

CITY OF CAMBRIDGE MASSACHUSETTS BOARD OF ZONING APPEAL 831 MASSACHUSETTS AVENUE CAMBRIDGE, MA 02139 617 349-6100

BZA APPLICATION FORM

GENERAL INFORMATION

Plan No: BZA-010036-2016

Special Permit :√		Variance :	Appeal :
PETITIONER :	New Cing	ular Wireless PCS LLC d/b/a AT	&T Mobility- C/O Timothy Greene
PETITIONER'S AD	DRESS :	157 Riverside Drive Norwell	, MA 02061
LOCATION OF PR	OPERTY :	60 Vassar St Cambridge, MA	

Other: Telecommunications

DESCRIPTION OF PETITIONER'S PROPOSAL :

This application is a Eligible Facilities request pursuant to Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012 47 U.S.C. 1455; or in the alternative, for a special permit under the zoning ordinance as cited above, if and to the extent necessary, all rights reserved

AT&T will be replacing fantennas currently installed on site. AT&T will also be adding and upgrading telecommunications equipment as part of nationwide network upgrades

SECTIONS OF ZONING ORDINANCE CITED :

Article	4.000	Section	.32.G.1 (Telecommunications Facility).				
Article	4.000	Section	4.40 (Footnote 49) (Telecommunications Facility).				
Article	10.000	Section	10.40 (Special Permit)/				
Article	6409	Section	Middle Class Tax Relief and Job Creation Act				

Original Signature(s): (Petitioner(s) / Owner)
(Print Name)
Address: 157 Riverside Prive
Tel. No.: 617-877-2950
E-Mail Address: typer aterrasearch 11c. rom

Date :

BZA APPLICATION FORM - OWNERSHIP INFORMATION

To be completed by OWNER, signed before a notary and returned to The Secretary of the Board of Zoning Appeals.

I/We Massachusetts Institute of Technology (OWNER) .) Address: 17 Mess Ave. W92-196, Cambridge MA 02139 State that I/We own the property located at GC Vusser St. Cambridge MA which is the subject of this zoning application. Init Ind gills Definite The record title of this property is in the name of Massachusetts Thushitute of Technology *Pursuant to a deed of duly recorded in the date 321612, Middlesex South County Registry of Deeds at Book 3676 , Page 190 ; or Middlesex Registry District of Land Court, Certificate No. Book _____ Page ___ SIGNATURE BY LAND OWNER OR AUTHORIZED TRUSTEE, OFFICER OR AGENT* *Written evidence of Agent's standing to represent petitioner may be requested. Commonwealth of Massachusetts, County of MIDDLISF X The above-name Attomy Sharon personally appeared before me, this 8 of April, 2016, and made oath that the above statement is true. Notary (Notary Sea My commission expires SHARON PINKSTEN Notary Public COMMONWEALTH OF MASSACHUSETTS My Commission Expires March 5, 2021 · If ownership is not shown in recorded deed, e.g. if by court

deed, or inheritance, please include documentation.

BZA APPLICATION FORM

DIMENSIONAL INFORMATION

APPLICANT: I	erraSearch	PRESENT USE/OCCUP	ANCY :	: Educational/Telecom		
LOCATION :	0 Vassar St Cambride	ge, MA		ZONE :	Residence C-3	Zone
PHONE :		REQUESTED	USE/OCCUPANCY :	Same		
		<u>EXISTING</u> CONDITIONS	<u>REQUESTED</u> CONDITIONS		<u>ORDINANCE</u> <u>REQUIREMENTS</u>	1
TOTAL GROSS FLOOR AREA:		0	0		0	(max.)
LOT AREA:		0	0		0	(min.)
RATIO OF GROS	S FLOOR AREA 2	00	0	0		(max.)
LOT AREA FOR	EACH DWELLING UNIT:	0	0		0	(min.)
SIZE OF LOT:	WIDTH	0	0		0	(min.)
	DEPTH	0	0		0	
SETBACKS IN F	EET: FRONT	0	0		0	(min.)
	REAR	0	0		0	(min.)
	LEFT SIDE	0	0		0	(min.)
	RIGHT SIDE	0	0		0	(min.)
SIZE OF BLDG.	: HEIGHT	0	0		0	(max.)
	LENGTH	0	0		0	
	WIDTH	0	0		0	
RATIO OF USABLE OPEN SPACE TO LOT AREA:		0	0		0	(min.)
NO. OF DWELLI	NG UNITS:	0	0		0	(max.)
NO. OF PARKING SPACES:		0	0		0	(min./max)
NO. OF LOADIN	G AREAS:	0	0		0	(min.)
DISTANCE TO NEAREST BLDG. ON SAME LOT:		0	0		0	(min.)

Describe where applicable, other occupancies on same lot, the size of adjacent buildings on same lot, and type of construction proposed, e.g.; wood frame, concrete, brick, steel, etc.

1. SEE CAMBRIDGE ZONING ORDINANCE ARTICLE 5.000, SECTION 5.30 (DISTRICT OF DIMENSIONAL REGULATIONS).

2. TOTAL GROSS FLOOR AREA (INCLUDING BASEMENT 7'-0" IN HEIGHT AND ATTIC AREAS GREATER THAN 5') DIVIDED BY LOT AREA.

3. OPEN SPACE SHALL NOT INCLUDE PARKING AREAS, WALKWAYS OR DRIVEWAYS AND SHALL HAVE A MINIMUM DIMENSION OF 15'.



April 25, 2016

Donna P. Lopez, City Clerk City of Cambridge City Hall 795 Massachusetts Avenue Cambridge, MA 02139	Constantine Alexander, Chair Board of Zoning Appeal City Hall 795 Massachusetts Avenue Cambridge, MA 02139					
Applicant:	New Cingular Wireless PCS, LLC ("AT&T")					
Property Address:	60 Vassar Street.					
Do.	Assessor's Map 52A, Lot 21 (the "Property")					
IC.	(i) Eligible Excilities Request pursuant to Section 6400 of the Middle					
	Class Tax Relief and Job Creation Act of 2012, 47 U.S.C. § 1455: or, in					
	the alternative.					
	(ii) Special Permit under Cambridge Zoning Ordinance Section					
	4.32(g)(1) and M.G.L. c. 40A, Section 9; and					
	(iii) Any other zoning relief required.					
	(All relief if and to the extent necessary, all rights reserved)					

Dear Ms. Lopez, Mr. Alexander and Members of the Board of Zoning Appeal:

Pursuant to Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012 (a/k/a the "Spectrum Act" or "Section 6409"), 47 U.S.C. § 1455, as further implemented by the Federal Communications Commission's Report and Order *In re Acceleration of Broadband Deployment by Improving Wireless Facilities Siting Policies*, FCC Docket No. 13-238, Report and Order No. 14-153 (October 17, 2014) (the "FCC Order"), New Cingular Wireless PCS, LLC ("AT&T") hereby submits this Eligible Facilities Request ("Request"); and, in the alternative, applies for a special permit from the City of Cambridge Board of Zoning Appeal (the "Board") under Section 432(g)(1) of the Cambridge Zoning Ordinance (the "Ordinance") to modify its existing "Telephone Exchange including Transmission Facilities to serve a Mobile Communication System" (the "Facility") on and within the existing building located at 60 Vassar Street (the "Special Permit Application").²

Under Section 6409, AT&T's proposed modification of its existing transmission equipment on and within the existing building, previously approved by the Board for use as a wireless communication

² AT&T submits this Request, Special Permit application and supporting materials subject to a full and complete reservation of AT&T's rights under the Spectrum Act and the FCC Order including without limitation its rights with respect to (i) any submittal requirements or approval criteria that are inconsistent with the prohibitions established by the FCC Order, (ii) any delay beyond the deadlines established in the FCC Order, (iii) the imposition of conditions on any approval that are inconsistent with the FCC Order, and (iv) referral or requirement to a discretionary review process such as a special permit.

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base station, does "not substantially change the physical dimensions" of the existing building. Therefore, AT&T's Request must be approved administratively, including the issuance of a building permit, to enable AT&T to make the proposed modifications to its transmission equipment.

In the alternative, as demonstrated in this application letter, the AT&T's proposed modifications to its existing Facility on the Property located in the C-3 zoning district satisfy the requirements for the grant of a special permit pursuant to Section 10.43 of the Ordinance.

I. <u>APPLICATION PACKAGE</u>

Enclosed with this application is a check payable to the City of Cambridge in the amount of \$500.00. In addition to the signed original of this letter are copies of the letter and the following materials:

- 1. The following completed and signed application forms:
 - a. BZA Application Form General Information;
 - b. BZA Application Form Ownership Information;
 - c. BZA Application Form Dimensional Requirements;
 - d. BZA Application Form Supporting Statement for a Special Permit; and
 - e. BZA Application Form Check List;
- 2. AT&T's relevant FCC License information;
- 3. Drawings by Hudson Design Group consisting of 9 pages dated 3/2/16;
- 4. Manufacturer's specification sheets for AT&T's proposed antennas and other featured equipment;
- 5. Photographs of the existing building and photosimulations of the proposed modifications Facility by Hudson Design Group., dated 4/1/16;
- 6. Radio Frequency Coverage Report, demonstrating the public need for the proposed modifications to the Facility, radio frequency coverage maps showing (a) existing or predicted coverage from neighboring facilities; and (b) coverage with the proposed Facility;
- 7. Structural Analysis by Hudson Design Group LLC dated April 4, 2016;
- 8. Maximum Permissible Exposure Study, Theoretical Report, by SAI Communications, dated April 1, 2016;
- 9. Letter of Authorization from Owner of Subject Property;
- 10. Deed to subject property; and
- 11. Attorney General's letters to the Towns of Mount Washington, Lynnfield and Montague.

In addition to the supporting materials identified above, submitted simultaneously herewith is a completed building permit application package including:

- 1. Completed Building Permit Application;
- 2. Certificate of Liability Insurance;
- 3. Worker's Compensation Insurance Affidavit;
- 4. Construction Supervisor License for Keith F Barnard; and
- 5. 1 copy of the Plans.

II. PROPOSED FACILITY DESIGN

AT&T seeks to modify the existing Facility on and within the building located at the Property. The existing Facility consists of nine (9) panel antennas (Alpha Sector: 3 antennas, Beta Sector: 3 antennas, and Gamma Sector: 3 antennas) that are mounted in three (3) locations. The proposed modifications include the replacement two (2) antenna per sector. The replacement antennas will be mounted to the existing antenna mounts consistent with the current Facility's design. Nine (9) remote radio-head units (RRUs) (one per sector) and three (3) surge arrestors (one per sector) will be added in close proximity to the antennas. Consistent with the concealment elements of the existing Facility's design, the proposed replacement antennas will be painted to match the color and texture of the existing façade. The proposed RRUs will match the color of the existing RRUs.

The Facility's design is shown in detail in the Zoning Drawings attached as Exhibit 3 to this application letter and featured equipment is described in the manufacturers' specification sheets attached as Exhibit 4. The photographs and photosimulations (Exhibit 5) show the existing Facility from various locations in the neighborhood around the Property and as simulated with proposed modifications. A structural analysis for the Facility demonstrates that the building is capable of supporting AT&T's proposed equipment at or near the locations shown on the Zoning Drawings (*see* Exhibit 7).

The Facility will continue to bring advanced wireless voice, text and data communications services to the surrounding areas. It will allow residents, professionals, government, businesses and students to communicate locally, nationally and internationally from virtually any location within the coverage area. In the event of an emergency, the improved Facility will allow immediate contact with fire, rescue and other emergency personnel. The improved Facility will thus enhance public health, safety and welfare both in ordinary daily living and in the event of fire, accident, medical emergency, natural disaster or other dangers.

III. <u>BACKGROUND</u>

AT&T is licensed by the Federal Communications Commission to construct and operate a wireless telecommunications network in various markets throughout the country, including the

Commonwealth of Massachusetts and the City of Cambridge. A copy of the AT&T's FCC license that covers the area of the proposed Facility is included with this application (*see* Exhibit 2). AT&T is in the process of designing and constructing additional wireless facilities to its existing telecommunications system to serve Massachusetts. One of the key design objectives of its systems is to provide adequate and reliable coverage. Such a system requires a grid of radio transmitting and receiving links located approximately .5 to 2 miles apart, depending on the location of existing and proposed installations in the surrounding area, the extent of use of AT&T's wireless services within the network, and the existing topography and obstructions. The radio transmitting and receiving facilities operate on a line-of-sight basis, requiring a clear path from the facility to the user on the ground. In urban settings, this dynamic requires the antennas to be located on buildings at heights and in locations where the signal is not obstructed or degraded by other buildings or by topographical features such as hills.

IV. RF COVERAGE DETERMINATION

AT&T has performed a study of radio frequency coverage for the City of Cambridge and from the Property, the results of which are described in the Radio Frequency Report submitted with this application (*see* Exhibit 6). Without the proposed modifications to its existing Facility, AT&T has a substantial coverage gap in this area of Cambridge. AT&T has determined that the proposed modifications to the existing Facility located on the building at the Property will provide needed coverage to the targeted sections of the City and the immediately surrounding area if AT&T's antennas are located on the buildingat the height and in the configuration requested. The importance of a facility at this location is underscored by AT&T's interest in enhancing its ability to provide its most up-to-date wireless technology, known as long-term evolution technology ("LTE"), in this area to satisfy its customers' ever-increasing needs for high-speed data services. Radio frequency coverage maps included in the report are provided to pictorially and vividly show the differences in existing and proposed wireless coverage at the various bands authorized for AT&T's service. The maps show dramatic improvements to wireless coverage at all three (3) bands with the inclusion of the proposed Facility, namely, at 700, 1900, and 2100 MHz.

V. THE FEDERAL SPECTRUM ACT AND THE FCC ORDER

As set forth below, the proposed modifications constitute an Eligible Facilities Request pursuant to the federal Spectrum Act,³ as further implemented by the FCC Order.⁴

47 U.S.C. § 1455(a)(2).

³ Pursuant to Section 6409(a)(2) an "eligible facilities request" means any request for modification of an existing wireless tower or base station that involves—

⁽A) collocation of new transmission equipment;

⁽B) removal of transmission equipment; or

⁽C) replacement of transmission equipment.

⁴ The Order was effective on February 9, 2015, except for § 1.40001, which became effective on April 8, 2015, except for §§ 1.40001(c)(3)(i), 1.40001(c)(3)(ii), 1.140001(c)(4), and 17.4(c)(1)(vii), which became effective on May 18, 2015, after approval by the Office of Management and Budget. The FCC Order makes clear that under the Spectrum Act discretionary review is not required or permitted for an Eligible Facilities Request.

Under the Spectrum Act, as further clarified by the FCC Order, the streamlined process for this Eligible Facilities Request is limited to non-discretionary review. Specifically, the FCC Order "adopt[s] an objective standard for determining when a proposed modification will 'substantially change the physical dimensions' of an existing tower or base station." *FCC Order*, ¶ 87. As stated in the FCC Order, Section 6409 "states without equivocation that the reviewing authority 'may not deny, and shall approve' any qualifying application. This directive leaves no room for a lengthy and discretionary approach to reviewing an application that meets the statutory criteria." *FCC Order*, ¶ 116.

In issuing the FCC Order and eliminating discretionary review for eligible facilities requests, the FCC's goal was to "adopt a test that is defined by specific, objective factors rather than the contextual and entirely subjective standard advocated by the IAC and municipalities." The FCC intentionally sought to reduce "flexibility" and "open ended context-specific approach" engendered by the discretionary review process:

While we acknowledge that the IAC approach would provide municipalities with maximum flexibility to consider potential effects, we are concerned that it would invite lengthy review processes that conflict with Congress's intent. Indeed, some municipal commenters anticipate their review of covered requests under a subjective, case-by-case approach could take even longer than their review of collocations absent Section 6409(a). We also anticipate that disputes arising from a subjective approach would tend to require longer and more costly litigation to resolve given the more fact-intensive nature of the IAC's open-ended and context-specific approach. We find that an objective definition, by contrast, will provide an appropriate balance between municipal flexibility and the rapid deployment of covered facilities. We find further support for this approach in State statutes that have implemented Section 6409(a), all of which establish objective standards.

FCC Order, ¶ 88.

As a result, the FCC Order implementing Section 6409 establishes clear and objective criteria for determining eligibility, limits the types of information that a municipality may require when processing an application for an eligible facilities request, and imposes a "deemed granted" remedy for failure to timely process and eligible facilities request.⁵ The FCC Order also establishes significant limits on the information that can be required to be provided with an eligible facilities request and limits it to only that information "reasonably related to determining whether the request meets the requirements of this section. A State or local government may not require an applicant to submit any other documentation". 47 CFR 1.40001(c)(1).

Both before and after the FCC Order was issued, the Massachusetts Attorney General's Office provided clear guidance that an eligible request cannot be subjected to a discretionary special permit process. *See* Attorney General's letters to (i) Town of Mount Washington, dated June 12, 2014, p. 3 (ii) Town of Lynnfield, dated February 10, 2015, p. 3 (the "AG Lynnfield Letter") and

⁵ See 47 CFR §§1.40001(c)(1) - (c)(4).

(iii) Town of Montague, dated February 23, 2015, p. 2 (all attached hereto). As set forth in each letter [t]he Act's requirement that a local government 'may not deny, and shall approve, any eligible facilities request' means that a request for modification to an existing facility that does not substantially change the physical dimensions of the tower or base station must be approved. *Such qualifying requests also cannot be subject to a discretionary special permit.*")(Emphasis added). In providing these opinions, the Attorney General's Office specifically opined that provisions in zoning ordinances that specifically required a special permit for modifications to existing facilities could not be applied to eligible facilities requests. While approving the Town of Lynnfield's Zoning Bylaw, the Attorney General stated that "Section 8.7.5.1 requires that PWSF may only be erected upon the grant of a special permit. The Town cannot apply this required approval under Section 6409 of the Act." *AG Lynnfield Letter*, p. 3.

Therefore, as set forth in the FCC Order and Attorney General's opinion letters, the City cannot impose a requirement that AT&T obtain a special permit, or an amendment to an existing special permit utilizing the same discretionary review process, in connection with its eligible facilities request. To the extent that the City of Cambridge's Zoning Ordinance and any prior decisions by the Board include provisions seeking to further regulate the modification of wireless communication facilities, federal law overrules those requirements. *See* <u>Sprint Spectrum L.P. v.</u> <u>Town of Swansea</u>, 574 F.Supp.2d 227, 236 (2008) (Board is obligated to consider whether its actions would violate federal law even if a different outcome would be permitted under state law). The standard of review for an application to modify an existing wireless communication facility on an existing tower or base station is governed by the Spectrum Act and the FCC Order which require eligible facilities requests to be permitted "by right."

In addition, the FCC Order establishes a 60-day period for approval from the time of AT&T's submission. 47 CFR §1.40001(c)(2). Within the context of the Spectrum Act and FCC Order, approval means all necessary approvals to permit the proposed modifications, including the issuance of a building permit, if required. The FCC found that this 60-day period is appropriate due to "the more restricted scope of review applicable to applications under section 6409(a)." *FCC Order*, ¶ 108. If the Request is not acted upon within the 60-day period, it is deemed granted. 47 CFR §1.40001(c)(4).

As set forth below, the proposed modifications constitute an eligible facilities request. Therefore, AT&T respectfully requests the Board to find that Section 4.32(g)(1) of the Ordinance does not apply to its Request.

VI. <u>THE PROPOSED MODIFICATIONS ARE AN ELIGIBLE FACILITIES</u> <u>REQUEST</u>

Under Section 6409 and the FCC Order, a "base station" means "[a] structure or equipment at a fixed location that enables Commission-licensed or authorized wireless communications between user equipment and a communications network." 47 C.F.R §1.40001(b)(1). A Base Station includes "any structure other than a tower" that supports or houses "authorized wireless communications between user equipment and a communications network." 47 C.F.R §1.40001(b)(1). A Base Station §1.40001(b)(1). Therefore, the existing building that is currently used for FCC-licensed transmissions for personal wireless services is a "base station" for purposes of Section 6409.

AT&T proposes to modify its existing Facility as described above and depicted on the Plans submitted herewith.

The proposed modifications will not require the installation of any part of the facility on the ground outside of the building.

As a result, AT&T's proposed modifications involving the removal and replacement of the existing transmission equipment constitute an "eligible facilities request" under Section 6409. The proposed eligible facilities request is not a "substantial modification" under Section 6409 and the FCC Order because it does not:

- (i) Result in an increase in "the height of the structure by more than 10% or more than ten feet, whichever is greater" because the proposed replacement antennas will be façade mounted and located below the roofline and therefore will not exceed 10 feet above the existing building and the proposed roof mounted RRUs and surge arrestors will also not exceed 10 feet above the existing building;
- (ii) Protrude from the edge of the edge of the building by more than six feet because AT&T's proposed antennas will not protrude more than six feet from building façade;
- (iii) Involve the installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets because no new radio communications equipment cabinets will be installed;
- (iv) Require any excavation or deployment outside the current site of the tower or base station because all antennas, equipment cabinets and related equipment will be installed entirely on and within the existing building; or
- (v) Otherwise defeat the existing concealment elements of the tower or base station because the proposed replacement antennas will be painted and textured to match the façade of the existing building on which the existing and proposed antennas will be located and will continue to integrate the Facility into the existing architecture of the building. Further, the proposed and surge arrestors will be mounted in a manner and color consistent with the existing RRUs and surge arrestors. Therefore, AT&T's proposed Facility will remain aesthetically consistent with the exterior finish of the building as well as maintain the concealment elements of the original design.

See FCC Order, §1.40001(b)(7)(i)-(v).

VII. COMPLIANCE WITH THE CAMBRIDGE ZONING ORDINANCE

In the alternative, AT&T respectfully requests the Board to grant a special permit for the proposed modifications to the existing Facility.⁶

A. <u>AT&T complies with the Wireless Communications provisions set forth in Section</u> 4.32(g)(1), and Section 4.40, Footnote 49 of the Ordinance.

AT&T's proposed modifications comply with Section 4.32(g)(1), and Section 4.40, Footnote 49 of the Ordinance as follows:⁷

<u>Section 4.32(g)(1)</u>: Section 4.32(g)(1) of the Ordinance allows for the use of a "[t]elephone exchange (including switching, relay, and transmission facilities serving mobile communications systems) and any towers or antennas accessory thereto." Under the Table of Use Regulations beginning at Section 4.30, AT&T's proposed use of the Facility as a transmission facility serving a mobile communications system is permitted by special permit in the C-3 zoning district (see the table at Section 4.32(g)(1)).

<u>Section 4.40, Footnote 49</u>: Section 4.32(g)(1) includes a reference to Section 4.40, Footnote 49 which sets out the standards for granting the special permit. AT&T's proposed Facility complies with Footnote 49's standards as noted below:

1. The Board of Zoning Appeal shall consider "[t]he scope of or limitations imposed by any license secured from any state or federal agency having jurisdiction over such matters."

<u>AT&T's Response</u>: AT&T's FCC license is included with this application and the license information included shows that AT&T is authorized to provide wireless service in the area served by the Facility (*see* Exhibit 2).

2. The Board of Zoning Appeal shall consider "[t]he extent to which the visual impact of the various elements of the proposed facility is minimized: (1) through the use of existing mechanical elements on the building's roof or other features of the building as support and background, (2) through the use in materials that in texture and color

⁶ AT&T's request is made, if and to the extent necessary, all rights reserved. As discussed above, the FCC Order establishes a 60-day period for receipt of all necessary approvals from the time of AT&T's submission, including a building permit, if required. 47 CFR §1.40001(c)(2). If the Request is not acted upon within the 60-day period, it is deemed granted. 47 CFR §1.40001(c)(4). Therefore, AT&T expressly reserves its rights under 47 CFR §1.40001(c)(2) and (4).

⁷ To the extent that Section 4.32(g)(1), and Section 4.40, Footnote 49 of the Ordinance purport to require the submission of information that is beyond the scope permitted by the FCC Order or Spectrum Act, AT&T expressly reserves, and does not waive, its right to assert that such information is not required under the Spectrum Act and the submission of such information shall not constitute a waiver of AT&T's rights pursuant thereto.

blend with the materials to which the facilities are attached, or (3) other effective means to reduce the visual impact of the facility on the site."

<u>AT&T's Response</u>: The design of the overall Facility, including the choice and placement of replacement antennas and associated equipment, on the building's façade, minimizes the visual impact of the proposed Facility. This is because the antennas and equipment on the exterior façade surfaces will be painted to match the color and texture of the building so as to be minimally visible and consistent with the concealment elements of the existing Facility. The minimal visual impact of the Facility is shown in the photographs of the existing Facility and the photosimulations that superimpose the proposed modifications to the existing Facility (*see*, Exhibit 5).

3. The Board of Zoning Appeal shall consider "[w]here it is proposed to erect such a facility in any residential zoning district, the extent to which there is a demonstrated public need for the facility at the proposed locations, the existence of alternative, functionally suitable sites in nonresidential locations, the character of the prevailing uses in the area, and the prevalence of other existing mechanical systems and equipment carried on or above the roof of nearby structures. The Board of Zoning Appeal shall grant a special permit to erect such a facility in a residential zoning district only upon finding that nonresidential uses predominate in the vicinity of the proposed facility's location and that the telecommunications facility is not inconsistent with the character that does prevail in the surrounding neighborhood.

In granting a special permit the Board of Zoning Appeal shall set forth in its decision under which circumstances or procedures, if any, the permittee shall be allowed to replace and upgrade its equipment without the necessity of seeking a new special permit."

<u>AT&T's Response</u>: As demonstrated by the Radio Frequency Report and the associated coverage maps, AT&T has demonstrated an immediate and compelling need for the proposed modifications to its existing Facility located at the Property in order to provide substantially improved indoor coverage to residents, businesses, students and faculty, and the general public in that area.⁸ AT&T also seeks to substantially improve its ability to satisfy the ever-increasing need of its customers for data accessibility, navigation and use. This is especially critical in and around the area Vassar Street, Massachusetts Avenue and the surrounding MIT campus. AT&T proposes to satisfy its RF coverage needs in the area by adding to the existing Facility the antennas and equipment necessary to provide the latest LTE wireless communications service technology. By modifying its existing Facility, AT&T obviates the need to construct an entirely new facility within this area of Cambridge in order to meet its wireless network coverage needs.

As provided in Footnote 49, AT&T requests that once permission is received from the City to site the Facility at the Property, the Board permit AT&T to replace and upgrade the equipment at this Facility in the future without further zoning proceedings or a new special permit, provided that such equipment shall meet the eligible facilities request criteria set forth in 47 CFR § 1.40001.

⁸ AT&T must generate a signal strength of at least -74 dBm to provide serviceable voice and data coverage on its mobile wireless devices in indoor environments. AT&T also seeks to substantially improve its data navigation service coverage in the area by including antennas and equipment that will provide LTE service.

B. <u>AT&T complies with the Special Permit Criteria set forth in Section 10.43 of the</u> <u>Ordinance</u>.

Section 10.43 of the Ordinance specifies the following criteria for issuance of a special permit: "Special permits will normally be granted where specific provisions of this Ordinance are met, except when particulars of the location or use, not generally true of the district or of the uses permitted in it, would cause granting of such permit to be to the detriment of the public interest because:

(a) The requirements of this Ordinance cannot or will not be met, or

<u>AT&T's Response</u>: As provided above, AT&T's proposed modifications comply with the requirements set forth in Section 4.32(g), Footnote 49 of the Ordinance, the Spectrum Act and the eligible facilities request criteria set forth in 47 CFR § 1.40001. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(b) Traffic generated or patterns of access or egress would cause congestion, hazard, or substantial change in established neighborhood character for the following reasons, or

<u>AT&T's Response</u>: The proposed modifications to AT&T's existing Facility will not result in any change to the existing traffic on or near the Property. The Facility will continue to be unmanned and only require infrequent visits by a technician (typically two times per month for routine diagnostics and/or maintenance, except in cases of emergency), there will be no material increase in traffic or disruption to patterns of access or egress that will cause congestion, hazards or a substantial change in the established neighborhood character. AT&T's maintenance personnel will make use of the existing access roads and parking at the building. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(c) The continued operation of or the development of adjacent uses as permitted in the Zoning Ordinance would be adversely affected by the nature of the proposed use, or

<u>AT&T's Response</u>: As described above and illustrated on the attached photographs and photosimulations (*see* Exhibit 5) the proposed modifications to the existing Facility will result in a *de minimis* change in the appearance of the building because the equipment will be located on building exterior surfaces. As a result, the Facility as a whole either will be hidden from view or will visually blend with existing characteristics of the building and the surrounding neighborhood. Because the proposed installation will not generate any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater, it will not adversely affect residential uses on neighboring streets. Conversely, the surrounding properties and general public will benefit from the potential to enjoy improved wireless communications services. Granting the special permit

would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(d) Nuisance or hazard would be created to the detriment of the health, safety and/or welfare of the occupant of the proposed use or the citizens of the City, or

AT&T's Response: Because the proposed modifications to the existing Facility will not cause the Facility to generate any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater, no nuisance or hazard will be created to the detriment of the health, safety, or welfare of the occupants of the building or the residents of the City of Cambridge. To the contrary, the proposed Facility will benefit the City and promote the safety and welfare of its residents, businesses and drivers by providing reliable state-of-the-art digital wireless voice and data services that will improve the reliability of emergency communications with the police and fire departments by eliminating dropped or blocked calls due to inadequate signal strength or insufficient network capacity to handle call volume, particularly important during emergency situations. The Facility, as modified, will continue to comply with all federal, state and local safety requirements including the standards established by the FCC and Federal Aviation Administration (FAA). (*See* Exhibit 8 Maximum Permissible Exposure Study, Theoretical Report). Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(e) For other reasons, the proposed installation would impair the integrity of the district or adjoining district or otherwise derogate from the intent or purpose of this Ordinance, or

<u>AT&T's Response</u>: The purpose of the Ordinance is multifaceted, the relevant aspects of which relating to wireless telecommunications facilities include the lessening of congestion in the streets, conserving health, securing safety from fire, flood, panic and other danger, conserving the value of land and buildings and natural resources, preventing blight and pollution, encouraging the most rational use of land throughout the city, including encouraging appropriate economic development, and protecting residential neighborhoods from incompatible activities.

As noted above, the proposed modifications to the existing Facility directly accord with the purposes of the Ordinance because the modifications will not result in any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater. As the Facility will improve the ability of residents, businesses, travelers and drivers in the area to access state-of-theart wireless technology, the City's ability to provide emergency services will be improved, as will the economic development of the City as more people will be able to conduct commerce by virtue of a mobile platform. Because the proposed modifications to the existing Facility will be installed on an existing building that includes the Facility, and the proposed modifications are consistent with the existing concealment elements, the proposed modifications to the existing Facility are in consistent with the building's character and will not affect the value of the building or the natural resources of the City. Because the proposed modifications to the existing Facility are designed to be consistent with the existing concealment element elements of the Facility and characteristics of the Property, the visual impact on the underlying and adjacent zoning districts will be *de minimis*. As a result, the proposed modifications to the existing Facility are consistent with the Ordinance's purpose to allow for less intrusive wireless telecommunications facilities in all districts (other than Open Space) including the applicable overlay districts, and the underlying C-3 district. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(f) The new use or building construction is inconsistent with the Urban Design Objectives set forth in Section 19.30

AT&T's Response: As stated in the Section 19.30, the Citywide Urban Design Objectives ("Objectives") "are intended to provide guidance to property owners and the general public as to the city's policies with regard to the form and character desirable for new development in the city. It is understood that application of these principles can vary with the context of specific building proposals in ways that, nevertheless, fully respect the policies' intent. It is intended that proponents of projects, and city staff, the Planning Board and the general public, where public review or approval is required, should be open to creative variations from the detailed provisions presented in this Section as long as the core values expressed are being served. A project need not meet all the objectives of this Section 19.30 where this Section serves as the basis for issuance of a special permit. Rather the permit granting authority shall find that on balance the objectives of the city are being served. Nor shall a project subject to special permit review be required to conform to the Required Building and Site Plan Requirements set forth in Section 11.50." [emphasis added]. For the reasons stated in AT&T's response to this Section 10.43(f) of the Zoning Ordinance and in its application generally, "on balance, the objectives of the city are being served" by the installation of the Facility at the Property so that granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

The following are the Objectives' headings as appearing in the Ordinance:

<u>19.31</u>: New projects should be responsive to the existing or anticipated pattern of development.

<u>AT&T's Response</u>: The existing Facility is located on n the existing building, some of the equipment of which is hidden from view behind the screen wall on the existing building, or otherwise obstructed from view, and the remaining equipment blends with the structures and colors of the building. The proposed modifications to the existing Facility are consistent with the previously approved design and concealment elements of the existing Facility. Therefore, the proposed modifications are responsive to the existing pattern of development in the Property's applicable zoning and overlay districts.

<u>19.32</u>: Development should be pedestrian and bicycle-friendly, with a positive relationship to its surroundings.

AT&T's Response: The existing Facility is located on and within the existing building. The Facility is only accessed by authorized AT&T personnel for routine maintenance one to two times per month and is not accessed by the general public. The proposed modifications to the existing

Facility will not result in any increase in routine visits nor otherwise result in a change in traffic patterns in the vicinity of the Property that would affect pedestrian flow or cyclists' access to the building or surrounding areas within the Property's applicable zoning districts.

<u>19.33</u> The building and site design should mitigate adverse environmental impacts of a development upon its neighbors. Indicators include[⁹]

(1) Mechanical equipment that is carefully designed, well organized or visually screened from its surroundings and is acoustically buffered from neighbors. Consideration is given to the size, complexity and appearance of the equipment, its proximity to residential areas, and its impact on the existing streetscape and skyline. The extent to which screening can bring order, lessen negative visual impacts, and enhance the overall appearance of the equipment should be taken into account. More specifically:

(a) Reasonable attempts have been made to avoid exposing rooftop mechanical equipment to public view from city streets. Among the techniques that might be considered are the inclusion of screens or a parapet around the roof of the building to shield low ducts and other equipment on the roof from view.

(b) Treatment of the mechanical equipment (including design and massing of screening devices as well as exposed mechanical elements) that relates well to the overall design, massing, scale and character of the building.

(c) Placement of mechanical equipment at locations on the site other than on the rooftop (such as in the basement), which reduces the bulk of elements located on the roof; however, at-grade locations external to the building should not be viewed as desirable alternatives.

(d) Tall elements, such as chimneys and air exhaust stacks, which are typically carried above screening devices for functioning reasons, are carefully designed as features of the building, thus creating interest on the skyline.

(e) All aspects of the mechanical equipment have been designed with attention to their visual impact on adjacent areas, particularly with regard to residential neighborhoods and views and vistas.

AT&T's Response: As shown in the photosimulations (*see* Exhibit 5), the existing Facility, as proposed to be modified herein, will continue to be visually consistent with the color and texture of the building and the concealment elements of the design of the Facility. As a result, AT&T's Facility is in keeping with the building's existing features without adversely affecting the building's overall design, massing, scale or character.

⁹ Inasmuch as Section 19.33 is most relevant to the Facility, it is stated here in full.

(2) Trash that is handled to avoid impacts (noise, odor, and visual quality) on neighbors, e.g. the use of trash compactors or containment of all trash storage and handling within a building is encouraged.

<u>AT&T's Response</u>: The Facility does not generate trash, therefore this design objective is inapplicable.

(3) Loading docks that are located and designed to minimize impacts (visual and operational) on neighbors.

<u>AT&T's Response</u>: The Facility does not utilize any loading dock, therefore this design objective is inapplicable.

(4) Stormwater Best Management Practices and other measures to minimize runoff and improve water quality are implemented.

<u>AT&T's Response</u>: The existing Facility, and the proposed modifications, are located entirely on and within the existing Building on the Property and have no effect on stormwater runoff, therefore this design objective is inapplicable.

(5) Landscaped areas and required Green Area Open Space, in addition to serving as visual amenities, are employed to reduce the rate and volume of stormwater runoff compared to pre-development conditions.

<u>AT&T's Response</u>: The existing Facility and proposed modifications have no effect any landscaped or Green Area Open Space, therefore this design objective is inapplicable.

(6) The structure is designed and sited to minimize shadow impacts on neighboring lots, especially shadows that would have a significant impact on the use and enjoyment of adjacent open space and shadows that might impact the operation of a Registered Solar Energy System as defined in Section 22.60 of this Zoning Ordinance.

<u>AT&T's Response</u>: The existing Facility and proposed modifications are designed so as not to cause shadows on neighboring lots.

(7) Changes in grade across the lot are designed in ways that minimize the need for structural retaining walls close to property lines.

<u>AT&T's Response</u>: The existing Facility and proposed modifications are located entirely on the existing building and have no impact on the grade of the Property, therefore this design objective is inapplicable.

(8) Building scale and wall treatment, including the provision of windows, are sensitive to existing residential uses on adjacent lots.

<u>AT&T's Response</u>: The proposed modifications to the existing Facility will not change the building's scale because antennas and equipment will blend with the color and

textures of the building (*see* Exhibit 3). The existing Facility and proposed modifications are consistent with characteristics of the existing building design, maintain the existing concealment elements of the Facility and therefore minimize any visual impact from the Facility.

(9) Outdoor lighting is designed to provide minimum lighting and necessary to ensure adequate safety, night vision, and comfort, while minimizing light pollution.

<u>AT&T's Response</u>: The existing Facility does not use any outdoor lighting. The proposed modifications to the Facility do not include any additional lighting of the Facility or building. As a result, this design objective is inapplicable.

(10) The creation of a Tree Protection Plan that identifies important trees on the site, encourages their protection, or provides for adequate replacement of trees lost to development on the site.

<u>AT&T's Response</u>: The existing Facility and proposed modifications are located entirely on the existing building and have no effect on any trees on the Property, therefore this design objective is inapplicable.

<u>19.34</u>: Projects should not overburden the City infrastructure services, including neighborhood roads, city water supply system, and sewer system.

<u>AT&T's Response</u>: The existing Facility, including the proposed modifications, is a passive use and will not generate trash, odor, excess noise, or utilize water or wastewater services. As such, it will not burden the City's infrastructure services.

<u>19.35:</u> New construction should reinforce and enhance the complex urban aspects of Cambridge as it has developed historically.

AT&T's Response: The proposed modification of the existing Facility located on the existing building, will obviate the need for AT&T to construct an additional Facility to address its wireless network coverage need in this area of Cambridge. The existing Facility and the proposed modifications blend the equipment with the building texture and color, and are consistent with the concealment elements of the Facility's design. As a result, the Facility will reinforce the existing Cambridge landscape as it currently is manifested at the Property.

19.36: Expansion of the inventory of housing in the city is encouraged.

<u>AT&T's Response</u>: The Facility and proposed modifications provide wireless services and will not adversely impact the City's housing inventory.

<u>19.37</u>. Enhancement and expansion of open space amenities in the city should be incorporated into new development in the city.

<u>AT&T's Response</u>: The Facility and proposed modifications are located on the existing building. The Facility and proposed modifications will not adversely impact or otherwise reduce open space amenities within the City.

VIII. <u>SUMMARY</u>

For the foregoing reasons AT&T respectfully requests that the Board to determine that pursuant to the Spectrum Act and the FCC Order, the Request constitutes and eligible facilities request and therefore AT&T's Request must be approved administratively, including the issuance of a building permit, without the need for further relief from the Board. In the alternative, without waiving its rights, AT&T requests the Board grant the foregoing zoning relief in the form of a Special Permit and such other relief as the Board deems necessary to allow the modification and operation of AT&T's proposed Facility.

Best Regards,

Timothy W. Greene Authorized Agent to New Cingular Wireless PCS, LLC ("AT&T")

cc: Brian S. Grossman, Esq.

	CITY OF CAMBRIDGE MASSACHUSETTS BOARD OF ZONING APPEAL 831 MASSACHUSETTS AVENUE CAMBRIDGE, MA 02139 617 349-6100 2016 APR 27 PM 3: 34 BZA APPLICATION FORM BZA APPLICATION FORM GENERAL INFORMATION
The undersigned hereby petition	ns the Board of Zoning Appeal for the following:
Special Permit : V	Variance : Appeal :
PETITIONER : New Cingu	alar Wireless PCS LLC d/b/a AT&T Mobility- C/O Timothy Greene
PETITIONER'S ADDRESS :	157 Riverside Drive Norwell, MA 02061
LOCATION OF PROPERTY :	60 Vassar St Cambridge, MA
TYPE OF OCCUPANCY :	ZONING DISTRICT: Residence C-3 Zone
REASON FOR PETITION :	
Other	: Telecommunications
DESCRIPTION OF PETITIONER This application is a E Class Tax Relief and Jo a special permit under necessary, all rights r AT&T will be replacing and upgrading telecommu	'S PROPOSAL: ligible Facilities request pursuant to Section 6409 of the Middle b Creation Act of 2012 47 U.S.C. 1455; or in the alternative, for the zoning ordinance as cited above, if and to the extent eserved antennas currently installed on site. AT&T will also be adding nications equipment as part of nationwide network upgrades
SECTIONS OF ZONING ORDINA	ANCE CITED :
Article 4.000	Section 4.32.G.1 (Telecommunications Facility).
Article 4.000	Section 4.40 (Footnote 49) (Telecommunications Facility).
Article 10.000	Section 10.40 (Special Permit)/
Article 6409	Section Middle Class Tax Relief and Job Creation Act Original Signature(s):
	(Petitioner(s) / Owner) <u>i Wetty W. Green</u> (Print Name) Address: <u>IST Riversice Prine</u> <u>Norvell</u> , <u>MA 02061</u> Tel. No.: <u>617-877-2950</u> E-Mail Address: <u>Topeene Oterrasparchilc.com</u>

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BZA 10036-2016



CAMBRIDGE HISTORICAL COMMISSION

831 Massachusetts Avenue, 2nd Fl., Cambridge, Massachusetts 02139 Telephone: 617 349 4683 Fax: 617 349 3116 TTY: 617 349 6112 E-mail: histcomm@cambridgema.gov URL: http://www.cambridgema.gov/Historic

William B. King, *Chair*, Bruce A. Irving, *Vice Chair*, Charles M. Sullivan, *Executive Director* William G. Barry, Jr., M. Robert G. Crocker, Chandra Harrington, Jo M. Solet, *Members* Shary Page Berg, Joseph V. Ferrara, Susannah Barton Tobin, *Alternates*

Bldg

Jurisdiction Advice

To the Owner of Property at

The above-referenced property is subject to the jurisdiction of the Cambridge Historical Commission (CHC) by reason of the status referenced below:

__Old Cambridge Historic District

___ Fort Washington Historic District

(M.G.L. Ch. 40C, City Code §2.78.050)

___ Avon Hill Neighborhood Conservation District

- ____ Half Crown Marsh Neighborhood Conservation District
- ____Harvard Square Conservation District
- Mid Cambridge Neighborhood Conservation District
- ___ Designated Landmark
- Property is being studied for designation:
 - " (City Code, Ch. 2.78., Article III, and various City Council Orders)

Preservation Restriction or Easement (as recorded)

Built 1966.

✓ Structure is fifty years or more old and therefore subject to CHC review of any application for a demolition permit, if one is required by ISD. (City Code, Ch. 2.78, Article II). See the back of this page for definition of demolition.

No demo Proposed. _____No jurisdiction: not a designated historic property and the structure is less than fifty years old.

No local jurisdiction, but the property is listed on the National Register of Historic Places; CHC staff is available for consultation, upon request. Staff comments:

The Board of Zoning Appeal advises applicants to complete Historical Commission or Neighborhood Conservation District Commission reviews before appearing before the Board.

If a line indicating possible jurisdiction is checked, the owner needs to consult with the staff of the Historical Commission to determine whether a hearing will be required.

CHC staff initials 80 Received by Relationship to project

Date <u>4/2/2016</u>

cc: Applicant Inspectional Services Commissioner

Demolition Delay Ordinance and Application Information

The Demolition Delay Ordinance (Chapter 2.78, Article II of the Cambridge Municipal Code) was adopted by the City Council in 1979 to afford public review of demolition permit applications for potentially significant buildings. When the Historical Commission determines that a building is significant and should be preserved, demolition will be delayed for up to six months so that solutions can be sought to preserve the building indefinitely. The Ordinance covers all buildings over 50 years old, city-wide. The Historical Commission archives provide dates of construction for all properties in the City.

Demolition is defined in the ordinance as "the act of pulling down, destroying, removing or razing a building or commencing the work of total or substantial destruction with the intent of completing the same." The Inspectional Services Commissioner has provided further guidelines to outline what actions require a demolition permit. In addition to complete demolition of a building, the following actions may require a demolition permit,

- removal of a roof,
- removal of one side of a building,
- gutting of a building's interior to the point where exterior features (windows, etc.) are impacted, and
- removal of more than 25% of a structure.

Please contact the building inspector or a staff member of the Historical Commission if you have questions about whether a demolition permit is required for a particular project.

Demolition permit applications can be obtained from the Inspectional Services Department. The completed application should be submitted to the Historical Commission, where the staff will review the application. If the Executive Director of the Historical Commission makes an initial determination that the building is significant, a public hearing will be scheduled with Historical Commission. If the staff makes an initial determination that the building is not significant, the application is released for further review by the Building Commissioner.

More information about the demolition permit application procedures is available on the Historical Commission's web site or by calling or dropping by the Historical Commission office.

July 2003

Cambridge Historical Commission 831 Massachusetts Ave., 2nd Fl. Cambridge, MA 02139 Ph: 617/349-4683 or TTY: 617/349-6112 http://www.cambridgema.gov/Historic/demolitiondelay.html



48-129 / 53-54-60 / 52A-21-22-31-19-32 MASSACHUSETTS INSTITUTE OF TECHNOLOGY C/O OFFICE OF THE TREASURER 238 MAIN ST. SUITE 200 CAMBRIDGE, MA 02142

44-105 BP FIVE CC LLC, C/O BOSTON PROPERTIES LP 800 BOYLSTON ST, STE #1900 BOSTON, MA 02199

D.C.R DEPARTMENT OF CONSERVATION & RECREATION 251 CAUSEWAY STREET – SUITE 600 BOSTON, MA 02114-2119

Vasser St 60

57-131-169-170-171 / 58-161-162-165-74 MASSACHUSETTS INSTITUTE OF TECHNOLOGY C/O OFFICE OF THE TREASURER 238 MAIN ST. SUITE 200 CAMBRIDGE, MA 02142

43A-29 CAMBRIDGE REDEVELOPMENT AUTHORITY 4 CAMBRIDGE CENTER 2ND FLOOR CAMBRIDGE, MA 02142

43-63 WHITEHEAD INSTITUTE FOR BIOMEDICAL RESEARCH 9 CAMBRIDGE CENTER CAMBRIDGE, MA 02142

TIMOTHY W. GREENE

TIMOTHY W. GREENE AUTHORIZED AGENT FOR AT&T 157 RIVERSIDE DRIVE NORWELL, MA 02061

56-4 MIT 636 PUTNAM AVENUE LLC C/O MIT INVESTMENT MANAGEMENT CO 238 MAIN ST., SUITE 200 CAMBRIDGE, MA 02142

43-77 BP SEVEN CAMBRIDGE CENTER LLC, C/O BOSTON PROPERTIES LIMITED 800 BOYLSTON ST, STE #1900 BOSTON, MA 02199



April 25, 2016

Donna P. Lopez, City Clerk	Constantine Alexander, Chair			
City of Cambridge	Board of Zoning Appeal			
City Hall	City Hall			
795 Massachusetts Avenue	795 Massachusetts Avenue			
Cambridge, MA 02139	Cambridge, MA 02139			
Anglisont	New Cincular Window DCS, LLC ("AT 6-T")			
Applicant:	New Cingular Wireless PCS, LLC (AT&T)			
Property Address:	60 Vassar Street.			
	Assessor's Map 52A, Lot 21 (the "Property")			
Re:	Application for:			
	(i) Eligible Facilities Request pursuant to Section 6409 of the Middle			

Clas	ss Tax Re	elief and	Job Cre	eation A	ct of 2	2012, 47	U.S.C. § 14:	55; or, in
the a	alternativ	ve,						
(ii)	Special	Permit	under	Cambr	idge	Zoning	Ordinance	Section
1 00	1 1 1 1 1	111001	10		0	1		

4.32(g)(1) and M.G.L. c. 40A, Section 9; and

(iii) Any other zoning relief required.

(All relief if and to the extent necessary, all rights reserved)

Dear Ms. Lopez, Mr. Alexander and Members of the Board of Zoning Appeal:

Pursuant to Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012 (a/k/a the "Spectrum Act" or "Section 6409"), 47 U.S.C. § 1455, as further implemented by the Federal Communications Commission's Report and Order *In re Acceleration of Broadband Deployment by Improving Wireless Facilities Siting Policies*, FCC Docket No. 13-238, Report and Order No. 14-153 (October 17, 2014) (the "FCC Order"), New Cingular Wireless PCS, LLC ("AT&T") hereby submits this Eligible Facilities Request ("Request"); and, in the alternative, applies for a special permit from the City of Cambridge Board of Zoning Appeal (the "Board") under Section 432(g)(1) of the Cambridge Zoning Ordinance (the "Ordinance") to modify its existing "Telephone Exchange including Transmission Facilities to serve a Mobile Communication System" (the "Facility") on and within the existing building located at 60 Vassar Street (the "Special Permit Application").²

Under Section 6409, AT&T's proposed modification of its existing transmission equipment on and within the existing building, previously approved by the Board for use as a wireless communication

² AT&T submits this Request, Special Permit application and supporting materials subject to a full and complete reservation of AT&T's rights under the Spectrum Act and the FCC Order including without limitation its rights with respect to (i) any submittal requirements or approval criteria that are inconsistent with the prohibitions established by the FCC Order, (ii) any delay beyond the deadlines established in the FCC Order, (iii) the imposition of conditions on any approval that are inconsistent with the FCC Order, and (iv) referral or requirement to a discretionary review process such as a special permit.

base station, does "not substantially change the physical dimensions" of the existing building. Therefore, AT&T's Request must be approved administratively, including the issuance of a building permit, to enable AT&T to make the proposed modifications to its transmission equipment.

In the alternative, as demonstrated in this application letter, the AT&T's proposed modifications to its existing Facility on the Property located in the C-3 zoning district satisfy the requirements for the grant of a special permit pursuant to Section 10.43 of the Ordinance.

I. <u>APPLICATION PACKAGE</u>

Enclosed with this application is a check payable to the City of Cambridge in the amount of \$500.00. In addition to the signed original of this letter are copies of the letter and the following materials:

- 1. The following completed and signed application forms:
 - a. BZA Application Form General Information;
 - b. BZA Application Form Ownership Information;
 - c. BZA Application Form Dimensional Requirements;
 - d. BZA Application Form Supporting Statement for a Special Permit; and
 - e. BZA Application Form Check List;
- 2. AT&T's relevant FCC License information;
- 3. Drawings by Hudson Design Group consisting of 9 pages dated 3/2/16;
- 4. Manufacturer's specification sheets for AT&T's proposed antennas and other featured equipment;
- 5. Photographs of the existing building and photosimulations of the proposed modifications Facility by Hudson Design Group., dated 4/1/16;
- 6. Radio Frequency Coverage Report, demonstrating the public need for the proposed modifications to the Facility, radio frequency coverage maps showing (a) existing or predicted coverage from neighboring facilities; and (b) coverage with the proposed Facility;
- 7. Structural Analysis by Hudson Design Group LLC dated April 4, 2016;
- 8. Maximum Permissible Exposure Study, Theoretical Report, by SAI Communications, dated April 1, 2016;
- 9. Letter of Authorization from Owner of Subject Property;
- 10. Deed to subject property; and
- 11. Attorney General's letters to the Towns of Mount Washington, Lynnfield and Montague.

In addition to the supporting materials identified above, submitted simultaneously herewith is a completed building permit application package including:

- 1. Completed Building Permit Application;
- 2. Certificate of Liability Insurance;
- 3. Worker's Compensation Insurance Affidavit;
- 4. Construction Supervisor License for Keith F Barnard; and
- 5. 1 copy of the Plans.

II. PROPOSED FACILITY DESIGN

AT&T seeks to modify the existing Facility on and within the building located at the Property. The existing Facility consists of nine (9) panel antennas (Alpha Sector: 3 antennas, Beta Sector: 3 antennas, and Gamma Sector: 3 antennas) that are mounted in three (3) locations. The proposed modifications include the replacement two (2) antenna per sector. The replacement antennas will be mounted to the existing antenna mounts consistent with the current Facility's design. Nine (9) remote radio-head units (RRUs) (one per sector) and three (3) surge arrestors (one per sector) will be added in close proximity to the antennas. Consistent with the concealment elements of the existing Facility's design, the proposed replacement antennas will be painted to match the color and texture of the existing façade. The proposed RRUs will match the color of the existing RRUs.

The Facility's design is shown in detail in the Zoning Drawings attached as Exhibit 3 to this application letter and featured equipment is described in the manufacturers' specification sheets attached as Exhibit 4. The photographs and photosimulations (Exhibit 5) show the existing Facility from various locations in the neighborhood around the Property and as simulated with proposed modifications. A structural analysis for the Facility demonstrates that the building is capable of supporting AT&T's proposed equipment at or near the locations shown on the Zoning Drawings (*see* Exhibit 7).

The Facility will continue to bring advanced wireless voice, text and data communications services to the surrounding areas. It will allow residents, professionals, government, businesses and students to communicate locally, nationally and internationally from virtually any location within the coverage area. In the event of an emergency, the improved Facility will allow immediate contact with fire, rescue and other emergency personnel. The improved Facility will thus enhance public health, safety and welfare both in ordinary daily living and in the event of fire, accident, medical emergency, natural disaster or other dangers.

III. <u>BACKGROUND</u>

AT&T is licensed by the Federal Communications Commission to construct and operate a wireless telecommunications network in various markets throughout the country, including the

Commonwealth of Massachusetts and the City of Cambridge. A copy of the AT&T's FCC license that covers the area of the proposed Facility is included with this application (*see* Exhibit 2). AT&T is in the process of designing and constructing additional wireless facilities to its existing telecommunications system to serve Massachusetts. One of the key design objectives of its systems is to provide adequate and reliable coverage. Such a system requires a grid of radio transmitting and receiving links located approximately .5 to 2 miles apart, depending on the location of existing and proposed installations in the surrounding area, the extent of use of AT&T's wireless services within the network, and the existing topography and obstructions. The radio transmitting and receiving facilities operate on a line-of-sight basis, requiring a clear path from the facility to the user on the ground. In urban settings, this dynamic requires the antennas to be located on buildings at heights and in locations where the signal is not obstructed or degraded by other buildings or by topographical features such as hills.

IV. <u>RF COVERAGE DETERMINATION</u>

AT&T has performed a study of radio frequency coverage for the City of Cambridge and from the Property, the results of which are described in the Radio Frequency Report submitted with this application (*see* Exhibit 6). Without the proposed modifications to its existing Facility, AT&T has a substantial coverage gap in this area of Cambridge. AT&T has determined that the proposed modifications to the existing Facility located on the building at the Property will provide needed coverage to the targeted sections of the City and the immediately surrounding area if AT&T's antennas are located on the building at the height and in the configuration requested. The importance of a facility at this location is underscored by AT&T's interest in enhancing its ability to provide its most up-to-date wireless technology, known as long-term evolution technology ("LTE"), in this area to satisfy its customers' ever-increasing needs for high-speed data services. Radio frequency coverage maps included in the report are provided to pictorially and vividly show the differences in existing and proposed wireless coverage at the various bands authorized for AT&T's service. The maps show dramatic improvements to wireless coverage at all three (3) bands with the inclusion of the proposed Facility, namely, at 700, 1900, and 2100 MHz.

V. THE FEDERAL SPECTRUM ACT AND THE FCC ORDER

As set forth below, the proposed modifications constitute an Eligible Facilities Request pursuant to the federal Spectrum Act,³ as further implemented by the FCC Order.⁴

47 U.S.C. § 1455(a)(2).

³ Pursuant to Section 6409(a)(2) an "eligible facilities request" means any request for modification of an existing wireless tower or base station that involves—

⁽A) collocation of new transmission equipment;

⁽B) removal of transmission equipment; or

⁽C) replacement of transmission equipment.

⁴ The Order was effective on February 9, 2015, except for § 1.40001, which became effective on April 8, 2015, except for §§ 1.40001(c)(3)(i), 1.40001(c)(3)(iii), 1.140001(c)(4), and 17.4(c)(1)(vii), which became effective on May 18, 2015, after approval by the Office of Management and Budget. The FCC Order makes clear that under the Spectrum Act discretionary review is not required or permitted for an Eligible Facilities Request.

Under the Spectrum Act, as further clarified by the FCC Order, the streamlined process for this Eligible Facilities Request is limited to non-discretionary review. Specifically, the FCC Order "adopt[s] an objective standard for determining when a proposed modification will 'substantially change the physical dimensions' of an existing tower or base station." *FCC Order*, ¶ 87. As stated in the FCC Order, Section 6409 "states without equivocation that the reviewing authority 'may not deny, and shall approve' any qualifying application. This directive leaves no room for a lengthy and discretionary approach to reviewing an application that meets the statutory criteria." *FCC Order*, ¶ 116.

In issuing the FCC Order and eliminating discretionary review for eligible facilities requests, the FCC's goal was to "adopt a test that is defined by specific, objective factors rather than the contextual and entirely subjective standard advocated by the IAC and municipalities." The FCC intentionally sought to reduce "flexibility" and "open ended context-specific approach" engendered by the discretionary review process:

While we acknowledge that the IAC approach would provide municipalities with maximum flexibility to consider potential effects, we are concerned that it would invite lengthy review processes that conflict with Congress's intent. Indeed, some municipal commenters anticipate their review of covered requests under a subjective, case-by-case approach could take even longer than their review of collocations absent Section 6409(a). We also anticipate that disputes arising from a subjective approach would tend to require longer and more costly litigation to resolve given the more fact-intensive nature of the IAC's open-ended and context-specific approach. We find that an objective definition, by contrast, will provide an appropriate balance between municipal flexibility and the rapid deployment of covered facilities. We find further support for this approach in State statutes that have implemented Section 6409(a), all of which establish objective standards.

FCC Order, ¶ 88.

As a result, the FCC Order implementing Section 6409 establishes clear and objective criteria for determining eligibility, limits the types of information that a municipality may require when processing an application for an eligible facilities request, and imposes a "deemed granted" remedy for failure to timely process and eligible facilities request.⁵ The FCC Order also establishes significant limits on the information that can be required to be provided with an eligible facilities request and limits it to only that information "reasonably related to determining whether the request meets the requirements of this section. A State or local government may not require an applicant to submit any other documentation". 47 CFR 1.40001(c)(1).

Both before and after the FCC Order was issued, the Massachusetts Attorney General's Office provided clear guidance that an eligible request cannot be subjected to a discretionary special permit process. *See* Attorney General's letters to (i) Town of Mount Washington, dated June 12, 2014, p. 3 (ii) Town of Lynnfield, dated February 10, 2015, p. 3 (the "AG Lynnfield Letter") and

⁵ See 47 CFR §§1.40001(c)(1) - (c)(4).

(iii) Town of Montague, dated February 23, 2015, p. 2 (all attached hereto). As set forth in each letter [t]he Act's requirement that a local government 'may not deny, and shall approve, any eligible facilities request' means that a request for modification to an existing facility that does not substantially change the physical dimensions of the tower or base station must be approved. *Such qualifying requests also cannot be subject to a discretionary special permit*.")(Emphasis added). In providing these opinions, the Attorney General's Office specifically opined that provisions in zoning ordinances that specifically required a special permit for modifications to existing facilities could not be applied to eligible facilities requests. While approving the Town of Lynnfield's Zoning Bylaw, the Attorney General stated that "Section 8.7.5.1 requires that PWSF may only be erected upon the grant of a special permit. The Town cannot apply this required approval under Section 6409 of the Act." *AG Lynnfield Letter*, p. 3.

Therefore, as set forth in the FCC Order and Attorney General's opinion letters, the City cannot impose a requirement that AT&T obtain a special permit, or an amendment to an existing special permit utilizing the same discretionary review process, in connection with its eligible facilities request. To the extent that the City of Cambridge's Zoning Ordinance and any prior decisions by the Board include provisions seeking to further regulate the modification of wireless communication facilities, federal law overrules those requirements. *See* <u>Sprint Spectrum L.P. v.</u> <u>Town of Swansea</u>, 574 F.Supp.2d 227, 236 (2008) (Board is obligated to consider whether its actions would violate federal law even if a different outcome would be permitted under state law). The standard of review for an application to modify an existing wireless communication facility on an existing tower or base station is governed by the Spectrum Act and the FCC Order which require eligible facilities requests to be permitted "by right."

In addition, the FCC Order establishes a 60-day period for approval from the time of AT&T's submission. 47 CFR \$1.40001(c)(2). Within the context of the Spectrum Act and FCC Order, approval means all necessary approvals to permit the proposed modifications, including the issuance of a building permit, if required. The FCC found that this 60-day period is appropriate due to "the more restricted scope of review applicable to applications under section 6409(a)." *FCC Order*, ¶ 108. If the Request is not acted upon within the 60-day period, it is deemed granted. 47 CFR \$1.40001(c)(4).

As set forth below, the proposed modifications constitute an eligible facilities request. Therefore, AT&T respectfully requests the Board to find that Section 4.32(g)(1) of the Ordinance does not apply to its Request.

VI. <u>THE PROPOSED MODIFICATIONS ARE AN ELIGIBLE FACILITIES</u> <u>REQUEST</u>

Under Section 6409 and the FCC Order, a "base station" means "[a] structure or equipment at a fixed location that enables Commission-licensed or authorized wireless communications between user equipment and a communications network." 47 C.F.R §1.40001(b)(1). A Base Station includes "any structure other than a tower" that supports or houses "authorized wireless communications between user equipment and a communications network." 47 C.F.R §1.40001(b)(1). Therefore, the existing building that is currently used for FCC-licensed transmissions for personal wireless services is a "base station" for purposes of Section 6409.

AT&T proposes to modify its existing Facility as described above and depicted on the Plans submitted herewith.

The proposed modifications will not require the installation of any part of the facility on the ground outside of the building.

As a result, AT&T's proposed modifications involving the removal and replacement of the existing transmission equipment constitute an "eligible facilities request" under Section 6409. The proposed eligible facilities request is not a "substantial modification" under Section 6409 and the FCC Order because it does not:

- (i) Result in an increase in "the height of the structure by more than 10% or more than ten feet, whichever is greater" because the proposed replacement antennas will be façade mounted and located below the roofline and therefore will not exceed 10 feet above the existing building and the proposed roof mounted RRUs and surge arrestors will also not exceed 10 feet above the existing building;
- (ii) Protrude from the edge of the edge of the building by more than six feet because AT&T's proposed antennas will not protrude more than six feet from building façade;
- (iii) Involve the installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets because no new radio communications equipment cabinets will be installed;
- (iv) Require any excavation or deployment outside the current site of the tower or base station because all antennas, equipment cabinets and related equipment will be installed entirely on and within the existing building; or
- (v) Otherwise defeat the existing concealment elements of the tower or base station because the proposed replacement antennas will be painted and textured to match the façade of the existing building on which the existing and proposed antennas will be located and will continue to integrate the Facility into the existing architecture of the building. Further, the proposed and surge arrestors will be mounted in a manner and color consistent with the existing RRUs and surge arrestors. Therefore, AT&T's proposed Facility will remain aesthetically consistent with the exterior finish of the building as well as maintain the concealment elements of the original design.

See FCC Order, §1.40001(b)(7)(i)-(v).

VII. <u>COMPLIANCE WITH THE CAMBRIDGE ZONING ORDINANCE</u>

In the alternative, AT&T respectfully requests the Board to grant a special permit for the proposed modifications to the existing Facility.⁶

A. <u>AT&T complies with the Wireless Communications provisions set forth in Section</u> 4.32(g)(1), and Section 4.40, Footnote 49 of the Ordinance.

AT&T's proposed modifications comply with Section 4.32(g)(1), and Section 4.40, Footnote 49 of the Ordinance as follows:⁷

<u>Section 4.32(g)(1)</u>: Section 4.32(g)(1) of the Ordinance allows for the use of a "[t]elephone exchange (including switching, relay, and transmission facilities serving mobile communications systems) and any towers or antennas accessory thereto." Under the Table of Use Regulations beginning at Section 4.30, AT&T's proposed use of the Facility as a transmission facility serving a mobile communications system is permitted by special permit in the C-3 zoning district (see the table at Section 4.32(g)(1)).

<u>Section 4.40, Footnote 49</u>: Section 4.32(g)(1) includes a reference to Section 4.40, Footnote 49 which sets out the standards for granting the special permit. AT&T's proposed Facility complies with Footnote 49's standards as noted below:

1. The Board of Zoning Appeal shall consider "[t]he scope of or limitations imposed by any license secured from any state or federal agency having jurisdiction over such matters."

<u>AT&T's Response</u>: AT&T's FCC license is included with this application and the license information included shows that AT&T is authorized to provide wireless service in the area served by the Facility (*see* Exhibit 2).

2. The Board of Zoning Appeal shall consider "[t]he extent to which the visual impact of the various elements of the proposed facility is minimized: (1) through the use of existing mechanical elements on the building's roof or other features of the building as support and background, (2) through the use in materials that in texture and color

⁶ AT&T's request is made, if and to the extent necessary, all rights reserved. As discussed above, the FCC Order establishes a 60-day period for receipt of all necessary approvals from the time of AT&T's submission, including a building permit, if required. 47 CFR §1.40001(c)(2). If the Request is not acted upon within the 60-day period, it is deemed granted. 47 CFR §1.40001(c)(4). Therefore, AT&T expressly reserves its rights under 47 CFR §1.40001(c)(2) and (4).

⁷ To the extent that Section 4.32(g)(1), and Section 4.40, Footnote 49 of the Ordinance purport to require the submission of information that is beyond the scope permitted by the FCC Order or Spectrum Act, AT&T expressly reserves, and does not waive, its right to assert that such information is not required under the Spectrum Act and the submission of such information shall not constitute a waiver of AT&T's rights pursuant thereto.

blend with the materials to which the facilities are attached, or (3) other effective means to reduce the visual impact of the facility on the site."

<u>AT&T's Response</u>: The design of the overall Facility, including the choice and placement of replacement antennas and associated equipment, on the building's façade, minimizes the visual impact of the proposed Facility. This is because the antennas and equipment on the exterior façade surfaces will be painted to match the color and texture of the building so as to be minimally visible and consistent with the concealment elements of the existing Facility. The minimal visual impact of the Facility is shown in the photographs of the existing Facility and the photosimulations that superimpose the proposed modifications to the existing Facility (*see*, Exhibit 5).

3. The Board of Zoning Appeal shall consider "[w]here it is proposed to erect such a facility in any residential zoning district, the extent to which there is a demonstrated public need for the facility at the proposed locations, the existence of alternative, functionally suitable sites in nonresidential locations, the character of the prevailing uses in the area, and the prevalence of other existing mechanical systems and equipment carried on or above the roof of nearby structures. The Board of Zoning Appeal shall grant a special permit to erect such a facility in a residential zoning district only upon finding that nonresidential uses predominate in the vicinity of the proposed facility's location and that the telecommunications facility is not inconsistent with the character that does prevail in the surrounding neighborhood.

In granting a special permit the Board of Zoning Appeal shall set forth in its decision under which circumstances or procedures, if any, the permittee shall be allowed to replace and upgrade its equipment without the necessity of seeking a new special permit."

<u>AT&T's Response</u>: As demonstrated by the Radio Frequency Report and the associated coverage maps, AT&T has demonstrated an immediate and compelling need for the proposed modifications to its existing Facility located at the Property in order to provide substantially improved indoor coverage to residents, businesses, students and faculty, and the general public in that area.⁸ AT&T also seeks to substantially improve its ability to satisfy the ever-increasing need of its customers for data accessibility, navigation and use. This is especially critical in and around the area Vassar Street, Massachusetts Avenue and the surrounding MIT campus. AT&T proposes to satisfy its RF coverage needs in the area by adding to the existing Facility the antennas and equipment necessary to provide the latest LTE wireless communications service technology. By modifying its existing Facility, AT&T obviates the need to construct an entirely new facility within this area of Cambridge in order to meet its wireless network coverage needs.

As provided in Footnote 49, AT&T requests that once permission is received from the City to site the Facility at the Property, the Board permit AT&T to replace and upgrade the equipment at this Facility in the future without further zoning proceedings or a new special permit, provided that such equipment shall meet the eligible facilities request criteria set forth in 47 CFR § 1.40001.

⁸ AT&T must generate a signal strength of at least -74 dBm to provide serviceable voice and data coverage on its mobile wireless devices in indoor environments. AT&T also seeks to substantially improve its data navigation service coverage in the area by including antennas and equipment that will provide LTE service.

B. <u>AT&T complies with the Special Permit Criteria set forth in Section 10.43 of the</u> <u>Ordinance</u>.

Section 10.43 of the Ordinance specifies the following criteria for issuance of a special permit: "Special permits will normally be granted where specific provisions of this Ordinance are met, except when particulars of the location or use, not generally true of the district or of the uses permitted in it, would cause granting of such permit to be to the detriment of the public interest because:

(a) The requirements of this Ordinance cannot or will not be met, or

<u>AT&T's Response</u>: As provided above, AT&T's proposed modifications comply with the requirements set forth in Section 4.32(g), Footnote 49 of the Ordinance, the Spectrum Act and the eligible facilities request criteria set forth in 47 CFR § 1.40001. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(b) Traffic generated or patterns of access or egress would cause congestion, hazard, or substantial change in established neighborhood character for the following reasons, or

<u>AT&T's Response</u>: The proposed modifications to AT&T's existing Facility will not result in any change to the existing traffic on or near the Property. The Facility will continue to be unmanned and only require infrequent visits by a technician (typically two times per month for routine diagnostics and/or maintenance, except in cases of emergency), there will be no material increase in traffic or disruption to patterns of access or egress that will cause congestion, hazards or a substantial change in the established neighborhood character. AT&T's maintenance personnel will make use of the existing access roads and parking at the building. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(c) The continued operation of or the development of adjacent uses as permitted in the Zoning Ordinance would be adversely affected by the nature of the proposed use, or

AT&T's Response: As described above and illustrated on the attached photographs and photosimulations (*see* Exhibit 5) the proposed modifications to the existing Facility will result in a *de minimis* change in the appearance of the building because the equipment will be located on building exterior surfaces. As a result, the Facility as a whole either will be hidden from view or will visually blend with existing characteristics of the building and the surrounding neighborhood. Because the proposed installation will not generate any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater, it will not adversely affect residential uses on neighboring streets. Conversely, the surrounding properties and general public will benefit from the potential to enjoy improved wireless communications services. Granting the special permit

would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(d) Nuisance or hazard would be created to the detriment of the health, safety and/or welfare of the occupant of the proposed use or the citizens of the City, or

AT&T's Response: Because the proposed modifications to the existing Facility will not cause the Facility to generate any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater, no nuisance or hazard will be created to the detriment of the health, safety, or welfare of the occupants of the building or the residents of the City of Cambridge. To the contrary, the proposed Facility will benefit the City and promote the safety and welfare of its residents, businesses and drivers by providing reliable state-of-the-art digital wireless voice and data services that will improve the reliability of emergency communications with the police and fire departments by eliminating dropped or blocked calls due to inadequate signal strength or insufficient network capacity to handle call volume, particularly important during emergency situations. The Facility, as modified, will continue to comply with all federal, state and local safety requirements including the standards established by the FCC and Federal Aviation Administration (FAA). (*See* Exhibit 8 Maximum Permissible Exposure Study, Theoretical Report). Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(e) For other reasons, the proposed installation would impair the integrity of the district or adjoining district or otherwise derogate from the intent or purpose of this Ordinance, or

<u>AT&T's Response</u>: The purpose of the Ordinance is multifaceted, the relevant aspects of which relating to wireless telecommunications facilities include the lessening of congestion in the streets, conserving health, securing safety from fire, flood, panic and other danger, conserving the value of land and buildings and natural resources, preventing blight and pollution, encouraging the most rational use of land throughout the city, including encouraging appropriate economic development, and protecting residential neighborhoods from incompatible activities.

As noted above, the proposed modifications to the existing Facility directly accord with the purposes of the Ordinance because the modifications will not result in any traffic, smoke, dust, heat or glare, discharge noxious substances, nor pollute waterways or groundwater. As the Facility will improve the ability of residents, businesses, travelers and drivers in the area to access state-of-the-art wireless technology, the City's ability to provide emergency services will be improved, as will the economic development of the City as more people will be able to conduct commerce by virtue of a mobile platform. Because the proposed modifications to the existing Facility will be installed on an existing building that includes the Facility, and the proposed modifications are consistent with the existing concealment elements, the proposed modifications to the existing Facility are in consistent with the building's character and will not affect the value of the building or the natural resources of the City. Because the proposed modifications to the existing Facility are designed to be consistent with the existing concealment elements of the Facility and characteristics of the
Property, the visual impact on the underlying and adjacent zoning districts will be *de minimis*. As a result, the proposed modifications to the existing Facility are consistent with the Ordinance's purpose to allow for less intrusive wireless telecommunications facilities in all districts (other than Open Space) including the applicable overlay districts, and the underlying C-3 district. Granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

(f) The new use or building construction is inconsistent with the Urban Design Objectives set forth in Section 19.30

AT&T's Response: As stated in the Section 19.30, the Citywide Urban Design Objectives ("Objectives") "are intended to provide guidance to property owners and the general public as to the city's policies with regard to the form and character desirable for new development in the city. It is understood that application of these principles can vary with the context of specific building proposals in ways that, nevertheless, fully respect the policies' intent. It is intended that proponents of projects, and city staff, the Planning Board and the general public, where public review or approval is required, should be open to creative variations from the detailed provisions presented in this Section as long as the core values expressed are being served. A project need not meet all the objectives of this Section 19.30 where this Section serves as the basis for issuance of a special permit. Rather the permit granting authority shall find that on balance the objectives of the city are being served. Nor shall a project subject to special permit review be required to conform to the Required Building and Site Plan Requirements set forth in Section 11.50." [emphasis added]. For the reasons stated in AT&T's response to this Section 10.43(f) of the Zoning Ordinance and in its application generally, "on balance, the objectives of the city are being served" by the installation of the Facility at the Property so that granting the special permit would not be a detriment to the public interest and is consistent with the Board's obligations pursuant to the Spectrum Act and FCC Order.

The following are the Objectives' headings as appearing in the Ordinance:

<u>19.31</u>: New projects should be responsive to the existing or anticipated pattern of development.

<u>AT&T's Response</u>: The existing Facility is located on n the existing building, some of the equipment of which is hidden from view behind the screen wall on the existing building, or otherwise obstructed from view, and the remaining equipment blends with the structures and colors of the building. The proposed modifications to the existing Facility are consistent with the previously approved design and concealment elements of the existing Facility. Therefore, the proposed modifications are responsive to the existing pattern of development in the Property's applicable zoning and overlay districts.

<u>19.32</u>: Development should be pedestrian and bicycle-friendly, with a positive relationship to its surroundings.

<u>AT&T's Response</u>: The existing Facility is located on and within the existing building. The Facility is only accessed by authorized AT&T personnel for routine maintenance one to two times per month and is not accessed by the general public. The proposed modifications to the existing

Facility will not result in any increase in routine visits nor otherwise result in a change in traffic patterns in the vicinity of the Property that would affect pedestrian flow or cyclists' access to the building or surrounding areas within the Property's applicable zoning districts.

<u>19.33</u> The building and site design should mitigate adverse environmental impacts of a development upon its neighbors. Indicators include[⁹]

(1) Mechanical equipment that is carefully designed, well organized or visually screened from its surroundings and is acoustically buffered from neighbors. Consideration is given to the size, complexity and appearance of the equipment, its proximity to residential areas, and its impact on the existing streetscape and skyline. The extent to which screening can bring order, lessen negative visual impacts, and enhance the overall appearance of the equipment should be taken into account. More specifically:

(a) Reasonable attempts have been made to avoid exposing rooftop mechanical equipment to public view from city streets. Among the techniques that might be considered are the inclusion of screens or a parapet around the roof of the building to shield low ducts and other equipment on the roof from view.

(b) Treatment of the mechanical equipment (including design and massing of screening devices as well as exposed mechanical elements) that relates well to the overall design, massing, scale and character of the building.

(c) Placement of mechanical equipment at locations on the site other than on the rooftop (such as in the basement), which reduces the bulk of elements located on the roof; however, at-grade locations external to the building should not be viewed as desirable alternatives.

(d) Tall elements, such as chimneys and air exhaust stacks, which are typically carried above screening devices for functioning reasons, are carefully designed as features of the building, thus creating interest on the skyline.

(e) All aspects of the mechanical equipment have been designed with attention to their visual impact on adjacent areas, particularly with regard to residential neighborhoods and views and vistas.

AT&T's Response: As shown in the photosimulations (*see* Exhibit 5), the existing Facility, as proposed to be modified herein, will continue to be visually consistent with the color and texture of the building and the concealment elements of the design of the Facility. As a result, AT&T's Facility is in keeping with the building's existing features without adversely affecting the building's overall design, massing, scale or character.

⁹ Inasmuch as Section 19.33 is most relevant to the Facility, it is stated here in full.

(2) Trash that is handled to avoid impacts (noise, odor, and visual quality) on neighbors, e.g. the use of trash compactors or containment of all trash storage and handling within a building is encouraged.

<u>AT&T's Response</u>: The Facility does not generate trash, therefore this design objective is inapplicable.

(3) Loading docks that are located and designed to minimize impacts (visual and operational) on neighbors.

<u>AT&T's Response</u>: The Facility does not utilize any loading dock, therefore this design objective is inapplicable.

(4) Stormwater Best Management Practices and other measures to minimize runoff and improve water quality are implemented.

<u>AT&T's Response</u>: The existing Facility, and the proposed modifications, are located entirely on and within the existing Building on the Property and have no effect on stormwater runoff, therefore this design objective is inapplicable.

(5) Landscaped areas and required Green Area Open Space, in addition to serving as visual amenities, are employed to reduce the rate and volume of stormwater runoff compared to pre-development conditions.

<u>AT&T's Response</u>: The existing Facility and proposed modifications have no effect any landscaped or Green Area Open Space, therefore this design objective is inapplicable.

(6) The structure is designed and sited to minimize shadow impacts on neighboring lots, especially shadows that would have a significant impact on the use and enjoyment of adjacent open space and shadows that might impact the operation of a Registered Solar Energy System as defined in Section 22.60 of this Zoning Ordinance.

<u>AT&T's Response</u>: The existing Facility and proposed modifications are designed so as not to cause shadows on neighboring lots.

(7) Changes in grade across the lot are designed in ways that minimize the need for structural retaining walls close to property lines.

<u>AT&T's Response</u>: The existing Facility and proposed modifications are located entirely on the existing building and have no impact on the grade of the Property, therefore this design objective is inapplicable.

(8) Building scale and wall treatment, including the provision of windows, are sensitive to existing residential uses on adjacent lots.

<u>AT&T's Response</u>: The proposed modifications to the existing Facility will not change the building's scale because antennas and equipment will blend with the color and

textures of the building (*see* Exhibit 3). The existing Facility and proposed modifications are consistent with characteristics of the existing building design, maintain the existing concealment elements of the Facility and therefore minimize any visual impact from the Facility.

(9) Outdoor lighting is designed to provide minimum lighting and necessary to ensure adequate safety, night vision, and comfort, while minimizing light pollution.

<u>AT&T's Response</u>: The existing Facility does not use any outdoor lighting. The proposed modifications to the Facility do not include any additional lighting of the Facility or building. As a result, this design objective is inapplicable.

(10) The creation of a Tree Protection Plan that identifies important trees on the site, encourages their protection, or provides for adequate replacement of trees lost to development on the site.

<u>AT&T's Response</u>: The existing Facility and proposed modifications are located entirely on the existing building and have no effect on any trees on the Property, therefore this design objective is inapplicable.

<u>19.34</u>: Projects should not overburden the City infrastructure services, including neighborhood roads, city water supply system, and sewer system.

<u>AT&T's Response</u>: The existing Facility, including the proposed modifications, is a passive use and will not generate trash, odor, excess noise, or utilize water or wastewater services. As such, it will not burden the City's infrastructure services.

<u>19.35:</u> New construction should reinforce and enhance the complex urban aspects of Cambridge as it has developed historically.

AT&T's Response: The proposed modification of the existing Facility located on the existing building, will obviate the need for AT&T to construct an additional Facility to address its wireless network coverage need in this area of Cambridge. The existing Facility and the proposed modifications blend the equipment with the building texture and color, and are consistent with the concealment elements of the Facility's design. As a result, the Facility will reinforce the existing Cambridge landscape as it currently is manifested at the Property.

<u>19.36</u>: Expansion of the inventory of housing in the city is encouraged.

<u>AT&T's Response</u>: The Facility and proposed modifications provide wireless services and will not adversely impact the City's housing inventory.

<u>19.37</u>. Enhancement and expansion of open space amenities in the city should be incorporated into new development in the city.

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<u>AT&T's Response</u>: The Facility and proposed modifications are located on the existing building. The Facility and proposed modifications will not adversely impact or otherwise reduce open space amenities within the City.

VIII. <u>SUMMARY</u>

For the foregoing reasons AT&T respectfully requests that the Board to determine that pursuant to the Spectrum Act and the FCC Order, the Request constitutes and eligible facilities request and therefore AT&T's Request must be approved administratively, including the issuance of a building permit, without the need for further relief from the Board. In the alternative, without waiving its rights, AT&T requests the Board grant the foregoing zoning relief in the form of a Special Permit and such other relief as the Board deems necessary to allow the modification and operation of AT&T's proposed Facility.

Best Regards,

Timothy W. Greene Authorized Agent to New Cingular Wireless PCS, LLC ("AT&T")

cc: Brian S. Grossman, Esq.

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the facilities authorized herein are vices, the licensee must seek ren	e used to provide broadcast op ewal of the license either with	berations, whether e in eight years from	the commence	n combilement of	the broadcast

47 CFR §27.13(b). This license is subject to compliance with the conditions set forth in the Commission's Order of Modification, WT Docket No.

service or within the term of the license had the broadcast service not been provided, whichever period is shorter in length. See

Conditions:

12-69, DA 14-43, released January 16, 2014.

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at http://wireless.fcc.gov/uls/index.htm?job=home and select "License Search". Follow the instructions on how to search for license information.

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LICENSEE: NEW	CINGULAR	WIRELE	SS PCS, L	LC			Sign	File I	Number
ATTN: REGINALI NEW CINGULAR 3300 F. RENNER	D YOUNGBL WIRELESS I	.OOD PCS, LLC				KINK	Radio CL - (Service Cellular	
RICHARDSON, T	X 75082					Marke CM	t Numer A006	Chann	el Block A
						S	Sub-Marke	t Designat	or
FCC Registration Num Market Name Boston-Lowell-Brock	ber (FRN): (00032911	92					<u> </u>	
Grant Date 10-05-2004	Effectiv 02-13-	e Date 2014	Exp 1	Diration Da 0-01-2014	te Fi	ive Yr Build	-Out Date	Prin	nt Date
Site Information:								•	
Location Latitude 15 42-37-42.3 N Address: 40 DORY ROA City: GLOUCESTER	Longit 070-39 AD County: ESS	ude)-16.8 W EX Sta	G) (n 45 te: MA	round Elev neters) 5.7 Constructi	ration S (1 5 on Deadl	tructure Hg neters) 8.8 ine:	t to Tip A I	Antenna St Registratio	ructure n No.
Antenna: 1 Azimuth (fro Antenna Height AAT (n Transmitting ERP (wat	om true north) neters) ts)	0 93.100 158.853	45 97.500 205.617	90 101.800 68.628	135 101.800 9.427	180 100.800 0.642	225 88.700 0.431	270 85.700 2.268	315 101.800 29.488
Antenna: 2 Azimuth (fro Antenna Height AAT (n Transmitting ERP (wat	om true north) neters) ts)	0 93.100 0.459	45 97.500 5.462	90 101.800 56.429	135 101.800 198.529	180 100.800 168.403	225 88.700 38.276	270 85.700 3.953	315 101.800 0.786
Antenna: 3 Azimuth (fro	m true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (n Transmitting ERP (wat	neters) ts)	93.100 12.078	97.500 0.668	101.800 0.599	101.800 1.024	100.800 10.050	88.700 68.014	85.700 123.413	101.800 62.132
						<		$\mathbf{D}_{\mathbf{A}}$	
Conditions: Pursuant to §309(h) of th following conditions: Th frequencies designated in license nor the right gran 1934, as amended. See 4 the Communications Act	e Communica his license shal the license be ted thereunder 7 U.S.C. § 31 of 1934, as an	tions Act Il not vest eyond the shall be a 0(d). This mended. S	of 1934, as in the lice term there assigned or s license is See 47 U.S	s amended, nsee any rig of nor in an r otherwise subject in .C. §606.	47 U.S.C. ght to open by other m transferre terms to th	. §309(h), thi rate the static anner than au d in violatior he right of us	s license is on nor any r uthorized he n of the Con e or control	subject to t ight in the u prein. Neith nmunicatio conferred	he use of the her the ns Act of by §706 of FCC 601-

-	I IIC I	ile Number: Print Date:						
Location Latitude Longit	tude	Gr (m	ound Eleva eters)	ation Str (me	ucture Hgt eters)	to Tip	Antenna Str Registration	ructure 1 No.
20 43-03-11.8 N 071-16	5-02.1 W	17	9.2	59.4	4			
Address: 80 Diamond Hill Road	AM Stat	• NH (Constructio	n Deedlin	•			
			constituein	In Deaum				
Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	73.200	111.000	159.400	159.000	98.400	148.300	88.600	75.600
Transmitting ERP (watts)	52.325	70.778	16.988	1.425	0.187	0.144	0.491	7.084
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	73.200	111.000	159.400	159.000	98.400	148.300	88.600	75.600
Transmitting ERP (watts)	0.343	3.851	33.085	100.313	84.855	19.494	2.061	0.299
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	73.200	111.000	159.400	159.000	98.400	148.300	88.600	75.600
Transmitting ERP (watts)	6.845	0.890	0.107	1.038	6.652	7.633	3.304	6.905
Location Latitude Longit 24 42-54-55.1 N 071-22	tude 1-37.4 W	Gr (m 10	ound Eleva eters) 0.9	ation Str (me 46.3	ucture Hgt eters) 3	to Tip	Antenna Str Registration 1011624	ructure 1 No.
Address: 15 INDEPENDENCE DRIV	Έ							
City: LONDONDERRY County: R	OCKINGH	IAM St	ate: NH	Constructi	on Deadlin	e:		
Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	35.900	30.000	44.800	52.100	54.500	72.000	68.000	66.500
Transmitting ERP (watts)	161.221	224.756	47.602	3.692	0.510	0.437	1.233	19.454
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	35.900	30.000	44.800	52.100	54.500	72.000	68.000	66.500
Transmitting ERP (watts)	0.510	3.172	43.604	213.248	156.639	22.374	1.350	0.496
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	35.900	30.000	44.800	52.100	54.500	72.000	68.000	66.500
Transmitting ERP (watts)	11.168	0.691	0.533	0.586	7.854	87.092	266.329	94.294
Antenna Height AAT (meters) Transmitting ERP (watts) Antenna: 3 Azimuth (from true north) Antenna: 4 Azimuth (from true north) Antenna Height AAT (meters) Transmitting ERP (watts) Location Latitude Longit 24 42-54-55.1 N Address: 15 INDEPENDENCE DRIV City: LONDONDERRY County: R Antenna: 1 Azimuth (from true north) Antenna Height AAT (meters) Transmitting ERP (watts) Antenna: 2 Azimuth (from true north) Antenna: 3 Azimuth (from true north) Antenna: 4 AAT (meters) Transmitting ERP (watts) Antenna: 3 Azimuth (from true north) Antenna: 3 Azimuth (from true north)	73.200 0.343 0 73.200 6.845 tude 1-37.4 W E OCKINGH 0 35.900 161.221 0 35.900 0.510 0 35.900 11.168	45 111.000 3.851 45 111.000 0.890 Gr (m 10) IAM St 45 30.000 224.756 45 30.000 3.172 45 30.000 0.691	90 159.400 33.085 90 159.400 0.107 ound Eleva eters) 0.9 ate: NH 90 44.800 44.800 43.604 90 44.800 0.533	135 159.000 100.313 135 159.000 1.038 ation Struction 135 52.100 3.692 135 52.100 213.248 135 52.100 0.586	180 98.400 84.855 180 98.400 6.652 exture Hgt eters) 3 on Deadlin 180 54.500 0.510 180 54.500 156.639 180 54.500 7.854	225 148.300 19.494 225 148.300 7.633 to Tip e: 225 72.000 0.437 225 72.000 22.374 225 72.000 87.092	270 88.600 2.061 270 88.600 3.304 Antenna Str Registration 1011624 270 68.000 1.233 270 68.000 1.350 270 68.000 266.329	315 75.600 0.299 315 75.600 6.905 315 66.500 0.496 315 66.500 94.294



Call Sign: KNKA226	File 1	e Number: Print Date:						
Location Latitude Longit 25 42-00-32.6 N 071-19	ude -15.2 W	Gr (me 90.	ound Eleva eters) .5	ation S (5	Structure Hgt (meters) 51.8	to Tip	Antenna Str Registration	ructure 1 No.
Address: 75 WASHINGTON SST			<i>a i</i>			2012		
City: PLAINVILLE County: NORF	OLK SI	ate: MA	Construc	tion Dea	adline: 03-29-	2013		
Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	64.500	61.200	95.600	96.100	94.300	64.100	46.000	48.800
Transmitting ERP (watts)	84.752	97.052	31.772	5.158	0.550	0.224	2.803	20.645
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	64.500	61.200	95.600	96.100	94.300	64.100	46.000	48.800
Transmitting ERP (watts)	0.380	5.181	37.013	100.829	9 79.042	20.699	2.118	0.824
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	64.500	61.200	95.600	96.100	94.300	64.100	46.000	48.800
Transmitting ERP (watts)	24.577	1.736	0.715	2.292	18.444	139.378	281.180	142.336
Location Latitude Longit	ude	Ground Elevation Structure Hgt to Tip Anteni (meters) (meters) Regist					Antenna Str Registration	ucture No.
26 41-46-57.1 N 070-44 Address: KENDRICK ROAD City: WAREHAM County: PLYMO	-06.5 W	W 12.5 58.8 Registration No						
			Colisti u			2013		
Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	30.000	30.000	46.500	56.700	59.800	50.600	39.100	32.800
Transmitting ERP (watts)	186.898	242.551	75.777	10.617	0.738	0.508	2.730	35.860
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	30.000	30.000	46.500	56.700	59.800	50.600	39.100	32.800
Transmitting ERP (watts)	0.361	5.818	47.861	150.309	9 121.062	28.493	2.933	0.991
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	30.000	30.000	46.500	56.700	59.800	50.600	39.100	32.800
Transmitting ERP (watts)	18.390	1.111	0.538	1.628	13.482	98.897	203.625	103.938



Call Sign: KNKA226	File 1	e Number: Print Date:						
LocationLatitudeLongit2741-53-35.2 N070-56Address:326 W GROVE STCitru MiddlehereCountry DI VMOD	ude 5-35.0 W	Gr (m 17	ound Eleva eters) .7	ation St (m 10	tructure Hgt neters))6.1	to Tip	Antenna St Registration 1210211	ructure n No.
City: Middleboro County: PL I MO		ate: MA	Construct	lion Deau	iiiie: 05-29-2	2015		
Antenna: 1 Azimuth (from true north) Antenna Height AAT (meters) Transmitting ERP (watts)	0 47.500 125.283	45 46.300 153.432	90 30.000 54.208	135 37.000 6.550	180 40.900 0.674	225 39.500 0.363	270 51.600 2.675	315 42.300 27.340
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters) Transmitting ERP (watts)	47.500 0.351	46.300 5.901	30.000 52.455	37.000 151.828	40.900 120.612	39.500 27.887	51.600 2.679	42.300 0.991
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters) Transmitting ERP (watts)	47.500 14.428	46.300 1.006	30.000 0.875	37.000 1.215	40.900 13.317	39.500 87.541	51.600 159.641	42.300 85.795
Location Latitude Longit	ude	Gr (m	ound Eleva eters)	ation St (n	tructure Hgt neters)	to Tip	Antenna St Registration	ructure n No.
2842-14-21.9 N070-51Address:168 Turkey Hill LaneCity:CohassetCounty: NORFOLK	-09.3 W State: 1	54 MA Cor	.9 Instruction	55 Deadline:	5.8 : 03-29-2013			
Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters) Transmitting ERP (watts)	99.800 185.522	98.300 243.217	97.600 80.727	71.700 11.598	64.800 0.756	62.900 0.499	86.700 2.589	99.100 34.953
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	99.800	98.300	97.600	71.700	64.800	62.900	86.700	99.100
Transmitting ERP (watts)	0.521	6.371	65.693	238.024	196.107	43.191	4.256	0.906
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters) Transmitting ERP (watts)	99.800 9.488	98.300 0.543	97.600 0.538	71.700 1.234	64.800 8.977	62.900 53.553	86.700 85.290	99.100 45.661



Call Sign: KNKA226	File Number:				Print Date:				
Location LatitudeLongia2941-56-02.0 N070-33Address: 265 STATE ROADCity: PLYMOUTHCounty: PLYMOUTH	t ude 5-08.0 W (OUTH S	Gr (m 82. State: MA	ound Eleva eters) 9 Constru	ntion St (n 12 nction De	tructure Hgt neters) 28.0 radline: 03-29	to Tip 9-2013	Antenna St Registration 1007828	ructure n No.	
Antenna: 1 Azimuth (from true north) Antenna Height AAT (meters) Transmitting ERP (watts)	0 128.000 23.222	45 128.000 24.154	90 128.000 10.475	135 123.500 1.931	180 92.200 0.466	225 86.600 0.109	270 84.900 1.398	315 120.500 6.965	
Antenna: 2 Azimuth (from true north) Antenna Height AAT (meters) Transmitting ERP (watts) Antenna: 3 Azimuth (from true north) Antenna Height AAT (meters) Transmitting ERP (watts)	0 128.000 0.346 0 128.000 9.680	45 128.000 4.427 45 128.000 0.561	90 128.000 33.055 90 128.000 0.550	 135 123.500 88.168 135 123.500 1.216 	 180 92.200 72.485 180 92.200 9.292 	 225 86.600 17.790 225 86.600 54.685 	 270 84.900 1.831 270 84.900 90.439 	315 120.500 0.701 315 120.500 45.409	
LocationLatitudeLongin3042-12-47.6 N071-32Address:26 LUMBER STREETCity:HOPKINTONCounty: MIDE	tude 2-33.4 W DLESEX	Gr (m 12) State: Ma	ound Eleva eters) 8.0 A Constr	ntion St (n 58 ruction D	tructure Hgt neters) 8.5 Peadline: 03-2	to Tip 29-2013	Antenna St Registration	ructure n No.	
Antenna: 1 Azimuth (from true north) Antenna Height AAT (meters) Transmitting ERP (watts) Antenna: 2 Azimuth (from true north) Antenna Height AAT (meters) Transmitting ERP (watts)	0 68.900 158.662 0 68.900 0.432	45 93.200 188.312 45 93.200 6.612	90 99.800 64.228 90 99.800 61.028	135 91.500 8.830 135 91.500 195.296	180 55.300 0.704 180 55.300 166.263	225 59.600 0.395 225 59.600 35.500	270 35.700 4.080 270 35.700 3.748	315 76.400 30.535 315 76.400 0.703	
Antenna: 3 Azimuth (from true north) Antenna Height AAT (meters) Transmitting ERP (watts)	0 68.900 18.831	45 93.200 1.074	90 99.800 0.590	135 91.500 1.783	180 55.300 15.144	225 59.600 103.799	270 35.700 219.501	315 76.400 97.060	



Call Sign: KNKA226	File I	Number: Print Date:						
LocationLatitudeLongitu3142-38-27.0 N070-36Address:38 Thatcher Pd	ude -24.8 W	G. (n 30	round Eleva neters) 5.6	ation	Structure Hg (meters) 38.7	to Tip	Antenna St Registratio	ructure n No.
City: ROCKLAND County: ESSEX	State:	MA Co	onstruction	Deadliı	ne: 03-29-2013	3		
Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters) Transmitting ERP (watts)	69.500 170.519	69.500 227.554	69.500 76.127	69.500 10.393	69.500 0.706	66.700 0.470	58.400 2.520	60.100 32.796
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters) Transmitting ERP (watts)	69.500 0.462	69.500 5.689	69.500 58.840	69.500 206.26	69.500 4 174.760	66.700 39.385	58.400 4.197	60.100 0.837
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters) Transmitting ERP (watts)	69.500 20.761	69.500 1.510	69.500 0.812	69.500 1.238	69.500 15.269	66.700 110.467	58.400 237.338	60.100 124.965
Location Latitude Longitu 32 42-36-37.9 N 071-33-	ude -28.9 W	G (n 14	round Eleva neters) 18.4	ation	Structure Hgt (meters) 46.3	t to Tip	Antenna St Registratio	ructure n No.
Address: 142 LOWELL RD City: GROTON County: MIDDLES	EX Sta	te: MA	Construct	ion Dea	dline: 03-29-2	013		
Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters) Transmitting ERP (watts)	129.600 209.658	133.000 291.175	121.700 91.511	118.30 11.206	0 83.000 1.156	99.300 0.596	81.700 4.998	86.000 40.617
Antenna: 2 Azimuth (from true north) Antenna Height AAT (meters) Transmitting ERP (watts)	0 129.600 0.597	45 133.000 10.042	90 121.700 80.421	135 118.30 284.56	180 0 83.000 9 246.599	225 99.300 46.898	270 81.700 5.186	315 86.000 0.906
Antenna: 3 Azimuth (from true north) Antenna Height AAT (meters) Transmitting ERP (watts)	0 129.600 18.748	45 133.000 1.375	90 121.700 0.781	135 118.30 1.196	180 0 83.000 15.487	225 99.300 106.791	270 81.700 230.014	315 86.000 118.184



Call Sign: KNKA226	File Number:			26 File Number: Print Da			ile Number: Print Date:				
LocationLatitudeLongitu3342-08-01.1 N070-43Address:178 EAMES WAY	ude -57.5 W	G1 (m 68	round Eleva neters) 3.3	ation Str (m 80.	ructure Hgt teters) .5	to Tip	Antenna St Registration 1017973	ructure n No.			
City: Marshfield County: PLYMOU	TH Sta	te: MA	Construct	ion Deadli	i ne: 03-29-2	013					
Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315			
Antenna Height AAT (meters) Transmitting ERP (watts)	125.300 156.993	128.600 202.510	128.200 73.503	125.800 10.210	107.800 0.666	113.100 0.415	97.600 2.429	105.400 32.615			
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315			
Antenna Height AAT (meters) Transmitting ERP (watts)	125.300 0.482	128.600 5.988	128.200 62.083	125.800 217.536	107.800 187.313	113.100 40.576	97.600 4.382	105.400 0.869			
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315			
Antenna Height AAT (meters) Transmitting ERP (watts)	125.300 21.007	128.600 1.466	128.200 0.829	125.800 1.219	107.800 15.907	113.100 109.305	97.600 228.002	105.400 122.541			
Location Latitude Longit	ude	Gi (m	cound Eleva eters)	ation Str (m	ructure Hgt eters)	to Tip	Antenna St Registratio	ructure n No.			
Address: 55 BENSONBROOK ROAD City: MARION County: PLYMOU	TH Stat	e: MA	Constructio	on Deadlir	.4 ne: 03-29-20	013					
Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315			
Antenna Height AAT (meters) Transmitting ERP (watts)	51.300 161.079	62.700 196.082	66.200 67.519	68.700 9.213	66.600 0.702	60.600 0.419	47.100 4.077	51.900 32.479			
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315			
Antenna Height AAT (meters) Transmitting ERP (watts)	51.300 0.446	62.700 6.712	66.200 62.074	68.700 197.767	66.600 163.770	60.600 38.273	47.100 3.886	51.900 0.801			
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315			
Antenna Height AAT (meters) Transmitting ERP (watts)	51.300 3.819	62.700 0.784	66.200 0.433	68.700 6.729	66.600 64.256	60.600 202.261	47.100 164.916	51.900 37.606			



Call Sign: KNKA226	File	le Number: Print Date:						
Location Latitude Longi 35 42-21-20.1 N 071-3	tude 3-16.6 W	Gr (m 15	ound Elev eters) 6.1	ation	Structure (meters) 26.5	Hgt to Tip	Antenna St Registratio	ructure n No.
Address: 157 UNION STREET							012	
City: MARLBOROUGH County: I	MIDDLES	EX Stat	e: MA C	onstru	ction Dead	line: 03-29-2	013	
Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	97.800	119.900	113.500	108.40	0 76.200	0 73.000	51.900	77.300
Transmitting ERP (watts)	280.304	377.489	119.970	14.810	1.525	0.802	6.660	52.209
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	97.800	119.900	113.500	108.40	0 76.200	0 73.000	51.900	77.300
Transmitting ERP (watts)	0.801	13.105	105.660	375.94	9 325.38	63.339	6.978	1.142
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	97.800	119.900	113.500	108.40	0 76.200	0 73.000	51.900	77.300
Transmitting ERP (watts)	30.606	2.831	1.046	2.632	27.909	9 187.774	419.392	197.441
Location Latitude Longi 36 42-39-54.6 N 070-3	tude 8-19.9 W	Gr (m 59	ound Elev eters) .4	ation	Structure (meters) 44.5	Hgt to Tip	Antenna St Registratio	ructure n No.
Address: 68 JOHNSON ROAD	7 C 4-4			D	02 20 2	012		
City: ROCKPOR1 County: ESSE2	State:	MA Con	istruction	Deadli	1e: 03-29-2	.013		
Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	103.000	103.000	103.000	100.40	0 95.400	0 85.100	98.100	103.000
Transmitting ERP (watts)	126.741	159.124	54.189	7.443	0.564	0.334	3.098	25.685
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	103.000	103.000	103.000	100.40	95.400	0 85.100	98.100	103.000
Transmitting ERP (watts)	0.353	5.360	49.103	157.25	5 130.11	17 30.639	2.895	0.641
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	103.000	103.000	103.000	100.40	0 95.400	0 85.100	98.100	103.000
Transmitting ERP (watts)	15.787	0.974	0.495	1.442	11.730	0 84.942	168.331	87.120
					_			



Call Sign: KNKA226	File 1	File Number:Print Date:						
LocationLatitudeLongit3742-41-29.8 N071-47Address:1140 Greenville Rd	ude -30.8 W	G1 (m 23	round Elev neters) 3.8	ation (Structure Hgt (meters) 47.9	to Tip	Antenna St Registratio	ructure n No.
City: ASHBY County: MIDDLESE	X State	:MA C	Constructio	n Deadli	ine: 03-29-201	13		
Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	30.000	138.200	163.500	145.000	68.800	30.000	30.000	30.000
Transmitting ERP (watts)	301.383	343.844	123.915	17.212	1.267	0.862	4.339	57.968
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	30.000	138.200	163.500	145.000	68.800	30.000	30.000	30.000
Transmitting ERP (watts)	0.559	6.546	72.077	254.800	0 226.824	50.359	4.678	0.979
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	30.000	138.200	163.500	145.000) 68.800	30.000	30.000	30.000
Transmitting ERP (watts)	35.557	2.084	1.375	2.194	29.159	209.483	410.600	215.057
Location Latitude Longit 38 42-38-54.9 N 071-47	ude -40.6 W	G1 (m 24	round Elev neters) -0.8	ation (Structure Hgt (meters) 17.2	to Tip	Antenna St Registratio	ructure n No.
Address: 601-603 FITCHBURG STAT City: ASHBY County: MIDDLESE	TE ROAD X State	: MA C	onstructio	n Deadli	ine: 03-29-201	13		
Antonno: 1 Azimuth (from true north)	0	45	00	125	190	225	270	215
Antenna Height AAT (meters)	U 31 100	45	90 170 800	135	100	225	20.000	315
Transmitting ERP (watts)	204 865	233 420	85 530	147.700	0.897	0 575	2 961	30.000 39.554
Antenna: 2 A zimuth (from true north)	0	255.420 45	00.000	125	180	225	2.70	37.33 4 215
Antenna Height AAT (meters)	U 31 100	4 5	90	135	100 56 200	223	20.000	20,000
Transmitting ERP (watts)	0 570	139.800 6.676	74 271	261.07	5 238 587	50.000 50.169	50.000 1 787	1 001
Antonno: 2 A zimuth (from true north)	0.570	45	00	125	100	225	370	215
Antenna Height AAT (motors)	U 21 100	43	90	133	100	20,000	2/U 20.000	313
Transmitting ERP (watts)	24.123	1.410	0.948	147.700	20.272	140.599	280.157	146.756



Call Sign: KNKA226	File 1	Number:			Pr	Print Date:				
Location Latitude Longit	ude	Gr (me	ound Eleva eters)	ntion S (1	Structure Hgt meters)	to Tip	Antenna Sti Registratior	ructure 1 No.		
40 43-05-58.2 N 070-47	-28.6 W	7.6		6	57.4					
Address: 165 GOSLING RD		1 Stata	NIL Com	aturatio	n Doodlinge (2 20 201	2			
City: NEWINGTON County: ROCI	XINGHAN	¹ State:	NH CON	structio	n Deadline: (13-29-201	3			
Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315		
Antenna Height AAT (meters)	34.000	45.500	68.500	72.400	58.800	51.900	57.200	52.000		
Transmitting ERP (watts)	205.727	278.300	62.928	5.059	0.711	0.597	1.577	25.136		
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315		
Antenna Height AAT (meters)	34.000	45.500	68.500	72.400	58.800	51,900	57.200	52.000		
Transmitting ERP (watts)	0.559	3.335	47.419	236.351	181.187	26.867	1.510	0.563		
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315		
Antenna Height AAT (meters)	34.000	45 500	68 500	72 400	58 800	51 900	57 200	52,000		
Transmitting ERP (watts)	10.525	0.618	0.497	0.555	7.391	82.592	243.998	90.540		
Location Latitude Longit	ude	Gr (m	ound Eleva eters)	ntion S (1	Structure Hgt meters)	to Tip	Antenna Str Registration	ructure 1 No.		
41 43-04-39.1 N 071-07	-30.3 W	10	7.0	6	50.7		1231475			
Address: 150 Raymond Road										
City: Nottingham County: ROCKIN	IGHAM	State: NF	I Constr	uction D	Deadline: 03-2	9-2013				
Antenna: 1 Azimuth (from true north)	0	45	90	135	180	225	270	315		
Antenna Height AAT (meters)	54.900	95.800	122.100	119.300) 102.200	66.300	44.100	30.000		
Transmitting ERP (watts)	160.334	230.049	54.265	4.271	0.586	0.522	1.415	21.993		
Antenna: 2 Azimuth (from true north)	0	45	90	135	180	225	270	315		
Antenna Height AAT (meters)	54.900	95.800	122,100	119.300	102.200	66.300	44.100	30.000		
Transmitting ERP (watts)	0.493	3.289	48.427	238.724	177.920	27.618	1.619	0.581		
Antenna: 3 Azimuth (from true north)	0	45	90	135	180	225	270	315		
Antenna Height AAT (meters)	54.900	95.800	122.100	119.300	102.200	66.300	44.100	30.000		
Transmitting ERP (watts)	10.353	0.693	0.601	0.662	8.753	100.864	305.315	110.743		



Call Sign: KNKA226	File	Number:		Print Date:				
LocationLatitudeLong4243-13-24.3 N071-Address:50 OLD CANTERBURY F	itude 14-23.2 W	G1 (m 18	round Ele neters) 39.0	evation	Structure Hg (meters) 38.7	gt to Tip	Antenna S Registratio	tructure on No.
City: NORTHWOOD County: RC	CKINGHA	AM Stat	e: NH	Construc	ction Deadline	: 03-29-2	013	
Antenna: 1 Azimuth (from true north) 0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	30.000	30.000	43.800	80.80	0 68.900	30.000	53.500	30.000
Transmitting ERP (watts)	114.248	162.456	37.049	2.808	0.392	0.366	0.961	16.015
Antenna: 2 Azimuth (from true north) 0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	30.000	30.000	43.800	80.80	0 68.900	30.000	53.500	30.000
Transmitting ERP (watts)	0.544	3.573	49.915	233.6	38 184.420	30.453	1.413	0.618
Antenna: 3 Azimuth (from true north) 0	45	90 42.000	135	180	225	270	315
Amenna riegni AA1 (meters) Transmitting ERP (watts)	30.000 8 132	30.000	43.800	80.80	0 68.900 6 300	30.000	53.500 182 164	30.000 77.016
	0.132	0.494	0.387	0.407	0.390	72.302	162.104	77.910
Location Latitude Long	itude	Gi	round El	evation	Structure Hg	gt to Tip	Antenna S	tructure
12 12 50 10 5 11 070	16 50 5 W	(m	neters)		(meters)		Registratio	on No.
45 42-59-40.7 N 070-4 Address: 96 GROVE RD	46-38.3 W	12	2.5		59.4			
City: RYE County: ROCKINGHA	M State	NH C	onstructi	on Deadl	ine: 03-29-20	13		
Antenna: 1 Azimuth (from true north) 0	15	00	135	180	225	270	315
Antenna Height AAT (meters)	49 700	 3 62 100	64 000	64 30	0 63 700	45 100	38,900	54 200
Transmitting ERP (watts)	146.515	206.846	49.164	3.766	0.505	0.452	1.193	17.877
Antenna: 2 Azimuth (from true north) 0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	49.700	62.100	64.000	64.30	63.700	45.100	38.900	54.200
Transmitting ERP (watts)	0.464	2.913	42.460	206.4	62 152.606	24.148	1.373	0.460
Antenna: 3 Azimuth (from true north) 0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	49.700	62.100	64.000	64.30	0 63.700	45.100	38.900	54.200
Transmitting ERP (watts)	10.168	0.644	0.536	0.576	7.457	86.483	257.603	87.494
Control Points:								
Control Pt. No. 2								
Address: 100 LOWDER BROOK D	R							
City: WESTWOOD County: NO	RFOLK	State: MA	Telep	ohone Nu	mber: (617)40	52-7094		

Call Sign: KNKA226

File Number:

Print Date:

Waivers/Conditions:

Commission approval of this application and the licenses contained therein are subject to the conditions set forth in the Memorandum Opinion and Order, adopted on December 29, 2006 and released on March 26, 2007, and revised in the Order on Reconsideration, adopted and released on March 26, 2007. See AT&T Inc. and BellSouth Corporation Application for Transfer of Control, WC Docket No. 06-74, Memorandum Opinion and Order, FCC 06-189 (rel. Mar. 26, 2007); AT&T Inc. and BellSouth Corporation, WC Docket No. 06-74, Order on Reconsideration, FCC 07-44 (rel. Mar. 26, 2007).

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F	ederal Communic Wireless Telecomm	ations Com	nission ^{eau}	
COMMISSION*	RADIO STATION A	AUTHORIZATI	ON	
LICENSEE: AT&T MOB	ILITY SPECTRUM LLC			
ATTN: REGINALD YOU	NGBLOOD		Call Sign KNLB200	File Number
AT&T MOBILITY SPECTRUM LLC 3300 E. RENNER ROAD, B3132 RICHARDSON, TX 75082			Radio Service WS - Wireless Communications Servic	
C Registration Number (FRN): 0014980726			
Grant Date 09-27-2010	Effective Date 02-12-2014	Expiration 07-21-20	Date 017	Print Date
Market Number MEA001	Chann	nel Block B	Sub-Market Designate	
	Market Bos	t Name ston		
1st Build-out Date 03-13-2017	2nd Build-out Date 09-13-2019	3rd Build-ou	it Date	4th Build-out Date
aivers/Conditions:	itional basis subject to the out	trome of ECC proces	eding WT Doc	ket No. 10-112 (see ECC

10-86, paras. 113 and 126).

This authorization is subject to the condition that, in the event that systems using the same frequencies as granted herein are authorized in an adjacent foreign territory (Canada/Mexico), future coordination of any base station transmitters shall be required to eliminate any harmful interference to operations in the adjacent foreign territory and to ensure continuance of equal access to the frequencies by both countries.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at http://wireless.fcc.gov/uls/index.htm?job=home and select "License Search". Follow the instructions on how to search for license information.

Licensee Name: AT&T MOBILITY SPECTRUM LLC

Call Sign: KNLB200

File Number:

Print Date:

This authorization is subject to the condition that the remaining balance of the winning bid amount will be paid in accordance with Part 1 of the Commission's rules, 47 C.F.R. Part 1.

Spectrum Lease associated with this license. See Spectrum Leasing Arrangement Letter dated 04/01/2005 and File No. 0001999501.

License renewal is granted on a conditional basis, subject to the outcome of FCC proceeding WT Docket No. 10-112 (see FCC 10-86, paras. 113 and 126).

Pursuant to WCS Order on Reconsideration, FCC 12-130, in order to obtain a renewal expectancy at the 7/21/17 renewal deadline, a licensee must, for each license area, certify that it has maintained, or exceeded, the level of coverage demonstrated for thatlicense area at the 3/13/2017 construction deadline.

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Fe	ederal Communic Wireless Telecomm	ations Comm nunications Burea	lission u	
COMMISSION S	RADIO STATION A	AUTHORIZATIO	N	
LICENSEE: AT&T MOBI	LITY SPECTRUM LLC			
ATTN: REGINALD YOUN	NGBLOOD		Call Sign KNLB210	File Number
AT&T MOBILITY SPECTRUM LLC 3300 E. RENNER ROAD, B3132 RICHARDSON, TX 75082		v	Radio Service WS - Wireless Communications Service	
C Registration Number (FRN)	: 0014980726			
Grant Date 09-27-2010	Effective Date 02-12-2014	Expiration I 07-21-201	Date 7	Print Date
Market Number MEA001	Chanr	nel Block A	Sub-Market Designator	
	Market Bos	t Name aton		
1st Build-out Date 03-13-2017	2nd Build-out Date 09-13-2019	3rd Build-out	Date	4th Build-out Date
ivers/Conditions:	tional basis subject to the out	come of ECC proceed	ing WT Docket N	Io 10-112 (see FCC

10-86, paras. 113 and 126).

This authorization is subject to the condition that, in the event that systems using the same frequencies as granted herein are authorized in an adjacent foreign territory (Canada/Mexico), future coordination of any base station transmitters shall be required to eliminate any harmful interference to operations in the adjacent foreign territory and to ensure continuance of equal access to the frequencies by both countries.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at http://wireless.fcc.gov/uls/index.htm?job=home and select "License Search". Follow the instructions on how to search for license information.

Licensee Name: AT&T MOBILITY SPECTRUM LLC

Call Sign: KNLB210

File Number:

Print Date:

This authorization is subject to the condition that the remaining balance of the winning bid amount will be paid in accordance with Part 1 of the Commission's rules, 47 C.F.R. Part 1.

License renewal is granted on a conditional basis, subject to the outcome of FCC proceeding WT Docket No. 10-112 (see FCC 10-86, paras. 113 and 126).

Pursuant to WCS Order on Reconsideration, FCC 12-130, in order to obtain a renewal expectancy at the 7/21/17 renewal deadline, a licensee must, for each license area, certify that it has maintained, or exceeded, the level of coverage demonstrated for thatlicense area at the 3/13/2017 construction deadline.

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COMMUNICE Sector	Federal Communica Wireless Telecomm	ations Comn unications Burea	nission ^{nu}	
COMMISSION	RADIO STATION A	UTHORIZATIO	DN	
LICENSEE: AT&T MO	DBILITY SPECTRUM LLC			
			Call Sign	File Number
ATTN: REGINALD YO	UNGBLOOD		KNLB297	
3300 E. RENNER ROAL RICHARDSON, TX 750	2, B3132 82		Ra WS - Wireless (ndio Service Communications Service
FCC Registration Number (FF	N): 0014980726			
Grant Date 09-27-2010	Effective Date 02-12-2014	Expiration 2 07-21-202	Date 17	Print Date
Market Number REA001	Channe	el Block D	Sub-	Market Designator 0
	Market North	Name neast		
1st Build-out Date 03-13-2017	2nd Build-out Date 09-13-2019	3rd Build-out	Date	4th Build-out Date
Waivers/Conditions:				
License renewal granted on a co 10-86, paras. 113 and 126).	nditional basis, subject to the outc	come of FCC proceed	ling WT Docke	t No. 10-112 (see FCC

License renewal is granted on a conditional basis, subject to the outcome of FCC proceeding WT Docket No. 10-112 (see FCC 10-86, paras. 113 and 126).

Pursuant to WCS Order on Reconsideration, FCC 12-130, in order to obtain a renewal expectancy at the 7/21/17 renewal deadline, a licensee must, for each license area, certify that it has maintained, or exceeded, the level of coverage demonstrated for thatlicense area at the 3/13/2017 construction deadline.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at http://wireless.fcc.gov/uls/index.htm?job=home and select "License Search". Follow the instructions on how to search for license information.

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	Federal Communica Wireless Telecomm	ations Comr unications Bure	nission ^{au}	
COMMISSION	RADIO STATION A	UTHORIZATI	ON	
LICENSEE: NEW CINC	GULAR WIRELESS PCS, LLC	Г	Call Sign	File Number
ATTN: REGINALD YO	UNGBLOOD		KNLF216	
NEW CINGULAR WIRI 2200 N. GREENVILLE / RICHARDSON, TX 750	NEW CINGULAR WIRELESS PCS, LLC 2200 N. GREENVILLE AVE, 1W RICHARDSON, TX 75082			Radio Service - PCS Broadband
FCC Registration Number (FR	N): 0003291192	1		
Grant Date 07-07-2005	Effective Date 11-24-2012	Expiration 06-23-20	Date)15	Print Date
Market Number MTA008	Channe	el Block A	Su	b-Market Designator 17
	Market Boston-Pro	Name ovidence		
1st Build-out Date 06-23-2000	2nd Build-out Date 06-23-2005	3rd Build-ou	t Date	4th Build-out Date
Waivers/Conditions:	compliance with the provisions of	of Applications of A		Services Inc. and Cincular

Wireless Corporation For Consent to Transfer Control of Licenses and Authorizations, Memorandum Opinion and Order, FCC 04-255 (rel. Oct. 26, 2004).

Commission approval of this application and the licenses contained therein are subject to the conditions set forth in the Memorandum Opinion and Order, adopted on December 29, 2006 and released on March 26, 2007, and revised in the Order on Reconsideration, adopted and released on March 26, 2007. See AT&T Inc. and BellSouth Corporation Application for Transfer of Control, WC Docket No. 06-74, Memorandum Opinion and Order, FCC 06-189 (rel. Mar. 26, 2007); AT&T Inc. and BellSouth Corporation, WC Docket No. 06-74, Order on Reconsideration, FCC 07-44 (rel. Mar. 26, 2007).

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at http://wireless.fcc.gov/uls/index.htm?job=home and select "License Search". Follow the instructions on how to search for license information.

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F	ederal Communica Wireless Telecomm	ations Com unications Burg	mission eau		
COMMISSION +	RADIO STATION A	UTHORIZAT	ION		
LICENSEE: NEW CING	ULAR WIRELESS PCS, LLC	Г	Call Sign	File Number	
ATTN: REGINALD YOU	NGBLOOD		WPOI214		
NEW CINGULAR WIRELESS PCS, LLC 2200 N. GREENVILLE AVE, 1W RICHARDSON, TX 75082			Radio Service CW - PCS Broadband		
C Registration Number (FRN	I): 0003291192				
Grant Date 07-07-2005	Effective Date 11-24-2012	Expiratio 06-23-2	n Date 015	Print Date	
Market Number MTA008	Chann	el Block A	Su	b-Market Designator 7	
	Market Boston-Pre	Name ovidence			
1st Build-out Date 06-23-2000	2nd Build-out Date 06-23-2005	3rd Build-o	ut Date	4th Build-out Date	
ivers/Conditions:	condition that in the event the	t systems using the	same frequenc	ies as granted herein are	

authorized in an adjacent foreign territory (Canada/United States), future coordination of any base station transmitters within 72 km (45 miles) of the United States/Canada border shall be required to eliminate any harmful interference to operations in the adjacent foreign territory and to ensure continuance of equal access to the frequencies by both countries.

This authorization is subject to the condition that the remaining balance of the winning bid amount will be paid in accordance with Part 1 of the Commission's rules, 47 C.F.R. Part 1.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at http://wireless.fcc.gov/uls/index.htm?job=home and select "License Search". Follow the instructions on how to search for license information.

Call Sign: WPOI214

File Number:

Print Date:

This license is conditioned upon compliance with the provisions of Applications of AT&T Wireless Services, Inc. and Cingular Wireless Corporation For Consent to Transfer Control of Licenses and Authorizations, Memorandum Opinion and Order, FCC 04-255 (rel. Oct. 26, 2004).

Commission approval of this application and the licenses contained therein are subject to the conditions set forth in the Memorandum Opinion and Order, adopted on December 29, 2006 and released on March 26, 2007, and revised in the Order on Reconsideration, adopted and released on March 26, 2007. See AT&T Inc. and BellSouth Corporation Application for Transfer of Control, WC Docket No. 06-74, Memorandum Opinion and Order, FCC 06-189 (rel. Mar. 26, 2007); AT&T Inc. and BellSouth Corporation, WC Docket No. 06-74, Order on Reconsideration, FCC 07-44 (rel. Mar. 26, 2007).

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COMMUNICATION ON COMMUNICATION	Federal Communica Wireless Telecomm	ations Commis unications Bureau	ssion	
COMMISSION	RADIO STATION A	UTHORIZATION	I	
LICENSEE: AT&T MO	OBILITY II LLC			
			Call Sign	File Number
ATTN: REGINALD YC	DUNGBLOOD	V	VPWU950	
3300 E. RENNER ROA RICHARDSON, TX 750	D, B3132 082	WZ	Rac Z - 700 MHz I	lio Service Lower Band (Blocks C, D)
FCC Registration Number (FI	RN): 0016982233			
Grant Date 01-24-2003	Effective Date 02-11-2014	Expiration Da 06-13-2019	te	Print Date
Market Number CMA006	Channe	el Block	Sub-M	Aarket Designator 0
	Market Boston-Lowell-Br	Name ockton-Lawrenc		
1st Build-out Date 06-13-2019	2nd Build-out Date	3rd Build-out Da	ate	4th Build-out Date
Waivers/Conditions: If the facilities authorized herein services, the licensee must seek	n are used to provide broadcast op	erations, whether exclusion eight years from the c	sively or in co	mbination with other

services, the licensee must seek renewal of the license either within eight years from the commencement of the broadcast service or within the term of the license had the broadcast service not been provided, whichever period is shorter in length. See 47 CFR §27.13(b).

Operation of the facilities authorized herein, are subject to the condition that harmful interference may not be caused to, but must be accepted from UHF TV transmitters in Canada and Mexico as identified in existing and any future agreements with those countries.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at http://wireless.fcc.gov/uls/index.htm?job=home and select "License Search". Follow the instructions on how to search for license information.

Call Sign: WPWU950

File Number:

Print Date:

This license is subject to compliance with the conditions set forth in the Commission's Order of Modification, WT Docket No. 12-69, DA 14-43, released January 16, 2014.

FCC 601-MB April 2009

This is not an official FCC license. It is a record of public information contained in the FCC's licensing database on the date that this reference copy was generated. In cases where FCC rules require the presentation, posting, or display of an FCC license, this document may not be used in place of an official FCC license.

COMMUNICATION COMUNICATION COMUNI	Federal Communic Wireless Telecomm	ations Communications Bure	nission au	
COMMISSION +	RADIO STATION A	UTHORIZATI	ON	
LICENSEE: NEW CIN	GULAR WIRELESS PCS, LLC			
ATTN: REGINALD YC	DUNGBLOOD	Γ	Call Sign WPZY689	File Number
NEW CINGULAR WIR 3300 E. RENNER ROA RICHARDSON, TX 75(ELESS PCS, LLC D, B3132 082		CW	Radio Service - PCS Broadband
CC Registration Number (Fl	RN): 0003291192			
Grant Date 02-28-2007	Effective Date 02-13-2014	Expiration 01-03-20	Date)17	Print Date
Market Number BTA051	Chann	nel Block C	Su	b-Market Designator 2
	Market Bostor	t Name 1, MA		
1st Build-out Date 12-07-2003	2nd Build-out Date 01-03-2007	3rd Build-ou	t Date	4th Build-out Date
Vaivers/Conditions:				

This authorization is subject to the condition that, in the event that systems using the same frequencies as granted herein are authorized in an adjacent foreign territory (Canada/United States), future coordination of any base station transmitters within 72 km (45 miles) of the United States/Canada border shall be required to eliminate any harmful interference to operations in the adjacent foreign territory and to ensure continuance of equal access to the frequencies by both countries.

This authorization is conditioned upon the full and timely payment of all monies due pursuant to Sections 1.2110 and 24.711 of the Commission's Rules and the terms of the Commission's installment plan as set forth in the Note and Security Agreement executed by the licensee. Failure to comply with this condition will result in the automatic cancellation of this authorization.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at http://wireless.fcc.gov/uls/index.htm?job=home and select "License Search". Follow the instructions on how to search for license information.

Call Sign: WPZY689

File Number:

Print Date:

Pursuant to Order DA 03-617 (rel. March 3, 2003), the designated entity holding period for this license is extended by 703 days, or until the licensee meets its five-year construction requirement, whichever is sooner.

Commission approval of this application and the licenses contained therein are subject to the conditions set forth in the Memorandum Opinion and Order, adopted on December 29, 2006 and released on March 26, 2007, and revised in the Order on Reconsideration, adopted and released on March 26, 2007. See AT&T Inc. and BellSouth Corporation Application for Transfer of Control, WC Docket No. 06-74, Memorandum Opinion and Order, FCC 06-189 (rel. Mar. 26, 2007); AT&T Inc. and BellSouth Corporation, WC Docket No. 06-74, Order on Reconsideration, FCC 07-44 (rel. Mar. 26, 2007).

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AND COMMUNICATION	Federa W	al Communica Vireless Telecomm	ations Con unications Bu	1 missi 0 reau	n	
COMMISSION	RA	ADIO STATION A	UTHORIZA	ΓΙΟΝ		
LICENSEE: AT&T MO	BILITY S	SPECTRUM LLC				
				Call	Sign	File Number
ATTN: REGINALD YC	UNGBLC	OOD		WQG	A763	
AT&T MOBILITY SPE	CTRUM I	LLC			Radio	Service
2200 N. GREENVILLE	AVE, IW			AW - AV	WS, 1710-1	755/2110-2155 MHz
RICHARDSON, 12 750	102				ba	nds
FCC Registration Number (FI	RN): 0014	980726				
Grant Date 11-29-2006]	Effective Date 11-29-2012	Expirati 11-29-	on Date 2021		Print Date
Market Number BEA003		Channe	el Block		Sub-Ma	rket Designator 3
		Market Boston-Worcester-	Name -Lawrence-Lowe			
1st Build-out Date	2nd	l Build-out Date	3rd Build-	out Date	4	th Build-out Date
Waivers/Conditions:						
This authorization is conditioner reasonable efforts to coordinate operating in the 1710-1755 MH	d upon the frequency	licensee, prior to initiat usage with known co-c	ting operations fro channel and adjace ffected by the pro-	om any base ent channel	e or fixed st incumbent	ation, making federal users

operating in the 1710-1755 MHz band whose facilities could be affected by the proposed operations. See, e.g., FCC and NTIA Coordination Procedures in the 1710-1755 MHz Band, Public Notice, FCC 06-50, WTB Docket No. 02-353, rel. April 20, 2006.

Grant of the request to update licensee name is conditioned on it not reflecting an assignment or transfer of control (see Rule 1.948); if an assignment or transfer occurred without proper notification or FCC approval, the grant is void and the station is licensed under the prior name.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at http://wireless.fcc.gov/uls/index.htm?job=home and select "License Search". Follow the instructions on how to search for license information.

Licensee Name: AT&T MOBILITY SPECTRUM LLC

Call Sign: WQGA763

File Number:

Print Date:

AWS operations must not cause harmful interference across the Canadian or Mexican Border. The authority granted herein is subject to future international agreements with Canada or Mexico, as applicable.

Commission approval of this application and the licenses contained therein are subject to the conditions set forth in the Memorandum Opinion and Order, adopted on December 29, 2006 and released on March 26, 2007, and revised in the Order on Reconsideration, adopted and released on March 26, 2007. See AT&T Inc. and BellSouth Corporation Application for Transfer of Control, WC Docket No. 06-74, Memorandum Opinion and Order, FCC 06-189 (rel. Mar. 26, 2007); AT&T Inc. and BellSouth Corporation, WC Docket No. 06-74, Order on Reconsideration, FCC 07-44 (rel. Mar. 26, 2007).

PROJECT INFORMATION					
SCOPE OF WORK: TELECOMMUNICATIONS FACILITY UPGRADE (LTE3C,4C,5C & RELO PRO SITE ADDRESS: 77 MASSACHUSETTS AVENUE CAMBRIDGE, MA 02139 LATITUDE: 42.36044 N LONGITUDE: 71.09068 W TYPE OF SITE: ROOFTOP / OUTDOOR EQUIPMENT OVERALL CURRENT USE: CURRENT USE: TELECOMMUNICATIONS FACILITY PROPOSED USE: TELECOMMUNICATIONS FACILITY JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES	NECT 2016):	F	SIT SITE NAME PROJECT: LTE 3	E NUM E NUM MIT I BC,4C,5	BER: MADORRAN
DRAWING INDEX	REV		VICINITY MAP		
T-1TITLE SHEETGN-1GENERAL NOTESA-1ROOF AND EQUIPMENT PLANA-2SOUTH ELEVATIONA-3WEST ELEVATIONA-4ANTENNA LAYOUTSA-5DETAILSRF-1RF PLUMBING DIAGRAMG-1GROUNDING DETAILS	2 2 2 2 2 2 2 2 2 2 2 2	DIRECTIONS TO SITE: HEAD WEST ON COCHITUAT ST. 443 FEET. MAKE A U- RD. 295 FEET. TAKE THE MILES. KEEP RIGHT AT TH PARTIAL TOLL ROAD. 14.0 TOLL ROAD. 0.4 MILES. K MERGE ONTO CAMBRIDGE MILES. TURN RIGHT AT MA MASSACHUSETTS AVE, CAM	E RD TOWARD BURR ST. 417 FEET. TAKE THE 1ST F -TURN AT LEGGAT MCCALL CONN. 0.1 MILES. TURN L RAMP TO I-90 E/MASSPIKE W/SPRINGFIELD/BOSTON. E FORK TO CONTINUE TOWARD I-90 E AND MERGE C MILES. TAKE EXIT 18 ON THE LEFT TOWARD BRIGHTC E2P RIGHT AT THE FORK TO CONTINUE TOWARD CAME ST. PARTIAL TOLL ROAD. 0.3 MILES. CONTINUE ONTO SSACHUSETTS AVE/MASSACHUSETTS 2A E. 0.7 MILES. BRIDGE, MIDDLESEX, MASSACHUSETTS 02139	RIGHT ONTO BURR LEFT AT COCHITUATE . TOLL ROAD. 0.6 ONTO I-90 E. ON/CAMBRIDGE. BRIDGE ST AND RIVER ST. 0.7 . END AT 77	 THIS DOCUMENT IS DUPLICATION OR US AND USE BY GOVE AUTHORIZED REGUL THE FACILITY IS AN ACCESSED BY TRAI NOT REQUIRE ANY REGULATIONS REQU CONTRACTOR SHALL SITE AND SHALL IN BEFORE PROCEEDING
HUCSOOD STREET BUILDING 20 NORTH, SUITE SOOD E:: 1978) 557-5553 E:: 1978) 557-557 E:: 1978) 557-577 E:: 1978 E:: 1978) 557-577 E:: 1978) 557-577 E:: 1978) 557-57	SITE NUI SITE NAME: BL 77 MASSA CAMBRI MIDDL	MBER: MA2267 MIDORRANCE LDG #16 CHUSETTS AVENUE DGE, MA 02139 LESEX COUNTY	e 2015 Google e	2 03/02/16 ISSUE 1 06/08/15 ISSUE 0 05/29/15 ISSUE A 04/24/16 ISSUE NO, DATE SUMMIN	CALL TOLL UI

A2267 ICE BLDG #16 ELO 2016 UPGRADE

GENERAL NOTES

S THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY ISE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION ERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY LATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

N UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY INED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY JIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

L VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB MMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES NG WITH THE WORK OR BE RESPONSIBLE FOR SAME.



GROUNDING NOTES

- 1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
- 2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
- 3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
- METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC. SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
- 5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
- 6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- 7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- 8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
- 9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- 10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES. FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- 11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- 12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50





GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR - SAL SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION) OWNER - AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

"KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT. POWER AND TI CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY, SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 kai). All steel exposed to weather shall be hot dipped galvanized. Touchup all scratches AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK, ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:

SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE: MA STATE BUILDING CODE 780 CMR 8TH EDITION ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

AGL	ABOVE GRADE I
AWG	AMERICAN WIRE
BCW	BARE COPPER
BTS	BASE TRANSCER
EXISTI	NG EXISTING
EG	EQUIPMENT GRO
EGR	EQUIPMENT GRO

SITE NUMBER: MA2267 SITE NAME: MIT DORRANCE **BLDG #16** 77 MASSACHUSETTS AVENUE CAMBRIDGE, MA 02139 MIDDLESEX COUNTY



04/24/15 DATE	ISSUED	FOR	REVIEW REVIEW	evisioi	WS	
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06/08/15	ISSUED	FOR	REVIEW			
03/02/16	issued	FOR	CONSTRUC	TION		
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	ABBRE	VIATIONS			
LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUEN	CY
GAUGE	MGB	MASTER GROUND BUS			
WIRE	MIN	MINIMUM	TBD	TO BE DETERMIN	NED
IVER STATION	PROPOSED	NEW	TBR	TO BE REMOVED	Ŭ.
	TN.T.S. MAS	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED	Ě.
OUND RING	DEBEK J.	REQUIRED	TYP	TYPICAL	
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BY CHIK WHY	SCIONAL ENG	JOB NUMBER	DRAMING	NUMBER	REV
BY: MR	YUNAL CIT	2267.02	GN	-1	2






NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: JUNE 03, 2015... FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE: ANY WORK COMPLETED NEAR OR OVER EDGE OF ROOF MUST BE COORDINATED AND SCHEDULED IN ADVANCE WITH MIT FACILITIES

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE: PAINT ALL VISIBLE PROPOSED EQUIPMENT TO MATCH EXISTING SURROUNDINGS

RRH NOTE: DO NOT INTERFERE WITH OR RESTRICT ACCESS TO EXISTING FALL PROTECTION CABLE SYSTEM







		PROPOSED	ANTENNA SCHEDUL	E
2	SECTOR	MAKE	MODEL	SIZE (INCHES)
	ALPHA:	CCI	OPA-65R-LCUU-H4	48.0X14.4X7.3
5		KATHREIN CCI	— 742264 0PA—65R—LCUU—H4	- 51.8X10.3X5.5 48.0X14.4X7.3
	BETA:	CCI	OPA-65R-LCUU-H4	48.0X14.4X7.3
5		- Kathrein CCI	_ 742264 0PA-65R-LCUU-H4	- 51.8X10.3X5.5 48.0X14.4X7.3
	GAMMA:	CCI	OPA-65R-LCUU-H4	48.0X14.4X7.3
5		- Kathrein CCI	_ 742264 0PA-65R-LCUU-H4	- 51.8X10.3X5.5 46.0X14.4X7.3







TWO HOLE COPPER COMPRESSION TERMINAL

EXPOSED BARE COPPER TO BE KEPT TO ABSOLUTE MINIMUM, NO INSULATION ALLOWED WITHIN THE COMPRESSION TERMINAL (TYPICAL)

TA	<u>\IL</u>	Sum?	ALTH OF MASS	CHILE I		
€	E	Ì		ETS.	AT&T	
SG NR		町雪原	CISTER S		GROUNDING DETAILS (3C,4C,5C, & RELO)	
BY	CHK	APP 2	CS. CIONIN ENGL	JOB NUMBER	DRAWING NUMBER	REV
BY:	MR		STUINAL D	2267.02	G-1	2



Twin Triple Band "Active PCS with 700 and 850 Band Pass-thru" Dual Duplexed TMA

Tel: 201-342-3338 Fax: 201-342-3339

www.cciproducts.com

General Information



CCI's Twin Triple Band (700 Band, Cellular and PCS) TMA contains two triple band TMA's in a single housing. The PCS TMA is full band and fully duplexed, while the 700 Band and Cellular RF is bypassed and combined (Diplexed) with the PCS RF signal. High linearity improves the uplink sensitivity and the receive performance of base stations. The TMA is fully compliant with the latest AISG 2.0 specification. The TMA supports EDGE/GSM, UMTS and LTE BTS equipment. It provides a convenient package for sites upgraded to triple or quad antenna configurations. The twin TMA package reduces tower loading, leasing, and installation costs. Unit count on the tower is cut in half. An excellent match for two branch receive diversity applications using triple polarization antennas. The input and output connectors are located inline for ease of installation in space constrained areas such as uni-pole structures and stealth antennas.

Technical Description

The TMA system consists of a twin outdoor triple band tower mount unit which combine separate PCS, 700 Band & Cellular antennas onto a single BTS port. The • PCS path of the tower mount unit is dual duplexed to separate the low-power uplink signals from the high-power downlink signals at the antenna port, amplifies the lowlevel uplink signals using an ultra-low noise amplifier (LNA), and recombines the two paths at the BTS port. The 700 Band & Cellular path is ultra low loss and passive. • Both paths are diplexed at the BTS port. The tower mount units consist of eight band-pass filters, two redundant low-noise amplifiers, bypass failure circuitry, and • bias tee's which are all housed in an IP65 moisture proof enclosure, with IP68 Immersion proof connectors suited to long-life masthead mounting. The unit provides • protection against lightning strikes via a multi-stage surge protection circuit. DC • power and control is provided via the feeder cable from the BTS or a Power Distribution Unit (PDU). Optional AISG 2.0 DC power and control is provided via the

Model DTMABP7819VG12A

Contents:

General Info and 1 Technical Description 1 Electrical & Mechanical 2 Specs (AISG TMA)

Block Diagram & Outline Drawing (AISG TMA)

Features:

- Small, lightweight, twin unit
- Triple Band Dual Duplexed (PCS with 700 Band & Cellular Bypass)
- Optional AISG 2.0 compatible unit
- AISG TMA detects BTS port that DC voltage and AISG sampling is applied to, and automatically switches to utilize that port
- AISG TMA operates at constant power
- AISG TMA may be powered by a standard PDU High linearity
- Lightning protected
- Fail-safe bypass mode
- High reliability

feeder cable from the BTS using the AISG 2.0 and 3GPP standard. The optional AISG TMA detects which BTS port has DC Voltage/AISG Sampling applied and automatically switches to utilize that port. Additionally the AISG TMA operates at constant power when powered by an AISG 2.0 Compatible Site Control Unit, but may be powered by a "Standard Power distribution Unit. A separate AISG connector is also provided to allow direct AISG connection or "Daisy Chaining" to multiple AISG products at the top of the tower.

An optional indoor site control unit (SCU) is available to power up to up to 32 AISG modules per sector and to provide the all the monitoring and alarm functions for the system. The SCU is housed in a single (1U) 1.75" x 19" rack and contains triple redundant power supplies capable of being "hot swapped" that provide a regulated DC supply voltage on the RF coax for the tower mount amplifiers.

Communication Components Inc.

Twin Triple Band "Active AWS with 700 and 850 Band Pass-thru" TMA Typical Specifications



Description	Typical Specifications			
Electrical Specifications				
700 Band & Cellular Frequency Range	698 to 894 MHz			
PCS Receive Frequency Range	1850 – 1910 MHz			
PCS Transmit Frequency Range	1930 - 1990 MHz			
PCS Amplifier Gain	6 to 12 dB Adjustable in 0.25 dB steps via AISG			
PCS Gain Variation	±1.0 dB			
PCS System Noise Figure	1.4 dB (@ +25°C),1.6 dB (@ +65°C), At 1910 MHz: 1.7 dB (@ +25°C), 1.9 dB (@ +65°C)			
PCS Input Third Order Intercept Point	+12 dBm Min @ Max. Gain			
Input/Output Return Loss	18 dB Min. all ports, 15 dB Min. Bypass Mode			
Insertion Loss				
700 Band & Cellular Passband	< 0.2 dB, 0.1 dB typical			
PCS Transmit Passband	0.4 dB Typical			
PCS Transmit Passband Ripple	±0.2 dB			
PCS Bypass Mode, Rx Passband	1.6 dB (@ +25°C),1.8 dB (@ +65°C), At 1910 MHz: 2.3 dB (@ +25°C), 2.5 dB (@ +65°C)			
PCS Bypass Mode, Rx Passband Ripple	±1 dB			
Filter Characteristics				
700 Band & Cellular Path Rejection	70 dB @ 1850 - 1990 MHz			
PCS Path Rejection	80 dB @ 698 - 894 MHz			
Continuous Average Power	200 Watts max			
Peak Envelope Power	2 kW max			
Intermodulation Performance				
IMD at ANT port in Rx Band	-112 dBm Min. (2 x +43 dBm tones)			
Operating Voltage	+10V to +30V DC provided via coax or AISG			
Power Consumption	≤2.1 Watts			
Mechanical Specifications				
Connectors	DIN 7-16 Female (Long Neck) x 6, AISG x 1			
Dimensions (Body Only)	10.63" (H) x 11.02" (W) x 3.78" (D); (270 (H) x 280 (W) x 96 (D) mm)			
Dimensions (with Bracket)	14.25" (H) x 11.46" (W) x 4.17" (D); (362 (H) x 291 (W) x 106 (D) mm)			
Weight (w/o Bracket)	19.18 Lbs. (8.7 Kg)			
Mounting	Pole/Wall Mounting Bracket			
Environmental Specifications				
Operating Temperature	-40° C to +65°C			
Lightning Protection	8/20us, ±2KA max, 10 strikes each, IEC61000-4-5			
Enclosure	IP65 (Unit Body), IP68 (Connector)			
MTBF	>500,000 hours			

All specifications are subject to change. The latest specifications are available at www.cciproducts.com

Communication Components Inc.

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89 Leuning Street South Hackensack, NJ 07606

Tel: 201-342-3338 Fax: 201-342-3339 WWW.CCIPRODUCTS.COM



Ordering Information:

 Model DTMABP7819VG12A CEQ. ????? (Variable Gain AISG 2.0 Compatible Unit)

Options:

Pole Mount Kit

Accessories:

- AISG 2.0 Site Controller (SCU-AISG2-3)
- AISG Cable Kit (RET-CBK)
- AISG 2.0 Outdoor Bias-T
 - 1. Model BT-0821-DMDF-AG-O (DIN-Male RF Port, DIN-Female RF+DC+AISG Port)
 - 2. Model BT-0821-DFDM-AG-O (DIN-Female RF Port, DIN-Male RF+DC+AISG Port)
 - 3. Model BT-0821-DFDF-AG-O (DIN-Female RF Port, DIN-Female RF+DC+AISG Port)

Triple Band Active PCS with 700 and 850 Band Pass-Thru Twin TMA Block Diagram



Triple Band Active PCS with 700 and 850 Band Pass-Thru Twin TMA Outline Drawing



Communication Components Inc.



65° OctoPort Multi-Band Antenna

Model OPA-65R-LCUU-H4



The CCI Octoport Multi-Band Antenna Array is an industry first 8-port antenna with full WCS Band Coverage. With four high band ports covering PCS, AWS and WCS bands, two 700 MHZ ports, and two 850 MHz ports our octoport antenna is ready for 4X4 high band MIMO.

Modern networks demand high performance, consequently CCI has incorporated several new and innovative design techniques to provide an antenna with excellent side-lobe performance, sharp elevation beams, and high front to back ratio.

Multiple networks can now be connected to a single antenna, reducing tower loading and leasing expense, while decreasing deployment time and installation cost.

Full band capability for 700 MHz , Cellular 850 MHz, PCS 1900 MHz, AWS 1710/2155 MHz and WCS 2300 MHz coverage in a single enclosure.

Octoport Multi-Band Antenna Array

Benefits

- RET System allows Independent Tilt of each band specific paired port
- Reduces tower loading
- Frees up space for tower mounted Remote Radio Heads
- Single radome with eight ports
- All Band design simplifies radio assignments
- Sharp elevation beam eases network planning

Features

- High Band Ports include WCS Band
- Four High Band ports with four Low Band ports in one antenna
- Sharp elevation beam
- Excellent elevation side-lobe performance
- Excellent MIMO performance due to array spacing
- Excellent PIM Performance
- A multi-network solution in one radome

Applications

- ♦ 4x4 MIMO on High Band and Dual 2x2 MIMO on 700 & 850 Low Bands
- Adding additional capacity without adding additional antennas
- Adding WCS Band without increasing antenna count







www.cciproducts.com 12/17/2013



65° OCTOPORT MULTI-BAND ANTENNA

Model OPA-65R-LCUU-H4

OPA-65R Multi-Band Antenna Electrical Specifications

	2 X Low Band Ports (L) which	2 X Low Band Ports (C) which cover the range from 824-894	4 X High Band Ports (H1 & H2) which cover the full range from 1710-2360 MHz			
Frequency Range	cover the range from 698-787		1850-1990 MHz	1710-1755/2110-2170 2305-23 MHz 2		2305-2360 MHz
Gain	12.7 dBi	13.3 dBi	15.7 dBi	14.9 dBi	16.4 dBi	16.8 dBi
Azimuth Beamwidth (-3dB)	65°	63°	63°	68°	62°	58°
Elevation Beamwidth (-3dB)	18.9°	16.5°	8.9°	9.8°	7.7°	6.9°
Electrical Downtilt	0° to 10°	0° to 10°	0° to 8°	0° to 8°	0° to 8°	0° to 8°
Elevation Sidelobes (1st Upper)	< -20 dB	< -18 dB	< -20 dB	< -20 dB	< -18 dB	< -18 dB
Front-to-Back Ratio @180°	> 28 dB	> 28 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Front-to-Back Ratio over ± 20°	> 28 dB	> 27 dB	> 28 dB	> 28 dB	> 26 dB	> 26 dB
Cross-Polar Discrimination (at Peak)	> 20 dB	> 20 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross-Polar Discrimination (at ± 60°)	> 15 dB	> 13 dB	> 17 dB	> 17 dB	> 17 dB	> 17 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
VSWR	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -150dBc	≤ -150dBc	≤ -150dBc	≤ -150dBc	≤ -150dBc	≤ -150dBc
Input Power	500 Watts CW	500 Watts CW	300 Watts CW	300 Watts CW	300 Watts CW	300 Watts CW
Polarization	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°
Input Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms
Lightning Protection	DC Ground	DC Ground	DC Ground	DC Ground	DC Ground	DC Ground

Mechanical Specifications



Antenna Patterns*



*Typical antenna patterns. For detail information on antenna pattern, please contact us at info@cciproducts.com. All specifications are subject to change without notice.

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65° OCTOPORT MULTI-BAND ANTENNA

Bracket

Model OPA-65R-LCUU-H4

Ordering Information:

OPA-65R-LCUU-H4	4 Foot Octoport Antenna with 65° Azimuth Beamwidth and factory installed RET Actuators (4)	MBK-02 Top Mounting	
OPA-65R-LCUU-H4-K	Complete Kit with Antenna, Factory Installed Actuators (4) and MBK-02 Mounting Bracket	Bracket	
BSA-RET200	RET Actuator		
MBK-02	Mounting Bracket (Top & Bottom) with 0° through 10° Mechanical tilt Adjustment: See Installation Guide 50-000038-01 for Details: Weight 10.3 Lbs. (4.7 kg)	MBK-02 Bottom Mounting	×.

RET [Remote Electrical Tilt] System

General Specification

General Specification		Electrical Specification		
Part Number	BSA-RET200	Interface Signal	Data dc	
Protocols	AISG 2.0	Input Voltage Range	10-30 Vdc	
RET Type (Reference AISG 1.1)	Type 1	Current consumption during tilting	120mA at Vin = 24V	
Adjustment Cycles	>10,000 cycles	Current consumption idle	55mA at Vin=24V	
Tilt Accuracy	±0.1°	Hardware Interface	AISG - RS 485 A/B	
Temperature Range	-40°C to +70°C	Input Connector	1x8-pin Daisy Chain In Male	
		Output Connector	1x8-pin Daisy Chain Out Female	

Mechanical Specification and Dimensions

Housing Material Dimensions (H x W x D) Weight

ASA / ABS / Aluminum 8 x 5 x 2 inches (213 x 135 x 51 mm) 1.5 lbs (0.68 kg)





Standards Compliance

Safety	EN 60950-1, UL 60950-1
Emission	EN 55022
Immunity	EN 55024
Environmental	IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-5, IEC 60068-2-6, IEC 60068-2-11, IEC 60068-2-14, IEC 60068-2-18, IEC 60068-2-27, IEC 60068-2-29, IEC 60068-2-30, IEC 60068-2-52, IEC 60068-2-64, GR-63-CORE 4.3.1, EN60529 IP24

Regulatory Certification

AISG, FCC Part 15 Class B, CE, CSA US

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FLX12WSW Power-Battery Cabinet Installation Manual



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Content

These instructions do not cover all details or variations in equipment, nor do they provide for every possible contingency to be met with installation, operation, or maintenance.

Shipped product typically includes associated documents, such as user manuals from OEMs of installed equipment, engineering drawings, and instructions for supplied kits. For extra documentation or further information, contact Purcell Systems, Inc.

Pertinent Product(s)

This installation manual pertains to product part number 2000001749.

Packaging Inspection

If the shipping carton shows evidence of rough handling, inspect the equipment carefully for shipping damage. If damage is found, notify the carrier immediately, and annotate the damage on the bill of lading.

Precautions

Cautionary statements in this document conform to the following international standard:

	An operating or maintenance procedure, practice, condition, statement, etc., that, when not strictly observed, <u>will</u> result in serious injury or death.
	An operating or maintenance procedure, practice, condition, statement, etc., that, when not strictly observed, <u>could</u> result in serious injury or death.
	An operating or maintenance procedure, practice, condition, statement, etc., that, when not strictly observed, might result in minor or moderate injury.
CAUTION	An operating or maintenance procedure, practice, condition, statement, etc., that, when not strictly observed, could result in damage to or destruction of equipment or product.

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FLX12WSW POWER-BATTERY CABINET INSTALLATION MANUAL

NOTES

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FlexSure®

Section 1 System Description

Functional Description

Functional Description

FLX12WSW is a DC power supply cabinet with 12 rack units (RU) equipment space and a battery pedestal that houses (4) 90A/hr backup batteries. A heat exchanger (HX) or other environmental control unit regulates interior temperature.

Components

This illustration shows cabinet components and options as seen from the left-front.



Isolator Base (Underneath Battery Pedestal)

- Alarm Block Double 8-position prewired with low temperature, high-temperature, HX power fail, and door entry alarms.
- **Battery Pedestal** Covered compartment housing (4) 90A/hr batteries and an optional heater pad.
- **Cable Access Box** Compartment protected by a removable "skirt" that serves as a possible entry point for AC cables. Will support data cables for customized applications.
- **DCPP** The shelf DC power plant, rated at -48V, 200A, and using 5RU equipment space.
- **Demarc Box** Not shown in illustration, this 6-in. high option fits between the equipment bay and the battery pedestal, offering extra RU.
- **Dual Thermostat** Sets high and low temperature limits for high- and low-temperature alarms.
- **Equipment Rails** 23-in. wide.
- **GFCI Outlet** AC convenience option.
- Heat Exchanger (HX) Environmental control option, -48V, produces front-to-back air flow.
- **Heyco Fittings** Customer-installed Water-tight seals for routing battery cabling between the battery pedestal and the equipment bay. The large one routes and secures the cable for an optional battery heater. The smaller two are supplied loose for customer install of battery cables.
- HX Air Supply Scoop Directs ambient air upwards in the cabinet to the DCPP.
- **Isolator Base** Buffer that keeps the battery pedestal bottom from directly contacting a concrete pad.
- **JBox** Box for splicing incoming AC power to ground, DCPP, and GFCI/battery heater.
- Lifting Eye Bolt Hardware for hoisting the cabinet to the mounting location.
- **Master Ground Bar** Electrically and mechanically bonded to the cabinet frame through direct metal-to-metal contact on embosses below the bar.

FlexSure®

Section 2 *Installation*

Installation: Precautions

Precautions

Failure to comply with the precautions in this manual violates safety standards. Purcell[®] Systems, Inc., is not responsible for equipment damage or poor operating performance when these guidelines are not followed or when noncertified installers perform the work.

	 The site engineer or contracted installer is responsible for all safety issues and procedures on-site. Do not install or service equipment during a lightning storm.
	Cabinet and equipment must be grounded to minimize shock hazard. Follow national and local codes, and best practices.
CAUTION	 Do not lift the cabinet with customer equipment or batteries installed—the cabinet could bend from the weight. If the batteries are damaged, a hazardous material spill could occur. Install/ground/remove equipment per manufacturer's instruction to ensure proper performance and maintain warranty. Do not exceed equipment operational specifications.

Cabinet Mounting Options

- Cement pad
- Pole-mount

Both methods require a kit. Kits have their own installation manuals except where noted in the following table. This manual gives general mounting instructions only.

Mounting Kits

Kit PN	Document PN	Description
4000003681	This manual	Anchor plate for pad mount
1000016845	This manual	Template for pad mount, equipment bay pattern
1000016846	This manual	Template for pad mount, cable access box pattern
200000744	1000006452	Pole mount, "face front" orientation

Important Any method used to mount the cabinet must prevent shifting or overturn.

Selecting a Site

Various factors govern site selection including local/regional regulations and ordinances, climate, geological features, and other circumstance.

Consider these when developing site selection plans and requirements:

- Accessibility
 - A site must be accessible to vehicles and equipment for installation, maintenance, and expansion.
 - All services required at the site, including electrical, site grounding, and other utilities, must be available, reliable, and able to grow with planned site expansion.
 - All cabinet doors must be accessible and have room to open.

Climate and Geography

- Avoid locations prone to flooding or close to in-ground sprinkler systems. Cabinet sealing will not withstand complete or partial immersion in water, mud, or debris.
- Check with federal and local authorities for severe climate risks and seismic activity.
- Consider landforms, soils, and subterranean issues (caves, underground rivers, manmade structures) that can impact site acceptance, costs, safety, and performance.

Cabinet Heat Gain

Heat gain can be caused by site loading and traffic, solar thermal loading, geographic location, time of day, weather, cabinet orientation, surroundings, and external air movement.

To avoid high-temperature shutdown, do not place the cabinet in the following locations:

- Within alcoves prone to heat gain
- Next to any surface within 4 ft (120 cm) of the cabinet or near hot air exhaust from neighboring buildings or structures
- Near hot surfaces such as asphalt, tarred roofs, or crushed rock

Safety and Maintenance

Site planning must include safety and maintenance plans.

Local Codes and Bylaws

Plan the site to meet or exceed the requirements of any local architectural codes, bylaws, environmental restrictions, right-of-way easements, and noise restrictions, as applicable. Off-ground mounting locations (poles) must meet all local codes and ordinances pertaining to the cabinet weights and dimensions described in this manual.

Preparing the Mounting Location

Pole-Mounting

See the manual that comes with the kit. Follow the instructions in this manual for all other procedures. Be sure to follow the instructions in "Releasing the Cabinet from the Pallet and Lifting the Cabinet Using a Hoist before using the kit manual.

Installation: Preparing the Mounting Location

Pad-Mounting

The cabinet mounts to a cement pad using an anchor plate, Redi-Rods, or individual anchors. When designing the pad, consider:

- Cabinet footprint
- Cabinet weight
- External cable routing to the cabinet

Cabinet Footprint

This illustration shows cabinet footprint and mounting bolt pattern:



Note Mounting hole dimensions match those in the plinth options and isolator base.

This illustration shows the cabinet door swing-out:



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Cabinet Weight

- **Empty** About 87 lb
- With 4 Batteries Battery weight varies by type and manufacturer; 31 lb each = 124, for a typical total weight of about 211 lb

External Cable Routing to the Cabinet

Dimensions and locations of the cable access knockouts (KOs) in the floor plate of the equipment bay are shown below. Dimensions measure from the external surface of the cabinet to the KO center point.



TOP VIEWS LOOKING DOWN INTO BAY AND BOX

FLX12WSW POWER-BATTERY CABINET INSTALLATION MANUAL

Installation: Constructing a Pad with an Anchor Plate

Constructing a Pad with an Anchor Plate

Pad design and structure must meet all national and local codes/ordinances and conform to contractor best practices. Refer to the architectural and engineering drawings and to the customer site plan for specific site requirements.

The anchor plate is to be cemented into the pad.



Cement Pad Edge

Tools and Materials Required

- Anchor plate kit, PN 4000008712
- Standard tools and materials for concrete pad construction
- Cable conduit
- 16-penny nail to stabilize anchor plate through a rim hole

Constructing a Pad with a Template

Pad design and structure must meet all national and local codes/ordinances and conform to contractor best practices. Refer to the architectural and engineering drawings and to the customer site plan for specific site requirements.

The template locates conduits and Redi-Rod mounting locations. To obtain the template appropriate to your site, see "Contact Information" on page ii.

Tools and Materials Required

- Template from Purcell[®] Systems, Inc.
- Standard tools and materials for concrete pad construction
- Redi-Rods
- Cable conduit

To construct a pad using a template

- 1 When preparing the site, allow for 30 in. of cement from each edge of the template.
- 2 Locate and stabilize all entry conduits and wire feeds necessary for the cabinet, according to the pattern in the template. Follow local Telco or NEC requirements for proper system ground rod or ground ring.
- **3** Based on the template, prepare the Redi-Rod locations.

Releasing the Cabinet from the Pallet

The cabinet secures to the pallet with 4 sets of securing hardware in the battery pedestal.

CAUTION Once released from the pallet, the cabinet could be at risk of tipping over. Before removing mounting hardware, arrange a method for stabilizing the cabinet.

Tools and Materials Required

- Standard tools
- A method for stabilizing the cabinet

FLX12WSW POWER-BATTERY CABINET INSTALLATION MANUAL

Installation: Punching Knockouts in the Cable Access Box

To release the cabinet from the pallet

- 1 Stabilize the cabinet to keep it from tipping over when the pallet securing hardware is removed.
- 2 Remove the battery cover. Pull cover out and off (it might be tight).



3 Remove the bolts, washers, and nuts from the 4 corners of the battery pedestal floor.



Front Left Corner Shown

- Not Shown:
- Securing Hex Nut
- Battery Bracket
 Optional Battery I
- Optional Battery Heater Pad
 Cable Access Box
- Cable Access Bo

Note Battery brackets might be preinstalled inside the pedestal. If so, they will release with the removal of the pallet securing hardware. Remove and retain brackets.

Punching Knockouts in the Cable Access Box

If you choose to use the KOs in the cable access box to route cables into the cabinet, follow this procedure. If you are going to route cables by some other method, skip this subsection and go to the next.

Remove the cable access box and punch the KOs for cable access before mounting the cabinet. The site plan should show which KOs to punch for the customer's configuration.

Tools and Materials Required

- KO punching tools
- Phillips screwdriver
- Liquid-tight fittings

Installation: Punching Knockouts in the Cable Access Box

\equiv To punch through KOs

1 Release 2 captive screws (circled in illustration) and pull off the cover.



2 With the battery cover off, detach and retain the Phillips screws on the inside of the pedestal's left wall, near the front. Pull cover forward (**a**), then to the left and off the cabinet (**b**).



- **3** Follow best practices to punch KOs called out in the site plan. Seal all punched holes with 3R-rated weather-tight fittings.
- 4 Reattach box to cabinet. Leave cover off until cable routing is complete.

FLX12WSW POWER-BATTERY CABINET INSTALLATION MANUAL

Installation: Preparing Battery Cable Ports

Preparing Battery Cable Ports

To prepare battery cable ports

- 1 Punch 2 KOs at the rear of the equipment bay.
- 2 Thread 0V cable through a Heyco fitting and the -48V cable through the other.
- **3** Set fittings in the port holes.
- 4 In the battery pedestal, slide Heyco nuts over the cables and up to the fittings. Tighten nuts.



Mounting the Cabinet

Engineer and set up a hoist sufficient for the cabinet weight.

Lifting the Cabinet Using a Hoist

 Hand-tighten eye bolts; do not use a bar handle to tighten! The eye bolt secures inside a threaded barrel that is compression-sealed into a bracket attached under the cabinet roof. Severe over-torquing of the eye bolt can break the seal and cause the barrel to spin inside the bracket, trapping the bolt so it cannot release.
 Do not lift cabinet with batteries or customer equipment installed.

To lift the cabinet using a hoist

- 1 Angle the lifting eye bolts so that the edge of the eye bolt points to the center of the roof. Loosen, rather than over-tighten, to get correct orientation of the eye bolt. Do not remove the eyebolt or its accompanying hardware.
- **2** Attach the hoist cables to all lifting eye bolts.



Mounting to a Cement Pad with Anchor Plate

Tools and Materials Required

- Torque wrench and sockets
- Level
- The battery brackets retained when the cabinet was removed from the shipping pallet
- Batteries to be installed

CAUTION Batteries are heavy; DC voltages are dangerous!

- Avoid touching electrically live spots.
- Prevent hazardous spills.

To mount the cabinet to a pad with anchor plate

- 1 Move the cabinet to the mounting location by the best means available for the site.
- 2 Set the isolator base sheet, shipped between the cabinet and pallet, on the cement pad. Align the corner holes in the isolator over the mounting holes in the anchor plate.
- **3** Attach hoist; slowly and carefully lift the cabinet.
- **4** Set the cabinet on the pad:
 - Align the mounting holes of plinth or pedestal with the mounting holes in the plate and isolator base.
 - If conduit tubes are installed in the concrete pad, guide the cabinet over the tubes.
- 5 Check cabinet with level. Use supplied shims as necessary—between the isolator base and the cement pad—to achieve a level orientation.
- **6** Use the pallet mounting hardware to secure the cabinet to the anchor plate:
 - **a** Place a tie-down bracket in the rear of the battery compartment; notch in tie-down must be on the right side. Push bracket as far to the back as possible and still align side slots with the pedestal mounting holes. Note bracket orientation in the drawing.



Installation: Mounting the Cabinet

b Place washers in the stacking order shown on the brackets over the mounting holes.



(Mounting hole reference only. Actual holes for this step are in the rear of the battery pedestal.)

- **c** Attach mounting bolt through the washers, brackets, and mounting hole. Torque to 44 ft-lb.
- **d** Attach Velcro battery straps to the rear tie-down bracket.
- **e** Shift battery heater pad so power-connector tab in back-right corner slides under bracket notch.
- **f** Slide (2) 12V batteries into the battery compartment—on the far left, one on the far right—while pulling the strap out over the battery top.
- **g** Pull the middle 2 velcro straps over the tops of the side batteries.
- **h** Route battery cables and optional temperature probe cable to front according to contractor best practices.
- i Slide the next 2 batteries into the middle; pull their straps over the top.
- j Repeat Substeps a–c to attach the front battery bracket.
- **k** Pull the velcro straps to the front bracket and hook them through the slots.
- 7 Disconnect the hoist.
- **8** Postpone battery connection until the end of the installation.

Mounting to a Cement Pad with Redi-Rods

Tools and Materials Required

- Torque wrench and sockets
- Level
- The battery brackets of a battery pedestal configuration—retained when the cabinet was removed from the shipping pallet
- Batteries to be installed

CAUTION Batteries are heavy; DC voltages are dangerous! Avoid touching electrically live spots.

To mount the cabinet to a pad with Redi-Rods

- 1 Move the cabinet to the mounting location by the best means available for the site.
- 2 Set the isolator base sheet, shipped between the cabinet and pallet, on the cement pad over the Redi-Rods.

Installation: *Mounting the Cabinet*

- **3** Attach hoist; slowly and carefully lift the cabinet.
- 4 Set the cabinet on the pad guiding the mounting holes of plinth or pedestal over the Redi-Rods and any conduit tubes.
- **5** Check cabinet with level. Use supplied shims as necessary—between the isolator base and the cement pad—to achieve a level orientation.



- 6 Use the pallet mounting hardware to secure the cabinet to the anchor plate:
 - **a** Place a tie-down bracket in the rear of the battery compartment; notch in tie-down must be on the right side. Push bracket as far to the back as possible and still align side slots with the pedestal mounting holes. Note bracket orientation in the drawing.



b Place washers and securing nut over each of the back Redi-Rods in the stacking order shown. Torque nuts to 44 ft-lb.



(Mounting hole reference only. Actual holes for this step are in the rear of the battery pedestal.)

- **c** Attach Velcro battery straps to the rear tie-down bracket.
- **d** Shift battery heater pad so power-connector tab in back-right corner slides under bracket notch.
- **e** Slide (2) 12V batteries into the battery compartment on each side, while pulling the strap out over the battery top.
- **f** Route battery cables and optional temperature probe cable to front according to contractor best practices.

Installation: Routing External Cables Into the Cabinet

- **g** Pull the middle 2 velcro straps over the tops of the side batteries.
- **h** Slide the next 2 batteries into the middle; pull their straps over the top.
- i Repeat Substeps a-c to attach the front battery bracket.
- j Pull the velcro straps to the front bracket and hook.
- **7** Disconnect the hoist.
- 8 Postpone battery connection until the end of the installation.

Routing External Cables Into the Cabinet

The customer's AC power cables can enter the cabinet through a punched KO in the equipment bay floor plate on the left-hand side, possibly from the cable access box, or through a custom port drilled into the equipment bay by the installer. All KOs or drilled ports must be made water-tight.

Tools and Materials Required

- Liquid-tight fittings with a UL Type 3R rating if not supplied
- Cable ties
- Standard tools, to possibly include a KO punch tool or a drill for custom KOs
- Deburring tool, portable vacuum (if drilling custom ports)

To route external cable into the cabinet

AC and DC voltages are hazardous!

Before pulling and routing cable, verify no cables are connected to electrical power.

- 1 If you have drilled a custom port hole, deburr the edges and vacuum up filings.
- 2 Attach liquid-tight fittings to all open cable-access holes not already protected.
- **3** Carefully pull the AC cables through the chosen port into the equipment bay. Allow enough slack for routing within the bay.
- 4 If you routed cable into the equipment bay through the cable access box, reattach the box cover. Hand-tighten the captive screws.

Grounding the Cabinet

AC voltages are hazardous! Have a licensed, certified electrician perform cabinet grounding.

The master ground bar (MGB), located in the front of the equipment bay, serves as the grounding point for installed equipment and site ground. These are preconnected in the equipment bay:

- Door
- Equipment rails
- AC power connection box
- Convenience outlet
- DC power plant (DCPP)

Installation: Connecting AC Power



Site Ground

Tools and Materials Required

- Standard electrician's tools
- A grounding ring large enough to fit around the cement mounting pad; site-ground service for pole-mount cabinet
- No. 2 AWG tin-plated copper wire grounding cable with a 2-hole lug (5/8-in. centers)
- Other grounding components required by national and local codes/ordinances
- Corrosion inhibiting, electrically conductive grease

To ground the cabinet to site ground

- 1 Apply a corrosion preventing, electrically conductive grease to an MGB connection.
- **2** Bring the #2 lead from site ground into the cabinet through a weather-tight port. Bond it to the MGB with a 2-hole lug (1/4 in. diameter holes, 5/9 in. centers).
- **3** Ground cabinet according to national and local codes/ordinances and best practices.

Connecting AC Power

Follow the AC wiring diagram labeled on the inside of the HX door. These instructions are for routing incoming AC to the AC power connection box termination point.

Note AC source and breakers are "up-line." Recommended breaker ratings are on the AC wiring diagram label.

WARNING AC voltages are hazardous!

Have a licensed, certified electrician route and connect incoming AC.

Tools and Materials Required

Standard tools

- FLX12WSW POWER-BATTERY CABINET INSTALLATION MANUAL
- Installation: Connecting AC Power
 - To connect incoming AC power
 - 1 Verify incoming AC power is switched off at the source.
 - **2** Loosen the 2 cover screws enough to pull off the cover (removing screws is unnecessary).



- **3** Loosen clamp screws for incoming AC, enough to be able to route the cables into the AC power connection box.
- 4 Route AC feeds into the AC power connection box. Cables for DCPP, GFCI outlet/battery heater, and ground—with wire nuts—are prerouted and secured inside the connection box.





- **5** Splice AC to loads according to the wiring diagram. Follow all codes and ordinances and contractor best practices.
- **6** Tie the 2 connection-box ground wires into the incoming AC leads to establish a local AC ground.
- 7 Tighten the clamp onto the wires.
- 8 Do not switch on AC power at the source until cabinet installation is complete.

Setting up DC Power

The DCPP is preinstalled, except for the customer-supplied 10A breaker for the HX. Refer to the DC schematic label on the door for location of the breaker.

For other DCPP information, see the manufacturer's user manual (supplied). For any other DC power issues with the HX, see the supplied user manual, "FlexAir 741 Heat Exchanger Installation Manual," PN 1000013426.

Connecting Alarms

Prewired as shown in the diagram in "Setting up DC Power:"

- HX power fail
- Door entry
- Over- and under-temperature

Connect other alarms per customer plan.

Note There is enough service-loop in alarm wiring to allow the customer to move the terminal block to a more convenient location for better access and easier connections.

Connecting Batteries

CAUTION DC voltages are hazardous! Have a licensed, certified electrician connect the battery string.

Connect the battery string according the battery vendor's installation instructions. Observe national and local codes/ordinances and follow contractor best practices.

To install the optional battery temperature probe cable



- 1 Carefully snip cable ties holding the cable in a service loop.
- **2** Bring the cable to front of the battery pedestal.
- **3** Remove the connector from its shipping bag and attach to the cable.
- 4 Attach the ring terminal of the connector to any battery terminal (consult any customer battery install specification).
FLX12WSW POWER-BATTERY CABINET INSTALLATION MANUAL

Installation: Testing the Installation

Testing the Installation

To test HX functioning, see the HX installation manual.

To test the installation

- **1** Verify breakers in cabinet are on.
- 2 Switch on AC at source.
- **3** Check DCPP controller for proper operation. Refer to the DCPP manual.
- 4 Check door alarm switch with multimeter:
 - **a** Set multimeter to "continuity."
 - **b** Red probe on red wire connection, black probe on black.You should hear a tone, indicating continuity.
 - c Press and hold the plunger on the door alarm switch.Tone should stop, indicating an open circuit.
 - **d** If the switch fails any test, contact technical support. See "Contact Information" on page ii.
- **5** Check high/low temperature alarm with multimeter (refer to DC schematic on door):
 - a Turn high-temp control (red) below ambient temperature.Test alarm block contacts with multimeter. Circuit should change state to "open."
 - b Turn low-temp control (blue) above ambient temperature.Test alarm block contacts with multimeter. Circuit should change state to "open."
 - **c** With successful testing, return controls to normal setting. If the test fails, contact technical support. See "Contact Information" on page ii.
- **6** With successful testing, close door.



RRUS 32 B30 DATA SHEET

RRUS 32 B30

- > WCS A+B blocks
 - TX = 2350 2360 MHz
 - RX = 2305 2315 MHz
- > CPRI 2 ports x 10 Gbps
- > Dimensions (incl. feet and sunshield)
 - Height: 26.7" (678 mm)
 - Width: 12.1" (306 mm)
 - Depth: 6.7" (171 mm)
- > Weight, excl. mounting hardware
 - 60 lbs (23 kg)



PRELIMINARY



MECHANICAL OUTLINE



PRELIMINARY



(millimeters)



ERICSSON



LOCUS MAP

TAKEN FROM BING.COM ON 07-27-15





PROPOSED CONDITIONS

LOCATION #1

DATE OF PHOTO: 07-23-15



EXISTING CONDITIONS

LOCATION # 2

DATE OF PHOTO: 07-23-15



PROPOSED CONDITIONS LOCATION # 2 DATE OF PHOTO: 07-23-15 Image: Description of the person of the person

DETAIL OF EQUIPMENT

 PROPOSED LTE ANTENNA MOUNTED TO EXISTING MOUNTING PIPE @
 POSITION 1 & 4
 (TYP. OF 2 PER SECTOR, TOTAL OF 6)

VIEW SOUTHWEST FROM AMES STREET

SITE NO: MA2267 SITE NAME: DORRANCE BLDG #16

ADDRESS: 77 MASSACHUSETTS AVENUE CAMBRIDGE, MA 02139



27 NORTHWESTERN DR SALEM, NH 03079



 SITE TYPE: ROOFTOP
 THIS STUDY

 DATE: 04/01/16
 IT IS MEANT

 DRAWN BY: FM
 PROPOSED

 SCALE: N.T.S.
 BASED UPOI

 REV: 1
 LOCATIONS

THIS STUDY DOES NOT CLAIM IN ANY WAY TO SHOW THE ONLY AREAS OF VISIBILITY. IT IS MEANT TO SHOW A BROAD REPRESENTATION OF AREAS WHERE THE PROPOSED INSTALLATION MAY BE VISIBLE BASED UPON THE BEST INFORMATION FOR TOPOGRAPHY AND VEGETATION LOCATIONS AVAILABLE TO DATE. PAGE 6 OF 9





LOCATION # 4 DATE OF PHOTO: 07-23-15 EXISTING/PROPOSED CONDITIONS VIEW NORTHEAST FROM MEMORIAL DRIVE (EQUIPMENT NOT VISIBLE) THIS STUDY DOES NOT CLAIM IN ANY WAY TO SHOW THE ONLY AREAS OF VISIBILITY. IT IS MEANT TO SHOW A BROAD REPRESENTATION OF AREAS WHERE THE PROPOSED INSTALLATION MAY BE VISIBLE BASED UPON THE BEST INFORMATION FOR TOPOGRAPHY AND VEGETATION LOCATIONS AVAILABLE TO DATE. SITE TYPE: ROOFTOF SITE NO: MA2267 at&t DATE: 04/01/16 SITE NAME: DORRANCE BLDG #16 Hudson **Design** Grou DRAWN BY: FM 5 SUMMIT STREET ADDRESS: 77 MASSACHUSETTS AVENUE SCALE: N.T.S. 550 COCHITUATE ROAD FRAMINGHAM, MA 01701 1600 OSGOOD STREET BUILDING 20 NORTH, SUITE 3090 N. ANDOVER, MA 01845 FAX: (978) 336-5586 CAMBRIDGE, MA 02139 27 NORTHWESTERN DR SALEM, NH 03079 PAGE 9 OF 9

Cambridge Coverage Plot Without MAL02267





On Air sites

Cambridge Coverage Plot With MAL02267





On Air sites

Cambridge Coverage Plot Individual MAL02267





On Air sites Proposed sites

(REVISED) STRUCTURAL ANALYSIS REPORT

For

MA2267

MIT DORRANCE BLDG #16 141 Portland Street Cambridge, MA 02141

Antennas Mounted to Building Façade; Equipment on Steel Platform on Roof



Prepared for:





SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the structure supporting the proposed AT&T equipment located in the areas depicted in the latest HDG construction drawings.

This report represents this office's findings, conclusions and recommendations pertaining to the support of AT&T's proposed equipment.

CONCLUSION SUMMARY:

Building plans prepared by Ellenzweig Associates, Inc. dated August 16, 1996 were available and were obtained for our use. A limited visual survey of the structure was completed in or near the areas of the proposed work.

Based on our evaluation, we have determined that the existing structure **<u>IS CAPABLE</u>** of supporting the proposed equipment loading.

APPURTENACE/EQUIPMENT CONFIGURATION:

(3) Kathrein 742-264 Antennas (51.8"x10.3"x5.5" - Wt. = 37 lbs. /each) (One per sector)

- (6) OPA-65R-LCUU-H4 Antennas (48"x14.4"x7.3" Wt. = 63 lbs./each) (One per sector)
- (9) RRUS-11 RRH's (19.7"x17"x7.2" Wt. = 51 lbs. /each) (Two per sector)
- (3) RRUS-32 RRH's (26.7"x12.1"x6.7" Wt. = 60 lbs. /each) (One per sector)
- (3) RRUS-E2 RRH's (20"x20.4"x7.5" Wt. = 72 lbs. /each) (One per sector)
- (3) A2 Modules (16.4"x15.2"x3.4" Wt. = 22 lbs. /each) (One per sector)
- (3) TT19-08BP111-001 TMA's (9.9"x6.7"x5.4" Wt. = 16 lbs. /each) (One per sector)
- (3) DC6-48-60-18 Square Squids (Wt. = 43.5 lbs. / each) (One per sector)



DESIGN CRITERIA:

1. Massachusetts State Building code latest edition, International Building Code (IBC) 2009, and ASCE 7-05.

Wind Analysis:

Reference Wind Speed:	105 mph	(780 CMR 1604.10)
Category:	В	(ASCE 7-05 Section 6.5.6.3)
Approx. structure height:	123'-0"+/-	

Roof:

Ground Snow, Pg:	45 psf	(780 CMR 1604.10)
Occupancy Category:	II	(ASCE 7-05 Table 1-1)
Importance Factor, I:	1.0	(ASCE 7-05 Table 7-4)
Exposure Factor, Ce:	1.0	(Partially Exposed, Table 7-2)
Thermal Factor, Ct:	1.0	(ASCE 7-05 Table 7-3)

Calculated Flat Roof Snow Load:

Pf=0.7*Ce*Ct*I*Pg: 31.5 ps

31.5 psf (ASCE 7-05 Equation 7-1)

2. EIA/TIA -222- G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

City/Town:	Cambridge
County:	Middlesex
Wind Load:	105 mph
Nominal Ice Thickness:	1 inch

3. Approximate height above grade to the center of the Antennas:

120'-10"+/-



EXISTING ROOF CONSTRUCTION:

The existing roof construction consists of a roofing membrane over rigid insulation over a reinforced concrete slab supported by a system of reinforced concrete beams and columns.

ANTENNA SUPPORT RECOMMENDATIONS:

The new antennas are proposed to be mounted on existing pipe masts secured to the existing building façade with epoxy anchors.

RRH / SURGE SUPPRESSOR SUPPORT RECOMMENDATIONS:

The new RRH's and Surge Suppressors are proposed to be mounted on new ballast frame extensions located on the roof.

Limitations and assumptions:

- 1. Reference the latest HDG construction drawings for all the equipment locations details.
- 2. Mount all equipment per manufacturer's specifications.
- 3. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
- 4. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.
- 5. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
- 6. If field conditions differ from what is assumed in this report, then the engineer of record is to be notified as soon as possible.



FIELD PHOTOS:



Photo 1: Sample photo illustrating the existing antennas.



Photo 2: Sample photo illustrating the existing RRH's.



Calculations

.

Date: 04-04-2016 Project Name: MIT Dorrance Bldg # 16 Project Number: MA2267 Designed By: GH Checked By: MSC



2.6.5.2 Velocity Pressure Coeff:

K _z = 2.01 (z	$(/z_g)^{2/\alpha}$		Z=	120.8 (ft)
			z _g =	1200 (ft)
	K _z =	1.043	α=	7

Kzmin \leq Kz \leq 2.01

Table 2-4

Exposure	Zg	α	K _{zmin}	K _e
В	1200 ft	7.0	0.70	0.9
С	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.4 Topographic Factor:

Table 2-5

Topo. Category	Kt	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

 $K_{zt} = [1 + (K_e K_t / K_h)]^2$

K_{zt}= #DIV/01

(If Category 1 then K_{zt} = 1.0)

Category= 1

 $K_h = e^{(f^*z/H)}$

K _h =	#DIV/0!	
K _e =	0	(from Table 2-4)
K _t =	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	120.8	
H=	0	(Ht. of the crest above surrounding terrain)
K _{zt} =	1.00	

Date: 04-04-2016 Project Name: MIT Dorrance Bidg # 16 Project Number: MA2267 Designed By: GH Checked By: MSC



2.6.7 Gust Effect Factor

- 2.6.7.1 Self Supporting Lattice Structures
- Gh = 1.0 Latticed Structures > 600 ft
- Gh = 0.85 Latticed Structures 450 ft or less

Gh = 0.85 + 0.15 [h/150 - 3.0]	h= ht. of structure		
h= 123	Gh= 0.85		
2.6.7.2 Guyed Masts	Gh= 0.85		
2.6.7.3 Pole Structures	Gh= 1.1		
2.6.9 Appurtenances	Gh= 1.0		

2.6.7.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

Gh= 1.3

1.35

Gh= 1.35

Date: 04-04-2016 Project Name: MIT Dorrance Bldg # 16 Project Number: MA2267 Designed By: GH Checked By: MSC



2.6.9.2 Design Wind Force on Appurtenances

F= qz*Gh*(EPA)_A

q _z = 0.0	q _z = 0.00256*K _z *K _{zt} *K _d *V _{max} ² *I		1.043
		K _{zt} =	1.0
q _z =	27.97	K _d =	0.95
		V _{max} =	105
		I=	1.0

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd	
Latticed structures with triangular, square or	0.85	
rectangular cross sections		
Tubular pole structures, latticed structures with other	0.05	
cross sections, appurtenances	0.95	

Determine Cf:

If lattice Structure See Manual

If Tubular Pole Structure, Use Corrected Value from Table 2.7 Below

С	Round	18 Sided	16 Sided	12 Sided	8 Sided
mph.ft					
< 32	1.2	1.2	1.2	1.2	1.2
(Subcritical)					
32 to 64	38.4/C ^{1.0}	25.8/C ^{0.885}	12.6/C ^{0.678}	2.99/C ^{0.263}	1.2
(Transitional)					
> 64	0.6	0.65	0.75	1	1.2
(Supercritical)					

 $C = (I^*K_{zt}^*K_z)^{0.5}*V^*D$

D = Outside diameter for rounds:

0.25 feet

C= 26.81

Cf= 1.2

Date: 04-04-2016 Project Name: MIT Dorrance Bldg # 16 Project Number: MA2267 Designed By: GH Checked By: MSC



Determine Ca:

Table 2-8

Force Coefficients (Ca) for Appurtenances					
Manahar Trans		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25	
Memil	beriype	Ca	Ca	Ca	
F	ilat	1.2	1.4	2.0	
Round	C < 32	07	0.0	1.2	
	(Subcritical)	0.7	0.0		
	32 ≤ C ≤ 64	a a (1 a ^{0,485})	a a a 1/ a 0.415	aa	
(Transitional)		3.76/(C)	3.37/(C)	38.4/(C)	
	C > 64	0.5	0.0	0.0	
(Supercritical)		0.5 0.6		0.6	
Aspect Ratio is	s the overall leng	gth/width ratio in the plane	e normal to the wind dire	ection.	
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,					
and the section length considered to have uniform wind load).					
Note: Linear interpolation may be used for aspect ratios other than those shown.					

Appurtenances	<u>Height</u>	<u>Width</u>	<u>Depth</u>	<u>Flat Area</u>	<u>Aspect</u> <u>Ratio</u>	<u>Ca</u>	Force (lbs)
742-264	51.8	10.3	5.5	3.71	5.03	1.31	184
AM-X-CD-14-65-00T-RET	48.0	11.8	5.9	3.93	4.07	1.27	189
OPA-65R-LCUU-H4	48.0	14.4	7.3	4.80	3.33	1.24	224
RRUS-11	19.7	17.0	7.2	2.33	1.16	1.20	105
RRUS-32	26.7	12.1	6.7	2.24	2.21	1.20	102
RRUS-E2	20.0	20.4	7.5	2.83	0.98	1.20	128

Project: MA2267 - MIT Dorrance Bldg #16

Thickness of ice:	1 in.
Density of ice:	56 pcf

742-264 Antenna

Weight of ice based on total radial SF area:					
Depth (in):	5.5				
height (in):	51.8				
Width (in):	10.3				
Total weight of ice on object:		53 lbs			
Weight of object:	ect: 37 lbs				
Combined weight of ice	90 lbs				

AM-X-CD-14-65-00T-RET Antenna

Weight of ice based on total radial SF area:				
Depth (in):	5.9			
height (in):	48			
Width (in):	11.8			
Total weight of ice on o	bject: 55 lbs			
Weight of object:	37 lbs			
Combined weight of ice	and object: 92 lbs			

OPA-65R-LCUU-H4 Antenna

Weight of ice based on total radial SF area:				
Depth (in):	7.3			
height (in):	48			
Width (in):	14.4			
Total weight of ice on c	bject: 68 lbs			
Weight of object:	63 lbs			
Combined weight of ice	and object: 131 lbs			

TT19 - 08BP111-001 TMA

Weight of ice based on total radial SF area:				
Depth (in):	5.4			
height (in):	9.9			
Width (in):	6.7			
Total weight of ice on object:		8 lbs		
Weight of object:	16 lbs			
Combined weight of ice and object:		24 lbs		

RRUS-11 RRH

Weight of ice based on total radial SF area:				
Depth (in):	7.2			
height (in):	19.7			
Width (in):	17			
Total weight of ice on object:		31 lbs		
Weight of object:	51 lbs			
Combined weight of ice and object:		82 lbs		

RRUS-32 RRH

Weight of ice based on	total radial SF area:
Depth (in):	6.7
height (in):	26.7
Width (in):	12.1
Total weight of ice on o	bject: 33 lbs
Weight of object:	60 lbs
Combined weight of ice	and object: 93 lbs

RRUS-E2 RRH

Weight of ice based on total radial SF area:				
Depth (in):	7.5			
height (in):	20			
Width (in):	20.4			
Total weight of ice on object:		36 lbs		
Weight of object:	72 lb	S		
Combined weight of ice and object:		108 lbs		

 Site Name:
 MIT Dorrance Bldg #16

 Site No.
 MA2267

 Done by:
 GH
 Checked by: MSC

 Date:
 6/3/2015



CHECK CONNECTION CAPACITY

<u>Reference:</u> Hilti Volume 2: Anchor Fastening Technical Guide

Epoxy Type =		HIT-HY20	(or ap	proved e	qual)			
Anchor Diamete	er =	1/2	in.				TX	A
Min. Embedme	nt Depth =	2	in.					$\langle \rangle$
Allowable Tens	i <u>le Load =</u> F _{Tall} =	525	lbs.					
<u>Allowable Shea</u>	<mark>r Load =</mark> F _{Vall} =	1230	lbs.					
WIND FORCES								2
Reaction	F =	112	lbs.					
GRAVITY LOAD	<u> </u>							
Ice and Equipme	ent_	150	lbs.					2
No. of Supports	- 1	2						2
No. of Anchors	 / Support =	2						
Tension Design	Load / Anchor =							
	f _t =	56.00	lbs.	<	525	lbs.	Therefore,	OK !
Shear Design Lo	ad / Anchor=							
	f _v =	37.50	lbs.	<	1230	lbs.	Therefore,	OK !
CHECK COMBII	NED TENSION A	ND SHEAR						
f _t / F _T	+	f_v/F_v	≤	1.0				
0.107	+	0.030	=	0.137	<	1.0	Therefore,	ОК !



THEORETICAL REPORT



Site Number:	MA2267
Site Name:	MIT Dorrance Building #16
Latitude:	42.36044444
Longitude:	-71.09068611
Address:	77 Massachusetts Avenue,
	Cambridge, MA

<u>Conclusion:</u> AT&T's existing + proposed antenna installation is calculated to be within the FCC Standard for Uncontrolled/General Public and Controlled/Occupational Maximum Permissible Exposure (MPE).

Prepared by:

SAI Communications 260 Cedar Hill Street Marlborough, MA 01752 (603) 421-0470

Date of Report:

April 1, 2016

Table of Contents

Introduction	3
RF Exposure Prediction Method	3
Case Summary	4
RF Design Specifications	4
FCC Guidelines	5
FCC RF Exposure Limits	6
Calculation Results (6ft AGL)	7
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Introduction

SAI Communications has conducted this theoretical analysis for AT&T, to ensure that the existing radio facility complies with Federal Communications Commission (FCC) regulations after carrier additions. This report will show that, through the use of FCC suggested prediction methods, the radio facility in question will be in compliance with all appropriate Federal regulations in regards to Radio Frequency (RF) Exposure.

RF Exposure Prediction Method

Power Density is calculated in accordance with FCC OET Bulletin 65 formula (3):



Where:

- S = Power Density
- P = Power input to the antenna
- G = Gain of an antenna
- R = Radial distance = $\sqrt{H^2 + V^2}$
- H = Horizontal distance from antenna
- V = Vertical distance from antenna = Va Vb
- V_a = Antenna height above ground
- V_b = Calculation height above ground = 6ft

Case Summary

The existing radio facility has a radiation center of 120ft located at the following geographic coordinates:

Latitude:	42.36044444
Longitude:	-71.09068611

See sketch below for specific property location.



RF Design Specifications

AT&T Mobility is planning to install 6 panel antennas, 2 per sector for LTE Technologies (3C+4C+5C) with azimuths of 30-150-270 for alpha-beta-gamma sectors. Table below shows the technical data used for the calculation.

	GSM850	UMTS850	UMTS1900	LTE700BC
Antenna Type:	CCI OPA-65R-LCUU-H4	Ka 74	threin 2-264	CCI OPA-65R-LCUU-H4
Antenna Gain (dBd)	11.25	11.85	14.85	10.35
Rad Center, AGL (ft)	120	120	120	120
ERP (dBm)	55.75	56.85	59.85	55.35
No of Radios	1	2	2	1

	LTE700DE	LTE850	LTE1900	LTEWCS
Antenna Type:	CCI OPA-65R-LCUU-H4			
Antenna Gain (dBd)	10.35	11.25	13.65	14.95
Rad Center, AGL (ft)	120	120	120	120
ERP (dBm)	55.35	56.25	58.65	59.95
No of Radios	1	1	1	1

FCC Guidelines

Table 1. MPE Limits for General Population/ Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time for E ² , H ² , or S (Minutes)
0.3 – 1.34	614	1.63	(100)*	30
1.34 -30	824/f	2.19/f	(180/f ²)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500			f/1500	30
1500- 100,000			1.0	30
f – frequency in MHz		* – Plane wave equivalent power density		

General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can't exercise control over their exposure.

Table 2. MPE Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time for E ² , H ² , or S (Minutes)
0.3 - 3.0	614	1.63	(100)*	6
3.0 - 30	1842/f	4.89/f	(900/f ²)*	6
30 – 300	61.4	0.163	1.0	6
300 - 1500			f/300	6
1500-100,000			5.0	6
f = frequency in MHz * = Plane		* = Plane w	ave equivalent p	ower density

Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where such occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

FCC RF Exposure Limits

FCC MPE LIMITS (mW/cm ²)			
	AT&T FREQUENCY BANDS		
EXPOSORE ENVIRONMENT	Cellular	PCS	
General Public (Uncontrolled)	0.59	1.0	
Occupational (Controlled)	2.93	5.0	



Maximum Permissible Exposures. Occupational/Controlled and General Population/Uncontrolled MPE's are functions of frequency.

Calculation Results (6ft AGL)

The following charts show the graphical representation of the calculated AT&T contribution on power density levels and % MPE at 6ft above ground, as horizontal distance from antenna increases. The calculations take into account the vertical pattern of the antennas and represent the immediate direction of each sector azimuth within the antenna horizontal beamwidth. The calculations also assume line of site to the antennas and the result will be lower if measured indoor due to in-building penetration loss.



Power Density and %MPE
Statement of Certification

I certify to the best of my knowledge that the statements contained in this report are true and accurate. The theoretical computations contained are based on FCC recommended methods, with industry standard assumptions & formulas, and complies with FCC mandated Maximum Permissible RF Exposure requirements.

A comprehensive field survey was not performed prior to the generation of this report. If questions arise regarding the calculations herein, SAI Communications recommends that a comprehensive field survey be performed to resolve any disputes.

Michae Diron

<u>April 1, 2016</u> Date

Michael Doiron Director, RF Engineering SAI Communications

BZA APPLICATION FORM - OWNERSHIP INFORMATION

To be completed by OWNER, signed before a notary and returned to The Secretary of the Board of Zoning Appeals.

I/We Mussachusetts Institute of Technology Address: 77 Muss. Ave. W92-196, Cambridge MA 02139 State that I/We own the property located at 60 Vassar St. Cambridge MA which is the subject of this zoning application. MITBIDG. 16 Dorrance B The record title of this property is in the name of Massachusetts Fustitute of Technology *Pursuant to a deed of duly recorded in the date 3221912, Middlesex South County Registry of Deeds at Book 3678 , Page 196 ; or Middlesex Registry District of Land Court, Certificate No. Book _____ Page _ SIGNATURE BY LAND OWNER OR AUTHORIZED TRUSTEE, OFFICER OR AGENT* *Written evidence of Agent's standing to represent petitioner may be requested. The above-name Anthony P.Sharon personally appeared before me, this <u>S</u> of <u>April</u>, 20<u>16</u>, and made oath that the above statement is true. Notary My commission expires (Notary) SHARON PINKSTEN Notary Public COMMONWEALTH OF MASSACHUSETTS My Commission Expires March 5, 2021 If ownership is not shown in recorded deed, e.g. 1 deed, or inheritance, please include documentation.

3678 Honowall men by these Gresente. 19 mes val. Irs. that we Oliver ames, Samuel barr and Oliver W. Mink as we 's are the Trustees under the will of Frederick & ames late of to Mass Institute Carton in the County of Bristol in the Commonwealth of of Technology massachinetts deceased, acting by virtue of the power and au-thouty given us in and by said will and of every other power and authority us herelo mabling in consideration of one dollar and other valuable considerations faid by the massachmette molitice of Technology a corporation duly ce. tablished under the laws of said Commonwealth the receipt Whereof is hereby acknowledged, do hereby, grant, bargain sell and convey into the said massachusetts Institute of Technology and its successors and assigns the following described lots or parcele of land situate in Cambridge in the bounty of middlesex in said Commonwealth and shown on a plan by aspinivall and Leincoln dated February 14, 1912 to be record 24 ed herewith namely. Hirst: a certain parcel of land mark ed on said flan 134995/10 pg. ft. and bounded southwesterly on massachusette avenue one hundred sixteen and 32/100 feet, northwesterly on amherst Street one hundred twelve, and theos feet, northeasterly on a passageway sixteen feet wide shown on said plan one hundred sitteen feet, and southeasterly on land now or formerly of marcy one hundred twenty and 69/100 feet. This 27 parcel is also shown as lots numbered 22, to 25 both inclusive on another plan by appinuall and Lincoln dated December 2, 1897 and recorded with middlesex South District Duds plan book ŝŝ 10% plan 31. Decond: a certain parcel of land marked 15000 pg. ft.on said plan dated February 14 1912 and bounded south easterly on the Osplanade or Charles River Road one hundred twenty feel; couthwesterly on land now or formerly of dusan W. Cair one hundred teventy five feet, northwesterly on a pas. sageway sixteen feet wide one hundred twenty feet, and north. easterly on land now or formerly of Braman one hundred twenty five feet. This parcel is also shown as lots numbered 11 to 14 both inclusive and part of lot numbered 10 on paid plan dated December 2, 1897, Third: a certain parcel of land marked 53000 sq. ft. on said plan dated February 14, 19/2. bound ed northwesterly on Umherst-Street five hundred thirty feet couthwesterly on blaflin Street one hundred feet, southeast erly on a passageway sidteen feet-wide five humand thinky feet and northeasterly on Bradford Street one hundred feet. Howelle: a certain parcel of land marked 113128 2/10 pg. ft on said plan dated February 14,1912, bounded couthwesterly

on said massachusettes avenue two hundred twenty six and 3/100 feet, northwesterly on Princeton avenue four hundred ninety cerm and 64/100 feet, northeasterly on Claflin Street two hundred twenty Riv feet and southeasterly on amherst Street five hundred seven and \$9/100 feet. With: a certain parcel of land marked 5500 sq. fl. on said plan dated February 14, 1912 bounded northwesterly. on Princeton avenue fifty feet; northeasterly on land now or formerly of Foster one hindred ten feet, southeasterly on a passageway risteen feet wide fifty feet, southwesterly on land now or formerly of Shepley one hundred ten fect. This parcel is also shown as lote numbered 117 and 118 on said plan dated December 2, 1897. Diath: a certain parcel of land mark ed 2500 sq. ft. on said plan dated February 14, 1912, bounded northwesterly on Wellesley Street twenty five feet, northeasterly on blaflin Street one hundred feet, southeasterly on a passageury sitteen feet wide twenty five feet and pouthivesterly on land now or formerly of Upton one hundred feet. This parcel is al. so shown as lot numbered 82 on said plan dated December 2, 1897. Deventh: a certain of vicel of land marked 119780 og. ft. on said plan dated February 14, 1912, bounded northwesterly on eaid Wellesley Street five hundred thirty feet northeasterly on Raid Bradford Street two hundred twenty six feet southeasterly on said Princeton avenue five hundred thirty feet and south weaterly on said blaflin Street two hundred twenty six feet. Eighth, a certain triangular parcel of land marked 22% sq.ft. on said plan dated February 14,1912, bounded northwesterly on said Wellesley Street four and 1/100 feet, easterly on land now or formerly of marcy eighteen and 6/100 feet and could westerly on said Bradford Street seventeen and 45/100 feet Ninth a certain small triangular parcel of land marked 115 %/10 og. fl. on said plan dated February 14, 1912, bounded northwest: bily on said Wellesley Street twinty-three and %00 feet, easterly on land of the grantors, being the panel next herein described eleven and 58/100 feet and coutherly on land now or formerly of marcy nineteen and 97/100 feet. Venth: a certain tuangular parcel of land marked 3813 1/10 og. ft. on paid plan dated February 14, 1912, bounded westerly in part on the end of said Wellesley Street and in part on the par-cel last herein described and in part on land now or formerly of marcy seventy five and 15/100 feet, southerly on said land now or formerly of marcy one hundred one and 5%/100 feet and northeasterly on other land of the grantors one hundred twenty in and 29/100 feet. Oleventh: a certain

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parcel of land marked 101 28 % o sq. ft. on said plan dated February 14, 1912, bounded southeasterly on said Wellesley Street one hundred thirty eight and "1/100 feet, westerly on land now or formerly of Charles H. Douther one hundred forty six and 19/100 feet, northeasterly on land now or formerly of John a Stewart one hundred thirty one and 59/100 feet and easterly on other hand of the grantore twenty-two and 62/100 feet. Welfth; a cer tain parcel of land marked 4562 the og. ft. on oaid plan dat ed February 14, 1912 bounded northwesterly on Radcliffe Street seventy four and 6/100 feet, northeasterly on a parcel of land lighteenthly herein described one hundred fifteen and 5%100 feet, southeasterly on a passageway sisteen feet wide sisteen and "Theo feet and southwesterly on land now or formerly of Baker one hundred fect. This parcel is also shown as lots tand I. on another plan by aspinwall and Dincoln dated January 18,1898 recorded with middlesen South District Deeds plan book 109 plan 11. Thirteenth: a certain parcel of land marked 96.00 og. ft. on said plan dated February 14, 19/2, bounded northwesterly on said badcliffe Street ninety six feet, northeasterly on land now or formerly of damuel bars one hundred feet southeast. erly on a parrageway sixteen feet wide ninety eix feet, and southwesterly on land now or formerly of burniff one hundred feet. This parcel is also shown as late numbered 147 to 150 both inclusive on said plan dated December 2, 1897 Fourteenth a certain parcel of land marked 129784 og. ft. on said plan dated February 14, 1912 bounded southwesterly on said massa chusette avenue two hundred twenty six and 95/100 feet, north westerly on Vassar Street thirty eight and 24/100 feet, more north erly on haddliffe Street six hundred eight and 63/100 feet northeasterly on said blaflin Street two hundred sixteen feet and southeasterly on said Wellesley Street five hundred eighty and 52/100 feet Sifteenth. a certain parcel of land marked 899988/10 sq. ft. on paid plan dated February 14, 1912, bounded southeasterly on said Vassar Street-one thousand eighteen and 71/100 feet southwesterly on land now or formerly of Helles minute feel, northwesterly on the Goston and Albany Railroad nine hundred eighty and 76/100 feet and northeasterly on land now or formerly of Rogers ninety seven and "1/100 feet. Disteenth: a certain parcel of land being lots marked 6737 5/10 og. ft. and 4374 /10 0g. ft. on said plan dated February 14, 1912, bound. ed northwesterly on said said Vassar Street one hundred twenty five and 526/1000 feet, easterly on the parcel eighteenthly herein described one hundred eighty three and 96/100 feet, coutheasterly

on said Radcliffe Street thirty one and 1/10 feet, and southwesterly on land now or formerly of brane one hundred thirty eight and 80/100 feet. Deventeenth: a certain parcel of land marked 9724 og ft: on said pean dated February 14, 1412 bounded mortherly on main Street thirty one and 82/100 feel; easterly on the parcel next herein described ninety three and 71/100 feet, southeasterly on said Vassar Street one hundred eleven and 2/100 feet, westerly on land now or formerly of Rogers one hundred sixteen and . 46/100 feet and northwesterly on the Boston and albany Railroad Reventy two and 1/100 feet. Olighteenth: a certain parcel of land marked 55825 pg. ft. on said plan dated February 14,1412, borna. ed notherly on said main Street one hundred one and 50/100 feel, easterly on land now or formerly of Charles H. Souther five hundred fifty feet, southerly on other land now or formerly of said souther one hundred one and 50/100 feet, westerly in part on said land now or formerly of Souther, in part on the end of a passageway sixteen fect wide in part on the parcel twelfthly herein described, in part on the end of said Radeliffe Street in part on the parcel sixteenthly here. in described in part on the end of said Varear Street and in part on the parcel last above described five hundred fifty feet. This parcel comprises the lot marked " on a plan by William B. Jackson dated December 5, 1876 recorded with mid. dleser South District Deeds plan book 31 plan 4, and also the fee of the west half of a street forty feet wide shown on said plan but never opened for use. Also all our interest as such trustees in the fee and soil and the use of all dreets and passageways adjoining the above described parcele or any q them. Or however otherwise said panels or either of them may be bounded or described and be all or any of said measure. ments more or less. The premises are conveyed subject to such restrictions affecting the same as appear of record as far as now in force and applicable. To have and to hold the grant. Id premises with all the rights, carements, privileges and appurtenances thereto belonging unto the said mass achusette Institute of Technology and its successors and assigns to their our use and behoof forever mitness whereof we the said Oliver ames, Samuel Carr and Oliver W. Mink as trus. the as aforesaid hereinto eet our hands and reals this twenty mith day of February in the year one thousand onine hundred and twelve. Oliver ames wal Samuel Carrier Oliver W. mink beal Trustees as aforesaid Commonwealth of massa chriselts. Suffolk as. Feby. 29 th. 1912. Then personally appeared the

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above named Oliver ames and acknowledged the foregoing in stimment to be his free act and deed, before me, Chas. M. Hayden Justice of the Peace. Middlesexes march 22,19/2. 4h. 30m. P.M. Recd. & Recorded One word stricken out.

Ungell Mass Institute

Knowall mendy these herents -that I martha B. Angell of Boston in the bounty of Sufforce 18: in the bommonivealth of massachusetts, widow in consideration of one dollar and other valuable considerations of Technology paid by the massachusetts Institute of Technology a conporation duly established under the law of said Common. wealth the receipt where of is hereby acknowledged do hereby quant, remise, release and forever quitclaim unto the said massachusette Institute of Technology and its successore and assigns a certain panel of land situate in Cambridge in the County of middlever in said Commonwealth, be ing lot numbered 35 on a plan by aspinwall and Dincoln dated December 2, 1897, recorded with middlesex Do. Dist Deeas plan book 104 plan 31, and bounded and described as follows: northwesterly on amherst Street twenty four feet, northeasterly on lot numbered 36 on said plan one hundred feet, southeasterly on a passageway sitteen feet wide shown on said plan twenty four feet and southwesterly on lot numbered 34 on said plan one hundred feet bontain ing twenty four hundred square feet. also all my interest in the fee and soil and the use of all adjoining streets and has agenaup. Or however otherwise said premies may be bounded or described and be all or any of said measure. ments more or less. Being the premices conviged by Oliver ames to Susan W. Farwell by deed dated December 22, 1897 recorded with middlerex & Dist Deeds lib. 2622 page 398 and devised to me in and by the will of said Susan W. Farwell duly probated in the County of norfolks June 4, 1902. The premises are conveyed with the benefit of and subject to the rights, easements, agreements and restrictions therein referred to so far as now in force and applicable. To have and to hold the above described primises with all the rights earements, privileges and appurtinances there to belonging to the said massachusette Institute of Technology and its successors and assigns to their own use and behoof forever. Und I the said granter for myself and any him executors and administrators do covenant with the said grantie and its successors and assigns that the above described premises are free from all incumbrances made



Martha Coakley Attorney General

THE COMMONWEALTH OF MASSACHUSETTS OFFICE OF THE ATTORNEY GENERAL

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June 12, 2013

Gail Garrett, Town Clerk Town of Mount Washington 118 East Street Mount Washington, MA 01258

RE: Mount Washington Special Town Meeting of April 1, 2013 - Case # 6642 Warrant Articles # 1, 2, and 3 (Zoning)

Dear Ms. Garrett:

<u>Articles 1, 2, and 3</u> - We approve the amendments to the Town by-laws adopted under Articles 1, 2, and 3 on the warrant for the Mount Washington Special Town Meeting that convened on April 1, 2013, and the map pertaining to Article 3. Our comments on Articles 1 and 2 are provided below.

<u>Article 1</u> - The amendments adopted under Article 1 add a new Section 215-27 to the zoning by-laws entitled "Wireless Telecommunication Facility Zoning Bylaw." We approve the new Section 215-27, but offer the following comments.

I. <u>Applicable Law</u>

The federal Telecommunications Act of 1996, 47 U.S.C. § 332 (7) preserves state and municipal zoning authority to regulate personal wireless service facilities, subject to the following limitations:

- 1. Zoning regulations "shall not unreasonably discriminate among providers of functionally equivalent services." 47 U.S.C. §332(7) (B) (i) (I)
- 2. Zoning regulations "shall not prohibit or have the effect of prohibiting the provisions of personal wireless services." 47 U.S.C. § 332 (7) (B) (i) (II).
- 3. The Zoning Authority "shall act on any request for authorization to place, construct, or modify personal wireless service facilities within a reasonable period of time." 47 U.S.C.

§ 332 (7) (B) (ii).

- 4. Any decision "to deny a request to place, construct, or modify personal wireless service facilities shall be in writing and supported by substantial evidence contained in a written record." 47 U.S.C. § 332 (7) (B) (iii).
- 5. "No state or local government or instrumentality thereof may regulate the placement, construction and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the [Federal Communications] Commission's regulations concerning emissions." 47 U.S.C. § 332(7) (B) (iv).

Federal courts have construed the limitations listed under 47 U.S.C. § 332(7) as follows. First, even a facially neutral by-law may have the effect of prohibiting the provision of wireless coverage if its application suggests that no service provider is likely to obtain approval. "If the criteria or their administration effectively preclude towers no matter what the carrier does, they may amount to a ban 'in effect'...." <u>Town of Amherst, N.H. v. Omnipoint Communications Enters, Inc.</u>, 173 F.3d 9, 14 (1st Cir. 1999).

Second, local zoning decisions and by-laws that prevent the closing of significant gaps in wireless coverage have been found to effectively prohibit the provision of personal wireless services in violation of 47 U.S.C. § 332(7). See, e.g., Nat'l Tower, LLC v. Plainville Zoning Bd. of Appeals, 297 F.3d 14, 20 (1st Cir. 2002) ("local zoning decisions and ordinances that prevent the closing of significant gaps in the availability of wireless services violate the statute"); Omnipoint Communications MB Operations, LLC v. Town of Lincoln, 107 F. Supp. 2d 108, 117 (D. Mass. 2000) (by-law resulting in significant gaps in coverage within town had effect of prohibiting wireless services).

Third, whether the denial of a permit has the effect of prohibiting the provision of personal wireless services depends in part upon the availability of reasonable alternatives. See <u>360 Degrees Communications Co. v. Bd. of Supervisors</u>, 211 F.3d 79, 85 (4th Cir. 2000). Zoning regulations must allow cellular towers to exist somewhere. Towns may not effectively ban towers throughout the municipality, even under the application of objective criteria. <u>See Virginia Metronet, Inc. v. Bd. of Supervisors</u>, 984 F. Supp. 966, 971 (E.D. Va. 1998).

State law also establishes certain limitations on a municipality's authority to regulate wireless communications facilities and service providers. Under General Laws Chapter 40A, Section 3, wireless service providers may apply to the Department of Telecommunications and Cable for an exemption from local zoning requirements. If a telecommunication provider does not apply for or is not granted an exemption under c. 40A, § 3, it remains subject to local zoning requirements pertaining to cellular towers. <u>See Building Comm'r of Franklin v. Dispatch Communications of New England, Inc.</u>, 48 Mass. App. Ct. 709, 722 (2000). Also, G.L. c. 40J, § 6B, charges the Massachusetts Broadband Institute with the task of promoting broadband access throughout the state. Municipal regulation of broadband service providers must not frustrate the achievement of this statewide policy.

In addition, Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012

requires that "[A] state or local government *may not deny, and shall approve*, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station." (emphasis added). The Act defines "eligible facilities request" as any request for modification of an existing wireless tower or base station that involves: 1) collocation of new transmission equipment; 2) removal of transmission equipment; or 3) replacement of transmission equipment. The Act applies "[n]otwithstanding section 704 of the Telecommunications Act of 1996." The Act's requirement that a local government "may not deny, and shall approve, any eligible facilities request" means that a request for modification to an existing facility that does not substantially change the physical dimensions of the tower or base station must be approved. Such qualifying requests also cannot be subject to a discretionary special permit.

We approve the new Section 215-27. However, the Town must apply the by-law in a manner consistent with the applicable law outlined above. In particular, Section IV of the new by-law requires that Wireless Telecommunication Facilities are only allowed by special permit in the Wireless Telecommunication Overlay District. This requirement cannot be applied to eligible facilities requests for modification to existing facilities which qualify for required approval under Section 6409 of the Act, as described above. We urge the Town to consult closely with Town Counsel regarding the appropriate response to applications for collocation in light of these recent amendments.

II. <u>Analysis of Mount Washington's Wireless Telecommunication Facility By-Law</u>

A. <u>Section VIII "Criteria For Approval and Conditions"</u>.

This section provides as follows:

5. The applicant will remove the Facility, should the Facility be abandoned or cease to operate. The Planning Board may require the applicant to provide a bond, or other form of financial guarantee acceptable to the Planning Board to cover the cost of removal of the Facility, should the Facility be abandoned or cease to operate, and ensure other compliance hereunder.

The Town must apply any bond or other financial guarantee proceeds in a manner consistent with state law. Bond proceeds do not become Town funds unless and until the applicant defaults on the obligation under the proposed by-law. Moreover, if the Town must use the bond to pay for removal of a wireless communication facility or the repair and/or restoration of the premises, an appropriation is required before expenditure is made to do the work. General Laws Chapter 44, Section 53, provides that "[a]ll moneys received by a city, town or district officer or department, except as otherwise provided by special acts and except fees provided for by statute, shall be paid by such officers or department upon their receipt into the city, town or district treasury." Under Section 53 all moneys received by the Town become a part of the general fund, unless the Legislature has expressly made other provisions that are applicable to such receipt. In the absence of any general or special law to the contrary, performance security funds of the sort contemplated here must be deposited with the Town Treasurer and made part of the Town's general fund, pursuant to G.L. c. 44, § 53. The Town must then appropriate the money for the specific purpose of completing the work required for removal and/or restoration.

B. <u>Section X "Permit Revocation For Non-Performance"</u>.

Section X authorizes the Planning Board to revoke a special permit for failure to comply with certain conditions. We approve Section X. However, before the Planning Board revokes a permit for failure to comply with certain conditions provided in Section X, the Planning Board should discuss with Town Counsel what due process, including notice and hearing requirements, are required. We suggest that the Town discuss this issue in more detail with Town Counsel.

Finally, the word "ordinance" is used in the by-law. Towns enact "by-laws" and cities enact "ordinances." The Town may wish delete the word "ordinance" from the new Section 215-27 and insert the word "by-law" at a future Town Meeting.

<u>Article 2</u> - The amendments adopted under Article 2 add a new Section 215-28, "Solar Photovoltaic Installation Moratorium Bylaw," to the Town's zoning by-laws. The temporary moratorium (through one year from the date of enactment of Section 215-28) on solar photovoltaic installation other than those mounted on an existing structure provides as follows:

Whereas, the Town of Mount Washington is undertaking a comprehensive study with respect to regulating the use of land for Solar Photovoltaic Installations, and

Whereas, there have been significant changes in law regarding Solar Photovoltaic Installations; and,

Whereas, the Town wishes to act carefully in a field with evolving law and technology, to investigate ways to preserve the character of the community while serving the needs of its people, and to devise an orderly process for granting permits by drafting an amendment to the Bylaw which is comprehensive, practical, equitable, and addresses the concerns of the Town on number, size, appearance, site standards, and location of Solar Photovoltaic Installations; and,

Whereas, it is desired to protect the Town from ill-advised and inappropriate development of Solar Photovoltaic Installations pending a thorough review and the formulation of such a zoning amendment; and,

Whereas, the Planning Board has determined that one year is necessary for such a comprehensive review and development of a Bylaw Subsection on Solar Photovoltaic Installations.

Now, therefore, no Solar Photovoltaic Installations other than those mounted on an existing structure, in the usual manner, shall be permitted for one year from the date of enactment of this Bylaw.

We approve the temporary moratorium adopted under Article 2 because the Town has the authority to "impose reasonable time limitations on development, at least where those restrictions are temporary and adopted to provide controlled development while the municipality engages in comprehensive planning studies." <u>Sturges v. Chilmark</u>, 380 Mass. 246, 252-253 (1980). Such a temporary moratorium is within the Town's zoning power where there is a stated need for "study, reflection and decision on a subject matter of [some] complexity..." <u>W.R.</u>

<u>Grace v. Cambridge City Council</u>, 56 Mass. App. Ct. 559, 569 (2002) (City's temporary moratorium on building permits in two districts was within city's authority to zone for public purposes.) The time limit Mount Washington has selected for its temporary moratorium (one year from the date of enactment of the by-law) appears to be reasonable in the circumstances. The moratorium is limited in time period and scope (to the use of land and structures for solar photovoltaic installations), and thus does not present the problem of a rate-of-development bylaw of unlimited duration which the <u>Zuckerman</u> court determined was unconstitutional. <u>Zuckerman</u> v. <u>Hadley</u>, 442 Mass. 511, 512 (2004) ("[A]bsent exceptional circumstances not present here, restrictions of unlimited duration on a municipality's rate of development are in derogation of the general welfare and thus are unconstitutional.")

While we approve the temporary one year moratorium on solar photovoltaic installations, we note that G.L. c. 40A, § 3, protects solar energy systems and the building of structures that facilitate the collection of solar energy from certain local zoning requirements. General Laws Chapter 40A, Section 3, provides in pertinent part as follows:

No zoning ordinance or by-law shall prohibit or unreasonably regulate the installation of solar energy systems or the building of structures that facilitate the collection of solar energy, except where necessary to protect the public health, safety or welfare.

General Laws Chapter 40A, Section 3, prohibits towns from adopting zoning by-laws that prohibit or *unreasonably regulate* the installation of solar energy systems or the building of structures that facilitate the collection of solar energy, except where necessary to protect the public health, safety or welfare. A temporary moratorium longer than one year may be vulnerable to a challenge in court that it is an unreasonable regulation of solar energy systems under G.L. c. 40A, § 3. We suggest the Town consult closely with Town Counsel on this issue.

Note: Pursuant to G.L. c. 40, § 32, neither general nor zoning by-laws take effect unless the Town has first satisfied the posting/publishing requirements of that statute. Once this statutory duty is fulfilled, (1) general by-laws and amendments take effect on the date these posting and publishing requirements are satisfied unless a later effective date is prescribed in the by-law, and (2) zoning by-laws and amendments are deemed to have taken effect from the date they were approved by the Town Meeting, unless a later effective date is prescribed in the by-law.

Very truly yours, MARTHA COAKLEY ATTORNEY GENERAL

Kelli E. Gunagan

By: Kelli E. Gunagan Assistant Attorney General Municipal Law Unit 10 Mechanic Street, Suite 301 Worcester, MA 01608 (508) 792-7600

cc: Town Counsel Joel Bard (via electronic mail)



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Maura Healey Attorney General

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February 10, 2015

Trudy L. Reid, Town Clerk Town of Lynnfield 55 Summer Street Lynnfield, MA 01940

RE: Lynnfield Fall Annual Town Meeting of October 20, 2014 - Case # 7408 Warrant Articles # 12, 13 and 14 (Zoning) Warrant Articles # 16 and 17 (General)

Dear Ms. Reid:

Articles 12, 13, 14, 16 and 17 - We approve Articles 12, 13, 14, 16 and 17 from the October 20, 2014 Lynnfield Fall Annual Town Meeting. Our comments regarding Article 14 are provided below.

<u>Article 14</u> - Article 14 makes a number of changes to the Town's zoning by-laws pertaining to Radio Telecommunication Facilities (RTF) and Personal Wireless Service Facilities (PWSF) including adding new definitions to Section 2, amending Section 7.4, "Site Plan" to add a new sub-section 7.4A "Additional Requirements for Personal Wireless Service Facilities"; and amending Section 8, "Special Permits" to add a new sub-section 8.7, "Siting of Radio Telecommunications Facilities."

I. Applicable Law

The federal Telecommunications Act of 1996, 47 U.S.C. § 332 (7) preserves state and municipal zoning authority to regulate personal wireless service facilities, subject to the following limitations:

- 1. Zoning regulations "shall not unreasonably discriminate among providers of functionally equivalent services." 47 U.S.C. §332(7) (B) (i) (I)
- 2. Zoning regulations "shall not prohibit or have the effect of prohibiting the provisions of personal wireless services." 47 U.S.C. § 332 (7) (B) (i) (II).
- The Zoning Authority "shall act on any request for authorization to place, construct, or modify personal wireless service facilities within a reasonable period of time." 47 U.S.C. § 332 (7) (B) (ii).

- 4. Any decision "to deny a request to place, construct, or modify personal wireless service facilities shall be in writing and supported by substantial evidence contained in a written record." 47 U.S.C. § 332 (7) (B) (iii).
- 5. "No state or local government or instrumentality thereof may regulate the placement, construction and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the [Federal Communications] Commission's regulations concerning emissions." 47 U.S.C. § 332(7) (B) (iv).

Federal courts have construed the limitations listed under 47 U.S.C. § 332(7) as follows. First, even a facially neutral by-law may have the effect of prohibiting the provision of wireless coverage if its application suggests that no service provider is likely to obtain approval. "If the criteria or their administration effectively preclude towers no matter what the carrier does, they may amount to a ban 'in effect'...." <u>Town of Amherst, N.H. v. Omnipoint Communications Enters, Inc.</u>, 173 F.3d 9, 14 (1st Cir. 1999).

Second, local zoning decisions and by-laws that prevent the closing of significant gaps in wireless coverage have been found to effectively prohibit the provision of personal wireless services in violation of 47 U.S.C. § 332(7). See, e.g., Nat'l Tower, LLC v. Plainville Zoning Bd. of Appeals, 297 F.3d 14, 20 (1st Cir. 2002) ("local zoning decisions and ordinances that prevent the closing of significant gaps in the availability of wireless services violate the statute"); Omnipoint Communications MB Operations, LLC v. Town of Lincoln, 107 F. Supp. 2d 108, 117 (D. Mass. 2000) (by-law resulting in significant gaps in coverage within town had effect of prohibiting wireless services).

Third, whether the denial of a permit has the effect of prohibiting the provision of personal wireless services depends in part upon the availability of reasonable alternatives. See <u>360 Degrees Communications Co. v. Bd. of Supervisors</u>, 211 F.3d 79, 85 (4th Cir. 2000). Zoning regulations must allow cellular towers to exist somewhere. Towns may not effectively ban towers throughout the municipality, even under the application of objective criteria. <u>See Virginia Metronet, Inc. v. Bd. of Supervisors</u>, 984 F. Supp. 966, 971 (E.D. Va. 1998).

State law also establishes certain limitations on a municipality's authority to regulate wireless communications facilities and service providers. Under General Laws Chapter 40A, Section 3, wireless service providers may apply to the Department of Telecommunications and Cable for an exemption from local zoning requirements. If a telecommunication provider does not apply for or is not granted an exemption under c. 40A, § 3, it remains subject to local zoning requirements pertaining to cellular towers. <u>See Building Comm'r of Franklin v. Dispatch Communications of New England, Inc.</u>, 48 Mass. App. Ct. 709, 722 (2000). Also, G.L. c. 40J, § 6B, charges the Massachusetts Broadband Institute with the task of promoting broadband access throughout the state. Municipal regulation of broadband service providers must not frustrate the achievement of this statewide policy.

In addition, Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012 requires that "[A] state or local government *may not deny, and shall approve*, any eligible

facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station." (emphasis added). The Act defines "eligible facilities request" as any request for modification of an existing wireless tower or base station that involves: 1) collocation of new transmission equipment; 2) removal of transmission equipment; or 3) replacement of transmission equipment. The Act applies "[n]otwithstanding section 704 of the Telecommunications Act of 1996." The Act's requirement that a local government "may not deny, and shall approve, any eligible facilities request" means that a request for modification to an existing facility that does not substantially change the physical dimensions of the tower or base station must be approved. Such qualifying requests also cannot be subject to a discretionary special permit.

The Town must apply Article 14 in a manner consistent with the applicable law outlined above. In particular, Section 8.7.5.1 requires that PWSF may only be erected upon the grant of a special permit. The Town cannot apply this requirement to eligible facilities requests for modification to existing facilities that qualify for required approval under Section 6409 of the Act. We also urge the Town to consult closely with Town Counsel regarding the appropriate response to applications for collocation in light of these recent amendments.

II. Section 8.7, Siting of Radio Telecommunications Facilities

A. <u>Section 8.7.2, Purpose</u>

Section 8.7.2 provides that the purpose of the by-law is to establish general guidelines for the siting of RTFs. Section 8.7.2 (4) establishes one of the by-law's goals as "[t]o make all RTF locations available for municipal agencies use where feasible."

It is unclear whether Section 8.7.2 (4) would require the Town's use of the RTF, and whether such use would be compensated or uncompensated. When applying the by-law, the Town cannot require an applicant to transfer property to the public without fair compensation. "The Fifth Amendment to the United States Constitution, made applicable to the States through the Fourteenth Amendment, provides that private property shall not 'be taken for public use, without just compensation." This protection is "designed to bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole." Giovanella v. Conservation Commission of Ashland, 447 Mass. 720, 724 (2006) (quoting Armstrong v. United States, 364 U.S. 40, 49 (1960). More recently, the court in Collins v. Stow, 79 Mass. App. Ct. 447 (2011) ruled that a town cannot condition subdivision approval on the dedication of open space for public use and actual conveyance of the land to the Town in exchange for waivers. "Although a planning board's authority under the subdivision control law certainly encompasses, in appropriate circumstances, requiring open space, it does not extend to requiring the transfer of that open space to the public for reasons unrelated to adequate access and safety of the subdivision without providing just compensation." Id. at 453. We suggest that the Town consult with Town Counsel regarding the proper application of Section 8.7.2 (4).

B. <u>Section 8.7.5.4, General</u>

Section 8.7.5.4.1 provides in relevant part that:

An undertaking shall be required, secured by a BOND appropriate in form and amount for removal of the PWSF within 6 months of cessation of operation of said facility or such other activity which may be appropriate to prevent the structures from becoming a nuisance or aesthetic blights.

The Town must apply any bond proceeds in a manner consistent with state law. Bond proceeds do not become Town funds unless and until the applicant defaults on the obligation under the by-law. Moreover, if the Town must use the bond to pay for removal of a PWSF or for other activity to prevent nuisance or blight, an appropriation is required before expenditure is made to do the work. General Laws Chapter 44, Section 53, provides that "[a]ll moneys received by a city, town or district officer or department, except as otherwise provided by special acts and except fees provided for by statute, shall be paid by such officers or department upon their receipt into the city, town or district treasury." Under Section 53 all moneys received by the Town become a part of the general fund, unless the Legislature has expressly made other provisions that are applicable to such receipt. In the absence of any general or special law to the contrary, performance security funds of the sort contemplated here must be deposited with the Town Treasurer and made part of the Town's general fund, pursuant to G.L. c. 44, § 53. The Town must then appropriate the money for the specific purpose of completing the work required for removal and/or other activities. The Town should consult with Town Counsel regarding the proper application of Section 8.7.5.4.

C. <u>Section 8.7.5.5</u>, Application Procedures

Section 8.7.5.5 pertaining to the Special Permit application provides in relevant part, that:

The Application Phase of the process begins with the receipt by the SPGA of a complete application including all materials required by the Zoning Bylaw and any applicable regulations.

Within 30 days of receipt, the SPGA or its designee shall review the application for consistency and completeness with respect to the Application Requirements in the bylaw and any applicable regulations and shall notify the Applicant in writing of any deficiency in the completeness of the application.

The SPGA shall take regulatory notice of the Federal Communications Commission (FCC) presumption that the final action of the SPGA on a new Antenna Tower should take no more than 150 days from the date of receipt of the completed application, and that final action on a Collocation or Site Sharing application should take no more than 90 days from the date of receipt of the completed application except upon written

extension of these timelines by mutual agreement between the SPGA and the Applicant.

Section 8.7.5.5 must be applied in a manner consistent with the time limits established in G.L. c. 40A, § 9. General Laws Chapter 40A, Section 9, requires that the special permit granting authority "shall hold a public hearing for which notice has been given as provided in section eleven, on <u>any application</u> for a special permit within sixty-five days from the date of filing of such application. . . . The decision of the special permit granting authority shall be made within ninety days following the date of such public hearing. . . Failure by the special permit granting authority to take final action within . . . ninety days . . . shall be deemed to be a grant of the special permit." (emphasis added).

Pursuant to G.L. c. 40A, § 9, the filing of a special permit application "starts the clock" on the time period within which the special permitting authority must act. Section 8.7.5.5 cannot be applied in a manner that "starts the clock" only when a *completed* application is filed. The Town must apply Section 8.7.5.5 consistent with G.L. c. 40A, § 9. *See* <u>Massachusetts Broken</u> <u>Stone Co. v. Town of Weston</u>, 430 Mass. 637, 642 (2000). The Town should consult with Town Counsel regarding the proper application of Section 8.7.5.5.

<u>Note</u>: Pursuant to G.L. c. 40, § 32, neither general nor zoning by-laws take effect unless the Town has first satisfied the posting/publishing requirements of that statute. Once this statutory duty is fulfilled, (1) <u>general</u> by-laws and amendments take effect on the date these posting and publishing requirements are satisfied unless a later effective date is prescribed in the by-law, and (2) <u>zoning</u> by-laws and amendments are deemed to have taken effect from the date they were approved by the Town Meeting, unless a later effective date is prescribed in the by-law.

Very truly yours,

MAURA HEALEY ATTORNEY GENERAL

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cc: Town Counsel Thomas Mullen



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February 23, 2015

Debra A. Bourbeau, Town Clerk Town of Montague 1 Avenue A Montague, MA 01376

RE: Montague Special Town Meeting of October 29, 2014 - Case # 7451 Warrant Article # 17 (Zoning)

Dear Ms. Bourbeau:

<u>Article 17</u> - We approve Article 17 from the October 29, 2014 Montague Special Town Meeting. Article 17 amends several portions of the Town's zoning by-laws pertaining to site plan review.

1. <u>Section 5.2 (d)</u>, Permitted Uses and Special Permits - Procedures

Section 5.2 (d) was deleted in its entirety and replaced with new text that provides as follows (with emphasis added):

All applications for Special Permits and Site Plan Review from the Board of Appeals or the Planning Board shall be subject to the procedural requirements established by the respective Board. The Board of Appeals or Planning Board may determine that the assistance of outside professional expertise is required due to the size, scale, or complexity of a given project or its potential impact on the health, safety, and welfare of the Town. <u>When outside review is determined to be necessary, the Board may require the applicant pay all reasonable expenses for this purpose, in accordance with the Board's regulations and M.G.L. Chapter 44 Section 53G.</u>

General Laws Chapter 44, Section 53G, authorizes zoning boards, planning boards, boards of health, and conservation commissions, acting under authority conferred by G.L. c. 40A, § 9 and 12, c. 41, § 81Q, c. 40B, § 21, c. 111; and c. 40, § 8C, to impose consultant review fees, to disburse the funds collected, and to return unused portions to the applicant. However, the Legislature did not include Boards acting under the authority conferred solely by a local law within the small class of local boards that enjoy the benefits of G.L. c. 44, § 53G. When the Board is reviewing a site plan application based solely on the authority granted under local law, it cannot avail itself of the provisions of G.L. c. 44, § 53G. We suggest that the Town discuss this issue in more detail with Town Counsel.

2. <u>Section 7.5.2, Telecommunication Facilities - General Provisions</u>

Section 7.5.2, was deleted in its entirety and replaced with new text that provides as follows:

Telecommunication Facilities may be allowed by Special Permit from the Board of Appeals pursuant to Sections 5.2 and Section 7.5. Conditions shall maximize the shared use of any new or existing structures to minimize the required number of such facilities; and shall minimize[e] adverse visual impacts through careful design, siting, and screening. No facility shall be located in a (RS) Residential District. (see: Section 2, Definitions).

Section 7.5.2 must be applied in a manner consistent with Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012, which requires that "[A] state or local government *may not deny, and shall approve*, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station." (emphasis added). The Act defines "eligible facilities request" as any request for modification of an existing wireless tower or base station that involves: 1) collocation of new transmission equipment; 2) removal of transmission equipment; or 3) replacement of transmission equipment. The Act applies "[n]otwithstanding section 704 of the Telecommunications Act of 1996." The Act's requirement that a local government "may not deny, and shall approve, any eligible facilities request" means that a request for modification to an existing facility that does not substantially change the physical dimensions of the tower or base station that a physical dimensions of the tower or base station that a request for modification to an existing facility that does not substantially change the physical dimensions of the tower or base station must be approved. Such qualifying requests also cannot be subject to a discretionary special permit.

The Town must apply Section 7.5.2 in a manner consistent with the applicable law outlined above. We also urge the Town to consult closely with Town Counsel regarding the appropriate response to applications for collocation in light of these recent amendments.

<u>Note</u>: Pursuant to G.L. c. 40, § 32, neither general nor zoning by-laws take effect unless the Town has first satisfied the posting/publishing requirements of that statute. Once this statutory duty is fulfilled, (1) general by-laws and amendments take effect on the date these posting and publishing requirements are satisfied unless a later effective date is prescribed in the by-law, and (2) zoning by-laws and amendments are deemed to have taken effect from the

date they were approved by the Town Meeting, unless a later effective date is prescribed in the by-law.

Very truly yours,

MAURA HEALEY ATTORNEY GENERAL

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cc: Town Counsel Gregg J. Corbo