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Maximum Permissible Exposure Evaluation

FCC ID: 2BQVP-ZPHD-0320

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)

EUT Specification

Product Name:	Mobile smart screen
Trade Mark:	/
Model/Type reference:	ZPHD-0320
Listed Model(s):	/
Operating Frequency band:	BT: 2402MHz ~ 2480MHz WLAN: 2412MHz ~ 2462MHz RLAN: 5180MHz ~ 5240MHz 5745MHz ~ 5825MHz
Device category:	☐ Portable (<5mm separation) ☒ Mobile (>20cm separation) ☐ Fixed (>20cm separation) ☐ Others ____
Exposure classification:	☐ Occupational/Controlled exposure (S=5mW/cm ²) ☒ General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity:	☒ Single antenna ☐ Multiple antennas
Antenna gain:	BT: 3.54dBi Max WLAN: 3.54dBi Max RLAN U-NII-1: 3.27dBi Max RLAN U-NII-3: 4.70dBi Max
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)	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	30
1500-100000	--	--	1	30

F = frequency in MHz



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

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d the limit of MPE 1mW/cm². 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

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Verdict
BLE	2480	3.54	-2.436	-2 ± 1	-1	0.00036	1.000	PASS
GFSK	2441	3.54	8.462	8 ± 1	9	0.00357	1.000	PASS
802.11b	2437	3.54	17.94	18 ± 1	19	0.03571	1.000	PASS
802.11a	5180	3.27	12.87	13 ± 1	14	0.01061	1.000	PASS
802.11ac(VHT20)	5825	4.70	13.42	13 ± 1	14	0.01475	1.000	PASS

The WLAN and BT can transmit simultaneously

WLAN Power density at 20cm(mW/cm ²)	BT Power density at 20cm(mW/cm ²)	Total Power density at 20cm	Limit (mW/cm ²)	Verdict
0.03571	0.00357	0.03928	1	PASS

Total E-field strength = ((E-field strength)/ (Limit) + (E-field strength)/ (Limit)...) ≤ 1

Note:

For a more detailed features description, Please refer to the RF Test Report.

*****THE END*****