FCC TEST REPORT

REPORT NO.:	RF140527E04
MODEL NO.:	KT-6101
FCC ID:	2ACEXKT6101
RECEIVED:	May 27, 2014
TESTED:	June 13 to 30, 2014
ISSUED:	Sep. 29, 2014

APPLICANT:	Keystone Microtech Corporation
ADDRESS:	9F., No.255 Dong Sec. 1, Guangming 6th Rd., Jhubei City, Hsinchu County 302

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.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140527E04	Original release	Sep. 29, 2014

1. CERTIFICATION

PRODUCT:	Smart I/O
BRAND NAME:	Keystone Microtech Corporation
MODEL NO.:	KT-6101
TEST SAMPLE:	MASS-PRODUCTION
APPLICANT:	Keystone Microtech Corporation
TESTED:	June 13 to 30, 2014
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247)** ANSI C63.10-2009

The above equipment (Model: KT-6101) 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. 29, 2014*
(Claire Kuan, Specialist)

APPROVED BY : _____ , **DATE:** *Sep. 29, 2014*
(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

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 -0.72dB at 4.51953MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.5dB at 2390.00MHz
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 output power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

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	2.86 dB
Radiated emissions (30MHz-1GHz)	5.37 dB
Radiated emissions (1GHz -6GHz)	3.65 dB
Radiated emissions (6GHz -18GHz)	3.88 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Smart I/O
MODEL NO.	KT-6101
POWER SUPPLY	DC 12-24V from host equipment or DC 48V from POE adapter
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: up to 54Mbps 802.11n: up to 135Mbps
OPERATING FREQUENCY	2.412 ~ 2.462GHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
MAXIMUM OUTPUT POWER	802.11b: 84.528mW 802.11g: 279.254mW 802.11n (HT20): 251.768mW 802.11n (HT40): 210.378mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

NOTE:

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

Antenna NO.	Antenna Type	Antenna Connector	Antenna Gain(dBi) Including cable loss	Frequency range (MHz)
AT3216-B2R7HAAT	chip	NA	-2.6	2400~2500

2. The EUT incorporates a SISO function.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX/1RX
802.11g	1TX/1RX
802.11n (HT20)	1TX/1RX
802.11n (HT40)	1TX/1RX

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

Pre-test Mode	Description
Mode A	**PoE mode**
Mode B	DC Power supply 12V
Mode C	DC Power supply 24V

From the above modes, the worst case was found in **Mode A**. Therefore only the test data of the modes were recorded in this report.

4. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 7.

5. 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

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20):

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 (HT40):

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

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	OB	
1	√	√	√	√	√	PoE mode
2	√	-	-	-	-	DC mode (DC 12V)
3	√	-	-	-	-	DC mode (DC 24V)

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

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

OB: Conducted Out-Band Emission Measurement

NOTE: 1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on Z-plane.

POWER LINE CONDUCTED EMISSION TEST:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

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	MODULATIO N TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

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
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	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
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	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
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	25deg. C, 70%RH	120Vac, 60Hz	Mike Hsieh
RE<1G	24deg. C, 68%RH	120Vac, 60Hz	Robert Cheng
RE≥1G	22deg. C, 68%RH	120Vac, 60Hz	Nelson Teng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng
OB	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

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 v03r02

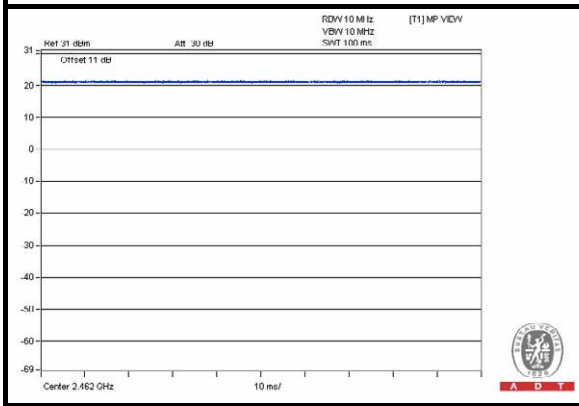
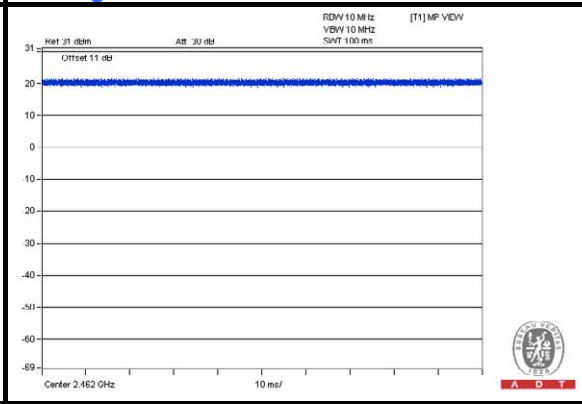
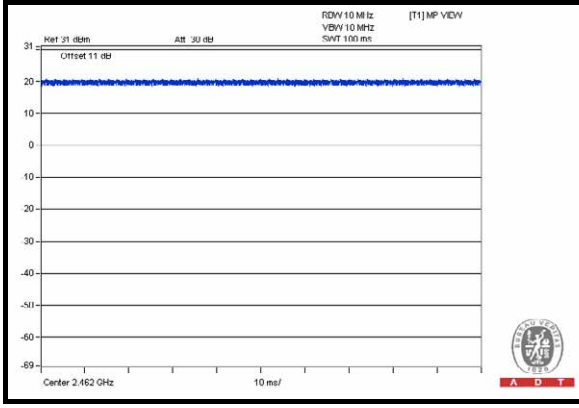
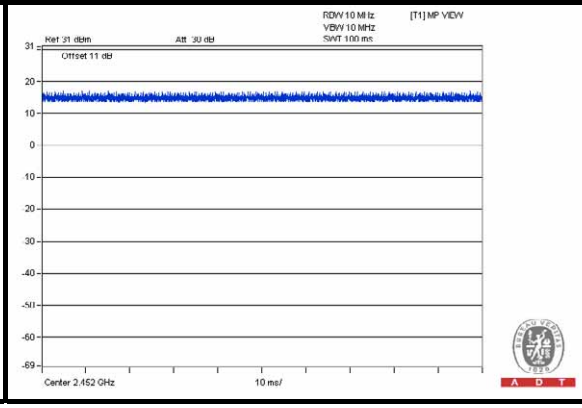
ANSI C63.10-2009

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

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

3.4 DUTY CYCLE OF TEST SIGNAL

Duty cycle of test signal is 100 %, duty factor is not required.

802.11b	802.11g
	
802.11n (HT20)	**802.11n (HT40)**
	

3.5 DESCRIPTION OF SUPPORT UNITS

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

PoE mode					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	PP32LA	FSLB32S	FCC DoC
2	PoE	Motorola	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable (1m)
2	UTP cable (10m)

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

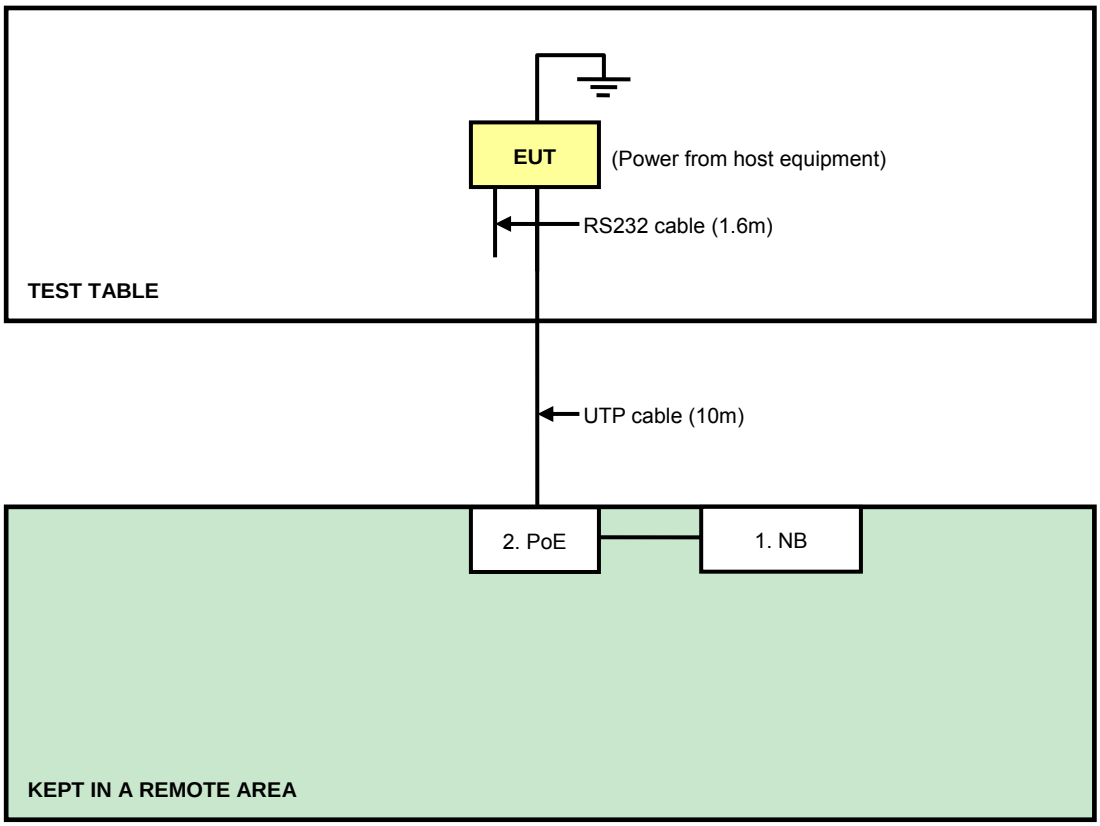
DC power supply mode					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	PP32LA	FSLB32S	FCC DoC
2	DC power supply	Topward	6603D	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable (1m)
2	UTP cable (10m)

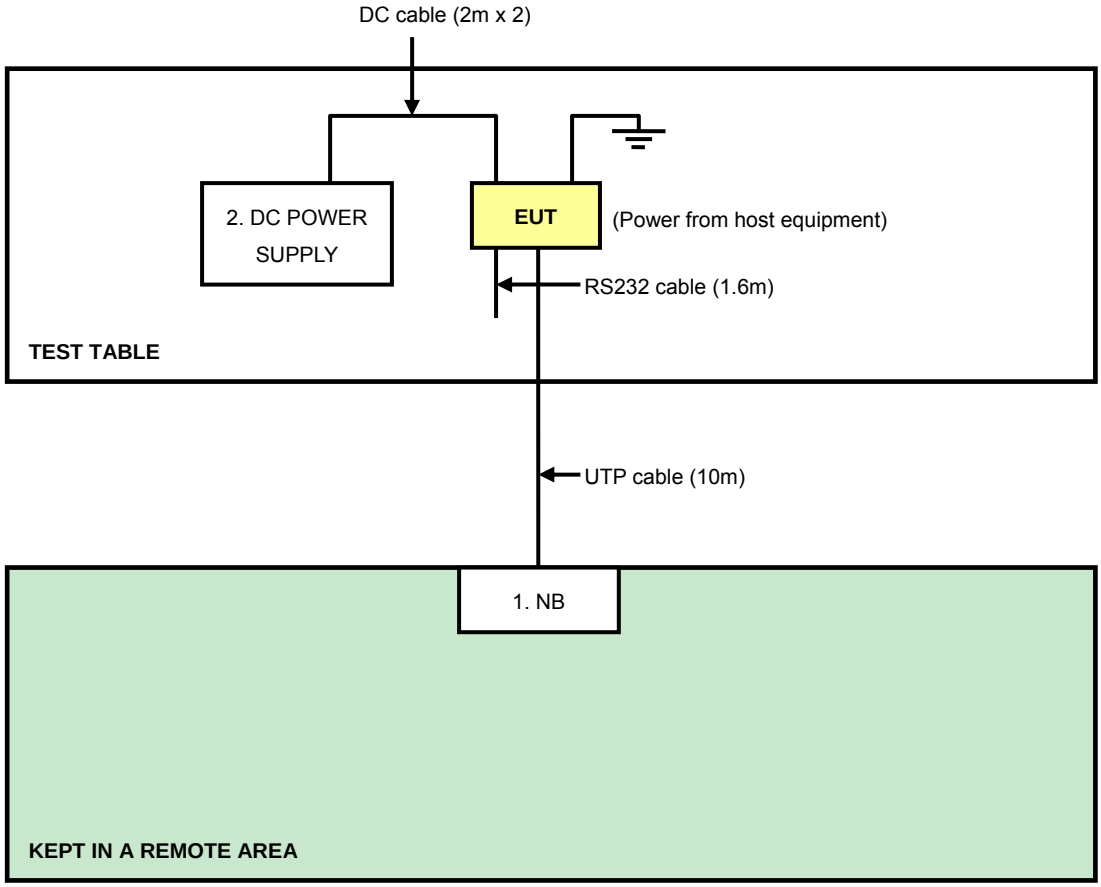
NOTE: All power cords of the above support units are non shielded (1.8m).

3.6 CONFIGURATION OF SYSTEM UNDER TEST

For PoE mode:



For DC power supply mode:



4. TEST TYPES AND RESULTS

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	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 05, 2013	Sep. 04, 2014
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 10, 2014	June 09, 2015
RF Cable (JYEBAO)	5DFB	CONCAB-003	Mar. 07, 2014	Mar. 06, 2015
50 ohms Terminator	50	EMC-03	Sep. 24, 2013	Sep. 23, 2014
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: June 13 to 18, 2014

4.1.3 TEST PROCEDURES

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

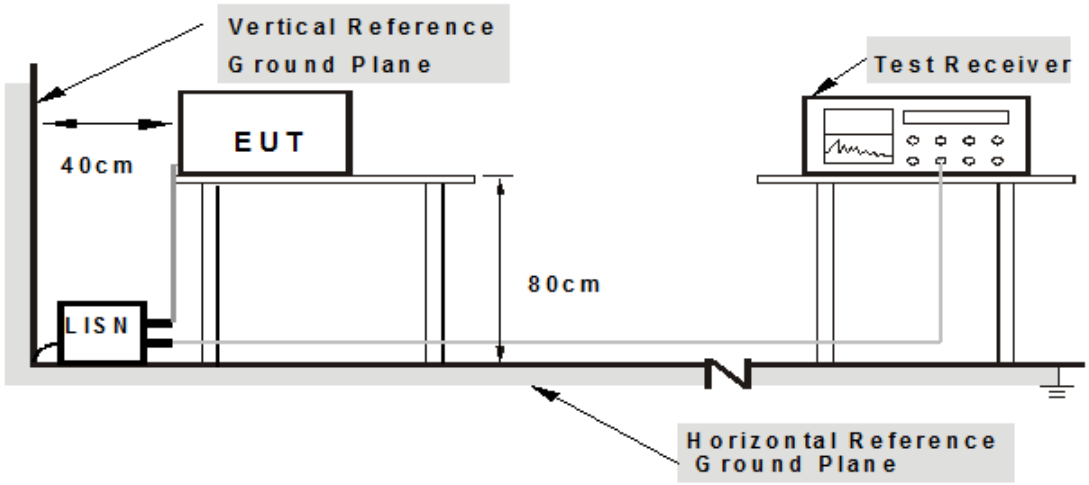
NOTE:

1. The resolution bandwidth of test receiver is 9kHz for Quasi-peak detection (QP) & Average detection (AV).

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

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

4.1.6 EUT OPERATING CONDITIONS

1. The communication partner run test program “MP_TEST.exe[Ver 1.3.8.0]” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

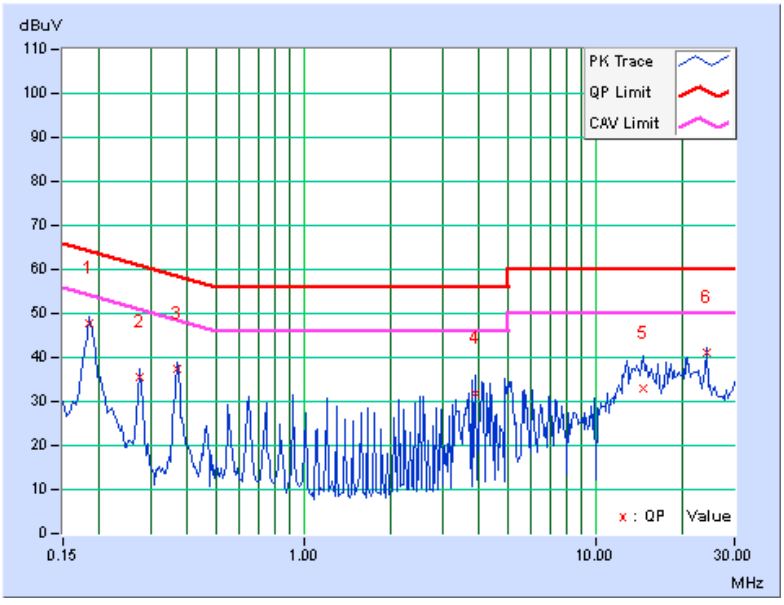
4.1.7 TEST RESULTS(MODE 1)

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	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	0.18516	0.07	47.80	43.09	47.87	43.16	64.25	54.25	-16.38	-11.09
2	0.27500	0.08	35.38	31.40	35.46	31.48	60.97	50.97	-25.51	-19.49
3	0.36875	0.09	37.32	34.20	37.41	34.29	58.53	48.53	-21.12	-14.24
4	3.87891	0.25	31.75	23.28	32.00	23.53	56.00	46.00	-24.00	-22.47
5	14.60547	0.58	32.44	22.87	33.02	23.45	60.00	50.00	-26.98	-26.55
6	24.12500	0.83	40.20	39.50	41.03	40.33	60.00	50.00	-18.97	-9.67

REMARKS:

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

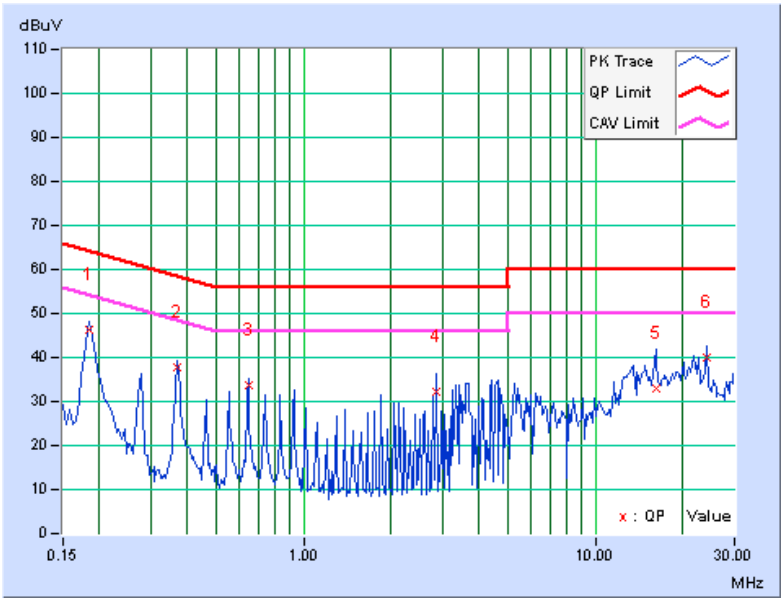


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	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	0.18516	0.07	46.36	41.20	46.43	41.27	64.25	54.25	-17.82	-12.98
2	0.36875	0.09	37.56	34.98	37.65	35.07	58.53	48.53	-20.88	-13.46
3	0.64609	0.11	33.50	30.58	33.61	30.69	56.00	46.00	-22.39	-15.31
4	2.86719	0.21	32.03	28.76	32.24	28.97	56.00	46.00	-23.76	-17.03
5	16.09375	0.61	32.47	22.13	33.08	22.74	60.00	50.00	-26.92	-27.26
6	24.12500	0.82	39.26	39.03	40.08	39.85	60.00	50.00	-19.92	-10.15

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



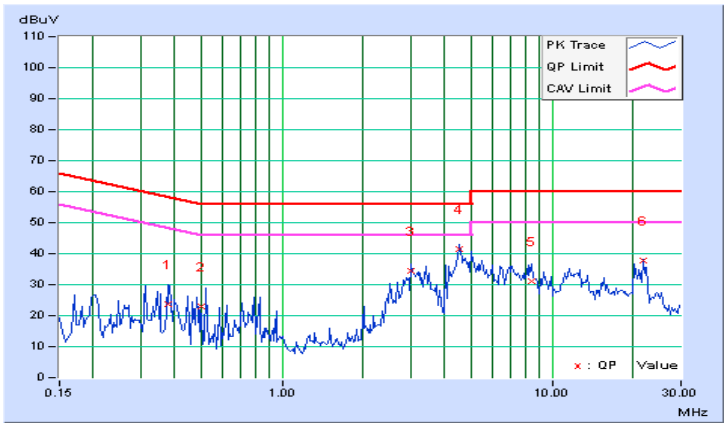
4.1.8 TEST RESULTS(MODE 2)

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	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	0.37656	0.07	23.71	22.72	23.78	22.79	58.35	48.35	-34.58	-25.57
2	0.50359	0.08	22.99	17.01	23.07	17.09	56.00	46.00	-32.93	-28.91
3	3.01172	0.25	34.09	22.92	34.34	23.17	56.00	46.00	-21.66	-22.83
4	4.51563	0.35	41.10	40.98	41.45	41.33	56.00	46.00	-14.55	-4.67
5	8.37109	0.43	30.79	22.49	31.22	22.92	60.00	50.00	-28.78	-27.08
6	21.66016	0.87	36.95	32.22	37.82	33.09	60.00	50.00	-22.18	-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

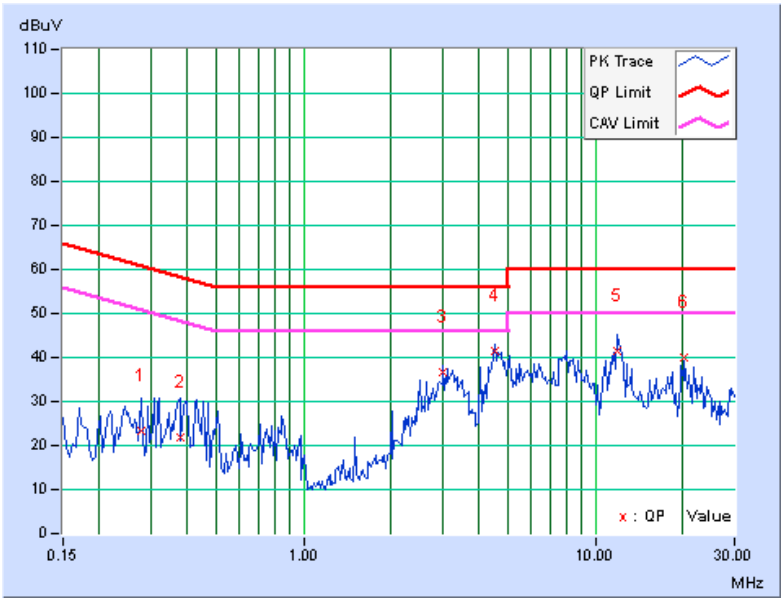


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	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	0.27891	0.08	23.20	22.86	23.28	22.94	60.85	50.85	-37.57	-27.91
2	0.37656	0.09	21.71	12.05	21.80	12.14	58.35	48.35	-36.56	-36.22
3	3.01172	0.22	36.41	35.48	36.63	35.70	56.00	46.00	-19.37	-10.30
4	4.51172	0.28	41.02	40.32	41.30	40.60	56.00	46.00	-14.70	-5.40
5	11.89063	0.50	41.05	30.33	41.55	30.83	60.00	50.00	-18.45	-19.17
6	20.25781	0.71	39.46	34.86	40.17	35.57	60.00	50.00	-19.83	-14.43

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



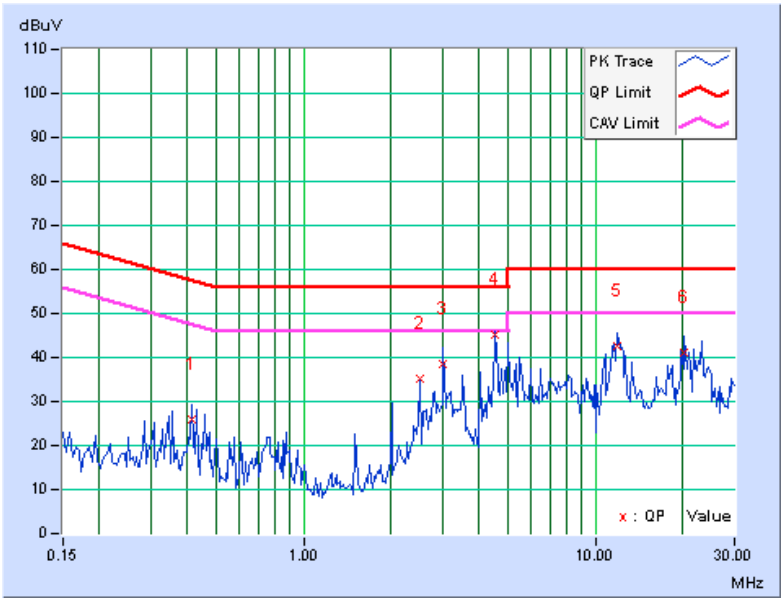
4.1.9 TEST RESULTS(MODE 3)

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	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	0.41563	0.09	26.01	23.93	26.10	24.02	57.54	47.54	-31.43	-23.51
2	2.50781	0.19	35.11	34.25	35.30	34.44	56.00	46.00	-20.70	-11.56
3	3.01172	0.22	38.30	38.11	38.52	38.33	56.00	46.00	-17.48	-7.67
4	4.51563	0.28	45.00	44.40	45.28	44.68	56.00	46.00	-10.72	-1.32
5	11.89063	0.50	42.09	39.52	42.59	40.02	60.00	50.00	-17.41	-9.98
6	20.25781	0.72	40.48	38.63	41.20	39.35	60.00	50.00	-18.80	-10.65

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

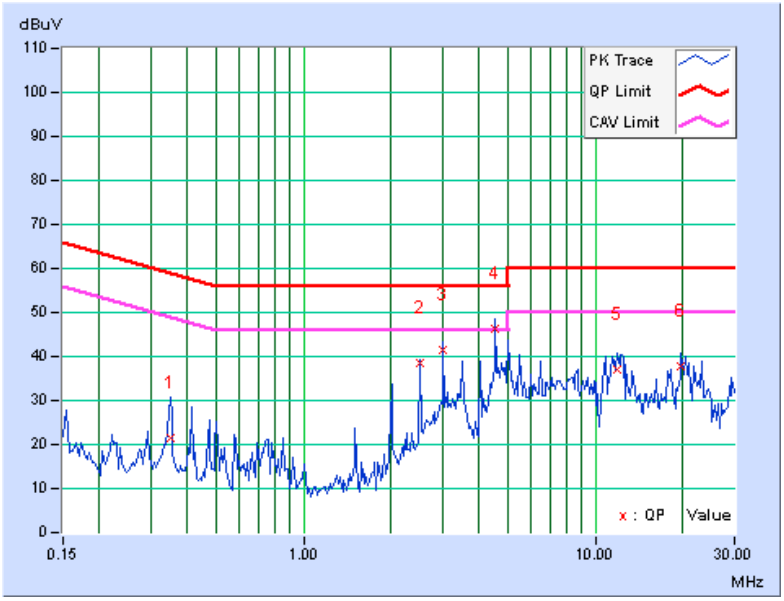


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	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	0.34922	0.08	21.44	13.21	21.52	13.29	58.98	48.98	-37.46	-35.69
2	2.51172	0.20	38.49	37.89	38.69	38.09	56.00	46.00	-17.31	-7.91
3	3.01172	0.22	41.22	40.99	41.44	41.21	56.00	46.00	-14.56	-4.79
4	**4.51953**	**0.28**	**45.85**	**45.00**	**46.13**	**45.28**	**56.00**	**46.00**	**-9.87**	**-0.72**
5	11.89453	0.50	36.71	35.61	37.21	36.11	60.00	50.00	-22.79	-13.89
6	19.70703	0.69	36.99	34.16	37.68	34.85	60.00	50.00	-22.32	-15.15

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.

4.2.2 TEST INSTRUMENTS

For below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 21, 2014	Jan. 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.
7. Tested Date: June 30, 2014

For above 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 21, 2014	Jan. 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 25, 2013	June 24, 2014
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.
7. Tested Date: June 13, 2014

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 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

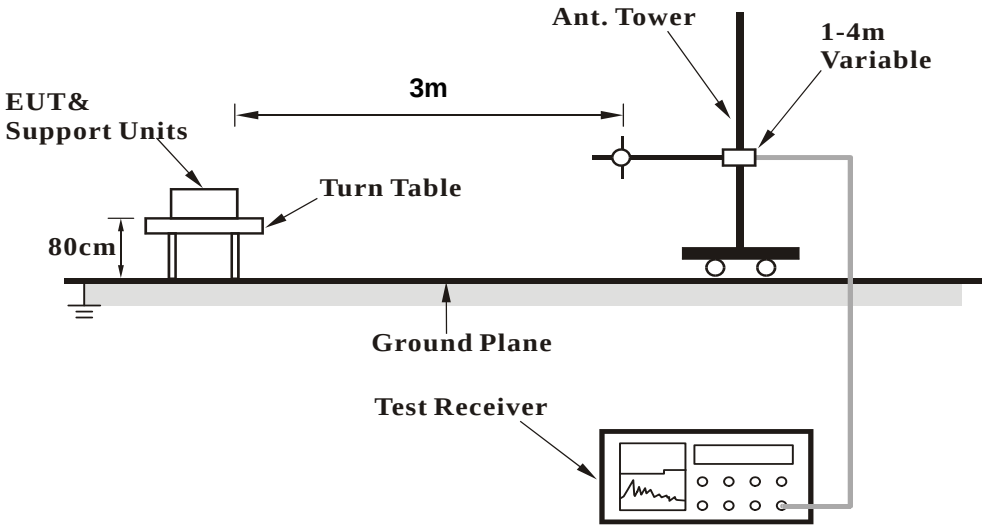
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.2.4 DEVIATION FROM TEST STANDARD

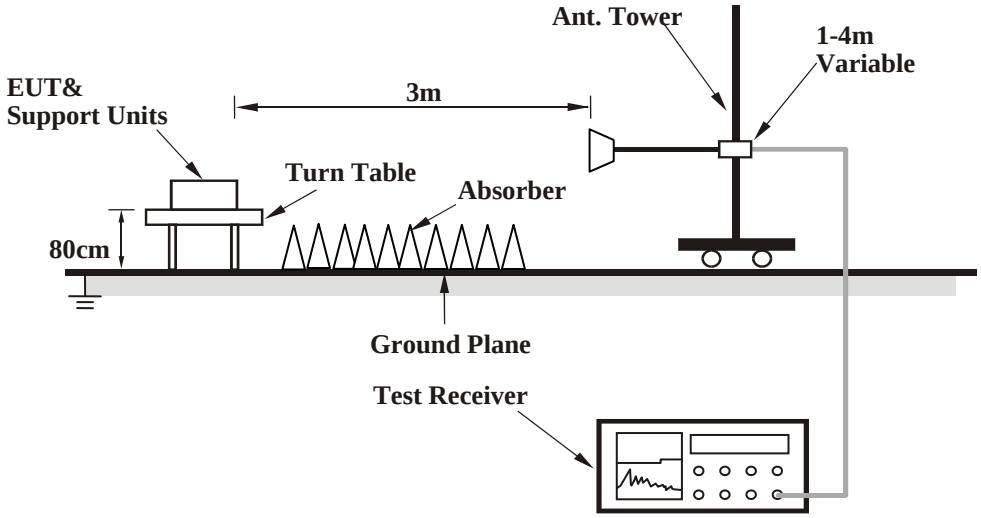
No deviation

4.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	50.42	34.7 QP	40.0	-5.3	1.50 H	275	48.29	-13.55
2	110.79	39.6 QP	43.5	-4.0	1.70 H	279	55.80	-16.25
3	125.01	39.2 QP	43.5	-4.3	2.00 H	106	54.08	-14.92
4	141.21	36.1 QP	43.5	-7.4	2.00 H	78	49.72	-13.61
5	162.36	34.6 QP	43.5	-8.9	1.50 H	281	48.00	-13.37
6	616.03	31.9 QP	46.0	-14.1	1.50 H	341	36.36	-4.42
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	30.63	33.9 QP	40.0	-6.1	1.00 V	135	48.45	-14.54
2	38.24	31.2 QP	40.0	-8.8	1.00 V	128	45.10	-13.90
3	68.99	35.0 QP	40.0	-5.0	1.00 V	3	50.46	-15.48
4	90.33	34.9 QP	43.5	-8.6	1.50 V	255	54.04	-19.10
5	101.88	35.1 QP	43.5	-8.4	1.00 V	278	52.52	-17.43
6	110.80	37.4 QP	43.5	-6.1	1.00 V	49	53.61	-16.25

REMARKS:

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

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	2386.00	50.2 PK	74.0	-23.8	1.25 H	116	52.60	-2.40
2	2386.00	39.5 AV	54.0	-14.5	1.25 H	116	41.90	-2.40
3	*2412.00	103.9 PK			1.25 H	116	106.20	-2.30
4	*2412.00	101.5 AV			1.25 H	116	103.80	-2.30
5	4824.00	51.2 PK	74.0	-22.8	1.79 H	176	45.60	5.60
6	4824.00	43.6 AV	54.0	-10.4	1.79 H	176	38.00	5.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2386.00	50.7 PK	74.0	-23.3	1.01 V	346	53.10	-2.40
2	2386.00	40.9 AV	54.0	-13.1	1.01 V	346	43.30	-2.40
3	*2412.00	104.3 PK			1.01 V	347	106.60	-2.30
4	*2412.00	102.0 AV			1.01 V	347	104.30	-2.30
5	4824.00	51.5 PK	74.0	-22.5	1.01 V	74	45.90	5.60
6	4824.00	46.8 AV	54.0	-7.2	1.01 V	74	41.20	5.60

REMARKS:

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

CHANNEL	TX Channel 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	50.3 PK	74.0	-23.7	1.25 H	116	52.70	-2.40
2	2390.00	39.7 AV	54.0	-14.3	1.25 H	116	42.10	-2.40
3	*2437.00	103.2 PK			1.25 H	116	105.50	-2.30
4	*2437.00	101.1 AV			1.25 H	116	103.40	-2.30
5	4874.00	50.8 PK	74.0	-23.2	1.77 H	180	44.90	5.90
6	4874.00	43.4 AV	54.0	-10.6	1.77 H	180	37.50	5.90
7	7311.00	54.9 PK	74.0	-19.1	1.51 H	330	41.70	13.20
8	7311.00	42.0 AV	54.0	-12.0	1.51 H	330	28.80	13.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.7 PK	74.0	-16.3	1.25 V	358	60.10	-2.40
2	2390.00	49.3 AV	54.0	-4.7	1.25 V	358	51.70	-2.40
3	*2437.00	104.1 PK			1.25 V	358	106.40	-2.30
4	*2437.00	101.6 AV			1.25 V	358	103.90	-2.30
5	2483.50	56.7 PK	74.0	-17.3	1.25 V	358	58.70	-2.00
6	2483.50	48.7 AV	54.0	-5.3	1.25 V	358	50.70	-2.00
7	4874.00	51.6 PK	74.0	-22.4	1.06 V	76	45.70	5.90
8	4874.00	46.6 AV	54.0	-7.4	1.06 V	76	40.70	5.90
9	7311.00	55.4 PK	74.0	-18.6	1.05 V	258	42.20	13.20
10	7311.00	41.0 AV	54.0	-13.0	1.05 V	258	27.80	13.20

REMARKS:

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

CHANNEL	TX Channel 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	102.6 PK			1.22 H	128	104.70	-2.10
2	*2462.00	100.6 AV			1.22 H	128	102.70	-2.10
3	2483.50	50.3 PK	74.0	-23.7	1.22 H	128	52.30	-2.00
4	2483.50	39.6 AV	54.0	-14.4	1.22 H	128	41.60	-2.00
5	4924.00	50.8 PK	74.0	-23.2	1.78 H	178	44.70	6.10
6	4924.00	43.3 AV	54.0	-10.7	1.78 H	178	37.20	6.10
7	7386.00	54.7 PK	74.0	-19.3	1.51 H	322	41.50	13.20
8	7386.00	41.6 AV	54.0	-12.4	1.51 H	322	28.40	13.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.6 PK			1.23 V	356	104.70	-2.10
2	*2462.00	100.1 AV			1.23 V	356	102.20	-2.10
3	2483.50	58.8 PK	74.0	-15.2	1.23 V	356	60.80	-2.00
4	2483.50	43.6 AV	54.0	-10.4	1.23 V	356	45.60	-2.00
5	4924.00	51.8 PK	74.0	-22.2	1.00 V	74	45.70	6.10
6	4924.00	47.0 AV	54.0	-7.0	1.00 V	74	40.90	6.10
7	7386.00	55.5 PK	74.0	-18.5	1.00 V	243	42.30	13.20
8	7386.00	41.3 AV	54.0	-12.7	1.00 V	243	28.10	13.20

REMARKS:

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

802.11g

CHANNEL	TX Channel 1	**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	70.1 PK	74.0	-3.9	1.22 H	128	72.50	-2.40
2	2390.00	48.6 AV	54.0	-5.4	1.22 H	128	51.00	-2.40
3	*2412.00	103.5 PK			1.22 H	128	105.80	-2.30
4	*2412.00	94.7 AV			1.22 H	128	97.00	-2.30
5	4824.00	50.4 PK	74.0	-23.6	1.83 H	192	44.80	5.60
6	4824.00	43.2 AV	54.0	-10.8	1.83 H	192	37.60	5.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	72.7 PK	74.0	-1.3	1.00 V	347	75.10	-2.40
2	2390.00	50.9 AV	54.0	-3.1	1.00 V	347	53.30	-2.40
3	*2412.00	102.5 PK			1.00 V	347	104.80	-2.30
4	*2412.00	93.3 AV			1.00 V	347	95.60	-2.30
5	4824.00	52.0 PK	74.0	-22.0	1.00 V	62	46.40	5.60
6	4824.00	47.2 AV	54.0	-6.8	1.00 V	62	41.60	5.60

REMARKS:

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

CHANNEL	TX Channel 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	65.1 PK	74.0	-8.9	1.22 H	128	67.50	-2.40
2	2390.00	49.4 AV	54.0	-4.6	1.22 H	128	51.80	-2.40
3	*2437.00	105.1 PK			1.22 H	128	107.40	-2.30
4	*2437.00	96.2 AV			1.22 H	128	98.50	-2.30
5	4874.00	50.0 PK	74.0	-24.0	1.73 H	187	44.10	5.90
6	4874.00	42.8 AV	54.0	-11.2	1.73 H	187	36.90	5.90
7	7311.00	54.3 PK	74.0	-19.7	1.53 H	313	41.10	13.20
8	7311.00	41.3 AV	54.0	-12.7	1.53 H	313	28.10	13.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.8 PK	74.0	-5.2	1.29 V	360	71.20	-2.40
2	2390.00	53.4 AV	54.0	-0.6	1.29 V	360	55.80	-2.40
3	*2437.00	107.4 PK			1.24 V	360	109.70	-2.30
4	*2437.00	98.0 AV			1.24 V	360	100.30	-2.30
5	2483.50	64.7 PK	74.0	-9.3	1.26 V	359	66.70	-2.00
6	2483.50	50.3 AV	54.0	-3.7	1.26 V	359	52.30	-2.00
7	4874.00	52.7 PK	74.0	-21.3	1.01 V	62	46.80	5.90
8	4874.00	47.6 AV	54.0	-6.4	1.01 V	62	41.70	5.90
9	7311.00	55.0 PK	74.0	-19.0	1.00 V	226	41.80	13.20
10	7311.00	40.9 AV	54.0	-13.1	1.00 V	226	27.70	13.20

REMARKS:

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

CHANNEL	TX Channel 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	99.8 PK			1.22 H	126	101.90	-2.10
2	*2462.00	90.1 AV			1.22 H	126	92.20	-2.10
3	2483.50	65.3 PK	74.0	-8.7	1.22 H	126	67.30	-2.00
4	2483.50	49.5 AV	54.0	-4.5	1.22 H	126	51.50	-2.00
5	4924.00	49.9 PK	74.0	-24.1	1.72 H	200	43.80	6.10
6	4924.00	42.7 AV	54.0	-11.3	1.72 H	200	36.60	6.10
7	7386.00	54.0 PK	74.0	-20.0	1.52 H	304	40.80	13.20
8	7386.00	41.0 AV	54.0	-13.0	1.52 H	304	27.80	13.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.0 PK			1.22 V	349	103.10	-2.10
2	*2462.00	91.6 AV			1.22 V	349	93.70	-2.10
3	2483.50	71.6 PK	74.0	-2.4	1.22 V	349	73.60	-2.00
4	2483.50	52.2 AV	54.0	-1.8	1.22 V	349	54.20	-2.00
5	4924.00	52.3 PK	74.0	-21.7	1.00 V	73	46.20	6.10
6	4924.00	47.4 AV	54.0	-6.6	1.00 V	73	41.30	6.10
7	7386.00	55.2 PK	74.0	-18.8	1.00 V	245	42.00	13.20
8	7386.00	41.2 AV	54.0	-12.8	1.00 V	245	28.00	13.20

REMARKS:

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

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	68.1 PK	74.0	-5.9	1.22 H	121	70.50	-2.40
2	2390.00	45.6 AV	54.0	-8.4	1.22 H	121	48.00	-2.40
3	*2412.00	1013.0 PK			1.22 H	121	1015.30	-2.30
4	*2412.00	92.1 AV			1.22 H	121	94.40	-2.30
5	4824.00	50.2 PK	74.0	-23.8	1.67 H	198	44.60	5.60
6	4824.00	43.2 AV	54.0	-10.8	1.67 H	198	37.60	5.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.1 PK	74.0	-0.9	1.00 V	348	75.50	-2.40
2	2390.00	49.4 AV	54.0	-4.6	1.00 V	348	51.80	-2.40
3	*2412.00	102.3 PK			1.00 V	348	104.60	-2.30
4	*2412.00	93.4 AV			1.00 V	348	95.70	-2.30
5	4824.00	51.9 PK	74.0	-22.1	1.00 V	76	46.30	5.60
6	4824.00	46.9 AV	54.0	-7.1	1.00 V	76	41.30	5.60

REMARKS:

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

CHANNEL	TX Channel 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	65.1 PK	74.0	-8.9	1.22 H	104	67.50	-2.40
2	2390.00	49.7 AV	54.0	-4.3	1.22 H	104	52.10	-2.40
3	*2437.00	105.1 PK			1.00 H	110	107.40	-2.30
4	*2437.00	95.1 AV			1.00 H	110	97.40	-2.30
5	4874.00	50.3 PK	74.0	-23.7	1.78 H	181	44.40	5.90
6	4874.00	43.0 AV	54.0	-11.0	1.78 H	181	37.10	5.90
7	7311.00	54.6 PK	74.0	-19.4	1.56 H	321	41.40	13.20
8	7311.00	41.7 AV	54.0	-12.3	1.56 H	321	28.50	13.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.2 PK	74.0	-5.8	1.27 V	357	70.60	-2.40
2	2390.00	53.1 AV	54.0	-0.9	1.27 V	357	55.50	-2.40
3	*2437.00	107.2 PK			1.27 V	357	109.50	-2.30
4	*2437.00	97.5 AV			1.27 V	357	99.80	-2.30
5	2483.50	65.0 PK	74.0	-9.0	1.27 V	357	67.00	-2.00
6	2483.50	50.3 AV	54.0	-3.7	1.27 V	357	52.30	-2.00
7	4874.00	51.8 PK	74.0	-22.2	1.00 V	62	45.90	5.90
8	4874.00	47.2 AV	54.0	-6.8	1.00 V	62	41.30	5.90
9	7311.00	55.6 PK	74.0	-18.4	1.00 V	252	42.40	13.20
10	7311.00	41.4 AV	54.0	-12.6	1.00 V	252	28.20	13.20

REMARKS:

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

CHANNEL	TX Channel 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	100.2 PK			1.12 H	121	102.30	-2.10
2	*2462.00	90.7 AV			1.12 H	121	92.80	-2.10
3	2483.50	64.5 PK	74.0	-9.5	1.12 H	121	66.50	-2.00
4	2483.50	49.4 AV	54.0	-4.6	1.12 H	121	51.40	-2.00
5	4924.00	50.4 PK	74.0	-23.6	1.74 H	199	44.30	6.10
6	4924.00	43.2 AV	54.0	-10.8	1.74 H	199	37.10	6.10
7	7386.00	54.2 PK	74.0	-19.8	1.56 H	329	41.00	13.20
8	7386.00	41.1 AV	54.0	-12.9	1.56 H	329	27.90	13.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.4 PK			1.24 V	355	103.50	-2.10
2	*2462.00	92.0 AV			1.24 V	355	94.10	-2.10
3	2483.50	72.0 PK	74.0	-2.0	1.24 V	355	74.00	-2.00
4	2483.50	52.6 AV	54.0	-1.4	1.24 V	355	54.60	-2.00
5	4924.00	52.2 PK	74.0	-21.8	1.00 V	50	46.10	6.10
6	4924.00	47.1 AV	54.0	-6.9	1.00 V	50	41.00	6.10
7	7386.00	55.2 PK	74.0	-18.8	1.00 V	243	42.00	13.20
8	7386.00	41.2 AV	54.0	-12.8	1.00 V	243	28.00	13.20

REMARKS:

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

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	70.2 PK	74.0	-3.8	1.00 H	124	72.60	-2.40
2	2390.00	47.5 AV	54.0	-6.5	1.00 H	124	49.90	-2.40
3	*2422.00	98.5 PK			1.00 H	124	100.80	-2.30
4	*2422.00	89.2 AV			1.00 H	124	91.50	-2.30
5	4844.00	50.5 PK	74.0	-23.5	1.69 H	189	44.70	5.80
6	4844.00	43.2 AV	54.0	-10.8	1.69 H	189	37.40	5.80
7	7266.00	54.3 PK	74.0	-19.7	1.58 H	315	41.10	13.20
8	7266.00	41.1 AV	54.0	-12.9	1.58 H	315	27.90	13.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.2 PK	74.0	-1.8	1.27 V	357	74.60	-2.40
2	2390.00	51.0 AV	54.0	-3.0	1.27 V	357	53.40	-2.40
3	*2422.00	99.9 PK			1.27 V	357	102.20	-2.30
4	*2422.00	90.1 AV			1.27 V	357	92.40	-2.30
5	4844.00	52.4 PK	74.0	-21.6	1.00 V	73	46.60	5.80
6	4844.00	47.6 AV	54.0	-6.4	1.00 V	73	41.80	5.80
7	7266.00	55.3 PK	74.0	-18.7	1.00 V	249	42.10	13.20
8	7266.00	41.2 AV	54.0	-12.8	1.00 V	249	28.00	13.20

REMARKS:

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

CHANNEL	TX Channel 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	70.7 PK	74.0	-3.3	1.10 H	127	73.10	-2.40
2	2390.00	48.0 AV	54.0	-6.0	1.10 H	127	50.40	-2.40
3	*2437.00	98.7 PK			1.10 H	127	101.00	-2.30
4	*2437.00	88.8 AV			1.10 H	127	91.10	-2.30
5	4874.00	49.4 PK	74.0	-24.6	1.70 H	186	43.50	5.90
6	4874.00	42.4 AV	54.0	-11.6	1.70 H	186	36.50	5.90
7	7311.00	54.0 PK	74.0	-20.0	1.58 H	304	40.80	13.20
8	7311.00	40.9 AV	54.0	-13.1	1.58 H	304	27.70	13.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.6 PK	74.0	-6.4	1.28 V	358	70.00	-2.40
2	**2390.00**	**53.5 AV**	**54.0**	**-0.5**	**1.28 V**	**358**	**55.90**	**-2.40**
3	*2437.00	100.4 PK			1.28 V	358	102.70	-2.30
4	*2437.00	90.9 AV			1.28 V	358	93.20	-2.30
5	2483.50	67.3 PK	74.0	-6.7	1.28 V	358	69.30	-2.00
6	2483.50	51.8 AV	54.0	-2.2	1.28 V	358	53.80	-2.00
7	4874.00	52.3 PK	74.0	-21.7	1.00 V	46	46.40	5.90
8	4874.00	47.6 AV	54.0	-6.4	1.00 V	46	41.70	5.90
9	7311.00	55.8 PK	74.0	-18.2	1.00 V	250	42.60	13.20
10	7311.00	41.5 AV	54.0	-12.5	1.00 V	250	28.30	13.20

REMARKS:

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

CHANNEL	TX Channel 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	98.1 PK			1.00 H	135	100.20	-2.10
2	*2452.00	88.1 AV			1.00 H	135	90.20	-2.10
3	2483.50	69.9 PK	74.0	-4.1	1.00 H	135	71.90	-2.00
4	2483.50	47.3 AV	54.0	-6.7	1.00 H	135	49.30	-2.00
5	4904.00	49.2 PK	74.0	-24.8	1.66 H	175	43.10	6.10
6	4904.00	42.4 AV	54.0	-11.6	1.66 H	175	36.30	6.10
7	7356.00	53.6 PK	74.0	-20.4	1.52 H	288	40.30	13.30
8	7356.00	40.5 AV	54.0	-13.5	1.52 H	288	27.20	13.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	98.7 PK			1.23 V	358	100.80	-2.10
2	*2452.00	89.2 AV			1.23 V	358	91.30	-2.10
3	2483.50	71.4 PK	74.0	-2.6	1.23 V	358	73.40	-2.00
4	2483.50	51.6 AV	54.0	-2.4	1.23 V	358	53.60	-2.00
5	4904.00	52.0 PK	74.0	-22.0	1.01 V	74	45.90	6.10
6	4904.00	47.0 AV	54.0	-7.0	1.01 V	74	40.90	6.10
7	7356.00	55.5 PK	74.0	-18.5	1.00 V	241	42.20	13.30
8	7356.00	41.4 AV	54.0	-12.6	1.00 V	241	28.10	13.30

REMARKS:

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

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
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2014

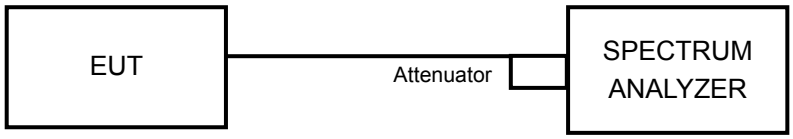
4.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz
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
1	2412	10.13	0.5	PASS
6	2437	10.12	0.5	PASS
11	2462	10.12	0.5	PASS

802.11g

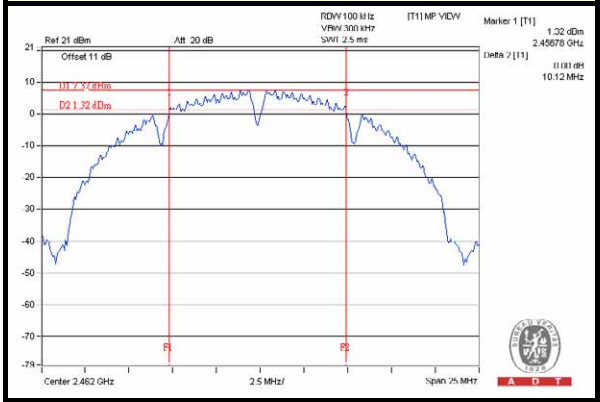
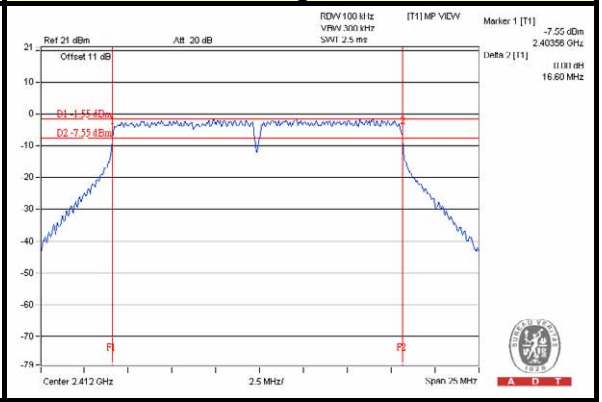
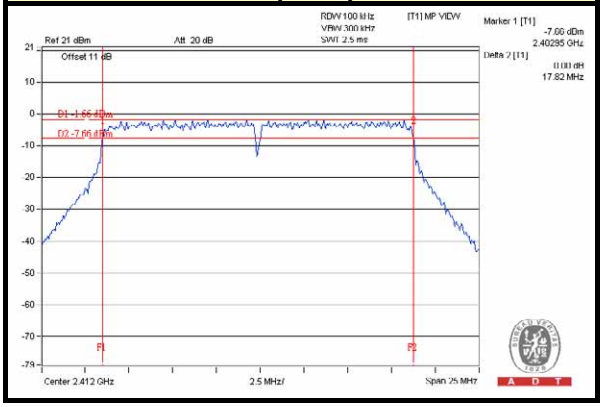
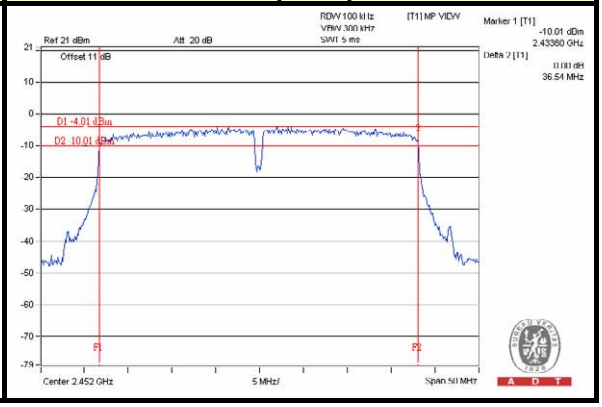
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.60	0.5	PASS
6	2437	16.62	0.5	PASS
11	2462	16.62	0.5	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.82	0.5	PASS
6	2437	17.83	0.5	PASS
11	2462	17.83	0.5	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.54	0.5	PASS
6	2437	36.56	0.5	PASS
9	2452	36.54	0.5	PASS

SPECTRUM PLOT OF WORST VALUE	
802.11b / CH11	**802.11g / CH1**
	
802.11n (HT20) / CH1	**802.11n (HT40) / CH9**
	

4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

4.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power Sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 2015

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, 2014

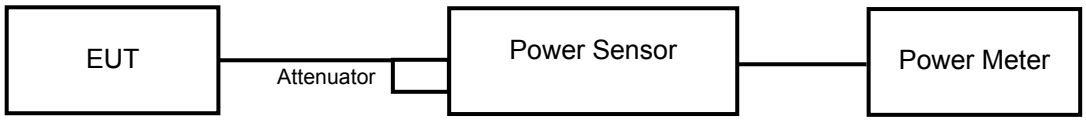
4.4.3 TEST PROCEDURES

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

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

FOR PEAK POWER

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	75.336	18.77	30	PASS
6	2437	81.846	19.13	30	PASS
11	2462	84.528	19.27	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	205.589	23.13	30	PASS
6	2437	279.254	24.46	30	PASS
11	2462	225.944	23.54	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	143.549	21.57	30	PASS
6	2437	251.768	24.01	30	PASS
11	2462	174.181	22.41	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	127.938	21.07	30	PASS
6	2437	210.378	23.23	30	PASS
9	2452	135.519	21.32	30	PASS

FOR AVERAGE POWER

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	44.259	16.46
6	2437	47.643	16.78
11	2462	49.774	16.97

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	20.370	13.09
6	2437	30.620	14.86
11	2462	22.803	13.58

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	18.072	12.57
6	2437	29.854	14.75
11	2462	22.439	13.51

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
3	2422	17.258	12.37
6	2437	26.977	14.31
9	2452	19.543	12.91

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
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2014

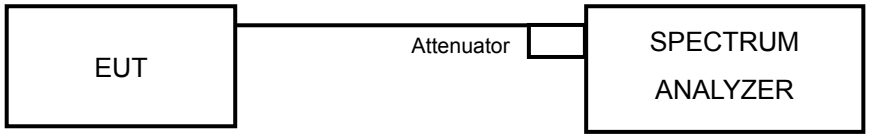
4.5.3 TEST PROCEDURE

1. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
2. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
3. Use the peak marker function to determine the maximum amplitude level.

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

Channel	FREQUENCY (MHz)	PSD (dBm)	Limit (dBm)	PASS /FAIL
1	2412	-13.66	8	PASS
6	2437	-13.14	8	PASS
11	2462	-12.63	8	PASS

802.11g

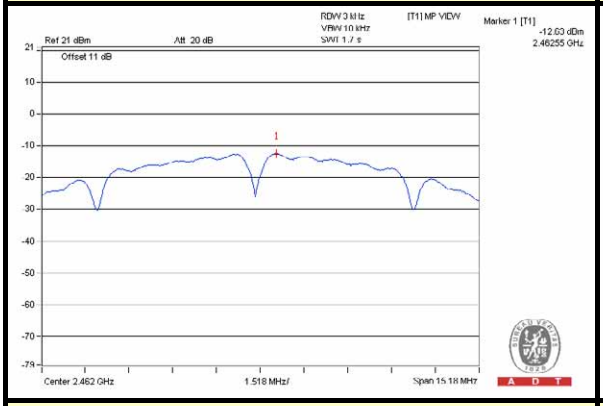
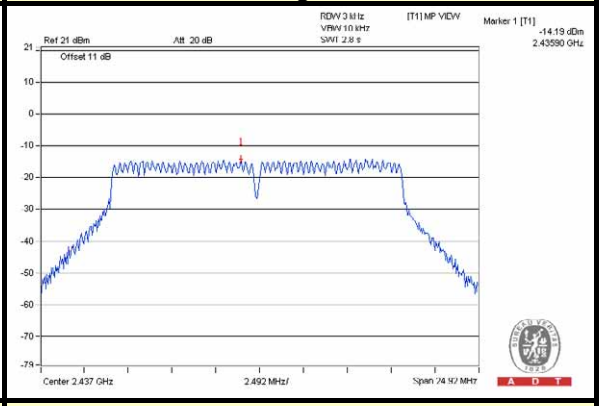
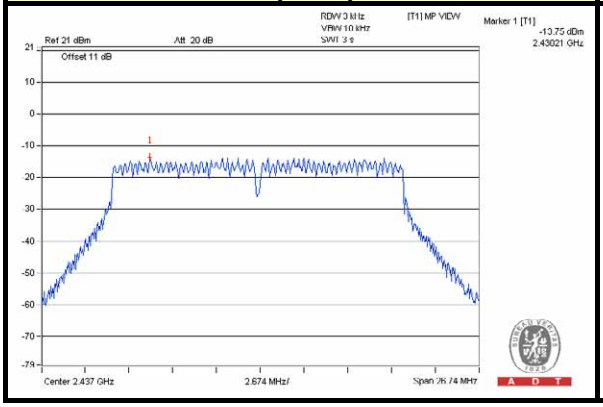
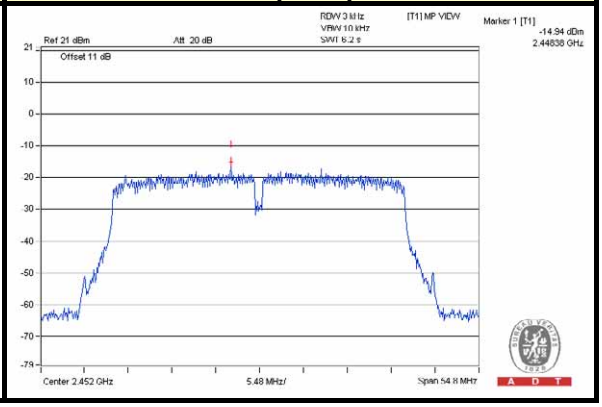
Channel	FREQUENCY (MHz)	PSD (dBm)	Limit (dBm)	PASS /FAIL
1	2412	-16.01	8	PASS
6	2437	-14.19	8	PASS
11	2462	-15.31	8	PASS

802.11n (HT20)

Channel	FREQUENCY (MHz)	PSD (dBm)	Limit (dBm)	PASS /FAIL
1	2412	-15.43	8	PASS
6	2437	-13.75	8	PASS
11	2462	-15.22	8	PASS

802.11n (HT40)

Channel	FREQUENCY (MHz)	PSD (dBm)	Limit (dBm)	PASS /FAIL
3	2422	-18.51	8	PASS
6	2437	-15.66	8	PASS
9	2452	-14.94	8	PASS

SPECTRUM PLOT OF WORST VALUE	
802.11b / CH11	**802.11g / CH6**
	
802.11n (HT20) / CH6	**802.11n (HT40) / CH9**
	

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
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2014

4.6.3 TEST PROCEDURE

Measurement Procedure - Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

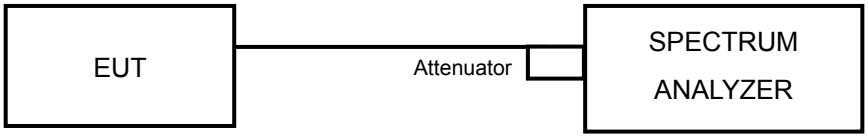
Measurement Procedure –Unwanted Emission Level

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

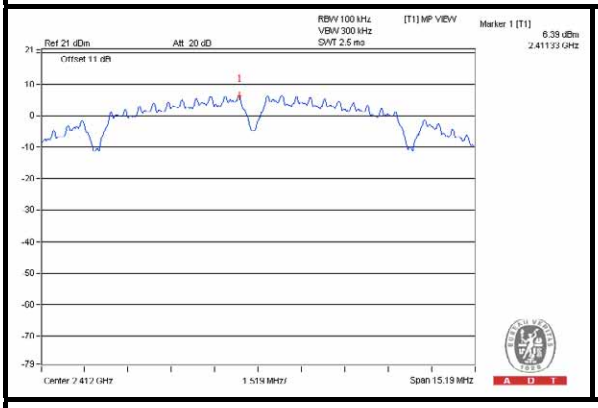
Same as Item 4.3.6

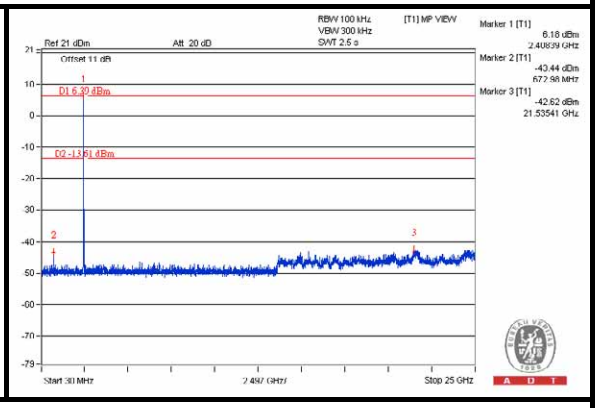
4.6.7 TEST RESULTS

The 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.

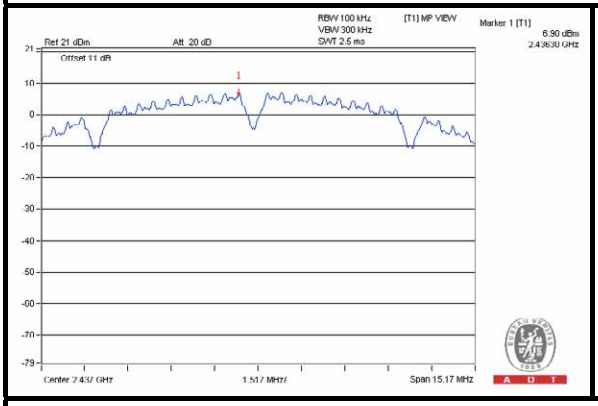
802.11b:

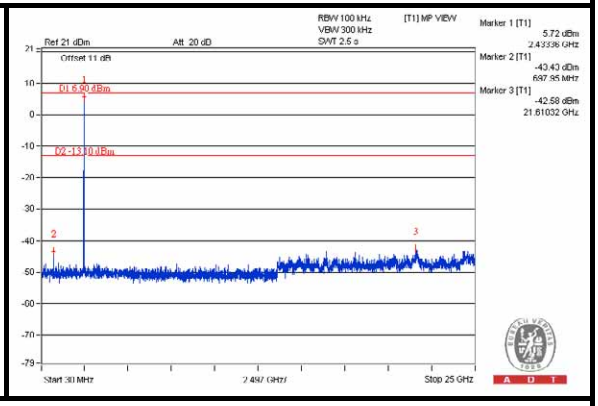
CH 1



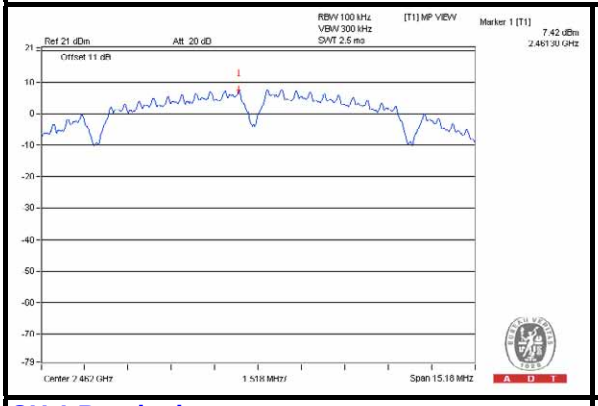


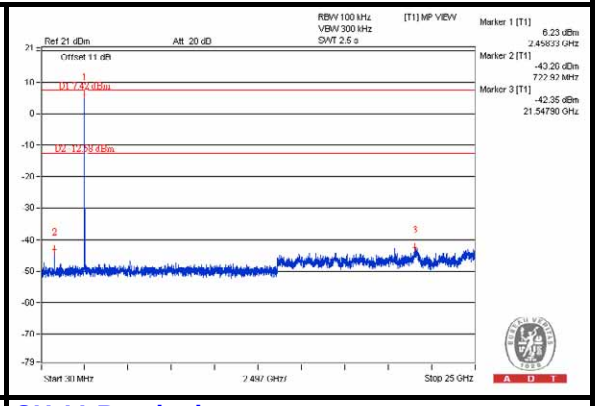
CH 6



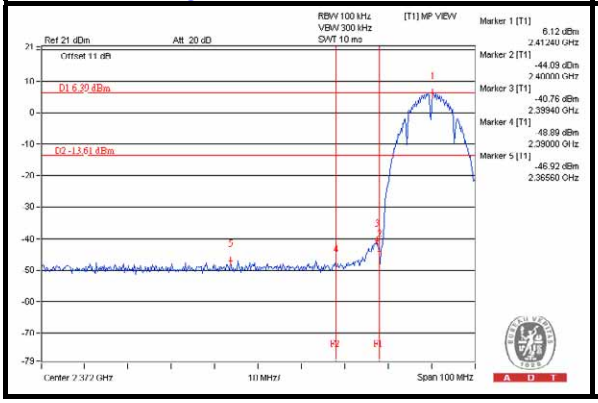


CH 11

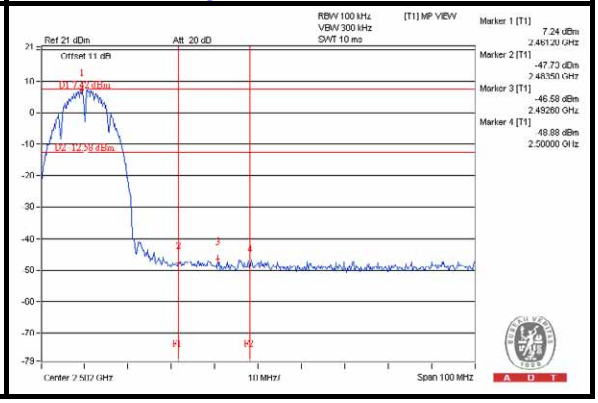




CH 1 Band edge

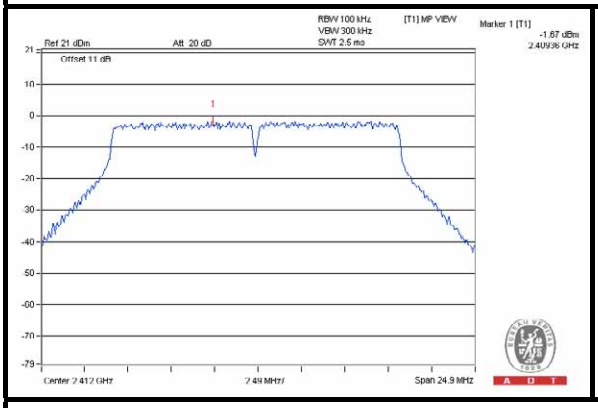


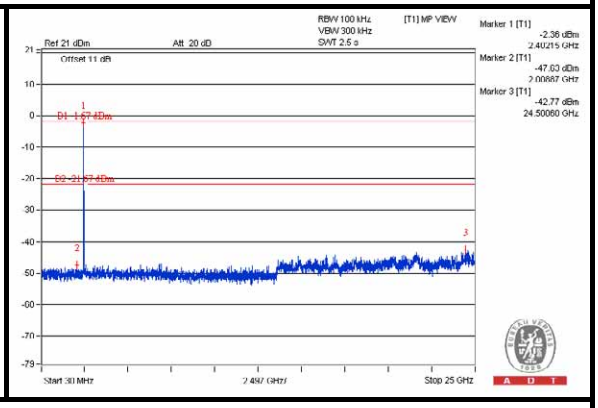
CH 11 Band edge



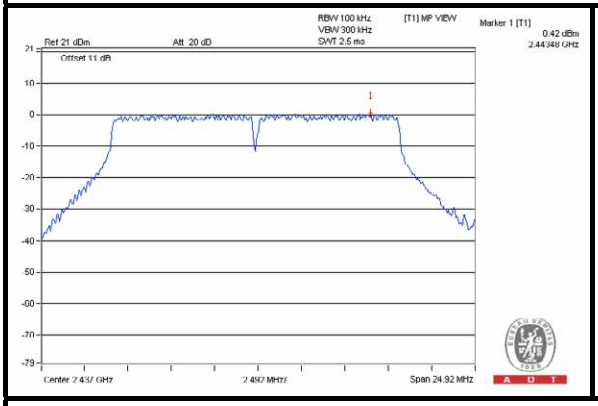
802.11g:

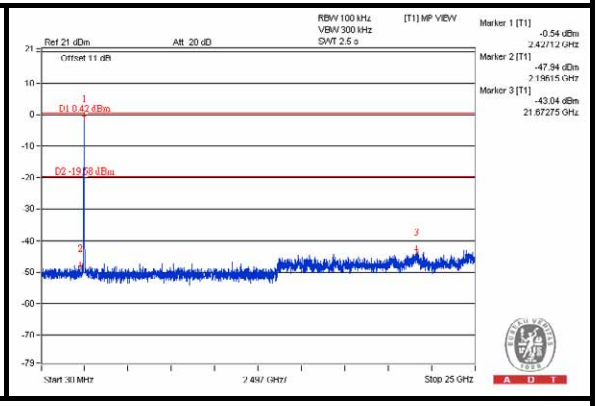
CH 1



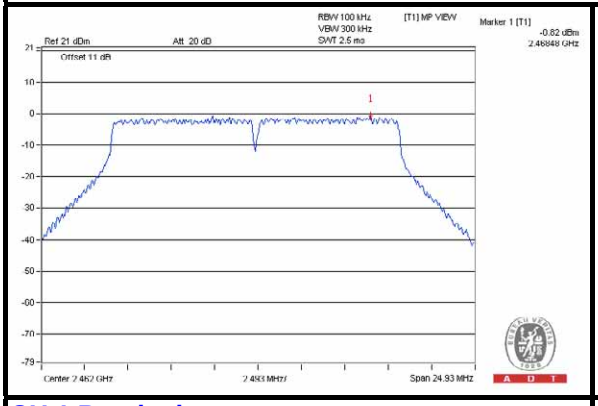


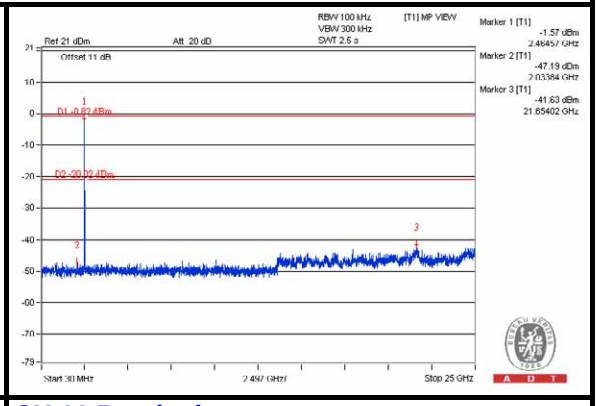
CH 6



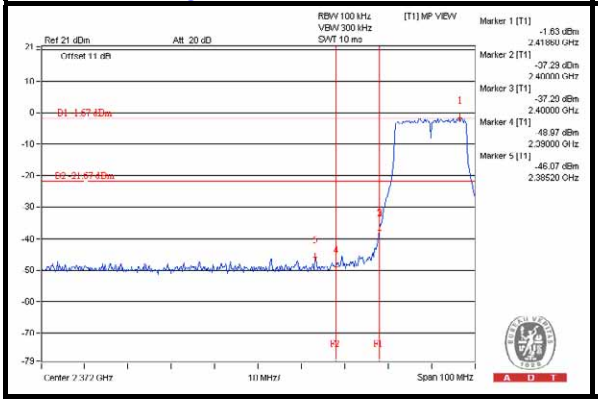


CH 11

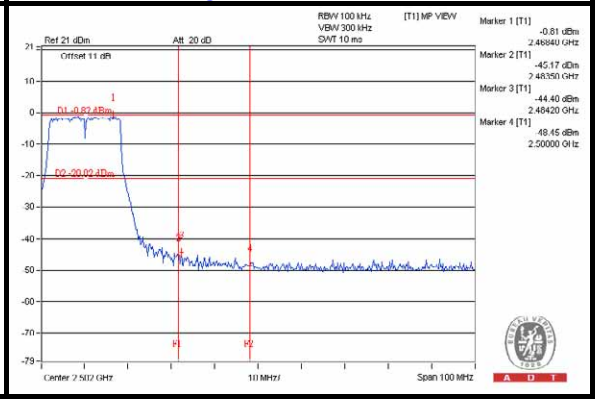




CH 1 Band edge

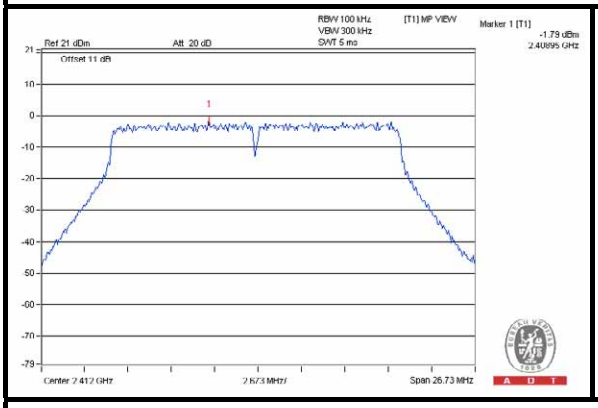


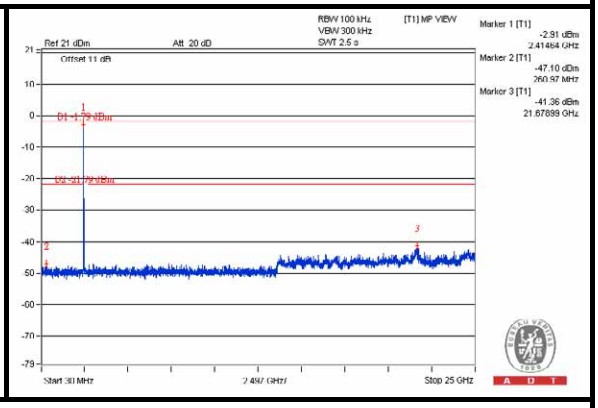
CH 11 Band edge



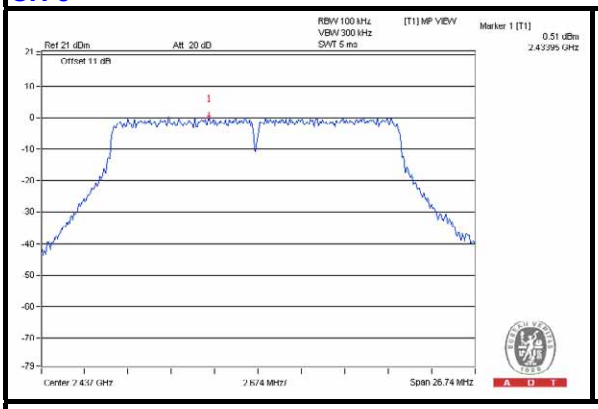
802.11n (HT20):

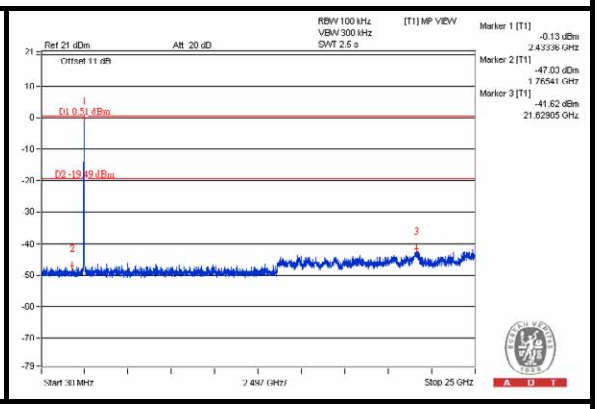
CH 1



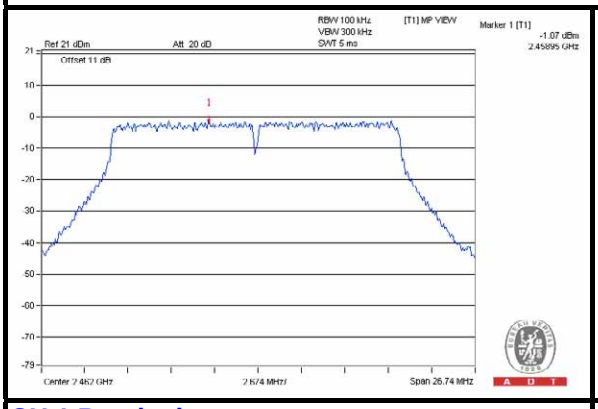


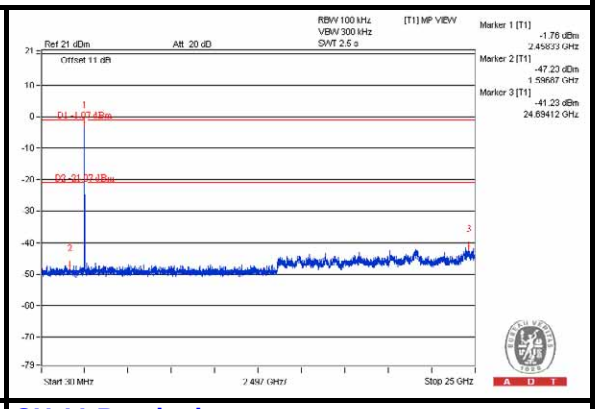
CH 6



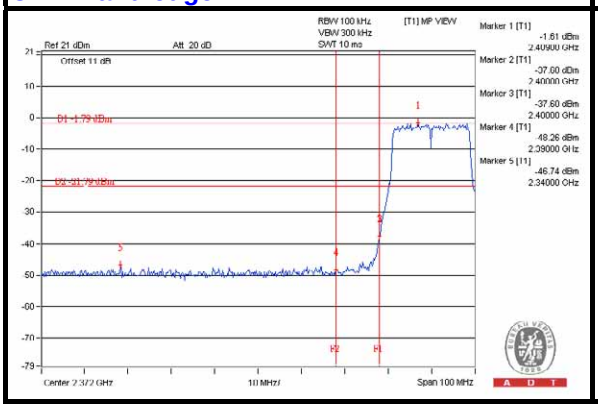


CH 11

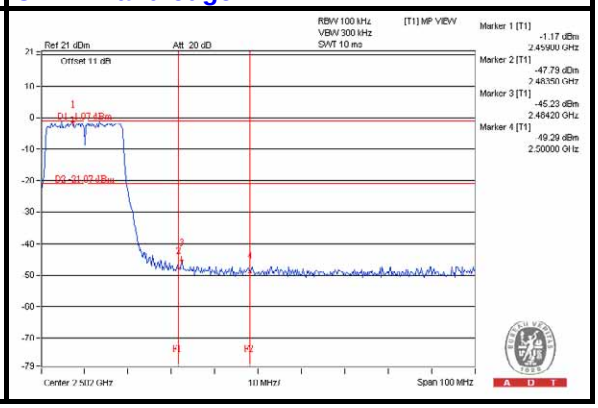




CH 1 Band edge

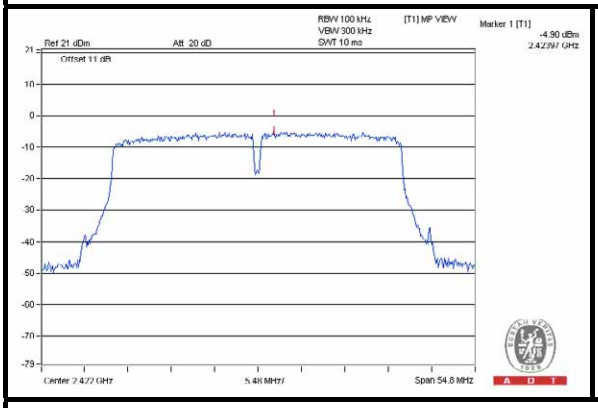


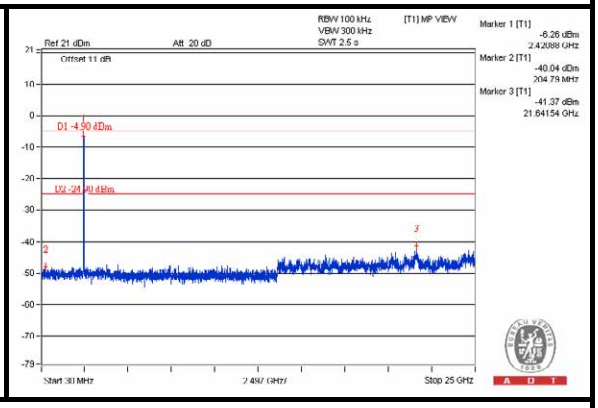
CH 11 Band edge



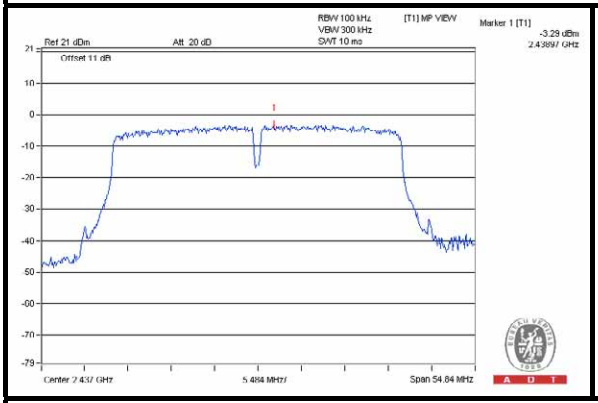
802.11n (HT40):

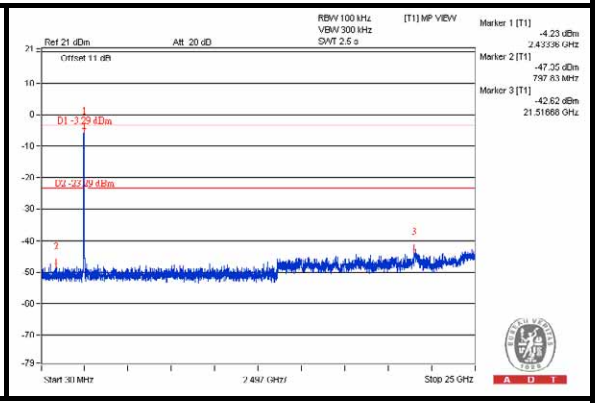
CH 3



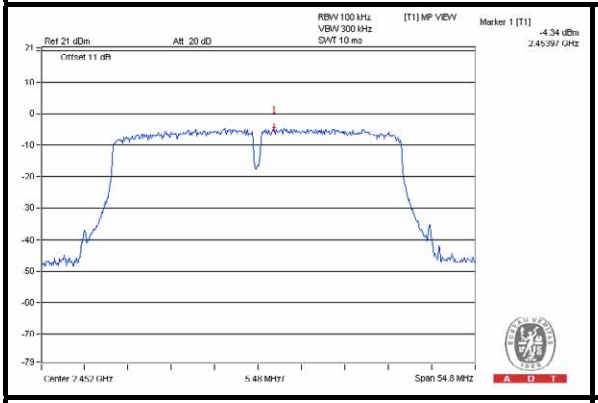


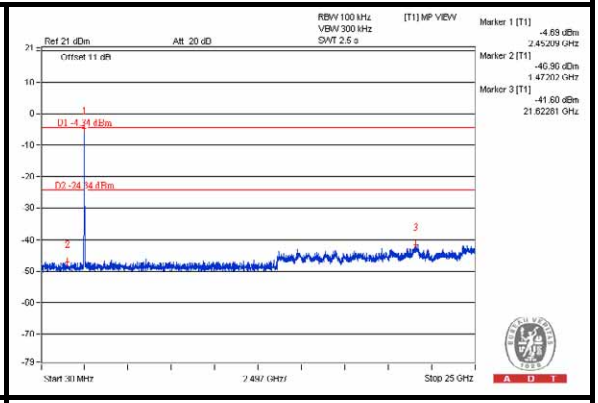
CH 6



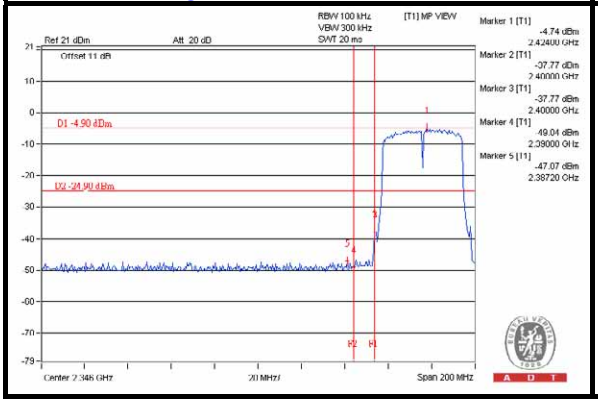


CH 9

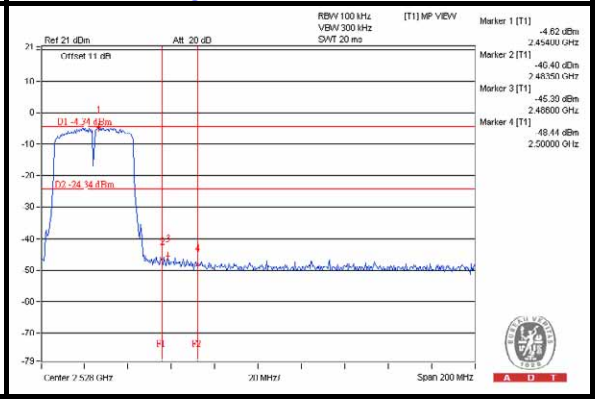




CH 3 Band edge



CH 9 Band edge



5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. INFORMATION ON THE TESTING LABORATORIES

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

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

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

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