FCC TEST REPORT

REPORT NO.:	RF140514C27
MODEL NO.:	FortiAP-25Dxxxxxx (where “x” can be used as “A-Z”, or “0-9”, or “-“, or blank for software changes or marketing purposes only) (Refer to Item 3.1 for more detail)
FCC ID:	TVE-121213
RECEIVED:	May 14, 2014
TESTED:	May 29 ~ Jun. 12, 2014
ISSUED:	Jun. 20, 2014
APPLICANT:	Fortinet Inc.
ADDRESS:	899 Kifer Road Sunnyvale, CA 94086 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.

TABLE OF CONTENTS

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140514C27	Original release.	Jun. 20, 2014

1. CERTIFICATION

PRODUCT:	Secured Wireless Access Point
MODEL NO.:	FortiAP-25Dxxxxxx (where "x" can be used as "A-Z", or "0-9", or "-", or blank for software changes or marketing purposes only) (Refer to Item 3.1 for more detail)
BRAND:	Fortinet Inc.
APPLICANT:	Fortinet Inc.
TESTED:	May 29 ~ Jun. 12, 2014
TEST SAMPLE:	ENGINEERING SAMPLE
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247)**
	ANSI C63.10-2009

The above equipment (model: FortiAP-25D) 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 :** Jun. 20, 2014

Pettie Chen / Senior Specialist

APPROVED BY : _____ **, DATE :** Jun. 20, 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 -11.62dB at 0.50547MHz.
15.205 & 209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 4924.00MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.1dB at 2483.5MHz.
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	Antenna connector is IPEX not a standard connector.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 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	Secured Wireless Access Point
MODEL NO.	FortiAP-25Dxxxxxx (where "x" can be used as "A-Z", or "0-9", or "-", or blank for software changes or marketing purposes only) (Refer to NOTE for more detail)
POWER SUPPLY	100-240Vac, 0.25A, 50/60Hz
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b:11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps
OPERATING FREQUENCY	2412 ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
OUTPUT POWER	422.686mW
ANTENNA TYPE	Ant. 1: PCB antenna with 2.1dBi gain Ant. 2: PCB antenna with 4.6dBi gain
ANTENNA CONNECTOR	IPEX
POWER CORD	NA
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	NA

NOTE:

1. All models are listed as below.

Brand	Model	Difference
Fortinet Inc.	FortiAP-25Dxxxxxx	where "x" can be used as "A-Z", or "0-9", or "-", or blank for software changes or marketing purposes only
	FAP-25Dxxxxxx	

*Model: FortiAP-25D was the final model.

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

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

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

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

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

EUT CONFIGURE MODE	MODE	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	6	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	6	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

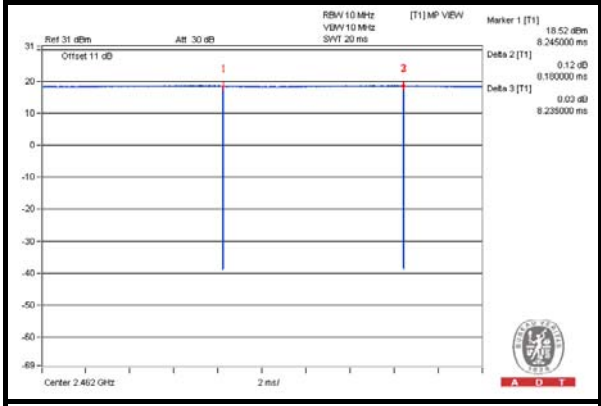
TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	21deg. C, 69%RH	120Vac, 60Hz	Chris Lin
RE<1G	21deg. C, 69%RH	120Vac, 60Hz	Chris Lin
PLC	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin
APCM	21deg. C, 60%RH	120Vac, 60Hz	Nick Chen

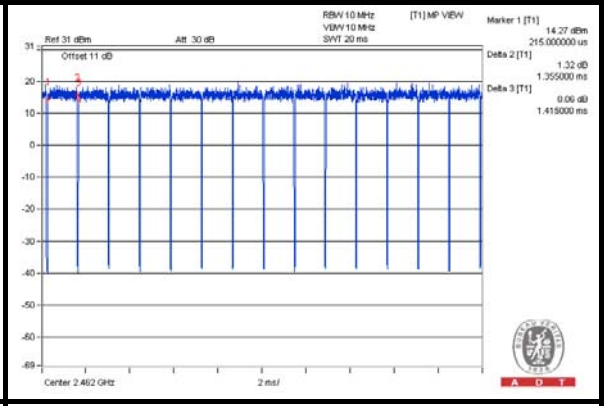
3.3 DUTY CYCLE OF TEST SIGNAL

802.11b: Duty cycle = 8.18/8.235 = 0.993 > 98 %
802.11g: Duty cycle = 1.355/1.415 = 0.957, Duty factor = 10 * log(1/0.957) = 0.19
802.11n (20MHz): Duty cycle = 1.26/1.32 = 0.955, Duty factor = 10 * log(1/0.955) = 0.20
802.11n (40MHz): Duty cycle = 620.00/675.00 = 0.919, Duty factor = 10 * log(1/0.919) = 0.37

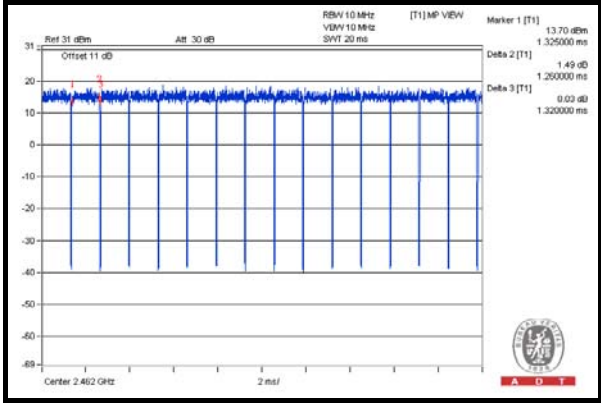
802.11b



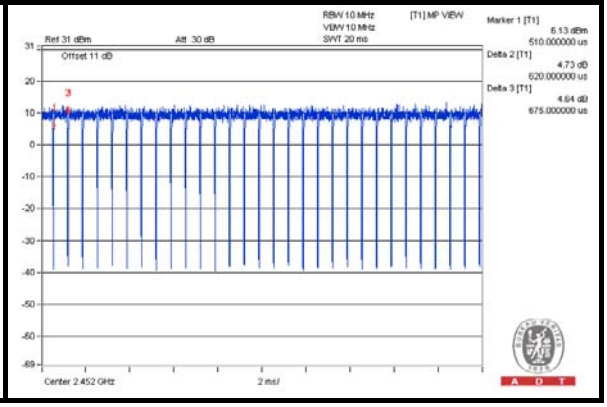
802.11g



802.11n (20MHz)



802.11n (40MHz)



3.4 DESCRIPTION OF SUPPORT UNITS

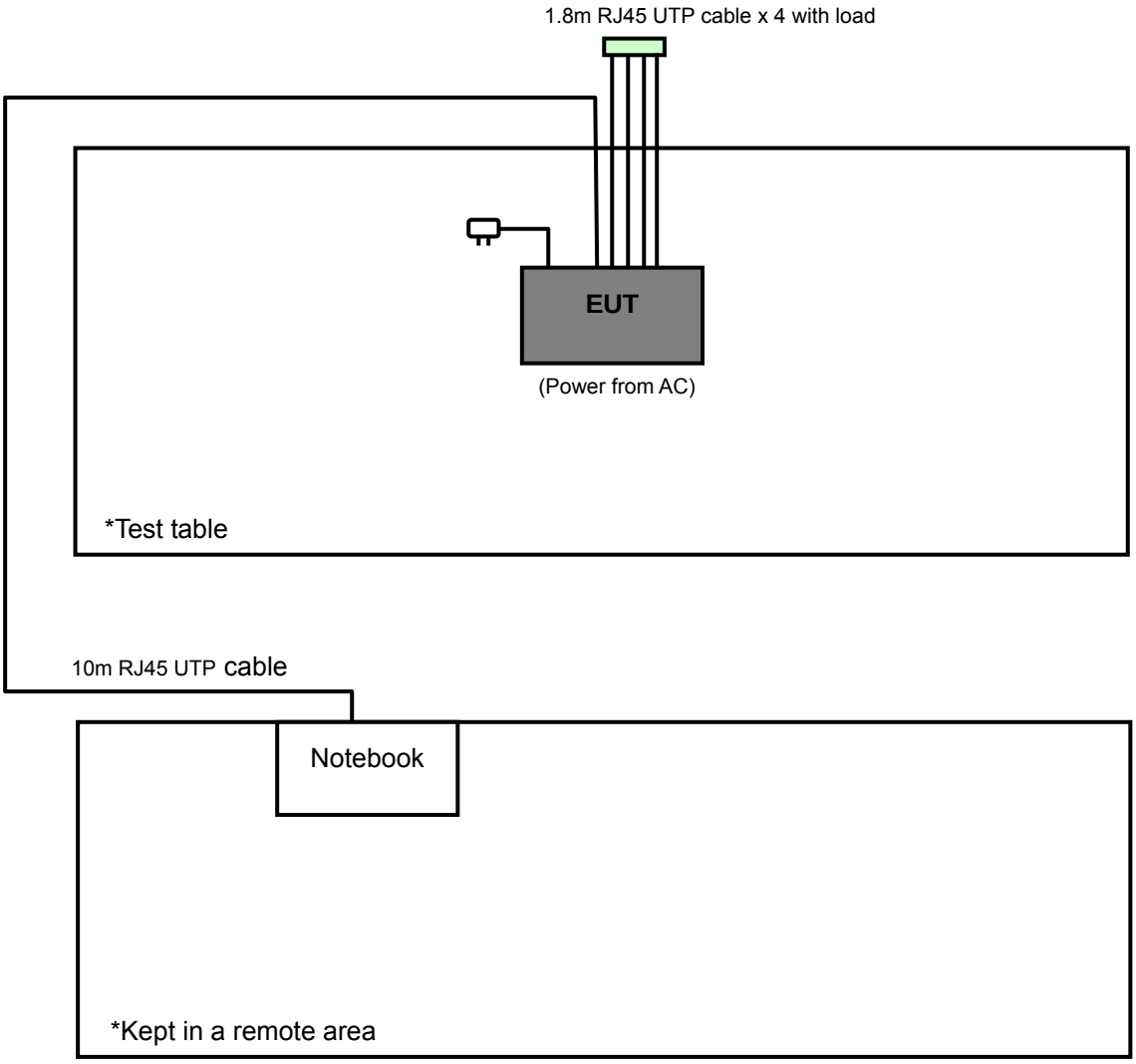
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m RJ45 UTP 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	ESIB7	100187	Jan. 02, 2014	Jan. 01, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Mar. 03, 2014	Mar. 02, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Feb. 26, 2014	Feb. 25, 2015
HORN Antenna SCHWARZBECK	9120D	209	Sep. 12, 2013	Sep. 11, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 15, 2013	Jul. 14, 2014
Preamplifier Agilent	8447D	2944A10633	Oct. 07, 2013	Oct. 06, 2014
Preamplifier Agilent	8449B	3008A01964	Aug. 26, 2013	Aug. 25, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	214378/4	Aug. 26, 2013	Aug. 25, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6 +309224/4	Aug. 26, 2013	Aug. 25, 2014
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 18, 2013	Oct. 17, 2014
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 3.

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 988962.

5. The IC Site Registration No. is IC 7450F-3.

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:

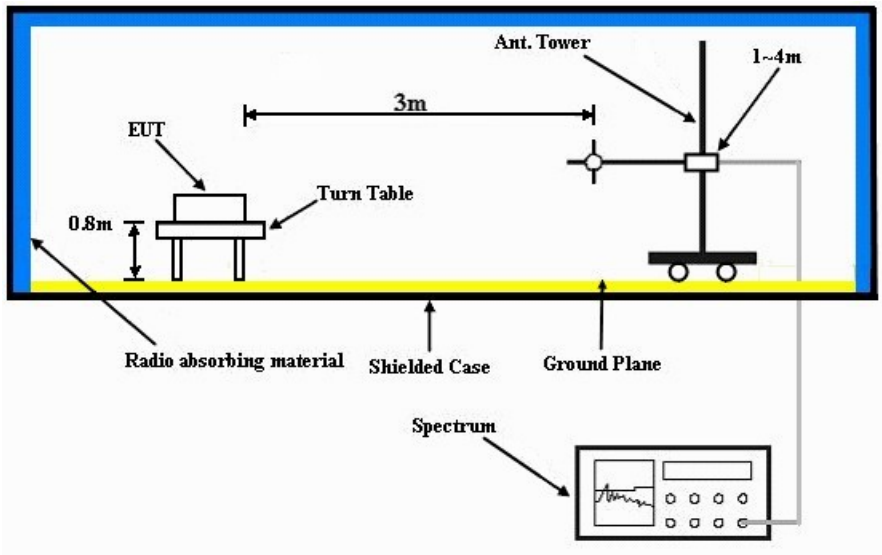
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution 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

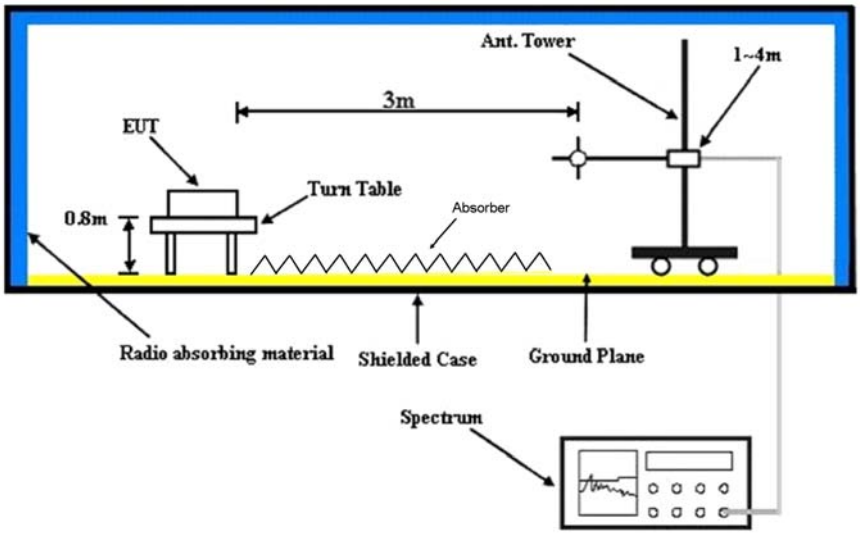
No deviation.

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 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".
e. The necessary accessories enable the system in full functions.

4.1.7 TEST RESULTS

ABOVE 1GHz DATA：

802.11b

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	2288.00	50.8 PK	74.0	-23.2	1.00 H	212	50.90	-0.10
2	2288.00	46.5 AV	54.0	-7.5	1.00 H	212	46.60	-0.10
3	2390.00	55.5 PK	74.0	-18.5	1.19 H	277	24.50	31.00
4	2390.00	45.1 AV	54.0	-8.9	1.19 H	277	14.10	31.00
5	*2412.00	107.2 PK			1.05 H	125	76.10	31.10
6	*2412.00	103.7 AV			1.05 H	125	72.60	31.10
7	4824.00	55.7 PK	74.0	-18.3	1.00 H	7	50.80	4.90
8	4824.00	52.4 AV	54.0	-1.6	1.00 H	7	47.50	4.90
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	2288.00	55.7 PK	74.0	-18.3	1.02 V	210	55.80	-0.10
2	2288.00	51.3 AV	54.0	-2.7	1.02 V	210	51.40	-0.10
3	2390.00	71.7 PK	74.0	-2.3	1.00 V	208	40.70	31.00
4	2390.00	51.4 AV	54.0	-2.6	1.00 V	208	20.40	31.00
5	*2412.00	113.4 PK			1.00 V	207	82.30	31.10
6	*2412.00	110.1 AV			1.00 V	207	79.00	31.10
7	4824.00	55.2 PK	74.0	-18.8	1.00 V	220	50.30	4.90
8	4824.00	52.3 AV	54.0	-1.7	1.00 V	220	47.40	4.90

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2288.00	51.6 PK	74.0	-22.4	1.00 H	213	51.70	-0.10
2	2288.00	46.6 AV	54.0	-7.4	1.00 H	213	46.70	-0.10
3	*2437.00	102.7 PK			1.76 H	121	71.50	31.20
4	*2437.00	99.1 AV			1.76 H	121	67.90	31.20
5	4874.00	53.6 PK	74.0	-20.4	1.01 H	12	48.60	5.00
6	4874.00	49.4 AV	54.0	-4.6	1.01 H	12	44.40	5.00
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	2288.00	54.9 PK	74.0	-19.1	1.03 V	212	55.00	-0.10
2	2288.00	50.9 AV	54.0	-3.1	1.03 V	212	51.00	-0.10
3	*2437.00	111.8 PK			1.00 V	208	80.60	31.20
4	*2437.00	108.3 AV			1.00 V	208	77.10	31.20
5	4874.00	55.2 PK	74.0	-18.8	1.25 V	255	50.20	5.00
6	4874.00	52.3 AV	54.0	-1.7	1.25 V	255	47.30	5.00

REMARKS:

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

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	2288.00	51.3 PK	74.0	-22.7	1.00 H	213	51.40	-0.10
2	2288.00	46.6 AV	54.0	-7.4	1.00 H	213	46.70	-0.10
3	*2462.00	103.5 PK			1.04 H	236	72.20	31.30
4	*2462.00	100.0 AV			1.04 H	236	68.70	31.30
5	2483.50	56.8 PK	74.0	-17.2	1.05 H	165	25.40	31.40
6	2483.50	43.6 AV	54.0	-10.4	1.05 H	165	12.20	31.40
7	4924.00	53.1 PK	74.0	-20.9	1.09 H	331	47.90	5.20
8	4924.00	49.8 AV	54.0	-4.2	1.09 H	331	44.60	5.20
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	2288.00	56.0 PK	74.0	-18.0	1.27 V	213	56.10	-0.10
2	2288.00	51.7 AV	54.0	-2.3	1.27 V	213	51.80	-0.10
3	*2462.00	111.8 PK			1.17 V	207	80.50	31.30
4	*2462.00	108.3 AV			1.17 V	207	77.00	31.30
5	2483.50	70.9 PK	74.0	-3.1	1.62 V	214	39.50	31.40
6	2483.50	46.3 AV	54.0	-7.7	1.62 V	214	14.90	31.40
7	4924.00	56.3 PK	74.0	-17.7	1.24 V	254	51.10	5.20
8	**4924.00**	**53.0 AV**	**54.0**	**-1.0**	**1.24 V**	**254**	**47.80**	**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)
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	2288.00	51.3 PK	74.0	-22.7	1.00 H	214	51.40	-0.10
2	2288.00	47.0 AV	54.0	-7.0	1.00 H	214	47.10	-0.10
3	2390.00	61.6 PK	74.0	-12.4	1.75 H	281	30.60	31.00
4	2390.00	46.2 AV	54.0	-7.8	1.75 H	281	15.20	31.00
5	*2412.00	102.8 PK			1.24 H	278	71.70	31.10
6	*2412.00	93.2 AV			1.24 H	278	62.10	31.10
7	4824.00	48.5 PK	74.0	-25.5	1.16 H	74	43.60	4.90
8	4824.00	35.3 AV	54.0	-18.7	1.16 H	74	30.40	4.90
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	2288.00	55.3 PK	74.0	-18.7	1.43 V	213	55.40	-0.10
2	2288.00	51.7 AV	54.0	-2.3	1.43 V	213	51.80	-0.10
3	2390.00	68.8 PK	74.0	-5.2	1.18 V	209	37.80	31.00
4	2390.00	52.2 AV	54.0	-1.8	1.18 V	209	21.20	31.00
5	*2412.00	111.2 PK			1.38 V	181	80.10	31.10
6	*2412.00	101.9 AV			1.38 V	181	70.80	31.10
7	4824.00	47.8 PK	74.0	-26.2	1.12 V	69	42.90	4.90
8	4824.00	33.9 AV	54.0	-20.1	1.12 V	69	29.00	4.90

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2288.00	50.9 PK	74.0	-23.1	1.00 H	213	51.00	-0.10
2	2288.00	46.9 AV	54.0	-7.1	1.00 H	213	47.00	-0.10
3	*2437.00	103.4 PK			1.24 H	286	72.20	31.20
4	*2437.00	94.0 AV			1.24 H	286	62.80	31.20
5	4874.00	47.6 PK	74.0	-26.4	1.06 H	88	42.60	5.00
6	4874.00	34.0 AV	54.0	-20.0	1.06 H	88	29.00	5.00
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	2288.00	57.2 PK	74.0	-16.8	1.25 V	190	57.30	-0.10
2	2288.00	52.7 AV	54.0	-1.3	1.25 V	190	52.80	-0.10
3	*2437.00	113.4 PK			1.16 V	176	82.20	31.20
4	*2437.00	103.9 AV			1.16 V	176	72.70	31.20
5	4874.00	46.9 PK	74.0	-27.1	1.16 V	58	41.90	5.00
6	4874.00	34.0 AV	54.0	-20.0	1.16 V	58	29.00	5.00

REMARKS:

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

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	2288.00	51.5 PK	74.0	-22.5	1.00 H	212	51.60	-0.10
2	2288.00	47.0 AV	54.0	-7.0	1.00 H	212	47.10	-0.10
3	*2462.00	101.9 PK			1.03 H	237	70.60	31.30
4	*2462.00	92.2 AV			1.03 H	237	60.90	31.30
5	2483.50	55.4 PK	74.0	-18.6	1.16 H	248	24.00	31.40
6	2483.50	44.9 AV	54.0	-9.1	1.16 H	248	13.50	31.40
7	4924.00	47.8 PK	74.0	-26.2	1.07 H	45	42.60	5.20
8	4924.00	34.4 AV	54.0	-19.6	1.07 H	45	29.20	5.20
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	2288.00	54.9 PK	74.0	-19.1	1.40 V	210	55.00	-0.10
2	2288.00	51.0 AV	54.0	-3.0	1.40 V	210	51.10	-0.10
3	*2462.00	110.8 PK			1.34 V	159	79.50	31.30
4	*2462.00	101.3 AV			1.34 V	159	70.00	31.30
5	2483.50	72.8 PK	74.0	-1.2	1.34 V	196	41.40	31.40
6	2483.50	52.1 AV	54.0	-1.9	1.34 V	196	20.70	31.40
7	4924.00	47.9 PK	74.0	-26.1	1.16 V	87	42.70	5.20
8	4924.00	33.9 AV	54.0	-20.1	1.16 V	87	28.70	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)
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)
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	2288.00	51.5 PK	74.0	-22.5	1.00 H	212	51.60	-0.10
2	2288.00	47.0 AV	54.0	-7.0	1.00 H	212	47.10	-0.10
3	2390.00	63.9 PK	74.0	-10.1	1.74 H	286	32.90	31.00
4	2390.00	46.8 AV	54.0	-7.2	1.74 H	286	15.80	31.00
5	*2412.00	102.8 PK			1.03 H	122	71.70	31.10
6	*2412.00	93.3 AV			1.03 H	122	62.20	31.10
7	4824.00	46.9 PK	74.0	-27.1	1.13 H	69	42.00	4.90
8	4824.00	33.6 AV	54.0	-20.4	1.13 H	69	28.70	4.90
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	2288.00	56.0 PK	74.0	-18.0	1.26 V	212	56.10	-0.10
2	2288.00	51.3 AV	54.0	-2.7	1.26 V	212	51.40	-0.10
3	2390.00	71.3 PK	74.0	-2.7	1.22 V	210	40.30	31.00
4	2390.00	52.8 AV	54.0	-1.2	1.22 V	210	21.80	31.00
5	*2412.00	111.7 PK			1.40 V	183	80.60	31.10
6	*2412.00	101.3 AV			1.40 V	183	70.20	31.10
7	4824.00	47.6 PK	74.0	-26.4	1.13 V	56	42.70	4.90
8	4824.00	34.6 AV	54.0	-19.4	1.13 V	56	29.70	4.90

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2288.00	50.7 PK	74.0	-23.3	1.15 H	200	50.80	-0.10
2	2288.00	45.7 AV	54.0	-8.3	1.15 H	200	45.80	-0.10
3	*2437.00	103.7 PK			1.01 H	289	72.50	31.20
4	*2437.00	93.6 AV			1.01 H	289	62.40	31.20
5	4874.00	47.0 PK	74.0	-27.0	1.33 H	269	42.00	5.00
6	4874.00	33.7 AV	54.0	-20.3	1.33 H	269	28.70	5.00
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	2288.00	55.7 PK	74.0	-18.3	1.40 V	199	55.80	-0.10
2	2288.00	52.6 AV	54.0	-1.4	1.40 V	199	52.70	-0.10
3	*2437.00	112.8 PK			1.37 V	175	81.60	31.20
4	*2437.00	103.5 AV			1.37 V	175	72.30	31.20
5	4874.00	48.0 PK	74.0	-26.0	1.13 V	69	43.00	5.00
6	4874.00	35.4 AV	54.0	-18.6	1.13 V	69	30.40	5.00

REMARKS:

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

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	2288.00	51.4 PK	74.0	-22.6	1.00 H	214	51.50	-0.10
2	2288.00	47.7 AV	54.0	-6.3	1.00 H	214	47.80	-0.10
3	*2462.00	103.2 PK			1.04 H	316	71.90	31.30
4	*2462.00	92.9 AV			1.04 H	316	61.60	31.30
5	2483.50	58.6 PK	74.0	-15.4	1.29 H	13	27.20	31.40
6	2483.50	45.5 AV	54.0	-8.5	1.29 H	13	14.10	31.40
7	4924.00	46.8 PK	74.0	-27.2	1.05 H	77	41.60	5.20
8	4924.00	33.9 AV	54.0	-20.1	1.05 H	77	28.70	5.20
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	2288.00	55.4 PK	74.0	-18.6	1.29 V	214	55.50	-0.10
2	2288.00	51.4 AV	54.0	-2.6	1.29 V	214	51.50	-0.10
3	*2462.00	111.0 PK			1.60 V	189	79.70	31.30
4	*2462.00	101.2 AV			1.60 V	189	69.90	31.30
5	2483.50	72.7 PK	74.0	-1.3	1.15 V	213	41.30	31.40
6	2483.50	52.3 AV	54.0	-1.7	1.15 V	213	20.90	31.40
7	4924.00	47.8 PK	74.0	-26.2	1.14 V	78	42.60	5.20
8	4924.00	34.2 AV	54.0	-19.8	1.14 V	78	29.00	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)
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) 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	2288.00	50.9 PK	74.0	-23.1	1.00 H	208	51.00	-0.10
2	2288.00	46.9 AV	54.0	-7.1	1.00 H	208	47.00	-0.10
3	2390.00	64.8 PK	74.0	-9.2	1.09 H	19	33.80	31.00
4	2390.00	45.9 AV	54.0	-8.1	1.09 H	19	14.90	31.00
5	*2422.00	95.6 PK			1.03 H	119	64.40	31.20
6	*2422.00	87.0 AV			1.03 H	119	55.80	31.20
7	4844.00	46.6 PK	74.0	-27.4	1.06 H	44	41.60	5.00
8	4844.00	33.7 AV	54.0	-20.3	1.06 H	44	28.70	5.00
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	2288.00	55.0 PK	74.0	-19.0	1.02 V	209	55.10	-0.10
2	2288.00	50.2 AV	54.0	-3.8	1.02 V	209	50.30	-0.10
3	2390.00	72.3 PK	74.0	-1.7	1.00 V	212	41.30	31.00
4	2390.00	51.9 AV	54.0	-2.1	1.00 V	212	20.90	31.00
5	*2422.00	105.3 PK			1.38 V	182	74.10	31.20
6	*2422.00	95.1 AV			1.38 V	182	63.90	31.20
7	4844.00	47.6 PK	74.0	-26.4	1.20 V	56	42.60	5.00
8	4844.00	34.0 AV	54.0	-20.0	1.20 V	56	29.00	5.00

REMARKS:

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

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	2288.00	51.6 PK	74.0	-22.4	1.00 H	214	51.70	-0.10
2	2288.00	47.5 AV	54.0	-6.5	1.00 H	214	47.60	-0.10
3	2390.00	55.0 PK	74.0	-19.0	1.19 H	63	24.00	31.00
4	2390.00	44.6 AV	54.0	-9.4	1.19 H	63	13.60	31.00
5	*2437.00	97.8 PK			1.24 H	288	66.60	31.20
6	*2437.00	88.4 AV			1.24 H	288	57.20	31.20
7	2483.50	55.3 PK	74.0	-18.7	1.05 H	47	23.90	31.40
8	2483.50	45.4 AV	54.0	-8.6	1.05 H	47	14.00	31.40
9	4874.00	46.7 PK	74.0	-27.3	1.23 H	66	41.70	5.00
10	4874.00	33.5 AV	54.0	-20.5	1.23 H	66	28.50	5.00
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	2288.00	55.6 PK	74.0	-18.4	1.44 V	213	55.70	-0.10
2	2288.00	51.8 AV	54.0	-2.2	1.44 V	213	51.90	-0.10
3	2390.00	63.3 PK	74.0	-10.7	1.15 V	167	32.30	31.00
4	2390.00	47.4 AV	54.0	-6.6	1.15 V	167	16.40	31.00
5	*2437.00	107.8 PK			1.16 V	181	76.60	31.20
6	*2437.00	97.4 AV			1.16 V	181	66.20	31.20
7	2483.50	71.8 PK	74.0	-2.2	1.34 V	187	40.40	31.40
8	2483.50	52.3 AV	54.0	-1.7	1.34 V	187	20.90	31.40
9	4874.00	46.9 PK	74.0	-27.1	1.16 V	54	41.90	5.00
10	4874.00	34.0 AV	54.0	-20.0	1.16 V	54	29.00	5.00

REMARKS:

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

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	2288.00	49.3 PK	74.0	-24.7	1.00 H	213	49.40	-0.10
2	2288.00	44.8 AV	54.0	-9.2	1.00 H	213	44.90	-0.10
3	*2452.00	96.2 PK			1.05 H	129	64.90	31.30
4	*2452.00	86.8 AV			1.05 H	129	55.50	31.30
5	2483.50	55.4 PK	74.0	-18.6	1.02 H	190	24.00	31.40
6	2483.50	44.8 AV	54.0	-9.2	1.02 H	190	13.40	31.40
7	4904.00	46.7 PK	74.0	-27.3	1.12 H	36	41.60	5.10
8	4904.00	32.9 AV	54.0	-21.1	1.12 H	36	27.80	5.10
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	2288.00	52.7 PK	74.0	-21.3	1.43 V	214	52.80	-0.10
2	2288.00	48.9 AV	54.0	-5.1	1.43 V	214	49.00	-0.10
3	*2452.00	104.0 PK			1.39 V	202	72.70	31.30
4	*2452.00	94.0 AV			1.39 V	202	62.70	31.30
5	**2483.50**	**72.9 PK**	**74.0**	**-1.1**	**1.15 V**	**204**	**41.50**	**31.40**
6	2483.50	52.1 AV	54.0	-1.9	1.15 V	204	20.70	31.40
7	4904.00	47.7 PK	74.0	-26.3	1.16 V	54	42.60	5.10
8	4904.00	33.8 AV	54.0	-20.2	1.16 V	54	28.70	5.10

REMARKS:

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

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	57.12	31.7 QP	40.0	-8.3	2.00 H	54	46.30	-14.60
2	125.17	36.2 QP	43.5	-7.3	1.51 H	220	52.00	-15.80
3	249.60	33.0 QP	46.0	-13.0	1.00 H	99	47.20	-14.20
4	500.42	36.7 QP	46.0	-9.3	1.26 H	190	45.00	-8.30
5	624.85	29.6 QP	46.0	-16.4	1.00 H	283	35.10	-5.50
6	900.94	36.6 QP	46.0	-9.4	1.26 H	156	37.00	-0.40
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	59.06	37.4 QP	40.0	-2.6	1.24 V	16	52.10	-14.70
2	125.17	37.9 QP	43.5	-5.6	1.24 V	51	53.70	-15.80
3	249.60	34.6 QP	46.0	-11.4	1.00 V	87	48.80	-14.20
4	374.04	28.6 QP	46.0	-17.4	1.24 V	117	39.30	-10.70
5	500.42	37.4 QP	46.0	-8.6	1.00 V	61	45.70	-8.30
6	675.40	32.5 QP	46.0	-13.5	1.24 V	267	37.30	-4.80

REMARKS:

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

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	100288	Apr. 24, 2014	Apr. 23, 2015
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 27, 2013	Dec. 26, 2014
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 23, 2013	Dec. 22, 2014
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 08, 2013	Jul. 07, 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 HwaYa Shielded Room 2.

3. The VCCI Site Registration No. is C-2047.

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.

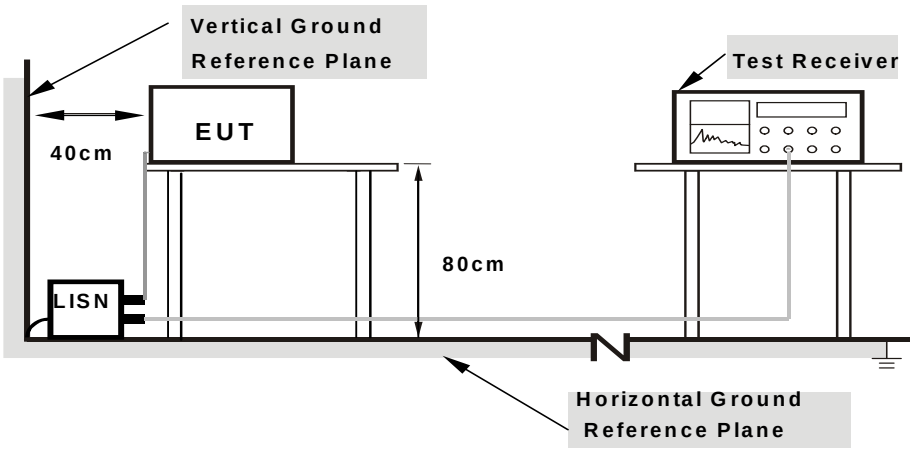
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

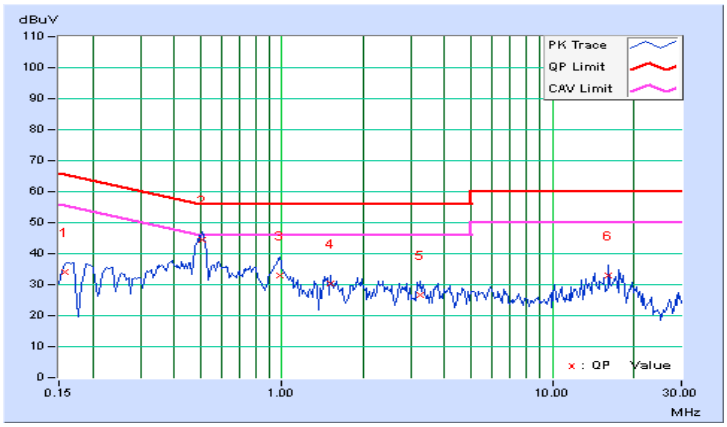
CONDUCTED WORST-CASE DATA：802.11g

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	0.15781	0.27	33.75	25.81	34.02	26.08	65.58	55.58	-31.56	-29.50
2	**0.50547**	**0.31**	**44.07**	**33.31**	**44.38**	**33.62**	**56.00**	**46.00**	**-11.62**	**-12.38**
3	0.98203	0.34	32.59	20.56	32.93	20.90	56.00	46.00	-23.07	-25.10
4	1.50781	0.35	30.20	20.64	30.55	20.99	56.00	46.00	-25.45	-25.01
5	3.26172	0.40	26.40	18.09	26.80	18.49	56.00	46.00	-29.20	-27.51
6	16.16797	0.54	32.48	26.85	33.02	27.39	60.00	50.00	-26.98	-22.61

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.

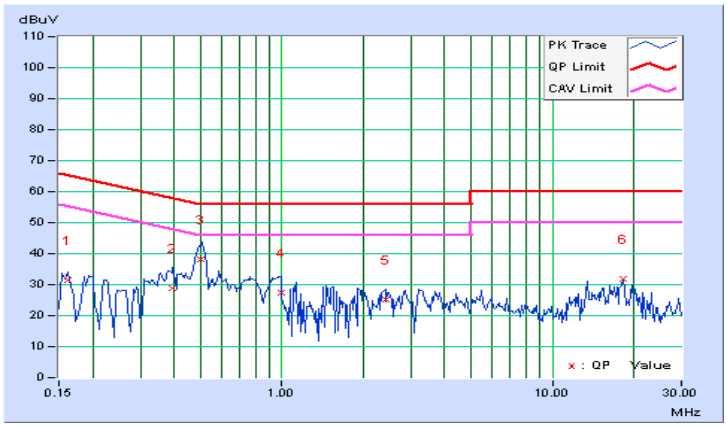


PHASE	Line 2	6dB BANDWIDTH	9kHz

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	0.16172	0.27	31.30	20.68	31.57	20.95	65.38	55.38	-33.81	-34.43
2	0.39609	0.30	28.74	12.67	29.04	12.97	57.93	47.93	-28.90	-34.97
3	0.50000	0.31	37.68	22.78	37.99	23.09	56.00	46.00	-18.01	-22.91
4	0.99766	0.34	27.02	15.15	27.36	15.49	56.00	46.00	-28.64	-30.51
5	2.41016	0.38	24.89	14.22	25.27	14.60	56.00	46.00	-30.73	-31.40
6	18.24219	0.61	31.13	27.68	31.74	28.29	60.00	50.00	-28.26	-21.71

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.

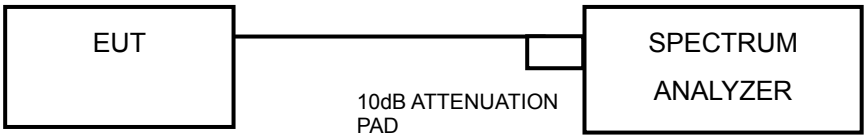


4.3 6dB BANDWIDTH MEASUREMENT

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	10.11	10.13	0.5	PASS
6	2437	10.10	10.11	0.5	PASS
11	2462	10.11	10.12	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.39	16.41	0.5	PASS
6	2437	16.39	16.40	0.5	PASS
11	2462	16.39	16.40	0.5	PASS

802.11n (20MHz)

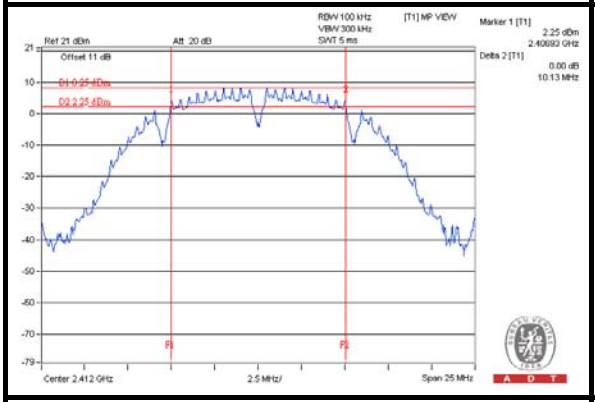
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.62	17.61	0.5	PASS
6	2437	17.60	17.60	0.5	PASS
11	2462	17.61	17.63	0.5	PASS

802.11n (40MHz)

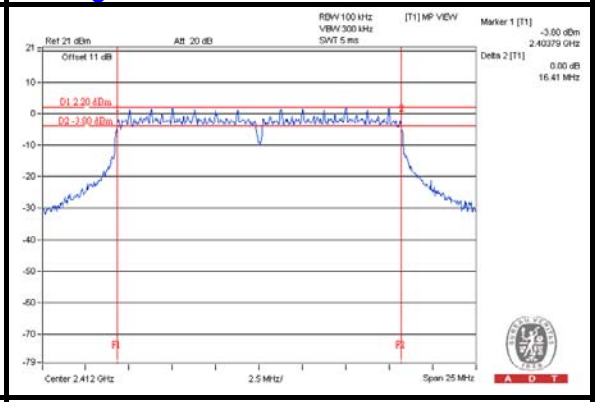
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.44	36.47	0.5	PASS
6	2437	36.44	36.44	0.5	PASS
9	2452	36.45	36.46	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

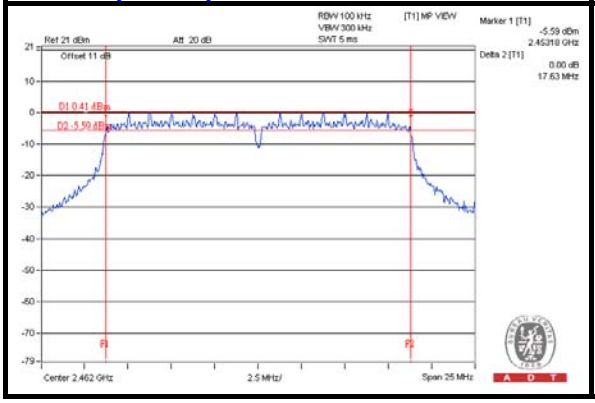
802.11b



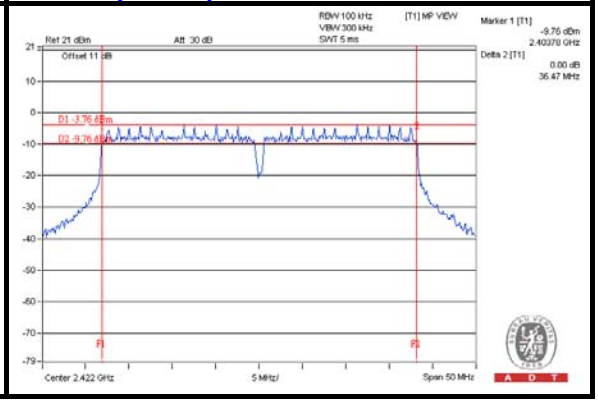
802.11g



802.11n (20MHz)



802.11n (40MHz)



4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

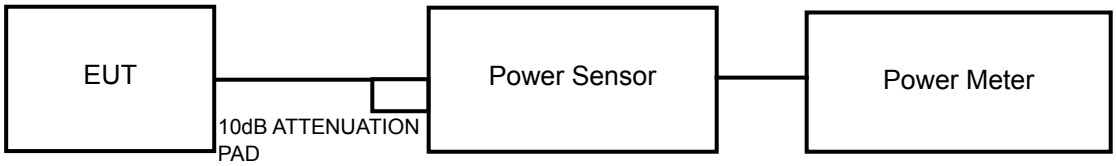
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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	22.32	21.38	308.012	24.89	30	PASS
6	2437	20.19	19.77	199.314	23.00	30	PASS
11	2462	19.91	19.74	192.138	22.84	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	21.87	21.86	307.277	24.88	30	PASS
6	2437	23.73	22.71	**422.686**	26.26	30	PASS
11	2462	21.63	20.89	268.290	24.29	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	21.50	22.07	302.319	24.80	30	PASS
6	2437	23.39	22.88	412.362	26.15	30	PASS
11	2462	21.63	21.22	277.980	24.44	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	21.45	20.19	244.109	23.88	30	PASS
6	2437	22.28	21.80	320.400	25.06	30	PASS
9	2452	19.34	19.11	167.371	22.24	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	20.21	19.28	189.677	22.78
6	2437	17.87	17.60	118.779	20.75
11	2462	17.61	17.51	114.041	20.57

802.11g

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	15.10	15.23	65.702	18.18
6	2437	17.03	16.52	95.341	19.79
11	2462	14.50	14.22	54.608	17.37

802.11n (20MHz)

CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	14.99	14.58	60.258	17.80
6	2437	16.99	16.41	93.755	19.72
11	2462	14.11	13.72	49.313	16.93

802.11n (40MHz)

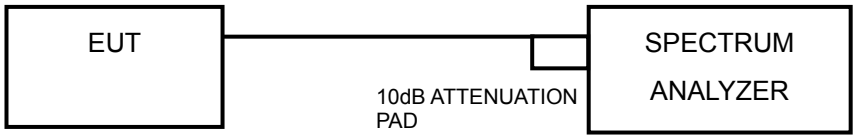
CHAN.	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	12.03	12.10	32.177	15.08
6	2437	14.45	13.69	51.249	17.10
9	2452	11.02	10.99	25.207	14.02

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	-5.84	3.01	-2.83	7.55	PASS
	6	2437	-7.65	3.01	-4.64	7.55	PASS
	11	2462	-7.79	3.01	-4.78	7.55	PASS
1	1	2412	-5.59	3.01	-2.58	7.55	PASS
	6	2437	-8.71	3.01	-5.70	7.55	PASS
	11	2462	-7.70	3.01	-4.69	7.55	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2$]=6.45 dBi > 6dBi , so the power density limit shall be reduced to 8-(6.45-6) = 7.55dBm.

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	-12.53	3.01	-9.52	7.55	PASS
	6	2437	-9.47	3.01	-6.46	7.55	PASS
	11	2462	-12.99	3.01	-9.98	7.55	PASS
1	1	2412	-12.40	3.01	-9.39	7.55	PASS
	6	2437	-10.68	3.01	-7.67	7.55	PASS
	11	2462	-12.85	3.01	-9.84	7.55	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2$]=6.45 dBi > 6dBi , so the power density limit shall be reduced to 8-(6.45-6) = 7.55dBm.

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	-12.73	3.01	-9.72	7.55	PASS
	6	2437	-9.20	3.01	-6.19	7.55	PASS
	11	2462	-13.58	3.01	-10.57	7.55	PASS
1	1	2412	-13.18	3.01	-10.17	7.55	PASS
	6	2437	-9.88	3.01	-6.87	7.55	PASS
	11	2462	-14.09	3.01	-11.08	7.55	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2$]=6.45 dBi > 6dBi , so the power density limit shall be reduced to 8-(6.45-6) = 7.55dBm.

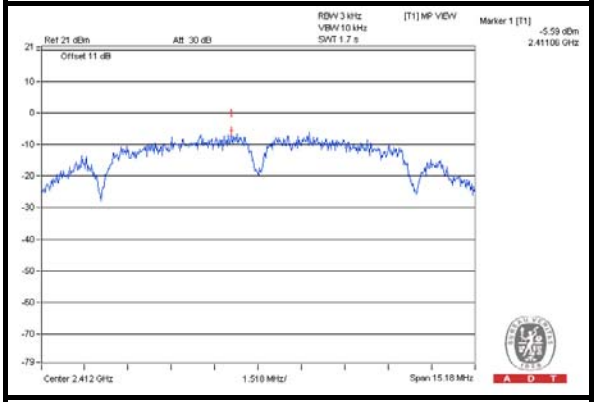
802.11n (40MHz)

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	-18.24	3.01	-15.23	7.55	PASS
	6	2437	-15.03	3.01	-12.02	7.55	PASS
	9	2452	-18.42	3.01	-15.41	7.55	PASS
1	3	2422	-17.75	3.01	-14.74	7.55	PASS
	6	2437	-16.59	3.01	-13.58	7.55	PASS
	9	2452	-19.33	3.01	-16.32	7.55	PASS

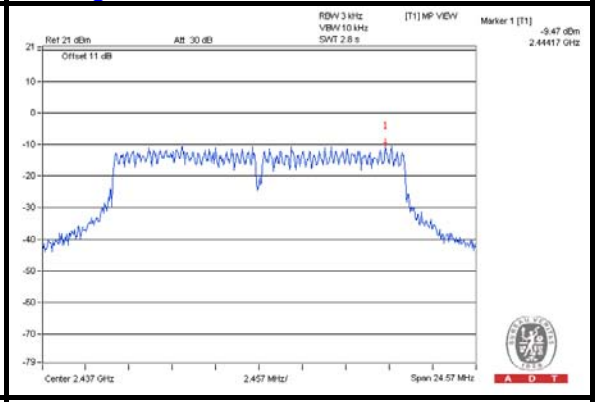
NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2$]=6.45 dBi > 6dBi , so the power density limit shall be reduced to 8-(6.45-6) = 7.55dBm.

SPECTRUM PLOT OF WORST VALUE

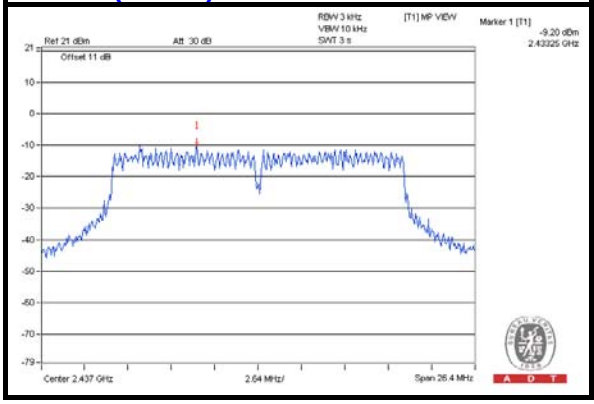
802.11b



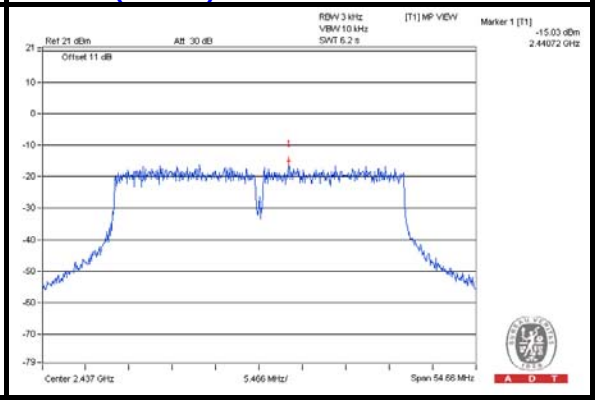
802.11g



802.11n (20MHz)



802.11n (40MHz)

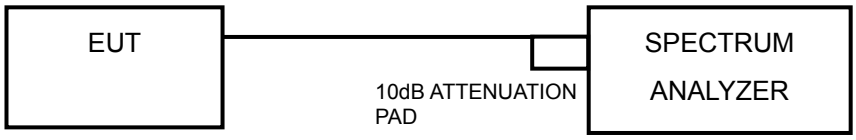


4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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. Ensure that the number of measurement points ≥ span/RBW
4. According to measurement points to set differ measurement span.
5. Detector = peak.
6. Trace Mode = max hold.
7. Sweep = auto couple.

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

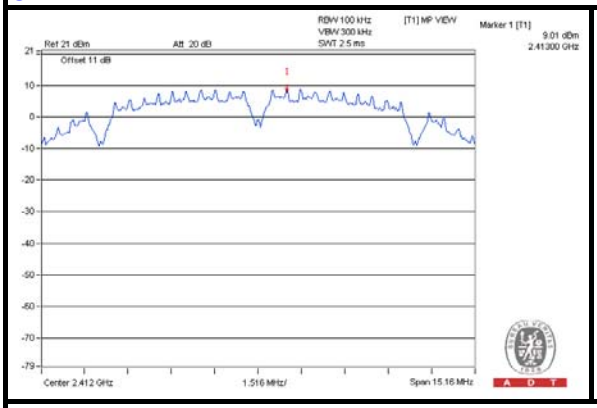
The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.

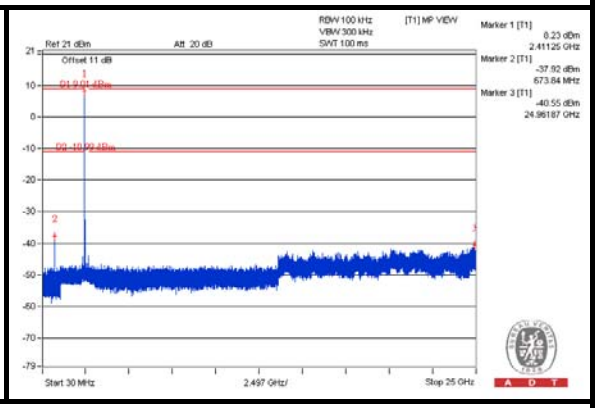
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

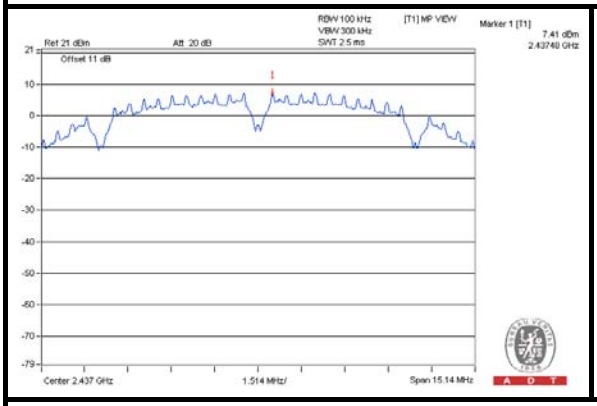
CHAIN 0

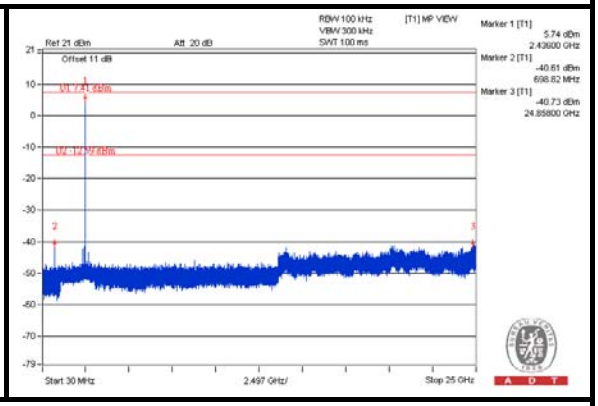
CH 1



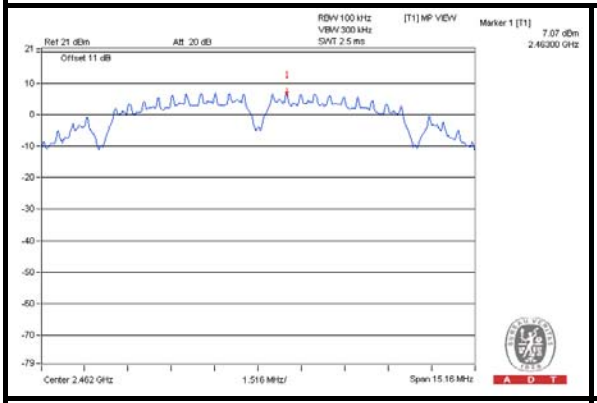


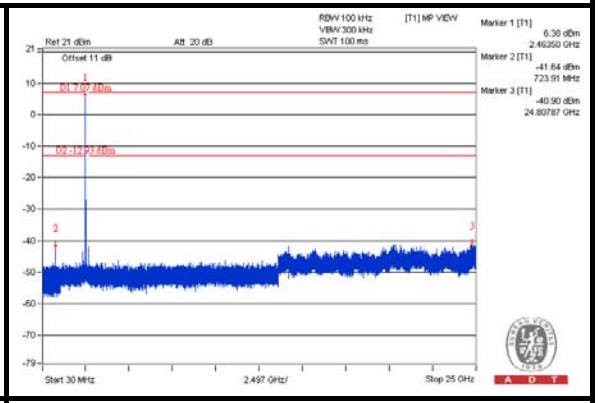
CH 6



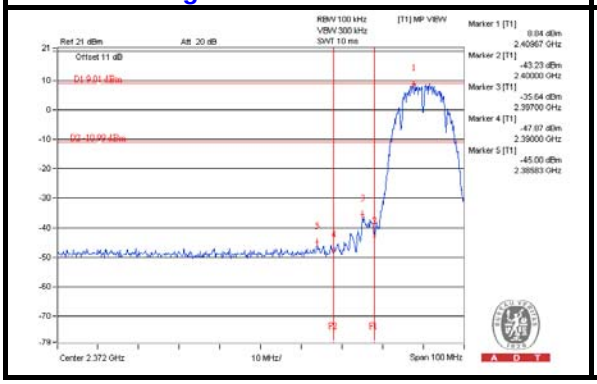


CH 11

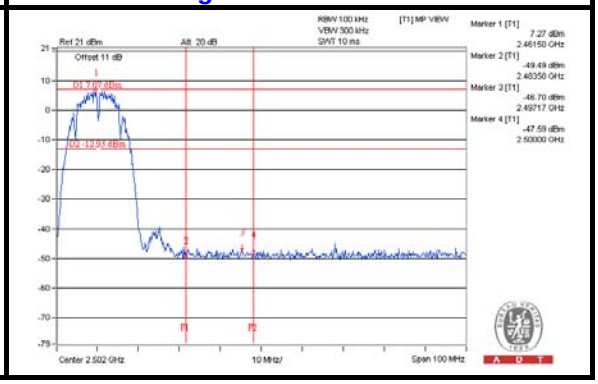




CH 1 Band edge

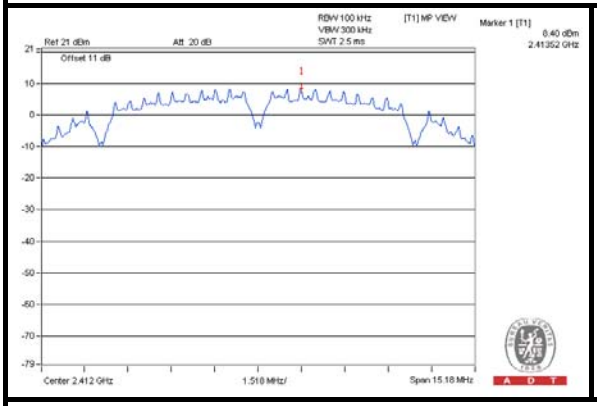


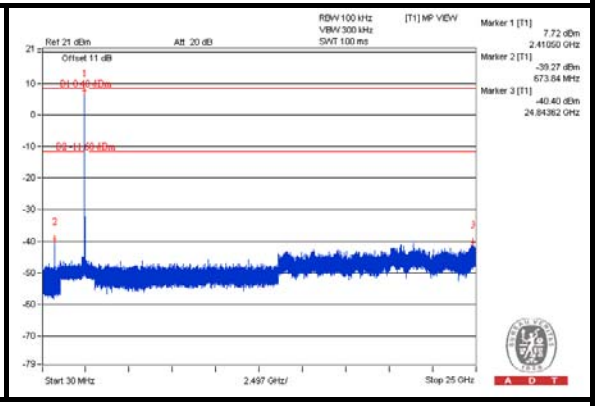
CH 11 Band edge



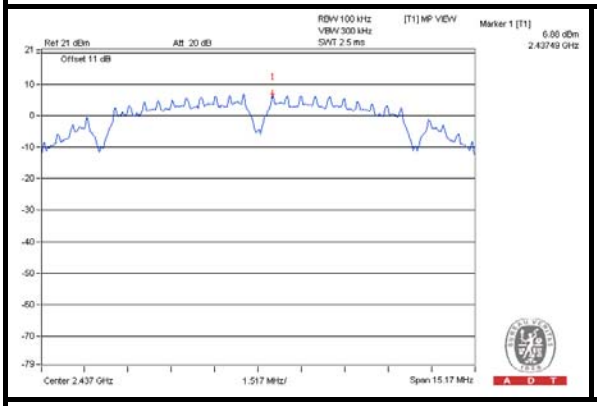
CHAIN 1

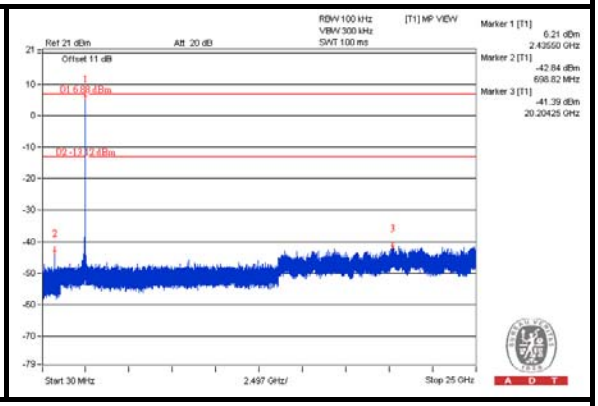
CH 1



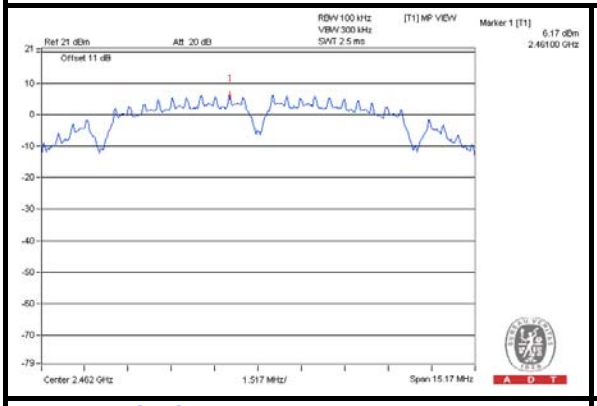


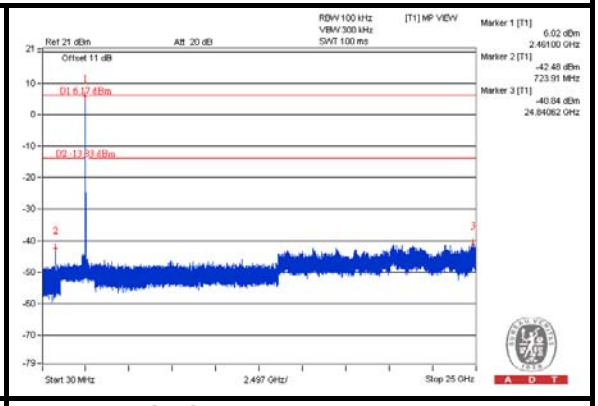
CH 6



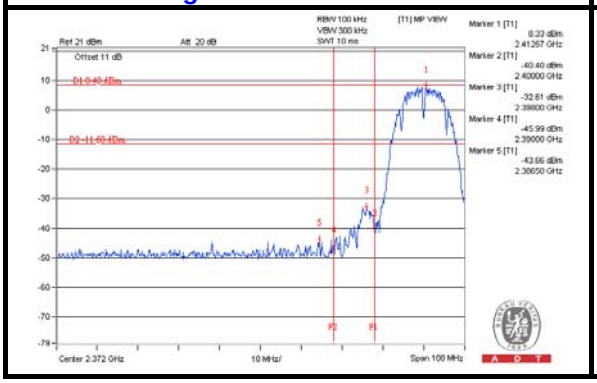


CH 11

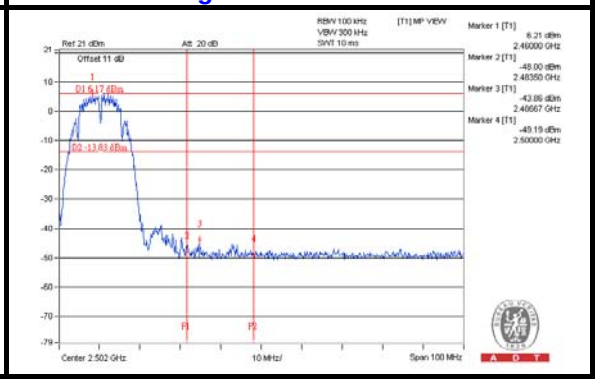




CH 1 Band edge

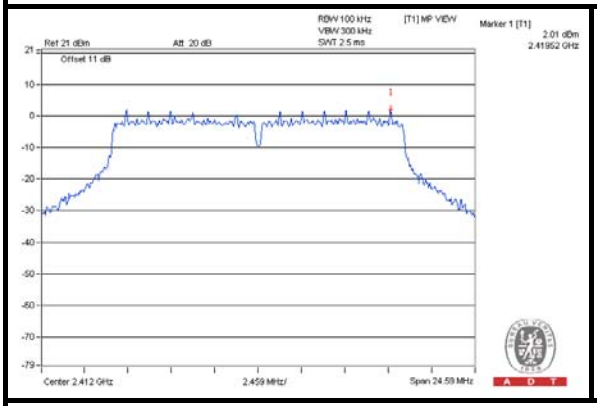


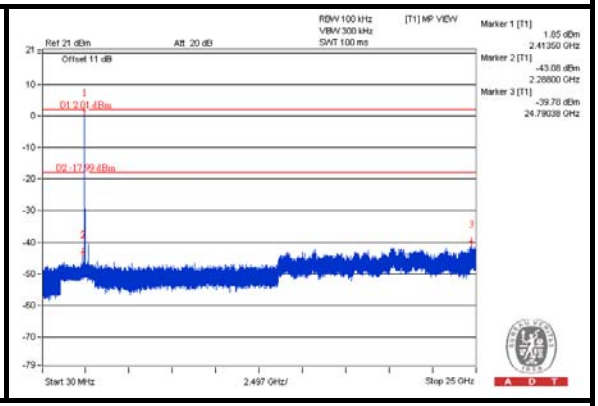
CH 11 Band edge



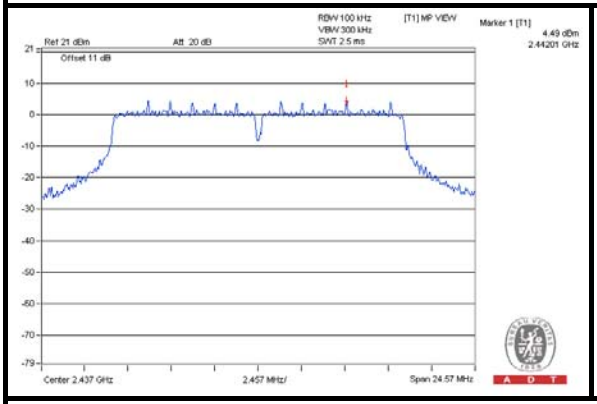
802.11g
CHAIN 0

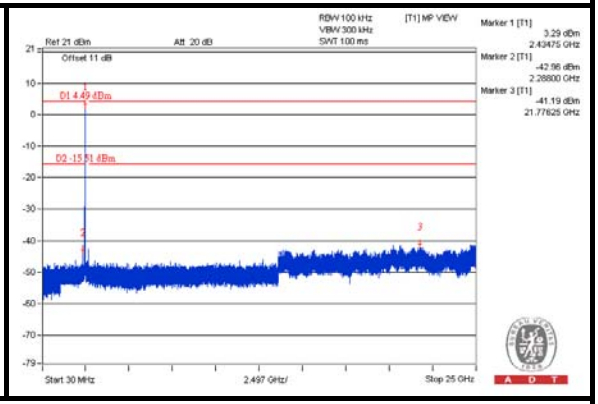
CH 1



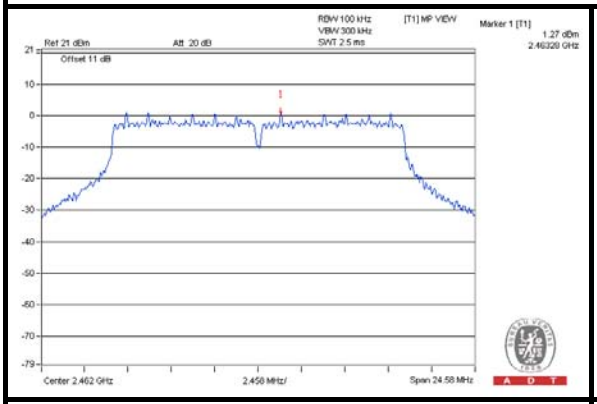


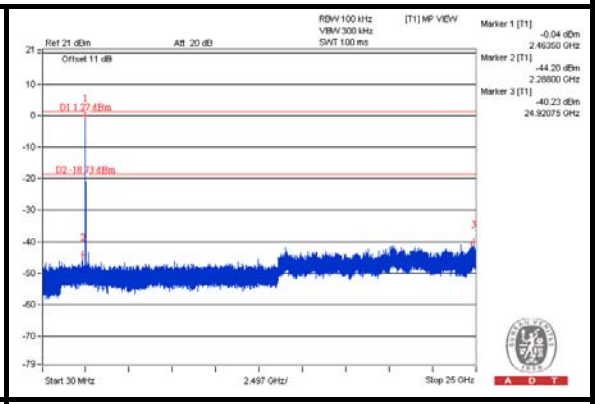
CH 6



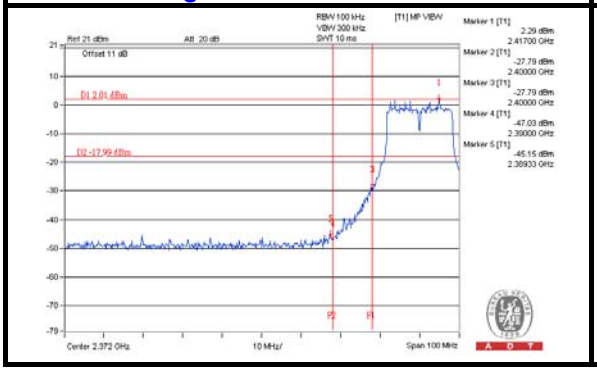


CH 11

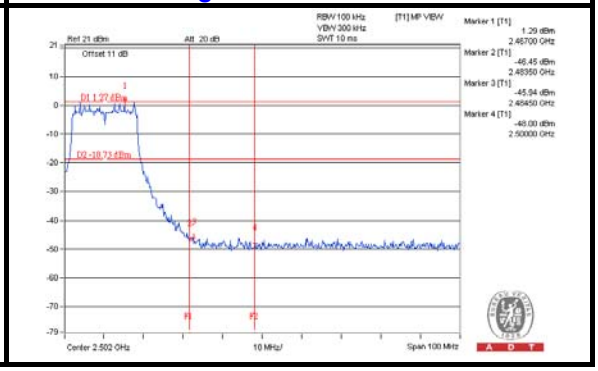




CH 1 Band edge

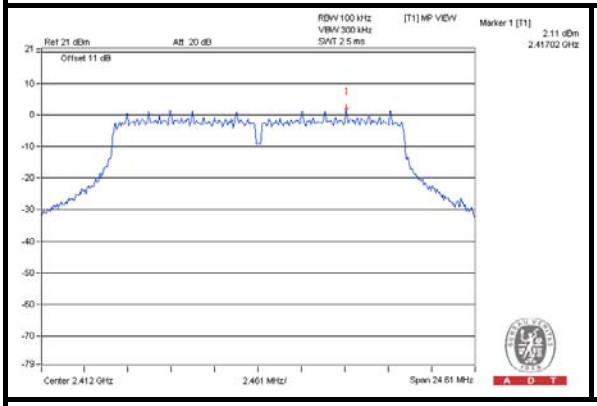


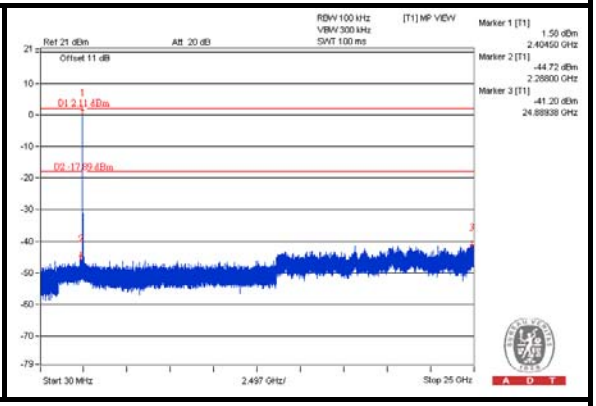
CH 11 Band edge



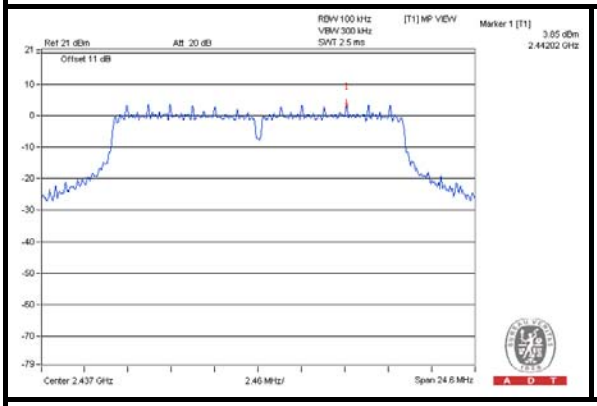
CHAIN 1

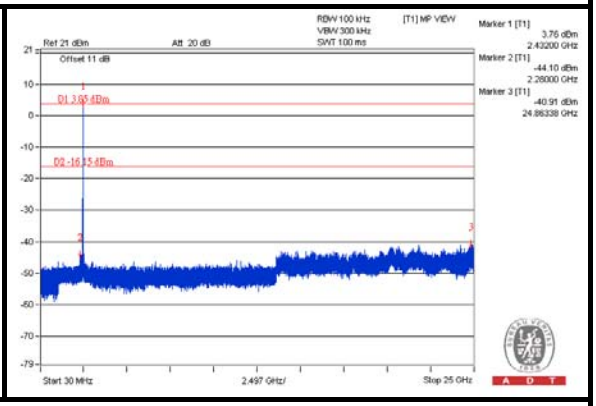
CH 1



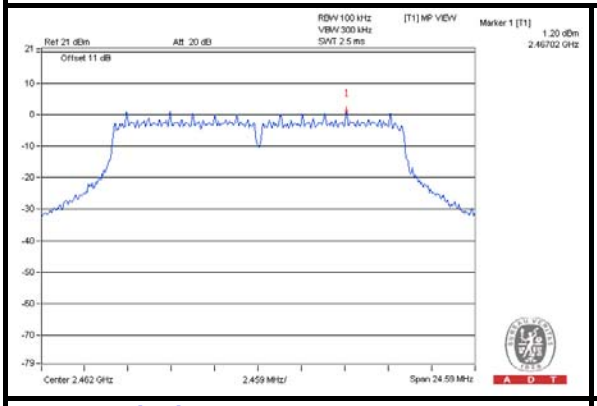


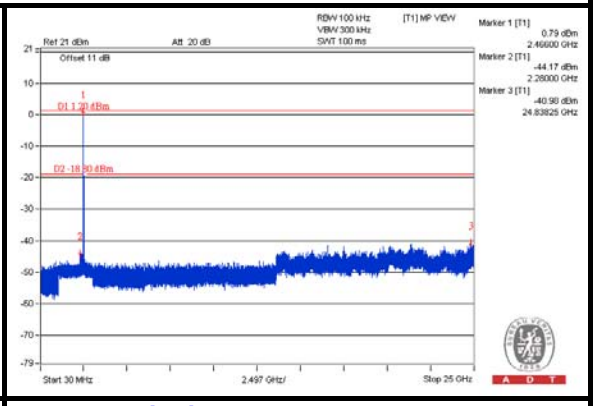
CH 6



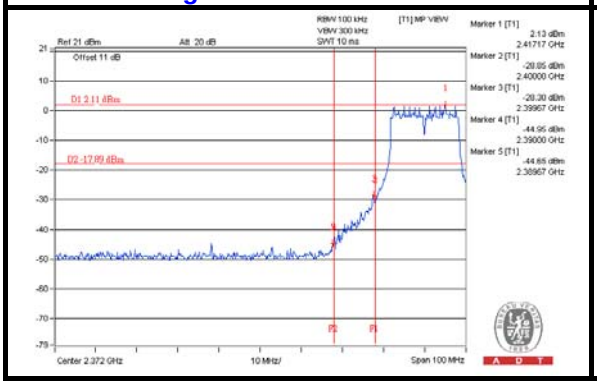


CH 11

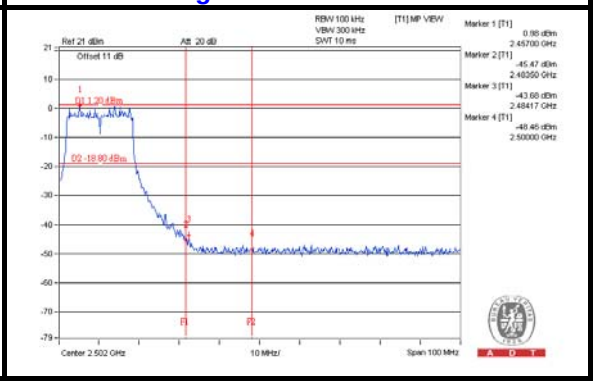




CH 1 Band edge

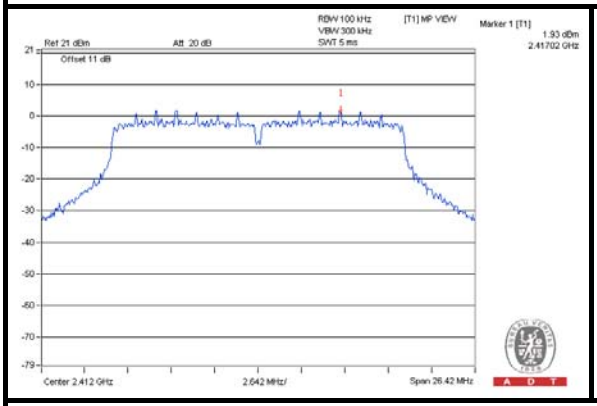


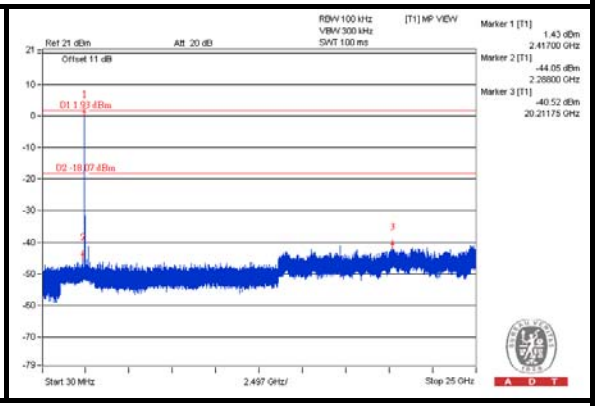
CH 11 Band edge



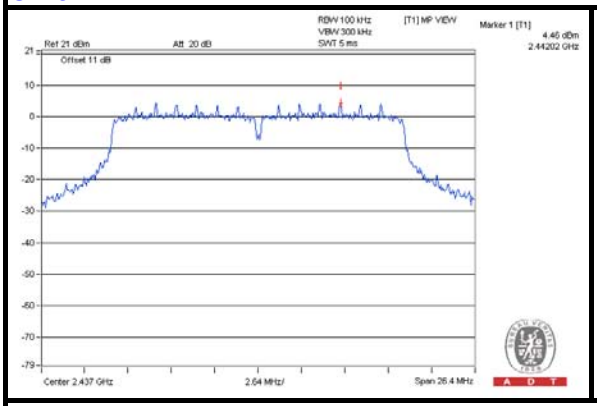
802.11n (20MHz)
CHAIN 0

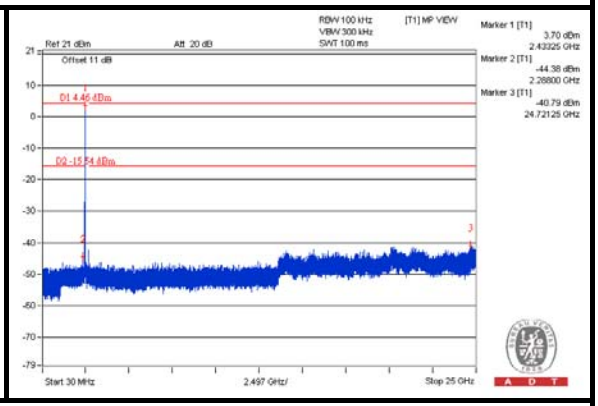
CH 1



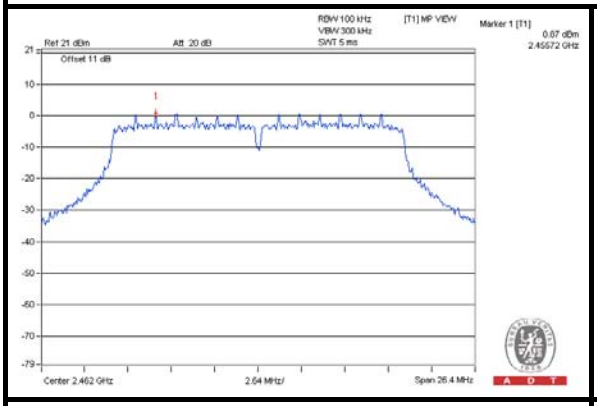


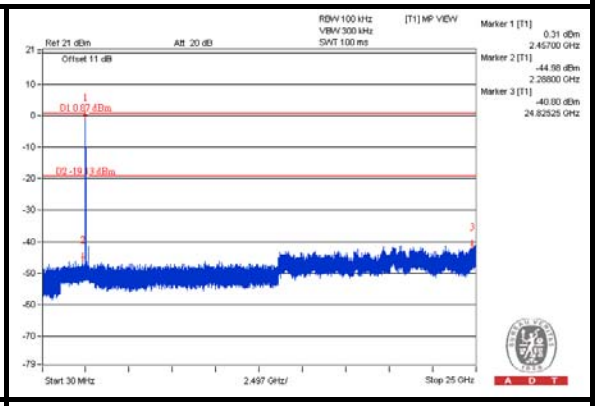
CH 6



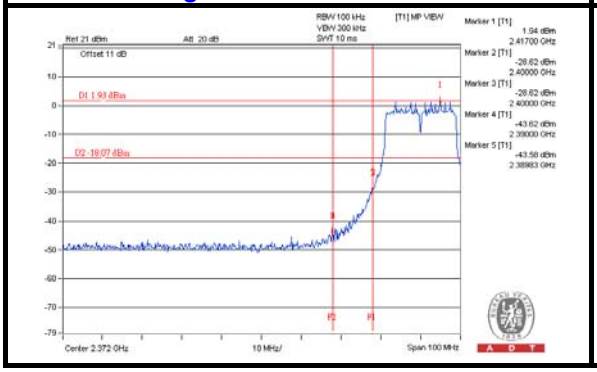


CH 11

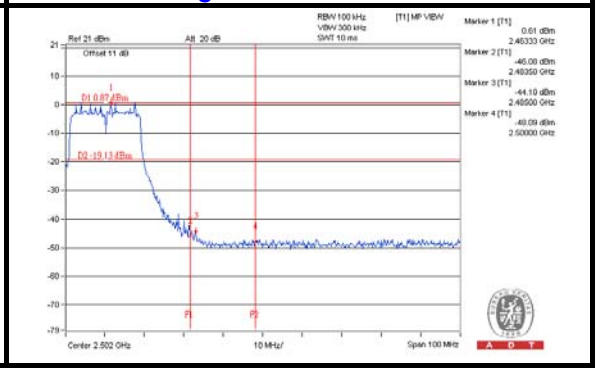




CH 1 Band edge

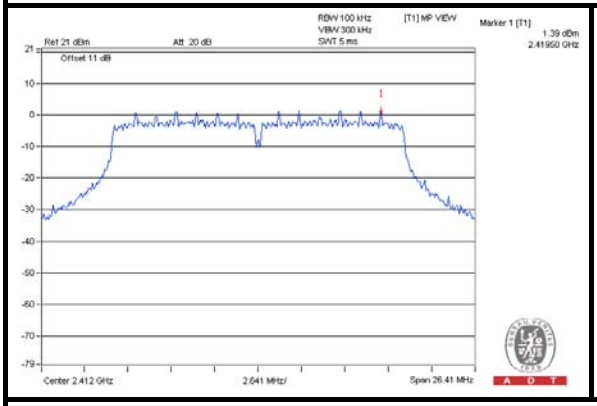


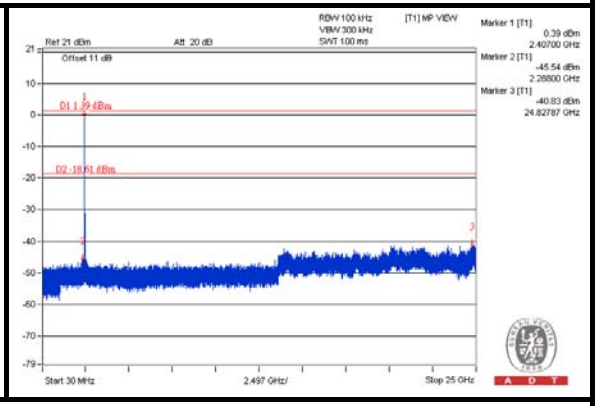
CH 11 Band edge



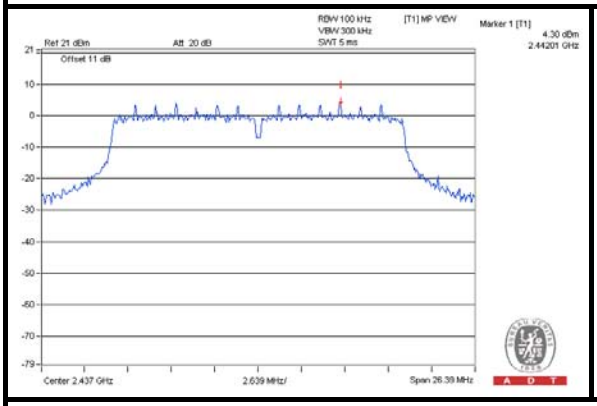
CHAIN 1

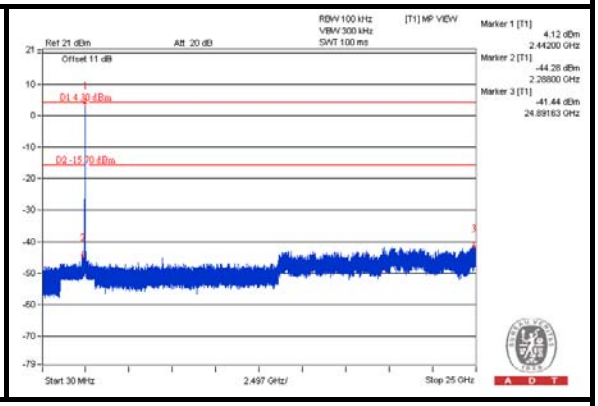
CH 1



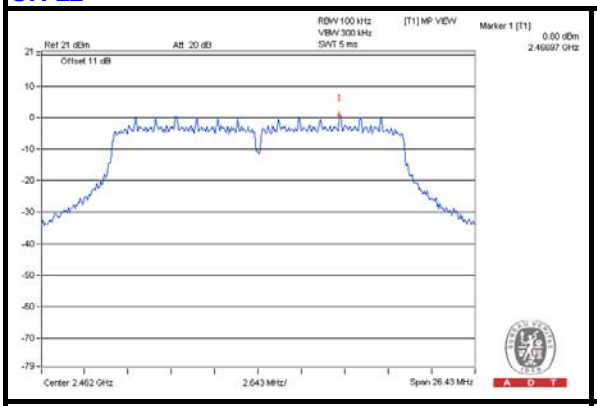


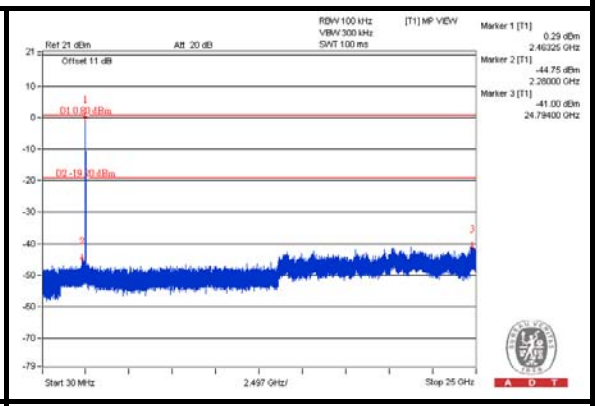
CH 6



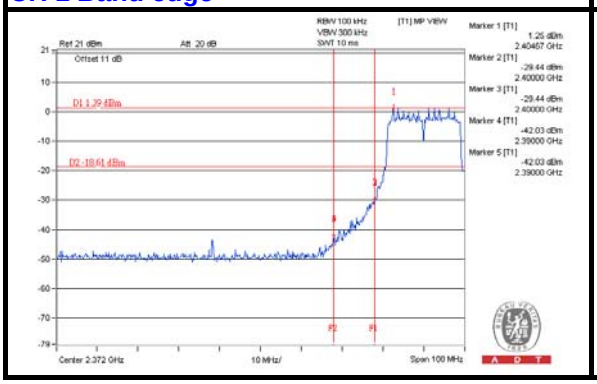


CH 11

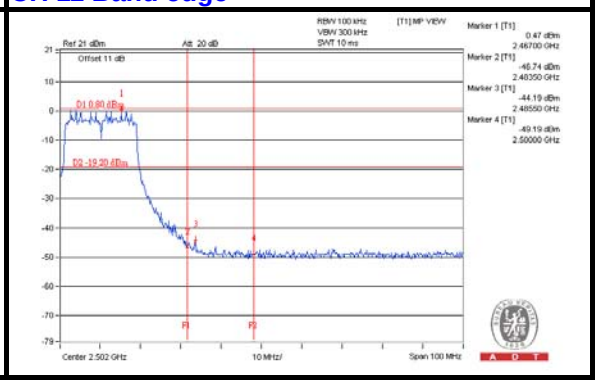




CH 1 Band edge

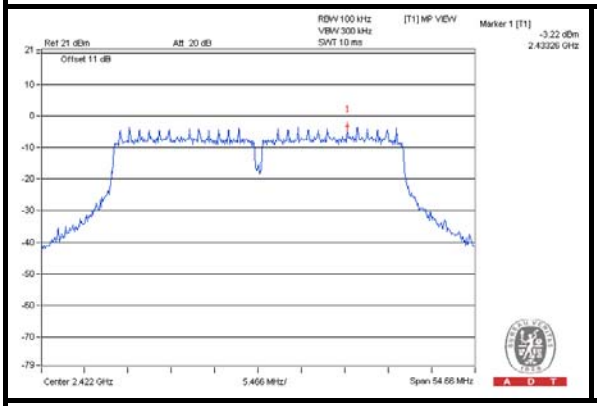


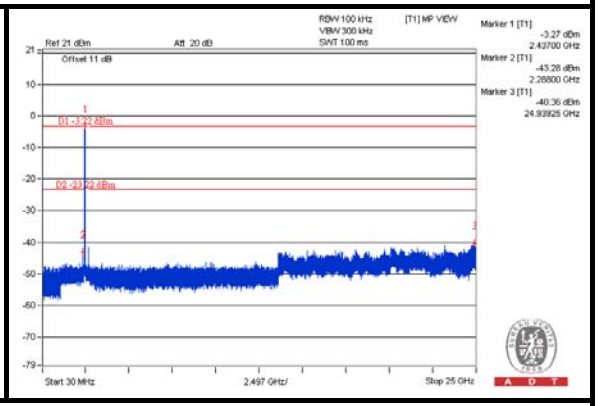
CH 11 Band edge



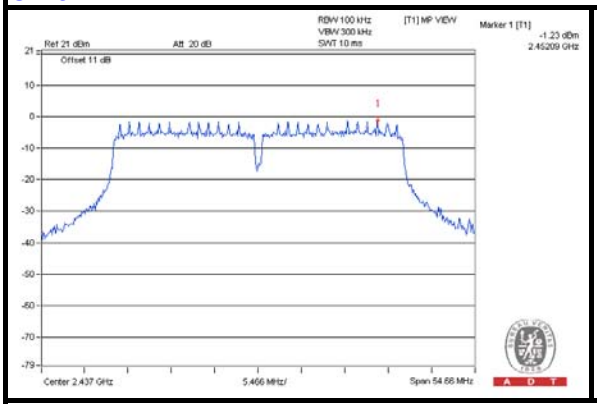
802.11n (40MHz)
CHAIN 0

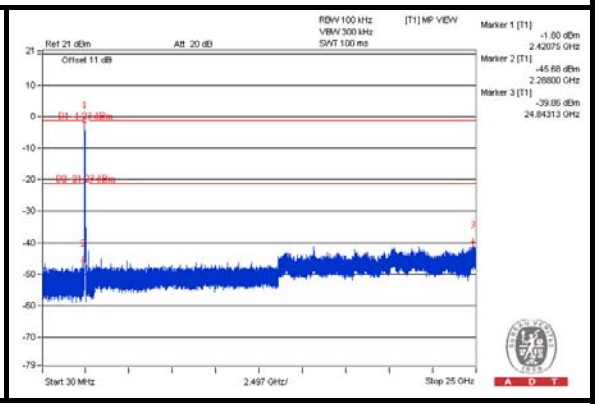
CH 3



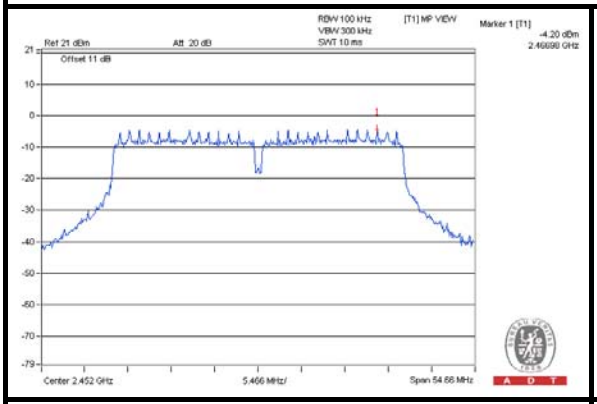


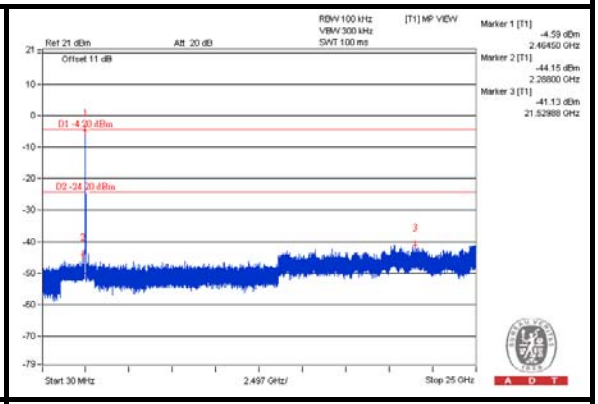
CH 6



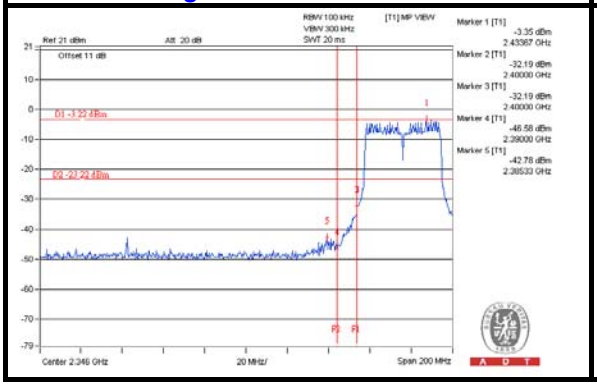


CH 9

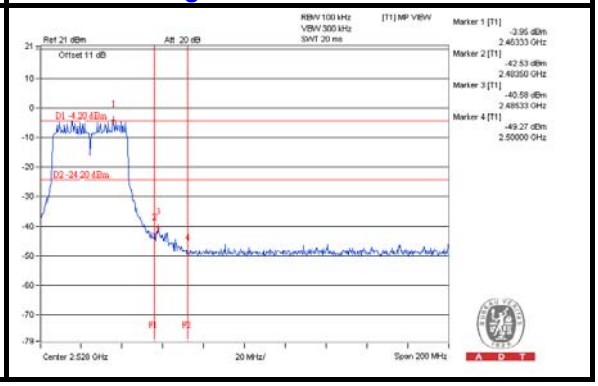




CH 3 Band edge

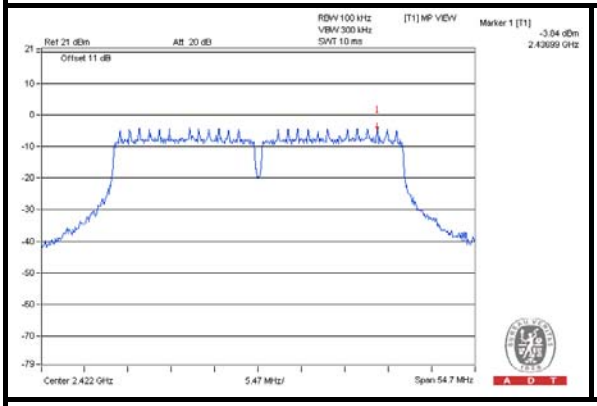


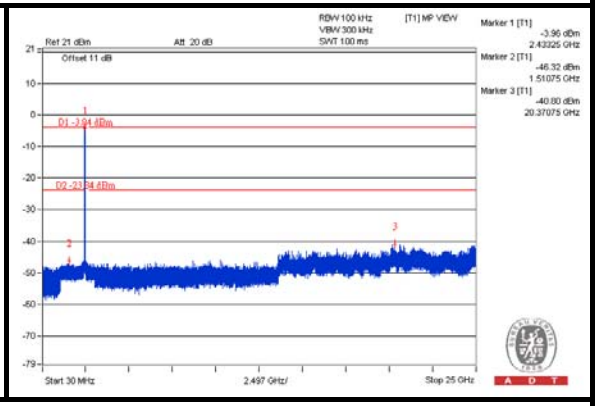
CH 9 Band edge



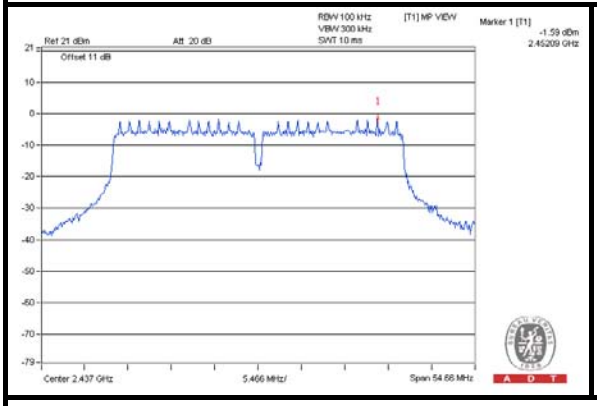
CHAIN 1

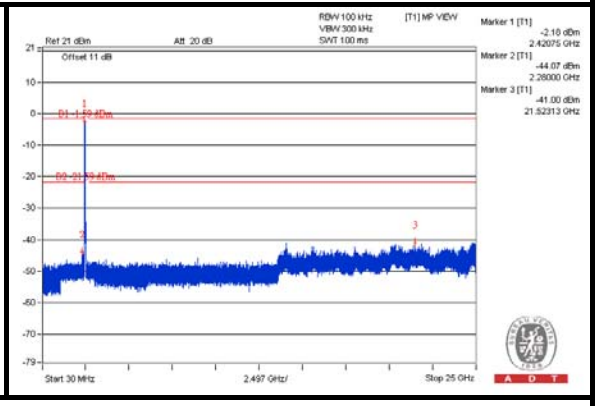
CH 3



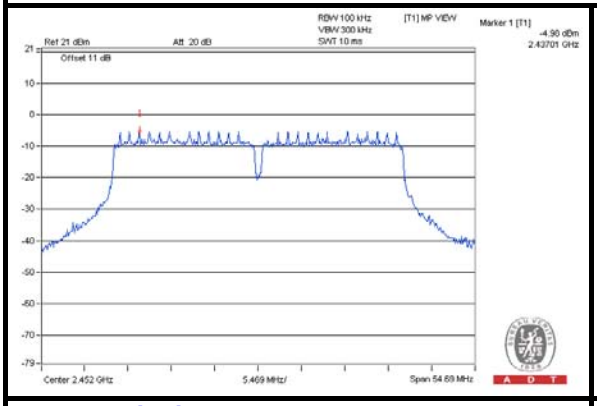


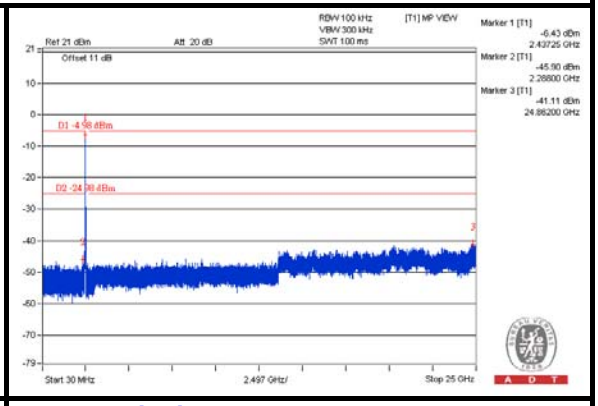
CH 6



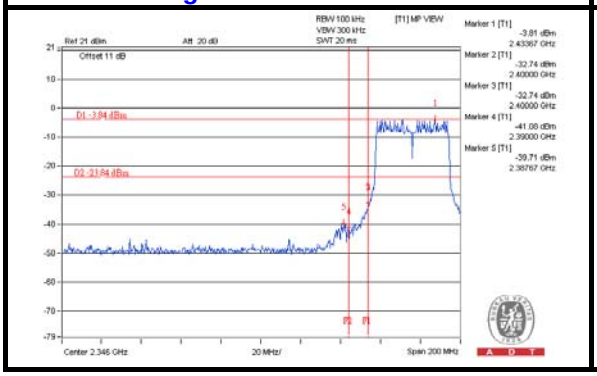


CH 9

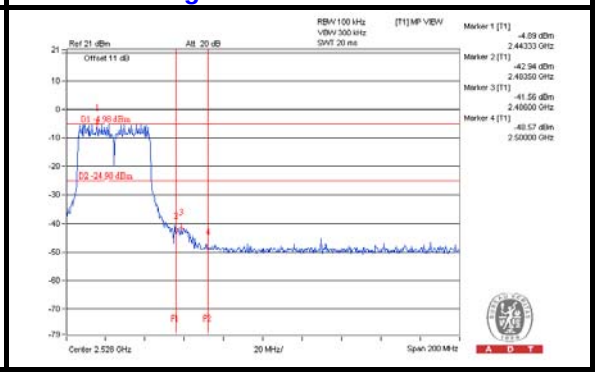




CH 3 Band edge



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---