



FCC TEST REPORT (15.407)

REPORT NO.: RF130923C41-2
MODEL NO.: KALOS
FCC ID: HFS-FG6Q-BBG
RECEIVED: Sep. 23, 2013
TESTED: Oct. 09, 2013 ~ Oct. 29, 2013
ISSUED: Nov. 25, 2013

APPLICANT: Quanta Computer Inc.

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TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1. CERTIFICATION	5
2. SUMMARY OF TEST RESULTS	6
2.1 MEASUREMENT uncertainty	6
3. GENERAL INFORMATION	7
3.1 GENERAL DESCRIPTION OF EUT	7
3.2 DESCRIPTION OF TEST MODES	9
3.2.1 Test Mode Applicability and tested channel detail	10
3.3 DESCRIPTION OF SUPPORT UNITS	13
3.3.1 CONFIGURATION OF SYSTEM UNDER TEST	13
3.4 Duty cycle of test signal	14
3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS	15
4. TEST TYPES AND RESULTS	16
4.1 Radiated Emission AND BANDEDGE Measurement	16
4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	16
4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS	16
4.1.3 TEST INSTRUMENTS	17
4.1.4 TEST PROCEDURES	18
4.1.5 DEVIATION FROM TEST STANDARD	18
4.1.6 TEST SETUP	19
4.1.7 EUT OPERATING CONDITION	19
4.1.8 Test RESULTS	20
4.2 CONDUCTED EMISSION MEASUREMENT	48
4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	48
4.2.2 TEST INSTRUMENTS	48
4.2.3 TEST PROCEDURES	49
4.2.4 DEVIATION FROM TEST STANDARD	49
4.2.5 TEST SETUP	49
4.2.6 EUT OPERATING CONDITIONS	49
4.2.7 TEST RESULTS	50
4.3 Peak transmit power MEASUREMENT	54
4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT	54
4.3.2 TEST SETUP	54
4.3.3 TEST INSTRUMENTS	54
4.3.4 TEST PROCEDURE	55
4.3.5 DEVIATION FROM TEST STANDARD	55
4.3.6 EUT OPERATING CONDITIONS	55
4.3.7 TEST RESULTS	56
4.4 PEAK power spectral density measurement	58
4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT	58
4.4.2 TEST SETUP	58
4.4.3 TEST INSTRUMENTS	58
4.4.4 TEST PROCEDURES	58
4.4.5 DEVIATION FROM TEST STANDARD	59
4.4.6 EUT OPERATING CONDITIONS	59
4.4.7 TEST RESULTS	59
4.5 Peak power EXCURSION MEASUREMENT	61



4.5.1	LIMITS OF PEAK POWER EXCURSION MEASUREMENT	61
4.5.2	TEST SETUP.....	61
4.5.3	TEST INSTRUMENTS	61
4.5.4	TEST PROCEDURE	61
4.5.5	DEVIATION FROM TEST STANDARD	61
4.5.6	EUT OPERATING CONDITIONS.....	61
4.5.7	TEST RESULTS	62
4.6	FREQUENCY STABILITY.....	64
4.6.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT	64
4.6.2	TEST SETUP.....	64
4.6.3	TEST INSTRUMENTS	64
4.6.4	TEST PROCEDURE	65
4.6.5	DEVIATION FROM TEST STANDARD	65
4.6.6	EUT OPERATING CONDITION	65
4.6.7	TEST RESULTS	66
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION	67
6.	INFORMATION ON THE TESTING LABORATORIES	68
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	69



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130923C41-2	Original release	Nov. 25, 2013



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1. CERTIFICATION

PRODUCT: Tablet
MODEL NO.: KALOS
BRAND: BungBungame
APPLICANT: Quanta Computer Inc.
TESTED: Oct. 09, 2013 ~ Oct. 29, 2013
TEST SAMPLE: Identical Prototype
STANDARDS: **FCC Part 15, Subpart E (Section 15.407)**
ANSI C63.10-2009

The above equipment (model: KALOS) 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 : Evonne Liu , **DATE** : Nov. 25, 2013
Evonne Liu / Specialist

APPROVED BY : Sam Chen , **DATE** : Nov. 25, 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 -12.63dB at 0.69297MHz.
15.407(b/1/2/3) (b)(6)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.12dB at 5470MHz.
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 $k = 2$.



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3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Tablet
MODEL NO.	KALOS
POWER SUPPLY	5.0Vdc from adapter or host equipment 3.7Vdc from battery
MODULATION TYPE	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 135Mbps
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) 5260 ~ 5320MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 5500 ~ 5700MHz: 8 for 802.11a, 802.11n (20MHz) 3 for 802.11n (40MHz)
OUTPUT POWER	25.592mW for 5180 ~ 5240MHz 26.651mW for 5260 ~ 5320MHz 26.008mW for 5500 ~ 5700MHz
ANTENNA TYPE	PIFA antenna with -2.92dBi gain (5180 ~ 5240MHz) PIFA antenna with -3.22dBi gain (5260 ~ 5320MHz) PIFA antenna with -2.97dBi gain (5500 ~ 5700MHz)
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.

ITEM	BRAND	MODEL	DESCRIPTION
AC Adapter	Tamura	MII050200B	I/P: 100-240Vac, 0.3A, 50-60Hz O/P: 5Vdc, 2A
Li-ion Battery	Getac	FG6Q (P/N: 541385760001)	Rating: 3.7 Vdc,9000mAh
USB Cable	MEC IMEX INCORPORATED	65-15317-300	0.75m cable



2. 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

3. 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

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

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

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		

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE \geq 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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

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)
-	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	MCS0
	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	MCS0
	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	MCS0
	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	MCS0
	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	MCS0
	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	MCS0

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)
-	802.11a	5180-5240	36 to 48	48	OFDM	BPSK	6.0
		5260-5320	52 to 64	60	OFDM	BPSK	6.0
		5500-5700	100 to 140	100	OFDM	BPSK	6.0

**POWER LINE CONDUCTED EMISSION TEST:**

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5500-5700	100 to 140	100	OFDM	BPSK	6.0

BANDEDGE MEASUREMENT:

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	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	MCS0
	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	MCS0
	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	MCS0
	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	MCS0
	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	MCS0
	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	MCS0



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)
-	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	MCS0
	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	MCS0
	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	MCS0
	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	MCS0
	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	MCS0
	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	MCS0

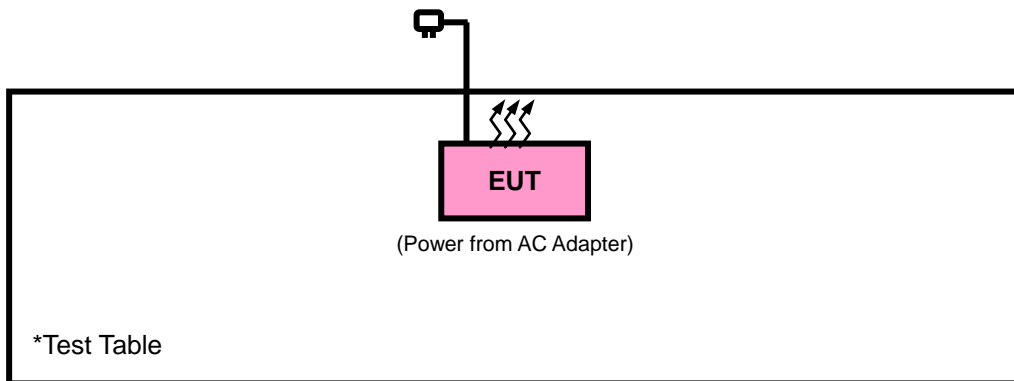
TEST CONDITION:

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	Anson Lin
PLC	25deg. C, 65%RH	120Vac, 60Hz	Johnson Liao
APCM	25deg. C, 65%RH	120Vac, 60Hz	Dylan Yang

3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units.

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 = $2.051/2.163 = 0.948$, Duty factor = $10 * \log(1/0.948) = 0.23$

802.11n (20MHz): Duty cycle = $1.915/2.019 = 0.948$, Duty factor = $10 * \log(1/0.948) = 0.23$

802.11n (40MHz): Duty cycle = $905/1042 = 0.869$, Duty factor = $10 * \log(1/0.869) = 0.61$



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 v01r03

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

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:

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



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4.1.3 TEST INSTRUMENTS

Test Data: Oct. 08, 2013 ~ Oct. 29, 2013

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 15, 2013	Apr. 14, 2014
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	309219/4	Oct. 18, 2013	Oct. 17, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 19, 2012	Oct. 18, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 18, 2013	Oct. 17, 2014
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.

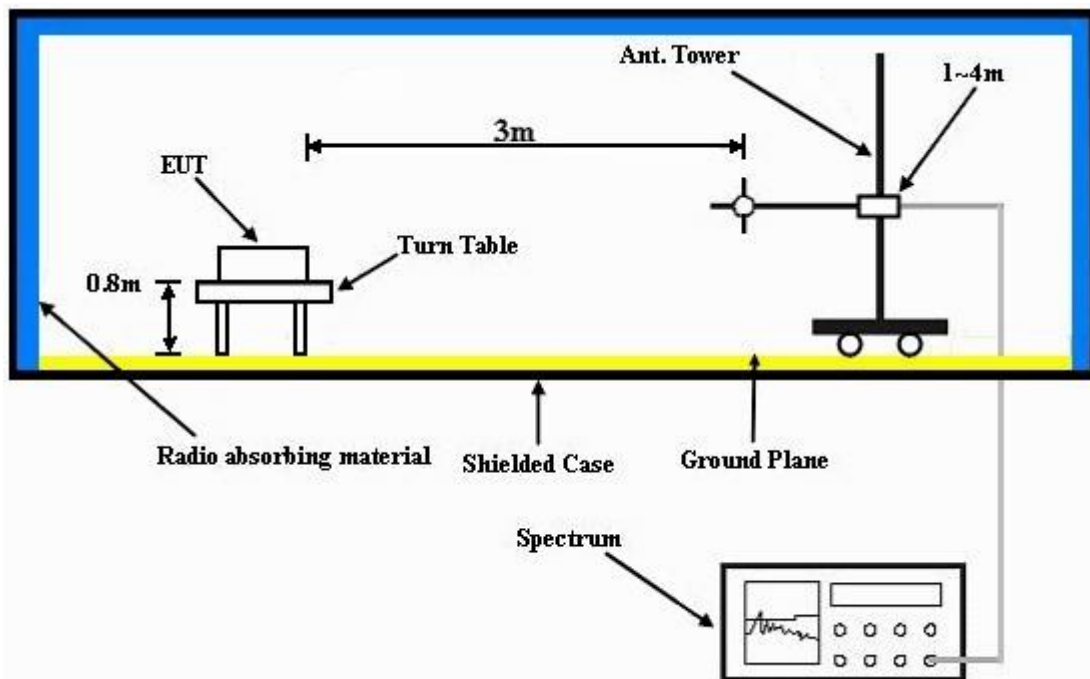
NOTE:

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

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



4.1.8 TEST RESULTS

ABOVE 1GHz DATA:

802.11a

Band 1

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	51.79	52.5	54	-2.21	31.32	5.29	37.32	102	35	Average
5150	68.17	68.88	74	-5.83	31.32	5.29	37.32	102	35	Peak
5180	99.44	100.12			31.35	5.31	37.34	102	35	Average
5180	107.44	108.12			31.35	5.31	37.34	102	35	Peak
5438	37.93	38.07	54	-16.07	31.55	5.44	37.13	102	35	Average
5438	54.01	54.15	74	-19.99	31.55	5.44	37.13	102	35	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
5146	48.43	49.14	54	-5.57	31.32	5.29	37.32	101	309	Average
5146	63.64	64.35	74	-10.36	31.32	5.29	37.32	101	309	Peak
5180	96.63	97.31			31.35	5.31	37.34	101	309	Average
5180	104.67	105.35			31.35	5.31	37.34	101	309	Peak
5430	37.73	37.89	54	-16.27	31.55	5.42	37.13	101	309	Average
5430	53.45	53.61	74	-20.55	31.55	5.42	37.13	101	309	Peak

REMARKS:

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



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
5072	40.57	41.31	54	-13.43	31.27	5.26	37.27	102	36	Average
5072	53.92	54.66	74	-20.08	31.27	5.26	37.27	102	36	Peak
5220	98.81	99.47			31.37	5.33	37.36	102	36	Average
5220	106.65	107.31			31.37	5.33	37.36	102	36	Peak
5442	38.32	38.46	54	-15.68	31.55	5.44	37.13	102	36	Average
5442	54.04	54.18	74	-19.96	31.55	5.44	37.13	102	36	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
5038	39.03	39.78	54	-14.97	31.24	5.25	37.24	100	312	Average
5038	53.05	53.8	74	-20.95	31.24	5.25	37.24	100	312	Peak
5220	96.48	97.14			31.37	5.33	37.36	100	312	Average
5220	105.05	105.71			31.37	5.33	37.36	100	312	Peak
5450	37.71	37.79	54	-16.29	31.56	5.44	37.08	100	312	Average
5450	53.62	53.7	74	-20.38	31.56	5.44	37.08	100	312	Peak

REMARKS:

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



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	39.17	39.88	54	-14.83	31.31	5.28	37.3	100	35	Average
5130	54.05	54.76	74	-19.95	31.31	5.28	37.3	100	35	Peak
5240	98.83	99.42			31.39	5.34	37.32	100	35	Average
5240	106.32	106.91			31.39	5.34	37.32	100	35	Peak
5410	38.71	38.96	54	-15.29	31.52	5.41	37.18	100	35	Average
5410	54.04	54.29	74	-19.96	31.52	5.41	37.18	100	35	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	38.25	38.96	54	-15.75	31.32	5.29	37.32	100	309	Average
5148	53.39	54.1	74	-20.61	31.32	5.29	37.32	100	309	Peak
5240	97.38	97.97			31.39	5.34	37.32	100	309	Average
5240	105.24	105.83			31.39	5.34	37.32	100	309	Peak
5378	37.79	38.06	54	-16.21	31.51	5.4	37.18	100	309	Average
5378	53.15	53.42	74	-20.85	31.51	5.4	37.18	100	309	Peak

REMARKS:

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



Band 2

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	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
5118	39.61	40.32	54	-14.39	31.29	5.28	37.28	104	204	Average
5118	54.13	54.84	74	-19.87	31.29	5.28	37.28	104	204	Peak
5260	100.86	101.38			31.41	5.34	37.27	104	204	Average
5260	106.88	107.4			31.41	5.34	37.27	104	204	Peak
5382	39.76	40.03	54	-14.24	31.51	5.4	37.18	104	204	Average
5382	53.91	54.18	74	-20.09	31.51	5.4	37.18	104	204	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
5142	37.82	38.51	54	-16.18	31.32	5.29	37.3	100	49	Average
5142	53.68	54.37	74	-20.32	31.32	5.29	37.3	100	49	Peak
5260	93.88	94.4			31.41	5.34	37.27	100	49	Average
5260	102.91	103.43			31.41	5.34	37.27	100	49	Peak
5386	38.09	38.36	54	-15.91	31.51	5.4	37.18	100	49	Average
5386	54.65	54.92	74	-19.35	31.51	5.4	37.18	100	49	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5260MHz: Fundamental frequency.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	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
5140	39.15	39.84	54	-14.85	31.32	5.29	37.3	101	205	Average
5140	53.6	54.29	74	-20.4	31.32	5.29	37.3	101	205	Peak
5300	100.59	100.97			31.44	5.37	37.19	101	205	Average
5300	107.19	107.57			31.44	5.37	37.19	101	205	Peak
5362	44.57	44.87	54	-9.43	31.49	5.39	37.18	101	205	Average
5362	60.33	60.63	74	-13.67	31.49	5.39	37.18	101	205	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	38.76	39.47	54	-15.24	31.32	5.29	37.32	120	298	Average
5148	52.89	53.6	74	-21.11	31.32	5.29	37.32	120	298	Peak
5300	94.75	95.13			31.44	5.37	37.19	120	298	Average
5300	103.22	103.6			31.44	5.37	37.19	120	298	Peak
5350	40.44	40.75	54	-13.56	31.48	5.39	37.18	120	298	Average
5350	54.32	54.63	74	-19.68	31.48	5.39	37.18	120	298	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5300MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	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
5102	38.87	39.6	54	-15.13	31.28	5.27	37.28	100	204	Average
5102	53.7	54.43	74	-20.3	31.28	5.27	37.28	100	204	Peak
5320	99.52	99.88			31.45	5.38	37.19	100	204	Average
5320	106.99	107.35			31.45	5.38	37.19	100	204	Peak
5350	50.46	50.77	54	-3.54	31.48	5.39	37.18	100	204	Average
5350	69.13	69.44	74	-4.87	31.48	5.39	37.18	100	204	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
5112	38.88	39.6	54	-15.12	31.29	5.27	37.28	133	298	Average
5112	52.59	53.31	74	-21.41	31.29	5.27	37.28	133	298	Peak
5320	93.75	94.11			31.45	5.38	37.19	133	298	Average
5320	103.11	103.47			31.45	5.38	37.19	133	298	Peak
5350	45.62	45.93	54	-8.38	31.48	5.39	37.18	133	298	Average
5350	63.97	64.28	74	-10.03	31.48	5.39	37.18	133	298	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5320MHz: Fundamental frequency.



Band 3

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	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
5458	46.7	46.78	54	-7.3	31.56	5.44	37.08	108	350	Average
5458	58.5	58.58	74	-15.5	31.56	5.44	37.08	108	350	Peak
5470	63.9	63.96	68.3	-4.4	31.57	5.45	37.08	108	350	Peak
5500	97.13	97.1			31.6	5.46	37.03	108	350	Average
5500	105.79	105.76			31.6	5.46	37.03	108	350	Peak
5725	51.92	51.8	68.3	-16.38	31.96	5.59	37.43	108	350	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	51.25	51.33	54	-2.75	31.56	5.44	37.08	100	156	Average
5460	63.82	63.9	74	-10.18	31.56	5.44	37.08	100	156	Peak
5470	65.38	65.44	68.3	-2.92	31.57	5.45	37.08	100	156	Peak
5500	101.09	101.06			31.6	5.46	37.03	100	156	Average
5500	108.05	108.02			31.6	5.46	37.03	100	156	Peak
5725	51.78	51.66	68.3	-16.52	31.96	5.59	37.43	100	156	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5500MHz: Fundamental frequency.
3. 5470MHz & 5725MHz: Out of restricted band



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	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
5426	38.61	38.79	54	-15.39	31.53	5.42	37.13	102	146	Average
5426	53.56	53.74	74	-20.44	31.53	5.42	37.13	102	146	Peak
5470	51.53	51.59	68.3	-16.77	31.57	5.45	37.08	102	146	Peak
5580	96.77	96.72			31.71	5.5	37.16	102	146	Average
5580	105.59	105.54			31.71	5.5	37.16	102	146	Peak
5725	53.13	53.01	68.3	-15.17	31.96	5.59	37.43	102	146	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
5376	38.37	38.66	54	-15.63	31.49	5.4	37.18	117	162	Average
5376	54.97	55.26	74	-19.03	31.49	5.4	37.18	117	162	Peak
5470	53.51	53.57	68.3	-14.79	31.57	5.45	37.08	117	162	Peak
5580	101.15	101.1			31.71	5.5	37.16	117	162	Average
5580	108.62	108.57			31.71	5.5	37.16	117	162	Peak
5725	53.15	53.03	68.3	-15.15	31.96	5.59	37.43	117	162	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5580MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	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
5370	38.19	38.48	54	-15.81	31.49	5.4	37.18	102	355	Average
5370	53.51	53.8	74	-20.49	31.49	5.4	37.18	102	355	Peak
5470	51.38	51.44	68.3	-16.92	31.57	5.45	37.08	102	355	Peak
5700	95.41	95.34			31.9	5.57	37.4	102	355	Average
5700	104.46	104.39			31.9	5.57	37.4	102	355	Peak
5725	64.02	63.9	68.3	-4.28	31.96	5.59	37.43	102	355	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
5404	39.02	39.27	54	-14.98	31.52	5.41	37.18	114	156	Average
5404	52.94	53.19	74	-21.06	31.52	5.41	37.18	114	156	Peak
5470	52.11	52.17	68.3	-16.19	31.57	5.45	37.08	114	156	Peak
5700	98.81	98.74			31.9	5.57	37.4	114	156	Average
5700	106.47	106.4			31.9	5.57	37.4	114	156	Peak
5725	64.58	64.46	68.3	-3.72	31.96	5.59	37.43	114	156	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5700MHz: Fundamental frequency.
3. 5470MHz & 5725MHz: Out of restricted band



802.11n (20MHz)

Band 1

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	49.78	50.49	54	-4.22	31.32	5.29	37.32	102	38	Average
5150	65.56	66.27	74	-8.44	31.32	5.29	37.32	102	38	Peak
5180	98.63	99.31			31.35	5.31	37.34	102	38	Average
5180	105.81	106.49			31.35	5.31	37.34	102	38	Peak
5440	38.38	38.52	54	-15.62	31.55	5.44	37.13	102	38	Average
5440	54.17	54.31	74	-19.83	31.55	5.44	37.13	102	38	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	47.43	48.14	54	-6.57	31.32	5.29	37.32	100	312	Average
5148	61.77	62.48	74	-12.23	31.32	5.29	37.32	100	312	Peak
5180	95.3	95.98			31.35	5.31	37.34	100	312	Average
5180	104.04	104.72			31.35	5.31	37.34	100	312	Peak
5430	38.01	38.17	54	-15.99	31.55	5.42	37.13	100	312	Average
5430	53.14	53.3	74	-20.86	31.55	5.42	37.13	100	312	Peak

REMARKS:

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



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
5148	40.96	41.67	54	-13.04	31.32	5.29	37.32	100	39	Average
5148	55.19	55.9	74	-18.81	31.32	5.29	37.32	100	39	Peak
5220	98.61	99.27			31.37	5.33	37.36	100	39	Average
5220	105.83	106.49			31.37	5.33	37.36	100	39	Peak
5424	39.34	39.57	54	-14.66	31.53	5.42	37.18	100	39	Average
5424	54.38	54.61	74	-19.62	31.53	5.42	37.18	100	39	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
5144	39.78	40.49	54	-14.22	31.32	5.29	37.32	100	311	Average
5144	53.68	54.39	74	-20.32	31.32	5.29	37.32	100	311	Peak
5220	95.96	96.62			31.37	5.33	37.36	100	311	Average
5220	104.33	104.99			31.37	5.33	37.36	100	311	Peak
5402	38.14	38.39	54	-15.86	31.52	5.41	37.18	100	311	Average
5402	53.77	54.02	74	-20.23	31.52	5.41	37.18	100	311	Peak

REMARKS:

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



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
5146	39.88	40.59	54	-14.12	31.32	5.29	37.32	100	38	Average
5146	54.88	55.59	74	-19.12	31.32	5.29	37.32	100	38	Peak
5240	98.89	99.48			31.39	5.34	37.32	100	38	Average
5240	106.48	107.07			31.39	5.34	37.32	100	38	Peak
5396	39.51	39.76	54	-14.49	31.52	5.41	37.18	100	38	Average
5396	54.74	54.99	74	-19.26	31.52	5.41	37.18	100	38	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
5138	39.07	39.77	54	-14.93	31.31	5.29	37.3	100	311	Average
5138	54.22	54.92	74	-19.78	31.31	5.29	37.3	100	311	Peak
5240	95.03	95.62			31.39	5.34	37.32	100	311	Average
5240	103.86	104.45			31.39	5.34	37.32	100	311	Peak
5360	38.14	38.45	54	-15.86	31.48	5.39	37.18	100	311	Average
5360	55.1	55.41	74	-18.9	31.48	5.39	37.18	100	311	Peak

REMARKS:

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



Band 2

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	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
5138	39.98	40.68	54	-14.02	31.31	5.29	37.3	103	204	Average
5138	54.87	55.57	74	-19.13	31.31	5.29	37.3	103	204	Peak
5260	98.4	98.92			31.41	5.34	37.27	103	204	Average
5260	105.87	106.39			31.41	5.34	37.27	103	204	Peak
5414	39.97	40.2	54	-14.03	31.53	5.42	37.18	103	204	Average
5414	54.51	54.74	74	-19.49	31.53	5.42	37.18	103	204	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
5142	39.99	40.68	54	-14.01	31.32	5.29	37.3	116	321	Average
5142	54.51	55.2	74	-19.49	31.32	5.29	37.3	116	321	Peak
5260	98.4	98.92			31.41	5.34	37.27	116	321	Average
5260	103.79	104.31			31.41	5.34	37.27	116	321	Peak
5350	39.88	40.19	54	-14.12	31.48	5.39	37.18	116	321	Average
5350	53.96	54.27	74	-20.04	31.48	5.39	37.18	116	321	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5260MHz: Fundamental frequency.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	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
5100	39.78	40.51	54	-14.22	31.28	5.27	37.28	100	146	Average
5100	53.1	53.83	74	-20.9	31.28	5.27	37.28	100	146	Peak
5300	98.51	98.89			31.44	5.37	37.19	100	146	Average
5300	105.25	105.63			31.44	5.37	37.19	100	146	Peak
5352	42.44	42.75	54	-11.56	31.48	5.39	37.18	100	146	Average
5352	55.36	55.67	74	-18.64	31.48	5.39	37.18	100	146	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
5088	39.15	39.88	54	-14.85	31.27	5.27	37.27	102	313	Average
5088	53.18	53.91	74	-20.82	31.27	5.27	37.27	102	313	Peak
5300	94.23	94.61			31.44	5.37	37.19	102	313	Average
5300	102.54	102.92			31.44	5.37	37.19	102	313	Peak
5354	40.26	40.57	54	-13.74	31.48	5.39	37.18	102	313	Average
5354	53.89	54.2	74	-20.11	31.48	5.39	37.18	102	313	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5300MHz: Fundamental frequency.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	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	40.05	40.76	54	-13.95	31.32	5.29	37.32	100	145	Average
5150	52.98	53.69	74	-21.02	31.32	5.29	37.32	100	145	Peak
5320	97.76	98.12			31.45	5.38	37.19	100	145	Average
5320	105.16	105.52			31.45	5.38	37.19	100	145	Peak
5350	46.76	47.07	54	-7.24	31.48	5.39	37.18	100	145	Average
5350	64.23	64.54	74	-9.77	31.48	5.39	37.18	100	145	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
5128	39.67	40.38	54	-14.33	31.31	5.28	37.3	115	313	Average
5128	52.9	53.61	74	-21.1	31.31	5.28	37.3	115	313	Peak
5320	93.18	93.54			31.45	5.38	37.19	115	313	Average
5320	101.74	102.1			31.45	5.38	37.19	115	313	Peak
5350	44.1	44.41	54	-9.9	31.48	5.39	37.18	115	313	Average
5350	59.35	59.66	74	-14.65	31.48	5.39	37.18	115	313	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5320MHz: Fundamental frequency.



Band 3

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	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
5456	44.53	44.61	54	-9.47	31.56	5.44	37.08	115	30	Average
5456	57.74	57.82	74	-16.26	31.56	5.44	37.08	115	30	Peak
5470	61.79	61.85	68.3	-6.51	31.57	5.45	37.08	115	30	Peak
5500	94.77	94.74			31.6	5.46	37.03	115	30	Average
5500	103.76	103.73			31.6	5.46	37.03	115	30	Peak
5725	52.08	51.96	68.3	-16.22	31.96	5.59	37.43	115	30	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	46.98	47.06	54	-7.02	31.56	5.44	37.08	100	23	Average
5460	59.72	59.8	74	-14.28	31.56	5.44	37.08	100	23	Peak
5470	61.78	61.84	68.3	-6.52	31.57	5.45	37.08	100	23	Peak
5500	98.53	98.5			31.6	5.46	37.03	100	23	Average
5500	105.86	105.83			31.6	5.46	37.03	100	23	Peak
5725	52.14	52.02	68.3	-16.16	31.96	5.59	37.43	100	23	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5500MHz: Fundamental frequency.
3. 5470MHz & 5725MHz: Out of restricted band



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	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
5420	38.77	39	54	-15.23	31.53	5.42	37.18	100	146	Average
5420	53.82	54.05	74	-20.18	31.53	5.42	37.18	100	146	Peak
5470	52.54	52.6	68.3	-15.76	31.57	5.45	37.08	100	146	Peak
5580	94.27	94.22			31.71	5.5	37.16	100	146	Average
5580	103.57	103.52			31.71	5.5	37.16	100	146	Peak
5725	52.26	52.14	68.3	-16.04	31.96	5.59	37.43	100	146	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
5430	40.4	40.56	54	-13.6	31.55	5.42	37.13	100	22	Average
5430	54.59	54.75	74	-19.41	31.55	5.42	37.13	100	22	Peak
5470	53.48	53.54	68.3	-14.82	31.57	5.45	37.08	100	22	Peak
5580	98.24	98.19			31.71	5.5	37.16	100	22	Average
5580	106.57	106.52			31.71	5.5	37.16	100	22	Peak
5725	51.67	51.55	68.3	-16.63	31.96	5.59	37.43	100	22	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5580MHz: Fundamental frequency.
3. 5470MHz & 5725MHz: Out of restricted band



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	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
5444	38.25	38.39	54	-15.75	31.55	5.44	37.13	102	34	Average
5444	53.43	53.57	74	-20.57	31.55	5.44	37.13	102	34	Peak
5470	51.71	51.77	68.3	-16.59	31.57	5.45	37.08	102	34	Peak
5700	96.12	96.05			31.9	5.57	37.4	102	34	Average
5700	104.88	104.81			31.9	5.57	37.4	102	34	Peak
5725	64.81	64.69	68.3	-3.49	31.96	5.59	37.43	102	34	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
5436	38.03	38.19	54	-15.97	31.55	5.42	37.13	104	161	Average
5436	54.41	54.57	74	-19.59	31.55	5.42	37.13	104	161	Peak
5470	52.74	52.8	68.3	-15.56	31.57	5.45	37.08	104	161	Peak
5700	98.54	98.47			31.9	5.57	37.4	104	161	Average
5700	106.88	106.81			31.9	5.57	37.4	104	161	Peak
5725	66.83	66.71	68.3	-1.47	31.96	5.59	37.43	104	161	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5700MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band



802.11n (40MHz)

Band 1

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
5146	51.69	52.4	54	-2.31	31.32	5.29	37.32	111	40	Average
5146	67.84	68.55	74	-6.16	31.32	5.29	37.32	111	40	Peak
5190	92.61	93.28			31.35	5.32	37.34	111	40	Average
5190	102.66	103.33			31.35	5.32	37.34	111	40	Peak
5402	38.34	38.59	54	-15.66	31.52	5.41	37.18	111	40	Average
5402	53.77	54.02	74	-20.23	31.52	5.41	37.18	111	40	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
5142	49.52	50.21	54	-4.48	31.32	5.29	37.3	100	312	Average
5142	63.45	64.14	74	-10.55	31.32	5.29	37.3	100	312	Peak
5190	90.85	91.52			31.35	5.32	37.34	100	312	Average
5190	100.3	100.97			31.35	5.32	37.34	100	312	Peak
5448	38.36	38.49	54	-15.64	31.56	5.44	37.13	100	312	Average
5448	53.74	53.87	74	-20.26	31.56	5.44	37.13	100	312	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5190MHz: Fundamental frequency.



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
5140	44.11	44.8	54	-9.89	31.32	5.29	37.3	124	38	Average
5140	63.91	64.6	74	-10.09	31.32	5.29	37.3	124	38	Peak
5230	93.93	94.53			31.39	5.33	37.32	124	38	Average
5230	103.32	103.92			31.39	5.33	37.32	124	38	Peak
5422	38.9	39.13	54	-15.1	31.53	5.42	37.18	124	38	Average
5422	53.84	54.07	74	-20.16	31.53	5.42	37.18	124	38	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	42.2	42.91	54	-11.8	31.32	5.29	37.32	100	311	Average
5150	59.87	60.58	74	-14.13	31.32	5.29	37.32	100	311	Peak
5230	92.57	93.17			31.39	5.33	37.32	100	311	Average
5230	102.3	102.9			31.39	5.33	37.32	100	311	Peak
5438	38.83	38.97	54	-15.17	31.55	5.44	37.13	100	311	Average
5438	54.16	54.3	74	-19.84	31.55	5.44	37.13	100	311	Peak

REMARKS:

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



Band 2

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 54	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
5028	39.61	40.38	54	-14.39	31.23	5.24	37.24	100	145	Average
5028	53.53	54.3	74	-20.47	31.23	5.24	37.24	100	145	Peak
5270	94.38	94.89			31.41	5.35	37.27	100	145	Average
5270	103.39	103.9			31.41	5.35	37.27	100	145	Peak
5358	43.11	43.42	54	-10.89	31.48	5.39	37.18	100	145	Average
5358	57.12	57.43	74	-16.88	31.48	5.39	37.18	100	145	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
5144	38.36	39.07	54	-15.64	31.32	5.29	37.32	113	308	Average
5144	53.01	53.72	74	-20.99	31.32	5.29	37.32	113	308	Peak
5270	91.66	92.17			31.41	5.35	37.27	113	308	Average
5270	100.95	101.46			31.41	5.35	37.27	113	308	Peak
5364	41.18	41.47	54	-12.82	31.49	5.4	37.18	113	308	Average
5364	56.32	56.61	74	-17.68	31.49	5.4	37.18	113	308	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5270MHz: Fundamental frequency.



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
5110	38.42	39.14	54	-15.58	31.29	5.27	37.28	101	201	Average
5110	53.64	54.36	74	-20.36	31.29	5.27	37.28	101	201	Peak
5310	94.48	94.85			31.45	5.37	37.19	101	201	Average
5310	103.15	103.52			31.45	5.37	37.19	101	201	Peak
5350	52.68	52.99	54	-1.32	31.48	5.39	37.18	101	201	Average
5350	70.08	70.39	74	-3.92	31.48	5.39	37.18	101	201	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
5050	36.73	37.49	54	-17.27	31.24	5.25	37.25	113	45	Average
5050	53.66	54.42	74	-20.34	31.24	5.25	37.25	113	45	Peak
5310	88.69	89.06			31.45	5.37	37.19	113	45	Average
5310	97.85	98.22			31.45	5.37	37.19	113	45	Peak
5350	46.51	46.82	54	-7.49	31.48	5.39	37.18	113	45	Average
5350	67.08	67.39	74	-6.92	31.48	5.39	37.18	113	45	Peak

REMARKS:

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



Band 3

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	49.24	49.32	54	-4.76	31.56	5.44	37.08	119	146	Average
5460	62.89	62.97	74	-11.11	31.56	5.44	37.08	119	146	Peak
5470	66.1	66.16	68.3	-2.2	31.57	5.45	37.08	119	146	Peak
5510	90.72	90.72			31.6	5.46	37.06	119	146	Average
5510	100.38	100.38			31.6	5.46	37.06	119	146	Peak
5725	52.98	52.86	68.3	-15.32	31.96	5.59	37.43	119	146	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
5458	52.28	52.36	54	-1.72	31.56	5.44	37.08	100	159	Average
5458	65.32	65.4	74	-8.68	31.56	5.44	37.08	100	159	Peak
5470	67.18	67.24	68.3	-1.12	31.57	5.45	37.08	100	159	Peak
5510	94.39	94.39			31.6	5.46	37.06	100	159	Average
5510	104.3	104.3			31.6	5.46	37.06	100	159	Peak
5725	53.16	53.04	68.3	-15.14	31.96	5.59	37.43	100	159	Peak

REMARKS:

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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 110	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	42.26	42.34	54	-11.74	31.56	5.44	37.08	117	149	Average
5460	55.11	55.19	74	-18.89	31.56	5.44	37.08	117	149	Peak
5470	54.87	54.93	68.3	-13.43	31.57	5.45	37.08	117	149	Peak
5550	92.39	92.31			31.68	5.49	37.09	117	149	Average
5550	102.7	102.62			31.68	5.49	37.09	117	149	Peak
5725	54.09	53.97	68.3	-14.21	31.96	5.59	37.43	117	149	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	44.23	44.31	54	-9.77	31.56	5.44	37.08	100	156	Average
5460	58.97	59.05	74	-15.03	31.56	5.44	37.08	100	156	Peak
5470	60.36	60.42	68.3	-7.94	31.57	5.45	37.08	100	156	Peak
5550	95.99	95.91			31.68	5.49	37.09	100	156	Average
5550	104.91	104.83			31.68	5.49	37.09	100	156	Peak
5725	52.08	51.96	68.3	-16.22	31.96	5.59	37.43	100	156	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5550MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 134	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
5348	38.2	38.51	54	-15.8	31.48	5.39	37.18	101	1	Average
5348	53.05	53.36	74	-20.95	31.48	5.39	37.18	101	1	Peak
5470	51.52	51.58	68.3	-16.78	31.57	5.45	37.08	101	1	Peak
5670	93.47	93.37			31.88	5.56	37.34	101	1	Average
5670	102.34	102.24			31.88	5.56	37.34	101	1	Peak
5725	59.49	59.37	68.3	-8.81	31.96	5.59	37.43	101	1	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
5438	38.33	38.47	54	-15.67	31.55	5.44	37.13	100	310	Average
5438	54.58	54.72	74	-19.42	31.55	5.44	37.13	100	310	Peak
5470	52.3	52.36	68.3	-16	31.57	5.45	37.08	100	310	Peak
5670	94.55	94.45			31.88	5.56	37.34	100	310	Average
5670	104.62	104.52			31.88	5.56	37.34	100	310	Peak
5725	56.94	56.82	68.3	-11.36	31.96	5.59	37.43	100	310	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5670MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band



BELOW 1GHz WORST-CASE DATA : 802.11a

Band 1

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	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	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
44.03	34.51	51.32	40	-5.49	13.59	0.71	31.11	100	179	QP
187.14	18.2	38.13	43.5	-25.3	10.26	1.53	31.72	100	138	Peak
270.03	18.05	36.12	46	-27.95	12.05	1.91	32.03	100	157	Peak
384.7	17.11	31.76	46	-28.89	14.98	2.37	32	100	255	Peak
528.9	20.52	31.35	46	-25.48	17.97	2.88	31.68	100	173	Peak
825	25.93	31.29	46	-20.07	22.55	3.76	31.67	102	131	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
44.33	33.49	50.3	40	-6.51	13.6	0.73	31.14	102	142	QP
88.32	19.98	42.57	43.5	-23.52	8.27	1.01	31.87	100	165	Peak
183.36	17.22	36.97	43.5	-26.28	10.53	1.51	31.79	105	342	Peak
405.7	17.75	31.9	46	-28.25	15.45	2.45	32.05	100	202	Peak
537.3	21.34	31.98	46	-24.66	18.17	2.91	31.72	100	133	Peak
700.4	24.26	31.8	46	-21.74	20.82	3.43	31.79	100	57	Peak



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Band 2

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	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	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
44.04	34.25	51.06	40	-5.75	13.59	0.71	31.11	100	145	QP
56.46	32.66	50.85	40	-7.34	12.35	0.8	31.34	100	184	Peak
185.25	21.08	40.93	43.5	-22.42	10.39	1.52	31.76	100	137	Peak
549.2	22.09	32.64	46	-23.91	18.44	2.94	31.93	100	131	Peak
643	24.94	33.66	46	-21.06	20.13	3.22	32.07	100	151	Peak
899.9	28.3	32.83	46	-17.7	23.51	3.97	32.01	100	113	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	34.73	51.54	40	-5.27	13.6	0.73	31.14	100	141	QP
56.46	31.51	49.7	40	-8.49	12.35	0.8	31.34	100	181	Peak
85.35	22.42	44.94	40	-17.58	8.22	1	31.74	100	136	Peak
575.1	22.74	32.79	46	-23.26	19.03	3.02	32.1	100	130	Peak
657	24.29	32.7	46	-21.71	20.29	3.27	31.97	100	263	Peak
773.9	27.57	33.43	46	-18.43	21.86	3.63	31.35	100	196	Peak



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Band 3

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	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	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
44.04	34.51	51.32	40	-5.49	13.59	0.71	31.11	100	182	QP
56.73	32.69	50.98	40	-7.31	12.25	0.81	31.35	100	148	Peak
109.11	29	49.73	43.5	-14.5	9.99	1.12	31.84	100	162	Peak
456.8	20.2	33.09	46	-25.8	16.46	2.64	31.99	100	193	Peak
597.5	23.78	33.38	46	-22.22	19.54	3.08	32.22	100	152	Peak
776	26.74	32.59	46	-19.26	21.89	3.64	31.38	100	236	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
44.31	33.6	50.41	40	-6.4	13.6	0.73	31.14	100	155	QP
51.87	31.92	49.7	40	-8.08	12.76	0.78	31.32	100	197	Peak
85.08	22.28	44.8	40	-17.72	8.22	1	31.74	100	225	Peak
629.7	24.51	33.51	46	-21.49	19.96	3.18	32.14	100	336	Peak
802.6	29.3	34.78	46	-16.7	22.25	3.7	31.43	100	329	Peak
892.9	29.56	34.19	46	-16.44	23.42	3.95	32	100	214	Peak



4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 16, 2012	Nov. 15, 2013
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 28, 2012	Dec. 27, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100312	Jul. 02, 2013	Jul. 01, 2014
LISN ROHDE & SCHWARZ (Peripheral)	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 2.
 3. The VCCI Site Registration No. is C-2047.

4.2.3 TEST PROCEDURES

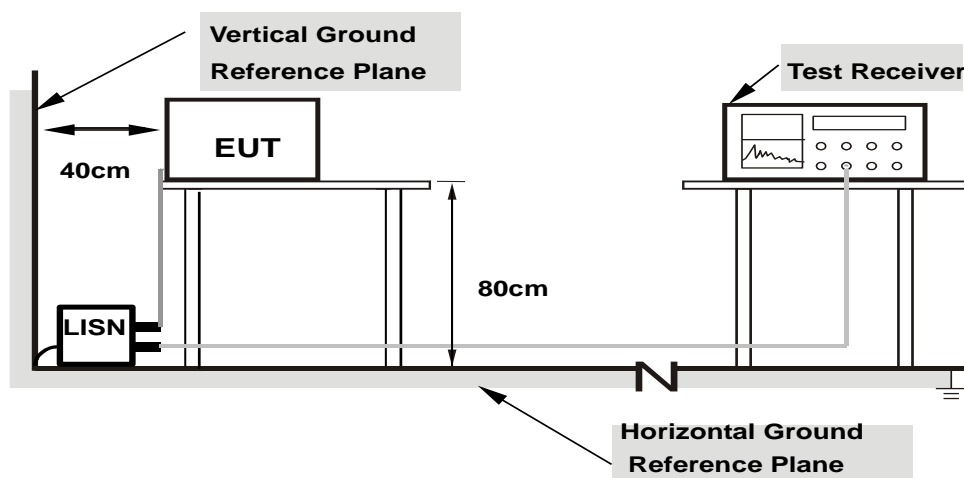
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS

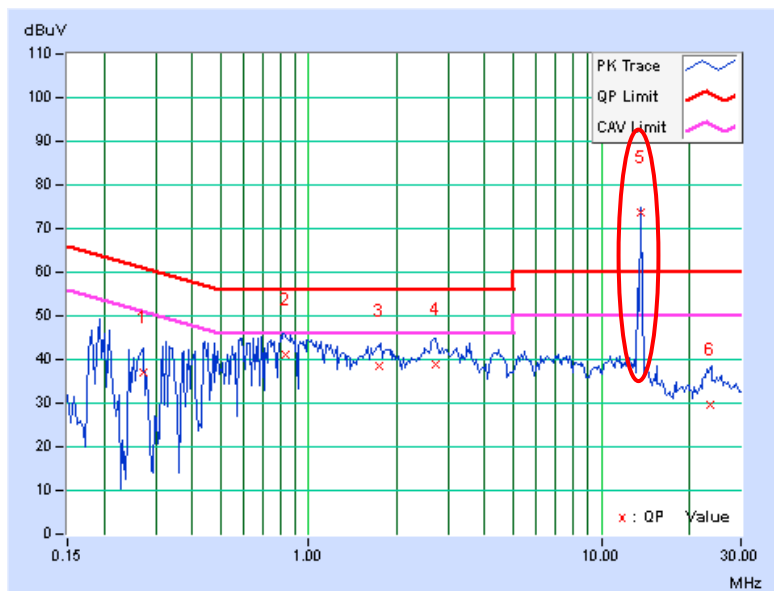
CONDUCTED WORST-CASE DATA : 802.11n (40MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.27109	0.18	36.80	21.75	36.98	21.93	61.08	51.08	-24.10	-29.15
2	0.83359	0.25	40.76	23.36	41.01	23.61	56.00	46.00	-14.99	-22.39
3	1.74766	0.28	38.17	21.20	38.45	21.48	56.00	46.00	-17.55	-24.52
4	2.72422	0.31	38.44	21.50	38.75	21.81	56.00	46.00	-17.25	-24.19
5	13.56016	0.50	73.31	72.74	73.81	73.24	60.00	50.00	13.81	23.24
6	23.47422	0.61	28.92	20.20	29.53	20.81	60.00	50.00	-30.47	-29.19

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.
6. The No. 5 is NFC signal inductive with measurement system. Please see test result for EUT with a suitable dummy load.

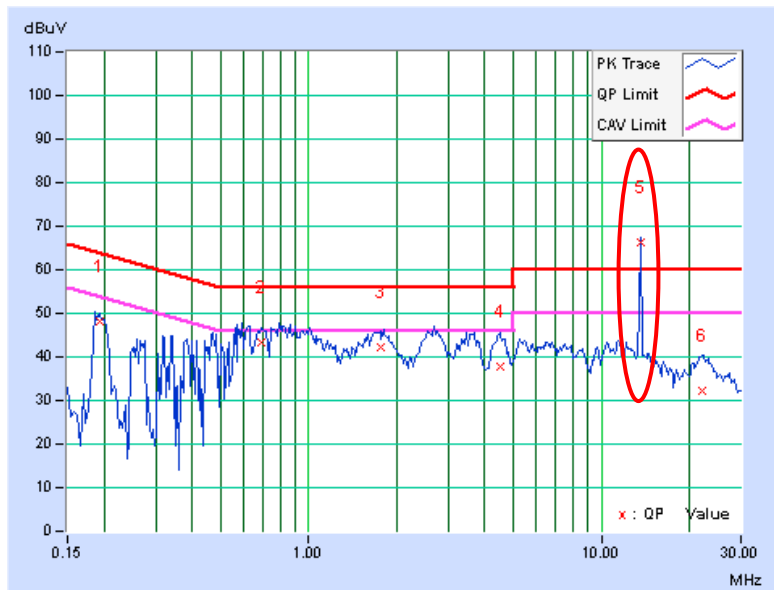


PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.19297	0.18	48.04	36.00	48.22	36.18	63.91
2	0.69297	0.24	43.13	27.43	43.37	27.67	56.00	46.00	-12.63	-18.33
3	1.75547	0.27	41.81	25.82	42.08	26.09	56.00	46.00	-13.92	-19.91
4	4.49766	0.40	37.48	23.99	37.88	24.39	56.00	46.00	-18.12	-21.61
5	13.56016	0.57	65.91	61.63	66.48	62.20	60.00	50.00	6.48	12.20
6	22.16953	0.71	31.66	21.84	32.37	22.55	60.00	50.00	-27.63	-27.45

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.
6. The No. 5 is NFC signal inductive with measurement system. Please see test result for EUT with a suitable dummy load.



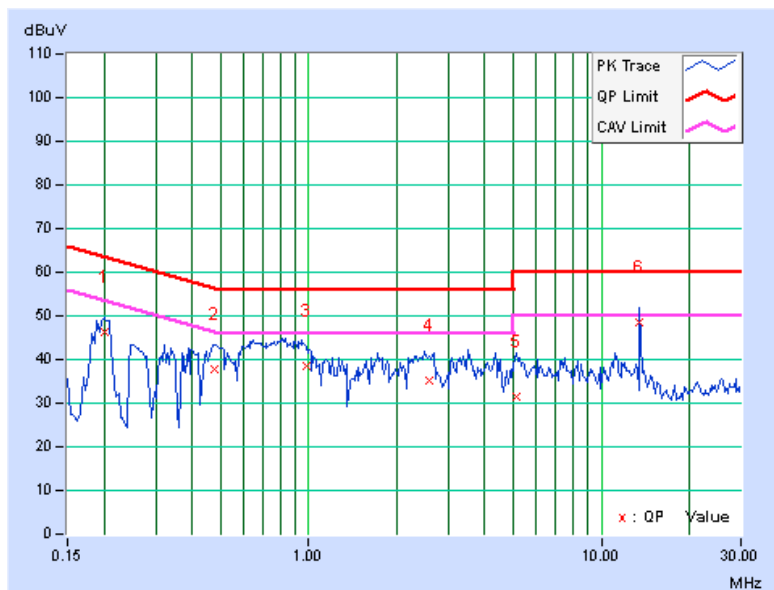
Test with suitable dummy load

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20078	0.17	46.21	34.14	46.38	34.31	63.58	53.58	-17.20	-19.27
2	0.47813	0.22	37.38	20.81	37.60	21.03	56.37	46.37	-18.77	-25.34
3	0.97813	0.27	38.14	21.63	38.41	21.90	56.00	46.00	-17.59	-24.10
4	2.58203	0.31	34.86	19.19	35.17	19.50	56.00	46.00	-20.83	-26.50
5	5.14063	0.38	31.12	16.95	31.50	17.33	60.00	50.00	-28.50	-32.67
6	13.55859	0.50	47.92	43.31	48.42	43.81	60.00	50.00	-11.58	-6.19

REMARKS:

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

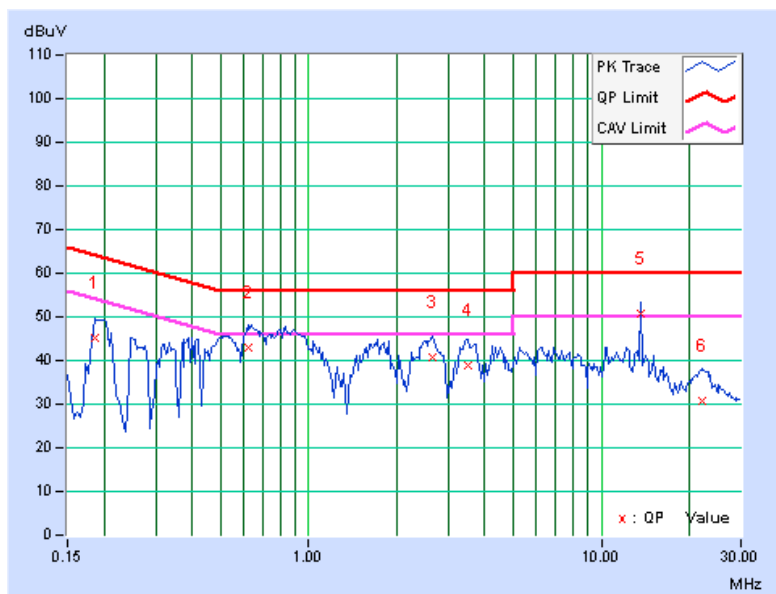


PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.18516	0.18	45.12	30.21	45.30	30.39	64.25
2	0.61875	0.24	42.70	25.90	42.94	26.14	56.00	46.00	-13.06	-19.86
3	2.63672	0.32	40.47	24.86	40.79	25.18	56.00	46.00	-15.21	-20.82
4	3.50000	0.36	38.56	23.75	38.92	24.11	56.00	46.00	-17.08	-21.89
5	13.56250	0.57	50.21	39.75	50.78	40.32	60.00	50.00	-9.22	-9.68
6	22.08984	0.71	30.08	21.24	30.79	21.95	60.00	50.00	-29.21	-28.05

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

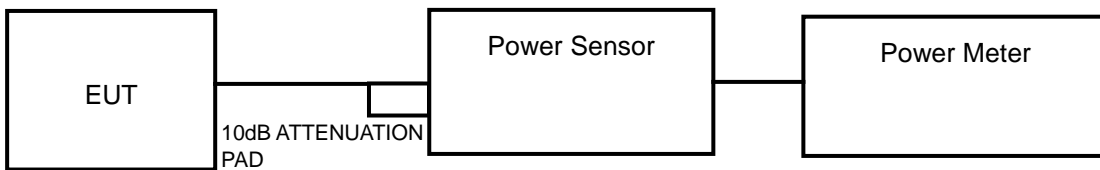
4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.250 ~ 5.350GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.470 ~ 5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB

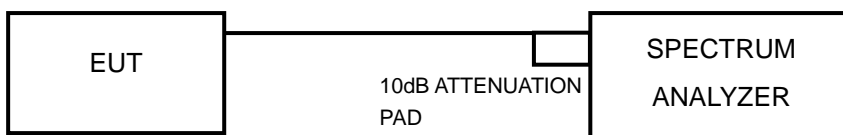
NOTE: Where B is the 26dB emission bandwidth in MHz.

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

<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 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	24.440	13.88	17	PASS
44	5220	25.474	14.06	17	PASS
48	5240	25.592	14.08	17	PASS
52	5260	24.837	13.95	24	PASS
60	5300	25.651	14.09	24	PASS
64	5320	24.952	13.97	24	PASS
100	5500	26.008	14.15	24	PASS
116	5580	24.780	13.94	24	PASS
140	5700	16.222	12.10	24	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	15.884	12.01	17	PASS
44	5220	15.995	12.04	17	PASS
48	5240	16.068	12.06	17	PASS
52	5260	16.254	12.11	24	PASS
60	5300	16.292	12.12	24	PASS
64	5320	15.666	11.95	24	PASS
100	5500	15.595	11.93	24	PASS
116	5580	15.487	11.90	24	PASS
140	5700	18.196	12.60	24	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
38	5190	16.325	12.13	17	PASS
46	5230	16.783	12.25	17	PASS
54	5270	16.667	12.22	24	PASS
62	5310	16.899	12.28	24	PASS
102	5510	16.477	12.17	24	PASS
110	5550	19.901	12.99	24	PASS
134	5670	19.628	12.93	24	PASS

**26dB BANDWIDTH:****802.11a**

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
36	5180	20.00	PASS
44	5220	21.62	PASS
48	5240	20.62	PASS
52	5260	23.12	PASS
60	5300	22.08	PASS
64	5320	20.66	PASS
100	5500	24.06	PASS
116	5580	22.64	PASS
140	5700	19.90	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
36	5180	20.39	PASS
44	5220	20.52	PASS
48	5240	20.59	PASS
52	5260	20.34	PASS
60	5300	20.75	PASS
64	5320	20.42	PASS
100	5500	20.45	PASS
116	5580	20.93	PASS
140	5700	21.72	PASS

802.11n (40MHz)

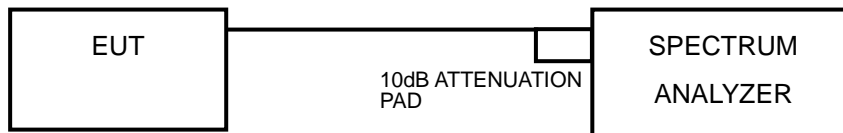
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
38	5190	46.54	PASS
46	5230	46.70	PASS
54	5270	46.18	PASS
62	5310	47.03	PASS
102	5510	46.24	PASS
110	5550	51.13	PASS
134	5670	45.79	PASS

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
5.250 ~ 5.350GHz	11dBm
5.470 ~ 5.725GHz	11dBm

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

<802.11a, 802.11n (20MHz), 802.11n (40MHz)>

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	1.54	0.23	1.77	4	PASS
44	5220	1.59	0.23	1.82	4	PASS
48	5240	1.69	0.23	1.92	4	PASS
52	5260	1.94	0.23	2.17	11	PASS
60	5300	2.31	0.23	2.54	11	PASS
64	5320	2.37	0.23	2.60	11	PASS
100	5500	2.77	0.23	3.00	11	PASS
116	5580	2.62	0.23	2.85	11	PASS
140	5700	-0.17	0.23	0.06	11	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	0.23	-0.66	4	PASS
44	5220	-0.49	0.23	-0.26	4	PASS
48	5240	-0.38	0.23	-0.15	4	PASS
52	5260	-0.23	0.23	0.00	11	PASS
60	5300	0.31	0.23	0.54	11	PASS
64	5320	0.27	0.23	0.50	11	PASS
100	5500	0.59	0.23	0.82	11	PASS
116	5580	0.32	0.23	0.55	11	PASS
140	5700	0.65	0.23	0.88	11	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	-4.56	0.61	-3.95	4	PASS
46	5230	-4.28	0.61	-3.67	4	PASS
54	5270	-4.15	0.61	-3.54	11	PASS
62	5310	-3.82	0.61	-3.21	11	PASS
102	5510	-3.49	0.61	-2.88	11	PASS
110	5550	-2.40	0.61	-1.79	11	PASS
134	5670	-3.26	0.61	-2.65	11	PASS

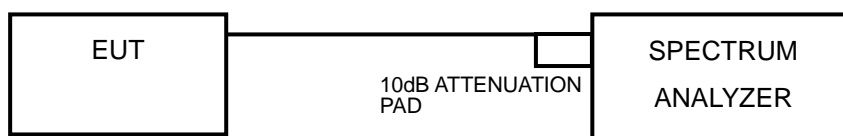
NOTE: Refer to section 3.3 for duty cycle spectrum plot.

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.

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

802.11a

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
11a_6Mbps	BPSK	5500	12.78	2.77	3.00	9.78	13	PASS
	QPSK		13.23	2.62	3.20	10.03	13	PASS
	16QAM		13.14	2.34	3.31	9.83	13	PASS
	64QAM		13.28	1.99	3.51	9.77	13	PASS

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

802.11n (20MHz)

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
HT 20_MCS0	BPSK	5700	11.05	0.65	1.16	9.89	13	PASS
	QPSK		11.04	0.43	0.66	10.38	13	PASS
	16QAM		11.20	0.12	0.97	10.23	13	PASS
	64QAM		10.41	-0.37	1.25	9.16	13	PASS

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

802.11n (40MHz)

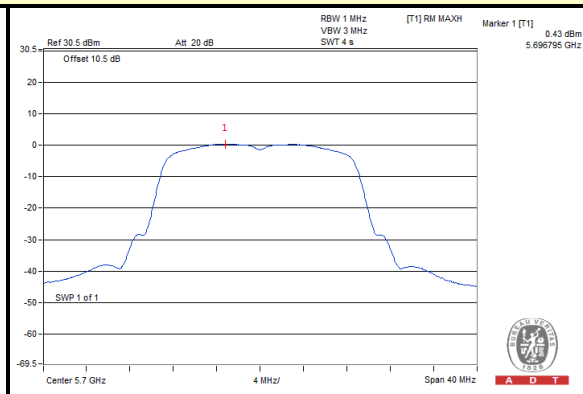
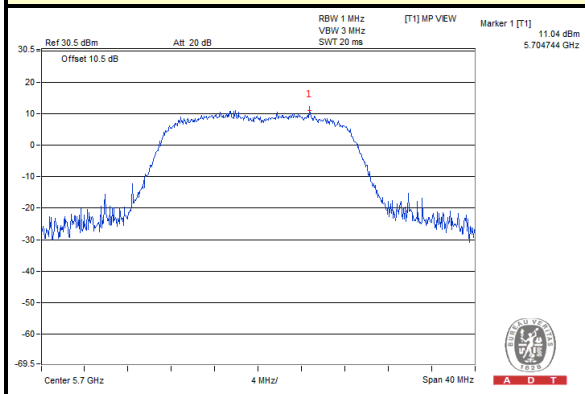
MODULATION MODE	MODULATION TYPE	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)	PPSD WITHOUT DUTY FACTOR (dBm)	PPSD WITH DUTY FACTOR (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS /FAIL
HT 40_MCS0	BPSK	5550	7.75	-2.40	-1.79	9.54	13	PASS
	QPSK		7.80	-2.88	-1.76	9.56	13	PASS
	16QAM		8.13	-3.35	-1.35	9.48	13	PASS
	64QAM		7.96	-3.85	-0.59	8.55	13	PASS

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



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SPECTRUM PLOT OF WORST VALUE

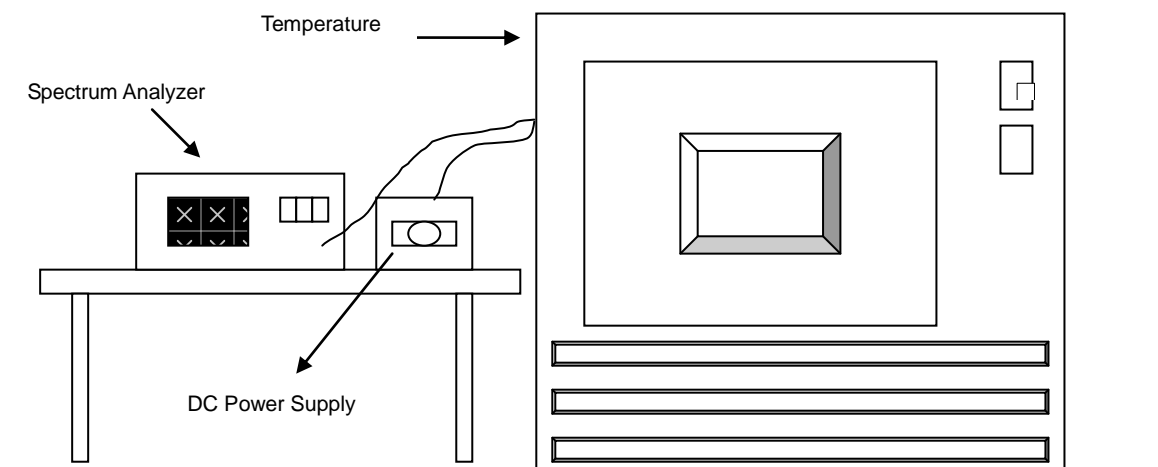


4.6 FREQUENCY STABILITY

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: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vdc)	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	3.8	5320.015122	0.00028	5320.015242	0.00029	5320.014849	0.00028	5320.014924	0.00028
40	3.8	5320.015773	0.00030	5320.015413	0.00029	5320.015280	0.00029	5320.015875	0.00030
30	3.8	5320.016994	0.00032	5320.016858	0.00032	5320.017027	0.00032	5320.016728	0.00031
20	3.8	5320.017948	0.00034	5320.017999	0.00034	5320.018255	0.00034	5320.017966	0.00034
10	3.8	5320.019440	0.00037	5320.019585	0.00037	5320.019498	0.00037	5320.019599	0.00037
0	3.8	5320.017966	0.00034	5320.017674	0.00033	5320.018339	0.00034	5320.017710	0.00033
-10	3.8	5320.016426	0.00031	5320.016769	0.00032	5320.016735	0.00031	5320.017013	0.00032
-20	3.8	5320.015926	0.00030	5320.015701	0.00030	5320.015733	0.00030	5320.016073	0.00030
-30	3.8	5320.014835	0.00028	5320.014935	0.00028	5320.015103	0.00028	5320.014932	0.00028

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	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	3.4	5320.017570	0.00033	5320.017273	0.00032	5320.017510	0.00033	5320.017310	0.00033
	3.8	5320.017948	0.00034	5320.017999	0.00034	5320.018255	0.00034	5320.017966	0.00034
	4.35	5320.019210	0.00036	5320.019205	0.00036	5320.019408	0.00036	5320.019331	0.00036



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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



6. INFORMATION ON THE TESTING LABORATORIES

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

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

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Web Site: www.bureauveritas-adt.com

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



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

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

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