

# **FCC Test Report**

FCC ID : 2ABLK-814G-1

Equipment : GigaHub Model No. : 814G-1

Brand Name : Calix Inc.

Applicant : Calix Inc.

Address : 1035 N. McDowell Blvd. Petaluma, CA 94954

Standard : 47 CFR FCC Part 15.247

Received Date : Nov. 30, 2017

Tested Date : Nov. 30, 2017 ~ Jan. 23, 2018

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.

Reviewed by: Approved by:

Along Cherl / Assistant Manager Gary Chang / Manager

Testing Laboratory

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## **Release Record**

Report No.	Version	Description	Issued Date
FR7N3003AC	Rev. 01	Initial issue	Feb. 05, 2018

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# **Summary of Test Results**

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.371MHz 41.34 (Margin -7.13dB) - AV	Pass
15.247(d)	Radiated Emissions	[dBuV/m at 3m]: 4824.00MHz	Pass
15.209	Natiated Liffissions	53.72 (Margin -0.28dB) - AV	rass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: 27.35	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 Specification of the Equipment under Test (EUT)

RF General Information								
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N <sub>TX</sub> )	Data Rate / MCS			
2400-2483.5	b	2412-2462	1-11 [11]	2	1-11 Mbps			
2400-2483.5	g	2412-2462	1-11 [11]	2	6-54 Mbps			
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	2	MCS 0-15			
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	2	MCS 0-15			

Note 1: RF output power specifies that Maximum Conducted (Average) 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.

#### 1.1.2 Antenna Details

Ant. No.	Model Type		Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)		
Ant. No.	Ant. No.   Model   Type	Connector	2400~2483.5	5150~5250	5725~5850	
1	PCB antenna	Dipole	IPEX	3.6		
2	PCB antenna	Dipole	IPEX	4.0		
3	PCB antenna	Dipole	IPEX		3.6	2.0
4	PCB antenna	Dipole	IPEX		4.1	3.8

### 1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12Vdc from AC adapter

#### 1.1.4 Accessories

	Accessories						
No.	Equipment	Description					
1	AC adapter	Brand: AMIGO Model: AMS157-1202500FU (US)					
2	RJ45 cable	1.5m non-shielded without core					
3	RJ11 cable	1.5m non-shielded without core					

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### 1.1.5 Channel List

Frequency	band (MHz)	2400~2483.5		
802.11 b /	g / n HT20	802.11n HT40		
Channel	Frequency(MHz)	Channel	Frequency(MHz)	
1	2412	3	2422	
2	2417	4	2427	
3	2422	5	2432	
4	2427	6	2437	
5	2432	7	2442	
6	2437	8	2447	
7	2442	9	2452	
8	2447			
9	2452			
10	2457			
11	2462			

## 1.1.6 Test Tool and Duty Cycle

Test Tool	PUTTY, V0.6					
	Mode	Duty cycle (%)	Duty factor (dB)			
	11b 100.00%		0.00			
Duty Cycle and Duty Factor	11g	100.00%	0.00			
	HT20	100.00%	0.00			
	HT40	100.00%	0.00			

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## 1.1.7 Power Setting

Modulation Mode	Test Frequency (MHz)	Power Set
11b	2412	36/44
11b	2437	33/43
11b	2462	30/40
11g	2412	43/51
11g	2437	53/59
11g	2462	43/50
HT20	2412	43/50
HT20	2437	53/59
HT20	2462	43/51
HT40	2422	41/49
HT40	2437	47/55
HT40	2452	39/48

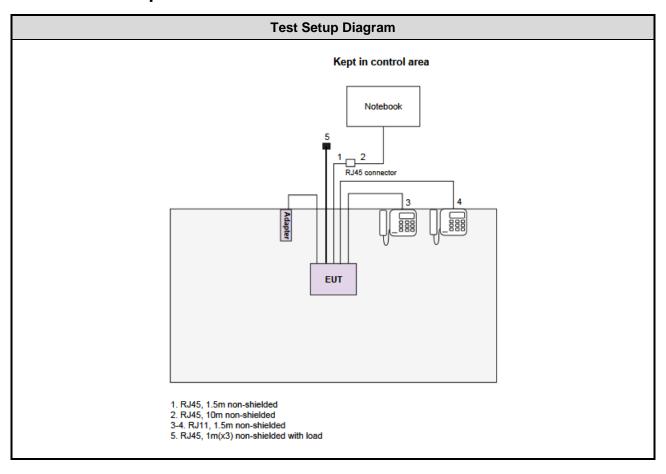
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## 1.2 Local Support Equipment List

	Support Equipment List								
No.	No. Equipment Brand Model FCC ID Signal cable / Length (m								
1	Notebook	DELL	Latitude E6440	DoC	RJ45, 10m non-shielded.				
2	Telephone	HTT	HTT-806		RJ11, 1.5m non-shielded.				
3	Telephone	HTT	HTT-806		RJ11, 1.5m non-shielded.				

## 1.3 Test Setup Chart



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## 1.4 The Equipment List

Test Item	Radiated Emission below 1GHz test							
Test Site	966 chamber1 / (03CH01-WS)							
Tested Date	Nov. 30, 2017	Nov. 30, 2017						
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until			
Receiver	R&S	ESR3	101658	Nov. 20, 2017	Nov. 19, 2018			
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 25, 2017	Jul. 24, 2018			
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 13, 2017	Nov. 12, 2018			
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 09, 2016	Dec. 08, 2017			
Preamplifier	EMC	EMC02325	980225	Jul. 28, 2017	Jul. 27, 2018			
Preamplifier	Agilent	83017A	MY39501308	Oct. 06, 2017	Oct. 05, 2018			
Preamplifier	EMC	EMC184045B	980192	Aug. 22, 2017	Aug. 21, 2018			
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	16052	Dec. 09, 2016	Dec. 08, 2017			
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 09, 2016	Dec. 08, 2017			
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 09, 2016	Dec. 08, 2017			
Measurement Software	AUDIX	e3	6.120210g	NA	NA			
Note: Calibration Inter	rval of instruments liste	d above is one year.		•				

Test Item	Radiated Emission above 1GHz test										
Test Site	966 chamber1 / (03CH01-WS)										
Tested Date	Jan. 08 ~ Jan. 09, 201	Jan. 08 ~ Jan. 09, 2018									
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until						
Spectrum Analyzer	R&S	FSV40	101498	Dec. 04, 2017	Dec. 03, 2018						
Receiver	R&S	ESR3	101658	Nov. 20, 2017	Nov. 19, 2018						
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 20, 2017	Dec. 19, 2018						
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 23, 2017	Nov. 22, 2018						
Preamplifier	EMC	EMC02325	980225	Jul. 28, 2017	Jul. 27, 2018						
Preamplifier	Agilent	83017A	MY39501308	Oct. 06, 2017	Oct. 05, 2018						
Preamplifier	EMC	EMC184045B	980192	Aug. 22, 2017	Aug. 21, 2018						
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 07, 2017	Dec. 06, 2018						
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 07, 2017	Dec. 06, 2018						
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 07, 2017	Dec. 06, 2018						
Measurement Software	AUDIX	e3	6.120210g	NA	NA						
Note: Calibration Inter	rval of instruments listed	d above is one year.									

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Test Item	Conducted Emission									
Test Site	Conduction room 1 /	Conduction room 1 / (CO01-WS)								
Tested Date	Jan. 22, 2018	Jan. 22, 2018								
Instrument	Manufacturer	Manufacturer Model No. Serial No. Calibration Date Calibration								
Receiver	R&S	ESR3	101657	Jan. 05, 2018	Jan. 04, 2019					
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 13, 2017	Nov. 12, 2018					
RF Cable-CON	EMC	EMCCFD300-BM-BM-6000	50821	Dec. 18, 2017	Dec. 17, 2018					
Measurement Software	AUDIX	e3	6.120210k	NA	NA					
Note: Calibration Interval of instruments listed above is one year.										

Test Item	RF Conducted	RF Conducted								
Test Site	(TH01-WS)									
Tested Date	Jan. 22 ~ Jan. 23, 201	8								
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until					
Spectrum Analyzer	R&S	FSV40	101063	Mar. 15, 2017	Mar. 14, 2018					
Power Meter	Anritsu	ML2495A	1241002	Oct. 16, 2017	Oct. 15, 2018					
Power Sensor	Anritsu	MA2411B	1207366	Oct. 16, 2017	Oct. 15, 2018					
AC POWER SOURCE	APC	AFC-500W	F312060012	Dec. 01, 2017	Nov. 30, 2018					
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA					
Note: Calibration Interval of instruments listed above is one year.										

### 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 v04

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

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## 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	Uncertainty						
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	±5.63 dB						

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## 2 Test Configuration

## 2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By	
AC Conduction	CO01-WS	21°C / 58%	Alex Tsai	
Radiated Emissions	03CH01-WS	22-25°C / 64-66%	Akun Chung Roger Lu	
RF Conducted	TH01-WS	20°C / 63%	Brad Wu	

FCC Designation No.: TW2732
 FCC site registration No.: 181692
 IC site registration No.: 10807A-1

### 2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
Conducted Emissions	11g	2437	6 Mbps	
Radiated Emissions ≤1GHz	11g	2437	6 Mbps	
Radiated Emissions >1GHz Maximum Output Power 6dB bandwidth Power spectral density	11b 11g HT20 HT40	2412 / 2437 / 2462 2412 / 2437 / 2462 2412 / 2437 / 2462 2422 / 2437 / 2452	1 Mbps 6 Mbps MCS 0 MCS 0	

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### 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  $\Omega$  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



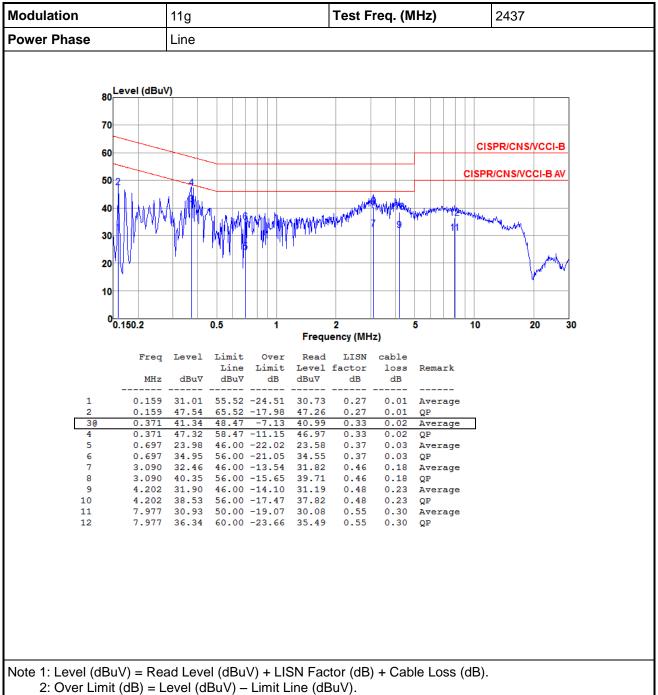
Note: 1. Support units were connected to second LISN.

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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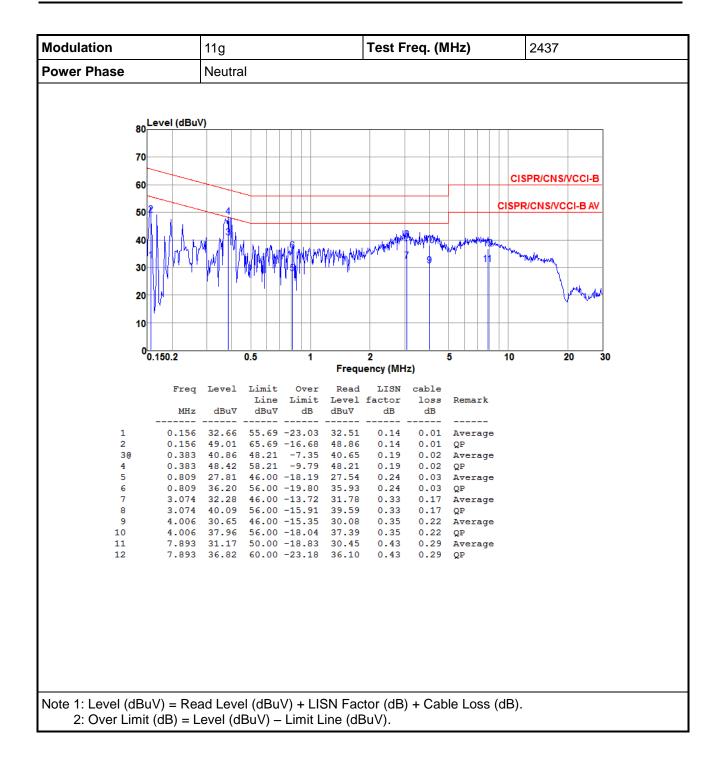
#### 3.1.4 Test Result of Conducted Emissions



2. Over Limit (db) = Lever (dbuv) – Limit Line (dbuv).

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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

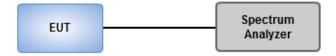
#### 6dB Bandwidth

- 1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
- 2. 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

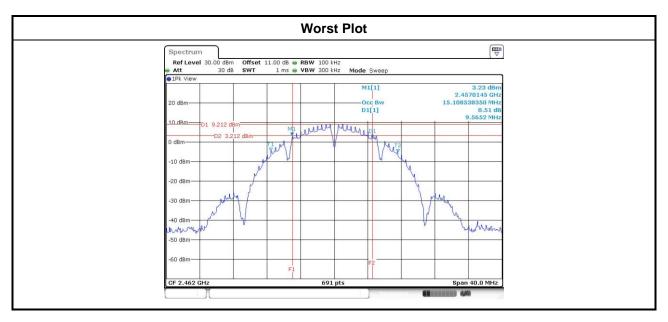


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## 3.2.4 Test Result of 6dB and Occupied Bandwidth

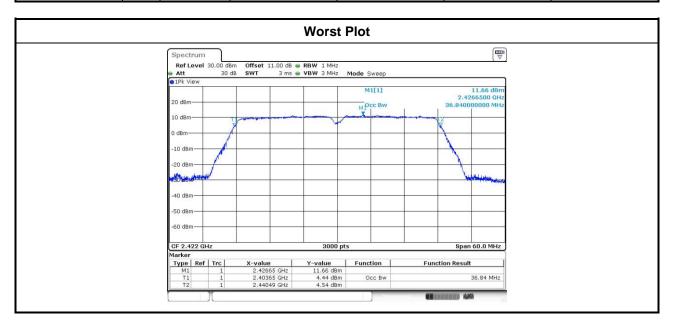
Modulation	N	Eros (MU=)		6dB Bandwidth (MHz)					
Mode	N <sub>TX</sub>	Freq. (MHz)	Chain 0	Chain 0 Chain 1 Chain 2		Chain 3	Limit (kHz)		
11b	2	2412	10.09	10.03			500		
11b	2	2437	10.03	10.03			500		
11b	2	2462	10.03	9.57			500		
11g	2	2412	16.64	16.64			500		
11g	2	2437	16.58	16.58			500		
11g	2	2462	16.58	16.52			500		
HT20	2	2412	17.80	17.86			500		
HT20	2	2437	17.80	17.80			500		
HT20	2	2462	17.86	17.86			500		
HT40	2	2422	36.52	36.52			500		
HT40	2	2437	36.52	36.52			500		
HT40	2	2452	36.52	36.52			500		



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Modulation	N.	Freq.		Bandwidth (MHz)		
Mode	N <sub>TX</sub>	(MHz)	Chain 0	Chain 1	Chain 2	Chain 3
11b	2	2412	15.09	15.13		
11b	2	2437	15.10	15.11		
11b	2	2462	15.19	15.13		
11g	2	2412	16.94	16.88		
11g	2	2437	17.02	16.96		
11g	2	2462	17.01	16.98		
HT20	2	2412	18.01	18.03		
HT20	2	2437	18.08	18.14		
HT20	2	2462	18.02	18.02		
HT40	2	2422	36.84	36.76		
HT40	2	2437	36.72	36.80		
HT40	2	2452	36.70	36.82		



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## 3.3 RF Output Power

## 3.3.1 Limit of RF Output Power

Con	duct	ed po	ower shall not exceed 1Watt.
	Ante	enna	gain <= 6dBi, no any corresponding reduction is in output power limit.
	Ante	enna	gain > 6dBi
		The	Fixed, point to point operations. conducted output power from the intentional radiator shall be reduced by the amount in dB the directional gain of the antenna exceeds 6 dB
		Syst Ope	ed, point to point operations tems operations. The substitute of t
			tems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point rations ,no any corresponding reduction is in transmitter peak output power
3.3.	2	Test	Procedures
	Max	kimun	n Peak Conducted Output Power
		Spe	ctrum 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.
		Pov	ver meter
		1.	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.
$\boxtimes$	Max	kimun	n Conducted Output Power
	$\boxtimes$	Pow	ver meter
		1.	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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Power Sensor

Power Meter

Report Version: Rev. 01

EUT



## 3.3.4 Test Result of Maximum Output Power

				Conduc	ted (Avei	age) Out	put Powe	er (dBm)		A 4		EIRP
Modulation Mode	N <sub>TX</sub>	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	2	2412	21.23	21.19			264.262	24.22	30.00	4.00	28.22	36.00
11b	2	2437	20.11	20.58			216.853	23.36	30.00	4.00	27.36	36.00
11b	2	2462	19.05	19.31			165.663	22.19	30.00	4.00	26.19	36.00
11g	2	2412	19.42	19.51			176.829	22.48	30.00	4.00	26.48	36.00
11g	2	2437	24.25	24.42			542.767	27.35	30.00	4.00	31.35	36.00
11g	2	2462	19.62	19.01			171.238	22.34	30.00	4.00	26.34	36.00
HT20	2	2412	19.51	19.82			185.271	22.68	30.00	4.00	26.68	36.00
HT20	2	2437	24.02	24.48			532.891	27.27	30.00	4.00	31.27	36.00
HT20	2	2462	19.56	19.78			185.425	22.68	30.00	4.00	26.68	36.00
HT40	2	2422	17.76	17.71			118.724	20.75	30.00	4.00	24.75	36.00
HT40	2	2437	20.41	20.63			225.512	23.53	30.00	4.00	27.53	36.00
HT40	2	2452	17.21	16.89			101.467	20.06	30.00	4.00	24.06	36.00

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## 3.4 Power Spectral Density

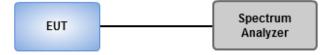
#### 3.4.1 Limit of Power Spectral Density

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.
  - Set the RBW = 3kHz, VBW = 10kHz.
  - 2. 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 = 30kHz, VBW = 100 kHz.
  - 2. Detector = RMS, Sweep time = auto couple.
  - 3. Set the sweep time to: ≥ 10 x (number of measurement points in sweep) x (maximum data rate per stream).
  - 4. Perform the measurement over a single sweep.
  - 5. Use the peak marker function to determine the maximum amplitude level.

### 3.4.3 Test Setup



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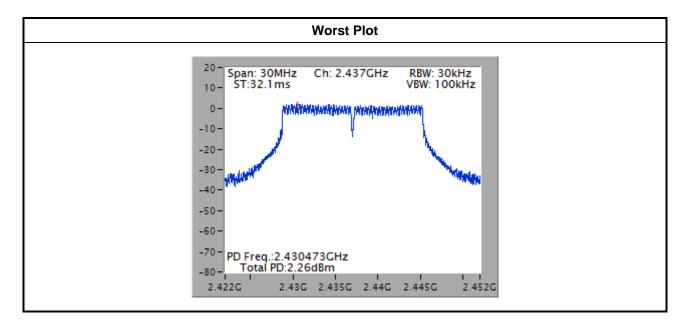


### 3.4.4 Test Result of Power Spectral Density

Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Total Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
11b	2	2412	1.05	7.19
11b	2	2437	0.47	7.19
11b	2	2462	-1.23	7.19
11g	2	2412	-2.69	7.19
11g	2	2437	2.26	7.19
11g	2	2462	-2.65	7.19
HT20	2	2412	-3.64	7.19
HT20	2	2437	1.24	7.19
HT20	2	2462	-2.68	7.19
HT40	2	2422	-7.82	7.19
HT40	2	2437	-4.86	7.19
HT40	2	2452	-8.81	7.19

#### Note:

- 1. Test result is bin-by-bin summing measured value of each TX port.
- 2. Directional gain =  $10 * log((10^{3.6/20} + 10^{4/20})^2/2) = 6.81 dBi > 6 dBi$ Limit shall be reduced to 8 dBm - (6.81 dBi - 6 dBi) = 7.19 dBm



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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)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)							
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.

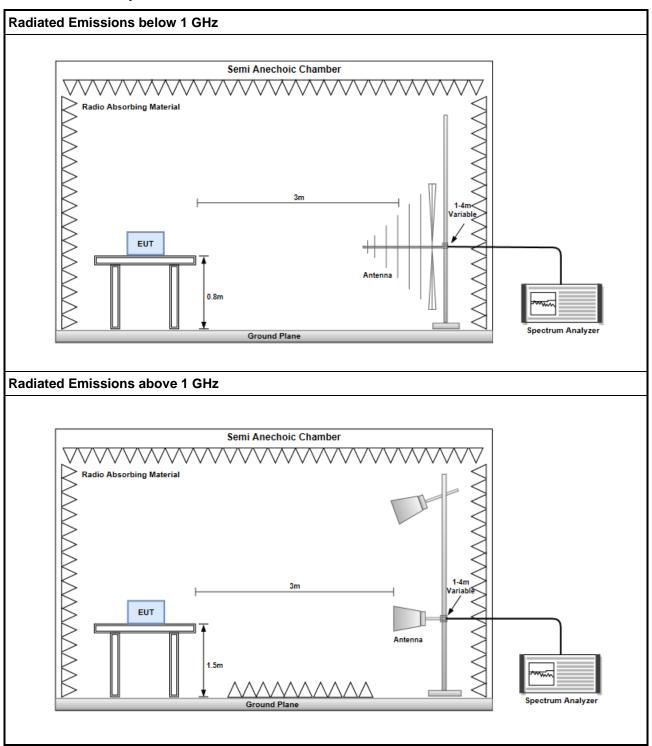
#### Note:

- 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.
- RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

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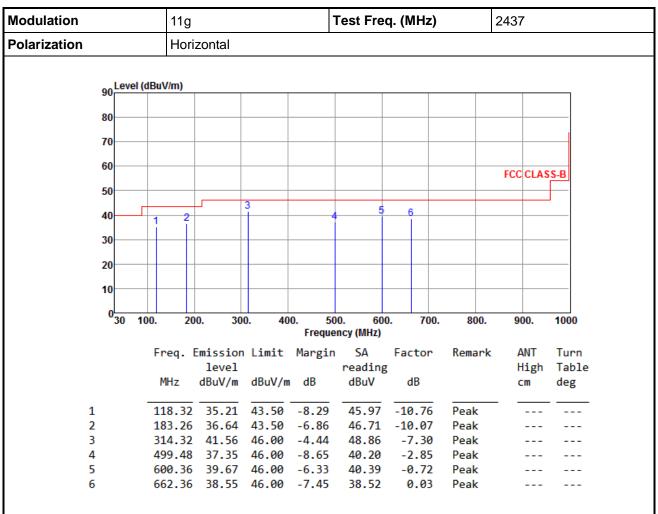
### 3.5.3 Test Setup



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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)

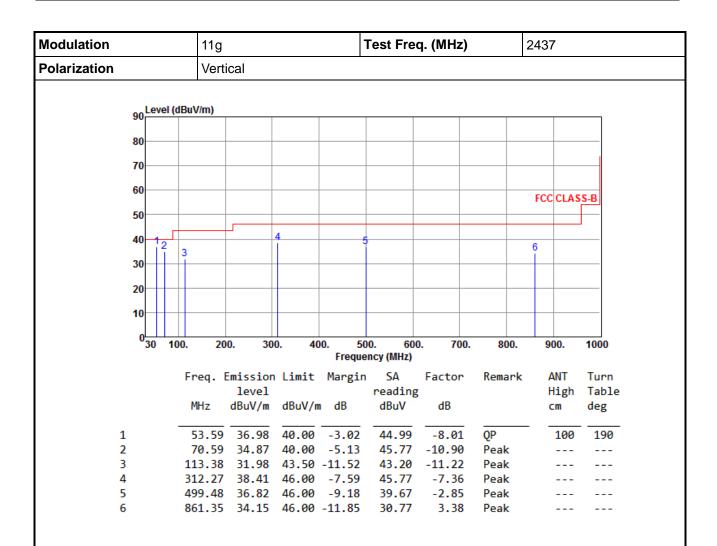
\*Factor includes antenna factor, cable loss and amplifier gain

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

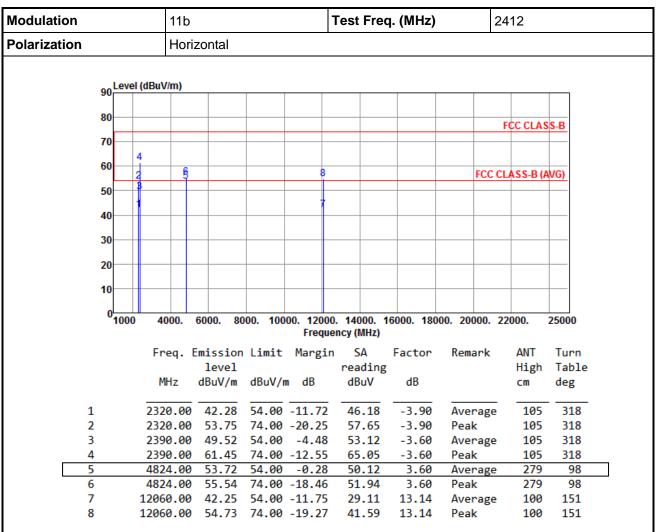
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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)

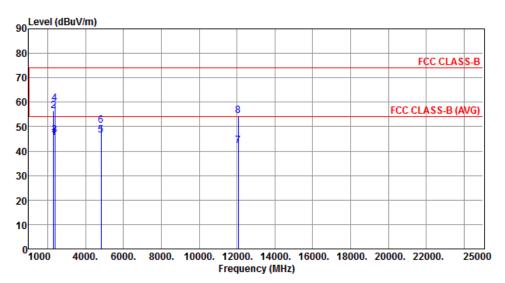
\*Factor includes antenna factor, cable loss and amplifier gain

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

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



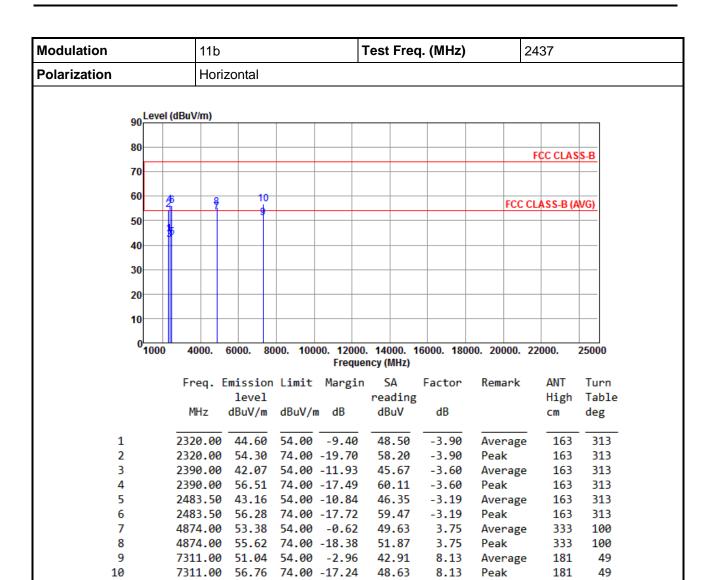
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2320.00	45.64	54.00	-8.36	49.54	-3.90	Average	140	315
2	2320.00	56.31	74.00	-17.69	60.21	-3.90	Peak	140	315
3	2390.00	46.52	54.00	-7.48	50.12	-3.60	Average	140	315
4	2390.00	59.41	74.00	-14.59	63.01	-3.60	Peak	140	315
5	4824.00	46.49	54.00	-7.51	42.89	3.60	Average	169	82
6	4824.00	50.56	74.00	-23.44	46.96	3.60	Peak	169	82
7	12060.00	42.14	54.00	-11.86	29.00	13.14	Average	100	212
8	12060.00	54.42	74.00	-19.58	41.28	13.14	Peak	100	212

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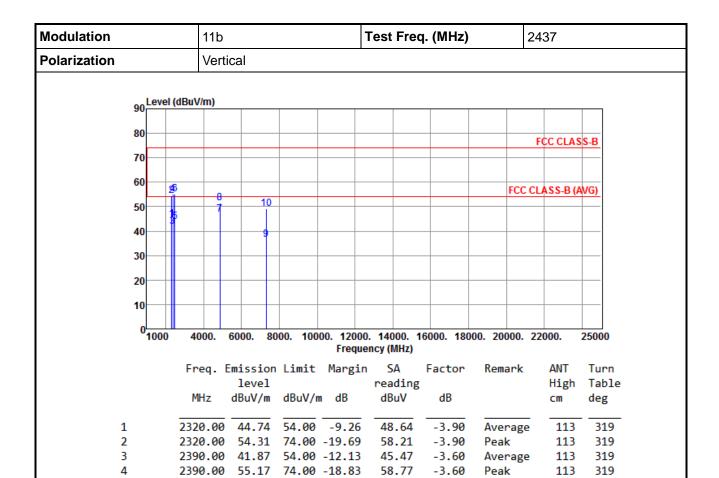
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*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 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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5

6

7

8

9

10

2483.50

2483.50

4874.00

4874.00

7311.00

43.78

55.06

46.72

51.32

36.37

7311.00 49.16 74.00 -24.84

54.00 -10.22

74.00 -18.94

54.00 -7.28

74.00 -22.68

54.00 -17.63

46.97

58.25

42.97

47.57

28.24

41.03

-3.19

-3.19

3.75

3.75

8.13

8.13

Average

Average

Average

Peak

Peak

Peak

113

113

144

144

100

100

319

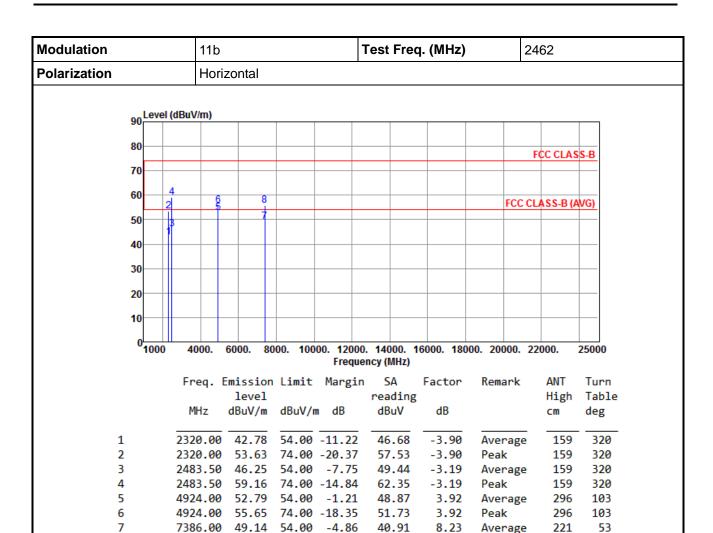
319

63

63

84





47.55

8.23

Peak

221

53

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

7386.00 55.78 74.00 -18.22

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

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Modulation			1	11b			٦	Test Fred	q. (MHz)	)	246	2462		
Polarization			٧	Vertical										
	90	Level	(dBuV/m	1)										
	80													
	00											FC	C CLAS	S-B
	70							+						
	60	2	4 J					+						
	50			6	8	}					FC	C CLA	SS-B (A	VG)
	90			\$										
	40			+	7			+						
	30			+				+						
	20													
	20													
	10													
	0	1000	400	0 6	6000.	B000.	10000 1	2000	14000 1	ISONO 19	000. 20000	) 220	000	25000
		1000	400	U. U	0000.	5000.			. 14000. i ncy (MHz)	10000. 10	000. Z000C	J. 220		23000
			Fred	ı. Eı	missio	n Lim	it Mar	gin	SA	Factor	Remar	k	ANT	Turn
					level			_	reading				High	Table
			MHz	<u> </u>	dBuV/m	dBu	V/m dB		dBuV	dB			cm	deg
	1		2320	00	44.42	54.	00 -9.	58	48.32	-3.90	Avera	ge.	101	312
	2		2320.				00 -19.		58.46	-3.90		<b>D</b> -	101	312
3	3		2483.	50	47.55	54.	00 -6.	45	50.74	-3.19	Avera	ge	101	312

63.77

39.99

45.10

28.03

41.21

-3.19

3.92

3.92

8.23

8.23

Peak

Peak

Peak

Average

Average

101

168

168

100

100

312

82

82

218

218

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

2483.50 60.58 74.00 -13.42

7386.00 36.26 54.00 -17.74

7386.00 49.44 74.00 -24.56

54.00 -10.09

74.00 -24.98

4924.00 43.91

4924.00 49.02

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

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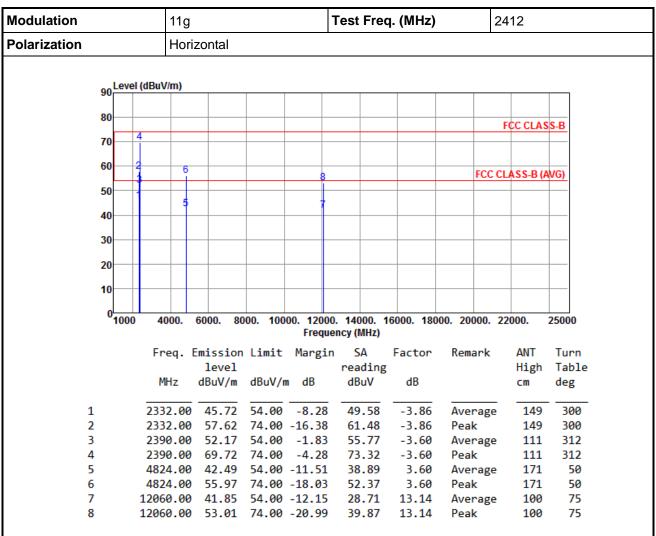
5

6

7



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



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

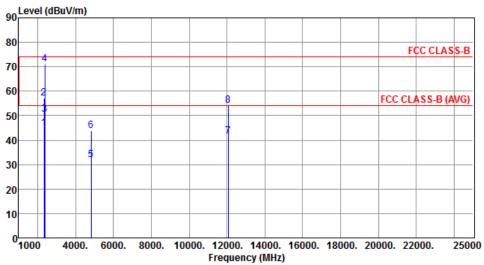
\*Factor includes antenna factor, cable loss and amplifier gain

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

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Modulation	11g	Т	est Freq.	(MHz)	24	12		
Polarization	Vertical							
90 Level (dBu	//m)							
90								



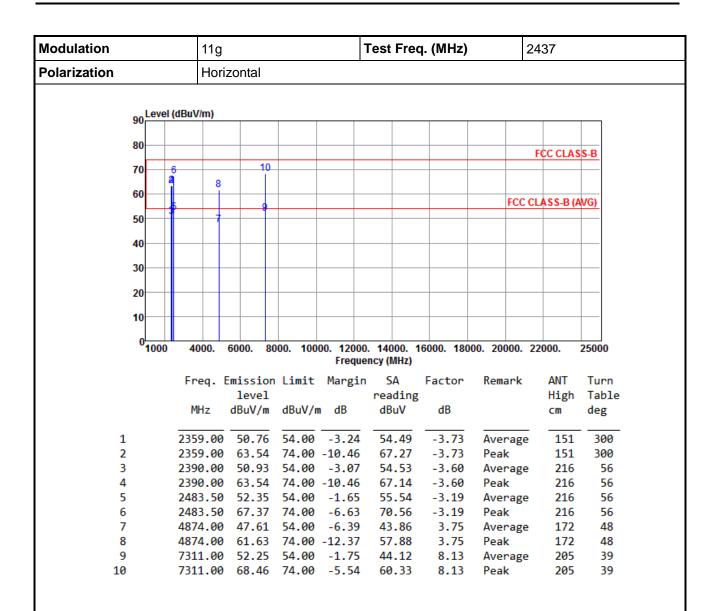
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2332.00	44.89	54.00	-9.11	48.75	-3.86	 Average	109	108
_									
2	2332.00	56.98	74.00	-17.02	60.84	-3.86	Peak	109	108
3	2390.00	50.50	54.00	-3.50	54.10	-3.60	Average	154	111
4	2390.00	71.13	74.00	-2.87	74.73	-3.60	Peak	154	111
5	4824.00	31.82	54.00	-22.18	28.22	3.60	Average	100	115
6	4824.00	43.93	74.00	-30.07	40.33	3.60	Peak	100	115
7	12060.00	41.45	54.00	-12.55	28.31	13.14	Average	100	100
8	12060.00	53.99	74.00	-20.01	40.85	13.14	Peak	100	100

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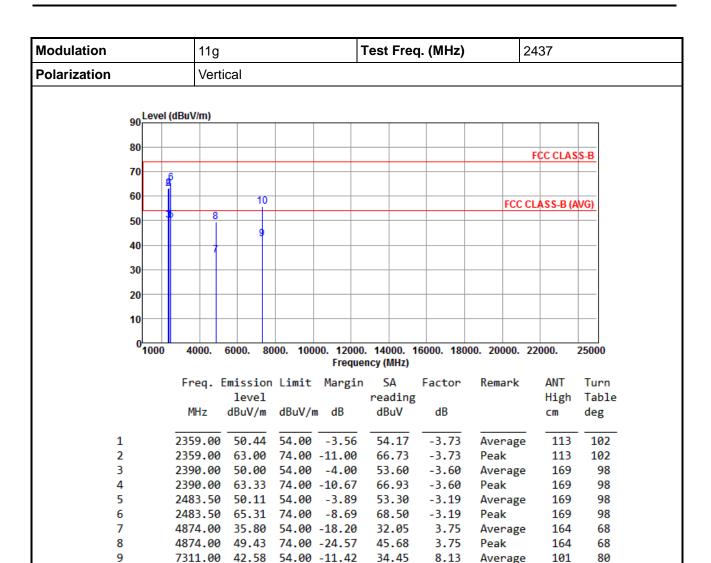
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*Factor includes antenna factor, cable loss and amplifier gain

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

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47.66

8.13

Peak

101

80

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

7311.00 55.79 74.00 -18.21

\*Factor includes antenna factor, cable loss and amplifier gain

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

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MHz dBuV/m dB dBuV dB cm deg  1 2382.00 50.02 54.00 -3.98 53.66 -3.64 Average 145 298 2 2382.00 61.91 74.00 -12.09 65.55 -3.64 Peak 145 298 3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317	Modulation		11g			-	Test Fred	q. (MHz)	:	2462	
FCC CLASS-B (AVG)  60  60  60  60  60  60  60  60  60  6	Polarization		Horiz	zontal		•			1		
Freq. Emission Limit Margin SA Factor Remark ANT Turn level reading High Table MHz dBuV/m dBuV/m dB dBuV dB cm deg  1 2382.00 50.02 54.00 -3.98 53.66 -3.64 Average 145 298 2 2382.00 61.91 74.00 -12.09 65.55 -3.64 Peak 145 298 3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317	90 Le	vel (dBu	V/m)								
70 2 8 8 6 FCC CLASS-B (AVG) 50 40 30 20 1000 4000. 6000. 8000. 10000. 12000. 14000. 16000. 18000. 20000. 22000. 25000 Frequency (MHz)  Freq. Emission Limit Margin SA Factor Remark ANT Turn Tevel reading High Tabl MHz dBuV/m dBuV/m dB dBuV dB cm deg  1 2382.00 50.02 54.00 -3.98 53.66 -3.64 Average 145 298 2 2382.00 61.91 74.00 -12.09 65.55 -3.64 Peak 145 298 3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317	80—									F00 01 4 0	
60	70	4								FCC CLAS	2-B
1 2382.00 50.02 54.00 -3.98 53.66 -3.64 Average 145 298 2 2382.00 61.91 74.00 -12.09 65.55 -3.64 Peak 145 298 3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317	60—	2	6	8							
1 2382.00 50.02 54.00 -3.98 53.66 -3.64 Average 145 298 2 2382.00 61.91 74.00 -12.09 65.55 -3.64 Peak 145 298 3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317	50	-		7					FCC	CLASS-B (A	(VG)
30 20 100 4000. 6000. 8000. 10000. 12000. 14000. 16000. 18000. 20000. 22000. 25000 Frequency (MHz)  Freq. Emission Limit Margin SA Factor Remark ANT Turn level reading High Tabl MHz dBuV/m dBuV/m dB dBuV dB cm deg  1 2382.00 50.02 54.00 -3.98 53.66 -3.64 Average 145 298 2 2382.00 61.91 74.00 -12.09 65.55 -3.64 Peak 145 298 3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317			5								
20 10 10 1000 4000. 6000. 8000. 10000. 12000. 14000. 16000. 18000. 20000. 22000. 25000 Frequency (MHz)  Freq. Emission Limit Margin SA Factor Remark ANT Turn level reading High Tabl MHz dBuV/m dBuV/m dB dBuV dB cm deg  1 2382.00 50.02 54.00 -3.98 53.66 -3.64 Average 145 298 2 2382.00 61.91 74.00 -12.09 65.55 -3.64 Peak 145 298 3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317											
10 4000. 6000. 8000. 10000. 12000. 14000. 16000. 18000. 20000. 22000. 25000 Frequency (MHz)  Freq. Emission Limit Margin SA Factor Remark ANT Turn level reading High Table MHz dBuV/m dBuV/m dB dBuV dB cm deg  1 2382.00 50.02 54.00 -3.98 53.66 -3.64 Average 145 298 2 2382.00 61.91 74.00 -12.09 65.55 -3.64 Peak 145 298 3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317	30—										
0 1000 4000. 6000. 8000. 10000. 12000. 14000. 16000. 18000. 20000. 22000. 25000 Frequency (MHz)  Freq. Emission Limit Margin SA Factor Remark ANT Turn level reading High Table MHz dBuV/m dBuV/m dB dBuV dB cm deg  1 2382.00 50.02 54.00 -3.98 53.66 -3.64 Average 145 298 2 2382.00 61.91 74.00 -12.09 65.55 -3.64 Peak 145 298 3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317	20										
1000 4000. 6000. 8000. 10000. 12000. 14000. 16000. 18000. 20000. 22000. 25000 Frequency (MHz)  Freq. Emission Limit Margin SA Factor Remark ANT Turn level reading High Table MHz dBuV/m dBuV/m dB dBuV dB cm deg  1 2382.00 50.02 54.00 -3.98 53.66 -3.64 Average 145 298 2 2382.00 61.91 74.00 -12.09 65.55 -3.64 Peak 145 298 3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317	10										
Freq. Emission Limit Margin SA Factor Remark ANT Turn level reading MHz dBuV/m dBuV/m dB dBuV dB cm deg  1 2382.00 50.02 54.00 -3.98 53.66 -3.64 Average 145 298 2 2382.00 61.91 74.00 -12.09 65.55 -3.64 Peak 145 298 3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317	0 10	00 4	1000.	6000. 80	000. 100			6000. 180	00. 20000.	22000.	25000
level reading dBuV/m dB dBuV dB Cm deg  1 2382.00 50.02 54.00 -3.98 53.66 -3.64 Average 145 298 2 2382.00 61.91 74.00 -12.09 65.55 -3.64 Peak 145 298 3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317		-						<b>.</b> .	ъ .	ANT	_
MHz dBuV/m dB dBuV dB cm deg  1 2382.00 50.02 54.00 -3.98 53.66 -3.64 Average 145 298 2 2382.00 61.91 74.00 -12.09 65.55 -3.64 Peak 145 298 3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317		F	req. t		1 Limit	Margin			Kemark		Table
2 2382.00 61.91 74.00 -12.09 65.55 -3.64 Peak 145 298 3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317		ı	MHz	dBuV/m	dBuV/	m dB	_			_	
3 2483.50 52.29 54.00 -1.71 55.48 -3.19 Average 156 317 4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317	1	23	82.00	50.02	54.00	-3.98	53.66	-3.64	Average	145	298
4 2483.50 72.23 74.00 -1.77 75.42 -3.19 Peak 156 317											298
									_		317
											317 49

53.67

3.92

8.23

8.23

Peak

Peak

Average

49

50

50

173

175

175

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

4924.00 57.59 74.00 -16.41

7386.00 48.36 54.00 -5.64 40.13

7386.00 61.88 74.00 -12.12 53.65

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

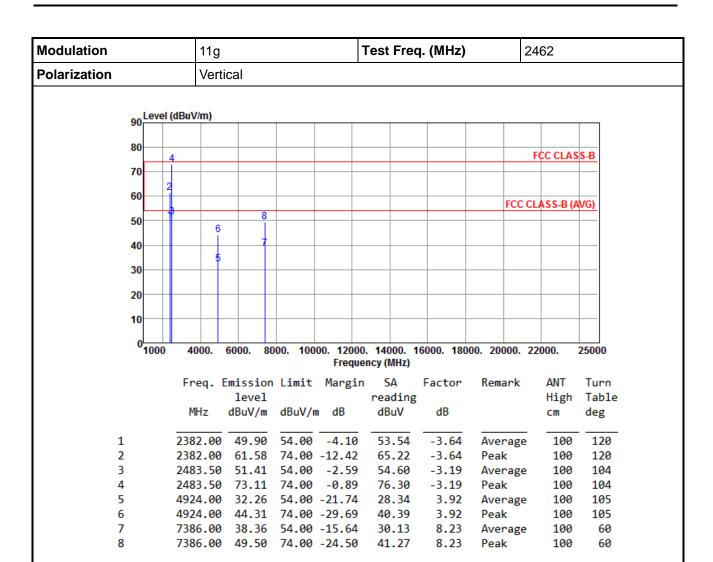
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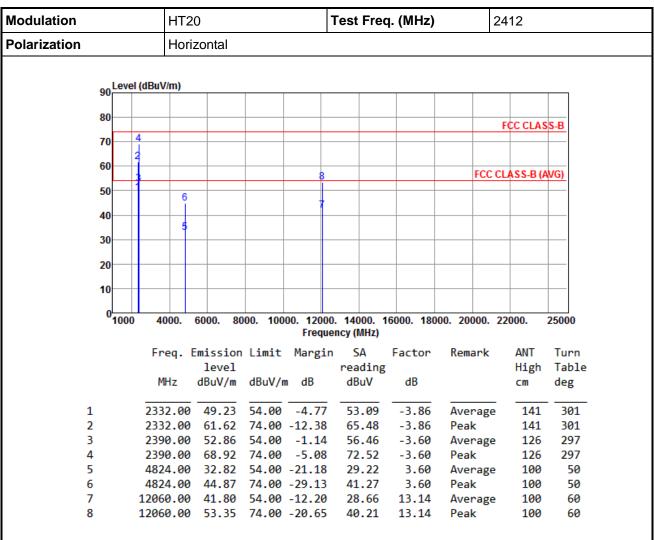
\*Factor includes antenna factor, cable loss and amplifier gain

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

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



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

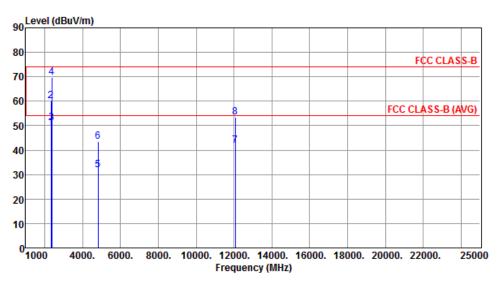
\*Factor includes antenna factor, cable loss and amplifier gain

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

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Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Vertical		

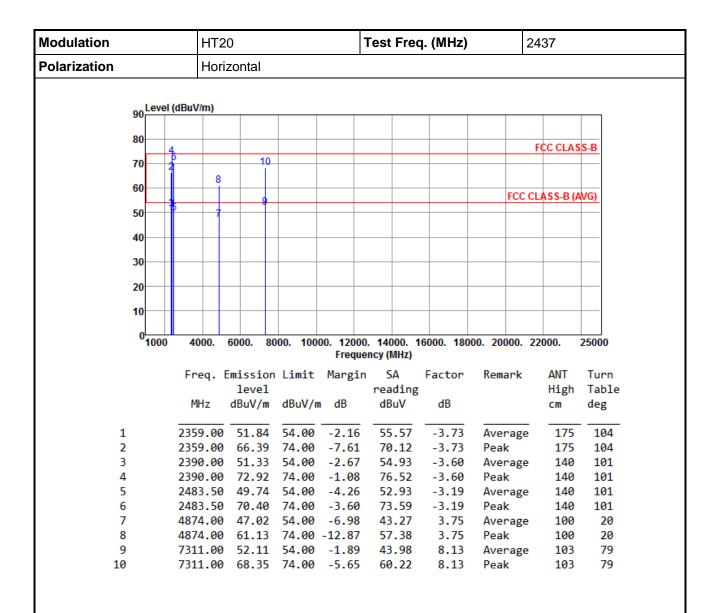


	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2332.00	49.15	54.00	-4.85	53.01	-3.86	Average	106	123
2	2332.00	60.13	74.00	-13.87	63.99	-3.86	Peak	106	123
3	2390.00	51.03	54.00	-2.97	54.63	-3.60	Average	163	117
4	2390.00	69.90	74.00	-4.10	73.50	-3.60	Peak	163	117
5	4824.00	31.96	54.00	-22.04	28.36	3.60	Average	100	120
6	4824.00	43.48	74.00	-30.52	39.88	3.60	Peak	100	120
7	12060.00	41.70	54.00	-12.30	28.56	13.14	Average	100	160
8	12060.00	53.45	74.00	-20.55	40.31	13.14	Peak	100	160

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

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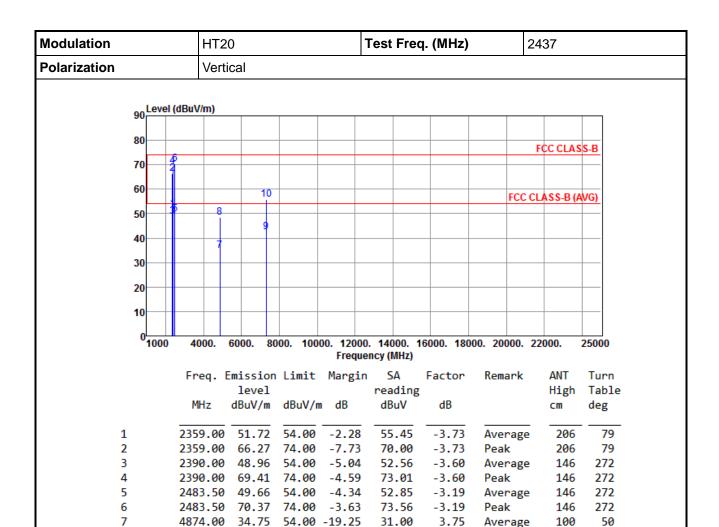


\*Factor includes antenna factor, cable loss and amplifier gain

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

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44.88

34.33

47.78

74.00 -25.37

54.00 -11.54

3.75

8.13

8.13

Peak

Peak

Average

50

44

44

100

211

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).

4874.00 48.63

7311.00 42.46

7311.00 55.91 74.00 -18.09

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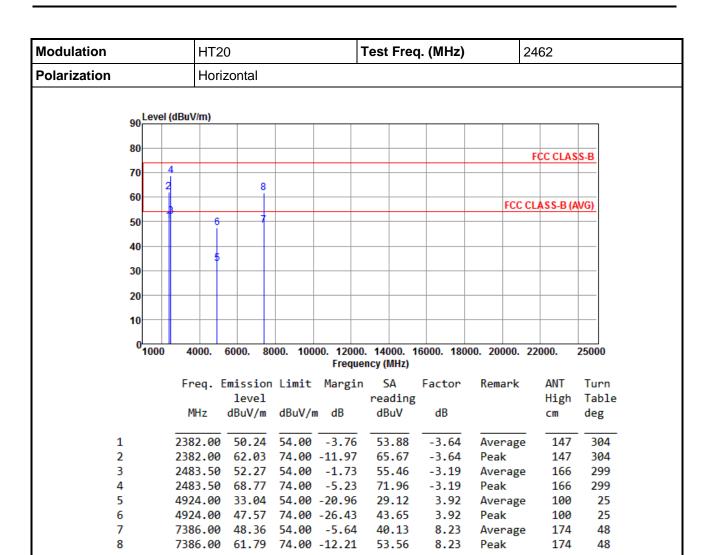
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9

10





\*Factor includes antenna factor, cable loss and amplifier gain

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

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1

2

3

4

5

6

7

8

Modulation		HT	20				Tes	t Fre	q. (M	Hz)		24	62	
Polarization		Ver	tical				•							
90 <mark>_Le</mark> \	/el (dBu	V/m)												
80—										_			CC CLAS	0 D
70	4												CC CLA	33-Б
60—	2										F	CC CI	ASS-B (	AVG)
50	1	6		8							-	CCCL	M33-D (/	
40				+						_				
30			<u> </u>											
20		+								_				
10														
0 100	00 4	1000.	6000.	8000	. 1000		)00. 14 quency		16000.	1800	0. 2000	0. 22	000.	25000
	Fi	req.	Emissi leve		imit		in		Fact	tor	Remar	rk	ANT High	Tur Tab
		MHz	dBuV/		BuV/m	dB		au I I I BuV	s di	В			cm	deg

53.85

65.11

54.71

72.24

28.56

40.48

30.22

41.56

-3.64

-3.64

-3.19

-3.19

3.92

3.92

8.23

8.23

Average

Average

Average

Peak Average

Peak

Peak

Peak

100

100

181

181

100

100

100

100

124

124

87

87

100

100

58

58

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

2382.00 50.21 54.00 -3.79

7386.00 49.79 74.00 -24.21

74.00 -12.53

54.00 -2.48

74.00 -4.95

54.00 -21.52

74.00 -29.60

54.00 -15.55

61.47

51.52

69.05

32.48

44.40

2382.00

2483.50

2483.50

4924.00

4924.00

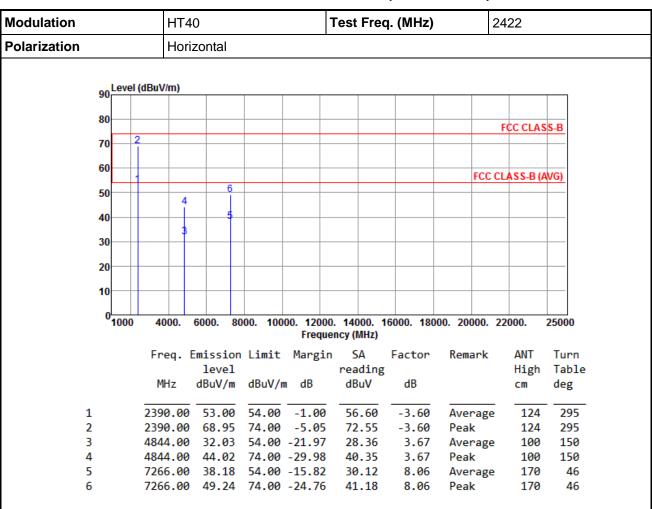
7386.00 38.45

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

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## 3.5.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT40



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

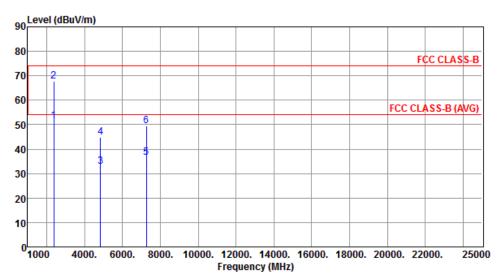
\*Factor includes antenna factor, cable loss and amplifier gain

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

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Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Vertical		



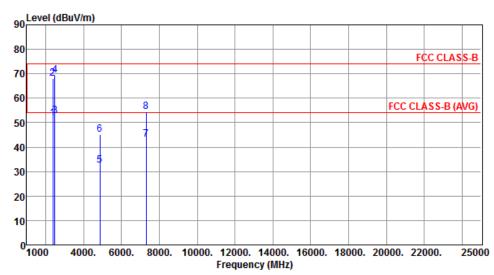
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2390.00	51.57	54.00	-2.43	55.17	-3.60	Average	163	116
2	2390.00	67.67	74.00	-6.33	71.27	-3.60	Peak	163	116
3	4844.00	32.95	54.00	-21.05	29.28	3.67	Average	100	120
4	4844.00	44.90	74.00	-29.10	41.23	3.67	Peak	100	120
5	7266.00	36.68	54.00	-17.32	28.62	8.06	Average	100	150
6	7266.00	49.42	74.00	-24.58	41.36	8.06	Peak	100	150

\*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	HT40	Test Freq. (MHz)	2437
Polarization	Horizontal		



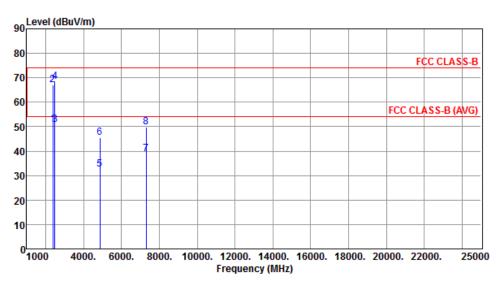
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2390.00	51.86	54.00	-2.14	55.46	-3.60	Average	158	303
2	2390.00	68.06	74.00	-5.94	71.66	-3.60	Peak	158	303
3	2483.50	52.79	54.00	-1.21	55.98	-3.19	Average	158	303
4	2483.50	69.47	74.00	-4.53	72.66	-3.19	Peak	158	303
5	4874.00	32.41	54.00	-21.59	28.66	3.75	Average	100	20
6	4874.00	45.14	74.00	-28.86	41.39	3.75	Peak	100	20
7	7311.00	43.25	54.00	-10.75	35.12	8.13	Average	173	55
8	7311.00	54.51	74.00	-19.49	46.38	8.13	Peak	173	55

\*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	HT40	Test Freq. (MHz)	2437
Polarization	Vertical		



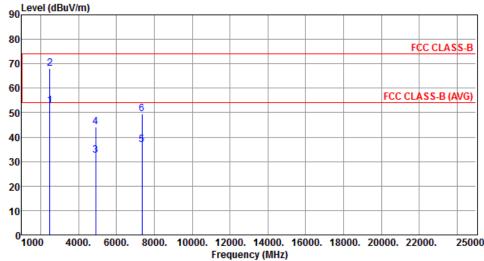
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2390.00	50.67	54.00	-3.33	54.27	-3.60	Average	146	119
2	2390.00	67.04	74.00	-6.96	70.64	-3.60	Peak	146	119
3	2483.50	50.84	54.00	-3.16	54.03	-3.19	Average	146	119
4	2483.50	68.31	74.00	-5.69	71.50	-3.19	Peak	146	119
5	4874.00	32.39	54.00	-21.61	28.64	3.75	Average	100	160
6	4874.00	45.39	74.00	-28.61	41.64	3.75	Peak	100	160
7	7311.00	38.78	54.00	-15.22	30.65	8.13	Average	100	140
8	7311.00	49.82	74.00	-24.18	41.69	8.13	Peak	100	140

\*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	odulation HT40		t Freq. (MHz)	)	24	2452		
Polarization								
90 Level (dBu	V/m)							
30								



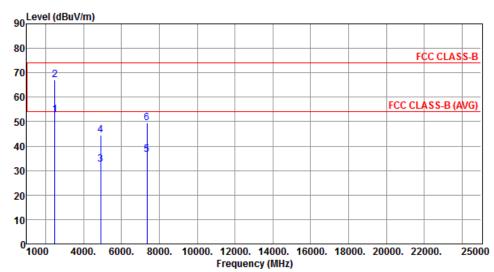
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
		•	•						
1	2483.50	52.84	54.00	-1.16	56.03	-3.19	Average	202	319
2	2483.50	67.92	74.00	-6.08	71.11	-3.19	Peak	202	319
3	4904.00	32.41	54.00	-21.59	28.55	3.86	Average	100	25
4	4904.00	44.11	74.00	-29.89	40.25	3.86	Peak	100	25
5	7356.00	36.71	54.00	-17.29	28.51	8.20	Average	100	60
6	7356.00	49.54	74.00	-24.46	41.34	8.20	Peak	100	60

\*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	HT40	Test Freq. (MHz)	2452
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	52.83	54.00	-1.17	56.02	-3.19	Average	120	100
2	2483.50	67.06	74.00	-6.94	70.25	-3.19	Peak	120	100
3	4904.00	32.52	54.00	-21.48	28.66	3.86	Average	100	125
4	4904.00	44.50	74.00	-29.50	40.64	3.86	Peak	100	125
5	7356.00	36.69	54.00	-17.31	28.49	8.20	Average	100	190
6	7356.00	49.56	74.00	-24.44	41.36	8.20	Peak	100	190

\*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 30 dB relative to the maximum in-band peak PSD level in 100 kHz

### 3.6.2 Test Procedures

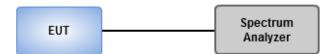
#### Reference level measurement

- 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
- 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

### 3.6.3 Test Setup



## 3.6.4 Test Result of Emissions in non-restricted frequency bands

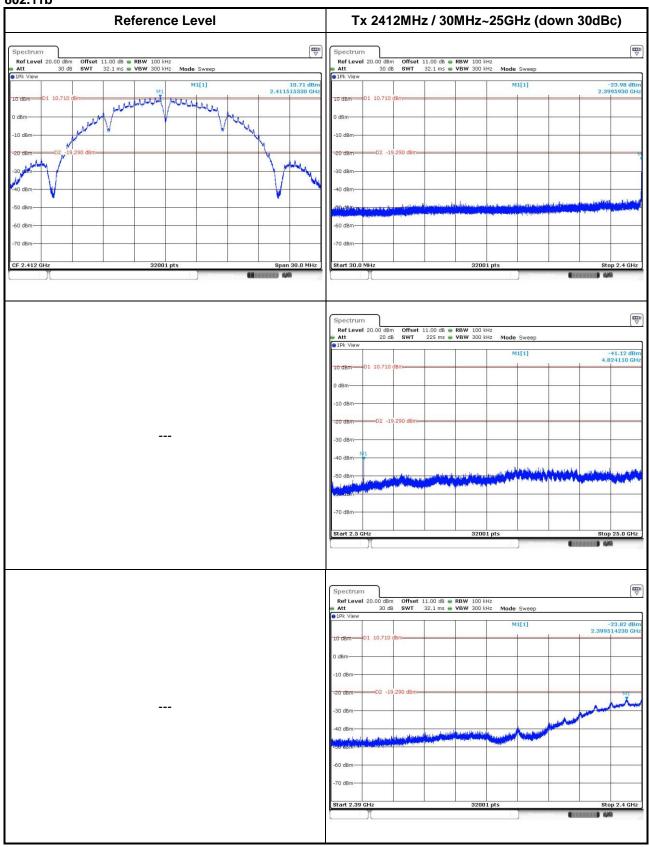
This test item is performed on each TX output individually without summing or adding 10  $log(N_{ANT})$  since measurements are made relative to the in-band emissions on the individual outputs. Only worst test result of each operating mode is presented.

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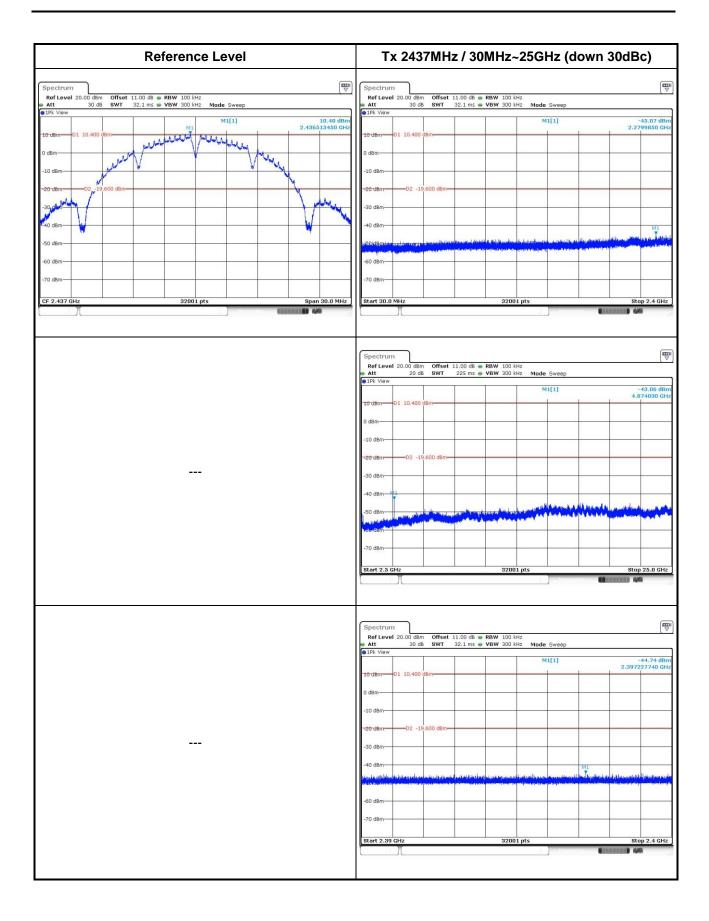
# 3.6.5 Unwanted Emissions into Non-Restricted Frequency Bands

## 802.11b



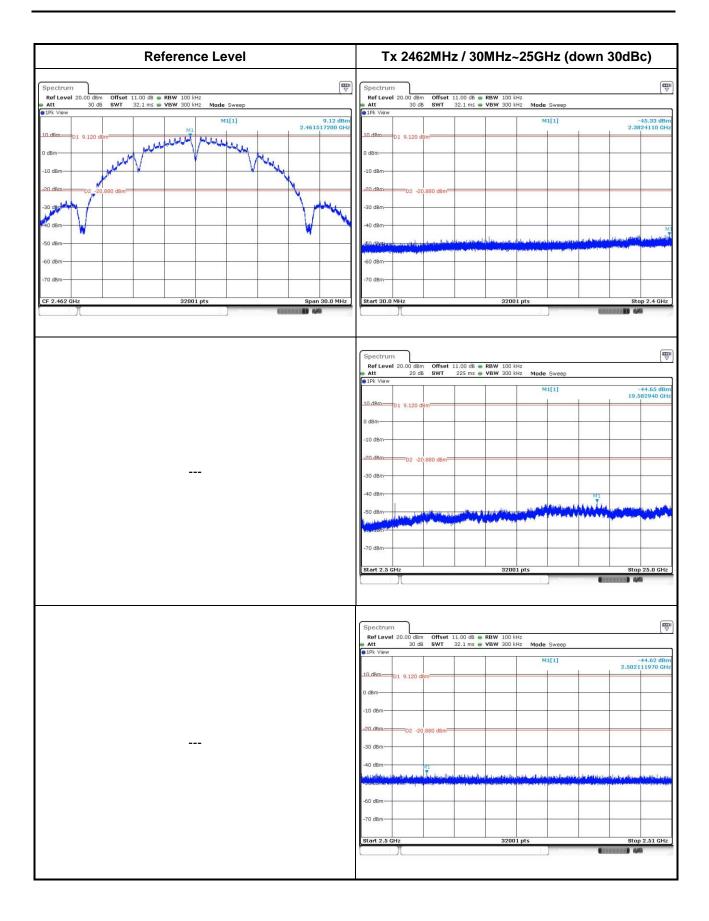
Report No.: FR7N3003AC Report Version: Rev. 01





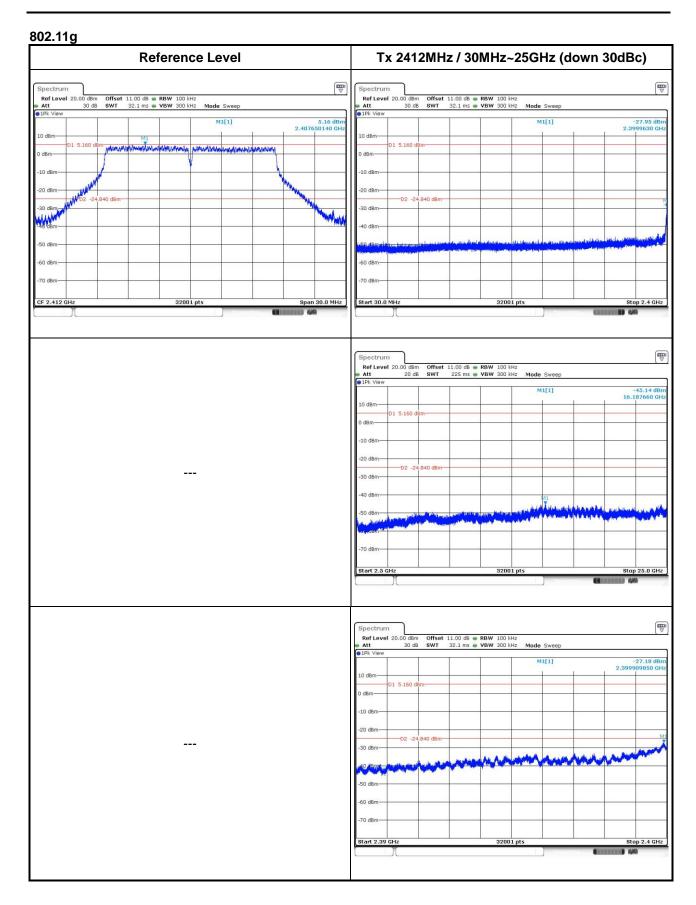
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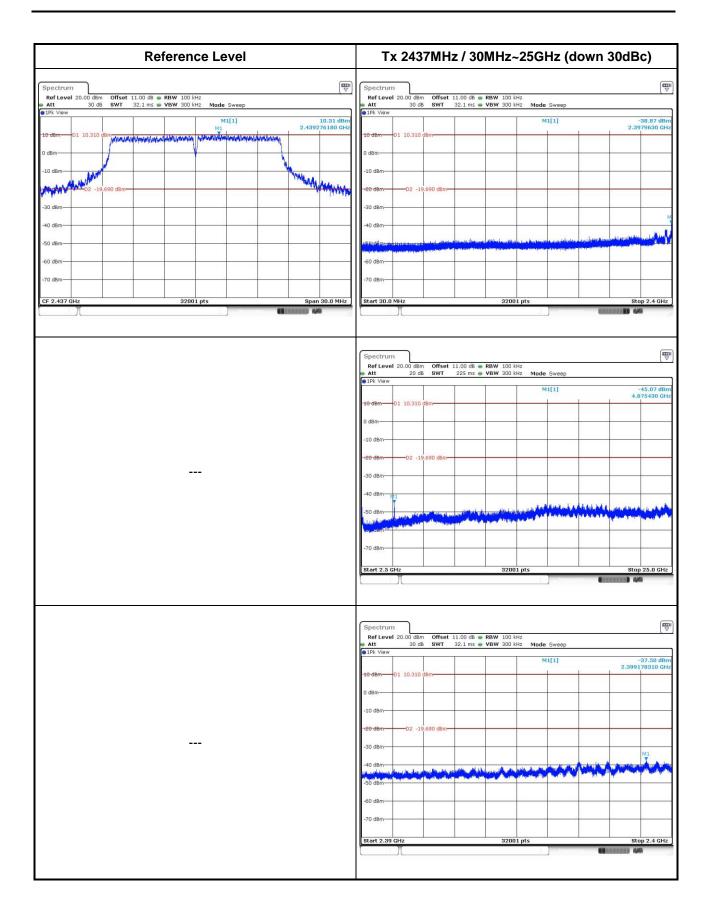
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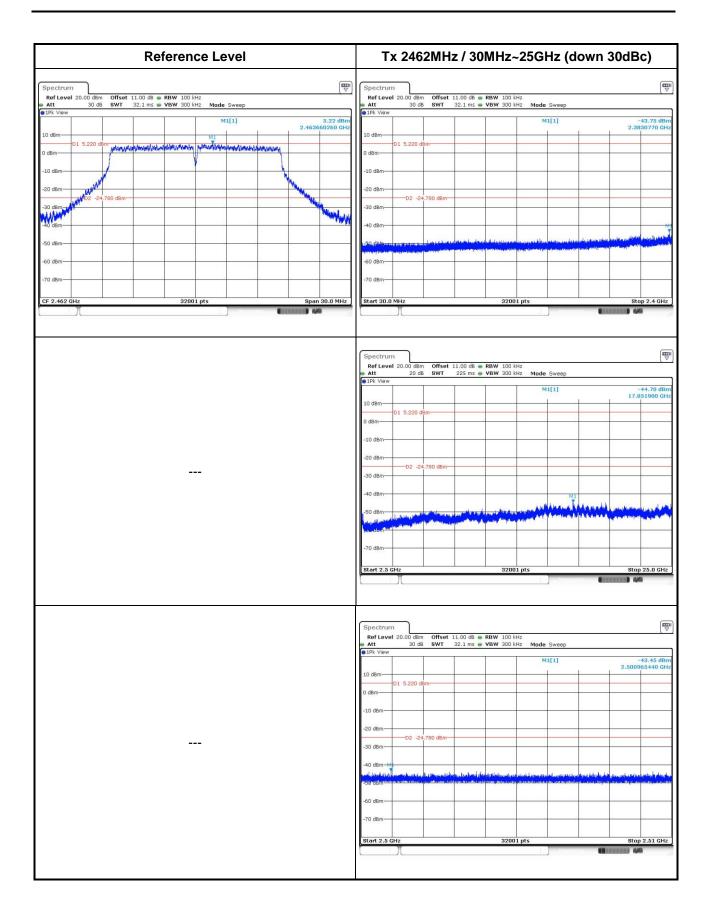
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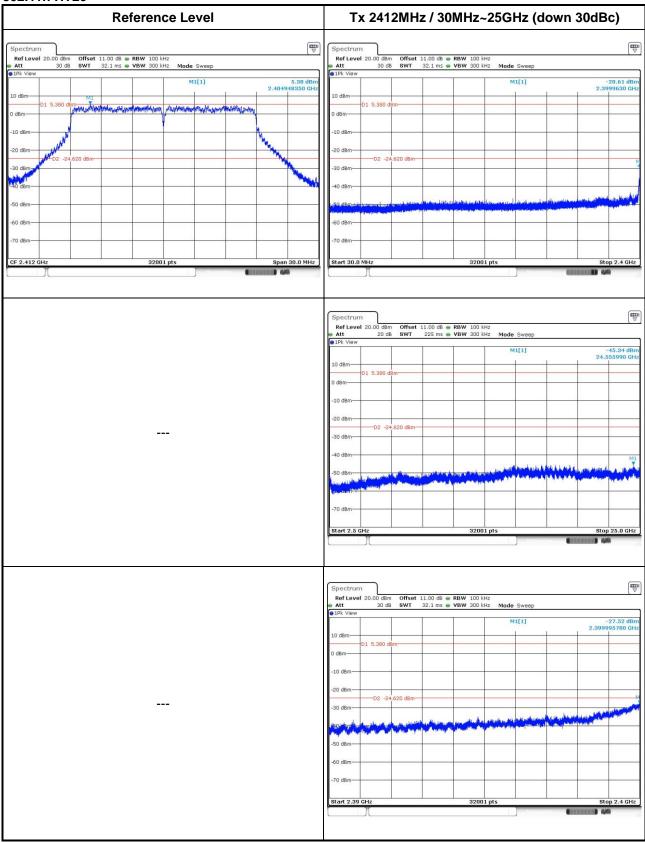




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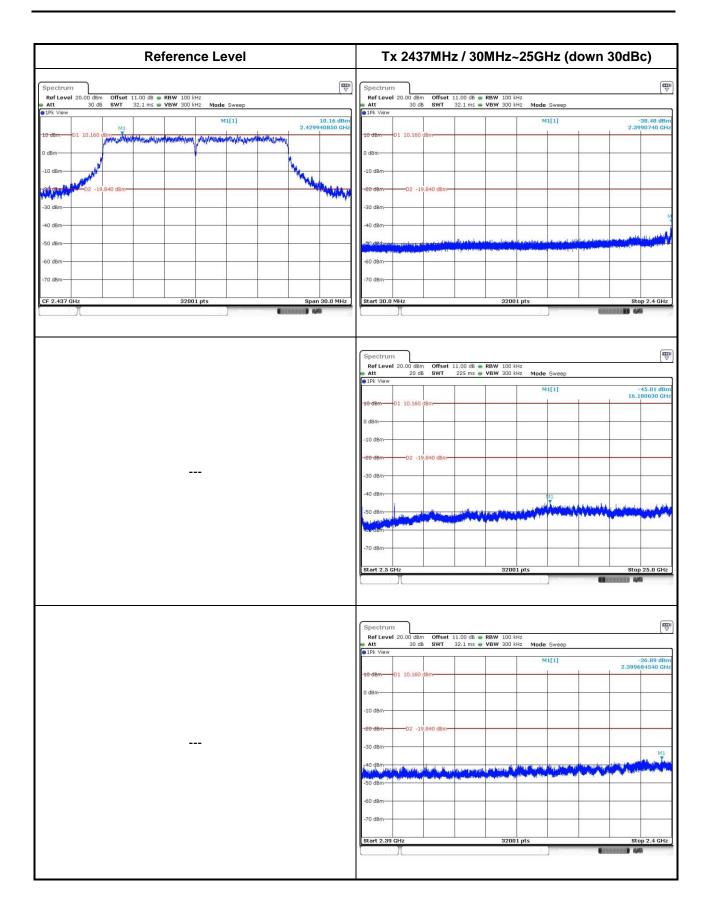


# 802.11n HT20



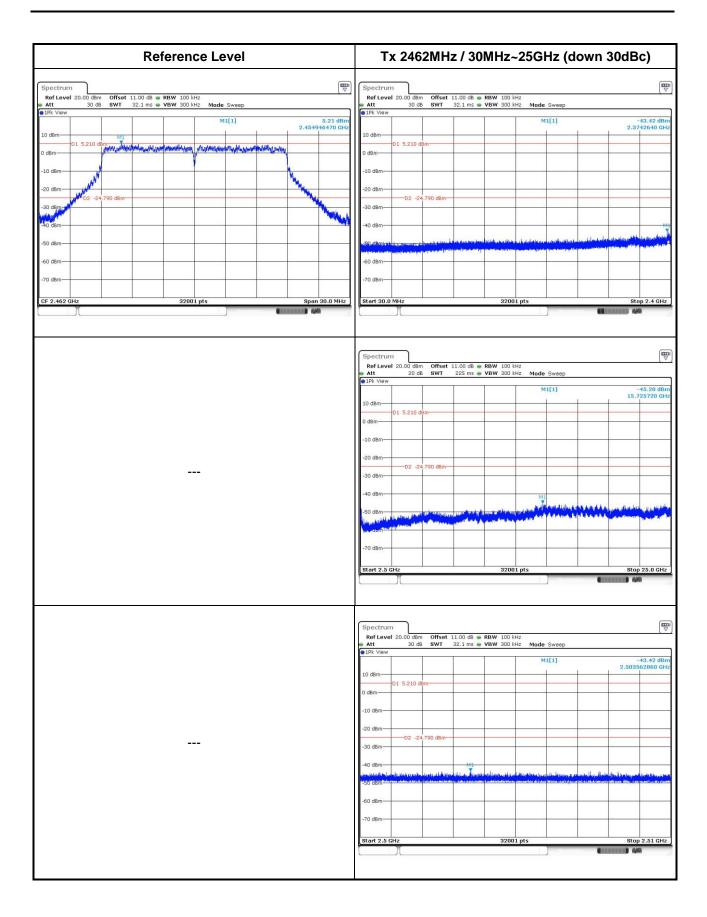
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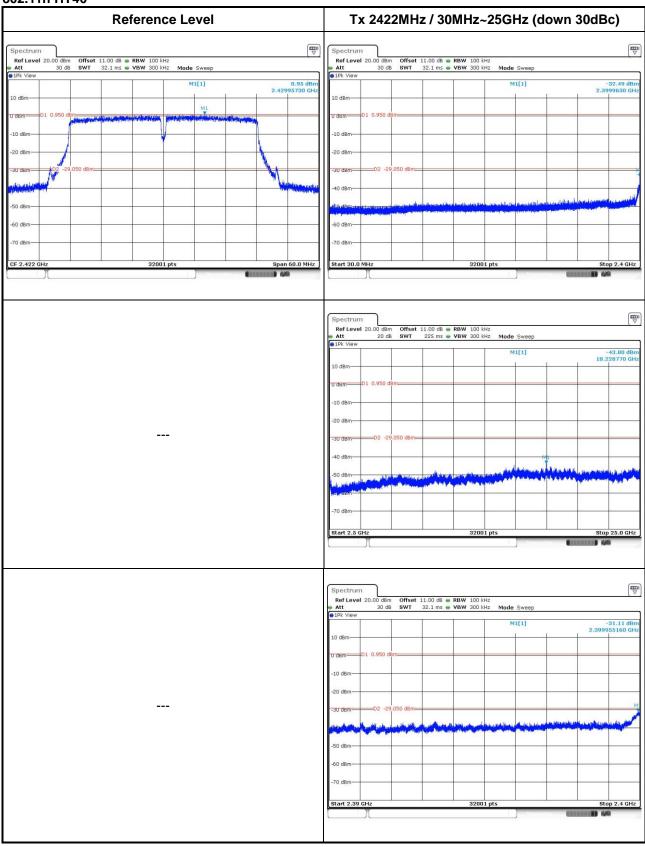




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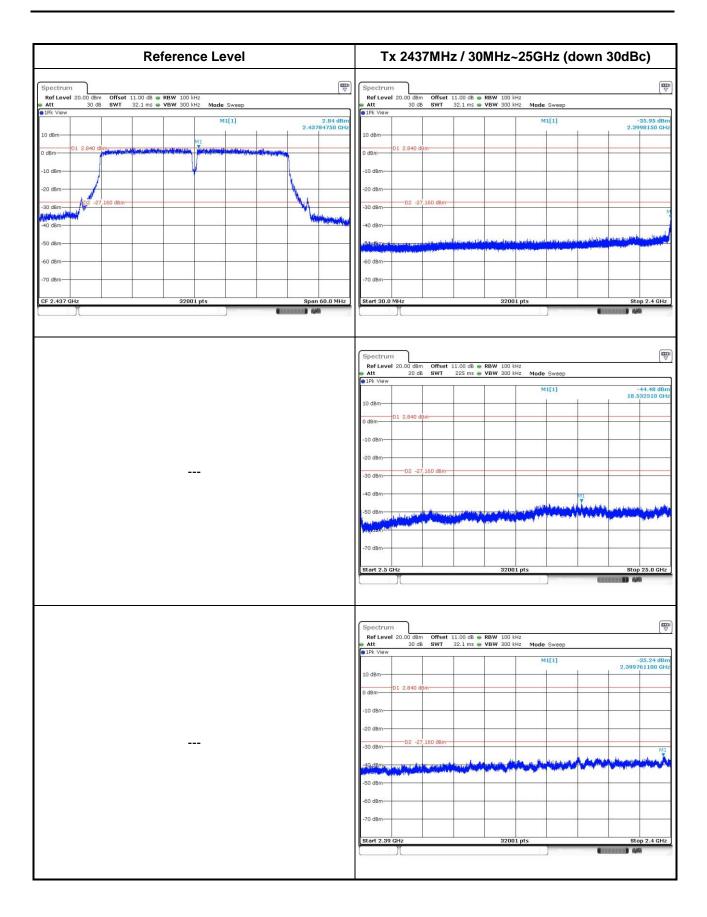


## 802.11n HT40



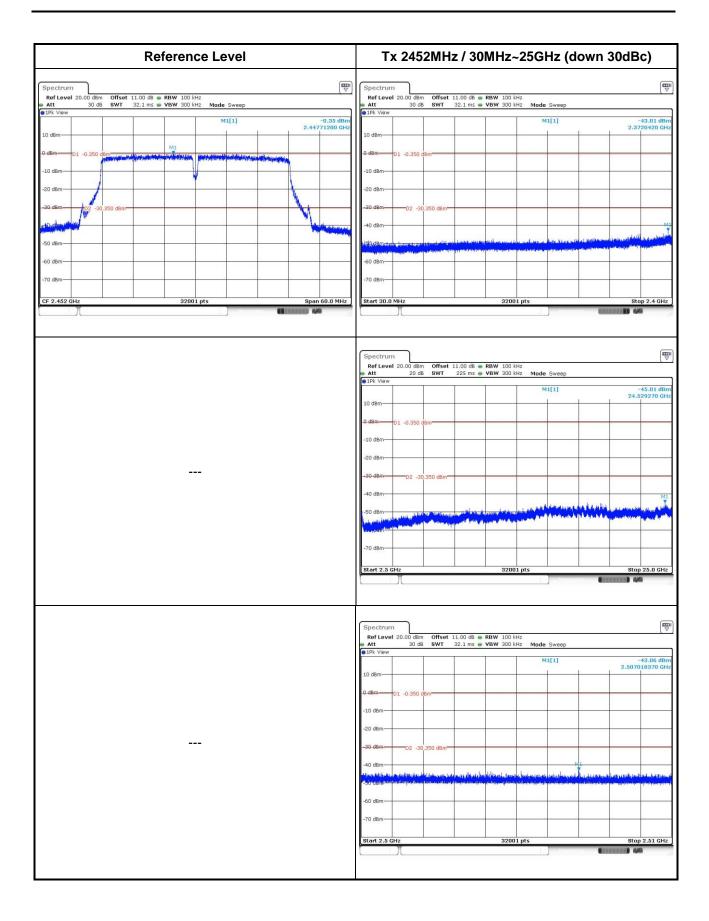
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# 4 Test laboratory information

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 District. Location map can be found on our website <a href="http://www.icertifi.com.tw">http://www.icertifi.com.tw</a>.

#### 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 No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.

#### Kwei Shan Site II

Tel: 886-3-271-8640

No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.

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

Tel: 886-3-271-8666 Fax: 886-3-318-0155

Email: ICC\_Service@icertifi.com.tw

==END==

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