FCC TEST REPORT(15.247)

REPORT NO.:	RF120530E05
MODEL NO.:	DAP-2690
FCC ID:	KA2AP2690B1
RECEIVED:	May 30, 2012
TESTED:	June 07 to July 03, 2012
ISSUED:	Sep. 11, 2012

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.

Table of Contents

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120530E05	Original release	Sep. 11, 2012

1. CERTIFICATION

PRODUCT:	DAP-2690 AirPremier N Dual Band Concurrent PoE Access Point
BRAND NAME:	D-Link
MODEL NO.:	DAP-2690
TEST SAMPLE:	MASS-PRODUCTION
APPLICANT:	D-Link Corporation
TESTED:	June 07 to July 03, 2012
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247)** ANSI C63.10-2009

The above equipment (Model: DAP-2690) 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:** *Sep. 11, 2012*
(Midoli Peng, Specialist)

APPROVED BY : _____ , **DATE:** *Sep. 11, 2012*
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 2.4GHz, 2412~2462MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	**TEST TYPE**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -8.07dB at 0.15000MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2483.5MHz
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is SMA Plug Reverse not a standard connector.

For 5GHz, 5745~5825MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	**TEST TYPE**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -9.11dB at 0.15391MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.5dB at 5440.0MHz & 5400.11MHz &
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is SMA Plug Reverse not a standard connector.

NOTE: The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.25GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 2400 ~ 2483.5MHz and 5.725~5.850GHz. For the 5.15~5.25GHz RF parameters 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)	5.59 dB
Radiated emissions (1GHz -18GHz)	2.49 dB
Radiated emissions (18GHz -40GHz)	2.70 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	DAP-2690 AirPremier N Dual Band Concurrent PoE Access Point
MODEL NO.	DAP-2690
POWER SUPPLY	DC 48V from Power adapter or POE
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11g / a: up to 54Mbps 802.11n (20MHz, 800ns GI): up to 130Mbps 802.11n (20MHz, 400ns GI): up to 144.444Mbps 802.11n (40MHz, 800ns GI): up to 270Mbps 802.11n (40MHz, 400ns GI): up to 300Mbps
OPERATING FREQUENCY	**For 15.407** 5.18 ~ 5.24GHz
	For 15.247 2.4GHz: 2.412 ~ 2.462GHz 5GHz: 5.745 ~ 5.825GHz
NUMBER OF CHANNEL	**For 15.407** 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
	For 15.247 (2.4GHz) 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) **For 15.247 (5GHz)** 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
MAXIMUM OUTPUT POWER	**For 15.407** 802.11a: 15.754mW 802.11n (20MHz): 30.868mW 802.11n (40MHz): 44.335mW **For 15.247(2.4GHz)** 802.11b: 283.170mW 802.11g: 424.097mW 802.11n (20MHz): 266.886mW 802.11n (40MHz): 62.886mW **For 15.247(5GHz)** 802.11a: 322.157mW 802.11n (20MHz): 245.093mW 802.11n (40MHz): 257.526mW

ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	Adapter x 1 POE x 1

NOTE:

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

For 2.4GHz					
Transmitter Circuit	Manufacture	Model name	Antenna Gain Gain (dBi)	Antenna Type	Connector
Chain (0)	WHA YU GROUP	NP-9022	4.29	Dipole	SMA Plug Reverse
Chain (1)	WHA YU GROUP	NP-9022	4.29	Dipole	SMA Plug Reverse
For 5GHz					
Transmitter Circuit	Manufacture	Model name	Antenna Gain Gain (dBi)	Antenna Type	Connector
Chain (0)	WHA YU GROUP	SSR-12968	5G Band1: 5.646 5G Band2: 6.270 5G Band3: 5.428 5G Band4: 5.264	Dipole	SMA Plug Reverse
Chain (1)	WHA YU GROUP	SSR-12968	5G Band1: 5.646 5G Band2: 6.270 5G Band3: 5.428 5G Band4: 5.264	Dipole	SMA Plug Reverse

2. The EUT must be supplied with a power adapter or POE as following table:

POE 1		
Brand	Model No.	Spec.
Lanredy	PE03G	Output: 12-48V , 1A
POE 2		
Manufacture	Model No.	Spec.
Bothhand	EBU-101G-T2 LF	Output: 48V, 0.4A
Adapter		
Brand	Model No.	Spec.
LEI	MU24-B480050-A1	Input: 100-240V, 1.0A, 50/60Hz Output: 48V, 0.5A DC output cable (Unshielded, 1.5m)

3. The EUT incorporates a MIMO function.

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

4. The EUT was pre-tested in chamber under the following modes:

Pre-test Mode	Description
Mode A	EUT : Laying-flat type + adapter
Mode B	EUT : Stand-up type + adapter
Mode C	EUT : Laying-flat type + POE 1
Mode D	EUT : Stand-up type + POE 1
Mode E	EUT : Laying-flat type + POE 2
Mode F	EUT : Stand-up type + POE 2

The worse radiated emission (Below 1GHz) was found in **Mode C** and the radiated emission (Above 1GHz) was found in **Mode D**. Therefore only the test data of the modes were recorded in this report.

5. Radiated and Conducted emission of the simultaneous operation (2.4GHz and 5GHz WLAN technology) has been evaluated and no non-compliance was found.

6. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.

7. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz band:

11 channels are provided for 802.11b, 802.11g, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

Operated in 5725 ~ 5850MHz band:

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

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

CHANNEL	FREQUENCY
151	5755 MHz
159	5795 MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ³ 1G	APCM	OB	
1	√	-	-	-	-	EUT : Laying-flat type + adapter
2	√	√	-	-	-	EUT : Laying-flat type + POE 1
3	√	-	-	-	-	EUT : Laying-flat type + POE 2
4	-	-	√	√	√	EUT : Stand-up type + POE 1

Where **PLC:** Power Line Conducted Emission **RE < 1G:** Radiated Emission below 1GHz

RE ³ 1G: Radiated Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

OB: Conducted Out-Band Emission Measurement

NOTE: "-"means no effect.

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)
802.11g	1 to 13	6	OFDM	BPSK	6
802.11a	149 to 165	149	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)
802.11g	1 to 13	6	OFDM	BPSK	6
802.11a	149 to 165	149	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)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
For 2.4 GHz 802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
802.11a	149 to 161	149, 157, 161	OFDM	BPSK	6
For 5 GHz 802.11n (20MHz)	149 to 161	149, 157, 161	OFDM	BPSK	6.5
For 5 GHz 802.11n (40MHz)	151 to 159	151, 159	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)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
For 2.4 GHz 802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
802.11a	149 to 161	149, 157, 161	OFDM	BPSK	6
For 5 GHz 802.11n (20MHz)	149 to 161	149, 157, 161	OFDM	BPSK	6.5
For 5 GHz 802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	13.5

CONDUCTED OUT-BAND EMISSION 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)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
For 2.4 GHz 802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
802.11a	149 to 161	149, 157, 161	OFDM	BPSK	6
For 5 GHz 802.11n (20MHz)	149 to 161	149, 157, 161	OFDM	BPSK	6.5
For 5 GHz 802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	26deg. C, 60%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	23deg. C, 67%RH	120Vac, 60Hz	Robert Cheng
RE≥1G	26deg. C, 72%RH	120Vac, 60Hz	Nelson Teng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang
OB	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang

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 C (15.247)
558074 D01 DTS Meas Guidance v01
ANSI C63.10-2009

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

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

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.

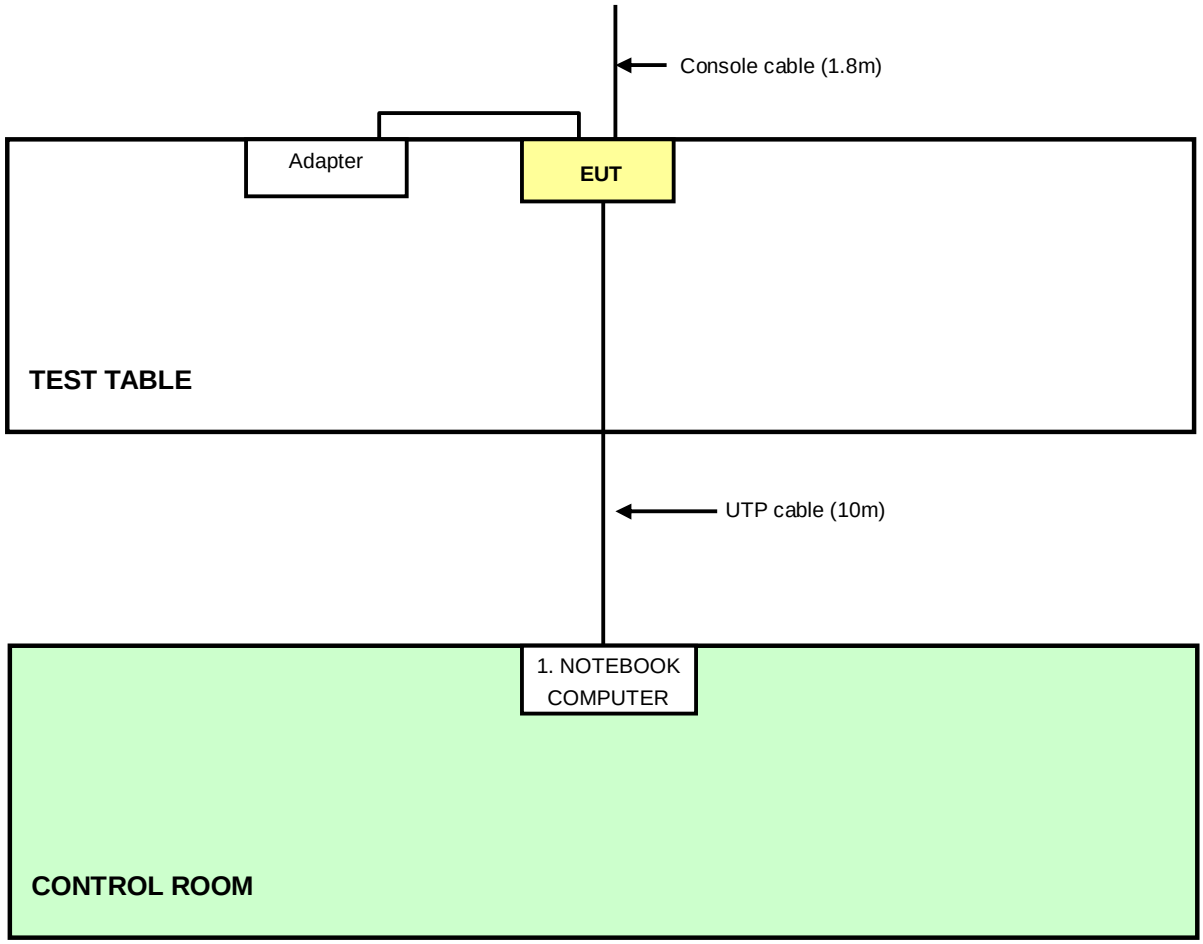
For conducted emission test					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	E6420	B92T3R1	FCC DoC
For other test items					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	GSLB32S	FCC DoC

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

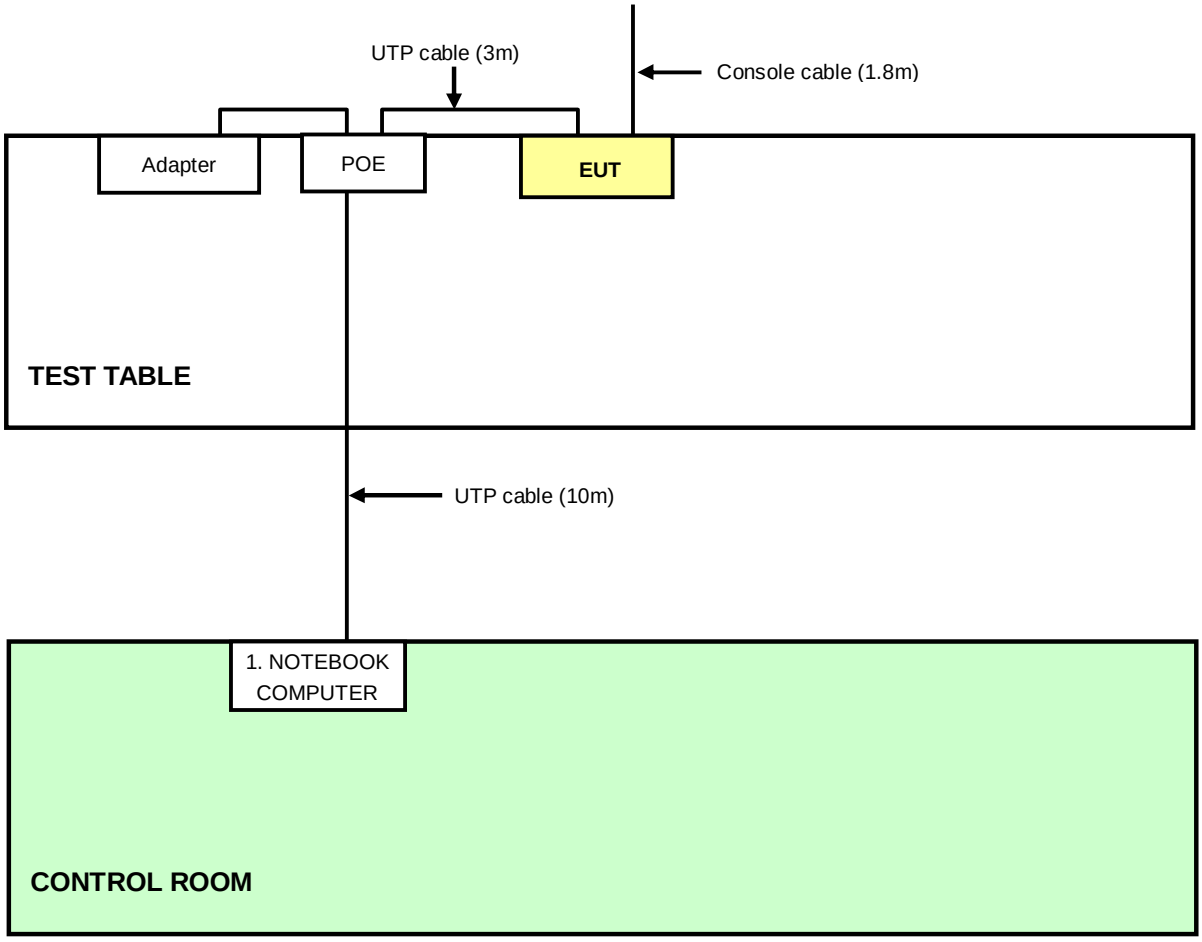
NOTE: All power cords of the above support units are non shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST

With adapter mode



With POE mode



4.TEST TYPES AND RESULTS (FOR 2.4GHz, 2412 ~ 2462MHz Band)

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 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	ESCS 30	100375	Mar. 12, 2012	Mar.11, 2013
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 07, 2011	Sep. 06, 2012
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 08,2012	June 07,2013
RF Cable (JYEBAO)	5DFB	COCCAB-001	Aug. 29, 2011	Aug. 28, 2012
50 ohms Terminator	50	EMC-3	Sep. 26, 2011	Sep. 25, 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. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: July 03, 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. 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.

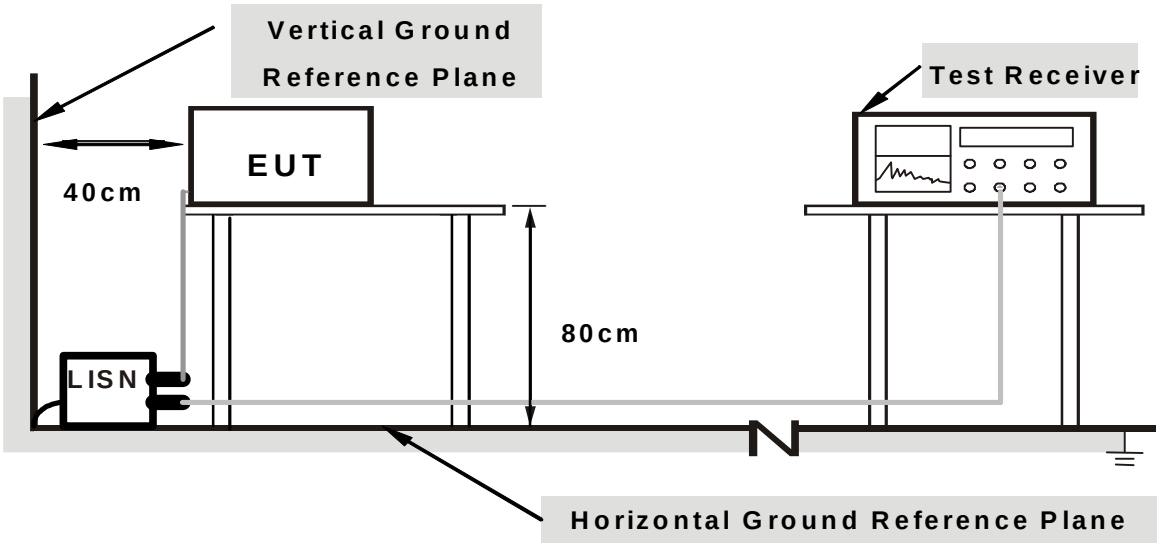
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

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

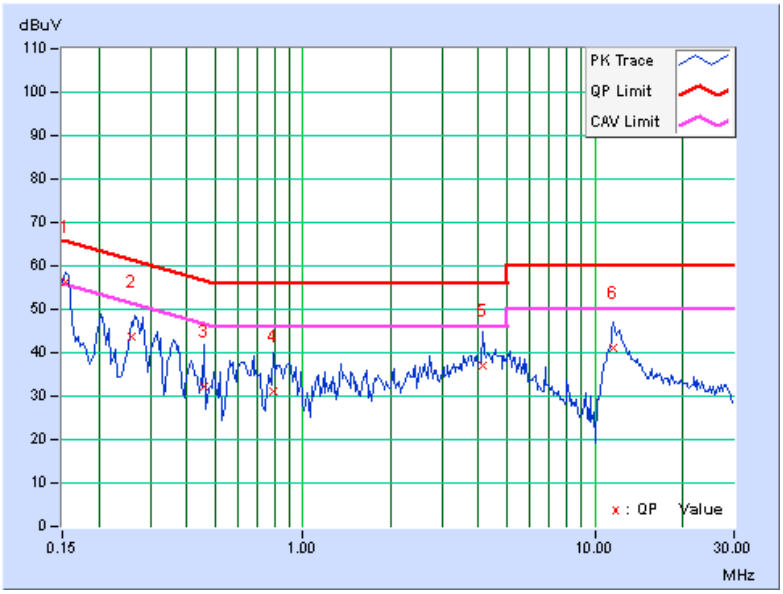
4.1.7 TEST RESULTS (MODE 1)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.07	56.13	46.67	56.20	46.74	65.79	55.79	-9.59	-9.05
2	0.26031	0.09	43.76	38.99	43.85	39.08	61.42	51.42	-17.57	-12.34
3	0.45859	0.11	32.05	17.73	32.16	17.84	56.72	46.72	-24.55	-28.87
4	0.79063	0.14	30.87	24.20	31.01	24.34	56.00	46.00	-24.99	-21.66
5	4.15625	0.41	36.68	31.19	37.09	31.60	56.00	46.00	-18.91	-14.40
6	11.61719	0.78	40.51	35.33	41.29	36.11	60.00	50.00	-18.71	-13.89

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.

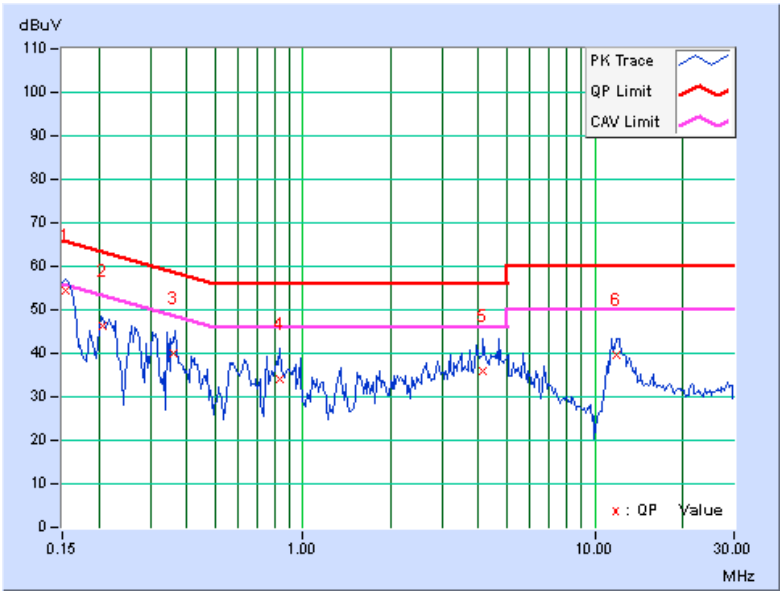


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.06	54.48	45.57	54.54	45.63	65.79	55.79	-11.25	-10.16
2	0.20591	0.07	46.07	37.57	46.14	37.64	63.37	53.37	-17.23	-15.73
3	0.35903	0.09	40.02	36.45	40.11	36.54	58.75	48.75	-18.64	-12.21
4	0.82969	0.11	33.90	28.30	34.01	28.41	56.00	46.00	-21.99	-17.59
5	4.12891	0.32	35.79	30.45	36.11	30.77	56.00	46.00	-19.89	-15.23
6	11.92578	0.67	39.04	33.54	39.71	34.21	60.00	50.00	-20.29	-15.79

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.



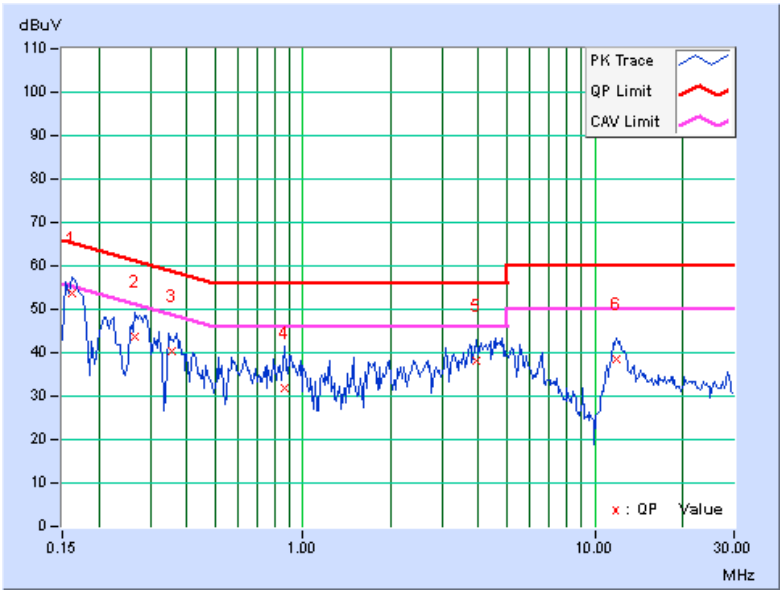
4.1.8 TEST RESULTS (MODE 2)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.07	53.81	41.86	53.88	41.93	65.38	55.38	-11.49	-13.44
2	0.26719	0.09	43.72	36.19	43.81	36.28	61.20	51.20	-17.39	-14.92
3	0.35563	0.10	40.18	32.77	40.28	32.87	58.83	48.83	-18.55	-15.96
4	0.86094	0.14	31.53	24.88	31.67	25.02	56.00	46.00	-24.33	-20.98
5	3.94141	0.40	37.76	31.67	38.16	32.07	56.00	46.00	-17.84	-13.93
6	11.85547	0.79	37.84	32.28	38.63	33.07	60.00	50.00	-21.37	-16.93

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.

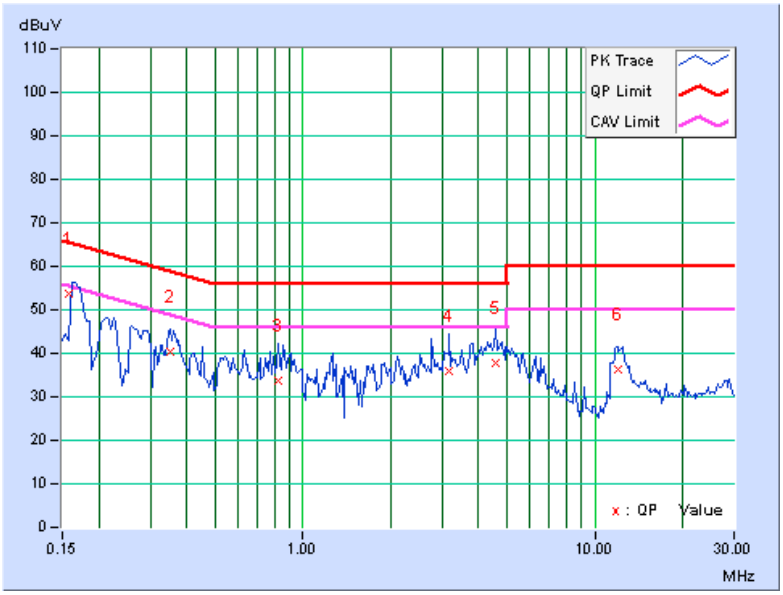


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15862	0.06	53.60	42.49	53.66	42.55	65.54	55.54	-11.87	-12.98
2	0.34922	0.09	40.40	31.87	40.49	31.96	58.98	48.98	-18.49	-17.02
3	0.82188	0.11	33.44	25.77	33.55	25.88	56.00	46.00	-22.45	-20.12
4	3.17188	0.26	35.54	29.52	35.80	29.78	56.00	46.00	-20.20	-16.22
5	4.59766	0.34	37.59	31.36	37.93	31.70	56.00	46.00	-18.07	-14.30
6	12.02344	0.68	35.53	29.67	36.21	30.35	60.00	50.00	-23.79	-19.65

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.



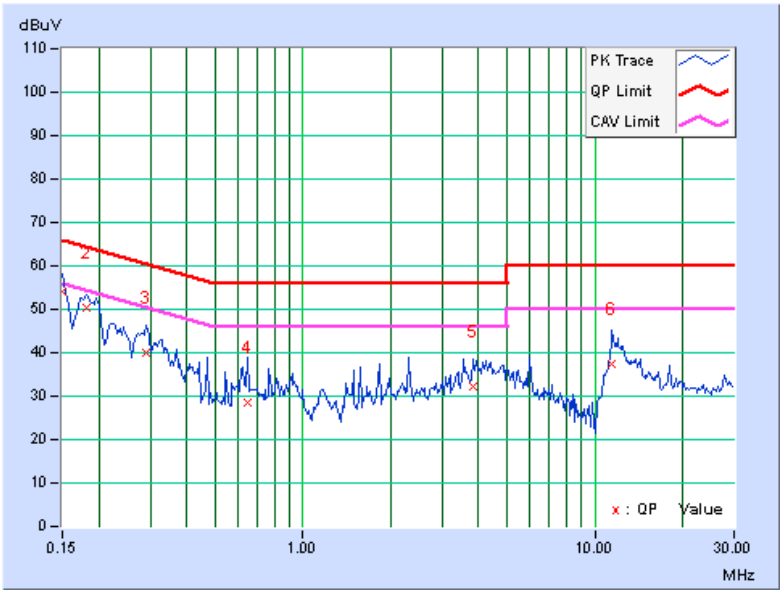
4.1.9 TEST RESULTS (MODE 3)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.07	54.05	38.42	54.12	38.49	66.00	56.00	-11.88	-17.51
2	0.18125	0.08	50.21	38.20	50.29	38.28	64.43	54.43	-14.14	-16.15
3	0.29063	0.09	39.96	33.27	40.05	33.36	60.51	50.51	-20.45	-17.14
4	0.65000	0.13	28.52	23.11	28.65	23.24	56.00	46.00	-27.35	-22.76
5	3.80859	0.39	31.66	25.87	32.05	26.26	56.00	46.00	-23.95	-19.74
6	11.46094	0.77	36.75	31.37	37.52	32.14	60.00	50.00	-22.48	-17.86

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.

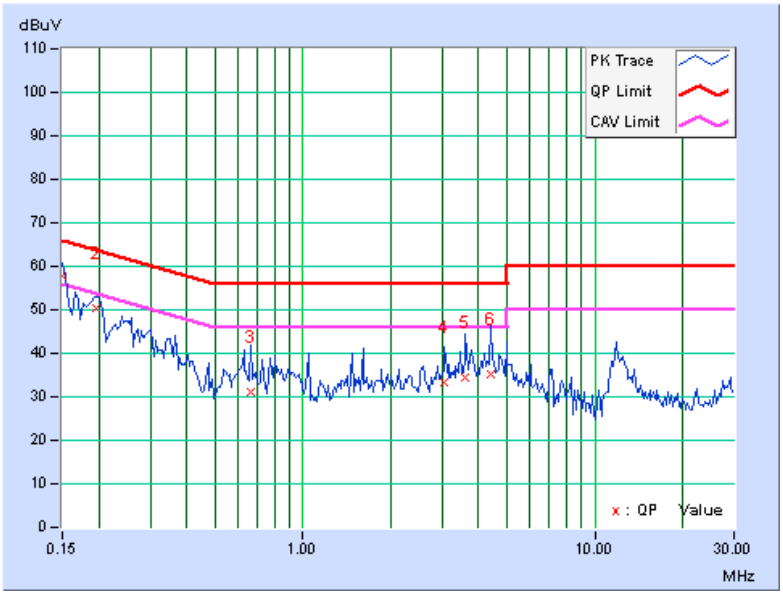


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.15000**	**0.06**	**57.87**	**46.41**	**57.93**	**46.47**	**66.00**	**56.00**	**-8.07**	**-9.53**
2	0.19687	0.07	50.42	39.42	50.49	39.49	63.74	53.74	-13.25	-14.25
3	0.66563	0.10	31.05	24.02	31.15	24.12	56.00	46.00	-24.85	-21.88
4	3.03516	0.25	33.13	27.85	33.38	28.10	56.00	46.00	-22.62	-17.90
5	3.60547	0.29	34.09	28.52	34.38	28.81	56.00	46.00	-21.62	-17.19
6	4.39844	0.33	34.96	28.76	35.29	29.09	56.00	46.00	-20.71	-16.91

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.



4.2 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. 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.

4.2.2 TEST INSTRUMENTS

For below 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012
Agilent Pre-Selector	N9039A	MY46520311	July 12, 2011	July 11, 2012
Agilent Signal Generator	N5181A	MY49060517	July 12, 2011	July 11, 2012
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 15, 2011	Nov. 14, 2012
Agilent Pre-Amplifier	8449B	3008A02578	July 04, 2011	July 03, 2012
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 09, 2012	Apr. 08, 2013
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 14, 2011	Nov. 13, 2012
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
*R&S Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
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
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. * = The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3 The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in 966 Chamber No. G.
5 The FCC Site Registration No. is 966073.
6 The VCCI Site Registration No. is G-137.
7 The CANADA Site Registration No. is IC 7450H-2.
8 Tested Date: June 07, 2012

For above 1GHz:

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) and Spectrum Analyzer (model: FSP40) 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: June 11, 2012

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meters chamber room(below 1GHz test) & 10 meters open site(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.

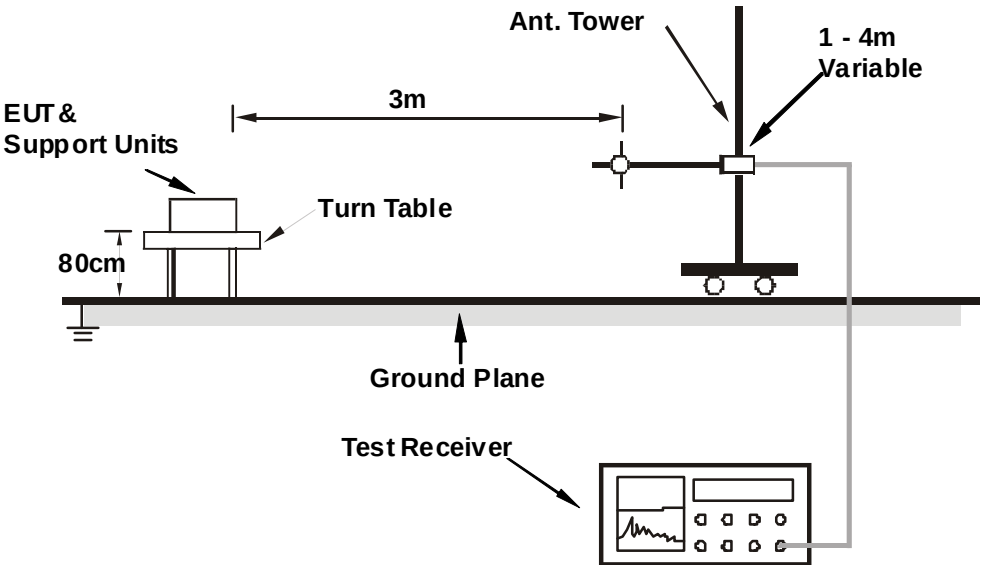
NOTE:

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.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11g

CHANNEL	TX Channel 6	**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	52.15	26.2 QP	40.0	-13.8	2.00 H	300	12.17	14.00
2	113.84	30.7 QP	43.5	-12.8	1.50 H	0	18.98	11.74
3	165.71	31.0 QP	43.5	-12.5	2.00 H	87	17.05	13.98
4	176.61	30.6 QP	43.5	-12.9	1.50 H	45	17.35	13.26
5	304.74	32.1 QP	46.0	-13.9	1.00 H	263	16.67	15.41
6	374.97	31.2 QP	46.0	-14.8	1.00 H	252	14.00	17.22
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	39.12	35.9 QP	40.0	-4.1	1.00 V	225	22.19	13.71
2	81.28	36.1 QP	40.0	-3.9	1.00 V	290	26.54	9.56
3	137.88	31.9 QP	43.5	-11.6	1.00 V	360	18.12	13.79
4	204.67	28.8 QP	43.5	-14.7	1.50 V	71	17.45	11.36
5	269.57	27.0 QP	46.0	-19.0	1.50 V	321	12.88	14.10
6	375.08	26.3 QP	46.0	-19.7	1.50 V	203	9.09	17.22

REMARKS:

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

ABOVE 1GHz DATA

802.11b

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2390.00	55.8 PK	74.0	-18.2	1.01 H	49	25.74	30.06
2	2390.00	43.7 AV	54.0	-10.3	1.01 H	49	13.64	30.06
3	*2412.00	100.8 PK			1.01 H	49	70.65	30.15
4	*2412.00	98.4 AV			1.01 H	49	68.25	30.15
5	4824.00	46.5 PK	74.0	-27.5	1.00 H	351	11.07	35.43
6	4824.00	34.9 AV	54.0	-19.1	1.00 H	351	-0.53	35.43
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	2390.00	73.4 PK	74.0	-0.6	1.33 V	357	43.34	30.06
2	2390.00	47.9 AV	54.0	-6.1	1.33 V	357	17.84	30.06
3	*2412.00	112.2 PK			1.16 V	153	82.05	30.15
4	*2412.00	109.7 AV			1.16 V	153	79.55	30.15
5	4824.00	46.7 PK	74.0	-27.3	1.00 V	153	11.27	35.43
6	4824.00	35.6 AV	54.0	-18.4	1.00 V	153	0.17	35.43

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	55.8 PK	74.0	-18.2	1.08 H	54	25.74	30.06
2	2390.00	43.8 AV	54.0	-10.2	1.08 H	54	13.74	30.06
3	*2437.00	104.4 PK			1.08 H	54	74.16	30.24
4	*2437.00	102.1 AV			1.08 H	54	71.86	30.24
5	2483.50	56.1 PK	74.0	-17.9	1.08 H	54	25.67	30.43
6	2483.50	43.7 AV	54.0	-10.3	1.08 H	54	13.27	30.43
7	4874.00	48.6 PK	74.0	-25.4	1.00 H	347	13.08	35.52
8	4874.00	42.5 AV	54.0	-11.5	1.00 H	347	6.98	35.52
9	7311.00	54.6 PK	74.0	-19.4	1.00 H	115	12.64	41.96
10	7311.00	42.6 AV	54.0	-11.4	1.00 H	115	0.64	41.96
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2310.00	58.3 PK	74.0	-15.7	1.23 V	98	28.55	29.75
2	2310.00	46.6 AV	54.0	-7.4	1.23 V	98	16.85	29.75
3	*2437.00	115.7 PK			1.14 V	206	85.46	30.24
4	*2437.00	113.5 AV			1.14 V	206	83.26	30.24
5	2483.50	59.5 PK	74.0	-14.5	1.24 V	112	29.07	30.43
6	2483.50	47.5 AV	54.0	-6.5	1.24 V	112	17.07	30.43
7	4874.00	51.5 PK	74.0	-22.5	1.00 V	152	15.98	35.52
8	4874.00	46.8 AV	54.0	-7.2	1.00 V	152	11.28	35.52
9	7311.00	55.6 PK	74.0	-18.4	1.32 V	46	13.64	41.96
10	7311.00	42.5 AV	54.0	-11.5	1.32 V	46	0.54	41.96

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2462.00	101.1 PK			1.02 H	55	70.76	30.34
2	*2462.00	98.3 AV			1.02 H	55	67.96	30.34
3	2483.50	63.8 PK	74.0	-10.2	1.02 H	55	33.37	30.43
4	2483.50	43.5 AV	54.0	-10.5	1.02 H	55	13.07	30.43
5	4924.00	46.4 PK	74.0	-27.6	1.00 H	346	10.78	35.62
6	4924.00	34.4 AV	54.0	-19.6	1.00 H	346	-1.22	35.62
7	7386.00	55.8 PK	74.0	-18.2	1.00 H	120	13.70	42.10
8	7386.00	42.6 AV	54.0	-11.4	1.00 H	120	0.50	42.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	113.7 PK			1.17 V	176	83.36	30.34
2	*2462.00	111.3 AV			1.17 V	176	80.96	30.34
3	2483.50	73.7 PK	74.0	-0.3	1.21 V	0	43.27	30.43
4	2483.50	47.7 AV	54.0	-6.3	1.21 V	0	17.27	30.43
5	4924.00	46.8 PK	74.0	-27.2	1.00 V	155	11.18	35.62
6	4924.00	35.4 AV	54.0	-18.6	1.00 V	155	-0.22	35.62
7	7386.00	55.7 PK	74.0	-18.3	1.35 V	43	13.60	42.10
8	7386.00	42.7 AV	54.0	-11.3	1.35 V	43	0.60	42.10

REMARKS:

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

802.11g

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2390.00	58.5 PK	74.0	-15.5	1.31 H	58	28.44	30.06
2	2390.00	44.6 AV	54.0	-9.4	1.31 H	58	14.54	30.06
3	*2412.00	105.2 PK			1.31 H	58	75.05	30.15
4	*2412.00	94.1 AV			1.31 H	58	63.95	30.15
5	4824.00	47.7 PK	74.0	-26.3	1.00 H	349	12.27	35.43
6	4824.00	36.1 AV	54.0	-17.9	1.00 H	349	0.67	35.43
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	2390.00	72.9 PK	74.0	-1.1	1.31 V	256	42.84	30.06
2	2390.00	52.3 AV	54.0	-1.7	1.31 V	256	22.24	30.06
3	*2412.00	116.2 PK			1.18 V	175	86.05	30.15
4	*2412.00	105.3 AV			1.18 V	175	75.15	30.15
5	4824.00	47.3 PK	74.0	-26.7	1.00 V	151	11.87	35.43
6	4824.00	35.3 AV	54.0	-18.7	1.00 V	151	-0.13	35.43

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2310.00	55.9 PK	74.0	-18.1	1.29 H	61	26.15	29.75
2	2310.00	44.6 AV	54.0	-9.4	1.29 H	61	14.85	29.75
3	*2437.00	110.6 PK			1.29 H	61	80.36	30.24
4	*2437.00	99.4 AV			1.29 H	61	69.16	30.24
5	2485.00	56.6 PK	74.0	-17.4	1.29 H	61	26.17	30.43
6	2485.00	43.9 AV	54.0	-10.1	1.29 H	61	13.47	30.43
7	4874.00	47.1 PK	74.0	-26.9	1.00 H	349	11.58	35.52
8	4874.00	35.7 AV	54.0	-18.3	1.00 H	349	0.18	35.52
9	7311.00	54.1 PK	74.0	-19.9	1.00 H	117	12.14	41.96
10	7311.00	42.5 AV	54.0	-11.5	1.00 H	117	0.54	41.96
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2310.00	70.3 PK	74.0	-3.7	1.09 V	0	40.55	29.75
2	2310.00	50.4 AV	54.0	-3.6	1.09 V	0	20.65	29.75
3	*2437.00	121.9 PK			1.18 V	176	91.66	30.24
4	*2437.00	111.5 AV			1.18 V	176	81.26	30.24
5	2485.00	63.1 PK	74.0	-10.9	1.21 V	120	32.67	30.43
6	2485.00	50.5 AV	54.0	-3.5	1.21 V	120	20.07	30.43
7	4874.00	47.5 PK	74.0	-26.5	1.02 V	148	11.98	35.52
8	4874.00	35.4 AV	54.0	-18.6	1.02 V	148	-0.12	35.52
9	7311.00	55.2 PK	74.0	-18.8	1.37 V	42	13.24	41.96
10	7311.00	41.9 AV	54.0	-12.1	1.37 V	42	-0.06	41.96

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2462.00	104.4 PK			1.26 H	60	74.06	30.34
2	*2462.00	94.2 AV			1.26 H	60	63.86	30.34
3	2483.50	60.5 PK	74.0	-13.5	1.26 H	60	30.07	30.43
4	2483.50	44.4 AV	54.0	-9.6	1.26 H	60	13.97	30.43
5	4924.00	47.4 PK	74.0	-26.6	1.05 H	340	11.78	35.62
6	4924.00	36.1 AV	54.0	-17.9	1.05 H	340	0.48	35.62
7	7386.00	54.7 PK	74.0	-19.3	1.00 H	135	12.60	42.10
8	7386.00	42.7 AV	54.0	-11.3	1.00 H	135	0.60	42.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	117.4 PK			1.18 V	187	87.06	30.34
2	*2462.00	105.6 AV			1.18 V	187	75.26	30.34
3	2483.50	73.1 PK	74.0	-0.9	1.29 V	183	42.67	30.43
4	2483.50	51.3 AV	54.0	-2.7	1.29 V	183	20.87	30.43
5	4924.00	47.8 PK	74.0	-26.2	1.03 V	158	12.18	35.62
6	4924.00	35.5 AV	54.0	-18.5	1.03 V	158	-0.12	35.62
7	7386.00	56.2 PK	74.0	-17.8	1.34 V	65	14.10	42.10
8	7386.00	42.8 AV	54.0	-11.2	1.34 V	65	0.70	42.10

REMARKS:

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

802.11n (20MHz)

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2390.00	56.1 PK	74.0	-17.9	1.30 H	59	26.04	30.06
2	2390.00	44.5 AV	54.0	-9.5	1.30 H	59	14.44	30.06
3	*2412.00	104.1 PK			1.30 H	59	73.95	30.15
4	*2412.00	93.3 AV			1.30 H	59	63.15	30.15
5	4824.00	48.5 PK	74.0	-25.5	1.00 H	343	13.07	35.43
6	4824.00	35.9 AV	54.0	-18.1	1.00 H	343	0.47	35.43
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	2390.00	70.9 PK	74.0	-3.1	1.31 V	260	40.84	30.06
2	2390.00	52.9 AV	54.0	-1.1	1.31 V	260	22.84	30.06
3	*2412.00	115.4 PK			1.19 V	173	85.25	30.15
4	*2412.00	104.6 AV			1.19 V	173	74.45	30.15
5	4824.00	48.4 PK	74.0	-25.6	1.00 V	154	12.97	35.43
6	4824.00	35.6 AV	54.0	-18.4	1.00 V	154	0.17	35.43

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2437.00	107.8 PK			1.29 H	61	77.56	30.24
2	*2437.00	96.9 AV			1.29 H	61	66.66	30.24
3	2483.50	56.9 PK	74.0	-17.1	1.29 H	61	26.47	30.43
4	2483.50	43.9 AV	54.0	-10.1	1.29 H	61	13.47	30.43
5	4874.00	47.3 PK	74.0	-26.7	1.00 H	339	11.78	35.52
6	4874.00	35.9 AV	54.0	-18.1	1.00 H	339	0.38	35.52
7	7311.00	54.6 PK	74.0	-19.4	1.00 H	129	12.64	41.96
8	7311.00	42.8 AV	54.0	-11.2	1.00 H	129	0.84	41.96
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	119.6 PK			1.19 V	167	89.36	30.24
2	*2437.00	108.9 AV			1.19 V	167	78.66	30.24
3	2483.50	66.5 PK	74.0	-7.5	1.20 V	119	36.07	30.43
4	2483.50	49.7 AV	54.0	-4.3	1.20 V	119	19.27	30.43
5	4874.00	47.9 PK	74.0	-26.1	1.00 V	153	12.38	35.52
6	4874.00	35.8 AV	54.0	-18.2	1.00 V	153	0.28	35.52
7	7311.00	55.6 PK	74.0	-18.4	1.33 V	56	13.64	41.96
8	7311.00	42.4 AV	54.0	-11.6	1.33 V	56	0.44	41.96

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2462.00	104.4 PK			1.27 H	62	74.06	30.34
2	*2462.00	93.4 AV			1.27 H	62	63.06	30.34
3	2483.50	57.2 PK	74.0	-16.8	1.27 H	62	26.77	30.43
4	2483.50	44.6 AV	54.0	-9.4	1.27 H	62	14.17	30.43
5	4924.00	47.6 PK	74.0	-26.4	1.00 H	341	11.98	35.62
6	4924.00	35.4 AV	54.0	-18.6	1.00 H	341	-0.22	35.62
7	7386.00	53.9 PK	74.0	-20.1	1.00 H	127	11.80	42.10
8	7386.00	42.5 AV	54.0	-11.5	1.00 H	127	0.40	42.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	115.9 PK			1.17 V	182	85.56	30.34
2	*2462.00	105.2 AV			1.17 V	182	74.86	30.34
3	2483.50	71.0 PK	74.0	-3.0	1.10 V	159	40.57	30.43
4	2483.50	50.4 AV	54.0	-3.6	1.10 V	159	19.97	30.43
5	4924.00	48.3 PK	74.0	-25.7	1.00 V	153	12.68	35.62
6	4924.00	35.7 AV	54.0	-18.3	1.00 V	153	0.08	35.62
7	7386.00	54.5 PK	74.0	-19.5	1.32 V	39	12.40	42.10
8	7386.00	42.6 AV	54.0	-11.4	1.32 V	39	0.50	42.10

REMARKS:

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

802.11n (40MHz)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	58.6 PK	74.0	-15.4	1.31 H	60	28.54	30.06
2	2390.00	45.3 AV	54.0	-8.7	1.31 H	60	15.24	30.06
3	*2422.00	98.6 PK			1.31 H	60	68.41	30.19
4	*2422.00	87.4 AV			1.31 H	60	57.21	30.19
5	4844.00	47.8 PK	74.0	-26.2	1.00 H	349	12.33	35.47
6	4844.00	35.3 AV	54.0	-18.7	1.00 H	349	-0.17	35.47
7	7266.00	52.7 PK	74.0	-21.3	1.00 H	130	10.83	41.87
8	7266.00	42.8 AV	54.0	-11.2	1.00 H	130	0.93	41.87
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	2390.00	70.9 PK	74.0	-3.1	1.54 V	166	40.84	30.06
2	2390.00	53.4 AV	54.0	-0.6	1.54 V	166	23.34	30.06
3	*2422.00	108.7 PK			1.18 V	194	78.51	30.19
4	*2422.00	97.1 AV			1.18 V	194	66.91	30.19
5	4844.00	48.6 PK	74.0	-25.4	1.00 V	154	13.13	35.47
6	4844.00	34.9 AV	54.0	-19.1	1.00 V	154	-0.57	35.47
7	7266.00	54.3 PK	74.0	-19.7	1.35 V	39	12.43	41.87
8	7266.00	42.7 AV	54.0	-11.3	1.35 V	39	0.83	41.87

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 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	56.4 PK	74.0	-17.6	1.30 H	56	26.34	30.06
2	2390.00	43.8 AV	54.0	-10.2	1.30 H	56	13.74	30.06
3	*2437.00	99.8 PK			1.30 H	56	69.56	30.24
4	*2437.00	87.6 AV			1.30 H	56	57.36	30.24
5	2483.50	55.9 PK	74.0	-18.1	1.30 H	56	25.47	30.43
6	2483.50	43.6 AV	54.0	-10.4	1.30 H	56	13.17	30.43
7	4874.00	48.4 PK	74.0	-25.6	1.00 H	339	12.88	35.52
8	4874.00	34.7 AV	54.0	-19.3	1.00 H	339	-0.82	35.52
9	7311.00	54.3 PK	74.0	-19.7	1.00 H	131	12.34	41.96
10	7311.00	42.8 AV	54.0	-11.2	1.00 H	131	0.84	41.96
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.6 PK	74.0	-10.4	1.23 V	103	33.54	30.06
2	2390.00	46.5 AV	54.0	-7.5	1.23 V	103	16.44	30.06
3	*2437.00	111.3 PK			1.18 V	178	81.06	30.24
4	*2437.00	99.2 AV			1.18 V	178	68.96	30.24
5	2483.50	72.5 PK	74.0	-1.5	1.22 V	118	42.07	30.43
6	2483.50	52.3 AV	54.0	-1.7	1.22 V	118	21.87	30.43
7	4874.00	48.5 PK	74.0	-25.5	1.00 V	155	12.98	35.52
8	4874.00	34.7 AV	54.0	-19.3	1.00 V	155	-0.82	35.52
9	7311.00	54.7 PK	74.0	-19.3	1.33 V	42	12.74	41.96
10	7311.00	43.2 AV	54.0	-10.8	1.33 V	42	1.24	41.96

REMARKS:

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

CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2452.00	96.9 PK			1.31 H	47	66.60	30.30
2	*2452.00	85.5 AV			1.31 H	47	55.20	30.30
3	2483.50	59.2 PK	74.0	-14.8	1.31 H	47	28.77	30.43
4	2483.50	44.6 AV	54.0	-9.4	1.31 H	47	14.17	30.43
5	4904.00	49.0 PK	74.0	-25.0	1.00 H	344	13.42	35.58
6	4904.00	35.3 AV	54.0	-18.7	1.00 H	344	-0.28	35.58
7	7356.00	54.4 PK	74.0	-19.6	1.00 H	129	12.36	42.04
8	7356.00	42.8 AV	54.0	-11.2	1.00 H	129	0.76	42.04
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	*2452.00	109.2 PK			1.16 V	178	78.90	30.30
2	*2452.00	97.5 AV			1.16 V	178	67.20	30.30
3	2483.50	71.2 PK	74.0	-2.8	1.19 V	97	40.77	30.43
4	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**1.19 V**	**97**	**23.47**	**30.43**
5	4904.00	48.2 PK	74.0	-25.8	1.00 V	159	12.62	35.58
6	4904.00	34.6 AV	54.0	-19.4	1.00 V	159	-0.98	35.58
7	7356.00	54.6 PK	74.0	-19.4	1.36 V	49	12.56	42.04
8	7356.00	42.7 AV	54.0	-11.3	1.36 V	49	0.66	42.04

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.

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100036	Dec. 14, 2011	Dec. 13, 2012

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2012

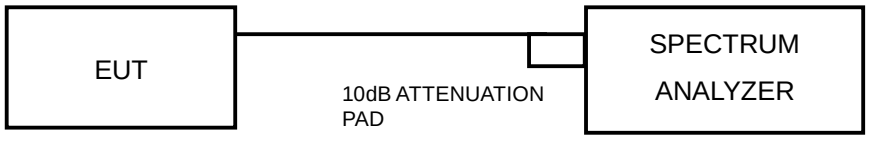
4.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
2. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. 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

4.3.4 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 lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	10.43	10.89	0.5	PASS
6	2437	10.42	10.71	0.5	PASS
11	2462	10.68	10.87	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.55	16.54	0.5	PASS
6	2437	16.63	16.53	0.5	PASS
11	2462	16.53	16.52	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.69	17.82	0.5	PASS
6	2437	17.81	17.77	0.5	PASS
11	2462	17.75	17.77	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.99	36.90	0.5	PASS
6	2437	37.17	36.87	0.5	PASS
9	2452	36.53	36.47	0.5	PASS

4.4 CONDUCTED OUTPUT POWER MEASUREMENT

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

4.4.2 INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2012

4.4.3 TEST PROCEDURES

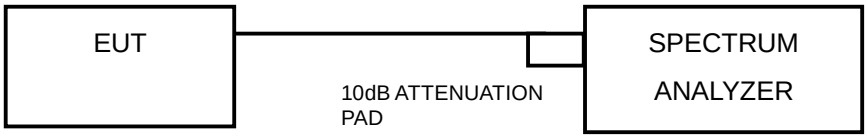
Follow FCC KDB 558074 DTS test procedure:
Measurement Procedure AVG1

1. Set the analyzer span to 5-30% greater than the EBW.
2. Set RBW =1MHz.
3. Set the VBW ≥ 3 x RBW.
4. Number of measurement points in the sweep ≥ 2 x (span/RBW).
5. Manually set the sweep time to: ≥10 x (number of measurement points in sweep) x(transmission symbol period)..
6. Detector = power averaging (RMS) or sample.
7. Perform the measurement over a single sweep.
8. Use the spectrum analyzer's integrated band power measurement function with band limits set equal to the EBW band edges.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.7 TEST RESULTS

802.11b

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	17.40	17.71	113.974	20.57	28.7	PASS
6	2437	21.47	21.55	283.170	24.52	28.7	PASS
11	2462	17.33	16.36	97.326	19.88	28.7	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)
Effective Legacy Gain (dBi) = 7.3
The effective legacy gain is 7.3dBi, therefore the limit needs to reduce.

802.11g

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	16.05	16.38	83.723	19.23	28.7	PASS
6	2437	23.54	22.97	424.097	26.27	28.7	PASS
11	2462	17.46	16.79	103.472	20.15	28.7	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)
Effective Legacy Gain (dBi) = 7.3
The effective legacy gain is 7.3dBi, therefore the limit needs to reduce.

802.11n (20MHz)

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	15.96	16.27	81.810	19.13	30	PASS
6	2437	21.41	21.09	266.886	24.26	30	PASS
11	2462	17.23	16.63	98.871	19.95	30	PASS

802.11n (40MHz)

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	13.37	13.72	45.277	16.56	30	PASS
6	2437	15.02	14.93	62.886	17.99	30	PASS
9	2452	13.17	12.54	38.696	15.88	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2012

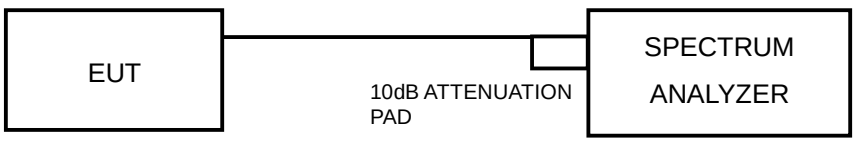
4.5.3 TEST PROCEDURE

1. Set the RBW = 100 kHz, VBW =300 kHz, Detector = Power Average (RMS).
2. Number of measurement points in the sweep ≥ 2 x span/RBW
3. Manually set the sweep time to ≥ 10 x (number of measurement points in sweep) x (transmission symbol period).
4. Perform the measurement over a single sweep.
5. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
6. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(3 kHz/100kHz)

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.5.7 TEST RESULTS

802.11b

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-0.73	-15.96	3.01	-12.95	6.7	PASS
	6	2437	4.27	-10.96	3.01	-7.95	6.7	PASS
	11	2462	-0.77	-16.00	3.01	-12.99	6.7	PASS
1	1	2412	-0.49	-15.72	3.01	-12.71	6.7	PASS
	6	2437	3.52	-11.71	3.01	-8.70	6.7	PASS
	11	2462	-1.78	-17.01	3.01	-14.00	6.7	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

Effective Legacy Gain (dBi) = 7.3

The effective legacy gain is 7.3dBi, therefore the limit needs to reduce.

802.11g

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-3.66	-18.89	3.01	-15.88	6.7	PASS
	6	2437	3.68	-11.55	3.01	-8.54	6.7	PASS
	11	2462	-2.25	-17.48	3.01	-14.47	6.7	PASS
1	1	2412	-3.42	-18.65	3.01	-15.64	6.7	PASS
	6	2437	3.21	-12.02	3.01	-9.01	6.7	PASS
	11	2462	-2.97	-18.20	3.01	-15.19	6.7	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

Effective Legacy Gain (dBi) = 7.3

The effective legacy gain is 7.3dBi, therefore the limit needs to reduce.

802.11n (20MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-3.92	-19.15	3.01	-16.14	8	PASS
	6	2437	1.48	-13.75	3.01	-10.74	8	PASS
	11	2462	-2.93	-18.16	3.01	-15.15	8	PASS
1	1	2412	-3.90	-19.13	3.01	-16.12	8	PASS
	6	2437	1.10	-14.13	3.01	-11.12	8	PASS
	11	2462	-3.50	-18.73	3.01	-15.72	8	PASS

802.11n (40MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-9.48	-24.71	3.01	-21.70	8	PASS
	6	2437	-7.98	-23.21	3.01	-20.20	8	PASS
	9	2452	-9.64	-24.87	3.01	-21.86	8	PASS
1	3	2422	-9.61	-24.84	3.01	-21.83	8	PASS
	6	2437	-8.14	-23.37	3.01	-20.36	8	PASS
	9	2452	-10.14	-25.37	3.01	-22.36	8	PASS

4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2012

4.6.3 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 300 kHz.
3. Detector = power average (RMS).
4. Manually set the sweep time to: ≥ 10 x (number of measurement points in sweep) x (transmission symbol period).
5. Perform the measurement over a single sweep.
6. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

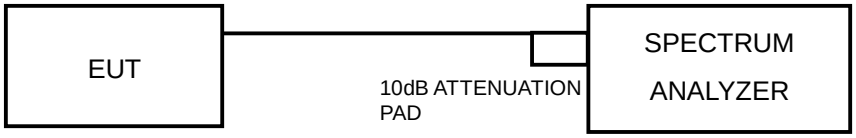
MEASUREMENT PROCEDURE OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = power average (RMS).
5. Manually set the sweep time to: ≥ 10 x (number of measurement points in sweep) x (transmission symbol period).
6. Perform the measurement over a single sweep.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

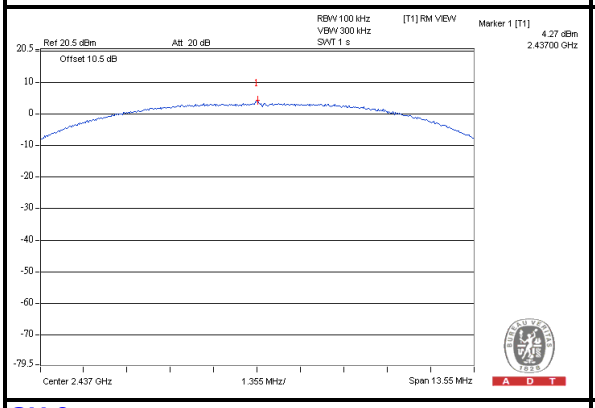
4.6.7 TEST RESULTS

The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit. Only worst data of each operating mode is presented.

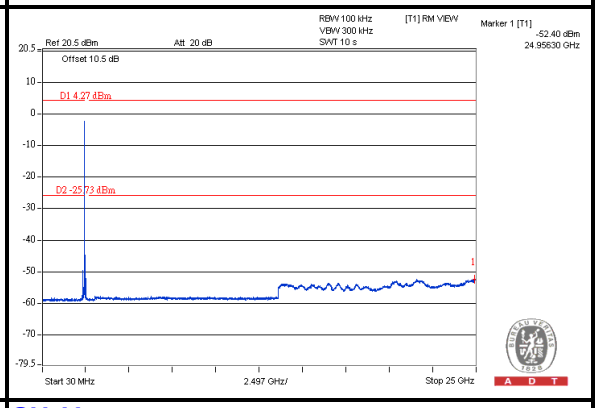
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

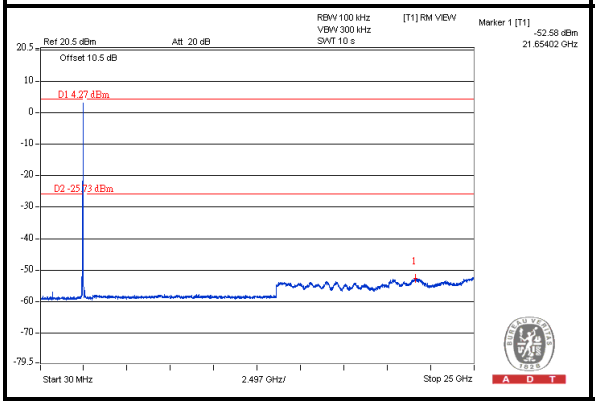
Maximum REF



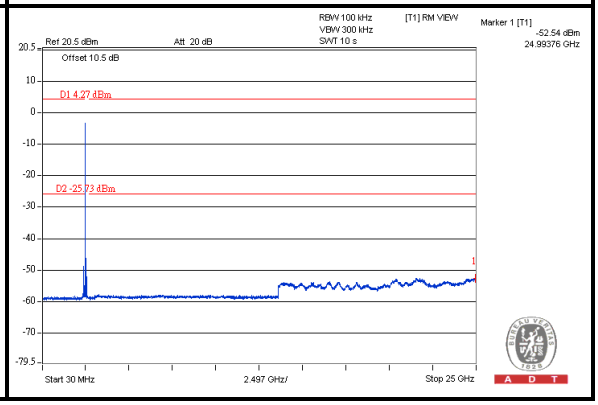
CH 1



CH 6

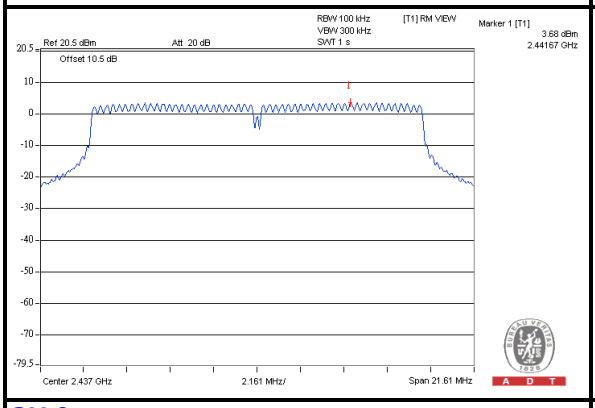


CH 11

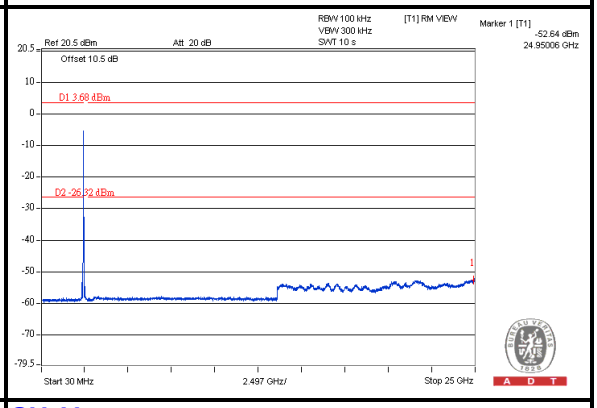


802.11g

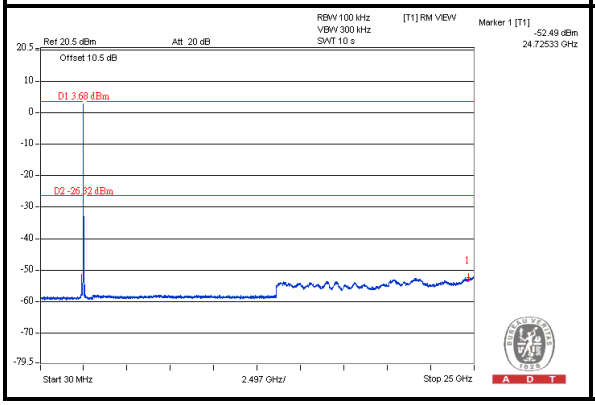
Maximum REF



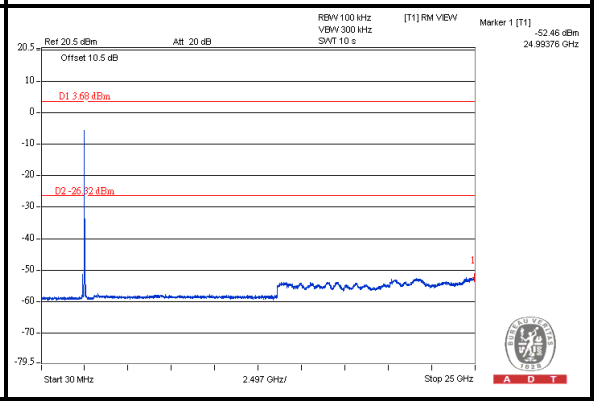
CH 1



CH 6

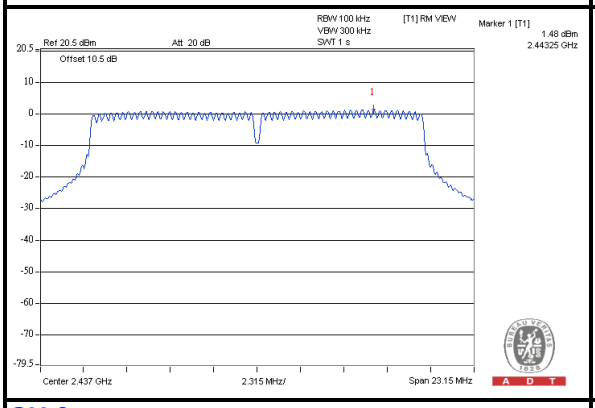


CH 11

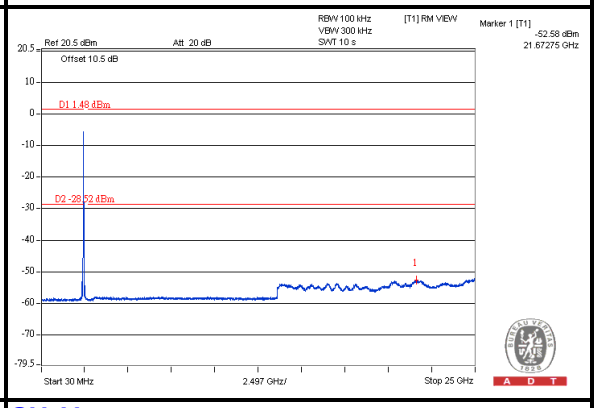


802.11n (20MHz)

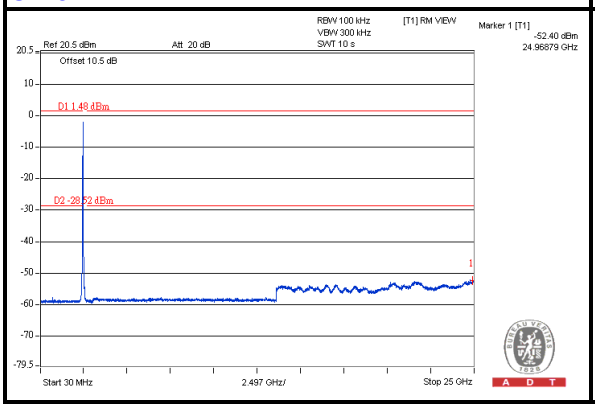
Maximum REF



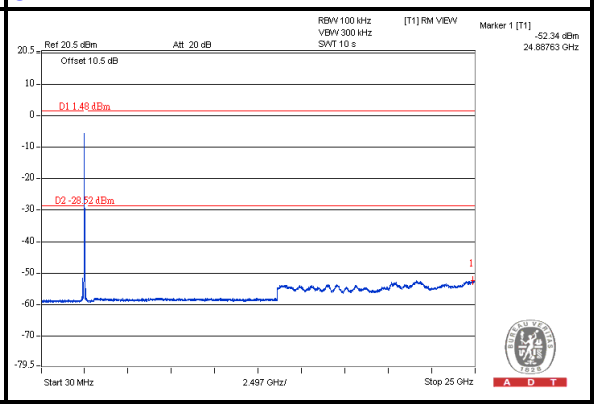
CH 1



CH 6

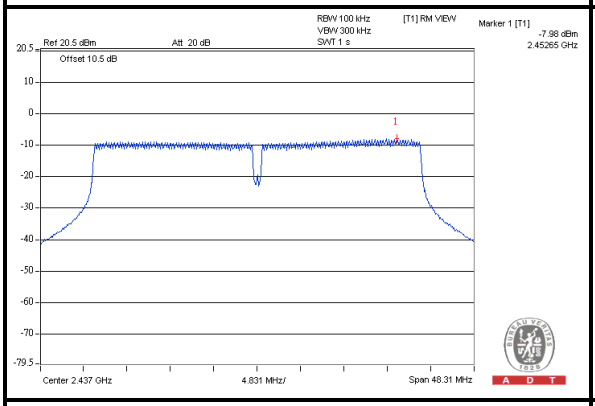


CH 11

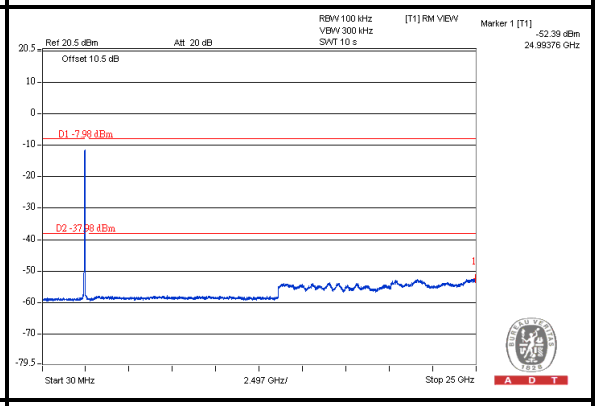


802.11n (40MHz)

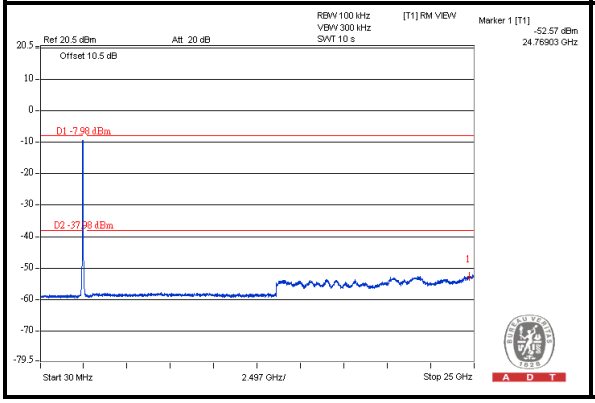
Maximum REF



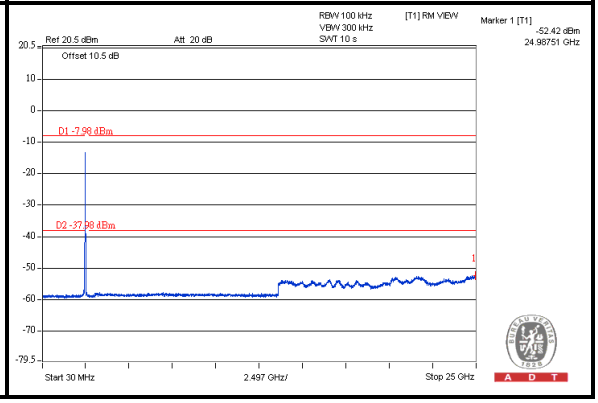
CH 3



CH 6



CH 9



5. TEST TYPES AND RESULTS (FOR 5GHz, 5725~5850MHz Band)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	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.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 12, 2012	Mar.11, 2013
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 07, 2011	Sep. 06, 2012
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 08,2012	June 07,2013
RF Cable (JYEBAO)	5DFB	COCCAB-001	Aug. 29, 2011	Aug. 28, 2012
50 ohms Terminator	50	EMC-3	Sep. 26, 2011	Sep. 25, 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. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: July 03, 2012

5.1.3 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. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

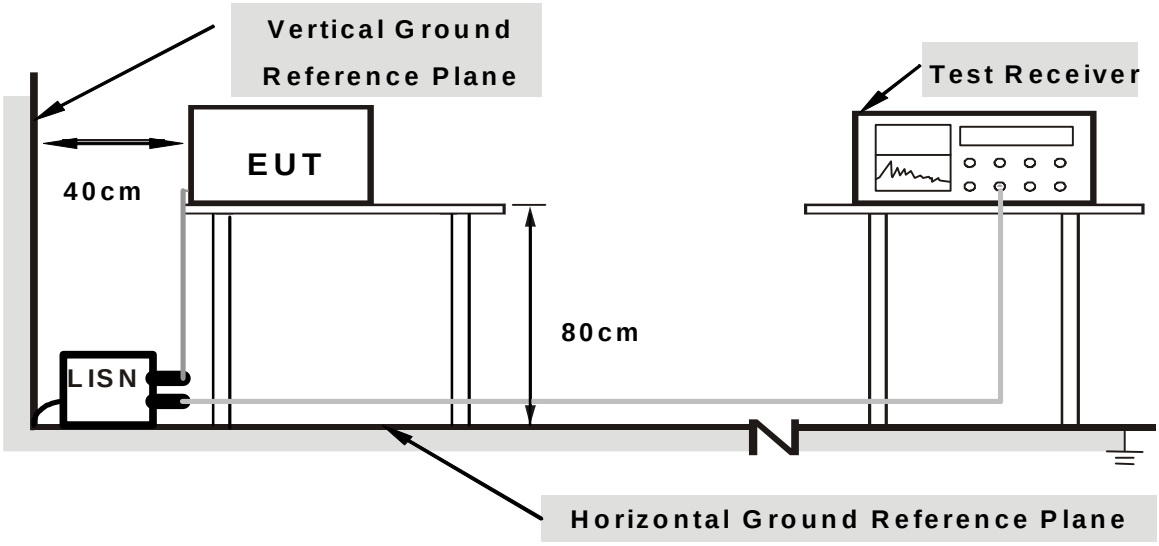
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 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.

5.1.6 EUT OPERATING CONDITIONS

Same as the 4.1.6

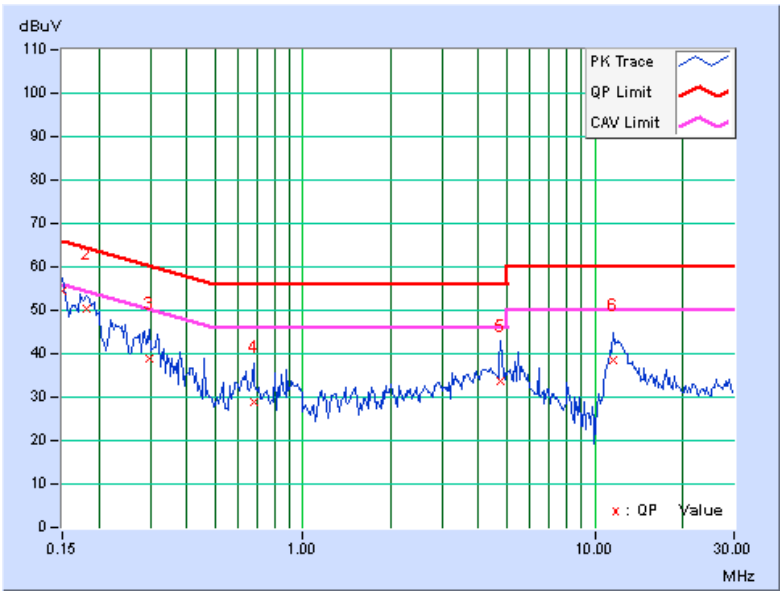
5.1.7 TEST RESULTS (Mode 1)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.07	54.50	38.83	54.57	38.90	66.00	56.00	-11.43	-17.10
2	0.18125	0.08	50.42	37.99	50.50	38.07	64.43	54.43	-13.93	-16.36
3	0.29844	0.09	38.82	31.55	38.91	31.64	60.29	50.29	-21.37	-18.64
4	0.67734	0.13	28.81	23.29	28.94	23.42	56.00	46.00	-27.06	-22.58
5	4.77344	0.44	33.28	27.99	33.72	28.43	56.00	46.00	-22.28	-17.57
6	11.61328	0.78	37.67	32.33	38.45	33.11	60.00	50.00	-21.55	-16.89

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.

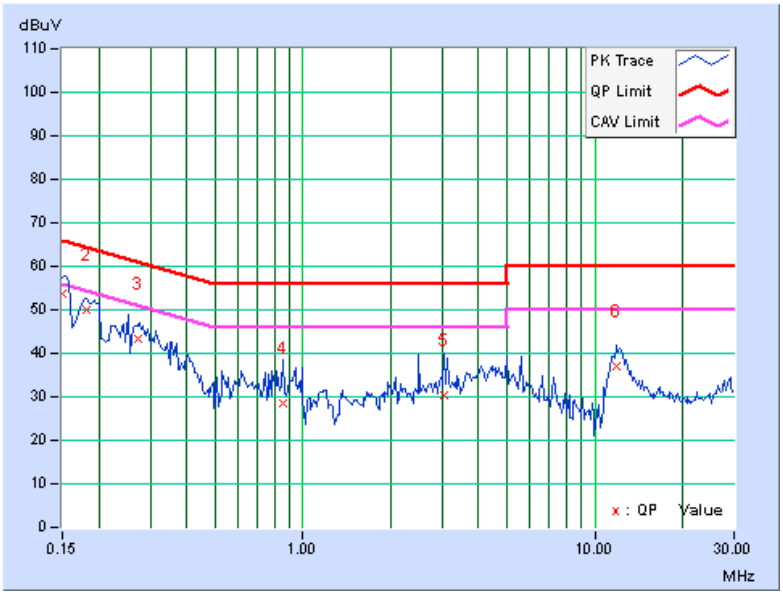


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.06	53.71	38.93	53.77	38.99	66.00	56.00	-12.23	-17.01
2	0.18125	0.07	49.81	37.43	49.88	37.50	64.43	54.43	-14.55	-16.93
3	0.27144	0.08	43.13	34.98	43.21	35.06	61.07	51.07	-17.86	-16.01
4	0.85703	0.11	28.47	22.29	28.58	22.40	56.00	46.00	-27.42	-23.60
5	3.03906	0.25	30.13	24.88	30.38	25.13	56.00	46.00	-25.62	-20.87
6	11.88281	0.67	36.20	30.31	36.87	30.98	60.00	50.00	-23.13	-19.02

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.



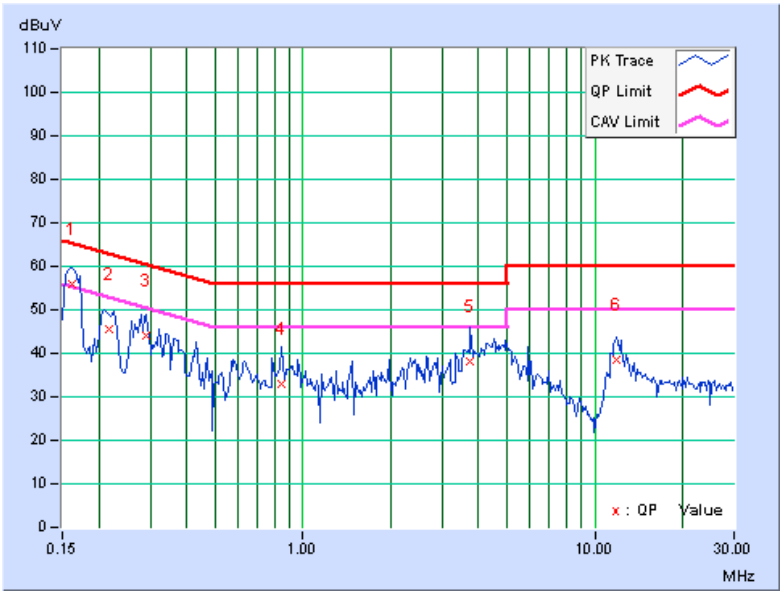
5.1.8 TEST RESULTS (Mode 2)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.07	55.77	43.87	55.84	43.94	65.38	55.38	-9.53	-11.43
2	0.21641	0.08	45.37	34.39	45.45	34.47	62.96	52.96	-17.50	-18.48
3	0.29053	0.09	43.84	35.40	43.93	35.49	60.51	50.51	-16.58	-15.02
4	0.84141	0.14	32.99	26.38	33.13	26.52	56.00	46.00	-22.87	-19.48
5	3.75391	0.38	37.64	31.95	38.02	32.33	56.00	46.00	-17.98	-13.67
6	11.81641	0.79	37.56	32.04	38.35	32.83	60.00	50.00	-21.65	-17.17

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.

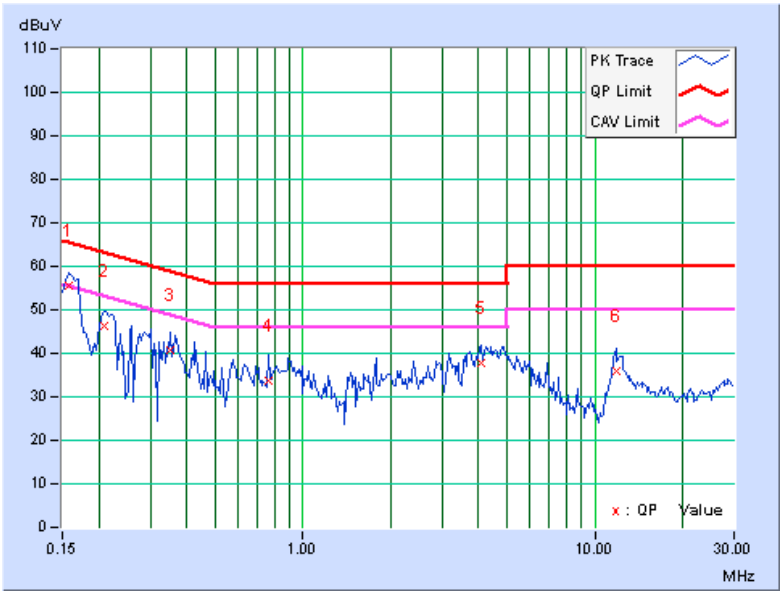


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.06	55.50	44.60	55.56	44.66	65.58	55.58	-10.02	-10.92
2	0.20859	0.07	46.41	34.49	46.48	34.56	63.26	53.26	-16.78	-18.70
3	0.35313	0.09	40.80	30.78	40.89	30.87	58.89	48.89	-18.00	-18.02
4	0.75938	0.11	33.53	25.28	33.64	25.39	56.00	46.00	-22.36	-20.61
5	4.07422	0.31	37.53	31.60	37.84	31.91	56.00	46.00	-18.16	-14.09
6	11.85938	0.67	35.08	29.22	35.75	29.89	60.00	50.00	-24.25	-20.11

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.



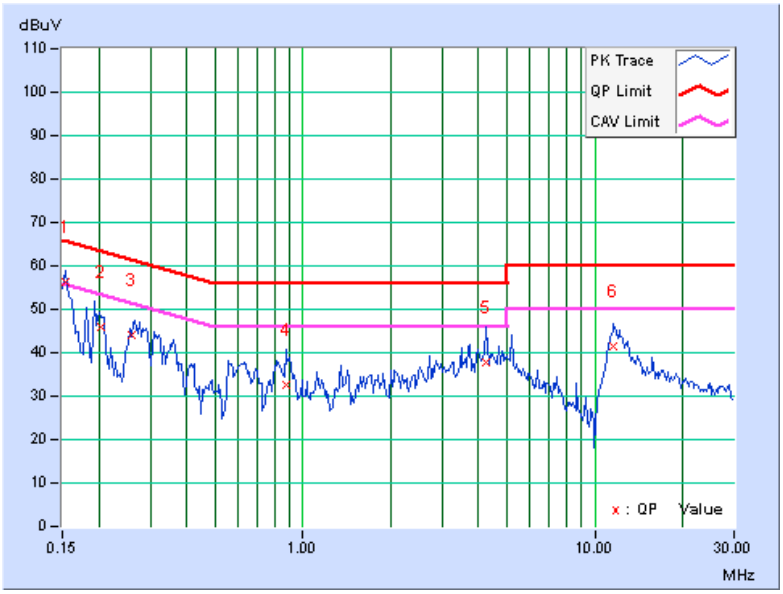
5.1.9 TEST RESULTS (Mode 3)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.15391**	**0.07**	**56.09**	**46.61**	**56.16**	**46.68**	**65.79**	**55.79**	**-9.63**	**-9.11**
2	0.20309	0.08	46.03	38.34	46.11	38.42	63.48	53.48	-17.37	-15.06
3	0.26019	0.09	43.94	39.05	44.03	39.14	61.43	51.43	-17.40	-12.29
4	0.87266	0.14	32.30	27.00	32.44	27.14	56.00	46.00	-23.56	-18.86
5	4.22656	0.41	37.22	31.88	37.63	32.29	56.00	46.00	-18.37	-13.71
6	11.60156	0.78	40.63	35.29	41.41	36.07	60.00	50.00	-18.59	-13.93

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.

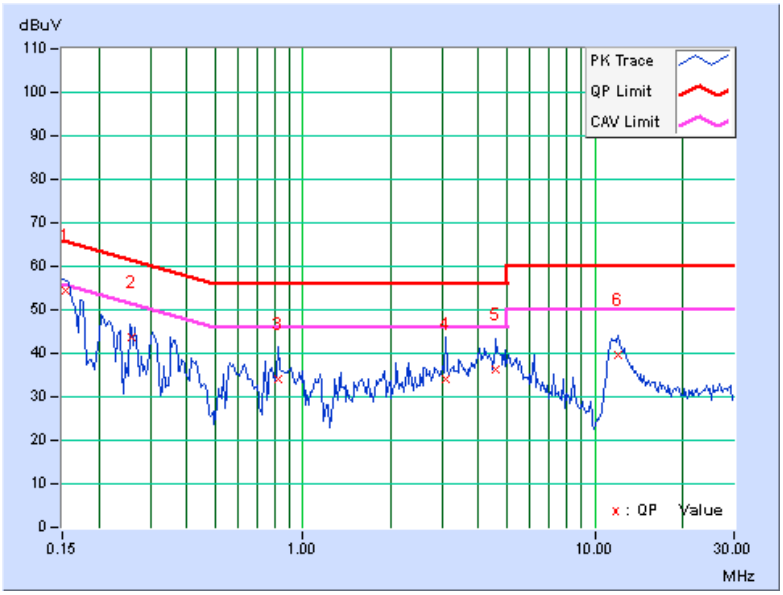


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15325	0.06	54.42	45.30	54.48	45.36	65.82	55.82	-11.34	-10.46
2	0.25872	0.08	43.66	36.88	43.74	36.96	61.47	51.47	-17.73	-14.51
3	0.82188	0.11	34.01	28.85	34.12	28.96	56.00	46.00	-21.88	-17.04
4	3.07422	0.25	33.77	28.43	34.02	28.68	56.00	46.00	-21.98	-17.32
5	4.58984	0.34	36.11	30.87	36.45	31.21	56.00	46.00	-19.55	-14.79
6	12.02344	0.68	38.86	33.52	39.54	34.20	60.00	50.00	-20.46	-15.80

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.



5.2 RADIATED AND BANDEDGE EMISSION MEASUREMENT

5.2.1 LIMITS OF RADIATED AND BANDEDGE EMISSION 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.

5.2.2 TEST INSTRUMENTS

For below 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012
Agilent Pre-Selector	N9039A	MY46520311	July 12, 2011	July 11, 2012
Agilent Signal Generator	N5181A	MY49060517	July 12, 2011	July 11, 2012
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 15, 2011	Nov. 14, 2012
Agilent Pre-Amplifier	8449B	3008A02578	July 04, 2011	July 03, 2012
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 09, 2012	Apr. 08, 2013
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 14, 2011	Nov. 13, 2012
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
*R&S Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
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
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. * = The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3 The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in 966 Chamber No. G.
5 The FCC Site Registration No. is 966073.
6 The VCCI Site Registration No. is G-137.
7 The CANADA Site Registration No. is IC 7450H-2.
8 Tested Date: June 07, 2012

For above 1GHz:

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) and Spectrum Analyzer (model: FSP40) 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: June 11, 2012

5.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meters chamber room(below 1GHz test) & 10 meters open site(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.

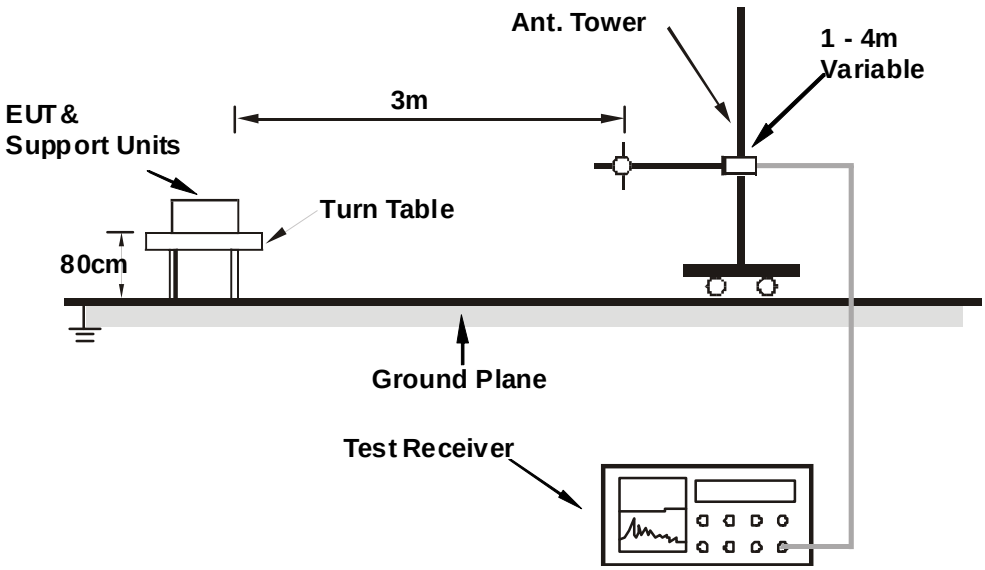
NOTE:

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.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation

5.2.5 TEST SETUP



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

5.2.6 EUT OPERATING CONDITIONS

Same as the 4.2.6

5.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11a

CHANNEL	TX Channel 149	**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	113.84	37.0 QP	43.5	-6.5	1.50 H	0	25.26	11.74
2	162.04	37.5 QP	43.5	-6.1	1.50 H	57	23.25	14.20
3	189.04	33.6 QP	43.5	-9.9	1.00 H	63	21.46	12.15
4	219.95	29.8 QP	46.0	-16.2	1.50 H	76	17.76	12.03
5	304.74	32.1 QP	46.0	-13.9	1.00 H	263	16.67	15.41
6	361.47	31.5 QP	46.0	-14.5	1.00 H	360	14.60	16.87
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	50.84	36.1 QP	40.0	-4.0	1.00 V	189	22.00	14.05
2	100.11	32.3 QP	43.5	-11.2	1.00 V	348	22.39	9.89
3	141.32	28.4 QP	43.5	-15.1	1.50 V	360	14.34	14.07
4	204.67	28.8 QP	43.5	-14.7	1.50 V	71	17.45	11.36
5	428.97	29.1 QP	46.0	-16.9	1.00 V	114	10.51	18.60
6	450.05	29.2 QP	46.0	-16.8	1.00 V	133	10.09	19.14

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).
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 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	*5745.00	111.4 PK			1.54 H	207	74.19	37.21
2	*5745.00	101.2 AV			1.54 H	207	63.99	37.21
3	11490.00	56.9 PK	74.0	-17.1	1.12 H	24	9.77	47.13
4	11490.00	44.7 AV	54.0	-9.3	1.12 H	24	-2.43	47.13
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	4999.99	59.4 PK	74.0	-14.6	1.00 V	70	23.64	35.76
2	4999.99	50.8 AV	54.0	-3.2	1.00 V	70	15.04	35.76
3	5440.00	62.6 PK	74.0	-11.4	1.00 V	75	26.14	36.46
4	**5440.00**	**53.5 AV**	**54.0**	**-0.5**	**1.00 V**	**75**	**17.04**	**36.46**
5	*5745.00	118.7 PK			1.00 V	35	81.49	37.21
6	*5745.00	108.6 AV			1.00 V	35	71.39	37.21
7	11490.00	54.9 PK	74.0	-19.1	1.38 V	148	7.77	47.13
8	11490.00	43.7 AV	54.0	-10.3	1.38 V	148	-3.43	47.13

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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

CHANNEL	TX Channel 157	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	*5785.00	111.7 PK			1.57 H	204	74.39	37.31
2	*5785.00	101.5 AV			1.57 H	204	64.19	37.31
3	11570.00	56.3 PK	74.0	-17.7	1.11 H	29	9.23	47.07
4	11570.00	44.3 AV	54.0	-9.7	1.11 H	29	-2.77	47.07
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	5400.11	64.3 PK	74.0	-9.7	1.00 V	73	27.90	36.40
2	**5400.11**	**53.5 AV**	**54.0**	**-0.5**	**1.00 V**	**73**	**17.10**	**36.40**
3	*5785.00	117.6 PK			1.00 V	36	80.29	37.31
4	*5785.00	107.2 AV			1.00 V	36	69.89	37.31
5	11570.00	54.5 PK	74.0	-19.5	1.39 V	143	7.43	47.07
6	11570.00	43.4 AV	54.0	-10.6	1.39 V	143	-3.67	47.07

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 limit value is defined as per 15.247.

CHANNEL	TX Channel 165	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	*5825.00	109.8 PK			1.54 H	206	72.38	37.42
2	*5825.00	99.5 AV			1.54 H	206	62.08	37.42
3	11650.00	56.9 PK	74.0	-17.1	1.11 H	17	9.90	47.00
4	11650.00	44.7 AV	54.0	-9.3	1.11 H	17	-2.30	47.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5400.03	63.6 PK	74.0	-10.4	1.00 V	101	27.20	36.40
2	5400.03	52.9 AV	54.0	-1.1	1.00 V	101	16.50	36.40
3	*5825.00	114.4 PK			1.00 V	35	76.98	37.42
4	*5825.00	104.5 AV			1.00 V	35	67.08	37.42
5	11650.00	55.3 PK	74.0	-18.7	1.42 V	163	8.30	47.00
6	11650.00	44.0 AV	54.0	-10.0	1.42 V	163	-3.00	47.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

802.11n (20MHz)

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	*5745.00	111.9 PK			1.59 H	205	74.69	37.21
2	*5745.00	100.3 AV			1.59 H	205	63.09	37.21
3	11490.00	57.2 PK	74.0	-16.8	1.11 H	15	10.07	47.13
4	11490.00	44.8 AV	54.0	-9.2	1.11 H	15	-2.33	47.13
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	5439.99	62.0 PK	74.0	-12.0	1.00 V	106	25.54	36.46
2	5439.99	52.1 AV	54.0	-1.9	1.00 V	106	15.64	36.46
3	*5745.00	118.7 PK			1.00 V	31	81.49	37.21
4	*5745.00	108.0 AV			1.00 V	31	70.79	37.21
5	11490.00	54.6 PK	74.0	-19.4	1.47 V	154	7.47	47.13
6	11490.00	43.6 AV	54.0	-10.4	1.47 V	154	-3.53	47.13

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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

CHANNEL	TX Channel 157	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	*5785.00	112.3 PK			1.60 H	207	74.99	37.31
2	*5785.00	100.8 AV			1.60 H	207	63.49	37.31
3	11570.00	57.1 PK	74.0	-16.9	1.08 H	28	10.03	47.07
4	11570.00	45.0 AV	54.0	-9.0	1.08 H	28	-2.07	47.07
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	5440.00	63.3 PK	74.0	-10.7	1.00 V	109	26.84	36.46
2	5440.00	52.9 AV	54.0	-1.1	1.00 V	109	16.44	36.46
3	*5785.00	116.9 PK			1.00 V	35	79.59	37.31
4	*5785.00	106.1 AV			1.00 V	35	68.79	37.31
5	11570.00	53.9 PK	74.0	-20.1	1.51 V	151	6.83	47.07
6	11570.00	43.1 AV	54.0	-10.9	1.51 V	151	-3.97	47.07

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 limit value is defined as per 15.247.

CHANNEL	TX Channel 165	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	*5825.00	109.6 PK			1.56 H	207	72.18	37.42
2	*5825.00	99.2 AV			1.56 H	207	61.78	37.42
3	11650.00	56.7 PK	74.0	-17.3	1.15 H	26	9.70	47.00
4	11650.00	44.4 AV	54.0	-9.6	1.15 H	26	-2.60	47.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5440.00	63.9 PK	74.0	-10.1	1.00 V	109	27.44	36.46
2	5440.00	52.8 AV	54.0	-1.2	1.00 V	109	16.34	36.46
3	*5825.00	115.2 PK			1.00 V	35	77.78	37.42
4	*5825.00	103.9 AV			1.00 V	35	66.48	37.42
5	11650.00	54.8 PK	74.0	-19.2	1.52 V	148	7.80	47.00
6	11650.00	44.1 AV	54.0	-9.9	1.52 V	148	-2.90	47.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

802.11n (40MHz)

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	*5755.00	109.9 PK			1.58 H	206	72.67	37.23
2	*5755.00	98.2 AV			1.58 H	206	60.97	37.23
3	11510.00	57.2 PK	74.0	-16.8	1.11 H	24	10.08	47.12
4	11510.00	45.2 AV	54.0	-8.8	1.11 H	24	-1.92	47.12
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5439.98	62.3 PK	74.0	-11.7	1.00 V	108	25.84	36.46
2	5439.98	52.3 AV	54.0	-1.7	1.00 V	108	15.84	36.46
3	*5755.00	116.2 PK			1.00 V	37	78.97	37.23
4	*5755.00	105.2 AV			1.00 V	37	67.97	37.23
5	11510.00	54.7 PK	74.0	-19.3	1.46 V	139	7.58	47.12
6	11510.00	43.5 AV	54.0	-10.5	1.46 V	139	-3.62	47.12

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

CHANNEL	TX Channel 159	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	*5795.00	108.9 PK			1.57 H	207	71.56	37.34
2	*5795.00	97.2 AV			1.57 H	207	59.86	37.34
3	11590.00	57.0 PK	74.0	-17.0	1.13 H	12	9.95	47.05
4	11590.00	44.7 AV	54.0	-9.3	1.13 H	12	-2.35	47.05
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	5440.05	63.1 PK	74.0	-10.9	1.00 V	109	26.64	36.46
2	5440.05	53.0 AV	54.0	-1.0	1.00 V	109	16.54	36.46
3	*5795.00	113.9 PK			1.00 V	36	76.56	37.34
4	*5795.00	103.2 AV			1.00 V	36	65.86	37.34
5	11590.00	53.7 PK	74.0	-20.3	1.34 V	148	6.65	47.05
6	11590.00	43.5 AV	54.0	-10.5	1.34 V	148	-3.55	47.05

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 limit value is defined as per 15.247.

5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

5.3.2 TEST INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2012

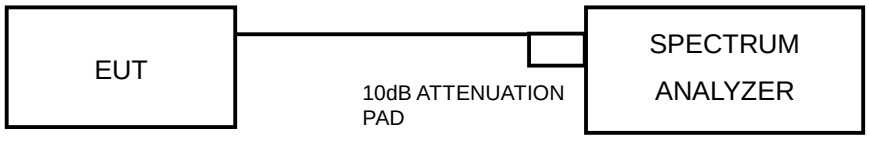
5.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
2. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. 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

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

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

5.3.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.58	16.59	0.5	PASS
157	5785	16.58	16.61	0.5	PASS
165	5825	16.60	16.62	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.74	17.82	0.5	PASS
157	5785	17.81	17.86	0.5	PASS
165	5825	17.81	17.88	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.62	36.87	0.5	PASS
159	5795	37.48	36.88	0.5	PASS

5.4 CONDUCTED OUTPUT POWER

5.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 5725 –5850 MHz band: 1 Watt (30dBm)

5.4.2 INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2012

5.4.3 TEST PROCEDURES

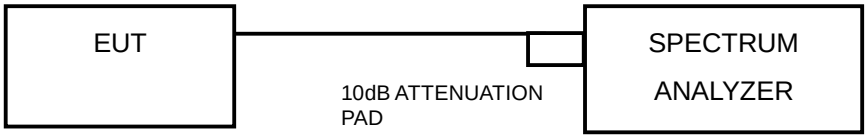
Follow FCC KDB 558074 DTS test procedure:
Measurement Procedure AVG1

1. Set the analyzer span to 5-30% greater than the EBW.
2. Set RBW =1MHz.
3. Set the VBW ≥ 3 x RBW.
4. Number of measurement points in the sweep ≥ 2 x (span/RBW).
5. Manually set the sweep time to: ≥10 x (number of measurement points in sweep) x(transmission symbol period)..
6. Detector = power averaging (RMS) or sample.
7. Perform the measurement over a single sweep.
8. Use the spectrum analyzer's integrated band power measurement function with band limits set equal to the EBW band edges.

5.4.4 DEVIATION FROM TEST STANDARD

No deviation

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

5.4.7 TEST RESULTS

802.11a

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	22.71	21.32	322.157	25.08	27.73	PASS
157	5785	21.22	19.90	230.158	23.62	27.73	PASS
165	5825	19.38	17.88	148.072	21.70	27.73	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

Effective Legacy Gain (dBi) = 8.27

The effective legacy gain is 8.27dBi, therefore the limit needs to reduce.

802.11n (20MHz)

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	21.51	20.15	245.093	23.89	30	PASS
157	5785	20.95	19.36	210.749	23.24	30	PASS
165	5825	19.21	17.67	141.847	21.52	30	PASS

802.11n (40MHz)

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	21.80	20.26	257.526	24.11	30	PASS
159	5795	20.65	19.19	199.130	22.99	30	PASS

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2012

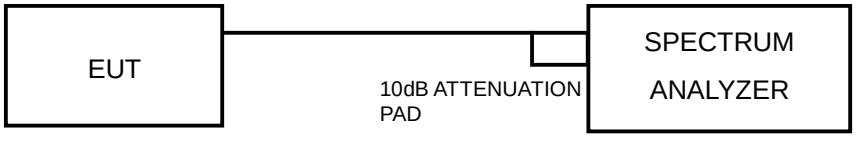
5.5.3 TEST PROCEDURE

1. Set the RBW = 100 kHz, VBW =300 kHz, Detector = Power Average (RMS).
2. Number of measurement points in the sweep ≥ 2 x span/RBW
3. Manually set the sweep time to ≥ 10 x (number of measurement points in sweep) x (transmission symbol period).
4. Perform the measurement over a single sweep.
5. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
6. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(3 kHz/100kHz)

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

5.5.7 TEST RESULTS

802.11a

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	3.20	-12.03	3.01	-9.02	5.73	PASS
	157	5785	1.95	-13.28	3.01	-10.27	5.73	PASS
	165	5825	0.11	-15.12	3.01	-12.11	5.73	PASS
1	149	5745	1.84	-13.39	3.01	-10.38	5.73	PASS
	157	5785	0.10	-15.13	3.01	-12.12	5.73	PASS
	165	5825	-1.90	-17.13	3.01	-14.12	5.73	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

Effective Legacy Gain (dBi) = 8.27

The effective legacy gain is 8.27dBi, therefore the limit needs to reduce.

802.11n (20MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	1.47	-13.76	3.01	-10.75	8	PASS
	157	5785	1.33	-13.90	3.01	-10.89	8	PASS
	165	5825	-0.64	-15.87	3.01	-12.86	8	PASS
1	149	5745	0.22	-15.01	3.01	-12.00	8	PASS
	157	5785	-0.58	-15.81	3.01	-12.80	8	PASS
	165	5825	-2.13	-17.36	3.01	-14.35	8	PASS

802.11n (40MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-1.18	-16.41	3.01	-13.40	8	PASS
	159	5795	-2.02	-17.25	3.01	-14.24	8	PASS
1	151	5755	-2.46	-17.69	3.01	-14.68	8	PASS
	159	5795	-3.67	-18.90	3.01	-15.89	8	PASS

5.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

5.6.2 TEST INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2012

5.6.3 TEST PROCEDURE

Measurement Procedure - Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 300 kHz.
3. Detector = power average (RMS).
4. Manually set the sweep time to: ≥ 10 x (number of measurement points in sweep) x (transmission symbol period).
5. Perform the measurement over a single sweep.
6. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

Measurement Procedure –Unwanted Emission Level

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = power average (RMS).
5. Manually set the sweep time to ≥ 10 x (number of measurement points in sweep) x (transmission symbol period).
6. Perform the measurement over a single sweep.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

5.6.4 DEVIATION FROM TEST STANDARD

No deviation

5.6.5 TEST SETUP

5.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

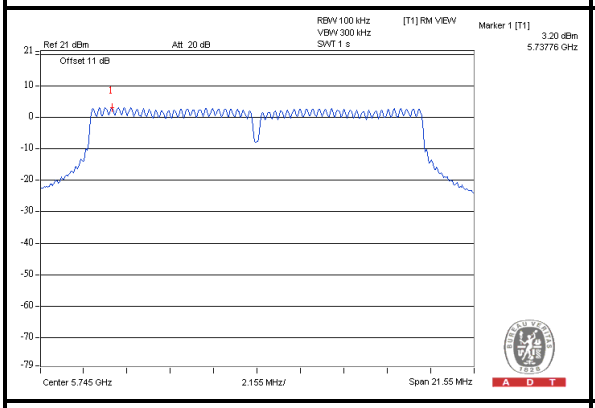
5.6.7 TEST RESULTS

The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit. Only worst data of each operating mode is presented.

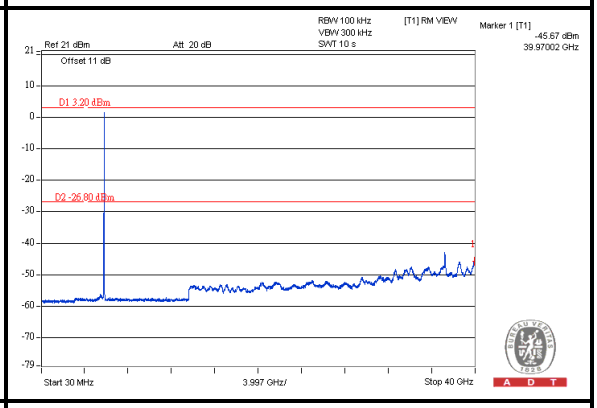
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11a

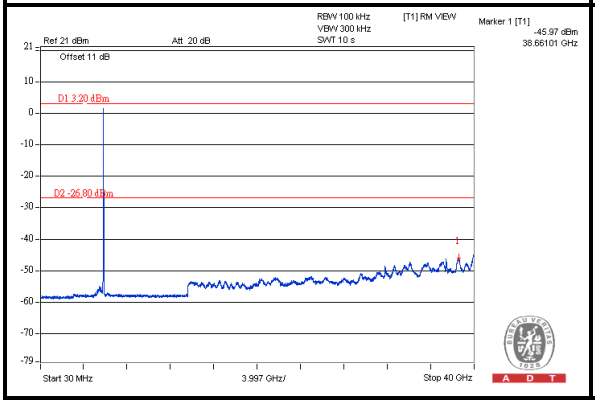
Maximum REF



CH 149



CH 157



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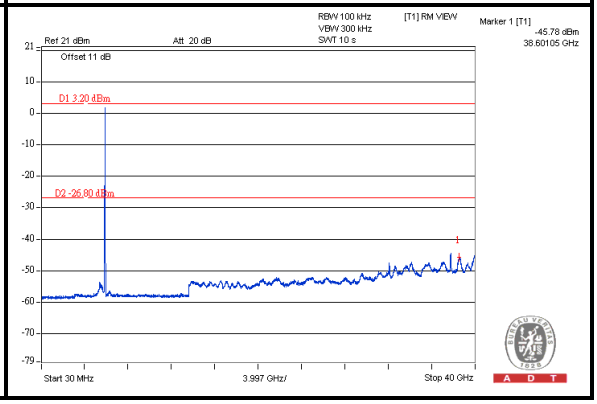
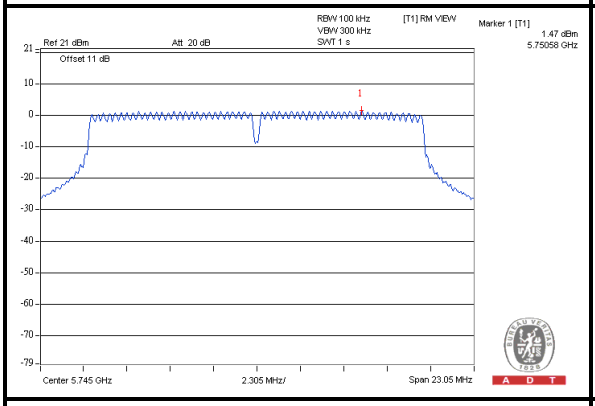
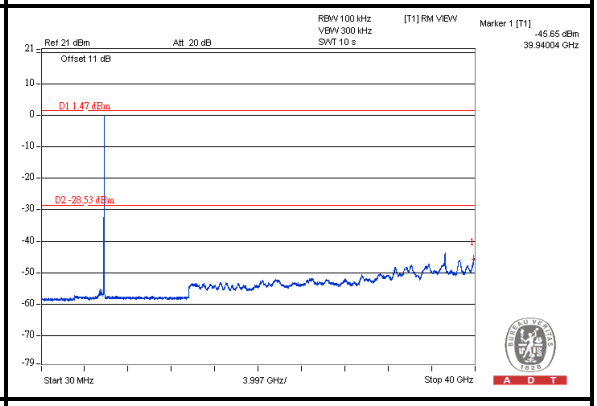


802.11n (20MHz)

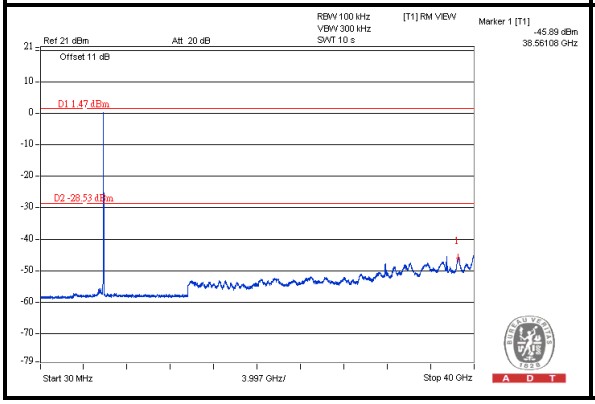
Maximum REF



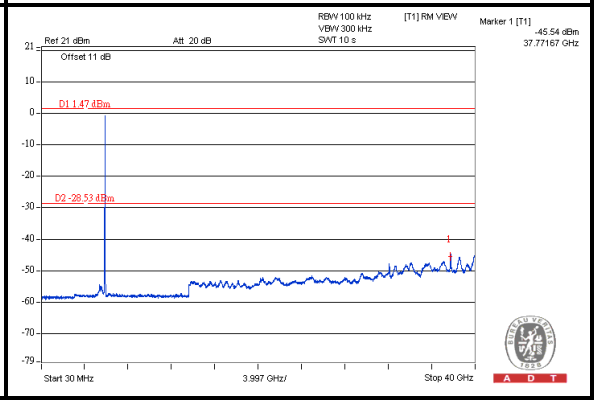
CH 149



CH 157

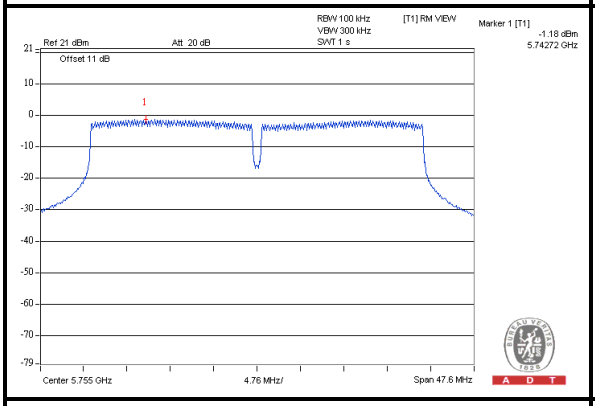


CH 165

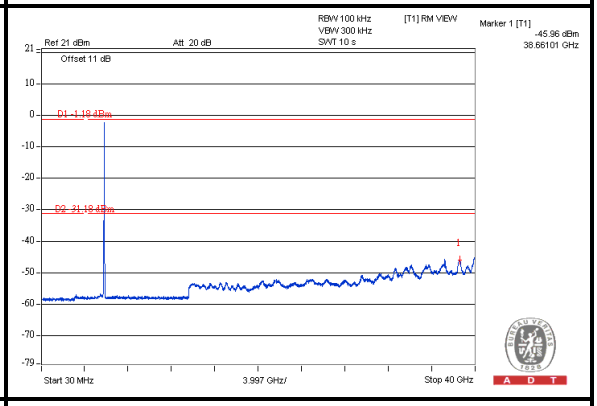


802.11n (40MHz)

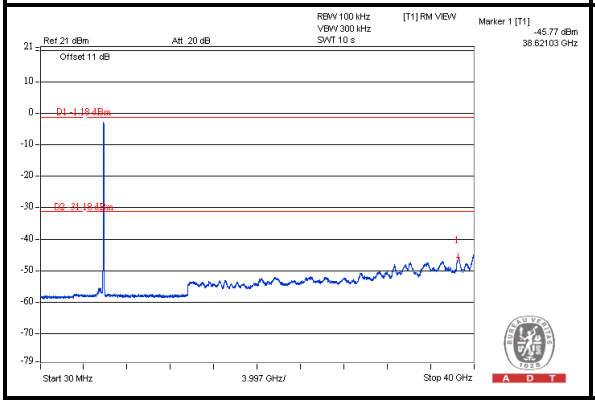
Maximum REF



CH 151



CH 159



6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

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

8. 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 ---