May. 09, 2017

Subject: **RF MPE Exposure**

Re: FCC ID: 2ALGRPLX-G8519

The MPE calculation for model PLX-G8519 signal booster were done for frequency band 824-849MHz and band 1850-1910MHz. Foe each two calculations were done, these included the worst-case scenario for each of the different types of antennas that may be connected to this signal booster: outside and inside antenna. The order of the attached calculations is as follows:

850MHz band and 1900 MHz band:

    1. Outside antenna: Opinion 10(Reference to antenna kitting)

    2. Inside antenna: Opinion 4(Reference to antenna kitting)

A booster's uplink power must not exceed 1 Watt equivalent isotropic power for each band of operation, Composite downlink power must not exceed 0.05 watt EIRP for each band of operation. The following formula was used to calculate the equivalent isotropic radiated power:

    EIRP= Power Out (Watts)*Duty Cycle percent*Antenna Gain(non-log)*Coax loss(non-log)

The power density(mW/c ㎡) is calculated using the following formula:

    Calculated Power density=1000*EIRP(Watts)/(4* π *(Distance form antenna(cm)^2))

Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

Uplink_824-849MHz:

Input data

Frequency MHz	843.26
Pout Watts	0.0416
Duty cycle percent	100%
Ant. Gain dBi	10
Coax Loss dB	3.22
Distance From Antenna In cm	20.0

Results of calculations

Ant. Gain less Coax Loss dBi	6.78
Distance From Antenna In Inches	7.87
EIRP(Watts)	0.87
FCC Power Density Limit (mW/c ㎡)	0.56
Calculated Power Density (mW/c ㎡)	0.17

Reference data

Pout dBm	16.19
Antenna Gain (non-log)	10
Coax loss (non-log)	2.1
General FCC Limit (mW/c ㎡)	F/1500

Downlink_869-894MHz:

Input data

Frequency MHz	877.40
Pout Watts	0.0065
Duty cycle percent	100%
Ant. Gain dBi	8.45
Coax Loss dB	3.98
Distance From Antenna In cm	20.0

Results of calculations

Ant. Gain less Coax Loss dBi	4.47
Distance From Antenna In Inches	7.87
EIRP(Watts)	0.018
FCC Power Density Limit (mW/c ㎡)	0.58
Calculated Power Density (mW/c ㎡)	0.004

Reference data

Pout dBm	8.10
Antenna Gain (non-log)	7
Coax loss (non-log)	0.4
General FCC Limit (mW/c ㎡)	F/1500

Uplink_1850-1910MHz:

Input data

Frequency MHz	1871.12
Pout Watts	0.0422
Duty cycle percent	100%
Ant. Gain dBi	10.41
Coax Loss dB	4.31
Distance From Antenna In cm	20.0

Results of calculations

Ant. Gain less Coax Loss dBi	6.1
Distance From Antenna In Inches	7.87
EIRP(Watts)	0.12
FCC Power Density Limit (mW/c ㎡)	1.25
Calculated Power Density (mW/c ㎡)	0.02

Reference data

Pout dBm	16.25
Antenna Gain (non-log)	11
Coax loss (non-log)	2.7
General FCC Limit (mW/c ㎡)	F/1500

Downlink_1930-1990MHz:

Input data

Frequency MHz	1950.40
Pout Watts	0.0066
Duty cycle percent	100%
Ant. Gain dBi	9.54
Coax Loss dB	2.22
Distance From Antenna In cm	20.0

Results of calculations

Ant. Gain less Coax Loss dBi	7.32
Distance From Antenna In Inches	7.87
EIRP(Watts)	0.018
FCC Power Density Limit (mW/c ㎡)	1.30
Calculated Power Density (mW/c ㎡)	0.004

Reference data

Pout dBm	8.21
Antenna Gain (non-log)	9
Coax loss (non-log)	0.6
General FCC Limit (mW/c ㎡)	F/1500

Results: PASS