Maximum Permissible Exposure Report

1. Product Information

FCC ID	:	2AVIMHPADIA10
EUT	:	TABLET PC
Test Model	:	GACRUX
Power Supply	:	Input: 5V⎓2A
		For Adapter Input: 100-240V~, 50/60Hz, 0.35A MAX
		For Adapter Output: 5V⎓2A
		DC 3.8V by Rechargeable Li-ion Battery, 6000mAh
Hardware Version	:	EM_T6818E_V1.0 L20
Software Version	:	HPADIA10_GACRUX_xxxxxxxx_V01
Bluetooth	:	
Frequency Range	:	2402MHz ~ 2480MHz
Chanel Number	:	79 channels for Bluetooth V4.1(DSS)
		40 channels for Bluetooth V4.1 (DTS)
Chanel Spacing	:	1MHz for Bluetooth V4.1 (DSS)
		2MHz for Bluetooth V4.1 (DTS)
Modulation Type	:	GFSK, π/4-DQPSK, 8-DPSK for Bluetooth V4.1(DSS)
		GFSK for Bluetooth V4.1 (DTS)
Bluetoth Version	:	V4.1
Antenna Description	:	PIFA Antenna, 0.86dBi(Max.)
WIFI(2.4G Band)	:	
Frequency Range	:	2412MHz ~ 2462MHz
Channel Spacing	:	5MHz
Channel Number	:	11 Channels for 20MHz bandwidth (2412~2462MHz)
		7 Channels for 40MHz bandwidth (2422~2452MHz)
Modulation Type	:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK)
		IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK)
		IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna Description	:	PIFA Antenna, 0.86dBi(Max.)
5.2G WLAN	:	
Frequency Range	:	5180MHz-5240MHz
Channel Number	:	4 channels for 20MHz bandwidth(5180MHz-5240MHz)
		2 channels for 40MHz bandwidth(5190MHz~5230MHz)
		1 channels for 80MHz bandwidth(5210MHz)
Modulation Type	:	IEEE 802.11a/n/ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK)
Antenna Description	:	PIFA Antenna, 1.23dBi(Max.)
5.8G WLAN	:	
Frequency Range	:	5745MHz-5825MHz
Channel Number	:	5 channels for 20MHz bandwidth(5745MHz-5825MHz)
		2 channels for 40MHz bandwidth(5755MHz~5795MHz)
		1 channels for 80MHz bandwidth(5775MHz)
Modulation Type	:	IEEE 802.11a/n/ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK)
Antenna Description	:	PIFA Antenna, 1.23dBi(Max.)
EUT Type	:	Production Unit

Device Type : Portable Device
GPS function : Support and only RX

2.Evaluation method and Limit

According to KDB447498 D01 General RF Exposure Guidance v06 Section 4.3.1 Standalone SAR test exclusion considerations: "Unless specifically required by the published RF exposure KDB procedures, standalone 1-g hed a or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition, listed below, is satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.22 The minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander (see 5) of section 4.1). To qualify for SAR test exclusion, the test separation distances applied must be fully explained and justified by the operating configurations and exposure conditions of the transmitter and applicable host platform requirements, typically in the SAR measurement or SAR analysis report, according to the required published RF exposure KDB procedures. When no other RF exposure testing or reporting is required, a statement of justification and compliance must be included in the equipment approval, in lieu of the SAR report, to qualify for the SAR test exclusion. When required, the device specific conditions described in the other published RF exposure KDB procedures must be satisfied before applying these SAR test exclusion provisions; for example, handheld PTT two-way radios, handsets, laptops & tablets etc.23 "
[(max. power of channel, including tune-up tolerance, mW)/ (min. test separation distance, mm)] · [√f (GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:

- f (GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below
  The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to f) in section 4.1 is applied to determine SAR test exclusion.

3. Refer Evaluation Method

ANSI C95.1–1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
FCC KDB publication 447498 D01 General RF Exposure Guidance v06: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.
FCC CFR 47 part1 1.1310: Radiofrequency radiation exposure limits.
FCC CFR 47 part2 2.1093: Radiofrequency radiation exposure evaluation: portable devices

4. Conducted Power

[BT]

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)
GFSK	00	2402	1.58
	39	2441	1.95
	79	2480	0.51
π/4-DQPSK	00	2402	-0.09
	39	2441	1.05
	79	2480	-0.41
8-DPSK	00	2402	0.18
	39	2441	1.18
	79	2480	-0.25

[BT LE]

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)
GFSK	00	2402	1.32
	19	2440	2.47
	39	2480	1.05

[2.4G WLAN]

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)
IEEE 802.11b	1	2412	8.86
	6	2437	8.01
	11	2462	8.59
IEEE 802.11g	1	2412	7.76
	6	2437	7.16
	11	2462	7.12
IEEE 802.11n HT20	1	2412	7.47
	6	2437	7.88
	11	2462	7.51
IEEE 802.11n HT40	3	2422	7.48
	6	2437	7.06
	9	2462	7.02

[5.2G WLAN]

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
IEEE 802.11a	36	5180	6.59
	40	5200	6.82
	48	5240	6.39
IEEE 802.11n HT20	36	5180	6.57
	40	5200	6.45
	48	5240	6.37
IEEE 802.11n HT40	38	5190	6.63
	46	5230	6.55
IEEE 802.11ac VHT20	36	5180	6.70
	40	5200	6.54
	48	5240	6.29
IEEE 802.11ac VHT40	38	5190	6.67
	46	5230	6.49
IEEE 802.11ac VHT80	42	5210	6.57

[5.8G WLAN]

Mode	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)
IEEE 802.11a	149	5745	6.80
	157	5785	6.40
	165	5825	6.19
IEEE 802.11n HT20	149	5745	6.17
	157	5785	6.13
	165	5825	5.51
IEEE 802.11n HT40	151	5755	7.22
	159	5795	6.83
IEEE 802.11ac VHT20	149	5745	6.08
	157	5785	6.72
	165	5825	5.87
IEEE 802.11ac VHT40	151	5755	6.23
	159	5795	6.79
IEEE 802.11ac VHT80	155	5775	6.07

5. Manufacturing Tolerance

GFSK(Peak)			
Channel	Channel 00	Channel 39	Channel 78
Target (dBm)	1.0	1.0	0.0
Tolerance ± (dB)	1.0	1.0	1.0
π/4-DQPSK(Peak)			
Channel	Channel 00	Channel 39	Channel 78
Target (dBm)	0.0	1.0	0.0
Tolerance ± (dB)	1.0	1.0	1.0
8-DPSK(Peak)			
Channel	Channel 00	Channel 39	Channel 78
Target (dBm)	0.0	1.0	0.0
Tolerance ± (dB)	1.0	1.0	1.0

BT LE(Peak)			
Channel	Channel 00	Channel 19	Channel 39
Target (dBm)	1.0	2.0	1.0
Tolerance ± (dB)	1.0	1.0	1.0

IEEE 802.11b(Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	8.0	8.0	8.0
Tolerance ± (dB)	1.0	1.0	1.0
IEEE 802.11g(Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	7.0	7.0	7.0
Tolerance ± (dB)	1.0	1.0	1.0
IEEE 802.11n20(Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	7.0	7.0	7.0
Tolerance ± (dB)	1.0	1.0	1.0
IEEE 802.11n40(Peak)			
Channel	Channel 03	Channel 06	Channel 09
Target (dBm)	7.0	7.0	7.0
Tolerance ± (dB)	1.0	1.0	1.0

[5.2G WLAN]			
IEEE 802.11a (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	7.0	7.0	7.0
Tolerance ± (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	7.0	7.0	7.0
Tolerance ± (dB)	1.0	1.0	1.0
IEEE 802.11n HT40 (Average)			
Channel	Channel 38	Channel 46	
Target (dBm)	7.0	7.0	

Tolerance ± (dB)	1.0		1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	7.0	7.0	7.0
Tolerance ± (dB)	1.0	1.0	1.0
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 38		Channel 46
Target (dBm)	7.0		7.0
Tolerance ± (dB)	1.0		1.0
IEEE 802.11ac VHT80(Average)			
Channel	Channel 42		
Target (dBm)	7.0		
Tolerance ± (dB)	1.0		

[5.8G WLAN]			
IEEE 802.11a (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	6.0	6.0	6.0
Tolerance ± (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	6.0	6.0	6.0
Tolerance ± (dB)	1.0	1.0	1.0
IEEE 802.11n HT40 (Average)			
Channel	Channel 151		Channel 159
Target (dBm)	6.0		6.0
Tolerance ± (dB)	1.0		1.0
IEEE 802.11ac VHT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	6.0	6.0	6.0
Tolerance ± (dB)	1.0	1.0	1.0
IEEE 802.11ac VHT40 (Average)			
Channel	Channel 151		Channel 159
Target (dBm)	6.0		6.0
Tolerance ± (dB)	1.0		1.0
IEEE 802.11ac VHT80(Average)			
Channel	Channel 155		
Target (dBm)	6.0		
Tolerance ± (dB)	1.0		

6. Measurement Results

Band/Mode	f (GHz)	Antenna Distance (mm)	RF output power		SAR Test Exclusion Threshold	SAR Test Exclusion
			dBm	mW		
GFSK	2.450	5	2.0	1.5849	0.4962< 3.0	Yes
π/4DQPSK	2.450	5	2.0	1.5849	0.4962< 3.0	Yes
8DPSK	2.450	5	2.0	1.5849	0.4962< 3.0	Yes
GFSK (BT LE)	2.450	5	3.0	1.9953	0.6246< 3.0	Yes
IEEE 802.11b	2.450	5	9.0	7.9433	2.4866< 3.0	Yes
IEEE 802.11g	2.450	5	8.0	6.3096	1.9752< 3.0	Yes
IEEE 802.11n HT20	2.450	5	8.0	6.3096	1.9752< 3.0	Yes
IEEE 802.11n HT40	2.450	5	8.0	6.3096	1.9752< 3.0	Yes

5.2GWiFi

Band/Mode	f (GHz)	Antenna Distance (mm)	RF output power		SAR Test Exclusion Threshold	SAR Test Exclusion
			dBm	mW		
IEEE 802.11a	5200	5	8.0	6.3096	2.8776< 3.0	Yes
IEEE 802.11n HT20	5200	5	8.0	6.3096	2.8776< 3.0	Yes
IEEE 802.11n HT40	5200	5	8.0	6.3096	2.8776< 3.0	Yes
IEEE 802.11ac VHT20	5200	5	8.0	6.3096	2.8776< 3.0	Yes
IEEE 802.11ac VHT40	5200	5	8.0	6.3096	2.8776< 3.0	Yes
IEEE 802.11ac VHT80	5200	5	8.0	6.3096	2.8776< 3.0	Yes

5.8GWiFi

Band/Mode	f (GHz)	Antenna Distance (mm)	RF output power		SAR Test Exclusion Threshold	SAR Test Exclusion
			dBm	mW		
IEEE 802.11a	5785	5	7.0	5.0119	2.4109< 3.0	Yes
IEEE 802.11n HT20	5785	5	7.0	5.0119	2.4109< 3.0	Yes
IEEE 802.11n HT40	5785	5	7.0	5.0119	2.4109< 3.0	Yes
IEEE 802.11ac VHT20	5785	5	7.0	5.0119	2.4109< 3.0	Yes
IEEE 802.11ac VHT40	5785	5	7.0	5.0119	2.4109< 3.0	Yes
IEEE 802.11ac VHT80	5785	5	7.0	5.0119	2.4109< 3.0	Yes

Remark:
1. Output power including tune up tolerance;
2. WLAN ,RLAN and BT share same modular and same antenna, no need consider simultaneous transmit.

7. 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.

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