



FCC TEST REPORT (15.407)

REPORT NO.: RF110721C33C-1
MODEL NO.: AP-8100
FCC ID: HZB-AP8100
RECEIVED: Apr. 25, 2012
TESTED: Aug. 01 ~ Sep. 27, 2012
ISSUED: Nov. 07, 2012

APPLICANT: Proxim Wireless Corporation

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

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A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110721C33C-1	Original release	Nov. 07, 2012



1. CERTIFICATION

PRODUCT: Wireless 802.11 abgn Router

MODEL: AP-8100

BRAND: Proxim

APPLICANT: Proxim Wireless Corporation

TESTED: Aug. 01 ~ Sep. 27, 2012

TEST SAMPLE: ENGINEERING SAMPLE

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

ANSI C63.10-2009

The above equipment (model: AP-8100) 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 : Ivy Lin , DATE : Nov. 07, 2012
Ivy Lin / Specialist

APPROVED BY : Ken Liu , DATE : Nov. 07, 2012
Ken Liu / Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.407(b)(6)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -4.13dB at 0.39609MHz.
15.407(b/1/2/3) (b)(6)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 5351.00MHz, 5362.00MHz, 5725.00MHz.
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	Antenna connector is UFL not a standard connector.

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	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	Wireless 802.11 abgn Router
MODEL NO.	AP-8100
POWER SUPPLY	48Vdc (POE) 12Vdc (Adapter)
MODULATION TYPE	64QAM, 16QAM, QPSK, BPSK
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300Mbps
OPERATING FREQUENCY	5180 ~ 5320MHz, 5500 ~ 5580MHz, 5680 ~ 5700MHz
NUMBER OF CHANNEL	5260 ~ 5320MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 5500 ~ 5700MHz: 7 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	153.12mW for 5260 ~ 5320MHz 126.58mW for 5500 ~ 5580MHz 29.69mW for 5680 ~ 5700MHz
ANTENNA TYPE	Embedded antenna with 4dBi gain
ANTENNA CONNECTOR	UFL
DATA CABLE	Refer to Note as below
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to Note as below

NOTE:

1. This report is prepared for FCC class II permissive change. This report is issued as a supplementary report to the original BVADT report no. RF110721C33B-1. The difference compared with original report is adding 5260 ~ 5320MHz & 5500 ~ 5700MHz. Therefore, the EUT was re-tested and presented in the test report.
2. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

MODULATION MODE	TX FUNCTION
802.11b	2TX
802.11g	2TX
802.11a	2TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX

3. The EUT consumes power from the following adapter and POE.

ADAPTER	
BRAND:	Powertron
MODEL:	PA1015-2I/PA1015-2I120125
INPUT:	100-240Vac~, 50-60Hz, 0.4A
OUTPUT:	12Vdc, 1.25A, 15W
POWER LINE:	1.5m non-shielded cable w/o core

POE	
BRAND:	Powertron
INPUT:	PD-3001/AC
OUTPUT:	100-250VAC, 50/60Hz, 0.5A
INPUT:	+48VDC, 0.35A

**POE as above is provided as support unit only.

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

3.2 DESCRIPTION OF TEST MODES

FOR 5260 ~ 5320MHz

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

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
54	5270 MHz	62	5310 MHz

FOR 5500 ~ 5700MHz

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

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

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

CHANNEL	FREQUENCY
102	5510 MHz
110	5550 MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE \geq 1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from AC Adapter
B	-	√	√	-	Power from POE

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: “-” means no effect.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
A	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	7.2
A	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	15.0
A	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
A	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	7.2
A	802.11n (40MHz)		102 to 110	102, 110	OFDM	BPSK	15.0

RADIATED EMISSION TEST (BELOW 1GHz):

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11n (20MHz)	5260-5320	52 to 64	52	OFDM	BPSK	7.2
A, B	802.11a	5500-5700	100 to 140	116	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11n (20MHz)	5260-5320	52 to 64	52	OFDM	BPSK	7.2
A, B	802.11a	5500-5700	100 to 140	116	OFDM	BPSK	6.0

ANTENNA PORT CONDUCTED MEASUREMENT:

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
A	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	7.2
A	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	15.0
A	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
A	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	7.2
A	802.11n (40MHz)		102 to 110	102, 110	OFDM	BPSK	15.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Haru Yang, Chris Yang
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Haru Yang
PLC	25deg. C, 67%RH	120Vac, 60Hz	Sun Lin
APCM	25deg. C, 65%RH	120Vac, 60Hz	Haru Yang

3.3 DUTY CYCLE OF TEST SIGNAL

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

802.11a: Duty cycle = 1.379/1.414 = 0.975, Duty factor = $10 * \log(1/0.975) = 0.11$

802.11n (20MHz): Duty cycle = 1.288/1.330 = 0.968, Duty factor = $10 * \log(1/0.968) = 0.14$

802.11n (40MHz): Duty cycle = 0.648/0.676 = 0.959, Duty factor = $10 * \log(1/0.959) = 0.18$





3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	D600	CN-0G5152-48643-487-0068	NA

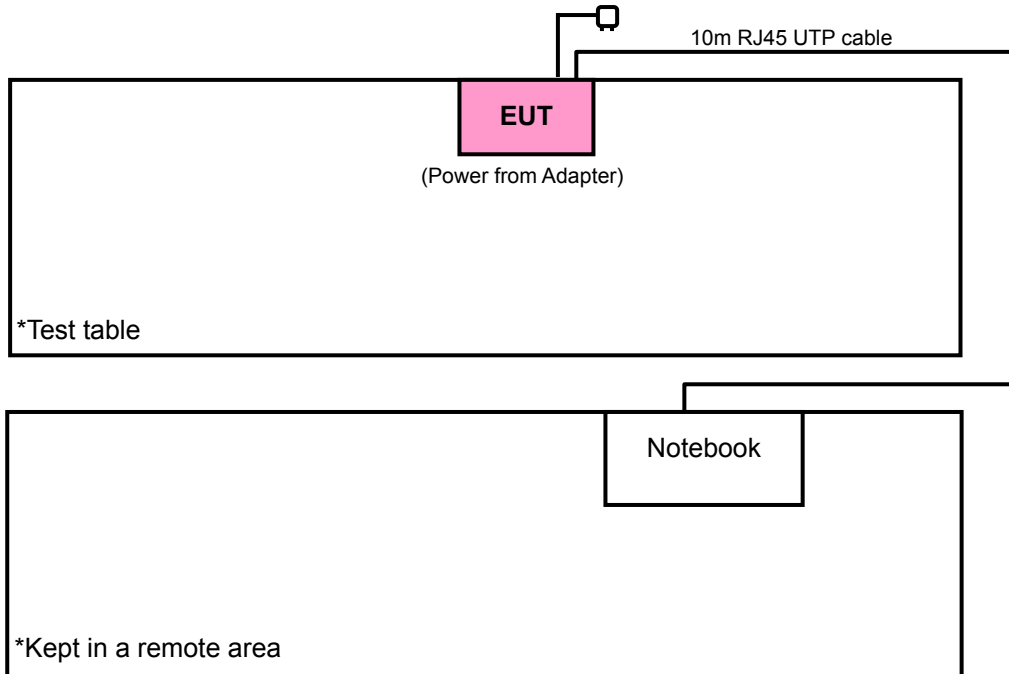
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m RJ45 UTP cable.

NOTE:

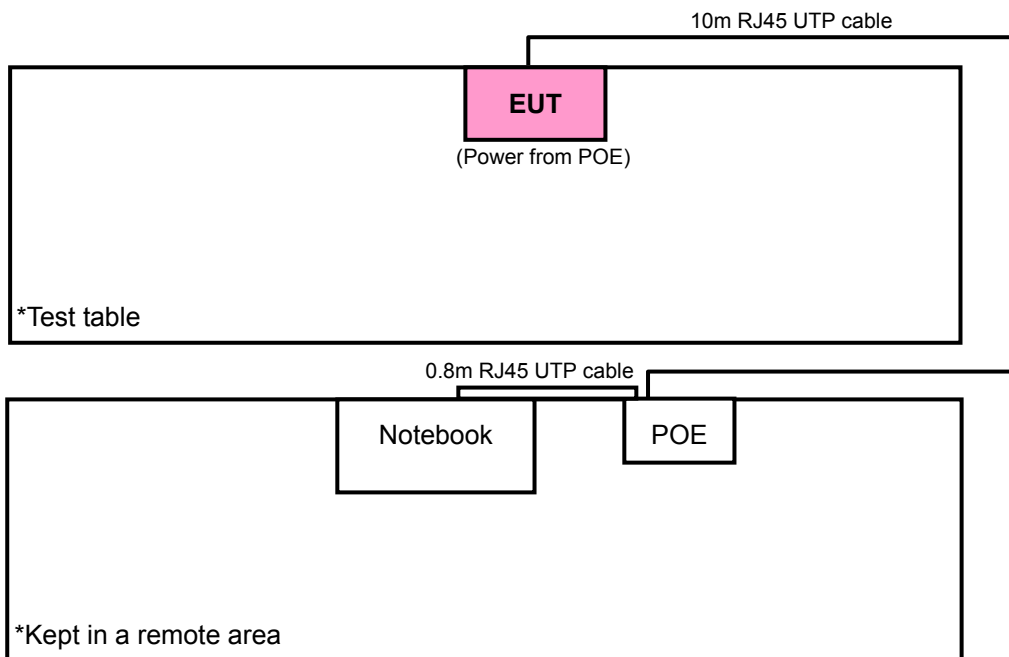
- 1. All power cords of the above support units are non shielded (1.8m).
- 2. Items 1 acted as communication partners to transfer data.

3.4.1 CONFIGURATION OF SYSTEM UNDER TEST

TEST MODE A



TEST MODE B



3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart E (15.407)

789033 D01 General UNII Test Procedures v01 r02

662911 D01 Multiple Transmitter Output v01 r02

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:

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

4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Aug. 06, 2012	Aug. 05, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Feb. 03, 2012	Feb. 02, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 06, 2012	Apr. 05, 2013
HORN Antenna SCHWARZBECK	9120D	9120D-408	Jan. 05, 2012	Jan. 04, 2013
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 11, 2012	Jul. 10, 2013
Preamplifier Agilent	8447D	2944A10633	Oct. 29, 2011	Oct. 28, 2012
Preamplifier Agilent	8449B	3008A01964	Oct. 29, 2011	Oct. 28, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250724/4	Nov. 03, 2011	Nov. 02, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	72662/6	Jan. 19, 2012	Jan. 18, 2013
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100	TT93021703	NA	NA
Turn Table Controller ADT.	SC100	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 29, 2011	Oct. 28, 2012

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 3.
 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 988962.
 4. The IC Site Registration No. is IC 7450F-3.

4.1.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

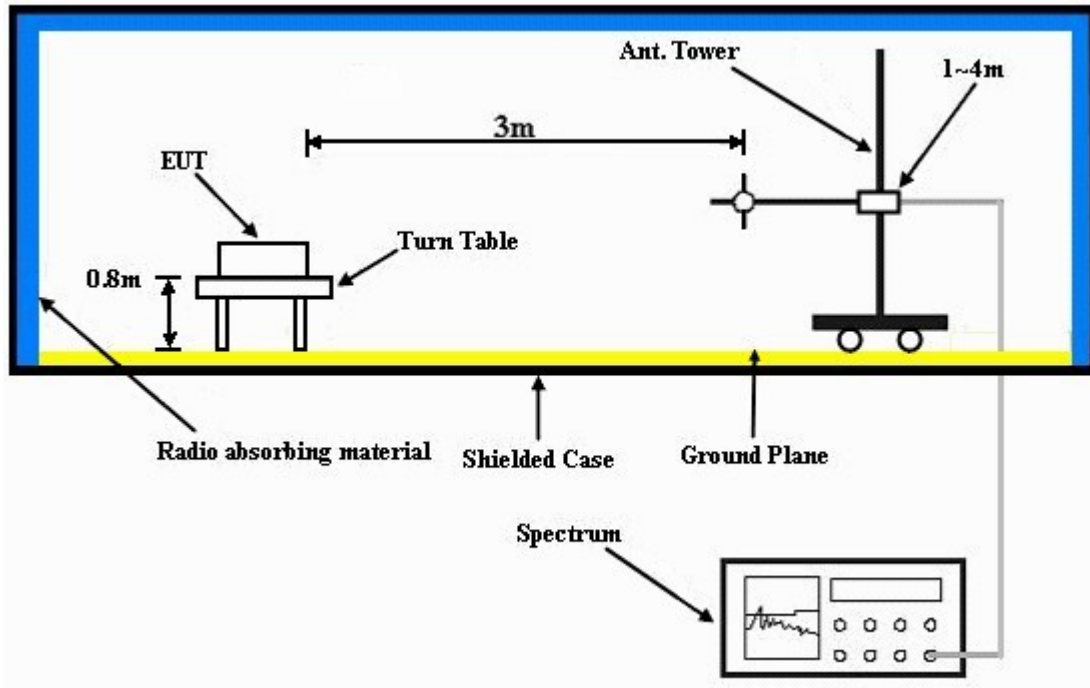
NOTE:

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

4.1.5 DEVIATION FROM TEST STANDARD

No deviation.

4.1.6 TEST SETUP



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

4.1.7 EUT OPERATING CONDITION

- a. Placed the EUT on the testing table.
- b. Prepared notebook outside of testing area to act as communication partners.
- c. The communication partners connected with EUT via a RJ45 cable and run a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- d. The necessary accessories enable the system in full functions



4.1.8 TEST RESULTS

ABOVE 1GHz: 802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5260.00	114.8 PK			1.05 H	175	76.80	38.00
2	*5260.00	102.5 AV			1.05 H	175	64.50	38.00
3	5350.00	58.6 PK	74.0	-15.4	1.05 H	175	20.50	38.10
4	5350.00	44.4 AV	54.0	-9.6	1.05 H	175	6.30	38.10
5	5456.00	59.1 PK	74.0	-14.9	1.52 H	174	20.80	38.30
6	5456.00	47.3 AV	54.0	-6.7	1.52 H	174	9.00	38.30
7	#10520.00	59.5 PK	68.3	-8.8	1.19 H	355	9.90	49.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5260.00	118.1 PK			1.23 V	147	80.10	38.00
2	*5260.00	106.2 AV			1.23 V	147	68.20	38.00
3	5350.00	57.2 PK	74.0	-16.8	1.27 V	149	19.10	38.10
4	5350.00	44.4 AV	54.0	-9.6	1.27 V	149	6.30	38.10
5	5456.00	59.1 PK	74.0	-14.9	1.19 V	140	20.80	38.30
6	5456.00	49.2 AV	54.0	-4.8	1.19 V	140	10.90	38.30
7	#10520.00	62.2 PK	68.3	-6.1	1.17 V	153	12.60	49.60

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	113.6 PK			1.25 H	152	75.50	38.10
2	*5300.00	101.7 AV			1.25 H	152	63.60	38.10
3	5353.00	61.8 PK	74.0	-12.2	1.00 H	178	23.60	38.20
4	5353.00	50.4 AV	54.0	-3.6	1.00 H	178	12.20	38.20
5	10600.00	58.8 PK	74.0	-15.2	1.00 H	5	9.60	49.20
6	10600.00	45.8 AV	54.0	-8.2	1.00 H	5	-3.40	49.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	117.5 PK			1.08 V	356	79.40	38.10
2	*5300.00	105.6 AV			1.08 V	356	67.50	38.10
3	5351.00	66.1 PK	74.0	-7.9	1.32 V	188	27.90	38.20
4	5351.00	53.0 AV	54.0	-1.0	1.32 V	188	14.80	38.20
5	10600.00	58.7 PK	74.0	-15.3	1.11 V	180	9.50	49.20
6	10600.00	45.5 AV	54.0	-8.5	1.11 V	180	-3.70	49.20

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	110.5 PK			1.25 H	152	72.40	38.10
2	*5320.00	99.0 AV			1.25 H	152	60.90	38.10
3	5350.00	64.1 PK	74.0	-9.9	1.00 H	168	26.00	38.10
4	5350.00	48.4 AV	54.0	-5.6	1.00 H	168	10.30	38.10
5	5365.00	62.7 PK	74.0	-11.3	1.00 H	168	24.60	38.10
6	5365.00	51.2 AV	54.0	-2.8	1.00 H	168	13.10	38.10
7	10640.00	58.5 PK	74.0	-15.5	1.10 H	152	8.90	49.60
8	10640.00	45.1 AV	54.0	-8.9	1.10 H	152	-4.50	49.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	113.20 PK			1.20 V	148	75.10	38.10
2	*5320.00	101.30 AV			1.20 V	148	63.20	38.10
3	5350.00	72.00 PK	74.0	-2.0	1.20 V	150	33.90	38.10
4	5350.00	52.30 AV	54.0	-1.7	1.20 V	150	14.20	38.10
5	5375.00	65.70 PK	74.0	-8.3	1.19 V	145	27.60	38.10
6	5375.00	52.80 AV	54.0	-1.2	1.19 V	145	14.70	38.10
7	10640.00	58.60 PK	74.0	-15.4	1.18 V	146	9.00	49.60
8	10640.00	44.70 AV	54.0	-9.3	1.18 V	146	-4.90	49.60

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5456.00	59.00 PK	74.0	-15.0	1.00 H	180	20.70	38.30
2	5456.00	49.70 AV	54.0	-4.3	1.00 H	180	11.40	38.30
3	#5470.00	65.70 PK	68.3	-2.6	1.00 H	158	27.40	38.30
4	*5500.00	110.9 PK			1.09 H	166	72.5	38.40
5	*5500.00	101.2 AV			1.09 H	166	62.8	38.40
6	11000.00	59.6 PK	74.0	-14.4	1.00 H	125	9.3	50.30
7	11000.00	45.6 AV	54.0	-8.4	1.00 H	125	-4.7	50.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5454.00	63.50 PK	74.0	-10.5	1.20 V	189	25.20	38.30
2	5454.00	52.60 AV	54.0	-1.4	1.20 V	189	14.30	38.30
3	#5470.00	67.20 PK	68.3	-1.1	1.08 V	188	28.90	38.30
4	*5500.00	113.8 PK			1.08 V	187	75.4	38.40
5	*5500.00	102.8 AV			1.08 V	187	64.4	38.40
6	11000.00	59.5 PK	74.0	-14.5	1.02 V	238	9.2	50.30
7	11000.00	50.0 AV	54.0	-4.0	1.02 V	238	-0.3	50.30

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5456.00	58.5 PK	74.0	-15.5	1.68 H	172	20.10	38.40
2	5456.00	46.4 AV	54.0	-7.6	1.68 H	172	8.00	38.40
3	*5580.00	115.8 PK			1.32 H	186	77.20	38.60
4	*5580.00	102.9 AV			1.32 H	186	64.30	38.60
5	#5725.00	57.6 PK	68.3	-10.7	1.43 H	186	18.60	39.00
6	11160.00	65.0 PK	74.0	-9.0	1.54 H	218	14.80	50.20
7	11160.00	50.2 AV	54.0	-3.8	1.54 H	218	0.00	50.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5456.00	60.3 PK	74.0	-13.7	1.18 V	193	21.90	38.40
2	5456.00	47.8 AV	54.0	-6.2	1.18 V	193	9.40	38.40
3	*5580.00	119.0 PK			1.03 V	193	80.40	38.60
4	*5580.00	106.5 AV			1.03 V	193	67.90	38.60
5	#5725.00	57.6 PK	68.3	-10.7	1.03 V	199	18.60	39.00
6	11160.00	69.3 PK	74.0	-4.7	1.44 V	273	19.10	50.20
7	11160.00	52.9 AV	54.0	-1.1	1.44 V	273	2.70	50.20

REMARKS:

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Haru Yang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	107.20 PK			1.39 H	150	68.50	38.70
2	*5700.00	97.00 AV			1.39 H	150	58.30	38.70
3	#5725.00	66.40 PK	68.3	-1.9	1.00 H	156	27.60	38.80
4	11400.00	59.50 PK	74.0	-14.5	1.04 H	135	9.40	50.10
5	11400.00	45.50 AV	54.0	-8.5	1.04 H	135	-4.60	50.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5456.00	54.40 PK	74.0	-19.6	1.18 V	140	16.10	38.30
2	5456.00	44.60 AV	54.0	-9.4	1.18 V	140	6.30	38.30
3	*5700.00	109.80 PK			1.19 V	118	71.10	38.70
4	*5700.00	98.80 AV			1.19 V	118	60.10	38.70
5	#5725.00	67.20 PK	68.3	-1.1	1.07 V	113	28.40	38.80
6	11400.00	67.4 PK	74.0	-6.6	1.38 V	36	17.3	50.10
7	11400.00	52.3 AV	54.0	-1.7	1.38 V	36	2.2	50.10

REMARKS:

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



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802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5260.00	115.70 PK			1.14 H	154	77.70	38.00
2	*5260.00	105.30 AV			1.14 H	154	67.30	38.00
3	5350.00	56.60 PK	74.0	-17.4	1.00 H	328	18.50	38.10
4	5350.00	43.10 AV	54.0	-10.9	1.00 H	328	5.00	38.10
5	5456.00	56.80 PK	74.0	-17.2	1.00 H	328	18.50	38.30
6	5456.00	46.30 AV	54.0	-7.70	1.00 H	328	8.00	38.30
7	#10520.00	58.20 PK	68.3	-10.10	1.10 H	126	8.60	49.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5260.00	117.50 PK			1.00 V	347	79.50	38.00
2	*5260.00	107.50 AV			1.00 V	347	69.50	38.00
3	5350.00	58.70 PK	74.0	-15.3	1.00 V	347	20.60	38.10
4	5350.00	45.20 AV	54.0	-8.8	1.00 V	347	7.10	38.10
5	5456.00	61.30 PK	74.0	-12.7	1.21 V	202	23.00	38.30
6	5456.00	49.10 AV	54.0	-4.9	1.21 V	202	10.80	38.30
7	#10520.00	61.70 PK	68.3	-6.6	1.82 V	292	12.10	49.60

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	114.4 PK			1.12 H	157	76.40	38.00
2	*5300.00	105.0 AV			1.12 H	157	67.00	38.00
3	5356.00	62.3 PK	74.0	-11.7	1.09 H	152	24.20	38.10
4	5356.00	51.0 AV	54.0	-3.0	1.09 H	152	12.90	38.10
5	10600.00	58.2 PK	74.0	-15.8	1.09 H	110	8.60	49.60
6	10600.00	45.4 AV	54.0	-8.6	1.09 H	110	-4.20	49.60
7	15900.00	57.6 PK	74.0	-16.4	1.10 H	145	9.60	48.00
8	15900.00	44.9 AV	54.0	-9.1	1.10 H	145	-3.10	48.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	116.2 PK			1.09 V	343	78.20	38.00
2	*5300.00	106.2 AV			1.09 V	343	68.20	38.00
3	5356.00	64.2 PK	74.0	-9.8	1.22 V	189	26.10	38.10
4	5356.00	52.1 AV	54.0	-1.9	1.22 V	189	14.00	38.10
5	10600.00	58.8 PK	74.0	-15.2	1.10 V	120	9.20	49.60
6	10600.00	45.4 AV	54.0	-8.6	1.10 V	120	-4.20	49.60
7	15900.00	58.8 PK	74.0	-15.2	1.17 V	152	10.80	48.00
8	15900.00	45.3 AV	54.0	-8.7	1.17 V	152	-2.70	48.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	110.60 PK			1.25 H	154	72.50	38.10
2	*5320.00	100.70 AV			1.25 H	154	62.60	38.10
3	5350.00	63.70 PK	74.0	-10.3	1.00 H	152	25.60	38.10
4	5350.00	46.50 AV	54.0	-7.5	1.00 H	152	8.40	38.10
5	5365.00	61.00 PK	74.0	-13.0	1.00 H	152	22.90	38.10
6	5365.00	50.60 AV	54.0	-3.4	1.00 H	152	12.50	38.10
7	10640.00	57.50 PK	74.0	-16.5	1.00 H	112	7.90	49.60
8	10640.00	45.10 AV	54.0	-8.9	1.00 H	112	-4.50	49.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	113.00 PK			1.00 V	143	74.90	38.10
2	*5320.00	102.60 AV			1.00 V	143	64.50	38.10
3	5350.00	69.30 PK	74.0	-4.7	1.00 V	143	31.20	38.10
4	5350.00	48.90 AV	54.0	-5.1	1.00 V	143	10.80	38.10
5	5362.00	64.70 PK	74.0	-9.3	1.11 V	141	26.60	38.10
6	5362.00	53.00 AV	54.0	-1.0	1.11 V	141	14.90	38.10
7	10640.00	59.60 PK	74.0	-14.4	1.48 V	296	10.00	49.60
8	10640.00	46.30 AV	54.0	-7.7	1.48 V	296	-3.30	49.60

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	58.50 PK	74.0	-15.5	1.21 H	189	20.20	38.30
2	5460.00	44.80 AV	54.0	-9.2	1.21 H	189	6.50	38.30
3	#5470.00	63.30 PK	68.3	-5.0	1.21 H	189	25.00	38.30
4	*5500.00	110.4 PK			1.10 H	166	72.0	38.40
5	*5500.00	100.2 AV			1.10 H	166	61.8	38.40
6	11000.00	58.9 PK	74.0	-15.1	1.04 H	126	8.6	50.30
7	11000.00	46.0 AV	54.0	-8.0	1.04 H	126	-4.3	50.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5456.00	64.10 PK	74.0	-9.9	1.30 V	191	25.80	38.30
2	5456.00	52.40 AV	54.0	-1.6	1.30 V	191	14.10	38.30
3	#5470.00	67.20 PK	68.3	-1.1	1.30 V	192	28.90	38.30
4	*5500.00	113.6 PK			1.30 V	192	75.2	38.40
5	*5500.00	103.2 AV			1.30 V	192	64.8	38.40
6	11000.00	59.9 PK	74.0	-14.1	1.48 V	292	9.6	50.30
7	11000.00	46.4 AV	54.0	-7.6	1.48 V	292	-3.9	50.30

REMARKS:

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



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	113.3 PK			1.32 H	167	74.90	38.40
2	*5580.00	103.8 AV			1.32 H	167	65.40	38.40
3	11160.00	59.3 PK	74.0	-14.7	1.14 H	136	9.20	50.10
4	11160.00	46.3 AV	54.0	-7.7	1.14 H	136	-3.80	50.10
5	#16740.00	63.1 PK	68.3	-5.2	1.10 H	125	13.00	50.10

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	117.5 PK			1.01 V	140	79.10	38.40
2	*5580.00	107.8 AV			1.01 V	140	69.40	38.40
3	11160.00	60.7 PK	74.0	-13.3	1.01 V	214	10.60	50.10
4	11160.00	46.6 AV	54.0	-7.4	1.01 V	214	-3.50	50.10
5	#16740.00	61.8 PK	68.3	-6.5	1.10 V	126	11.70	50.10

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Haru Yang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	105.50 PK			1.51 H	171	66.80	38.70
2	*5700.00	95.70 AV			1.51 H	171	57.00	38.70
3	#5725.00	63.80 PK	68.3	-4.5	1.00 H	162	25.00	38.80
4	11400.00	59.6 PK	74.0	-14.4	1.00 H	162	9.5	50.10
5	11400.00	45.7 AV	54.0	-8.3	1.00 H	162	-4.4	50.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5456.00	60.00 PK	74.0	-14.0	1.20 V	139	21.70	38.30
2	5456.00	48.10 AV	54.0	-5.9	1.20 V	139	9.80	38.30
3	*5700.00	110.30 PK			1.02 V	200	71.60	38.70
4	*5700.00	100.30 AV			1.02 V	200	61.60	38.70
5	#5725.00	67.30 PK	68.3	-1.0	1.13 V	143	28.50	38.80
6	11400.00	59.3 PK	74.0	-14.7	1.33 V	359	9.2	50.10
7	11400.00	46.4 AV	54.0	-7.6	1.33 V	359	-3.7	50.10

REMARKS:

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



A D T

802.11n (40MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.80 PK	74.0	-17.2	1.00 H	125	19.00	37.80
2	5150.00	43.80 AV	54.0	-10.2	1.00 H	125	6.00	37.80
3	*5270.00	111.70 PK			1.52 H	157	73.70	38.00
4	*5270.00	102.30 AV			1.52 H	157	64.30	38.00
5	5350.00	68.00 PK	74.0	-6.0	1.00 H	192	29.90	38.10
6	5350.00	48.60 AV	54.0	-5.4	1.00 H	192	10.50	38.10
7	5355.00	71.20 PK	74.0	-2.8	1.00 H	174	33.10	38.10
8	5355.00	50.30 AV	54.0	-3.7	1.00 H	174	12.20	38.10
9	#10540.00	57.30 PK	68.30	-11.0	1.00 H	125	7.70	49.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.40 PK	74.0	-17.6	1.11 V	350	18.60	37.80
2	5150.00	43.30 AV	54.0	-10.7	1.11 V	350	5.50	37.80
3	*5270.00	115.70 PK			1.11 V	350	77.70	38.00
4	*5270.00	105.90 AV			1.11 V	350	67.90	38.00
5	5350.00	71.10 PK	74.0	-2.9	1.11 V	350	33.00	38.10
6	5350.00	50.70 AV	54.0	-3.3	1.11 V	350	12.60	38.10
7	5361.00	72.00 PK	74.0	-2.0	1.11 V	141	33.90	38.10
8	5361.00	52.30 AV	54.0	-1.7	1.11 V	141	14.20	38.10
9	#10540.00	59.30 PK	68.3	-9.0	1.42 V	297	9.70	49.60

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	104.60 PK			1.00 H	155	66.60	38.00
2	*5310.00	94.70 AV			1.00 H	155	56.70	38.00
3	5350.00	59.90 PK	74.0	-14.1	1.00 H	174	21.80	38.10
4	5350.00	38.40 AV	54.0	-15.6	1.00 H	174	0.30	38.10
5	10620.00	57.80 PK	74.0	-16.2	1.10 H	162	8.20	49.60
6	10620.00	44.90 AV	54.0	-9.1	1.10 H	162	-4.70	49.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	107.80 PK			1.00 V	143	69.80	38.00
2	*5310.00	98.10 AV			1.00 V	143	60.10	38.00
3	5350.00	72.90 PK	74.0	-1.1	1.11 V	143	34.80	38.10
4	5350.00	51.20 AV	54.0	-2.8	1.11 V	143	13.10	38.10
5	5456.00	59.40 PK	74.0	-14.6	1.20 V	139	21.10	38.30
6	5456.00	48.80 AV	54.0	-5.2	1.20 V	139	10.50	38.30
7	10620.00	59.10 PK	74.0	-14.9	1.16 V	350	9.50	49.60
8	10620.00	45.60 AV	54.0	-8.4	1.16 V	350	-4.00	49.60

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	61.80 PK	74.0	-12.2	1.05 H	123	23.50	38.30
2	5460.00	45.40 AV	54.0	-8.6	1.05 H	123	7.10	38.30
3	5470.00	64.40 PK	68.3	-3.9	1.00 H	159	26.10	38.30
4	*5510.00	103.5 PK			1.10 H	170	65.1	38.40
5	*5510.00	94.1 AV			1.10 H	170	55.7	38.40
6	11020.00	58.6 PK	74.0	-15.4	1.04 H	110	8.4	50.20
7	11020.00	45.3 AV	54.0	-8.7	1.04 H	110	-4.9	50.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5456.00	64.80 PK	74.0	-9.2	1.20 V	191	26.50	38.30
2	5456.00	50.70 AV	54.0	-3.3	1.20 V	191	12.40	38.30
3	5470.00	67.20 PK	68.3	-1.1	1.18 V	167	28.90	38.30
4	*5510.00	107.2 PK			1.17 V	192	68.8	38.40
5	*5510.00	97.1 AV			1.17 V	192	58.7	38.40
6	11020.00	59.7 PK	74.0	-14.3	1.20 V	91	9.5	50.20
7	11020.00	47.5 AV	54.0	-6.5	1.20 V	91	-2.7	50.20

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 110	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH hPa	TESTED BY	Haru Yang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5456.00	58.6 PK	74.0	-15.4	1.50 H	35	20.30	38.30
2	5456.00	42.7 AV	54.0	-11.3	1.50 H	35	4.40	38.30
3	*5550.00	111.4 PK			1.13 H	118	73.00	38.40
4	*5550.00	101.6 AV			1.13 H	118	63.20	38.40
5	11100.00	52.2 PK	74.0	-21.8	1.00 H	125	2.20	50.00
6	11100.00	41.0 AV	54.0	-13.0	1.00 H	125	-9.00	50.00
7	#16650.00	59.3 PK	68.3	-9.0	1.00 H	125	9.60	49.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5456.00	61.7 PK	74.0	-12.3	1.24 V	36	23.40	38.30
2	5456.00	46.7 AV	54.0	-7.3	1.24 V	36	8.40	38.30
3	*5550.00	113.8 PK			1.27 V	145	75.40	38.40
4	*5550.00	103.6 AV			1.27 V	145	65.20	38.40
5	11100.00	60.0 PK	74.0	-14.0	1.07 V	116	10.00	50.00
6	11100.00	47.0 AV	54.0	-7.0	1.07 V	116	-3.00	50.00
7	#16650.00	61.3 PK	68.3	-7.0	1.04 V	136	11.60	49.70

REMARKS:

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



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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Haru Yang
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	125.17	36.4 QP	43.5	-7.1	1.74 H	44	24.10	12.30
2	208.15	42.4 QP	43.5	-1.1	1.00 H	342	31.10	11.30
3	374.04	42.7 QP	46.0	-3.3	1.00 H	96	25.80	16.90
4	625.00	44.8 QP	46.0	-1.2	1.37 H	205	22.40	22.40
5	675.40	43.2 QP	46.0	-2.8	1.24 H	43	20.40	22.80
6	875.67	39.3 QP	46.0	-6.7	1.00 H	308	12.80	26.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	35.73	38.4 QP	40.0	-1.6	1.00 V	134	25.40	13.00
2	208.77	40.1 QP	43.5	-3.4	1.24 V	299	28.80	11.30
3	325.43	38.3 QP	46.0	-7.7	1.49 V	31	22.70	15.60
4	374.04	40.4 QP	46.0	-5.6	1.24 V	153	23.50	16.90
5	624.85	43.6 QP	46.0	-2.4	1.49 V	150	21.30	22.30
6	675.40	40.0 QP	46.0	-6.0	1.24 V	18	17.20	22.80

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



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802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Haru Yang
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	125.17	37.4 QP	43.5	-6.1	1.50 H	65	25.10	12.30
2	208.77	42.3 QP	43.5	-1.2	1.50 H	252	31.00	11.30
3	374.04	44.9 QP	46.0	-1.1	1.00 H	104	28.00	16.90
4	624.85	44.2 QP	46.0	-1.8	1.25 H	214	21.90	22.30
5	675.40	43.0 QP	46.0	-3.0	1.25 H	282	20.20	22.80
6	875.67	37.6 QP	46.0	-8.4	1.00 H	304	11.10	26.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.68	38.7 QP	40.0	-1.3	1.24 V	204	25.40	13.30
2	208.77	39.2 QP	43.5	-4.3	1.49 V	322	27.90	11.30
3	374.04	41.8 QP	46.0	-4.2	1.24 V	142	24.90	16.90
4	500.42	34.5 QP	46.0	-11.5	1.00 V	169	14.50	20.00
5	624.85	43.5 QP	46.0	-2.5	1.49 V	164	21.20	22.30
6	675.40	41.6 QP	46.0	-4.4	1.49 V	179	18.80	22.80

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Haru Yang
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	109.62	32.9 QP	43.5	-10.6	1.00 H	316	22.30	10.60
2	206.83	36.6 QP	43.5	-6.9	1.50 H	209	25.30	11.30
3	325.43	37.4 QP	46.0	-8.6	1.00 H	158	21.80	15.60
4	399.31	30.4 QP	46.0	-15.6	1.99 H	263	12.90	17.50
5	475.14	29.7 QP	46.0	-16.3	1.74 H	237	10.30	19.40
6	675.40	43.9 QP	46.0	-2.1	1.24 H	272	21.10	22.80

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.68	37.2 QP	40.0	-2.8	1.00 V	9	23.90	13.30
2	150.45	30.1 QP	43.5	-13.4	1.00 V	291	16.00	14.10
3	224.33	28.7 QP	46.0	-17.3	1.00 V	273	16.70	12.00
4	325.43	38.2 QP	46.0	-7.8	1.50 V	292	22.60	15.60
5	407.09	31.0 QP	46.0	-15.0	1.75 V	285	13.30	17.70
6	675.40	37.8 QP	46.0	-8.2	1.50 V	4	15.00	22.80

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



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802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Haru Yang
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	206.83	35.3 QP	43.5	-8.2	1.49 H	142	24.00	11.30
2	325.43	36.3 QP	46.0	-9.7	1.00 H	115	20.70	15.60
3	374.04	32.7 QP	46.0	-13.3	1.00 H	118	15.80	16.90
4	500.42	30.1 QP	46.0	-15.9	1.49 H	211	10.10	20.00
5	675.40	44.6 QP	46.0	-1.4	1.00 H	91	21.80	22.80
6	900.94	35.1 QP	46.0	-10.9	1.49 H	53	8.30	26.80

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	47.40	36.1 QP	40.0	-3.9	1.00 V	288	22.10	14.00
2	94.06	26.1 QP	43.5	-17.4	1.00 V	74	17.40	8.70
3	325.43	38.2 QP	46.0	-7.8	1.50 V	62	22.60	15.60
4	449.87	33.7 QP	46.0	-12.3	1.00 V	170	15.00	18.70
5	675.40	37.1 QP	46.0	-8.9	1.50 V	356	14.30	22.80
6	900.94	32.6 QP	46.0	-13.4	1.50 V	237	5.80	26.80

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (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	100289	Nov. 19, 2011	Nov. 18, 2012
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 29, 2011	Dec. 28, 2012
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 30, 2011	Dec. 29, 2012
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 06, 2012	Jul. 05, 2013
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

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

4.2.3 TEST PROCEDURES

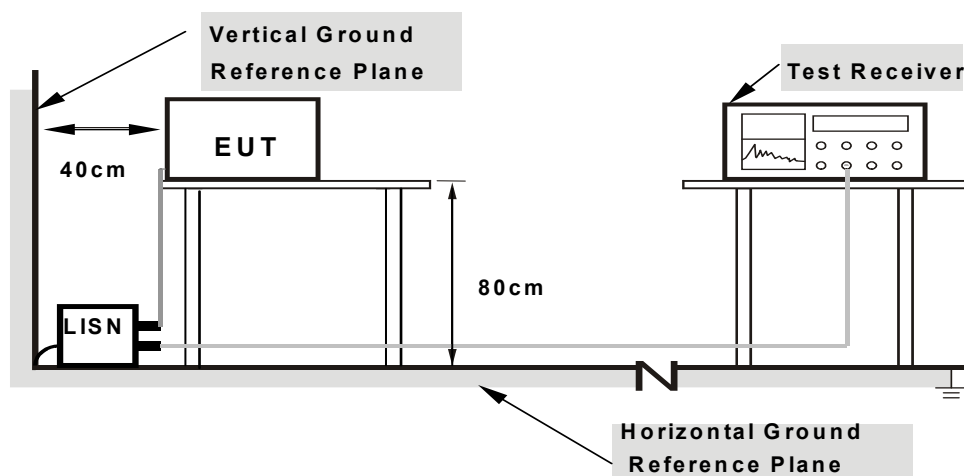
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.



4.2.7 TEST RESULTS

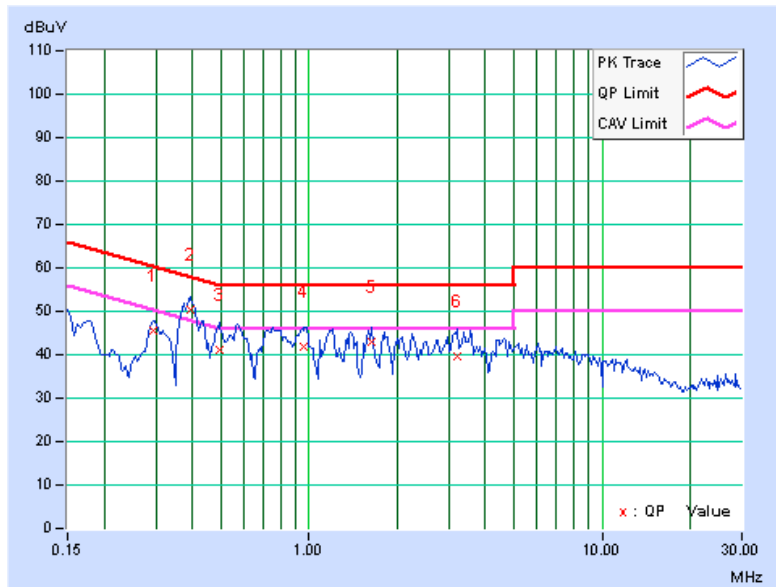
CONDUCTED WORST-CASE DATA : 802.11n (20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	A

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.29453	0.16	45.29	42.17	45.45	42.33	60.40	50.40	-14.95	-8.07
2	0.39219	0.17	50.18	42.27	50.35	42.44	58.02	48.02	-7.67	-5.58
3	0.49375	0.17	40.83	29.72	41.00	29.89	56.10	46.10	-15.10	-16.21
4	0.95859	0.19	41.66	33.40	41.85	33.59	56.00	46.00	-14.15	-12.41
5	1.64063	0.23	42.68	34.18	42.91	34.41	56.00	46.00	-13.09	-11.59
6	3.21875	0.31	39.49	31.84	39.80	32.15	56.00	46.00	-16.20	-13.85

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.





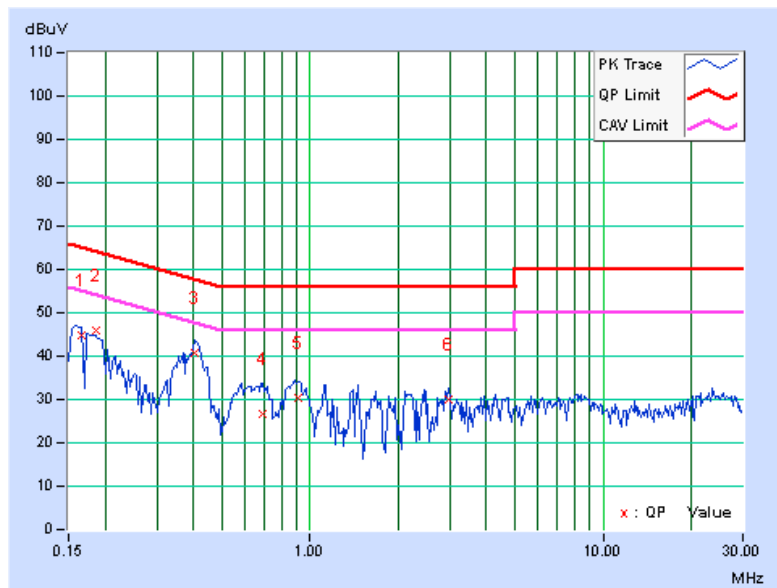
A D T

PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	A

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	0.13	44.70	23.80	44.83	23.93	65.18	55.18	-20.34	-31.24
2	0.18516	0.14	45.74	32.68	45.88	32.82	64.25	54.25	-18.37	-21.43
3	0.40391	0.16	40.72	27.28	40.88	27.44	57.77	47.77	-16.89	-20.33
4	0.68906	0.17	26.56	11.63	26.73	11.80	56.00	46.00	-29.27	-34.20
5	0.91563	0.19	30.29	14.73	30.48	14.92	56.00	46.00	-25.52	-31.08
6	2.96875	0.30	29.54	16.75	29.84	17.05	56.00	46.00	-26.16	-28.95

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.





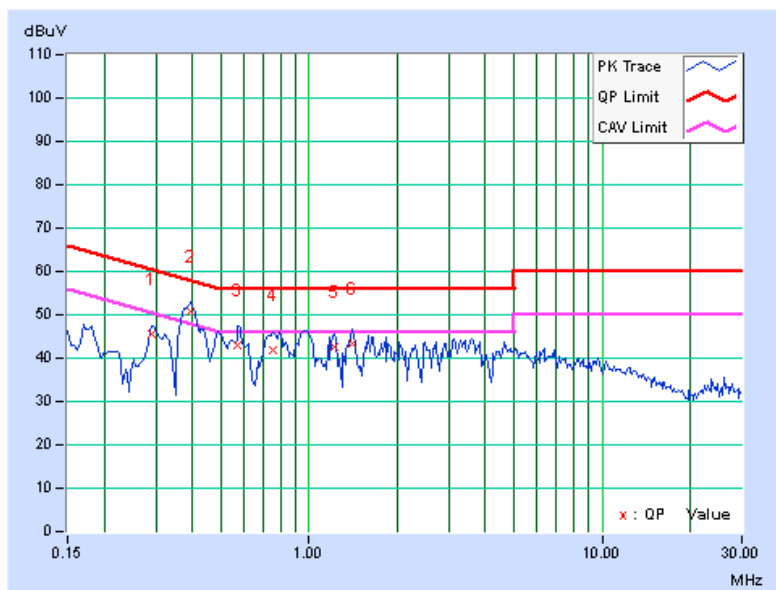
802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	A

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.29063	0.16	45.33	41.39	45.49	41.55	60.51	50.51	-15.02	-8.96
2	0.39609	0.17	50.43	43.64	50.60	43.81	57.93	47.93	-7.34	-4.13
3	0.57188	0.18	42.78	33.04	42.96	33.22	56.00	46.00	-13.04	-12.78
4	0.75156	0.18	41.59	32.43	41.77	32.61	56.00	46.00	-14.23	-13.39
5	1.22656	0.21	42.43	33.70	42.64	33.91	56.00	46.00	-13.36	-12.09
6	1.40234	0.22	43.03	34.75	43.25	34.97	56.00	46.00	-12.75	-11.03

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.





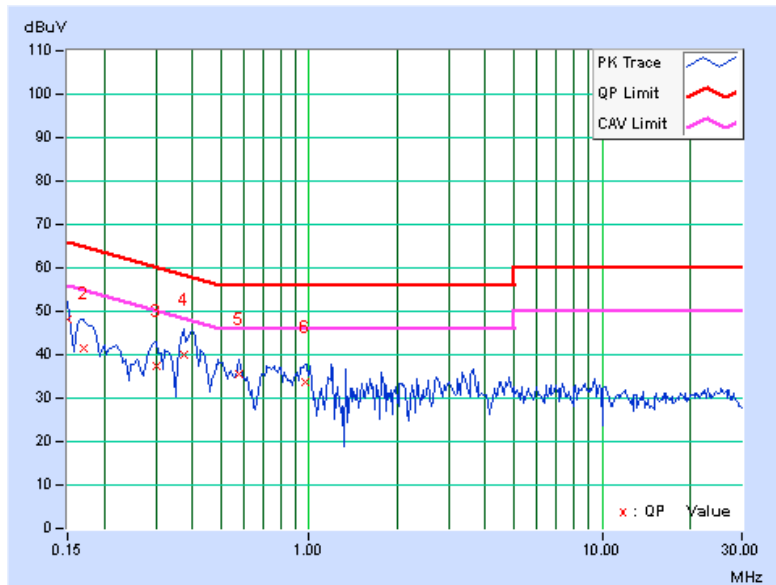
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PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	A

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.13	48.18	32.98	48.31	33.11	66.00	56.00	-17.69	-22.89
2	0.16953	0.13	41.53	21.30	41.66	21.43	64.98	54.98	-23.32	-33.55
3	0.30234	0.15	37.18	21.16	37.33	21.31	60.18	50.18	-22.85	-28.87
4	0.37656	0.16	39.97	23.79	40.13	23.95	58.35	48.35	-18.23	-24.41
5	0.57578	0.17	35.31	19.90	35.48	20.07	56.00	46.00	-20.52	-25.93
6	0.97031	0.19	33.65	19.20	33.84	19.39	56.00	46.00	-22.16	-26.61

REMARKS:

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





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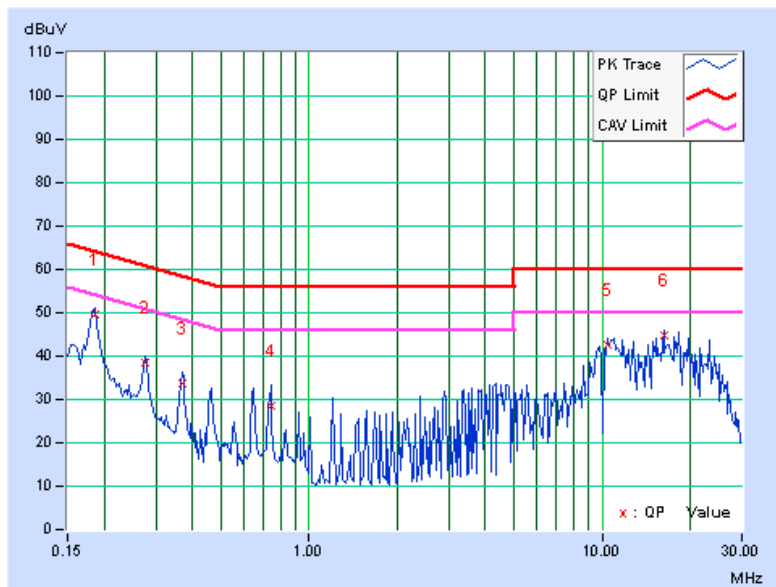
802.11n (20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	B

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18516	0.15	49.62	41.19	49.77	41.34	64.25	54.25	-14.48	-12.91
2	0.27500	0.16	38.47	32.00	38.63	32.16	60.97	50.97	-22.34	-18.81
3	0.36875	0.17	33.46	31.13	33.63	31.30	58.53	48.53	-24.90	-17.23
4	0.73984	0.18	28.23	24.43	28.41	24.61	56.00	46.00	-27.59	-21.39
5	10.48888	0.44	42.03	40.13	42.47	40.57	60.00	50.00	-17.53	-9.43
6	16.22656	0.55	44.43	41.71	44.98	42.26	60.00	50.00	-15.02	-7.74

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.





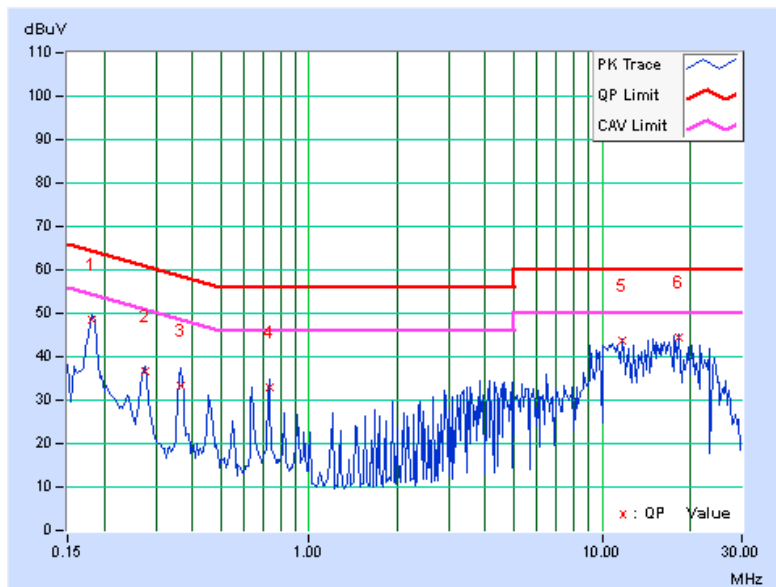
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PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	B

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.14	48.32	37.32	48.46	37.46	64.43	54.43	-15.97	-16.97
2	0.27500	0.15	36.57	29.01	36.72	29.16	60.97	50.97	-24.25	-21.81
3	0.36484	0.16	33.32	30.81	33.48	30.97	58.62	48.62	-25.14	-17.65
4	0.73203	0.18	32.92	28.01	33.10	28.19	56.00	46.00	-22.90	-17.81
5	11.78125	0.52	43.09	41.97	43.61	42.49	60.00	50.00	-16.39	-7.51
6	18.24219	0.68	43.67	40.81	44.35	41.49	60.00	50.00	-15.65	-8.51

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.





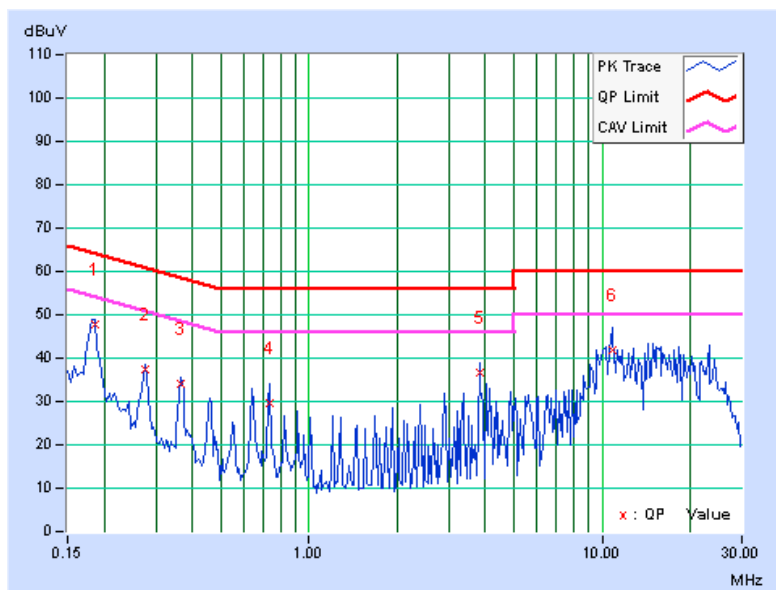
802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	B

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18516	0.15	47.79	39.80	47.94	39.95	64.25	54.25	-16.31	-14.30
2	0.27500	0.16	37.21	31.60	37.37	31.76	60.97	50.97	-23.60	-19.21
3	0.36484	0.17	33.76	31.01	33.93	31.18	58.62	48.62	-24.69	-17.44
4	0.73594	0.18	29.31	25.16	29.49	25.34	56.00	46.00	-26.51	-20.66
5	3.84766	0.33	36.45	32.80	36.78	33.13	56.00	46.00	-19.22	-12.87
6	10.81641	0.45	41.30	39.43	41.75	39.88	60.00	50.00	-18.25	-10.12

REMARKS:

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



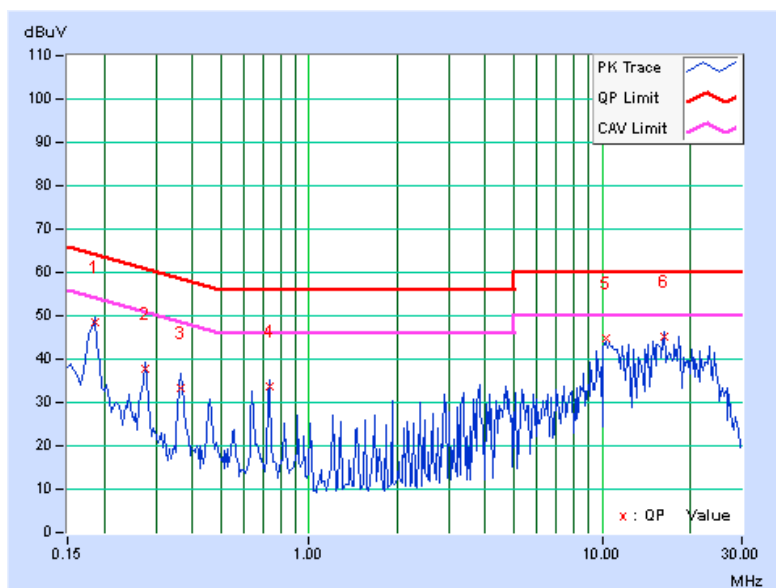


PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	B

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18516	0.14	48.46	37.50	48.60	37.64	64.25	54.25	-15.65	-16.61
2	0.27500	0.15	37.57	29.70	37.72	29.85	60.97	50.97	-23.25	-21.12
3	0.36484	0.16	33.30	30.65	33.46	30.81	58.62	48.62	-25.16	-17.81
4	0.73203	0.18	33.62	28.62	33.80	28.80	56.00	46.00	-22.20	-17.20
5	10.33700	0.49	44.23	40.67	44.72	41.16	60.00	50.00	-15.28	-8.84
6	16.23044	0.63	44.49	41.59	45.12	42.22	60.00	50.00	-14.88	-7.78

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.

Per KDB 662911 D01 Multiple Transmitter Output v01r02 Method of conducted output power measurement on IEEE 802.11 devices,

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

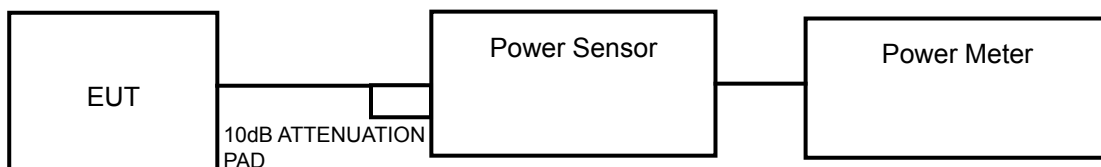
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

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

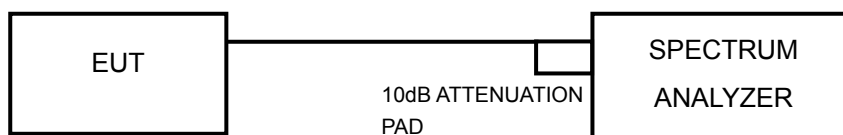
For power measurements on all other devices: Array Gain = $10 \log(N_{ANT} / NSS)$ dB.

4.3.2 TEST SETUP

FOR POWER OUTPUT MEASUREMENT



FOR 26dB BANDWIDTH



4.3.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.3.4 TEST PROCEDURE

FOR AVERAGE POWER MEASUREMENT

Duty cycle of test signal is < 98 %. Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

FOR 26dB BANDWIDTH

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

4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.



4.3.7 TEST RESULTS

POWER OUTPUT: 802.11a

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
52	5260	17.65	17.08	109.26	20.38	24	PASS
60	5300	17.24	17.32	106.92	20.29	24	PASS
64	5320	13.66	13.6	46.14	16.64	24	PASS
100	5500	12.46	11.12	30.56	14.85	24	PASS
116	5580	18.74	17.14	126.58	21.02	24	PASS
140	5700	11.44	11.03	26.61	14.25	24	PASS

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
52	5260	18.77	18.18	141.10	21.50	24	PASS
60	5300	18.63	17.66	131.29	21.18	24	PASS
64	5320	14.55	14.36	55.80	17.47	24	PASS
100	5500	13.15	11.44	34.59	15.39	24	PASS
116	5580	18.69	17.09	125.13	20.97	24	PASS
140	5700	12.20	11.17	29.69	14.73	24	PASS

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
54	5270	18.83	18.85	153.12	21.85	24	PASS
62	5310	12.48	11.34	31.32	14.96	24	PASS
102	5510	9.56	8.10	15.49	11.90	24	PASS
110	5550	18.41	16.45	113.50	20.55	24	PASS

**26dB BANDWIDTH: 802.11a**

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
52	5260	29.75	25.18	PASS
60	5300	25.73	23.39	PASS
64	5320	24.23	22.97	PASS
100	5500	23.59	22.80	PASS
116	5580	42.46	39.42	PASS
140	5700	23.82	23.28	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
52	5260	45.81	25.74	PASS
60	5300	45.47	25.54	PASS
64	5320	25.40	23.91	PASS
100	5500	25.00	24.55	PASS
116	5580	46.26	29.65	PASS
140	5700	25.07	24.50	PASS

802.11n (40MHz)

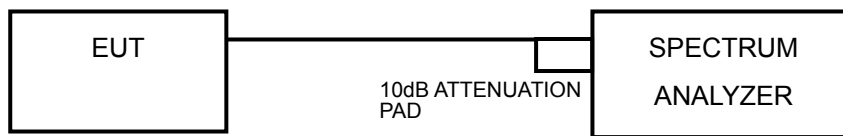
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
54	5270	88.43	89.29	PASS
62	5310	51.88	50.29	PASS
102	5510	52.20	51.04	PASS
110	5550	87.27	75.15	PASS

4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

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

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.4.4 TEST PROCEDURES

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

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as 4.3.6.



4.4.7 TEST RESULTS

802.11a

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1					
52	5260	6.48	7.09	9.81	0.11	9.92	10.00	PASS
60	5300	6.43	6.90	9.68	0.11	9.79	10.00	PASS
64	5320	6.44	5.93	9.20	0.11	9.31	10.00	PASS
100	5500	6.04	5.86	8.96	0.11	9.07	10.00	PASS
116	5580	6.03	5.84	8.95	0.11	9.06	10.00	PASS
140	5700	5.78	6.20	9.01	0.11	9.12	10.00	PASS

NOTE:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $4\text{dBi} + 10\log(2) = 7\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $11-(7-6) = 10.00\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1					
52	5260	6.42	6.35	9.40	0.14	9.54	10.00	PASS
60	5300	6.15	5.86	9.02	0.14	9.16	10.00	PASS
64	5320	6.19	5.88	9.05	0.14	9.19	10.00	PASS
100	5500	6.16	5.99	9.09	0.14	9.23	10.00	PASS
116	5580	6.14	5.95	9.06	0.14	9.20	10.00	PASS
140	5700	6.69	5.94	9.34	0.14	9.48	10.00	PASS

NOTE:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $4\text{dBi} + 10\log(2) = 7\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $11-(7-6) = 10.00\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.



802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1					
54	5270	6.33	7.01	9.69	0.18	9.87	10.00	PASS
62	5310	5.03	5.51	8.29	0.18	8.47	10.00	PASS
102	5510	4.32	3.53	6.95	0.18	7.13	10.00	PASS
110	5550	4.99	4.11	7.58	0.18	7.76	10.00	PASS

NOTE:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $4\text{dBi} + 10\log(2) = 7\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $11-(7-6) = 10.00\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

4.5 PEAK POWER EXCURSION MEASUREMENT

4.5.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Shall not exceed 13 dB.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.5.4 TEST PROCEDURE

- 1) Set RBW = 1 MHz, VBW \geq 3 MHz, Detector = peak.
- 2) Trace mode = max-hold. Allow the sweeps to continue until the trace stabilizes.
- 3) Use the peak search function to find the peak of the spectrum.
- 4) Measure the PPSD.
- 5) Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITIONS

Same as 4.2.6

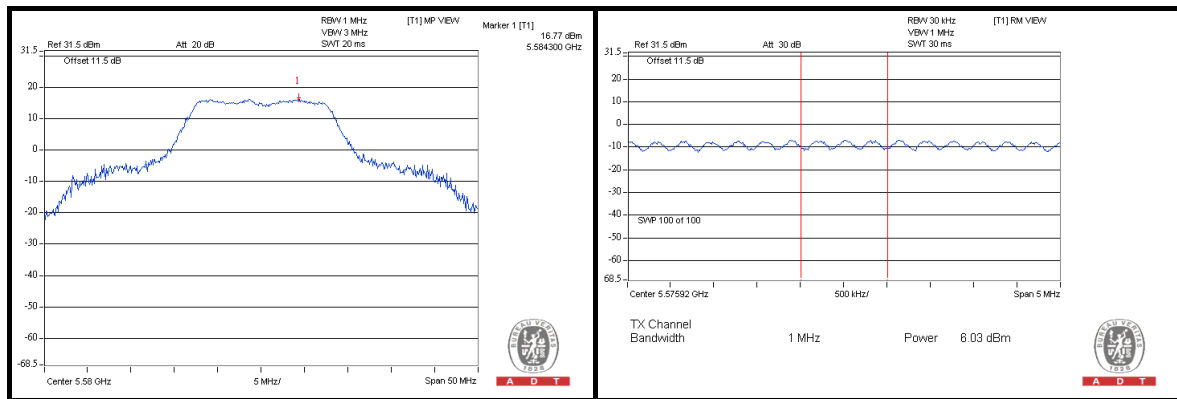


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4.5.7 TEST RESULTS

802.11a

TX chain	CHAN.	CHANNEL FREQUENCY (MHz)	PEAK VALUE (dBm)	PSD W/O DUTY FACTOR (dBm)	PSD WITH DUTY FACTOR (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS /FAIL
0	52	5260	16.22	6.48	6.59	9.63	13	PASS
	60	5300	15.69	6.43	6.54	9.15	13	PASS
	64	5320	12.49	6.44	6.55	5.94	13	PASS
	100	5500	11.23	6.04	6.15	5.08	13	PASS
	116	5580	16.77	6.03	6.14	10.63	13	PASS
	140	5700	9.42	5.78	5.89	3.53	13	PASS
1	52	5260	16.60	7.09	7.20	9.40	13	PASS
	60	5300	16.64	6.90	7.01	9.63	13	PASS
	64	5320	12.89	5.93	6.04	6.85	13	PASS
	100	5500	10.48	5.86	5.97	4.51	13	PASS
	116	5580	16.57	5.84	5.95	10.62	13	PASS
	140	5700	10.52	6.20	6.31	4.21	13	PASS

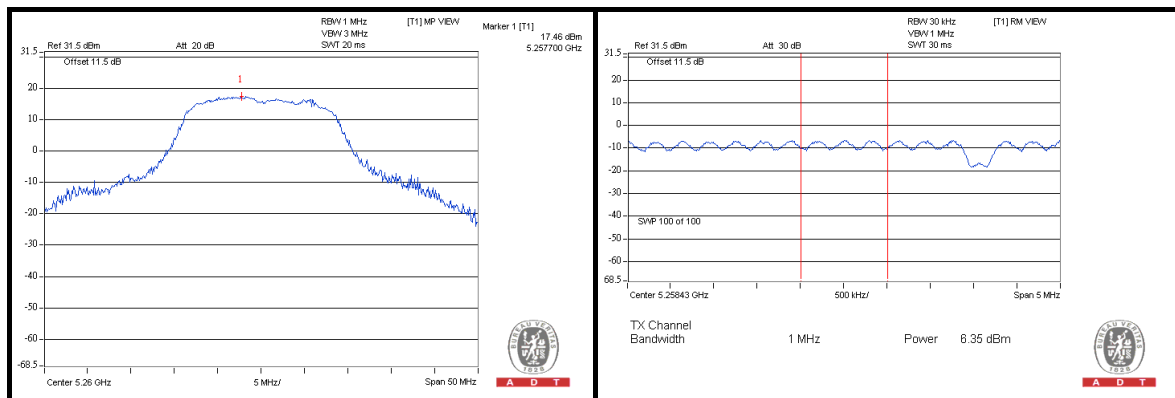




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802.11n (20MHz)

TX chain	CHAN.	CHANNEL FREQUENCY (MHz)	PEAK VALUE (dBm)	PSD W/O DUTY FACTOR (dBm)	PSD WITH DUTY FACTOR (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS /FAIL
0	52	5260	17.43	6.42	6.56	10.87	13	PASS
	60	5300	16.71	6.15	6.29	10.42	13	PASS
	64	5320	13.00	6.19	6.33	6.67	13	PASS
	100	5500	11.51	6.16	6.3	5.21	13	PASS
	116	5580	16.09	6.14	6.28	9.81	13	PASS
	140	5700	10.17	6.69	6.83	3.34	13	PASS
1	52	5260	17.46	6.35	6.49	10.97	13	PASS
	60	5300	16.71	5.86	6.00	10.71	13	PASS
	64	5320	13.61	5.88	6.02	7.59	13	PASS
	100	5500	10.80	5.99	6.13	4.67	13	PASS
	116	5580	16.15	5.95	6.09	10.06	13	PASS
	140	5700	10.24	5.94	6.08	4.16	13	PASS

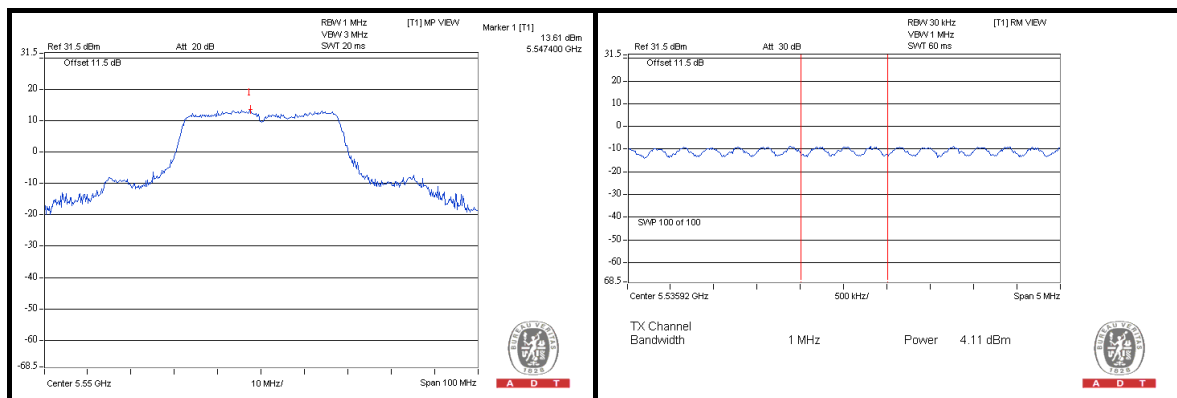




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802.11n (40MHz)

TX chain	CHAN.	CHANNEL FREQUENCY (MHz)	PEAK VALUE (dBm)	PSD W/O DUTY FACTOR (dBm)	PSD WITH DUTY FACTOR (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS /FAIL
0	54	5270	14.09	6.33	6.51	7.58	13	PASS
	62	5310	7.88	5.03	5.21	2.67	13	PASS
	102	5510	4.92	4.32	4.50	0.42	13	PASS
	110	5550	13.54	4.99	5.17	8.37	13	PASS
1	54	5270	16.18	7.01	7.19	8.99	13	PASS
	62	5310	8.49	5.51	5.69	2.80	13	PASS
	102	5510	5.43	3.53	3.71	1.72	13	PASS
	110	5550	13.61	4.11	4.29	9.32	13	PASS

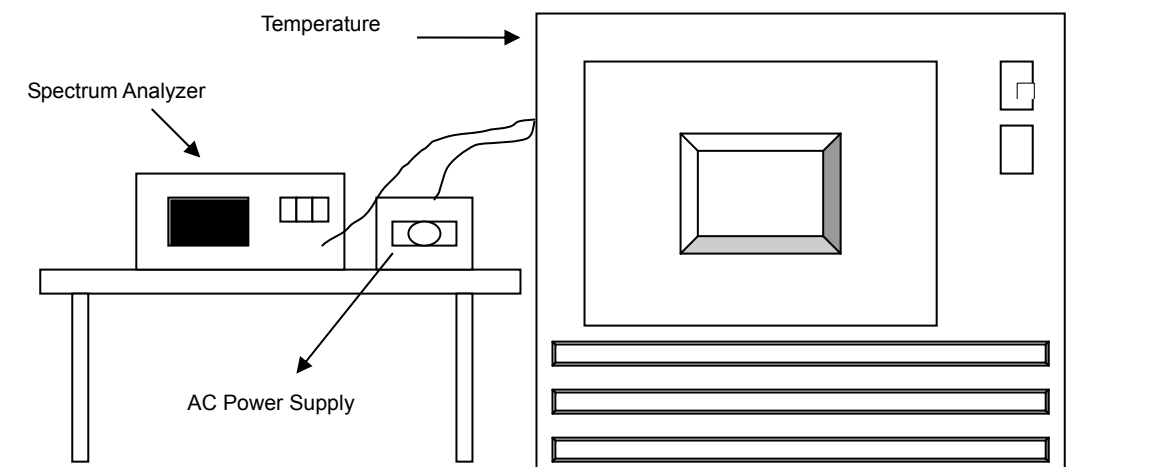


4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.6.4 TEST PROCEDURE

- a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

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



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4.6.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
55	110.0	5320.003452	0.649	5320.003385	0.636	5320.003526	0.663	5320.003530	0.664
50	110.0	5320.003510	0.660	5320.003868	0.727	5320.003999	0.752	5320.003784	0.711
40	110.0	5320.004717	0.887	5320.004998	0.939	5320.005020	0.944	5320.004810	0.904
30	110.0	5320.006757	1.270	5320.006702	1.260	5320.006197	1.165	5320.006510	1.224
20	110.0	5320.007739	1.455	5320.007859	1.477	5320.008513	1.600	5320.007900	1.485
10	110.0	5320.006742	1.267	5320.006762	1.271	5320.006554	1.232	5320.006911	1.299
0	110.0	5320.004667	0.877	5320.004520	0.850	5320.005015	0.943	5320.004783	0.899
-10	110.0	5320.004802	0.903	5320.004300	0.808	5320.004502	0.846	5320.004562	0.858
-20	110.0	5320.003649	0.686	5320.003872	0.728	5320.003583	0.673	5320.003385	0.636
-30	110.0	5320.004395	0.826	5320.003830	0.720	5320.003864	0.726	5320.004319	0.812

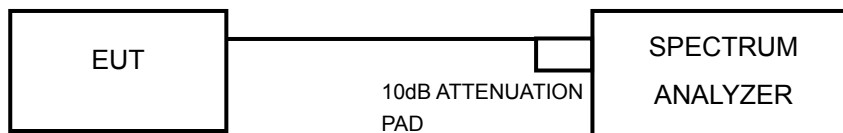
FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	93.5	5320.006583	1.237	5320.006600	1.241	5320.007225	1.358	5320.006583	1.237
	110.0	5320.007739	1.455	5320.007859	1.477	5320.008513	1.600	5320.007900	1.485
	126.5	5320.006950	1.306	5320.006992	1.314	5320.006947	1.306	5320.006944	1.305

4.7 20dBc BANDWIDTH FOR CHANNEL CLOSE TO 5600 TO 5650 MHz BAND

4.7.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

20dBc point shall not fall in 5600~5650MHz.

4.7.2 TEST INSTRUMENTS



4.7.3 TEST INSTRUMENTS

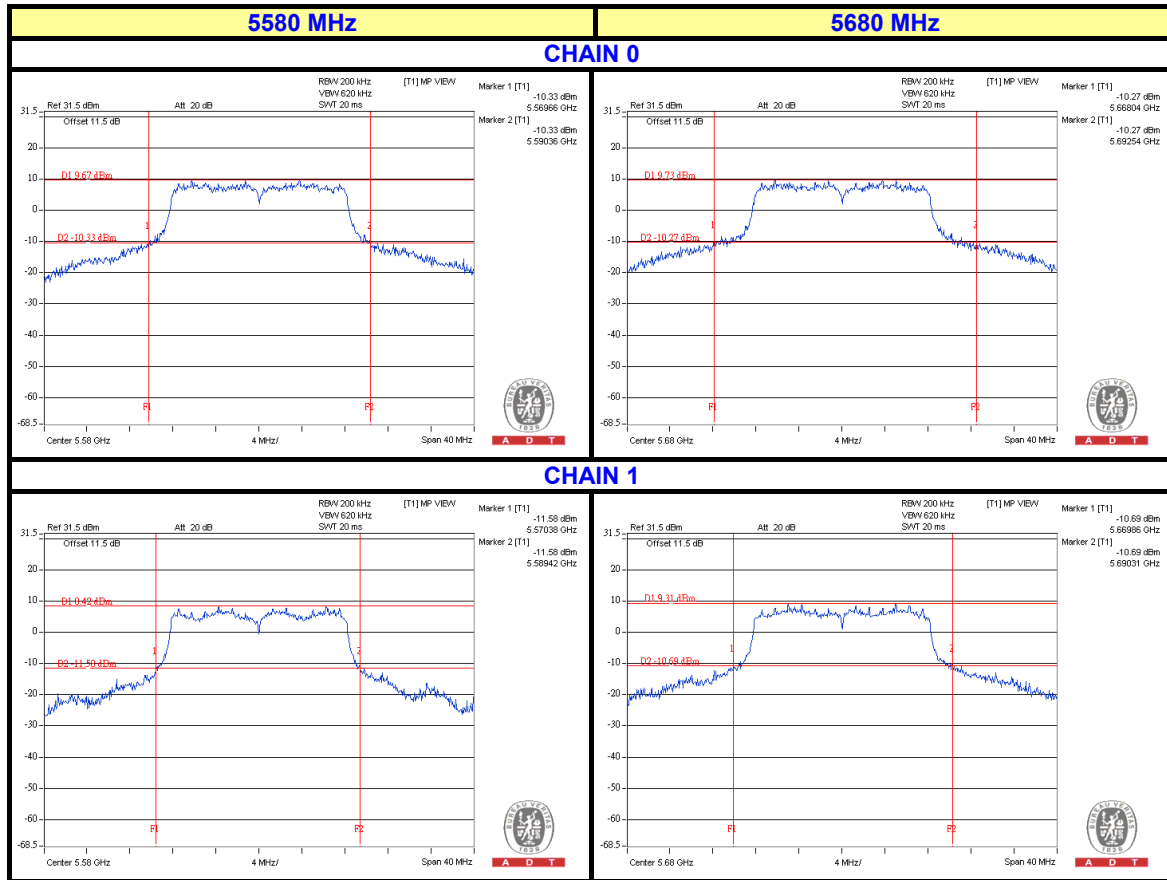
Refer to section 4.1.3 to get information of above instrument.



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4.7.4 TEST RESULTS

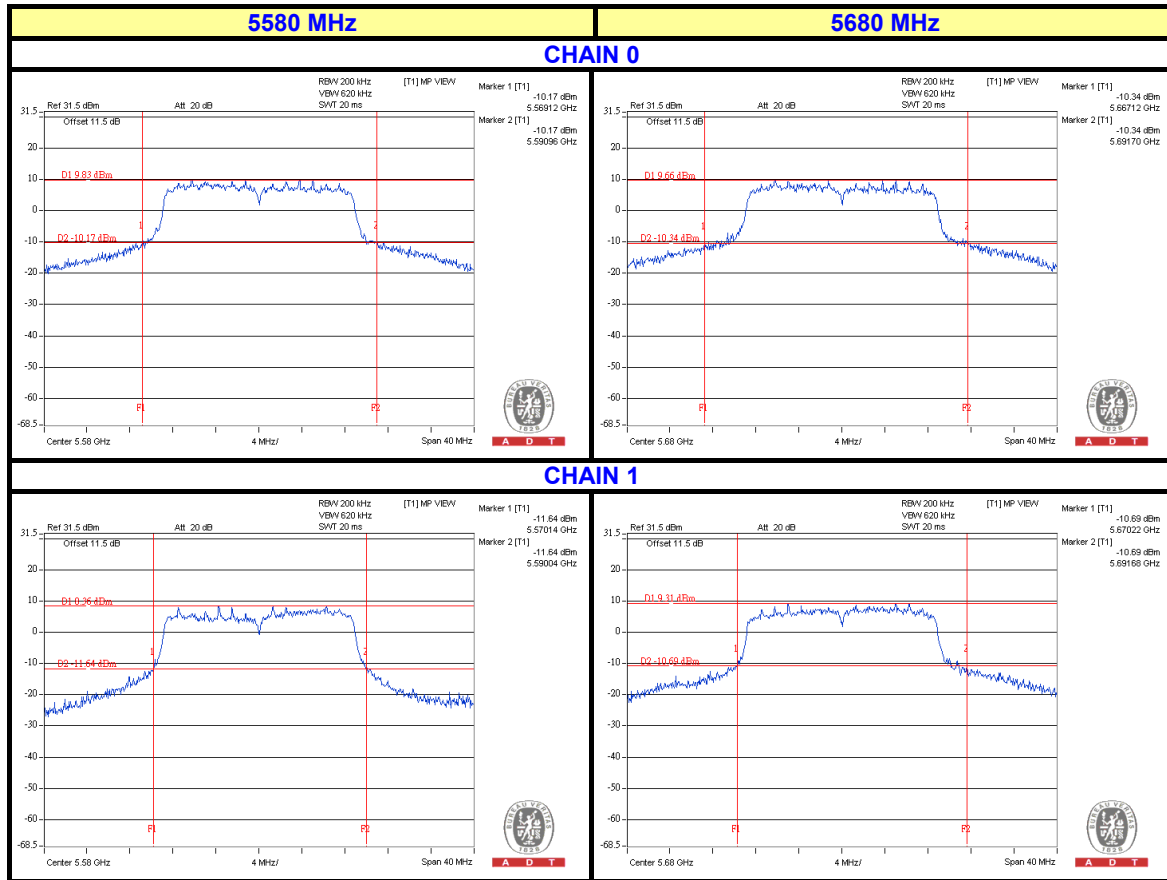
802.11a





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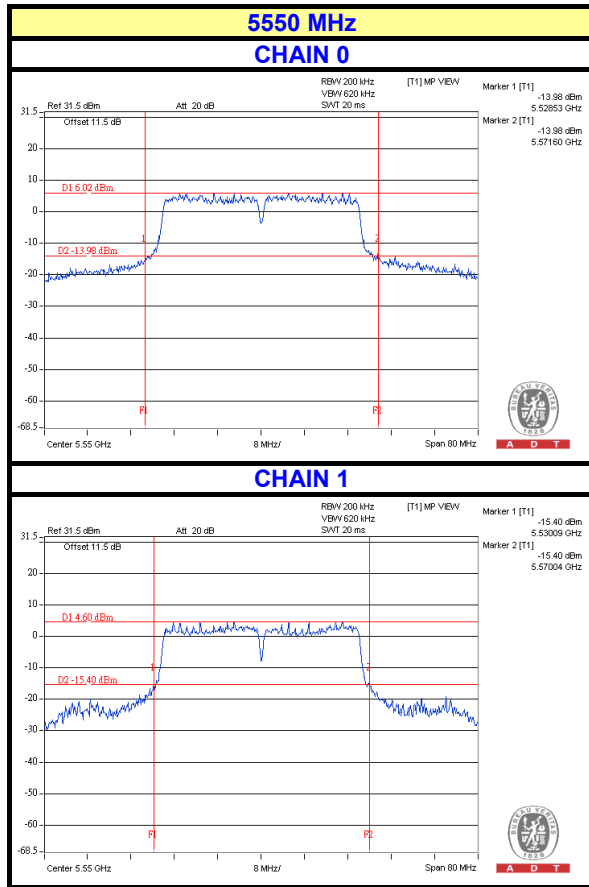
802.11n (20MHz)





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802.11n (40MHz)





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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



6. INFORMATION ON THE TESTING LABORATORIES

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

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

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Fax: 886-2-26051924

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Hwa Ya EMC/RF/Safety Telecom Lab:
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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 modifications were made to the EUT by the lab during the test.

---END---