



FCC TEST REPORT (15.407)

REPORT NO.: RF140407C14-4
MODEL NO.: AST21,AST21MLA,AST21MPA,AST21MWA
FCC ID: MSQAST21
RECEIVED: Apr. 07, 2014
TESTED: Apr. 22, 2014 ~ Jun. 10, 2014
ISSUED: Jun. 16, 2014

APPLICANT: ASUSTek COMPUTER INC.

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

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

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist.,
New Taipei City, Taiwan (R.O.C)

TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei
Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140407C14-4	Original release	Jun. 16, 2014



1. CERTIFICATION

PRODUCT: ASUS Tablet
MODEL NO.: AST21,AST21MLA,AST21MPA,AST21MWA
BRAND: ASUS
APPLICANT: ASUSTek COMPUTER INC.
TESTED: Apr. 22, 2014 ~ Jun. 10, 2014
TEST SAMPLE: Production Unit
STANDARDS: **FCC Part 15, Subpart E (Section 15.407)**
ANSI C63.10-2009

The above equipment (model: AST21,AST21MLA,AST21MPA,AST21MWA) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Evonne Liu , **DATE** : Jun. 16, 2014
Evonne Liu / Specialist

APPROVED BY : Sam Chen , **DATE** : Jun. 16, 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 -16.53dB at 0.91172MHz.
15.407(b/1/2/3) (b)(6)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.45dB at 5725MHz.
15.407(a/1/2)	Peak Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

2.1 MEASUREMENT UNCERTAINTY

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

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

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	ASUS Tablet
MODEL NO.	AST21,AST21MLA,AST21MPA,AST21MWA
POWER SUPPLY	5.2Vdc (adapter or host equipment) 3.8Vdc (Li-ion battery)
MODULATION TYPE	256QAM, 64QAM, 16QAM, QPSK, BPSK
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to MCS7 802.11ac: up to V9
OPERATING FREQUENCY	5180 ~ 5240MHz, 5260 ~ 5320MHz & 5500 ~ 5700MHz
NUMBER OF CHANNEL	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz) 5260 ~ 5320MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz) 5500 ~ 5700MHz: 8 for 802.11a, 802.11n (20MHz) 3 for 802.11n (40MHz) 1 for 802.11ac (80MHz)
OUTPUT POWER	17.74mW for 5180 ~ 5240MHz 16.03mW for 5260 ~ 5320MHz 17.74mW for 5500 ~ 5700MHz
ANTENNA TYPE	PIFA antenna with 3.02dBi gain (5180 ~ 5240MHz) PIFA antenna with 3.08dBi gain (5260 ~ 5320MHz) PIFA antenna with 2.14dBi gain (5500 ~ 5700MHz)
ANTENNA CONNECTOR	NA
DATA CABLE	Refer to Note as below
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to Note as below

NOTE:

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

MODULATION MODE	TX FUNCTION
802.11a	1TX
802.11n (20MHz)	1TX
802.11n (40MHz)	1TX
802.11ac (80MHz)	1TX



2. The EUT contains following accessory devices.

ITEM	BRAND	MODEL	SPECIFICATION
Adapter 1	ASUS	PA-1070-07	I/P: 100-240Vac, 50/60Hz, 0.25A O/P: 5.2Vdc, 1.35A
Adapter 2	ASUS	PSM06A-050Q	I/P: 100-240Vac, 50-60Hz, 0.25A O/P: 5.2Vdc, 1.35A
Adapter 3	ASUS	AD2005320	I/P: 100-240Vac, 50/60Hz, 0.25A O/P: 5.2Vdc, 1.35A
Battery	SMP	C11P1330 1S1P	3.8Vdc, 4000mAh
USB Cable 1	ASUS	L65U2009-CS-B	0.9m shielded cable
USB Cable 2	ASUS	AA781000	0.9m shielded cable
LCD Panel	AUO	AUO LCD (AUO/B080UAN01.3)	-
Photo Camera	Lite-On	12P2BA535	-
Video Camera	Lite-On	12P2SF181	-
CPU	Intel	MOOREFIELD FBGA-1064	2.3GHz 2MB
MainBoard	ASUS	V1.2	-
LTE Module	Intel	X-GOLD 716G PMB9923	-
BT/WLAN Module	BROADCOM	BCM4339	-

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

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

CHANNEL	FREQUENCY
42	5210 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

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

CHANNEL	FREQUENCY
58	5290MHz



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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		

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

CHANNEL	FREQUENCY
106	5530MHz



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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
	802.11ac (80MHz)		42	42	OFDM	BPSK	V0
-	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
	802.11ac (80MHz)		58	58	OFDM	BPSK	V0
-	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
	802.11ac (80MHz)		106	106	OFDM	BPSK	V0

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)
-	802.11ac (80MHz)	5180-5240	42	42	OFDM	BPSK	V0
-	802.11ac (80MHz)	5260-5320	58	58	OFDM	BPSK	V0
-	802.11n (40MHz)	5500-5700	102 to 134	134	OFDM	BPSK	MCS0



POWER LINE CONDUCTED EMISSION TEST:

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (40MHz)	5500-5700	102 to 134	134	OFDM	BPSK	MCS0

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
	802.11ac (80MHz)		42	42	OFDM	BPSK	V0
-	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
	802.11ac (80MHz)		58	58	OFDM	BPSK	V0
-	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
	802.11ac (80MHz)		106	106	OFDM	BPSK	V0



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
	802.11ac (80MHz)		42	42	OFDM	BPSK	V0
-	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
	802.11ac (80MHz)		58	58	OFDM	BPSK	V0
-	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
	802.11ac (80MHz)		106	106	OFDM	BPSK	V0

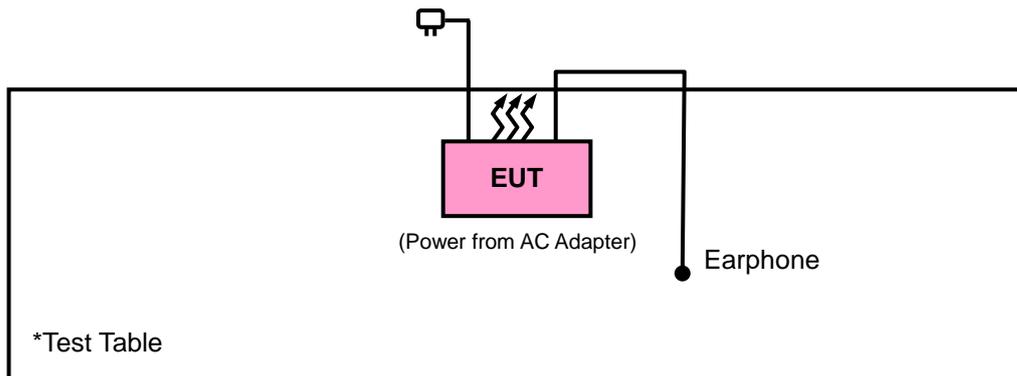
Test CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
PLC	25deg. C, 65%RH	120Vac, 60Hz	Peter Weng
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

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

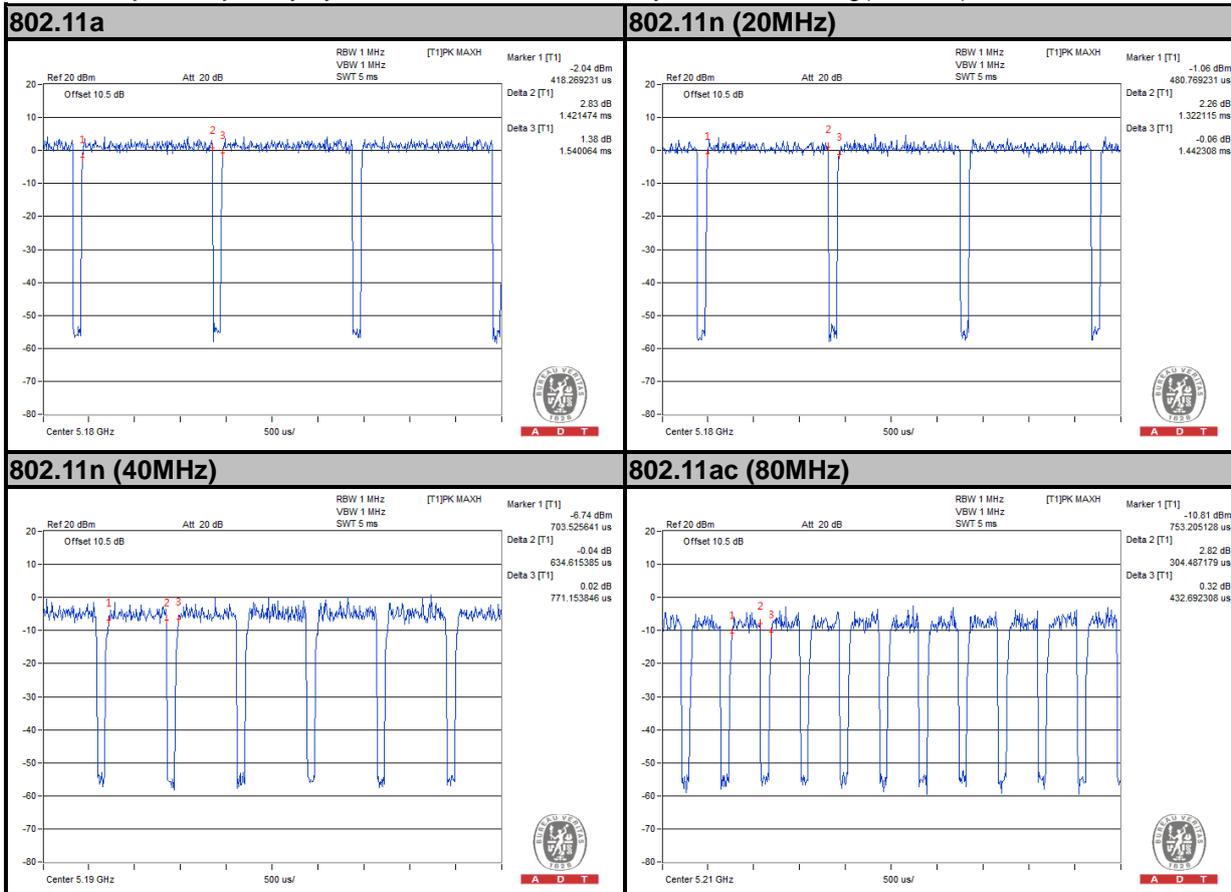
MODULATION TYPE: BPSK

802.11a: Duty cycle = 1.421/1.540 = 0.922, Duty factor = $10 \cdot \log(1/0.922) = 0.35$

802.11n (20MHz): Duty cycle = 1.322/1.442 = 0.916, Duty factor = $10 \cdot \log(1/0.916) = 0.66$

802.11n (40MHz): Duty cycle = 634/771 = 0.823, Duty factor = $10 \cdot \log(1/0.823) = 0.85$

802.11ac (80MHz): Duty cycle = 304/432 = 0.703, Duty factor = $10 \cdot \log(1/0.703) = 1.53$





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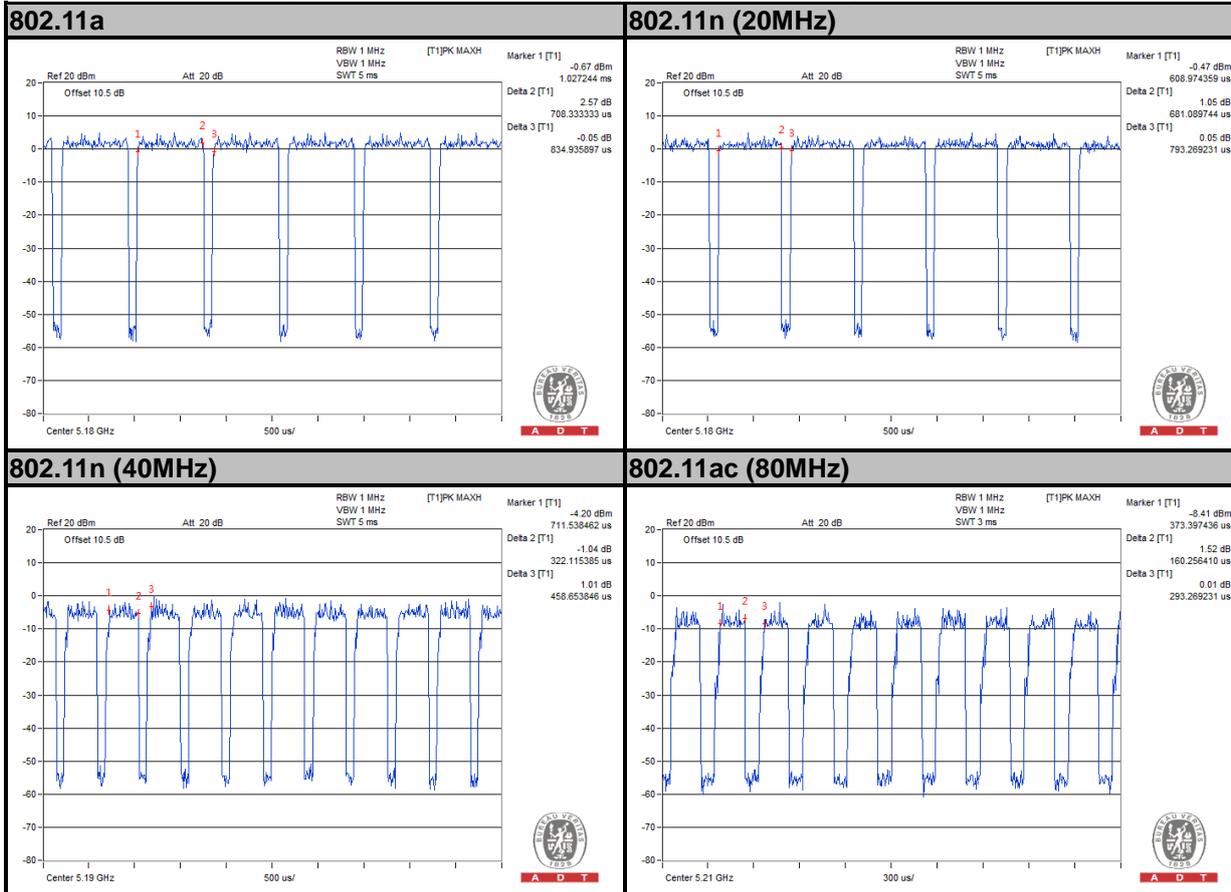
MODULATION TYPE: QPSK

802.11a: Duty cycle = 708/834 = 0.848, Duty factor = $10 * \log(1/0.848) = 0.71$

802.11n (20MHz): Duty cycle = 681/793 = 0.858, Duty factor = $10 * \log(1/0.858) = 0.66$

802.11n (40MHz): Duty cycle = 322/458 = 0.702, Duty factor = $10 * \log(1/0.702) = 1.53$

802.11ac (80MHz): Duty cycle = 160/293 = 0.546, Duty factor = $10 * \log(1/0.546) = 2.62$





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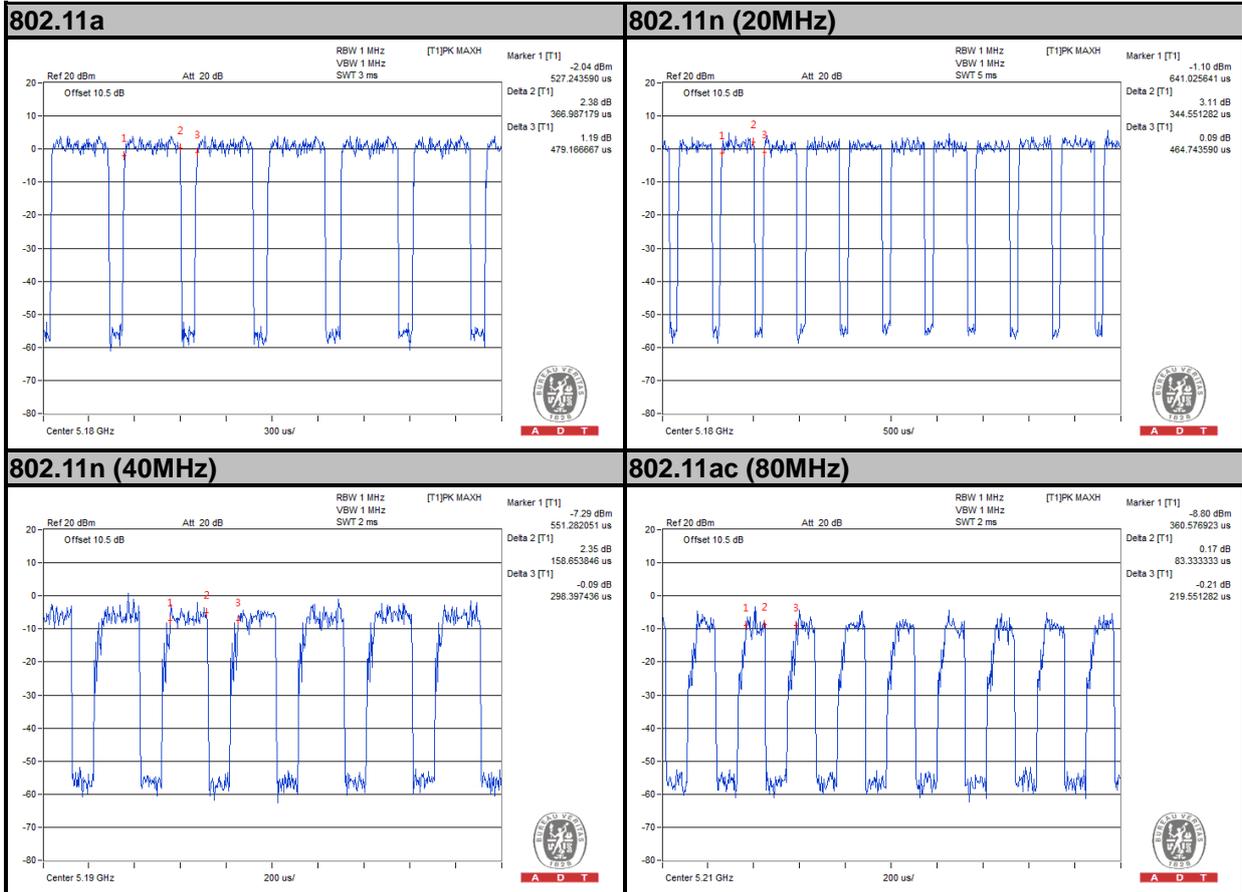
MODULATION TYPE: 16QAM

802.11a: Duty cycle = 366/479 = 0.765, Duty factor = $10 * \log(1/0.765) = 1.16$

802.11n (20MHz): Duty cycle = 344/464 = 0.741, Duty factor = $10 * \log(1/0.741) = 1.30$

802.11n (40MHz): Duty cycle = 158/298 = 0.531, Duty factor = $10 * \log(1/0.531) = 2.74$

802.11ac (80MHz): Duty cycle = 83/219 = 0.380, Duty factor = $10 * \log(1/0.380) = 4.20$





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MODULATION TYPE: 64QAM

802.11a: Duty cycle = 190/299 = 0.636, Duty factor = $10 * \log(1/0.636) = 1.96$

802.11n (20MHz): Duty cycle = 190/301 = 0.633, Duty factor = $10 * \log(1/0.633) = 1.99$

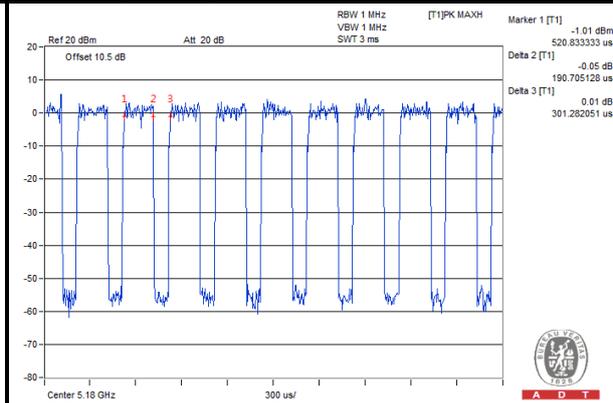
802.11n (40MHz): Duty cycle = 78/218 = 0.360, Duty factor = $10 * \log(1/0.360) = 4.44$

802.11ac (80MHz): Duty cycle = 44/184 = 0.243, Duty factor = $10 * \log(1/0.243) = 6.14$

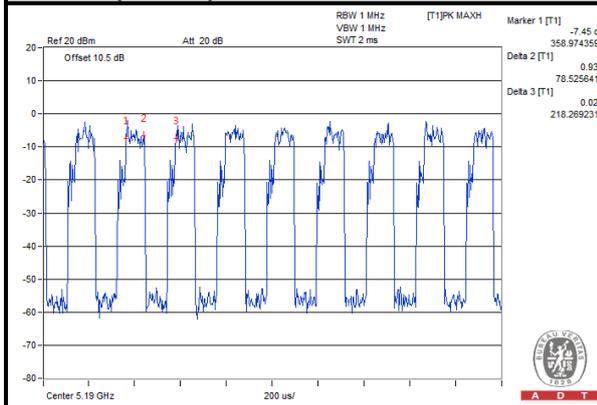
802.11a



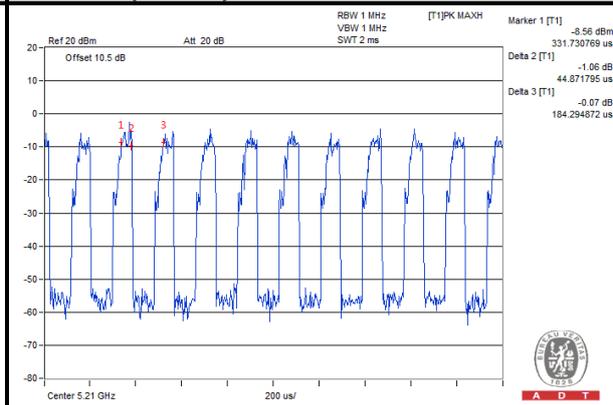
802.11n (20MHz)



802.11n (40MHz)



802.11ac (80MHz)

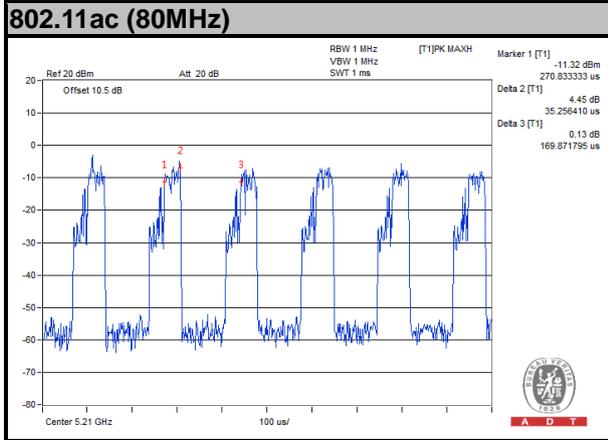




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MODULATION TYPE: 256QAM

802.11ac (80MHz): Duty cycle = $35/169 = 0.207$, Duty factor = $10 * \log(1/0.207) = 6.83$





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)

KDB 789033 D01 General UNII Test Procedures v01r03

ANSI C63.10-2009

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

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

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

NOTE:

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

4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

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

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

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



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, 2013	Oct. 17, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 18, 2013	Oct. 17, 2014
RF signal cable Worken	RG-213	NA	Nov. 07, 2013	Nov. 06, 2014
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	Aug. 23, 2013	Aug. 22, 2014
Power Sensor	MA2411B	1207325	Aug. 23, 2013	Aug. 22, 2014

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

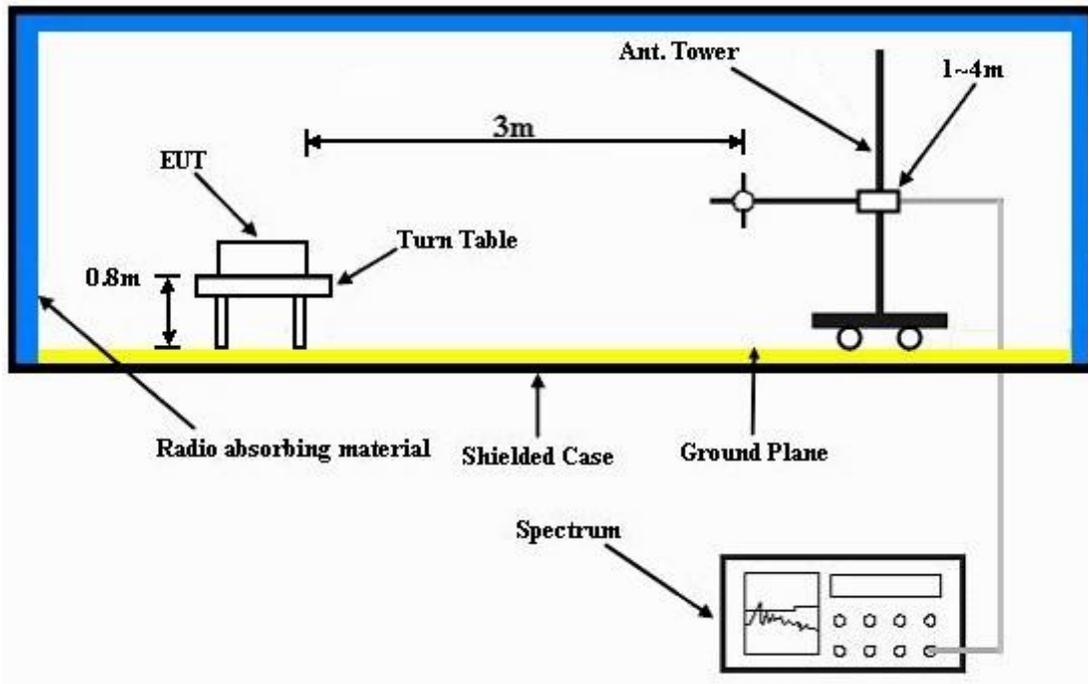
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency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

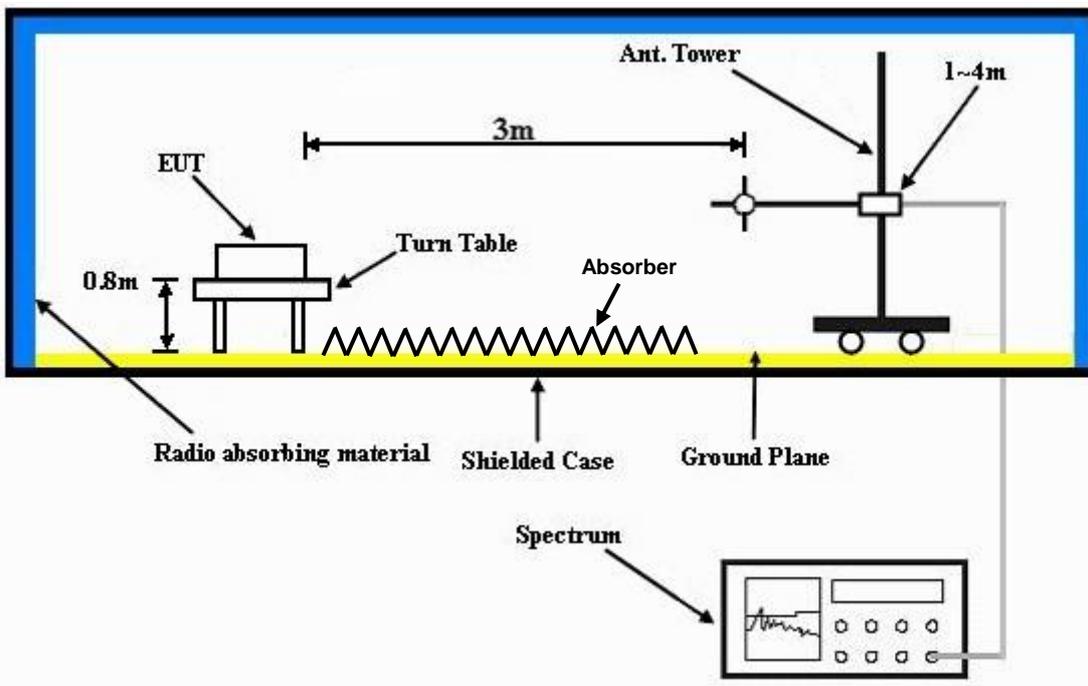
No deviation.

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).



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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.



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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	Kay Wu

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	43.24	34.99	54	-10.76	34.12	8.13	34	160	248	Average
5148	60.94	52.69	74	-13.06	34.12	8.13	34	160	248	Peak
5180	90.47	82.16			34.15	8.16	34	160	248	Average
5180	99.98	91.67			34.15	8.16	34	160	248	Peak
5448	43.15	34.32	54	-10.85	34.36	8.51	34.04	160	248	Average
5448	59.13	50.3	74	-14.87	34.36	8.51	34.04	160	248	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5148	47.79	39.54	54	-6.21	34.12	8.13	34	100	92	Average
5148	71.15	62.9	74	-2.85	34.12	8.13	34	100	92	Peak
5180	98.83	90.52			34.15	8.16	34	100	92	Average
5180	108.05	99.74			34.15	8.16	34	100	92	Peak
5456	42.83	34.01	54	-11.17	34.36	8.51	34.05	100	92	Average
5456	59.65	50.83	74	-14.35	34.36	8.51	34.05	100	92	Peak

REMARKS:

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



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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	Kay Wu

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	42.35	34.18	54	-11.65	34.08	8.07	33.98	109	246	Average
5092	57.75	49.58	74	-16.25	34.08	8.07	33.98	109	246	Peak
5220	90.84	82.45			34.17	8.22	34	109	246	Average
5220	100.71	92.32			34.17	8.22	34	109	246	Peak
5452	43.21	34.39	54	-10.79	34.36	8.51	34.05	109	246	Average
5452	58.44	49.62	74	-15.56	34.36	8.51	34.05	109	246	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	44.21	35.95	54	-9.79	34.12	8.13	33.99	153	92	Average
5142	58.64	50.38	74	-15.36	34.12	8.13	33.99	153	92	Peak
5220	98.94	90.55			34.17	8.22	34	153	92	Average
5220	108.16	99.77			34.17	8.22	34	153	92	Peak
5448	44.48	35.65	54	-9.52	34.36	8.51	34.04	153	92	Average
5448	58.58	49.75	74	-15.42	34.36	8.51	34.04	153	92	Peak

REMARKS:

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



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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	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5110	42.12	33.92	54	-11.88	34.09	8.1	33.99	108	245	Average
5110	58.41	50.21	74	-15.59	34.09	8.1	33.99	108	245	Peak
5240	90.75	82.31			34.19	8.26	34.01	108	245	Average
5240	100.52	92.08			34.19	8.26	34.01	108	245	Peak
5392	42.87	34.19	54	-11.13	34.31	8.41	34.04	108	245	Average
5392	59.06	50.38	74	-14.94	34.31	8.41	34.04	108	245	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	42.21	34.05	54	-11.79	34.07	8.07	33.98	153	91	Average
5082	58.54	50.38	74	-15.46	34.07	8.07	33.98	153	91	Peak
5240	99.06	90.62			34.19	8.26	34.01	153	91	Average
5240	108.44	100			34.19	8.26	34.01	153	91	Peak
5394	44.73	36.02	54	-9.27	34.31	8.44	34.04	153	91	Average
5394	58.38	49.67	74	-15.62	34.31	8.44	34.04	153	91	Peak

REMARKS:

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



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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	Kay Wu

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
5024	44.56	36.53	54	-9.44	34.03	7.97	33.97	101	135	Average
5024	59.3	51.27	74	-14.7	34.03	7.97	33.97	101	135	Peak
5260	95.04	86.58			34.21	8.26	34.01	101	135	Average
5260	103.3	94.84			34.21	8.26	34.01	101	135	Peak
5424	46.06	37.29	54	-7.94	34.33	8.48	34.04	101	135	Average
5424	58.9	50.13	74	-15.1	34.33	8.48	34.04	101	135	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
5030	44.56	36.5	54	-9.44	34.03	8	33.97	114	92	Average
5030	57.83	49.77	74	-16.17	34.03	8	33.97	114	92	Peak
5260	98.33	89.87			34.21	8.26	34.01	114	92	Average
5260	107.49	99.03			34.21	8.26	34.01	114	92	Peak
5416	48.35	39.62	54	-5.65	34.33	8.44	34.04	114	92	Average
5416	60.41	51.68	74	-13.59	34.33	8.44	34.04	114	92	Peak

REMARKS:

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



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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	Kay Wu

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
5068	45.61	37.51	54	-8.39	34.05	8.03	33.98	115	134	Average
5068	57.39	49.29	74	-16.61	34.05	8.03	33.98	115	134	Peak
5300	95.13	86.59			34.24	8.32	34.02	115	134	Average
5300	103.79	95.25			34.24	8.32	34.02	115	134	Peak
5382	46.25	37.57	54	-7.75	34.31	8.41	34.04	115	134	Average
5382	58.22	49.54	74	-15.78	34.31	8.41	34.04	115	134	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	44.52	36.49	54	-9.48	34.03	7.97	33.97	114	91	Average
5024	57.06	49.03	74	-16.94	34.03	7.97	33.97	114	91	Peak
5300	98.24	89.7			34.24	8.32	34.02	114	91	Average
5300	106.92	98.38			34.24	8.32	34.02	114	91	Peak
5382	50.31	41.63	54	-3.69	34.31	8.41	34.04	114	91	Average
5382	59.53	50.85	74	-14.47	34.31	8.41	34.04	114	91	Peak

REMARKS:

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



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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	Kay Wu

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	44.77	36.52	54	-9.23	34.12	8.13	34	155	9	Average
5150	57.05	48.8	74	-16.95	34.12	8.13	34	155	9	Peak
5320	94.19	85.61			34.25	8.35	34.02	155	9	Average
5320	103.59	95.01			34.25	8.35	34.02	155	9	Peak
5398	45.33	36.61	54	-8.67	34.32	8.44	34.04	155	9	Average
5398	58.59	49.87	74	-15.41	34.32	8.44	34.04	155	9	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	44.75	36.55	54	-9.25	34.09	8.1	33.99	114	92	Average
5108	56.83	48.63	74	-17.17	34.09	8.1	33.99	114	92	Peak
5320	97.72	89.14			34.25	8.35	34.02	114	92	Average
5320	106.91	98.33			34.25	8.35	34.02	114	92	Peak
5350	47.52	38.89	54	-6.48	34.28	8.38	34.03	114	92	Average
5350	57.68	49.05	74	-16.32	34.28	8.38	34.03	114	92	Peak

REMARKS:

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



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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	Kay Wu

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
5350	46.19	37.56	54	-7.81	34.28	8.38	34.03	154	67	Average
5350	57.97	49.34	74	-16.03	34.28	8.38	34.03	154	67	Peak
5470	49.41	40.58	54	-4.59	34.37	8.51	34.05	154	67	Average
5470	61.78	52.95	74	-12.22	34.37	8.51	34.05	154	67	Peak
5500	93.34	84.42			34.4	8.57	34.05	154	67	Average
5500	102.53	93.61			34.4	8.57	34.05	154	67	Peak
5725	45.84	36.68	54	-8.16	34.62	8.65	34.11	154	67	Average
5725	56.37	47.21	74	-17.63	34.62	8.65	34.11	154	67	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5430	46.35	37.56	54	-7.65	34.35	8.48	34.04	111	91	Average
5430	59.39	50.6	74	-14.61	34.35	8.48	34.04	111	91	Peak
5470	47.41	38.58	54	-6.59	34.37	8.51	34.05	111	91	Average
5470	56.97	48.14	74	-17.03	34.37	8.51	34.05	111	91	Peak
5500	98.34	89.42			34.4	8.57	34.05	111	91	Average
5500	107.18	98.26			34.4	8.57	34.05	111	91	Peak
5725	45.84	36.68	54	-8.16	34.62	8.65	34.11	111	91	Average
5725	56.98	47.82	74	-17.02	34.62	8.65	34.11	111	91	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



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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	Kay Wu

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
5414	45.3	36.57	54	-8.7	34.33	8.44	34.04	152	78	Average
5414	58.23	49.5	74	-15.77	34.33	8.44	34.04	152	78	Peak
5470	46	37.17	54	-8	34.37	8.51	34.05	152	78	Average
5470	55.36	46.53	74	-18.64	34.37	8.51	34.05	152	78	Peak
5580	93.3	84.31			34.47	8.6	34.08	152	78	Average
5580	101.36	92.37			34.47	8.6	34.08	152	78	Peak
5725	45.79	36.63	54	-8.21	34.62	8.65	34.11	152	78	Average
5725	57.16	48	74	-16.84	34.62	8.65	34.11	152	78	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
5350	45.19	36.56	54	-8.81	34.28	8.38	34.03	109	99	Average
5350	56.65	48.02	74	-17.35	34.28	8.38	34.03	109	99	Peak
5470	45.4	36.57	54	-8.6	34.37	8.51	34.05	109	99	Average
5470	56.53	47.7	74	-17.47	34.37	8.51	34.05	109	99	Peak
5580	97.93	88.94			34.47	8.6	34.08	109	99	Average
5580	107.18	98.19			34.47	8.6	34.08	109	99	Peak
5725	46.8	37.64	54	-7.2	34.62	8.65	34.11	109	99	Average
5725	59.4	50.24	74	-14.6	34.62	8.65	34.11	109	99	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



A D T

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	Kay Wu

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
5436	45.35	36.56	54	-8.65	34.35	8.48	34.04	148	66	Average
5436	58.89	50.1	74	-15.11	34.35	8.48	34.04	148	66	Peak
5470	44.41	35.58	54	-9.59	34.37	8.51	34.05	148	66	Average
5470	57.46	48.63	74	-16.54	34.37	8.51	34.05	148	66	Peak
5700	93.13	84			34.59	8.64	34.1	148	66	Average
5700	101.83	92.7			34.59	8.64	34.1	148	66	Peak
5725	48.8	39.64	54	-5.2	34.62	8.65	34.11	148	66	Average
5725	58.46	49.3	74	-15.54	34.62	8.65	34.11	148	66	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
5350	45.19	36.56	54	-8.81	34.28	8.38	34.03	106	96	Average
5350	57.88	49.25	74	-16.12	34.28	8.38	34.03	106	96	Peak
5470	44.41	35.58	54	-9.59	34.37	8.51	34.05	106	96	Average
5470	56.55	47.72	74	-17.45	34.37	8.51	34.05	106	96	Peak
5700	98.55	89.42			34.59	8.64	34.1	106	96	Average
5700	107.85	98.72			34.59	8.64	34.1	106	96	Peak
5725	48.8	39.64	54	-5.2	34.62	8.65	34.11	106	96	Average
5725	57.86	48.7	74	-16.14	34.62	8.65	34.11	106	96	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



A D T

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	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	43.93	35.68	54	-10.07	34.12	8.13	34	109	246	Average
5150	64.18	55.93	74	-9.82	34.12	8.13	34	109	246	Peak
5180	89.98	81.67			34.15	8.16	34	109	246	Average
5180	99.49	91.18			34.15	8.16	34	109	246	Peak
5380	42.76	34.08	54	-11.24	34.31	8.41	34.04	109	246	Average
5380	58.39	49.71	74	-15.61	34.31	8.41	34.04	109	246	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5148	48.2	39.95	54	-5.8	34.12	8.13	34	100	91	Average
5148	71.44	63.19	74	-2.56	34.12	8.13	34	100	91	Peak
5180	98.32	90.01			34.15	8.16	34	100	91	Average
5180	107.28	98.97			34.15	8.16	34	100	91	Peak
5370	42.73	34.06	54	-11.27	34.29	8.41	34.03	100	91	Average
5370	59.01	50.34	74	-14.99	34.29	8.41	34.03	100	91	Peak

REMARKS:

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



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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	Kay Wu

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
5068	42.36	34.26	54	-11.64	34.05	8.03	33.98	109	246	Average
5068	58.38	50.28	74	-15.62	34.05	8.03	33.98	109	246	Peak
5220	91.52	83.13			34.17	8.22	34	109	246	Average
5220	101	92.61			34.17	8.22	34	109	246	Peak
5450	43.28	34.46	54	-10.72	34.36	8.51	34.05	109	246	Average
5450	58.62	49.8	74	-15.38	34.36	8.51	34.05	109	246	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
5118	43.95	35.75	54	-10.05	34.09	8.1	33.99	154	91	Average
5118	58.41	50.21	74	-15.59	34.09	8.1	33.99	154	91	Peak
5220	99.27	90.88			34.17	8.22	34	154	91	Average
5220	108.36	99.97			34.17	8.22	34	154	91	Peak
5368	44.47	35.8	54	-9.53	34.29	8.41	34.03	154	91	Average
5368	59.42	50.75	74	-14.58	34.29	8.41	34.03	154	91	Peak

REMARKS:

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



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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	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5146	42.16	33.91	54	-11.84	34.12	8.13	34	108	245	Average
5146	58.72	50.47	74	-15.28	34.12	8.13	34	108	245	Peak
5240	91.17	82.73			34.19	8.26	34.01	108	245	Average
5240	100.72	92.28			34.19	8.26	34.01	108	245	Peak
5422	43.05	34.28	54	-10.95	34.33	8.48	34.04	108	245	Average
5422	58.4	49.63	74	-15.6	34.33	8.48	34.04	108	245	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	42.4	34.15	54	-11.6	34.12	8.13	34	153	91	Average
5144	57.79	49.54	74	-16.21	34.12	8.13	34	153	91	Peak
5240	99.24	90.8			34.19	8.26	34.01	153	91	Average
5240	108.43	99.99			34.19	8.26	34.01	153	91	Peak
5428	43.9	35.13	54	-10.1	34.33	8.48	34.04	153	91	Average
5428	58.77	50	74	-15.23	34.33	8.48	34.04	153	91	Peak

REMARKS:

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



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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	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5028	44.52	36.49	54	-9.48	34.03	7.97	33.97	155	72	Average
5028	57.16	49.13	74	-16.84	34.03	7.97	33.97	155	72	Peak
5260	97.99	89.53			34.21	8.26	34.01	155	72	Average
5260	106.74	98.28			34.21	8.26	34.01	155	72	Peak
5410	46.29	37.57	54	-7.71	34.32	8.44	34.04	155	72	Average
5410	58.23	49.51	74	-15.77	34.32	8.44	34.04	155	72	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
5084	44.66	36.5	54	-9.34	34.07	8.07	33.98	114	92	Average
5084	58.07	49.91	74	-15.93	34.07	8.07	33.98	114	92	Peak
5260	101.23	92.77			34.21	8.26	34.01	114	92	Average
5260	109.34	100.88			34.21	8.26	34.01	114	92	Peak
5410	50.79	42.07	54	-3.21	34.32	8.44	34.04	114	92	Average
5410	61.03	52.31	74	-12.97	34.32	8.44	34.04	114	92	Peak

REMARKS:

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



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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	Kay Wu

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
5050	45.57	37.51	54	-8.43	34.04	8	33.98	151	74	Average
5050	58.12	50.06	74	-15.88	34.04	8	33.98	151	74	Peak
5300	97.08	88.54			34.24	8.32	34.02	151	74	Average
5300	105.49	96.95			34.24	8.32	34.02	151	74	Peak
5350	49.19	40.56	54	-4.81	34.28	8.38	34.03	151	74	Average
5350	60.86	52.23	74	-13.14	34.28	8.38	34.03	151	74	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	44.57	36.51	54	-9.43	34.04	8	33.98	116	92	Average
5054	57.43	49.37	74	-16.57	34.04	8	33.98	116	92	Peak
5300	101.81	93.27			34.24	8.32	34.02	116	92	Average
5300	109.84	101.3			34.24	8.32	34.02	116	92	Peak
5356	48.63	40	54	-5.37	34.28	8.38	34.03	116	92	Average
5356	64.24	55.61	74	-9.76	34.28	8.38	34.03	116	92	Peak

REMARKS:

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



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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	Kay Wu

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
5070	44.61	36.51	54	-9.39	34.05	8.03	33.98	143	70	Average
5070	57.22	49.12	74	-16.78	34.05	8.03	33.98	143	70	Peak
5320	94.63	86.05			34.25	8.35	34.02	143	70	Average
5320	103.65	95.07			34.25	8.35	34.02	143	70	Peak
5356	49.23	40.6	54	-4.77	34.28	8.38	34.03	143	70	Average
5356	66.53	57.9	74	-7.47	34.28	8.38	34.03	143	70	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	45.51	37.26	54	-8.49	34.12	8.13	34	114	92	Average
5146	57.41	49.16	74	-16.59	34.12	8.13	34	114	92	Peak
5320	98.86	90.28			34.25	8.35	34.02	114	92	Average
5320	107.43	98.85			34.25	8.35	34.02	114	92	Peak
5356	48.83	40.2	54	-5.17	34.28	8.38	34.03	114	92	Average
5356	71.77	63.14	74	-2.23	34.28	8.38	34.03	114	92	Peak

REMARKS:

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



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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	Kay Wu

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	43.5	34.68	54	-10.5	34.36	8.51	34.05	112	133	Average
5460	61.45	52.63	74	-12.55	34.36	8.51	34.05	112	133	Peak
5470	43.93	35.1	54	-10.07	34.37	8.51	34.05	112	133	Average
5470	66.18	57.35	74	-7.82	34.37	8.51	34.05	112	133	Peak
5500	93.31	84.39			34.4	8.57	34.05	112	133	Average
5500	103.68	94.76			34.4	8.57	34.05	112	133	Peak
5725	43.03	33.87	54	-10.97	34.62	8.65	34.11	112	133	Average
5725	54.3	45.14	74	-19.7	34.62	8.65	34.11	112	133	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5454	45.49	36.67	54	-8.51	34.36	8.51	34.05	109	96	Average
5454	61.02	52.2	74	-12.98	34.36	8.51	34.05	109	96	Peak
5470	46.14	37.31	54	-7.86	34.37	8.51	34.05	109	96	Average
5470	72.75	63.92	74	-1.25	34.37	8.51	34.05	109	96	Peak
5500	98.88	89.96			34.4	8.57	34.05	109	96	Average
5500	107.3	98.38			34.4	8.57	34.05	109	96	Peak
5725	43.67	34.51	54	-10.33	34.62	8.65	34.11	109	96	Average
5725	55.31	46.15	74	-18.69	34.62	8.65	34.11	109	96	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



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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	Kay Wu

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
5380	44.25	35.57	54	-9.75	34.31	8.41	34.04	137	66	Average
5380	58.36	49.68	74	-15.64	34.31	8.41	34.04	137	66	Peak
5470	45.14	36.31	54	-8.86	34.37	8.51	34.05	137	66	Average
5470	56.36	47.53	74	-17.64	34.37	8.51	34.05	137	66	Peak
5580	96.64	87.65			34.47	8.6	34.08	137	66	Average
5580	105.31	96.32			34.47	8.6	34.08	137	66	Peak
5725	44.84	35.68	54	-9.16	34.62	8.65	34.11	137	66	Average
5725	56.04	46.88	74	-17.96	34.62	8.65	34.11	137	66	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5460	46.39	37.57	54	-7.61	34.36	8.51	34.05	111	91	Average
5460	58.47	49.65	74	-15.53	34.36	8.51	34.05	111	91	Peak
5470	46.12	37.29	54	-7.88	34.37	8.51	34.05	111	91	Average
5470	57.17	48.34	74	-16.83	34.37	8.51	34.05	111	91	Peak
5580	101.3	92.31			34.47	8.6	34.08	111	91	Average
5580	109.97	100.98			34.47	8.6	34.08	111	91	Peak
5725	45.4	36.24	54	-8.6	34.62	8.65	34.11	111	91	Average
5725	57.43	48.27	74	-16.57	34.62	8.65	34.11	111	91	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



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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	Kay Wu

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
5450	42.65	33.83	54	-11.35	34.36	8.51	34.05	126	108	Average
5450	57.91	49.09	74	-16.09	34.36	8.51	34.05	126	108	Peak
5470	42.2	33.37	54	-11.8	34.37	8.51	34.05	126	108	Average
5470	56.43	47.6	74	-17.57	34.37	8.51	34.05	126	108	Peak
5700	88.09	78.96			34.59	8.64	34.1	126	108	Average
5700	97.4	88.27			34.59	8.64	34.1	126	108	Peak
5725	43.42	34.26	54	-10.58	34.62	8.65	34.11	126	108	Average
5725	57.99	48.83	74	-16.01	34.62	8.65	34.11	126	108	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
5368	42.67	34	54	-11.33	34.29	8.41	34.03	106	96	Average
5368	58.53	49.86	74	-15.47	34.29	8.41	34.03	106	96	Peak
5470	42.51	33.68	54	-11.49	34.37	8.51	34.05	106	96	Average
5470	57.01	48.18	74	-16.99	34.37	8.51	34.05	106	96	Peak
5700	96.79	87.66			34.59	8.64	34.1	106	96	Average
5700	106.47	97.34			34.59	8.64	34.1	106	96	Peak
5725	45.3	36.14	54	-8.7	34.62	8.65	34.11	106	96	Average
5725	72	62.84	74	-2	34.62	8.65	34.11	106	96	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



A D T

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	Kay Wu

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	44.84	36.59	54	-9.16	34.12	8.13	34	162	248	Average
5144	65.89	57.64	74	-8.11	34.12	8.13	34	162	248	Peak
5190	88.5	80.16			34.15	8.19	34	162	248	Average
5190	97.47	89.13			34.15	8.19	34	162	248	Peak
5358	43.32	34.69	54	-10.68	34.28	8.38	34.03	162	248	Average
5358	58.54	49.91	74	-15.46	34.28	8.38	34.03	162	248	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	52.43	44.18	54	-1.57	34.12	8.13	34	100	91	Average
5144	72.64	64.39	74	-1.36	34.12	8.13	34	100	91	Peak
5190	95.44	87.1			34.15	8.19	34	100	91	Average
5190	104.48	96.14			34.15	8.19	34	100	91	Peak
5424	43.71	34.94	54	-10.29	34.33	8.48	34.04	100	91	Average
5424	59.28	50.51	74	-14.72	34.33	8.48	34.04	100	91	Peak

REMARKS:

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



A D T

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	Kay Wu

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
5036	42.5	34.44	54	-11.5	34.03	8	33.97	161	248	Average
5036	58.39	50.33	74	-15.61	34.03	8	33.97	161	248	Peak
5230	87.32	78.92			34.19	8.22	34.01	161	248	Average
5230	96.8	88.4			34.19	8.22	34.01	161	248	Peak
5428	43.28	34.51	54	-10.72	34.33	8.48	34.04	161	248	Average
5428	59.03	50.26	74	-14.97	34.33	8.48	34.04	161	248	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	45.41	37.16	54	-8.59	34.12	8.13	34	127	95	Average
5150	63.56	55.31	74	-10.44	34.12	8.13	34	127	95	Peak
5230	96.76	88.36			34.19	8.22	34.01	127	95	Average
5230	106.61	98.21			34.19	8.22	34.01	127	95	Peak
5370	45.16	36.49	54	-8.84	34.29	8.41	34.03	127	95	Average
5370	59.09	50.42	74	-14.91	34.29	8.41	34.03	127	95	Peak

REMARKS:

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



A D T

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	Kay Wu

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	45.57	37.51	54	-8.43	34.04	8	33.98	155	72	Average
5054	58.36	50.3	74	-15.64	34.04	8	33.98	155	72	Peak
5270	94.84	86.35			34.21	8.29	34.01	155	72	Average
5270	103.48	94.99			34.21	8.29	34.01	155	72	Peak
5354	47.19	38.56	54	-6.81	34.28	8.38	34.03	155	72	Average
5354	59.48	50.85	74	-14.52	34.28	8.38	34.03	155	72	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
5098	45.67	37.51	54	-8.33	34.08	8.07	33.99	114	92	Average
5098	57.71	49.55	74	-16.29	34.08	8.07	33.99	114	92	Peak
5270	98.96	90.47			34.21	8.29	34.01	114	92	Average
5270	107.27	98.78			34.21	8.29	34.01	114	92	Peak
5354	50.49	41.86	54	-3.51	34.28	8.38	34.03	114	92	Average
5354	66.97	58.34	74	-7.03	34.28	8.38	34.03	114	92	Peak

REMARKS:

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



A D T

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	Kay Wu

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	45.63	37.51	54	-8.37	34.07	8.03	33.98	132	72	Average
5076	57.29	49.17	74	-16.71	34.07	8.03	33.98	132	72	Peak
5310	90.83	82.28			34.25	8.32	34.02	132	72	Average
5310	99.53	90.98			34.25	8.32	34.02	132	72	Peak
5362	49.24	40.6	54	-4.76	34.29	8.38	34.03	132	72	Average
5362	60.93	52.29	74	-13.07	34.29	8.38	34.03	132	72	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5110	44.72	36.52	54	-9.28	34.09	8.1	33.99	114	90	Average
5110	57.67	49.47	74	-16.33	34.09	8.1	33.99	114	90	Peak
5310	94.58	86.03			34.25	8.32	34.02	114	90	Average
5310	104.18	95.63			34.25	8.32	34.02	114	90	Peak
5356	51.52	42.89	54	-2.48	34.28	8.38	34.03	114	90	Average
5356	70.49	61.86	74	-3.51	34.28	8.38	34.03	114	90	Peak

REMARKS:

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



A D T

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	Kay Wu

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
5436	43.82	35.03	54	-10.18	34.35	8.48	34.04	110	135	Average
5436	65.44	56.65	74	-8.56	34.35	8.48	34.04	110	135	Peak
5470	45.04	36.21	54	-8.96	34.37	8.51	34.05	110	135	Average
5470	67.02	58.19	74	-6.98	34.37	8.51	34.05	110	135	Peak
5510	89.91	81			34.4	8.57	34.06	110	135	Average
5510	99.12	90.21			34.4	8.57	34.06	110	135	Peak
5725	43.37	34.21	54	-10.63	34.62	8.65	34.11	110	135	Average
5725	65.18	56.02	74	-8.82	34.62	8.65	34.11	110	135	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5460	46.18	37.36	54	-7.82	34.36	8.51	34.05	122	96	Average
5460	69.61	60.79	74	-4.39	34.36	8.51	34.05	122	96	Peak
5470	48.63	39.8	54	-5.37	34.37	8.51	34.05	122	96	Average
5470	73.19	64.36	74	-0.81	34.37	8.51	34.05	122	96	Peak
5510	95.4	86.49			34.4	8.57	34.06	122	96	Average
5510	104.78	95.87			34.4	8.57	34.06	122	96	Peak
5725	43.35	34.19	54	-10.65	34.62	8.65	34.11	122	96	Average
5725	64.07	54.91	74	-9.93	34.62	8.65	34.11	122	96	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



A D T

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	Kay Wu

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	47.39	38.57	54	-6.61	34.36	8.51	34.05	154	77	Average
5458	58.85	50.03	74	-15.15	34.36	8.51	34.05	154	77	Peak
5470	48.45	39.62	54	-5.55	34.37	8.51	34.05	154	77	Average
5470	57.23	48.4	74	-16.77	34.37	8.51	34.05	154	77	Peak
5550	94.7	85.73			34.45	8.59	34.07	154	77	Average
5550	103.74	94.77			34.45	8.59	34.07	154	77	Peak
5725	45.84	36.68	54	-8.16	34.62	8.65	34.11	154	77	Average
5725	56.96	47.8	74	-17.04	34.62	8.65	34.11	154	77	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
5418	47.35	38.62	54	-6.65	34.33	8.44	34.04	109	97	Average
5418	58.92	50.19	74	-15.08	34.33	8.44	34.04	109	97	Peak
5470	48.96	40.13	54	-5.04	34.37	8.51	34.05	109	97	Average
5470	57.98	49.15	74	-16.02	34.37	8.51	34.05	109	97	Peak
5550	99.93	90.96			34.45	8.59	34.07	109	97	Average
5550	108.74	99.77			34.45	8.59	34.07	109	97	Peak
5725	46.8	37.64	54	-7.2	34.62	8.65	34.11	109	97	Average
5725	58.42	49.26	74	-15.58	34.62	8.65	34.11	109	97	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



A D T

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	Kay Wu

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	44.39	35.57	54	-9.61	34.36	8.51	34.05	190	66	Average
5460	57.81	48.99	74	-16.19	34.36	8.51	34.05	190	66	Peak
5470	45.41	36.58	54	-8.59	34.37	8.51	34.05	190	66	Average
5470	55.18	46.35	74	-18.82	34.37	8.51	34.05	190	66	Peak
5670	91.56	82.46			34.57	8.63	34.1	190	66	Average
5670	100.38	91.28			34.57	8.63	34.1	190	66	Peak
5725	50.13	40.97	54	-3.87	34.62	8.65	34.11	190	66	Average
5725	60.21	51.05	74	-13.79	34.62	8.65	34.11	190	66	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
5426	45.33	36.56	54	-8.67	34.33	8.48	34.04	108	98	Average
5426	57.59	48.82	74	-16.41	34.33	8.48	34.04	108	98	Peak
5470	44.44	35.61	54	-9.56	34.37	8.51	34.05	108	98	Average
5470	57.2	48.37	74	-16.8	34.37	8.51	34.05	108	98	Peak
5670	95.77	86.67			34.57	8.63	34.1	108	98	Average
5670	105.97	96.87			34.57	8.63	34.1	108	98	Peak
5725	53.55	44.39	54	-0.45	34.62	8.65	34.11	108	98	Average
5725	66.51	57.35	74	-7.49	34.62	8.65	34.11	108	98	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

802.11ac (80MHz)

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

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	47.78	39.53	54	-6.22	34.12	8.13	34	108	246	Average
5150	65.12	56.87	74	-8.88	34.12	8.13	34	108	246	Peak
5210	86.66	78.3			34.17	8.19	34	108	246	Average
5210	96.28	87.92			34.17	8.19	34	108	246	Peak
5408	44.39	35.67	54	-9.61	34.32	8.44	34.04	108	246	Average
5408	59.85	51.13	74	-14.15	34.32	8.44	34.04	108	246	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
5136.2	53.04	44.79	54	-0.96	34.11	8.13	33.99	153	92	Average
5136.2	69.56	61.31	74	-4.44	34.11	8.13	33.99	153	92	Peak
5210	94.17	85.81			34.17	8.19	34	153	92	Average
5210	104.11	95.75			34.17	8.19	34	153	92	Peak
5354	47.08	38.45	54	-6.92	34.28	8.38	34.03	153	92	Average
5354	61.19	52.56	74	-12.81	34.28	8.38	34.03	153	92	Peak

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 58	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5016	45.55	37.54	54	-8.45	34.01	7.97	33.97	155	72	Average
5016	57.36	49.35	74	-16.64	34.01	7.97	33.97	155	72	Peak
5290	91.11	82.58			34.23	8.32	34.02	155	72	Average
5290	99.14	90.61			34.23	8.32	34.02	155	72	Peak
5354	51.23	42.6	54	-2.77	34.28	8.38	34.03	155	72	Average
5354	64.91	56.28	74	-9.09	34.28	8.38	34.03	155	72	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
5140	45.77	37.51	54	-8.23	34.12	8.13	33.99	114	92	Average
5140	58.23	49.97	74	-15.77	34.12	8.13	33.99	114	92	Peak
5290	93.44	84.91			34.23	8.32	34.02	114	92	Average
5290	104.17	95.64			34.23	8.32	34.02	114	92	Peak
5358	51.02	42.39	54	-2.98	34.28	8.38	34.03	114	92	Average
5358	72.73	64.1	74	-1.27	34.28	8.38	34.03	114	92	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5290MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 106	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5454	48.44	39.62	54	-5.56	34.36	8.51	34.05	152	68	Average
5454	63.54	54.72	74	-10.46	34.36	8.51	34.05	152	68	Peak
5470	52.45	43.62	54	-1.55	34.37	8.51	34.05	152	68	Average
5470	64.95	56.12	74	-9.05	34.37	8.51	34.05	152	68	Peak
5530	89.11	80.18			34.42	8.58	34.07	152	68	Average
5530	97.89	88.96			34.42	8.58	34.07	152	68	Peak
5725	46.8	37.64	54	-7.2	34.62	8.65	34.11	152	68	Average
5725	56.71	47.55	74	-17.29	34.62	8.65	34.11	152	68	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	51.1	42.28	54	-2.9	34.36	8.51	34.05	109	97	Average
5452	67.79	58.97	74	-6.21	34.36	8.51	34.05	109	97	Peak
5470	48.41	39.58	54	-5.59	34.37	8.51	34.05	109	97	Average
5470	65.64	56.81	74	-8.36	34.37	8.51	34.05	109	97	Peak
5530	94.35	85.42			34.42	8.58	34.07	109	97	Average
5530	102.45	93.52			34.42	8.58	34.07	109	97	Peak
5725	46.8	37.64	54	-7.2	34.62	8.65	34.11	109	97	Average
5725	57.44	48.28	74	-16.56	34.62	8.65	34.11	109	97	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5530MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band



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BELOW 1GHz WORST-CASE DATA:

802.11ac (80MHz)

Band 1

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

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
94.53	24.8	46.42	43.5	-18.7	9.26	1.11	31.99	102	322	Peak
144.75	32.5	53.66	43.5	-11	9.73	1.38	32.27	152	312	Peak
176.07	35.17	55.55	43.5	-8.33	10.25	1.61	32.24	105	253	Peak
317.5	25.02	40.17	46	-20.98	14.85	2.11	32.11	100	152	Peak
476.4	29.76	40.42	46	-16.24	18.9	2.56	32.12	100	198	Peak
598.9	26.33	34.55	46	-19.67	21.1	2.87	32.19	100	232	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
31.89	25.28	40.47	40	-14.72	16.33	0.74	32.26	232	125	Peak
49.71	22.11	45.54	40	-17.89	7.89	0.9	32.22	400	0	Peak
163.38	26.77	47	43.5	-16.73	10.51	1.52	32.26	110	0	Peak
397.3	22.17	34.1	46	-23.83	17.95	2.34	32.22	100	123	Peak
476.4	26	36.66	46	-20	18.9	2.56	32.12	100	321	Peak
731.2	26.35	31.94	46	-19.65	23.37	3.16	32.12	100	285	Peak

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

Margin value = Emission level – Limit value



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802.11ac (80MHz)

Band 2

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 58	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
92.64	24.94	46.57	43.5	-18.56	9.14	1.11	31.88	102	322	Peak
144.21	32.32	53.54	43.5	-11.18	9.67	1.38	32.27	102	321	Peak
168.24	34.85	55.42	43.5	-8.65	10.15	1.52	32.24	174	44	Peak
476.4	29.72	40.38	46	-16.28	18.9	2.56	32.12	100	132	Peak
556.2	26.56	35.75	46	-19.44	20.25	2.76	32.2	100	253	Peak
708.1	25.77	31.57	46	-20.23	23.19	3.11	32.1	100	112	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
31.62	25.41	40.36	40	-14.59	16.57	0.74	32.26	175	332	Peak
49.17	22.65	45.91	40	-17.35	8.06	0.9	32.22	400	222	Peak
175.53	26.22	46.63	43.5	-17.28	10.22	1.61	32.24	252	123	Peak
357.4	21.36	34.82	46	-24.64	16.37	2.26	32.09	100	177	Peak
476.4	26.57	37.23	46	-19.43	18.9	2.56	32.12	100	133	Peak
706	25.93	31.72	46	-20.07	23.19	3.11	32.09	100	198	Peak

REMARKS: Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
 Margin value = Emission level – Limit value



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802.11n (40MHz)

Band 3

CHANNEL	Channel 134	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
93.18	25.45	47.04	43.5	-18.05	9.18	1.11	31.88	102	312	Peak
147.18	32.72	53.55	43.5	-10.78	9.92	1.52	32.27	123	57	Peak
175.8	35.19	55.6	43.5	-8.31	10.22	1.61	32.24	152	331	Peak
476.4	29.86	40.52	46	-16.14	18.9	2.56	32.12	100	42	Peak
556.2	26.84	36.03	46	-19.16	20.25	2.76	32.2	100	54	Peak
792.8	27.08	31.65	46	-18.92	24.23	3.27	32.07	100	257	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	24.93	40.24	40	-15.07	16.21	0.74	32.26	102	312	Peak
75.9	21.39	44.22	40	-18.61	8.28	1.11	32.22	132	74	Peak
175.8	25.5	45.91	43.5	-18	10.22	1.61	32.24	122	211	Peak
476.4	25.06	35.72	46	-20.94	18.9	2.56	32.12	100	122	Peak
644.4	24.02	31.08	46	-21.98	22.1	2.99	32.15	100	75	Peak
740.3	25.85	31.52	46	-20.15	23.3	3.16	32.13	100	211	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	Nov. 17, 2013	Nov. 16, 2014
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. 08, 2013	Jul. 07, 2014
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

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

4.2.3 TEST PROCEDURES

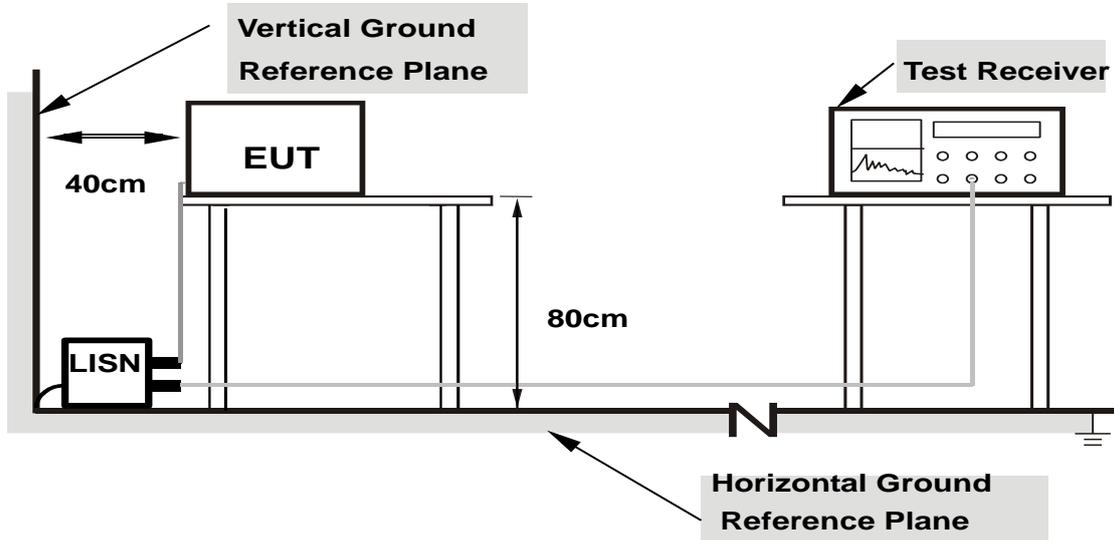
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

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

4.2.6 EUT OPERATING CONDITIONS

Same as section 4.1.6.

4.2.7 TEST RESULTS

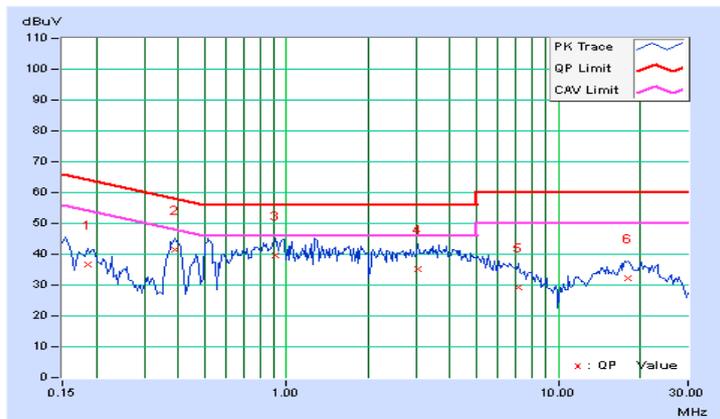
CONDUCTED WORST-CASE DATA :

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP), 9kHz Average (AV), 9kHz
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Phase Of Power : Line (L)										
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	0.18516	0.28	36.23	23.18	36.51	23.46	64.25	54.25	-27.75	-30.80
2	0.38828	0.30	41.19	29.59	41.49	29.89	58.10	48.10	-16.61	-18.21
3	0.91172	0.33	39.14	24.96	39.47	25.29	56.00	46.00	-16.53	-20.71
4	3.05469	0.40	34.83	23.01	35.23	23.41	56.00	46.00	-20.77	-22.59
5	7.15625	0.47	28.61	16.05	29.08	16.52	60.00	50.00	-30.92	-33.48
6	18.02734	0.57	31.69	21.35	32.26	21.92	60.00	50.00	-27.74	-28.08

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





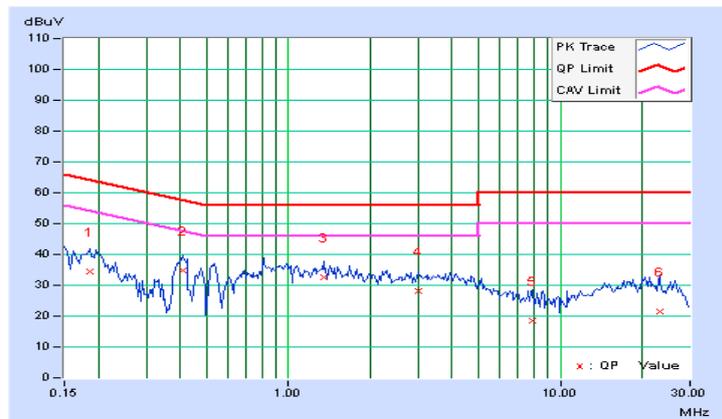
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Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP), 9kHz Average (AV), 9kHz
-----------------	----------------	--	---

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	0.18516	0.28	34.31	18.30	34.59	18.58	64.25	54.25	-29.67	-35.68
2	0.40781	0.30	34.45	26.97	34.75	27.27	57.69	47.69	-22.94	-20.42
3	1.35156	0.35	32.39	22.77	32.74	23.12	56.00	46.00	-23.26	-22.88
4	3.00781	0.41	27.88	19.96	28.29	20.37	56.00	46.00	-27.71	-25.63
5	7.94141	0.49	17.90	10.73	18.39	11.22	60.00	50.00	-41.61	-38.78
6	23.31641	0.59	21.04	10.38	21.63	10.97	60.00	50.00	-38.37	-39.03

Remarks:

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



4.3 PEAK TRANSMIT POWER MEASUREMENT

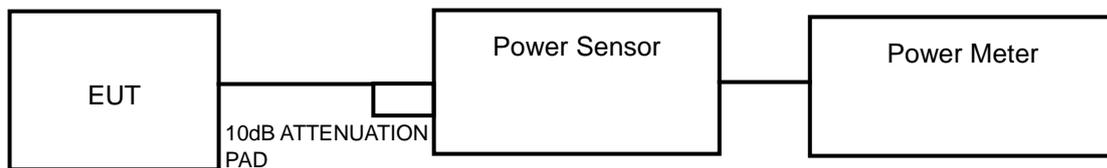
4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

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

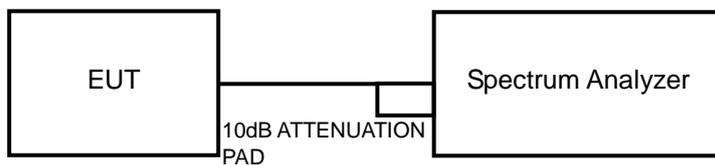
NOTE: Where B is the 26dB emission bandwidth in MHz.

4.3.2 TEST SETUP

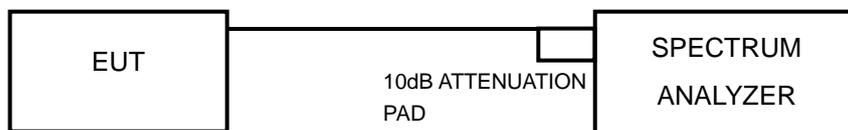
FOR POWER OUTPUT MEASUREMENT



or



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.

<802.11ac (80MHz)>

Method SA-1 is used to perform output power measurement, trigger and gating function of spectrum analyzer 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.



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4.3.7 TEST RESULTS

POWER OUTPUT

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	17.74	12.49	17	PASS
44	5220	17.46	12.42	17	PASS
48	5240	17.50	12.43	17	PASS
52	5260	15.89	12.01	24	PASS
60	5300	15.38	11.87	24	PASS
64	5320	15.67	11.95	24	PASS
100	5500	16.98	12.30	24	PASS
116	5580	17.70	12.48	24	PASS
140	5700	17.50	12.43	24	PASS

NOTE:

For 5180~5240MHz:

1. $4\text{dBm} + 10\log(21.76) = 17.38\text{dBm} > 17\text{dBm}$.
2. $4\text{dBm} + 10\log(21.85) = 17.39\text{dBm} > 17\text{dBm}$.
3. $4\text{dBm} + 10\log(21.84) = 17.39\text{dBm} > 17\text{dBm}$.

For 5260~5700MHz:

1. $11\text{dBm} + 10\log(21.74) = 24.37\text{dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(21.75) = 24.37\text{dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(21.89) = 24.40\text{dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(21.79) = 24.38\text{dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(21.75) = 24.37\text{dBm} > 24\text{dBm}$.
6. $11\text{dBm} + 10\log(21.86) = 24.40\text{dBm} > 24\text{dBm}$.



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802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	14.59	11.64	17	PASS
44	5220	17.42	12.41	17	PASS
48	5240	17.34	12.39	17	PASS
52	5260	16.03	12.05	24	PASS
60	5300	15.17	11.81	24	PASS
64	5320	14.55	11.63	24	PASS
100	5500	15.74	11.97	24	PASS
116	5580	16.79	12.25	24	PASS
140	5700	17.74	12.49	24	PASS

NOTE:

For 5180~5240MHz:

1. $4\text{dBm} + 10\log(22.44) = 17.51\text{dBm} > 17\text{dBm}$.
2. $4\text{dBm} + 10\log(22.32) = 17.49\text{dBm} > 17\text{dBm}$.
3. $4\text{dBm} + 10\log(27.60) = 18.41\text{dBm} > 17\text{dBm}$.

For 5260~5700MHz:

1. $11\text{dBm} + 10\log(27.19) = 25.34\text{dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(24.35) = 24.86\text{dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(29.51) = 25.70\text{dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(22.14) = 24.45\text{dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(26.34) = 25.21\text{dBm} > 24\text{dBm}$.
6. $11\text{dBm} + 10\log(23.04) = 24.62\text{dBm} > 24\text{dBm}$.



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802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
38	5190	15.70	11.96	17	PASS
46	5230	15.56	11.92	17	PASS
54	5270	14.52	11.62	24	PASS
62	5310	14.13	11.50	24	PASS
102	5510	17.14	12.34	24	PASS
110	5550	17.42	12.41	24	PASS
134	5670	17.70	12.48	24	PASS

NOTE:

For 5180~5240MHz:

1. $4\text{dBm} + 10\log(68.81) = 22.38\text{dBm} > 17\text{dBm}$.
2. $4\text{dBm} + 10\log(68.11) = 22.33\text{dBm} > 17\text{dBm}$.

For 5260~5700MHz:

1. $11\text{dBm} + 10\log(59.85) = 28.77\text{dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(60.23) = 28.80\text{dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(63.36) = 29.02\text{dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(63.40) = 29.02\text{dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(74.67) = 29.73\text{dBm} > 24\text{dBm}$.

802.11ac (80MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
42	5210	9.62	9.83	17	PASS
58	5290	9.06	9.57	24	PASS
106	5530	9.14	9.61	24	PASS

NOTE:

For 5180~5240MHz:

1. $4\text{dBm} + 10\log(86.17) = 23.35\text{dBm} > 17\text{dBm}$.

For 5260~5700MHz:

1. $11\text{dBm} + 10\log(91.85) = 30.63\text{dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(100.83) = 31.04\text{dBm} > 24\text{dBm}$.



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26dB BANDWIDTH

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
36	5180	21.76	PASS
44	5220	21.85	PASS
48	5240	21.84	PASS
52	5260	21.74	PASS
60	5300	21.75	PASS
64	5320	21.89	PASS
100	5500	21.79	PASS
116	5580	21.75	PASS
140	5700	21.86	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
36	5180	22.44	PASS
44	5220	22.32	PASS
48	5240	27.60	PASS
52	5260	27.19	PASS
60	5300	24.35	PASS
64	5320	29.51	PASS
100	5500	22.14	PASS
116	5580	26.34	PASS
140	5700	23.04	PASS



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802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
38	5190	68.81	PASS
46	5230	68.11	PASS
54	5270	59.85	PASS
62	5310	60.23	PASS
102	5510	63.36	PASS
110	5550	63.40	PASS
134	5670	74.67	PASS

802.11ac (80MHz)

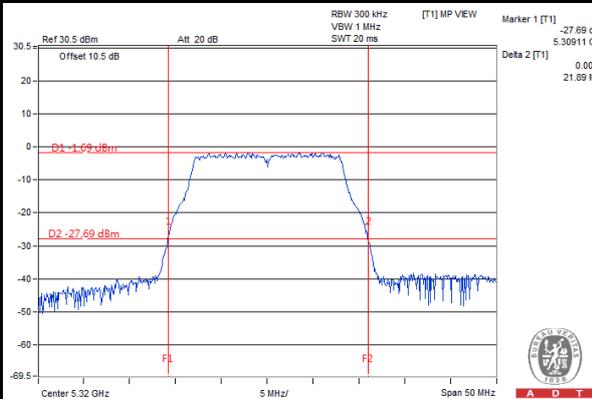
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
42	5210	86.17	PASS
58	5290	91.85	PASS
106	5530	100.83	PASS



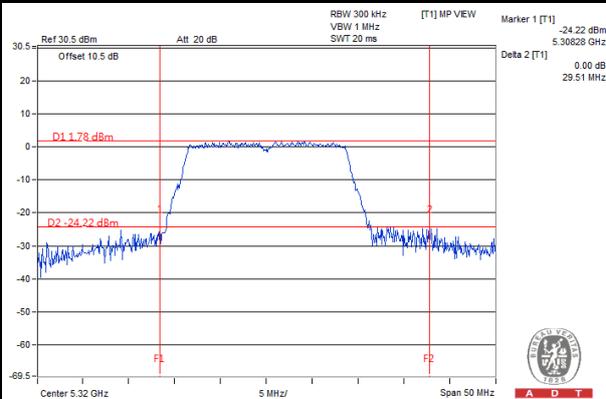
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SPECTRUM PLOT OF WORST VALUE

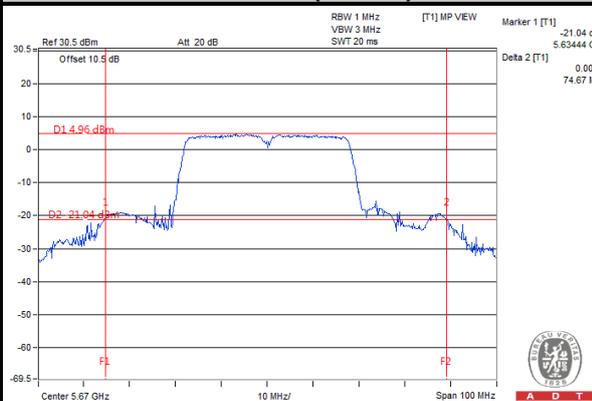
802.11a



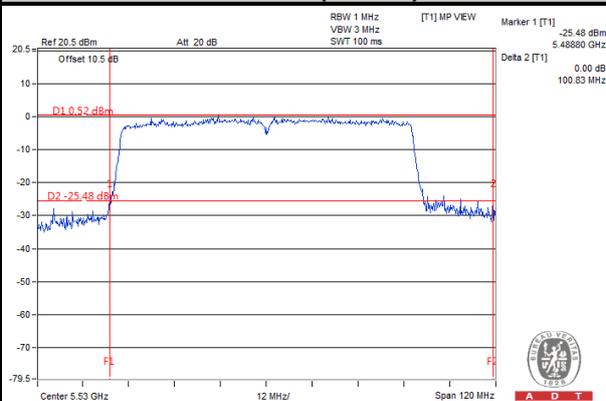
802.11n (20MHz)



802.11n (40MHz)



802.11ac (80MHz)

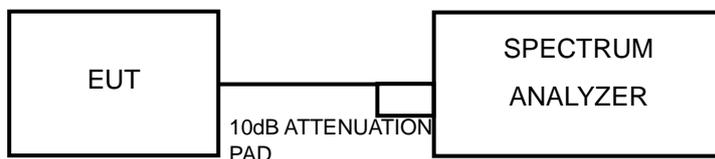


4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	4dBm
5.250 ~ 5.350GHz	11dBm
5.470 ~ 5.725GHz	11dBm

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.4.4 TEST PROCEDURES

<802.11a, 802.11n (20MHz), 802.11n (40MHz), 802.11ac (80MHz)>

Using method SA-2 alternative

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

<802.11ac (80MHz)>

Using method SA-1

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 1 MHz, Set VBW \geq 3 MHz, Detector = RMS
- 3) Sweep time = 4second.
- 4) Perform a single sweep.

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

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	-4.39	0.35	-4.04	4	PASS
44	5220	-4.60	0.35	-4.25	4	PASS
48	5240	-4.48	0.35	-4.13	4	PASS
52	5260	-4.63	0.35	-4.28	11	PASS
60	5300	-4.84	0.35	-4.49	11	PASS
64	5320	-4.77	0.35	-4.42	11	PASS
100	5500	-4.21	0.35	-3.86	11	PASS
116	5580	-4.22	0.35	-3.87	11	PASS
140	5700	-3.86	0.35	-3.51	11	PASS

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

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	-1.52	0.38	-1.14	4	PASS
44	5220	-0.48	0.38	-0.10	4	PASS
48	5240	0.99	0.38	1.37	4	PASS
52	5260	-1.22	0.38	-0.84	11	PASS
60	5300	-1.56	0.38	-1.18	11	PASS
64	5320	-1.80	0.38	-1.42	11	PASS
100	5500	-1.92	0.38	-1.54	11	PASS
116	5580	-1.88	0.38	-1.50	11	PASS
140	5700	-1.21	0.38	-0.83	11	PASS

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



802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
38	5190	-5.10	0.85	-4.25	4	PASS
46	5230	-4.87	0.85	-4.02	4	PASS
54	5270	-4.84	0.85	-3.99	11	PASS
62	5310	-5.01	0.85	-4.16	11	PASS
102	5510	-5.23	0.85	-4.38	11	PASS
110	5550	-5.22	0.85	-4.37	11	PASS
134	5670	-4.63	0.85	-3.78	11	PASS

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

802.11ac (80MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
42	5210	-7.34	1.53	-5.81	4	PASS
58	5290	-7.54	1.53	-6.01	11	PASS
106	5530	-7.89	1.53	-6.36	11	PASS

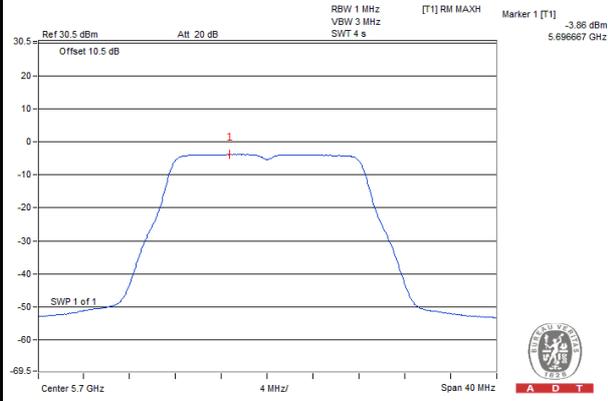
NOTE: Refer to section 3.3 for duty cycle spectrum plot.



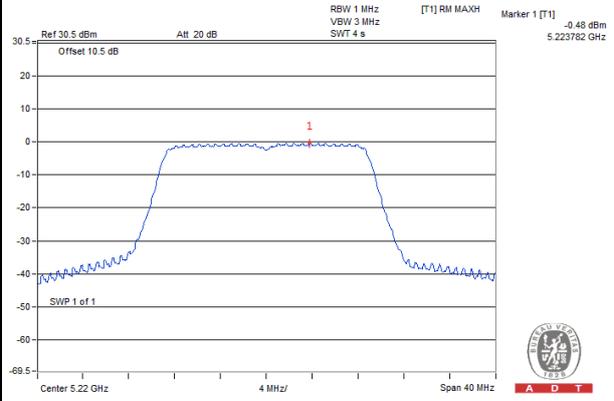
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SPECTRUM PLOT OF WORST VALUE

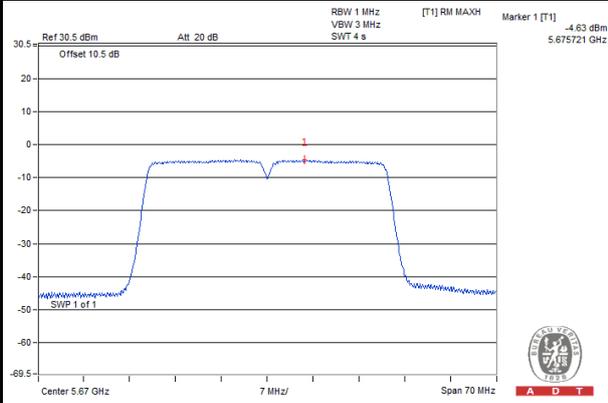
802.11a



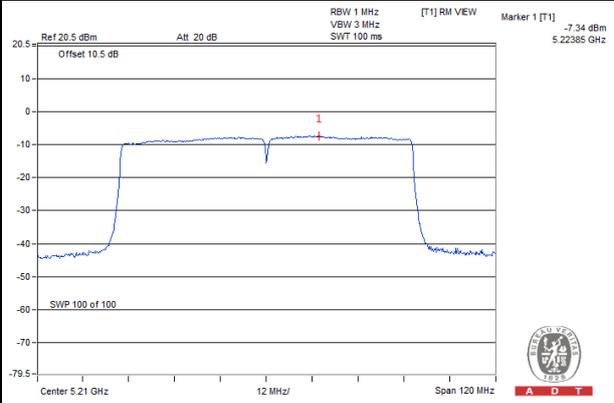
802.11n (20MHz)



802.11n (40MHz)



802.11ac (80MHz)

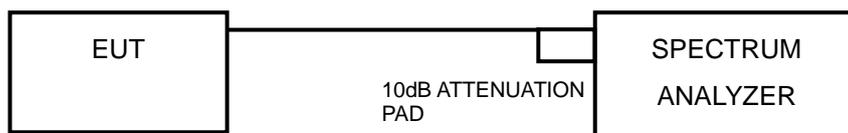


4.5 PEAK POWER EXCURSION MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

Shall not exceed 13 dB.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.5.4 TEST PROCEDURE

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

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6.



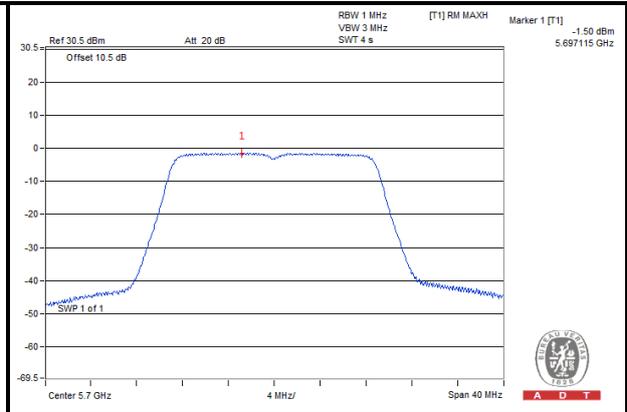
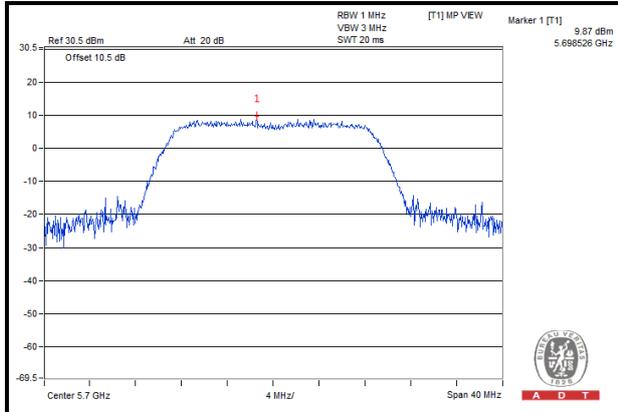
4.5.7 TEST RESULTS

MODULATION MODE	MODULATION TYPE	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)	PPSD WITHOUT DUTY FACTOR (dBm)	PPSD WITH DUTY FACTOR (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS/FAIL
802.11a	BPSK	5180	4.68	-4.39	-4.04	8.72	13	PASS
	QPSK		4.96	-4.52	-3.81	8.77	13	PASS
	16QAM		4.91	-5.02	-3.86	8.77	13	PASS
	64QAM		4.78	-5.74	-3.78	8.56	13	PASS
802.11n (20MHz)	BPSK	5700	8.36	-1.21	-0.83	9.19	13	PASS
	QPSK		9.87	-1.50	-0.84	10.71	13	PASS
	16QAM		9.15	-1.83	-0.53	9.68	13	PASS
	64QAM		8.67	-2.73	-0.74	9.41	13	PASS
802.11n (40MHz)	BPSK	5310	5.26	-4.63	-3.78	9.04	13	PASS
	QPSK		6.16	-5.14	-3.61	9.77	13	PASS
	16QAM		5.29	-5.83	-3.09	8.38	13	PASS
	64QAM		5.88	-6.89	-2.45	8.33	13	PASS
802.11ac (80MHz)	BPSK	5210	1.17	-7.34	-5.81	6.98	13	PASS
	QPSK		1.35	-7.64	-5.02	6.37	13	PASS
	16QAM		3.60	-7.90	-3.70	7.30	13	PASS
	64QAM		2.04	-9.09	-4.89	6.93	13	PASS
	256QAM		2.10	-9.38	-3.24	5.34	13	PASS

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



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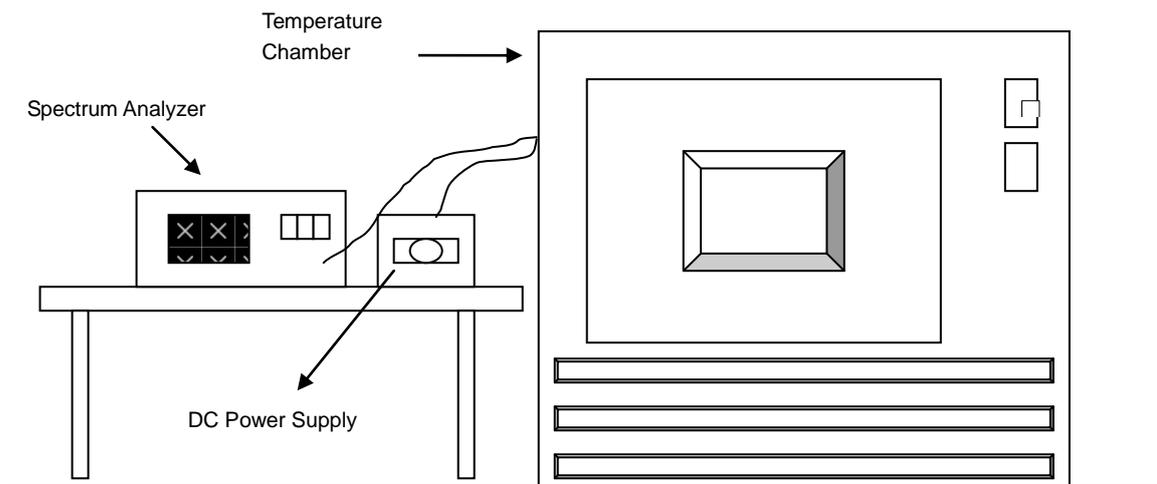


4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.6.4 TEST PROCEDURE

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

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

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



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4.6.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vdc)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)						
55	4.0	5320.040997	7.706	5320.041142	7.733	5320.041540	7.808	5320.041298	7.763
50	4.0	5320.041677	7.834	5320.042106	7.915	5320.042085	7.911	5320.042014	7.897
40	4.0	5320.042049	7.904	5320.042248	7.941	5320.041631	7.825	5320.041797	7.857
30	4.0	5320.043177	8.116	5320.043234	8.127	5320.043102	8.102	5320.043031	8.089
20	4.0	5320.044143	8.298	5320.043782	8.230	5320.043997	8.270	5320.044378	8.342
10	4.0	5320.045469	8.547	5320.045176	8.492	5320.045735	8.597	5320.045814	8.612
0	4.0	5320.044152	8.299	5320.044061	8.282	5320.044334	8.333	5320.044369	8.340
-10	4.0	5320.042494	7.988	5320.042558	8.000	5320.042614	8.010	5320.042646	8.016

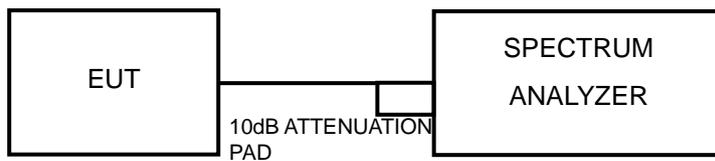
FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vdc)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)						
20	3.6	5320.044058	8.282	5320.043724	8.219	5320.043515	8.180	5320.043291	8.137
	4.0	5320.044143	8.298	5320.043782	8.230	5320.043997	8.270	5320.044378	8.342
	4.40	5320.045147	8.486	5320.044907	8.441	5320.044923	8.444	5320.045437	8.541

4.7 20dBc BANDWIDTH MEASUREMENT

4.7.1 LIMITS OF 20dBc BANDWIDTH MEASUREMENT

20dBc point shall not overlap in 5150~5700MHz.

4.7.2 TEST SETUP



4.7.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.7.4 TEST PROCEDURES

789033 D01 General UNII Test Procedures v01r03

Emission bandwidth

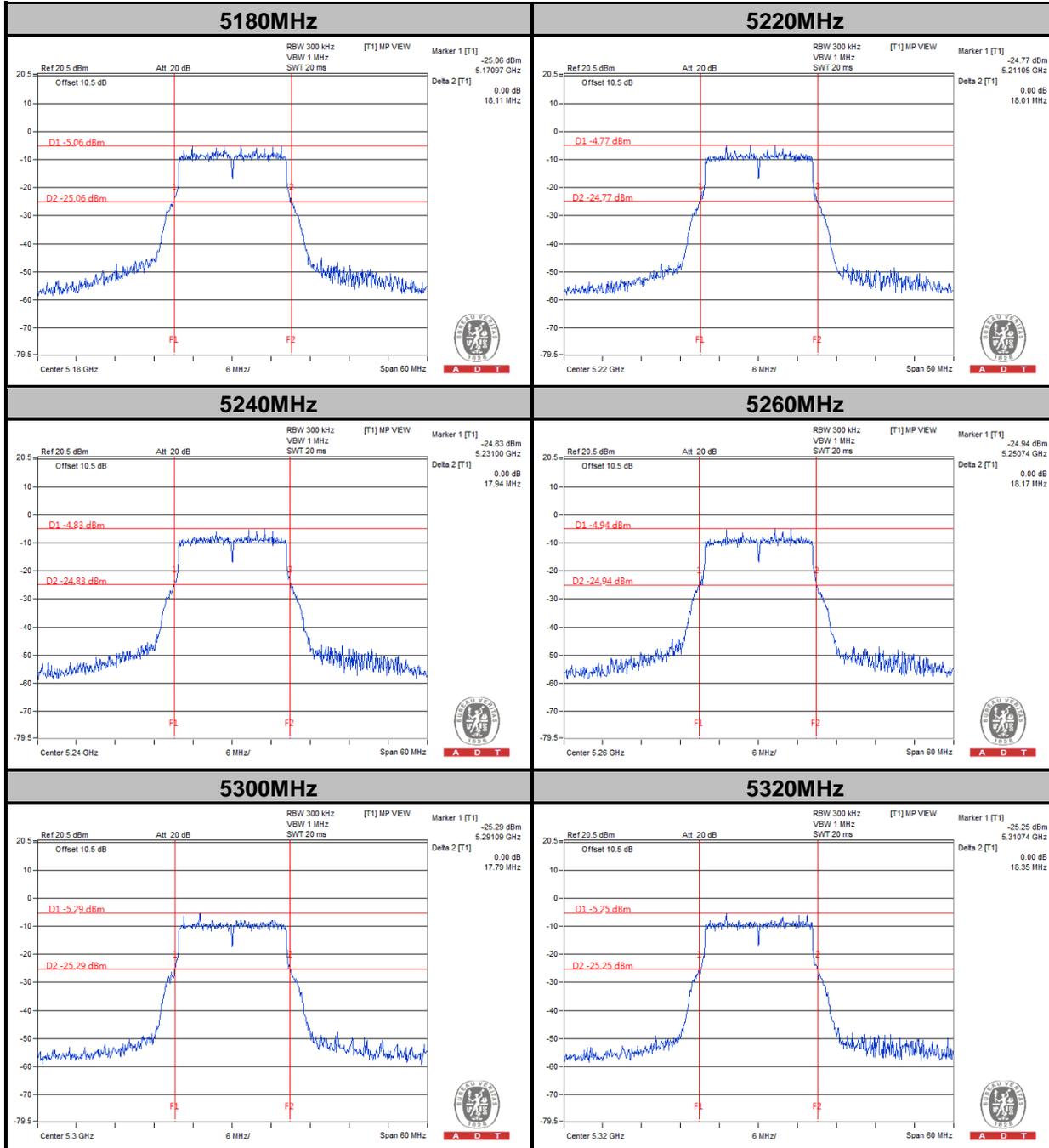
- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = Peak
- 4) Trace mode = max hold.
- 5) Measurement the maximum width of the emission that is 20dB down from the peak of the emission. Compare this with RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.



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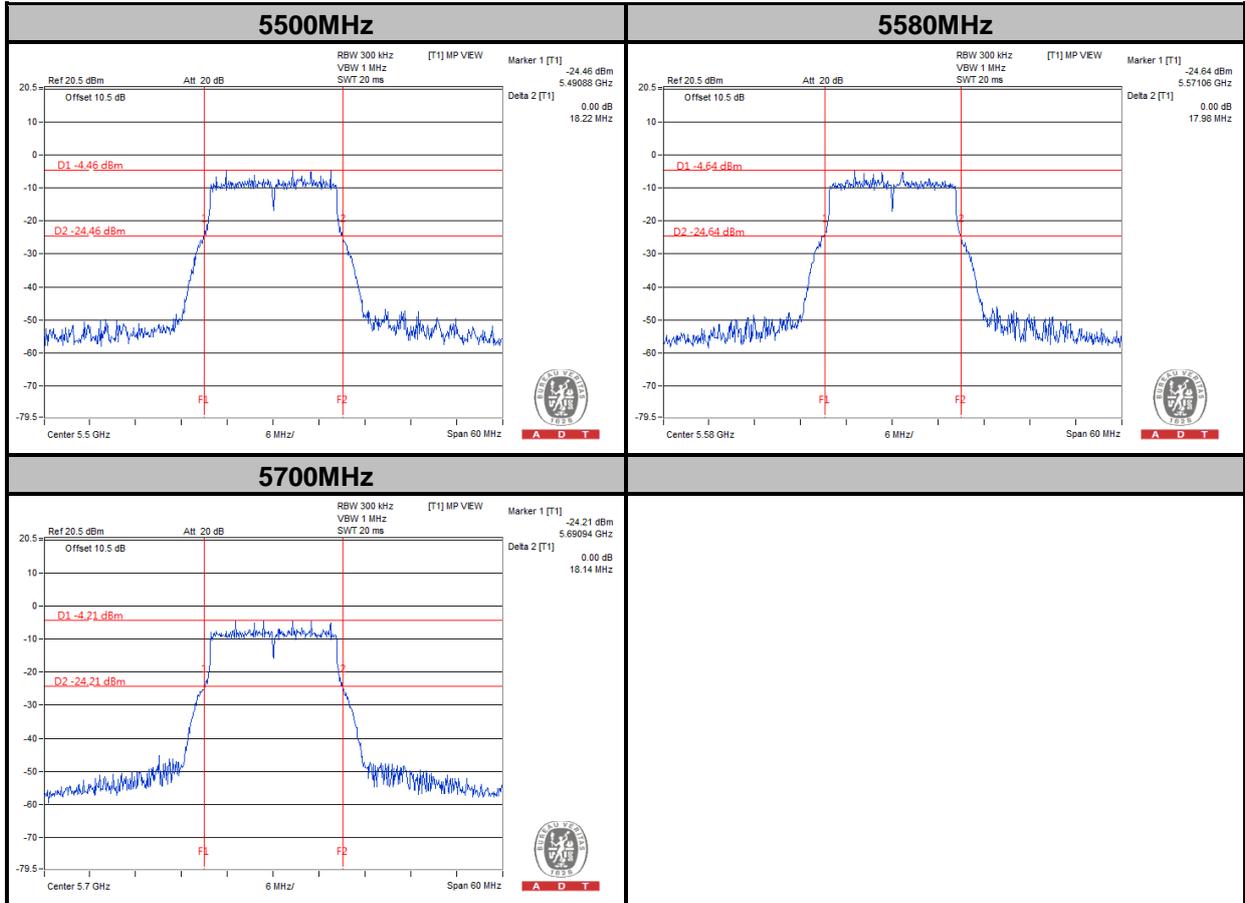
4.7.5 TEST RESULTS

802.11a





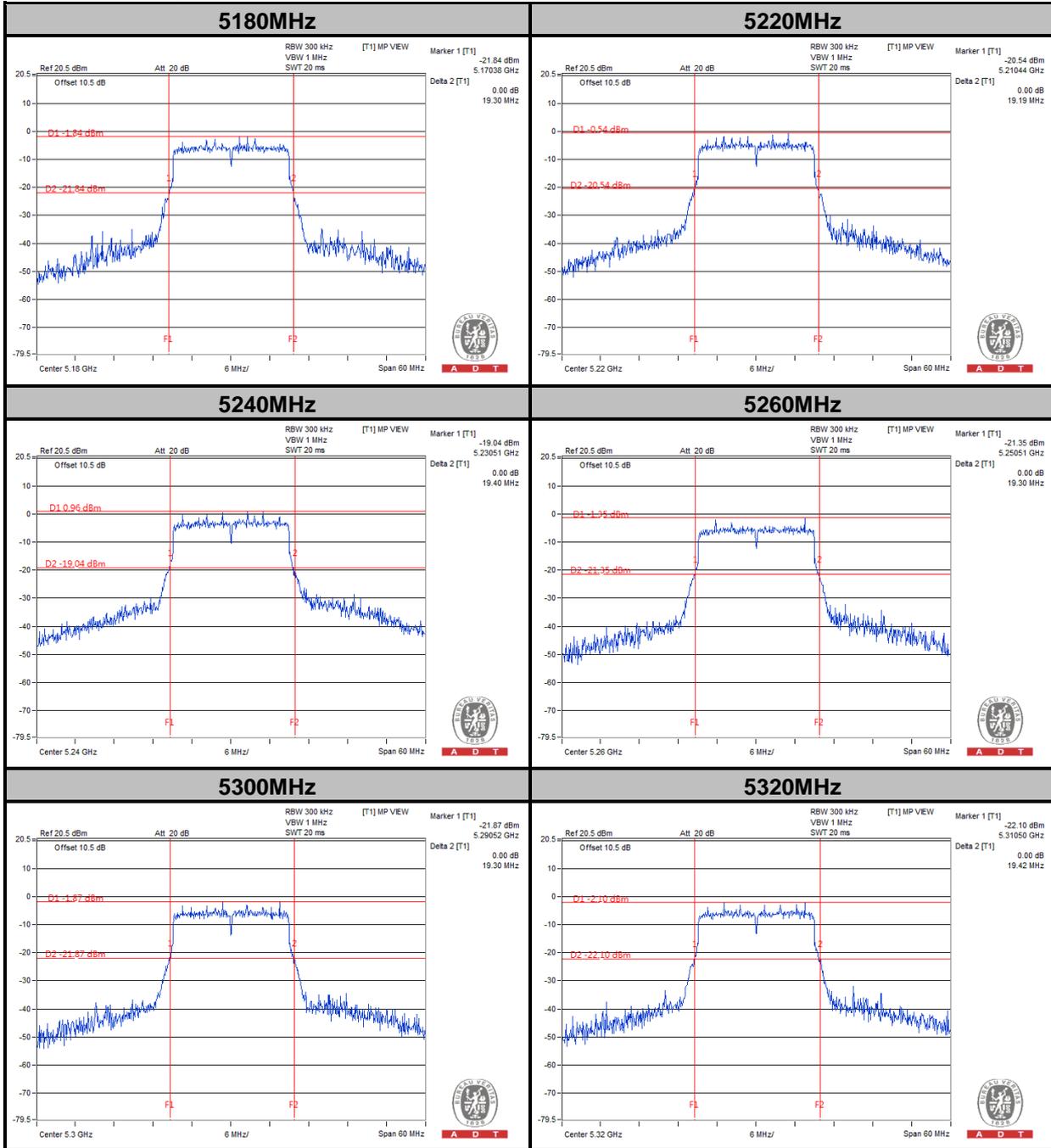
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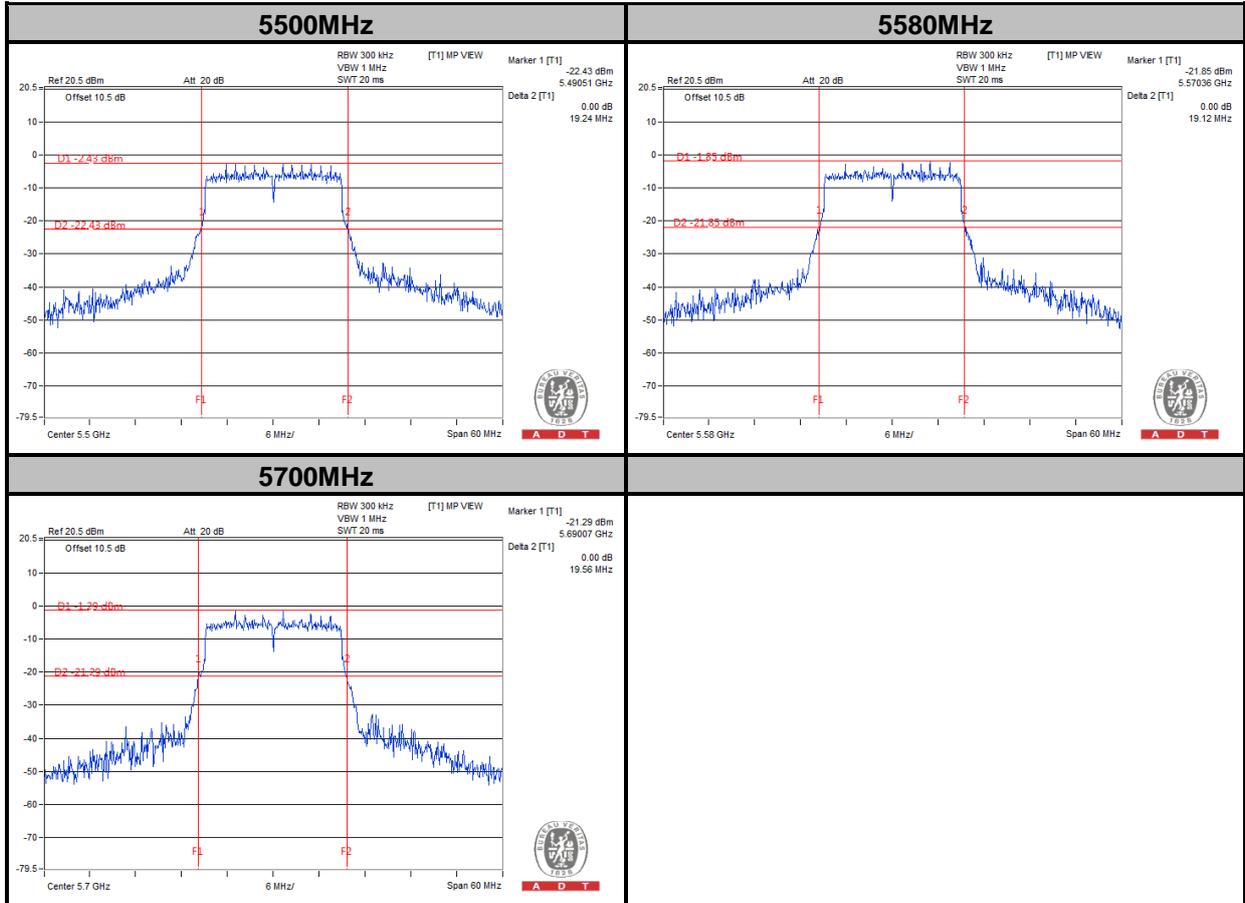
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802.11n (20MHz)





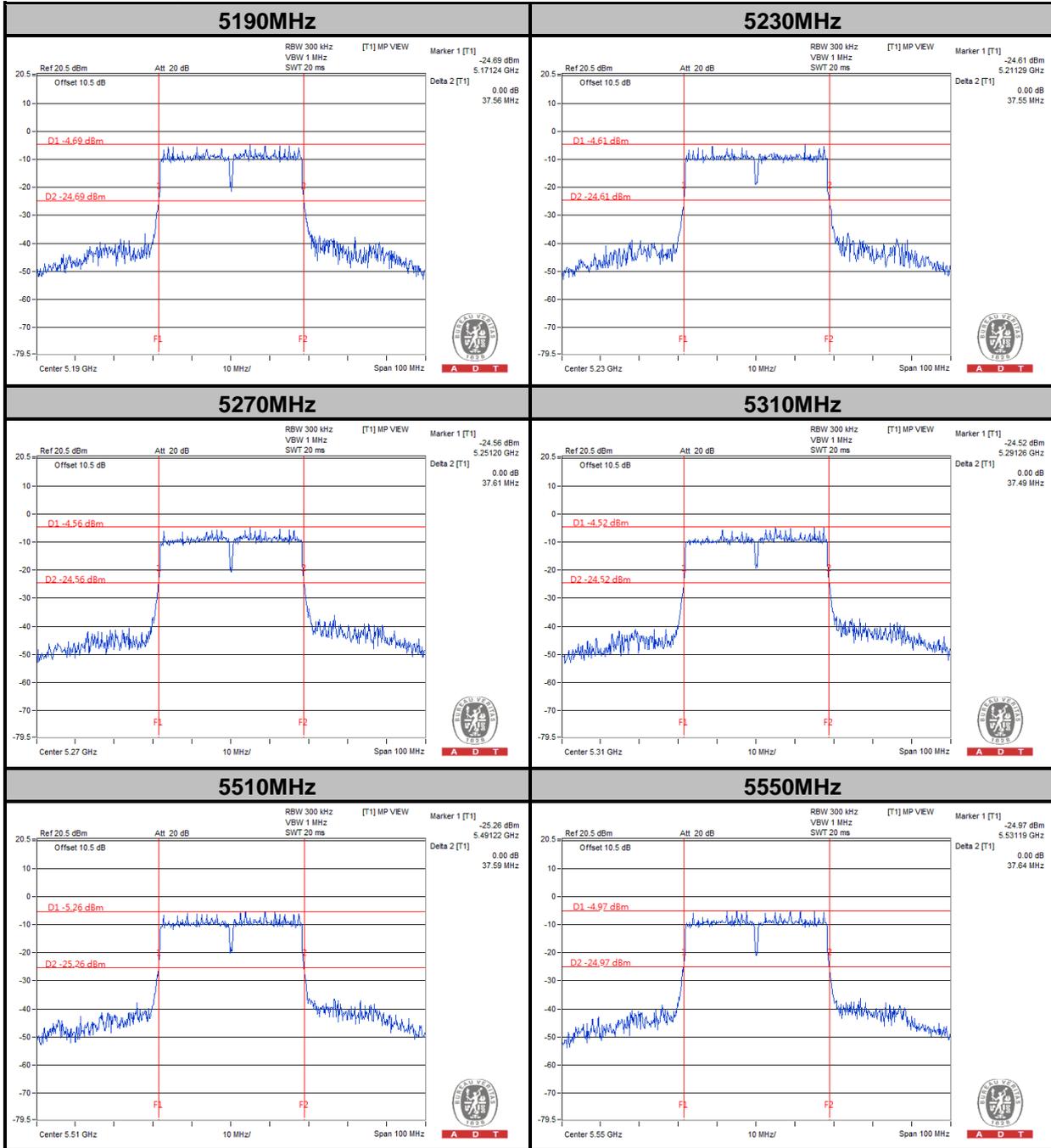
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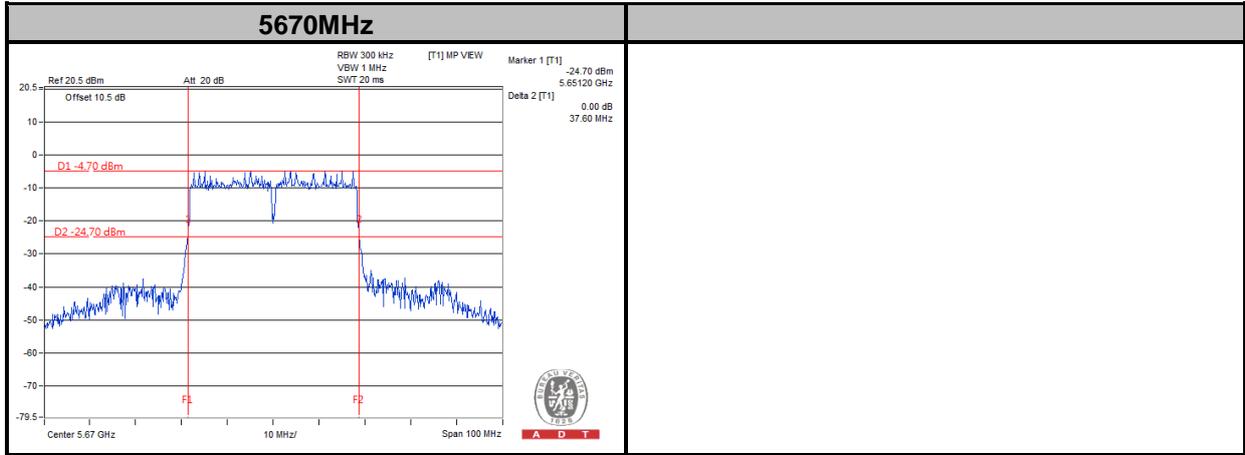
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802.11n (40MHz)





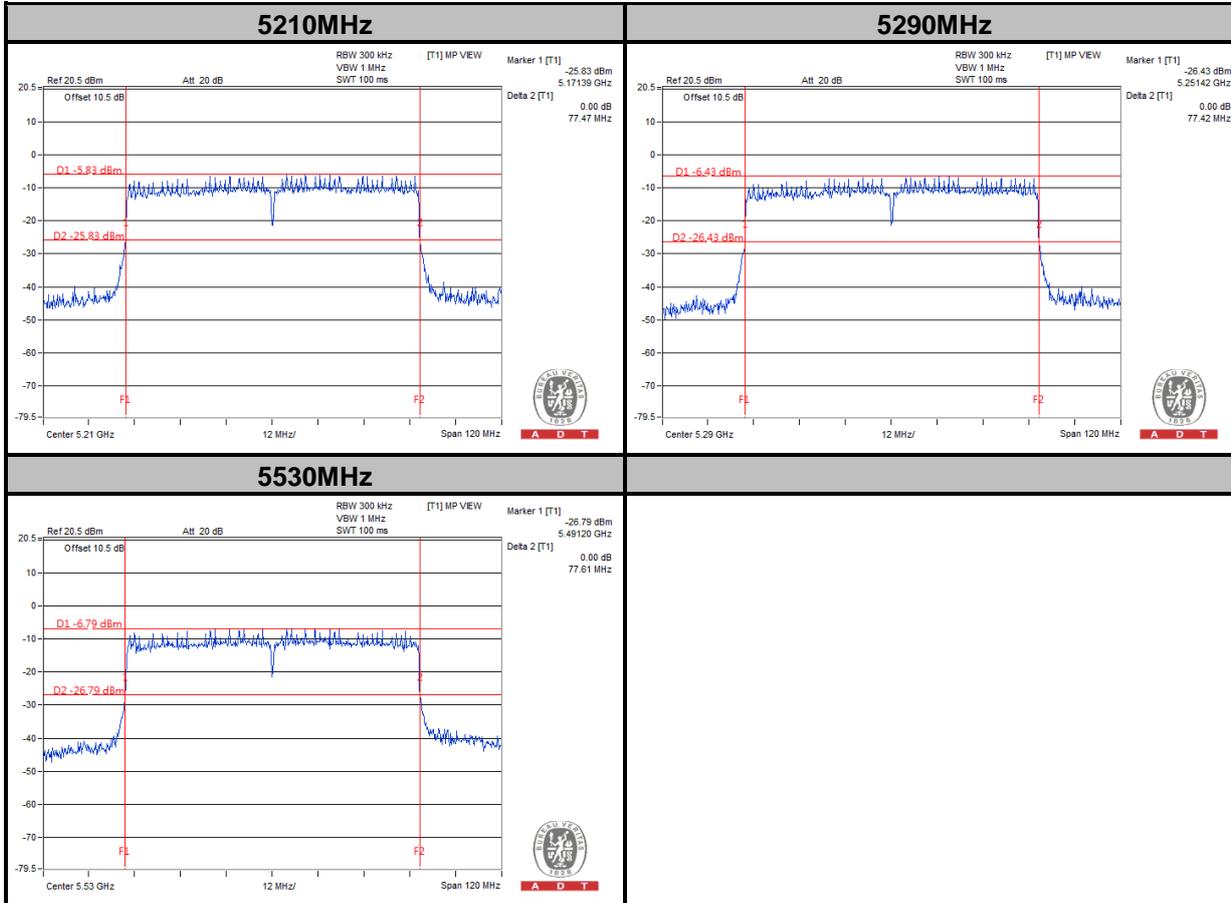
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802.11ac (80MHz)





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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



6. INFORMATION ON THE TESTING LABORATORIES

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

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

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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



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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---