

RF EXPOSURE EVALUATION

EUT Specification

EUT	Cell Phone Signal Booster																																																		
Model Number	18P.5.LLCPA.1																																																		
FCC ID	2AMPB-18P5LLCPA1																																																		
Antenna gain (Max)	<table><tr><th>Mode</th><th>Frequency(MHz)</th><th>Antenna Gain(dBi)</th><th>Cable loss(dB)</th></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
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Input Rating	DC 5V from Switching Power Supply																																																		
Max. output power	LTE Band 5: Uplink: 824 - 849MHz,18.33dBm, Downlink: 869 - 894MHz,10.35dBm LTE Band 4: Uplink: 1710 - 1755MHz, 19.56dBm, Downlink: 2110 - 2155MHz, 10.39dBm LTE Band 13: Uplink:776 – 787, 19.47dBm, Downlink: 746-756 MHz, 10.44 dBm LTE Band 12: Uplink: 699 - 716MHz, 19.47dBm, Downlink: 729 - 746MHz, 10.78dBm LTE Band 25: Uplink: 1850-1915MHz, 19.55dBm, Downlink: 1930-1995MHz, 10.08dBm																																																		

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 =3.1416

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/ cm ²)	Power density Limits(mW/cm ²)
UL824 -849	18 ± 1	19	3	398.107	10	0.079241	0.55
DL 869-894	10 ± 1	11	3	50.119	9	0.009976	0.58
UL1710 -1755	19 ± 1	20	3	501.187	10	0.099759	1
DL 2110-2155	10 ± 1	11	3	50.119	9	0.009976	1
UL 776 -787	19 ± 1	20	3	501.187	10	0.099759	0.52
DL 746-756	10 ± 1	11	3	50.119	9	0.009976	0.52
UL 699-716	19 ± 1	20	3	501.187	10	0.099759	0.47
DL 729-746	11 ± 1	12	3	63.096	9	0.012559	0.49
UL1850-1915	19 ± 1	20	3	501.187	10	0.099759	1
DL 1930-1995	10 ± 1	11	3	50.119	9	0.009976	1

Signature:

Stone Tang

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Date: 2023-07-24