



Exhibit 11 - RF Exposure

Customer Premises Equipment Roof Unit 2.0

FCC ID: NNSRTU2000-00

Model Number: RTU2000-28-3

Information Provided in this Exhibit:

- RF Exposure calculations for the CPE Roof Unit 2.0
- Warning label drawing
- Drawing showing placement of the warning label on the CPE Roof Unit 2.0 radome

RF Exposure Calculations

This exhibit contains RF Exposure Information for the SpectraPoint CPE Roof Unit, Version 2.0, based on calculations using RF exposure equations contained in FCC Office of Engineering & Technology Bulletin 65, Edition 97-01.

The transmitter portion of the CPE Roof Unit has a maximum rated RF output power of +20 dBm (100 milliwatts) and is tunable over the frequency range of 27.990 to 28.350 GHz. When installed in the SpectraPoint System, the unit is digitally modulated with a QPSK signal with an occupied bandwidth of from approximately 1.4 MHz to 10 MHz.

The unit has an integral antenna for transmitting and receiving LMDS data within the authorized LMDS band of 27.500 to 28.350 GHz. The unit has a 13" diameter parabolic reflector which provides a highly directional gain of 35 dBi.

The maximum RF power density from the CPE Roof Unit transmitter is 0.16 milliwatt per square centimeter, which is below the maximum permissible limits for general population/uncontrolled exposure, Table 1, FCC Part 1, paragraph 1.1310.

Calculations for 27.991 GHz, 28.170 GHz and 28.348 GHz, representative of minimum, mid and maximum tunable frequencies for the CPE Roof Unit, are presented on pages 2, 3 and 4 of this exhibit.

Conclusion

While calculations for RF exposure do not indicate a hazard by recognized standards, Spectrapoint Wireless will place a label on all units to warn of potential hazards to personnel in near proximity of the CPE roof unit antenna while in operation. The labels and their location are shown in pages at the end of this exhibit.

RF Exposure Calculations

SpectraPoint CPE Roof Unit, Version 2.0

Ref: OET Bulletin 65, Edition
97-01

Extent of the Near-Field Region:

Antenna Diameter = 0.330 meters
Frequency = 27991 MHz

R_{nf} = 2.542 meters

Distance from Reflector to Beginning of the Far-Field Region:

R_{ff} = 6.101 meters

R_{ff} = 20.021 feet

Maximum On-Axis Power Density in the Near-Field:

Transmitter Power = 0.100 Watts
Antenna Gain = 35 dB

S_{rf} = 1.578 Watts per Square
Meter

S_{rf} = 0.158 MilliWatts per Square Centimeter

Power Density in the Far-Field:

Distance from Antenna = 6.125 meters

S_{ff} = 0.671 Watts per Square
Meter

S_{ff} = 0.067 MilliWatts per Square Centimeter

Power Density in the Transition Region:

Distance from Antenna = 2.56 meters

S_{ff} = 1.57 Watts per Square
Meter

S_{ff} = 0.16 MilliWatts per Square Centimeter

RF Exposure Calculations

SpectraPoint CPE Roof Unit, Version 2.0

Ref: OET Bulletin 65, Edition
97-01

Extent of the Near-Field Region:

Antenna Diameter = meters
Frequency = MHz

R_{nf} = 2.558 meters

Distance from Reflector to Beginning of the Far-Field Region:

R_{ff} = 6.140 meters

R_{ff} = 20.149 feet

Maximum On-Axis Power Density in the Near-Field:

Transmitter Power = Watts
Antenna Gain = dB

S_{rf} = 1.558 Watts per Square
Meter

S_{rf} = 0.156 MilliWatts per Square Centimeter

Power Density in the Far-Field:

Distance from Antenna = meters

S_{ff} = 0.671 Watts per Square
Meter

S_{ff} = 0.067 MilliWatts per Square Centimeter

Power Density in the Transition Region:

Distance from Antenna = meters

S_{ff} = 1.56 Watts per Square
Meter

S_{ff} = 0.16 MilliWatts per Square Centimeter

RF Exposure Calculations

SpectraPoint CPE Roof Unit, Version 2.0

Ref: OET Bulletin 65, Edition
97-01

Extent of the Near-Field Region:

Antenna Diameter = meters
Frequency = MHz

R_{nf} = 2.574 meters

Distance from Reflector to Beginning of the Far-Field Region:

R_{ff} = 6.179 meters

R_{ff} = 20.276 feet

Maximum On-Axis Power Density in the Near-Field:

Transmitter Power = Watts
Antenna Gain = dB

S_{rf} = 1.539 Watts per Square
Meter

S_{rf} = 0.154 MilliWatts per Square Centimeter

Power Density in the Far-Field:

Distance from Antenna = meters

S_{ff} = 0.671 Watts per Square
Meter

S_{ff} = 0.067 MilliWatts per Square Centimeter

Power Density in the Transition Region:

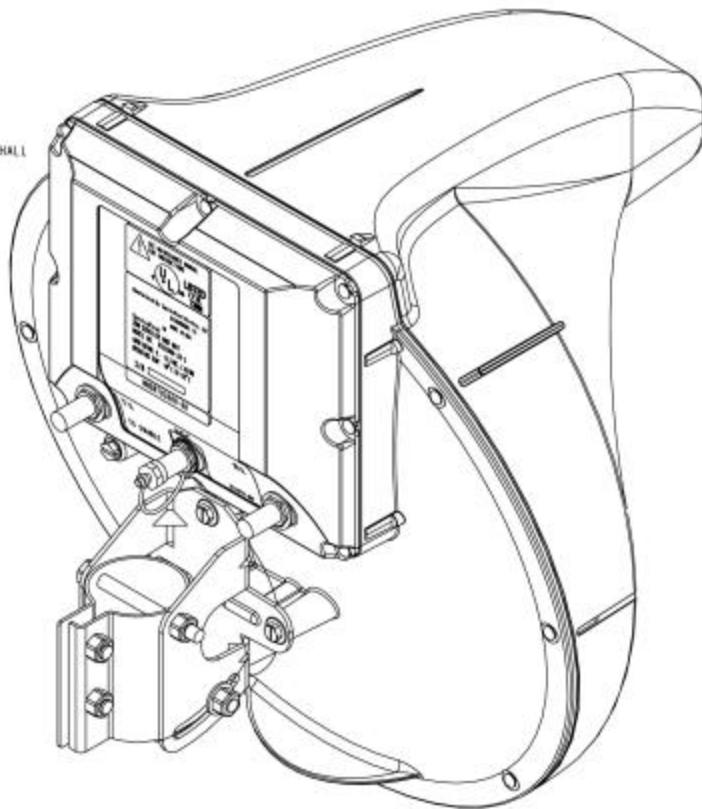
Distance from Antenna = meters

S_{ff} = 1.55 Watts per Square
Meter

S_{ff} = 0.15 MilliWatts per Square Centimeter

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 TORQUE SCREWS FIND NOS 8, 9 AND 10 TO 8 IN-LBS
- 2 REPLACE NONCONDUCTIVE O-RING SUPPLIED WITH RUE BOARD WITH FIND NO 11
- 3 REPLACE LOCK WASHER SUPPLIED WITH RUE BOARD WITH FIND NO 13
- 4 FIND NO 6 CONSISTS OF TWO LABELS (SHOWN)
- 5 FIND NO 1 INCLUDES RUE COVER, UPPER MOUNT ASSEMBLY AND MOUNTING SCREWS
- 6 TORQUE JAW NUT, FIND NO 7, TO 36 IN-LBS
- 7 TORQUE SCREWS FIND NO 14 TO 14 IN-LBS
- 8 UPPER MOUNT ASSEMBLY AND MOUNTING SCREWS SHALL BE INSTALLED BY CUSTOMER. CUSTOMER SHALL TORQUE UPPER MOUNT ASSY MOUNTING SCREWS TO 90 IN-LBS. BAG PARTS PRIOR TO SHIPPING
- 9 REMOVE BACKING OF FIND 15 AND PLACE LABEL ON A CLEAN DRY SURFACE IN APPROXIMATE LOCATION.



SCALE 0.300

REV		ECN NO	DATE	DESCRIPTION	BY	CHK
-		-	06-Jan-00	INITIAL RELEASE	BD	LH
A		E24768	17-Feb-00	REV PER ECN	DD	LH
B		E24874	09-Mar-00	REV PER ECN	JS	LH

1	EA	3216185-001		LBL, WARNING RF EXPOSURE	15
8	EA	8001402-001	STL, JS500	SCR, TORX TPR PF T10, 6-32 X .375	14
2	EA	8000380-101	410 SST	WSHR, LK, INT., 30410, .6920D, .840THK, SST	13
1	EA	8001150-002		CAP, F-TYPE, CHAIN, O-RING	12
3	EA	8001391-002		O-RING, .4261D, .870THK, CONSL-A B95	11
5	EA	8000458-006		SCR, SHH, 4-40 X .625 SEMS	10
2	EA	8000458-004		SCR, SHH, 4-40 X .500 SEMS	9
2	EA	8000458-002		SCR, SHH, 4-40 X .312 SEMS, SST	8
3	EA	8001308-001		NUT, JAW, 3/8-32 X 1/16	7
1	EA	3214978-005		LBL, GEN CERT, USA	6
1	EA	3214979-002		LBL, GEN CERT, RF 110 REMEC	5
1	EA	3215383-002		LBL, SAFETY, UL, US AND CANADA	4
1	EA	3219692-001		O-RING, EMI, CPE ANTENNA	3
1	EA	3215360-001		ASSY, PCB, RUE, 360 BP, BTP, AGC	2
1	EA	3215389-002		SUB-ASSY, DISH, AGC, FILTERED	1

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SPLIT BALLOON LEGEND		UNLESS OTHERWISE SPECIFIED:
ITEM NUMBER	QUANTITY	ALL DIMENSIONS ARE IN INCHES FILLING ALL CORNERS SHARP ALL SHARP EDGES
THIRD ANGLE PROJECTION		TOLERANCES: DECIMALS: .1 .06 .030 FRACTION: 1/32 1/64 1/16 ANGLE: .5 .25 .125
		DO NOT SCALE DRAWING

LIST OF MATERIALS		DATE	BY
MATERIAL		28-Dec-99	B. Dahl
FINISH		28-Dec-99	J. Cummings
		05-Jan-00	L. Hanna
SpectraPoint WIRELESS, LLC.			
Richardson, TX			
ASSY, RTU, FILTER, 360 BP,			
CPE ANTENNA			
3215391			
SCALE: 1.000			

MODEL	3215391-001	FORM RELEASE	1-4
DRAWING	3215391	FORM RELEASE	1-4
		REVISION	000

REV	ECN NO	DATE	DESCRIPTION	BY	CHK
-		14-Feb-00	INITIAL RELEASE	DD	LH
A	E24807	18-Feb-00	REV PER ECN	DD	LH

NOTES:

1. INTERPRET DIMENSIONS AND TOLERANCES IN ACCORDANCE WITH ANSI Y14.5 - 1982
2. MATERIAL: TEDLAR .010 THK, COLOR YELLOW, WITH (3M 468) ADHESIVE BACKING
3. LABEL LIFE MUST BE MINIMUM OF 10 YEARS
- 4 TEXT STYLE SHALL BE ARIAL FONT, COLOR BLACK AND UPPER CASE. TEXT HEIGHT SHALL BE PER FIGURE 1. LINES AND GRAPHICS SHALL BE COLOR BLACK.
5. LABEL PART NUMBER SHALL BE IN ARIAL FONT, 8 PT, AND LOCATED IN THE LOWER RIGHT HAND CORNER
6. LABEL SHALL BE SELF-EXTINGUISHING AND EQUAL TO OR EXCEED 94V-0 FLAMMABILITY REQUIREMENTS
7. LABELS SHALL BE SUITABLE TO OUTDOOR CONDITIONS: MUST BE UV RESISTANT AND ENDURE -40°C TO +55°C TEMPERATURE RANGES
- 8 THIS SYMBOL IS DEFINED IN ANSI C95.2 - 1982 OR IEC STANDARD 417 NO. 417-IEC-5140

TOLERANCES
USE UNLESS SPECIFIED OTHERWISE

DIMENSIONS ARE IN INCHES .XX = ±.03 .XXX = ±.010 ANGLES ±1°

ORIGINATOR	
D.DANIELS	31-Jan-00
ENGINEERING	
J.Finklea	3-Feb-00
CM	
L.Hanna	14-Feb-00

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SpectraPoint WIRELESS, LLC. Richardson, Texas		
TITLE LBL,WARNING RF EXPOSURE, CPE		
SIZE A	DRAWING NO. 3216165	A REV
SCALE: 1.000		1 OF 2

MODEL:	3216165-001	FORMAL_RELEASE	1.4
DRAWING:	3216165	FORMAL_RELEASE	1.4
	FILE NAME	RELEASE LEVEL	PDM VERSION

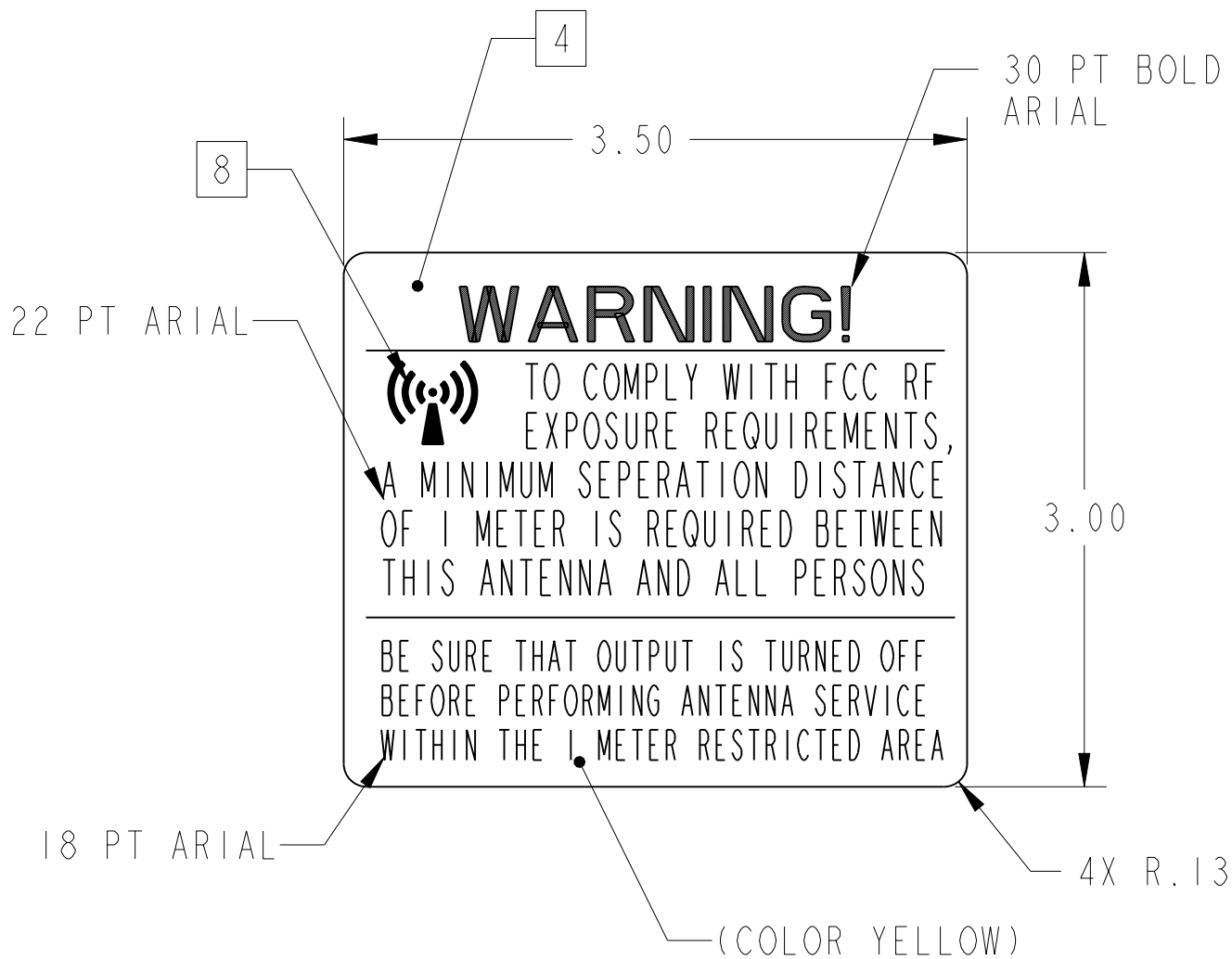


FIGURE 1