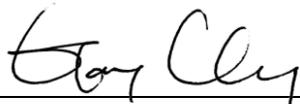


# FCC Test Report

**FCC ID** : PY313200235  
**Equipment** : LTE Gateway  
**Model No.** : LG6100D  
**Brand Name** : NETGEAR  
**Applicant** : NETGEAR, Inc.  
**Address** : 350 East Plumeria Drive, San Jose, California  
95134, USA  
**Standard** : 47 CFR FCC Part 15.247  
**Received Date** : Oct. 11, 2013  
**Tested Date** : Oct. 11 ~ Nov. 01, 2013

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



Testing Laboratory  
2732

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## Release Record

Report No.	Version	Description	Issued Date
FR3O2308AC	Rev. 01	Initial issue	Nov. 11, 2013

## Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.595MHz 41.46 (Margin -4.54dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 4924.00MHz 53.88 (Margin -0.12 dB) - AV	Pass
15.247(b)(3)	Fundamental Emission Output Power	Power [dBm]: 11b: 26.26 11g: 25.56 HT20: 26.04 HT40: 22.91	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

# 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

Model	Type	Operating Frequency (MHz) / Gain (dBi)					Connector
		2400~2483.5	5150~5250	5250~5350	5470~5725	5725~5825	
401-10006-01	PCB Dipole Antenna	2.4	---	---	---	---	U.FL
401-10007-01	PCB Dipole Antenna	---	2.9	---	---	3.0	U.FL

### 1.1.3 EUT Operational Condition

<b>Power Supply Type</b>	12Vdc from AC adapter
--------------------------	-----------------------

### 1.1.4 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter 1	Brand Name: NETGEAR Model Name: P030WF120B Power Rating: I/P: 100-240Vac, 50-60Hz, 1.0A O/P: 12Vdc, 2.5A Power Line: DC 1.8m non-shielded cable w/o core
2	AC adapter 2	Brand Name: NETGEAR Model Name: MU30-5120250-A1 Power Rating: I/P: 100-240Vac, 50-60Hz, 0.8A O/P: 12Vdc, 2.5A Power Line: DC 1.8m non-shielded cable w/o core
3	AC adapter 3	Brand Name: NETGEAR Model Name: SAS030F1 Power Rating: I/P: 100-120Vac, 47-63Hz, 0.9A O/P: 12Vdc, 2.5A Power Line: DC 1.8m non-shielded cable w/o core

### 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

<b>Test tool</b>	CART V4.9
<b>Duty Cycle Of Test Signal (%)</b>	100.00% - IEEE 802.11b 99.63% - IEEE 802.11g 99.65% - IEEE 802.11n (HT20) 99.31% - IEEE 802.11n (HT40)
<b>Duty Factor</b>	0.00 - IEEE 802.11b 0.02 - IEEE 802.11g 0.02 - IEEE 802.11n (HT20) 0.03 - IEEE 802.11n (HT40)

### 1.1.7 Power Setting

Modulation Mode	Test Frequency (MHz)	Power Set
11b	2412	23.5
11b	2437	23
11b	2462	22
11g	2412	18
11g	2437	23
11g	2462	19
HT20	2412	18
HT20	2437	23.5
HT20	2462	19
HT40	2422	17
HT40	2437	20
HT40	2452	17.5

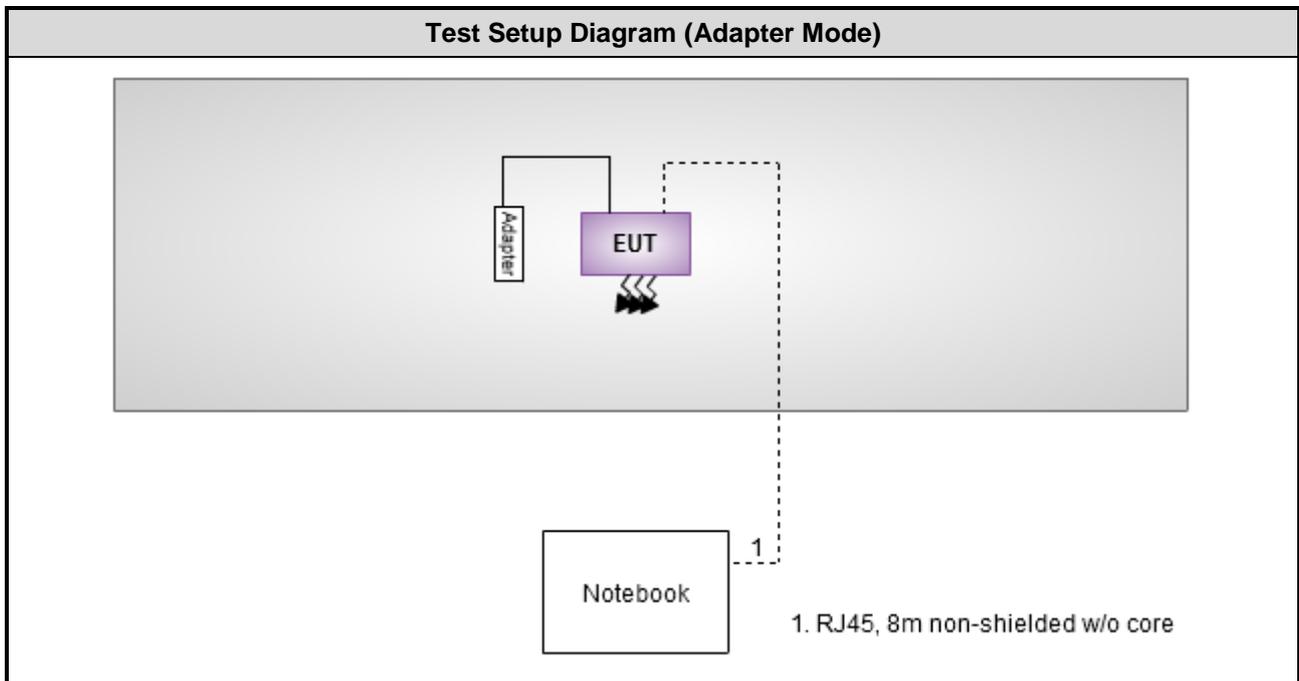
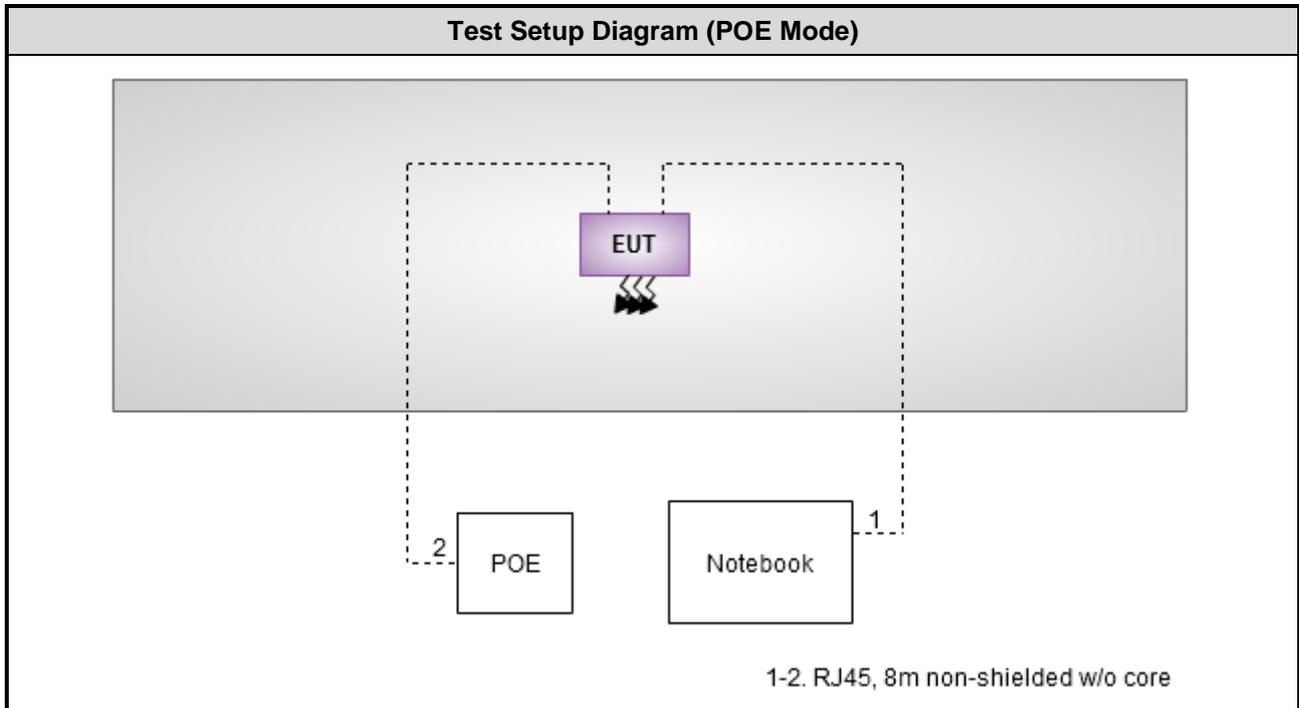
## 1.2 Local Support Equipment List

Support Equipment List						
No.	Equipment	Brand	Model	S/N	FCC ID	Signal cable / Length (m)
1	Notebook	DELL	E6430	---	DoC	RJ45, 8m non-shielded w/o core.
2	POE	PowerDsine	PD-3001G C/AC	---	DoC	RJ45, 8m non-shielded w/o core.

Note:

- 1) No. 2 was supplied by applicant.
- 2) POE is for POE mode only.

### 1.3 Test Setup Chart



## 1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
EMC Receiver	R&S	ESCS 30	100169	Oct. 15, 2013	Oct. 14, 2014
LISN	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-667	Dec. 04, 2012	Dec. 03, 2013
LISN (Support Unit)	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-666	Dec. 04, 2012	Dec. 03, 2013
ISN	TESEQ	ISN T800	34406	Apr. 08, 2013	Apr. 07, 2014
ISN	TESEQ	ISN T200A	30494	Apr. 09, 2013	Apr. 08, 2014
ISN	TESEQ	ISN ST08	22589	Jan. 24, 2013	Jan. 23, 2014
RF Current Probe	FCC	F-33-4	121630	Dec. 04, 2012	Dec. 03, 2013
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Dec. 25, 2012	Dec. 24, 2013
ESH3-Z6 V-Network(+)	R&S	ESH3-Z6	100920	Nov. 21, 2012	Nov. 20, 2013
ESH3-Z6 V-Network(-)	R&S	ESH3-Z6	100951	Jan. 30, 2013	Jan. 29, 2014
Two-Line V-Network	R&S	ENV216	101579	Jan. 07, 2013	Jan. 06, 2014
50 ohm terminal	NA	50	01	Apr. 22, 2013	Apr. 21, 2014
50 ohm terminal	NA	50	02	Apr. 22, 2013	Apr. 21, 2014
50 ohm terminal	NA	50	03	Apr. 22, 2013	Apr. 21, 2014
50 ohm terminal (Support Unit)	NA	50	04	Apr. 22, 2013	Apr. 21, 2014
Note: Calibration Interval 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	FSV 40	101063	Feb. 18, 2013	Feb. 17, 2014
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Nov. 29, 2012	Nov. 28, 2013
Power Meter	Anritsu	ML2495A	1241002	Oct. 24, 2013	Oct. 23, 2014
Power Sensor	Anritsu	MA2411B	1027366	Oct. 24, 2013	Oct. 23, 2014
Signal Generator	R&S	SMB100A	175727	Jan. 14, 2013	Jan. 13, 2014
Note: Calibration Interval of instruments listed above is one year.					

<b>Test Item</b>	Radiated Emission above 1GHz				
<b>Test Site</b>	966 chamber 2 / (03CH02-WS)				
<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Calibration Date</b>	<b>Calibration Until</b>
3m semi-anechoic chamber	CHAMPRO	SAC-03	03CH02-WS	Jan. 02, 2013	Jan. 01, 2014
Spectrum Analyzer	R&S	FSV40	101499	Jan. 28, 2013	Jan. 27, 2014
Receiver	R&S	ESR3	101657	Jan. 30, 2013	Jan. 29, 2014
Bilog Antenna	Schwarzbeck	VULB9168	VULB9168-524	Jan. 11, 2013	Jan. 10, 2014
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120D	BBHA 9120 D 1095	Jan. 29, 2013	Jan. 28, 2014
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Jan. 14, 2013	Jan. 13, 2014
Amplifier	Burgeon	BPA-530	100218	Dec. 14, 2012	Dec. 13, 2013
Amplifier	Agilent	83017A	MY39501309	Dec. 18, 2012	Dec. 17, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16140/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16018/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16015/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable-R03m	Woken	CFD400NL-LW	CFD400NL-003	Dec. 25, 2012	Dec. 24, 2013
RF Cable-R10m	Woken	CFD400NL-LW	CFD400NL-004	Dec. 25, 2012	Dec. 24, 2013
control	EM Electronics	EM1000	060608	N/A	N/A
Note: Calibration Interval of instruments listed above is one year.					

<b>Test Item</b>	Radiated Emission above 1GHz				
<b>Test Site</b>	966 chamber 2 / (03CH02-WS)				
<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Calibration Date</b>	<b>Calibration Until</b>
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 15, 2012	Nov. 14, 2014
Amplifier	MITEQ	AMF-6F-260400	9121372	Apr. 19, 2013	Apr. 18, 2015
Note: Calibration Interval of instruments listed above is two 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 C63.10-2009

FCC KDB 558074 D01 DTS Meas Guidance v03r01

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

Note: The EUT has been tested and complied with FCC part 15B requirement. FCC Part 15B test results are issued to another report.

## 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	$\pm 35.286$ Hz
Conducted power	$\pm 0.536$ dB
Frequency error	$\pm 35.286$ Hz
Temperature	$\pm 0.3$ °C
Conducted emission	$\pm 2.946$ dB
AC conducted emission	$\pm 2.43$ dB
Radiated emission	$\pm 2.49$ dB

## 2 Test Configuration

### 2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	22°C / 61%	Skys Huang
Radiated Emissions	03CH02-WS	23°C / 66% 26°C / 63%	Haru Yang Mark Liao
RF Conducted	TH01-WS	23°C / 62%	Brad Wu

➤ FCC site registration No.: 657002

➤ IC site registration No.: 10807A-2

### 2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data rate (Mbps) / MCS	Test Configuration
Conducted Emissions	11b	2412	6 Mbps	1, 2
Radiated Emissions < 1GHz	11b	2412	6 Mbps	1, 2
Radiated Emissions > 1GHz	11b	2412 / 2437 / 2462	1 Mbps	---
	11g	2412 / 2437 / 2462	6 Mbps	
	HT20	2412 / 2437 / 2462	MCS 0	
	HT40	2422 / 2437 / 2452	MCS 0	
Fundamental Emission Output Power	11b	2412 / 2437 / 2462	1 Mbps	---
6dB bandwidth	11g	2412 / 2437 / 2462	6 Mbps	
Power spectral density	HT20	2412 / 2437 / 2462	MCS 0	
	HT40	2422 / 2437 / 2452	MCS 0	

**NOTE:**

- Three adapters had been pretested and found that adapter 2 (model: MU30-5120250-A1) was the worst case and was chosen for final test.
- EUT has 2 types of power supply, each type is selected to perform radiated emission and conduction emission test as below test configuration.
  - Configuration 1 : POE Mode.
  - Configuration 2 : Adapter Mode.

## 3 Transmitter Test Results

### 3.1 Conducted Emissions

#### 3.1.1 Limit of Conducted Emissions

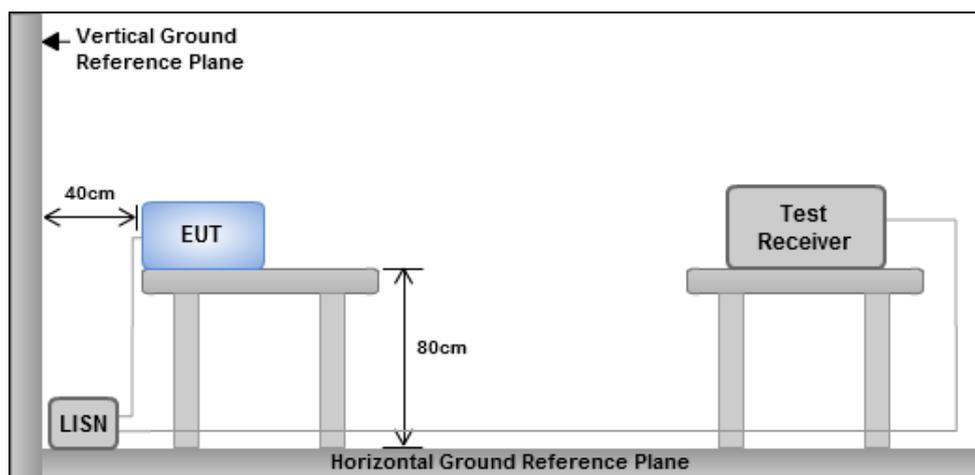
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

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.

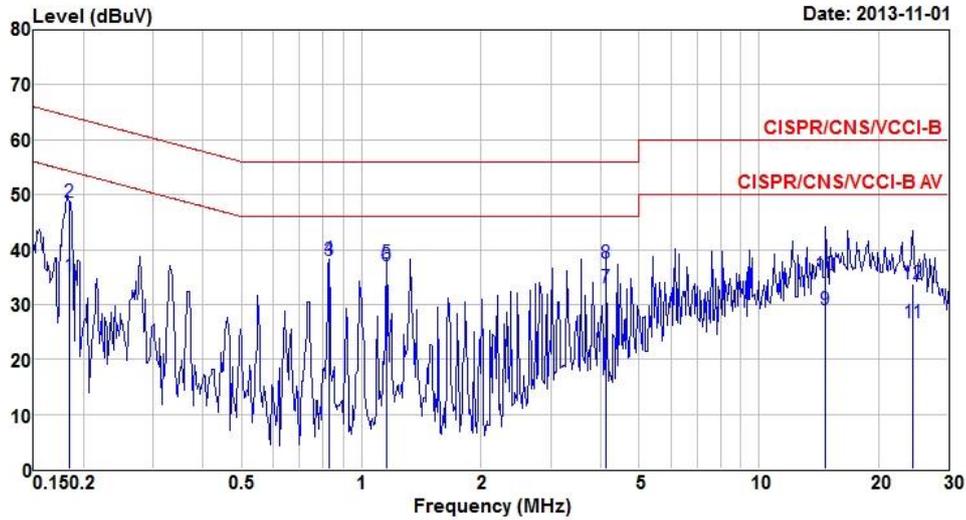
#### 3.1.3 Test Setup



- Note: 1. Support units were connected to second LISN.  
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes



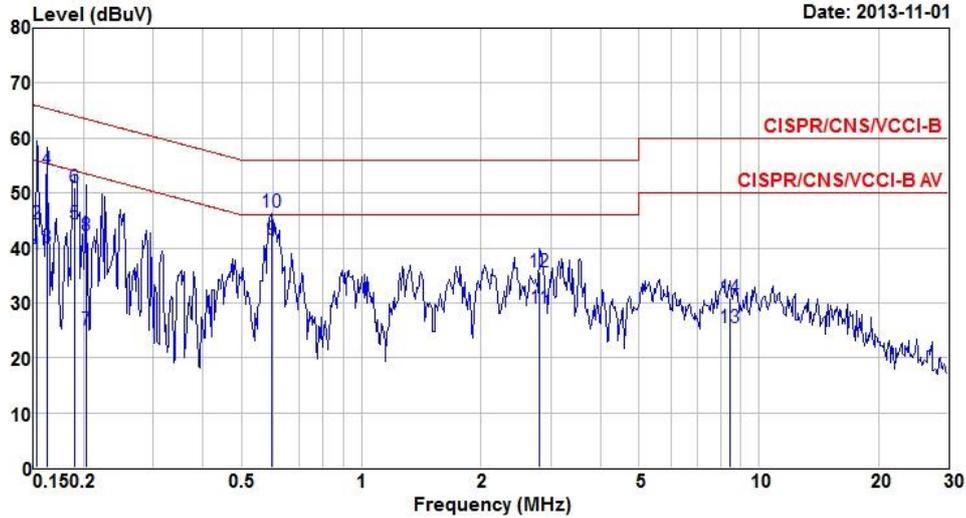
<b>Power Phase</b>	Neutral	<b>Test Freq. (MHz)</b>	2412
<b>Test Mode</b>	1		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.184	35.29	54.30	-19.01	35.12	0.02	0.15	Average
2	0.184	48.55	64.30	-15.75	48.38	0.02	0.15	QP
3	0.830	38.06	46.00	-7.94	38.00	0.02	0.04	Average
4	0.830	38.15	56.00	-17.85	38.09	0.02	0.04	QP
5	1.161	37.59	46.00	-8.41	37.49	0.03	0.07	Average
6	1.161	37.09	56.00	-18.91	36.99	0.03	0.07	QP
7	4.129	33.15	46.00	-12.85	32.86	0.05	0.24	Average
8	4.129	37.56	56.00	-18.44	37.27	0.05	0.24	QP
9	14.750	28.98	50.00	-21.02	28.74	0.11	0.13	Average
10	14.750	35.32	60.00	-24.68	35.08	0.11	0.13	QP
11	24.400	26.59	50.00	-23.41	25.98	0.14	0.47	Average
12	24.400	33.85	60.00	-26.15	33.24	0.14	0.47	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).  
 2: Over Limit (dBuV) = Limit Line (dBuV) – Level (dBuV).

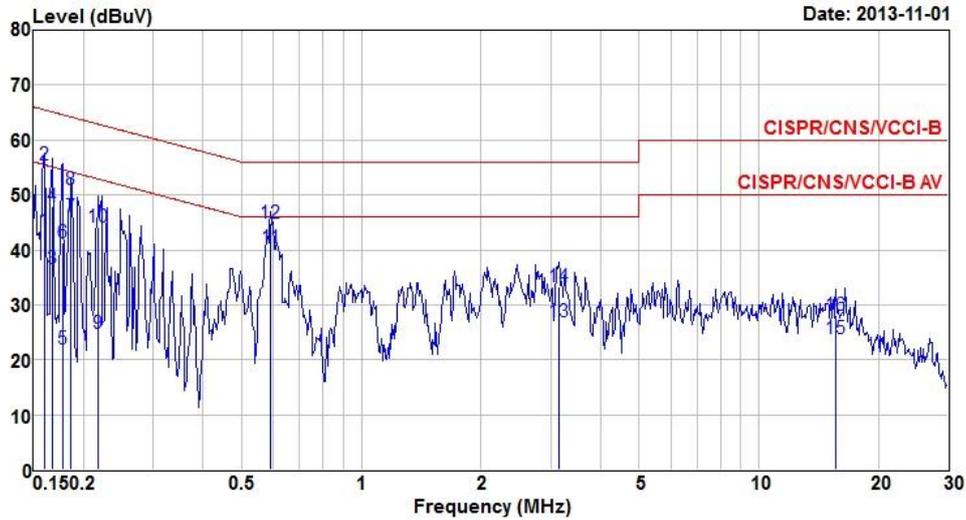
Power Phase	Line	Test Freq. (MHz)	2412
Test Mode	2		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.152	38.61	55.87	-17.26	38.51	0.03	0.07	Average
2	0.152	44.39	65.87	-21.48	44.29	0.03	0.07	QP
3	0.162	40.13	55.38	-15.25	40.01	0.03	0.09	Average
4	0.162	54.21	65.38	-11.17	54.09	0.03	0.09	QP
5	0.190	44.47	54.02	-9.55	44.28	0.03	0.16	Average
6	0.190	50.94	64.02	-13.08	50.75	0.03	0.16	QP
7	0.203	25.01	53.49	-28.48	24.80	0.03	0.18	Average
8	0.203	42.21	63.49	-21.28	42.00	0.03	0.18	QP
9	0.595	41.46	46.00	-4.54	41.38	0.03	0.05	Average
10	0.595	46.52	56.00	-9.48	46.44	0.03	0.05	QP
11	2.809	28.99	46.00	-17.01	28.74	0.05	0.20	Average
12	2.809	35.53	56.00	-20.47	35.28	0.05	0.20	QP
13	8.456	25.49	50.00	-24.51	25.27	0.09	0.13	Average
14	8.456	30.92	60.00	-29.08	30.70	0.09	0.13	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).  
 2: Over Limit (dBuV) = Limit Line (dBuV) – Level (dBuV).

Power Phase	Neutral	Test Freq. (MHz)	2412
Test Mode	2		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.160	43.40	55.47	-12.07	43.29	0.02	0.09	Average
2	0.160	55.37	65.47	-10.10	55.26	0.02	0.09	QP
3	0.168	36.68	55.08	-18.40	36.55	0.02	0.11	Average
4	0.168	48.03	65.08	-17.05	47.90	0.02	0.11	QP
5	0.178	21.84	54.59	-32.75	21.69	0.02	0.13	Average
6	0.178	41.22	64.59	-23.37	41.07	0.02	0.13	QP
7	0.186	46.05	54.20	-8.15	45.88	0.02	0.15	Average
8	0.186	51.09	64.20	-13.11	50.92	0.02	0.15	QP
9	0.219	24.80	52.88	-28.08	24.62	0.02	0.16	Average
10	0.219	44.25	62.88	-18.63	44.07	0.02	0.16	QP
11	0.592	40.43	46.00	-5.57	40.36	0.02	0.05	Average
12	0.592	44.85	56.00	-11.15	44.78	0.02	0.05	QP
13	3.140	27.02	46.00	-18.98	26.77	0.04	0.21	Average
14	3.140	33.23	56.00	-22.77	32.98	0.04	0.21	QP
15	15.635	23.85	50.00	-26.15	23.60	0.11	0.14	Average
16	15.635	28.07	60.00	-31.93	27.82	0.11	0.14	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).  
 2: Over Limit (dBuV) = Limit Line (dBuV) – Level (dBuV).

## 3.2 6dB and Occupied Bandwidth

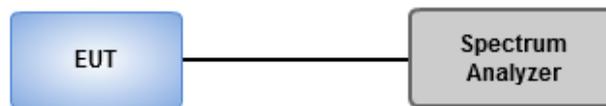
### 3.2.1 Limit of 6dB Bandwidth

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

### 3.2.2 Test Procedures

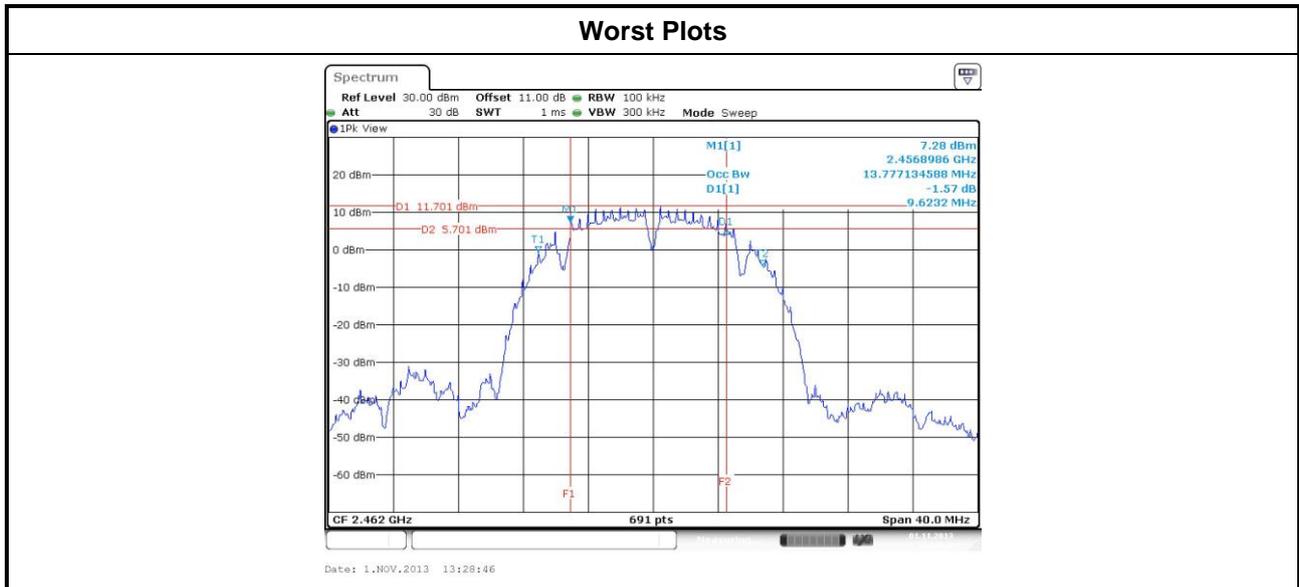
1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points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

### 3.2.3 Test Setup

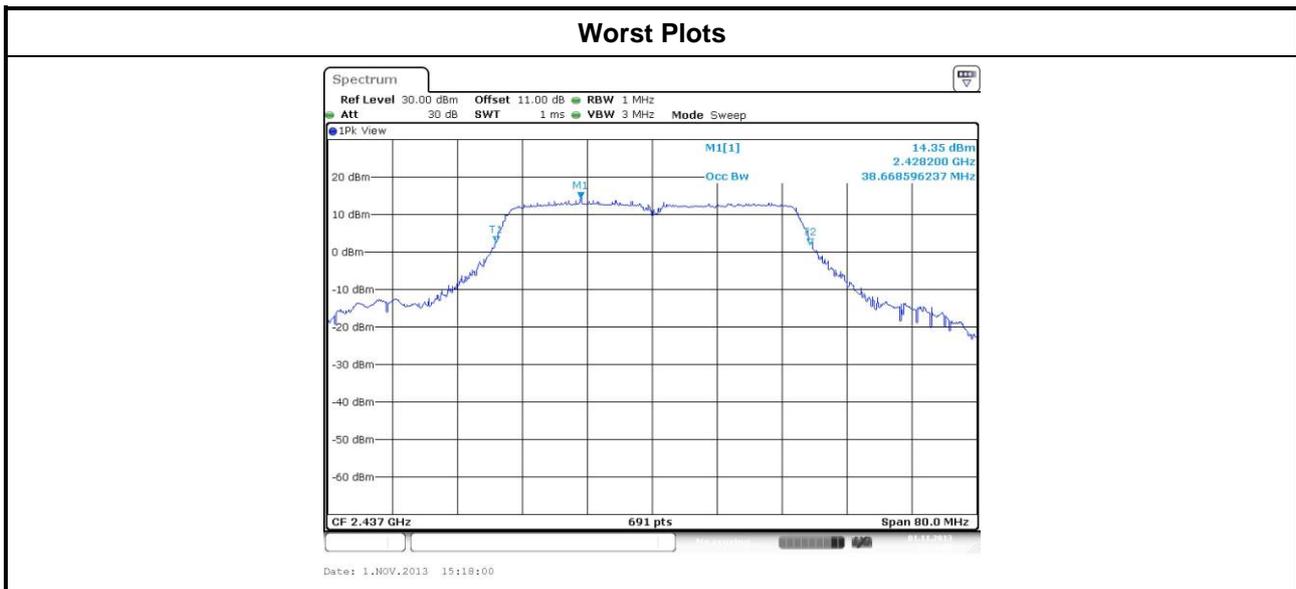


### 3.2.4 Test Result of 6dB and Occupied Bandwidth

Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	6dB Bandwidth (MHz)				Limit (kHz)
			Chain 0	Chain 1	Chain 2	Chain 3	
11b	2	2412	10.09	10.09	---	---	500
11b	2	2437	10.09	10.09	---	---	500
11b	2	2462	9.62	10.09	---	---	500
11g	2	2412	16.41	16.46	---	---	500
11g	2	2437	16.41	16.41	---	---	500
11g	2	2462	16.41	16.41	---	---	500
HT20	2	2412	17.62	17.57	---	---	500
HT20	2	2437	17.62	17.62	---	---	500
HT20	2	2462	17.62	17.68	---	---	500
HT40	2	2422	36.06	36.29	---	---	500
HT40	2	2437	36.41	36.41	---	---	500
HT40	2	2452	36.06	36.06	---	---	500



Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	99% Occupied Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3
11b	2	2412	13.89	13.89	---	---
11b	2	2437	13.89	14.01	---	---
11b	2	2462	13.78	14.01	---	---
11g	2	2412	17.54	17.02	---	---
11g	2	2437	18.81	20.55	---	---
11g	2	2462	17.48	17.19	---	---
HT20	2	2412	18.58	18.35	---	---
HT20	2	2437	20.03	22.23	---	---
HT20	2	2462	18.47	18.47	---	---
HT40	2	2422	38.55	37.97	---	---
HT40	2	2437	38.67	38.44	---	---
HT40	2	2452	38.67	38.09	---	---



## 3.3 RF Output Power

### 3.3.1 Limit of RF Output Power

Conducted power shall not exceed 1Watt.

- Antenna gain  $\leq$  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.
  - Power 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.
- Maximum Conducted Output Power
  - Spectrum analyzer**
    1. Set RBW = 1MHz, VBW = 3MHz, Detector = RMS.
    2. Set the sweep time to:  $\geq 10 \times$  (number of measurement points in sweep)  $\times$  (maximum data rate per stream).
    3. Perform the measurement over a single sweep.
    4. Use the spectrum analyzer's band power measurement function with band limits set equal to the EBW(26dBc) band edges.
  - Power 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



### 3.3.4 Test Result of Maximum Output Power

Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Conducted (average) output power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3			
11b	2	2412	22.94	23.54	---	---	422.732	26.26	30
11b	2	2437	22.85	22.52	---	---	371.401	25.70	30
11b	2	2462	21.79	21.42	---	---	289.684	24.62	30
11g	2	2412	18.27	18.17	---	---	132.757	21.23	30
11g	2	2437	22.65	22.44	---	---	359.465	25.56	30
11g	2	2462	19.13	19.16	---	---	164.260	22.16	30
HT20	2	2412	18.19	18.16	---	---	131.381	21.19	30
HT20	2	2437	23.39	22.64	---	---	401.927	26.04	30
HT20	2	2462	19.21	19.15	---	---	165.592	22.19	30
HT40	2	2422	16.44	16.51	---	---	88.827	19.49	30
HT40	2	2437	19.65	20.13	---	---	195.296	22.91	30
HT40	2	2452	17.21	17.53	---	---	109.226	20.38	30

## 3.4 Power Spectral Density

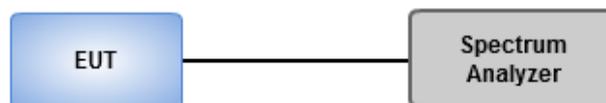
### 3.4.1 Limit of Power Spectral Density

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 = 30kHz, VBW = 100kHz.
  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:  $\geq 10 \times (\text{number of measurement points in sweep}) \times (\text{maximum data rate per stream})$ .
  4. Perform the measurement over a single sweep.
  5. Use the peak marker function to determine the maximum amplitude level.\

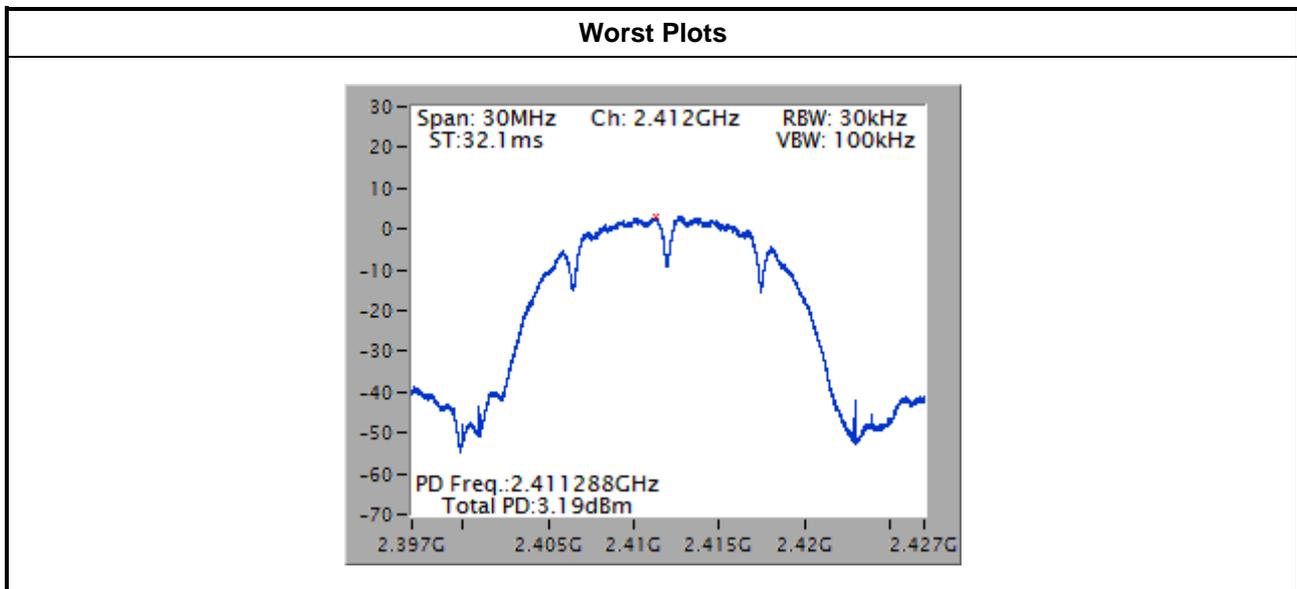
### 3.4.3 Test Setup



### 3.4.4 Test Result of Power Spectral Density

Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Total Power Spectral Density (dBm/30kHz)	Limit (dBm/3kHz)
11b	2	2412	3.19	8
11b	2	2437	2.58	8
11b	2	2462	1.35	8
11g	2	2412	-3.74	8
11g	2	2437	0.85	8
11g	2	2462	-2.35	8
HT20	2	2412	-4.37	8
HT20	2	2437	1.03	8
HT20	2	2462	-2.58	8
HT40	2	2422	-8.50	8
HT40	2	2437	-3.13	8
HT40	2	2452	-6.53	8

Note: Test result is bin-by-bin summing measured value of each TX port.



## 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

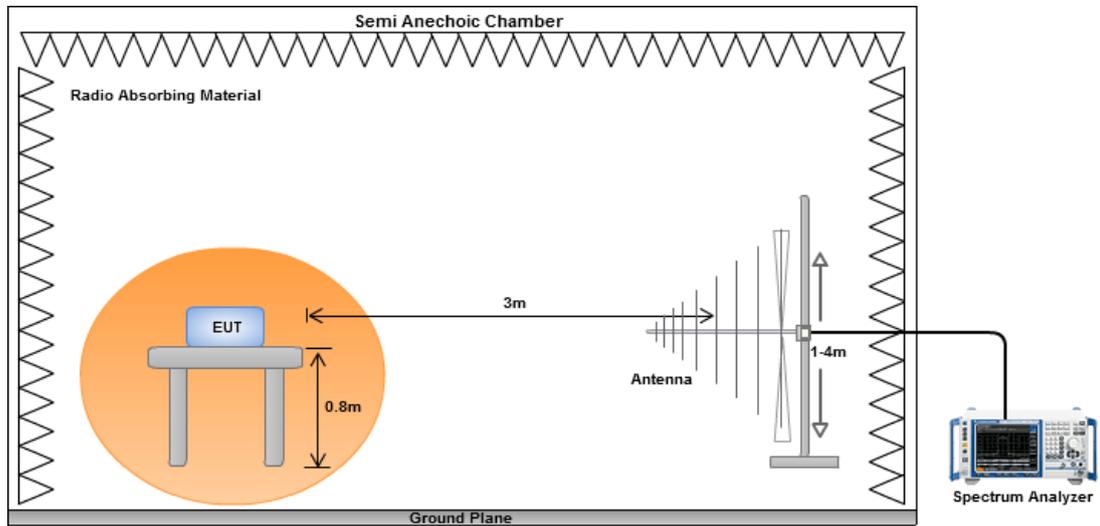
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at a height of 0.8 m test table above the ground plane.
2. 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:

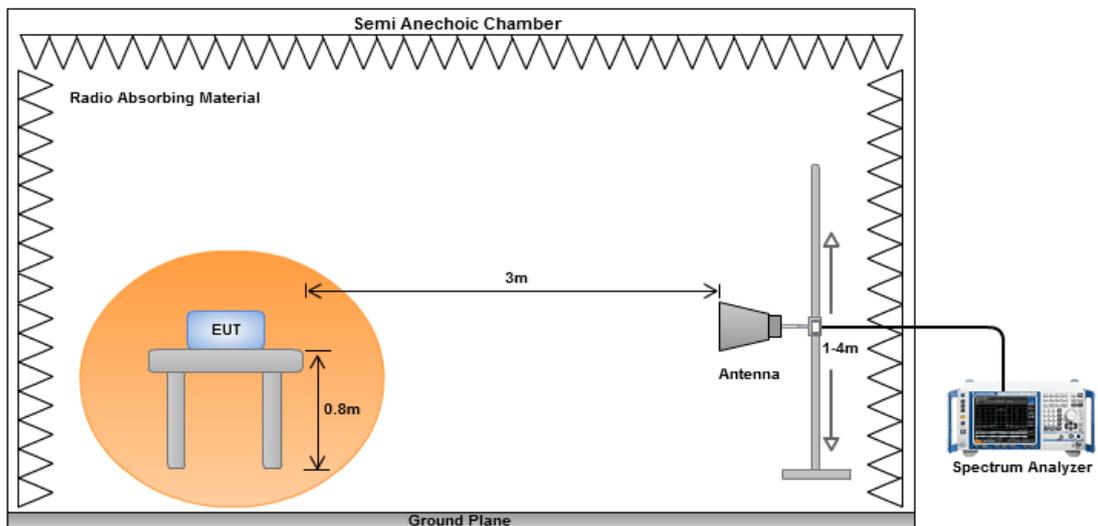
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

### 3.5.3 Test Setup

#### Radiated Emissions below 1 GHz

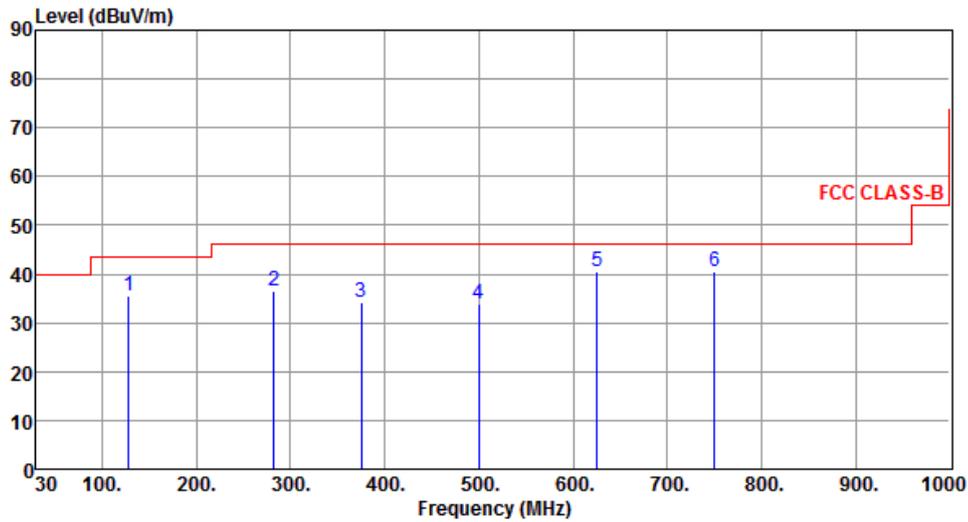


#### Radiated Emissions above 1 GHz



### 3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

<b>Modulation</b>	11b	<b>Test Freq. (MHz)</b>	2412
<b>Polarization</b>	Horizontal	<b>Test Configuration</b>	1



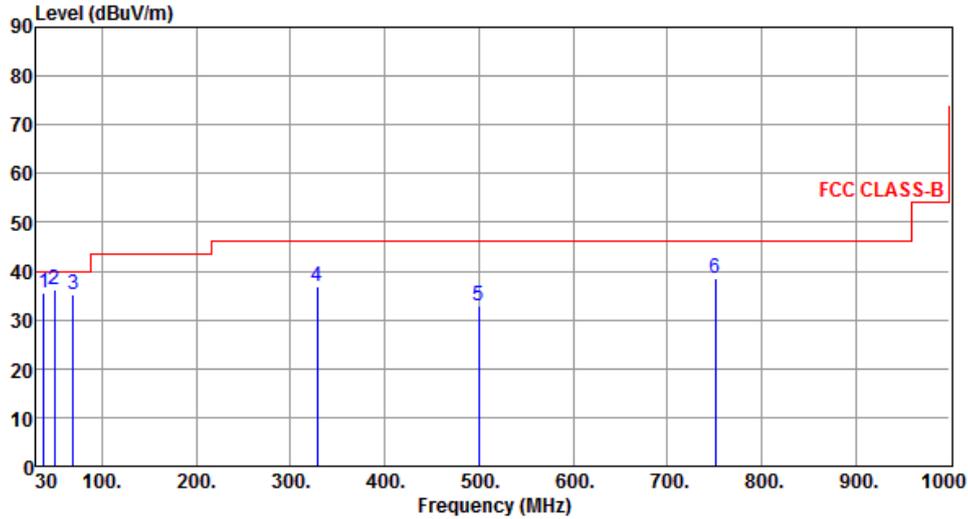
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	128.47	35.44	43.50	-8.06	53.39	-17.95	Peak	---	---
2	282.36	36.37	46.00	-9.63	52.36	-15.99	Peak	---	---
3	375.49	34.31	46.00	-11.69	48.01	-13.70	Peak	---	---
4	500.12	33.94	46.00	-12.06	44.89	-10.95	Peak	---	---
5	625.84	40.56	46.00	-5.44	49.14	-8.58	Peak	---	---
6	750.62	40.55	46.00	-5.45	47.16	-6.61	Peak	---	---

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).

<b>Modulation</b>	11b	<b>Test Freq. (MHz)</b>	2412
<b>Polarization</b>	Vertical	<b>Test Configuration</b>	1



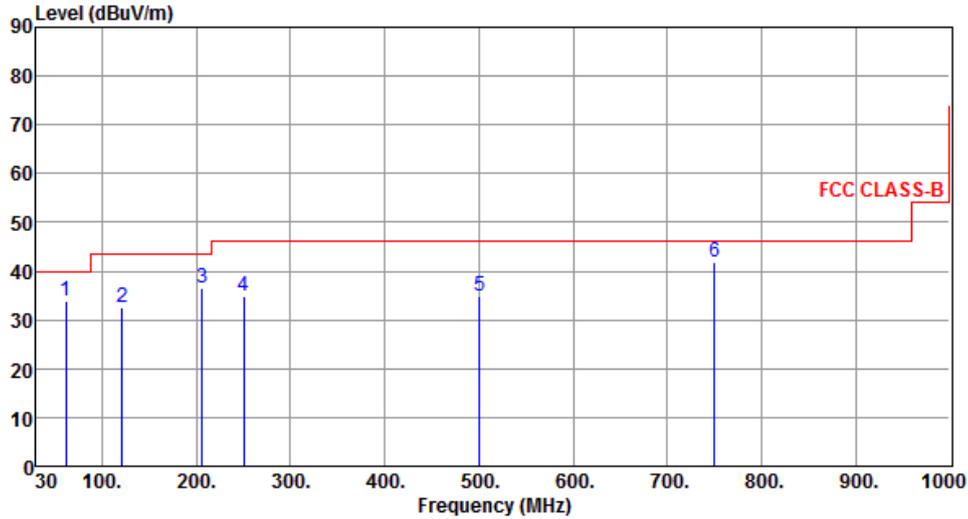
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	38.13	35.64	40.00	-4.36	52.17	-16.53	QP	---	---
2	49.28	36.13	40.00	-3.87	52.09	-15.96	QP	---	---
3	68.90	35.22	40.00	-4.78	53.68	-18.46	QP	---	---
4	328.43	36.74	46.00	-9.26	51.64	-14.90	Peak	---	---
5	500.16	32.85	46.00	-13.15	43.80	-10.95	Peak	---	---
6	750.85	38.47	46.00	-7.53	45.08	-6.61	Peak	---	---

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).

<b>Modulation</b>	11b	<b>Test Freq. (MHz)</b>	2412
<b>Polarization</b>	Horizontal	<b>Test Configuration</b>	2



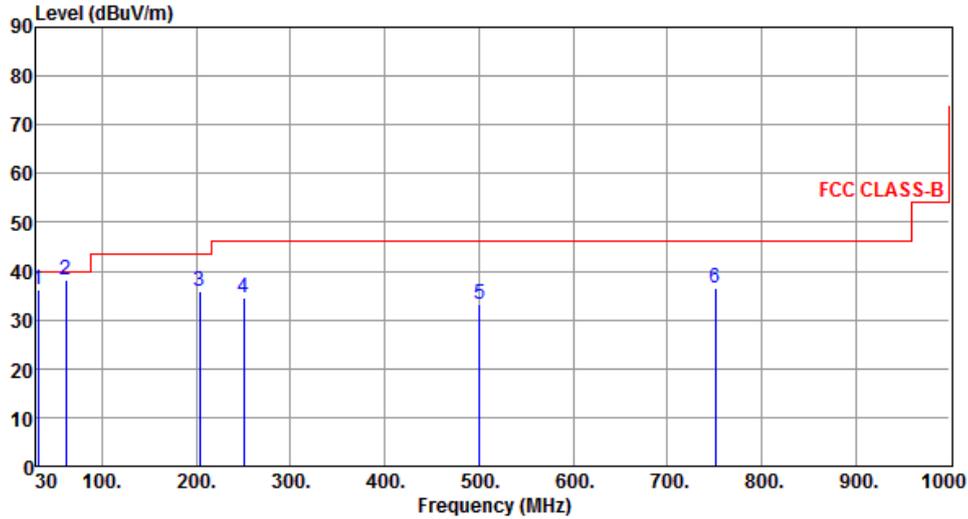
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	61.58	33.92	40.00	-6.08	50.93	-17.01	Peak	---	---
2	121.23	32.44	43.50	-11.06	51.05	-18.61	Peak	---	---
3	206.48	36.51	43.50	-6.99	55.46	-18.95	Peak	---	---
4	250.36	35.02	46.00	-10.98	52.36	-17.34	Peak	---	---
5	500.47	34.93	46.00	-11.07	45.87	-10.94	Peak	---	---
6	750.15	41.99	46.00	-4.01	48.61	-6.62	Peak	---	---

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).

<b>Modulation</b>	11b	<b>Test Freq. (MHz)</b>	2412
<b>Polarization</b>	Vertical	<b>Test Configuration</b>	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	32.15	36.35	40.00	-3.65	53.27	-16.92	QP	---	---
2	61.59	38.11	40.00	-1.89	55.12	-17.01	QP	---	---
3	203.47	35.94	43.50	-7.56	54.99	-19.05	Peak	---	---
4	250.22	34.38	46.00	-11.62	51.72	-17.34	Peak	---	---
5	500.59	33.25	46.00	-12.75	44.19	-10.94	Peak	---	---
6	750.87	36.53	46.00	-9.47	43.14	-6.61	Peak	---	---

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

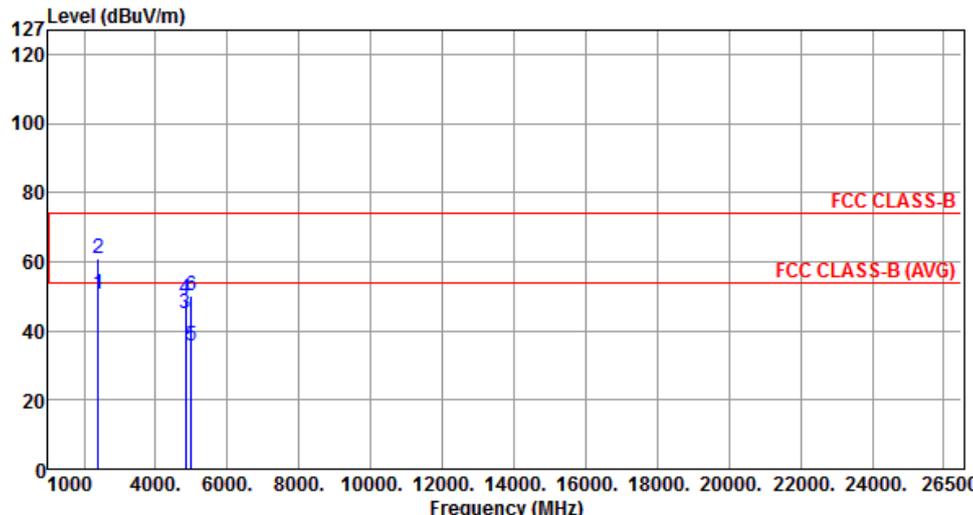
\*Factor includes antenna factor , cable loss and amplifier gain

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

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

<b>Modulation</b>	11b	<b>Test Freq. (MHz)</b>	2412
<b>Polarization</b>	Horizontal		

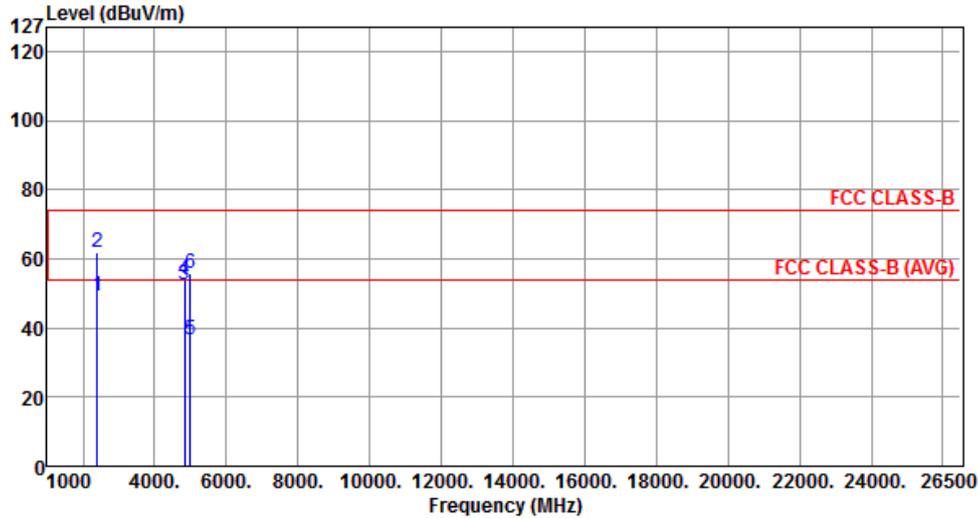
  



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	50.79	54.00	-3.21	53.69	-2.90	Average	---	---
2	2390.00	60.79	74.00	-13.21	63.69	-2.90	Peak	---	---
3	4824.00	44.98	54.00	-9.02	40.29	4.69	Average	---	---
4	4824.00	49.26	74.00	-24.74	44.57	4.69	Peak	---	---
5	5000.00	35.39	54.00	-18.61	30.41	4.98	Average	---	---
6	5000.00	50.33	74.00	-23.67	45.35	4.98	Peak	---	---

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).

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



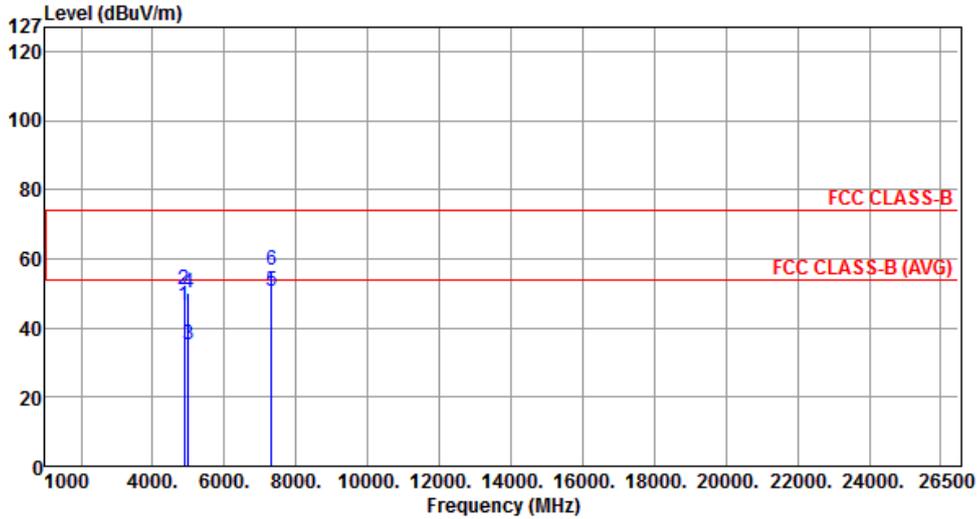
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	49.21	54.00	-4.79	52.11	-2.90	Average	---	---
2	2390.00	61.84	74.00	-12.16	64.74	-2.90	Peak	---	---
3	4824.00	52.62	54.00	-1.38	47.93	4.69	Average	---	---
4	4824.00	53.84	74.00	-20.16	49.15	4.69	Peak	---	---
5	5000.00	36.49	54.00	-17.51	31.51	4.98	Average	---	---
6	5000.00	55.87	74.00	-18.13	50.89	4.98	Peak	---	---

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).

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



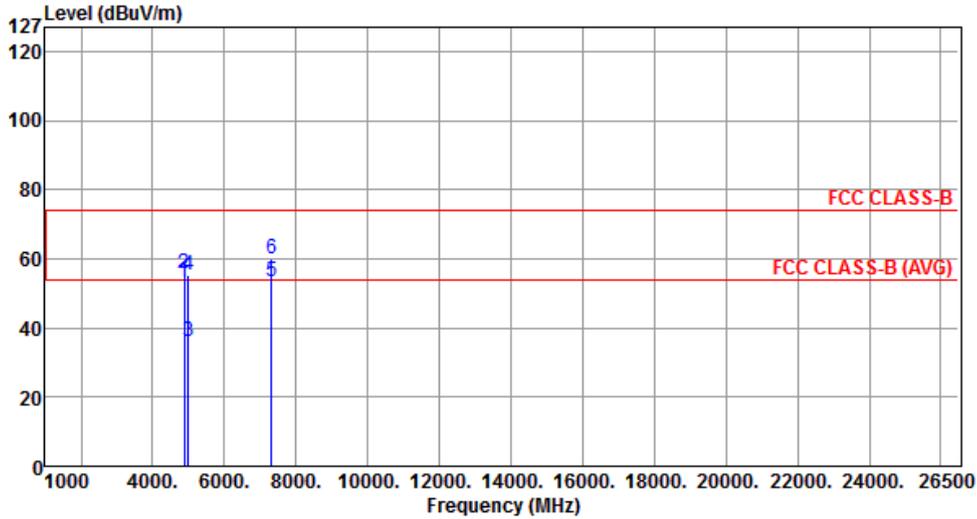
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	4874.00	46.28	54.00	-7.72	41.51	4.77	Average	---	---
2	4874.00	51.03	74.00	-22.97	46.26	4.77	Peak	---	---
3	5000.00	35.20	54.00	-18.80	30.22	4.98	Average	---	---
4	5000.00	50.06	74.00	-23.94	45.08	4.98	Peak	---	---
5	7311.00	50.64	54.00	-3.36	41.07	9.57	Average	---	---
6	7311.00	56.49	74.00	-17.51	46.92	9.57	Peak	---	---

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).

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



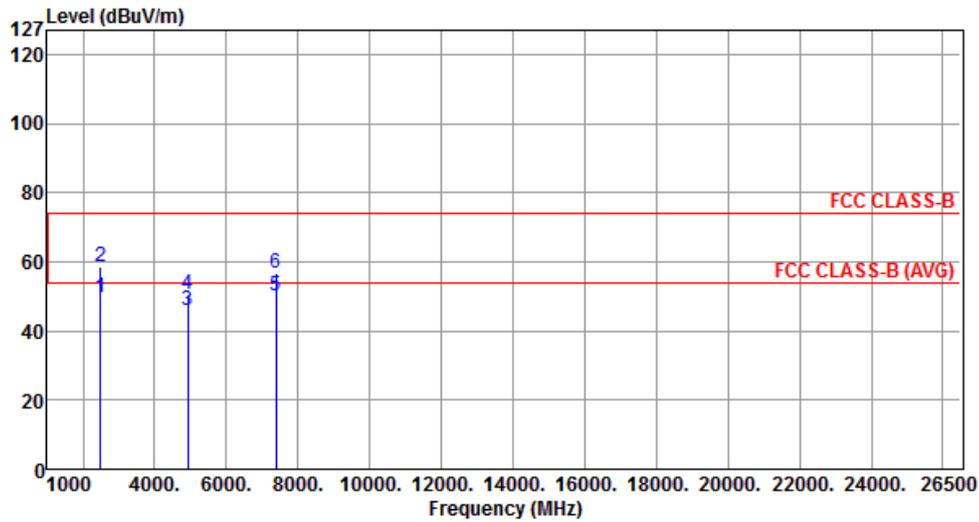
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	4874.00	53.57	54.00	-0.43	48.80	4.77	Average	---	---
2	4874.00	55.89	74.00	-18.11	51.12	4.77	Peak	---	---
3	5000.00	36.27	54.00	-17.73	31.29	4.98	Average	---	---
4	5000.00	55.31	74.00	-18.69	50.33	4.98	Peak	---	---
5	7311.00	53.51	54.00	-0.49	43.94	9.57	Average	---	---
6	7311.00	59.95	74.00	-14.05	50.38	9.57	Peak	---	---

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).

<b>Modulation</b>	11b	<b>Test Freq. (MHz)</b>	2462
<b>Polarization</b>	Horizontal		



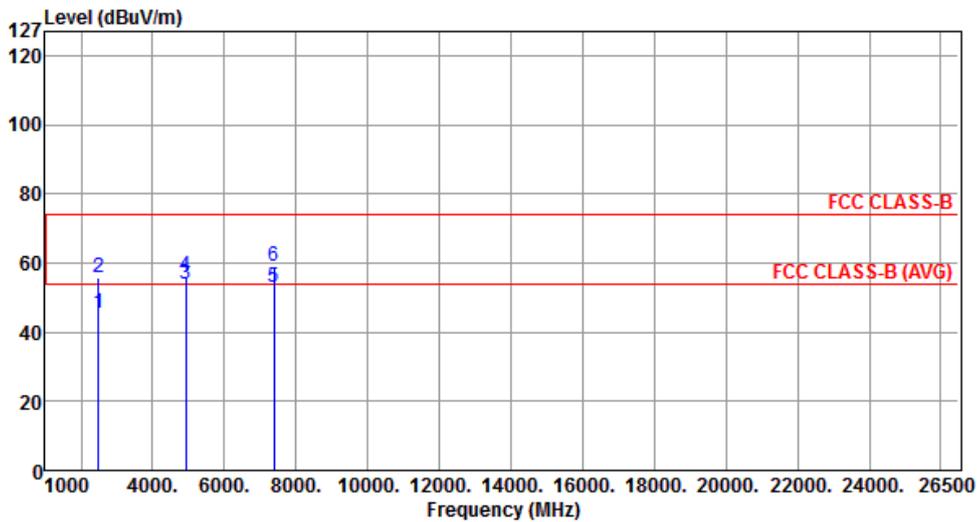
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	49.83	54.00	-4.17	52.25	-2.42	Average	---	---
2	2483.50	58.38	74.00	-15.62	60.80	-2.42	Peak	---	---
3	4924.00	46.09	54.00	-7.91	41.23	4.86	Average	---	---
4	4924.00	50.70	74.00	-23.30	45.84	4.86	Peak	---	---
5	7386.00	50.35	54.00	-3.65	40.67	9.68	Average	---	---
6	7386.00	56.92	74.00	-17.08	47.24	9.68	Peak	---	---

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).

<b>Modulation</b>	11b	<b>Test Freq. (MHz)</b>	2462
<b>Polarization</b>	Vertical		



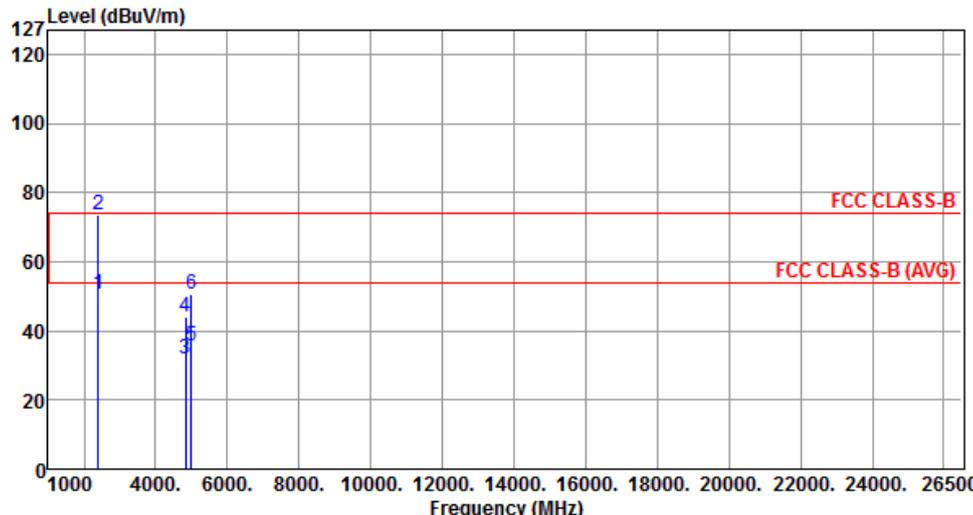
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	45.47	54.00	-8.53	47.89	-2.42	Average	---	---
2	2483.50	55.68	74.00	-18.32	58.10	-2.42	Peak	---	---
3	4924.00	53.88	54.00	-0.12	49.02	4.86	Average	---	---
4	4924.00	56.00	74.00	-18.00	51.14	4.86	Peak	---	---
5	7386.00	53.14	54.00	-0.86	43.46	9.68	Average	---	---
6	7386.00	58.88	74.00	-15.12	49.20	9.68	Peak	---	---

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

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

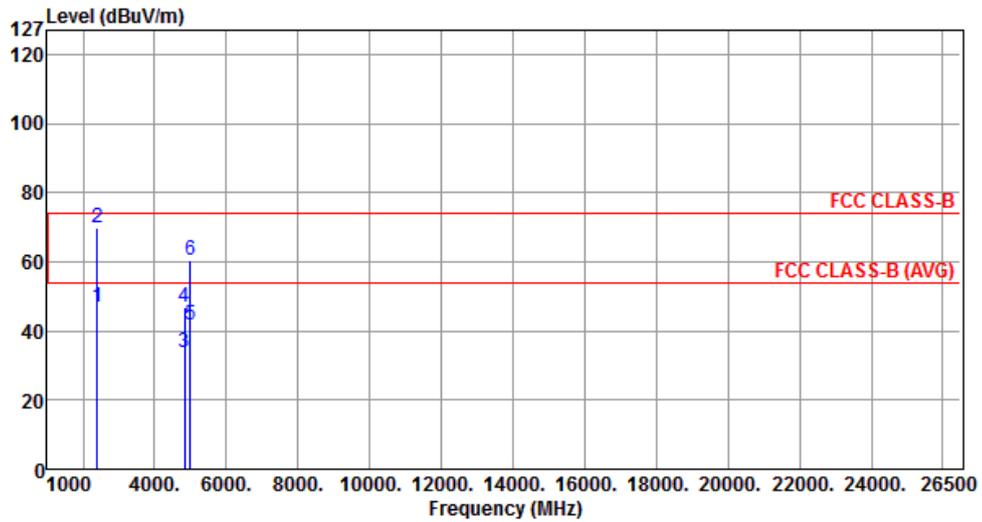
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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

Modulation	11g	Test Freq. (MHz)	2412						
Polarization	Horizontal								
									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2389.97	50.61	54.00	-3.39	53.51	-2.90	Average	---	---
2	2389.97	73.66	74.00	-0.34	76.56	-2.90	Peak	---	---
3	4824.00	31.79	54.00	-22.21	27.10	4.69	Average	---	---
4	4824.00	44.09	74.00	-29.91	39.40	4.69	Peak	---	---
5	5000.00	35.66	54.00	-18.34	30.68	4.98	Average	---	---
6	5000.00	50.58	74.00	-23.42	45.60	4.98	Peak	---	---

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).

<b>Modulation</b>	11g	<b>Test Freq. (MHz)</b>	2412
<b>Polarization</b>	Vertical		



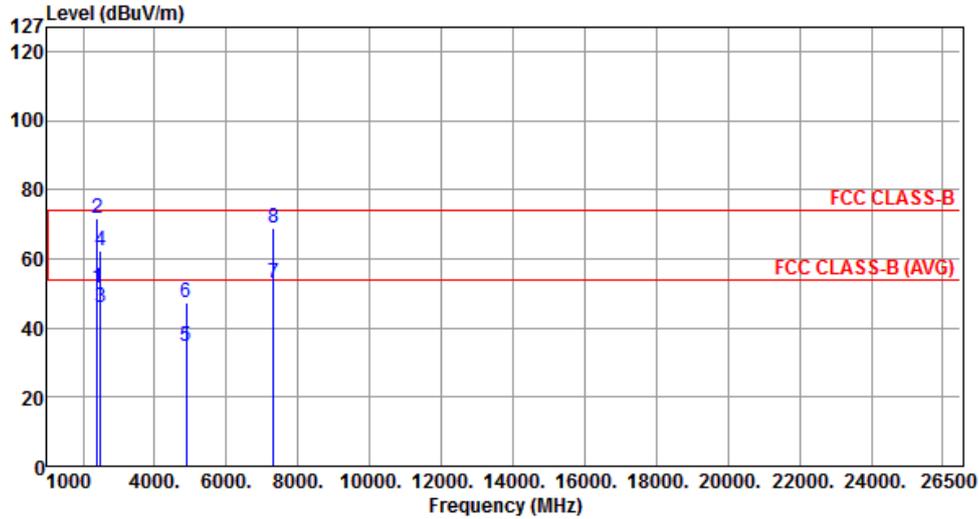
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	46.83	54.00	-7.17	49.73	-2.90	Average	---	---
2	2390.00	70.04	74.00	-3.96	72.94	-2.90	Peak	---	---
3	4824.00	33.59	54.00	-20.41	28.90	4.69	Average	---	---
4	4824.00	46.69	74.00	-27.31	42.00	4.69	Peak	---	---
5	5000.00	41.61	54.00	-12.39	36.63	4.98	Average	---	---
6	5000.00	60.49	74.00	-13.51	55.51	4.98	Peak	---	---

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).

<b>Modulation</b>	11g	<b>Test Freq. (MHz)</b>	2437
<b>Polarization</b>	Horizontal		



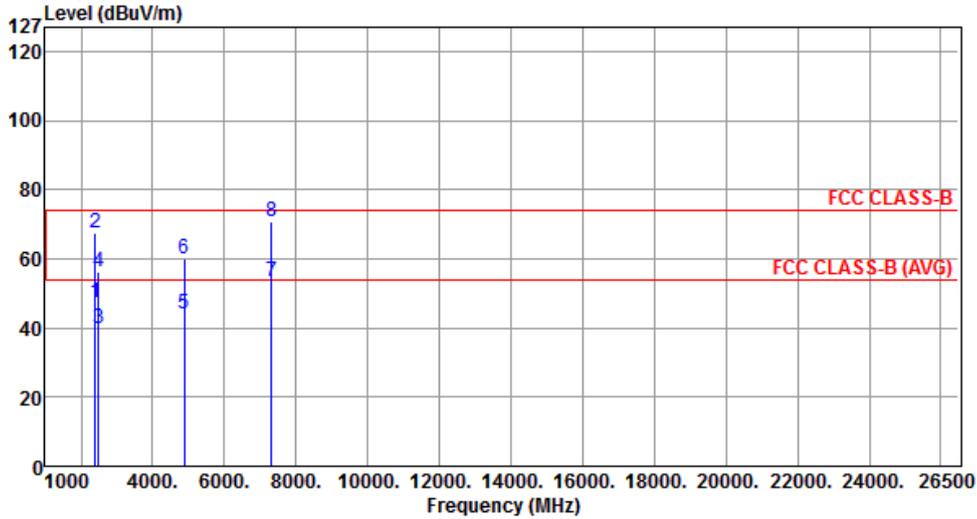
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2389.99	51.54	54.00	-2.46	54.44	-2.90	Average	---	---
2	2389.99	71.66	74.00	-2.34	74.56	-2.90	Peak	---	---
3	2484.04	46.00	54.00	-8.00	48.42	-2.42	Average	---	---
4	2484.04	62.29	74.00	-11.71	64.71	-2.42	Peak	---	---
5	4874.00	34.90	54.00	-19.10	30.13	4.77	Average	---	---
6	4874.00	47.15	74.00	-26.85	42.38	4.77	Peak	---	---
7	7311.00	53.15	54.00	-0.85	43.58	9.57	Average	---	---
8	7311.00	69.03	74.00	-4.97	59.46	9.57	Peak	---	---

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).

<b>Modulation</b>	11g	<b>Test Freq. (MHz)</b>	2437
<b>Polarization</b>	Vertical		



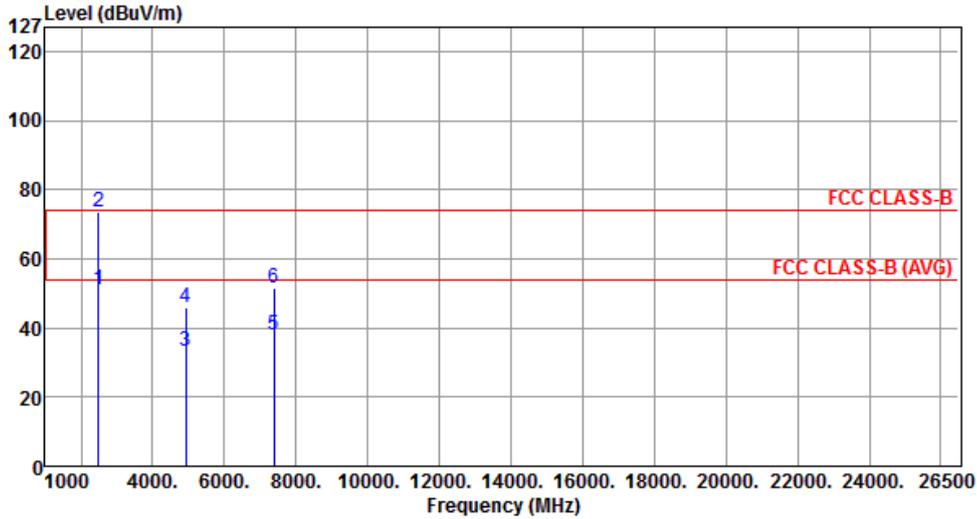
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	47.57	54.00	-6.43	50.47	-2.90	Average	---	---
2	2390.00	67.32	74.00	-6.68	70.22	-2.90	Peak	---	---
3	2483.50	39.79	54.00	-14.21	42.21	-2.42	Average	---	---
4	2483.50	56.27	74.00	-17.73	58.69	-2.42	Peak	---	---
5	4874.00	44.24	54.00	-9.76	39.47	4.77	Average	---	---
6	4874.00	59.99	74.00	-14.01	55.22	4.77	Peak	---	---
7	7311.00	53.60	54.00	-0.40	44.03	9.57	Average	---	---
8	7311.00	70.74	74.00	-3.26	61.17	9.57	Peak	---	---

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).

<b>Modulation</b>	11g	<b>Test Freq. (MHz)</b>	2462
<b>Polarization</b>	Horizontal		



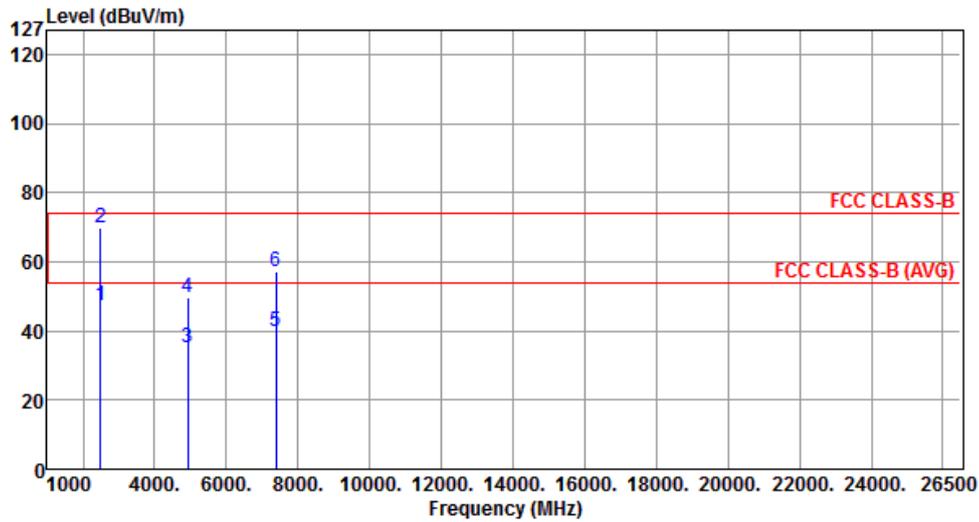
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.40	51.17	54.00	-2.83	53.59	-2.42	Average	---	---
2	2483.40	73.70	74.00	-0.30	76.12	-2.42	Peak	---	---
3	4924.00	33.49	54.00	-20.51	28.63	4.86	Average	---	---
4	4924.00	45.96	74.00	-28.04	41.10	4.86	Peak	---	---
5	7386.00	38.14	54.00	-15.86	28.46	9.68	Average	---	---
6	7386.00	51.41	74.00	-22.59	41.73	9.68	Peak	---	---

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).

<b>Modulation</b>	11g	<b>Test Freq. (MHz)</b>	2462
<b>Polarization</b>	Vertical		



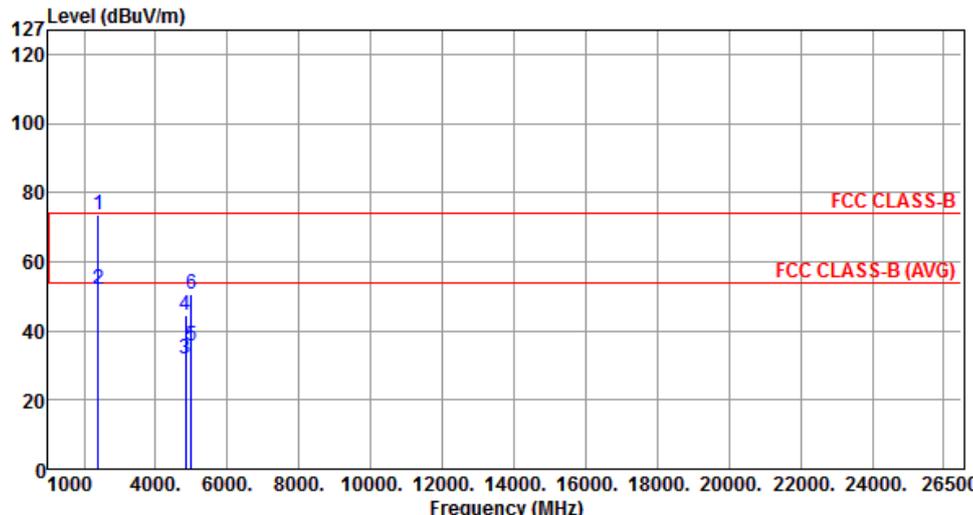
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	47.24	54.00	-6.76	49.66	-2.42	Average	---	---
2	2483.50	69.83	74.00	-4.17	72.25	-2.42	Peak	---	---
3	4924.00	35.28	54.00	-18.72	30.42	4.86	Average	---	---
4	4924.00	49.48	74.00	-24.52	44.62	4.86	Peak	---	---
5	7386.00	39.63	54.00	-14.37	29.95	9.68	Average	---	---
6	7386.00	57.00	74.00	-17.00	47.32	9.68	Peak	---	---

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

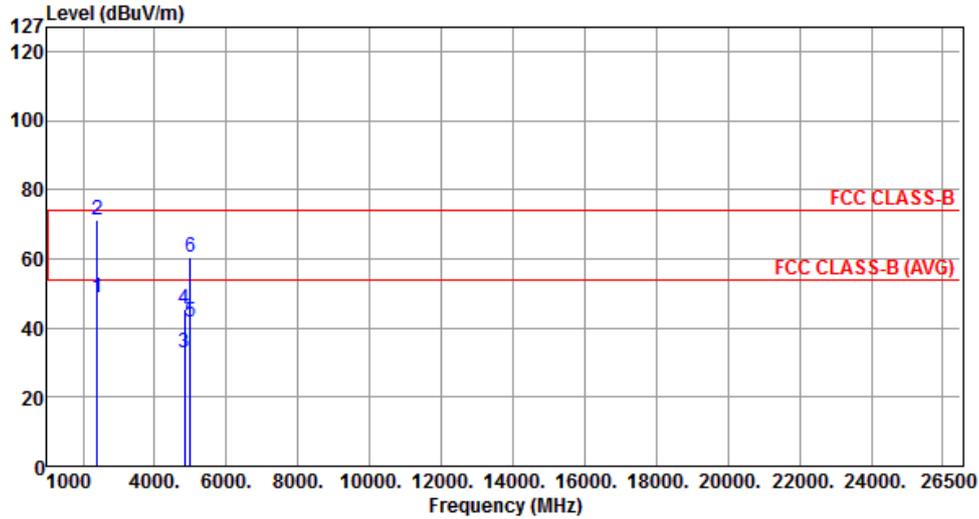
\*Factor includes antenna factor , cable loss and amplifier gain

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

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

Modulation	HT20	Test Freq. (MHz)	2412						
Polarization	Horizontal								
									
	Freq.	Emission level	Limit	Margin	SA	Factor	Remark	ANT	Turn
	MHz	dBUV/m	dBUV/m	dB	reading	dB		High	Table
								cm	deg
1	2389.86	73.68	74.00	-0.32	76.58	-2.90	Peak	---	---
2	2390.00	52.06	54.00	-1.94	54.96	-2.90	Average	---	---
3	4824.00	31.89	54.00	-22.11	27.20	4.69	Average	---	---
4	4824.00	44.69	74.00	-29.31	40.00	4.69	Peak	---	---
5	5000.00	35.72	54.00	-18.28	30.74	4.98	Average	---	---
6	5000.00	50.58	74.00	-23.42	45.60	4.98	Peak	---	---
<p>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).</p>									

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	2412
<b>Polarization</b>	Vertical		



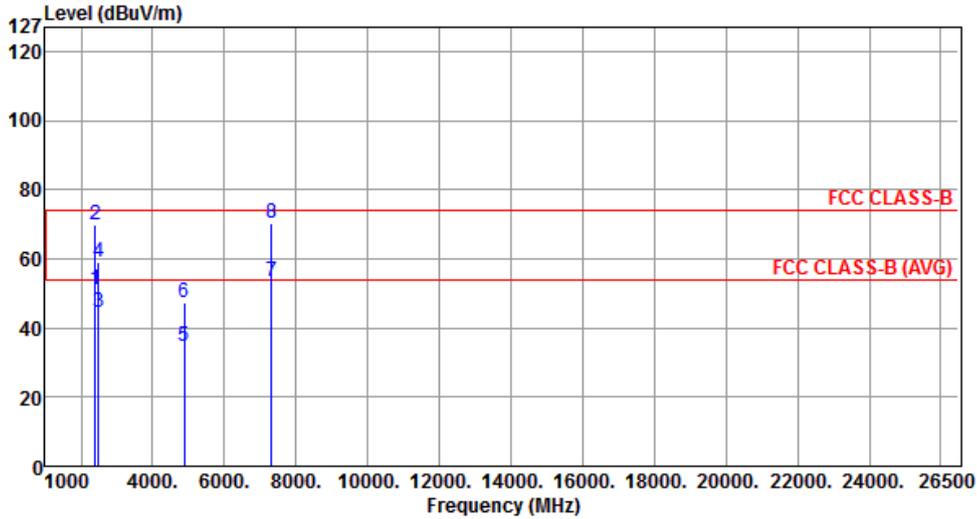
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	48.82	54.00	-5.18	51.72	-2.90	Average	---	---
2	2390.00	71.23	74.00	-2.77	74.13	-2.90	Peak	---	---
3	4824.00	32.66	54.00	-21.34	27.97	4.69	Average	---	---
4	4824.00	45.55	74.00	-28.45	40.86	4.69	Peak	---	---
5	5000.00	41.69	54.00	-12.31	36.71	4.98	Average	---	---
6	5000.00	60.58	74.00	-13.42	55.60	4.98	Peak	---	---

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).

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	2437
<b>Polarization</b>	Horizontal		



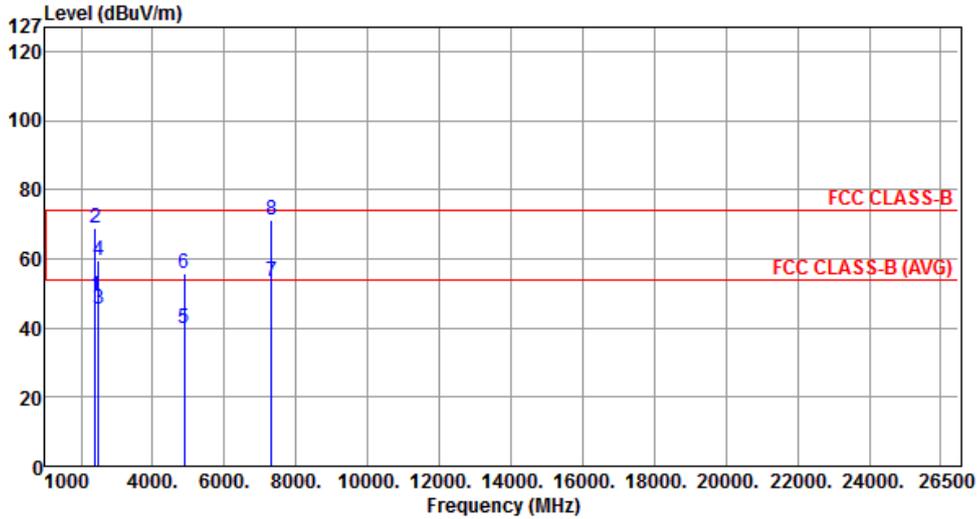
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	51.01	54.00	-2.99	53.91	-2.90	Average	---	---
2	2390.00	69.61	74.00	-4.39	72.51	-2.90	Peak	---	---
3	2483.50	44.31	54.00	-9.69	46.73	-2.42	Average	---	---
4	2483.50	59.28	74.00	-14.72	61.70	-2.42	Peak	---	---
5	4874.00	34.59	54.00	-19.41	29.82	4.77	Average	---	---
6	4874.00	47.49	74.00	-26.51	42.72	4.77	Peak	---	---
7	7311.00	53.48	54.00	-0.52	43.91	9.57	Average	---	---
8	7311.00	70.28	74.00	-3.72	60.71	9.57	Peak	---	---

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).

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	2437
<b>Polarization</b>	Vertical		



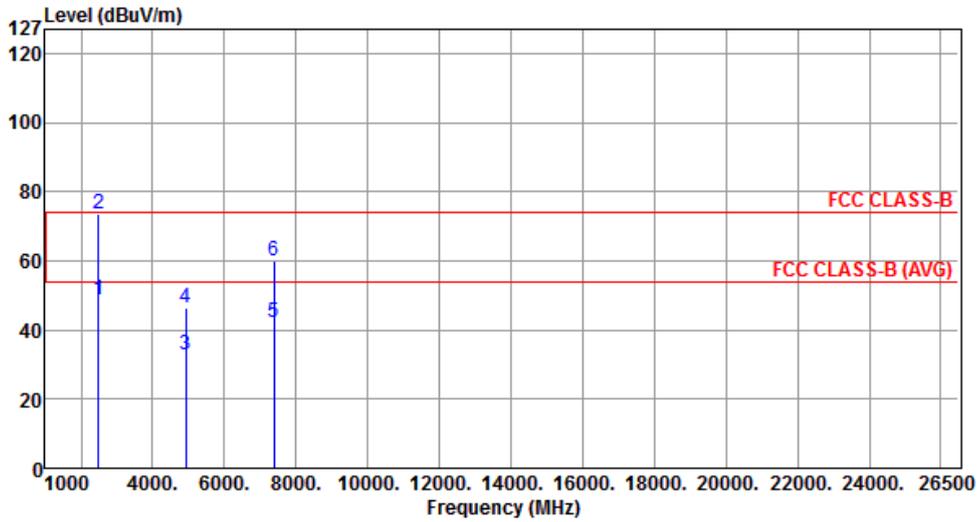
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	49.31	54.00	-4.69	52.21	-2.90	Average	---	---
2	2390.00	69.04	74.00	-4.96	71.94	-2.90	Peak	---	---
3	2483.50	45.28	54.00	-8.72	47.70	-2.42	Average	---	---
4	2483.50	59.48	74.00	-14.52	61.90	-2.42	Peak	---	---
5	4874.00	39.98	54.00	-14.02	35.21	4.77	Average	---	---
6	4874.00	55.70	74.00	-18.30	50.93	4.77	Peak	---	---
7	7311.00	53.58	54.00	-0.42	44.01	9.57	Average	---	---
8	7311.00	71.45	74.00	-2.55	61.88	9.57	Peak	---	---

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).

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	2462
<b>Polarization</b>	Horizontal		



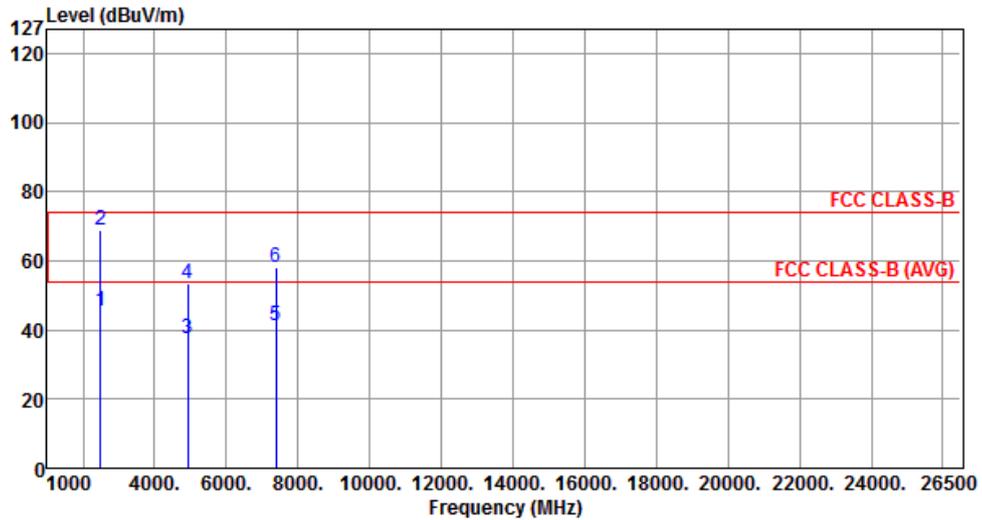
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	48.75	54.00	-5.25	51.17	-2.42	Average	---	---
2	2483.50	73.68	74.00	-0.32	76.10	-2.42	Peak	---	---
3	4924.00	32.95	54.00	-21.05	28.09	4.86	Average	---	---
4	4924.00	46.37	74.00	-27.63	41.51	4.86	Peak	---	---
5	7386.00	42.08	54.00	-11.92	32.40	9.68	Average	---	---
6	7386.00	59.98	74.00	-14.02	50.30	9.68	Peak	---	---

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).

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	2462
<b>Polarization</b>	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	45.64	54.00	-8.36	48.06	-2.42	Average	---	---
2	2483.50	68.91	74.00	-5.09	71.33	-2.42	Peak	---	---
3	4924.00	37.33	54.00	-16.67	32.47	4.86	Average	---	---
4	4924.00	53.35	74.00	-20.65	48.49	4.86	Peak	---	---
5	7386.00	41.28	54.00	-12.72	31.60	9.68	Average	---	---
6	7386.00	58.18	74.00	-15.82	48.50	9.68	Peak	---	---

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

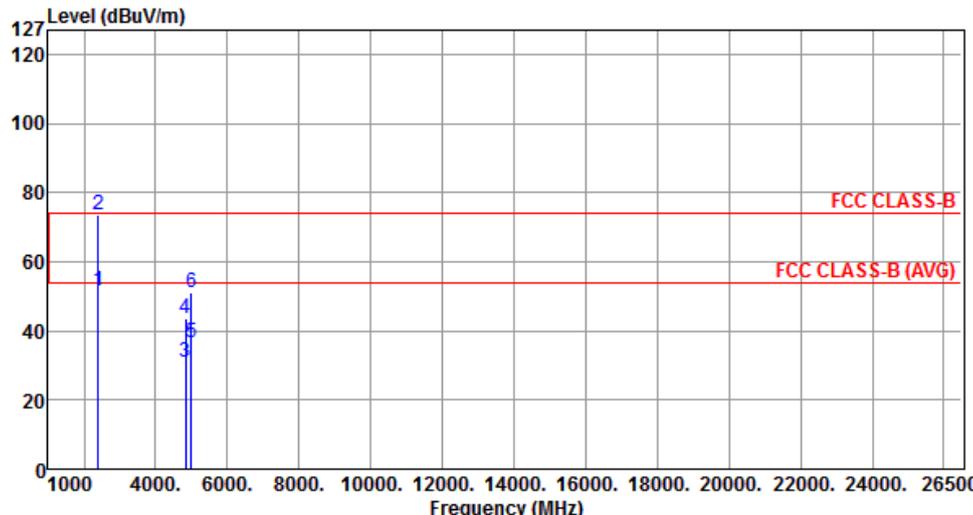
\*Factor includes antenna factor , cable loss and amplifier gain

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

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

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	2422
<b>Polarization</b>	Horizontal		

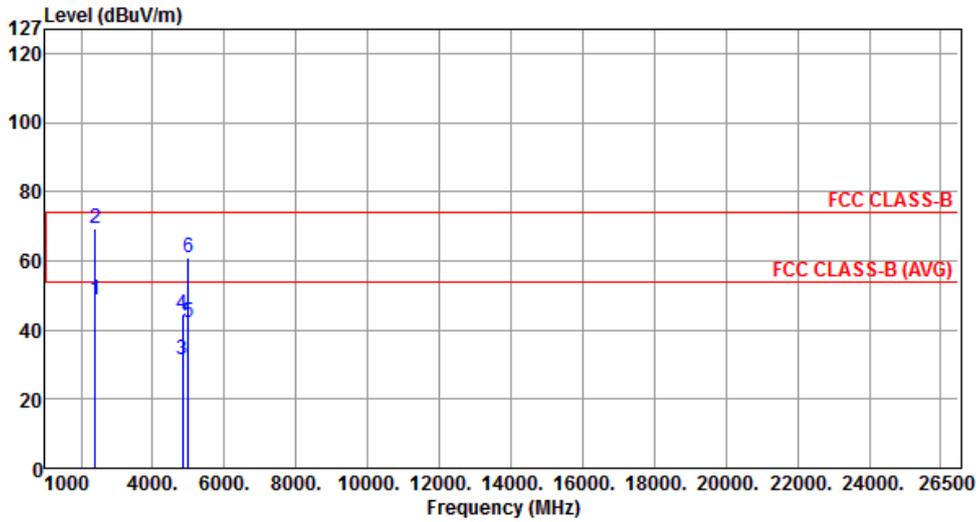
  



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	51.71	54.00	-2.29	54.61	-2.90	Average	---	---
2	2390.00	73.54	74.00	-0.46	76.44	-2.90	Peak	---	---
3	4844.00	30.76	54.00	-23.24	26.05	4.71	Average	---	---
4	4844.00	43.58	74.00	-30.42	38.87	4.71	Peak	---	---
5	5000.00	36.48	54.00	-17.52	31.50	4.98	Average	---	---
6	5000.00	51.19	74.00	-22.81	46.21	4.98	Peak	---	---

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).

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	2422
<b>Polarization</b>	Vertical		



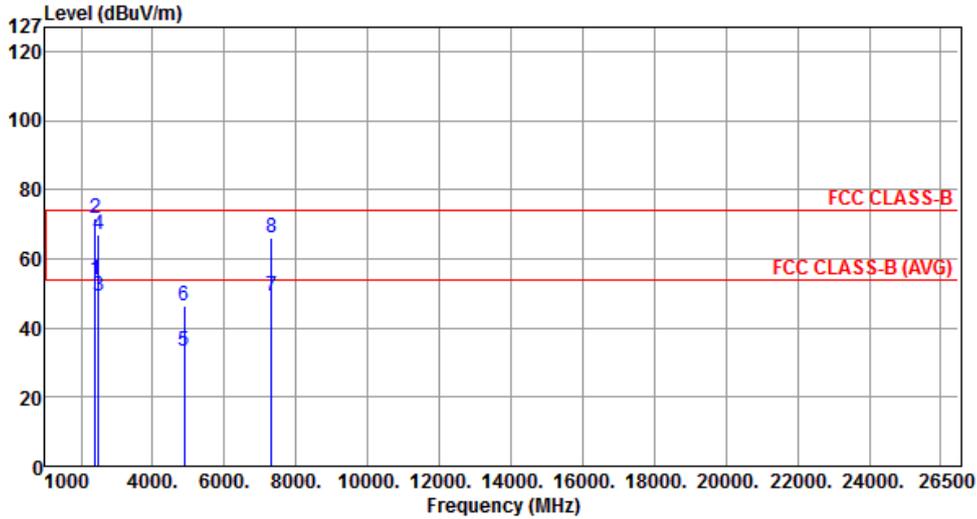
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	48.51	54.00	-5.49	51.41	-2.90	Average	---	---
2	2390.00	69.51	74.00	-4.49	72.41	-2.90	Peak	---	---
3	4844.00	31.22	54.00	-22.78	26.51	4.71	Average	---	---
4	4844.00	44.31	74.00	-29.69	39.60	4.71	Peak	---	---
5	5000.00	42.24	54.00	-11.76	37.26	4.98	Average	---	---
6	5000.00	61.10	74.00	-12.90	56.12	4.98	Peak	---	---

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).

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	2437
<b>Polarization</b>	Horizontal		



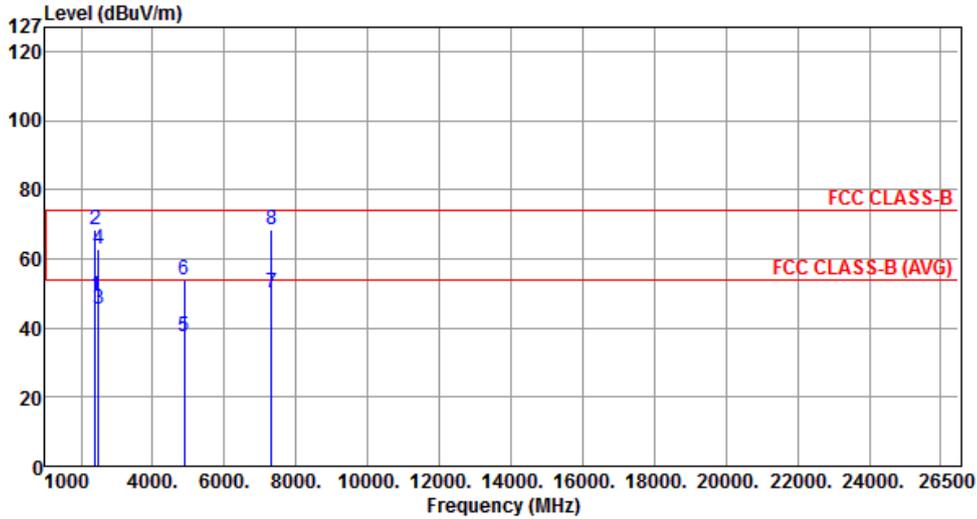
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	53.80	54.00	-0.20	56.70	-2.90	Average	---	---
2	2390.00	71.65	74.00	-2.35	74.55	-2.90	Peak	---	---
3	2483.50	49.27	54.00	-4.73	51.69	-2.42	Average	---	---
4	2483.50	67.24	74.00	-6.76	69.66	-2.42	Peak	---	---
5	4874.00	33.21	54.00	-20.79	28.44	4.77	Average	---	---
6	4874.00	46.28	74.00	-27.72	41.51	4.77	Peak	---	---
7	7311.00	49.16	54.00	-4.84	39.59	9.57	Average	---	---
8	7311.00	65.86	74.00	-8.14	56.29	9.57	Peak	---	---

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).

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	2437
<b>Polarization</b>	Vertical		



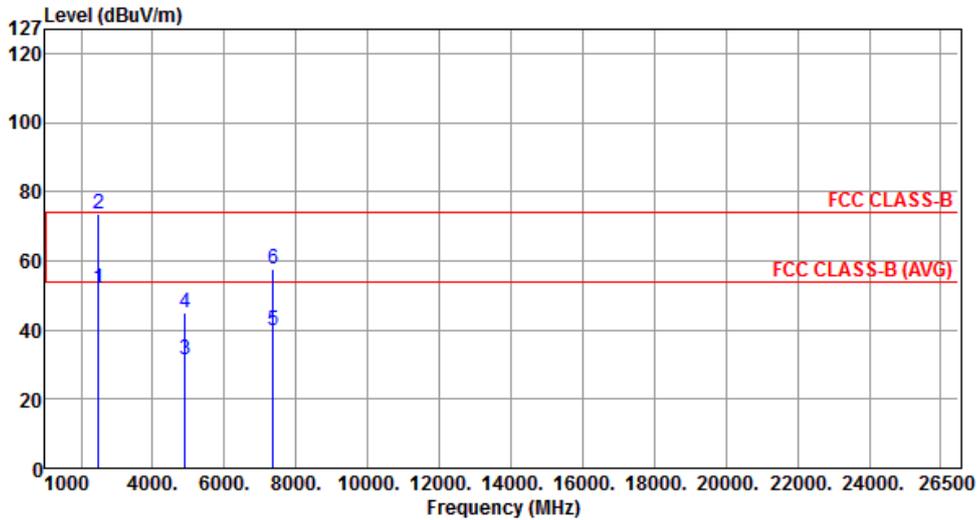
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	49.41	54.00	-4.59	52.31	-2.90	Average	---	---
2	2390.00	68.21	74.00	-5.79	71.11	-2.90	Peak	---	---
3	2483.50	45.68	54.00	-8.32	48.10	-2.42	Average	---	---
4	2483.50	62.68	74.00	-11.32	65.10	-2.42	Peak	---	---
5	4874.00	37.59	54.00	-16.41	32.82	4.77	Average	---	---
6	4874.00	53.66	74.00	-20.34	48.89	4.77	Peak	---	---
7	7311.00	50.14	54.00	-3.86	40.57	9.57	Average	---	---
8	7311.00	68.47	74.00	-5.53	58.90	9.57	Peak	---	---

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).

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	2452
<b>Polarization</b>	Horizontal		



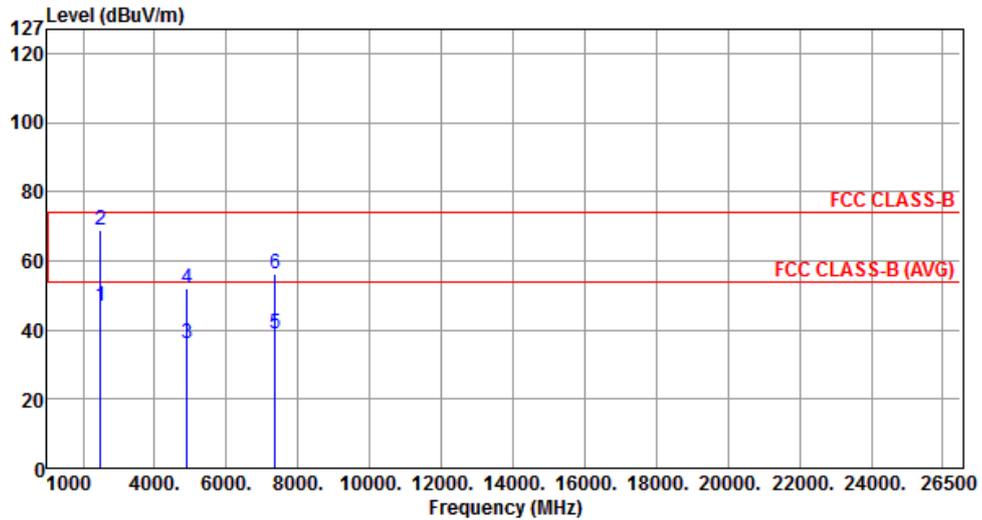
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	51.98	54.00	-2.02	54.40	-2.42	Average	---	---
2	2483.50	73.65	74.00	-0.35	76.07	-2.42	Peak	---	---
3	4904.00	31.55	54.00	-22.45	26.73	4.82	Average	---	---
4	4904.00	45.19	74.00	-28.81	40.37	4.82	Peak	---	---
5	7356.00	40.02	54.00	-13.98	30.39	9.63	Average	---	---
6	7356.00	57.64	74.00	-16.36	48.01	9.63	Peak	---	---

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).

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	2452
<b>Polarization</b>	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	46.78	54.00	-7.22	49.20	-2.42	Average	---	---
2	2483.50	68.88	74.00	-5.12	71.30	-2.42	Peak	---	---
3	4904.00	36.13	54.00	-17.87	31.31	4.82	Average	---	---
4	4904.00	52.24	74.00	-21.76	47.42	4.82	Peak	---	---
5	7356.00	39.05	54.00	-14.95	29.42	9.63	Average	---	---
6	7356.00	56.10	74.00	-17.90	46.47	9.63	Peak	---	---

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).

## 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 Measuring Instruments

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

### 3.6.3 Test Procedures

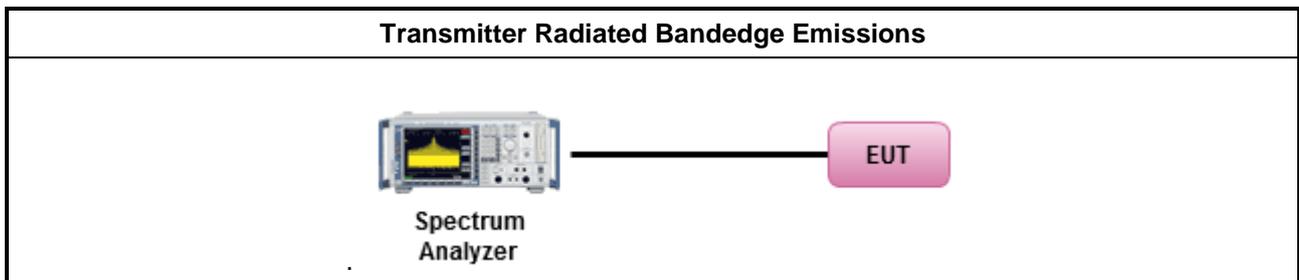
#### Reference level measurement

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

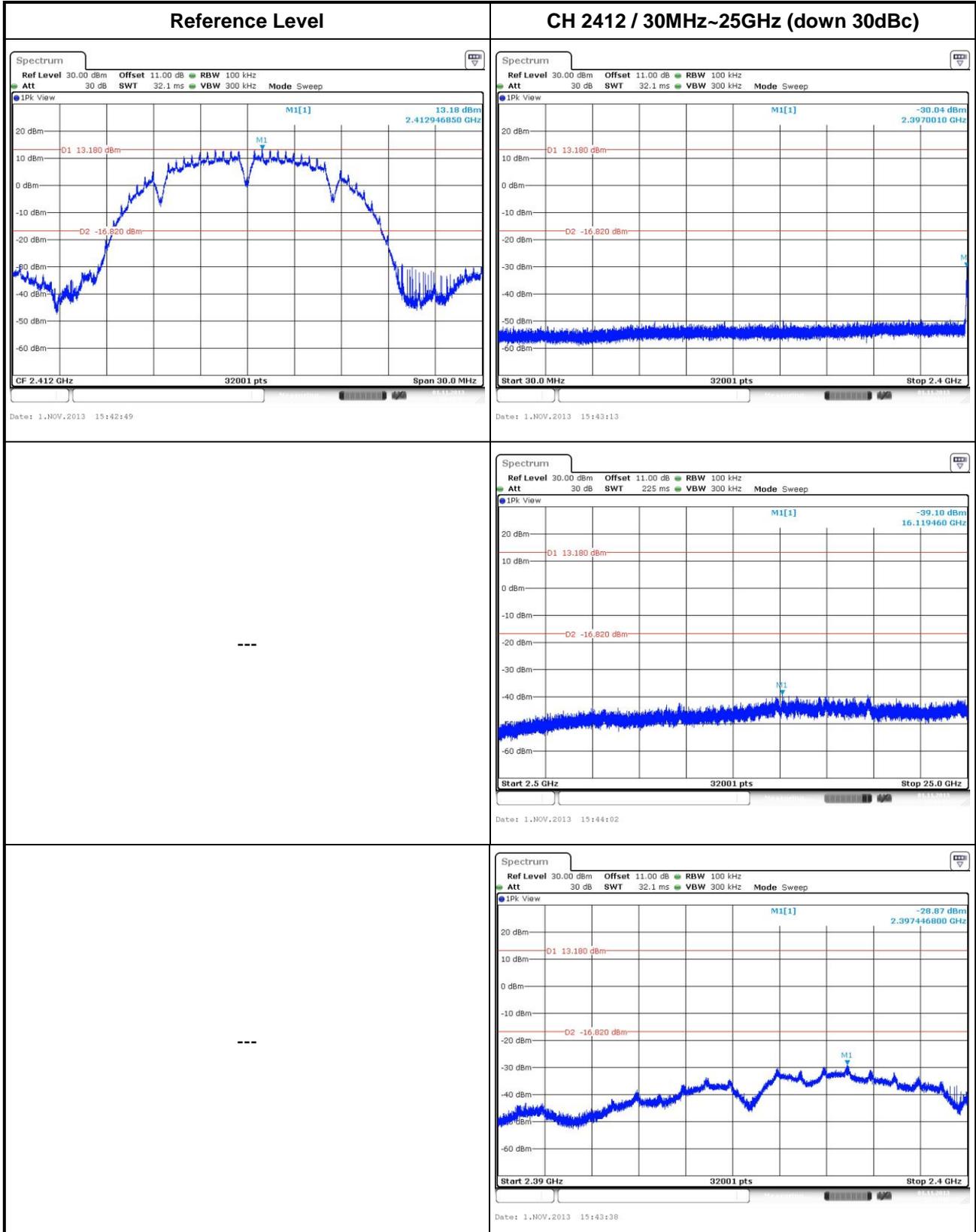


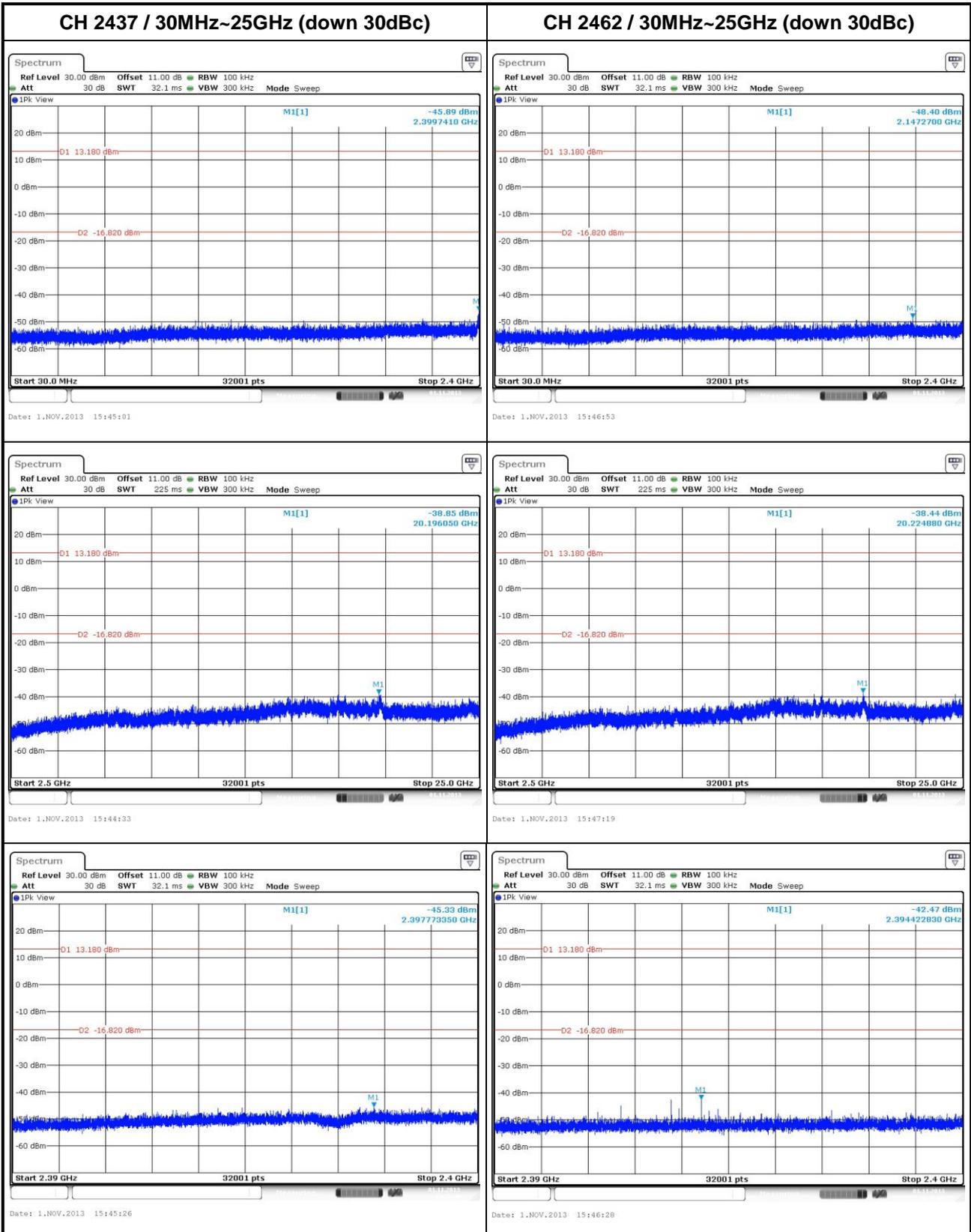
### 3.6.5 Test Result of Emissions in non-restricted frequency bands

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.

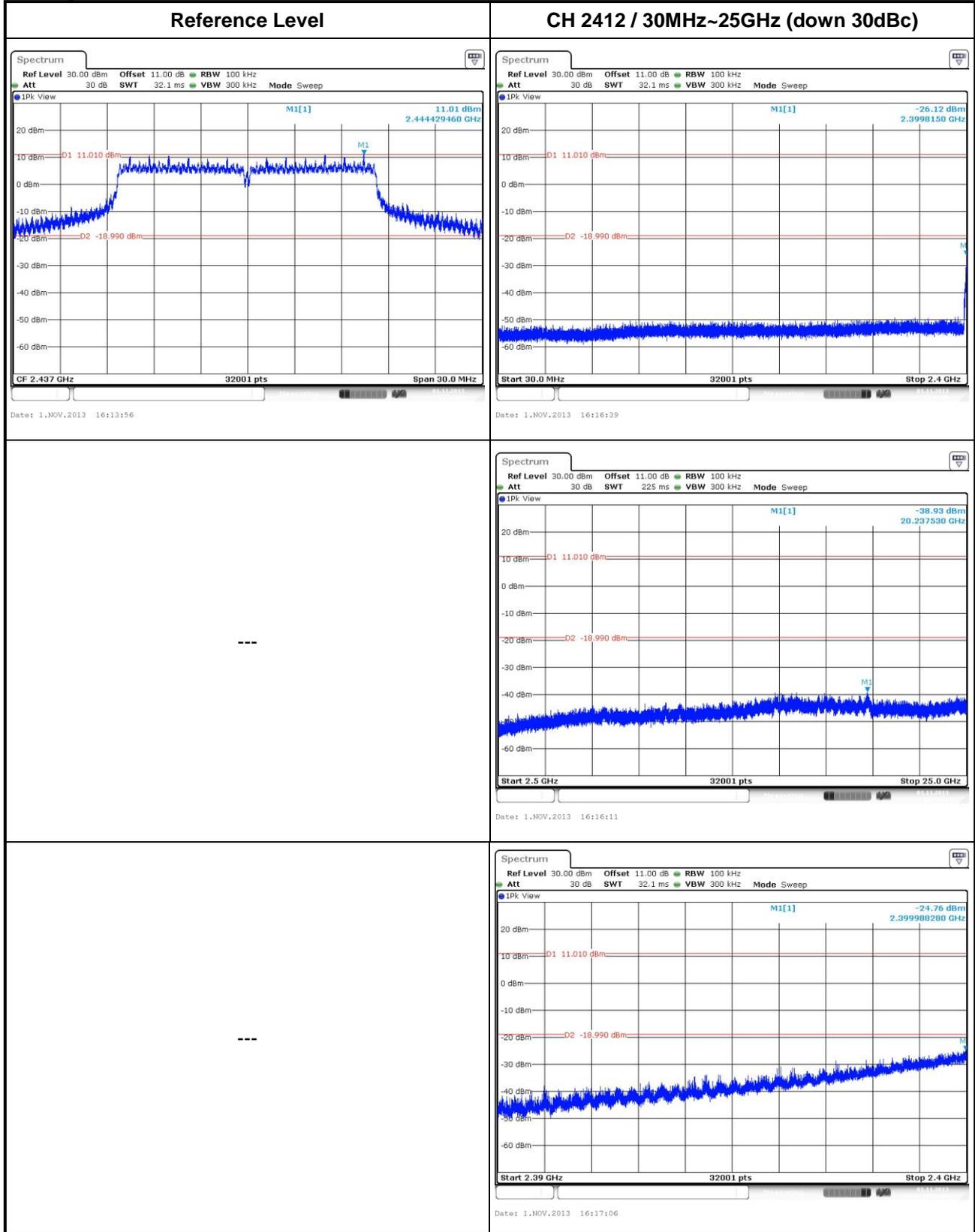
### 3.6.6 Unwanted Emissions into Non-Restricted Frequency Bands

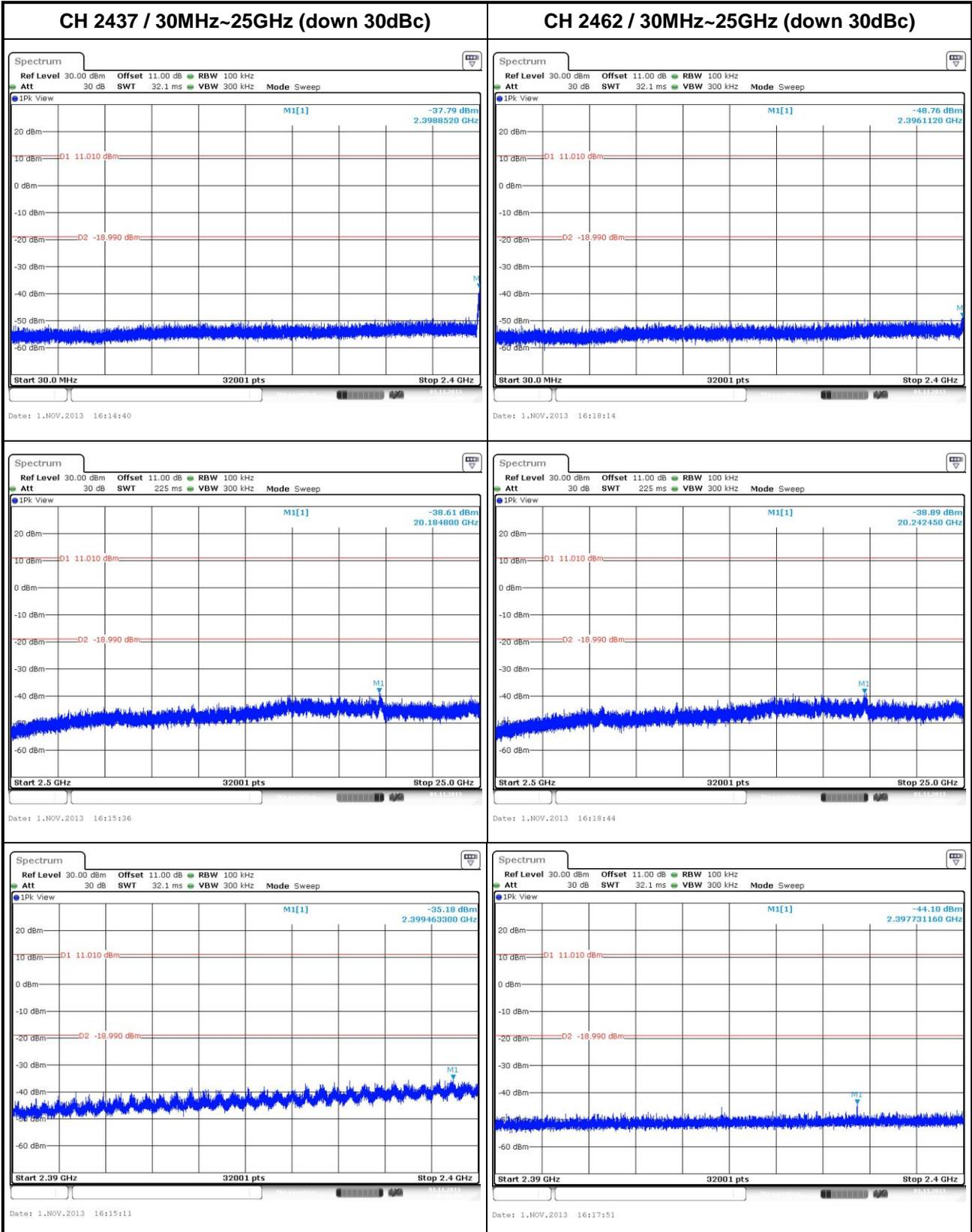
#### 802.11b



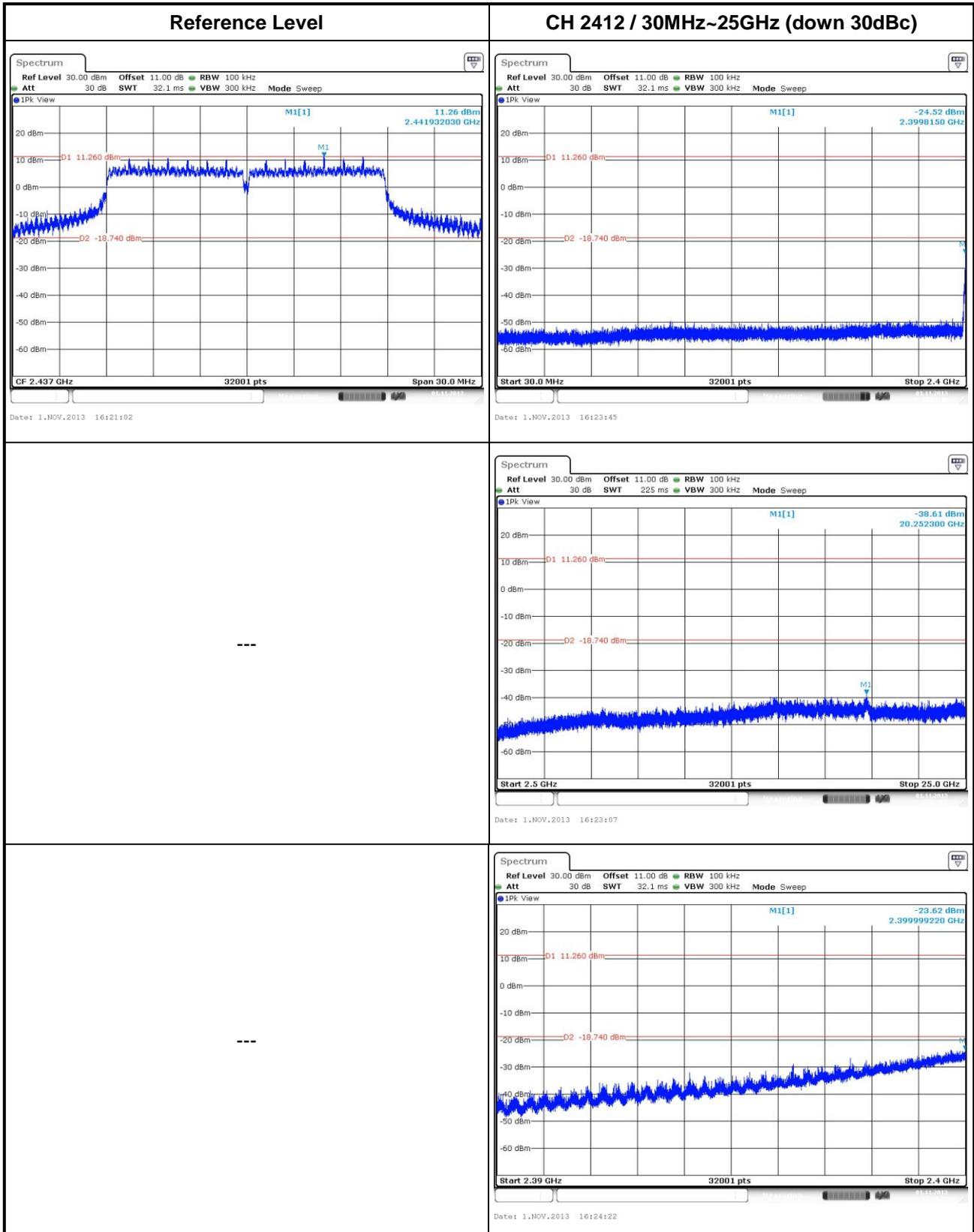


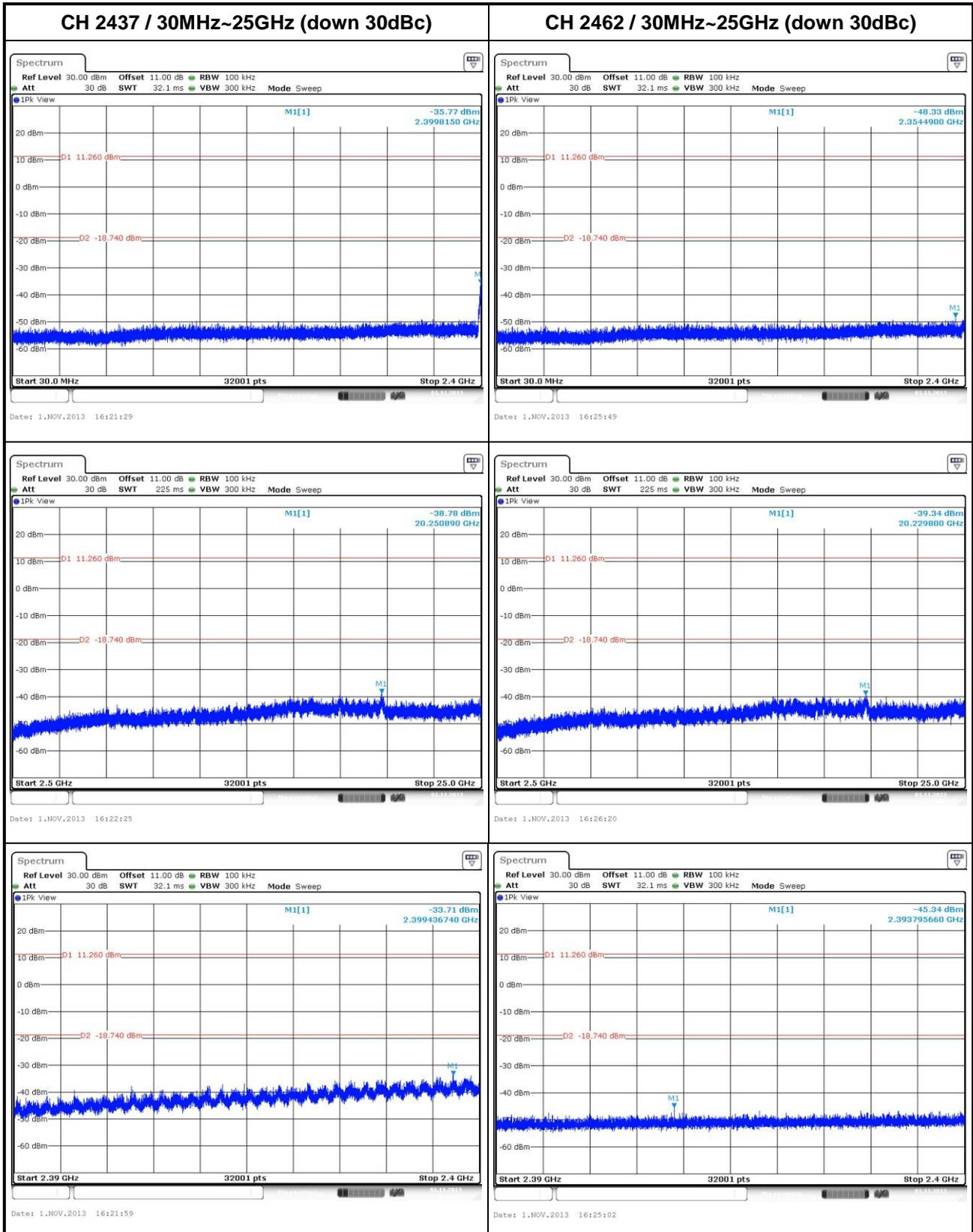
802.11g



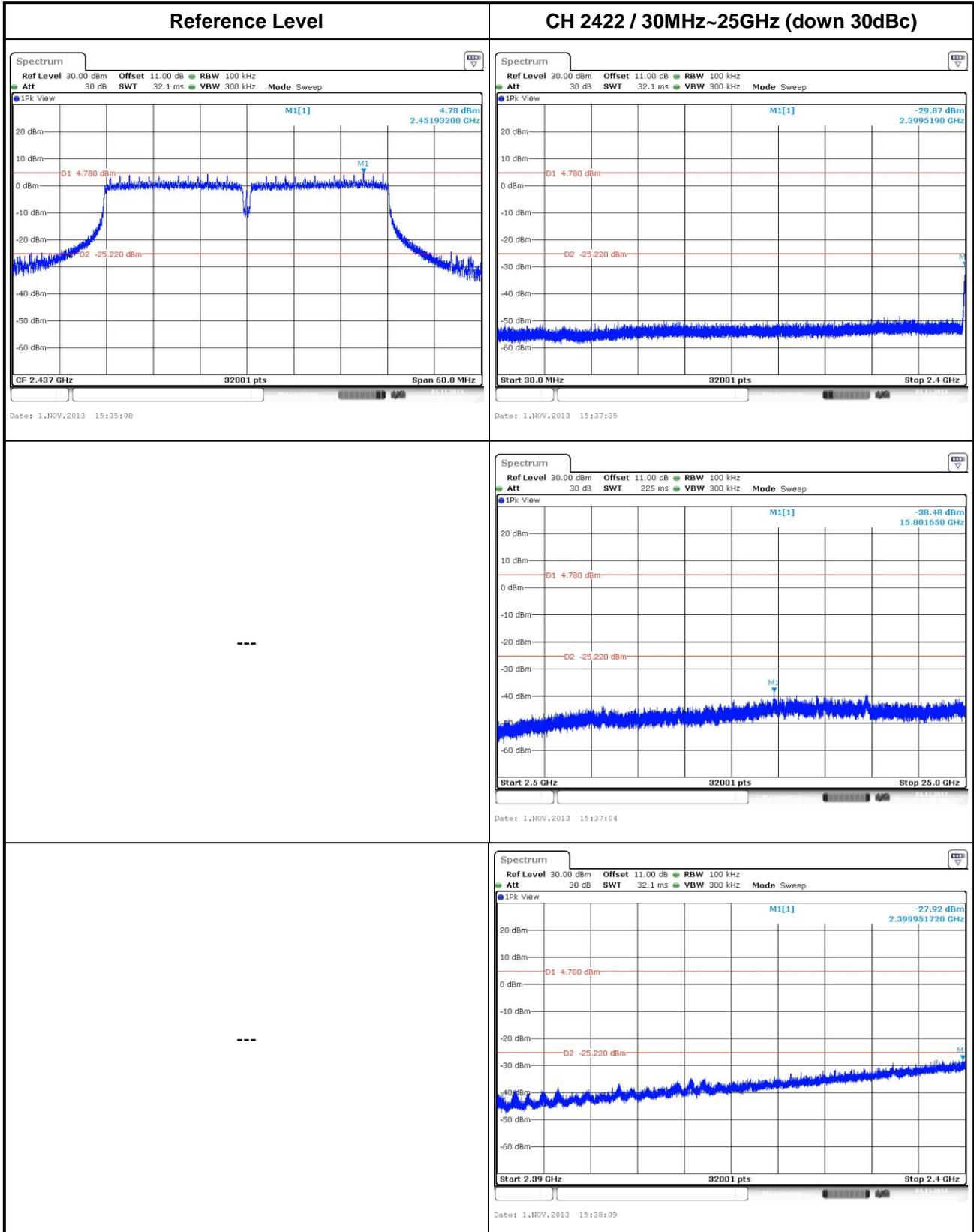


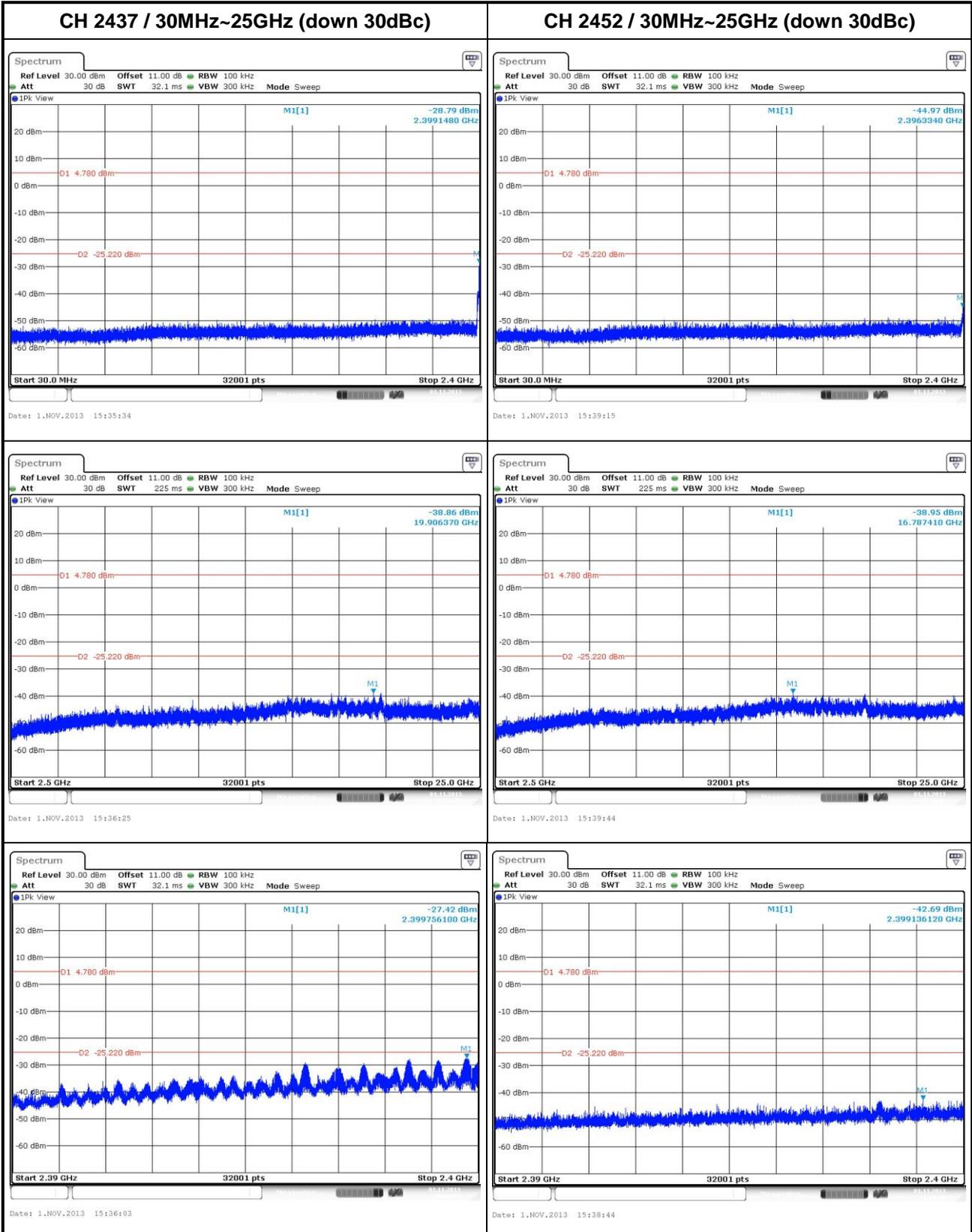
802.11n HT20





802.11n HT40





## 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, 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>.

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

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

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==END==