

March 26, 2015

Subject: MPE Calculations
Re: FCC ID: 2ADWV-CMB-5B215

To Whom It May Concern:

The MPE calculations for model CMB215 signal booster were generated for all frequency bands tested which were 700 MHz 800 MHz Band 1700/2100 MHz Band 1900 MHz Band All calculations were made for antenna kitted was calculated to show the worst case scenario for both the uplinks/downlinks that will be connected to the signal booster to include exterior and interior antennas. The order of the attached calculations are as follows:

$EIRP = \text{Power Out (Watts)} * \text{Duty Cycle Percent} * \text{Antenna Gain (non-log)} * \text{Coax loss (non-log)}$

The power density (mW/cm^2) is calculated using the following formula:

$\text{Calculated Power Density} = 1000 * EIRP \text{ (Watts)} / (4 * \pi * (\text{Distance from Antenna (cm)}^2))$

A booster's uplink power must not exceed 1 watt equivalent isotropic radiated power (EIRP) for each band of operation. Composite downlink power must not exceed 0.05 watt EIRP for each band of operation (20.21(e)(8)(i)(D)). The following formula was used to calculate the equivalent isotropic radiated Power.

Exterior antennas: 1. 700MHz Bands 12,17 model# FY14E-7213 2. 700Mhz Band 13 model# ETB-3162 3. 800 MHz Band 5 model# FY14E-7231 4. 1700/2100MH model #FY9E-7231 5. 1900MHz band 25 model# FY9E-7230

Interior antennas: 1. 700MHZ Bands 12,17, model#IPA-8734 2. 700MHz Band 13 model#IPA-8734 3. 800MHz Band 5 model# IPA-8734 4. 1700/2100 MHz model# IPA-8734 5. 1900 MHz antenna model# IPA-8734.

Sincerely,

Robert Skilton

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SUBJECT: MPE Calculations
 RE: FCC ID: 2ADW-CMB-5215

<i>Input Data:</i>					
External Antenna Model Number used for Calculations :	FY14E-7231	ETA-3162	FY14E-7231	FY9E-7230	FY9E-7230
Frequency / Up-Link (MHz.) :	698 - 716	776 - 787	824 - 849	1710 - 1755	1850 - 1910
Maximum Conducted RF Output Power (dBm.):	26.51	25.57	25.25	26.64	25.32
Maximum Conducted RF Output Power (mW.):	447.713	360.579	334.965	461.318	340.408
Maximum Antenna Gain (dBi.) :	7.22	5.54	5.40	6.97	6.01
Coax Cable Loss (dB.) :	4.97	3.88	5.55	7.91	8.18
Net Antenna Gain (Antenna Gain - Coax Cable Loss (dBi)) :	2.25	1.66	-0.15	-0.94	-2.17
Distance from Antenna (cm.) :	20	20	20	20	20
Effects of Ground Reflections Used:	No	No	No	No	No

<i>Results of Calculations:</i>					
Maximum Conducted RF Output Power (mW.):	447.713	360.579	334.965	461.318	340.408
Net Antenna Gain (Antenna Gain - Coax Cable Loss (dBi)) :	2.25	1.66	-0.15	0.94	-2.17
Distance from Antenna (cm. to ft.) :	0.656168	0.656168	0.656168	0.656168	0.656168
CC Maximum RF Power Density (mW / cm ²) :	0.47133	0.52133	0.55733	1.00000	1.00000
Calculated RF Power Density (mW / cm ²) :	0.1495	0.1051	0.0644	0.0739	0.0411



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Subject : MPE Calculations (cont.)
 RE: FCCID: 2ADWV-CMB-5215

<i>Input Data:</i>					
Internal Antenna Model Number used for Calculations :	IPA-8734	IPA-8734	IPA-8734	IPA-8734	IPA-8734
Frequency / Down-Link (MHz.) :	728 - 746	746 - 757	869 - 894	1930 - 1990	2110 - 2155
Maximum Conducted RF Output Power (dBm.):	14.90	15.24	15.44	16.01	11.65
Maximum Conducted RF Output Power (mW.):	30.903	33.420	34.995	39.902	14.622
Maximum Antenna Gain (dBi.) :	3.28	4.71	5.58	5.76	6.89
Coax Cable Loss (dB.) :	6.41	6.81	7.77	7.91	8.18
Net Antenna Gain (Antenna Gain - Coax Cable Loss (dBi)) :	-3.13	-2.10	-2.19	-2.15	-1.29
Distance from Antenna (cm.) :	20	20	20	20	20
Effects of Ground Reflections Used:	No	No	No	No	No

<i>Results of Calculations:</i>					
Maximum Conducted RF Output Power (mW.):	30.903	33.420	34.995	39.902	14.622
Net Antenna Gain (Antenna Gain - Coax Cable Loss (dBi)) :	-3.13	-2.10	-2.19	-2.15	-1.29
Distance from Antenna (cm. to ft.) :	0.656168	0.656168	0.656168	0.656168	0.656168
CC Maximum RF Power Density (mW / cm ²) :	0.4963	0.5063	0.5923	1.0000	1.0000
Calculated RF Power Density (mW / cm ²) :	0.0030	0.0041	0.0042	0.0048	0.0022