FCC Test Report

Report No.:	RF141226D01-1
FCC ID:	P279962MCI
Test Model:	9962 Multi-Standard Enterprise Cell
Series Model:	9962 Multi-Standard Enterprise Cellxxxxx (where “x” is blank, number or any characters)
Received Date:	Dec. 26, 2014
Test Date:	Jan. 12 ~ Feb. 5, 2015
Issued Date:	Feb. 5, 2015
Applicant:	Sercomm Corp.
Address:	8F, No. 3-1, YuangQu St., NanKang, Taipei 115, Taiwan, R.O.C. (NanKang Software Park)
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)

Testing Laboratory
2021

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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Release Control Record

Issue No.	Description	Date Issued
RF141226D01-1	Original release.	Feb. 5, 2015

1 Certificate of Conformity

Product:	9962 Multi-Standard AP; Metro Cell Indoor
Brand:	Alcatel-Lucent
Test Model:	9962 Multi-Standard Enterprise Cell
Series Model:	9962 Multi-Standard Enterprise Cellxxxxx (where “x” is blank, number or any characters)
Sample Status:	Engineering sample
Applicant:	Sercomm Corp.
Test Date:	Jan. 12 ~ Feb. 5, 2015
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2009

The above equipment 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 : Annie Chang , **Date:** Feb. 5, 2015

Annie Chang / Supervisor

Approved by : Rex. Lai , **Date:** Feb. 5, 2015

Rex Lai / Assistant Manage

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -10.41dB at 0.41017MHz.
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 5714.90MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(e)	6dB bandwidth	PASS	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is IPEX 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	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	3.43 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	4.00 dB
Radiated Emissions above 1 GHz	Above 1GHz	3.36 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	9962 Multi-Standard AP; Metro Cell Indoor
Brand	Alcatel-Lucent
Test Model	9962 Multi-Standard Enterprise Cell
Series Model	9962 Multi-Standard Enterprise Cellxxxxx (where “x” is blank, number or any characters)
Model Difference	Marketing purpose
Status of EUT	Engineering sample
Power Supply Rating	48Vdc from Adapter or 55Vdc from PoE
Modulation Type	64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54/ 48/ 36/ 24/ 18/ 12/ 9/ 6Mbps 802.11n: up to 300Mbps
Operating Frequency	5180 ~ 5240MHz, 5745 ~ 5825MHz
Number of Channel	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
Output Power	5180 ~ 5240MHz: 126.9mW 5745 ~ 5825MHz: 127.53mW
Antenna Type	Dipole antenna with 5.27dBi gain
Antenna Connector	IPEX Conector
Accessory Device	Adapter
Data Cable Supplied	GPS cable (8m)

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

Modulation Mode	TX Function
802.11a	2TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX

2. The EUT uses following adapter or PoE:

Adaprer:

Brand	AmpowerTek
Model	AU60AA-00
Input Power	100-240V, 50-60Hz, 1.5A
Output Power	48V, 1.25A
Power Line	Non-shielded AC 3-Pin cable (1.5m) Non-shielded DC cable (1.2m) with one ferrite core

PoE:

Brand	Microsemi
Model	PD-9601G/AC
Input Power	100-240V, 50-60Hz, 1.35A
Output Power	55V, 1.75A

After pre-tested, adapter mode was the worst case, therefore, only its test data was recorded in the report.

3. 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 5180 ~ 5240MHz

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

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (40MHz)

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

FOR 5745 ~ 5825MHz:

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

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

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

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

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

Radiated Emission Test (Above 1GHz):

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
-	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	13
-	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	27
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
-	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	13
-	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	27

Radiated Emission Test (Below 1GHz):

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5745-5825	149 to 165	157	OFDM	BPSK	6

Power Line Conducted Emission Test:

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5745-5825	149 to 165	157	OFDM	BPSK	6

Antenna Port Conducted Measurement:

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
-	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	13
-	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	27
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
-	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	13
-	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	27

Test Condition:

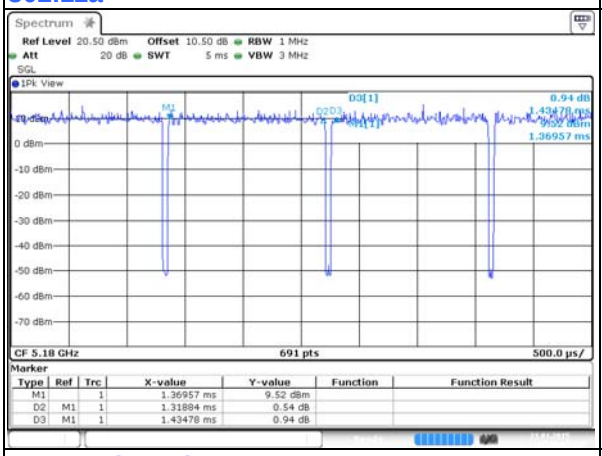
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 68%RH	120Vac, 60Hz	Dalen Dai
RE<1G	25deg. C, 68%RH	120Vac, 60Hz	Dalen Dai
PLC	18deg. C, 63%RH	120Vac, 60Hz	T.H. Tseng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Saxon Lee

3.3 Duty Cycle of Test Signal

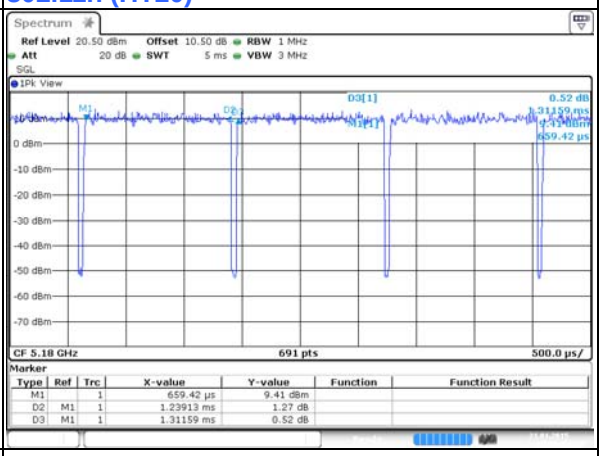
If duty cycle of test signal is < 98%, duty factor shall be considered.

802.11a: Duty cycle = 1.318/1.434 = 0.919, Duty factor = 10 * log(1/0.919) = 0.37
802.11n (HT20): Duty cycle = 1.239/1.311 = 0.945, Duty factor = 10 * log(1/0.945) = 0.25
802.11n (HT40): Duty cycle = 0.600/0.660 = 0.909, Duty factor = 10 * log(1/0.909) = 0.41

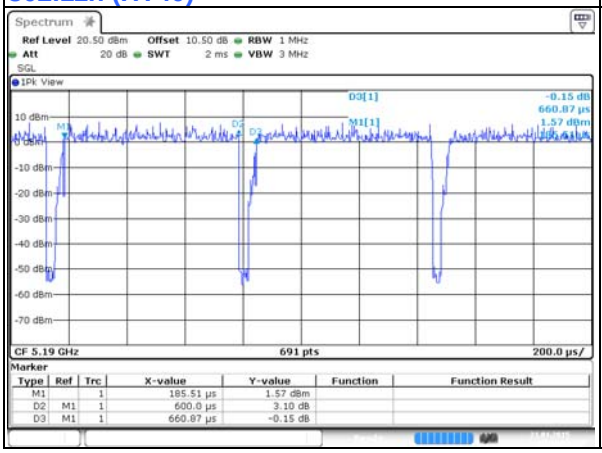
802.11a



802.11n (HT20)



802.11n (HT40)



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.

Conduction test only:

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	EUT	Alcatel-Lucent	9962 Multi-Standard Enterprise Cell	-	-	-
B.	AC Adapter	AmpowerTek	AU60AA-00	N/A	N/A	Supplied by client
C.	Notebook PC	DELL	PP04X	1W9ZZ1S	FCC DoC Approved	Provided by Lab
D.	Notebook PC	DELL	PP04X	JV9ZZ1S	FCC DoC Approved	Provided by Lab
E.	Notebook PC	SONY	SVS151A12P	275548477001024	FCC DoC Approved	Provided by Lab
F.	Notebook PC	SONY	SVS151A12P	275548477001087	FCC DoC Approved	Provided by Lab
G.	Universal Radio Communication Tester	R&S	CMU200	117260	N/A	Provided by Lab
H.	LTE simulator	Anritsu	LTE Band 11 & 18	N/A	N/A	Provided by Lab
I.	GPS simulator	PENDULUM	GSG-5	200447	N/A	Provided by Lab
J.	HORN Antenna	ETS	3117	00123980	N/A	Provided by Lab

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Antenna cable	1	8	Y	0	Supplied by client
2.	AC Power Cord	1	1.5	N	0	Supplied by client
3.	DC cable	1	1.2	N	1	Supplied by client
4.	SFP to LAN cable	1	10	N	0	Provided by Lab
5.	LAN cable	1	10	N	0	Provided by Lab
6.	Coaxial cable	1	10	Y	0	Provided by Lab

Note: The core(s) is(are) originally attached to the cable(s).

Conduction test excluded:

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	EUT	Alcatel-Lucent	9962 Multi-Standard Enterprise Cell	-	-	-
B.	AC Adapter	AmpowerTek	AU60AA-00	N/A	N/A	Supplied by client
C.	NOTEBOOK PC	DELL	PP04X	1W9ZZ1S	FCC DoC Approved	Provided by Lab

Note:

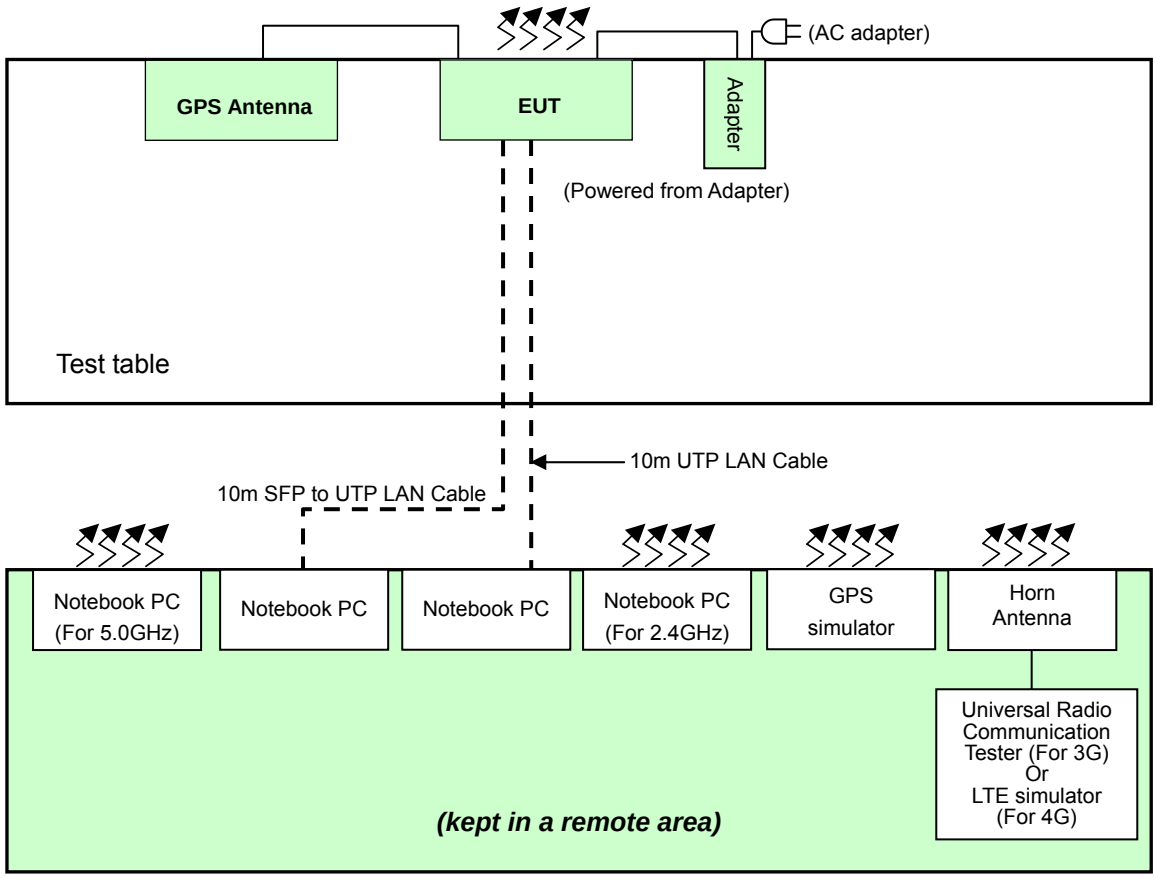
1. All power cords of the above support units are non-shielded (1.8m).
2. Item C acted as communication partners to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Antenna cable	1	8	Y	0	Supplied by client
2.	AC Power Cord	1	1.5	N	0	Supplied by client
3.	DC cable	1	1.2	N	1	Supplied by client
4.	LAN cable	1	10	N	0	Provided by Lab

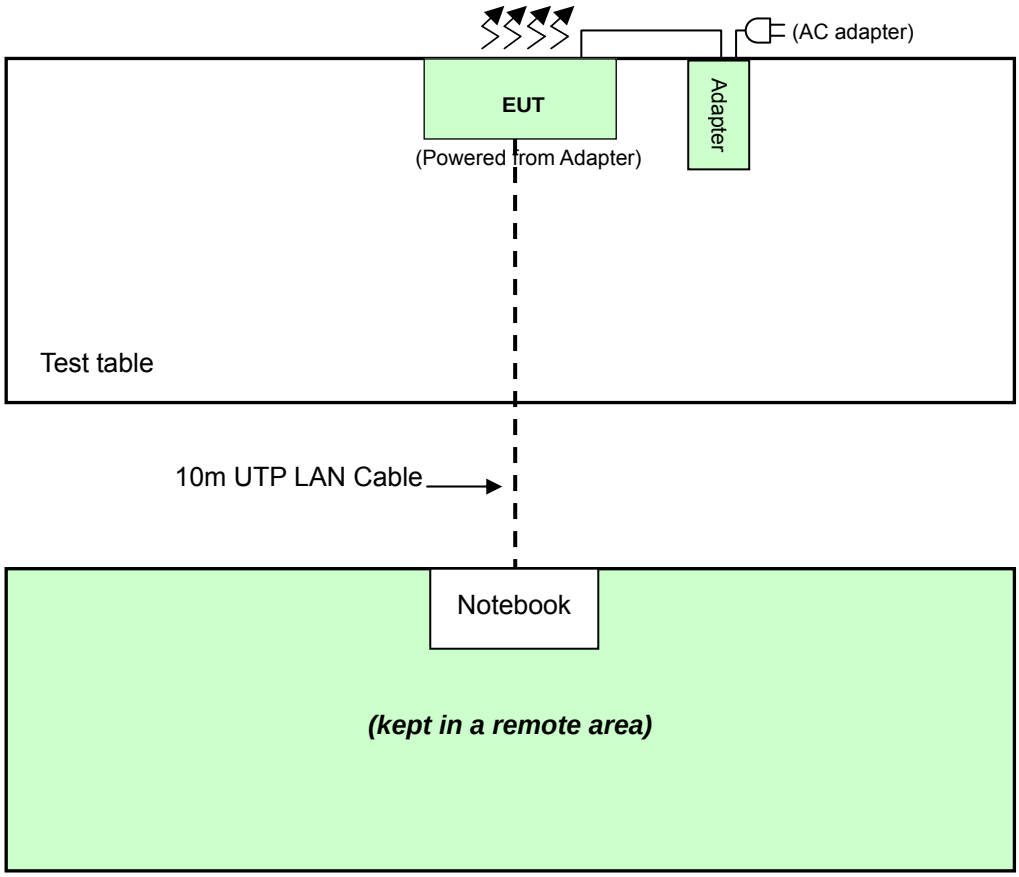
Note: The core(s) is(are) originally attached to the cable(s).

3.4.1 Configuration of System under Test

Conduction test only:



Conduction test excluded:



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart E (15.407)
789033 D02 General UNII Test Procedures New Rules v01
662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2009

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

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. Other emissions shall be at least 20dB below the highest level of the desired power:

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.

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

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

NOTE: [*1] beyond 10MHz of the band edge [*2] within 10 MHz of band edge

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

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 26, 2014	Feb. 25, 2015
HP Preamplifier	8449B	3008A01201	Feb. 26, 2014	Feb. 25, 2015
MITEQ Preamplifier	AMF-6F-260400-33-8P	892164	Mar. 01, 2014	Feb. 28, 2015
Agilent Spectrum	E4446A	MY51100050	Oct. 24, 2014	Oct. 23, 2015
Agilent TEST RECEIVER	N9038A	MY51210129	Jan. 20, 2015	Jan. 19, 2016
Schwarzbeck Antenna	VULB 9168	139	Feb. 24, 2014	Feb. 23, 2015
Schwarzbeck Antenna	VHBA 9123	480	May 29, 2013	May 28, 2015
Schwarzbeck Horn Antenna	BBHA-9170	212	Aug. 26, 2014	Aug. 25, 2015
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	Aug. 26, 2014	Aug. 25, 2015
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	ADT_Radiated_V7.6.15.9.4	NA	NA	NA
SUHNER RF cable	SF104	CABLE-CH6	Aug. 15, 2014	Aug. 14, 2015
SUHNER RF cable	SF102	Cable-CH8-3.6m	Aug. 15, 2014	Aug. 14, 2015
EMCO Horn Antenna	3115	00028257	Aug. 28, 2014	Aug. 27, 2015
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA
ROHDE & SCHWARZ Spectrum Analyzer	FSV40	101042	Sep. 29, 2014	Sep. 28, 2015
Anritsu Power Sensor	MA2411B	0738404	Apr. 21, 2014	Apr. 20, 2015
Anritsu Power Meter	ML2495A	0842014	Apr. 21, 2014	Apr. 20, 2015

NOTE: 1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Chamber No. 6.
4. The Industry Canada Reference No. IC 7450E-6.
5. The FCC Site Registration No. is 447212.

4.1.3 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. 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:

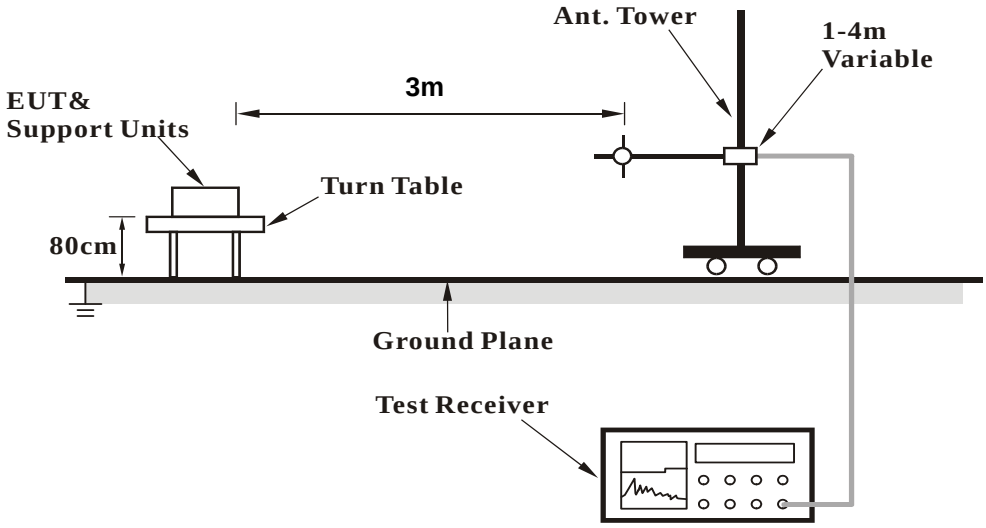
1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
6. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

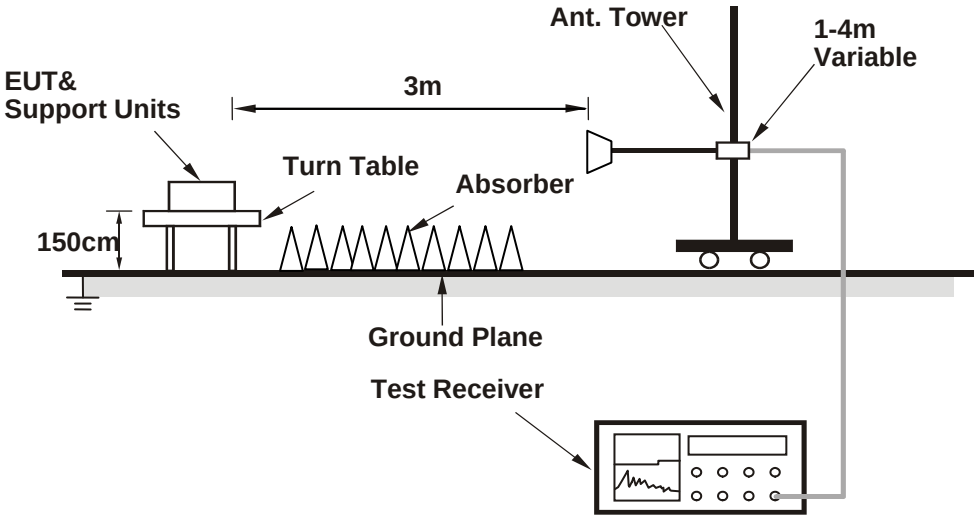
No deviation.

4.1.5 Test Set Up

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.1.6 EUT Operating Conditions

a. Placed the EUT on the testing table.
b. Prepared notebook to act as communication partner and placed it outside of testing area.
c. The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

ABOVE 1GHz DATA

802.11a

CHANNEL	TX Channel 36	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	62.5 PK	74.0	-11.5	1.86 H	113	59.12	3.41
2	5150.00	48.0 AV	54.0	-6.0	1.86 H	113	44.62	3.41
3	*5180.00	110.6 PK			1.86 H	113	107.13	3.43
4	*5180.00	100.5 AV			1.86 H	113	97.04	3.43
5	#10360.00	58.1 PK	68.2	-10.1	1.49 H	56	43.69	14.39
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	71.0 PK	74.0	-3.0	1.55 V	356	67.55	3.41
2	5150.00	52.8 AV	54.0	-1.2	1.55 V	356	49.36	3.41
3	*5180.00	117.1 PK			1.55 V	356	113.64	3.43
4	*5180.00	106.3 AV			1.55 V	356	102.82	3.43
5	#10360.00	57.1 PK	68.2	-11.1	1.37 V	251	42.73	14.39

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

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

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	*5200.00	115.7 PK			1.86 H	115	112.23	3.43
2	*5200.00	105.0 AV			1.86 H	115	101.56	3.43
3	#10400.00	58.1 PK	68.2	-10.1	1.52 H	73	43.92	14.22
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	*5200.00	122.7 PK			1.86 V	115	119.23	3.43
2	*5200.00	112.0 AV			1.86 V	115	108.56	3.43
3	#10400.00	58.1 PK	68.2	-10.1	1.52 V	73	43.92	14.22

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) – Pre-Amplifier 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 48	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	*5240.00	116.1 PK			1.94 H	115	112.52	3.54
2	*5240.00	105.5 AV			1.94 H	115	101.94	3.54
3	5350.00	61.9 PK	74.0	-12.1	1.94 H	115	58.09	3.85
4	5350.00	49.2 AV	54.0	-4.8	1.94 H	115	45.37	3.85
5	#10480.00	58.9 PK	68.2	-9.3	1.49 H	104	44.27	14.64
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	*5240.00	123.4 PK			1.59 V	18	119.82	3.54
2	*5240.00	113.1 AV			1.59 V	18	109.58	3.54
3	5350.00	66.2 PK	74.0	-7.8	1.59 V	18	62.38	3.85
4	5350.00	52.8 AV	54.0	-1.2	1.59 V	18	48.92	3.85
5	#10480.00	58.3 PK	68.2	-9.9	1.35 V	266	43.66	14.64

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) – Pre-Amplifier 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 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	#5714.90	62.5 PK	68.2	-5.7	1.90 H	243	57.90	4.61
2	#5725.00	65.2 PK	78.2	-13.0	1.90 H	243	60.53	4.65
3	*5745.00	104.3 PK			1.90 H	243	99.59	4.74
4	*5745.00	94.0 AV			1.90 H	243	89.21	4.74
5	11490.00	59.4 PK	74.0	-14.7	1.50 H	84	42.19	17.16
6	11490.00	47.2 AV	54.0	-6.8	1.50 H	84	30.06	17.16
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	#5714.90	67.0 PK	68.2	-1.2	1.56 V	340	62.41	4.61
2	#5725.00	73.6 PK	78.2	-4.6	1.56 V	340	68.96	4.65
3	*5745.00	112.6 PK			1.56 V	340	107.84	4.74
4	*5745.00	101.2 AV			1.56 V	340	96.43	4.74
5	11490.00	59.1 PK	74.0	-14.9	1.31 V	245	41.96	17.16
6	11490.00	46.7 AV	54.0	-7.3	1.31 V	245	29.51	17.16

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) – Pre-Amplifier 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 157	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	*5785.00	115.4 PK			1.88 H	135	110.53	4.91
2	*5785.00	105.1 AV			1.88 H	135	100.22	4.91
3	11570.00	61.5 PK	74.0	-12.5	1.51 H	133	45.17	16.37
4	11570.00	49.5 AV	54.0	-4.5	1.51 H	133	33.09	16.37
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	*5785.00	124.9 PK			1.91 V	331	119.97	4.91
2	*5785.00	114.1 AV			1.91 V	331	109.18	4.91
3	11570.00	61.3 PK	74.0	-12.7	1.29 V	256	44.92	16.37
4	11570.00	49.1 AV	54.0	-4.9	1.29 V	256	32.73	16.37

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) – Pre-Amplifier 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 165	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	*5825.00	110.2 PK			1.18 H	43	105.19	5.05
2	*5825.00	100.0 AV			1.18 H	43	94.98	5.05
3	#5850.00	64.7 PK	78.2	-13.5	1.18 H	43	59.62	5.12
4	#5860.10	63.2 PK	68.2	-5.0	1.18 H	43	58.02	5.15
5	11650.00	57.8 PK	74.0	-16.2	1.56 H	117	41.68	16.13
6	11650.00	47.0 AV	54.0	-7.0	1.56 H	117	30.85	16.13
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	*5825.00	116.1 PK			2.07 V	357	111.04	5.05
2	*5825.00	106.0 AV			2.07 V	357	100.95	5.05
3	#5850.00	73.3 PK	78.2	-5.0	2.07 V	357	68.13	5.12
4	#5860.10	67.0 PK	68.2	-1.2	2.07 V	357	61.85	5.15
5	11650.00	57.4 PK	74.0	-16.6	1.22 V	249	41.25	16.13
6	11650.00	46.6 AV	54.0	-7.4	1.22 V	249	30.47	16.13

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) – Pre-Amplifier 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 36	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	64.1 PK	74.0	-10.0	1.96 H	335	60.64	3.41
2	5150.00	48.4 AV	54.0	-5.6	1.96 H	335	45.02	3.41
3	*5180.00	109.3 PK			1.96 H	335	105.82	3.43
4	*5180.00	98.8 AV			1.96 H	335	95.35	3.43
5	#10360.00	57.4 PK	68.2	-10.8	1.35 H	271	43.05	14.39
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	69.8 PK	74.0	-4.2	1.52 V	333	66.39	3.41
2	5150.00	52.8 AV	54.0	-1.2	1.52 V	333	49.38	3.41
3	*5180.00	116.4 PK			1.52 V	333	112.92	3.43
4	*5180.00	106.0 AV			1.52 V	333	102.58	3.43
5	#10360.00	56.9 PK	68.2	-11.3	1.27 V	196	42.47	14.39

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) – Pre-Amplifier 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 40	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	*5200.00	116.5 PK			1.78 H	112	113.11	3.43
2	*5200.00	106.5 AV			1.78 H	112	103.07	3.43
3	#10400.00	59.2 PK	68.2	-9.0	1.54 H	231	44.96	14.22
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	*5200.00	122.7 PK			1.66 V	334	119.24	3.43
2	*5200.00	112.5 AV			1.66 V	334	109.06	3.43
3	#10400.00	59.0 PK	68.2	-9.2	1.39 V	178	44.81	14.22

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) – Pre-Amplifier 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 48	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	*5240.00	114.8 PK			1.93 H	334	111.28	3.54
2	*5240.00	104.5 AV			1.93 H	334	100.95	3.54
3	5350.00	62.0 PK	74.0	-12.0	1.93 H	334	58.16	3.85
4	5350.00	48.7 AV	54.0	-5.3	1.93 H	334	44.87	3.85
5	#10480.00	59.2 PK	68.2	-9.0	1.42 H	245	44.55	14.64
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	*5240.00	122.3 PK			1.65 V	19	118.79	3.54
2	*5240.00	111.9 AV			1.65 V	19	108.36	3.54
3	5350.00	67.3 PK	74.0	-6.7	1.65 V	19	63.41	3.85
4	5350.00	52.6 AV	54.0	-1.4	1.65 V	19	48.75	3.85
5	#10480.00	58.9 PK	68.2	-9.3	1.45 V	183	44.29	14.64

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) – Pre-Amplifier 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 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	#5714.90	61.8 PK	68.2	-6.4	1.60 H	78	57.21	4.61
2	#5725.00	64.3 PK	78.2	-13.9	1.60 H	78	59.68	4.65
3	*5745.00	103.7 PK			1.60 H	78	98.94	4.74
4	*5745.00	93.5 AV			1.60 H	78	88.71	4.74
5	11490.00	60.2 PK	74.0	-13.8	1.56 H	165	43.04	17.16
6	11490.00	47.1 AV	54.0	-6.9	1.56 H	165	29.93	17.16
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	**#5714.90**	**67.2 PK**	**68.2**	**-1.0**	**1.76 V**	**337**	**62.56**	**4.61**
2	#5725.00	76.1 PK	78.2	-2.1	1.76 V	337	71.48	4.65
3	*5745.00	113.4 PK			1.76 V	337	108.66	4.74
4	*5745.00	103.2 AV			1.76 V	337	98.45	4.74
5	11490.00	59.8 PK	74.0	-14.2	1.35 V	209	42.61	17.16
6	11490.00	46.7 AV	54.0	-7.3	1.35 V	209	29.57	17.16

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) – Pre-Amplifier 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 157	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	*5785.00	114.6 PK			1.92 H	137	109.69	4.91
2	*5785.00	104.1 AV			1.92 H	137	99.23	4.91
3	11570.00	60.9 PK	74.0	-13.1	1.49 H	96	44.57	16.37
4	11570.00	48.3 AV	54.0	-5.7	1.49 H	96	31.92	16.37
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	*5785.00	122.2 PK			1.64 V	349	117.25	4.91
2	*5785.00	112.0 AV			1.64 V	349	107.06	4.91
3	11570.00	60.7 PK	74.0	-13.4	1.32 V	267	44.28	16.37
4	11570.00	48.0 AV	54.0	-6.0	1.32 V	267	31.67	16.37

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) – Pre-Amplifier 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 165	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	*5825.00	110.0 PK			1.91 H	84	104.92	5.05
2	*5825.00	99.4 AV			1.91 H	84	94.38	5.05
3	#5850.00	65.4 PK	78.2	-12.8	1.91 H	84	60.28	5.12
4	#5860.10	63.7 PK	68.2	-4.5	1.91 H	84	58.53	5.15
5	11650.00	61.1 PK	74.0	-12.9	1.57 H	118	44.95	16.13
6	11650.00	49.0 AV	54.0	-5.0	1.57 H	118	32.83	16.13
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	*5825.00	118.5 PK			1.85 V	345	113.42	5.05
2	*5825.00	108.1 AV			1.85 V	345	103.08	5.05
3	#5850.00	75.0 PK	78.2	-3.2	1.85 V	345	69.84	5.12
4	#5860.10	66.9 PK	68.2	-1.3	1.85 V	345	61.73	5.15
5	11650.00	60.8 PK	74.0	-13.3	1.41 V	293	44.62	16.13
6	11650.00	48.6 AV	54.0	-5.4	1.41 V	293	32.51	16.13

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) – Pre-Amplifier 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 38	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	64.6 PK	74.0	-9.4	1.39 H	278	61.23	3.41
2	5150.00	47.6 AV	54.0	-6.4	1.39 H	278	44.16	3.41
3	*5190.00	102.3 PK			1.39 H	278	98.85	3.42
4	*5190.00	92.0 AV			1.39 H	278	88.57	3.42
5	#10380.00	57.3 PK	68.2	-11.0	1.62 H	293	42.95	14.30
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	5150.00	69.9 PK	74.0	-4.1	1.72 V	331	66.48	3.41
2	**5150.00**	**52.8 AV**	**54.0**	**-1.2**	**1.72 V**	**331**	**49.38**	**3.41**
3	*5190.00	109.6 PK			1.72 V	331	106.17	3.42
4	*5190.00	99.2 AV			1.72 V	331	95.82	3.42
5	#10380.00	56.7 PK	68.2	-11.5	1.44 V	167	42.39	14.30

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) – Pre-Amplifier 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 46	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	*5230.00	108.7 PK			1.75 H	281	105.19	3.51
2	*5230.00	98.3 AV			1.75 H	281	94.82	3.51
3	5350.00	59.3 PK	74.0	-14.7	1.75 H	281	55.49	3.85
4	5350.00	47.2 AV	54.0	-6.8	1.75 H	281	43.37	3.85
5	#10460.00	58.2 PK	68.2	-10.0	1.69 H	274	43.68	14.53
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	*5230.00	116.2 PK			1.48 V	17	112.73	3.51
2	*5230.00	106.2 AV			1.48 V	17	102.67	3.51
3	5350.00	66.2 PK	74.0	-7.8	1.48 V	17	62.38	3.85
4	5350.00	50.8 AV	54.0	-3.2	1.48 V	17	46.97	3.85
5	#10460.00	57.8 PK	68.2	-10.4	1.37 V	205	43.29	14.53

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) – Pre-Amplifier 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 151	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	#5714.90	61.9 PK	68.2	-6.3	1.77 H	296	57.28	4.61
2	#5725.00	62.9 PK	78.2	-15.3	1.77 H	296	58.25	4.65
3	*5755.00	100.0 PK			1.77 H	296	95.17	4.78
4	*5755.00	89.4 AV			1.77 H	296	84.65	4.78
5	11510.00	60.1 PK	74.0	-13.9	1.63 H	282	43.07	17.06
6	11510.00	46.9 AV	54.0	-7.1	1.63 H	282	29.84	17.06
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	#5714.90	66.9 PK	68.2	-1.3	1.97 V	11	62.29	4.61
2	#5725.00	70.9 PK	78.2	-7.3	1.97 V	11	66.28	4.65
3	*5755.00	106.6 PK			1.97 V	11	101.85	4.78
4	*5755.00	96.2 AV			1.97 V	11	91.37	4.78
5	11510.00	59.7 PK	74.0	-14.3	1.35 V	192	42.66	17.06
6	11510.00	46.6 AV	54.0	-7.4	1.35 V	192	29.57	17.06

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) – Pre-Amplifier 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 159	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	*5795.00	106.6 PK			1.78 H	249	101.65	4.95
2	*5795.00	96.0 AV			1.78 H	249	91.08	4.95
3	#5850.00	64.5 PK	78.2	-13.7	1.78 H	249	59.42	5.12
4	#5860.10	62.2 PK	68.2	-6.0	1.78 H	249	57.06	5.15
5	11590.00	59.7 PK	74.0	-14.3	1.71 H	308	43.57	16.14
6	11590.00	47.0 AV	54.0	-7.0	1.71 H	308	30.86	16.14
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	*5795.00	113.9 PK			1.97 V	17	108.97	4.95
2	*5795.00	103.5 AV			1.97 V	17	98.51	4.95
3	#5850.00	69.3 PK	78.2	-8.9	1.97 V	17	64.16	5.12
4	#5860.10	66.6 PK	68.2	-1.6	1.97 V	17	61.42	5.15
5	11590.00	59.3 PK	74.0	-14.7	1.47 V	228	43.15	16.14
6	11590.00	46.4 AV	54.0	-7.6	1.47 V	228	30.28	16.14

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) – Pre-Amplifier 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.

BELOW 1GHz WORST-CASE DATA: 802.11a

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	154.68	26.8 QP	43.5	-16.7	1.53 H	241	40.14	-13.30
2	311.43	34.6 QP	46.0	-11.4	1.76 H	179	46.50	-11.86
3	359.85	41.3 QP	46.0	-4.7	1.08 H	21	52.44	-11.16
4	600.02	39.2 QP	46.0	-6.9	1.33 H	290	45.38	-6.23
5	680.02	41.0 QP	46.0	-5.0	1.00 H	330	46.19	-5.19
6	799.99	37.5 QP	46.0	-8.5	1.42 H	76	40.39	-2.91
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	32.67	33.5 QP	40.0	-6.5	1.75 V	302	48.88	-15.41
2	156.29	29.0 QP	43.5	-14.5	1.34 V	130	42.35	-13.34
3	359.76	39.9 QP	46.0	-6.1	1.58 V	23	51.05	-11.16
4	456.61	36.9 QP	46.0	-9.1	1.00 V	197	45.98	-9.10
5	600.02	38.9 QP	46.0	-7.1	1.77 V	347	45.16	-6.23
6	799.99	41.2 QP	46.0	-4.8	1.37 V	3	44.09	-2.91

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) – Pre-Amplifier 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 (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	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.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	834115/016	Apr. 28, 2014	Apr. 27, 2015
ROHDE & SCHWARZ Artificial Mains Network (For EUT)	ENV216	101195	Apr. 18, 2014	Apr. 17, 2015
LISN With Adapter (for EUT)	AD10	C03Ada-002	Apr. 18, 2014	Apr. 17, 2015
EMCO L.I.S.N. (For peripherals)	3825/2	9504-2359	Jul. 24, 2014	Jul. 23, 2015
SCHWARZBECK Artificial Mains Network (For EUT)	NNLK8129	8129229	May 08, 2014	May 07, 2015
Software	ADT_Cond_V7.3.7	NA	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C03.01	Sep. 24, 2014	Sep. 23, 2015
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-300	Jan. 19, 2015	Jan. 18, 2016
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-301	Jan. 27, 2014	Jan. 26, 2015
ROHDE & SCHWARZ Artificial Mains Network (For TV EUT)	ESH3-Z5	100220	Nov. 20, 2014	Nov. 19, 2015
LISN With Adapter (for TV EUT)	100220	N/A	Nov. 20, 2014	Nov. 19, 2015

Notes: 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 Shielded Room No. 3.
3. The VCCI Site Registration No. C-274.

4.2.3 Test Procedures

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

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

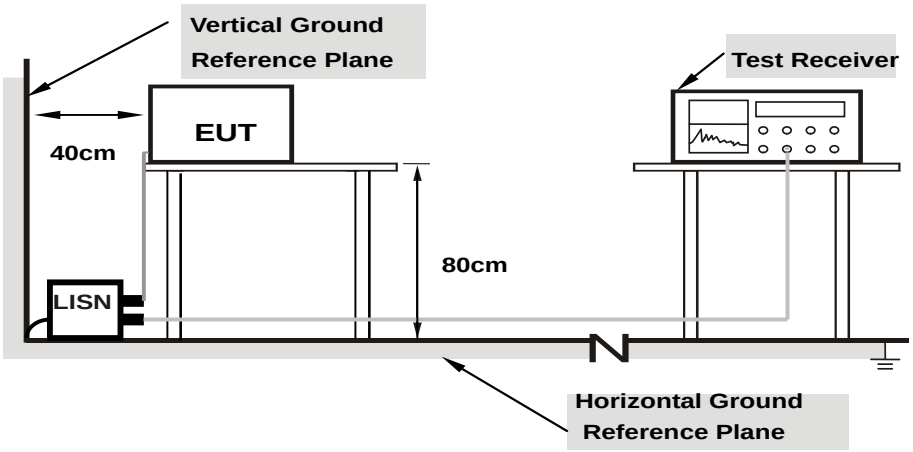
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 TEST SETUP



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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

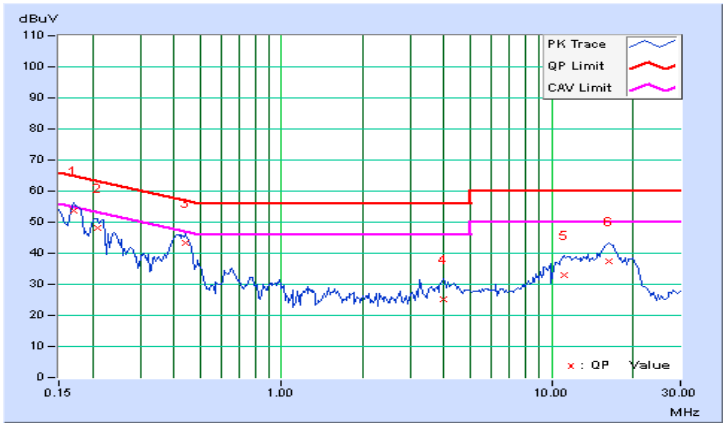
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17091	9.66	43.89	31.68	53.55	41.34	64.92	54.92	-11.36	-13.57
2	0.20859	9.66	38.53	28.02	48.19	37.68	63.26	53.26	-15.07	-15.58
3	0.44297	9.66	33.67	26.29	43.33	35.95	57.01	47.01	-13.68	-11.06
4	3.98828	9.70	15.63	8.53	25.33	18.23	56.00	46.00	-30.67	-27.77
5	11.09766	9.83	23.30	16.50	33.13	26.33	60.00	50.00	-26.87	-23.67
6	16.24609	9.91	27.40	20.32	37.31	30.23	60.00	50.00	-22.69	-19.77

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

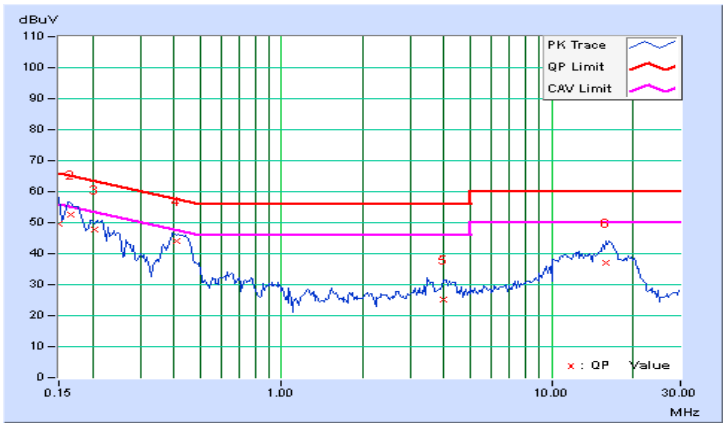


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.66	39.80	17.26	49.46	26.92	66.00	56.00	-16.54	-29.08
2	0.16562	9.66	42.83	25.43	52.49	35.09	65.18	55.18	-12.69	-20.09
3	0.20469	9.66	38.13	28.00	47.79	37.66	63.42	53.42	-15.63	-15.76
4	**0.41017**	**9.66**	**34.38**	**27.57**	**44.04**	**37.23**	**57.64**	**47.64**	**-13.60**	**-10.41**
5	3.96484	9.70	15.32	8.00	25.02	17.70	56.00	46.00	-30.98	-28.30
6	15.87891	9.91	27.27	20.15	37.18	30.06	60.00	50.00	-22.82	-19.94

Remarks:

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



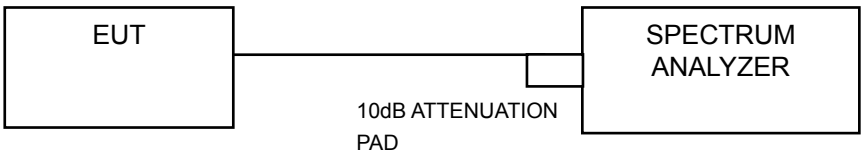
4.3 Transmit Power Measurment

4.3.1 LIMITS OF TRANSMIT POWER MEASUREMENT

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
	√	Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client device	250mW (24 dBm)
U-NII-3	---		1 Watt (30 dBm)

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

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

FOR AVERAGE POWER MEASUREMENT

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 fromTest Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

POWER OUTPUT:

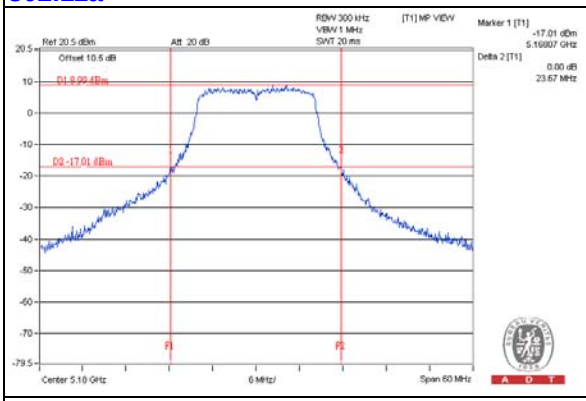
CHAN.	FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
802.11a							
36	5180	17.50	17.34	110.4	20.43	30	PASS
40	5200	17.61	17.44	113.1	20.54	30	PASS
48	5240	17.02	17.49	106.5	20.27	30	PASS
149	5745	12.97	14.26	46.5	16.67	30	PASS
157	5785	17.96	18.13	**127.5**	21.06	30	PASS
165	5825	17.88	17.98	124.2	20.94	30	PASS
802.11n (20MHz)							
36	5180	17.92	16.82	110.0	20.42	30	PASS
40	5200	18.07	17.82	124.7	20.96	30	PASS
48	5240	18.04	18.01	**126.9**	21.04	30	PASS
149	5745	15.17	15.27	66.5	18.23	30	PASS
157	5785	17.94	18.09	126.6	21.03	30	PASS
165	5825	17.91	18.00	124.9	20.97	30	PASS
802.11n (40MHz)							
38	5190	13.87	14.42	52.0	17.16	30	PASS
46	5230	17.63	18.02	121.3	20.84	30	PASS
151	5755	13.84	14.50	52.4	17.19	30	PASS
159	5795	17.78	18.00	123.1	20.90	30	PASS

26dB BANDWIDTH:

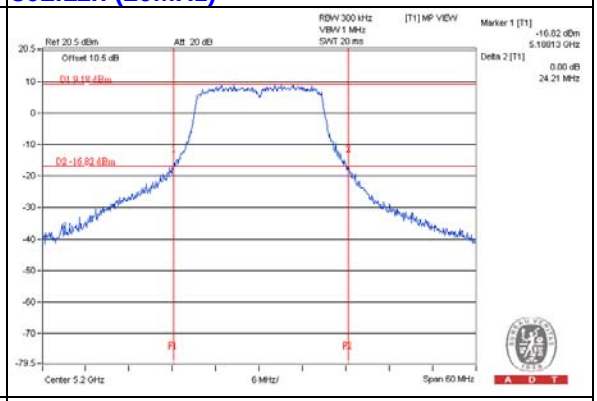
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
802.11a				
36	5180	22.13	23.67	PASS
40	5200	22.28	23.00	PASS
48	5240	22.06	23.11	PASS
802.11n (20MHz)				
36	5180	23.94	24.15	PASS
40	5200	23.89	24.21	PASS
48	5240	23.84	23.95	PASS
802.11n (40MHz)				
38	5190	48.12	49.50	PASS
46	5230	49.55	48.70	PASS

SPECTRUM PLOT OF WORST VALUE

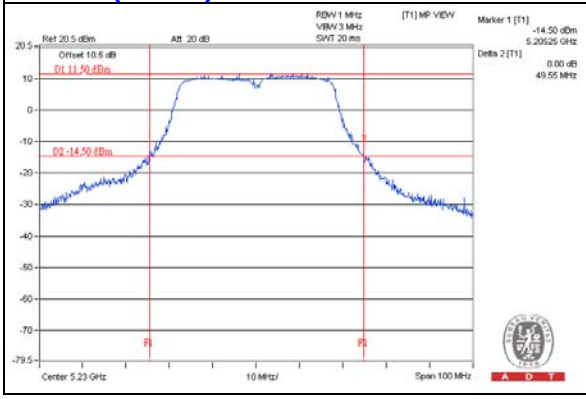
802.11a



802.11n (20MHz)



802.11n (40MHz)

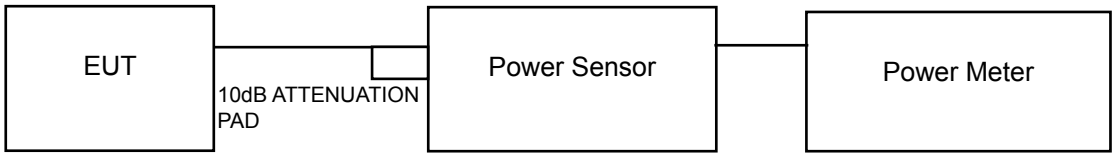


4.4 Peak Power Spectral Density Measurement

4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

For U-NII-1 band:
Using method SA-2
1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 30 kHz, Set VBW ≥ 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 and add 10 log (1/duty cycle)

For U-NII-3 band:
1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 500 kHz, Set VBW ≥ 3 RBW, Detector = RMS
3) Sweep time = auto, trigger set to “free run”.
4) Trace average at least 100 traces in power averaging mode.
5) Record the max value and add 10 log (1/duty cycle)

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

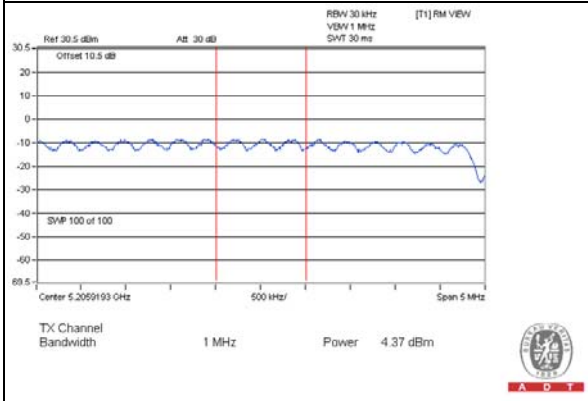
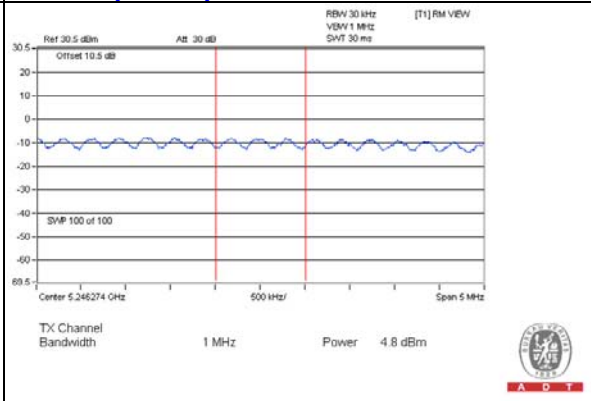
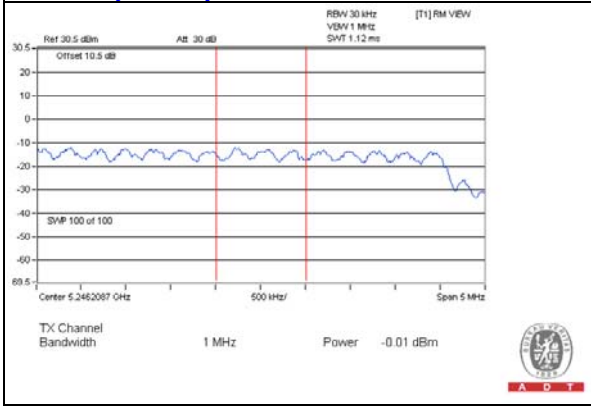
Same as Item 4.3.6.

4.4.7 Test Results

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					
802.11a								
36	5180	4.33	3.45	7.29	0.37	7.66	14.72	PASS
40	5200	4.37	4.09	7.61	0.37	7.98	14.72	PASS
48	5240	3.41	4.32	7.27	0.37	7.64	14.72	PASS
802.11a								
36	5180	4.12	3.63	7.14	0.25	7.39	14.72	PASS
40	5200	4.50	4.55	7.78	0.25	8.03	14.72	PASS
48	5240	4.10	4.80	7.72	0.25	7.97	14.72	PASS
802.11a								
38	5190	-3.84	-4.30	-0.64	0.41	-0.23	14.72	PASS
46	5230	-0.57	-0.01	3.14	0.41	3.55	14.72	PASS

NOTE:

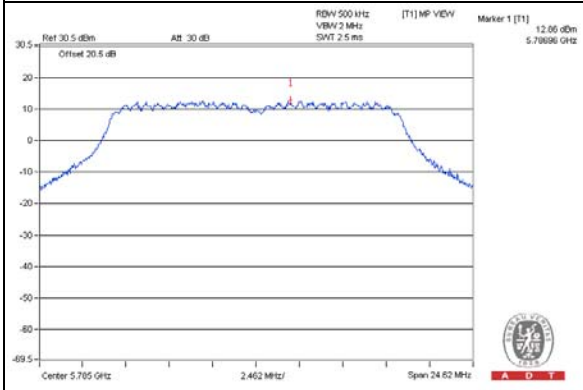
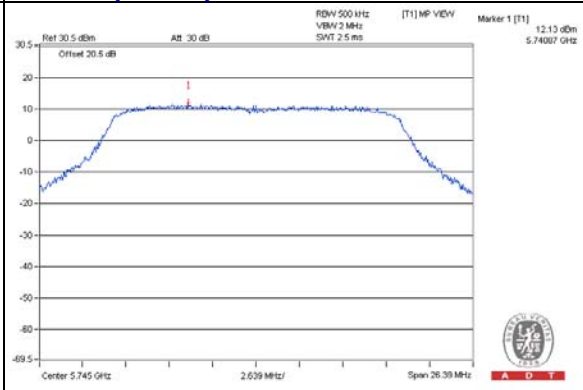
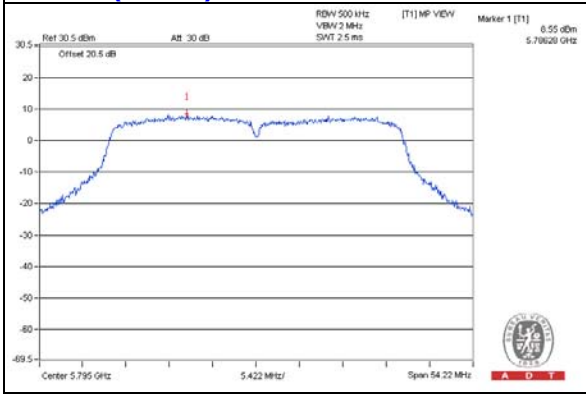
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 5.27dBi + 10log(2) = 8.28dBi > 6dBi , so the power density limit shall be reduced to 17-(8.28-6) = 14.72dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE	
802.11a	**802.11n (20MHz)**
	
802.11n (40MHz)	
	

For U-NII-3 Band

TX chain	Channel	Freq. (MHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
802.11a							
0	149	5745	9.96	3.01	13.34	27.72	PASS
	157	5785	12.72	3.01	16.10	27.72	PASS
	165	5825	11.33	3.01	14.71	27.72	PASS
1	149	5745	10.81	3.01	14.19	27.72	PASS
	157	5785	12.86	3.01	16.24	27.72	PASS
	165	5825	12.34	3.01	15.72	27.72	PASS
802.11n (20MHz)							
0	149	5745	10.92	3.01	14.18	27.72	PASS
	157	5785	11.69	3.01	14.95	27.72	PASS
	165	5825	10.74	3.01	14.00	27.72	PASS
1	149	5745	12.13	3.01	15.39	27.72	PASS
	157	5785	11.59	3.01	14.85	27.72	PASS
	165	5825	10.47	3.01	13.73	27.72	PASS
802.11n (40MHz)							
0	151	5755	6.74	3.01	10.16	27.72	PASS
	159	5795	8.55	3.01	11.97	27.72	PASS
1	151	5755	8.00	3.01	11.42	27.72	PASS
	159	5795	8.39	3.01	11.81	27.72	PASS

NOTE: Directional gain = 5.27dBi + 10log(2) = 8.28dBi > 6dBi , so the power density limit shall be reduced to 30-(8.28-6) = 27.72dBm.

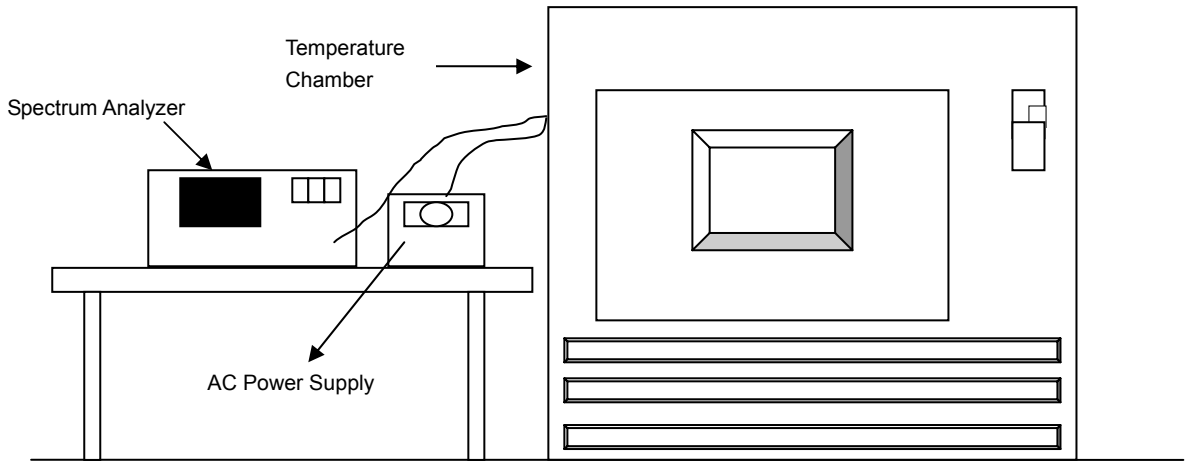
SPECTRUM PLOT OF WORST VALUE	
802.11a	**802.11n (20MHz)**
	
802.11n (40MHz)	
	

4.5 Frequency Stability

4.5.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 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.
.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

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

4.5.7 Test Results

FREQUEMCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5180MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	120	5180.043099	8.3202666	5180.042669	8.2372587	5180.042621	8.2280491	5180.043041	8.3090734
40	120	5180.04274	8.2508734	5180.042844	8.2710425	5180.042771	8.2570332	5180.042956	8.2926641
30	120	5180.043555	8.4082169	5180.043675	8.4314672	5180.043622	8.4211960	5180.043501	8.3978764
20	120	5180.042936	8.2887189	5180.042665	8.2364865	5180.043114	8.3231370	5180.042734	8.2498069
10	120	5180.042597	8.2234489	5180.042674	8.2382239	5180.042649	8.2333469	5180.042396	8.1845560
0	120	5180.043297	8.3584422	5180.043138	8.3277992	5180.043320	8.3629612	5180.043274	8.3540541
-10	120	5180.04346	8.3899835	5180.043128	8.3258687	5180.043265	8.3523676	5180.04344	8.3861004
-20	120	5180.043002	8.3015611	5180.042786	8.2599353	5180.043471	8.3920764	5180.042694	8.2420669

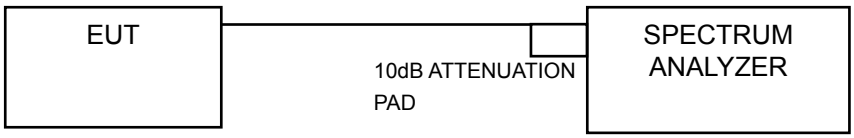
FREQUEMCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5180MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	138	5180.042906	8.2829945	5180.043218	8.3432432	5180.043416	8.3813938	5180.04333	8.3648649
	120	5180.042936	8.2887189	5180.042665	8.2364865	5180.043114	8.3231370	5180.042734	8.2498069
	102	5180.042247	8.1558111	5180.042023	8.1125483	5180.042372	8.1798936	5180.042319	8.1696911

4.6 6dB Bandwidth Measurment

4.6.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

4.6.5 Deviation from Test Standard

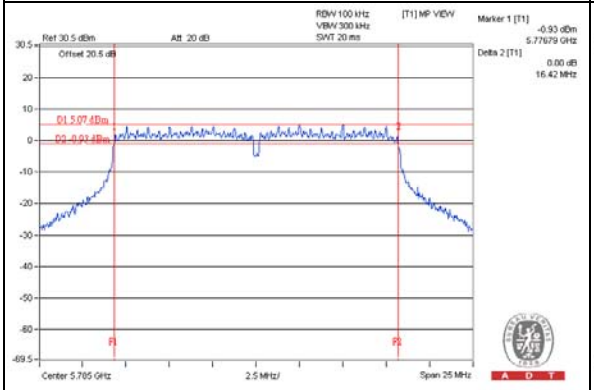
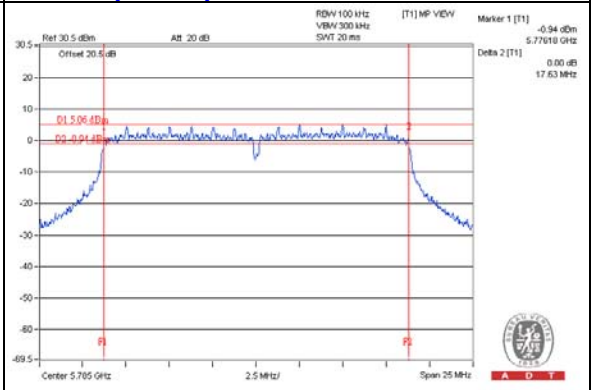
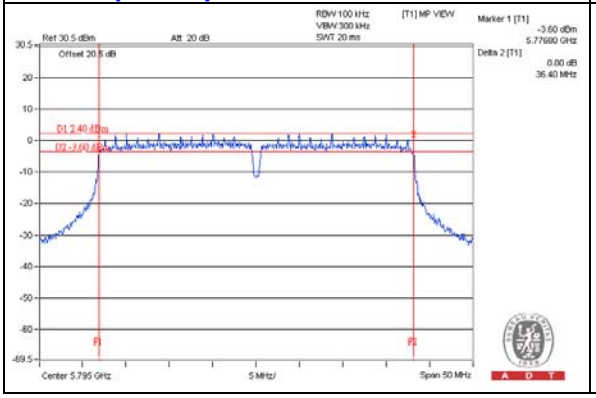
No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 TEST RESULTS

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHZ)		MINIMUM LIMIT (MHZ)	PASS / FAIL
		CHAIN 0	CHAIN 1		
802.11a					
149	5745	16.39	16.39	0.5	PASS
157	5785	16.40	16.42	0.5	PASS
165	5825	16.39	16.39	0.5	PASS
802.11n (20MHz)					
149	5745	17.60	17.59	0.5	PASS
157	5785	17.55	17.63	0.5	PASS
165	5825	17.60	17.56	0.5	PASS
802.11n (40MHz)					
151	5755	36.08	36.39	0.5	PASS
159	5795	36.15	36.40	0.5	PASS

SPECTRUM PLOT OF WORST VALUE	
802.11a	**802.11n (20MHz)**
	
802.11n (40MHz)	
	

5 Pictures of Test Arrangements

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

Appendix – 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.bureauveritas-adt.com

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

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