FCC Test Report

(Class II Permissive Change)

Product Name	Rugged Tablet
Model No.	PA501BXXXXXXXXX (X for marketing used only: can be alphanumeric or blank)
FCC ID.	2ABTU-PA501B

Applicant	RuggON Corporation
Address	4F, No. 298, Yang Guang St., Neihu Dist., Taipei City, Taiwan

Date of Receipt	Dec. 10, 2019
Issued Date	Jan. 17, 2020
Report No.	19C0153R-RFUSP27V00
Report Version	V1.0

Testing Laboratory
3023

Test Report

Issued Date: Jan. 17, 2020
Report No.: 19C0153R-RFUSP27V00

Product Name	Rugged Tablet
Applicant	RuggON Corporation
Address	4F, No. 298, Yang Guang St., Neihu Dist., Taipei City, Taiwan
Manufacturer	RuggON Corporation
Model No.	PA501BXXXXXXXXX (X for marketing used only: can be alphanumeric or blank)
FCC ID.	2ABTU-PA501B
EUT Rated Voltage	AC 100-240V / 50-60Hz
EUT Test Voltage	AC 120V/60Hz
Trade Name	RuggON
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By : Anny Chou

(Senior Adm. Specialist / Anny Chou)

Tested By : Sam Hsu

(Engineer / Sam Hsu)

Approved By :

(Director / Vincent Lin)

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Rugged Tablet
Trade Name	RuggON
Model No.	PA501BXXXXXXXXX (X for marketing used only: can be alphanumeric or blank)
FCC ID.	2ABTU-PA501B
Frequency Range	WLAN：802.11b/g/n-20: 2412-2472 MHz, 802.11n-40: 2422-2462 MHz 802.11a/ n/ac-20: 5180-5320 MHz, 5500-5720 MHz, 5745-5825MHz 802.11n/ac-40: 5190-5310 MHz, 5510-5670 MHz, 5755-5795MHz 802.11ac-80 MHz: 5210-5290 MHz, 5530-5690 MHz,5775MHz Bluetooth：2402-2480 MHz
Channel Number	WLAN：802.11b/g/n-20: 13CH, 802.11n-40: 9CH 802.11a /n/ac-20: 25CH 802.11ac-80 MHz: 5CH Bluetooth：V3.0+HS, V2.1+EDR: 79CH, V4.0: 40CH
Data Rate	WLAN：802.11b: 1-11Mbps, 802.11a/g: 6-54Mbps, 802.11n: up to 300Mbps 802.11ac-80 MHz: up to 866.7 Mbps Bluetooth: 1-3Mbps
Channel Separation	WLAN：802.11b/g/n: 5 MHz, 802.11a/n-20 MHz: 20 MHz, 802.11n-40 MHz: 40 MHz 802.11ac-80 MHz: 80 MHz Bluetooth：V3.0: 1 MHz; V5.0: 2 MHz
Type of Modulation	WLAN：802.11b:DSSS, DBPSK, DQPSK, CCK 802.11a/g/n/ac: OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM Bluetooth：V3.0+HS, V2.1+EDR: GFSK(1Mbps) /π/4DQPSK(2Mbps) / 8DPSK(3Mbps); V5.0: GFSK(1Mbps)/(2Mbps)
Antenna Type	PIFA Antenna
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”
Power Adapter	MFR: FSP, M/N: FSP065-RBBN3 Input: AC 100-240Vac, 1.5A 50-60Hz Output: 19V⎓3.42A Cable Out: Non-shielded, 1.5m, with one ferrite core bonded.

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	AnJie	AJDQ1J-B0024(Main) AJQQ1J-W0001(Aux)	PIFA	Main: 2.94dBi for 2.4 GHz 3.58dBi for 5150-5250MHz 3.58dBi for 5250-5350MHz 2.85dBi for 5470-5725MHz 3.34dBi for 5725-5850MHz Aux: 3.31dBi for 2.4 GHz 2.89dBi for 5150-5250MHz 2.49dBi for 5250-5350MHz 1.93dBi for 5470-5725MHz 1.77dBi for 5725-5850MHz

Note: The antenna of EUT is conform to FCC 15.203

1.2. Test Summary

Part 15C Requirement

Requirement – Test Item	Result
Spurious emissions	Pass

Part 22H,Part 24E,Part 27,Part 90 Requirement

Requirement – Test Item	Result
Spurious emissions	Pass

Note:

1. The EUT is an Rugged Tablet ,contains functions on NFC, 2.4G and 5G band WIFI and WWAN with Bluetooth (V5.0 and V3.0+HS, V2.1+EDR) combo card module transceiver,this report for Bluetooth V5.0.
2. These tests were conducted on a sample for the purpose of demonstrating compliance of transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. This device contains the certified FCC ID: 2ABTU-MS01 and FCC ID: 2ABTU-EM75S , This is a WLAN/BT Combo Card and WWAN Card, the final product addition the antenna a PIFA Antenna.
5. The consider Co-Location based on KDB 996369 D02 Question 1 and KDB 996369 D04 for Radiated Spurious Emission & SAR testing.
6. Since the antenna gain and output power are both smaller than the original certification, the final product complies with the KDB 178919 Section II.B) ERP/EIRP rules.
7. The final test results meets all the applicable FCC rules, including FCC Part 15C and Part 22H, Part 24E, Part 27 Part 90.

Test Mode (Simultaneous Transmit)	(1) Select adjacent operating bands. Mode 1: LTE B41 (20MBW 2506MHz)+ WiFi 802.11n20 (2462MHz)+NFC+GPS Mode 2: LTE B7 (20MBW 2510MHz)+Wi-Fi 802.11n40 (2452MHz) +NFC+GPS Mode 3: WiFi 802.11n20 (2412MHz)+BT EDR 3Mbps (2402MHz)+NFC+GPS (2) Select higher power channel from each pair of simultaneous transmission Mode 4: WCDMA Band V (846.6MHz)+2.4 GHz WLAN(802.11b 2457MHz)+NFC+GPS Mode 5: LTE Band 14 (10MBW 793MHz)+5 GHz WLAN(802.11a 5200MHz+NFC+GPS Mode 6: LTE Band 66 (20MBW 1745MHz)+2.4 GHZ BT(1Mbps 2480MHz+NFC+GPS

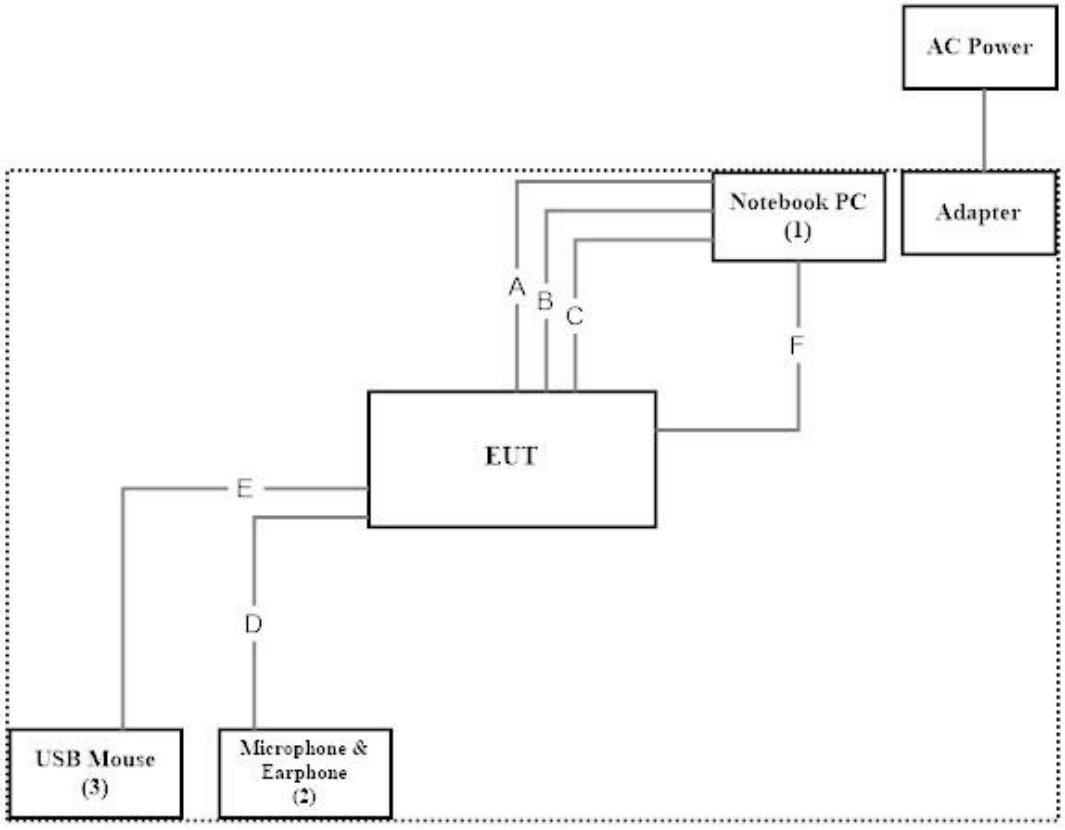
1.4. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	Latitude 5580	2HRD7H2	Non-Shielded, 0.8m
2	Microphone & Earphone	RONEVER	MOE241	N/A	N/A
3	USB Mouse	Dell	MS111-L	CN-09RRC7-44751-071-04R8	N/A

Signal Cable Type		Signal cable Description
A	USB Cable	Non-Shielded, 1.8m
B	LAN Cable	Non-Shielded, 3m
C	USB Cable	Shielded, 1m
D	Microphone & Earphone Cable	Non-Shielded, 1.2m
E	USB Mouse Cable	Shielded, 1.8m
F	RS-232 Cable	Shielded, 1.5m

1.5. Configuration of Tested System



1.6. EUT Exercise Software

(1) Setup the EUT as shown on 1.4

(2) Execute software “QRCT V3.0.268.0” on the EUT.

(3) The Communication Analyzer (MT8820C) uses in controlling EUT to transmit continuously.

(4) Configure the test mode, the test channel, and the data rate.

(5) Start the continuous transmission.

(6) Verify that the EUT works properly.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

USA : FCC Registration Number: TW3023

Canada : IC Registration Number: 4075A

Site Description: Accredited by TAF
Accredited Number: 3023

Test Laboratory: DEKRA Testing and Certification Co., Ltd
Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
Phone number: 886-2-8601-3788
Fax number: 886-2-8601-3789
Email address: info.tw@dekra.com
Website: http://www.dekra.com.tw

1.8. List of Test Item and Equipment

For Radiated measurements /Site3/CB8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Spectrum Analyzer	R&S	FSP40	100170	2019/03/11	2020/03/10
	Loop Antenna	Teseq	HLA6121	37133	2019/10/15	2021/10/14
X	Bilog Antenna	Schaffner Chase	CBL6112B	2794	2019/06/23	2020/06/22
X	Coaxial Cable	DEKRA	L1907-001C	280280.F141.1000D	2019/07/10	2020/07/09
X	Amplifier	EMCI	EMC001330	980254	2019/08/22	2020/08/21
X	Horn Antenna	ETS-LINDGREN	3117	00228113	2019/05/02	2020/05/01
	Coaxial Cable	DEKRA	L1907-002C	280280.F141.1000D	2019/07/10	2020/07/09
X	Amplifier	EMCI	EMC05820SE	980362	2019/06/26	2020/06/25
	Amplifier	EMCI	EMC051845SE	SN980632	2019/08/08	2020/08/07
X	Horn Antenna	Com-Power	AH-1840	101101	2019/10/31	2020/10/30
X	Amplifier + Cable	EMCI	EMC184045SE	980369	2019/04/16	2020/04/15
	Bilog Antenna	Schaffner Chase	CBL6112B	2916	2019/06/23	2020/06/22
	Coaxial Cable	DEKRA	L1907-003C	00100A1B3A120M	2019/07/10	2020/07/09
	Amplifier	EMCI	EMC001330	980255	2019/06/28	2020/06/27
X	Filter	MICRO-TRONICS	BRM50702	G270	2019/08/08	2020/08/07
X	Filter	MICRO-TRONICS	BRM50716	G196	2019/08/08	2020/08/07

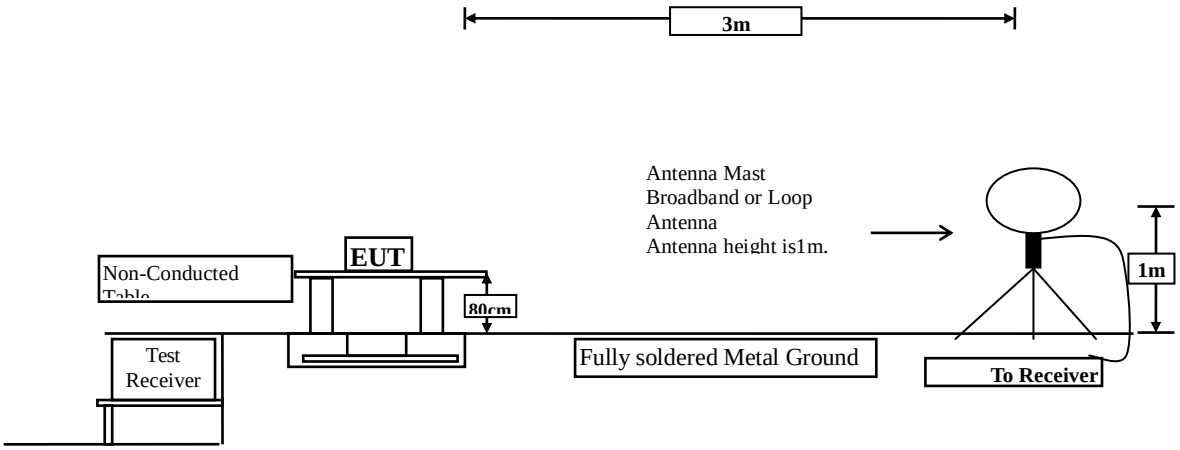
Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version :QuieTek EMI 2.0 V2.1.113.

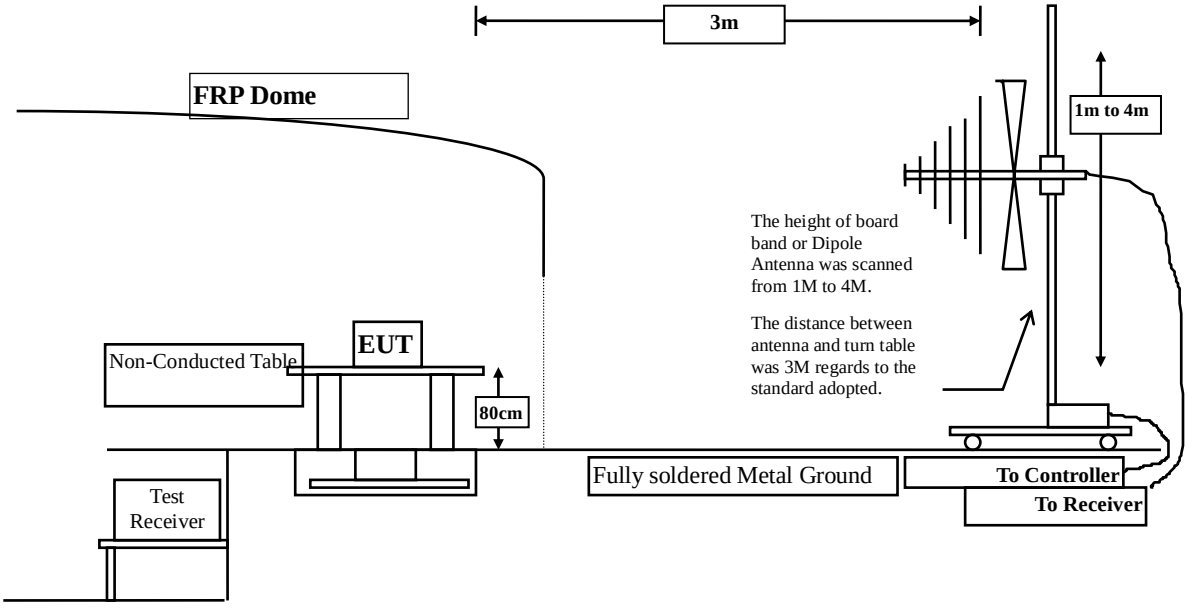
2. Radiated Emission

2.1. Test Setup

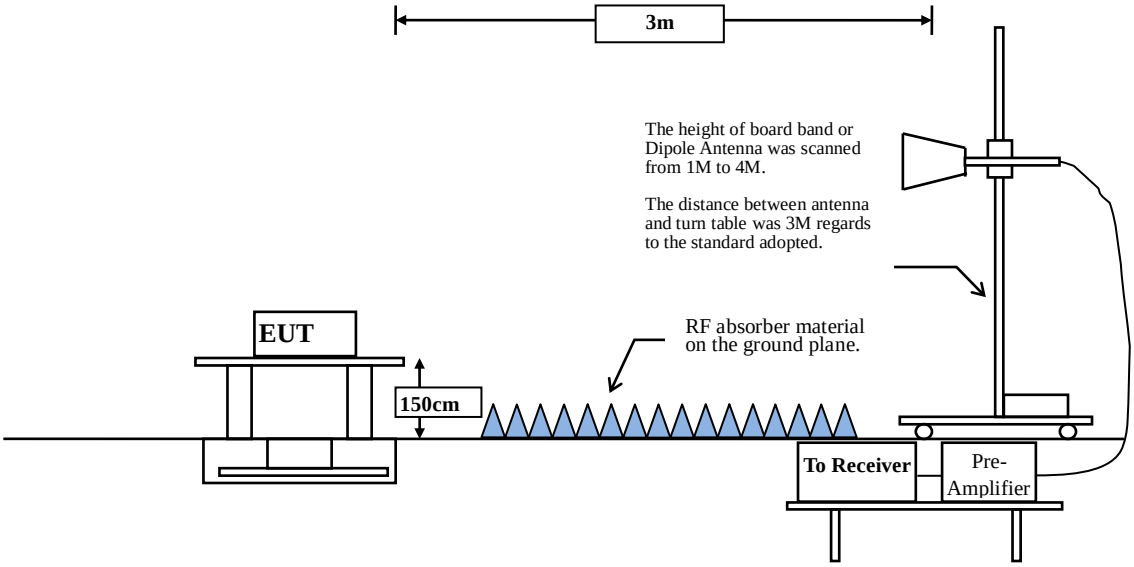
Under 30MHz



Below 1GHz



Above 1GHz


3m
The height of board band or Dipole Antenna was scanned from 1M to 4M.
The distance between antenna and turn table was 3M regards to the standard adopted.
EUT
150cm
RF absorber material on the ground plane.
To Receiver
Pre-Amplifier

2.2. Limits

➢ **General Radiated Emission Limits**

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

The final test results meets all the applicable FCC rules, including FCC Part 15C and Part 22H, Part 24E, Part 27 Part 90.

2.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground,when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

2.4. Uncertainty

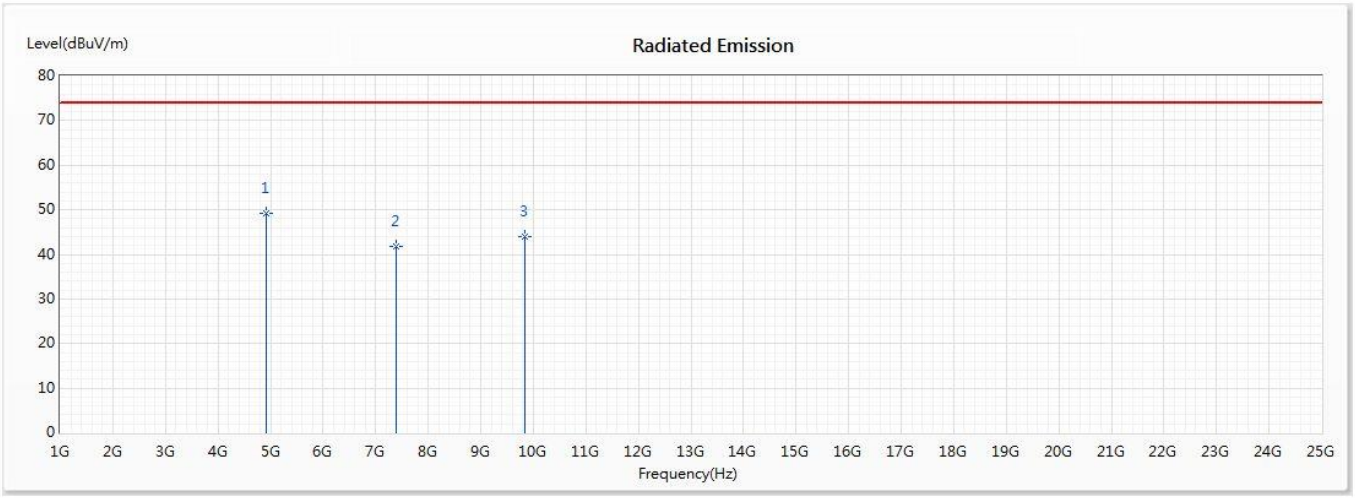
± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

2.5. Test Result of Radiated Emission

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 1: LTE B41 (20MBW 2506MHz)+ WiFi 802.11n20 (2462MHz)+NFC+GPS

Horizontal



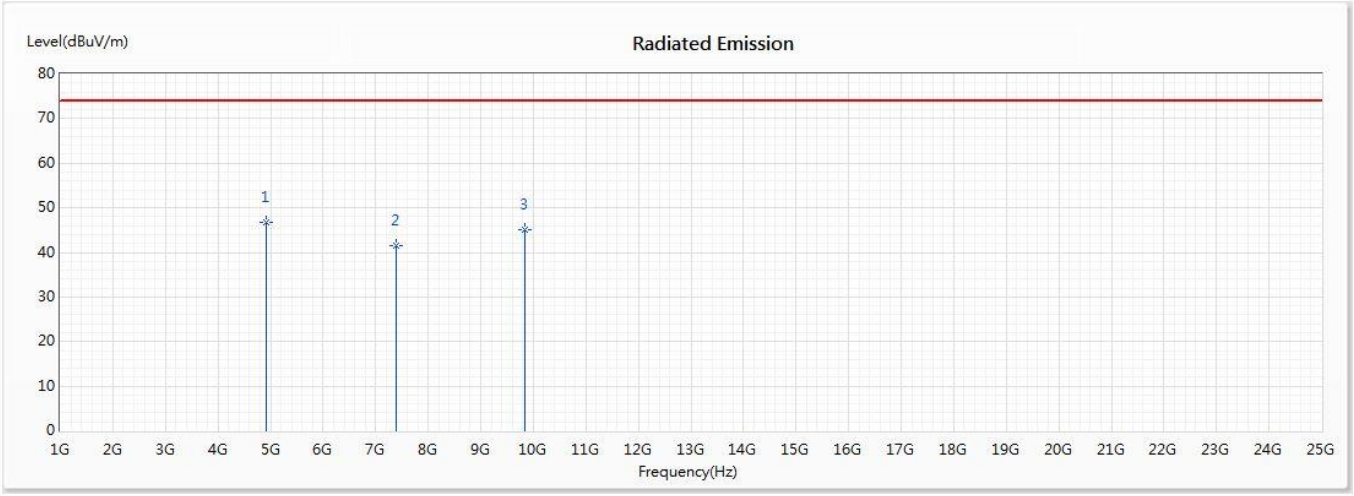
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4924	49.18	74.00	-24.82	60.42	-11.24	PK
2	7386	41.86	74.00	-32.14	55.96	-14.10	PK
3	9848	43.99	74.00	-30.01	57.43	-13.44	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 1: LTE B41 (20MBW 2506MHz)+ WiFi 802.11n20 (2462MHz)+NFC+GPS

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4924	46.86	74.00	-27.14	58.10	-11.24	PK
2	7386	41.62	74.00	-32.38	55.72	-14.10	PK
3	9848	44.96	74.00	-29.04	58.40	-13.44	PK

Note:

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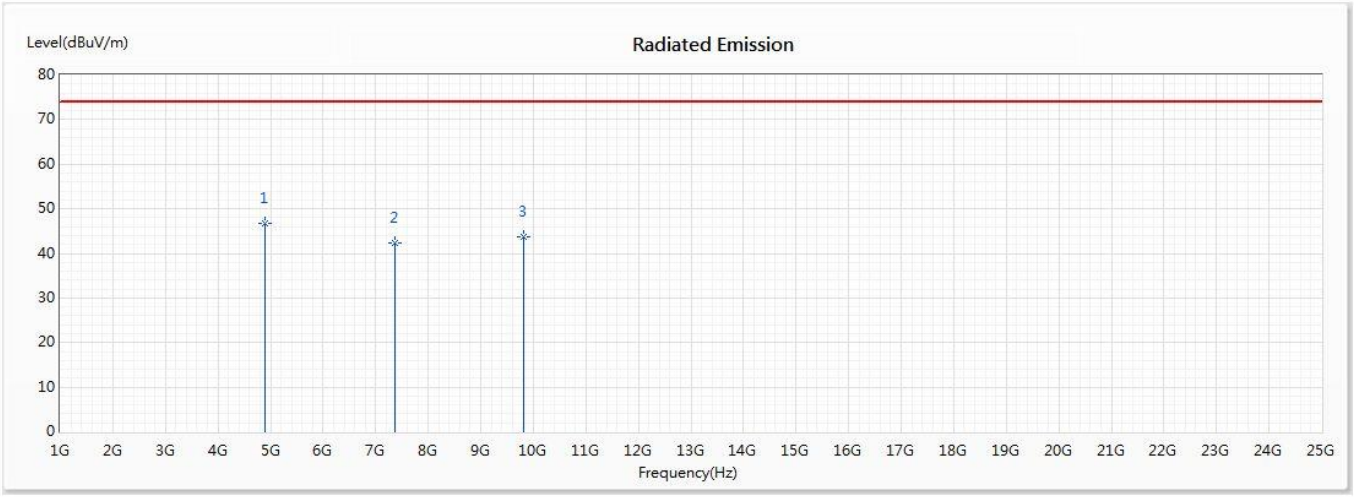
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 2: LTE B7 (20MBW 2510MHz)+Wi-Fi 802.11n40 (2452MHz) +NFC+GPS

Horizontal



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4904	46.62	74.00	-27.38	58.06	-11.44	PK
2	7356	42.32	74.00	-31.68	56.16	-13.84	PK
3	9808	43.79	74.00	-30.21	56.79	-13.00	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

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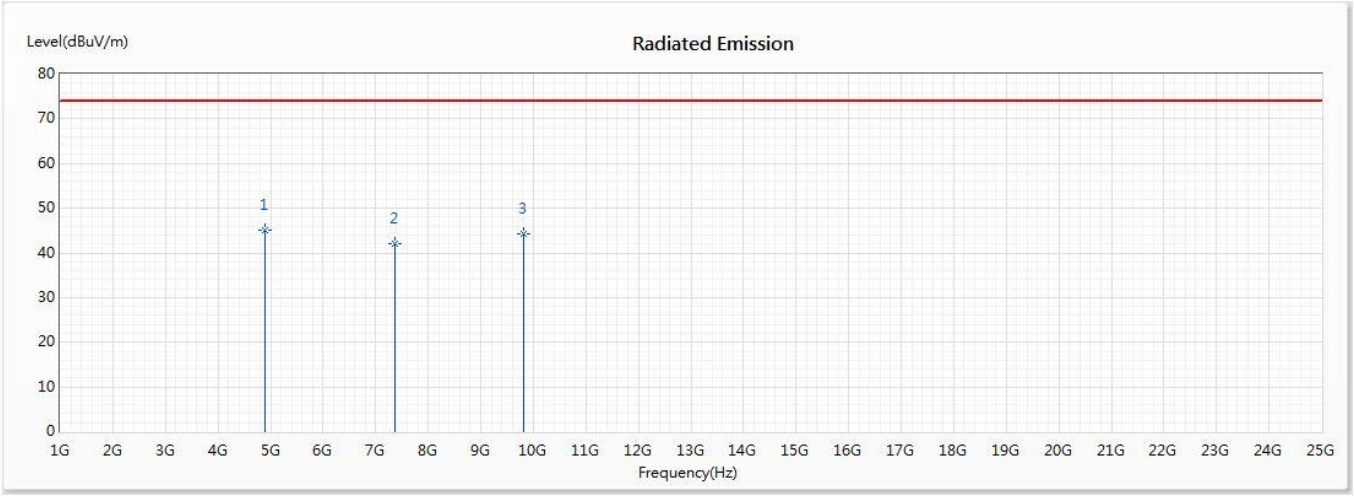
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 2: LTE B7 (20MBW 2510MHz)+Wi-Fi 802.11n40 (2452MHz) +NFC+GPS

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4904	45.04	74.00	-28.96	56.48	-11.44	PK
2	7356	42.07	74.00	-31.93	55.91	-13.84	PK
3	9808	44.24	74.00	-29.76	57.24	-13.00	PK

Note:

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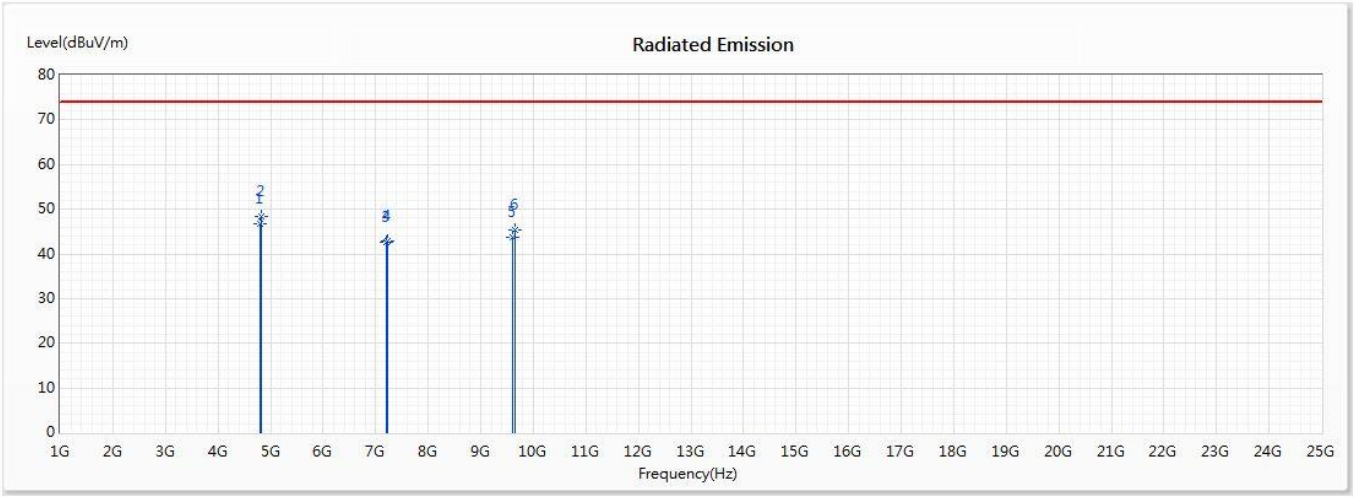
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 3: WiFi 802.11n20 (2412MHz)+BT EDR 3Mbps (2402MHz)+NFC+GPS

Horizontal



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4804	46.79	74.00	-27.21	58.94	-12.15	PK
* 2	4824	48.45	74.00	-25.55	60.44	-11.99	PK
3	7206	42.69	74.00	-31.31	55.83	-13.14	PK
4	7236	42.86	74.00	-31.14	55.82	-12.96	PK
5	9608	43.80	74.00	-30.20	57.22	-13.42	PK
6	9648	45.24	74.00	-28.76	58.34	-13.10	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
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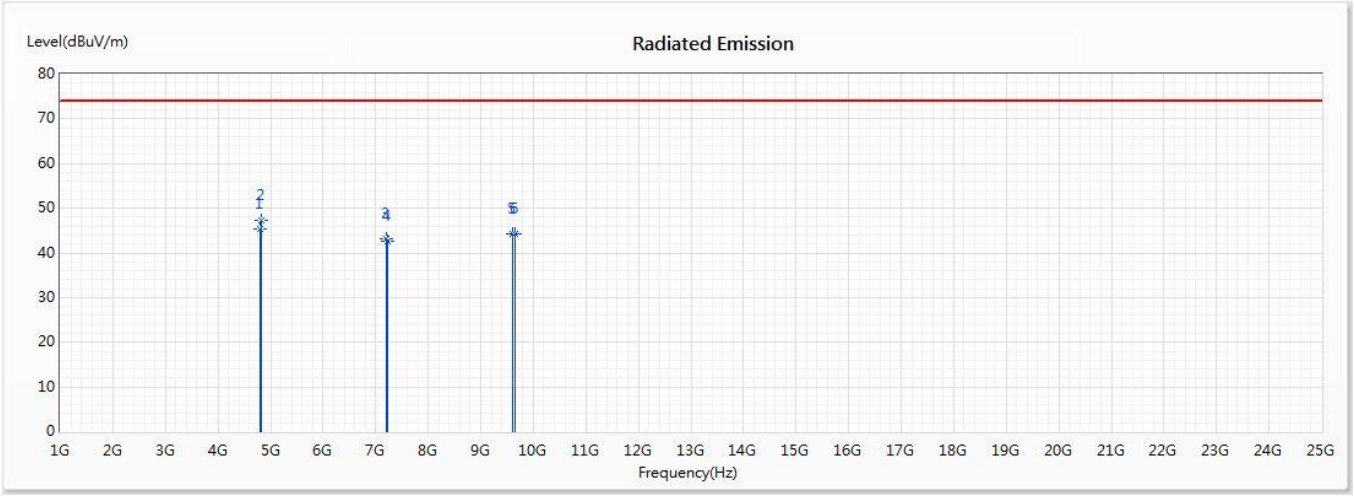
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 3: WiFi 802.11n20 (2412MHz)+BT EDR 3Mbps (2402MHz)+NFC+GPS

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4804	45.28	74.00	-28.72	57.43	-12.15	PK
* 2	4824	47.23	74.00	-26.77	59.22	-11.99	PK
3	7206	43.08	74.00	-30.92	56.22	-13.14	PK
4	7236	42.52	74.00	-31.48	55.48	-12.96	PK
5	9608	44.20	74.00	-29.80	57.62	-13.42	PK
6	9648	44.38	74.00	-29.62	57.48	-13.10	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
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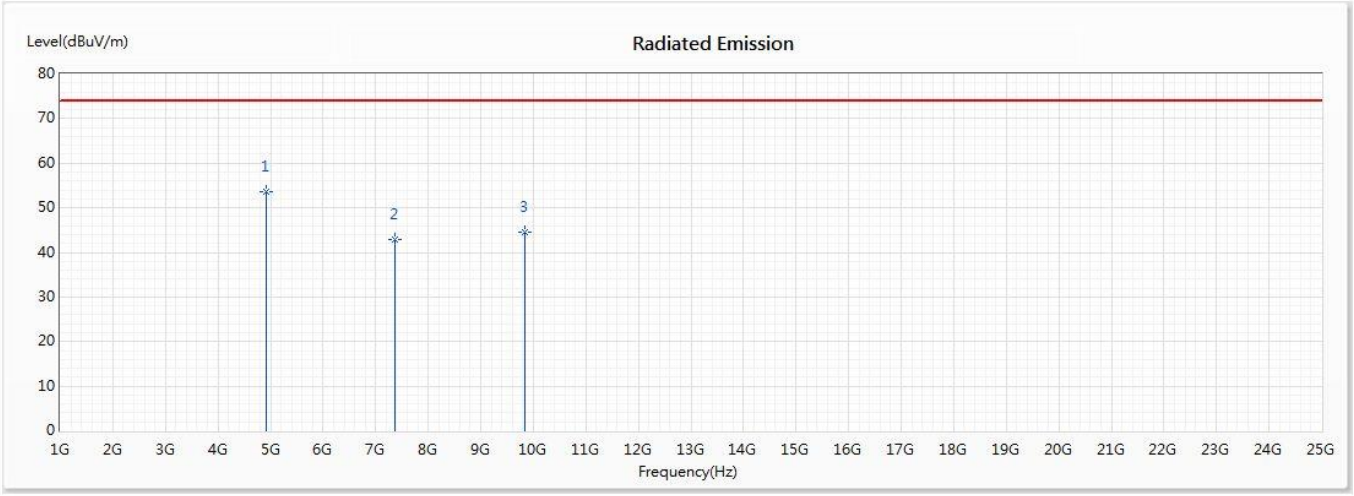
Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 4: WCDMA Band V (846.6MHz)+2.4 GHz WLAN(802.11b 2457MHz)+NFC+GPS

Horizontal



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4914	53.69	74.00	-20.31	65.03	-11.34	PK
2	7371	42.93	74.00	-31.07	56.91	-13.98	PK
3	9828	44.56	74.00	-29.44	57.79	-13.23	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
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4. The average measurement was not performed when the peak measured data under the limit of average detection.
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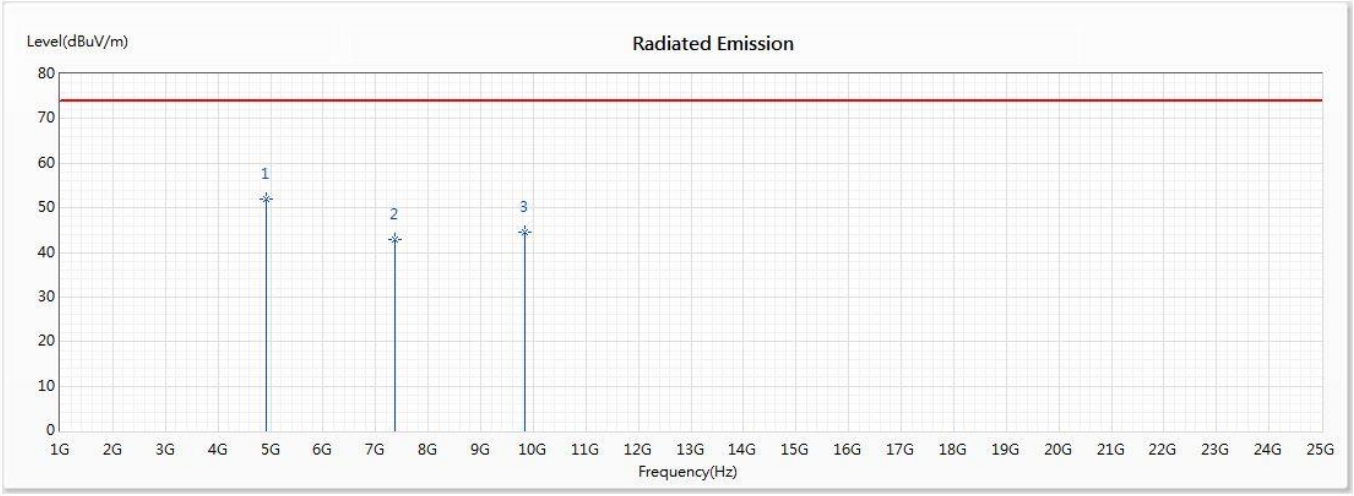
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 4: WCDMA Band V (846.6MHz)+2.4 GHz WLAN(802.11b 2457MHz)+NFC+GPS

Vertical



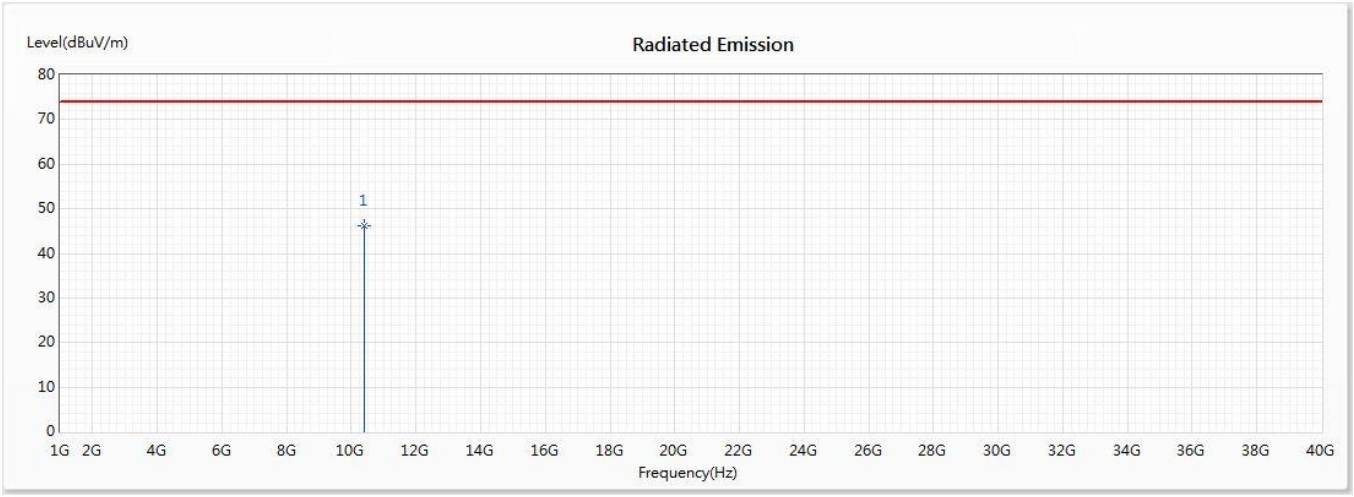
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4914	52.05	74.00	-21.95	63.39	-11.34	PK
2	7371	42.93	74.00	-31.07	56.91	-13.98	PK
3	9828	44.51	74.00	-29.49	57.74	-13.23	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 5: LTE Band 14 (10MBW 793MHz)+5 GHz WLAN(802.11a 5200MHz+NFC+GPS

Horizontal



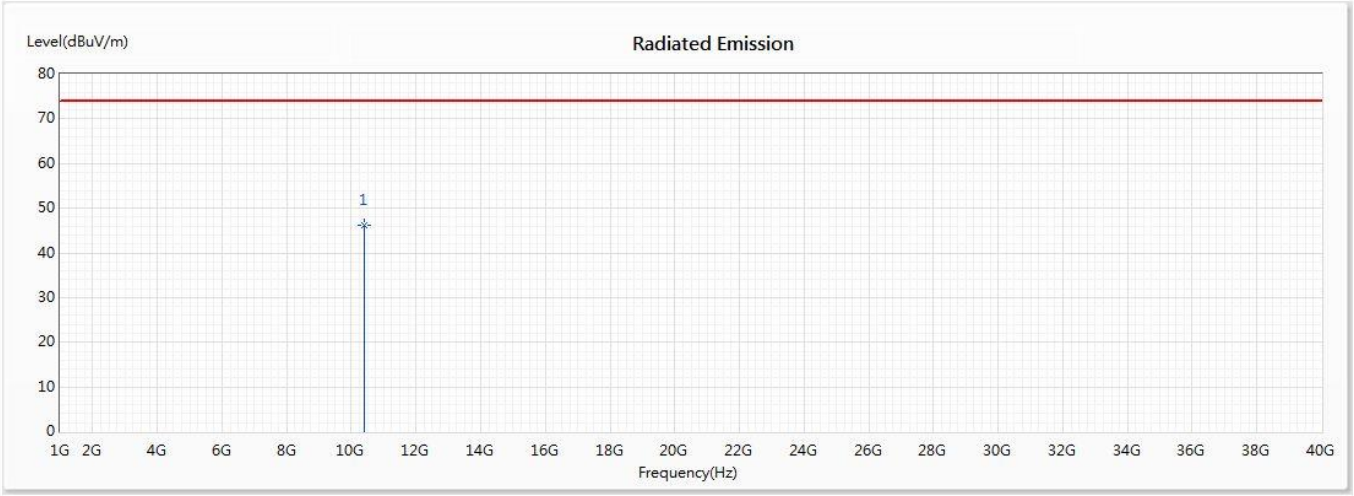
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	10400	46.08	74.00	-27.92	58.04	-11.96	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 5: LTE Band 14 (10MBW 793MHz)+5 GHz WLAN(802.11a 5200MHz+NFC+GPS

Vertical



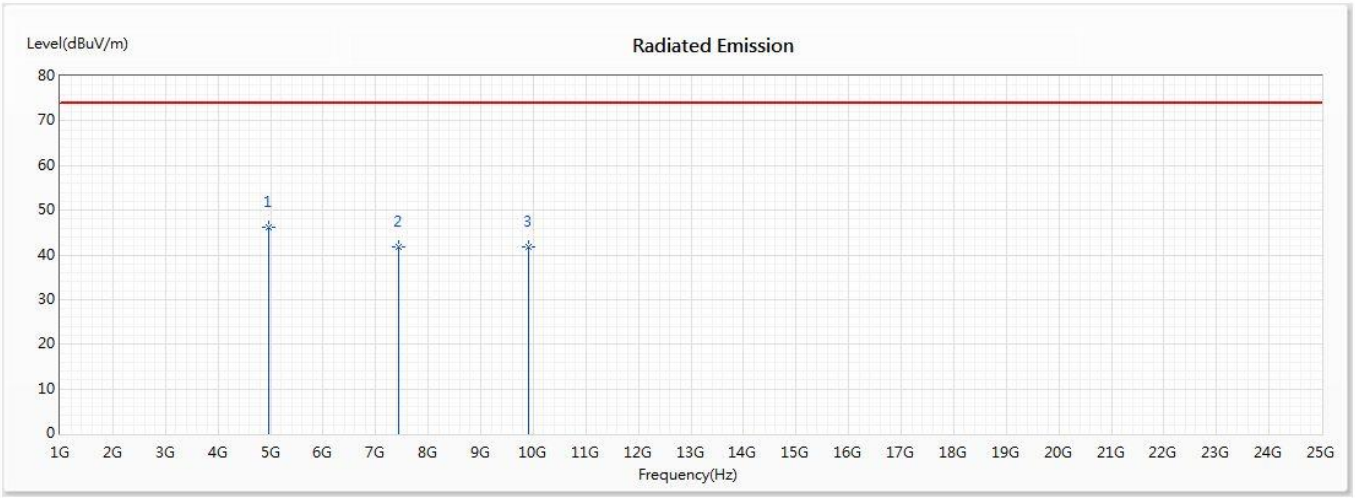
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	10400	46.23	74.00	-27.77	58.19	-11.96	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 6: LTE Band 66 (20MBW 1745MHz)+2.4 GHZ BT(1Mbps 2480MHz+NFC+GPS

Horizontal



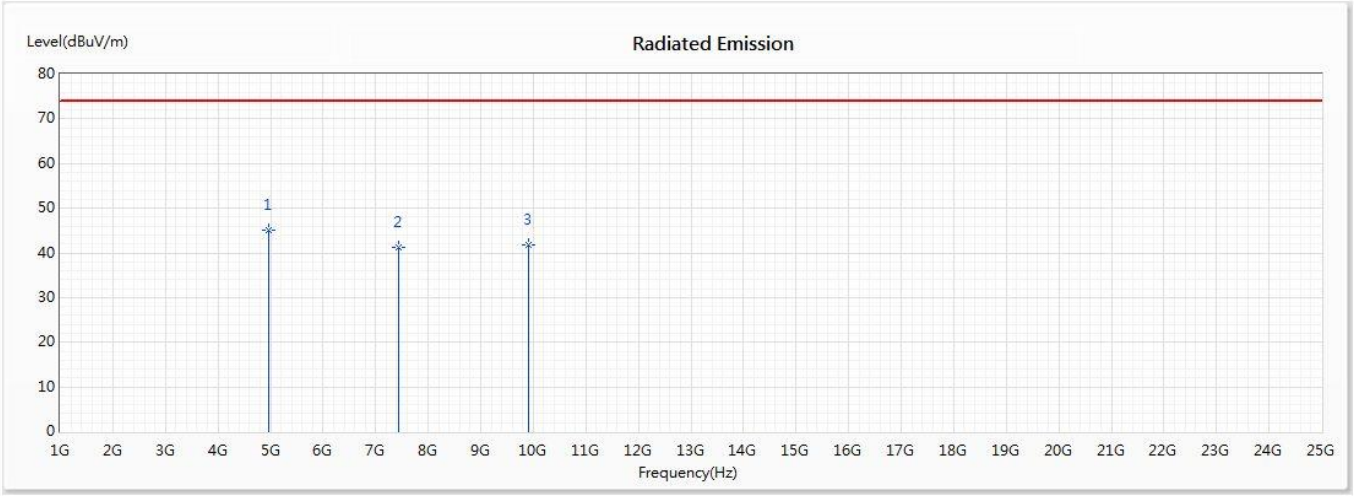
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4960	46.19	74.00	-27.81	57.08	-10.89	PK
2	7440	41.68	74.00	-32.32	56.30	-14.62	PK
3	9920	41.86	74.00	-32.14	56.09	-14.23	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 6: LTE Band 66 (20MBW 1745MHz)+2.4 GHZ BT(1Mbps 2480MHz+NFC+GPS

Vertical



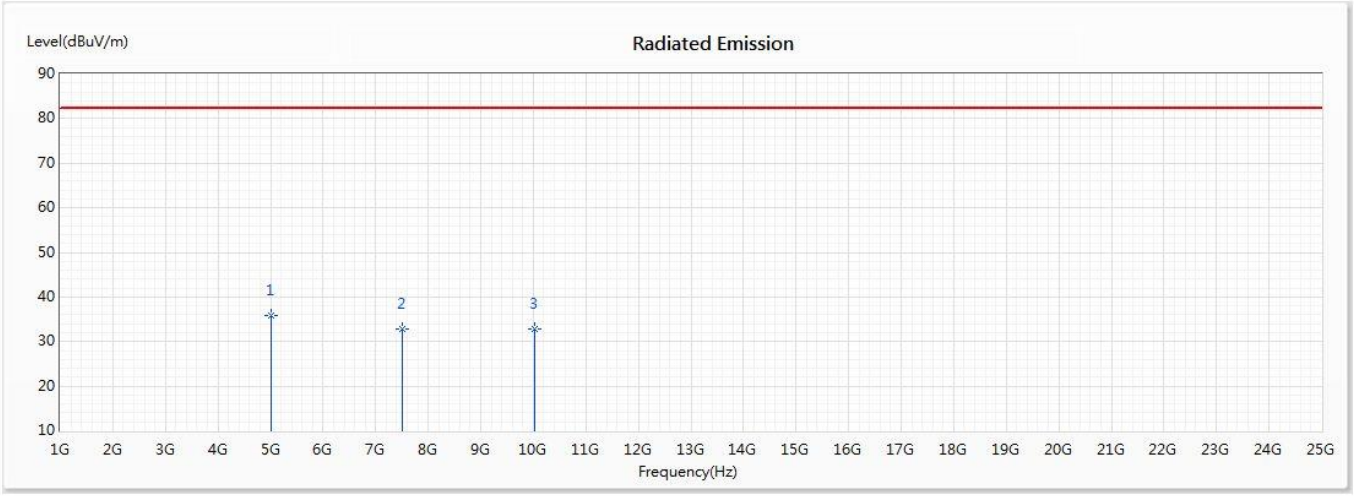
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4960	45.18	74.00	-28.82	56.07	-10.89	PK
2	7440	41.21	74.00	-32.79	55.83	-14.62	PK
3	9920	41.79	74.00	-32.21	56.02	-14.23	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 1: LTE B41 (20MBW 2506MHz)+ WiFi 802.11n20 (2462MHz)+NFC+GPS

Horizontal



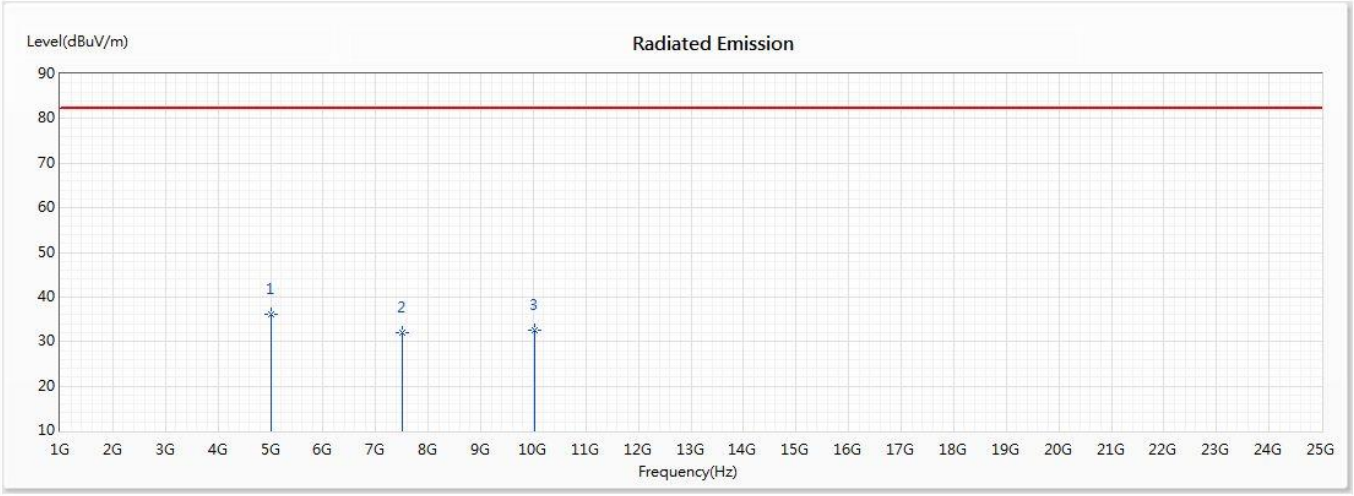
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	5012	35.94	82.23	-46.29	46.52	-10.58	AV
2	7518	32.87	82.23	-49.36	48.16	-15.29	AV
3	10024	32.76	82.23	-49.47	47.51	-14.75	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08

Vertical



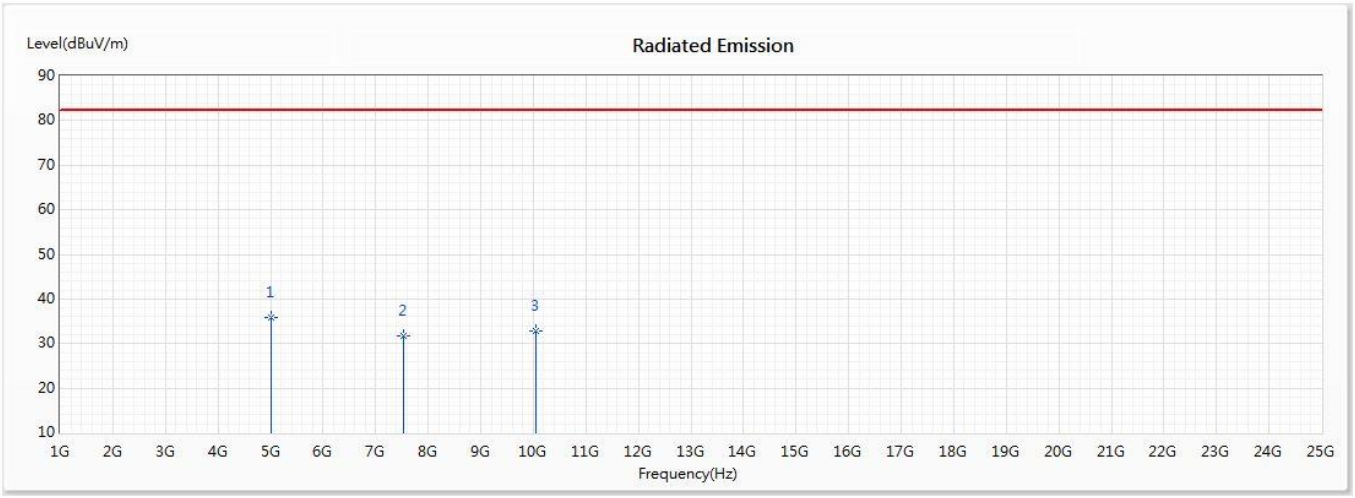
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	5012	36.20	82.23	-46.03	46.78	-10.58	AV
2	7518	31.99	82.23	-50.24	47.28	-15.29	AV
3	10024	32.58	82.23	-49.65	47.33	-14.75	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 2: LTE B7 (20MBW 2510MHz)+Wi-Fi 802.11n40 (2452MHz) +NFC+GPS

Horizontal



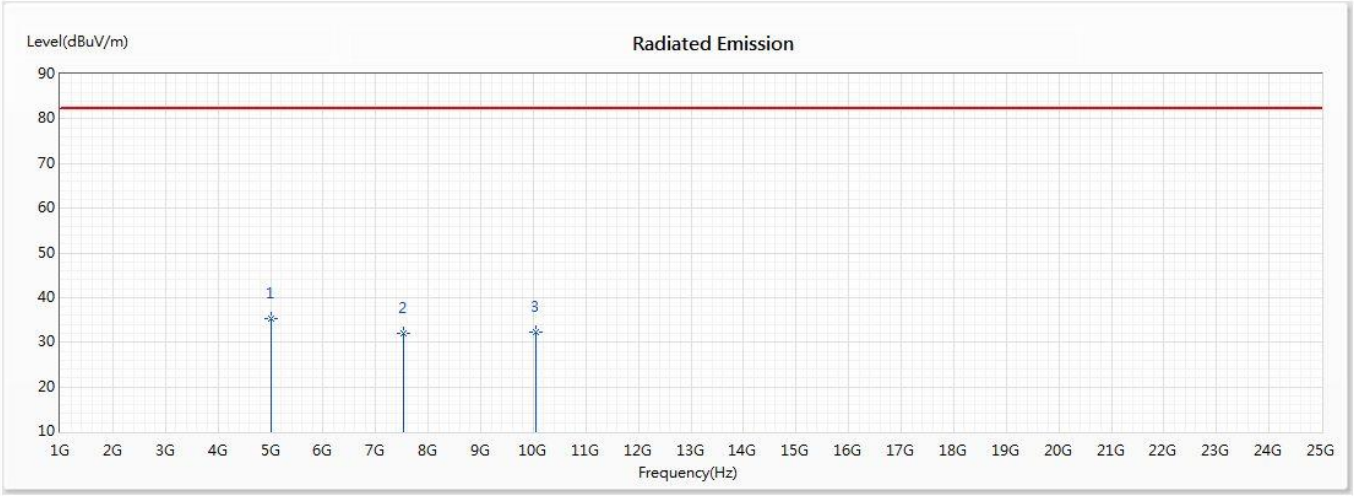
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	5020	35.93	82.23	-46.30	46.58	-10.65	AV
2	7530	31.82	82.23	-50.41	47.15	-15.33	AV
3	10040	32.78	82.23	-49.45	47.22	-14.44	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 2: LTE B7 (20MBW 2510MHz)+Wi-Fi 802.11n40 (2452MHz) +NFC+GPS

Vertical



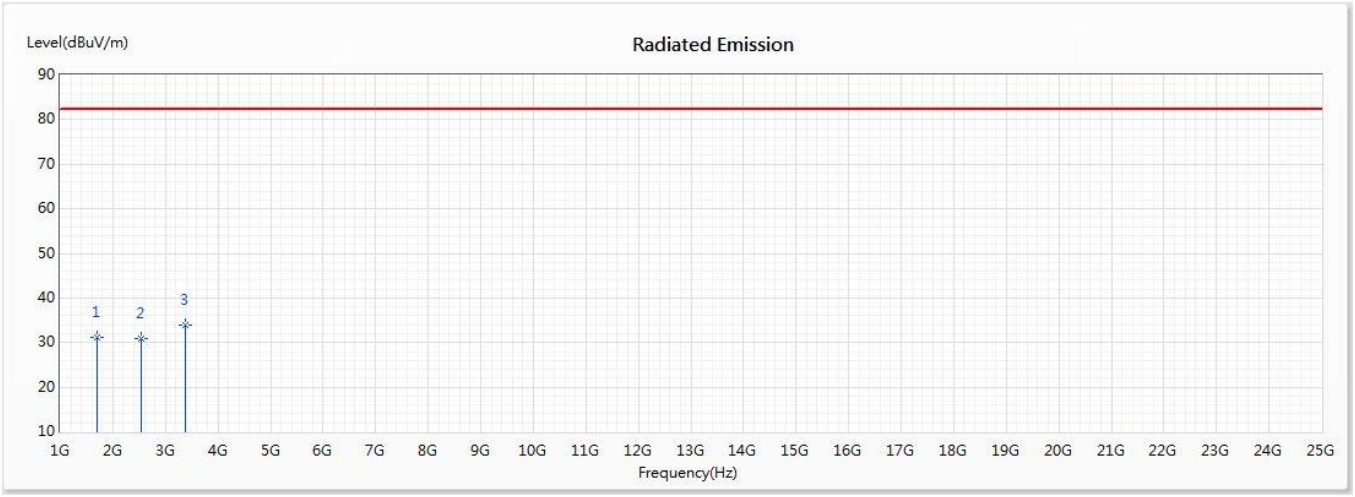
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	5020	35.18	82.23	-47.05	45.83	-10.65	AV
2	7530	32.05	82.23	-50.18	47.38	-15.33	AV
3	10040	32.26	82.23	-49.97	46.70	-14.44	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 4: WCDMA Band V (846.6MHz)+2.4 GHz WLAN(802.11b 2457MHz)+NFC+GPS

Horizontal



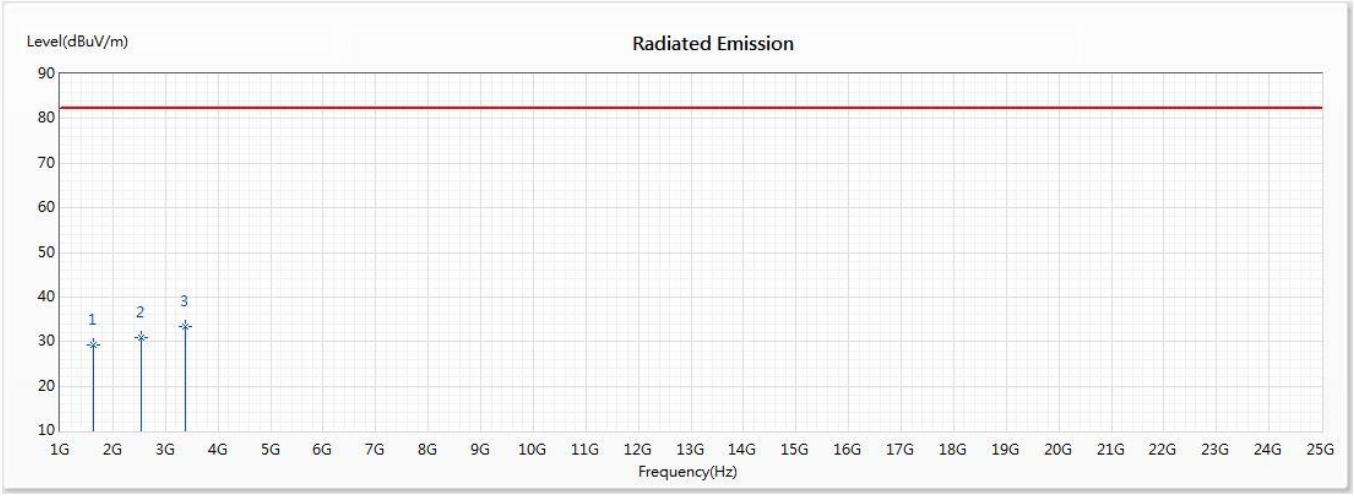
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	1693.2	31.09	82.23	-51.14	50.25	-19.16	AV
2	2539.8	30.88	82.23	-51.35	45.21	-14.33	AV
* 3	3386.4	33.89	82.23	-48.34	46.79	-12.90	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 4: WCDMA Band V (846.6MHz)+2.4 GHz WLAN(802.11b 2457MHz)+NFC+GPS

Vertical



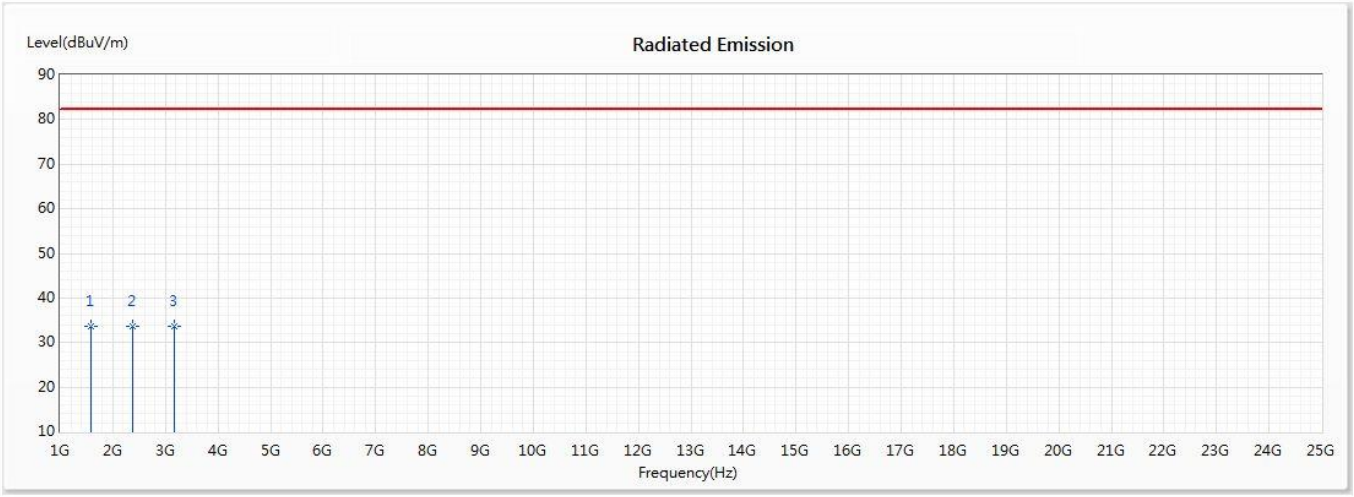
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	1639.2	29.17	82.23	-53.06	48.54	-19.37	AV
2	2539.8	30.86	82.23	-51.37	45.19	-14.33	AV
* 3	3386.4	33.38	82.23	-48.85	46.28	-12.90	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 5: LTE Band 14 (10MBW 793MHz)+5 GHz WLAN(802.11a 5200MHz+NFC+GPS

Horizontal



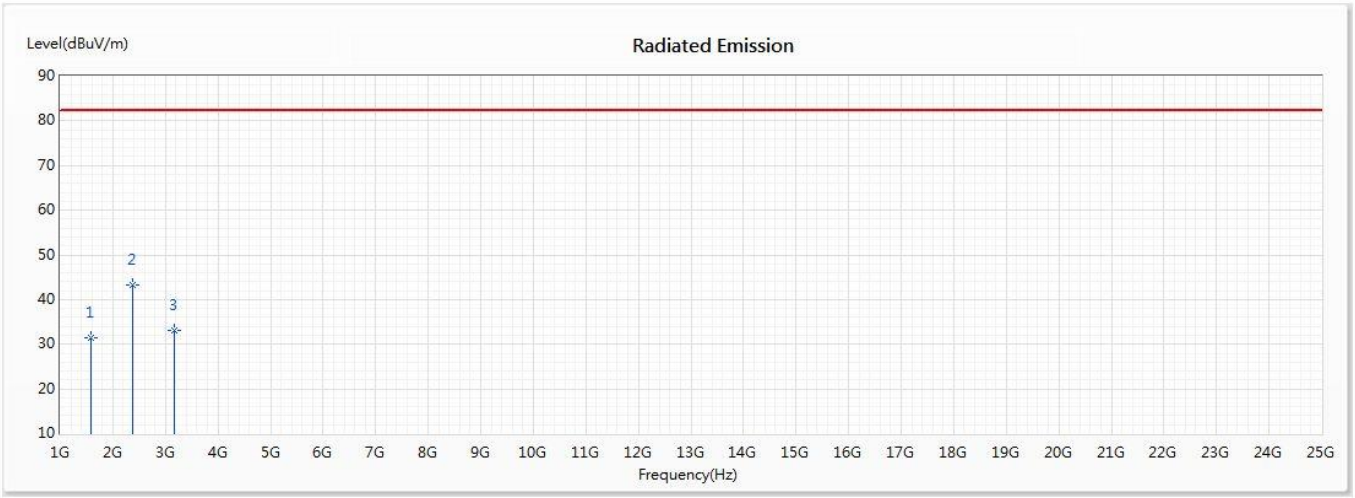
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	1586	33.65	82.23	-48.58	52.80	-19.15	AV
* 2	2379	33.73	82.23	-48.50	48.59	-14.86	AV
3	3172	33.59	82.23	-48.64	46.85	-13.26	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 5: LTE Band 14 (10MBW 793MHz)+5 GHz WLAN(802.11a 5200MHz+NFC+GPS

Vertical



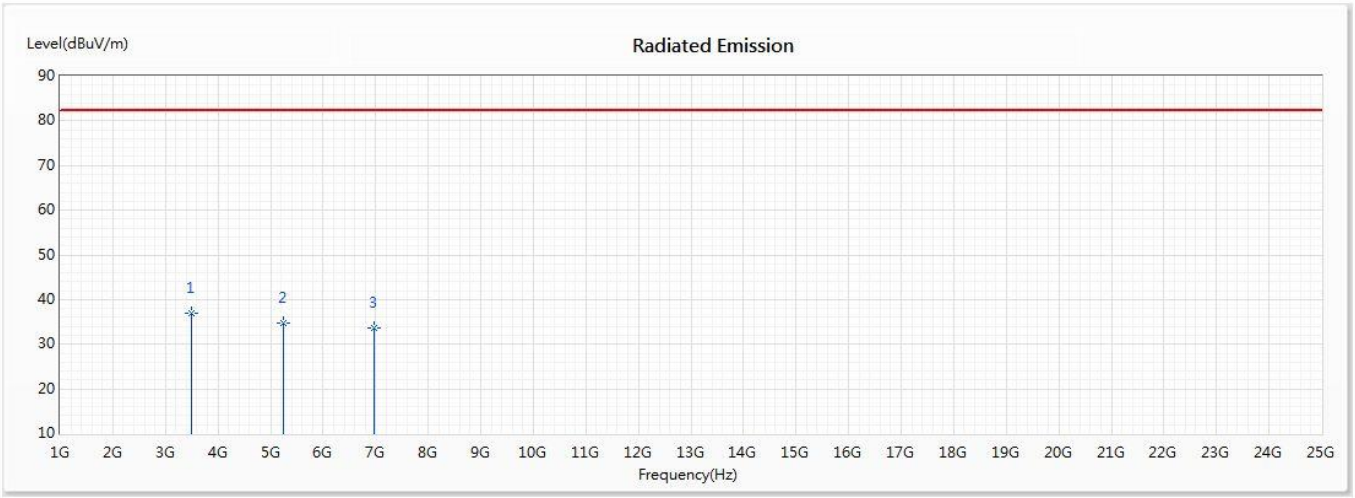
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	1586	31.47	82.23	-50.76	50.62	-19.15	AV
* 2	2379	43.29	82.23	-38.94	58.15	-14.86	AV
3	3172	33.16	82.23	-49.07	46.42	-13.26	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 6: LTE Band 66 (20MBW 1745MHz)+2.4 GHZ BT(1Mbps 2480MHz+NFC+GPS

Horizontal



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	3490	36.82	82.23	-45.41	48.91	-12.09	AV
2	5235	34.77	82.23	-47.46	46.73	-11.96	AV
3	6980	33.68	82.23	-48.55	47.34	-13.66	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
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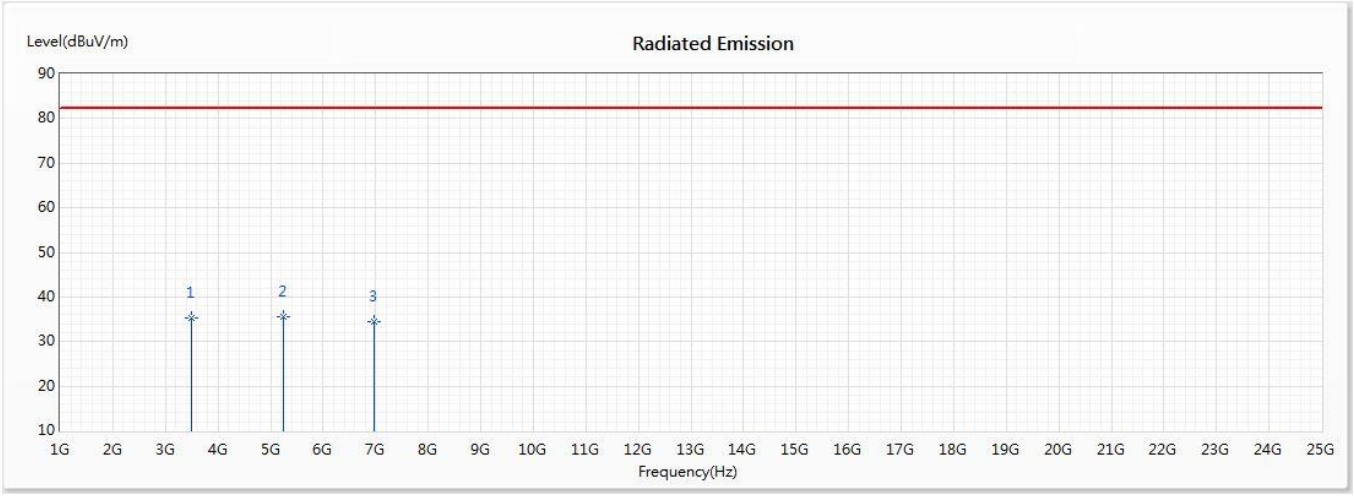
Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2020/01/08
Test Mode	:	Mode 6: LTE Band 66 (20MBW 1745MHz)+2.4 GHZ BT(1Mbps 2480MHz+NFC+GPS

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	3490	35.18	82.23	-47.05	47.27	-12.09	AV
* 2	5235	35.49	82.23	-46.74	47.45	-11.96	AV
3	6980	34.39	82.23	-47.84	48.05	-13.66	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

3. EMI Reduction Method During Compliance Testing

No modification was made during testing.