FCC Test Report (WLAN)

Report No.: RF150126E05

FCC ID: TLZ-CM2XXNF

Test Model: AW-CM195NF

Series Model: AW-CM217NF, AW-CM235NF

Received Date: Jan. 26, 2015

Test Date: Feb. 03 to 04, 2015

Issued Date: Feb. 25, 2015

Applicant: AzureWave Technologies, Inc.

Address: 8 F., No. 94, Baozhong Rd., Xindian,Taipei, Taiwan 231

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

Lab Address: No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

Test Location (1): No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, 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. This report should 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 (WLAN) 7
3.2 Description of Test Modes 10
3.2.1 Test Mode Applicability and Tested Channel Detail 11
3.3 Duty Cycle of Test Signal 13
3.4 Description of Support Units 14
3.4.1 Configuration of System under Test 15
3.5 General Description of Applied Standards 16

4 Test Types and Results **17**

4.1 Radiated Emission and Bandedge Measurement 17
4.1.1 Limits of Radiated Emission and Bandedge Measurement 17
4.1.2 Test Instruments 18
4.1.3 Test Procedures 19
4.1.4 Deviation from Test Standard 19
4.1.5 Test Setup 20
4.1.6 EUT Operating Conditions 20
4.1.7 Test Results 21
4.2 Conducted Emission Measurement 34
4.2.1 Limits of Conducted Emission Measurement 34
4.2.2 Test Instruments 34
4.2.3 Test Procedures 35
4.2.4 Deviation from Test Standard 35
4.2.5 Test Setup 35
4.2.6 EUT Operating Conditions 35
4.2.7 Test Results 36
4.3 6dB Bandwidth Measurement 38
4.3.1 Limits of 6dB Bandwidth Measurement 38
4.3.2 Test Setup 38
4.3.3 Test Instruments 38
4.3.4 Test Procedures 38
4.3.5 Deviation from Test Standard 38
4.3.6 EUT Operating Conditions 38
4.3.7 Test Results 39
4.4 Conducted Output Power Measurement 41
4.4.1 Limits of Conducted Output Power Measurement 41
4.4.2 Test Setup 41
4.4.3 Test Instruments 41
4.4.4 Test Procedures 41
4.4.5 Deviation from Test Standard 41
4.4.6 EUT Operating Conditions 41
4.4.7 Test Results 42
4.5 Power Spectral Density Measurement 44
4.5.1 Limits of Power Spectral Density Measurement 44
4.5.2 Test Setup 44
4.5.3 Test Instruments 44
4.5.4 Test Procedures 44
4.5.5 Deviation from Test Standard 44
4.5.6 EUT Operating Conditions 44

4.5.7 Test Results 45
4.6 Conducted Out of Band Emission Measurement 47
4.6.1 Limits of Conducted Out of Band Emission Measurement 47
4.6.2 Test Setup 47
4.6.3 Test Instruments 47
4.6.4 Test Procedures 47
4.6.5 Deviation from Test Standard 47
4.6.6 EUT Operating Conditions 47
4.6.7 Test Results 48

5 Pictures of Test Arrangements 55

Appendix – Information on the Testing Laboratories 56

Release Control Record

Issue No.	Description	Date Issued
RF150126E05	Original release.	Feb. 25, 2015

1 Certificate of Conformity

Product: IEEE 802.11 a/b/g/n/ac Wireless LAN and Bluetooth M.2 Combo Module

Brand: AzureWave

Test Model: AW-CM195NF

Series Model: AW-CM217NF, AW-CM235NF

Sample Status: ENGINEERING SAMPLE

Applicant: AzureWave Technologies, Inc.

Test Date: Feb. 03 to 04, 2015

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10:2009

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 : _____, **Date:** Feb. 25, 2015
Midoli Peng / Specialist

Approved by : _____, **Date:** Feb. 25, 2015
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 -15.50dB at 0.51328MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 2483.500MHz.
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 i-pex(MHF) not a standard connector.

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	5.37 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.65 dB
	6GHz ~ 18GHz	3.88 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 (WLAN)

Product	IEEE 802.11 a/b/g/n/ac Wireless LAN and Bluetooth M.2 Combo Module
Brand	AzureWave
Test Model	AW-CM195NF
Series Model	AW-CM217NF, AW-CM235NF
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	3.3Vdc from host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n : up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	For 15.407 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.50 ~ 5.70GHz, 5.745 ~ 5.825GHz
	For 15.247 2.412 ~ 2.462GHz
Number of Channel	For 15.407 24 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 11 for 802.11n (HT40), 802.11ac (VHT40) 6 for 802.11ac (VHT80)
	For 15.247 11 for 802.11b/g, 802.11n (HT20), VHT20 7 for 802.11n (HT40), VHT40
Output Power	For 15.407 802.11a: 89.536mW 802.11ac (VHT20): 178.144mW 802.11ac (VHT40): 177.863mW 802.11ac (VHT80): 148.092mW
	For 15.247 802.11b: 179.473mW 802.11g: 270.396mW 802.11n (HT20): 466.771mW 802.11n (HT40): 233.435mW
Antenna Type	Please see Note
Antenna Connector	Please see Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. There are Bluetooth technology and WLAN technology used for the EUT.
2. For WLAN, 2.4GHz and 5GHz technology can not transmit at same time.
3. WLAN (5GHz) and Bluetooth technology can transmit at same time.
4. The EUT has three model names which are identical to each other in all aspects except for the following table. These solutions have same RF circuit /parameter and are pin to pin compatible. (Detail information please refer declaration letter by client)

AW model name	Difference. Broadcom solution
AW-CM195NF	BCM43540
AW-CM217NF	BCM4356
AW-CM235NF	BCM4354

From the above models, model: **AW-CM195NF** was selected as representative model for the test and its data was recorded in this report.

5. The antennas provided to the EUT, please refer to the following table:

Antenna No	Chain No.	Brand	Model	Gain (dBi)	Antenna Type	Connector Type	Frequency range (GHz to GHz)	Cable Length (External only)
1	Chain (0) (Aux)	MAG.LAYERS	MSA-4008-25GC1-A1	2.98	PIFA	i-pex(MHF)	2.4~2.5	15cm
				5.16			4.9~5.9	
	Chain (1) (Main)	MAG.LAYERS	MSA-4008-25GC1-A1	2.98	PIFA	i-pex(MHF)	2.4~2.5	15cm
				5.16			4.9~5.9	
2	Chain (0) (Aux)	LUXSHARE ICT	Speedy	1.43	PIFA	i-pex(MHF)	2.4~2.5	507mm
				-3.12			4.9~5.9	
	Chain (1) (Main)	LUXSHARE ICT	Speedy	-2.46	PIFA	i-pex(MHF)	2.4~2.5	472mm
				-0.02			4.9~5.9	

Antenna 1 was chosen for final test.

6. Antenna 1 was chosen for final test.The EUT incorporates a MIMO function.

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

Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

7. 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), VHT20:

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), VHT40:

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≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE≥1G:** Radiated Emission above 1GHz & Bandedge Measurement **RE<1G:** Radiated Emission below 1GHz

PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

NOTE:

1. The EUT's antenna (PIFA) had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.

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
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	13
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	27

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	13

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	13

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
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	13
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	27

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	23deg. C, 65%RH	120Vac, 60Hz	Robert Cheng
RE<1G	26deg. C, 67%RH	120Vac, 60Hz	Robert Cheng
PLC	22deg. C, 60%RH	120Vac, 60Hz	Barry Lee
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

3.3 Duty Cycle of Test Signal

If duty cycle of test signal is ≥ 98 %, duty factor is not required.

If duty cycle of test signal is < 98%, duty factor shall be considered.

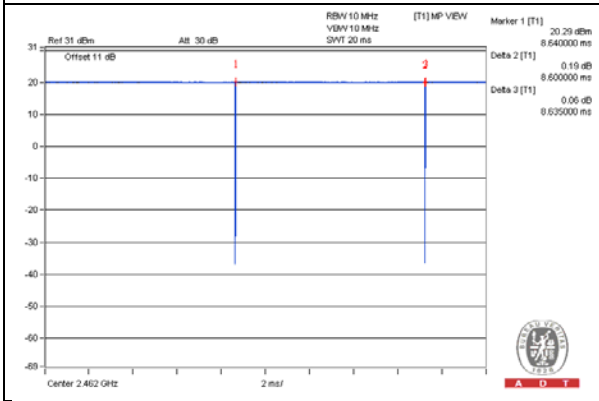
802.11b: Duty cycle = 8.6 ms/8.635 ms = 0.996

802.11g: Duty cycle = 1.43 ms/1.459 ms = 0.98

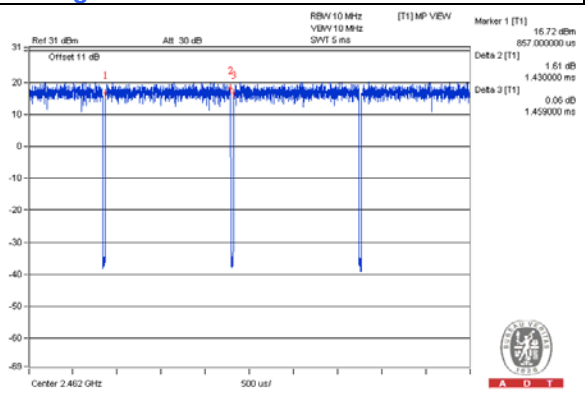
802.11n (HT20): Duty cycle = 1.343 ms/1.368 ms = 0.982

802.11n (HT40): Duty cycle = 0.942 ms/0.975 ms = 0.966, Duty factor = 10 * log(1/0.966) = 0.1

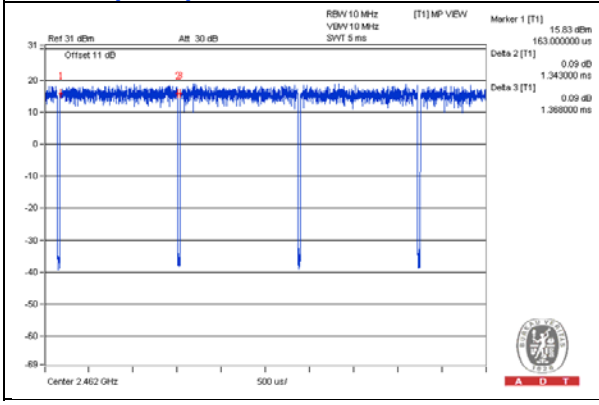
802.11b



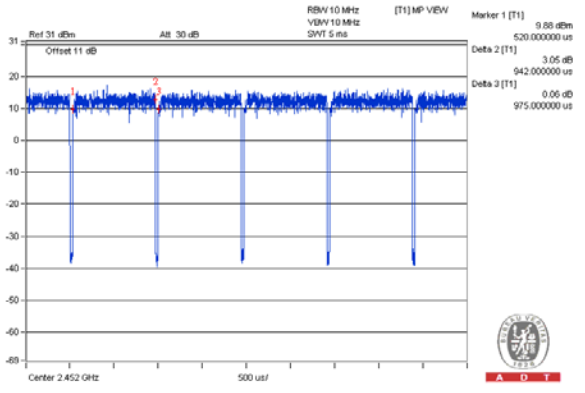
802.11g



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.

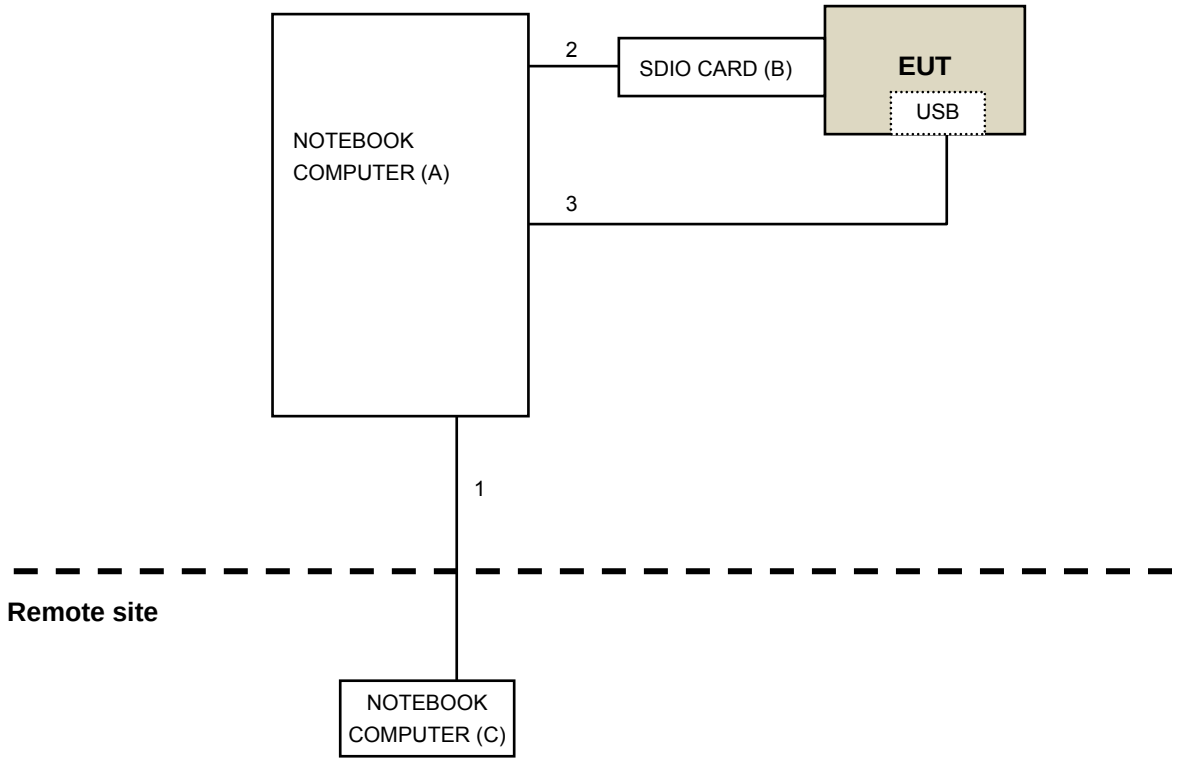
No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	NOTEBOOK COMPUTER	ASUS	A42J	NA	FCC DoC	Supplied by Client
B	SDIO CARD	AzureWave	NA	NA	NA	Supplied by Client
C	NOTEBOOK COMPUTER	DELL	PP32LA	DSLB32S	NA	Provided by Lab

NOTE:

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

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1	RJ45	1	10	No	0	Provided by Lab
2	USB	1	2	No	0	Provided by Lab
3	USB	1	1.8	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)
558074 D01 DTS Meas Guidance v03r02
662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2009

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

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
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Aug. 27, 2014	Aug. 26, 2015
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131214 SNMY23684/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCI	EMC184045	980143	Jan. 15, 2015	Jan. 14, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Antenna Tower & Turn Table CT	NA	NA	NA	NA

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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5 The VCCI Site Registration No. is G-137.
6 The CANADA Site Registration No. is IC 7450H-2.
7 Tested Date: Feb. 03 to 04, 2015

4.1.3 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters 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:

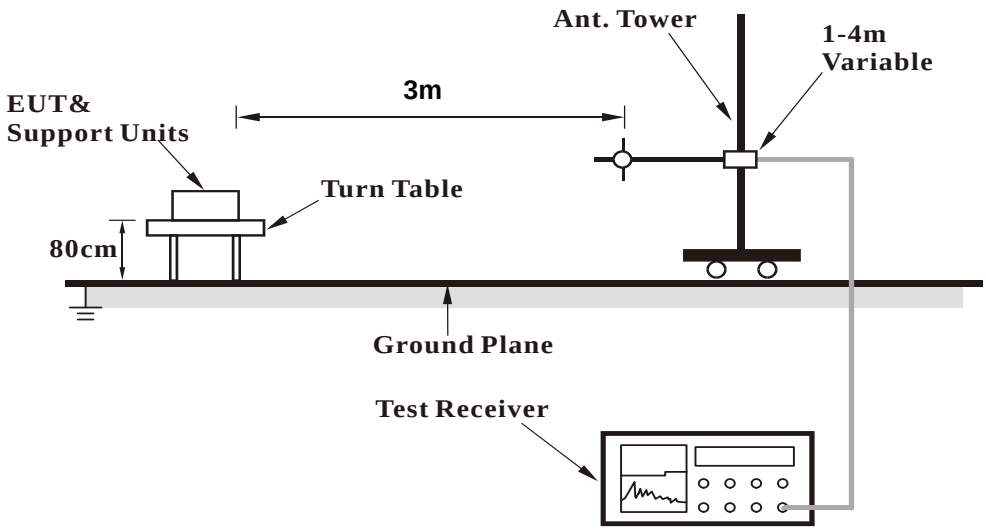
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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/duty cycle)).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle ≥ 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

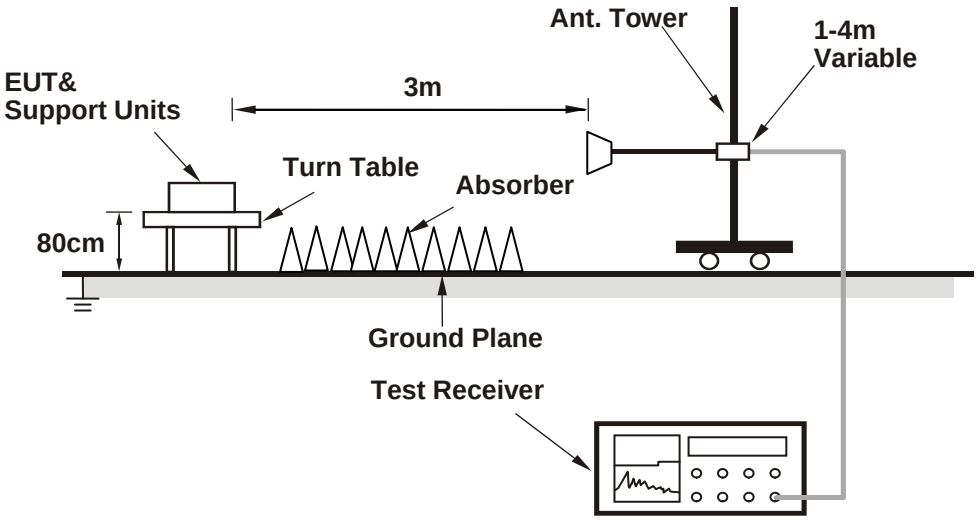
No deviation.

4.1.5 Test Setup

<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

1. Connect the EUT with the support unit A (Notebook computer) which is placed on a testing table.
2. The communication partner run test program “paste WiFi command” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data

802.11b

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

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	2388.00	59.3 PK	74.0	-14.7	1.45 H	33	61.78	-2.48
2	2388.00	53.4 AV	54.0	-0.6	1.45 H	33	55.88	-2.48
3	*2412.00	106.1 PK			1.45 H	33	108.47	-2.37
4	*2412.00	103.5 AV			1.45 H	33	105.87	-2.37
5	4824.00	48.3 PK	74.0	-25.7	1.13 H	260	42.59	5.71
6	4824.00	40.6 AV	54.0	-13.4	1.13 H	260	34.89	5.71
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	2388.00	56.4 PK	74.0	-17.6	1.48 V	287	58.88	-2.48
2	2388.00	47.6 AV	54.0	-6.4	1.48 V	287	50.08	-2.48
3	*2412.00	102.2 PK			1.48 V	287	104.57	-2.37
4	*2412.00	99.6 AV			1.48 V	287	101.97	-2.37
5	4824.00	50.5 PK	74.0	-23.5	1.05 V	341	44.79	5.71
6	4824.00	46.0 AV	54.0	-8.0	1.05 V	341	40.29	5.71

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	58.4 PK	74.0	-15.6	1.42 H	36	60.87	-2.47
2	2390.00	50.6 AV	54.0	-3.4	1.42 H	36	53.07	-2.47
3	*2437.00	110.1 PK			1.42 H	36	112.35	-2.25
4	*2437.00	107.6 AV			1.42 H	36	109.85	-2.25
5	2483.50	56.3 PK	74.0	-17.7	1.42 H	36	58.33	-2.03
6	2483.50	44.1 AV	54.0	-9.9	1.42 H	36	46.13	-2.03
7	4874.00	48.5 PK	74.0	-25.5	1.17 H	261	42.60	5.90
8	4874.00	40.5 AV	54.0	-13.5	1.17 H	261	34.60	5.90
9	7311.00	53.9 PK	74.0	-20.1	1.07 H	257	40.73	13.17
10	7311.00	43.6 AV	54.0	-10.4	1.07 H	257	30.43	13.17
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	52.3 PK	74.0	-21.7	1.49 V	288	54.77	-2.47
2	2390.00	42.4 AV	54.0	-11.6	1.49 V	288	44.87	-2.47
3	*2437.00	106.5 PK			1.49 V	288	108.75	-2.25
4	*2437.00	103.5 AV			1.49 V	288	105.75	-2.25
5	2483.50	49.8 PK	74.0	-24.2	1.49 V	288	51.83	-2.03
6	2483.50	39.4 AV	54.0	-14.6	1.49 V	288	41.43	-2.03
7	4874.00	50.5 PK	74.0	-23.5	1.08 V	353	44.60	5.90
8	4874.00	46.0 AV	54.0	-8.0	1.08 V	353	40.10	5.90
9	7311.00	54.2 PK	74.0	-19.8	1.08 V	10	41.03	13.17
10	7311.00	45.5 AV	54.0	-8.5	1.08 V	10	32.33	13.17

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	107.5 PK			1.40 H	38	109.64	-2.14
2	*2462.00	105.1 AV			1.40 H	38	107.24	-2.14
3	2483.50	61.5 PK	74.0	-12.5	1.40 H	38	63.53	-2.03
4	2483.50	53.7 AV	54.0	-0.3	1.40 H	38	55.73	-2.03
5	4924.00	48.5 PK	74.0	-25.5	1.18 H	250	42.39	6.11
6	4924.00	40.6 AV	54.0	-13.4	1.18 H	250	34.49	6.11
7	7386.00	54.0 PK	74.0	-20.0	1.08 H	243	40.82	13.18
8	7386.00	43.5 AV	54.0	-10.5	1.08 H	243	30.32	13.18
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	104.1 PK			1.51 V	282	106.24	-2.14
2	*2462.00	101.1 AV			1.51 V	282	103.24	-2.14
3	4924.00	51.0 PK	74.0	-23.0	1.07 V	356	44.89	6.11
4	4924.00	46.4 AV	54.0	-7.6	1.07 V	356	40.29	6.11
5	7386.00	53.9 PK	74.0	-20.1	1.07 V	0	40.72	13.18
6	7386.00	45.1 AV	54.0	-8.9	1.07 V	0	31.92	13.18

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.

802.11g

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

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	66.7 PK	74.0	-7.3	1.44 H	36	69.17	-2.47
2	2390.00	53.2 AV	54.0	-0.8	1.44 H	36	55.67	-2.47
3	*2412.00	107.3 PK			1.44 H	36	109.67	-2.37
4	*2412.00	96.8 AV			1.44 H	36	99.17	-2.37
5	4824.00	49.0 PK	74.0	-25.0	1.12 H	251	43.29	5.71
6	4824.00	40.8 AV	54.0	-13.2	1.12 H	251	35.09	5.71
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	62.1 PK	74.0	-11.9	1.52 V	275	64.57	-2.47
2	2390.00	48.9 AV	54.0	-5.1	1.52 V	275	51.37	-2.47
3	*2412.00	104.1 PK			1.52 V	275	106.47	-2.37
4	*2412.00	93.5 AV			1.52 V	275	95.87	-2.37
5	4824.00	49.2 PK	74.0	-24.8	1.03 V	349	43.49	5.71
6	4824.00	40.7 AV	54.0	-13.3	1.03 V	349	34.99	5.71

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	66.9 PK	74.0	-7.1	1.43 H	35	69.37	-2.47
2	2390.00	53.0 AV	54.0	-1.0	1.43 H	35	55.47	-2.47
3	*2437.00	112.4 PK			1.43 H	35	114.65	-2.25
4	*2437.00	101.7 AV			1.43 H	35	103.95	-2.25
5	2483.50	67.3 PK	74.0	-6.7	1.43 H	35	69.33	-2.03
6	2483.50	50.2 AV	54.0	-3.8	1.43 H	35	52.23	-2.03
7	4874.00	48.6 PK	74.0	-25.4	1.12 H	276	42.70	5.90
8	4874.00	40.5 AV	54.0	-13.5	1.12 H	276	34.60	5.90
9	7311.00	53.8 PK	74.0	-20.2	1.08 H	255	40.63	13.17
10	7311.00	43.4 AV	54.0	-10.6	1.08 H	255	30.23	13.17
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	62.4 PK	74.0	-11.6	1.54 V	274	64.87	-2.47
2	2390.00	49.2 AV	54.0	-4.8	1.54 V	274	51.67	-2.47
3	*2437.00	109.3 PK			1.54 V	274	111.55	-2.25
4	*2437.00	98.4 AV			1.54 V	274	100.65	-2.25
5	2483.50	60.3 PK	74.0	-13.7	1.54 V	274	62.33	-2.03
6	2483.50	46.9 AV	54.0	-7.1	1.54 V	274	48.93	-2.03
7	4874.00	50.1 PK	74.0	-23.9	1.04 V	359	44.20	5.90
8	4874.00	42.1 AV	54.0	-11.9	1.04 V	359	36.20	5.90
9	7311.00	53.9 PK	74.0	-20.1	1.00 V	25	40.73	13.17
10	7311.00	43.3 AV	54.0	-10.7	1.00 V	25	30.13	13.17

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	107.1 PK			1.38 H	39	109.24	-2.14
2	*2462.00	96.6 AV			1.38 H	39	98.74	-2.14
3	2483.50	69.8 PK	74.0	-4.2	1.38 H	39	71.83	-2.03
4	2483.50	53.4 AV	54.0	-0.6	1.38 H	39	55.43	-2.03
5	4924.00	48.9 PK	74.0	-25.1	1.21 H	271	42.79	6.11
6	4924.00	40.9 AV	54.0	-13.1	1.21 H	271	34.79	6.11
7	7386.00	54.4 PK	74.0	-19.6	1.05 H	246	41.22	13.18
8	7386.00	44.0 AV	54.0	-10.0	1.05 H	246	30.82	13.18
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	103.9 PK			1.48 V	284	106.04	-2.14
2	*2462.00	93.1 AV			1.48 V	284	95.24	-2.14
3	2483.50	62.1 PK	74.0	-11.9	1.48 V	284	64.13	-2.03
4	2483.50	49.0 AV	54.0	-5.0	1.48 V	284	51.03	-2.03
5	4924.00	49.5 PK	74.0	-24.5	1.02 V	359	43.39	6.11
6	4924.00	41.0 AV	54.0	-13.0	1.02 V	359	34.89	6.11
7	7386.00	53.5 PK	74.0	-20.5	1.08 V	17	40.32	13.18
8	7386.00	43.2 AV	54.0	-10.8	1.08 V	17	30.02	13.18

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	68.1 PK	74.0	-5.9	1.43 H	33	70.57	-2.47
2	2390.00	53.4 AV	54.0	-0.6	1.43 H	33	55.87	-2.47
3	*2412.00	106.9 PK			1.43 H	33	109.27	-2.37
4	*2412.00	96.6 AV			1.43 H	33	98.97	-2.37
5	4824.00	49.0 PK	74.0	-25.0	1.19 H	264	43.29	5.71
6	4824.00	40.9 AV	54.0	-13.1	1.19 H	264	35.19	5.71
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	62.8 PK	74.0	-11.2	1.05 V	343	65.27	-2.47
2	2390.00	49.6 AV	54.0	-4.4	1.05 V	343	52.07	-2.47
3	*2412.00	103.3 PK			1.05 V	343	105.67	-2.37
4	*2412.00	93.5 AV			1.05 V	343	95.87	-2.37
5	4824.00	49.5 PK	74.0	-24.5	1.01 V	360	43.79	5.71
6	4824.00	41.1 AV	54.0	-12.9	1.01 V	360	35.39	5.71

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	1.41 H	38	70.27	-2.47
2	2390.00	53.3 AV	54.0	-0.7	1.41 H	38	55.77	-2.47
3	*2437.00	113.6 PK			1.41 H	38	115.85	-2.25
4	*2437.00	102.6 AV			1.41 H	38	104.85	-2.25
5	2483.50	68.4 PK	74.0	-5.6	1.41 H	38	70.43	-2.03
6	2483.50	51.2 AV	54.0	-2.8	1.41 H	38	53.23	-2.03
7	4874.00	48.8 PK	74.0	-25.2	1.23 H	267	42.90	5.90
8	4874.00	40.7 AV	54.0	-13.3	1.23 H	267	34.80	5.90
9	7311.00	53.9 PK	74.0	-20.1	1.12 H	252	40.73	13.17
10	7311.00	43.8 AV	54.0	-10.2	1.12 H	252	30.63	13.17
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	62.1 PK	74.0	-11.9	1.49 V	290	64.57	-2.47
2	2390.00	48.9 AV	54.0	-5.1	1.49 V	290	51.37	-2.47
3	*2437.00	109.0 PK			1.49 V	290	111.25	-2.25
4	*2437.00	97.9 AV			1.49 V	290	100.15	-2.25
5	2483.50	60.4 PK	74.0	-13.6	1.49 V	290	62.43	-2.03
6	2483.50	46.7 AV	54.0	-7.3	1.49 V	290	48.73	-2.03
7	4874.00	50.4 PK	74.0	-23.6	1.05 V	342	44.50	5.90
8	4874.00	42.2 AV	54.0	-11.8	1.05 V	342	36.30	5.90
9	7311.00	53.9 PK	74.0	-20.1	1.06 V	24	40.73	13.17
10	7311.00	43.7 AV	54.0	-10.3	1.06 V	24	30.53	13.17

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	108.2 PK			1.38 H	36	110.34	-2.14
2	*2462.00	97.5 AV			1.38 H	36	99.64	-2.14
3	2483.50	69.9 PK	74.0	-4.1	1.38 H	36	71.93	-2.03
4	2483.50	53.5 AV	54.0	-0.5	1.38 H	36	55.53	-2.03
5	4924.00	48.8 PK	74.0	-25.2	1.18 H	257	42.69	6.11
6	4924.00	40.6 AV	54.0	-13.4	1.18 H	257	34.49	6.11
7	7386.00	54.4 PK	74.0	-19.6	1.05 H	267	41.22	13.18
8	7386.00	43.9 AV	54.0	-10.1	1.05 H	267	30.72	13.18
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	104.2 PK			1.53 V	274	106.34	-2.14
2	*2462.00	93.3 AV			1.53 V	274	95.44	-2.14
3	2483.50	61.8 PK	74.0	-12.2	1.53 V	274	63.83	-2.03
4	2483.50	48.5 AV	54.0	-5.5	1.53 V	274	50.53	-2.03
5	4924.00	49.5 PK	74.0	-24.5	1.00 V	351	43.39	6.11
6	4924.00	40.9 AV	54.0	-13.1	1.00 V	351	34.79	6.11
7	7386.00	54.1 PK	74.0	-19.9	1.00 V	35	40.92	13.18
8	7386.00	43.5 AV	54.0	-10.5	1.00 V	35	30.32	13.18

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	66.8 PK	74.0	-7.2	1.40 H	33	69.27	-2.47
2	2390.00	53.5 AV	54.0	-0.5	1.40 H	33	55.97	-2.47
3	*2422.00	102.5 PK			1.40 H	33	104.82	-2.32
4	*2422.00	92.1 AV			1.40 H	33	94.42	-2.32
5	4844.00	48.9 PK	74.0	-25.1	1.19 H	261	43.12	5.78
6	4844.00	40.9 AV	54.0	-13.1	1.19 H	261	35.12	5.78
7	7266.00	54.2 PK	74.0	-19.8	1.10 H	248	41.00	13.20
8	7266.00	43.9 AV	54.0	-10.1	1.10 H	248	30.70	13.20
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	62.5 PK	74.0	-11.5	1.48 V	274	64.97	-2.47
2	2390.00	49.0 AV	54.0	-5.0	1.48 V	274	51.47	-2.47
3	*2422.00	99.2 PK			1.48 V	274	101.52	-2.32
4	*2422.00	88.3 AV			1.48 V	274	90.62	-2.32
5	4844.00	49.1 PK	74.0	-24.9	1.07 V	354	43.32	5.78
6	4844.00	40.8 AV	54.0	-13.2	1.07 V	354	35.02	5.78
7	7266.00	53.6 PK	74.0	-20.4	1.01 V	33	40.40	13.20
8	7266.00	43.2 AV	54.0	-10.8	1.01 V	33	30.00	13.20

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	69.7 PK	74.0	-4.3	1.40 H	37	72.17	-2.47
2	2390.00	53.4 AV	54.0	-0.6	1.40 H	37	55.87	-2.47
3	*2437.00	105.1 PK			1.40 H	37	107.35	-2.25
4	*2437.00	94.4 AV			1.40 H	37	96.65	-2.25
5	2483.50	65.0 PK	74.0	-9.0	1.40 H	37	67.03	-2.03
6	2483.50	48.4 AV	54.0	-5.6	1.40 H	37	50.43	-2.03
7	4874.00	48.2 PK	74.0	-25.8	1.15 H	250	42.30	5.90
8	4874.00	40.4 AV	54.0	-13.6	1.15 H	250	34.50	5.90
9	7311.00	54.2 PK	74.0	-19.8	1.11 H	268	41.03	13.17
10	7311.00	43.7 AV	54.0	-10.3	1.11 H	268	30.53	13.17
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	61.7 PK	74.0	-12.3	1.48 V	282	64.17	-2.47
2	2390.00	48.7 AV	54.0	-5.3	1.48 V	282	51.17	-2.47
3	*2437.00	101.5 PK			1.48 V	282	103.75	-2.25
4	*2437.00	91.1 AV			1.48 V	282	93.35	-2.25
5	2483.50	59.8 PK	74.0	-14.2	1.48 V	282	61.83	-2.03
6	2483.50	46.4 AV	54.0	-7.6	1.48 V	282	48.43	-2.03
7	4874.00	49.2 PK	74.0	-24.8	1.03 V	357	43.30	5.90
8	4874.00	40.5 AV	54.0	-13.5	1.03 V	357	34.60	5.90
9	7311.00	53.7 PK	74.0	-20.3	1.02 V	8	40.53	13.17
10	7311.00	43.5 AV	54.0	-10.5	1.02 V	8	30.33	13.17

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	104.2 PK			1.39 H	37	106.38	-2.18
2	*2452.00	93.8 AV			1.39 H	37	95.98	-2.18
3	2483.50	68.8 PK	74.0	-5.2	1.39 H	37	70.83	-2.03
4	**2483.50**	**53.8 AV**	**54.0**	**-0.2**	**1.39 H**	**37**	**55.83**	**-2.03**
5	4904.00	48.2 PK	74.0	-25.8	1.18 H	275	42.18	6.02
6	4904.00	40.1 AV	54.0	-13.9	1.18 H	275	34.08	6.02
7	7356.00	54.0 PK	74.0	-20.0	1.08 H	253	40.82	13.18
8	7356.00	43.9 AV	54.0	-10.1	1.08 H	253	30.72	13.18
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	100.1 PK			1.44 V	282	102.28	-2.18
2	*2452.00	89.2 AV			1.44 V	282	91.38	-2.18
3	2483.50	62.2 PK	74.0	-11.8	1.44 V	282	64.23	-2.03
4	2483.50	49.1 AV	54.0	-4.9	1.44 V	282	51.13	-2.03
5	4904.00	48.6 PK	74.0	-25.4	1.00 V	339	42.58	6.02
6	4904.00	40.4 AV	54.0	-13.6	1.00 V	339	34.38	6.02
7	7356.00	53.6 PK	74.0	-20.4	1.04 V	27	40.42	13.18
8	7356.00	43.0 AV	54.0	-11.0	1.04 V	27	29.82	13.18

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 Worst-Case Data

802.11n (HT20)

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	96.01	34.7 QP	43.5	-8.8	1.00 H	229	52.97	-18.26
2	216.00	40.1 QP	43.5	-3.4	1.00 H	208	55.94	-15.80
3	270.12	41.6 QP	46.0	-4.4	1.00 H	332	54.63	-13.02
4	432.02	42.1 QP	46.0	-3.9	1.00 H	215	50.18	-8.08
5	688.15	37.4 QP	46.0	-8.6	1.00 H	221	40.21	-2.84
6	792.03	42.8 QP	46.0	-3.2	1.00 H	328	43.41	-0.65
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	96.01	35.7 QP	43.5	-7.8	1.25 V	259	53.93	-18.26
2	276.24	39.9 QP	46.0	-6.2	1.25 V	325	52.56	-12.71
3	324.01	38.3 QP	46.0	-7.7	1.25 V	318	49.50	-11.16
4	432.02	41.8 QP	46.0	-4.2	1.25 V	27	49.84	-8.08
5	744.02	42.1 QP	46.0	-3.9	1.25 V	6	43.62	-1.52
6	912.02	41.5 QP	46.0	-4.5	1.25 V	255	40.40	1.11

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 ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 15, 2014	Sep. 14, 2015
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 10, 2014	Nov. 09, 2015
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 10 , 2014	Mar. 09, 2015
50 ohms Terminator	N/A	EMC-03	Sep. 22, 2014	Sep. 21, 2015
50 ohms Terminator	N/A	EMC-02	Sep. 30, 2014	Sep. 29, 2015
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

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 test was performed in Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: Feb. 03, 2015

4.2.3 Test Procedures

a. 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.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

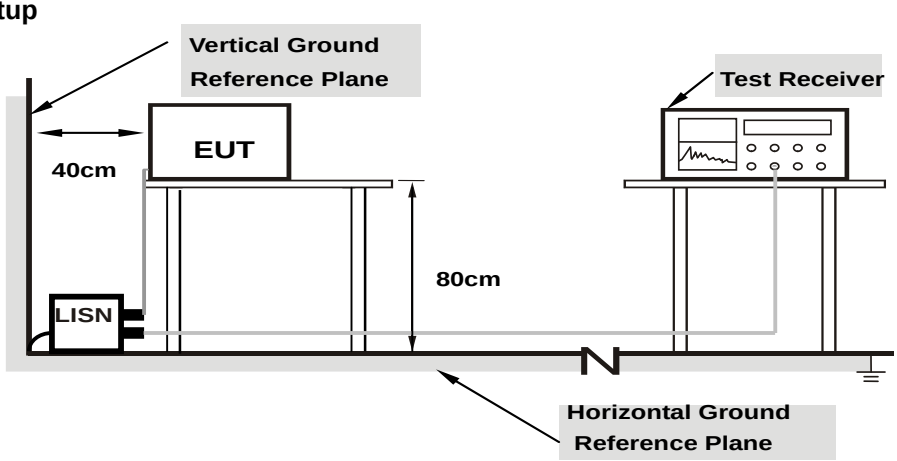
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

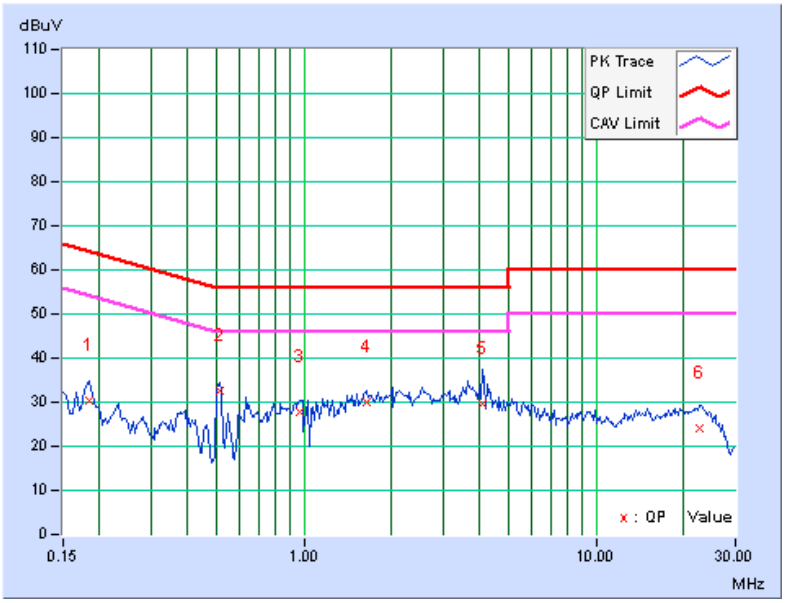
4.2.7 Test Results

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18516	0.07	30.44	23.70	30.51	23.77	64.25	54.25	-33.74	-30.48
2	**0.51328**	**0.10**	**32.64**	**30.40**	**32.74**	**30.50**	**56.00**	**46.00**	**-23.26**	**-15.50**
3	0.97031	0.13	27.56	20.79	27.69	20.92	56.00	46.00	-28.31	-25.08
4	1.64063	0.16	29.74	21.86	29.90	22.02	56.00	46.00	-26.10	-23.98
5	4.06250	0.25	29.46	21.46	29.71	21.71	56.00	46.00	-26.29	-24.29
6	22.63281	0.75	23.50	17.40	24.25	18.15	60.00	50.00	-35.75	-31.85

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

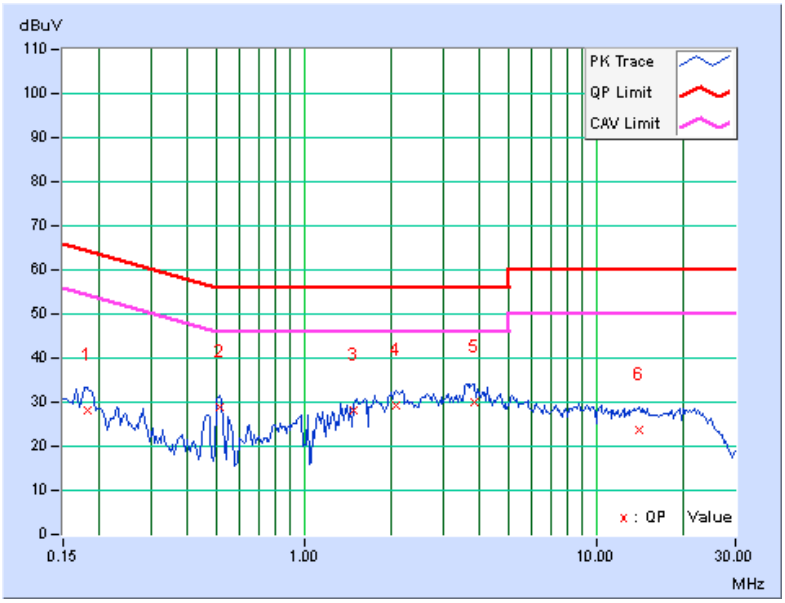


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.06	28.20	22.22	28.26	22.28	64.43	54.43	-36.17	-32.15
2	0.51328	0.10	28.84	26.54	28.94	26.64	56.00	46.00	-27.06	-19.36
3	1.48828	0.15	27.97	20.19	28.12	20.34	56.00	46.00	-27.88	-25.66
4	2.06641	0.18	28.98	20.36	29.16	20.54	56.00	46.00	-26.84	-25.46
5	3.83984	0.25	29.86	23.12	30.11	23.37	56.00	46.00	-25.89	-22.63
6	13.96875	0.58	23.09	17.75	23.67	18.33	60.00	50.00	-36.33	-31.67

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

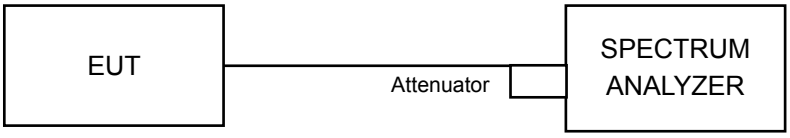


4.3 6dB Bandwidth Measurement

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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

NOTE:
1. The test was performed in Oven room B.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Feb. 03, 2015

4.3.4 Test Procedures

a. Set resolution bandwidth (RBW) = 100kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. 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 Results

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	8.61	0.5	Pass
6	2437	9.08	0.5	Pass
11	2462	8.60	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.40	0.5	Pass
6	2437	16.39	0.5	Pass
11	2462	16.42	0.5	Pass

802.11n (HT20)

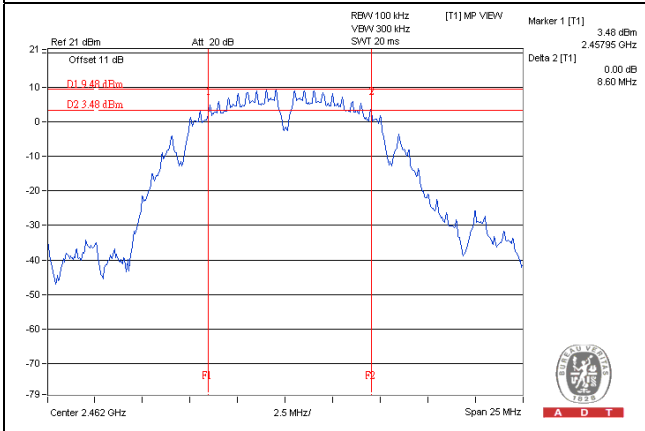
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.63	17.65	0.5	Pass
6	2437	17.64	17.66	0.5	Pass
11	2462	17.64	17.67	0.5	Pass

802.11n (HT40)

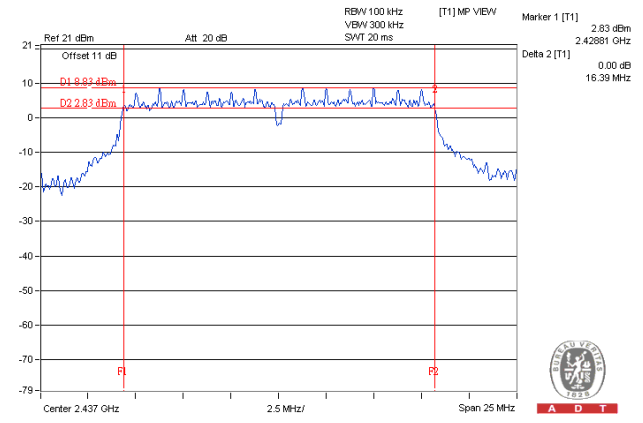
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	36.07	36.46	0.5	Pass
6	2437	35.90	36.46	0.5	Pass
9	2452	36.18	36.48	0.5	Pass

Spectrum Plot of Worst Value

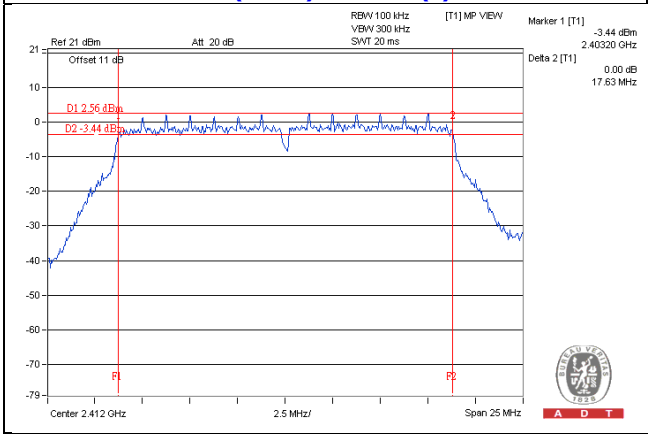
802.11b / CH11



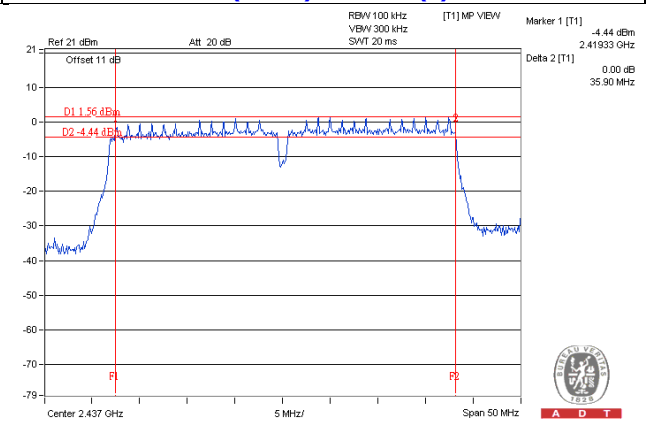
802.11g / CH6



802.11n (HT20) / Chain (0): CH1



802.11n (HT40) / Chain (0): CH6



4.4 Conducted Output Power Measurement

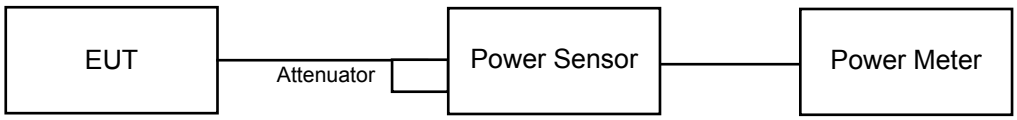
4.4.1 Limits of Conducted Output Power Measurement

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 NANT ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;
Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.
For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

4.4.2 Test Setup



4.4.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power Sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 2015

NOTE:
1. The test was performed in Oven room B.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Feb. 03, 2015

4.4.4 Test Procedures

The 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	78.163	18.93	30	Pass
6	2437	179.473	22.54	30	Pass
11	2462	130.017	21.14	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	144.212	21.59	30	Pass
6	2437	270.396	24.32	30	Pass
11	2462	162.555	22.11	30	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.46	20.87	233.353	23.68	30	Pass
6	2437	23.76	23.60	466.771	26.69	30	Pass
11	2462	20.80	20.99	245.829	23.91	30	Pass

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	19.82	19.76	190.564	22.80	30	Pass
6	2437	20.67	20.46	227.854	23.58	30	Pass
9	2452	20.90	20.43	233.435	23.68	30	Pass

FOR AVERAGE POWER

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	37.068	15.69
6	2437	98.401	19.93
11	2462	64.417	18.09

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	31.623	15.00
6	2437	94.189	19.74
11	2462	40.272	16.05

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	13.99	13.85	49.327	16.93
6	2437	19.96	19.20	182.259	22.61
11	2462	14.99	14.90	62.453	17.96

802.11n (HT40)

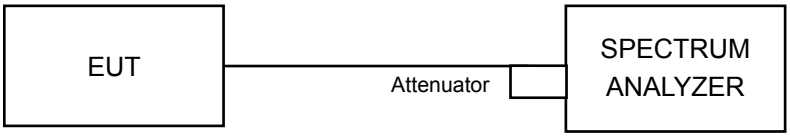
Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	12.86	12.77	38.243	15.83
6	2437	14.79	14.64	59.237	17.73
9	2452	13.92	13.87	49.038	16.91

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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

NOTE:
1. The test was performed in Oven room B.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Feb. 03, 2015

4.5.4 Test Procedures

a. Set analyzer center frequency to DTS channel center frequency.
b. Set the span to 1.5 times the DTS bandwidth.
c. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d. Set the VBW ≥ 3 × RBW.
e. Detector = peak.
f. Sweep time = auto couple.
g. Trace mode = max hold.
h. Allow trace to fully stabilize.
i. 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 Conditions

Same as Item 4.3.6

4.5.7 Test Results

802.11b

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Pass /Fail
1	2412	-7.59	8	Pass
6	2437	-3.23	8	Pass
11	2462	-5.24	8	Pass

802.11g

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Pass /Fail
1	2412	-11.71	8	Pass
6	2437	-6.45	8	Pass
11	2462	-10.40	8	Pass

802.11n (HT20)

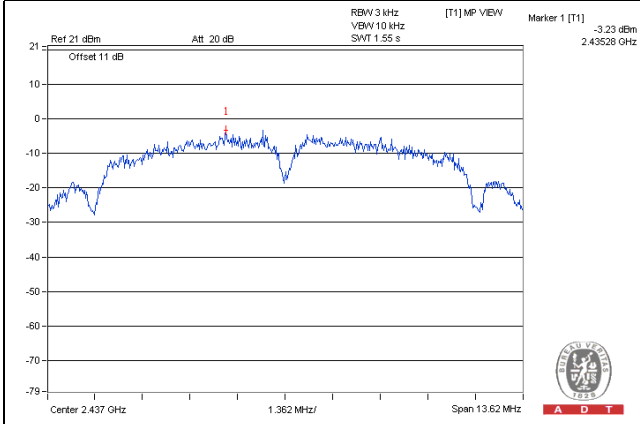
TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-12.48	3.01	-9.47	8	Pass
	6	2437	-7.04	3.01	-4.03	8	Pass
	11	2462	-12.12	3.01	-9.11	8	Pass
1	1	2412	-11.37	3.01	-8.36	8	Pass
	6	2437	-5.80	3.01	-2.79	8	Pass
	11	2462	-10.41	3.01	-7.40	8	Pass

802.11n (HT40)

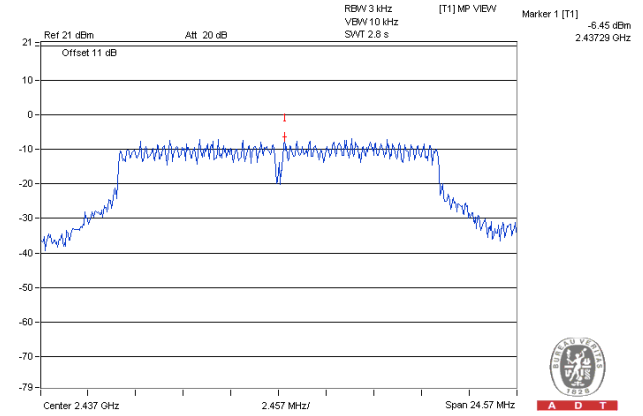
TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	3	2422	-15.46	3.01	-12.45	8	Pass
	6	2437	-13.73	3.01	-10.72	8	Pass
	9	2452	-14.63	3.01	-11.62	8	Pass
1	3	2422	-15.44	3.01	-12.43	8	Pass
	6	2437	-14.43	3.01	-11.42	8	Pass
	9	2452	-14.57	3.01	-11.56	8	Pass

Spectrum Plot of Worst Value

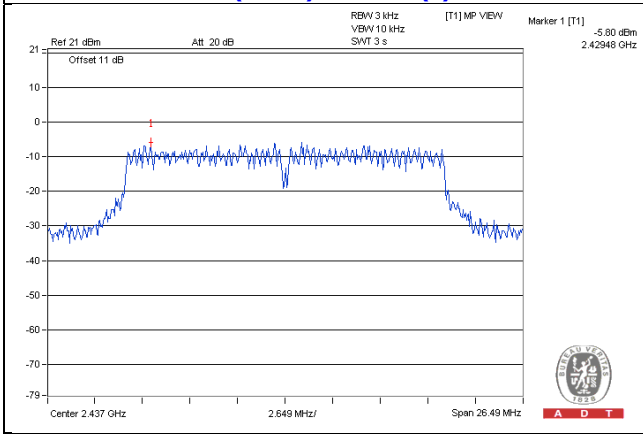
802.11b / CH6



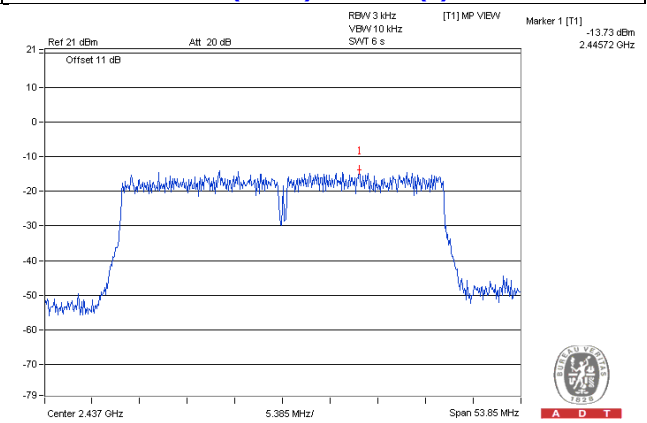
802.11g / CH6



802.11n (HT20) / Chain (1): CH6



802.11n (HT40) / Chain (0): CH6

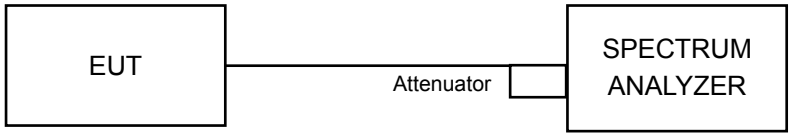


4.6 Conducted Out of Band Emission Measurement

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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

NOTE:
1. The test was performed in Oven room B.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Feb. 03, 2015

4.6.4 Test Procedures

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 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 OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 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 Conditions

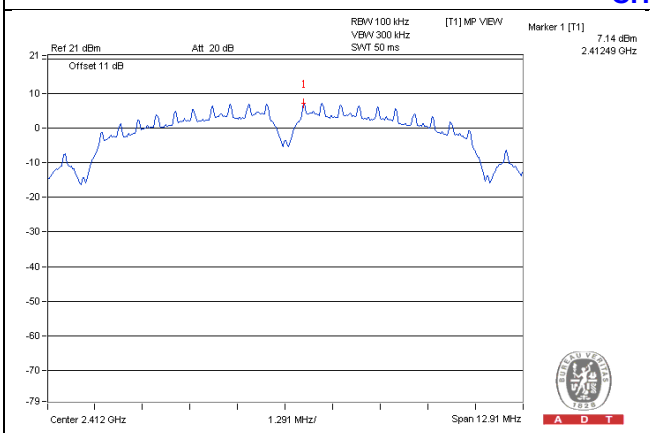
Same as Item 4.3.6

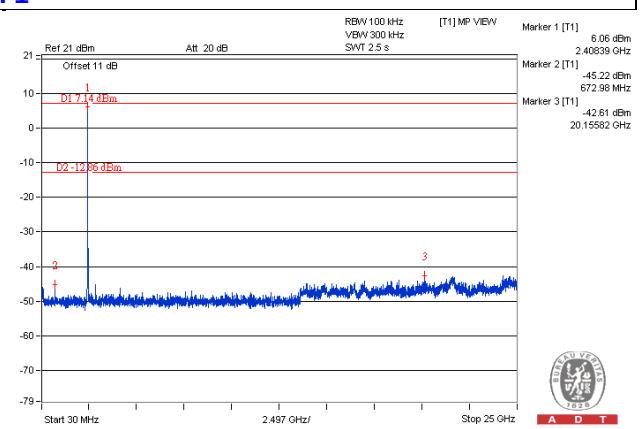
4.6.7 Test Results

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.

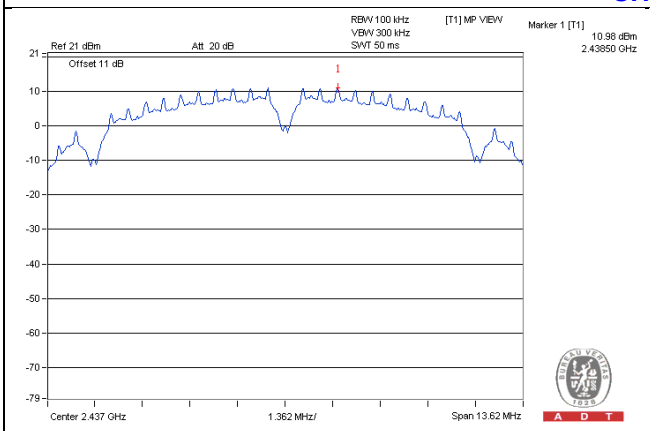
802.11b

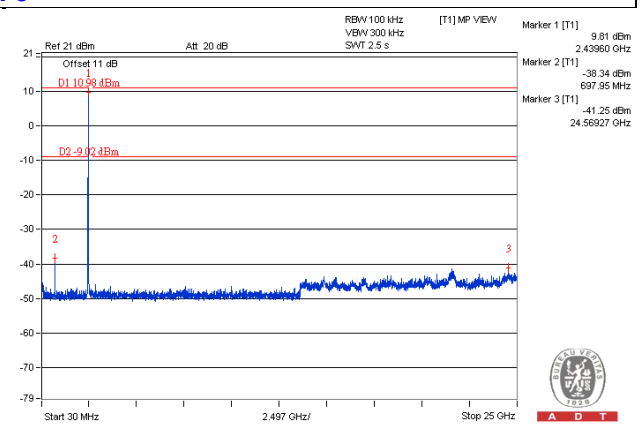
CH 1



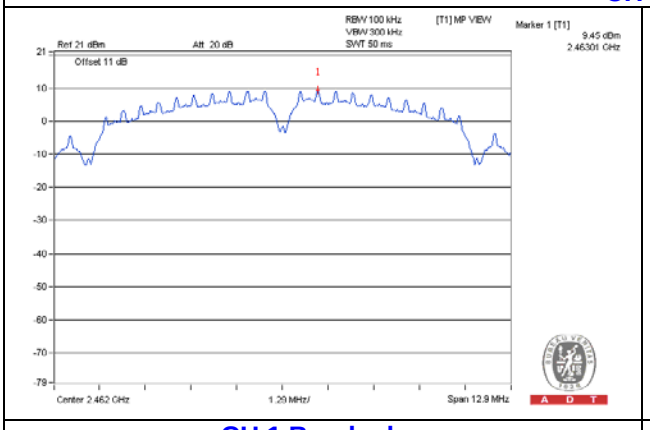


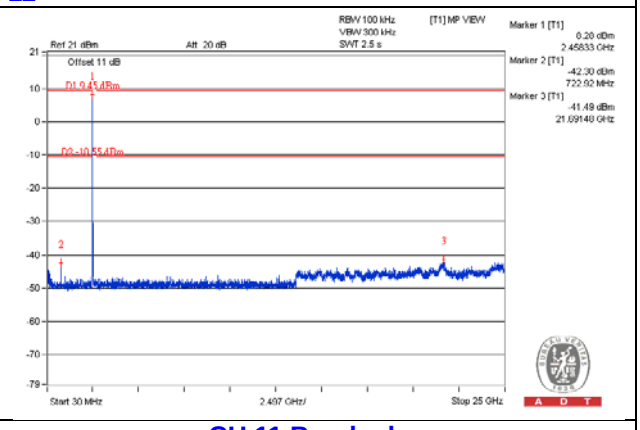
CH 6



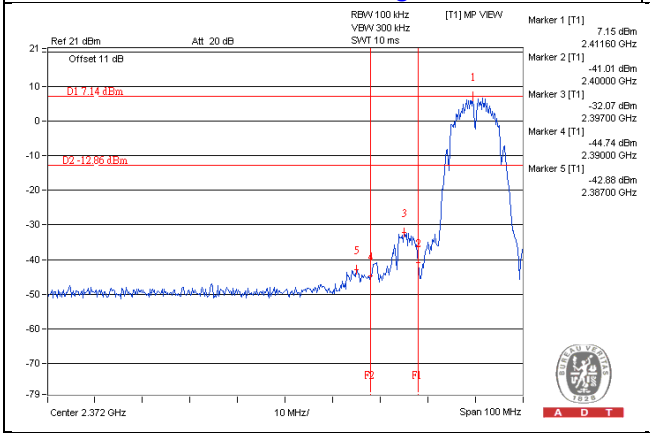


CH 11

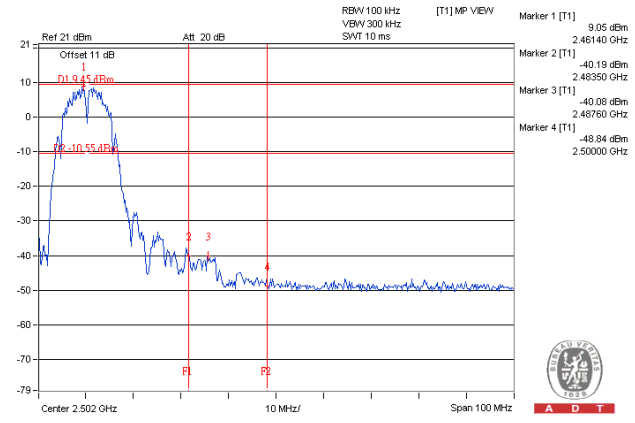




CH 1 Band edge

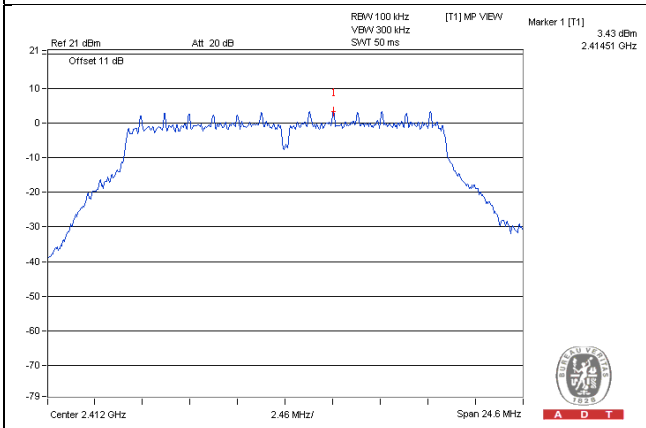


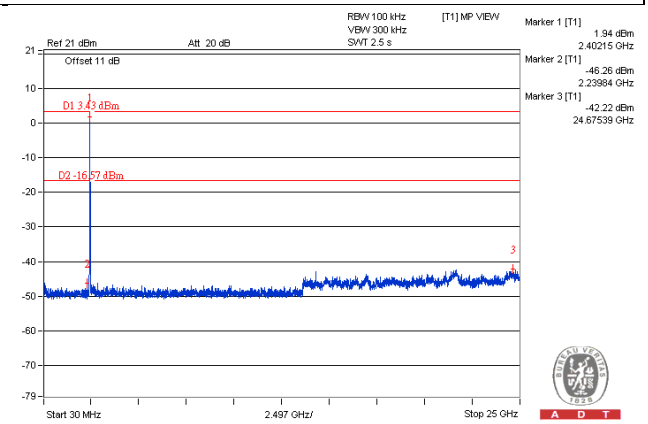
CH 11 Band edge



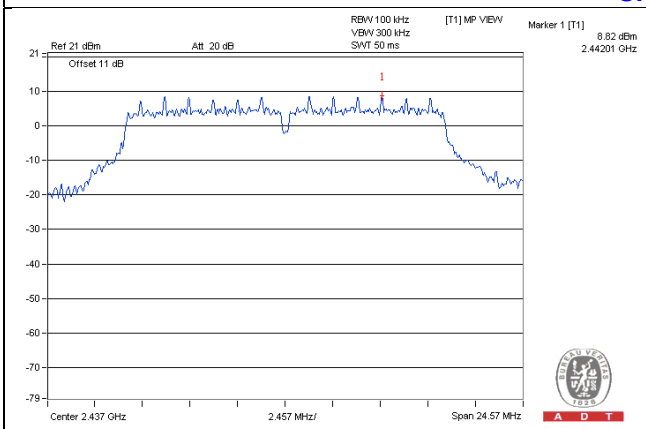
802.11g

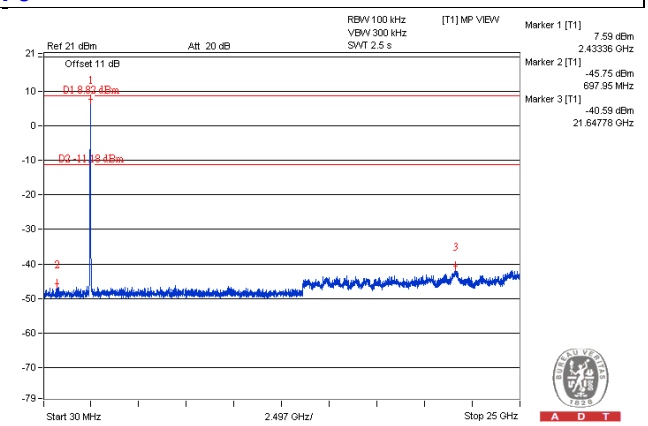
CH 1



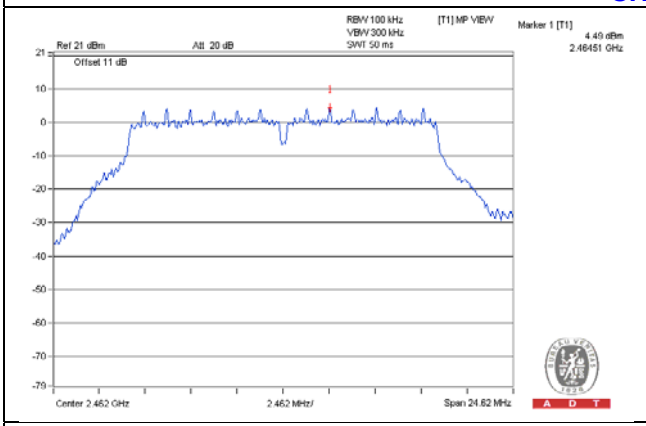


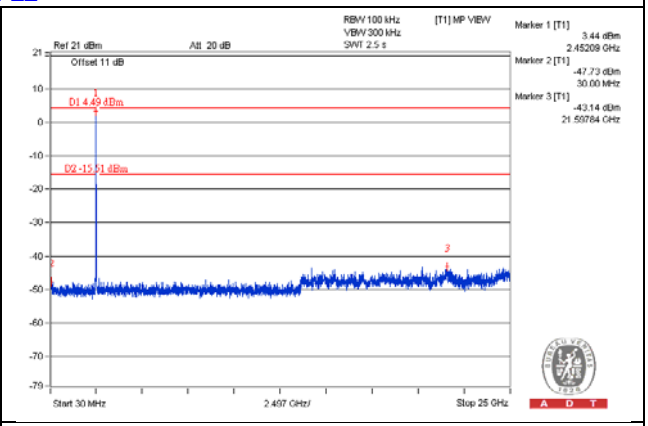
CH 6



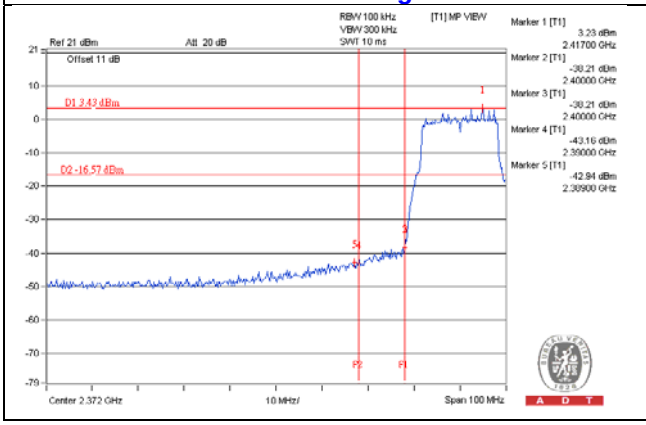


CH 11

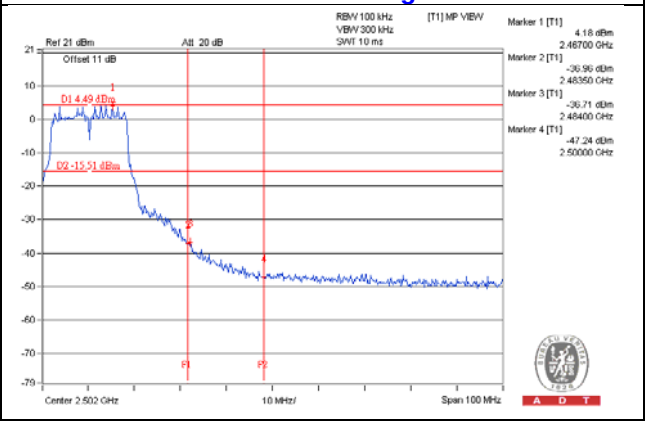




CH 1 Band edge

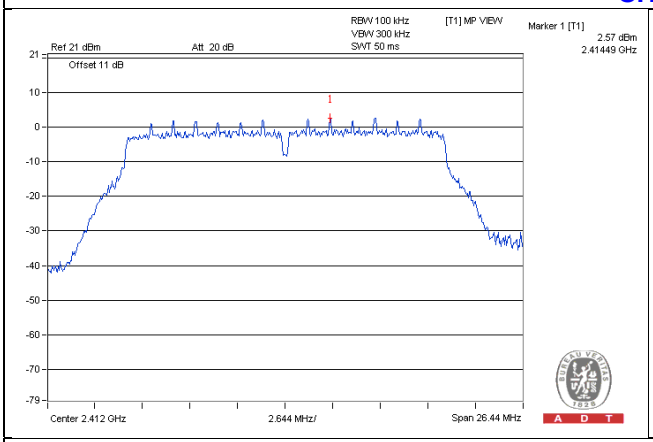


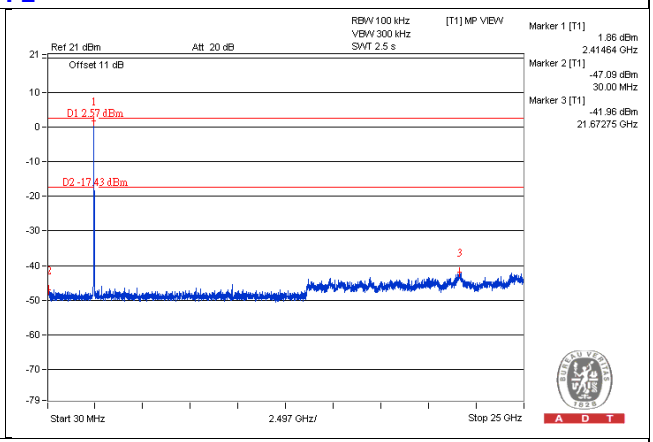
CH 11 Band edge



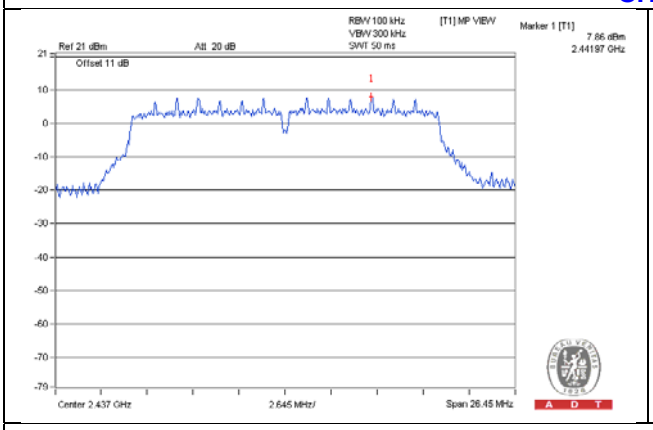
802.11n (HT20)
Chain (0)

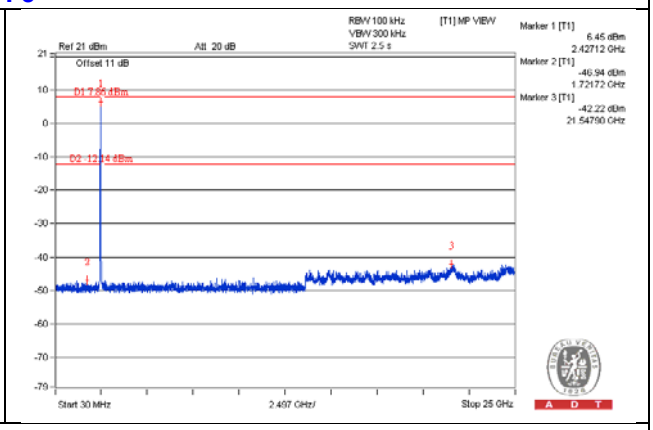
CH 1



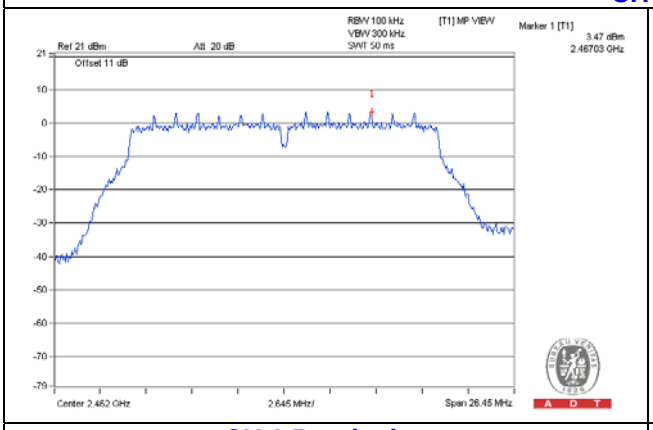


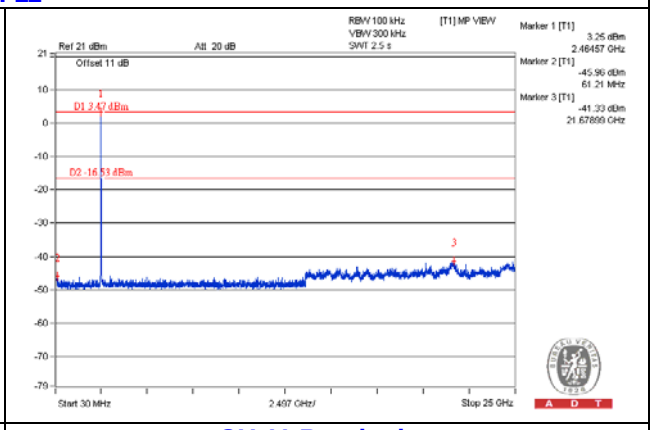
CH 6



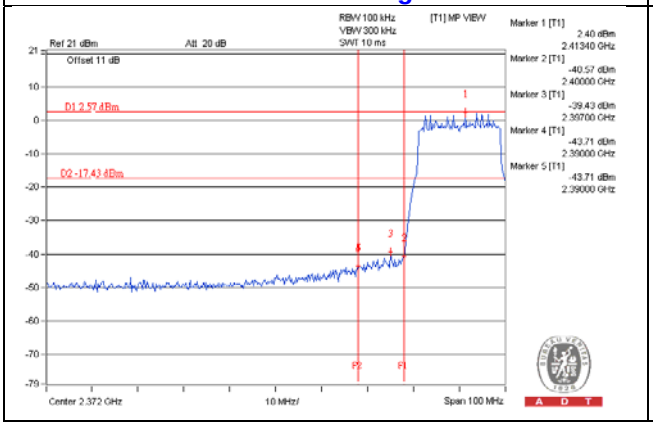


CH 11

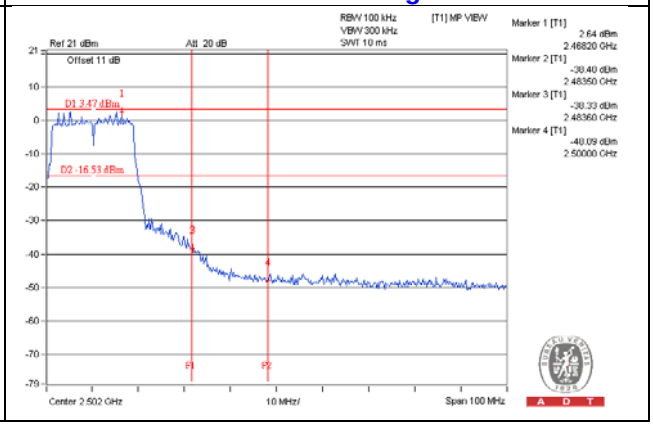




CH 1 Band edge

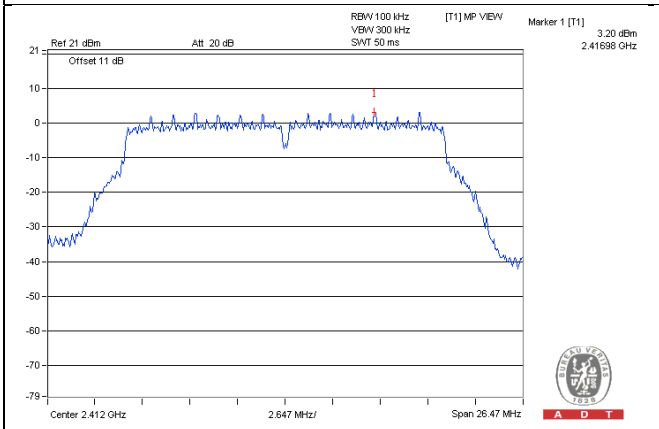


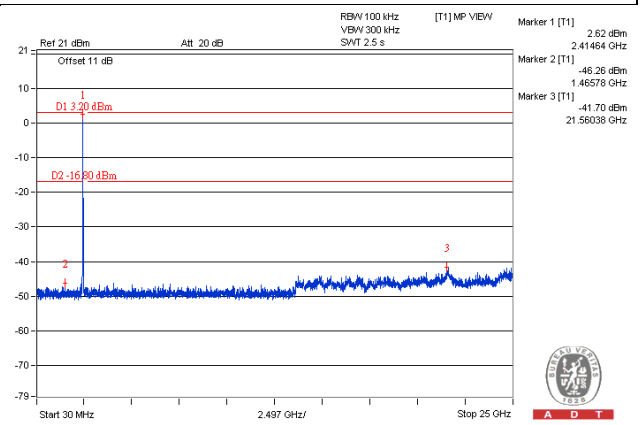
CH 11 Band edge



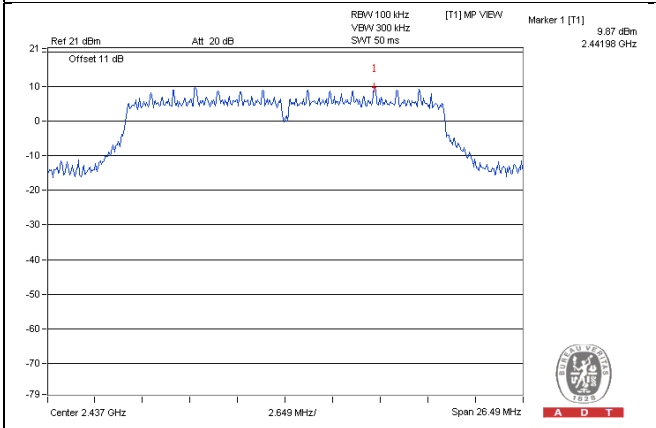
Chain (1)

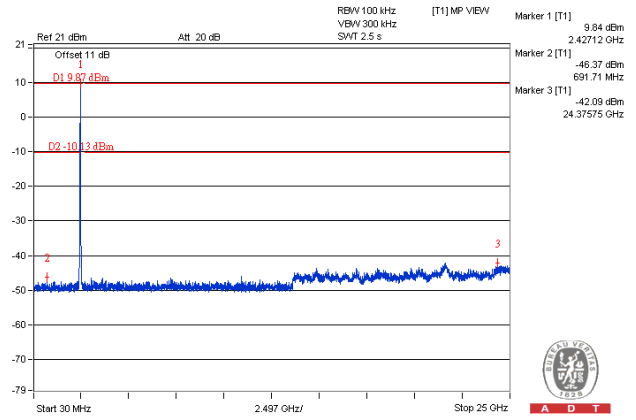
CH 1



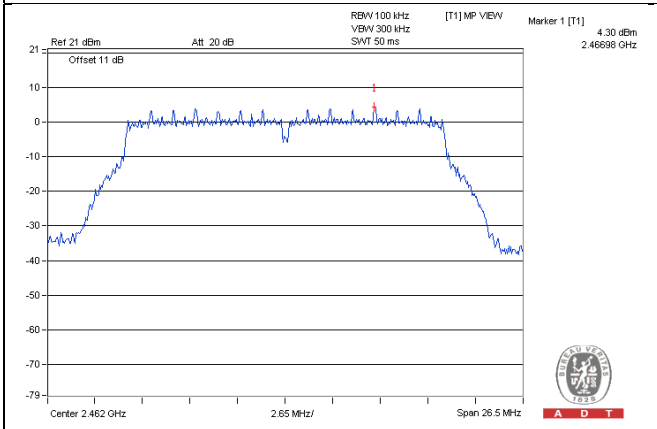


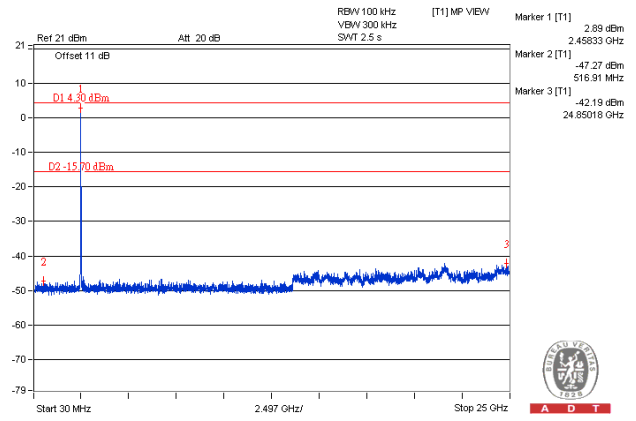
CH 6



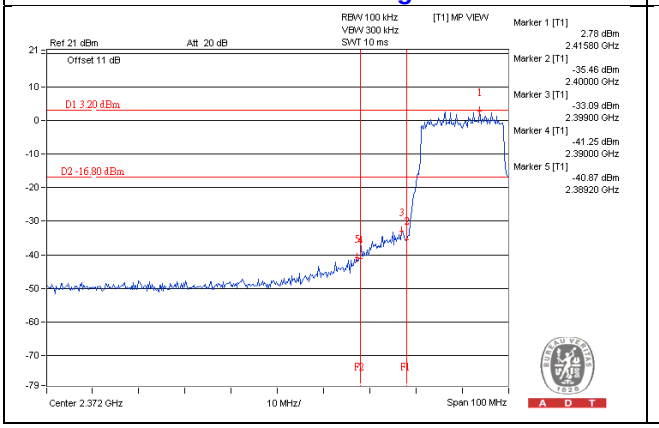


CH 11

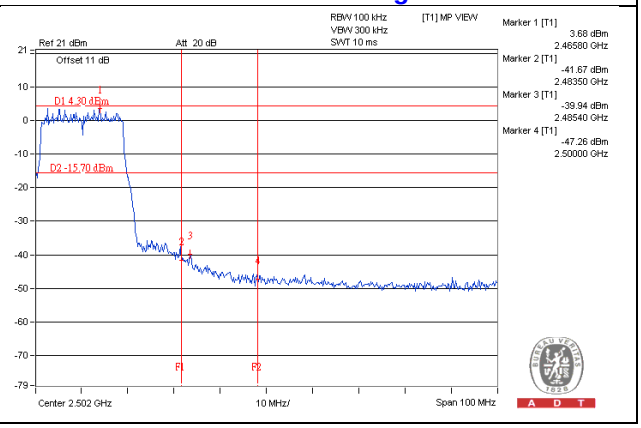




CH 1 Band edge

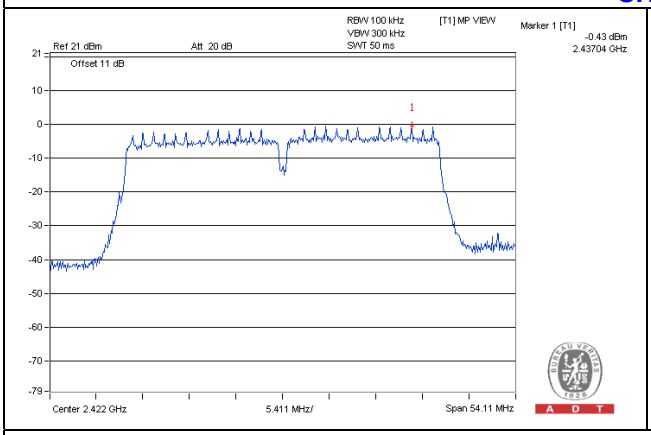


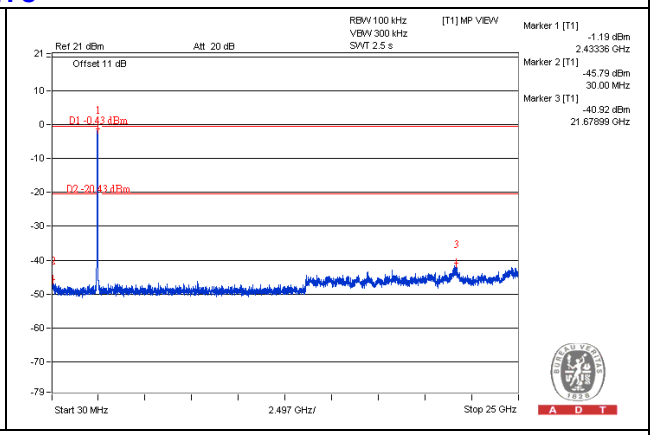
CH 11 Band edge



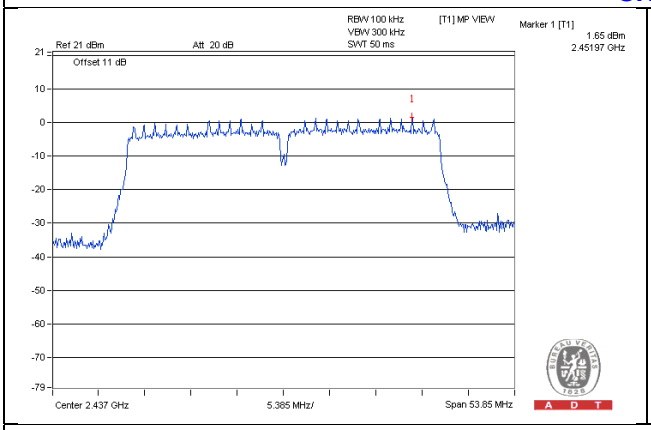
802.11n (HT40)
Chain (0)

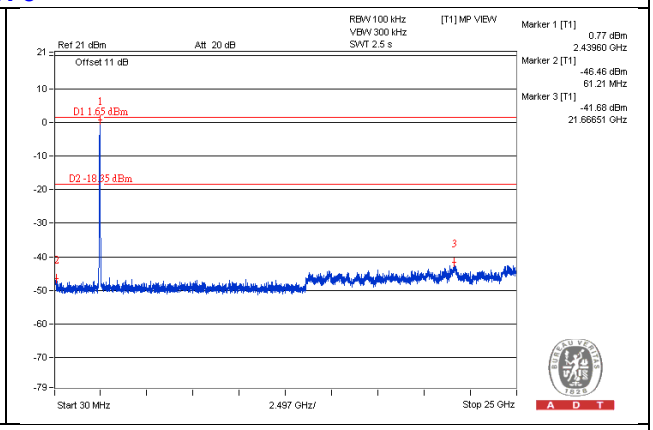
CH 3



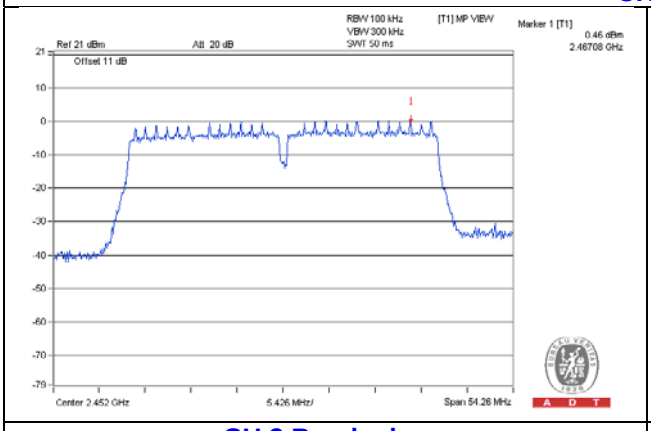


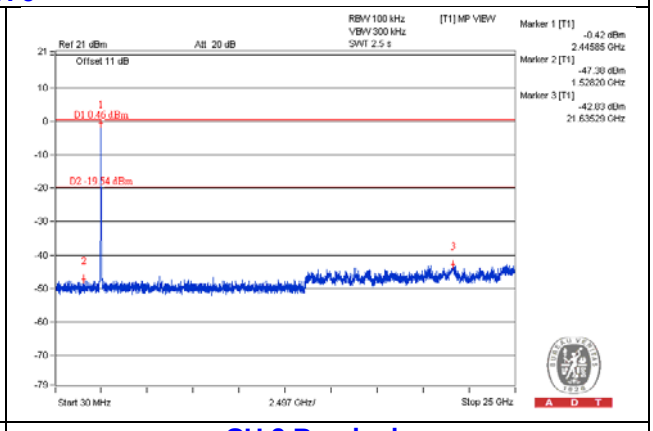
CH 6



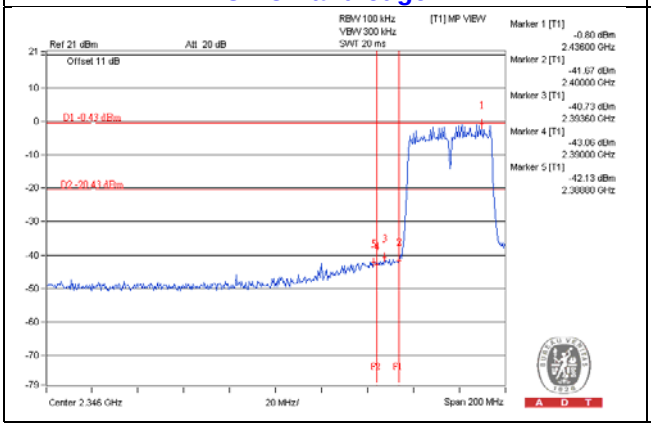


CH 9

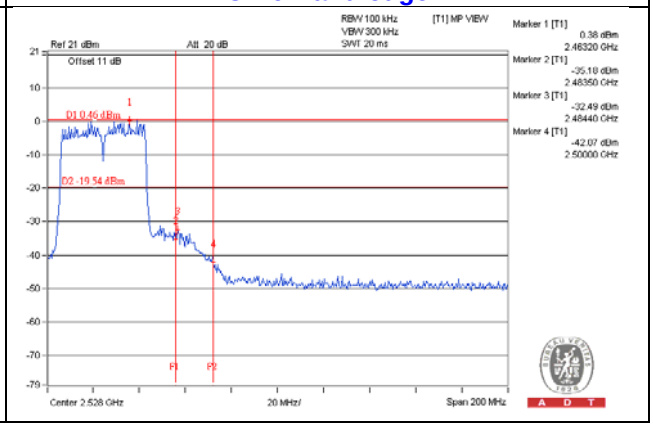




CH 3 Band edge

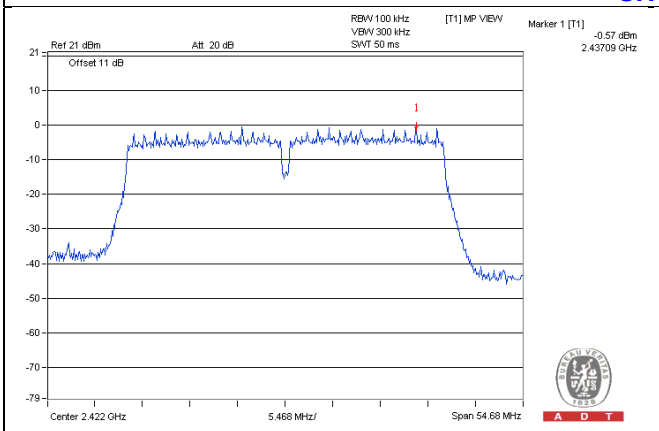


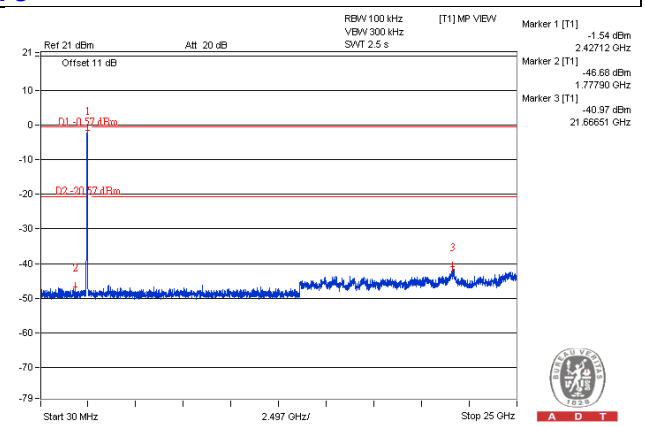
CH 9 Band edge



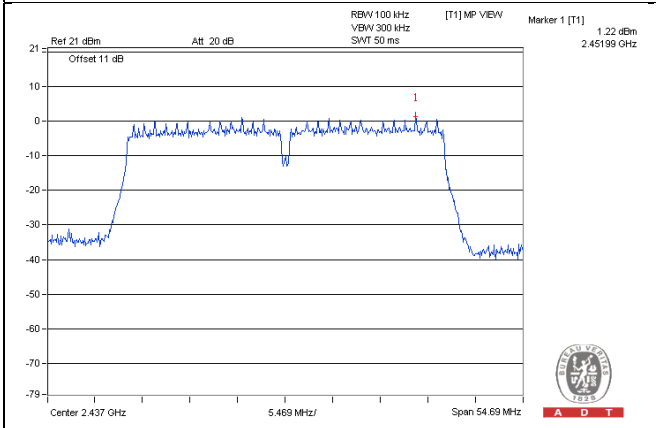
Chain (1)

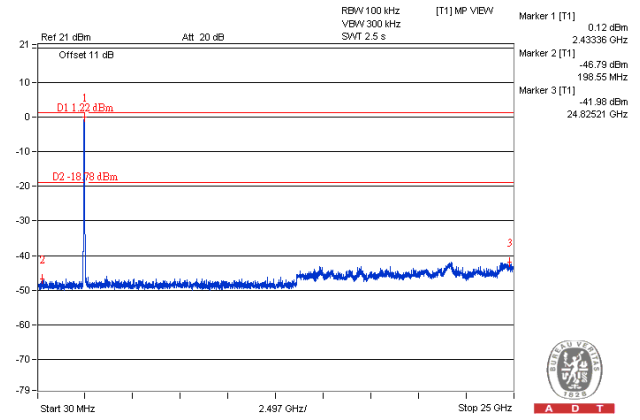
CH 3



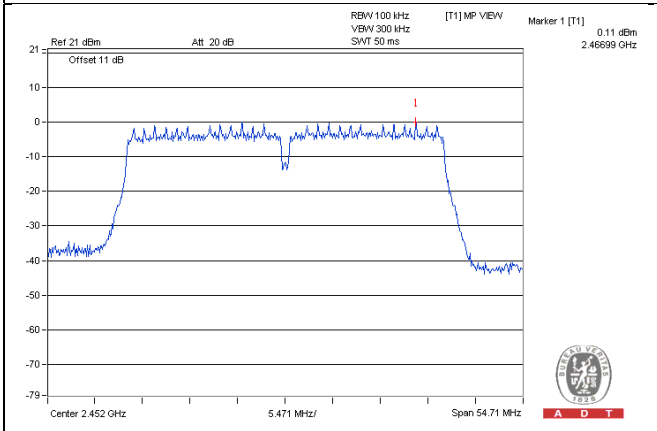


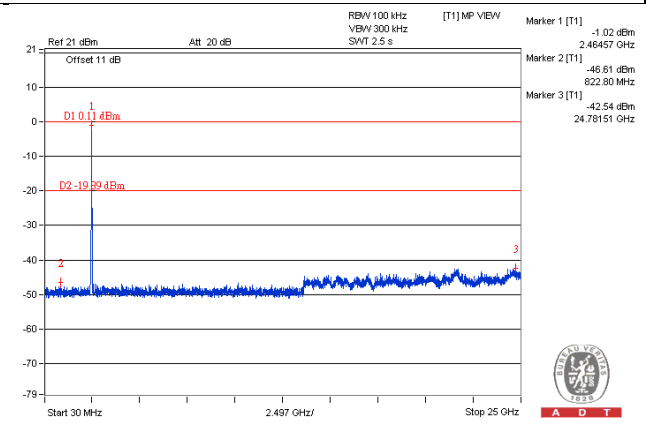
CH 6



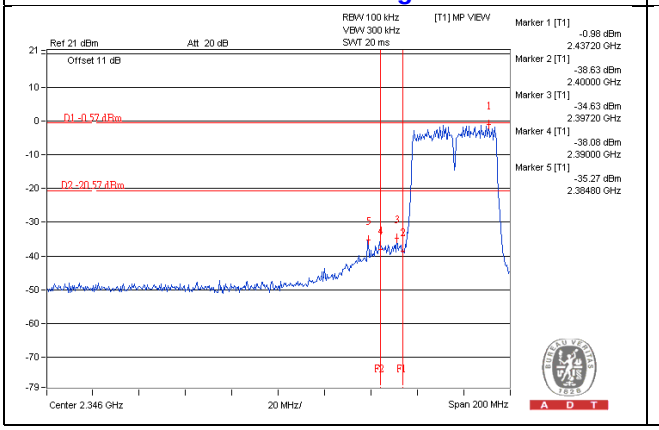


CH 9

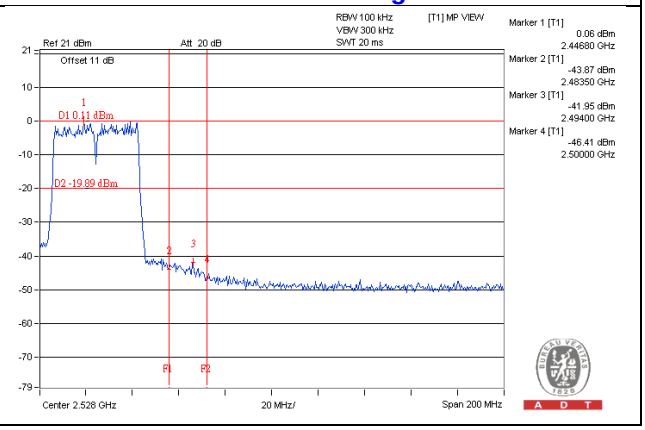




CH 3 Band edge



CH 9 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: 886-3-5935343
Fax: 886-3-5935342

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 ---