RF Exposure Evaluation Report

1 RF EXPOSURE

Product Name: car navigation
Model No.:   7862, GELC7862S, 7862S, Y7862A, Y7862B, Y7862C,
                        Y7862D, Y7862E
FCC ID: 2BP6N-7862

2. RF Exposure Evaluation

FCC KDB447498 D01 General RF Exposure Guidance v06: Mobile and Portable Device, RF Exposure, Equipment Authorization Procedures.

FCC CFR 47 part1 1.1310: Radiofrequency radiation exposure limits.

FCC CFR 47 part2 2.1091: Radiofrequency radiation exposure evaluation: mobile devices.

2.1 LIMITS

According to FCC Part1.1310: 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 part1.1307(b)

Table 1 to § 1.1310(e)(1)—Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3–3.0	614	1.63	*(100)	≤6
3.0–30	1842/f	4.89/f	*(900/f^2)	<6
30–300	61.4	0.163	1.0	<6
300–1,500			f/300	<6
1,500–100,000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	<30
1.34–30	824/f	2.19/f	*(180/f^2)	<30
30–300	27.5	0.073	0.2	<30
300–1,500			f/1500	<30
1,500–100,000			1.0	<30

F= Frequency in MHz Friis Formula

Friis transmission formula: $Pd = (Pout*G)/(4* Pi * R\ 2)$ Where

Pd = power density in mW/cm2

Pout = 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

Pd id the limit of MPE . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2.2 EUT RF EXPOSURE EVALUATION

BT/BLE/2.4GWIFI ANT: 1.5dBi; 5WIFI: 3.27dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.0 in linear scale.

The Max Conducted Peak Output Power data refer to report No.: DACE250603013RL001, DACE250603013RL002, DACE250603013RL003, DACE250603013RL004

I worst mode and channel:

Test channel	Conducted Power (dBm)	Maximum tune-up Power (dbm)	Maximum tune-up Power (dbm)	Maximum tune-up Power (mW)	Calculated value (mW/cm2)	Limit (mW/cm^2)
BLE-2402MHz	3.45	4±1.0	5.0	3.162	0.0009	1.0
EDR-3DH5-2402MHz	1.40	2±1.0	3.0	1.995	0.0006	1.0
802.11B–2412MHz	19.50	19±1.0	20	100	0.0281	1.0
802.11a-5240MHz	10.95	11±1.0	12	15.849	0.0067	1.0
802.11a-5825MHz	10.78	11±1.0	12	15.849	0.0067	1.0

Remark: Pd = (Pout*G)/(4* Pi * R2)=(100*1.41254)/(4*3.1415*20*20)=0.0281, G=10$^{gain/10}$ =1.41254

EUT RF Exposure Evaluation simultaneous transmission operations
According to 865664D02 2.2 d) 1):
The sum of the ratios of the spatially averaged results to the applicable frequency dependent MPE limits :

Simultaneous transmission mode	The sum of the ratios	SUM	Limit
5GWIFI+2.4G WIFI + BLE+EDR	0.0009+0.0006+0.0281+0.0067	≈0.036	1.0
Conclusion: 0.036< 1.0, So there is no sar requirement			

NOTE:1. EUT is more than 20cm away from the human body.

2.The sum of the ratios is less than the limit value of 1.0, so there is no sar requirement.