

## FCC RF Exposure Information

According to FCC §1.1310 and §2.1091 (Mobile Devices) RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure:

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minute)
<b>Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	<sup>1</sup> (100)	30
1.34-30	824/f	2.19/f	<sup>1</sup> (180/f <sup>2</sup> )	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

<sup>1</sup>=Plane-wave equivalent power density

## MPE Prediction

Prediction of MPE limit at a given distance, equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

## Test Results:

The following results were calculated using the highest gain antennas used on the ZB570-A.

Frequency Band 824-849MHz Uplink	Units	Value
Maximum peak output power at booster output	dBm	18.2
Cable loss (50 feet of RG-6 cable)	dB	2.7
Maximum peak output power at antenna input terminal	dBm	15.5
Maximum peak output power at antenna input terminal	mW	<b>35.5</b>
Prediction distance	cm	<b>20</b>
Prediction frequency	MHz	<b>836.5</b>
Antenna Gain, typical, using CANT-42 antenna	dBi	10
Antenna Gain, typical	numeric	<b>10.00</b>
<b>Power density at prediction frequency and distance</b>	mW/cm <sup>2</sup>	<b>0.071</b>
MPE limit for uncontrolled exposure at predication frequency	mW/cm <sup>2</sup>	<b>0.558</b>

$$= PG/4\pi R^2$$

Frequency Band 869-894MHz Downlink	Units	Value
Maximum peak output power at booster output	dBm	3.8
Cable loss (50 feet of RG-6 cable)	dB	0.81
Maximum peak output power at antenna input terminal	dBm	2.99
Maximum peak output power at antenna input terminal	mW	<b>2.0</b>
Prediction distance	cm	<b>20</b>
Prediction frequency	MHz	<b>881.5</b>
Antenna Gain, typical, using CANT-0043 antenna	dBi	6
Antenna Gain, typical	numeric	<b>3.98</b>
<b>Power density at prediction frequency and distance</b>	mW/cm <sup>2</sup>	<b>0.002</b>
MPE limit for uncontrolled exposure at predication frequency	mW/cm <sup>2</sup>	<b>0.588</b>

$$= PG/4\pi R^2$$

Frequency Band 1850-1910MHz Uplink	Units	Value
Maximum peak output power at booster output	dBm	19.1
Cable loss (50 feet of RG-6 cable)	dB	4.3
Maximum peak output power at antenna input terminal	dBm	14.8
Maximum peak output power at antenna input terminal	mW	<b>30.2</b>
Prediction distance	cm	<b>20</b>
Prediction frequency	MHz	<b>1960</b>
Antenna Gain, typical, using CANT-42 antenna	dBi	12
Antenna Gain, typical	numeric	<b>15.85</b>
<b>Power density at prediction frequency and distance</b>	mW/cm <sup>2</sup>	<b>0.095</b>
MPE limit for uncontrolled exposure at predication frequency	mW/cm <sup>2</sup>	<b>1.000</b>

$$= PG/4\pi R^2$$

Frequency Band 1930-1990MHz Downlink	Units	Value
Maximum peak output power at booster output	dBm	4.3
Cable loss (50 feet of RG-6 cable)	dB	1.29
Maximum peak output power at antenna input terminal	dBm	3.01
Maximum peak output power at antenna input terminal	mW	<b>2.0</b>
Prediction distance	cm	<b>20</b>
Prediction frequency	MHz	<b>1880</b>
Antenna Gain, typical, using CANT-0043 antenna	dBi	8
Antenna Gain, typical	numeric	<b>6.31</b>
<b>Power density at prediction frequency and distance</b>	mW/cm <sup>2</sup>	<b>0.003</b>
MPE limit for uncontrolled exposure at predication frequency	mW/cm <sup>2</sup>	<b>1.000</b>

$$= PG/4\pi R^2$$

Frequency Band 776-787MHz Uplink	Units	Value
Maximum peak output power at booster output	dBm	20.1
Cable loss (50 feet of RG-6 cable)	dB	2.5
Maximum peak output power at antenna input terminal	dBm	17.6
Maximum peak output power at antenna input terminal	mW	<b>57.5</b>
Prediction distance	cm	<b>20</b>
Prediction frequency	MHz	<b>781.5</b>
Antenna Gain, typical, <b>using CANT-42 antenna</b>	dBi	10
Antenna Gain, typical	numeric	<b>10.00</b>
<b>Power density at prediction frequency and distance</b>	mW/cm <sup>2</sup>	<b>0.114</b>
MPE limit for uncontrolled exposure at predication frequency	mW/cm <sup>2</sup>	<b>0.521</b>

$$= PG/4\pi R^2$$

Frequency Band 746-757MHz Downlink	Units	Value
Maximum peak output power at booster output	dBm	4.7
Cable loss (50 feet of RG-6 cable)	dB	0.75
Maximum peak output power at antenna input terminal	dBm	3.95
Maximum peak output power at antenna input terminal	mW	<b>2.5</b>
Prediction distance	cm	<b>20</b>
Prediction frequency	MHz	<b>751.5</b>
Antenna Gain, typical, <b>using CANT-0043 antenna</b>	dBi	6
Antenna Gain, typical	numeric	<b>3.98</b>
<b>Power density at prediction frequency and distance</b>	mW/cm <sup>2</sup>	<b>0.002</b>
MPE limit for uncontrolled exposure at predication frequency	mW/cm <sup>2</sup>	<b>0.501</b>

$$= PG/4\pi R^2$$

## Results

For uplink and downlink, the highest power density levels at 20cm on the ZB570-A product are below the MPE uncontrolled exposure limit.