FCC TEST REPORT (15.407)

REPORT NO.:	RF131220C10-1
MODEL NO.:	XR600
FCC ID:	SK6-XR630
RECEIVED:	Dec. 12, 2013
TESTED:	Dec. 24, 2013 ~ Jan. 09, 2014
ISSUED:	Jan. 10, 2014

APPLICANT:	Xirrus, INC.
ADDRESS:	2101 Corporate Center Drive Thousand Oaks, California 91320

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.

TABLE OF CONTENTS

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF131220C10-1	Original release	Jan. 10, 2014

1. CERTIFICATION

PRODUCT: 802.11ac 3x3 AP
MODEL: XR600
BRAND: Xirrus
APPLICANT: Xirrus, INC.
TESTED: Dec. 24, 2013 ~ Jan. 09, 2014
TEST SAMPLE: ENGINEERING SAMPLE
STANDARDS: **FCC Part 15, Subpart E (Section 15.407)**
ANSI C63.10-2009

The above equipment (model: XR600) 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 :** Jan. 10, 2014
Maggie Wu / Specialist

APPROVED BY : _____ **, DATE :** Jan. 10, 2014
Ken Liu / Senior Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	**TEST TYPE**	**RESULT**	**REMARK**
15.407(b)(6)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -23.39dB at 2.36306MHz.
15.407(b/1/2/3)(b)(6)	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -2.0dB at 101.75 & 111.55MHz.
15.407(a/1/2)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	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	802.11ac 3x3 AP
MODEL NO.	XR600
POWER SUPPLY	55Vdc (POE)
MODULATION TYPE	256QAM, 64QAM, 16QAM, QPSK, BPSK
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 450.0Mbps 802.11ac: up to 1300.0Mbps
OPERATING FREQUENCY	5180 ~ 5240MHz
NUMBER OF CHANNEL	4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (VHT80)
OUTPUT POWER	48.202mW
ANTENNA TYPE	Monopole antenna with 5.97dBi gain
ANTENNA CONNECTOR	I-PEX
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	NA

NOTE:

1. The EUT is collocated two dual band RF modules (Radio 1, Radio 2), which cannot co-transmit in the same band.
2. The EUT incorporates a MIMO function. Physically, the EUT provides three completed transmitters and three receivers.

MODULATION MODE	TX FUNCTION
802.11b	3TX
802.11g	3TX
802.11a	3TX
802.11n (20MHz) (MCS 16-23)	3TX
802.11n (40MHz) (MCS 16-23)	3TX
802.11ac (VHT80)	3TX

3. The EUT was powered by the following POE (provided as a support unit only).

BRAND	PowerDsine
MODEL	PD9001G
INPUT POWER	100-250Vac, 50/60Hz, 0.8A
OUTPUT POWER	55Vdc, 0.60A

4. 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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180MHz	44	5220MHz
40	5200MHz	48	5240MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190MHz	46	5230MHz

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

CHANNEL	FREQUENCY
42	5210MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Radio 1
B	√	√	√	√	Radio 2

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. Radio 1: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.
2. Radio 2: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
A, B	802.11n (20MHz)	36 to 48	36, 40, 48	OFDM	BPSK	7.2
A, B	802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	15.0
A, B	802.11ac (80MHz)	42	42	OFDM	BPSK	97.5

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	802.11n (40MHz)	38 to 46	46	OFDM	BPSK	15.0
B	802.11n (20MHz)	36 to 48	48	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	802.11n (40MHz)	38 to 46	46	OFDM	BPSK	15.0
B	802.11n (20MHz)	36 to 48	48	OFDM	BPSK	7.2

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
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A, B	802.11n (20MHz)	36 to 48	36, 40, 48	OFDM	BPSK	7.2
A, B	802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	15.0
A, B	802.11ac (80MHz)	42	42	OFDM	BPSK	97.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	22deg. C, 69%RH	120Vac, 60Hz	Alan Wu
RE<1G	22deg. C, 69%RH	120Vac, 60Hz	Brad Tung
PLC	24deg. C, 70%RH	120Vac, 60Hz	Alan Wu
APCM	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui

3.3 DUTY CYCLE OF TEST SIGNAL

Test mode A

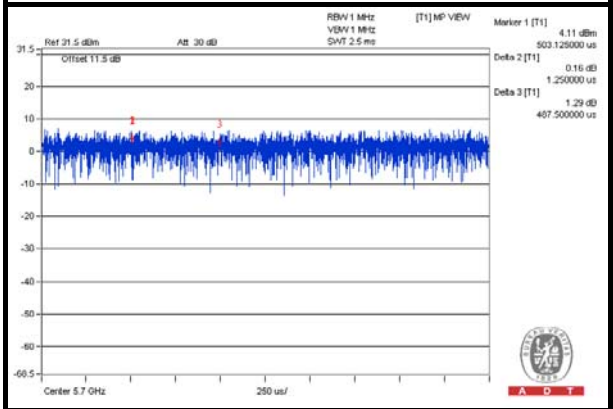
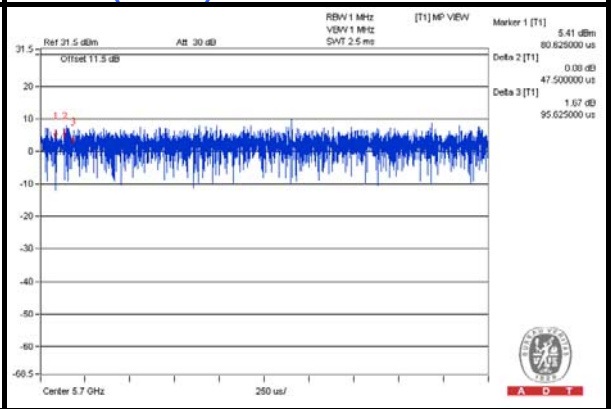
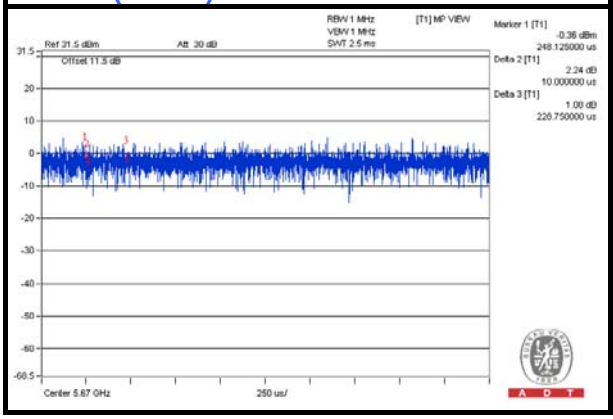
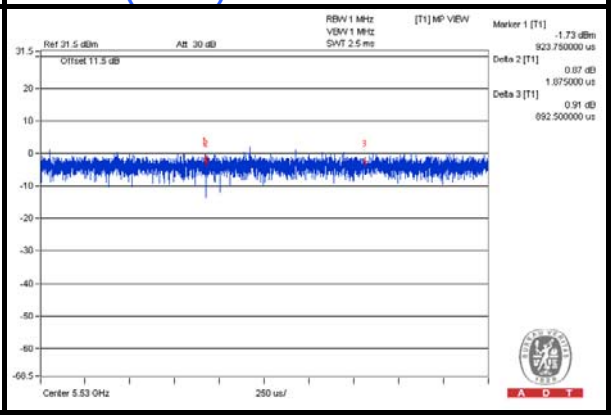
MODULATION TYPE: BPSK

02.11a: Duty cycle of test signal is > 98 %

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

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

802.11ac (VHT80): Duty cycle of test signal is > 98 %

802.11a	802.11n (20MHz)
	
802.11n (40MHz)	**802.11ac (VHT80)**
	

MODULATION TYPE: QPSK

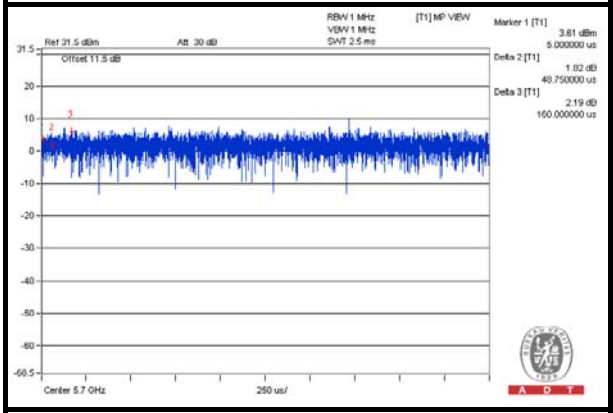
02.11a: Duty cycle of test signal is > 98 %

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

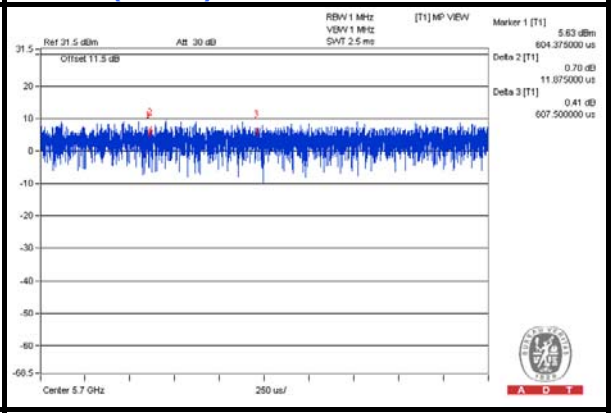
802.11n (40MHz): Duty cycle of test signal is > 98 %

802.11ac (VHT80): Duty cycle of test signal is > 98 %

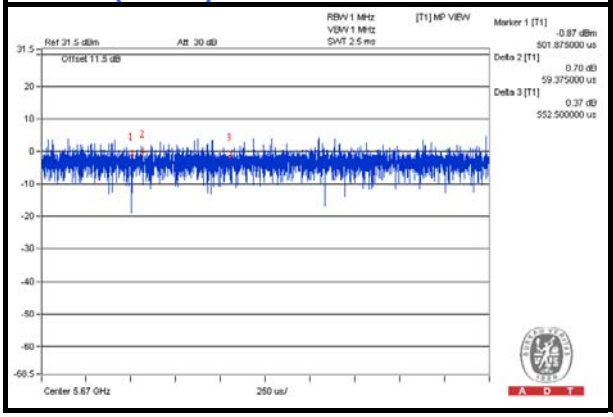
802.11a



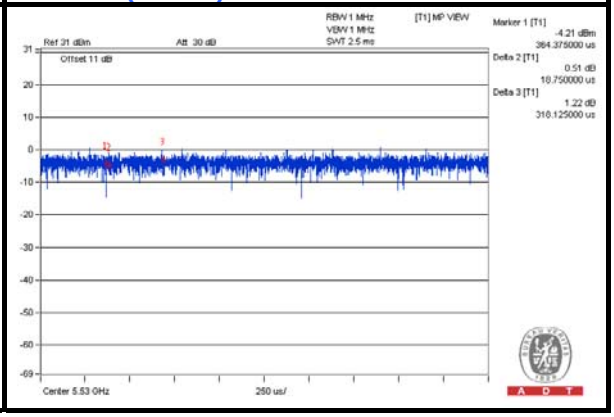
802.11n (20MHz)



802.11n (40MHz)



802.11ac (VHT80)



MODULATION TYPE: 16QAM

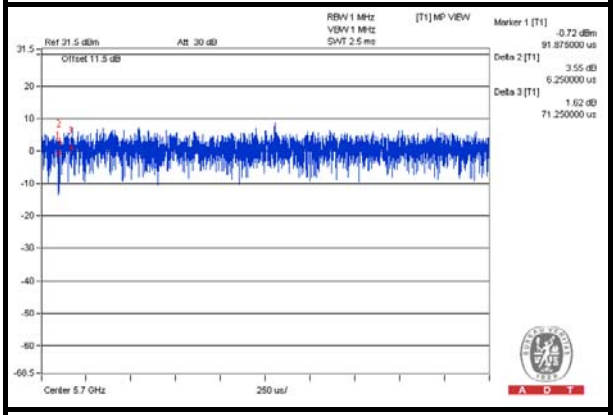
02.11a: Duty cycle of test signal is > 98 %

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

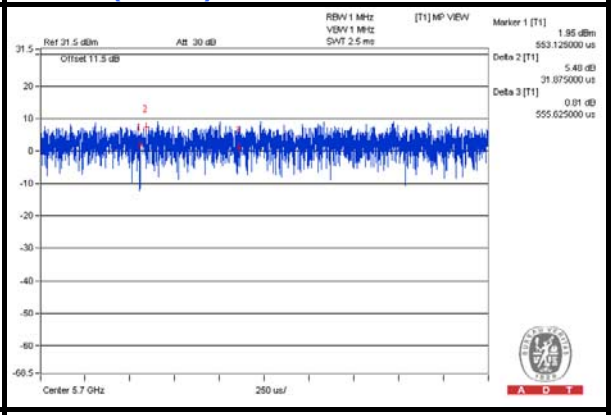
802.11n (40MHz): Duty cycle of test signal is > 98 %

802.11ac (VHT80): Duty cycle of test signal is > 98 %

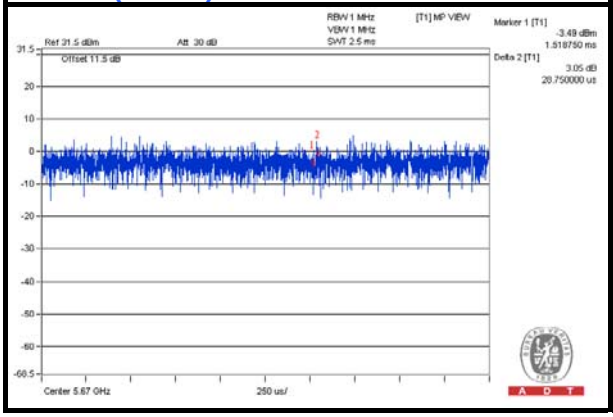
802.11a



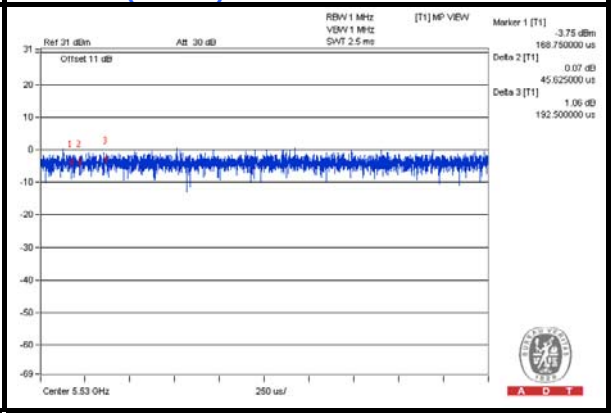
802.11n (20MHz)



802.11n (40MHz)



802.11ac (VHT80)



MODULATION TYPE: 64QAM

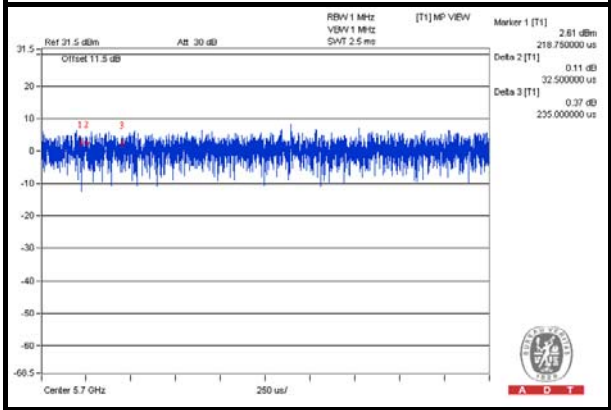
02.11a: Duty cycle of test signal is > 98 %

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

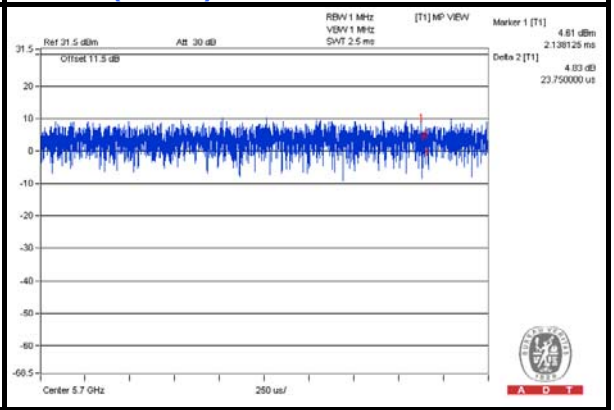
802.11n (40MHz): Duty cycle of test signal is > 98 %

802.11ac (VHT80): Duty cycle of test signal is > 98 %

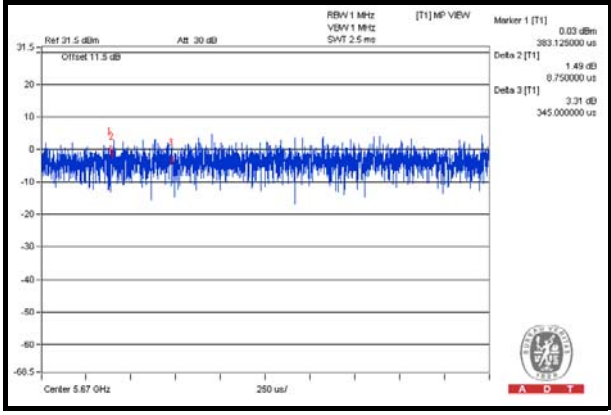
802.11a



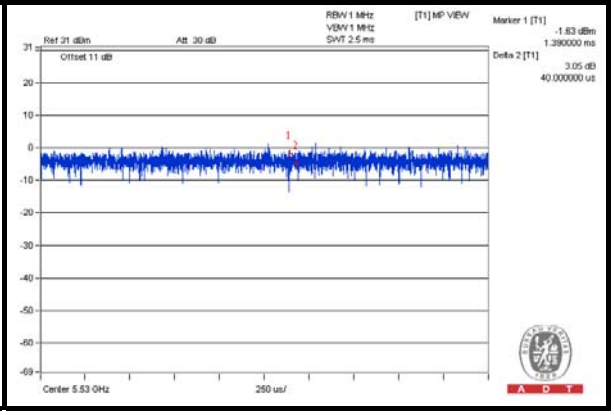
802.11n (20MHz)



802.11n (40MHz)



802.11ac (VHT80)

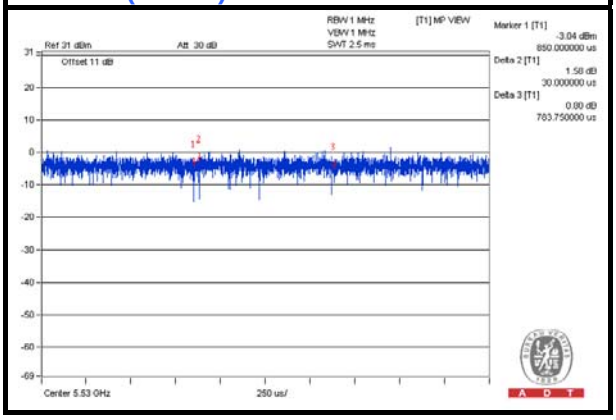


MODULATION TYPE: 256QAM

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

802.11ac (VHT80): Duty cycle of test signal is > 98 %

802.11ac (VHT80)



Test mode B

MODULATION TYPE: BPSK

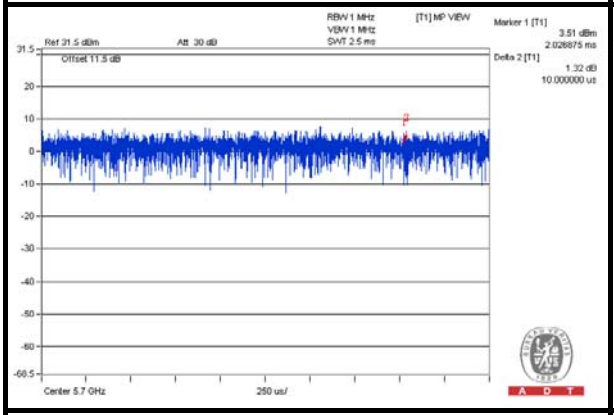
02.11a: Duty cycle of test signal is > 98 %

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

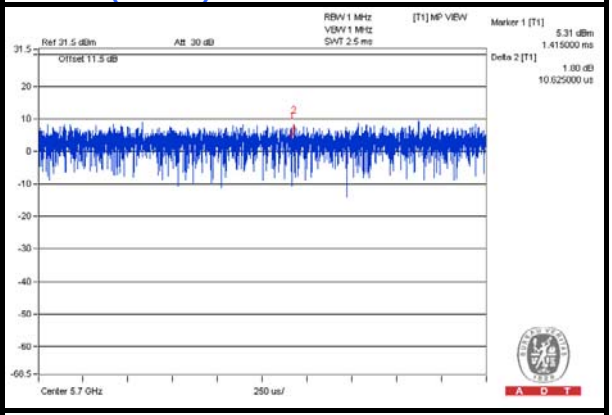
802.11n (40MHz): Duty cycle of test signal is > 98 %

802.11ac (VHT80): Duty cycle of test signal is > 98 %

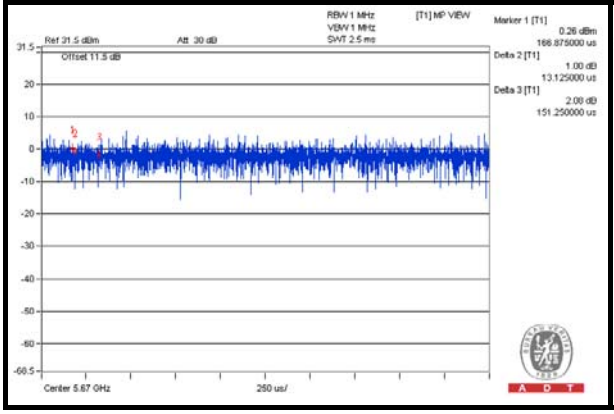
802.11a



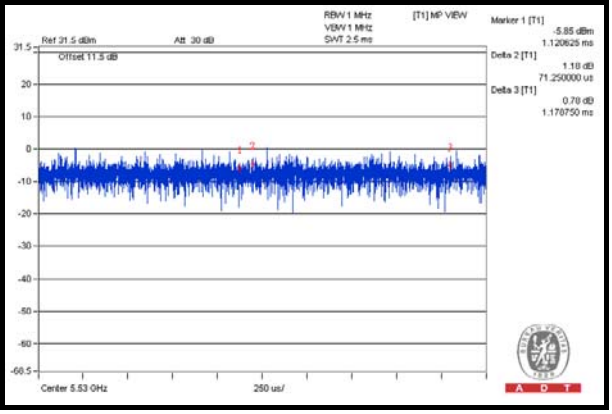
802.11n (20MHz)



802.11n (40MHz)



802.11ac (VHT80)



MODULATION TYPE: QPSK

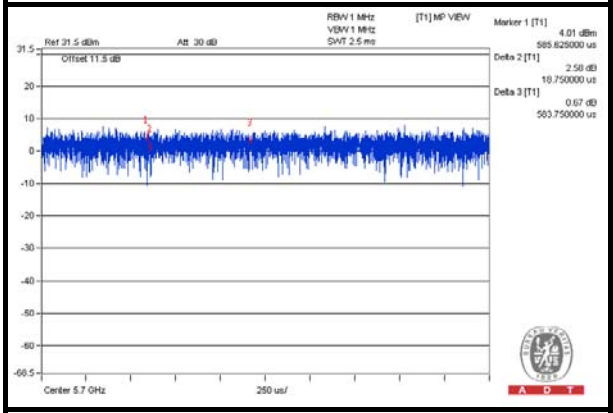
02.11a: Duty cycle of test signal is > 98 %

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

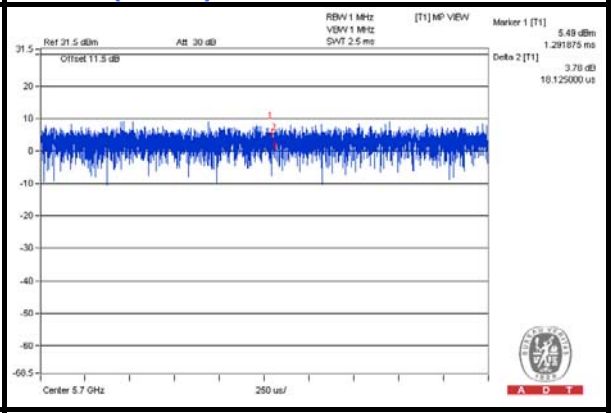
802.11n (40MHz): Duty cycle of test signal is > 98 %

802.11ac (VHT80): Duty cycle of test signal is > 98 %

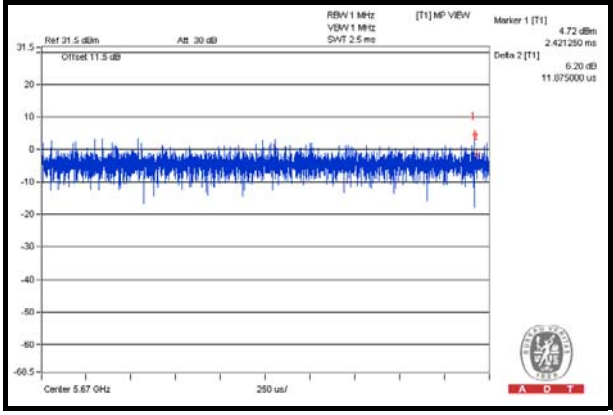
802.11a



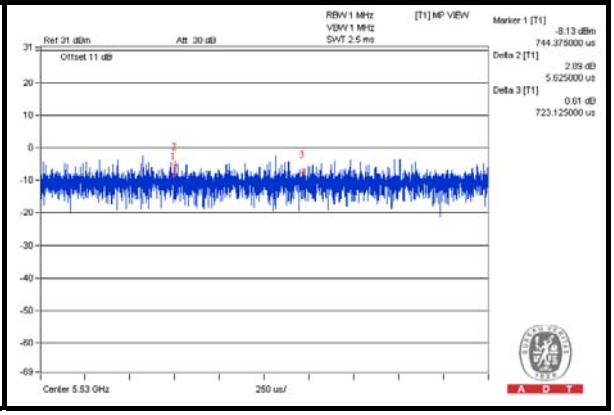
802.11n (20MHz)



802.11n (40MHz)



802.11ac (VHT80)



MODULATION TYPE: 16QAM

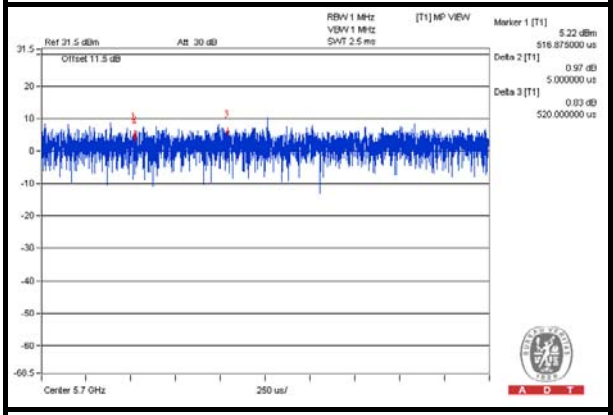
02.11a: Duty cycle of test signal is > 98 %

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

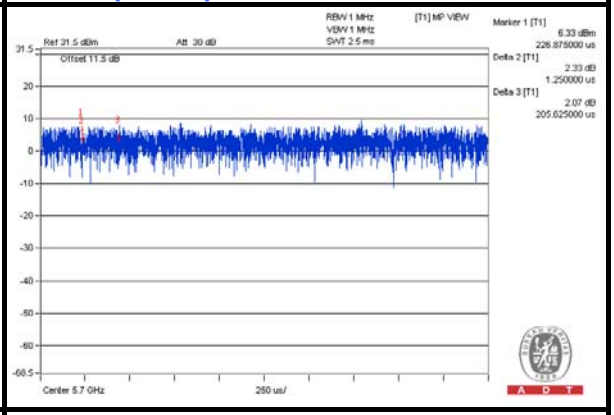
802.11n (40MHz): Duty cycle of test signal is > 98 %

802.11ac (VHT80): Duty cycle of test signal is > 98 %

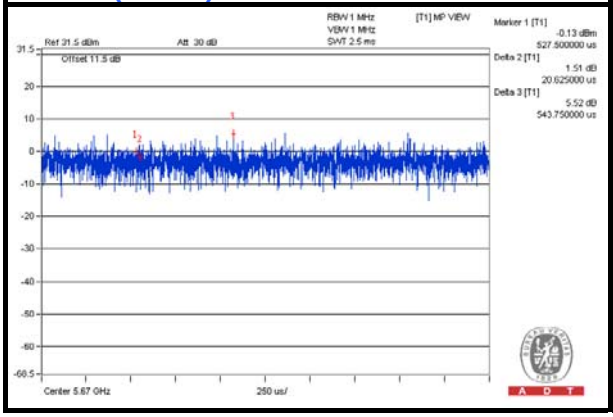
802.11a



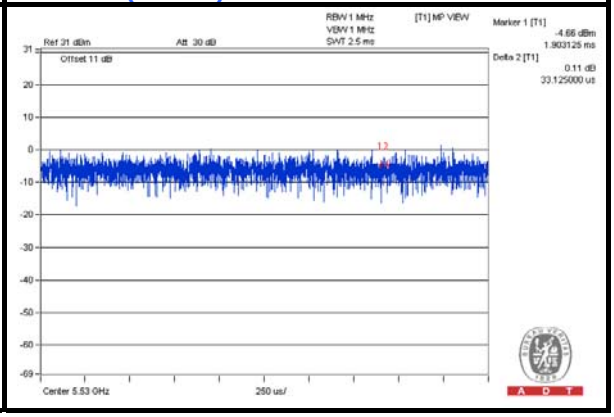
802.11n (20MHz)



802.11n (40MHz)



802.11ac (VHT80)



MODULATION TYPE: 64QAM

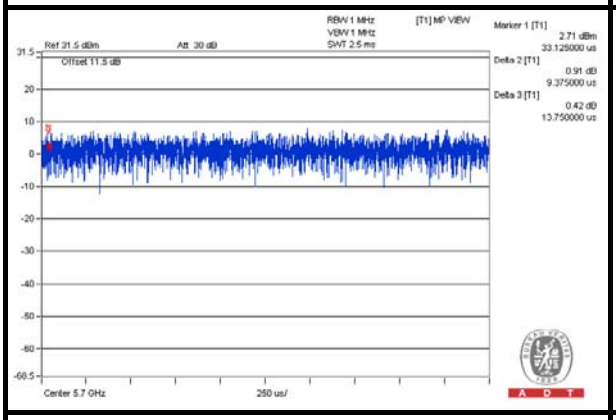
02.11a: Duty cycle of test signal is > 98 %

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

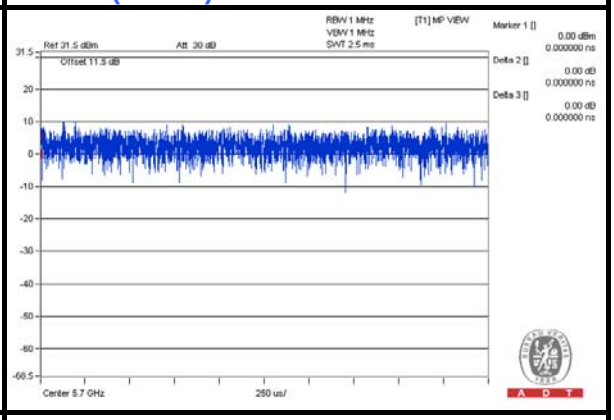
802.11n (40MHz): Duty cycle of test signal is > 98 %

802.11ac (VHT80): Duty cycle of test signal is > 98 %

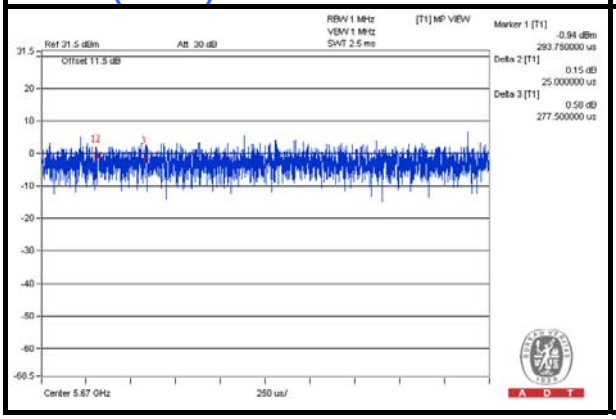
802.11a



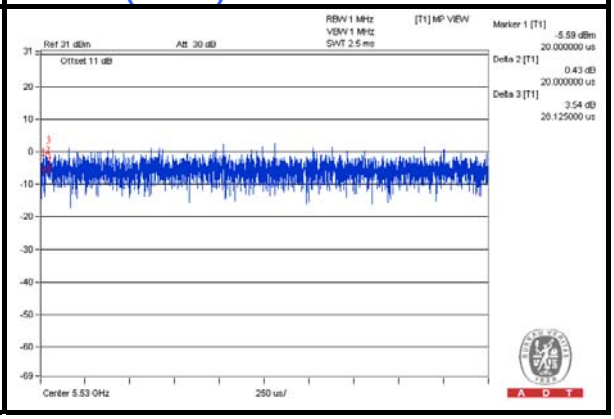
802.11n (20MHz)



802.11n (40MHz)



802.11ac (VHT80)

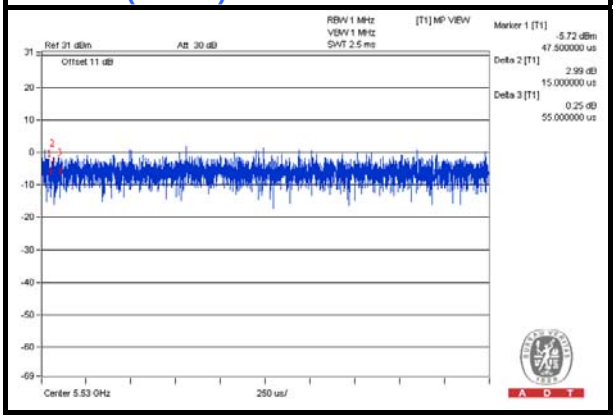


MODULATION TYPE: 256QAM

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

802.11ac (VHT80): Duty cycle of test signal is > 98 %

802.11ac (VHT80)



3.4 DESCRIPTION OF SUPPORT UNITS

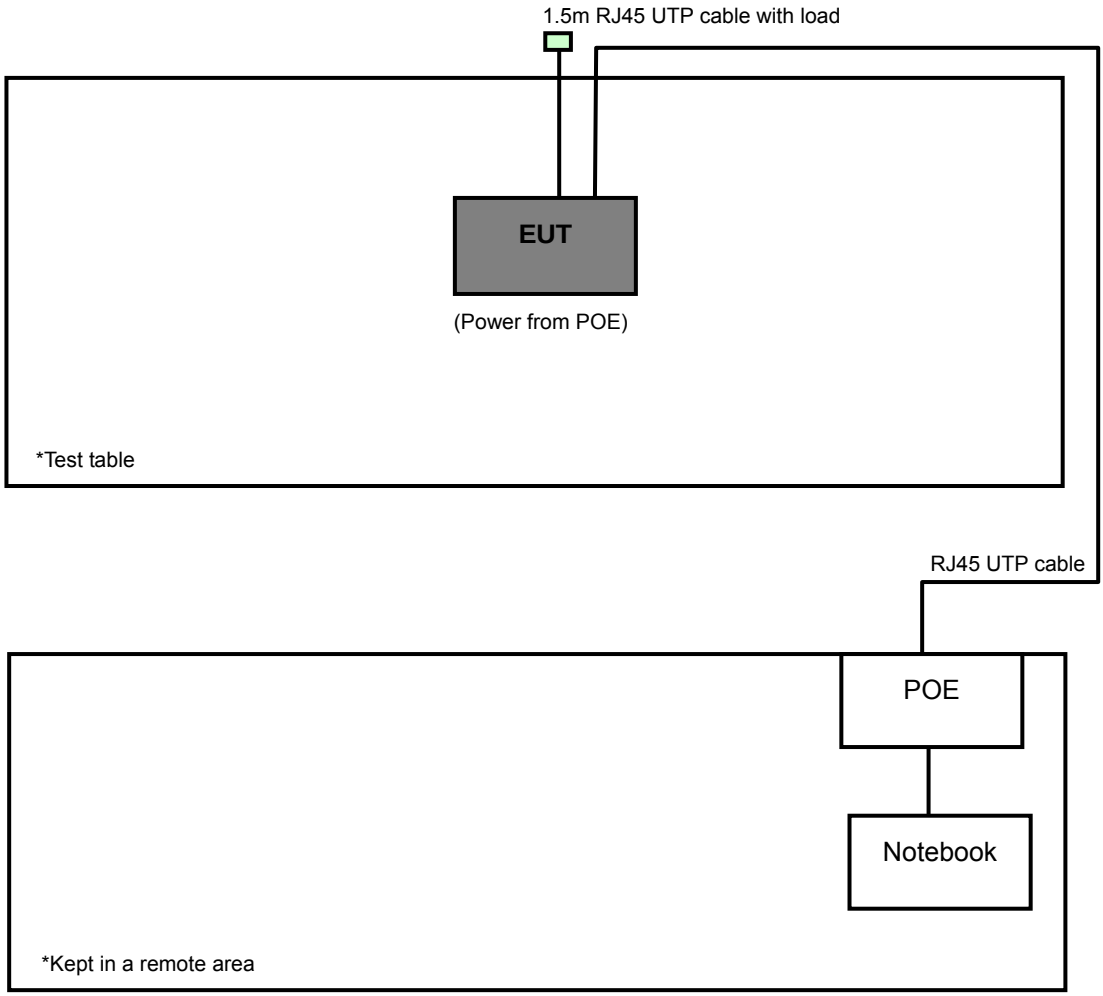
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook	DELL	D531	CN-0XM006-48643-81U-2973	QDS-BRCM1020
2	POE	PowerDsine	PD9001G	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	3m RJ45 UTP cable
2	1.5m RJ45 UTP cable

NOTE:
1. All power cords of the above support units are non-shielded (1.8m).
2. Item 1 ~ 2 acted as a communication partner to transfer data.
3. Item 2 was provided by the manufacturer.

3.4.1 CONFIGURATION OF SYSTEM UNDER TEST



3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart E (15.407)
789033 D01 General UNII Test Procedures v01 r03
662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2009

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

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

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

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

NOTE:

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

4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
√	FIELD STRENGTH AT 3m (dBμV/m)	
	PK	AV
	74	54
	EIRP LIMIT (dBm)	EQUIVALENT FIELD STRENGTH AT 3m (dBμV/m)
	PK	PK
	-27	68.3

NOTE: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts).

4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Sep. 09, 2013	Sep. 08, 2014
Spectrum Analyzer ROHDE & SCHWARZ	FSU 43	100115	Dec. 18, 2013	Dec. 17, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Mar. 25, 2013	Mar. 24, 2014
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-405	Feb. 21, 2013	Feb. 20, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 15, 2013	Jul. 14, 2014
Preamplifier Agilent	8449B	3008A01961	Oct. 28, 2013	Oct. 27, 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
High Speed Peak Power Meter	ML2495A	0824011	Jul. 29, 2013	Jul. 28, 2014
Power Sensor	MA2411B	0738171	Jul. 29, 2013	Jul. 28, 2014
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 10, 2013	Jun. 09, 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.

4.1.4 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. 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 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

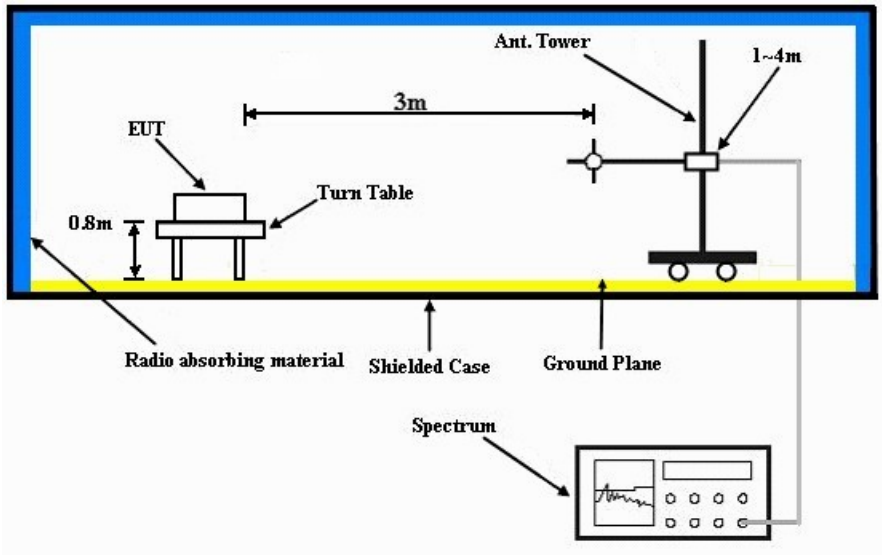
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution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

4.1.5 DEVIATION FROM TEST STANDARD

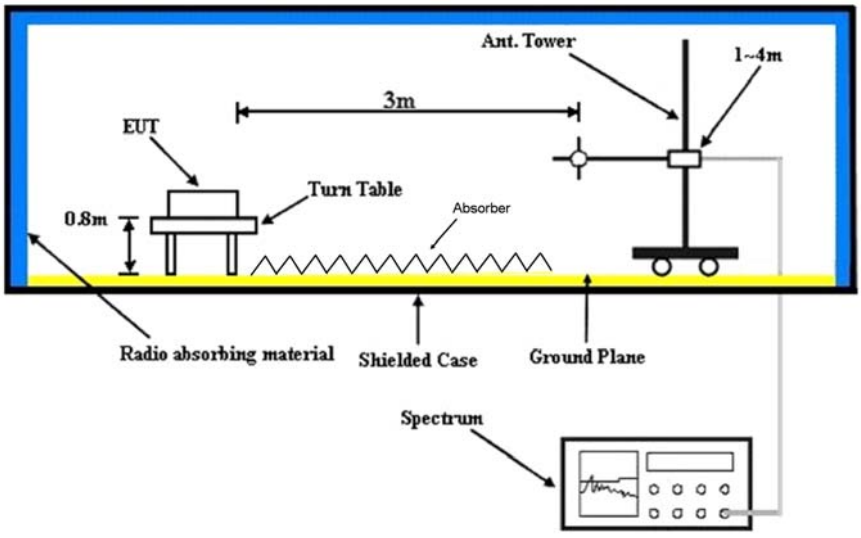
No deviation.

4.1.6 TEST SETUP

Frequency range 30MHz~1GHz



Frequency range above 1GHz



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

4.1.7 EUT OPERATING CONDITION

a. Placed the EUT on the testing table.
b. Prepared notebook and POE to act as communication partners and placed them 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".

4.1.8 TEST RESULTS

TEST MODE A

ABOVE 1GHz DATA:

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	5150.00	54.9 PK	74.0	-19.1	1.00 H	6	49.50	5.40
2	5150.00	44.3 AV	54.0	-9.7	1.00 H	6	38.90	5.40
3	*5180.00	96.1 PK			1.00 H	6	56.80	39.30
4	*5180.00	84.5 AV			1.00 H	6	45.20	39.30
5	#10360.00	56.9 PK	74.0	-17.1	1.26 H	127	40.90	16.00
6	#10360.00	45.5 AV	54.0	-8.5	1.26 H	127	29.50	16.00
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	5150.00	56.8 PK	74.0	-17.2	1.14 V	19	51.40	5.40
2	5150.00	44.9 AV	54.0	-9.1	1.14 V	19	39.50	5.40
3	*5180.00	103.3 PK			1.14 V	19	64.00	39.30
4	*5180.00	91.7 AV			1.14 V	19	52.40	39.30
5	#10360.00	57.0 PK	74.0	-17.0	1.16 V	75	41.00	16.00
6	#10360.00	46.0 AV	54.0	-8.0	1.16 V	75	30.00	16.00

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.
6. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*5200.00	96.9 PK			1.00 H	14	57.60	39.30
2	*5200.00	85.3 AV			1.00 H	14	46.00	39.30
3	#10400.00	57.2 PK	74.0	-16.8	1.22 H	35	41.00	16.20
4	#10400.00	46.2 AV	54.0	-7.8	1.22 H	35	30.00	16.20
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	*5200.00	103.9 PK			1.07 V	356	64.60	39.30
2	*5200.00	92.2 AV			1.07 V	356	52.90	39.30
3	#10400.00	57.3 PK	74.0	-16.7	1.00 V	152	41.10	16.20
4	#10400.00	46.4 AV	54.0	-7.6	1.00 V	152	30.20	16.20

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 radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*5240.00	96.1 PK			1.00 H	3	56.80	39.30
2	*5240.00	85.0 AV			1.00 H	3	45.70	39.30
3	5350.00	54.3 PK	74.0	-19.7	1.00 H	3	48.80	5.50
4	5350.00	42.7 AV	54.0	-11.3	1.00 H	3	37.20	5.50
5	#10480.00	56.9 PK	74.0	-17.1	1.07 H	140	40.10	16.80
6	#10480.00	46.0 AV	54.0	-8.0	1.07 H	140	29.20	16.80
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	*5240.00	103.1 PK			1.12 V	350	63.80	39.30
2	*5240.00	91.3 AV			1.12 V	350	52.00	39.30
3	5350.00	54.7 PK	74.0	-19.3	1.12 V	350	49.20	5.50
4	5350.00	42.9 AV	54.0	-11.1	1.12 V	350	37.40	5.50
5	#10480.00	57.1 PK	74.0	-16.9	1.19 V	165	40.30	16.80
6	#10480.00	46.1 AV	54.0	-7.9	1.19 V	165	29.30	16.80

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.
6. "#":The radiated frequency is out the restricted band.

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	5150.00	57.0 PK	74.0	-17.0	1.38 H	321	51.60	5.40
2	5150.00	45.8 AV	54.0	-8.2	1.38 H	321	40.40	5.40
3	*5180.00	100.0 PK			1.31 H	326	60.70	39.30
4	*5180.00	90.1 AV			1.31 H	326	50.80	39.30
5	#10360.00	57.3 PK	74.0	-16.7	1.24 H	52	41.30	16.00
6	#10360.00	47.2 AV	54.0	-6.8	1.24 H	52	31.20	16.00
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	5150.00	58.2 PK	74.0	-15.8	1.01 V	342	52.80	5.40
2	5150.00	46.2 AV	54.0	-7.8	1.01 V	342	40.80	5.40
3	*5180.00	107.4 PK			1.00 V	340	68.10	39.30
4	*5180.00	97.2 AV			1.00 V	340	57.90	39.30
5	#10360.00	57.4 PK	74.0	-16.6	1.15 V	352	41.40	16.00
6	#10360.00	47.4 AV	54.0	-6.6	1.15 V	352	31.40	16.00

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.
6. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*5200.00	99.9 PK			1.30 H	330	60.60	39.30
2	*5200.00	89.9 AV			1.30 H	330	50.60	39.30
3	#10400.00	57.4 PK	74.0	-16.6	1.14 H	182	41.20	16.20
4	#10400.00	47.1 AV	54.0	-6.9	1.14 H	182	30.90	16.20
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	*5200.00	107.1 PK			1.00 V	342	67.80	39.30
2	*5200.00	97.1 AV			1.00 V	342	57.80	39.30
3	#10400.00	57.5 PK	74.0	-16.5	1.08 V	152	41.30	16.20
4	#10400.00	47.3 AV	54.0	-6.7	1.08 V	152	31.10	16.20

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 radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*5240.00	99.5 PK			1.28 H	318	60.20	39.30
2	*5240.00	89.5 AV			1.28 H	318	50.20	39.30
3	5350.00	56.1 PK	74.0	-17.9	1.28 H	318	50.60	5.50
4	5350.00	44.8 AV	54.0	-9.2	1.28 H	318	39.30	5.50
5	#10480.00	57.9 PK	74.0	-16.1	1.36 H	140	41.10	16.80
6	#10480.00	47.5 AV	54.0	-6.5	1.36 H	140	30.70	16.80
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	*5240.00	107.0 PK			1.00 V	340	67.70	39.30
2	*5240.00	97.0 AV			1.00 V	340	57.70	39.30
3	5350.00	56.5 PK	74.0	-17.5	1.00 V	340	51.00	5.50
4	5350.00	45.3 AV	54.0	-8.7	1.00 V	340	39.80	5.50
5	#10480.00	58.1 PK	74.0	-15.9	1.13 V	83	41.30	16.80
6	#10480.00	47.9 AV	54.0	-6.1	1.13 V	83	31.10	16.80

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.
6. "#":The radiated frequency is out the restricted band.

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	5150.00	60.8 PK	74.0	-13.2	1.00 H	352	55.40	5.40
2	5150.00	46.9 AV	54.0	-7.1	1.00 H	352	41.50	5.40
3	*5190.00	99.4 PK			1.00 H	350	60.10	39.30
4	*5190.00	89.1 AV			1.00 H	350	49.80	39.30
5	#10380.00	57.4 PK	74.0	-16.6	1.07 H	153	41.30	16.10
6	#10380.00	47.1 AV	54.0	-6.9	1.07 H	153	31.00	16.10
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	5150.00	62.1 PK	74.0	-11.9	1.52 V	281	56.70	5.40
2	5150.00	48.1 AV	54.0	-5.9	1.52 V	281	42.70	5.40
3	*5190.00	105.7 PK			1.50 V	351	66.40	39.30
4	*5190.00	95.1 AV			1.50 V	351	55.80	39.30
5	#10380.00	57.5 PK	74.0	-16.5	1.18 V	184	41.40	16.10
6	#10380.00	47.3 AV	54.0	-6.7	1.18 V	184	31.20	16.10

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 radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*5230.00	99.6 PK			1.00 H	342	60.30	39.30
2	*5230.00	88.7 AV			1.00 H	342	49.40	39.30
3	5350.00	58.7 PK	74.0	-15.3	1.00 H	342	53.20	5.50
4	5350.00	46.1 AV	54.0	-7.9	1.00 H	342	40.60	5.50
5	#10460.00	57.5 PK	74.0	-16.5	1.12 H	50	40.90	16.60
6	#10460.00	47.4 AV	54.0	-6.6	1.12 H	50	30.80	16.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	105.4 PK			1.50 V	349	66.10	39.30
2	*5230.00	94.5 AV			1.50 V	349	55.20	39.30
3	5350.00	59.8 PK	74.0	-14.2	1.50 V	349	54.30	5.50
4	5350.00	46.5 AV	54.0	-7.5	1.50 V	349	41.00	5.50
5	#10460.00	57.9 PK	74.0	-16.1	1.15 V	146	41.30	16.60
6	#10460.00	47.5 AV	54.0	-6.5	1.15 V	146	30.90	16.60

REMARKS:

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

802.11ac (VHT80)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 42	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	5150.00	59.5 PK	74.0	-14.5	1.00 H	348	54.10	5.40
2	5150.00	47.6 AV	54.0	-6.4	1.00 H	348	42.20	5.40
3	*5210.00	94.7 PK			1.00 H	350	55.40	39.30
4	*5210.00	84.7 AV			1.00 H	350	45.40	39.30
5	#10420.00	59.5 PK	74.0	-14.5	1.00 H	94	43.10	16.40
6	#10420.00	47.2 AV	54.0	-6.8	1.00 H	94	30.80	16.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.8 PK	74.0	-13.2	1.00 V	217	55.40	5.40
2	5150.00	49.1 AV	54.0	-4.9	1.00 V	217	43.70	5.40
3	*5210.00	102.2 PK			1.00 V	350	62.90	39.30
4	*5210.00	91.5 AV			1.00 V	350	52.20	39.30
5	#10420.00	60.1 PK	74.0	-13.9	1.00 V	174	43.70	16.40
6	#10420.00	47.5 AV	54.0	-6.5	1.00 V	174	31.10	16.40

REMARKS:

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

TEST MODE B

ABOVE 1GHz DATA:

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	5150.00	54.9 PK	74.0	-19.1	1.00 H	6	49.50	5.40
2	5150.00	41.4 AV	54.0	-12.6	1.00 H	6	36.00	5.40
3	*5180.00	94.9 PK			1.00 H	6	55.60	39.30
4	*5180.00	84.5 AV			1.00 H	6	45.20	39.30
5	#10360.00	57.0 PK	74.0	-17.0	1.05 H	333	41.00	16.00
6	#10360.00	45.2 AV	54.0	-8.8	1.05 H	333	29.20	16.00
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	5150.00	56.4 PK	74.0	-17.6	1.00 V	10	51.00	5.40
2	5150.00	43.5 AV	54.0	-10.5	1.00 V	10	38.10	5.40
3	*5180.00	101.4 PK			1.00 V	10	62.10	39.30
4	*5180.00	90.7 AV			1.00 V	10	51.40	39.30
5	#10360.00	57.1 PK	74.0	-16.9	1.15 V	241	41.10	16.00
6	#10360.00	45.4 AV	54.0	-8.6	1.15 V	241	29.40	16.00

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.
6. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*5200.00	95.5 PK			1.00 H	45	56.20	39.30
2	*5200.00	85.1 AV			1.00 H	45	45.80	39.30
3	#10400.00	57.4 PK	74.0	-16.6	1.07 H	317	41.20	16.20
4	#10400.00	45.7 AV	54.0	-8.3	1.07 H	317	29.50	16.20
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	*5200.00	101.8 PK			1.00 V	2	62.50	39.30
2	*5200.00	91.5 AV			1.00 V	2	52.20	39.30
3	#10400.00	57.5 PK	74.0	-16.5	1.30 V	286	41.30	16.20
4	#10400.00	45.9 AV	54.0	-8.1	1.30 V	286	29.70	16.20

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 radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*5240.00	95.0 PK			1.00 H	18	55.70	39.30
2	*5240.00	84.9 AV			1.00 H	18	45.60	39.30
3	5350.00	53.7 PK	74.0	-20.3	1.00 H	18	48.20	5.50
4	5350.00	41.2 AV	54.0	-12.8	1.00 H	18	35.70	5.50
5	#10480.00	57.5 PK	74.0	-16.5	1.07 H	302	40.70	16.80
6	#10480.00	46.3 AV	54.0	-7.7	1.07 H	302	29.50	16.80
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	*5240.00	101.7 PK			1.00 V	15	62.40	39.30
2	*5240.00	91.1 AV			1.00 V	15	51.80	39.30
3	5350.00	54.3 PK	74.0	-19.7	1.00 V	15	48.80	5.50
4	5350.00	41.3 AV	54.0	-12.7	1.00 V	15	35.80	5.50
5	#10480.00	58.2 PK	74.0	-15.8	1.32 V	225	41.40	16.80
6	#10480.00	46.4 AV	54.0	-7.6	1.32 V	225	29.60	16.80

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.
6. "#":The radiated frequency is out the restricted band.

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	5150.00	57.9 PK	74.0	-16.1	1.00 H	30	52.50	5.40
2	5150.00	45.7 AV	54.0	-8.3	1.00 H	30	40.30	5.40
3	*5180.00	100.1 PK			1.00 H	36	60.80	39.30
4	*5180.00	89.8 AV			1.00 H	36	50.50	39.30
5	#10360.00	57.2 PK	74.0	-16.8	1.15 H	263	41.20	16.00
6	#10360.00	46.3 AV	54.0	-7.7	1.15 H	263	30.30	16.00
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	5150.00	58.2 PK	74.0	-15.8	1.39 V	259	52.80	5.40
2	5150.00	46.4 AV	54.0	-7.6	1.39 V	259	41.00	5.40
3	*5180.00	107.5 PK			1.37 V	257	68.20	39.30
4	*5180.00	97.6 AV			1.37 V	257	58.30	39.30
5	#10360.00	57.5 PK	74.0	-16.5	1.18 V	54	41.50	16.00
6	#10360.00	46.4 AV	54.0	-7.6	1.18 V	54	30.40	16.00

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.
6. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*5200.00	100.5 PK			1.00 H	37	61.20	39.30
2	*5200.00	90.0 AV			1.00 H	37	50.70	39.30
3	#10400.00	57.5 PK	74.0	-16.5	1.06 H	315	41.30	16.20
4	#10400.00	46.5 AV	54.0	-7.5	1.06 H	315	30.30	16.20
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	*5200.00	107.7 PK			1.47 V	276	68.40	39.30
2	*5200.00	98.0 AV			1.47 V	276	58.70	39.30
3	#10400.00	57.9 PK	74.0	-16.1	1.15 V	254	41.70	16.20
4	#10400.00	46.7 AV	54.0	-7.3	1.15 V	254	30.50	16.20

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 radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*5240.00	100.0 PK			1.00 H	20	60.70	39.30
2	*5240.00	90.1 AV			1.00 H	20	50.80	39.30
3	5350.00	57.3 PK	74.0	-16.7	1.00 H	20	51.80	5.50
4	5350.00	44.7 AV	54.0	-9.3	1.00 H	20	39.20	5.50
5	#10480.00	58.3 PK	74.0	-15.7	1.11 H	313	41.50	16.80
6	#10480.00	47.1 AV	54.0	-6.9	1.11 H	313	30.30	16.80
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	*5240.00	106.9 PK			1.50 V	253	67.60	39.30
2	*5240.00	97.2 AV			1.50 V	253	57.90	39.30
3	5350.00	57.6 PK	74.0	-16.4	1.50 V	253	52.10	5.50
4	5350.00	45.2 AV	54.0	-8.8	1.50 V	253	39.70	5.50
5	#10480.00	58.4 PK	74.0	-15.6	1.06 V	195	41.60	16.80
6	#10480.00	47.3 AV	54.0	-6.7	1.06 V	195	30.50	16.80

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.
6. "#":The radiated frequency is out the restricted band.

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	5150.00	61.9 PK	74.0	-12.1	1.00 H	33	56.50	5.40
2	5150.00	48.7 AV	54.0	-5.3	1.00 H	33	43.30	5.40
3	*5190.00	97.8 PK			1.00 H	36	58.50	39.30
4	*5190.00	88.1 AV			1.00 H	36	48.80	39.30
5	#10380.00	57.5 PK	74.0	-16.5	1.13 H	34	41.40	16.10
6	#10380.00	46.3 AV	54.0	-7.7	1.13 H	34	30.20	16.10
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	5150.00	63.5 PK	74.0	-10.5	1.35 V	283	58.10	5.40
2	5150.00	50.1 AV	54.0	-3.9	1.35 V	283	44.70	5.40
3	*5190.00	105.9 PK			1.35 V	268	66.60	39.30
4	*5190.00	95.8 AV			1.35 V	268	56.50	39.30
5	#10380.00	57.8 PK	74.0	-16.2	1.21 V	145	41.70	16.10
6	#10380.00	46.4 AV	54.0	-7.6	1.21 V	145	30.30	16.10

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 radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*5230.00	98.1 PK			1.00 H	42	58.80	39.30
2	*5230.00	88.1 AV			1.00 H	42	48.80	39.30
3	5350.00	59.5 PK	74.0	-14.5	1.00 H	42	54.00	5.50
4	5350.00	46.2 AV	54.0	-7.8	1.00 H	42	40.70	5.50
5	#10460.00	58.3 PK	74.0	-15.7	1.15 H	20	41.70	16.60
6	#10460.00	47.0 AV	54.0	-7.0	1.15 H	20	30.40	16.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	105.4 PK			1.32 V	286	66.10	39.30
2	*5230.00	95.4 AV			1.32 V	286	56.10	39.30
3	5350.00	61.0 PK	74.0	-13.0	1.32 V	286	55.50	5.50
4	5350.00	47.5 AV	54.0	-6.5	1.32 V	286	42.00	5.50
5	#10460.00	58.5 PK	74.0	-15.5	1.20 V	133	41.90	16.60
6	#10460.00	47.2 AV	54.0	-6.8	1.20 V	133	30.60	16.60

REMARKS:

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

802.11ac (VHT80)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 42	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	5150.00	60.2 PK	74.0	-13.8	1.00 H	185	54.80	5.40
2	5150.00	47.9 AV	54.0	-6.1	1.00 H	185	42.50	5.40
3	*5210.00	94.4 PK			1.00 H	189	55.10	39.30
4	*5210.00	84.4 AV			1.00 H	189	45.10	39.30
5	#10420.00	57.0 PK	74.0	-17.0	1.03 H	18	40.60	16.40
6	#10420.00	47.0 AV	54.0	-7.0	1.03 H	18	30.60	16.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	61.4 PK	74.0	-12.6	1.00 V	189	56.00	5.40
2	5150.00	49.0 AV	54.0	-5.0	1.00 V	189	43.60	5.40
3	*5210.00	101.1 PK			1.00 V	4	61.80	39.30
4	*5210.00	91.1 AV			1.00 V	4	51.80	39.30
5	#10420.00	57.2 PK	74.0	-16.8	1.37 V	263	40.80	16.40
6	#10420.00	47.3 AV	54.0	-6.7	1.37 V	263	30.90	16.40

REMARKS:

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

TEST MODE A

BELOW 1GHz WORST-CASE DATA: 802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 69%RH	TESTED BY	Brad Tung

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	**101.75**	**41.5 QP**	**43.5**	**-2.0**	**1.50 H**	**178**	**59.90**	**-18.40**
2	249.08	41.4 QP	46.0	-4.6	1.50 H	26	55.90	-14.50
3	499.32	35.1 QP	46.0	-10.9	1.75 H	76	44.10	-9.00
4	600.31	39.1 QP	46.0	-6.9	2.00 H	104	46.10	-7.00
5	701.30	39.7 QP	46.0	-6.3	1.00 H	288	45.10	-5.40
6	800.24	38.5 QP	46.0	-7.5	1.25 H	231	41.60	-3.10
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	34.05	33.9 QP	40.0	-6.1	1.25 V	325	49.60	-15.70
2	113.67	40.4 QP	43.5	-3.1	1.25 V	282	57.60	-17.20
3	249.08	33.0 QP	46.0	-13.0	1.00 V	314	47.50	-14.50
4	600.31	34.2 QP	46.0	-11.8	3.00 V	150	41.20	-7.00
5	701.30	36.5 QP	46.0	-9.5	2.00 V	77	41.90	-5.40
6	800.24	35.9 QP	46.0	-10.1	1.50 V	66	39.00	-3.10

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

TEST MODE B

BELOW 1GHz WORST-CASE DATA: 802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 69%RH	TESTED BY	Brad Tung

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	44.96	34.8 QP	40.0	-5.2	1.25 H	227	49.00	-14.20
2	**111.55**	**41.5 QP**	**43.5**	**-2.0**	**1.00 H**	**48**	**58.70**	**-17.20**
3	249.08	41.5 QP	46.0	-4.5	3.00 H	170	56.00	-14.50
4	600.31	34.5 QP	46.0	-11.5	1.50 H	169	41.50	-7.00
5	701.30	39.5 QP	46.0	-6.5	2.00 H	241	44.90	-5.40
6	800.24	38.5 QP	46.0	-7.5	1.00 H	305	41.60	-3.10
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	35.29	34.8 QP	40.0	-5.2	1.00 V	16	49.80	-15.00
2	113.67	40.9 QP	43.5	-2.6	1.50 V	325	58.10	-17.20
3	249.08	32.3 QP	46.0	-13.7	1.00 V	299	46.80	-14.50
4	600.31	33.0 QP	46.0	-13.0	2.00 V	267	40.00	-7.00
5	701.30	34.5 QP	46.0	-11.5	1.75 V	231	39.90	-5.40
6	800.24	34.6 QP	46.0	-11.4	1.25 V	230	37.70	-3.10

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

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

Tested Date: Dec. 24, 2013

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 29, 2013	Nov. 28, 2014
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 28, 2012	Dec. 27, 2013
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 17, 2013	Jul. 16, 2014
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 04, 2013	Feb. 03, 2014
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

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

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

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

4.2.3 TEST PROCEDURES

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

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

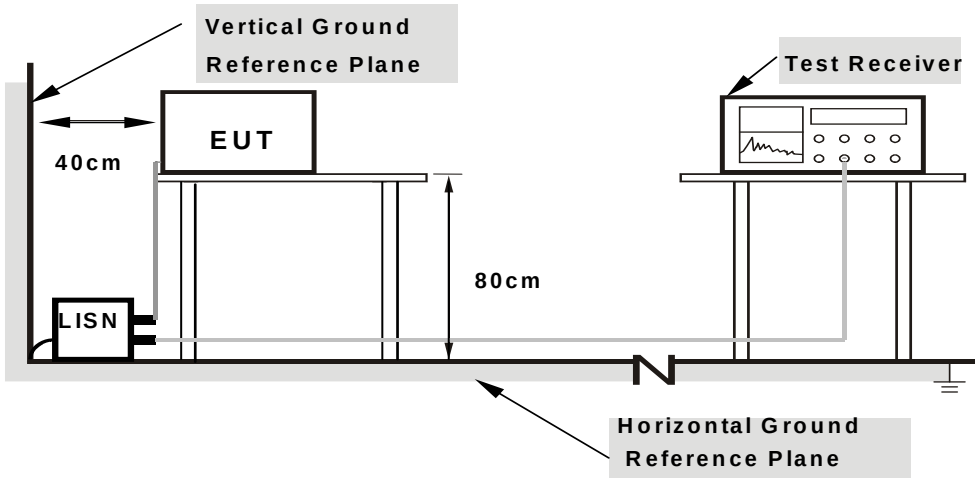
c. The frequency range from 150kHz to 30MHz was searched. Emissions levels under (Limit - 20dB) were not recorded.

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

TEST MODE A

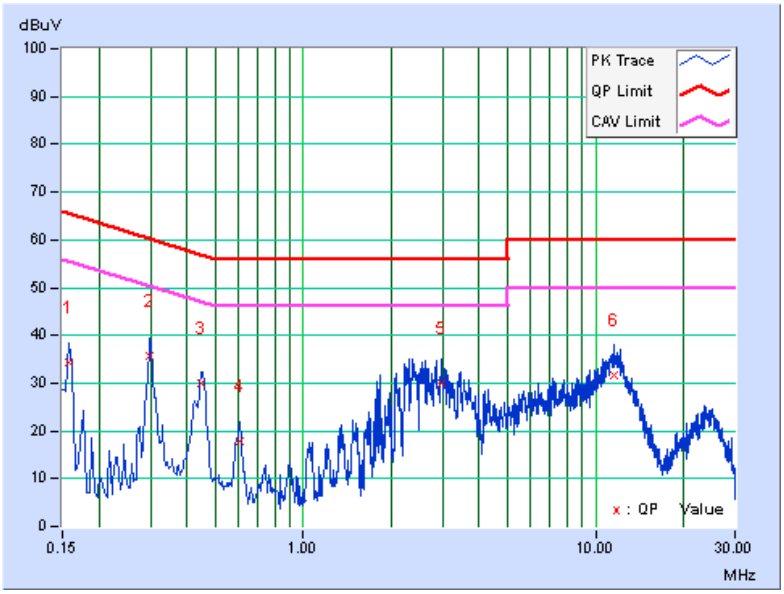
CONDUCTED WORST-CASE DATA: 802.11n (40MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15782	0.10	34.30	18.83	34.40	18.93	65.58	55.58	-31.18	-36.65
2	0.29897	0.11	35.48	23.36	35.59	23.47	60.27	50.27	-24.68	-26.80
3	0.44742	0.12	29.73	20.26	29.85	20.38	56.92	46.92	-27.07	-26.54
4	0.60747	0.13	17.59	7.93	17.72	8.06	56.00	46.00	-38.28	-37.94
5	2.96911	0.20	29.62	17.58	29.82	17.78	56.00	46.00	-26.18	-28.22
6	11.50855	0.55	31.10	20.32	31.65	20.87	60.00	50.00	-28.35	-29.13

REMARKS:

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

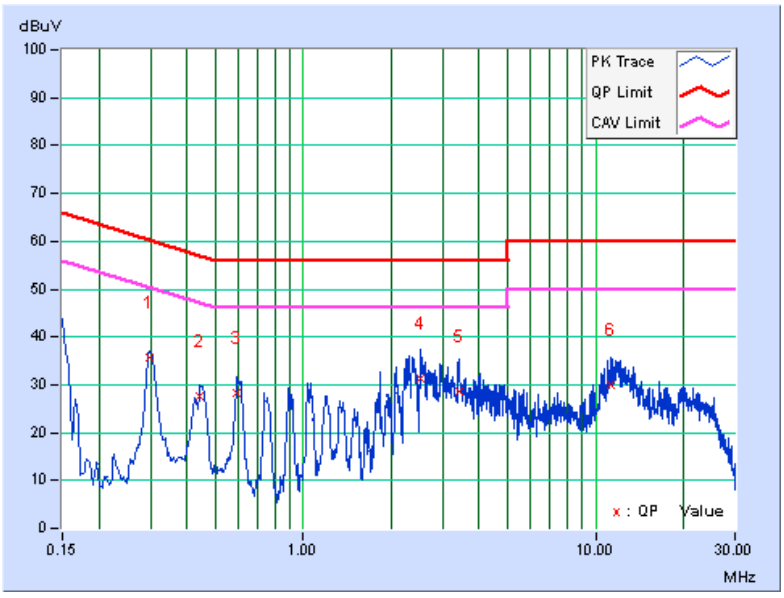


PHASE	Line 2	6dB BANDWIDTH	9kHz

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.29819	0.12	35.73	26.35	35.85	26.47	60.29	50.29	-24.44	-23.82
2	0.44390	0.13	27.51	17.83	27.64	17.96	56.99	46.99	-29.35	-29.03
3	0.59183	0.13	28.29	17.65	28.42	17.78	56.00	46.00	-27.58	-28.22
4	2.51164	0.17	30.99	16.98	31.16	17.15	56.00	46.00	-24.84	-28.85
5	3.39530	0.19	28.54	16.22	28.73	16.41	56.00	46.00	-27.27	-29.59
6	11.24267	0.40	29.61	19.01	30.01	19.41	60.00	50.00	-29.99	-30.59

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



TEST MODE B

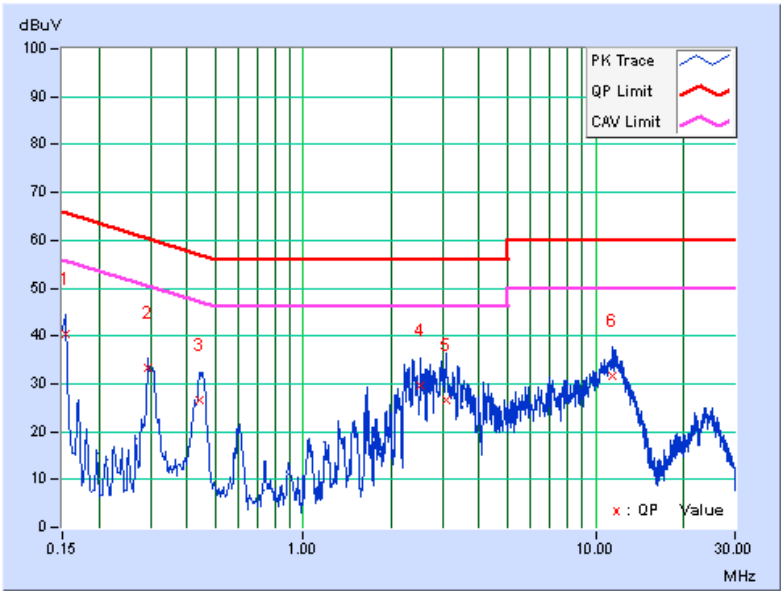
CONDUCTED WORST-CASE DATA: 802.11n (20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.10	40.34	25.21	40.44	25.31	65.79	55.79	-25.35	-30.48
2	0.29506	0.11	33.32	20.50	33.43	20.61	60.38	50.38	-26.95	-29.77
3	0.43934	0.12	26.37	16.74	26.49	16.86	57.07	47.07	-30.58	-30.21
4	2.52728	0.19	29.47	15.84	29.66	16.03	56.00	46.00	-26.34	-29.97
5	3.07077	0.20	26.33	14.53	26.53	14.73	56.00	46.00	-29.47	-31.27
6	11.38343	0.55	31.09	20.29	31.64	20.84	60.00	50.00	-28.36	-29.16

REMARKS:

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

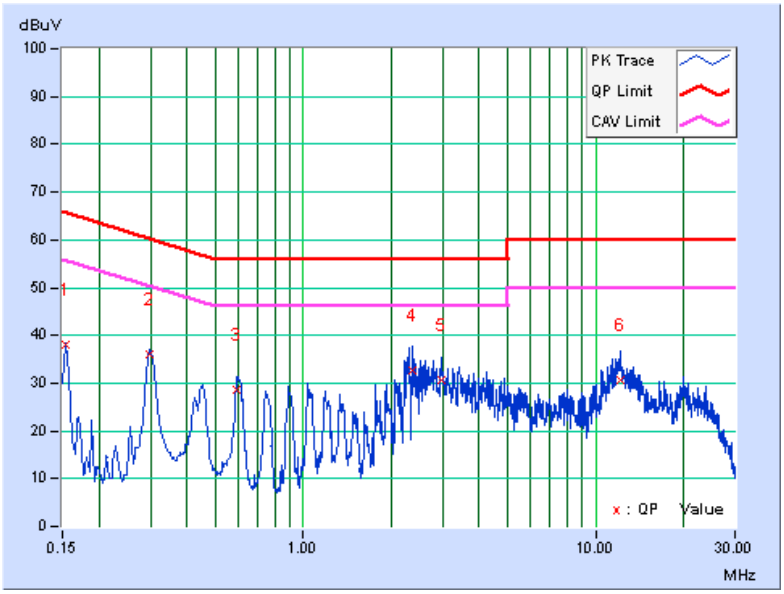


PHASE	Line 2	6dB BANDWIDTH	9kHz

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.11	38.00	25.58	38.11	25.69	65.79	55.79	-27.68	-30.10
2	0.29819	0.12	35.76	26.28	35.88	26.40	60.29	50.29	-24.41	-23.89
3	0.59314	0.13	28.61	18.09	28.74	18.22	56.00	46.00	-27.26	-27.78
4	**2.36306**	**0.17**	**32.44**	**17.38**	**32.61**	**17.55**	**56.00**	**46.00**	**-23.39**	**-28.45**
5	2.96520	0.18	30.60	18.20	30.78	18.38	56.00	46.00	-25.22	-27.62
6	12.11851	0.42	30.24	19.25	30.66	19.67	60.00	50.00	-29.34	-30.33

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 PEAK TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

FREQUENCY BAND	LIMIT
5.15 ~ 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB

NOTE: Where B is the 26dB emission bandwidth in MHz.

Per KDB 662911 D01 Multiple Transmitter Output v02r01 Method of conducted output power measurement on IEEE 802.11 devices,

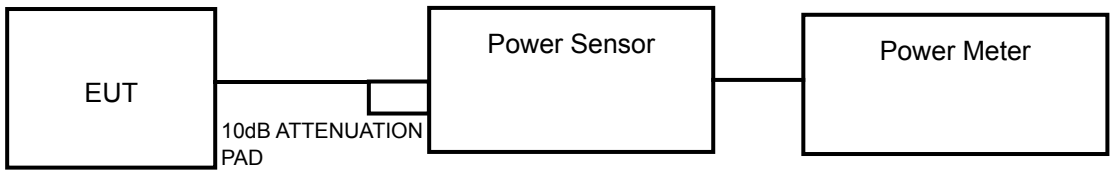
Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;
Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

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

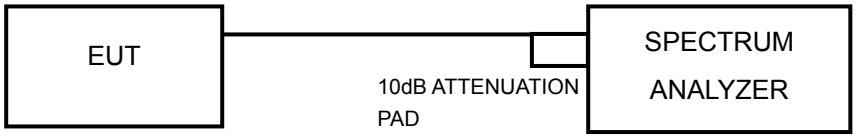
4.3.2 TEST SETUP

FOR POWER OUTPUT MEASUREMENT

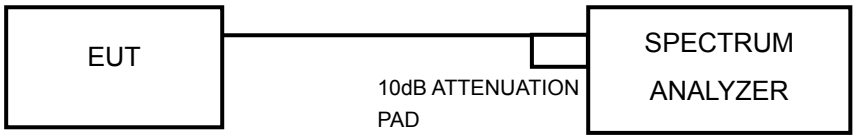
For 802.11a, 802.11n (20MHz), 802.11n (40MHz)



For 802.11ac (80MHz)



FOR 26dB BANDWIDTH



4.3.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.3.4 TEST PROCEDURE

FOR AVERAGE POWER MEASUREMENT

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)

Method SA-1

1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 1 MHz.
3) Set VBW ≥ 3 MHz.
4) Number of points in sweep ≥ 2 Span / RBW.
5) Sweep time = auto.
6) Set trigger to free run (duty cycle≥98 percent); Set video trigger (duty cycle<98 percent)
7) Detector = RMS.
8) Trace average at least 100 traces in power averaging mode
9) Compute power by integrating the spectrum across the 26 dB EBW of the signal.

FOR 26dB BANDWIDTH

1) Set RBW = approximately 1% of the emission bandwidth.
2) Set the VBW > RBW.
3) Detector = Peak.
4) Trace mode = max hold.
5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

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 specific channel frequencies individually.

4.3.7 TEST RESULTS

POWER OUTPUT:

TEST MODE A

802.11a

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
36	5180	5.32	6.95	6.57	12.898	11.11	17	PASS
40	5200	5.76	7.23	6.53	13.549	11.32	17	PASS
48	5240	6.26	7.25	6.60	14.107	11.49	17	PASS

NOTE:
CHAIN 0
1. 4dBm + 10log(22.16) = 17.46 dBm > 17dBm
2. 4dBm + 10log(23.24) = 17.66 dBm > 17dBm
3. 4dBm + 10log(22.08) = 17.44 dBm > 17dBm
CHAIN 1
1. 4dBm + 10log(22.56) = 17.53 dBm > 17dBm
2. 4dBm + 10log(22.81) = 17.58 dBm > 17dBm
3. 4dBm + 10log(22.98) = 17.61 dBm > 17dBm
CHAIN 2
1. 4dBm + 10log(22.18) = 17.46 dBm > 17dBm
2. 4dBm + 10log(22.31) = 17.48 dBm > 17dBm
3. 4dBm + 10log(22.36) = 17.49 dBm > 17dBm

802.11n (20MHz)

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
36	5180	11.60	12.33	11.35	45.200	16.55	17	PASS
40	5200	11.53	12.28	11.44	45.059	16.54	17	PASS
48	5240	11.64	12.33	11.25	45.023	16.53	17	PASS

NOTE:
CHAIN 0
1. 4dBm + 10log(24.05) = 17.81 dBm > 17dBm
2. 4dBm + 10log(23.47) = 17.71 dBm > 17dBm
3. 4dBm + 10log(23.51) = 17.71 dBm > 17dBm
CHAIN 1
1. 4dBm + 10log(23.04) = 17.62 dBm > 17dBm
2. 4dBm + 10log(22.86) = 17.59 dBm > 17dBm
3. 4dBm + 10log(22.94) = 17.61 dBm > 17dBm
CHAIN 2
1. 4dBm + 10log(23.51) = 17.71 dBm > 17dBm
2. 4dBm + 10log(23.31) = 17.68 dBm > 17dBm
3. 4dBm + 10log(23.83) = 17.77 dBm > 17dBm

802.11n (40MHz)

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
38	5190	11.25	11.94	11.71	43.791	16.41	17	PASS
46	5230	11.67	12.37	12.11	**48.202**	16.83	17	PASS

NOTE:
CHAIN 0
1. 4dBm + 10log(46.28) = 20.65 dBm > 17dBm
2. 4dBm + 10log(46.88) = 20.71 dBm > 17dBm
CHAIN 1
1. 4dBm + 10log(45.09) = 20.54 dBm > 17dBm
2. 4dBm + 10log(45.47) = 20.58 dBm > 17dBm
CHAIN 2
1. 4dBm + 10log(45.05) = 20.54 dBm > 17dBm
2. 4dBm + 10log(46.53) = 20.68 dBm > 17dBm

802.11ac (VHT80)

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
42	5210	10.33	10.92	10.92	35.507	15.50	17	PASS

NOTE:
CHAIN 0
1. 4dBm + 10log(88.59) = 23.47 dBm > 17dBm
CHAIN 1
1. 4dBm + 10log(91.49) = 23.61 dBm > 17dBm
CHAIN 2
1. 4dBm + 10log(88.12) = 23.45 dBm > 17dBm

TEST MODE B

802.11a

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
36	5180	5.57	6.53	6.64	12.717	11.04	17	PASS
40	5200	5.66	6.27	6.45	12.333	10.91	17	PASS
48	5240	6.36	7.29	6.96	14.649	11.66	17	PASS

NOTE:
CHAIN 0
1. 4dBm + 10log(21.72) = 17.37 dBm > 17dBm
2. 4dBm + 10log(22.01) = 17.43 dBm > 17dBm
3. 4dBm + 10log(22.42) = 17.51 dBm > 17dBm
CHAIN 1
1. 4dBm + 10log(22.48) = 17.52 dBm > 17dBm
2. 4dBm + 10log(22.86) = 17.59 dBm > 17dBm
3. 4dBm + 10log(22.72) = 17.56 dBm > 17dBm
CHAIN 2
1. 4dBm + 10log(23.11) = 17.64 dBm > 17dBm
2. 4dBm + 10log(21.87) = 17.40 dBm > 17dBm
3. 4dBm + 10log(23.15) = 17.65 dBm > 17dBm

802.11n (20MHz)

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
36	5180	11.84	11.17	11.54	42.624	16.30	17	PASS
40	5200	11.62	10.78	11.40	40.292	16.05	17	PASS
48	5240	11.79	11.71	11.82	45.131	16.54	17	PASS

NOTE:
CHAIN 0
1. 4dBm + 10log(23.18) = 17.65 dBm > 17dBm
2. 4dBm + 10log(23.95) = 17.79 dBm > 17dBm
3. 4dBm + 10log(23.07) = 17.63 dBm > 17dBm
CHAIN 1
1. 4dBm + 10log(23.36) = 17.68 dBm > 17dBm
2. 4dBm + 10log(23.54) = 17.72 dBm > 17dBm
3. 4dBm + 10log(23.42) = 17.70 dBm > 17dBm
CHAIN 2
1. 4dBm + 10log(23.42) = 17.70 dBm > 17dBm
2. 4dBm + 10log(23.47) = 17.71 dBm > 17dBm
3. 4dBm + 10log(23.37) = 17.69 dBm > 17dBm

802.11n (40MHz)

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
38	5190	11.07	10.93	11.12	38.124	15.81	17	PASS
46	5230	11.23	11.33	10.99	39.417	15.96	17	PASS

NOTE:
CHAIN 0
1. 4dBm + 10log(46.08) = 20.64 dBm > 17dBm
2. 4dBm + 10log(46.70) = 20.69 dBm > 17dBm
CHAIN 1
1. 4dBm + 10log(45.68) = 20.60 dBm > 17dBm
2. 4dBm + 10log(45.61) = 20.59 dBm > 17dBm
CHAIN 2
1. 4dBm + 10log(45.61) = 20.59 dBm > 17dBm
2. 4dBm + 10log(44.72) = 20.51 dBm > 17dBm

802.11ac (VHT80)

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
42	5210	10.80	10.69	10.52	35.017	15.44	17	PASS

NOTE:
CHAIN 0
1. 4dBm + 10log(87.24) = 23.41 dBm > 17dBm
CHAIN 1
1. 4dBm + 10log(89.53) = 23.52 dBm > 17dBm
CHAIN 2
1. 4dBm + 10log(88.20) = 23.45 dBm > 17dBm

26dB BANDWIDTH:

TEST MODE A

802.11a

CHANNEL	FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
36	5180	22.16	22.56	22.18	PASS
40	5200	23.24	22.81	22.31	PASS
48	5240	22.08	22.98	22.36	PASS

802.11n (20MHz)

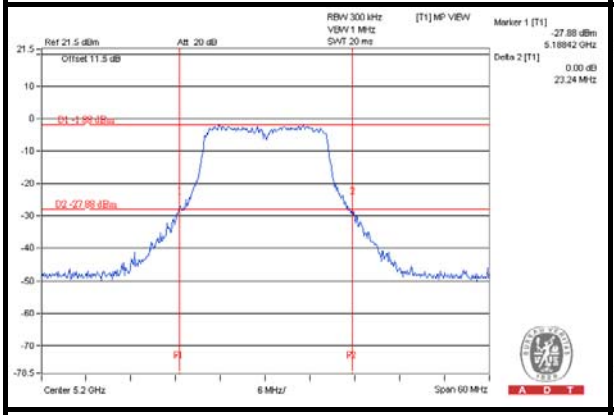
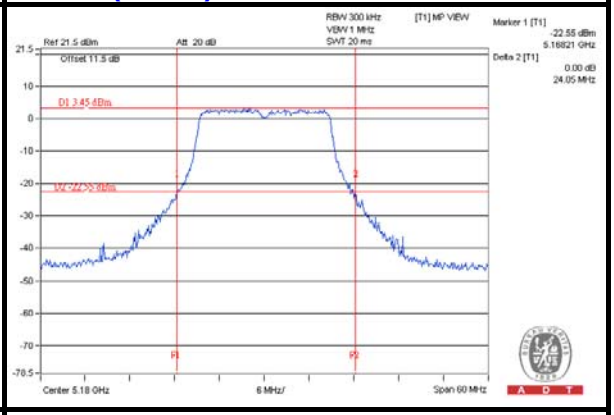
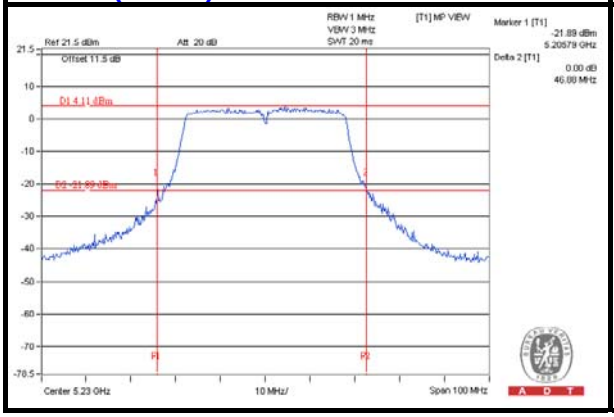
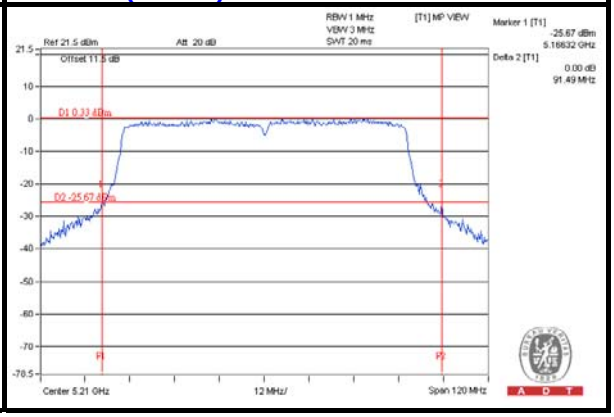
CHANNEL	FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
36	5180	24.05	23.04	23.51	PASS
40	5200	23.47	22.86	23.31	PASS
48	5240	23.51	22.94	23.83	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
38	5190	46.28	45.09	45.05	PASS
46	5230	46.88	45.47	46.53	PASS

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
42	5210	88.59	91.49	88.12	PASS

SPECTRUM PLOT OF WORST VALUE	
802.11a	**802.11n (20MHz)**
	
802.11n (40MHz)	**802.11ac (VHT80)**
	

TEST MODE B

802.11a

CHANNEL	FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
36	5180	21.72	22.48	23.11	PASS
40	5200	22.01	22.86	21.87	PASS
48	5240	22.42	22.72	23.15	PASS

802.11n (20MHz)

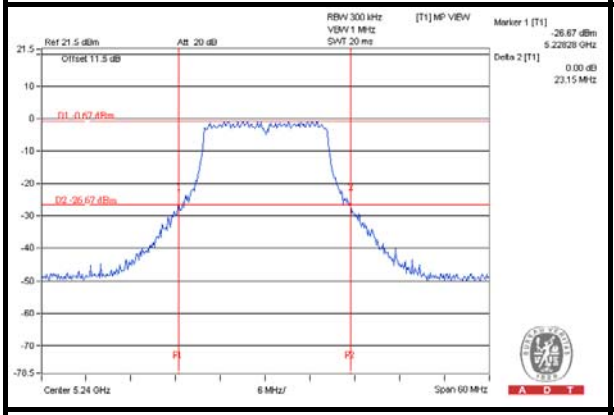
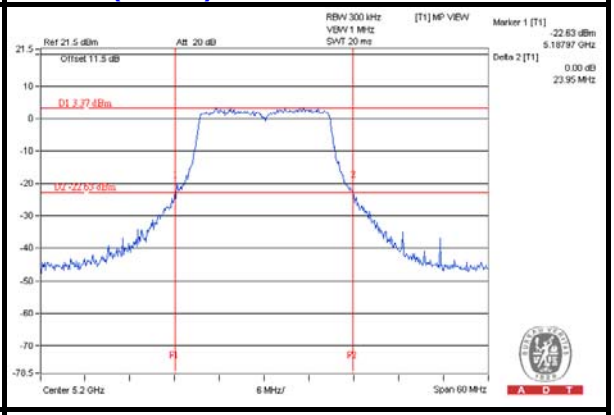
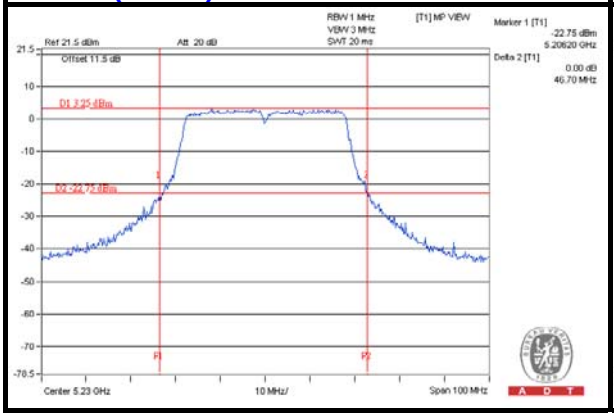
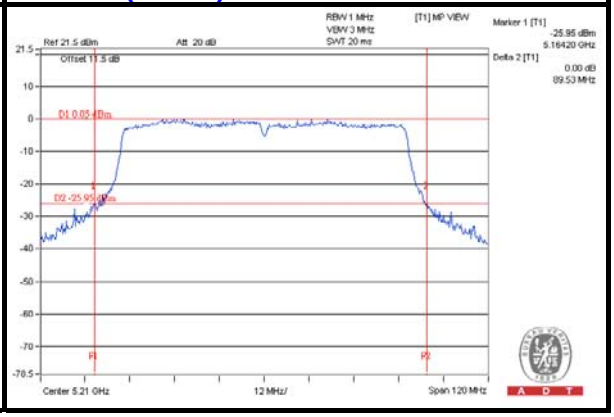
CHANNEL	FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
36	5180	23.18	23.36	23.42	PASS
40	5200	23.95	23.54	23.47	PASS
48	5240	23.07	23.42	23.37	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
38	5190	46.08	45.68	45.61	PASS
46	5230	46.70	45.61	44.72	PASS

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
42	5210	87.24	89.53	88.20	PASS

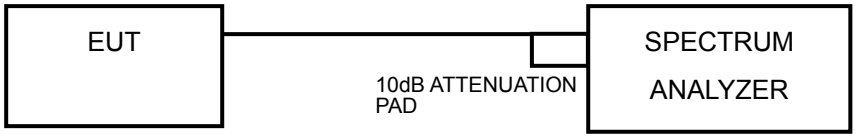
SPECTRUM PLOT OF WORST VALUE	
802.11a	**802.11n (20MHz)**
	
802.11n (40MHz)	**802.11ac (VHT80)**
	

4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

FREQUENCY BAND	LIMIT
5.15 ~ 5.25GHz	4dBm

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.4.4 TEST PROCEDURES

Using method SA-1

1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 30 KHz, Set VBW ≥ 1 MHz, Detector = RMS
3) Set Channel power measure = 1MHz
4) Sweep time = auto, trigger set to “free run”.
5) Trace average at least 100 traces in power averaging mode.
6) Record the max value

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as 4.3.6.

4.4.7 TEST RESULTS

TEST MODE A

802.11a

CHAN.	FREQ. (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
36	5180	-7.22	-5.49	-6.35	-1.52	-0.74	PASS
40	5200	-6.93	-5.28	-6.22	-1.32	-0.74	PASS
48	5240	-6.24	-5.23	-6.00	-1.03	-0.74	PASS

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. Directional gain = 5.97dBi + 10log(3) = 10.74dBi > 6dBi , so the power density limit shall be reduced to 4-(10.74-6) = -0.74dBm.

802.11n (20MHz)

CHAN.	FREQ. (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
36	5180	-1.31	-0.43	-1.77	3.64	4.00	PASS
40	5200	-1.08	-0.41	-1.70	3.74	4.00	PASS
48	5240	-0.77	-0.60	-1.60	3.80	4.00	PASS

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. IEEE 802.11n, MCS = 16-23, NSS = 3,
Directional gain = 5.97dBi + 10log(3/3) = 5.97dBi < 6dBi, so the limit no need to reduced.

802.11n (40MHz)

CHAN.	FREQ. (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
38	5190	-4.54	-4.01	-4.35	0.48	4.00	PASS
46	5230	-4.28	-3.46	-3.91	0.90	4.00	PASS

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

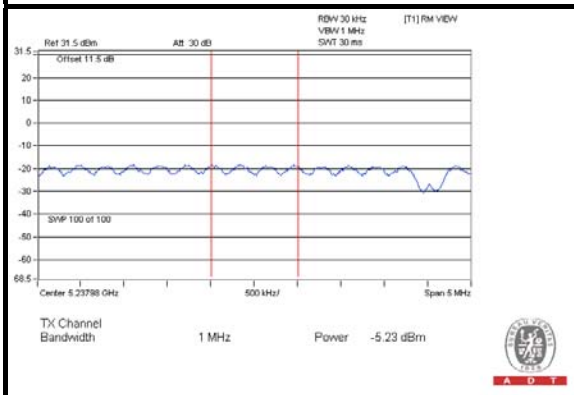
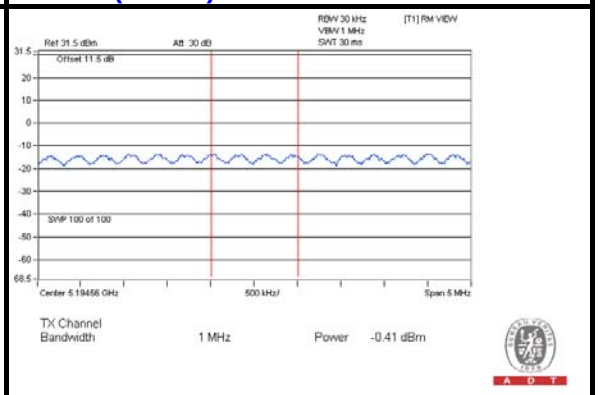
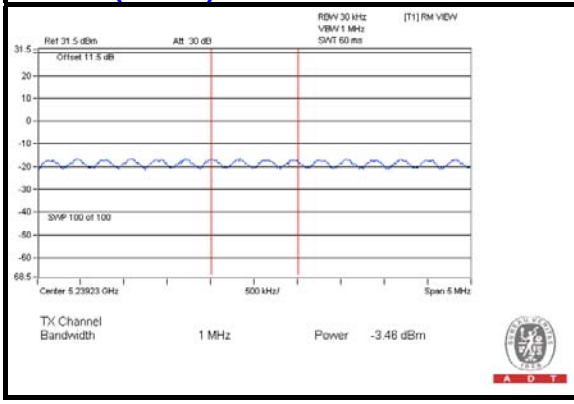
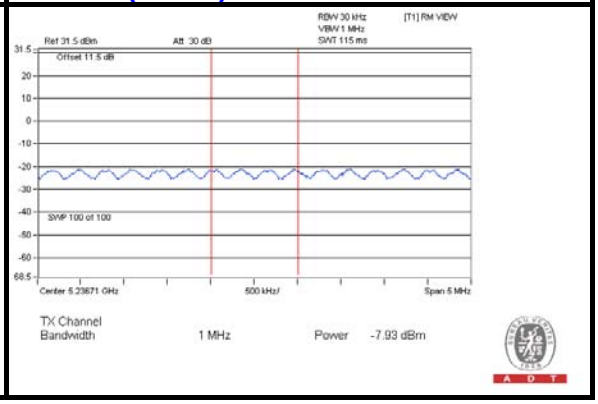
2. IEEE 802.11n, MCS = 16-23, NSS = 3,
Directional gain = 5.97dBi + 10log(3/3) = 5.97dBi < 6dBi, so the limit no need to reduced.

802.11ac (VHT80)

CHAN.	FREQ. (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
42	5210	-8.63	-7.93	-8.47	-3.56	-0.74	PASS

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. Directional gain = 5.97dBi + 10log(3) = 10.74dBi > 6dBi , so the power density limit shall be reduced to 4-(10.74-6) = -0.74dBm.

SPECTRUM PLOT OF WORST VALUE	
802.11a	**802.11n (20MHz)**
	
802.11n (40MHz)	**802.11ac (VHT80)**
	

TEST MODE B

802.11a

CHAN.	FREQ. (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
36	5180	-5.62	-6.06	-5.34	-0.89	-0.74	PASS
40	5200	-6.35	-6.16	-5.53	-1.23	-0.74	PASS
48	5240	-5.19	-6.32	-5.59	-0.90	-0.74	PASS

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. Directional gain = 5.97dBi + 10log(3) = 10.74dBi > 6dBi , so the power density limit shall be reduced to 4-(10.74-6) = -0.74dBm.

802.11n (20MHz)

CHAN.	FREQ. (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
36	5180	-0.94	-2.07	-1.65	3.24	4.00	PASS
40	5200	-1.43	-2.45	-1.87	2.87	4.00	PASS
48	5240	-1.17	-1.39	-1.18	3.53	4.00	PASS

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. IEEE 802.11n, MCS = 16-23, NSS = 3,
Directional gain = 5.97dBi + 10log(3/3) = 5.97dBi < 6dBi, so the limit no need to reduced.

802.11n (40MHz)

CHAN.	FREQ. (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
38	5190	-4.75	-4.85	-5.02	-0.10	4.00	PASS
46	5230	-4.47	-4.29	-5.01	0.19	4.00	PASS

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

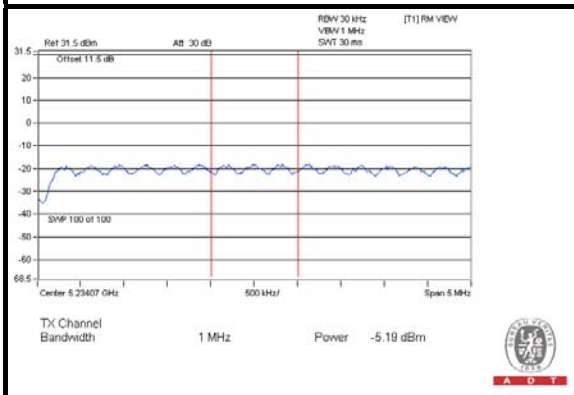
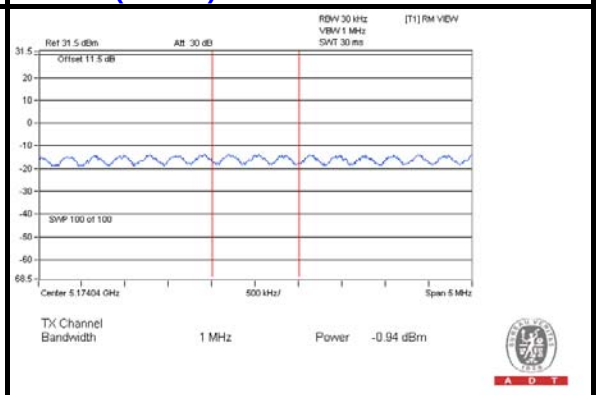
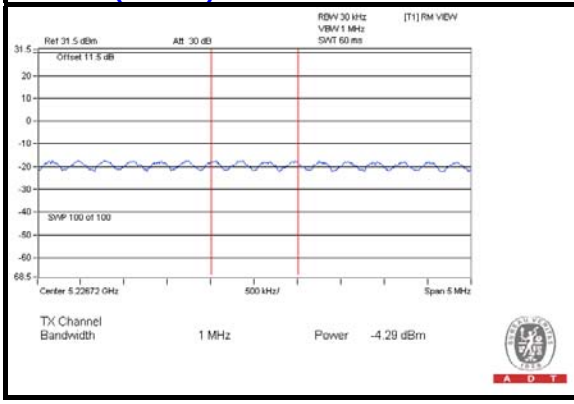
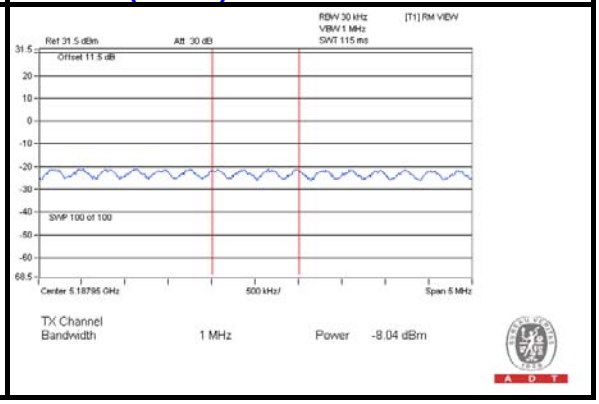
2. IEEE 802.11n, MCS = 16-23, NSS = 3,
Directional gain = 5.97dBi + 10log(3/3) = 5.97dBi < 6dBi, so the limit no need to reduced.

802.11ac (VHT80)

CHAN.	FREQ. (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
42	5210	-8.11	-8.04	-8.87	-3.55	-0.74	PASS

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. Directional gain = 5.97dBi + 10log(3) = 10.74dBi > 6dBi , so the power density limit shall be reduced to 4-(10.74-6) = -0.74dBm.

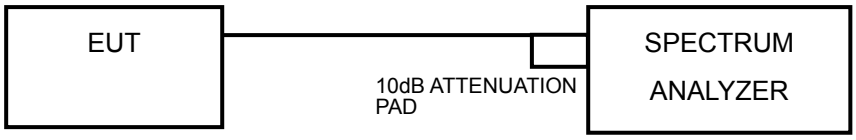
SPECTRUM PLOT OF WORST VALUE	
802.11a	**802.11n (20MHz)**
	
802.11n (40MHz)	**802.11ac (VHT80)**
	

4.5 PEAK POWER EXCURSION MEASUREMENT

4.5.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Shall not exceed 13 dB

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.5.4 TEST PROCEDURE

1) Set RBW = 1 MHz, VBW ≥ 3 MHz, Detector = peak.
2) Trace mode = max-hold. Allow the sweeps to continue until the trace stabilizes.
3) Use the peak search function to find the peak of the spectrum.
4) Measure the PPSD.
5) Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD. Find the worst channel and modulation mode as above test procedure, and follow KDB 789033 D01 General UNII Test Procedures v01r03 and repeat step 1 to 5 for final testing of each modulation mode on a single channel (all modulation types) in a single operating band to compliance with the peak excursion requirement.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

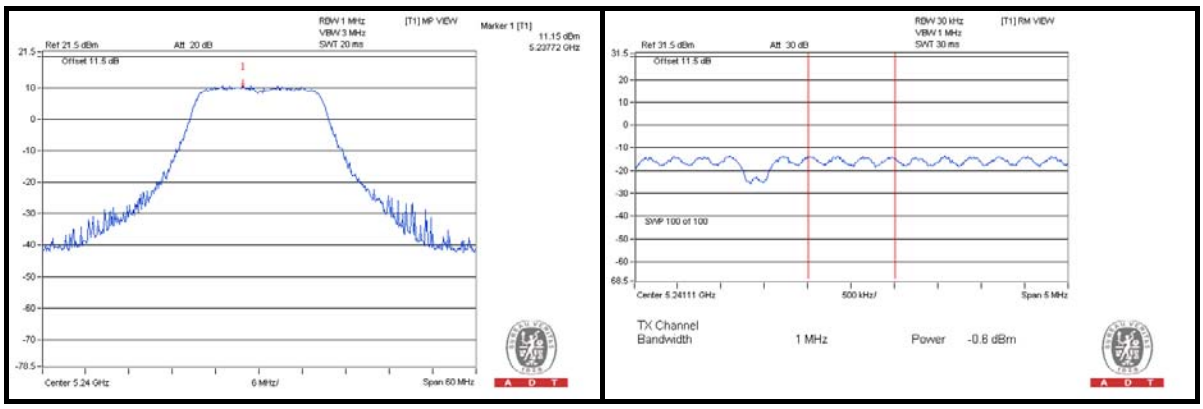
4.5.6 EUT OPERATING CONDITIONS

Same as 4.2.6

4.5.7 TEST RESULTS

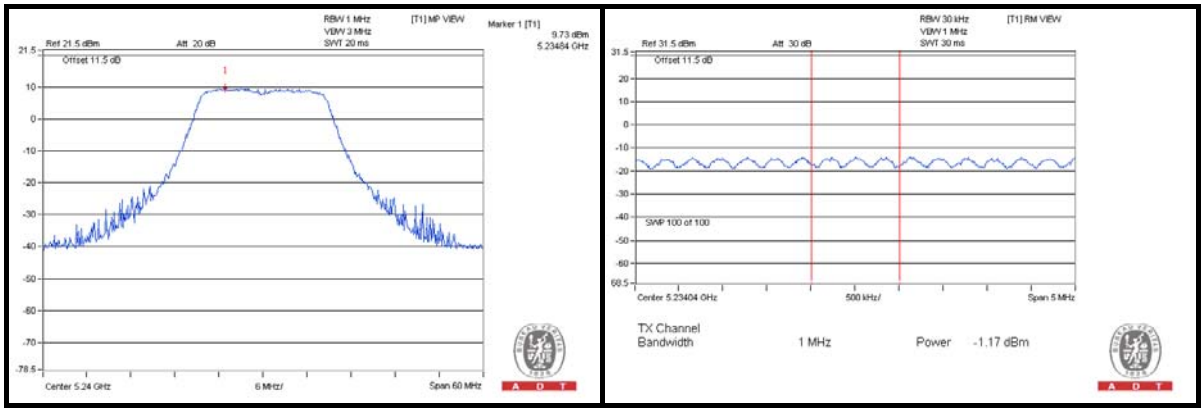
TEST MODE A

MODULATION MODE	MODULATION TYPE	FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS/ FAIL
802.11a	BPSK	5240	5.90	-5.23	11.13	13	PASS
	QPSK		3.32	-5.11	8.43	13	PASS
	16QAM		4.04	-5.24	9.28	13	PASS
	64QAM		4.07	-5.15	9.22	13	PASS
802.11n (20MHz)	BPSK	5240	11.15	-0.60	11.75	13	PASS
	QPSK		8.44	-0.50	8.94	13	PASS
	16QAM		10.23	-0.11	10.34	13	PASS
	64QAM		8.88	-0.26	9.14	13	PASS
802.11n (40MHz)	BPSK	5230	5.30	-3.46	8.76	13	PASS
	QPSK		5.24	-3.49	8.73	13	PASS
	16QAM		5.83	-3.64	9.47	13	PASS
	64QAM		6.88	-3.66	10.54	13	PASS
802.11ac (80MHz)	BPSK	5210	0.52	-7.93	8.45	13	PASS
	QPSK		1.38	-7.95	9.33	13	PASS
	16QAM		1.18	-8.00	9.18	13	PASS
	64QAM		1.51	-7.99	9.50	13	PASS
	256QAM		0.97	-7.97	8.94	13	PASS



TEST MODE B

MODULATION MODE	MODULATION TYPE	FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS/ FAIL
802.11a	BPSK	5240	5.32	-5.19	10.51	13	PASS
	QPSK		3.95	-5.00	8.95	13	PASS
	16QAM		3.94	-5.11	9.05	13	PASS
	64QAM		3.81	-5.61	9.42	13	PASS
802.11n (20MHz)	BPSK	5240	9.73	-1.17	10.90	13	PASS
	QPSK		7.54	-1.39	8.93	13	PASS
	16QAM		8.41	-1.83	10.24	13	PASS
	64QAM		7.30	-1.81	9.11	13	PASS
802.11n (40MHz)	BPSK	5230	4.67	-4.29	8.96	13	PASS
	QPSK		4.66	-4.10	8.76	13	PASS
	16QAM		5.38	-4.05	9.43	13	PASS
	64QAM		5.20	-4.12	9.32	13	PASS
802.11ac (80MHz)	BPSK	5210	1.25	-8.04	9.29	13	PASS
	QPSK		0.92	-8.16	9.08	13	PASS
	16QAM		1.37	-8.02	9.39	13	PASS
	64QAM		1.33	-8.18	9.51	13	PASS
	256QAM		1.56	-8.35	9.91	13	PASS

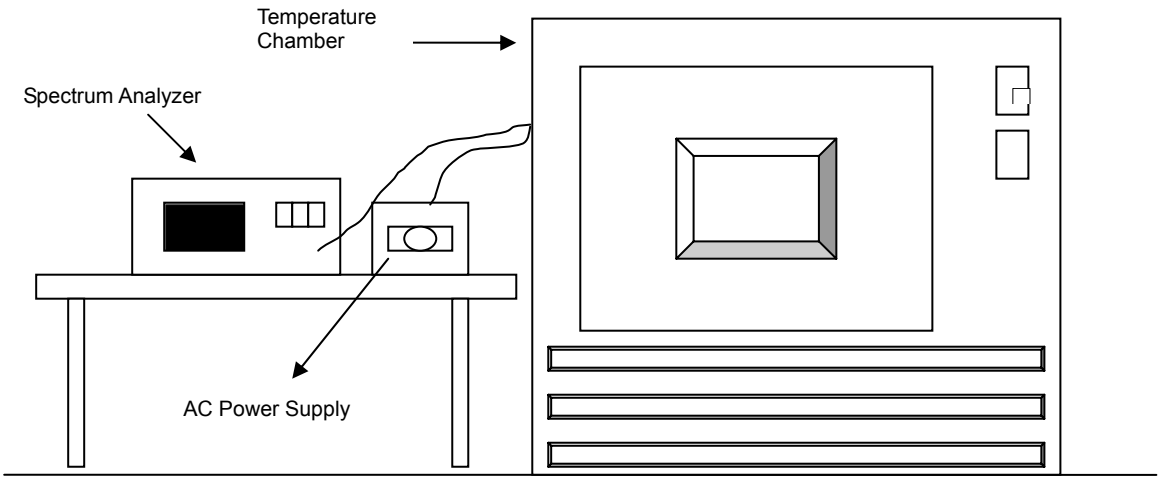


4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency of the carrier signal shall be maintained within band of operation

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.6.4 TEST PROCEDURE

a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.

b. Turn the EUT on and couple its output to a spectrum analyzer.

c. Turn the EUT off and set the chamber to the highest temperature specified.

d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.

e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.

f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Set the EUT transmit at un-modulation mode to test frequency stability.

4.6.7 TEST RESULTS

TEST MODE A

FREQUEMCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5240MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5239.9958	-0.00008	5239.9929	-0.00014	5239.9919	-0.00015	5239.9961	-0.00007
40	120	5240.0023	0.00004	5240.0018	0.00003	5240.0033	0.00006	5240.0058	0.00011
30	120	5239.9865	-0.00026	5239.9838	-0.00031	5239.9847	-0.00029	5239.9831	-0.00032
20	120	5239.9892	-0.00021	5239.9906	-0.00018	5239.9911	-0.00017	5239.9907	-0.00018
10	120	5239.9844	-0.00030	5239.9847	-0.00029	5239.9888	-0.00021	5239.9801	-0.00038
0	120	5239.9838	-0.00031	5239.9862	-0.00026	5239.987	-0.00025	5239.9918	-0.00016
-10	120	5239.985	-0.00029	5239.9832	-0.00032	5239.981	-0.00036	5239.9867	-0.00025
-20	120	5239.977	-0.00044	5239.9837	-0.00031	5239.9785	-0.00041	5239.9798	-0.00039
-30	120	5240.0217	0.00041	5240.0189	0.00036	5240.013	0.00025	5240.0227	0.00043

FREQUEMCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5240MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5239.9898	-0.00019	5239.9915	-0.00016	5239.9911	-0.00017	5239.9915	-0.00016
	120	5239.9892	-0.00021	5239.9906	-0.00018	5239.9911	-0.00017	5239.9907	-0.00018
	102	5239.9901	-0.00019	5239.9903	-0.00019	5239.9902	-0.00019	5239.9912	-0.00017

TEST MODE B

FREQUEMCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5240MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5240.002	0.00004	5239.9969	-0.00006	5239.9928	-0.00014	5240.0006	0.00001
40	120	5239.9942	-0.00011	5239.9985	-0.00003	5240.0033	0.00006	5239.997	-0.00006
30	120	5239.9853	-0.00028	5239.979	-0.00040	5239.9866	-0.00026	5239.9826	-0.00033
20	120	5240.0027	0.00005	5240.0052	0.00010	5240.0013	0.00002	5240.0016	0.00003
10	120	5239.9762	-0.00045	5239.9799	-0.00038	5239.9755	-0.00047	5239.9698	-0.00058
0	120	5239.9982	-0.00003	5239.9967	-0.00006	5239.9987	-0.00002	5240.0002	0.00000
-10	120	5239.9729	-0.00052	5239.9756	-0.00047	5239.9693	-0.00059	5239.9798	-0.00039
-20	120	5240.0049	0.00009	5240.0008	0.00002	5239.9972	-0.00005	5240.0025	0.00005
-30	120	5240.0033	0.00006	5240.0021	0.00004	5239.9995	-0.00001	5240	0.00000

FREQUEMCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5240MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5240.0037	0.00007	5240.0054	0.00010	5240.0011	0.00002	5240.0009	0.00002
	120	5240.0027	0.00005	5240.0052	0.00010	5240.0013	0.00002	5240.0016	0.00003
	102	5240.0024	0.00005	5240.0054	0.00010	5240.0017	0.00003	5240.0011	0.00002

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. INFORMATION ON THE TESTING LABORATORIES

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

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

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
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Hwa Ya EMC/RF/Safety Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3270892

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

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

7. 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---