

FCC Test Report

Product Name	Rugged Tablet	
Model No.	PA501BXXXXXXXXXX (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	May. 30, 2019			
Issued Date	Sep. 11, 2019			
Report No.	1950454R-RFUSP01V00			
Report Version	V1.0			
TESTING Laboratory 3023				

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

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Test Report

Issued Date: Sep. 11, 2019 Report No.: 1950454R-RFUSP01V00



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: 2017
	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)



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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Rugged Tablet	
Trade Name	RuggON	
Model No.	PA501BXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	
FCC ID.	2ABTU-PA501B	
Frequency Range	2402 – 2480MHz	
Channel Number	79	
Type of Modulation	FHSS: GFSK(1Mbps) / π /4DQPSK(2Mbps) / 8DPSK(3Mbps)	
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		AJDQ1J-B0024(Main) AJDQ1J-W0001(Aux)		Main: 2.94dBi for 2.4 GHz Aux: 3.31dBi for 2.4 GHz

Note: The antenna of EUT is conform to FCC 15.203



1.2. Test Summary

Part 15C Requirement			
Requirement – Test Item	Result		
Output Power	Pass		
Spurious emissions	Pass		
Band edge	Pass		

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

Requirement – Test Item	
EIRP	
Spurious emissions	Pass



Center Frequency of Each Channel: (For V3.0+HS, V2.1+EDR)

1	5	`	,	,			
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 20:	2422 MHz	Channel 40:	2442 MHz	Channel 60:	2462 MHz
Channel 01:	2403 MHz	Channel 21:	2423 MHz	Channel 41:	2443 MHz	Channel 61:	2463 MHz
Channel 02:	2404 MHz	Channel 22:	2424 MHz	Channel 42:	2444 MHz	Channel 62:	2464 MHz
Channel 03:	2405 MHz	Channel 23:	2425 MHz	Channel 43:	2445 MHz	Channel 63:	2465 MHz
Channel 04:	2406 MHz	Channel 24:	2426 MHz	Channel 44:	2446 MHz	Channel 64:	2466 MHz
Channel 05:	2407 MHz	Channel 25:	2427 MHz	Channel 45:	2447 MHz	Channel 65:	2467 MHz
Channel 06:	2408 MHz	Channel 26:	2428 MHz	Channel 46:	2448 MHz	Channel 66:	2468 MHz
Channel 07:	2409 MHz	Channel 27:	2429 MHz	Channel 47:	2449 MHz	Channel 67:	2469 MHz
Channel 08:	2410 MHz	Channel 28:	2430 MHz	Channel 48:	2450 MHz	Channel 68:	2470 MHz
Channel 09:	2411 MHz	Channel 29:	2431 MHz	Channel 49:	2451 MHz	Channel 69:	2471 MHz
Channel 10:	2412 MHz	Channel 30:	2432 MHz	Channel 50:	2452 MHz	Channel 70:	2472 MHz
Channel 11:	2413 MHz	Channel 31:	2433 MHz	Channel 51:	2453 MHz	Channel 71:	2473 MHz
Channel 12:	2414 MHz	Channel 32:	2434 MHz	Channel 52:	2454 MHz	Channel 72:	2474 MHz
Channel 13:	2415 MHz	Channel 33:	2435 MHz	Channel 53:	2455 MHz	Channel 73:	2475 MHz
Channel 14:	2416 MHz	Channel 34:	2436 MHz	Channel 54:	2456 MHz	Channel 74:	2476 MHz
Channel 15:	2417 MHz	Channel 35:	2437 MHz	Channel 55:	2457 MHz	Channel 75:	2477 MHz
Channel 16:	2418 MHz	Channel 36:	2438 MHz	Channel 56:	2458 MHz	Channel 76:	2478 MHz
Channel 17:	2419 MHz	Channel 37:	2439 MHz	Channel 57:	2459 MHz	Channel 77:	2479 MHz
Channel 18:	2420 MHz	Channel 38:	2440 MHz	Channel 58:	2460 MHz	Channel 78:	2480 MHz
Channel 19:	2421 MHz	Channel 39:	2441 MHz	Channel 59:	2461 MHz		

- The EUT is a 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 V3.0+HS, V2.1+EDR.
- 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-MS01PRO, This is a WLAN/WWAN/BT Combo Card, the original certified module uses Dipole Antenna, and final product addition the antenna a PIFA Antenna.
- 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.
- 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	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC
(Simultaneous Transmit)	Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC

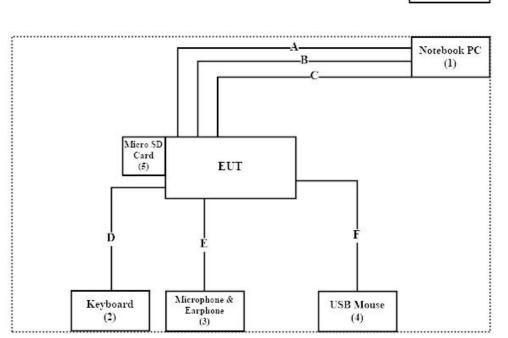
1.4. Tested System Details

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 5491	1PL56S2	N/A	
2	Keyboard	DELL	SK-8115	MY-0DJ325-71619-79D-0178	N/A	
3	Microphone & Earphone	Ergotech	ET-E201	N/A	N/A	
4	USB Mouse	Logitech	M-BE58	HCA30103357	N/A	
5	Micro SD Card 1GB	SanDisk	N/A	0801002841D2N	N/A	
6	Communication Analyzer	Anritsu	MT8820C	6201091166	N/A	

Sig	Signal Cable Type Signal cable Description	
А	USB Cable	Shielded, 1.8m
В	USB Cable	Shielded, 2.1m
С	LAN Cable	Shielded, 3m
D	Keyboard Cable	Shielded, 1.8m
Е	Microphone & Earphone Cable	Shielded, 2m
F	Mouse Cable	Shielded, 1.8m

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

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	

Ambient conditions in the laboratory:

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:

http://www.dekra.com.tw/english/about/certificates.aspx?bval=5

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: <u>http://www.dekra.com.tw/index_en.aspx</u>

Site Description:	Accredited by TAF Accredited Number: 3023
Site Name:	DEKRA Testing and Certification Co., Ltd
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	TEL: 886-2-8601-3788 / FAX: 886-2-8601-3789
	E-Mail : <u>info.tw@dekra.com</u>

FCC Accreditation Number: TW3023



1.8. List of Test Item and Equipment

For Conducted measurements /CB3/SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-00146	2019/02/26	2020/02/25
Х	Spectrum Analyzer	Agilent	N9010A	MY53470892	2018/09/27	2019/09/26
Х	Peak Power Analyzer	Keysight	8990B	MY51000410	2019/07/30	2020/07/29
Х	Wideband Power Sensor	Keysight	N1923A	MY56080003	2019/07/30	2020/07/29
X	Wideband Power Sensor	Keysight	N1923A	MY56080004	2019/07/30	2020/07/29
Х	EMI Test Receiver	R&S	ESCS 30	100369	2018/11/19	2019/11/18
Х	LISN	R&S	ENV216	101105	2019/04/10	2020/04/09
X	LISN	R&S	ESH3-Z5	836679/014	2019/04/10	2020/04/09
Х	Coaxial Cable	DEKRA	RG 400	LC018-RG	2018/06/21	2019/06/20

For Radiated measurements /Site3/CB8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
Х	Spectrum Analyzer	R&S	FSP40	100170	2019/03/11	2020/03/10
Х	Communication Analyzer	Anritsu	MT8820C	6201091166	2019/03/21	2020/03/20
Х	Loop Antenna	Teseq	HLA6121	37133	2017/10/13	2019/10/12
X	Bilog Antenna	Schaffner Chase	CBL6112B	2707	2019/06/23	2020/06/22
Х	Coaxial Cable	DEKRA	RG 214	LC003-RG	2019/06/13	2020/06/12
Х	Pre-Amplifier	Jet-Power	JPA-10M1G33	170101000330	2019/06/13	2020/06/12
Х	Horn Antenna	ETS-Lindgren	3117	00135205	2019/04/30	2020/04/29
Х	Horn Antenna	SCHWARZBECK	9120D	576	2018/12/18	2019/12/17
Х	Pre-Amplifier	EMCI	EMC012630SE	980210	2019/04/16	2020/04/15
Х	Horn Antenna	Com-Power	AH-840	101043	2019/01/19	2020/01/18
X	Amplifier + Cable	EMCI	EMC184045SE	980370	2019/03/27	2020/03/26
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:

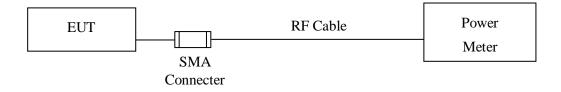
1. All equipments are calibrated every one year.

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. Peak Power Output

2.1. Test Setup



2.2. Limit

The maximum peak power shall be less 1Watt. 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 to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

2.4. Uncertainty

± 1.19 dB



2.5. Test Result of Peak Power Output

Product	:	Rugged Tablet
Test Item	:	Peak Power Output
Test Site	:	No.3 OATS
Test date	:	2019/09/06
Test Mode	:	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC

Channel No.	Frequency	Measurement	Required Limit	Result
	(MHz)	(dBm)		
Channel 00	2402.00	6.02	1 Watt= 30 dBm	Pass
Channel 39	2441.00	4.77	1 Watt= 30 dBm	Pass
Channel 78	2480.00	6.81	1 Watt= 30 dBm	Pass



Product	:	Rugged Tablet
Test Item	:	Peak Power Output
Test Site	:	No.3 OATS
Test date	:	2019/09/06
Test Mode	:	Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC

Channel No.	Frequency	Measurement	Required Limit	Result
	(MHz)	(dBm)		
Channel 00	2402.00	5.17	1 Watt= 30 dBm	Pass
Channel 39	2441.00	3.89	1 Watt= 30 dBm	Pass
Channel 78	2480.00	5.96	1 Watt= 30 dBm	Pass



Product	:	Rugged Tablet
Test Item	:	Peak Power Output
Test Site	:	No.3 OATS
Test date	:	2019/09/06
Test Mode	:	Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC

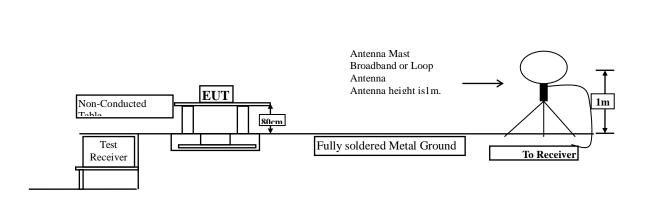
Channel No.	Frequency	Measurement	Required Limit	Result
	(MHz)	(dBm)		
Channel 00	2402.00	5.63	1 Watt= 30 dBm	Pass
Channel 39	2441.00	4.29	1 Watt= 30 dBm	Pass
Channel 78	2480.00	6.45	1 Watt= 30 dBm	Pass



3. Radiated Emission

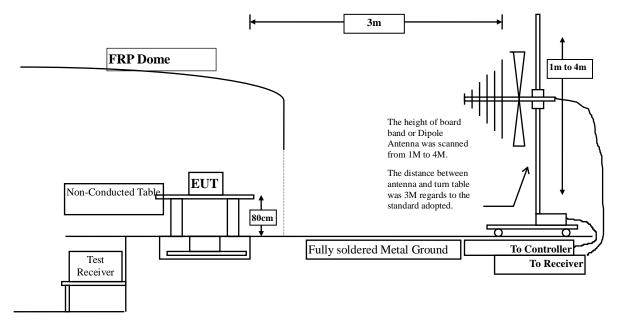
3.1. Test Setup





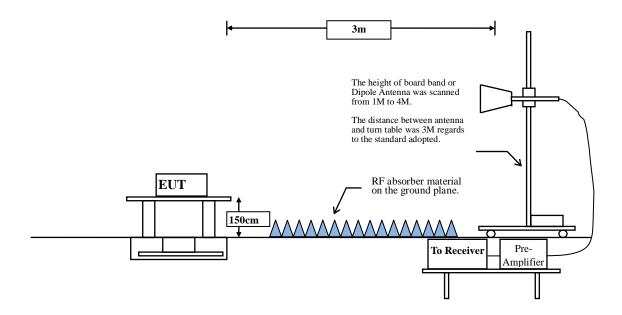
3m

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Below 1GHz
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Above 1GHz



3.2. 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	uV/m @3m	dBµV/m@3m			
30-88	100	40			
88-216	150	43.5			
216-960	200	46			
Above 960	500	54			

Remarks: 1. RF Voltage $(dB\mu V) = 20 \log RF$ 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.

3.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested 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.

3.4. Uncertainty

± 4.08 dB above 1GHz

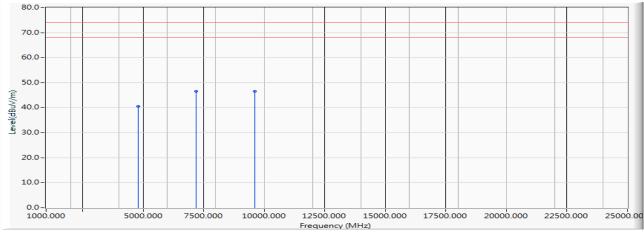
 \pm 4.22 dB below 1GHz



3.5. Test Result of Radiated Emission

Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/08/30
Test Mode	:	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC(2402MHz)

Horizontal



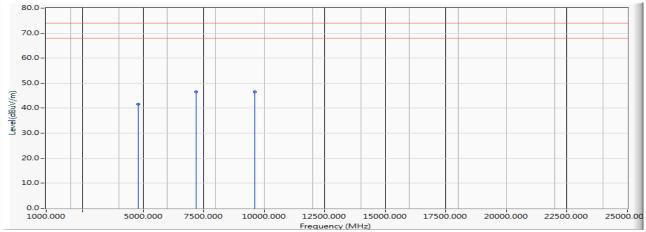
		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4804.000	-15.895	56.390	40.495	-33.505	74.000	PEAK
2		7206.000	-12.632	59.160	46.529	-27.471	74.000	PEAK
3	*	9608.000	-11.950	58.550	46.600	-27.400	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. 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	:	2019/08/30
Test Mode	:	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC(2402MHz)

Vertical



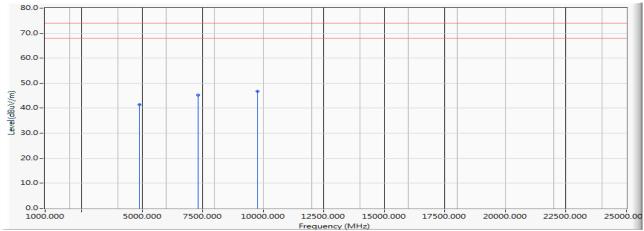
		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4804.000	-15.895	57.430	41.535	-32.465	74.000	PEAK
2		7206.000	-12.632	59.080	46.449	-27.551	74.000	PEAK
3	*	9608.000	-11.950	58.470	46.520	-27.480	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
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- 7. 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	:	2019/08/30
Test Mode	:	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC(2441MHz)



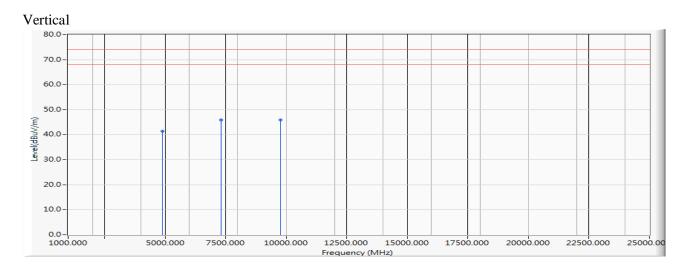


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4882.000	-15.030	56.420	41.389	-32.611	74.000	PEAK
2	*	7323.000	-13.119	58.430	45.311	-28.689	74.000	PEAK
3		9764.000	-10.928	57.790	46.862	-27.138	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
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Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/08/30
Test Mode	:	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC(2441MHz)



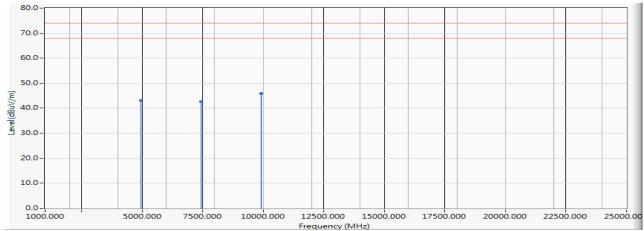
		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4882.000	-15.030	56.500	41.469	-32.531	74.000	PEAK
2	*	7323.000	-13.119	58.940	45.821	-28.179	74.000	PEAK
3		9764.000	-10.928	56.820	45.892	-28.108	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
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Product	:	Rugged Tablet
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/08/30
Test Mode	:	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC(2480MHz)



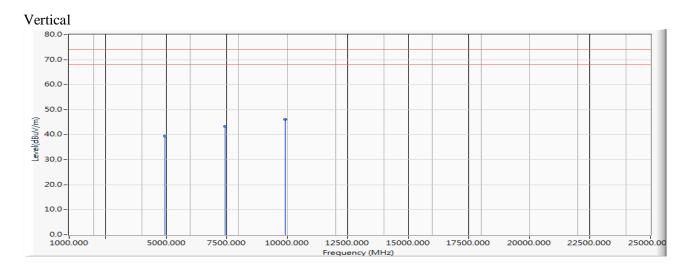


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4960.000	-14.106	57.150	43.045	-30.955	74.000	PEAK
2		7440.000	-14.374	57.160	42.785	-31.215	74.000	PEAK
3	*	9920.000	-12.781	58.680	45.899	-28.101	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. 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	:	2019/08/30
Test Mode	:	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC(2480MHz)



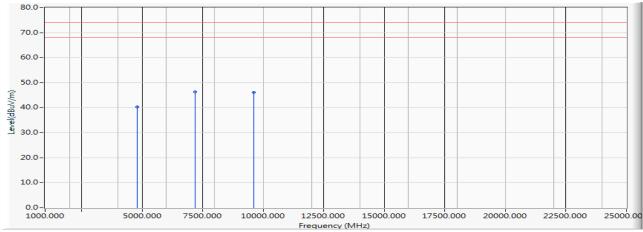
		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4960.000	-14.106	53.620	39.515	-34.485	74.000	PEAK
2	*	7440.000	-14.374	57.630	43.255	-30.745	74.000	PEAK
3		9920.000	-12.781	58.880	46.099	-27.901	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. 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	:	2019/08/30
Test Mode	:	Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2402MHz)

Horizontal

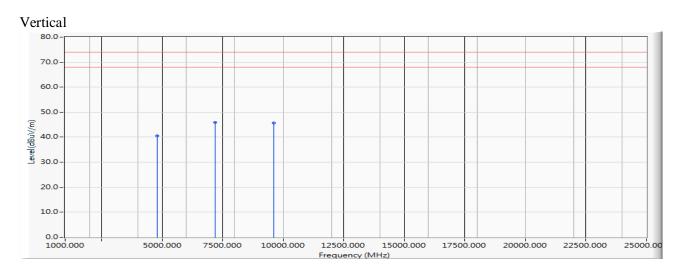


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4804.000	-15.895	56.280	40.385	-33.615	74.000	PEAK
2		7206.000	-12.632	59.000	46.369	-27.631	74.000	PEAK
3	*	9608.000	-11.950	57.980	46.030	-27.970	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. 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	:	2019/08/30
Test Mode	:	Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	((2402MHz)

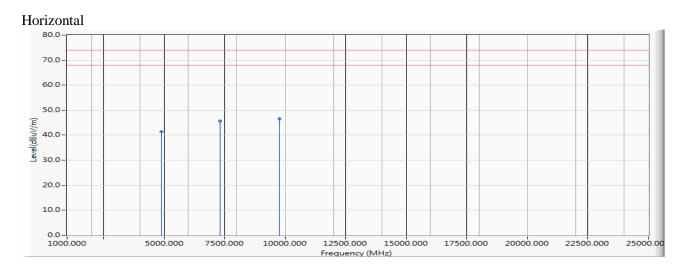


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4804.000	-15.895	56.480	40.585	-33.415	74.000	PEAK
2		7206.000	-12.632	58.600	45.969	-28.031	74.000	PEAK
3	*	9608.000	-11.950	57.550	45.600	-28.400	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. 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	:	2019/08/30
Test Mode	:	Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2441MHz)

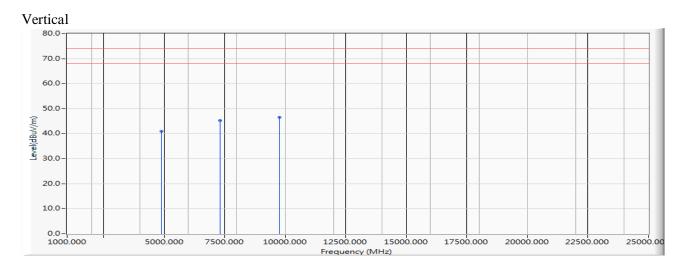


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4882.000	-15.030	56.530	41.499	-32.501	74.000	PEAK
2	*	7323.000	-13.119	58.870	45.751	-28.249	74.000	PEAK
3		9764.000	-10.928	57.500	46.572	-27.428	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. 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	:	2019/08/30
Test Mode	:	Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2441MHz)

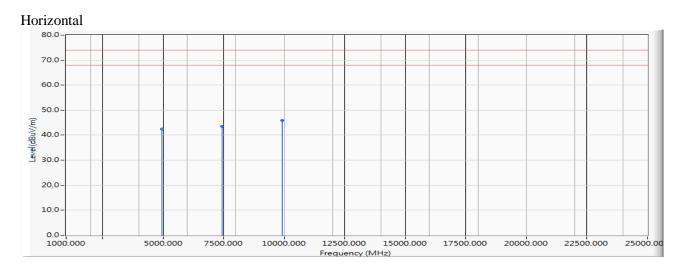


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4882.000	-15.030	56.010	40.979	-33.021	74.000	PEAK
2	*	7323.000	-13.119	58.450	45.331	-28.669	74.000	PEAK
3		9764.000	-10.928	57.530	46.602	-27.398	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. 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	:	2019/08/30
Test Mode	:	Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2480MHz)

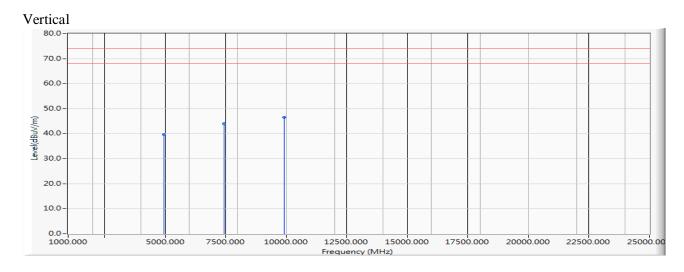


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4960.000	-14.106	56.670	42.565	-31.435	74.000	PEAK
2		7440.000	-14.374	57.860	43.485	-30.515	74.000	PEAK
3	*	9920.000	-12.781	58.730	45.949	-28.051	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. 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	:	2019/08/30
Test Mode	:	Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2480MHz)



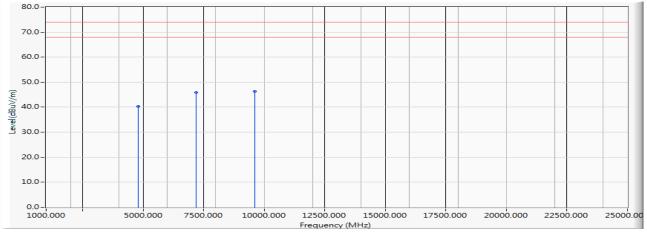
		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4960.000	-14.106	53.710	39.605	-34.395	74.000	PEAK
2		7440.000	-14.374	58.400	44.025	-29.975	74.000	PEAK
3	*	9920.000	-12.781	59.220	46.439	-27.561	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. 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	:	2019/08/30
Test Mode	:	Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC(2402MHz)

Horizontal



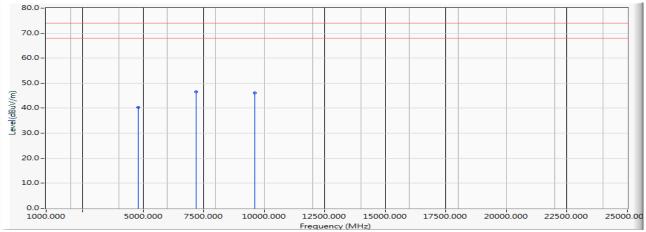
		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4804.000	-15.895	56.160	40.265	-33.735	74.000	PEAK
2		7206.000	-12.632	58.470	45.839	-28.161	74.000	PEAK
3	*	9608.000	-11.950	58.210	46.260	-27.740	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. 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	:	2019/08/30
Test Mode	:	Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC(2402MHz)

Vertical



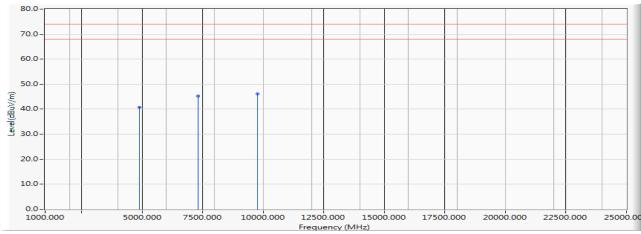
		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4804.000	-15.895	56.250	40.355	-33.645	74.000	PEAK
2		7206.000	-12.632	59.270	46.639	-27.361	74.000	PEAK
3	*	9608.000	-11.950	57.980	46.030	-27.970	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. 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	:	2019/08/30
Test Mode	:	Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2441MHz)

Horizontal

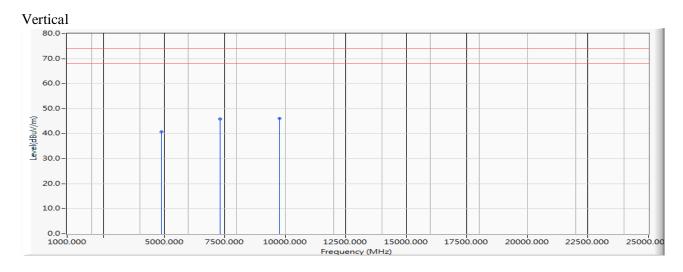


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4882.000	-15.030	55.770	40.739	-33.261	74.000	PEAK
2	*	7323.000	-13.119	58.430	45.311	-28.689	74.000	PEAK
3		9764.000	-10.928	57.130	46.202	-27.798	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. 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	:	2019/08/30
Test Mode	:	Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2441MHz)

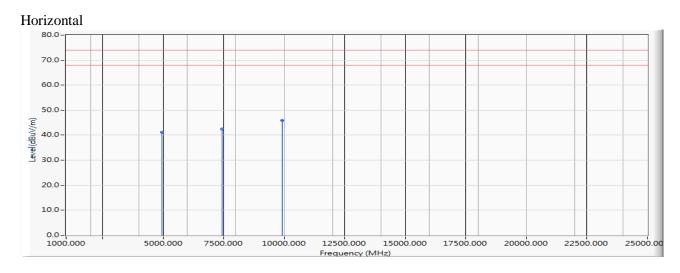


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4882.000	-15.030	55.870	40.839	-33.161	74.000	PEAK
2	*	7323.000	-13.119	59.020	45.901	-28.099	74.000	PEAK
3		9764.000	-10.928	57.090	46.162	-27.838	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. 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	:	2019/08/30
Test Mode	:	Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2480MHz)

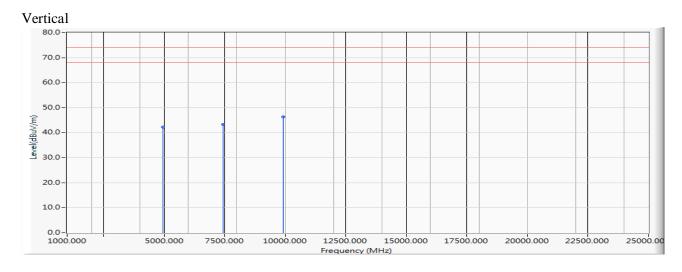


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4960.000	-14.106	55.290	41.185	-32.815	74.000	PEAK
2		7440.000	-14.374	56.940	42.565	-31.435	74.000	PEAK
3	*	9920.000	-12.781	58.670	45.889	-28.111	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. 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	:	2019/08/30
Test Mode	:	Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2480MHz)

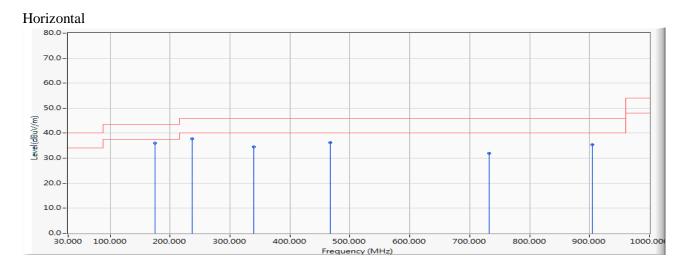


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4960.000	-14.106	56.350	42.245	-31.755	74.000	PEAK
2		7440.000	-14.374	57.610	43.235	-30.765	74.000	PEAK
3	*	9920.000	-12.781	59.110	46.329	-27.671	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	Rugged Tablet			
Test Item	:	General Radiated Emission			
Test Site	:	No.3 OATS			
Test date	:	2019/08/29			
Test Mode	:	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC			
(2441MHz)					

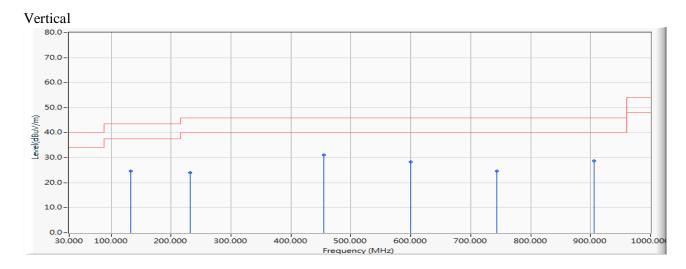


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	174.797	-19.766	55.752	35.986	-7.514	43.500	QUASIPEAK
2		236.652	-18.233	55.976	37.743	-8.257	46.000	QUASIPEAK
3		339.275	-13.999	48.636	34.638	-11.362	46.000	QUASIPEAK
4		467.203	-11.127	47.300	36.173	-9.827	46.000	QUASIPEAK
5		732.899	-6.679	38.634	31.955	-14.045	46.000	QUASIPEAK
6		904.406	-9.856	45.292	35.437	-10.563	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	Rugged Tablet
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/08/29
Test Mode	:	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2441MHz)

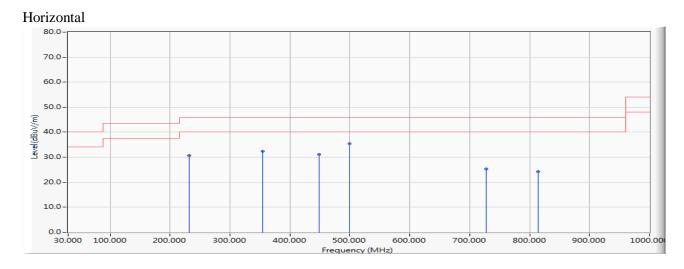


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		132.623	-16.460	41.055	24.595	-18.905	43.500	QUASIPEAK
2		232.435	-17.838	41.958	24.119	-21.881	46.000	QUASIPEAK
3	*	454.551	-10.341	41.377	31.036	-14.964	46.000	QUASIPEAK
4		599.348	-6.581	34.982	28.401	-17.599	46.000	QUASIPEAK
5		744.145	-5.917	30.589	24.671	-21.329	46.000	QUASIPEAK
6		905.812	-9.890	38.717	28.826	-17.174	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	Rugged Tablet
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/08/29
Test Mode	:	Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2441MHz)

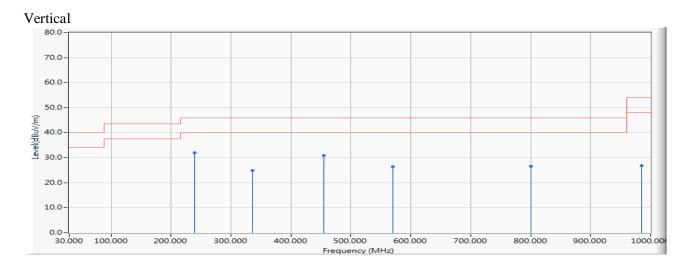


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		232.435	-17.838	48.526	30.687	-15.313	46.000	QUASIPEAK
2		354.739	-13.056	45.350	32.294	-13.706	46.000	QUASIPEAK
3		448.928	-10.150	41.323	31.173	-14.827	46.000	QUASIPEAK
4	*	499.536	-10.897	46.348	35.452	-10.548	46.000	QUASIPEAK
5		727.275	-7.659	32.894	25.235	-20.765	46.000	QUASIPEAK
6		814.435	-8.930	33.231	24.301	-21.699	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	Rugged Tablet
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/08/29
Test Mode	:	Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2441MHz)

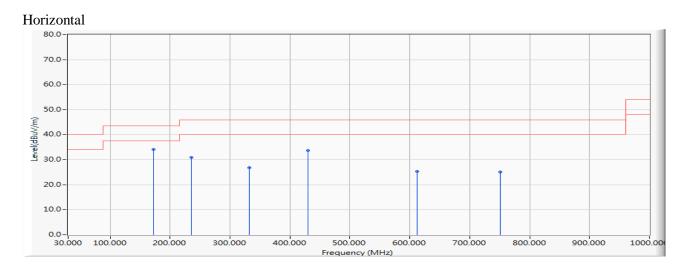


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	239.464	-18.523	50.468	31.946	-14.054	46.000	QUASIPEAK
2		336.464	-13.999	38.917	24.918	-21.082	46.000	QUASIPEAK
3		454.551	-10.341	41.329	30.988	-15.012	46.000	QUASIPEAK
4		569.826	-9.021	35.321	26.300	-19.700	46.000	QUASIPEAK
5		800.377	-8.870	35.517	26.647	-19.353	46.000	QUASIPEAK
6		984.536	-7.892	34.774	26.882	-27.118	54.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	Rugged Tablet
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/08/29
Test Mode	:	Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2441MHz)

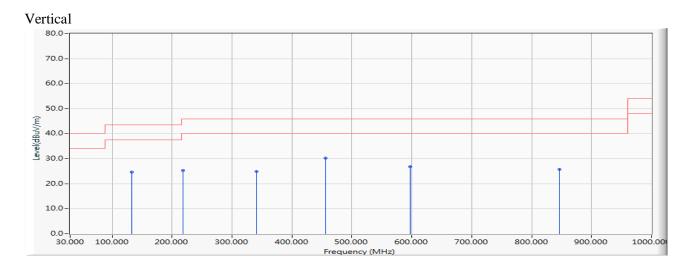


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	171.986	-20.029	54.237	34.208	-9.292	43.500	QUASIPEAK
2		235.246	-18.092	48.942	30.850	-15.150	46.000	QUASIPEAK
3		332.246	-14.023	40.789	26.767	-19.233	46.000	QUASIPEAK
4		430.652	-10.975	44.578	33.603	-12.397	46.000	QUASIPEAK
5		612.000	-7.439	32.694	25.255	-20.745	46.000	QUASIPEAK
6		751.174	-6.676	31.781	25.105	-20.895	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Product	:	Rugged Tablet
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/08/29
Test Mode	:	Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2	2441MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		132.623	-16.460	41.134	24.674	-18.826	43.500	QUASIPEAK
2		218.377	-18.092	43.328	25.236	-20.764	46.000	QUASIPEAK
3		340.681	-13.953	38.890	24.937	-21.063	46.000	QUASIPEAK
4	*	455.957	-10.388	40.643	30.255	-15.745	46.000	QUASIPEAK
5		597.942	-6.648	33.549	26.902	-19.098	46.000	QUASIPEAK
6		846.768	-8.233	33.980	25.747	-20.253	46.000	QUASIPEAK

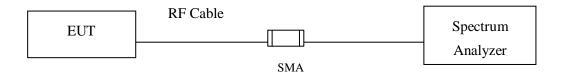
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



4. Band Edge

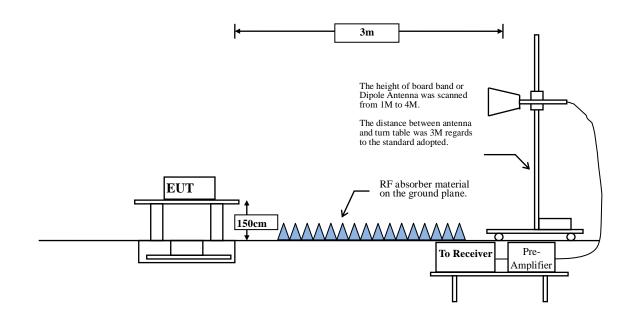
4.1. Test Setup

RF Conducted Measurement



RF Radiated Measurement:

Above 1GHz



4.2. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

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

4.3. Test Procedure

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 can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

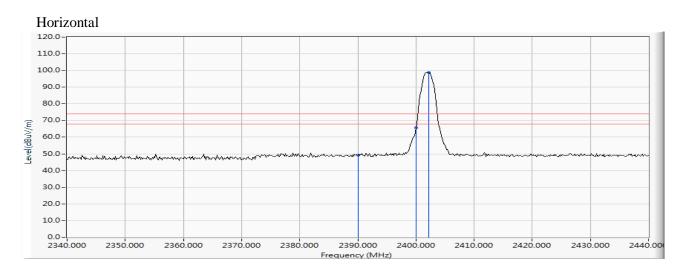
4.4. Uncertainty

- ± 4.08 dB above 1GHz
- ± 4.22 dB below 1GHz



4.5. Test Result of Band Edge

Product	:	Rugged Tablet
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/05
Test Mode	:	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	(2402MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		2390.000	8.763	40.493	49.256	-24.744	74.000	PEAK
2		2400.000	8.799	56.725	65.524	-8.476	74.000	PEAK
3	*	2402.174	8.807	89.932	98.739	24.739	74.000	PEAK

Note:

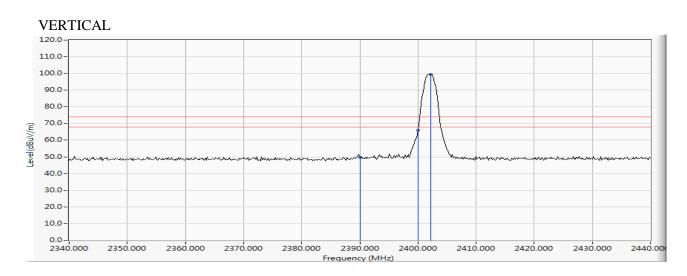
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Measurement Level = Reading Level + Correct Factor.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Average Limit	Result	
	(MHz)	$(dB\mu V/m)$	(dB)	(dBµV/m)	(dBµV/m)	Result	
00 (Average)	2390.000	49.256	-2.290	46.966	54.00	Pass	
00 (Average)	2400.000	65.524	-2.290	63.234		Pass	
00 (Average)	2402.174	98.739	-2.290	96.449		Pass	

- 1. Average Measurement=Peak Measurement + Duty Cycle Factor
- 2. The Duty Cycle is refer to section 5.



Product	:	Rugged Tablet
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/05
Test Mode	:	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	((2402MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		2390.000	8.763	40.908	49.671	-24.329	74.000	PEAK
2		2400.000	8.799	57.119	65.918	-8.082	74.000	PEAK
3	*	2402.174	8.807	90.658	99.465	25.465	74.000	PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3MHz, Sweep: Auto.
- 3. Measurement Level = Reading Level + Correct Factor.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.

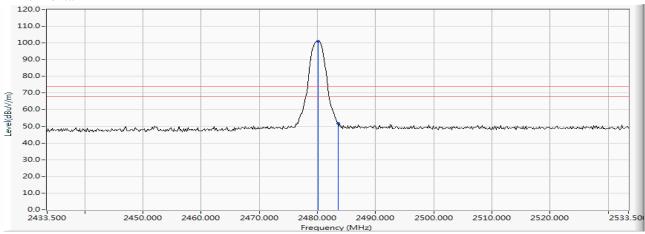
	Eroquanau	Peak	Duty Cycle	Average	Average Limit	
Channel No.	Frequency (MHz)	Measurement	Factor	Measurement	$(dB\mu V/m)$	Result
	(MHZ)	(dBµV/m)	(dB)	(dBµV/m)		
00 (Average)	2390.000	49.671	-2.290	47.381	54.00	Pass
00 (Average)	2400.000	65.918	-2.290	63.628		Pass
00 (Average)	2402.174	99.465	-2.290	97.175		Pass

- 1. Average Measurement=Peak Measurement + Duty Cycle Factor
- 2. The Duty Cycle is refer to section 5.



Product	:	Rugged Tablet
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/05
Test Mode	:	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	((2480MHz)

Horizontal



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	2480.167	9.087	91.889	100.976	26.976	74.000	PEAK
2		2483.500	9.100	42.615	51.714	-22.286	74.000	PEAK

Note:

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Measurement Level = Reading Level + Correct Factor.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.

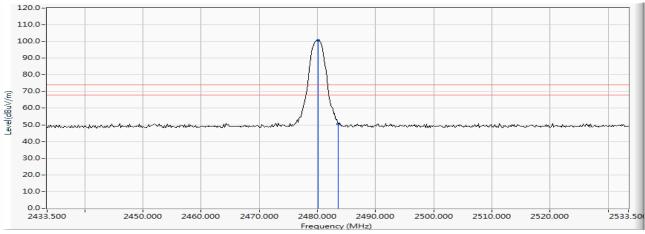
	Eroquanau	Peak	Duty Cycle	Average	Peak	Average Limit	
Channel No.	Frequency (MHz)	Measurement	Factor	Measurement	Limit	$(dB\mu V/m)$	Result
	(MITZ)	$(dB\mu V/m)$	(dB)	$(dB\mu V/m)$	$(dB\mu V/m)$		
78 (Average)	2390.000	51.714	-2.290	51.714	74.00	54.00	Pass

- 1. Average Measurement=Peak Measurement + Duty Cycle Factor
- 2. The Duty Cycle is refer to section 5.



Product	:	Rugged Tablet
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/05
Test Mode	:	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC
		(2480MHz)

VERTICAL



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	2480.167	9.087	91.456	100.543	26.543	74.000	PEAK
2		2483.500	9.100	41.485	50.584	-23.416	74.000	PEAK

Note:

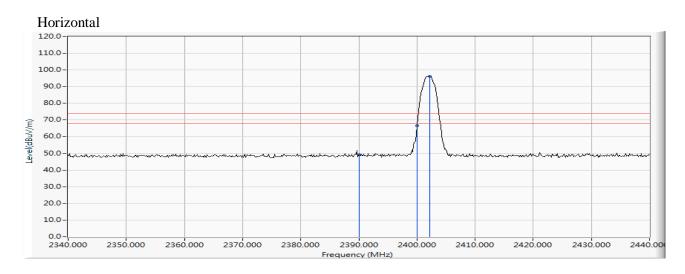
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Measurement Level = Reading Level + Correct Factor.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Average Limit (dBµV/m)	Result
78 (Average)	2483.5000	50.584	-2.290	51.714	54.00	Pass

- 1. Average Measurement=Peak Measurement + Duty Cycle Factor
- 2. The Duty Cycle is refer to section 5.



Product	:	Rugged Tablet
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/05
Test Mode	:	Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC
		(2402MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		2390.000	8.763	40.570	49.333	-24.667	74.000	PEAK
2		2400.000	8.799	57.720	66.519	-7.481	74.000	PEAK
3	*	2402.174	8.807	87.507	96.314	22.314	74.000	PEAK

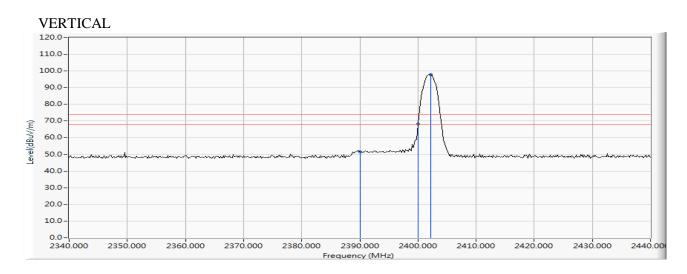
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Measurement Level = Reading Level + Correct Factor.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Average Limit (dBµV/m)	Result
00 (Average)	2390.000	51.413	-24.437	26.976	54.00	Pass
00 (Average)	2400.000	73.351	-24.437	48.914		Pass
00 (Average)	2402.174	96.314	-2.290	94.024		Pass

- 1. Average Measurement=Peak Measurement + Duty Cycle Factor
- 2. The Duty Cycle is refer to section 5.



Product	:	Rugged Tablet
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/05
Test Mode	:	Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC
		(2402MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		2390.000	8.763	42.612	51.375	-22.625	74.000	PEAK
2		2400.000	8.799	59.551	68.350	-5.650	74.000	PEAK
3	*	2402.174	8.807	88.936	97.743	23.743	74.000	PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Measurement Level = Reading Level + Correct Factor.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Average Limit (dBµV/m)	Result
00 (Average)	2390.000	51.375	-2.290	49.085	54.00	Pass
00 (Average)	2400.000	68.35	-2.290	66.060		Pass
00 (Average)	2402.174	96.314	-2.290	94.024		Pass

- 1. Average Measurement=Peak Measurement + Duty Cycle Factor
- 2. The Duty Cycle is refer to section 5.



Product	:	Rugged Tablet
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/05
Test Mode	:	Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC
		(2480MHz)

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		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	2480.167	9.087	90.105	99.192	25.192	74.000	PEAK
2		2483.500	9.100	41.706	50.805	-23.195	74.000	PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Measurement Level = Reading Level + Correct Factor.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.

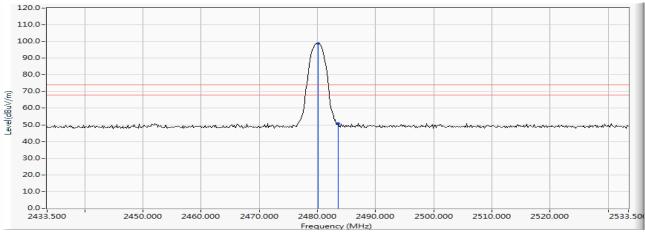
Channel No.	Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Average Limit (dBµV/m)	Result
78 (Average)	2483.5	50.805	-2.290	51.714	54.00	Pass

- 1. Average Measurement=Peak Measurement + Duty Cycle Factor
- 2. The Duty Cycle is refer to section 5.



Product	:	Rugged Tablet
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/05
Test Mode	:	Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC
	((2480MHz)

VERTICAL



	Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
	(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1 *	2480.167	9.087	89.795	98.882	24.882	74.000	PEAK
2	2483.500	9.100	41.578	50.677	-23.323	74.000	PEAK

Note:

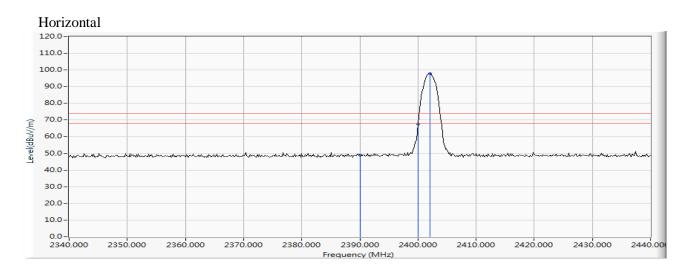
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Measurement Level = Reading Level + Correct Factor.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Average Limit (dBµV/m)	Result
78 (Average)	2483.5	50.677	-2.290	51.714	54.00	Pass

- 1. Average Measurement=Peak Measurement + Duty Cycle Factor
- 2. The Duty Cycle is refer to section 5.



Product	:	Rugged Tablet
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/05
Test Mode	:	Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC
		(2402MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		2390.000	8.763	40.204	48.967	-25.033	74.000	PEAK
2		2400.000	8.799	58.706	67.505	-6.495	74.000	PEAK
3	*	2402.029	8.807	88.966	97.772	23.772	74.000	PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Measurement Level = Reading Level + Correct Factor.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.

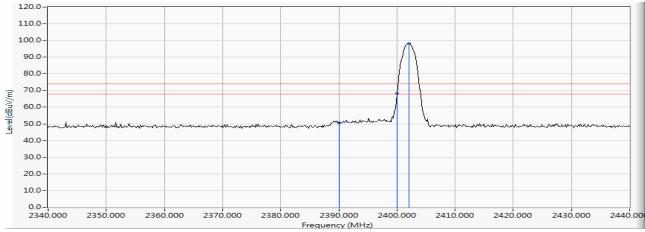
Channel No.	Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Average Limit (dBµV/m)	Result
00 (Average)	2390.000	48.967	-2.290	46.677	54.00	Pass
00 (Average)	2400.000	67.505	-2.290	65.215		Pass
00 (Average)	2402.029	97.772	-2.290	95.482		Pass

- 1. Average Measurement=Peak Measurement + Duty Cycle Factor
- 2. The Duty Cycle is refer to section 5.



Product	:	Rugged Tablet
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/05
Test Mode	:	Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC
		(2402MHz)

VERTICAL



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		2390.000	8.763	41.866	50.629	-23.371	74.000	PEAK
2		2400.000	8.799	59.490	68.289	-5.711	74.000	PEAK
3	*	2402.029	8.807	89.338	98.144	24.144	74.000	PEAK

Note:

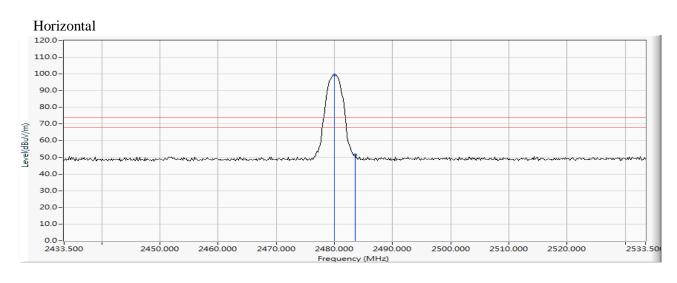
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Measurement Level = Reading Level + Correct Factor.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Average Limit (dBµV/m)	Result
00 (Average)	2390.000	50.629	-2.290	48.339	54.00	Pass
00 (Average)	2400.000	68.289	-2.290	65.999		Pass
00 (Average)	2402.029	98.144	-2.290	95.854		Pass

- 1. Average Measurement=Peak Measurement + Duty Cycle Factor
- 2. The Duty Cycle is refer to section 5.



Product	:	Rugged Tablet
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/05
Test Mode	:	Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC
		(2480MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	2480.022	9.086	90.320	99.407	25.407	74.000	PEAK
2		2483.500	9.100	42.381	51.480	-22.520	74.000	PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Measurement Level = Reading Level + Correct Factor.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Average Limit (dBµV/m)	Result
78 (Average)	2480.022	99.407	-2.290	100.976	54.00	Pass
78 (Average)	2483.5	51.48	-2.290	51.714	54.00	Pass

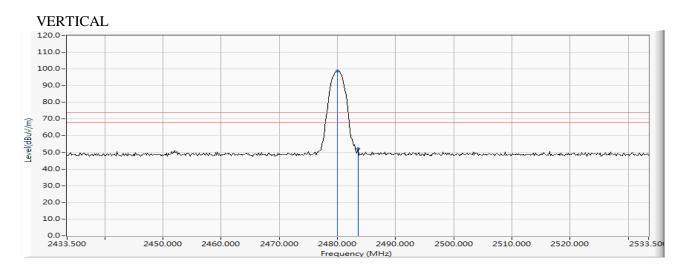
Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor

2. The Duty Cycle is refer to section 5.



Product	:	Rugged Tablet
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/05
Test Mode	:	Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC
		(2480MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	2480.022	9.086	89.636	98.723	24.723	74.000	PEAK
2		2483.500	9.100	42.874	51.973	-22.027	74.000	PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Measurement Level = Reading Level + Correct Factor.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.

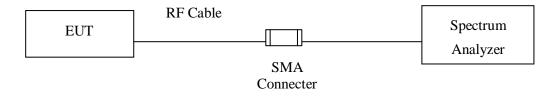
Channel No.	Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Average Limit (dBµV/m)	Result
78 (Average)	2480.022	98.723	-2.290	100.976	54.00	Pass
78 (Average)	2483.5	51.973	-2.290	51.714	54.00	Pass

- 1. Average Measurement=Peak Measurement + Duty Cycle Factor
- 2. The Duty Cycle is refer to section 5.



5. Duty Cycle

5.1. Test Setup



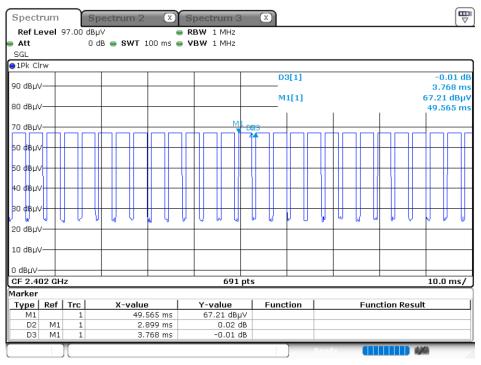
5.2. Uncertainty

 \pm 25msec



5.3. Test Result of Duty Cycle

Product	:	Rugged Tablet
Test Item	:	Duty Cycle
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Bluetooth 1Mbps +LTE TDD Band 38_20M 2595MHz+NFC



Date: 12.SEP.2019 07:54:50

Time on of 100ms= 76.824ms Duty Cycle=6ms / 100ms= 0.76824 Duty Cycle correction factor= 20 LOG 0.76824= -2.29 dB

Duty Cycle correction factor	-2.29	dB
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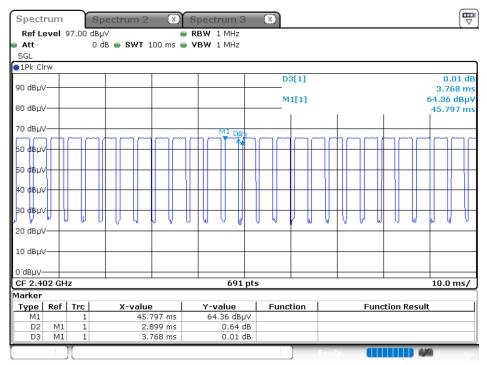


	Product	:	Rugged	Tablet
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Test Item		Duty Cycle
Test nem	•	Duty Cycle

Test Site : No.3 OATS

Test Mode : Mode 2: Bluetooth 2Mbps +LTE TDD Band 38_20M 2595MHz+NFC



Date: 12.SEP.2019 07:56:46

Time on of 100ms= 76.824ms

Duty Cycle=6ms / 100ms= 0.76824

Duty Cycle correction factor= 20 LOG 0.76824= -2.29 dB

Duty Cycle correction factor -2.29 dB

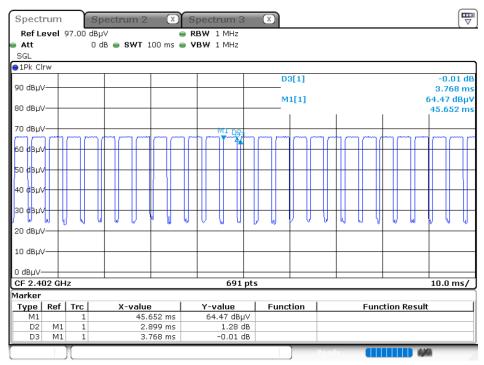


Product	:	Rugged Tablet
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Test Item	•	Duty Cycle
rest nem	•	Duty Cycle

Test Site : No.3 OATS

Test Mode : Mode 3: Bluetooth 3Mbps +LTE TDD Band 38_20M 2595MHz+NFC



Date: 12.SEP.2019 07:57:45

Time on of 100ms= 76.824ms

Duty Cycle=6ms / 100ms= 0.76824

Duty Cycle correction factor= 20 LOG 0.76824= -2.29 dB

Duty Cycle correction factor	-2.29	dB
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6. EMI Reduction Method During Compliance Testing

No modification was made during testing.