

FCC TEST REPORT (15.407)

REPORT NO.: RF141017C16-2
MODEL NO.: E100-AVL
FCC ID: QYLE100AVL2
RECEIVED: Oct. 17, 2014
TESTED: Oct. 28, 2014 ~ Nov. 06, 2014
ISSUED: Dec. 02, 2014

APPLICANT: Getac Technology Corporation.

ADDRESS: 5F., Building A, No. 209, Sec.1, Nangang Rd., Nangang Dist., Taipei City 11568, Taiwan, R.O.C.

ISSUED BY: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

LAB ADDRESS: No. 47-2, 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.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF141017C16-2	Original release	Dec. 02, 2014



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1. CERTIFICATION

PRODUCT: Rugged PC

MODEL NO.: E100-AVL

BRAND: Getac

APPLICANT: Getac Technology Corporation.

TESTED: Oct. 28, 2014 ~ Nov. 06, 2014

TEST SAMPLE: Identical Prototype

STANDARDS: FCC Part 15, Subpart E (Section 15.407)

ANSI C63.10-2009

The above equipment (model: E100-AVL) 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 : Gina Liu , **DATE** : Dec. 02, 2014

Gina Liu / Specialist

APPROVED BY : Sam chen , **DATE** : Dec. 02, 2014

Sam Chen / Senior Project Engineer

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 -14.12dB at 0.76778MHz.
15.407(b/1/2/3)(b)(6)	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.61dB at 5470MHz.
15.407(a/1/2/3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(e)	6dB bandwidth	PASS	Meet the requirement of limit. (U-NII-3 Band only)
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

EUT	Rugged PC
MODEL NO.	E100-AVL
POWER SUPPLY	19.0Vdc (adapter) 14.4Vdc (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 MCS7
OPERATING FREQUENCY	5180 ~ 5240MHz, 5260 ~ 5320MHz, 5500 ~ 5700MHz, 5745 ~ 5825MHz
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) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	39.36mW for 5180 ~ 5240MHz 39.36mW for 5260 ~ 5320MHz 44.16mW for 5500 ~ 5700MHz 43.25mW for 5745 ~ 5825MHz
ANTENNA TYPE	PIFA antenna with 4.67dBi 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 contains following accessory devices.

ITEM	BRAND	MODEL	SPECIFICATION
Adapter	Delta	ADP-90MD H	I/P: 100-240Vac, 1.5A O/P: 19Vdc, 4.74A
Battery	Getac	E100AVL Battery Pack	14.4Vdc, 4200mAh
WLAN Module	Intel	7260HMW AN	--
CPU	Intel	Cedar Trail N2600	1.6GHz
Chipset	Intel	Tiger Point NM10 Express	2.1W
Panel	AUO	AUO G084SN03V3	8.4" SVGA
SSD	Lite-On	LMT-32M3M	SATA, 32GB
RAM	NANYA	NT2GC64B88B0NS-CG	2GB
Booster	SPEEDY CIRCUITS	PWA-S400G2/650mW WLAN Booster BD(316852100020)	--

2. The EUT incorporates a MIMO function. Physically, the EUT provides three completed transmitters and three receivers.

MODULATION MODE	TX FUNCTION
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

WLAN 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

WLAN 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		

FOR 5.0GHz (5745 ~ 5825MHz):

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

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

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

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

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

EUT CONFIGURE MODE	MODE	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
-	802.11a	5745-5825	149 to 161	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (20MHz)		149 to 161	149, 157, 165	OFDM	BPSK	MCS0
-	802.11n (40MHz)		151 to 159	151, 159	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	36	OFDM	BPSK	6.0
-	802.11n (20MHz)	5260-5320	52 to 64	64	OFDM	BPSK	MCS0
-	802.11n (40MHz)	5500-5700	102 to 134	102	OFDM	BPSK	MCS0
-	802.11a	5745-5825	149 to 161	149	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

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	OFDM	BPSK	6.0
-	802.11n (20MHz)	5260-5320	52 to 64	64	OFDM	BPSK	MCS0
-	802.11n (40MHz)	5500-5700	102 to 134	102	OFDM	BPSK	MCS0
-	802.11a	5745-5825	149 to 161	149	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
-	802.11a	5745-5825	149 to 161	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (20MHz)		149 to 161	149, 157, 165	OFDM	BPSK	MCS0
-	802.11n (40MHz)		151 to 159	151, 159	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
-	802.11a	5745-5825	149 to 161	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (20MHz)		149 to 161	149, 157, 165	OFDM	BPSK	MCS0
-	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	MCS0

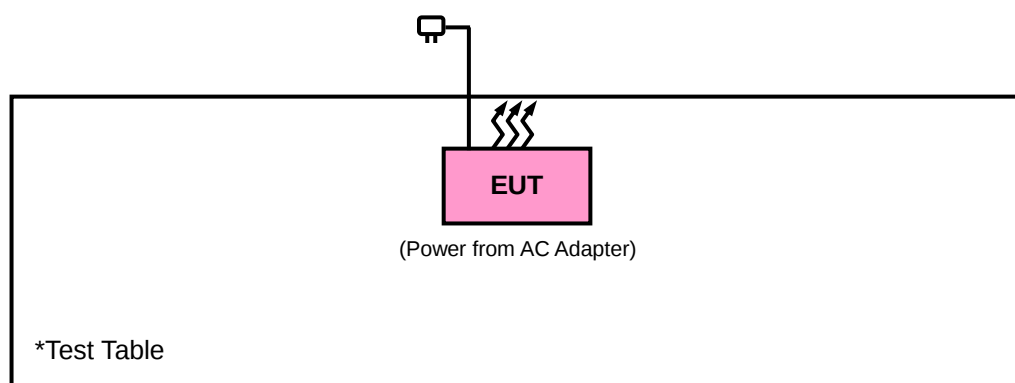
Test CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Will Chen, Harry Hsueh
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Will Chen
PLC	25deg. C, 65%RH	120Vac, 60Hz	Gavin Wu
APCM	25deg. C, 65%RH	120Vac, 60Hz	David Huang

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 TEST SIGNAL

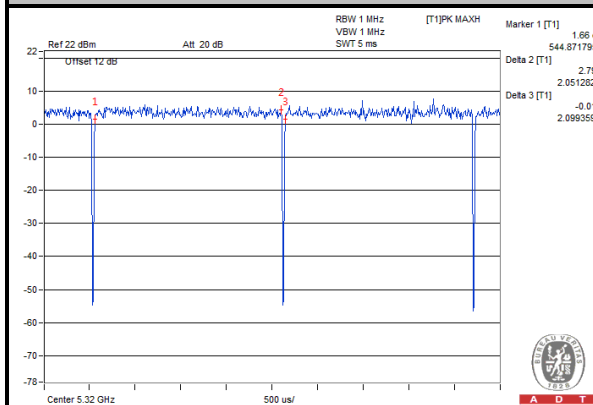
MODULATION TYPE: BPSK

802.11a: Duty cycle = $2.051/2.099 = 0.977$, Duty factor = $10 \cdot \log(1/0.977) = 0.10$

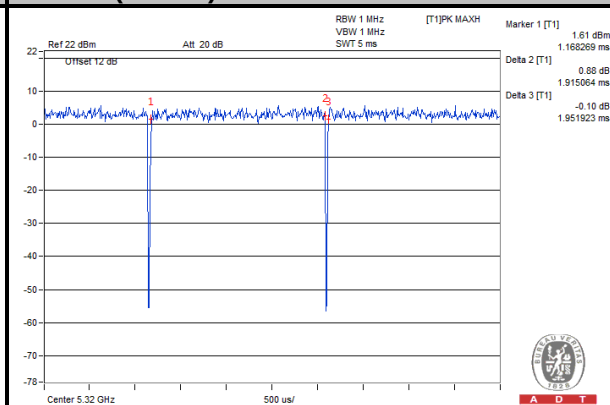
802.11n (20MHz): Duty cycle of test signal is > 98%, duty factor is not required.

802.11n (40MHz): Duty cycle = $913.46/975.96 = 0.936$, Duty factor = $10 \cdot \log(1/0.936) = 0.29$

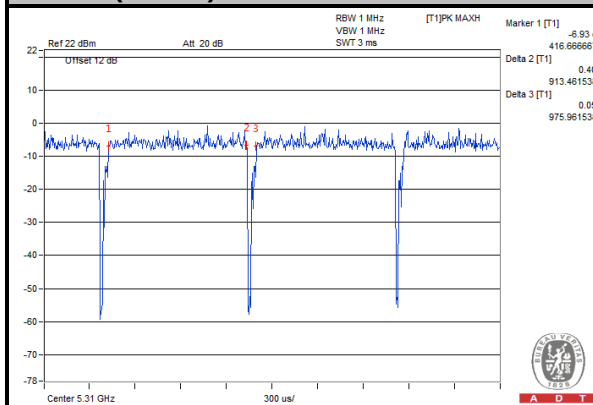
802.11a



802.11n (20MHz)



802.11n (40MHz)



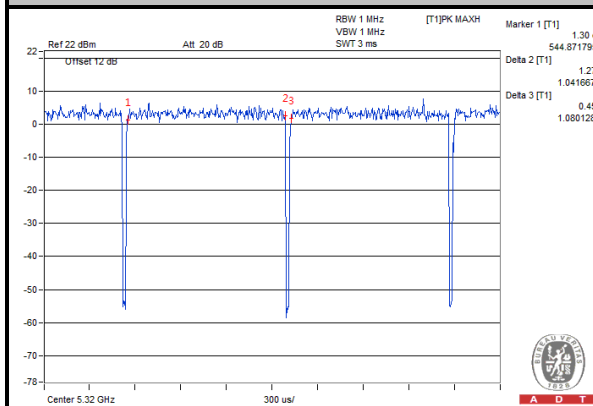
MODULATION TYPE: QPSK

802.11a: Duty cycle = $1.041/1.08 = 0.964$, Duty factor = $10 \cdot \log(1/0.964) = 0.16$

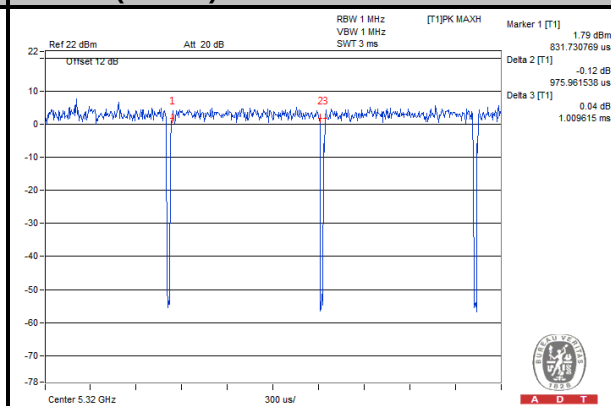
802.11n (20MHz): Duty cycle = $0.976/1.01 = 0.966$, Duty factor = $10 \cdot \log(1/0.966) = 0.15$

802.11n (40MHz): Duty cycle = $458.33/517.62 = 0.885$, Duty factor = $10 \cdot \log(1/0.885) = 0.53$

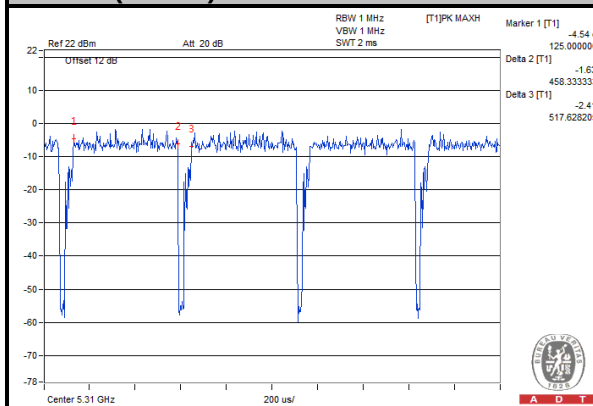
802.11a



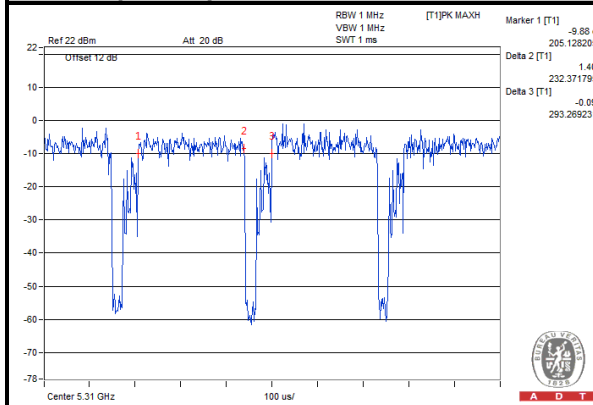
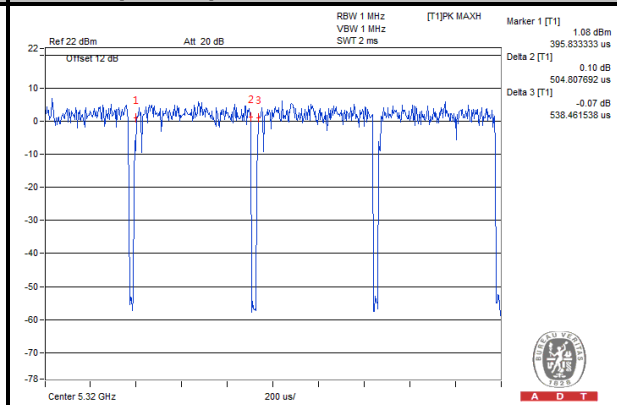
802.11n (20MHz)



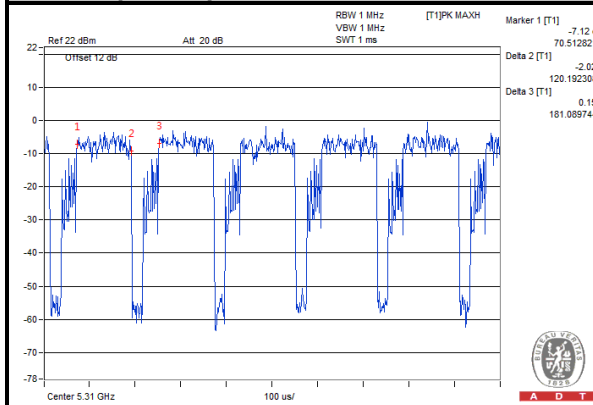
802.11n (40MHz)



802.11n (40MHz): Duty cycle = $232.37/293.27 = 0.792$, Duty factor = $10 \cdot \log(1/0.792) = 1.01$



802.11n (40MHz): Duty cycle = $120.19/181.09 = 0.664$, Duty factor = $10 \cdot \log(1/0.664) = 1.78$



5725MHz ~ 5825MHz

802.11a: Duty cycle of test signal is > 98%, duty factor is not required.

802.11n (20MHz): Duty cycle = $1.915/1.96 = 0.977$, Duty factor = $10 \cdot \log(1/0.977) = 0.10$

802.11n (40MHz): Duty cycle = $913.07/980.38 = 0.931$, Duty factor = $10 \cdot \log(1/0.931) = 0.31$



3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart E (15.407)

789033 D02 General UNII Test Procedures New Rules v01

ANSI C63.10-2009

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

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

NOTE:

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

4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedures New Rules v01	FIELD STRENGTH AT 3m	
	PK: 74 (dBμV/m)	AV: 54 (dBμV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK: -27 (dBm/MHz) ^{*1} PK: -17 (dBm/MHz) ^{*2}	PK: 68.2 (dBμV/m) ^{*1} PK: 78.2 (dBμV/m) ^{*2}

NOTE: ^{*1} beyond 10MHz of the band edge ^{*2} within 10 MHz of band edge

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 AGILENT	N9038A	MY51210203	Jan. 17, 2014	Jan. 16, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 21, 2013	Dec. 20, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Feb. 27, 2014	Feb. 26, 2015
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Feb. 19, 2014	Feb. 18, 2015
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 18, 2013	Dec. 17, 2014
Loop Antenna	HFH2-Z2	100070	Mar. 06, 2014	Mar. 05, 2016
Preamplifier EMCI	EMC 012645	980115	Dec. 26, 2013	Dec. 25, 2014
Preamplifier EMCI	EMC 184045	980116	Jan. 13, 2014	Jan. 12, 2015
Preamplifier EMCI	EMC 330H	980112	Dec. 27, 2013	Dec. 26, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4 2950114	Oct. 18, 2014	Oct. 17, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 18, 2014	Oct. 17, 2015
RF signal cable Worken	RG-213	NA	Nov. 07, 2014	Nov. 06, 2015
Software BV ADT	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
Power Meter	ML2495A	1232002	Sep. 17, 2014	Sep. 16, 2015
Power Sensor	MA2411B	1207325	Sep. 17, 2014	Sep. 16, 2015

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

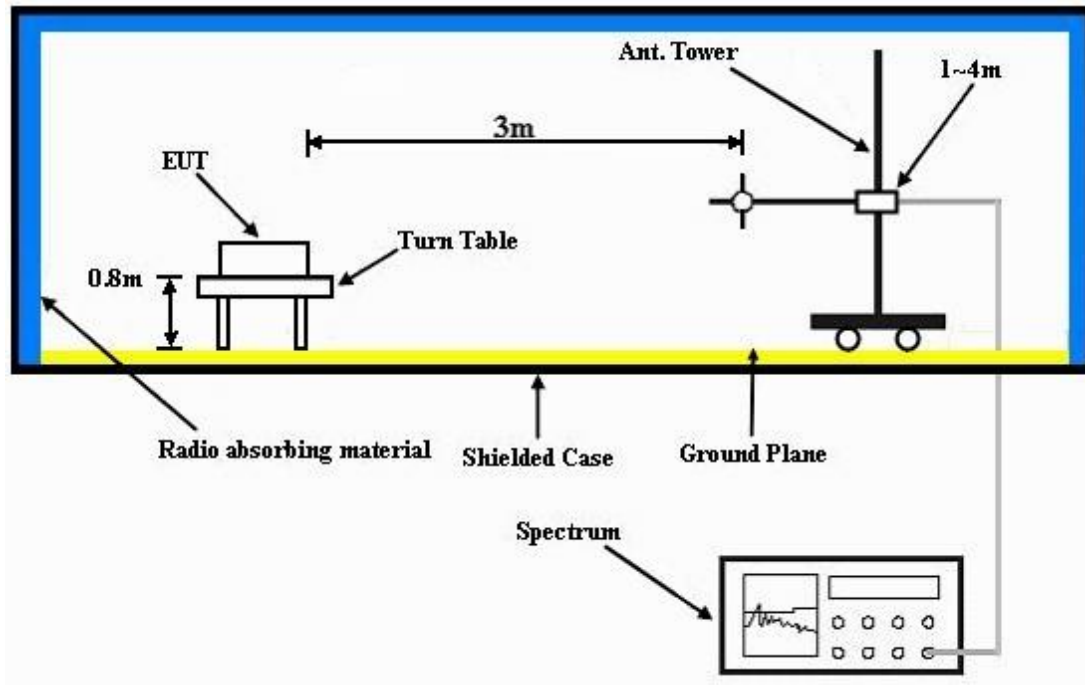
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency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

4.1.5 DEVIATION FROM TEST STANDARD

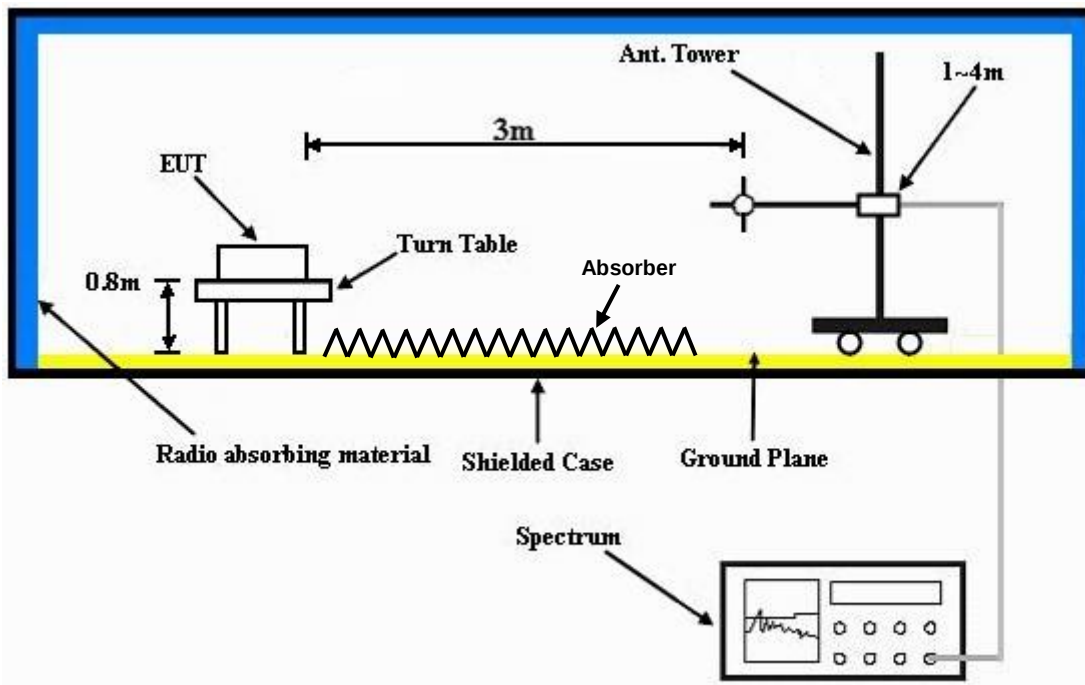
No deviation.

4.1.6 TEST SETUP

Frequency Range 30MHz ~ 1GHz



Frequency Range above 1GHz



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



A D T

4.1.7 EUT OPERATING CONDITIONS

- 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 WORST-CASE DATA

802.11a

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

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	46.92	38.67	54	-7.08	34.12	8.13	34	100	222	Average
5150	59.89	51.64	74	-14.11	34.12	8.13	34	100	222	Peak
5180	101.59	93.28			34.15	8.16	34	100	222	Average
5180	107.89	99.58			34.15	8.16	34	100	222	Peak
5454	43.2	34.38	54	-10.8	34.36	8.51	34.05	100	222	Average
5454	58.35	49.53	74	-15.65	34.36	8.51	34.05	100	222	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	50.67	42.42	54	-3.33	34.12	8.13	34	110	296	Average
5150	60.34	52.09	74	-13.66	34.12	8.13	34	110	296	Peak
5180	104.68	96.37			34.15	8.16	34	110	296	Average
5180	112.43	104.12			34.15	8.16	34	110	296	Peak
5456	48.28	39.46	54	-5.72	34.36	8.51	34.05	110	296	Average
5456	58.52	49.7	74	-15.48	34.36	8.51	34.05	110	296	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

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
5142	44.02	35.76	54	-9.98	34.12	8.13	33.99	110	222	Average
5142	58.29	50.03	74	-15.71	34.12	8.13	33.99	110	222	Peak
5220	102.38	93.99			34.17	8.22	34	110	222	Average
5220	110.29	101.9			34.17	8.22	34	110	222	Peak
5444	43.29	34.5	54	-10.71	34.35	8.48	34.04	110	222	Average
5444	58.4	49.61	74	-15.6	34.35	8.48	34.04	110	222	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	46.4	38.15	54	-7.6	34.12	8.13	34	108	297	Average
5144	58.72	50.47	74	-15.28	34.12	8.13	34	108	297	Peak
5220	106.99	98.6			34.17	8.22	34	108	297	Average
5220	115.06	106.67			34.17	8.22	34	108	297	Peak
5372	44.11	35.44	54	-9.89	34.29	8.41	34.03	108	297	Average
5372	59.1	50.43	74	-14.9	34.29	8.41	34.03	108	297	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

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
5092	43.09	34.92	54	-10.91	34.08	8.07	33.98	100	217	Average
5092	57.11	48.94	74	-16.89	34.08	8.07	33.98	100	217	Peak
5240	100.96	92.52			34.19	8.26	34.01	100	217	Average
5240	108.47	100.03			34.19	8.26	34.01	100	217	Peak
5458	43.31	34.49	54	-10.69	34.36	8.51	34.05	100	217	Average
5458	57.74	48.92	74	-16.26	34.36	8.51	34.05	100	217	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
5114	43.88	35.68	54	-10.12	34.09	8.1	33.99	115	316	Average
5114	57.73	49.53	74	-16.27	34.09	8.1	33.99	115	316	Peak
5240	105.25	96.81			34.19	8.26	34.01	115	316	Average
5240	113.11	104.67			34.19	8.26	34.01	115	316	Peak
5444	44.13	35.34	54	-9.87	34.35	8.48	34.04	115	316	Average
5444	58.33	49.54	74	-15.67	34.35	8.48	34.04	115	316	Peak

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5074	41.77	33.65	54	-12.23	34.07	8.03	33.98	100	226	Average
5074	56.4	48.28	74	-17.6	34.07	8.03	33.98	100	226	Peak
5260	99.64	91.18			34.21	8.26	34.01	100	226	Average
5260	107.18	98.72			34.21	8.26	34.01	100	226	Peak
5430	42.19	33.4	54	-11.81	34.35	8.48	34.04	100	226	Average
5430	57.64	48.85	74	-16.36	34.35	8.48	34.04	100	226	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
5054	41.95	33.89	54	-12.05	34.04	8	33.98	102	282	Average
5054	56.62	48.56	74	-17.38	34.04	8	33.98	102	282	Peak
5260	104.21	95.75			34.21	8.26	34.01	102	282	Average
5260	112.28	103.82			34.21	8.26	34.01	102	282	Peak
5442	43.58	34.79	54	-10.42	34.35	8.48	34.04	102	282	Average
5442	56.8	48.01	74	-17.2	34.35	8.48	34.04	102	282	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5076	41.59	33.47	54	-12.41	34.07	8.03	33.98	185	226	Average
5076	56.97	48.85	74	-17.03	34.07	8.03	33.98	185	226	Peak
5300	102.06	93.52			34.24	8.32	34.02	185	226	Average
5300	110.41	101.87			34.24	8.32	34.02	185	226	Peak
5414	43.63	34.9	54	-10.37	34.33	8.44	34.04	185	226	Average
5414	58.18	49.45	74	-15.82	34.33	8.44	34.04	185	226	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
5082	41.68	33.52	54	-12.32	34.07	8.07	33.98	101	280	Average
5082	56.46	48.3	74	-17.54	34.07	8.07	33.98	101	280	Peak
5300	107.78	99.24			34.24	8.32	34.02	101	280	Average
5300	115.13	106.59			34.24	8.32	34.02	101	280	Peak
5354	46.09	37.46	54	-7.91	34.28	8.38	34.03	101	280	Average
5354	58.64	50.01	74	-15.36	34.28	8.38	34.03	101	280	Peak

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5054	41.53	33.47	54	-12.47	34.04	8	33.98	183	225	Average
5054	56.71	48.65	74	-17.29	34.04	8	33.98	183	225	Peak
5320	99.85	91.27			34.25	8.35	34.02	183	225	Average
5320	107.05	98.47			34.25	8.35	34.02	183	225	Peak
5384	44.15	35.47	54	-9.85	34.31	8.41	34.04	183	225	Average
5384	57.81	49.13	74	-16.19	34.31	8.41	34.04	183	225	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
5036	41.48	33.42	54	-12.52	34.03	8	33.97	100	280	Average
5036	57.23	49.17	74	-16.77	34.03	8	33.97	100	280	Peak
5320	105.09	96.51			34.25	8.35	34.02	100	280	Average
5320	112.76	104.18			34.25	8.35	34.02	100	280	Peak
5350	47.4	38.77	54	-6.6	34.28	8.38	34.03	100	280	Average
5350	61.55	52.92	74	-12.45	34.28	8.38	34.03	100	280	Peak

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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	43.47	34.65	54	-10.53	34.36	8.51	34.05	100	221	Average
5456	58.07	49.25	74	-15.93	34.36	8.51	34.05	100	221	Peak
5470	62.41	53.58	68.2	-5.79	34.37	8.51	34.05	100	221	Peak
5500	99.49	90.57			34.4	8.57	34.05	100	221	Average
5500	107.12	98.2			34.4	8.57	34.05	100	221	Peak
5725	56.78	47.62	68.2	-11.42	34.62	8.65	34.11	100	221	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
5424	46.45	37.68	54	-7.55	34.33	8.48	34.04	100	285	Average
5424	59.32	50.55	74	-14.68	34.33	8.48	34.04	100	285	Peak
5470	66.37	57.54	68.2	-1.83	34.37	8.51	34.05	100	285	Peak
5500	105.06	96.14			34.4	8.57	34.05	100	285	Average
5500	112.33	103.41			34.4	8.57	34.05	100	285	Peak
5725	56.68	47.52	68.2	-11.52	34.62	8.65	34.11	100	285	Peak

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5440	42.38	33.59	54	-11.62	34.35	8.48	34.04	103	233	Average
5440	58.78	49.99	74	-15.22	34.35	8.48	34.04	103	233	Peak
5470	56.29	47.46	68.2	-11.91	34.37	8.51	34.05	103	233	Peak
5580	102.04	93.05			34.47	8.6	34.08	103	233	Average
5580	110.24	101.25			34.47	8.6	34.08	103	233	Peak
5725	56.73	47.57	68.2	-11.47	34.62	8.65	34.11	103	233	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	43.94	35.12	54	-10.06	34.36	8.51	34.05	100	288	Average
5458	58.47	49.65	74	-15.53	34.36	8.51	34.05	100	288	Peak
5470	58.72	49.89	68.2	-9.48	34.37	8.51	34.05	100	288	Peak
5580	108.02	99.03			34.47	8.6	34.08	100	288	Average
5580	115.65	106.66			34.47	8.6	34.08	100	288	Peak
5725	56.39	47.23	68.2	-11.81	34.62	8.65	34.11	100	288	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5396	42.11	33.39	54	-11.89	34.32	8.44	34.04	100	210	Average
5396	57.86	49.14	74	-16.14	34.32	8.44	34.04	100	210	Peak
5470	55.85	47.02	68.2	-12.35	34.37	8.51	34.05	100	210	Peak
5700	99.95	90.82			34.59	8.64	34.1	100	210	Average
5700	107.34	98.21			34.59	8.64	34.1	100	210	Peak
5725	60.67	51.51	68.2	-7.53	34.62	8.65	34.11	100	210	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
5456	42.23	33.41	54	-11.77	34.36	8.51	34.05	101	273	Average
5456	58.03	49.21	74	-15.97	34.36	8.51	34.05	101	273	Peak
5470	56.75	47.92	68.2	-11.45	34.37	8.51	34.05	101	273	Peak
5700	104.39	95.26			34.59	8.64	34.1	101	273	Average
5700	112.38	103.25			34.59	8.64	34.1	101	273	Peak
5725	65.45	56.29	68.2	-2.75	34.62	8.65	34.11	101	273	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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5476	64.33	55.47	68.2	-3.87	34.37	8.54	34.05	100	224	Peak
5724	69.27	60.11	78.2	-8.93	34.62	8.65	34.11	100	224	Peak
5745	102.87	93.68			34.64	8.66	34.11	100	224	Average
5745	110.51	101.32			34.64	8.66	34.11	100	224	Peak
5858	63.93	54.61	78.2	-14.27	34.76	8.7	34.14	100	224	Peak
5862	63.9	54.57	68.2	-4.3	34.76	8.71	34.14	100	224	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
5702	65.6	56.45	68.2	-2.6	34.61	8.64	34.1	100	272	Peak
5724	77.73	68.57	78.2	-0.47	34.62	8.65	34.11	100	272	Peak
5745	107.83	98.64			34.64	8.66	34.11	100	272	Average
5745	115.58	106.39			34.64	8.66	34.11	100	272	Peak
5860	63.12	53.8	78.2	-15.08	34.76	8.7	34.14	100	272	Peak
5868	63.27	53.94	68.2	-4.93	34.76	8.71	34.14	100	272	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5745MHz: Fundamental frequency.
- 5476MHz, 5702MHz, 5724MHz, 5858MHz, 5860MHz, 5862MHz & 5868MHz: Out of restricted band

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5570	64.85	55.86	68.2	-3.35	34.47	8.59	34.07	100	224	Peak
5724	63.7	54.54	78.2	-14.5	34.62	8.65	34.11	100	224	Peak
5785	102.92	93.69			34.68	8.68	34.13	100	224	Average
5785	110.01	100.78			34.68	8.68	34.13	100	224	Peak
5854	63.92	54.6	78.2	-14.28	34.76	8.7	34.14	100	224	Peak
5870	63.04	53.71	68.2	-5.16	34.76	8.71	34.14	100	224	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
5694	64.61	55.48	68.2	-3.59	34.59	8.64	34.1	100	271	Peak
5718	63.25	54.09	78.2	-14.95	34.62	8.65	34.11	100	271	Peak
5785	107.92	98.69			34.68	8.68	34.13	100	271	Average
5785	115.67	106.44			34.68	8.68	34.13	100	271	Peak
5860	63.47	54.15	78.2	-14.73	34.76	8.7	34.14	100	271	Peak
5868	62.81	53.48	68.2	-5.39	34.76	8.71	34.14	100	271	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5785MHz: Fundamental frequency.
- 5570MHz, 5694MHz, 5718MHz, 5724MHz, 5854MHz ,5860MHz, 5868MHz & 5870MHz: Out of restricted band

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5596	64.07	55.06	68.2	-4.13	34.49	8.6	34.08	100	223	Peak
5718	63.62	54.46	78.2	-14.58	34.62	8.65	34.11	100	223	Peak
5825	102.94	93.65			34.73	8.69	34.13	100	223	Average
5825	110.17	100.88			34.73	8.69	34.13	100	223	Peak
5854	64.72	55.4	78.2	-13.48	34.76	8.7	34.14	100	223	Peak
5864	64.98	55.65	68.2	-3.22	34.76	8.71	34.14	100	223	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
5540	64.77	55.83	68.2	-3.43	34.43	8.58	34.07	100	271	Peak
5716	63.21	54.06	78.2	-14.99	34.61	8.65	34.11	100	271	Peak
5825	107.65	98.36			34.73	8.69	34.13	100	271	Average
5825	114.93	105.64			34.73	8.69	34.13	100	271	Peak
5854	66.34	57.02	78.2	-11.86	34.76	8.7	34.14	100	271	Peak
5862	64.93	55.6	68.2	-3.27	34.76	8.71	34.14	100	271	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5825MHz: Fundamental frequency.
- 5540MHz, 5596MHz, 5716MHz, 5718MHz ,5854MHz, 5862MHz & 5864MHz: Out of restricted band

802.11n (20MHz)

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

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	47.76	39.51	54	-6.24	34.12	8.13	34	100	222	Average
5148	60.12	51.87	74	-13.88	34.12	8.13	34	100	222	Peak
5180	98.82	90.51			34.15	8.16	34	100	222	Average
5180	107.36	99.05			34.15	8.16	34	100	222	Peak
5352	43.01	34.38	54	-10.99	34.28	8.38	34.03	100	222	Average
5352	57.71	49.08	74	-16.29	34.28	8.38	34.03	100	222	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	50.39	42.13	54	-3.61	34.12	8.13	33.99	110	296	Average
5142	60.72	52.46	74	-13.28	34.12	8.13	33.99	110	296	Peak
5180	104.86	96.55			34.15	8.16	34	110	296	Average
5180	112.1	103.79			34.15	8.16	34	110	296	Peak
5438	43.43	34.64	54	-10.57	34.35	8.48	34.04	110	296	Average
5438	57.66	48.87	74	-16.34	34.35	8.48	34.04	110	296	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

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	44.83	36.58	54	-9.17	34.12	8.13	34	110	222	Average
5144	57.71	49.46	74	-16.29	34.12	8.13	34	110	222	Peak
5220	102.54	94.15			34.17	8.22	34	110	222	Average
5220	110.5	102.11			34.17	8.22	34	110	222	Peak
5386	43.37	34.69	54	-10.63	34.31	8.41	34.04	110	222	Average
5386	57.26	48.58	74	-16.74	34.31	8.41	34.04	110	222	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	46.58	38.33	54	-7.42	34.12	8.13	34	108	297	Average
5144	58.03	49.78	74	-15.97	34.12	8.13	34	108	297	Peak
5220	107.4	99.01			34.17	8.22	34	108	297	Average
5220	115.2	106.81			34.17	8.22	34	108	297	Peak
5448	44.4	35.57	54	-9.6	34.36	8.51	34.04	108	297	Average
5448	58.19	49.36	74	-15.81	34.36	8.51	34.04	108	297	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

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
5082	43.13	34.97	54	-10.87	34.07	8.07	33.98	100	217	Average
5082	57.32	49.16	74	-16.68	34.07	8.07	33.98	100	217	Peak
5240	100.99	92.55			34.19	8.26	34.01	100	217	Average
5240	108.28	99.84			34.19	8.26	34.01	100	217	Peak
5448	43.39	34.56	54	-10.61	34.36	8.51	34.04	100	217	Average
5448	59.11	50.28	74	-14.89	34.36	8.51	34.04	100	217	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
5072	43.72	35.6	54	-10.28	34.07	8.03	33.98	115	316	Average
5072	57.31	49.19	74	-16.69	34.07	8.03	33.98	115	316	Peak
5240	105.76	97.32			34.19	8.26	34.01	115	316	Average
5240	113.25	104.81			34.19	8.26	34.01	115	316	Peak
5422	43.95	35.18	54	-10.05	34.33	8.48	34.04	115	316	Average
5422	57.85	49.08	74	-16.15	34.33	8.48	34.04	115	316	Peak

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5098	41.73	33.57	54	-12.27	34.08	8.07	33.99	100	226	Average
5098	57.7	49.54	74	-16.3	34.08	8.07	33.99	100	226	Peak
5260	99.83	91.37			34.21	8.26	34.01	100	226	Average
5260	107.19	98.73			34.21	8.26	34.01	100	226	Peak
5452	42.23	33.41	54	-11.77	34.36	8.51	34.05	100	226	Average
5452	58.59	49.77	74	-15.41	34.36	8.51	34.05	100	226	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
5102	42	33.84	54	-12	34.08	8.07	33.99	102	280	Average
5102	56.66	48.5	74	-17.34	34.08	8.07	33.99	102	280	Peak
5260	104.16	95.7			34.21	8.26	34.01	102	280	Average
5260	112.29	103.83			34.21	8.26	34.01	102	280	Peak
5452	43.42	34.6	54	-10.58	34.36	8.51	34.05	102	280	Average
5452	57.55	48.73	74	-16.45	34.36	8.51	34.05	102	280	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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	41.54	33.47	54	-12.46	34.04	8	33.97	185	224	Average
5038	56.83	48.76	74	-17.17	34.04	8	33.97	185	224	Peak
5300	102.74	94.2			34.24	8.32	34.02	185	224	Average
5300	110.27	101.73			34.24	8.32	34.02	185	224	Peak
5360	43.41	34.78	54	-10.59	34.28	8.38	34.03	185	224	Average
5360	57.92	49.29	74	-16.08	34.28	8.38	34.03	185	224	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	41.53	33.5	54	-12.47	34.03	7.97	33.97	101	280	Average
5024	57.38	49.35	74	-16.62	34.03	7.97	33.97	101	280	Peak
5300	107.03	98.49			34.24	8.32	34.02	101	280	Average
5300	114.87	106.33			34.24	8.32	34.02	101	280	Peak
5350	46.09	37.46	54	-7.91	34.28	8.38	34.03	101	280	Average
5350	59.68	51.05	74	-14.32	34.28	8.38	34.03	101	280	Peak

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5132	41.71	33.49	54	-12.29	34.11	8.1	33.99	182	224	Average
5132	57.12	48.9	74	-16.88	34.11	8.1	33.99	182	224	Peak
5320	100.37	91.79			34.25	8.35	34.02	182	224	Average
5320	107.57	98.99			34.25	8.35	34.02	182	224	Peak
5358	44.44	35.81	54	-9.56	34.28	8.38	34.03	182	224	Average
5358	57.96	49.33	74	-16.04	34.28	8.38	34.03	182	224	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
5058	41.55	33.45	54	-12.45	34.05	8.03	33.98	100	280	Average
5058	57.95	49.85	74	-16.05	34.05	8.03	33.98	100	280	Peak
5320	104.6	96.02			34.25	8.35	34.02	100	280	Average
5320	112.02	103.44			34.25	8.35	34.02	100	280	Peak
5350	47.75	39.12	54	-6.25	34.28	8.38	34.03	100	280	Average
5350	62.04	53.41	74	-11.96	34.28	8.38	34.03	100	280	Peak

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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	43.62	34.8	54	-10.38	34.36	8.51	34.05	100	222	Average
5458	57.88	49.06	74	-16.12	34.36	8.51	34.05	100	222	Peak
5470	63.02	54.19	68.2	-5.18	34.37	8.51	34.05	100	222	Peak
5500	99.97	91.05			34.4	8.57	34.05	100	222	Average
5500	107.62	98.7			34.4	8.57	34.05	100	222	Peak
5725	56.08	46.92	68.2	-12.12	34.62	8.65	34.11	100	222	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	47.07	38.25	54	-6.93	34.36	8.51	34.05	100	285	Average
5460	59.86	51.04	74	-14.14	34.36	8.51	34.05	100	285	Peak
5470	67.58	58.75	68.2	-0.62	34.37	8.51	34.05	100	285	Peak
5500	104.83	95.91			34.4	8.57	34.05	100	285	Average
5500	112.5	103.58			34.4	8.57	34.05	100	285	Peak
5725	56.91	47.75	68.2	-11.29	34.62	8.65	34.11	100	285	Peak

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5352	42.17	33.54	54	-11.83	34.28	8.38	34.03	103	233	Average
5352	57.02	48.39	74	-16.98	34.28	8.38	34.03	103	233	Peak
5470	55.27	46.44	68.2	-12.93	34.37	8.51	34.05	103	233	Peak
5580	102.1	93.11			34.47	8.6	34.08	103	233	Average
5580	109.87	100.88			34.47	8.6	34.08	103	233	Peak
5725	55.76	46.6	68.2	-12.44	34.62	8.65	34.11	103	233	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
5452	43.91	35.09	54	-10.09	34.36	8.51	34.05	100	289	Average
5452	58.09	49.27	74	-15.91	34.36	8.51	34.05	100	289	Peak
5470	56.13	47.3	68.2	-12.07	34.37	8.51	34.05	100	289	Peak
5580	108.31	99.32			34.47	8.6	34.08	100	289	Average
5580	115.13	106.14			34.47	8.6	34.08	100	289	Peak
5725	57.43	48.27	68.2	-10.77	34.62	8.65	34.11	100	289	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5362	41.98	33.34	54	-12.02	34.29	8.38	34.03	100	212	Average
5362	58.6	49.96	74	-15.4	34.29	8.38	34.03	100	212	Peak
5470	55.73	46.9	68.2	-12.47	34.37	8.51	34.05	100	212	Peak
5700	99.54	90.41			34.59	8.64	34.1	100	212	Average
5700	107.1	97.97			34.59	8.64	34.1	100	212	Peak
5725	60.69	51.53	68.2	-7.51	34.62	8.65	34.11	100	212	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
5380	42.17	33.49	54	-11.83	34.31	8.41	34.04	100	273	Average
5380	58.41	49.73	74	-15.59	34.31	8.41	34.04	100	273	Peak
5470	57.37	48.54	68.2	-10.83	34.37	8.51	34.05	100	273	Peak
5700	103.62	94.49			34.59	8.64	34.1	100	273	Average
5700	111.65	102.52			34.59	8.64	34.1	100	273	Peak
5725	64.68	55.52	68.2	-3.52	34.62	8.65	34.11	100	273	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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5514	64.39	55.46	68.2	-3.81	34.42	8.57	34.06	100	223	Peak
5724	68.92	59.76	78.2	-9.28	34.62	8.65	34.11	100	223	Peak
5745	100.83	91.64			34.64	8.66	34.11	100	223	Average
5745	108.24	99.05			34.64	8.66	34.11	100	223	Peak
5860	62.97	53.65	78.2	-15.23	34.76	8.7	34.14	100	223	Peak
5862	62.95	53.62	68.2	-5.25	34.76	8.71	34.14	100	223	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
5712	64.19	55.04	68.2	-4.01	34.61	8.65	34.11	100	271	Peak
5724	77.28	68.12	78.2	-0.92	34.62	8.65	34.11	100	271	Peak
5745	106.16	96.97			34.64	8.66	34.11	100	271	Average
5745	113.11	103.92			34.64	8.66	34.11	100	271	Peak
5852	63.4	54.1	78.2	-14.8	34.74	8.7	34.14	100	271	Peak
5864	64.12	54.79	68.2	-4.08	34.76	8.71	34.14	100	271	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5745MHz: Fundamental frequency.
- 5514MHz, 5712MHz, 5724MHz, 5852MHz, 5860MHz, 5862MHz & 5864MHz: Out of restricted band

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5500	63.76	54.84	68.2	-4.44	34.4	8.57	34.05	100	223	Peak
5722	63.79	54.63	78.2	-14.41	34.62	8.65	34.11	100	223	Peak
5785	102.88	93.65			34.68	8.68	34.13	100	223	Average
5785	110.47	101.24			34.68	8.68	34.13	100	223	Peak
5856	62.71	53.39	78.2	-15.49	34.76	8.7	34.14	100	223	Peak
5862	63.74	54.41	68.2	-4.46	34.76	8.71	34.14	100	223	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
5480	64.75	55.87	68.2	-3.45	34.39	8.54	34.05	100	271	Peak
5722	63.95	54.79	78.2	-14.25	34.62	8.65	34.11	100	271	Peak
5785	107.59	98.36			34.68	8.68	34.13	100	271	Average
5785	115.11	105.88			34.68	8.68	34.13	100	271	Peak
5860	65.15	55.83	78.2	-13.05	34.76	8.7	34.14	100	271	Peak
5868	64.25	54.92	68.2	-3.95	34.76	8.71	34.14	100	271	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5785MHz: Fundamental frequency.
- 5480MHz, 5500MHz, 5722MHz, 5856MHz, 5860MHz & 5868MHz: Out of restricted band

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5646	63.93	54.86	68.2	-4.27	34.54	8.62	34.09	100	223	Peak
5724	63.68	54.52	78.2	-14.52	34.62	8.65	34.11	100	223	Peak
5825	101.94	92.65			34.73	8.69	34.13	100	223	Average
5825	109.87	100.58			34.73	8.69	34.13	100	223	Peak
5852	65.66	56.36	78.2	-12.54	34.74	8.7	34.14	100	223	Peak
5870	63.87	54.54	68.2	-4.33	34.76	8.71	34.14	100	223	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
5570	64.57	55.58	68.2	-3.63	34.47	8.59	34.07	100	271	Peak
5718	63.59	54.43	78.2	-14.61	34.62	8.65	34.11	100	271	Peak
5825	107.65	98.36			34.73	8.69	34.13	100	271	Average
5825	115.16	105.87			34.73	8.69	34.13	100	271	Peak
5854	67.37	58.05	78.2	-10.83	34.76	8.7	34.14	100	271	Peak
5862	64.73	55.4	68.2	-3.47	34.76	8.71	34.14	100	271	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5825MHz: Fundamental frequency.
- 5570MHz, 5646MHz, 5718MHz, 5724MHz, 5852MHz, 5854MHz, 5862MHz & 5870MHz: Out of restricted band

802.11n (40MHz)

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

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	45.84	37.59	54	-8.16	34.12	8.13	34	100	222	Average
5148	58.85	50.6	74	-15.15	34.12	8.13	34	100	222	Peak
5190	95.77	87.43			34.15	8.19	34	100	222	Average
5190	103.25	94.91			34.15	8.19	34	100	222	Peak
5360	43.03	34.4	54	-10.97	34.28	8.38	34.03	100	222	Average
5360	57.84	49.21	74	-16.16	34.28	8.38	34.03	100	222	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	48.45	40.2	54	-5.55	34.12	8.13	34	110	296	Average
5146	59.58	51.33	74	-14.42	34.12	8.13	34	110	296	Peak
5190	100.78	92.44			34.15	8.19	34	110	296	Average
5190	108.15	99.81			34.15	8.19	34	110	296	Peak
5450	43.46	34.64	54	-10.54	34.36	8.51	34.05	110	296	Average
5450	57.74	48.92	74	-16.26	34.36	8.51	34.05	110	296	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

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
5142	46.17	37.91	54	-7.83	34.12	8.13	33.99	100	209	Average
5142	59.34	51.08	74	-14.66	34.12	8.13	33.99	100	209	Peak
5230	91.83	83.43			34.19	8.22	34.01	100	209	Average
5230	109.06	100.66			34.19	8.22	34.01	100	209	Peak
5364	43.38	34.74	54	-10.62	34.29	8.38	34.03	100	209	Average
5364	57.63	48.99	74	-16.37	34.29	8.38	34.03	100	209	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	50.01	41.76	54	-3.99	34.12	8.13	34	103	287	Average
5144	62.53	54.28	74	-11.47	34.12	8.13	34	103	287	Peak
5230	105.89	97.49			34.19	8.22	34.01	103	287	Average
5230	113.89	105.49			34.19	8.22	34.01	103	287	Peak
5426	45.14	36.37	54	-8.86	34.33	8.48	34.04	103	287	Average
5426	57.83	49.06	74	-16.17	34.33	8.48	34.04	103	287	Peak

REMARKS:

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 54	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5058	41.56	33.46	54	-12.44	34.05	8.03	33.98	100	226	Average
5058	56.51	48.41	74	-17.49	34.05	8.03	33.98	100	226	Peak
5270	95.83	87.34			34.21	8.29	34.01	100	226	Average
5270	103.57	95.08			34.21	8.29	34.01	100	226	Peak
5418	42.06	33.33	54	-11.94	34.33	8.44	34.04	100	226	Average
5418	57.52	48.79	74	-16.48	34.33	8.44	34.04	100	226	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
5082	41.65	33.49	54	-12.35	34.07	8.07	33.98	102	280	Average
5082	56.5	48.34	74	-17.5	34.07	8.07	33.98	102	280	Peak
5270	100.99	92.5			34.21	8.29	34.01	102	280	Average
5270	108.63	100.14			34.21	8.29	34.01	102	280	Peak
5454	43.17	34.35	54	-10.83	34.36	8.51	34.05	102	280	Average
5454	57.05	48.23	74	-16.95	34.36	8.51	34.05	102	280	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5120	41.65	33.45	54	-12.35	34.09	8.1	33.99	185	224	Average
5120	56.79	48.59	74	-17.21	34.09	8.1	33.99	185	224	Peak
5310	97.07	88.52			34.25	8.32	34.02	185	224	Average
5310	104.75	96.2			34.25	8.32	34.02	185	224	Peak
5376	43.85	35.19	54	-10.15	34.29	8.41	34.04	185	224	Average
5376	57.48	48.82	74	-16.52	34.29	8.41	34.04	185	224	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
5108	41.65	33.45	54	-12.35	34.09	8.1	33.99	100	280	Average
5108	56.94	48.74	74	-17.06	34.09	8.1	33.99	100	280	Peak
5310	101.07	92.52			34.25	8.32	34.02	100	280	Average
5310	109.21	100.66			34.25	8.32	34.02	100	280	Peak
5352	46.93	38.3	54	-7.07	34.28	8.38	34.03	100	280	Average
5352	59.27	50.64	74	-14.73	34.28	8.38	34.03	100	280	Peak

REMARKS:

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

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

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	43.8	34.98	54	-10.2	34.36	8.51	34.05	101	222	Average
5458	58.56	49.74	74	-15.44	34.36	8.51	34.05	101	222	Peak
5470	64.09	55.26	68.2	-4.11	34.37	8.51	34.05	101	222	Peak
5510	95.84	86.93			34.4	8.57	34.06	101	222	Average
5510	104.69	95.78			34.4	8.57	34.06	101	222	Peak
5725	56.45	47.29	68.2	-11.75	34.62	8.65	34.11	101	222	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	46.47	37.65	54	-7.53	34.36	8.51	34.05	100	284	Average
5458	58.56	49.74	74	-15.44	34.36	8.51	34.05	100	284	Peak
5470	67.59	58.76	68.2	-0.61	34.37	8.51	34.05	100	284	Peak
5510	101.07	92.16			34.4	8.57	34.06	100	284	Average
5510	109.32	100.41			34.4	8.57	34.06	100	284	Peak
5725	58.84	49.68	68.2	-9.36	34.62	8.65	34.11	100	284	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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	43.66	34.84	54	-10.34	34.36	8.51	34.05	100	222	Average
5460	57.93	49.11	74	-16.07	34.36	8.51	34.05	100	222	Peak
5470	57.96	49.13	68.2	-10.24	34.37	8.51	34.05	100	222	Peak
5550	103.14	94.17			34.45	8.59	34.07	100	222	Average
5550	110.83	101.86			34.45	8.59	34.07	100	222	Peak
5725	54.86	45.7	68.2	-13.34	34.62	8.65	34.11	100	222	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	47.59	38.77	54	-6.41	34.36	8.51	34.05	100	286	Average
5460	60.07	51.25	74	-13.93	34.36	8.51	34.05	100	286	Peak
5470	62.99	54.16	68.2	-5.21	34.37	8.51	34.05	100	286	Peak
5550	106.99	98.02			34.45	8.59	34.07	100	286	Average
5550	115.29	106.32			34.45	8.59	34.07	100	286	Peak
5725	56.46	47.3	68.2	-11.74	34.62	8.65	34.11	100	286	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5422	42.32	33.55	54	-11.68	34.33	8.48	34.04	100	220	Average
5422	58.58	49.81	74	-15.42	34.33	8.48	34.04	100	220	Peak
5470	54.63	45.8	68.2	-13.57	34.37	8.51	34.05	100	220	Peak
5670	101.79	92.69			34.57	8.63	34.1	100	220	Average
5670	109.75	100.65			34.57	8.63	34.1	100	220	Peak
5725	56.27	47.11	68.2	-11.93	34.62	8.65	34.11	100	220	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
5386	42.51	33.83	54	-11.49	34.31	8.41	34.04	109	287	Average
5386	57.04	48.36	74	-16.96	34.31	8.41	34.04	109	287	Peak
5470	55.9	47.07	68.2	-12.3	34.37	8.51	34.05	109	287	Peak
5670	107.25	98.15			34.57	8.63	34.1	109	287	Average
5670	114.37	105.27			34.57	8.63	34.1	109	287	Peak
5725	58.04	48.88	68.2	-10.16	34.62	8.65	34.11	109	287	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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5710	64.37	55.22	68.2	-3.83	34.61	8.65	34.11	100	223	Peak
5724	68.1	58.94	78.2	-10.1	34.62	8.65	34.11	100	223	Peak
5755	99.84	90.63			34.66	8.66	34.11	100	223	Average
5755	107.04	97.83			34.66	8.66	34.11	100	223	Peak
5858	63.22	53.9	78.2	-14.98	34.76	8.7	34.14	100	223	Peak
5862	62.93	53.6	68.2	-5.27	34.76	8.71	34.14	100	223	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
5714	66.77	57.62	68.2	-1.43	34.61	8.65	34.11	100	271	Peak
5724	71.2	62.04	78.2	-7	34.62	8.65	34.11	100	271	Peak
5755	104.55	95.34			34.66	8.66	34.11	100	271	Average
5755	112.08	102.87			34.66	8.66	34.11	100	271	Peak
5852	63.66	54.36	78.2	-14.54	34.74	8.7	34.14	100	271	Peak
5864	62.42	53.09	68.2	-5.78	34.76	8.71	34.14	100	271	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5755MHz: Fundamental frequency.
- 5710MHz, 5714MHz, 5724MHz, 5852MHz, 5858MHz, 5862MHz & 5864MHz: Out of restricted band

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
5548	63.82	54.86	68.2	-4.38	34.45	8.58	34.07	100	223	Peak
5716	64.25	55.1	78.2	-13.95	34.61	8.65	34.11	100	223	Peak
5795	101.9	92.66			34.69	8.68	34.13	100	223	Average
5795	109.95	100.71			34.69	8.68	34.13	100	223	Peak
5852	63.43	54.13	78.2	-14.77	34.74	8.7	34.14	100	223	Peak
5866	64.1	54.77	68.2	-4.1	34.76	8.71	34.14	100	223	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
5712	64.26	55.11	68.2	-3.94	34.61	8.65	34.11	100	271	Peak
5718	65.48	56.32	78.2	-12.72	34.62	8.65	34.11	100	271	Peak
5795	108.23	98.99			34.69	8.68	34.13	100	271	Average
5795	115.52	106.28			34.69	8.68	34.13	100	271	Peak
5852	64	54.7	78.2	-14.2	34.74	8.7	34.14	100	271	Peak
5862	63.54	54.21	68.2	-4.66	34.76	8.71	34.14	100	271	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5795MHz: Fundamental frequency.
- 5548MHz, 5712MHz, 5716MHz, 5718MHz, 5852MHz, 5862MHz & 5866MHz: Out of restricted band

BELOW 1GHz WORST-CASE DATA:
802.11a

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

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
98.04	22.41	43.74	43.5	-21.09	9.54	1.28	32.15	146	277	Peak
199.56	28.21	47.96	43.5	-15.29	10.9	1.65	32.3	159	95	Peak
298.11	34.07	50.28	46	-11.93	13.89	2.03	32.13	113	148	Peak
300	31.92	48.13	46	-14.08	13.9	2.03	32.14	180	354	Peak
598.2	29.25	37.59	46	-16.75	20.98	2.87	32.19	177	166	Peak
995.8	33.76	34.35	54	-20.24	26.04	3.72	30.35	189	239	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
47.82	23.46	46.3	40	-16.54	8.48	0.9	32.22	115	44	Peak
199.29	23.18	42.99	43.5	-20.32	10.84	1.65	32.3	105	227	Peak
299.19	32.01	48.22	46	-13.99	13.9	2.03	32.14	126	211	Peak
398	27.96	39.89	46	-18.04	17.95	2.34	32.22	119	196	Peak
598.9	32.06	40.28	46	-13.94	21.1	2.87	32.19	149	241	Peak
997.2	34.48	35.05	54	-19.52	26.04	3.72	30.33	197	69	Peak

REMARKS: 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 64	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
97.77	21.62	42.99	43.5	-21.88	9.5	1.28	32.15	195	96	Peak
199.83	29.59	49.34	43.5	-13.91	10.9	1.65	32.3	173	183	Peak
299.73	33.26	49.47	46	-12.74	13.9	2.03	32.14	151	262	Peak
398	34.4	46.33	46	-11.6	17.95	2.34	32.22	135	314	Peak
598.9	29.3	37.52	46	-16.7	21.1	2.87	32.19	106	271	Peak
996.5	33.1	33.69	54	-20.9	26.04	3.72	30.35	154	43	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
37.83	24.15	43.11	40	-15.85	12.53	0.74	32.23	140	288	Peak
160.14	21.24	41.19	43.5	-22.26	10.8	1.52	32.27	144	157	Peak
298.65	32.65	48.86	46	-13.35	13.9	2.03	32.14	200	199	Peak
398.7	27.22	39	46	-18.78	18.1	2.34	32.22	108	150	Peak
598.2	31.03	39.37	46	-14.97	20.98	2.87	32.19	174	239	Peak
997.2	36.29	36.86	54	-17.71	26.04	3.72	30.33	123	229	Peak

REMARKS: 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	30MHz ~ 1GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
97.77	22.32	43.69	43.5	-21.18	9.5	1.28	32.15	193	331	Peak
160.14	26.85	46.8	43.5	-16.65	10.8	1.52	32.27	108	197	Peak
298.11	34.1	50.31	46	-11.9	13.89	2.03	32.13	184	179	Peak
398.7	29.3	41.08	46	-16.7	18.1	2.34	32.22	168	291	Peak
598.2	29.97	38.31	46	-16.03	20.98	2.87	32.19	102	94	Peak
995.8	34.58	35.17	54	-19.42	26.04	3.72	30.35	188	214	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
47.82	24.35	47.19	40	-15.65	8.48	0.9	32.22	192	275	Peak
188.49	21.58	41.82	43.5	-21.92	10.4	1.61	32.25	195	346	Peak
299.73	30.41	46.62	46	-15.59	13.9	2.03	32.14	111	141	Peak
400.1	28.18	39.96	46	-17.82	18.1	2.34	32.22	116	113	Peak
598.9	30.3	38.52	46	-15.7	21.1	2.87	32.19	185	228	Peak
999.3	34.42	34.9	54	-19.58	26.1	3.72	30.3	143	70	Peak

REMARKS: Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

Margin value = Emission level – Limit value

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Will Chen

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
30.54	26.76	40.97	40	-13.24	17.31	0.74	32.26	116	327	Peak
199.56	29.81	49.56	43.5	-13.69	10.9	1.65	32.3	187	253	Peak
300	32.84	49.05	46	-13.16	13.9	2.03	32.14	169	320	Peak
398.7	29.83	41.61	46	-16.17	18.1	2.34	32.22	168	254	Peak
598.2	28.06	36.4	46	-17.94	20.98	2.87	32.19	147	293	Peak
997.2	33.17	33.74	54	-20.83	26.04	3.72	30.33	133	28	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
32.16	25.51	40.82	40	-14.49	16.21	0.74	32.26	185	210	Peak
159.6	21.82	41.83	43.5	-21.68	10.74	1.52	32.27	140	257	Peak
298.11	30.64	46.85	46	-15.36	13.89	2.03	32.13	171	37	Peak
399.4	25.44	37.22	46	-20.56	18.1	2.34	32.22	199	268	Peak
597.5	29.72	38.06	46	-16.28	20.98	2.87	32.19	164	315	Peak
995.8	36.75	37.34	54	-17.25	26.04	3.72	30.35	112	354	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 (dB μ V)	
	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	Apr. 24, 2014	Apr. 23, 2015
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 27, 2013	Dec. 26, 2014
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 23, 2013	Dec. 22, 2014
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 10, 2014	Jul. 09, 2015
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

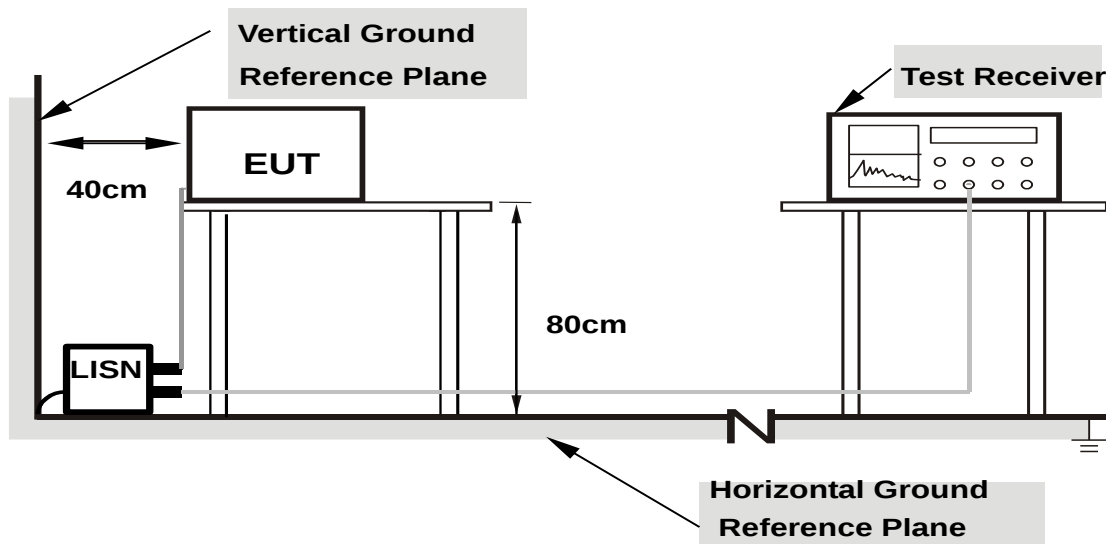
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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 section 4.1.6.

4.2.7 TEST RESULTS

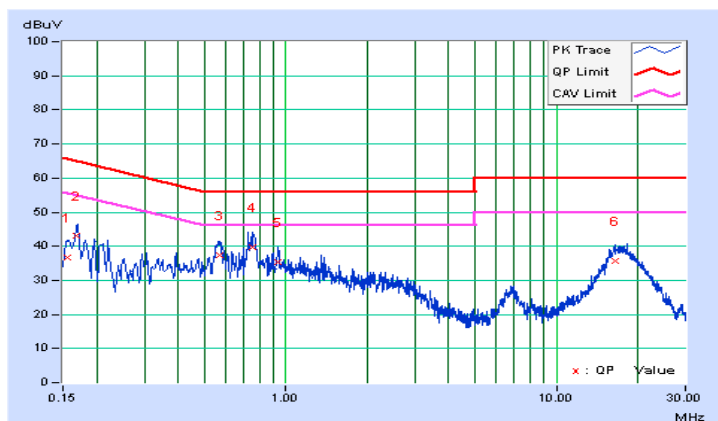
CONDUCTED WORST-CASE DATA :

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

Phase Of Power : Line (L)										
No	Frequency	Correction Factor	Reading Value (dBUV)		Emission Level (dBUV)		Limit (dBUV)		Margin (dB)	
	(MHz)	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15595	0.08	36.51	29.34	36.59	29.42	65.68	55.68	-29.09	-26.26
2	0.16922	0.08	43.17	31.90	43.25	31.98	65.00	55.00	-21.75	-23.02
3	0.57228	0.09	37.37	31.62	37.46	31.71	56.00	46.00	-18.54	-14.29
4	0.75585	0.10	39.59	30.73	39.69	30.83	56.00	46.00	-16.31	-15.17
5	0.93982	0.11	35.31	29.41	35.42	29.52	56.00	46.00	-20.58	-16.48
6	16.47816	0.85	34.97	30.24	35.82	31.09	60.00	50.00	-24.18	-18.91

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

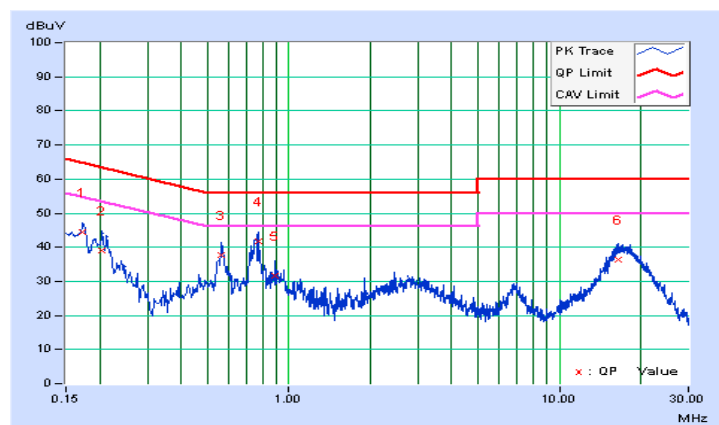


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17346	0.05	44.31	35.45	44.36	35.50	64.79	54.79	-20.43	-19.29
2	0.20458	0.05	38.93	31.67	38.98	31.72	63.42	53.42	-24.44	-21.70
3	0.56055	0.08	37.68	30.98	37.76	31.06	56.00	46.00	-18.24	-14.94
4	0.76778	0.08	41.80	30.04	41.88	30.12	56.00	46.00	-14.12	-15.88
5	0.89290	0.09	31.57	26.61	31.66	26.70	56.00	46.00	-24.34	-19.30
6	16.57200	0.75	35.54	30.52	36.29	31.27	60.00	50.00	-23.71	-18.73

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 TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF TRANSMIT POWER MEASUREMENT

OPERATION BAND	EUT CATEGORY		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Mobile and Portable client device	250mW (24 dBm)
U-NII-2A	√	---	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	√	---	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√	---	1 Watt (30 dBm)

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

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

Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

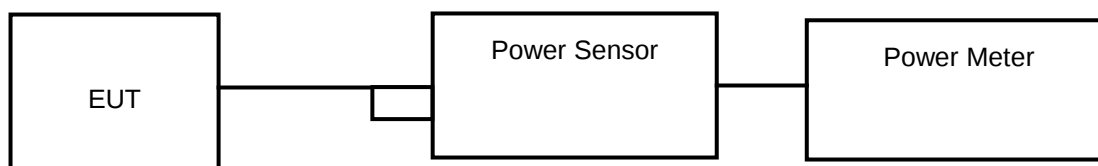
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = $5 \log(NANT/NSS)$ dB or 3 dB, whichever is less for 20-MHz channel widths with $NANT \geq 5$.

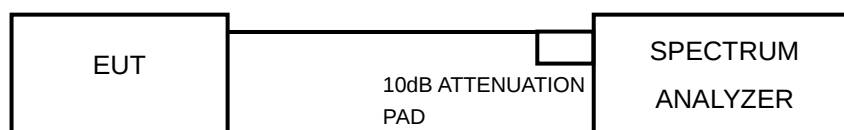
For power measurements on all other devices: Array Gain = $10 \log(NANT/NSS)$ dB.

4.3.2 TEST SETUP

FOR POWER OUTPUT MEASUREMENT



FOR 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)	MAX. CONDUCTED POWER (mW)	MAX. CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	20.61	13.14	24	PASS
44	5220	39.36	15.95	24	PASS
48	5240	29.79	14.74	24	PASS
52	5260	22.08	13.44	24	PASS
60	5300	39.36	15.95	24	PASS
64	5320	21.18	13.26	24	PASS
100	5500	22.18	13.46	24	PASS
116	5580	44.16	16.45	24	PASS
140	5700	19.10	12.81	24	PASS
149	5745	42.66	16.3	30	PASS
157	5785	43.25	16.36	30	PASS
165	5825	40.64	16.09	30	PASS

NOTE:

For U-NII-2A, U-NII-2C Band:

1. $11\text{dBm} + 10\log(24.90) = 24.96\text{ dBm} > 24\text{dBm}.$
2. $11\text{dBm} + 10\log(25.69) = 25.10\text{ dBm} > 24\text{dBm}.$
3. $11\text{dBm} + 10\log(25.04) = 24.99\text{ dBm} > 24\text{dBm}.$
4. $11\text{dBm} + 10\log(25.67) = 25.09\text{ dBm} > 24\text{dBm}.$
5. $11\text{dBm} + 10\log(27.12) = 25.33\text{ dBm} > 24\text{dBm}.$
6. $11\text{dBm} + 10\log(25.44) = 25.06\text{ dBm} > 24\text{dBm}.$

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	MAX. CONDUCTED POWER (mW)	MAX. CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	21.23	13.27	24	PASS
44	5220	39.36	15.95	24	PASS
48	5240	30.34	14.82	24	PASS
52	5260	21.78	13.38	24	PASS
60	5300	39.26	15.94	24	PASS
64	5320	21.43	13.31	24	PASS
100	5500	22.23	13.47	24	PASS
116	5580	43.15	16.35	24	PASS
140	5700	18.97	12.78	24	PASS
149	5745	21.63	13.35	30	PASS
157	5785	43.25	16.36	30	PASS
165	5825	40.18	16.04	30	PASS

NOTE:

For U-NII-2A, U-NII-2C Band:

1. $11\text{dBm} + 10\log(25.55) = 25.07\text{ dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(25.25) = 25.02\text{ dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(25.37) = 25.04\text{ dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(26.31) = 25.20\text{ dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(27.00) = 25.31\text{ dBm} > 24\text{dBm}$.
6. $11\text{dBm} + 10\log(26.05) = 25.16\text{ dBm} > 24\text{dBm}$.



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802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	MAX. CONDUCTED POWER (mW)	MAX. CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
38	5190	8.41	9.25	24	PASS
46	5230	33.27	15.22	24	PASS
54	5270	8.87	9.48	24	PASS
62	5310	11.53	10.62	24	PASS
102	5510	10.86	10.36	24	PASS
110	5550	42.36	16.27	24	PASS
134	5670	32.73	15.15	24	PASS
151	5755	18.54	12.68	30	PASS
159	5795	41.11	16.14	30	PASS

NOTE:

For U-NII-2A, U-NII-2C Band:

1. $11\text{dBm} + 10\log(43.16) = 27.35\text{ dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(42.77) = 27.31\text{ dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(42.83) = 27.31\text{ dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(45.81) = 27.61\text{ dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(44.55) = 27.49\text{ dBm} > 24\text{dBm}$.



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26dB BANDWIDTH**802.11a**

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
52	5260	24.90	PASS
60	5300	25.69	PASS
64	5320	25.04	PASS
100	5500	25.67	PASS
116	5580	27.12	PASS
140	5700	25.44	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
52	5260	25.55	PASS
60	5300	25.25	PASS
64	5320	25.37	PASS
100	5500	26.31	PASS
116	5580	27.00	PASS
140	5700	26.05	PASS

802.11n (40MHz)

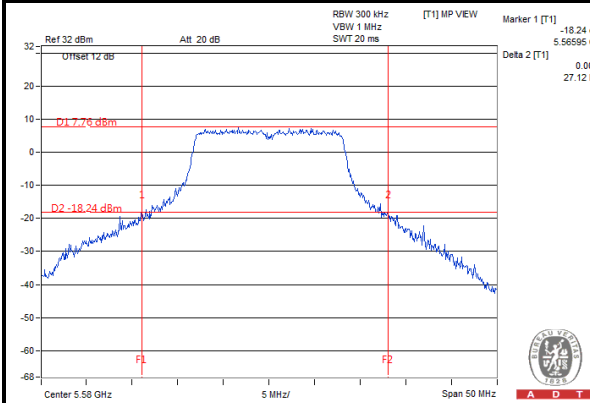
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
54	5270	43.16	PASS
62	5310	42.77	PASS
102	5510	42.83	PASS
110	5550	45.81	PASS
134	5670	44.55	PASS



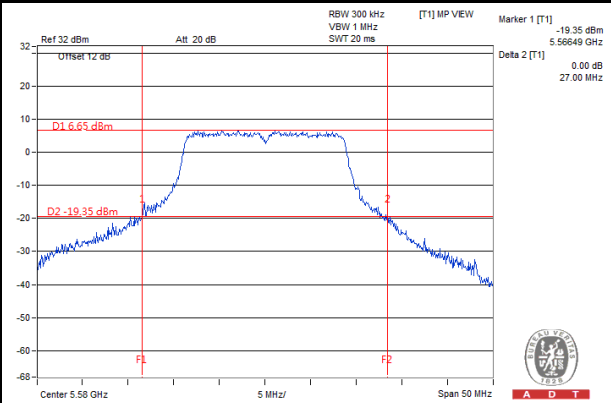
A D T

SPECTRUM PLOT OF WORST VALUE

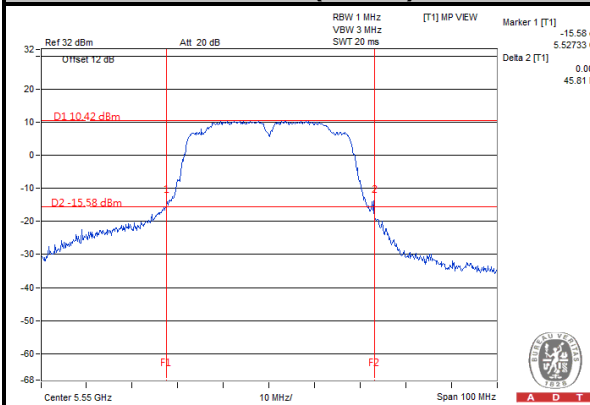
802.11a



802.11n (20MHz)



802.11n (40MHz)

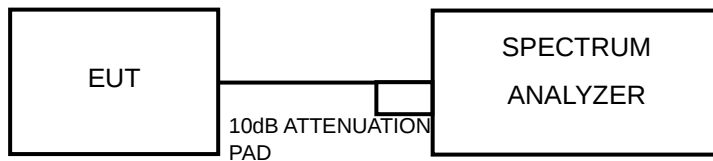


4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
	√	Mobile and Portable client device	11dBm/ MHz
U-NII-2A	√	---	11dBm/ MHz
U-NII-2C	√	---	11dBm/ MHz
U-NII-3	√	---	30dBm/ 500KHz

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

For U-NII-1, U-NII-2A, U-NII-2C band:

Using method SA-1 alternative

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 kHz, Set VBW $\geq$ 1 MHz, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time = 4 second.
- 5) Perform a single sweep.
- 6) Record the max value

Using method SA-2 alternative

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 kHz, Set VBW $\geq$ 1 MHz, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time = 4 second.
- 5) Perform a single sweep.
- 6) Record the max value and add 10 log (1/duty cycle)

For U-NII-3 band:

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 500 kHz, Set VBW $\geq$ 3 RBW, Detector = RMS
- 3) Sweep time = auto, trigger set to "free run".
- 4) Trace average at least 100 traces in power averaging mode.
- 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 Item 4.3.6.

4.4.7 TEST RESULTS

For U-NII-1, U-NII-2A, U-NII-2C Band

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	-0.60	0.10	-0.50	11	PASS
44	5220	1.75	0.10	1.85	11	PASS
48	5240	1.10	0.10	1.20	11	PASS
52	5260	-0.14	0.10	-0.04	11	PASS
60	5300	2.62	0.10	2.72	11	PASS
64	5320	0.00	0.10	0.10	11	PASS
100	5500	0.78	0.10	0.88	11	PASS
116	5580	3.79	0.10	3.89	11	PASS
140	5700	-0.69	0.10	-0.59	11	PASS

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

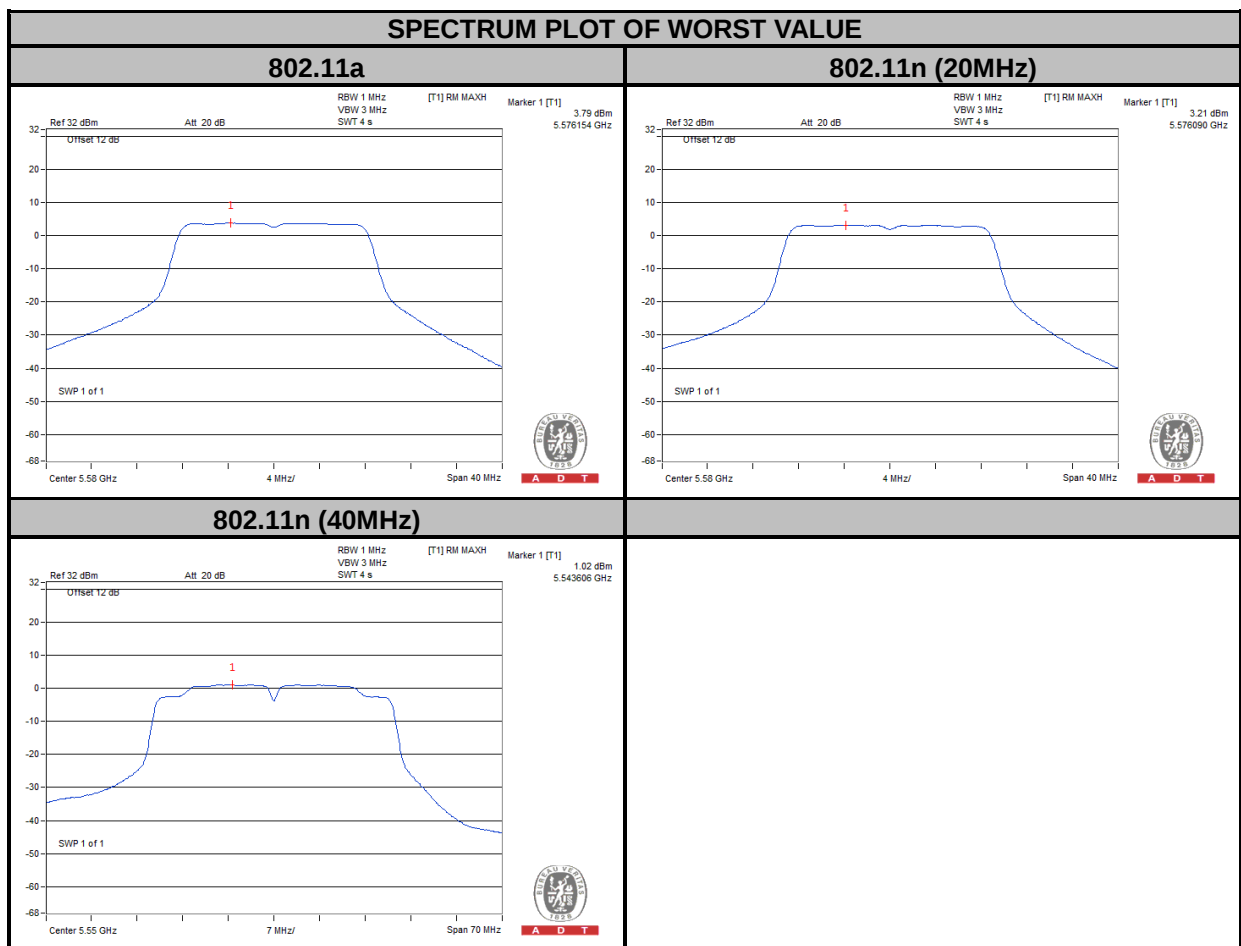
802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	-1.05	11	PASS
44	5220	1.49	11	PASS
48	5240	0.65	11	PASS
52	5260	-0.53	11	PASS
60	5300	2.29	11	PASS
64	5320	1.44	11	PASS
100	5500	0.74	11	PASS
116	5580	3.21	11	PASS
140	5700	-0.87	11	PASS

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	-7.13	0.29	-6.84	11	PASS
46	5230	-1.05	0.29	-0.76	11	PASS
54	5270	-6.35	0.29	-6.06	11	PASS
62	5310	-5.15	0.29	-4.86	11	PASS
102	5510	-4.70	0.29	-4.41	11	PASS
110	5550	1.02	0.29	1.31	11	PASS
134	5670	-0.64	0.29	-0.35	11	PASS

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



For U-NII-3 Band

802.11a

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	LIMIT (dBm/500kHz)	PASS/FAIL
149	5745	-0.14	0.10	-0.04	30	PASS
157	5785	-0.65	0.10	-0.55	30	PASS
165	5825	-0.75	0.10	-0.65	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	LIMIT (dBm/500kHz)	PASS/FAIL
149	5745	-3.47	0.08	-3.47	30	PASS
157	5785	-1.06	0.08	-1.06	30	PASS
165	5825	-1.10	0.08	-1.10	30	PASS

802.11n (40MHz)

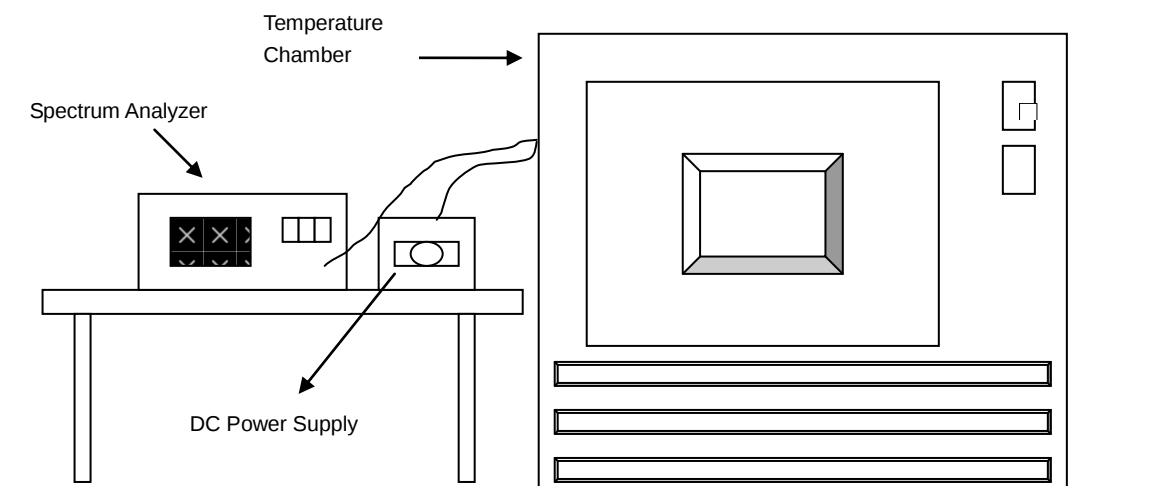
CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	LIMIT (dBm/500kHz)	PASS/FAIL
151	5755	-6.87	0.29	-6.58	30	PASS
159	5795	-3.36	0.29	-3.07	30	PASS

4.5 FREQUENCY STABILITY

4.5.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

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

- 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.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

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

4.5.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	120.0	5320.041570	7.81391	5320.041226	7.74925	5320.041044	7.71504	5320.041466	7.79436
40	120.0	5320.042106	7.91466	5320.042066	7.90714	5320.041799	7.85695	5320.041982	7.89135
30	120.0	5320.043395	8.15695	5320.042851	8.05470	5320.042948	8.07293	5320.043244	8.12857
20	120.0	5320.044224	8.31278	5320.044206	8.30940	5320.043892	8.25038	5320.044364	8.33910
10	120.0	5320.045330	8.52068	5320.045730	8.59586	5320.045750	8.59962	5320.045267	8.50883
0	120.0	5320.043838	8.24023	5320.044255	8.31861	5320.044150	8.29887	5320.044194	8.30714
-10	120.0	5320.042675	8.02162	5320.042401	7.97011	5320.042510	7.99060	5320.042580	8.00376
-20	120.0	5320.041945	7.88440	5320.042279	7.94718	5320.041959	7.88703	5320.041820	7.86090

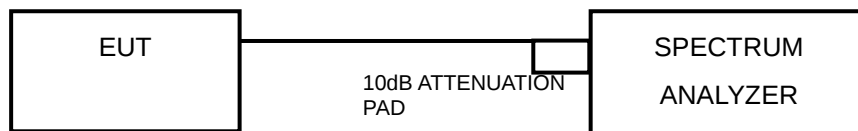
FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	102.0	5320.043988	8.26842	5320.043770	8.22744	5320.043587	8.19305	5320.043482	8.17331
	120.0	5320.044224	8.31278	5320.044206	8.30940	5320.043892	8.25038	5320.044364	8.33910
	138.00	5320.045443	8.54192	5320.044985	8.45583	5320.045443	8.54192	5320.045593	8.57011

4.6 6dB BANDWIDTH MEASUREMENT

4.6.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

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

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

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITIONS

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

4.6.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.36	0.5	PASS
157	5785	16.39	0.5	PASS
165	5825	16.39	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	17.62	0.5	PASS
157	5785	17.64	0.5	PASS
165	5825	17.63	0.5	PASS

802.11n (40MHz)

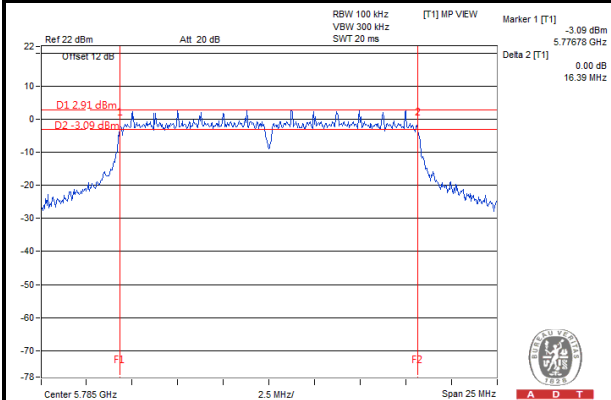
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
151	5755	35.16	0.5	PASS
159	5795	35.20	0.5	PASS



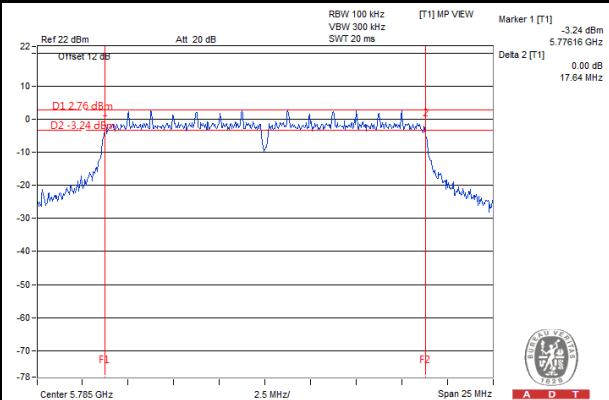
A D T

SPECTRUM PLOT OF WORST VALUE

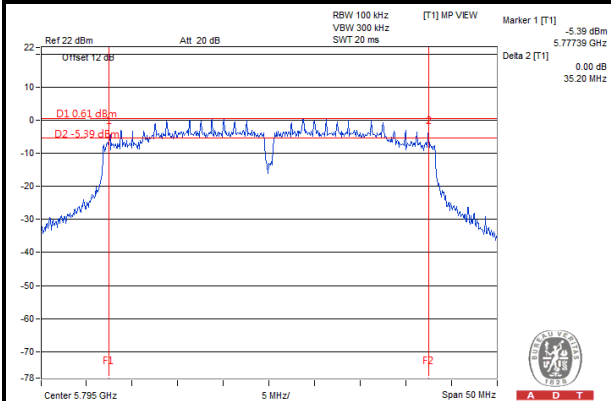
802.11a



802.11n (20MHz)



802.11n (40MHz)



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/Telecom Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety 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.



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

No any modifications are made to the EUT by the lab during the test.

---END---