

TOWN OF DOVER  
RECEIVED

2020 JAN 14 P 3:54



PLANNING BOARD  
DOVER, MASSACHUSETTS

TOWN CLERK

### APPLICATION FOR SPECIAL PERMIT

DATE SUBMITTED: 1/13/20

**INSTRUCTIONS:** Submit to the Town Clerk five (5) copies of this form and plans (for the Planning Board (2), Town Clerk, Conservation Commission, and Consulting Engineer) and one check, payable to the Town of Dover for the appropriate amount as indicated on Form F of the Rules and Regulations of the Town of Dover Planning Board.

**Applicant Name and Contact:**

Name: Cellco Partnership (formerly Bell Atlantic Mobile Systems)  
d/b/a Verizon Wireless  
Address: c/o Jonathan McNeal, SAI Group  
12 Industrial Way, Salem, NH 03079  
Telephone: 603-738-0002

**Owner Name and Contact:**

Name: Town of Dover  
Address: 5 Springdale Avenue  
Dover, MA 02030  
Telephone: 508-785-0032

**Permit Desired:** Amendment to Special Permit for Wireless Communication Facility  
and any other relief the Dover Planning Board deems appropriate. See attached application narrative.



Description of Premises : Telecommunications Tower on Town of Dover  
DPW facility.

Location of Property: Assessors Plans, Map No. 11 Lot No. 36-A

Has there been a previous application for a special permit on these premises ? YES

If so, what was the date of the previous application? Decision dated 7/2/07

State your interest in the premises. (Owner, lessee, etc.) Lessee

Does anyone else have an interest in the premises? (Owner, lessee, mortgagee(s),  
etc.?) Owner/Lessees If so, state names and identify interest. Town of Dover  
as owner and other wireless carriers as lessees.

Name and Contact of Engineer and/or Surveyor: Hudson Design Group  
c/o Jose Xavier 978-808-9418

Source of Owner's Title:

(a) Deed from Catherine Wakefield dated 12/17/65 recorded in  
Norfolk County Registry of Deeds Book 4317, Page 243; or

(b) Land Court Certificate of Title No. \_\_\_\_\_ registered with  
Norfolk County Registry, Book \_\_\_\_\_, Page \_\_\_\_\_.

Applicant's Signature:  Date: 1/13/20

Name (printed): Jonathan McNeal, as agent for Verizon Wireless/SAI



Public Usage

# SAMSUNG CBRS RRU

Introducing the best use of shared spectrum

CBRS spectrum, the shared spectrum on 3.5 GHz, now is viewed as an alternative to the overcrowded LTE spectrum. Globally, 3.5 GHz band is chosen as 5G main spectrum, also current CBRS band can be used for 5G service in the near future.

Samsung CBRS RRU can select the optimized spectrum from whole CBRS bands,

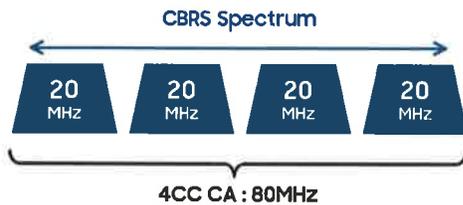


# Points of Differentiation

## Wide Bandwidth

Being able to support up to 4 CC carrier aggregation, Samsung CBRS RRU can support 80 MHz bandwidth in the 3.5 GHz shared spectrum.

Because the CBRS is shared spectrum, it may have its own limitation according to region and environment. Samsung CBRS RRU can use all CBRS 150 MHz bands at the same time, so it can select the best band to avoid the frequency which is used by other operators or other equipment.



## OPEX Reduction

Antenna and AC/DC converter can be easily installed on the Samsung CBRS RRU. Antenna can be mounted on the front of it by a simple Clip-on method and AC/DC converter can be mounted by its side.

Operators can reduce their renting cost as antenna and AC/DC converter can be directly installed on the CBRS RRU without using extra footprint.



## Future Proof Product

Samsung CBRS RRU supports eCPRI interface, thus, it can be used as 5G RU in the future. To provide 5G service, operators only need to update software since the hardware is already ready.

By band carrier aggregation between macro and CBRS, it can provide high data traffic requirement services such as HD video streaming, drone and AR/VR.



## Easy Installation

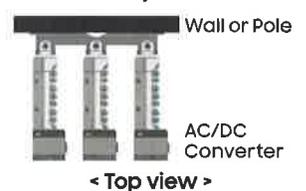
A single worker can easily install this product in various places such as wall, pole and tower with its small volume.

In addition, it is possible to install 2 or 3 products by using 'Back to back' method or 'Side by side' method. Therefore, operators can effectively utilize their installation space.

Back to back



Side by side



# Technical Specifications

Item	Specification
Tech	LTE/5G NR ready (Support eCPRI)
Band	Band48 (3.5 GHz)
Frequency Band	3550 ~ 3700 MHz
RF Power	Total 20 W = 43 dBm (4 x 5 W)
IBW/OBW	150 MHz / 80 MHz
Installation	Pole/Wall/Tower (Back to back, Side by side)
Weight/Size	RRH : 230 x 227 x 76mm (3.97L), 9kg Antenna : 231 x 231 x 30mm(1.6L), 819g AC/DC : 218 x 87 x 92.6 mm( 1.76L), 1.45Kg RRH + antenna : 327 x 230 x 104.5 mm(7.86L) RRH + AC/DC : 230 x 292 x 92.6 mm (6.22L) RRH + antenna + AC/DC : 327 x 292 x 104.5(9.98L)

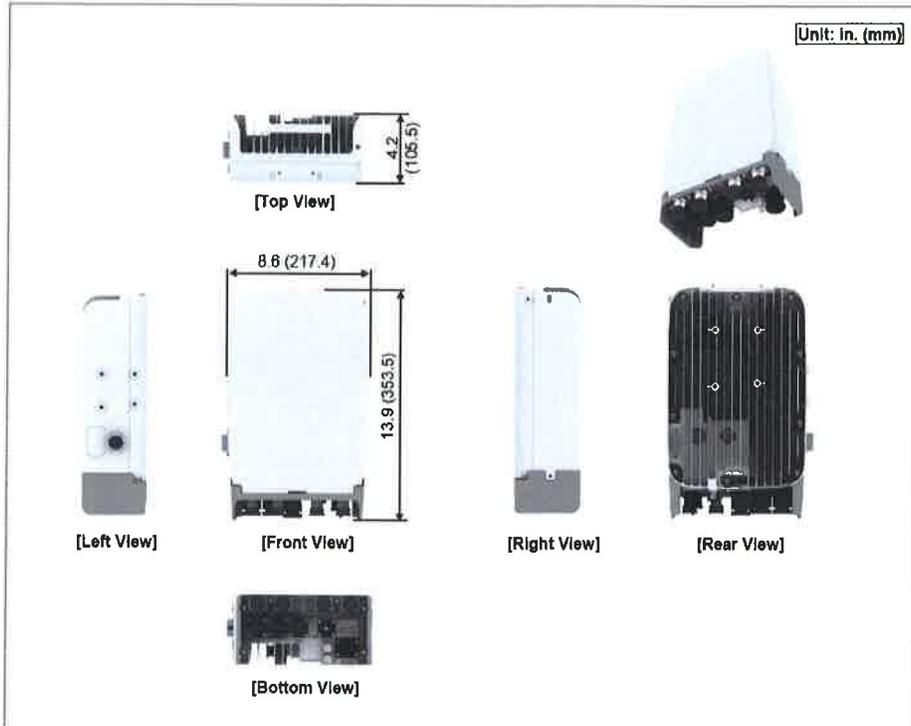
12 87"x11 49"x4 09" 24 83lbs

## What is CBRS ?

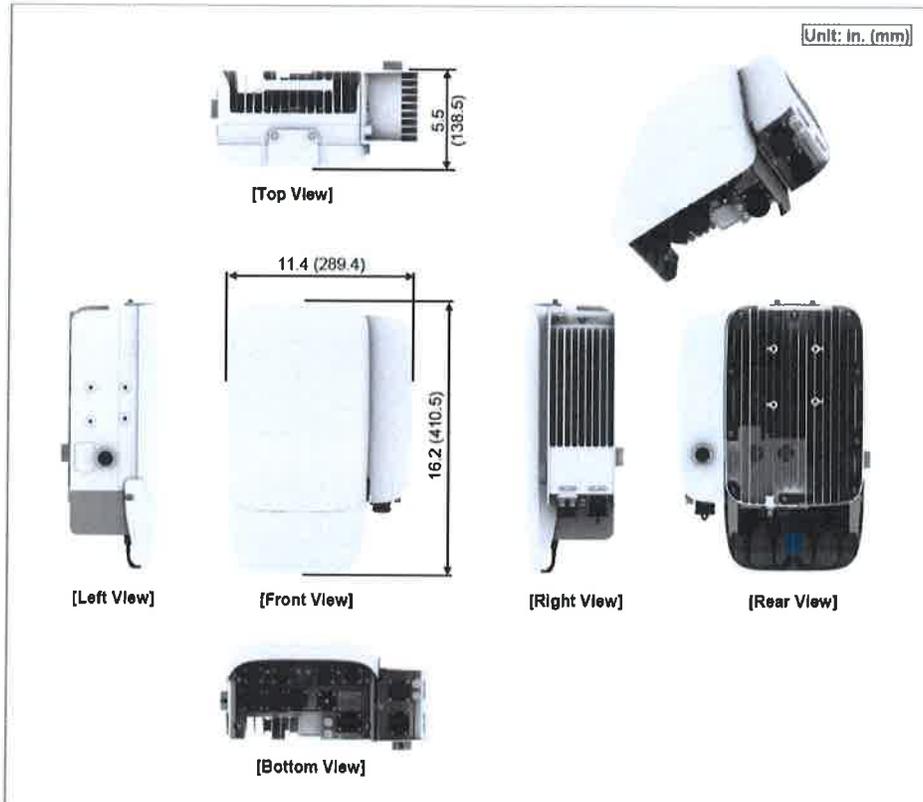
Citizens Broadband Radio Service (CBRS) is a 150 MHz band of the 3.5 GHz. Some of Spectrum will continue to be used by the US government for radar system. In 2015, FCC authorized the use of the 3.5 GHz band (3,550 MHz to 3,700 MHz) for shared wireless access.

To use CBRS spectrum, must request and be assigned a band by a Spectrum Access System (SAS). The SAS calculates RF density and channel availability using terrain, radio propagation and current usage data before approving the request and allocating the spectrum.

# RRH Alone



# RRH with Clip-On Antenna & AC/DC Power Unit





January 13, 2020

Carol Chirico, Chair  
Dover Massachusetts Planning Board  
5 Springdale Avenue  
Dover, MA 02030

Re: Verizon Wireless- Modifications to Existing Mobile Communications Facility  
2 Dedham Street, Dover, MA

Dear Chair Chirico:

This application is submitted on behalf of Cellco Partnership d/b/a Verizon Wireless ("Verizon Wireless") (formerly Bell Atlantic Mobile Systems, Ltd.) in support of the request to modify Verizon Wireless' existing tower-mounted mobile communications facility on property owned by the Town of Dover and located at 2 Dedham Street (the "Existing Facility"). The Existing Facility was approved by the Dover Planning Board by Special Permit on July 2, 2007.

Verizon proposes to install 3 new combined antennas/radio units. (Please see attached plans and equipment specifications)

Verizon Wireless has and shall comply with all FCC and other federal regulations regarding radio-frequency emissions.

#### 6409

Verizon Wireless asserts that the modifications to the existing facility should be "by right" (with no further zoning review) under federal law.

The federal law commonly known as "6409" should govern these proposed modifications.

6409 States: "(n)otwithstanding section 704 of the Telecommunications Act of 1996, .... 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." Pursuant to the FCC Regulations, an "eligible facilities request" means "any request for modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station, involving.... Collocation of new transmission equipment... or replacement of transmission equipment", "Transmission equipment is defined to include not only antennas but also all equipment that facilitates transmission" for a FCC-Licensed or authorized wireless

12 Industrial Way  
Salem, NH 03079

communication service, including, but not limited to 'radio transceivers, antennas, coaxial or fiber-optic cable, and regular and backup power supply'"

Consequently, the existing tower at 2 Dedham Street that is the subject of this request constitutes a "base station" in that it currently "supports or house" wireless communication equipment that has been reviewed and approved by the Town of Dover Zoning Bylaw, i.e., the existing Verizon Wireless installation was approved by the Town of Dover previously. The proposed addition of 3 antenna/RRU does not "substantially change the physical dimensions" as defined by the FCC Regulations because it:

- Does not involve the installation of more than the standard number of equipment cabinets (no cabinets to be added)
- Does not entail excavation or deployment outside of the current site (all changes are taking place to the installation on the building itself)
- Does not defeat the concealment elements of the existing facility (The new antennas/RRU do not increase the visibility of the installation.)
- Does not increase the height of the building more than 10% or ten feet (There is no increase in height)
- Does not add any appurtenances that would protrude from the edge of the tower by more than 6 feet. (There should be minimal change to the dimensions of the tower, the antennas and related equipment will protrude no more than 24" from the face of the tower.

Therefore, we respectfully request that the Town of Dover approve amending the existing Special Permit, as well as any additional relief deemed appropriate by the Board or by federal, state and municipal law. Please note that Verizon Wireless reserves all rights to object to this process and all rights to appeal available under federal, state and municipal law. Thank you.

*Jonathan McNeal*

Jonathan McNeal



**SAI Group**

12 Industrial Way

Salem, NH 03079

603-738-0002

[JMcNeal@saigrp.com](mailto:JMcNeal@saigrp.com)

12 Industrial Way  
Salem, NH 03079

# **DONALD L. HAES, JR., CHP, CLSO**

*Radiation Safety Specialist*

PO Box 198, Hampstead, NH 03841

617-680-6262

Email: donald\_haes\_chp@comcast.net

November 25, 2019

**RE: Installation of radio base station antennas and associated equipment for the proposed upgrade to the existing Verizon Wireless personal wireless services facility located on the existing monopole at 2 Dedham Street, Dover, MA.**

## **PURPOSE**

I have reviewed the information pertinent to the proposed installation upgrade at the above location. To determine regulatory compliance, theoretical calculations of maximal radio-frequency (RF) fields have been prepared. The physical conditions are that Verizon Wireless was recently approved to upgrade their personal wireless services (PWS) equipment on the existing monopole at 2 Dedham Street, Dover, MA (See Figure 2). Verizon Wireless has been approved to swap-out a total of six (6) of their directional panel antennas; two (2) each in three different "arrays" aimed 120° apart, along with their associated support equipment (e.g. remote radio head (RRH) units). This additional upgrade adds three CBRS panel antennas; one (1) per sector. The monopole currently hosts several additional PWS providers' antennas mounted at about 10-foot vertical separation heights.

This report considers the contributions of the **proposed** Verizon Wireless and **existing** PWS transmitters operating at their proposed FCC licensed capacity. The calculated values of RF fields are presented as a percent of current Maximum Permissible Exposures (%MPE) as adopted by the Federal Communications Commission (FCC),<sup>i,iii</sup> and those established by the Massachusetts Department of Public Health (MDPH).<sup>iii</sup>

## **SUMMARY**

Theoretical RF field calculations data indicate the summation of the existing maximum PWS RF fields are within the established RF exposure guidelines; see Figure 3. When added to the changes in PWS RF fields as a result of the recently approved and proposed equipment upgrades, the summation would also be within the established RF exposure guidelines; see Figure 4. This includes all publicly accessible areas, and the surrounding neighborhood in general. The results again support compliance with the pertinent sections of the Massachusetts Department of Public Health regulations regarding PWS facilities, and the FCC's guidelines for RF exposure.

Based on the results of the theoretical RF fields I have calculated, it is my expert opinion that this facility would continue to comply with all regulatory guidelines for RF exposure with the recently approved and proposed Verizon Wireless upgrade antenna and transmitter installations.

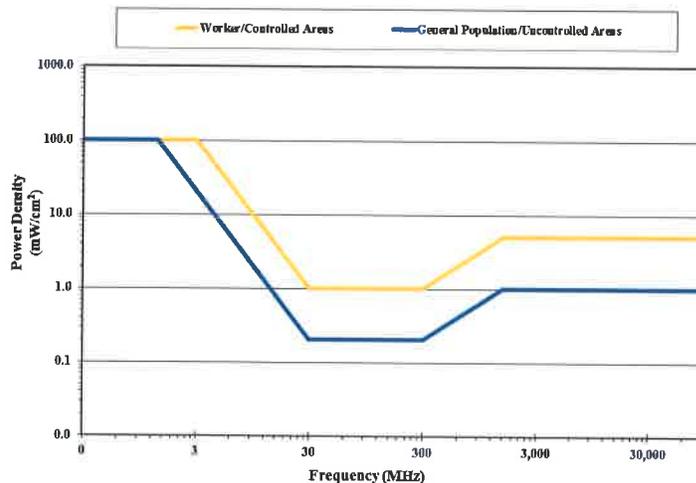
---

**Note:** The analyses, conclusions and professional opinions are based upon the precise parameters and conditions of this particular site; **Monopole at 2 Dedham Street, Dover, MA.** Utilization of these analyses, conclusions and professional opinions for any personal wireless services installation, existing or proposed, other than the aforementioned has not been sanctioned by the author, and therefore should not be accepted as evidence of regulatory compliance.

## EXPOSURE LIMITS AND GUIDELINES

RF exposure guidelines enforced by the FCC were established by the American National Standards Institute (ANSI)<sup>iv</sup> and the National Council on Radiation Protection and Measurement (NCRP).<sup>v</sup> The RF exposure guidelines are listed for RF workers and members of the public. The applicable FCC RF exposure guidelines for the public are listed in Table 1, and depicted in Figure 1. All listed values are intended to be averaged over any contiguous 30-minute period.

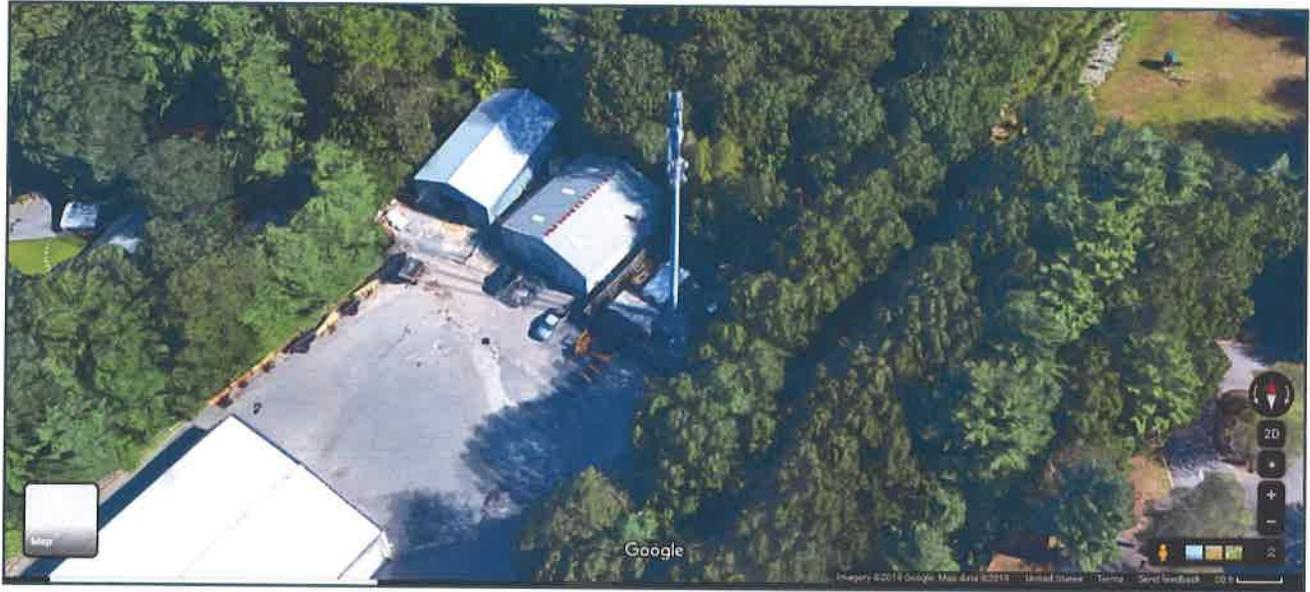
Frequency Bands	Electric Fields	Magnetic Fields	Equivalent Power Density
0.3 – 1.34 MHz	614 (V/m)	1.63 (A/m)	(100) mW/cm <sup>2</sup>
1.34 - 30 MHz	824/f (V/m)	2.19/f(A/m)	(100) mW/cm <sup>2</sup>
30 - 300 MHz	27.5 (V/m)	0.073 (A/m)	0.2 mW/cm <sup>2</sup>
300 - 1500 MHz	--	--	f/1500 mW/cm <sup>2</sup>
1500 - 100,000	--	--	1.0 mW/cm <sup>2</sup>



**Figure 1: FCC Limits for Maximum Permissible Exposure (MPE)**

**NOTE: FCC 5% Rule** – At multiple transmitter sites, actions necessary to bring the area into compliance with the RF exposure guidelines are the shared responsibility of all licensees whose transmitters produce RF field levels in excess of 5% of the applicable FCC MPEs.

## FACILITY LOCATION



**Figure 2a: Existing PWS Compound;**  
**2 Dedham Street, Dover, MA (LAT: 42.2472139°; LONG: -71.2804806°)**  
*(Picture courtesy Google Earth ©2019 and may not represent current conditions)*

### **OBSERVATIONS IN CONSIDERATION WITH FCC RULES §1.1307(B) & §1.1310**

*Will it be physically possible to stand next to or touch any omnidirectional antenna and/or stand in front of a directional antenna?*

**NO;** access to the monopole is restricted, and the site will adhere to existing RF safety guidelines regarding the transmitting antennas, including appropriate signage.

# STRUCTURAL ANALYSIS REPORT

For

**SITE NAME: DOVER RELO MA**

2 Dedham Street  
Dover, MA 02030

**Antennas Mounted on the Tower**



Prepared for:

**verizon** ✓

118 Flanders Road  
Westborough, MA 01581

Dated: December 18, 2019

Prepared by:



**HUDSON**  
Design Group LLC

45 Beechwood Drive  
North Andover, MA 01845  
(P) 978.557.5553 (F) 978.336.5586  
[www.hudsondesigngroupllc.com](http://www.hudsondesigngroupllc.com)





**HUDSON**  
Design Group LLC

#### **SCOPE OF WORK:**

Hudson Design Group LLC (HDG) has been authorized by Verizon to conduct a structural evaluation of the 135' monopole supporting the proposed Verizon's antennas located at elevation 113' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of Verizon's existing and proposed antennas listed below.

Record drawings of the existing tower prepared by Valmont, dated October 1, 2007 were available for our use. Tower mapping report prepared by ProVertic LLC, dated May 21, 2019 was provided to this office.

Record Foundation Drawings of the existing foundation prepared by Valmont, dated October 10, 2007 were available for our use.

#### **CONCLUSION SUMMARY:**

Based on our evaluation, we have determined that the existing tower is in conformance with the ANSI/TIA-222-G Standard for the loading considered under the criteria listed in this report. The tower structure is rated at 101.2 % - (Base Plate Controlling).