FCC Test Report (15.247)

Report No.:	RF150428E01
FCC ID:	KA2IR822A1
Test Model:	DIR-822
Received Date:	Apr. 28, 2015
Test Date:	Apr. 30 to May 05, 2015
Issued Date:	May 21, 2015
Applicant:	D-Link Corporation
Address:	No.289, Sinhu 3rd Rd., Neihu District, Taipei City 114, Taiwan, R.O.C.
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.

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Release Control Record

Issue No.	Description	Date Issued
RF150428E01	Original release.	May 21, 2015

1 Certificate of Conformity

Product:	AC1200 Wi-Fi Router
Brand:	D-Link
Test Model:	DIR-822
Sample Status:	ENGINEERING SAMPLE
Applicant:	D-Link Corporation
Test Date:	Apr. 30 to May 05, 2015
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) ANSI C63.10:2009

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

Prepared by : _____ , **Date:** May 21, 2015

Lori Chung / Specialist

Approved by : _____ , **Date:** May 21, 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 -10.20dB at 0.45719MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 2390.00MHz & 2483.50MHz.
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	No antenna connector is used.

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 5725~5.850MHz 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	5.43 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	AC1200 Wi-Fi Router
Brand	D-Link
Test Model	DIR-822
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	12Vdc from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/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) 7 for 802.11n (HT40)
Output Power	**For 15.407** 802.11a: 264.383mW 802.11ac (VHT20): 220.326mW 802.11ac (VHT40): 126.936mW 802.11ac (VHT80): 31.324mW
	For 15.247 802.11b: 209.188mW 802.11g: 717.682mW 802.11n (HT20): 726.158mW 802.11n (HT40): 336.317mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. The emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.
2. The antennas provided to the EUT, please refer to the following table:

2.4GHz Band							
Antenna No.	Transmitter Circuit	Brand	Model	Ant. Gain(dBi) <Including cable loss>	Frequency range (GHz to GHz)	Antenna Type	Connecter Type
1	Chain (0)	HL Technology Group Limited	290-20208	2.5	2.4~2.4835	Dipole	NA
2	Chain (1)		290-20210	2.5	2.4~2.4835		
5GHz Band							
Antenna No.	Transmitter Circuit	Brand	Model	Ant. Gain(dBi) <Including cable loss>	Frequency range (GHz to GHz)	Antenna Type	Connecter Type
3	Chain (0)	HL Technology Group Limited	290-20207	2.5	5.15~5.85	Dipole	NA
4	Chain (1)		290-20209	2.5	5.15~5.85		

3. The EUT must be supplied with a power adapter and following two different models could be chosen as following table:

No	Brand Name	Model No.	Spec.
1	D-LINK	2AAR006F US	Input: 100-240V, 0.2A, 50/60Hz Output: 12V, 0.5A DC output cable: 1.2m, unshielded
2	D-LINK	MU06-T120050-A1	Input: 100-240V, 0.2A, 50/60Hz Output: 12V, 0.5A DC output cable: 1.2m, unshielded
For Radiated Emission test, the EUT was pre-tested with adapter 1 & 2, the worst case was found in adapter 2. Therefore only the test data of the adapter 2 was recorded in this report.			

4. The EUT incorporates a MIMO function.

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
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)	MCS 0~8, Nss=1	2TX	2RX
	MCS 0~8, Nss=2	2TX	2RX
802.11ac (VHT40)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX
802.11ac (VHT80)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX

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

5. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

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

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

7 channels are provided for 802.11n (HT40):

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
1	√	√	√	√	With adapter 2
2	-	-	√	-	With adapter 1

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: The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **Laying-flat type**.

NOTE: "-"means no effect.

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)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5

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

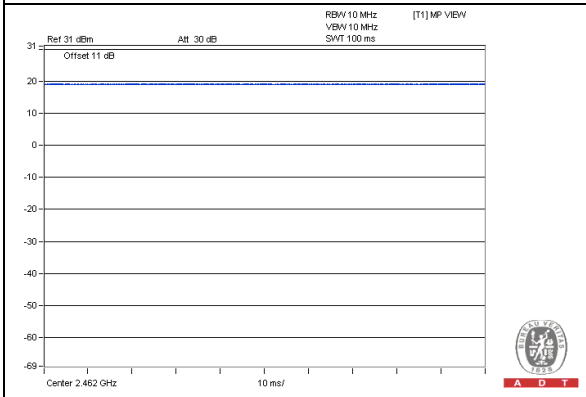
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	26deg. C, 73%RH	120Vac, 60Hz	Weiwei Lo
RE<1G	23deg. C, 67%RH	120Vac, 60Hz	Gary Cheng
PLC	25deg. C, 70%RH	120Vac, 60Hz	Mike Hsieh
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

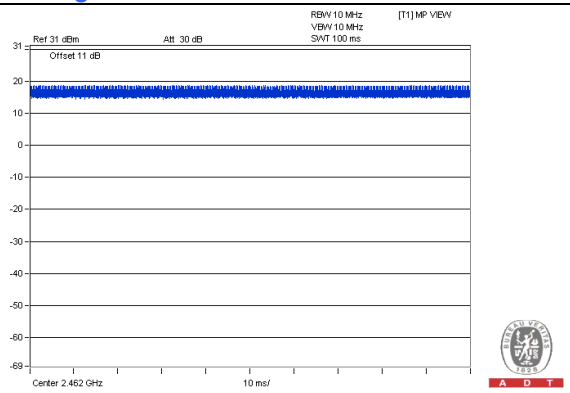
3.3 Duty Cycle of Test Signal

Duty cycle of test signal is 100 %, duty factor is not required.

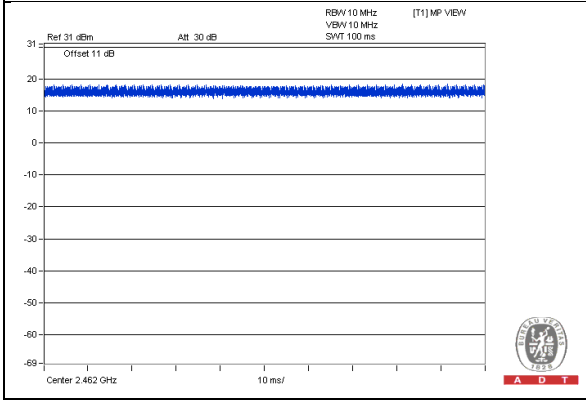
802.11b



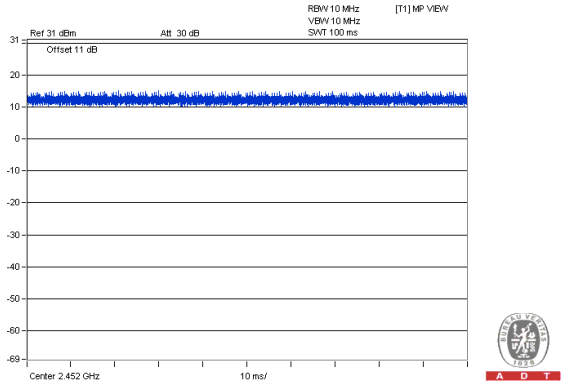
802.11g



802.11n (HT20)



802.11n (HT40)



3.4 Description of Support Units

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

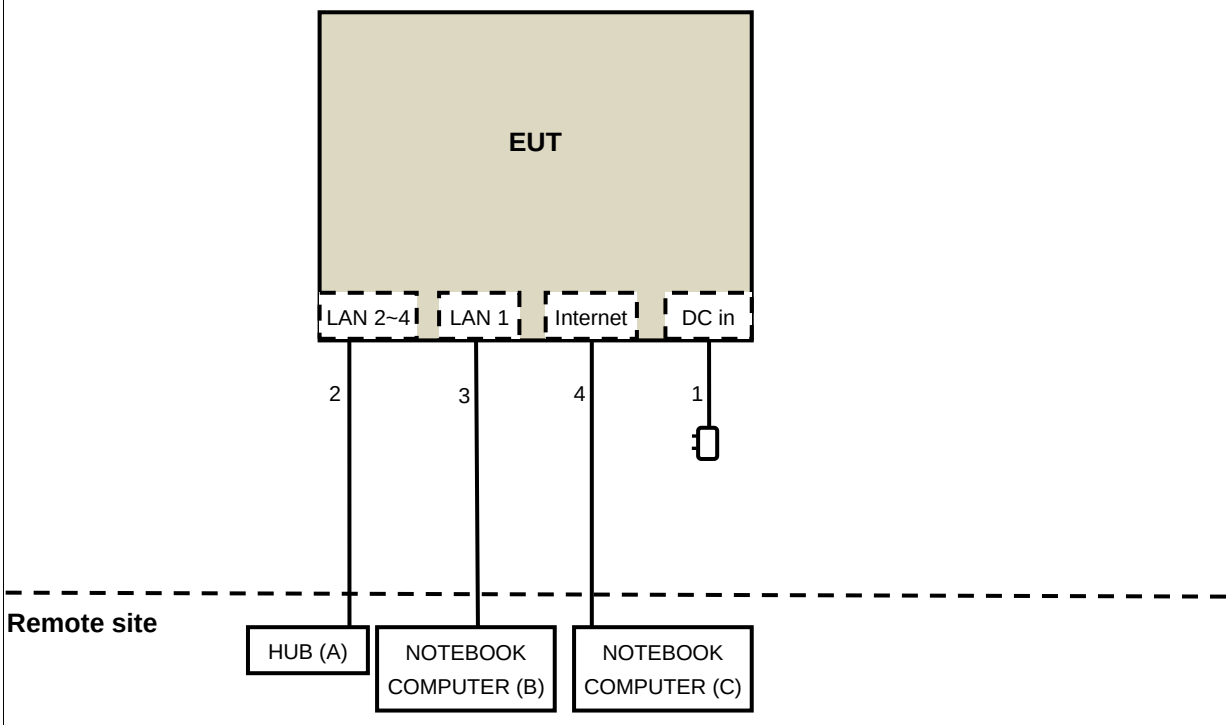
No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab
B	NOTEBOOK COMPUTER	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab
C	NOTEBOOK COMPUTER	DELL	E6420	H62T3R1	FCC DoC	Provided by Lab

NOTE:

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

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1	DC	1	1.2	No	0	Supplied by Client
2	RJ45	3	10	No	0	Provided by Lab
3	RJ45	1	10	No	0	Provided by Lab
4	RJ45	1	10	No	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)
558074 D01 DTS Meas Guidance v03r02
662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2009

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

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

For above 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 09, 2015	Feb. 08, 2016
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Feb. 09, 2015	Feb. 08, 2016
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131216 131217 SNMY23684/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
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
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Spectrum Analyzer R&S	FSP 40	100060	May 08, 2014	May 07, 2015
Power Meter Anritsu	ML2495A	0824006	May 22, 2014	May 21, 2015
Power Sensor Anritsu	MA2411B	0738172	May 22, 2014	May 21, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5 The VCCI Site Registration No. is G-137.
6 The CANADA Site Registration No. is IC 7450H-2.
7 Tested Date: Apr. 30 to May 04, 2015

For below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-04	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 06, 2015	Feb. 05, 2016
RF Cable	NA	CHHCAB_001	Oct. 05, 2014	Oct. 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Feb. 06, 2015	Feb. 05, 2016
Pre-Amplifier Agilent	8449B	300801923	Oct. 28, 2014	Oct. 27, 2015
RF Cable	NA	131206 131213 131215 SNMY23685/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: May 01, 2015

4.1.3 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

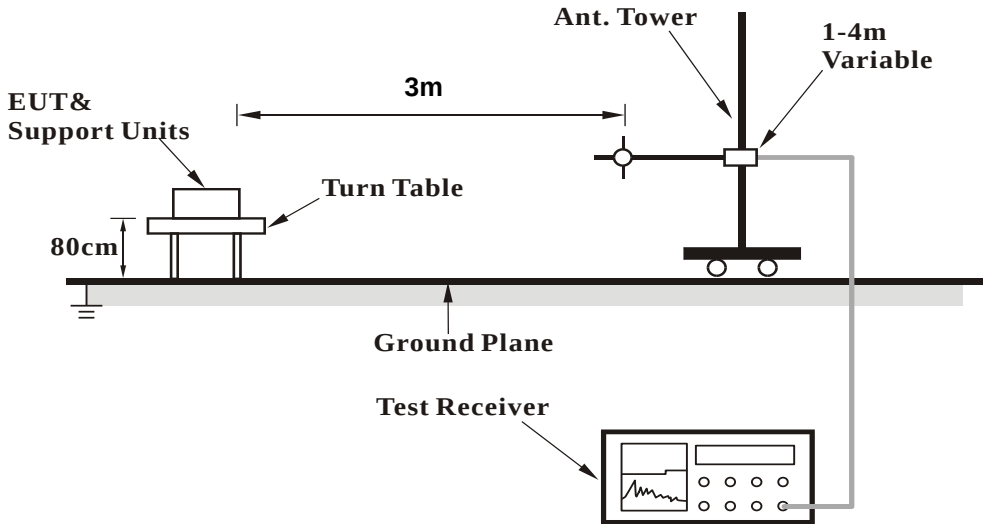
1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
4. 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)).
5. 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.
6. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

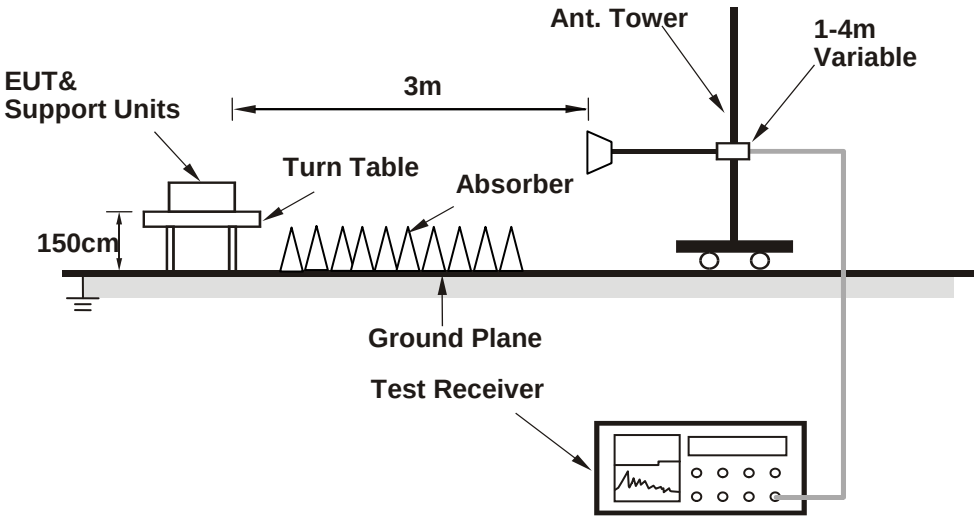
No deviation.

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 units B & C (NOTEBOOK COMPUTER) which is placed on remote site.
2. Controlling software (MP_TEST.exe) has been activated to set the EUT on specific status.

4.1.7 Test Results

Above 1GHz Data:

802.11b

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) 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	56.6 PK	74.0	-17.4	1.35 H	26	62.45	-5.85
2	2390.00	45.1 AV	54.0	-8.9	1.35 H	26	50.95	-5.85
3	*2412.00	104.1 PK			1.35 H	26	109.85	-5.75
4	*2412.00	101.4 AV			1.35 H	26	107.15	-5.75
5	4824.00	51.0 PK	74.0	-23.0	1.18 H	145	49.08	1.92
6	4824.00	43.1 AV	54.0	-10.9	1.18 H	145	41.18	1.92
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	60.0 PK	74.0	-14.0	1.32 V	321	65.85	-5.85
2	2390.00	49.3 AV	54.0	-4.7	1.32 V	321	55.15	-5.85
3	*2412.00	113.7 PK			1.67 V	97	119.45	-5.75
4	*2412.00	111.1 AV			1.67 V	97	116.85	-5.75
5	4824.00	54.6 PK	74.0	-19.4	1.12 V	171	52.68	1.92
6	4824.00	53.1 AV	54.0	-0.9	1.12 V	171	51.18	1.92

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	102.9 PK			1.38 H	41	108.51	-5.61
2	*2437.00	100.8 AV			1.38 H	41	106.41	-5.61
3	4874.00	51.2 PK	74.0	-22.8	1.12 H	155	49.11	2.09
4	4874.00	43.0 AV	54.0	-11.0	1.12 H	155	40.91	2.09
5	7311.00	57.7 PK	74.0	-16.3	1.36 H	173	48.49	9.21
6	7311.00	46.3 AV	54.0	-7.7	1.36 H	173	37.09	9.21
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	*2437.00	113.6 PK			1.57 V	91	119.21	-5.61
2	*2437.00	111.3 AV			1.57 V	91	116.91	-5.61
3	4874.00	56.3 PK	74.0	-17.7	1.32 V	173	54.21	2.09
4	4874.00	53.1 AV	54.0	-0.9	1.32 V	173	51.01	2.09
5	7311.00	57.7 PK	74.0	-16.3	1.33 V	210	48.49	9.21
6	7311.00	46.3 AV	54.0	-7.7	1.33 V	210	37.09	9.21

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	103.4 PK			1.31 H	39	108.87	-5.47
2	*2462.00	100.8 AV			1.31 H	39	106.27	-5.47
3	2483.50	56.3 PK	74.0	-17.7	1.31 H	39	61.64	-5.34
4	2483.50	44.6 AV	54.0	-9.4	1.31 H	39	49.94	-5.34
5	4924.00	51.7 PK	74.0	-22.3	1.18 H	170	49.42	2.28
6	4924.00	43.4 AV	54.0	-10.6	1.18 H	170	41.12	2.28
7	7386.00	58.1 PK	74.0	-15.9	1.37 H	179	48.79	9.31
8	7386.00	46.6 AV	54.0	-7.4	1.37 H	179	37.29	9.31
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	113.4 PK			1.66 V	89	118.87	-5.47
2	*2462.00	110.9 AV			1.66 V	89	116.37	-5.47
3	2483.50	59.0 PK	74.0	-15.0	1.69 V	178	64.34	-5.34
4	2483.50	48.5 AV	54.0	-5.5	1.69 V	178	53.84	-5.34
5	4924.00	56.2 PK	74.0	-17.8	1.02 V	173	53.92	2.28
6	4924.00	53.2 AV	54.0	-0.8	1.02 V	173	50.92	2.28
7	7386.00	58.6 PK	74.0	-15.4	1.02 V	174	49.29	9.31
8	7386.00	48.3 AV	54.0	-5.7	1.02 V	174	38.99	9.31

REMARKS:

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

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	58.3 PK	74.0	-15.7	1.37 H	43	64.15	-5.85
2	2390.00	43.4 AV	54.0	-10.6	1.37 H	43	49.25	-5.85
3	*2412.00	101.2 PK			1.37 H	43	106.95	-5.75
4	*2412.00	93.5 AV			1.37 H	43	99.25	-5.75
5	4824.00	50.9 PK	74.0	-23.1	1.16 H	156	48.98	1.92
6	4824.00	42.8 AV	54.0	-11.2	1.16 H	156	40.88	1.92
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	1.31 V	316	74.75	-5.85
2	**2390.00**	**53.8 AV**	**54.0**	**-0.2**	**1.31 V**	**316**	**59.65**	**-5.85**
3	*2412.00	110.5 PK			1.36 V	43	116.25	-5.75
4	*2412.00	103.1 AV			1.36 V	43	108.85	-5.75
5	4824.00	52.2 PK	74.0	-21.8	1.10 V	190	50.28	1.92
6	4824.00	43.8 AV	54.0	-10.2	1.10 V	190	41.88	1.92

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.5 PK	74.0	-19.5	1.37 H	45	60.35	-5.85
2	2390.00	41.0 AV	54.0	-13.0	1.37 H	45	46.85	-5.85
3	*2437.00	106.9 PK			1.37 H	45	112.51	-5.61
4	*2437.00	99.2 AV			1.37 H	45	104.81	-5.61
5	2483.50	52.9 PK	74.0	-21.1	1.37 H	45	58.24	-5.34
6	2483.50	40.5 AV	54.0	-13.5	1.37 H	45	45.84	-5.34
7	4874.00	50.8 PK	74.0	-23.2	1.14 H	159	48.71	2.09
8	4874.00	42.6 AV	54.0	-11.4	1.14 H	159	40.51	2.09
9	7311.00	58.4 PK	74.0	-15.6	1.33 H	171	49.19	9.21
10	7311.00	46.8 AV	54.0	-7.2	1.33 H	171	37.59	9.21
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	64.3 PK	74.0	-9.7	1.37 V	343	70.15	-5.85
2	2390.00	50.7 AV	54.0	-3.3	1.37 V	343	56.55	-5.85
3	*2437.00	116.7 PK			1.60 V	50	122.31	-5.61
4	*2437.00	109.0 AV			1.60 V	50	114.61	-5.61
5	2483.50	62.3 PK	74.0	-11.7	1.58 V	25	67.64	-5.34
6	2483.50	50.1 AV	54.0	-3.9	1.58 V	25	55.44	-5.34
7	4874.00	52.1 PK	74.0	-21.9	1.11 V	186	50.01	2.09
8	4874.00	43.5 AV	54.0	-10.5	1.11 V	186	41.41	2.09
9	7311.00	58.4 PK	74.0	-15.6	1.13 V	165	49.19	9.21
10	7311.00	46.8 AV	54.0	-7.2	1.13 V	165	37.59	9.21

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	100.7 PK			1.36 H	47	106.17	-5.47
2	*2462.00	92.8 AV			1.36 H	47	98.27	-5.47
3	2483.50	58.0 PK	74.0	-16.0	1.36 H	47	63.34	-5.34
4	2483.50	43.3 AV	54.0	-10.7	1.36 H	47	48.64	-5.34
5	4924.00	51.1 PK	74.0	-22.9	1.16 H	164	48.82	2.28
6	4924.00	43.1 AV	54.0	-10.9	1.16 H	164	40.82	2.28
7	7386.00	57.7 PK	74.0	-16.3	1.32 H	169	48.39	9.31
8	7386.00	46.5 AV	54.0	-7.5	1.32 H	169	37.19	9.31
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.4 PK			1.34 V	48	115.87	-5.47
2	*2462.00	102.8 AV			1.34 V	48	108.27	-5.47
3	2483.50	68.3 PK	74.0	-5.7	1.31 V	344	73.64	-5.34
4	**2483.50**	**53.8 AV**	**54.0**	**-0.2**	**1.31 V**	**344**	**59.14**	**-5.34**
5	4924.00	52.4 PK	74.0	-21.6	1.07 V	192	50.12	2.28
6	4924.00	43.7 AV	54.0	-10.3	1.07 V	192	41.42	2.28
7	7386.00	57.8 PK	74.0	-16.2	1.12 V	167	48.49	9.31
8	7386.00	46.4 AV	54.0	-7.6	1.12 V	167	37.09	9.31

REMARKS:

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

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	61.8 PK	74.0	-12.2	1.27 H	46	67.65	-5.85
2	2390.00	42.8 AV	54.0	-11.2	1.27 H	46	48.65	-5.85
3	*2412.00	100.8 PK			1.27 H	46	106.55	-5.75
4	*2412.00	92.4 AV			1.27 H	46	98.15	-5.75
5	4824.00	51.5 PK	74.0	-22.5	1.12 H	145	49.58	1.92
6	4824.00	43.1 AV	54.0	-10.9	1.12 H	145	41.18	1.92
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	1.59 V	157	78.05	-5.85
2	2390.00	53.1 AV	54.0	-0.9	1.59 V	157	58.95	-5.85
3	*2412.00	110.9 PK			1.63 V	122	116.65	-5.75
4	*2412.00	102.3 AV			1.63 V	122	108.05	-5.75
5	4824.00	52.8 PK	74.0	-21.2	1.16 V	208	50.88	1.92
6	4824.00	44.1 AV	54.0	-9.9	1.16 V	208	42.18	1.92

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.7 PK	74.0	-11.3	1.27 H	42	68.55	-5.85
2	2390.00	40.8 AV	54.0	-13.2	1.27 H	42	46.65	-5.85
3	*2437.00	106.3 PK			1.27 H	42	111.91	-5.61
4	*2437.00	98.8 AV			1.27 H	42	104.41	-5.61
5	2483.50	58.0 PK	74.0	-16.0	1.27 H	42	63.34	-5.34
6	2483.50	41.6 AV	54.0	-12.4	1.27 H	42	46.94	-5.34
7	4874.00	51.7 PK	74.0	-22.3	1.13 H	165	49.61	2.09
8	4874.00	43.2 AV	54.0	-10.8	1.13 H	165	41.11	2.09
9	7311.00	57.4 PK	74.0	-16.6	1.33 H	175	48.19	9.21
10	7311.00	46.0 AV	54.0	-8.0	1.33 H	175	36.79	9.21
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	73.2 PK	74.0	-0.8	1.62 V	203	79.05	-5.85
2	2390.00	51.2 AV	54.0	-2.8	1.62 V	203	57.05	-5.85
3	*2437.00	116.5 PK			1.59 V	36	122.11	-5.61
4	*2437.00	108.8 AV			1.59 V	36	114.41	-5.61
5	2483.50	68.0 PK	74.0	-6.0	1.65 V	202	73.34	-5.34
6	2483.50	51.7 AV	54.0	-2.3	1.65 V	202	57.04	-5.34
7	4874.00	52.3 PK	74.0	-21.7	1.14 V	193	50.21	2.09
8	4874.00	43.8 AV	54.0	-10.2	1.14 V	193	41.71	2.09
9	7311.00	58.5 PK	74.0	-15.5	1.14 V	169	49.29	9.21
10	7311.00	46.7 AV	54.0	-7.3	1.14 V	169	37.49	9.21

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	100.8 PK			1.28 H	42	106.27	-5.47
2	*2462.00	92.4 AV			1.28 H	42	97.87	-5.47
3	2483.50	57.0 PK	74.0	-17.0	1.28 H	42	62.34	-5.34
4	2483.50	43.7 AV	54.0	-10.3	1.28 H	42	49.04	-5.34
5	4924.00	51.1 PK	74.0	-22.9	1.12 H	158	48.82	2.28
6	4924.00	43.1 AV	54.0	-10.9	1.12 H	158	40.82	2.28
7	7386.00	57.3 PK	74.0	-16.7	1.36 H	171	47.99	9.31
8	7386.00	46.1 AV	54.0	-7.9	1.36 H	171	36.79	9.31
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.9 PK			1.66 V	116	116.37	-5.47
2	*2462.00	102.4 AV			1.66 V	116	107.87	-5.47
3	2483.50	67.3 PK	74.0	-6.7	1.61 V	201	72.64	-5.34
4	**2483.50**	**53.8 AV**	**54.0**	**-0.2**	**1.61 V**	**201**	**59.14**	**-5.34**
5	4924.00	52.2 PK	74.0	-21.8	1.20 V	181	49.92	2.28
6	4924.00	43.6 AV	54.0	-10.4	1.20 V	181	41.32	2.28
7	7386.00	57.9 PK	74.0	-16.1	1.14 V	178	48.59	9.31
8	7386.00	46.3 AV	54.0	-7.7	1.14 V	178	36.99	9.31

REMARKS:

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

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	58.5 PK	74.0	-15.5	1.33 H	49	64.35	-5.85
2	2390.00	43.2 AV	54.0	-10.8	1.33 H	49	49.05	-5.85
3	*2422.00	96.9 PK			1.33 H	49	102.59	-5.69
4	*2422.00	88.3 AV			1.33 H	49	93.99	-5.69
5	4844.00	51.1 PK	74.0	-22.9	1.15 H	154	49.12	1.98
6	4844.00	43.0 AV	54.0	-11.0	1.15 H	154	41.02	1.98
7	7266.00	58.1 PK	74.0	-15.9	1.38 H	186	48.93	9.17
8	7266.00	46.5 AV	54.0	-7.5	1.38 H	186	37.33	9.17
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.9 PK	74.0	-5.1	1.48 V	333	74.75	-5.85
2	2390.00	53.5 AV	54.0	-0.5	1.48 V	333	59.35	-5.85
3	*2422.00	106.7 PK			1.42 V	80	112.39	-5.69
4	*2422.00	98.1 AV			1.42 V	80	103.79	-5.69
5	4844.00	52.7 PK	74.0	-21.3	1.19 V	178	50.72	1.98
6	4844.00	44.0 AV	54.0	-10.0	1.19 V	178	42.02	1.98
7	7266.00	58.9 PK	74.0	-15.1	1.17 V	163	49.73	9.17
8	7266.00	46.8 AV	54.0	-7.2	1.17 V	163	37.63	9.17

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	53.1 PK	74.0	-20.9	1.37 H	45	58.95	-5.85
2	2390.00	40.6 AV	54.0	-13.4	1.37 H	45	46.45	-5.85
3	*2437.00	99.6 PK			1.37 H	45	105.21	-5.61
4	*2437.00	91.1 AV			1.37 H	45	96.71	-5.61
5	2483.50	56.2 PK	74.0	-17.8	1.37 H	45	61.54	-5.34
6	2483.50	43.2 AV	54.0	-10.8	1.37 H	45	48.54	-5.34
7	4874.00	51.4 PK	74.0	-22.6	1.15 H	147	49.31	2.09
8	4874.00	43.4 AV	54.0	-10.6	1.15 H	147	41.31	2.09
9	7311.00	58.0 PK	74.0	-16.0	1.31 H	174	48.79	9.21
10	7311.00	46.7 AV	54.0	-7.3	1.31 H	174	37.49	9.21
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	63.5 PK	74.0	-10.5	1.48 V	28	69.35	-5.85
2	2390.00	51.1 AV	54.0	-2.9	1.48 V	28	56.95	-5.85
3	*2437.00	109.4 PK			1.44 V	162	115.01	-5.61
4	*2437.00	100.9 AV			1.44 V	162	106.51	-5.61
5	2483.50	66.6 PK	74.0	-7.4	1.64 V	203	71.94	-5.34
6	2483.50	53.4 AV	54.0	-0.6	1.64 V	203	58.74	-5.34
7	4874.00	52.1 PK	74.0	-21.9	1.20 V	207	50.01	2.09
8	4874.00	43.5 AV	54.0	-10.5	1.20 V	207	41.41	2.09
9	7311.00	58.3 PK	74.0	-15.7	1.18 V	185	49.09	9.21
10	7311.00	46.8 AV	54.0	-7.2	1.18 V	185	37.59	9.21

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	96.6 PK			1.31 H	51	102.12	-5.52
2	*2452.00	88.3 AV			1.31 H	51	93.82	-5.52
3	2483.50	52.9 PK	74.0	-21.1	1.31 H	51	58.24	-5.34
4	2483.50	43.5 AV	54.0	-10.5	1.31 H	51	48.84	-5.34
5	4904.00	51.0 PK	74.0	-23.0	1.09 H	151	48.80	2.20
6	4904.00	42.6 AV	54.0	-11.4	1.09 H	151	40.40	2.20
7	7356.00	57.3 PK	74.0	-16.7	1.37 H	177	48.03	9.27
8	7356.00	45.9 AV	54.0	-8.1	1.37 H	177	36.63	9.27
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	106.8 PK			1.53 V	162	112.32	-5.52
2	*2452.00	98.5 AV			1.53 V	162	104.02	-5.52
3	2483.50	63.2 PK	74.0	-10.8	1.41 V	161	68.54	-5.34
4	2483.50	53.6 AV	54.0	-0.4	1.41 V	161	58.94	-5.34
5	4904.00	52.4 PK	74.0	-21.6	1.16 V	203	50.20	2.20
6	4904.00	43.7 AV	54.0	-10.3	1.16 V	203	41.50	2.20
7	7356.00	58.8 PK	74.0	-15.2	1.13 V	157	49.53	9.27
8	7356.00	47.1 AV	54.0	-6.9	1.13 V	157	37.83	9.27

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:

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	106.73	36.1 QP	43.5	-7.5	2.00 H	316	52.43	-16.38
2	141.21	35.6 QP	43.5	-7.9	2.00 H	275	48.83	-13.27
3	151.49	33.3 QP	43.5	-10.3	2.00 H	97	46.05	-12.80
4	181.27	32.2 QP	43.5	-11.3	1.50 H	172	46.86	-14.66
5	362.52	41.4 QP	46.0	-4.6	1.00 H	49	51.67	-10.30
6	500.01	37.6 QP	46.0	-8.4	1.00 H	188	44.78	-7.16
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	50.47	36.9 QP	40.0	-3.1	1.00 V	188	50.18	-13.30
2	118.03	36.1 QP	43.5	-7.4	1.50 V	64	51.38	-15.24
3	139.27	39.7 QP	43.5	-3.8	1.50 V	66	53.15	-13.43
4	362.52	40.6 QP	46.0	-5.4	1.50 V	264	50.86	-10.30
5	494.10	40.6 QP	46.0	-5.4	1.50 V	318	47.93	-7.37
6	543.76	40.4 QP	46.0	-5.6	2.00 V	6	46.99	-6.59

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	847124/029	Oct. 22, 2014	Oct. 21, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 15, 2014	Sep. 14, 2015
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 10, 2014	Nov. 09, 2015
RF Cable (JYEBAO)	5D-FB	COCCAB-001	Mar. 09, 2015	Mar. 08, 2016
50 ohms Terminator	N/A	EMC-03	Sep. 22, 2014	Sep. 21, 2015
50 ohms Terminator	N/A	EMC-02	Sep. 30, 2014	Sep. 29, 2015
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: May 04 to 05, 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.

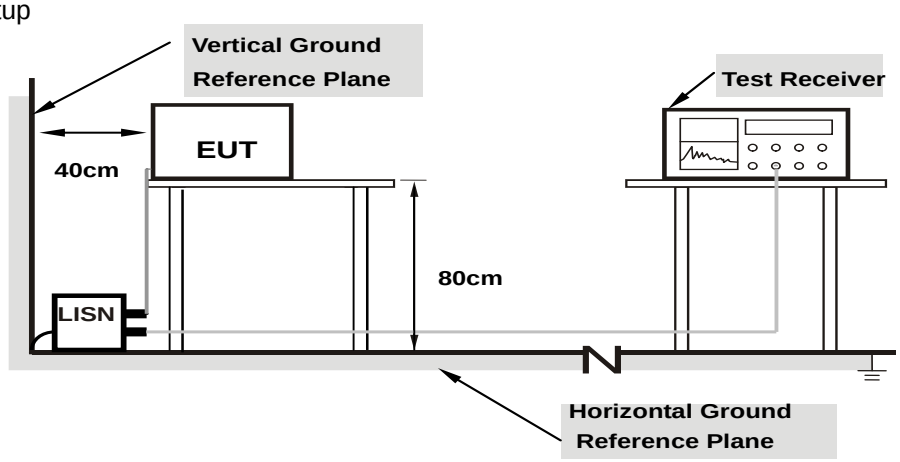
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

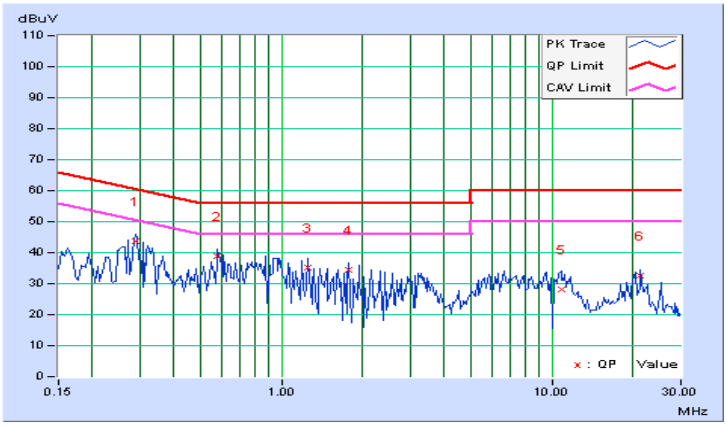
4.2.7 Test Results (Mode 1)

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	0.29063	0.09	43.75	38.73	43.84	38.82	60.51	50.51	-16.66	-11.68
2	0.57969	0.11	38.64	28.30	38.75	28.41	56.00	46.00	-17.25	-17.59
3	1.25391	0.14	34.97	23.80	35.11	23.94	56.00	46.00	-20.89	-22.06
4	1.76953	0.16	34.44	21.09	34.60	21.25	56.00	46.00	-21.40	-24.75
5	10.81641	0.47	27.85	18.84	28.32	19.31	60.00	50.00	-31.68	-30.69
6	21.28516	0.73	31.76	26.79	32.49	27.52	60.00	50.00	-27.51	-22.48

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

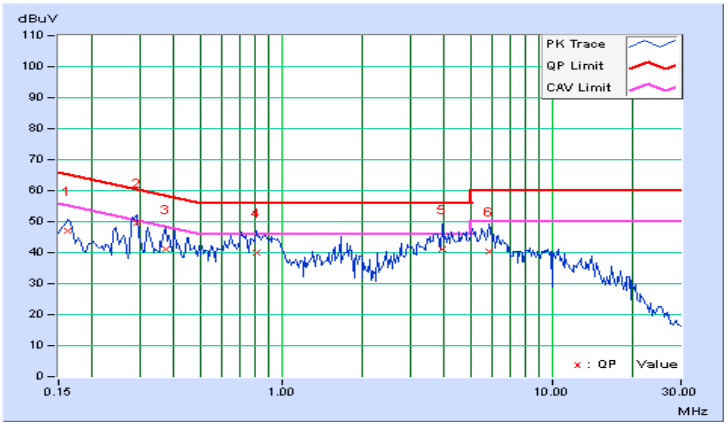


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.16172	0.08	47.05	33.04	47.13	33.12	65.38	55.38	-18.25	-22.26
2	0.29453	0.09	49.65	39.50	49.74	39.59	60.40	50.40	-10.66	-10.81
3	0.37266	0.10	41.05	20.63	41.15	20.73	58.44	48.44	-17.29	-27.71
4	0.80625	0.12	39.89	28.85	40.01	28.97	56.00	46.00	-15.99	-17.03
5	3.95313	0.23	40.70	29.19	40.93	29.42	56.00	46.00	-15.07	-16.58
6	5.83203	0.30	40.03	28.75	40.33	29.05	60.00	50.00	-19.67	-20.95

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



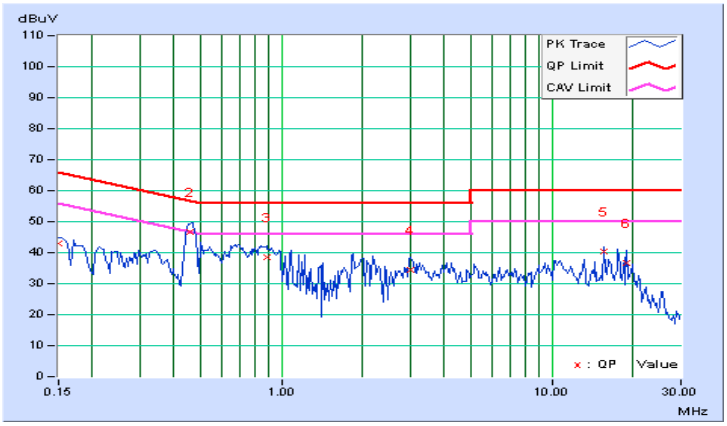
4.2.8 Test Results (Mode 2)

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	0.15000	0.08	42.80	33.72	42.88	33.80	66.00	56.00	-23.12	-22.20
2	**0.45719**	**0.10**	**46.44**	**35.79**	**46.54**	**35.89**	**56.74**	**46.74**	**-10.20**	**-10.85**
3	0.88047	0.12	38.34	27.47	38.46	27.59	56.00	46.00	-17.54	-18.41
4	3.01172	0.20	34.37	26.75	34.57	26.95	56.00	46.00	-21.43	-19.05
5	15.50781	0.59	39.67	28.66	40.26	29.25	60.00	50.00	-19.74	-20.75
6	18.88672	0.67	36.10	31.66	36.77	32.33	60.00	50.00	-23.23	-17.67

Remarks:

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

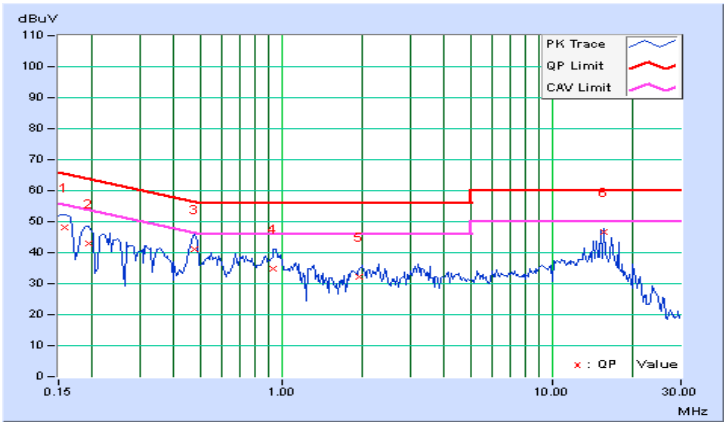


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	48.15	38.07	48.23	38.15	65.58	55.58	-17.35	-17.43
2	0.19297	0.08	42.91	30.62	42.99	30.70	63.91	53.91	-20.92	-23.21
3	0.47813	0.10	41.04	28.61	41.14	28.71	56.37	46.37	-15.23	-17.66
4	0.93516	0.13	34.82	23.72	34.95	23.85	56.00	46.00	-21.05	-22.15
5	1.94141	0.17	32.13	22.52	32.30	22.69	56.00	46.00	-23.70	-23.31
6	15.53941	0.62	46.01	38.34	46.63	38.96	60.00	50.00	-13.37	-11.04

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

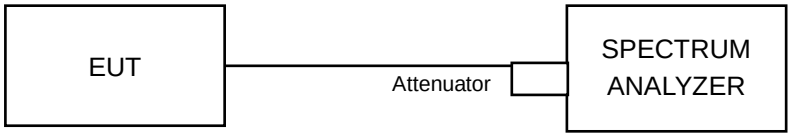


4.3 6dB Bandwidth Measurement

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 fromTest 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	10.12	10.12	0.5	Pass
6	2437	10.12	10.12	0.5	Pass
11	2462	10.11	10.12	0.5	Pass

802.11g

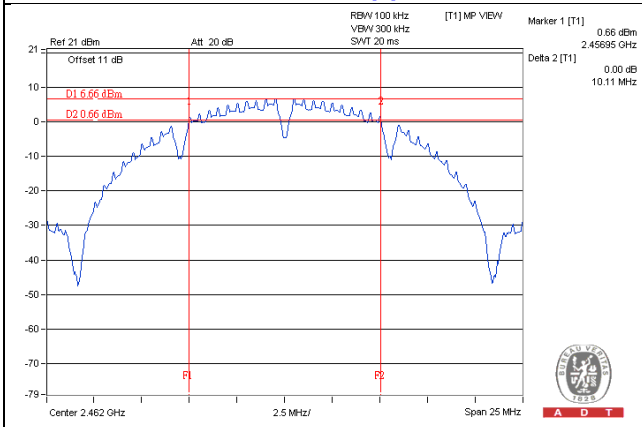
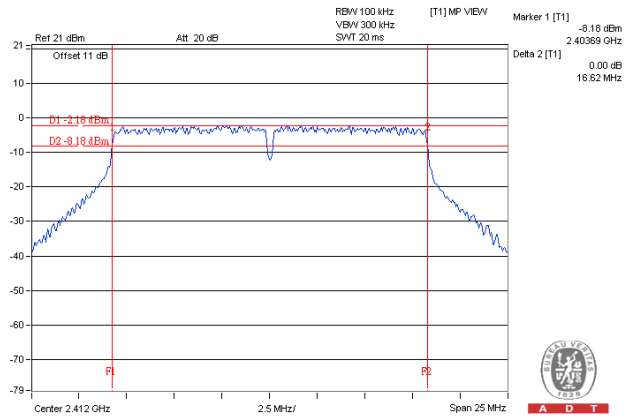
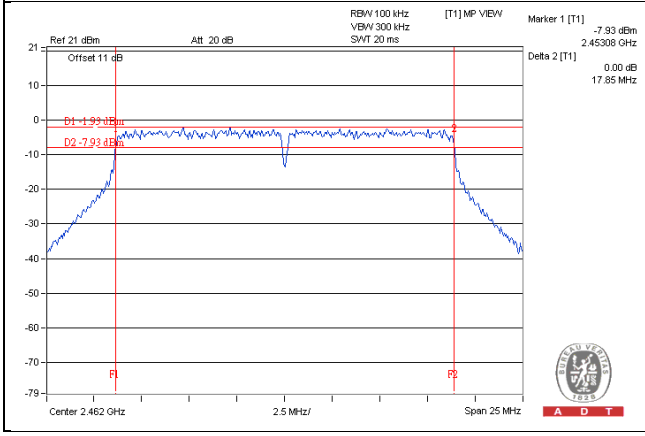
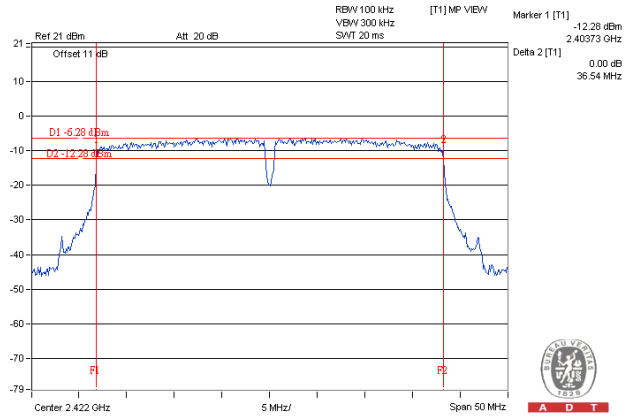
Channel	Frequency (MHz)	6db Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.64	16.62	0.5	Pass
6	2437	16.63	16.64	0.5	Pass
11	2462	16.64	16.63	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6db Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.87	17.86	0.5	Pass
6	2437	17.89	17.88	0.5	Pass
11	2462	17.87	17.85	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6db Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	36.54	36.56	0.5	Pass
6	2437	36.55	36.54	0.5	Pass
9	2452	36.55	36.54	0.5	Pass

Spectrum Plot of Worst Value	
802.11b – Chain (0): CH 11	**802.11g – Chain (1): CH 1**
	
802.11n (HT20) – Chain (1): CH 11	**802.11n (HT40) – Chain (0): CH 3**
	

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

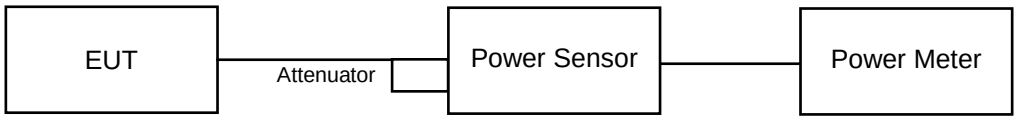
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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	19.53	19.25	173.883	22.40	30	Pass
6	2437	20.17	20.22	209.188	23.21	30	Pass
11	2462	19.89	20.06	198.89	22.99	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	22.12	22.96	360.627	25.57	30	Pass
6	2437	25.26	25.82	717.682	28.56	30	Pass
11	2462	23.28	23.38	430.585	26.34	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	22.12	22.22	329.655	25.18	30	Pass
6	2437	25.59	25.61	726.158	28.61	30	Pass
11	2462	22.23	22.64	350.763	25.45	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	19.52	19.93	187.937	22.74	30	Pass
6	2437	22.00	22.50	336.317	25.27	30	Pass
9	2452	20.02	20.19	204.934	23.12	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	17.44	17.24	108.429	20.35
6	2437	18.40	18.25	136.017	21.34
11	2462	17.80	17.99	123.207	20.91

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	13.86	14.28	51.114	17.09
6	2437	19.34	19.50	175.026	22.43
11	2462	13.94	14.59	53.548	17.29

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	13.76	14.46	51.693	17.13
6	2437	19.14	19.23	165.788	22.20
11	2462	14.01	14.90	56.080	17.49

802.11n (HT40)

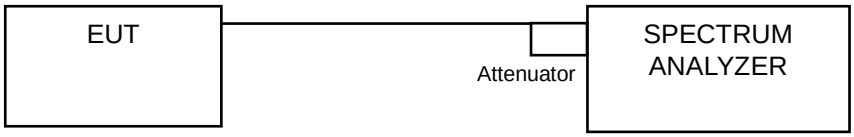
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	11.73	12.31	31.916	15.04
6	2437	14.35	14.71	56.807	17.54
9	2452	12.36	12.89	36.673	15.64

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	-14.17	3.01	-11.16	8	Pass
	6	2437	-13.51	3.01	-10.50	8	Pass
	11	2462	-13.10	3.01	-10.09	8	Pass
1	1	2412	-13.91	3.01	-10.90	8	Pass
	6	2437	-13.09	3.01	-10.08	8	Pass
	11	2462	-13.57	3.01	-10.56	8	Pass

NOTE: Directional gain = 2.5dBi + 10log(2) = 5.51dBi < 6dBi , so the power density limit shall not be reduced.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-15.80	3.01	-12.79	8	Pass
	6	2437	-11.16	3.01	-8.15	8	Pass
	11	2462	-16.09	3.01	-13.08	8	Pass
1	1	2412	-15.65	3.01	-12.64	8	Pass
	6	2437	-10.32	3.01	-7.31	8	Pass
	11	2462	-16.17	3.01	-13.16	8	Pass

NOTE: Directional gain = 2.5dBi + 10log(2) = 5.51dBi < 6dBi , so the power density limit shall not be reduced.

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	-16.59	3.01	-13.58	8	Pass
	6	2437	-10.31	3.01	-7.30	8	Pass
	11	2462	-15.65	3.01	-12.64	8	Pass
1	1	2412	-15.69	3.01	-12.68	8	Pass
	6	2437	-9.64	3.01	-6.63	8	Pass
	11	2462	-16.41	3.01	-13.40	8	Pass

NOTE: Directional gain = 2.5dBi + 10log(2) = 5.51dBi < 6dBi , so the power density limit shall not be reduced.

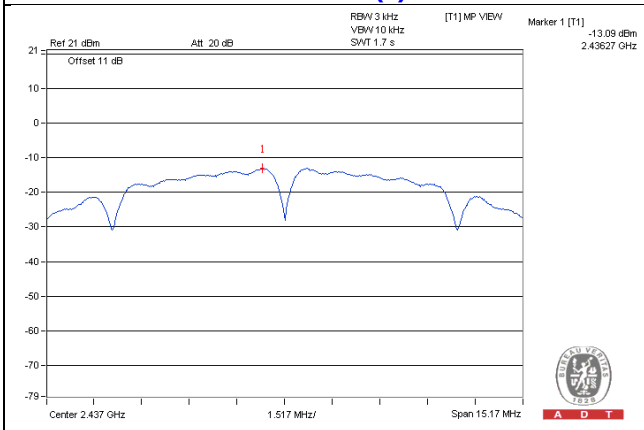
802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	3	2422	-18.93	3.01	-15.92	8	Pass
	6	2437	-16.58	3.01	-13.57	8	Pass
	9	2452	-15.56	3.01	-12.55	8	Pass
1	3	2422	-19.75	3.01	-16.74	8	Pass
	6	2437	-16.52	3.01	-13.51	8	Pass
	9	2452	-18.90	3.01	-15.89	8	Pass

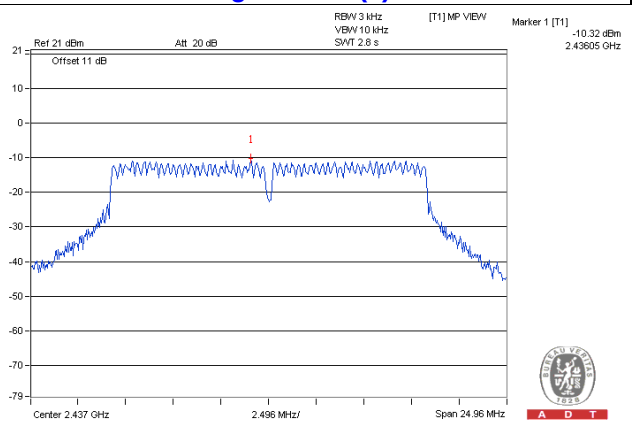
NOTE: Directional gain = 2.5dBi + 10log(2) = 5.51dBi < 6dBi , so the power density limit shall not be reduced.

Spectrum Plot of Worst Value

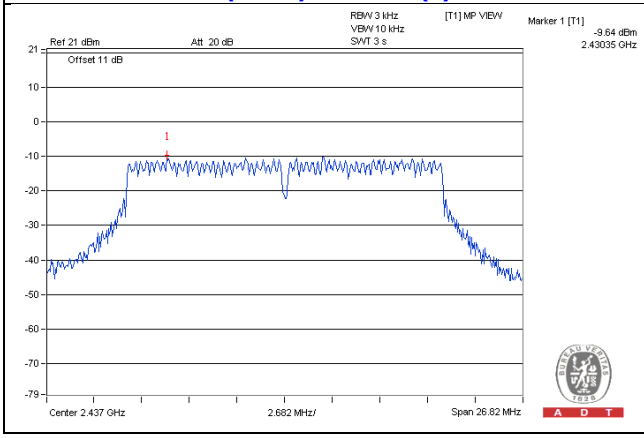
802.11b – Chain (1): CH 6



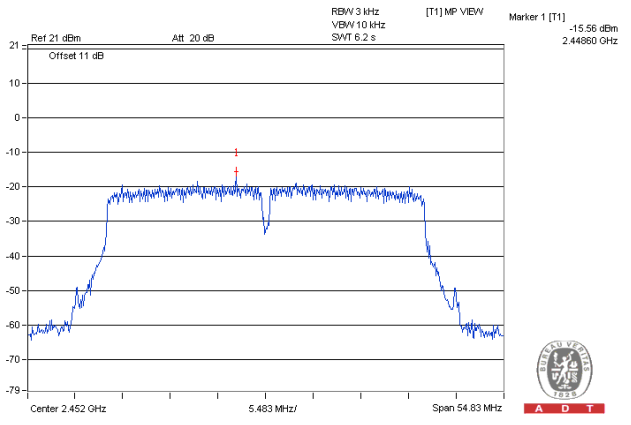
802.11g – Chain (1): CH 6



802.11n (HT20) – Chain (1): CH 6



802.11n (HT40) – Chain (0): CH 9

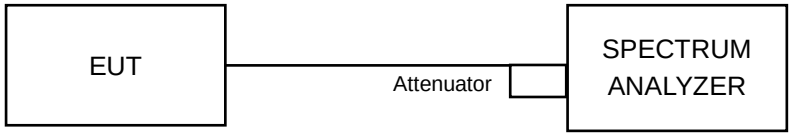


4.6 Conducted Out of Band Emission Measurement

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

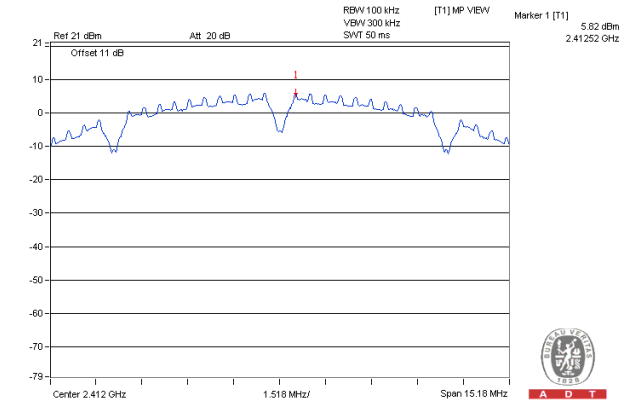
4.6.7 Test Results

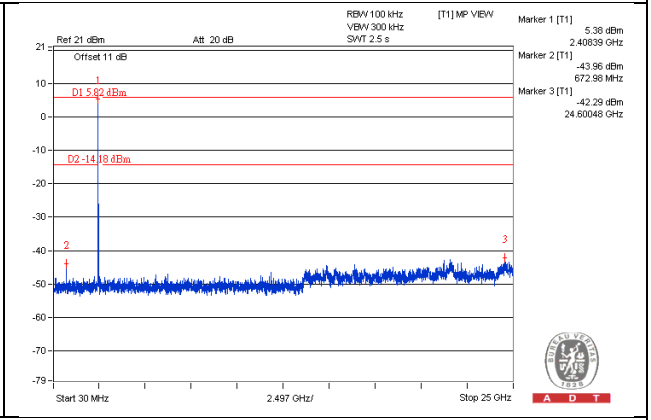
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

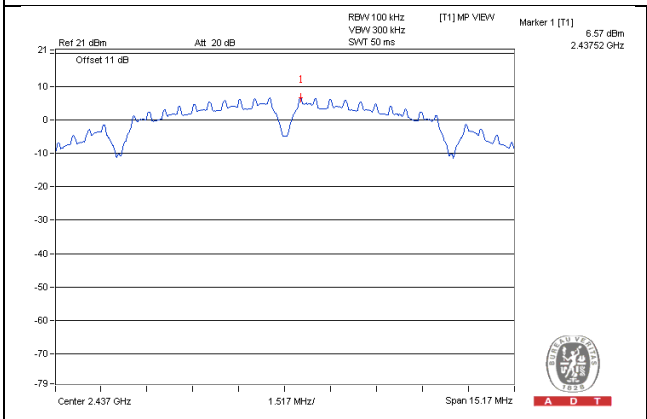
Chain 0

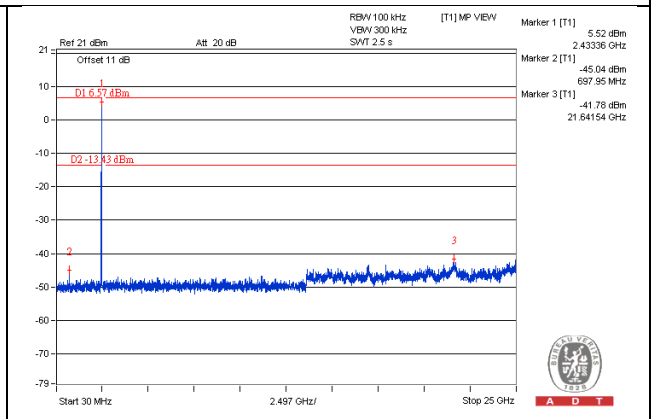
CH 1



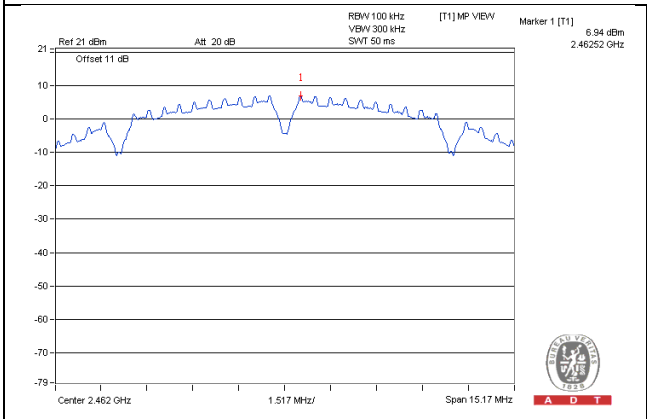


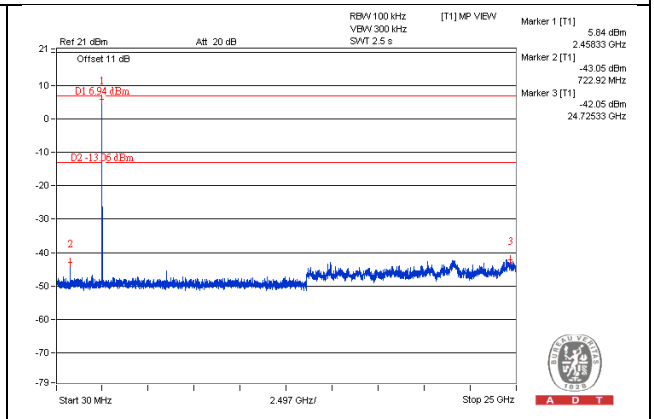
CH 6



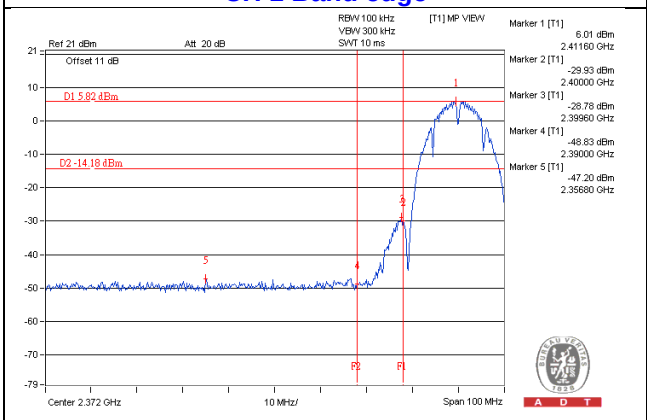


CH 11

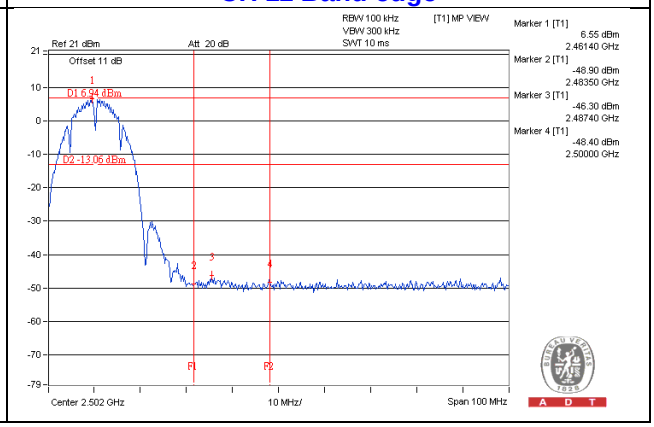




CH 1 Band edge

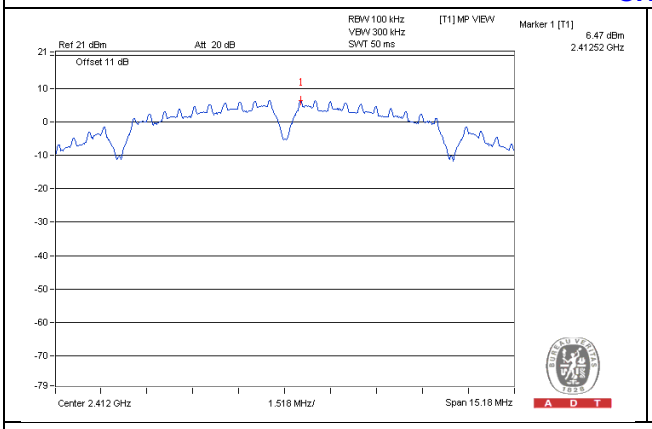


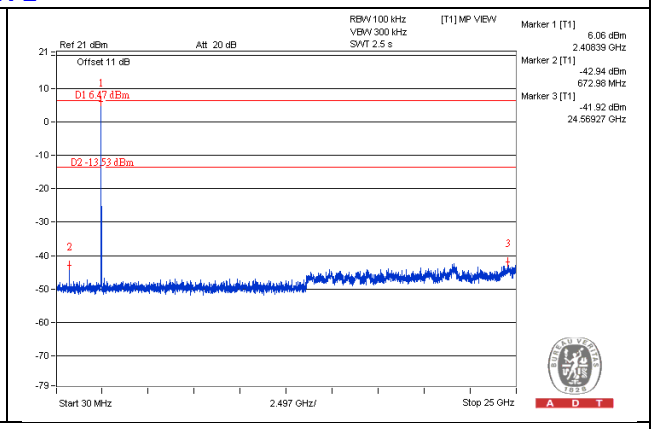
CH 11 Band edge



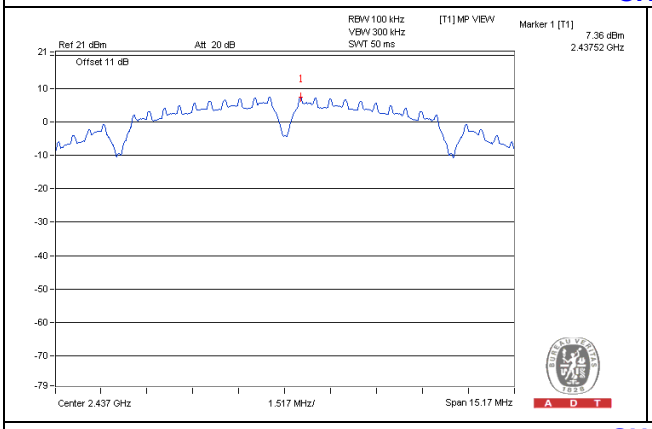
Chain 1

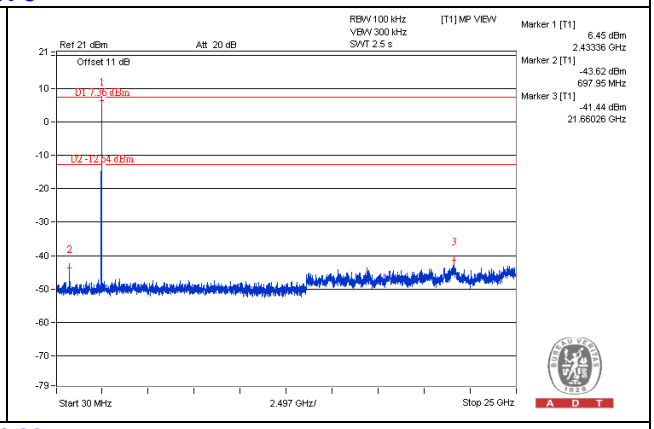
CH 1



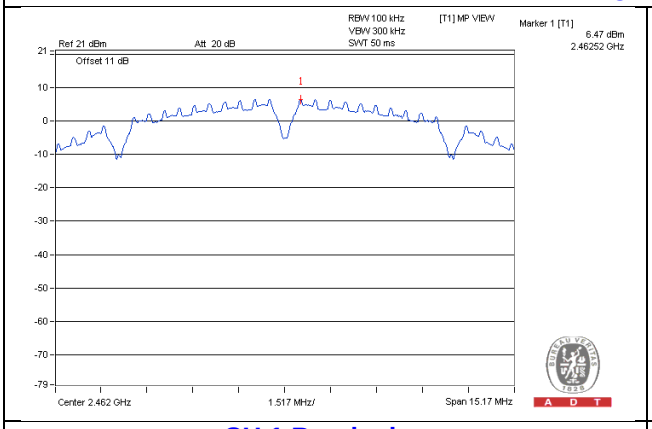


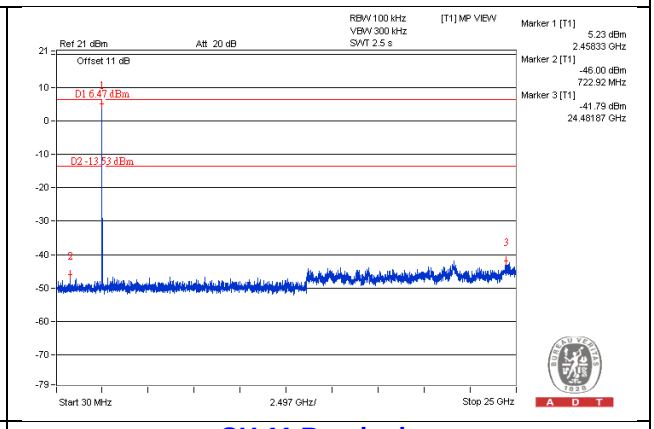
CH 6



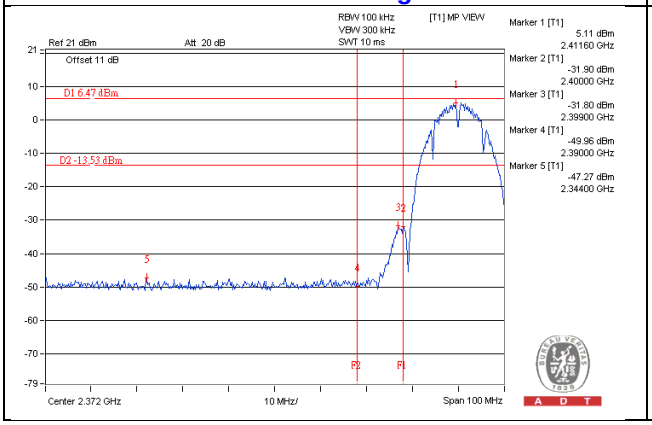


CH 11

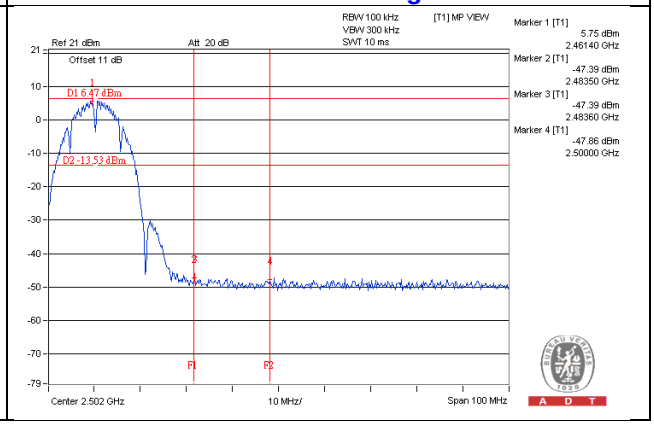




CH 1 Band edge



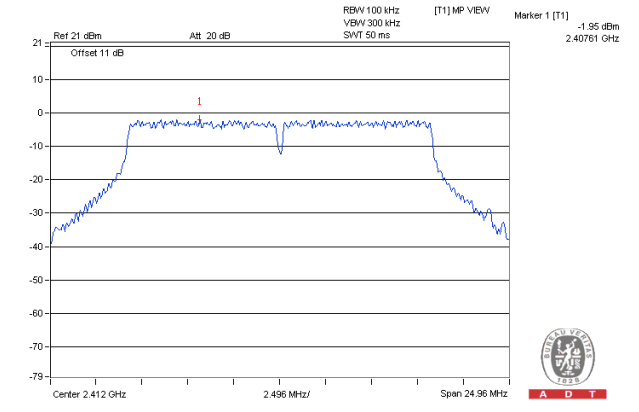
CH 11 Band edge

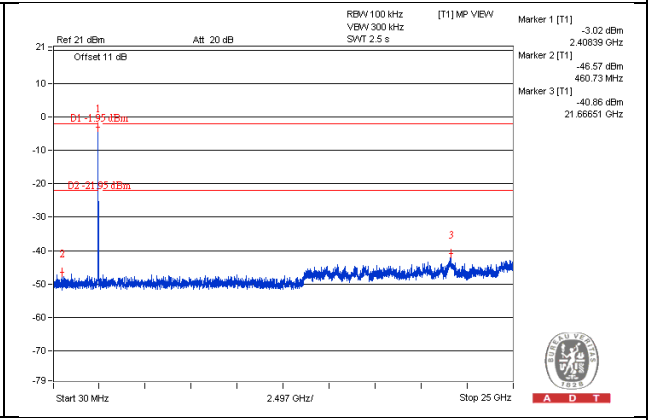


802.11g

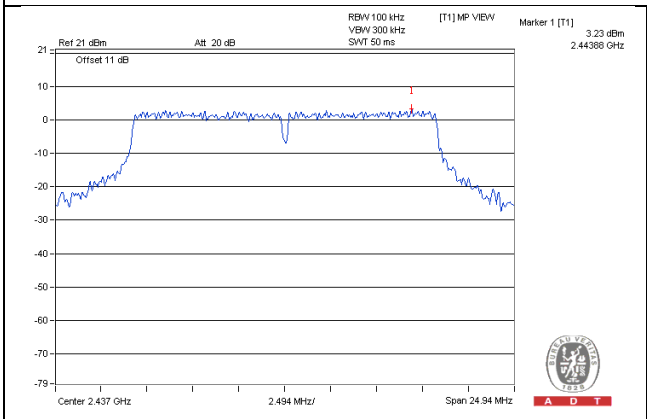
Chain 0

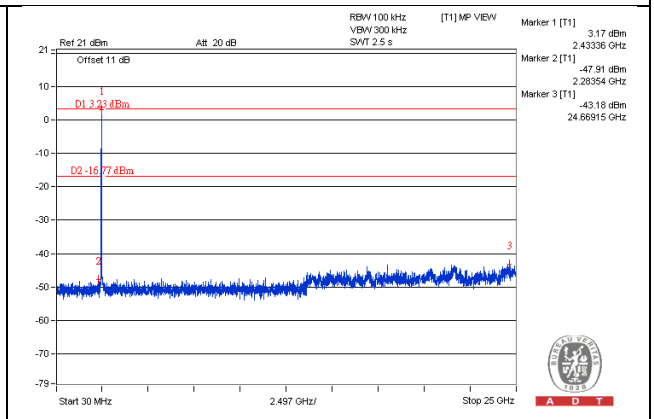
CH 1



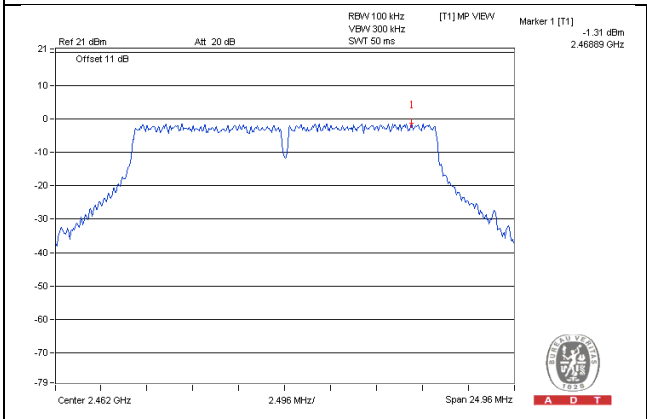


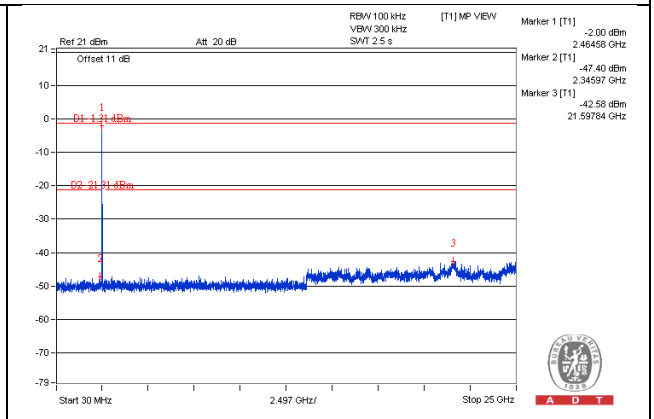
CH 6



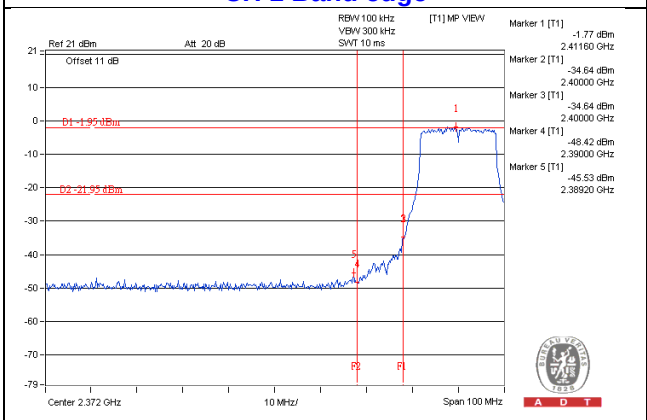


CH 11

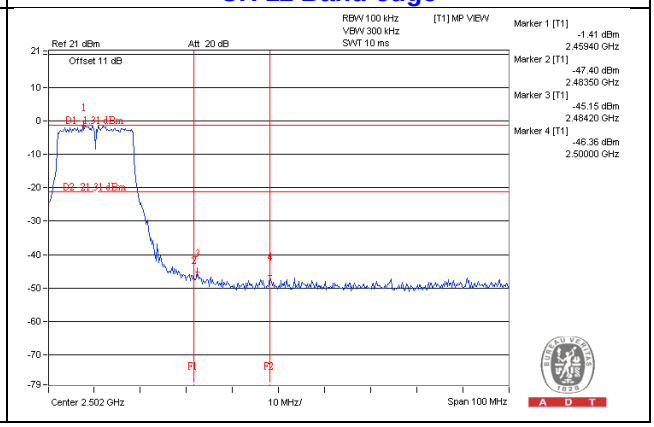




CH 1 Band edge

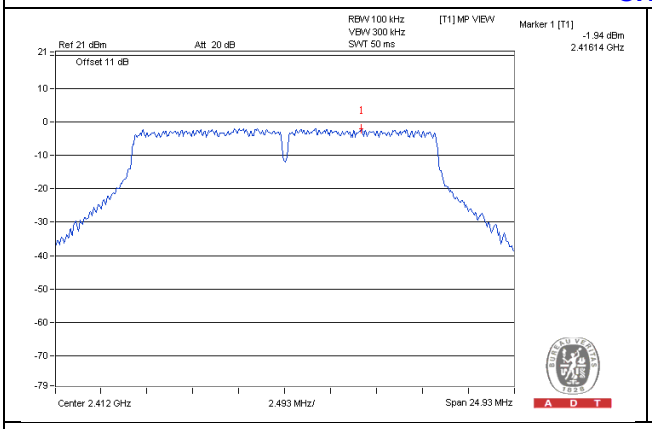


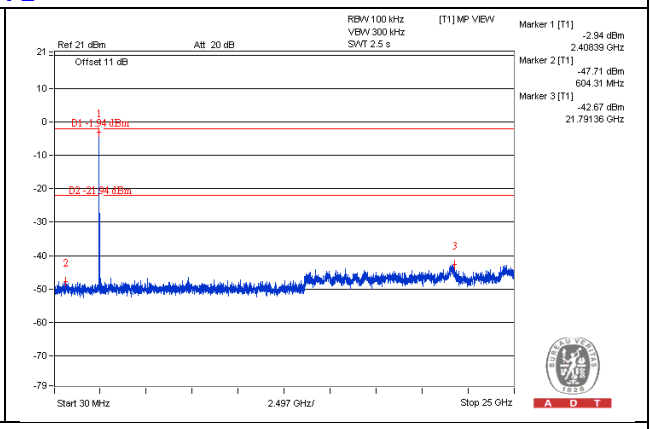
CH 11 Band edge



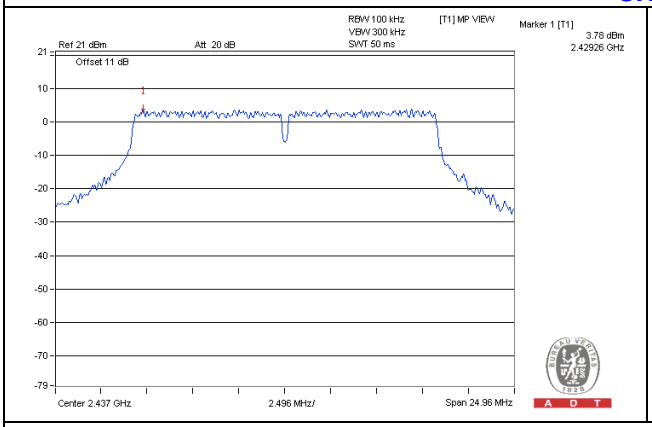
Chain 1

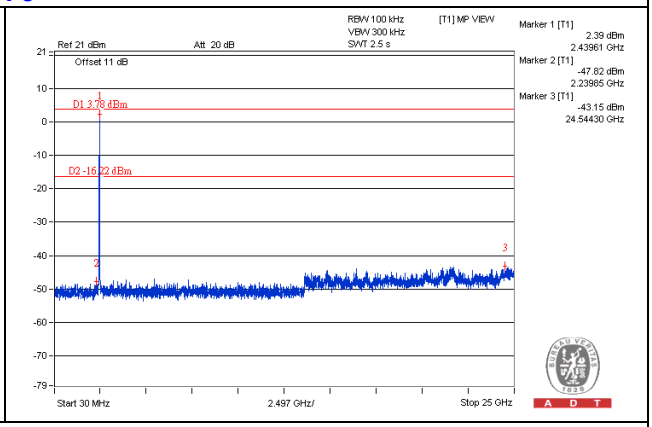
CH 1



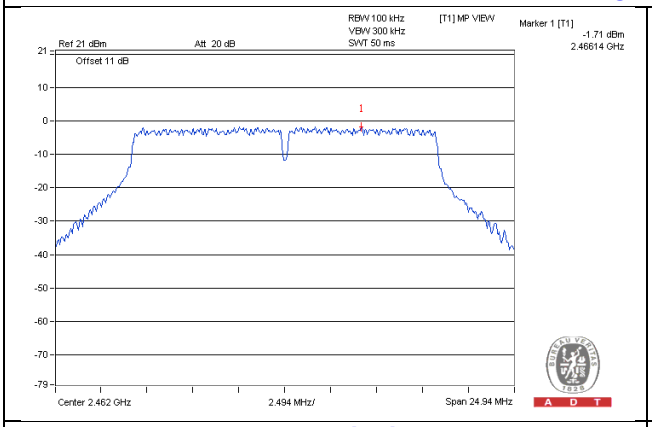


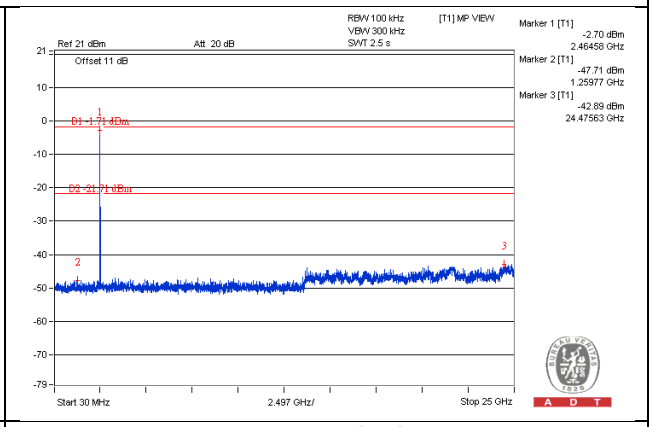
CH 6



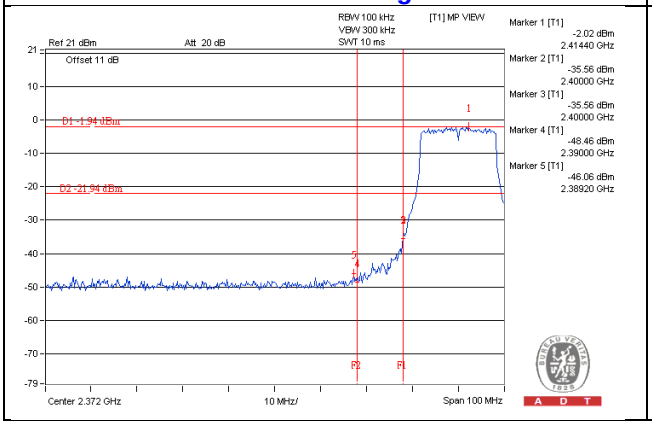


CH 11

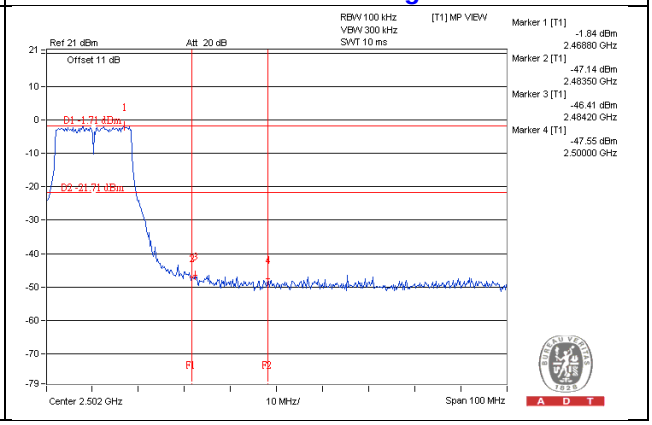




CH 1 Band edge



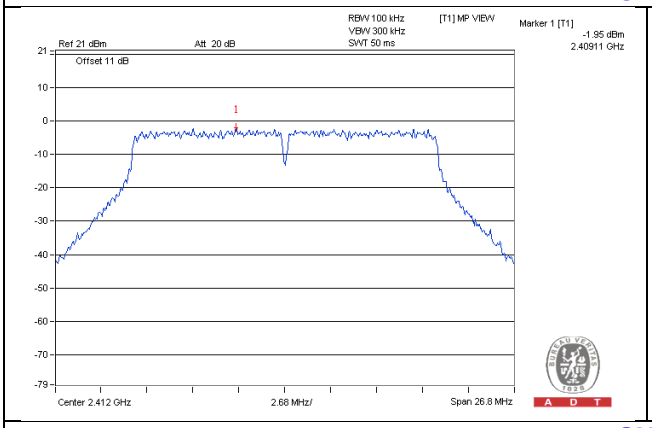
CH 11 Band edge

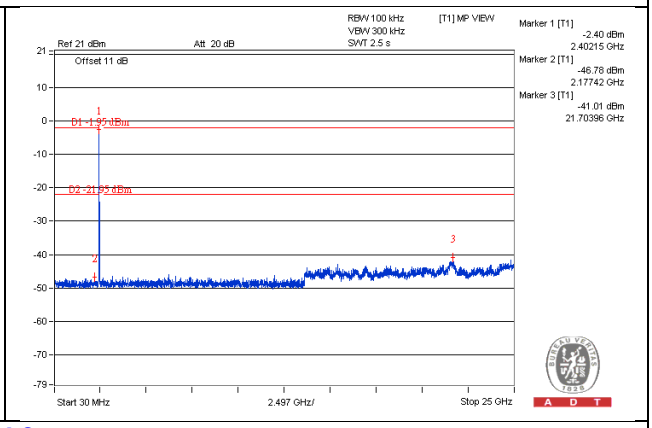


802.11n (HT20)

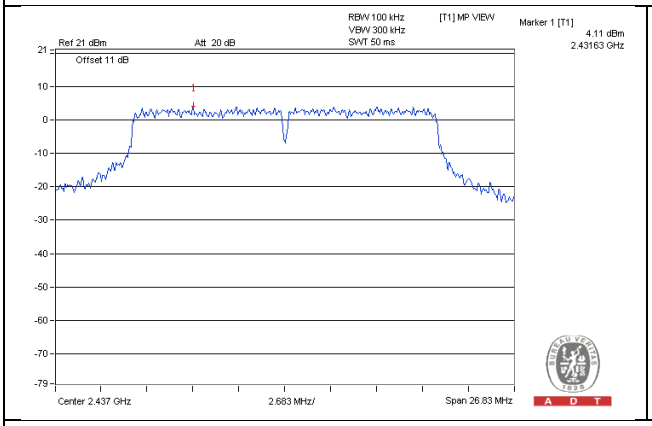
Chain 0

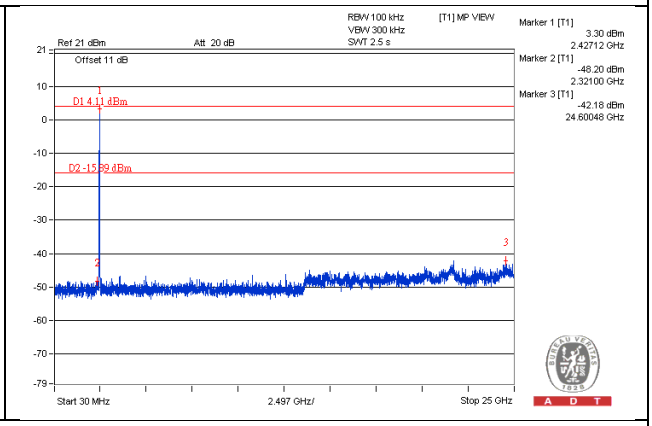
CH 1



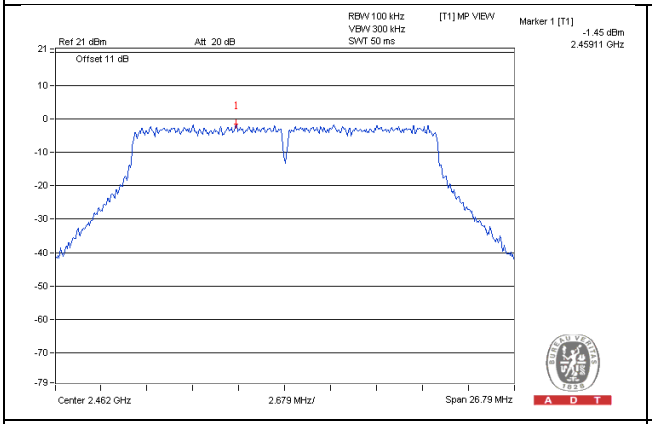


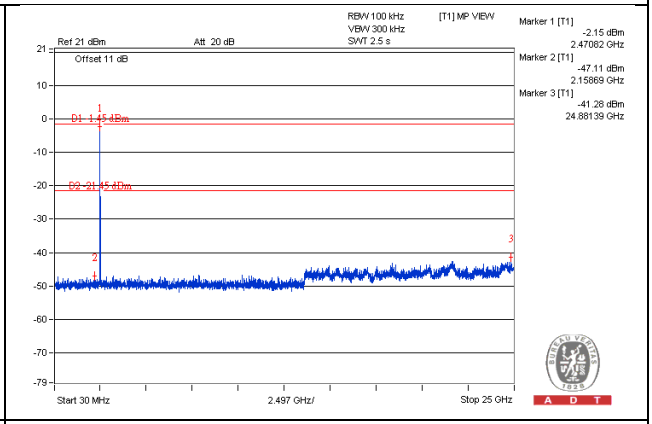
CH 6



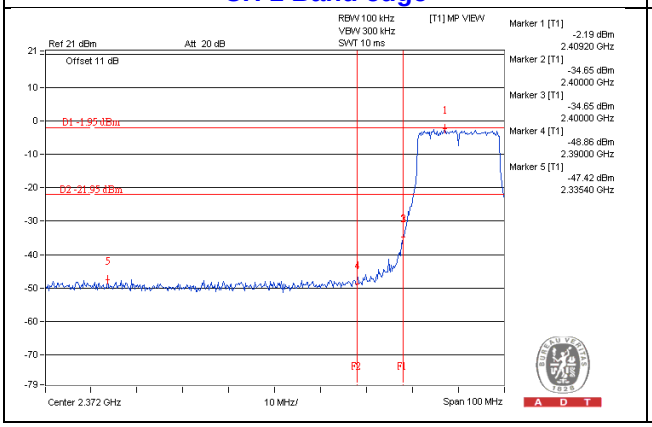


CH 11

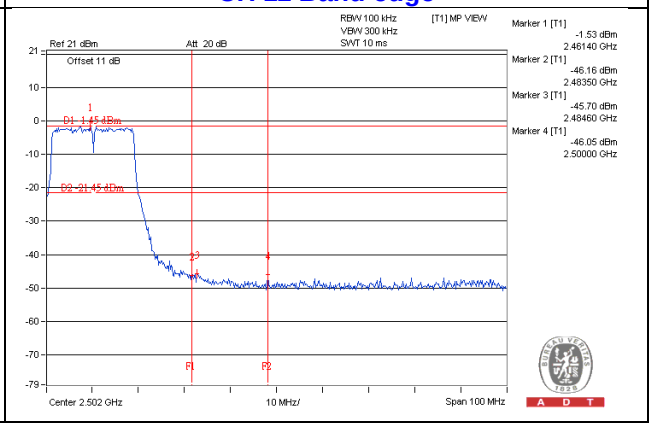




CH 1 Band edge

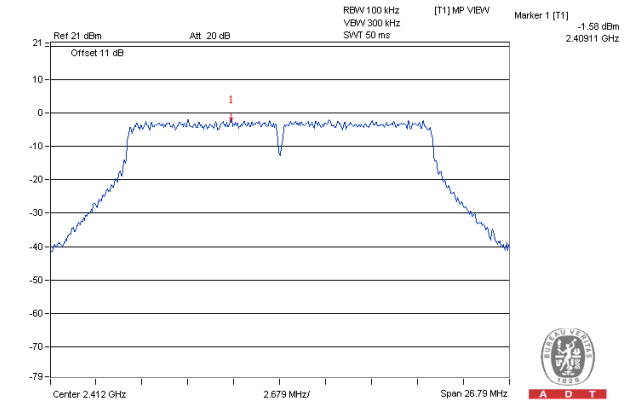


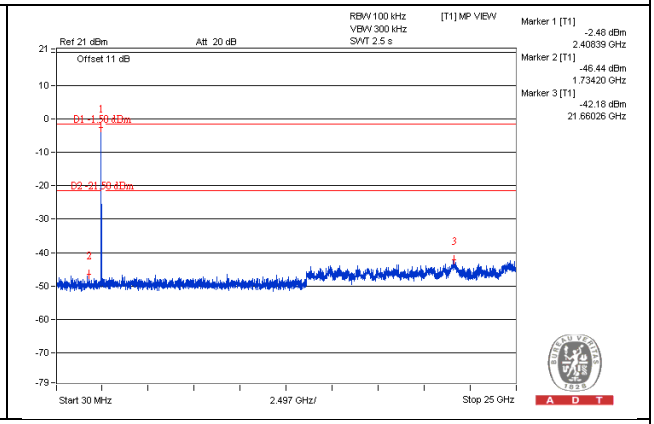
CH 11 Band edge



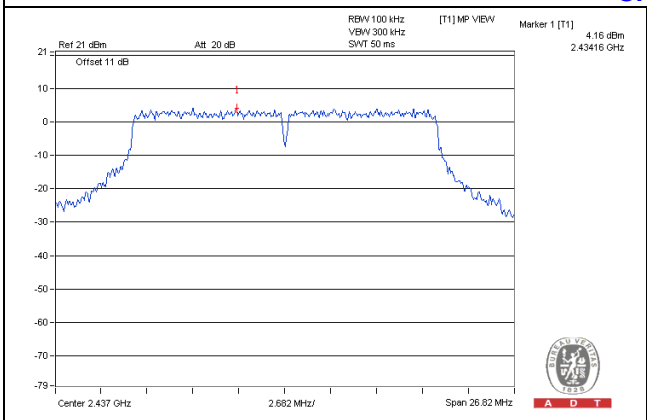
Chain 1

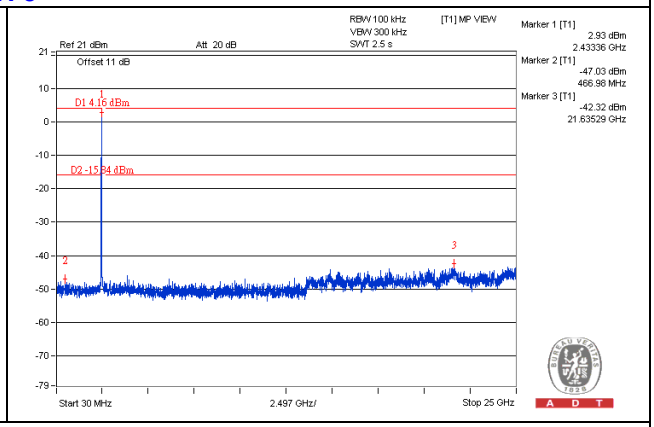
CH 1



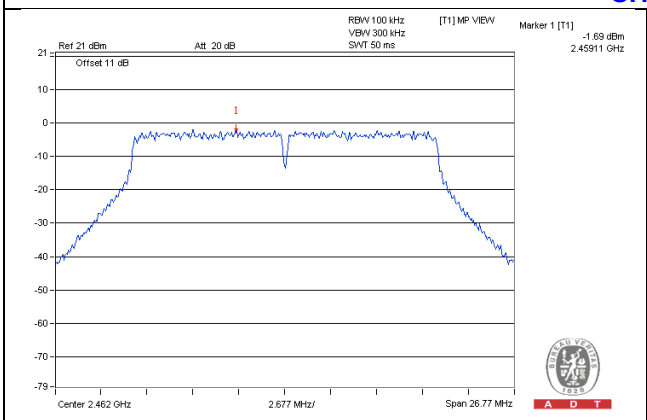


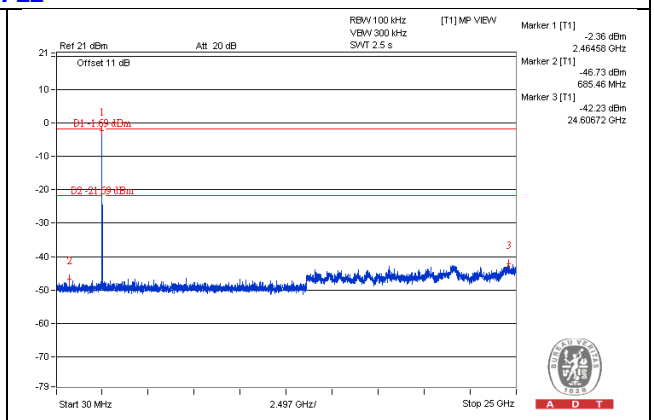
CH 6



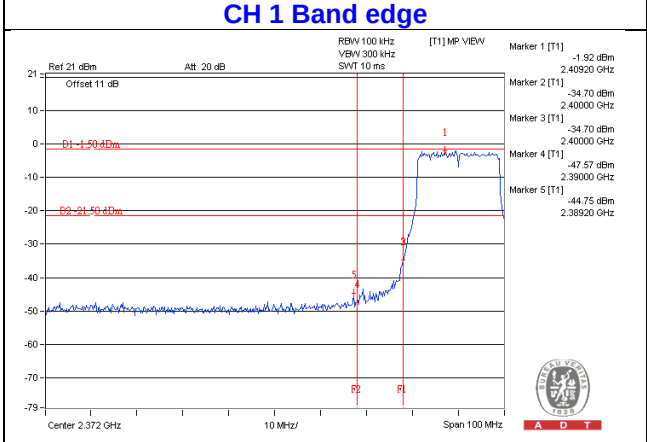


CH 11

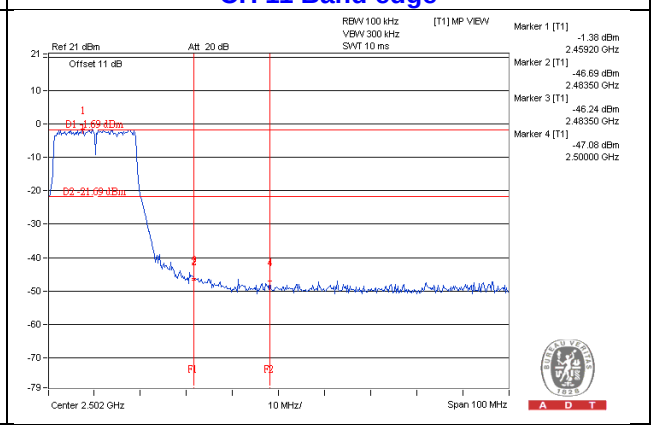




CH 1 Band edge



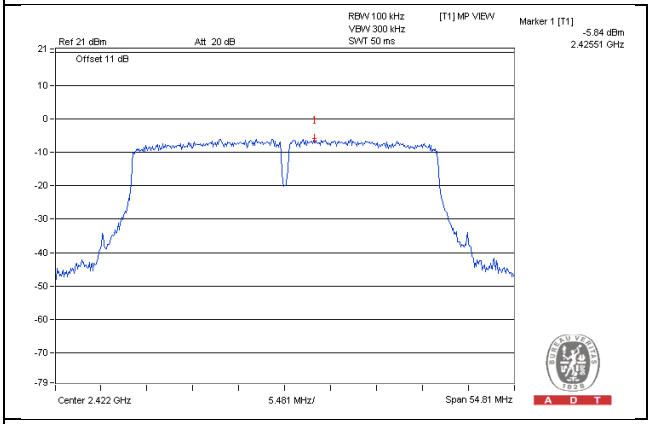
CH 11 Band edge

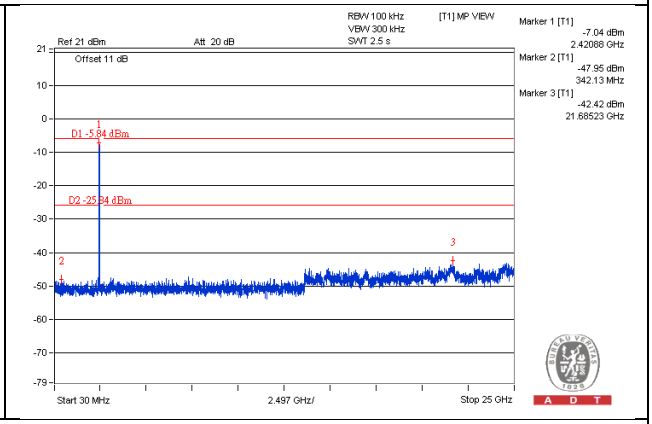


802.11n (HT40)

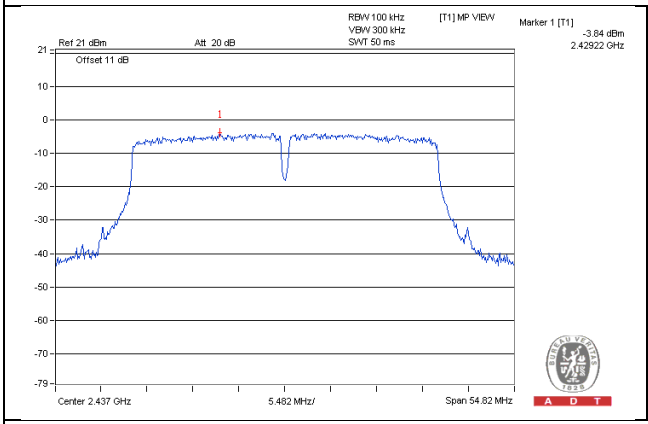
Chain 0

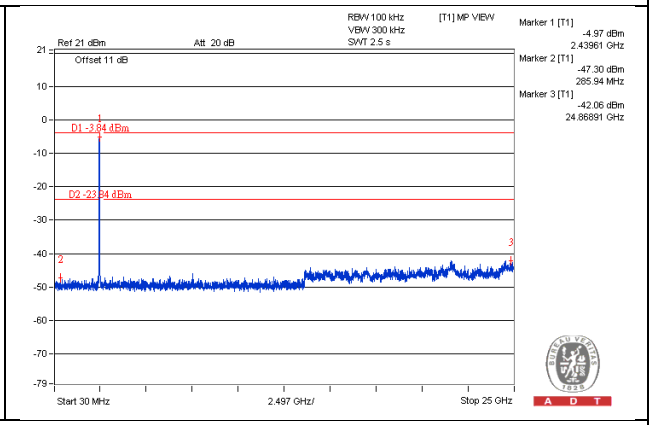
CH 3



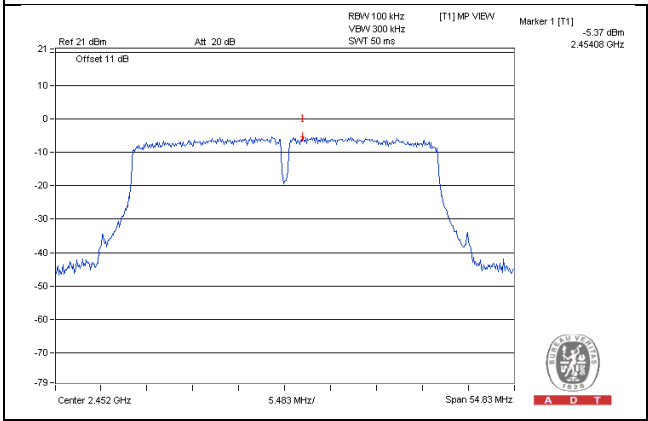


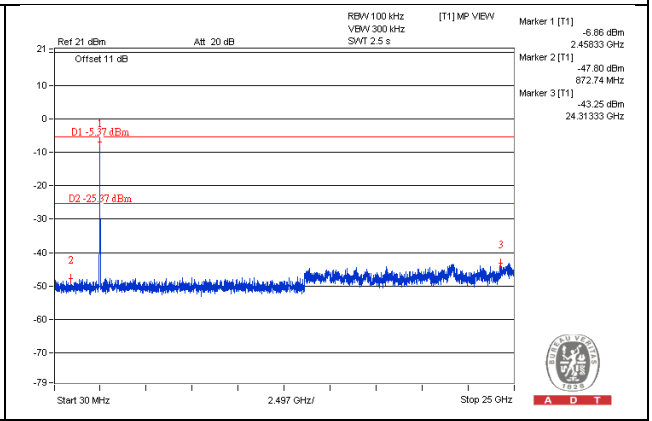
CH 6



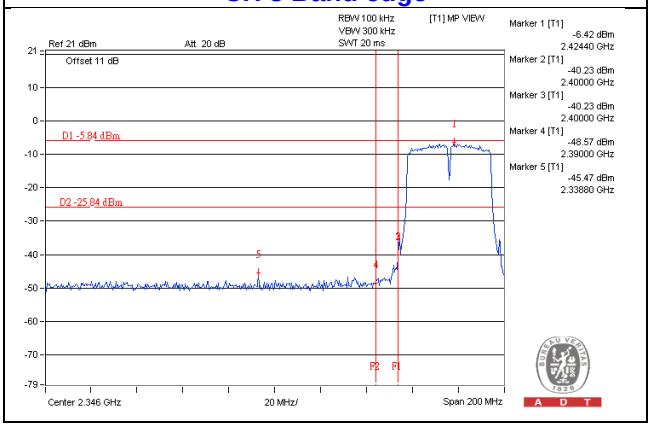


CH 9

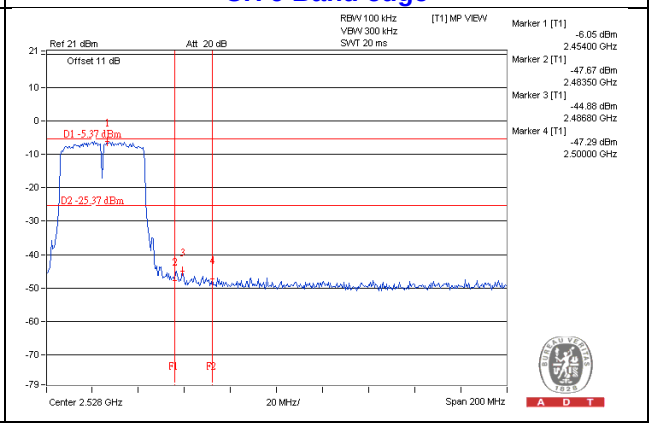




CH 3 Band edge

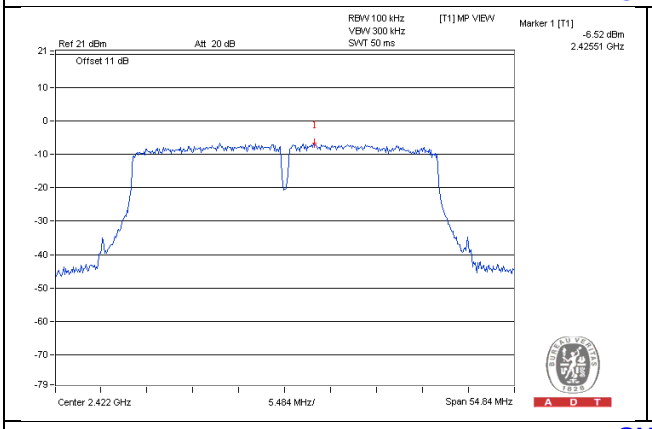


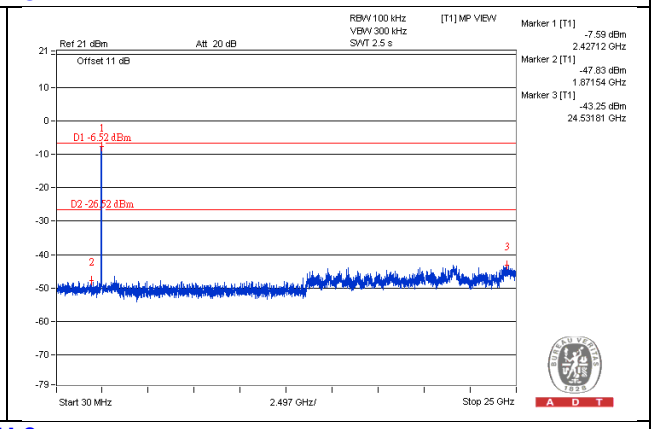
CH 9 Band edge



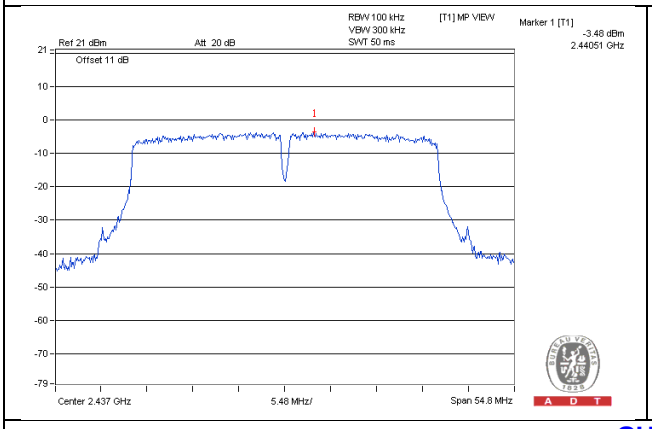
Chain 1

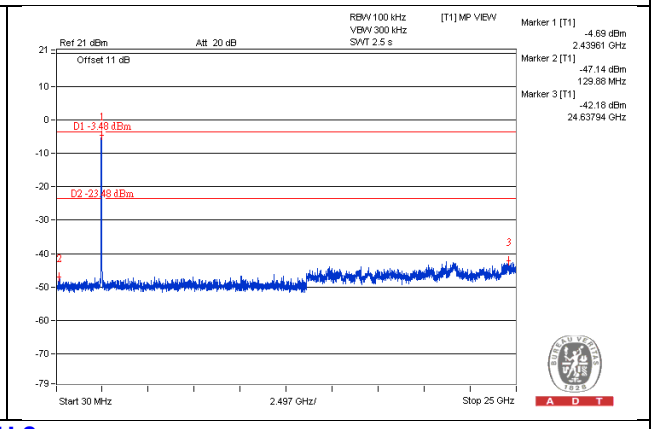
CH 3



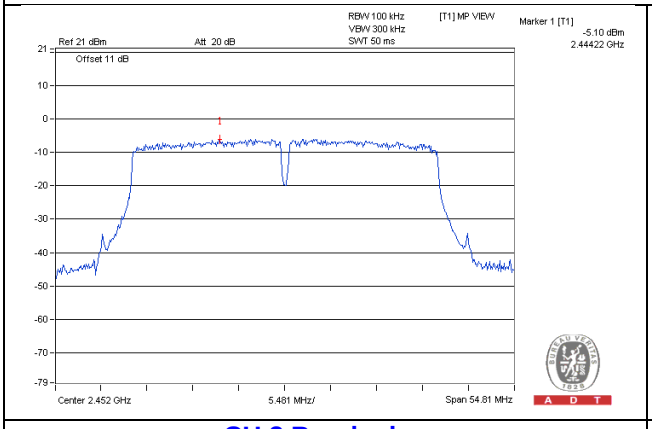


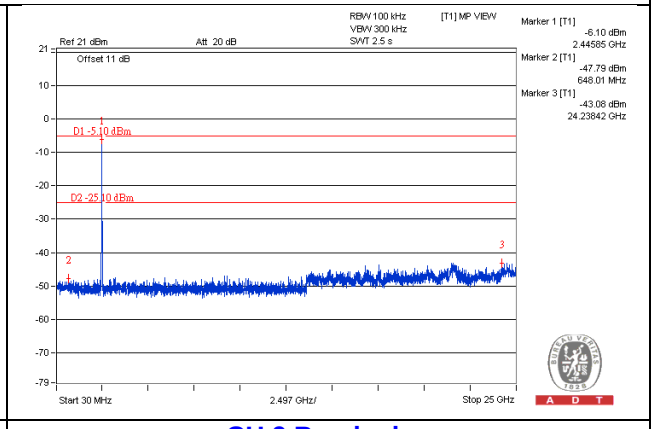
CH 6



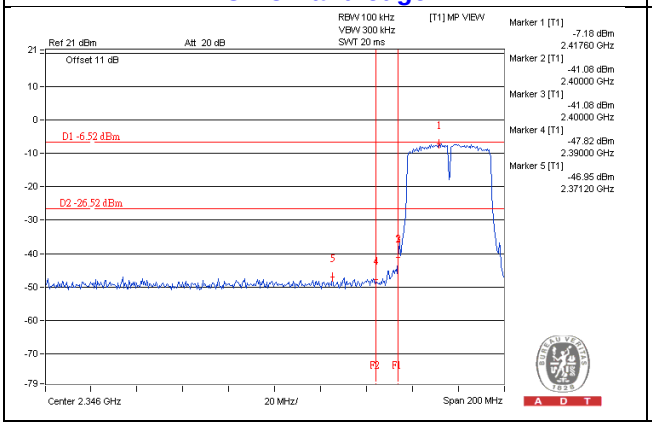


CH 9

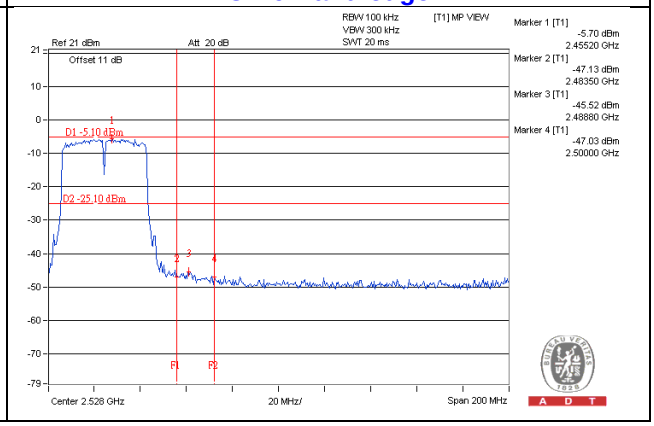




CH 3 Band edge



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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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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