

FCC Test Report

Report No.: RF160201E01

FCC ID: W59XAP1410

Test Model: XAP-1410

Received Date: Feb. 01, 2016

Test Date: Feb. 02 to 04, 2016

Issued Date: Feb. 24, 2016

Applicant: Luxul Wireless

Address: 14203 Minuteman Dr Suite 201 Draper UT 84020 USA

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan R.O.C.

Test Location (1): E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan R.O.C.

Test Location (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin
Chu Hsien 307, Taiwan R.O.C.



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty	6
2.2 Modification Record	6
3 General Information	7
3.1 General Description of EUT	7
3.2 Description of Test Modes	9
3.2.1 Test Mode Applicability and Tested Channel Detail	10
3.3 Duty Cycle of Test Signal	12
3.4 Description of Support Units	13
3.4.1 Configuration of System under Test	13
3.5 General Description of Applied Standards	14
4 Test Types and Results	15
4.1 Radiated Emission and Bandedge Measurement	15
4.1.1 Limits of Radiated Emission and Bandedge Measurement	15
4.1.2 Test Instruments	16
4.1.3 Test Procedures	17
4.1.4 Deviation from Test Standard	17
4.1.5 Test Set Up	18
4.1.6 EUT Operating Conditions	18
4.1.7 Test Results	19
4.2 Conducted Emission Measurement	32
4.2.1 Limits of Conducted Emission Measurement	32
4.2.2 Test Instruments	32
4.2.3 Test Procedures	33
4.2.4 Deviation from Test Standard	33
4.2.5 Test Setup	33
4.2.6 EUT Operating Conditions	33
4.2.7 Test Results	34
4.3 6dB Bandwidth Measurement	36
4.3.1 Limits of 6dB Bandwidth Measurement	36
4.3.2 Test Setup	36
4.3.3 Test Instruments	36
4.3.4 Test Procedure	36
4.3.5 Deviation from Test Standard	36
4.3.6 EUT Operating Conditions	36
4.3.7 Test Result	37
4.4 Conducted Output Power Measurement	39
4.4.1 Limits of Conducted Output Power Measurement	39
4.4.2 Test Setup	39
4.4.3 Test Instruments	39
4.4.4 Test Procedures	39
4.4.5 Deviation from Test Standard	39
4.4.6 EUT Operating Conditions	39
4.4.7 Test Results	40
4.5 Power Spectral Density Measurement	42
4.5.1 Limits of Power Spectral Density Measurement	42
4.5.2 Test Setup	42
4.5.3 Test Instruments	42
4.5.4 Test Procedure	42
4.5.5 Deviation from Test Standard	42
4.5.6 EUT Operating Condition	42

4.5.7 Test Results	43
4.6 Conducted Out of Band Emission Measurement.....	46
4.6.1 Limits of Conducted Out of Band Emission Measurement	46
4.6.2 Test Setup.....	46
4.6.3 Test Instruments	46
4.6.4 Test Procedure	46
4.6.5 Deviation from Test Standard	46
4.6.6 EUT Operating Condition	46
4.6.7 Test Results	46
5 Pictures of Test Arrangements.....	54
Appendix – Information on the Testing Laboratories	55



A D T

Release Control Record

Issue No.	Description	Date Issued
RF160201E01	Original release.	Feb. 24, 2016

1 Certificate of Conformity

Product: High Power AC1200 Dual-Band Wireless AP

Brand: Luxul

Test Model: XAP-1410

Sample Status: ENGINEERING SAMPLE

Applicant: Luxul Wireless

Test Date: Feb. 02 to 04, 2016

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10: 2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : C. L., **Date:** Feb. 24, 2016
Claire Kuan / Specialist

Approved by : May Chen, **Date:** Feb. 24, 2016
May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -6.19dB at 0.38438MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2390.00MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

Note: The EUT was operating in 2.4~2.4835GHz, 5.15~5.25GHz and 5.725~5.85GHz frequencies band. This report was recorded the RF parameters including 2.4~2.4835GHz. For the 5.15~5.25GHz and 5.725~5.85GHz RF parameters was recorded in another test report.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.19 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.43 dB
	6GHz ~ 18GHz	3.49 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	High Power AC1200 Dual-Band Wireless AP
Brand	Luxul
Test Model	XAP-1410
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 56V from POE
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	For 15.407 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
	For 15.247 2.412 ~ 2.462GHz
Number of Channel	For 15.407 9 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 4 for 802.11n (HT40), 802.11ac (VHT40) 2 for 802.11ac (VHT80)
	For 15.247 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Output Power	For 15.407 5.18 ~ 5.24GHz CDD Mode 802.11a: 289.975mW Beamforming Mode 802.11ac (VHT20): 396.725mW 802.11ac (VHT40): 273.598mW 802.11ac (VHT80): 91.018mW 5.745 ~ 5.825GHz CDD Mode 802.11a: 361.162mW Beamforming Mode 802.11ac (VHT20): 355.055mW 802.11ac (VHT40): 191.485mW 802.11ac (VHT80): 88.011mW
	For 15.247 802.11b: 368.978mW CDD Mode 802.11g: 860.191mW 802.11n (HT20): 834.727mW 802.11n (HT40): 616.565mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	POE x1
Data Cable Supplied	RJ45 cable (Unshielded, 1m) x1

Note:

- 2.4GHz and 5GHz technology can transmit at same time.
- The antennas provided to the EUT, please refer to the following table:

2.4GHz								
Transmitter Circuit	Brand	Model No.	Ant. Gain (dBi) Including cable loss	Frequency range (GHz to GHz)	Antenna Type	Connector Type	Cable Loss(dB)	Cable Length
Chain (0)	HL	290-20261	4	2.4~2.4835	PIFA	IPEX	NA	43mm
Chain (1)	HL	290-20262	4	2.4~2.4835	PIFA	IPEX	NA	83mm
5GHz								
Transmitter Circuit	Brand	Model No.	Ant. Gain (dBi) Including cable loss	Frequency range (GHz to GHz)	Antenna Type	Connector Type	Cable Loss(dB)	Cable Length
Chain (0)	HL	290-20263	4.5	5.15~5.85	PIFA	IPEX	NA	142mm
Chain (1)	HL	290-20264	4.5	5.15~5.85	PIFA	IPEX	NA	207mm

- The EUT power needs to be supplied from one POE, the information is as below table:

Brand	Model No.	Spec.
PHIHONG	POE29U-560	Input: 100-240Vac, 0.8A, 50-60Hz Output: 56V, 0.536A

- The EUT incorporates a MIMO function.

2.4GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	1TX (Fixed Chain 0)	2RX
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
5GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11ac (VHT20)	MCS0~8 Nss=1	2TX	2RX
	MCS0~8 Nss=2	2TX	2RX
802.11ac (VHT40)	MCS0~9 Nss=1	2TX	2RX
	MCS0~9 Nss=2	2TX	2RX
802.11ac (VHT80)	MCS0~9 Nss=1	2TX	2RX
	MCS0~9 Nss=2	2TX	2RX

Note. : All of modulation mode support beamforming function except 2.4GHz & 802.11a modulation mode.

- The emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.
- The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

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

7 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE \geq 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where RE \geq 1G: Radiated Emission above 1GHz & Bandedge Measurement
 RE<1G: Radiated Emission below 1GHz
 PLC: Power Line Conducted Emission
 APCM: Antenna Port Conducted Measurement

NOTE: The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **X-plane** (for below 1GHz) and **Z-plane** (for above 1GHz).

Radiated Emission Test (Above 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Radiated Emission Test (Below 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

Power Line Conducted Emission Test:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

Antenna Port Conducted Measurement:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Radiated Emission Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	22deg. C, 61%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	24deg. C, 62%RH	120Vac, 60Hz	Jyunchun Lin
PLC	20deg. C, 73%RH	120Vac, 60Hz	Eagle Chen
APCM	14deg. C, 66%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is $\geq 98\%$, duty factor is not required.

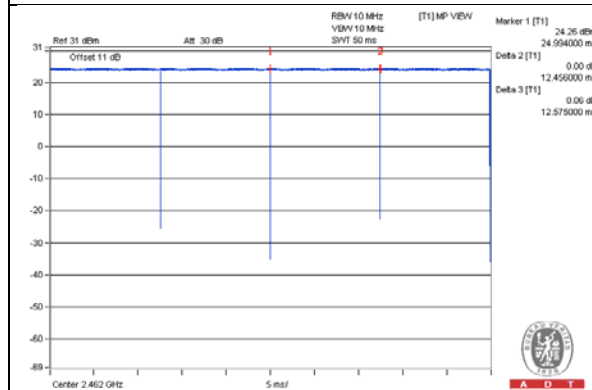
802.11b: Duty cycle = $12.456/12.575 = 0.991$

802.11g: Duty cycle = $2.058/2.084 = 0.988$

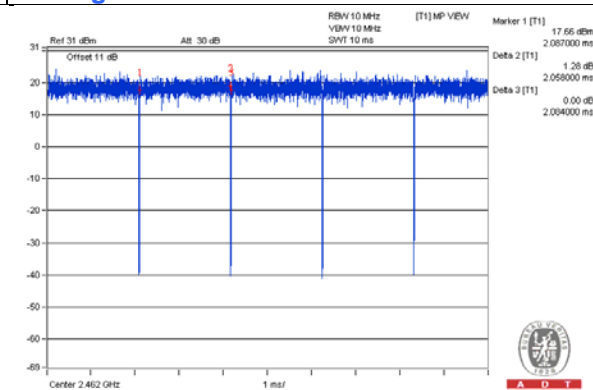
802.11n (HT20): Duty cycle = $1.917/1.943 = 0.987$

802.11n (HT40): Duty cycle = $0.933/0.952 = 0.98$

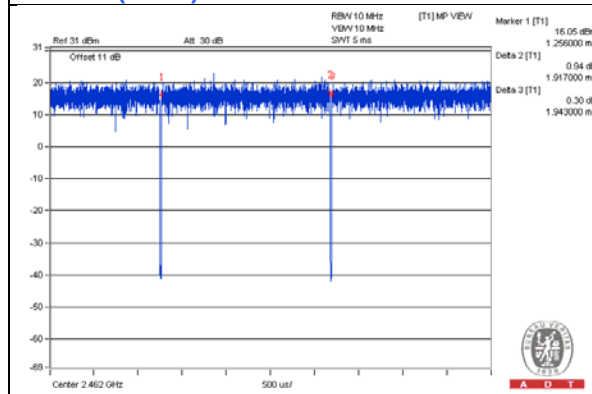
802.11b



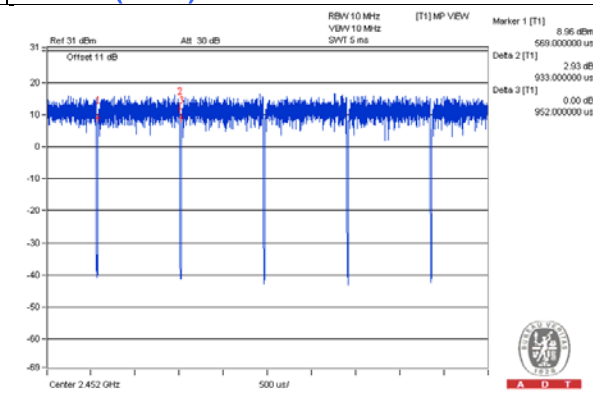
802.11g



802.11n (HT20)



802.11n (HT40)



3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

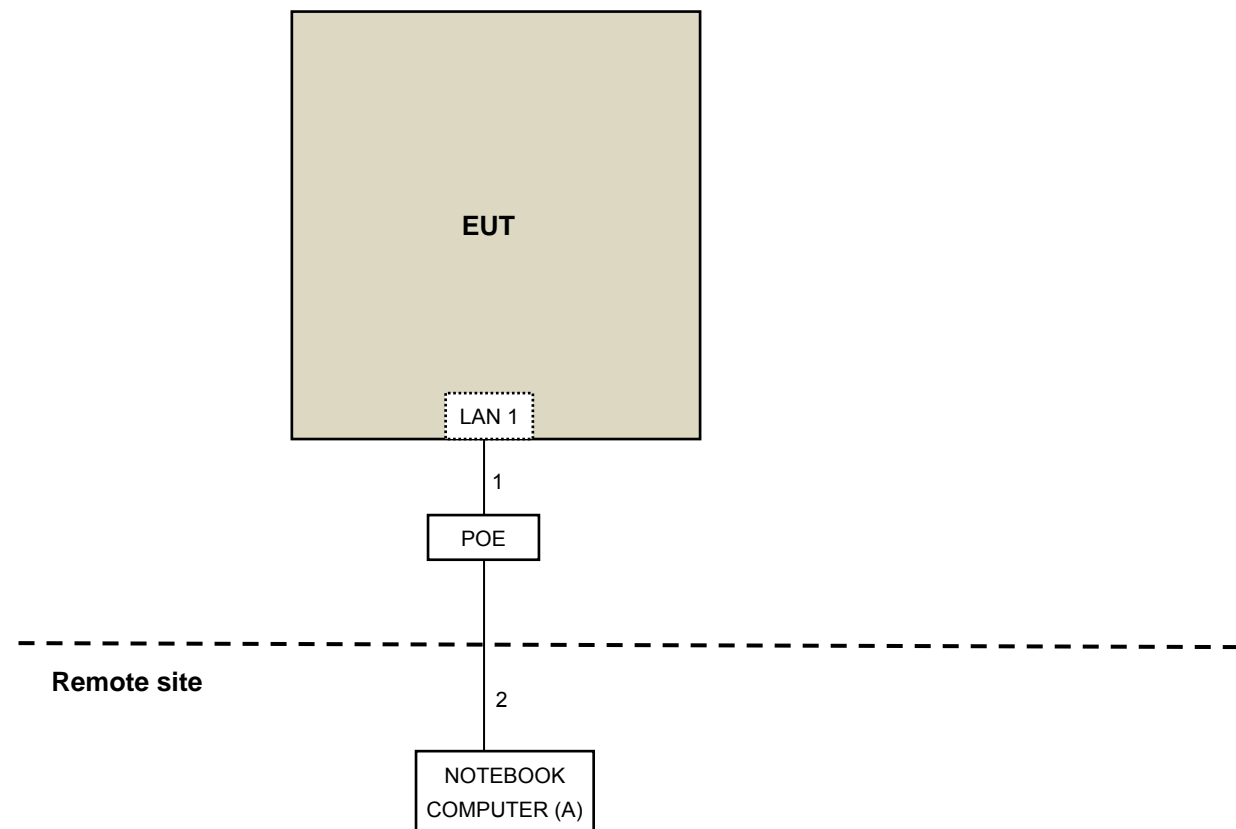
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	NOTEBOOK COMPUTER	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab

Note:

1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45	1	1	No	0	Provided by Lab
2.	RJ45	1	10	No	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)

KDB 558074 D01 DTS Meas Guidance v03r04

KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY54450088	July 24, 2015	July 23, 2016
Pre-Amplifier ^(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna ^(*) Electro-Metrics	EM-6879	264	Dec. 16, 2014	Dec. 15, 2016
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 18, 2016	Jan. 17, 2017
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 11, 2015	Nov. 10, 2016
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Jan. 04, 2016	Jan. 03, 2017
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 03, 2015	Apr. 02, 2016
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Jan. 19, 2016	Jan. 18, 2017
Pre-Amplifier Agilent	8449B	3008A01922	Sep. 19, 2015	Sep. 18, 2016
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	150318 150323 150324	Mar. 31, 2015	Mar. 30, 2016
Pre-Amplifier EMCI	EMC184045	980143	Jan. 15, 2016	Jan. 14, 2017
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Jan. 08, 2016	Jan. 07, 2017
RF Cable	SUCOFLEX 102	36432/2 36441/2	Jan. 16, 2016	Jan. 15, 2017
Software	ADT_Radiated_V 8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Power Meter Anritsu	ML2495A	1014008	Apr. 28, 2015	Apr. 27, 2016
Power Sensor Anritsu	MA2411B	0917122	Apr. 28, 2015	Apr. 27, 2016
Spectrum Analyzer R&S	FSP40	100060	May 08, 2015	May 07, 2016

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Loop antenna was used for all emissions below 30 MHz.
4. The test was performed in 966 Chamber No. 4.
5. The FCC Site Registration No. is 292998
6. The CANADA Site Registration No. is 20331-2
7. Tested Date: Feb. 02 to 03, 2016

4.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

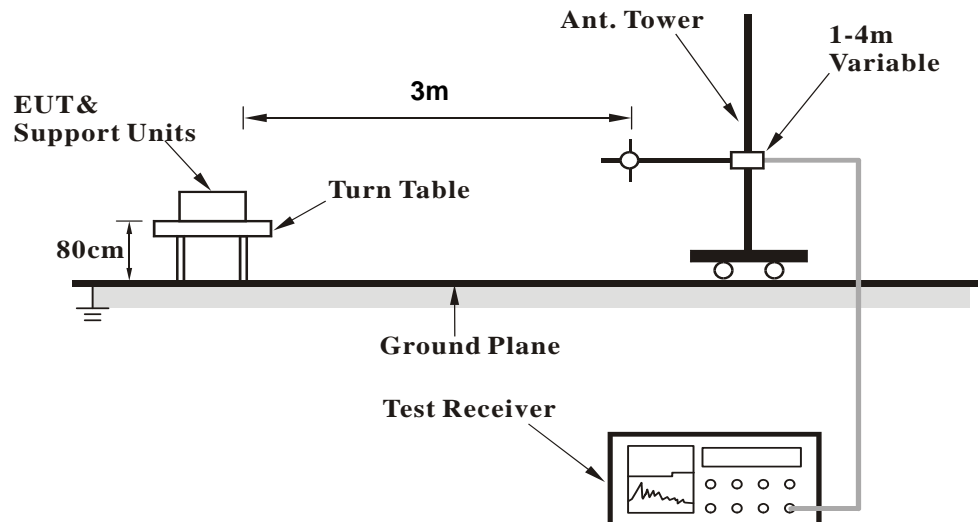
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

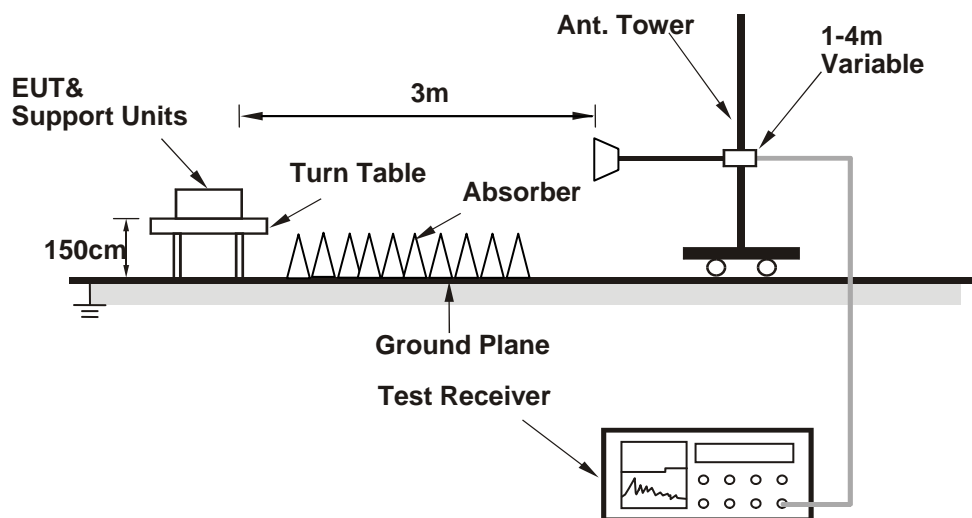
No deviation.

4.1.5 Test Set Up

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

- Connected the EUT with the support unit A (Notebook Computer) which is placed on remote site.
- Contorlling software (MTool REL_2_0_2_1) has been activated to set the EUT on specific status.

4.1.7 Test Results

Above 1GHz Data

802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.7 PK	74.0	-16.3	1.99 H	278	63.89	-6.19
2	2390.00	46.9 AV	54.0	-7.1	1.99 H	278	53.09	-6.19
3	*2412.00	109.3 PK			1.99 H	278	115.39	-6.09
4	*2412.00	106.9 AV			1.99 H	278	112.99	-6.09
5	4824.00	55.8 PK	74.0	-18.2	1.05 H	356	55.99	-0.19
6	4824.00	53.1 AV	54.0	-0.9	1.05 H	356	53.29	-0.19
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.3 PK	74.0	-15.7	3.22 V	151	64.49	-6.19
2	2390.00	46.8 AV	54.0	-7.2	3.22 V	151	52.99	-6.19
3	*2412.00	110.4 PK			3.22 V	151	116.49	-6.09
4	*2412.00	107.8 AV			3.22 V	151	113.89	-6.09
5	4824.00	56.4 PK	74.0	-17.6	2.92 V	328	56.59	-0.19
6	4824.00	53.7 AV	54.0	-0.3	2.92 V	328	53.89	-0.19

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	53.5 PK	74.0	-20.5	2.86 H	282	59.69	-6.19
2	2390.00	41.0 AV	54.0	-13.0	2.86 H	282	47.19	-6.19
3	*2437.00	108.1 PK			2.86 H	282	114.10	-6.00
4	*2437.00	105.6 AV			2.86 H	282	111.60	-6.00
5	2483.50	55.1 PK	74.0	-18.9	2.86 H	282	60.92	-5.82
6	2483.50	43.0 AV	54.0	-11.0	2.86 H	282	48.82	-5.82
7	4874.00	48.6 PK	74.0	-25.4	1.00 H	0	48.59	0.01
8	4874.00	45.8 AV	54.0	-8.2	1.00 H	0	45.79	0.01
9	7311.00	58.9 PK	74.0	-15.1	1.00 H	134	52.59	6.31
10	7311.00	53.6 AV	54.0	-0.4	1.00 H	134	47.29	6.31

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.8 PK	74.0	-19.2	3.34 V	142	60.99	-6.19
2	2390.00	42.8 AV	54.0	-11.2	3.34 V	142	48.99	-6.19
3	*2437.00	109.1 PK			3.34 V	142	115.10	-6.00
4	*2437.00	106.5 AV			3.34 V	142	112.50	-6.00
5	2483.50	57.7 PK	74.0	-16.3	3.34 V	142	63.52	-5.82
6	2483.50	46.4 AV	54.0	-7.6	3.34 V	142	52.22	-5.82
7	4874.00	50.5 PK	74.0	-23.5	2.39 V	360	50.49	0.01
8	4874.00	48.4 AV	54.0	-5.6	2.39 V	360	48.39	0.01
9	7311.00	55.9 PK	74.0	-18.1	1.00 V	195	49.59	6.31
10	7311.00	51.3 AV	54.0	-2.7	1.00 V	195	44.99	6.31

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.8 PK			2.83 H	291	113.71	-5.91
2	*2462.00	105.6 AV			2.83 H	291	111.51	-5.91
3	2483.50	55.3 PK	74.0	-18.7	2.83 H	291	61.12	-5.82
4	2483.50	42.9 AV	54.0	-11.1	2.83 H	291	48.72	-5.82
5	4924.00	48.4 PK	74.0	-25.6	1.00 H	0	48.26	0.14
6	4924.00	45.5 AV	54.0	-8.5	1.00 H	0	45.36	0.14
7	7386.00	58.7 PK	74.0	-15.3	2.09 H	228	52.24	6.46
8	7386.00	53.8 AV	54.0	-0.2	2.09 H	228	47.34	6.46
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.1 PK			3.34 V	126	115.01	-5.91
2	*2462.00	106.3 AV			3.34 V	126	112.21	-5.91
3	2483.50	57.2 PK	74.0	-16.8	3.34 V	126	63.02	-5.82
4	2483.50	46.0 AV	54.0	-8.0	3.34 V	126	51.82	-5.82
5	4924.00	50.8 PK	74.0	-23.2	2.40 V	355	50.66	0.14
6	4924.00	48.8 AV	54.0	-5.2	2.40 V	355	48.66	0.14
7	7386.00	57.9 PK	74.0	-16.1	1.01 V	109	51.44	6.46
8	7386.00	53.2 AV	54.0	-0.8	1.01 V	109	46.74	6.46

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CDD Mode

802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.7 PK	74.0	-3.3	1.12 H	230	76.89	-6.19
2	2390.00	53.7 AV	54.0	-0.3	1.12 H	230	59.89	-6.19
3	*2412.00	111.9 PK			1.12 H	230	117.99	-6.09
4	*2412.00	101.6 AV			1.12 H	230	107.69	-6.09
5	4824.00	44.4 PK	74.0	-29.6	1.15 H	11	44.59	-0.19
6	4824.00	34.5 AV	54.0	-19.5	1.15 H	11	34.69	-0.19
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.2 PK	74.0	-6.8	3.37 V	174	73.39	-6.19
2	2390.00	50.0 AV	54.0	-4.0	3.37 V	174	56.19	-6.19
3	*2412.00	108.4 PK			3.37 V	174	114.49	-6.09
4	*2412.00	99.5 AV			3.37 V	174	105.59	-6.09
5	4824.00	42.4 PK	74.0	-31.6	1.16 V	207	42.59	-0.19
6	4824.00	32.2 AV	54.0	-21.8	1.16 V	207	32.39	-0.19

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	64.4 PK	74.0	-9.6	1.27 H	228	70.59	-6.19
2	2390.00	51.5 AV	54.0	-2.5	1.27 H	228	57.69	-6.19
3	*2437.00	117.5 PK			1.27 H	228	123.50	-6.00
4	*2437.00	108.6 AV			1.27 H	228	114.60	-6.00
5	2483.50	68.4 PK	74.0	-5.6	1.27 H	228	74.22	-5.82
6	2483.50	53.6 AV	54.0	-0.4	1.27 H	228	59.42	-5.82
7	4874.00	45.0 PK	74.0	-29.0	1.15 H	0	44.99	0.01
8	4874.00	35.0 AV	54.0	-19.0	1.15 H	0	34.99	0.01
9	7311.00	63.3 PK	74.0	-10.7	2.04 H	258	56.99	6.31
10	7311.00	49.9 AV	54.0	-4.1	2.04 H	258	43.59	6.31

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.9 PK	74.0	-13.1	3.35 V	164	67.09	-6.19
2	2390.00	47.7 AV	54.0	-6.3	3.35 V	164	53.89	-6.19
3	*2437.00	114.0 PK			3.35 V	164	120.00	-6.00
4	*2437.00	106.5 AV			3.35 V	164	112.50	-6.00
5	2483.50	64.0 PK	74.0	-10.0	3.35 V	164	69.82	-5.82
6	2483.50	49.4 AV	54.0	-4.6	3.35 V	164	55.22	-5.82
7	4874.00	43.1 PK	74.0	-30.9	1.14 V	200	43.09	0.01
8	4874.00	32.6 AV	54.0	-21.4	1.14 V	200	32.59	0.01
9	7311.00	60.4 PK	74.0	-13.6	1.01 V	169	54.09	6.31
10	7311.00	48.3 AV	54.0	-5.7	1.01 V	169	41.99	6.31

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	112.5 PK			1.03 H	232	118.41	-5.91
2	*2462.00	101.4 AV			1.03 H	232	107.31	-5.91
3	2483.50	73.7 PK	74.0	-0.3	1.03 H	232	79.52	-5.82
4	2483.50	50.9 AV	54.0	-3.1	1.03 H	232	56.72	-5.82
5	4924.00	45.1 PK	74.0	-28.9	1.15 H	8	44.96	0.14
6	4924.00	35.1 AV	54.0	-18.9	1.15 H	8	34.96	0.14
7	7386.00	62.9 PK	74.0	-11.1	2.01 H	253	56.44	6.46
8	7386.00	49.5 AV	54.0	-4.5	2.01 H	253	43.04	6.46
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.0 PK			3.37 V	159	114.91	-5.91
2	*2462.00	99.3 AV			3.37 V	159	105.21	-5.91
3	2483.50	66.3 PK	74.0	-7.7	3.37 V	159	72.12	-5.82
4	2483.50	46.7 AV	54.0	-7.3	3.37 V	159	52.52	-5.82
5	4924.00	43.1 PK	74.0	-30.9	1.20 V	186	42.96	0.14
6	4924.00	32.4 AV	54.0	-21.6	1.20 V	186	32.26	0.14
7	7386.00	60.1 PK	74.0	-13.9	1.00 V	178	53.64	6.46
8	7386.00	48.0 AV	54.0	-6.0	1.00 V	178	41.54	6.46

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

802.11n (HT20)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.7 PK	74.0	-1.3	1.00 H	48	78.89	-6.19
2	2390.00	53.6 AV	54.0	-0.4	1.00 H	48	59.79	-6.19
3	*2412.00	112.1 PK			1.00 H	48	118.19	-6.09
4	*2412.00	101.1 AV			1.00 H	48	107.19	-6.09
5	4824.00	44.3 PK	74.0	-29.7	1.49 H	357	44.49	-0.19
6	4824.00	32.2 AV	54.0	-21.8	1.49 H	357	32.39	-0.19
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.3 PK	74.0	-8.7	3.45 V	154	71.49	-6.19
2	2390.00	49.4 AV	54.0	-4.6	3.45 V	154	55.59	-6.19
3	*2412.00	108.6 PK			3.45 V	154	114.69	-6.09
4	*2412.00	99.0 AV			3.45 V	154	105.09	-6.09
5	4824.00	42.4 PK	74.0	-31.6	1.12 V	195	42.59	-0.19
6	4824.00	32.1 AV	54.0	-21.9	1.12 V	195	32.29	-0.19

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.2 PK	74.0	-6.8	2.29 H	123	73.39	-6.19
2	2390.00	50.0 AV	54.0	-4.0	2.29 H	123	56.19	-6.19
3	*2437.00	116.7 PK			2.29 H	123	122.70	-6.00
4	*2437.00	105.5 AV			2.29 H	123	111.50	-6.00
5	2483.50	73.5 PK	74.0	-0.5	2.29 H	123	79.32	-5.82
6	2483.50	52.8 AV	54.0	-1.2	2.29 H	123	58.62	-5.82
7	4874.00	44.9 PK	74.0	-29.1	1.46 H	360	44.89	0.01
8	4874.00	32.5 AV	54.0	-21.5	1.46 H	360	32.49	0.01
9	7311.00	62.1 PK	74.0	-11.9	1.74 H	124	55.79	6.31
10	7311.00	46.5 AV	54.0	-7.5	1.74 H	124	40.19	6.31

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.8 PK	74.0	-14.2	3.41 V	153	65.99	-6.19
2	2390.00	45.8 AV	54.0	-8.2	3.41 V	153	51.99	-6.19
3	*2437.00	113.3 PK			3.41 V	153	119.30	-6.00
4	*2437.00	103.1 AV			3.41 V	153	109.10	-6.00
5	2483.50	67.5 PK	74.0	-6.5	3.41 V	153	73.32	-5.82
6	2483.50	47.2 AV	54.0	-6.8	3.41 V	153	53.02	-5.82
7	4874.00	43.0 PK	74.0	-31.0	1.09 V	205	42.99	0.01
8	4874.00	32.5 AV	54.0	-21.5	1.09 V	205	32.49	0.01
9	7311.00	61.6 PK	74.0	-12.4	1.18 V	176	55.29	6.31
10	7311.00	45.6 AV	54.0	-8.4	1.18 V	176	39.29	6.31

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.8 PK			1.08 H	47	116.71	-5.91
2	*2462.00	100.2 AV			1.08 H	47	106.11	-5.91
3	2483.50	70.8 PK	74.0	-3.2	1.08 H	47	76.62	-5.82
4	2483.50	53.5 AV	54.0	-0.5	1.08 H	47	59.32	-5.82
5	4924.00	44.7 PK	74.0	-29.3	1.48 H	347	44.56	0.14
6	4924.00	32.5 AV	54.0	-21.5	1.48 H	347	32.36	0.14
7	7386.00	61.8 PK	74.0	-12.2	1.72 H	123	55.34	6.46
8	7386.00	46.2 AV	54.0	-7.8	1.72 H	123	39.74	6.46
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.4 PK			3.38 V	155	113.31	-5.91
2	*2462.00	97.8 AV			3.38 V	155	103.71	-5.91
3	2483.50	66.5 PK	74.0	-7.5	3.38 V	155	72.32	-5.82
4	2483.50	49.5 AV	54.0	-4.5	3.38 V	155	55.32	-5.82
5	4924.00	42.6 PK	74.0	-31.4	1.10 V	215	42.46	0.14
6	4924.00	32.2 AV	54.0	-21.8	1.10 V	215	32.06	0.14
7	7386.00	61.3 PK	74.0	-12.7	1.23 V	180	54.84	6.46
8	7386.00	45.4 AV	54.0	-8.6	1.23 V	180	38.94	6.46

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

802.11n (HT40)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.5 PK	74.0	-5.5	1.00 H	48	74.69	-6.19
2	2390.00	53.9 AV	54.0	-0.1	1.00 H	48	60.09	-6.19
3	*2422.00	106.1 PK			1.00 H	48	112.16	-6.06
4	*2422.00	95.2 AV			1.00 H	48	101.26	-6.06
5	4844.00	44.5 PK	74.0	-29.5	1.41 H	356	44.61	-0.11
6	4844.00	32.6 AV	54.0	-21.4	1.41 H	356	32.71	-0.11
7	7266.00	62.0 PK	74.0	-12.0	1.76 H	108	55.74	6.26
8	7266.00	46.5 AV	54.0	-7.5	1.76 H	108	40.24	6.26
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.2 PK	74.0	-13.8	3.37 V	164	66.39	-6.19
2	2390.00	48.0 AV	54.0	-6.0	3.37 V	164	54.19	-6.19
3	*2422.00	102.7 PK			3.37 V	164	108.76	-6.06
4	*2422.00	92.8 AV			3.37 V	164	98.86	-6.06
5	4844.00	42.9 PK	74.0	-31.1	1.05 V	211	43.01	-0.11
6	4844.00	32.7 AV	54.0	-21.3	1.05 V	211	32.81	-0.11
7	7266.00	61.6 PK	74.0	-12.4	1.14 V	200	55.34	6.26
8	7266.00	45.9 AV	54.0	-8.1	1.14 V	200	39.64	6.26

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " * ": Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.8 PK	74.0	-6.2	1.24 H	226	73.99	-6.19
2	2390.00	51.7 AV	54.0	-2.3	1.24 H	226	57.89	-6.19
3	*2437.00	109.3 PK			1.24 H	226	115.30	-6.00
4	*2437.00	98.2 AV			1.24 H	226	104.20	-6.00
5	2483.50	71.7 PK	74.0	-2.3	1.24 H	226	77.52	-5.82
6	2483.50	53.6 AV	54.0	-0.4	1.24 H	226	59.42	-5.82
7	4874.00	44.6 PK	74.0	-29.4	1.46 H	352	44.59	0.01
8	4874.00	32.5 AV	54.0	-21.5	1.46 H	352	32.49	0.01
9	7311.00	61.8 PK	74.0	-12.2	1.75 H	119	55.49	6.31
10	7311.00	46.1 AV	54.0	-7.9	1.75 H	119	39.79	6.31

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.4 PK	74.0	-14.6	3.38 V	141	65.59	-6.19
2	2390.00	45.7 AV	54.0	-8.3	3.38 V	141	51.89	-6.19
3	*2437.00	105.9 PK			3.38 V	141	111.90	-6.00
4	*2437.00	95.8 AV			3.38 V	141	101.80	-6.00
5	2483.50	67.3 PK	74.0	-6.7	3.38 V	141	73.12	-5.82
6	2483.50	46.8 AV	54.0	-7.2	3.38 V	141	52.62	-5.82
7	4874.00	43.0 PK	74.0	-31.0	1.07 V	215	42.99	0.01
8	4874.00	32.6 AV	54.0	-21.4	1.07 V	215	32.59	0.01
9	7311.00	61.2 PK	74.0	-12.8	1.15 V	189	54.89	6.31
10	7311.00	45.4 AV	54.0	-8.6	1.15 V	189	39.09	6.31

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	105.7 PK			1.21 H	43	111.65	-5.95
2	*2452.00	94.2 AV			1.21 H	43	100.15	-5.95
3	2483.50	65.9 PK	74.0	-8.1	1.21 H	43	71.72	-5.82
4	2483.50	53.5 AV	54.0	-0.5	1.21 H	43	59.32	-5.82
5	4904.00	44.7 PK	74.0	-29.3	1.47 H	360	44.58	0.12
6	4904.00	32.5 AV	54.0	-21.5	1.47 H	360	32.38	0.12
7	7356.00	61.4 PK	74.0	-12.6	1.75 H	104	55.00	6.40
8	7356.00	45.7 AV	54.0	-8.3	1.75 H	104	39.30	6.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	102.3 PK			3.38 V	132	108.25	-5.95
2	*2452.00	91.8 AV			3.38 V	132	97.75	-5.95
3	2483.50	61.9 PK	74.0	-12.1	3.38 V	132	67.72	-5.82
4	2483.50	47.0 AV	54.0	-7.0	3.38 V	132	52.82	-5.82
5	4904.00	42.5 PK	74.0	-31.5	1.09 V	217	42.38	0.12
6	4904.00	32.2 AV	54.0	-21.8	1.09 V	217	32.08	0.12
7	7356.00	61.1 PK	74.0	-12.9	1.09 V	188	54.70	6.40
8	7356.00	45.5 AV	54.0	-8.5	1.09 V	188	39.10	6.40

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

Below 1GHz Data

CDD Mode

802.11g

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	72.80	32.5 QP	40.0	-7.5	2.00 H	264	44.15	-11.69
2	86.72	32.9 QP	40.0	-7.1	1.50 H	72	47.45	-14.58
3	116.65	31.6 QP	43.5	-12.0	1.50 H	110	42.40	-10.85
4	156.08	32.9 QP	43.5	-10.6	2.00 H	92	41.44	-8.58
5	212.26	32.0 QP	43.5	-11.5	1.00 H	303	43.86	-11.88
6	499.99	27.7 QP	46.0	-18.3	2.00 H	327	30.63	-2.91
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.53	32.5 QP	40.0	-7.5	1.00 V	360	41.90	-9.39
2	74.60	30.8 QP	40.0	-9.2	1.00 V	0	42.82	-12.02
3	146.57	31.0 QP	43.5	-12.5	1.00 V	345	39.64	-8.65
4	214.57	27.6 QP	43.5	-15.9	1.50 V	9	39.47	-11.91
5	740.04	27.7 QP	46.0	-18.4	1.50 V	145	25.79	1.86
6	902.13	29.2 QP	46.0	-16.8	2.00 V	193	25.42	3.77

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	100287	Apr. 17, 2015	Apr. 16, 2016
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-523	Oct. 02, 2015	Oct. 01, 2016
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100071	Nov. 11, 2015	Nov. 10, 2016
RF Cable	5D-FB	COACAB-001	May 25, 2015	May 24, 2016
50 ohms Terminator	50	3	Oct. 21, 2015	Oct. 20, 2016
50 ohms Terminator	N/A	EMC-04	Oct. 28, 2015	Oct. 27, 2016
Software BVADT	BVADT_Cond_ V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. A.
3. The VCCI Con A Registration No. is C-817.
4. Tested Date: Feb. 04, 2016

4.2.3 Test Procedures

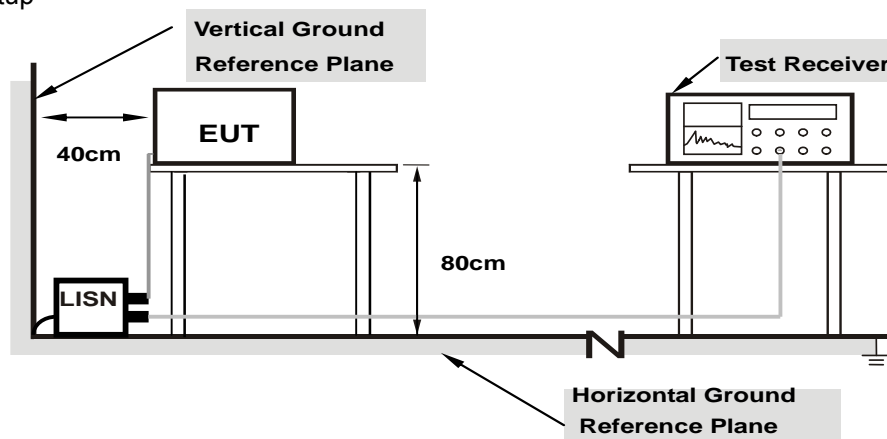
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

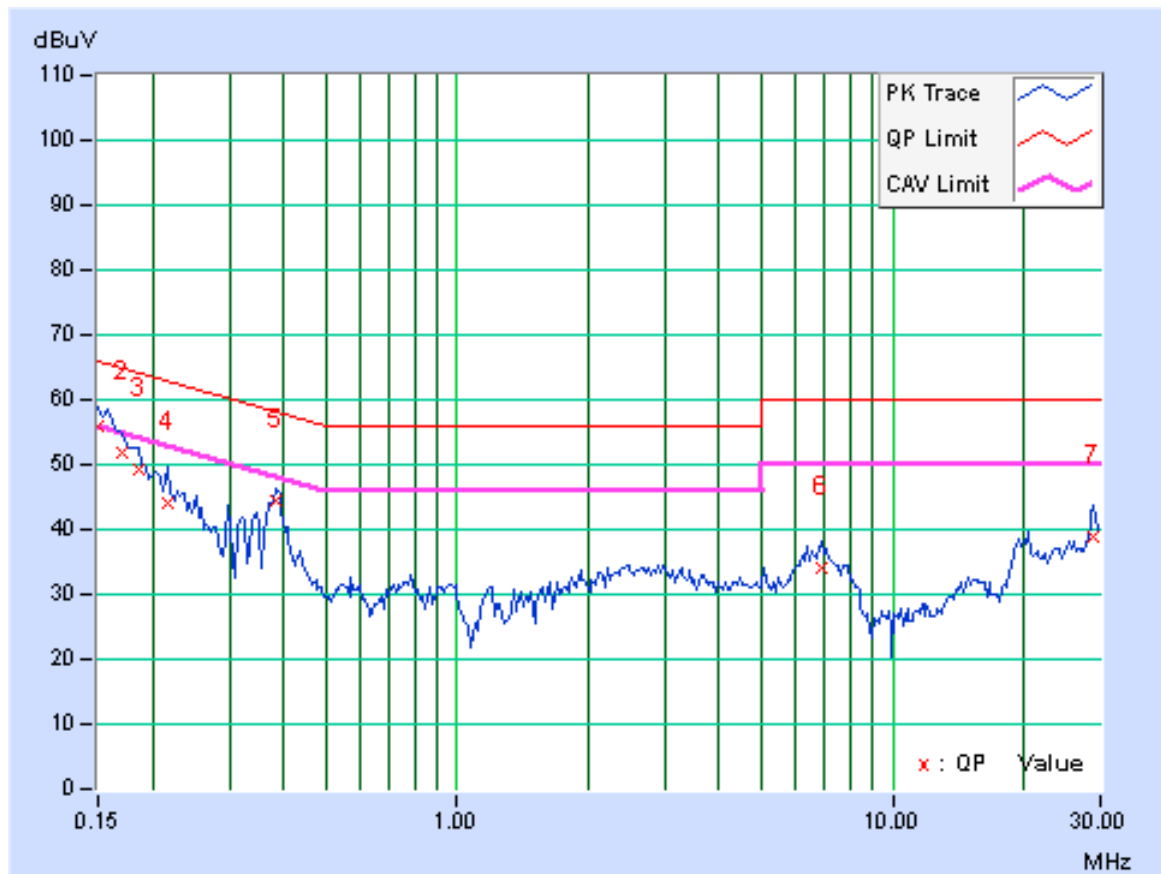
CDD Mode

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	----------	-------------------	--------------------------------

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.21	45.72	29.20	55.93	39.41	66.00	56.00	-10.07	-16.59
2	0.16953	10.22	41.61	26.08	51.83	36.30	64.98	54.98	-13.15	-18.68
3	0.18516	10.23	39.19	23.41	49.42	33.64	64.25	54.25	-14.84	-20.62
4	0.21641	10.23	33.89	18.37	44.12	28.60	62.96	52.96	-18.83	-24.35
5	0.38438	10.28	34.11	31.72	44.39	42.00	58.18	48.18	-13.80	-6.19
6	6.86328	10.55	23.45	18.63	34.00	29.18	60.00	50.00	-26.00	-20.82
7	28.88672	11.25	27.50	22.49	38.75	33.74	60.00	50.00	-21.25	-16.26

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

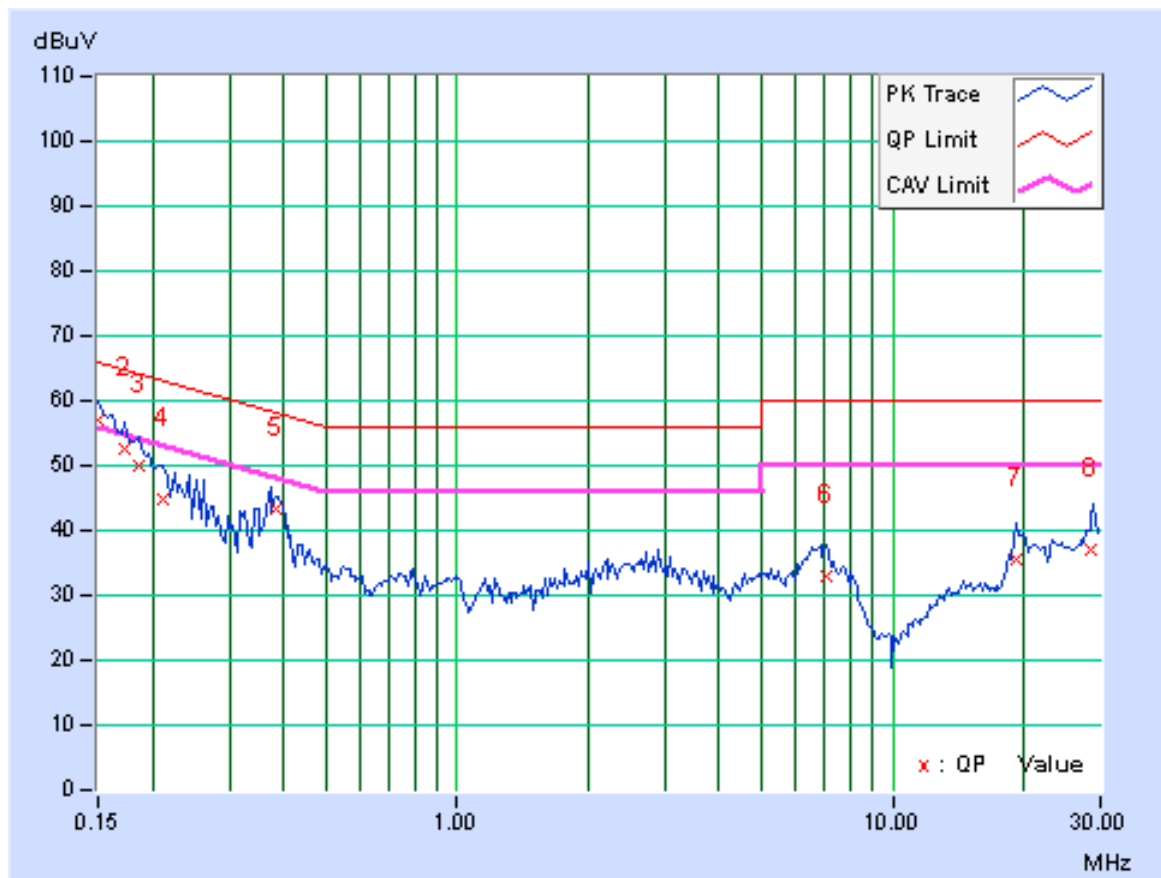


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.28	46.76	30.35	57.04	40.63	66.00	56.00	-8.96	-15.37
2	0.17344	10.30	42.46	26.34	52.76	36.64	64.79	54.79	-12.04	-18.16
3	0.18516	10.30	39.72	23.60	50.02	33.90	64.25	54.25	-14.23	-20.35
4	0.21250	10.31	34.35	21.66	44.66	31.97	63.11	53.11	-18.44	-21.13
5	0.38566	10.37	33.06	31.36	43.43	41.73	58.16	48.16	-14.73	-6.43
6	7.07031	10.60	22.27	17.30	32.87	27.90	60.00	50.00	-27.13	-22.10
7	19.27344	10.97	24.46	19.65	35.43	30.62	60.00	50.00	-24.57	-19.38
8	28.53906	11.13	25.94	20.72	37.07	31.85	60.00	50.00	-22.93	-18.15

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

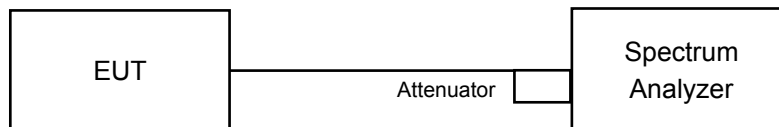


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

- Set resolution bandwidth (RBW) = 100kHz
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	8.12	0.5	PASS
6	2437	8.09	0.5	PASS
11	2462	8.12	0.5	PASS

CDD Mode

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.44	16.45	0.5	PASS
6	2437	16.42	16.45	0.5	PASS
11	2462	16.48	16.47	0.5	PASS

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.66	17.68	0.5	PASS
6	2437	17.67	17.67	0.5	PASS
11	2462	17.65	17.68	0.5	PASS

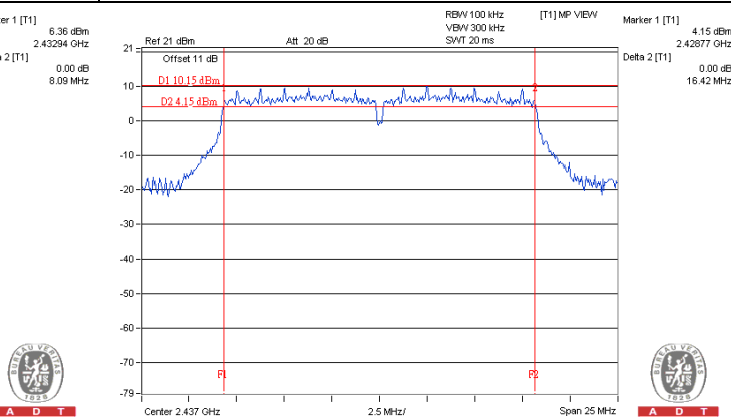
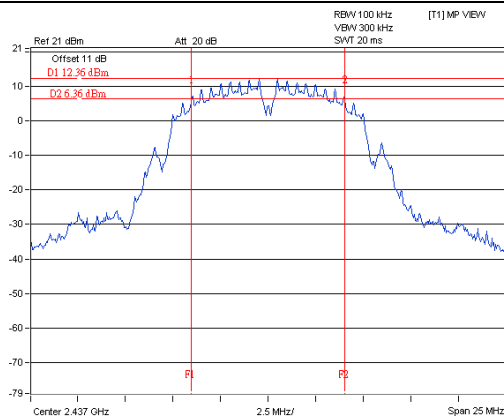
802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.89	36.10	0.5	Pass
6	2437	35.81	36.03	0.5	Pass
9	2452	35.73	36.14	0.5	Pass

Spectrum Plot of Worst Value

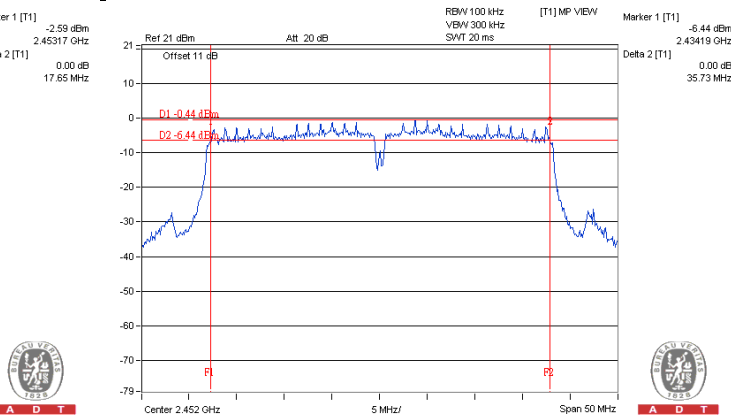
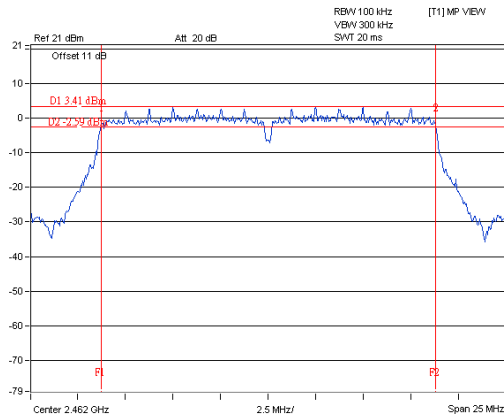
802.11b / CH6

802.11g / Chain 0 : CH6



802.11n (HT20) / Chain 0 : CH11

802.11n (HT40) / Chain 0 : CH9



4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

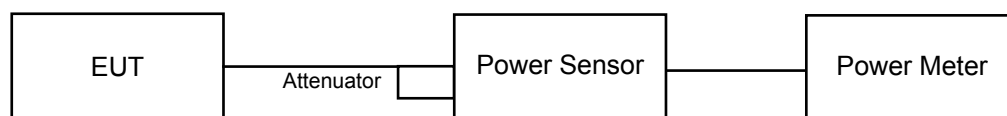
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

A peak / average power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak / average power sensor. Record the power level.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

FOR PEAK POWER

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	368.978	25.67	30	Pass
6	2437	259.418	24.14	30	Pass
11	2462	263.633	24.21	30	Pass

CDD Mode

802.11g

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	24.59	25.03	606.16	27.83	30	Pass
6	2437	26.26	26.41	860.191	29.35	30	Pass
11	2462	24.28	24.46	547.171	27.38	30	Pass

802.11n (HT20)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	24.44	25.11	602.311	27.80	30	Pass
6	2437	26.17	26.24	834.727	29.22	30	Pass
11	2462	23.42	23.73	455.834	26.59	30	Pass

802.11n (HT40)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	21.66	21.74	295.834	24.71	30	Pass
6	2437	24.52	25.23	616.565	27.90	30	Pass
9	2452	21.58	21.92	299.477	24.76	30	Pass

FOR AVERAGE POWER

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	177.419	22.49
6	2437	111.944	20.49
11	2462	112.72	20.52

CDD Mode

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	16.54	17.09	96.25	19.83
6	2437	20.61	21.36	251.853	24.01
11	2462	16.06	16.33	83.319	19.21

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	15.92	16.59	84.688	19.28
6	2437	20.28	21.33	242.491	23.85
11	2462	15.02	15.47	67.006	18.26

802.11n (HT40)

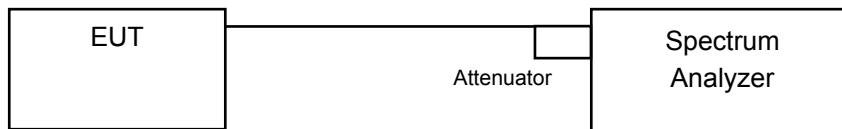
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	13.22	13.81	45.033	16.54
6	2437	16.42	17.36	98.303	19.93
9	2452	13.18	13.85	45.063	16.54

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set the VBW $\geq 3 \times \text{RBW}$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	0.02	8	Pass
6	2437	-2.30	8	Pass
11	2462	-1.63	8	Pass

CDD Mode

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-8.59	3.01	-5.58	6.99	Pass
	6	2437	-3.63	3.01	-0.62	6.99	Pass
	11	2462	-10.15	3.01	-7.14	6.99	Pass
1	1	2412	-8.39	3.01	-5.38	6.99	Pass
	6	2437	-5.29	3.01	-2.28	6.99	Pass
	11	2462	-8.82	3.01	-5.81	6.99	Pass

NOTE: Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-9.25	3.01	-6.24	6.99	Pass
	6	2437	-5.88	3.01	-2.87	6.99	Pass
	11	2462	-10.91	3.01	-7.90	6.99	Pass
1	1	2412	-9.49	3.01	-6.48	6.99	Pass
	6	2437	-5.76	3.01	-2.75	6.99	Pass
	11	2462	-10.12	3.01	-7.11	6.99	Pass

NOTE: Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.

802.11n (HT40)

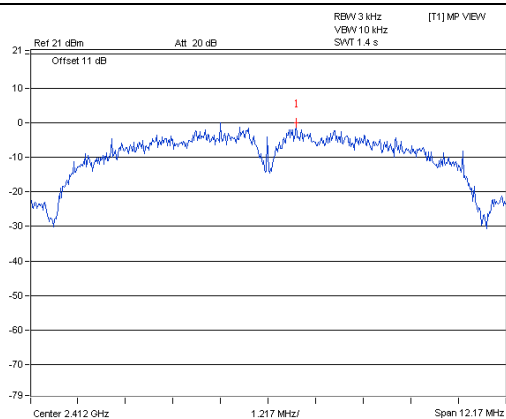
TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-14.87	3.01	-11.86	6.99	Pass
	6	2437	-11.51	3.01	-8.50	6.99	Pass
	9	2452	-14.45	3.01	-11.44	6.99	Pass
1	3	2422	-14.24	3.01	-11.23	6.99	Pass
	6	2437	-9.32	3.01	-6.31	6.99	Pass
	9	2452	-14.83	3.01	-11.82	6.99	Pass

NOTE: Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.

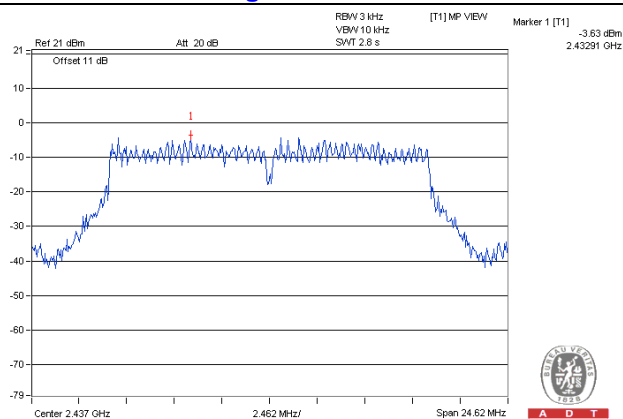
Spectrum Plot of Worst Value

802.11b / CH1

802.11g / Chain 0 : CH6



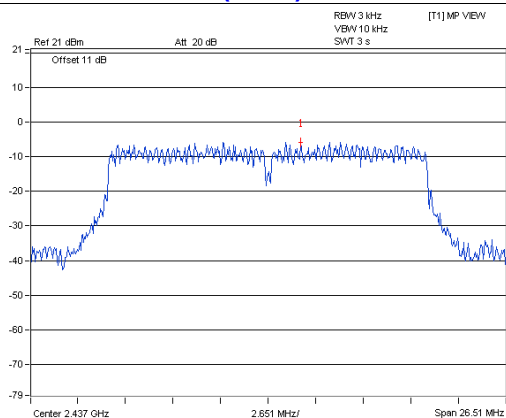
A D T



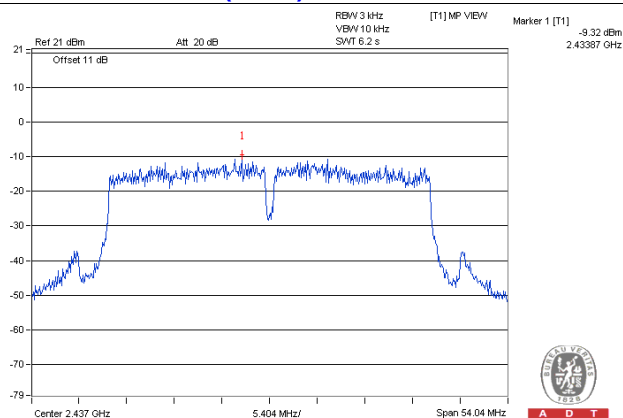
A D T

802.11n (HT20) / Chain 1 : CH6

802.11n (HT40) / Chain 1 : CH6



A D T



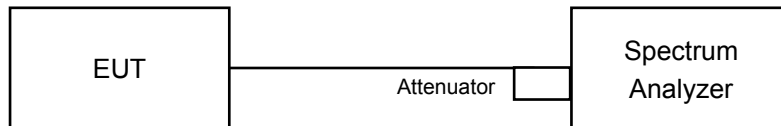
A D T

4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

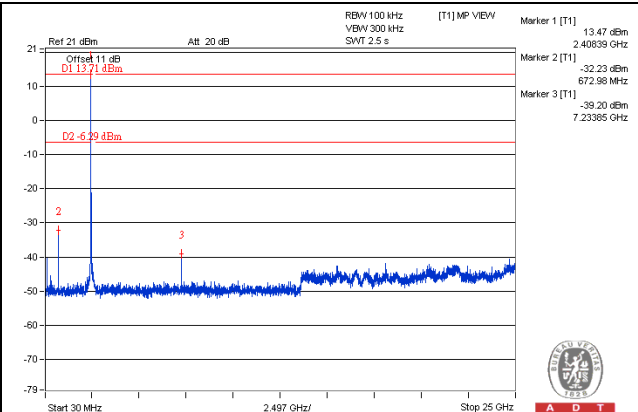
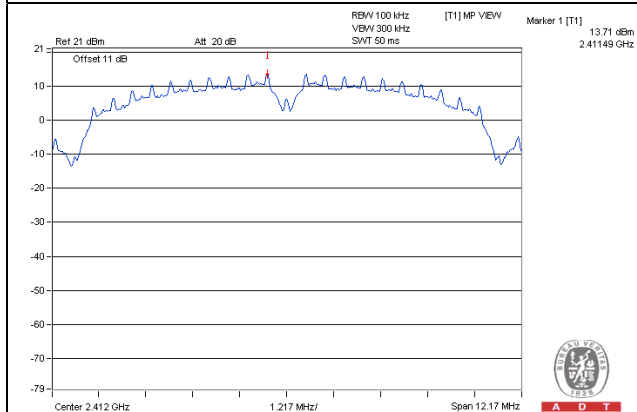
Same as Item 4.3.6

4.6.7 Test Results

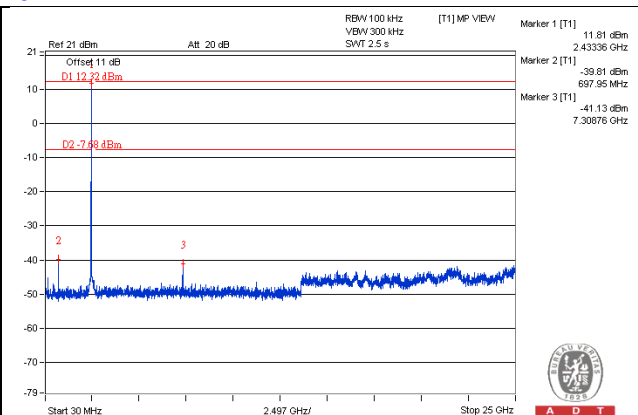
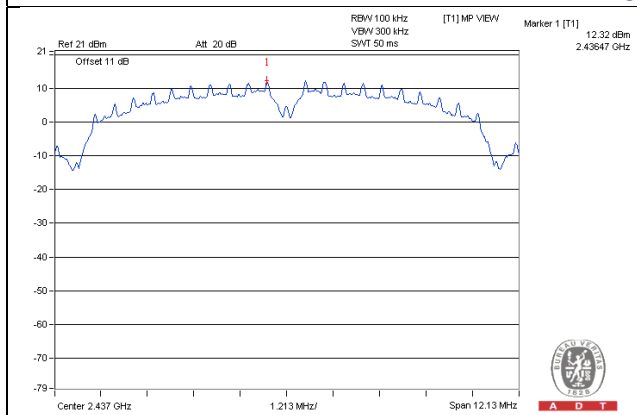
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

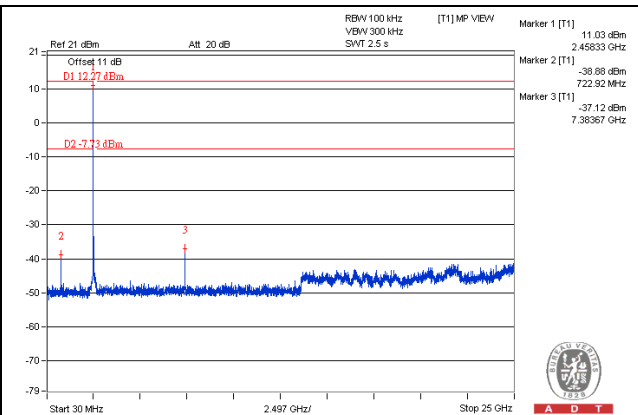
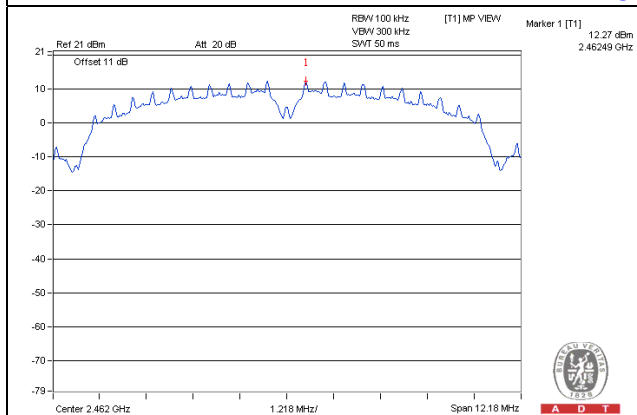
CH 1



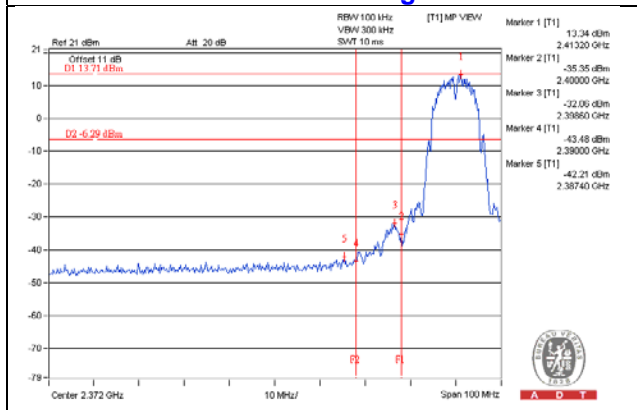
CH 6



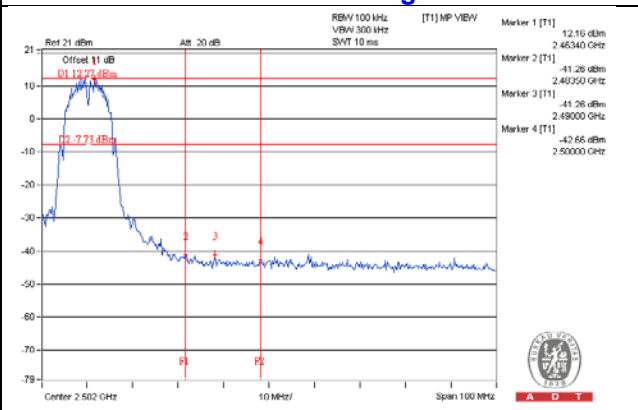
CH 11



CH 1 Band edge

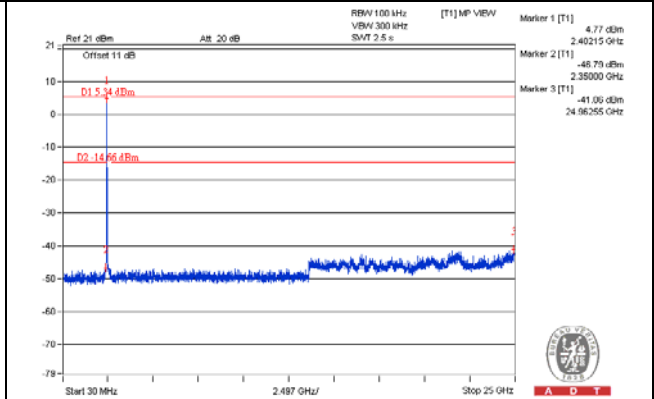
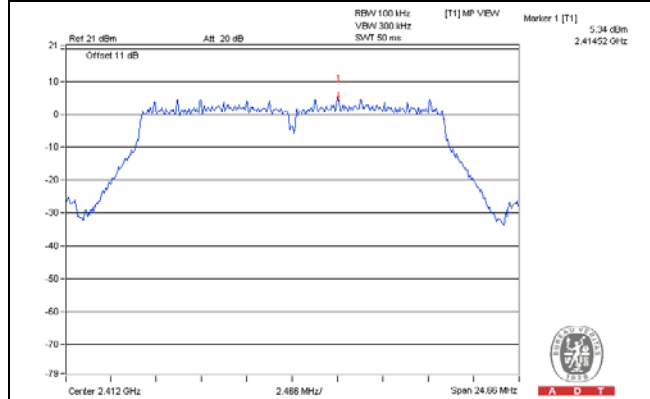


CH 11 Band edge

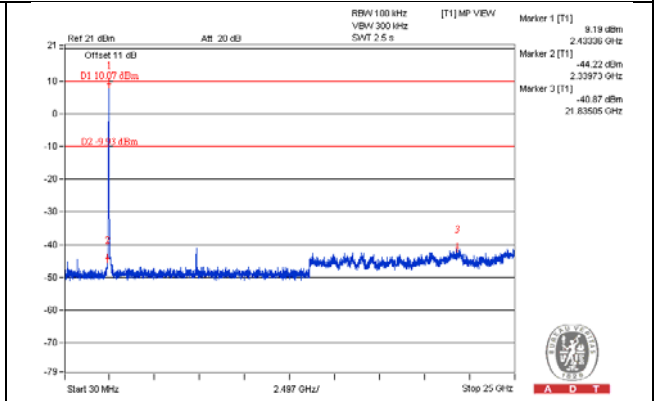
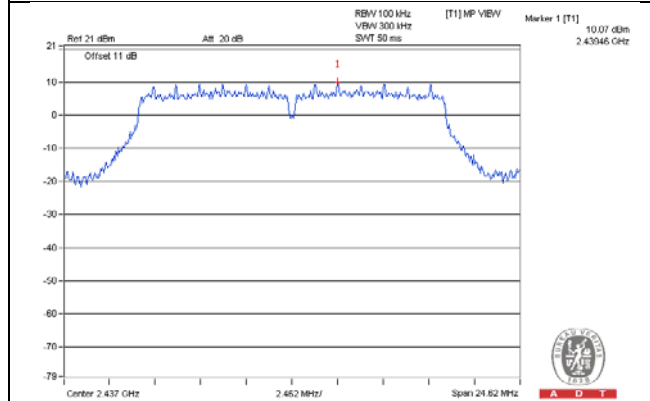


802.11g
Chain 0

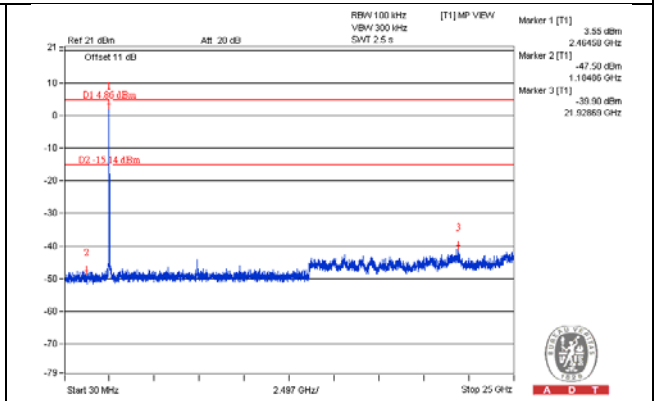
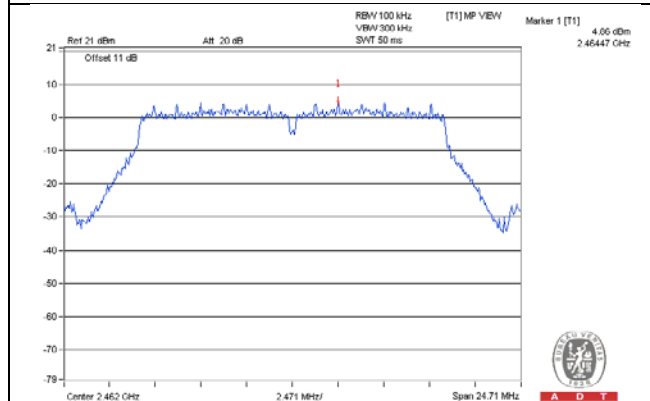
CH 1



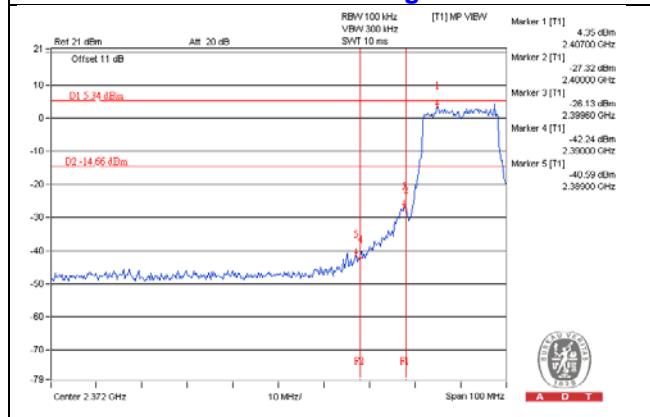
CH 6



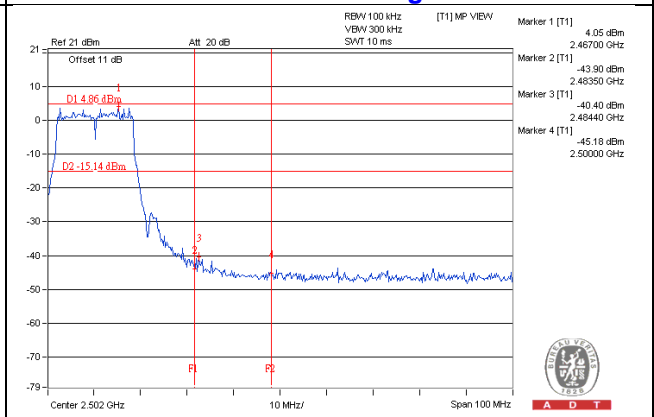
CH 11



CH 1 Band edge

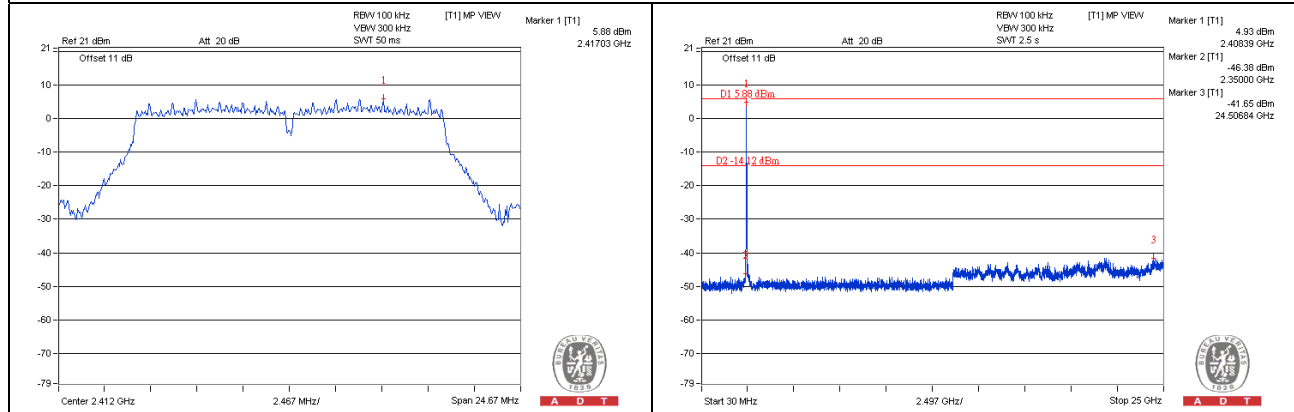


CH 11 Band edge

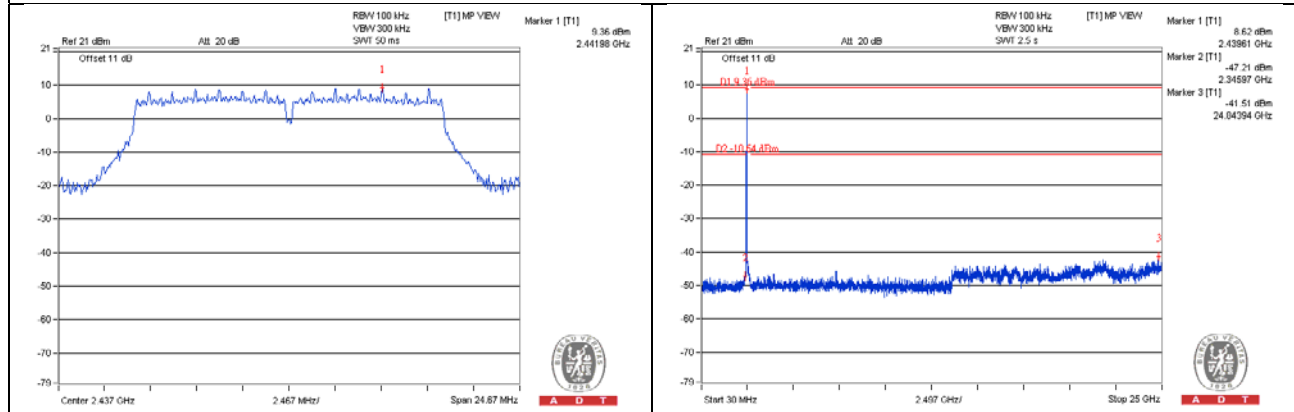


Chain 1

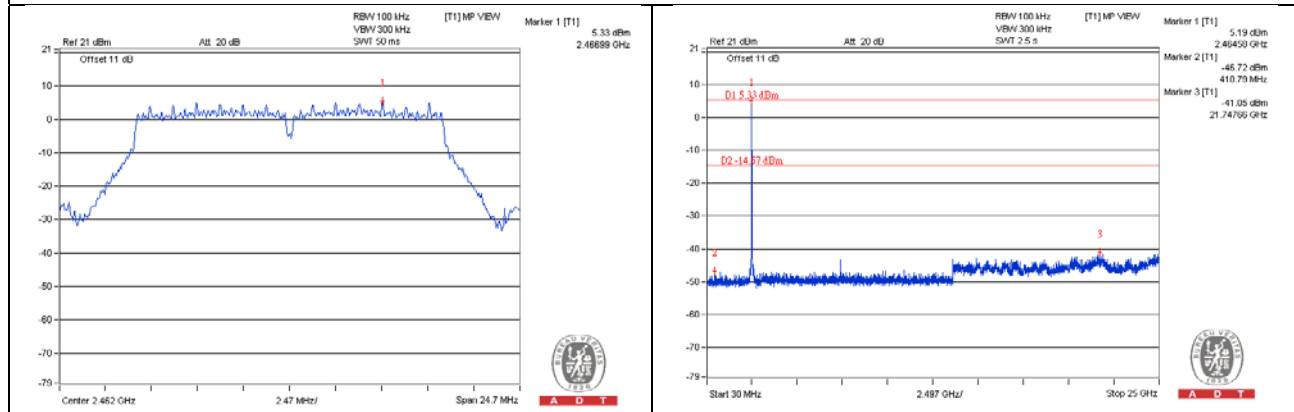
CH 1



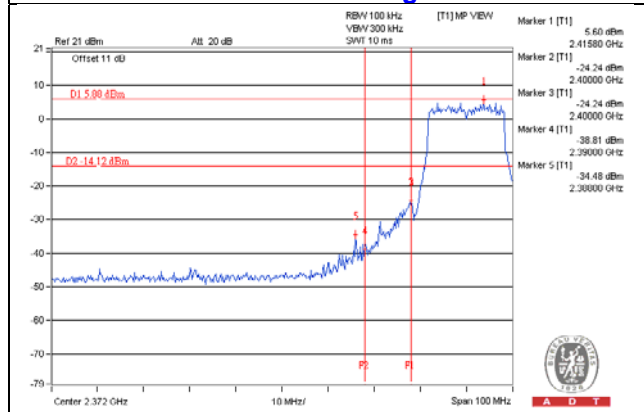
CH 6



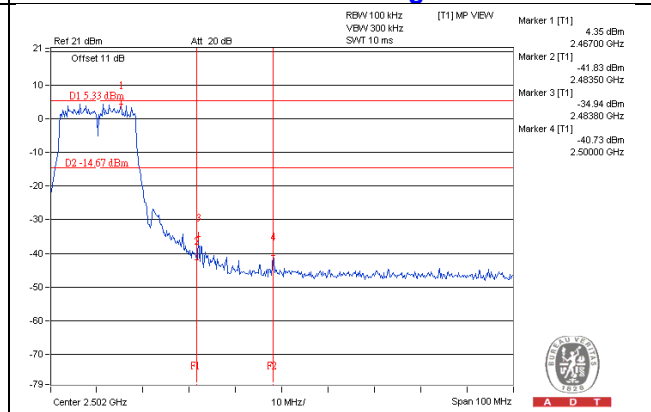
CH 11



CH 1 Band edge

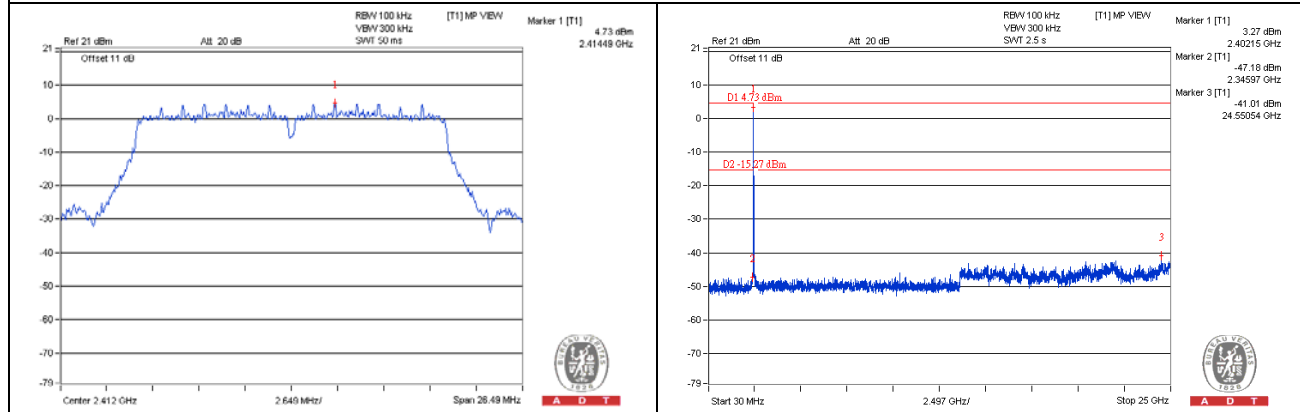


CH 11 Band edge

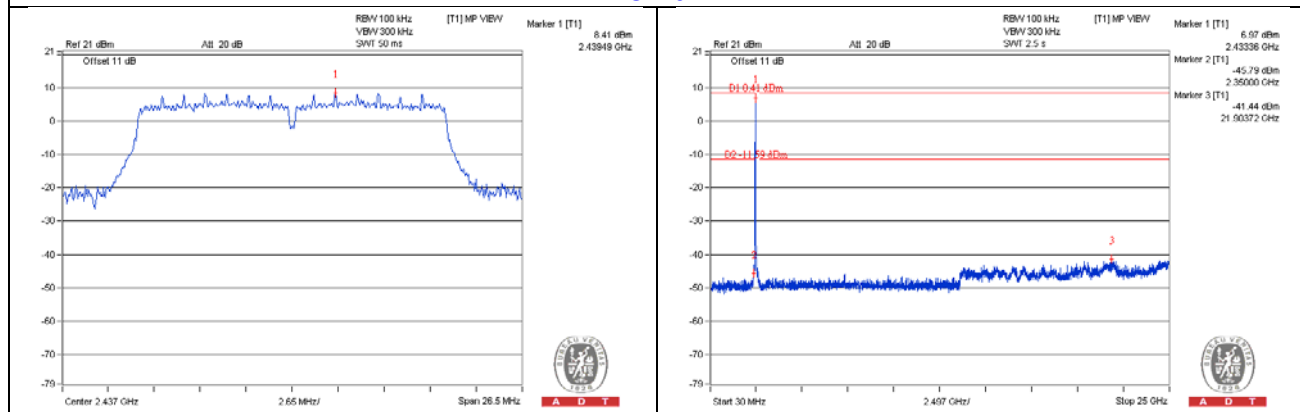


802.11n (HT20) Chain 0

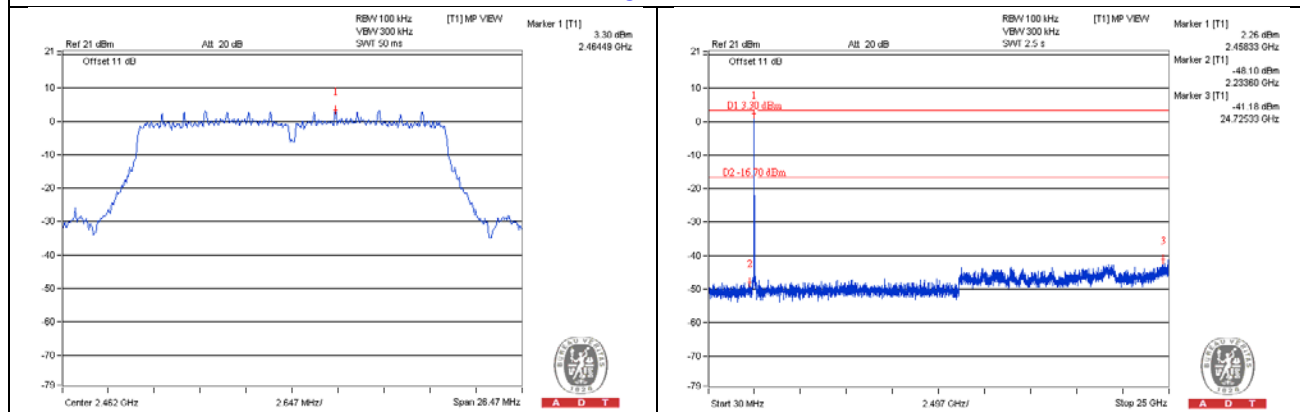
CH 1



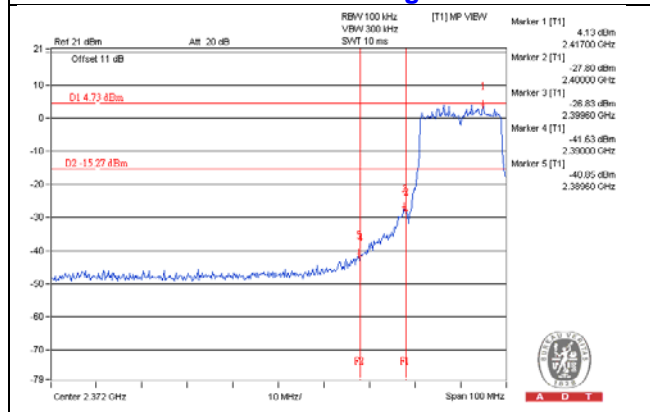
CH 6



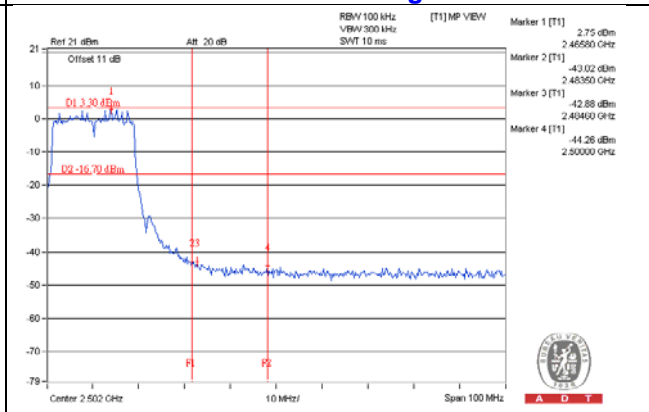
CH 11



CH 1 Band edge

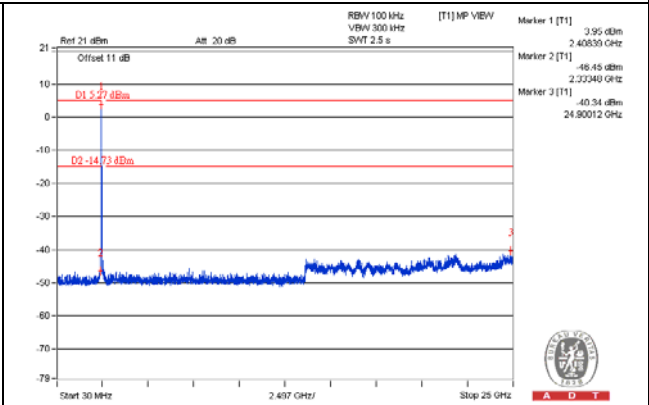
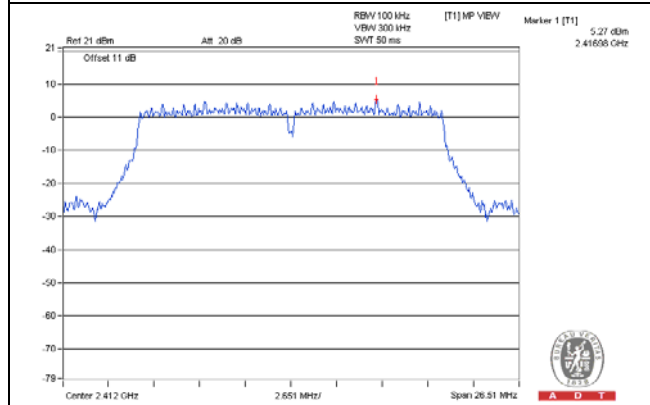


CH 11 Band edge

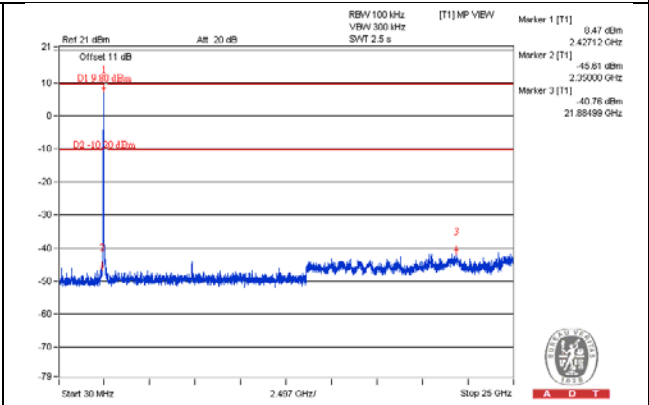
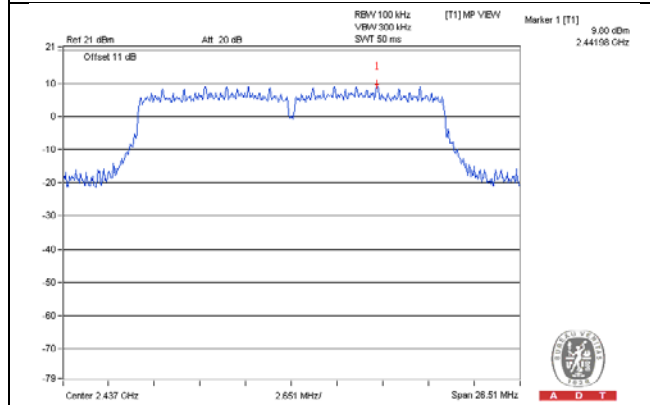


Chain 1

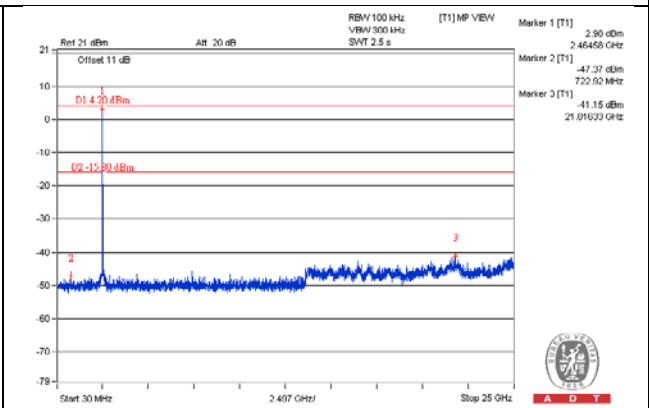
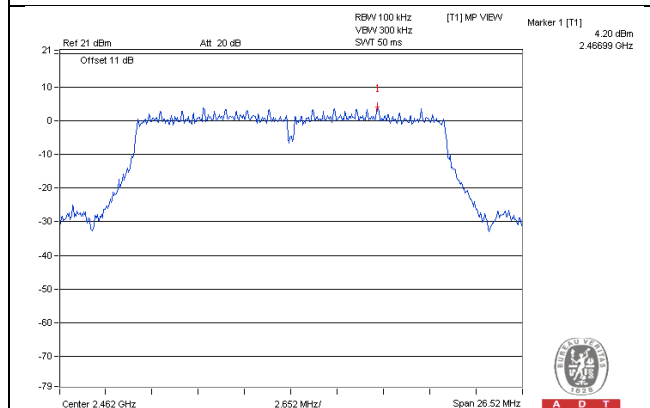
CH 1



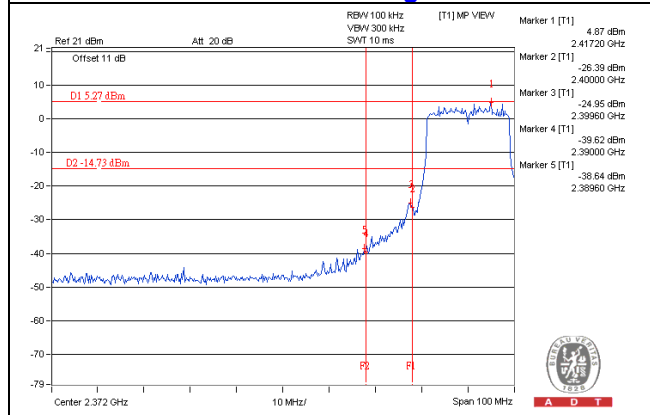
CH 6



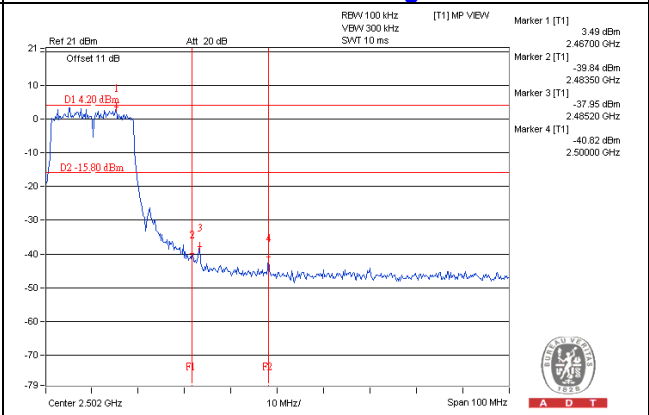
CH 11



CH 1 Band edge

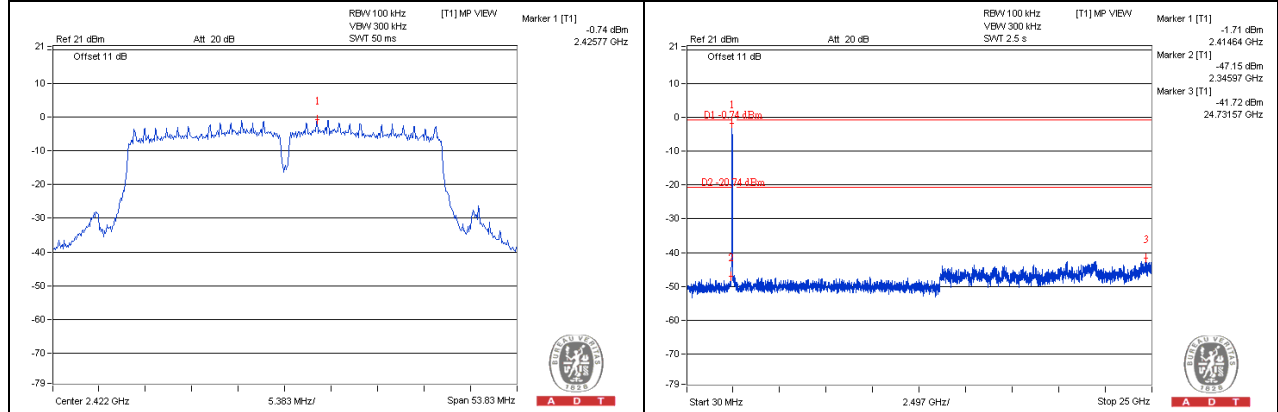


CH 11 Band edge

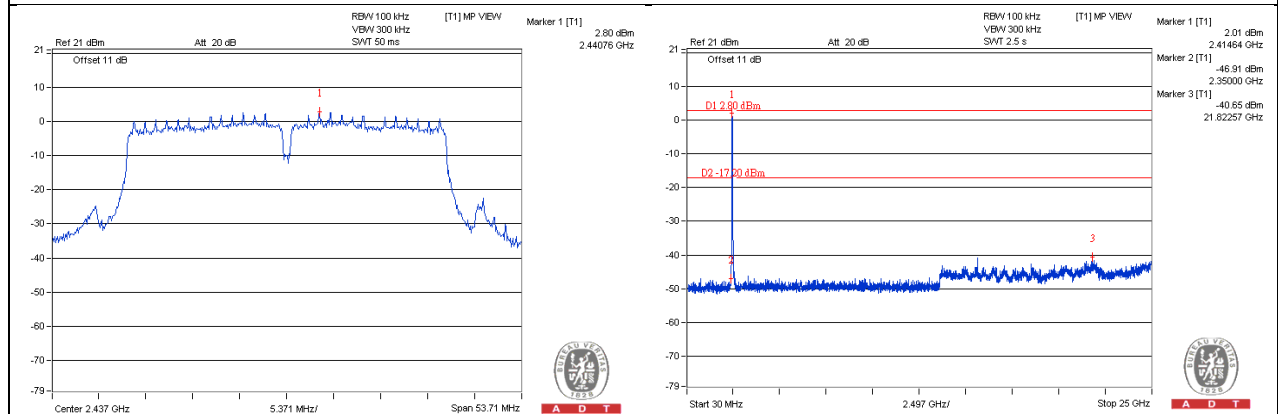


802.11n (HT40) Chain 0

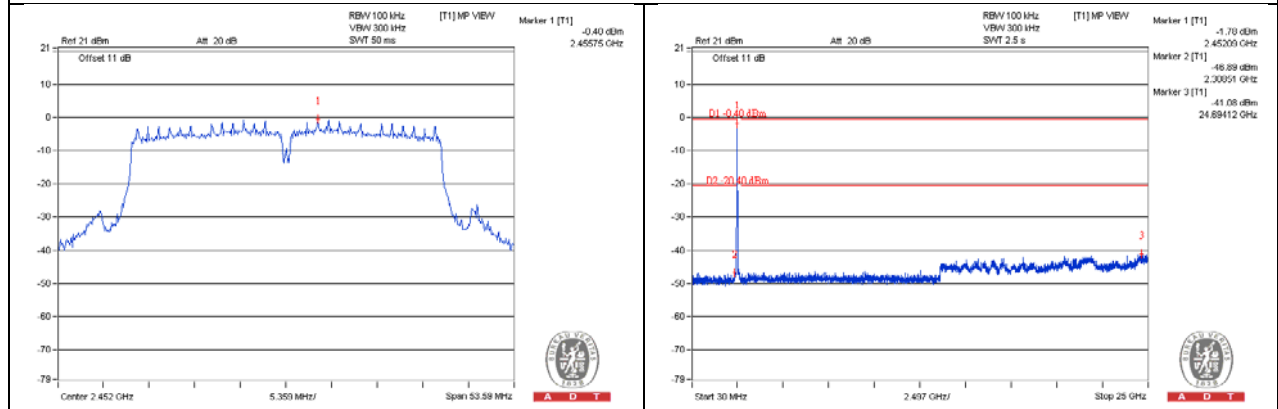
CH 3



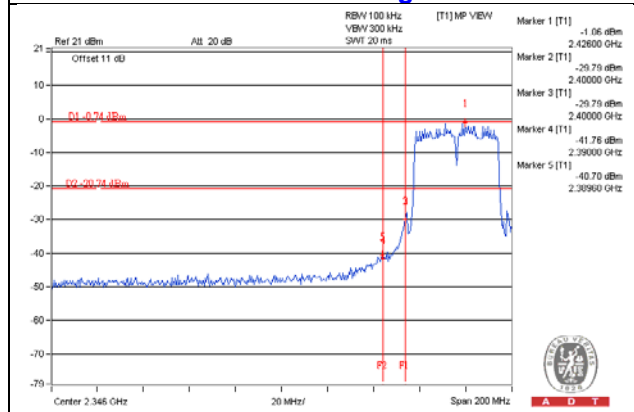
CH 6



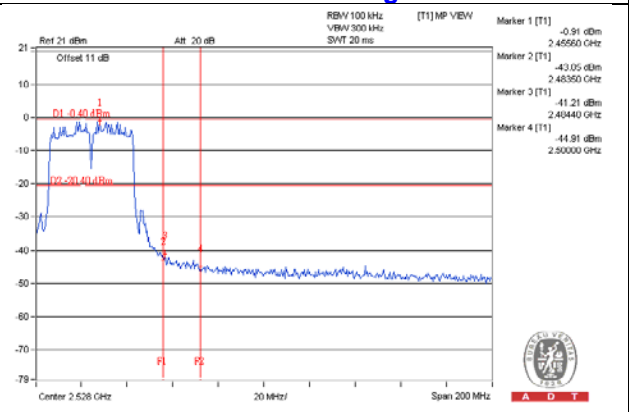
CH 9



CH 3 Band edge

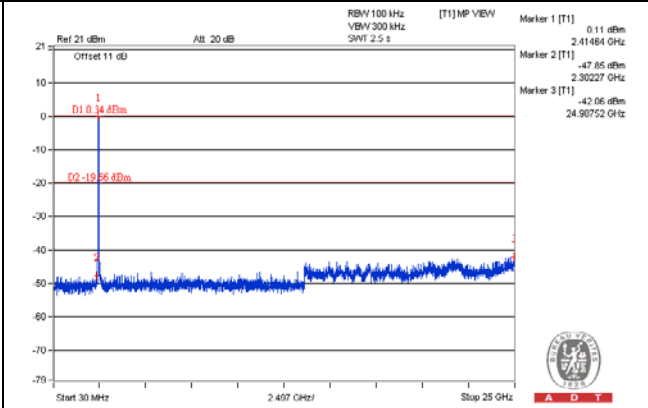
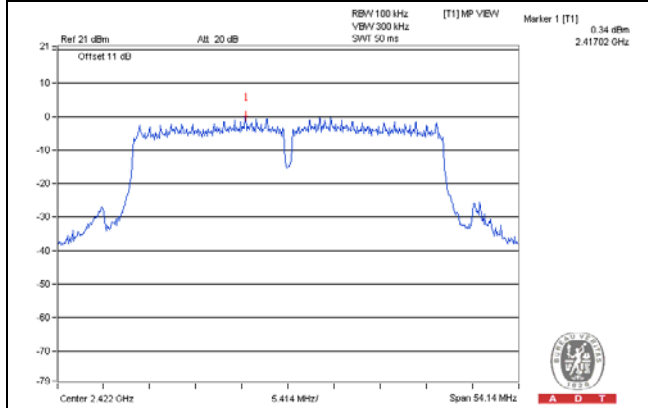


CH 9 Band edge

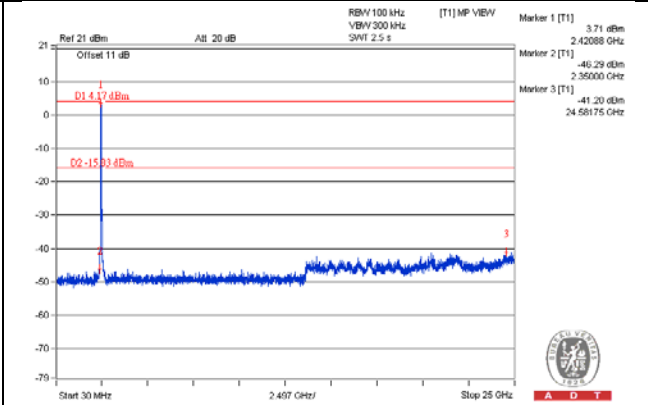
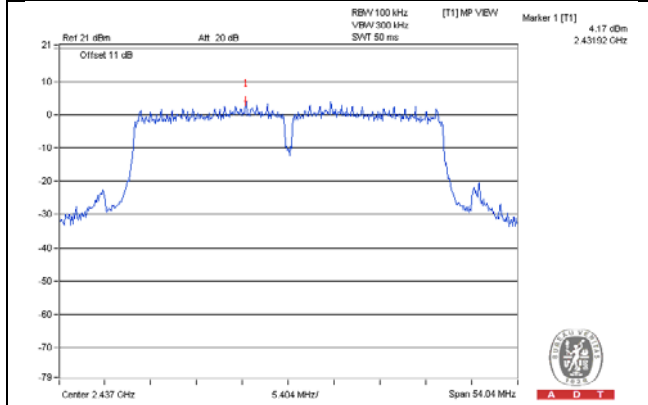


Chain 1

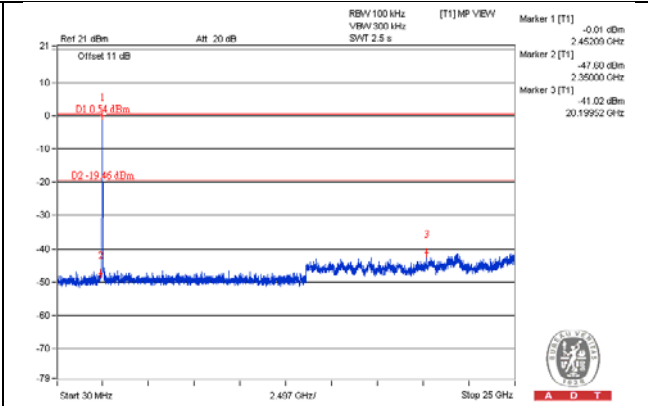
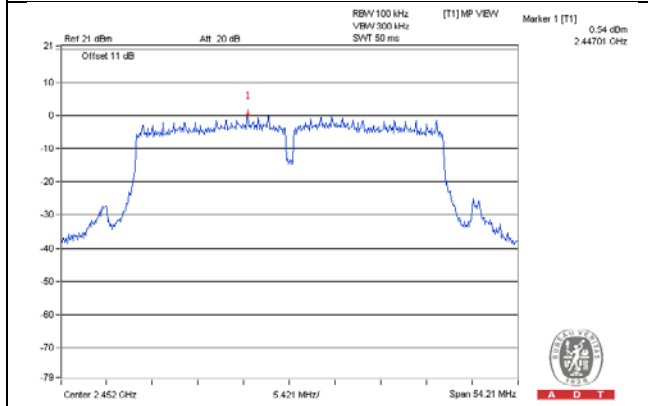
CH 3



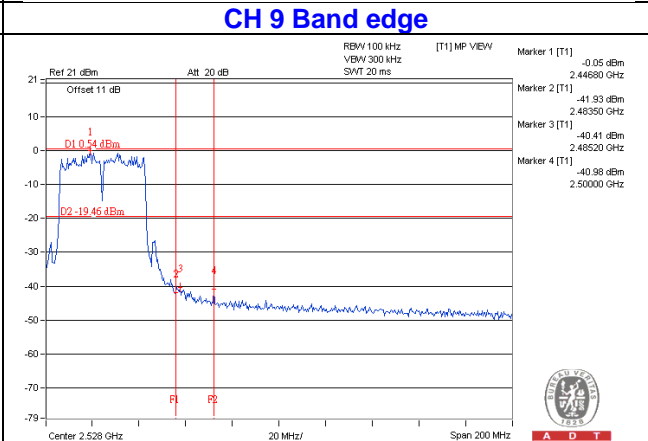
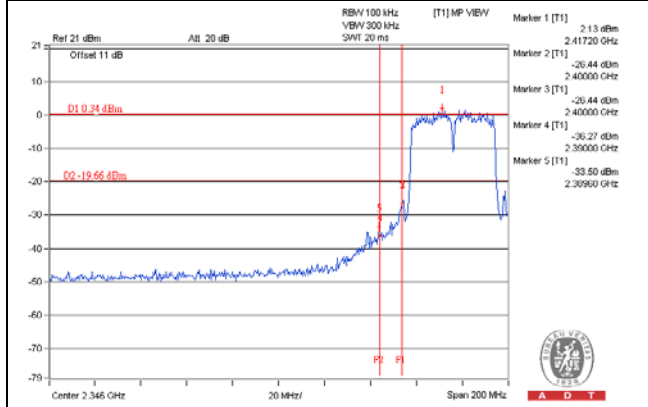
CH 6



CH 9



CH 3 Band edge



5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

--- END ---