

FCC TEST REPORT

(15.247)

REPORT NO.: RF140625C09

MODEL NO.: PCE3302AN

FCC ID: Q6G-PCE3302

RECEIVED: Jun. 25, 2014

TESTED: Jul. 01 ~ Jul. 08, 2014

ISSUED: Jul. 31, 2014

APPLICANT: WatchGuard Technologies, Inc.

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ISSUED BY: Bureau Veritas Consumer Products Services
(H.K.) Ltd., Taoyuan Branch

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TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140625C09	Original release.	Jul. 31, 2014



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1. CERTIFICATION

PRODUCT: Module

MODEL NO.: PCE3302AN

BRAND: WatchGuard

APPLICANT: WatchGuard Technologies, Inc.

TESTED: Jul. 01 ~ Jul. 08, 2014

TEST SAMPLE: ENGINEERING SAMPLE

STANDARDS: FCC Part 15, Subpart C (Section 15.247)

ANSI C63.10-2009

The above equipment (model: PCE3302AN) 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: Ivy Lin , **DATE :** Jul. 31, 2014
Ivy Lin / Specialist

APPROVED BY: Ken Liu , **DATE :** Jul. 31, 2014
Ken Liu / Senior Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -14.47dB at 0.66563MHz.
15.205 & 209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2483.50MHz & 4924.00MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB 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	UNCERTAINTY
Conducted emissions	150kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Module
MODEL NO.	PCE3302AN
POWER SUPPLY	5Vdc (host equipment)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
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 300.0Mbps
OPERATING FREQUENCY	2412 ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
OUTPUT POWER	743.939mW
ANTENNA TYPE	Refer to note
ANTENNA CONNECTOR	Refer to note
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	NA

NOTE:

- The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

MODULATION MODE	TX FUNCTION
802.11b	2TX
802.11g	2TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX

- The following antenna is provided to the EUT.

Type	Connector	Gain(dBi)		
		2400 ~ 2483.5MHz	5180 ~ 5240MHz	5745 ~ 5825MHz
PIFA	IPEX	5.2	5.7	6.2

- 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 (20MHz):

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 (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

NOTE: The antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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 (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
-	802.11n (40MHz)	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)
-	802.11g	1 to 11	6	OFDM	BPSK	6.0

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)
-	802.11g	1 to 11	6	OFDM	BPSK	6.0

BANDEDGE MEASUREMENT:

- ☒ 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, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
-	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2
-	802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	15.0

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 (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	22deg. C, 65%RH	120Vac, 60Hz	Jones Chang
RE<1G	22deg. C, 65%RH	120Vac, 60Hz	Jones Chang
PLC	25deg. C, 70%RH	120Vac, 60Hz	Jones Chang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Ted Chang

3.3 DUTY CYCLE OF TEST SIGNAL

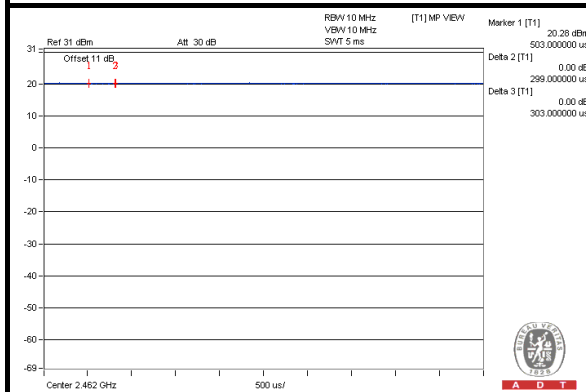
802.11b: Duty cycle of test signal is > 98 %

802.11g: Duty cycle = $1.356/1.412 = 0.960$, Duty factor = $10 * \log(1/0.960) = 0.18$

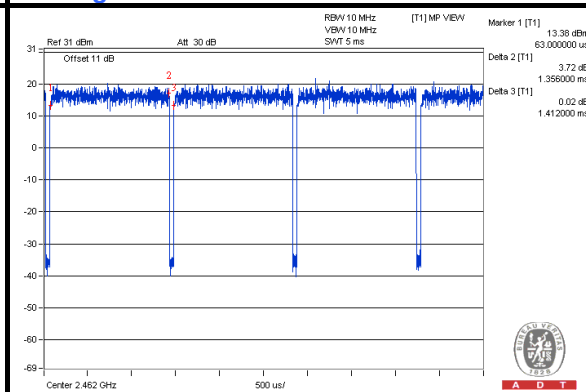
802.11n (20MHz): Duty cycle = $1.267/1.326 = 0.956$, Duty factor = $10 * \log(1/0.956) = 0.20$

802.11n (40MHz): Duty cycle = $631.0/670.0 = 0.942$, Duty factor = $10 * \log(1/0.942) = 0.26$

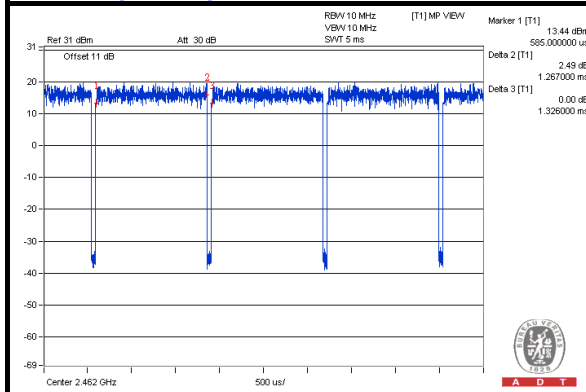
802.11b



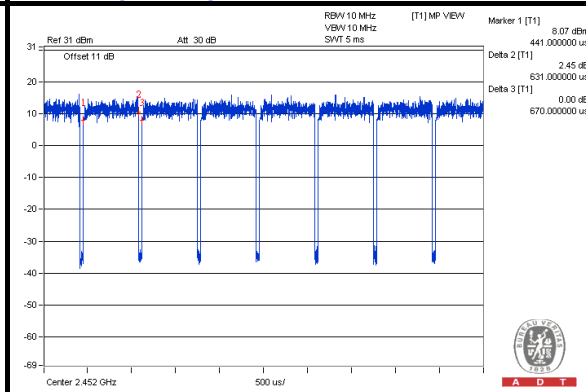
802.11g



802.11n (20MHz)



802.11n (40MHz)



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.

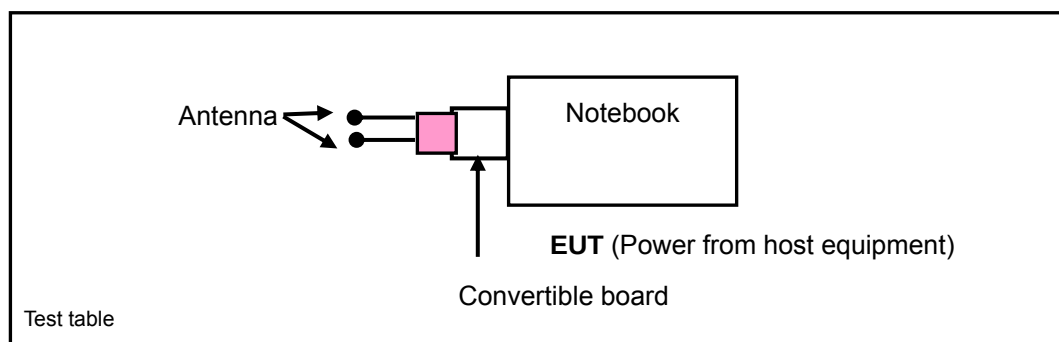
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook	DELL	E5420	33MJMQ1	FCC DoC Approved
2	Convertible board	NA	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	NA

NOTE:

1. All power cords of the above support units are non-shielded (1.8m).
2. Convertible board is used to control EUT transmit at specific channel.

3.4.1 CONFIGURATION OF SYSTEM UNDER TEST





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3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v03r02

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2009

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

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	Jan. 02, 2014	Jan. 01, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Mar. 03, 2014	Mar. 02, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Feb. 26, 2014	Feb. 25, 2015
HORN Antenna SCHWARZBECK	9120D	209	Sep. 12, 2013	Sep. 11, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 17, 2014	Feb. 16, 2015
Preamplifier Agilent	8447D	2944A10633	Oct. 07, 2013	Oct. 06, 2014
Preamplifier Agilent	8449B	3008A01964	Aug. 26, 2013	Aug. 25, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	214378/4	Aug. 26, 2013	Aug. 25, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6 +309224/4	Aug. 26, 2013	Aug. 25, 2014
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
High Speed Peak Power Meter	ML2495A	0824011	Jul. 29, 2013	Jul. 28, 2014
Power Sensor	MA2411B	0738171	Jul. 29, 2013	Jul. 28, 2014

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 3.
 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 988962.
 5. The IC Site Registration No. is IC 7450F-3.

4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. 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. Height of receiving 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

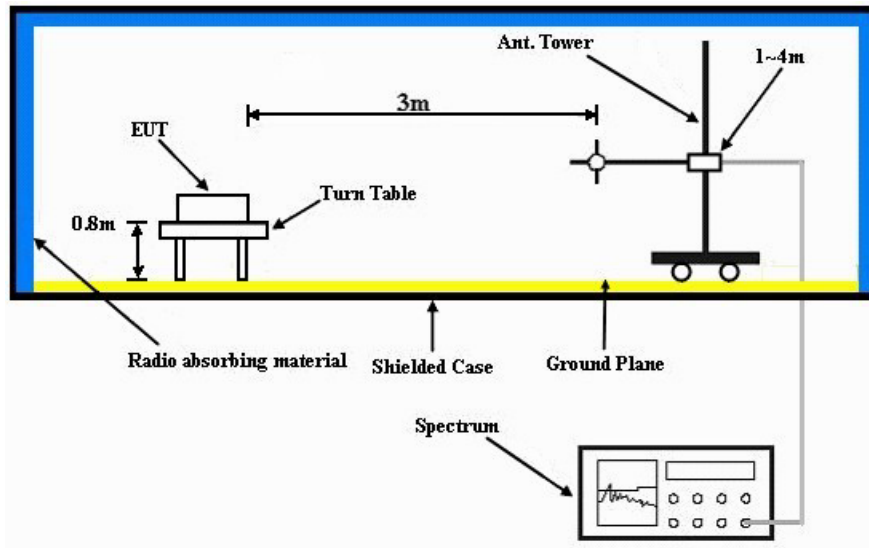
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $> 98\%$) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

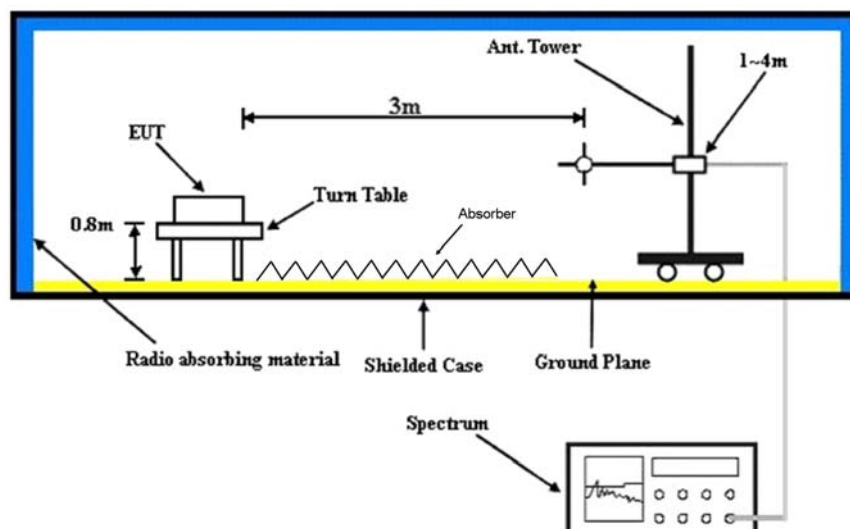
No deviation.

4.1.5 TEST SETUP

Frequency range 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

- a. Plugged the EUT into notebook via external board and placed them on the testing table.
- b. The notebook system ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- c. The necessary accessories enable the system in full functions.

4.1.7 TEST RESULTS

ABOVE 1GHz DATA :

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Jones Chang

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	2387.00	62.4 PK	74.0	-11.6	1.29 H	255	31.40	31.00
2	2387.00	52.2 AV	54.0	-1.8	1.29 H	255	21.20	31.00
3	*2412.00	111.3 PK			1.27 H	243	80.20	31.10
4	*2412.00	107.7 AV			1.27 H	243	76.60	31.10
5	2500.00	63.1 PK	74.0	-10.9	1.25 H	258	31.60	31.50
6	2500.00	51.6 AV	54.0	-2.4	1.25 H	258	20.10	31.50
7	4824.00	50.4 PK	74.0	-23.6	1.77 H	69	45.50	4.90
8	4824.00	44.4 AV	54.0	-9.6	1.77 H	69	39.50	4.90
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	1.21 V	155	24.30	31.00
2	2390.00	47.3 AV	54.0	-6.7	1.21 V	155	16.30	31.00
3	*2412.00	107.3 PK			1.16 V	162	76.20	31.10
4	*2412.00	103.6 AV			1.16 V	162	72.50	31.10
5	2500.00	58.8 PK	74.0	-15.2	1.10 V	164	27.30	31.50
6	2500.00	47.7 AV	54.0	-6.3	1.10 V	164	16.20	31.50
7	4824.00	50.7 PK	74.0	-23.3	1.00 V	189	45.80	4.90
8	4824.00	45.5 AV	54.0	-8.5	1.00 V	189	40.60	4.90

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
5. “ * “: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Jones Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.9 PK	74.0	-14.1	1.20 H	77	28.90	31.00
2	2390.00	48.6 AV	54.0	-5.4	1.20 H	77	17.60	31.00
3	*2437.00	114.3 PK			1.26 H	261	83.10	31.20
4	*2437.00	110.4 AV			1.26 H	261	79.20	31.20
5	2483.50	62.4 PK	74.0	-11.6	1.27 H	258	31.00	31.40
6	2483.50	51.1 AV	54.0	-2.9	1.27 H	258	19.70	31.40
7	4874.00	55.3 PK	74.0	-18.7	1.56 H	70	50.30	5.00
8	4874.00	52.7 AV	54.0	-1.3	1.56 H	70	47.70	5.00
9	7311.00	58.0 PK	74.0	-16.0	1.23 H	82	46.80	11.20
10	7311.00	52.2 AV	54.0	-1.8	1.23 H	82	41.00	11.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.1 PK	74.0	-17.9	1.10 V	157	25.10	31.00
2	2390.00	45.2 AV	54.0	-8.8	1.10 V	157	14.20	31.00
3	*2437.00	106.6 PK			1.17 V	119	75.40	31.20
4	*2437.00	104.0 AV			1.17 V	119	72.80	31.20
5	2483.50	55.6 PK	74.0	-18.4	1.00 V	140	24.20	31.40
6	2483.50	45.2 AV	54.0	-8.8	1.00 V	140	13.80	31.40
7	4874.00	52.9 PK	74.0	-21.1	1.00 V	166	47.90	5.00
8	4874.00	49.1 AV	54.0	-4.9	1.00 V	166	44.10	5.00
9	7311.00	53.8 PK	74.0	-20.2	1.00 V	185	42.60	11.20
10	7311.00	43.7 AV	54.0	-10.3	1.00 V	185	32.50	11.20

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Jones Chang

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	113.0 PK			1.23 H	245	81.70	31.30
2	*2462.00	109.6 AV			1.23 H	245	78.30	31.30
3	2483.50	62.1 PK	74.0	-11.9	1.21 H	262	30.70	31.40
4	2483.50	52.7 AV	54.0	-1.3	1.21 H	262	21.30	31.40
5	4924.00	55.5 PK	74.0	-18.5	1.49 H	76	50.30	5.20
6	4924.00	53.0 AV	54.0	-1.0	1.49 H	76	47.80	5.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.1 PK			1.70 V	109	75.80	31.30
2	*2462.00	103.5 AV			1.70 V	109	72.20	31.30
3	2483.50	58.1 PK	74.0	-15.9	1.28 V	131	26.70	31.40
4	2483.50	47.9 AV	54.0	-6.1	1.28 V	131	16.50	31.40
5	4924.00	51.1 PK	74.0	-22.9	1.08 V	197	45.90	5.20
6	4924.00	46.4 AV	54.0	-7.6	1.08 V	197	41.20	5.20

REMARKS:

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

802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Jones Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.9 PK	74.0	-1.1	1.28 H	258	41.90	31.00
2	2390.00	52.5 AV	54.0	-1.5	1.28 H	258	21.50	31.00
3	*2412.00	110.4 PK			1.26 H	258	79.30	31.10
4	*2412.00	101.4 AV			1.26 H	258	70.30	31.10
5	4824.00	48.1 PK	74.0	-25.9	1.33 H	290	43.20	4.90
6	4824.00	35.5 AV	54.0	-18.5	1.33 H	290	30.60	4.90
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	60.1 PK	74.0	-13.9	1.13 V	246	29.10	31.00
2	2390.00	48.8 AV	54.0	-5.2	1.13 V	246	17.80	31.00
3	*2412.00	103.4 PK			1.11 V	260	72.30	31.10
4	*2412.00	94.7 AV			1.11 V	260	63.60	31.10
5	4824.00	47.1 PK	74.0	-26.9	1.08 V	198	42.20	4.90
6	4824.00	33.6 AV	54.0	-20.4	1.08 V	198	28.70	4.90

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
5. “ * “: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Jones Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.7 PK	74.0	-3.3	1.26 H	257	39.70	31.00
2	2390.00	52.7 AV	54.0	-1.3	1.26 H	257	21.70	31.00
3	*2437.00	116.4 PK			1.29 H	258	85.20	31.20
4	*2437.00	107.0 AV			1.29 H	258	75.80	31.20
5	2487.00	69.0 PK	74.0	-5.0	1.24 H	257	37.60	31.40
6	2487.00	52.9 AV	54.0	-1.1	1.24 H	257	21.50	31.40
7	4874.00	59.3 PK	74.0	-14.7	1.29 H	69	54.30	5.00
8	4874.00	45.8 AV	54.0	-8.2	1.29 H	69	40.80	5.00
9	7311.00	62.4 PK	74.0	-11.6	1.33 H	75	51.20	11.20
10	7311.00	49.1 AV	54.0	-4.9	1.33 H	75	37.90	11.20
11	12185.00	65.1 PK	74.0	-8.9	1.32 H	18	47.30	17.80
12	12185.00	50.9 AV	54.0	-3.1	1.32 H	18	33.10	17.80
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	63.1 PK	74.0	-10.9	1.22 V	144	32.10	31.00
2	2390.00	48.3 AV	54.0	-5.7	1.22 V	144	17.30	31.00
3	*2437.00	110.9 PK			1.00 V	125	79.70	31.20
4	*2437.00	98.6 AV			1.00 V	125	67.40	31.20
5	2483.50	60.1 PK	74.0	-13.9	1.26 V	123	28.70	31.40
6	2483.50	48.4 AV	54.0	-5.6	1.26 V	123	17.00	31.40
7	4874.00	56.0 PK	74.0	-18.0	1.25 V	153	51.00	5.00
8	4874.00	42.3 AV	54.0	-11.7	1.25 V	153	37.30	5.00
9	7311.00	56.8 PK	74.0	-17.2	1.00 V	181	45.60	11.20
10	7311.00	43.5 AV	54.0	-10.5	1.00 V	181	32.30	11.20
11	12185.00	67.8 PK	74.0	-6.2	1.32 V	121	50.00	17.80
12	12185.00	52.7 AV	54.0	-1.3	1.32 V	121	34.90	17.80

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Jones Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.6 PK			1.22 H	243	77.30	31.30
2	*2462.00	99.5 AV			1.22 H	243	68.20	31.30
3	2483.50	72.4 PK	74.0	-1.6	1.23 H	260	41.00	31.40
4	2483.50	51.0 AV	54.0	-3.0	1.23 H	260	19.60	31.40
5	4924.00	48.2 PK	74.0	-25.8	1.32 H	302	43.00	5.20
6	4924.00	35.3 AV	54.0	-18.7	1.32 H	302	30.10	5.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.6 PK			1.39 V	156	71.30	31.30
2	*2462.00	93.2 AV			1.39 V	156	61.90	31.30
3	2483.50	56.8 PK	74.0	-17.2	1.09 V	121	25.40	31.40
4	2483.50	45.4 AV	54.0	-8.6	1.09 V	121	14.00	31.40
5	4924.00	47.5 PK	74.0	-26.5	1.09 V	192	42.30	5.20
6	4924.00	34.0 AV	54.0	-20.0	1.09 V	192	28.80	5.20

REMARKS:

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

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Jones Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.7 PK	74.0	-1.3	1.00 H	54	41.70	31.00
2	2390.00	52.2 AV	54.0	-1.8	1.00 H	54	21.20	31.00
3	*2412.00	109.8 PK			1.22 H	243	78.70	31.10
4	*2412.00	100.1 AV			1.22 H	243	69.00	31.10
5	4824.00	48.3 PK	74.0	-25.7	1.39 H	206	43.40	4.90
6	4824.00	35.7 AV	54.0	-18.3	1.39 H	206	30.80	4.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.7 PK	74.0	-14.3	1.19 V	121	28.70	31.00
2	2390.00	48.8 AV	54.0	-5.2	1.19 V	121	17.80	31.00
3	*2412.00	104.5 PK			1.19 V	125	73.40	31.10
4	*2412.00	95.7 AV			1.19 V	125	64.60	31.10
5	4824.00	47.4 PK	74.0	-26.6	1.29 V	101	42.50	4.90
6	4824.00	34.1 AV	54.0	-19.9	1.29 V	101	29.20	4.90

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
5. “ * “: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Jones Chang

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	57.2 PK	74.0	-16.8	1.85 H	260	26.20	31.00
2	2390.00	52.9 AV	54.0	-1.1	1.85 H	260	21.90	31.00
3	*2437.00	114.2 PK			1.85 H	258	83.00	31.20
4	*2437.00	104.5 AV			1.85 H	258	73.30	31.20
5	2483.50	57.6 PK	74.0	-16.4	1.85 H	201	26.20	31.40
6	2483.50	52.4 AV	54.0	-1.6	1.85 H	201	21.00	31.40
7	4874.00	51.7 PK	74.0	-22.3	1.30 H	149	46.70	5.00
8	4874.00	41.5 AV	54.0	-12.5	1.30 H	149	36.50	5.00
9	12185.00	66.4 PK	74.0	-7.6	1.16 H	78	48.60	17.80
10	12185.00	51.1 AV	54.0	-2.9	1.16 H	78	33.30	17.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.3 PK	74.0	-15.7	1.56 V	113	27.30	31.00
2	2390.00	47.9 AV	54.0	-6.1	1.56 V	113	16.90	31.00
3	*2437.00	109.1 PK			1.70 V	95	77.90	31.20
4	*2437.00	100.2 AV			1.70 V	95	69.00	31.20
5	2483.50	59.4 PK	74.0	-14.6	1.70 V	97	28.00	31.40
6	2483.50	49.2 AV	54.0	-4.8	1.70 V	97	17.80	31.40
7	4874.00	52.8 PK	74.0	-21.2	1.34 V	0	47.80	5.00
8	4874.00	40.3 AV	54.0	-13.7	1.34 V	0	35.30	5.00
9	12185.00	65.8 PK	74.0	-8.2	1.24 V	101	48.00	17.80
10	12185.00	51.1 AV	54.0	-2.9	1.24 V	101	33.30	17.80

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Jones Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.0 PK			1.78 H	243	76.70	31.30
2	*2462.00	98.2 AV			1.78 H	243	66.90	31.30
3	2483.50	72.2 PK	74.0	-1.8	1.72 H	284	40.80	31.40
4	2483.50	49.9 AV	54.0	-4.1	1.72 H	284	18.50	31.40
5	4924.00	48.0 PK	74.0	-26.0	1.48 H	256	42.80	5.20
6	4924.00	35.0 AV	54.0	-19.0	1.48 H	256	29.80	5.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.4 PK			1.60 V	187	73.10	31.30
2	*2462.00	94.7 AV			1.60 V	187	63.40	31.30
3	2483.50	57.5 PK	74.0	-16.5	1.53 V	199	26.10	31.40
4	2483.50	46.8 AV	54.0	-7.2	1.53 V	199	15.40	31.40
5	4924.00	47.6 PK	74.0	-26.4	1.28 V	106	42.40	5.20
6	4924.00	34.2 AV	54.0	-19.8	1.00 V	106	29.00	5.20

REMARKS:

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

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Jones Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.0 PK	74.0	-2.0	1.26 H	261	41.00	31.00
2	2390.00	52.9 AV	54.0	-1.1	1.26 H	261	21.90	31.00
3	*2422.00	106.9 PK			1.25 H	260	75.70	31.20
4	*2422.00	97.7 AV			1.25 H	260	66.50	31.20
5	4844.00	47.7 PK	74.0	-26.3	1.43 H	80	42.70	5.00
6	4844.00	34.5 AV	54.0	-19.5	1.43 H	80	29.50	5.00
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	54.1 PK	74.0	-19.9	1.30 V	187	23.10	31.00
2	2390.00	49.6 AV	54.0	-4.4	1.30 V	187	18.60	31.00
3	*2422.00	100.6 PK			1.30 V	187	69.40	31.20
4	*2422.00	91.5 AV			1.30 V	187	60.30	31.20
5	4844.00	47.4 PK	74.0	-26.6	1.33 V	88	42.40	5.00
6	4844.00	33.7 AV	54.0	-20.3	1.33 V	88	28.70	5.00

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Jones Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.7 PK	74.0	-6.3	1.29 H	253	36.70	31.00
2	2390.00	51.7 AV	54.0	-2.3	1.29 H	253	20.70	31.00
3	*2437.00	106.8 PK			1.27 H	258	75.60	31.20
4	*2437.00	96.5 AV			1.27 H	258	65.30	31.20
5	2483.50	72.4 PK	74.0	-1.6	1.21 H	259	41.00	31.40
6	2483.50	52.3 AV	54.0	-1.7	1.21 H	259	20.90	31.40
7	4874.00	47.0 PK	74.0	-27.0	1.36 H	262	42.00	5.00
8	4874.00	34.0 AV	54.0	-20.0	1.36 H	262	29.00	5.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.0 PK	74.0	-16.0	1.43 V	62	27.00	31.00
2	2390.00	47.8 AV	54.0	-6.2	1.43 V	62	16.80	31.00
3	*2437.00	101.4 PK			1.63 V	178	70.20	31.20
4	*2437.00	91.9 AV			1.63 V	178	60.70	31.20
5	2483.50	60.4 PK	74.0	-13.6	1.63 V	212	29.00	31.40
6	2483.50	50.9 AV	54.0	-3.1	1.63 V	212	19.50	31.40
7	4874.00	46.8 PK	74.0	-27.2	1.40 V	278	41.80	5.00
8	4874.00	33.8 AV	54.0	-20.2	1.40 V	278	28.80	5.00

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Jones Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	104.2 PK			1.25 H	259	72.90	31.30
2	*2452.00	94.5 AV			1.25 H	259	63.20	31.30
3	2483.50	73.0 PK	74.0	-1.0	1.21 H	258	41.60	31.40
4	2483.50	52.0 AV	54.0	-2.0	1.21 H	258	20.60	31.40
5	4904.00	47.6 PK	74.0	-26.4	1.35 H	74	42.50	5.10
6	4904.00	33.7 AV	54.0	-20.3	1.35 H	74	28.60	5.10
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	99.2 PK			1.90 V	178	67.90	31.30
2	*2452.00	89.6 AV			1.90 V	178	58.30	31.30
3	2483.50	63.8 PK	74.0	-10.2	1.63 V	189	32.40	31.40
4	2483.50	47.9 AV	54.0	-6.1	1.63 V	189	16.50	31.40
5	4904.00	47.1 PK	74.0	-26.9	1.56 V	94	42.00	5.10
6	4904.00	33.2 AV	54.0	-20.8	1.56 V	94	28.10	5.10

REMARKS:

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



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BELOW 1GHz WORST-CASE DATA : 802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH	TESTED BY	Jones Chang

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	57.12	31.1 QP	40.0	-8.9	1.50 H	169	45.70	-14.60
2	214.61	40.8 QP	43.5	-2.7	1.00 H	49	57.00	-16.20
3	249.60	40.7 QP	46.0	-5.3	1.00 H	201	54.90	-14.20
4	298.21	44.7 QP	46.0	-1.3	1.00 H	164	57.00	-12.30
5	500.42	33.0 QP	46.0	-13.0	1.50 H	37	41.30	-8.30
6	900.94	40.0 QP	46.0	-6.0	1.50 H	65	40.40	-0.40
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	37.68	30.6 QP	40.0	-9.4	1.00 V	136	45.90	-15.30
2	214.61	30.3 QP	43.5	-13.2	1.49 V	147	46.50	-16.20
3	249.60	32.0 QP	46.0	-14.0	1.49 V	136	46.20	-14.20
4	298.21	44.5 QP	46.0	-1.5	1.00 V	131	56.80	-12.30
5	667.63	32.0 QP	46.0	-14.0	1.49 V	150	37.00	-5.00
6	900.94	36.5 QP	46.0	-9.5	1.00 V	114	36.90	-0.40

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

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	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.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Apr. 24, 2014	Apr. 23, 2015
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 27, 2013	Dec. 26, 2014
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 23, 2013	Dec. 22, 2014
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 10, 2014	Jul. 09, 2015
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

- Notes: 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 2.
3. The VCCI Site Registration No. is C-2047.

4.2.3 TEST PROCEDURES

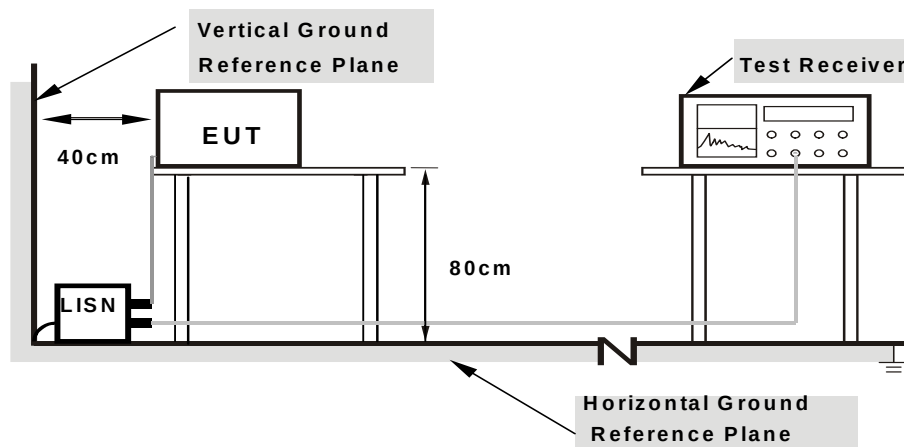
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

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

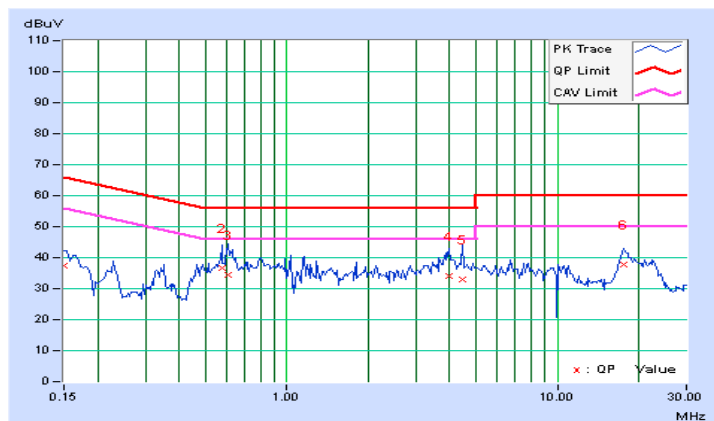
CONDUCTED WORST-CASE DATA : 802.11g

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.26	37.06	31.46	37.32	31.72	66.00	56.00	-28.68	-24.28
2	0.57578	0.31	36.21	25.48	36.52	25.79	56.00	46.00	-19.48	-20.21
3	0.60703	0.31	34.20	22.74	34.51	23.05	56.00	46.00	-21.49	-22.95
4	3.96875	0.43	33.82	27.52	34.25	27.95	56.00	46.00	-21.75	-18.05
5	4.46875	0.44	32.67	26.97	33.11	27.41	56.00	46.00	-22.89	-18.59
6	17.57813	0.56	37.16	31.95	37.72	32.51	60.00	50.00	-22.28	-17.49

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.

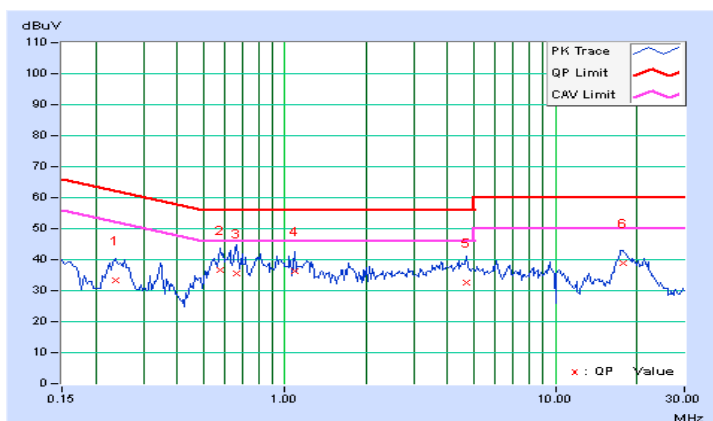


PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.23594	0.28	33.02	25.43	33.30	25.71	62.24	52.24	-28.93	-26.52
2	0.57578	0.31	36.46	26.07	36.77	26.38	56.00	46.00	-19.23	-19.62
3	0.66563	0.32	35.33	31.21	35.65	31.53	56.00	46.00	-20.35	-14.47
4	1.08594	0.34	35.99	26.27	36.33	26.61	56.00	46.00	-19.67	-19.39
5	4.69141	0.45	32.01	25.50	32.46	25.95	56.00	46.00	-23.54	-20.05
6	17.71484	0.61	38.23	32.24	38.84	32.85	60.00	50.00	-21.16	-17.15

REMARKS:

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

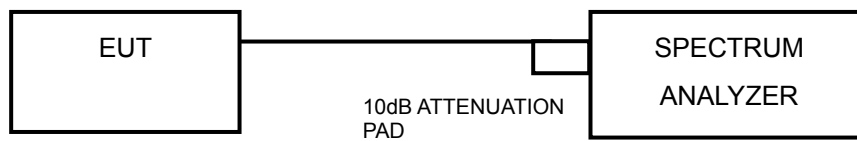


4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.3.4 TEST PROCEDURE

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

4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

4.3.6 EUT OPERATING CONDITIONS

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

4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	10.12	10.11	0.5	PASS
6	2437	10.13	10.12	0.5	PASS
11	2462	10.12	10.12	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.42	16.39	0.5	PASS
6	2437	16.39	16.37	0.5	PASS
11	2462	16.41	16.39	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.62	17.59	0.5	PASS
6	2437	17.32	17.56	0.5	PASS
11	2462	17.60	17.61	0.5	PASS

802.11n (40MHz)

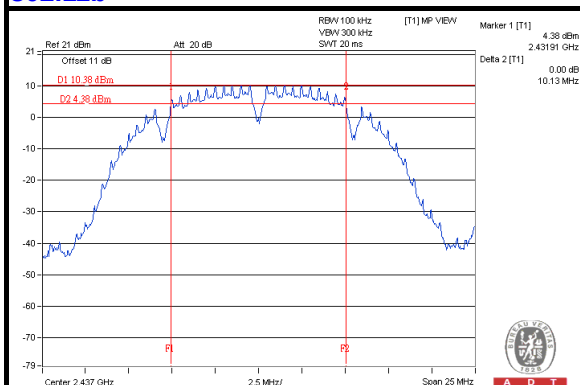
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	35.94	36.29	0.5	PASS
6	2437	35.88	36.17	0.5	PASS
9	2452	35.85	36.40	0.5	PASS



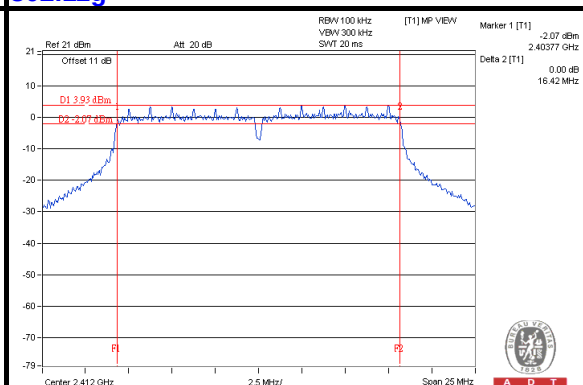
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SPECTRUM PLOT OF WORST VALUE

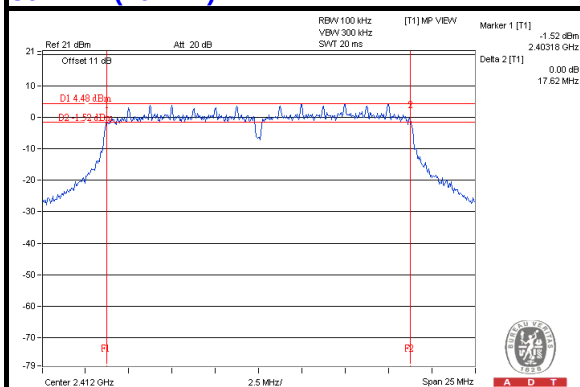
802.11b



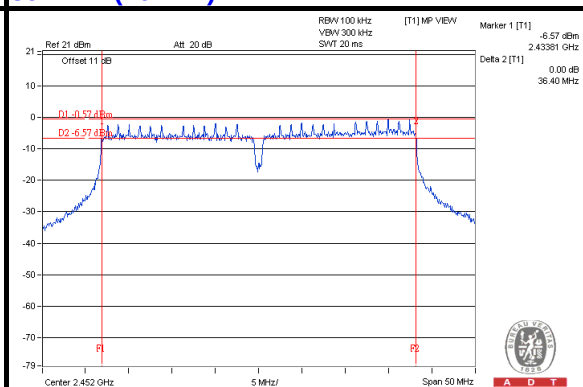
802.11g



802.11n (20MHz)



802.11n (40MHz)



4.4 CONDUCTED OUTPUT POWER

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 v02r01 Method of conducted output power measurement on IEEE 802.11 devices,

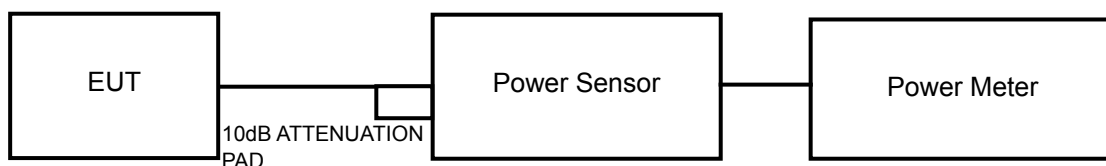
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

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 $NANT \geq 5$.

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	21.22	21.30	267.33	24.27	30	PASS
6	2437	21.63	22.25	313.426	24.96	30	PASS
11	2462	20.88	21.50	263.716	24.21	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	22.65	23.22	393.971	25.95	30	PASS
6	2437	25.73	25.68	743.939	28.72	30	PASS
11	2462	21.01	21.11	255.305	24.07	30	PASS

802.11n (20MHz)

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	24.11	23.65	489.371	26.90	30	PASS
6	2437	25.40	25.60	709.815	28.51	30	PASS
11	2462	21.22	22.46	308.632	24.89	30	PASS

802.11n (40MHz)

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	21.73	22.44	324.324	25.11	30	PASS
6	2437	22.04	21.76	309.924	24.91	30	PASS
9	2452	21.14	21.69	277.588	24.43	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	18.96	19.11	160.175	22.05
6	2437	19.52	20.17	193.528	22.87
11	2462	18.71	19.28	159.025	22.01

802.11g

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	15.52	16.04	75.824	18.80
6	2437	20.65	21.11	245.267	23.90
11	2462	12.93	13.40	41.512	16.18

802.11n (20MHz)

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	15.53	16.03	75.814	18.80
6	2437	20.73	20.91	241.614	23.83
11	2462	13.01	13.77	43.822	16.42

802.11n (40MHz)

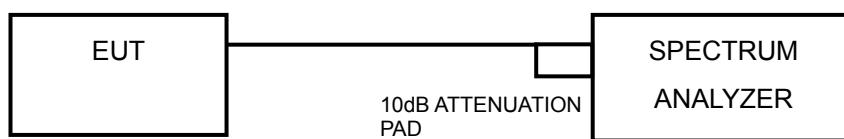
CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	14.04	14.31	52.328	17.19
6	2437	13.85	13.64	47.387	16.76
9	2452	12.05	12.67	34.525	15.38

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

- Set the RBW = 3 kHz, VBW = 10 kHz, Detector = peak.
- 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.

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/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-4.64	3.01	-1.57	5.79	PASS
	6	2437	-2.88	3.01	0.19	5.79	PASS
	11	2462	-4.74	3.01	-1.67	5.79	PASS
1	1	2412	-3.00	3.01	0.07	5.79	PASS
	6	2437	-3.05	3.01	0.02	5.79	PASS
	11	2462	-3.15	3.01	-0.08	5.79	PASS

NOTE: Directional gain = $5.2\text{dBi} + 10\log(2) = 8.21\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(8.21-6) = 5.79\text{dBm}$.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-10.23	3.01	-7.04	5.79	PASS
	6	2437	-4.38	3.01	-1.19	5.79	PASS
	11	2462	-11.79	3.01	-8.60	5.79	PASS
1	1	2412	-8.72	3.01	-5.53	5.79	PASS
	6	2437	-3.36	3.01	-0.17	5.79	PASS
	11	2462	-11.89	3.01	-8.70	5.79	PASS

NOTE: Directional gain = $5.2\text{dBi} + 10\log(2) = 8.21\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(8.21-6) = 5.79\text{dBm}$.

802.11n (20MHz)

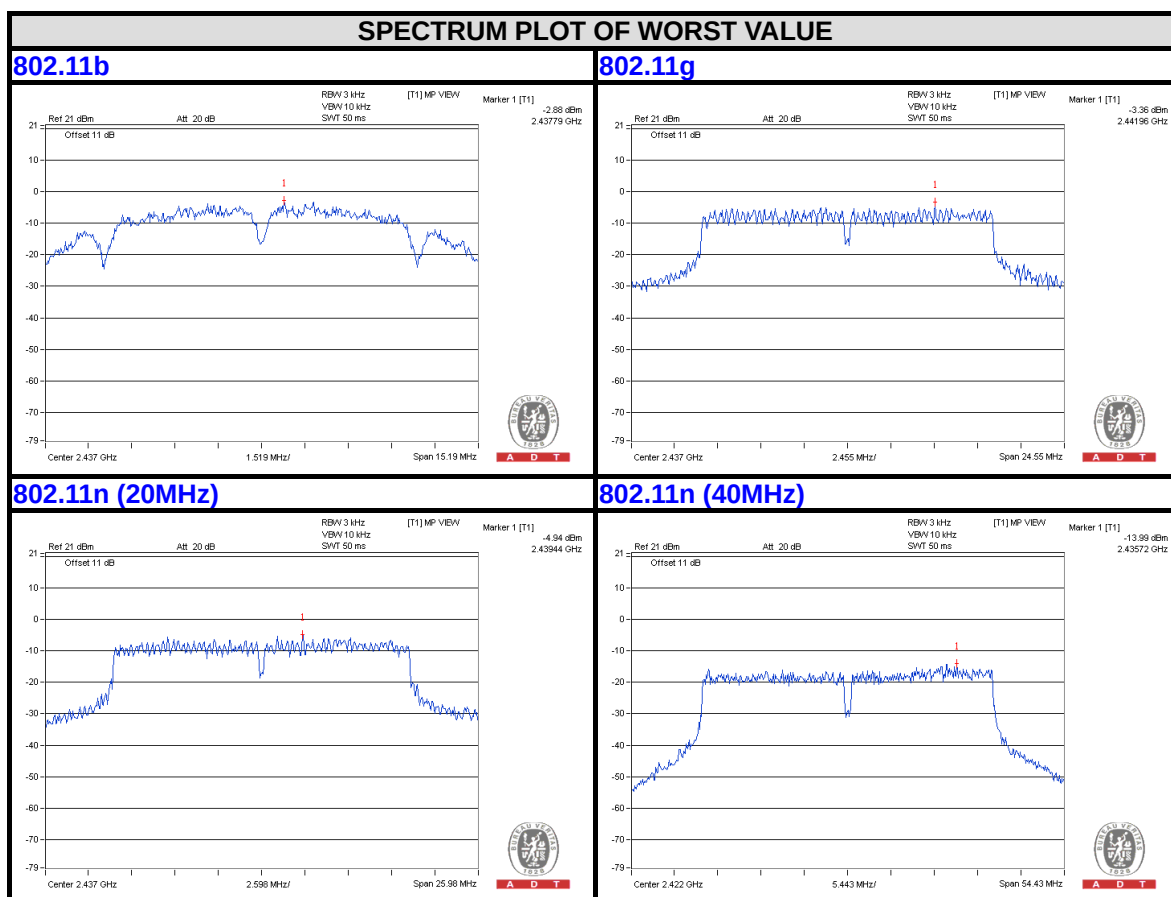
TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-9.98	3.01	-6.77	5.79	PASS
	6	2437	-4.94	3.01	-1.73	5.79	PASS
	11	2462	-12.61	3.01	-9.40	5.79	PASS
1	1	2412	-10.47	3.01	-7.26	5.79	PASS
	6	2437	-5.35	3.01	-2.14	5.79	PASS
	11	2462	-11.56	3.01	-8.35	5.79	PASS

NOTE: Directional gain = $5.2\text{dBi} + 10\log(2) = 8.21\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(8.21-6) = 5.79\text{dBm}$.

802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-15.41	3.01	-12.14	5.79	PASS
	6	2437	-15.38	3.01	-12.11	5.79	PASS
	9	2452	-17.38	3.01	-14.11	5.79	PASS
1	3	2422	-13.99	3.01	-10.72	5.79	PASS
	6	2437	-13.99	3.01	-10.72	5.79	PASS
	9	2452	-16.50	3.01	-13.23	5.79	PASS

NOTE: Directional gain = 5.2dBi + 10log(2) = 8.21dBi > 6dBi , so the power density limit shall be reduced to 8-(8.21-6) = 5.79dBm.

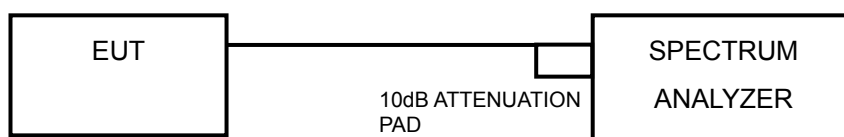


4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

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

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.7 TEST RESULTS

The conducted emission test is performed on each TX port of operating mode without summing or adding $10\log(N)$ since the limit is relative emission limit.

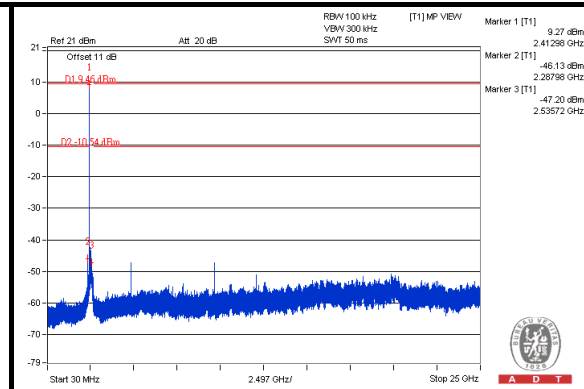
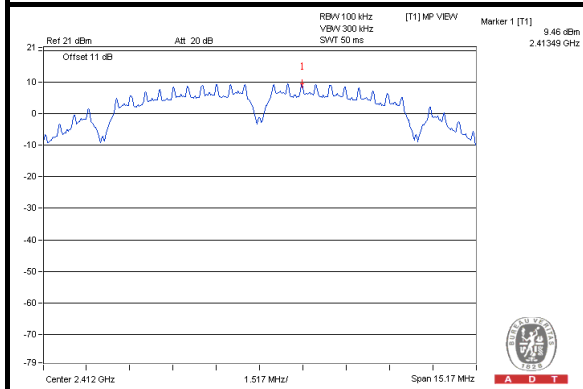
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



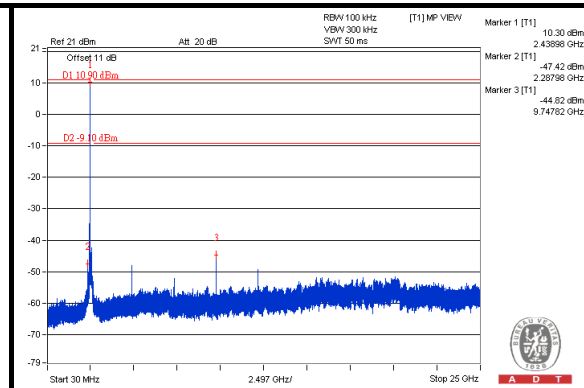
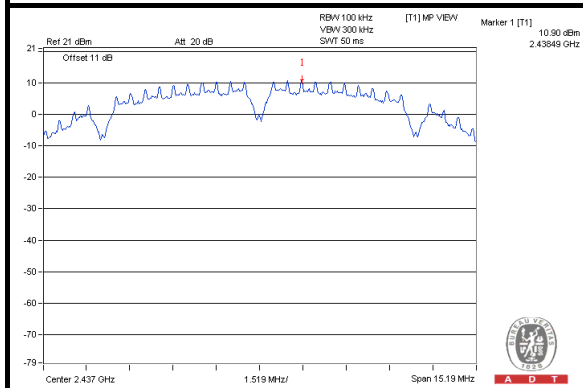
A D T

802.11b: CHAIN 0

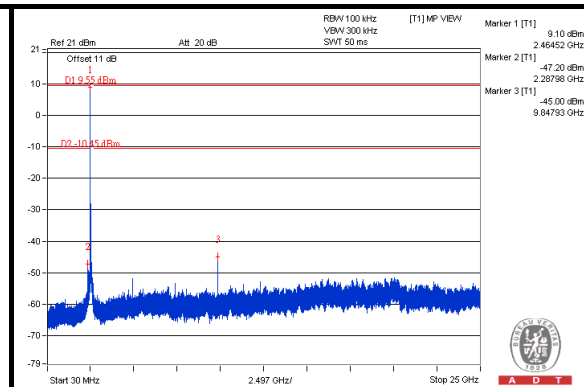
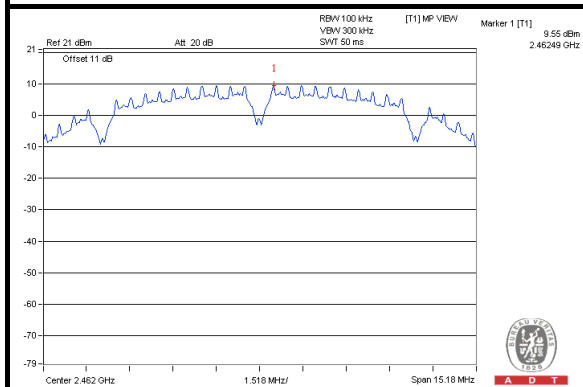
CH 1



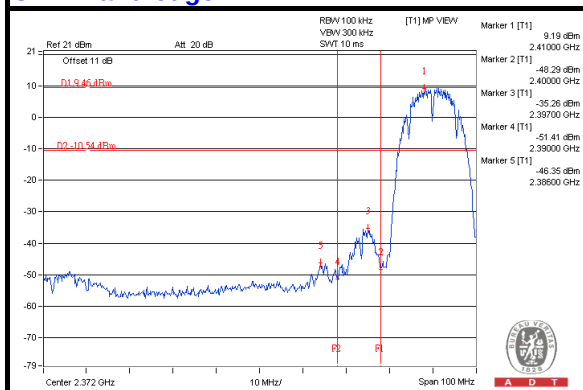
CH 6



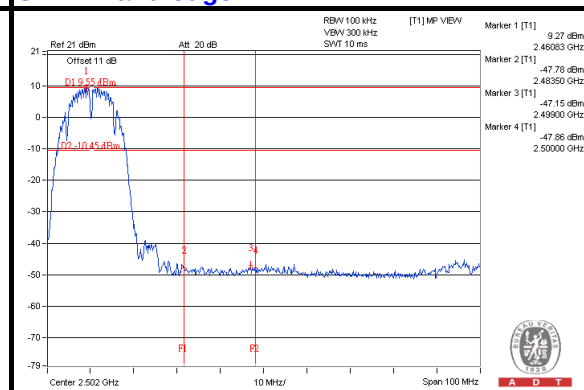
CH 11



CH 1 Band edge



CH 11 Band edge

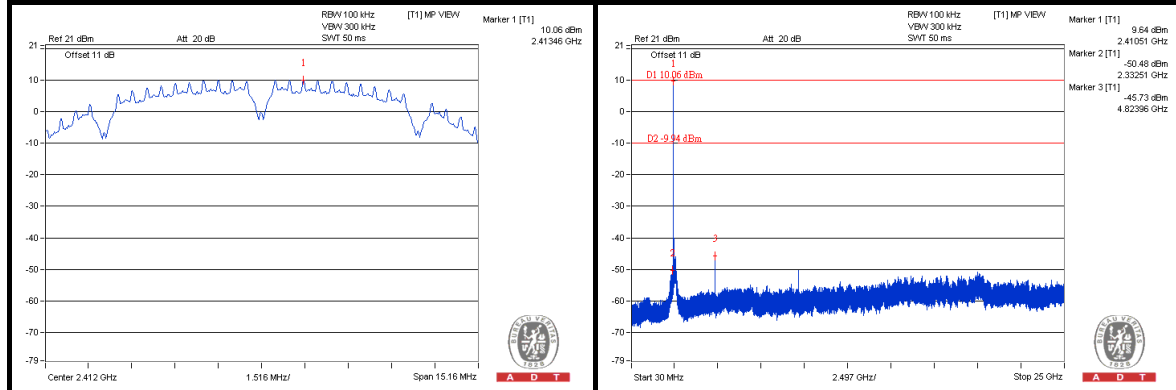




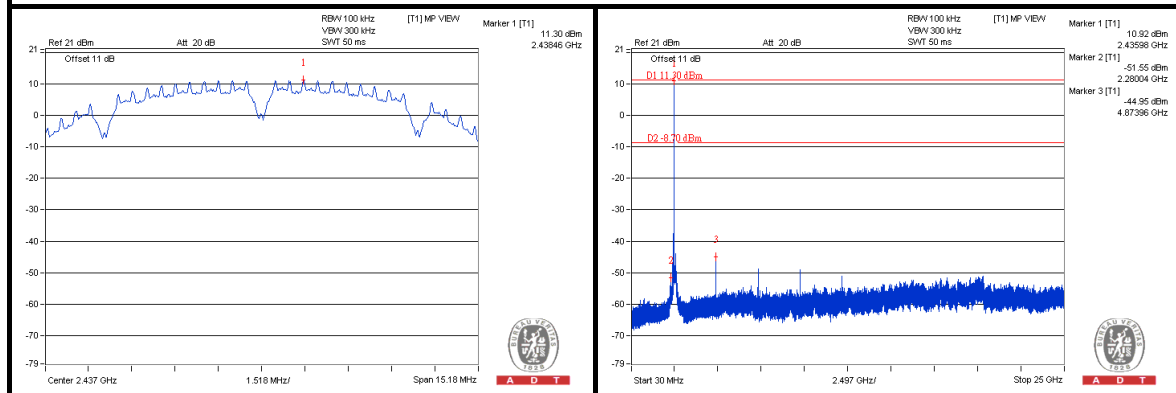
A D T

CHAIN 1

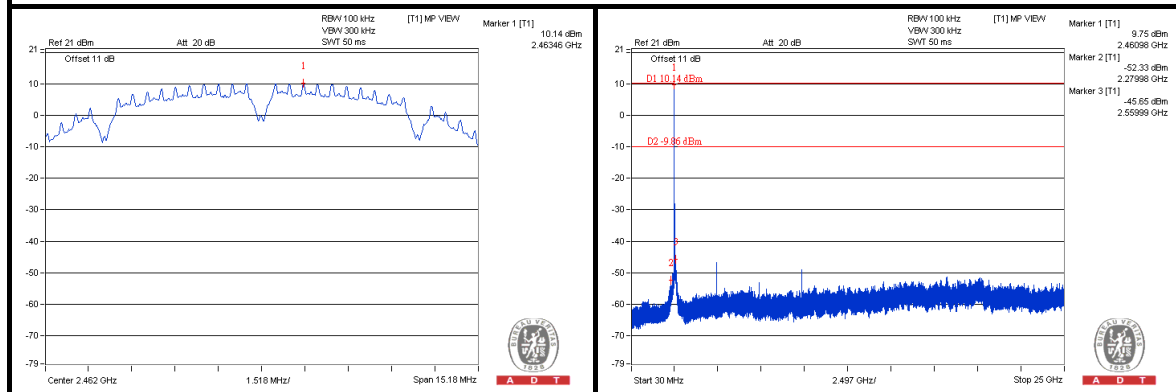
CH 1



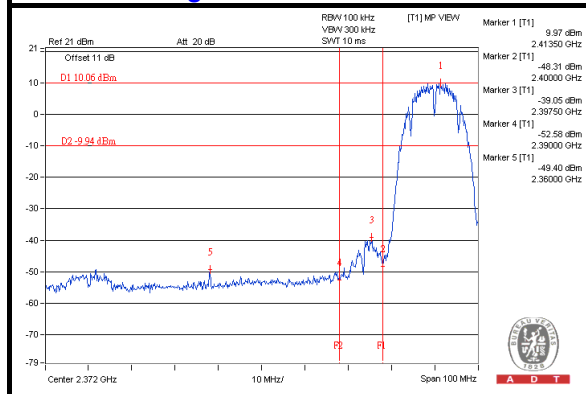
CH 6



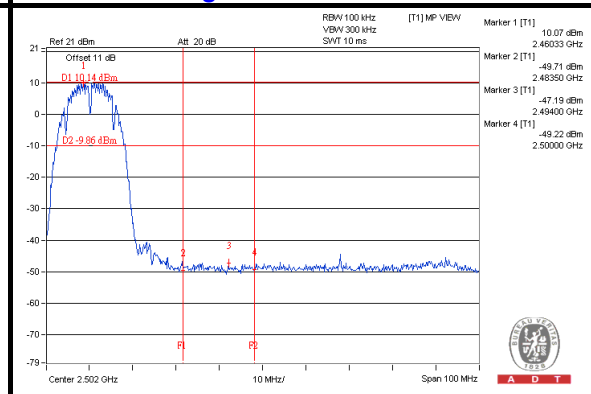
CH 11



CH 1 Band edge



CH 11 Band edge

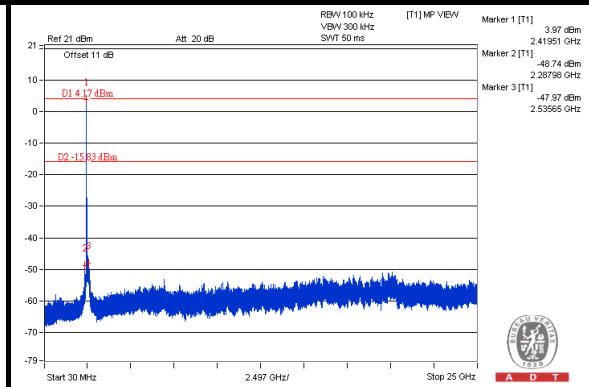
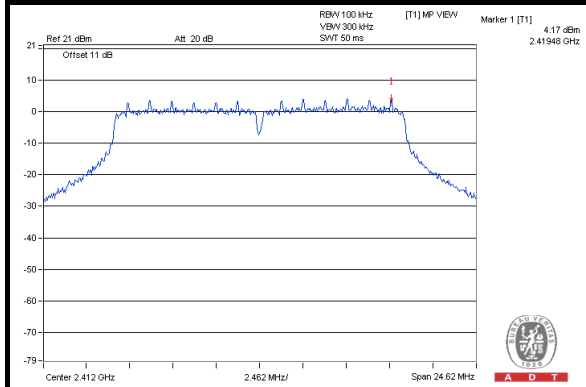




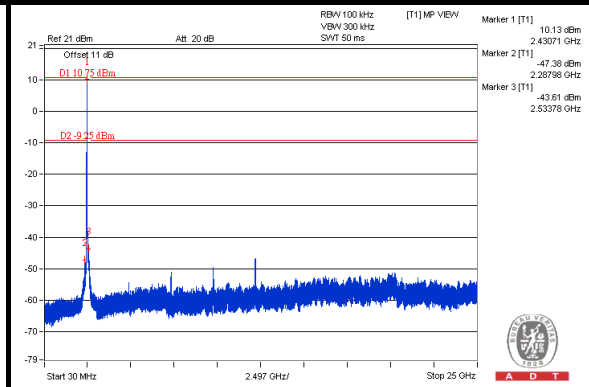
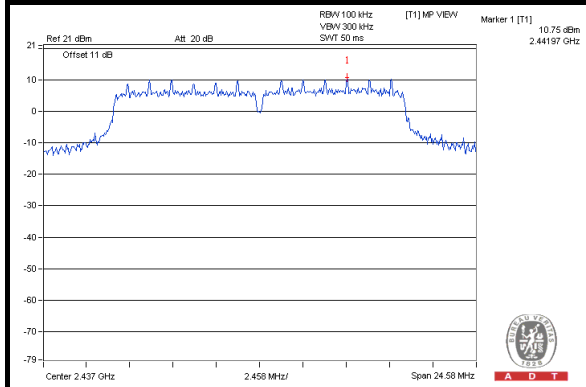
A D T

802.11g: CHAIN 0

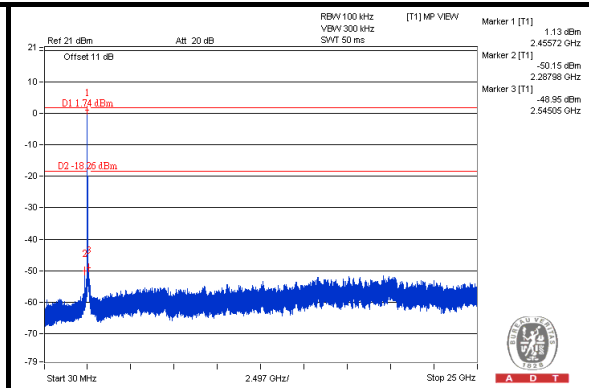
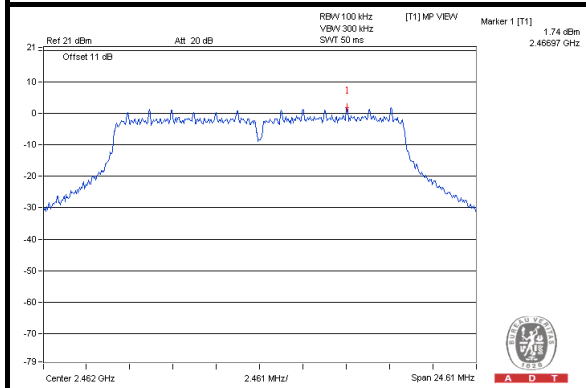
CH 1



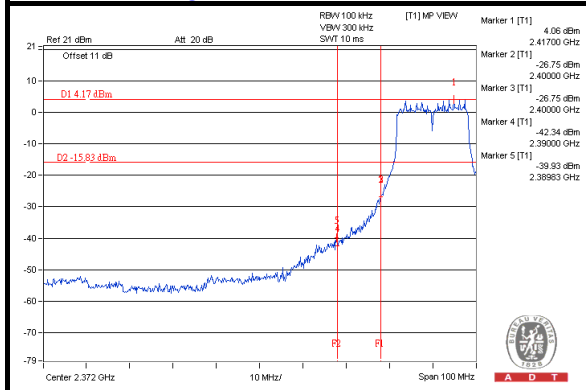
CH 6



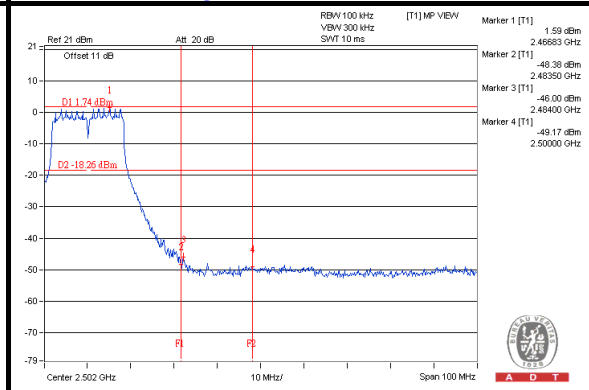
CH 11



CH 1 Band edge



CH 11 Band edge

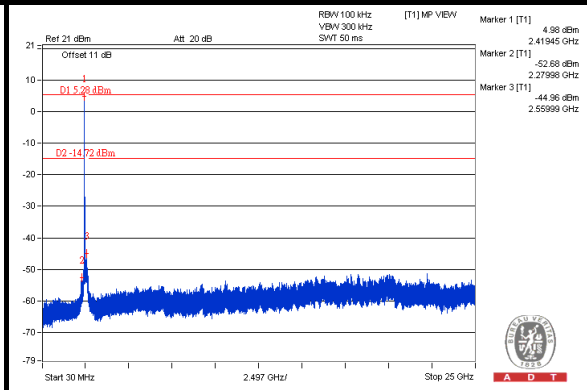
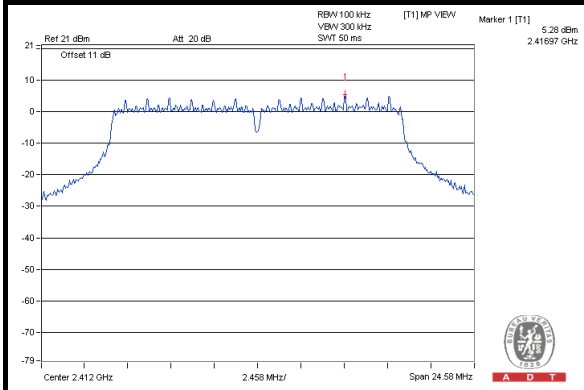




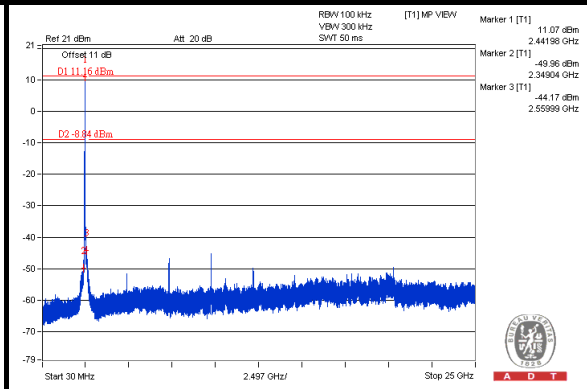
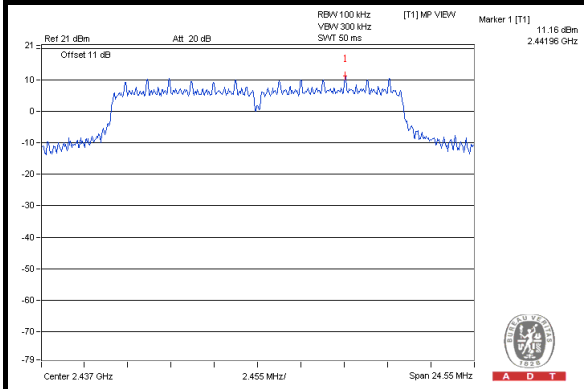
A D T

CHAIN 1

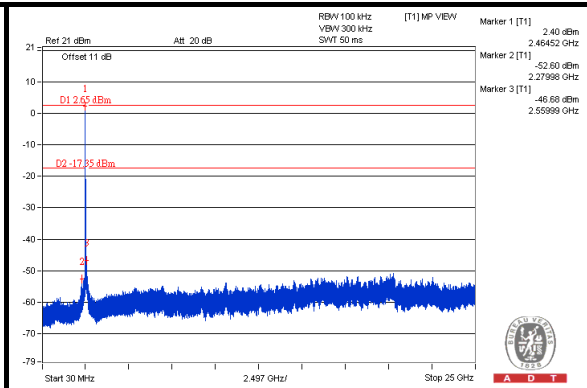
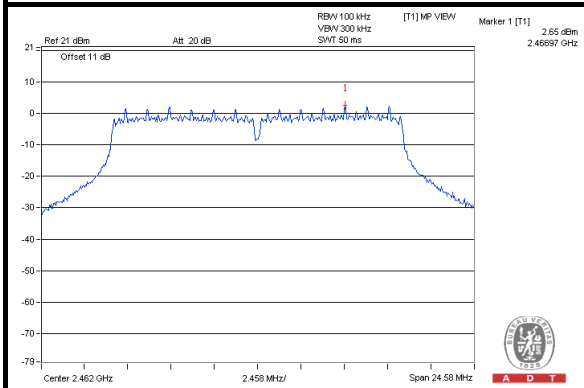
CH 1



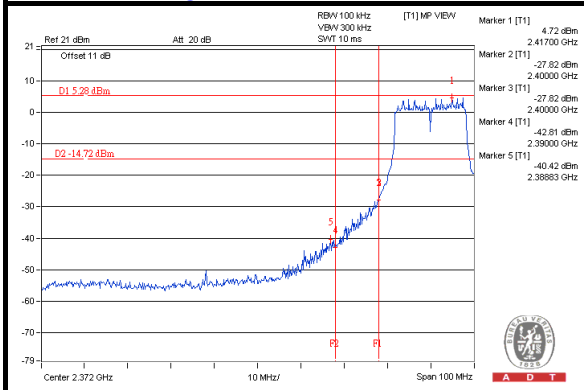
CH 6



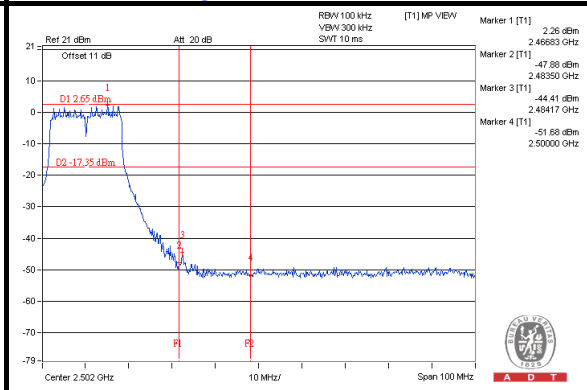
CH 11



CH 1 Band edge



CH 11 Band edge

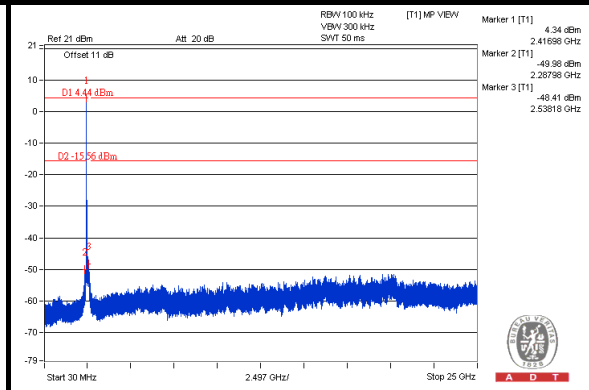
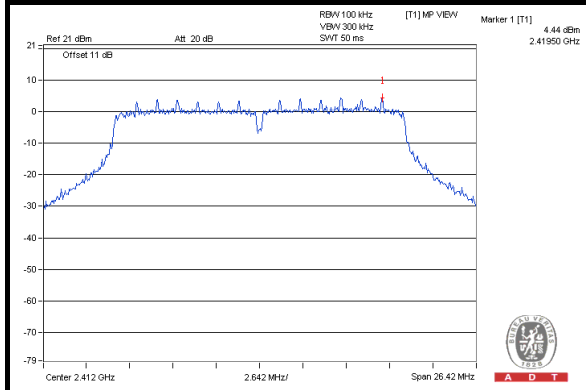




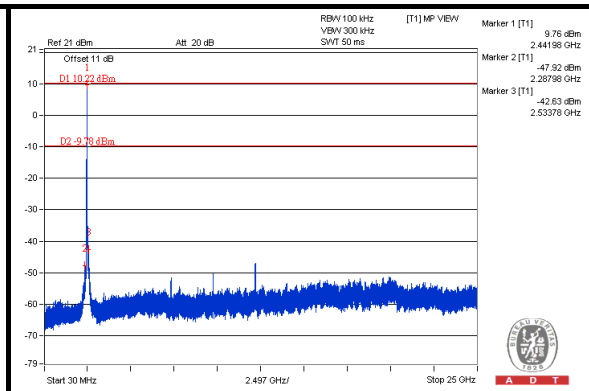
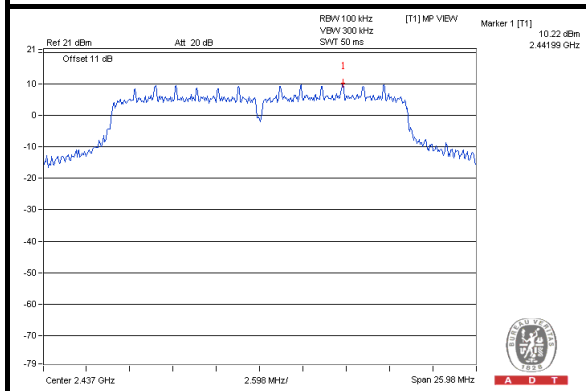
A D T

802.11n (20MHz): CHAIN 0

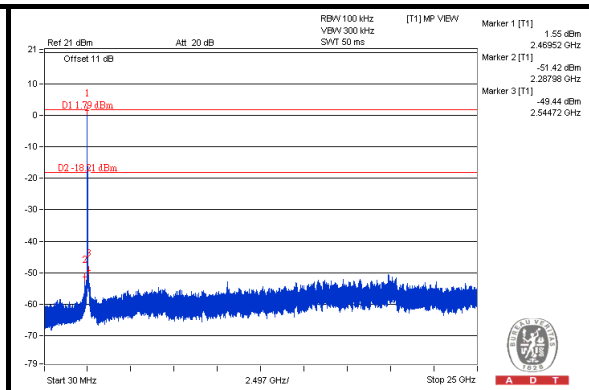
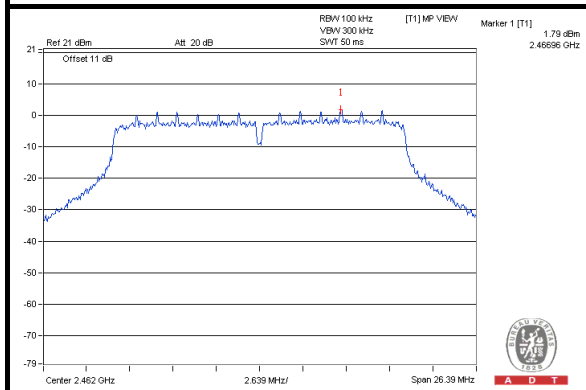
CH 1



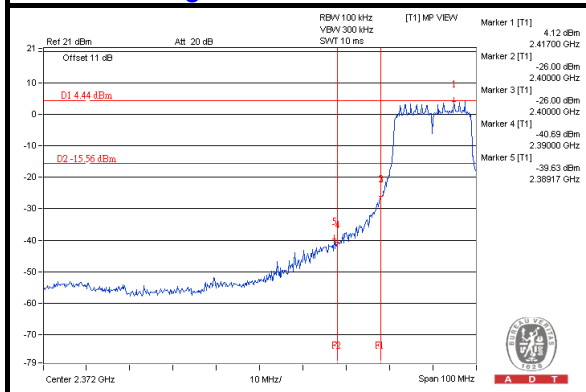
CH 6



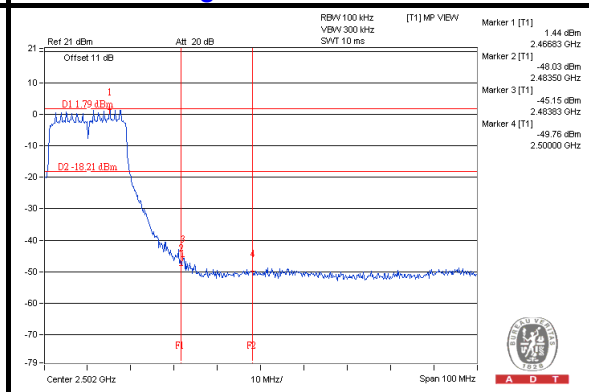
CH 11



CH 1 Band edge



CH 11 Band edge

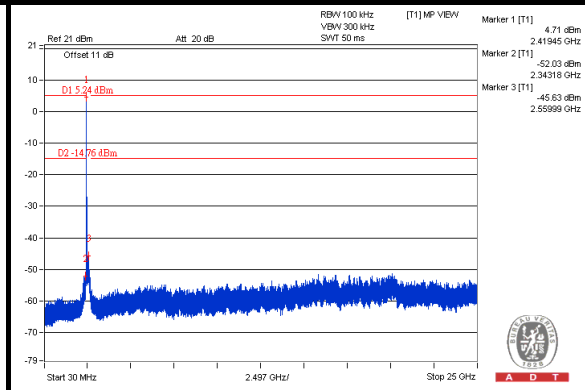
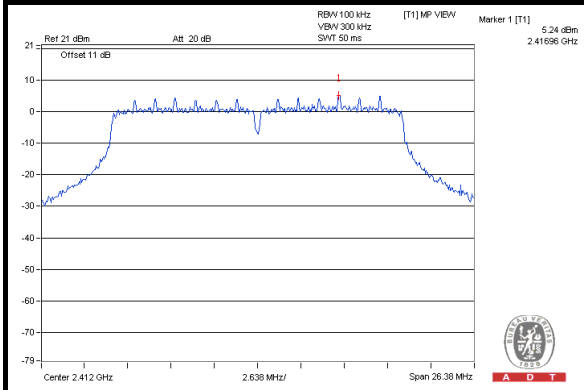




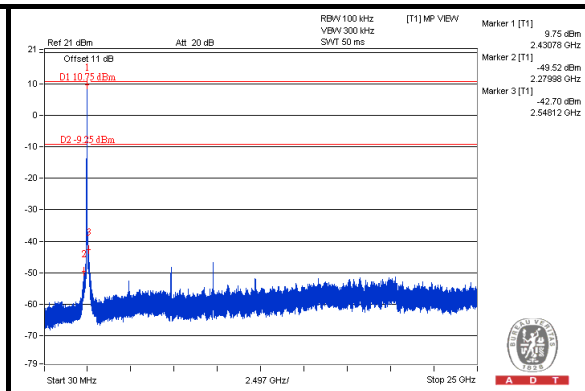
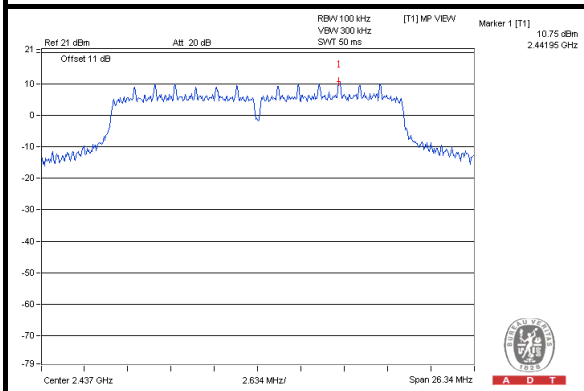
A D T

CHAIN 1

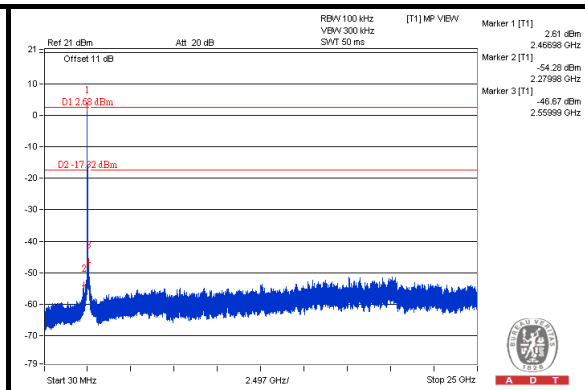
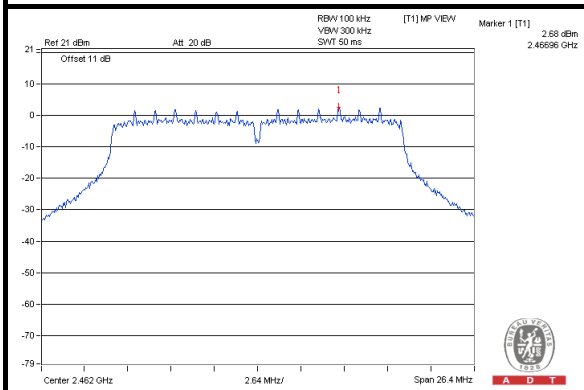
CH 1



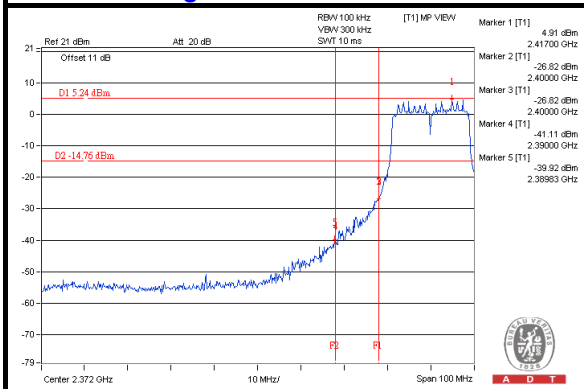
CH 6



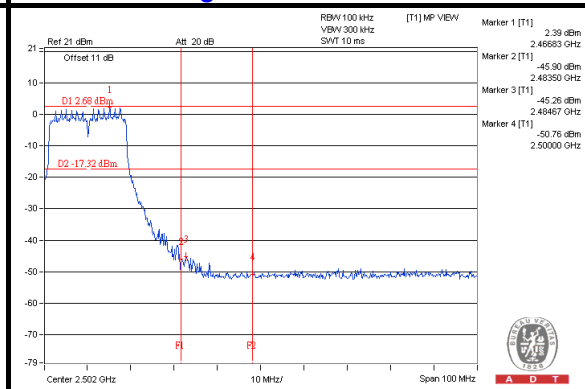
CH 11



CH 1 Band edge



CH 11 Band edge

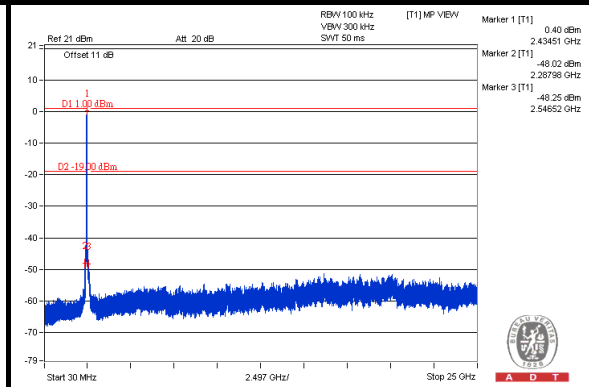
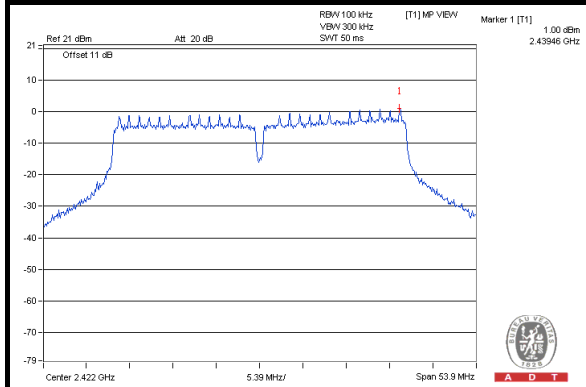




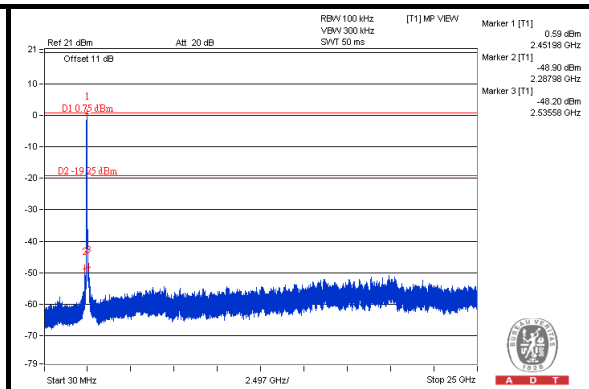
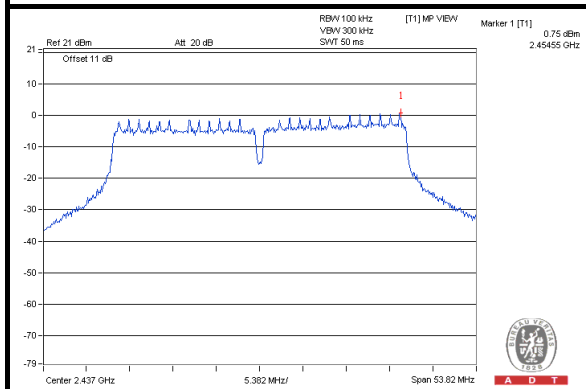
A D T

802.11n (40MHz): CHAIN 0

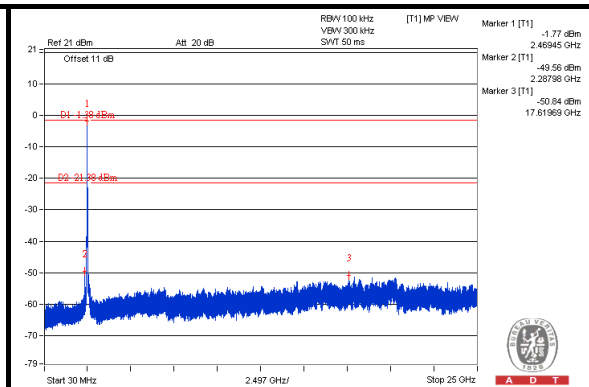
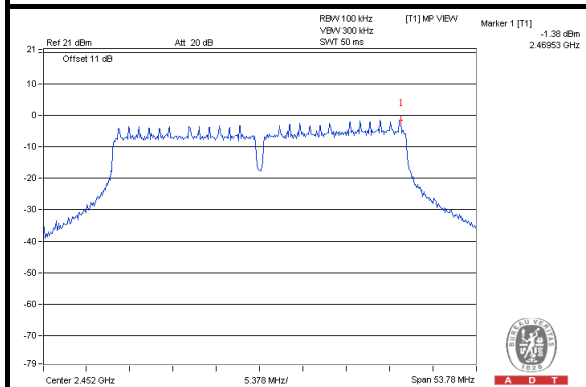
CH 3



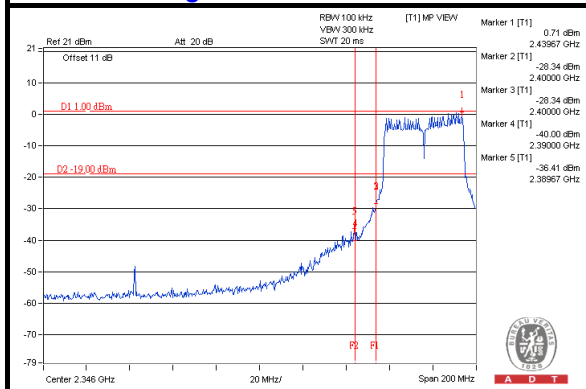
CH 6



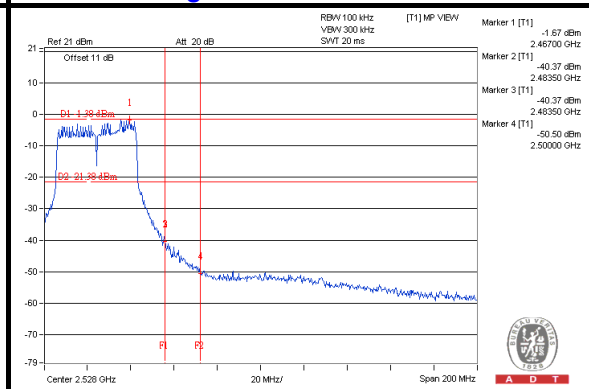
CH 9



CH 3 Band edge



CH 9 Band edge

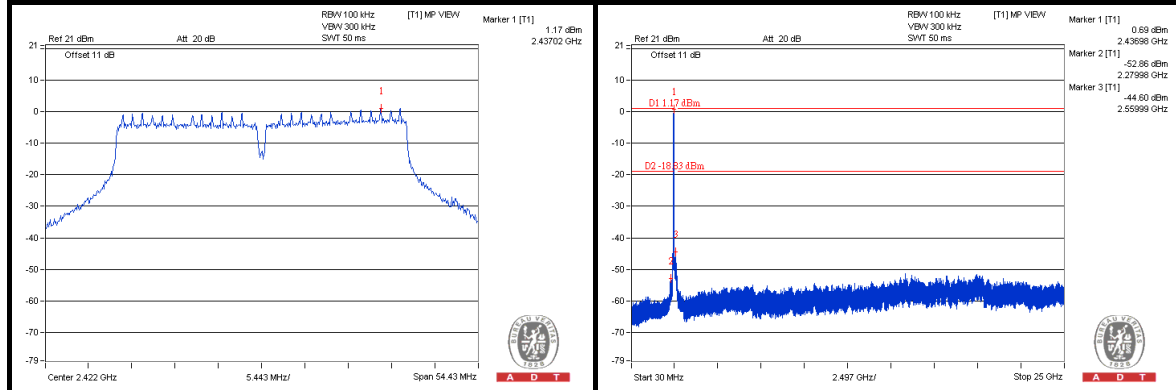




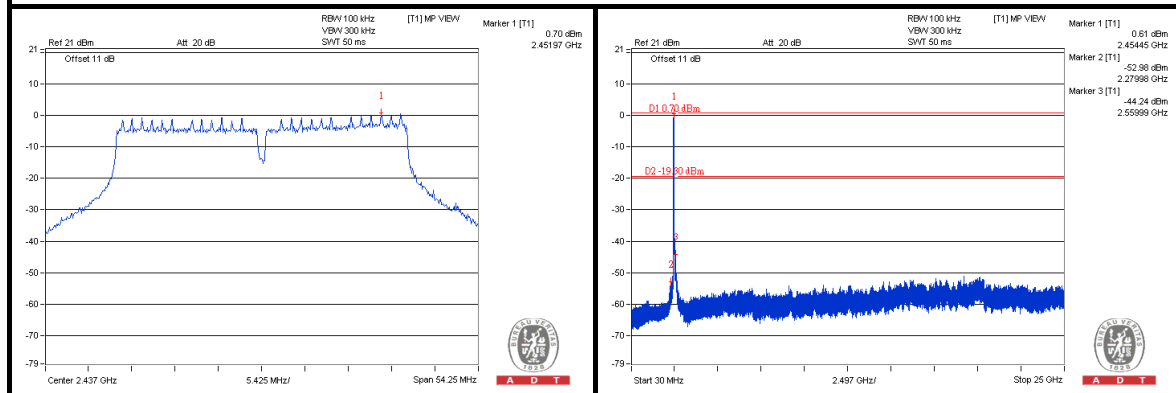
A D T

CHAIN 1

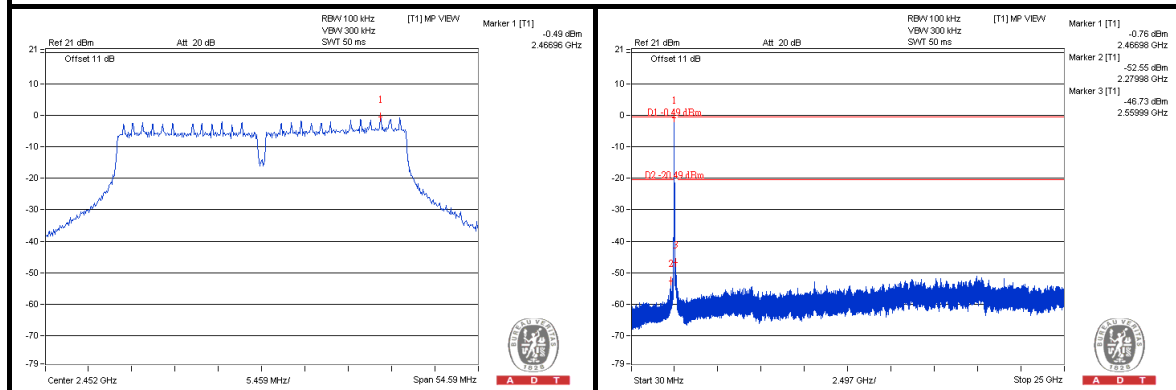
CH 3



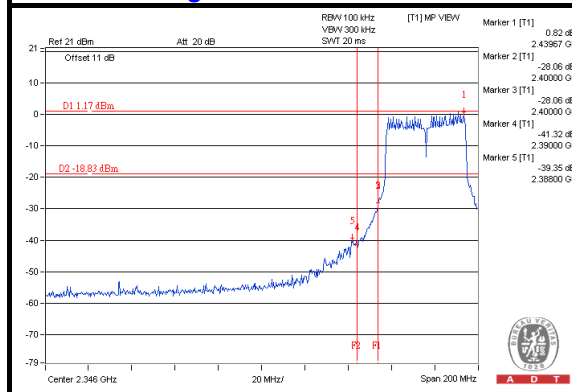
CH 6



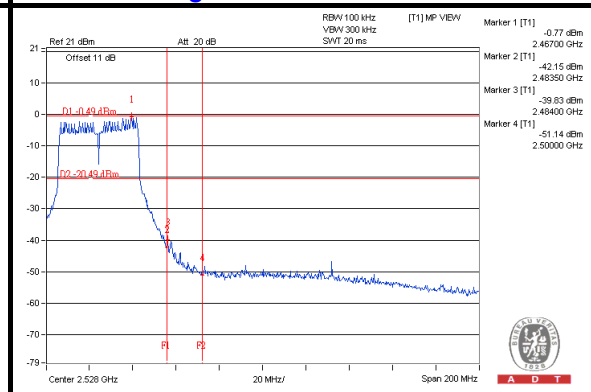
CH 9



CH 3 Band edge



CH 9 Band edge



5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. 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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Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

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Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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



A D T

7. APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---