



## **Exhibit 11 – RF Exposure Information**

**Spectrapoint Wireless LLC**

**Customer Premises Equipment Roof Unit**

**FCC ID: NNSRTU2000-99**

**Model Number: RTU2000-28-2**

### **Information Provided in this Exhibit**

This exhibit contains RF Exposure Information for the SpectraPoint CPE Roof, Version 1.3, 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 +23 dBm (200 milliwatts) operating over the frequency range of 28.100 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 12.5 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 36 dBi minimum to a maximum of approximately 38 dBi.

The maximum RF exposure power that the CPE Roof Unit transmitter can reach is approximately +24 dBm, if driven into compression (not a normal condition). However, under this condition, the maximum RF power density from the CPE Roof Unit transmitter will be 0.785 milliwatt per square centimeter. This power level is less than the maximum permissible limit of 1.0 milliwatt per square centimeter for the general population for uncontrolled exposure. (Reference: Table 1, FCC Part 1, paragraph 1.1310)

Calculations for 28.100 GHz, 28.225 GHz and 28.349 GHz, representative of minimum, mid and maximum tunable frequencies for the CPE Roof Unit, at the abnormal RF power output level of +24 dBm are presented on pages 2, 3 and 4 of this exhibit.

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# RF Exposure Calculations

SpectraPoint CPE Roof Unit, Version 1.3

Ref: OET Bulleting 65, Edition 97-01

## Extent of the Near-Field Region:

Antenna Diameter = 0.330 meters  
Frequency = 28100 MHz

$$R_{nf} = 2.552 \text{ meters}$$

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

$$R_{ff} = 6.125 \text{ meters}$$
$$R_{ff} = 20.099 \text{ feet}$$

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

Transmitter Power = 0.251 Watts  
Antenna Gain = 38 dB

$$S_{nf} = 7.849 \text{ Watts per Square Meter}$$
$$S_{nf} = 0.785 \text{ MilliWatts per Square Centimeter}$$

## Power Density in the Far-Field:

Distance from Antenna = 6.125 meters

$$S_{ff} = 3.362 \text{ Watts per Square Meter}$$
$$S_{ff} = 0.336 \text{ MilliWatts per Square Centimeter}$$

## Power Density in the Transition Region:

Distance from Antenna = 2.56 meters

$$S_{ff} = 7.82 \text{ Watts per Square Meter}$$
$$S_{ff} = 0.78 \text{ MilliWatts per Square Centimeter}$$

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# RF Exposure Calculations

SpectraPoint CPE Roof Unit, Version 1.3

Ref: OET Bulleting 65, Edition 97-01

## Extent of the Near-Field Region:

Antenna Diameter = 

0.330
28225

 meters  
Frequency = 

28225
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 MHz

$$R_{nf} = 2.563 \text{ meters}$$

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

$$R_{ff} = 6.152 \text{ meters}$$
$$R_{ff} = 20.188 \text{ feet}$$

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

Transmitter Power = 

0.251
38

 Watts  
Antenna Gain = 

38
----

 dB

$$S_{nf} = 7.780 \text{ Watts per Square Meter}$$
$$S_{nf} = 0.778 \text{ MilliWatts per Square Centimeter}$$

## Power Density in the Far-Field:

Distance from Antenna = 

6.125
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 meters

$$S_{ff} = 3.362 \text{ Watts per Square Meter}$$
$$S_{ff} = 0.336 \text{ MilliWatts per Square Centimeter}$$

## Power Density in the Transition Region:

Distance from Antenna = 

2.56
------

 meters

$$S_{ff} = 7.79 \text{ Watts per Square Meter}$$
$$S_{ff} = 0.78 \text{ MilliWatts per Square Centimeter}$$

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# RF Exposure Calculations

SpectraPoint CPE Roof Unit, Version 1.3

Ref: OET Bulleting 65, Edition 97-01

## Extent of the Near-Field Region:

Antenna Diameter = 0.330 meters  
Frequency = 28349 MHz

$$R_{nf} = 2.574 \text{ meters}$$

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

$$R_{ff} = 6.179 \text{ meters}$$
$$R_{ff} = 20.277 \text{ feet}$$

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

Transmitter Power = 0.251 Watts  
Antenna Gain = 38 dB

$$S_{nf} = 7.712 \text{ Watts per Square Meter}$$
$$S_{nf} = 0.771 \text{ MilliWatts per Square Centimeter}$$

## Power Density in the Far-Field:

Distance from Antenna = 6.125 meters

$$S_{ff} = 3.362 \text{ Watts per Square Meter}$$
$$S_{ff} = 0.336 \text{ MilliWatts per Square Centimeter}$$

## Power Density in the Transition Region:

Distance from Antenna = 2.56 meters

$$S_{ff} = 7.76 \text{ Watts per Square Meter}$$
$$S_{ff} = 0.78 \text{ MilliWatts per Square Centimeter}$$

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