FCC TEST REPORT (15.247)

REPORT NO.:	RF131021C14
MODEL NO.:	NWA1123-AC
FCC ID:	I88NWA1123AC
RECEIVED:	Oct. 18, 2013
TESTED:	Oct. 25 ~ Nov. 02, 2013
ISSUED:	Nov. 11, 2013

APPLICANT:	ZyXEL Communications Corporation
ADDRESS:	No. 2, Gongye E. 9th Road, Hsinchu Science Park, Hsinchu, Taiwan, R.O.C

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.

Testing Laboratory 2021

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF131021C14	Original release	Nov. 11, 2013

1. CERTIFICATION

PRODUCT:	802.11 a/b/g/n/ac Dual-Radio Ceiling Mount PoE Access Point
MODEL NO.:	NWA1123-AC
BRAND:	ZyXEL
APPLICANT:	ZyXEL Communications Corporation
TESTED:	Oct. 25 ~ Nov. 02, 2013
TEST SAMPLE:	ENGINEERING SAMPLE
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247)**
	ANSI C63.10-2009

The above equipment (model: NWA1123-AC) 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 :** Nov. 11, 2013

Pettie Chen / Senior Specialist

APPROVED BY : _____ **, DATE :** Nov. 11, 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 -4.06dB at 0.34531MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2483.50, 11570.00MHz.
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	Antenna connector is I-PEX not a standard connector.

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	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	802.11 a/b/g/n/ac Dual-Radio Ceiling Mount PoE Access Point
MODEL NO.	NWA1123-AC
POWER SUPPLY	12Vdc from adapter 55Vdc from POE
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 300.0Mbps 802.11ac: up to 867Mbps
OPERATING FREQUENCY	**2.4GHz:** 2400 ~ 2483.5MHz **5.0GHz:** 5725 ~ 5850MHz
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) 1 for 802.11ac (80MHz)
OUTPUT POWER	194.347mW for 2400 ~ 2483.5MHz 214.986mW for 5725 ~ 5850MHz
ANTENNA TYPE	**2.4GHz:** Printed antenna with 3.5dBi gain **5.0GHz:** Printed antenna with 4.9dBi gain
ANTENNA CONNECTOR	I-PEX
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter

NOTE:

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

MODULATION MODE	TX FUNCTION
802.11b	2TX
802.11g	2TX
802.11a	2TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX
802.11ac (80MHz)	2TX

2. The EUT consumes power from the following adapter or PoE.

ADAPTER	
BRAND:	DVE
MODEL:	DSA-12CA-12 120100
INPUT:	100-240Vac, 50/60Hz, 0.3A
OUTPUT:	+12Vdc, 1A
POWER LINE:	DC 1.5m non-shielded cable without core attached on adapter

POE (Support Unit only)	
BRAND	PowerDsine™
MODEL	9001G-40/SP
INPUT POWER	100-240Vac, 50-60Hz, 1.5A
OUTPUT POWER	55Vdc, 0.73A

3. 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 (5725 ~ 5850MHz):

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	
A	√	√	√	√	Power from adapter
B	-	√	√	-	Power from PoE

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

NOTE:

1. The EUT had been pre-tested on the positioned of X & Z axis. The worst case was found when positioned on **X-plane**.
2. "-"means no effect.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

RADIATED EMISSION TEST (BELOW 1GHz):

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11b	1 to 11	6	DSSS	DBPSK	1.0

POWER LINE CONDUCTED EMISSION TEST:

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11b	1 to 11	6	DSSS	DBPSK	1.0

BANDEDGE MEASUREMENT:

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2
A	802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	15.0

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 69%RH	120Vac, 60Hz	Alan Wu
RE<1G	25deg. C, 69%RH	120Vac, 60Hz	Alan Wu
PLC	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
APCM	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui

FOR 5.0GHz (5725 ~ 5850MHz):

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from adapter
B	-	√	√	-	Power from PoE

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

NOTE:
1. The EUT had been pre-tested on the positioned of X & Z axis. The worst case was found when positioned on **Z-plane**.
2. "-"means no effect.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

RADIATED EMISSION TEST (BELOW 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11n (20MHz)	149 to 165	157	OFDM	BPSK	7.2

POWER LINE CONDUCTED EMISSION TEST:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11n (20MHz)	149 to 165	157	OFDM	BPSK	7.2

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)
A	802.11a	149 to 165	149, 165	OFDM	BPSK	6.0
A	802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	7.2
A	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0
A	802.11ac (80MHz)	155	155	OFDM	BPSK	65.0

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

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

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

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

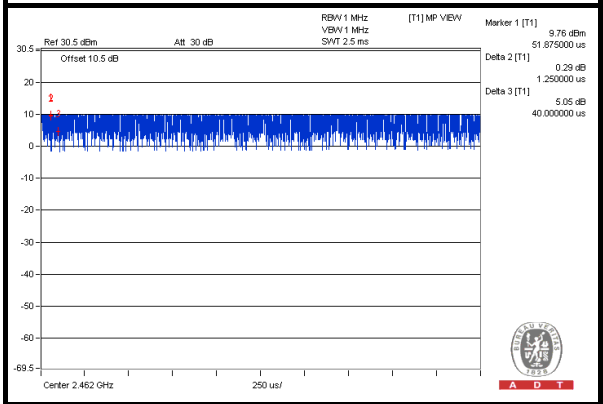
TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 69%RH	120Vac, 60Hz	Alan Wu
RE<1G	25deg. C, 69%RH	120Vac, 60Hz	Alan Wu
PLC	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
APCM	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui

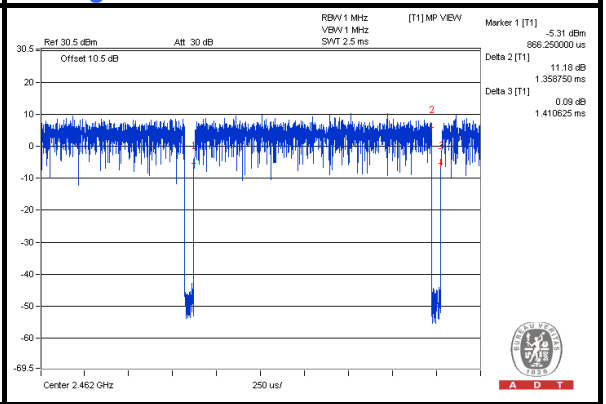
3.3 DUTY CYCLE OF TEST SIGNAL

2.4GHz:
Duty cycle of test signal is > 98 %, duty factor is not required.
802.11b: Duty cycle of test signal is > 98 %
802.11g: Duty cycle = 1.359/1.411 = 0.963, Duty factor = 10 * log(1/0.963) = 0.16
802.11n (20MHz): Duty cycle = 1.271/1.322 = 0.961, Duty factor = 10 * log(1/0.961) = 0.17
802.11n (40MHz): Duty cycle = 0.631/0.670 = 0.942, Duty factor = 10 * log(1/0.942) = 0.26

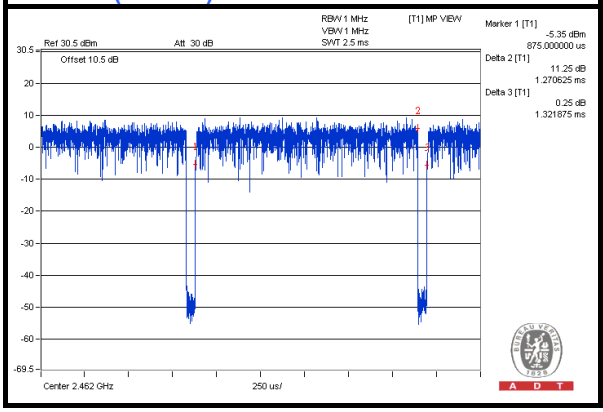
802.11b



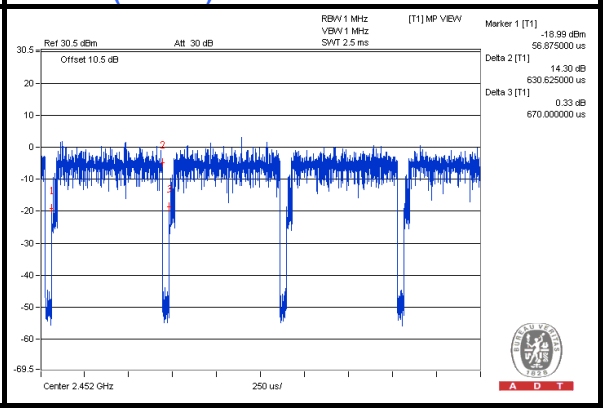
802.11g



802.11n (20MHz)



802.11n (40MHz)



5725~5850MHz:

If duty cycle is < 98%, duty factor shall be considered.

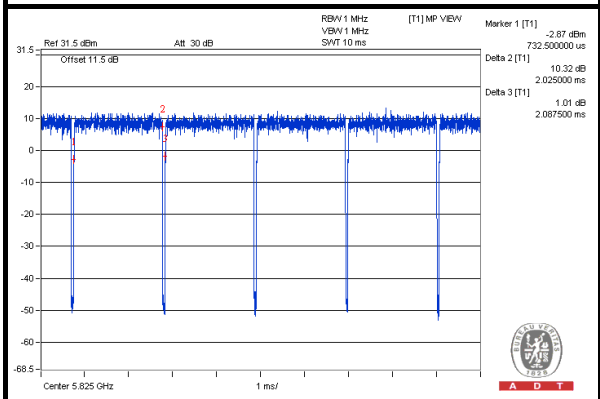
802.11a: Duty cycle = 2.02/2.08 = 0.971, Duty factor = 10 * log(1/0.971) = 0.13

802.11n (20MHz): Duty cycle = 1.88/1.94 = 0.969, Duty factor = 10 * log(1/0.969) = 0.14

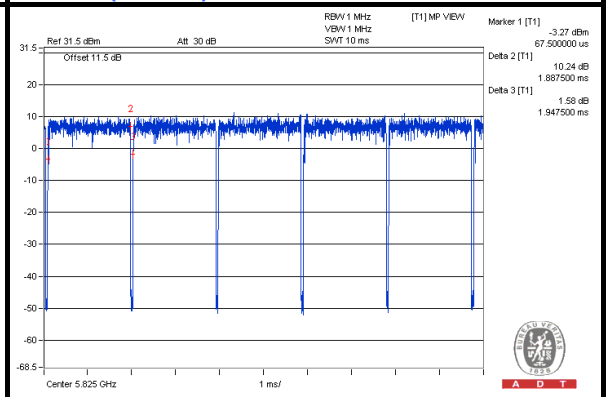
802.11n (40MHz): Duty cycle = 0.922/0.987 = 0.934, Duty factor = 10 * log(1/0.934) = 0.30

802.11ac (80MHz): Duty cycle = 0.456/0.514 = 0.887, Duty factor = 10 * log(1/0.887) = 0.52

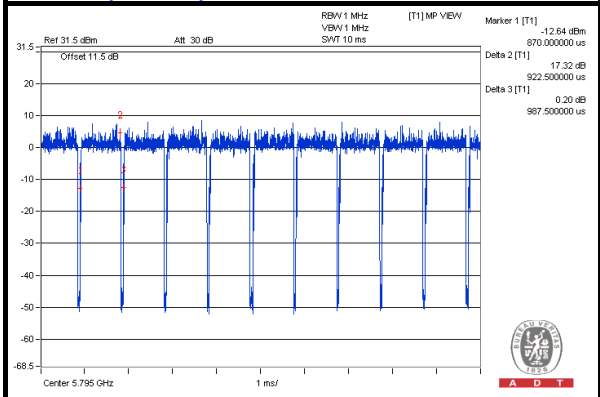
802.11a



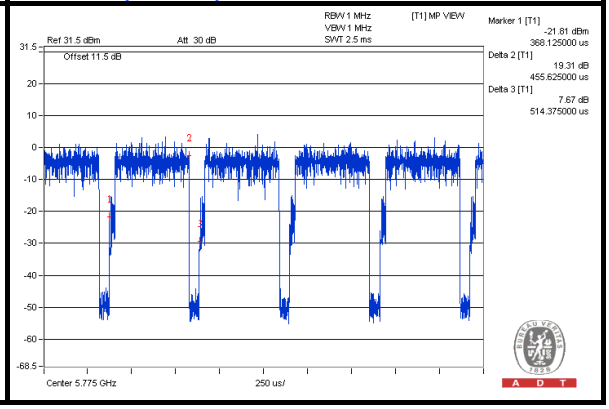
802.11n(20MHz)



802.11n(40MHz)



802.11ac(80MHz)



3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved

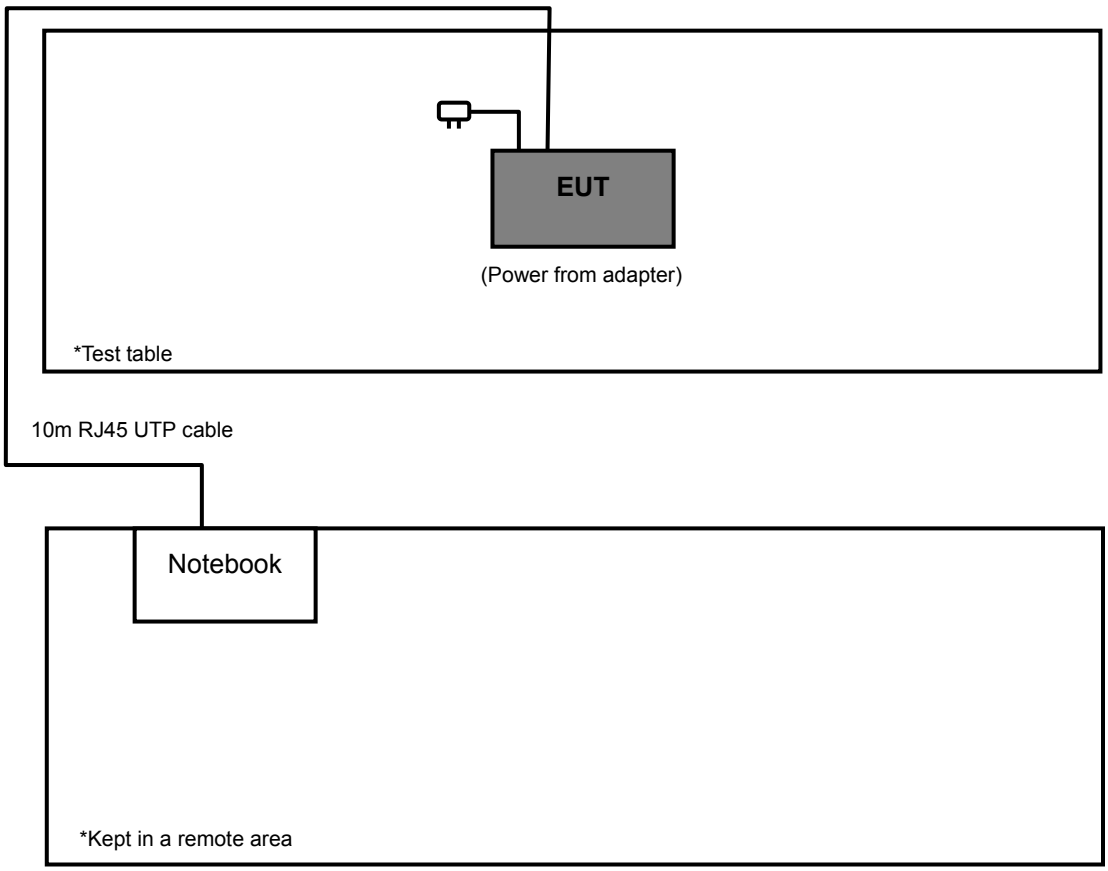
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m RJ45 Cable.

NOTE:

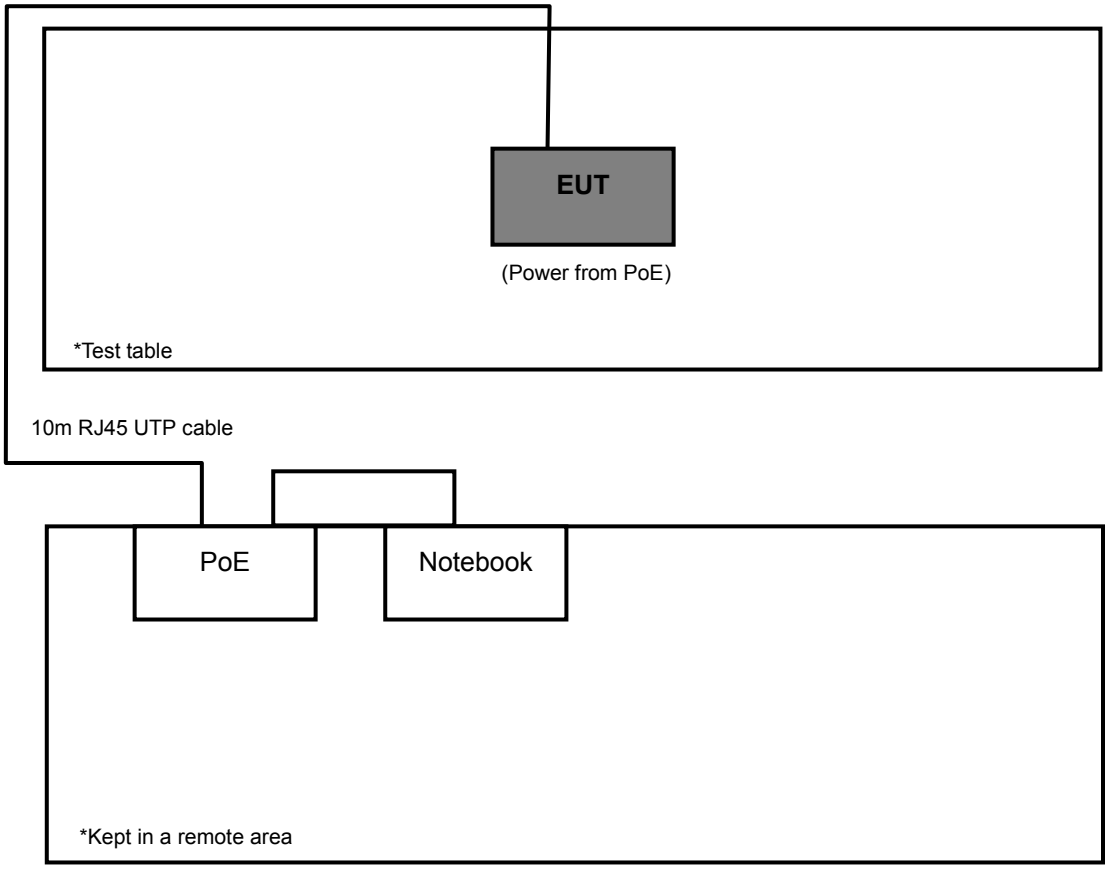
1. All power cords of the above support units are non shielded (1.8m).
2. Item 1 acted as communication partner to transfer data.

3.4.1 CONFIGURATION OF SYSTEM UNDER TEST

Test Mode A



Test Mode B



3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)
558074 D01 DTS Meas Guidance 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 30dB below the highest level of the desired power:

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 30dB under any condition of modulation.

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	FSP40	100039	Jan. 31, 2013	Jan. 30, 2014
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
Preamplifier Agilent	8449B	3008A01910	Oct. 18, 2013	Oct. 17, 2014
Preamplifier Agilent	8447D	2944A10738	Oct. 18, 2013	Oct. 17, 2014
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. 18, 2013	Oct. 17, 2014
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 10, 2013	Jun. 09, 2014
High Speed Peak Power Meter	ML2495A	0842014	Apr. 25, 2013	Apr. 24, 2014
Power Sensor	MA2411B	0738404	Apr. 24, 2013	Apr. 23, 2014

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 4.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 460141.
5. The IC Site Registration No. is IC7450F-4.

4.1.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters 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:

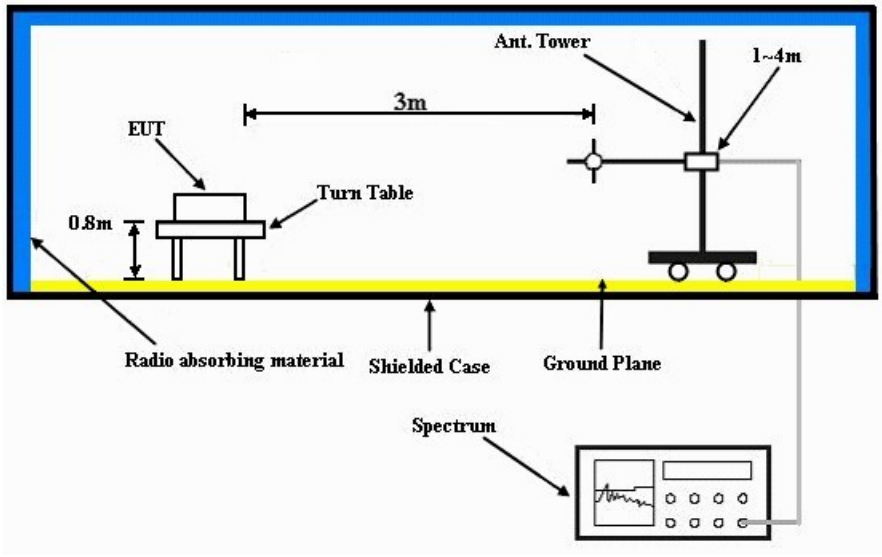
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution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

4.1.4 DEVIATION FROM TEST STANDARD

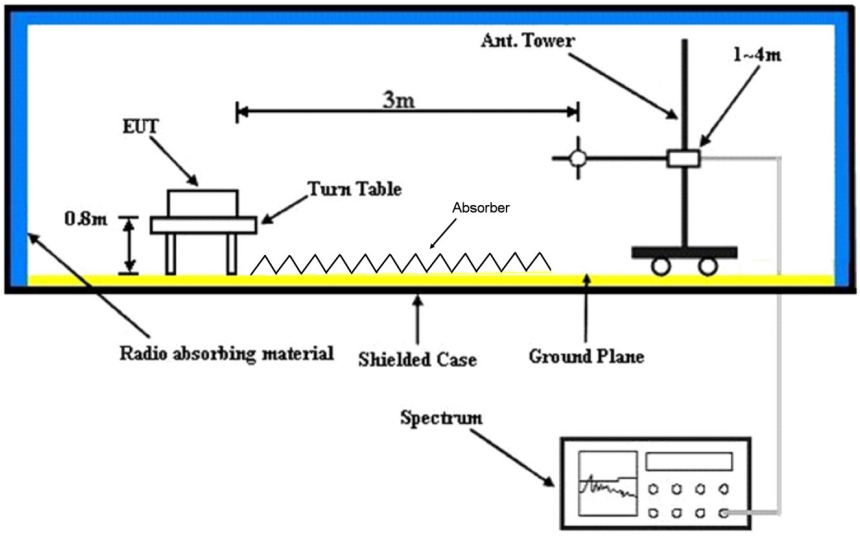
No deviation.

4.1.5 TEST SETUP

Frequency range 30MHz~1GHz



Frequency range above 1GHz



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

4.1.6 EUT OPERATING CONDITIONS

a. Placed the EUT on the testing table.
b. Prepared notebook to act as communication partner and placed it outside of testing area.
c. The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
d. The communication partner sent data to EUT by command "PING".

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	25deg. C, 69%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	2360.00	60.9 PK	74.0	-13.1	2.04 H	274	29.10	31.80
2	2360.00	52.7 AV	54.0	-1.3	2.04 H	274	20.90	31.80
3	2390.00	67.2 PK	74.0	-6.8	1.99 H	274	35.30	31.90
4	2390.00	52.8 AV	54.0	-1.2	1.99 H	274	20.90	31.90
5	*2412.00	106.6 PK			1.97 H	274	74.60	32.00
6	*2412.00	102.8 AV			1.97 H	274	70.80	32.00
7	4824.00	46.3 PK	74.0	-27.7	1.60 H	118	41.50	4.80
8	4824.00	37.5 AV	54.0	-16.5	1.60 H	118	32.70	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	2360.00	56.1 PK	74.0	-17.9	1.00 V	258	24.30	31.80
2	2360.00	46.9 AV	54.0	-7.1	1.00 V	258	15.10	31.80
3	2390.00	61.1 PK	74.0	-12.9	1.00 V	254	29.20	31.90
4	2390.00	48.5 AV	54.0	-5.5	1.00 V	254	16.60	31.90
5	*2412.00	105.8 PK			1.00 V	186	73.80	32.00
6	*2412.00	102.5 AV			1.00 V	186	70.50	32.00
7	4824.00	48.6 PK	74.0	-25.4	1.00 V	156	43.80	4.80
8	4824.00	38.8 AV	54.0	-15.2	1.00 V	156	34.00	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	24deg. C, 68%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	2360.00	63.2 PK	74.0	-10.8	2.04 H	277	31.40	31.80
2	2360.00	52.6 AV	54.0	-1.4	2.04 H	277	20.80	31.80
3	*2437.00	110.7 PK			1.87 H	277	78.70	32.00
4	*2437.00	106.8 AV			1.87 H	277	74.80	32.00
5	4874.00	48.4 PK	74.0	-25.6	1.67 H	111	43.40	5.00
6	4874.00	39.5 AV	54.0	-14.5	1.67 H	111	34.50	5.00
7	7311.00	53.3 PK	74.0	-20.7	1.00 H	94	42.30	11.00
8	7311.00	43.7 AV	54.0	-10.3	1.00 H	94	32.70	11.00
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	2360.00	56.5 PK	74.0	-17.5	1.00 V	260	24.70	31.80
2	2360.00	47.5 AV	54.0	-6.5	1.00 V	260	15.70	31.80
3	*2437.00	109.6 PK			1.00 V	187	77.60	32.00
4	*2437.00	106.1 AV			1.00 V	187	74.10	32.00
5	4874.00	51.1 PK	74.0	-22.9	1.00 V	355	46.10	5.00
6	4874.00	47.9 AV	54.0	-6.1	1.00 V	355	42.90	5.00
7	7311.00	57.5 PK	74.0	-16.5	1.00 V	180	46.50	11.00
8	7311.00	50.5 AV	54.0	-3.5	1.00 V	180	39.50	11.00

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, 69%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	2360.00	59.7 PK	74.0	-14.3	2.00 H	276	27.90	31.80
2	2360.00	52.7 AV	54.0	-1.3	2.00 H	276	20.90	31.80
3	*2462.00	108.1 PK			1.86 H	299	75.90	32.20
4	*2462.00	104.4 AV			1.86 H	299	72.20	32.20
5	2483.50	65.9 PK	74.0	-8.1	1.84 H	274	33.60	32.30
6	2483.50	52.9 AV	54.0	-1.1	1.84 H	274	20.60	32.30
7	4924.00	47.4 PK	74.0	-26.6	1.65 H	115	42.40	5.00
8	4924.00	38.0 AV	54.0	-16.0	1.65 H	115	33.00	5.00
9	7386.00	51.7 PK	74.0	-22.3	1.00 H	115	40.60	11.10
10	7386.00	41.1 AV	54.0	-12.9	1.00 H	115	30.00	11.10

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.

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, 69%RH	TESTED BY	Alan Wu

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	2360.00	56.3 PK	74.0	-17.7	1.00 V	253	24.50	31.80
2	2360.00	47.2 AV	54.0	-6.8	1.00 V	253	15.40	31.80
3	*2462.00	107.8 PK			1.00 V	112	75.60	32.20
4	*2462.00	104.1 AV			1.00 V	112	71.90	32.20
5	2483.50	62.1 PK	74.0	-11.9	1.00 V	203	29.80	32.30
6	2483.50	48.5 AV	54.0	-5.5	1.00 V	203	16.20	32.30
7	4924.00	49.3 PK	74.0	-24.7	1.00 V	328	44.30	5.00
8	4924.00	44.7 AV	54.0	-9.3	1.00 V	328	39.70	5.00
9	7386.00	56.9 PK	74.0	-17.1	1.80 V	139	45.80	11.10
10	7386.00	49.6 AV	54.0	-4.4	1.80 V	139	38.50	11.10

REMARKS:

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

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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, 69%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	2360.00	58.5 PK	74.0	-15.5	2.04 H	271	26.70	31.80
2	2360.00	52.2 AV	54.0	-1.8	2.04 H	271	20.40	31.80
3	2390.00	70.2 PK	74.0	-3.8	1.99 H	276	38.30	31.90
4	2390.00	52.5 AV	54.0	-1.5	1.99 H	276	20.60	31.90
5	*2412.00	109.7 PK			2.00 H	278	77.70	32.00
6	*2412.00	99.1 AV			2.00 H	278	67.10	32.00
7	4824.00	48.7 PK	74.0	-25.3	1.60 H	114	43.90	4.80
8	4824.00	34.2 AV	54.0	-19.8	1.60 H	114	29.40	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	2360.00	56.3 PK	74.0	-17.7	1.00 V	288	24.50	31.80
2	2360.00	47.4 AV	54.0	-6.6	1.00 V	288	15.60	31.80
3	2390.00	60.7 PK	74.0	-13.3	1.00 V	280	28.80	31.90
4	2390.00	47.8 AV	54.0	-6.2	1.00 V	280	15.90	31.90
5	*2412.00	106.4 PK			1.00 V	184	74.40	32.00
6	*2412.00	97.2 AV			1.00 V	184	65.20	32.00
7	4824.00	49.8 PK	74.0	-24.2	1.00 V	313	45.00	4.80
8	4824.00	35.7 AV	54.0	-18.3	1.00 V	313	30.90	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, 69%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	2360.00	61.2 PK	74.0	-12.8	2.03 H	271	29.40	31.80
2	2360.00	52.5 AV	54.0	-1.5	2.03 H	271	20.70	31.80
3	2390.00	70.5 PK	74.0	-3.5	2.02 H	275	38.60	31.90
4	2390.00	52.2 AV	54.0	-1.8	2.02 H	275	20.30	31.90
5	*2437.00	114.2 PK			1.96 H	302	82.20	32.00
6	*2437.00	104.3 AV			1.96 H	302	72.30	32.00
7	2483.50	70.3 PK	74.0	-3.7	1.28 H	303	38.00	32.30
8	2483.50	51.2 AV	54.0	-2.8	1.28 H	303	18.90	32.30
9	4874.00	50.8 PK	74.0	-23.2	1.62 H	114	45.80	5.00
10	4874.00	36.1 AV	54.0	-17.9	1.62 H	114	31.10	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 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 69%RH	TESTED BY	Alan Wu

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	2360.00	56.3 PK	74.0	-17.7	1.00 V	275	24.50	31.80
2	2360.00	47.7 AV	54.0	-6.3	1.00 V	275	15.90	31.80
3	2390.00	65.7 PK	74.0	-8.3	1.00 V	185	33.80	31.90
4	2390.00	50.2 AV	54.0	-3.8	1.00 V	185	18.30	31.90
5	*2437.00	113.7 PK			1.00 V	186	81.70	32.00
6	*2437.00	103.5 AV			1.00 V	186	71.50	32.00
7	2483.50	68.4 PK	74.0	-5.6	1.00 V	204	36.10	32.30
8	2483.50	48.7 AV	54.0	-5.3	1.00 V	204	16.40	32.30
9	4874.00	51.7 PK	74.0	-22.3	1.00 V	312	46.70	5.00
10	4874.00	37.4 AV	54.0	-16.6	1.00 V	312	32.40	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	25deg. C, 69%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	2360.00	60.1 PK	74.0	-13.9	2.04 H	277	28.30	31.80
2	2360.00	52.7 AV	54.0	-1.3	2.04 H	277	20.90	31.80
3	*2462.00	110.8 PK			1.94 H	300	78.60	32.20
4	*2462.00	100.9 AV			1.94 H	300	68.70	32.20
5	2483.50	70.3 PK	74.0	-3.7	1.95 H	300	38.00	32.30
6	2483.50	52.8 AV	54.0	-1.2	1.95 H	300	20.50	32.30
7	4924.00	49.4 PK	74.0	-24.6	1.61 H	115	44.40	5.00
8	4924.00	35.0 AV	54.0	-19.0	1.61 H	115	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	2360.00	56.1 PK	74.0	-17.9	1.00 V	282	24.30	31.80
2	2360.00	46.9 AV	54.0	-7.1	1.00 V	282	15.10	31.80
3	*2462.00	108.9 PK			1.00 V	114	76.70	32.20
4	*2462.00	99.5 AV			1.00 V	114	67.30	32.20
5	2483.50	70.0 PK	74.0	-4.0	1.00 V	95	37.70	32.30
6	2483.50	50.5 AV	54.0	-3.5	1.00 V	95	18.20	32.30
7	4874.00	50.5 PK	74.0	-23.5	1.00 V	311	45.50	5.00
8	4874.00	36.6 AV	54.0	-17.4	1.00 V	311	31.60	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)

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, 69%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	2360.00	59.9 PK	74.0	-14.1	2.07 H	276	28.10	31.80
2	2360.00	52.7 AV	54.0	-1.3	2.07 H	276	20.90	31.80
3	2390.00	72.5 PK	74.0	-1.5	2.00 H	274	40.60	31.90
4	2390.00	52.6 AV	54.0	-1.4	2.00 H	274	20.70	31.90
5	*2412.00	108.6 PK			2.02 H	295	76.60	32.00
6	*2412.00	98.5 AV			2.02 H	295	66.50	32.00
7	4824.00	49.6 PK	74.0	-24.4	1.61 H	115	44.80	4.80
8	4824.00	35.0 AV	54.0	-19.0	1.61 H	115	30.20	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	2360.00	55.8 PK	74.0	-18.2	1.00 V	289	24.00	31.80
2	2360.00	46.9 AV	54.0	-7.1	1.00 V	289	15.10	31.80
3	2390.00	60.3 PK	74.0	-13.7	1.19 V	186	28.40	31.90
4	2390.00	47.1 AV	54.0	-6.9	1.19 V	186	15.20	31.90
5	*2412.00	107.3 PK			1.23 V	185	75.30	32.00
6	*2412.00	97.0 AV			1.23 V	185	65.00	32.00
7	4824.00	50.7 PK	74.0	-23.3	1.00 V	318	45.90	4.80
8	4824.00	36.5 AV	54.0	-17.5	1.00 V	318	31.70	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, 69%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	2360.00	62.3 PK	74.0	-11.7	2.03 H	274	30.50	31.80
2	2360.00	52.5 AV	54.0	-1.5	2.03 H	274	20.70	31.80
3	2390.00	70.5 PK	74.0	-3.5	2.01 H	275	38.60	31.90
4	2390.00	52.6 AV	54.0	-1.4	2.01 H	275	20.70	31.90
5	*2437.00	113.5 PK			1.32 H	309	81.50	32.00
6	*2437.00	104.0 AV			1.32 H	309	72.00	32.00
7	2483.50	71.3 PK	74.0	-2.7	1.89 H	276	39.00	32.30
8	2483.50	50.3 AV	54.0	-3.7	1.89 H	276	18.00	32.30
9	4874.00	50.6 PK	74.0	-23.4	1.60 H	118	45.60	5.00
10	4874.00	35.9 AV	54.0	-18.1	1.60 H	118	30.90	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.

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, 69%RH	TESTED BY	Alan Wu

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	2360.00	55.9 PK	74.0	-18.1	1.00 V	278	24.10	31.80
2	2360.00	47.6 AV	54.0	-6.4	1.00 V	278	15.80	31.80
3	2390.00	65.4 PK	74.0	-8.6	1.00 V	188	33.50	31.90
4	2390.00	49.7 AV	54.0	-4.3	1.00 V	188	17.80	31.90
5	*2437.00	112.6 PK			1.00 V	186	80.60	32.00
6	*2437.00	103.1 AV			1.00 V	186	71.10	32.00
7	2483.50	69.2 PK	74.0	-4.8	1.00 V	206	36.90	32.30
8	2483.50	46.9 AV	54.0	-7.1	1.00 V	206	14.60	32.30
9	4874.00	52.6 PK	74.0	-21.4	1.60 V	118	47.60	5.00
10	4874.00	37.9 AV	54.0	-16.1	1.60 V	118	32.90	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.

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, 69%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	2360.00	60.6 PK	74.0	-13.4	2.04 H	276	28.80	31.80
2	2360.00	52.3 AV	54.0	-1.7	2.04 H	276	20.50	31.80
3	*2462.00	110.2 PK			1.88 H	276	78.00	32.20
4	*2462.00	100.4 AV			1.88 H	276	68.20	32.20
5	2483.50	69.9 PK	74.0	-4.1	1.87 H	277	37.60	32.30
6	2483.50	52.9 AV	54.0	-1.1	1.87 H	277	20.60	32.30
7	4924.00	49.5 PK	74.0	-24.5	1.61 H	117	44.50	5.00
8	4924.00	35.5 AV	54.0	-18.5	1.61 H	117	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	2360.00	56.6 PK	74.0	-17.4	1.00 V	289	24.80	31.80
2	2360.00	47.5 AV	54.0	-6.5	1.00 V	289	15.70	31.80
3	*2462.00	108.6 PK			1.00 V	112	76.40	32.20
4	*2462.00	99.4 AV			1.00 V	112	67.20	32.20
5	2483.50	71.2 PK	74.0	-2.8	1.00 V	96	38.90	32.30
6	2483.50	50.5 AV	54.0	-3.5	1.00 V	96	18.20	32.30
7	4924.00	51.4 PK	74.0	-22.6	1.00 V	318	46.40	5.00
8	4924.00	37.0 AV	54.0	-17.0	1.00 V	318	32.00	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)

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, 69%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	2360.00	61.1 PK	74.0	-12.9	2.00 H	279	29.30	31.80
2	2360.00	52.9 AV	54.0	-1.1	2.00 H	279	21.10	31.80
3	2390.00	69.3 PK	74.0	-4.7	1.99 H	277	37.40	31.90
4	2390.00	52.7 AV	54.0	-1.3	1.99 H	277	20.80	31.90
5	*2422.00	103.7 PK			2.00 H	284	71.70	32.00
6	*2422.00	94.1 AV			2.00 H	284	62.10	32.00
7	4844.00	47.1 PK	74.0	-26.9	1.60 H	110	42.30	4.80
8	4844.00	32.5 AV	54.0	-21.5	1.60 H	110	27.70	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	2360.00	56.2 PK	74.0	-17.8	1.00 V	288	24.40	31.80
2	2360.00	47.1 AV	54.0	-6.9	1.00 V	288	15.30	31.80
3	2390.00	61.3 PK	74.0	-12.7	1.00 V	181	29.40	31.90
4	2390.00	46.6 AV	54.0	-7.4	1.00 V	181	14.70	31.90
5	*2422.00	100.7 PK			1.00 V	185	68.70	32.00
6	*2422.00	90.3 AV			1.00 V	185	58.30	32.00
7	4844.00	47.5 PK	74.0	-26.5	1.00 V	316	42.70	4.80
8	4844.00	33.3 AV	54.0	-20.7	1.00 V	316	28.50	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, 69%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	2360.00	63.2 PK	74.0	-10.8	2.06 H	272	31.40	31.80
2	2360.00	52.2 AV	54.0	-1.8	2.06 H	272	20.40	31.80
3	2390.00	69.9 PK	74.0	-4.1	2.00 H	274	38.00	31.90
4	2390.00	52.4 AV	54.0	-1.6	2.00 H	274	20.50	31.90
5	*2437.00	106.9 PK			1.32 H	307	74.90	32.00
6	*2437.00	97.1 AV			1.32 H	307	65.10	32.00
7	2483.50	68.4 PK	74.0	-5.6	1.85 H	278	36.10	32.30
8	2483.50	47.6 AV	54.0	-6.4	1.85 H	278	15.30	32.30
9	4874.00	48.0 PK	74.0	-26.0	1.60 H	116	43.00	5.00
10	4874.00	33.1 AV	54.0	-20.9	1.60 H	116	28.10	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 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 69%RH	TESTED BY	Alan Wu

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	2360.00	56.5 PK	74.0	-17.5	1.00 V	290	24.70	31.80
2	2360.00	47.4 AV	54.0	-6.6	1.00 V	290	15.60	31.80
3	2390.00	65.1 PK	74.0	-8.9	1.00 V	190	33.20	31.90
4	2390.00	47.4 AV	54.0	-6.6	1.00 V	190	15.50	31.90
5	*2437.00	105.2 PK			1.00 V	187	73.20	32.00
6	*2437.00	94.9 AV			1.00 V	187	62.90	32.00
7	2483.50	70.1 PK	74.0	-3.9	1.00 V	205	37.80	32.30
8	2483.50	46.9 AV	54.0	-7.1	1.00 V	205	14.60	32.30
9	4874.00	48.3 PK	74.0	-25.7	1.00 V	315	43.30	5.00
10	4874.00	33.9 AV	54.0	-20.1	1.00 V	315	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.

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, 69%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	2360.00	61.3 PK	74.0	-12.7	2.01 H	279	29.50	31.80
2	2360.00	52.7 AV	54.0	-1.3	2.01 H	279	20.90	31.80
3	*2452.00	105.9 PK			1.90 H	275	73.70	32.20
4	*2452.00	95.5 AV			1.90 H	275	63.30	32.20
5	**2483.50**	**73.0 PK**	**74.0**	**-1.0**	**1.88 H**	**302**	**40.70**	**32.30**
6	2483.50	48.7 AV	54.0	-5.3	1.88 H	302	16.40	32.30
7	4904.00	47.2 PK	74.0	-26.8	1.61 H	117	42.20	5.00
8	4904.00	32.7 AV	54.0	-21.3	1.61 H	117	27.70	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	2360.00	56.4 PK	74.0	-17.6	1.00 V	289	24.60	31.80
2	2360.00	46.9 AV	54.0	-7.1	1.00 V	289	15.10	31.80
3	*2452.00	103.7 PK			1.00 V	187	71.50	32.20
4	*2452.00	93.1 AV			1.00 V	187	60.90	32.20
5	2483.50	70.7 PK	74.0	-3.3	1.00 V	206	38.40	32.30
6	2483.50	47.6 AV	54.0	-6.4	1.00 V	206	15.30	32.30
7	4904.00	47.7 PK	74.0	-26.3	1.00 V	312	42.70	5.00
8	4904.00	33.6 AV	54.0	-20.4	1.00 V	312	28.60	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：802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH	TESTED BY	Alan Wu
TEST MODE	A		

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	249.17	44.1 QP	46.0	-1.9	1.25 H	263	58.60	-14.50
2	375.29	44.4 QP	46.0	-1.6	1.00 H	225	55.70	-11.30
3	499.48	44.5 QP	46.0	-1.5	2.00 H	130	53.50	-9.00
4	600.38	44.2 QP	46.0	-1.8	1.25 H	315	51.20	-7.00
5	625.60	44.1 QP	46.0	-1.9	1.25 H	140	50.40	-6.30
6	751.73	43.9 QP	46.0	-2.1	1.00 H	144	47.60	-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	53.18	36.8 QP	40.0	-3.2	1.00 V	17	50.50	-13.70
2	124.98	39.2 QP	43.5	-4.3	1.00 V	144	54.90	-15.70
3	375.29	43.7 QP	46.0	-2.3	1.25 V	273	55.00	-11.30
4	499.48	43.6 QP	46.0	-2.4	1.25 V	273	52.60	-9.00
5	600.38	43.3 QP	46.0	-2.7	1.00 V	303	50.30	-7.00
6	751.73	42.9 QP	46.0	-3.1	1.25 V	184	46.60	-3.70

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH	TESTED BY	Alan Wu
TEST MODE	B		

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	249.17	43.3 QP	46.0	-2.7	1.24 H	113	57.80	-14.50
2	375.29	43.8 QP	46.0	-2.2	2.00 H	132	55.10	-11.30
3	499.48	44.4 QP	46.0	-1.6	2.00 H	251	53.40	-9.00
4	600.38	43.2 QP	46.0	-2.8	1.49 H	348	50.20	-7.00
5	625.60	44.7 QP	46.0	-1.3	1.24 H	91	51.00	-6.30
6	899.20	43.7 QP	46.0	-2.3	1.49 H	133	45.20	-1.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	35.72	38.4 QP	40.0	-1.6	1.00 V	282	53.10	-14.70
2	375.29	40.6 QP	46.0	-5.4	1.49 V	278	51.90	-11.30
3	499.48	44.5 QP	46.0	-1.5	1.00 V	183	53.50	-9.00
4	600.38	41.3 QP	46.0	-4.7	1.24 V	74	48.30	-7.00
5	625.60	43.9 QP	46.0	-2.1	1.49 V	183	50.20	-6.30
6	751.73	40.5 QP	46.0	-5.5	1.99 V	189	44.20	-3.70

REMARKS:

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

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 2.

3. The VCCI Site Registration No. is C-2047.

4.2.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

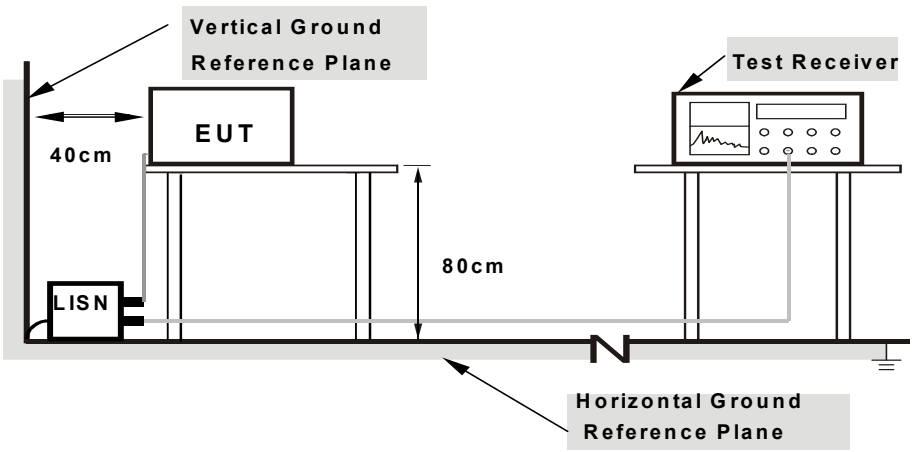
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

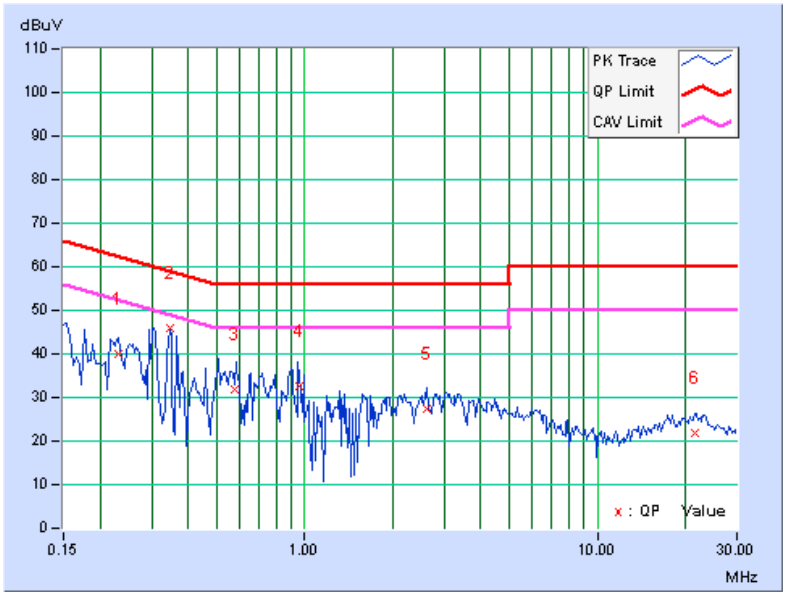
4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA：802.11b

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

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	0.23203	0.17	39.84	38.56	40.01	38.73	62.38	52.38	-22.37	-13.65
2	**0.34531**	**0.21**	**45.69**	**44.80**	**45.90**	**45.01**	**59.07**	**49.07**	**-13.17**	**-4.06**
3	0.57342	0.24	31.60	30.60	31.84	30.84	56.00	46.00	-24.16	-15.16
4	0.95705	0.25	32.49	27.25	32.74	27.50	56.00	46.00	-23.26	-18.50
5	2.60194	0.32	26.93	21.28	27.25	21.60	56.00	46.00	-28.75	-24.40
6	21.57422	1.31	20.53	14.19	21.84	15.50	60.00	50.00	-38.16	-34.50

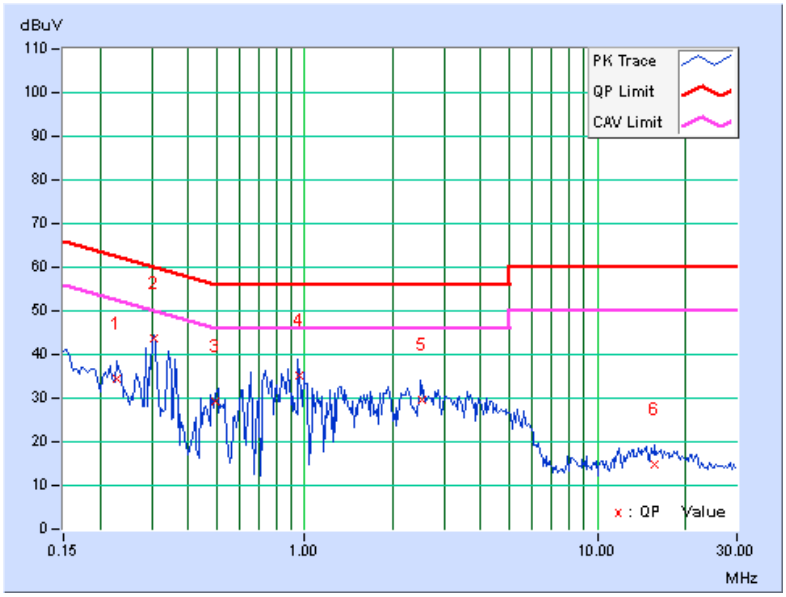
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading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



PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

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	0.22812	0.18	34.40	32.12	34.58	32.30	62.52	52.52	-27.94	-20.22
2	0.30625	0.21	43.44	42.48	43.65	42.69	60.07	50.07	-16.42	-7.38
3	0.49403	0.24	29.04	28.32	29.28	28.56	56.10	46.10	-26.82	-17.54
4	0.95324	0.25	34.87	31.96	35.12	32.21	56.00	46.00	-20.88	-13.79
5	2.51144	0.31	29.32	24.39	29.63	24.70	56.00	46.00	-26.37	-21.30
6	15.73047	0.78	14.03	7.33	14.81	8.11	60.00	50.00	-45.19	-41.89

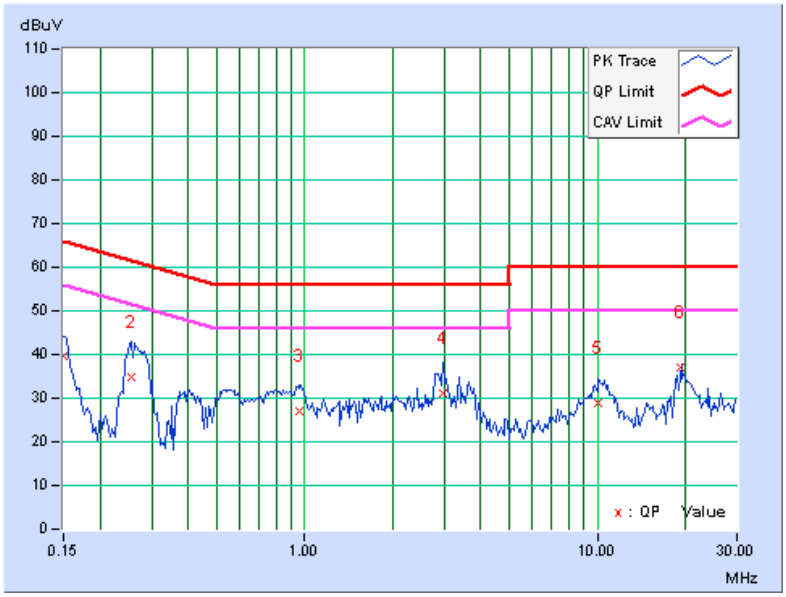
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading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



PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

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	0.15000	0.16	39.58	26.27	39.74	26.43	66.00	56.00	-26.26	-29.57
2	0.25547	0.18	34.82	20.07	35.00	20.25	61.58	51.58	-26.58	-31.33
3	0.96250	0.25	26.94	19.90	27.19	20.15	56.00	46.00	-28.81	-25.85
4	2.98438	0.34	30.75	21.74	31.09	22.08	56.00	46.00	-24.91	-23.92
5	10.01563	0.72	28.29	22.56	29.01	23.28	60.00	50.00	-30.99	-26.72
6	19.34784	1.20	35.81	32.98	37.01	34.18	60.00	50.00	-22.99	-15.82

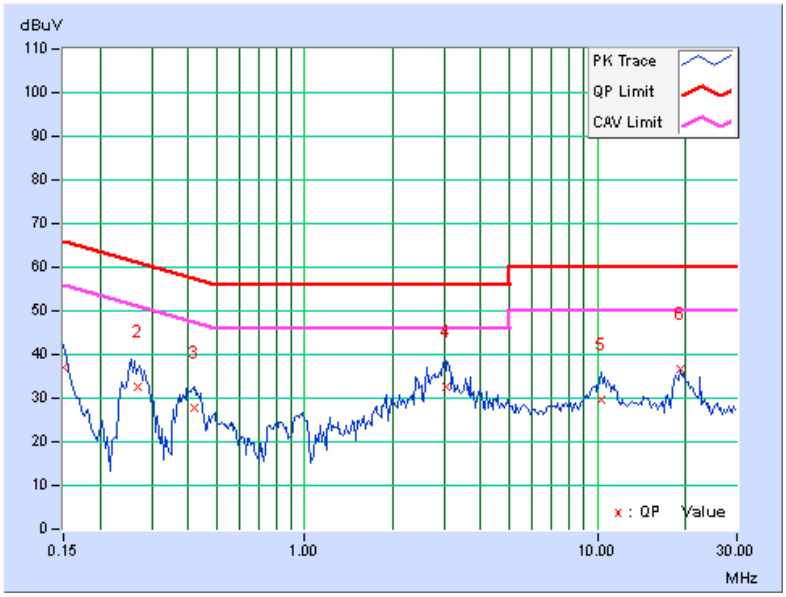
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading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



PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

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	0.15000	0.16	36.77	25.73	36.93	25.89	66.00	56.00	-29.07	-30.11
2	0.27072	0.19	32.37	24.99	32.56	25.18	61.10	51.10	-28.53	-25.91
3	0.41953	0.24	27.71	21.52	27.95	21.76	57.46	47.46	-29.51	-25.70
4	3.05078	0.33	32.36	23.52	32.69	23.85	56.00	46.00	-23.31	-22.15
5	10.36719	0.61	29.10	23.58	29.71	24.19	60.00	50.00	-30.29	-25.81
6	19.34375	0.91	35.77	33.75	36.68	34.66	60.00	50.00	-23.32	-15.34

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.

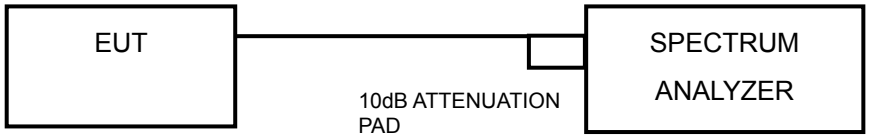


4.3 6dB BANDWIDTH MEASUREMENT

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
		CHAIN 0	CHAIN 1		
1	2412	10.12	10.08	0.5	PASS
6	2437	10.11	10.12	0.5	PASS
11	2462	10.10	10.11	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.38	16.40	0.5	PASS
6	2437	16.38	16.38	0.5	PASS
11	2462	16.35	16.38	0.5	PASS

802.11n (20MHz)

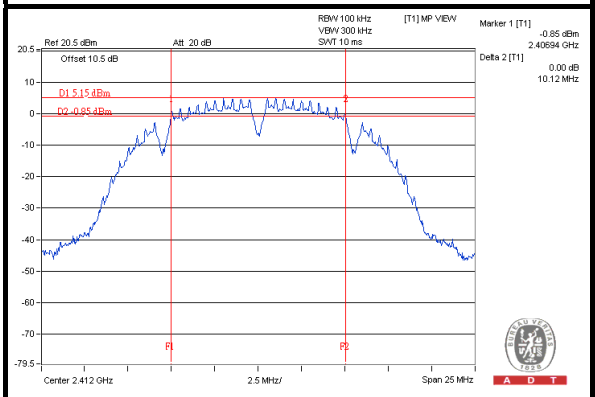
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.63	17.63	0.5	PASS
6	2437	17.62	17.19	0.5	PASS
11	2462	17.32	17.63	0.5	PASS

802.11n (40MHz)

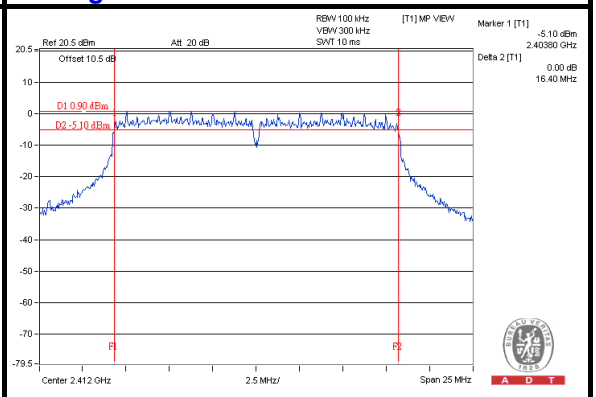
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.41	35.83	0.5	PASS
6	2437	36.20	35.83	0.5	PASS
9	2452	35.90	35.85	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

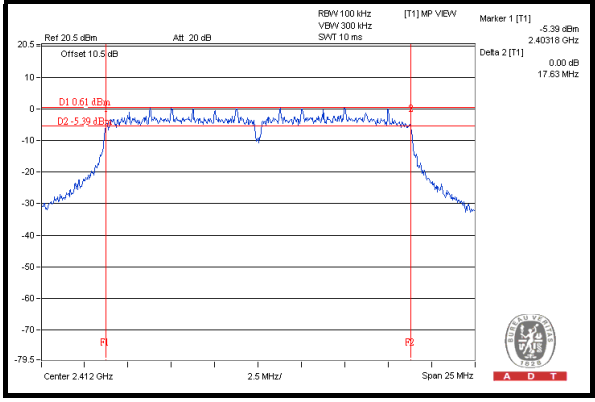
802.11b



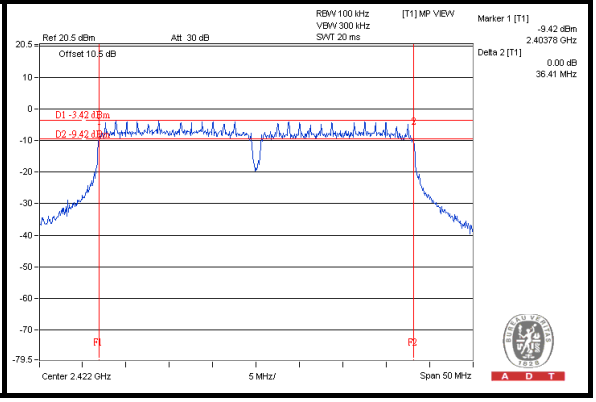
802.11g



802.11n (20MHz)



802.11n (40MHz)



4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

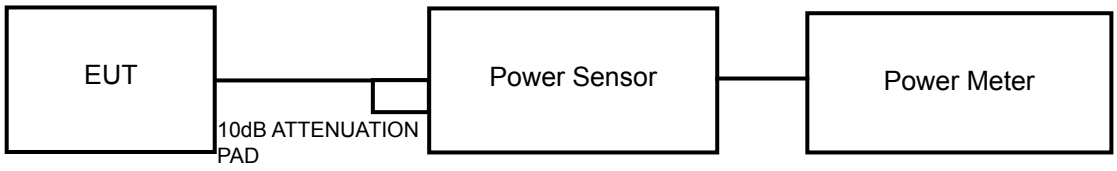
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output 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

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

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

4.4.7 TEST RESULTS

FOR AVERAGE POWER

802.11b

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	15.44	16.30	77.653	18.90	30	PASS
6	2437	19.81	19.94	**194.347**	22.89	30	PASS
11	2462	18.05	17.76	123.530	20.92	30	PASS

802.11g

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	13.32	14.02	46.713	16.69	30	PASS
6	2437	19.58	19.52	180.318	22.56	30	PASS
11	2462	16.84	16.65	94.544	19.76	30	PASS

802.11n (20MHz)

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	13.23	13.99	46.099	16.64	30	PASS
6	2437	19.36	19.27	170.826	22.33	30	PASS
11	2462	16.82	16.66	94.429	19.75	30	PASS

802.11n (40MHz)

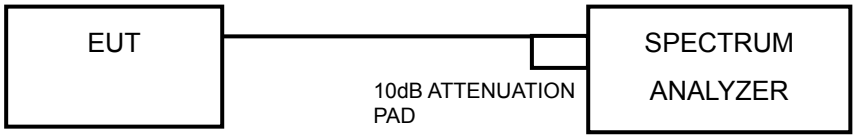
CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	12.32	12.31	34.083	15.33	30	PASS
6	2437	15.80	15.99	77.738	18.91	30	PASS
9	2452	14.65	14.43	56.907	17.55	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

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

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	-15.78	3.01	-12.77	7.49	PASS
	6	2437	-12.45	3.01	-9.44	7.49	PASS
	11	2462	-15.78	3.01	-12.77	7.49	PASS
1	1	2412	-15.54	3.01	-12.53	7.49	PASS
	6	2437	-11.41	3.01	-8.40	7.49	PASS
	11	2462	-15.54	3.01	-12.53	7.49	PASS

NOTE: Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi , so the power density limit shall be reduced to 8-(6.51-6) = 7.49dBm.

802.11g

TX chain	Chan.	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD without Duty Factor (dBm/3kHz)	Duty Factor	Total PSD with Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-19.84	3.01	-16.83	0.16	-16.67	7.49	PASS
	6	2437	-14.38	3.01	-11.37	0.16	-11.21	7.49	PASS
	11	2462	-19.84	3.01	-16.83	0.16	-16.67	7.49	PASS
1	1	2412	-19.60	3.01	-16.59	0.16	-16.43	7.49	PASS
	6	2437	-14.02	3.01	-11.01	0.16	-10.85	7.49	PASS
	11	2462	-19.60	3.01	-16.59	0.16	-16.43	7.49	PASS

NOTE: Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi , so the power density limit shall be reduced to 8-(6.51-6) = 7.49dBm.

802.11n(20MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD without Duty Factor (dBm/3kHz)	Duty Factor	Total PSD with Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-20.58	3.01	-17.57	0.17	-17.40	7.49	PASS
	6	2437	-14.90	3.01	-11.89	0.17	-11.72	7.49	PASS
	11	2462	-20.58	3.01	-17.57	0.17	-17.40	7.49	PASS
1	1	2412	-19.62	3.01	-16.61	0.17	-16.44	7.49	PASS
	6	2437	-14.91	3.01	-11.90	0.17	-11.73	7.49	PASS
	11	2462	-19.62	3.01	-16.61	0.17	-16.44	7.49	PASS

NOTE: Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi , so the power density limit shall be reduced to 8-(6.51-6) = 7.49dBm.

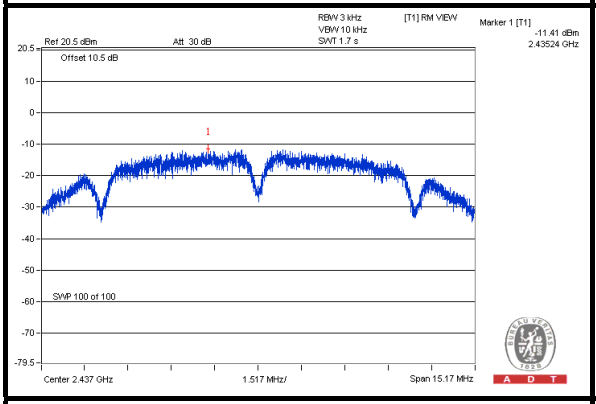
802.11n(40MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD without Duty Factor (dBm/3kHz)	Duty Factor	Total PSD with Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-24.85	3.01	-21.84	0.26	-21.58	7.49	PASS
	6	2437	-21.32	3.01	-18.31	0.26	-18.05	7.49	PASS
	9	2452	-24.85	3.01	-21.84	0.26	-21.58	7.49	PASS
1	3	2422	-24.72	3.01	-21.71	0.26	-21.45	7.49	PASS
	6	2437	-20.94	3.01	-17.93	0.26	-17.67	7.49	PASS
	9	2452	-24.72	3.01	-21.71	0.26	-21.45	7.49	PASS

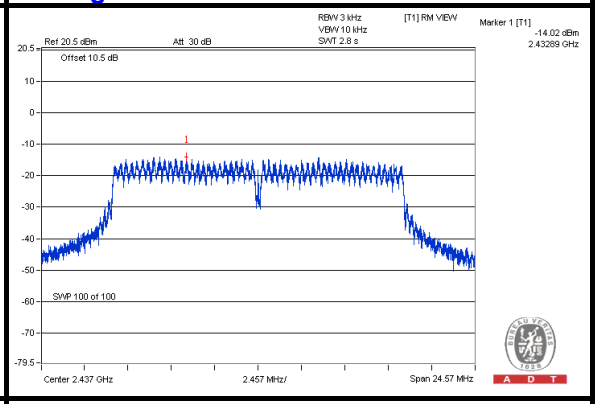
NOTE: Directional gain = 3.5dBi + 10log(2) = 6.51dBi > 6dBi , so the power density limit shall be reduced to 8-(6.51-6) = 7.49dBm.

SPECTRUM PLOT OF WORST VALUE

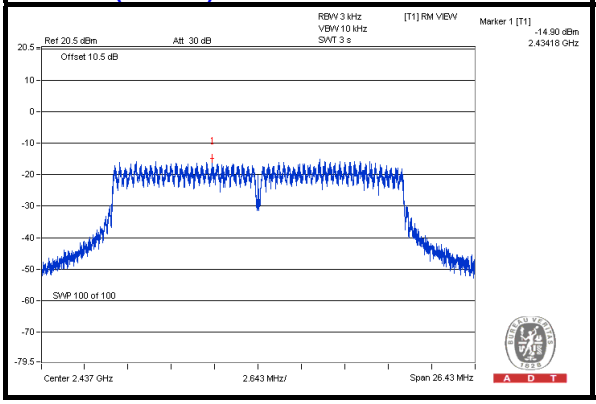
802.11b



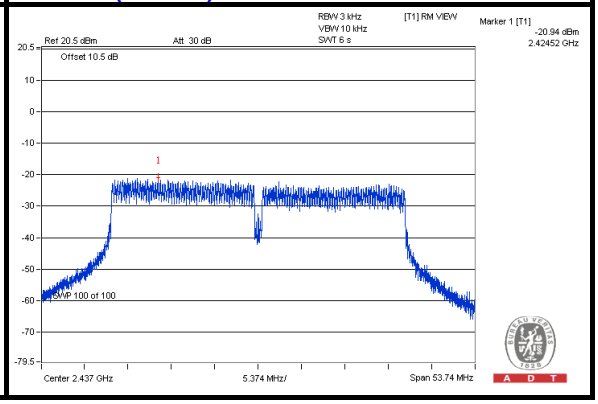
802.11g



802.11n (20MHz)



802.11n (40MHz)

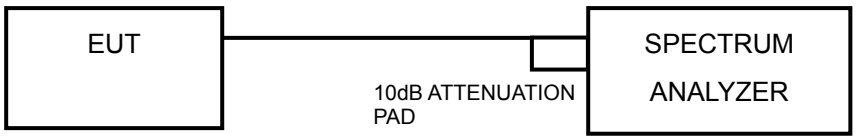


4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below -30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

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

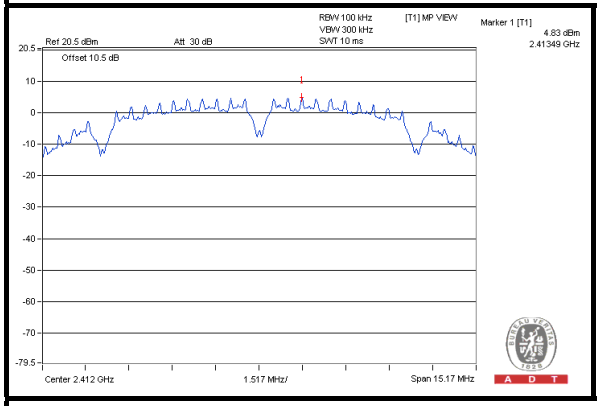
4.6.7 TEST RESULTS

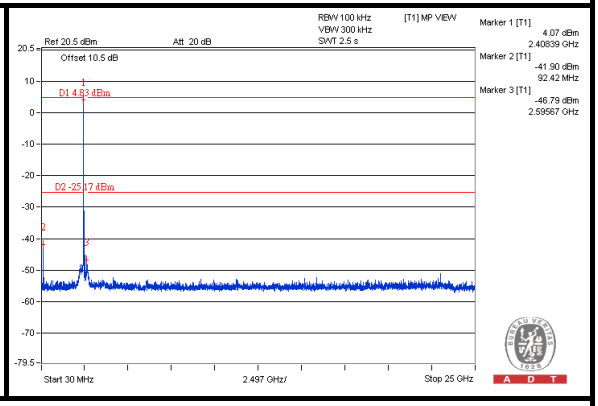
The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.

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

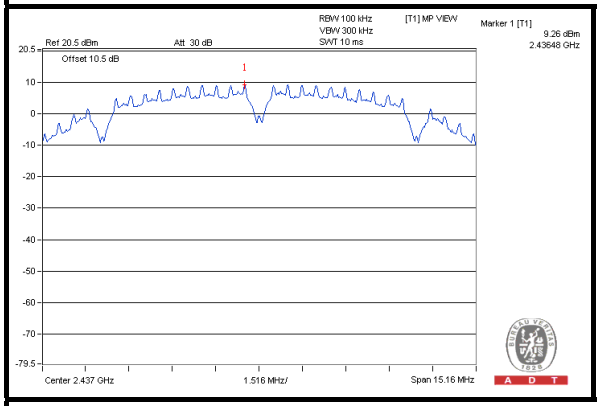
802.11b
CHAIN 0

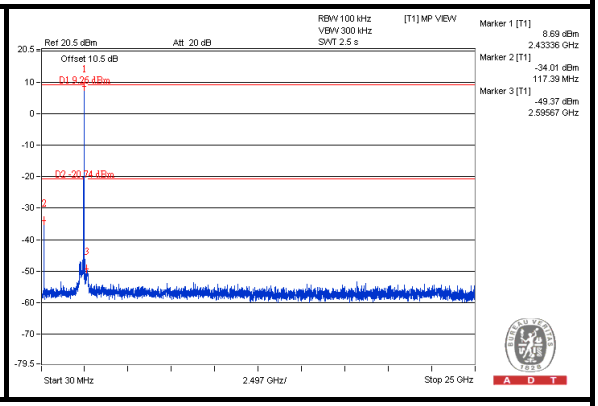
CH 1



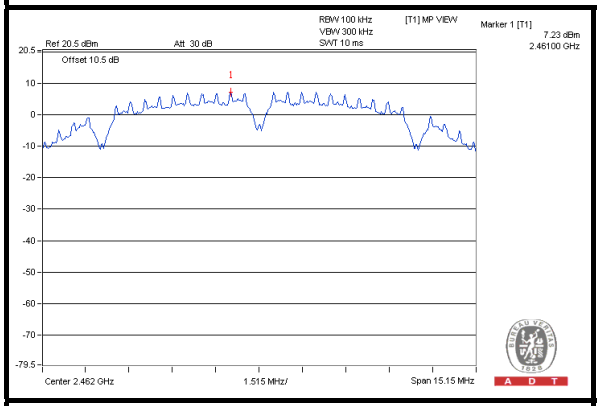


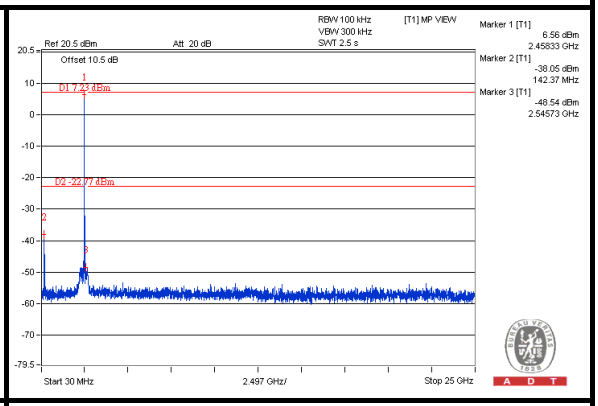
CH 6



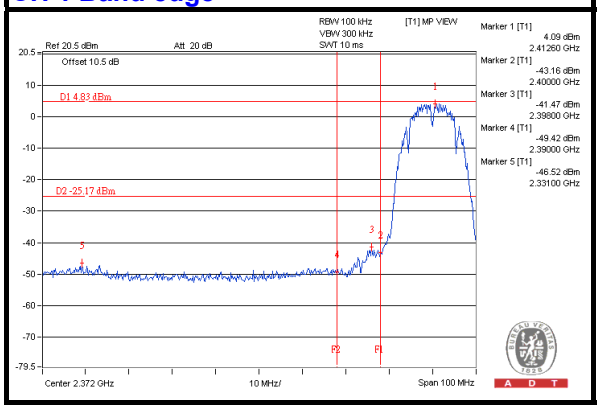


CH 11

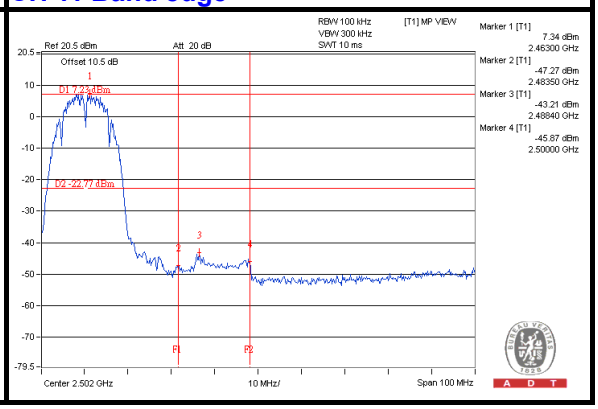




CH 1 Band edge

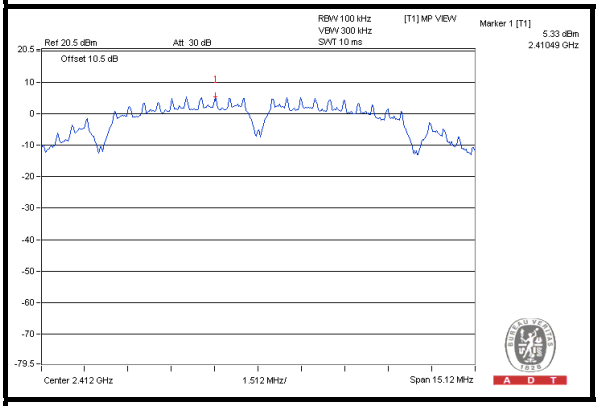


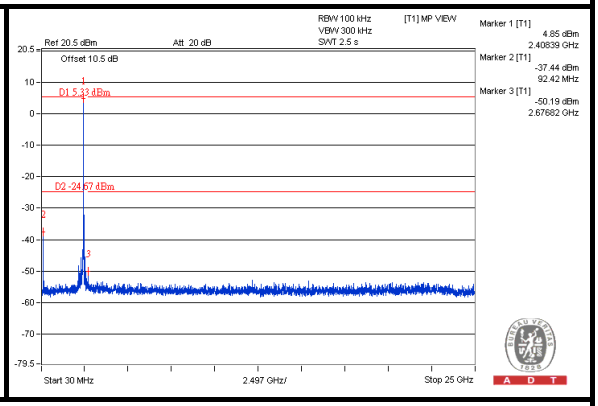
CH 11 Band edge



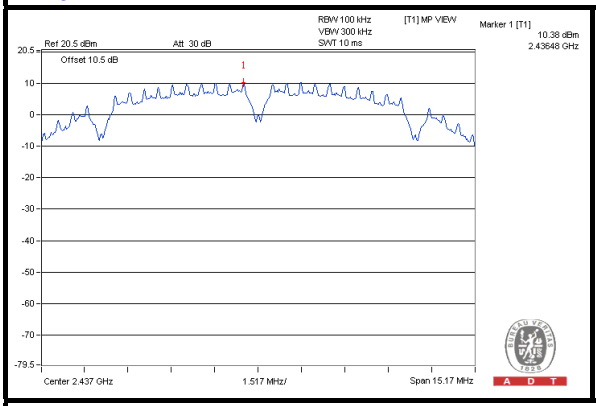
CHAIN 1

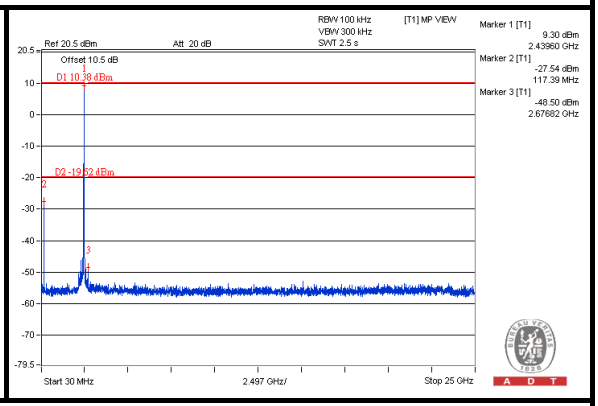
CH 1



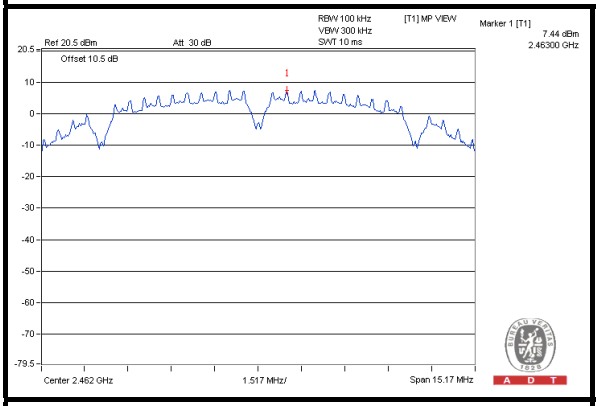


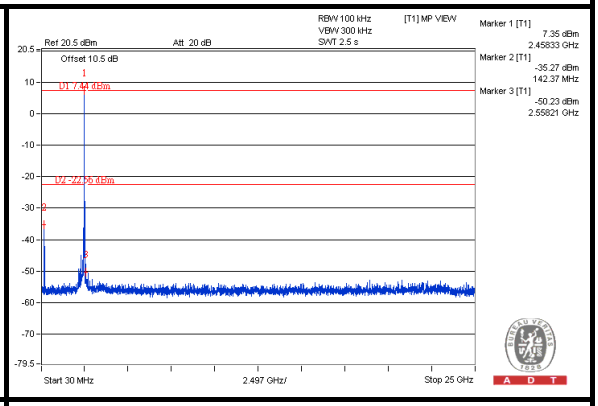
CH 6



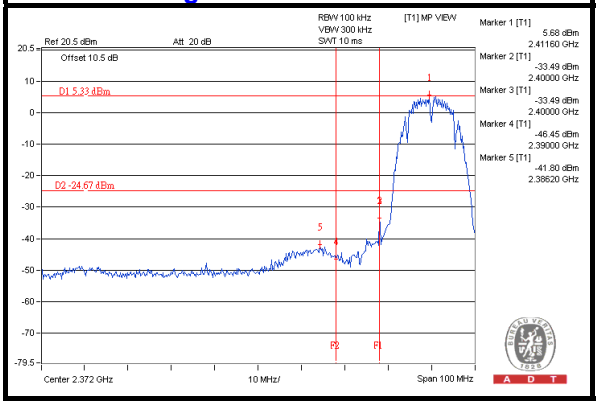


CH 11

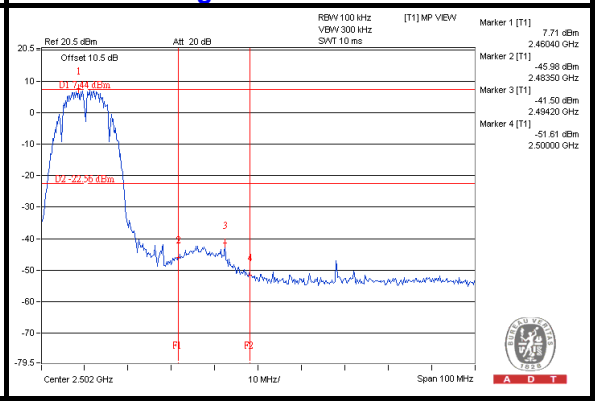




CH 1 Band edge

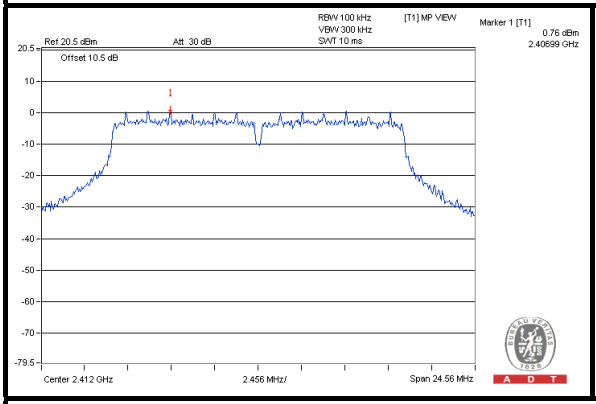


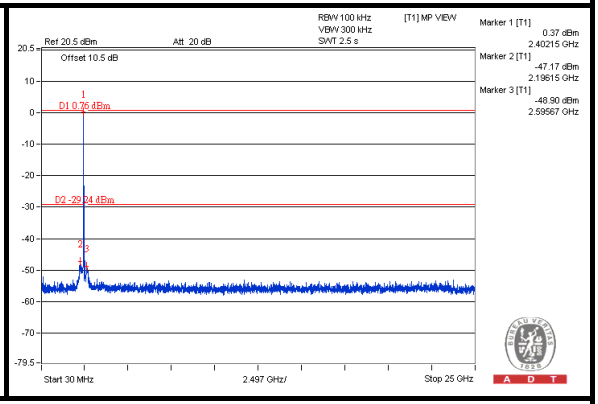
CH 11 Band edge



802.11g
CHAIN 0

CH 1





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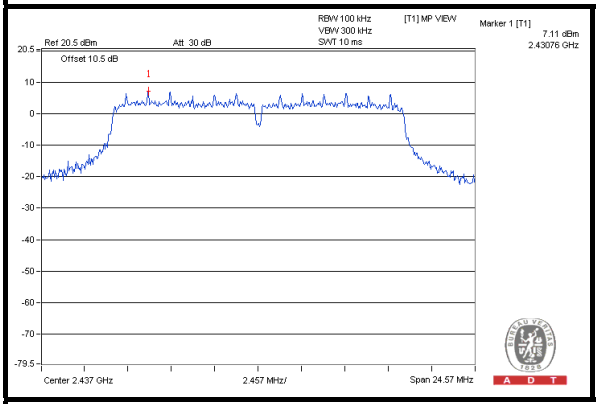
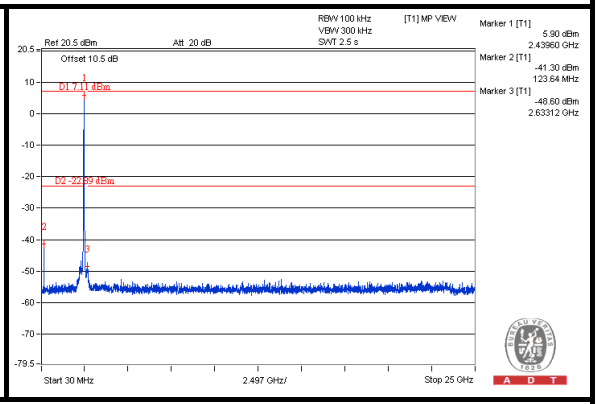
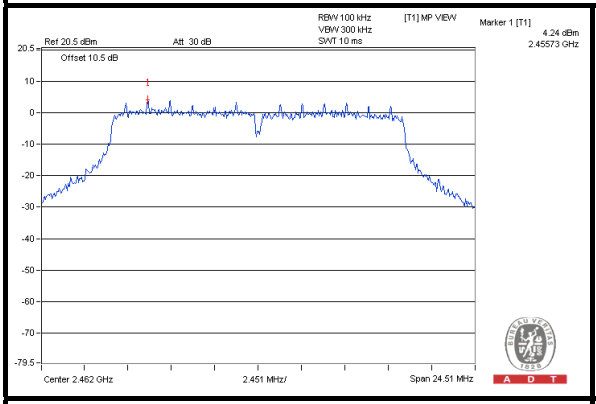
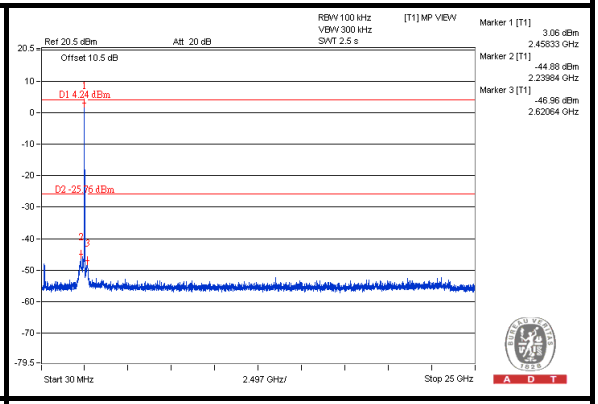


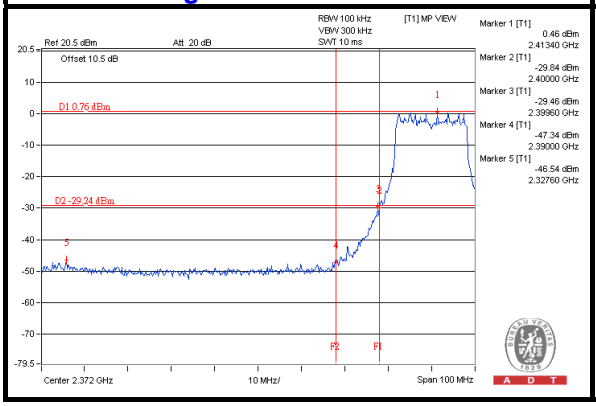


CH 11

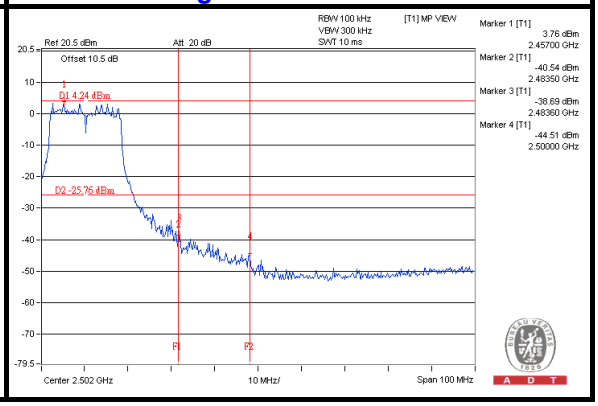




CH 1 Band edge

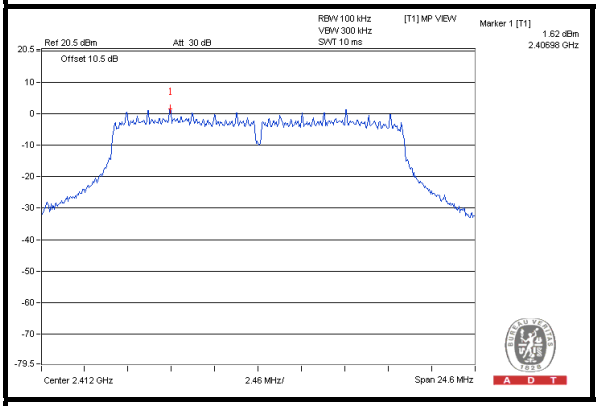


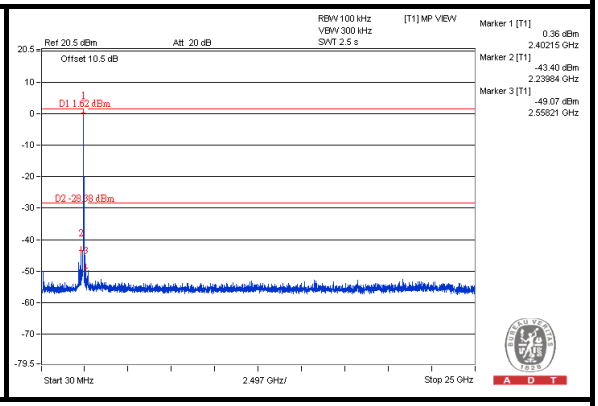
CH 11 Band edge



CHAIN 1

CH 1





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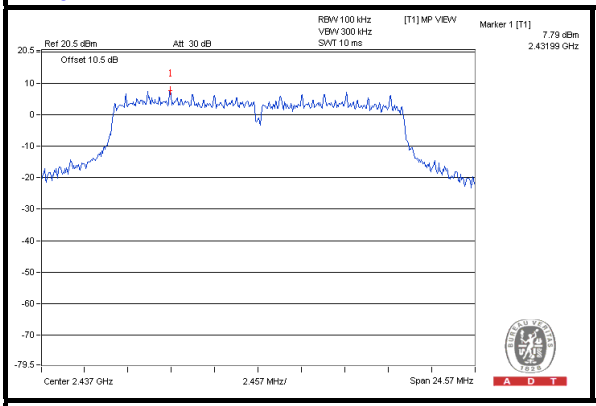
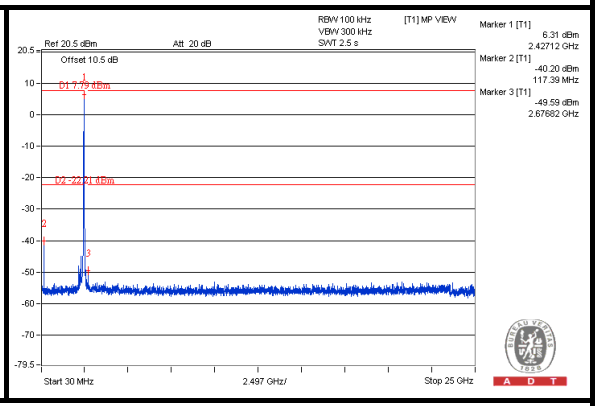
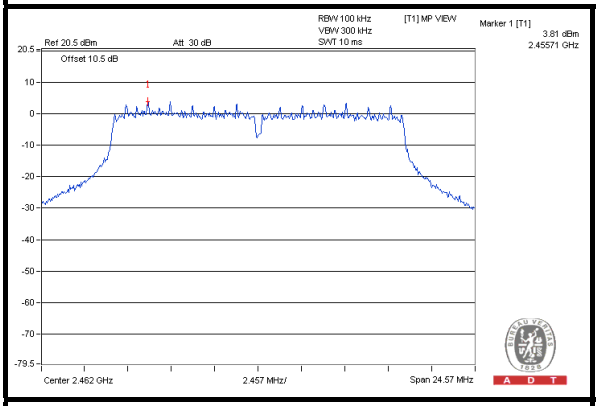
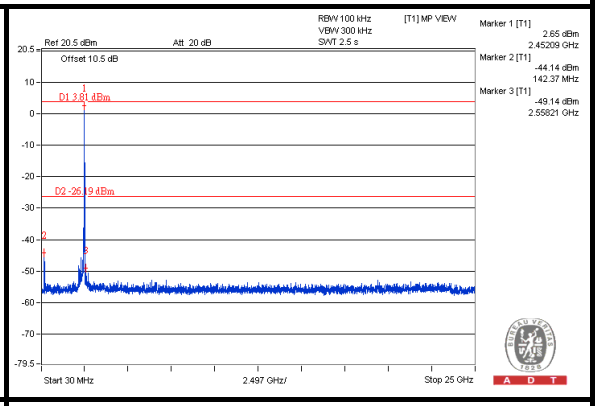


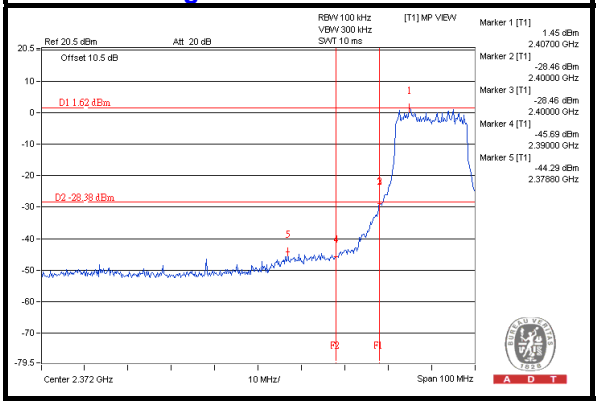


CH 11

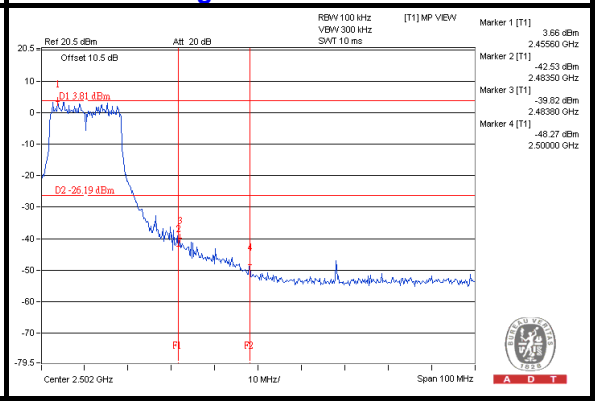




CH 1 Band edge

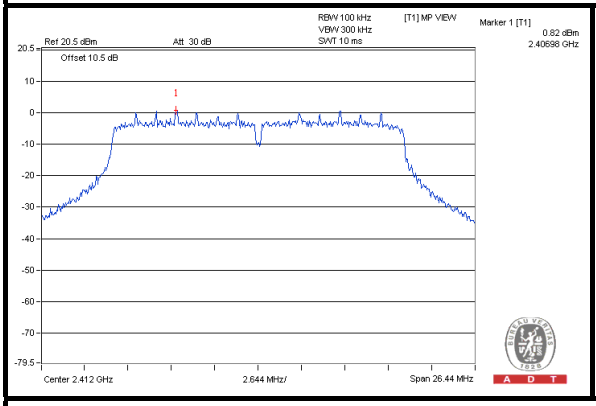


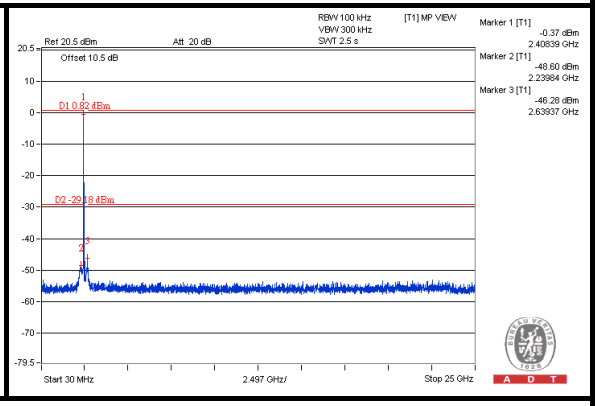
CH 11 Band edge



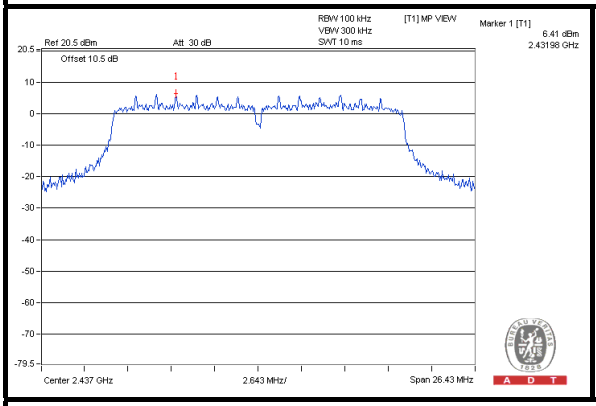
802.11n (20MHz)
CHAIN 0

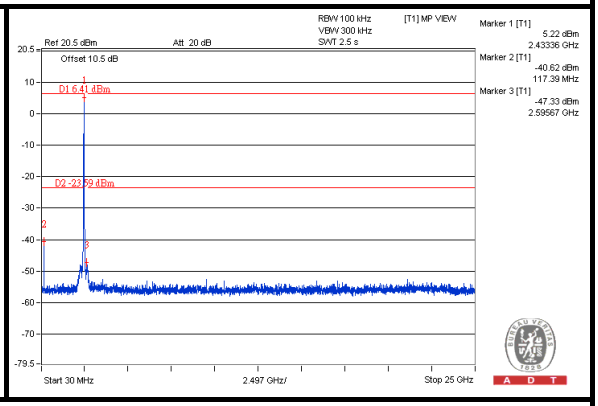
CH 1



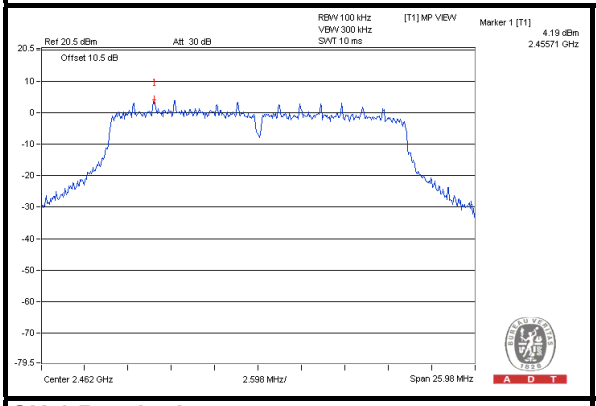


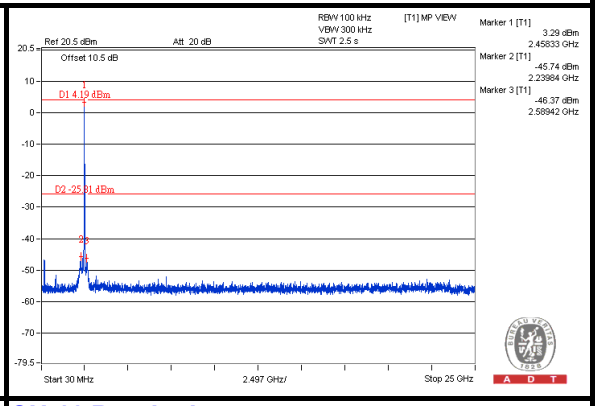
CH 6



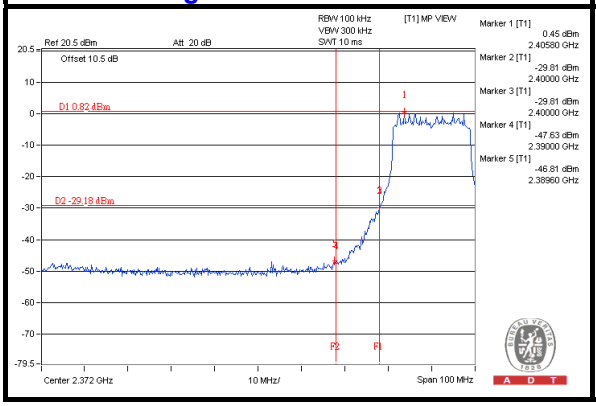


CH 11

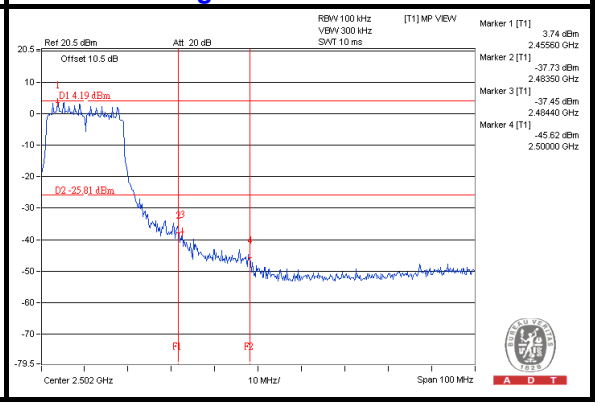




CH 1 Band edge

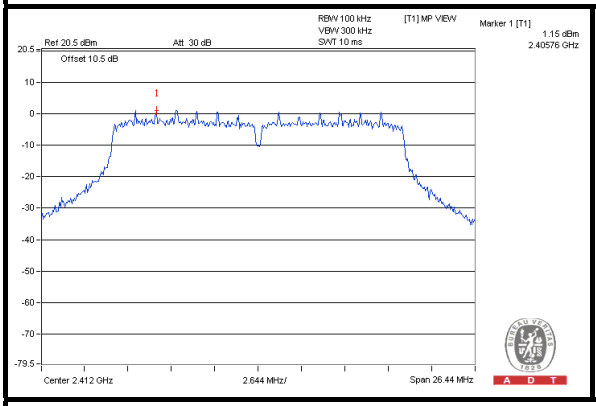


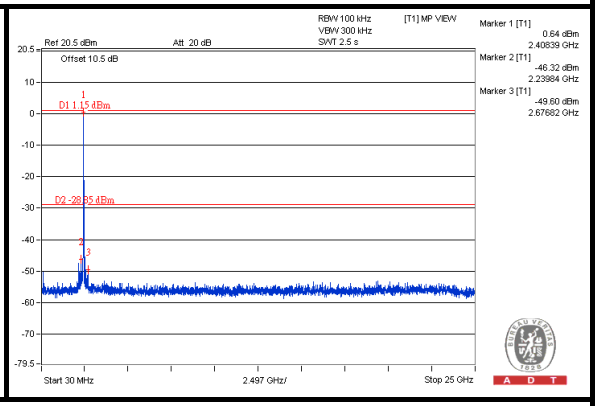
CH 11 Band edge



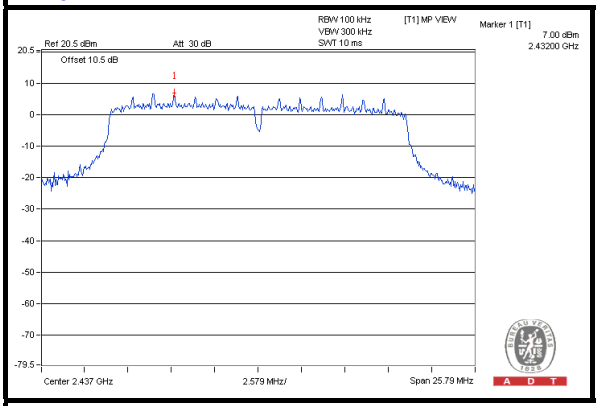
CHAIN 1

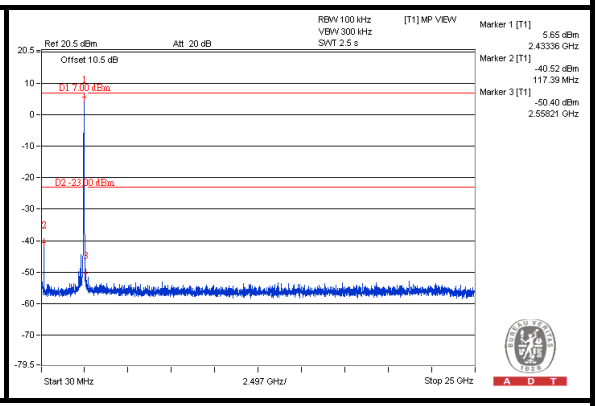
CH 1



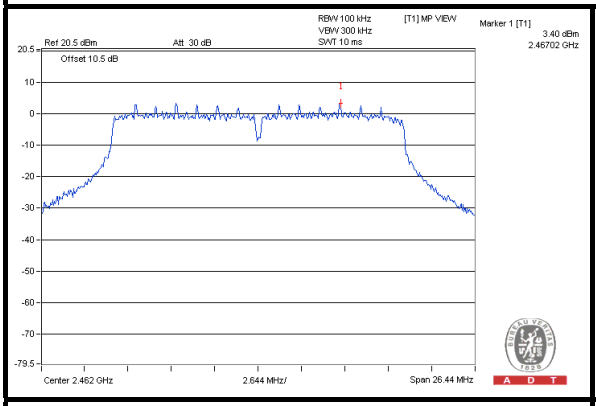


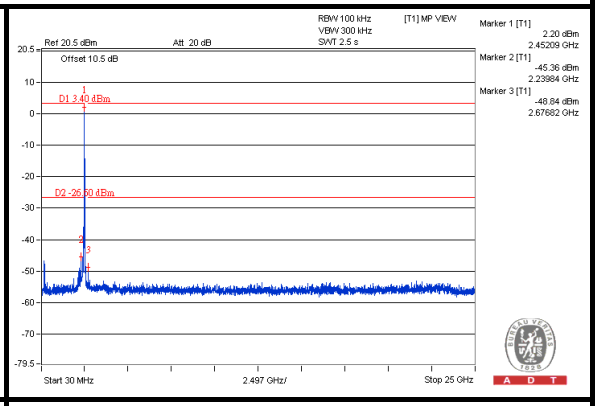
CH 6



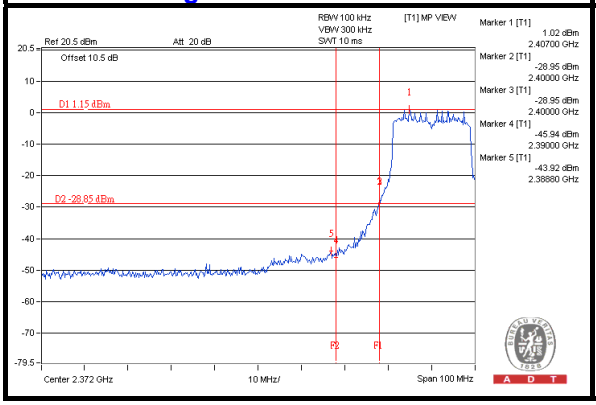


CH 11

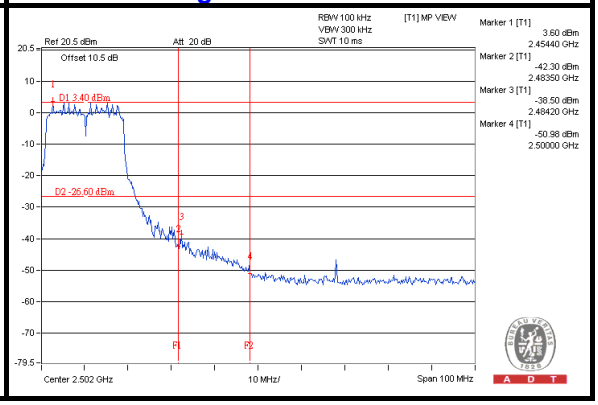




CH 1 Band edge

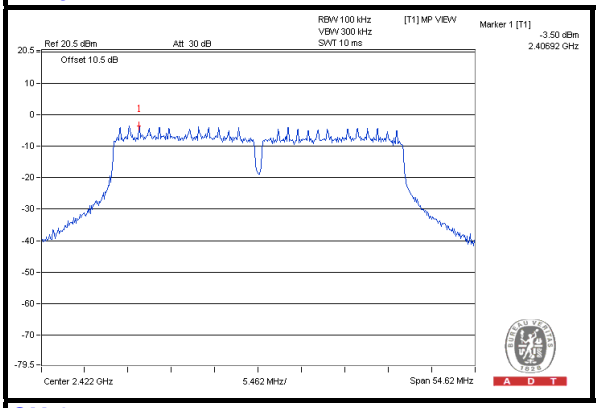


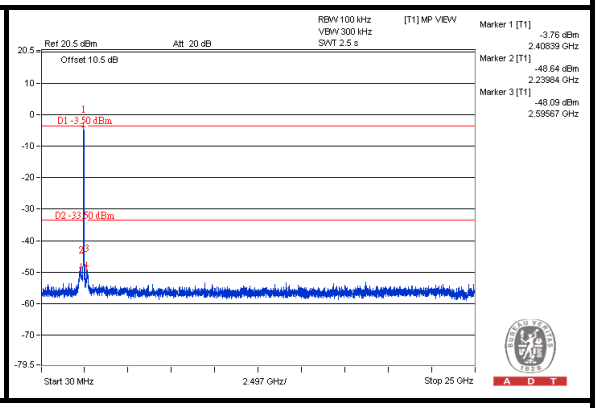
CH 11 Band edge



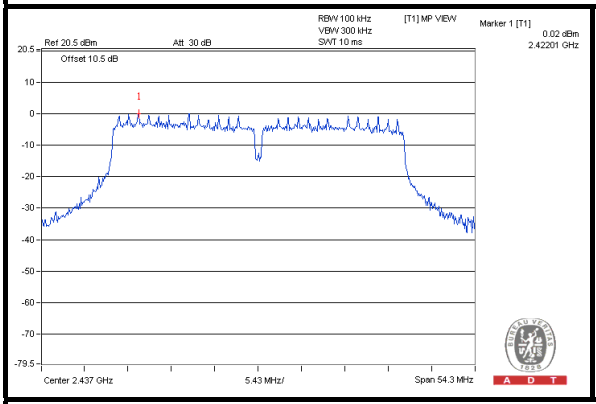
802.11n (40MHz)
CHAIN 0

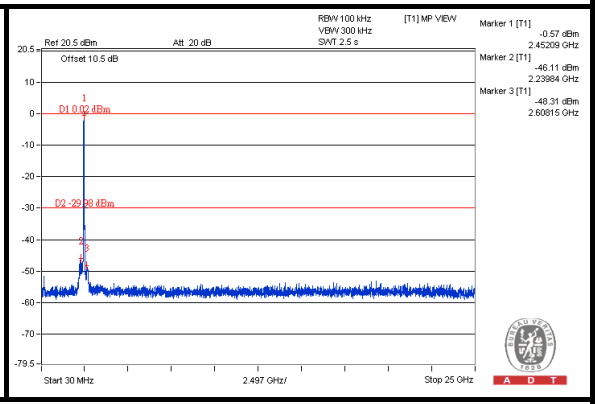
CH 3



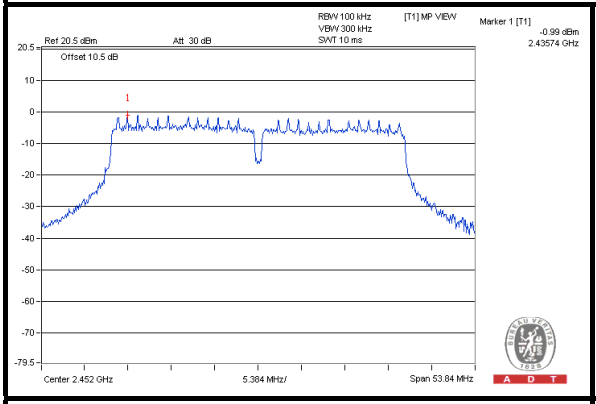


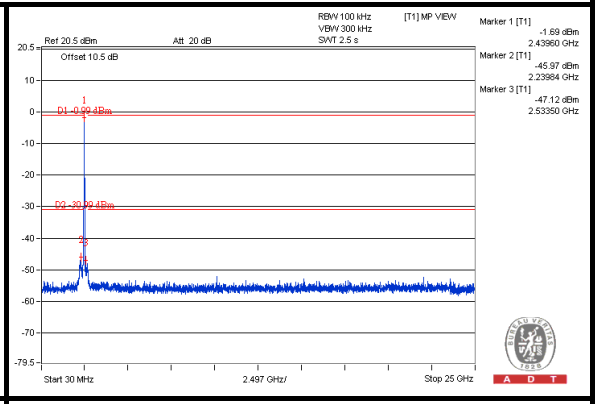
CH 6



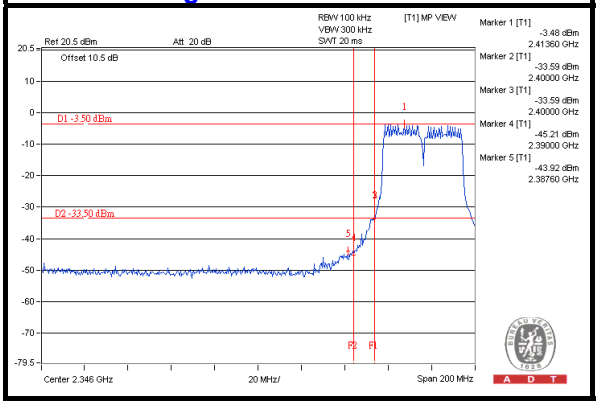


CH 9

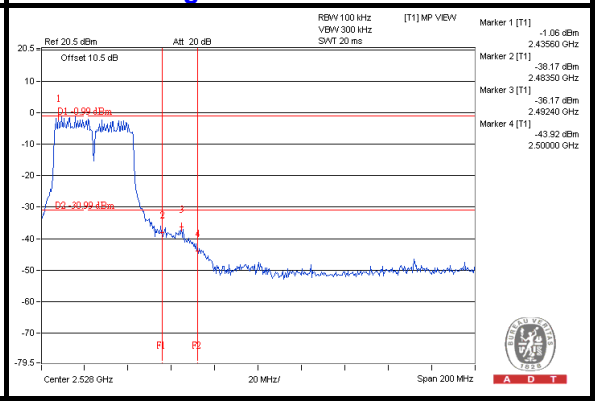




CH 3 Band edge

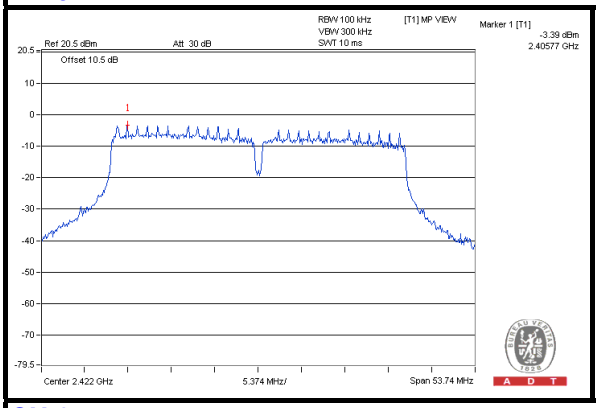


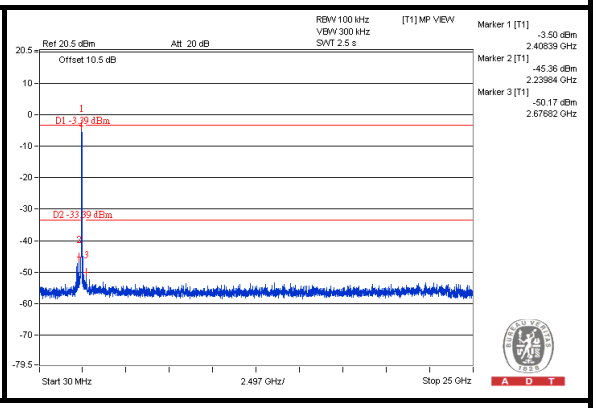
CH 9 Band edge



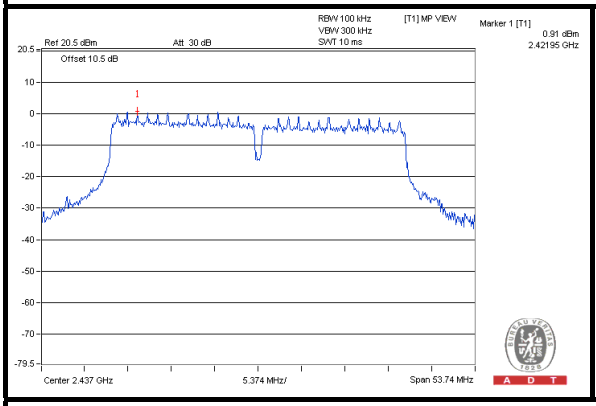
CHAIN 1

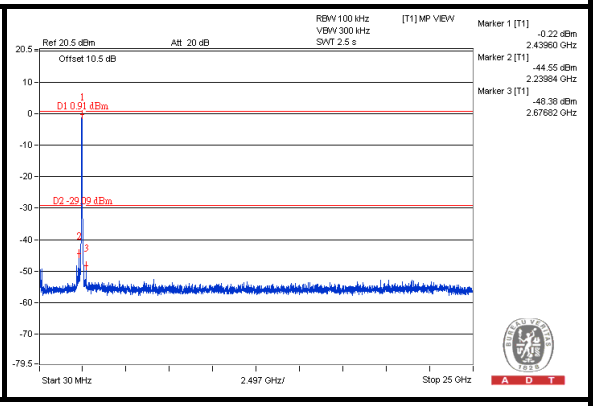
CH 3



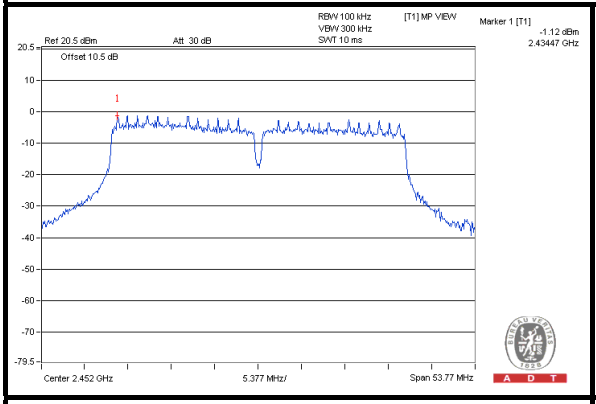


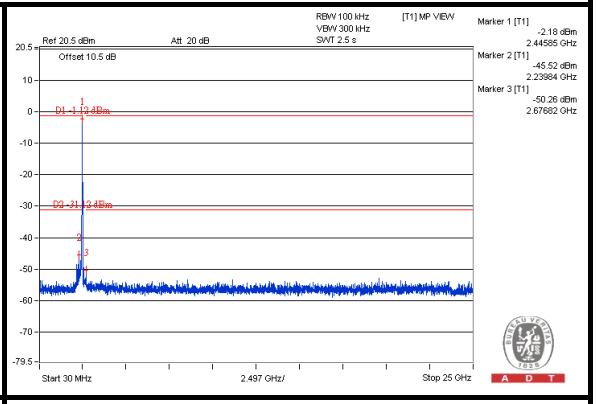
CH 6



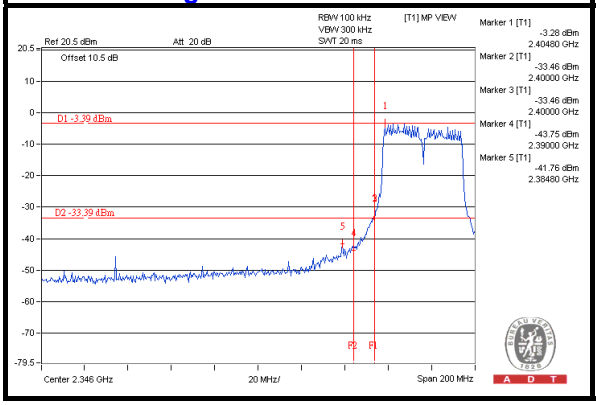


CH 9

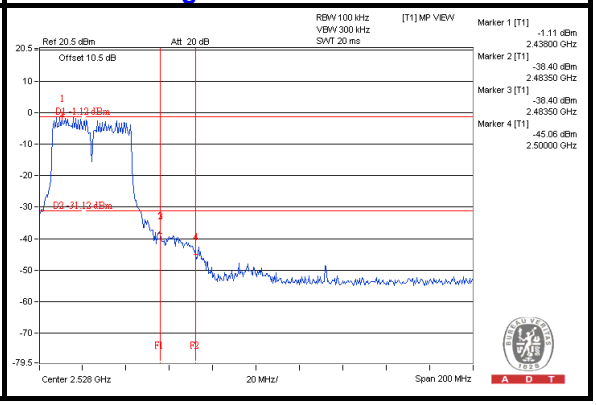




CH 3 Band edge



CH 9 Band edge



5. 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 30dB below the highest level of the desired power:

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 30dB under any condition of modulation.

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	27deg. 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	83.1 PK	84.3	-1.2	1.94 H	101	76.80	6.30
2	#5725.00	72.8 AV	74.0	-1.2	1.94 H	101	66.50	6.30
3	*5745.00	114.3 PK			1.90 H	104	74.10	40.20
4	*5745.00	104.0 AV			1.90 H	104	63.80	40.20
5	11490.00	64.3 PK	74.0	-9.7	1.00 H	53	46.20	18.10
6	11490.00	51.8 AV	54.0	-2.2	1.00 H	53	33.70	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	85.0 PK	86.2	-1.2	1.00 V	8	78.70	6.30
2	#5725.00	75.2 AV	76.4	-1.2	1.00 V	8	68.90	6.30
3	*5745.00	116.2 PK			1.00 V	15	76.00	40.20
4	*5745.00	106.4 AV			1.00 V	15	66.20	40.20
5	11490.00	62.1 PK	74.0	-11.9	1.00 V	23	44.00	18.10
6	11490.00	49.3 AV	54.0	-4.7	1.00 V	23	31.20	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	27deg. 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	114.4 PK			1.66 H	103	74.10	40.30
2	*5785.00	104.4 AV			1.66 H	103	64.10	40.30
3	11570.00	66.2 PK	74.0	-7.8	1.00 H	56	48.00	18.20
4	11570.00	52.6 AV	54.0	-1.4	1.00 H	56	34.40	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	116.3 PK			1.00 V	18	76.00	40.30
2	*5785.00	106.4 AV			1.00 V	18	66.10	40.30
3	11570.00	62.8 PK	74.0	-11.2	1.00 V	24	44.60	18.20
4	11570.00	49.8 AV	54.0	-4.2	1.00 V	24	31.60	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	27deg. 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	113.8 PK			1.65 H	103	73.50	40.30
2	*5825.00	103.4 AV			1.65 H	103	63.10	40.30
3	#5850.00	71.7 PK	83.8	-12.1	1.63 H	105	65.10	6.60
4	#5850.00	61.3 AV	73.4	-12.1	1.63 H	105	54.70	6.60
5	11650.00	66.4 PK	74.0	-7.6	1.00 H	55	48.30	18.10
6	11650.00	52.9 AV	54.0	-1.1	1.00 H	55	34.80	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	*5825.00	115.0 PK			1.00 V	17	74.70	40.30
2	*5825.00	104.6 AV			1.00 V	17	64.30	40.30
3	#5850.00	72.9 PK	85.0	-12.1	1.00 V	19	66.30	6.60
4	#5850.00	62.5 AV	74.6	-12.1	1.00 V	19	55.90	6.60
5	11650.00	62.0 PK	74.0	-12.0	1.00 V	28	43.90	18.10
6	11650.00	49.1 AV	54.0	-4.9	1.00 V	28	31.00	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 (20MHz)

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	27deg. 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	82.1 PK	83.5	-1.4	1.65 H	101	75.80	6.30
2	#5725.00	71.8 AV	73.2	-1.4	1.65 H	101	65.50	6.30
3	*5745.00	113.5 PK			1.68 H	104	73.30	40.20
4	*5745.00	103.2 AV			1.68 H	104	63.00	40.20
5	11490.00	66.4 PK	74.0	-7.6	1.07 H	62	48.30	18.10
6	11490.00	52.6 AV	54.0	-1.4	1.07 H	62	34.50	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	83.6 PK	85.0	-1.4	1.00 V	17	77.30	6.30
2	#5725.00	73.7 AV	75.1	-1.4	1.00 V	17	67.40	6.30
3	*5745.00	115.0 PK			1.00 V	24	74.80	40.20
4	*5745.00	105.1 AV			1.00 V	24	64.90	40.20
5	11490.00	62.1 PK	74.0	-11.9	1.00 V	46	44.00	18.10
6	11490.00	48.9 AV	54.0	-5.1	1.00 V	46	30.80	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	27deg. 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	113.5 PK			1.66 H	104	73.20	40.30
2	*5785.00	103.4 AV			1.66 H	104	63.10	40.30
3	11570.00	66.4 PK	74.0	-7.6	1.00 H	63	48.20	18.20
4	**11570.00**	**53.0 AV**	**54.0**	**-1.0**	**1.00 H**	**63**	**34.80**	**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	116.6 PK			1.00 V	17	76.30	40.30
2	*5785.00	106.3 AV			1.00 V	17	66.00	40.30
3	11570.00	63.0 PK	74.0	-11.0	1.00 V	44	44.80	18.20
4	11570.00	49.5 AV	54.0	-4.5	1.00 V	44	31.30	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	27deg. 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	113.0 PK			1.85 H	107	72.70	40.30
2	*5825.00	102.7 AV			1.85 H	107	62.40	40.30
3	#5850.00	70.7 PK	83.0	-12.3	1.82 H	101	64.10	6.60
4	#5850.00	60.4 AV	72.7	-12.3	1.82 H	101	53.80	6.60
5	11650.00	66.8 PK	74.0	-7.2	1.00 H	54	48.70	18.10
6	11650.00	52.6 AV	54.0	-1.4	1.00 H	54	34.50	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	*5825.00	115.2 PK			1.00 V	18	74.90	40.30
2	*5825.00	104.7 AV			1.00 V	18	64.40	40.30
3	#5850.00	72.9 PK	85.2	-12.3	1.00 V	17	66.30	6.60
4	#5850.00	62.4 AV	74.7	-12.3	1.00 V	17	55.80	6.60
5	11650.00	62.4 PK	74.0	-11.6	1.00 V	42	44.30	18.10
6	11650.00	49.8 AV	54.0	-4.2	1.00 V	42	31.70	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.

802.11n (40MHz)

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	27deg. 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	79.2 PK	80.8	-1.6	1.88 H	97	72.90	6.30
2	#5725.00	69.1 AV	70.7	-1.6	1.88 H	97	62.80	6.30
3	*5755.00	110.8 PK			1.87 H	99	70.60	40.20
4	*5755.00	100.7 AV			1.87 H	99	60.50	40.20
5	11510.00	65.0 PK	74.0	-9.0	1.00 H	60	46.90	18.10
6	11510.00	51.5 AV	54.0	-2.5	1.00 H	60	33.40	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	80.6 PK	82.2	-1.6	1.10 V	15	74.30	6.30
2	#5725.00	70.2 AV	71.8	-1.6	1.10 V	15	63.90	6.30
3	*5755.00	112.2 PK			1.09 V	20	72.00	40.20
4	*5755.00	101.8 AV			1.09 V	20	61.60	40.20
5	11510.00	62.2 PK	74.0	-11.8	1.00 V	44	44.10	18.10
6	11510.00	49.5 AV	54.0	-4.5	1.00 V	44	31.40	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.

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	24deg. C, 68%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	110.5 PK			1.90 H	98	70.20	40.30
2	*5795.00	100.5 AV			1.90 H	98	60.20	40.30
3	#5850.00	69.9 PK	80.5	-10.6	1.88 H	90	63.30	6.60
4	#5850.00	59.9 AV	70.5	-10.6	1.88 H	90	53.30	6.60
5	11590.00	64.6 PK	74.0	-9.4	1.03 H	56	46.50	18.10
6	11590.00	51.6 AV	54.0	-2.4	1.03 H	56	33.50	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	*5795.00	113.5 PK			1.00 V	18	73.20	40.30
2	*5795.00	102.8 AV			1.00 V	18	62.50	40.30
3	#5850.00	72.9 PK	83.5	-10.6	1.00 V	17	66.30	6.60
4	#5850.00	62.2 AV	72.8	-10.6	1.00 V	17	55.60	6.60
5	11590.00	60.7 PK	74.0	-13.3	1.00 V	47	42.60	18.10
6	11590.00	48.3 AV	54.0	-5.7	1.00 V	47	30.20	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)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 155	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. 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	76.5 PK	77.8	-1.3	1.69 H	93	70.20	6.30
2	#5725.00	65.3 AV	66.6	-1.3	1.69 H	93	59.00	6.30
3	*5775.00	107.8 PK			1.66 H	96	67.60	40.20
4	*5775.00	96.6 AV			1.66 H	96	56.40	40.20
5	11550.00	62.5 PK	74.0	-11.5	1.00 H	59	44.40	18.10
6	11550.00	49.7 AV	54.0	-4.3	1.00 H	59	31.60	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	77.9 PK	79.2	-1.3	1.00 V	16	71.60	6.30
2	#5725.00	66.8 AV	68.1	-1.3	1.00 V	16	60.50	6.30
3	*5775.00	109.2 PK			1.00 V	14	69.00	40.20
4	*5775.00	98.1 AV			1.00 V	14	57.90	40.20
5	11550.00	61.4 PK	74.0	-12.6	1.00 V	43	43.30	18.10
6	11550.00	48.4 AV	54.0	-5.6	1.00 V	43	30.30	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)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH	TESTED BY	Alan Wu
TEST MODE	A		

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	249.17	42.9 QP	46.0	-3.1	1.50 H	277	57.40	-14.50
2	375.29	43.1 QP	46.0	-2.9	1.00 H	125	54.40	-11.30
3	499.48	43.3 QP	46.0	-2.7	1.50 H	126	52.30	-9.00
4	600.38	43.6 QP	46.0	-2.4	1.50 H	325	50.60	-7.00
5	625.60	44.1 QP	46.0	-1.9	1.24 H	127	50.40	-6.30
6	751.73	40.7 QP	46.0	-5.3	1.00 H	91	44.40	-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	53.18	36.2 QP	40.0	-3.8	1.49 V	13	49.90	-13.70
2	62.89	36.2 QP	40.0	-3.8	1.00 V	203	50.90	-14.70
3	375.29	41.5 QP	46.0	-4.5	1.75 V	208	52.80	-11.30
4	499.48	42.7 QP	46.0	-3.3	1.00 V	179	51.70	-9.00
5	625.60	43.0 QP	46.0	-3.0	1.00 V	251	49.30	-6.30
6	875.91	41.4 QP	46.0	-4.6	1.24 V	133	43.60	-2.20

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH	TESTED BY	Alan Wu
TEST MODE	B		

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	249.17	43.5 QP	46.0	-2.5	1.25 H	296	58.00	-14.50
2	375.29	40.8 QP	46.0	-5.2	1.00 H	356	52.10	-11.30
3	499.48	43.0 QP	46.0	-3.0	1.49 H	148	52.00	-9.00
4	600.38	43.1 QP	46.0	-2.9	1.49 H	144	50.10	-7.00
5	625.60	42.5 QP	46.0	-3.5	1.25 H	160	48.80	-6.30
6	751.73	44.9 QP	46.0	-1.1	1.00 H	168	48.60	-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	38.2 QP	40.0	-1.8	1.00 V	98	52.90	-14.70
2	124.98	36.0 QP	43.5	-7.5	1.00 V	108	51.70	-15.70
3	499.48	44.4 QP	46.0	-1.6	1.00 V	168	53.40	-9.00
4	625.60	44.5 QP	46.0	-1.5	1.49 V	189	50.80	-6.30
5	751.73	40.2 QP	46.0	-5.8	2.00 V	198	43.90	-3.70
6	875.91	42.6 QP	46.0	-3.4	1.25 V	147	44.80	-2.20

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

5.2 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 TEST 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

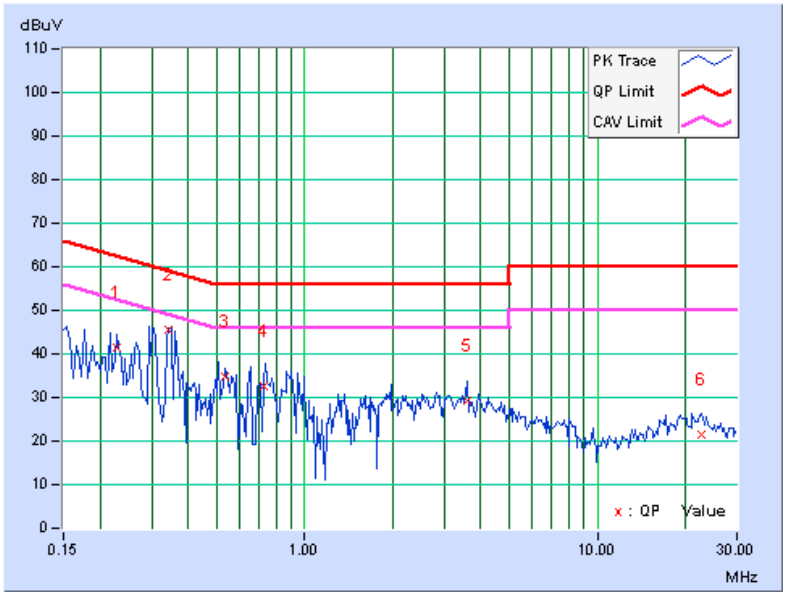
CONDUCTED WORST-CASE DATA：802.11n(20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

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	0.22812	0.17	41.16	39.02	41.33	39.19	62.52	52.52	-21.19	-13.33
2	0.34286	0.21	45.46	44.72	45.67	44.93	59.13	49.13	-13.46	-4.20
3	0.53605	0.23	34.40	33.04	34.63	33.27	56.00	46.00	-21.37	-12.73
4	0.72440	0.24	32.37	31.13	32.61	31.37	56.00	46.00	-23.39	-14.63
5	3.59074	0.38	28.86	20.44	29.24	20.82	56.00	46.00	-26.76	-25.18
6	22.55859	1.36	20.25	14.37	21.61	15.73	60.00	50.00	-38.39	-34.27

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.

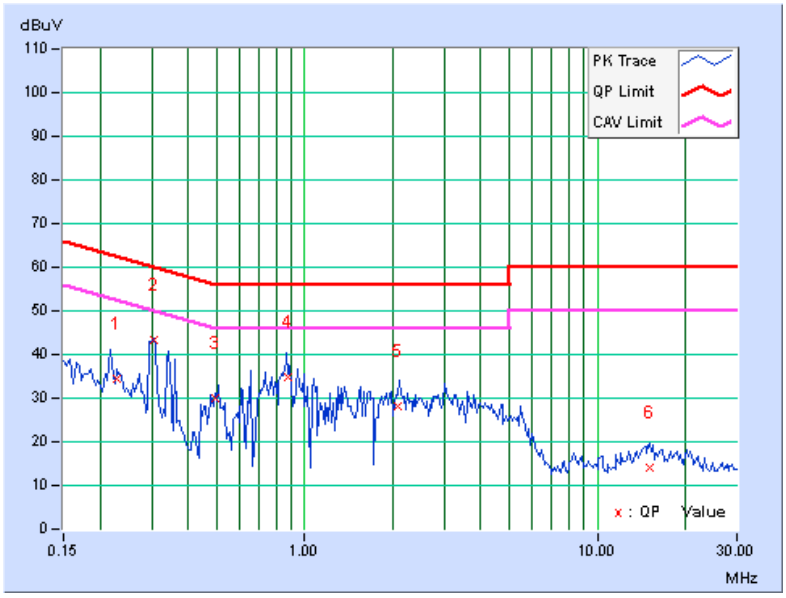


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

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	0.22912	0.18	34.23	30.78	34.41	30.96	62.48	52.48	-28.07	-21.52
2	0.30625	0.21	42.96	42.06	43.17	42.27	60.07	50.07	-16.90	-7.80
3	0.49667	0.24	29.82	28.72	30.06	28.96	56.06	46.06	-25.99	-17.09
4	0.87628	0.25	34.42	29.74	34.67	29.99	56.00	46.00	-21.33	-16.01
5	2.09414	0.28	27.69	21.28	27.97	21.56	56.00	46.00	-28.03	-24.44
6	15.10938	0.76	13.47	7.78	14.23	8.54	60.00	50.00	-45.77	-41.46

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.

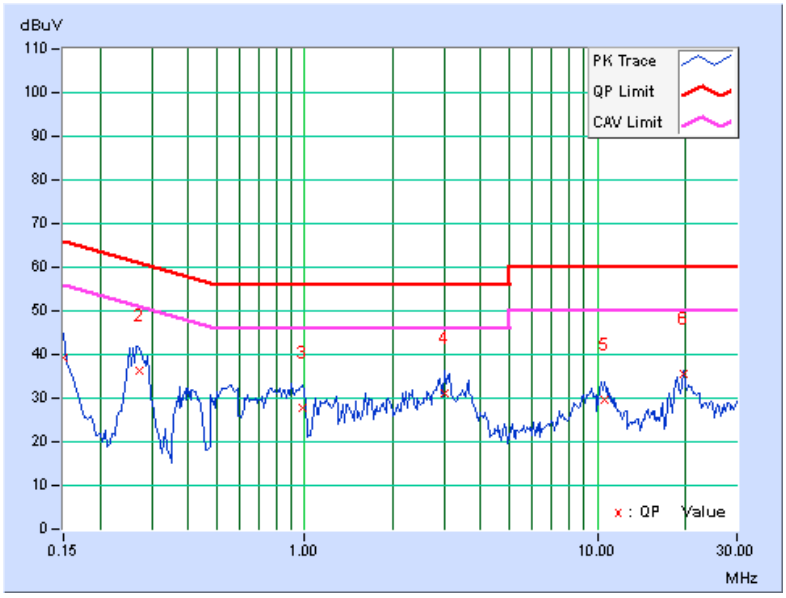


PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

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	0.15000	0.16	38.98	26.05	39.14	26.21	66.00	56.00	-26.86	-29.79
2	0.27228	0.19	36.10	26.56	36.29	26.75	61.05	51.05	-24.76	-24.30
3	0.98203	0.25	27.59	21.00	27.84	21.25	56.00	46.00	-28.16	-24.75
4	3.00391	0.35	30.69	21.76	31.04	22.11	56.00	46.00	-24.96	-23.89
5	10.53906	0.75	28.74	22.99	29.49	23.74	60.00	50.00	-30.51	-26.26
6	19.83594	1.22	34.20	33.35	35.42	34.57	60.00	50.00	-24.58	-15.43

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.

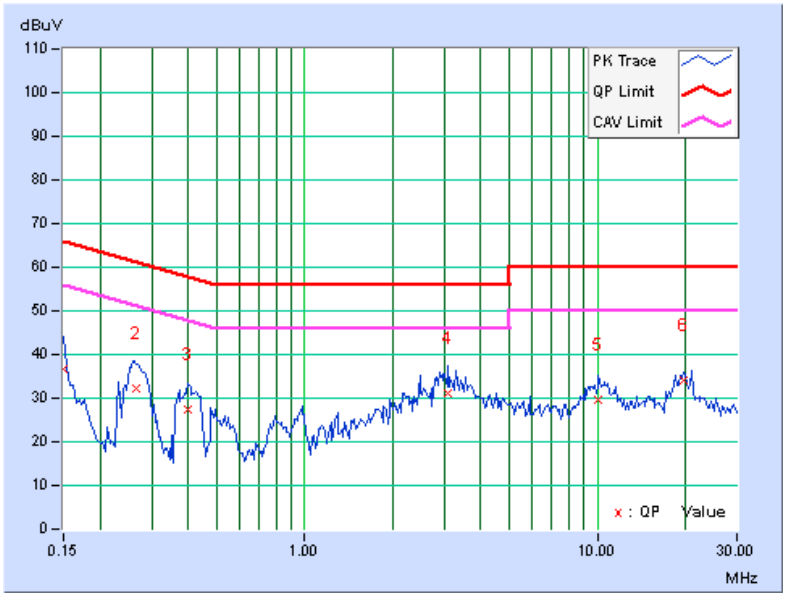


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

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	0.15000	0.16	36.51	25.56	36.67	25.72	66.00	56.00	-29.33	-30.28
2	0.26583	0.19	32.17	23.75	32.36	23.94	61.25	51.25	-28.88	-27.30
3	0.40000	0.24	27.11	19.57	27.35	19.81	57.85	47.85	-30.50	-28.04
4	3.08984	0.33	30.74	22.42	31.07	22.75	56.00	46.00	-24.93	-23.25
5	10.04297	0.60	29.14	23.84	29.74	24.44	60.00	50.00	-30.26	-25.56
6	19.83203	0.92	33.28	30.62	34.20	31.54	60.00	50.00	-25.80	-18.46

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
		CHAIN 0	CHAIN 1		
149	5745	16.44	16.44	0.5	PASS
157	5785	16.44	16.43	0.5	PASS
165	5825	16.34	16.46	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.68	16.32	0.5	PASS
157	5785	17.65	16.69	0.5	PASS
165	5825	17.68	17.66	0.5	PASS

802.11n (40MHz)

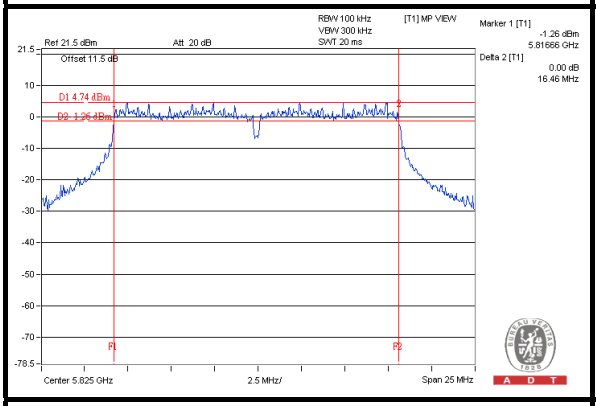
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.14	35.55	0.5	PASS
159	5795	36.14	35.54	0.5	PASS

802.11ac (80MHz)

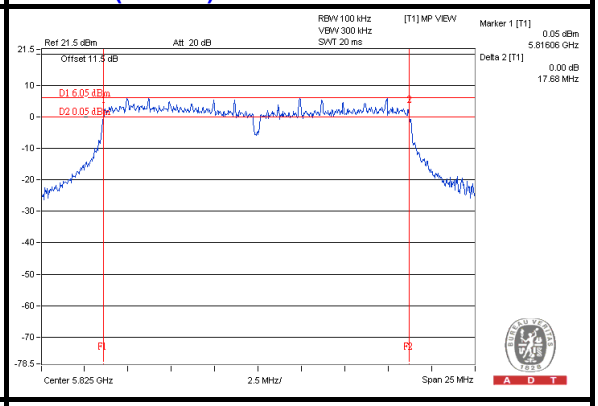
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
155	5775	75.46	75.93	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

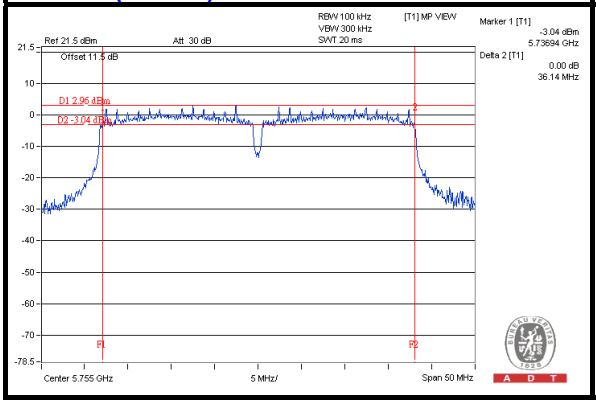
802.11a



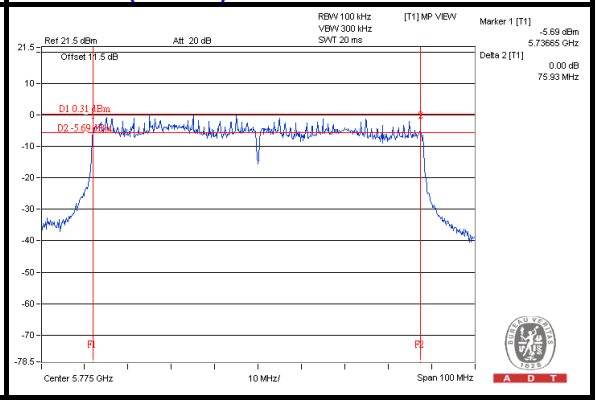
802.11n (20MHz)



802.11n (40MHz)



802.11ac (80MHz)



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,

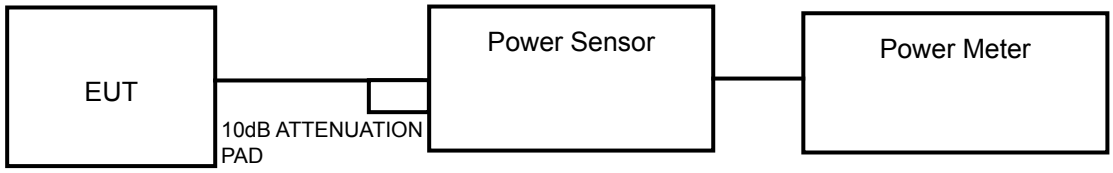
Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;
Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

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

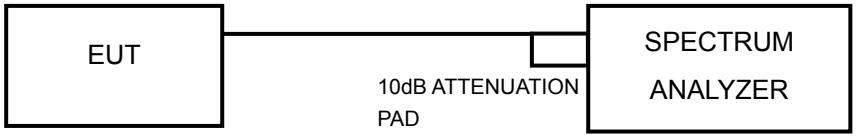
5.4.2 TEST SETUP

FOR POWER OUTPUT MEASUREMENT

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.
8) Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select peak detector). If the instrument does not have a band power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS bandwidth.

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

802.11a

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	19.98	19.12	181.199	22.58	30	PASS
157	5785	20.51	18.60	184.904	22.67	30	PASS
165	5825	20.22	19.10	186.479	22.71	30	PASS

802.11n (20MHz)

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	19.81	19.03	175.702	22.45	30	PASS
157	5785	20.98	19.05	205.667	23.13	30	PASS
165	5825	20.24	18.75	180.671	22.57	30	PASS

802.11n (40MHz)

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	19.34	18.43	155.564	21.92	30	PASS
159	5795	21.02	19.47	**214.986**	23.32	30	PASS

802.11ac (80MHz)

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
155	5775	19.41	17.83	147.971	21.70	30	PASS

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

TX chain	Chan.	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD without Duty Factor (dBm/3kHz)	Duty Factor	Total PSD with Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-14.31	3.01	-11.30	0.13	-11.17	6.09	PASS
	157	5785	-13.98	3.01	-10.97	0.13	-10.84	6.09	PASS
	165	5825	-14.72	3.01	-11.71	0.13	-11.58	6.09	PASS
1	149	5745	-15.37	3.01	-12.36	0.13	-12.23	6.09	PASS
	157	5785	-16.75	3.01	-13.74	0.13	-13.61	6.09	PASS
	165	5825	-16.00	3.01	-12.99	0.13	-12.86	6.09	PASS

NOTE: Directional gain = 4.9dBi + 10log(2) = 7.91dBi > 6dBi , so the power density limit shall be reduced to 8-(7.91-6) = 6.09dBm.

802.11n (20MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD without Duty Factor (dBm/3kHz)	Duty Factor	Total PSD with Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-15.35	3.01	-12.34	0.14	-12.20	6.09	PASS
	157	5785	-14.38	3.01	-11.37	0.14	-11.23	6.09	PASS
	165	5825	-15.21	3.01	-12.20	0.14	-12.06	6.09	PASS
1	149	5745	-15.88	3.01	-12.87	0.14	-12.73	6.09	PASS
	157	5785	-16.41	3.01	-13.40	0.14	-13.26	6.09	PASS
	165	5825	-16.35	3.01	-13.34	0.14	-13.20	6.09	PASS

NOTE: Directional gain = 4.9dBi + 10log(2) = 7.91dBi > 6dBi , so the power density limit shall be reduced to 8-(7.91-6) = 6.09dBm.

802.11n (40MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD without Duty Factor (dBm/3kHz)	Duty Factor	Total PSD with Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-18.24	3.01	-15.23	0.30	-14.93	6.09	PASS
	159	5795	-17.62	3.01	-14.61	0.30	-14.31	6.09	PASS
1	151	5755	-18.14	3.01	-15.13	0.30	-14.83	6.09	PASS
	159	5795	-19.21	3.01	-16.20	0.60	-15.90	6.09	PASS

NOTE: Directional gain = 4.9dBi + 10log(2) = 7.91dBi > 6dBi , so the power density limit shall be reduced to 8-(7.91-6) = 6.09dBm.

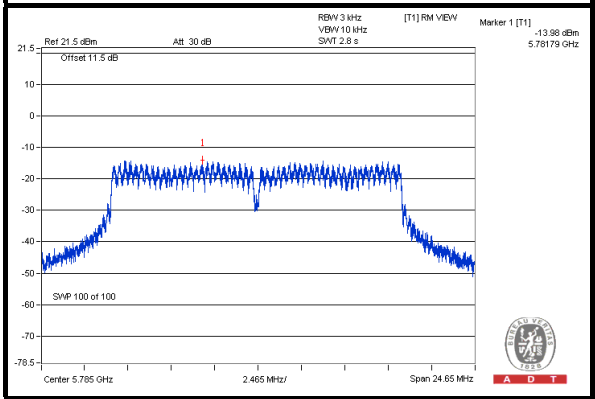
802.11ac (80MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD without Duty Factor (dBm/3kHz)	Duty Factor	Total PSD with Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	155	5775	-21.86	3.01	-18.85	0.52	-18.33	6.09	PASS
1	155	5775	-22.61	3.01	-19.60	0.52	-19.08	6.09	PASS

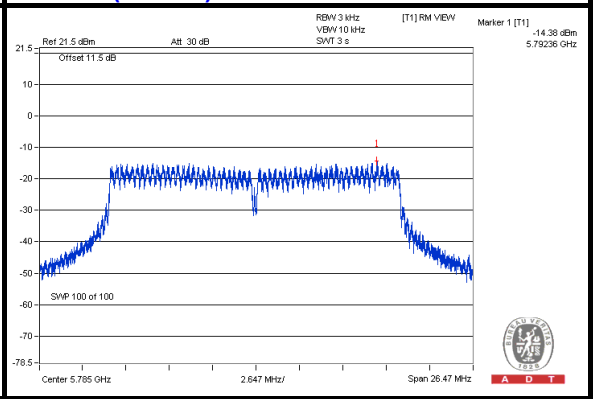
NOTE: Directional gain = 4.9dBi + 10log(2) = 7.91dBi > 6dBi , so the power density limit shall be reduced to 8-(7.91-6) = 6.09dBm.

SPECTRUM PLOT OF WORST VALUE

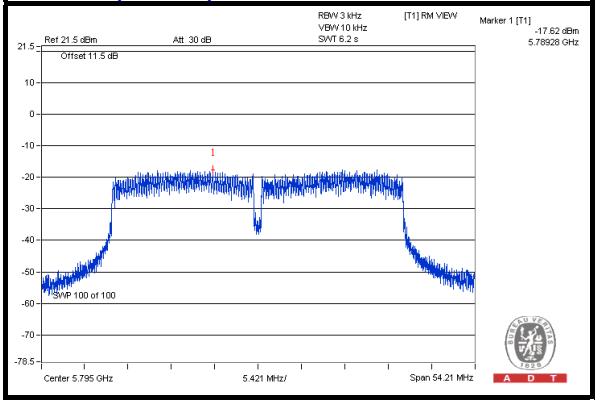
802.11a



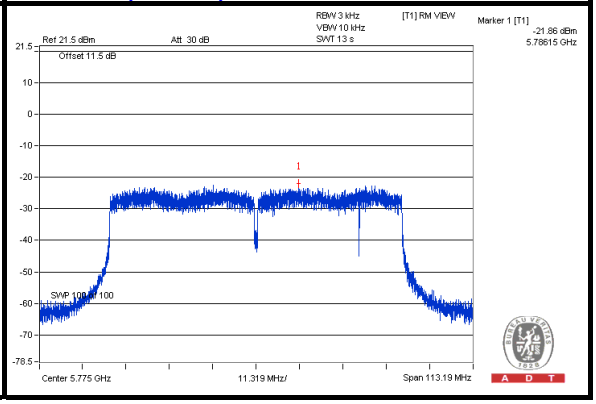
802.11n (20MHz)



802.11n (40MHz)



802.11ac (80MHz)



5.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below –30dB 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

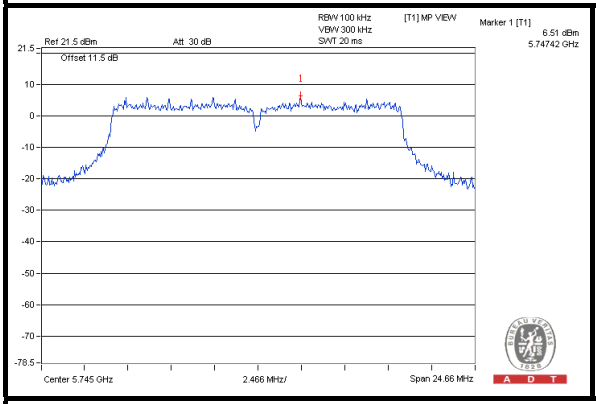
5.6.7 TEST RESULTS

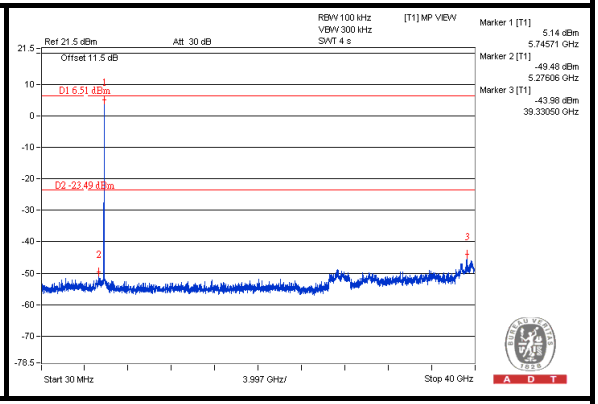
The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.

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

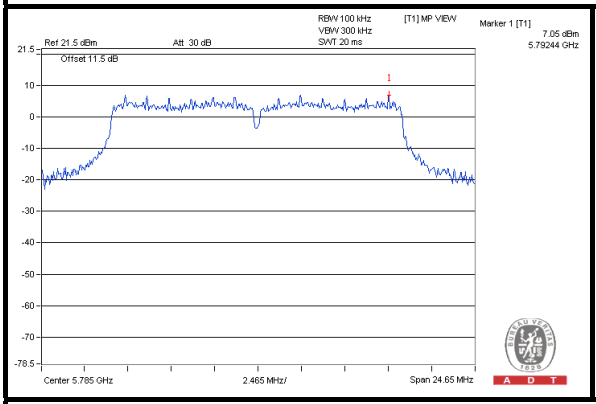
802.11a
CHAIN 0

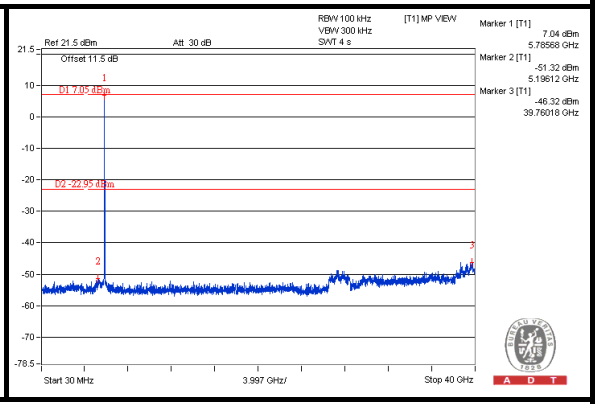
CH 149



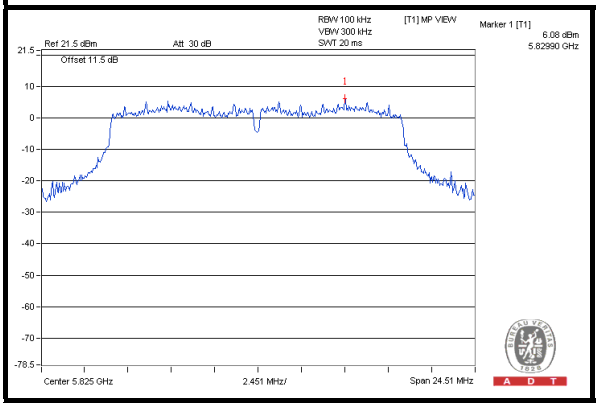


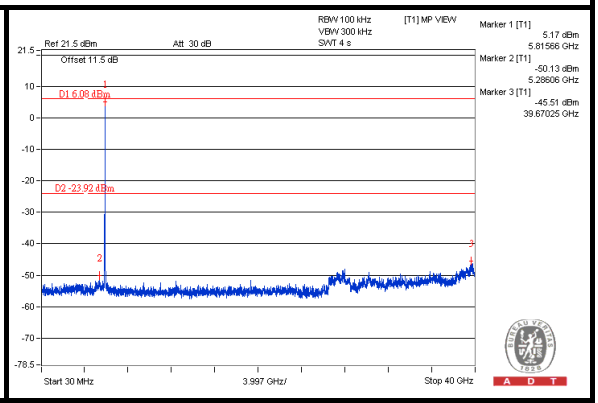
CH 157



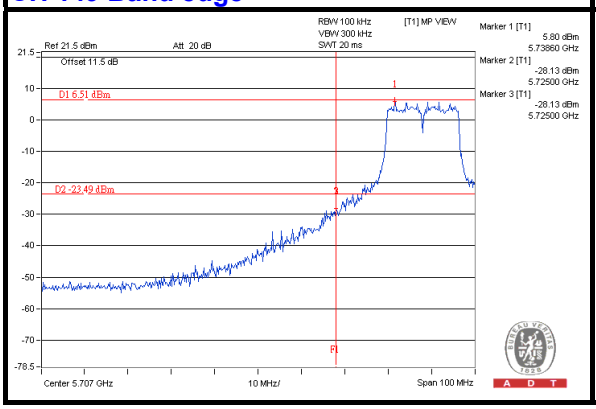


CH 165

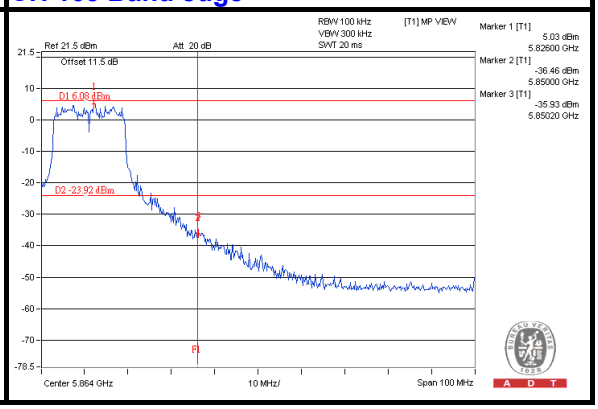




CH 149 Band edge

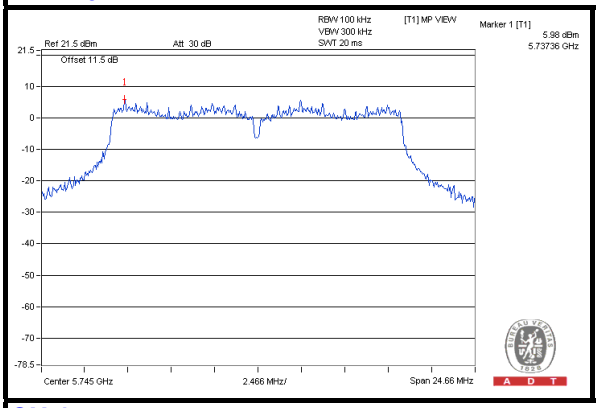


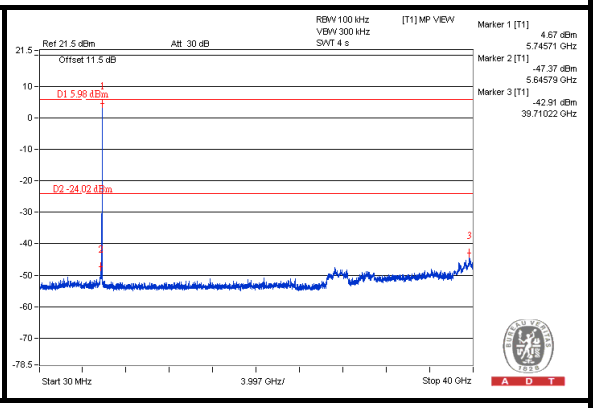
CH 165 Band edge



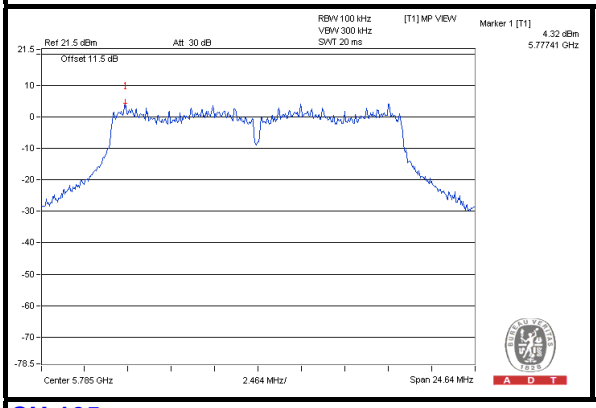
CHAIN 1

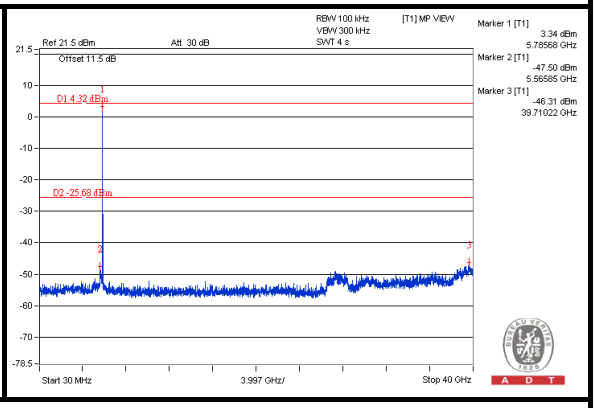
CH 149



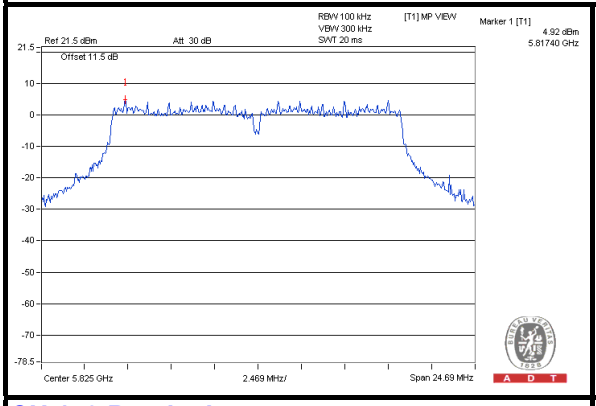


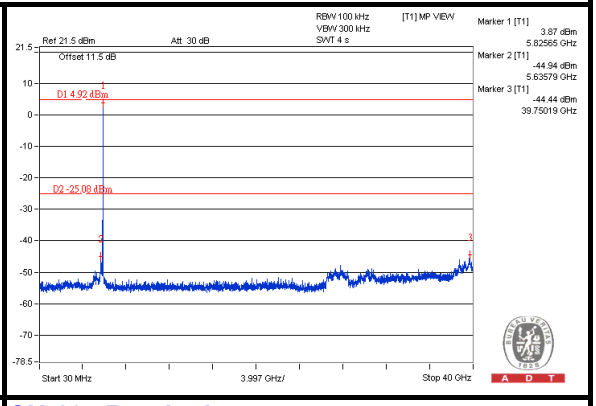
CH 157



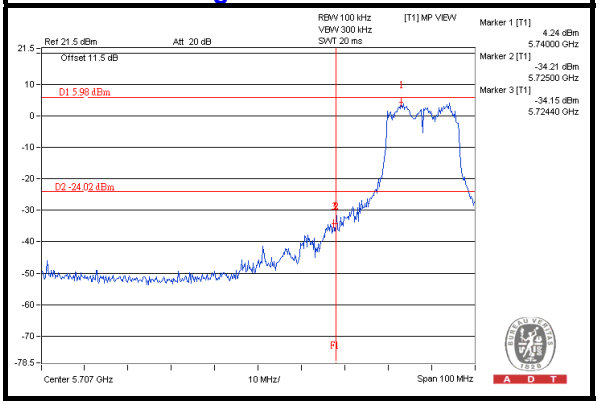


CH 165

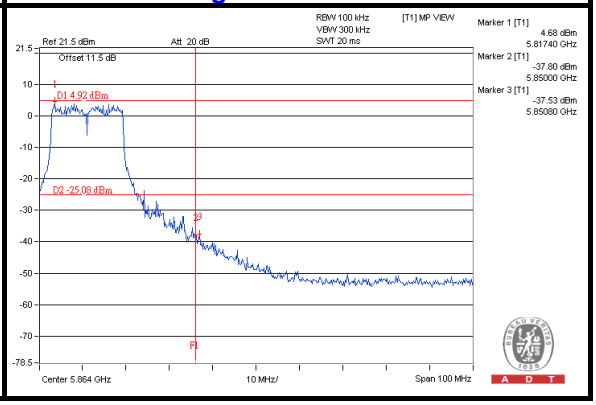




CH 149 Band edge

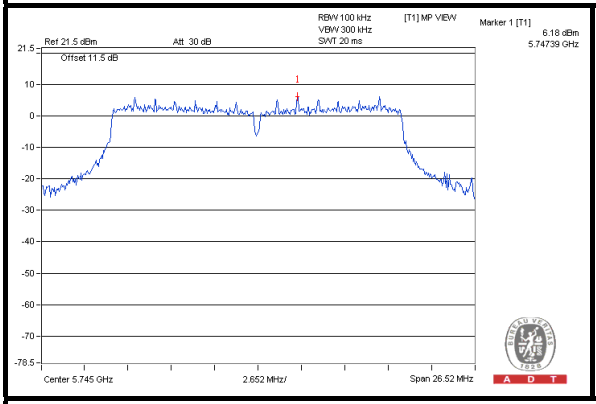


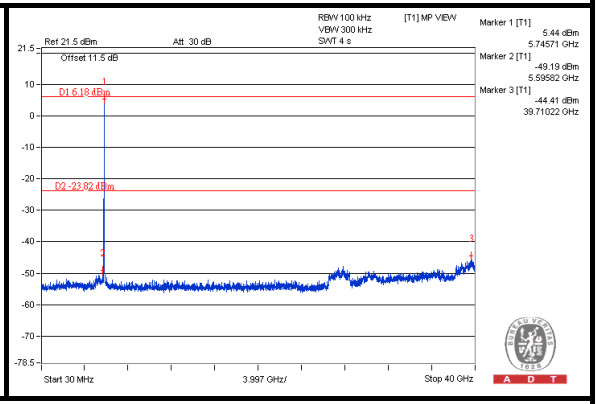
CH 165 Band edge



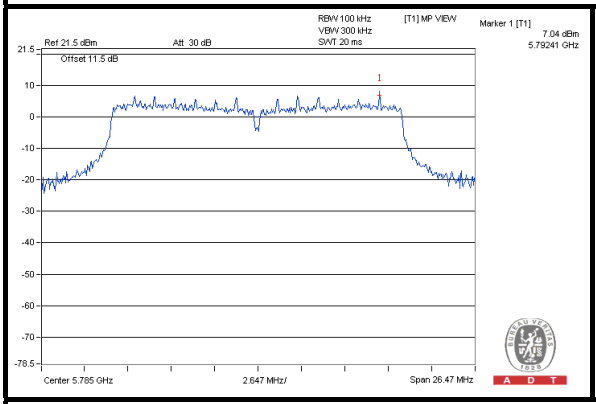
802.11n (20MHz)
CHAIN 0

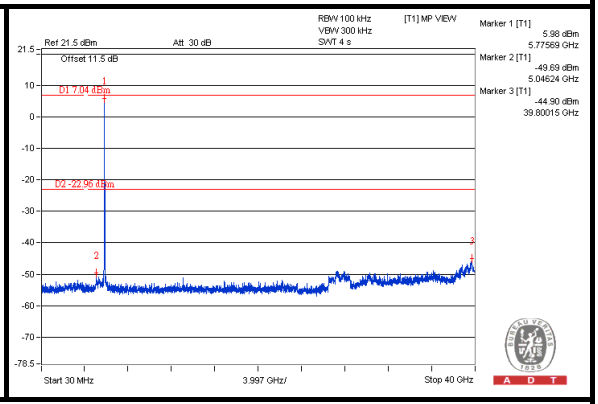
CH 149



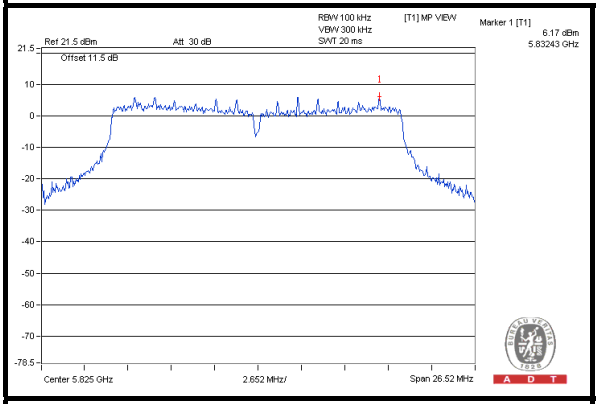


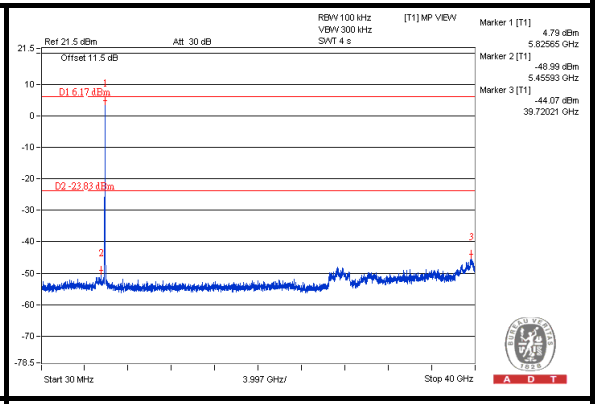
CH 157



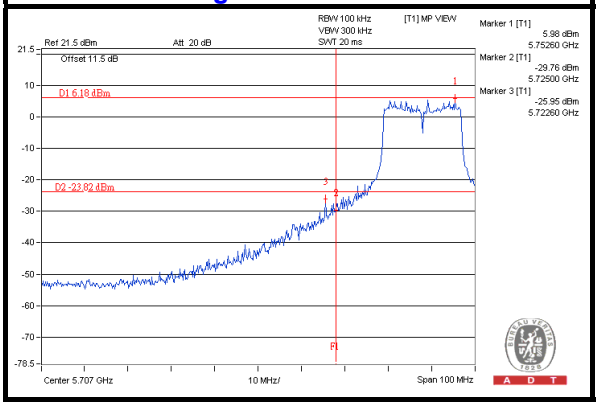


CH 165

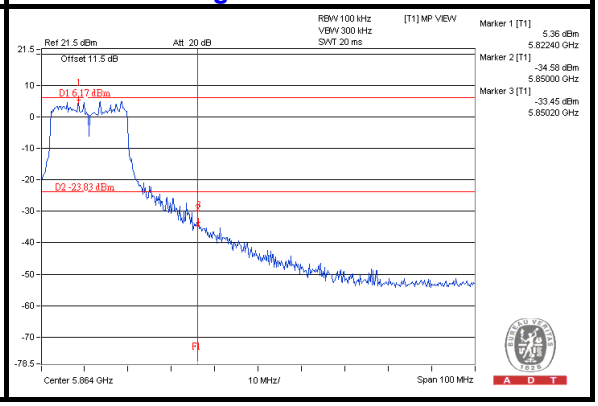




CH 149 Band edge

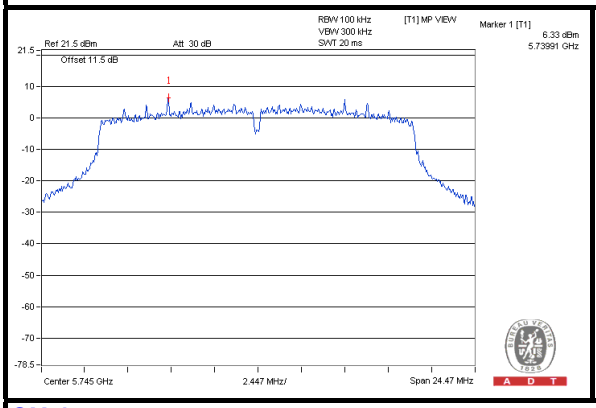


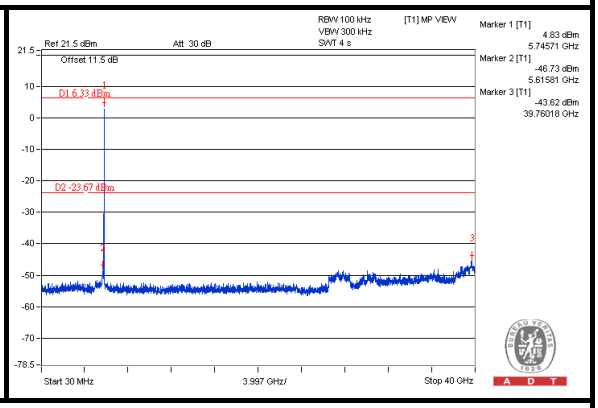
CH 165 Band edge



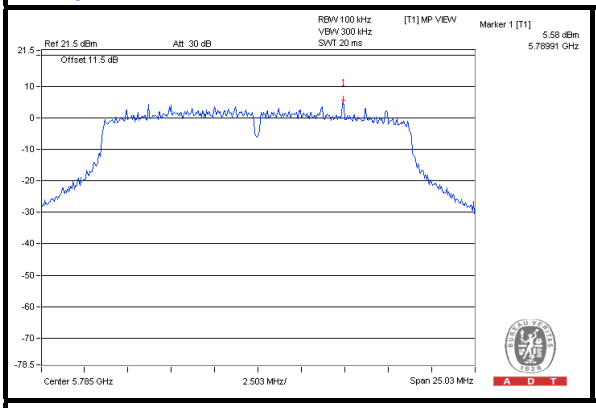
CHAIN 1

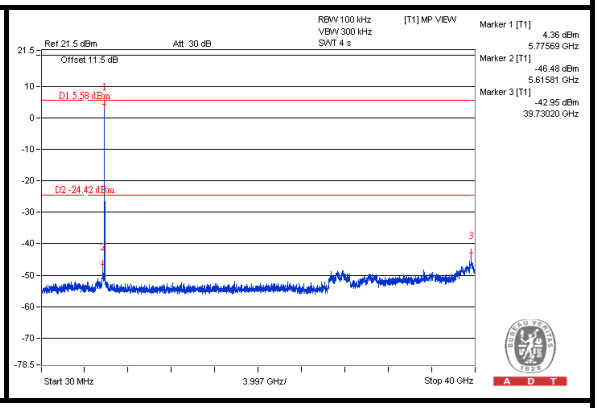
CH 149



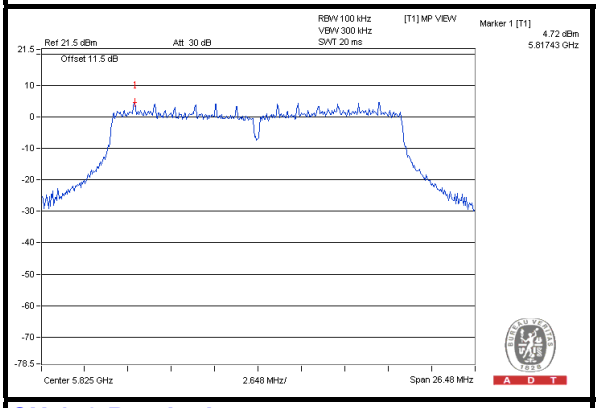


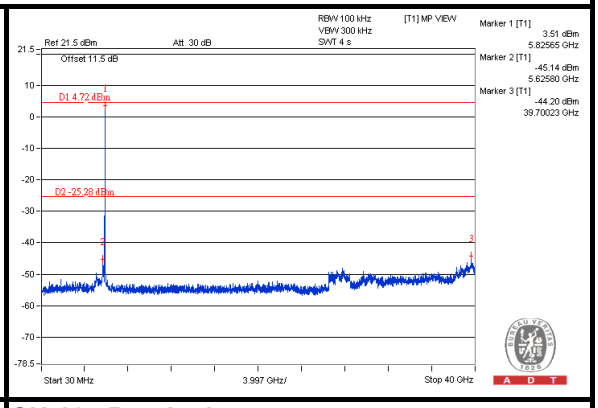
CH 157



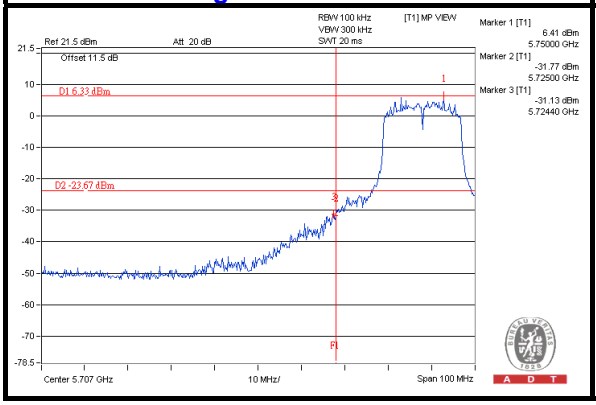


CH 165

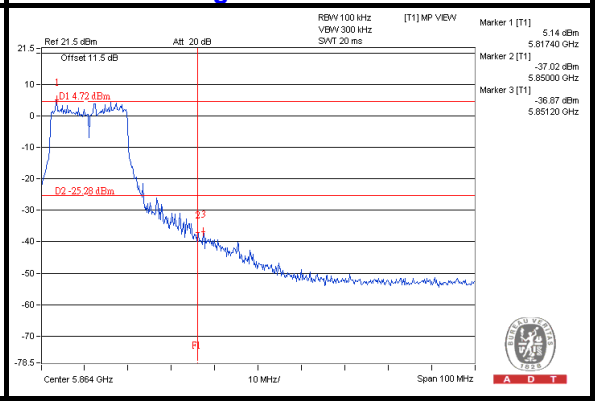




CH 149 Band edge



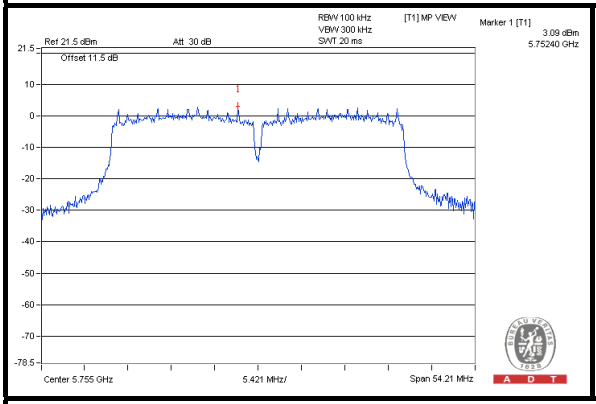
CH 165 Band edge

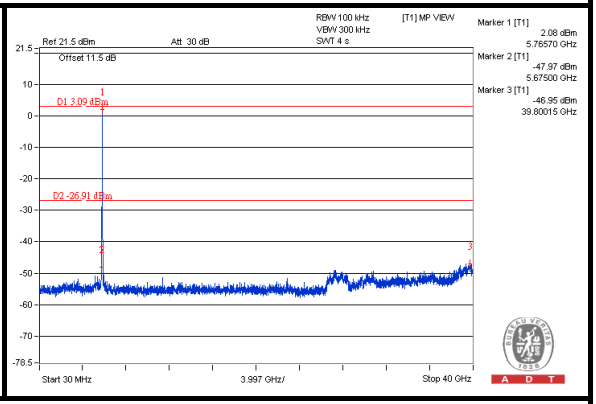


802.11n (40MHz)

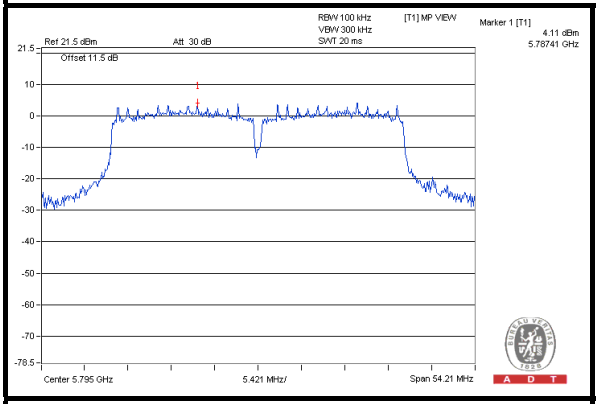
CHAIN 0

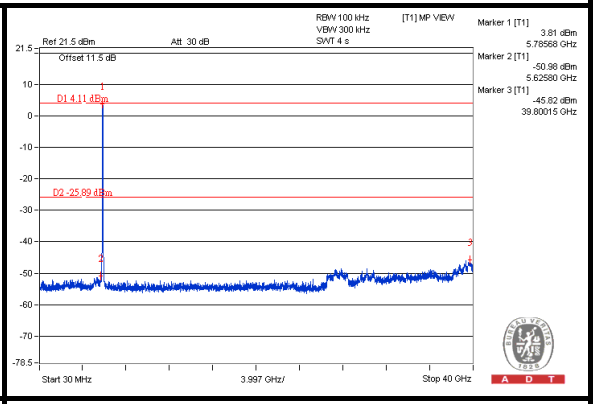
CH 151



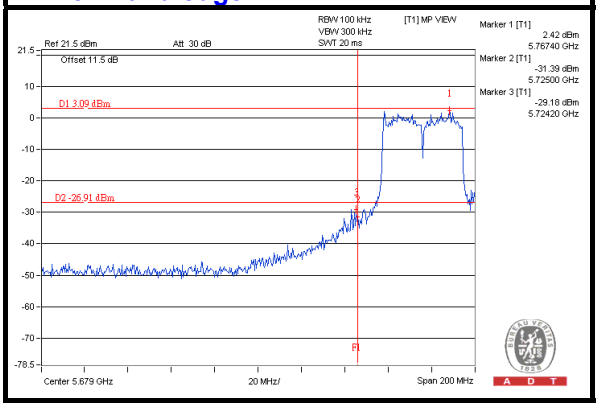


CH 159

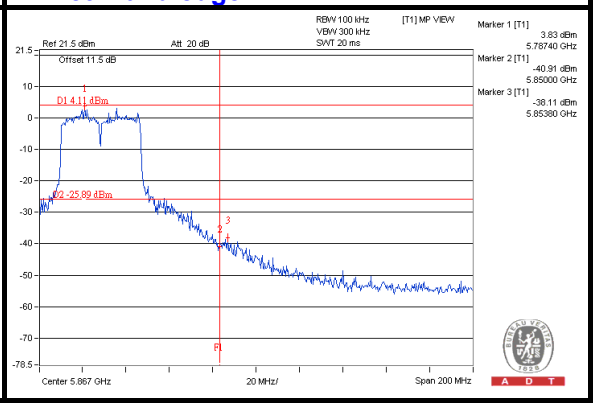




CH 151 Band edge

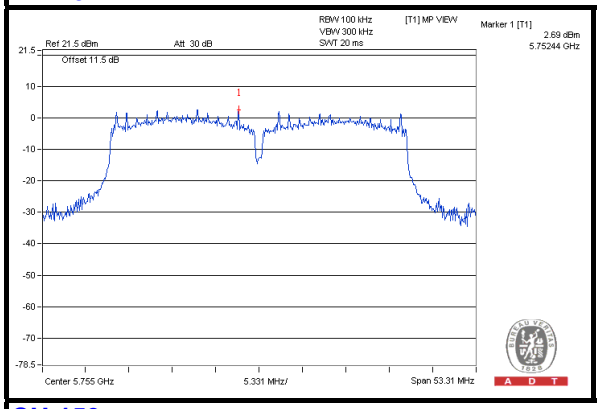


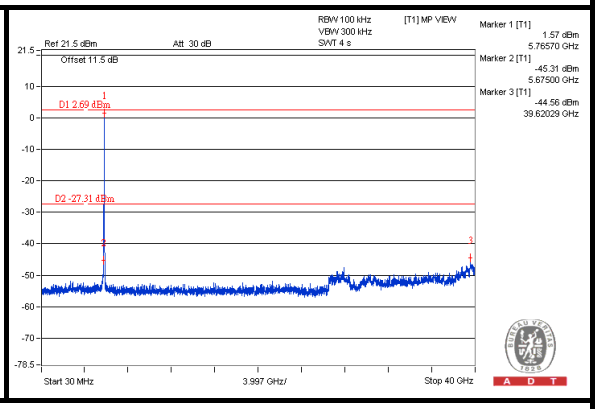
CH 159 Band edge



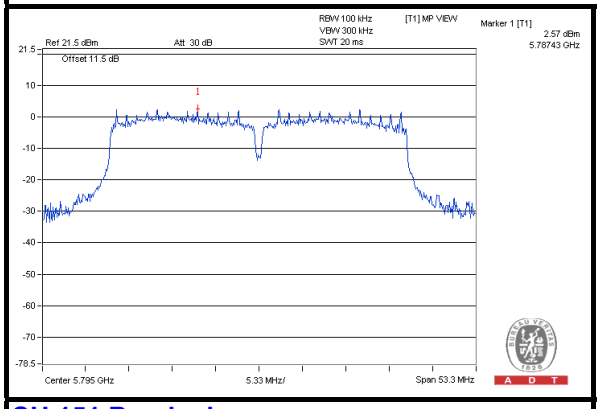
CHAIN 1

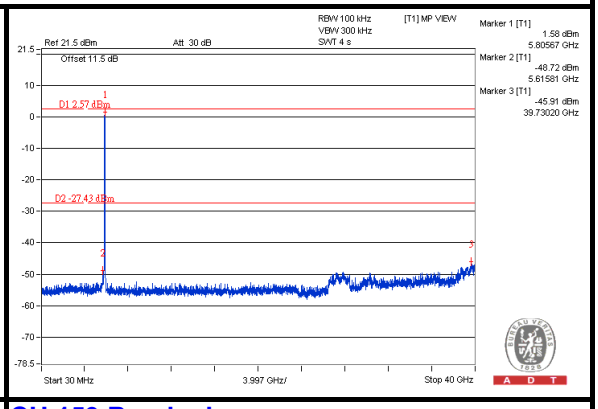
CH 151



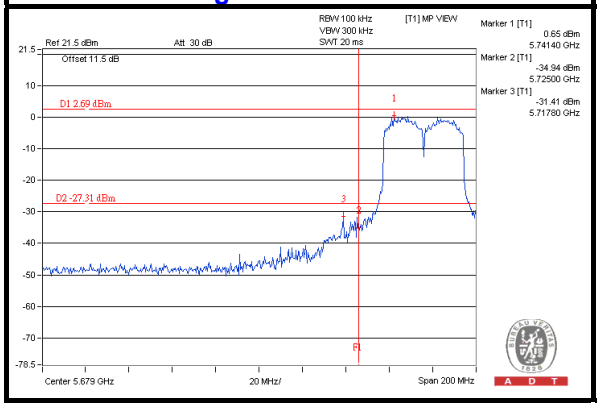


CH 159

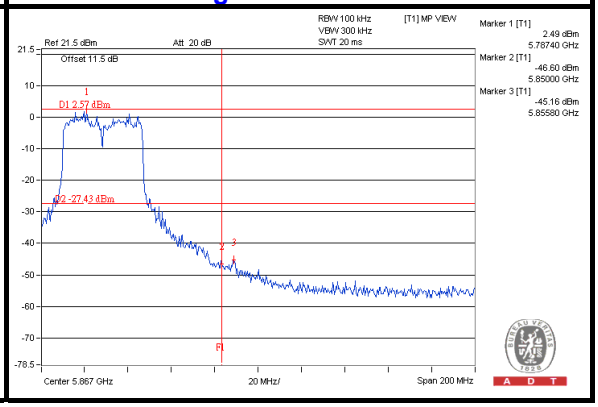




CH 151 Band edge



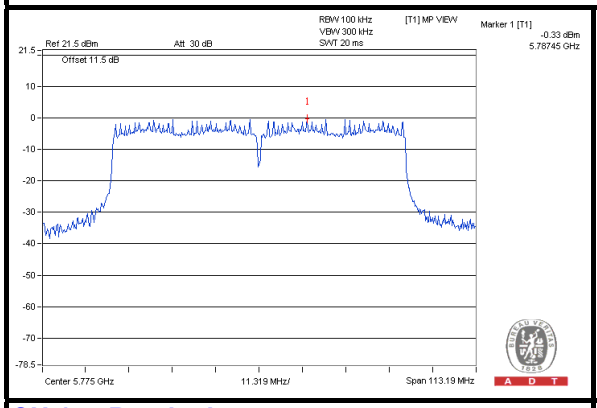
CH 159 Band edge

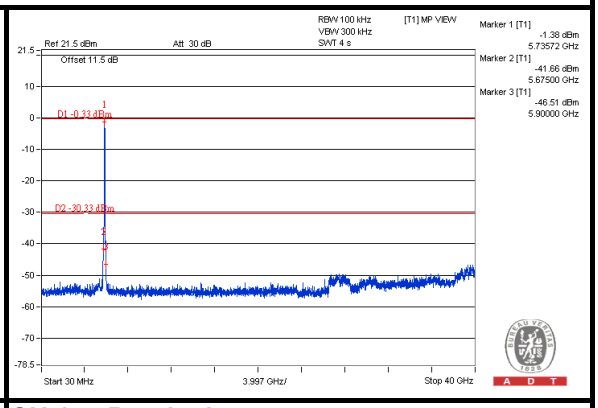


802.11ac (80MHz)

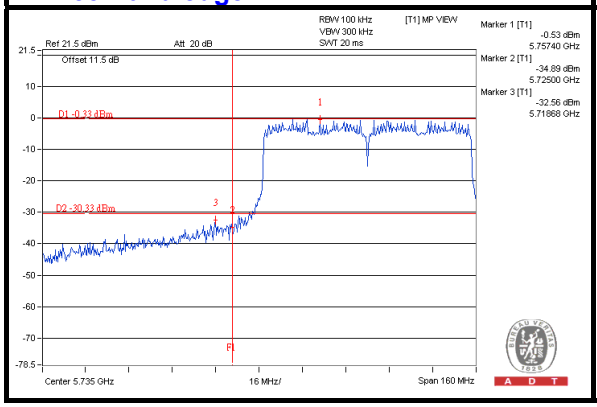
CHAIN 0

CH 155

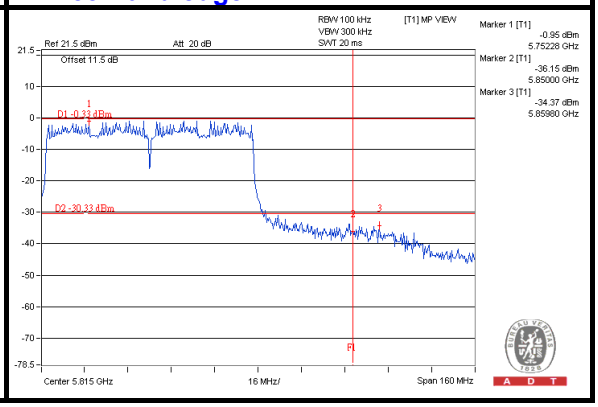




CH 155 Band edge

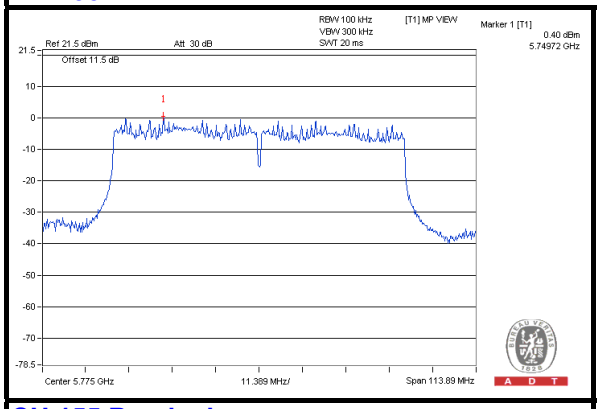


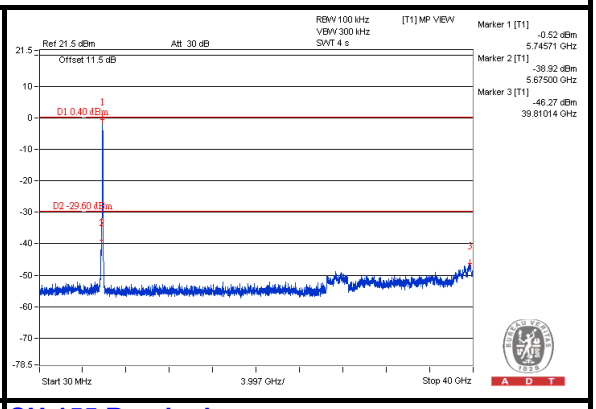
CH 155 Band edge



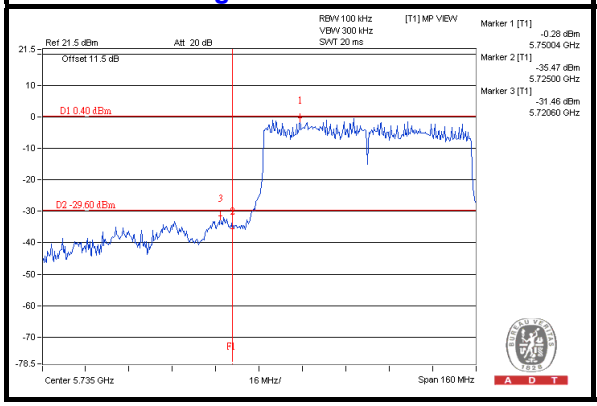
CHAIN 1

CH 155

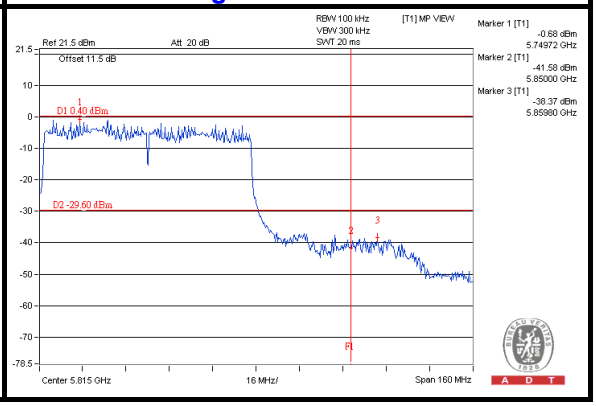




CH 155 Band edge



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:

Linko EMC/RF Lab
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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---