RF Exposure Evaluation Report

1 RF EXPOSURE

Product Name: Car Smart Mirror

Model No.: Z96

FCC ID: 2BNA6-Z96

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 ANT :2.2dBi; WIFI ANT:2.8dBi

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.: DACE241030001RF001, DACE241030001RF002, DACE241030001RF003

worst mode and channel:

Test channel (MHz)	Conducted Power (dBm)	Maximum tune-up Power (dbm)	Maximum tune-up Power (dbm)	Maximum tune-up Power (mW)	Calculated value (mW/cm2)	Limit (mW/cm2)
802.11ac-5240MHz	13.33	14±1.0	15	31.623	0.0120	1.0
802.11a-5745MHz	14.85	15±1.0	16	39.811	0.0151	1.0
3DH5-2480MHz	9.22	10±1.0	11	12.589	0.0042	1.0
BLE-2480MHz (2Mbps)	5.42	6±1.0	7	5.012	0.0017	1.0

Remark: Pd = (Pout*G)/(4* Pi * R^2)=(39.811*1.9055)/(4*3.1416*20*20)= 0.0151 , $G=10^{gain/10}=10^{2.8/10}$ =1.9055

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
WIFI + BT	0.0042+0.0151	≈0.02	1.0
Conclusion: 0.02 < 1.0, So there is no sar requirement			

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

2.The sum of the ratios(WIFI +BT) is less than the limit value of 1.0, so there is no sar requirement.