



FCC TEST REPORT

REPORT NO.: RF140604C02

MODEL NO.: Fujitsu 2.4G Mesh Radio Module

FCC ID: O4D-IC400

RECEIVED: Jun. 04, 2014

TESTED: Jun. 18 ~ Jun. 19, 2014

ISSUED: Jun. 20, 2014

APPLICANT: FUJITSU LIMITED

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ISSUED BY: Bureau Veritas Consumer Products Services
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TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1. CERTIFICATION.....	5
2. SUMMARY OF TEST RESULTS	6
2.1 MEASUREMENT UNCERTAINTY	6
3. GENERAL INFORMATION.....	7
3.1 GENERAL DESCRIPTION OF EUT.....	7
3.2 DESCRIPTION OF TEST MODES.....	8
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	9
3.3 DUTY CYCLE OF TEST SIGNAL.....	12
3.4 DESCRIPTION OF SUPPORT UNITS.....	14
3.4.1 CONFIGURATION OF SYSTEM UNDER TEST	14
3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS.....	15
4. TEST TYPES AND RESULTS	16
4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT	16
4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT.....	16
4.1.2 TEST INSTRUMENTS.....	17
4.1.3 TEST PROCEDURES	18
4.1.4 DEVIATION FROM TEST STANDARD	18
4.1.5 TEST SETUP.....	19
4.1.6 EUT OPERATING CONDITIONS	20
4.1.7 TEST RESULTS	21
4.2 CONDUCTED EMISSION MEASUREMENT	46
4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	46
4.2.2 TEST INSTRUMENTS.....	46
4.2.3 TEST PROCEDURES	47
4.2.4 DEVIATION FROM TEST STANDARD	47
4.2.5 TEST SETUP.....	47
4.2.6 EUT OPERATING CONDITIONS	47
4.2.7 TEST RESULTS	48
4.3 6dB BANDWIDTH MEASUREMENT	50
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT.....	50
4.3.2 TEST SETUP	50
4.3.3 TEST INSTRUMENTS.....	50
4.3.4 TEST PROCEDURE.....	50
4.3.5 DEVIATION FROM TEST STANDARD	50
4.3.6 EUT OPERATING CONDITIONS	50
4.3.7 TEST RESULTS	51
4.4 CONDUCTED OUTPUT POWER	55
4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	55
4.4.2 TEST SETUP	55
4.4.3 TEST INSTRUMENTS.....	55
4.4.4 TEST PROCEDURES	55



4.4.5 DEVIATION FROM TEST STANDARD 56

4.4.6 EUT OPERATING CONDITIONS 56

4.4.7 TEST RESULTS 57

4.5 POWER SPECTRAL DENSITY MEASUREMENT..... 61

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT 61

4.5.2 TEST SETUP 61

4.5.3 TEST INSTRUMENTS..... 61

4.5.4 TEST PROCEDURE..... 61

4.5.5 DEVIATION FROM TEST STANDARD 61

4.5.6 EUT OPERATING CONDITION 61

4.5.7 TEST RESULTS 62

4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT 66

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT..... 66

4.6.2 TEST SETUP 66

4.6.3 TEST INSTRUMENTS..... 66

4.6.4 TEST PROCEDURE..... 67

4.6.5 DEVIATION FROM TEST STANDARD 67

4.6.6 EUT OPERATING CONDITION 67

4.6.7 TEST RESULTS 67

5. PHOTOGRAPHS OF THE TEST CONFIGURATION 80

6. INFORMATION ON THE TESTING LABORATORIES..... 81

7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB..... 82



RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140604C02	Original release.	Jun. 20, 2014



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1. CERTIFICATION

PRODUCT: WisReed Module

MODEL NO.: Fujitsu 2.4G Mesh Radio Module

BRAND: FUJITSU

APPLICANT: FUJITSU LIMITED

TESTED: Jun. 18 ~ Jun. 19, 2014

TEST SAMPLE: ENGINEERING SAMPLE

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

ANSI C63.10-2009

The above equipment (model: Fujitsu 2.4G Mesh Radio Module) 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 :** Jun. 20, 2014
Ivy Lin / Specialist

APPROVED BY : *Ken Liu* , **DATE :** Jun. 20, 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 -11.68dB at 0.16562MHz.
15.205 & 209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2390.00MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2390.00MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is Miniature RF Coaxial Connector 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	2.93 dB
	200MHz ~1000MHz	2.95 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	WisReed Module
MODEL NO.	Fujitsu 2.4G Mesh Radio Module
POWER SUPPLY	5Vdc (adapter)
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	680.769mW
ANTENNA TYPE	Refer to Note
ANTENNA CONNECTOR	Miniature RF Coaxial
DATA CABLE	N/A
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	1TX/ 2TX
802.11g	1TX/ 2TX
802.11n (20MHz)	1TX/ 2TX
802.11n (40MHz)	1TX/ 2TX

* In 1TX part, the EUT supported Chain 0 and chain 1, the chain 0 is worst case for final test.

- The following antennas are provided to the EUT.

Antenna	Antenna Type	Gain (dBi)
Ant. 1	Chip	3.12
Ant. 2	Chip	1.77

- The EUT consumes power from the following adapter. (Support Unit only)

BRAND:	LEADER ELECTRONICS INC.
MODEL:	MU12-G050200-C5
INPUT:	100-240Vac, 50/60Hz, 500mA
OUTPUT:	5Vdc, 2000mA
POWER LINE:	DC 1.6m cable without core

- 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≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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

NOTE: The EUT had been pre-tested on the positioned of each 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)	TX FUNCTION
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	1TX
-		1 to 11	1, 6, 11	DSSS	DBPSK	1.0	2TX
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	1TX
-		1 to 11	1, 6, 11	OFDM	BPSK	6.0	2TX
-	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	1TX
-		1 to 11	1, 6, 11	OFDM	BPSK	7.2	2TX
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0	1TX
-		3 to 9	3, 6, 9	OFDM	BPSK	15.0	2TX

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)	TX FUNCTION
-	802.11g	1 to 11	6	OFDM	BPSK	6.0	1TX



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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)	TX FUNCTION
-	802.11g	1 to 11	6	OFDM	BPSK	6.0	1TX

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)	TX FUNCTION
-	802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0	1TX
-		1 to 11	1, 11	DSSS	DBPSK	1.0	2TX
-	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0	1TX
-		1 to 11	1, 11	OFDM	BPSK	6.0	2TX
-	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2	1TX
-		1 to 11	1, 11	OFDM	BPSK	7.2	2TX
-	802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	15.0	1TX
-		3 to 9	3, 9	OFDM	BPSK	15.0	2TX



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	MODULATIONTE CHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX FUNCTION
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	1TX
-		1 to 11	1, 6, 11	DSSS	DBPSK	1.0	2TX
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	1TX
-		1 to 11	1, 6, 11	OFDM	BPSK	6.0	2TX
-	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	1TX
-		1 to 11	1, 6, 11	OFDM	BPSK	7.2	2TX
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0	1TX
-		3 to 9	3, 6, 9	OFDM	BPSK	15.0	2TX

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 60%RH	120Vac, 60Hz	Ted Chang, Alan Wu
RE<1G	25deg. C, 60%RH	120Vac, 60Hz	Alan Wu
PLC	25deg. C, 60%RH	120Vac, 60Hz	Alan Wu
APCM	25deg. C, 60%RH	120Vac, 60Hz	Nick Chen



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3.3 DUTY CYCLE OF TEST SIGNAL

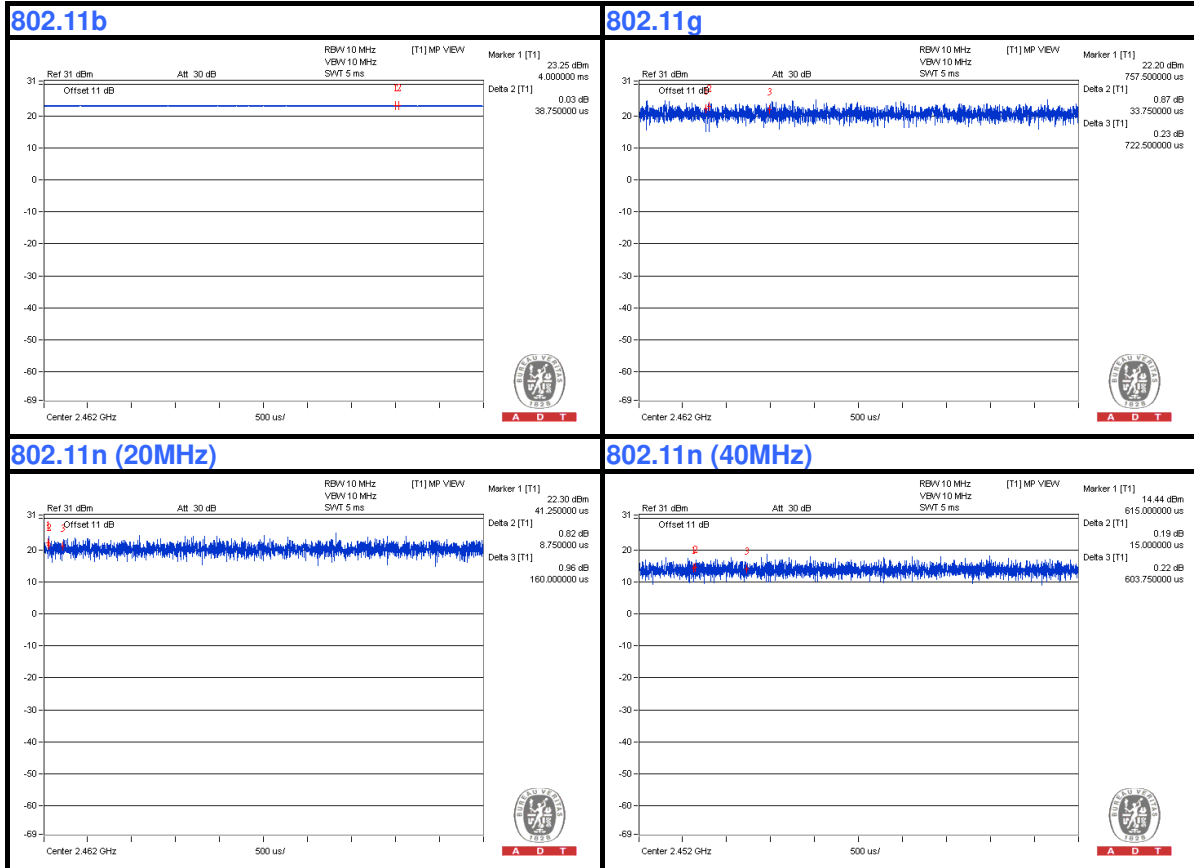
1TX:

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

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

802.11n (20MHz): Duty cycle of test signal is > 98 %

802.11n (40MHz): Duty cycle of test signal is > 98 %





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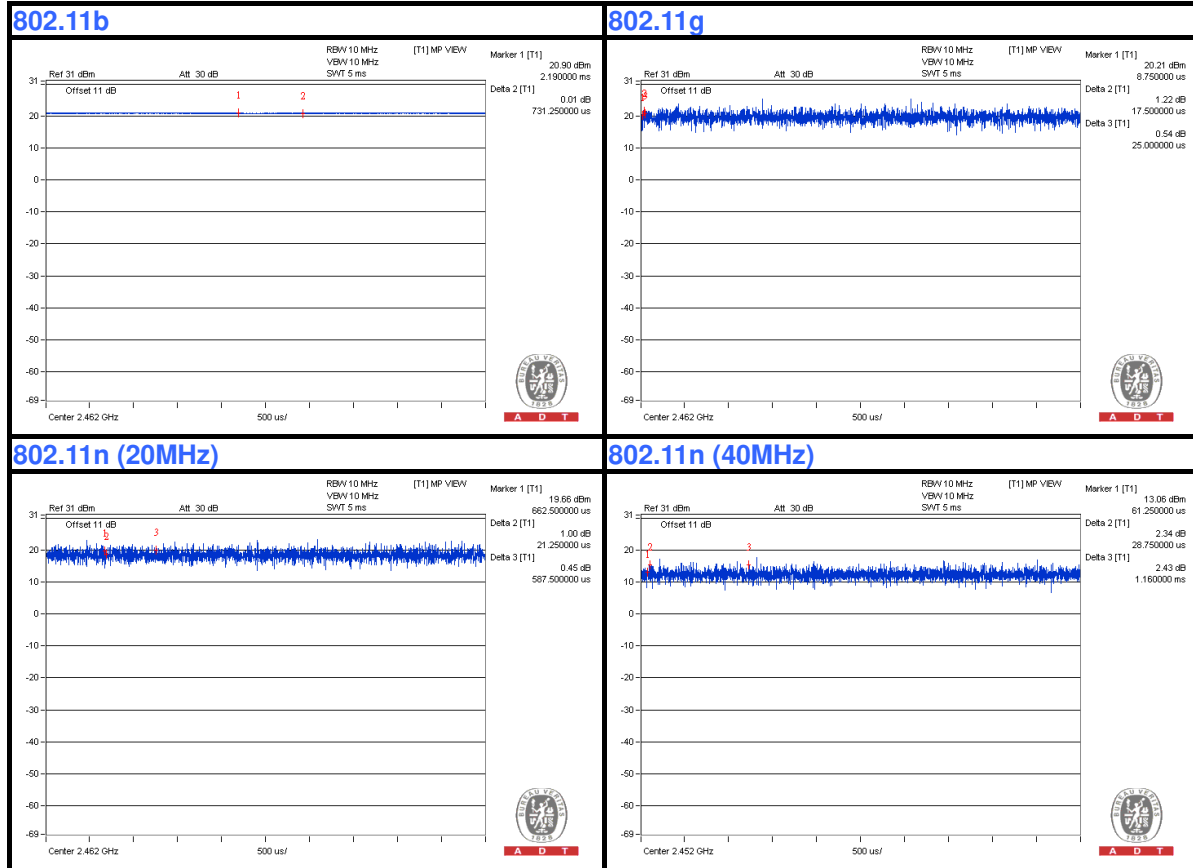
2TX:

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

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

802.11n (20MHz): Duty cycle of test signal is > 98 %

802.11n (40MHz): Duty cycle of test signal is > 98 %



3.4 DESCRIPTION OF SUPPORT UNITS

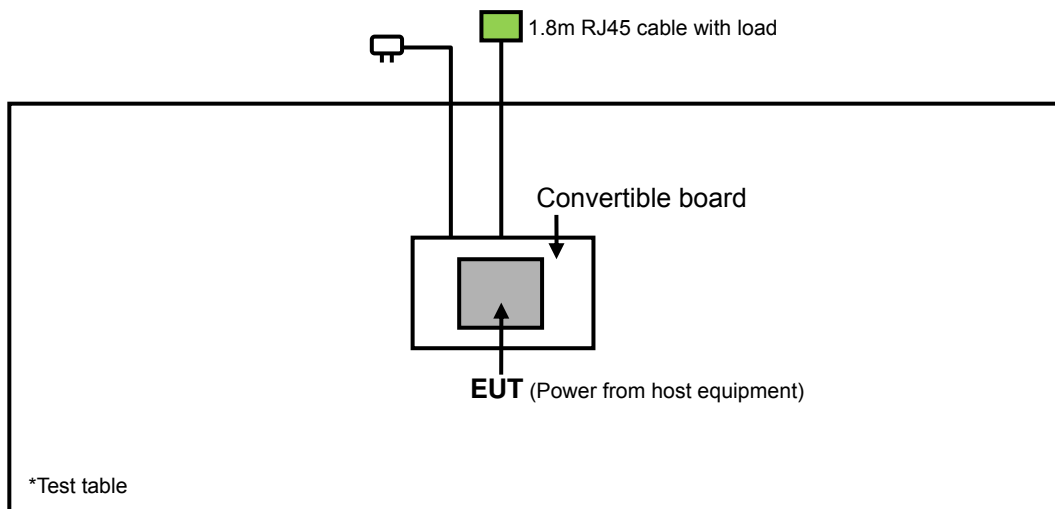
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	CONVERTIBLE BOARD	NA	NA	NA	NA

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

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

3.4.1 CONFIGURATION OF SYSTEM UNDER TEST





3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v03r02

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2009

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

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

NOTE:

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



4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 29, 2013	Nov. 28, 2014
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Feb. 11, 2014	Feb. 10, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Feb. 25, 2014	Feb. 24, 2015
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Sep. 12, 2013	Sep. 11, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 15, 2013	Jul. 14, 2014
Preamplifier Agilent	8449B	3008A01911	Aug. 22, 2013	Aug. 21, 2014
Preamplifier Agilent	8447D	2944A10638	Oct. 18, 2013	Oct. 17, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	248780/4 309222/4 274092/4	Aug. 26, 2013	Aug. 25, 2014
RF signal cable Worken	5D-FB	Cable-HYCH9-01	Aug. 11, 2013	Aug. 10, 2014
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	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 test was performed in HwaYa Chamber 9.
 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 215374.
 5. The IC Site Registration No. is IC 7450F-9.

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:

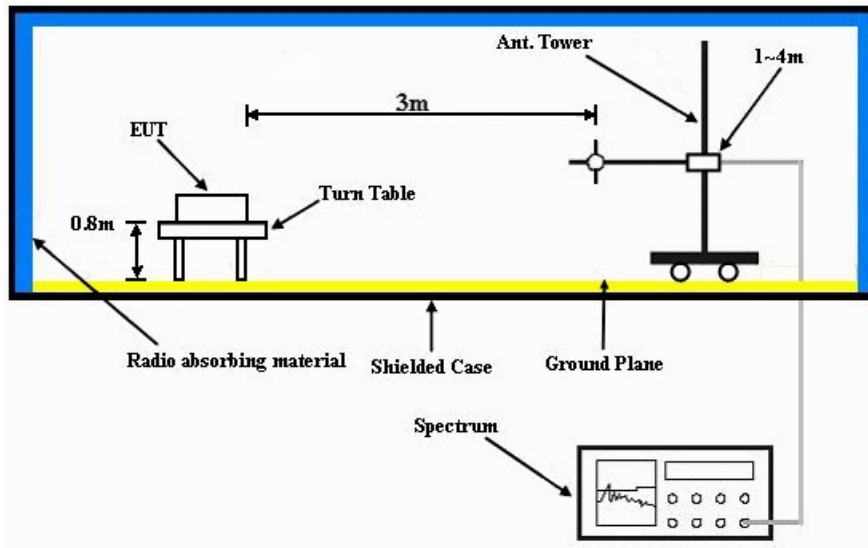
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution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

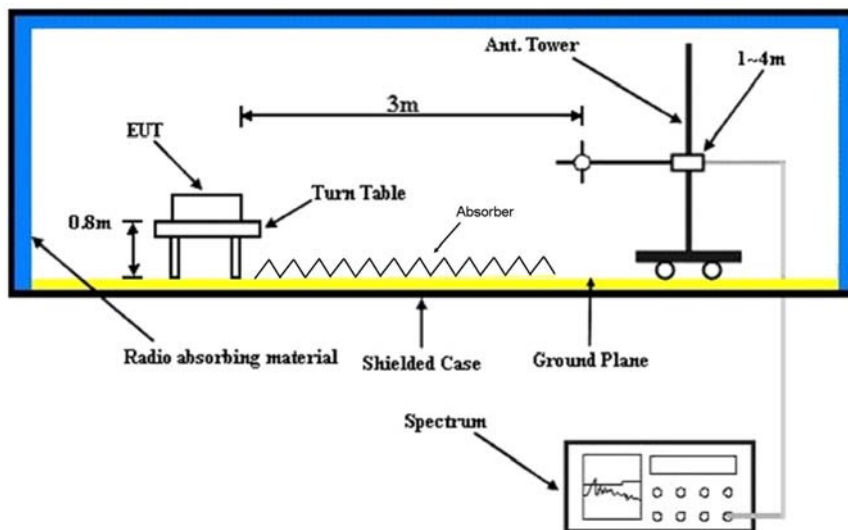
No deviation.

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 convertible 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.



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4.1.7 TEST RESULTS

ABOVE 1GHz DATA : 1TX

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	25deg. C, 60%RH	TESTED BY	Ted 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	63.9 PK	74.0	-10.1	1.36 H	143	31.60	32.30
2	2390.00	53.0 AV	54.0	-1.0	1.36 H	143	20.70	32.30
3	*2412.00	112.5 PK			1.36 H	142	80.00	32.50
4	*2412.00	109.0 AV			1.36 H	142	76.50	32.50
5	4824.00	50.1 PK	74.0	-23.9	1.00 H	236	48.10	2.00
6	4824.00	44.5 AV	54.0	-9.5	1.00 H	236	42.50	2.00
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	60.2 PK	74.0	-13.8	1.00 V	279	27.90	32.30
2	2390.00	47.9 AV	54.0	-6.1	1.00 V	279	15.60	32.30
3	*2412.00	103.5 PK			1.00 V	279	71.00	32.50
4	*2412.00	99.8 AV			1.00 V	279	67.30	32.50
5	4824.00	50.5 PK	74.0	-23.5	1.23 V	24	48.50	2.00
6	4824.00	46.2 AV	54.0	-7.8	1.23 V	24	44.20	2.00

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.



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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	25deg. C, 60%RH	TESTED BY	Ted 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	*2437.00	112.7 PK			1.07 H	122	80.20	32.50
2	*2437.00	109.0 AV			1.07 H	122	76.50	32.50
3	4874.00	51.0 PK	74.0	-23.0	1.06 H	61	49.00	2.00
4	4874.00	46.3 AV	54.0	-7.7	1.06 H	61	44.30	2.00
5	7311.00	55.9 PK	74.0	-18.1	1.00 H	78	47.90	8.00
6	7311.00	43.4 AV	54.0	-10.6	1.00 H	78	35.40	8.00
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	*2437.00	106.0 PK			1.33 V	99	73.50	32.50
2	*2437.00	102.3 AV			1.33 V	99	69.80	32.50
3	4874.00	51.5 PK	74.0	-22.5	1.02 V	6	49.50	2.00
4	4874.00	47.2 AV	54.0	-6.8	1.02 V	6	45.20	2.00
5	7311.00	56.2 PK	74.0	-17.8	1.02 V	64	48.20	8.00
6	7311.00	44.2 AV	54.0	-9.8	1.02 V	64	36.20	8.00

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.



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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	25deg. C, 60%RH	TESTED BY	Ted 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	109.7 PK			1.27 H	116	77.10	32.60
2	*2462.00	106.1 AV			1.27 H	116	73.50	32.60
3	2483.50	62.4 PK	74.0	-11.6	1.27 H	116	29.60	32.80
4	2483.50	49.2 AV	54.0	-4.8	1.27 H	116	16.40	32.80
5	4924.00	51.3 PK	74.0	-22.7	1.11 H	287	49.20	2.10
6	4924.00	46.2 AV	54.0	-7.8	1.11 H	287	44.10	2.10
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	*2462.00	102.1 PK			1.00 V	274	69.50	32.60
2	*2462.00	98.3 AV			1.00 V	274	65.70	32.60
3	2483.50	59.8 PK	74.0	-14.2	1.00 V	274	27.00	32.80
4	2483.50	47.8 AV	54.0	-6.2	1.00 V	274	15.00	32.80
5	4924.00	52.2 PK	74.0	-21.8	1.05 V	9	50.10	2.10
6	4924.00	47.3 AV	54.0	-6.7	1.05 V	9	45.20	2.10

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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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	25deg. C, 60%RH	TESTED BY	Ted 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	70.8 PK	74.0	-3.2	1.15 H	149	38.50	32.30
2	2390.00	52.7 AV	54.0	-1.3	1.15 H	149	20.40	32.30
3	*2412.00	111.0 PK			1.15 H	149	78.50	32.50
4	*2412.00	100.5 AV			1.15 H	149	68.00	32.50
5	4824.00	47.6 PK	74.0	-26.4	1.02 H	64	45.60	2.00
6	4824.00	35.5 AV	54.0	-18.5	1.02 H	64	33.50	2.00

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	61.9 PK	74.0	-12.1	1.00 V	278	29.60	32.30
2	2390.00	48.6 AV	54.0	-5.4	1.00 V	278	16.30	32.30
3	*2412.00	103.8 PK			1.00 V	278	71.30	32.50
4	*2412.00	92.9 AV			1.00 V	278	60.40	32.50
5	4824.00	48.5 PK	74.0	-25.5	1.08 V	94	46.50	2.00
6	4824.00	36.5 AV	54.0	-17.5	1.08 V	94	34.50	2.00

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.



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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	25deg. C, 60%RH	TESTED BY	Ted 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	*2437.00	109.1 PK			1.00 H	150	76.60	32.50
2	*2437.00	98.2 AV			1.00 H	150	65.70	32.50
3	4874.00	46.6 PK	74.0	-27.4	1.06 H	54	44.60	2.00
4	4874.00	36.5 AV	54.0	-17.5	1.06 H	54	34.50	2.00
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	*2437.00	105.5 PK			1.34 V	99	73.00	32.50
2	*2437.00	94.3 AV			1.34 V	99	61.80	32.50
3	4874.00	47.6 PK	74.0	-26.4	1.54 V	94	45.60	2.00
4	4874.00	35.6 AV	54.0	-18.4	1.54 V	94	33.60	2.00

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.



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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	25deg. C, 60%RH	TESTED BY	Ted 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	110.0 PK			1.05 H	161	77.40	32.60
2	*2462.00	99.7 AV			1.05 H	161	67.10	32.60
3	2483.50	72.5 PK	74.0	-1.5	1.06 H	161	39.70	32.80
4	2483.50	51.1 AV	54.0	-2.9	1.06 H	161	18.30	32.80
5	4924.00	47.4 PK	74.0	-26.6	1.05 H	94	45.30	2.10
6	4924.00	35.6 AV	54.0	-18.4	1.05 H	94	33.50	2.10
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	*2462.00	103.5 PK			1.08 V	101	70.90	32.60
2	*2462.00	92.1 AV			1.08 V	101	59.50	32.60
3	2483.50	63.3 PK	74.0	-10.7	1.08 V	101	30.50	32.80
4	2483.50	48.6 AV	54.0	-5.4	1.08 V	101	15.80	32.80
5	4924.00	45.7 PK	74.0	-28.3	1.01 V	51	43.60	2.10
6	4924.00	35.3 AV	54.0	-18.7	1.01 V	51	33.20	2.10

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.



A D T

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	25deg. C, 60%RH	TESTED BY	Ted 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	68.4 PK	74.0	-5.6	1.13 H	151	36.10	32.30
2	2390.00	52.9 AV	54.0	-1.1	1.13 H	151	20.60	32.30
3	*2412.00	110.8 PK			1.13 H	151	78.30	32.50
4	*2412.00	100.2 AV			1.13 H	151	67.70	32.50
5	4824.00	47.3 PK	74.0	-26.7	1.56 H	62	45.30	2.00
6	4824.00	35.6 AV	54.0	-18.4	1.56 H	62	33.60	2.00

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	60.0 PK	74.0	-14.0	1.00 V	278	27.70	32.30
2	2390.00	48.3 AV	54.0	-5.7	1.00 V	278	16.00	32.30
3	*2412.00	102.0 PK			1.00 V	278	69.50	32.50
4	*2412.00	91.4 AV			1.00 V	278	58.90	32.50
5	4824.00	47.2 PK	74.0	-26.8	1.02 V	54	45.20	2.00
6	4824.00	35.5 AV	54.0	-18.5	1.02 V	54	33.50	2.00

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.



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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	25deg. C, 60%RH	TESTED BY	Ted 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	*2437.00	110.3 PK			1.05 H	131	77.80	32.50
2	*2437.00	99.3 AV			1.05 H	131	66.80	32.50
3	4874.00	47.7 PK	74.0	-26.3	1.05 H	4	45.70	2.00
4	4874.00	35.5 AV	54.0	-18.5	1.05 H	4	33.50	2.00
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	*2437.00	104.4 PK			1.35 V	38	71.90	32.50
2	*2437.00	93.9 AV			1.35 V	38	61.40	32.50
3	4874.00	46.2 PK	74.0	-27.8	1.01 V	47	44.20	2.00
4	4874.00	35.2 AV	54.0	-18.8	1.01 V	47	33.20	2.00

REMARKS:

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



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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	25deg. C, 60%RH	TESTED BY	Ted 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	108.2 PK			1.03 H	119	75.60	32.60
2	*2462.00	97.9 AV			1.03 H	119	65.30	32.60
3	2483.50	71.7 PK	74.0	-2.3	1.03 H	119	38.90	32.80
4	2483.50	51.1 AV	54.0	-2.9	1.03 H	119	18.30	32.80
5	4924.00	47.3 PK	74.0	-26.7	1.57 H	84	45.20	2.10
6	4924.00	35.7 AV	54.0	-18.3	1.57 H	84	33.60	2.10

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	*2462.00	103.0 PK			1.00 V	99	70.40	32.60
2	*2462.00	92.0 AV			1.00 V	99	59.40	32.60
3	2483.50	64.4 PK	74.0	-9.6	1.00 V	99	31.60	32.80
4	2483.50	49.0 AV	54.0	-5.0	1.00 V	99	16.20	32.80
5	4924.00	47.4 PK	74.0	-26.6	1.51 V	54	45.30	2.10
6	4924.00	35.6 AV	54.0	-18.4	1.51 V	54	33.50	2.10

REMARKS:

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



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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	25deg. C, 60%RH	TESTED BY	Alan Wu

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	67.9 PK	74.0	-6.1	1.39 H	150	35.60	32.30
2	2390.00	52.9 AV	54.0	-1.1	1.39 H	150	20.60	32.30
3	*2422.00	104.3 PK			1.37 H	153	71.80	32.50
4	*2422.00	94.4 AV			1.37 H	153	61.90	32.50
5	4844.00	47.0 PK	74.0	-27.0	1.50 H	61	45.00	2.00
6	4844.00	35.1 AV	54.0	-18.9	1.50 H	61	33.10	2.00

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	63.9 PK	74.0	-10.1	1.39 V	101	31.60	32.30
2	2390.00	48.8 AV	54.0	-5.2	1.39 V	101	16.50	32.30
3	*2422.00	97.8 PK			1.31 V	101	65.30	32.50
4	*2422.00	87.7 AV			1.31 V	101	55.20	32.50
5	4844.00	46.7 PK	74.0	-27.3	1.00 V	58	44.70	2.00
6	4844.00	34.8 AV	54.0	-19.2	1.00 V	58	32.80	2.00

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.



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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	25deg. C, 60%RH	TESTED BY	Alan Wu

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	64.8 PK	74.0	-9.2	1.32 H	150	32.50	32.30
2	2390.00	50.9 AV	54.0	-3.1	1.32 H	150	18.60	32.30
3	*2437.00	108.5 PK			1.35 H	153	76.00	32.50
4	*2437.00	97.9 AV			1.35 H	153	65.40	32.50
5	4874.00	47.4 PK	74.0	-26.6	1.52 H	62	45.40	2.00
6	4874.00	35.4 AV	54.0	-18.6	1.52 H	62	33.40	2.00
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	59.5 PK	74.0	-14.5	1.24 V	107	27.20	32.30
2	2390.00	47.5 AV	54.0	-6.5	1.24 V	107	15.20	32.30
3	*2437.00	100.7 PK			1.28 V	102	68.20	32.50
4	*2437.00	90.8 AV			1.28 V	102	58.30	32.50
5	4874.00	45.8 PK	74.0	-28.2	1.00 V	51	43.80	2.00
6	4874.00	34.7 AV	54.0	-19.3	1.00 V	51	32.70	2.00

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.



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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	25deg. C, 60%RH	TESTED BY	Alan Wu

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	105.9 PK			1.31 H	148	73.30	32.60
2	*2452.00	95.7 AV			1.31 H	148	63.10	32.60
3	2483.50	70.4 PK	74.0	-3.6	1.30 H	143	37.60	32.80
4	2483.50	52.5 AV	54.0	-1.5	1.30 H	143	19.70	32.80
5	4904.00	46.7 PK	74.0	-27.3	1.53 H	63	44.60	2.10
6	4904.00	34.9 AV	54.0	-19.1	1.53 H	63	32.80	2.10
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	99.3 PK			1.28 V	100	66.70	32.60
2	*2452.00	88.8 AV			1.28 V	100	56.20	32.60
3	2483.50	64.1 PK	74.0	-9.9	1.26 V	100	31.30	32.80
4	2483.50	48.6 AV	54.0	-5.4	1.26 V	100	15.80	32.80
5	4904.00	46.1 PK	74.0	-27.9	1.00 V	56	44.00	2.10
6	4904.00	34.1 AV	54.0	-19.9	1.00 V	56	32.00	2.10

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.



A D T

ABOVE 1GHz DATA : 2TX

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	25deg. C, 60%RH	TESTED BY	Alan Wu

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	2386.00	62.8 PK	74.0	-11.2	1.31 H	85	30.50	32.30
2	2386.00	52.8 AV	54.0	-1.2	1.31 H	85	20.50	32.30
3	*2412.00	114.4 PK			1.29 H	68	81.90	32.50
4	*2412.00	111.0 AV			1.29 H	68	78.50	32.50
5	4824.00	46.9 PK	74.0	-27.1	1.01 H	25	44.90	2.00
6	4824.00	37.7 AV	54.0	-16.3	1.01 H	25	35.70	2.00
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	2386.00	60.3 PK	74.0	-13.7	1.00 V	122	28.00	32.30
2	2386.00	48.6 AV	54.0	-5.4	1.00 V	122	16.30	32.30
3	*2412.00	108.7 PK			1.00 V	122	76.20	32.50
4	*2412.00	105.5 AV			1.00 V	122	73.00	32.50
5	4824.00	47.5 PK	74.0	-26.5	1.00 V	34	45.50	2.00
6	4824.00	40.8 AV	54.0	-13.2	1.00 V	34	38.80	2.00

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.



A D T

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	25deg. C, 60%RH	TESTED BY	Alan Wu

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	115.1 PK			1.29 H	68	82.60	32.50
2	*2437.00	111.5 AV			1.29 H	68	79.00	32.50
3	4874.00	47.3 PK	74.0	-26.7	1.01 H	25	45.30	2.00
4	4874.00	38.1 AV	54.0	-15.9	1.01 H	25	36.10	2.00
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	*2437.00	108.9 PK			1.00 V	122	76.40	32.50
2	*2437.00	105.7 AV			1.00 V	122	73.20	32.50
3	4874.00	48.4 PK	74.0	-25.6	1.00 V	30	46.40	2.00
4	4874.00	41.2 AV	54.0	-12.8	1.00 V	30	39.20	2.00

REMARKS:

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



A D T

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	25deg. C, 60%RH	TESTED BY	Alan Wu

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	111.9 PK			1.01 H	35	79.30	32.60
2	*2462.00	108.4 AV			1.01 H	35	75.80	32.60
3	2483.50	60.6 PK	74.0	-13.4	1.28 H	62	27.80	32.80
4	2483.50	48.4 AV	54.0	-5.6	1.28 H	62	15.60	32.80
5	4924.00	46.4 PK	74.0	-27.6	1.03 H	25	44.30	2.10
6	4924.00	37.5 AV	54.0	-16.5	1.03 H	25	35.40	2.10

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	*2462.00	105.0 PK			1.00 V	93	72.40	32.60
2	*2462.00	102.0 AV			1.00 V	93	69.40	32.60
3	2483.50	60.4 PK	74.0	-13.6	1.00 V	98	27.60	32.80
4	2483.50	47.3 AV	54.0	-6.7	1.00 V	98	14.50	32.80
5	4924.00	47.0 PK	74.0	-27.0	1.00 V	36	44.90	2.10
6	4924.00	38.2 AV	54.0	-15.8	1.00 V	36	36.10	2.10

REMARKS:

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



A D T

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	25deg. C, 60%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.7 PK	74.0	-5.3	1.31 H	69	36.40	32.30
2	2390.00	52.4 AV	54.0	-1.6	1.31 H	69	20.10	32.30
3	*2412.00	113.4 PK			1.30 H	69	80.90	32.50
4	*2412.00	103.3 AV			1.30 H	69	70.80	32.50
5	4824.00	46.5 PK	74.0	-27.5	1.01 H	27	44.50	2.00
6	4824.00	37.4 AV	54.0	-16.6	1.01 H	27	35.40	2.00

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	64.6 PK	74.0	-9.4	1.00 V	127	32.30	32.30
2	2390.00	48.6 AV	54.0	-5.4	1.00 V	127	16.30	32.30
3	*2412.00	107.2 PK			1.00 V	123	74.70	32.50
4	*2412.00	97.6 AV			1.00 V	123	65.10	32.50
5	4824.00	47.2 PK	74.0	-26.8	1.00 V	31	45.20	2.00
6	4824.00	39.6 AV	54.0	-14.4	1.00 V	31	37.60	2.00

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.



A D T

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	25deg. C, 60%RH	TESTED BY	Alan Wu

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	113.6 PK			1.28 H	69	81.10	32.50
2	*2437.00	103.7 AV			1.28 H	69	71.20	32.50
3	4874.00	46.8 PK	74.0	-27.2	1.02 H	24	44.80	2.00
4	4874.00	37.7 AV	54.0	-16.3	1.02 H	24	35.70	2.00
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	*2437.00	106.5 PK			1.00 V	123	74.00	32.50
2	*2437.00	97.4 AV			1.00 V	123	64.90	32.50
3	4874.00	47.2 PK	74.0	-26.8	1.00 V	34	45.20	2.00
4	4874.00	40.1 AV	54.0	-13.9	1.00 V	34	38.10	2.00

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.



A D T

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	25deg. C, 60%RH	TESTED BY	Alan Wu

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	113.5 PK			1.28 H	69	80.90	32.60
2	*2462.00	103.1 AV			1.28 H	69	70.50	32.60
3	2483.50	67.3 PK	74.0	-6.7	1.27 H	66	34.50	32.80
4	2483.50	51.6 AV	54.0	-2.4	1.27 H	66	18.80	32.80
5	4924.00	46.0 PK	74.0	-28.0	1.00 H	27	43.90	2.10
6	4924.00	36.9 AV	54.0	-17.1	1.00 H	27	34.80	2.10
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	*2462.00	106.8 PK			1.00 V	123	74.20	32.60
2	*2462.00	97.4 AV			1.00 V	123	64.80	32.60
3	2483.50	60.8 PK	74.0	-13.2	1.00 V	123	28.00	32.80
4	2483.50	47.6 AV	54.0	-6.4	1.00 V	123	14.80	32.80
5	4924.00	46.3 PK	74.0	-27.7	1.00 V	35	44.20	2.10
6	4924.00	38.0 AV	54.0	-16.0	1.00 V	35	35.90	2.10

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.



A D T

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	25deg. C, 60%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.5 PK	74.0	-4.5	1.31 H	79	37.20	32.30
2	2390.00	52.8 AV	54.0	-1.2	1.31 H	79	20.50	32.30
3	*2412.00	114.1 PK			1.31 H	69	81.60	32.50
4	*2412.00	103.8 AV			1.31 H	69	71.30	32.50
5	4824.00	46.4 PK	74.0	-27.6	1.04 H	26	44.40	2.00
6	4824.00	37.1 AV	54.0	-16.9	1.04 H	26	35.10	2.00

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	63.5 PK	74.0	-10.5	1.00 V	124	31.20	32.30
2	2390.00	49.3 AV	54.0	-4.7	1.00 V	124	17.00	32.30
3	*2412.00	106.7 PK			1.00 V	123	74.20	32.50
4	*2412.00	97.5 AV			1.00 V	123	65.00	32.50
5	4824.00	46.7 PK	74.0	-27.3	1.00 V	32	44.70	2.00
6	4824.00	39.4 AV	54.0	-14.6	1.00 V	32	37.40	2.00

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.



A D T

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	25deg. C, 60%RH	TESTED BY	Alan Wu

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	114.1 PK			1.30 H	65	81.60	32.50
2	*2437.00	103.7 AV			1.30 H	65	71.20	32.50
3	4874.00	46.1 PK	74.0	-27.9	1.02 H	26	44.10	2.00
4	4874.00	36.8 AV	54.0	-17.2	1.02 H	26	34.80	2.00

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	*2437.00	107.5 PK			1.00 V	124	75.00	32.50
2	*2437.00	97.4 AV			1.00 V	124	64.90	32.50
3	4874.00	46.6 PK	74.0	-27.4	1.00 V	38	44.60	2.00
4	4874.00	39.3 AV	54.0	-14.7	1.00 V	38	37.30	2.00

REMARKS:

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



A D T

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	25deg. C, 60%RH	TESTED BY	Alan Wu

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	112.8 PK			1.29 H	67	80.20	32.60
2	*2462.00	102.5 AV			1.29 H	67	69.90	32.60
3	2483.50	65.5 PK	74.0	-8.5	1.27 H	86	32.70	32.80
4	2483.50	49.7 AV	54.0	-4.3	1.27 H	86	16.90	32.80
5	4924.00	45.2 PK	74.0	-28.8	1.01 H	23	43.10	2.10
6	4924.00	36.4 AV	54.0	-17.6	1.01 H	23	34.30	2.10
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	*2462.00	105.9 PK			1.00 V	125	73.30	32.60
2	*2462.00	95.8 AV			1.00 V	125	63.20	32.60
3	2483.50	61.6 PK	74.0	-12.4	1.00 V	121	28.80	32.80
4	2483.50	47.8 AV	54.0	-6.2	1.00 V	121	15.00	32.80
5	4924.00	46.1 PK	74.0	-27.9	1.00 V	39	44.00	2.10
6	4924.00	36.7 AV	54.0	-17.3	1.00 V	39	34.60	2.10

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.



A D T

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	25deg. C, 60%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.7 PK	74.0	-4.3	1.33 H	65	37.40	32.30
2	2390.00	52.6 AV	54.0	-1.4	1.33 H	65	20.30	32.30
3	*2422.00	105.9 PK			1.32 H	67	73.40	32.50
4	*2422.00	96.3 AV			1.32 H	67	63.80	32.50
5	4844.00	45.9 PK	74.0	-28.1	1.00 H	24	43.90	2.00
6	4844.00	36.5 AV	54.0	-17.5	1.00 H	24	34.50	2.00

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	65.1 PK	74.0	-8.9	1.00 V	126	32.80	32.30
2	2390.00	48.8 AV	54.0	-5.2	1.00 V	126	16.50	32.30
3	*2422.00	99.8 PK			1.00 V	124	67.30	32.50
4	*2422.00	90.6 AV			1.00 V	124	58.10	32.50
5	4844.00	46.0 PK	74.0	-28.0	1.00 V	34	44.00	2.00
6	4844.00	38.1 AV	54.0	-15.9	1.00 V	34	36.10	2.00

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.



A D T

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	25deg. C, 60%RH	TESTED BY	Alan Wu

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	64.2 PK	74.0	-9.8	1.20 H	75	31.90	32.30
2	2390.00	51.3 AV	54.0	-2.7	1.20 H	75	19.00	32.30
3	*2437.00	109.5 PK			1.28 H	72	77.00	32.50
4	*2437.00	99.5 AV			1.28 H	72	67.00	32.50
5	4874.00	45.7 PK	74.0	-28.3	1.05 H	25	43.70	2.00
6	4874.00	36.4 AV	54.0	-17.6	1.05 H	25	34.40	2.00

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	62.1 PK	74.0	-11.9	1.00 V	120	29.80	32.30
2	2390.00	48.2 AV	54.0	-5.8	1.00 V	120	15.90	32.30
3	*2437.00	103.9 PK			1.00 V	124	71.40	32.50
4	*2437.00	93.8 AV			1.00 V	124	61.30	32.50
5	4874.00	46.2 PK	74.0	-27.8	1.00 V	30	44.20	2.00
6	4874.00	38.0 AV	54.0	-16.0	1.00 V	30	36.00	2.00

REMARKS:

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



A D T

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	25deg. C, 60%RH	TESTED BY	Alan Wu

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	108.6 PK			1.31 H	68	76.00	32.60
2	*2452.00	98.7 AV			1.31 H	68	66.10	32.60
3	2483.50	70.6 PK	74.0	-3.4	1.26 H	83	37.80	32.80
4	2483.50	52.5 AV	54.0	-1.5	1.26 H	83	19.70	32.80
5	4904.00	44.7 PK	74.0	-29.3	1.02 H	24	42.60	2.10
6	4904.00	36.0 AV	54.0	-18.0	1.02 H	24	33.90	2.10
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	100.2 PK			1.00 V	123	67.60	32.60
2	*2452.00	91.3 AV			1.00 V	123	58.70	32.60
3	2483.50	65.1 PK	74.0	-8.9	1.00 V	123	32.30	32.80
4	2483.50	49.0 AV	54.0	-5.0	1.00 V	123	16.20	32.80
5	4904.00	45.7 PK	74.0	-28.3	1.00 V	31	43.60	2.10
6	4904.00	36.3 AV	54.0	-17.7	1.00 V	31	34.20	2.10

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.



A D T

BELOW 1GHz WORST-CASE DATA :**802.11g : 1TX**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH	TESTED BY	Alan Wu

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	75.08	26.6 QP	40.0	-13.4	1.99 H	220	43.80	-17.20
2	149.70	28.4 QP	43.5	-15.1	1.99 H	280	42.10	-13.70
3	350.22	26.7 QP	46.0	-19.3	1.00 H	130	38.00	-11.30
4	449.71	29.0 QP	46.0	-17.0	1.50 H	192	37.90	-8.90
5	578.73	28.0 QP	46.0	-18.0	1.24 H	157	34.80	-6.80
6	858.54	37.4 QP	46.0	-8.6	1.50 H	313	39.20	-1.80
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	31.55	33.4 QP	40.0	-6.6	1.00 V	11	49.20	-15.80
2	53.32	30.3 QP	40.0	-9.7	1.25 V	332	44.30	-14.00
3	149.70	27.9 QP	43.5	-15.6	1.00 V	242	41.60	-13.70
4	449.71	26.2 QP	46.0	-19.8	1.49 V	220	35.10	-8.90
5	586.51	26.8 QP	46.0	-19.2	1.49 V	187	33.40	-6.60
6	850.77	35.7 QP	46.0	-10.3	1.00 V	1	37.70	-2.00

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

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. 08, 2013	Jul. 07, 2014
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

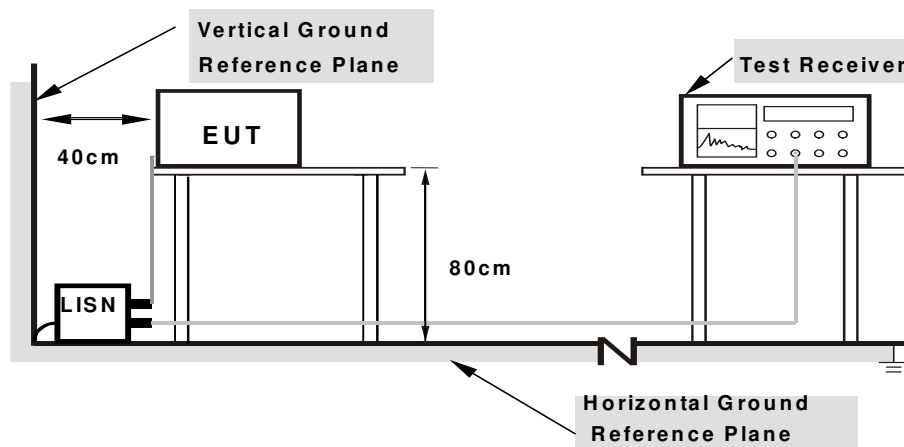
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

NOTE: 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 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

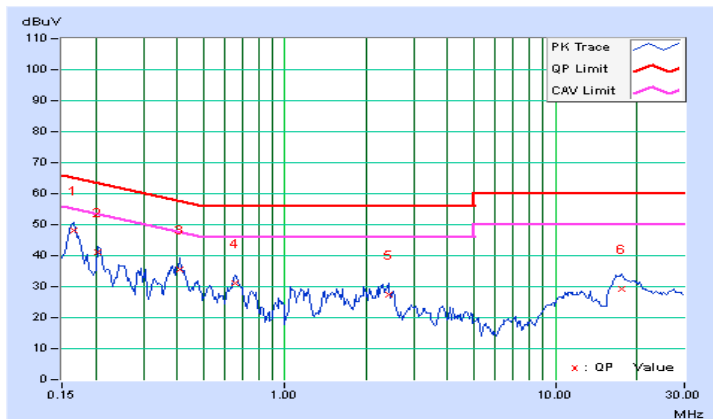
CONDUCTED WORST-CASE DATA : 802.11g : 1TX

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	0.16562	0.22	47.92	43.27	48.14	43.49	65.18	55.18	-17.03	-11.68
2	0.20469	0.24	40.98	32.44	41.22	32.68	63.42	53.42	-22.20	-20.74
3	0.40781	0.22	35.30	30.93	35.52	31.15	57.69	47.69	-22.17	-16.54
4	0.65781	0.25	30.98	25.34	31.23	25.59	56.00	46.00	-24.77	-20.41
5	2.41797	0.38	27.10	19.23	27.48	19.61	56.00	46.00	-28.52	-26.39
6	17.60156	0.64	28.50	24.14	29.14	24.78	60.00	50.00	-30.86	-25.22

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.

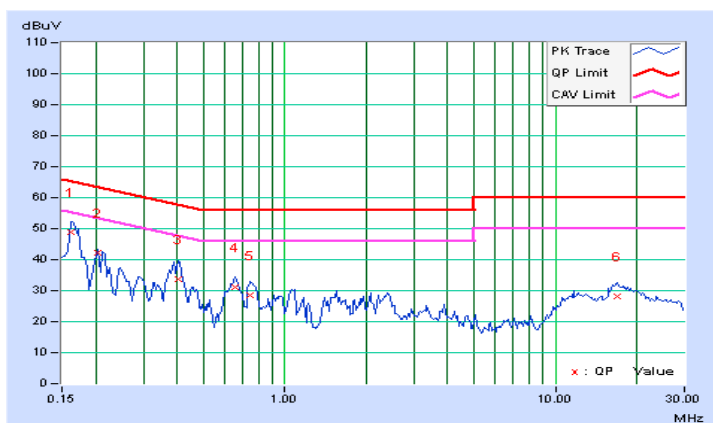


PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.23	48.81	42.02	49.04	42.25	65.38	55.38	-16.34	-13.13
2	0.20469	0.24	41.84	32.93	42.08	33.17	63.42	53.42	-21.34	-20.25
3	0.40391	0.30	33.51	27.22	33.81	27.52	57.77	47.77	-23.96	-20.25
4	0.65391	0.30	30.68	25.14	30.98	25.44	56.00	46.00	-25.02	-20.56
5	0.74766	0.29	28.40	22.19	28.69	22.48	56.00	46.00	-27.31	-23.52
6	16.93750	0.72	27.29	22.61	28.01	23.33	60.00	50.00	-31.99	-26.67

REMARKS:

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

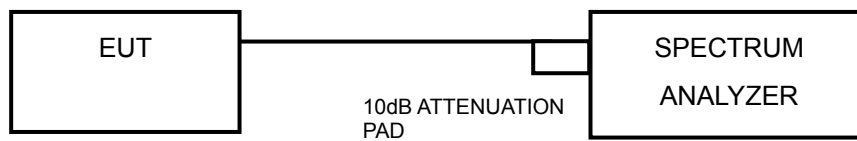


4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

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 RESULTS

1TX:

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.12	0.5	PASS
6	2437	10.08	0.5	PASS
11	2462	10.12	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.62	0.5	PASS
6	2437	16.61	0.5	PASS
11	2462	16.61	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.86	0.5	PASS
6	2437	17.86	0.5	PASS
11	2462	17.85	0.5	PASS

802.11n (40MHz)

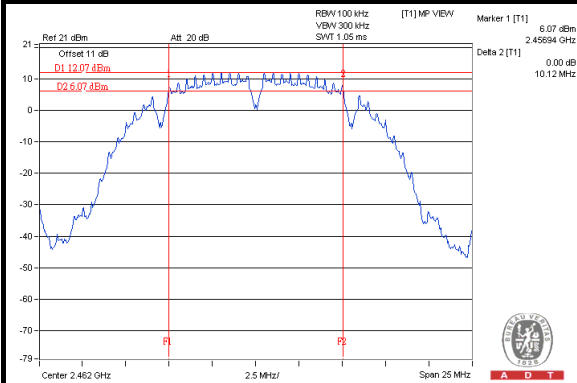
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.68	0.5	PASS
6	2437	36.68	0.5	PASS
9	2452	36.70	0.5	PASS



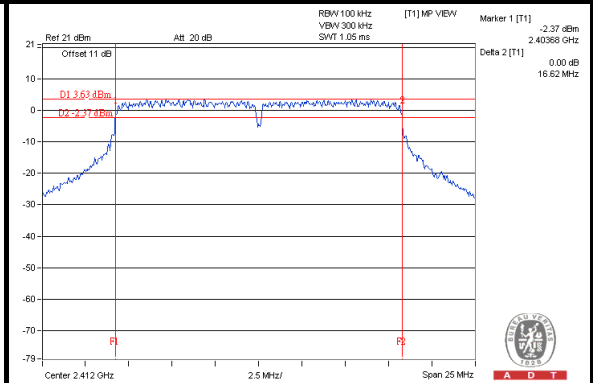
A D T

SPECTRUM PLOT OF WORST VALUE

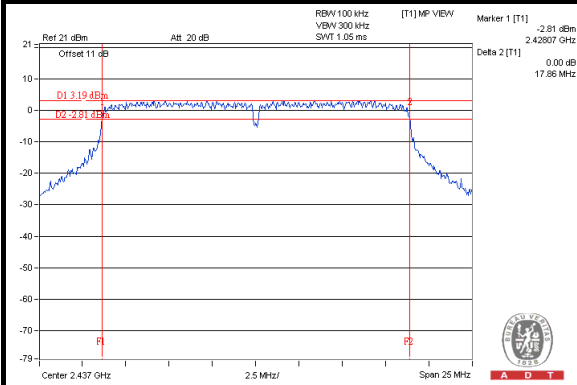
802.11b



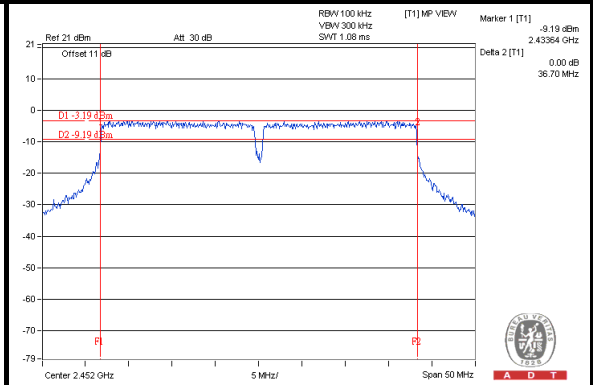
802.11g



802.11n (20MHz)



802.11n (40MHz)





A D T

2TX:

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	10.11	10.12	0.5	PASS
6	2437	10.12	10.13	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	16.64	16.54	0.5	PASS
6	2437	16.61	16.57	0.5	PASS
11	2462	16.62	16.57	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.86	17.82	0.5	PASS
6	2437	17.85	17.85	0.5	PASS
11	2462	17.85	17.83	0.5	PASS

802.11n (40MHz)

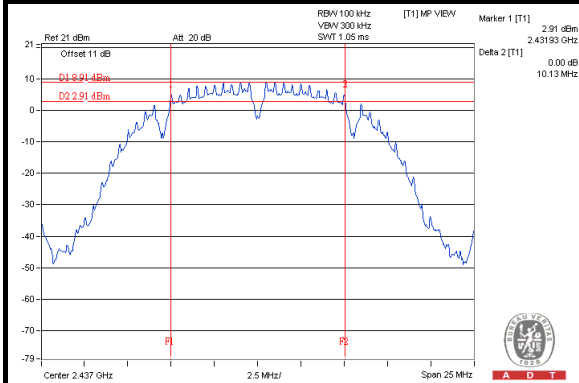
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.68	36.68	0.5	PASS
6	2437	36.68	36.69	0.5	PASS
9	2452	36.68	36.67	0.5	PASS



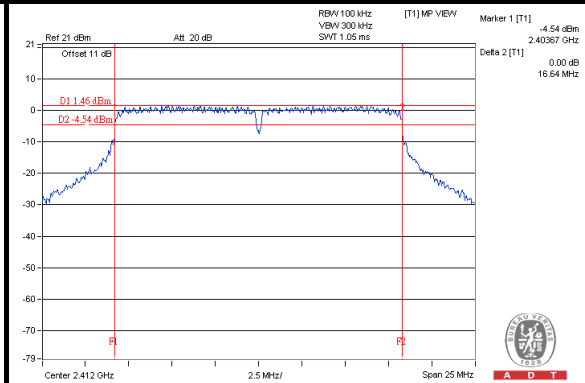
A D T

SPECTRUM PLOT OF WORST VALUE

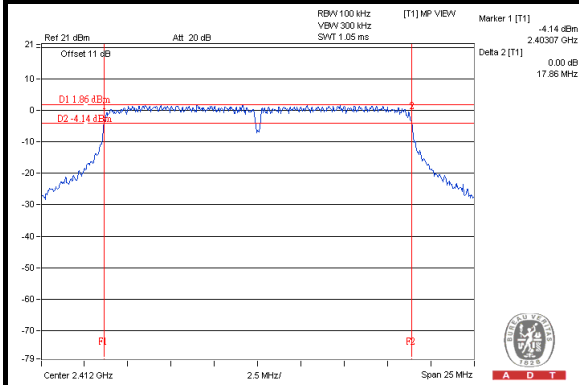
802.11b



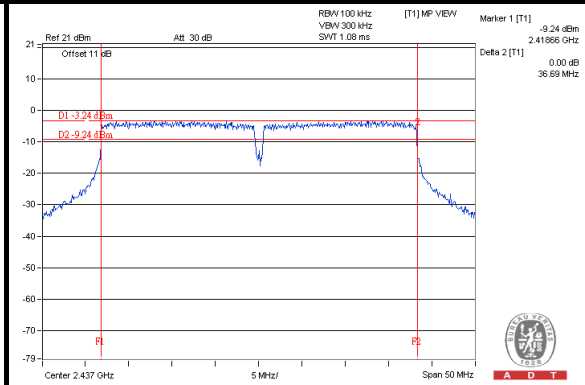
802.11g



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,

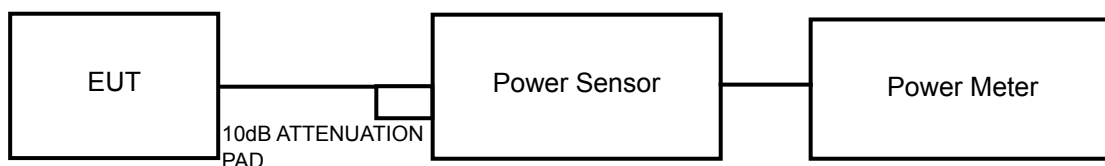
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

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

1TX:

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	153.462	21.86	30	PASS
6	2437	266.073	24.25	30	PASS
11	2462	261.216	24.17	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	519.996	27.16	30	PASS
6	2437	680.769	28.33	30	PASS
11	2462	517.607	27.14	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	414.954	26.18	30	PASS
6	2437	508.159	27.06	30	PASS
11	2462	504.661	27.03	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	193.642	22.87	30	PASS
6	2437	448.745	26.52	30	PASS
9	2452	264.241	24.22	30	PASS



2TX

802.11b

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	23.13	21.62	350.800	25.45	30	PASS
6	2437	23.35	21.76	366.240	25.64	30	PASS
11	2462	22.47	21.03	303.369	24.82	30	PASS

802.11g

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	25.16	24.47	607.993	27.84	30	PASS
6	2437	25.81	24.17	642.282	28.08	30	PASS
11	2462	25.83	23.96	631.711	28.01	30	PASS

802.11n (20MHz)

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	25.57	24.09	617.027	27.90	30	PASS
6	2437	25.93	24.11	649.374	28.12	30	PASS
11	2462	24.61	22.95	486.310	26.87	30	PASS

802.11n (40MHz)

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	20.53	19.62	204.602	23.11	30	PASS
6	2437	24.62	23.40	508.51	27.06	30	PASS
9	2452	22.95	21.02	323.716	25.10	30	PASS



A D T

FOR AVERAGE POWER

1TX

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	86.099	19.35
6	2437	155.239	21.91
11	2462	152.405	21.83

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	63.241	18.01
6	2437	79.250	18.99
11	2462	62.661	17.97

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	53.580	17.29
6	2437	67.764	18.31
11	2462	66.681	18.24

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	22.803	13.58
6	2437	56.494	17.52
11	2462	31.842	15.03



A D T

2TX

802.11b

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	20.82	19.25	204.921	23.12
6	2437	21.01	19.33	211.887	23.26
11	2462	20.03	18.61	173.304	22.39

802.11g

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	15.56	14.84	66.454	18.23
6	2437	16.90	15.33	83.097	19.20
11	2462	16.91	15.09	81.376	19.10

802.11n (20MHz)

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	16.56	15.28	79.019	18.98
6	2437	16.91	15.33	83.210	19.20
11	2462	15.41	14.04	60.105	17.79

802.11n (40MHz)

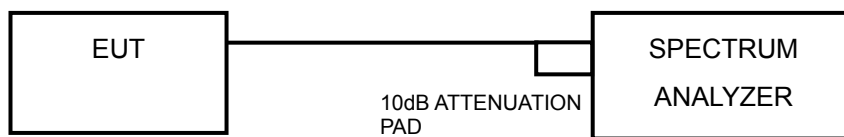
CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	11.40	10.48	24.973	13.97
6	2437	15.46	14.23	61.641	17.90
9	2452	13.50	11.89	37.840	15.78

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

1TX:

802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-3.36	8	PASS
6	2437	-1.38	8	PASS
11	2462	-1.90	8	PASS

802.11g

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-8.27	8	PASS
6	2437	-5.33	8	PASS
11	2462	-7.46	8	PASS

802.11n (20MHz)

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-8.66	8	PASS
6	2437	-7.57	8	PASS
11	2462	-7.52	8	PASS

802.11n (40MHz)

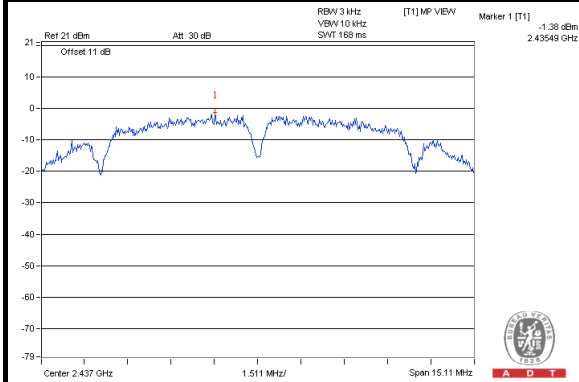
Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-14.81	8	PASS
6	2437	-11.84	8	PASS
9	2452	-13.69	8	PASS



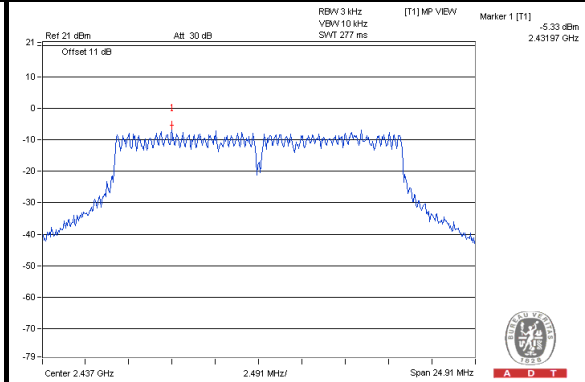
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SPECTRUM PLOT OF WORST VALUE

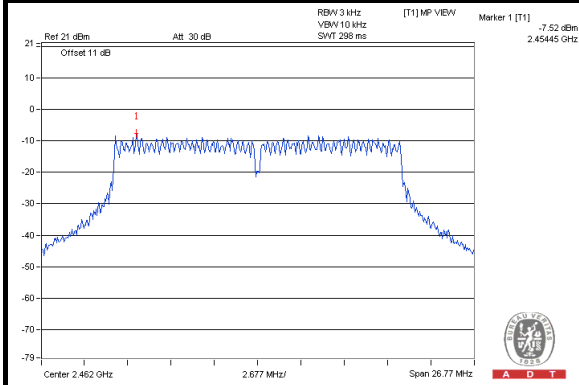
802.11b



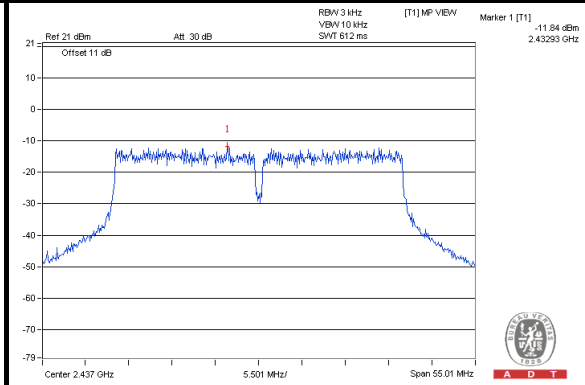
802.11g



802.11n (20MHz)



802.11n (40MHz)





2TX:

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	-4.53	3.01	-1.52	8	PASS
	6	2437	-2.16	3.01	0.85	8	PASS
	11	2462	-4.02	3.01	-1.01	8	PASS
1	1	2412	-5.17	3.01	-2.16	8	PASS
	6	2437	-4.33	3.01	-1.32	8	PASS
	11	2462	-5.79	3.01	-2.78	8	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 5.48 \text{ dBi} < 6 \text{ dBi}$, so the limit no need to reduced.

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	-9.20	3.01	-6.19	8	PASS
	6	2437	-8.74	3.01	-5.73	8	PASS
	11	2462	-7.19	3.01	-4.18	8	PASS
1	1	2412	-9.66	3.01	-6.65	8	PASS
	6	2437	-10.11	3.01	-7.10	8	PASS
	11	2462	-10.49	3.01	-7.48	8	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 5.48 \text{ dBi} < 6 \text{ dBi}$, so the limit no need to reduced.

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	-8.97	3.01	-5.96	8	PASS
	6	2437	-9.10	3.01	-6.09	8	PASS
	11	2462	-9.73	3.01	-6.72	8	PASS
1	1	2412	-10.02	3.01	-7.01	8	PASS
	6	2437	-9.37	3.01	-6.36	8	PASS
	11	2462	-11.16	3.01	-8.15	8	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 5.48 \text{ dBi} < 6 \text{ dBi}$, so the limit no need to reduced.

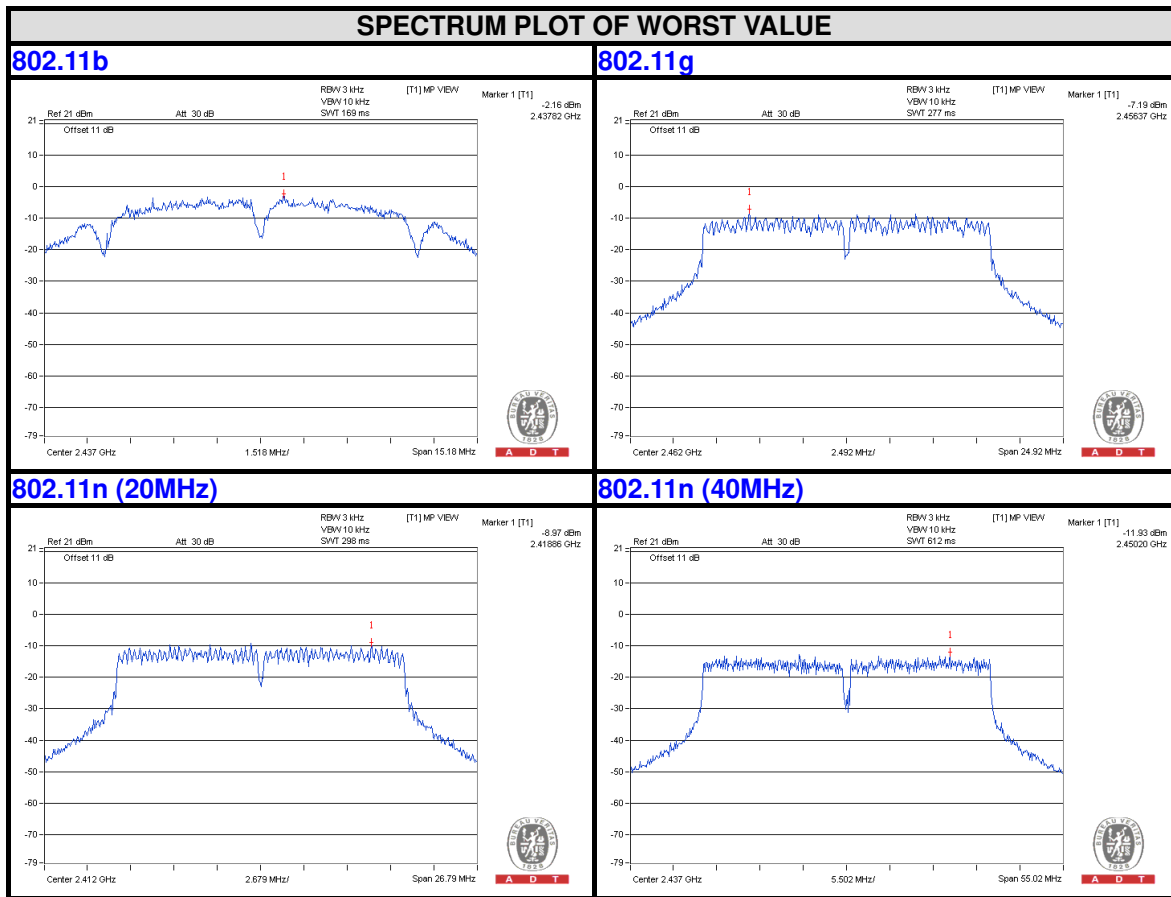


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802.11n (40MHz)

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	-17.67	3.01	-14.66	8	PASS
	6	2437	-11.93	3.01	-8.92	8	PASS
	9	2452	-16.04	3.01	-13.03	8	PASS
1	3	2422	-18.50	3.01	-15.49	8	PASS
	6	2437	-14.35	3.01	-11.34	8	PASS
	9	2452	-17.15	3.01	-14.14	8	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 5.48 \text{ dBi} < 6 \text{ dBi}$, so the limit no need to reduced.

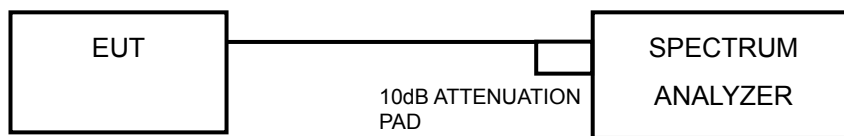


4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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 OOBE

1. Set RBW = 100 kHz.
2. Set VBW \geq 300 kHz.
3. Ensure that the number of measurement points \geq span/RBW
4. According to measurement points to set differ measurement span.
5. Detector = peak.
6. Trace Mode = max hold.
7. 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 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.

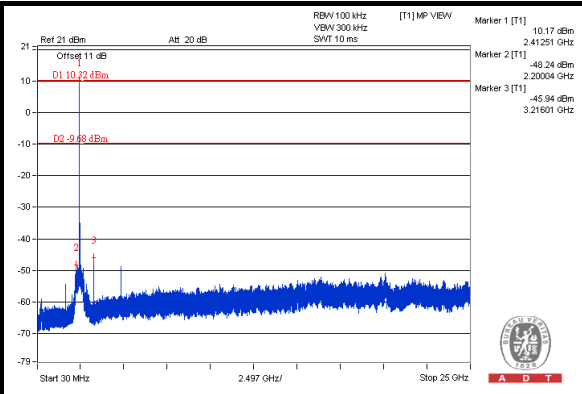
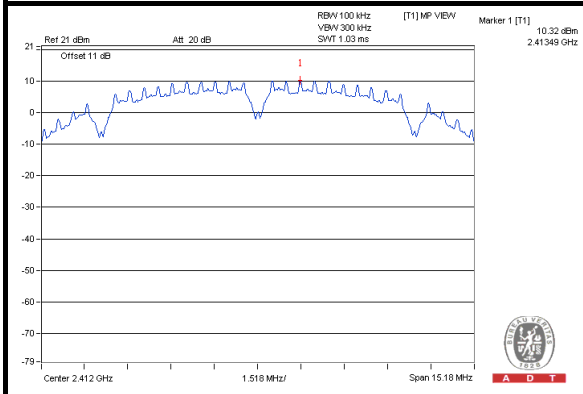
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



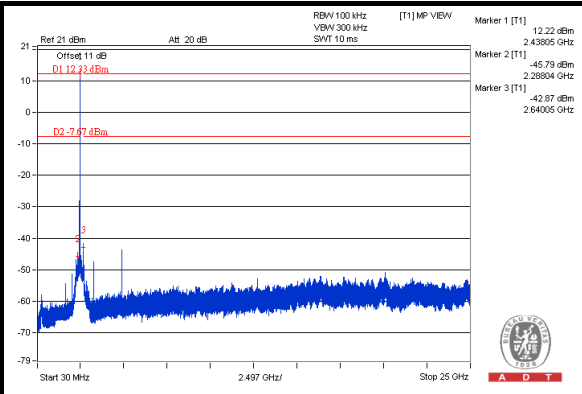
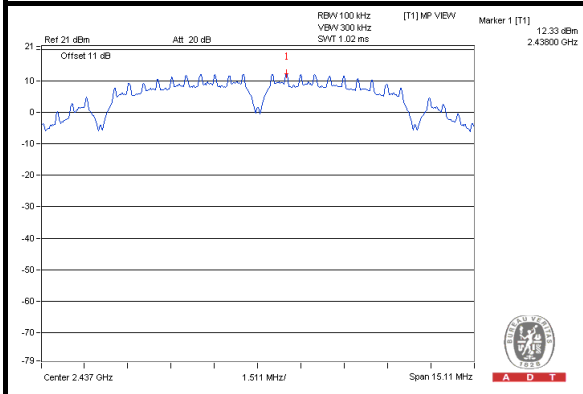
A D T

1TX
802.11b

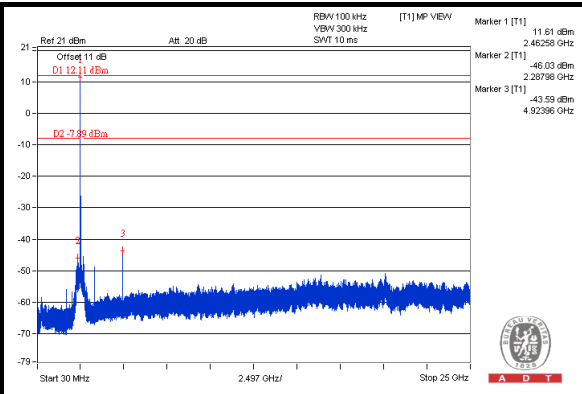
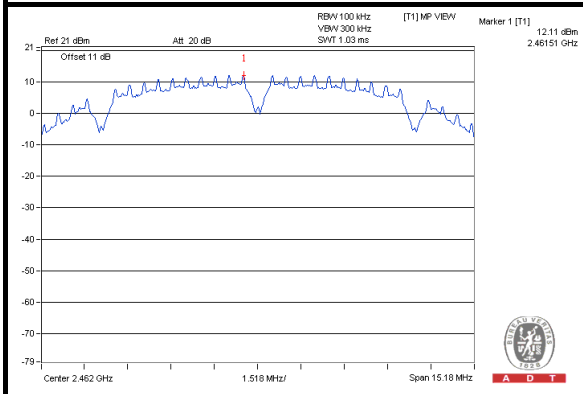
CH 1



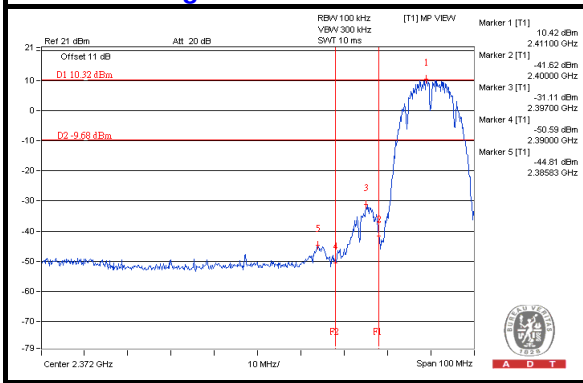
CH 6



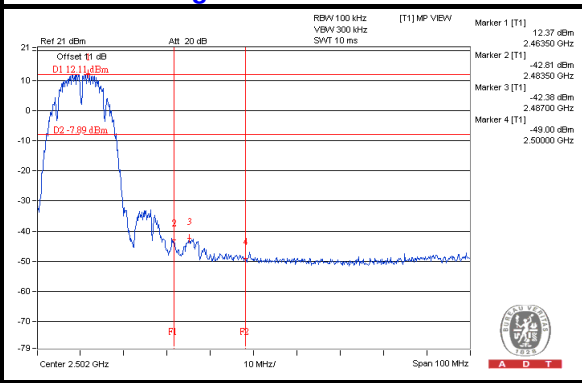
CH 11



CH 1 Band edge



CH 11 Band edge

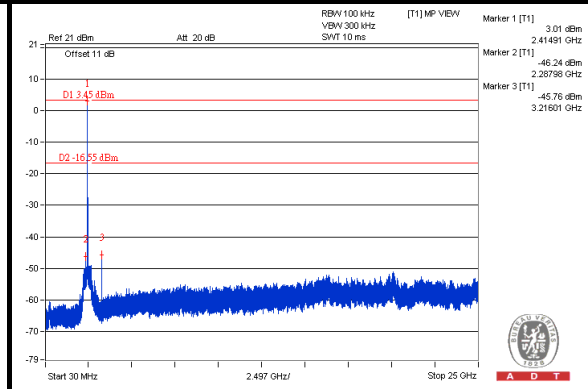
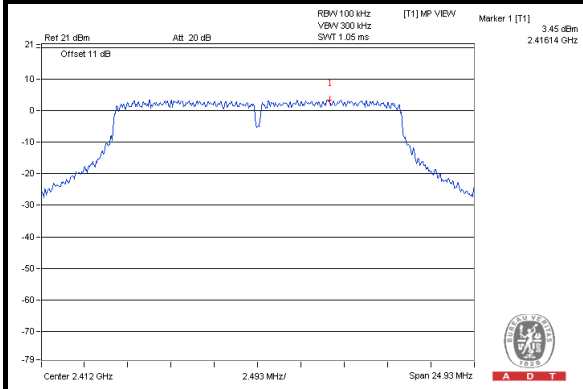




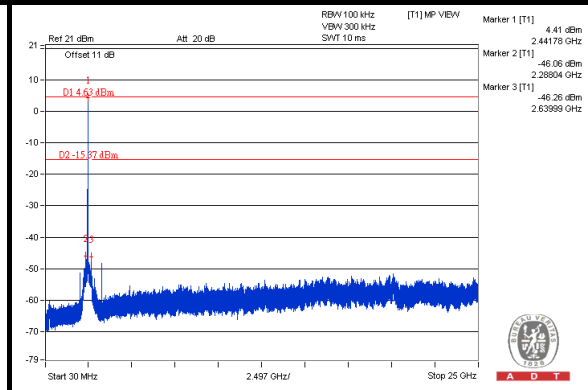
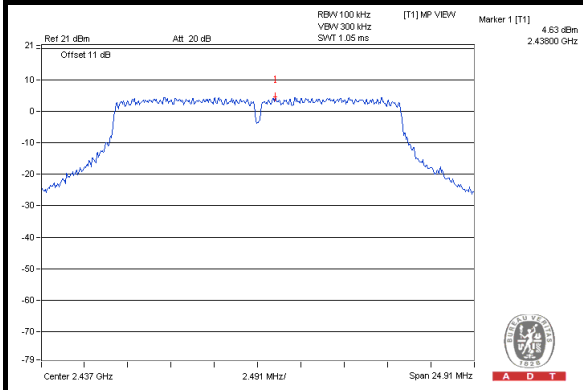
A D T

802.11g

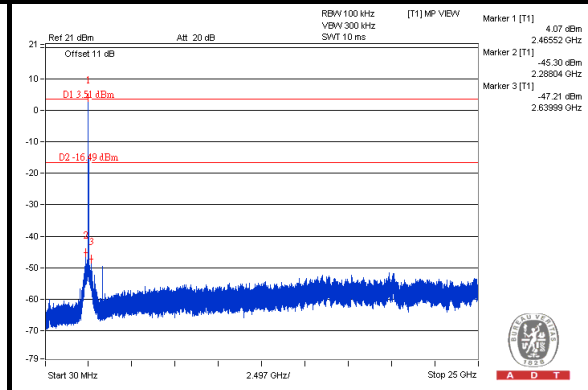
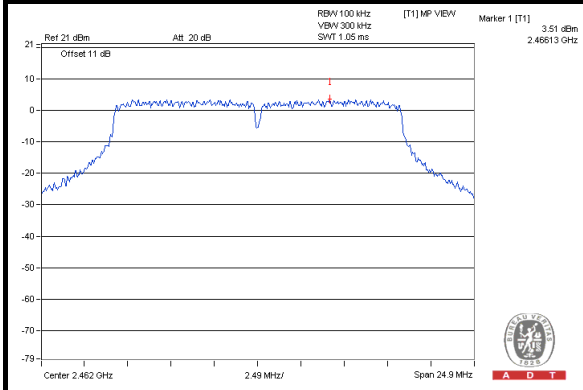
CH 1



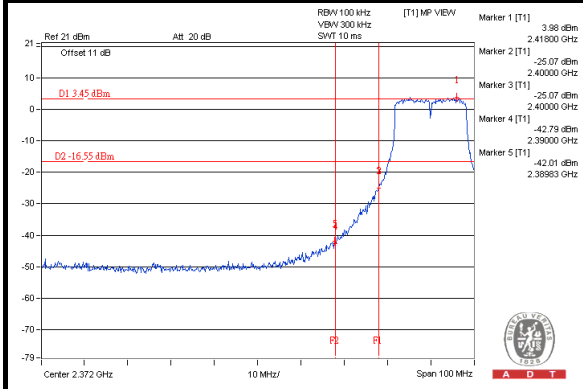
CH 6



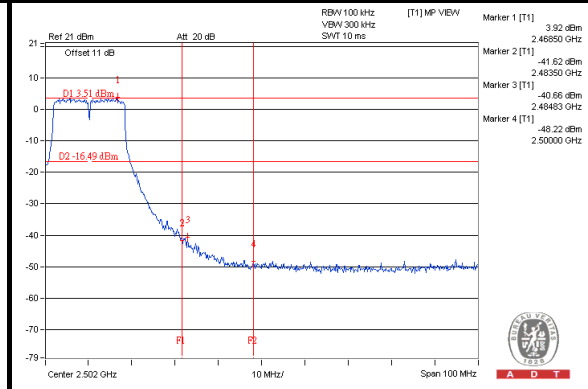
CH 11



CH 1 Band edge



CH 11 Band edge

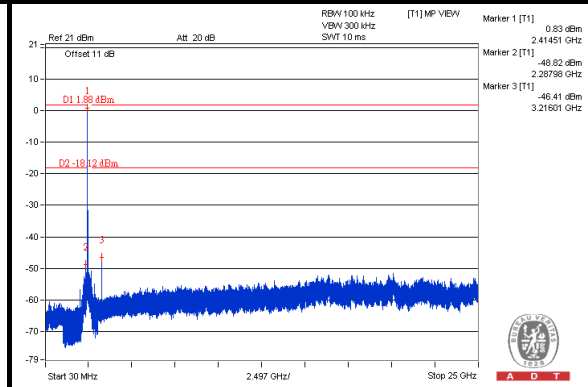
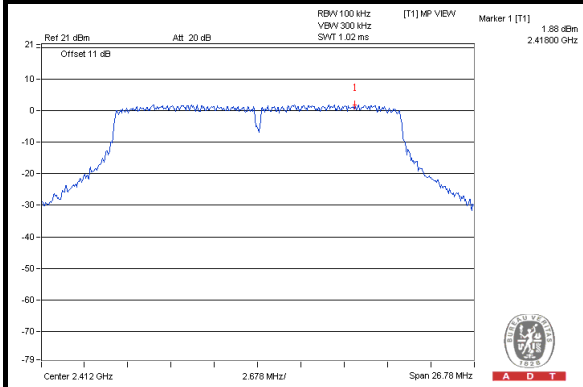




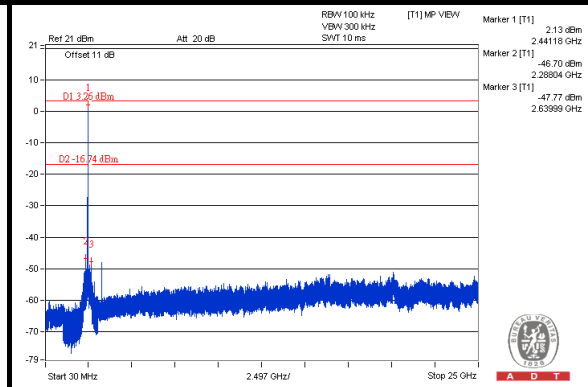
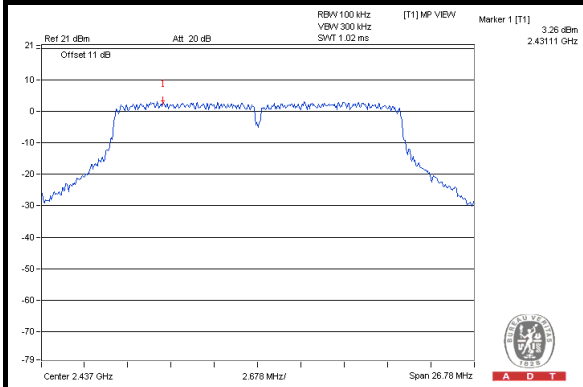
A D T

802.11n (20MHz)

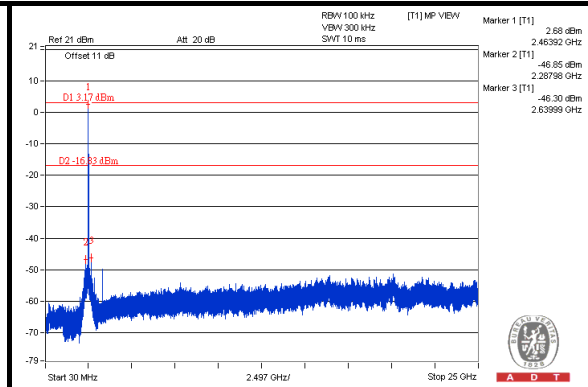
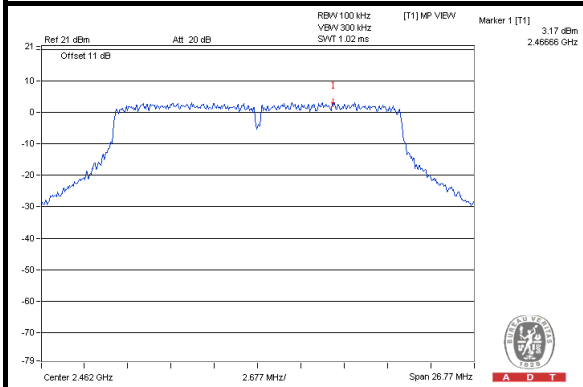
CH 1



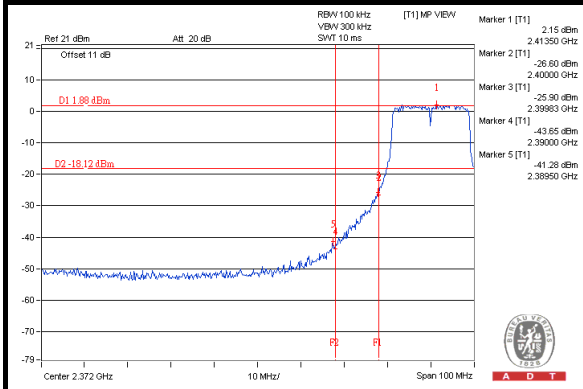
CH 6



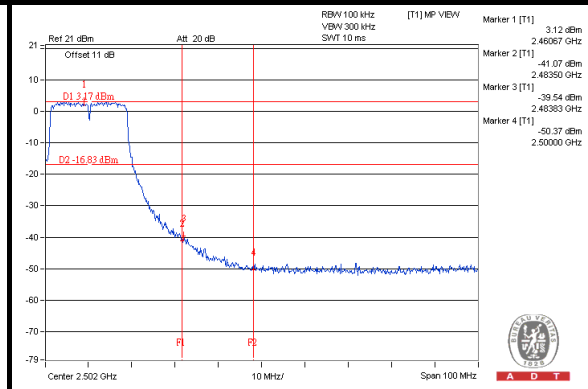
CH 11



CH 1 Band edge



CH 11 Band edge

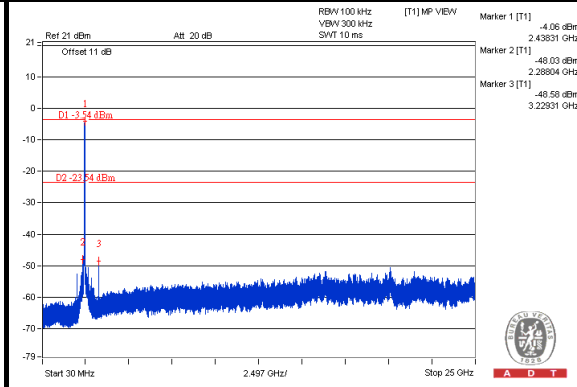
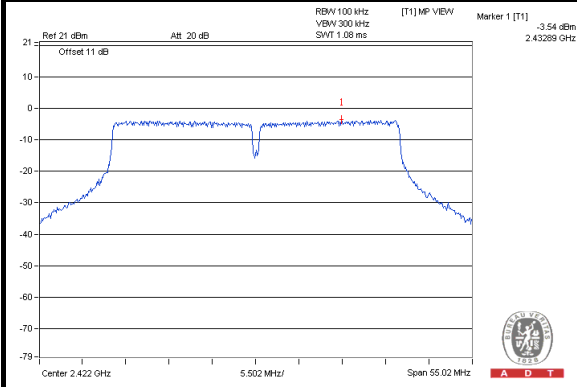




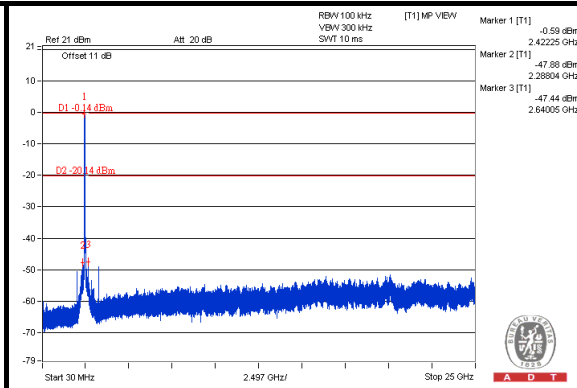
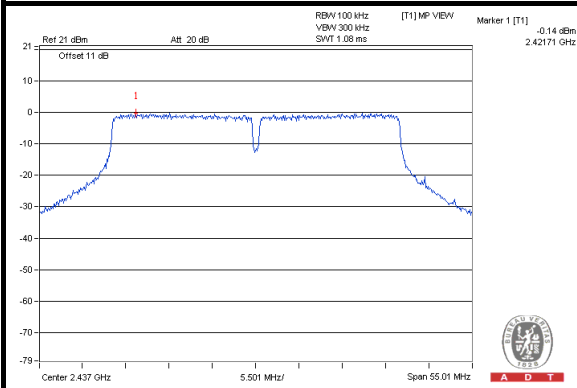
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802.11n (40MHz):

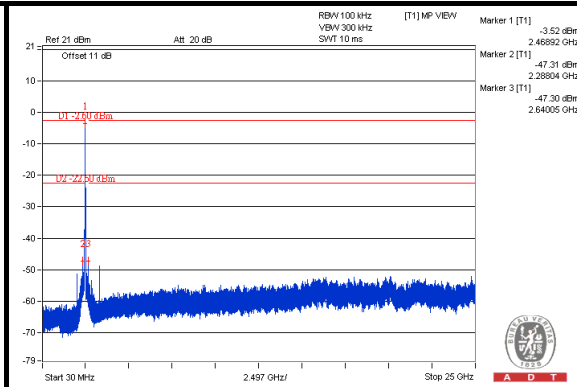
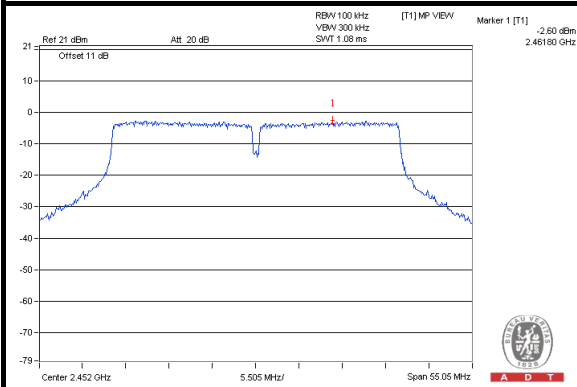
CH 3



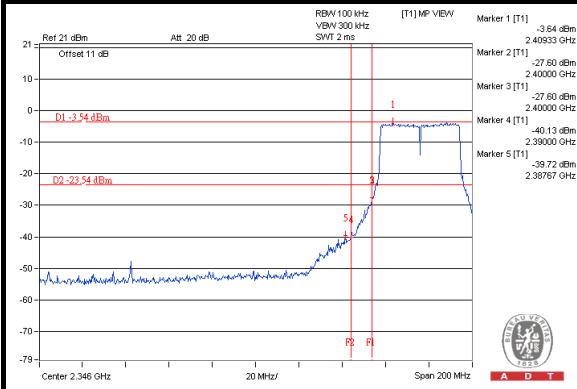
CH 6



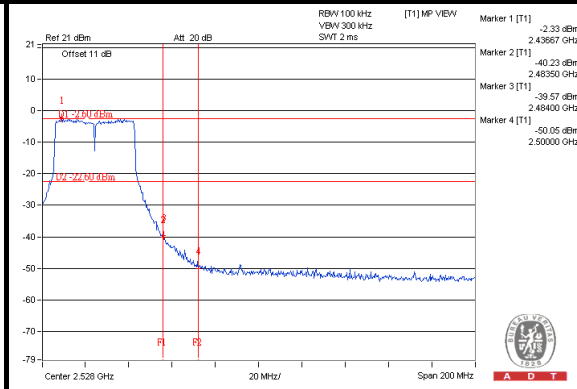
CH 9



CH 3 Band edge



CH 9 Band edge

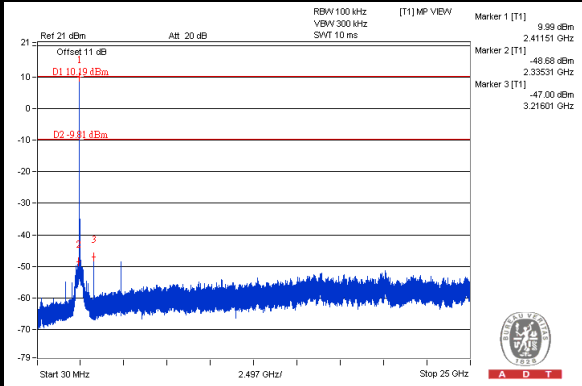
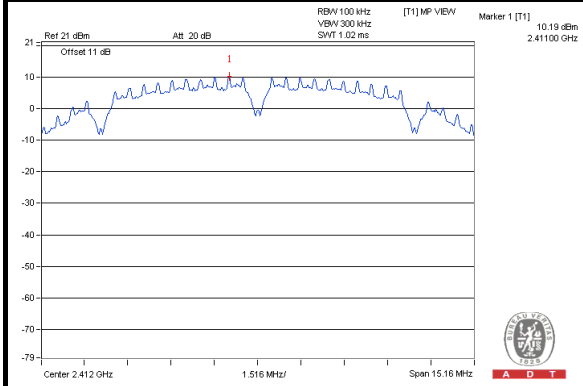




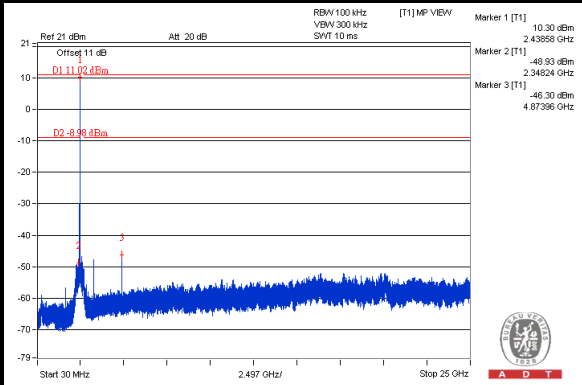
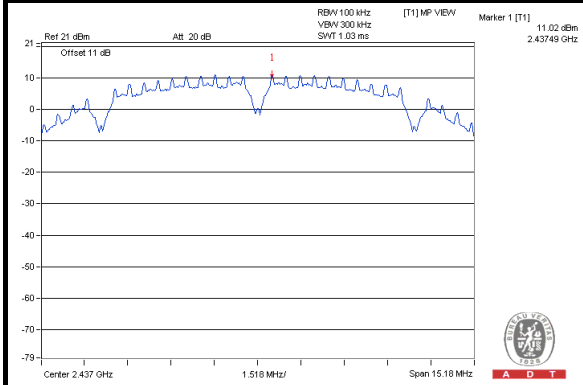
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2TX 802.11b: CHAIN 0

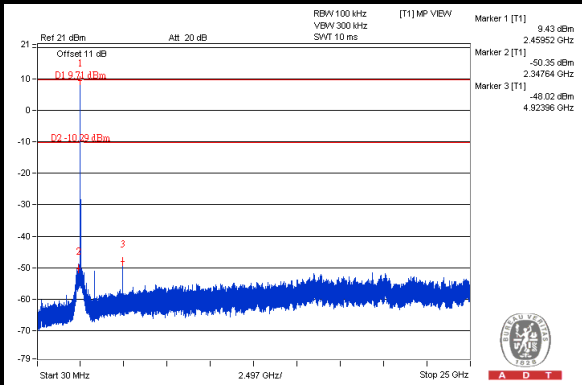
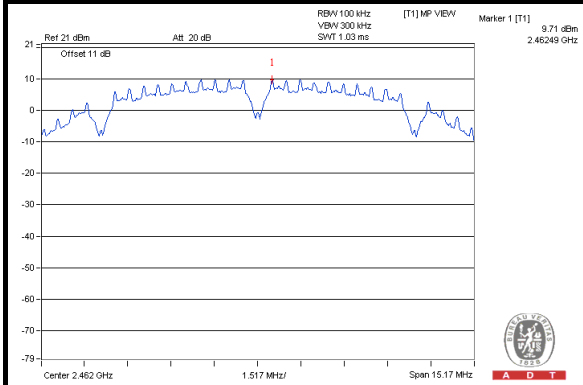
CH 1



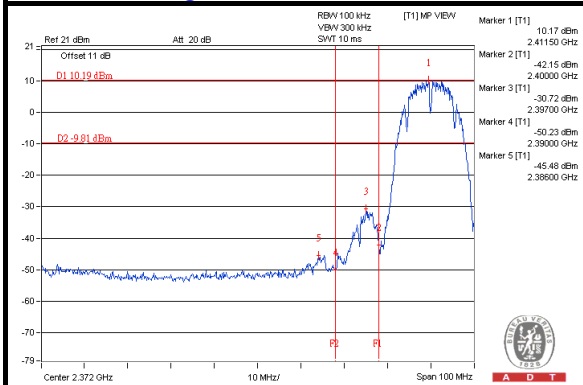
CH 6



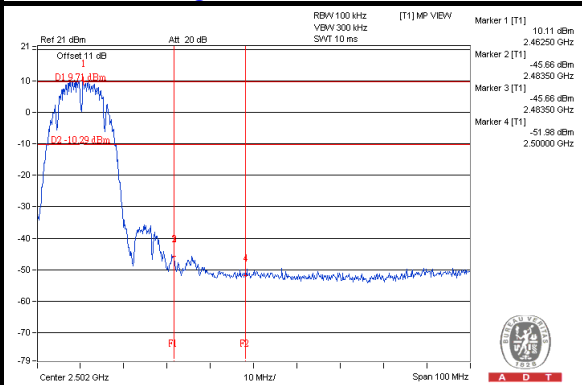
CH 11



CH 11 Band edge



CH 11 Band edge

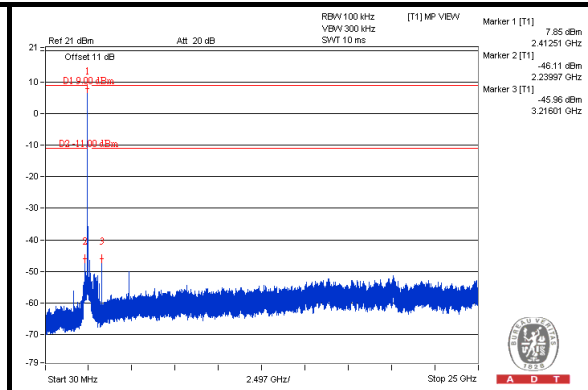
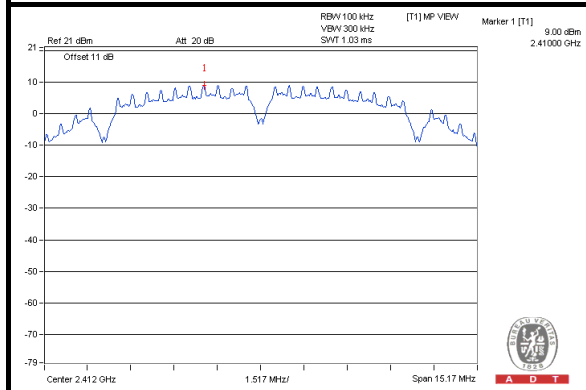




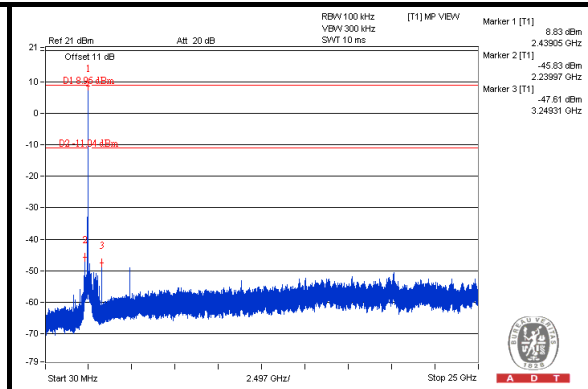
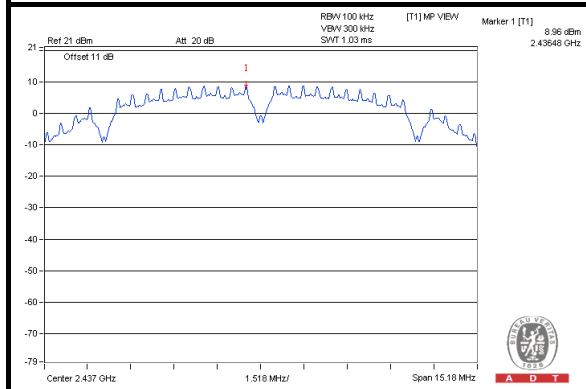
A D T

CHAIN 1

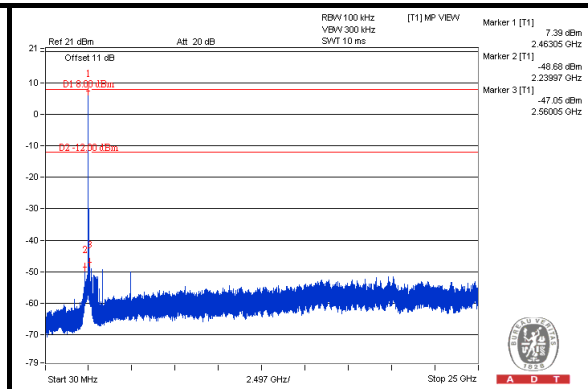
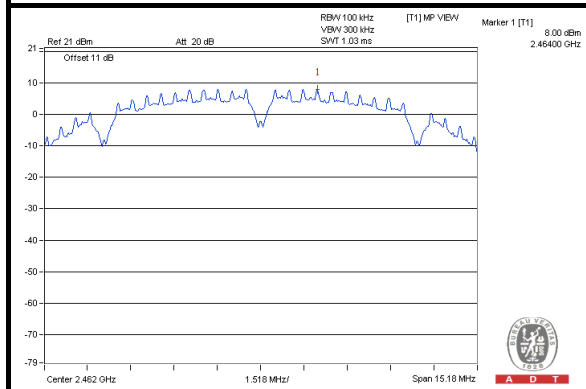
CH 1



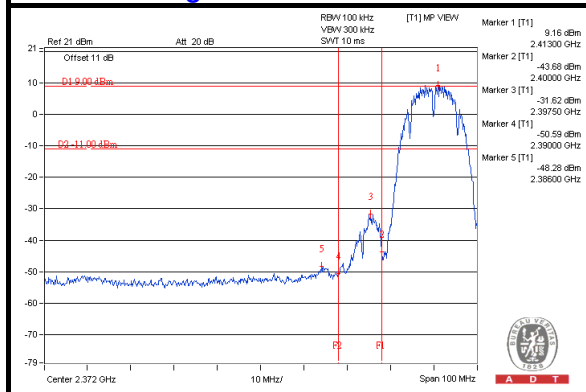
CH 6



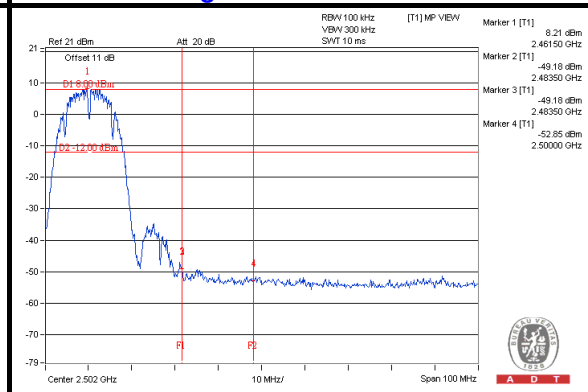
CH 11



CH 1 Band edge



CH 11 Band edge

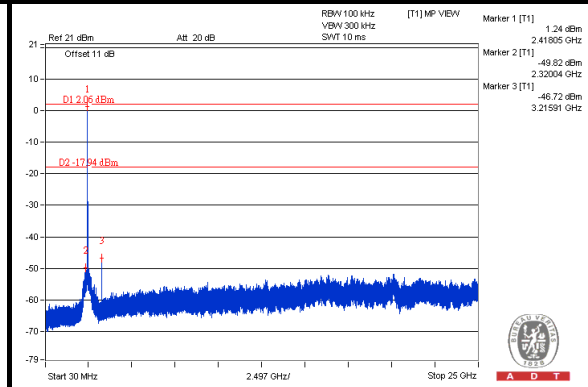
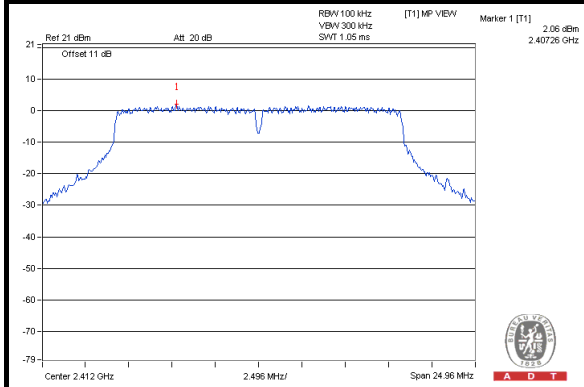




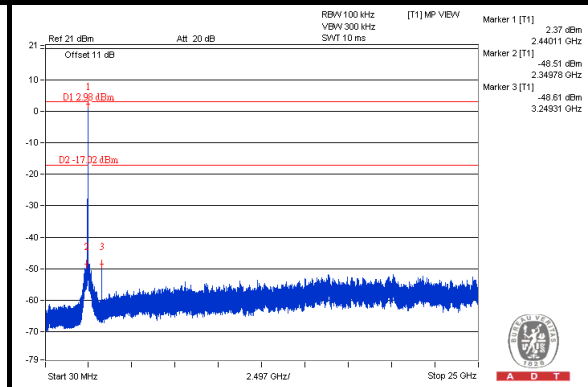
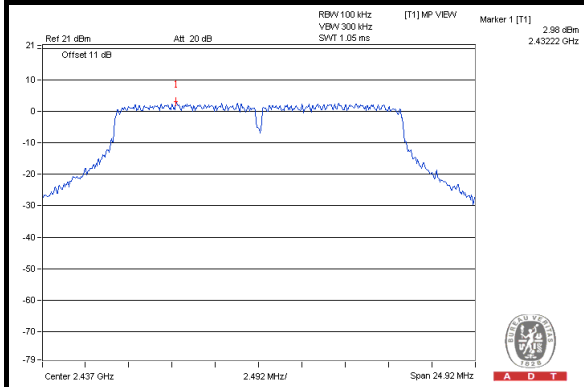
A D T

802.11g: CHAIN 0

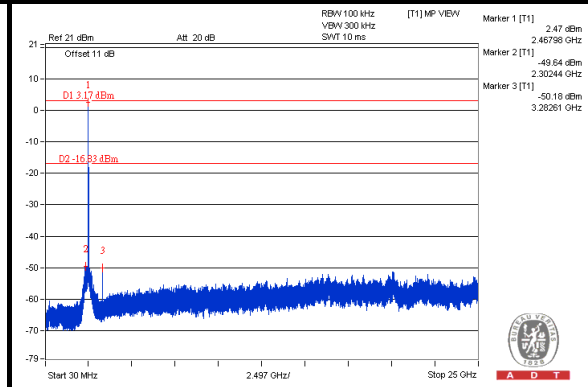
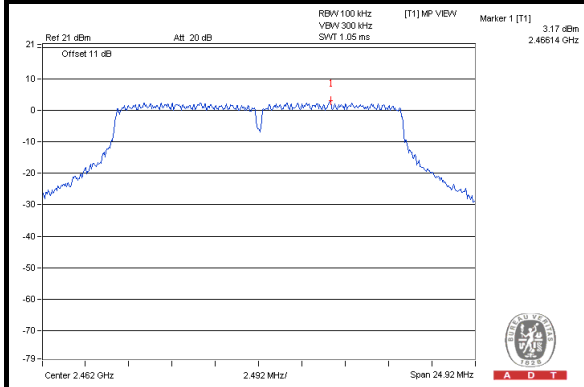
CH 1



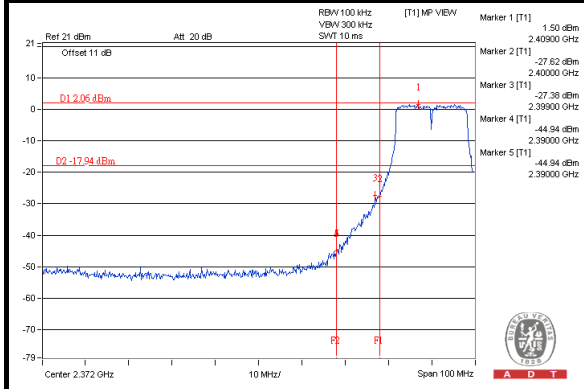
CH 6



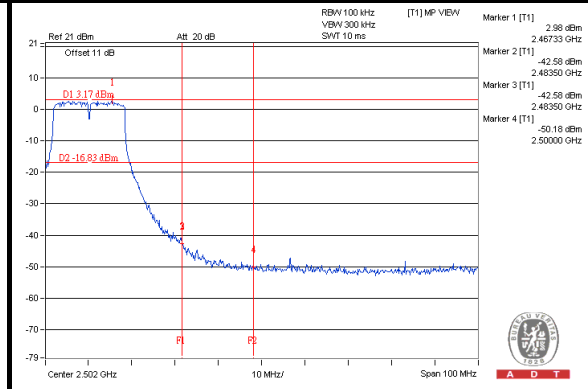
CH 11



CH 1 Band edge



CH 11 Band edge

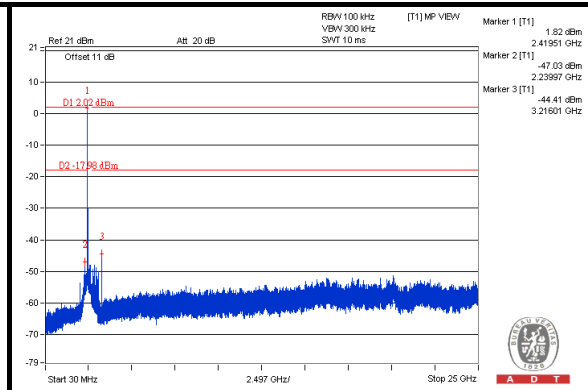
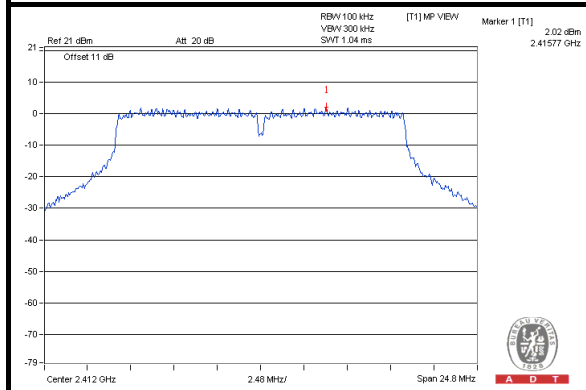




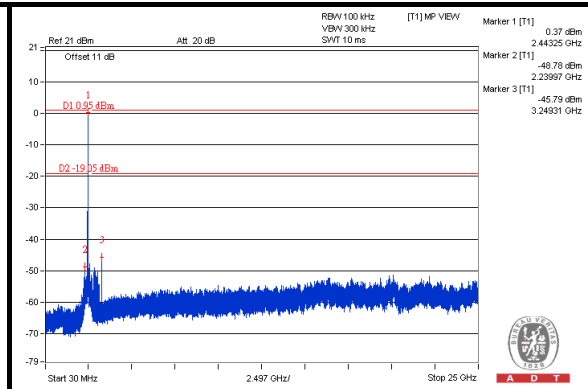
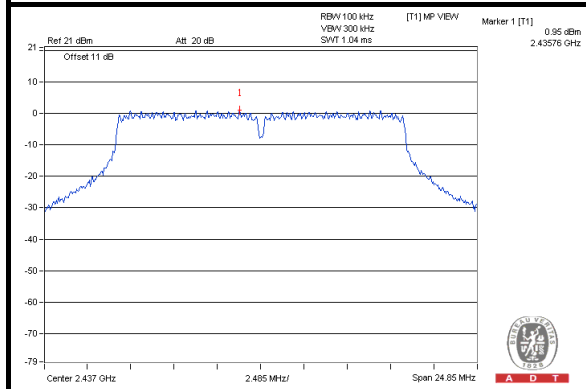
A D T

CHAIN 1

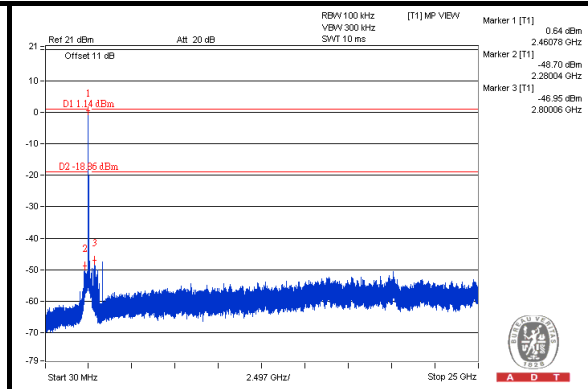
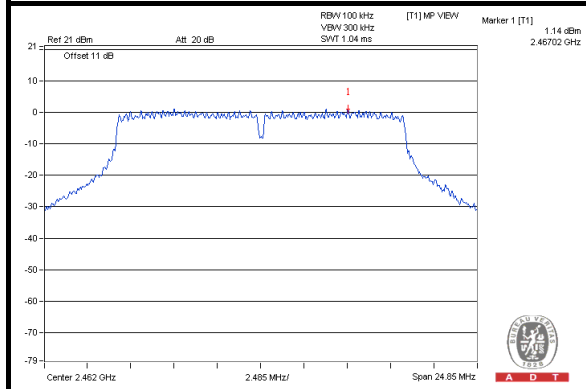
CH 1



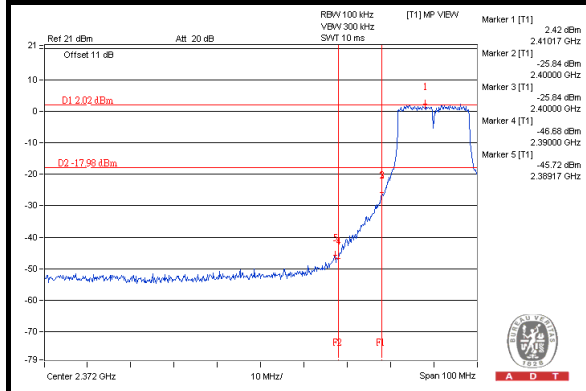
CH 6



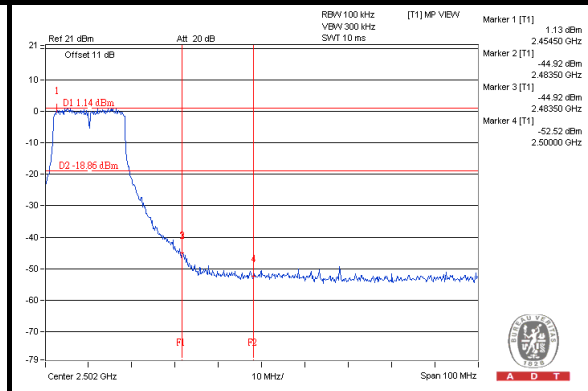
CH 11



CH 1 Band edge



CH 11 Band edge

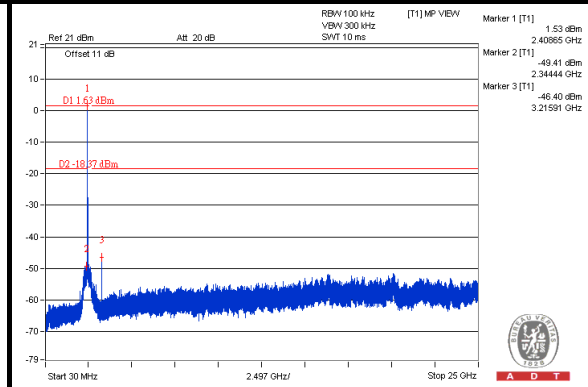
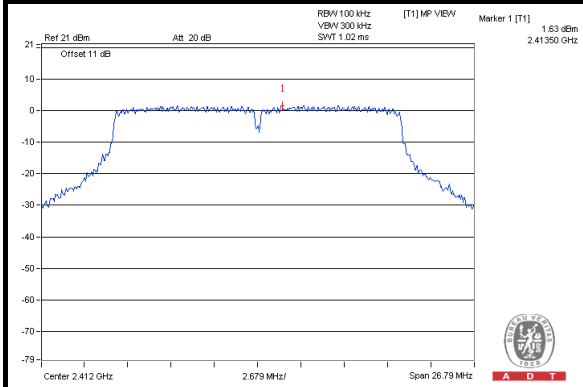




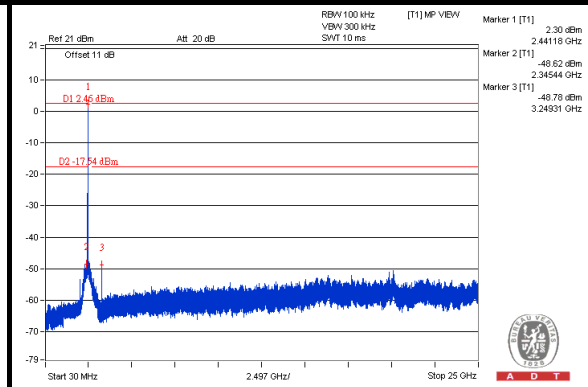
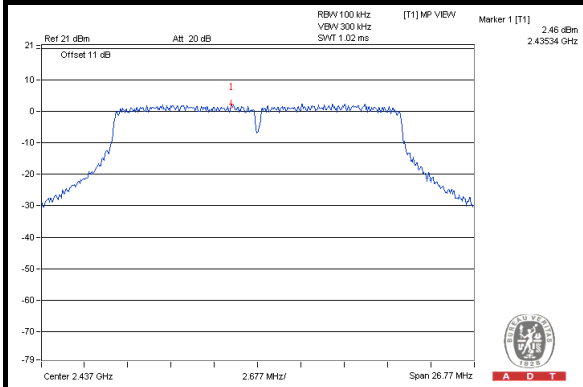
A D T

802.11n (20MHz): CHAIN 0

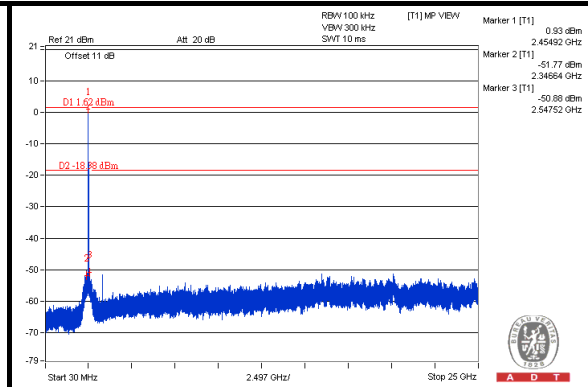
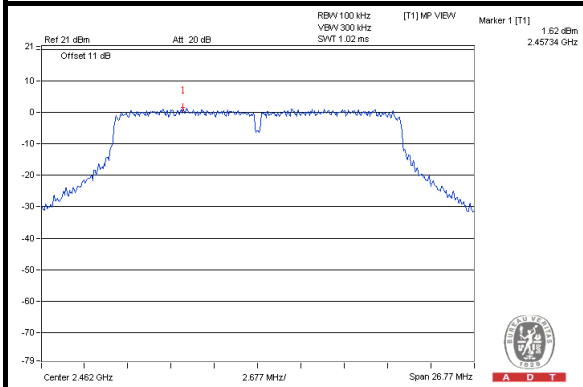
CH 1



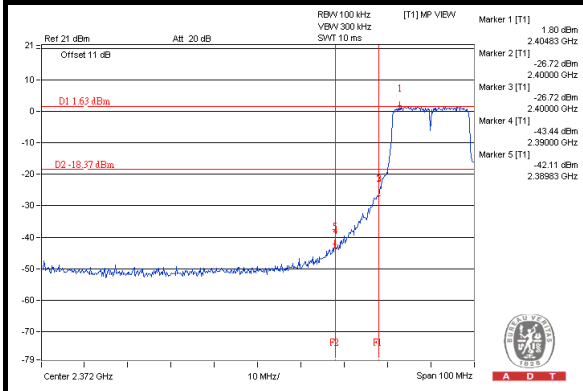
CH 6



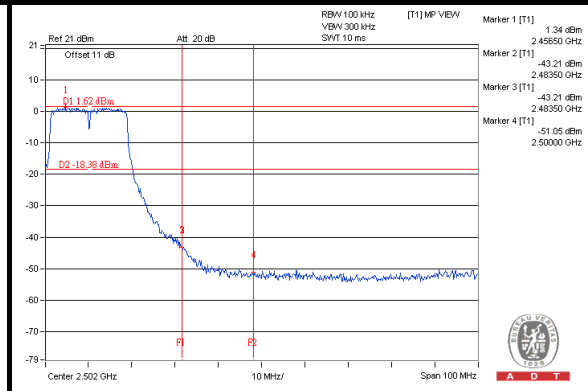
CH 11



CH 1 Band edge



CH 11 Band edge

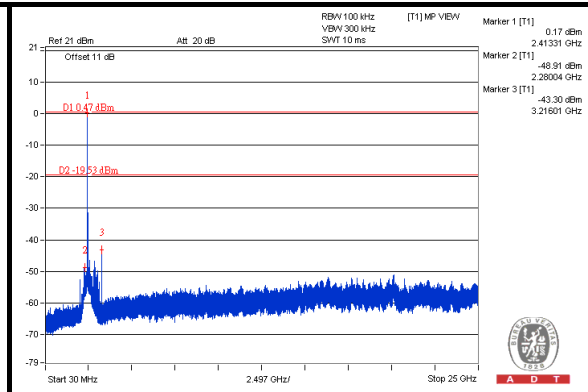
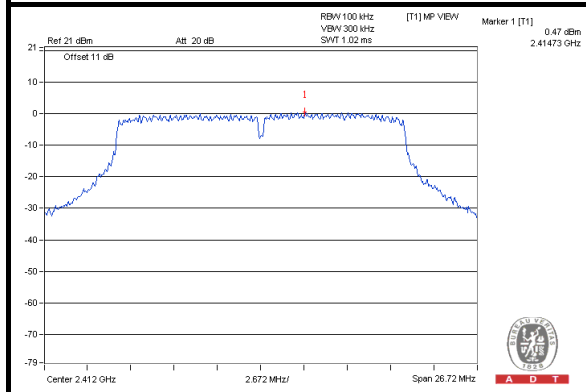




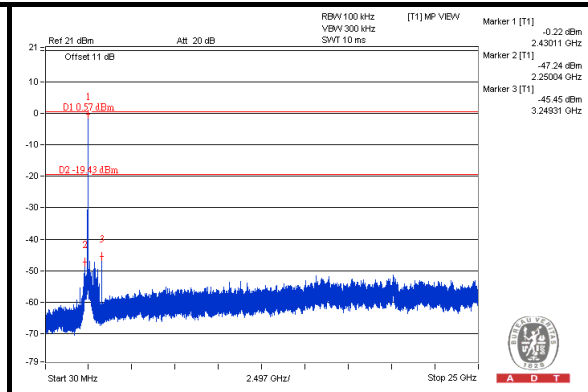
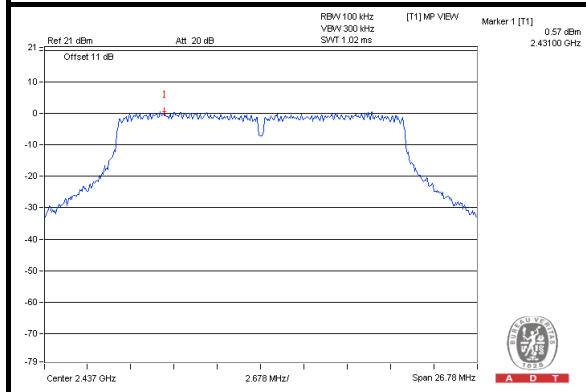
A D T

CHAIN 1

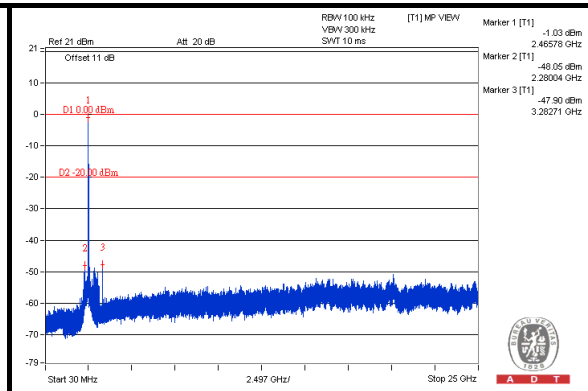
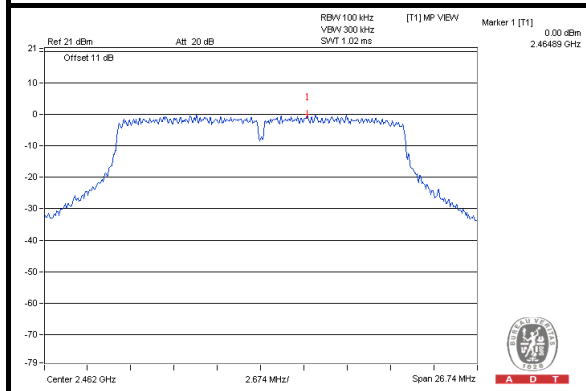
CH 1



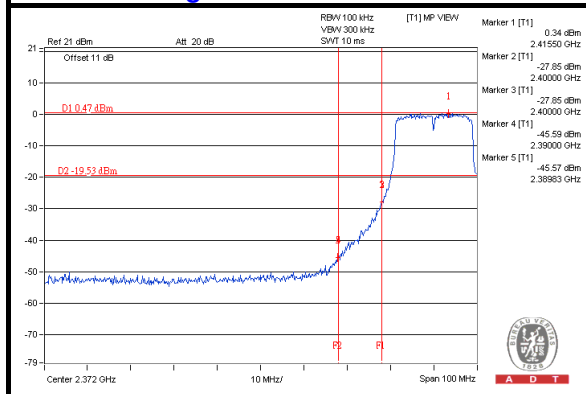
CH 6



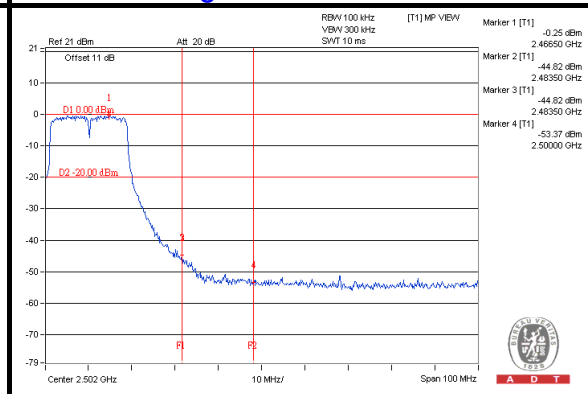
CH 11



CH 1 Band edge



CH 11 Band edge

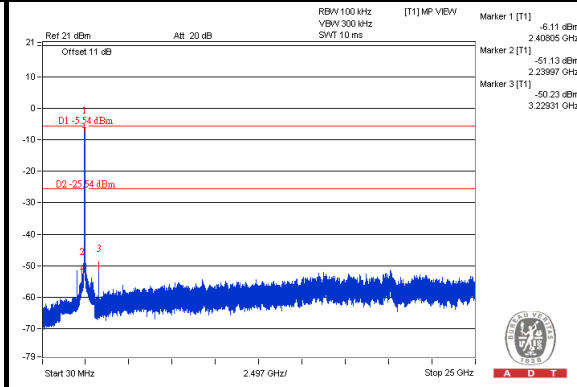
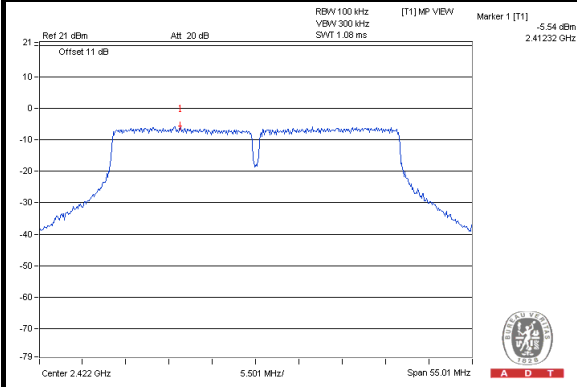




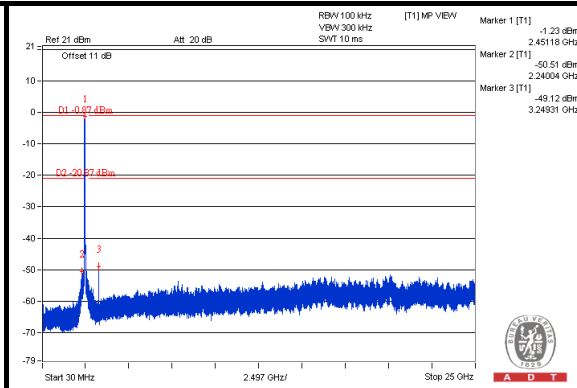
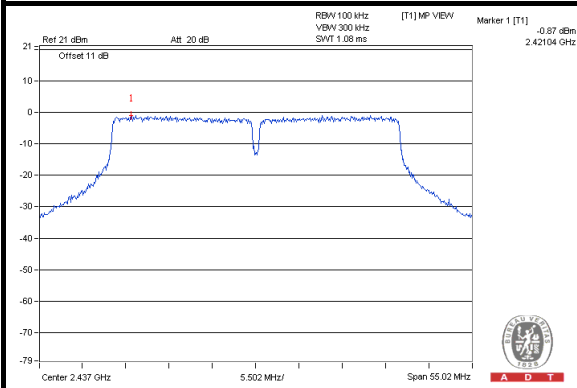
A D T

802.11n (40MHz): CHAIN 0

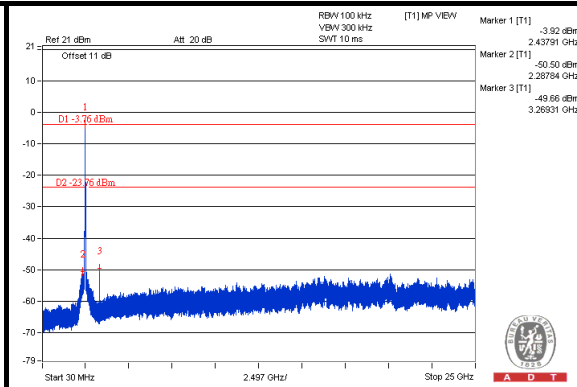
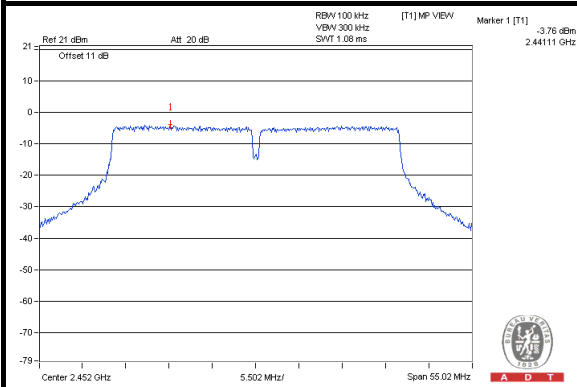
CH 3



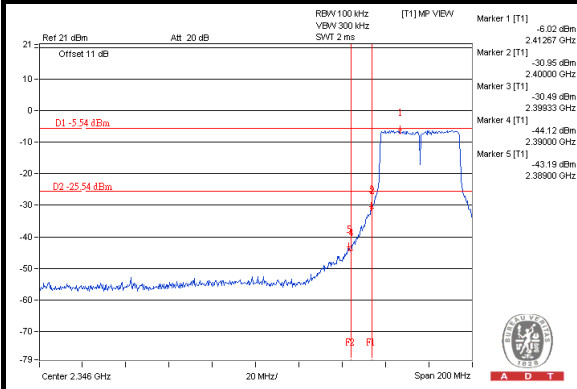
CH 6



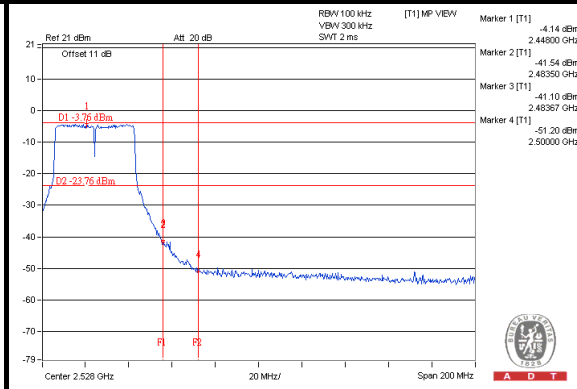
CH 9



CH 3 Band edge



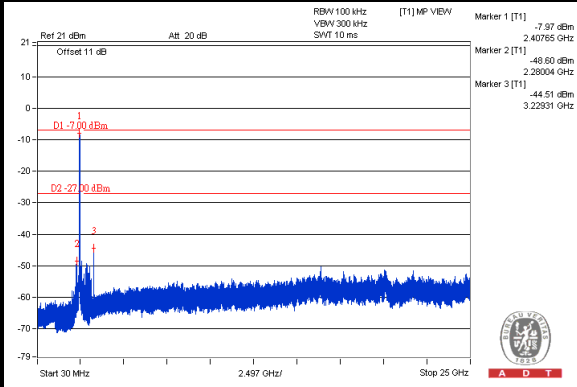
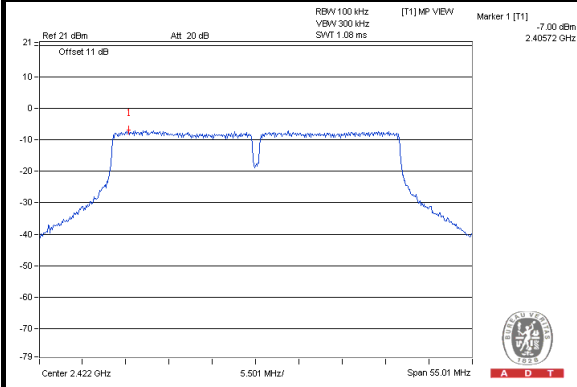
CH 9 Band edge



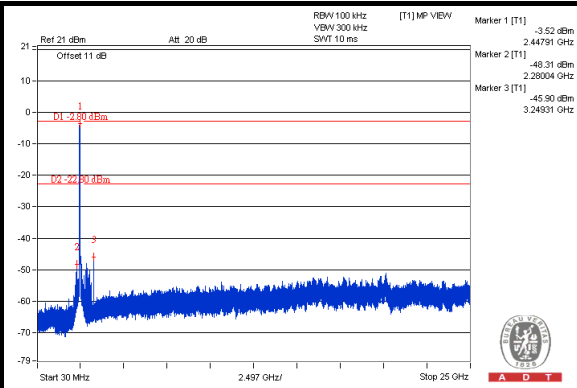
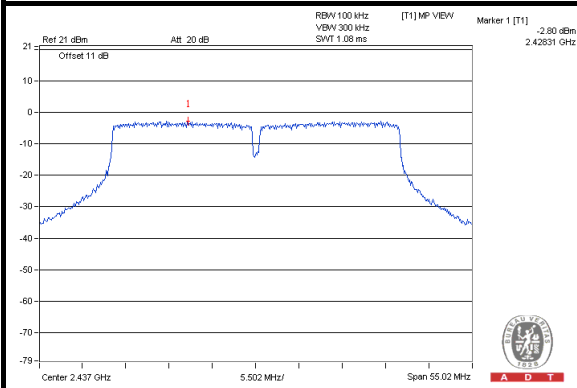


A D T

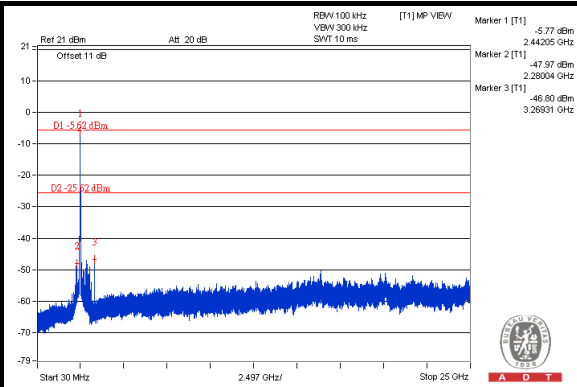
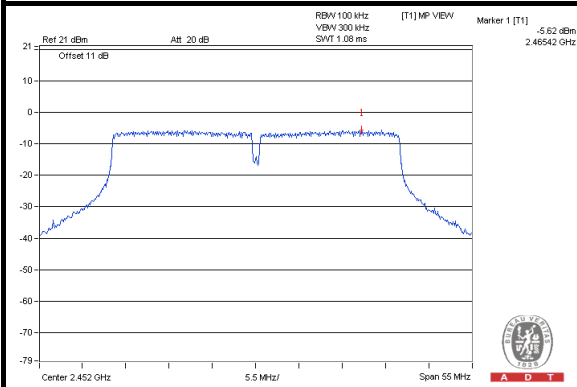
CHAIN 1 CH 3



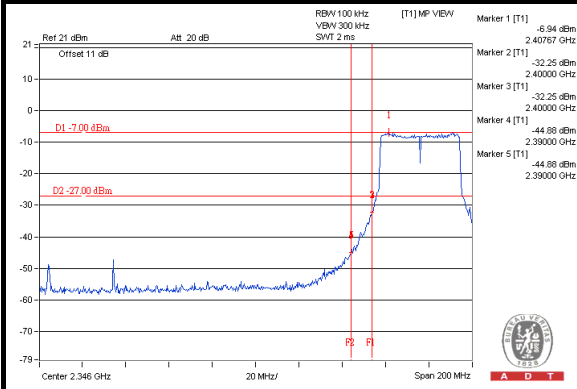
CH 6



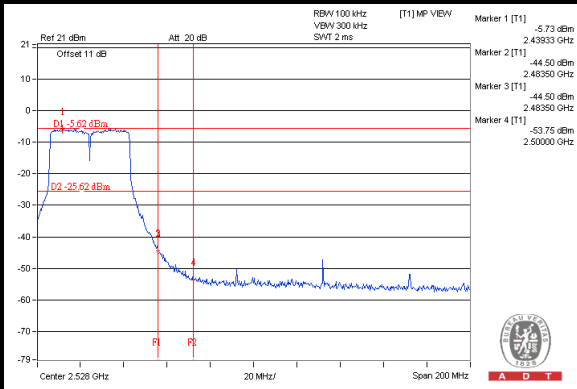
CH 9



CH 3 Band edge



CH 9 Band edge





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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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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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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---