

FCC Test Report

Report No.: RF150420C10F

FCC ID: MSQ7260H

Test Model: 7260HMW

Notebook Model: E403S, L403S, R416S

Received Date: Jan. 22, 2016

Test Date: Feb. 02 ~ Feb. 16, 2016

Issued Date: Feb. 17, 2016

Applicant: ASUSTeK COMPUTER INC.

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

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Release Control Record

Issue No.	Description	Date Issued
RF150420C10F	Original release.	Feb. 17, 2016

1 Certificate of Conformity

Product: Model 7260HMW Wireless Network Adapter

Brand: Intel

Test Model: 7260HMW

Notebook Model: E403S, L403S, R416S

Sample Status: Engineering sample

Applicant: ASUSTeK COMPUTER INC.

Test Date: Feb. 02 ~ Feb. 16, 2016

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

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

Prepared by :



Date:

Feb. 17, 2016

Pettie Chen / Senior Specialist

Approved by :



Date:

Feb. 17, 2016

Ken Liu / Senior Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -15.88dB at 0.47062MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -6.6dB at 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	Antenna connector is IPEX not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.59 dB
	200MHz ~ 1000MHz	3.60 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Model 7260HMW Wireless Network Adapter
Brand	Intel
Test Model	7260HMW
Notebook model	E403S, L403S, R416S
Status of EUT	Engineering sample
Power Supply Rating	3.3Vdc (host)
Transfer Rate	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Output Power	30.262mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA
Accessory Device	Adapter
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC class II permissive change. The differences compared with original report are adding an End-product (refer to note 2) and updating standard to the latest version. Therefore, all test items had been re-tested in this report.
2. The EUT is authorized for use in specific End-product. Please refer to below table for more details.

Product	Notebook PC	
Brand	Model	Difference
ASUS	E403S (Main test model)	All models are electrically identical, different model names are for marketing purpose.
	L403S	
	R416S	

3. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitter and 2 receivers.

Modulation Mode	TX Function
802.11b	1TX
802.11g	1TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX

4. The Notebook PC contains the following accessories.

Part	Vendor	Model	Specification
AC Adapter 1	PI	AD890326	Input: 100-240Vac, 50/60Hz, 0.8A Output: 19Vdc, 1.75A 2.35m power cable without core attached on adapter
AC Adapter 2	PI	AD891M21	Input: 100-240Vac, 50/60Hz, 0.8A Output: 19Vdc, 1.75A 2.4m power cable without core attached on adapter
AC Adapter 3	DELTA	ADP-33AW A	Input: 100-240Vac, 50-60Hz, 1A Output: 19Vdc, 1.75A 2.3m power cable without core attached on adapter
AC Adapter 4 (adaptor 1 change revision)	PI	AD890326	Input: 100-240Vac, 50/60Hz, 0.8A Output: 19Vdc, 1.75A 2.2m power cable without core attached on adapter
AC Adapter 5 (adaptor 3 change revision)	DELTA	ADP-33AW A (China) ADP-33AW B (Taiwan)	Input: 100-240Vac, 50-60Hz, 1A Output: 19Vdc, 1.75A 2.3m power cable without core attached on adapter
AC Adapter 6	LITEON	PA-1330-39	Input: 100-240Vac, 50/60Hz, 1.0A Output: 19Vdc, 1.75A 2.2m power cable without core attached on adapter
AC Adapter 7	PI	AD890M26	Input: 100-240Vac, 50/60Hz, 0.8A Output: 19Vdc, 1.75A 2.2m power cable without core attached on adapter
Battery	LG	LG- ICP 4059134L1 (C31N1431)	SMP, 11.4Vdc, 57Wh
	LG	LG- ICP 4059134L1 (C31N1431)	Dyna, 11.4Vdc, 57Wh

* After pretesting, the adapter 5 and battery (SMP) were chosen for final test.

5. The antennas used in this EUT are listed as below table:

No.	Item	Type	Brand	P/N	Connector	Gain (dBi)
Ant. 1	Main ant.	PIFA	LUXSHARE-ICT	14008-01140100	I-PEX	-0.13
	Aux ant.	PIFA	LUXSHARE-ICT	14008-01140100	I-PEX	0.47
Ant. 2	Main ant.	PIFA	TONGDA	14008-01140000	I-PEX	-0.30
	Aux ant.	PIFA	TONGDA	14008-01140000	I-PEX	-2.24

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):

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	
-	√	√	√	√	-

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

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (HT20)	1 to 11	6	OFDM	BPSK	7.2

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (HT20)	1 to 11	6	OFDM	BPSK	7.2

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	22deg. C, 66%RH	120Vac, 60Hz	Alan Wu
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Bayu Chen
PLC	25deg. C, 65%RH	120Vac, 60Hz	Bayu Chen
APCM	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is > 98%, duty factor is not required.

Duty cycle of test signal is < 98%, duty factor is required.

802.11b_1TX (Ant. 1_Main Ant.): Duty cycle = 2.206/2.238 = 0.986

802.11b_1TX (Ant. 1_Aux. Ant.): Duty cycle = 2.206/2.236 = 0.987

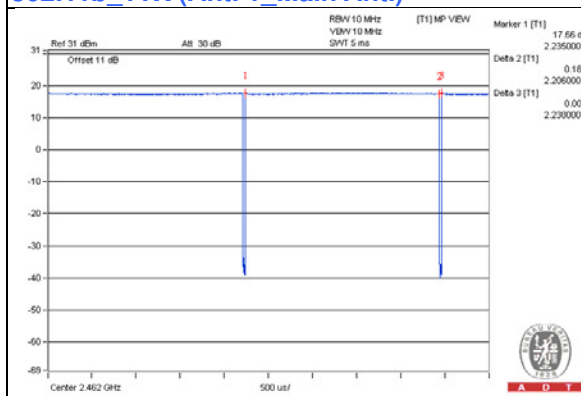
802.11g_1TX (Ant. 1_Main Ant.): Duty cycle = 2.044/2.09 = 0.978, Duty factor = $10 * \log(1/0.978) = 0.10$

802.11g_1TX (Ant. 1_Aux. Ant.): Duty cycle = 2.045/2.075 = 0.986

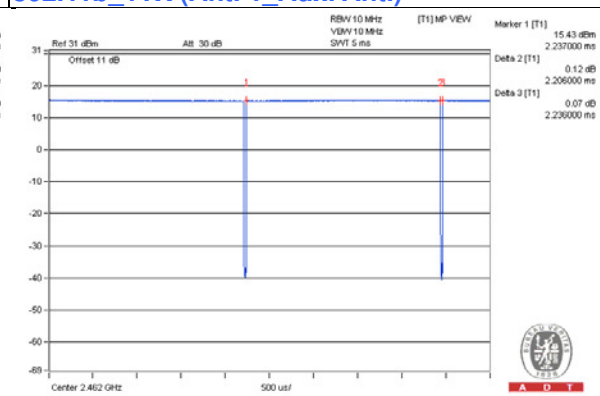
802.11n (HT20)_2TX: Duty cycle = 1.901/1.951 = 0.974, Duty factor = $10 * \log(1/0.974) = 0.11$

802.11n (HT40)_2TX: Duty cycle = 0.935/0.962 = 0.972, Duty factor = $10 * \log(1/0.972) = 0.12$

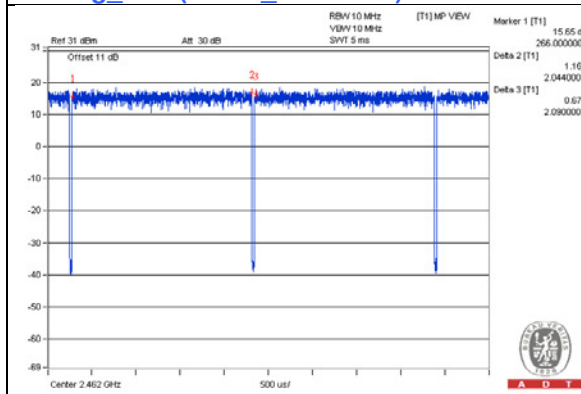
802.11b_1TX (Ant. 1_Main Ant.)



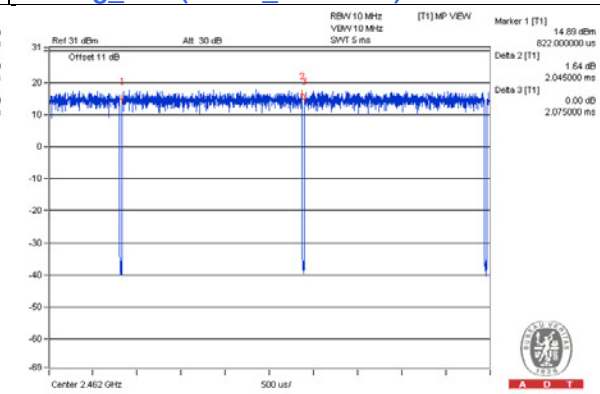
802.11b_1TX (Ant. 1_Aux. Ant.)



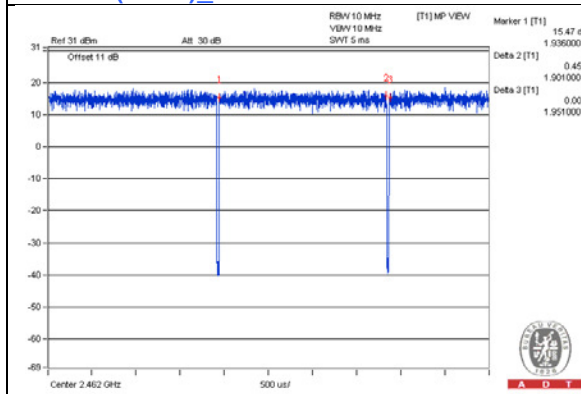
802.11g_1TX (Ant. 1_Main Ant.)



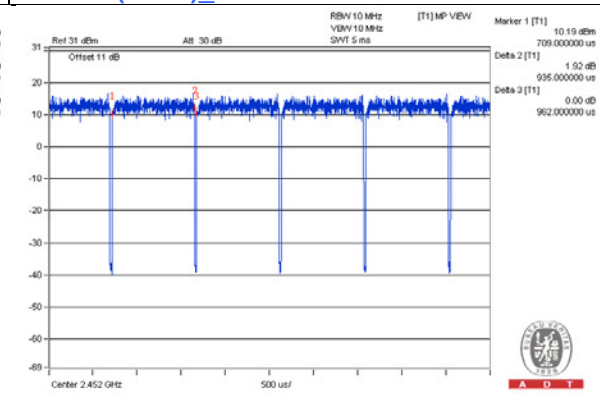
802.11g_1TX (Ant. 1_Aux. Ant.)



802.11n (HT20)_2TX



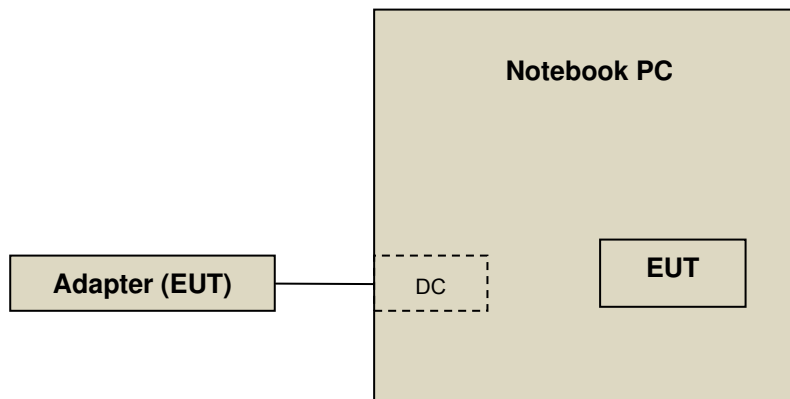
802.11n (HT40)_2TX



3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

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 v03r04
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 30dB 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 30dB under any condition of modulation.



A D T

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Oct. 12, 2015	Oct. 11, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Jul. 08, 2015	Jul. 07, 2016
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Feb. 06, 2015	Feb. 05, 2016
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Feb. 05, 2015	Feb. 04, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 09, 2015	Feb. 08, 2016
Preamplifier Agilent	8449B	3008A01960	Aug. 09, 2015	Aug. 08, 2016
Preamplifier Agilent	8447D	2944A10631	Aug. 09, 2015	Aug. 08, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-02(295012+309220)	Aug. 09, 2015	Aug. 08, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03(250724)	Aug. 09, 2015	Aug. 08, 2016
Software BV ADT	ADT_Radiated_V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100.	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 18, 2015	Oct. 17, 2016
High Speed Peak Power Meter	ML2495A	0824011	Jul. 09, 2015	Jul. 08, 2016
Power Sensor	MA2411B	0738171	Jul. 09, 2015	Jul. 08, 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 HwaYa Chamber 4.
3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 460141.
5. The IC Site Registration No. is IC7450F-4.

4.1.3 Test Procedures

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

Note:

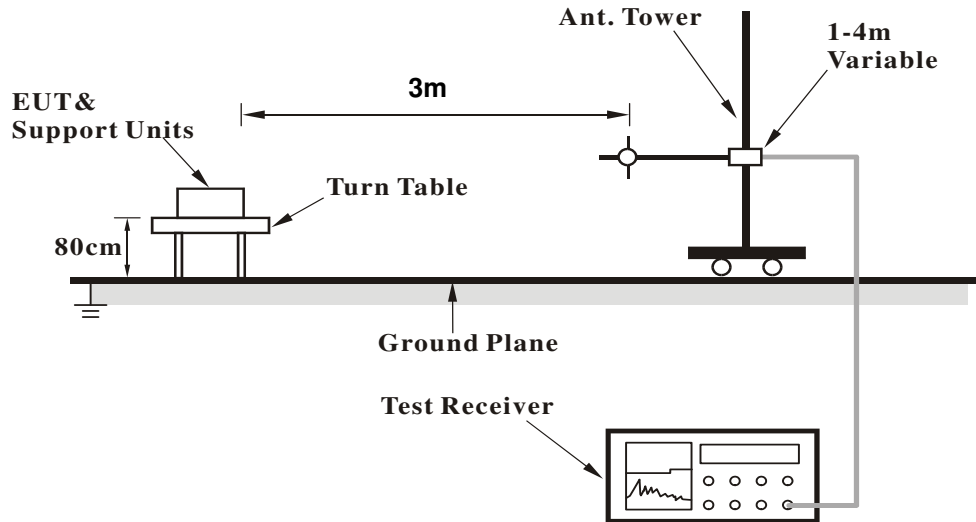
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

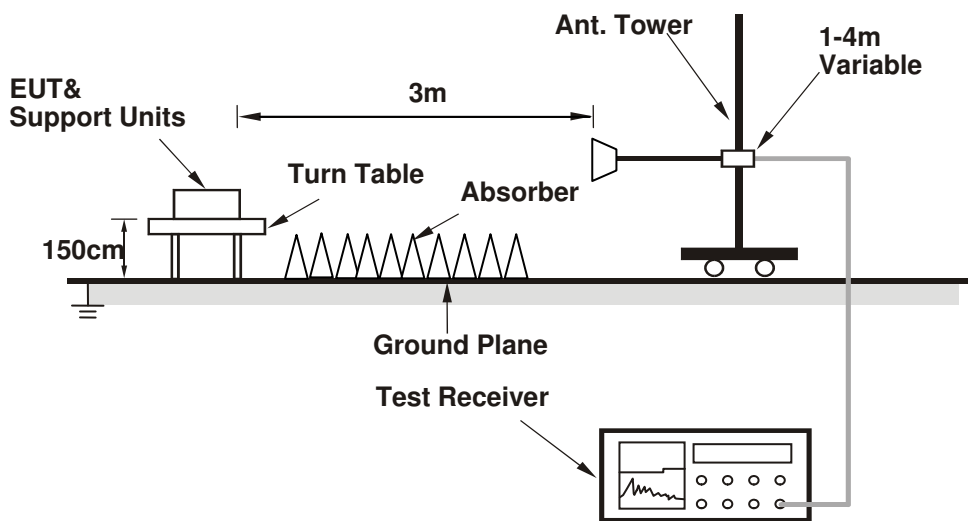
No deviation.

4.1.5 Test Set Up

<Frequency Range 30MHz ~ 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

Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data :

802.11b_1TX (Ant. 1_Main Ant.)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.7 PK	74.0	-19.3	1.68 H	252	22.80	31.90
2	2390.00	42.9 AV	54.0	-11.1	1.68 H	252	11.00	31.90
3	*2412.00	94.8 PK			1.65 H	259	62.70	32.10
4	*2412.00	90.9 AV			1.65 H	259	58.80	32.10
5	4824.00	48.9 PK	74.0	-25.1	1.00 H	296	42.50	6.40
6	4824.00	35.9 AV	54.0	-18.1	1.00 H	296	29.50	6.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.8 PK	74.0	-19.2	1.00 V	188	22.90	31.90
2	2390.00	43.4 AV	54.0	-10.6	1.00 V	188	11.50	31.90
3	*2412.00	97.0 PK			1.00 V	182	64.90	32.10
4	*2412.00	93.2 AV			1.00 V	182	61.10	32.10
5	4824.00	49.3 PK	74.0	-24.7	1.00 V	150	42.90	6.40
6	4824.00	37.3 AV	54.0	-16.7	1.00 V	150	30.90	6.40

REMARKS:

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

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	*2437.00	95.5 PK			1.45 H	255	63.30	32.20
2	*2437.00	91.7 AV			1.45 H	255	59.50	32.20
3	4874.00	49.2 PK	74.0	-24.8	1.00 H	290	42.60	6.60
4	4874.00	36.1 AV	54.0	-17.9	1.00 H	290	29.50	6.60

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	97.2 PK			1.00 V	182	65.00	32.20
2	*2437.00	93.8 AV			1.00 V	182	61.60	32.20
3	4874.00	49.6 PK	74.0	-24.4	1.02 V	158	43.00	6.60
4	4874.00	37.4 AV	54.0	-16.6	1.02 V	158	30.80	6.60

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	97.0 PK			1.44 H	258	64.70	32.30
2	*2462.00	93.2 AV			1.44 H	258	60.90	32.30
3	2483.50	55.6 PK	74.0	-18.4	1.41 H	255	23.20	32.40
4	2483.50	44.0 AV	54.0	-10.0	1.41 H	255	11.60	32.40
5	4924.00	49.7 PK	74.0	-24.3	1.06 H	294	43.10	6.60
6	4924.00	36.5 AV	54.0	-17.5	1.06 H	294	29.90	6.60

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	98.7 PK			2.64 V	180	66.40	32.30
2	*2462.00	95.1 AV			2.64 V	180	62.80	32.30
3	2483.50	56.0 PK	74.0	-18.0	2.60 V	175	23.60	32.40
4	2483.50	44.2 AV	54.0	-9.8	2.60 V	175	11.80	32.40
5	4924.00	50.0 PK	74.0	-24.0	1.00 V	155	43.40	6.60
6	4924.00	37.6 AV	54.0	-16.4	1.00 V	155	31.00	6.60

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.

802.11b_1TX (Ant. 1_Aux. Ant.)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.9 PK	74.0	-18.1	1.54 H	111	24.00	31.90
2	2390.00	43.2 AV	54.0	-10.8	1.54 H	111	11.30	31.90
3	*2412.00	95.8 PK			1.59 H	113	63.70	32.10
4	*2412.00	92.1 AV			1.59 H	113	60.00	32.10
5	4824.00	48.5 PK	74.0	-25.5	1.43 H	325	42.10	6.40
6	4824.00	38.3 AV	54.0	-15.7	1.43 H	325	31.90	6.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.4 PK	74.0	-18.6	1.00 V	321	23.50	31.90
2	2390.00	42.5 AV	54.0	-11.5	1.00 V	321	10.60	31.90
3	*2412.00	93.8 PK			1.00 V	324	61.70	32.10
4	*2412.00	90.2 AV			1.00 V	324	58.10	32.10
5	4824.00	50.1 PK	74.0	-23.9	1.00 V	291	43.70	6.40
6	4824.00	41.9 AV	54.0	-12.1	1.00 V	291	35.50	6.40

REMARKS:

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



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	*2437.00	97.8 PK			1.60 H	114	65.60	32.20
2	*2437.00	93.7 AV			1.60 H	114	61.50	32.20
3	4874.00	49.0 PK	74.0	-25.0	1.41 H	326	42.40	6.60
4	4874.00	38.7 AV	54.0	-15.3	1.41 H	326	32.10	6.60

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	95.1 PK			1.00 V	320	62.90	32.20
2	*2437.00	91.7 AV			1.00 V	320	59.50	32.20
3	4874.00	50.3 PK	74.0	-23.7	1.05 V	293	43.70	6.60
4	4874.00	42.5 AV	54.0	-11.5	1.05 V	293	35.90	6.60

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	97.0 PK			1.27 H	111	64.70	32.30
2	*2462.00	93.2 AV			1.27 H	111	60.90	32.30
3	2483.50	56.2 PK	74.0	-17.8	1.28 H	110	23.80	32.40
4	2483.50	44.2 AV	54.0	-9.8	1.28 H	110	11.80	32.40
5	4924.00	48.7 PK	74.0	-25.3	1.40 H	328	42.10	6.60
6	4924.00	38.5 AV	54.0	-15.5	1.40 H	328	31.90	6.60

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	94.8 PK			1.12 V	321	62.50	32.30
2	*2462.00	91.0 AV			1.12 V	321	58.70	32.30
3	2483.50	56.0 PK	74.0	-18.0	1.12 V	320	23.60	32.40
4	2483.50	43.9 AV	54.0	-10.1	1.12 V	320	11.50	32.40
5	4924.00	50.2 PK	74.0	-23.8	1.00 V	292	43.60	6.60
6	4924.00	42.1 AV	54.0	-11.9	1.00 V	292	35.50	6.60

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_1TX (Ant. 1_Main Ant.)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.4 PK	74.0	-17.6	2.50 H	253	24.50	31.90
2	2390.00	43.1 AV	54.0	-10.9	2.50 H	253	11.20	31.90
3	*2412.00	96.0 PK			2.51 H	250	63.90	32.10
4	*2412.00	85.9 AV			2.51 H	250	53.80	32.10
5	4824.00	47.9 PK	74.0	-26.1	1.00 H	293	41.50	6.40
6	4824.00	35.7 AV	54.0	-18.3	1.00 H	293	29.30	6.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.8 PK	74.0	-17.2	2.60 V	173	24.90	31.90
2	2390.00	43.8 AV	54.0	-10.2	2.60 V	173	11.90	31.90
3	*2412.00	99.6 PK			2.68 V	175	67.50	32.10
4	*2412.00	88.7 AV			2.68 V	175	56.60	32.10
5	4824.00	48.5 PK	74.0	-25.5	1.00 V	153	42.10	6.40
6	4824.00	36.5 AV	54.0	-17.5	1.00 V	153	30.10	6.40

REMARKS:

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

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	*2437.00	95.9 PK			1.00 H	249	63.70	32.20
2	*2437.00	85.8 AV			1.00 H	249	53.60	32.20
3	4874.00	48.6 PK	74.0	-25.4	1.00 H	297	42.00	6.60
4	4874.00	35.9 AV	54.0	-18.1	1.00 H	297	29.30	6.60

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	100.1 PK			1.00 V	179	67.90	32.20
2	*2437.00	90.0 AV			1.00 V	179	57.80	32.20
3	4874.00	49.1 PK	74.0	-24.9	1.08 V	150	42.50	6.60
4	4874.00	37.0 AV	54.0	-17.0	1.08 V	150	30.40	6.60

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	96.1 PK			2.39 H	262	63.80	32.30
2	*2462.00	86.2 AV			2.39 H	262	53.90	32.30
3	2483.50	57.0 PK	74.0	-17.0	2.34 H	262	24.60	32.40
4	2483.50	43.2 AV	54.0	-10.8	2.34 H	262	10.80	32.40
5	4924.00	48.1 PK	74.0	-25.9	1.02 H	296	41.50	6.60
6	4924.00	35.8 AV	54.0	-18.2	1.02 H	296	29.20	6.60

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	100.0 PK			1.00 V	155	67.70	32.30
2	*2462.00	89.6 AV			1.00 V	155	57.30	32.30
3	2483.50	57.3 PK	74.0	-16.7	1.00 V	154	24.90	32.40
4	2483.50	43.5 AV	54.0	-10.5	1.00 V	154	11.10	32.40
5	4924.00	48.9 PK	74.0	-25.1	1.00 V	154	42.30	6.60
6	4924.00	36.7 AV	54.0	-17.3	1.00 V	154	30.10	6.60

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_1TX (Ant. 1_Aux. Ant.)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.8 PK	74.0	-18.2	1.25 H	113	23.90	31.90
2	2390.00	43.7 AV	54.0	-10.3	1.25 H	113	11.80	31.90
3	*2412.00	96.5 PK			1.29 H	115	64.40	32.10
4	*2412.00	85.9 AV			1.29 H	115	53.80	32.10
5	4824.00	47.8 PK	74.0	-26.2	1.42 H	328	41.40	6.40
6	4824.00	38.1 AV	54.0	-15.9	1.42 H	328	31.70	6.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.3 PK	74.0	-18.7	1.18 V	310	23.40	31.90
2	2390.00	43.5 AV	54.0	-10.5	1.18 V	310	11.60	31.90
3	*2412.00	95.5 PK			1.13 V	318	63.40	32.10
4	*2412.00	85.1 AV			1.13 V	318	53.00	32.10
5	4824.00	49.0 PK	74.0	-25.0	1.00 V	298	42.60	6.40
6	4824.00	41.3 AV	54.0	-12.7	1.00 V	298	34.90	6.40

REMARKS:

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

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	*2437.00	100.2 PK			1.59 H	116	68.00	32.20
2	*2437.00	90.1 AV			1.59 H	116	57.90	32.20
3	4874.00	48.4 PK	74.0	-25.6	1.43 H	323	41.80	6.60
4	4874.00	38.6 AV	54.0	-15.4	1.43 H	323	32.00	6.60

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	99.9 PK			1.29 V	324	67.70	32.20
2	*2437.00	89.7 AV			1.29 V	324	57.50	32.20
3	4874.00	49.8 PK	74.0	-24.2	1.01 V	295	43.20	6.60
4	4874.00	42.2 AV	54.0	-11.8	1.01 V	295	35.60	6.60

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	99.5 PK			1.26 H	115	67.20	32.30
2	*2462.00	89.3 AV			1.26 H	115	57.00	32.30
3	2483.50	57.0 PK	74.0	-17.0	1.27 H	113	24.60	32.40
4	2483.50	45.0 AV	54.0	-9.0	1.27 H	113	12.60	32.40
5	4924.00	47.9 PK	74.0	-26.1	1.44 H	320	41.30	6.60
6	4924.00	38.3 AV	54.0	-15.7	1.44 H	320	31.70	6.60

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	98.1 PK			1.12 V	322	65.80	32.30
2	*2462.00	88.4 AV			1.12 V	322	56.10	32.30
3	2483.50	56.7 PK	74.0	-17.3	1.14 V	323	24.30	32.40
4	2483.50	44.8 AV	54.0	-9.2	1.14 V	323	12.40	32.40
5	4924.00	49.3 PK	74.0	-24.7	1.01 V	297	42.70	6.60
6	4924.00	41.7 AV	54.0	-12.3	1.01 V	297	35.10	6.60

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)_2TX

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.7 PK	74.0	-15.3	2.91 H	121	26.80	31.90
2	2390.00	45.7 AV	54.0	-8.3	2.91 H	121	13.80	31.90
3	*2412.00	100.7 PK			2.94 H	120	68.60	32.10
4	*2412.00	90.9 AV			2.94 H	120	58.80	32.10
5	4824.00	48.7 PK	74.0	-25.3	1.40 H	152	42.30	6.40
6	4824.00	40.9 AV	54.0	-13.1	1.40 H	152	34.50	6.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.6 PK	74.0	-17.4	1.21 V	296	24.70	31.90
2	2390.00	44.5 AV	54.0	-9.5	1.21 V	296	12.60	31.90
3	*2412.00	97.4 PK			1.28 V	299	65.30	32.10
4	*2412.00	87.6 AV			1.28 V	299	55.50	32.10
5	4824.00	47.7 PK	74.0	-26.3	1.00 V	325	41.30	6.40
6	4824.00	37.3 AV	54.0	-16.7	1.00 V	325	30.90	6.40

REMARKS:

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

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	*2437.00	103.0 PK			2.67 H	121	70.80	32.20
2	*2437.00	92.5 AV			2.67 H	121	60.30	32.20
3	4874.00	49.3 PK	74.0	-24.7	1.40 H	154	42.70	6.60
4	4874.00	41.8 AV	54.0	-12.2	1.40 H	154	35.20	6.60

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	100.0 PK			1.00 V	309	67.80	32.20
2	*2437.00	89.7 AV			1.00 V	309	57.50	32.20
3	4874.00	48.0 PK	74.0	-26.0	1.00 V	327	41.40	6.60
4	4874.00	38.2 AV	54.0	-15.8	1.00 V	327	31.60	6.60

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.6 PK			2.86 H	124	70.30	32.30
2	*2462.00	92.5 AV			2.86 H	124	60.20	32.30
3	2483.50	62.4 PK	74.0	-11.6	2.89 H	129	30.00	32.40
4	2483.50	46.6 AV	54.0	-7.4	2.89 H	129	14.20	32.40
5	4924.00	48.9 PK	74.0	-25.1	1.48 H	150	42.30	6.60
6	4924.00	41.2 AV	54.0	-12.8	1.48 H	150	34.60	6.60

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	98.8 PK			1.27 V	308	66.50	32.30
2	*2462.00	88.6 AV			1.27 V	308	56.30	32.30
3	2483.50	57.9 PK	74.0	-16.1	1.28 V	305	25.50	32.40
4	2483.50	44.4 AV	54.0	-9.6	1.28 V	305	12.00	32.40
5	4924.00	47.8 PK	74.0	-26.2	1.00 V	323	41.20	6.60
6	4924.00	37.9 AV	54.0	-16.1	1.00 V	323	31.30	6.60

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)_2TX

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.4 PK	74.0	-16.6	3.20 H	117	25.50	31.90
2	2390.00	44.8 AV	54.0	-9.2	3.20 H	117	12.90	31.90
3	*2422.00	94.9 PK			3.22 H	118	62.80	32.10
4	*2422.00	84.4 AV			3.22 H	118	52.30	32.10
5	4844.00	48.3 PK	74.0	-25.7	1.47 H	150	41.80	6.50
6	4844.00	40.7 AV	54.0	-13.3	1.47 H	150	34.20	6.50

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	57.1 PK	74.0	-16.9	1.17 V	301	25.20	31.90
2	2390.00	44.2 AV	54.0	-9.8	1.17 V	301	12.30	31.90
3	*2422.00	91.9 PK			1.14 V	302	59.80	32.10
4	*2422.00	82.1 AV			1.14 V	302	50.00	32.10
5	4844.00	47.0 PK	74.0	-27.0	1.00 V	328	40.50	6.50
6	4844.00	37.1 AV	54.0	-16.9	1.00 V	328	30.60	6.50

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	*2437.00	99.5 PK			2.96 H	121	67.30	32.20
2	*2437.00	89.4 AV			2.96 H	121	57.20	32.20
3	4874.00	49.0 PK	74.0	-25.0	1.44 H	158	42.40	6.60
4	4874.00	41.6 AV	54.0	-12.4	1.44 H	158	35.00	6.60

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	97.7 PK			1.27 V	311	65.50	32.20
2	*2437.00	87.3 AV			1.27 V	311	55.10	32.20
3	4874.00	47.4 PK	74.0	-26.6	1.00 V	322	40.80	6.60
4	4874.00	38.0 AV	54.0	-16.0	1.00 V	322	31.40	6.60

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	100.4 PK			3.16 H	121	68.10	32.30
2	*2452.00	90.0 AV			3.16 H	121	57.70	32.30
3	2483.50	59.2 PK	74.0	-14.8	3.15 H	129	26.80	32.40
4	2483.50	47.4 AV	54.0	-6.6	3.15 H	129	15.00	32.40
5	4904.00	48.5 PK	74.0	-25.5	1.44 H	154	41.80	6.70
6	4904.00	41.0 AV	54.0	-13.0	1.44 H	154	34.30	6.70

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	97.1 PK			1.28 V	313	64.80	32.30
2	*2452.00	86.8 AV			1.28 V	313	54.50	32.30
3	2483.50	57.4 PK	74.0	-16.6	1.28 V	317	25.00	32.40
4	2483.50	45.5 AV	54.0	-8.5	1.28 V	317	13.10	32.40
5	4904.00	47.2 PK	74.0	-26.8	1.00 V	325	40.50	6.70
6	4904.00	37.4 AV	54.0	-16.6	1.00 V	325	30.70	6.70

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	30MHz ~ 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	31.94	29.1 QP	40.0	-10.9	1.49 H	346	45.00	-15.90
2	115.36	21.6 QP	43.5	-21.9	1.24 H	96	38.50	-16.90
3	144.46	24.6 QP	43.5	-18.9	1.99 H	98	38.80	-14.20
4	198.78	29.8 QP	43.5	-13.7	1.00 H	249	46.50	-16.70
5	291.90	24.5 QP	46.0	-21.5	1.00 H	105	37.10	-12.60
6	600.36	33.9 QP	46.0	-12.1	1.24 H	16	40.20	-6.30

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	33.88	33.3 QP	40.0	-6.7	1.00 V	15	48.70	-15.40
2	55.22	33.0 QP	40.0	-7.0	1.00 V	351	47.20	-14.20
3	198.78	24.3 QP	43.5	-19.2	1.00 V	232	41.00	-16.70
4	400.54	26.9 QP	46.0	-19.1	1.26 V	10	37.30	-10.40
5	600.36	33.4 QP	46.0	-12.6	1.00 V	72	39.70	-6.30
6	730.34	33.6 QP	46.0	-12.4	1.00 V	115	37.50	-3.90

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.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 16, 2015	Nov. 15, 2016
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Dec. 26, 2015	Dec. 25, 2016
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 26, 2015	Feb. 25, 2016
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 24, 2015	Jul. 23, 2016
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 HwaYa Shielded Room 1.

3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

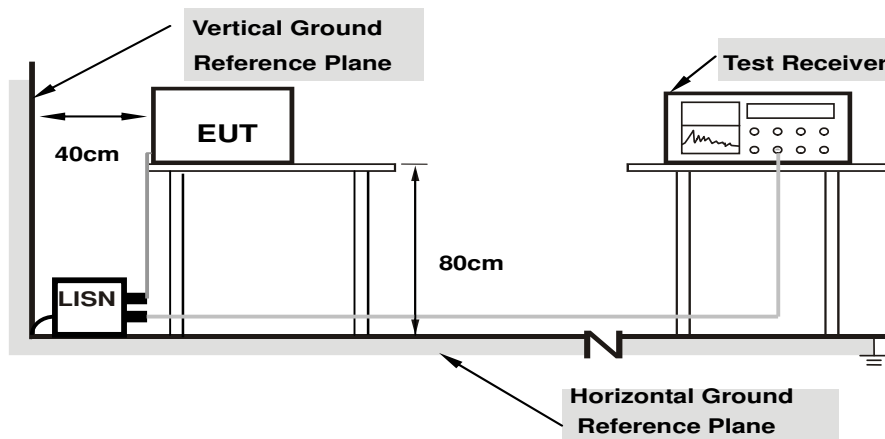
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

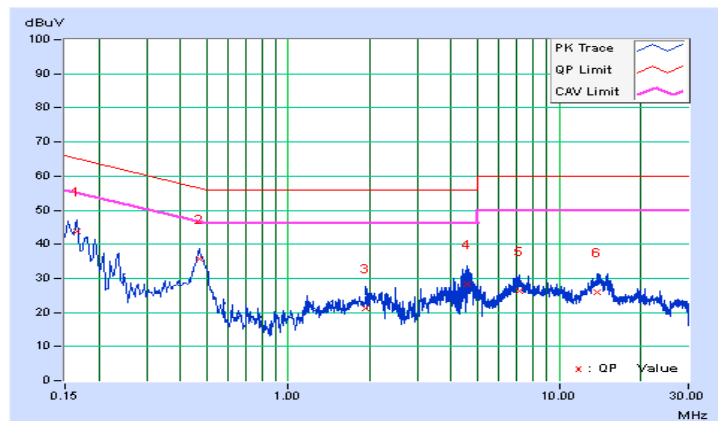
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.16569	10.05	33.65	22.67	43.70	32.72	65.17	55.17	-21.48
2	0.47062	10.15	25.40	20.47	35.55	30.62	56.50	46.50	-20.95	-15.88
3	1.94078	10.27	10.90	6.11	21.17	16.38	56.00	46.00	-34.83	-29.62
4	4.56439	10.46	17.71	6.98	28.17	17.44	56.00	46.00	-27.83	-28.56
5	7.10589	10.58	15.79	10.11	26.37	20.69	60.00	50.00	-33.63	-29.31
6	13.89756	10.88	14.94	9.32	25.82	20.20	60.00	50.00	-34.18	-29.80

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.

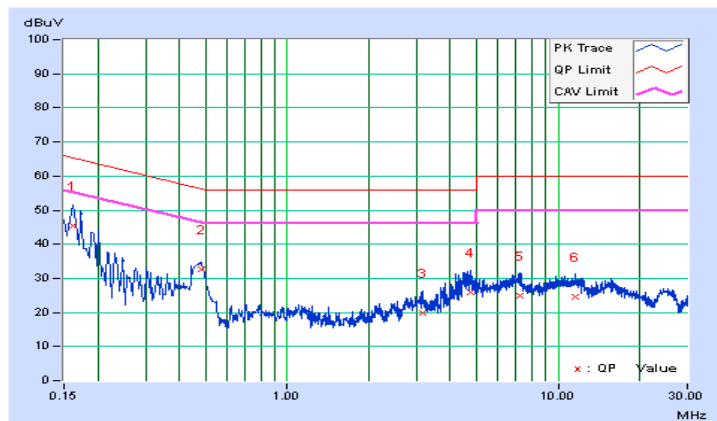


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.16181	10.01	35.38	24.14	45.39	34.15	65.37
2	0.48168	10.16	22.66	17.11	32.82	27.27	56.31	46.31	-23.49	-19.04
3	3.15679	10.38	9.44	2.30	19.82	12.68	56.00	46.00	-36.18	-33.32
4	4.76380	10.47	15.52	8.73	25.99	19.20	56.00	46.00	-30.01	-26.80
5	7.19191	10.54	14.54	8.60	25.08	19.14	60.00	50.00	-34.92	-30.86
6	11.57893	10.66	13.89	8.29	24.55	18.95	60.00	50.00	-35.45	-31.05

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.

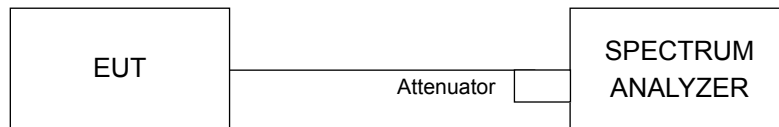


4.3 6dB Bandwidth Measurement

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) $\geq 3 \times$ 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

1TX (Ant. 1_Main Ant.)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	10.15	0.5	Pass
6	2437	10.13	0.5	Pass
11	2462	10.14	0.5	Pass

1TX (Ant. 1_Aux. Ant.)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	10.14	0.5	Pass
6	2437	10.15	0.5	Pass
11	2462	10.15	0.5	Pass

802.11g

1TX (Ant. 1_Main Ant.)

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

1TX (Ant. 1_Aux. Ant.)

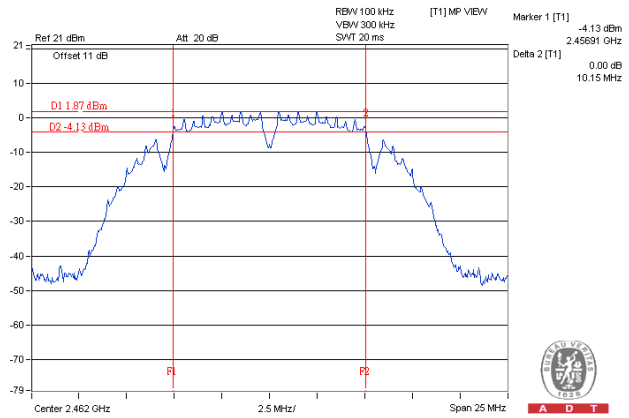
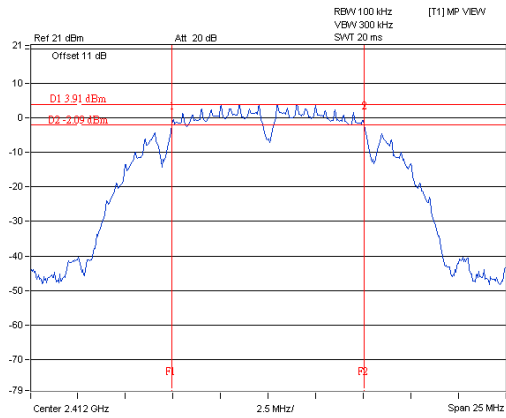
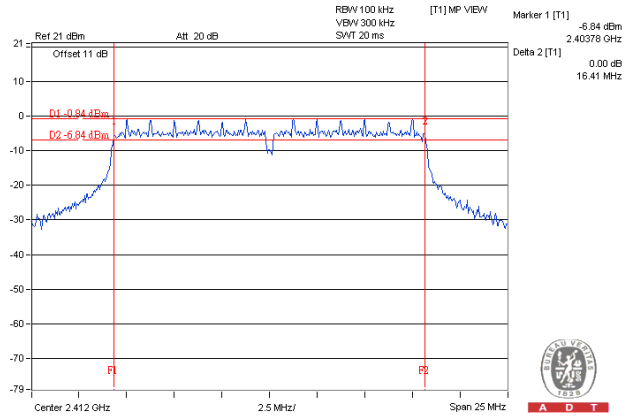
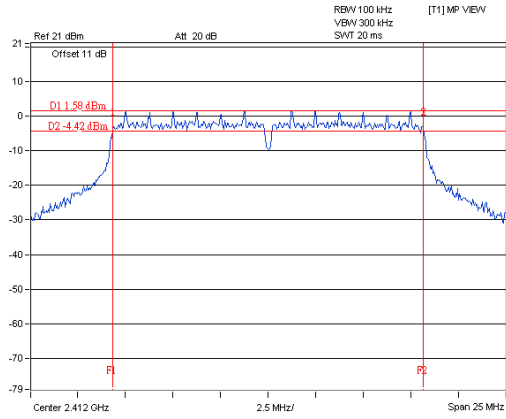
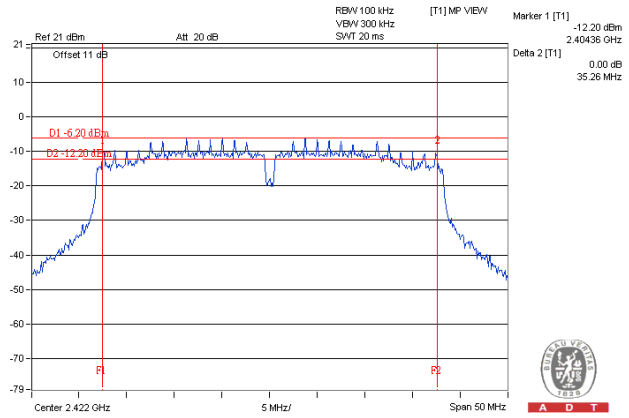
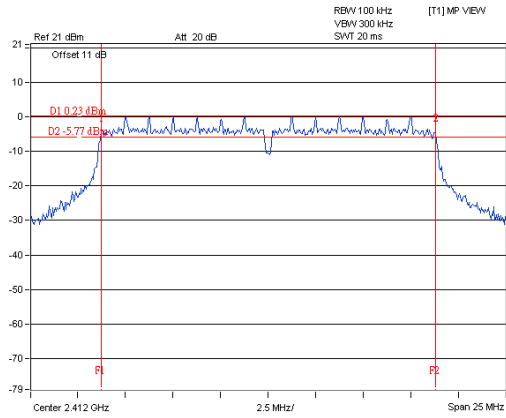
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.41	0.5	Pass
6	2437	16.40	0.5	Pass
11	2462	16.40	0.5	Pass

802.11n (HT20)

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

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.26	35.21	0.5	PASS
6	2437	35.21	35.19	0.5	PASS
9	2452	35.16	35.19	0.5	PASS

Spectrum Plot of Worst Value
802.11b_1TX (Ant. 1 Main Ant.)
802.11b_1TX (Ant. 1 Aux. Ant.)

802.11g_1TX (Ant. 1 Main Ant.)
802.11g_1TX (Ant. 1 Aux. Ant.)

802.11n (HT20)
802.11n (HT40)


4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

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

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

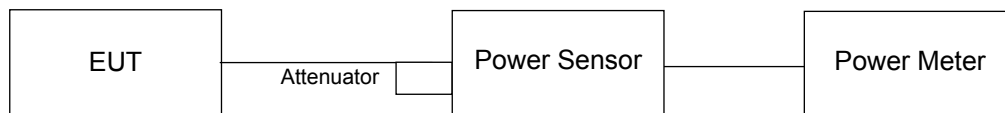
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

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

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

An average power sensor was used on the output port of the EUT. A power meter was used to read the response of the 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

802.11b

1TX (Ant. 1_Main Ant.)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	20.464	13.11	30	Pass
6	2437	22.233	13.47	30	Pass
11	2462	20.559	13.13	30	Pass

1TX (Ant. 1_Aux. Ant.)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	15.560	11.92	30	Pass
6	2437	15.704	11.96	30	Pass
11	2462	15.417	11.88	30	Pass

802.11g

1TX (Ant. 1_Main Ant.)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	14.388	11.58	30	Pass
6	2437	21.429	13.31	30	Pass
11	2462	15.959	12.03	30	Pass

1TX (Ant. 1_Aux. Ant.)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	10.914	10.38	30	Pass
6	2437	21.330	13.29	30	Pass
11	2462	15.241	11.83	30	Pass

802.11n (HT20)

Chan.	Freq. (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	10.15	10.79	22.346	13.49	30	Pass
6	2437	11.18	12.34	30.262	14.81	30	Pass
11	2462	11.02	11.61	27.135	14.34	30	Pass

802.11n (HT40)

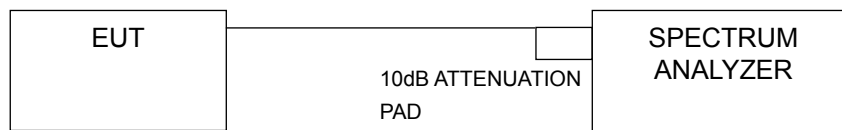
Chan.	Freq. (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	6.26	6.75	8.959	9.52	30	Pass
6	2437	10.62	11.75	26.497	14.23	30	Pass
9	2452	11.34	11.77	28.645	14.57	30	Pass

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

For duty cycle $\geq 98\%$

- Set instrument center frequency to DTS channel center frequency.
- Set span to at least 1.5 times the OBW.
- Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set VBW $\geq 3 \times \text{RBW}$.
- Detector = power averaging (RMS) or sample detector (when RMS not available).
- Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.
- Sweep time = auto couple.
- Employ trace averaging (RMS) mode over a minimum of 100 traces.
- Use the peak marker function to determine the maximum amplitude level.

For duty cycle $< 98\%$

- Measure the duty cycle (x).
- Set instrument center frequency to DTS channel center frequency.
- Set span to at least 1.5 times the OBW.
- Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set VBW $\geq 3 \times \text{RBW}$.
- Detector = power averaging (RMS) or sample detector (when RMS not available).
- Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.
- Sweep time = auto couple.
- Don't use sweep triggering. Allow sweep to "free run".
- Employ trace averaging (RMS) mode over a minimum of 100 traces.
- Use the peak marker function to determine the maximum amplitude level.
- Add $10 \log (1/x)$, where x is the duty cycle measured in step (a), to the measured PSD to compute the average PSD during the actual transmission time.

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

1TX (Ant. 1_Main Ant.)

Channel	Freq. (MHz)	PSD (dBm)	Limit (dBm)	Pass /Fail
1	2412	-15.64	8	Pass
6	2437	-15.56	8	Pass
11	2462	-15.35	8	Pass

1TX (Ant. 1_Aux. Ant.)

Channel	Freq. (MHz)	PSD (dBm)	Limit (dBm)	Pass /Fail
1	2412	-16.40	8	Pass
6	2437	-17.73	8	Pass
11	2462	-17.08	8	Pass

802.11g

1TX (Ant. 1_Main Ant.)

Channel	Freq. (MHz)	PSD without Duty Factor (dBm)	Duty Factor	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass /Fail
3	2422	-18.45	0.10	-18.35	8	Pass
6	2437	-17.95	0.10	-17.85	8	Pass
9	2452	-18.98	0.10	-18.88	8	Pass

1TX (Ant. 1_Aux. Ant.)

Channel	Freq. (MHz)	PSD (dBm)	Limit (dBm)	Pass /Fail
1	2412	-21.48	8	Pass
6	2437	-18.48	8	Pass
11	2462	-19.51	8	Pass

802.11n (HT20)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/10kHz)	10 log (N=2) dB	Duty Factor	Total PSD with Duty Factor (dBm/10kHz)	Limit (dBm/10kHz)	Pass / Fail
0	1	2412	-20.00	3.01	0.11	-16.88	8.00	Pass
	6	2437	-18.48	3.01	0.11	-15.36	8.00	Pass
	11	2462	-19.19	3.01	0.11	-16.07	8.00	Pass
1	1	2412	-20.08	3.01	0.11	-16.96	8.00	Pass
	6	2437	-19.09	3.01	0.11	-15.97	8.00	Pass
	11	2462	-19.81	3.01	0.11	-16.69	8.00	Pass

NOTE:

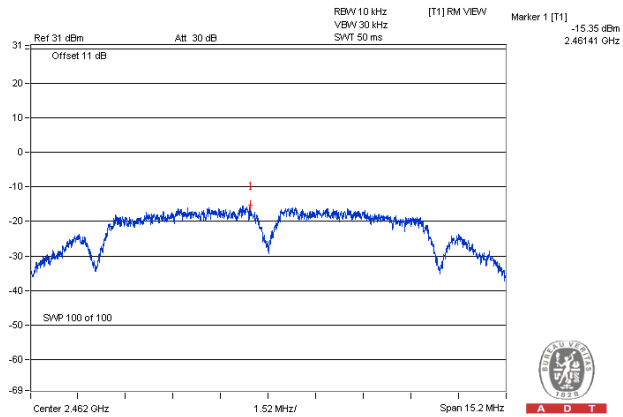
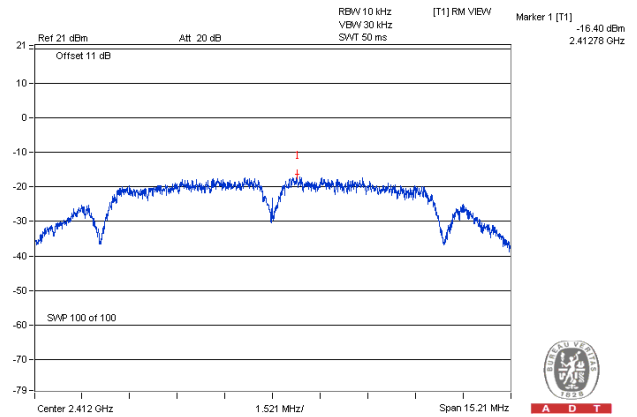
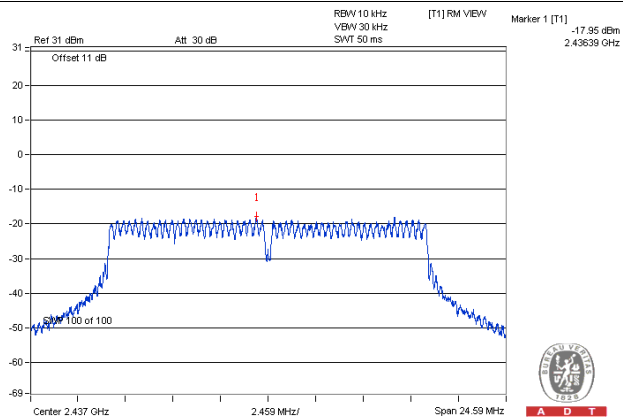
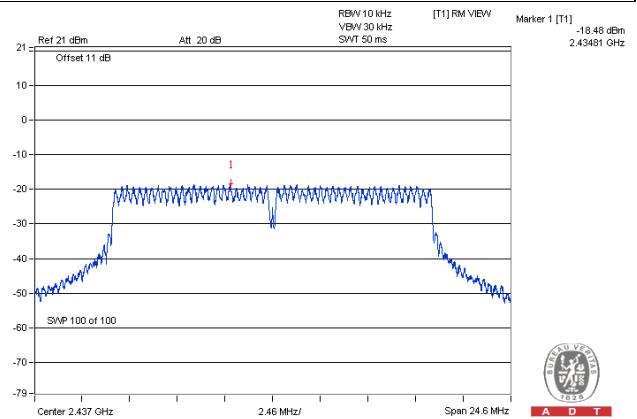
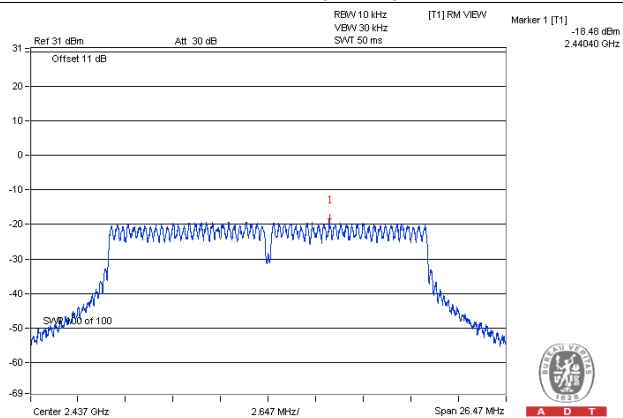
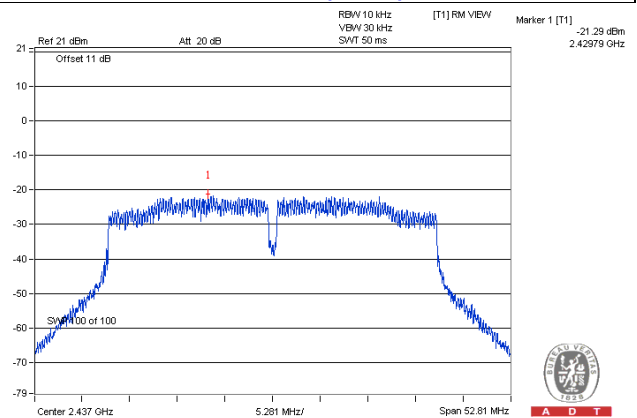
- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 2.8\text{dBi} < 6\text{dBi}$, so the power density limit no need to reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/10kHz)	10 log (N=2) dB	Duty Factor	Total PSD with Duty Factor (dBm/10kHz)	Limit (dBm/10kHz)	Pass / Fail
0	3	2422	-27.21	3.01	0.12	-24.08	8.00	Pass
	6	2437	-21.29	3.01	0.12	-18.16	8.00	Pass
	9	2452	-21.56	3.01	0.12	-18.43	8.00	Pass
1	3	2422	-26.85	3.01	0.12	-23.72	8.00	Pass
	6	2437	-22.05	3.01	0.12	-18.92	8.00	Pass
	9	2452	-21.97	3.01	0.12	-18.84	8.00	Pass

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 2.8\text{dBi} < 6\text{dBi}$, so the power density limit no need to reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

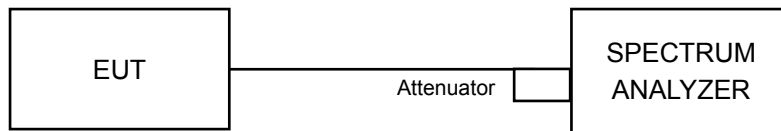
Spectrum Plot of Worst Value**802.11b_1TX (Ant. 1 Main Ant.)****802.11b_1TX (Ant. 1 Aux. Ant.)****802.11g_1TX (Ant. 1 Main Ant.)****802.11g_1TX (Ant. 1 Aux. Ant.)****802.11n (HT20)****802.11n (HT40)**

4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 30dB 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

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

MEASUREMENT PROCEDURE OOB

- Set RBW = 100 kHz.
- Set VBW \geq 300 kHz.
- Ensure that the number of measurement points \geq span/RBW
- According to measurement points to set differ measurement span.
- Detector = average.
- Trace Mode = max hold.
- Sweep = auto couple.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

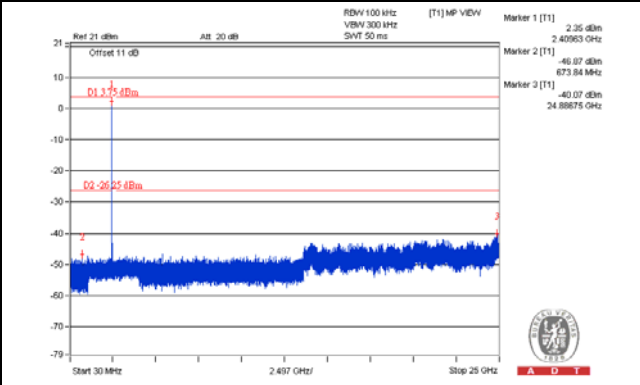
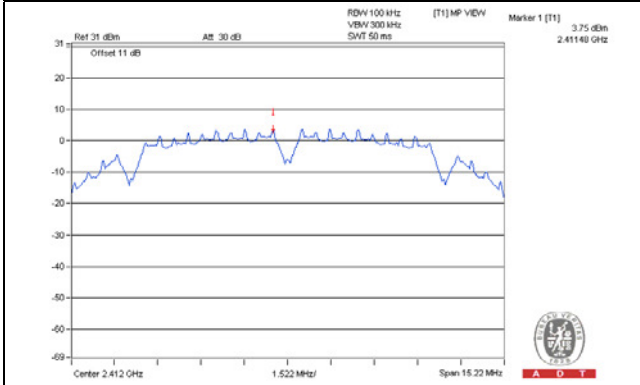
Same as Item 4.3.6

4.6.7 Test Results

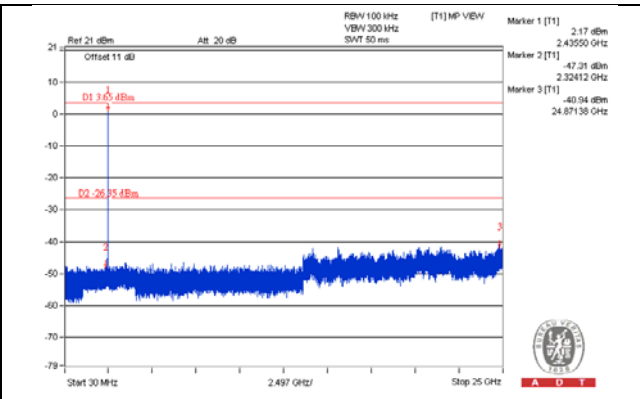
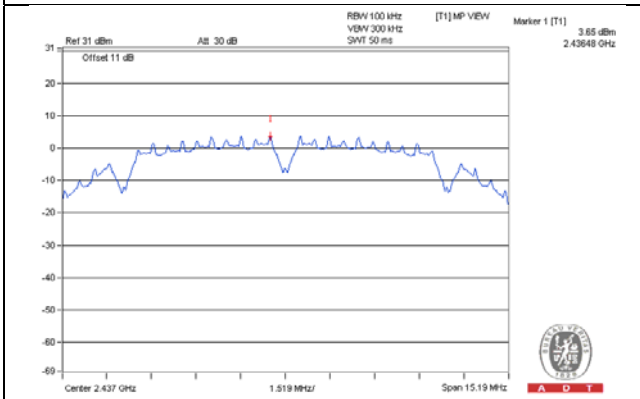
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

802.11b
1TX (Ant. 1_Main Ant.)

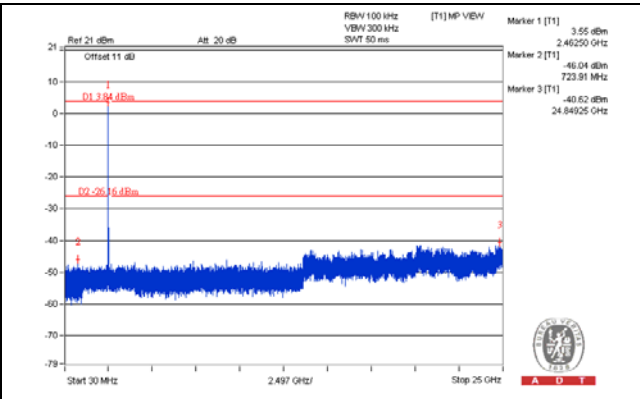
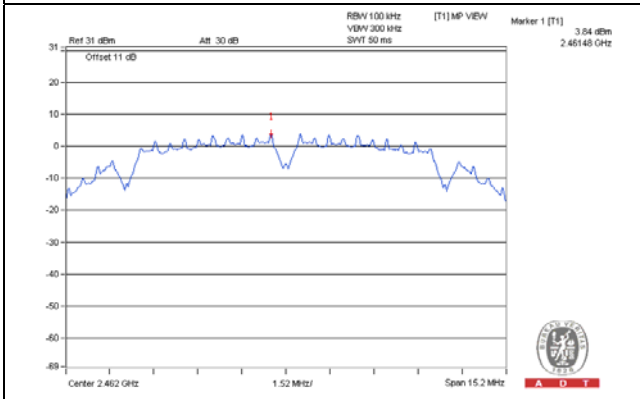
CH 1



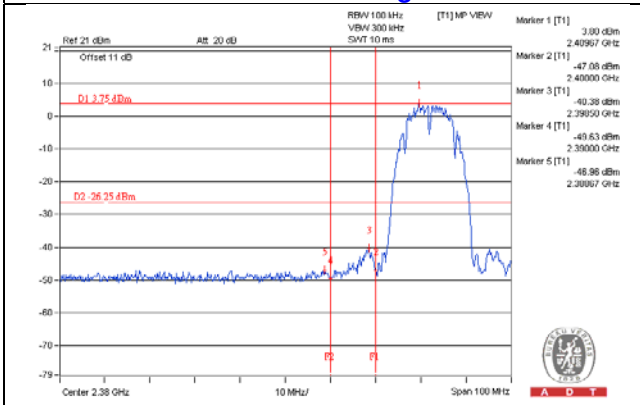
CH 6



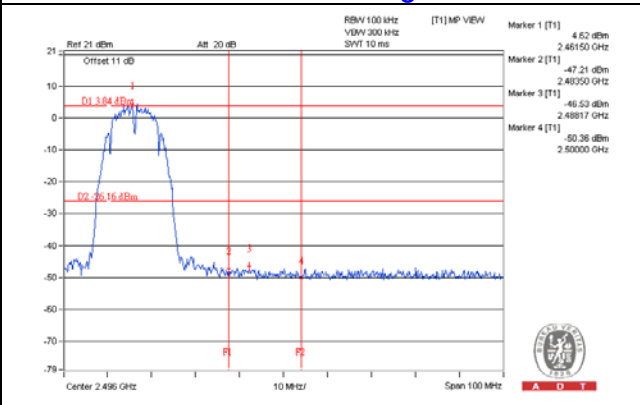
CH 11



CH 1 Band edge

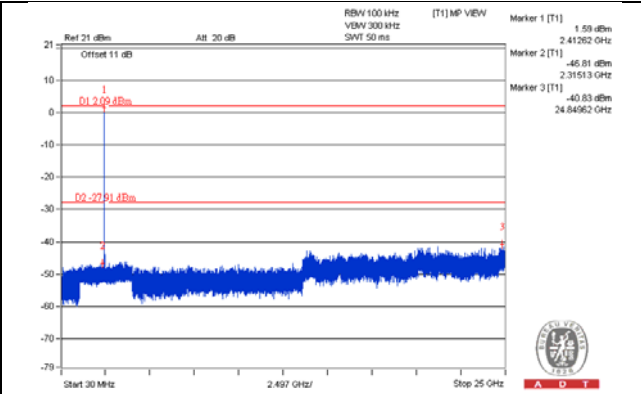
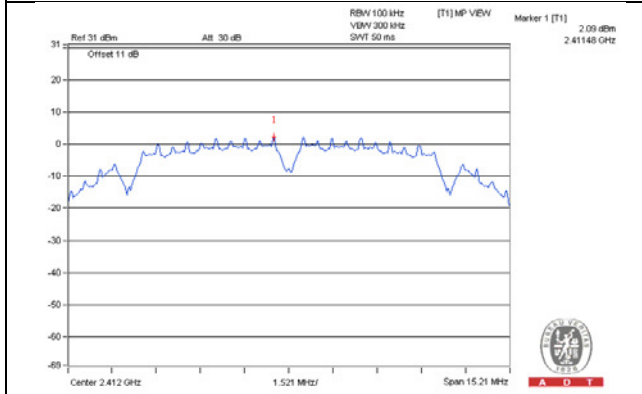


CH 11 Band edge

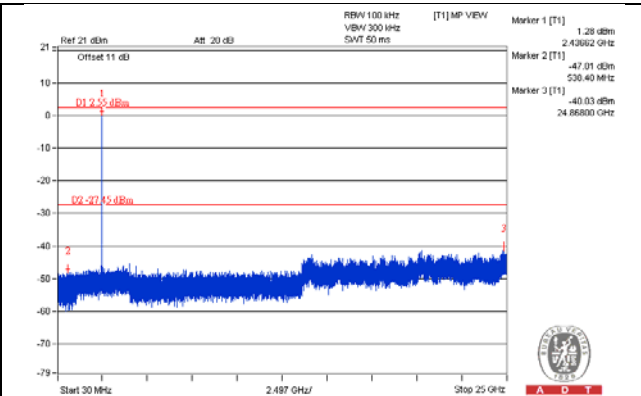
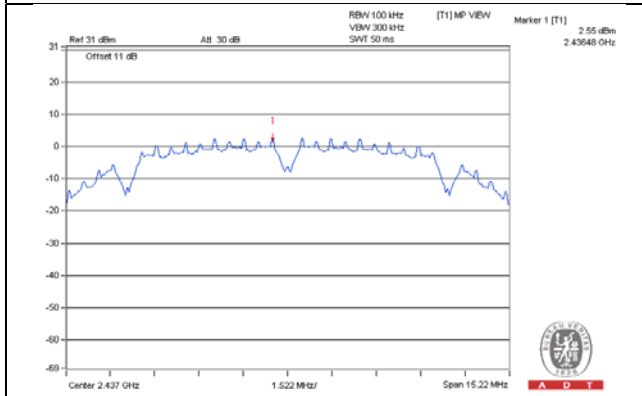


1TX (Ant. 1_Aux. Ant.)

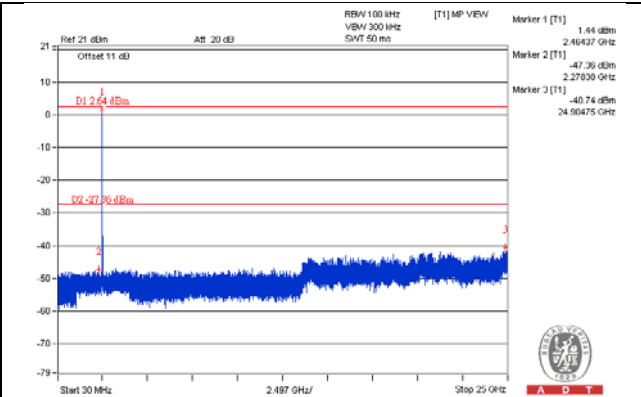
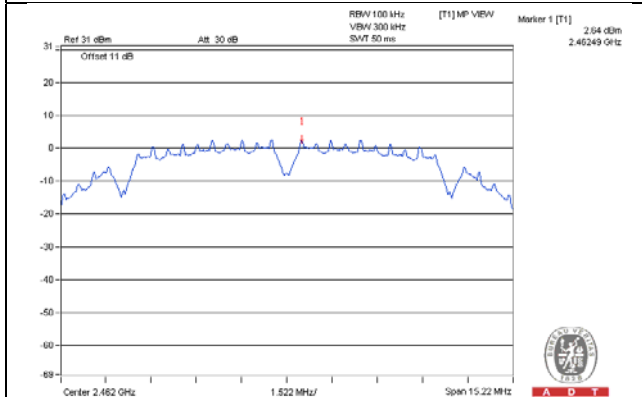
CH 1



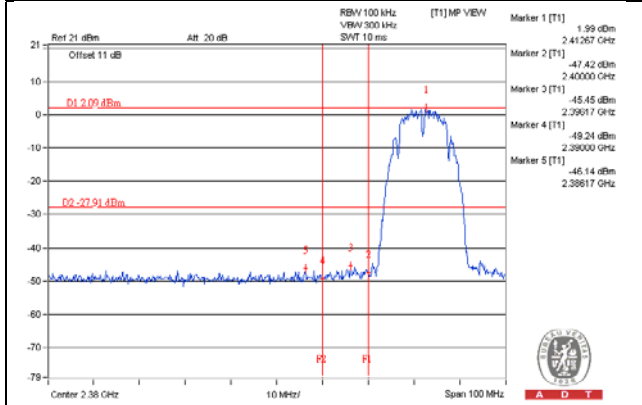
CH 6



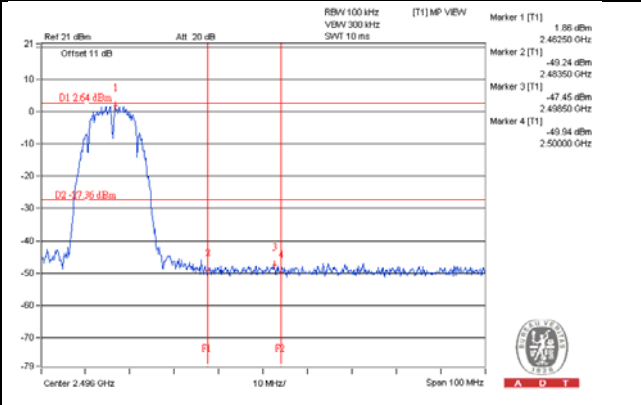
CH 11



CH 1 Band edge

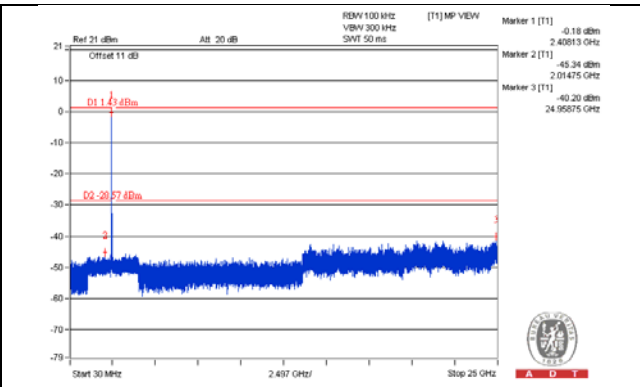
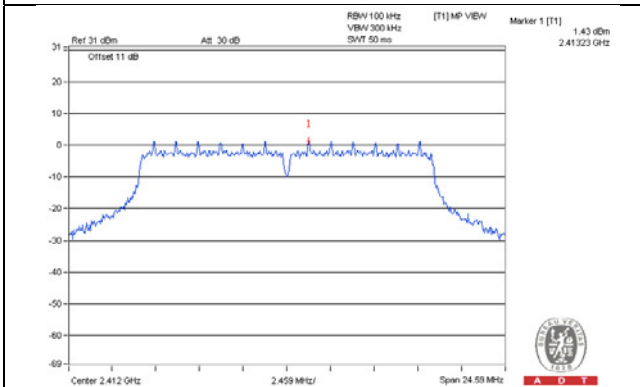


CH 11 Band edge

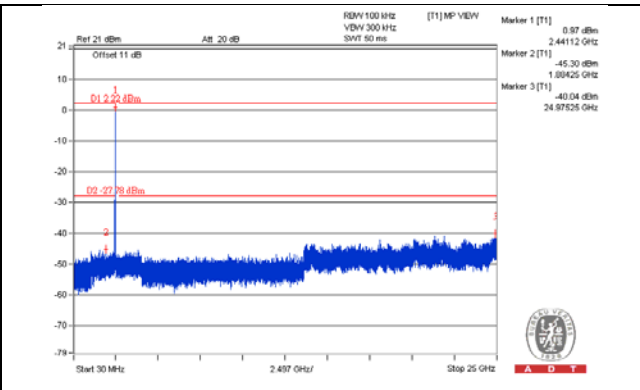
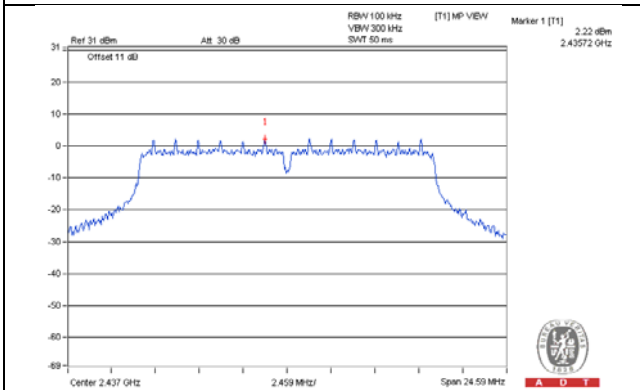


802.11g
1TX (Ant. 1_Main Ant.)

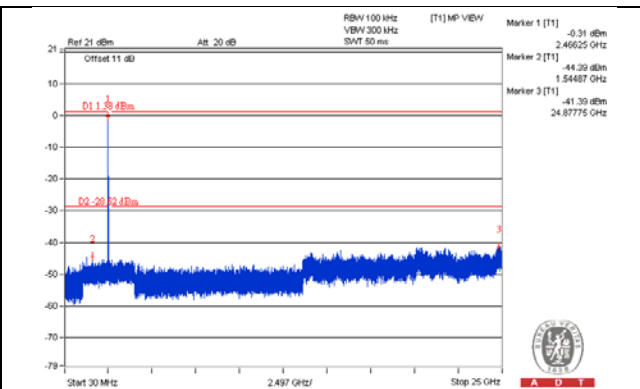
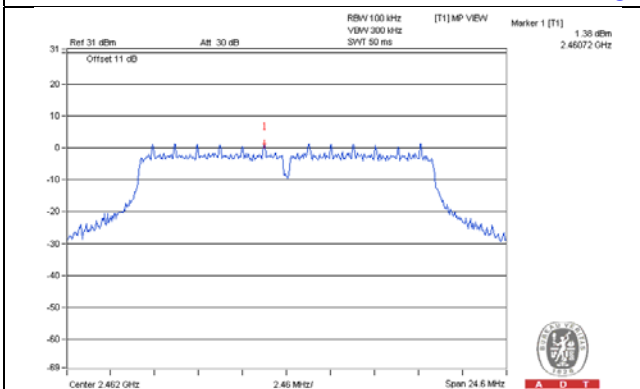
CH 1



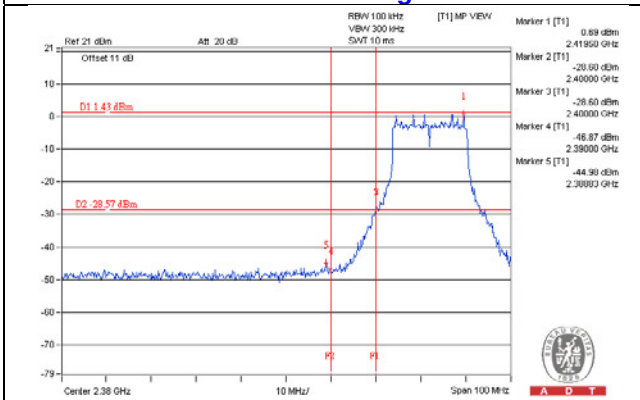
CH 6



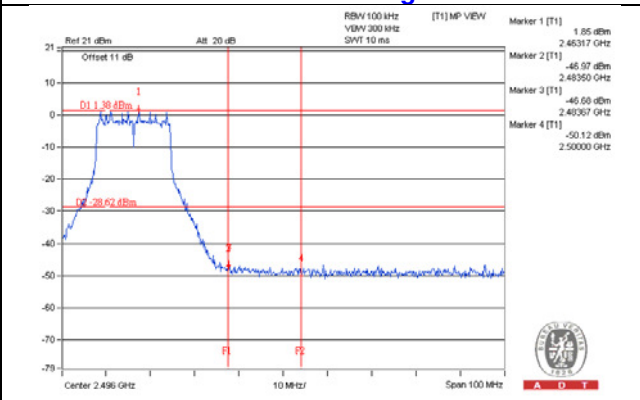
CH 11



CH 1 Band edge

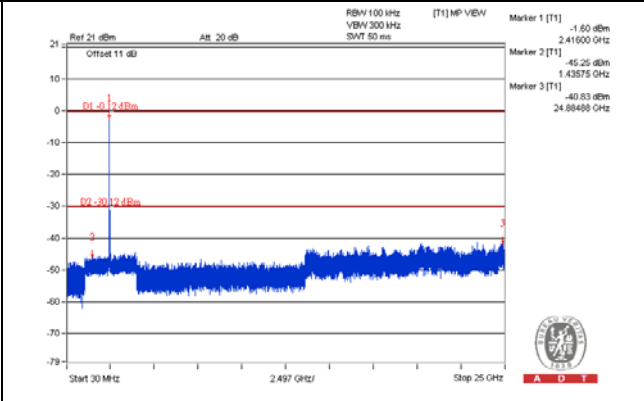
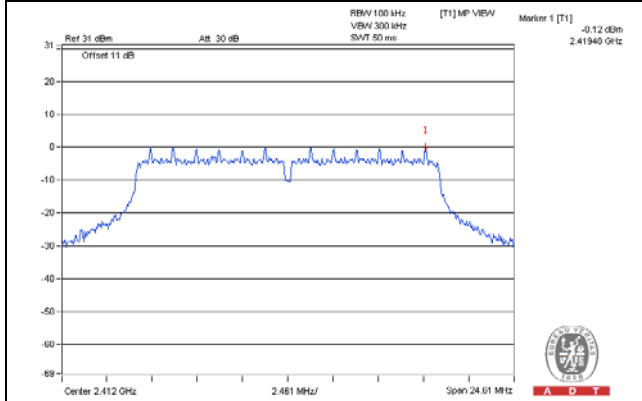


CH 11 Band edge

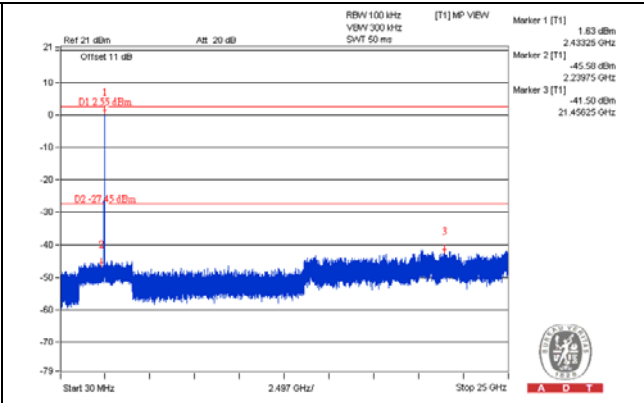
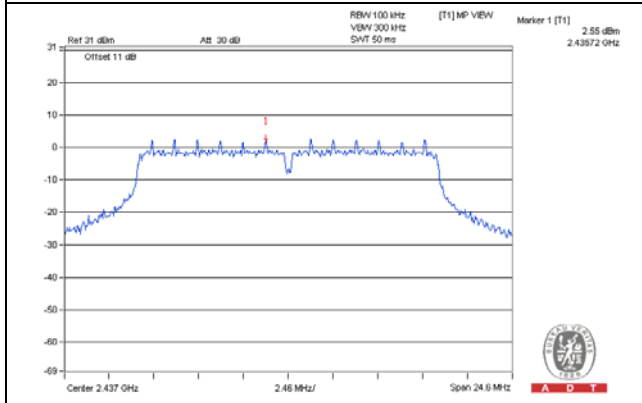


1TX (Ant. 1_Aux. Ant.)

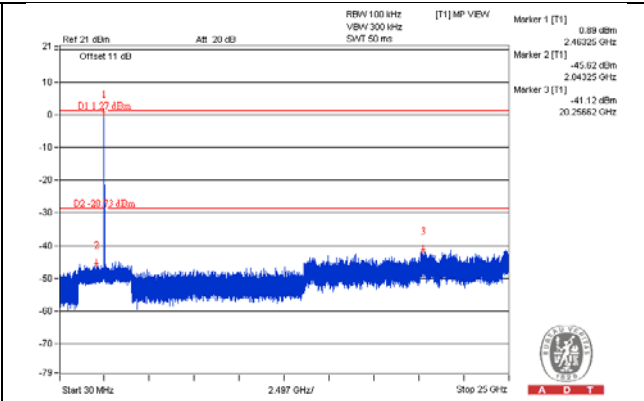
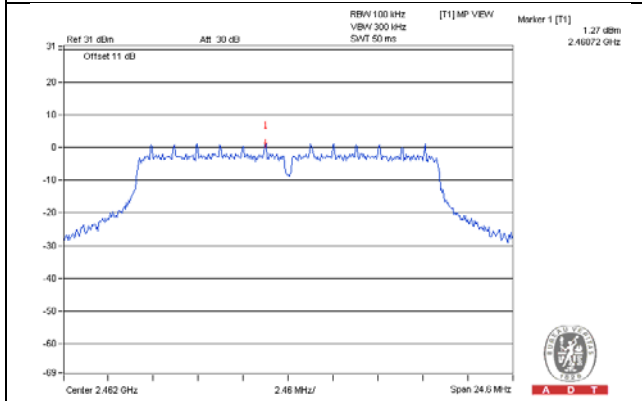
CH 1



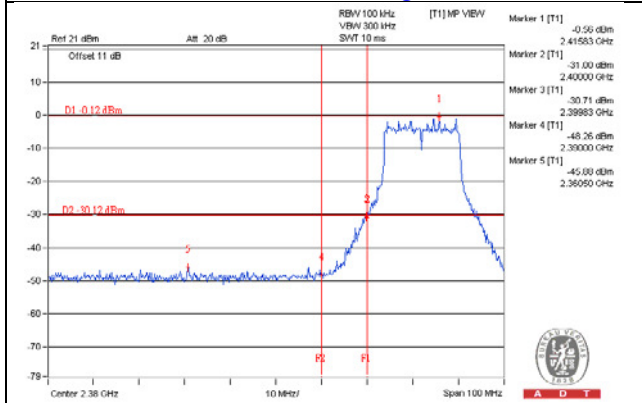
CH 6



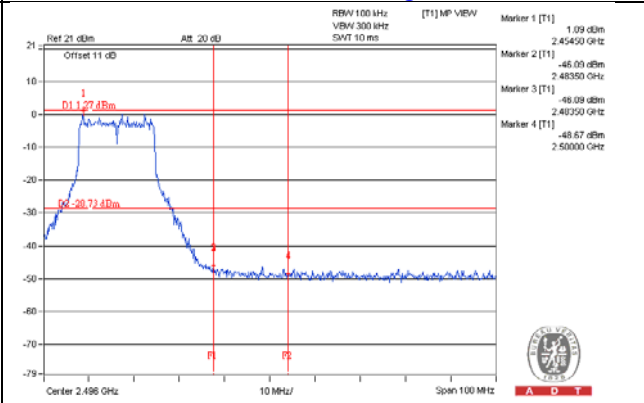
CH 11



CH 1 Band edge

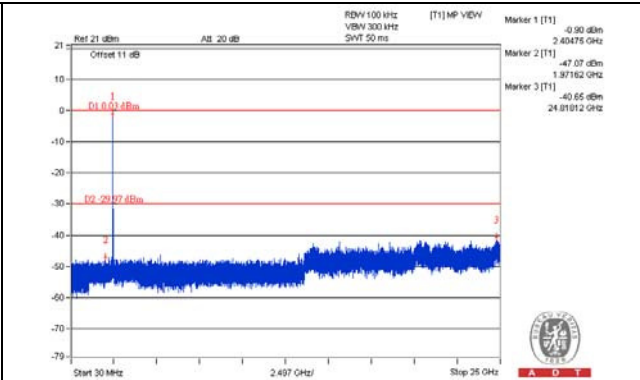
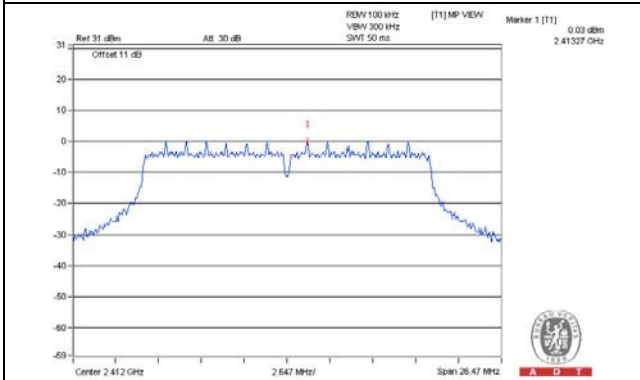


CH 11 Band edge

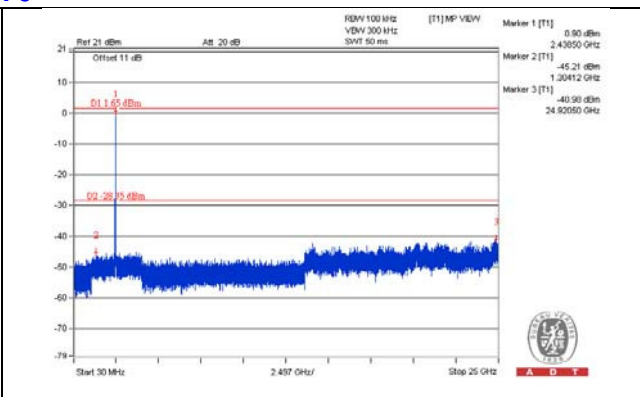
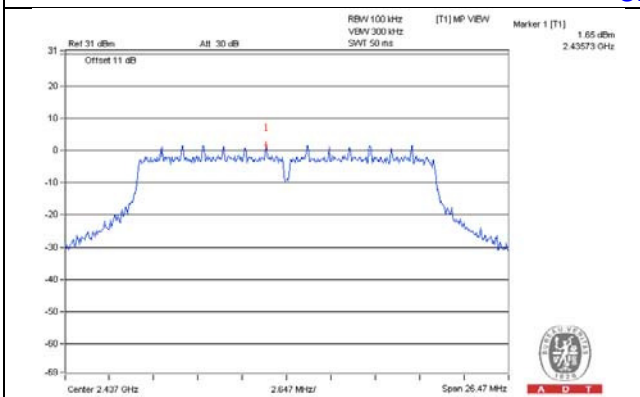


802.11n (HT20)
CHAIN 0

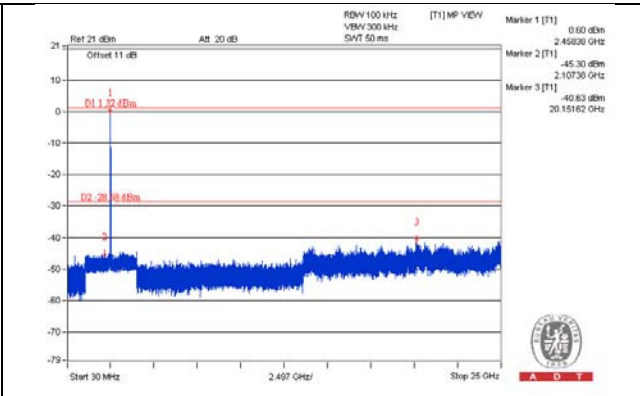
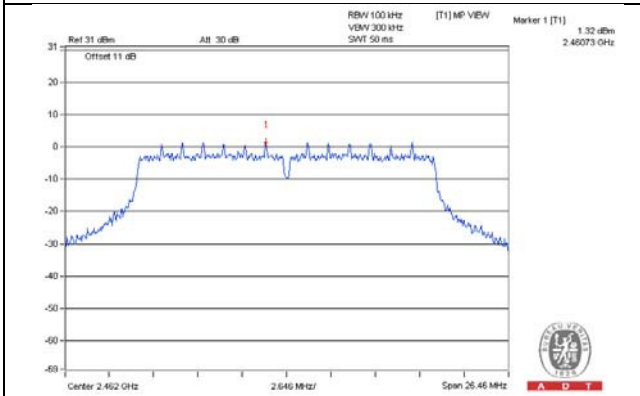
CH 1



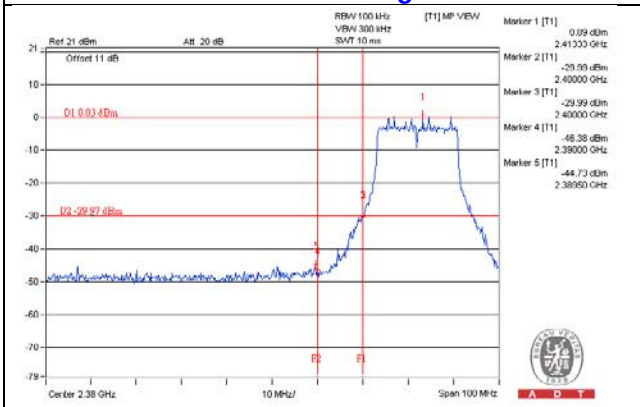
CH 6



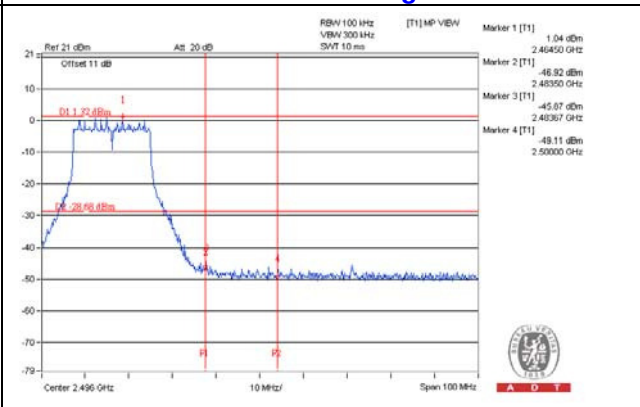
CH 11



CH 1 Band edge

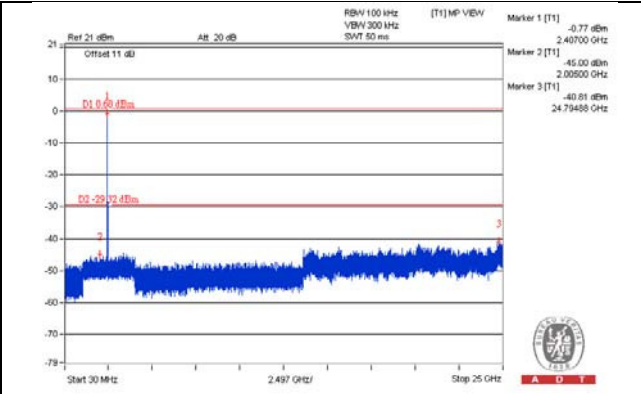
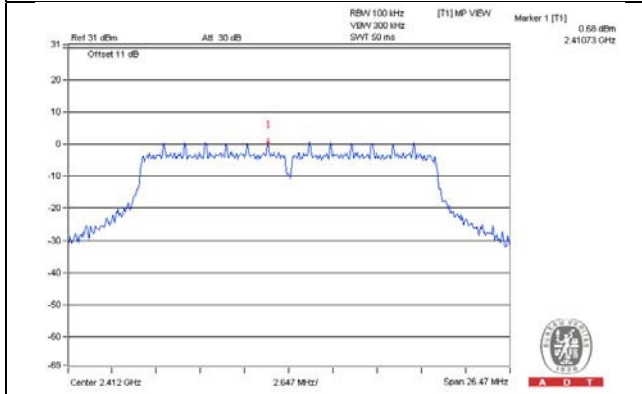


CH 11 Band edge

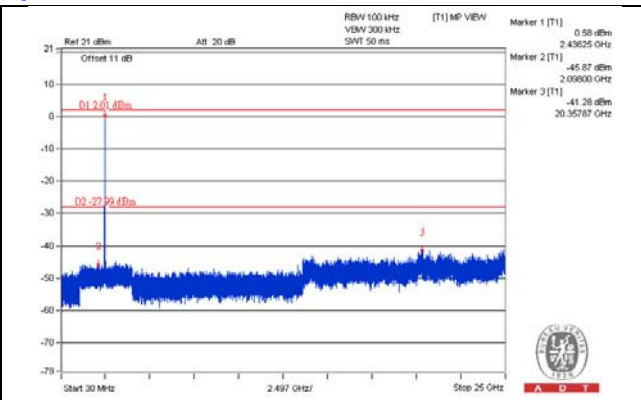
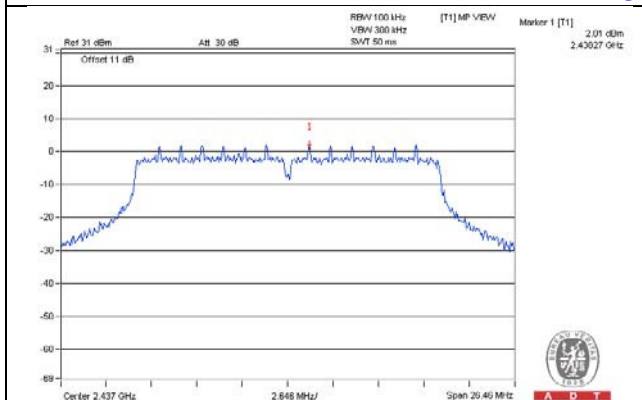


CHAIN 1

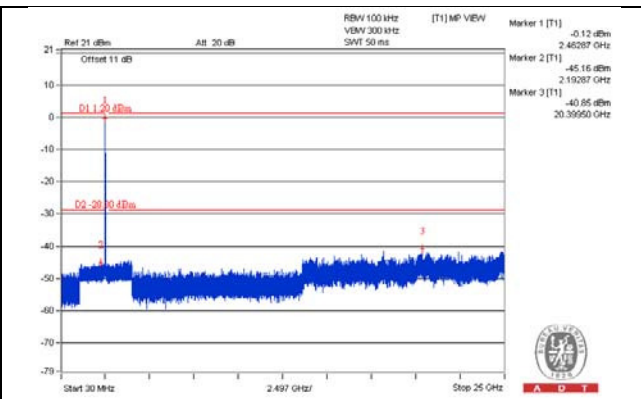
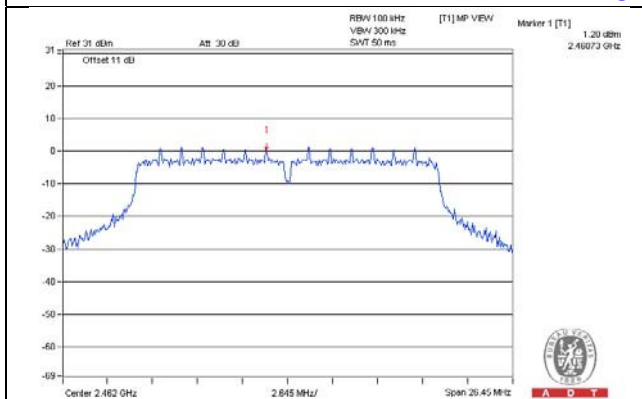
CH 1



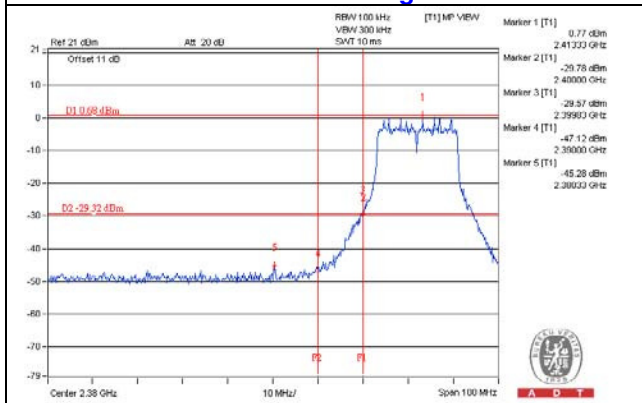
CH 6



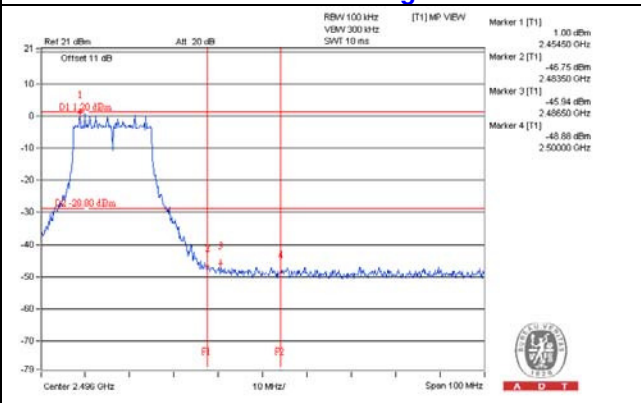
CH 11



CH 1 Band edge

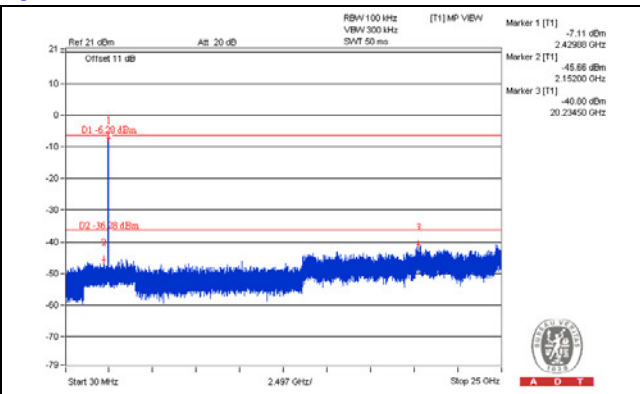
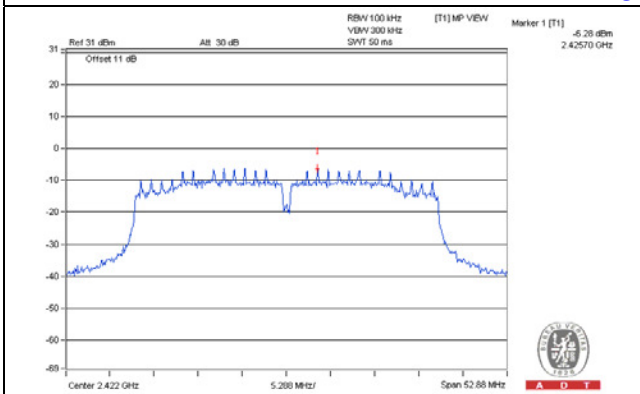


CH 11 Band edge

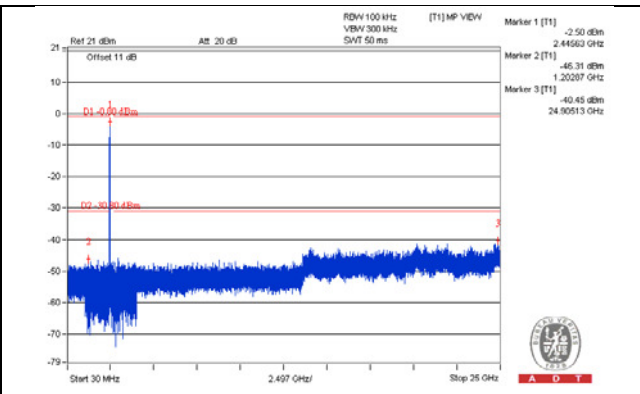
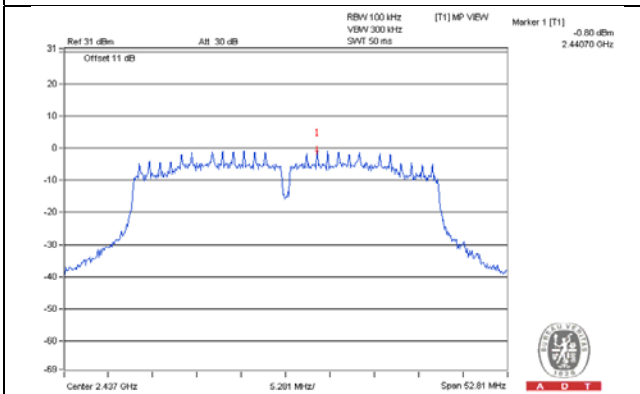


802.11n (HT40)
CHAIN 0

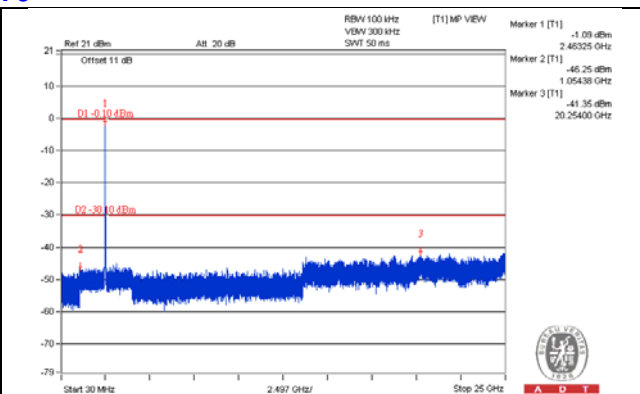
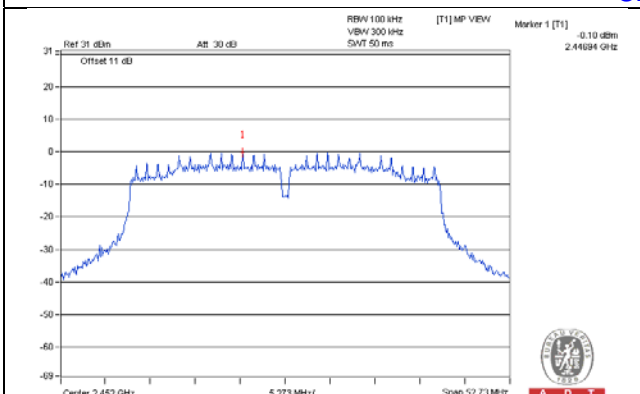
CH 3



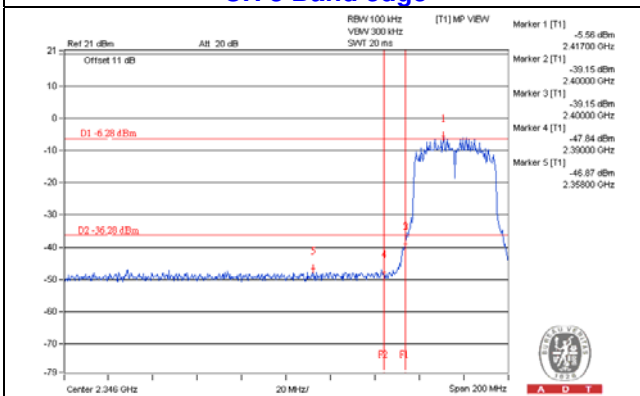
CH 6



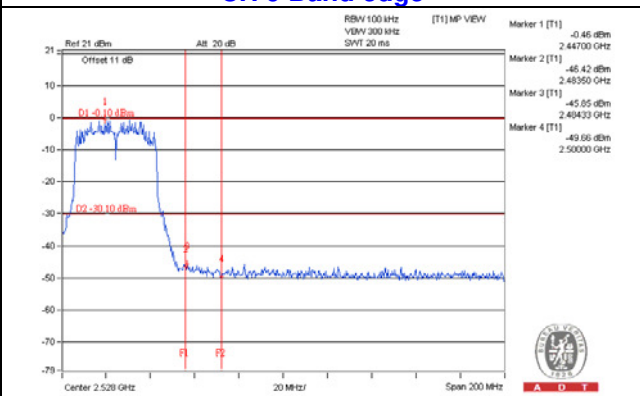
CH 9



CH 3 Band edge

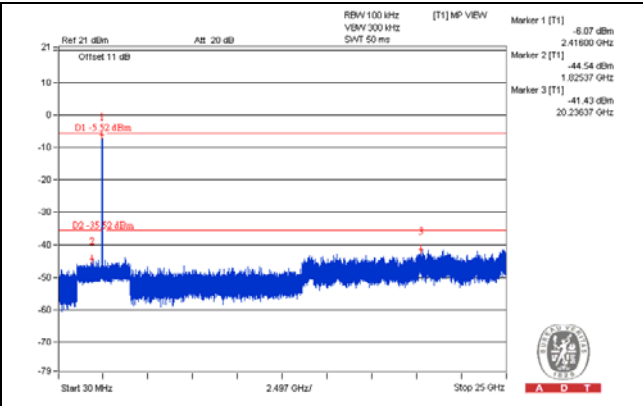
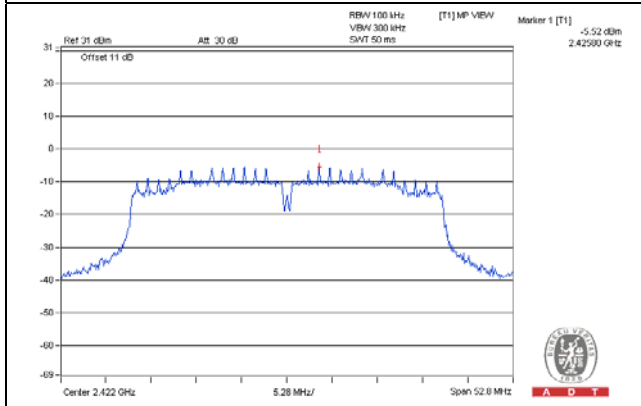


CH 9 Band edge

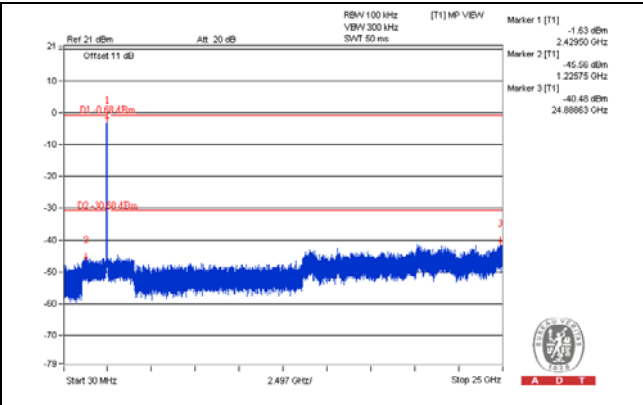
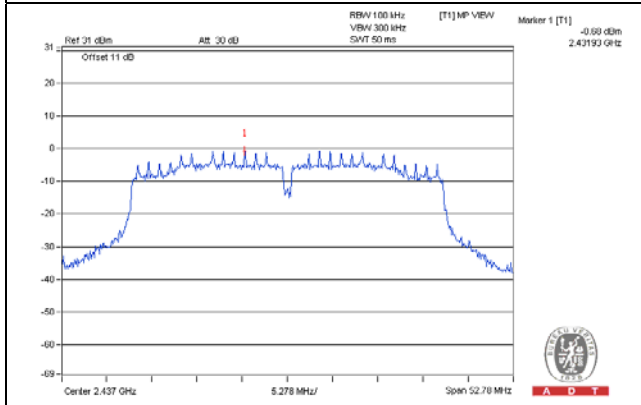


CHAIN 1

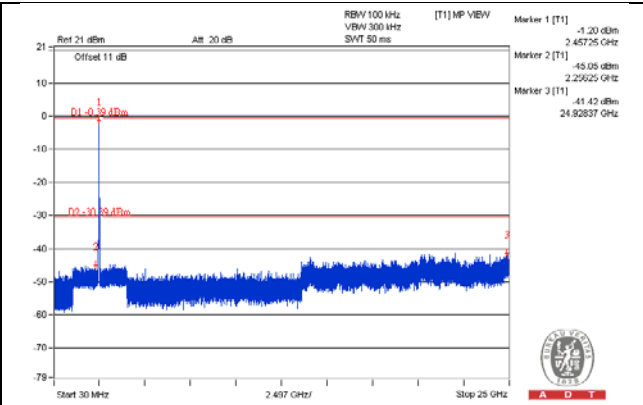
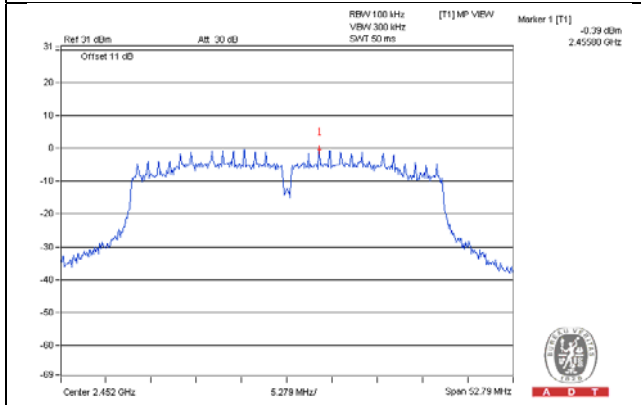
CH 3



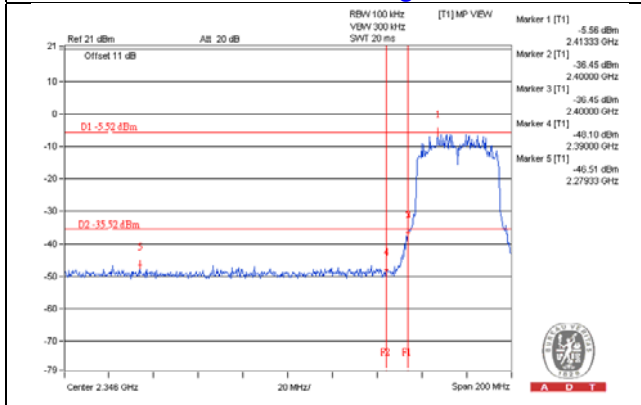
CH 6



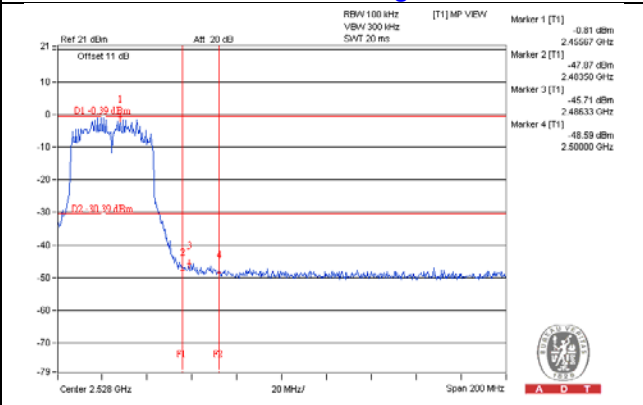
CH 9



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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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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