

RF EXPOSURE EVALUATION

EUT Specification

EUT	HeroGoGo Smart Driving Assistant System
Frequency band (Operating)	☒ WLAN: 2.412GHz ~ 2.472GHz ☐ WLAN: 5.18GHz ~ 5.24GHz ☐ WLAN: 5.745GHz ~ 5.825GHz ☒ Others(Bluetooth: 2.402GHz ~ 2.480GHz)
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others ____
Antenna diversity	☒ Single antenna ☐ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Max. output power	For WIFI: 11.09dBm(12.85mW) For BLE: 7.55dBm(5.69mW)
Antenna gain	For WIFI: -0.5 dBi For BLE: 0.26 dBi
Evaluation applied	☒ MPE Evaluation ☐ SAR Evaluation

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm ²)
300-1500	--	--	F/1500
1500-100000	--	--	1

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

Where

P_d = Power density in mW/cm^2

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, $1mW/cm^2$. 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

Channel	Gain	Channel Frequency (MHz)	Max Output power (dBm)	Tolerance	Max Tune-UP power (mW)	Power density at 20cm (mW/cm ²)	Power density Limits (mW/cm ²)
GFSK							
Low	0.26	2402	6.74	± 0.5	5.30	0.0112	1
Middle	0.26	2440	7.21	± 0.5	5.90	0.0125	1
High	0.26	2480	7.55	± 0.5	6.38	0.0135	1

Channel	Gain	Channel Frequency (MHz)	Max Output power (dBm)	Tolerance	Max Tune-UP power (mW)	Power density at 20cm (mW/cm ²)	Power density Limits (mW/cm ²)
802.11b							
Low	-0.5	2412	11.09	± 0.5	14.42	0.0256	1
Middle	-0.5	2437	10.42	± 0.5	12.36	0.0219	1
High	-0.5	2462	10.30	± 0.5	12.02	0.0213	1
802.11g							
Low	-0.5	2412	10.80	± 0.5	13.49	0.0239	1
Middle	-0.5	2437	10.28	± 0.5	11.97	0.0212	1
High	-0.5	2462	10.28	± 0.5	11.97	0.0212	1
802.11n HT20							
Low	-0.5	2412	10.50	± 0.5	12.59	0.0223	1
Middle	-0.5	2437	10.07	± 0.5	11.40	0.0202	1
High	-0.5	2462	10.18	± 0.5	11.69	0.0207	1
802.11n HT40							
Low	-0.5	2422	9.97	± 0.5	11.14	0.0198	1
Middle	-0.5	2437	9.53	± 0.5	10.07	0.0179	1
High	-0.5	2452	9.26	± 0.5	9.46	0.0169	1

Note: Bluetooth and WIFI can be used at the same time.

Power density at 20cm (mW/cm ²)	Power density at 20cm (mW/cm ²)	Total Power density at 20cm (mW/cm ²)	Limits (mW/cm ²)	Test Result
BLE	WIFI	BLE+WIFI		
0.0135	0.0256	0.0391	1	Pass

According to the test result of power density at separation distance 20cm, compliance with RF Exposure requirement.