

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 ²)	Average Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	¹ (100)	30
1.34-30	824/f	2.19/f	¹ (180/f ²)	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

¹=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	19.32
Cable loss (50 feet of RG-6 cable)	dB	2.7
Maximum peak output power at antenna input terminal	dBm	16.62
Maximum peak output power at antenna input terminal	mW	45.9
Prediction distance	cm	20
Prediction frequency	MHz	836.5
Antenna Gain, typical, using CANT-42 antenna	dBi	10
Antenna Gain, typical	numeric	10.00
Power density at prediction frequency and distance	mW/cm ²	0.091
MPE limit for uncontrolled exposure at predication frequency	mW/cm ²	0.558

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

Frequency Band 869-894MHz Downlink	Units	Value	
Maximum peak output power at booster output	dBm	3.43	
Cable loss (50 feet of RG-6 cable)	dB	0.81	
Maximum peak output power at antenna input terminal	dBm	2.62	
Maximum peak output power at antenna input terminal	mW	1.8	
Prediction distance	cm	20	
Prediction frequency	MHz	881.5	
Antenna Gain, typical, using CANT-0043 antenna	dBi	6	
Antenna Gain, typical	numeric	3.98	
Power density at prediction frequency and distance	mW/cm ²	0.001	= PG/4πR ²
MPE limit for uncontrolled exposure at predication frequency	mW/cm ²	0.588	

Frequency Band 1850-1910MHz Uplink	Units	Value	
Maximum peak output power at booster output	dBm	22.98	
Cable loss (50 feet of RG-6 cable)	dB	4.3	
Maximum peak output power at antenna input terminal	dBm	18.68	
Maximum peak output power at antenna input terminal	mW	73.8	
Prediction distance	cm	20	
Prediction frequency	MHz	1960	
Antenna Gain, typical, using CANT-42 antenna	dBi	12	
Antenna Gain, typical	numeric	15.85	
Power density at prediction frequency and distance	mW/cm ²	0.233	= PG/4πR ²
MPE limit for uncontrolled exposure at predication frequency	mW/cm ²	1.000	

Frequency Band 1930-1990MHz Downlink	Units	Value	
Maximum peak output power at booster output	dBm	5.56	
Cable loss (50 feet of RG-6 cable)	dB	1.29	
Maximum peak output power at antenna input terminal	dBm	4.27	
Maximum peak output power at antenna input terminal	mW	2.7	
Prediction distance	cm	20	
Prediction frequency	MHz	1880	
Antenna Gain, typical, using CANT-0043 antenna	dBi	8	
Antenna Gain, typical	numeric	6.31	
Power density at prediction frequency and distance	mW/cm ²	0.003	= PG/4πR ²
MPE limit for uncontrolled exposure at predication frequency	mW/cm ²	1.000	

Frequency Band 698-716MHz Uplink	Units	Value
Maximum peak output power at booster output	dBm	19.77
Cable loss (50 feet of RG-6 cable)	dB	2.5
Maximum peak output power at antenna input terminal	dBm	17.27
Maximum peak output power at antenna input terminal	mW	53.3
Prediction distance	cm	20
Prediction frequency	MHz	781.5
Antenna Gain, typical, using CANT-42 antenna	dBi	10
Antenna Gain, typical	numeric	10.00
Power density at prediction frequency and distance	mW/cm ²	0.106
MPE limit for uncontrolled exposure at predication frequency	mW/cm ²	0.521

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

Frequency Band 728-746MHz Downlink	Units	Value
Maximum peak output power at booster output	dBm	3.54
Cable loss (50 feet of RG-6 cable)	dB	0.75
Maximum peak output power at antenna input terminal	dBm	2.79
Maximum peak output power at antenna input terminal	mW	1.9
Prediction distance	cm	20
Prediction frequency	MHz	751.5
Antenna Gain, typical, using CANT-0043 antenna	dBi	6
Antenna Gain, typical	numeric	3.98
Power density at prediction frequency and distance	mW/cm ²	0.002
MPE limit for uncontrolled exposure at predication frequency	mW/cm ²	0.501

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

Results

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