FCC TEST REPORT (15.247)

REPORT NO.:	RF130820C06
MODEL NO.:	EUB1200AC
FCC ID:	A8J-EUB1200AC-1
RECEIVED:	Aug. 20, 2013
TESTED:	Aug. 29 ~ Sep. 25, 2013
ISSUED:	Sep. 26, 2013

APPLICANT:	EnGenius Technologies
ADDRESS:	1580 Scenic Avenue, Costa Mesa, CA92626

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
LAB ADDRESS:	No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.
TEST LOCATION:	No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130820C06	Original release	Sep. 26, 2013

1. CERTIFICATION

PRODUCT:	Dual Band Wireless-AC USB Adapter
MODEL NO.:	EUB1200AC
BRAND:	EnGenius
APPLICANT:	EnGenius Technologies
TESTED:	Aug. 29 ~ Sep. 25, 2013
TEST SAMPLE:	ENGINEERING SAMPLE
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247)**
	ANSI C63.10-2009

The above equipment (model: EUB1200AC) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch,** and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ **, DATE :** Sep. 26, 2013

Pettie Chen / Senior Specialist

APPROVED BY : _____ **, DATE :** Sep. 26, 2013

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 -17.41dB at 1.90234MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -3.3dB at 751.73MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

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	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.19 dB
	200MHz ~1000MHz	3.21 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	Dual Band Wireless-AC USB Adapter
MODEL NO.	EUB1200AC
POWER SUPPLY	5Vdc (Host equipment)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 256QAM, 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 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300Mbps 802.11ac: up to 867Mbps
OPERATING FREQUENCY	**2.4GHz:** 2412 ~ 2462MHz **5.0GHz:** 5745 ~ 5825MHz
NUMBER OF CHANNEL	**2.4GHz:** 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) **5.0GHz:** 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 802.11ac (80MHz): 1
OUTPUT POWER	364.002mW for 2412 ~ 2462MHz 253.280mW for 5745 ~ 5825MHz
ANTENNA TYPE	**2.4GHz:** Printed antenna with 1.0dBi gain **5.0GHz:** Printed antenna with 4.0dBi gain
ANTENNA CONNECTOR	NA
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	NA

NOTE:

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

MODULATION MODE	TX FUNCTION
802.11b	1TX, 2RX
802.11g	1TX, 2RX
802.11a	1TX, 2RX
802.11n (20MHz) MCS 0-7	1TX, 2RX
802.11n (20MHz) MCS 8-15	2TX, 2RX
802.11n (40MHz) MCS 0-7	1TX, 2RX
802.11n (40MHz) MCS 8-15	2TX, 2RX
802.11ac (80MHz) MCS 0-9	1TX, 2RX
802.11ac (80MHz) MCS 0-9	2TX, 2RX

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

3.2 DESCRIPTION OF TEST MODES

FOR 2.4GHz:

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		

FOR 5.0GHz (5745 ~ 5825MHz):

5 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (80MHz):

CHANNEL	FREQUENCY
155	5775MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR 2.4GHz:

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 **Y-plane**.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

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
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	1TX
-	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	1TX
-	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	14.4	2TX
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0	1TX
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	30.0	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
-	802.11n (20MHz)	1 to 11	6	OFDM	BPSK	14.4	2TX

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
-	802.11n (20MHz)	1 to 11	6	OFDM	BPSK	14.4	2TX

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
-	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0	1TX
-	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2	1TX
-	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	14.4	2TX
-	802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	15.0	1TX
-	802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	30.0	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	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX FUNCTION
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	1TX
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	1TX
-	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	1TX
-	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	14.4	2TX
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0	1TX
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	30.0	2TX

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	23deg. C, 65%RH	120Vac, 60Hz	Alan Wu
RE<1G	23deg. C, 65%RH	120Vac, 60Hz	Alan Wu
PLC	25deg. C, 65%RH	120Vac, 60Hz	Ted Chang
APCM	25deg. C, 65%RH	120Vac, 60Hz	Nick Chen

FOR 5.0GHz (5745 ~ 5825MHz):

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 **Y-plane**.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX FUNCTION
-	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0	1TX
-	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2	1TX
-	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	14.4	2TX
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0	1TX
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	30.0	2TX
-	802.11ac (80MHz)	155	155	OFDM	BPSK	32.5	1TX
-	802.11ac (80MHz)	155	155	OFDM	BPSK	65.0	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
-	802.11n (20MHz)	149 to 165	157	OFDM	BPSK	14.4	2TX

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
-	802.11n (20MHz)	149 to 165	157	OFDM	BPSK	14.4	2TX

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
-	802.11a	149 to 165	149, 165	OFDM	BPSK	6.0	1TX
-	802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	7.2	1TX
-	802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	14.4	2TX
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0	1TX
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	30.0	2TX
-	802.11ac (80MHz)	155	155	OFDM	BPSK	32.5	1TX
-	802.11ac (80MHz)	155	155	OFDM	BPSK	65.0	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	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX FUNCTION
-	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0	1TX
-	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2	1TX
-	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	14.4	2TX
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0	1TX
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	30.0	2TX
-	802.11ac (80MHz)	155	155	OFDM	BPSK	32.5	1TX
-	802.11ac (80MHz)	155	155	OFDM	BPSK	65.0	2TX

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	23deg. C, 65%RH	120Vac, 60Hz	Alan Wu
RE<1G	23deg. C, 65%RH	120Vac, 60Hz	Alan Wu
PLC	25deg. C, 65%RH	120Vac, 60Hz	Ted Chang
APCM	25deg. C, 65%RH	120Vac, 60Hz	Nick Chen

3.3 DESCRIPTION OF SUPPORT UNITS

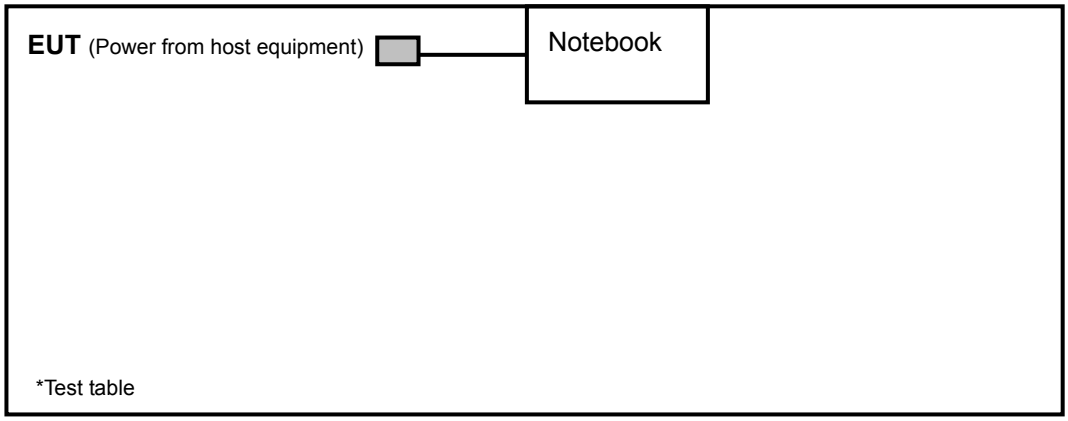
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	E5520	8Y4DMQ1	FCC Doc approved

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	0.3m USB Cable without core

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

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



3.4 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 v03r01
662911 D01 Multiple Transmitter Output v02
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 (FOR 2.4GHz BAND)

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	ESCI	100424	Sep. 09, 2013	Sep. 08, 2014
Spectrum Analyzer ROHDE & SCHWARZ	FSU 43	100115	Oct. 25, 2012	Oct. 24, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Mar. 25, 2013	Mar. 24, 2014
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-404	Dec. 22, 2012	Dec. 21, 2013
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 15, 2013	Jul. 14, 2014
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier Agilent	8449B	3008A01961	Oct. 25, 2012	Oct. 24, 2013
Preamplifier Agilent	8447D	2944A10738	Oct. 23, 2012	Oct. 22, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309220/4	Aug. 26, 2013	Aug. 25, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250724/4	Aug. 26, 2013	Aug. 25, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295012/4	Aug. 26, 2013	Aug. 25, 2014
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table BV ADT	TT100.	TT93021704	NA	NA
Turn Table Controller BV ADT	SC100.	SC93021704	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 25, 2012	Oct. 24, 2013
High Speed Peak Power Meter	ML2495A	0824011	Jul. 29, 2013	Jul. 28, 2014
Power Sensor	MA2411B	0738171	Jul. 29, 2013	Jul. 28, 2014

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in HwaYa Chamber 4.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The FCC Site Registration No. is 460141.
6. The IC Site Registration No. is IC7450F-4.

4.1.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters 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. The antenna is a broadband antenna, and its height 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:

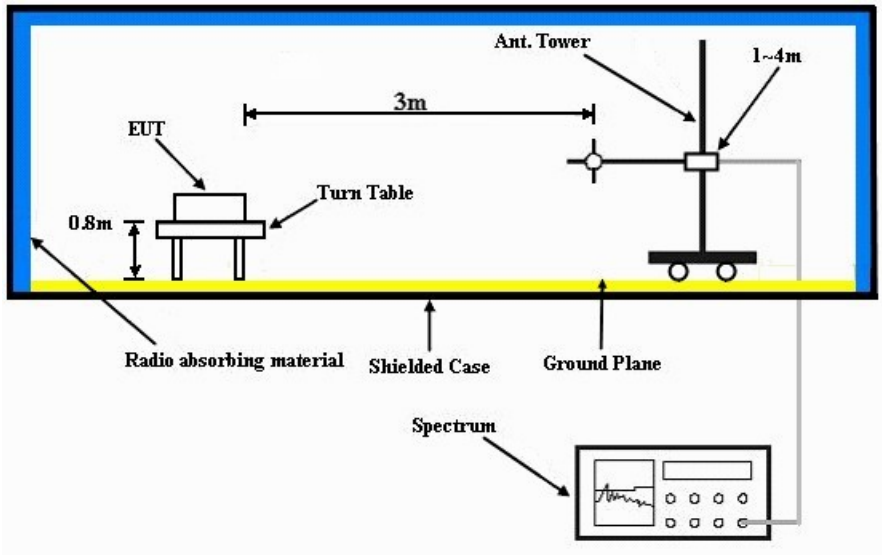
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution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

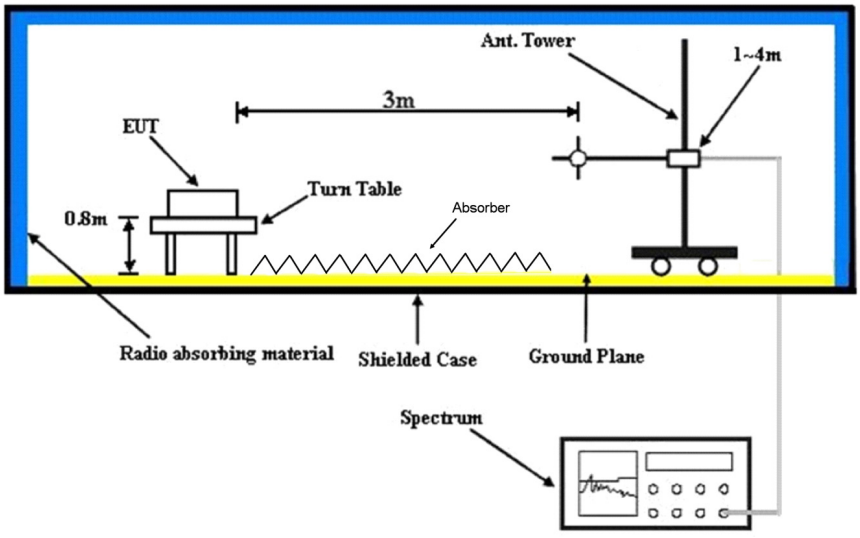
No deviation.

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. The EUT was connected to the notebook with USB cable and placed them on the testing table.
b. The notebook system ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
c. The necessary accessories enable the system in full functions.

4.1.7 TEST RESULTS

ABOVE 1GHz DATA：

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 74%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	57.0 PK	74.0	-17.0	1.05 H	195	25.10	31.90
2	2386.00	46.9 AV	54.0	-7.1	1.05 H	195	15.00	31.90
3	*2412.00	111.6 PK			1.10 H	200	79.60	32.00
4	*2412.00	107.7 AV			1.10 H	200	75.70	32.00
5	4824.00	53.4 PK	74.0	-20.6	1.18 H	127	48.60	4.80
6	4824.00	49.3 AV	54.0	-4.7	1.18 H	127	44.50	4.80
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	2386.00	55.5 PK	74.0	-18.5	1.00 V	246	23.60	31.90
2	2386.00	43.4 AV	54.0	-10.6	1.00 V	246	11.50	31.90
3	*2412.00	104.5 PK			1.00 V	247	72.50	32.00
4	*2412.00	101.0 AV			1.00 V	247	69.00	32.00
5	4824.00	51.9 PK	74.0	-22.1	1.00 V	177	47.10	4.80
6	4824.00	46.4 AV	54.0	-7.6	1.00 V	177	41.60	4.80

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 74%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	112.3 PK			1.07 H	203	80.30	32.00
2	*2437.00	108.4 AV			1.07 H	203	76.40	32.00
3	4874.00	52.2 PK	74.0	-21.8	1.17 H	127	47.20	5.00
4	4874.00	45.9 AV	54.0	-8.1	1.17 H	127	40.90	5.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	106.8 PK			1.00 V	250	74.80	32.00
2	*2437.00	102.9 AV			1.00 V	250	70.90	32.00
3	4874.00	49.4 PK	74.0	-24.6	1.00 V	173	44.40	5.00
4	4874.00	42.4 AV	54.0	-11.6	1.00 V	173	37.40	5.00

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 74%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	111.0 PK			1.08 H	204	78.80	32.20
2	*2462.00	107.1 AV			1.08 H	204	74.90	32.20
3	2483.50	58.2 PK	74.0	-15.8	1.02 H	207	25.90	32.30
4	2483.50	47.4 AV	54.0	-6.6	1.02 H	207	15.10	32.30
5	4924.00	49.4 PK	74.0	-24.6	1.02 H	129	44.40	5.00
6	4924.00	41.9 AV	54.0	-12.1	1.02 H	129	36.90	5.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.6 PK			1.00 V	251	73.40	32.20
2	*2462.00	101.9 AV			1.00 V	251	69.70	32.20
3	2483.50	55.0 PK	74.0	-19.0	1.00 V	259	22.70	32.30
4	2483.50	43.8 AV	54.0	-10.2	1.00 V	259	11.50	32.30
5	4924.00	46.3 PK	74.0	-27.7	1.00 V	179	41.30	5.00
6	4924.00	38.0 AV	54.0	-16.0	1.00 V	179	33.00	5.00

REMARKS:

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

802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 74%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	57.4 PK	74.0	-16.6	1.04 H	210	25.50	31.90
2	2390.00	45.6 AV	54.0	-8.4	1.04 H	210	13.70	31.90
3	*2412.00	107.0 PK			1.04 H	216	75.00	32.00
4	*2412.00	97.8 AV			1.04 H	216	65.80	32.00
5	4824.00	47.6 PK	74.0	-26.4	1.00 H	124	42.80	4.80
6	4824.00	34.6 AV	54.0	-19.4	1.00 H	124	29.80	4.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.9 PK	74.0	-18.1	1.30 V	195	24.00	31.90
2	2390.00	43.9 AV	54.0	-10.1	1.30 V	195	12.00	31.90
3	*2412.00	103.4 PK			1.38 V	191	71.40	32.00
4	*2412.00	94.3 AV			1.38 V	191	62.30	32.00
5	4824.00	47.3 PK	74.0	-26.7	1.05 V	120	42.50	4.80
6	4824.00	34.0 AV	54.0	-20.0	1.05 V	120	29.20	4.80

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 74%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	107.1 PK			1.00 H	217	75.10	32.00
2	*2437.00	98.4 AV			1.00 H	217	66.40	32.00
3	4874.00	48.0 PK	74.0	-26.0	1.10 H	122	43.00	5.00
4	4874.00	35.3 AV	54.0	-18.7	1.10 H	122	30.30	5.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	103.7 PK			1.80 V	191	71.70	32.00
2	*2437.00	94.5 AV			1.80 V	191	62.50	32.00
3	4874.00	47.9 PK	74.0	-26.1	1.08 V	175	42.90	5.00
4	4874.00	35.1 AV	54.0	-18.9	1.08 V	175	30.10	5.00

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 74%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	106.5 PK			1.05 H	203	74.30	32.20
2	*2462.00	97.5 AV			1.05 H	203	65.30	32.20
3	2483.50	58.6 PK	74.0	-15.4	1.07 H	208	26.30	32.30
4	2483.50	45.1 AV	54.0	-8.9	1.07 H	208	12.80	32.30
5	4924.00	47.0 PK	74.0	-27.0	1.00 H	120	42.00	5.00
6	4924.00	34.5 AV	54.0	-19.5	1.00 H	120	29.50	5.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.5 PK			1.78 V	193	72.30	32.20
2	*2462.00	94.8 AV			1.78 V	193	62.60	32.20
3	2483.50	58.0 PK	74.0	-16.0	1.72 V	190	25.70	32.30
4	2483.50	44.5 AV	54.0	-9.5	1.72 V	190	12.20	32.30
5	4924.00	46.5 PK	74.0	-27.5	1.00 V	122	41.50	5.00
6	4924.00	33.9 AV	54.0	-20.1	1.00 V	122	28.90	5.00

REMARKS:

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

802.11n (20MHz): 1TX

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 74%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	57.7 PK	74.0	-16.3	1.08 H	202	25.80	31.90
2	2390.00	43.7 AV	54.0	-10.3	1.08 H	202	11.80	31.90
3	*2412.00	105.8 PK			1.09 H	203	73.80	32.00
4	*2412.00	96.5 AV			1.09 H	203	64.50	32.00
5	4824.00	48.1 PK	74.0	-25.9	1.17 H	127	43.30	4.80
6	4824.00	35.3 AV	54.0	-18.7	1.17 H	127	30.50	4.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.4 PK	74.0	-16.6	1.00 V	292	25.50	31.90
2	2390.00	43.0 AV	54.0	-11.0	1.00 V	292	11.10	31.90
3	*2412.00	102.5 PK			1.00 V	299	70.50	32.00
4	*2412.00	93.1 AV			1.00 V	299	61.10	32.00
5	4824.00	47.9 PK	74.0	-26.1	1.02 V	120	43.10	4.80
6	4824.00	34.8 AV	54.0	-19.2	1.02 V	120	30.00	4.80

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 74%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	105.5 PK			1.00 H	220	73.50	32.00
2	*2437.00	96.0 AV			1.00 H	220	64.00	32.00
3	4874.00	48.6 PK	74.0	-25.4	1.10 H	120	43.60	5.00
4	4874.00	36.2 AV	54.0	-17.8	1.10 H	120	31.20	5.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	102.6 PK			1.23 V	215	70.60	32.00
2	*2437.00	92.9 AV			1.23 V	215	60.90	32.00
3	4874.00	47.4 PK	74.0	-26.6	1.08 V	179	42.40	5.00
4	4874.00	35.8 AV	54.0	-18.2	1.08 V	179	30.80	5.00

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 74%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	106.8 PK			1.07 H	191	74.60	32.20
2	*2462.00	97.3 AV			1.07 H	191	65.10	32.20
3	2483.50	59.6 PK	74.0	-14.4	1.06 H	196	27.30	32.30
4	2483.50	45.5 AV	54.0	-8.5	1.06 H	196	13.20	32.30
5	4924.00	48.6 PK	74.0	-25.4	1.16 H	126	43.60	5.00
6	4924.00	35.5 AV	54.0	-18.5	1.16 H	126	30.50	5.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.4 PK			1.00 V	297	69.20	32.20
2	*2462.00	91.9 AV			1.00 V	297	59.70	32.20
3	2483.50	58.5 PK	74.0	-15.5	1.00 V	293	26.20	32.30
4	2483.50	45.0 AV	54.0	-9.0	1.00 V	293	12.70	32.30
5	4924.00	47.4 PK	74.0	-26.6	1.03 V	120	42.40	5.00
6	4924.00	34.5 AV	54.0	-19.5	1.03 V	120	29.50	5.00

REMARKS:

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

802.11n (20MHz): 2TX

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, 64%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	58.3 PK	74.0	-15.7	1.07 H	213	26.40	31.90
2	2390.00	44.0 AV	54.0	-10.0	1.07 H	213	12.10	31.90
3	*2412.00	106.3 PK			1.10 H	213	74.30	32.00
4	*2412.00	99.8 AV			1.10 H	213	67.80	32.00
5	4824.00	49.1 PK	74.0	-24.9	1.13 H	127	44.30	4.80
6	4824.00	35.4 AV	54.0	-18.6	1.13 H	127	30.60	4.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.1 PK	74.0	-15.9	1.00 V	276	26.20	31.90
2	2390.00	43.5 AV	54.0	-10.5	1.00 V	276	11.60	31.90
3	*2412.00	102.7 PK			1.00 V	272	70.70	32.00
4	*2412.00	93.4 AV			1.00 V	272	61.40	32.00
5	4824.00	48.0 PK	74.0	-26.0	1.16 V	129	43.20	4.80
6	4824.00	35.0 AV	54.0	-19.0	1.16 V	129	30.20	4.80

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 64%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	108.7 PK			1.34 H	241	76.70	32.00
2	*2437.00	97.6 AV			1.34 H	241	65.60	32.00
3	4874.00	49.5 PK	74.0	-24.5	1.12 H	127	44.50	5.00
4	4874.00	37.5 AV	54.0	-16.5	1.12 H	127	32.50	5.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	102.9 PK			1.00 V	272	70.90	32.00
2	*2437.00	93.8 AV			1.00 V	272	61.80	32.00
3	4874.00	48.4 PK	74.0	-25.6	1.05 V	178	43.40	5.00
4	4874.00	36.2 AV	54.0	-17.8	1.05 V	178	31.20	5.00

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 64%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	107.7 PK			1.30 H	237	75.50	32.20
2	*2462.00	97.5 AV			1.30 H	237	65.30	32.20
3	2483.50	60.6 PK	74.0	-13.4	1.30 H	238	28.30	32.30
4	2483.50	45.7 AV	54.0	-8.3	1.30 H	238	13.40	32.30
5	4924.00	48.9 PK	74.0	-25.1	1.18 H	120	43.90	5.00
6	4924.00	35.8 AV	54.0	-18.2	1.18 H	120	30.80	5.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.2 PK			1.00 V	265	70.00	32.20
2	*2462.00	92.9 AV			1.00 V	265	60.70	32.20
3	2483.50	58.6 PK	74.0	-15.4	1.00 V	262	60.60	-2.00
4	2483.50	45.2 AV	54.0	-8.8	1.00 V	262	47.20	-2.00
5	4924.00	47.7 PK	74.0	-26.3	1.02 V	119	42.70	5.00
6	4924.00	35.3 AV	54.0	-18.7	1.02 V	119	30.30	5.00

REMARKS:

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

802.11n (40MHz): 1TX

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 74%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	57.5 PK	74.0	-16.5	1.00 H	203	25.60	31.90
2	2390.00	44.2 AV	54.0	-9.8	1.00 H	203	12.30	31.90
3	*2422.00	102.1 PK			1.08 H	201	70.10	32.00
4	*2422.00	93.4 AV			1.08 H	201	61.40	32.00
5	4844.00	48.0 PK	74.0	-26.0	1.13 H	120	43.20	4.80
6	4844.00	34.8 AV	54.0	-19.2	1.13 H	120	30.00	4.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.2 PK	74.0	-16.8	1.00 V	309	25.30	31.90
2	2390.00	43.6 AV	54.0	-10.4	1.00 V	309	11.70	31.90
3	*2422.00	98.0 PK			1.00 V	301	66.00	32.00
4	*2422.00	88.7 AV			1.00 V	301	56.70	32.00
5	4844.00	47.5 PK	74.0	-26.5	1.09 V	119	42.70	4.80
6	4844.00	34.2 AV	54.0	-19.8	1.09 V	119	29.40	4.80

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 74%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	103.1 PK			1.07 H	194	71.10	32.00
2	*2437.00	93.8 AV			1.07 H	194	61.80	32.00
3	4874.00	48.2 PK	74.0	-25.8	1.12 H	129	43.20	5.00
4	4874.00	35.6 AV	54.0	-18.4	1.12 H	129	30.60	5.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	97.0 PK			1.00 V	267	65.00	32.00
2	*2437.00	87.9 AV			1.00 V	267	55.90	32.00
3	4874.00	48.0 PK	74.0	-26.0	1.00 V	113	43.00	5.00
4	4874.00	35.1 AV	54.0	-18.9	1.00 V	113	30.10	5.00

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 74%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	103.5 PK			1.07 H	193	71.30	32.20
2	*2452.00	94.3 AV			1.07 H	193	62.10	32.20
3	2483.50	61.8 PK	74.0	-12.2	1.07 H	196	29.50	32.30
4	2483.50	47.9 AV	54.0	-6.1	1.07 H	196	15.60	32.30
5	4924.00	47.5 PK	74.0	-26.5	1.16 H	127	42.50	5.00
6	4924.00	34.6 AV	54.0	-19.4	1.16 H	127	29.60	5.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	98.2 PK			1.59 V	294	66.00	32.20
2	*2452.00	89.0 AV			1.59 V	294	56.80	32.20
3	2483.50	60.9 PK	74.0	-13.1	1.54 V	293	28.60	32.30
4	2483.50	46.6 AV	54.0	-7.4	1.54 V	293	14.30	32.30
5	4924.00	47.2 PK	74.0	-26.8	1.03 V	124	42.20	5.00
6	4924.00	34.0 AV	54.0	-20.0	1.03 V	124	29.00	5.00

REMARKS:

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

802.11n (40MHz): 2TX

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, 64%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	58.1 PK	74.0	-15.9	1.08 H	232	26.20	31.90
2	2390.00	44.8 AV	54.0	-9.2	1.08 H	232	12.90	31.90
3	*2422.00	102.4 PK			1.04 H	235	70.40	32.00
4	*2422.00	93.6 AV			1.04 H	235	61.60	32.00
5	4844.00	48.6 PK	74.0	-25.4	1.14 H	128	43.80	4.80
6	4844.00	34.9 AV	54.0	-19.1	1.14 H	128	30.10	4.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.9 PK	74.0	-16.1	1.00 V	268	60.40	-2.50
2	2390.00	44.2 AV	54.0	-9.8	1.00 V	268	46.70	-2.50
3	*2422.00	98.8 PK			1.00 V	263	66.80	32.00
4	*2422.00	89.8 AV			1.00 V	263	57.80	32.00
5	4844.00	48.4 PK	74.0	-25.6	1.08 V	120	43.60	4.80
6	4844.00	34.4 AV	54.0	-19.6	1.08 V	120	29.60	4.80

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 64%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	103.2 PK			1.34 H	242	71.20	32.00
2	*2437.00	94.7 AV			1.34 H	242	62.70	32.00
3	4874.00	49.2 PK	74.0	-24.8	1.14 H	125	44.20	5.00
4	4874.00	35.8 AV	54.0	-18.2	1.14 H	125	30.80	5.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	97.5 PK			1.65 V	188	65.50	32.00
2	*2437.00	88.1 AV			1.65 V	188	56.10	32.00
3	4874.00	48.1 PK	74.0	-25.9	1.02 V	114	43.10	5.00
4	4874.00	35.3 AV	54.0	-18.7	1.02 V	114	30.30	5.00

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 64%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	104.1 PK			1.32 H	240	71.90	32.20
2	*2452.00	95.0 AV			1.32 H	240	62.80	32.20
3	2483.50	62.3 PK	74.0	-11.7	1.34 H	244	30.00	32.30
4	2483.50	48.4 AV	54.0	-5.6	1.34 H	244	16.10	32.30
5	4904.00	48.3 PK	74.0	-25.7	1.14 H	124	43.30	5.00
6	4904.00	35.0 AV	54.0	-19.0	1.14 H	124	30.00	5.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	98.6 PK			1.32 V	187	66.40	32.20
2	*2452.00	89.9 AV			1.32 V	187	57.70	32.20
3	2483.50	61.5 PK	74.0	-12.5	1.35 V	180	63.50	-2.00
4	2483.50	47.2 AV	54.0	-6.8	1.35 V	180	49.20	-2.00
5	4904.00	48.1 PK	74.0	-25.9	1.00 V	125	43.10	5.00
6	4904.00	34.5 AV	54.0	-19.5	1.00 V	125	29.50	5.00

REMARKS:

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

BELOW 1GHz WORST-CASE DATA :

802.11n (20MHz): 2TX

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 65%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	123.04	32.6 QP	43.5	-10.9	2.00 H	6	48.70	-16.10
2	165.73	36.1 QP	43.5	-7.4	1.00 H	246	50.50	-14.40
3	239.46	37.8 QP	46.0	-8.2	1.00 H	242	52.70	-14.90
4	431.56	33.8 QP	46.0	-12.2	1.00 H	168	43.80	-10.00
5	697.40	38.0 QP	46.0	-8.0	1.00 H	242	43.40	-5.40
6	**751.73**	**42.7 QP**	**46.0**	**-3.3**	**1.00 H**	**267**	**46.40**	**-3.70**
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	35.72	33.1 QP	40.0	-6.9	2.00 V	14	47.80	-14.70
2	165.73	25.8 QP	43.5	-17.7	1.49 V	6	40.20	-14.40
3	670.23	30.4 QP	46.0	-15.6	2.00 V	320	36.20	-5.80
4	699.34	32.5 QP	46.0	-13.5	2.00 V	257	37.90	-5.40
5	751.73	35.2 QP	46.0	-10.8	2.00 V	330	38.90	-3.70
6	864.27	33.7 QP	46.0	-12.3	2.00 V	253	36.10	-2.40

REMARKS:

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

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	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	100289	Nov. 16, 2012	Nov. 15, 2013
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 28, 2012	Dec. 27, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 04, 2013	Feb. 03, 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

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Shielded Room 1.

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

4.2.3 TEST PROCEDURES

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.

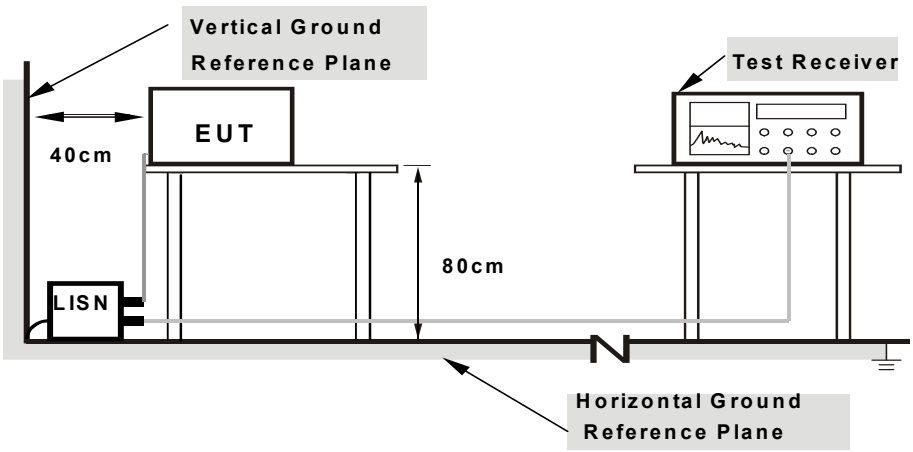
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

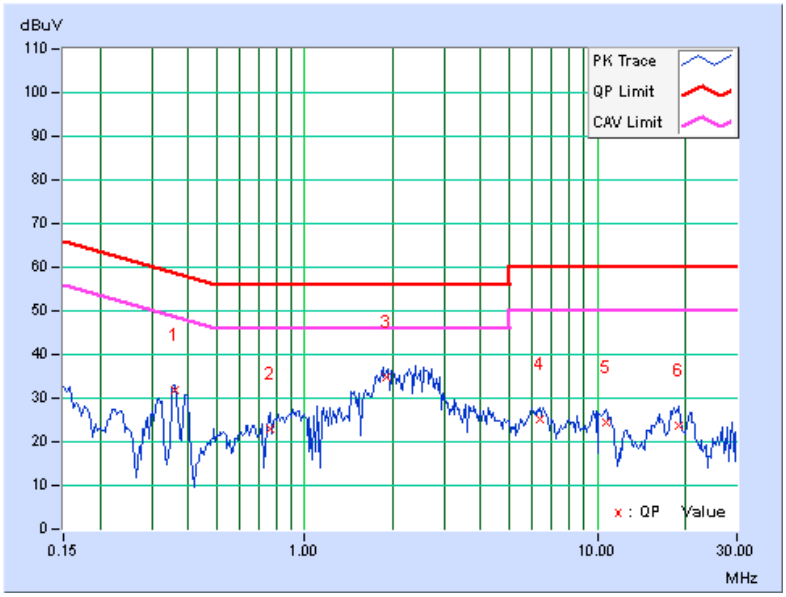
CONDUCTED WORST-CASE DATA：

802.11n (20MHz): 2TX

PHASE	Line 1	6dB BANDWIDTH	9kHz

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.36094	0.22	31.59	28.02	31.81	28.24	58.71	48.71	-26.90	-20.47
2	0.76328	0.24	22.59	9.56	22.83	9.80	56.00	46.00	-33.17	-36.20
3	**1.90234**	**0.29**	**34.64**	**28.30**	**34.93**	**28.59**	**56.00**	**46.00**	**-21.07**	**-17.41**
4	6.33203	0.52	24.69	17.52	25.21	18.04	60.00	50.00	-34.79	-31.96
5	10.67578	0.75	23.66	16.41	24.41	17.16	60.00	50.00	-35.59	-32.84
6	19.01172	1.18	22.48	16.80	23.66	17.98	60.00	50.00	-36.34	-32.02

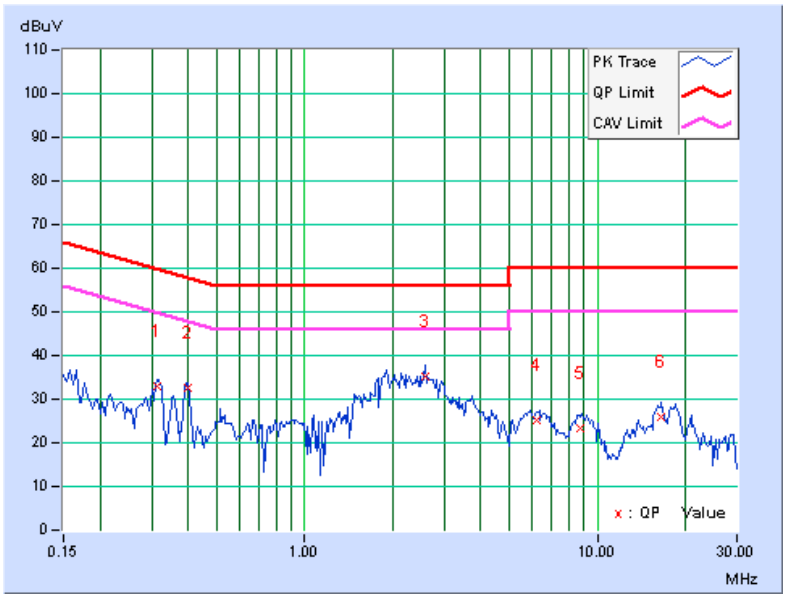
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading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



PHASE	Line 2	6dB BANDWIDTH	9kHz

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.31406	0.21	32.68	27.95	32.89	28.16	59.86	49.86	-26.97	-21.70
2	0.40000	0.24	32.26	28.56	32.50	28.80	57.85	47.85	-25.35	-19.05
3	2.57031	0.31	34.78	26.86	35.09	27.17	56.00	46.00	-20.91	-18.83
4	6.19922	0.46	24.83	18.52	25.29	18.98	60.00	50.00	-34.71	-31.02
5	8.70313	0.55	22.76	17.37	23.31	17.92	60.00	50.00	-36.69	-32.08
6	16.50391	0.81	25.02	18.94	25.83	19.75	60.00	50.00	-34.17	-30.25

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

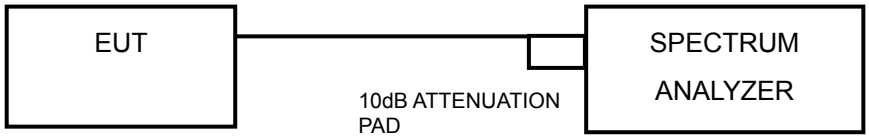


4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.3.4 TEST PROCEDURE

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

4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

4.3.6 EUT OPERATING CONDITIONS

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

4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.15	0.5	PASS
6	2437	10.15	0.5	PASS
11	2462	10.15	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.58	0.5	PASS
6	2437	16.58	0.5	PASS
11	2462	16.58	0.5	PASS

802.11n (20MHz): 1TX

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.71	0.5	PASS
6	2437	17.71	0.5	PASS
11	2462	17.71	0.5	PASS

802.11n (20MHz): 2TX

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.83	17.70	0.5	PASS
6	2437	17.83	17.69	0.5	PASS
11	2462	17.83	17.68	0.5	PASS

802.11n (40MHz): 1TX

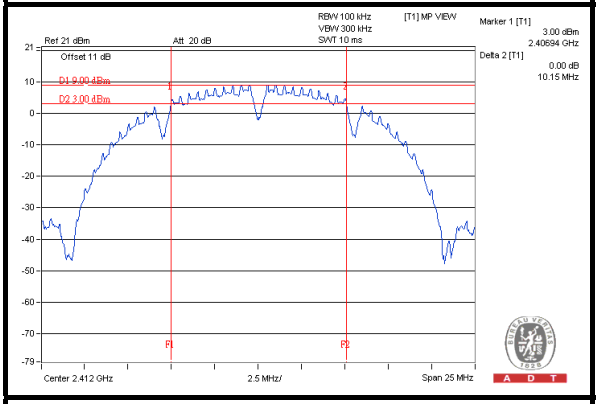
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.59	0.5	PASS
6	2437	36.62	0.5	PASS
9	2452	36.60	0.5	PASS

802.11n (40MHz): 2TX

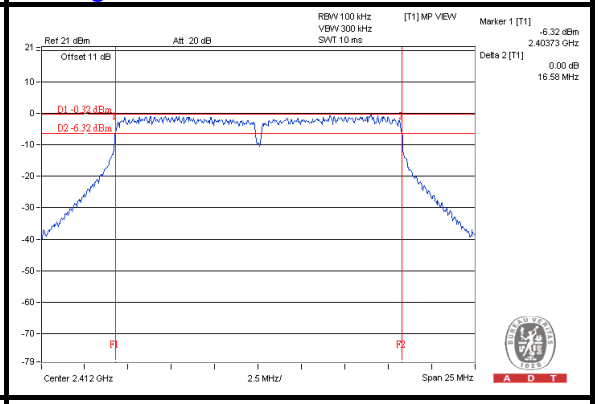
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.56	36.45	0.5	PASS
6	2437	36.62	36.45	0.5	PASS
9	2452	36.59	36.47	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

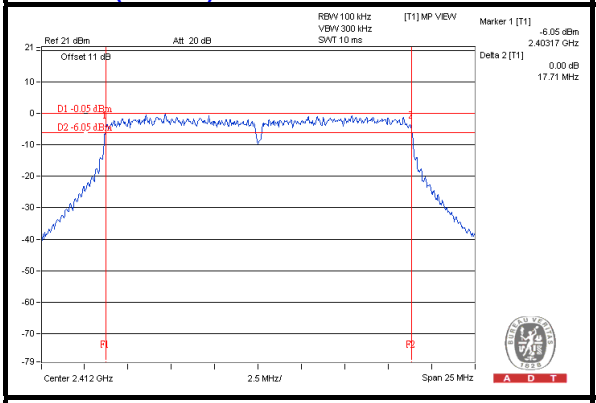
802.11b



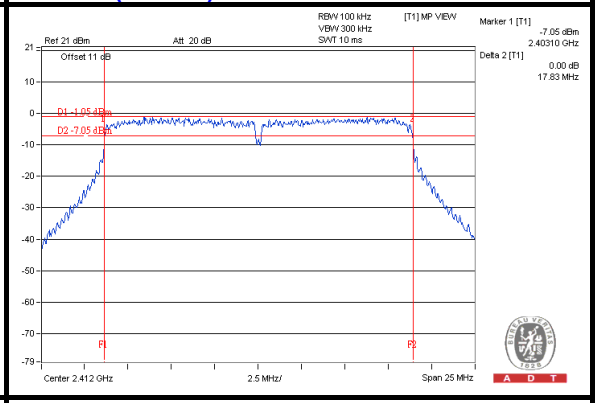
802.11g



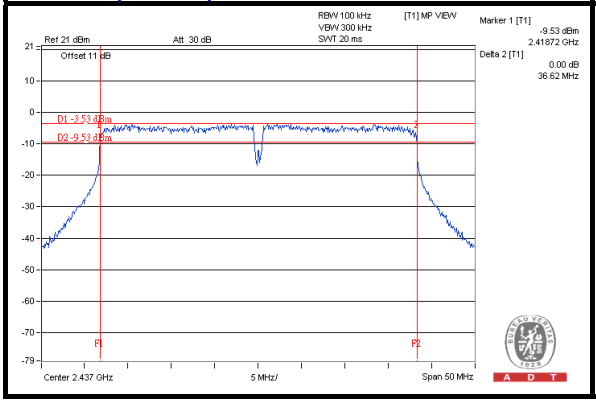
802.11n (20MHz): 1TX



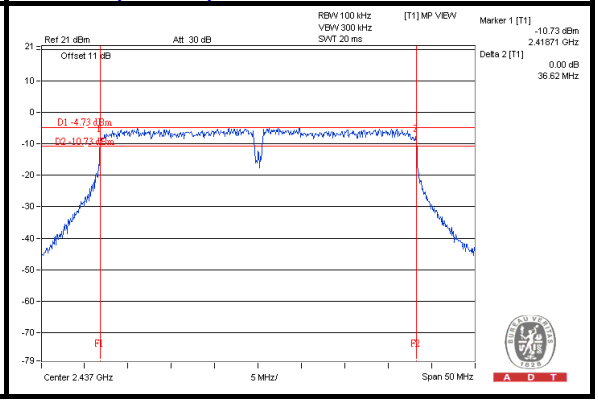
802.11n (20MHz): 2TX



802.11n (40MHz): 1TX



802.11n (40MHz): 2TX



4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

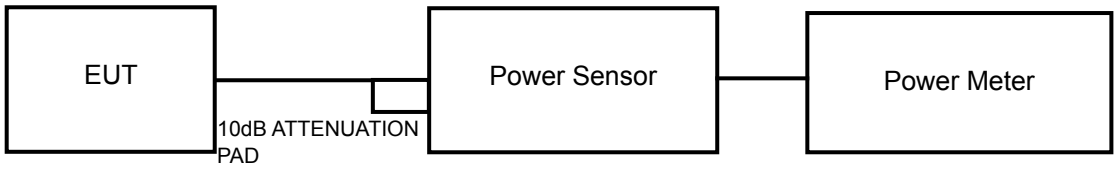
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output v02 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;
Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.4.4 TEST PROCEDURES

A peak / average power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak / average power sensor. Record the peak power level.

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

4.4.7 TEST RESULTS

FOR PEAK POWER

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	167.880	22.25	30	PASS
6	2437	184.077	22.65	30	PASS
11	2462	179.061	22.53	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	189.671	22.78	30	PASS
6	2437	166.725	22.22	30	PASS
11	2462	184.502	22.66	30	PASS

802.11n (20MHz): 1TX

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	245.471	23.90	30	PASS
6	2437	165.577	22.19	30	PASS
11	2462	185.780	22.69	30	PASS

802.11n (20MHz): 2TX

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	22.66	22.18	349.698	25.44	30	PASS
6	2437	22.52	22.68	364.002	25.61	30	PASS
11	2462	22.14	21.81	315.387	24.99	30	PASS

802.11n (40MHz): 1TX

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	140.605	21.48	30	PASS
6	2437	126.474	21.02	30	PASS
9	2452	138.676	21.42	30	PASS

802.11n (40MHz): 2TX

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	22.28	22.20	335.003	25.25	30	PASS
6	2437	21.63	21.52	287.452	24.59	30	PASS
9	2452	21.09	21.06	256.173	24.09	30	PASS

FOR AVERAGE POWER

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	95.940	19.82
6	2437	107.895	20.33
11	2462	104.232	20.18

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	29.854	14.75
6	2437	29.174	14.65
11	2462	27.669	14.42

802.11n (20MHz): 1TX

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	30.761	14.88
6	2437	28.708	14.58
11	2462	27.102	14.33

802.11n (20MHz): 2TX

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	14.15	14.12	51.825	17.15
6	2437	14.21	14.05	51.773	17.14
11	2462	13.73	13.45	45.736	16.60

802.11n (40MHz): 1TX

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
3	2422	25.882	14.13
6	2437	22.699	13.56
9	2452	23.823	13.77

802.11n (40MHz): 2TX

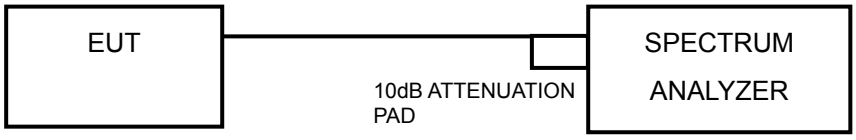
CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	13.27	13.34	42.809	16.32
6	2437	13.16	13.07	40.978	16.13
9	2452	13.16	13.08	41.025	16.13

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

a. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
b. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
c. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.5.7 TEST RESULTS

802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-10.94	8	PASS
6	2437	-10.75	8	PASS
11	2462	-10.93	8	PASS

802.11g

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-14.60	8	PASS
6	2437	-14.96	8	PASS
11	2462	-14.62	8	PASS

802.11n (20MHz): 1TX

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-13.22	8	PASS
6	2437	-13.82	8	PASS
11	2462	-14.87	8	PASS

802.11n (20MHz): 2TX

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	-13.86	3.01	-10.85	8	PASS
	6	2437	-13.96	3.01	-10.95	8	PASS
	11	2462	-14.13	3.01	-11.12	8	PASS
1	1	2412	-14.34	3.01	-11.33	8	PASS
	6	2437	-14.25	3.01	-11.24	8	PASS
	11	2462	-15.35	3.01	-12.34	8	PASS

NOTE: Directional gain = 1dBi + 10log(2) = 4.01dBi < 6dBi, so the limit no need to reduced.

802.11n (40MHz): 1TX

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-16.64	8	PASS
6	2437	-15.57	8	PASS
9	2452	-16.60	8	PASS

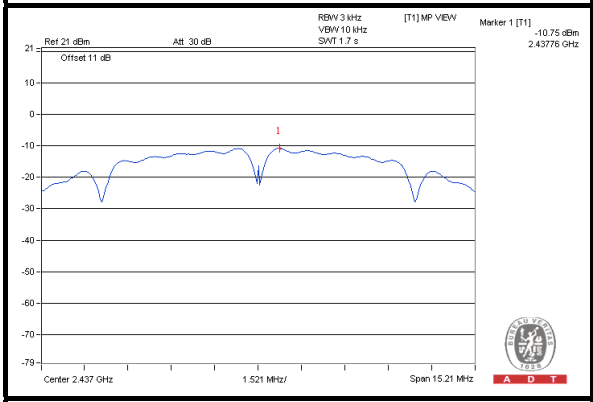
802.11n (40MHz): 2TX

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	-16.98	3.01	-13.97	8	PASS
	6	2437	-16.85	3.01	-13.84	8	PASS
	9	2452	-16.97	3.01	-13.96	8	PASS
1	3	2422	-18.29	3.01	-15.28	8	PASS
	6	2437	-18.96	3.01	-15.95	8	PASS
	9	2452	-18.86	3.01	-15.85	8	PASS

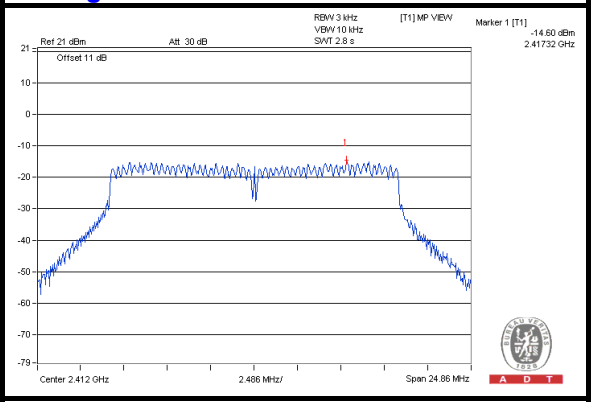
NOTE: Directional gain = 1dBi + 10log(2) = 4.01dBi < 6dBi, so the limit no need to reduced.

SPECTRUM PLOT OF WORST VALUE

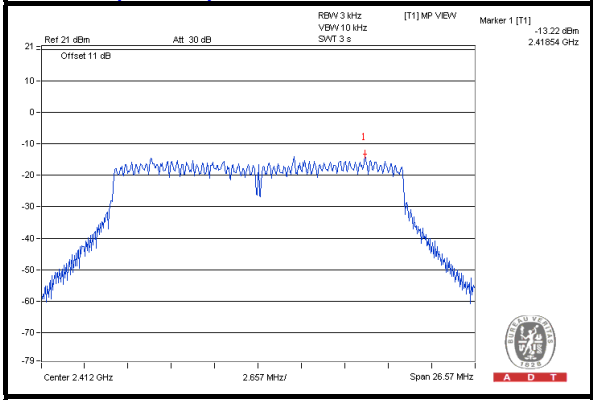
802.11b



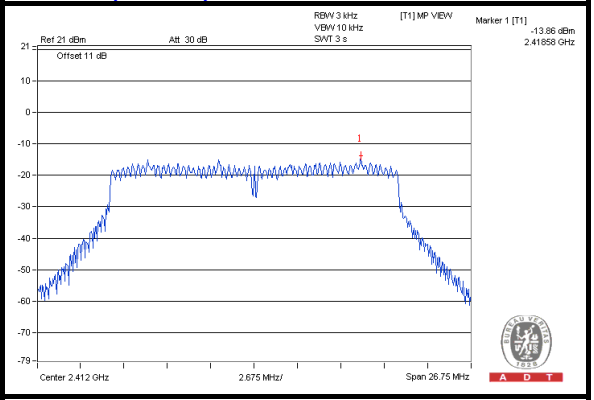
802.11g



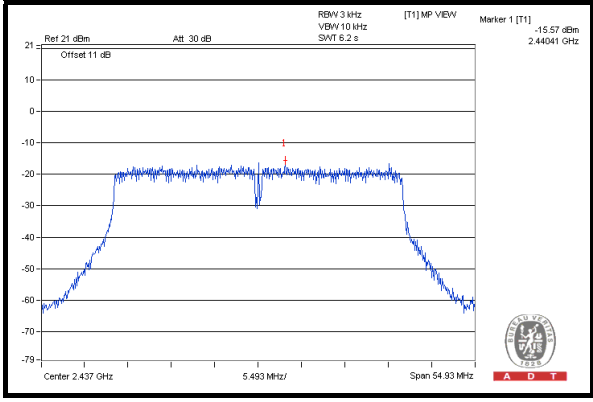
802.11n (20MHz): 1TX



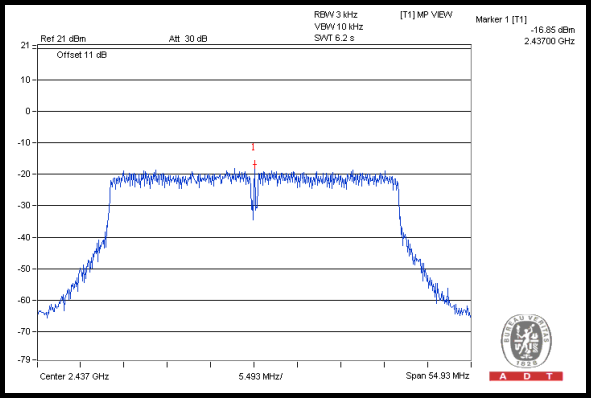
802.11n (20MHz): 2TX



802.11n (40MHz): 1TX



802.11n (40MHz): 2TX

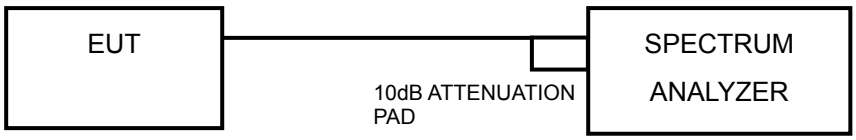


4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Set span to encompass the spectrum to be examined.
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

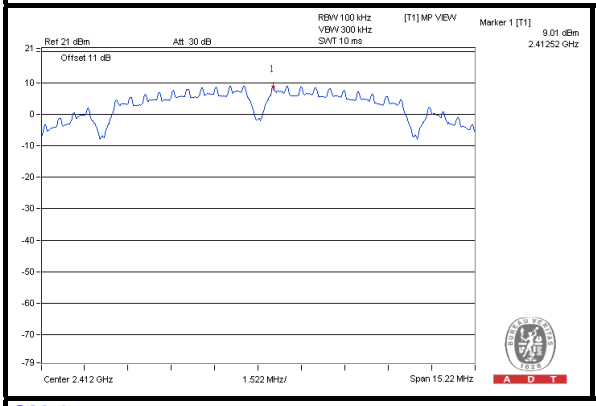
4.6.7 TEST RESULTS

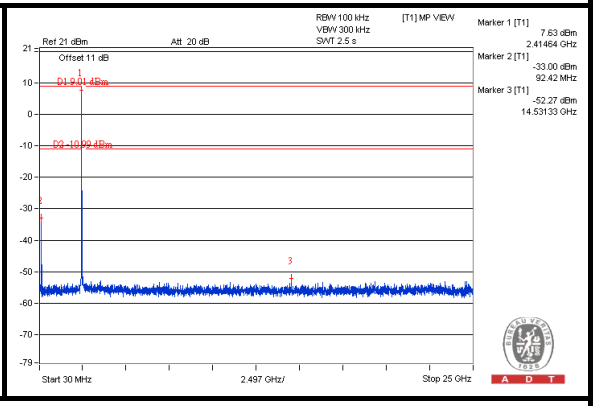
The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.

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.

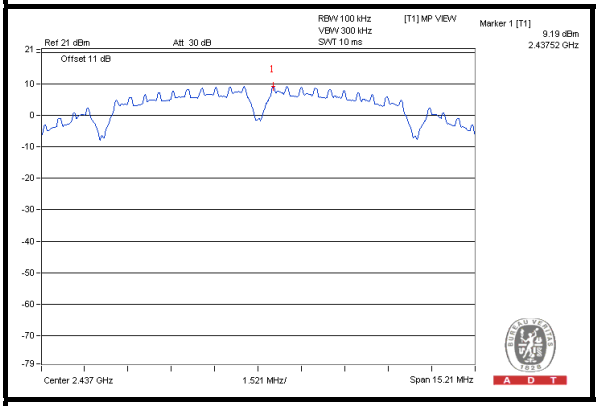
802.11b

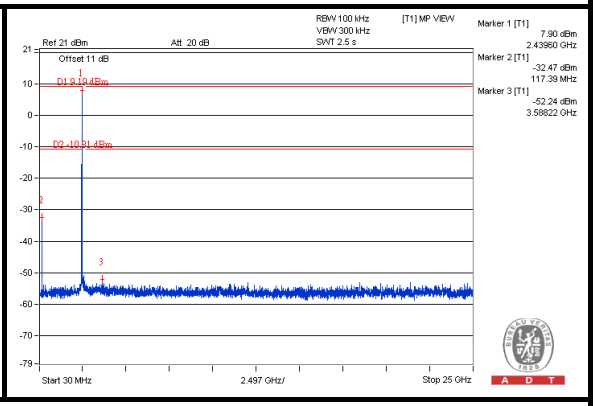
CH 1



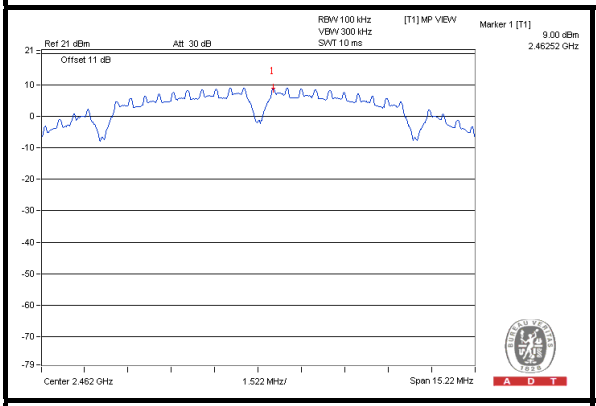


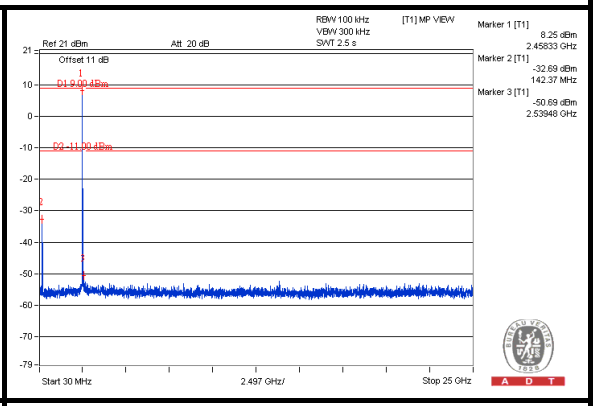
CH 6



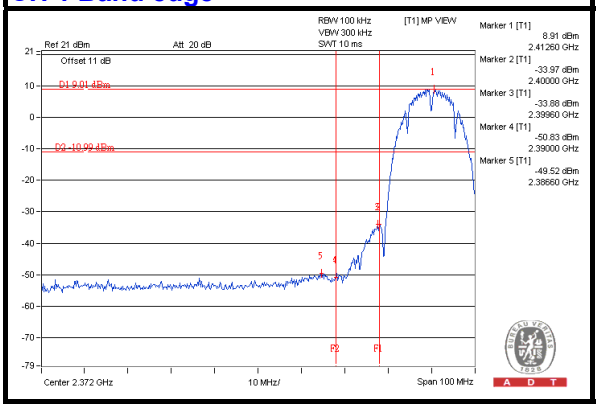


CH 11

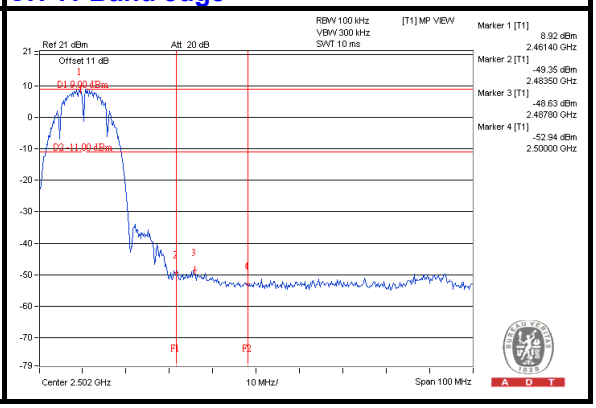




CH 1 Band edge

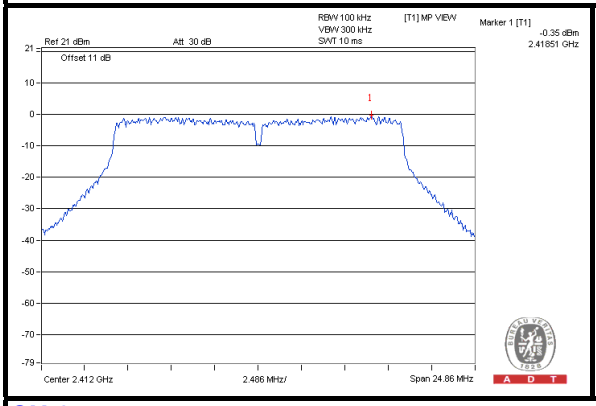


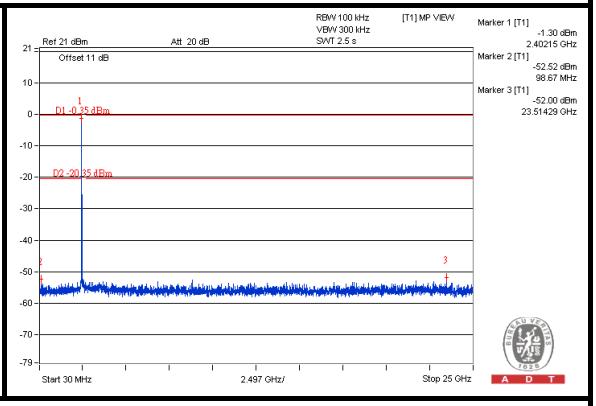
CH 11 Band edge



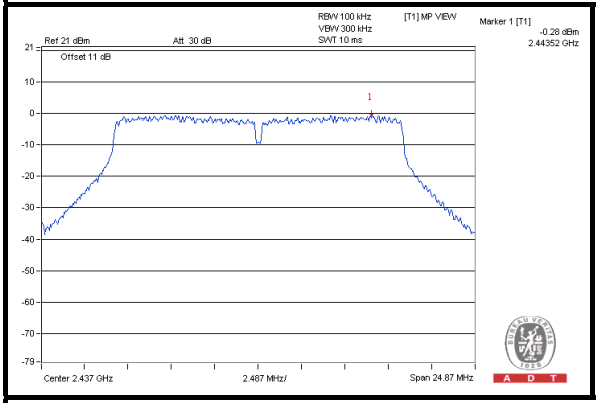
802.11g

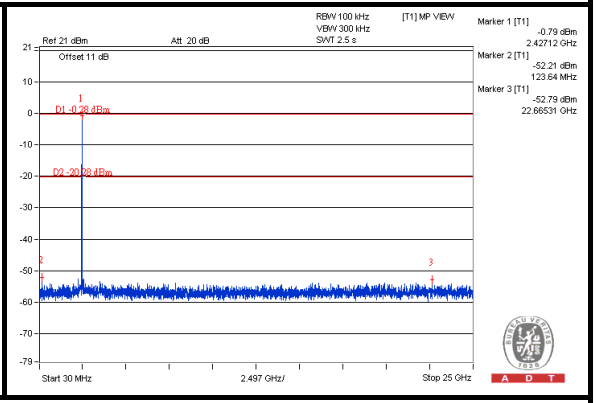
CH 1





CH 6





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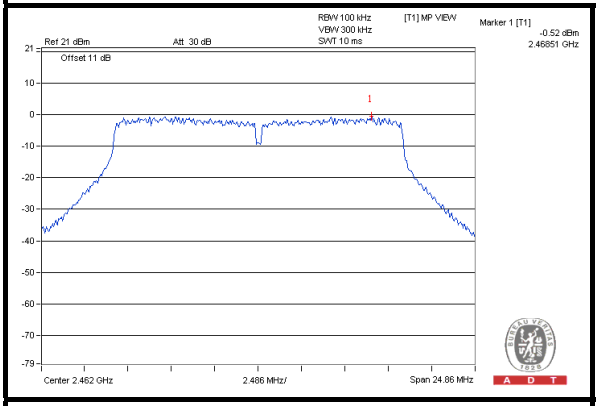

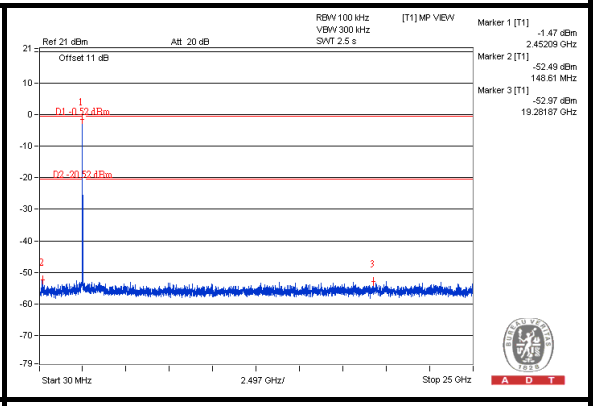

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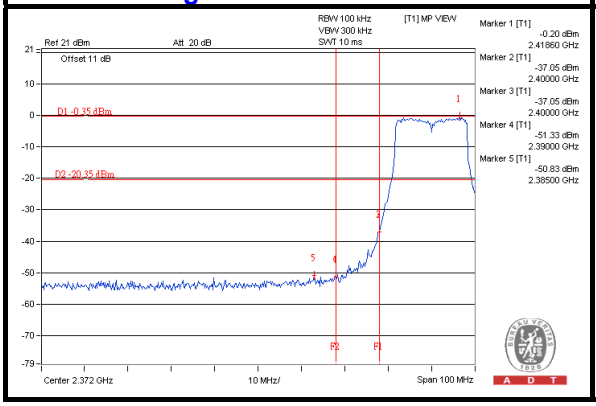

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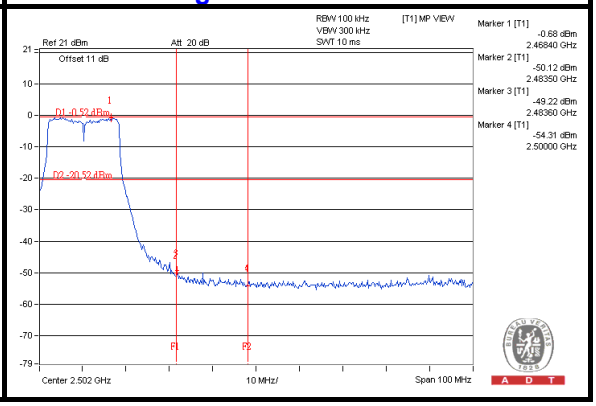

802.11n (20MHz): 1TX

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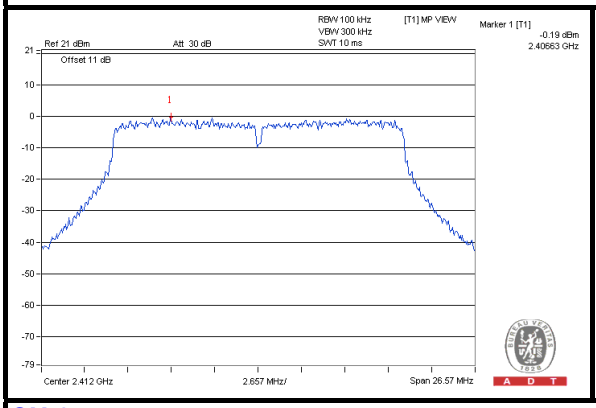

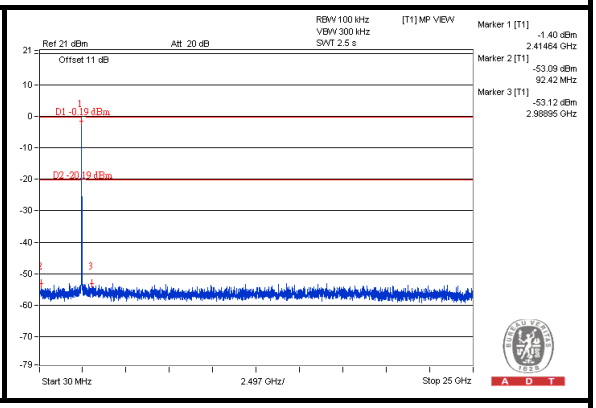

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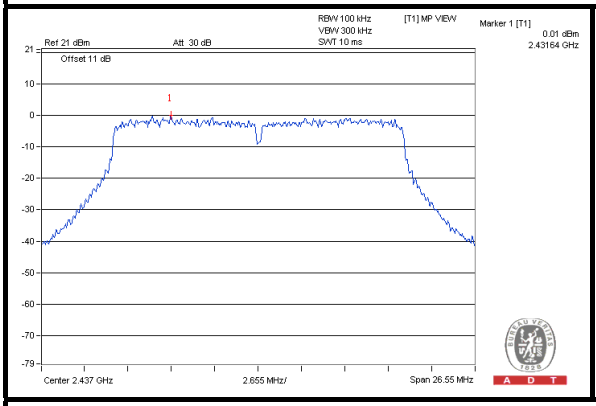

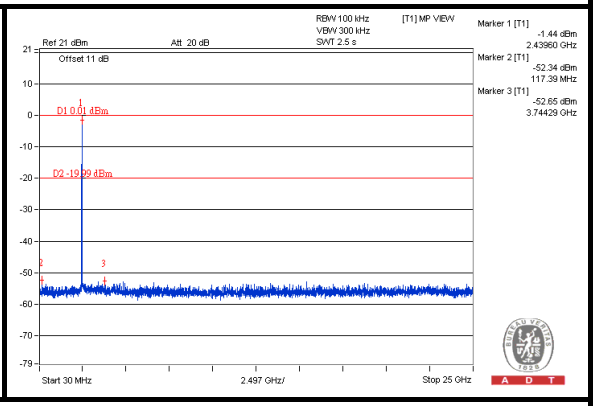

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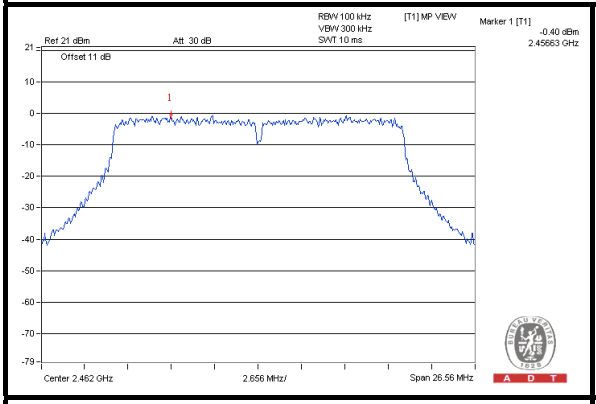

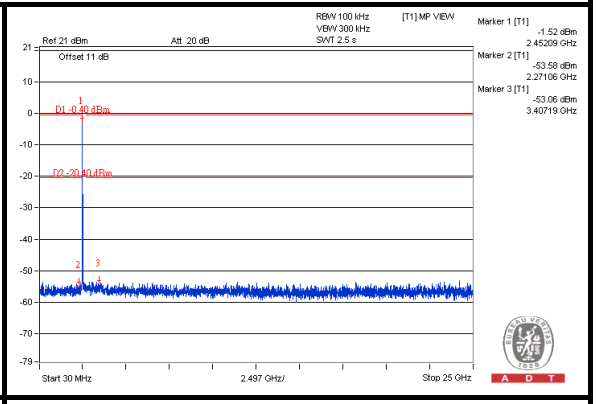

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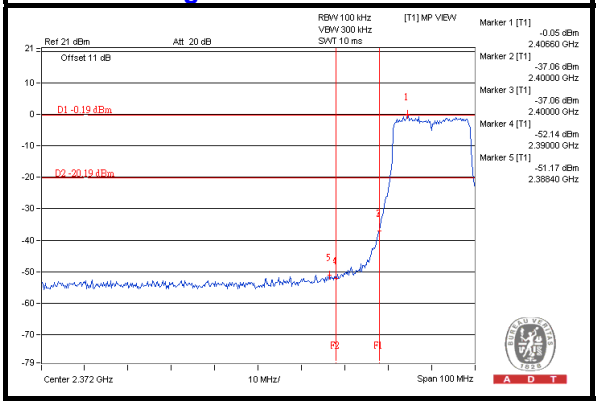

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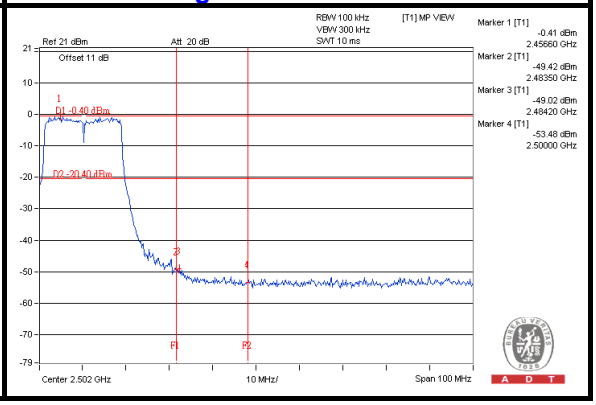

802.11n (20MHz): 2TX

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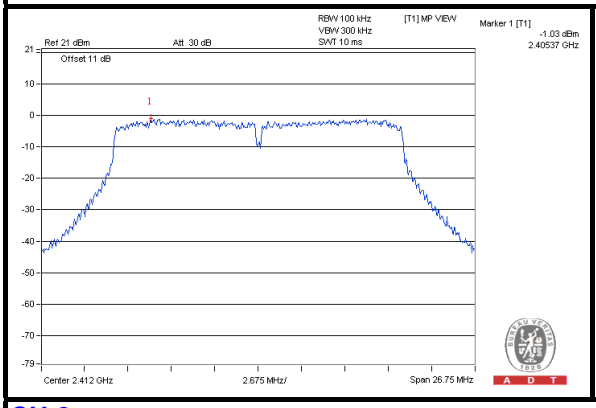

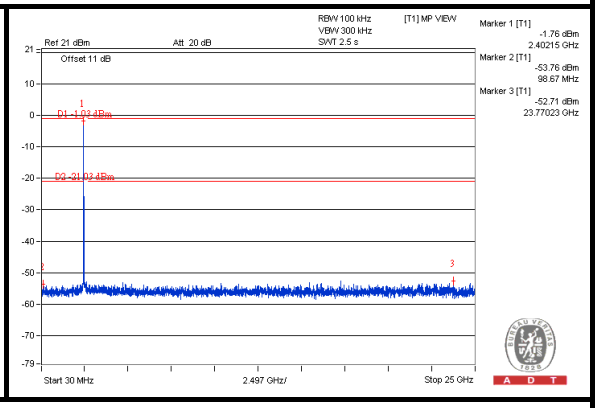

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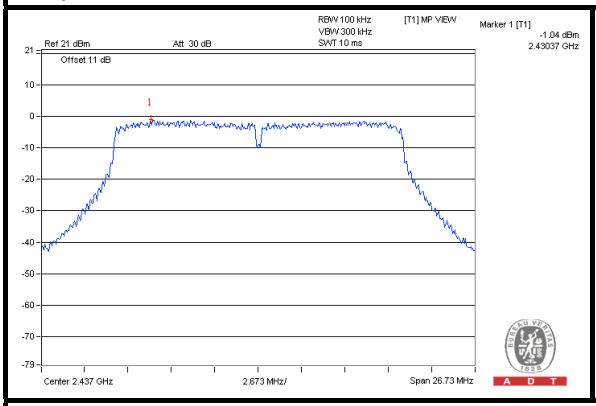

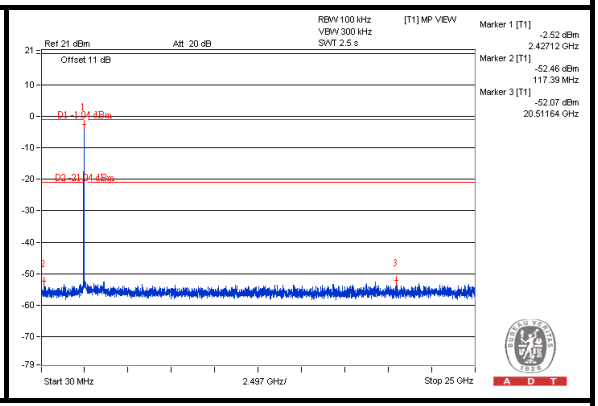

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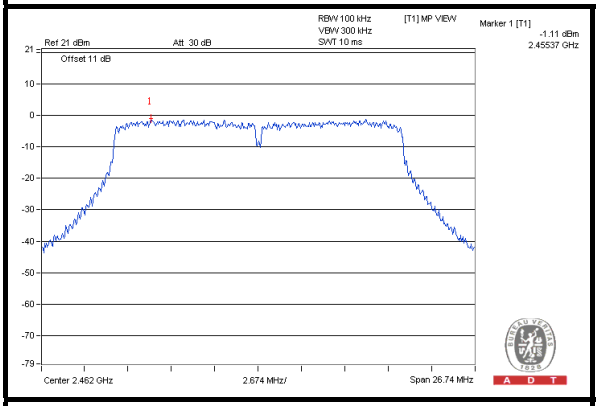
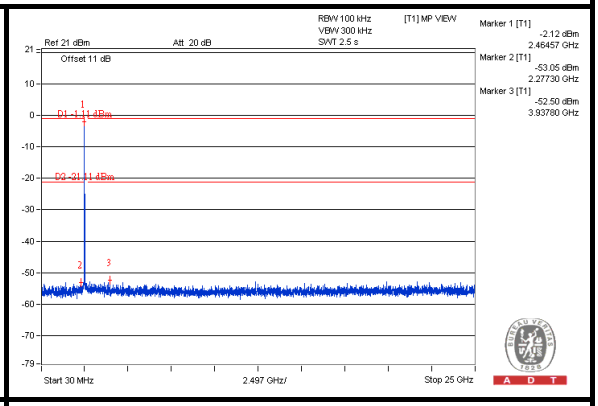
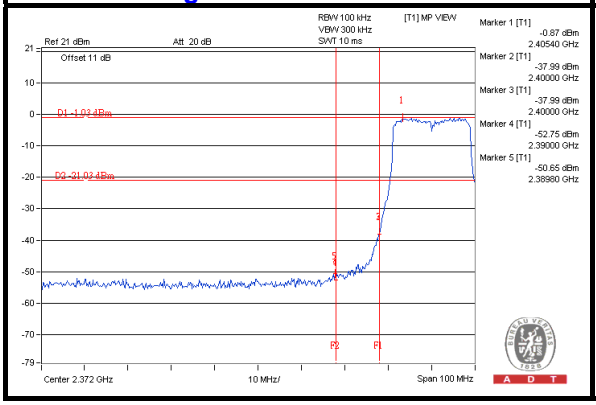




CH 1 Band edge



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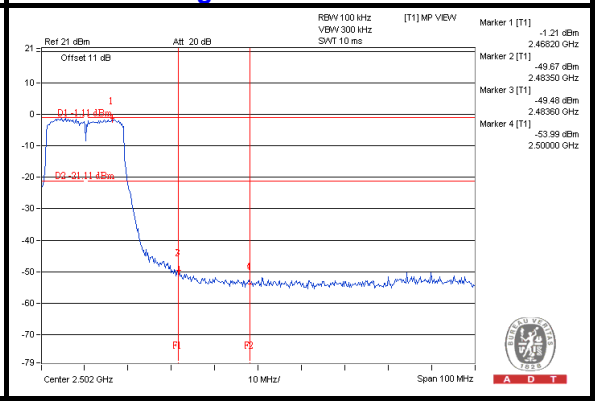
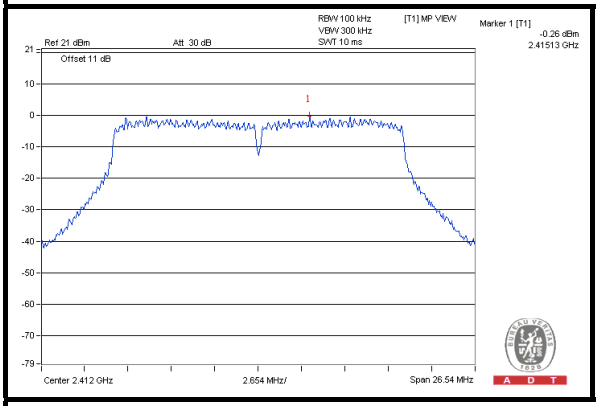
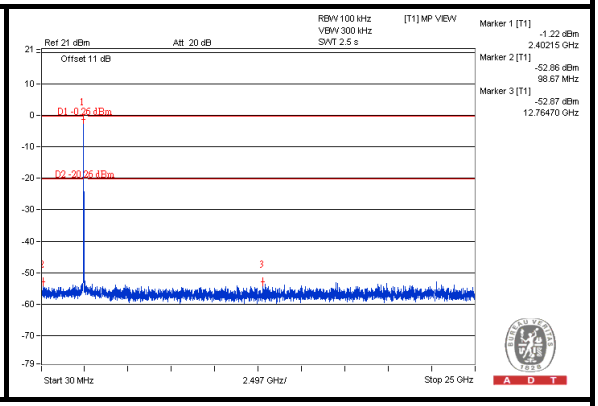


CHAIN 1

CH 1





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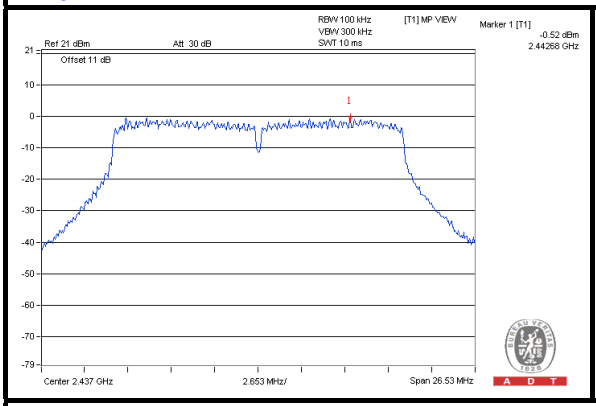

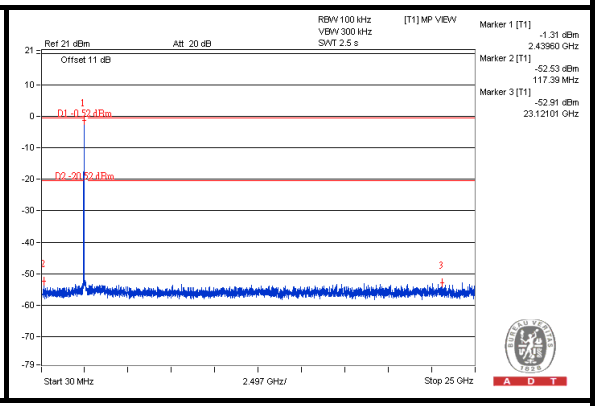

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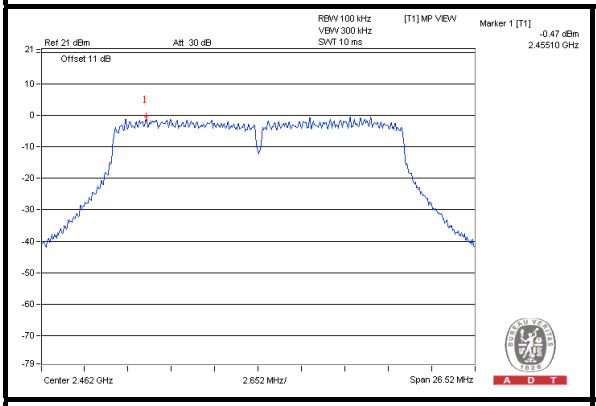

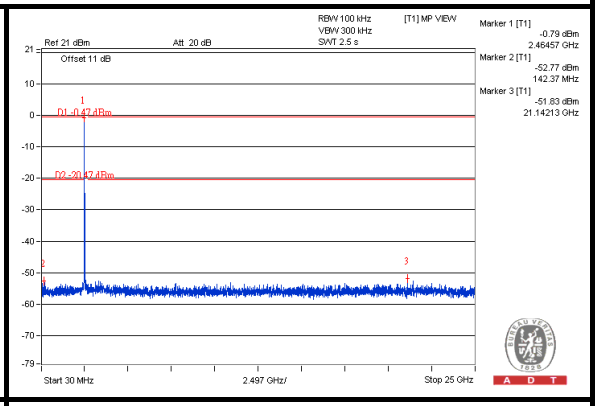

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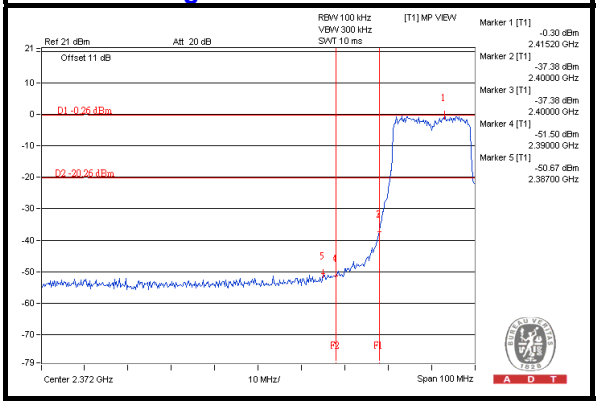

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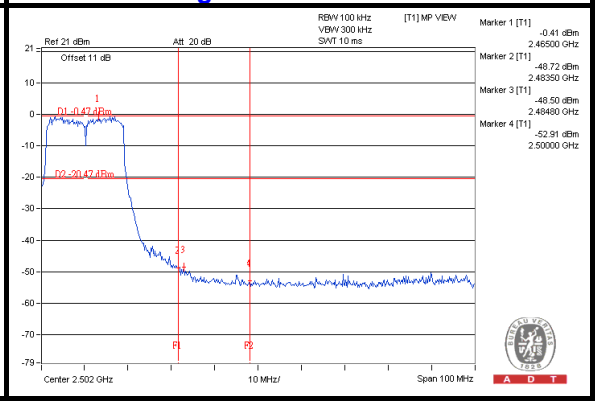
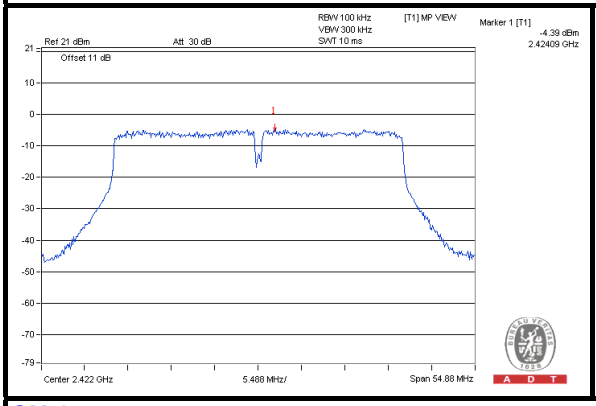
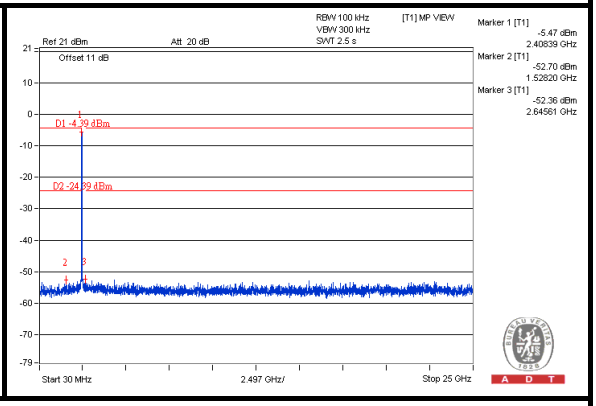


802.11n (40MHz): 1TX

CH 3





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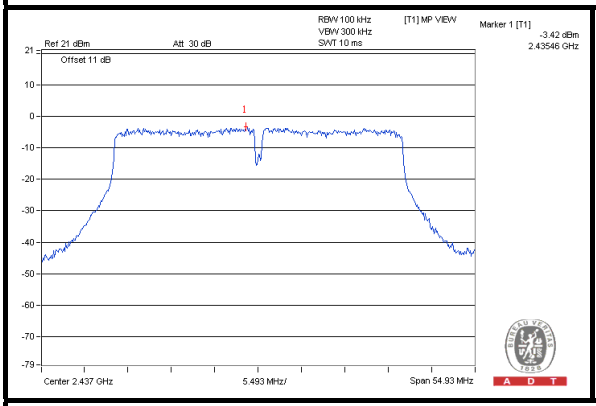
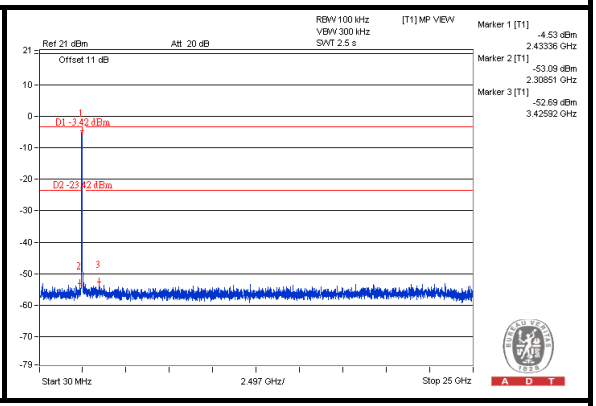
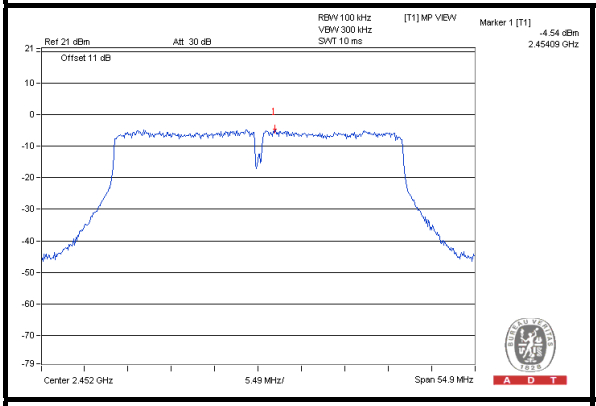
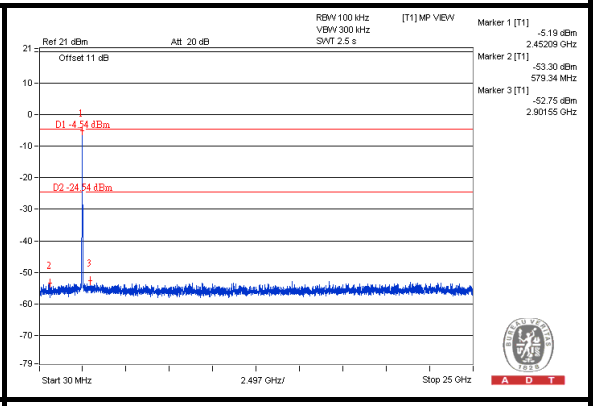




CH 9





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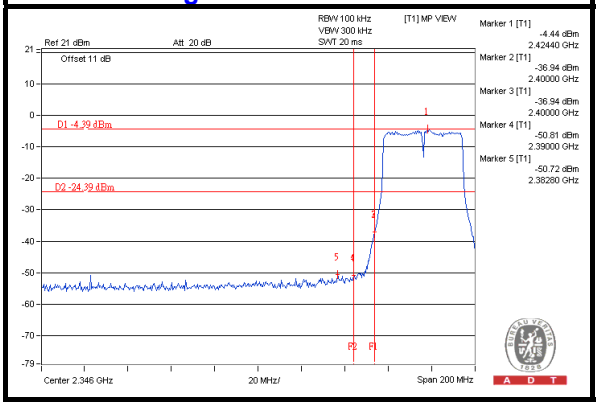

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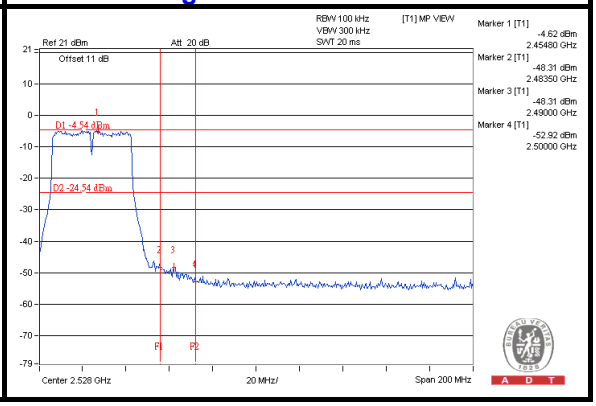

802.11n (40MHz): 2TX

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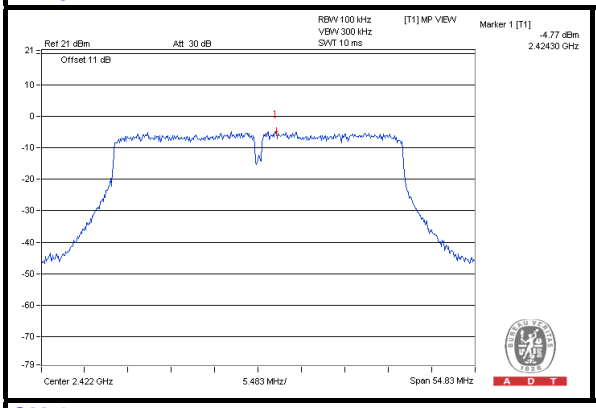

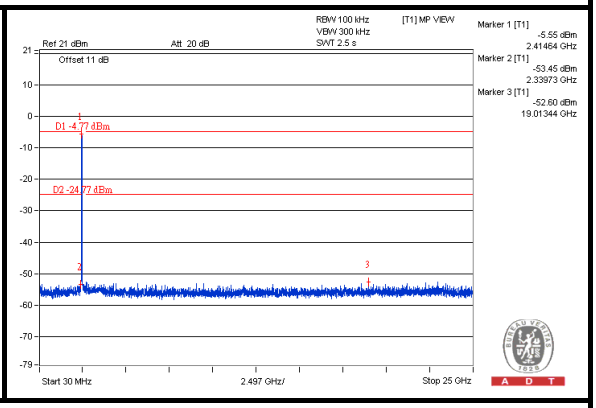

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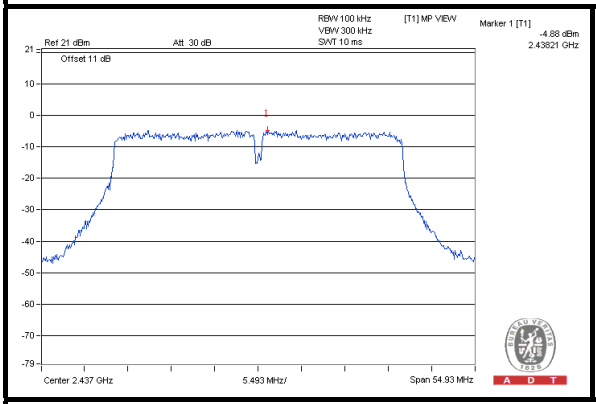

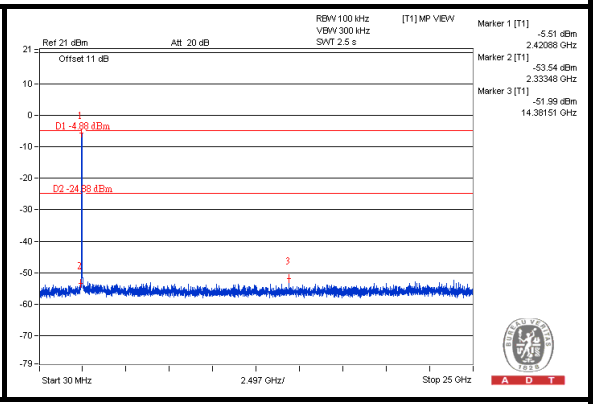

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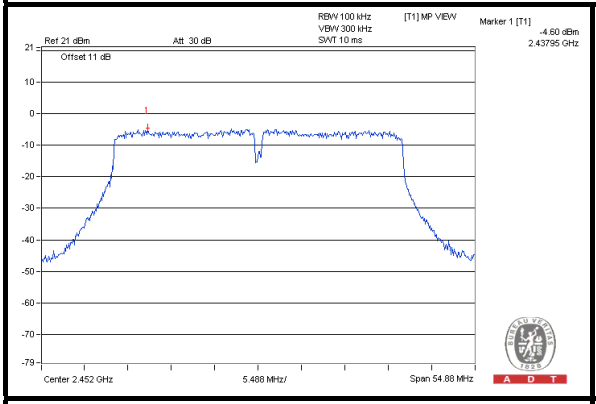
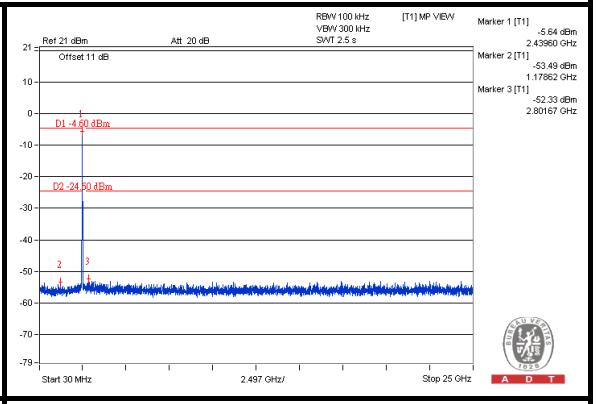
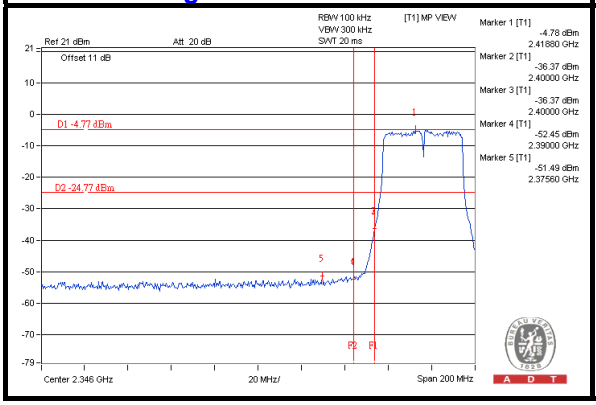
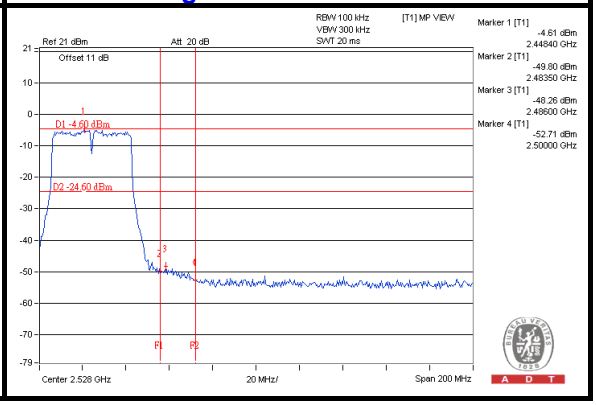




CH 3 Band edge

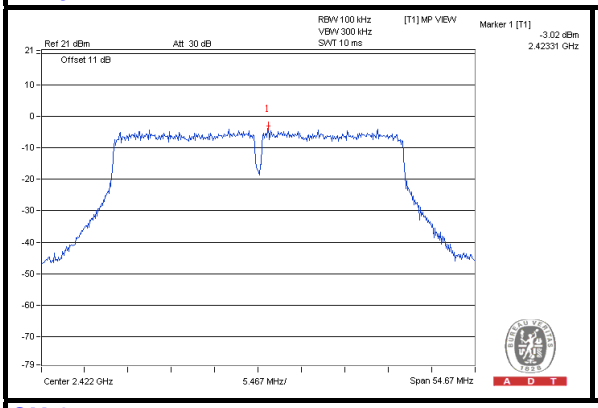


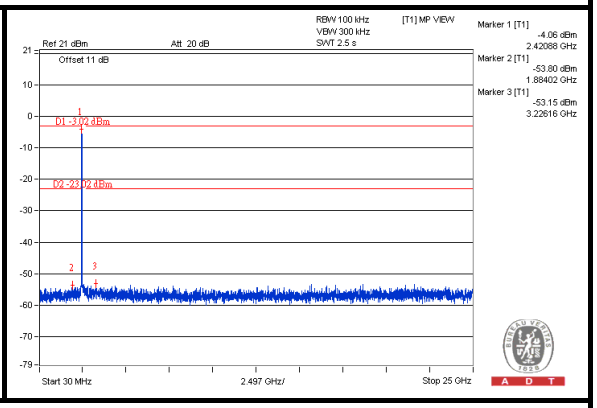
CH 9 Band edge



CHAIN 1

CH 3





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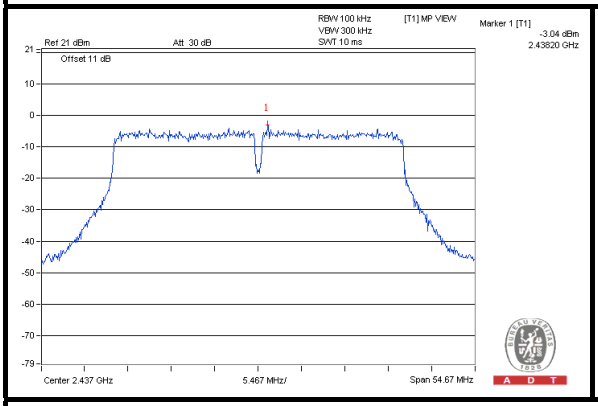

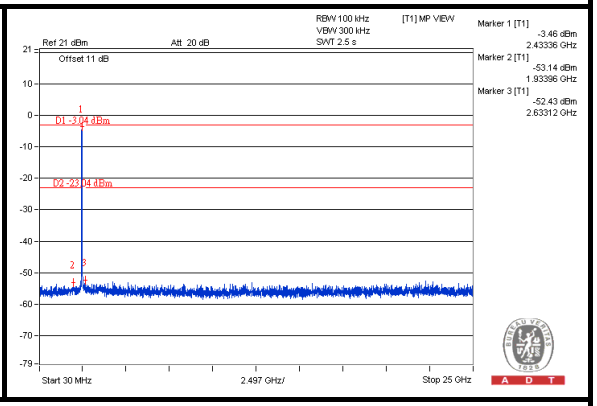

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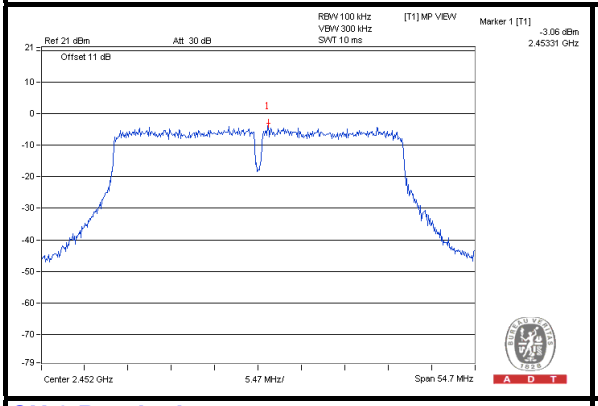
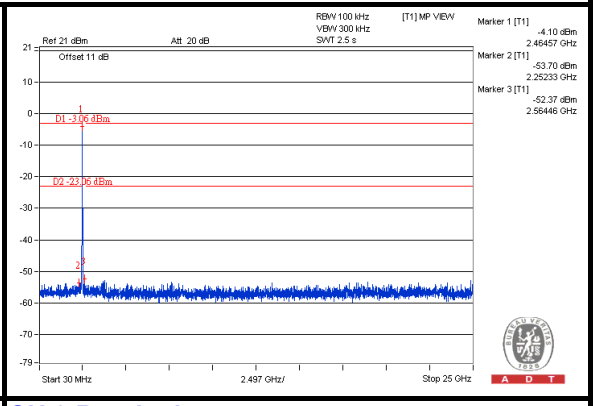
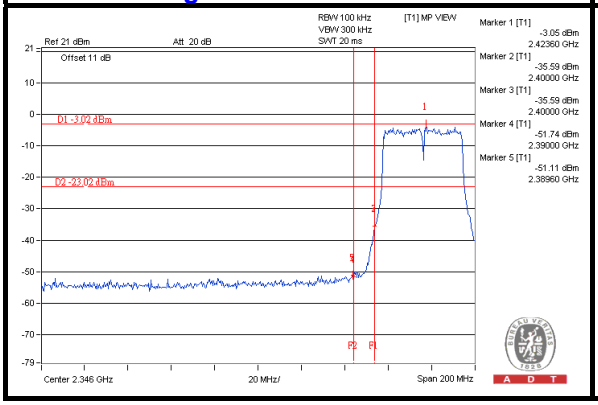
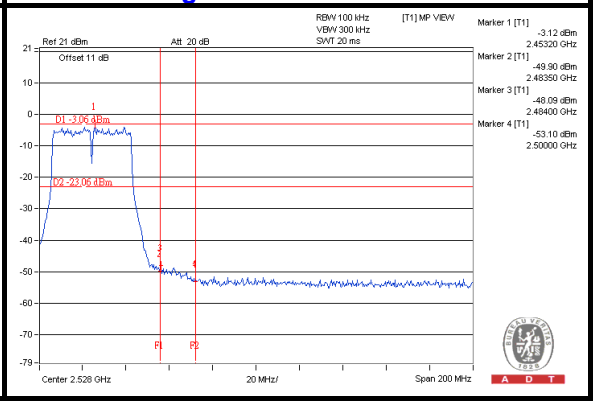




CH 3 Band edge



CH 9 Band edge



5. TEST TYPES AND RESULTS (FOR 5.0GHz BAND)

5.1 RADIATED EMISSION MEASUREMENT

5.1.1 LIMITS OF RADIATED EMISSION 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.

5.1.2 TEST INSTRUMENTS

Same as item 4.1.2.

5.1.3 TEST PROCEDURES

Same as item 4.1.3.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation.

5.1.5 TEST SETUP

Same as item 4.1.5.

5.1.6 EUT OPERATING CONDITIONS

Same as item 4.1.6.

5.1.7 TEST RESULTS

ABOVE 1GHz DATA：

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 64%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	#5725.00	57.3 PK	80.6	-23.3	1.12 H	231	51.00	6.30
2	#5725.00	47.6 AV	70.9	-23.3	1.12 H	231	41.30	6.30
3	*5745.00	100.6 PK			1.11 H	233	60.40	40.20
4	*5745.00	90.9 AV			1.11 H	233	50.70	40.20
5	11490.00	56.5 PK	74.0	-17.5	1.01 H	22	38.40	18.10
6	11490.00	43.6 AV	54.0	-10.4	1.01 H	22	25.50	18.10
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	#5725.00	59.4 PK	82.7	-23.3	1.40 V	207	53.10	6.30
2	#5725.00	49.9 AV	73.2	-23.3	1.40 V	207	43.60	6.30
3	*5745.00	102.7 PK			1.41 V	202	62.50	40.20
4	*5745.00	93.2 AV			1.41 V	202	53.00	40.20
5	11490.00	56.9 PK	74.0	-17.1	1.17 V	140	38.80	18.10
6	11490.00	44.2 AV	54.0	-9.8	1.17 V	140	26.10	18.10

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 64%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	*5785.00	100.4 PK			1.05 H	220	60.10	40.30
2	*5785.00	91.4 AV			1.05 H	220	51.10	40.30
3	11570.00	56.8 PK	74.0	-17.2	1.05 H	27	38.60	18.20
4	11570.00	44.3 AV	54.0	-9.7	1.05 H	27	26.10	18.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	103.5 PK			1.40 V	168	63.20	40.30
2	*5785.00	94.3 AV			1.40 V	168	54.00	40.30
3	11570.00	57.1 PK	74.0	-16.9	1.10 V	144	38.90	18.20
4	11570.00	44.9 AV	54.0	-9.1	1.10 V	144	26.70	18.20

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 64%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	*5825.00	102.4 PK			1.20 H	233	62.10	40.30
2	*5825.00	92.8 AV			1.20 H	233	52.50	40.30
3	#5850.00	60.8 PK	82.4	-21.6	1.20 H	239	54.20	6.60
4	#5850.00	51.2 AV	72.8	-21.6	1.20 H	239	44.60	6.60
5	11650.00	57.1 PK	74.0	-16.9	1.09 H	20	39.00	18.10
6	11650.00	45.2 AV	54.0	-8.8	1.09 H	20	27.10	18.10
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	*5825.00	104.7 PK			1.03 V	202	64.40	40.30
2	*5825.00	95.2 AV			1.03 V	202	54.90	40.30
3	#5850.00	63.1 PK	84.7	-21.6	1.02 V	206	56.50	6.60
4	#5850.00	53.6 AV	75.2	-21.6	1.02 V	206	47.00	6.60
5	11650.00	57.4 PK	74.0	-16.6	1.16 V	142	39.30	18.10
6	11650.00	45.7 AV	54.0	-8.3	1.16 V	142	27.60	18.10

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

802.11n (20MHz): 1TX

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 64%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	#5725.00	59.2 PK	81.2	-22.0	1.00 H	333	52.90	6.30
2	#5725.00	50.3 AV	72.3	-22.0	1.00 H	333	44.00	6.30
3	*5745.00	101.2 PK			1.00 H	333	61.00	40.20
4	*5745.00	92.3 AV			1.00 H	333	52.10	40.20
5	11490.00	60.8 PK	74.0	-13.2	1.10 H	21	42.70	18.10
6	11490.00	48.3 AV	54.0	-5.7	1.10 H	21	30.20	18.10
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	#5725.00	61.2 PK	83.2	-22.0	1.48 V	205	54.90	6.30
2	#5725.00	52.3 AV	74.3	-22.0	1.48 V	205	46.00	6.30
3	*5745.00	103.2 PK			1.48 V	205	63.00	40.20
4	*5745.00	94.3 AV			1.48 V	205	54.10	40.20
5	11490.00	60.6 PK	74.0	-13.4	1.05 V	128	42.50	18.10
6	11490.00	48.1 AV	54.0	-5.9	1.05 V	128	30.00	18.10

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 64%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	*5785.00	100.0 PK			1.00 H	300	59.70	40.30
2	*5785.00	91.8 AV			1.00 H	300	51.50	40.30
3	11570.00	60.9 PK	74.0	-13.1	1.03 H	53	42.70	18.20
4	11570.00	48.4 AV	54.0	-5.6	1.03 H	53	30.20	18.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	101.8 PK			1.00 V	10	61.50	40.30
2	*5785.00	93.0 AV			1.00 V	10	52.70	40.30
3	11570.00	60.6 PK	74.0	-13.4	1.00 V	210	42.40	18.20
4	11570.00	48.2 AV	54.0	-5.8	1.00 V	210	30.00	18.20

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 64%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	*5825.00	99.8 PK			1.00 H	317	59.50	40.30
2	*5825.00	91.5 AV			1.00 H	317	51.20	40.30
3	#5850.00	56.8 PK	79.8	-23.0	1.00 H	317	50.20	6.60
4	#5850.00	48.5 AV	71.5	-23.0	1.00 H	317	41.90	6.60
5	11650.00	60.8 PK	74.0	-13.2	1.06 H	30	42.70	18.10
6	11650.00	48.3 AV	54.0	-5.7	1.06 H	30	30.20	18.10
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	*5825.00	101.8 PK			1.00 V	11	61.50	40.30
2	*5825.00	93.5 AV			1.00 V	11	53.20	40.30
3	#5850.00	58.8 PK	81.8	-23.0	1.00 V	11	52.20	6.60
4	#5850.00	50.5 AV	73.5	-23.0	1.00 V	11	43.90	6.60
5	11650.00	60.5 PK	74.0	-13.5	1.00 V	223	42.40	18.10
6	11650.00	48.0 AV	54.0	-6.0	1.00 V	223	29.90	18.10

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

802.11n (20MHz): 2TX

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 65%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	#5725.00	61.5 PK	81.5	-20.0	1.00 H	234	55.20	6.30
2	#5725.00	52.7 AV	72.7	-20.0	1.00 H	234	46.40	6.30
3	*5745.00	101.5 PK			1.00 H	230	61.30	40.20
4	*5745.00	92.7 AV			1.00 H	230	52.50	40.20
5	11490.00	59.6 PK	74.0	-14.4	1.08 H	125	41.50	18.10
6	11490.00	47.9 AV	54.0	-6.1	1.08 H	125	29.80	18.10
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	#5725.00	64.1 PK	84.1	-20.0	1.00 V	190	57.80	6.30
2	#5725.00	55.2 AV	75.2	-20.0	1.00 V	190	48.90	6.30
3	*5745.00	104.1 PK			1.06 V	193	63.90	40.20
4	*5745.00	95.2 AV			1.06 V	193	55.00	40.20
5	11490.00	59.8 PK	74.0	-14.2	1.11 V	20	41.70	18.10
6	11490.00	48.1 AV	54.0	-5.9	1.11 V	20	30.00	18.10

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 65%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	*5785.00	102.7 PK			1.69 H	270	62.40	40.30
2	*5785.00	93.4 AV			1.69 H	270	53.10	40.30
3	11570.00	58.9 PK	74.0	-15.1	1.00 H	50	40.70	18.20
4	11570.00	47.2 AV	54.0	-6.8	1.00 H	50	29.00	18.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	104.3 PK			1.05 V	196	64.00	40.30
2	*5785.00	94.5 AV			1.05 V	196	54.20	40.30
3	11570.00	59.6 PK	74.0	-14.4	1.00 V	200	41.40	18.20
4	11570.00	48.0 AV	54.0	-6.0	1.00 V	200	29.80	18.20

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 65%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	*5825.00	99.9 PK			1.00 H	233	59.60	40.30
2	*5825.00	92.0 AV			1.00 H	233	51.70	40.30
3	#5850.00	58.4 PK	79.9	-21.5	1.00 H	236	51.80	6.60
4	#5850.00	50.5 AV	72.0	-21.5	1.00 H	236	43.90	6.60
5	11650.00	58.8 PK	74.0	-15.2	1.03 H	36	40.70	18.10
6	11650.00	47.1 AV	54.0	-6.9	1.03 H	36	29.00	18.10
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	*5825.00	103.7 PK			1.05 V	197	63.40	40.30
2	*5825.00	94.8 AV			1.05 V	197	54.50	40.30
3	#5850.00	62.2 PK	83.7	-21.5	1.03 V	195	55.60	6.60
4	#5850.00	53.3 AV	74.8	-21.5	1.03 V	195	46.70	6.60
5	11650.00	59.5 PK	74.0	-14.5	1.03 V	225	41.40	18.10
6	11650.00	47.5 AV	54.0	-6.5	1.03 V	225	29.40	18.10

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

802.11n (40MHz): 1TX

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 64%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	#5725.00	56.9 PK	75.9	-19.0	1.00 H	213	50.60	6.30
2	#5725.00	48.0 AV	67.0	-19.0	1.00 H	213	41.70	6.30
3	*5755.00	95.9 PK			1.00 H	213	55.70	40.20
4	*5755.00	87.0 AV			1.00 H	213	46.80	40.20
5	11510.00	58.7 PK	74.0	-15.3	1.00 H	217	40.60	18.10
6	11510.00	47.0 AV	54.0	-7.0	1.00 H	217	28.90	18.10
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	#5725.00	59.9 PK	78.9	-19.0	1.34 V	215	53.60	6.30
2	#5725.00	51.0 AV	70.0	-19.0	1.34 V	215	44.70	6.30
3	*5755.00	98.9 PK			1.34 V	215	58.70	40.20
4	*5755.00	90.0 AV			1.34 V	215	49.80	40.20
5	11510.00	58.1 PK	74.0	-15.9	1.00 V	208	40.00	18.10
6	11510.00	46.6 AV	54.0	-7.4	1.00 V	208	28.50	18.10

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 64%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	*5795.00	96.5 PK			1.00 H	221	56.20	40.30
2	*5795.00	86.9 AV			1.00 H	221	46.60	40.30
3	#5850.00	57.5 PK	76.5	-19.0	1.00 H	221	50.90	6.60
4	#5850.00	47.9 AV	66.9	-19.0	1.00 H	221	41.30	6.60
5	11590.00	58.8 PK	74.0	-15.2	1.00 H	206	40.70	18.10
6	11590.00	47.4 AV	54.0	-6.6	1.00 H	206	29.30	18.10
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	*5795.00	99.5 PK			1.46 V	205	59.20	40.30
2	*5795.00	89.9 AV			1.46 V	205	49.60	40.30
3	#5850.00	60.5 PK	79.5	-19.0	1.46 V	205	53.90	6.60
4	#5850.00	50.9 AV	69.9	-19.0	1.46 V	205	44.30	6.60
5	11590.00	58.4 PK	74.0	-15.6	1.00 V	217	40.30	18.10
6	11590.00	47.1 AV	54.0	-6.9	1.00 V	217	29.00	18.10

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

802.11n (40MHz): 2TX

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 65%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	#5725.00	61.9 PK	79.4	-17.5	1.00 H	237	55.60	6.30
2	#5725.00	50.7 AV	68.2	-17.5	1.00 H	237	44.40	6.30
3	*5755.00	99.4 PK			1.00 H	232	59.20	40.20
4	*5755.00	88.2 AV			1.00 H	232	48.00	40.20
5	11510.00	57.5 PK	74.0	-16.5	1.00 H	217	39.40	18.10
6	11510.00	45.8 AV	54.0	-8.2	1.00 H	217	27.70	18.10
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	#5725.00	66.9 PK	84.4	-17.5	1.12 V	199	60.60	6.30
2	#5725.00	55.1 AV	72.6	-17.5	1.12 V	199	48.80	6.30
3	*5755.00	104.4 PK			1.17 V	194	64.20	40.20
4	*5755.00	92.6 AV			1.17 V	194	52.40	40.20
5	11510.00	57.9 PK	74.0	-16.1	1.08 V	201	39.80	18.10
6	11510.00	46.2 AV	54.0	-7.8	1.08 V	201	28.10	18.10

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 65%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	*5795.00	98.8 PK			1.00 H	232	58.50	40.30
2	*5795.00	88.0 AV			1.00 H	232	47.70	40.30
3	#5850.00	60.6 PK	78.8	-18.2	1.00 H	237	54.00	6.60
4	#5850.00	49.8 AV	68.0	-18.2	1.00 H	237	43.20	6.60
5	11590.00	57.6 PK	74.0	-16.4	1.06 H	202	39.50	18.10
6	11590.00	46.1 AV	54.0	-7.9	1.06 H	202	28.00	18.10
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	*5795.00	103.1 PK			1.04 V	196	62.80	40.30
2	*5795.00	91.9 AV			1.04 V	196	51.60	40.30
3	#5850.00	64.9 PK	83.1	-18.2	1.08 V	190	58.30	6.60
4	#5850.00	53.7 AV	71.9	-18.2	1.08 V	190	47.10	6.60
5	11590.00	58.2 PK	74.0	-15.8	1.00 V	218	40.10	18.10
6	11590.00	46.8 AV	54.0	-7.2	1.00 V	218	28.70	18.10

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

802.11ac (80MHz): 1TX

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 155	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 65%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	#5725.00	61.8 PK	75.0	-13.2	1.00 H	239	55.50	6.30
2	#5725.00	52.2 AV	65.4	-13.2	1.00 H	239	45.90	6.30
3	*5775.00	95.0 PK			1.00 H	232	54.80	40.20
4	*5775.00	85.4 AV			1.00 H	232	45.20	40.20
5	11550.00	55.7 PK	74.0	-18.3	1.08 H	210	37.60	18.10
6	11550.00	42.9 AV	54.0	-11.1	1.08 H	210	24.80	18.10
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	#5725.00	64.4 PK	77.6	-13.2	1.03 V	218	58.10	6.30
2	#5725.00	55.4 AV	68.6	-13.2	1.03 V	218	49.10	6.30
3	*5775.00	97.6 PK			1.05 V	213	57.40	40.20
4	*5775.00	88.6 AV			1.05 V	213	48.40	40.20
5	11550.00	56.1 PK	74.0	-17.9	1.01 V	215	38.00	18.10
6	11550.00	43.6 AV	54.0	-10.4	1.01 V	215	25.50	18.10

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

802.11ac (80MHz): 2TX

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 155	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 65%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	#5725.00	63.4 PK	78.6	-15.2	1.00 H	234	57.10	6.30
2	#5725.00	53.4 AV	68.6	-15.2	1.00 H	234	47.10	6.30
3	*5775.00	98.6 PK			1.00 H	231	58.40	40.20
4	*5775.00	88.6 AV			1.00 H	231	48.40	40.20
5	11550.00	56.5 PK	74.0	-17.5	1.00 H	213	38.40	18.10
6	11550.00	43.1 AV	54.0	-10.9	1.00 H	213	25.00	18.10
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	#5725.00	66.1 PK	81.3	-15.2	1.06 V	192	59.80	6.30
2	#5725.00	55.8 AV	71.0	-48.7	1.06 V	192	49.50	6.30
3	*5775.00	101.3 PK			1.05 V	196	61.10	40.20
4	*5775.00	91.0 AV			1.05 V	196	50.80	40.20
5	11550.00	56.9 PK	74.0	-17.1	1.04 V	218	38.80	18.10
6	11550.00	43.8 AV	54.0	-10.2	1.04 V	218	25.70	18.10

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

BELOW 1GHz WORST-CASE DATA :

802.11n(20MHz): 2TX

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 65%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	107.52	26.3 QP	43.5	-17.2	2.00 H	260	43.90	-17.60
2	165.73	28.7 QP	43.5	-14.8	1.00 H	260	43.10	-14.40
3	231.70	34.3 QP	46.0	-11.7	1.00 H	258	50.20	-15.90
4	699.34	28.8 QP	46.0	-17.2	1.25 H	238	34.20	-5.40
5	751.73	39.1 QP	46.0	-6.9	1.00 H	258	42.80	-3.70
6	788.60	32.3 QP	46.0	-13.7	1.00 H	262	35.70	-3.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	35.72	29.7 QP	40.0	-10.3	1.49 V	7	44.40	-14.70
2	165.73	28.4 QP	43.5	-15.1	1.25 V	339	42.80	-14.40
3	431.56	30.1 QP	46.0	-15.9	1.75 V	217	40.10	-10.00
4	699.34	28.7 QP	46.0	-17.3	1.00 V	146	34.10	-5.40
5	751.73	34.8 QP	46.0	-11.2	1.00 V	61	38.50	-3.70
6	864.27	28.9 QP	46.0	-17.1	1.00 V	254	31.30	-2.40

REMARKS:

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

5.2 CONDUCTED EMISSION MEASUREMENT

5.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	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.

5.2.2 T EST INSTRUMENTS

Same as item 4.2.2.

5.2.3 TEST PROCEDURES

Same as item 4.2.3.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation.

5.2.5 TEST SETUP

Same as item 4.2.5.

5.2.6 EUT OPERATING CONDITIONS

Same as item 4.1.6.

5.2.7 TEST RESULTS

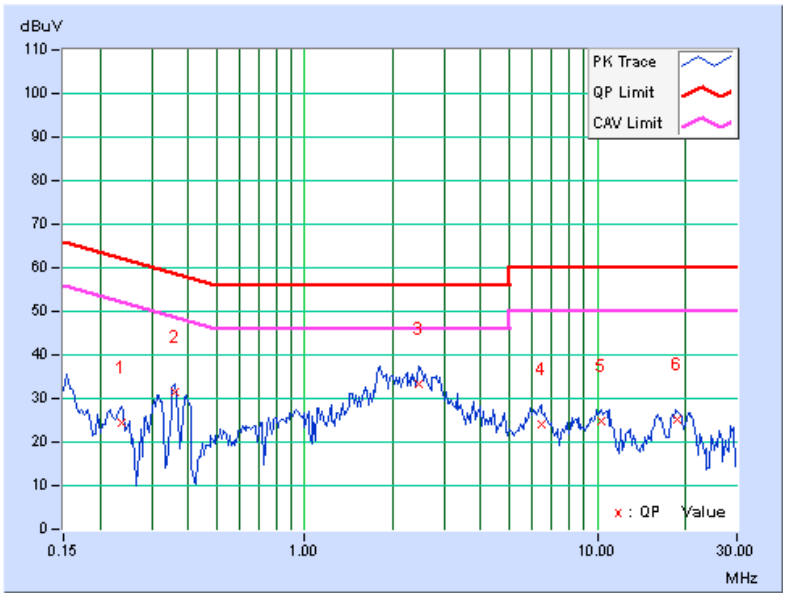
CONDUCTED WORST-CASE DATA：802.11n (20MHz): 2TX

PHASE	Line 1	6dB BANDWIDTH	9kHz

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.23594	0.17	24.19	20.36	24.36	20.53	62.24	52.24	-37.88	-31.71
2	0.36094	0.22	31.09	27.57	31.31	27.79	58.71	48.71	-27.40	-20.92
3	2.45703	0.32	33.03	27.80	33.35	28.12	56.00	46.00	-22.65	-17.88
4	6.43359	0.53	23.48	18.23	24.01	18.76	60.00	50.00	-35.99	-31.24
5	10.36328	0.74	24.11	16.70	24.85	17.44	60.00	50.00	-35.15	-32.56
6	18.85156	1.17	24.07	17.28	25.24	18.45	60.00	50.00	-34.76	-31.55

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.

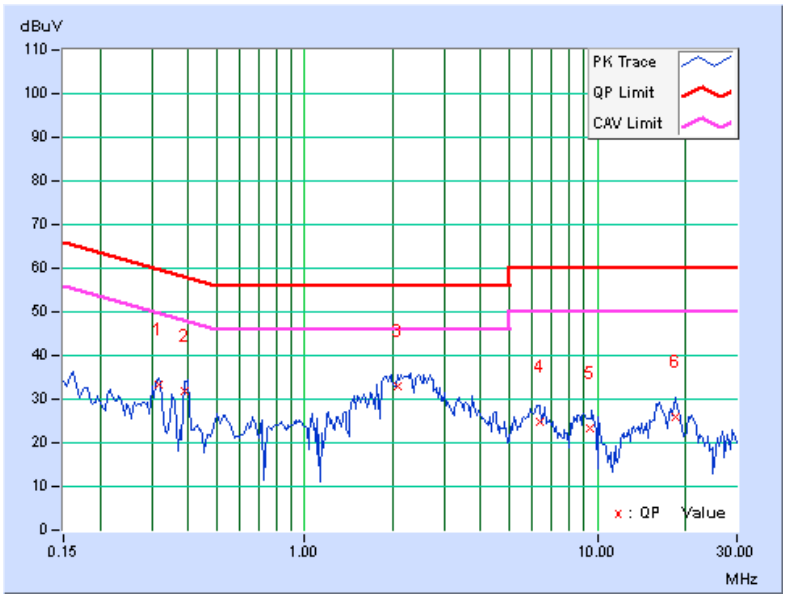


PHASE	Line 2	6dB BANDWIDTH	9kHz

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.31797	0.21	33.03	29.81	33.24	30.02	59.76	49.76	-26.52	-19.74
2	0.38828	0.24	31.61	24.32	31.85	24.56	58.10	48.10	-26.25	-23.54
3	2.07031	0.28	32.83	27.08	33.11	27.36	56.00	46.00	-22.89	-18.64
4	6.36719	0.47	24.33	18.66	24.80	19.13	60.00	50.00	-35.20	-30.87
5	9.44531	0.58	22.58	17.06	23.16	17.64	60.00	50.00	-36.84	-32.36
6	18.39453	0.88	25.00	19.32	25.88	20.20	60.00	50.00	-34.12	-29.80

REMARKS:

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



5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

5.3.2 TEST SETUP

Same as item 4.3.2.

5.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.3.4 TEST PROCEDURE

Same as item 4.3.4.

5.3.5 DEVIATION FROM TEST STANDARD

No deviation.

5.3.6 EUT OPERATING CONDITIONS

Same as item 4.3.6.

5.3.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.61	0.5	PASS
157	5785	16.59	0.5	PASS
165	5825	16.60	0.5	PASS

802.11n (20MHz): 1TX

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	17.80	0.5	PASS
157	5785	17.72	0.5	PASS
165	5825	17.72	0.5	PASS

802.11n (20MHz): 2TX

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.84	17.71	0.5	PASS
157	5785	17.80	17.70	0.5	PASS
165	5825	17.83	17.71	0.5	PASS

802.11n (40MHz): 1TX

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
151	5755	36.59	0.5	PASS
159	5795	36.60	0.5	PASS

802.11n (40MHz): 2TX

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.58	36.46	0.5	PASS
159	5795	36.59	36.47	0.5	PASS

802.11ac (80MHz): 1TX

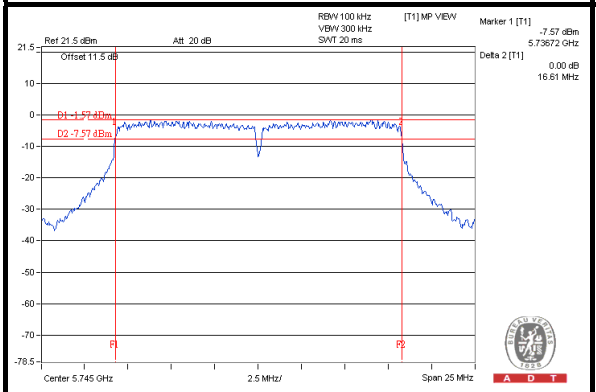
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
155	5775	76.62	0.5	PASS

802.11ac (80MHz): 2TX

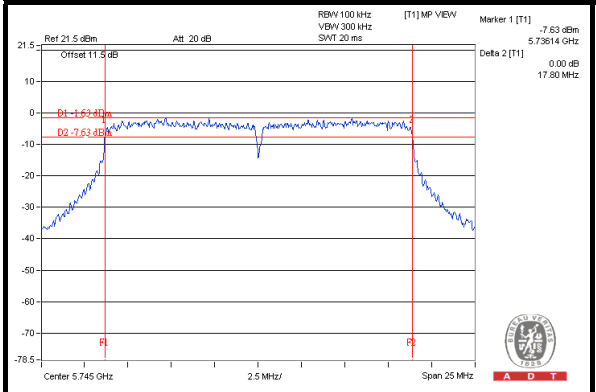
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
155	5775	76.67	76.68	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

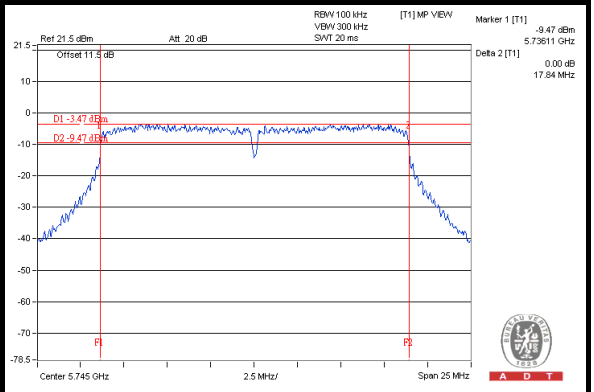
802.11a



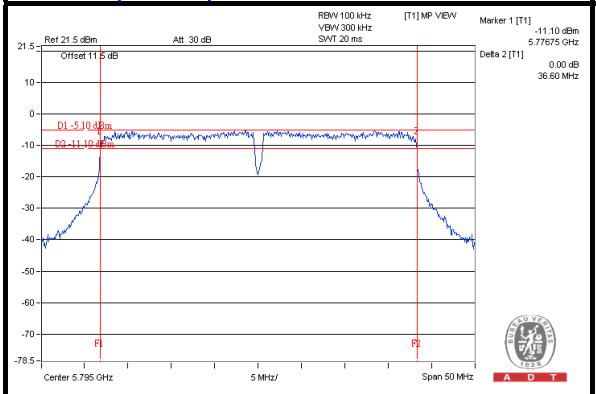
802.11n (20MHz): 1TX



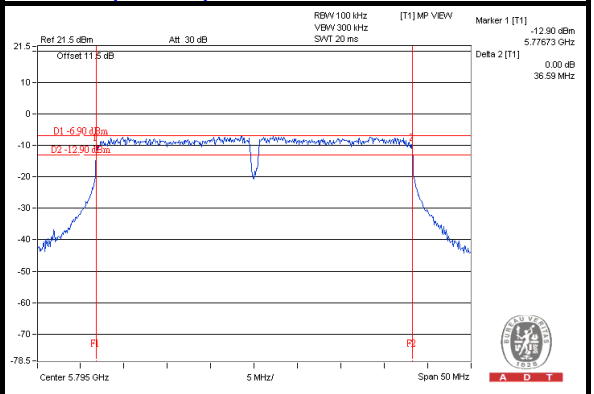
802.11n (20MHz): 2TX



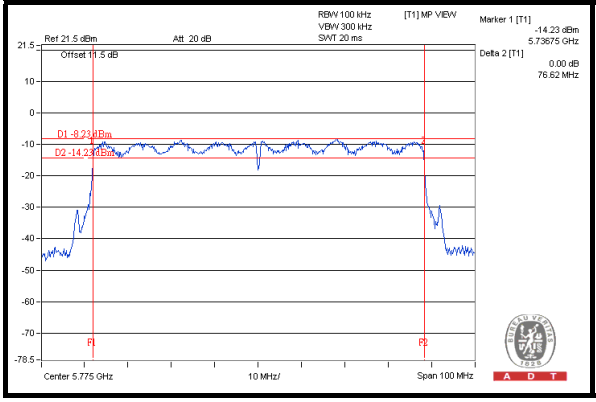
802.11n (40MHz): 1TX



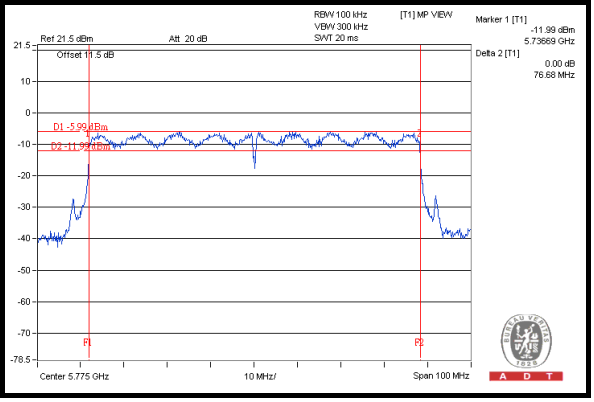
802.11n (40MHz): 2TX



802.11ac (80MHz): 1TX



802.11ac (80MHz): 2TX



5.4 CONDUCTED OUTPUT POWER

5.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 5725 –5850 MHz bands: 1 Watt (30dBm)

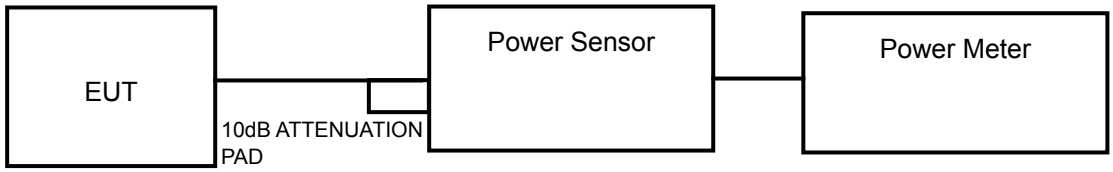
Per KDB 662911 D01 Multiple Transmitter Output v02 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;
Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

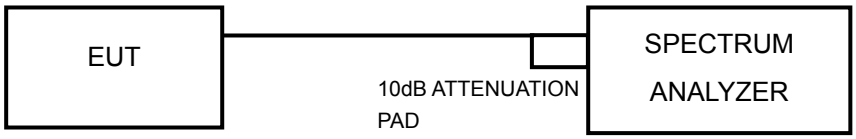
For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

5.4.2 TEST SETUP

For 802.11a, 802.11n (20MHz), 802.11n (40MHz)



For 802.11ac (80MHz)



5.4.3 INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.4.4 TEST PROCEDURES

For 802.11a, 802.11n (20MHz), 802.11n (40MHz)

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

For 802.11ac (80MHz)

This procedure may be used when the maximum available RBW of the measurement instrument is less than the DTS bandwidth.

1) Set the RBW = 1 MHz.
2) Set the VBW ≥ 3 RBW
3) Set the span ≥ 1.5 x DTS bandwidth.
4) Detector = peak.
5) Sweep time = auto couple.
6) Trace mode = max hold.
7) Allow trace to fully stabilize.

5.4.5 DEVIATION FROM TEST STANDARD

No deviation.

5.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

5.4.7 TEST RESULTS

FOR PEAK POWER

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	158.125	21.99	30	PASS
157	5785	153.815	21.87	30	PASS
165	5825	194.089	22.88	30	PASS

802.11n (20MHz): 1TX

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	147.911	21.70	30	PASS
157	5785	151.356	21.80	30	PASS
165	5825	134.276	21.28	30	PASS

802.11n (20MHz): 2TX

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	19.55	21.81	241.862	23.84	30	PASS
157	5785	19.85	21.95	**253.280**	24.04	30	PASS
165	5825	19.95	21.61	243.732	23.87	30	PASS

802.11n (40MHz): 1TX

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
151	5755	111.429	20.47	30	PASS
159	5795	113.501	20.55	30	PASS

802.11n (40MHz): 2TX

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	18.93	21.03	204.928	23.12	30	PASS
159	5795	19.70	21.94	249.640	23.97	30	PASS

802.11ac (80MHz): 1TX

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
155	5775	104.713	20.20	30	PASS

802.11ac (80MHz): 2TX

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
155	5775	18.40	21.72	217.777	23.38	30	PASS

FOR AVERAGE POWER

802.11a

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	23.281	13.67
157	5785	24.155	13.83
165	5825	23.768	13.76

802.11n (20MHz): 1TX

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	22.387	13.50
157	5785	23.442	13.70
165	5825	22.699	13.56

802.11n (20MHz): 2TX

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	12.01	14.52	44.199	16.45
157	5785	12.17	14.86	47.102	16.73
165	5825	12.39	15.85	55.797	17.47

802.11n (40MHz): 1TX

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
151	5755	16.255	12.11
159	5795	17.989	12.55

802.11n (40MHz): 2TX

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
151	5755	11.14	13.86	37.324	15.72
159	5795	11.27	14.07	38.924	15.90

802.11ac (80MHz): 1TX

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
155	5775	17.418	12.41

802.11ac (80MHz): 2TX

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
155	5775	11.40	14.38	41.220	16.15

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST SETUP

Same as item 4.5.2.

5.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.5.4 TEST PROCEDURE.

Same as item 4.5.4.

5.5.5 DEVIATION FROM TEST STANDARD

No deviation.

5.5.6 EUT OPERATING CONDITION

Same as item 4.3.6.

5.5.7 TEST RESULTS

802.11a

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-15.72	8	PASS
157	5785	-16.15	8	PASS
165	5825	-15.39	8	PASS

802.11n (20MHz): 1TX

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-15.34	8	PASS
157	5785	-15.22	8	PASS
165	5825	-14.39	8	PASS

802.11n (20MHz): 2TX

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-17.15	3.01	-14.14	6.99	PASS
	157	5785	-16.95	3.01	-13.94	6.99	PASS
	165	5825	-17.01	3.01	-14.00	6.99	PASS
1	149	5745	-13.72	3.01	-10.71	6.99	PASS
	157	5785	-13.81	3.01	-10.80	6.99	PASS
	165	5825	-13.77	3.01	-10.76	6.99	PASS

NOTE: Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.

802.11n (40MHz): 1TX

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
151	5755	-18.08	8	PASS
159	5795	-16.23	8	PASS

802.11n (40MHz): 2TX

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-20.11	3.01	-17.10	6.99	PASS
	159	5795	-19.19	3.01	-16.18	6.99	PASS
1	151	5755	-18.24	3.01	-15.23	6.99	PASS
	159	5795	-17.87	3.01	-14.86	6.99	PASS

NOTE: Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.

802.11ac (80MHz): 1TX

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
155	5775	-21.81	8	PASS

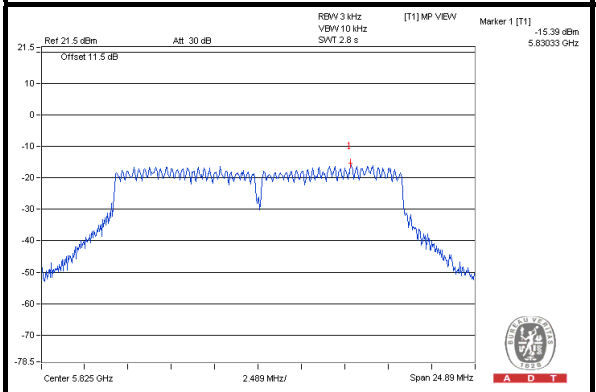
802.11ac (80MHz): 2TX

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	155	5775	-23.84	3.01	-20.83	6.99	PASS
1	155	5775	-19.52	3.01	-16.51	6.99	PASS

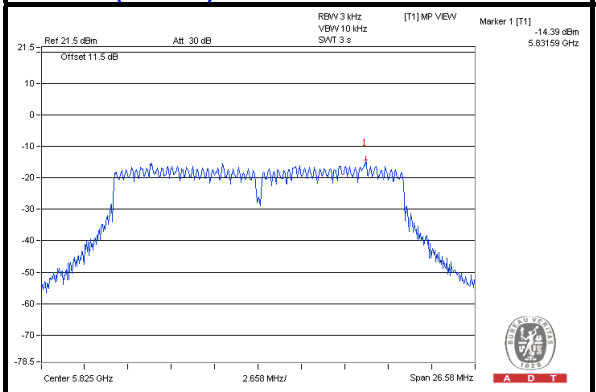
NOTE: Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.

SPECTRUM PLOT OF WORST VALUE

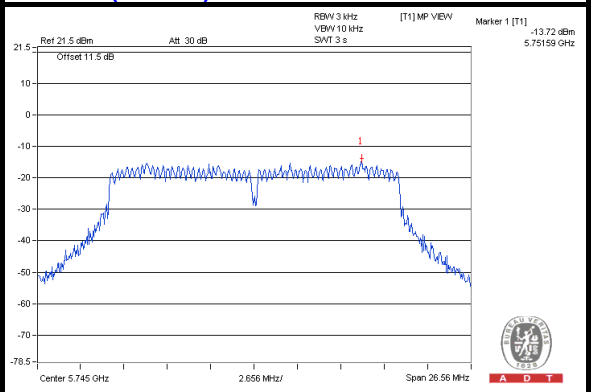
802.11a



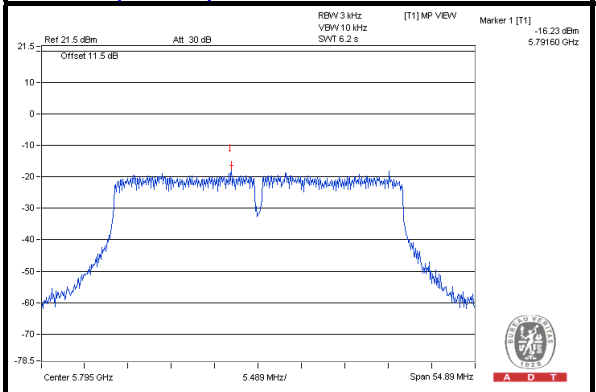
802.11n (20MHz): 1TX



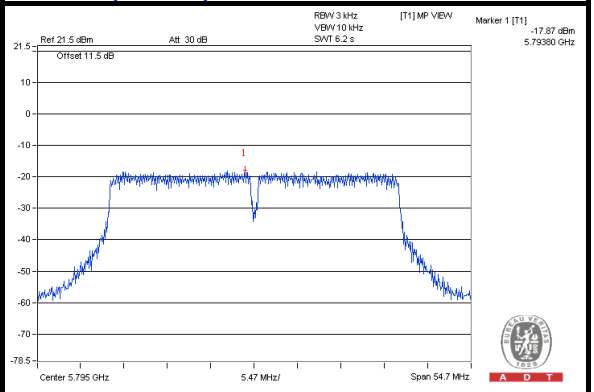
802.11n (20MHz): 2TX



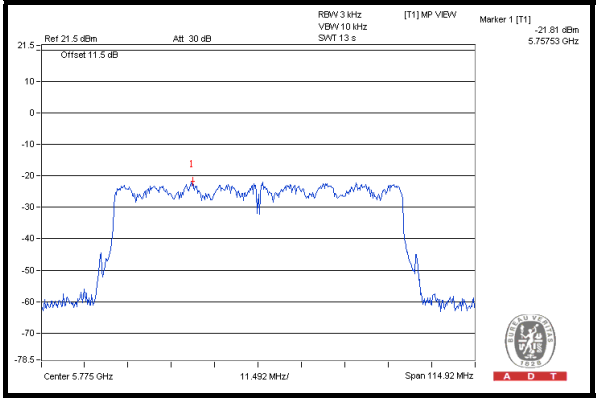
802.11n (40MHz): 1TX



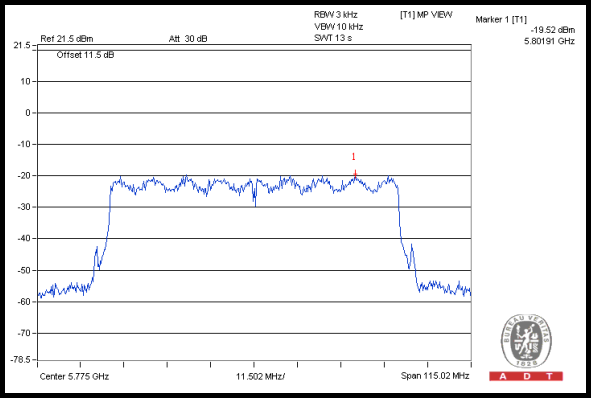
802.11n (40MHz): 2TX



802.11ac (80MHz): 1TX



802.11ac (80MHz): 2TX



5.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

5.6.2 TEST SETUP

Same as Item 4.6.2

5.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.6.4 TEST PROCEDURE

Same as Item 4.6.4

5.6.5 DEVIATION FROM TEST STANDARD

No deviation.

5.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

5.6.7 TEST RESULTS

The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (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.

802.11a

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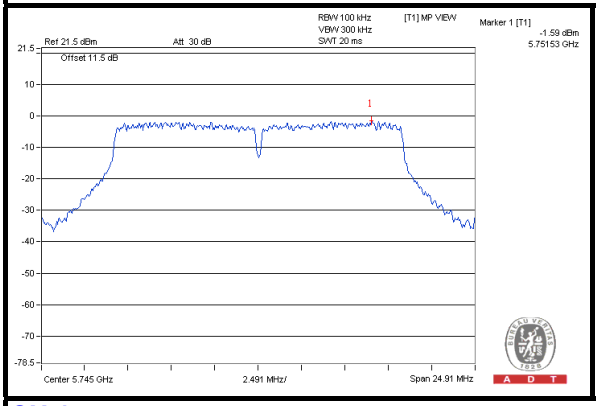

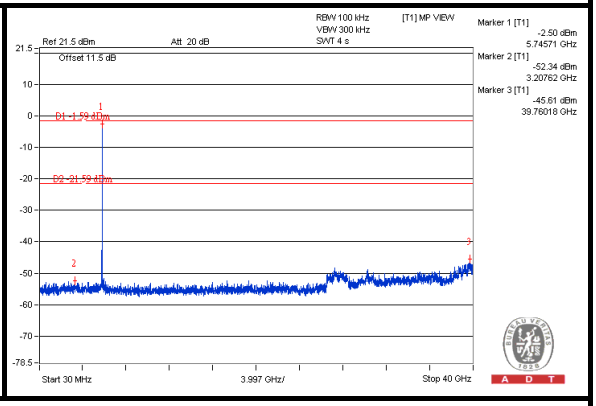

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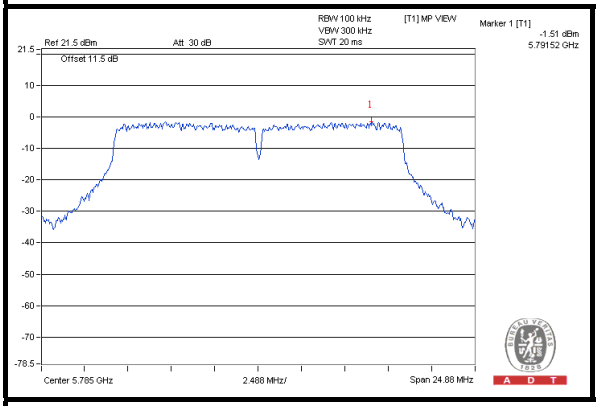
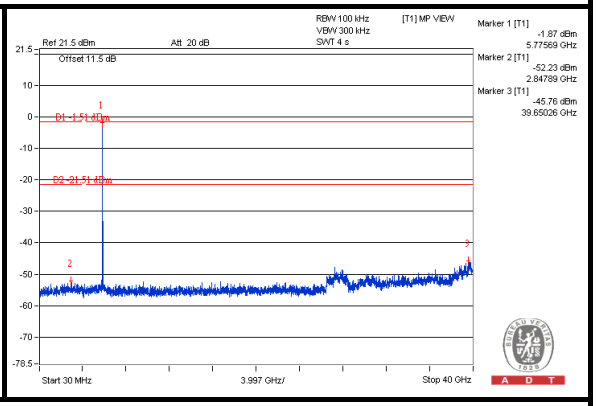
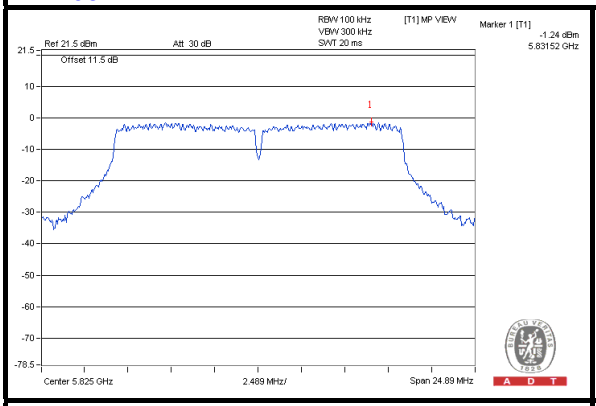
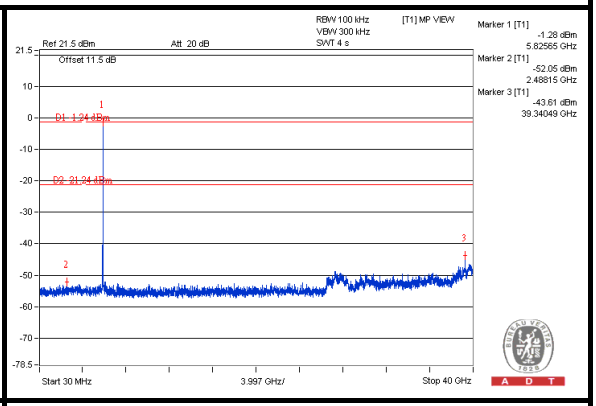


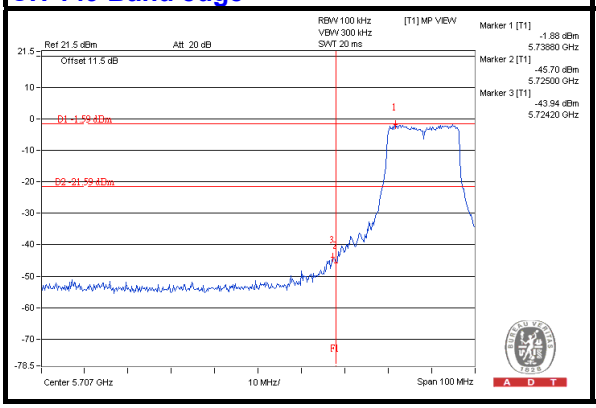


CH 165

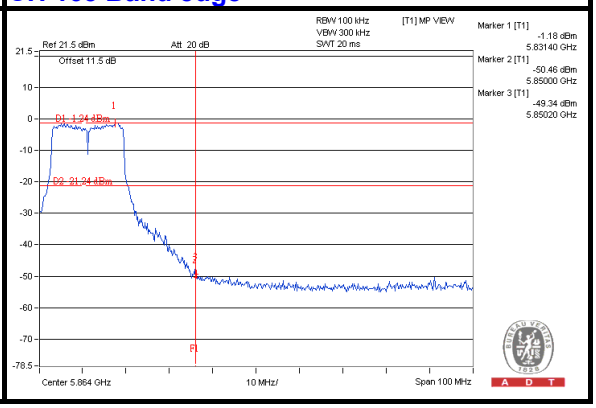




CH 149 Band edge

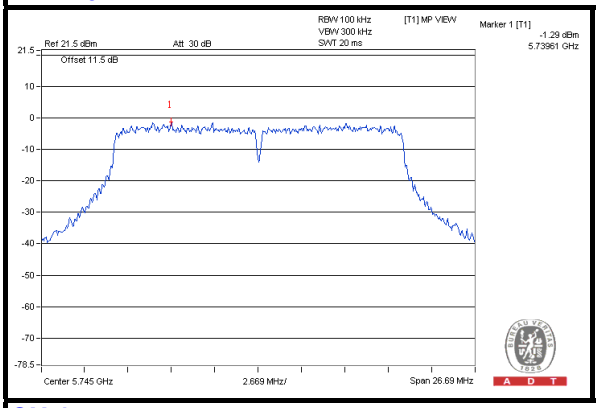


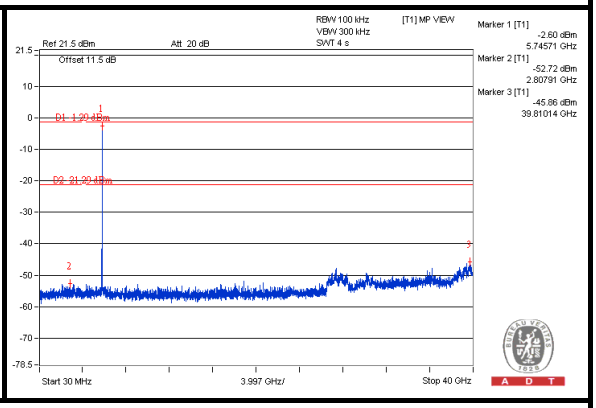
CH 165 Band edge



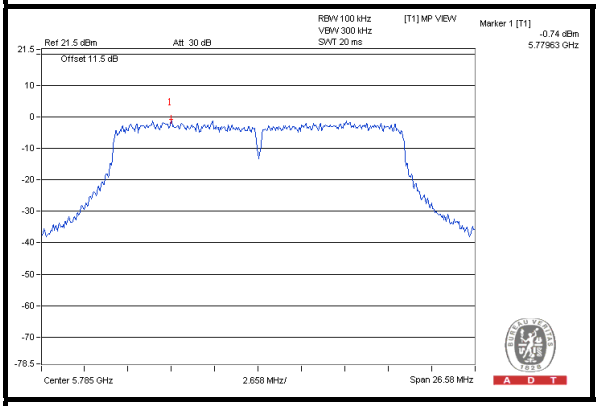
802.11n (20MHz): 1TX

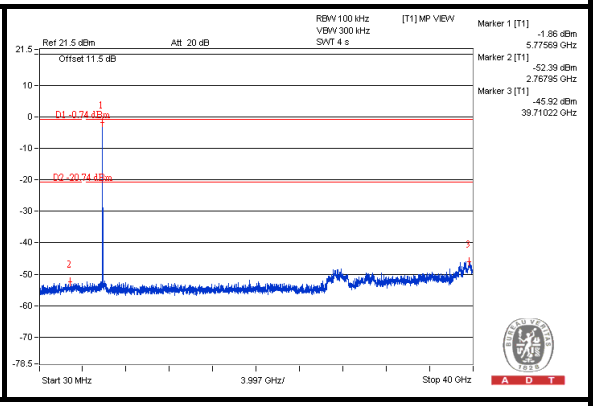
CH 149



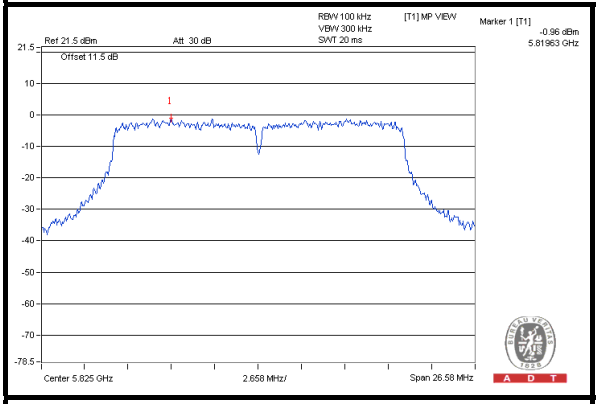


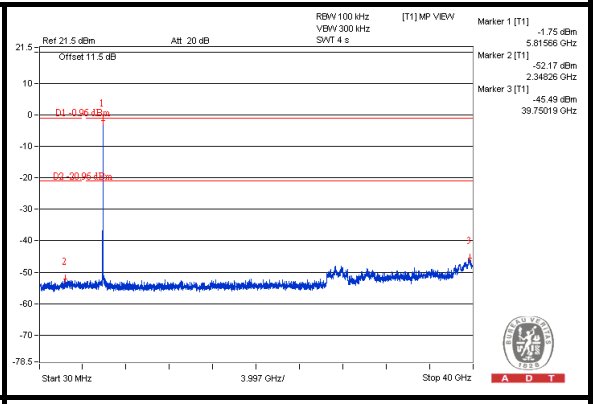
CH 157



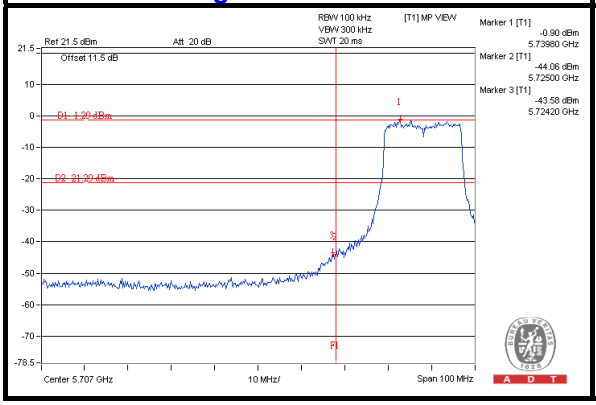


CH 165

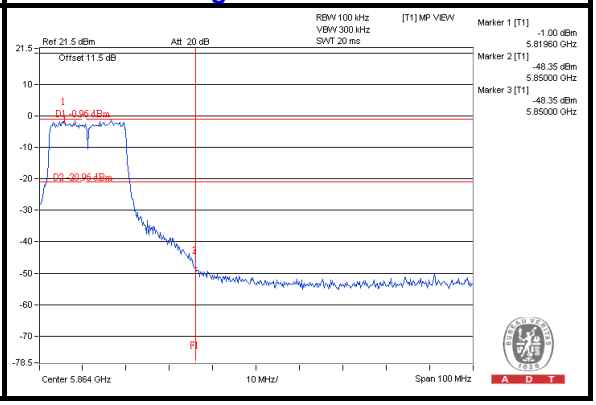




CH 149 Band edge



CH 165 Band edge



802.11n (20MHz): 2TX

CHAIN 0

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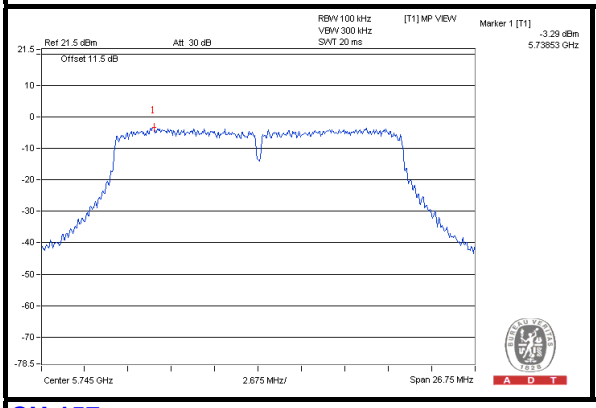
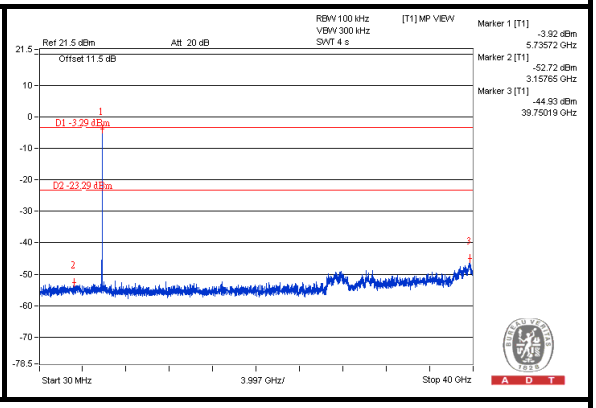
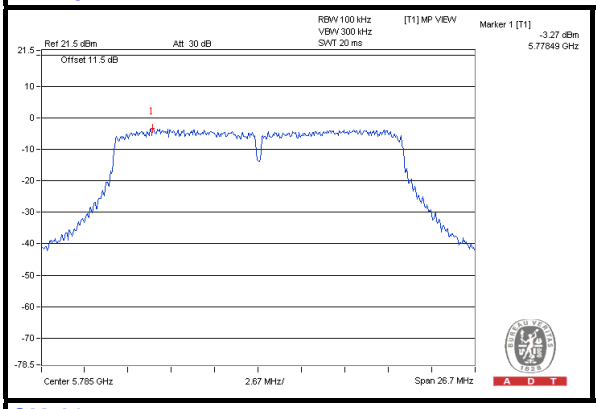
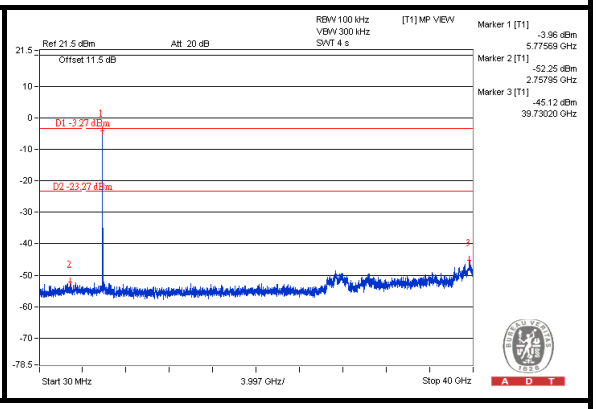


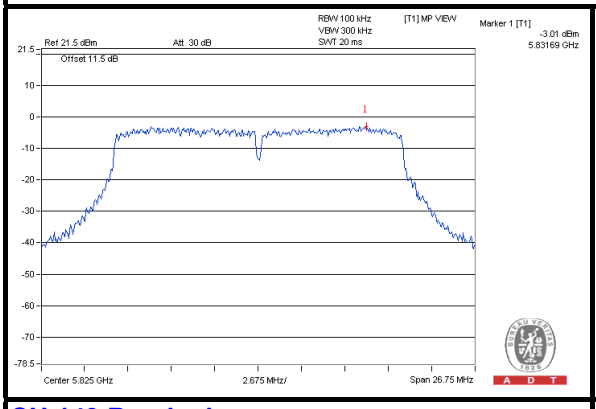


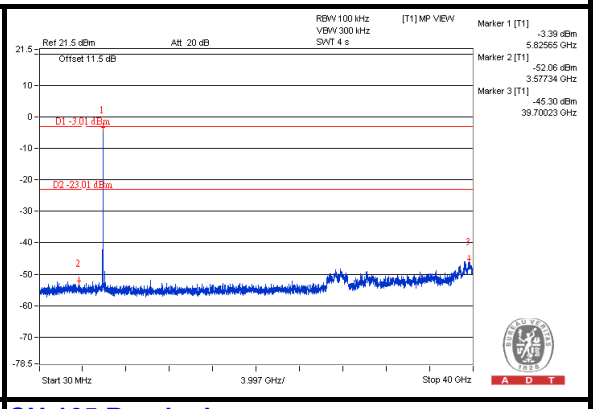
CH 157



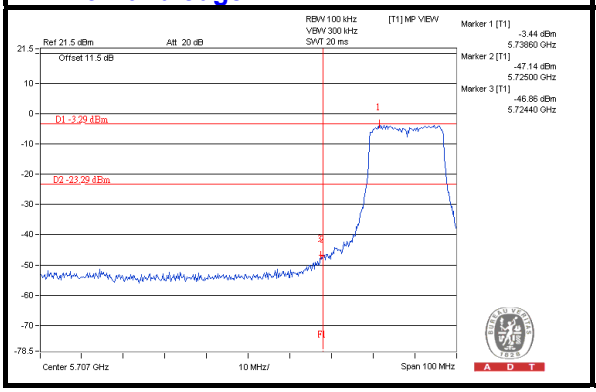


CH 165

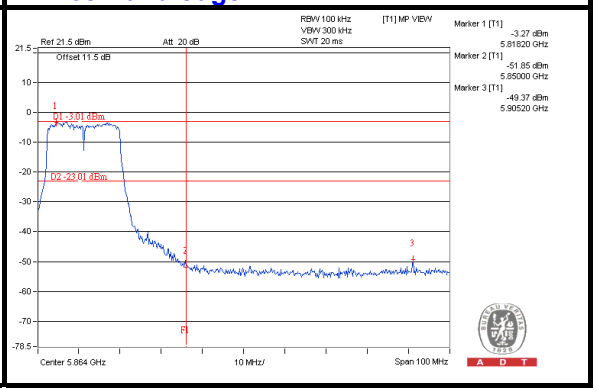




CH 149 Band edge

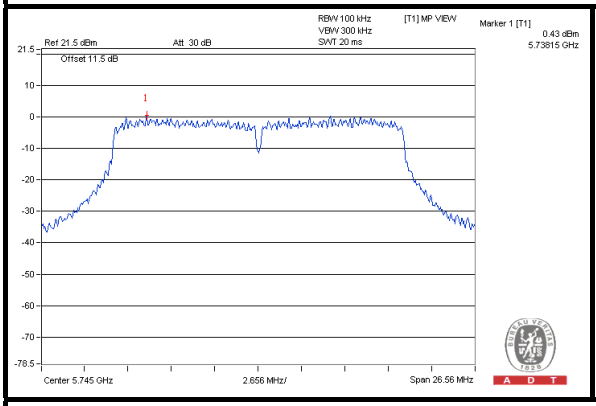


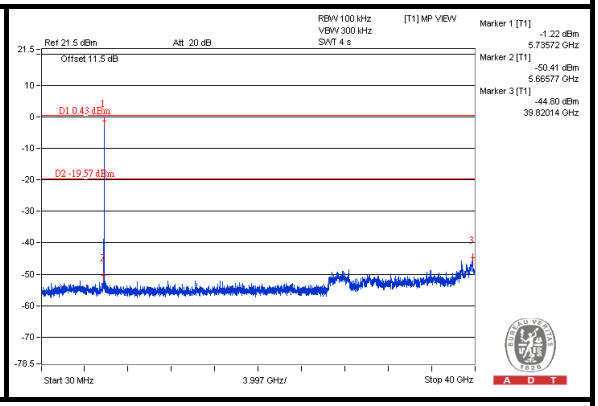
CH 165 Band edge



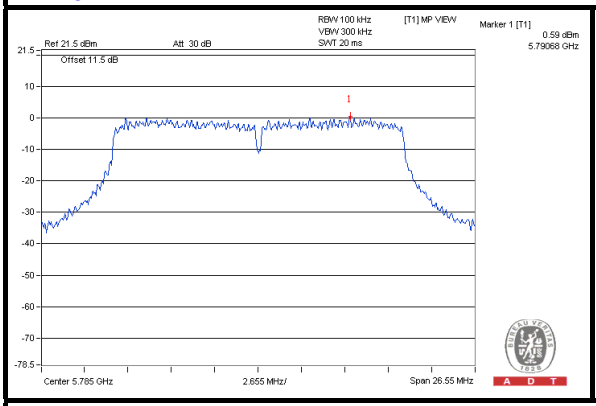
CHAIN 1

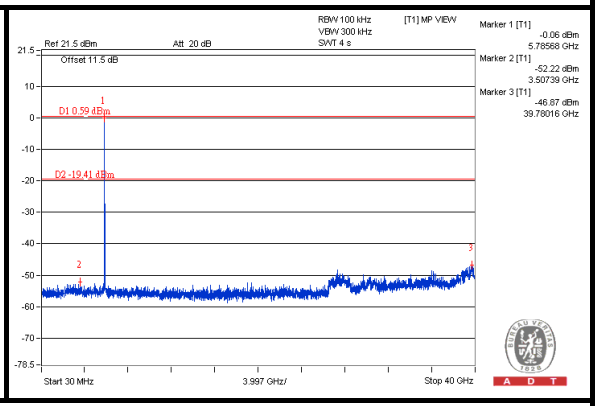
CH 149



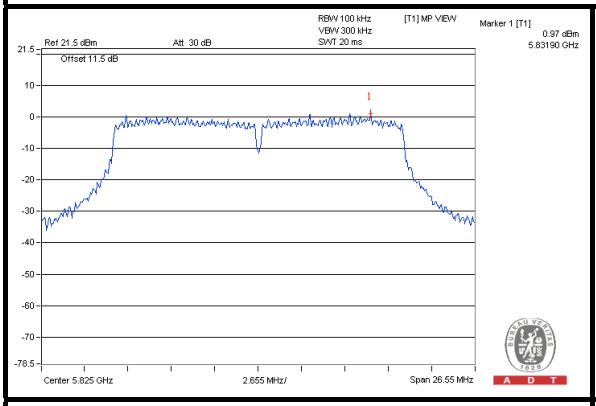


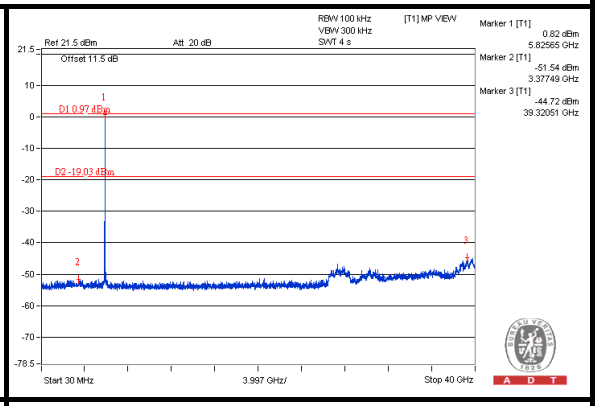
CH 157



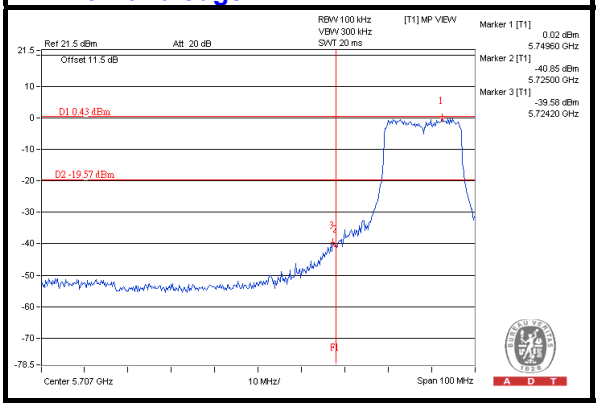


CH 165

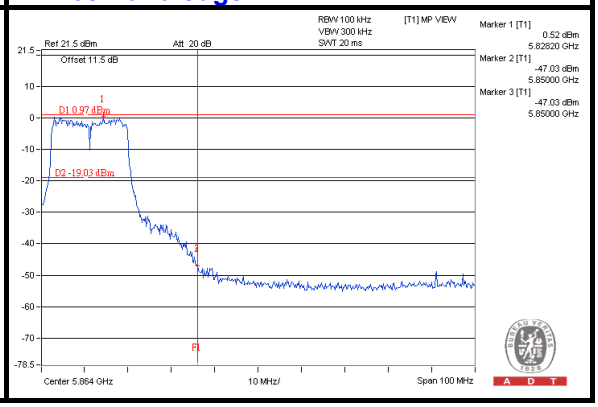




CH 149 Band edge

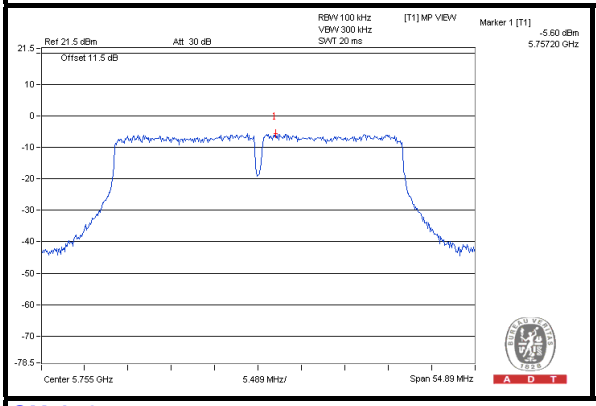


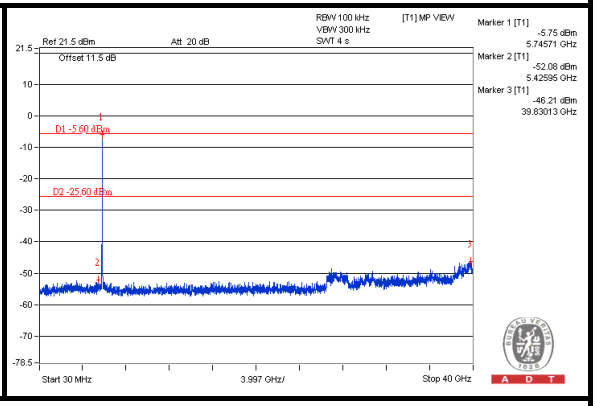
CH 165 Band edge



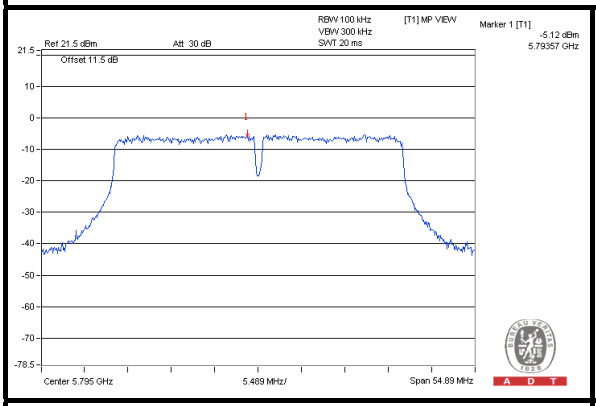
802.11n (40MHz): 1TX

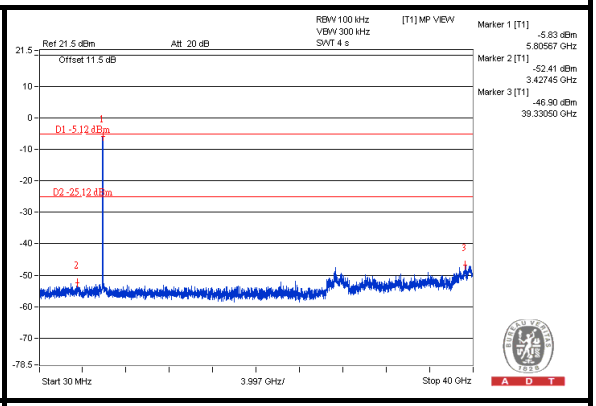
CH 151



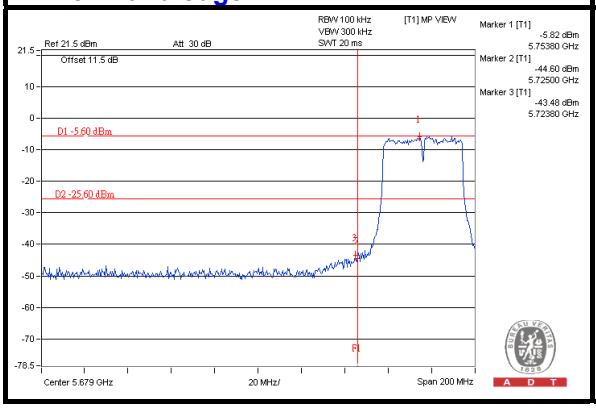


CH 159

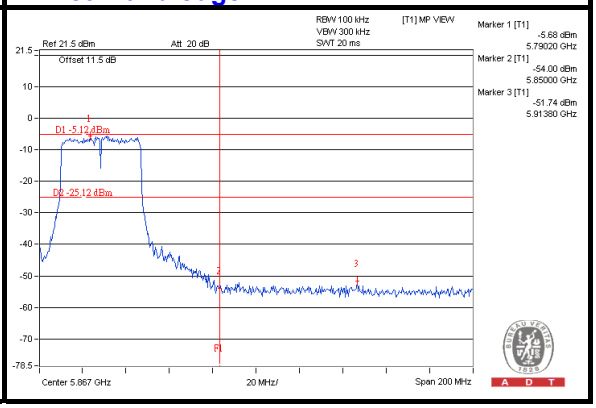




CH 151 Band edge



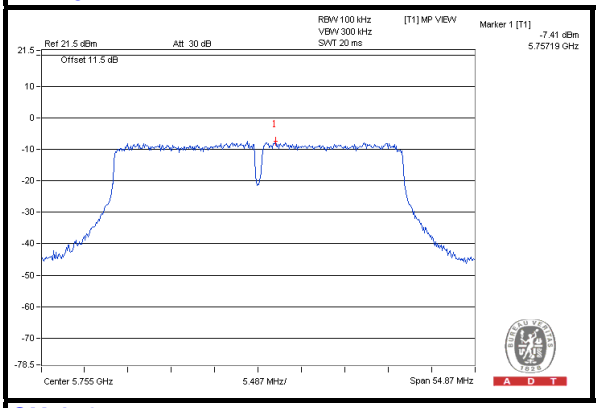
CH 159 Band edge

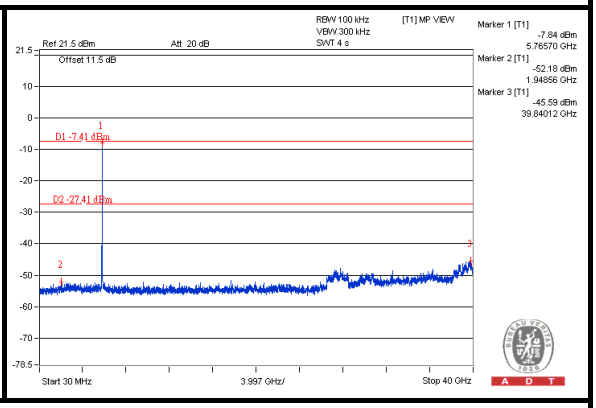


802.11n (40MHz): 2TX

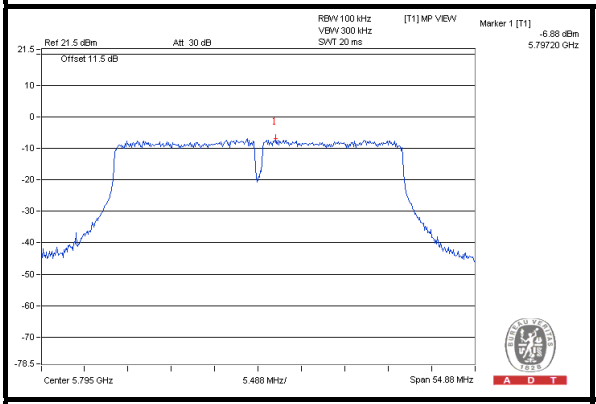
CHAIN 0

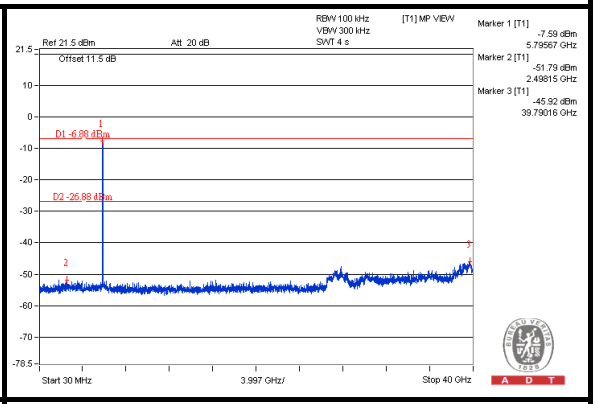
CH 151



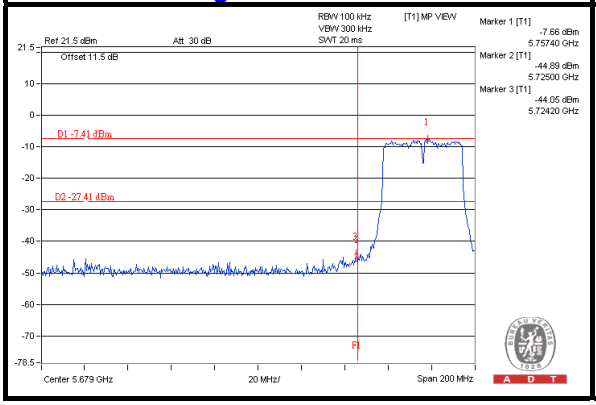


CH 159

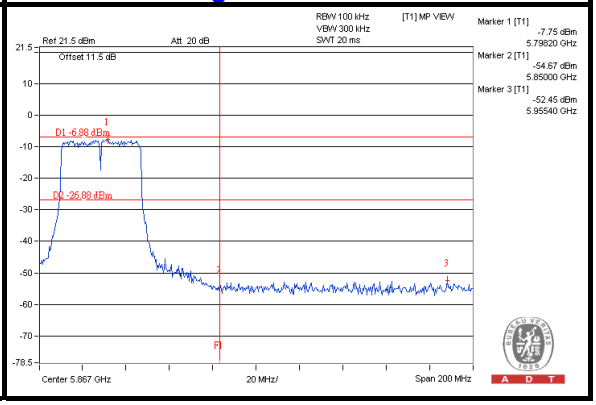




CH 151 Band edge

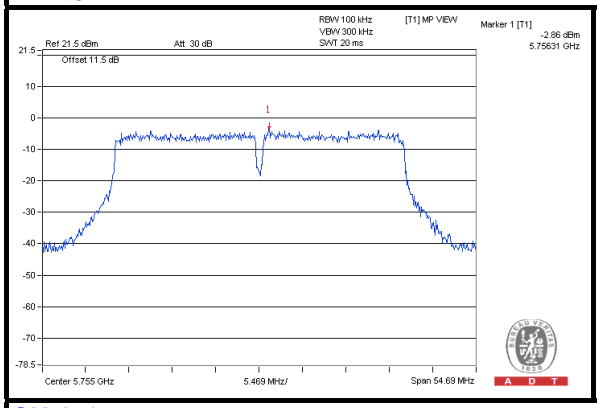


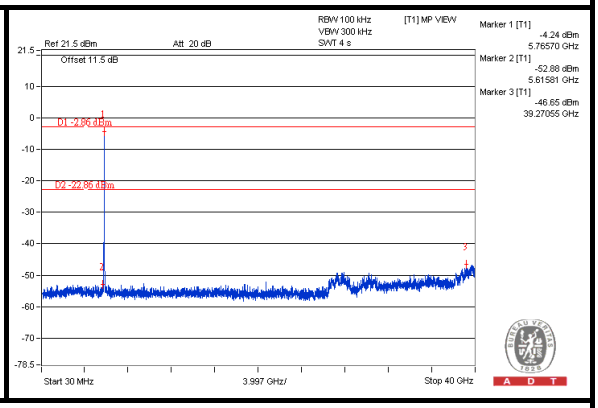
CH 159 Band edge



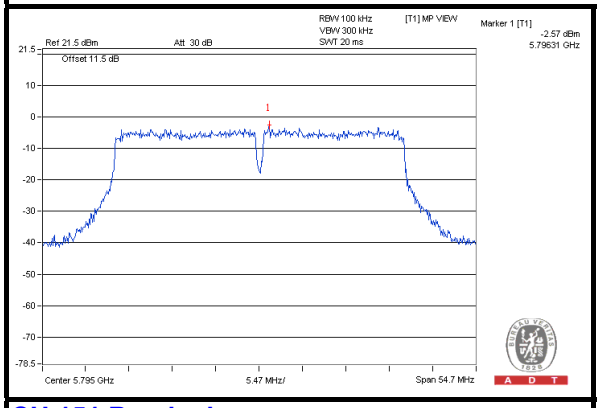
CHAIN 1

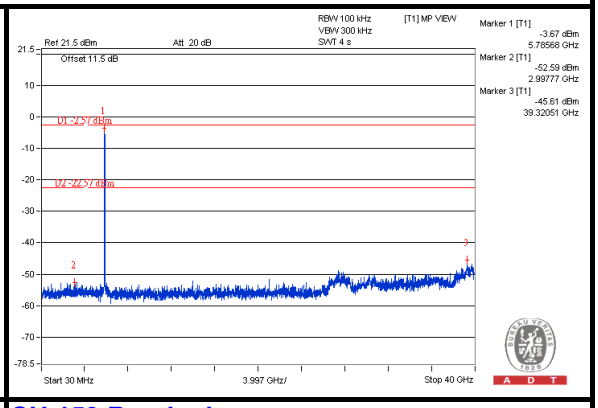
CH 151



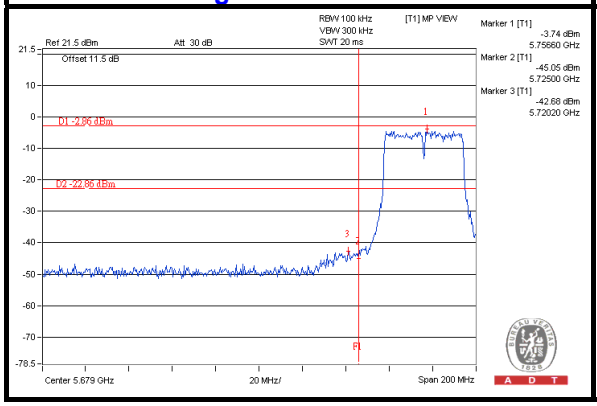


CH 159

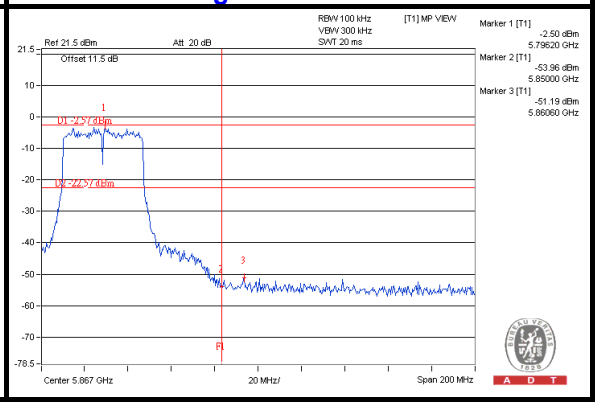




CH 151 Band edge

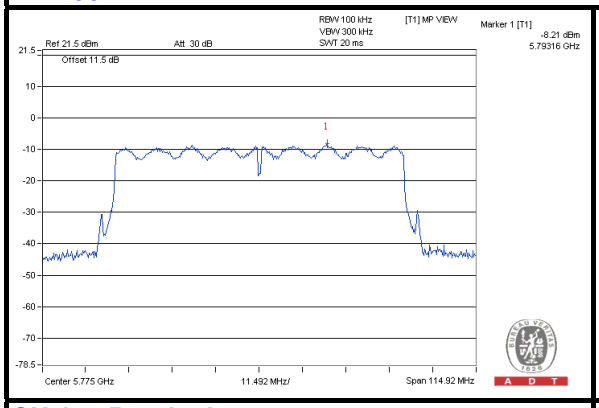


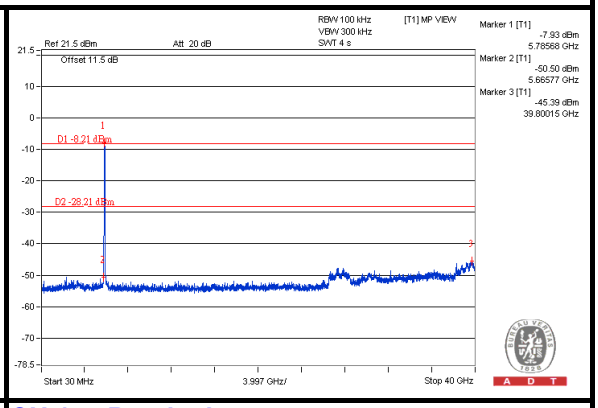
CH 159 Band edge



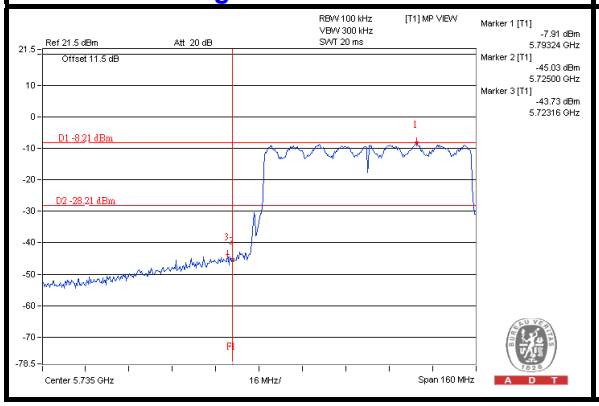
802.11ac (80MHz): 1TX

CH 155

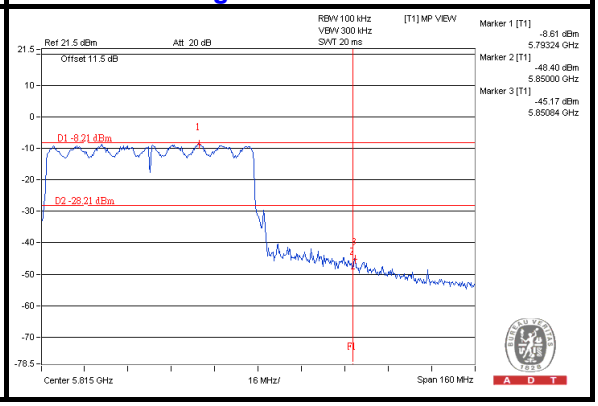




CH 155 Band edge



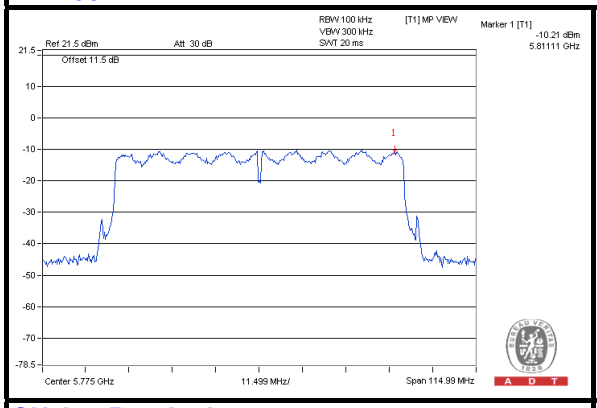
CH 155 Band edge

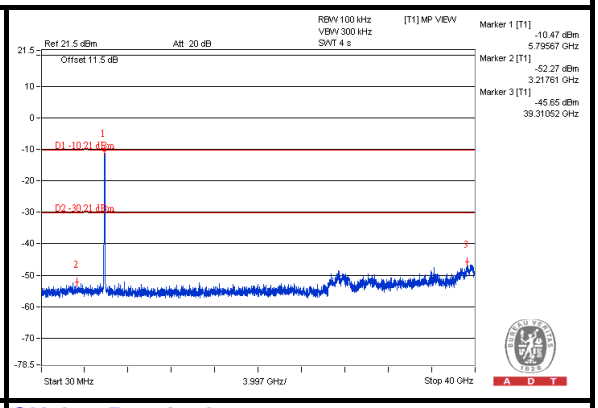


802.11ac (80MHz): 2TX

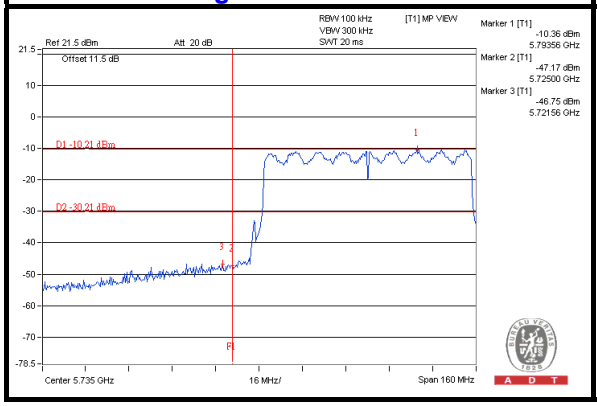
CHAIN 0

CH 155

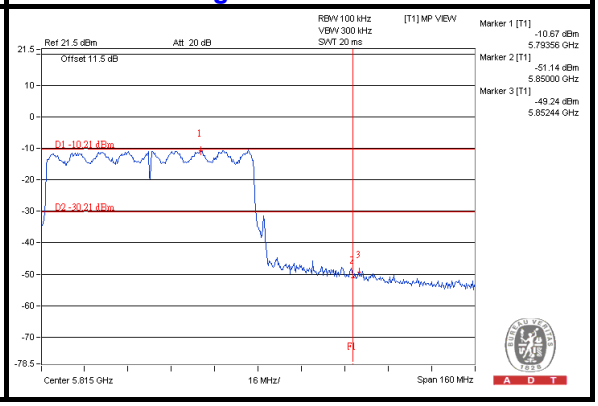




CH 155 Band edge

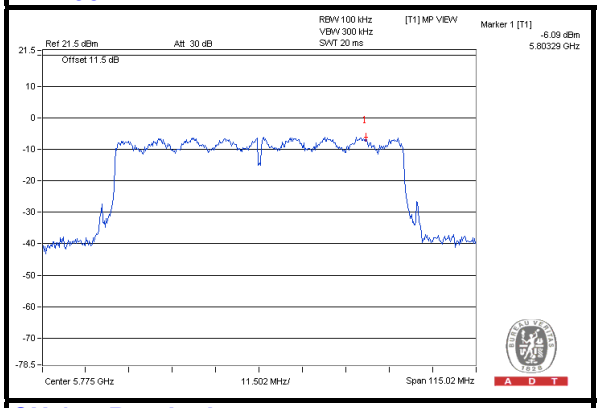


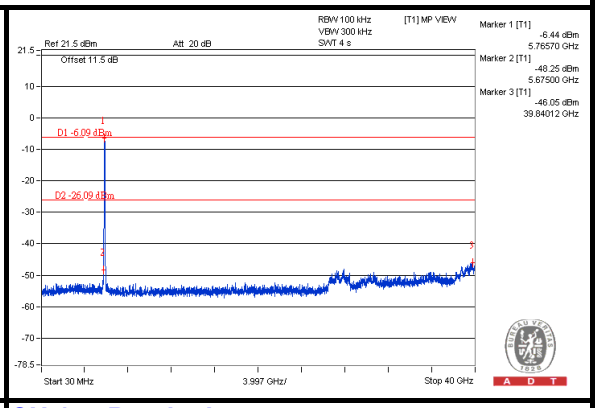
CH 155 Band edge



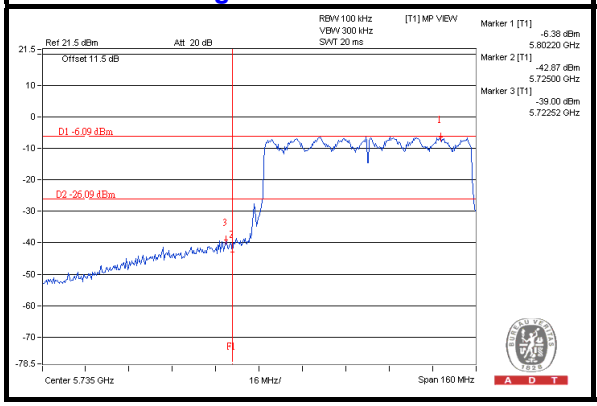
CHAIN 1

CH 155

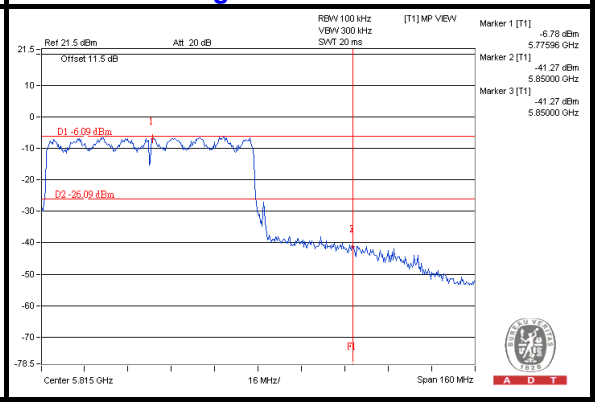




CH 155 Band edge



CH 155 Band edge



6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

7. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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

No modifications were made to the EUT by the lab during the test.

---END---