

## RF EXPOSURE EVALUATION

FCC ID: 2AP62-SL-01

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/cm <sup>2</sup> )	Average Time
<b>(A) Limits for Occupational/Control Exposures</b>				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
<b>(B) Limits for General Population/Uncontrol Exposures</b>				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

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

Where

$P_d$ = Power density in mW/cm<sup>2</sup>

$P_{out}$ =output power to antenna in Mw

$G$ = gain of antenna in linear scale

$\pi$ =3.1416

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

$P_d$  the limit of MPE, 1mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

## Measurement Result

Operating Mode	Channel Frequency (MHz)	Measured Power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Antenna Gain (dBi)	Power density at 20cm (mW/ cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
GPRS 850	824.2-848.8	30.58	30±1	31	-1.3	0.1856	0.5495
GPRS 1900	1850.2-1909.8	30.85	30±1	31	1.2	0.3299	1

Operating Mode	Channel Frequency (MHz)	Measured Power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Antenna Gain (dBi)	Power density at 20cm (mW/ cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
BLE	2402	-9.205	-9.205±1	-8.205	1.05	3.83e-5	1
	2440	-9.197	-9.197±1	-8.197	1.05	3.85e-5	1
	2480	-10.107	-10.107±1	-9.107	1.05	3.12e-5	1

Operating Mode	Channel Frequency	Measured Power	Tune up tolerance	Max. Tune up Power	Antenna Gain	Power density at 20cm	Power density Limits (mW/cm <sup>2</sup> )
	(MHz)	(dBm)	(dBm)	(dBm)	(dBi)	(mW/ cm <sup>2</sup> )	
802.11b	2412	13.15	13.15±1	14.15	4.48	0.0145	1
	2437	13.27	13.27±1	14.27	4.48	0.0149	1
	2462	12.03	12.03±1	13.03	4.48	0.0112	1
802.11g	2412	12.96	12.96±1	13.96	4.48	0.0139	1
	2437	13.56	13.56±1	14.56	4.48	0.0159	1
	2462	11.87	11.87±1	12.87	4.48	0.0108	1
802.11n (HT20)	2412	12.15	12.15±1	13.15	4.48	0.0115	1
	2437	12.78	12.78±1	13.78	4.48	0.0133	1
	2462	11.52	11.52±1	12.52	4.48	0.0099	1

input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Remark: Under multiple launch conditions:

$$Pd(\text{GPRS}+\text{BT}+\text{WIFI})=0.3299+(3.85\text{e-}5)+0.0159=0.3458+(3.85\text{e-}5)<1(\text{mW}/\text{cm}^2)$$

## Measurement Result

Conclusion: No SAR is required.