FCC TEST REPORT

REPORT NO.: RF140624C24

MODEL NO.: TEW-722BRM

FCC ID: XU8TEW722BRM

RECEIVED: Jun. 20, 2014

TESTED: Jun. 20 ~ Jul. 17, 2014

ISSUED: Jul. 18, 2014

APPLICANT: TRENDNET, Inc.

ADDRESS: 20675 Manhattan Place, Torrance, CA 90501, USA

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

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.

TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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

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

TABLE OF CONTENTS

RELEASE CONTROL RECORD 4
1. CERTIFICATION 5
2. SUMMARY OF TEST RESULTS 6
2.1 MEASUREMENT UNCERTAINTY 6
3. GENERAL INFORMATION 7
3.1 GENERAL DESCRIPTION OF EUT 7
3.2 DESCRIPTION OF TEST MODES 8
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL 9
3.3 DUTY CYCLE OF TEST SIGNAL 11
3.4 DESCRIPTION OF SUPPORT UNITS 12
3.4.1 CONFIGURATION OF SYSTEM UNDER TEST 12
3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS 13
4. TEST TYPES AND RESULTS 14
4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT 14
4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT 14
4.1.2 TEST INSTRUMENTS 15
4.1.3 TEST PROCEDURES 16
4.1.4 DEVIATION FROM TEST STANDARD 16
4.1.5 TEST SETUP 17
4.1.6 EUT OPERATING CONDITIONS 18
4.1.7 TEST RESULTS 19
4.2 CONDUCTED EMISSION MEASUREMENT 32
4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT 32
4.2.2 TEST INSTRUMENTS 32
4.2.3 TEST PROCEDURES 33
4.2.4 DEVIATION FROM TEST STANDARD 33
4.2.5 TEST SETUP 33
4.2.6 EUT OPERATING CONDITIONS 33
4.2.7 TEST RESULTS 34
4.3 6dB BANDWIDTH MEASUREMENT 36
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT 36
4.3.2 TEST SETUP 36
4.3.3 TEST INSTRUMENTS 36
4.3.4 TEST PROCEDURE 36
4.3.5 DEVIATION FROM TEST STANDARD 36
4.3.6 EUT OPERATING CONDITIONS 36
4.3.7 TEST RESULTS 37
4.4 CONDUCTED OUTPUT POWER 39
4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT 39
4.4.2 TEST SETUP 39
4.4.3 TEST INSTRUMENTS 39
4.4.4 TEST PROCEDURES 39

4.4.5 DEVIATION FROM TEST STANDARD 40
4.4.6 EUT OPERATING CONDITIONS 40
4.4.7 TEST RESULTS 41
4.5 POWER SPECTRAL DENSITY MEASUREMENT 43
4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT 43
4.5.2 TEST SETUP 43
4.5.3 TEST INSTRUMENTS 43
4.5.4 TEST PROCEDURE 43
4.5.5 DEVIATION FROM TEST STANDARD 43
4.5.6 EUT OPERATING CONDITION 43
4.5.7 TEST RESULTS 44
4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT 46
4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT 46
4.6.2 TEST SETUP 46
4.6.3 TEST INSTRUMENTS 46
4.6.4 TEST PROCEDURE 47
4.6.5 DEVIATION FROM TEST STANDARD 47
4.6.6 EUT OPERATING CONDITION 47
4.6.7 TEST RESULTS 47
5. PHOTOGRAPHS OF THE TEST CONFIGURATION 56
6. INFORMATION ON THE TESTING LABORATORIES 57
7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB 58

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140624C24	Original release.	Jul. 18, 2014

1. CERTIFICATION

PRODUCT:	N300 Wireless ADSL 2+ Modem Router
MODEL NO.:	TEW-722BRM
BRAND:	TRENDnet
APPLICANT:	TRENDNET, Inc.
TESTED:	Jun. 20 ~ Jul. 17, 2014
TEST SAMPLE:	ENGINEERING SAMPLE
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247)**
	ANSI C63.10-2009

The above equipment (model: TEW-722BRM) 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 :** Jul. 18, 2014
Suntee Liu / Specialist

APPROVED BY : _____ **, DATE :** Jul. 18, 2014
Ken Liu / Senior 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 -8.72dB at 0.15000MHz.
15.205 & 209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2390.00MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.1dB at 2483.50MHz.
15.247(d)	Antenna Port Emission	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	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:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	N300 Wireless ADSL 2+ Modem Router
MODEL NO.	TEW-722BRM
POWER SUPPLY	12Vdc (adapter)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b:11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 300Mbps
OPERATING FREQUENCY	2412 ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
OUTPUT POWER	468.811mW
ANTENNA TYPE	Printed antenna with 4dBi gain
ANTENNA CONNECTOR	NA
DATA CABLE	1.4m non-shielded RJ45 cable without core 1m non-shielded RJ11 cable without core
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter

NOTE:

1. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

MODULATION MODE	TX FUNCTION
802.11b	2TX
802.11g	2TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX

2. The EUT uses following adapter.

Brand	AOEM
Model	ADS012K-W 120100A
Input Power	100-240Vac, 50-60Hz, 0.5A
Output Power	12Vdc, 1.0A
Power Line	1.5m cable without core attached on adapter

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 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		

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

RADIATED EMISSION TEST (BELOW 1GHz):

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11g	1 to 11	1	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11g	1 to 11	1	OFDM	BPSK	6.0

BANDEDGE 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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
-	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2
-	802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	15.0

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 61%RH	120Vac, 60Hz	Ted Chang
RE<1G	25deg. C, 61%RH	120Vac, 60Hz	Ted Chang
PLC	24deg. C, 66%RH	120Vac, 60Hz	Kevin Kuo
APCM	25deg. C, 60%RH	120Vac, 60Hz	Alan Wu

3.3 DUTY CYCLE OF TEST SIGNAL

Duty cycle of test signal is > 98 %

802.11b: Duty cycle = 12.337/12.562 = 0.982

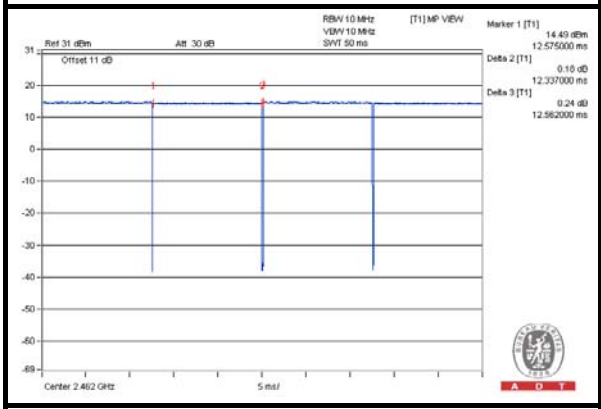
Duty cycle of test signal is < 98%

802.11g: Duty cycle = 2.062/2.207 = 0.934, Duty factor = 10 * log(1/0.934) = 0.3

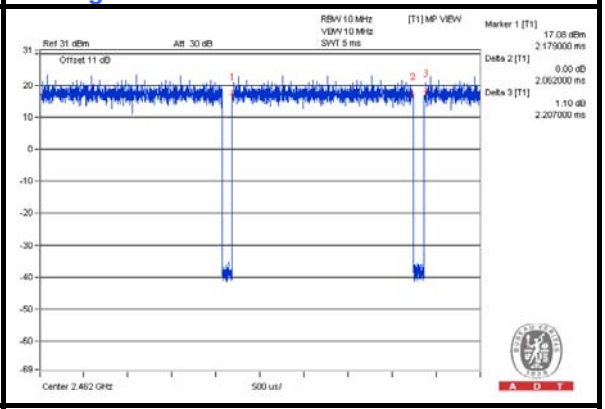
802.11n (20MHz): Duty cycle = 1.916/2.108 = 0.909, Duty factor = 10 * log(1/0.909) = 0.41

802.11n (40MHz): Duty cycle = 0.941/1.136 = 0.828, Duty factor = 10 * log(1/0.828) = 0.82

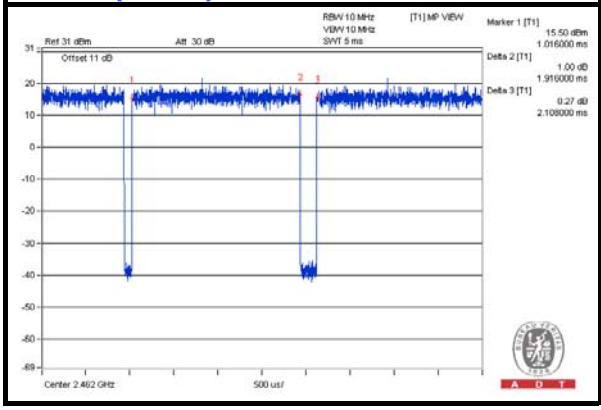
802.11b



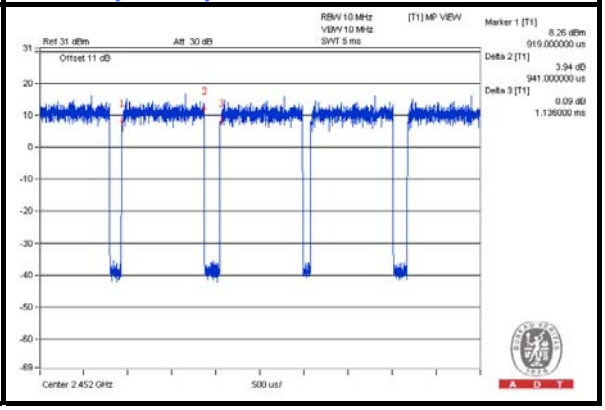
802.11g



802.11n (20MHz)



802.11n (40MHz)



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.

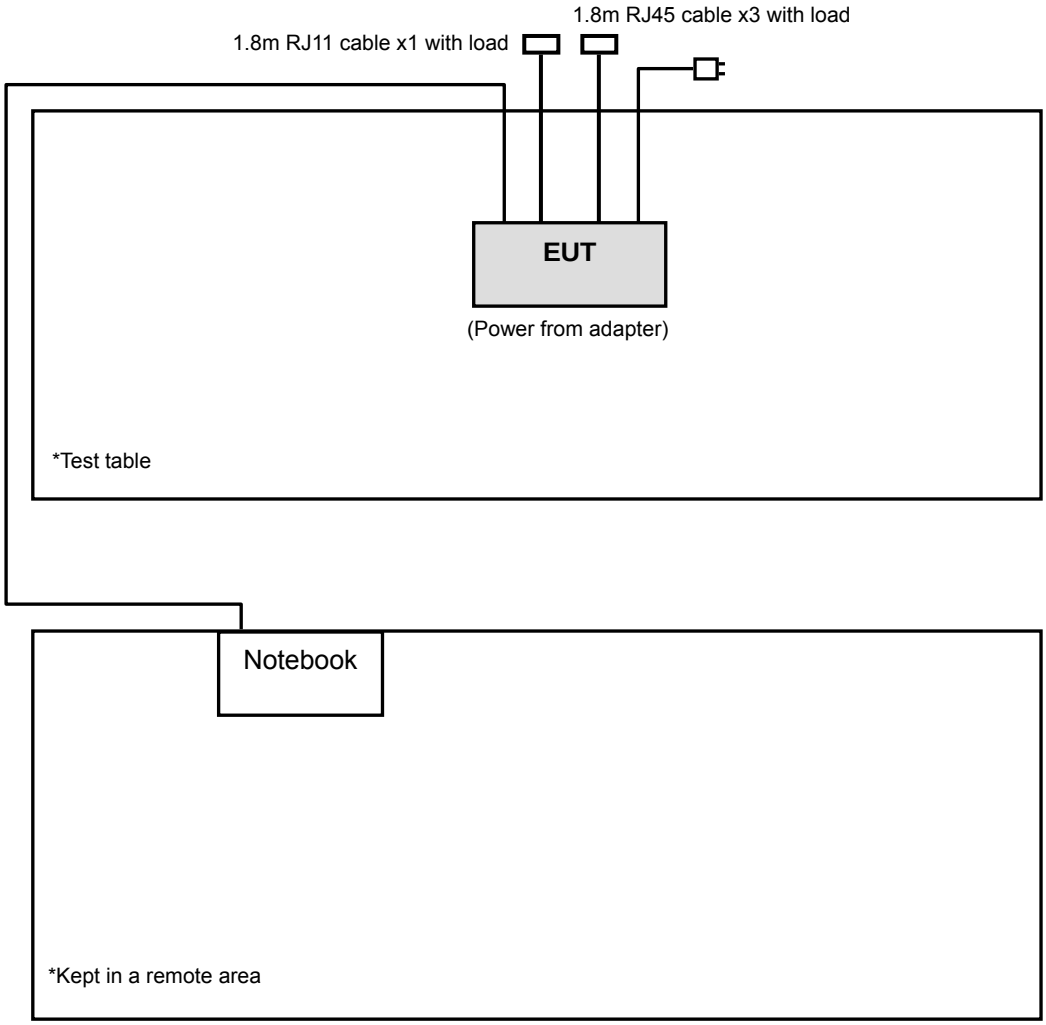
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook	DELL	E5420	BPQ8MQ1	FCC DoC Approved

No.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	3m RJ45 cable

NOTE:

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

3.4.1 CONFIGURATION OF SYSTEM UNDER TEST



3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)
558074 D01 DTS Meas Guidance v03r02
662911 D01 Multiple Transmitter Output v02r01
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.

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 29, 2013	Nov. 28, 2014
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Feb. 11, 2014	Feb. 10, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Feb. 25, 2014	Feb. 24, 2015
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Sep. 12, 2013	Sep. 11, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 17, 2014	Feb. 16, 2015
Preamplifier Agilent	8449B	3008A01911	Aug. 22, 2013	Aug. 21, 2014
Preamplifier Agilent	8447D	2944A10638	Oct. 18, 2013	Oct. 17, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	248780/4 309222/4 274092/4	Aug. 26, 2013	Aug. 25, 2014
RF signal cable Worken	5D-FB	Cable-HYCH9-01	Aug. 11, 2013	Aug. 10, 2014
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn Table Controller EMCO	2090	NA	NA	NA
High Speed Peak Power Meter	ML2495A	0824011	Jul. 29, 2013	Jul. 28, 2014
Power Sensor	MA2411B	0738171	Jul. 29, 2013	Jul. 28, 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. The test was performed in HwaYa Chamber 9.

3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 215374.

5. The IC Site Registration No. is IC 7450F-9.

4.1.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. 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. Height of receiving 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

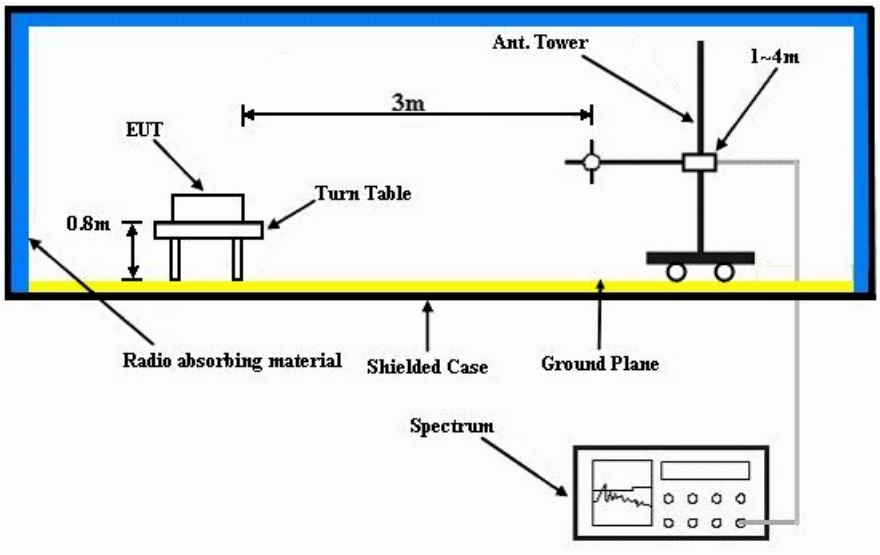
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

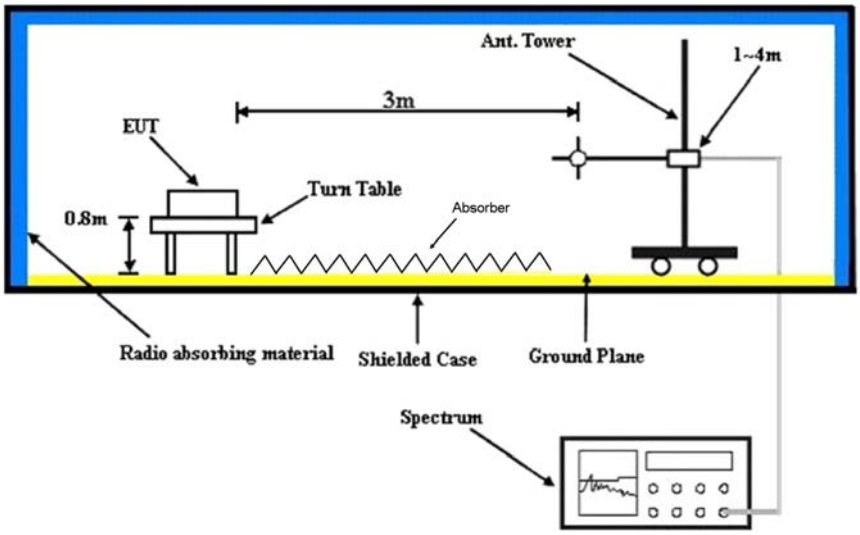
No deviation.

4.1.5 TEST SETUP

Frequency range 30MHz~1GHz



Frequency range above 1GHz



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

4.1.6 EUT OPERATING CONDITIONS

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

4.1.7 TEST RESULTS

ABOVE 1GHz DATA：

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	**FREQUENCY RANGE**	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH	**TESTED BY**	Ted Chang

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	59.1 PK	74.0	-14.9	1.00 H	20	26.80	32.30
2	2390.00	47.3 AV	54.0	-6.7	1.00 H	20	15.00	32.30
3	*2412.00	102.6 PK			1.39 H	28	70.10	32.50
4	*2412.00	98.6 AV			1.39 H	28	66.10	32.50
5	4824.00	55.5 PK	74.0	-18.5	1.00 H	150	53.50	2.00
6	4824.00	52.3 AV	54.0	-1.7	1.00 H	150	50.30	2.00
7	#7236.00	56.1 PK	82.6	-26.5	1.50 H	331	48.50	7.60
8	#7236.00	46.8 AV	78.6	-31.8	1.50 H	331	39.20	7.60
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	59.6 PK	74.0	-14.4	1.00 V	0	27.30	32.30
2	2390.00	47.3 AV	54.0	-6.7	1.00 V	0	15.00	32.30
3	*2412.00	96.3 PK			1.00 V	302	63.80	32.50
4	*2412.00	92.7 AV			1.00 V	302	60.20	32.50
5	4824.00	58.3 PK	74.0	-15.7	1.00 V	235	56.30	2.00
6	4824.00	52.7 AV	54.0	-1.3	1.00 V	235	50.70	2.00
7	#7236.00	60.1 PK	76.3	-16.2	1.77 V	107	52.50	7.60
8	#7236.00	52.9 AV	72.7	-19.8	1.77 V	107	45.30	7.60

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH	TESTED BY	Ted Chang

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	104.8 PK			1.05 H	346	72.30	32.50
2	*2437.00	101.1 AV			1.05 H	346	68.60	32.50
3	4874.00	55.8 PK	74.0	-18.2	1.00 H	154	53.80	2.00
4	4874.00	52.6 AV	54.0	-1.4	1.00 H	154	50.60	2.00
5	7311.00	55.9 PK	74.0	-18.1	1.00 H	328	47.90	8.00
6	7311.00	44.4 AV	54.0	-9.6	1.00 H	328	36.40	8.00
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	*2437.00	99.5 PK			1.02 V	102	67.00	32.50
2	*2437.00	95.8 AV			1.02 V	102	63.30	32.50
3	4874.00	56.0 PK	74.0	-18.0	1.27 V	247	54.00	2.00
4	4874.00	52.5 AV	54.0	-1.5	1.27 V	247	50.50	2.00
5	7311.00	60.4 PK	74.0	-13.6	1.74 V	146	52.40	8.00
6	7311.00	52.9 AV	54.0	-1.1	1.74 V	146	44.90	8.00

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) – 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH	TESTED BY	Ted Chang

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	102.7 PK			1.03 H	36	70.10	32.60
2	*2462.00	98.7 AV			1.03 H	36	66.10	32.60
3	2483.50	59.9 PK	74.0	-14.1	1.03 H	36	27.10	32.80
4	2483.50	47.8 AV	54.0	-6.2	1.03 H	36	15.00	32.80
5	4924.00	55.8 PK	74.0	-18.2	1.00 H	160	53.70	2.10
6	4924.00	52.8 AV	54.0	-1.2	1.00 H	160	50.70	2.10
7	7386.00	56.1 PK	74.0	-17.9	1.60 H	20	48.00	8.10
8	7386.00	43.1 AV	54.0	-10.9	1.60 H	20	35.00	8.10
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	97.5 PK			1.00 V	93	64.90	32.60
2	*2462.00	93.7 AV			1.00 V	93	61.10	32.60
3	2483.50	59.5 PK	74.0	-14.5	1.00 V	172	26.70	32.80
4	2483.50	47.8 AV	54.0	-6.2	1.00 V	172	15.00	32.80
5	4924.00	56.4 PK	74.0	-17.6	1.00 V	199	54.30	2.10
6	4924.00	52.9 AV	54.0	-1.1	1.00 V	199	50.80	2.10
7	7386.00	55.9 PK	74.0	-18.1	1.80 V	239	47.80	8.10
8	7386.00	45.9 AV	54.0	-8.1	1.88 V	239	37.80	8.10

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) – 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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH	TESTED BY	Ted Chang

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	66.3 PK	74.0	-7.7	1.33 H	314	34.00	32.30
2	**2390.00**	**53.0 AV**	**54.0**	**-1.0**	**1.33 H**	**314**	**20.70**	**32.30**
3	*2412.00	105.1 PK			1.07 H	34	72.60	32.50
4	*2412.00	95.6 AV			1.07 H	34	63.10	32.50
5	4824.00	51.0 PK	74.0	-23.0	1.00 H	163	49.00	2.00
6	4824.00	38.0 AV	54.0	-16.0	1.00 H	163	36.00	2.00
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	2390.00	59.6 PK	74.0	-14.4	1.00 V	267	27.30	32.30
2	2390.00	48.6 AV	54.0	-5.4	1.00 V	267	16.30	32.30
3	*2412.00	101.6 PK			1.00 V	111	69.10	32.50
4	*2412.00	92.4 AV			1.00 V	111	59.90	32.50
5	4824.00	55.6 PK	74.0	-18.4	1.00 V	252	53.60	2.00
6	4824.00	43.0 AV	54.0	-11.0	1.00 V	252	41.00	2.00

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) – 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH	TESTED BY	Ted Chang

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	107.5 PK			1.27 H	70	75.00	32.50
2	*2437.00	97.8 AV			1.27 H	70	65.30	32.50
3	4874.00	54.1 PK	74.0	-19.9	1.00 H	165	52.10	2.00
4	4874.00	40.4 AV	54.0	-13.6	1.00 H	165	38.40	2.00
5	5000.00	46.8 PK	74.0	-27.2	1.00 H	12	44.50	2.30
6	5000.00	36.5 AV	54.0	-17.5	1.00 H	12	34.20	2.30
7	7311.00	64.1 PK	74.0	-9.9	1.00 H	2	56.10	8.00
8	7311.00	51.4 AV	54.0	-2.6	1.00 H	2	43.40	8.00
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	*2437.00	102.0 PK			1.00 V	83	69.50	32.50
2	*2437.00	92.8 AV			1.00 V	83	60.30	32.50
3	4874.00	60.7 PK	74.0	-13.3	1.26 V	251	58.70	2.00
4	4874.00	47.7 AV	54.0	-6.3	1.26 V	251	45.70	2.00
5	5000.00	45.9 PK	74.0	-28.1	1.00 V	353	43.60	2.30
6	5000.00	33.1 AV	54.0	-20.9	1.00 V	353	30.80	2.30
7	7311.00	67.9 PK	74.0	-6.1	1.76 V	281	59.90	8.00
8	7311.00	52.9 AV	54.0	-1.1	1.76 V	281	44.90	8.00

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) – 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH	TESTED BY	Ted Chang

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	105.0 PK			1.01 H	36	72.40	32.60
2	*2462.00	95.4 AV			1.01 H	36	62.80	32.60
3	2483.50	67.5 PK	74.0	-6.5	1.27 H	63	34.70	32.80
4	2483.50	52.9 AV	54.0	-1.1	1.27 H	63	20.10	32.80
5	4924.00	49.1 PK	74.0	-24.9	1.00 H	33	47.00	2.10
6	4924.00	36.8 AV	54.0	-17.2	1.00 H	33	34.70	2.10
7	7386.00	59.2 PK	74.0	-14.8	1.15 H	0	51.10	8.10
8	7386.00	47.1 AV	54.0	-6.9	1.15 H	0	39.00	8.10
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	101.2 PK			1.00 V	107	68.60	32.60
2	*2462.00	91.2 AV			1.00 V	107	58.60	32.60
3	2483.50	60.4 PK	74.0	-13.6	1.00 V	87	27.60	32.80
4	2483.50	48.8 AV	54.0	-5.2	1.00 V	87	16.00	32.80
5	4924.00	56.4 PK	74.0	-17.6	1.00 V	244	54.30	2.10
6	4924.00	43.1 AV	54.0	-10.9	1.00 V	244	41.00	2.10
7	7386.00	64.1 PK	74.0	-9.9	1.80 V	283	56.00	8.10
8	7386.00	49.5 AV	54.0	-4.5	1.80 V	283	41.40	8.10

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) – 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)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH	TESTED BY	Ted Chang

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	66.3 PK	74.0	-7.7	1.07 H	347	34.00	32.30
2	2390.00	52.5 AV	54.0	-1.5	1.07 H	347	20.20	32.30
3	*2412.00	101.9 PK			1.32 H	32	69.40	32.50
4	*2412.00	91.7 AV			1.32 H	32	59.20	32.50
5	4824.00	49.7 PK	74.0	-24.3	1.00 H	162	47.70	2.00
6	4824.00	37.0 AV	54.0	-17.0	1.00 H	162	35.00	2.00
7	#5600.00	51.7 PK	81.9	-30.2	1.04 H	204	48.50	3.20
8	#5600.00	39.3 AV	71.7	-32.4	1.04 H	204	36.10	3.20
9	#7236.00	59.3 PK	81.9	-22.6	1.46 H	30	51.70	7.60
10	#7236.00	44.1 AV	71.7	-27.6	1.46 H	30	36.50	7.60
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	58.9 PK	74.0	-15.1	1.21 V	0	26.60	32.30
2	2390.00	47.6 AV	54.0	-6.4	1.21 V	0	15.30	32.30
3	*2412.00	99.4 PK			1.00 V	107	66.90	32.50
4	*2412.00	89.4 AV			1.00 V	107	56.90	32.50
5	4824.00	55.4 PK	74.0	-18.6	1.00 V	264	53.40	2.00
6	4824.00	40.4 AV	54.0	-13.6	1.00 V	264	38.40	2.00
7	#5600.00	50.4 PK	79.4	-29.0	1.00 V	212	47.20	3.20
8	#5600.00	38.7 AV	69.4	-30.7	1.00 V	212	35.50	3.20
9	#7236.00	63.5 PK	79.4	-15.9	1.65 V	96	55.90	7.60
10	#7236.00	48.0 AV	69.4	-21.4	1.65 V	96	40.40	7.60

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH	TESTED BY	Ted Chang

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	108.3 PK			1.03 H	44	75.80	32.50
2	*2437.00	97.5 AV			1.03 H	44	65.00	32.50
3	2483.50	64.7 PK	74.0	-9.3	1.00 H	33	31.90	32.80
4	2483.50	50.0 AV	54.0	-4.0	1.00 H	33	17.20	32.80
5	4874.00	53.9 PK	74.0	-20.1	1.00 H	29	51.90	2.00
6	4874.00	40.4 AV	54.0	-13.6	1.00 H	29	38.40	2.00
7	#5250.00	52.0 PK	88.3	-36.3	1.61 H	41	49.20	2.80
8	#5250.00	40.6 AV	77.5	-36.9	1.61 H	41	37.80	2.80
9	7311.00	64.5 PK	74.0	-9.5	1.17 H	356	56.50	8.00
10	7311.00	47.1 AV	54.0	-6.9	1.17 H	356	39.10	8.00
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	*2437.00	100.9 PK			1.00 V	82	68.40	32.50
2	*2437.00	91.5 AV			1.00 V	82	59.00	32.50
3	2483.50	60.4 PK	74.0	-13.6	1.00 V	23	27.60	32.80
4	2483.50	48.0 AV	54.0	-6.0	1.00 V	23	15.20	32.80
5	4874.00	57.2 PK	74.0	-16.8	1.24 V	248	55.20	2.00
6	4874.00	43.7 AV	54.0	-10.3	1.24 V	248	41.70	2.00
7	#5250.00	54.1 PK	80.9	-26.8	1.23 V	200	51.30	2.80
8	#5250.00	42.0 AV	71.5	-29.5	1.23 V	200	39.20	2.80
9	7311.00	68.5 PK	74.0	-5.5	1.76 V	279	60.50	8.00
10	7311.00	52.9 AV	54.0	-1.1	1.76 V	279	44.90	8.00

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) – 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH	TESTED BY	Ted Chang

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	104.8 PK			1.30 H	35	72.20	32.60
2	*2462.00	94.5 AV			1.30 H	35	61.90	32.60
3	2483.50	68.4 PK	74.0	-5.6	1.30 H	342	35.60	32.80
4	2483.50	52.8 AV	54.0	-1.2	1.30 H	342	20.00	32.80
5	4924.00	48.3 PK	74.0	-25.7	1.00 H	167	46.20	2.10
6	4924.00	35.3 AV	54.0	-18.7	1.00 H	167	33.20	2.10
7	7386.00	59.2 PK	74.0	-14.8	1.82 H	3	51.10	8.10
8	7386.00	44.2 AV	54.0	-9.8	1.82 H	3	36.10	8.10
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	97.7 PK			1.00 V	85	65.10	32.60
2	*2462.00	88.3 AV			1.00 V	85	55.70	32.60
3	2483.50	60.5 PK	74.0	-13.5	1.00 V	89	27.70	32.80
4	2483.50	48.3 AV	54.0	-5.7	1.00 V	89	15.50	32.80
5	4924.00	55.3 PK	74.0	-18.7	1.00 V	246	53.20	2.10
6	4924.00	41.5 AV	54.0	-12.5	1.00 V	246	39.40	2.10
7	7386.00	60.8 PK	74.0	-13.2	1.83 V	280	52.70	8.10
8	7386.00	46.0 AV	54.0	-8.0	1.83 V	280	37.90	8.10

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) – 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)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH	TESTED BY	Brad Tung

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	66.7 PK	74.0	-7.3	1.03 H	346	34.40	32.30
2	**2390.00**	**53.0 AV**	**54.0**	**-1.0**	**1.03 H**	**346**	**20.70**	**32.30**
3	*2422.00	100.0 PK			1.03 H	345	67.50	32.50
4	*2422.00	89.2 AV			1.03 H	345	56.70	32.50
5	4844.00	46.9 PK	74.0	-27.1	1.00 H	136	44.90	2.00
6	4844.00	33.7 AV	54.0	-20.3	1.00 H	136	31.70	2.00
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	2390.00	60.9 PK	74.0	-13.1	1.00 V	80	28.60	32.30
2	2390.00	48.0 AV	54.0	-6.0	1.00 V	80	15.70	32.30
3	*2422.00	92.9 PK			1.00 V	261	60.40	32.50
4	*2422.00	83.5 AV			1.00 V	261	51.00	32.50
5	4844.00	49.2 PK	74.0	-24.8	1.00 V	237	47.20	2.00
6	4844.00	35.3 AV	54.0	-18.7	1.00 V	237	33.30	2.00

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) – 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH	TESTED BY	Brad Tung

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	68.8 PK	74.0	-5.2	1.04 H	347	36.50	32.30
2	**2390.00**	**53.0 AV**	**54.0**	**-1.0**	**1.04 H**	**347**	**20.70**	**32.30**
3	*2437.00	104.3 PK			1.01 H	344	71.80	32.50
4	*2437.00	94.0 AV			1.01 H	344	61.50	32.50
5	2483.50	68.5 PK	74.0	-5.5	1.25 H	68	35.70	32.80
6	2483.50	52.7 AV	54.0	-1.3	1.25 H	68	19.90	32.80
7	4874.00	49.1 PK	74.0	-24.9	1.00 H	165	47.10	2.00
8	4874.00	36.2 AV	54.0	-17.8	1.00 H	165	34.20	2.00
9	7311.00	58.5 PK	74.0	-15.5	1.58 H	2	50.50	8.00
10	7311.00	45.2 AV	54.0	-8.8	1.58 H	2	37.20	8.00

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	2390.00	62.1 PK	74.0	-11.9	1.00 V	86	29.80	32.30
2	2390.00	48.5 AV	54.0	-5.5	1.00 V	86	16.20	32.30
3	*2437.00	98.4 PK			1.00 V	83	65.90	32.50
4	*2437.00	88.5 AV			1.00 V	83	56.00	32.50
5	2483.50	61.3 PK	74.0	-12.7	1.00 V	274	28.50	32.80
6	2483.50	49.4 AV	54.0	-4.6	1.00 V	274	16.60	32.80
7	4874.00	54.1 PK	74.0	-19.9	1.00 V	254	52.10	2.00
8	4874.00	41.3 AV	54.0	-12.7	1.00 V	254	39.30	2.00
9	7311.00	64.0 PK	74.0	-10.0	1.72 V	281	56.00	8.00
10	7311.00	51.3 AV	54.0	-2.7	1.72 V	281	43.30	8.00

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) – 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH	TESTED BY	Brad Tung

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	99.6 PK			1.32 H	36	67.00	32.60
2	*2452.00	89.1 AV			1.32 H	36	56.50	32.60
3	2483.50	65.1 PK	74.0	-8.9	1.24 H	310	32.30	32.80
4	2483.50	52.9 AV	54.0	-1.1	1.24 H	310	20.10	32.80
5	4904.00	46.4 PK	74.0	-27.6	1.00 H	183	44.30	2.10
6	4904.00	33.0 AV	54.0	-21.0	1.00 H	183	30.90	2.10
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	*2452.00	93.3 PK			1.00 V	81	60.70	32.60
2	*2452.00	85.2 AV			1.00 V	81	52.60	32.60
3	2483.50	61.1 PK	74.0	-12.9	1.00 V	39	28.30	32.80
4	2483.50	50.1 AV	54.0	-3.9	1.00 V	39	17.30	32.80
5	4904.00	49.4 PK	74.0	-24.6	1.00 V	267	47.30	2.10
6	4904.00	36.4 AV	54.0	-17.6	1.00 V	267	34.30	2.10

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) – 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.

BELOW 1GHz WORST-CASE DATA：802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH	TESTED BY	Ted Chang

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	75.08	32.2 QP	40.0	-7.8	2.00 H	190	49.40	-17.20
2	176.12	34.7 QP	43.5	-8.8	1.50 H	130	49.40	-14.70
3	224.31	35.3 QP	46.0	-10.7	1.01 H	128	51.70	-16.40
4	675.11	34.9 QP	46.0	-11.1	1.01 H	10	40.10	-5.20
5	788.59	33.8 QP	46.0	-12.2	1.01 H	10	36.70	-2.90
6	937.82	33.0 QP	46.0	-13.0	1.50 H	294	33.30	-0.30
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	31.55	30.2 QP	40.0	-9.8	1.00 V	221	46.00	-15.80
2	53.32	29.5 QP	40.0	-10.5	1.00 V	6	43.50	-14.00
3	75.08	32.6 QP	40.0	-7.4	1.99 V	255	49.80	-17.20
4	157.47	28.2 QP	43.5	-15.3	1.00 V	231	41.90	-13.70
5	224.31	28.5 QP	46.0	-17.5	1.00 V	152	44.90	-16.40
6	675.11	31.1 QP	46.0	-14.9	1.49 V	168	36.30	-5.20

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.

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 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 0.50MHz.

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 29, 2013	Nov. 28, 2014
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 27, 2013	Dec. 26, 2014
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 13, 2014	Feb. 12, 2015
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 17, 2013	Jul. 16, 2014
			Jul. 16, 2014	Jul. 15, 2015
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 HwaYa Shielded Room 1.

3. The VCCI Site Registration No. is C-2040.

4.2.3 TEST PROCEDURES

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

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

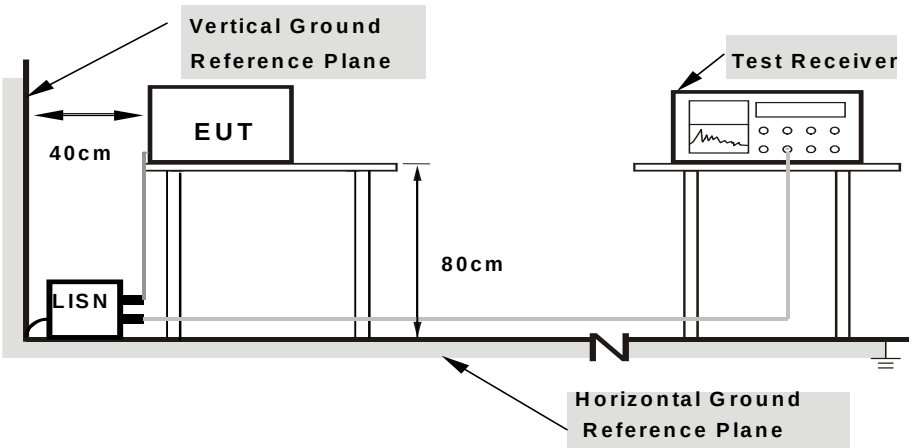
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS

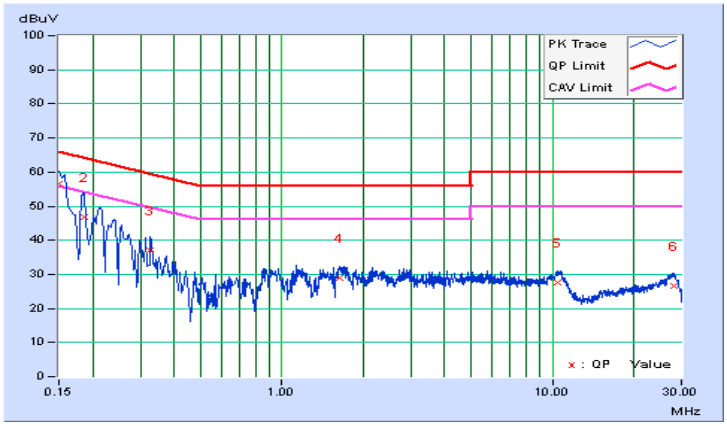
CONDUCTED WORST-CASE DATA：802.11g

PHASE	Line 1	6dB BANDWIDTH	9kHz

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.08	56.32	42.48	56.40	42.56	66.00	56.00	-9.60	-13.44
2	0.18508	0.07	46.87	27.47	46.94	27.54	64.25	54.25	-17.31	-26.71
3	0.32614	0.08	36.79	27.53	36.87	27.61	59.55	49.55	-22.68	-21.94
4	1.63577	0.14	28.70	21.18	28.84	21.32	56.00	46.00	-27.16	-24.68
5	10.43330	0.53	26.95	22.46	27.48	22.99	60.00	50.00	-32.52	-27.01
6	27.98529	1.28	25.38	20.82	26.66	22.10	60.00	50.00	-33.34	-27.90

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.

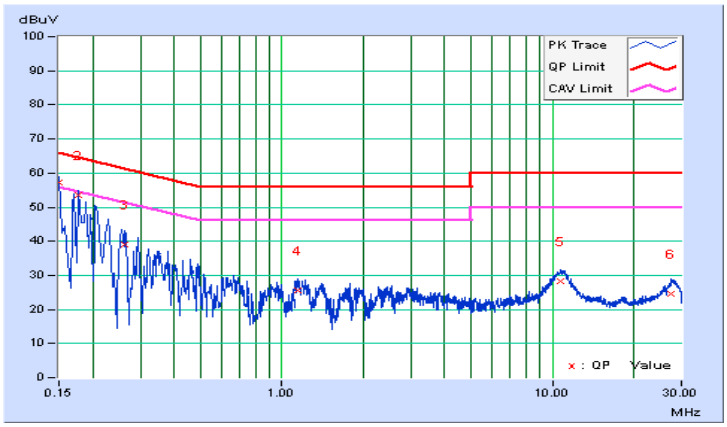


PHASE	Line 2	6dB BANDWIDTH	9kHz

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.15000**	**0.05**	**57.23**	**43.39**	**57.28**	**43.44**	**66.00**	**56.00**	**-8.72**	**-12.56**
2	0.17737	0.05	53.41	41.20	53.46	41.25	64.61	54.61	-11.15	-13.36
3	0.26346	0.06	38.90	24.02	38.96	24.08	61.32	51.32	-22.37	-27.25
4	1.13923	0.10	25.61	17.68	25.71	17.78	56.00	46.00	-30.29	-28.22
5	10.78129	0.48	27.76	23.30	28.24	23.78	60.00	50.00	-31.76	-26.22
6	27.59820	1.08	23.45	18.65	24.53	19.73	60.00	50.00	-35.47	-30.27

REMARKS:

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

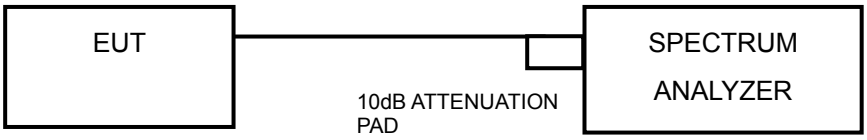


4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.3.4 TEST PROCEDURE

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

4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

4.3.6 EUT OPERATING CONDITIONS

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

4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	9.59	9.59	0.5	PASS
6	2437	9.58	10.03	0.5	PASS
11	2462	10.00	9.60	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.42	16.42	0.5	PASS
6	2437	16.39	16.40	0.5	PASS
11	2462	16.40	16.42	0.5	PASS

802.11n (20MHz)

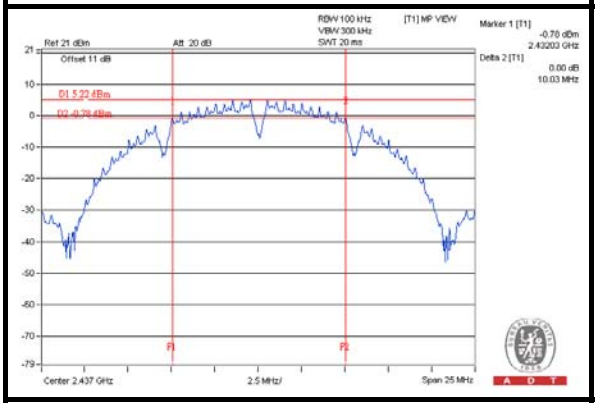
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.64	17.62	0.5	PASS
6	2437	17.63	17.61	0.5	PASS
11	2462	17.62	17.62	0.5	PASS

802.11n (40MHz)

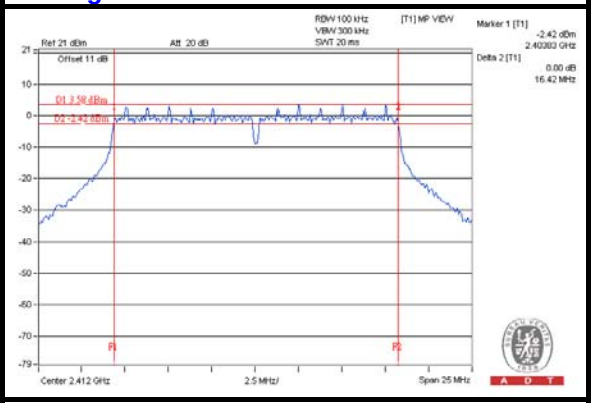
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	35.56	35.58	0.5	PASS
6	2437	35.43	35.42	0.5	PASS
9	2452	35.74	35.43	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

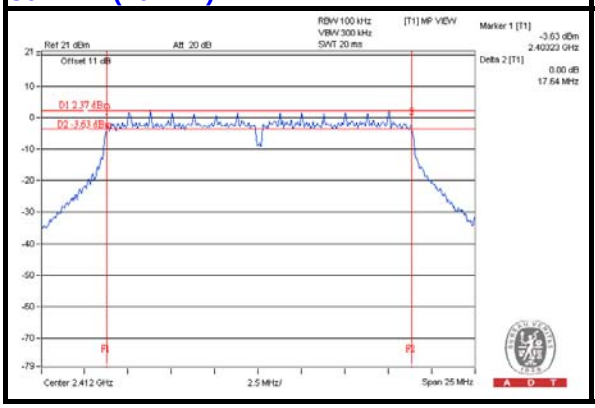
802.11b



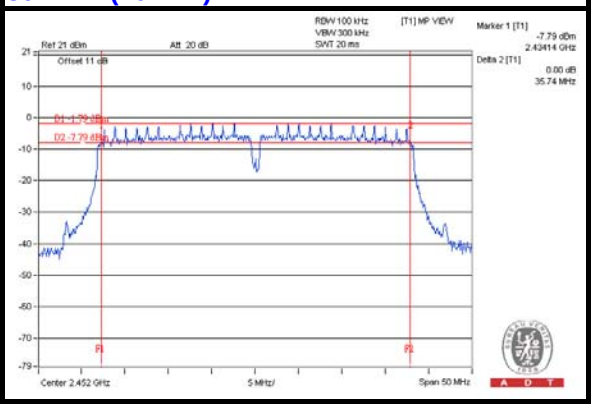
802.11g



802.11n (20MHz)



802.11n (40MHz)



4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

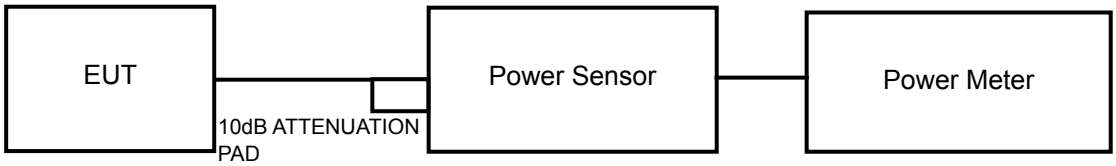
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output v02r01 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;
Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

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

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.4.4 TEST PROCEDURES

A 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 power level.

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

4.4.7 TEST RESULTS

FOR PEAK POWER

802.11b

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	16.65	16.53	91.216	19.60	30	PASS
6	2437	17.53	17.60	114.168	20.58	30	PASS
11	2462	14.15	14.16	52.064	17.17	30	PASS

802.11g

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	23.40	23.98	**468.811**	26.71	30	PASS
6	2437	21.74	21.86	302.741	24.81	30	PASS
11	2462	23.29	24.01	465.072	26.68	30	PASS

802.11n (20MHz)

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	22.22	22.46	342.923	25.35	30	PASS
6	2437	22.57	23.12	385.833	25.86	30	PASS
11	2462	22.97	21.99	356.278	25.52	30	PASS

802.11n (40MHz)

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	21.46	20.40	249.607	23.97	30	PASS
6	2437	23.22	23.71	444.857	26.48	30	PASS
9	2452	21.13	20.70	247.208	23.93	30	PASS

FOR AVERAGE POWER

802.11b

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	14.48	14.61	56.961	17.56
6	2437	15.47	15.40	69.911	18.45
11	2462	12.85	12.21	35.909	15.55

802.11g

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	15.80	15.35	72.296	18.59
6	2437	15.84	15.25	71.868	18.57
11	2462	15.73	15.26	70.985	18.51

802.11n (20MHz)

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	13.02	13.86	44.367	16.47
6	2437	14.75	15.66	66.667	18.24
11	2462	14.63	14.30	55.955	17.48

802.11n (40MHz)

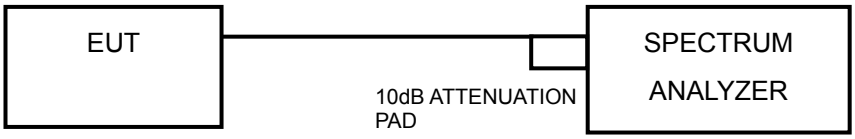
CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	12.36	11.74	32.147	15.07
6	2437	15.70	15.42	71.988	18.57
9	2452	12.67	12.60	36.690	15.65

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 SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

a. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
b. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
c. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

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/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-8.97	3.01	-5.96	6.99	PASS
	6	2437	-9.32	3.01	-6.31	6.99	PASS
	11	2462	-12.45	3.01	-9.44	6.99	PASS
1	1	2412	-10.65	3.01	-7.64	6.99	PASS
	6	2437	-9.45	3.01	-6.44	6.99	PASS
	11	2462	-12.00	3.01	-8.99	6.99	PASS

NOTE: Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-12.66	3.01	-9.65	6.99	PASS
	6	2437	-10.88	3.01	-7.87	6.99	PASS
	11	2462	-10.53	3.01	-7.52	6.99	PASS
1	1	2412	-13.04	3.01	-10.03	6.99	PASS
	6	2437	-12.02	3.01	-9.01	6.99	PASS
	11	2462	-12.95	3.01	-9.94	6.99	PASS

NOTE: Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-13.22	3.01	-10.21	6.99	PASS
	6	2437	-11.16	3.01	-8.15	6.99	PASS
	11	2462	-12.07	3.01	-9.06	6.99	PASS
1	1	2412	-15.23	3.01	-12.22	6.99	PASS
	6	2437	-12.42	3.01	-9.41	6.99	PASS
	11	2462	-12.56	3.01	-9.55	6.99	PASS

NOTE: Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.

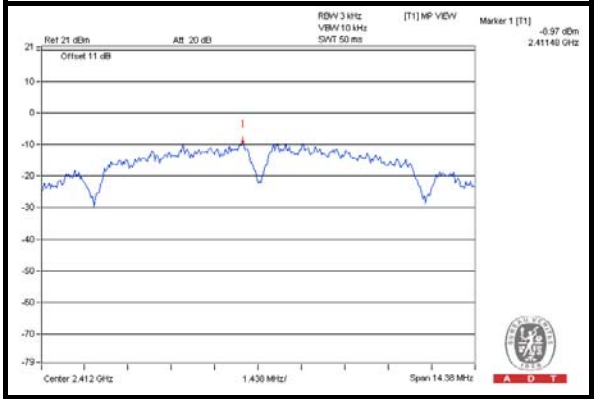
802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-19.45	3.01	-16.44	6.99	PASS
	6	2437	-12.51	3.01	-9.50	6.99	PASS
	9	2452	-17.95	3.01	-14.94	6.99	PASS
1	3	2422	-20.01	3.01	-17.00	6.99	PASS
	6	2437	-15.77	3.01	-12.76	6.99	PASS
	9	2452	-18.64	3.01	-15.63	6.99	PASS

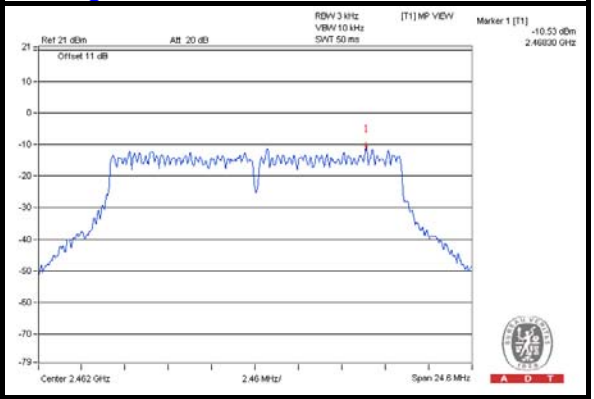
NOTE: Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.

SPECTRUM PLOT OF WORST VALUE

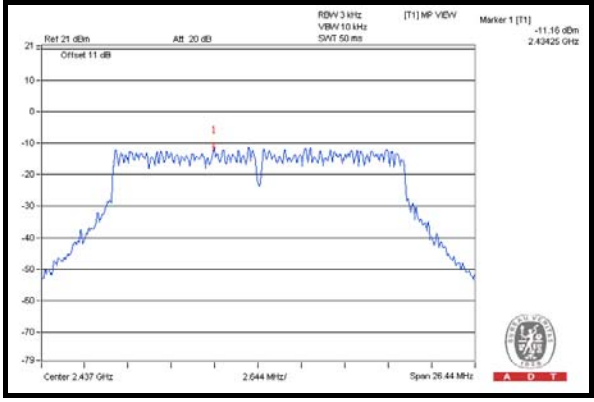
802.11b



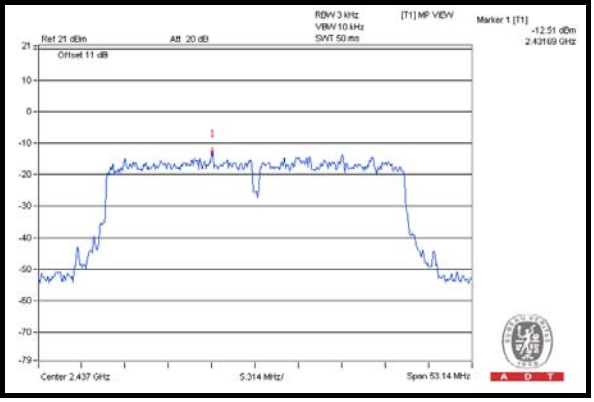
802.11g



802.11n (20MHz)



802.11n (40MHz)

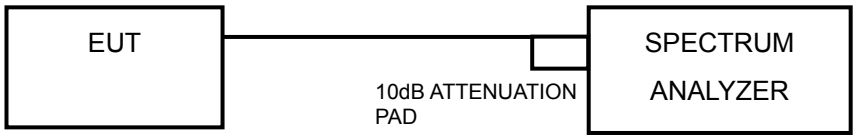


4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

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 OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.7 TEST RESULTS

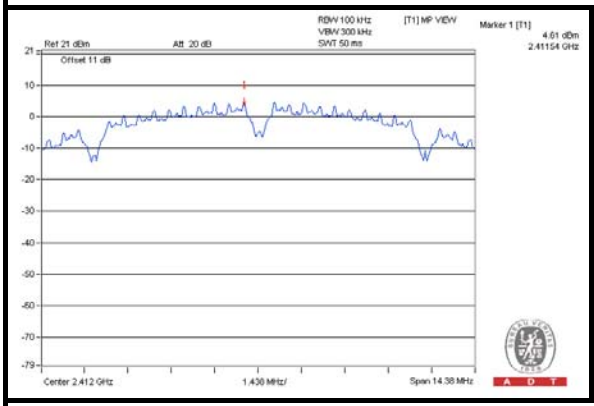
The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.

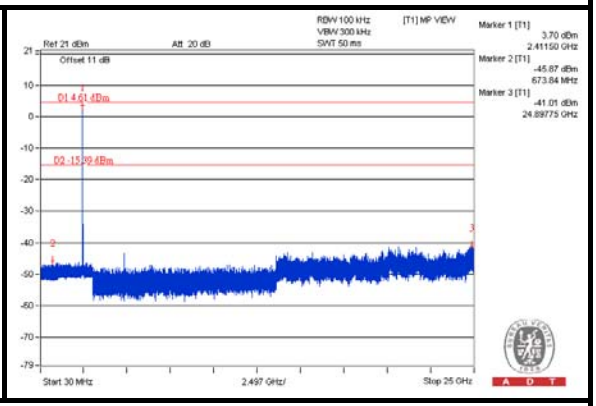
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

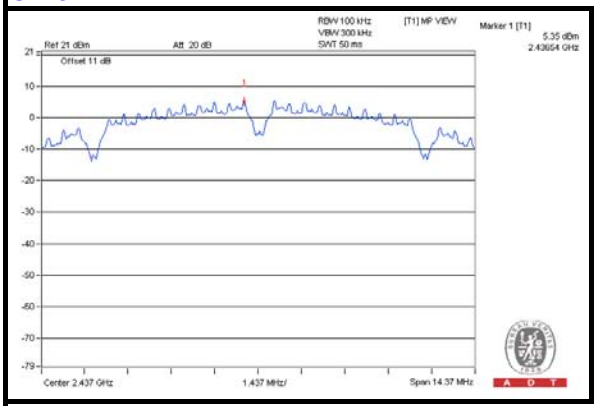
CHAIN 0

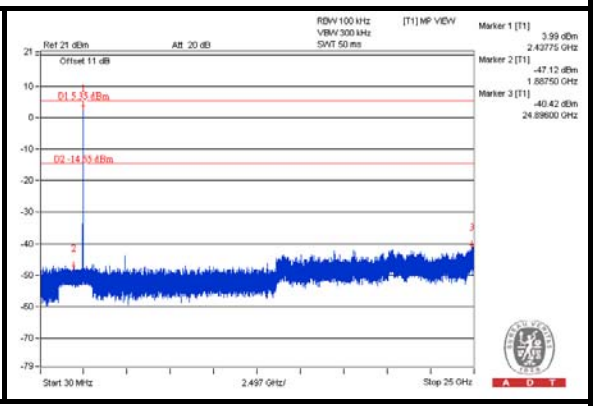
CH 1



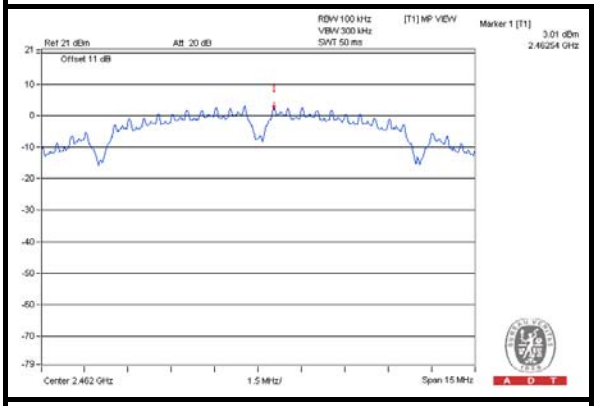


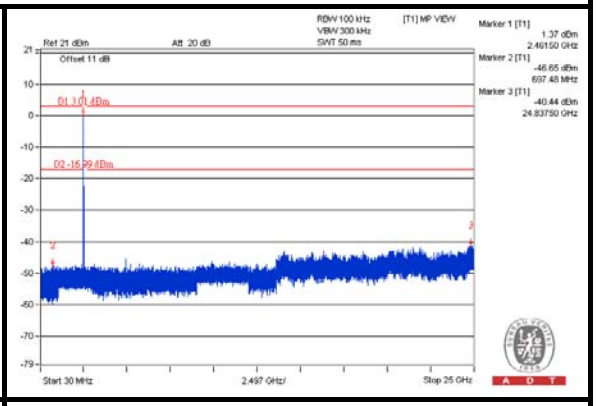
CH 6



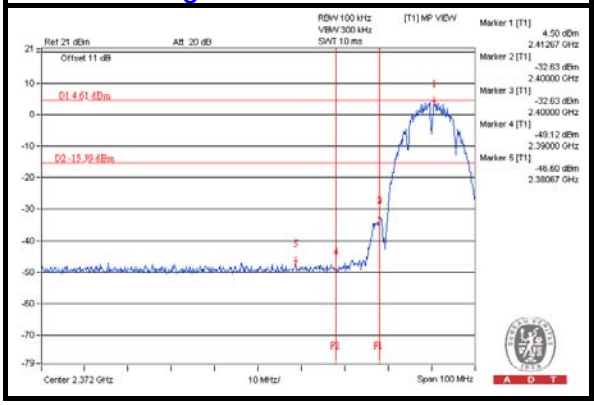


CH 11

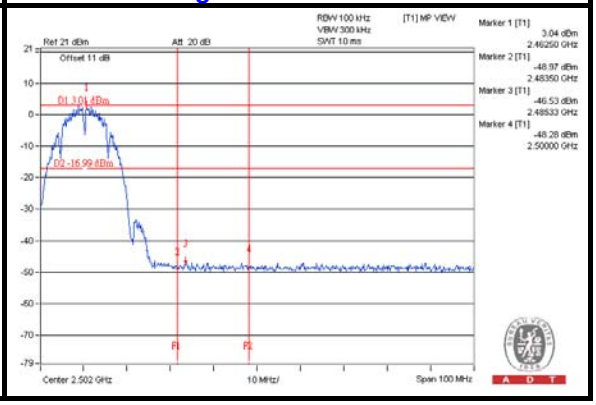




CH 1 Band edge

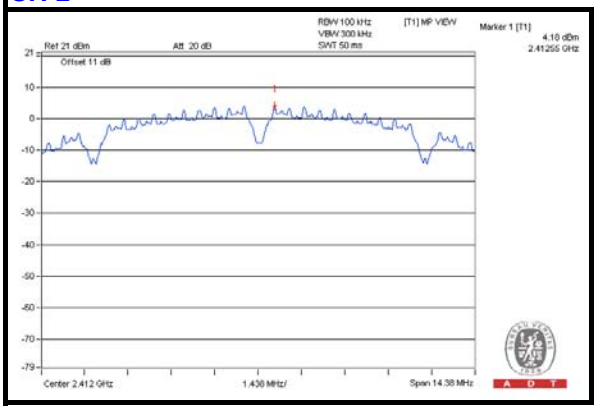


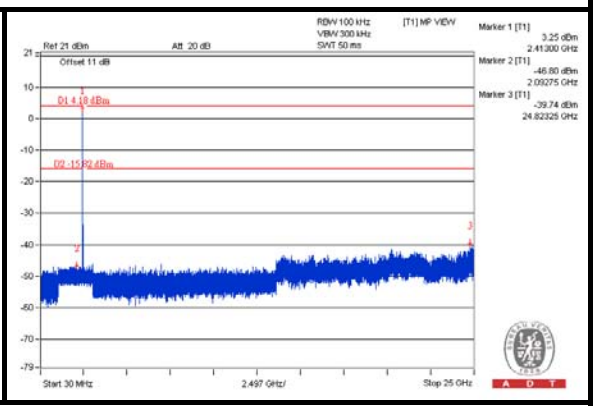
CH 11 Band edge



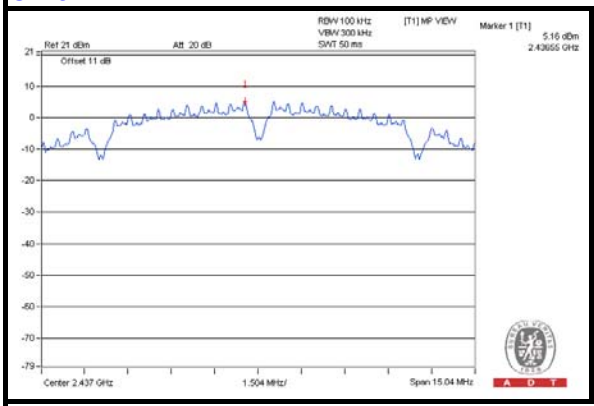
CHAIN 1

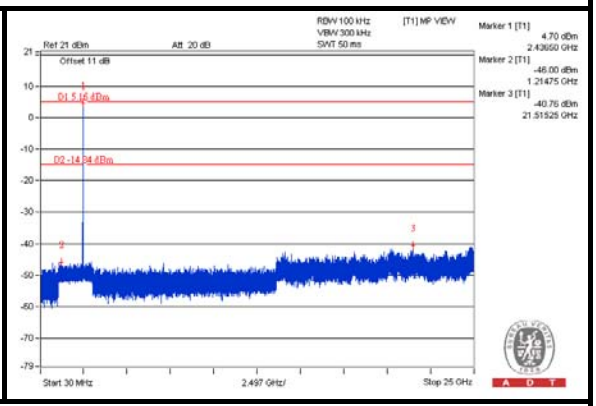
CH 1



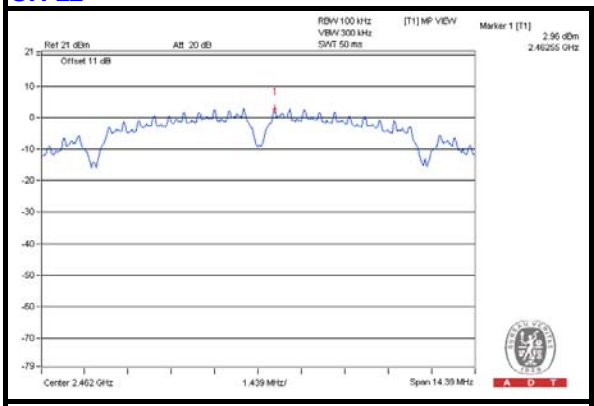


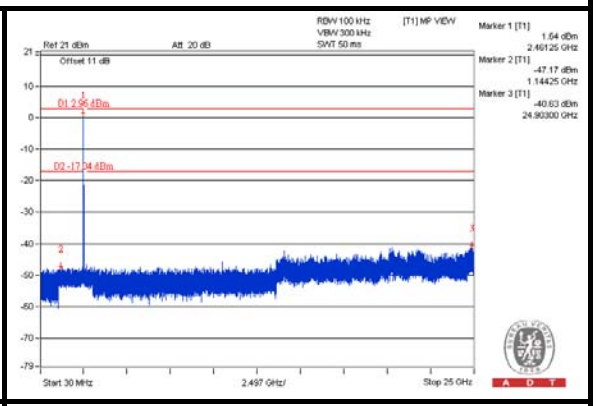
CH 6



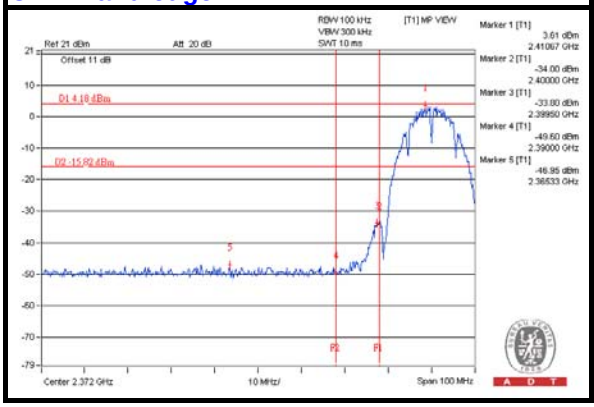


CH 11

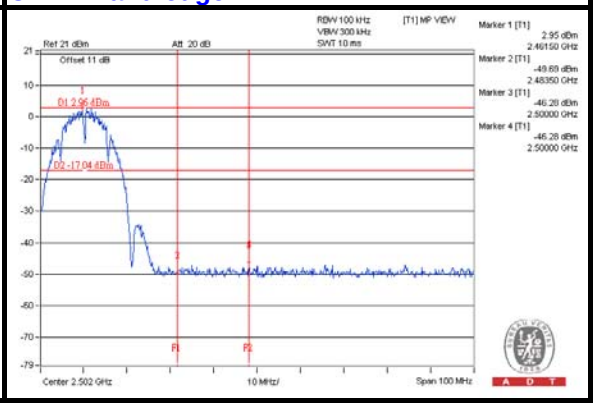




CH 1 Band edge



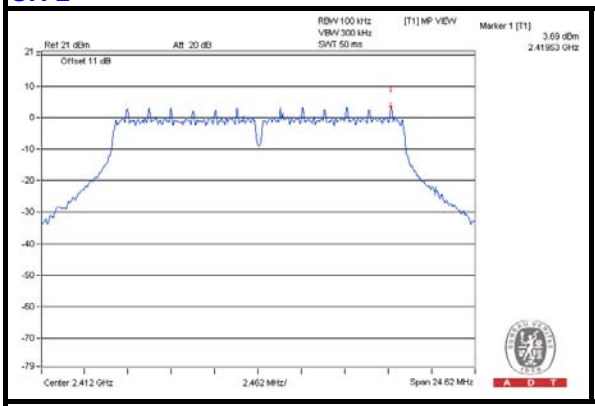
CH 11 Band edge

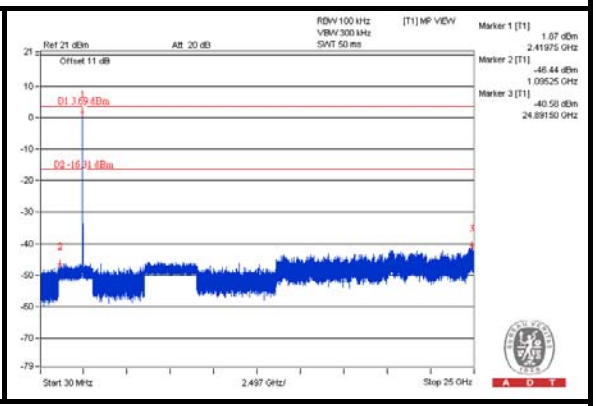


802.11g

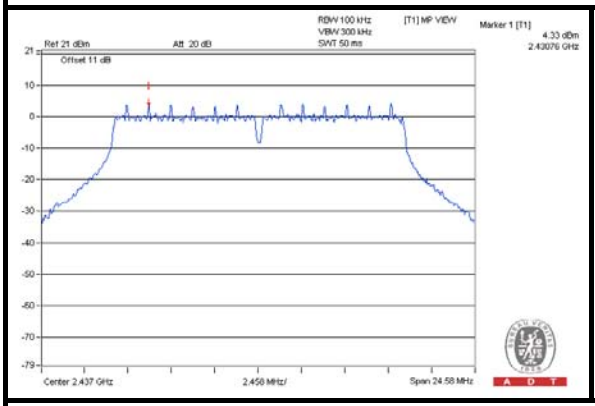
CHAIN 0

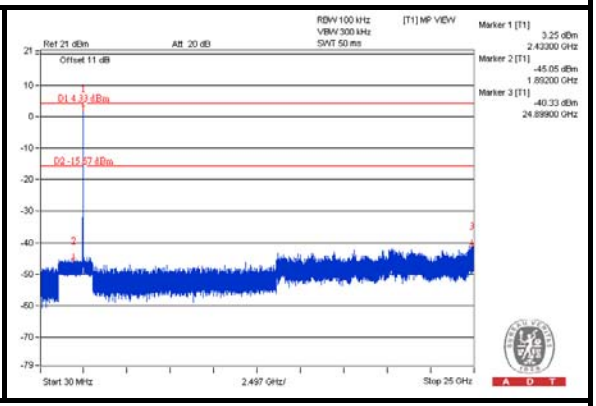
CH 1



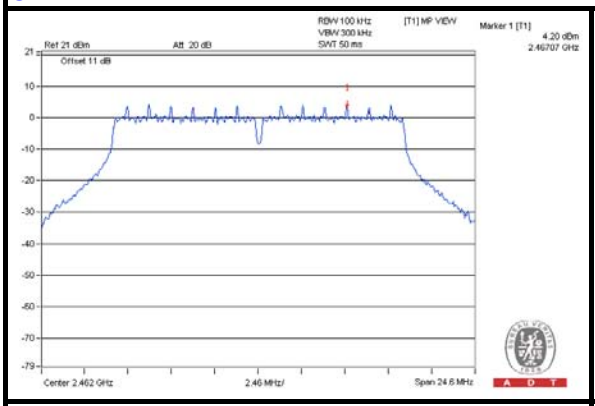


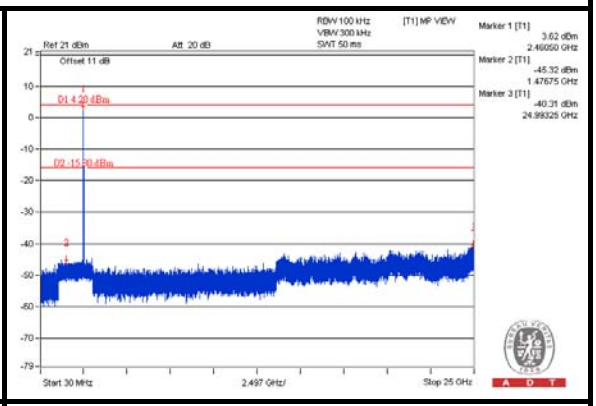
CH 6



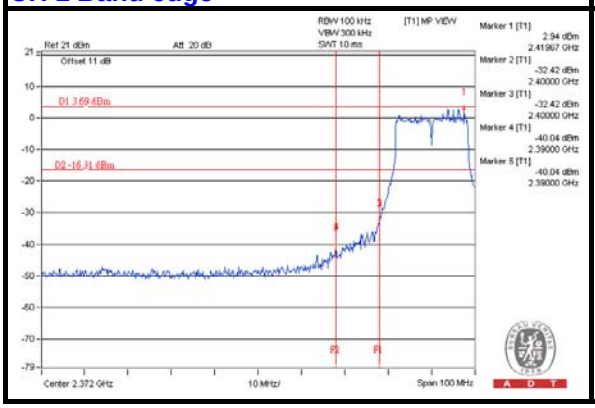


CH 11

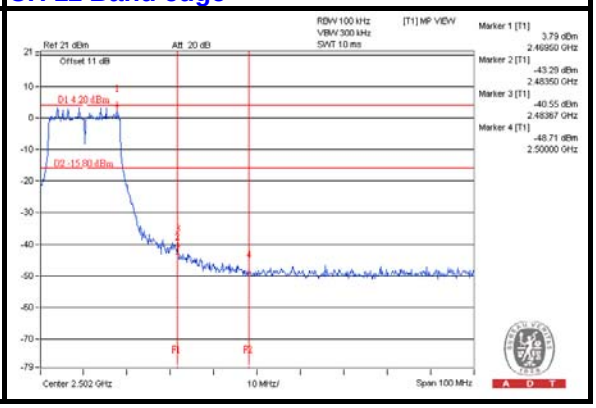




CH 1 Band edge

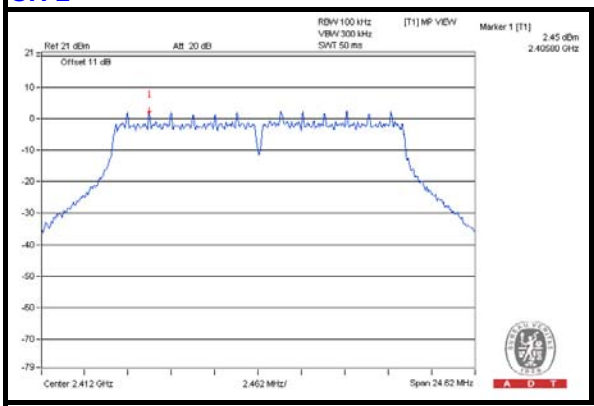


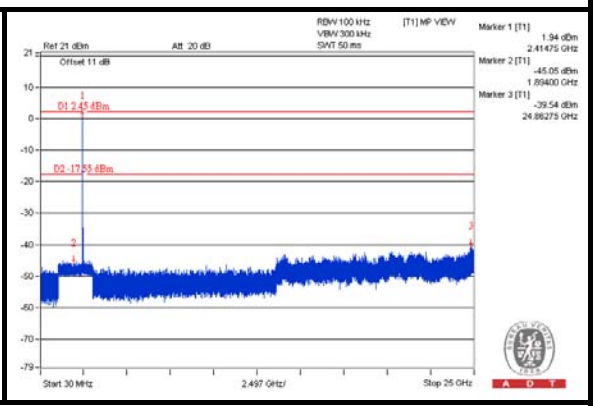
CH 11 Band edge



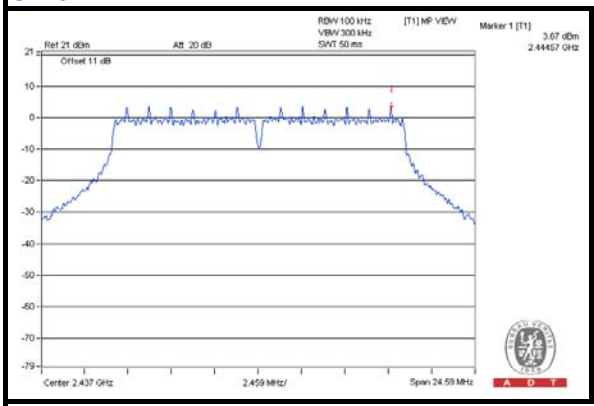
CHAIN 1

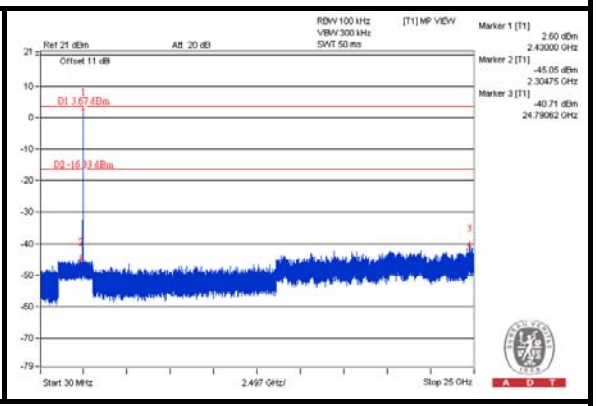
CH 1



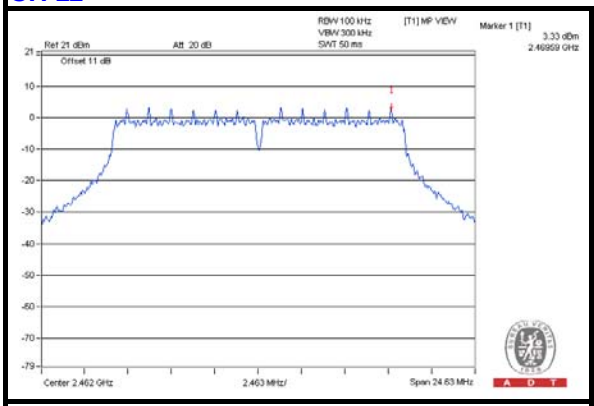


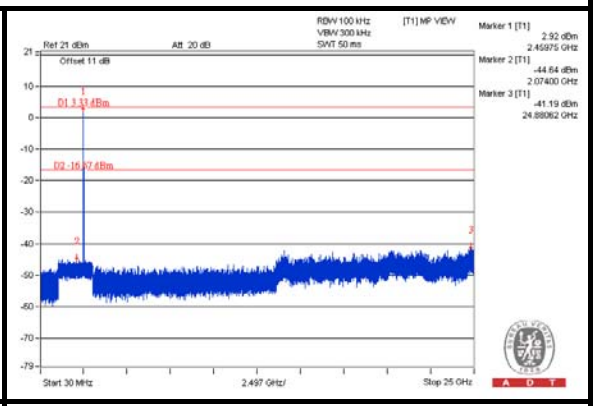
CH 6



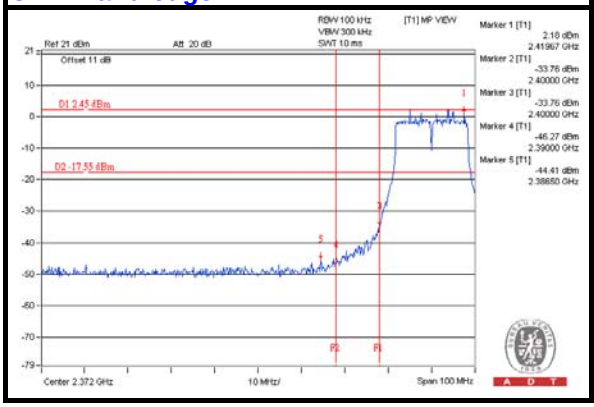


CH 11

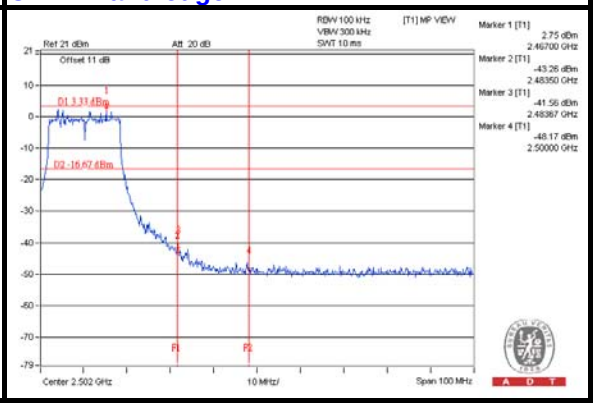




CH 1 Band edge



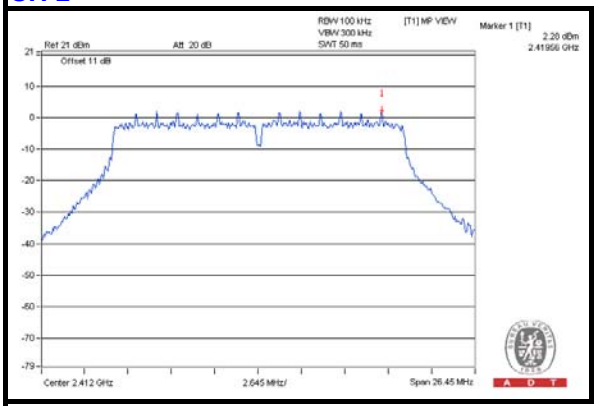
CH 11 Band edge

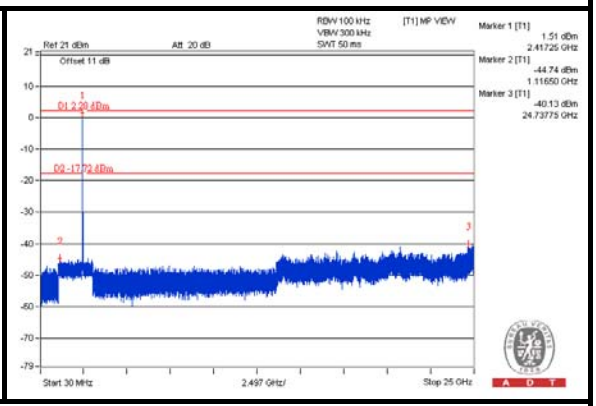


802.11n (20MHz)

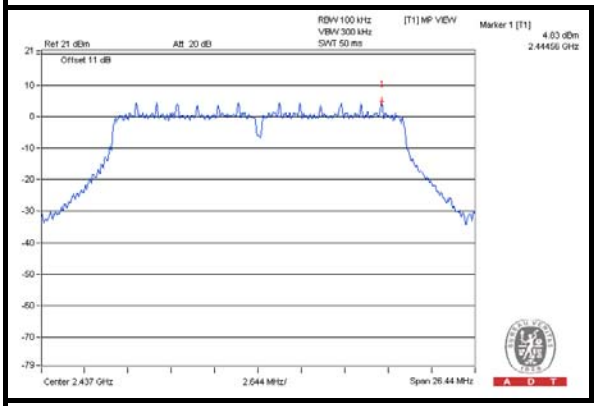
CHAIN 0

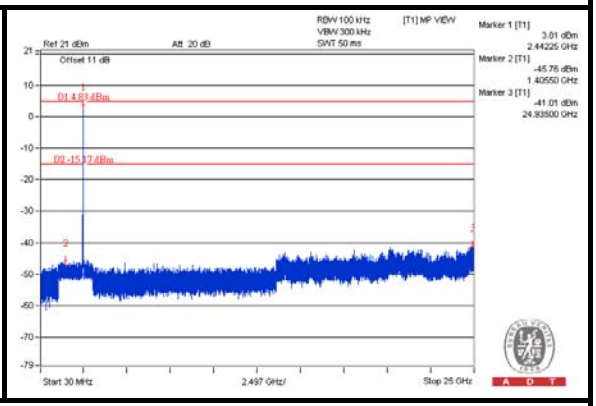
CH 1



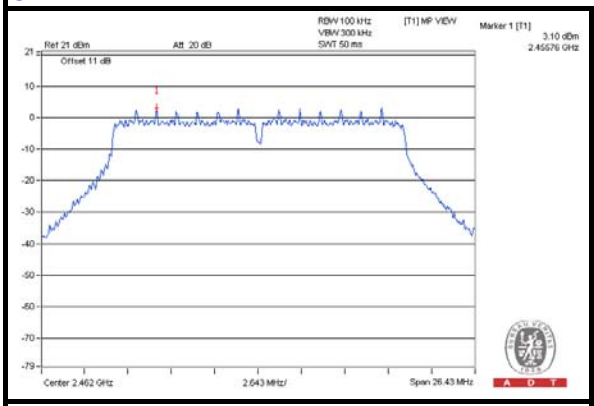


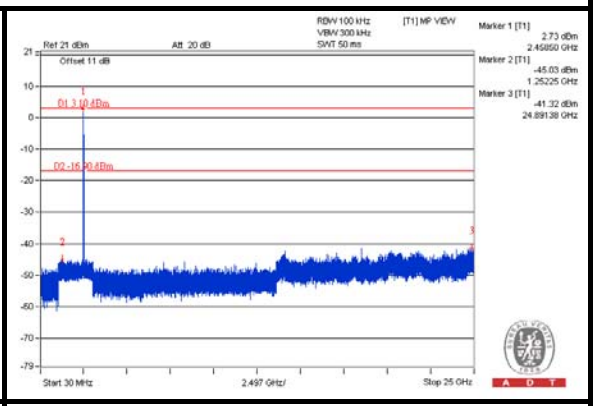
CH 6



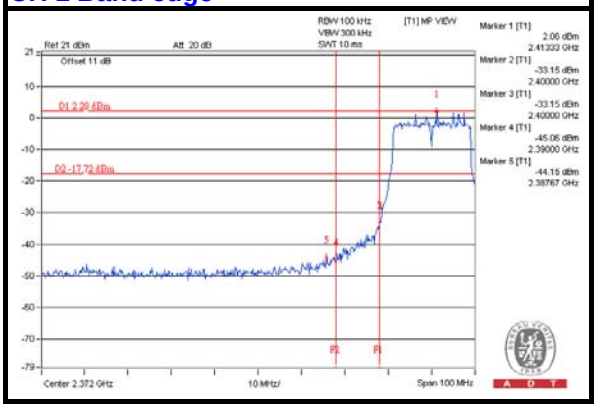


CH 11

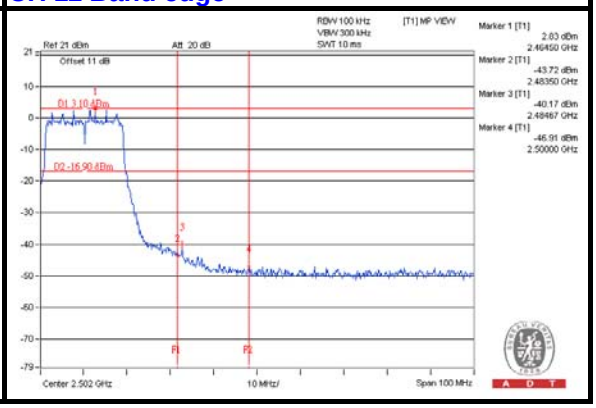




CH 1 Band edge

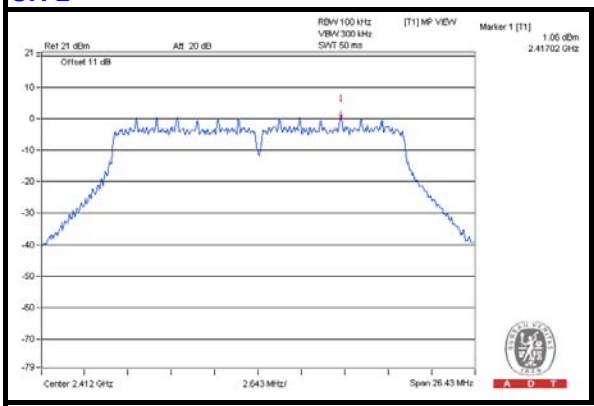


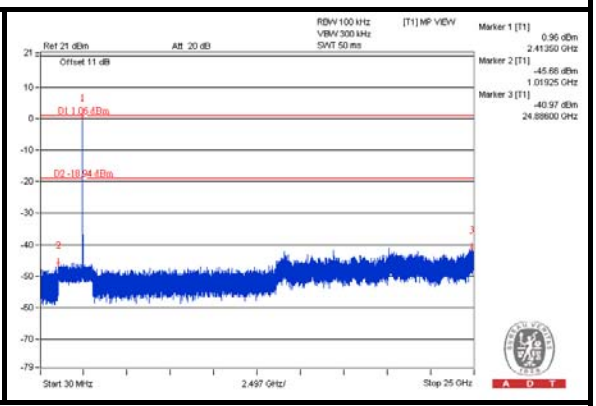
CH 11 Band edge



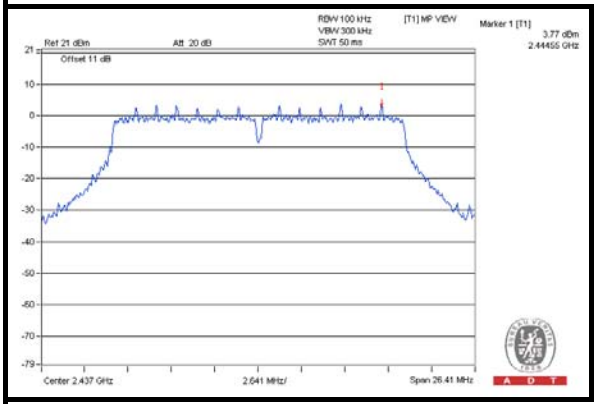
CHAIN 1

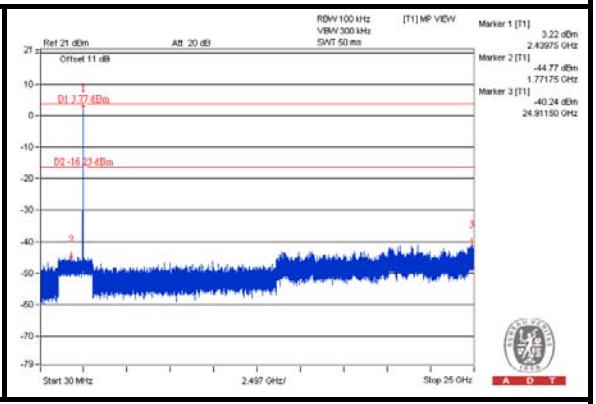
CH 1



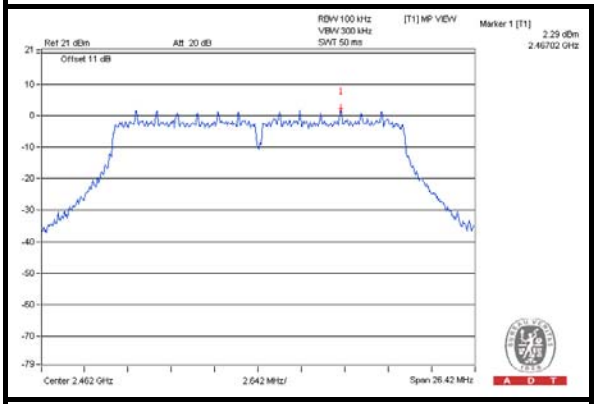


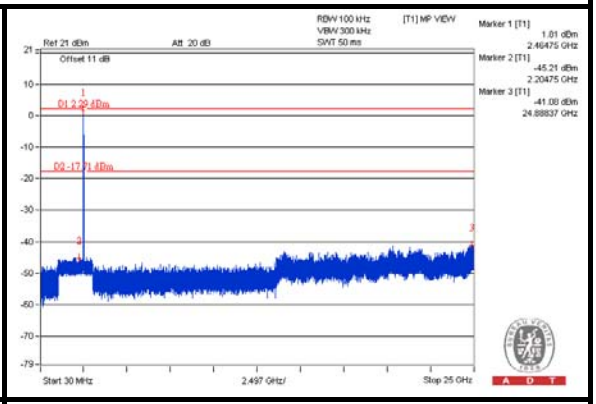
CH 6



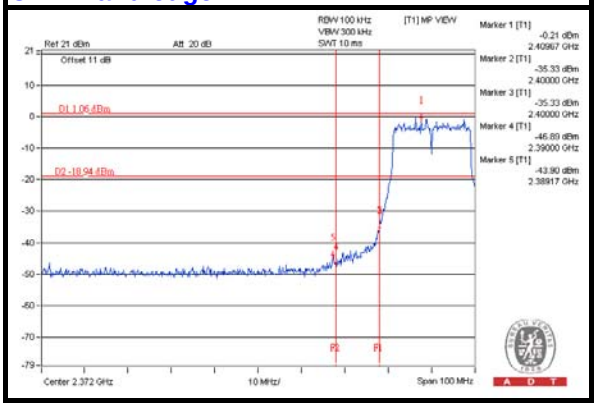


CH 11

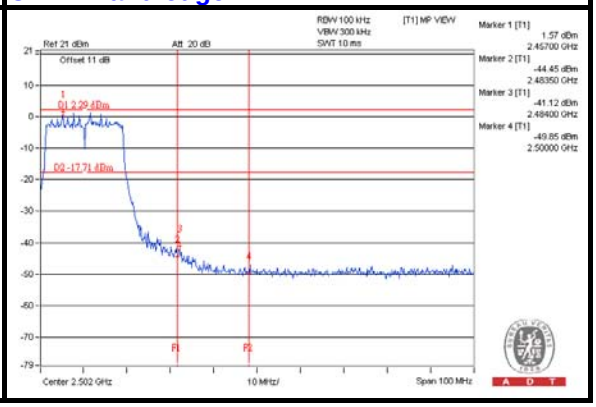




CH 1 Band edge



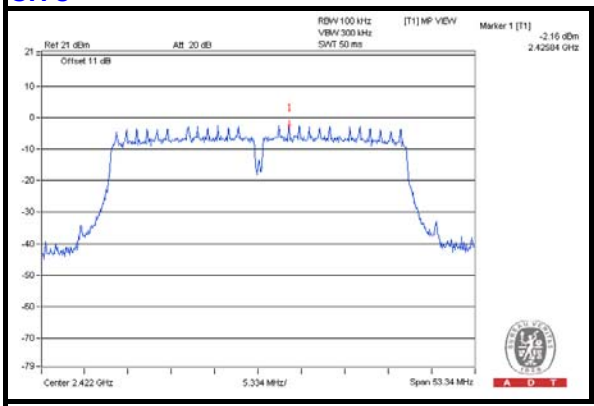
CH 11 Band edge

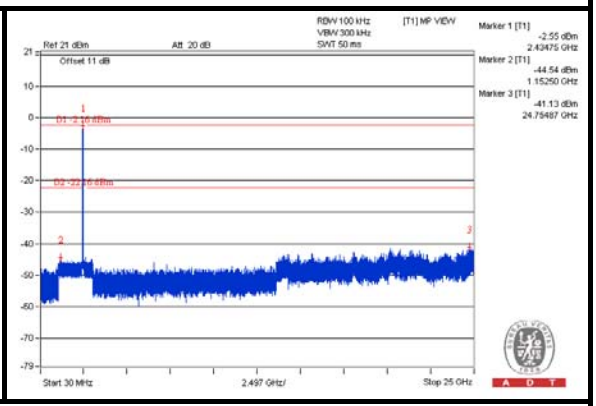


802.11n (40MHz)

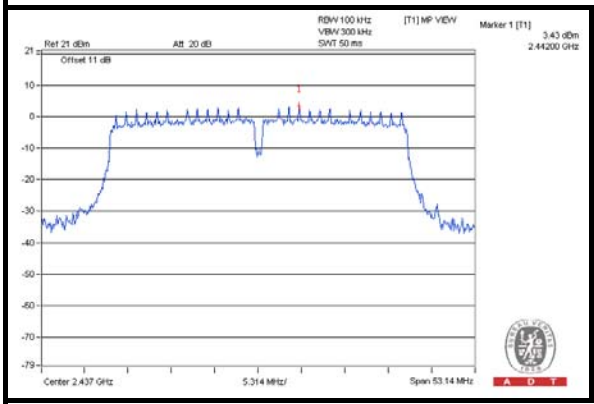
CHAIN 0

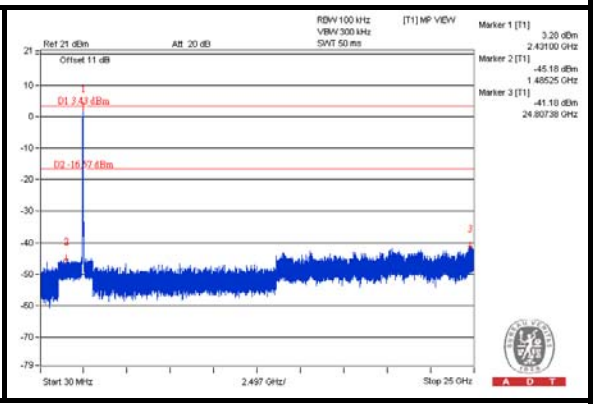
CH 3



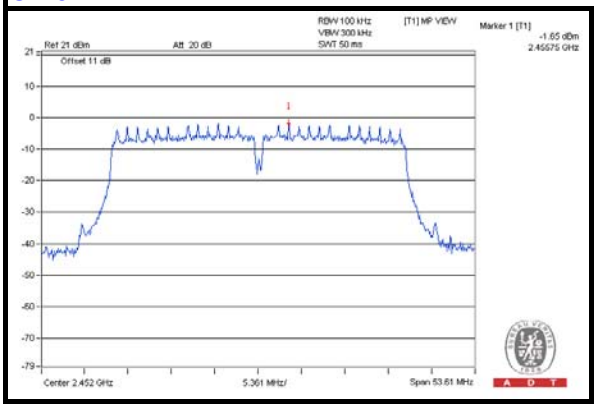


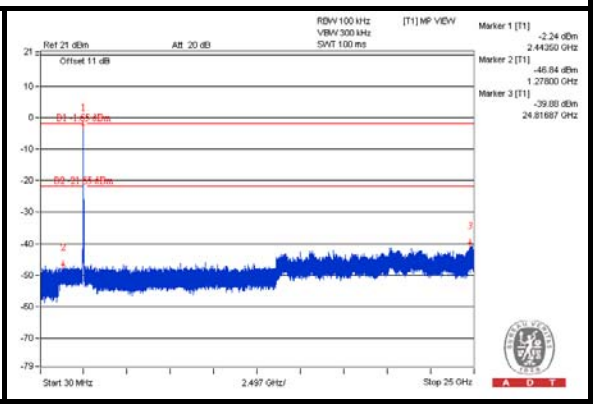
CH 6



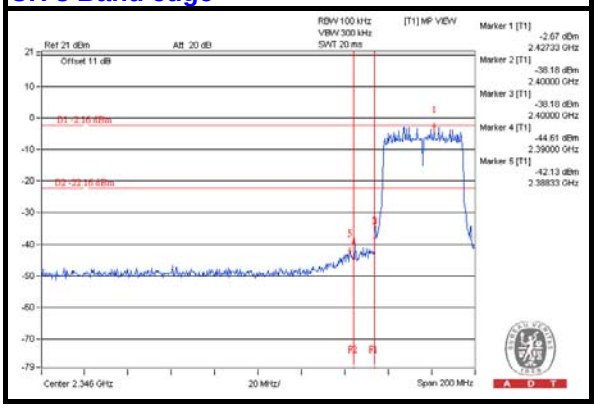


CH 9

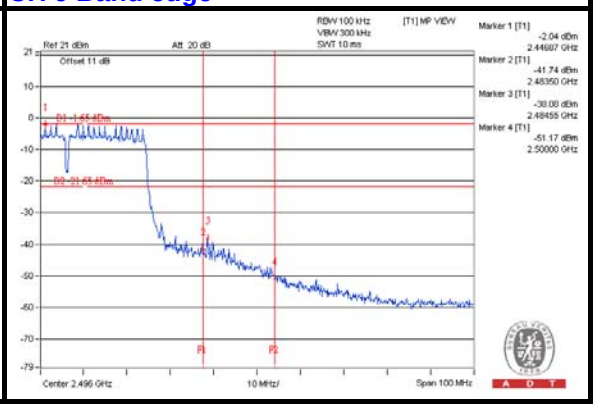




CH 3 Band edge

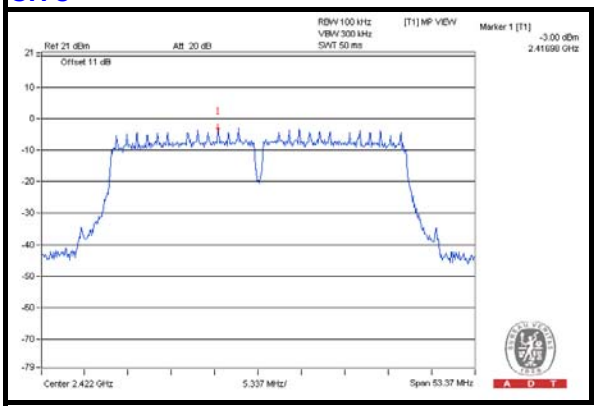


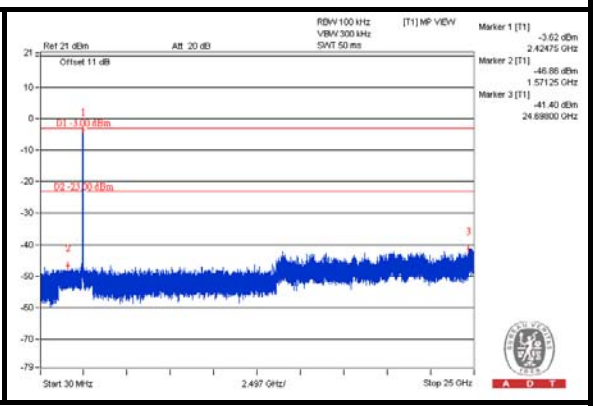
CH 9 Band edge



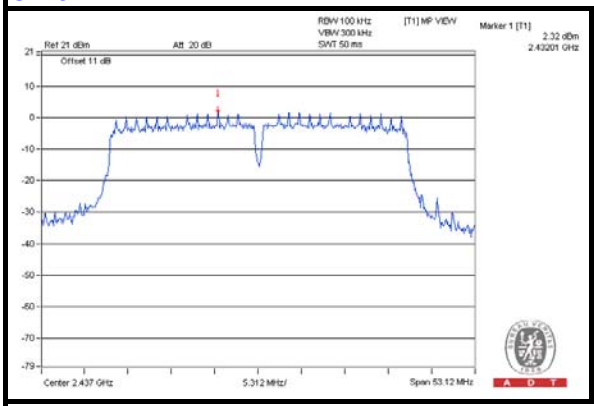
CHAIN 1

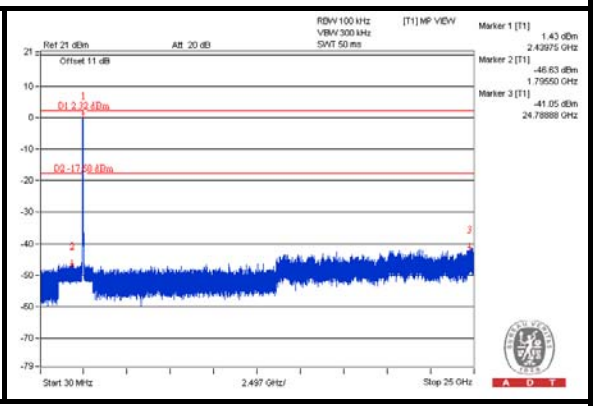
CH 3



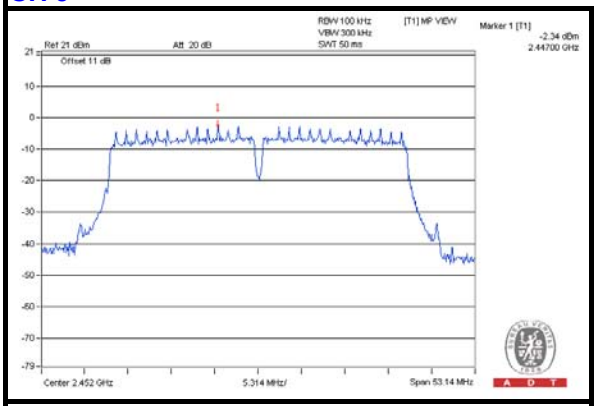


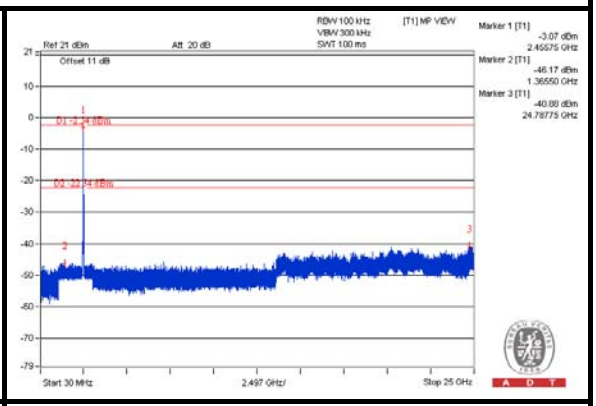
CH 6



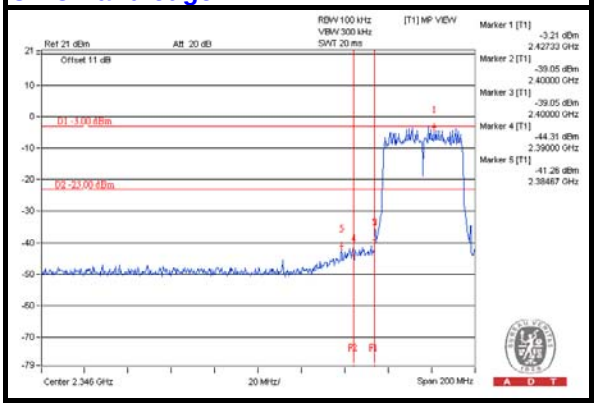


CH 9

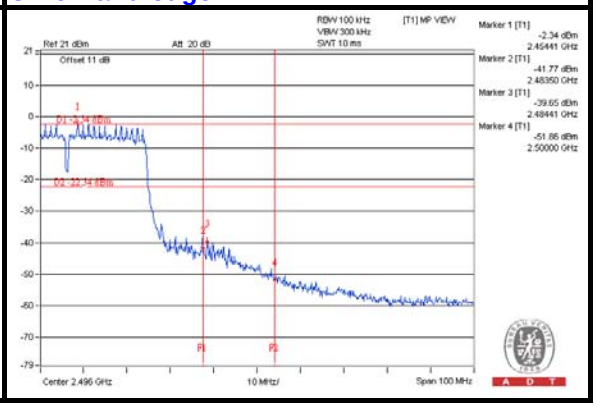




CH 3 Band edge



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: 886-2-26051924

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 any modifications are made to the EUT by the lab during the test.

---END---