

FCC TEST REPORT (15.407)

REPORT NO.: RF120724E01D-1

MODEL NO.: DIR-845L

FCC ID: KA2IR845LA1

RECEIVED: July 24, 2012

TESTED: July 30 to Aug. 03, 2012

ISSUED: May 14, 2013

APPLICANT: D-Link Corporation

ADDRESS: No.289, Sinhu 3rd Rd., Neihu District, Taipei City 114,
Taiwan, R.O.C.

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

LAB ADDRESS : No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan,
R.O.C.

TEST LOCATION (1): No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan,
R.O.C.

TEST LOCATION (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan,
R.O.C.

This report should not be used by the client to claim
product certification, approval, or endorsement by
TAF or any government agencies.



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



A D T

Table of Contents

RELEASE CONTROL RECORD.....	4
1. CERTIFICATION	5
2. SUMMARY OF TEST RESULTS	6
2.1 MEASUREMENT UNCERTAINTY	7
3. GENERAL INFORMATION	8
3.1 GENERAL DESCRIPTION OF EUT	8
3.2 DESCRIPTION OF TEST MODES	11
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	12
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS	14
3.4 DUTY CYCLE OF TEST SIGNAL.....	14
3.5 DESCRIPTION OF SUPPORT UNITS	15
3.6 CONFIGURATION OF SYSTEM UNDER TEST	16
4. TEST TYPES AND RESULTS	18
4.1 CONDUCTED EMISSION MEASUREMENT	18
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	18
4.1.2 TEST INSTRUMENTS	18
4.1.3 TEST PROCEDURES	19
4.1.4 DEVIATION FROM TEST STANDARD	19
4.1.5 TEST SETUP	20
4.1.6 EUT OPERATING CONDITIONS	20
4.1.7 TEST RESULTS (MODE 1)	21
4.1.8 TEST RESULTS (MODE 2)	23
4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT	25
4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	25
4.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS	25
4.2.3 TEST INSTRUMENTS	26
4.2.4 TEST PROCEDURES	28
4.2.5 DEVIATION FROM TEST STANDARD	28
4.2.6 TEST SETUP	29
4.2.7 EUT OPERATING CONDITION	29
4.2.8 TEST RESULTS	30
4.3 TRANSMIT POWER MEASUREMENT	50
4.3.1 LIMITS OF TRANSMIT POWER MEASUREMENT	50
4.3.2 TEST INSTRUMENTS	50
4.3.3 TEST PROCEDURE	51
4.3.4 DEVIATION FROM TEST STANDARD	52
4.3.5 TEST SETUP	52
4.3.6 EUT OPERATING CONDITIONS	52
4.3.7 TEST RESULTS	53
4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT	56
4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT	56
4.4.2 TEST INSTRUMENTS	56
4.4.3 TEST PROCEDURES	56



A D T

4.4.4	DEVIATION FROM TEST STANDARD	56
4.4.5	TEST SETUP	57
4.4.6	EUT OPERATING CONDITIONS.....	57
4.4.7	TEST RESULTS.....	58
4.5	PEAK POWER EXCURSION MEASUREMENT	60
4.5.1	LIMITS OF PEAK POWER EXCURSION MEASUREMENT	60
4.5.2	TEST INSTRUMENTS	60
4.5.3	TEST PROCEDURE	60
4.5.4	DEVIATION FROM TEST STANDARD	60
4.5.5	TEST SETUP	60
4.5.6	EUT OPERATING CONDITIONS.....	60
4.5.7	TEST RESULTS.....	61
4.6	FREQUENCY STABILITY	67
4.6.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT	67
4.6.2	TEST INSTRUMENTS	67
4.6.3	TEST PROCEDURE	67
4.6.4	DEVIATION FROM TEST STANDARD	68
4.6.5	TEST SETUP	68
4.6.6	EUT OPERATING CONDITION	68
4.6.7	TEST RESULTS.....	69
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	70
6.	INFORMATION ON THE TESTING LABORATORIES	71
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	72



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120724E01D-1	Original release	May 14, 2013

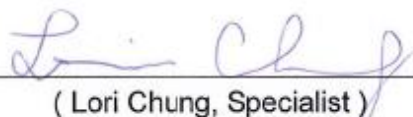


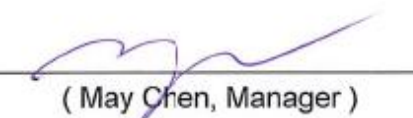
A D T

1. CERTIFICATION

PRODUCT: WHOLE HOME CLOUD ROUTER 2000
BRAND NAME: D-Link
MODEL NO.: DIR-845L
TEST SAMPLE: MASS-PRODUCTION
APPLICANT: D-Link Corporation
TESTED: July 30 to Aug. 03, 2012
STANDARDS: **FCC Part 15, Subpart E (Section 15.407)**
ANSI C63.10-2009

The above equipment (Model: DIR-845L) 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 : , **DATE:** May 14, 2013
(Lori Chung, Specialist)

APPROVED BY : , **DATE:** May 14, 2013
(May Chen, 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)(6)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -4.10dB at 10.35938MHz
15.407(b/1/2/3)(b)(5)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.1dB at 5725.00MHz.
15.407(a/1/2/3)	Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is I-PEX not a standard connector.

NOTE:

1. This report is prepared for FCC Class II change. (Add DFS band: 5260~5320MHz & 5500~5580MHz & 5660~5700MHz).
2. The DFS report was recorded in another test report.

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
Conducted emissions	2.98 dB
Radiated emissions (30MHz-1GHz)	4.89 dB
Radiated emissions (1GHz -6GHz)	3.56 dB
Radiated emissions (6GHz -18GHz)	4.10 dB
Radiated emissions (18GHz -40GHz)	4.24 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	WHOLE HOME CLOUD ROUTER 2000
MODEL NO.	DIR-845L
POWER SUPPLY	DC 12V from power adapter
MODULATION TYPE	64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: up to 54Mbps 802.11n: 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 (HT20) 5 for 802.11n (HT40)
MAXIMUM OUTPUT POWER	802.11a: 126.183mW 802.11n (HT20): 130.347mW 802.11n (HT40): 204.537mW
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.: RF120724E01-1 design is as the following:

u Add DFS band <5250~5350MHz & 5500~5580MHz & 5660~5700MHz >

2. The EUT must be supplied with a power adapter and following two different models could be chosen as following table:

No	Manufacturer	Brand	Model No.	Spec.
1	CWT	D-Link	SAG024F 4 US	Input: 100-240V, 0.8A, 47-63Hz Output: 12V, 2.0A DC power cable: 1.2m, unshielded
2	AMIGO		AMS4-1202000FU	Input: 100-240V, 0.8A, 50/60Hz Output: 12V, 2.0A DC power cable: 1.2m, unshielded

For radiated test, the EUT was pre-tested with above adapters, the worse case was found in adapter 2. Therefore only the test data of the adapter was recorded in the test report.

3. There are six antennas provided to this EUT, please refer to the following table:

Antenna 1					
Manufacture	Model name	Antenna Gain (dBi)	Frequency range (MHz to MHz)	Antenna Type	Connector
MEDIATEK	NA	3.33	2400~2483.5	PIFA	NA
		4.8	5150~5350		
		4.44	5470~5725		
		4.4	5725~5850		
Antenna 2					
Manufacture	Model name	Antenna Gain (dBi)	Frequency range (MHz to MHz)	Antenna Type	Connector
MEDIATEK	NA	5.30	2400~2483.5	PIFA	NA
		3.33	5150~5350		
		4.13	5470~5725		
		3.75	5725~5850		
Antenna 3					
Manufacture	Model name	Antenna Gain (dBi)	Frequency range (MHz to MHz)	Antenna Type	Connector
MEDIATEK	NA	3.76	2400~2483.5	PIFA	NA
		2.81	5150~5350		
		3.08	5470~5725		
		2.26	5725~5850		
Antenna 4					
Manufacture	Model name	Antenna Gain (dBi)	Frequency range (MHz to MHz)	Antenna Type	Connector
MEDIATEK	NA	5.23	2400~2483.5	PIFA	NA
		2.42	5150~5350		
		2.35	5470~5725		
		3.21	5725~5850		
Antenna 5					
Manufacture	Model name	Antenna Gain (dBi)	Frequency range (MHz to MHz)	Antenna Type	Connector
MEDIATEK	NA	4.87	2400~2483.5	PIFA	NA
		3.49	5150~5350		
		2.41	5470~5725		
		2.56	5725~5850		
Antenna 6					
Manufacture	Model name	Antenna Gain (dBi)	Frequency range (MHz to MHz)	Antenna Type	Connector
MEDIATEK	NA	4.92	2400~2483.5	PIFA	NA
		2.5	5150~5350		
		1.71	5470~5725		
		1.49	5725~5850		

4. According to the above antennas, there are two antennas will transmit simultaneously. Therefore the following antenna combination modes could be chosen as below table:

COMBINATION MODE	Antenna Configuration	
	CHAIN(0)	CHAIN(1)
1	Antenna 1 - H	Antenna 4 - V
2	Antenna 1 - H	Antenna 5 - V
3	Antenna 1 - H	Antenna 6 - V
4	Antenna 2 - H	Antenna 4 - V
5	Antenna 2 - H	Antenna 5 - V
6	Antenna 2 - H	Antenna 6 - V
7	Antenna 3 - H	Antenna 4 - V
8	Antenna 3 - H	Antenna 5 - V
9	Antenna 3 - H	Antenna 6 - V

Note:

Above antenna combinations were pre-tested in chamber, the worse case was found as below:

1. The antenna 1 was selected as representative antennas for 802.11a final test.
2. The antenna 1, 5 were selected as representative antennas for 802.11n (5GHz) final test.

5. The EUT incorporates a MIMO function without beam forming.

MODULATION MODE	Tx/Rx FUNCTION
802.11b	1TX/2RX
802.11g	1TX/2RX
802.11a	1TX/2RX
802.11n (HT20)	2TX/2RX
802.11n (HT40)	2TX/2RX

6. Radiated and Conducted emission of the simultaneous operation (2.4GHz and 5GHz WLAN technology) has been evaluated and no non-compliance was found.
7. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.
8. 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 (HT20):

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

2 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY
54	5270 MHz
62	5310 MHz

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

8 channels are provided for 802.11a, 802.11n (HT20):

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 (HT40):

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
	PLC	RE < 1G	RE ≥ 1G	APCM	
Mode 1	√	-	-	-	With adapter 1
Mode 2	√	√	√	√	With adapter 2

Where **PLC**: Power Line Conducted Emission

RE < 1G: Radiated Emission below 1GHz

RE ≥ 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 **X-plane**

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	52 to 140	140	OFDM	BPSK	6.5

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 (HT20)	52 to 140	140	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 (HT20)	52 to 140	52, 60, 64, 100, 116, 132, 140	OFDM	BPSK	6.5
802.11n (HT40)	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 (HT20)	52 to 140	52, 60, 64, 100, 116, 132, 140	OFDM	BPSK	6.5
802.11n (HT40)	52 to 140	54, 62, 102, 110, 134	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	25deg. C, 58%RH	120Vac, 60Hz	Kyle Huang
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Frank Liu
RE ³ 1G	25deg. C, 66%RH	120Vac, 60Hz	Robert Cheng
APCM	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

662911 D01 Multiple Transmitter Output

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 100 % > 98 %, duty factor is not required.



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.

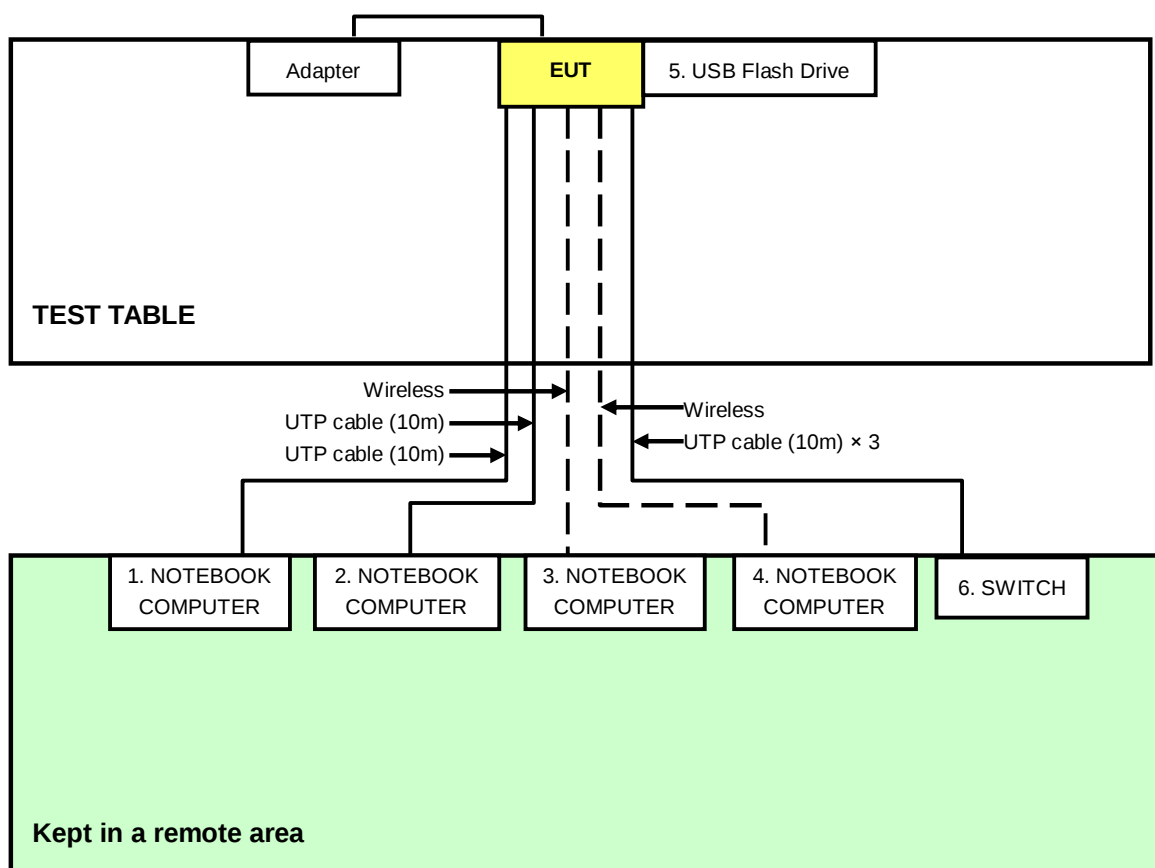
For Conducted emission test					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP18L	12252644560	FCC DoC
2	NOTEBOOK COMPUTER	DELL	E6420	B92T3R1	FCC DoC
3	NOTEBOOK COMPUTER	DELL	E5420	CHHYLQ1	FCC DoC
4	NOTEBOOK COMPUTER	DELL	PP27L	6YLB32S	FCC DoC
5	USB Flash Drive	SanDisk	SDCZ2-512-A10	5597844849	FCC DoC
6	SWITCH	HP	J9088A	NA	NA
For Other test items					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	E6420	H62T3R1	FCC DoC
2	NOTEBOOK COMPUTER	DELL	PP32LA	DSL32S	FCC DoC
3	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC
4	iPod shuffle	Apple	MC749TA/A	CC4DM9M8DFDM	NA

For Conducted emission test	
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable (10m)
2	UTP cable (10m)
3	NA
4	NA
5	NA
6	UTP cable (10m)
For Other test items	
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable, 10m
2	UTP cable, 10m
3	UTP cable, 10m
4	USB cable, 0.1m

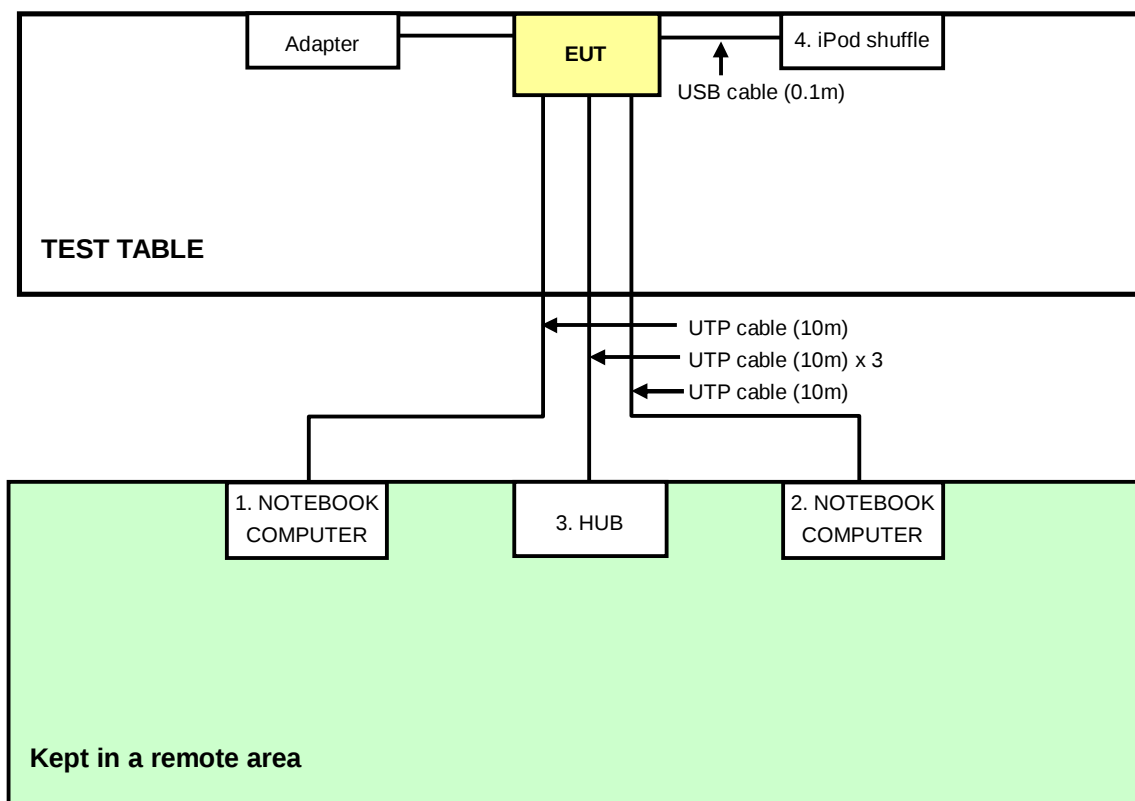
NOTE: All power cords of the above support units are non shielded (1.8m).

3.6 CONFIGURATION OF SYSTEM UNDER TEST

For Conducted emission test:



For Other test items:



4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100287	Feb. 29, 2012	Feb. 28, 2013
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK 8127	8127-523	Sep. 20, 2011	Sep. 19, 2012
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ESH3-Z5	848773/004	Nov. 01, 2011	Oct. 31, 2012
RF Cable (JYEBAO)	5DFB	COACAB-002	Aug. 05, 2012	Aug. 04, 2013
50 ohms Terminator	50	4	Nov. 12, 2011	Nov. 11, 2012
Software ADT	BV ADT_Cond_V7.3.7 .3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. A.
3. The VCCI Con A Registration No. is C-817.
4. Tested Date: Aug. 21, 2012

4.1.3 TEST PROCEDURES

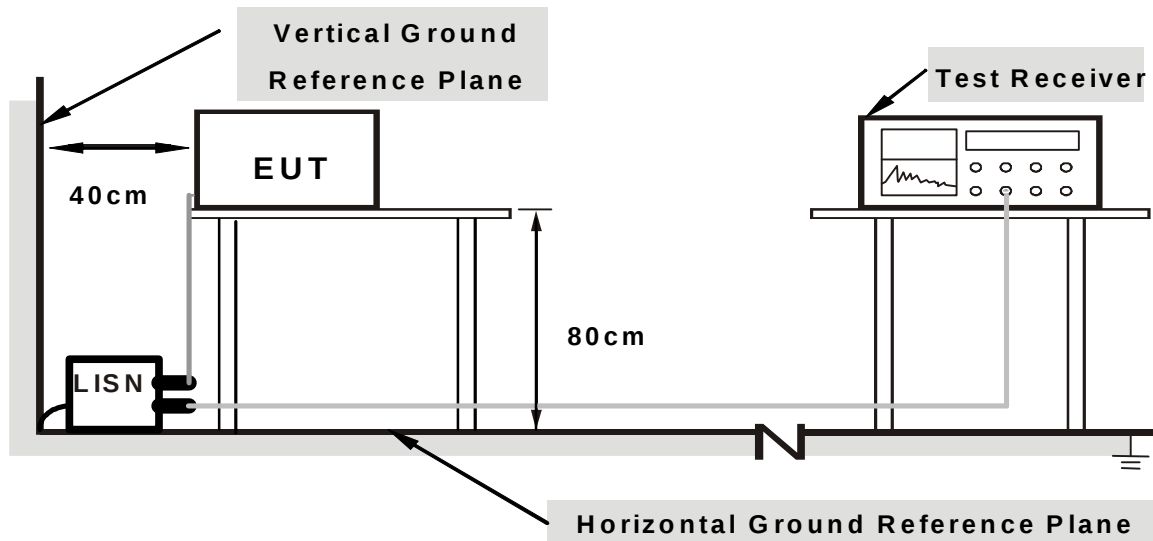
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN.
- b. The two LISNs provide 50 ohm/ 50uH of coupling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

Note: 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 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 related item – Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITIONS

1. Place the EUT on testing table.
2. Support units 1 ~ 4 (NB) run test program “Ping.exe” to enable EUT under transmission/receiving condition continuously via UTP cables and wireless transmission.
3. Support unit 1 (NB) run test program “EMC.bat” test program to read and write messages from Support unit 5 (USB Flash Drive) via EUT.
4. Repeat steps 2-3.

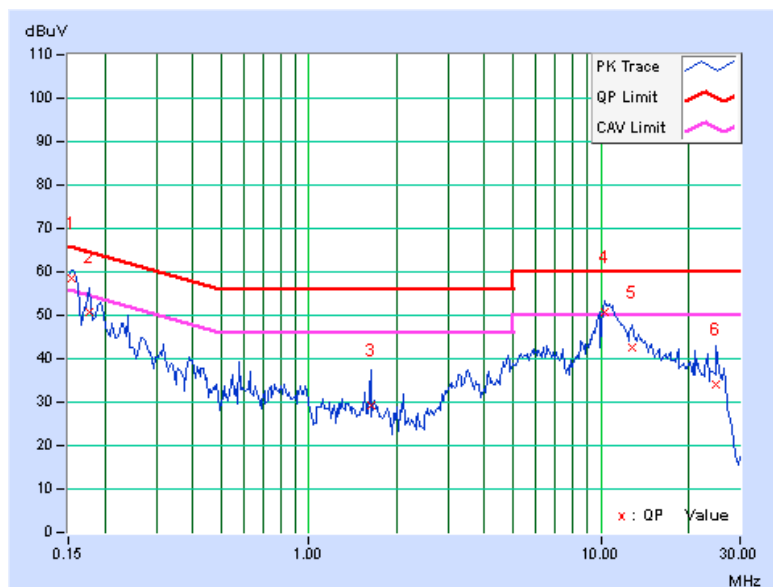
4.1.7 TEST RESULTS (MODE 1)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
-------	----------	---------------	-------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.11	58.33	48.02	58.44	48.13	65.79	55.79	-7.35	-7.66
2	0.17734	0.12	50.78	30.63	50.90	30.75	64.61	54.61	-13.71	-23.86
3	1.62500	0.25	28.87	22.66	29.12	22.91	56.00	46.00	-26.88	-23.09
4	10.35938	0.78	50.12	45.12	50.90	45.90	60.00	50.00	-9.10	-4.10
5	12.76172	0.91	41.67	36.72	42.58	37.63	60.00	50.00	-17.42	-12.37
6	24.93750	1.46	32.78	27.62	34.24	29.08	60.00	50.00	-25.76	-20.92

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.

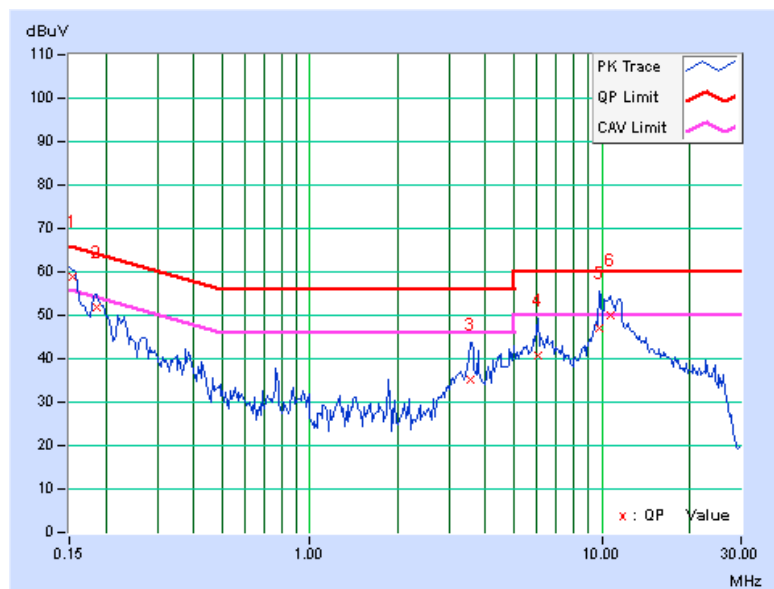


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
-------	-------------	---------------	-------

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.15	58.65	48.92	58.80	49.07	65.79	55.79	-6.99	-6.72
2	0.18516	0.15	51.66	41.82	51.81	41.97	64.25	54.25	-12.44	-12.28
3	3.55469	0.33	34.78	28.33	35.11	28.66	56.00	46.00	-20.89	-17.34
4	6.02344	0.41	40.46	35.32	40.87	35.73	60.00	50.00	-19.13	-14.27
5	9.81641	0.53	46.38	40.82	46.91	41.35	60.00	50.00	-13.09	-8.65
6	10.77344	0.56	49.58	44.66	50.14	45.22	60.00	50.00	-9.86	-4.78

REMARKS:

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



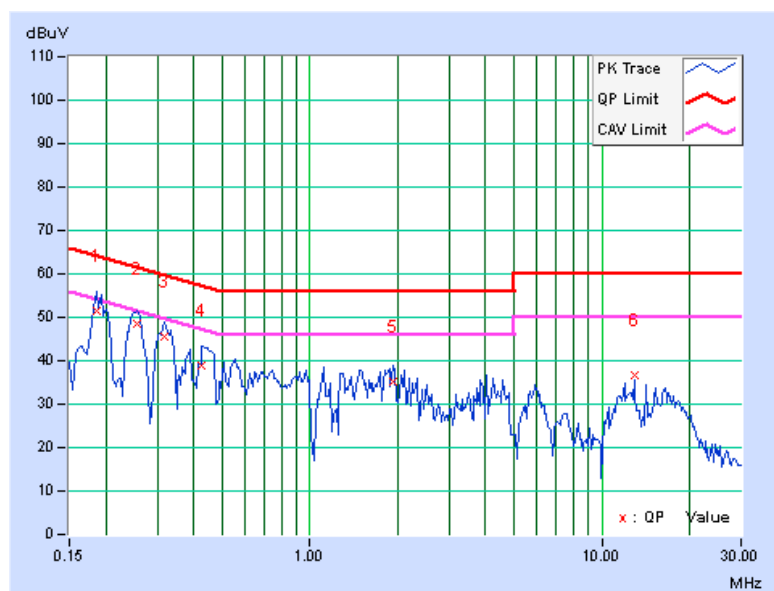
4.1.8 TEST RESULTS (MODE 2)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
-------	----------	---------------	-------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18516	0.06	51.35	42.75	51.41	42.81	64.25	54.25	-12.84	-11.44
2	0.25547	0.06	48.28	38.67	48.34	38.73	61.58	51.58	-13.23	-12.84
3	0.31797	0.07	45.35	37.10	45.42	37.17	59.76	49.76	-14.34	-12.59
4	0.42734	0.07	38.69	29.13	38.76	29.20	57.30	47.30	-18.54	-18.10
5	1.92969	0.19	35.18	25.91	35.37	26.10	56.00	46.00	-20.63	-19.90
6	13.01172	0.47	36.33	33.89	36.80	34.36	60.00	50.00	-23.20	-15.64

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.

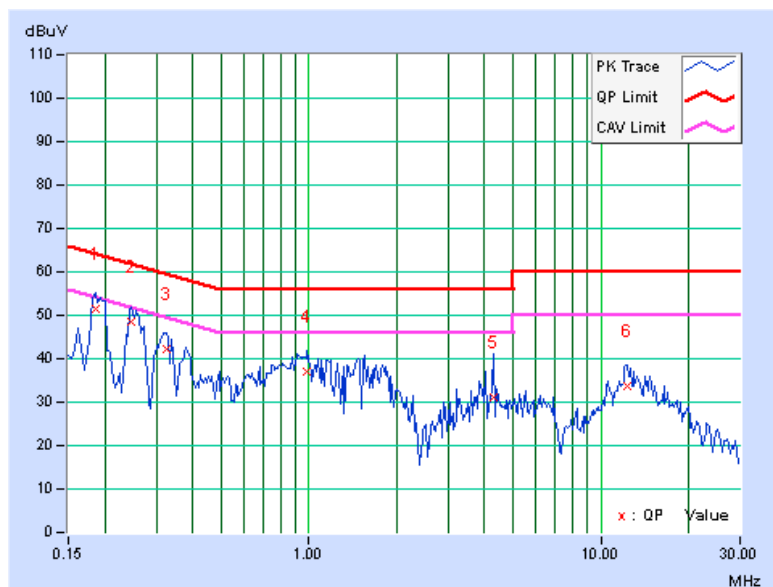


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
-------	-------------	---------------	-------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18516	0.07	51.41	42.62	51.48	42.69	64.25	54.25	-12.77	-11.56
2	0.24766	0.07	48.34	38.03	48.41	38.10	61.84	51.84	-13.42	-13.73
3	0.32578	0.08	41.98	30.00	42.06	30.08	59.56	49.56	-17.50	-19.48
4	0.98594	0.12	36.87	26.77	36.99	26.89	56.00	46.00	-19.01	-19.11
5	4.31250	0.26	31.01	19.70	31.27	19.96	56.00	46.00	-24.73	-26.04
6	12.31641	0.44	33.26	26.00	33.70	26.44	60.00	50.00	-26.30	-23.56

REMARKS:

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



4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.2.1 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.

4.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

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

NOTE:

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

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

4.2.3 TEST INSTRUMENTS

For below 1GHz test:

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
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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
- 3 The test was performed in Open Site No. C.
4. The FCC Site Registration No. is 656396.
- 5 The VCCI Site Registration No. is R-1626.
- 6 The CANADA Site Registration No. is IC 7450G-3.
- 7 Tested Date: Aug. 03, 2012



A D T

For above 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250254	July 09, 2012	July 08, 2013
Pre-Selector Agilent	N9039A	MY46520311	July 09, 2012	July 08, 2013
Signal Generator Agilent	N5181A	MY49060517	July 09, 2012	July 08, 2013
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 15, 2011	Nov. 14, 2012
Pre-Amplifier Agilent	8449B	3008A02578	June 26, 2012	June 25, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Apr. 09, 2012	Apr. 08, 2013
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 14, 2011	Nov. 13, 2012
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 26, 2011	Dec. 25, 2012
RF Cable	NA	CHGCAB_001	Oct. 07, 2011	Oct. 06, 2012
Software	ADT_Radiated _V8.7.05	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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.
7. Tested Date: Aug. 03, 2012

4.2.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters open field site for below 1GHz test and 3 meters chamber room for above 1GHz 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.

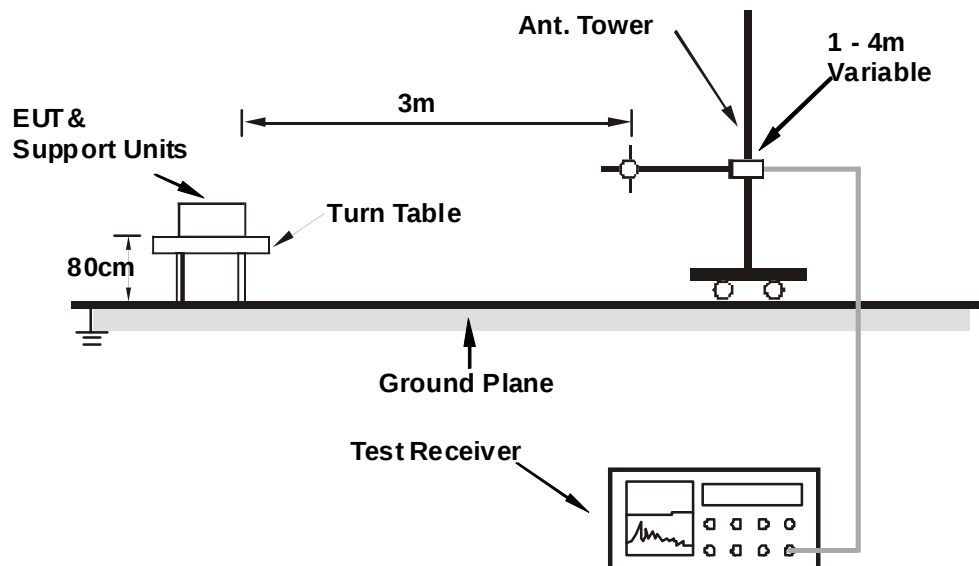
NOTE:

1. 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.

4.2.5 DEVIATION FROM TEST STANDARD

No deviation

4.2.6 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.2.7 EUT OPERATING CONDITION

1. Turn on the power of EUT.
2. The communication partner run test program “RT5x9x V1.0.7.6 AP” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.2.8 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11n (HT20)

CHANNEL	TX Channel 140	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	219.00	40.5 QP	46.0	-5.5	1.00 H	77	27.30	13.21
2	233.39	41.1 QP	46.0	-4.9	1.50 H	221	27.17	13.94
3	250.06	35.7 QP	46.0	-10.3	1.00 H	77	20.90	14.77
4	374.94	35.5 QP	46.0	-10.5	1.00 H	40	16.65	18.85
5	700.07	41.2 QP	46.0	-4.8	2.00 H	333	13.47	27.71
6	874.98	39.5 QP	46.0	-6.5	1.50 H	84	10.09	29.41
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	176.22	38.9 QP	43.5	-4.6	1.00 V	313	24.50	14.37
2	221.22	39.1 QP	46.0	-6.9	1.00 V	307	25.81	13.33
3	375.00	31.7 QP	46.0	-14.3	1.00 V	360	12.89	18.85
4	500.05	33.9 QP	46.0	-12.1	1.00 V	353	11.42	22.48
5	700.07	39.1 QP	46.0	-6.9	1.50 V	250	11.43	27.71
6	933.36	34.7 QP	46.0	-11.3	1.00 V	253	4.66	30.02

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	5066.75	58.1 PK	74.0	-15.9	1.11 H	102	17.85	40.25
2	5066.75	46.2 AV	54.0	-7.8	1.11 H	102	5.95	40.25
3	*5260.00	104.1 PK			1.11 H	102	63.14	40.96
4	*5260.00	95.6 AV			1.11 H	102	54.64	40.96
5	#10520.00	55.3 PK	68.3	-13.0	1.00 H	243	7.57	47.73
6	15780.00	62.1 PK	74.0	-11.9	1.00 H	343	9.56	52.54
7	15780.00	48.3 AV	54.0	-5.7	1.00 H	343	-4.24	52.54
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	5066.75	58.4 PK	74.0	-15.6	1.00 V	72	18.15	40.25
2	5066.75	47.3 AV	54.0	-6.7	1.00 V	72	7.05	40.25
3	*5260.00	110.3 PK			1.10 V	50	69.34	40.96
4	*5260.00	101.6 AV			1.10 V	50	60.64	40.96
5	#10520.00	58.3 PK	68.3	-10.0	1.00 V	131	10.57	47.73
6	15780.00	63.6 PK	74.0	-10.4	1.00 V	216	11.06	52.54
7	15780.00	49.3 AV	54.0	-4.7	1.00 V	216	-3.24	52.54

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 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	5070.75	58.3 PK	74.0	-15.7	1.11 H	104	18.04	40.26
2	5070.75	46.4 AV	54.0	-7.6	1.11 H	104	6.14	40.26
3	*5300.00	104.4 PK			1.11 H	104	63.32	41.08
4	*5300.00	95.3 AV			1.11 H	104	54.22	41.08
5	10600.00	55.4 PK	74.0	-18.6	1.00 H	246	7.64	47.76
6	10600.00	45.3 AV	54.0	-8.7	1.00 H	246	-2.46	47.76
7	15900.00	62.4 PK	74.0	-11.6	1.00 H	346	9.46	52.94
8	15900.00	48.2 AV	54.0	-5.8	1.00 H	346	-4.74	52.94
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	5070.75	58.3 PK	74.0	-15.7	1.00 V	64	18.04	40.26
2	5070.75	47.6 AV	54.0	-6.4	1.00 V	64	7.34	40.26
3	*5300.00	110.6 PK			1.17 V	71	69.52	41.08
4	*5300.00	102.3 AV			1.17 V	71	61.22	41.08
5	10600.00	58.4 PK	74.0	-15.6	1.00 V	136	10.64	47.76
6	10600.00	47.6 AV	54.0	-6.4	1.00 V	136	-0.16	47.76
7	15900.00	63.7 PK	74.0	-10.3	1.00 V	219	10.76	52.94
8	15900.00	49.6 AV	54.0	-4.4	1.00 V	219	-3.34	52.94

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	104.6 PK			1.13 H	106	63.49	41.11
2	*5320.00	95.2 AV			1.13 H	106	54.09	41.11
3	5350.00	58.1 PK	74.0	-15.9	1.13 H	106	16.95	41.15
4	5350.00	46.2 AV	54.0	-7.8	1.13 H	106	5.05	41.15
5	10640.00	55.7 PK	74.0	-18.3	1.00 H	251	7.82	47.88
6	10640.00	45.5 AV	54.0	-8.5	1.00 H	251	-2.38	47.88
7	15960.00	61.6 PK	74.0	-12.4	1.00 H	358	8.83	52.77
8	15960.00	47.5 AV	54.0	-6.5	1.00 H	358	-5.27	52.77
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	111.6 PK			1.15 V	64	70.49	41.11
2	*5320.00	102.6 AV			1.15 V	64	61.49	41.11
3	5350.00	58.1 PK	74.0	-15.9	1.00 V	128	16.95	41.15
4	5350.00	47.2 AV	54.0	-6.8	1.00 V	128	6.05	41.15
5	10640.00	58.1 PK	74.0	-15.9	1.00 V	150	10.22	47.88
6	10640.00	47.5 AV	54.0	-6.5	1.00 V	150	-0.38	47.88
7	15960.00	62.2 PK	74.0	-11.8	1.04 V	203	9.43	52.77
8	15960.00	48.8 AV	54.0	-5.2	1.04 V	203	-3.97	52.77

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	5447.70	58.0 PK	74.0	-16.0	1.12 H	105	16.55	41.45
2	5447.70	46.1 AV	54.0	-7.9	1.12 H	105	4.65	41.45
3	#5470.00	61.1 PK	68.3	-7.2	1.12 H	105	19.54	41.56
4	*5500.00	104.3 PK			1.12 H	105	62.60	41.70
5	*5500.00	95.6 AV			1.12 H	105	53.90	41.70
6	11000.00	55.4 PK	74.0	-18.6	1.00 H	257	6.43	48.97
7	11000.00	45.7 AV	54.0	-8.3	1.00 H	257	-3.27	48.97
8	#16500.00	61.3 PK	68.3	-7.0	1.00 H	342	6.91	54.39
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	5447.70	58.4 PK	74.0	-15.6	1.00 V	37	16.95	41.45
2	5447.70	47.7 AV	54.0	-6.3	1.00 V	37	6.25	41.45
3	#5470.00	65.5 PK	68.3	-2.8	1.00 V	103	23.94	41.56
4	*5500.00	111.1 PK			1.35 V	99	69.40	41.70
5	*5500.00	102.3 AV			1.35 V	99	60.60	41.70
6	11000.00	57.9 PK	74.0	-16.1	1.00 V	132	8.93	48.97
7	11000.00	47.7 AV	54.0	-6.3	1.00 V	132	-1.27	48.97
8	#16500.00	58.4 PK	68.3	-9.9	1.03 V	211	4.01	54.39

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).
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	5086.25	58.4 PK	74.0	-15.6	1.13 H	101	18.10	40.30
2	5086.25	46.7 AV	54.0	-7.3	1.13 H	101	6.40	40.30
3	*5580.00	104.6 PK			1.13 H	101	62.69	41.91
4	*5580.00	95.3 AV			1.13 H	101	53.39	41.91
5	11160.00	55.7 PK	74.0	-18.3	1.00 H	243	6.97	48.73
6	11160.00	45.2 AV	54.0	-8.8	1.00 H	243	-3.53	48.73
7	#16740.00	61.7 PK	68.3	-6.6	1.00 H	346	7.25	54.45
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	5086.25	58.4 PK	74.0	-15.6	1.00 V	66	18.10	40.30
2	5086.25	47.3 AV	54.0	-6.7	1.00 V	66	7.00	40.30
3	*5580.00	111.0 PK			1.00 V	46	69.09	41.91
4	*5580.00	102.4 AV			1.00 V	46	60.49	41.91
5	11160.00	58.2 PK	74.0	-15.8	1.00 V	136	9.47	48.73
6	11160.00	47.3 AV	54.0	-6.7	1.00 V	136	-1.43	48.73
7	#16740.00	62.3 PK	68.3	-6.0	1.00 V	46	7.85	54.45

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 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	5400.00	58.3 PK	74.0	-15.7	1.12 H	104	17.08	41.22
2	5400.00	47.6 AV	54.0	-6.4	1.12 H	104	6.38	41.22
3	*5660.00	104.7 PK			1.12 H	104	62.54	42.16
4	*5660.00	95.1 AV			1.12 H	104	52.94	42.16
5	11320.00	55.4 PK	74.0	-18.6	1.00 H	249	6.33	49.07
6	11320.00	45.6 AV	54.0	-8.4	1.00 H	249	-3.47	49.07
7	#16980.00	61.3 PK	68.3	-7.0	1.00 H	341	6.01	55.29
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	5400.00	58.2 PK	74.0	-15.8	1.00 V	37	16.98	41.22
2	5400.00	47.1 AV	54.0	-6.9	1.00 V	37	5.88	41.22
3	*5660.00	110.4 PK			1.00 V	50	68.24	42.16
4	*5660.00	101.4 AV			1.00 V	50	59.24	42.16
5	11320.00	58.3 PK	74.0	-15.7	1.00 V	139	9.23	49.07
6	11320.00	47.4 AV	54.0	-6.6	1.00 V	139	-1.67	49.07
7	#16980.00	62.1 PK	68.3	-6.2	1.00 V	57	6.81	55.29

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	104.6 PK			1.00 H	156	62.30	42.30
2	*5700.00	95.5 AV			1.00 H	156	53.20	42.30
3	#5725.00	63.3 PK	68.3	-5.0	1.00 H	156	20.96	42.34
4	11400.00	55.2 PK	74.0	-18.8	1.00 H	244	6.32	48.88
5	11400.00	45.3 AV	54.0	-8.7	1.00 H	244	-3.58	48.88
6	#17100.00	61.7 PK	68.3	-6.6	1.00 H	346	6.20	55.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	110.7 PK			1.00 V	92	68.40	42.30
2	*5700.00	101.3 AV			1.00 V	92	59.00	42.30
3	#5725.00	66.2 PK	68.3	-2.1	1.00 V	92	23.86	42.34
4	11400.00	58.4 PK	74.0	-15.6	1.00 V	134	9.52	48.88
5	11400.00	47.2 AV	54.0	-6.8	1.00 V	134	-1.68	48.88
6	#17100.00	62.3 PK	68.3	-6.0	1.00 V	62	6.80	55.50

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 (HT20)

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	5066.75	57.1 PK	74.0	-16.9	1.19 H	121	16.85	40.25
2	5066.75	45.5 AV	54.0	-8.5	1.19 H	121	5.25	40.25
3	*5260.00	105.6 PK			1.24 H	121	64.64	40.96
4	*5260.00	95.3 AV			1.24 H	121	54.34	40.96
5	#10520.00	56.4 PK	68.3	-11.9	1.00 H	211	8.67	47.73
6	15780.00	60.3 PK	74.0	-13.7	1.21 H	112	7.76	52.54
7	15780.00	50.6 AV	54.0	-3.4	1.21 H	112	-1.94	52.54
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	5066.75	59.3 PK	74.0	-14.7	1.00 V	57	19.05	40.25
2	5066.75	48.3 AV	54.0	-5.7	1.00 V	57	8.05	40.25
3	*5260.00	111.6 PK			1.00 V	46	70.64	40.96
4	*5260.00	101.3 AV			1.00 V	46	60.34	40.96
5	#10520.00	56.1 PK	68.3	-12.2	1.00 V	123	8.37	47.73
6	15780.00	60.3 PK	74.0	-13.7	1.00 V	313	7.76	52.54
7	15780.00	50.4 AV	54.0	-3.6	1.00 V	313	-2.14	52.54

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 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	105.7 PK			1.21 H	124	64.62	41.08
2	*5300.00	95.1 AV			1.21 H	124	54.02	41.08
3	5352.05	56.7 PK	74.0	-17.3	1.16 H	116	15.55	41.15
4	5352.05	45.2 AV	54.0	-8.8	1.16 H	116	4.05	41.15
5	10600.00	56.3 PK	74.0	-17.7	1.00 H	124	8.54	47.76
6	10600.00	47.6 AV	54.0	-6.4	1.00 H	124	-0.16	47.76
7	15900.00	60.7 PK	74.0	-13.3	1.00 H	319	7.76	52.94
8	15900.00	50.4 AV	54.0	-3.6	1.00 H	319	-2.54	52.94
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	111.8 PK			1.00 V	48	70.72	41.08
2	*5300.00	101.4 AV			1.00 V	48	60.32	41.08
3	5352.05	59.0 PK	74.0	-15.0	1.00 V	43	17.85	41.15
4	5352.05	48.3 AV	54.0	-5.7	1.00 V	43	7.15	41.15
5	10600.00	56.1 PK	74.0	-17.9	1.00 V	126	8.34	47.76
6	10600.00	47.3 AV	54.0	-6.7	1.00 V	126	-0.46	47.76
7	15900.00	60.4 PK	74.0	-13.6	1.00 V	314	7.46	52.94
8	15900.00	50.3 AV	54.0	-3.7	1.00 V	314	-2.64	52.94

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	5073.25	56.4 PK	74.0	-17.6	1.14 H	110	16.14	40.26
2	5073.25	44.9 AV	54.0	-9.1	1.14 H	110	4.64	40.26
3	*5320.00	105.4 PK			1.24 H	129	64.29	41.11
4	*5320.00	95.6 AV			1.24 H	129	54.49	41.11
5	5372.17	56.3 PK	74.0	-17.7	1.14 H	111	15.12	41.18
6	5372.17	44.8 AV	54.0	-9.2	1.14 H	111	3.62	41.18
7	10640.00	55.9 PK	74.0	-18.1	1.00 H	100	8.02	47.88
8	10640.00	47.4 AV	54.0	-6.6	1.00 H	100	-0.48	47.88
9	15960.00	61.1 PK	74.0	-12.9	1.00 H	297	8.33	52.77
10	15960.00	50.6 AV	54.0	-3.4	1.00 H	297	-2.17	52.77
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	5073.25	59.4 PK	74.0	-14.6	1.00 V	63	19.14	40.26
2	5073.25	47.3 AV	54.0	-6.7	1.00 V	63	7.04	40.26
3	*5320.00	111.4 PK			1.00 V	39	70.29	41.11
4	*5320.00	101.9 AV			1.00 V	39	60.79	41.11
5	5372.17	58.8 PK	74.0	-15.2	1.00 V	34	17.62	41.18
6	5372.17	48.2 AV	54.0	-5.8	1.00 V	34	7.02	41.18
7	10640.00	56.0 PK	74.0	-18.0	1.00 V	115	8.12	47.88
8	10640.00	47.4 AV	54.0	-6.6	1.00 V	115	-0.48	47.88
9	15960.00	61.0 PK	74.0	-13.0	1.04 V	300	8.23	52.77
10	15960.00	50.6 AV	54.0	-3.4	1.04 V	300	-2.17	52.77

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	5448.30	56.1 PK	74.0	-17.9	1.12 H	121	14.65	41.45
2	5448.30	44.6 AV	54.0	-9.4	1.12 H	121	3.15	41.45
3	#5470.00	61.3 PK	68.3	-7.0	1.01 H	160	19.74	41.56
4	*5500.00	105.8 PK			1.01 H	160	64.10	41.70
5	*5500.00	96.9 AV			1.01 H	160	55.20	41.70
6	11000.00	58.0 PK	74.0	-16.0	1.00 H	234	9.03	48.97
7	11000.00	45.1 AV	54.0	-8.9	1.00 H	234	-3.87	48.97
8	#16500.00	60.5 PK	68.3	-7.8	1.00 H	179	6.11	54.39
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	5448.30	58.7 PK	74.0	-15.3	1.00 V	34	17.25	41.45
2	5448.30	48.3 AV	54.0	-5.7	1.00 V	34	6.85	41.45
3	#5470.00	66.3 PK	68.3	-2.0	1.36 V	98	24.74	41.56
4	*5500.00	110.9 PK			1.11 V	102	69.20	41.70
5	*5500.00	102.4 AV			1.11 V	102	60.70	41.70
6	11000.00	57.3 PK	74.0	-16.7	1.00 V	127	8.33	48.97
7	11000.00	44.9 AV	54.0	-9.1	1.00 V	127	-4.07	48.97
8	#16500.00	59.5 PK	68.3	-8.8	1.00 V	347	5.11	54.39

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).
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	5400.00	56.5 PK	74.0	-17.5	1.13 H	96	15.28	41.22
2	5400.00	44.9 AV	54.0	-9.1	1.13 H	96	3.68	41.22
3	*5580.00	105.4 PK			1.02 H	159	63.49	41.91
4	*5580.00	96.4 AV			1.02 H	159	54.49	41.91
5	11160.00	58.4 PK	74.0	-15.6	1.00 H	237	9.67	48.73
6	11160.00	45.6 AV	54.0	-8.4	1.00 H	237	-3.13	48.73
7	#16740.00	60.3 PK	68.3	-8.0	1.00 H	169	5.85	54.45
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	5400.00	63.1 PK	74.0	-10.9	1.00 V	37	21.88	41.22
2	5400.00	51.8 AV	54.0	-2.2	1.00 V	37	10.58	41.22
3	*5580.00	111.6 PK			1.10 V	91	69.69	41.91
4	*5580.00	102.9 AV			1.10 V	91	60.99	41.91
5	11160.00	57.6 PK	74.0	-16.4	1.00 V	126	8.87	48.73
6	11160.00	45.4 AV	54.0	-8.6	1.00 V	126	-3.33	48.73
7	#16740.00	59.3 PK	68.3	-9.0	1.00 V	343	4.85	54.45

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 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	5453.40	56.5 PK	74.0	-17.5	1.09 H	88	15.02	41.48
2	5453.40	45.2 AV	54.0	-8.8	1.09 H	88	3.72	41.48
3	*5660.00	105.1 PK			1.04 H	157	62.94	42.16
4	*5660.00	96.3 AV			1.04 H	157	54.14	42.16
5	11320.00	58.6 PK	74.0	-15.4	1.00 H	234	9.53	49.07
6	11320.00	45.9 AV	54.0	-8.1	1.00 H	234	-3.17	49.07
7	#16980.00	60.7 PK	68.3	-7.6	1.00 H	162	5.41	55.29
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	5453.40	58.6 PK	74.0	-15.4	1.02 V	19	17.12	41.48
2	5453.40	48.4 AV	54.0	-5.6	1.02 V	19	6.92	41.48
3	*5660.00	110.5 PK			1.09 V	98	68.34	42.16
4	*5660.00	101.2 AV			1.09 V	98	59.04	42.16
5	11320.00	57.7 PK	74.0	-16.3	1.00 V	121	8.63	49.07
6	11320.00	45.9 AV	54.0	-8.1	1.00 V	121	-3.17	49.07
7	#16980.00	59.6 PK	68.3	-8.7	1.00 V	346	4.31	55.29

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	105.3 PK			1.07 H	154	63.00	42.30
2	*5700.00	96.6 AV			1.07 H	154	54.30	42.30
3	#5725.00	64.3 PK	68.3	-4.0	1.00 H	164	21.96	42.34
4	11400.00	58.4 PK	74.0	-15.6	1.00 H	251	9.52	48.88
5	11400.00	45.3 AV	54.0	-8.7	1.00 H	251	-3.58	48.88
6	#17100.00	60.3 PK	68.3	-8.0	1.00 H	164	4.80	55.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	110.6 PK			1.30 V	97	68.30	42.30
2	*5700.00	101.4 AV			1.30 V	97	59.10	42.30
3	#5725.00	67.2 PK	68.3	-1.1	1.30 V	97	24.86	42.34
4	11400.00	57.3 PK	74.0	-16.7	1.00 V	126	8.42	48.88
5	11400.00	45.4 AV	54.0	-8.6	1.00 V	126	-3.48	48.88
6	#17100.00	59.1 PK	68.3	-9.2	1.00 V	351	3.60	55.50

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 (HT40)

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	5071.50	57.3 PK	74.0	-16.7	1.00 H	35	17.04	40.26
2	5071.50	48.8 AV	54.0	-5.2	1.00 H	35	8.54	40.26
3	*5270.00	96.2 PK			1.04 H	151	55.21	40.99
4	*5270.00	87.3 AV			1.04 H	151	46.31	40.99
5	#10540.00	58.3 PK	68.3	-10.0	1.00 H	254	10.56	47.74
6	15810.00	59.6 PK	74.0	-14.4	1.00 H	126	7.03	52.57
7	15810.00	50.3 AV	54.0	-3.7	1.00 H	126	-2.27	52.57
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	5071.50	57.3 PK	74.0	-16.7	1.00 V	70	17.04	40.26
2	5071.50	48.7 AV	54.0	-5.3	1.00 V	70	8.44	40.26
3	*5270.00	111.6 PK			1.00 V	65	70.61	40.99
4	*5270.00	101.3 AV			1.00 V	65	60.31	40.99
5	#10540.00	57.1 PK	68.3	-11.2	1.00 V	126	9.36	47.74
6	15810.00	59.3 PK	74.0	-14.7	1.00 V	349	6.73	52.57
7	15810.00	50.1 AV	54.0	-3.9	1.00 V	349	-2.47	52.57

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.
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	96.3 PK			1.06 H	149	55.21	41.09
2	*5310.00	87.2 AV			1.06 H	149	46.11	41.09
3	5350.00	57.3 PK	74.0	-16.7	1.00 H	12	16.15	41.15
4	5350.00	48.8 AV	54.0	-5.2	1.00 H	12	7.65	41.15
5	10620.00	58.4 PK	74.0	-15.6	1.00 H	251	10.58	47.82
6	10620.00	48.3 AV	54.0	-5.7	1.00 H	251	0.48	47.82
7	15930.00	59.3 PK	74.0	-14.7	1.00 H	124	6.44	52.86
8	15930.00	50.1 AV	54.0	-3.9	1.00 H	124	-2.76	52.86
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	111.2 PK			1.00 V	40	70.11	41.09
2	*5310.00	101.6 AV			1.00 V	40	60.51	41.09
3	5350.00	57.7 PK	74.0	-16.3	1.00 V	46	16.55	41.15
4	5350.00	49.0 AV	54.0	-5.0	1.00 V	46	7.85	41.15
5	10620.00	57.3 PK	74.0	-16.7	1.00 V	121	9.48	47.82
6	10620.00	47.2 AV	54.0	-6.8	1.00 V	121	-0.62	47.82
7	15930.00	59.6 PK	74.0	-14.4	1.00 V	346	6.74	52.86
8	15930.00	50.4 AV	54.0	-3.6	1.00 V	346	-2.46	52.86

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	56.3 PK	74.0	-17.7	1.01 H	153	14.79	41.51
2	5460.00	47.2 AV	54.0	-6.8	1.01 H	153	5.69	41.51
3	#5470.00	62.3 PK	68.3	-6.0	1.01 H	153	20.74	41.56
4	*5510.00	96.6 PK			1.01 H	153	54.87	41.73
5	*5510.00	87.7 AV			1.01 H	153	45.97	41.73
6	11020.00	57.6 PK	74.0	-16.4	1.00 H	263	8.66	48.94
7	11020.00	47.3 AV	54.0	-6.7	1.00 H	263	-1.64	48.94
8	#16530.00	59.2 PK	68.3	-9.1	1.00 H	121	4.48	54.72
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	60.5 PK	74.0	-13.5	1.12 V	103	18.99	41.51
2	5460.00	50.6 AV	54.0	-3.4	1.12 V	103	9.09	41.51
3	#5470.00	67.1 PK	68.3	-1.2	1.12 V	103	25.54	41.56
4	*5510.00	111.6 PK			1.12 V	103	69.87	41.73
5	*5510.00	101.7 AV			1.12 V	103	59.97	41.73
6	11020.00	57.4 PK	74.0	-16.6	1.00 V	124	8.46	48.94
7	11020.00	47.1 AV	54.0	-6.9	1.00 V	124	-1.84	48.94
8	#16530.00	59.2 PK	68.3	-9.1	1.00 V	321	4.48	54.72

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 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	5447.10	57.5 PK	74.0	-16.5	1.00 H	30	16.05	41.45
2	5447.10	48.8 AV	54.0	-5.2	1.00 H	30	7.35	41.45
3	*5550.00	96.5 PK			1.04 H	143	54.67	41.83
4	*5550.00	87.2 AV			1.04 H	143	45.37	41.83
5	11100.00	57.4 PK	74.0	-16.6	1.00 H	126	8.59	48.81
6	11100.00	47.3 AV	54.0	-6.7	1.00 H	126	-1.51	48.81
7	#16650.00	58.1 PK	68.3	-10.2	1.00 H	124	3.05	55.05
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	5447.10	57.3 PK	74.0	-16.7	1.00 V	29	15.85	41.45
2	5447.10	49.0 AV	54.0	-5.0	1.00 V	29	7.55	41.45
3	*5550.00	110.3 PK			1.10 V	90	68.47	41.83
4	*5550.00	100.4 AV			1.10 V	90	58.57	41.83
5	11100.00	57.3 PK	74.0	-16.7	1.00 V	129	8.49	48.81
6	11100.00	46.9 AV	54.0	-7.1	1.00 V	129	-1.91	48.81
7	#16650.00	58.4 PK	68.3	-9.9	1.00 V	344	3.35	55.05

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	5439.40	56.3 PK	74.0	-17.7	1.00 H	35	14.89	41.41
2	5439.40	48.0 AV	54.0	-6.0	1.00 H	35	6.59	41.41
3	*5670.00	96.3 PK			1.02 H	153	54.10	42.20
4	*5670.00	87.4 AV			1.02 H	153	45.20	42.20
5	#5725.00	59.3 PK	68.3	-9.0	1.00 H	126	16.96	42.34
6	11340.00	57.3 PK	74.0	-16.7	1.00 H	121	8.28	49.02
7	11340.00	46.1 AV	54.0	-7.9	1.00 H	121	-2.92	49.02
8	#17010.00	58.3 PK	68.3	-10.0	1.00 H	121	2.95	55.35
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	5439.40	56.8 PK	74.0	-17.2	1.00 V	30	15.39	41.41
2	5439.40	48.5 AV	54.0	-5.5	1.00 V	30	7.09	41.41
3	*5670.00	110.6 PK			1.09 V	96	68.40	42.20
4	*5670.00	100.5 AV			1.09 V	96	58.30	42.20
5	#5725.00	63.7 PK	68.3	-4.6	1.09 V	96	21.36	42.34
6	11340.00	57.6 PK	74.0	-16.4	1.00 V	127	8.58	49.02
7	11340.00	47.2 AV	54.0	-6.8	1.00 V	127	-1.82	49.02
8	#17010.00	58.1 PK	68.3	-10.2	1.00 V	313	2.75	55.35

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.

4.3 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.

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

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

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

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

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

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Jan. 30, 2013

4.3.3 TEST PROCEDURE

FOR AVERAGE POWER MEASUREMENT

Follow FCC KDB 789033 UNII test procedure:

Method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1MHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Number of points in sweep ≥ 2 Span / RBW.
5. Sweep time = auto.
6. Set trigger to free run (duty cycle ≥ 98 percent) ; Set video trigger (duty cycle < 98 percent)
7. Detector = RMS.
8. Trace average at least 100 traces in power averaging mode
9. Compute power by integrating the spectrum across the 26 dB EBW of the signal.

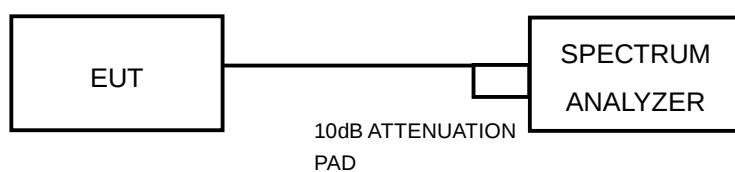
FOR 26dB OCCUPIED BANDWIDTH

- 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



4.3.6 EUT OPERATING CONDITIONS

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

4.3.7 TEST RESULTS

POWER OUTPUT: 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
52	5260	115.611	20.63	24	PASS
60	5300	126.183	21.01	24	PASS
64	5320	115.878	20.64	24	PASS
100	5500	126.183	21.01	24	PASS
116	5580	115.611	20.63	24	PASS
132	5660	124.451	20.95	24	PASS
140	5700	122.180	20.87	24	PASS

802.11n (HT20)

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
52	5260	17.94	18.21	128.452	21.09	24	PASS
60	5300	17.61	18.27	124.820	20.96	24	PASS
64	5320	18.19	17.93	128.004	21.07	24	PASS
100	5500	18.06	18.14	129.136	21.11	24	PASS
116	5580	18.06	18.22	130.347	21.15	24	PASS
132	5660	18.02	17.99	126.338	21.02	24	PASS
140	5700	18.00	17.48	119.072	20.76	24	PASS

802.11n (HT40)

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
54	5270	20.06	19.89	198.890	22.99	24	PASS
62	5310	20.24	19.95	204.537	23.11	24	PASS
102	5510	19.48	19.98	188.257	22.75	24	PASS
110	5550	19.86	19.59	187.819	22.74	24	PASS
134	5670	19.54	20.28	196.610	22.94	24	PASS

EUT HIGHEST AND LOWEST CONDUCTED POWER

802.11a

FREQUENCY BAND (MHz)	MAX. POWER		MIN. POWER	
	OUTPUT POWER(dBm)	OUTPUT POWER(mW)	OUTPUT POWER(dBm)	OUTPUT POWER(mW)
5250~5350	21.01	126.183	13.01	19.998
5470~5725	21.01	126.183	13.01	19.998

NOTE: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11n (HT20)

FREQUENCY BAND (MHz)	MAX. POWER		MIN. POWER	
	OUTPUT POWER(dBm)	OUTPUT POWER(mW)	OUTPUT POWER(dBm)	OUTPUT POWER(mW)
5250~5350	21.09	128.452	13.09	20.370
5470~5725	21.15	130.347	13.15	20.653

NOTE: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11n (HT40)

FREQUENCY BAND (MHz)	MAX. POWER		MIN. POWER	
	OUTPUT POWER(dBm)	OUTPUT POWER(mW)	OUTPUT POWER(dBm)	OUTPUT POWER(mW)
5250~5350	23.11	204.537	15.11	32.433
5470~5725	22.94	196.610	14.94	31.188

NOTE: Manufacturer provides Transmit Power Control description to meet this requirement.

26dB BANDWIDTH:

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)
52	5260	18.53
60	5300	19.00
64	5320	18.87
100	5500	18.95
116	5580	18.87
132	5660	18.76
140	5700	18.98

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
52	5260	19.11	19.23
60	5300	19.19	19.11
64	5320	19.21	19.16
100	5500	19.23	19.19
116	5580	19.21	19.26
132	5660	19.30	19.07
140	5700	19.22	19.24

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
54	5270	39.95	39.93
62	5310	39.93	39.84
102	5510	39.87	40.05
110	5550	40.03	39.92
134	5670	40.01	40.12

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
R&S Spectrum Analyzer	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Jan. 30, 2013

4.4.3 TEST PROCEDURES

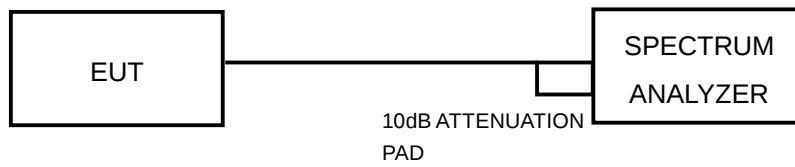
Using method SA-1

- 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

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
52	5260	10.35	11	PASS
60	5300	10.69	11	PASS
64	5320	10.33	11	PASS
100	5500	10.71	11	PASS
116	5580	10.26	11	PASS
132	5660	10.69	11	PASS
140	5700	10.53	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 (HT20)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
52	5260	7.51	7.79	10.66	11	PASS
60	5300	7.15	7.80	10.49	11	PASS
64	5320	7.72	7.48	10.60	11	PASS
100	5500	7.58	7.67	10.63	11	PASS
116	5580	7.61	7.78	10.68	11	PASS
132	5660	7.59	7.78	10.69	11	PASS
140	5700	7.49	6.98	10.25	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.



A D T

802.11n (HT40)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
54	5270	6.74	6.60	9.67	11	PASS
62	5310	6.98	6.71	9.85	11	PASS
102	5510	6.19	6.69	9.46	11	PASS
110	5550	6.54	6.29	9.42	11	PASS
134	5670	6.22	7.03	9.66	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
R&S Spectrum Analyzer	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Jan. 30, 2013

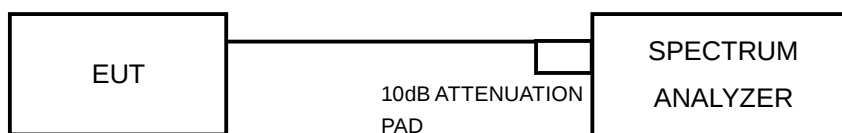
4.5.3 TEST PROCEDURE

- 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

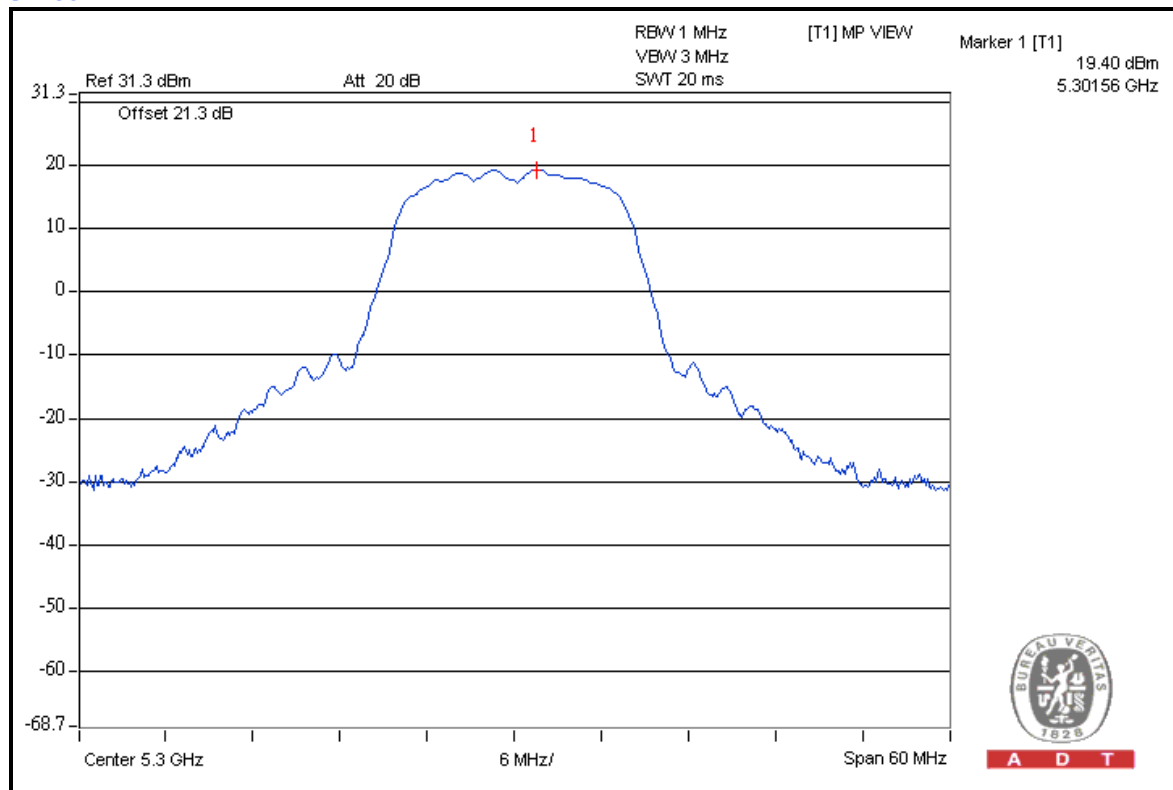
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.5.7 TEST RESULTS

802.11a

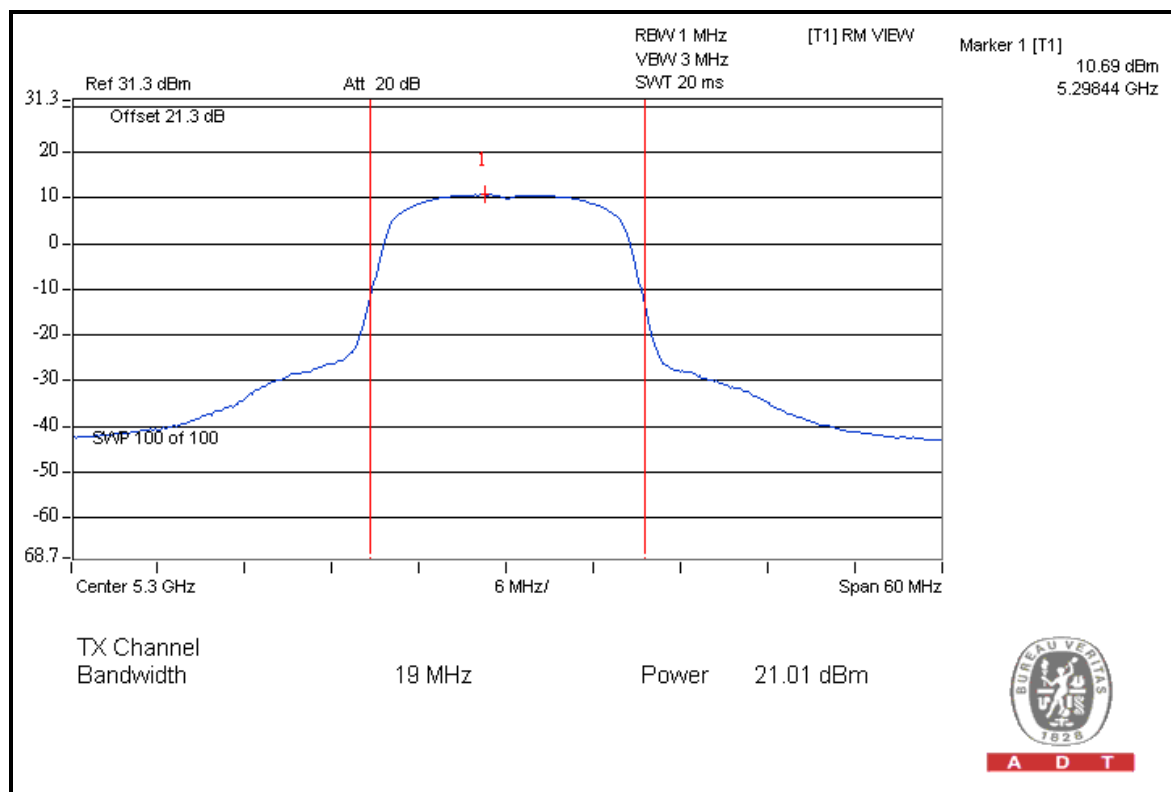
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS/FAIL
52	5260	18.79	10.35	8.44	13	PASS
60	5300	19.40	10.69	8.71	13	PASS
64	5320	18.97	10.33	8.64	13	PASS
100	5500	18.93	10.71	8.22	13	PASS
116	5580	18.84	10.26	8.58	13	PASS
132	5660	19.16	10.69	8.47	13	PASS
140	5700	18.92	10.53	8.39	13	PASS

CH 60





A D T

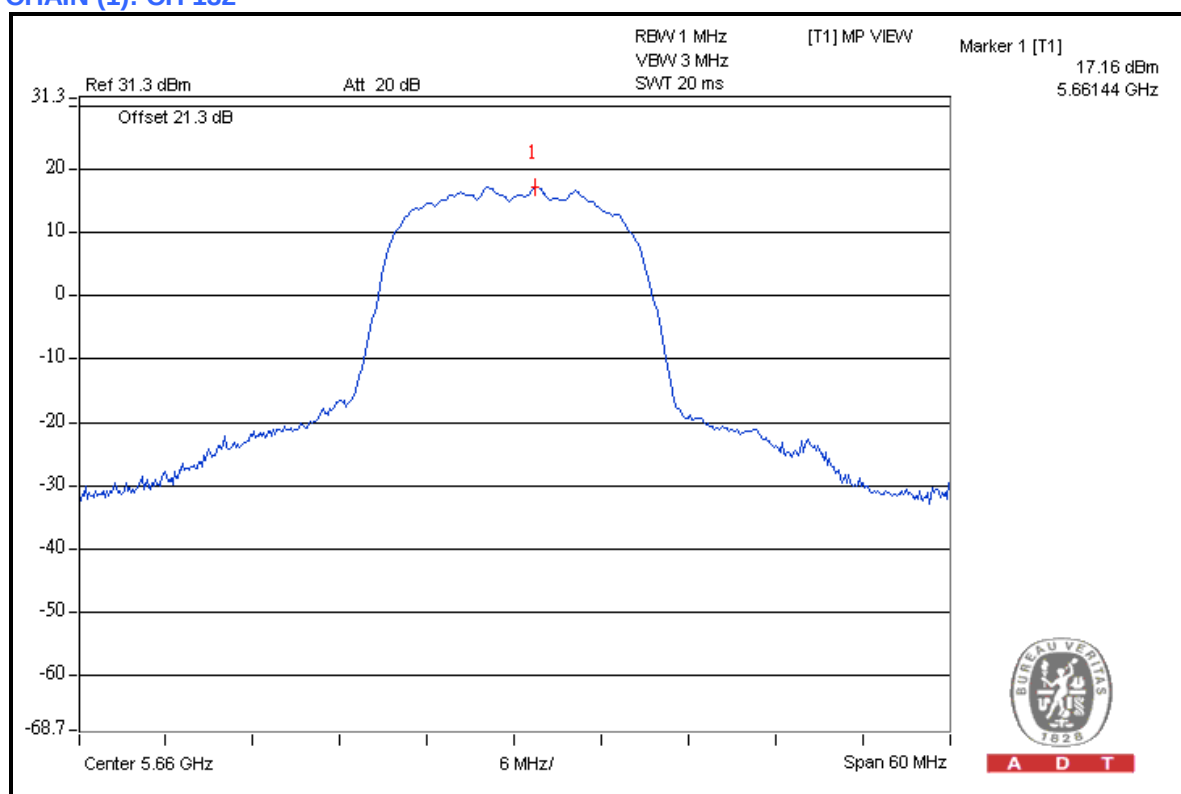


A D T

802.11n (HT20)

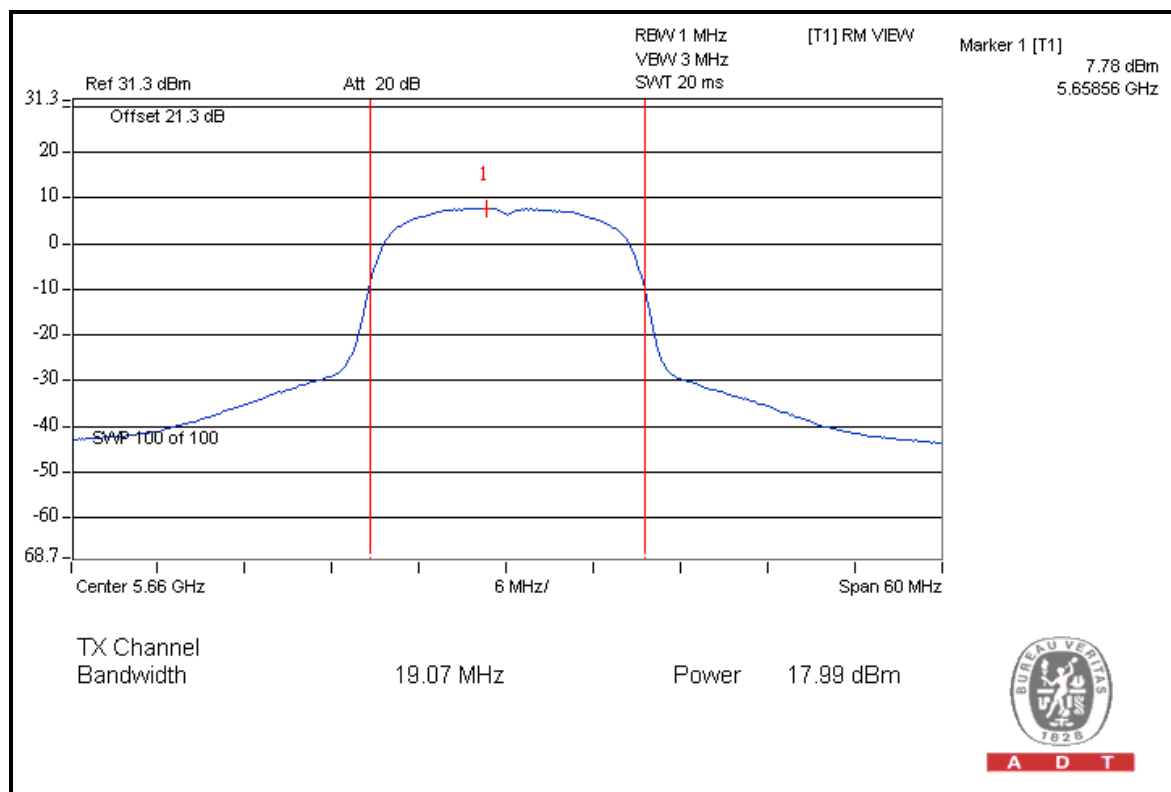
CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)		PPSD (dBm)		PEAK EXCURSION (dB)		LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1		
52	5260	16.03	16.51	7.51	7.79	8.52	8.72	13	PASS
60	5300	15.71	16.40	7.15	7.80	8.56	8.60	13	PASS
64	5320	16.37	16.09	7.72	7.48	8.65	8.61	13	PASS
100	5500	16.28	16.29	7.58	7.67	8.70	8.62	13	PASS
116	5580	16.20	16.40	7.61	7.78	8.59	8.62	13	PASS
132	5660	16.09	17.16	7.59	7.78	8.50	9.38	13	PASS
140	5700	16.19	15.61	7.49	6.98	8.70	8.63	13	PASS

CHAIN (1): CH 132





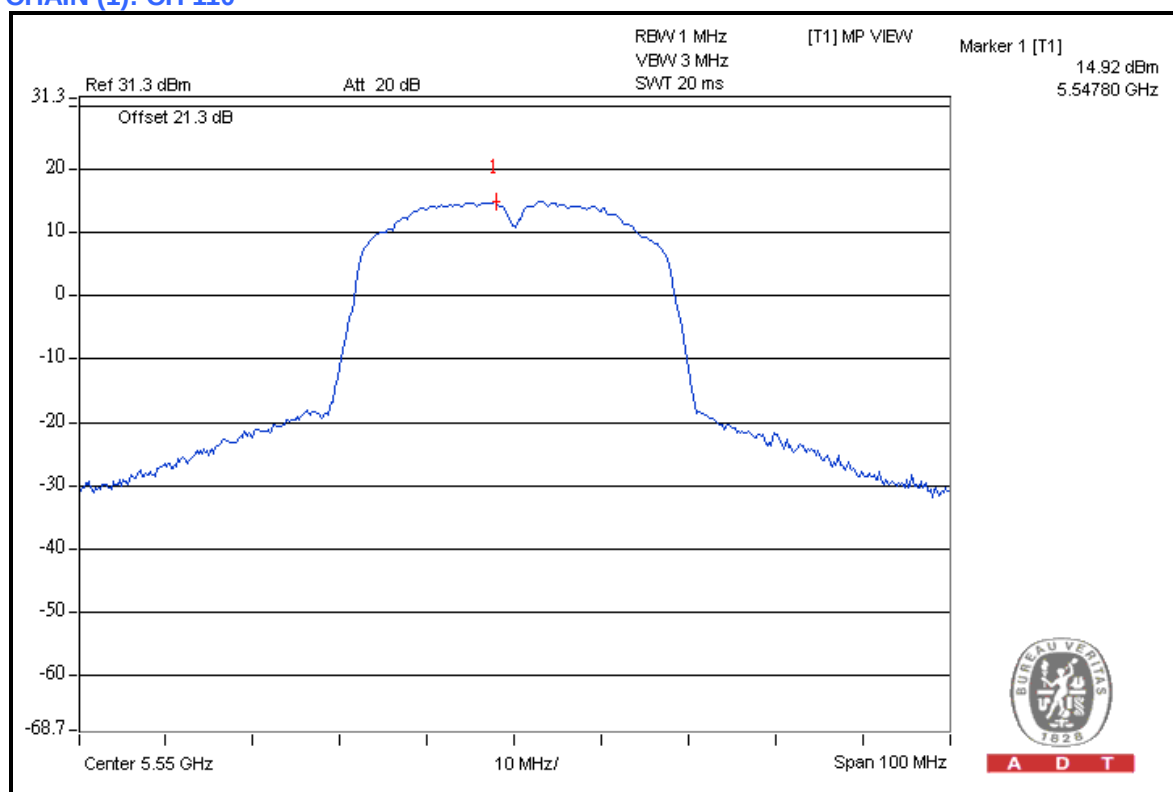
A D T



802.11n (HT40)

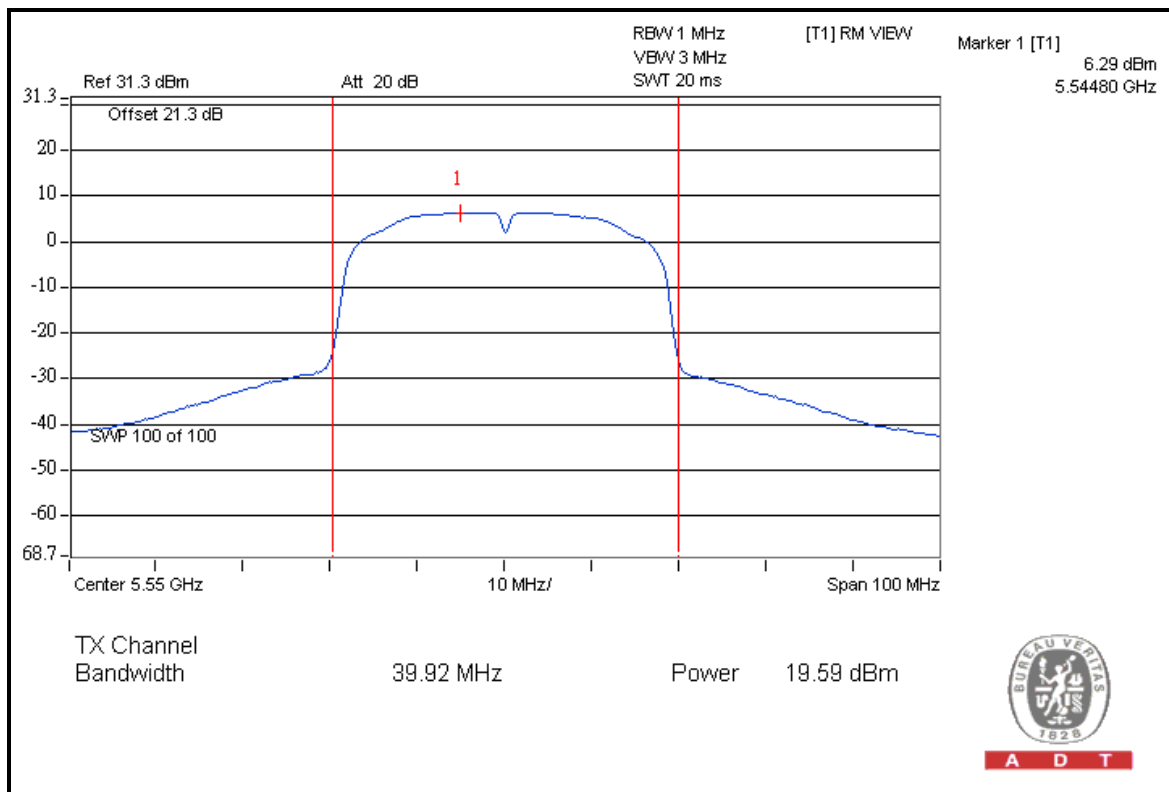
CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)		PPSD (dBm)		PEAK EXCURSION (dB)		LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1		
54	5270	15.25	15.17	6.74	6.60	8.51	8.57	13	PASS
62	5310	15.38	15.24	6.98	6.71	8.40	8.53	13	PASS
102	5510	14.75	15.24	6.19	6.69	8.56	8.55	13	PASS
110	5550	15.11	14.92	6.54	6.29	8.57	8.63	13	PASS
134	5670	14.84	15.57	6.22	7.03	8.62	8.54	13	PASS

CHAIN (1): CH 110





A D T



A D T



A D T

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	Jan. 21, 2013	Jan. 20, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Jan. 30, 2013

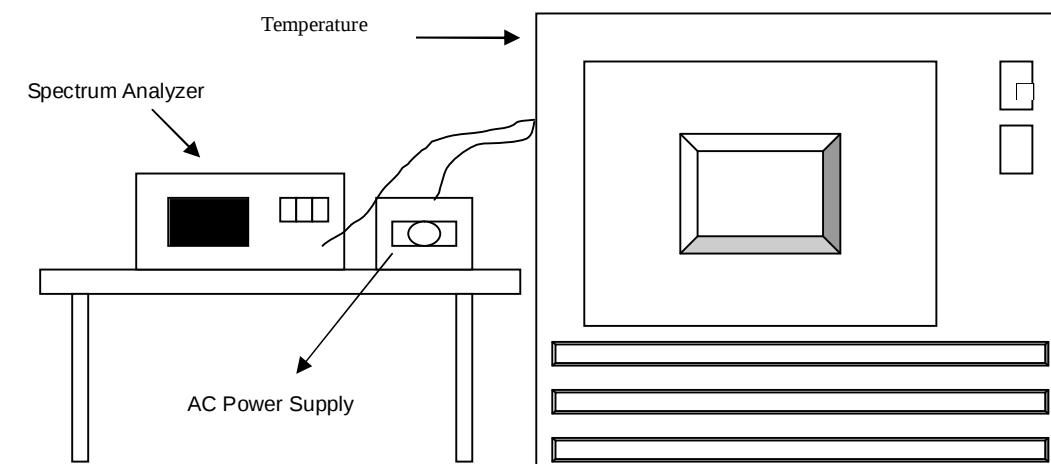
4.6.3 TEST PROCEDURE

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: 5500MHz									
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	5499.9816	-3.3455	5499.9821	-3.2545	5499.9822	-3.2364	5499.9816	-3.3455
40	120	5499.979	-3.8182	5499.9845	-2.8182	5499.9824	-3.2000	5499.981	-3.4545
30	120	5500.0129	2.3455	5500.0124	2.2545	5500.0083	1.5091	5500.0045	0.8182
20	120	5499.9996	-0.0727	5499.9941	-1.0727	5499.9956	-0.8000	5499.9988	-0.2182
10	120	5500.0142	2.5818	5500.0154	2.8000	5500.0201	3.6545	5500.0175	3.1818
0	120	5500.0047	0.8545	5500.0031	0.5636	5500.0053	0.9636	5500.0053	0.9636
-10	120	5500.0207	3.7636	5500.0154	2.8000	5500.0166	3.0182	5500.0191	3.4727
-20	120	5499.983	-3.0909	5499.9824	-3.2000	5499.9783	-3.9455	5499.9811	-3.4364
-30	120	5500.0046	0.8364	5500.0018	0.3273	5500.0006	0.1091	5500.0053	0.9636

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5500MHz									
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	5499.9995	-0.0909	5499.995	-0.9091	5499.9948	-0.9455	5499.9987	-0.2364
	120	5499.9996	-0.0727	5499.9941	-1.0727	5499.9956	-0.8000	5499.9988	-0.2182
	102	5499.998	-0.3636	5499.9954	-0.8364	5499.9941	-1.0727	5499.999	-0.1818

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. INFORMATION ON THE TESTING LABORATORIES

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

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

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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



A D T

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 ---