



FCC TEST REPORT (15.407)

REPORT NO.: RF130729C17-2

MODEL NO.: TX201L

FCC ID: MSQ-TX201L

RECEIVED: Jul. 26, 2013

TESTED: Aug. 02, 2013 ~ Aug. 27, 2013

ISSUED: Sep. 04, 2013

APPLICANT: ASUSTek COMPUTER INC.

ADDRESS: 4F., No. 150, LI-TE Rd., PEITOU, TAIPEI 112, TAIWAN

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.



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification

TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1. CERTIFICATION	5
2. SUMMARY OF TEST RESULTS	6
2.1 MEASUREMENT uncertainty	6
3. GENERAL INFORMATION	7
3.1 GENERAL DESCRIPTION OF EUT	7
3.2 DESCRIPTION OF TEST MODES	11
3.2.1 Test Mode Applicability and tested channel detail	13
3.3 DESCRIPTION OF SUPPORT UNITS	15
3.3.1 CONFIGURATION OF SYSTEM UNDER TEST	16
3.4 Duty cycle of test signal	16
3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS	17
4. TEST TYPES AND RESULTS	18
4.1 Radiated Emission AND BANDEDGE Measurement	18
4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	18
4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS	19
4.1.3 TEST INSTRUMENTS	20
4.1.4 TEST PROCEDURES	21
4.1.5 DEVIATION FROM TEST STANDARD	21
4.1.6 TEST SETUP	22
4.1.7 EUT OPERATING CONDITION	22
4.1.8 Test RESULTS	23
4.2 CONDUCTED EMISSION MEASUREMENT	42
4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	42
4.2.2 TEST INSTRUMENTS	42
4.2.3 TEST PROCEDURES	43
4.2.4 DEVIATION FROM TEST STANDARD	43
4.2.5 TEST SETUP	43
4.2.6 EUT OPERATING CONDITIONS	43
4.2.7 TEST RESULTS	44
4.3 Peak transmit power MEASUREMENT	52
4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT	52
4.3.2 TEST SETUP	52
4.3.3 TEST INSTRUMENTS	52
4.3.4 TEST PROCEDURE	53
4.3.5 DEVIATION FROM TEST STANDARD	53
4.3.6 EUT OPERATING CONDITIONS	53
4.3.7 TEST RESULTS	54
4.4 PEAK power spectral density measurement	56
4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT	56
4.4.2 TEST SETUP	56



A D T

4.4.3	TEST INSTRUMENTS	56
4.4.4	TEST PROCEDURES	56
4.4.5	DEVIATION FROM TEST STANDARD	57
4.4.6	EUT OPERATING CONDITIONS	57
4.4.7	TEST RESULTS	57
4.5	Peak power EXCURSION MEASUREMENT	58
4.5.1	LIMITS OF PEAK POWER EXCURSION MEASUREMENT	58
4.5.2	TEST SETUP	58
4.5.3	TEST INSTRUMENTS	58
4.5.4	TEST PROCEDURE	58
4.5.5	DEVIATION FROM TEST STANDARD	58
4.5.6	EUT OPERATING CONDITIONS	59
4.5.7	TEST RESULTS	59
4.6	FREQUENCY STABILITY	60
4.6.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT	60
4.6.2	TEST SETUP	60
4.6.3	TEST INSTRUMENTS	60
4.6.4	TEST PROCEDURE	61
4.6.5	DEVIATION FROM TEST STANDARD	61
4.6.6	EUT OPERATING CONDITION	61
4.6.7	TEST RESULTS	62
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION	63
6.	INFORMATION ON THE TESTING LABORATORIES	64
7.	APPENDIX A - Modifications recorders for engineering changes to the eut BY THE LAB	65



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130729C17-2	Original release	Sep. 04, 2013

1. CERTIFICATION

PRODUCT: Notebook PC
MODEL NO.: TX201L
BRAND: ASUS
APPLICANT: ASUSTek COMPUTER INC.
TESTED: Aug. 02, 2013 ~ Aug. 27, 2013
TEST SAMPLE: Production Unit
STANDARDS: **FCC Part 15, Subpart E (Section 15.407)**
ANSI C63.10-2009

The above equipment (model: TX201L) 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 : Vera Huang , **DATE** : Sep. 04, 2013

Vera Huang / Specialist

APPROVED BY : Sam chen , **DATE** : Sep. 04, 2013

Sam Chen / Assistant 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 -19.07dB at 0.18906MHz.
15.407(b/1/2/3) (b)(6)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -3.11dB at 5148MHz.
15.407(a/1/2)	Peak 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	No antenna connector is used.

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

<Pad>

EUT	Notebook PC
MODEL NO.	TX201L
POWER SUPPLY	5Vdc (adapter or host equipment) 3.75Vdc (battery)
MODULATION TYPE	64QAM, 16QAM, QPSK, BPSK for OFDM
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 MCS7
OPERATING FREQUENCY	5180 ~ 5240MHz
NUMBER OF CHANNEL	4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	20.512mW
ANTENNA TYPE	PIFA antenna with 1.96dBi gain
ANTENNA CONNECTOR	NA
DATA CABLE	Refer to Note as below
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to Note as below



<Base>

POWER SUPPLY	19Vdc (adapter) 7.54Vdc (battery)
MODULATION TYPE	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
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 MCS7 802.11ac: up to V9
OPERATING FREQUENCY	5180 ~ 5240MHz, 5260 ~ 5320MHz, 5500 ~ 5700MHz
NUMBER OF CHANNEL	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz) 5260 ~ 5320MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz) 5500 ~ 5700MHz: 8 for 802.11a, 802.11n (20MHz) 3 for 802.11n (40MHz) 1 for 802.11ac (80MHz)
ANTENNA TYPE	PIFA antenna with 0.69dBi gain
ANTENNA CONNECTOR	NA
DATA CABLE	Refer to Note as below
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to Note as below

**NOTE:**

1. The EUT has following accessories.

<For Pad>

ITEM	BRAND	MODEL	DESCRIPTION
AC Adapter 1	ASUS	AD83531	I/P: 100-240Vac, 50-60Hz, 0.3A O/P: 5Vdc, 2A
AC Adapter 2	ASUS	AD835M1	I/P: 100-240Vac, 50-60Hz, 0.3A O/P: 5Vdc, 2A
Li-ion Battery	Dynapack International Technology Corp/ Trademark for ASUS	C11N1312	Rating: 3.75Vdc, 19Wh
USB cable	ASUS	N/A	0.9m shielded cable w/o ferrite core
Photo Camera	LITEON	13P2BA515	--
Video Camera	CHICONY	CNFDH3021003870LH	--
WLAN/BT Module	Broadcom	BCM43340	--
CPU	Intel	Z2560	760 Pin
Main Borad	ASUS	TX201LA PAD MAIN BOARD	--
LCD Panel 1	INNOLUX	N116HSE	--
LCD Panel 2	BOE	HN116WX1	--
Flash Memory 1	HYNIX	H9TKNNNBPDARAR- NGM	Co-POP LPDDR2 Memory 2G Support Dual 32-bit channels. 6.4GB/s @ 800MHz, 8.2GB/s @ 1066MHz.
Flash Memory 2	ELPIDA	EDB8164B3PD-1D-F	Co-POP LPDDR2 Memory 1G Support Dual 32-bit channels. 6.4GB/s @ 800MHz, 8.2GB/s @ 1066MHz.
eMMC 1	HYNIX	H26M64003DQR	eMMC 32G
eMMC 2	SANDISK	SDIN8DE4-32G	eMMC 16G

* Adapter 1 and adapter 2 have same design, material, and specification. The difference between them is adapter 2 could change plug type.



<For Base>

ITEM	BRAND	MODEL	DESCRIPTION
AC Adapter	ASUS	AD883J20	I/P: 100-240Vac, 50-60Hz, 1A O/P: 19Vdc, 2.37A 2.2m shielded cable w/o ferrite core
Li-ion Battery	Dynapack International Technology Corp/ Trademark for ASUS	C21N1313	Rating: 7.54Vdc, 33Wh
WLAN/BT Module	AZWAVE	AW-CB161H	--
USB to RJ45 Cable	ASUS	USB Ethernet cable	0.18m shielded cable w/o ferrite core Support 10Mbps and 100Mbps
MDP to VGA Cable	ASUS	N/A	0.12m shielded cable w/o ferrite core
CPU 1	Intel	i5-4200U	1168 Pin, 1.8GHz
CPU 2	Intel	i74500u	1168 Pin, 1.6GHz
Main Borad	ASUS	TX201LA BASE BOARD	--
Flash Memory 1	HYNIX	H5TC4G63AFR-PBA	Onboard 4G (256 x 16 x8), 8G (512 x 16 x 8) 1600MHz DDR3L SDRAM
Flash Memory 2	ELPIDA	EDJ4216EFBG-GNL-F	Onboard 4G (256 x 16 x8), 8G (512 x 16 x 8) 1600MHz DDR3L SDRAM
HDD 1	HGST	HTS545050A7E680	7mm HDD 320G/500G/750G 5400RPM
HDD 2	Seagate	ST500LT012	7mm HDD 320G/500G/750G 5400RPM

2. The configurations of the device are as below.

SKU 1 Pad: LCD Panel 1 + Flash Memory 1 + eMMC 1

SKU 2 Pad: LCD Panel 2 + Flash Memory 2 + eMMC 2

SKU 1 Base: CPU 1 + Flash Memory 1 + HDD 1

SKU 2 Base: CPU 2 + Flash Memory 2 + HDD 2

3. The EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11a	1TX
802.11n (20MHz)	1TX
802.11n (40MHz)	1TX
802.11ac (80MHz) (for Base only)	1TX

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



3.2 DESCRIPTION OF TEST MODES

<Pad>

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

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

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

CHANNEL	FREQUENCY
42	5210MHz

<Base>

FOR 5180 ~ 5240MHz

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

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

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

CHANNEL	FREQUENCY
42	5210MHz



FOR 5260 ~ 5320MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
54	5270 MHz	62	5310 MHz

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

CHANNEL	FREQUENCY
58	5290MHz

FOR 5500 ~ 5700MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
100	5500MHz	116	5580MHz
104	5520MHz	132	5660MHz
108	5540MHz	136	5680MHz
112	5560MHz	140	5700MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
102	5510MHz	134	5670MHz
110	5550MHz		

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

CHANNEL	FREQUENCY
106	5530MHz



3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

TEST MODE	TX MODULE		TX ANTENNA	
	PAD	BASE	PAD	BASE
1 Pad	V	-	V	-
2 Pad + Base	V	-	V	-
3 Pad + Base	-	V	-	V

Note:

1. The EUT had been pre-tested on the positioned of each 3 axis for mode 1.
2. The above modes had been pre-tested, mode 1 and mode 3 were the worst cases and only these modes were presented in this report.

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	SKU 1 Pad
B	√	√	√	-	SKU 2 Pad
C	√	√	√	-	SKU 1 Pad + SKU 1 Base
D	√	√	√	-	SKU 2 Pad + SKU 2 Base

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

NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane** for MODE A and MODE B.

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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 44, 48	OFDM	BPSK	6.0
	802.11n (20MHz)		36 to 48	36, 44, 48	OFDM	BPSK	6.5
	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	13.5
B	802.11a	5180-5240	36 to 48	36	OFDM	BPSK	6.0
C, D	802.11ac (80MHz)	5180-5240	42	42	OFDM	BPSK	V0
	802.11n (40MHz)	5260-5320	54 to 62	62	OFDM	BPSK	13.5
	802.11n (40MHz)	5500-5700	102 to 134	102	OFDM	BPSK	13.5



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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11a	5180-5240	36 to 48	36	OFDM	BPSK	6.0
C	802.11n (40MHz)	5500-5700	102 to 134	102	OFDM	BPSK	13.5
D	802.11ac (80MHz)	5180-5240	42	42	OFDM	BPSK	V0

POWER LINE CONDUCTED EMISSION TEST:

The EUT was tested with the following mode.

EUT CONFIGURE MODE	TEST CONDITION
A, B	BT Link + WLAN (5G) Link + Earphone + Adapter
C, D	BT Link + WLAN (5G) Link + Earphone + Adapter + Mouse

BANDEDGE MEASUREMENT:

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 48	OFDM	BPSK	6.0
	802.11n (20MHz)		36 to 48	36, 48	OFDM	BPSK	6.5
	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	13.5



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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 44, 48	OFDM	BPSK	6.0
	802.11n (20MHz)		36 to 48	36, 44, 48	OFDM	BPSK	6.5
	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Anson Lin
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	David Huang
PLC	25deg. C, 65%RH	120Vac, 60Hz	Johnson Liao
APCM	25deg. C, 65%RH	120Vac, 60Hz	Howard Kao

3.3 DESCRIPTION OF SUPPORT UNITS

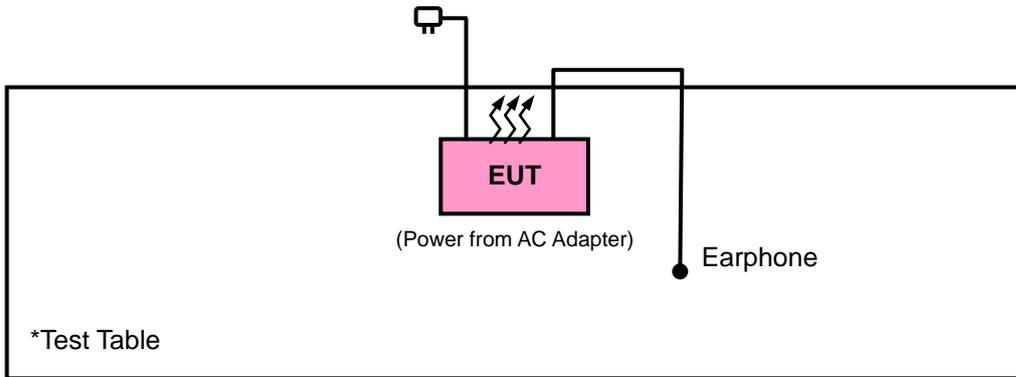
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	EARPHONE	Acon	CW-010M.V	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A

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

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



3.4 DUTY CYCLE OF TEST SIGNAL

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

802.11a: Duty cycle = $1.386/1.699 = 0.816$, Duty factor = $10 * \log(1/0.816) = 0.88$

802.11n (20MHz): Duty cycle = $1.306/1.619 = 0.807$, Duty factor = $10 * \log(1/0.807) = 0.93$

802.11n (40MHz): Duty cycle = $0.615/0.951 = 0.647$, Duty factor = $10 * \log(1/0.647) = 1.89$



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)

ANSI C63.10-2009

KDB 789033 D01 General UNII Test Procedures v01r02

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. 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 (dB μ V/m)	
	PK	AV
	74	54
√	EIRP LIMIT (dBm)	EQUIVALENT FIELD STRENGTH AT 3m (dB μ V/m)
	PK	PK
	-27	68.3

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

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



4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100612	Sep. 20, 2012	Sep. 19, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 17, 2012	Dec. 16, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Mar. 25, 2013	Mar. 24, 2014
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Jan. 07, 2013	Jan. 06, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 25, 2012	Dec. 24, 2013
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier EMCI	EMC 012645	980115	Dec. 28, 2012	Dec. 27, 2013
Preamplifier EMCI	EMC 184045	980116	Dec. 28, 2012	Dec. 27, 2013
Preamplifier EMCI	EMC 330H	980112	Dec. 28, 2012	Dec. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4	Oct. 19, 2012	Oct. 18, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 19, 2012	Oct. 18, 2013
RF signal cable Worken	RG-213	NA	Dec. 29, 2012	Dec. 28, 2013
Software	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	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 calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. The test was performed in HwaYa Chamber 10.
 4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 5. The FCC Site Registration No. is 690701.
 6. The IC Site Registration No. is IC 7450F-10.

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 chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 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.

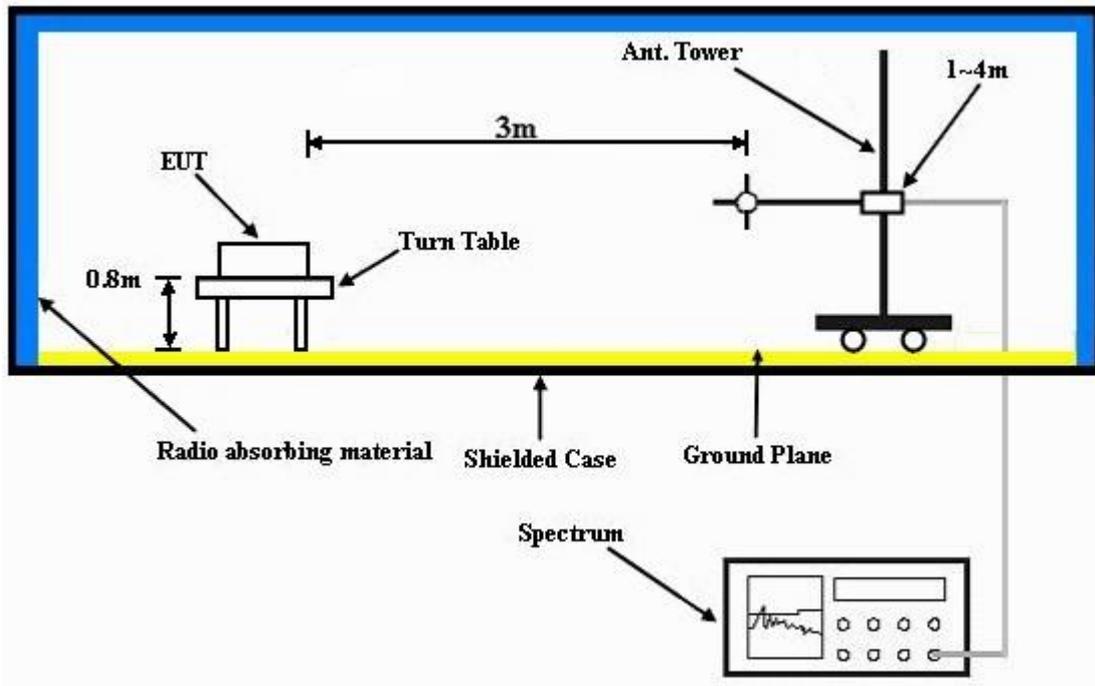
NOTE:

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



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

4.1.7 EUT OPERATING CONDITION

- Placed the EUT on a testing table.
- Use the software to control the EUT under transmission condition continuously at specific channel frequency.



4.1.8 TEST RESULTS

ABOVE 1GHz DATA:

MODE A

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5148	50.89	51.6	54	-3.11	31.32	5.29	37.32	100	0	Average
5148	70.16	70.87	74	-3.84	31.32	5.29	37.32	100	0	Peak
5180	101.77	102.45			31.35	5.31	37.34	100	0	Average
5180	108.75	109.43			31.35	5.31	37.34	100	0	Peak
5418	37.95	38.18	54	-16.05	31.53	5.42	37.18	100	0	Average
5418	56.56	56.79	74	-17.44	31.53	5.42	37.18	100	0	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	45.1	45.81	54	-8.9	31.32	5.29	37.32	102	17	Average
5150	67.44	68.15	74	-6.56	31.32	5.29	37.32	102	17	Peak
5180	95.64	96.32			31.35	5.31	37.34	102	17	Average
5180	104.6	105.28			31.35	5.31	37.34	102	17	Peak
5454	38.38	38.46	54	-15.62	31.56	5.44	37.08	102	17	Average
5454	56.21	56.29	74	-17.79	31.56	5.44	37.08	102	17	Peak

REMARKS:

1. 5180MHz: Fundamental frequency.
2. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 44	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5144	42.4	43.11	54	-11.6	31.32	5.29	37.32	100	327	Average
5144	58.64	59.35	74	-15.36	31.32	5.29	37.32	100	327	Peak
5220	101.92	102.58			31.37	5.33	37.36	100	327	Average
5220	108.24	108.9			31.37	5.33	37.36	100	327	Peak
5416	39.68	39.91	54	-14.32	31.53	5.42	37.18	100	327	Average
5416	56.26	56.49	74	-17.74	31.53	5.42	37.18	100	327	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5024	39.07	39.84	54	-14.93	31.23	5.24	37.24	113	16	Average
5024	55.63	56.4	74	-18.37	31.23	5.24	37.24	113	16	Peak
5220	95.07	95.73			31.37	5.33	37.36	113	16	Average
5220	104.26	104.92			31.37	5.33	37.36	113	16	Peak
5374	38.19	38.48	54	-15.81	31.49	5.4	37.18	113	16	Average
5374	56.19	56.48	74	-17.81	31.49	5.4	37.18	113	16	Peak

REMARKS:

- 5220MHz: Fundamental frequency.
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5130	40.16	40.87	54	-13.84	31.31	5.28	37.3	100	325	Average
5130	56.97	57.68	74	-17.03	31.31	5.28	37.3	100	325	Peak
5240	102.97	103.56			31.39	5.34	37.32	100	325	Average
5240	109.14	109.73			31.39	5.34	37.32	100	325	Peak
5360	41.6	41.91	54	-12.4	31.48	5.39	37.18	100	325	Average
5360	56.48	56.79	74	-17.52	31.48	5.39	37.18	100	325	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5026	38.1	38.87	54	-15.9	31.23	5.24	37.24	114	360	Average
5026	55.8	56.57	74	-18.2	31.23	5.24	37.24	114	360	Peak
5240	97.38	97.97			31.39	5.34	37.32	114	360	Average
5240	105.99	106.58			31.39	5.34	37.32	114	360	Peak
5428	43.17	43.35	54	-10.83	31.53	5.42	37.13	114	360	Average
5428	56.1	56.28	74	-17.9	31.53	5.42	37.13	114	360	Peak

REMARKS:

- 5240MHz: Fundamental frequency.
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5146	49.69	50.4	54	-4.31	31.32	5.29	37.32	100	357	Average
5146	70.42	71.13	74	-3.58	31.32	5.29	37.32	100	357	Peak
5180	101.02	101.7			31.35	5.31	37.34	100	357	Average
5180	108.37	109.05			31.35	5.31	37.34	100	357	Peak
5432	38.03	38.19	54	-15.97	31.55	5.42	37.13	100	357	Average
5432	56.46	56.62	74	-17.54	31.55	5.42	37.13	100	357	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5148	43.87	44.58	54	-10.13	31.32	5.29	37.32	114	14	Average
5148	59.87	60.58	74	-14.13	31.32	5.29	37.32	114	14	Peak
5180	93.95	94.63			31.35	5.31	37.34	114	14	Average
5180	102.61	103.29			31.35	5.31	37.34	114	14	Peak
5454	37.85	37.93	54	-16.15	31.56	5.44	37.08	114	14	Average
5454	56	56.08	74	-18	31.56	5.44	37.08	114	14	Peak

REMARKS:

1. 5180MHz: Fundamental frequency.
2. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 44	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	42.54	43.25	54	-11.46	31.32	5.29	37.32	100	331	Average
5150	60.34	61.05	74	-13.66	31.32	5.29	37.32	100	331	Peak
5220	100.84	101.5			31.37	5.33	37.36	100	331	Average
5220	108.52	109.18			31.37	5.33	37.36	100	331	Peak
5442	39.68	39.82	54	-14.32	31.55	5.44	37.13	100	331	Average
5442	56.1	56.24	74	-17.9	31.55	5.44	37.13	100	331	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5060	39.78	40.53	54	-14.22	31.25	5.25	37.25	103	359	Average
5060	55.92	56.67	74	-18.08	31.25	5.25	37.25	103	359	Peak
5220	97.18	97.84			31.37	5.33	37.36	103	359	Average
5220	105.71	106.37			31.37	5.33	37.36	103	359	Peak
5400	45.64	45.89	54	-8.36	31.52	5.41	37.18	103	359	Average
5400	56.03	56.28	74	-17.97	31.52	5.41	37.18	103	359	Peak

REMARKS:

- 5220MHz: Fundamental frequency.
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5038	39.22	39.97	54	-14.78	31.24	5.25	37.24	110	328	Average
5038	56.5	57.25	74	-17.5	31.24	5.25	37.24	110	328	Peak
5240	100.28	100.87			31.39	5.34	37.32	110	328	Average
5240	108.29	108.88			31.39	5.34	37.32	110	328	Peak
5354	42.71	43.02	54	-11.29	31.48	5.39	37.18	110	328	Average
5354	60.27	60.58	74	-13.73	31.48	5.39	37.18	110	328	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5110	38.09	38.81	54	-15.91	31.29	5.27	37.28	101	12	Average
5110	55.73	56.45	74	-18.27	31.29	5.27	37.28	101	12	Peak
5240	95.19	95.78			31.39	5.34	37.32	101	12	Average
5240	103.73	104.32			31.39	5.34	37.32	101	12	Peak
5440	38.48	38.62	54	-15.52	31.55	5.44	37.13	101	12	Average
5440	56.51	56.65	74	-17.49	31.55	5.44	37.13	101	12	Peak

REMARKS:

- 5240MHz: Fundamental frequency.
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	50.6	51.31	54	-3.4	31.32	5.29	37.32	100	348	Average
5150	68.28	68.99	74	-5.72	31.32	5.29	37.32	100	348	Peak
5190	95.9	96.57			31.35	5.32	37.34	100	348	Average
5190	104.37	105.04			31.35	5.32	37.34	100	348	Peak
5352	38.43	38.74	54	-15.57	31.48	5.39	37.18	100	348	Average
5352	55.84	56.15	74	-18.16	31.48	5.39	37.18	100	348	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	44.42	45.13	54	-9.58	31.32	5.29	37.32	101	15	Average
5150	59.17	59.88	74	-14.83	31.32	5.29	37.32	101	15	Peak
5190	89.46	90.13			31.35	5.32	37.34	101	15	Average
5190	98.27	98.94			31.35	5.32	37.34	101	15	Peak
5406	39.74	39.99	54	-14.26	31.52	5.41	37.18	101	15	Average
5406	56.9	57.15	74	-17.1	31.52	5.41	37.18	101	15	Peak

REMARKS:

1. 5190MHz: Fundamental frequency.
2. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5148	42.31	43.02	54	-11.69	31.32	5.29	37.32	100	332	Average
5148	55.92	56.63	74	-18.08	31.32	5.29	37.32	100	332	Peak
5230	96.53	97.13			31.39	5.33	37.32	100	332	Average
5230	105.53	106.13			31.39	5.33	37.32	100	332	Peak
5414	40.49	40.72	54	-13.51	31.53	5.42	37.18	100	332	Average
5414	56.68	56.91	74	-17.32	31.53	5.42	37.18	100	332	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5104	39.41	40.14	54	-14.59	31.28	5.27	37.28	104	358	Average
5104	55.64	56.37	74	-18.36	31.28	5.27	37.28	104	358	Peak
5230	91.09	91.69			31.39	5.33	37.32	104	358	Average
5230	100.39	100.99			31.39	5.33	37.32	104	358	Peak
5386	45.57	45.84	54	-8.43	31.51	5.4	37.18	104	358	Average
5386	56.59	56.86	74	-17.41	31.51	5.4	37.18	104	358	Peak

REMARKS:

- 5230MHz: Fundamental frequency.
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value

**MODE B****802.11a**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	48.63	49.34	54	-5.37	31.32	5.29	37.32	100	339	Average
5150	70.18	70.89	74	-3.82	31.32	5.29	37.32	100	339	Peak
5180	100.06	100.74			31.35	5.31	37.34	100	339	Average
5180	109.01	109.69			31.35	5.31	37.34	100	339	Peak
5422	38.09	38.32	54	-15.91	31.53	5.42	37.18	100	339	Average
5422	60.51	60.74	74	-13.49	31.53	5.42	37.18	100	339	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	42.24	42.95	54	-11.76	31.32	5.29	37.32	124	29	Average
5150	64.54	65.25	74	-9.46	31.32	5.29	37.32	124	29	Peak
5180	92.79	93.47			31.35	5.31	37.34	124	29	Average
5180	101.9	102.58			31.35	5.31	37.34	124	29	Peak
5406	37.72	37.97	54	-16.28	31.52	5.41	37.18	124	29	Average
5406	60.32	60.57	74	-13.68	31.52	5.41	37.18	124	29	Peak

REMARKS:

- 5180MHz: Fundamental frequency.
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



MODE C

802.11ac (80MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 42	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5062	40.07	40.82	54	-13.93	31.25	5.25	37.25	101	271	Average
5062	54.14	54.89	74	-19.86	31.25	5.25	37.25	101	271	Peak
5210	79.05	79.72			31.37	5.32	37.36	101	271	Average
5210	88.74	89.41			31.37	5.32	37.36	101	271	Peak
5424	38.1	38.33	54	-15.9	31.53	5.42	37.18	101	271	Average
5424	53.58	53.81	74	-20.42	31.53	5.42	37.18	101	271	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5132	46.36	47.07	54	-7.64	31.31	5.28	37.3	108	288	Average
5132	59.55	60.26	74	-14.45	31.31	5.28	37.3	108	288	Peak
5210	88.13	88.8			31.37	5.32	37.36	108	288	Average
5210	97.81	98.48			31.37	5.32	37.36	108	288	Peak
5350	39	39.31	54	-15	31.48	5.39	37.18	108	288	Average
5350	53.95	54.26	74	-20.05	31.48	5.39	37.18	108	288	Peak

REMARKS:

- 5210MHz: Fundamental frequency.
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 62	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5126	37.71	38.42	54	-16.29	31.31	5.28	37.3	100	272	Average
5126	53.16	53.87	74	-20.84	31.31	5.28	37.3	100	272	Peak
5310	79.11	79.48			31.45	5.37	37.19	100	272	Average
5310	88.54	88.91			31.45	5.37	37.19	100	272	Peak
5440	38.86	39	54	-15.14	31.55	5.44	37.13	100	272	Average
5440	54.04	54.18	74	-19.96	31.55	5.44	37.13	100	272	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5126	37.77	38.48	54	-16.23	31.31	5.28	37.3	108	287	Average
5126	54.13	54.84	74	-19.87	31.31	5.28	37.3	108	287	Peak
5310	89.12	89.49			31.45	5.37	37.19	108	287	Average
5310	98.71	99.08			31.45	5.37	37.19	108	287	Peak
5356	44.93	45.24	54	-9.07	31.48	5.39	37.18	108	287	Average
5356	57.7	58.01	74	-16.3	31.48	5.39	37.18	108	287	Peak

REMARKS:

- 5310MHz: Fundamental frequency.
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 102	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5454	38.85	38.93	54	-15.15	31.56	5.44	37.08	114	94	Average
5454	53.61	53.69	74	-20.39	31.56	5.44	37.08	114	94	Peak
5470	54.61	54.67	68.3	-13.69	31.57	5.45	37.08	114	94	Peak
5510	80.99	80.99			31.6	5.46	37.06	114	94	Average
5510	90.48	90.48			31.6	5.46	37.06	114	94	Peak
5725	52.78	52.66	68.3	-15.52	31.96	5.59	37.43	114	94	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5450	41.49	41.57	54	-12.51	31.56	5.44	37.08	100	248	Average
5450	55.02	55.1	74	-18.98	31.56	5.44	37.08	100	248	Peak
5470	61.5	61.56	68.3	-6.8	31.57	5.45	37.08	100	248	Peak
5510	88.83	88.83			31.6	5.46	37.06	100	248	Average
5510	98.35	98.35			31.6	5.46	37.06	100	248	Peak
5725	52.11	51.99	68.3	-16.19	31.96	5.59	37.43	100	248	Peak

REMARKS:

- 5510MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value

**MODE D****802.11ac (80MHz)**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 42	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	43.06	43.77	54	-10.94	31.32	5.29	37.32	100	170	Average
5150	54.06	54.77	74	-19.94	31.32	5.29	37.32	100	170	Peak
5210	79.85	80.52			31.37	5.32	37.36	100	170	Average
5210	87.98	88.65			31.37	5.32	37.36	100	170	Peak
5350	38.06	38.37	54	-15.94	31.48	5.39	37.18	100	170	Average
5350	47.62	47.93	74	-26.38	31.48	5.39	37.18	100	170	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	48.6	49.31	54	-5.4	31.32	5.29	37.32	110	275	Average
5150	61.16	61.87	74	-12.84	31.32	5.29	37.32	110	275	Peak
5210	86.71	87.38			31.37	5.32	37.36	110	275	Average
5210	94.3	94.97			31.37	5.32	37.36	110	275	Peak
5350	38.61	38.92	54	-15.39	31.48	5.39	37.18	110	275	Average
5350	52.66	52.97	74	-21.34	31.48	5.39	37.18	110	275	Peak

REMARKS:

- 5210MHz: Fundamental frequency.
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 62	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	37.79	38.5	54	-16.21	31.32	5.29	37.32	100	167	Average
5150	47.72	48.43	74	-26.28	31.32	5.29	37.32	100	167	Peak
5310	77.1	77.47			31.45	5.37	37.19	100	167	Average
5310	85.44	85.81			31.45	5.37	37.19	100	167	Peak
5350	38.71	39.02	54	-15.29	31.48	5.39	37.18	100	167	Average
5350	50.35	50.66	74	-23.65	31.48	5.39	37.18	100	167	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	37.93	38.64	54	-16.07	31.32	5.29	37.32	108	274	Average
5150	52.24	52.95	74	-21.76	31.32	5.29	37.32	108	274	Peak
5310	88.27	88.64			31.45	5.37	37.19	108	274	Average
5310	96.95	97.32			31.45	5.37	37.19	108	274	Peak
5350	44.88	45.19	54	-9.12	31.48	5.39	37.18	108	274	Average
5350	56.93	57.24	74	-17.07	31.48	5.39	37.18	108	274	Peak

REMARKS:

- 5310MHz: Fundamental frequency.
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 102	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5460	38.36	38.44	54	-15.64	31.56	5.44	37.08	101	316	Average
5460	50.32	50.4	74	-23.68	31.56	5.44	37.08	101	316	Peak
5470	52.88	52.94	68.3	-15.42	31.57	5.45	37.08	101	316	Peak
5510	77.71	77.71			31.6	5.46	37.06	101	316	Average
5510	86.27	86.27			31.6	5.46	37.06	101	316	Peak
5725	50.57	50.45	68.3	-17.73	31.96	5.59	37.43	101	316	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5460	41.49	41.57	54	-12.51	31.56	5.44	37.08	156	297	Average
5460	57.14	57.22	74	-16.86	31.56	5.44	37.08	156	297	Peak
5470	60.07	60.13	68.3	-8.23	31.57	5.45	37.08	156	297	Peak
5510	86.21	86.21			31.6	5.46	37.06	156	297	Average
5510	94.37	94.37			31.6	5.46	37.06	156	297	Peak
5725	52.88	52.76	68.3	-15.42	31.96	5.59	37.43	156	297	Peak

REMARKS:

- 5510MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



A D T

BELOW 1GHz WORST-CASE DATA :**MODE A****802.11a**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-Peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
56.73	30.76	49.05	40	-9.24	12.25	0.81	31.35	100	179	Peak
91.02	29.85	52.4	43.5	-13.65	8.38	1.03	31.96	100	116	Peak
172.29	26.06	44.89	43.5	-17.44	11.47	1.46	31.76	100	152	Peak
542.9	22.18	32.76	46	-23.82	18.3	2.92	31.8	100	163	Peak
675.2	27.36	35.34	46	-18.64	20.51	3.34	31.83	100	184	Peak
819.4	28.45	33.83	46	-17.55	22.48	3.74	31.6	100	133	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
30.27	36.62	55.21	40	-3.38	11.98	0.57	31.14	100	302	QP
39.72	35.36	52.16	40	-4.64	13.54	0.65	30.99	100	110	Peak
56.46	32.15	50.34	40	-7.85	12.35	0.8	31.34	100	155	Peak
539.4	25.8	36.4	46	-20.2	18.22	2.91	31.73	100	279	Peak
629.7	28.71	37.71	46	-17.29	19.96	3.18	32.14	100	258	Peak
720.7	27.3	34.35	46	-18.7	21.11	3.49	31.65	100	233	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



MODE B

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-Peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
55.38	31.97	50.05	40	-8.03	12.45	0.8	31.33	100	131	Peak
165.27	21.85	39.99	43.5	-21.65	12.25	1.42	31.81	100	295	Peak
289.47	25.32	42.37	46	-20.68	12.63	2	31.68	100	184	Peak
441.4	20.66	33.92	46	-25.34	16.16	2.58	32	100	120	Peak
651.4	27.81	36.34	46	-18.19	20.23	3.25	32.01	100	224	Peak
868.4	31.01	36.03	46	-14.99	23.1	3.87	31.99	100	172	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
30.54	31.11	49.52	40	-8.89	12.14	0.57	31.12	100	132	QP
135.3	17.84	36.23	43.5	-25.66	12.08	1.27	31.74	100	194	Peak
273.54	15.28	33.13	46	-30.72	12.17	1.93	31.95	100	262	Peak
395.2	18.89	33.36	46	-27.11	15.21	2.4	32.08	100	91	Peak
689.2	25.11	32.87	46	-20.89	20.69	3.39	31.84	100	134	Peak
940.5	28.45	32.57	46	-17.55	23.74	4.06	31.92	100	263	Peak

REMARKS:

- 1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



MODE C

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 102	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-Peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
72.12	26.9	47.46	40	-13.1	10.29	0.91	31.76	100	93	Peak
159.6	20.27	38.03	43.5	-23.23	12.73	1.39	31.88	100	165	Peak
287.85	30.43	47.53	46	-15.57	12.6	2	31.7	100	127	Peak
335.7	31.08	46.92	46	-14.92	13.8	2.18	31.82	100	264	Peak
580	23.58	33.52	46	-22.42	19.15	3.03	32.12	100	194	Peak
962.2	29.01	32.97	54	-24.99	23.86	4.1	31.92	100	141	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
44.85	24.24	41.05	40	-15.76	13.6	0.73	31.14	100	85	Peak
155.82	18.52	36.2	43.5	-24.98	12.72	1.37	31.77	100	162	Peak
276.51	19.52	37.23	46	-26.48	12.25	1.94	31.9	100	234	Peak
406.4	26.57	40.7	46	-19.43	15.46	2.45	32.04	100	255	Peak
600.3	31.84	41.39	46	-14.16	19.61	3.09	32.25	100	146	Peak
867.7	35.27	40.29	46	-10.73	23.1	3.87	31.99	100	185	Peak

REMARKS:

- 1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



MODE D

802.11ac (80MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 42	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-Peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
72.12	26.07	46.63	40	-13.93	10.29	0.91	31.76	100	176	Peak
184.17	24.06	43.85	43.5	-19.44	10.46	1.52	31.77	100	129	Peak
274.08	24.11	41.91	46	-21.89	12.2	1.93	31.93	100	336	Peak
365.8	26.54	41.67	46	-19.46	14.52	2.29	31.94	100	231	Peak
624.1	25.67	34.78	46	-20.33	19.89	3.16	32.16	100	214	Peak
908.3	28.67	33.18	46	-17.33	23.55	3.98	32.04	100	206	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
75.9	29.47	50.85	40	-10.53	9.33	0.94	31.65	100	192	Peak
159.33	20.22	37.96	43.5	-23.28	12.73	1.38	31.85	100	62	Peak
276.78	18.71	36.42	46	-27.29	12.25	1.94	31.9	100	314	Peak
431.6	30.54	44.04	46	-15.46	15.96	2.55	32.01	100	239	Peak
624.1	25.69	34.8	46	-20.31	19.89	3.16	32.16	100	153	Peak
941.2	28.63	32.75	46	-17.37	23.74	4.06	31.92	100	146	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value



4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBµV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:** 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Nov. 09, 2012	Nov. 08, 2013
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 28, 2012	Dec. 27, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 21, 2012	Dec. 20, 2013
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 02, 2013	Jul. 01, 2014
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-2047.

4.2.3 TEST PROCEDURES

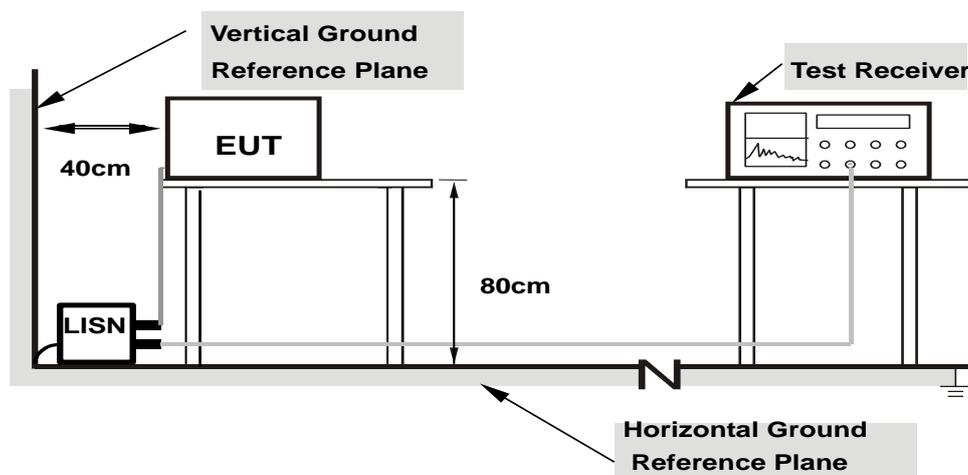
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA

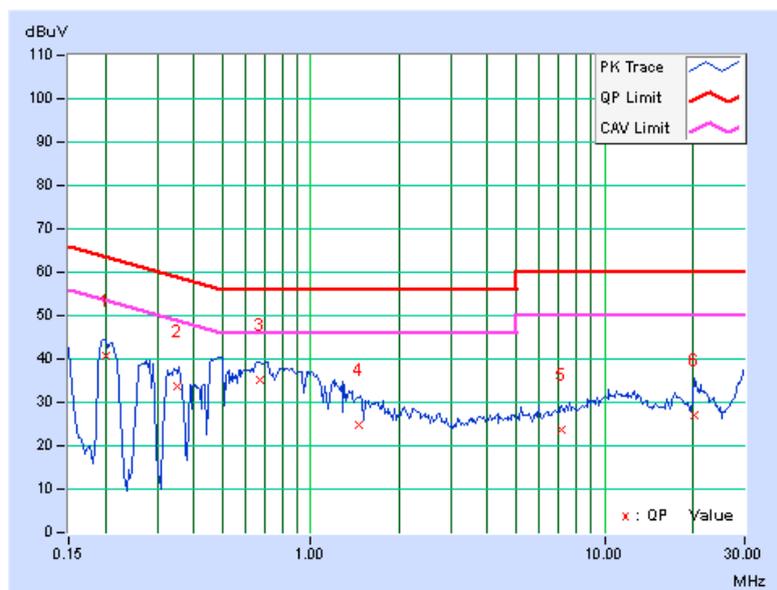
MODE A

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	0.20078	0.17	40.74	26.97	40.91	27.14	63.58	53.58	-22.67	-26.44
2	0.34922	0.20	33.42	19.48	33.62	19.68	58.98	48.98	-25.36	-29.30
3	0.66953	0.24	34.83	15.30	35.07	15.54	56.00	46.00	-20.93	-30.46
4	1.45313	0.27	24.51	8.96	24.78	9.23	56.00	46.00	-31.22	-36.77
5	7.17969	0.40	23.46	18.37	23.86	18.77	60.00	50.00	-36.14	-31.23
6	20.22266	0.64	26.57	17.43	27.21	18.07	60.00	50.00	-32.79	-31.93

REMARKS:

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

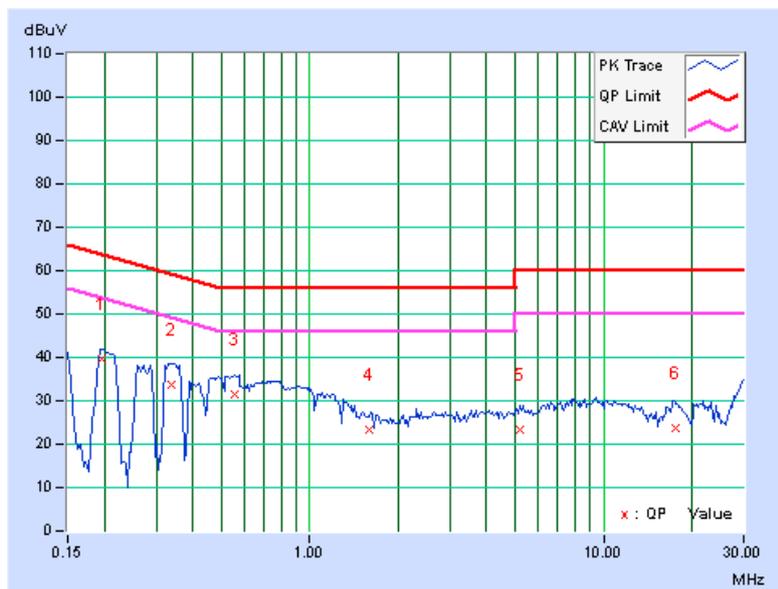


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19687	0.18	39.32	24.45	39.50	24.63	63.74	53.74	-24.24	-29.11
2	0.33750	0.23	33.57	16.59	33.80	16.82	59.26	49.26	-25.47	-32.45
3	0.55625	0.24	31.08	12.39	31.32	12.63	56.00	46.00	-24.68	-33.37
4	1.58594	0.26	22.97	9.64	23.23	9.90	56.00	46.00	-32.77	-36.10
5	5.16797	0.41	22.81	15.33	23.22	15.74	60.00	50.00	-36.78	-34.26
6	17.64453	0.67	22.99	16.09	23.66	16.76	60.00	50.00	-36.34	-33.24

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



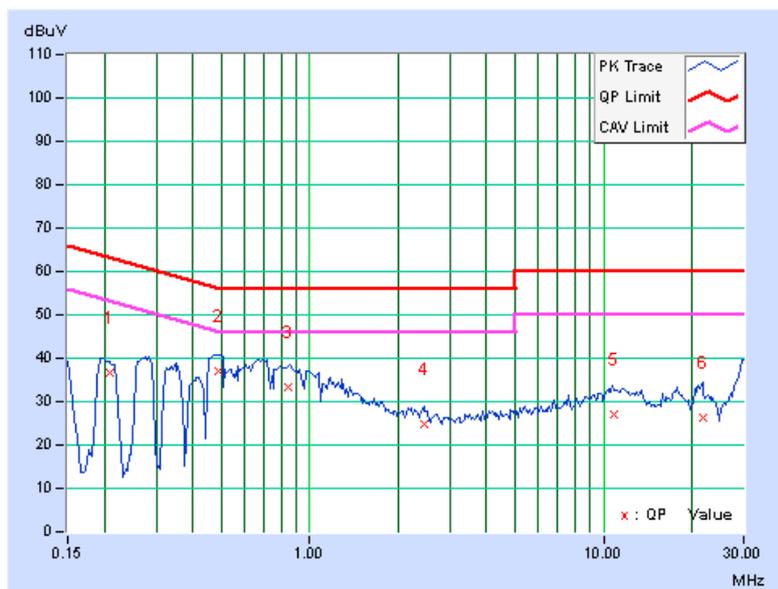
MODE B

PHASE	Line 1	6dB BANDWIDTH	9kHz
--------------	--------	----------------------	------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20859	0.17	36.55	21.99	36.72	22.16	63.26	53.26	-26.54	-31.10
2	0.48594	0.22	36.67	17.73	36.89	17.95	56.24	46.24	-19.35	-28.29
3	0.84141	0.25	33.11	17.09	33.36	17.34	56.00	46.00	-22.64	-28.66
4	2.45313	0.30	24.64	12.91	24.94	13.21	56.00	46.00	-31.06	-32.79
5	10.82813	0.45	26.68	22.12	27.13	22.57	60.00	50.00	-32.87	-27.43
6	21.71094	0.63	25.78	18.67	26.41	19.30	60.00	50.00	-33.59	-30.70

REMARKS:

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

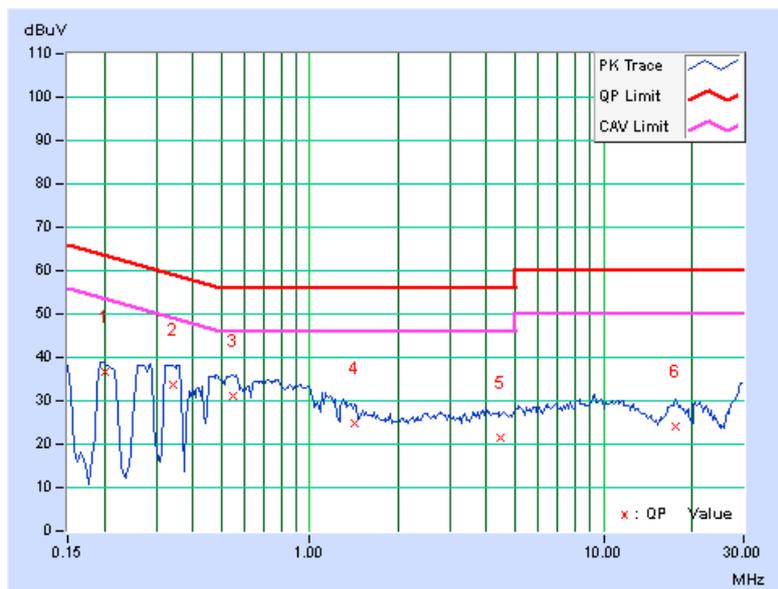


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20078	0.18	36.37	22.05	36.55	22.23	63.58	53.58	-27.03	-31.35
2	0.34141	0.23	33.37	15.95	33.60	16.18	59.17	49.17	-25.57	-32.99
3	0.54844	0.25	31.04	12.33	31.29	12.58	56.00	46.00	-24.71	-33.42
4	1.42188	0.25	24.40	12.13	24.65	12.38	56.00	46.00	-31.35	-33.62
5	4.46875	0.40	21.23	13.43	21.63	13.83	56.00	46.00	-34.37	-32.17
6	17.68359	0.67	23.22	16.05	23.89	16.72	60.00	50.00	-36.11	-33.28

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



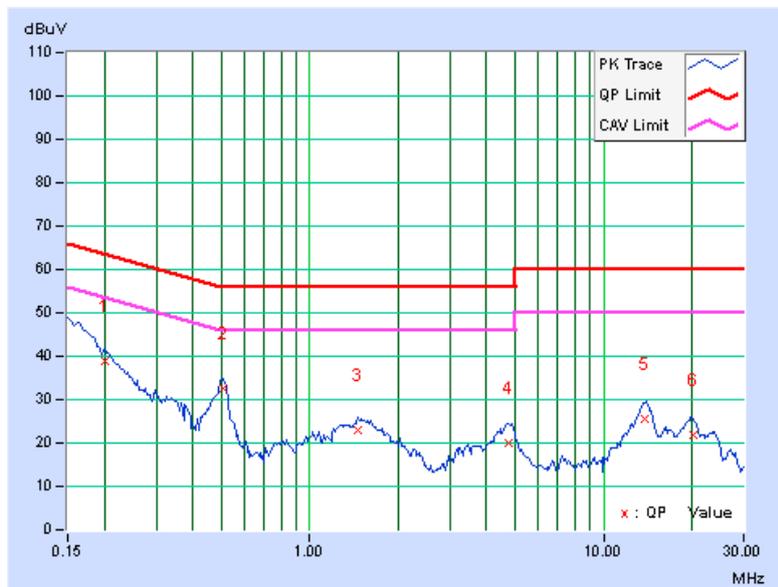
MODE C

PHASE	Line 1	6dB BANDWIDTH	9kHz
--------------	--------	----------------------	------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20078	0.17	38.64	22.33	38.81	22.50	63.58	53.58	-24.77	-31.08
2	0.50547	0.22	32.47	26.42	32.69	26.64	56.00	46.00	-23.31	-19.36
3	1.45703	0.27	22.82	17.90	23.09	18.17	56.00	46.00	-32.91	-27.83
4	4.74219	0.38	19.68	11.10	20.06	11.48	56.00	46.00	-35.94	-34.52
5	13.80078	0.51	25.19	17.21	25.70	17.72	60.00	50.00	-34.30	-32.28
6	20.10938	0.64	21.22	17.36	21.86	18.00	60.00	50.00	-38.14	-32.00

REMARKS:

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

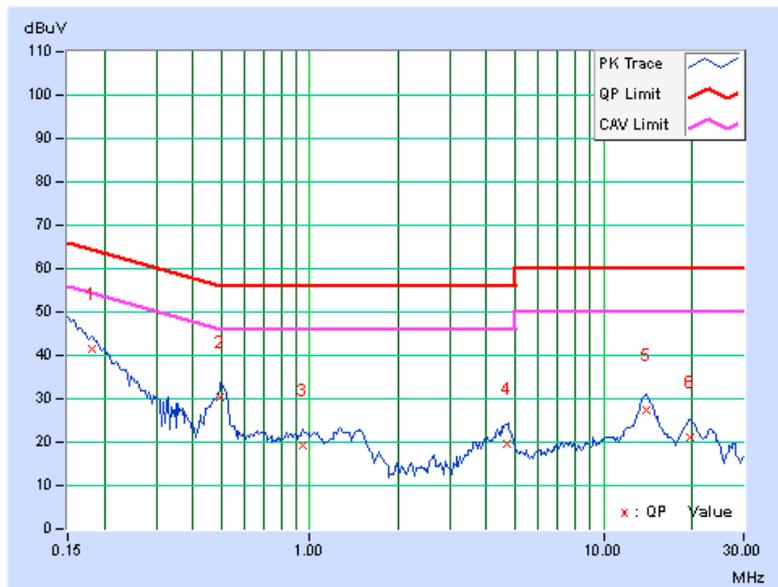


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.18	41.27	26.69	41.45	26.87	64.43	54.43	-22.98	-27.56
2	0.49375	0.25	30.21	24.03	30.46	24.28	56.10	46.10	-25.65	-21.83
3	0.94688	0.23	18.87	13.41	19.10	13.64	56.00	46.00	-36.90	-32.36
4	4.67969	0.40	19.36	11.44	19.76	11.84	56.00	46.00	-36.24	-34.16
5	13.92578	0.58	26.73	19.57	27.31	20.15	60.00	50.00	-32.69	-29.85
6	19.71875	0.72	20.45	16.67	21.17	17.39	60.00	50.00	-38.83	-32.61

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



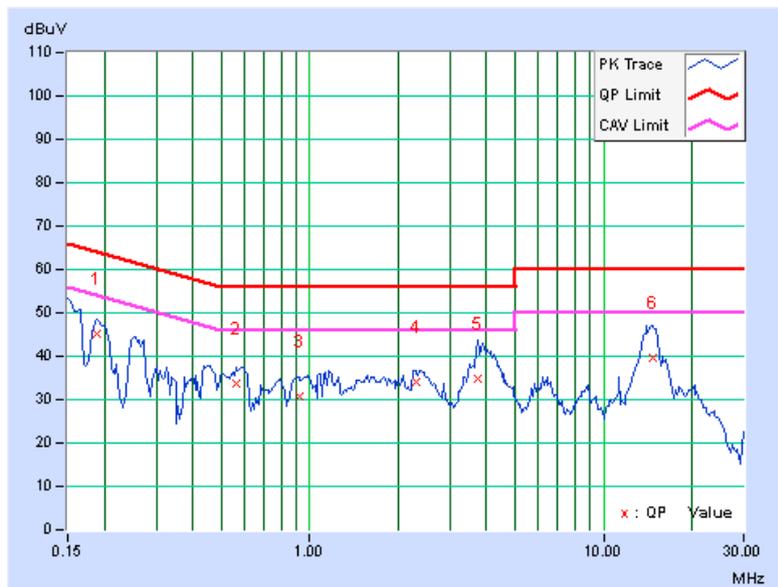
MODE D

PHASE	Line 1	6dB BANDWIDTH	9kHz
--------------	--------	----------------------	------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18906	0.17	44.84	31.92	45.01	32.09	64.08	54.08	-19.07	-21.99
2	0.56016	0.23	33.35	22.29	33.58	22.52	56.00	46.00	-22.42	-23.48
3	0.91953	0.26	30.60	18.71	30.86	18.97	56.00	46.00	-25.14	-27.03
4	2.29297	0.29	33.61	25.10	33.90	25.39	56.00	46.00	-22.10	-20.61
5	3.71094	0.36	34.54	25.71	34.90	26.07	56.00	46.00	-21.10	-19.93
6	14.71875	0.53	39.11	29.27	39.64	29.80	60.00	50.00	-20.36	-20.20

REMARKS:

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

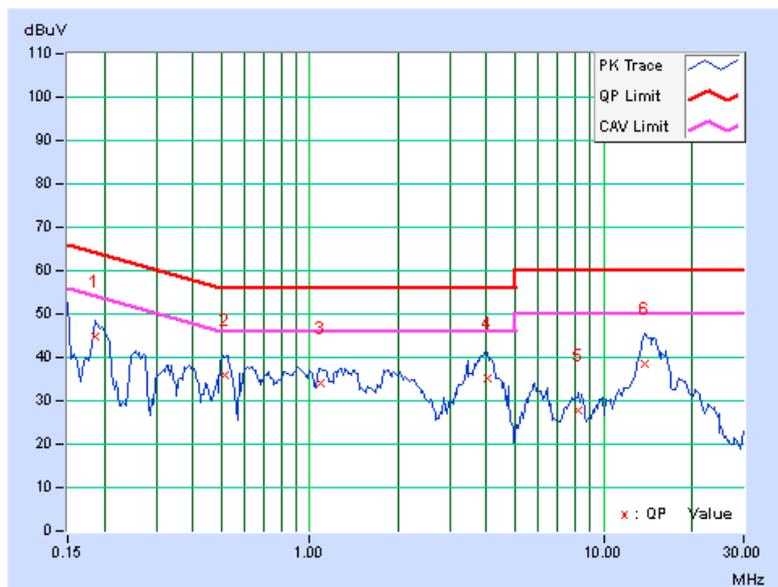


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18516	0.18	44.68	28.74	44.86	28.92	64.25	54.25	-19.39	-25.33
2	0.51719	0.25	35.68	25.65	35.93	25.90	56.00	46.00	-20.07	-20.10
3	1.09375	0.23	33.82	22.10	34.05	22.33	56.00	46.00	-21.95	-23.67
4	4.03906	0.39	34.78	26.46	35.17	26.85	56.00	46.00	-20.83	-19.15
5	8.21875	0.45	27.44	19.63	27.89	20.08	60.00	50.00	-32.11	-29.92
6	13.75781	0.57	38.10	30.07	38.67	30.64	60.00	50.00	-21.33	-19.36

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

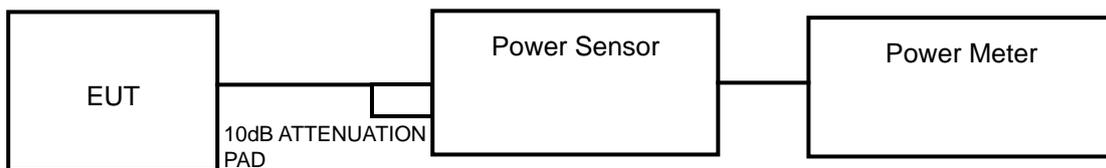
4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB

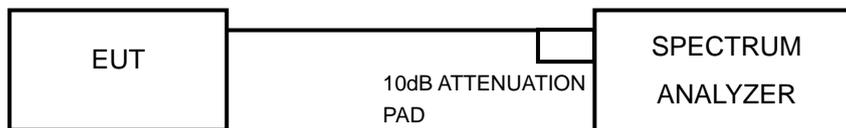
NOTE: Where B is the 26dB emission bandwidth in MHz.

4.3.2 TEST SETUP

FOR POWER OUTPUT MEASUREMENT



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

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 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:

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	20.512	13.12	17	PASS
44	5220	19.498	12.90	17	PASS
48	5240	19.275	12.85	17	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	19.907	12.99	17	PASS
44	5220	19.055	12.80	17	PASS
48	5240	18.707	12.72	17	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
38	5190	10.280	10.12	17	PASS
46	5230	9.795	9.91	17	PASS



26dB BANDWIDTH:

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
36	5180	20.13	PASS
44	5220	22.81	PASS
48	5240	19.32	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
36	5180	19.62	PASS
44	5220	19.71	PASS
48	5240	19.82	PASS

802.11n (40MHz)

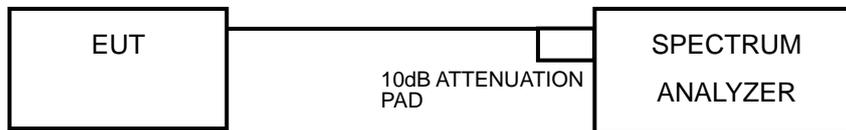
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
38	5190	40.97	PASS
46	5230	41.08	PASS

4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	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-2 alternative

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 1 MHz, Set VBW \geq 3 MHz, Detector = RMS
- 3) Sweep time = 4second.
- 4) Perform a single sweep.
- 5) Record the max value and add 10 log (1/duty cycle)



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

802.11a

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	1.41	0.88	2.29	4	PASS
44	5220	1.26	0.88	2.14	4	PASS
48	5240	1.28	0.88	2.16	4	PASS

NOTE: Refer to section 3.3 for duty cycle spectrum plot.

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	0.89	0.93	1.82	4	PASS
44	5220	0.72	0.93	1.65	4	PASS
48	5240	0.83	0.93	1.76	4	PASS

NOTE: Refer to section 3.3 for duty cycle spectrum plot.

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
38	5190	-5.22	1.89	-3.33	4	PASS
46	5230	-5.40	1.89	-3.51	4	PASS

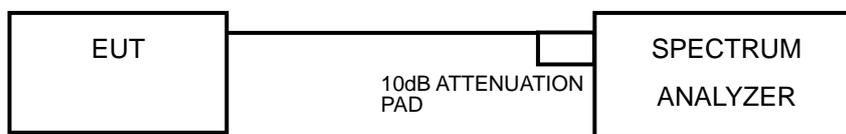
NOTE: Refer to section 3.3 for duty cycle spectrum plot.

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 \geq 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.

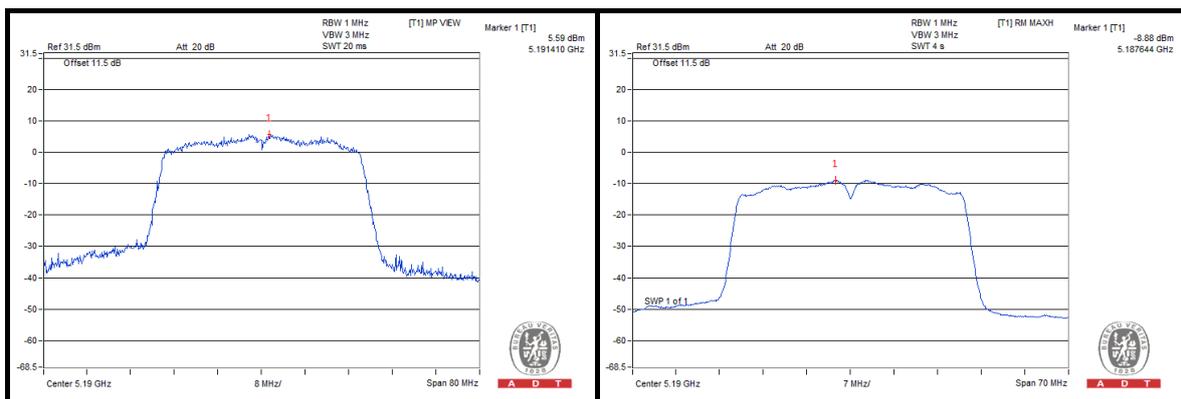
4.5.6 EUT OPERATING CONDITIONS

Same as 4.2.6

4.5.7 TEST RESULTS

MODULATION MODE	MODULATION TYPE	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)	PPSD WITHOUT DUTY FACTOR (dBm)	PPSD WITH DUTY FACTOR (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS /FAIL
802.11a	BPSK	5180	11.16	1.41	2.29	8.87	13	PASS
	QPSK		12.24	0.69	1.57	10.67	13	PASS
	16QAM		11.95	-0.38	0.50	11.45	13	PASS
	64QAM		11.47	-1.83	-0.95	12.42	13	PASS
802.11n (20MHz)	BPSK	5180	10.87	0.89	1.82	9.05	13	PASS
	QPSK		11.65	0.42	1.35	10.30	13	PASS
	16QAM		11.90	-0.84	0.09	11.81	13	PASS
	64QAM		10.99	-2.14	-1.21	12.20	13	PASS
802.11n (40MHz)	BPSK	5190	5.26	-5.22	-3.33	8.59	13	PASS
	QPSK		5.85	-6.36	-4.47	10.32	13	PASS
	16QAM		5.83	-7.57	-5.68	11.51	13	PASS
	64QAM		5.59	-8.88	-6.99	12.58	13	PASS

NOTE: Refer to section 3.3 for duty cycle spectrum plot.

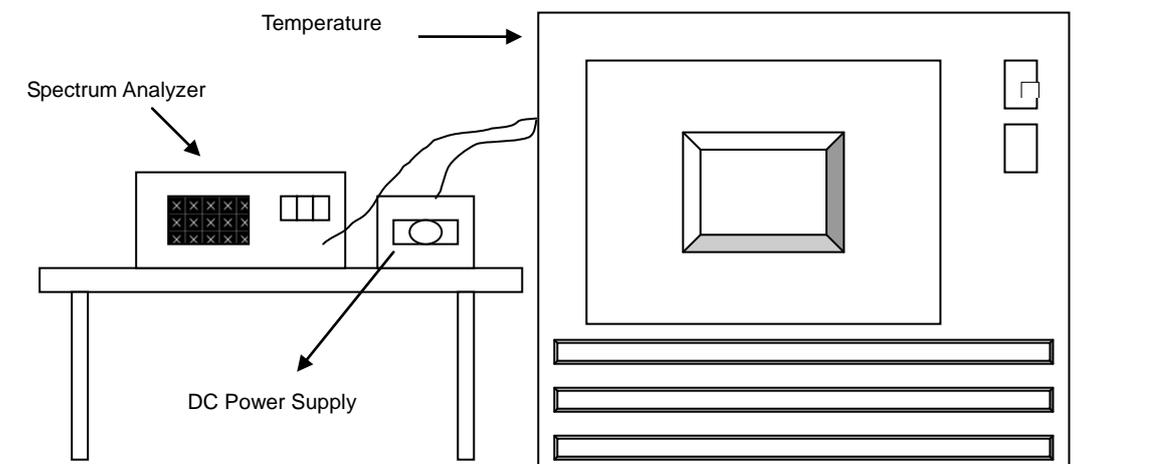


4.6 FREQUENCY STABILITY

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. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
- b. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
- c. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

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

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5180MHz									
TEMP. (°C)	POWER SUPPLY (Vdc)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)						
50	3.75	5180.015030	2.902	5180.015417	2.976	5180.015078	2.911	5180.015357	2.965
40	3.75	5180.016139	3.116	5180.015840	3.058	5180.015890	3.068	5180.016095	3.107
30	3.75	5180.017507	3.380	5180.017094	3.300	5180.016753	3.234	5180.017012	3.284
20	3.75	5180.017704	3.418	5180.018425	3.557	5180.018239	3.521	5180.018034	3.481
10	3.75	5180.019526	3.769	5180.019321	3.730	5180.019394	3.744	5180.019786	3.820
0	3.75	5180.017853	3.447	5180.018412	3.554	5180.018367	3.546	5180.018351	3.543
-10	3.75	5180.016756	3.235	5180.016744	3.232	5180.016700	3.224	5180.016683	3.221
-20	3.75	5180.015764	3.043	5180.016068	3.102	5180.016116	3.111	5180.015917	3.073
-30	3.75	5180.015123	2.919	5180.014940	2.884	5180.014955	2.887	5180.014852	2.867

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5180MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)						
20	3.4	5180.017601	3.398	5180.017991	3.473	5180.017584	3.395	5180.017788	3.434
	3.75	5180.017704	3.418	5180.018425	3.557	5180.018239	3.521	5180.018034	3.481
	4.2	5180.019664	3.796	5180.019318	3.729	5180.019007	3.669	5180.019174	3.702



A D T

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

Fax: 886-3-5935342

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.



A D T

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---