

FCC Test Report

FCC ID : VQK-F02J

Equipment : Mobile Phone

Model No. : F-02J

Brand Name : FUJITSU

Applicant : FUJITSU LIMITED

Address : 1-1, Kamikodanaka 4-chome, Nakahara-ku,

Kawasaki 211-8588, Japan

Standard : 47 CFR FCC Part 15.247

Received Date : May 25, 2016

Tested Date : Jun. 19 ~ Jun. 23, 2016

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:

Gary Chang / Manager

Iac MRA



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Release Record

Report No.	Version	Description	Issued Date
FR652501AC	Rev. 01	Initial issue	Jul. 12, 2016

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Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207 Conducted Emissions		[dBuV]: 0.452MHz 31.61 (Margin -15.24dB) - AV	Pass
15.247(d)	Radiated Emissions	[dBuV/m at 3m]: 2390.00MHz	Pass
15.209	Natiated Liffissions	72.96 (Margin -1.04dB) - PK	
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: 20.77	Pass
15.247(a)(2)	6dB Bandwidth	Meet the requirement of limit	Pass
15.247(e)	Power Spectral Density	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

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1 General Description

1.1 Information

1.1.1 Product Details

Product Name	Mobile Phone
Brand Name	FUJITSU
Model Name	F-02J
IMEI Code	358094070021952 / 358094070021978
H/W Version	v2.1.0
S/W Version	R015.1

1.1.2 Specification of the Equipment under Test (EUT)

RF General Information						
Frequency Range (MHz) IEEE Std. Ch. Freq. (MHz)		(ch Fred (MHz))		Transmit Chains (N _{TX})	Data Rate / MCS	
2400-2483.5	b	2412-2462	1-11 [11]	1	1-11 Mbps	
2400-2483.5	g	2412-2462	1-11 [11]	1	6-54 Mbps	
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	1	MCS 0-7	

Note 1: RF output power specifies that Maximum Peak Conducted Output Power.

Note 2: 802.11b uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.

Note 3: 802.11g/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.

1.1.3 Antenna Details

Ant. No. Type		Connector	Antenna Gain (dBi)	
1	λ/4 Monopole	No	-2.0	

1.1.4 Power Supply Type of Equipment under Test (EUT)

5.0Vdc from AC adapter 3.8Vdc from Battery

1.1.5 Accessories

No.	Equipment	Description	
1	Battery	Brand Name: NTT docomo Model Name: F33 Power Rating: 3.8Vdc, 1500mAh, 5.7Wh	
2	Brand Name: NTT docomo Cradle Model Name: F49 Input/Output Rating: 5Vdc, 1.5A		

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1.1.6 Channel List

Channel	Frequency(MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462

1.1.7 Test Tool and Duty Cycle

Test Tool	QRCT, Version: 3.0.54.0				
	Mode	Duty cycle (%)	Duty factor (dB)		
Duty Cycle and Duty Factor	11b	99.52%	0.02		
Duty Cycle and Duty Factor	11g	94.22%	0.26		
	HT20	92.72%	0.33		

1.1.8 Power Setting

Modulation Mode	Test Frequency (MHz)	Power Set
11b	2412	17
11b	2437	17
11b	2462	17
11g	2412	13
11g	2437	13
11g	2462	13
HT20	2412	12
HT20	2437	12
HT20	2462	12

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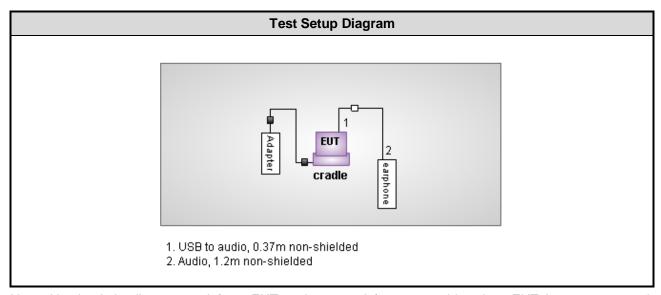


1.2 Local Support Equipment List

	Support Equipment List						
No.	Equipment	Brand	Model	S/N	FCC ID	Signal cable / Length (m)	
1	Notebook	DELL	Latitude E6430	C0GB4X1	DoC		
2	Earphone	APPLE	MD827FE/A	6		1.2m non-shielded w/o core	
3	Earphone adapter	NTT docomo	Earphone adapter 02			0.37m non-shielded w/o core	
4	Adapter	NTT docomo	AC Adapter 04			Remarks: I/P: 100-240Vac, 0.22A, 50-60Hz, 0.4A O/P: 5.0Vdc, 1.8A Power line: 1m, non-shielded with 2 cores	

Note: No.3 & No. 4 are provided by applicant.

1.3 Test Setup Chart



Note: Notebook is disconnected from EUT and removed from test table when EUT is set to transmit continuously.

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1.4 The Equipment List

Test Item	Conducted Emission									
Test Site	Conduction room 1 / (CO01-WS)									
Instrument	Manufacturer	Manufacturer Model No. Serial No. Calibration Date Calibration Until								
EMC Receiver	R&S	ESCS 30	100169	Oct. 21, 2015	Oct. 20, 2016					
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 13, 2015	Nov. 12, 2016					
RF Cable-CON	EMC	EMCCFD300-BM-BM-6000	50821	Dec. 21, 2015	Dec. 20, 2016					
Measurement Software AUDIX e3 6.120210k NA NA NA										
Note: Calibration Interval of instruments listed above is one year.										

Test Item	Radiated Emission	Radiated Emission										
Test Site	966 chamber 3 / (030	966 chamber 3 / (03CH03-WS)										
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until							
Spectrum Analyzer	Agilent	N9010A	MY53400091	Sep. 14, 2015	Sep. 13, 2016							
Receiver	Agilent	N9038A	MY53290044	Oct. 14, 2015	Oct. 13, 2016							
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-562	Nov. 16, 2015	Nov. 15, 2016							
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Feb. 24, 2016	Feb. 23, 2017							
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 04, 2015	Nov. 03, 2016							
Preamplifier	EMC	EMC02325	980187	Sep. 21, 2015	Sep. 20, 2016							
Preamplifier	Agilent	83017A	MY53270014	Sep. 07, 2015	Sep. 06, 2016							
Preamplifier	EMC	EMC184045B	980192	Sep. 01, 2015	Aug. 31, 2016							
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Feb. 05, 2016	Feb. 04, 2017							
RF cable-8M	HUBER+SUHNER	SUCOFLEX104	MY22600/4	Feb. 05, 2016	Feb. 04, 2017							
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Feb. 05, 2016	Feb. 04, 2017							
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Feb. 05, 2016	Feb. 04, 2017							
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Feb. 05, 2016	Feb. 04, 2017							
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Feb. 05, 2016	Feb. 04, 2017							
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 16, 2015	Nov. 15, 2016							
Measurement Software	AUDIX e3 6.120210g NA NA											
Note: Calibration I	nterval of instruments	listed above is one year.										

Test Item	RF Conducted									
Test Site	(TH01-WS)									
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until					
Spectrum Analyzer	R&S	FSV40	101063	Feb. 17, 2016	Feb. 16, 2017					
Power Meter	Anritsu	ML2495A	1241002	Sep. 21, 2015	Sep. 20, 2016					
Power Sensor	Anritsu	MA2411B	1207366	Sep. 21, 2015	Sep. 20, 2016					
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA					
Note: Calibration Inter	Note: Calibration Interval of instruments listed above is one year.									

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1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.247 ANSI C63.10-2013 FCC KDB 558074 D01 DTS Meas Guidance v03r05

1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Measurement Uncertainty								
Parameters Uncertai								
Bandwidth	±34.134 Hz							
Conducted power	±0.808 dB							
Power density	±0.463 dB							
Conducted emission	±2.670 dB							
AC conducted emission	±2.90 dB							
Radiated emission ≤ 1GHz	±3.66 dB							
Radiated emission > 1GHz	±5.37 dB							

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2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	22°C / 63%	Howard Huang
Radiated Emissions	03CH03-WS	20-24°C / 63-66%	Brad Wu Warren Lee
RF Conducted	TH01-WS	22°C / 64%	Alex Huang

➤ FCC site registration No.: 207696➤ IC site registration No.: 10807C-1

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate
Conducted Emissions	11g	2437	6 Mbps
Radiated Emissions ≤1GHz	11g	2437	6 Mbps
Radiated Emissions >1GHz Maximum Output Power	11b	2412 / 2437 / 2462	1 Mbps
6dB bandwidth Power spectral density	11g HT20	2412 / 2437 / 2462 2412 / 2437 / 2462	6 Mbps MCS 0

NOTE:

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Adapter and cradle mode had been covered during the pretest and found that cradle mode was the worst case and was selected for final test



3 Transmitter Test Results

3.1 Conducted Emissions

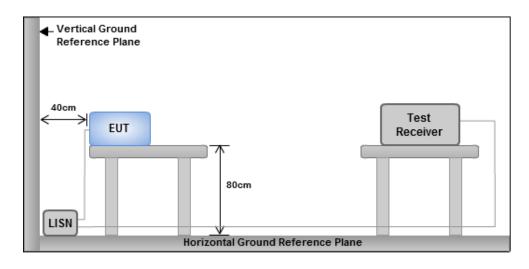
3.1.1 Limit of Conducted Emissions

Conducted Emissions Limit									
Frequency Emission (MHz) Quasi-Peak Average									
0.15-0.5 66 - 56 * 56 - 46 *									
0.5-5	56	46							
5-30 60 50									
Note 1: * Decreases with the logarithm of the frequency.									

3.1.2 Test Procedures

- 1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
- 2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
- 3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
- 4. This measurement was performed with AC 120V / 60Hz.

3.1.3 Test Setup



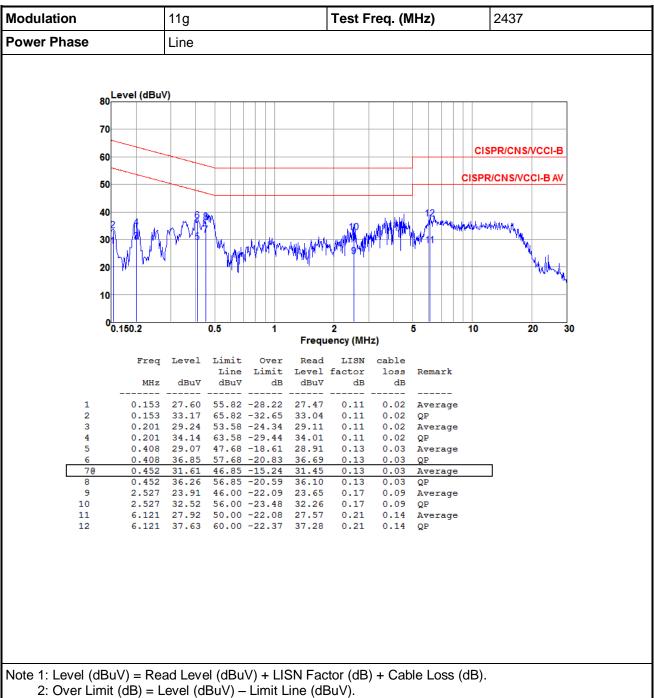
Note: 1. Support units were connected to second LISN.

Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

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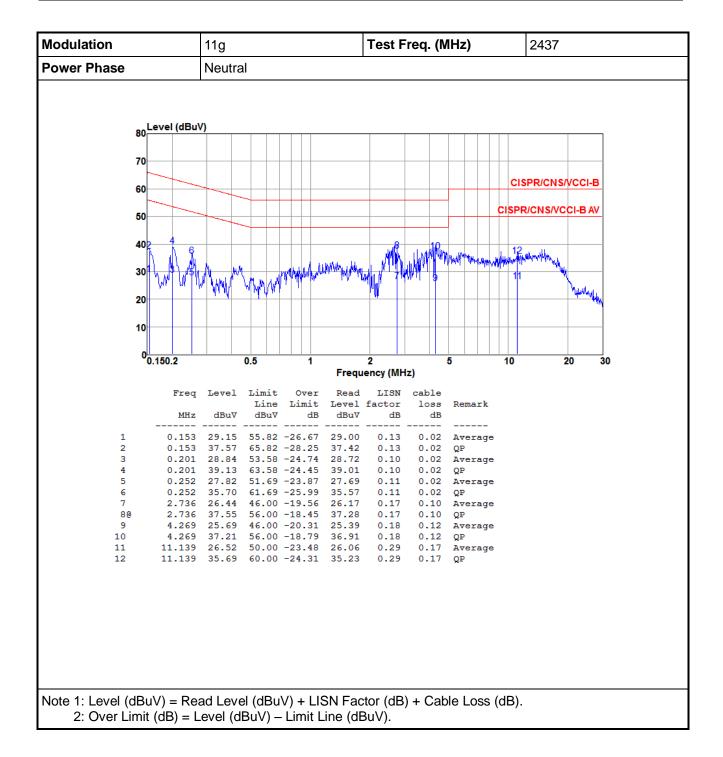


Test Result of Conducted Emissions 3.1.4



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3.2 6dB and Occupied Bandwidth

3.2.1 Limit of 6dB Bandwidth

The minimum 6dB bandwidth shall be at least 500 kHz.

3.2.2 Test Procedures

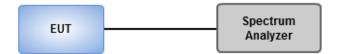
6dB Bandwidth

- 1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
- Detector = Peak, Trace mode = max hold.
- 3. Sweep = auto couple, Allow the trace to stabilize.
- 4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

Occupied Bandwidth

- 1. Set resolution bandwidth (RBW) = 1 MHz, Video bandwidth = 3 MHz.
- 2. Detector = Sample, Trace mode = max hold.
- 3 Sweep = auto couple, Allow the trace to stabilize.
- 4. Use the OBW measurement function of spectrum analyzer to measure the occupied bandwidth.

3.2.3 Test Setup

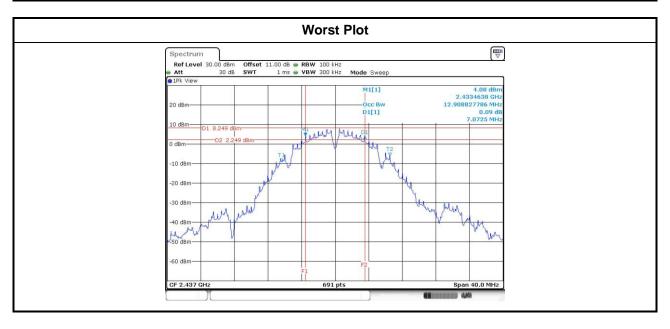


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3.2.4 Test Result of 6dB and Occupied Bandwidth

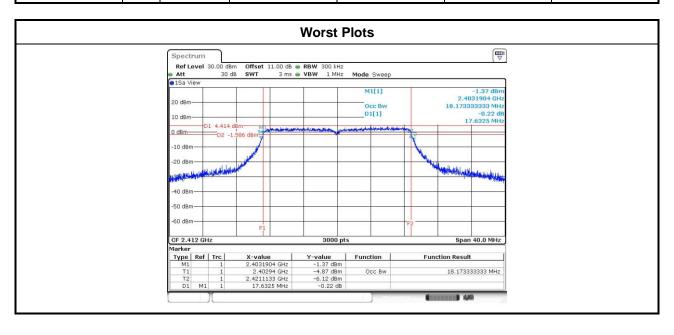
Modulation	N.	Eros (MU=)		6dB Bandy	vidth (MHz)		Limit (ItU=)
Mode	N _{TX}	Freq. (MHz)	Chain 0	Chain 1	Chain 2	Chain 3	Limit (kHz)
11b	1	2412	7.59				500
11b	1	2437	7.07				500
11b	1	2462	7.54				500
11g	1	2412	16.35				500
11g	1	2437	16.35				500
11g	1	2462	16.35				500
HT20	1	2412	17.62				500
HT20	1	2437	17.62				500
HT20	1	2462	17.62				500



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Modulation	N	Freq.		99% Occupied E	Bandwidth (MHz)	
Mode	N _{TX}	(MHz)	Chain 0	Chain 1	Chain 2	Chain 3
11b	1	2412	12.96			
11b	1	2437	13.05			
11b	1	2462	13.25			
11g	1	2412	17.25			
11g	1	2437	17.23			
11g	1	2462	17.20			
HT20	1	2412	18.17			
HT20	1	2437	18.13			
HT20	1	2462	18.13			



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3.3 RF Output Power

3.3.1 Limit of RF Output Power

Conducted power shall not exceed 1Watt.

Antenna gain <= 6dBi, no any corresponding reduction is in output power limit.

Antenna gain > 6dBi

Non Fixed, point to point operations.
The conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB

Fixed, point to point operations
Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point Operations, maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point operations, no any corresponding reduction is in transmitter peak output power

3.3.2 Test Procedures

Maximum Peak Conducted Output Power

Spectrum analyzer

- 1. Set RBW = 1MHz, VBW = 3MHz, Detector = Peak.
- 2. Sweep time = auto, Trace mode = max hold, Allow trace to fully stabilize.
- 3. Use the spectrum analyzer channel power measurement function with the band limits set equal to the DTS bandwidth edges.

- A broadband Peak RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.
- Maximum Conducted Output Power (For reference only)

Nower meter

 A broadband Average RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

3.3.3 Test Setup



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3.3.4 Test Result of Maximum Output Power

				Peak	conduct	ed Outpu	t Power (dBm)		A4		EIRP		
Modulation Mode	N _{TX}	N _{TX}	N _{TX}	Freq. (MHz)	Chain 0	Chain 1	Chain 2	Chain 3	Total Power (mW)	Total Power (dBm)	Limit (dBm)	Ant. Gain (dBi)	EIRP (dBm)	Limit (dBm)
11b	1	2412	19.40				87.096	19.40	30.00	-2.00	17.40	36.00		
11b	1	2437	19.49				88.920	19.49	30.00	-2.00	17.49	36.00		
11b	1	2462	20.17				103.992	20.17	30.00	-2.00	18.17	36.00		
11g	1	2412	20.67				116.681	20.67	30.00	-2.00	18.67	36.00		
11g	1	2437	20.77				119.399	20.77	30.00	-2.00	18.77	36.00		
11g	1	2462	20.40				109.648	20.40	30.00	-2.00	18.40	36.00		
HT20	1	2412	20.32				107.647	20.32	30.00	-2.00	18.32	36.00		
HT20	1	2437	20.53				112.980	20.53	30.00	-2.00	18.53	36.00		
HT20	1	2462	20.11				102.565	20.11	30.00	-2.00	18.11	36.00		

Modulation		Freg.	Cond	Conducted (Average) Output Power (dBm)			Total	Total	Limit
Mode	N _{TX}	(MHz)	Chain 0	Chain 1	Chain 2	Chain 3	Power (mW)	Power (dBm)	(dBm)
11b	1	2412	16.55				45.186	16.55	
11b	1	2437	16.70				46.774	16.70	
11b	1	2462	17.49				56.105	17.49	
11g	1	2412	13.04				20.137	13.04	
11g	1	2437	13.09				20.370	13.09	
11g	1	2462	12.54				17.947	12.54	
HT20	1	2412	12.32				17.061	12.32	
HT20	1	2437	12.82				19.143	12.82	
HT20	1	2462	11.87				15.382	11.87	

Note: Conducted average output power is for reference only.

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3.4 Power Spectral Density

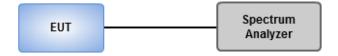
3.4.1 Limit of Power Spectral Density

Power spectral density shall not be greater than 8 dBm in any 3 kHz band.

3.4.2 Test Procedures

- Maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit.
 - 1. Set the RBW = 3kHz, VBW = 10kHz.
 - Detector = Peak, Sweep time = auto couple.
 - 3. Trace mode = max hold, allow trace to fully stabilize.
 - 4. Use the peak marker function to determine the maximum amplitude level.
- Maximum (average) conducted output power was used to demonstrate compliance to the fundamental output power limit.
 - 1. Set the RBW = 100kHz, VBW = 300 kHz.
 - 2. Detector = RMS, Sweep time = auto couple.
 - 3. Perform the measurement over a single sweep.
 - 4. Use the peak marker function to determine the maximum amplitude level.

3.4.3 Test Setup

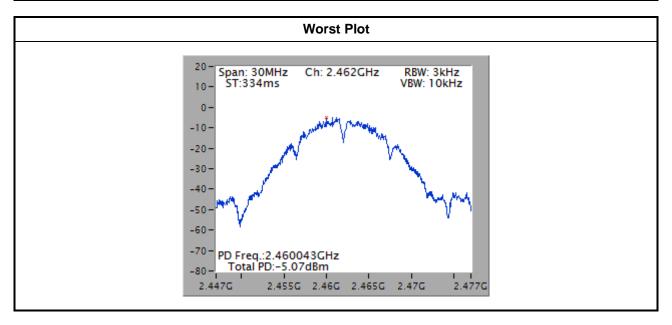


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3.4.4 Test Result of Power Spectral Density

Modulation Mode	N _{TX}	Freq. (MHz)	Total Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
11b	1	2412	-6.62	8.00
11b	1	2437	-6.05	8.00
11b	1	2462	-5.07	8.00
11g	1	2412	-12.23	8.00
11g	1	2437	-12.78	8.00
11g	1	2462	-13.17	8.00
HT20	1	2412	-12.93	8.00
HT20	1	2437	-13.84	8.00
HT20	1	2462	-14.09	8.00



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3.5 Unwanted Emissions into Restricted Frequency Bands

3.5.1 Limit of Unwanted Emissions into Restricted Frequency Bands

Restricted Band Emissions Limit									
Frequency Range (MHz)	quency Range (MHz) Field Strength (uV/m) Field Strength (dBuV								
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300						
0.490~1.705	24000/F(kHz)	33.8 - 23	30						
1.705~30.0	30	29	30						
30~88	100	40	3						
88~216	150	43.5	3						
216~960	200	46	3						
Above 960	500	54	3						

Note 1:

Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit **Note 2**:

Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.5.2 Test Procedures

- 1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
- Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
- 3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

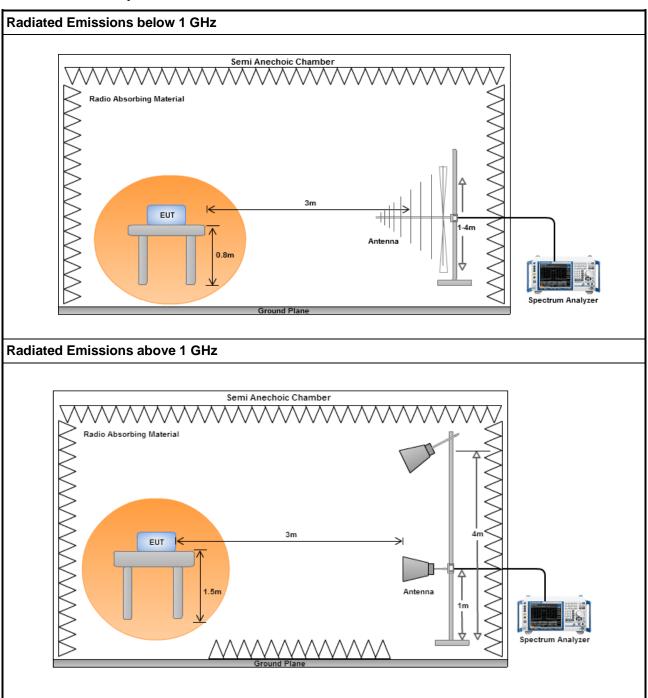
Note:

- 1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
- 2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
- 3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

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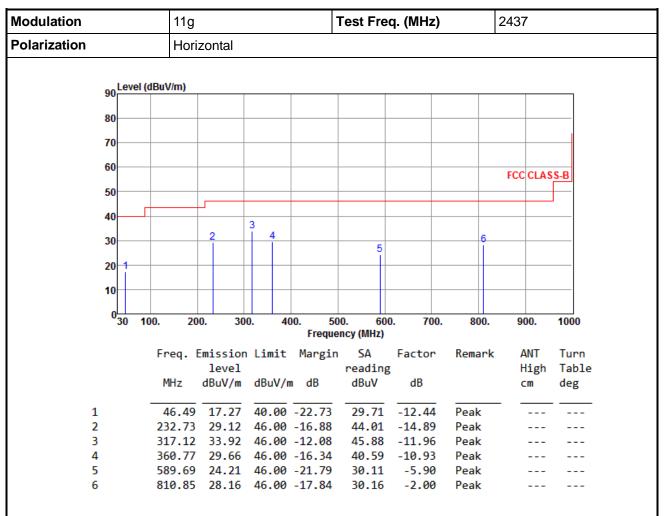
3.5.3 Test Setup



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3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)



Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

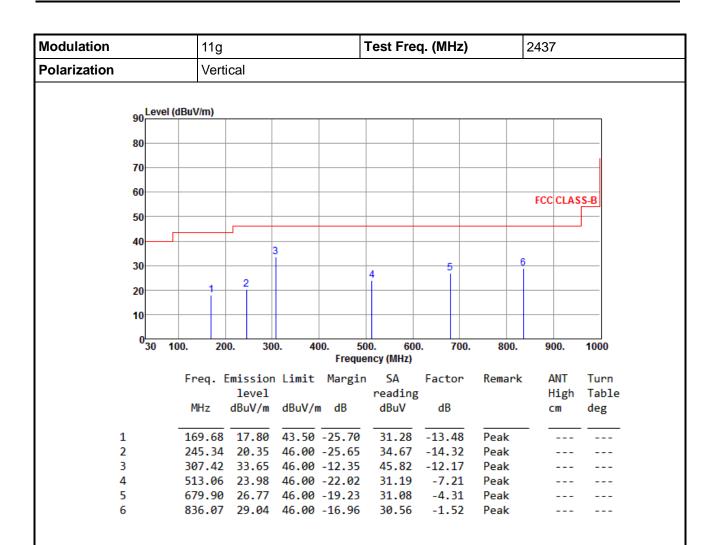
*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor, cable loss and amplifier gain

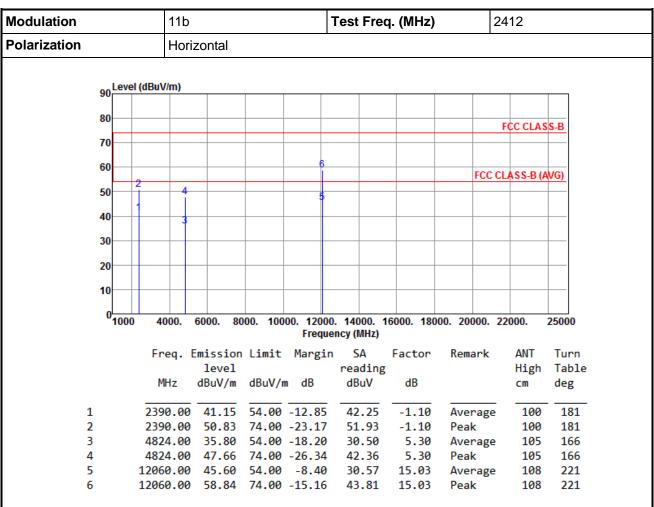
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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3.5.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11b



Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

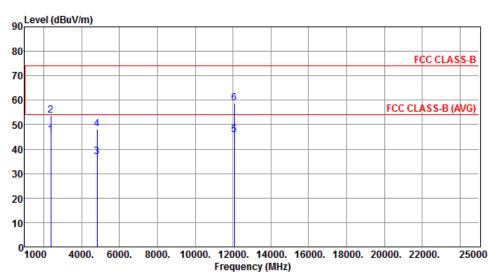
*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) - Limit (dBuV/m).

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Modulation	11b	Test Freq. (MHz)	2412
Polarization	Vertical		



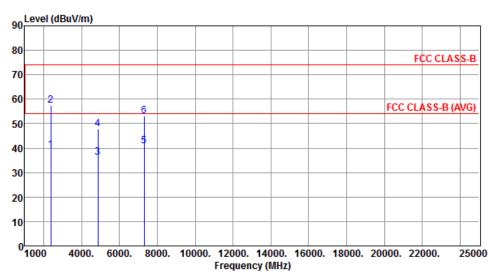
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
4	2200 00	45.00	<u></u> .	0.04	47.06	4.40		424	404
1	2390.00	45.96	54.00	-8.04	47.06	-1.10	Average	131	101
2	2390.00	53.91	74.00	-20.09	55.01	-1.10	Peak	131	101
3	4824.00	36.90	54.00	-17.10	31.60	5.30	Average	104	236
4	4824.00	48.18	74.00	-25.82	42.88	5.30	Peak	104	236
5	12060.00	46.00	54.00	-8.00	30.97	15.03	Average	106	135
6	12060.00	58.88	74.00	-15.12	43.85	15.03	Peak	106	135

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Modulation	11b	Test Freq. (MHz)	2437
Polarization	Horizontal		



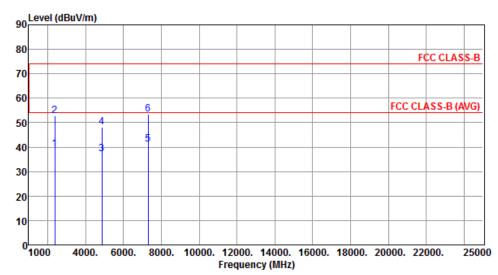
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ü	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	39.06	54.00	-14.94	40.16	-1.10	Average	122	156
2		57.42			58.52	-1.10	Peak	122	156
3	4874.00	36.15	54.00	-17.85	30.73	5.42	Average	110	142
4	4874.00	47.82	74.00	-26.18	42.40	5.42	Peak	110	142
5	7311.00	40.95	54.00	-13.05	30.69	10.26	Average	152	134
6	7311.00	53.14	74.00	-20.86	42.88	10.26	Peak	152	134

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Modulation	11b	Test Freq. (MHz)	2437
Polarization	Vertical		



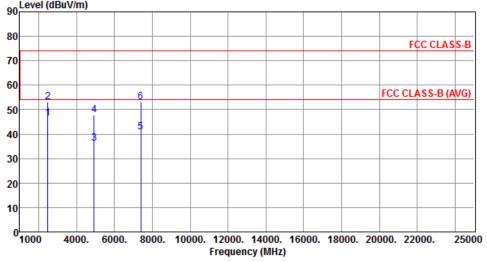
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	39.15	54 00	-14 85	40.25	-1.10	Average	124	111
2		52.76			53.86		Peak		111
2	2390.00	52./6	74.00	-21.24	33.00	-1.10	reak	124	111
3	4874.00	37.15	54.00	-16.85	31.73	5.42	Average	120	239
4	4874.00	48.26	74.00	-25.74	42.84	5.42	Peak	120	239
5	7311.00	41.20	54.00	-12.80	30.94	10.26	Average	168	126
6	7311.00	53.47	74.00	-20.53	43.21	10.26	Peak	168	126

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Polarization Horizontal 90 Level (dBuV/m)	Modulation 11b		Tes	Test Freq. (MHz)			24	62		
Loyal (dDnV/m)	Polarization	Horizontal								
	Love	L(dDu\//m)								
	80							_		



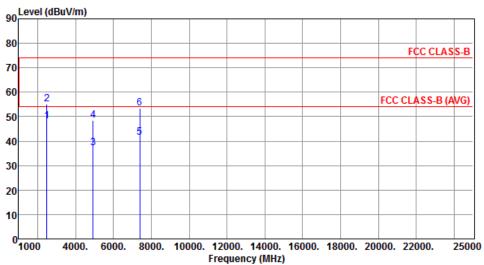
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2483.50	46.56	54.00	-7.44	47.17	-0.61	Average	126	143
2	2483.50	53.21	74.00	-20.79	53.82	-0.61	Peak	126	143
3	4924.00	36.25	54.00	-17.75	30.71	5.54	Average	115	208
4	4924.00	47.96	74.00	-26.04	42.42	5.54	Peak	115	208
5	7386.00	40.92	54.00	-13.08	30.52	10.40	Average	154	131
6	7386.00	53.22	74.00	-20.78	42.82	10.40	Peak	154	131

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Modulation	11b	Test Freq. (MHz)	2462
Polarization	Vertical		
1			



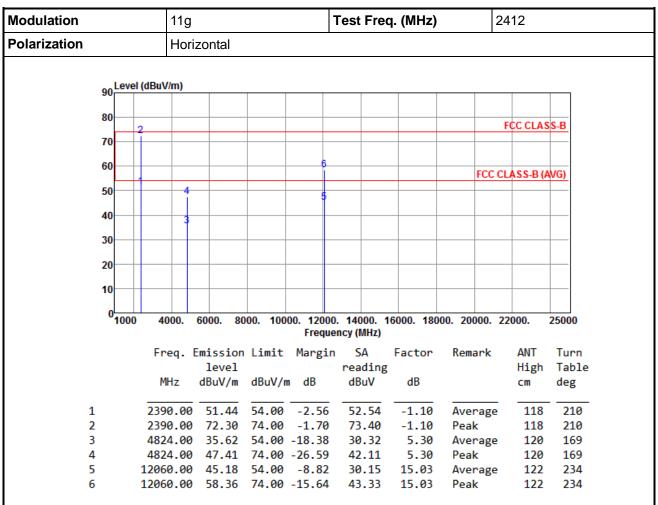
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2483.50	48.14	54.00	-5.86	48.75	-0.61	Average	116	114
2	2483.50	55.19	74.00	-18.81	55.80	-0.61	Peak	116	114
3	4924.00	37.24	54.00	-16.76	31.70	5.54	Average	121	208
4	4924.00	48.45	74.00	-25.55	42.91	5.54	Peak	121	208
5	7386.00	41.35	54.00	-12.65	30.95	10.40	Average	160	131
6	7386.00	53.62	74.00	-20.38	43.22	10.40	Peak	160	131

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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3.5.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11g



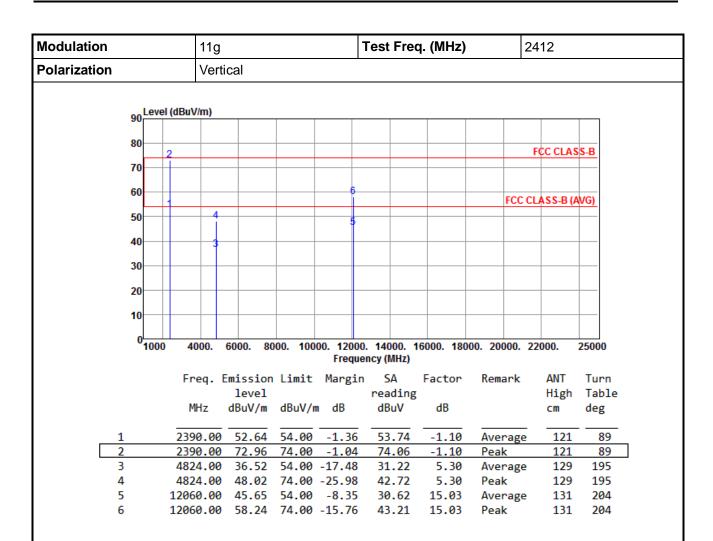
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) - Limit (dBuV/m).

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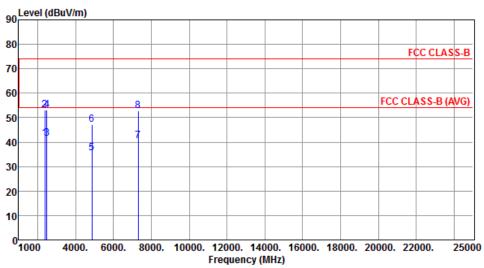


Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal		



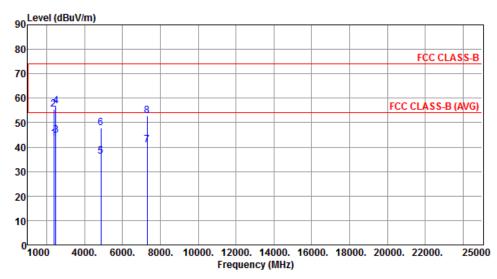
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m		SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	41.65	54.00	-12.35	42.75	-1.10	Average	120	212
2	2390.00	53.29	74.00	-20.71	54.39	-1.10	Peak	120	212
3	2483.50	41.54	54.00	-12.46	42.15	-0.61	Average	120	212
4	2483.50	53.12	74.00	-20.88	53.73	-0.61	Peak	120	212
5	4874.00	35.52	54.00	-18.48	30.10	5.42	Average	118	145
6	4874.00	47.29	74.00	-26.71	41.87	5.42	Peak	118	145
7	7311.00	40.58	54.00	-13.42	30.32	10.26	Average	123	162
8	7311.00	52.95	74.00	-21.05	42.69	10.26	Peak	123	162

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical		

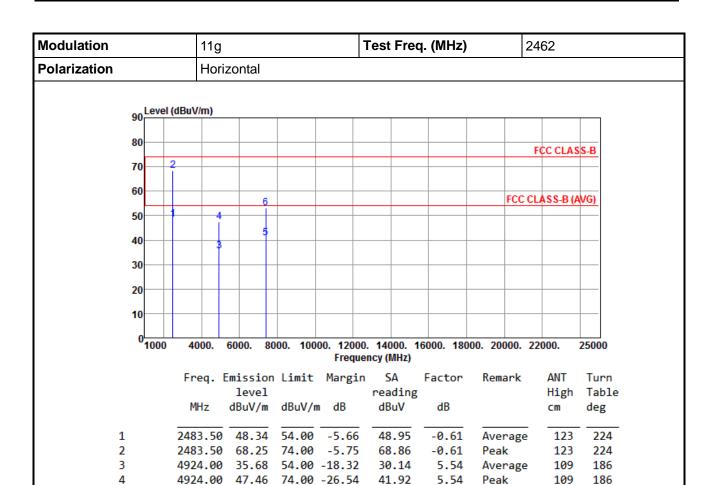


	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2390.00	43.66	54.00	-10.34	44.76	-1.10	Average	122	65
2	2390.00	55.42	74.00	-18.58	56.52	-1.10	Peak	122	65
3	2483.50	44.92	54.00	-9.08	45.53	-0.61	Average	122	65
4	2483.50	56.79	74.00	-17.21	57.40	-0.61	Peak	122	65
5	4874.00	36.25	54.00	-17.75	30.83	5.42	Average	122	203
6	4874.00	47.96	74.00	-26.04	42.54	5.42	Peak	122	203
7	7311.00	40.69	54.00	-13.31	30.43	10.26	Average	152	134
8	7311.00	52.88	74.00	-21.12	42.62	10.26	Peak	152	134

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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54.00 -13.16

30.44

42.72

10.40

10.40

Average

Peak

135

135

202

202

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB) *Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

7386.00 40.84

7386.00 53.12 74.00 -20.88

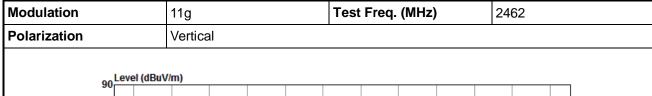
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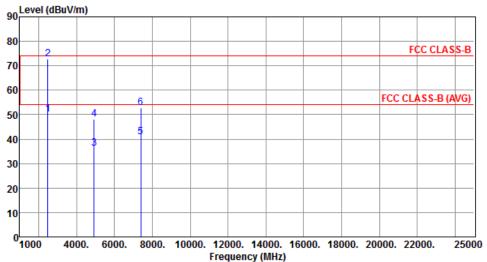
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6







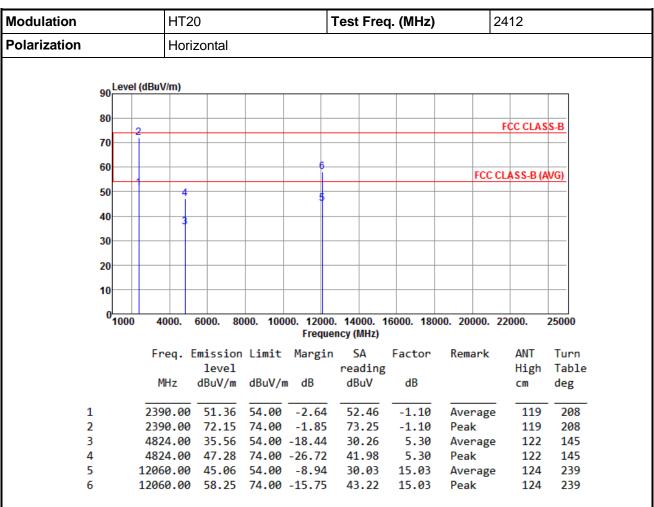
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2483.50	50.03	54.00	-3.97	50.64	-0.61	Average	121	63
2	2483.50	72.80	74.00	-1.20	73.41	-0.61	Peak	121	63
3	4924.00	36.35	54.00	-17.65	30.81	5.54	Average	119	194
4	4924.00	48.06	74.00	-25.94	42.52	5.54	Peak	119	194
5	7386.00	40.88	54.00	-13.12	30.48	10.40	Average	124	166
6	7386.00	52.94	74.00	-21.06	42.54	10.40	Peak	124	166

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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3.5.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT20



Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

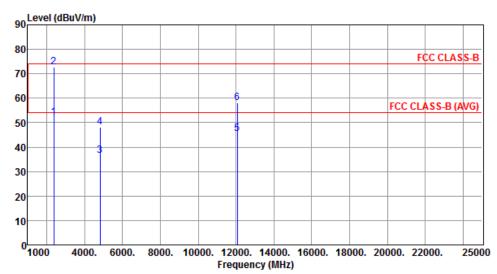
*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Vertical		



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2390.00	52.26	54.00	-1.74	53.36	-1.10	Average	122	65
2	2390.00	72.64	74.00	-1.36	73.74	-1.10	Peak	122	65
3	4824.00	36.41	54.00	-17.59	31.11	5.30	Average	133	138
4	4824.00	48.13	74.00	-25.87	42.83	5.30	Peak	133	138
5	12060.00	45.39	54.00	-8.61	30.36	15.03	Average	125	211
6	12060.00	58.16	74.00	-15.84	43.13	15.03	Peak	125	211

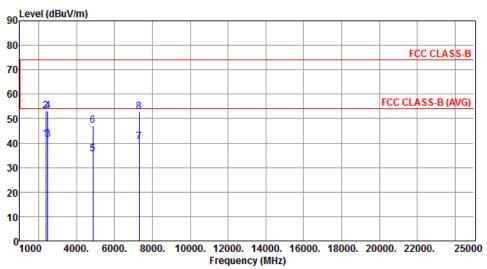
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB) *Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	41.52	54.00	-12.48	42.62	-1.10	Average	119	208
2	2390.00	53.14	74.00	-20.86	54.24	-1.10	Peak	119	208
3	2483.50	41.35	54.00	-12.65	41.96	-0.61	Average	119	208
4	2483.50	53.08	74.00	-20.92	53.69	-0.61	Peak	119	208
5	4874.00	35.48	54.00	-18.52	30.06	5.42	Average	121	153
6	4874.00	47.16	74.00	-26.84	41.74	5.42	Peak	121	153
7	7311.00	40.45	54.00	-13.55	30.19	10.26	Average	129	154
8	7311.00	52.86	74.00	-21.14	42.60	10.26	Peak	129	154

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

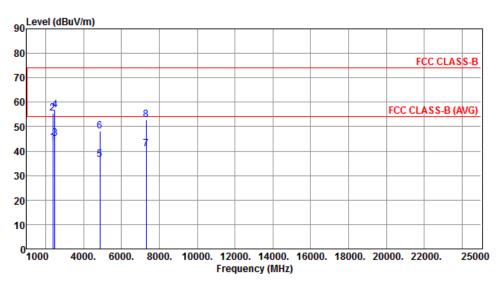
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Vertical		



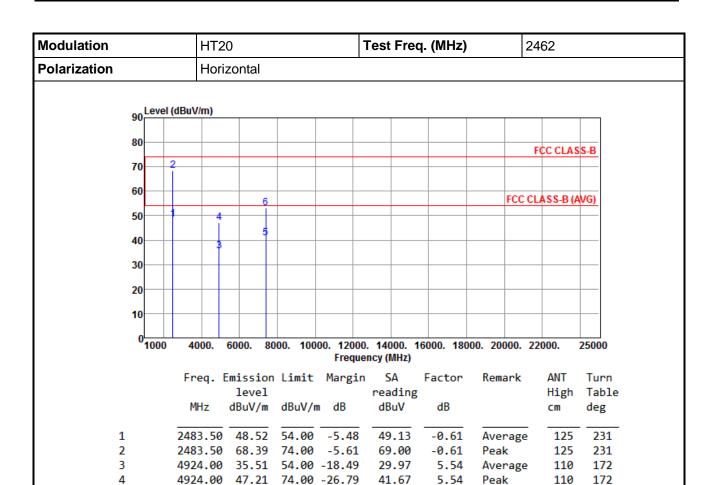
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2390.00	43.54	54.00	-10.46	44.64	-1.10	Average	124	69
2	2390.00	55.39	74.00	-18.61	56.49	-1.10	Peak	124	69
3	2483.50	45.06	54.00	-8.94	45.67	-0.61	Average	124	69
4	2483.50	56.83	74.00	-17.17	57.44	-0.61	Peak	124	69
5	4874.00	36.38	54.00	-17.62	30.96	5.42	Average	119	168
6	4874.00	48.07	74.00	-25.93	42.65	5.42	Peak	119	168
7	7311.00	40.87	54.00	-13.13	30.61	10.26	Average	141	139
8	7311.00	52.94	74.00	-21.06	42.68	10.26	Peak	141	139

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB) *Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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54.00 -13.04

30.56

42.84

10.40

10.40

Average

Peak

119

119

138

138

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB) *Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

7386.00 40.96

7386.00 53.24 74.00 -20.76

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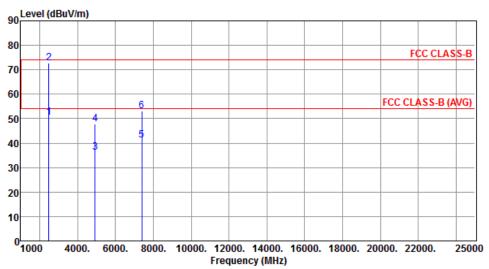
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Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Vertical		



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2483.50	50.44	54.00	-3.56	51.05	-0.61	Average	120	69
2	2483.50	72.69	74.00	-1.31	73.30	-0.61	Peak	120	69
3	4924.00	36.21	54.00	-17.79	30.67	5.54	Average	116	205
4	4924.00	47.93	74.00	-26.07	42.39	5.54	Peak	116	205
5	7386.00	41.06	54.00	-12.94	30.66	10.40	Average	130	201
6	7386.00	53.11	74.00	-20.89	42.71	10.40	Peak	130	201

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB) *Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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3.6 Emissions in Non-Restricted Frequency Bands

3.6.1 Emissions in Non-Restricted Frequency Bands Limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz

3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

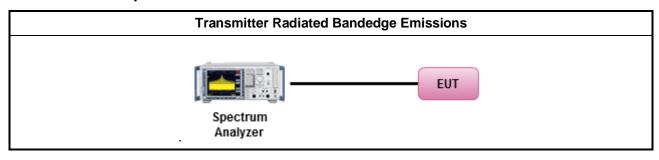
Reference level measurement

- 1. Set RBW=100kHz, VBW = 300kHz, Detector = Peak, Sweep time = Auto
- 2. Trace = max hold, Allow Trace to fully stabilize
- 3. Use the peak marker function to determine the maximum PSD level

Emission level measurement

- 1. Set RBW=100kHz, VBW = 300kHz, Detector = Peak, Sweep time = Auto
- 2. Trace = max hold, Allow Trace to fully stabilize
- 3. Scan Frequency range is up to 25GHz
- 4. Use the peak marker function to determine the maximum amplitude level

3.6.4 Test Setup

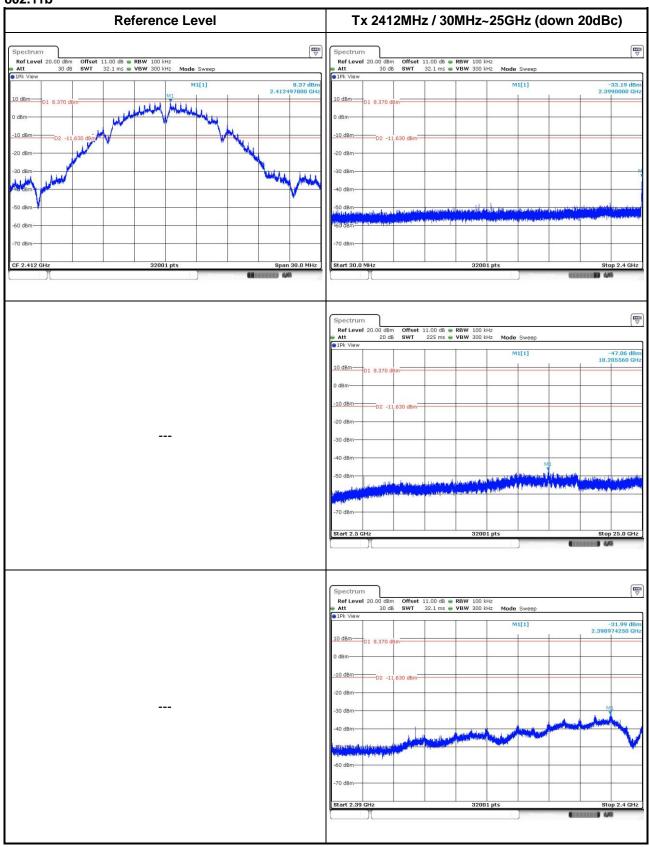


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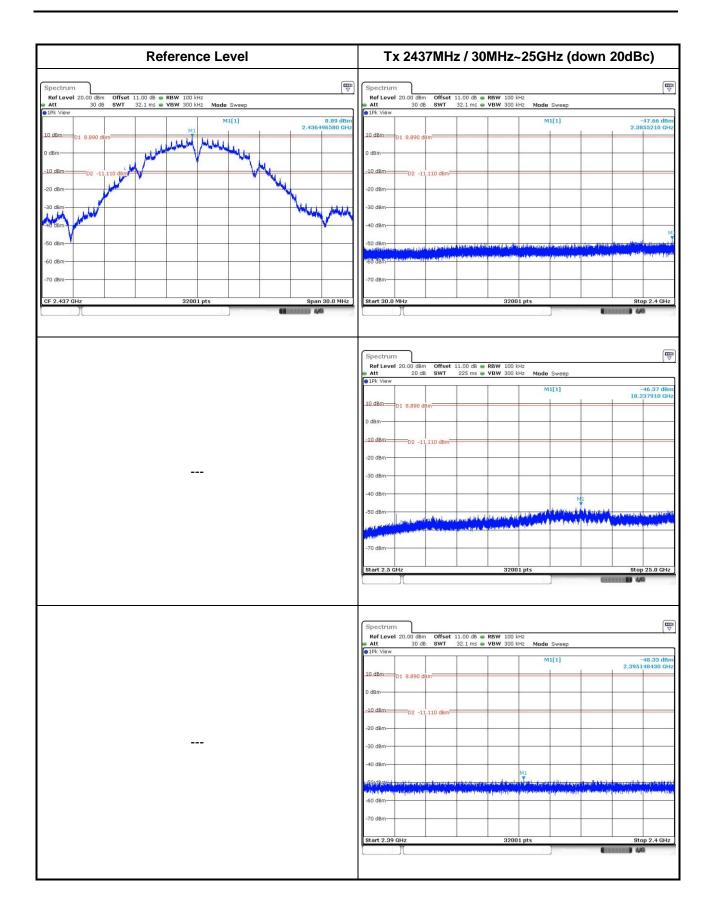
3.6.5 Unwanted Emissions into Non-Restricted Frequency Bands

802.11b



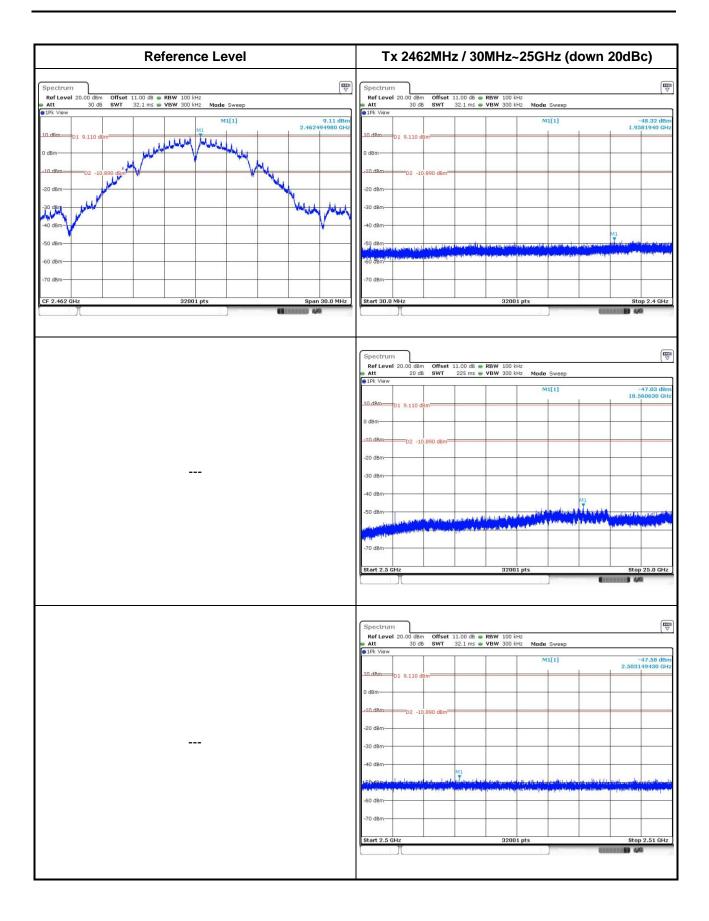
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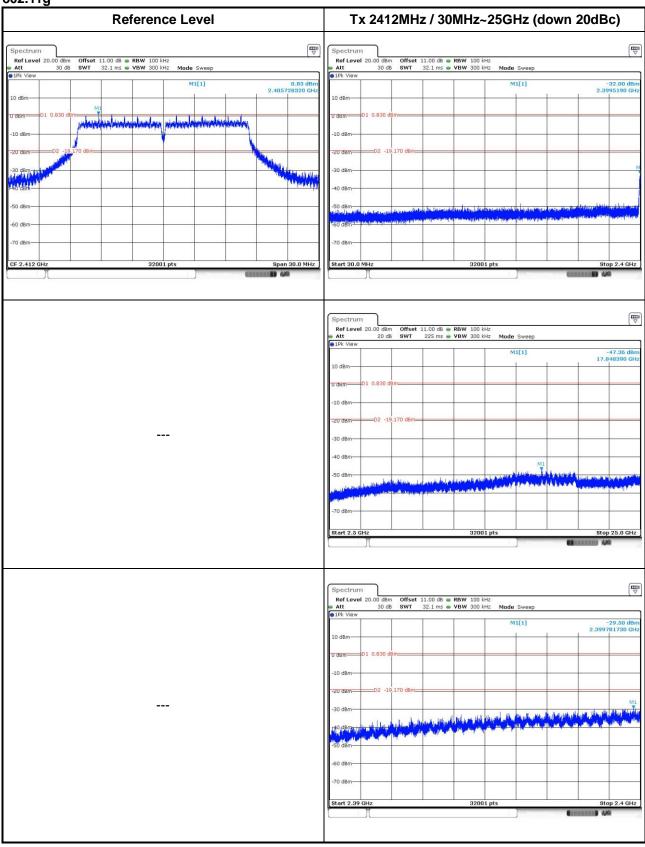




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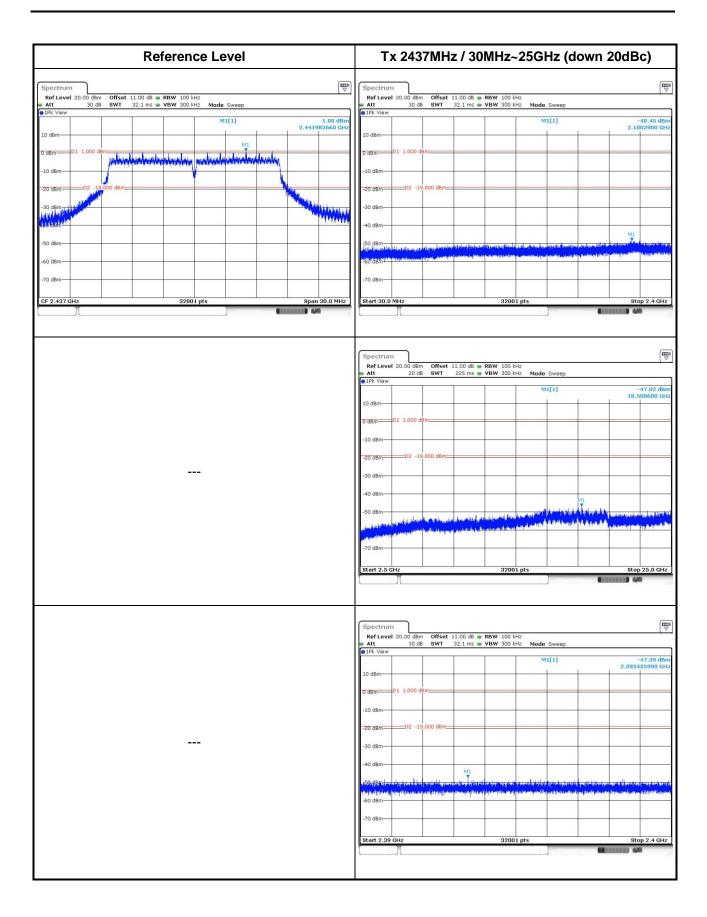






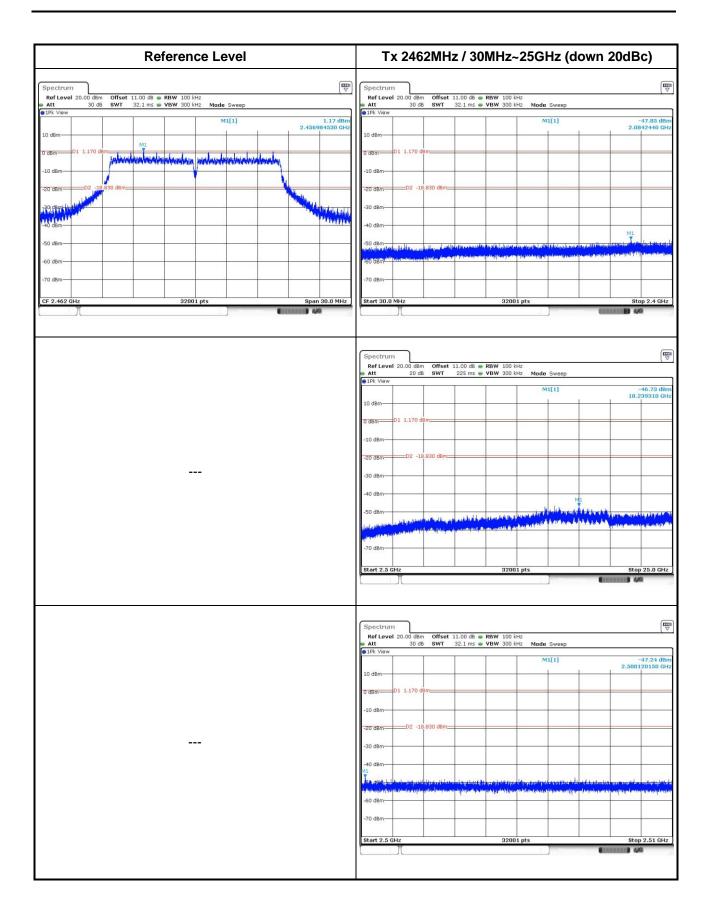
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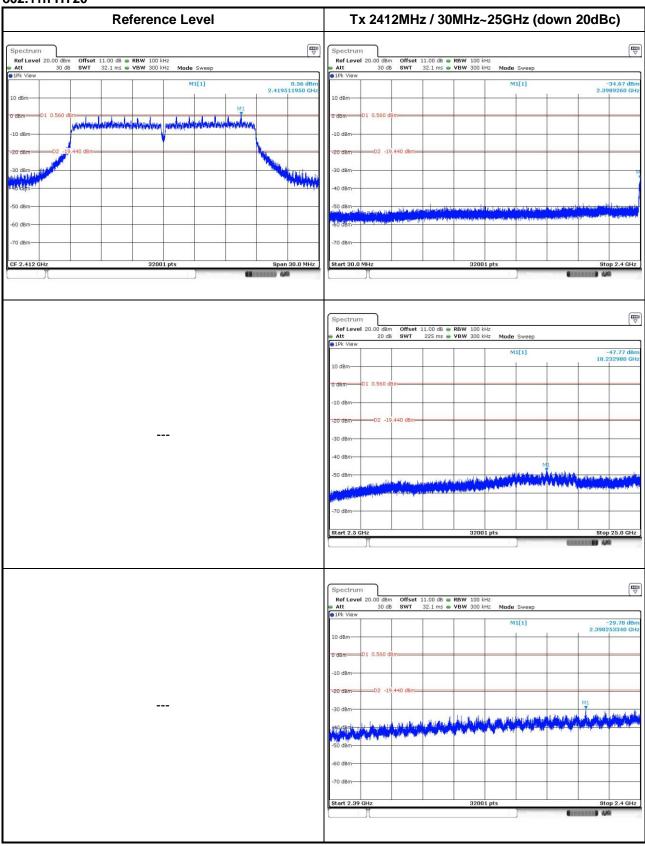




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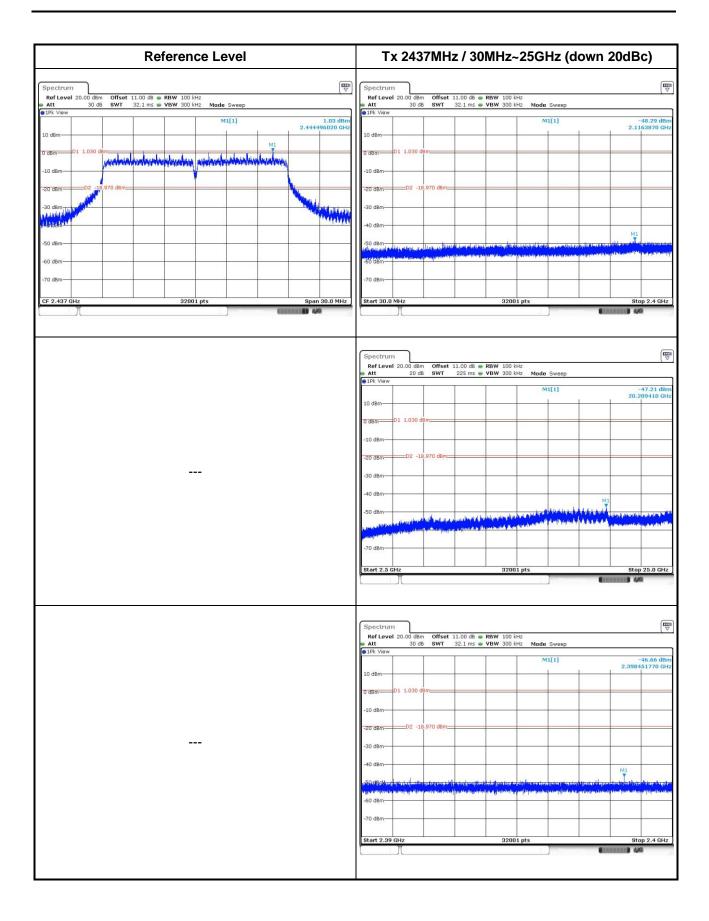


802.11n HT20



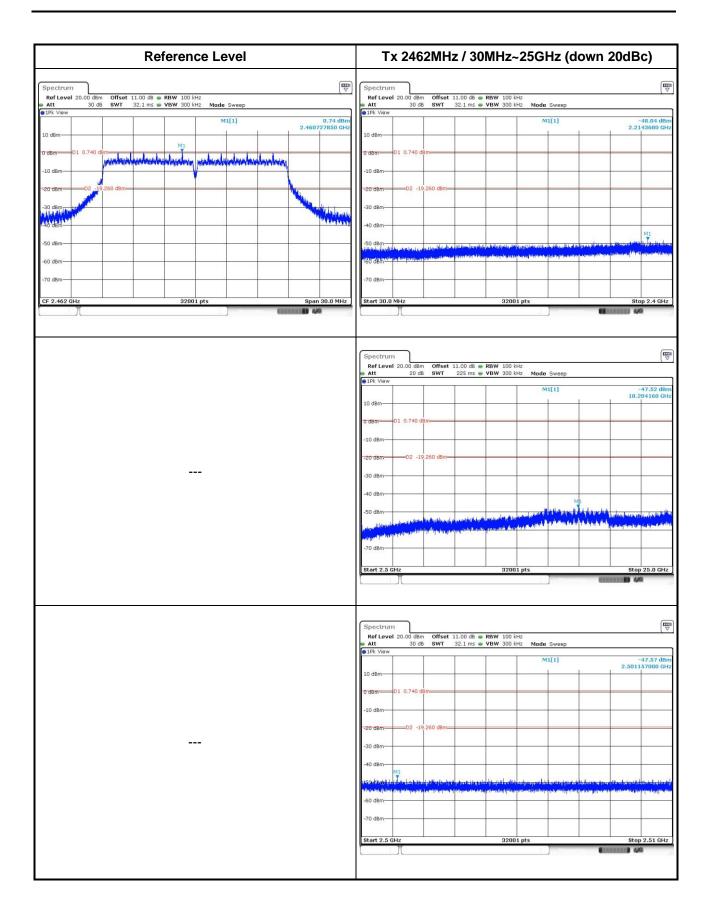
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4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan Hsiang. Location map can be found on our website http://www.icertifi.com.tw.

Linkou

Tel: 886-2-2601-1640

No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City,

Taiwan, R.O.C.

Kwei Shan

Tel: 886-3-271-8666

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If you have any suggestion, please feel free to contact us as below information

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