RF Exposure Evaluation

FCC ID: 2A4IC-CP20

1. Client Information

Applicant	:	Shenzhen Zhenyi Intelligent Technology Co., LTD
Address	:	701, Building A, Haohe Zhichuang, No.10, Fuyuan 2nd Road, Zhancheng Community, Fuhai Street, Baoan District, Shenzhen, Guangdong, China
Manufacturer	:	Shenzhen Zhenyi Intelligent Technology Co., LTD
Address	:	701, Building A, Haohe Zhichuang, No.10, Fuyuan 2nd Road, Zhancheng Community, Fuhai Street, Baoan District, Shenzhen, Guangdong, China

2. General Description of EUT

EUT Name	:	Tablet PC	
Model(s) No.	:	CP20, CP20PRO, CP20 GOLD, CP20MAX, CP30	
Model Difference	:	All PCB boards and circuit diagrams are the same, the only difference is that appearance, color and model names.	
Product Description	:	Operation Frequency:	Bluetooth V4.1: 2402MHz~2480MHz Bluetooth 4.1(BLE): 2402MHz~2480MHz 802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
		RF Output Power:	BT: 0.776dBm BLE: -1.973dBm 802.11b: -0.058dBm 802.11g: -1.575dBm 802.11n (HT20): -1.604dBm 802.11n (HT40): -2.08dBm
		Antenna Gain:	0.8dBi PIFA Antenna
Power Supply	:	For Adapter (Model: FX2U-050200U) Input: AC 100-240V~ 50/60Hz 0.4A Max Output: 5V⎓2A	
Li-ion Polymer Battery	:	DC 3.8V by 6000mAh Rechargeable Li-ion battery	
Software Version	:	V1.0	
Hardware Version	:	R862-RK3326-LPDDR-V1.0	
Remark: The antenna gain and adapter provided by the applicant, verified for the RF conduction test and adapter provided by TOBY test lab.			

Note: More test information about the EUT please refer the RF Test Report.

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The RF Exposure Evaluation for FCC:

SAR Test Exclusion Calculations

FCC: According to 447498 D04 Interim General RF Exposure Guidance v01.

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula (B.2).

$$P_{\text{th}}\ (\text{mW}) = \begin{cases} ERP_{20\ \text{cm}}(d/20\ \text{cm})^{x} & d \le 20\ \text{cm} \\ ERP_{20\ \text{cm}} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ \text{cm}}\sqrt{f}}\right)$$

and f is in GHz, d is the separation distance (cm), and ERP_{20cm} is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)										
	5	10	15	20	25	30	35	40	45	50
300	39	65	88	110	129	148	166	184	201	217
450	22	44	67	89	112	135	158	180	203	226
835	9	25	44	66	90	116	145	175	207	240
1900	3	12	26	44	66	92	122	157	195	236
2450	3	10	22	38	59	83	111	143	179	219
3600	2	8	18	32	49	71	96	125	158	195
5800	1	6	14	25	40	58	80	106	136	169

Calculation:

Test separation: 5mm						
BT (GFSK)						
Frequency (GHz)	**Conducted Power (dBm)**	**Antenna (dBi)**	**Turn-up Power Tolerance (dB)**	**Max power of tune up tolerance (dBm)**	**Max power of tune up tolerance (mW)**	**Limit P_{th}(mW)**
2.402	0.776	0.8	2±1	3	1.995	3
2.441	-0.126	0.8	1±1	2	1.585	3
2.480	0.088	0.8	1±1	2	1.585	3
BT (π/4-DQPSK)						
Frequency (GHz)	**Conducted Power (dBm)**	**Antenna (dBi)**	**Turn-up Power Tolerance (dB)**	**Max power of tune up tolerance (dBm)**	**Max power of tune up tolerance (mW)**	**Limit P_{th}(mW)**
2.402	-0.136	0.8	1±1	2	1.585	3
2.441	-1.049	0.8	0±1	1	1.259	3
2.480	-0.772	0.8	0±1	1	1.259	3
BT (8-DPSK)						
Frequency (GHz)	**Conducted Power (dBm)**	**Antenna (dBi)**	**Turn-up Power Tolerance (dB)**	**Max power of tune up tolerance (dBm)**	**Max power of tune up tolerance (mW)**	**Limit P_{th}(mW)**
2.402	-0.068	0.8	1±1	2	1.585	3
2.441	-0.951	0.8	0±1	1	1.259	3
2.480	-0.681	0.8	0±1	1	1.259	3
BLE (1Mbps)						
Frequency (GHz)	**Conducted Power (dBm)**	**Antenna (dBi)**	**Turn-up Power Tolerance (dB)**	**Max power of tune up tolerance (dBm)**	**Max power of tune up tolerance (mw)**	**Limit P_{th}(mW)**
2.402	-2.479	0.8	-2±1	-1	0.794	3
2.440	-1.973	0.8	-1±1	0	1.000	3
2.480	-3.242	0.8	-2±1	-1	0.794	3
BLE (2Mbps)						
Frequency (GHz)	**Conducted Power (dBm)**	**Antenna (dBi)**	**Turn-up Power Tolerance (dB)**	**Max power of tune up tolerance (dBm)**	**Max power of tune up tolerance (mw)**	**Limit P_{th}(mW)**
2.402	-2.917	0.8	-2±1	-1	0.794	3
2.440	-2.155	0.8	-1±1	0	1.000	3
2.480	-3.198	0.8	-2±1	-1	0.794	3

802.11b						
Frequency (GHz)	Conducted Power (dBm)	Antenna (dBi)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dBm)	Max power of tune up tolerance (mw)	Limit P_{th}(mW)
2.412	-0.384	0.8	0±1	1	1.259	3
2.437	-0.351	0.8	0±1	1	1.259	3
2.462	-0.058	0.8	1±1	2	1.585	3
802.11g						
Frequency (GHz)	Conducted Power (dBm)	Antenna (dBi)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dBm)	Max power of tune up tolerance (mw)	Limit P_{th}(mW)
2.412	-2.05	0.8	-1±1	0	1.000	3
2.437	-1.938	0.8	-1±1	0	1.000	3
2.462	-1.575	0.8	-1±1	0	1.000	3
802.11n(HT20)						
Frequency (GHz)	Conducted Power (dBm)	Antenna (dBi)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dBm)	Max power of tune up tolerance (mw)	Limit P_{th}(mW)
2.412	-2.092	0.8	-1±1	0	1.000	3
2.437	-1.985	0.8	-1±1	0	1.000	3
2.462	-1.604	0.8	-1±1	0	1.000	3
802.11n(HT40)						
Frequency (GHz)	Conducted Power (dBm)	Antenna (dBi)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dBm)	Max power of tune up tolerance (mw)	Limit P_{th}(mW)
2.422	-2.389	0.8	-2±1	-1	0.794	3
2.437	-2.301	0.8	-2±1	-1	0.794	3
2.452	-2.08	0.8	-1±1	0	1.000	3
The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 D04, No SAR is required.						

Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v06, No SAR is required.

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