FCC Test Report

Report No.:	RF150729E01
FCC ID:	Q87-RE6400
Test Model:	RE6400
Received Date:	July 29, 2015
Test Date:	July 31 to Sep. 07, 2015
Issued Date:	Sep. 11, 2015
Applicant:	Linksys LLC
Address:	121 Theory Drive Irvine California 92617 United State
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.
Test Location (3):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
RF150729E01	Original release.	Sep. 11, 2015

1 Certificate of Conformity

Product:	Wireless Extender
Brand:	Linksys
Test Model:	RE6400
Sample Status:	ENGINEERING SAMPLE
Applicant:	Linksys LLC
Test Date:	July 31 to Sep. 07, 2015
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 : _____ , **Date:** Sep. 11, 2015

Midoli Peng / Specialist

Approved by : _____ , **Date:** Sep. 11, 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 -8.03dB at 0.69297MHz.
15.205 / 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -4.2dB at 4874.00MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2483.50MHz & 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 i-pex(MHF) not a standard connector.

NOTE: The EUT was operating in 2400 ~ 2483.5MHz, 5150~5250MHz and 5725~5850MHz frequencies band. This report was recorded the RF parameters including 2400 ~ 2483.5MHz. For the 5150~5250MHz and 5725~5850MHz 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	5.37 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

Product	Wireless Extender
Brand	Linksys
Test Model	RE6400
Status of EUT	ENGINEERING SAMPLE
Driver version	1.1.00.001
Power Supply Rating	Refer to Note
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT20 and VHT40 mode of 2.4GHz Band.
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, 5.745 ~ 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), VHT20 7 for 802.11n (HT40), VHT40
Output Power	**For 15.407(5.18 ~ 5.24GHz)** **CDD Mode** 802.11a: 111.245mW **Beamforming Mode** 802.11ac (VHT20): 120.11mW 802.11ac (VHT40): 187.351mW 802.11ac (VHT80): 30.771mW **For 15.407(5.745 ~ 5.825GHz)** **CDD Mode** 802.11a: 220.008mW **Beamforming Mode** 802.11ac (VHT20): 191.049mW 802.11ac (VHT40): 104.343mW 802.11ac (VHT80): 19.114mW
	For 15.247 802.11b: 698.11mW 802.11g: 750.59mW 802.11n(HT20): 746.18mW 802.11n(HT40): 592.23mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. According to the applicant's requirement two test samples were tested for radiated (above 1GHz) emission only.
2. The antennas provided to the EUT, please refer to the following table:

Transmitter Circuit	Gain (dBi)	Frequency Range (GHz to GHz)	Antenna Type	Connecter Type	Cable Length (mm)
Chain (0)	3.97	2.4~2.4835	Dipole	i-pex(MHF)	160
	5.97	5.15~5.85			
Chain (1)	3.97	2.4~2.4835	Dipole	i-pex(MHF)	160
	5.97	5.15~5.85			

3. 2.4GHz and 5GHz technology can transmit at same time.
4. The EUT uses following internal power supply and following two different model names could be chosen:

No.	Brand	Model No.	Spec.
1	Amigo-PSU	AMS151-1201500F	Input: 100-240V, 0.8A, 47~63Hz Output: 12V, 1.5A
2	HON-KWANG	HK-XX18-A12	Input: 100-240V, 0.8A, 47~63Hz Output: 12V, 1.5A
Note: From the above modes, the worst radiated test was found in **internal power supply 2**. Therefore only the test data of the modes were recorded in this report.			

5. The EUT incorporates a MIMO function with beamforming.

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	2TX	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
VHT20	MCS0~8 Nss=1	2TX	2RX
	MCS0~8 Nss=2	2TX	2RX
VHT40	MCS0~9 Nss=1	2TX	2RX
	MCS0~9 Nss=2	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: 1. For 2.4GHz band and 5GHz band (802.11a), the EUT doesn't support beamforming mode. 2.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)			

6. 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	
1	-	-	√	-	Sample 1 + internal power supply 1
2	√	√	√	√	Sample 1 + internal power supply 2
3	√	-	-	-	Sample 2 + internal power supply 2

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. "-"means no effect.

2. The EUT had been pre-tested on the positioned of each 2 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	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.

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.

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.

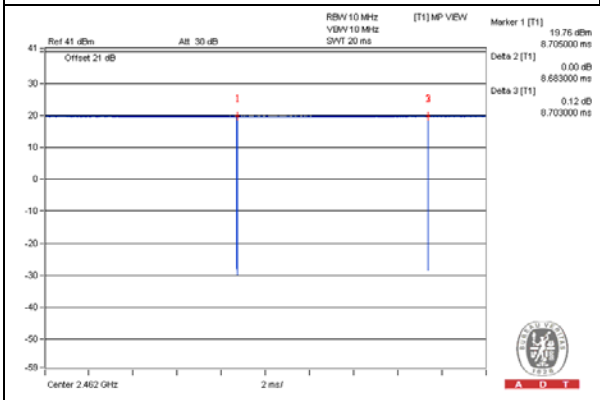
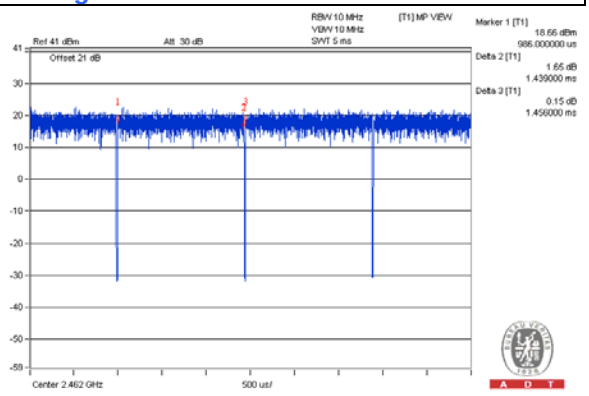
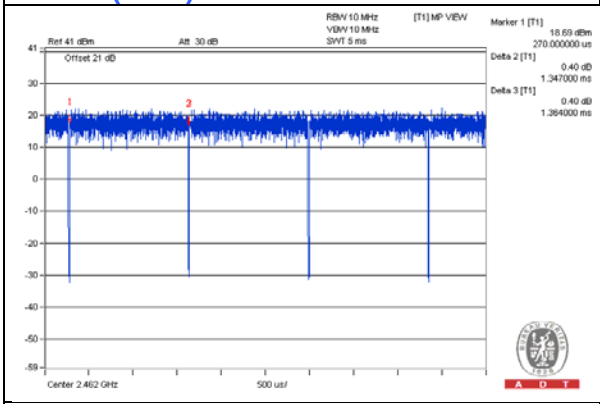
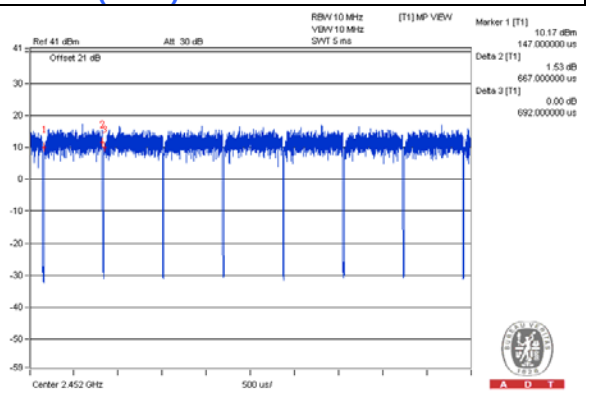
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	27deg. C, 61%RH	120Vac, 60Hz	Tim Ho
RE<1G	24deg. C, 70%RH	120Vac, 60Hz	Robert Cheng
PLC	26deg. C, 60%RH 27deg. C, 65%RH	120Vac, 60Hz	Barry Lee Wythe Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

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 = 8.683 ms/8.703ms = 0.998
802.11g: Duty cycle = 1.439ms/1.456 ms = 0.988
802.11n (HT20): Duty cycle = 1.347 ms/1.364 ms = 0.988
802.11n (HT40): Duty cycle = 0.667 ms/0.692 ms = 0.964, Duty factor = 10 * log(1/0.964) = 0.2

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.

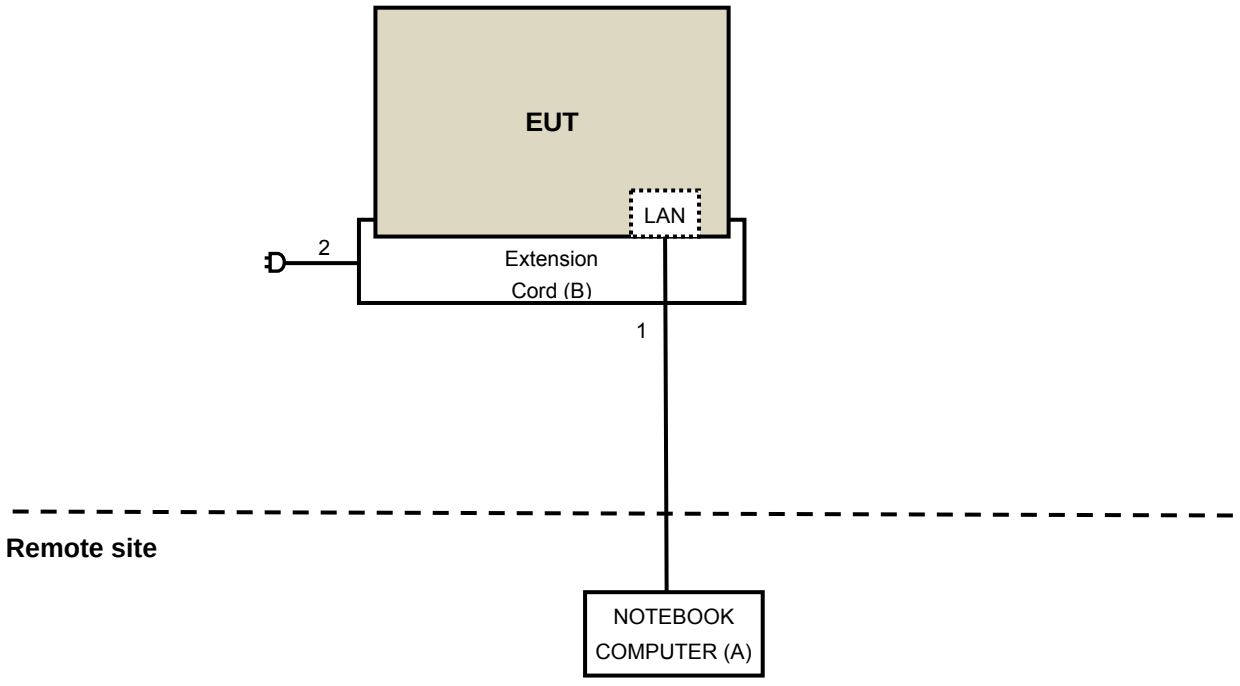
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	NOTEBOOK COMPUTER	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab
B.	Extension Cord	NA	NA	NA	NA	Provided by Lab

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.	RJ-45	1	10	No	0	Provided by Lab
2.	AC	1	1.8	Yes	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 v03r03
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	MY51210105	July 24, 2015	July 23, 2016
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 06, 2015	Feb. 05, 2016
RF Cable	8D-FB	CHGCAB-001-1 CHGCAB-001-2	Oct. 04, 2014	Oct. 03, 2015
	RF-141	CHGCAB-004	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Feb. 09, 2015	Feb. 08, 2016
Pre-Amplifier Agilent	8449B	3008A02578	June 23, 2015	June 22, 2016
RF Cable	NA	131205 131216 131217 SNMY23684/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	June 26, 2015	June 25, 2016
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Feb. 05, 2015	Feb. 04, 2016
RF Cable	NA	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated_V8.7.07	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	FSP 40	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 test was performed in 966 Chamber No. G.
3. The FCC Site Registration No. is 966073.
4. The VCCI Site Registration No. is G-137.
5. The CANADA Site Registration No. is IC 7450H-2.
6. Tested Date: Aug. 27 to Sep. 07, 2015

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:

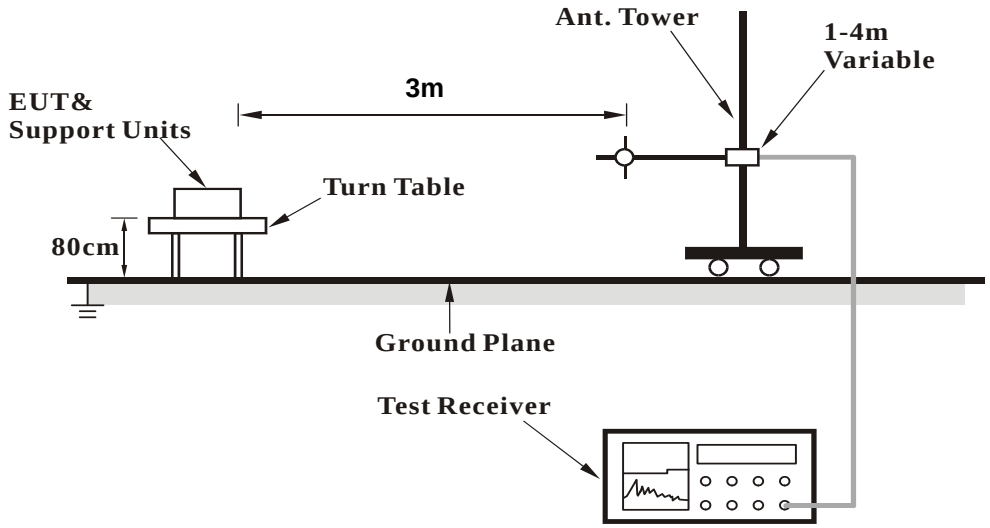
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

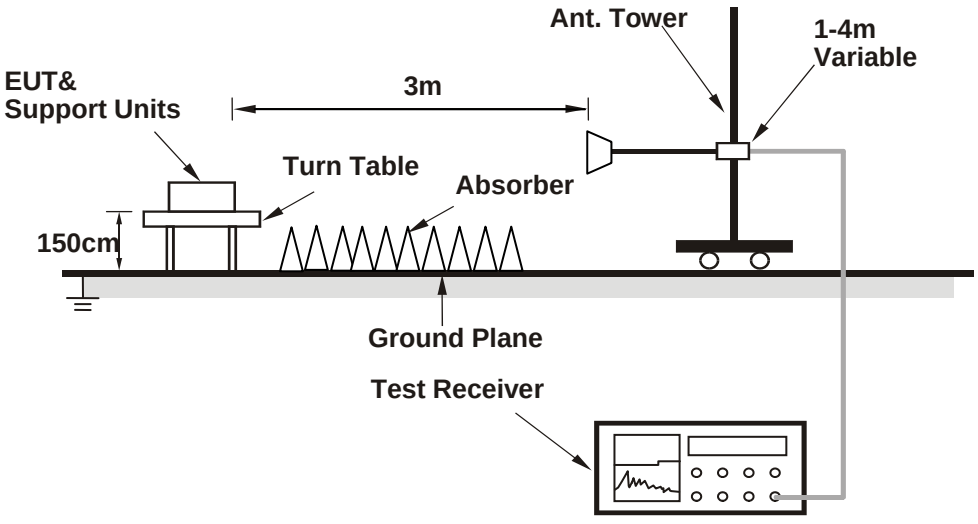
No deviation.

4.1.5 Test 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

1. Connect the EUT with the support unit A (Notebook Computer) which is placed on remote site.
2. Controlling software (MT76xxE_AP.exe V1.0.3.1) has been activated to set the EUT on specific status.

4.1.7 Test Results (Mode 2)

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	2390.00	63.1 PK	74.0	-10.9	2.09 H	245	63.22	-0.12
2	2390.00	41.3 AV	54.0	-12.7	2.09 H	245	41.42	-0.12
3	*2412.00	103.1 PK			2.12 H	108	103.13	-0.03
4	*2412.00	99.9 AV			2.12 H	108	99.93	-0.03
5	4824.00	48.3 PK	74.0	-25.7	1.85 H	154	39.28	9.02
6	4824.00	43.6 AV	54.0	-10.4	1.85 H	154	34.58	9.02
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	72.9 PK	74.0	-1.1	1.84 V	185	73.02	-0.12
2	2390.00	45.6 AV	54.0	-8.4	1.84 V	185	45.72	-0.12
3	*2412.00	113.9 PK			1.70 V	201	113.93	-0.03
4	*2412.00	110.5 AV			1.70 V	201	110.53	-0.03
5	4824.00	48.6 PK	74.0	-25.4	1.75 V	180	39.58	9.02
6	4824.00	43.1 AV	54.0	-10.9	1.75 V	180	34.08	9.02

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	*2437.00	104.5 PK			1.71 H	256	104.42	0.08
2	*2437.00	101.0 AV			1.71 H	256	100.92	0.08
3	4874.00	51.5 PK	74.0	-22.5	1.71 H	170	42.38	9.12
4	**4874.00**	**49.8 AV**	**54.0**	**-4.2**	**1.71 H**	**170**	**40.68**	**9.12**
5	7311.00	51.1 PK	74.0	-22.9	1.41 H	54	34.59	16.51
6	7311.00	41.7 AV	54.0	-12.3	1.41 H	54	25.19	16.51
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	69.0 PK	74.0	-5.0	1.85 V	175	69.12	-0.12
2	2390.00	44.3 AV	54.0	-9.7	1.85 V	175	44.42	-0.12
3	*2437.00	115.3 PK			1.73 V	175	115.22	0.08
4	*2437.00	112.2 AV			1.73 V	175	112.12	0.08
5	2483.50	67.8 PK	74.0	-6.2	1.85 V	176	67.49	0.31
6	2483.50	44.2 AV	54.0	-9.8	1.85 V	176	43.89	0.31
7	4874.00	48.5 PK	74.0	-25.5	1.70 V	172	39.38	9.12
8	4874.00	44.9 AV	54.0	-9.1	1.70 V	172	35.78	9.12
9	7311.00	51.5 PK	74.0	-22.5	2.13 V	322	34.99	16.51
10	7311.00	42.3 AV	54.0	-11.7	2.13 V	322	25.79	16.51

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	105.7 PK			2.02 H	69	105.49	0.21
2	*2462.00	96.3 AV			2.02 H	69	96.09	0.21
3	2483.50	61.6 PK	74.0	-12.4	1.99 H	62	61.29	0.31
4	2483.50	37.5 AV	54.0	-16.5	1.99 H	62	37.19	0.31
5	4924.00	50.4 PK	74.0	-23.6	1.07 H	79	41.13	9.27
6	4924.00	45.8 AV	54.0	-8.2	1.07 H	79	36.53	9.27
7	7386.00	51.9 PK	74.0	-22.1	1.36 H	54	35.28	16.62
8	7386.00	42.2 AV	54.0	-11.8	1.36 H	54	25.58	16.62
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	110.6 PK			1.80 V	196	110.39	0.21
2	*2462.00	102.8 AV			1.80 V	196	102.59	0.21
3	**2483.50**	**73.0 PK**	**74.0**	**-1.0**	**1.82 V**	**176**	**72.69**	**0.31**
4	2483.50	44.8 AV	54.0	-9.2	1.82 V	176	44.49	0.31
5	4924.00	49.3 PK	74.0	-24.7	1.37 V	155	40.03	9.27
6	4924.00	45.0 AV	54.0	-9.0	1.37 V	155	35.73	9.27
7	7386.00	51.0 PK	74.0	-23.0	2.12 V	347	34.38	16.62
8	7386.00	41.8 AV	54.0	-12.2	2.12 V	347	25.18	16.62

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	59.6 PK	74.0	-14.4	1.26 H	73	59.72	-0.12
2	2390.00	41.8 AV	54.0	-12.2	1.26 H	73	41.92	-0.12
3	*2412.00	103.1 PK			1.27 H	74	103.13	-0.03
4	*2412.00	91.0 AV			1.27 H	74	91.03	-0.03
5	4824.00	47.4 PK	74.0	-26.6	1.12 H	92	38.38	9.02
6	4824.00	41.3 AV	54.0	-12.7	1.12 H	92	32.28	9.02
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	71.4 PK	74.0	-2.6	1.78 V	173	71.52	-0.12
2	2390.00	52.9 AV	54.0	-1.1	1.78 V	173	53.02	-0.12
3	*2412.00	112.5 PK			1.78 V	173	112.53	-0.03
4	*2412.00	100.1 AV			1.78 V	173	100.13	-0.03
5	4824.00	47.4 PK	74.0	-26.6	1.25 V	152	38.38	9.02
6	4824.00	41.0 AV	54.0	-13.0	1.25 V	152	31.98	9.02

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	*2437.00	108.3 PK			1.17 H	81	108.22	0.08
2	*2437.00	96.1 AV			1.17 H	81	96.02	0.08
3	4874.00	48.5 PK	74.0	-25.5	1.12 H	80	39.38	9.12
4	4874.00	42.3 AV	54.0	-11.7	1.12 H	80	33.18	9.12
5	7311.00	51.8 PK	74.0	-22.2	1.34 H	33	35.29	16.51
6	7311.00	42.2 AV	54.0	-11.8	1.34 H	33	25.69	16.51
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	68.9 PK	74.0	-5.1	1.83 V	185	69.02	-0.12
2	2390.00	46.8 AV	54.0	-7.2	1.83 V	185	46.92	-0.12
3	*2437.00	118.1 PK			1.75 V	175	118.02	0.08
4	*2437.00	105.0 AV			1.75 V	175	104.92	0.08
5	2483.50	69.8 PK	74.0	-4.2	1.82 V	183	69.49	0.31
6	2483.50	46.9 AV	54.0	-7.1	1.82 V	183	46.59	0.31
7	4874.00	47.6 PK	74.0	-26.4	1.36 V	168	38.48	9.12
8	4874.00	41.4 AV	54.0	-12.6	1.36 V	168	32.28	9.12
9	7311.00	50.9 PK	74.0	-23.1	2.17 V	311	34.39	16.51
10	7311.00	41.9 AV	54.0	-12.1	2.17 V	311	25.39	16.51

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	104.7 PK			1.23 H	91	104.49	0.21
2	*2462.00	92.1 AV			1.23 H	91	91.89	0.21
3	2483.50	59.4 PK	74.0	-14.6	1.20 H	92	59.09	0.31
4	2483.50	41.4 AV	54.0	-12.6	1.20 H	92	41.09	0.31
5	4924.00	48.2 PK	74.0	-25.8	1.10 H	64	38.93	9.27
6	4924.00	41.8 AV	54.0	-12.2	1.10 H	64	32.53	9.27
7	7386.00	52.0 PK	74.0	-22.0	1.34 H	47	35.38	16.62
8	7386.00	41.8 AV	54.0	-12.2	1.34 H	47	25.18	16.62
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	111.4 PK			1.82 V	176	111.19	0.21
2	*2462.00	100.0 AV			1.82 V	176	99.79	0.21
3	**2483.50**	**73.0 PK**	**74.0**	**-1.0**	**1.82 V**	**176**	**72.69**	**0.31**
4	2483.50	52.5 AV	54.0	-1.5	1.82 V	176	52.19	0.31
5	4924.00	46.9 PK	74.0	-27.1	1.29 V	147	37.63	9.27
6	4924.00	41.1 AV	54.0	-12.9	1.29 V	147	31.83	9.27
7	7386.00	51.4 PK	74.0	-22.6	2.24 V	314	34.78	16.62
8	7386.00	42.3 AV	54.0	-11.7	2.24 V	314	25.68	16.62

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	59.1 PK	74.0	-14.9	1.27 H	77	59.22	-0.12
2	2390.00	41.3 AV	54.0	-12.7	1.27 H	77	41.42	-0.12
3	*2412.00	103.0 PK			1.20 H	77	103.03	-0.03
4	*2412.00	91.0 AV			1.20 H	77	91.03	-0.03
5	4824.00	48.4 PK	74.0	-25.6	1.22 H	68	39.38	9.02
6	4824.00	41.4 AV	54.0	-12.6	1.22 H	68	32.38	9.02
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**	**73.0 PK**	**74.0**	**-1.0**	**1.80 V**	**177**	**73.12**	**-0.12**
2	2390.00	50.6 AV	54.0	-3.4	1.80 V	177	50.72	-0.12
3	*2412.00	110.1 PK			1.82 V	175	110.13	-0.03
4	*2412.00	98.1 AV			1.82 V	175	98.13	-0.03
5	4824.00	47.4 PK	74.0	-26.6	1.24 V	155	38.38	9.02
6	4824.00	41.0 AV	54.0	-13.0	1.24 V	155	31.98	9.02

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	*2437.00	108.6 PK			1.19 H	100	108.52	0.08
2	*2437.00	96.5 AV			1.19 H	100	96.42	0.08
3	4874.00	48.2 PK	74.0	-25.8	1.14 H	75	39.08	9.12
4	4874.00	41.9 AV	54.0	-12.1	1.14 H	75	32.78	9.12
5	7311.00	52.1 PK	74.0	-21.9	1.10 H	103	35.59	16.51
6	7311.00	42.1 AV	54.0	-11.9	1.10 H	103	25.59	16.51
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	69.2 PK	74.0	-4.8	1.83 V	176	69.32	-0.12
2	2390.00	48.3 AV	54.0	-5.7	1.83 V	176	48.42	-0.12
3	*2437.00	116.3 PK			1.73 V	178	116.22	0.08
4	*2437.00	104.6 AV			1.73 V	178	104.52	0.08
5	2483.50	72.6 PK	74.0	-1.4	1.80 V	172	72.29	0.31
6	2483.50	48.1 AV	54.0	-5.9	1.80 V	172	47.79	0.31
7	4874.00	46.9 PK	74.0	-27.1	1.35 V	137	37.78	9.12
8	4874.00	41.0 AV	54.0	-13.0	1.35 V	137	31.88	9.12
9	7311.00	51.3 PK	74.0	-22.7	2.16 V	328	34.79	16.51
10	7311.00	42.1 AV	54.0	-11.9	2.16 V	328	25.59	16.51

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	106.0 PK			1.15 H	58	105.79	0.21
2	*2462.00	94.4 AV			1.15 H	58	94.19	0.21
3	2483.50	59.0 PK	74.0	-15.0	1.26 H	84	58.69	0.31
4	2483.50	41.3 AV	54.0	-12.7	1.26 H	84	40.99	0.31
5	4924.00	48.6 PK	74.0	-25.4	1.08 H	77	39.33	9.27
6	4924.00	41.8 AV	54.0	-12.2	1.08 H	77	32.53	9.27
7	7386.00	52.2 PK	74.0	-21.8	1.45 H	71	35.58	16.62
8	7386.00	42.5 AV	54.0	-11.5	1.45 H	71	25.88	16.62
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	110.6 PK			1.63 V	180	110.39	0.21
2	*2462.00	101.0 AV			1.63 V	180	100.79	0.21
3	**2483.50**	**73.0 PK**	**74.0**	**-1.0**	**1.65 V**	**181**	**72.69**	**0.31**
4	**2483.50**	**53.0 AV**	**54.0**	**-1.0**	**1.65 V**	**181**	**52.69**	**0.31**
5	4924.00	47.1 PK	74.0	-26.9	1.38 V	170	37.83	9.27
6	4924.00	40.7 AV	54.0	-13.3	1.38 V	170	31.43	9.27
7	7386.00	50.4 PK	74.0	-23.6	2.27 V	329	33.78	16.62
8	7386.00	41.3 AV	54.0	-12.7	2.27 V	329	24.68	16.62

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	59.9 PK	74.0	-14.1	1.16 H	94	60.02	-0.12
2	2390.00	42.1 AV	54.0	-11.9	1.16 H	94	42.22	-0.12
3	*2422.00	98.1 PK			1.27 H	64	98.09	0.01
4	*2422.00	85.8 AV			1.27 H	64	85.79	0.01
5	4844.00	48.2 PK	74.0	-25.8	1.23 H	75	39.14	9.06
6	4844.00	42.1 AV	54.0	-11.9	1.23 H	75	33.04	9.06
7	7266.00	52.0 PK	74.0	-22.0	1.38 H	38	35.34	16.66
8	7266.00	42.3 AV	54.0	-11.7	1.38 H	38	25.64	16.66
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	72.2 PK	74.0	-1.8	1.80 V	180	72.32	-0.12
2	2390.00	52.9 AV	54.0	-1.1	1.80 V	180	53.02	-0.12
3	*2422.00	106.4 PK			1.80 V	180	106.39	0.01
4	*2422.00	94.2 AV			1.80 V	180	94.19	0.01
5	4844.00	45.8 PK	74.0	-28.2	1.37 V	161	36.74	9.06
6	4844.00	39.9 AV	54.0	-14.1	1.37 V	161	30.84	9.06
7	7266.00	50.8 PK	74.0	-23.2	2.28 V	331	34.14	16.66
8	7266.00	42.3 AV	54.0	-11.7	2.28 V	331	25.64	16.66

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	*2437.00	101.1 PK			1.20 H	56	101.02	0.08
2	*2437.00	89.0 AV			1.20 H	56	88.92	0.08
3	4874.00	48.1 PK	74.0	-25.9	1.12 H	59	38.98	9.12
4	4874.00	41.6 AV	54.0	-12.4	1.12 H	59	32.48	9.12
5	7311.00	52.4 PK	74.0	-21.6	1.31 H	57	35.89	16.51
6	7311.00	42.5 AV	54.0	-11.5	1.31 H	57	25.99	16.51
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	72.1 PK	74.0	-1.9	1.80 V	180	72.22	-0.12
2	**2390.00**	**53.0 AV**	**54.0**	**-1.0**	**1.80 V**	**180**	**53.12**	**-0.12**
3	*2437.00	109.6 PK			1.80 V	180	109.52	0.08
4	*2437.00	96.4 AV			1.80 V	180	96.32	0.08
5	2483.50	72.6 PK	74.0	-1.4	1.80 V	180	72.29	0.31
6	2483.50	51.2 AV	54.0	-2.8	1.80 V	180	50.89	0.31
7	4874.00	46.8 PK	74.0	-27.2	1.31 V	173	37.68	9.12
8	4874.00	40.7 AV	54.0	-13.3	1.31 V	173	31.58	9.12
9	7311.00	50.7 PK	74.0	-23.3	2.28 V	314	34.19	16.51
10	7311.00	42.1 AV	54.0	-11.9	2.28 V	314	25.59	16.51

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	99.2 PK			1.17 H	100	99.05	0.15
2	*2452.00	86.7 AV			1.17 H	100	86.55	0.15
3	2483.50	59.3 PK	74.0	-14.7	1.25 H	85	58.99	0.31
4	2483.50	41.9 AV	54.0	-12.1	1.25 H	85	41.59	0.31
5	4904.00	47.9 PK	74.0	-26.1	1.21 H	59	38.71	9.19
6	4904.00	42.0 AV	54.0	-12.0	1.21 H	59	32.81	9.19
7	7356.00	52.1 PK	74.0	-21.9	1.38 H	32	35.51	16.59
8	7356.00	42.3 AV	54.0	-11.7	1.38 H	32	25.71	16.59
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	107.2 PK			1.78 V	180	107.05	0.15
2	*2452.00	93.8 AV			1.78 V	180	93.65	0.15
3	2483.50	71.2 PK	74.0	-2.8	1.78 V	181	70.89	0.31
4	2483.50	52.9 AV	54.0	-1.1	1.78 V	181	52.59	0.31
5	4904.00	46.5 PK	74.0	-27.5	1.27 V	170	37.31	9.19
6	4904.00	40.6 AV	54.0	-13.4	1.27 V	170	31.41	9.19
7	7356.00	50.3 PK	74.0	-23.7	2.23 V	311	33.71	16.59
8	7356.00	41.6 AV	54.0	-12.4	2.23 V	311	25.01	16.59

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

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	163.10	30.7 QP	43.5	-12.8	1.24 H	100	43.71	-13.04
2	374.10	32.7 QP	46.0	-13.3	1.64 H	200	42.70	-9.99
3	500.11	35.8 QP	46.0	-10.2	1.67 H	247	42.64	-6.83
4	749.71	31.8 QP	46.0	-14.3	1.44 H	301	32.97	-1.22
5	874.71	36.1 QP	46.0	-9.9	1.24 H	244	35.86	0.25
6	999.45	47.9 QP	54.0	-6.1	1.60 H	200	45.83	2.03
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	41.12	30.1 QP	40.0	-9.9	1.24 V	211	43.53	-13.42
2	348.41	25.5 QP	46.0	-20.6	1.64 V	241	36.28	-10.83
3	374.81	29.5 QP	46.0	-16.6	1.24 V	201	39.43	-9.98
4	500.11	35.9 QP	46.0	-10.1	1.42 V	301	42.72	-6.83
5	966.71	42.7 QP	54.0	-11.3	1.24 V	200	40.95	1.73
6	999.11	42.5 QP	54.0	-11.5	1.45 V	55	40.50	2.02

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

4.1.8 Test Results (Mode 3)

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	2390.00	63.7 PK	74.0	-10.3	2.06 H	254	63.82	-0.12
2	2390.00	41.8 AV	54.0	-12.2	2.06 H	254	41.92	-0.12
3	*2412.00	103.7 PK			2.13 H	103	103.73	-0.03
4	*2412.00	100.3 AV			2.13 H	103	100.33	-0.03
5	4824.00	48.7 PK	74.0	-25.3	1.89 H	166	39.68	9.02
6	4824.00	44.0 AV	54.0	-10.0	1.89 H	166	34.98	9.02
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	72.6 PK	74.0	-1.4	1.83 V	179	72.72	-0.12
2	2390.00	46.1 AV	54.0	-7.9	1.83 V	179	46.22	-0.12
3	*2412.00	113.4 PK			1.69 V	198	113.43	-0.03
4	*2412.00	110.3 AV			1.69 V	198	110.33	-0.03
5	4824.00	48.4 PK	74.0	-25.6	1.73 V	192	39.38	9.02
6	4824.00	42.9 AV	54.0	-11.1	1.73 V	192	33.88	9.02

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	*2437.00	104.2 PK			1.71 H	269	104.12	0.08
2	*2437.00	100.9 AV			1.71 H	269	100.82	0.08
3	4874.00	50.8 PK	74.0	-23.2	1.69 H	172	41.68	9.12
4	4874.00	49.3 AV	54.0	-4.7	1.69 H	172	40.18	9.12
5	7311.00	50.9 PK	74.0	-23.1	1.41 H	67	34.39	16.51
6	7311.00	41.3 AV	54.0	-12.7	1.41 H	67	24.79	16.51
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	68.3 PK	74.0	-5.7	1.89 V	166	68.42	-0.12
2	2390.00	43.8 AV	54.0	-10.2	1.89 V	166	43.92	-0.12
3	*2437.00	115.2 PK			1.77 V	185	115.12	0.08
4	*2437.00	111.9 AV			1.77 V	185	111.82	0.08
5	2483.50	68.2 PK	74.0	-5.8	1.91 V	176	67.89	0.31
6	2483.50	44.5 AV	54.0	-9.5	1.91 V	176	44.19	0.31
7	4874.00	48.5 PK	74.0	-25.5	1.66 V	164	39.38	9.12
8	4874.00	45.0 AV	54.0	-9.0	1.66 V	164	35.88	9.12
9	7311.00	51.7 PK	74.0	-22.3	2.15 V	333	35.19	16.51
10	7311.00	42.6 AV	54.0	-11.4	2.15 V	333	26.09	16.51

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	106.0 PK			2.08 H	74	105.79	0.21
2	*2462.00	96.7 AV			2.08 H	74	96.49	0.21
3	2483.50	61.5 PK	74.0	-12.5	1.95 H	64	61.19	0.31
4	2483.50	37.7 AV	54.0	-16.3	1.95 H	64	37.39	0.31
5	4924.00	50.7 PK	74.0	-23.3	1.05 H	73	41.43	9.27
6	4924.00	45.9 AV	54.0	-8.1	1.05 H	73	36.63	9.27
7	7386.00	52.1 PK	74.0	-21.9	1.34 H	66	35.48	16.62
8	7386.00	42.5 AV	54.0	-11.5	1.34 H	66	25.88	16.62
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	110.5 PK			1.83 V	180	110.29	0.21
2	*2462.00	102.6 AV			1.83 V	180	102.39	0.21
3	2483.50	72.5 PK	74.0	-1.5	1.78 V	169	72.19	0.31
4	2483.50	44.6 AV	54.0	-9.4	1.78 V	169	44.29	0.31
5	4924.00	49.8 PK	74.0	-24.2	1.33 V	165	40.53	9.27
6	4924.00	45.5 AV	54.0	-8.5	1.33 V	165	36.23	9.27
7	7386.00	51.3 PK	74.0	-22.7	2.07 V	353	34.68	16.62
8	7386.00	42.2 AV	54.0	-11.8	2.07 V	353	25.58	16.62

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.

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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	59.6 PK	74.0	-14.4	1.28 H	86	59.72	-0.12
2	2390.00	42.0 AV	54.0	-12.0	1.28 H	86	42.12	-0.12
3	*2412.00	102.7 PK			1.27 H	70	102.73	-0.03
4	*2412.00	90.9 AV			1.27 H	70	90.93	-0.03
5	4824.00	47.8 PK	74.0	-26.2	1.09 H	80	38.78	9.02
6	4824.00	41.7 AV	54.0	-12.3	1.09 H	80	32.68	9.02
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	71.4 PK	74.0	-2.6	1.81 V	184	71.52	-0.12
2	2390.00	52.8 AV	54.0	-1.2	1.81 V	184	52.92	-0.12
3	*2412.00	112.7 PK			1.77 V	187	112.73	-0.03
4	*2412.00	100.3 AV			1.77 V	187	100.33	-0.03
5	4824.00	46.7 PK	74.0	-27.3	1.21 V	159	37.68	9.02
6	4824.00	40.6 AV	54.0	-13.4	1.21 V	159	31.58	9.02

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	*2437.00	108.6 PK			1.19 H	75	108.52	0.08
2	*2437.00	96.1 AV			1.19 H	75	96.02	0.08
3	4874.00	48.3 PK	74.0	-25.7	1.13 H	64	39.18	9.12
4	4874.00	42.4 AV	54.0	-11.6	1.13 H	64	33.28	9.12
5	7311.00	51.6 PK	74.0	-22.4	1.38 H	25	35.09	16.51
6	7311.00	42.2 AV	54.0	-11.8	1.38 H	25	25.69	16.51
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	69.4 PK	74.0	-4.6	1.82 V	195	69.52	-0.12
2	2390.00	47.1 AV	54.0	-6.9	1.82 V	195	47.22	-0.12
3	*2437.00	117.7 PK			1.72 V	166	117.62	0.08
4	*2437.00	104.8 AV			1.72 V	166	104.72	0.08
5	2483.50	69.5 PK	74.0	-4.5	1.82 V	198	69.19	0.31
6	2483.50	46.8 AV	54.0	-7.2	1.82 V	198	46.49	0.31
7	4874.00	48.0 PK	74.0	-26.0	1.31 V	163	38.88	9.12
8	4874.00	41.7 AV	54.0	-12.3	1.31 V	163	32.58	9.12
9	7311.00	51.6 PK	74.0	-22.4	2.20 V	317	35.09	16.51
10	7311.00	42.3 AV	54.0	-11.7	2.20 V	317	25.79	16.51

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	104.8 PK			1.19 H	99	104.59	0.21
2	*2462.00	92.3 AV			1.19 H	99	92.09	0.21
3	2483.50	59.2 PK	74.0	-14.8	1.26 H	107	58.89	0.31
4	2483.50	41.1 AV	54.0	-12.9	1.26 H	107	40.79	0.31
5	4924.00	48.8 PK	74.0	-25.2	1.06 H	60	39.53	9.27
6	4924.00	42.1 AV	54.0	-11.9	1.06 H	60	32.83	9.27
7	7386.00	52.0 PK	74.0	-22.0	1.39 H	47	35.38	16.62
8	7386.00	41.8 AV	54.0	-12.2	1.39 H	47	25.18	16.62
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	111.3 PK			1.77 V	171	111.09	0.21
2	*2462.00	99.9 AV			1.77 V	171	99.69	0.21
3	2483.50	72.7 PK	74.0	-1.3	1.87 V	160	72.39	0.31
4	2483.50	52.5 AV	54.0	-1.5	1.87 V	160	52.19	0.31
5	4924.00	47.1 PK	74.0	-26.9	1.24 V	153	37.83	9.27
6	4924.00	41.0 AV	54.0	-13.0	1.24 V	153	31.73	9.27
7	7386.00	51.6 PK	74.0	-22.4	2.21 V	304	34.98	16.62
8	7386.00	42.4 AV	54.0	-11.6	2.21 V	304	25.78	16.62

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	58.7 PK	74.0	-15.3	1.30 H	91	58.82	-0.12
2	2390.00	40.9 AV	54.0	-13.1	1.30 H	91	41.02	-0.12
3	*2412.00	103.3 PK			1.21 H	77	103.33	-0.03
4	*2412.00	91.2 AV			1.21 H	77	91.23	-0.03
5	4824.00	49.1 PK	74.0	-24.9	1.26 H	78	40.08	9.02
6	4824.00	41.8 AV	54.0	-12.2	1.26 H	78	32.78	9.02
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**	**73.0 PK**	**74.0**	**-1.0**	**1.79 V**	**172**	**73.12**	**-0.12**
2	2390.00	50.8 AV	54.0	-3.2	1.79 V	172	50.92	-0.12
3	*2412.00	110.5 PK			1.84 V	163	110.53	-0.03
4	*2412.00	98.5 AV			1.84 V	163	98.53	-0.03
5	4824.00	47.1 PK	74.0	-26.9	1.24 V	158	38.08	9.02
6	4824.00	40.8 AV	54.0	-13.2	1.24 V	158	31.78	9.02

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	*2437.00	108.3 PK			1.17 H	116	108.22	0.08
2	*2437.00	96.3 AV			1.17 H	116	96.22	0.08
3	4874.00	48.3 PK	74.0	-25.7	1.14 H	64	39.18	9.12
4	4874.00	42.3 AV	54.0	-11.7	1.14 H	64	33.18	9.12
5	7311.00	51.6 PK	74.0	-22.4	1.09 H	103	35.09	16.51
6	7311.00	41.7 AV	54.0	-12.3	1.09 H	103	25.19	16.51
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	68.9 PK	74.0	-5.1	1.89 V	165	69.02	-0.12
2	2390.00	48.3 AV	54.0	-5.7	1.89 V	165	48.42	-0.12
3	*2437.00	115.8 PK			1.72 V	185	115.72	0.08
4	*2437.00	104.4 AV			1.72 V	185	104.32	0.08
5	2483.50	72.1 PK	74.0	-1.9	1.85 V	179	71.79	0.31
6	2483.50	47.6 AV	54.0	-6.4	1.85 V	179	47.29	0.31
7	4874.00	46.5 PK	74.0	-27.5	1.37 V	141	37.38	9.12
8	4874.00	40.7 AV	54.0	-13.3	1.37 V	141	31.58	9.12
9	7311.00	51.5 PK	74.0	-22.5	2.15 V	335	34.99	16.51
10	7311.00	42.6 AV	54.0	-11.4	2.15 V	335	26.09	16.51

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	106.5 PK			1.19 H	61	106.29	0.21
2	*2462.00	94.8 AV			1.19 H	61	94.59	0.21
3	2483.50	58.7 PK	74.0	-15.3	1.26 H	84	58.39	0.31
4	2483.50	41.0 AV	54.0	-13.0	1.26 H	84	40.69	0.31
5	4924.00	48.9 PK	74.0	-25.1	1.04 H	77	39.63	9.27
6	4924.00	42.0 AV	54.0	-12.0	1.04 H	77	32.73	9.27
7	7386.00	51.6 PK	74.0	-22.4	1.47 H	79	34.98	16.62
8	7386.00	42.1 AV	54.0	-11.9	1.47 H	79	25.48	16.62
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	110.9 PK			1.60 V	176	110.69	0.21
2	*2462.00	101.5 AV			1.60 V	176	101.29	0.21
3	2483.50	72.8 PK	74.0	-1.2	1.65 V	168	72.49	0.31
4	2483.50	52.7 AV	54.0	-1.3	1.65 V	168	52.39	0.31
5	4924.00	47.1 PK	74.0	-26.9	1.41 V	175	37.83	9.27
6	4924.00	41.0 AV	54.0	-13.0	1.41 V	175	31.73	9.27
7	7386.00	50.1 PK	74.0	-23.9	2.25 V	323	33.48	16.62
8	7386.00	41.0 AV	54.0	-13.0	2.25 V	323	24.38	16.62

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	60.0 PK	74.0	-14.0	1.14 H	91	60.12	-0.12
2	2390.00	42.5 AV	54.0	-11.5	1.14 H	91	42.62	-0.12
3	*2422.00	97.9 PK			1.29 H	55	97.89	0.01
4	*2422.00	85.5 AV			1.29 H	55	85.49	0.01
5	4844.00	48.0 PK	74.0	-26.0	1.18 H	80	38.94	9.06
6	4844.00	42.1 AV	54.0	-11.9	1.18 H	80	33.04	9.06
7	7266.00	51.6 PK	74.0	-22.4	1.40 H	30	34.94	16.66
8	7266.00	41.9 AV	54.0	-12.1	1.40 H	30	25.24	16.66
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	71.9 PK	74.0	-2.1	1.81 V	181	72.02	-0.12
2	2390.00	52.8 AV	54.0	-1.2	1.81 V	181	52.92	-0.12
3	*2422.00	106.5 PK			1.84 V	175	106.49	0.01
4	*2422.00	94.3 AV			1.84 V	175	94.29	0.01
5	4844.00	45.7 PK	74.0	-28.3	1.36 V	174	36.64	9.06
6	4844.00	39.9 AV	54.0	-14.1	1.36 V	174	30.84	9.06
7	7266.00	51.2 PK	74.0	-22.8	2.23 V	323	34.54	16.66
8	7266.00	42.6 AV	54.0	-11.4	2.23 V	323	25.94	16.66

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	*2437.00	100.9 PK			1.25 H	50	100.82	0.08
2	*2437.00	88.7 AV			1.25 H	50	88.62	0.08
3	4874.00	48.7 PK	74.0	-25.3	1.10 H	58	39.58	9.12
4	4874.00	41.9 AV	54.0	-12.1	1.10 H	58	32.78	9.12
5	7311.00	52.6 PK	74.0	-21.4	1.32 H	70	36.09	16.51
6	7311.00	43.0 AV	54.0	-11.0	1.32 H	70	26.49	16.51
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	72.4 PK	74.0	-1.6	1.78 V	178	72.52	-0.12
2	2390.00	52.5 AV	54.0	-1.5	1.78 V	178	52.62	-0.12
3	*2437.00	109.5 PK			1.82 V	166	109.42	0.08
4	*2437.00	96.4 AV			1.82 V	166	96.32	0.08
5	2483.50	72.5 PK	74.0	-1.5	1.74 V	171	72.19	0.31
6	2483.50	51.2 AV	54.0	-2.8	1.74 V	171	50.89	0.31
7	4874.00	47.0 PK	74.0	-27.0	1.30 V	177	37.88	9.12
8	4874.00	40.8 AV	54.0	-13.2	1.30 V	177	31.68	9.12
9	7311.00	50.7 PK	74.0	-23.3	2.29 V	329	34.19	16.51
10	7311.00	42.0 AV	54.0	-12.0	2.29 V	329	25.49	16.51

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	98.8 PK			1.21 H	88	98.65	0.15
2	*2452.00	86.4 AV			1.21 H	88	86.25	0.15
3	2483.50	59.6 PK	74.0	-14.4	1.29 H	100	59.29	0.31
4	2483.50	42.1 AV	54.0	-11.9	1.29 H	100	41.79	0.31
5	4904.00	47.8 PK	74.0	-26.2	1.22 H	62	38.61	9.19
6	4904.00	42.0 AV	54.0	-12.0	1.22 H	62	32.81	9.19
7	7356.00	51.8 PK	74.0	-22.2	1.37 H	41	35.21	16.59
8	7356.00	41.8 AV	54.0	-12.2	1.37 H	41	25.21	16.59
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	106.7 PK			1.73 V	172	106.55	0.15
2	*2452.00	93.4 AV			1.73 V	172	93.25	0.15
3	2483.50	71.0 PK	74.0	-3.0	1.72 V	174	70.69	0.31
4	2483.50	52.5 AV	54.0	-1.5	1.72 V	174	52.19	0.31
5	4904.00	46.8 PK	74.0	-27.2	1.28 V	166	37.61	9.19
6	4904.00	40.6 AV	54.0	-13.4	1.28 V	166	31.41	9.19
7	7356.00	50.6 PK	74.0	-23.4	2.23 V	312	34.01	16.59
8	7356.00	41.6 AV	54.0	-12.4	2.23 V	312	25.01	16.59

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.

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	Sep. 29, 2014	Sep. 28, 2015
RF Cable	5D-FB	COACAB-001	May 25, 2015	May 24, 2016
50 ohms Terminator	50	3	Oct. 17, 2014	Oct. 16, 2015
50 ohms Terminator	N/A	EMC-04	Oct. 21, 2014	Oct. 20, 2015
Software BVADT	BVADT_Cond_ V7.3.7.3	NA	NA	NA
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100071	Nov. 10, 2014	Nov. 09, 2015

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: July 31 to Aug. 07, 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.

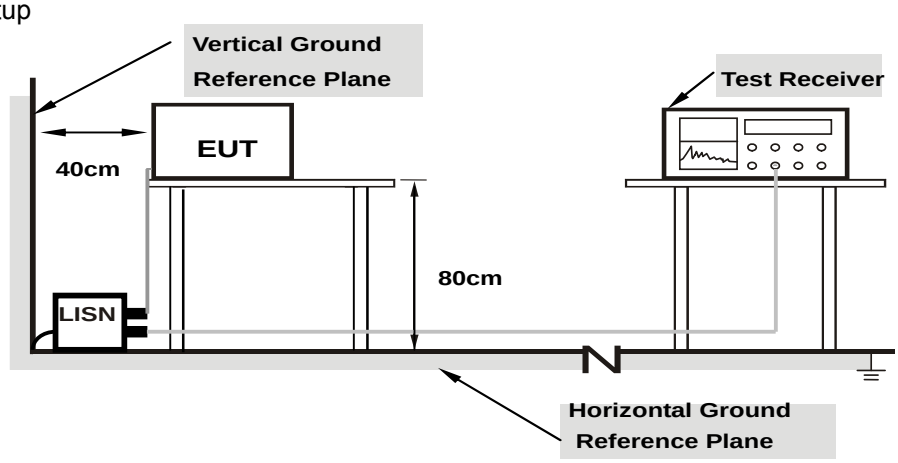
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

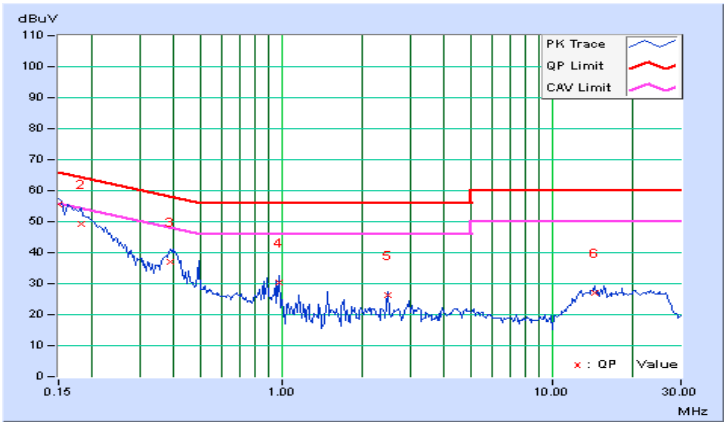
4.2.7 Test Results (Mode 1)

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	0.08	55.32	42.28	55.40	42.36	66.00	56.00	-10.60	-13.64
2	0.18125	0.09	49.16	35.90	49.25	35.99	64.43	54.43	-15.18	-18.44
3	0.38828	0.10	36.78	27.68	36.88	27.78	58.10	48.10	-21.22	-20.32
4	0.98594	0.13	30.38	28.60	30.51	28.73	56.00	46.00	-25.49	-17.27
5	2.47266	0.18	25.94	24.94	26.12	25.12	56.00	46.00	-29.88	-20.88
6	14.33594	0.56	26.40	21.56	26.96	22.12	60.00	50.00	-33.04	-27.88

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

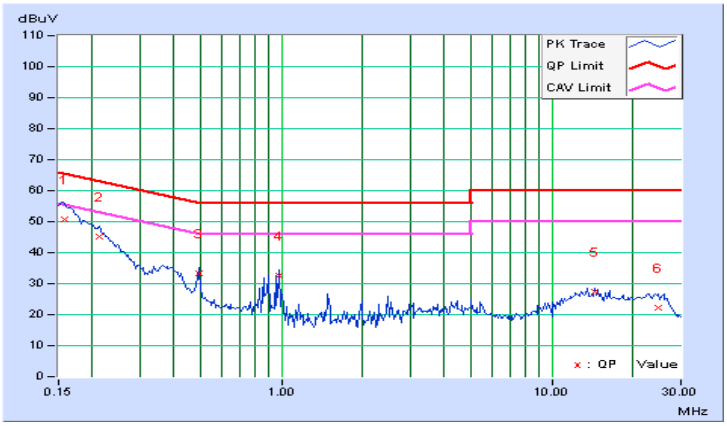


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15781	0.08	50.76	35.80	50.84	35.88	65.58	55.58	-14.74	-19.70
2	0.21250	0.08	45.26	34.28	45.34	34.36	63.11	53.11	-17.77	-18.75
3	0.49375	0.10	33.30	32.16	33.40	32.26	56.10	46.10	-22.70	-13.84
4	0.98594	0.13	32.34	29.38	32.47	29.51	56.00	46.00	-23.53	-16.49
5	14.33203	0.58	26.68	21.96	27.26	22.54	60.00	50.00	-32.74	-27.46
6	24.68359	0.85	21.20	16.14	22.05	16.99	60.00	50.00	-37.95	-33.01

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



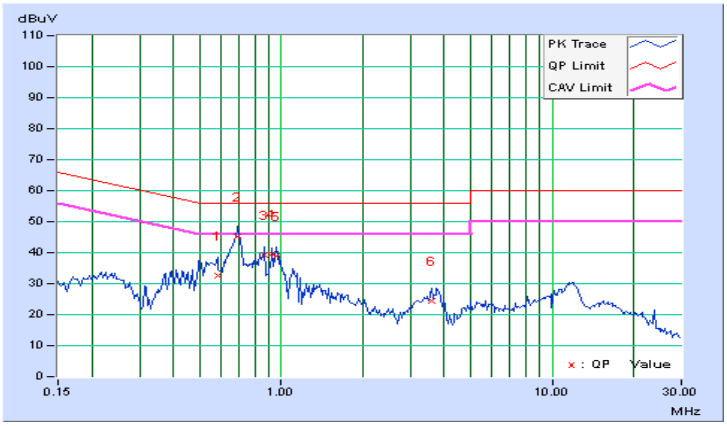
4.2.8 Test Results (Mode 2)

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	0.58359	0.18	32.40	23.58	32.58	23.76	56.00	46.00	-23.42	-22.24
2	**0.69297**	**0.19**	**45.18**	**37.78**	**45.37**	**37.97**	**56.00**	**46.00**	**-10.63**	**-8.03**
3	0.86484	0.21	39.12	36.90	39.33	37.11	56.00	46.00	-16.67	-8.89
4	0.92734	0.22	39.30	37.46	39.52	37.68	56.00	46.00	-16.48	-8.32
5	0.95859	0.23	38.80	36.26	39.03	36.49	56.00	46.00	-16.97	-9.51
6	3.57813	0.33	24.04	19.76	24.37	20.09	56.00	46.00	-31.63	-25.91

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

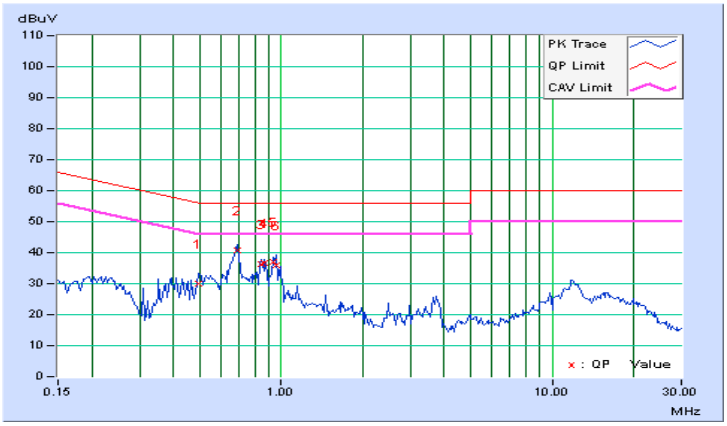


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.49375	0.16	29.96	19.00	30.12	19.16	56.10	46.10	-25.99	-26.95
2	0.68516	0.18	40.48	30.52	40.66	30.70	56.00	46.00	-15.34	-15.30
3	0.84141	0.19	36.24	33.86	36.43	34.05	56.00	46.00	-19.57	-11.95
4	0.87116	0.20	36.60	35.98	36.80	36.18	56.00	46.00	-19.20	-9.82
5	0.93125	0.20	36.98	36.34	37.18	36.54	56.00	46.00	-18.82	-9.46
6	0.96200	0.21	35.74	34.82	35.95	35.03	56.00	46.00	-20.05	-10.97

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

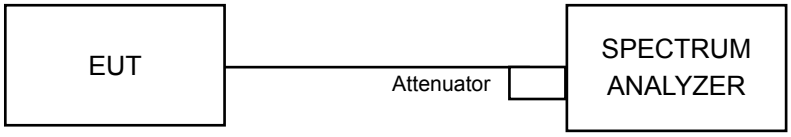


4.3 6dB Bandwidth Measurement

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

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 Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	10.06	10.12	0.5	Pass
6	2437	10.13	10.13	0.5	Pass
11	2462	10.11	10.12	0.5	Pass

802.11g

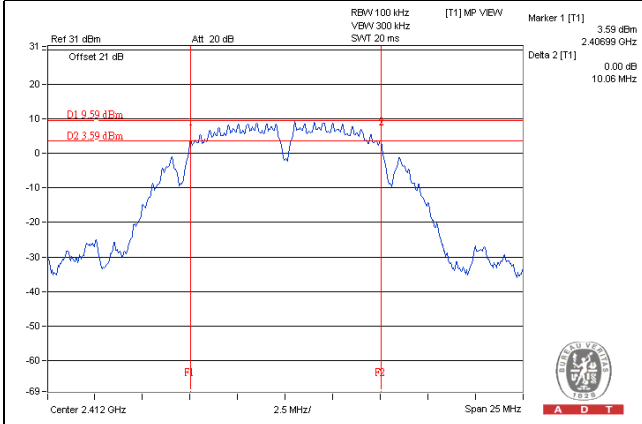
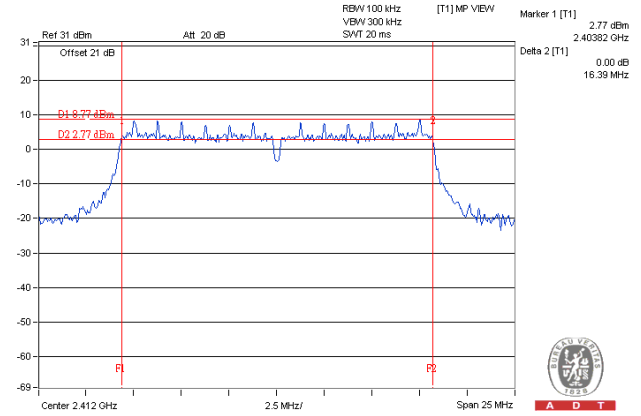
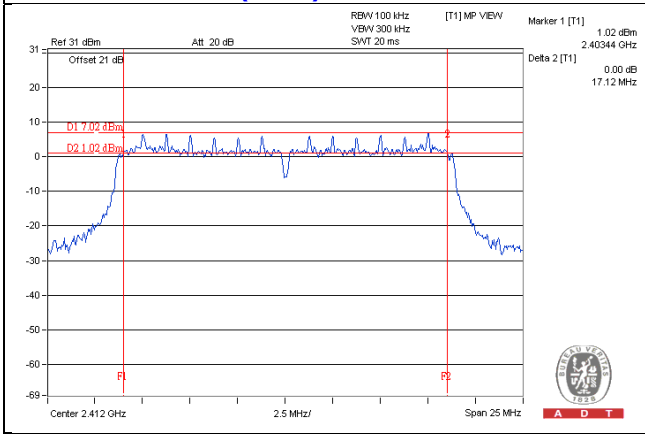
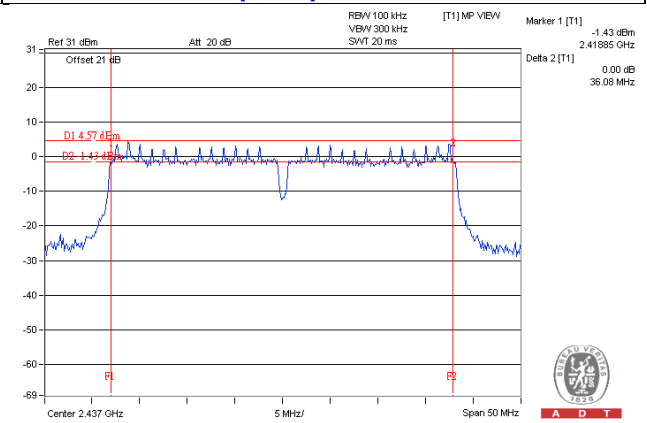
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.40	16.39	0.5	Pass
6	2437	16.42	16.40	0.5	Pass
11	2462	16.41	16.41	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.13	17.12	0.5	Pass
6	2437	17.14	17.35	0.5	Pass
11	2462	17.68	17.13	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	36.41	36.16	0.5	Pass
6	2437	36.08	36.10	0.5	Pass
9	2452	36.15	36.45	0.5	Pass

Spectrum Plot of Worst Value	
802.11b_Chain 0 / CH1	**802.11g_Chain 1 / CH1**
	
802.11n (HT20) _Chain 1 / CH1	**802.11n (HT40) _Chain 0 / CH6**
	

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

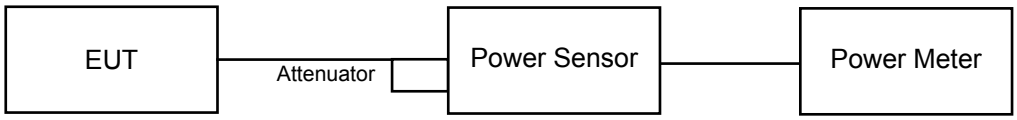
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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

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

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	23.90	24.02	497.819	26.97	30	Pass
6	2437	25.24	25.61	698.11	28.44	30	Pass
11	2462	20.97	22.01	283.881	24.53	30	Pass

802.11g

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	25.44	24.97	663.996	28.22	30	Pass
6	2437	25.92	25.56	750.59	28.75	30	Pass
11	2462	24.56	24.86	591.955	27.72	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	24.81	25.01	619.648	27.92	30	Pass
6	2437	25.55	25.88	746.18	28.73	30	Pass
11	2462	24.58	24.73	584.245	27.67	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	22.13	22.75	351.67	25.46	30	Pass
6	2437	24.91	24.51	592.23	27.72	30	Pass
9	2452	23.02	23.56	427.433	26.31	30	Pass

FOR AVERAGE POWER

802.11b

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	21.33	21.64	281.712	24.50
6	2437	23.36	24.05	470.867	26.73
11	2462	17.69	19.31	144.059	21.59

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	19.84	19.45	184.488	22.66
6	2437	22.19	21.98	323.338	25.10
11	2462	18.59	19.71	165.818	22.20

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	19.02	19.07	160.523	22.06
6	2437	22.19	22.77	354.811	25.50
11	2462	18.44	19.14	151.858	21.81

802.11n (HT40)

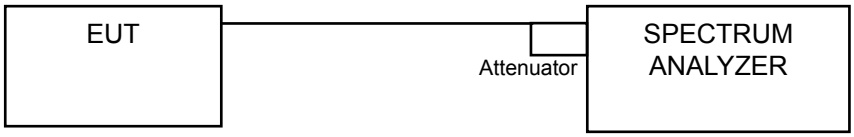
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	15.78	15.92	76.928	18.86
6	2437	20.02	20.73	218.766	23.40
9	2452	16.74	17.85	108.160	20.34

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

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 Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-5.95	3.01	-2.94	7.02	Pass
	6	2437	-3.69	3.01	-0.68	7.02	Pass
	11	2462	-9.42	3.01	-6.41	7.02	Pass
1	1	2412	-4.68	3.01	-1.67	7.02	Pass
	6	2437	-2.71	3.01	0.30	7.02	Pass
	11	2462	-7.55	3.01	-4.54	7.02	Pass

NOTE: Directional gain = 3.97dBi + 10log(2) = 6.98dBi > 6dBi , so the power density limit shall be reduced to 8-(6.98-6) = 7.02dBm.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-6.56	3.01	-3.55	7.02	Pass
	6	2437	-4.71	3.01	-1.70	7.02	Pass
	11	2462	-8.35	3.01	-5.34	7.02	Pass
1	1	2412	-7.02	3.01	-4.01	7.02	Pass
	6	2437	-4.91	3.01	-1.90	7.02	Pass
	11	2462	-8.37	3.01	-5.36	7.02	Pass

NOTE: Directional gain = 3.97dBi + 10log(2) = 6.98dBi > 6dBi , so the power density limit shall be reduced to 8-(6.98-6) = 7.02dBm.

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	-9.08	3.01	-6.07	7.02	Pass
	6	2437	-5.81	3.01	-2.80	7.02	Pass
	11	2462	-5.80	3.01	-2.79	7.02	Pass
1	1	2412	-8.25	3.01	-5.24	7.02	Pass
	6	2437	-5.25	3.01	-2.24	7.02	Pass
	11	2462	-9.41	3.01	-6.40	7.02	Pass

NOTE: Directional gain = 3.97dBi + 10log(2) = 6.98dBi > 6dBi , so the power density limit shall be reduced to 8-(6.98-6) = 7.02dBm.

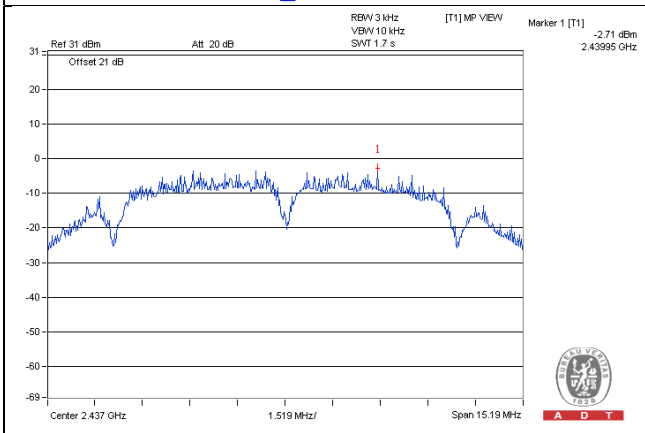
802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	3	2422	-13.02	3.01	-10.01	7.02	Pass
	6	2437	-11.56	3.01	-8.55	7.02	Pass
	9	2452	-14.68	3.01	-11.67	7.02	Pass
1	3	2422	-12.78	3.01	-9.77	7.02	Pass
	6	2437	-10.05	3.01	-7.04	7.02	Pass
	9	2452	-6.18	3.01	-3.17	7.02	Pass

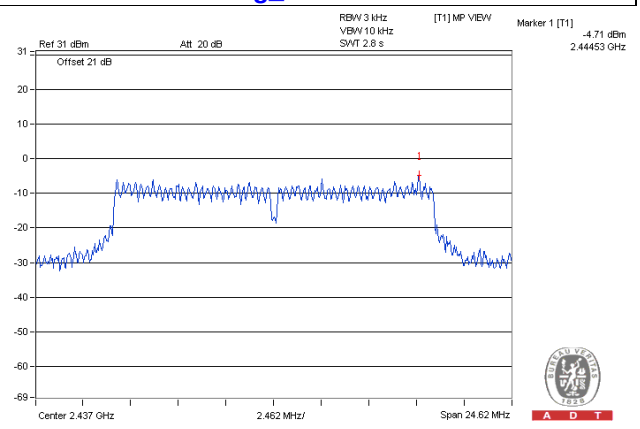
NOTE: Directional gain = 3.97dBi + 10log(2) = 6.98dBi > 6dBi , so the power density limit shall be reduced to 8-(6.98-6) = 7.02dBm.

Spectrum Plot of Worst Value

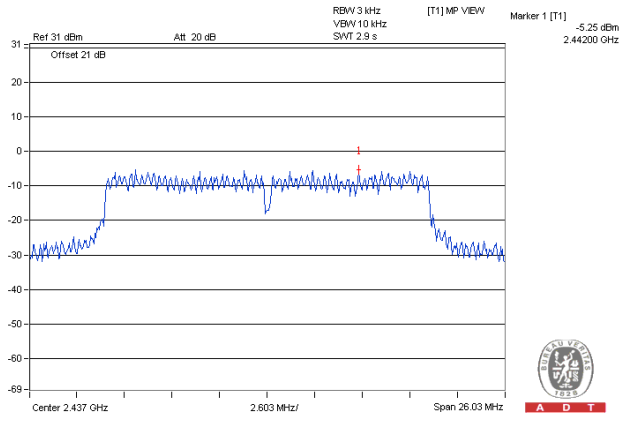
802.11b_Chain 1 / CH6



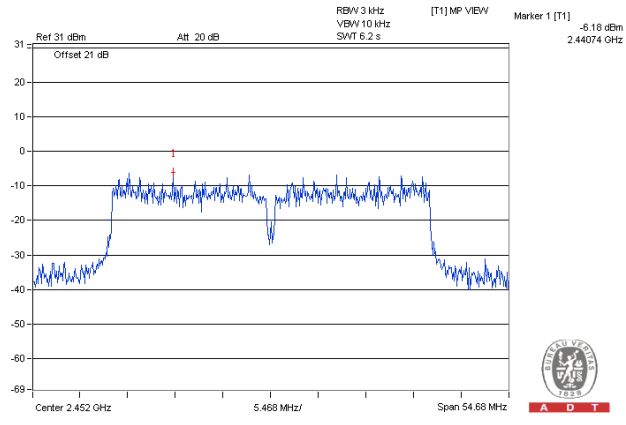
802.11g_Chain 0 / CH6



802.11n (HT20) _Chain 1 / CH6



802.11n (HT40) _Chain 1 / CH9

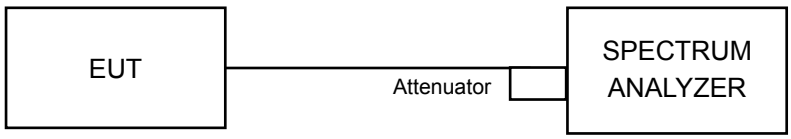


4.6 Conducted Out of Band Emission Measurement

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 ≥ 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 Condition

Same as Item 4.3.6

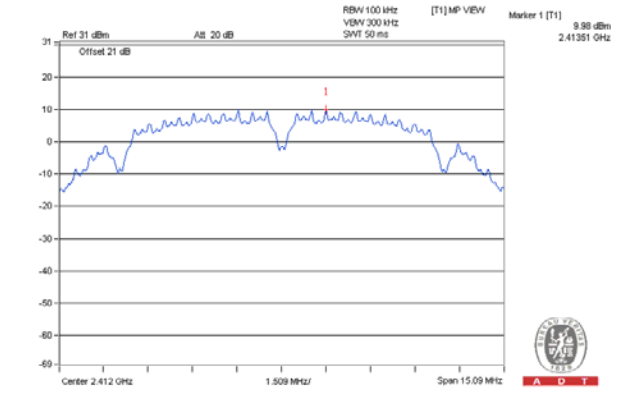
4.6.7 Test Results

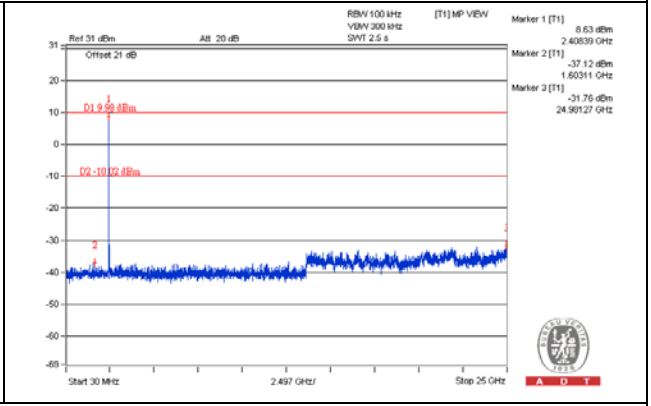
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

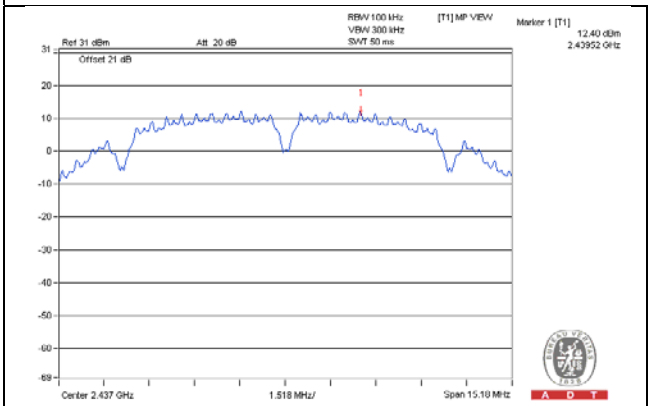
Chain 0

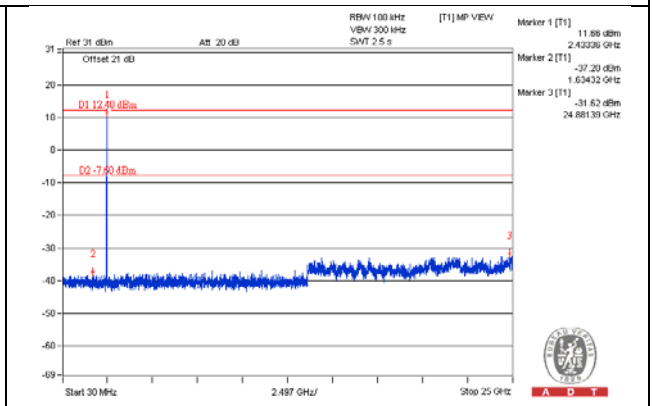
CH 1



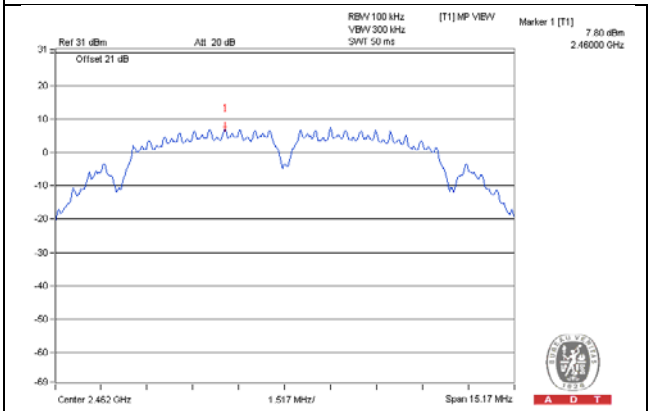


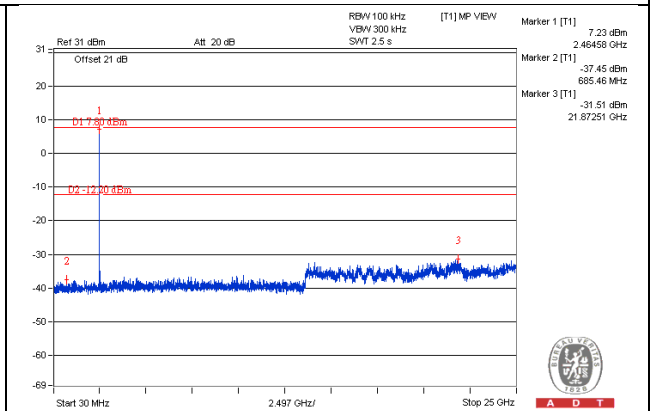
CH 6



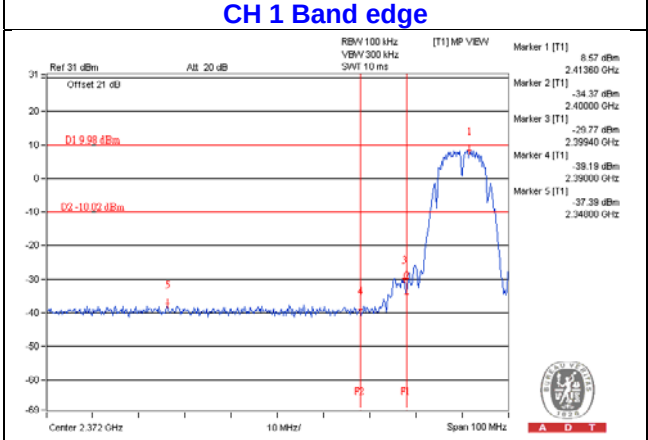


CH 11

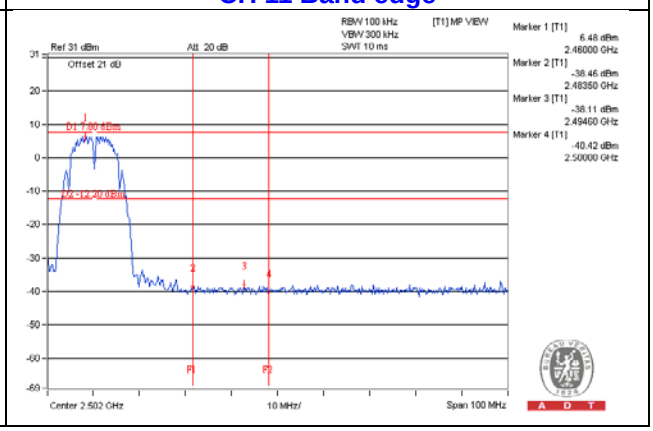




CH 1 Band edge

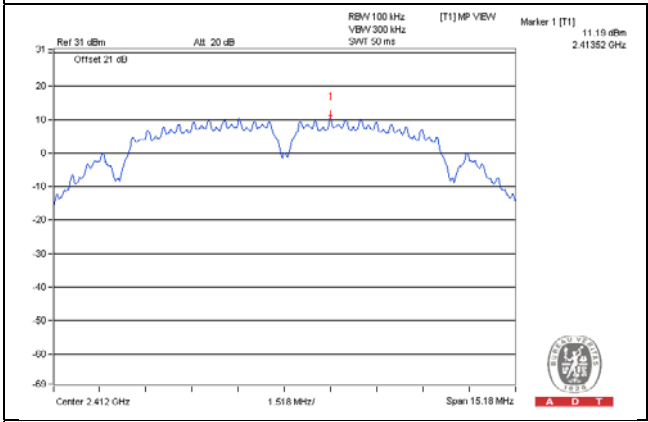


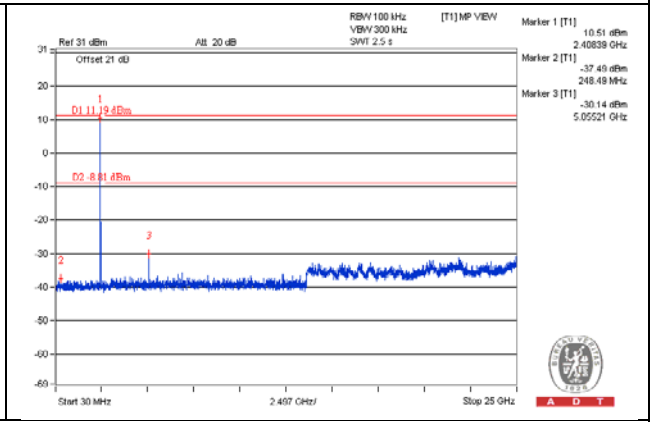
CH 11 Band edge



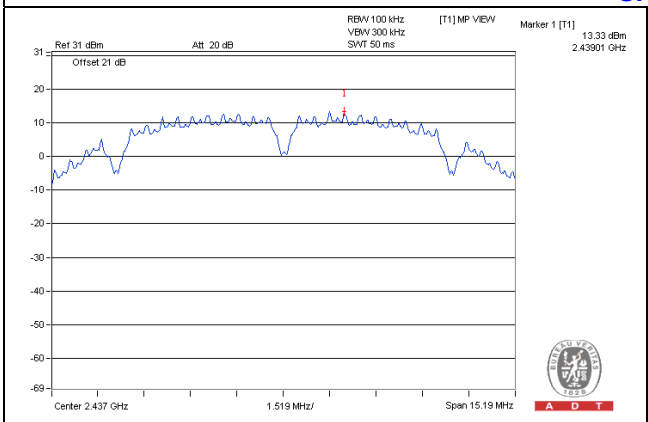
Chain 1

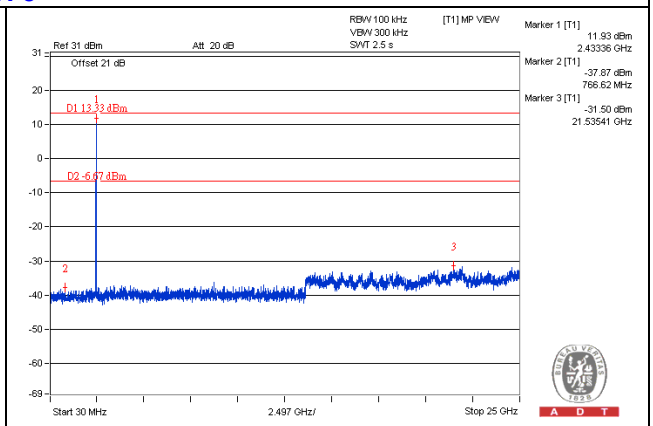
CH 1



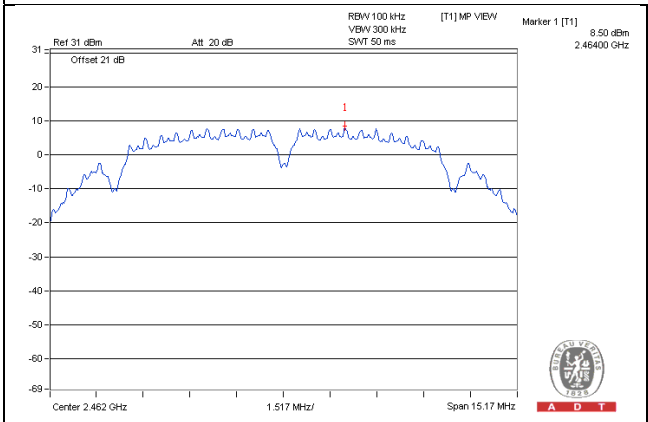


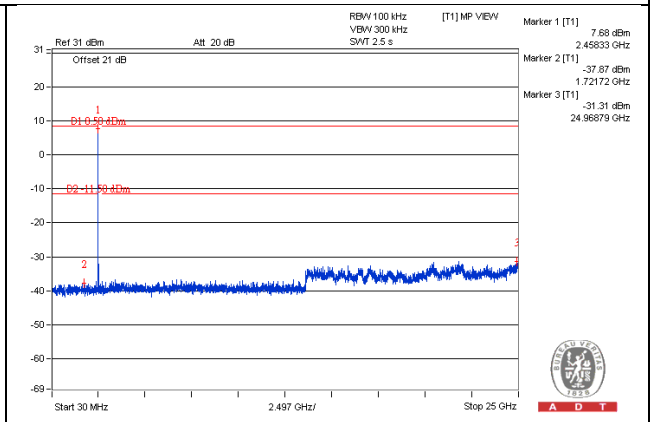
CH 6



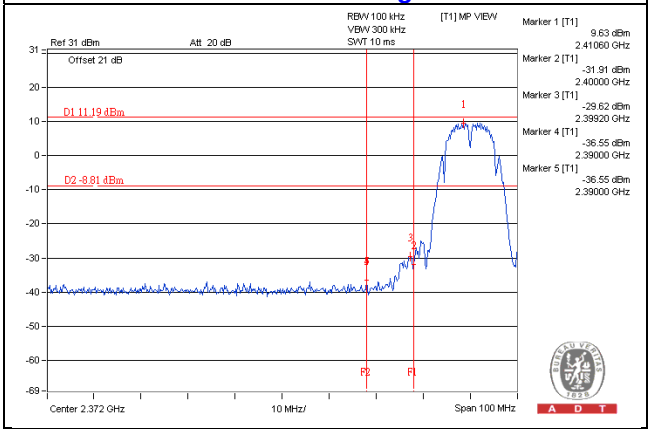


CH 11

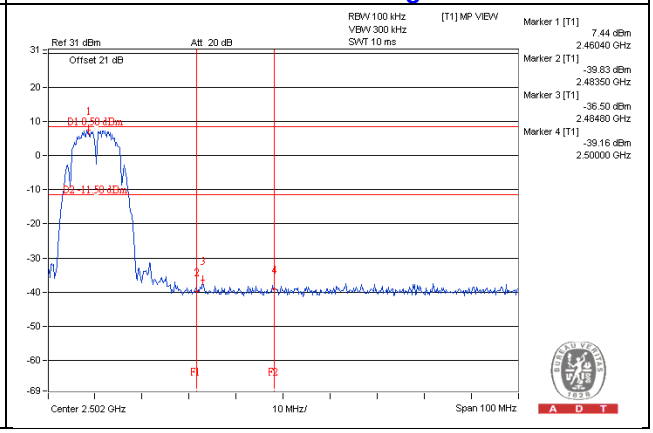




CH 1 Band edge



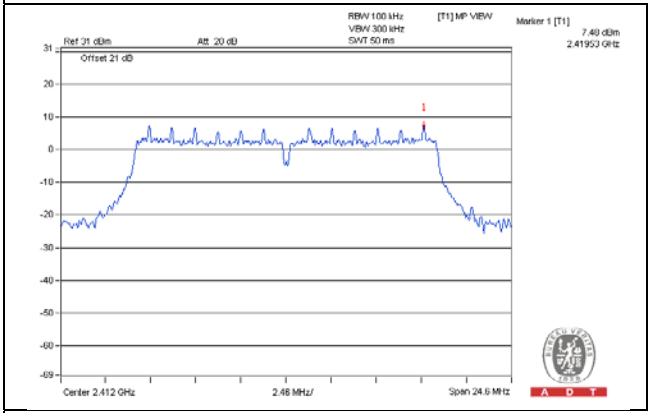
CH 11 Band edge

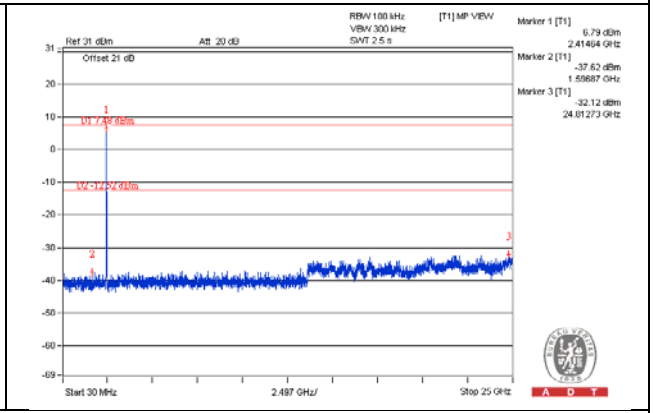


802.11g

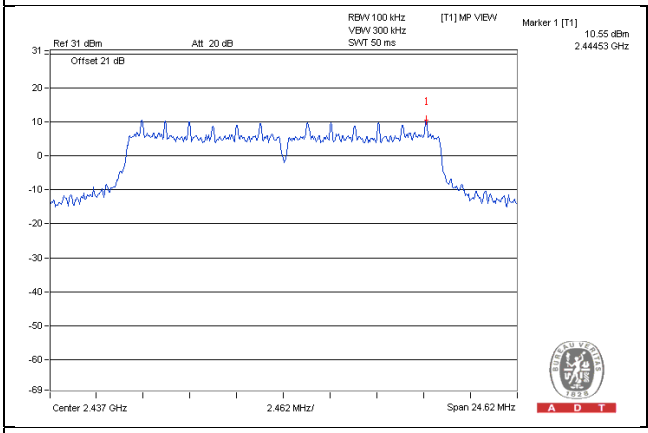
Chain 0

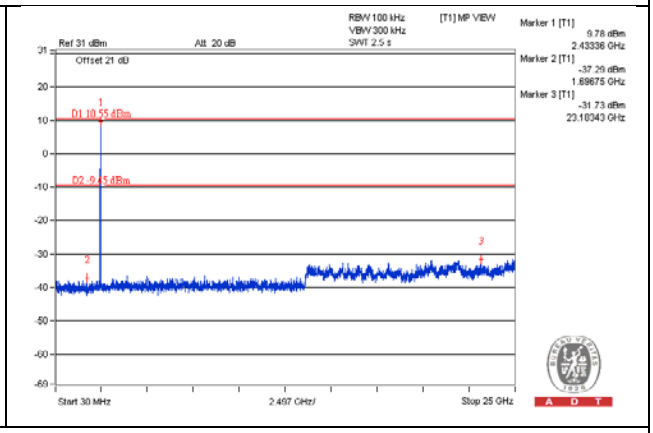
CH 1



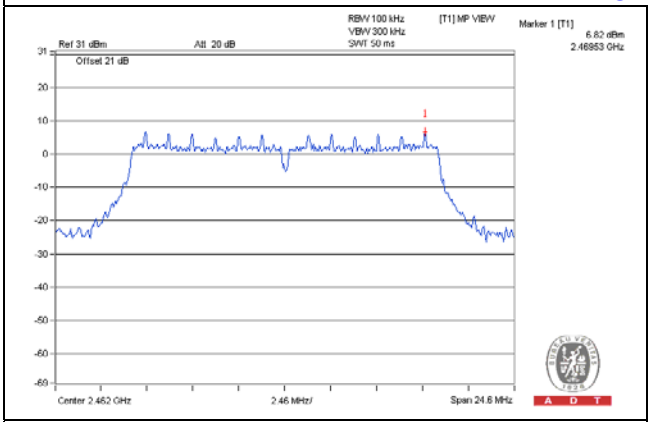


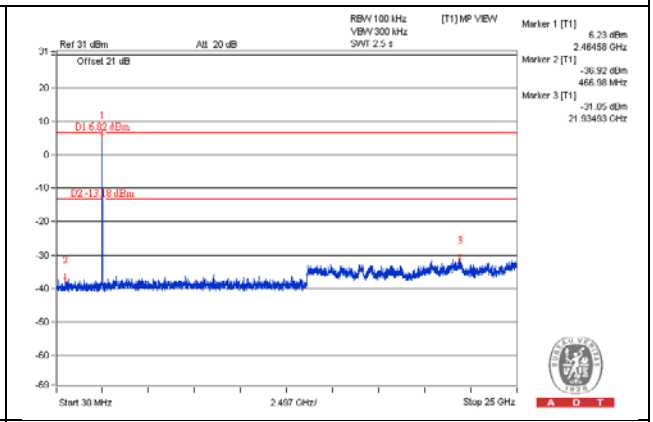
CH 6



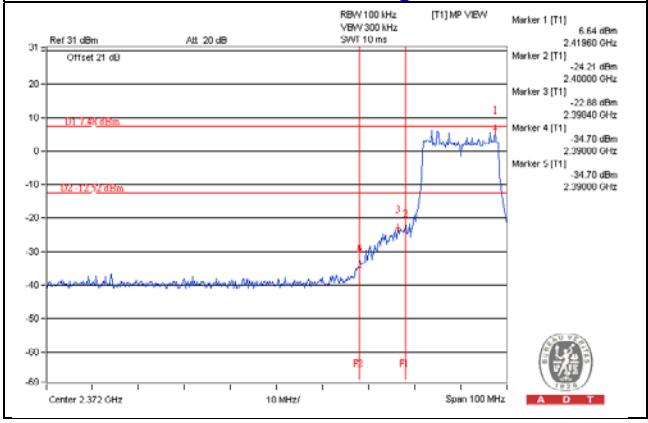


CH 11

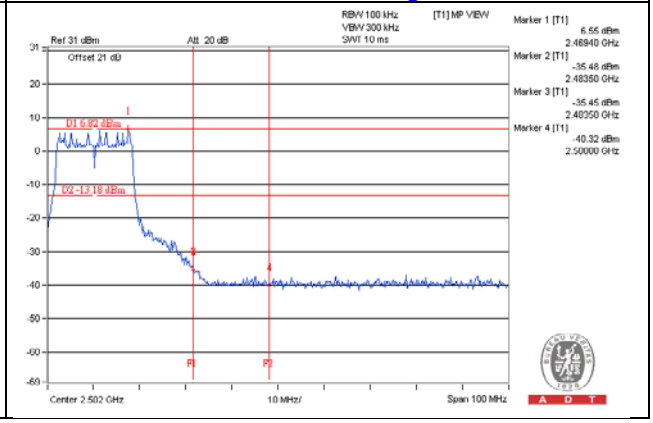




CH 1 Band edge

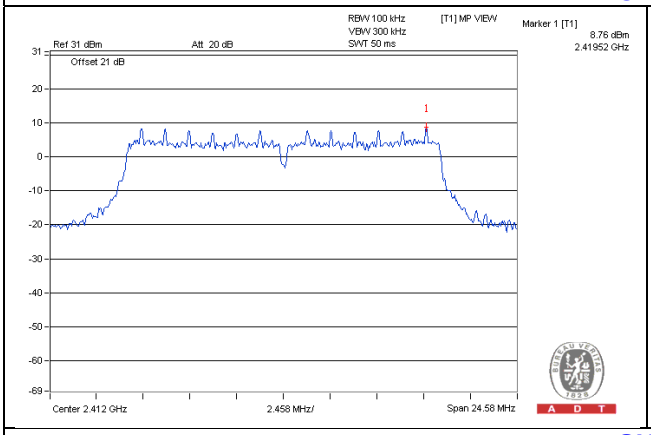


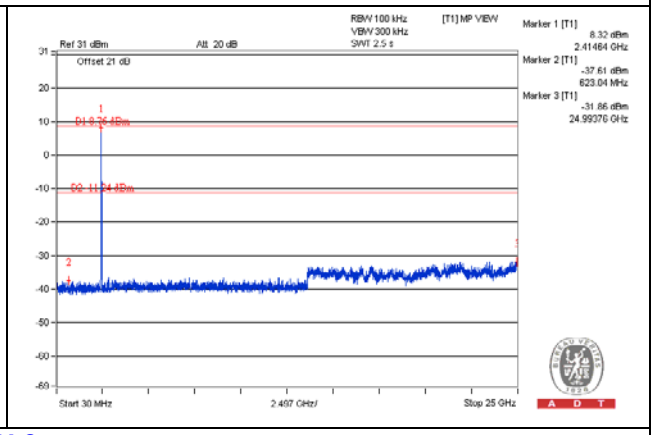
CH 11 Band edge



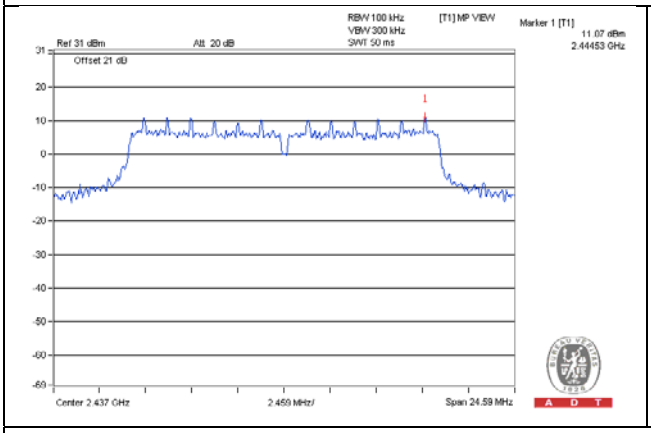
Chain 1

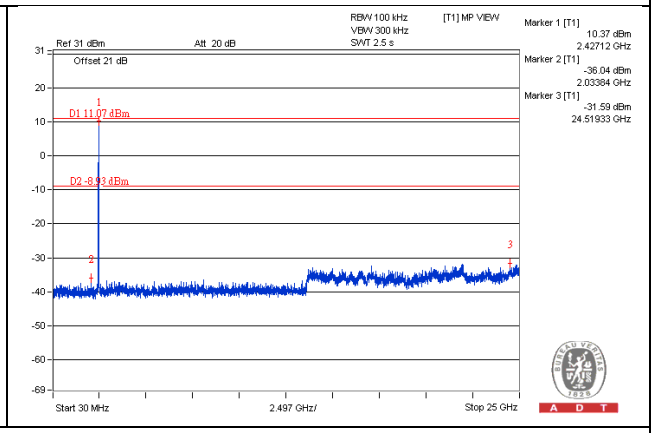
CH 1



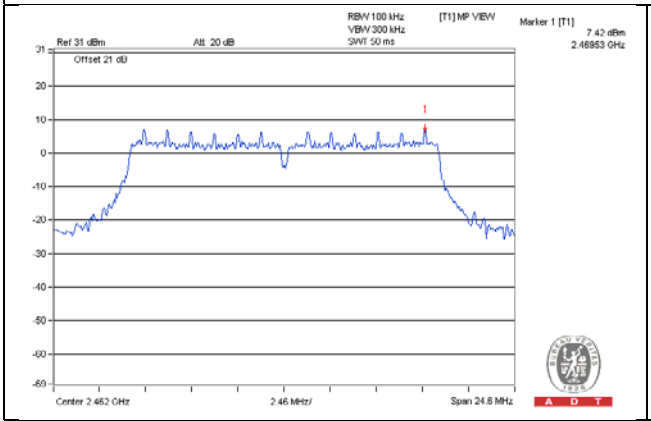


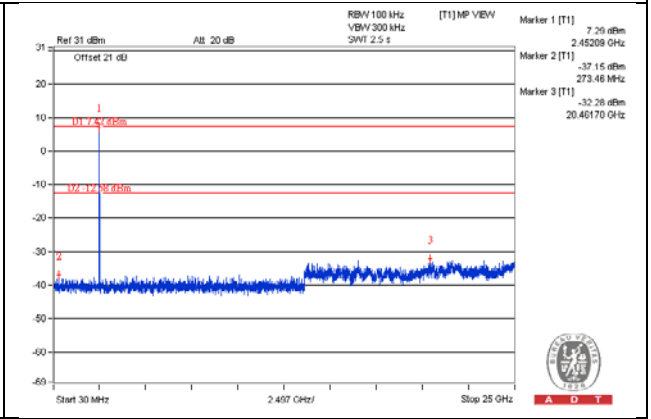
CH 6



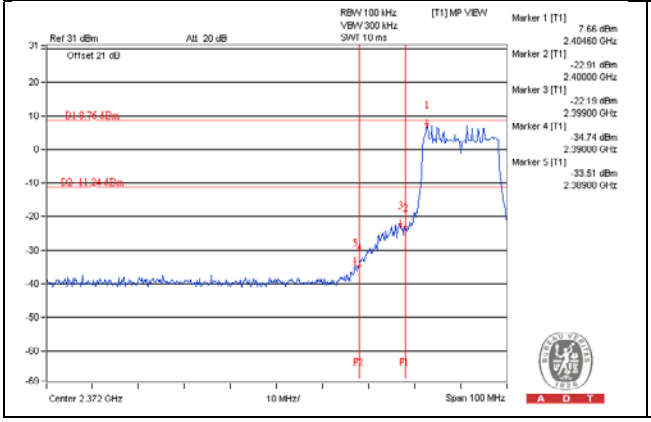


CH 11

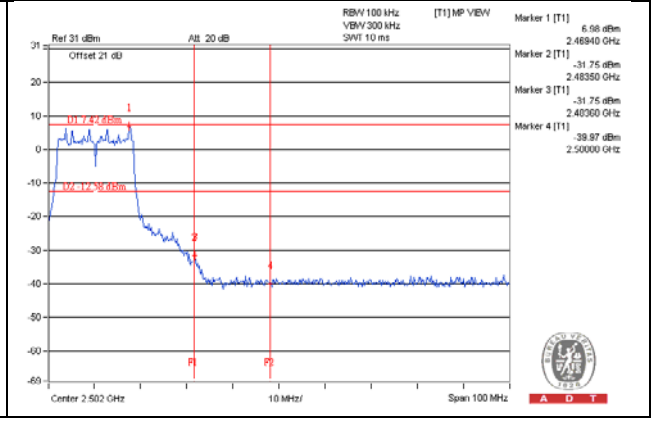




CH 1 Band edge



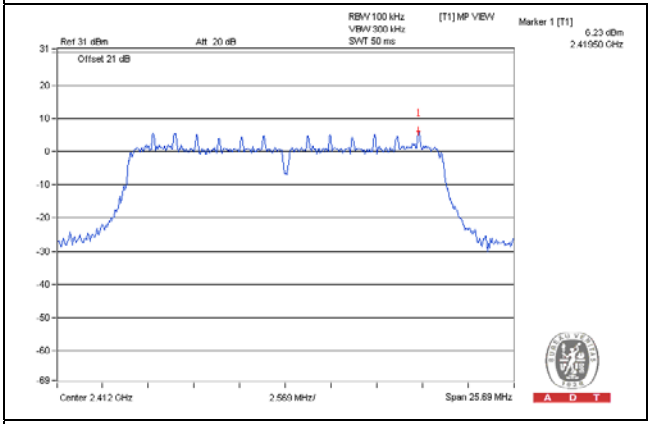
CH 11 Band edge

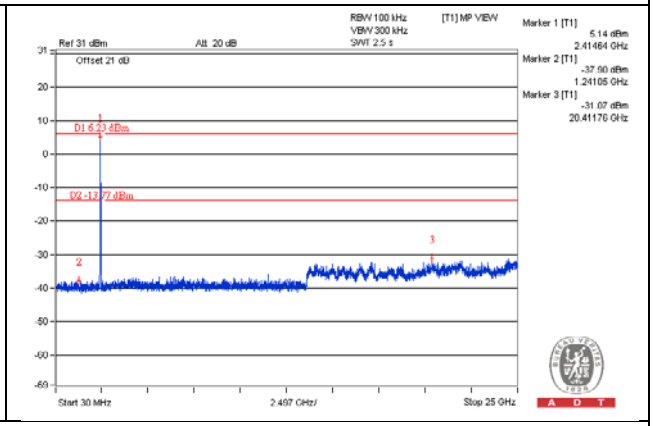


802.11n (HT20)

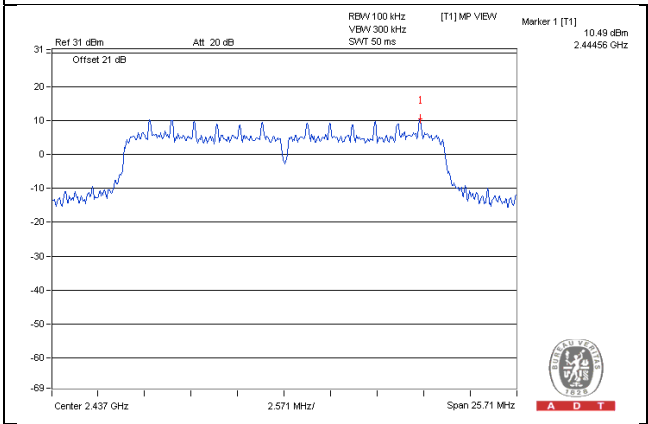
Chain 0

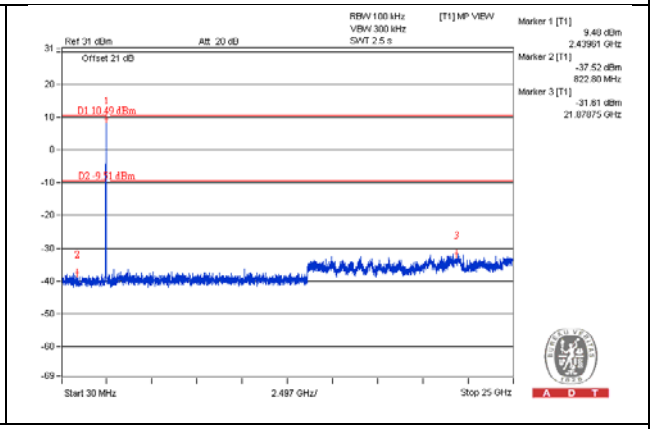
CH 1



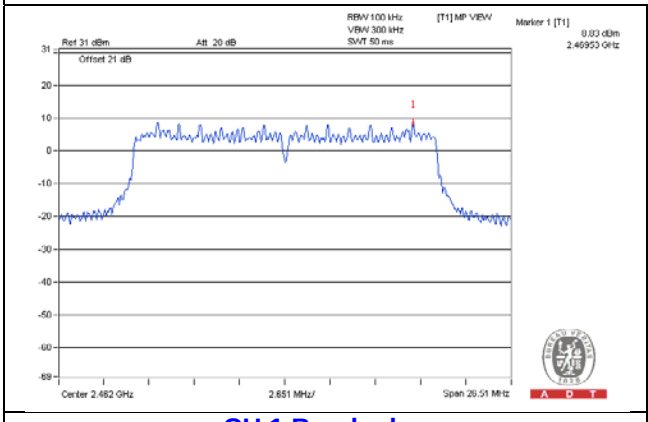


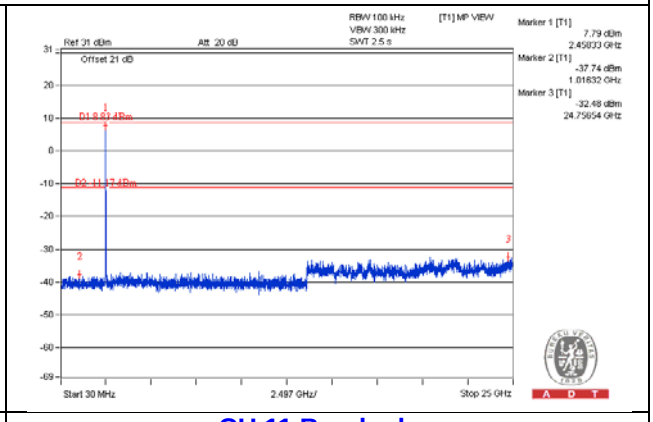
CH 6



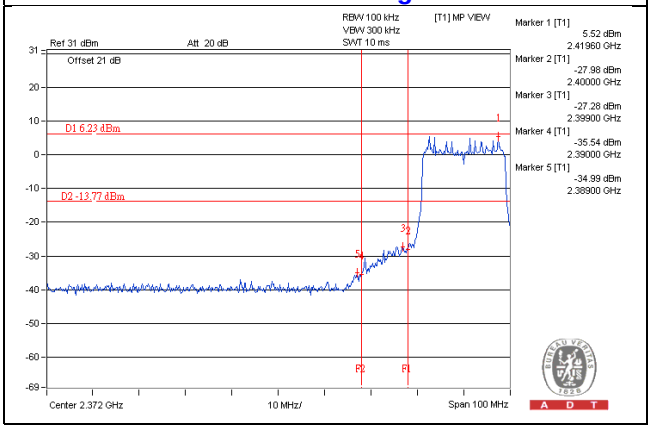


CH 11

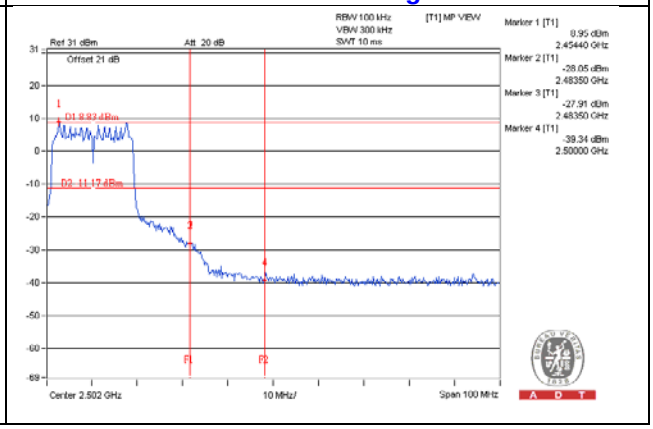




CH 1 Band edge

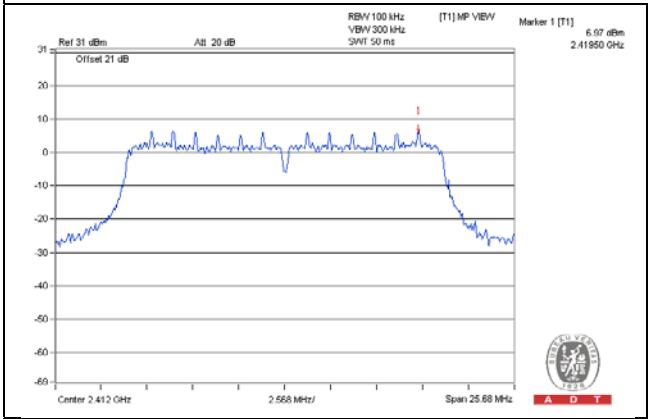


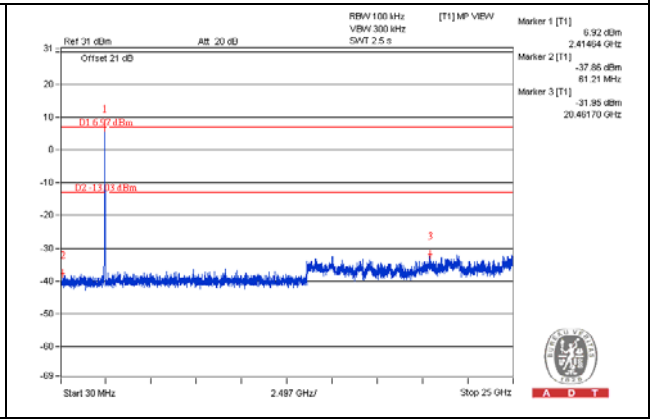
CH 11 Band edge



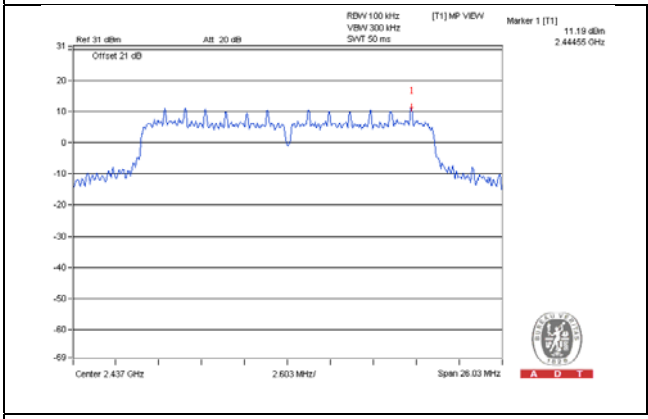
Chain 1

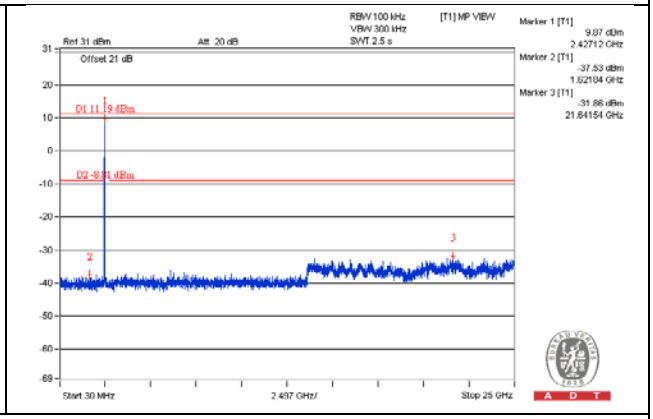
CH 1



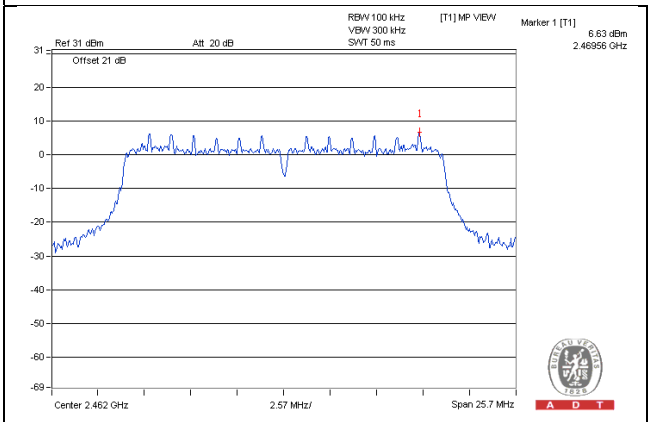


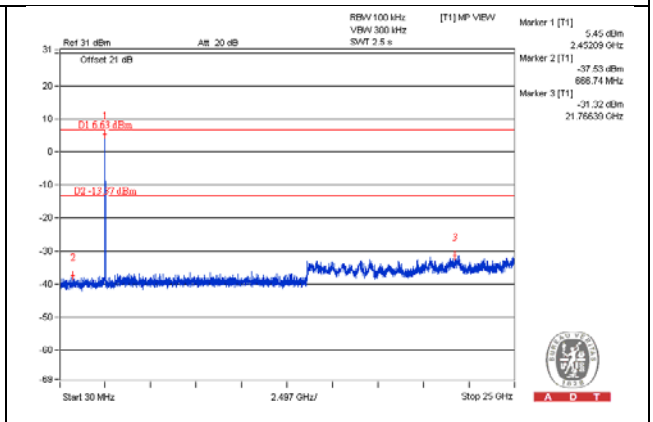
CH 6



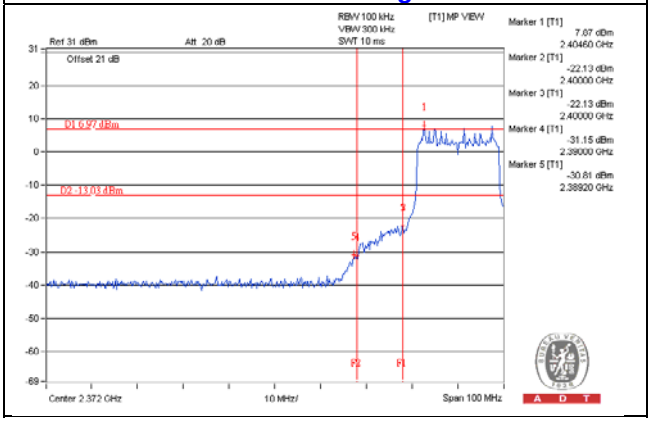


CH 11

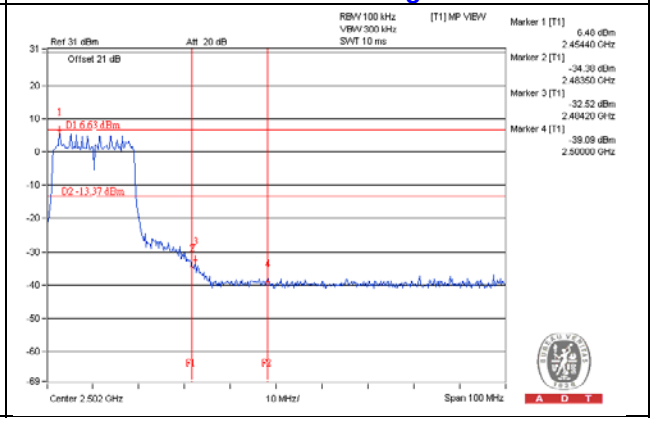




CH 1 Band edge



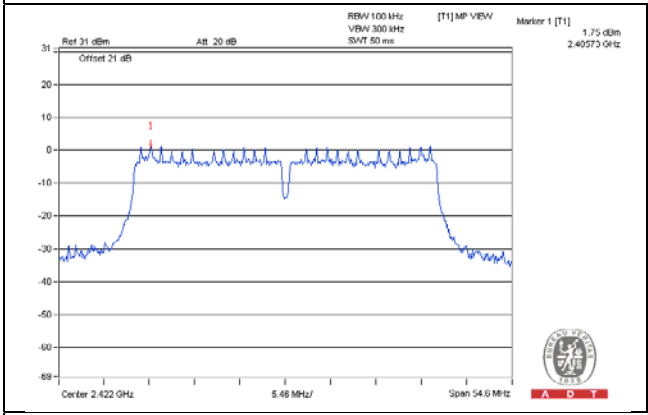
CH 11 Band edge

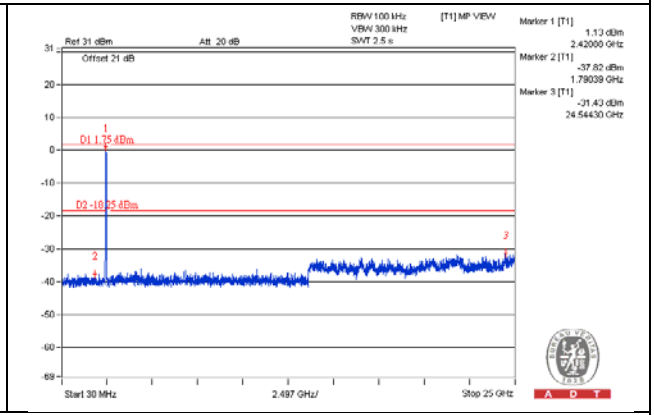


802.11n (HT40)

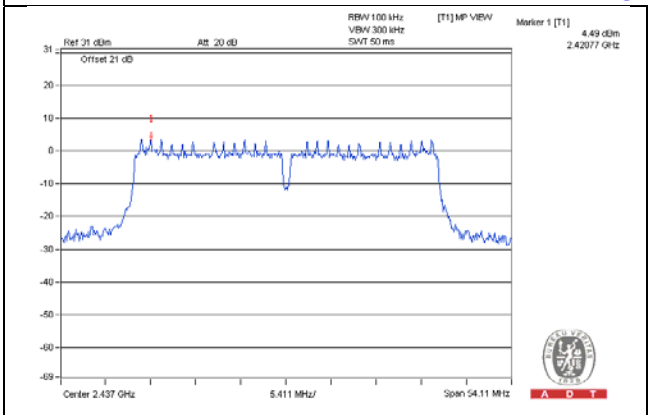
Chain 0

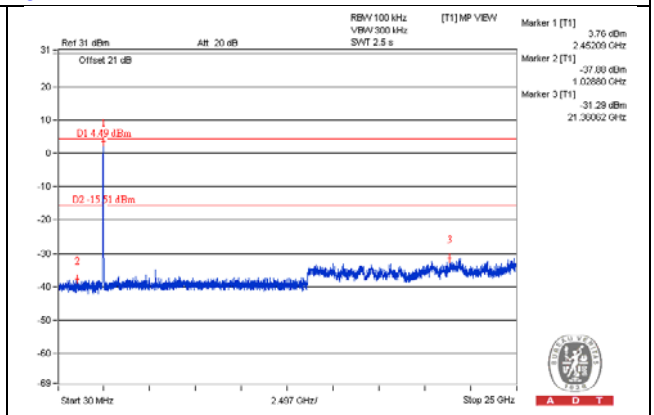
CH 3



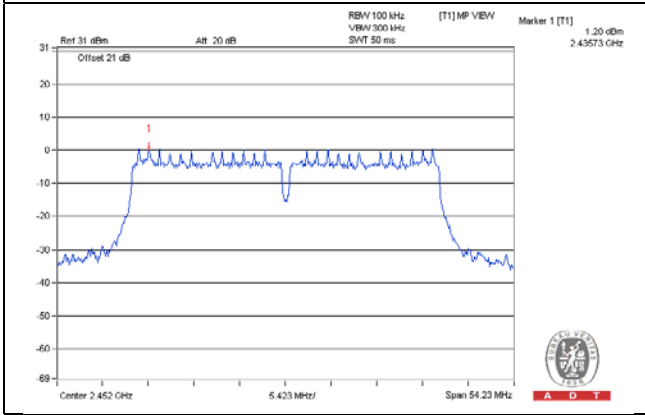


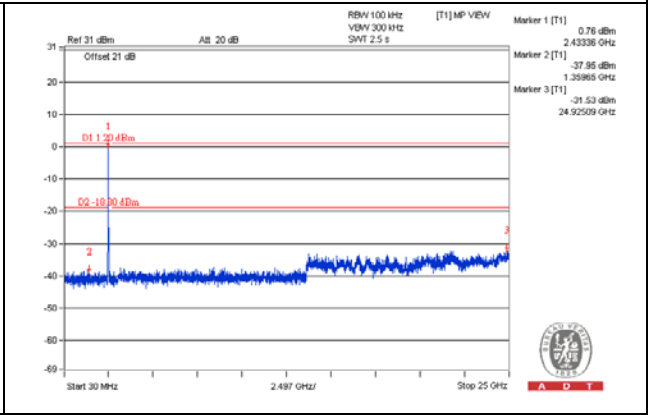
CH 6



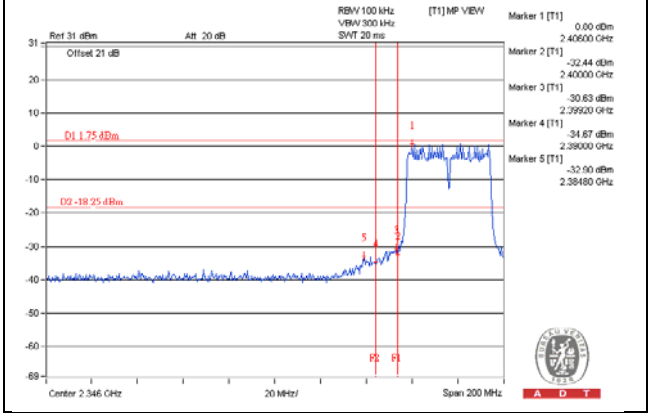


CH 9

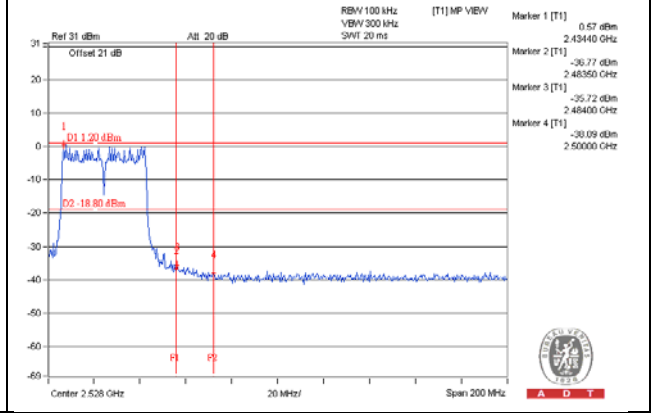




CH 3 Band edge

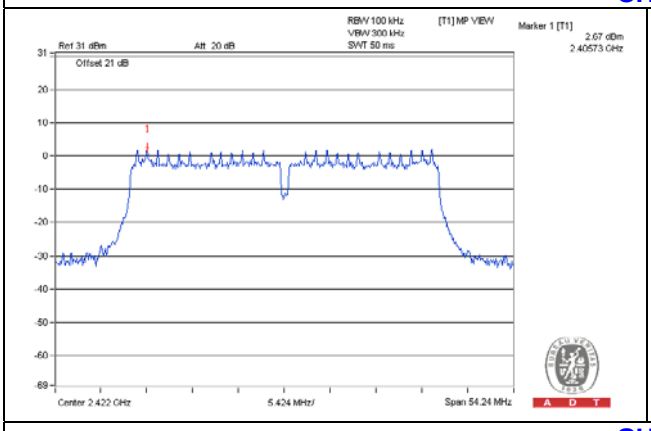


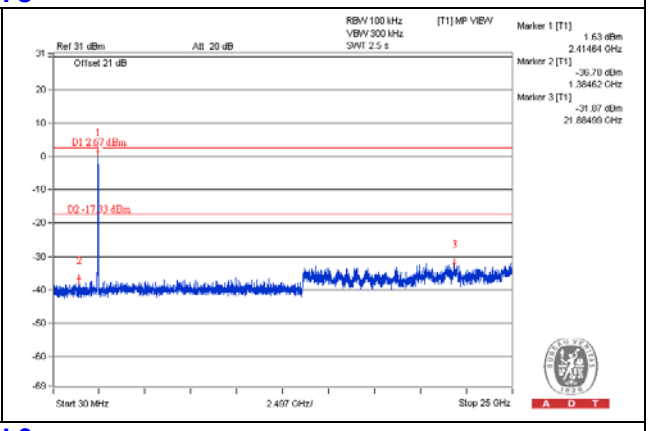
CH 9 Band edge



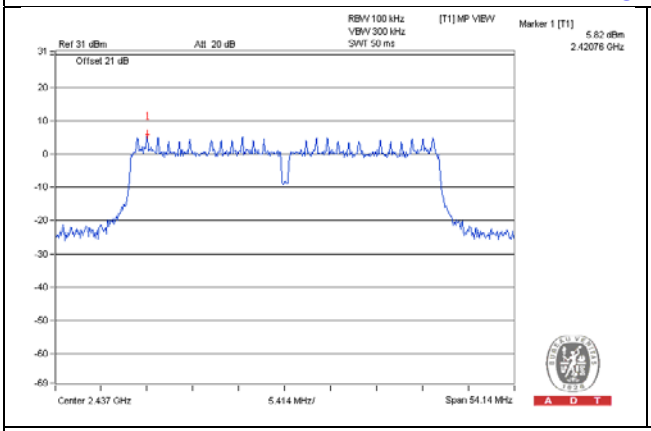
Chain 1

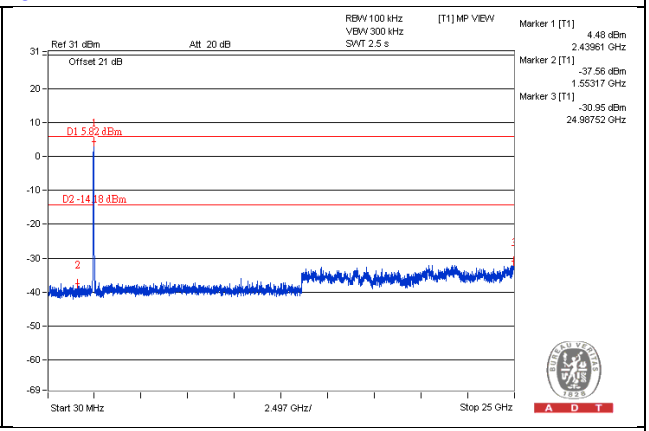
CH 3



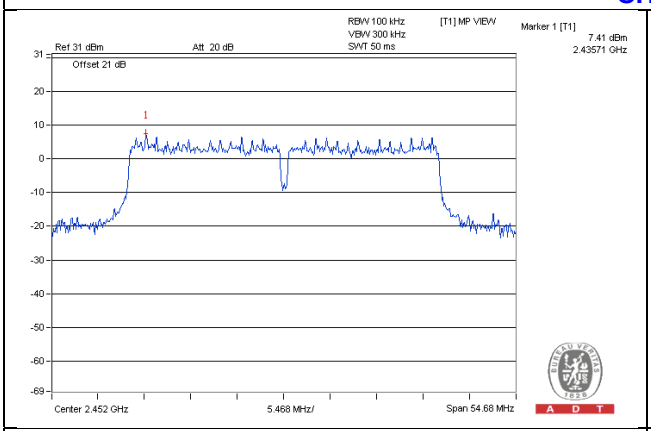


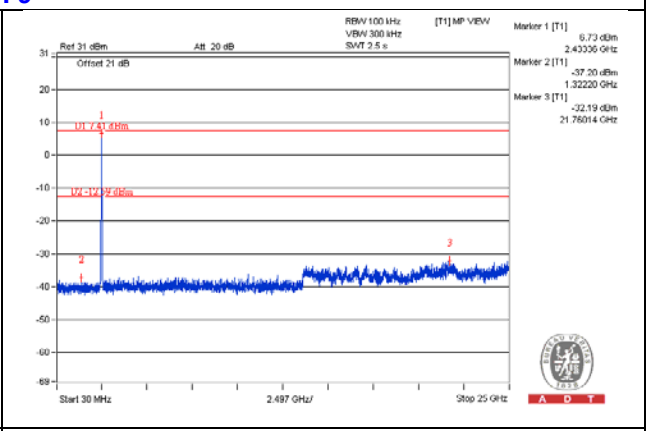
CH 6



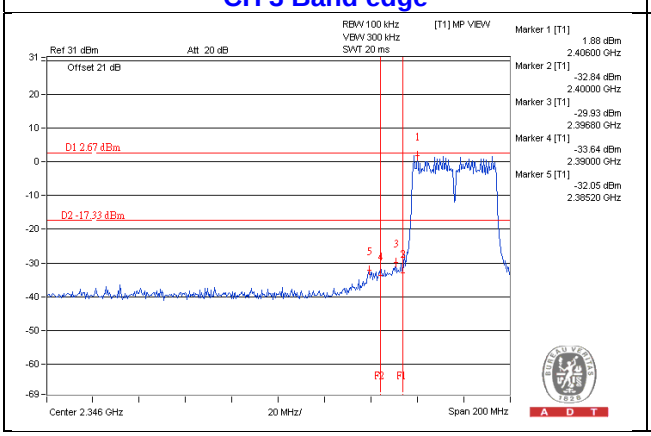


CH 9

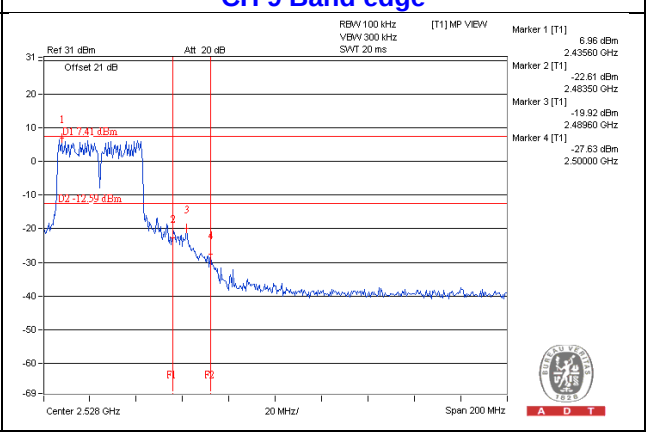




CH 3 Band edge



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:

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Tel: 886-2-26052180
Fax: 886-2-26051924

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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.

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