

November 1, 2023

Melanie A. Bachman
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modifications
Cellco Partnership d/b/a Verizon Wireless**

P2P Project – 723 Leetes Island Road, Branford, Connecticut

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently holds a license, issued by the Federal Communications Commission (“FCC”), to provide wireless communications services in the 28 GHz frequency range. To meet its FCC license requirements for frequency use and deployment, Cellco plans to deploy a new, “Point to Point” (“P2P”) 28 GHz microwave system at numerous cell sites in Connecticut. Initially, these frequencies will help Cellco maintain certain security systems currently used to monitor cell site equipment. This notice pertains to the P2P system that will be deployed at Cellco’s existing cell site at 723 Leetes Island Road in Branford, Connecticut (the “Branford South Cell Site”).

To establish the referenced P2P system, Cellco will install two (2) point to point microwave dish antennas on the roof of the existing equipment shelter at the Branford South Cell Site. Unlike the broadcast antennas on the tower, the P2P dish antennas will communicate only with each other. Shelter-mounted dish antennas will be installed at opposite ends of the shelter roof, approximately 25 feet apart, at a height of approximately twenty (20) feet above grade. The antennas would be attached to a non-penetrating ballast-mounted antenna mast. Plans with the equipment shelter view, antenna mount illustration and dish antenna specifications are included in Attachment 1.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Branford’s Chief Elected Official and Land Use Officer. A copy of this filing will also be sent to the property owner of the Branford South Cell Site facility location.

Melanie A. Bachman, Esq.
November 1, 2023
Page 2

The planned modifications to the listed facilities fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. The proposed 28 GHz antennas will be installed on roof of the existing equipment shelter, approximately 20 feet above grade.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The installation of the 28 GHz antennas will not increase radio frequency (“RF”) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Included in Attachment 2 is a Calculated Radio Frequency Emissions Report verifying that RF emissions from the Branford South Cell Site with the P2P system installed will comply with the FCC Standards.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. According to the attached October 26, 2023, letter from TEP Northeast (“TEP”), Cellco’s existing equipment shelter roof and the proposed ballast sled antenna mounting system can support the proposed 28 GHz antenna installations. A copy of the TEP letter is included in Attachment 3.

A Certificate of Mailing verifying that this filing was sent to the municipal officials and the property owner is included in Attachment 4.

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

James Cosgrove, First Selectman
Harry Smith, Town Planner
James John Medlyn, Property Owner
Aleksy Tyurin, Verizon Wireless

ATTACHMENT 1

CHECKED BY: JX
APPROVED BY: DPH

SUBMITTALS

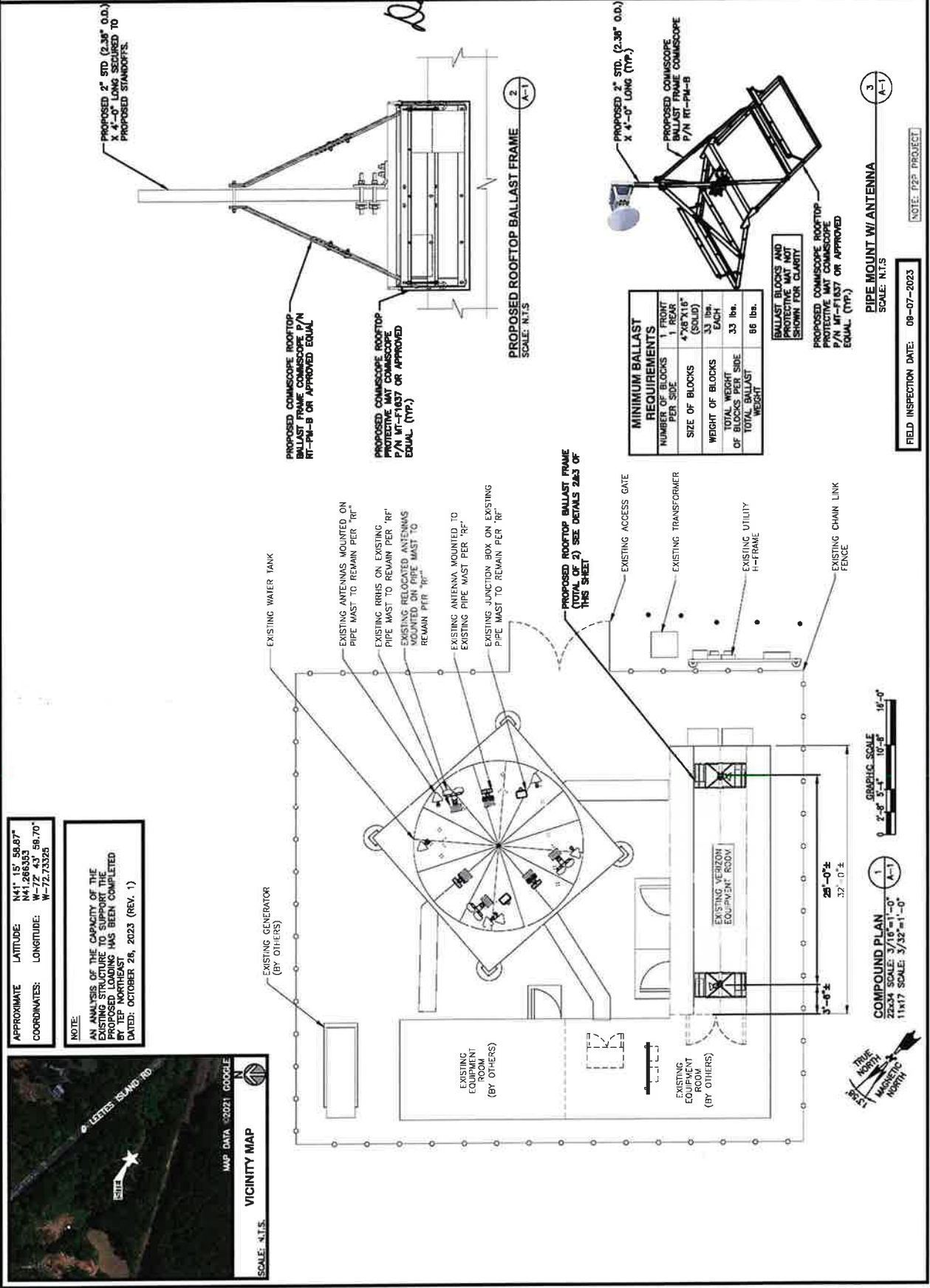
NO.	DATE	DESCRIPTION	BY
1	10/20/23	ISSUED FOR PERMITS	DPH
2	10/20/23	ISSUED FOR CONSTRUCTION	DPH

SITE NAME:
BRANFORD SOUTH CT

SITE ADDRESS:
723 LEETES ISLAND ROAD
BRANFORD, CT 06405

SHEET TITLE
COMPOUND PLAN

SHEET NUMBER
A-1



APPROXIMATE LATITUDE: N41° 15' 58.87"
LONGITUDE: W-72° 43' 58.70"
COORDINATES: W-72.73325

NOTE:
AN ANALYSIS OF THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THE PROPOSED ANTENNA HAS BEEN COMPLETED BY TEP NORTHEAST
DATED: OCTOBER 26, 2023 (REV. 1)





Technical Specifications

WTM 4100

ANSI with A2C+ Operation

General Specifications

General

Frequency Bands	5 - 38 GHz	
Physical Configurations	1+0, 2+0 ACCP (via A2C+), 2+0 XPIC (via external OMT)	
Modulation and Coding	<i>Fixed or Adaptive</i>	QPSK to 4096 QAM / Hitless AM
Channel Sizes	3.75, 5, 10, 20, 25, 30, 40, 50, 60, 80 and 100 MHz	
Capacity (standard single channel)	<i>Airlink Capacity</i>	up to 918 Mbit/s*
Capacity (A2C mode)	<i>Airlink Capacity</i>	up to 1836 Mbit/s*
Encryption	256-bit AES Payload Encryption	
Design Tools	<i>Recommended Supported</i>	Aviat Design™ on aviatcloud.com (includes MIMO, Multi-band) Pathloss 5 (basic support only)

Power Supply

Voltage	<i>DC</i>	±20 to 57V
	<i>PoE</i>	48Vdc (44 to 58Vdc)
Consumption	50 Watts nominal	
	65 Watts maximum	

Physical

Size (h-w-d), including antenna interfaces	11.5in x 10.5in x 4in (295mm x 270mm x 95mm)	
Weight, including antenna interfaces	12lbs (5.5 kg)	
Operating Temperature	<i>Guaranteed</i>	-27 to +131°F (-33° to +55°C)
	<i>Extended</i>	-49 to +159°F (-45° to +65°C) ^[1]
Humidity	<i>Guaranteed</i>	100%
Altitude	<i>Guaranteed</i>	15,000 ft (4500m)

Standards Compliance

EMC	FCC CFR 47, Part 15, ICES-003	
Operation	EN 300 019-2-4, Class 4.1	
Safety	UL 60950-1, UL 60950-22, UL 62368-1	
RF Performance	FCC CFR 47, Part 101	
	<i>All Federal Frequencies</i>	Manual of Regulations for Federal Radio Frequency Management
Maximum Permissible Exposure	EN 50385	
Water Ingress	IEC 60529, IP66	
Lightning Protection	Internal, compliant to IEC 61000-4-5, Class 5	
Security	FIPS 197 validated (Certificate A980)	

Transmitter / Receiver

Transmitter

Transmit Power Tolerance	<i>5-28 GHz</i>	± 2.0 dB
	<i>38 GHz</i>	± 2.5 dB
Transmitter Source	Synthesized	
Frequency Stability	± 5 ppm	
Manual Transmitter Power Control Range	Configurable in 0.1 dB steps from min to max power levels	
Automatic Transmitter Power Control Range	Configurable over the 20dB attenuation range	
	<i>Resolution / Speed</i>	0.1 dB steps / 50dB/s
Synthesizer Resolution	250 KHz	
Transmitter Mute	> 50 dB	

*[1] See notes in last page

Transmitter / Receiver

Receiver

Receiver Source		Synthesized
Frequency Stability		± 5 ppm
Receiver Overload	<i>BER = 1E-6</i>	-20 dBm
Residual (Background) Bit Error Rate		Better than 1E-13
RSSI Accuracy ^[4]	-30 to -70 dBm, -27 to +131°F (-33° to +55°C)	Better than ± 2.5dB
	-20 to -30 dBm, -27 to +131°F (-33° to +55°C)	Better than ± 3.5dB
	-20 to -30 dBm, -49 to +149°F (-45° to +65°C)	Better than ± 4.5dB

Networking

CE/L2

Switch capability		50 Gbps non-blocking
Quality of Service (QoS)		8 COS, Scheduling, Policing, Storm Control, Shaping
QoS Mapping		PCP (802.1p), DSCP, H-QoS
VLANs		IEEE 802.1Q and IEEE 802.1ad (Q-in-Q)
Spanning Tree		Rapid and multiple protocols (RSTP, MSTP)
Ethernet OAM		IEEE 802.3ah, IEEE 802.1ag, ITU-T Y.1731
Congestion Avoidance		WRED, per queue
		Packet Buffer – 180 Mbyte
Jumbo frames		Up to 9600 bytes

Synchronisation

Precision Time Protocol		IEEE 1588v2 TC or BC
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General Specifications

Interfaces

Traffic	2x fixed RJ45	10/100/1000BT Electrical
	2x optional SFP	1, 2.5 & 10Gbps speeds, both
		Optical (Single and Multi-mode) and Electrical
Power	Direct	24Vdc or 48Vdc
	Power over Ethernet	Via 10/100/1000BT Electrical port
USB support	Management	Local setup, sw/fw upgrade, config backup
Wireless connection		via Wifi
RSSI		Dual voltmeter pins

Management

Local Management		Configuration save & load
		Wireless USB dongle to support Wifi
		Aviat OS software upgrade
Event Capture		Event and Alarm capture, time stamp and logging
Statistics		RMON 1 Ethernet and radio performance statistics
Network Management		SNMPv2c ProVision or MIB interface support
		IPv4 addressing with an In-Band Management VLAN. Telnet or SSH access
		Aviat Cloud – Manage Advanced
Clock		Simple Network Time Protocol (SNTP V4), embedded real time clock

*[] See notes in last page



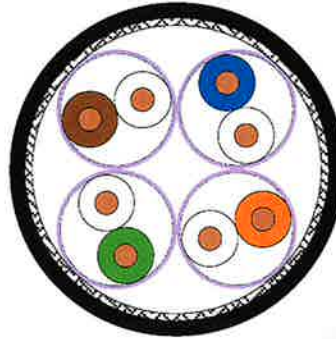
Microwave Antenna Specifications

SLA0328S3S49A20 0.3m Ultra High Performance Antenna Flange Type Rectangular



Electrical Specifications					
Frequency (GHz)	27.5~29.5				
Polarization	Single(V or H)				
Gain , Low(dBi)	37.7				
Gain, Mid(dBi)	38				
Gain, Top(dBi)	38.3				
Beam Width	2.0°				
Cross-pol. Discrimination_XPD (dB)	30				
F/B Ratio (dB)	64				
VSWR / RL (dB)	1.3/17.7				
Regulatory Compliance	ETSI EN 302217 Range 4 Class 3				
Mechanical Specifications					
Diameter (m)	0.3				
Antenna Color	Cool Gray 1C				
Radome Options	Foam				
Interface Type	UBR320 OR Customized				
Side Struts, Included	0				
Azimuth Adjustment	Coarse : 360 ° Fine : ±15 °				
Elevation Adjustment	Fine : ±15 °				
Diameter of Mounting Pole (mm)	Φ51~Φ114				
Wind Velocity Survival Rating (km/h)	252				
Wind Velocity Operational (km/h)	200				
Ice-load (mm)	25.4				
Operational Temperature (°C)	-45~+60				
Packaging	Carton				
LxWxH (mm)	480*480*267				
Wind Load Specifications					
Axial Force (N) @ survival wind speed	444				
Side Force (N) @ survival wind speed	219				
Twisting Moment (N*m) @ survival wind speed	141				
	Dimensions	ΦA	B	C	D
	(mm)	386	318	137	180
Note: 1. The values of B and C are measured at the pole diameter of 114mm 2. The thickness of the radome is not included in the dimensions of A and C					

02YSCH 4X2X0.62/1.5-100 PIMF BK Cat 6A



Design:

Wire

Bare copper wire (22AWG)
Insulation of foamed Polyethylene (PE) with skin

Ø 0.62 mm (0,024 in dia)
Ø 1.50 mm (0,059 in dia)

Screened pair

2 wires twisted to a pair
Alulaminat foil overlapped, applied longitudinally

Core:

4 screened pairs
Sequence of colors: WH/BL, WH/OR, WH/GN, WH/BR
Shield braiding of tinned copper wires
Coverage about 80%

Jacket:

Thermoplastic copolymer (FRNC)BK
Wall thickness about 0.80 mm

Ø (8.8±0.3) mm (0.346 ±0.012 in dia)

Inkjet -marking: "sequential length in metres" LEONI L * S/FTP CAT 6A SOLID CABLE 22AWG 4PR
"internal lot number"

Electrical data at 20° C

Coductor resistance	≤	65	Ohm/km
Insulation resistance	≥	5	GOhm*km
Capacitance (1kHz)		46	pF/m
Phase delay		460	ns/100 m
Skew at 100 MHz		10	ns/100 m
Characteristic impedance 100 MHz		100±10	Ohm
Operating voltage (peak)		125	V
Test voltage		1000	V

ATTACHMENT 2



C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions Report



Branford South
723 Leetes Island Road, Branford, CT 06405

September 26, 2023

Table of Contents

1. Introduction	1
2. FCC Guidelines for Evaluating RF Radiation Exposure Limits.....	1
3. RF Exposure Prediction Methods.....	2
4. Antenna Inventory	3
5. Calculation Results	4
6. Conclusion.....	6
7. Statement of Certification.....	6
Attachment A: References	7
Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)	8
Attachment C: Verizon Antenna Model Data Sheets and Electrical Patterns	10
Attachment D: Far Field Calculation Sheet.....	12

List of Figures

Figure 1: Graph of General Population % MPE vs. Distance.....	4
Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE).....	9

List of Tables

Table 1: Proposed Antenna Inventory	3
Table 2: Maximum Percent of General Population Exposure Values	5
Table 3: FCC Limits for Maximum Permissible Exposure	8

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of Verizon's 28 GHz microwave antenna to be mounted at 20' AGL on the roof of the equipment shelter located at 723 Leetes Island Road in Branford, CT. The coordinates of the monopole tower are 41° 15' 58.91" N, 72° 43' 59.69" W.

Verizon is proposing the following:

- 1) Install one (1) 28 GHz point-to-point microwave system.

This report considers the planned¹ and existing² antenna configuration for Verizon as well as existing³ antenna configuration for AT&T and T-Mobile to derive the resulting % MPE of its proposed installation.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. 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 cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm²). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment C of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment C contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

¹ As referenced to Verizon's Far Field Calculation sheet updated 06/07/2023 included in Attachment D.

² As referenced to Connecticut Siting Council Notice of Exempt Modification -723 Leetes Island Road, Branford, Connecticut, dated 04/30/2022

³ As referenced to Connecticut Siting Council Notice of Exempt Modification -723 Leetes Island Road, Branford, Connecticut, dated 04/30/2022

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{\text{GRF}^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

Ground Reflection Factor (GRF) of 1.6

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Antenna Inventory

Table 1 below outlines Verizon's existing antenna configuration for the site. The associated data sheets and antenna patterns for these specific antenna models are included in Attachment C.

Operator		TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech. Tilt	Length (ft)	Antenna Centerline Height (ft)
Verizon	Alpha	750	160	14.5	4509	JAHH-65B-R3B	67	0	6.1	90
		850	160	15.8	6083		65			
		1900	160	18.4	11069		63			
		2100	160	18.5	11327		65			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	90
	Beta	750	160	14.5	4509	JAHH-65B-R3B	67	0	6.1	90
		850	160	15.8	6083		65			
		1900	160	18.4	11069		63			
		2100	160	18.5	11327		65			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	90
	Gamma	750	160	14.5	4509	JAHH-65B-R3B	67	0	6.1	90
		850	160	15.8	6083		65			
		1900	160	18.4	11069		63			
		2100	160	18.5	11327		65			
		3700	200	25.5	70963	MT6407-77A	-	0	2.92	90
P2P	28000	0.2	38	1287	SLA0328S3S49A20	2.0	0	1	20	

Table 1: Proposed Antenna Inventory

5. Calculation Results

The calculated power density results are shown in Figure 1 below. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 5 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

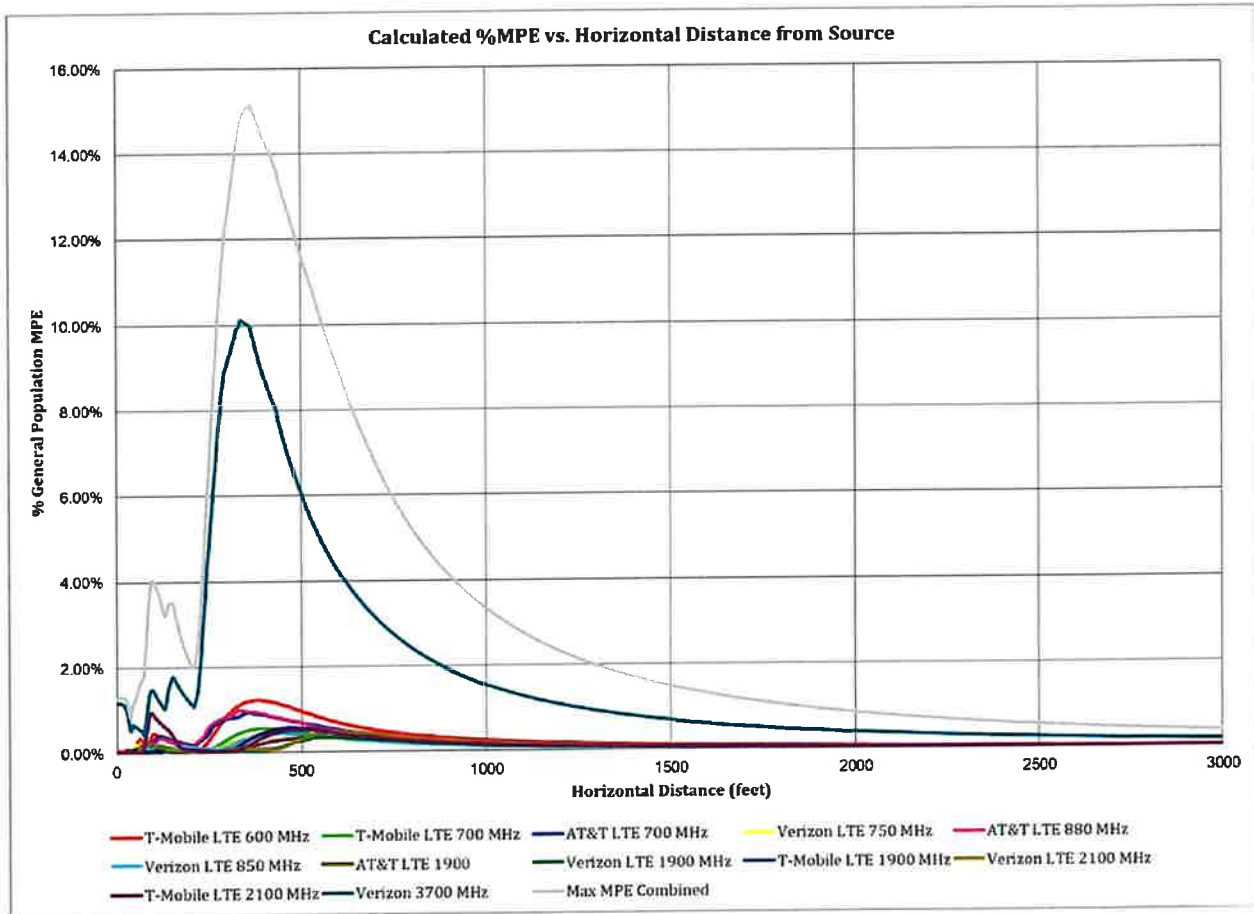


Figure 1: Graph of General Population % MPE vs. Distance

The highest combined value for % MPE for existing emitters (15.14% of the General Population limit) is calculated to occur at a horizontal distance of 364 feet from antennas. The maximum %MPE generated by the proposed 28 GHz microwave system is 0.06% and occurs at the distance of 516 feet. While the peak % MPE generated by the proposed 28 GHz microwave system does not occur at the same point as the peak cumulative %MPE for all existing emitters, as a very conservative calculation of the total %MPE, we add the 15.14% predicted at 364 feet to the 0.06% predicted for the 28 GHz system at 516 feet to arrive at a total maximum % MPE of 15.20%.

Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 1500 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. The highest percent of MPE value was calculated to occur at a horizontal distance of 364 feet from the site (reference Figure 1).

As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. In addition, a six foot height offset was considered in this analysis to account for average human height. As a result, the predicted signal levels are significantly higher than the actual signal levels will be from the final configuration. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm ²)	Limit (mW/cm ²)	% MPE
AT&T LTE 1900	1	160.0	100.0	364	0.001546	1.000	0.15%
AT&T LTE 700 MHz	1	160.0	100.0	364	0.004322	0.467	0.93%
AT&T LTE 880 MHz	1	160.0	100.0	364	0.005570	0.587	0.95%
T-Mobile LTE 1900 MHz	2	60.0	80.0	364	0.003294	1.000	0.33%
T-Mobile LTE 2100 MHz	2	60.0	80.0	364	0.002107	1.000	0.21%
T-Mobile LTE 600 MHz	1	140.0	80.0	364	0.004837	0.400	1.21%
T-Mobile LTE 700 MHz	2	30.0	80.0	364	0.002499	0.467	0.54%
Verizon 3700 MHz	1	200.0	90.0	364	0.099404	1.000	9.94%
Verizon LTE 1900 MHz	1	160.0	90.0	364	0.000534	1.000	0.05%
Verizon LTE 2100 MHz	1	240.0	90.0	364	0.000905	1.000	0.09%
Verizon LTE 750 MHz	1	160.0	90.0	364	0.001896	0.500	0.38%
Verizon LTE 850 MHz	1	160.0	90.0	364	0.002066	0.567	0.36%
						Total	15.14%
Verizon LTE 28GHz	1	0.2	20.0	516	0.001248	1.000	0.06%
						Grand Total	15.20%

Table 2: Maximum Percent of General Population Exposure Values

6. Conclusion

The above analysis verifies that RF exposure levels from the site with Verizon's proposed 28 GHz microwave antenna will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE in consideration of all existing transmitters and the proposed 28 GHz microwave system is calculated to be 15.20% of the FCC limit (General Population/Uncontrolled). This maximum cumulative percent of MPE value is calculated to occur 364 feet away from the site.

7. Statement of Certification

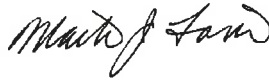
I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Report Prepared By: Ram Acharya
RF Engineer 1
C Squared Systems, LLC

September 25, 2023

Date



Reviewed/Approved By: Martin Lavin
Senior RF Engineer
C Squared Systems, LLC

September 26, 2023

Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Verizon's Radio Frequency Design Sheet updated 10/21/2022

AT&T's filing, Connecticut Siting Council Notice of Exempt Modification – Antenna Add - 723 Leetes Island Road (aka 1 Service Road) Branford, CT, dated 9/23/2022

As referenced to Dish Wireless LLC's filing, Connecticut Siting Council Tower Share Application – 723 Leetes Island Road , Branford, CT, dated 11/19/2021

T-Mobile's filing, Connecticut Siting Council Notice of Exempt Modification – 723 Leetes Island Road , Branford, CT, dated 10/1/2020

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure⁴

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time 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	6

(B) Limits for General Population/Uncontrolled Exposure⁵

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time 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

Table 3: FCC Limits for Maximum Permissible Exposure

⁴ 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 occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

⁵ 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 cannot exercise control over their exposure.

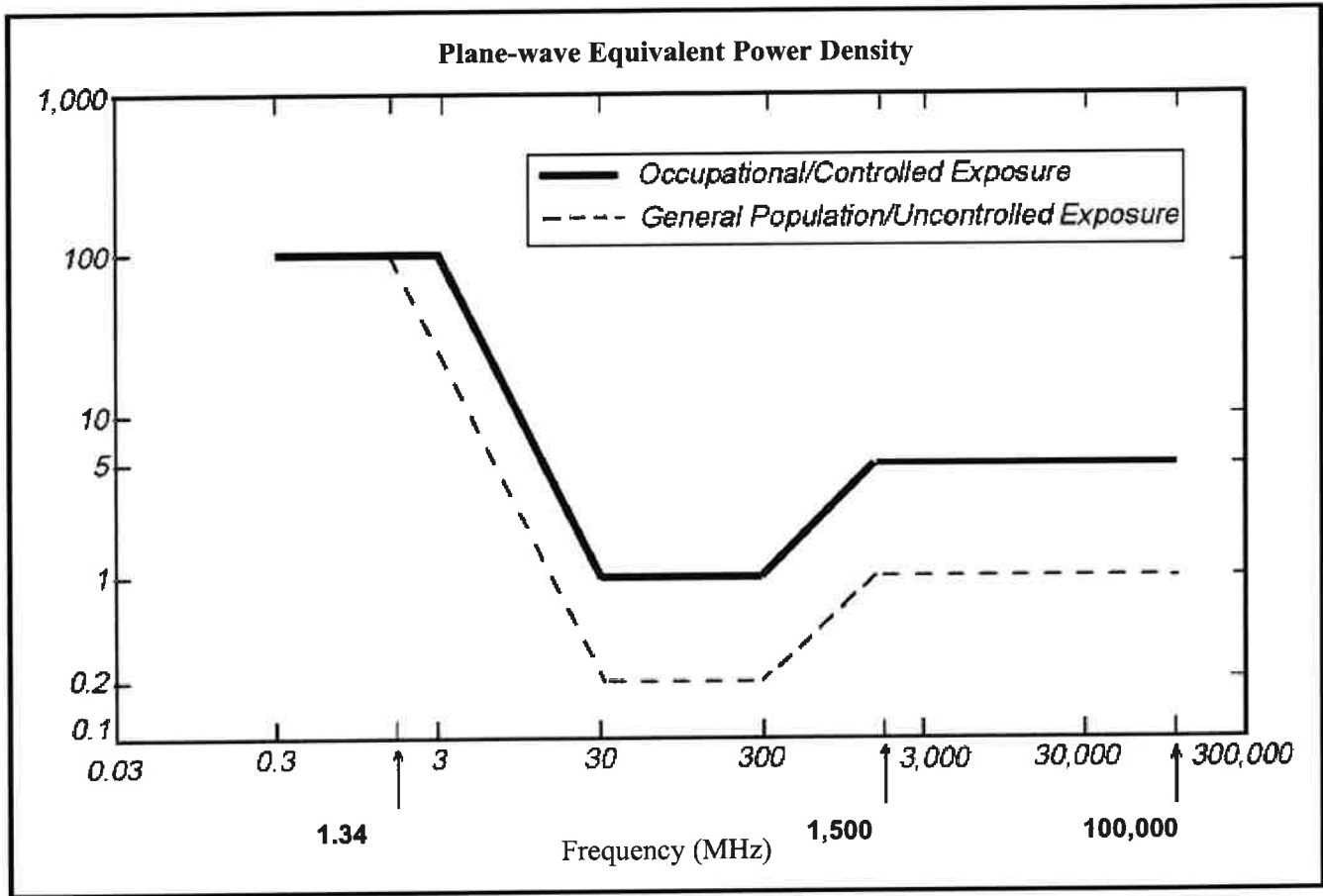
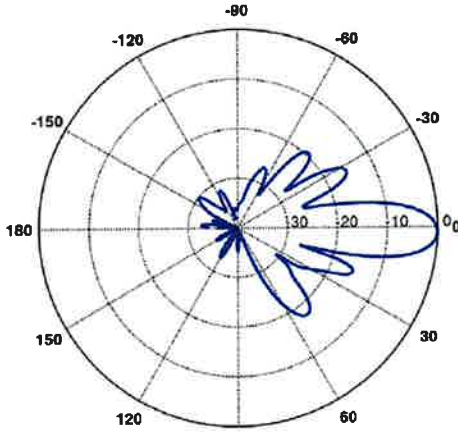
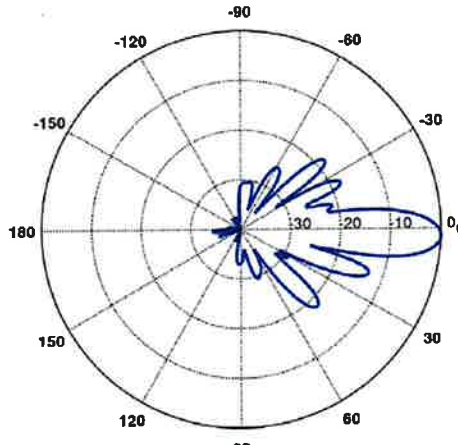
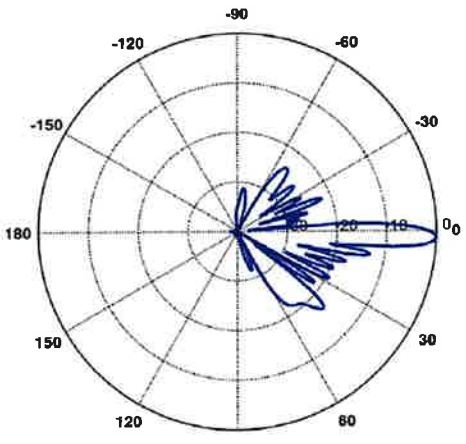
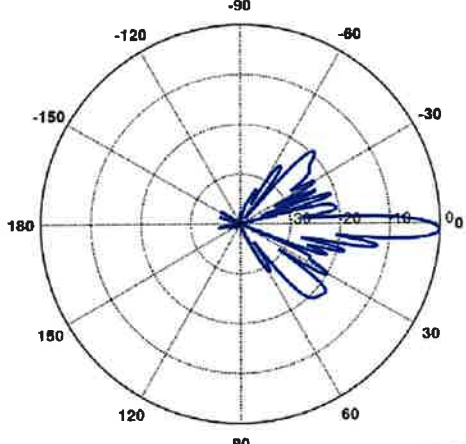


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Verizon Antenna Model Data Sheets and Electrical Patterns

<p>LTE 750 MHz</p> <p>Manufacturer: COMMSCOPE Model #: JAHH-65B-R3B Frequency Band: 698-787 MHz Gain: 14.5 dBi Vertical Beamwidth: 12.4° Horizontal Beamwidth: 67° Polarization: ±45° Dimensions (L x W x D): 72.97" x 13.78" x 8.20"</p>	 <p>A polar plot showing the radiation pattern for the LTE 750 MHz antenna. The plot is circular with concentric grid lines representing gain levels and radial lines representing angles from 0° to 180° in 30-degree increments. The main lobe is centered at 0° and extends to approximately 10 dBi. There are several side lobes, with the largest one at approximately 30° reaching about 5 dBi. The pattern is roughly symmetric about the 0° axis.</p>
<p>LTE 850 MHz</p> <p>Manufacturer: COMMSCOPE Model #: JAHH-65B-R3B Frequency Band: 824-894 MHz Gain: 15.8 dBi Vertical Beamwidth: 10.5° Horizontal Beamwidth: 65° Polarization: ±45° Dimensions (L x W x D): 72.97" x 13.78" x 8.20"</p>	 <p>A polar plot showing the radiation pattern for the LTE 850 MHz antenna. The plot is circular with concentric grid lines representing gain levels and radial lines representing angles from 0° to 180° in 30-degree increments. The main lobe is centered at 0° and extends to approximately 10 dBi. There are several side lobes, with the largest one at approximately 30° reaching about 5 dBi. The pattern is roughly symmetric about the 0° axis.</p>

<p>LTE 1900 MHz</p> <p>Manufacturer: COMMSCOPE Model #: JAHH-65B-R3B Frequency Band: 1850-1990 MHz Gain: 18.4 dBi Vertical Beamwidth: 5.2° Horizontal Beamwidth: 63° Polarization: ±45° Dimensions (L x W x D): 72.97" x 13.78" x 8.20"</p>	
<p>LTE 2100 MHz</p> <p>Manufacturer: COMMSCOPE Model #: JAHH-65B-R3B Frequency Band: 1920-2200 MHz Gain: 18.5 dBi Vertical Beamwidth: 4.9° Horizontal Beamwidth: 65° Polarization: ±45° Dimensions (L x W x D): 72.97" x 13.78" x 8.20"</p>	

Attachment D: Far Field Calculation Sheet

Band	28 GHz
Operating Frequency (MHz)	27,500
General Population MPE (mW/cm²)	1
ERP Per Transmitter (Watts)	785
Number of Transmitters	1
Antenna Centerline (feet)	20
Total ERP (Watts)	785
Total ERP (dBm)	59
Maximum % of General Population Limit	0.06%
Distsance to Maximum % of General Population Limit	516

ATTACHMENT 3

October 4, 2023
October 26, 2023 (Rev.1)



20 Alexander Drive, 2nd Floor
Wallingford, CT 06492

RE: Verizon Site Name: BRANFORD SOUTH CT
TEP Project Number: 254652.894285
Site Address: 723 Leetes Island Road
Branford, CT 06405

To Whom It May Concern:

TEP Northeast (TEP NE) has been authorized by Verizon Wireless to perform a structural assessment of the (2) proposed CommScope ballast mounts, P/N RT-PM-B, to determine their capability of supporting (2) 12" Verizon Dish Antennas (total of one per sled). The proposed equipment will be mounted on the rooftop of the ground mounted equipment shelter with a maximum height of 20' AGL to the centerline of each dish.

TEP NE has determined, based on the maximum ultimate wind speed of 125 mph (per Appendix P of the 2022 CT Building Code) and exposure category C (ANSI/TIA-222-H), that the proposed ballast mounts and equipment shelter roof structure have adequate capacity to support the proposed equipment loading as designed in the latest TEP NE Construction Drawings.

Each proposed ballast mount requires (1) 4"x8"x16" concrete block, weighting 33 lbs. /each, to be installed in each tray, equaling 66 lbs of ballast per mount. The proposed ballast mounts, including required ballast blocks, shall not exceed the minimum design roof live load of 20psf, as required by the 2021 International Building Codes.

The proposed ballast mount is controlled by overturning, with a maximum utilization ratio of 67%.

This determination was based on the following limitations and assumptions:

1. TEP NE is not responsible for any modifications completed prior to and hereafter which TEP NE was not directly involved.
2. 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. Contractor to perform pre-inspection prior to construction.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. All the components supporting the Verizon antenna mounts are assumed to be designed to all applicable codes and designed for identical to or larger than the currently proposed loads.
5. All components pertaining to Verizon's mounts must be tightened and re-plumbed prior to installation of new appurtenances.
6. A condition assessment of the existing ground mounted equipment shelter was not part of the scope of work.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
TEP Northeast

Michael Cabral
Director





Daniel P. Hamm, PE
Vice President

ATTACHMENT 4

Certificate of Mailing — Firm



Name and Address of Sender Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™ 3	Affix Stamp Here Postmark with Date of Receipt. neopost SM 11/01/2023 US POSTAGE \$003.19⁰⁰  ZIP 06103 041L12203937
	Postmaster, per (name of receiving employee) 		

USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	James Cosgrove, First Selectman Town of Branford 1019 Main Street Branford, CT 06405				
2.	Harry Smith, Town Planner Town of Branford 1019 Main Street Branford, CT 06405				
3.	James John Medlyn 710 Leetes Island Road Branford, CT 06405				
4.					
5.					
6.					

