

🧲 Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Report No: CCISE190304504

FCC REPORT

Applicant: ShenZhen Aratek Biometrics Technology Co., Ltd.

Address of Applicant: 2F, T2-A Building, ShenZhen Software Park, South Area, Hi-

Tech Park, Shenzhen, Guangdong, China

Equipment Under Test (EUT)

Product Name: Mobile ID Terminal

Model No.: Marshall, Marshall L, Marshall U, Marshall M, Marshall C,

Marshall S, Marshall 8, BM5510, BM5520

FCC ID: 2AGUJMARSHALL

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: 14 Mar., 2019

Date of Test: 14 Mar., to 16 May, 2019

Date of report issued: 16 May, 2019

Test Result: PASS*

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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2 Version

Version No.	Date	Description
00	16 May, 2019	Original

Tested by: Over Chen Date: 16 May, 2019

Test Engineer

Reviewed by: Date: 16 May, 2019

Project Engineer



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4 Test Summary

-		
Test Items	Section in CFR 47	Result
Antenna requirement	15.203 & 15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(3)	Pass
6dB Emission Bandwidth 99% Occupied Bandwidth	15.247 (a)(2)	Pass
Power Spectral Density	15.247 (e)	Pass
Band Edge	15.247 (d)	Pass
Spurious Emission	15.205 & 15.209	Pass
Dear. The FUT complies with the accombining	u viva manuta in the actor days	

Pass: The EUT complies with the essential requirements in the standard.

N/A: N/A: Not Applicable.





5 General Information

5.1 Client Information

Applicant:	ShenZhen Aratek Biometrics Technology Co., Ltd.
Address:	2F, T2-A Building, ShenZhen Software Park, South Area, Hi-Tech Park, Shenzhen, Guangdong, China
Manufacturer:	ShenZhen Aratek Biometrics Technology Co., Ltd.
Address:	2F,T2-A Building, ShenZhen Software Park, South Area, Hi-Tech Park, Shenzhen, Guangdong, China

5.2 General Description of E.U.T.

Product Name:	Mobile ID Terminal
Model No.:	Marshall, Marshall L, Marshall U, Marshall M, Marshall C, Marshall S, Marshall 8, BM5510, BM5520
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g/802.11n(H20)) 2422MHz~2452MHz (802.11n(H40))
Channel numbers:	11 for 802.11b/802.11g/802.11(H20) 7 for 802.11n(H40)
Channel separation:	5MHz
Modulation technology: (IEEE 802.11b)	Direct Sequence Spread Spectrum (DSSS)
Modulation technology: (IEEE 802.11g/802.11n)	Orthogonal Frequency Division Multiplexing(OFDM)
Data speed (IEEE 802.11b):	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Data speed (IEEE 802.11g):	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps
Data speed (IEEE 802.11n):	Up to 150Mbps
Antenna Type:	Internal Antenna
Antenna gain:	2.4dBi
Power supply:	Rechargeable Li-ion Battery DC3.8V-10000mAh
AC adapter:	Model: RH-050250US Input: AC100-240V, 50/60Hz, 0.6A Output: DC 5.0V, 2500mA
Test Sample Condition:	The test samples were provided in good working order with no visible defects.
Remark:	Item No.: Marshall, Marshall L, Marshall U, Marshall M, Marshall C, Marshall S, Marshall 8, BM5510, BM5520 were identical inside, the electrical circuit design, layout, components used and internal wiring, with difference being model name and shell color.

Operation Frequency each of channel for 802.11b/g/n(H20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

- 1. For 802.11n-HT40 mode, the channel number is from 3 to 9;
- 2. Channel 1, 6 & 11 selected for 802.11b/g/n-HT20 as Lowest, Middle and Highest channel. Channel 3, 6 & 9 selected

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,

Bao'an District, Shenzhen, Guangdong, China

Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366

Report No: CCISE190304504

for 802.11n-HT40 as Lowest, Middle and Highest channel, Channel.

5.3 Test environment and test mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Transmitting mode	Keep the EUT in continuous transmitting with modulation

The sample was placed 0.8m (below 1GHz)/1.5m (above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Per-scan all kind of data rate, the follow list were	the worst case.
Mode	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n(H20)	6.5Mbps
802.11n(H40)	13.5Mbps

5.4 Description of Support Units

The EUT has been tested as an independent unit.

5.5 Measurement Uncertainty

<u></u>	_
Parameters	Expanded Uncertainty
Conducted Emission (9kHz ~ 30MHz)	±1.60 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	±3.12 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.54 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.84 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±3.36 dB (k=2)

5.6 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC - Registration No.: 727551

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The Registration No. is 727551.

IC - Registration No.: 10106A-1

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

CNAS - Registration No.: CNAS L6048

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

A2LA - Registration No.: 4346.01

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

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Bao'an District, Shenzhen, Guangdong, China

Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366

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5.7 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,

Bao'an District, Shenzhen, Guangdong, China Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

5.8 Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
Loop Antonno	SCHWARZBECK	FMZB1519B	00044	03-18-2018	03-17-2019
Loop Antenna	SCHWARZBECK	FIVIZ D 13 19 D	00044	03-18-2019	03-17-2020
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-18-2018	03-17-2019
BICOIIILOG AIITEIIIIA	SCHWARZBECK	VOLD9103	497	03-18-2019	03-17-2020
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-18-2018	03-17-2019
Tiom Antenna	SCHWARZBECK	DBI 1A9 120D	910	03-18-2019	03-17-2020
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-22-2017	06-21-2020
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-21-2018	11-20-2019
EMI Test Software	AUDIX	E3	\	/ersion: 6.110919k)
Dro omplifier	HP	8447D	2944A09358	03-18-2018	03-17-2019
Pre-amplifier	ПР	0447D	2944AU9356	03-18-2019	03-17-2020
Pre-amplifier	CD	PAP-1G18	11804	03-18-2018	03-17-2019
rie-amplillei	CD	FAF-IGIO	11004	03-18-2019	03-17-2020
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-18-2018	03-17-2019
Spectrum analyzer	Ronde & Schwarz	F3F30	101434	03-18-2019	03-17-2020
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-21-2018	11-20-2019
EMI Took Dooring	Dahala 0 Caharan	EODD7	404070	03-18-2018	03-17-2019
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-18-2019	03-17-2020
Cable	70501	7400 N I N I 04	4000450	03-18-2018	03-17-2019
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-18-2019	03-17-2020
Cable	MICRO-COAX	MFR64639	K10742-5	03-18-2018	03-17-2019
Cable	MICRO-COAX	WFR04039	K10742-5	03-18-2019	03-17-2020
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-18-2018	03-17-2019
Cable	SUTINER	SUCUFLEXIUU	30193/4PE	03-18-2019	03-17-2020
RF Switch Unit	MWRFTEST	MW200	N/A	N/A	N/A
Test Software	MWRFTEST	MTS8200		Version: 2.0.0.0	

Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
rest Equipment	Manadatata	Model No.	ochanito.	(mm-dd-yy)	(mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI	101189	03-18-2018	03-17-2019
Elvii Test Receivei	Ronde & Schwarz	ESCI	101109	03-18-2019	03-17-2020
Dulas Limitar	SCHWARZBECK	OSRAM 2306	9731	03-18-2018	03-17-2019
Pulse Limiter	SCHWARZBECK	USKAW 2306	9/31	03-18-2019	03-17-2020
LICNI	CHACE	MNIOOFOD	4.447	03-18-2018	03-17-2019
LISN	CHASE	MN2050D	1447	03-18-2019	03-17-2020
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2018	07-20-2019
Cabla	LID	405004	NI/A	03-18-2018	03-17-2019
Cable	HP	10503A	N/A	03-18-2019	03-17-2020
EMI Test Software	AUDIX	E3	Version: 6.110919b)



6 Test results and Measurement Data

6.1 Antenna requirement

Standard requirement:

FCC Part 15 C Section 15.203 /247(b)

15.203 requirement:

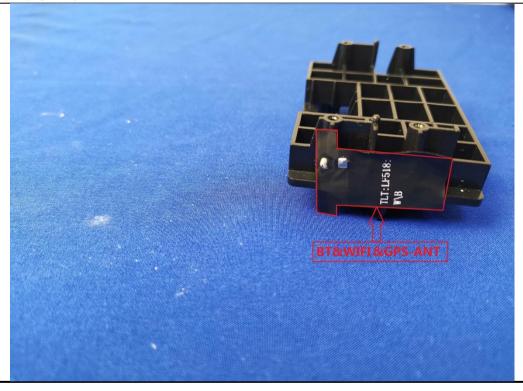
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

E.U.T Antenna:

The Wi-Fi antenna is an Internal antenna which cannot replace by end-user, the best case gain of the antenna is 2.4 dBi.





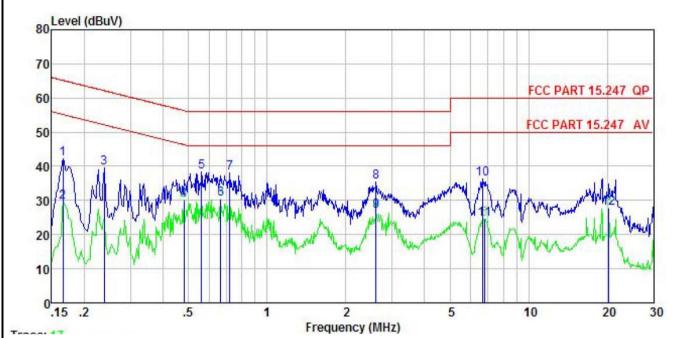
6.2 Conducted Emission

Test Requirement:	FCC Part 15 C Section 1	5.207	
Test Method:	ANSI C63.10: 2013		
Test Frequency Range:	150 kHz to 30 MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9 kHz, VBW=30 k	 H ₇	
Limit:	Frequency range	Limit (d	√Ru\/\
Limit.	(MHz)	Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
	* Decreases with the log		
Test procedure	 The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted 		
	changed according measurement.		
Test setup:	measurement.	to ANSI C63.4: 2014 on co	onducted
Test setup:	measurement.	Reference Plane 40cm 80cm Fi E.U.T EMI Receiver	onducted
Test setup: Test Instruments:	AUX Equipment Test table/Insulat Remark E.U.T. Equipment Under T LISN: Line Impedence Sta	Reference Plane 40cm 80cm Fi E.U.T EMI Receiver	onducted
	Remark E.U.T. Equipment Under 7 LISN: Line Impedence Sta Test table height=0.8m	Reference Plane 40cm 80cm LISN E.U.T EMI Receiver ion plane	onducted



Measurement Data:

Product name:	Mobile ID Terminal	Product model:	Marshall
Test by:	Carey	Test mode:	Wi-Fi Tx mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Huni: 55%



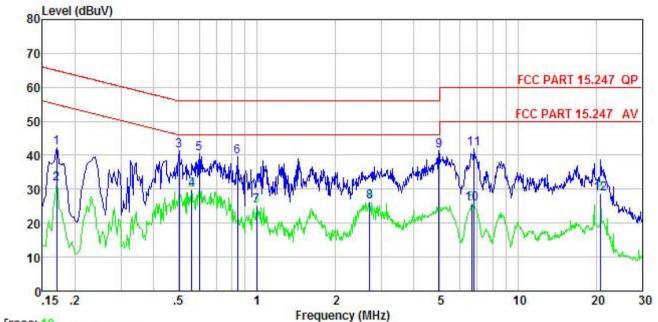
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
-	MHz	dBu∀	₫B	dB	dBu₹	dBu∀	<u>d</u> B	
1	0.166	31.24	0.17	10.77	42.18	65.16	-22.98	QP
2	0.166	18.71	0.17	10.77	29.65	55.16	-25.51	Average
3	0.238	28.70	0.14	10.75	39.59	62.17	-22.58	QP
4	0.481	19.20	0.12	10.75	30.07	46.32	-16.25	Average
5	0.561	27.58	0.12	10.76	38.46	56.00	-17.54	QP
6	0.665	19.38	0.13	10.77	30.28	46.00	-15.72	Average
7	0.720	27.03	0.13	10.78	37.94		-18.06	그렇게 하는 아이들이 얼마나 아이를 보게 하는데
8	2.608	24.41	0.16	10.93	35.50	56.00	-20.50	QP
1 2 3 4 5 6 7 8 9	2.608	15.72		10.93	26.81			Average
10	6.662	25.33		10.81	36.38		-23.62	
11	6.769	13.47	0.24	10.81	24.52			Average
12	20.270	16.69	0.28	10.93	27.90			Average

Notes

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss.



Product name:	Mobile ID Terminal	Product model:	Marshall
Test by:	Carey	Test mode:	Wi-Fi Tx mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Neutral
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Huni: 55%
	•		



	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
-	MHz	dBu∇	<u>ab</u>		dBu∀	dBu∀	<u>ab</u>	
1	0.170	30.53	0.96	10.77	42.26	64.94	-22.68	QP
2	0.170	19.77	0.96	10.77	31.50	54.94	-23.44	Average
3	0.502	29.50	0.97	10.76	41.23	56.00	-14.77	QP
4	0.561	17.94	0.97	10.76	29.67	46.00	-16.33	Average
1 2 3 4 5 6 7 8 9	0.601	28.84	0.97	10.77	40.58	56.00	-15.42	QP
6	0.839	27.85	0.97	10.82	39.64	56.00	-16.36	QP
7	0.994	13.21	0.97	10.87	25.05	46.00	-20.95	Average
8	2.707	14.32	0.99	10.93	26.24	46.00	-19.76	Average
9	4.978	29.38	1.01	10.85	41.24	56.00	-14.76	QP
10	6.662	13.91	1.02	10.81	25.74	50.00	-24.26	Average
11	6.805	30.13	1.02	10.80	41.95		-18.05	
12	20.814	16.90	0.69	10.92	28.51	50.00	-21.49	Average

Notes:

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss.



6.3 Conducted Output Power

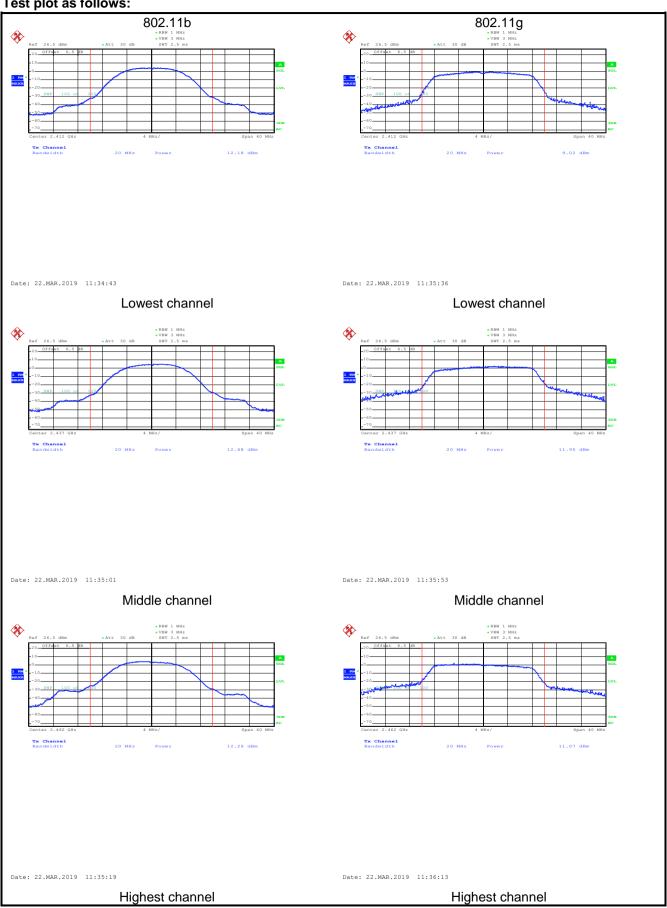
Test Requirement:	FCC Part 15 C Section 15.247 (b)(3)			
Test Method:	ANSI C63.10:2013 and KDB 558074			
Limit:	30dBm			
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane			
Test Instruments:	Refer to section 5.8 for details			
Test mode:	Refer to section 5.3 for details			
Test results:	Passed			

Measurement Data:

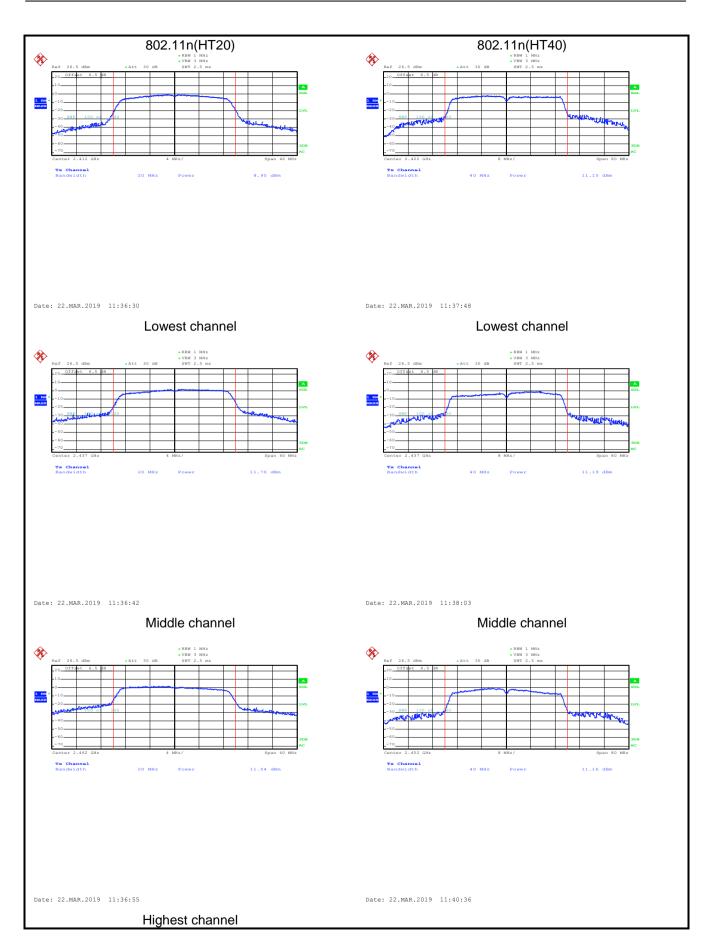
Test CH	Max	Limit(dBm)	Result			
rest CH	802.11b	802.11g	802.11n(H20)	802.11n(H40)	Limit(ubin)	Result
Lowest	12.18	9.02	8.95	11.15		Pass
Middle	12.68	11.95	11.70	11.19	30.00	
Highest	12.26	11.07	11.54	11.16		



Test plot as follows:









6.4 Occupy Bandwidth

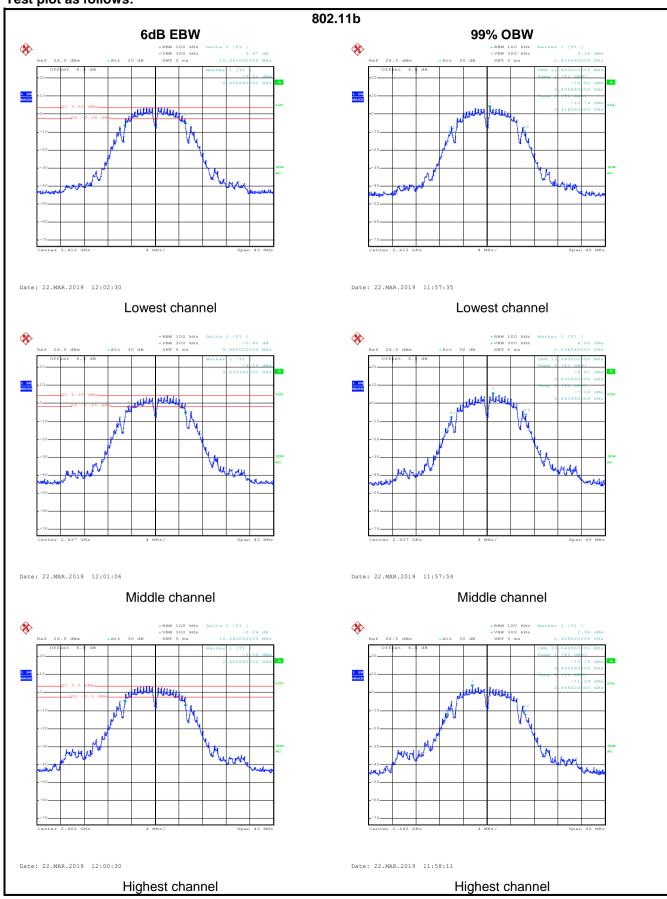
Test Requirement:	FCC Part 15 C Section 15.247 (a)(2)		
Test Method:	ANSI C63.10:2013 and KDB 558074		
Limit:	>500kHz		
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane		
Test Instruments:	Refer to section 5.8 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Passed		

Measurement Data:

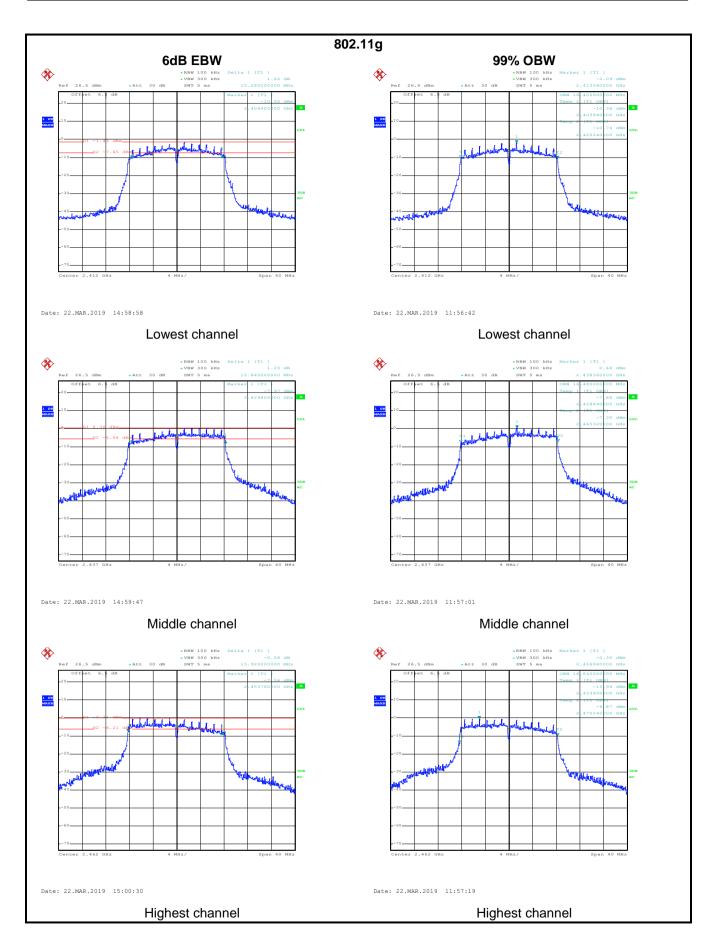
Test CH		6dB Emission B		Limit/k∐→\	Result	
Test CH	802.11b	802.11g 802.11n(H20) 80		802.11n(H40)		
Lowest	10.24	15.28	16.16	35.68		
Middle	9.68	15.84	16.48	35.68	>500	Pass
Highest	10.24	15.92	16.56	35.52		
Test CH		99% Occupy Ba	andwidth (MHz)		Limit(kHz)	Result
Test CH	802.11b	802.11g	802.11n(H20)	802.11n(H40)	Liiiii(Ki iz)	Result
Lowest	12.48	16.40	17.52	36.16		
Middle	12.64	16.48	17.60	36.00	N/A	N/A
Highest	13.04	16.64	17.76	35.68		



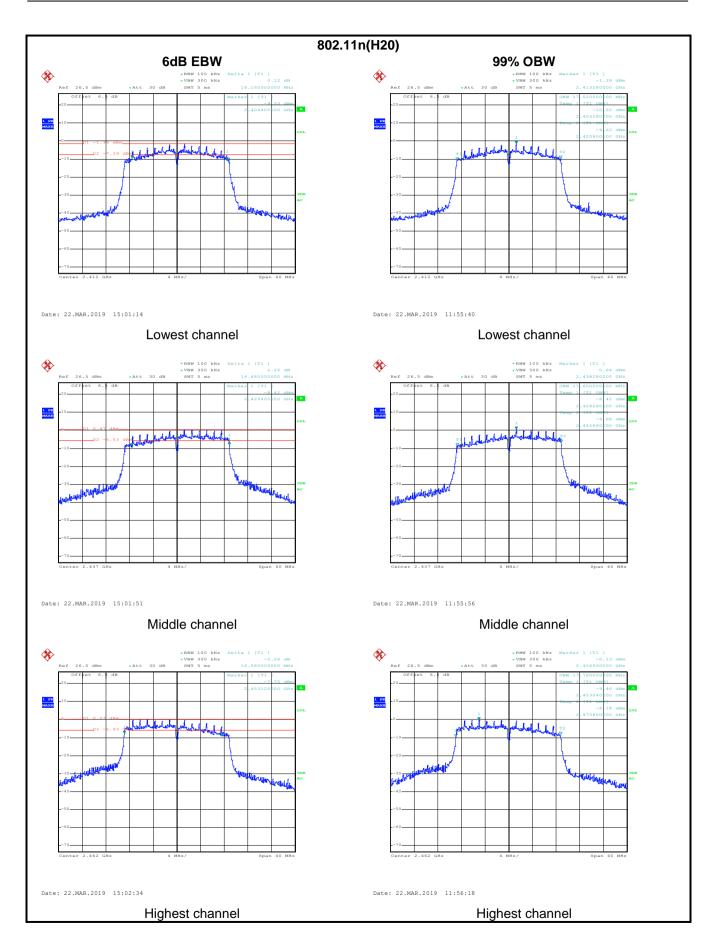
Test plot as follows:



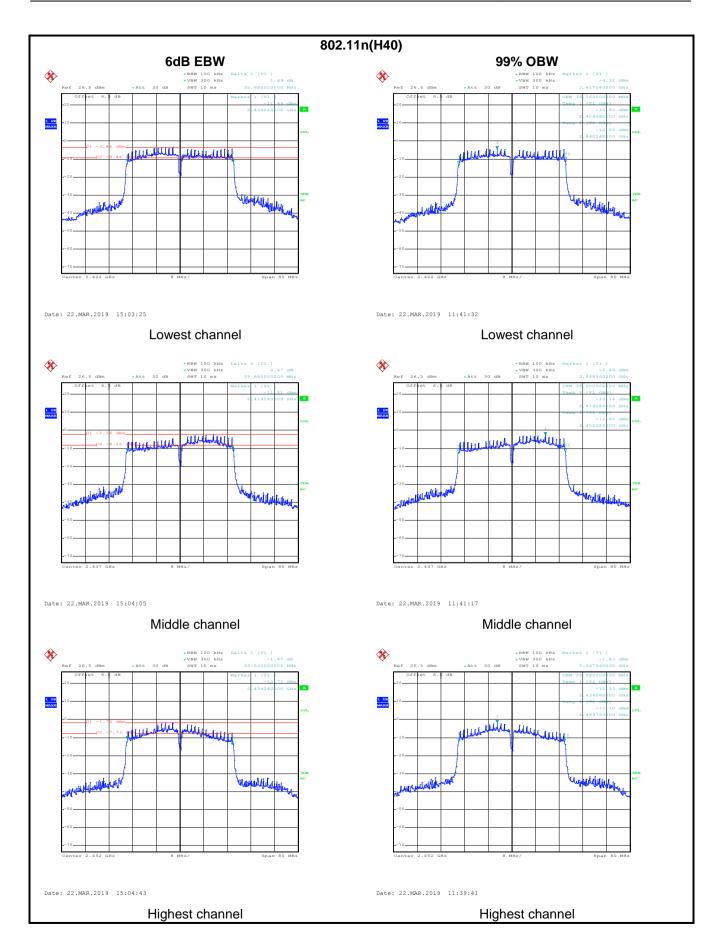














6.5 Power Spectral Density

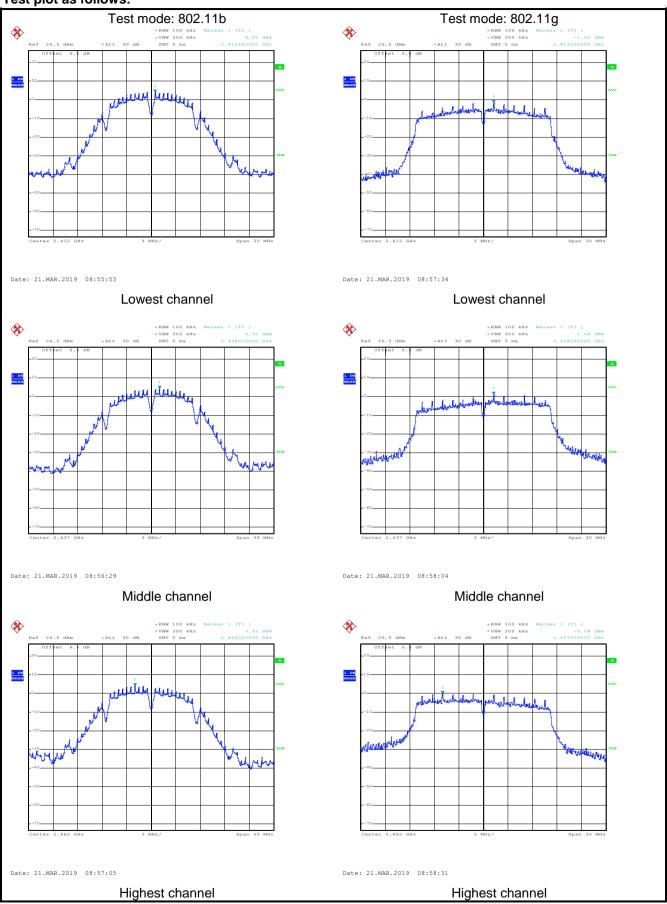
Test Requirement:	FCC Part 15 C Section 15.247 (e)
Test Method:	ANSI C63.10:2013 and KDB 558074
Limit:	8dBm
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

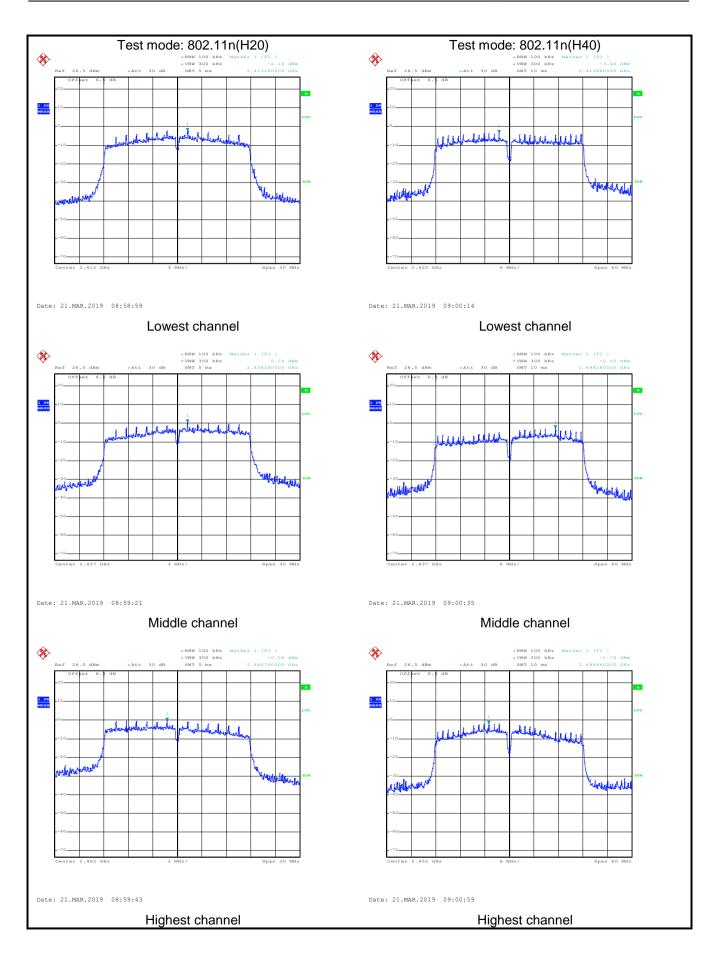
Toot CU		Limit(dDm)	Dogult			
Test CH	802.11b	802.11g	802.11n(H20)	802.11n(H40)	Limit(dBm)	Result
Lowest	4.05	-1.50	-2.16	-3.40		
Middle	4.32	1.04	0.75	-2.52	8.00	Pass
Highest	3.93	-0.08	-0.06	-1.70		



Test plot as follows:









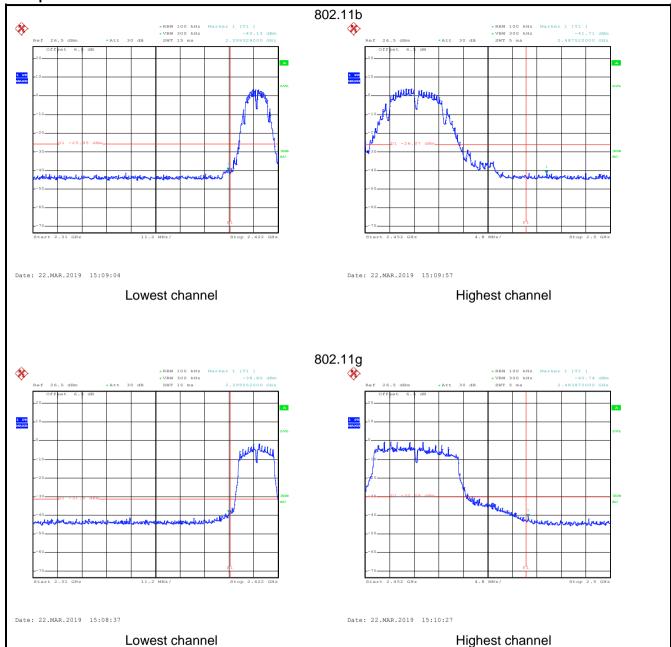
6.6 Band Edge

6.6.1 Conducted Emission Method

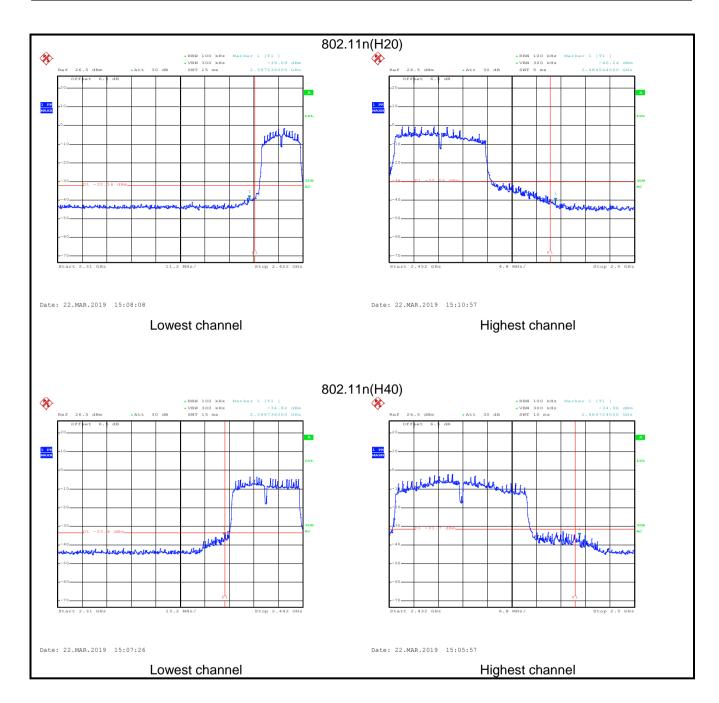
Test Requirement:	FCC Part 15 C Section 15.247 (d)				
Test Method:	ANSI C63.10:2013 and KDB 558074				
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 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.				
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane				
Test Instruments:	Refer to section 5.8 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				



Test plot as follows:









6.6.2 Radiated Emission Method

Test Requirement:		Section 15 20	00 and 15 205				
Test Method:	FCC Part 15 C Section 15.209 and 15.205 ANSI C63.10: 2013 and KDB 558074						
			3 558074				
Test Frequency Range:	2.3GHz to 2.5G	HZ					
Test Distance:	3m		1			1	
Receiver setup:	Frequency	Detector	RBW		BW	Remark	
	Above 1GHz	Peak RMS	1MHz 1MHz	-	<u>ИHz </u>	Peak Value Average Value	
Limit:	Frequenc		nit (dBuV/m @		/II 1Z	Remark	
Littit.			54.00	0111)	A۱	verage Value	
	Above 1GI		74.00			Peak Value	
Test Procedure:	 The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasipeak or average method as specified and then reported in a data 						
Test setup:	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	AE EUT (Turntable)	Ground Reference Plane	Pre-mplifier Co	Antenna Tov	wer	
Test Instruments:	Refer to section	5.8 for detail	S				
Test mode:	Refer to section 5.3 for details						
Test results:	Passed						



802.11b mode:

oduc	t Name:	Mobil	e ID Term	ninal		Pr	oduct Mo	del:	Marshall	
st By	<i>r</i> :	Care	У			Te	est mode:		802.11b Tx	mode
st Ch	nannel:	Lowe	st channe	e		Po	olarizatio	n:	Vertical	
st Vo	oltage:	AC 1:	20/60Hz			Er	nvironme	nt:	Temp: 24℃	Huni: 57%
	aval (dDv)(las)									
110	evel (dBuV/m)						- 1			Î
100									-	
										m
80									FCC F	PART 15 (PK)
									7	10000
60									J. CCC.	PART 15 (AV)
-	mm	<u>~~~</u>	my	wh	~~~~	~~~~		m-n	W PULL	AKT 15 (AV)
40				100				2		
20										
20										
0										
2	310 2320		No.	2350					i i	242
					Frequ	ency (MH	Z)			
	Freq	ReadA Level	ntenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark	
			dB/m			dBuV/m	dBuV/m	<u>d</u> B		
	MHz	dBuV	10000							
1 2	MHz 2390.000 2390.000	20.00	27.07	4.69 4.69	0.00	51.76	74.00	-22.24	Peak Average	

Remark

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Produc	t Name:	Mobile	ID Termina	al		Produ	ct Model:	M	arshall	
est By	<i>/</i> :	Carey				Test n	node:	80	02.11b Tx m	ode
Test Ch	nannel:	Lowest	channel			Polari	zation:	Н	orizontal	
Test Vo	oltage:	AC 120)/60Hz			Enviro	nment:	T	emp: 24℃	Huni: 57%
110L	evel (dBuV/m)									
100									-	m
										1
80									FCC PAI	RT 15 (PK)
									1	
60									FCC PAI	RT 15 (AV)
-	money	~~~~	Monn	m	mary		mon	money		
40								2		
20						-				
0	310 2320			2350						2422
	310 2320				Frequenc	y (MHz)				2422
		ReadA	ntenna	Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark	
	MHz	dBu∀	dB/m	₫B	₫B	$\overline{dBuV/m}$	dBu√/m			
1	2390.000	19.99	27.08	4.69	0.00	51.76	74.00	-22.24	Peak	
2	2390.000	8.04	27.08	4.69	0.00	39, 81	54,00	-14.19	Average	

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



roduct Name:	Mobile II	D Terminal			Prod	uct Mode	of:	Marshall	
est By:	Carey				Test	mode:		802.11b Tx m	ode
est Channel:	Highest	channel			Pola	rization:		Vertical	
est Voltage:	AC 120/	60Hz			Envi	ronment:		Temp: 24℃	Huni: 57%
1 115 11					•				
110 Level (dBuV/n	1)								1
100									-
		1							
80		1						FCC PA	RT 15 (PK)
			1						
60					<u></u>	1	1000 100	FCC PA	RT 15 (AV)
					<i>/</i>				
40						4			9
20									
02452									250
				Frequen	cy (MHz)				
F	ReadAn Level F	tenna C	able	Preamp	·	Limit	Over	D1-	
							Limit	remark	_
MHz	dBu∀	dB/m	₫B	dВ	dBuV/m	dBuV/m	₫B		
1 2483.500 2 2483.500		27.36	4.81	0.00			-20.92		
2 2483.500	8.25	27.36	4.81	0.00	40.42	54.00	-15.58	Average	

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



roduct Name:	Mobile ID Terminal		Product Model:	Marshall	
est By:	Carey		Test mode:	802.11b Tx n	node
est Channel:	Highest channel		Polarization:	Horizontal	
est Voltage:	AC 120/60Hz		Environment:	Temp: 24℃	Huni: 57%
110 Level (dBuV/m)					
100					
80				FCC	ADT 45 (DIV)
				FCCF	PART 15 (PK)
60		- man	1	FCC F	PART 15 (AV)
40			2		
20					
0					
02452		Frequency (MHz)		2500
Freq	ReadAntenna Cable Level Factor Loss	Preamp Factor Leve		er it Remark	
MHz -	dBuV dB/m dB	dB dBuV/	m dBuV/m	₫ <u>₿</u>	
1 2483.500 2 2483.500	20.62 27.35 4.81 8.29 27.35 4.81	0.00 52.7 0.00 40.4	8 74.00 -21. 5 54.00 -13.	22 Peak 55 Average	

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



802.11g mode:

Test By: Carey Test Channel: Lowest channel Test Voltage: AC 120/60Hz 110 Level (dBuV/m) 100	el	Test mode: Polarization: Environment:	802.11g Tx mode Vertical Temp: 24°C Huni: 57%
Test Voltage: AC 120/60Hz	el		Temp: 24°C Huni: 57%
110 100 100		Environment:	
100			FCC PART 15 (PK)
100			CC PART 15 (PK)
			CC PART 15 (PK)
80			CC PART 15 (PK)
80			FCC PART 15 (PK)
80			CC PART 15 (PK)
			1
			1
60			FCC PART 15 (AV)
manner manner	mormony	man man	- Technitis (AV)
40		2	
40			
20			
0			
2310 2320	2350		2422
	Frequency	(MHZ)	
Readantenna	Cable Preamp	Limit Ove	ar .
Freq Level Factor	Loss Factor Le	evel Line Limi	t Remark
MHz dBuV dB/m	. —— db —— db db.	ıV/m dBuV/m	iB

0.00 51.89 74.00 -22.11 Peak 0.00 39.91 54.00 -14.09 Average

Remark:

4.69

4.69

2390.000 20.13 27.07 2390.000 8.15 27.07

2390.000

^{1.} Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor.

The emission levels of other frequencies are very lower than the limit and not show in test report.

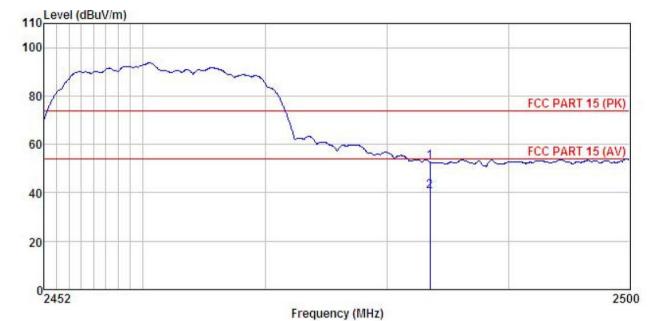


oduct Name:	Mobile I	ID Terminal		Pr	oduct Mo	odel:	Marshall	
st By:	Carey			Te	est mode:		802.11g Tx r	mode
st Channel:	Lowest	channel		Po	olarizatio	n:	Horizontal	
st Voltage:	AC 120	/60Hz		Er	nvironme	nt:	Temp: 24°C	Huni: 57%
110 Level (dBuV	m)							1
100							1 100	.
							m	and of
80							FCC P	ART 15 (PK)
							1	AKT 10 (114)
60							FCC D	ART 15 (AV)
man	~~~~	money	man	yma	m	mm	N ICCI.	ART 13 (AV)
40						2		8
20								
0								
⁰ 23 1 0 2320		235		ncy (MH	(7)			242
				Paris.	200			
	KeadAnt Level Fa	enna Cabl actor Los	e Preamp s Factor	Level	Limit Line	Over Limit	Remark	
Fred	A CONTRACTOR OF THE PARTY OF TH				dBu√/m			
	dBuV	dB/m d	ח חחי	ישילוווו וווחב				
Freq MHz		dB/m d 27.08 4.6				-21.10	D. 1	

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product Name:	Mobile ID Terminal	Product Model:	Marshall
Test By:	Carey	Test mode:	802.11g Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%



	Freq		Antenna Factor						
	MHz	dBu₹	dB/m	dB	<u>ab</u>	$\overline{dBuV/m}$	$\overline{dBuV/m}$	dB	
1 2	2483.500 2483.500								

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



roduct	Name:	Mobil	e ID Term	inal		Р	roduct M	odel:	Marsh	all	
est By:		Care	y			T	est mode):	802.1	1g Tx mo	ode
est Cha	annel:	Highe	est channe	əl		P	olarizatio	n:	Horizo	ontal	
est Vol	tage:	AC 1:	20/60Hz			E	nvironme	ent:	Temp:	: 24℃	Huni: 57%
110 100	.evel (dBuV/m	n)									
80			~~	~~						FCC PA	RT 15 (PK)
60					~	June	~	+	~~~	FCC PA	RT 15 (AV)
40								2			
20											-
02	2452				Eroa	uency (M	П-/				2500
					rieq	uency (m	пиј				
	Freq	ReadA Level	ntenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark		
	MHz	dBu₹	_dB/m	₫B	₫B	$\overline{dBuV/m}$	dBuV/m	<u>dB</u>			
1 2	2483.500 2483.500		27.35 27.35	4.81 4.81	0.00 0.00	52.70 40.32	74.00 54.00	-21.30 -13.68	Peak Average		

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.





802.11n(HT20):

Product N	lame:	Mobile	ID Termina	al		Produ	ıct Model:	N	/larshall	
est By:		Carey				Test r	node:	8	02.11n(HT20)) Tx mode
est Chai	nnel:	Lowest	channel			Polari	ization:	V	ertical	
est Volta	age:	AC 120)/60Hz			Envir	onment:	Т	emp: 24℃	Huni: 57%
476		9				·		•		
110 Lev	rel (dBuV/m)									-
100										
									~~	man
80									FCC P.	ART 15 (PK)
									1	
60			0					1 1	FCC P.	ART 15 (AV)
~~	mount	manufacture.	marker on	San Fran	www	hamman	m	my.		
40								1		
20										
0 231	10 2320			2350						242
					Frequen	cy (MHz)				
	Eroa	ReadA	intenna Factor	Cable	Preamp	Lorrol	Limit		Remark	
_		dBuV	dB/m	dВ	dВ	dBuV/m	dBuV/m	₫B		
2	MHz									

Remark:

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



oduct Na	ıme:	Mobile I	ID Termina	al		Produc	t Model:	Ma	arshall	
st By:		Carey				Test m	ode:	80	2.11n(HT20)	Tx mode
st Chanr	nel:	Lowest	channel			Polariz	ation:	Но	rizontal	
st Voltag	je:	AC 120	/60Hz			Enviro	nment:	Te	mp: 24 ℃	Huni: 57%
Low	ol /dBu\//m\									
110 Leve	el (dBuV/m)									
100									^~	M A
									~~	rand
80									FCC PA	RT 15 (PK)
								1 -5	FCC PA	RT 15 (AV)
60								T CVC	1 2 2 1 1	
60	m		~~~	~~~	my	money	m			-
40		~~~~	~~~		m	~~~~	~~	2		
_	m	~~~	~~~		m	Variation of the second	morim	2		
_	and the same				·····	~~~	~~~~	2		
40	m				······································	~~~~~	~~~	2		
40					m	Marine Marine	<u> </u>	2		
40	0 2320			2350	Frequenc	cy (MHz)	<u> </u>	2		242
40	0 2320	ReadA		2350	Frequenc		Limit	Over		
40	-	ReadA Level	untenna Factor	2350 Cable	Frequenc Preamp					
40	-	ReadA Level	ant enna	2350 Cable	Frequenc Preamp Factor		Line			
20 231	Freq	Level — <u>dBu</u> V	untenna Factor	2350 Cable	Frequence Preamp Factor dB	Level dBuV/m 52.90	Line dBuV/m 74.00	Limit dB -21.10	Remark	

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



roduct Name:	Mobile	ID Termin	al		Produ	ıct Model	: N	/larshall		
est By:	Carey				Test r	node:	8	02.11n(HT20) Tx mode	
est Channel:	Highes	st channel			Polar	ization:	٧	Vertical		
est Voltage:	AC 12	0/60Hz			Envir	onment:	Т	emp: 24℃	Huni: 57%	
- 12										
110 Level (dBuV/r	n)									
100										
	~~~	~~	-							
80			1					FCC PAR	RT 15 (PK)	
			N.						, , , ,	
60				-	m	1		FCC PAF	RT 15 (AV)	
							~~~			
40						2				
20										
0 <mark>2452</mark>									2500	
				Frequenc	cy (MHz)					
Fre	Read/ Level	Antenna	Cable	Preamp	Level	Limit		Remark		
	and the state of t								 -	
MH	dBuV	₫B/m	dB	₫B	dBuV/m	dBuV/m	₫B			
1 2483,500 2 2483,500		27.36	4.81	0.00 0.00	53.06		-20.94 -13.56	Peak Average		
2 2400.000	0.21	21.50	4.01	0.00	10.14	04.00	13.00	morage		

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



roduct Name:	Mobile ID Tern	ninal		Produ	ıct Model:	M	Marshall	
est By:	Carey			Test r	node:	80)2.11n(HT20) Tx mode
est Channel:	Highest chann	el		Polari	zation:	Н	orizontal	
est Voltage:	AC 120/60Hz			Enviro	onment:	Te	emp: 24°C	Huni: 57%
Lovel /dBu\//r	n)							
110 Level (dBuV/r	n)							
100								
		home						
80							FCC P.	ART 15 (PK)
			-					
60			1		1		FCC P	ART 15 (AV)
								~~~
40					- 4			
20								
02452	Lilia Li							250
2432			Frequen	cy (MHz)				230
3 <u>0</u> 5	ReadAntenn	a Cable	Preamp	B 102	Limit			
Fred	l Level Facto	r Loss	Factor	Level	Line	Limit	Kemark	
MH2	dBuV dB/	m dB	₫B	dBuV/m	dBuV/m	₫B		
1 2483.500		5 4.81		55.14	74.00	-18.86	Peak	
2 2483.500	8.42 27.3	5 4.81	0.00	40.58	54.00	-13.42	Average	

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



# 802.11n(HT40):

Product	Name:	Mobile	ID Termin	al		Produ	ıct Model	:	Marshall						
Test By:	•	Carey				Test r	node:	8	802.11n(HT40) Tx mode						
Test Ch	annel:	Lowest channel Polarization:				Lowest channel Polarization:		Lowest channel Polarization: Vertical		Lowest channel			Vertical		
Test Vol	Itage:	AC 12	0/60Hz			Envir	Environment:		Temp: 24°C Huni: €						
	- Udballa														
110	evel (dBuV/m)														
100			-				1								
										morning					
80								- Jan an	ECC DAE	RT 15 (PK)					
							1		TCCFAI	11 15 (11)					
60							1 00		FCC DAT	T 45 /AUA					
-	many	-MAN	www	www	many	mund	they		FCC PAR	RT 15 (AV)					
40							2								
20															
20										1					
23	310 2320		2350		F	(0.011-)	-	7		2442					
		D 1		211	Frequenc										
	Freq	Level	Antenna Factor	Loss	Factor	Level	Limit Line								
	MHz	dBu∜	— <u>d</u> B/m	<u>ab</u>	<u>d</u> B	$\overline{dBuV/m}$	dBuV/m	dE		<del></del>					

#### Remark:

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



	Name:	Mobile	ID Termina	al		Produ	ct Model:	Ma	Marshall	
st By:	:	Carey				Test m	node:	80	2.11n(HT40	) Tx mode
st Ch	annel:	Lowest	channel			Polariz	zation:	Н	orizontal	
st Vo	Itage:	AC 120	AC 120/60Hz			Enviro	nment:	Те	mp: 24°C	Huni: 57%
2.4	accal (alDeal time)					•		•		
110	evel (dBuV/m)									
100		-	-							1 1-61
								mo	yprom	my
80								1	FCC PA	ART 15 (PK)
- 3								1		
60						-12	from	~	ECC D	ART 15 (AV)
~	warman haran	m	man	my	m	Money	7		FCC P	ART 15 (AV)
40							2			
40										
- 100000										
20										5.
- 100000										
20	310 2320		2350	)						244
20	310 2320		2350	)	Frequenc	cy (MHz)		3		244
20			ntenna	Cable	Preamp		Limit		13W 28	244
20				Cable	Preamp				Remark	244
20			ntenna Factor	Cable	Preamp Factor		Line	Limit	Remark	244
20	Freq	Level	ntenna Factor ——dB/m	Cable Loss	Preamp Factor dB	Level dBuV/m 61.22	Line  dBuV/m  74.00	Limit		244

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.



roduct N	lame:	Mobil	e ID Term	ninal		P	roduct N	lodel:	Marshall		
est By:		Care	у			Т	est mod	e:	802.11n(	HT40)	Tx mode
est Cha	nnel:	Highe	est channe	el		P	olarizati	on:	Vertical		
est Volta	nge:	AC 1	20/60Hz			Е	nvironm	ent:	Temp: 24	ŀ℃	Huni: 57%
110 Le	vel (dBuV/m	)									7
100											
					2						
80				/~ - `	- V					CDAL	T 45 (DIA)
1									FC	CPA	RT 15 (PK)
60							1	W. D. 1992	1 50	CDAE	T 45 (ALB
****							1	~~	my te	CPA	RT 15 (AV)
40									2		
20											
20											
ا											
024	32		2450		Fren	uency (M	H ₇ )				2500
	Freq	KeadA Level	ntenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark		
_	MHz	dBu₹		<u>ab</u>		dBuV/m	dBuV/m	<u>ab</u>			
	2483,500 2483,500	22.77 8.14	27.36 27.36	4.81 4.81	0.00	54.94 40.31	74.00 54.00	-19.06 -13.69	Peak Average		

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



oduct Name:	Mobile ID Ter	rminal		Produ	ıct Model	: 1	/larshall	
est By:	Carey			Test r	node:	8	302.11n(HT40	D) Tx mode
est Channel:	Highest chan	nel		Polar	ization:	H	Horizontal	
est Voltage:	AC 120/60Hz	AC 120/60Hz			onment:	T	emp: 24°C	Huni: 57%
110 Level (dBuV/m)								
100	m	,~						
80		ν	1	1			FCC P	ART 15 (PK)
60					h-	1	YECC P	ART 15 (AV)
40						2		
20								1.
02432	2450		Frequen	cy (MHz)				2500
Freq	ReadAnten Level Fact	na Cable or Loss	Preamp		Limit Line	Over Limit	Remark	
MHz	dBu∀ dB,	/mdB	<u>ab</u>	$\overline{dBuV/m}$	$\overline{dBuV/m}$	<u>dB</u>		
1 2483.500	24.64 27.3 8.23 27.3	35 4.81 35 4.81	0.00 0.00	56.80 40.39	74.00	-17.20	Peak Average	

^{1.} Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor.

^{2.} The emission levels of other frequencies are very lower than the limit and not show in test report.



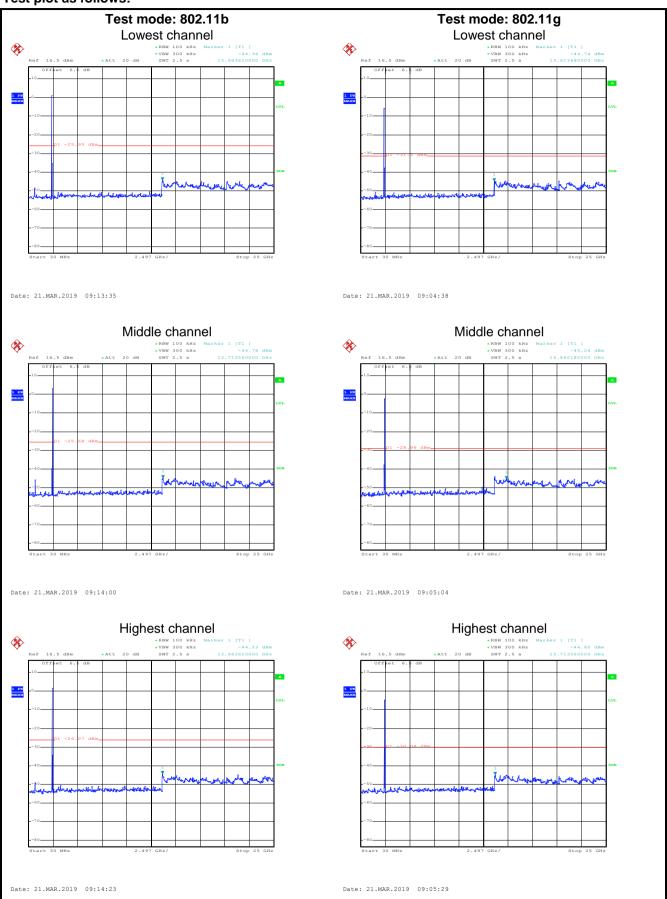
# 6.7 Spurious Emission

# 6.7.1 Conducted Emission Method

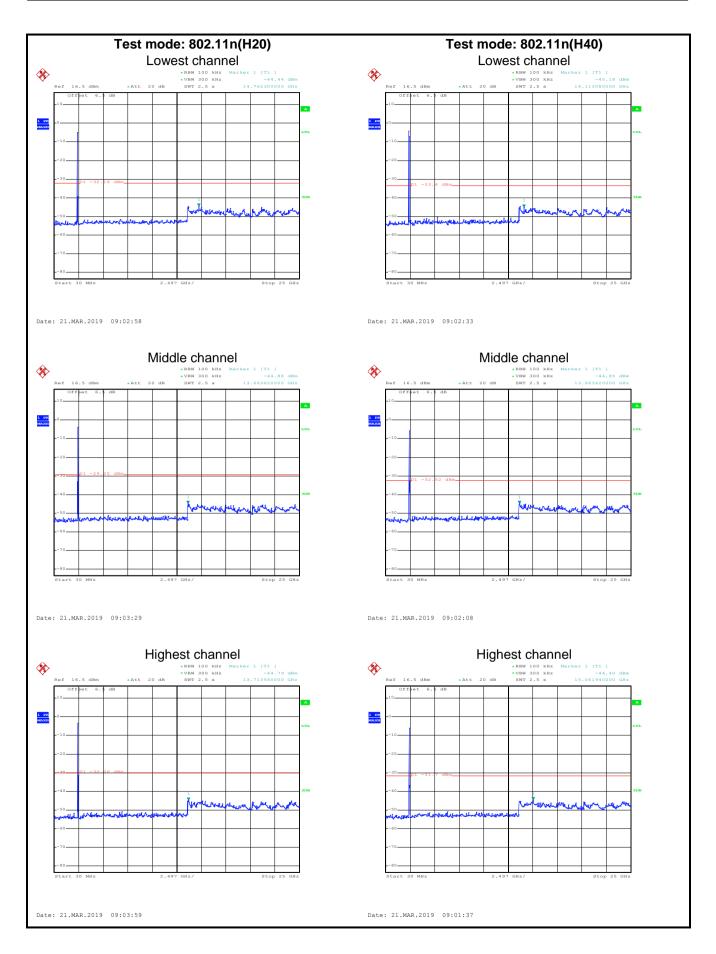
0.7.1 Conducted Emission							
Test Requirement:	FCC Part 15 C Section 15.247 (d)						
Test Method:	ANSI C63.10:2013 and KDB 558074						
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph(b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.						
Test setup:							
	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane						
Test Instruments:	Refer to section 5.8 for details						
Test mode:	Refer to section 5.3 for details						
Test results:	Passed						
700110001101	1 . 45554						



# Test plot as follows:





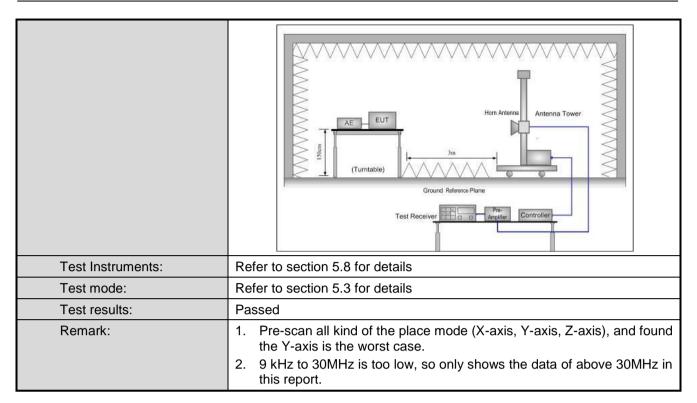




# 6.7.2 Radiated Emission Method

6.7.2 Radiated Emission M	etiloa					
Test Requirement:	FCC Part 15 C S	ection 15.209	and 15.205			
Test Method:	ANSI C63.10:201	3				
Test Frequency Range:	9kHz to 25GHz					
Test Distance:	3m					
Receiver setup:	Frequency	Detector	RBW	VE	3W	Remark
	30MHz-1GHz	Quasi-peak	120KHz	300	KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz		1Hz	Peak Value
		RMS	1MHz		1Hz	Average Value
Limit:	Frequency		nit (dBuV/m @3	m)		Remark
	30MHz-88MH	1	40.0			uasi-peak Value
	88MHz-216MH 216MHz-960M		43.5 46.0			uasi-peak Value uasi-peak Value
	960MHz-1GH	54.0			uasi-peak Value	
			54.0			Average Value
	Above 1GHz		74.0			Peak Value
Test Procedure:	1. The EUT wa	s placed on t	he top of a rot	ating t	table 0	
	The table wa highest radia	as rotated 360 ation.	degrees to d	etermi	ine the	meter chamber. e position of the
Test setup:	antenna, wh tower.  3. The antenna the ground to Both horizon make the me 4. For each suscase and the meters and to find the m  5. The test-reconspecified Bate 6. If the emission the limit spend of the EUT whave 10dB m	ich was mour height is var o determine to hal and vertice easurement. spected emissen the antenne he rota table aximum read eiver system andwidth with on level of the cified, then te vould be reponargin would	ied from one remaximum val polarization sion, the EUT a was turned from the was turned from the was set to Perion Maximum Hoe EUT in peak sting could be red. Otherwis be re-tested of	meter fivalue of a value of as of the was a to height om 0 of ak Det lid Moode as stopped the one by	variable to four of the f he ante hts from degrees tect Fu de. was 1 hed and emissi one us	e-height antenna meters above field strength. enna are set to ed to its worst m 1 meter to 4 s to 360 degrees
	EUT Turn Table Ground F Above 1GHz					



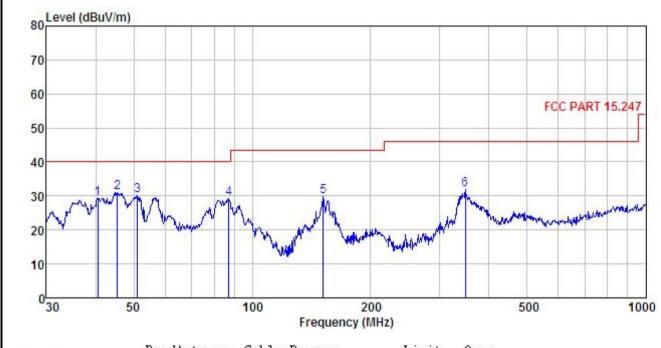




#### Measurement Data (worst case):

#### **Below 1GHz:**

Product Name:	Mobile ID Terminal	Product Model:	Marshall
Test By:	Carey	Test mode:	Wi-Fi Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%



	Freq	Keada Level			Preamp Factor				Remark
,	MHz	dBu₹			<u>d</u> B	$\overline{dBuV/m}$	$\overline{dBuV/m}$	<u>d</u> B	
1	40.559	45.65	12.39	1.22	29.90	29.36	40.00	-10.64	QP
2	45.375	47.35	12.28	1.29	29.86	31.06	40.00	-8.94	QP
1 2 3	51.121	46.58	11.99	1.27	29.82	30.02	40.00	-9.98	QP
4	87.112	47.53	9.26	1.91	29.59	29.11	40.00	-10.89	QP
5	151.597	47.52	8.97	2.53	29.21	29.81	43.50	-13.69	QP
4 5 6	348.027	42.71	14.57	3.09	28.56	31.81	46.00	-14.19	QP

#### Remark:

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



oduct N	lame:	Mobile	e ID Termi	nal		Prod	duct Mod	el:	Mars	shall	
st By:		Carey	Carey Test mode: Wi-Fi				Wi-Fi Tx mode				
st Freq	st Frequency: 3		30 MHz ~ 1 GHz			Pola	rization:		Hori	zontal	
st Volta	age:	AC 12	20/60Hz			Env	ironment		Tem	ıp: <b>24</b> ℃	Huni: 57%
Lev	el (dBuV/m)										
80	er (abaviiii)										
70											
60			-							FCC F	PART 15.247
50										FULF	ART 13.247
50											
40								5			
						4		V			6
30				3	16/	AND ANDRES	Male		٩.		a office adopted
20		2	4 300	Mr.	No Age	Marie	had the		John Wales	hondring who are	And the same
	were stronger and	WY	Mary Just James	. W	Why.		IV.				
10	A. Ada a	A JUNEAU	M								
030	5	0	31 to 12	100	Freque	200	1		5	00	1000
030	5	0			A STATE OF THE PARTY OF THE PARTY OF	200 ency (MHz			5	00	1000
030		0 Read!	Antenna Factor	Cable	Freque Preamp Factor	ency (MHz	) Limit Line	Over Limit			1000
030	Freq	0 Read/ Level	Factor	Cable Loss	Preamp Factor	ency (MHz Level	Limit Line	Limit			1000
-30	Freq MHz	Read/ Level dBuV	Factor —_dB/m	Cable Loss dB	Preamp Factor dB	Level	Limit Line dBuV/m	Limit ———————————————————————————————————	Rema		1000
-30	Freq MHz 30.211	Read/ Level dBuV	Factor 	Cable Loss ——————————————————————————————————	Preamp Factor dB	Level dBuV/m 26.05	Limit Line dBuV/m 40.00	Limit 	Rema		1000
-30	Freq MHz 30.211 54.835 99.180	Read/ Level dBuV 44.68 36.57 39.70	Factor  dB/m  10.63 11.60 12.32	Cable Loss ——————————————————————————————————	Preamp Factor ————————————————————————————————————	Level  dBuV/m  26.05 19.73 24.44	Limit Line dBuV/m 40.00 40.00 43.50	Limit	Rema		1000
-30	Freq MHz 30.211 54.835 99.180 172.599	Read/ Level dBuV 44.68 36.57 39.70 45.65	Factor  dB/m  10.63 11.60 12.32 9.74	Cable Loss ——————————————————————————————————	Preamp Factor ————————————————————————————————————	Level  dBuV/m  26.05 19.73 24.44 29.04	Limit Line dBuV/m 40.00 40.00 43.50 43.50	Limit	Rema QP QP QP QP		1000
0 30 1 2 3 4 5 6	Freq MHz 30.211 54.835 99.180	Read/ Level dBuV 44.68 36.57 39.70	Factor  dB/m  10.63 11.60 12.32	Cable Loss ——————————————————————————————————	Preamp Factor ————————————————————————————————————	Level  dBuV/m  26.05 19.73 24.44 29.04 38.86	Limit Line dBuV/m 40.00 40.00 43.50 43.50 46.00	Limit	Rema QP QP QP QP QP QP		1000

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



#### **Above 1GHz**

Above 1GHz				000.441				
				802.11b				
				nannel: Lowe				
		T T	De	tector: Peal	k Value		T	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4824.00	45.78	36.06	6.81	41.82	46.83	74.00	-27.17	Vertical
4824.00	47.53	36.06	6.81	41.82	48.58	74.00	-25.42	Horizontal
			Dete	ector: Avera	ge Value			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4824.00	36.45	36.06	6.81	41.82	37.50	54.00	-16.50	Vertical
4824.00	38.82	36.06	6.81	41.82	39.87	54.00	-14.13	Horizontal
			Toot of	nannel: Mido	No channal			
				tector: Peak				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4874.00	46.88	36.32	6.85	41.84	48.21	74.00	-25.79	Vertical
4874.00	46.24	36.32	6.85	41.84	47.57	74.00	-26.43	Horizontal
			Dete	ector: Avera	ge Value			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4874.00	37.59	36.32	6.85	41.84	38.92	54.00	-15.08	Vertical
4874.00	37.45	36.32	6.85	41.84	38.78	54.00	-15.22	Horizontal
			Test ch	annel: High	est channel			
			De	tector: Peak	Value Value			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4924.00	46.34	36.58	6.89	41.86	47.95	74.00	-26.05	Vertical
4924.00	47.59	36.58	6.89	41.86	49.20	74.00	-24.80	Horizontal
			Dete	ector: Avera	ge Value			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4924.00	36.41	36.58	6.89	41.86	38.02	54.00	-15.98	Vertical
4924.00	36.59	36.58	6.89	41.86	38.20	54.00	-15.80	Horizontal
		·			•		•	

# Remark:

^{1.} Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor.

^{2.} The emission levels of other frequencies are very lower than the limit and not show in test report.





	802.11g								
Test channel: Lowest channel									
Detector: Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4824.00	46.85	36.06	6.81	41.82	47.90	74.00	-26.10	Vertical	
4824.00	46.49	36.06	6.81	41.82	47.54	74.00	-26.46	Horizontal	
Detector: Average Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4824.00	37.25	36.06	6.81	41.82	38.30	54.00	-15.70	Vertical	
4824.00	37.74	36.06	6.81	41.82	38.79	54.00	-15.21	Horizontal	
Test channel: Middle channel									
Detector: Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4874.00	46.31	36.32	6.85	41.84	47.64	74.00	-26.36	Vertical	
4874.00	46.59	36.32	6.85	41.84	47.92	74.00	-26.08	Horizontal	
			Dete	ctor: Avera	ge Value				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4874.00	37.25	36.32	6.85	41.84	38.58	54.00	-15.42	Vertical	
4874.00	37.31	36.32	6.85	41.84	38.64	54.00	-15.36	Horizontal	
Test channel: Highest channel									
				tector: Peak	Value				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4924.00	46.59	36.58	6.89	41.86	48.20	74.00	-25.80	Vertical	
4924.00	46.28	36.58	6.89	41.86	47.89	74.00	-26.11	Horizontal	
Detector: Average Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4924.00	37.74	36.58	6.89	41.86	39.35	54.00	-14.65	Vertical	
4924.00	37.89	36.58	6.89	41.86	39.50	54.00	-14.50	Horizontal	
Remark:  1 Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor									

^{1.} Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor.

^{2.} The emission levels of other frequencies are very lower than the limit and not show in test report.





802.11n(HT20)									
Test channel: Lowest channel									
Detector: Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4824.00	46.74	36.06	6.81	41.82	47.79	74.00	-26.21	Vertical	
4824.00	46.41	36.06	6.81	41.82	47.46	74.00	-26.54	Horizontal	
Detector: Average Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4824.00	37.59	36.06	6.81	41.82	38.64	54.00	-15.36	Vertical	
4824.00	37.88	36.06	6.81	41.82	38.93	54.00	-15.07	Horizontal	
Test channel: Middle channel									
		1 . 1		tector: Peak	K Value		1		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4874.00	46.55	36.32	6.85	41.84	47.88	74.00	-26.12	Vertical	
4874.00	46.74	36.32	6.85	41.84	48.07	74.00	-25.93	Horizontal	
			Dete	ctor: Avera	ge Value				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4874.00	37.31	36.32	6.85	41.84	38.64	54.00	-15.36	Vertical	
4874.00	37.85	36.32	6.85	41.84	39.18	54.00	-14.82	Horizontal	
Test channel: Highest channel  Detector: Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4924.00	46.88	36.58	6.89	41.86	48.49	74.00	-25.51	Vertical	
4924.00	46.41	36.58	6.89	41.86	48.02	74.00	-25.98	Horizontal	
Detector: Average Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4924.00	37.41	36.58	6.89	41.86	39.02	54.00	-14.98	Vertical	
4924.00	37.56	36.58	6.89	41.86	39.17	54.00	-14.83	Horizontal	
Remark:									
1 Finalla	ol – Possivo	r Pood loval	Antonno Eo	otor . Cobla	Loon Droom	anlifior Easter			

^{1.} Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor.

^{2.} The emission levels of other frequencies are very lower than the limit and not show in test report.





802.11n(HT40)										
Test channel: Lowest channel										
Detector: Peak Value										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
4844.00	46.25	36.06	6.81	41.82	47.30	74.00	-26.70	Vertical		
4844.00	46.31	36.06	6.81	41.82	47.36	74.00	-26.64	Horizontal		
Detector: Average Value										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
4844.00	37.44	36.06	6.81	41.82	38.49	54.00	-15.51	Vertical		
4844.00	37.25	36.06	6.81	41.82	38.30	54.00	-15.70	Horizontal		
Test channel: Middle channel										
				tector: Peak	value					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
4874.00	46.55	36.32	6.85	41.84	47.88	74.00	-26.12	Vertical		
4874.00	46.31	36.32	6.85	41.84	47.64	74.00	-26.36	Horizontal		
			Dete	ctor: Avera	ge Value					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
4874.00	37.85	36.32	6.85	41.84	39.18	54.00	-14.82	Vertical		
4874.00	37.52	36.32	6.85	41.84	38.85	54.00	-15.15	Horizontal		
	Test channel: Highest channel									
Detector: Peak Value										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
4904.00	46.74	36.45	6.87	41.85	48.21	74.00	-25.79	Vertical		
4904.00	46.29	36.45	6.87	41.85	47.76	74.00	-26.24	Horizontal		
Detector: Average Value										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
4904.00	37.82	36.45	6.87	41.85	39.29	54.00	-14.71	Vertical		
4904.00	37.45	36.45	6.87	41.85	38.92	54.00	-15.08	Horizontal		
Remark:										
1 Finalla	ol - Possino	r Dood lovel	Antonno Fo	otor . Coblo	Loon Droom	anlifior Footor				

^{1.} Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor.

^{2.} The emission levels of other frequencies are very lower than the limit and not show in test report.