
RF EXPOSURE EVALUATION

EUT Specification

EUT	Cell Phone Signal Booster																																																			
Model Number	S5-A																																																			
FCC ID	2BB6MS5-A																																																			
Antenna gain (Max)	<table><tr><td>Mode</td><td>Frequency(MHz)</td><td>Antenna Gain(dBi)</td><td>Cable loss(dB)</td></tr><tr><td rowspan="7">UP LINK</td><td>1850-1910</td><td>10</td><td>3</td></tr><tr><td>824 - 849</td><td>10</td><td>3</td></tr><tr><td>1710 - 1755</td><td>10</td><td>3</td></tr><tr><td>704 - 716</td><td>10</td><td>3</td></tr><tr><td>777 - 787</td><td>10</td><td>3</td></tr><tr><td>699 - 716</td><td>10</td><td>3</td></tr><tr><td>1850-1915</td><td>10</td><td>3</td></tr><tr><td rowspan="7">DOWNLINK</td><td>1930-1990</td><td>9</td><td>3</td></tr><tr><td>869 - 894</td><td>9</td><td>3</td></tr><tr><td>2110 - 2155</td><td>9</td><td>3</td></tr><tr><td>734-746</td><td>9</td><td>3</td></tr><tr><td>746 - 756</td><td>9</td><td>3</td></tr><tr><td>729 - 746</td><td>9</td><td>3</td></tr><tr><td>1930-1995</td><td>9</td><td>3</td></tr></table>				Mode	Frequency(MHz)	Antenna Gain(dBi)	Cable loss(dB)	UP LINK	1850-1910	10	3	824 - 849	10	3	1710 - 1755	10	3	704 - 716	10	3	777 - 787	10	3	699 - 716	10	3	1850-1915	10	3	DOWNLINK	1930-1990	9	3	869 - 894	9	3	2110 - 2155	9	3	734-746	9	3	746 - 756	9	3	729 - 746	9	3	1930-1995	9	3
Mode	Frequency(MHz)	Antenna Gain(dBi)	Cable loss(dB)																																																	
UP LINK	1850-1910	10	3																																																	
	824 - 849	10	3																																																	
	1710 - 1755	10	3																																																	
	704 - 716	10	3																																																	
	777 - 787	10	3																																																	
	699 - 716	10	3																																																	
	1850-1915	10	3																																																	
DOWNLINK	1930-1990	9	3																																																	
	869 - 894	9	3																																																	
	2110 - 2155	9	3																																																	
	734-746	9	3																																																	
	746 - 756	9	3																																																	
	729 - 746	9	3																																																	
	1930-1995	9	3																																																	
Operation Frequency	Cellular: Uplink: 824 - 849MHz, Downlink: 869 - 894MHz AWS-1: Uplink: 1710 - 1755MHz, Downlink: 2110 - 2155MHz Broadband PCS: Uplink: 1850-1915MHz, Downlink: 1930-1995MHz Low A-E Blocks: Uplink:699-716MHz, Downlink: 729-746MHz 700 MHz Upper C Block: Uplink:777-787MHz, Downlink: 746-756MHz																																																			
Input Rating	DC 5V from Switching Power Supply																																																			
Max. output power	Cellular: Uplink: 824 - 849MHz,19.62dBm, Downlink: 869 - 894MHz,9.74dBm AWS-1: Uplink: 1710 - 1755MHz, 19.82dBm, Downlink: 2110 - 2155MHz, 9.62dBm Broadband PCS: Uplink: 1850-1915MHz, 21.25dBm, Downlink: 1930-1995MHz, 9.42dBm Low A-E Blocks: Uplink:699-716MHz, 18.73dBm,Downlink: 729-746MHz, 9.73dBm 700 MHz Upper C Block: Uplink:777-787MHz,18.63dBm, Downlink: 746-756MHz, 9.81dBm																																																			

Test Requirement:

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF) Radiation as specified in §1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm²)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	..	..	F/300	6
1500-100000	..	..	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	..	..	F/1500	6
1500-100000	..	..	1	30

11.1 Friis transmission formula: $P_d = \frac{P_{out} G}{4\pi R^2}$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.14

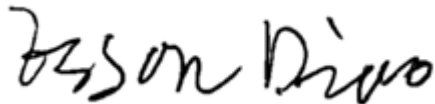
R = distance between observation point and center of the radiator in cm = 20cm

Pd the limit of MPE, $1\text{mW}/\text{cm}^2$. If we know the maximum gain of the nd total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

11.2 Measurement Result

Operating Mode Frequency(MHz)	Tune up tolerance (dBm)	Max tune up conducted power(dBm)	Cable loss	EIRP(mW)	Ant. Gain(dBi)	Power density at 20cm (mW/ cm2)	Power density Limits(mW/cm2)
UL824 -849	20 ± 1	21	3	630.957	10	0.125588	0.55
DL 869-894	10 ± 1	11	3	50.119	9	0.009975	0.58
UL1710 -1755	20 ± 1	21	3	630.957	10	0.125588	1
DL 2110-2155	10 ± 1	11	3	50.119	9	0.009975	1
UL 777 -787	19 ± 1	20	3	501.187	10	0.099758	0.52
DL 746-756	10 ± 1	11	3	50.119	9	0.009975	0.52
UL 699-716	19 ± 1	20	3	501.187	10	0.099758	0.47
DL 729-746	10 ± 1	11	3	50.119	9	0.009975	0.49
UL1850-1915	21 ± 1	22	3	794.328	10	0.158106	1
DL 1930-1995	9 ± 1	10	3	39.811	9	0.007924	1

Signature:



Esson Diao

Date: 2023-08-07