

FCC TEST REPORT (15.407)

REPORT NO.: RF120517E03A

MODEL NO.: WS-AP3705i

FCC ID: QXO-WSAP3705I

RECEIVED: May 23, 2012

TESTED: May 25 to June 21, 2012

ISSUED: Sep. 20, 2012

APPLICANT: Enterasys Networks, Inc.

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ISSUED BY: Bureau Veritas Consumer Products Services
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120517E03A	Original release	Sep. 20, 2012



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1. CERTIFICATION

PRODUCT: Wireless Access Point
BRAND NAME: Enterasys Networks
MODEL NO.: WS-AP3705i
TEST SAMPLE: MASS-PRODUCTION
APPLICANT: Enterasys Networks, Inc.
TESTED: May 25 to June 21, 2012
STANDARDS: **FCC Part 15, Subpart E (Section 15.407)**
ANSI C63.10-2009

The above equipment (Model: WS-AP3705i) 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 : Phoenix Huang, **DATE:** Sep. 20, 2012
(Phoenix Huang, Specialist)

APPROVED BY : May Chen, **DATE:** Sep. 20, 2012
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 5GHz, 5260~5320MHz, 5500~5580MHz & 5660~5700MHz

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.407(b/1/2/3) (b)(6)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.5dB at 5470.00MHz
15.407(a/1/2)	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 IPEX not a standard connector.

NOTE:

1. This report is prepared for FCC class II change. (Add DFS band: 5250~5350MHz & 5470~5725MHz).
2. The "Dynamic Frequency Selection" was recorded in Report No.: RF120517E03A-1

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:

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

Measurement	Value
Radiated emissions (30MHz-1GHz)	4.89 dB
Radiated emissions (1GHz -18GHz)	2.49 dB
Radiated emissions (18GHz -40GHz)	2.70 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless Access Point
MODEL NO.	WS-AP3705i
POWER SUPPLY	DC 48V from POE
MODULATION TYPE	64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: up to 54Mbps 802.11n (20MHz, 800ns GI): up to 130Mbps 802.11n (20MHz, 400ns GI): up to 144.444Mbps 802.11n (40MHz, 800ns GI): up to 270Mbps 802.11n (40MHz, 400ns GI): up to 300Mbps
OPERATING FREQUENCY	5.26 ~ 5.32GHz, 5.5~5.58GHz & 5.66~5.7GHz
NUMBER OF CHANNEL	12 for 802.11a, 802.11n (20MHz) 5 for 802.11n (40MHz)
MAXIMUM OUTPUT POWER	802.11a: 182.838mW 802.11n (20MHz): 186.849mW 802.11n (40MHz): 197.828mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

NOTE:

1. This report is prepared for FCC permissive change. The difference compared with the Report No.: RF120517E03 design is as the following:

u Add DFS band <5250~5350MHz & 5470~5725MHz>

2. The antennas provided to the EUT, please refer to the following table:

For 2.4GHz					
Transmitter Circuit	Manufacture	Model name	Antenna Gain Gain (dBi)	Antenna Type	Connector
Chain (0)	WHA YU GROUP	C037-511135-A (SSR-13314)	3.97	PIFA	I-PEX
Chain (1)	WHA YU GROUP	C037-511135-A (SSR-13314)	3.91	PIFA	I-PEX
For 5GHz					
Transmitter Circuit	Manufacture	Model name	Antenna Gain Gain (dBi)	Antenna Type	Connector
Chain (0)	WHA YU GROUP	C037-511135-A (SSR-13314)	5G Band1: 3.74 5G Band2: 3.92 5G Band3: 3.95 5G Band4: 3.87	PIFA	I-PEX
Chain (1)	WHA YU GROUP	C037-511135-A (SSR-13314)	5G Band1: 3.87 5G Band2: 3.84 5G Band3: 3.72 5G Band4: 3.98	PIFA	I-PEX

3. The EUT must be supplied with a POE Adapter as following table:

POE (only for test, not for sale)		
Brand	Model No.	Spec.
Base-Unit	EBU-101G-T2 LF	Output: 48V
Adapter (for POE use)		
Brand	Model No.	Spec.
Bothhand	SA06-20S48-V	Input: 100-240V, 0.6A, 50-60Hz Output: 48V, 0.4A DC output cable (Unshielded, 1.8m, with one core)

4. The EUT incorporates a MIMO function.

MODULATION MODE	Tx/Rx FUNCTION
802.11b	2Tx/2Rx
802.11g	2Tx/2Rx
802.11a	2Tx/2Rx
802.11n (20MHz)	2Tx/2Rx
802.11n (40MHz)	2Tx/2Rx

5. Radiated and Conducted emission of the simultaneous operation (2.4GHz and 5GHz WLAN technology) has been evaluated and no non-compliance was found.
6. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.
7. The above EUT information was 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

Operated in 5260 ~ 5320MHz band:

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

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

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

CHANNEL	FREQUENCY
54	5270 MHz
62	5310 MHz

Operated in 5470MHz ~ 5600MHz & 5650MHz ~ 5725MHz bands:

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

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

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

CHANNEL	FREQUENCY
102	5510 MHz
110	5550 MHz
134	5670 MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	RE < 1G	RE ³ 1G	APCM	
-	√	√	√	-

Where **PLC:** Power Line Conducted Emission

RE < 1G: Radiated Emission below 1GHz

RE ³ 1G: Radiated Emission above 1GHz

APCM: Antenna Port Conducted Measurement

NOTE: 1. The EUT had been pre-tested on the positioned of each 2 axis. The radiated emission worst case was found when positioned on **Y-plane**

RADIATED EMISSION TEST (BELOW 1 GHz):

- ☒ 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (20MHz)	52 to 140	52	OFDM	BPSK	6.5

RADIATED EMISSION TEST (ABOVE 1 GHz):

- ☒ 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	52 to 140	52, 60, 64, 100, 116, 132, 140	OFDM	BPSK	6
802.11n (20MHz)	52 to 140	52, 60, 64, 100, 116, 132, 140	OFDM	BPSK	6.5
802.11n (40MHz)	52 to 140	54, 62, 102, 110, 134	OFDM	BPSK	13.5

ANTENNA PORT CONDUCTED 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	52 to 140	52, 60, 64, 100, 116, 132, 140	OFDM	BPSK	6
802.11n (20MHz)	52 to 140	52, 60, 64, 100, 116, 132, 140	OFDM	BPSK	6.5
802.11n (40MHz)	52 to 140	54, 62, 102, 110, 134	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE<1G	27deg. C, 67%RH	120Vac, 60Hz	Nelson Teng
RE ³ 1G	25deg. C, 65%RH	120Vac, 60Hz	Amos Chuang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Frank Liu
OB	25deg. C, 60%RH	120Vac, 60Hz	Frank Liu

3.3 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 v01r01

ANSI C63.10-2009

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

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

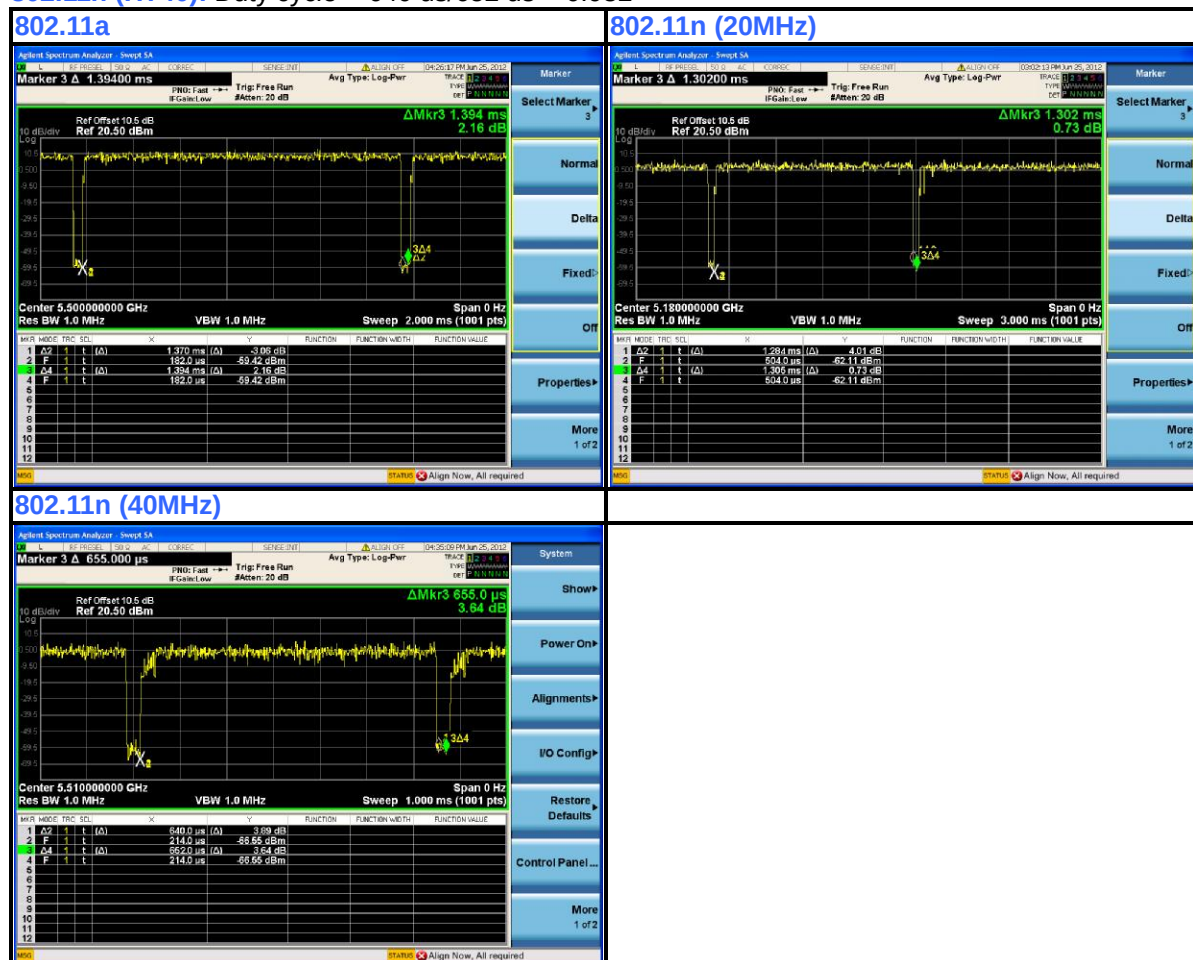
3.4 DUTY CYCLE OF TEST SIGNAL

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

802.11a: Duty cycle = 1.370 ms/1.394 ms = 0.983

802.11n (HT20): Duty cycle = 1.284 ms/1.305 ms = 0.984

802.11n (HT40): Duty cycle = 640 us/652 us = 0.982





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3.5 DESCRIPTION OF SUPPORT UNITS

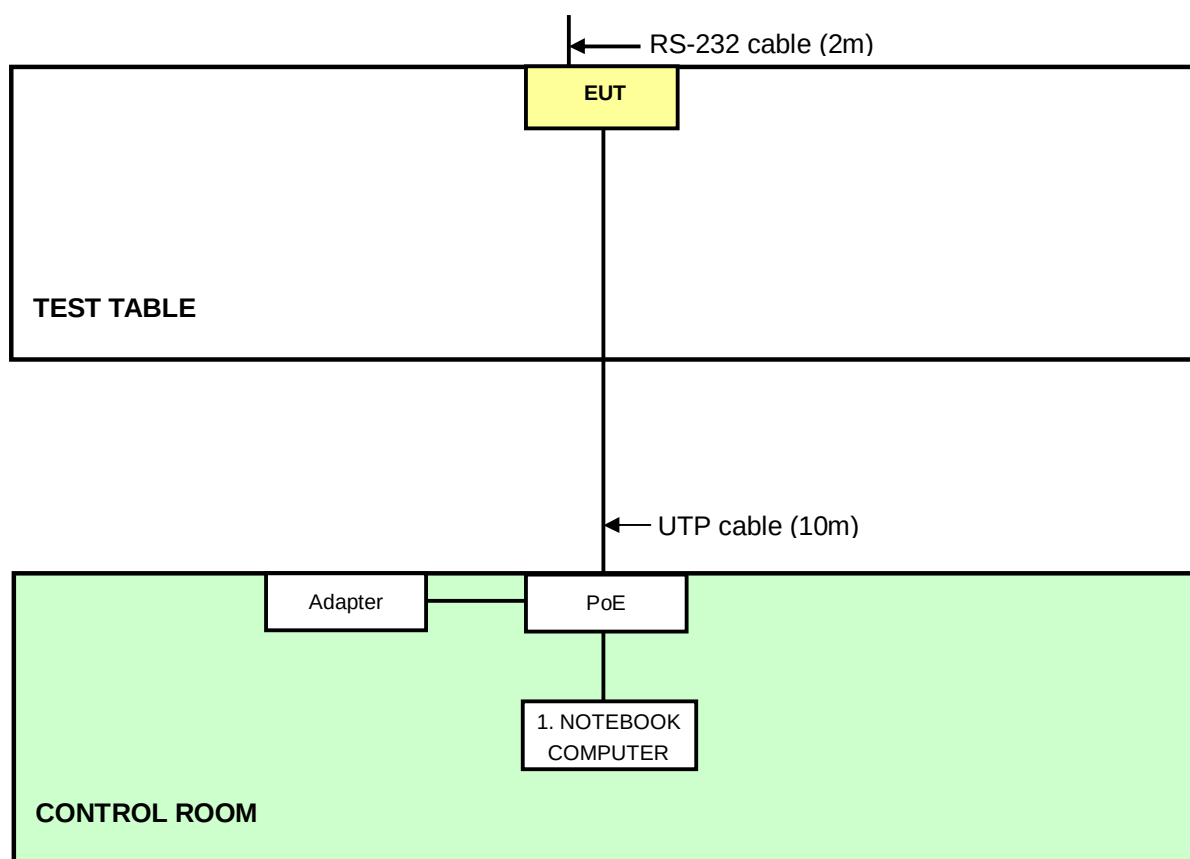
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable, 3m

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

3.6 CONFIGURATION OF SYSTEM UNDER TEST



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

Frequencies (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dBμV/m) *Note 3
5150~5250	-27	68.3
5250~5350	-27	68.3
5470~5725	-27	68.3
5725~5825	-27 *Note 1	68.3
	-17 *Note 2	78.3

Notes:

1. For frequencies 10MHz or greater above or below the band edge.
2. All emissions within the frequency range from the band edge to 10MHz above or below the band edge.
3. 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.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100036	Dec. 14, 2011	Dec. 13, 2012
Spectrum Analyzer Agilent PSA	E4446A	MY48250113	Nov. 30 , 2011	Nov. 29 , 2012
Pre_Amplifier HP	8449B	300801923	Oct. 31, 2011	Oct. 30, 2012
Test Receiver ROHDE & SCHWARZ	ESCS30	847124/029	Sep. 02, 2011	Sep. 01, 2012
TRILOG Broadband Antenna SCHWARZBECK	VULB 9168	138	Apr. 02, 2012	Apr. 01, 2013
Horn_Antenna SCHWARZBECK	BBHA9120	D124	Dec. 16, 2011	Dec. 15, 2012
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170153	Jan. 17, 2012	Jan. 16, 2013
Loop Antenna R&S	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
RF Switches	EMH-011	1001	Sep. 24, 2011	Sep. 23, 2012
RF Cable (Chaintek)	Sucoflex 106	RF106-102	Jan. 19, 2012	Jan. 18, 2013
RF Cable	8DFB	STCCAB-30M -1GHz	Sep. 24, 2011	Sep. 23, 2012
Software	ADT_Radiated _V7.6.15.9.2	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. * = The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in Open Site No. C.
5. The FCC Site Registration No. is 656396.
6. The VCCI Site Registration No. is R-1626.
7. The CANADA Site Registration No. is IC 7450G-3.
8. Tested Date: May 25 to June 08, 2012

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 10 meters open field site. 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 height of antenna 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 quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

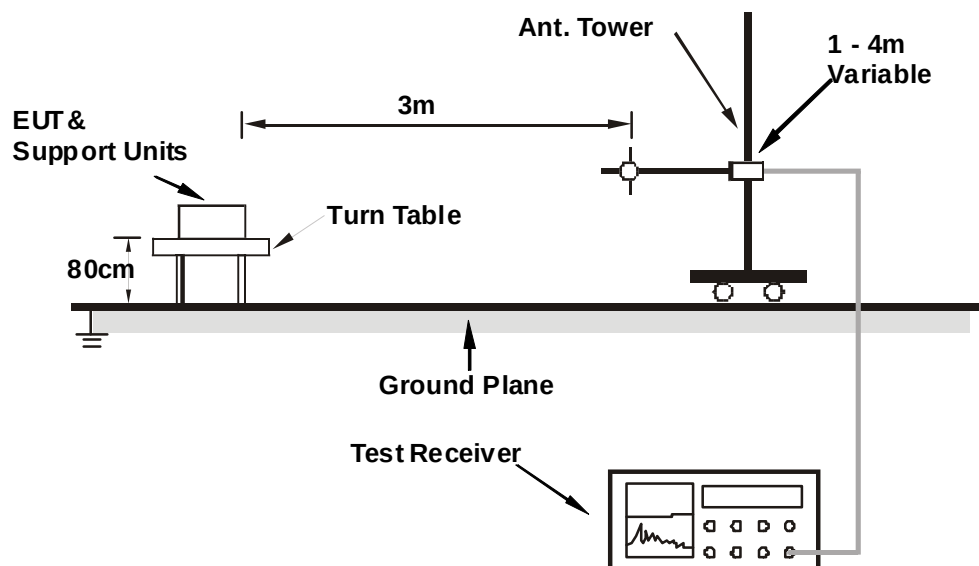
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz 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 related item – Photographs of the Test Configuration.

4.1.7 EUT OPERATING CONDITION

1. Turn on the power of EUT.
2. The communication partner run test program “artgui.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.8 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11n (20MHz)

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

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	126.18	25.4 QP	43.5	-18.1	1.75 H	314	12.19	13.25
2	216.51	26.9 QP	46.0	-19.1	1.24 H	175	14.19	12.71
3	250.01	41.4 QP	46.0	-4.6	1.10 H	151	27.00	14.38
4	375.86	35.1 QP	46.0	-10.9	1.00 H	0	16.54	18.52
5	481.27	41.1 QP	46.0	-4.9	1.50 H	18	19.55	21.56
6	999.24	26.2 QP	54.0	-27.8	1.25 H	250	-4.27	30.44
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	220.00	28.1 QP	46.0	-17.9	1.25 V	225	15.25	12.88
2	250.49	34.8 QP	46.0	-11.2	1.00 V	150	20.42	14.40
3	375.38	31.4 QP	46.0	-14.6	1.50 V	355	12.91	18.51
4	479.24	42.0 QP	46.0	-4.00	1.00 V	100	20.50	21.50
5	501.07	35.6 QP	46.0	-10.4	1.50 V	250	13.48	22.14
6	998.37	47.4 QP	54.0	-6.6	1.25 V	250	16.99	30.43

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.

ABOVE 1GHz DATA

802.11a

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	117.8 PK			1.09 H	172	81.08	36.72
2	*5260.00	110.2 AV			1.09 H	172	73.48	36.72
3	#10520.00	64.6 PK	68.3	-3.7	1.08 H	118	17.71	46.89
4	15780.00	61.2 PK	74.0	-12.8	1.00 H	255	13.11	48.09
5	15780.00	50.1 AV	54.0	-3.9	1.00 H	255	2.01	48.09
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	116.7 PK			1.15 V	149	79.98	36.72
2	*5260.00	108.5 AV			1.15 V	149	71.78	36.72
3	#10520.00	64.1 PK	68.3	-4.2	1.30 V	171	17.21	46.89
4	15780.00	60.8 PK	74.0	-13.2	1.00 V	182	12.71	48.09
5	15780.00	49.3 AV	54.0	-4.7	1.00 V	182	1.21	48.09

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 of the restricted band.



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CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	117.1 PK			1.04 H	168	80.30	36.80
2	*5300.00	109.7 AV			1.04 H	168	72.90	36.80
3	10600.00	61.3 PK	74.0	-12.7	1.08 H	116	14.39	46.91
4	10600.00	50.6 AV	54.0	-3.4	1.08 H	116	3.69	46.91
5	15900.00	62.3 PK	74.0	-11.7	1.01 H	255	14.89	47.41
6	15900.00	50.8 AV	54.0	-3.2	1.01 H	255	3.39	47.41
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	116.8 PK			1.20 V	163	80.00	36.80
2	*5300.00	108.3 AV			1.20 V	163	71.50	36.80
3	10600.00	59.9 PK	74.0	-14.1	1.36 V	173	12.99	46.91
4	10600.00	49.3 AV	54.0	-4.7	1.36 V	173	2.39	46.91
5	15900.00	60.6 PK	74.0	-13.4	1.00 V	197	13.19	47.41
6	15900.00	49.2 AV	54.0	-4.8	1.00 V	197	1.79	47.41

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.

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	114.9 PK			1.21 H	116	78.06	36.84
2	*5320.00	107.2 AV			1.21 H	116	70.36	36.84
3	5350.00	67.8 PK	74.0	-6.2	1.21 H	122	30.91	36.89
4	5350.00	53.2 AV	54.0	-0.8	1.21 H	122	16.31	36.89
5	10640.00	62.0 PK	74.0	-12.0	1.09 H	117	15.00	47.00
6	10640.00	50.7 AV	54.0	-3.3	1.09 H	117	3.70	47.00
7	15960.00	62.2 PK	74.0	-11.8	1.03 H	254	14.63	47.57
8	15960.00	50.8 AV	54.0	-3.2	1.03 H	254	3.23	47.57
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	114.2 PK			1.22 V	163	77.36	36.84
2	*5320.00	105.9 AV			1.22 V	163	69.06	36.84
3	5350.00	66.2 PK	74.0	-7.8	1.20 V	151	29.31	36.89
4	5350.00	51.3 AV	54.0	-2.7	1.20 V	151	14.41	36.89
5	10640.00	57.9 PK	74.0	-16.1	1.64 V	193	10.90	47.00
6	10640.00	45.8 AV	54.0	-8.2	1.64 V	193	-1.20	47.00
7	15960.00	59.8 PK	74.0	-14.2	1.19 V	121	12.23	47.57
8	15960.00	47.6 AV	54.0	-6.4	1.19 V	121	0.03	47.57

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.

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	5000.00	58.1 PK	74.0	-15.9	1.14 H	168	21.91	36.19
2	5000.00	51.4 AV	54.0	-2.6	1.14 H	168	15.21	36.19
3	5460.00	59.7 PK	74.0	-14.3	1.19 H	107	22.55	37.15
4	5460.00	48.2 AV	54.0	-5.8	1.19 H	107	11.05	37.15
5	#5470.00	67.5 PK	68.3	-0.8	1.16 H	109	30.33	37.17
6	*5500.00	114.5 PK			1.15 H	116	77.25	37.25
7	*5500.00	106.6 AV			1.15 H	116	69.35	37.25
8	11000.00	57.7 PK	74.0	-16.3	1.23 H	117	9.99	47.71
9	11000.00	45.6 AV	54.0	-8.4	1.23 H	117	-2.11	47.71
10	#16500.00	58.3 PK	68.3	-10.0	1.07 H	119	10.08	48.22
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	5000.00	54.6 PK	74.0	-19.4	1.18 V	156	18.41	36.19
2	5000.00	47.3 AV	54.0	-6.7	1.18 V	156	11.11	36.19
3	5460.00	59.0 PK	74.0	-15.0	1.16 V	134	21.85	37.15
4	5460.00	47.4 AV	54.0	-6.6	1.16 V	134	10.25	37.15
5	#5470.00	67.6 PK	68.3	-0.7	1.17 V	153	30.43	37.17
6	*5500.00	112.5 PK			1.19 V	148	75.25	37.25
7	*5500.00	104.9 AV			1.19 V	148	67.65	37.25
8	11000.00	55.6 PK	74.0	-18.4	1.58 V	184	7.89	47.71
9	11000.00	45.2 AV	54.0	-8.8	1.58 V	184	-2.51	47.71
10	#16500.00	57.8 PK	68.3	-10.5	1.28 V	203	9.58	48.22

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 of the restricted band.



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CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	117.7 PK			1.06 H	157	80.31	37.39
2	*5580.00	109.9 AV			1.06 H	157	72.51	37.39
3	11160.00	58.1 PK	74.0	-15.9	1.42 H	237	10.47	47.63
4	11160.00	47.1 AV	54.0	-6.9	1.42 H	237	-0.53	47.63
5	#16740.00	59.9 PK	68.3	-8.4	1.05 H	241	11.19	48.71
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	116.5 PK			1.11 V	153	79.11	37.39
2	*5580.00	108.2 AV			1.11 V	153	70.81	37.39
3	11160.00	61.3 PK	74.0	-12.7	1.35 V	181	13.67	47.63
4	11160.00	50.3 AV	54.0	-3.7	1.35 V	181	2.67	47.63
5	#16740.00	59.7 PK	68.3	-8.6	1.01 V	175	10.99	48.71

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 of the restricted band.



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CHANNEL	TX Channel 132	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	*5660.00	117.0 PK			1.07 H	164	79.39	37.61
2	*5660.00	109.7 AV			1.07 H	164	72.09	37.61
3	11320.00	59.5 PK	74.0	-14.5	1.25 H	232	11.73	47.77
4	11320.00	47.2 AV	54.0	-6.8	1.25 H	232	-0.57	47.77
5	#16980.00	60.0 PK	68.3	-8.3	1.03 H	239	11.04	48.96
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	*5660.00	116.6 PK			1.14 V	150	78.99	37.61
2	*5660.00	108.4 AV			1.14 V	150	70.79	37.61
3	11320.00	61.9 PK	74.0	-12.1	1.30 V	181	14.13	47.77
4	11320.00	50.7 AV	54.0	-3.3	1.30 V	181	2.93	47.77
5	#16980.00	59.4 PK	68.3	-8.9	1.00 V	169	10.44	48.96

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 of the restricted band.



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CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	112.7 PK			1.13 H	166	74.97	37.73
2	*5700.00	104.6 AV			1.13 H	166	66.87	37.73
3	#5725.00	67.2 PK	68.3	-1.1	1.13 H	167	29.40	37.80
4	11400.00	57.7 PK	74.0	-16.3	1.25 H	132	10.15	47.55
5	11400.00	45.3 AV	54.0	-8.7	1.25 H	132	-2.25	47.55
6	#17100.00	58.2 PK	68.3	-10.1	1.09 H	123	8.39	49.81
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	*5700.00	112.5 PK			1.22 V	154	74.77	37.73
2	*5700.00	104.5 AV			1.22 V	154	66.77	37.73
3	#5725.00	67.1 PK	68.3	-1.2	1.23 V	154	29.30	37.80
4	11400.00	55.3 PK	74.0	-18.7	1.52 V	199	7.75	47.55
5	11400.00	45.2 AV	54.0	-8.8	1.52 V	199	-2.35	47.55
6	#17100.00	57.5 PK	68.3	-10.8	1.26 V	204	7.69	49.81

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 of the restricted band.

802.11n (20MHz)

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	117.3 PK			1.09 H	173	80.58	36.72
2	*5260.00	109.1 AV			1.09 H	173	72.38	36.72
3	#10520.00	59.6 PK	68.3	-8.7	1.24 H	228	12.71	46.89
4	15780.00	61.2 PK	74.0	-12.8	1.02 H	252	13.11	48.09
5	15780.00	49.7 AV	54.0	-4.3	1.02 H	252	1.61	48.09
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	116.0 PK			1.15 V	138	79.28	36.72
2	*5260.00	108.1 AV			1.15 V	138	71.38	36.72
3	#10520.00	62.5 PK	68.3	-5.8	1.26 V	173	15.61	46.89
4	15780.00	60.1 PK	74.0	-13.9	1.00 V	181	12.01	48.09
5	15780.00	49.2 AV	54.0	-4.8	1.00 V	181	1.11	48.09

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 of the restricted band.



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CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	116.3 PK			1.10 H	169	79.50	36.80
2	*5300.00	108.1 AV			1.10 H	169	71.30	36.80
3	10600.00	61.6 PK	74.0	-12.4	1.09 H	116	14.69	46.91
4	10600.00	50.8 AV	54.0	-3.2	1.09 H	116	3.89	46.91
5	15900.00	59.6 PK	74.0	-14.4	1.02 H	255	12.19	47.41
6	15900.00	49.7 AV	54.0	-4.3	1.02 H	255	2.29	47.41
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	117.4 PK			1.18 V	151	80.60	36.80
2	*5300.00	108.1 AV			1.18 V	151	71.30	36.80
3	10600.00	60.7 PK	74.0	-13.3	1.35 V	175	13.79	46.91
4	10600.00	49.9 AV	54.0	-4.1	1.35 V	175	2.99	46.91
5	15900.00	59.8 PK	74.0	-14.2	1.00 V	165	12.39	47.41
6	15900.00	48.3 AV	54.0	-5.7	1.00 V	165	0.89	47.41

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.

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	5000.00	58.7 PK	74.0	-15.3	1.14 H	170	22.51	36.19
2	5000.00	52.5 AV	54.0	-1.5	1.14 H	170	16.31	36.19
3	*5320.00	113.0 PK			1.21 H	169	76.16	36.84
4	*5320.00	104.0 AV			1.21 H	169	67.16	36.84
5	5350.00	68.6 PK	74.0	-5.4	1.20 H	165	31.71	36.89
6	5350.00	52.8 AV	54.0	-1.2	1.20 H	165	15.91	36.89
7	10640.00	55.2 PK	74.0	-18.8	1.15 H	249	8.20	47.00
8	10640.00	45.1 AV	54.0	-8.9	1.15 H	249	-1.90	47.00
9	15960.00	59.2 PK	74.0	-14.8	1.10 H	247	11.63	47.57
10	15960.00	46.8 AV	54.0	-7.2	1.10 H	247	-0.77	47.57
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	113.9 PK			1.18 V	165	77.06	36.84
2	*5320.00	105.7 AV			1.18 V	165	68.86	36.84
3	5350.00	68.4 PK	74.0	-5.6	1.21 V	163	31.51	36.89
4	5350.00	50.9 AV	54.0	-3.1	1.21 V	163	14.01	36.89
5	10640.00	54.9 PK	74.0	-19.1	1.38 V	180	7.90	47.00
6	10640.00	44.7 AV	54.0	-9.3	1.38 V	180	-2.30	47.00
7	15960.00	58.9 PK	74.0	-15.1	1.05 V	217	11.33	47.57
8	15960.00	46.8 AV	54.0	-7.2	1.05 V	217	-0.77	47.57

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.

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	60.3 PK	74.0	-13.7	1.14 H	116	23.15	37.15
2	5460.00	48.3 AV	54.0	-5.7	1.14 H	116	11.15	37.15
3	#5470.00	67.8 PK	68.3	-0.5	1.17 H	108	30.63	37.17
4	*5500.00	113.9 PK			1.14 H	110	76.65	37.25
5	*5500.00	105.5 AV			1.14 H	110	68.25	37.25
6	11000.00	55.3 PK	74.0	-18.7	1.19 H	236	7.59	47.71
7	11000.00	44.8 AV	54.0	-9.2	1.19 H	236	-2.91	47.71
8	#16500.00	58.3 PK	68.3	-10.0	1.07 H	244	10.08	48.22
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	5460.00	59.3 PK	74.0	-14.7	1.15 V	148	22.15	37.15
2	5460.00	47.8 AV	54.0	-6.2	1.15 V	148	10.65	37.15
3	#5470.00	66.7 PK	68.3	-1.6	1.00 V	164	29.53	37.17
4	*5500.00	114.0 PK			1.13 V	162	76.75	37.25
5	*5500.00	105.2 AV			1.13 V	162	67.95	37.25
6	11000.00	55.1 PK	74.0	-18.9	1.52 V	188	7.39	47.71
7	11000.00	44.7 AV	54.0	-9.3	1.52 V	188	-3.01	47.71
8	#16500.00	57.9 PK	68.3	-10.4	1.24 V	205	9.68	48.22

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 of the restricted band.

CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	5000.00	57.1 PK	74.0	-16.9	1.15 H	171	20.91	36.19
2	5000.00	50.3 AV	54.0	-3.7	1.15 H	171	14.11	36.19
3	*5580.00	116.9 PK			1.11 H	159	79.51	37.39
4	*5580.00	109.5 AV			1.11 H	159	72.11	37.39
5	11160.00	58.2 PK	74.0	-15.8	1.43 H	236	10.57	47.63
6	11160.00	45.9 AV	54.0	-8.1	1.43 H	236	-1.73	47.63
7	#16740.00	63.3 PK	68.3	-5.0	1.03 H	268	14.59	48.71
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	116.9 PK			1.12 V	122	79.51	37.39
2	*5580.00	108.8 AV			1.12 V	122	71.41	37.39
3	11160.00	57.7 PK	74.0	-16.3	1.19 V	239	10.07	47.63
4	11160.00	46.4 AV	54.0	-7.6	1.19 V	239	-1.23	47.63
5	#16740.00	63.2 PK	68.3	-5.1	1.00 V	190	14.49	48.71

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 of the restricted band.



A D T

CHANNEL	TX Channel 132	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	*5660.00	117.8 PK			1.19 H	173	80.19	37.61
2	*5660.00	109.5 AV			1.19 H	173	71.89	37.61
3	11320.00	56.4 PK	74.0	-17.6	1.23 H	235	8.63	47.77
4	11320.00	46.3 AV	54.0	-7.7	1.23 H	235	-1.47	47.77
5	#16980.00	63.8 PK	68.3	-4.5	1.08 H	262	14.84	48.96
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	*5660.00	116.6 PK			1.13 V	155	78.99	37.61
2	*5660.00	108.4 AV			1.13 V	155	70.79	37.61
3	11320.00	56.2 PK	74.0	-17.8	1.24 V	243	8.43	47.77
4	11320.00	46.6 AV	54.0	-7.4	1.24 V	243	-1.17	47.77
5	#16980.00	63.5 PK	68.3	-4.8	1.06 V	197	14.54	48.96

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 of the restricted band.

CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	110.7 PK			1.13 H	120	72.97	37.73
2	*5700.00	103.1 AV			1.13 H	120	65.37	37.73
3	#5725.00	67.1 PK	68.3	-1.2	1.13 H	163	29.30	37.80
4	11400.00	57.6 PK	74.0	-16.4	1.24 H	140	10.05	47.55
5	11400.00	45.2 AV	54.0	-8.8	1.24 H	140	-2.35	47.55
6	#17100.00	57.7 PK	68.3	-10.6	1.06 H	113	7.89	49.81
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	*5700.00	111.5 PK			1.22 V	154	73.77	37.73
2	*5700.00	103.9 AV			1.22 V	154	66.17	37.73
3	#5725.00	67.3 PK	68.3	-1.0	1.24 V	155	29.50	37.80
4	11400.00	55.3 PK	74.0	-18.7	1.51 V	193	7.75	47.55
5	11400.00	45.2 AV	54.0	-8.8	1.51 V	193	-2.35	47.55
6	#17100.00	57.3 PK	68.3	-11.0	1.26 V	213	7.49	49.81

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 of the restricted band.

802.11n (40MHz)

CHANNEL	TX Channel 54	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	*5270.00	113.8 PK			1.22 H	174	77.06	36.74
2	*5270.00	105.5 AV			1.22 H	174	68.76	36.74
3	#10540.00	64.8 PK	68.3	-3.5	1.12 H	130	17.90	46.90
4	15810.00	58.4 PK	74.0	-15.6	1.03 H	254	10.37	48.03
5	15810.00	48.3 AV	54.0	-5.7	1.03 H	254	0.27	48.03
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	*5270.00	114.5 PK			1.18 V	130	77.76	36.74
2	*5270.00	106.5 AV			1.18 V	130	69.76	36.74
3	#10540.00	64.1 PK	68.3	-4.2	1.22 V	169	17.20	46.90
4	15810.00	56.8 PK	74.0	-17.2	1.07 V	181	8.77	48.03
5	15810.00	47.1 AV	54.0	-6.9	1.07 V	181	-0.93	48.03

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 of the restricted band.

CHANNEL	TX Channel 62	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	105.4 PK			1.18 H	169	68.58	36.82
2	*5310.00	97.1 AV			1.18 H	169	60.28	36.82
3	5350.00	64.7 PK	74.0	-9.3	1.22 H	177	27.81	36.89
4	5350.00	52.8 AV	54.0	-1.2	1.22 H	177	15.91	36.89
5	10620.00	54.1 PK	74.0	-19.9	1.26 H	288	7.15	46.95
6	10620.00	44.0 AV	54.0	-10.0	1.26 H	288	-2.95	46.95
7	15930.00	57.6 PK	74.0	-16.4	1.18 H	124	10.11	47.49
8	15930.00	45.1 AV	54.0	-8.9	1.18 H	124	-2.39	47.49
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	105.5 PK			1.16 V	130	68.68	36.82
2	*5310.00	97.0 AV			1.16 V	130	60.18	36.82
3	5350.00	63.5 PK	74.0	-10.5	1.16 V	160	26.61	36.89
4	5350.00	51.2 AV	54.0	-2.8	1.16 V	160	14.31	36.89
5	10620.00	53.7 PK	74.0	-20.3	1.26 V	281	6.75	46.95
6	10620.00	43.6 AV	54.0	-10.4	1.26 V	281	-3.35	46.95
7	15930.00	57.5 PK	74.0	-16.5	1.21 V	137	10.01	47.49
8	15930.00	45.1 AV	54.0	-8.9	1.21 V	137	-2.39	47.49

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.

CHANNEL	TX Channel 102	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	61.9 PK	74.0	-12.1	1.25 H	110	24.75	37.15
2	5460.00	47.6 AV	54.0	-6.4	1.25 H	110	10.45	37.15
3	#5470.00	67.8 PK	68.3	-0.5	1.17 H	101	30.63	37.17
4	*5510.00	106.1 PK			1.16 H	117	68.83	37.27
5	*5510.00	98.1 AV			1.16 H	117	60.83	37.27
6	11020.00	53.7 PK	74.0	-20.3	1.23 H	286	6.01	47.69
7	11020.00	43.7 AV	54.0	-10.3	1.23 H	286	-3.99	47.69
8	#16530.00	57.8 PK	68.3	-10.5	1.13 H	110	9.58	48.22
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	5460.00	61.8 PK	74.0	-12.2	1.14 V	128	24.65	37.15
2	5460.00	47.3 AV	54.0	-6.7	1.14 V	128	10.15	37.15
3	#5470.00	67.3 PK	68.3	-1.0	1.19 V	133	30.13	37.17
4	*5510.00	105.9 PK			1.14 V	123	68.63	37.27
5	*5510.00	97.8 AV			1.14 V	123	60.53	37.27
6	11020.00	54.2 PK	74.0	-19.8	1.22 V	270	6.51	47.69
7	11020.00	43.2 AV	54.0	-10.8	1.22 V	270	-4.49	47.69
8	#16530.00	57.3 PK	68.3	-11.0	1.23 V	147	9.08	48.22

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 of the restricted band.



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CHANNEL	TX Channel 110	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	*5550.00	113.2 PK			1.26 H	112	75.87	37.33
2	*5550.00	105.0 AV			1.26 H	112	67.67	37.33
3	11100.00	57.3 PK	74.0	-16.7	1.33 H	112	9.71	47.59
4	11100.00	45.6 AV	54.0	-8.4	1.33 H	112	-1.99	47.59
5	#16650.00	64.7 PK	68.3	-3.6	1.13 H	191	16.24	48.46
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	*5550.00	114.2 PK			1.20 V	146	76.87	37.33
2	*5550.00	106.4 AV			1.20 V	146	69.07	37.33
3	11100.00	56.2 PK	74.0	-17.8	1.56 V	166	8.61	47.59
4	11100.00	45.9 AV	54.0	-8.1	1.56 V	166	-1.69	47.59
5	#16650.00	64.5 PK	68.3	-3.8	1.27 V	129	16.04	48.46

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 of the restricted band.

CHANNEL	TX Channel 134	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	*5670.00	111.0 PK			1.24 H	164	73.36	37.64
2	*5670.00	103.1 AV			1.24 H	164	65.46	37.64
3	#5725.00	67.6 PK	68.3	-0.7	1.37 H	135	29.80	37.80
4	11340.00	59.8 PK	74.0	-14.2	1.18 H	240	12.08	47.72
5	11340.00	44.3 AV	54.0	-9.7	1.18 H	240	-3.42	47.72
6	#17010.00	65.8 PK	68.3	-2.5	1.07 H	126	16.68	49.12
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	*5670.00	111.4 PK			1.23 V	153	73.76	37.64
2	*5670.00	102.7 AV			1.23 V	153	65.06	37.64
3	#5725.00	67.7 PK	68.3	-0.6	1.32 V	119	29.90	37.80
4	11340.00	59.6 PK	74.0	-14.4	1.22 V	254	11.88	47.72
5	11340.00	44.4 AV	54.0	-9.6	1.22 V	254	-3.32	47.72
6	#17010.00	65.3 PK	68.3	-3.0	1.30 V	137	16.18	49.12

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 of the restricted band.

4.2 OCCUPIED BANDWIDTH MEASUREMENT

4.2.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 14, 2011	Dec. 13, 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. Tested date : June 21, 2012

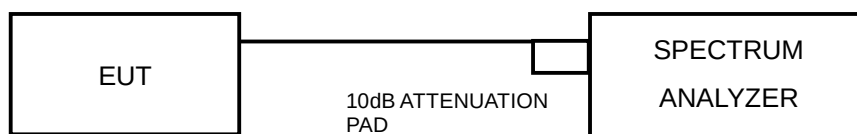
4.2.2 TEST PROCEDURE

1. Set RBW $\geq 1\%$ of the emission bandwidth.
2. Set the VBW $> 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Record the 99% emission bandwidth.

4.2.3 DEVIATION FROM TEST STANDARD

No deviation

4.2.4 TEST SETUP



4.2.5 EUT OPERATING CONDITIONS

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

4.2.6 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
52	5260	20.50	24.00
60	5300	21.40	24.40
64	5320	17.30	17.30
100	5500	17.10	17.20
116	5580	19.20	20.00
132	5660	18.10	19.80
140	5700	17.00	17.20

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
52	5260	22.70	25.60
60	5300	19.40	23.20
64	5320	18.10	18.30
100	5500	18.30	18.10
116	5580	20.20	20.80
132	5660	18.40	20.10
140	5700	17.90	18.10

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
54	5270	46.00	53.40
62	5310	37.60	37.20
102	5510	37.00	37.60
110	5550	40.60	42.80
134	5670	38.00	37.80

4.3 TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF TRANSMIT POWER MEASUREMENT

Frequency Band	Limit
5.15 – 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.47 – 5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

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

4.3.2 TEST INSTRUMENTS

FOR POWER OUTPUT MEASUREMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	0824006	May 10, 2012	May 09, 2013
Average Power Sensor	MA2411B	0738172	May 10, 2012	May 09, 2013

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. Tested date : June 21, 2012

FOR 26dB OCCUPIED BANDWIDTH

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250113	Nov. 30, 2011	Nov. 29, 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. Tested date : June 21, 2012

4.3.3 TEST PROCEDURE

FOR AVERAGE POWER MEASUREMENT

An average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor. Record the power level.

FOR 26dB OCCUPIED BANDWIDTH

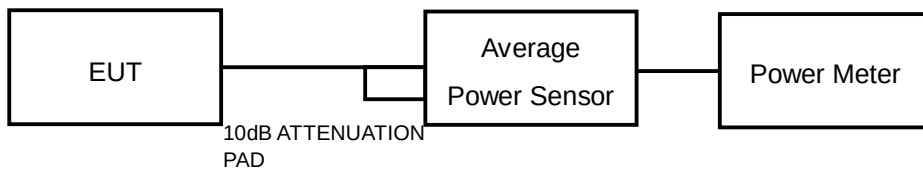
- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = Peak.
- 4) Trace mode = max hold.
- 5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat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

4.3.4 DEVIATION FROM TEST STANDARD

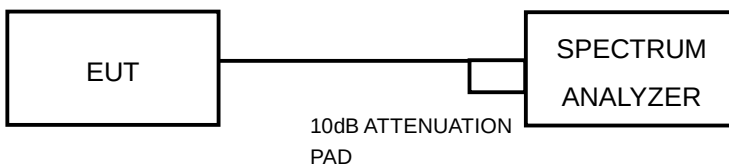
No deviation

4.3.5 TEST SETUP

FOR POWER OUTPUT MEASUREMENT



FOR 26dB OCCUPIED BANDWIDTH



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	19.00	19.80	174.932	22.43	23.11	PASS
60	5300	19.30	19.90	182.838	22.62	23.11	PASS
64	5320	15.50	15.90	74.386	18.71	23.11	PASS
100	5500	16.30	15.90	81.563	19.11	23.15	PASS
116	5580	19.70	19.30	178.439	22.51	23.15	PASS
132	5660	17.80	18.50	131.051	21.17	23.15	PASS
140	5700	13.30	15.00	53.003	17.24	23.15	PASS

For 5250MHz ~ 5350MHz:

$$\text{Directional gain} = 10 \log[(10^{G_{1/20}} + 10^{G_{2/20}}) / 2]$$

$$\text{Effective Legacy Gain (dBi)} = 6.89$$

The effective legacy gain is 6.89dBi, therefore the limit needs to reduce.

For 5470MHz ~ 5725MHz:

$$\text{Directional gain} = 10 \log[(10^{G_{1/20}} + 10^{G_{2/20}}) / 2]$$

$$\text{Effective Legacy Gain (dBi)} = 6.85$$

The effective legacy gain is 6.85dBi, therefore the limit needs to reduce.

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	19.50	19.90	186.849	22.71	24	PASS
60	5300	18.50	19.10	152.078	21.82	24	PASS
64	5320	15.10	16.10	73.097	18.64	24	PASS
100	5500	16.50	15.20	77.781	18.91	24	PASS
116	5580	19.50	19.20	172.301	22.36	24	PASS
132	5660	18.10	18.70	138.696	21.42	24	PASS
140	5700	13.30	15.20	54.493	17.36	24	PASS



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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	19.80	20.10	197.828	22.96	24	PASS
62	5310	10.60	11.20	24.665	13.92	24	PASS
102	5510	12.50	10.40	28.748	14.59	24	PASS
110	5550	19.90	18.70	171.855	22.35	24	PASS
134	5670	15.80	16.20	79.706	19.01	24	PASS

26dB BANDWIDTH:

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
52	5260	42.41	43.66
60	5300	40.70	42.58
64	5320	28.07	32.52
100	5500	25.47	25.63
116	5580	40.90	40.73
132	5660	37.27	40.77
140	5700	24.29	25.98

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
52	5260	44.08	44.63
60	5300	42.26	45.43
64	5320	27.08	35.31
100	5500	28.32	26.75
116	5580	42.36	45.08
132	5660	38.25	43.77
140	5700	24.49	26.99

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
54	5270	96.51	99.10
62	5310	53.86	52.22
102	5510	54.42	52.15
110	5550	91.77	96.33
134	5670	56.94	74.27

4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Frequency Band	Limit
5.15 ~ 5.25GHz	4dBm
5.25 ~ 5.35GHz	11dBm
5.47 ~ 5.725GHz	11dBm
5.725 ~ 5.825GHz	17dBm

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250113	Nov. 30, 2011	Nov. 29, 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. Tested date : June 21, 2012

4.4.3 TEST PROCEDURES

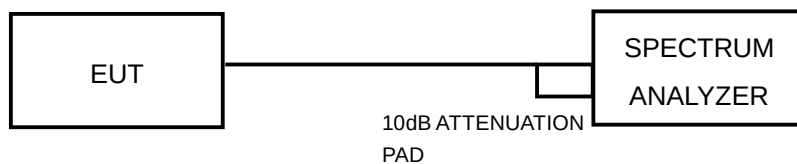
Using method SA-1

- 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 = auto, trigger set to "free run".
- 4) Trace average at least 100 traces in power averaging mode.
- 5) Record the max value

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



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 POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
52	5260	5.25	6.49	8.92	10.11	PASS
60	5300	5.39	6.34	8.77	10.11	PASS
64	5320	2.38	3.35	5.79	10.11	PASS
100	5500	4.03	4.19	6.73	10.15	PASS
116	5580	6.69	7.76	10.10	10.15	PASS
132	5660	5.17	7.25	9.26	10.15	PASS
140	5700	0.72	2.70	4.75	10.15	PASS

For 5250MHz ~ 5350MHz:

Directional gain = $10 \log[(10^{G_{1/20}} + 10^{G_{2/20}})^2 / 2]$

Effective Legacy Gain (dBi) = 6.89

The effective legacy gain is 6.89dBi, therefore the limit needs to reduce.

For 5470MHz ~ 5725MHz:

Directional gain = $10 \log[(10^{G_{1/20}} + 10^{G_{2/20}})^2 / 2]$

Effective Legacy Gain (dBi) = 6.85

The effective legacy gain is 6.85dBi, therefore the limit needs to reduce.

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.

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
52	5260	5.39	6.43	8.80	11	PASS
60	5300	4.43	5.56	7.96	11	PASS
64	5320	1.87	3.08	5.36	11	PASS
100	5500	3.68	3.80	6.39	11	PASS
116	5580	6.49	8.05	10.19	11	PASS
132	5660	5.00	7.01	8.97	11	PASS
140	5700	0.16	2.44	4.36	11	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.

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
54	5270	2.82	3.51	6.10	11	PASS
62	5310	-5.39	-4.93	-2.33	11	PASS
102	5510	-3.06	-3.15	-0.48	11	PASS
110	5550	3.83	4.81	7.31	11	PASS
134	5670	-0.38	1.33	3.29	11	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.

4.5 PEAK POWER EXCURSION MEASUREMENT

4.5.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Shall not exceed 13 dB

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250113	Nov. 30, 2011	Nov. 29, 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. Tested date : June 21, 2012

4.5.3 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.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITIONS

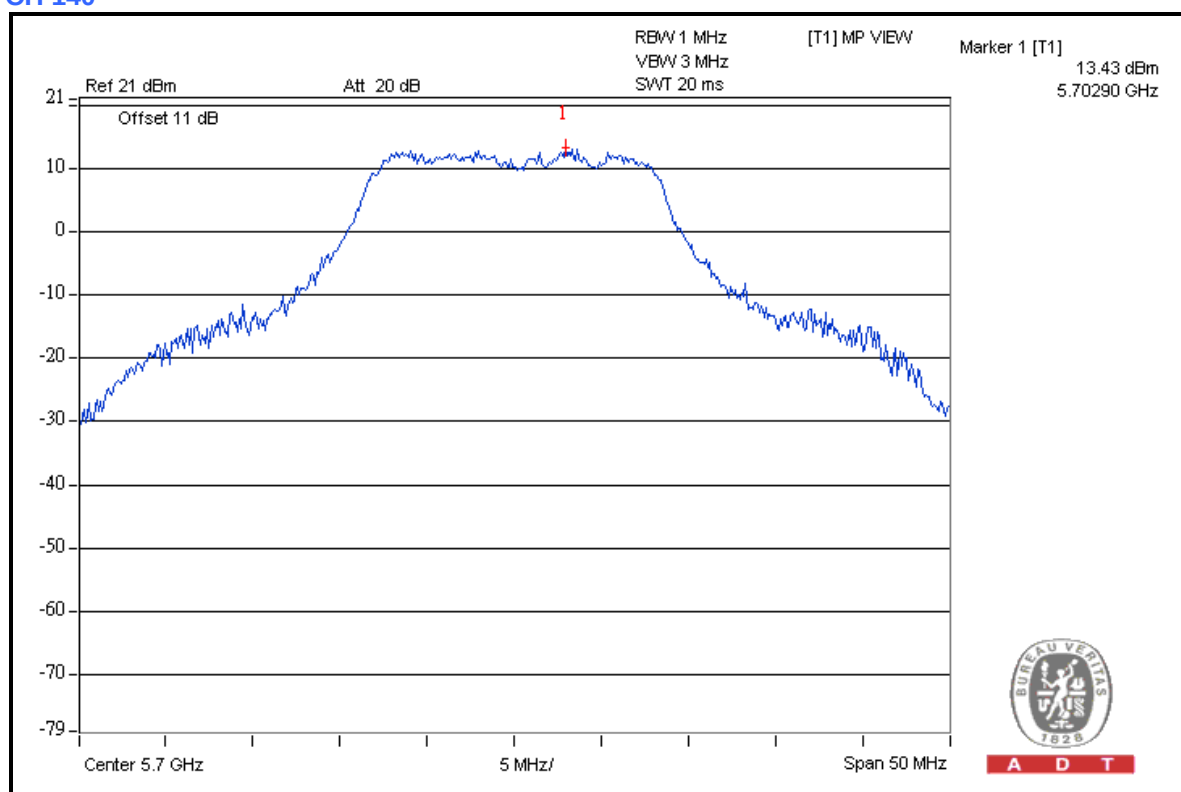
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.5.7 TEST RESULTS

802.11a

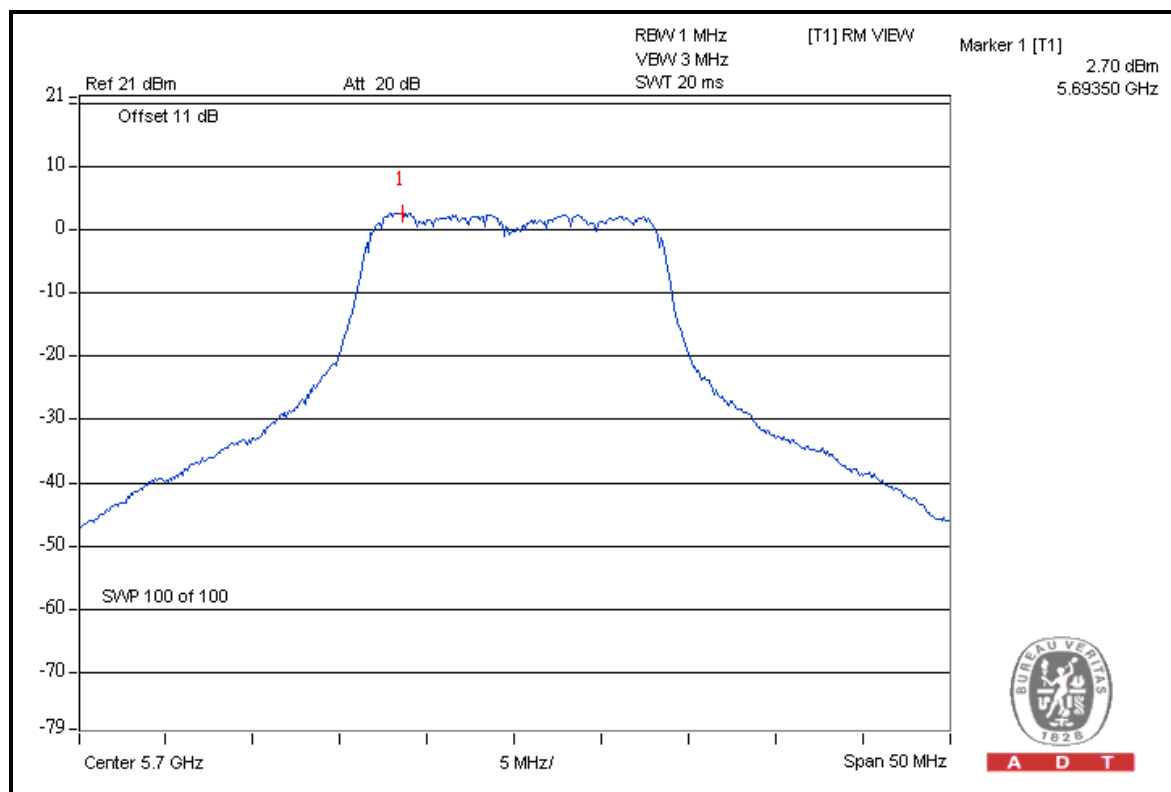
CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)		PPSD (dBm)		PEAK EXCURSION (dB)		LIMIT (dB)	PASS/ FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1		
52	5260	14.89	16.24	5.25	6.49	9.64	9.75	13	PASS
60	5300	14.75	16.05	5.39	6.34	9.36	9.71	13	PASS
64	5320	11.75	13.83	2.38	3.35	9.37	10.48	13	PASS
100	5500	12.99	13.89	4.03	4.19	8.96	9.70	13	PASS
116	5580	15.83	18.18	6.69	7.76	9.14	10.42	13	PASS
132	5660	14.23	17.03	5.17	7.25	9.06	9.78	13	PASS
140	5700	10.24	13.43	0.72	2.70	9.52	10.73	13	PASS

CH 140





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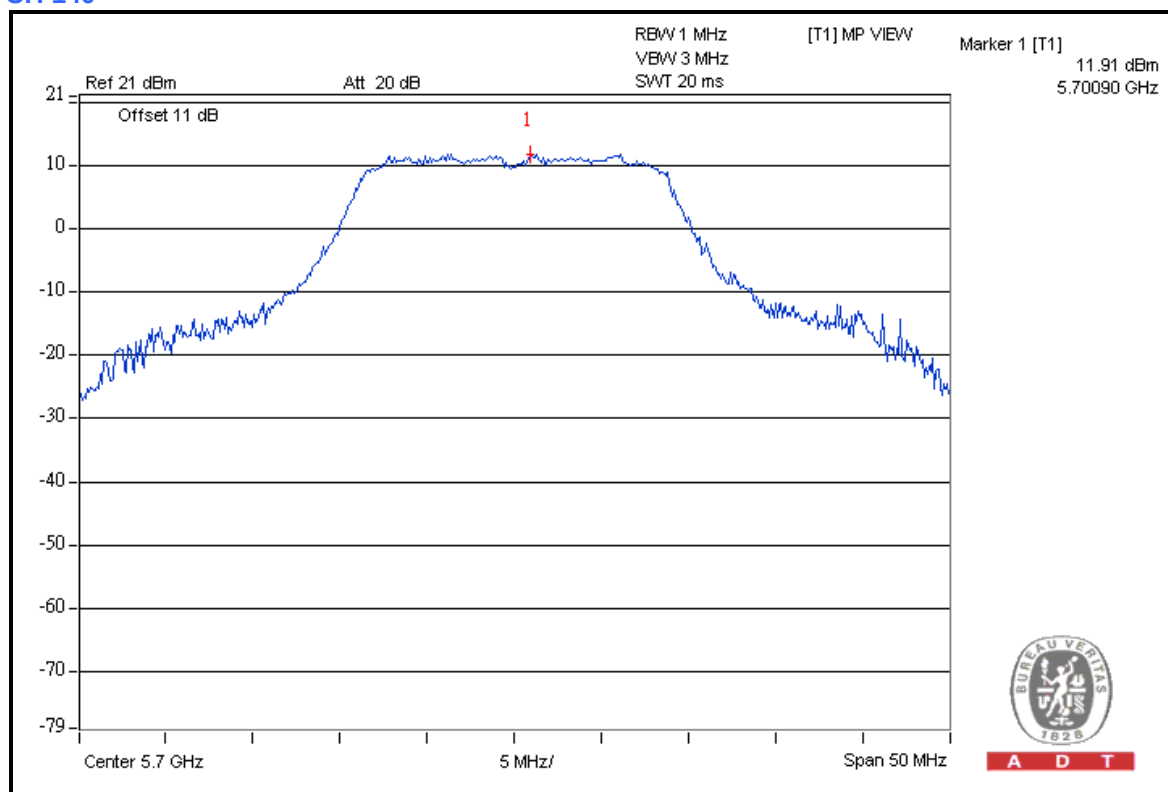


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802.11n (20MHz)

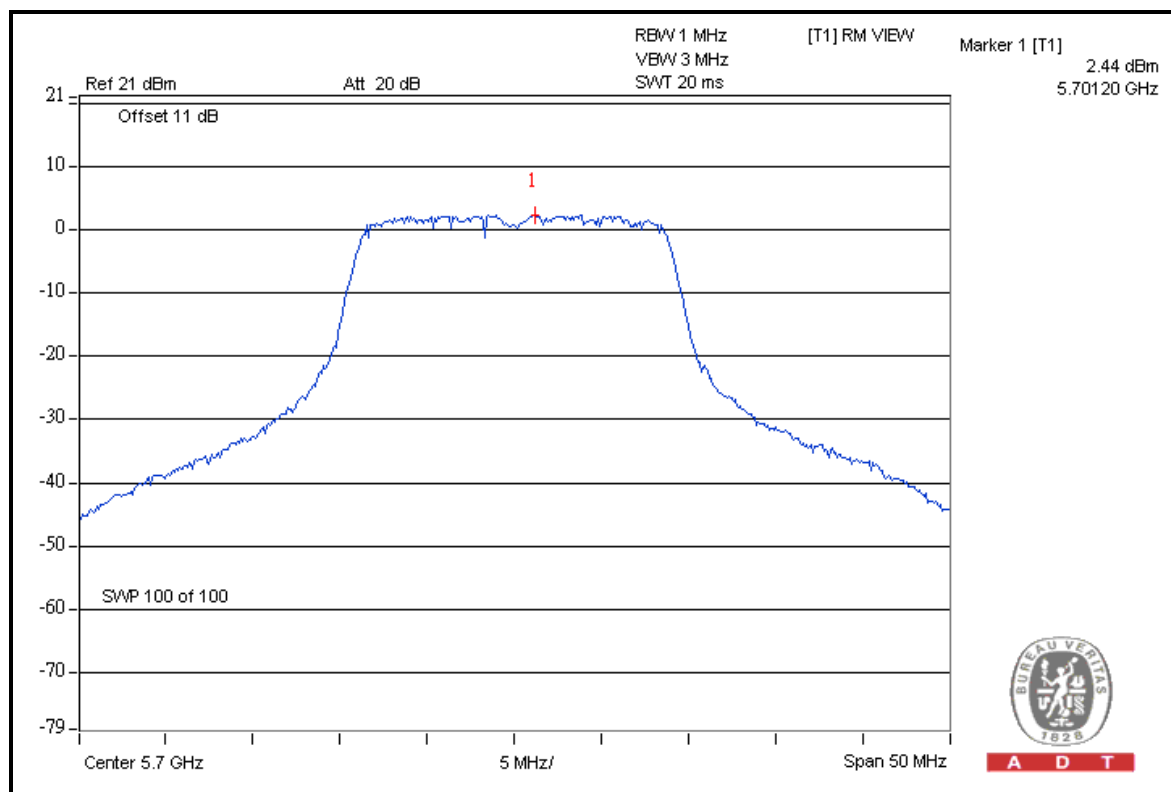
CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)		PPSD (dBm)		PEAK EXCURSION (dB)		LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1		
52	5260	14.69	15.67	5.39	6.43	9.30	9.24	13	PASS
60	5300	13.61	14.60	4.43	5.56	9.18	9.04	13	PASS
64	5320	10.93	12.31	1.87	3.08	9.06	9.23	13	PASS
100	5500	12.73	13.21	3.68	3.80	9.05	9.41	13	PASS
116	5580	15.80	17.21	6.49	8.05	9.31	9.16	13	PASS
132	5660	14.30	16.17	5.00	7.01	9.30	9.16	13	PASS
140	5700	9.38	11.91	0.16	2.44	9.22	9.47	13	PASS

CH 140





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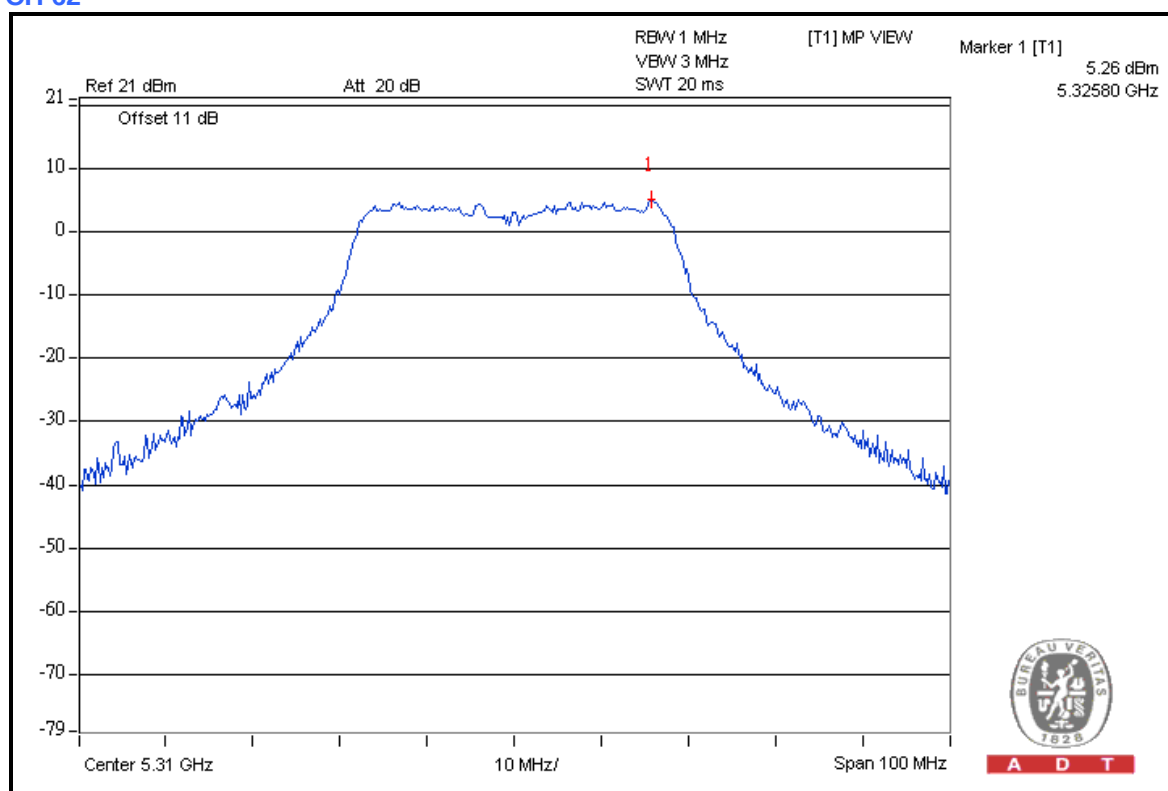


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802.11n (40MHz)

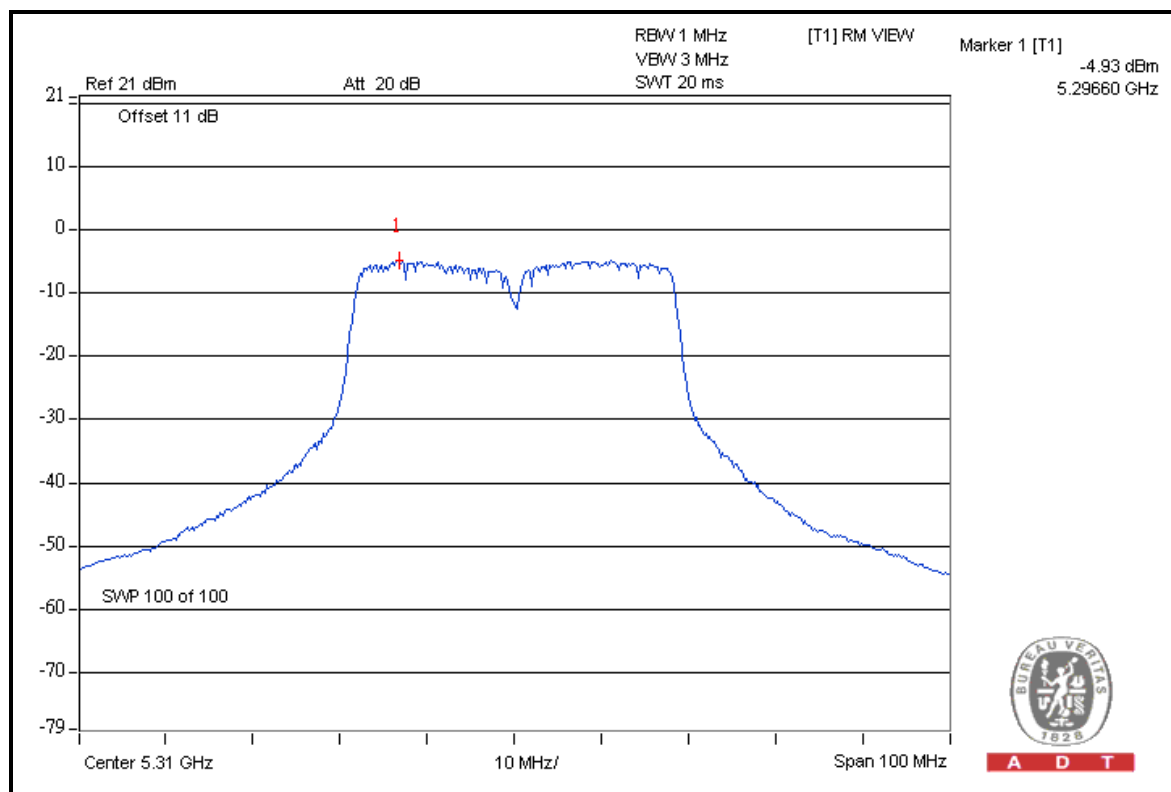
CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)		PPSD (dBm)		PEAK EXCURSION (dB)		LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1		
54	5270	12.21	13.14	2.82	3.51	9.39	9.63	13	PASS
62	5310	3.84	5.26	-5.39	-4.93	9.23	10.19	13	PASS
102	5510	6.75	6.26	-3.06	-3.15	9.81	9.41	13	PASS
110	5550	13.47	14.14	3.83	4.81	9.64	9.33	13	PASS
134	5670	9.25	11.03	-0.38	1.33	9.63	9.70	13	PASS

CH 62





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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 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 14, 2011	Dec. 13, 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. Tested date : June 21, 2012

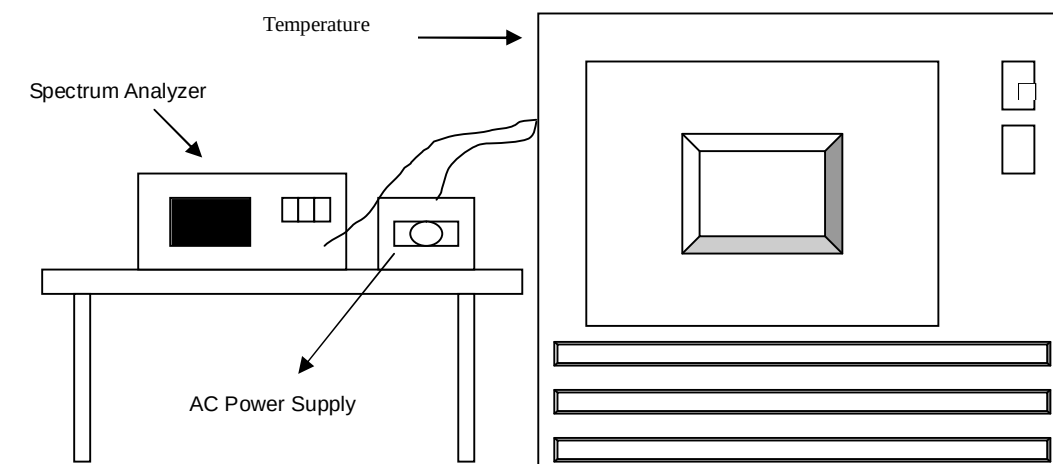
4.6.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. 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.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. 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.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

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

4.6.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	ppm	(MHz)	ppm	(MHz)	ppm	(MHz)	ppm
50	120	5320.0132	2.4812	5320.0103	1.9361	5320.0146	2.7444	5320.0198	3.7218
40	120	5319.9994	-0.1128	5320.0003	0.0564	5320.0037	0.6955	5320.0051	0.9586
30	120	5319.9796	-3.8346	5319.9756	-4.5865	5319.9761	-4.4925	5319.9718	-5.3008
20	120	5320.003	0.5639	5320.0073	1.3722	5320.0069	1.2970	5320.0011	0.2068
10	120	5319.9876	-2.3308	5319.9911	-1.6729	5319.9934	-1.2406	5319.9924	-1.4286
0	120	5319.9918	-1.5414	5319.9925	-1.4098	5319.9932	-1.2782	5319.9892	-2.0301
-10	120	5319.9900	-1.8797	5319.9937	-1.1842	5319.9907	-1.7481	5319.9871	-2.4248
-20	120	5320.0074	1.3910	5320.0086	1.6165	5320.0080	1.5038	5320.0066	1.2406
-30	120	5320.0103	1.9361	5320.0069	1.2970	5320.0048	0.9023	5320.0056	1.0526

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	ppm	(MHz)	ppm	(MHz)	ppm	(MHz)	ppm
20	138	5320.0030	0.5639	5320.0077	1.4474	5320.0067	1.2594	5320.0013	0.2444
	120	5320.0030	0.5639	5320.0073	1.3722	5320.0069	1.2970	5320.0011	0.2068
	102	5320.0030	0.5639	5320.0064	1.2030	5320.0063	1.1842	5320.0014	0.2632

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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Email: service.adt@tw.bureauveritas.com

Web Site: www.adt.com.tw

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 ---