FCC TEST REPORT (15.247)

REPORT NO.: RF990309L10

MODEL NO.: FORTIAP-220A

RECEIVED: Mar. 09, 2010

TESTED: Mar. 18 ~ Mar. 24, 2010

ISSUED: Mar. 26, 2010

APPLICANT: Fortinet Inc.

ADDRESS: 1090 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 Tsuen, Lin Kou Hsiang, Taipei Hsien 244, 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.

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1. CERTIFICATION

PRODUCT: FORTIAP-220A

MODEL NO.: FORTIAP-220A

BRAND: Fortinet

APPLICANT: Fortinet Inc.

TEST SAMPLE: ENGINEERING SAMPLE

TESTED: Mar. 18 ~ Mar. 24, 2010

STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.4-2003

The above equipment (Model: FORTIAP-220A) 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 : Andrea Hsia , **DATE:** Mar. 26, 2010
Andrea Hsia / Specialist

TECHNICAL ACCEPTANCE : Long Chen , **DATE:** Mar. 26, 2010
Responsible for RF Long Chen / Senior Engineer

APPROVED BY : Gary Chang , **DATE:** Mar. 26, 2010
Gary Chang / Assistant 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 AND LIMIT**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -11.18dB at 0.158MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 4283.50, 7386.00, 11490.00, 11510.00 & 11570.00MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is UFL 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	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.19 dB
	200MHz ~1000MHz	3.21 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

PRODUCT	FORTIAP-220A
MODEL NO.	FORTIAP-220A
FCC ID	TVE-220101
NOMINAL VOLTAGE	12Vdc
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 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps
OPERATING FREQUENCY	2.4GHz: 2412.0 ~ 2462.0MHz 5.0GHz: 5745.0 ~ 5825.0MHz
NUMBER OF CHANNEL	2.4GHz: 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) 5.0GHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	521.7mW for 2412.0 ~ 2462.0MHz 682.2mW for 5745.0 ~ 5825.0MHz
ANTENNA TYPE	2.4GHz: PIFA antenna with 0.636dBi gain (Right side) PIFA antenna with 0.879dBi gain (Left side) 5.0GHz: PIFA antenna with -0.720dBi gain (Right side) PIFA antenna with 4.237dBi gain (Left side)
ANTENNA CONNECTER	UFL
DATA CABLE	NA
I/O PORTS	RJ45
ACCESSORY DEVICES	AC Adapter

NOTE:

1. The EUT is a FORTIAP-220A. The functions of EUT listed as below:

	TEST STANDARD	REFERENCE REPORT
WLAN 802.11b/g, 802.11n	FCC Part 15, Subpart C (Section 15.247)	RF990309L10
WLAN 802.11a, 802.11n (5745~5825 MHz)		
WLAN 802.11a, 802.11n (5180~ 5240MHz)	FCC Part 15, Subpart E (Section 15.407)	RF990309L10-1

2. The frequency bands used in this EUT are listed as follows:

Frequency Band (MHz)	2412~2462	5180~5240	5745~5825
802.11b	√		
802.11g	√		
802.11a		√	√
802.11n (20MHz)	√	√	√
802.11n (40MHz)	√	√	√

3. 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
802.11a	2TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX

4. The EUT uses following adapters.

Adapter 1	
BRAND	LEADER ELECTRONICS INC.
MODEL	MU18-D120150-A1
INPUT POWER	100-240Vac, 0.6A, 50-60Hz
OUTPUT POWER	12Vdc, 1.5A
POEWR LINE	1.5 m non-shielded cable without core

Adapter 2	
BRAND	LEADER ELECTRONICS INC.
MODEL	MT18-Y120150-A1
INPUT POWER	120Vac, 0.5A, 60Hz
OUTPUT POWER	12Vdc, 1.5A
POEWR LINE	1.5 m non-shielded cable without core

5. The above EUT information was 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

FOR 2.4GHz:

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
1	2422MHz	5	2442MHz
2	2427MHz	6	2447MHz
3	2432MHz	7	2452MHz
4	2437MHz		

FOR 5.0GHz (5725 ~ 5850MHz):

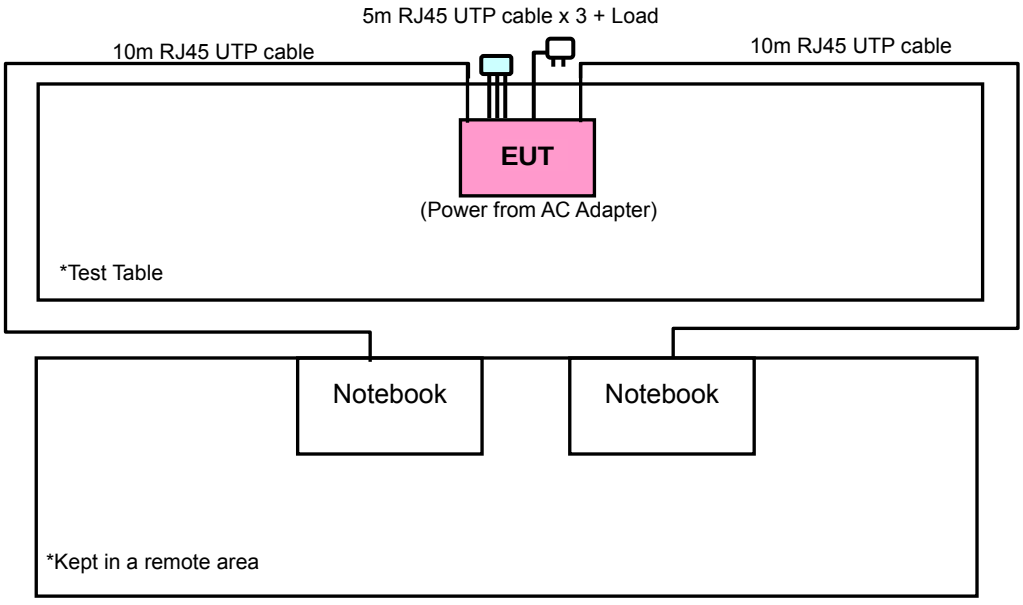
5 channels are provided for 802.11a and 802.11n (20MHz):

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR 2.400 ~ 2.4835GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from AC adapter1
B	-	√	√	-	Power from AC adapter2

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz

PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

NOTE: "-" means no effect.

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, XYZ axis 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)	AXIS
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Z
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	Z
A	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	Z
A	802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	15.0	Z

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, XYZ axis 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)	AXIS
A & B	802.11g	1 to 11	6	OFDM	BPSK	6.0	Z

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)
A & B	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)
A	802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2
A	802.11n (40MHz)	1 to 7	1, 7	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)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A	802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	15.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	23deg. C, 68%RH, 999 hPa	120Vac, 60Hz	Sun Lin
RE<1G	23deg. C, 68%RH, 999 hPa	120Vac, 60Hz	Sun Lin
	23deg. C, 65%RH, 999 hPa	120Vac, 60Hz	Dean Wang
PLC	26deg. C, 66%RH, 988 hPa	120Vac, 60Hz	Tim Mie
APCM	25deg. C, 63%RH, 999 hPa	120Vac, 60Hz	Sun Lin

FOR 5.725 ~ 5.850GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from AC adapter1
B	-	√	√	-	Power from AC adapter2

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

NOTE: "-" means no effect.

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, XYZ axis 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)	AXIS
A	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0	Z
A	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2	Z
A	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0	Z

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, XYZ axis 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)	AXIS
A & B	802.11n (20MHz)	151 to 159	151	OFDM	BPSK	7.2	Z

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)
A & B	802.11n (20MHz)	151 to 159	151	OFDM	BPSK	7.2

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)
A	802.11a	149 to 165	149, 165	OFDM	BPSK	6.0
A	802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	7.2
A	802.11n (40MHz)	151 to 159	151, 159	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)
A	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
A	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	25deg. C, 65%RH, 999 hPa	120Vac, 60Hz	Sun Lin
RE<1G	23deg. C, 68%RH, 999 hPa	120Vac, 60Hz	Sun Lin
	23deg. C, 65%RH, 999 hPa	120Vac, 60Hz	Dean Wang
PLC	26deg. C, 66%RH, 988 hPa	120Vac, 60Hz	Tim Mie
APCM	25deg. C, 63%RH, 999 hPa	120Vac, 60Hz	Sun Lin

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)
ANSI C63.4-2003

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

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

3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	D531	CN-0XM006-48643-81U-2973	QDS-BRCM1020
2	NOTEBOOK	DELL	D610	DRMTH1S	E2K5HCKT

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m UTP RJ45 cable
2	10m UTP RJ45 cable

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

4. TEST TYPES AND RESULTS (FOR 2.4GHz BAND)

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

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. As shown in 15.35(b), 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	ESI7	838496/016	Dec. 29, 2009	Dec. 28, 2010
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	May 13, 2009	May 12, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 29, 2009	Apr. 28, 2010
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-209	Jul. 01, 2009	Jun. 30, 2010
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Dec. 25, 2009	Dec. 24, 2010
Preamplifier Agilent	8449B	3008A01961	Nov. 04, 2009	Nov. 03, 2010
Preamplifier Agilent	8447D	2944A10738	Nov. 04, 2009	Nov. 03, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274041/4	Aug. 28, 2009	Aug. 27, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283397/4	Aug. 28, 2009	Aug. 27, 2010
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT.	TT100.	TT93021704	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	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 Chamber 4.
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 IC7450F-4.

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. The antenna is a broadband antenna, and its height 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.

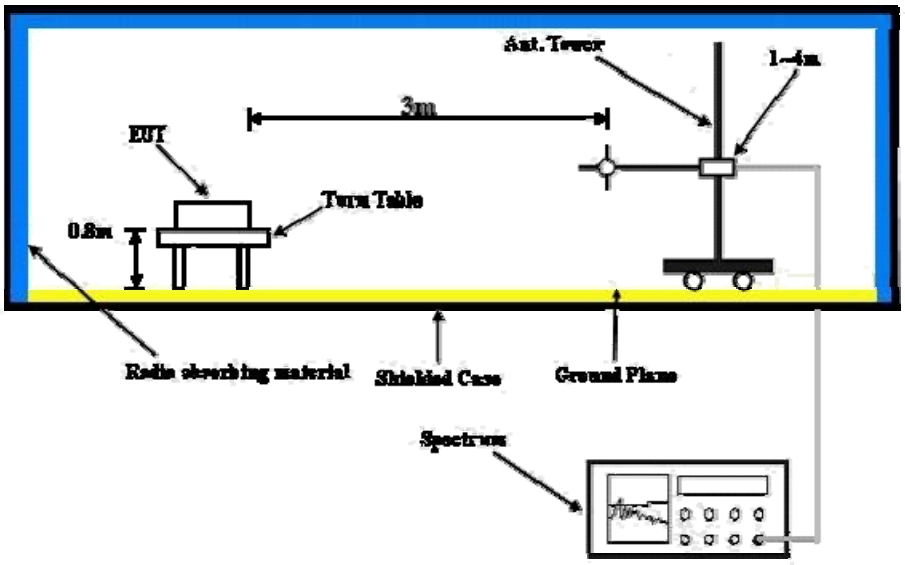
NOTE:

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 100kHz and video bandwidth is 300kHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz 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



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 notebook systems to act as a communication partner and placed them outside of testing area.
c. The communication partners connected with EUT via a UTP cable and run a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
d. The communication partners sent data to EUT by command "PING".

4.1.7 TEST RESULTS

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	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

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	59.5 PK	74.0	-14.5	1.00 H	129	26.00	33.50
2	2390.00	51.3 AV	54.0	-2.7	1.00 H	129	17.80	33.50
3	*2412.00	112.9 PK			1.02 H	133	79.30	33.60
4	*2412.00	108.7 AV			1.02 H	133	75.10	33.60
5	4824.00	49.4 PK	74.0	-24.6	1.23 H	138	9.40	40.00
6	4824.00	43.2 AV	54.0	-10.8	1.23 H	138	3.20	40.00
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	56.4 PK	74.0	-17.6	1.00 V	276	22.90	33.50
2	2390.00	48.8 AV	54.0	-5.2	1.00 V	276	15.30	33.50
3	*2412.00	109.5 PK			1.00 V	298	75.90	33.60
4	*2412.00	105.2 AV			1.00 V	298	71.60	33.60
5	4824.00	50.2 PK	74.0	-23.8	1.24 V	166	10.20	40.00
6	4824.00	42.5 AV	54.0	-11.5	1.24 V	166	2.50	40.00

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.

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	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

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	111.3 PK			1.00 H	127	77.60	33.70
2	*2437.00	107.0 AV			1.00 H	127	73.30	33.70
3	4874.00	50.5 PK	74.0	-23.5	1.40 H	288	10.40	40.10
4	4874.00	42.1 AV	54.0	-11.9	1.40 H	288	2.00	40.10
5	7311.00	62.6 PK	74.0	-11.4	1.27 H	237	16.20	46.40
6	7311.00	52.8 AV	54.0	-1.2	1.27 H	237	6.40	46.40
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	*2437.00	108.2 PK			1.01 V	271	74.50	33.70
2	*2437.00	104.0 AV			1.01 V	271	70.30	33.70
3	4874.00	51.5 PK	74.0	-22.5	1.41 V	32	11.40	40.10
4	4874.00	41.7 AV	54.0	-12.3	1.41 V	32	1.60	40.10
5	7311.00	54.9 PK	74.0	-19.1	1.46 V	165	8.50	46.40
6	7311.00	45.5 AV	54.0	-8.5	1.46 V	165	-0.90	46.40

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.

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	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

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	110.8 PK			1.00 H	130	77.00	33.80
2	*2462.00	106.7 AV			1.00 H	130	72.90	33.80
3	2483.50	58.6 PK	74.0	-15.4	1.00 H	135	24.80	33.80
4	2483.50	48.9 AV	54.0	-5.1	1.00 H	135	15.10	33.80
5	#3282.00	48.7 PK	90.8	-42.1	1.24 H	55	12.70	36.00
6	#3282.00	42.2 AV	86.7	-44.5	1.24 H	55	6.20	36.00
7	4924.00	50.5 PK	74.0	-23.5	1.18 H	214	10.30	40.20
8	4924.00	44.4 AV	54.0	-9.6	1.18 H	214	4.20	40.20
9	7386.00	60.4 PK	74.0	-13.6	1.15 H	235	13.80	46.60
10	**7386.00**	**53.0 AV**	**54.0**	**-1.0**	**1.15 H**	**235**	**6.40**	**46.60**
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	*2462.00	107.1 PK			1.00 V	268	73.30	33.80
2	*2462.00	102.9 AV			1.00 V	268	69.10	33.80
3	2483.50	55.0 PK	74.0	-19.0	1.02 V	277	21.20	33.80
4	2483.50	45.7 AV	54.0	-8.3	1.02 V	277	11.90	33.80
5	#3282.00	49.3 PK	87.1	-37.8	1.00 V	172	13.30	36.00
6	#3282.00	45.1 AV	82.9	-37.8	1.00 V	172	9.10	36.00
7	4924.00	50.9 PK	74.0	-23.1	1.14 V	162	10.70	40.20
8	4924.00	43.8 AV	54.0	-10.2	1.14 V	162	3.60	40.20
9	7386.00	56.7 PK	74.0	-17.3	1.17 V	184	10.10	46.60
10	7386.00	47.7 AV	54.0	-6.3	1.17 V	184	1.10	46.60

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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. "#":The radiated frequency is out the restricted band.

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	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.2 PK	74.0	-8.8	1.00 H	137	31.70	33.50
2	2390.00	52.5 AV	54.0	-1.5	1.00 H	137	19.00	33.50
3	*2412.00	111.5 PK			1.00 H	132	77.90	33.60
4	*2412.00	100.8 AV			1.00 H	132	67.20	33.60
5	4824.00	48.4 PK	74.0	-25.6	1.28 H	71	8.40	40.00
6	4824.00	37.2 AV	54.0	-16.8	1.28 H	71	-2.80	40.00
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	63.3 PK	74.0	-10.7	1.00 V	288	29.80	33.50
2	2390.00	50.1 AV	54.0	-3.9	1.00 V	288	16.60	33.50
3	*2412.00	107.5 PK			1.02 V	293	73.90	33.60
4	*2412.00	96.8 AV			1.02 V	293	63.20	33.60
5	4824.00	49.7 PK	74.0	-24.3	1.07 V	169	9.70	40.00
6	4824.00	38.2 AV	54.0	-15.8	1.07 V	169	-1.80	40.00

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.

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	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

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	57.8 PK	74.0	-16.2	1.00 H	317	24.30	33.50
2	2390.00	51.2 AV	54.0	-2.8	1.00 H	317	17.70	33.50
3	*2437.00	111.6 PK			1.00 H	298	77.90	33.70
4	*2437.00	100.8 AV			1.00 H	298	67.10	33.70
5	4874.00	48.4 PK	74.0	-25.6	1.32 H	228	8.30	40.10
6	4874.00	37.3 AV	54.0	-16.7	1.32 H	228	-2.80	40.10
7	7311.00	65.3 PK	74.0	-8.7	1.22 H	233	18.90	46.40
8	7311.00	47.8 AV	54.0	-6.2	1.22 H	233	1.40	46.40
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	2390.00	55.7 PK	74.0	-18.3	1.07 V	238	22.20	33.50
2	2390.00	47.8 AV	54.0	-6.2	1.07 V	238	14.30	33.50
3	*2437.00	106.1 PK			1.00 V	238	72.40	33.70
4	*2437.00	96.2 AV			1.00 V	238	62.50	33.70
5	4874.00	49.4 PK	74.0	-24.6	1.09 V	128	9.30	40.10
6	4874.00	38.3 AV	54.0	-15.7	1.09 V	128	-1.80	40.10
7	7311.00	55.0 PK	74.0	-19.0	1.00 V	153	8.60	46.40
8	7311.00	43.5 AV	54.0	-10.5	1.00 V	153	-2.90	46.40

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.

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	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

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	110.3 PK			1.00 H	141	76.50	33.80
2	*2462.00	100.1 AV			1.00 H	141	66.30	33.80
3	2483.50	65.4 PK	74.0	-8.6	1.00 H	138	31.60	33.80
4	2483.50	52.9 AV	54.0	-1.1	1.00 H	138	19.10	33.80
5	4924.00	48.3 PK	74.0	-25.7	1.28 H	169	8.10	40.20
6	4924.00	37.2 AV	54.0	-16.8	1.28 H	169	-3.00	40.20
7	7386.00	65.2 PK	74.0	-8.8	1.28 H	253	18.60	46.60
8	7386.00	47.5 AV	54.0	-6.5	1.28 H	253	0.90	46.60
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	*2462.00	108.5 PK			1.00 V	289	74.70	33.80
2	*2462.00	98.4 AV			1.00 V	289	64.60	33.80
3	2483.50	66.2 PK	74.0	-7.8	1.01 V	286	32.40	33.80
4	2483.50	52.3 AV	54.0	-1.7	1.01 V	286	18.50	33.80
5	4924.00	49.5 PK	74.0	-24.5	1.22 V	193	9.30	40.20
6	4924.00	38.4 AV	54.0	-15.6	1.22 V	193	-1.80	40.20
7	7386.00	54.8 PK	74.0	-19.2	1.07 V	200	8.20	46.60
8	7386.00	43.9 AV	54.0	-10.1	1.07 V	200	-2.70	46.60

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).

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	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

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	68.0 PK	74.0	-6.0	1.21 H	108	34.50	33.50
2	2390.00	52.2 AV	54.0	-1.8	1.21 H	108	18.70	33.50
3	*2412.00	110.5 PK			1.21 H	109	76.90	33.60
4	*2412.00	99.1 AV			1.21 H	109	65.50	33.60
5	4824.00	48.3 PK	74.0	-25.7	1.39 H	38	8.30	40.00
6	4824.00	37.0 AV	54.0	-17.0	1.39 H	38	-3.00	40.00
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	67.4 PK	74.0	-6.6	1.00 V	277	33.90	33.50
2	2390.00	48.9 AV	54.0	-5.1	1.00 V	277	15.40	33.50
3	*2412.00	106.3 PK			1.00 V	272	72.70	33.60
4	*2412.00	96.1 AV			1.00 V	272	62.50	33.60
5	4824.00	49.4 PK	74.0	-24.6	1.49 V	105	9.40	40.00
6	4824.00	38.3 AV	54.0	-15.7	1.49 V	105	-1.70	40.00

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.

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	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

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	111.7 PK			1.18 H	121	78.00	33.70
2	*2437.00	99.8 AV			1.18 H	121	66.10	33.70
3	4874.00	48.4 PK	74.0	-25.6	1.28 H	163	8.30	40.10
4	4874.00	37.4 AV	54.0	-16.6	1.28 H	163	-2.70	40.10
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	*2437.00	106.8 PK			1.01 V	279	73.10	33.70
2	*2437.00	96.6 AV			1.01 V	279	62.90	33.70
3	4874.00	49.5 PK	74.0	-24.5	1.29 V	239	9.40	40.10
4	4874.00	38.3 AV	54.0	-15.7	1.29 V	239	-1.80	40.10

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.

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	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

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	109.8 PK			1.18 H	116	76.00	33.80
2	*2462.00	98.5 AV			1.18 H	116	64.70	33.80
3	2483.50	68.7 PK	74.0	-5.3	1.18 H	116	34.90	33.80
4	2483.50	52.8 AV	54.0	-1.2	1.18 H	116	19.00	33.80
5	#3282.00	52.7 PK	89.8	-37.1	1.63 H	55	16.70	36.00
6	#3282.00	46.9 AV	78.5	-31.6	1.63 H	55	10.90	36.00
7	4924.00	48.5 PK	74.0	-25.5	1.25 H	170	8.30	40.20
8	4924.00	37.3 AV	54.0	-16.7	1.25 H	170	-2.90	40.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.7 PK			1.02 V	257	71.90	33.80
2	*2462.00	95.5 AV			1.02 V	257	61.70	33.80
3	2483.50	67.1 PK	74.0	-6.9	1.00 V	262	33.30	33.80
4	2483.50	48.6 AV	54.0	-5.4	1.00 V	262	14.80	33.80
5	#3282.00	53.4 PK	85.7	-32.3	1.00 V	172	17.40	36.00
6	#3282.00	48.0 AV	75.5	-27.5	1.00 V	172	12.00	36.00
7	4924.00	48.9 PK	74.0	-25.1	1.41 V	189	8.70	40.20
8	4924.00	38.5 AV	54.0	-15.5	1.41 V	189	-1.70	40.20

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.
6. "#":The radiated frequency is out the restricted band.

802.11n (40MHz)

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	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

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	72.8 PK	74.0	-1.2	1.00 H	100	39.30	33.50
2	2390.00	52.7 AV	54.0	-1.3	1.00 H	100	19.20	33.50
3	*2422.00	107.5 PK			1.00 H	135	73.90	33.60
4	*2422.00	95.5 AV			1.00 H	135	61.90	33.60
5	4844.00	48.3 PK	74.0	-25.7	1.05 H	47	8.30	40.00
6	4844.00	37.0 AV	54.0	-17.0	1.05 H	47	-3.00	40.00
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	71.5 PK	74.0	-2.5	1.00 V	268	38.00	33.50
2	2390.00	51.2 AV	54.0	-2.8	1.00 V	268	17.70	33.50
3	*2422.00	103.2 PK			1.00 V	252	69.60	33.60
4	*2422.00	91.9 AV			1.00 V	252	58.30	33.60
5	4844.00	49.9 PK	74.0	-24.1	1.25 V	328	9.90	40.00
6	4844.00	38.1 AV	54.0	-15.9	1.25 V	328	-1.90	40.00

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

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	1.00 H	129	32.80	33.50
2	2390.00	52.3 AV	54.0	-1.7	1.00 H	129	18.80	33.50
3	*2437.00	108.6 PK			1.00 H	133	74.90	33.70
4	*2437.00	95.8 AV			1.00 H	133	62.10	33.70
5	4874.00	48.5 PK	74.0	-25.5	1.53 H	223	8.40	40.10
6	4874.00	37.3 AV	54.0	-16.7	1.53 H	223	-2.80	40.10
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	2390.00	64.4 PK	74.0	-9.6	1.04 V	288	30.90	33.50
2	2390.00	48.7 AV	54.0	-5.3	1.04 V	288	15.20	33.50
3	*2437.00	103.7 PK			1.03 V	293	70.00	33.70
4	*2437.00	93.2 AV			1.03 V	293	59.50	33.70
5	4874.00	49.5 PK	74.0	-24.5	1.07 V	189	9.40	40.10
6	4874.00	38.4 AV	54.0	-15.6	1.07 V	189	-1.70	40.10

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

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	106.1 PK			1.00 H	133	72.40	33.70
2	*2452.00	94.4 AV			1.00 H	133	60.70	33.70
3	2483.50	72.9 PK	74.0	-1.1	1.00 H	138	39.10	33.80
4	**2483.50**	**53.0 AV**	**54.0**	**-1.0**	**1.00 H**	**138**	**19.20**	**33.80**
5	#3269.00	50.3 PK	86.1	-35.8	1.02 H	171	14.40	35.90
6	#3269.00	46.1 AV	74.4	-28.3	1.02 H	171	10.20	35.90
7	4904.00	48.5 PK	74.0	-25.5	1.23 H	157	8.30	40.20
8	4904.00	37.4 AV	54.0	-16.6	1.23 H	157	-2.80	40.20
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	*2452.00	102.1 PK			1.02 V	269	68.40	33.70
2	*2452.00	90.7 AV			1.02 V	269	57.00	33.70
3	2483.50	70.5 PK	74.0	-3.5	1.01 V	257	36.70	33.80
4	2483.50	50.7 AV	54.0	-3.3	1.01 V	257	16.90	33.80
5	#3269.00	50.6 PK	82.1	-31.5	1.04 V	179	14.70	35.90
6	#3269.00	47.1 AV	70.7	-23.6	1.04 V	179	11.20	35.90
7	4904.00	49.9 PK	74.0	-24.1	1.28 V	71	9.70	40.20
8	4904.00	38.5 AV	54.0	-15.5	1.28 V	71	-1.70	40.20

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.

6. "#":The radiated frequency is out the restricted band.

BELOW 1GHz WORST-CASE DATA：802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 68%RH 1020 hPa	TEST MODE	A
TESTED BY	Sun Lin		

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	105.73	37.2 QP	43.5	-6.3	1.50 H	325	27.10	10.10
2	199.05	37.7 QP	43.5	-5.8	2.00 H	70	26.10	11.60
3	249.60	42.0 QP	46.0	-4.0	1.25 H	265	28.80	13.20
4	350.71	44.0 QP	46.0	-2.0	1.00 H	91	27.20	16.80
5	667.63	40.3 QP	46.0	-5.7	1.00 H	214	16.20	24.10
6	733.73	41.3 QP	46.0	-4.7	1.00 H	178	16.10	25.20
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	43.51	34.6 QP	40.0	-5.4	1.00 V	217	20.50	14.10
2	249.60	36.6 QP	46.0	-9.4	2.00 V	25	23.40	13.20
3	352.65	44.2 QP	46.0	-1.8	1.50 V	253	27.30	16.90
4	681.24	37.5 QP	46.0	-8.5	1.00 V	79	13.20	24.30
5	751.23	37.6 QP	46.0	-8.4	1.50 V	313	12.10	25.50
6	801.78	40.1 QP	46.0	-5.9	1.25 V	91	13.60	26.50

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH 1020 hPa	TEST MODE	B
TESTED BY	Dean Wang		

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	249.60	44.8 QP	46.0	-1.2	1.00 H	301	31.60	13.20
2	267.10	42.1 QP	46.0	-3.9	1.50 H	133	28.10	14.00
3	333.21	39.4 QP	46.0	-6.6	1.00 H	163	23.00	16.40
4	500.42	40.9 QP	46.0	-5.1	1.00 H	325	20.10	20.80
5	681.24	41.3 QP	46.0	-4.7	1.25 H	172	17.00	24.30
6	751.23	41.1 QP	46.0	-4.9	1.00 H	352	15.60	25.50
7	795.95	39.2 QP	46.0	-6.8	1.00 H	10	12.90	26.30
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	43.51	32.0 QP	40.0	-8.0	1.00 V	10	19.50	12.50
2	125.17	32.5 QP	43.5	-11.0	1.50 V	10	20.50	12.00
3	249.60	38.2 QP	46.0	-7.8	1.00 V	322	25.30	12.90
4	681.24	41.1 QP	46.0	-4.9	1.50 V	205	18.50	22.60
5	751.23	35.4 QP	46.0	-10.6	1.50 V	94	11.40	24.00
6	877.61	35.7 QP	46.0	-10.3	1.50 V	205	9.80	25.90

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.

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	100291	Dec. 16, 2009	Dec. 15, 2010
RF signal cable Woken	5D-FB	Cable-HYC01-01	Nov. 12, 2009	Nov. 11, 2010
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jun. 18, 2009	Jun. 17, 2010
LISN SCHWARZBECK	NNBL 8226-2	8226-142	Jun. 03, 2009	Jun. 02, 2010
Software ADT	ADT_Cond_ V7.3.7	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.

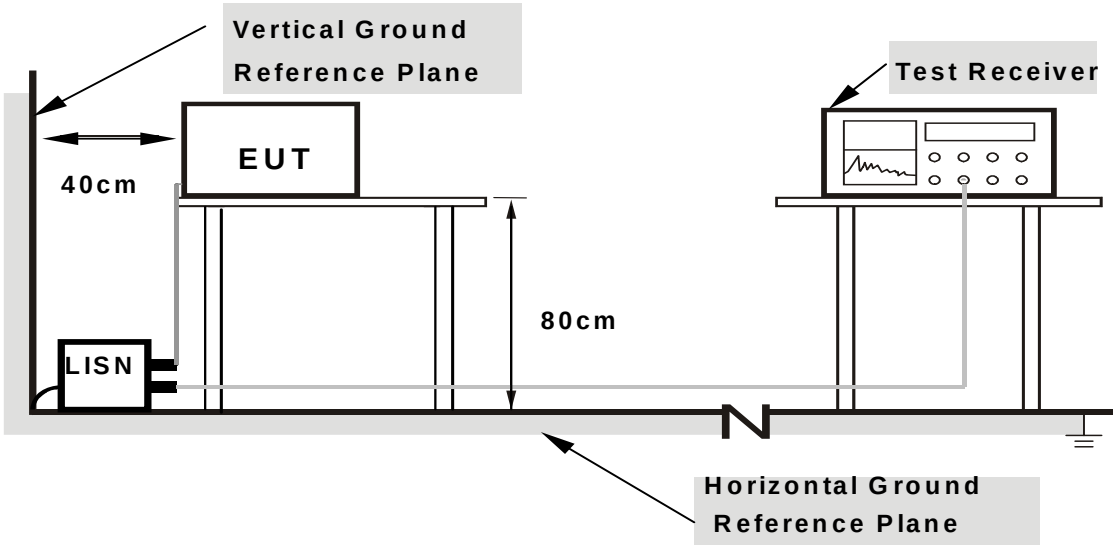
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

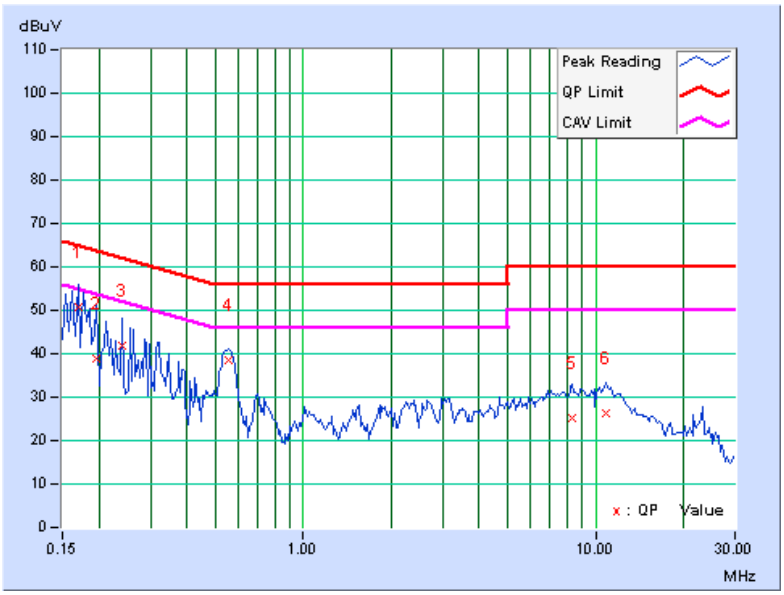
4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA：802.11g

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.170	0.10	50.51	-	50.61	-	64.98	54.98	-14.37	-
2	0.197	0.10	38.92	-	39.02	-	63.74	53.74	-24.72	-
3	0.240	0.10	41.79	-	41.89	-	62.10	52.10	-20.21	-
4	0.556	0.13	38.26	-	38.39	-	56.00	46.00	-17.61	-
5	8.305	0.51	24.78	-	25.29	-	60.00	50.00	-34.71	-
6	10.906	0.63	25.70	-	26.33	-	60.00	50.00	-33.67	-

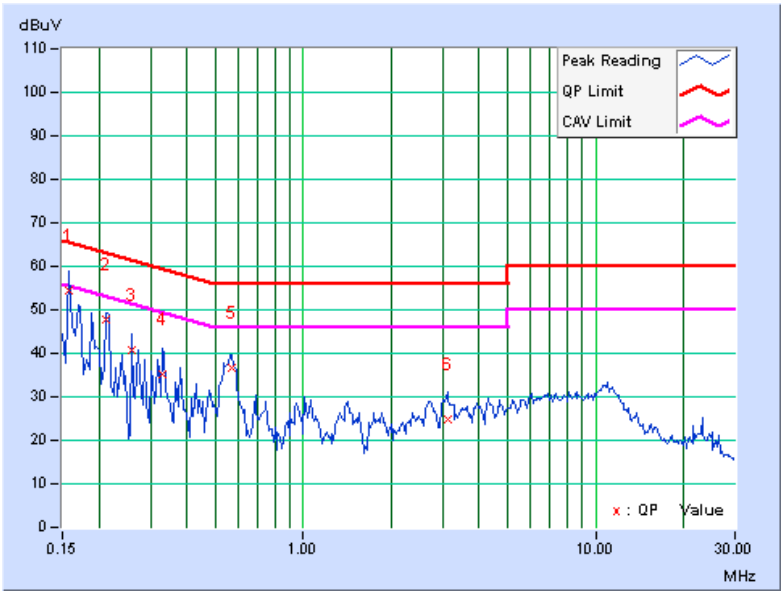
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.158**	**0.12**	**54.28**	**-**	**54.40**	**-**	**65.58**	**55.58**	**-11.18**	**-**
2	0.213	0.12	47.49	-	47.61	-	63.11	53.11	-15.50	-
3	0.259	0.13	40.62	-	40.75	-	61.45	51.45	-20.71	-
4	0.330	0.13	35.12	-	35.25	-	59.46	49.46	-24.21	-
5	0.572	0.15	36.57	-	36.72	-	56.00	46.00	-19.28	-
6	3.109	0.29	24.45	-	24.74	-	56.00	46.00	-31.26	-

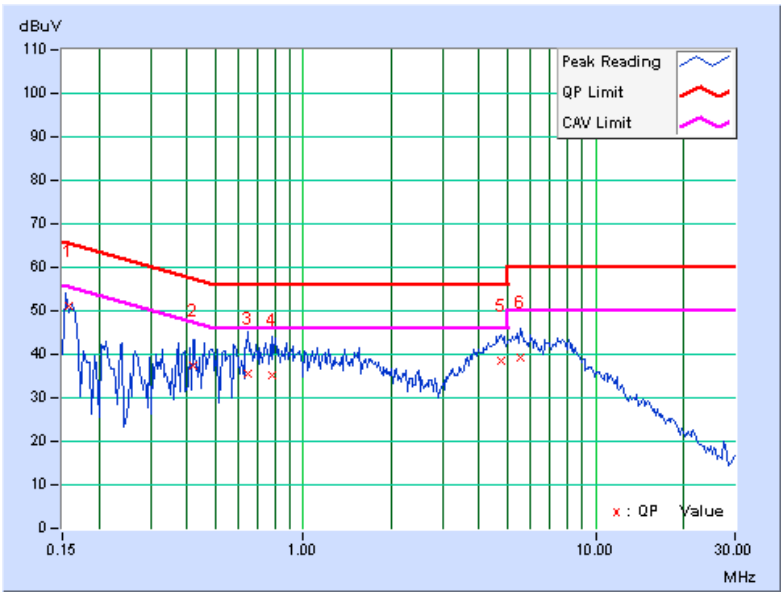
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.157	0.10	51.04	-	51.14	-	65.62	55.62	-14.48	-
2	0.420	0.12	37.33	-	37.45	-	57.46	47.46	-20.01	-
3	0.650	0.14	35.28	-	35.42	-	56.00	46.00	-20.58	-
4	0.783	0.15	35.00	-	35.15	-	56.00	46.00	-20.85	-
5	4.734	0.37	38.25	-	38.62	-	56.00	46.00	-17.38	-
6	5.531	0.40	38.81	-	39.21	-	60.00	50.00	-20.79	-

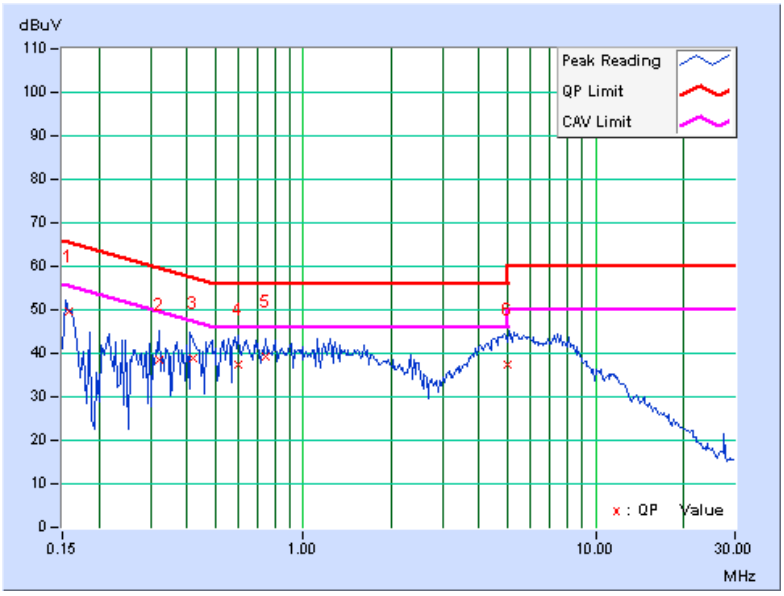
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.12	49.40	-	49.52	-	65.58	55.58	-16.06	-
2	0.322	0.13	38.37	-	38.50	-	59.66	49.66	-21.16	-
3	0.421	0.14	38.93	-	39.07	-	57.43	47.43	-18.36	-
4	0.599	0.15	37.14	-	37.29	-	56.00	46.00	-18.71	-
5	0.744	0.16	39.27	-	39.43	-	56.00	46.00	-16.57	-
6	5.000	0.35	37.08	-	37.43	-	56.00	46.00	-18.57	-

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. 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 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
R&S SPECTRUM ANALYZER	FSP40	100040	Jul. 07, 2009	Jul. 06, 2010

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

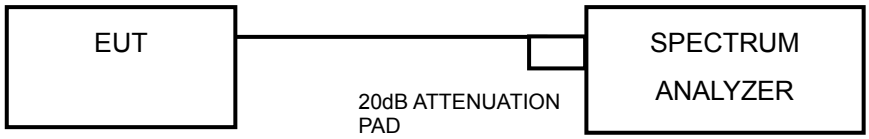
4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

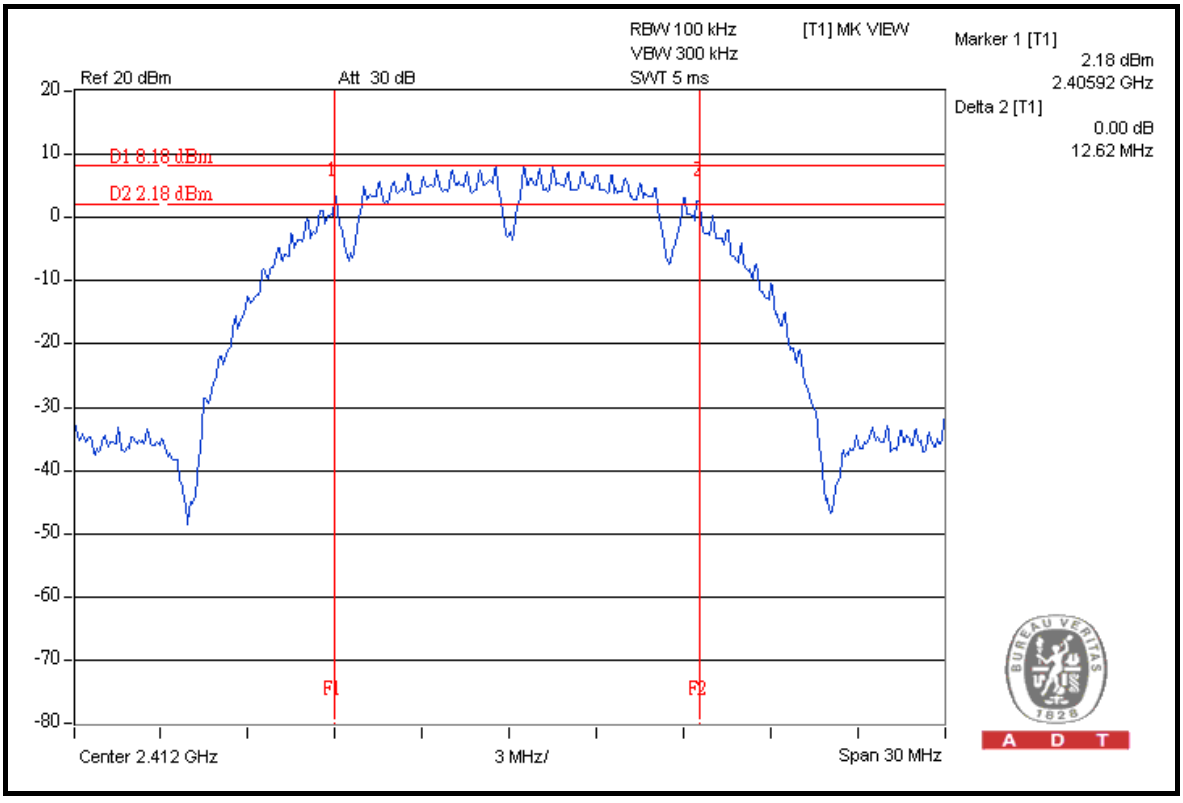
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	12.62	12.09	0.5	PASS
6	2437	11.13	12.15	0.5	PASS
11	2462	10.18	11.14	0.5	PASS

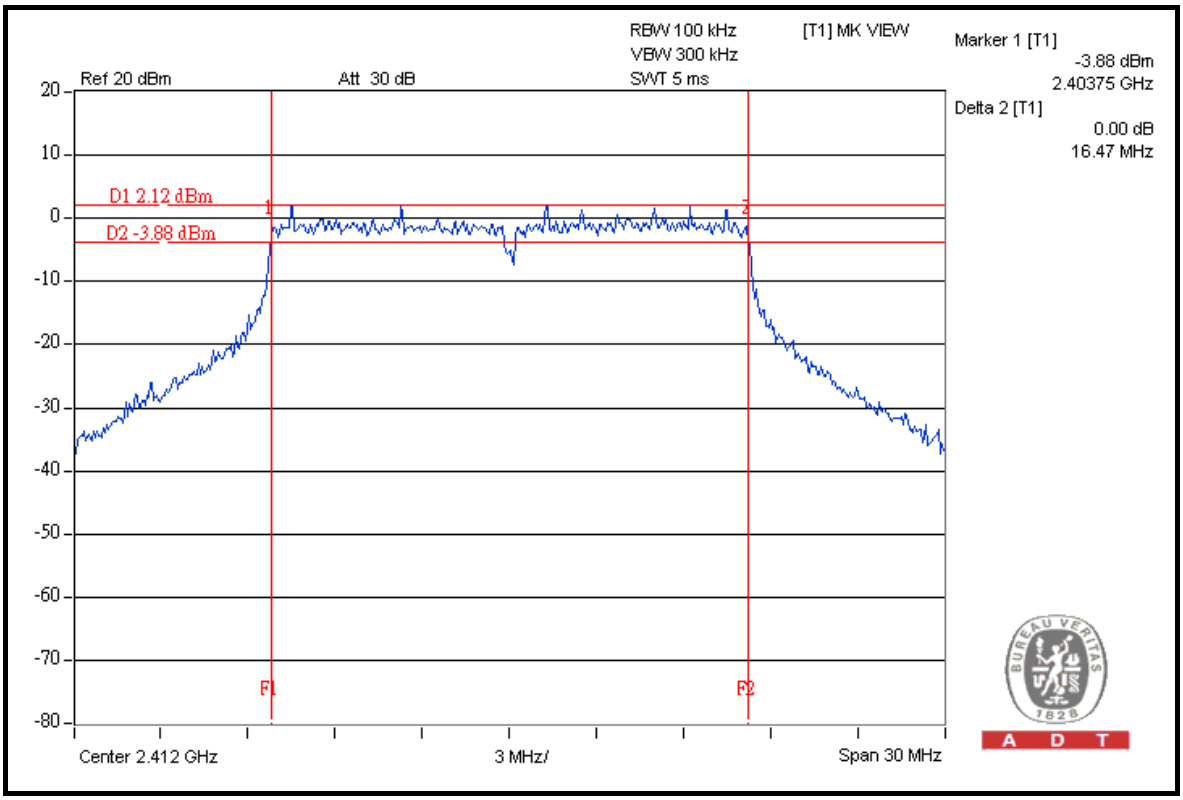
FOR CHAIN 0: CH 1



802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.47	16.43	0.5	PASS
6	2437	16.46	16.46	0.5	PASS
11	2462	16.47	16.43	0.5	PASS

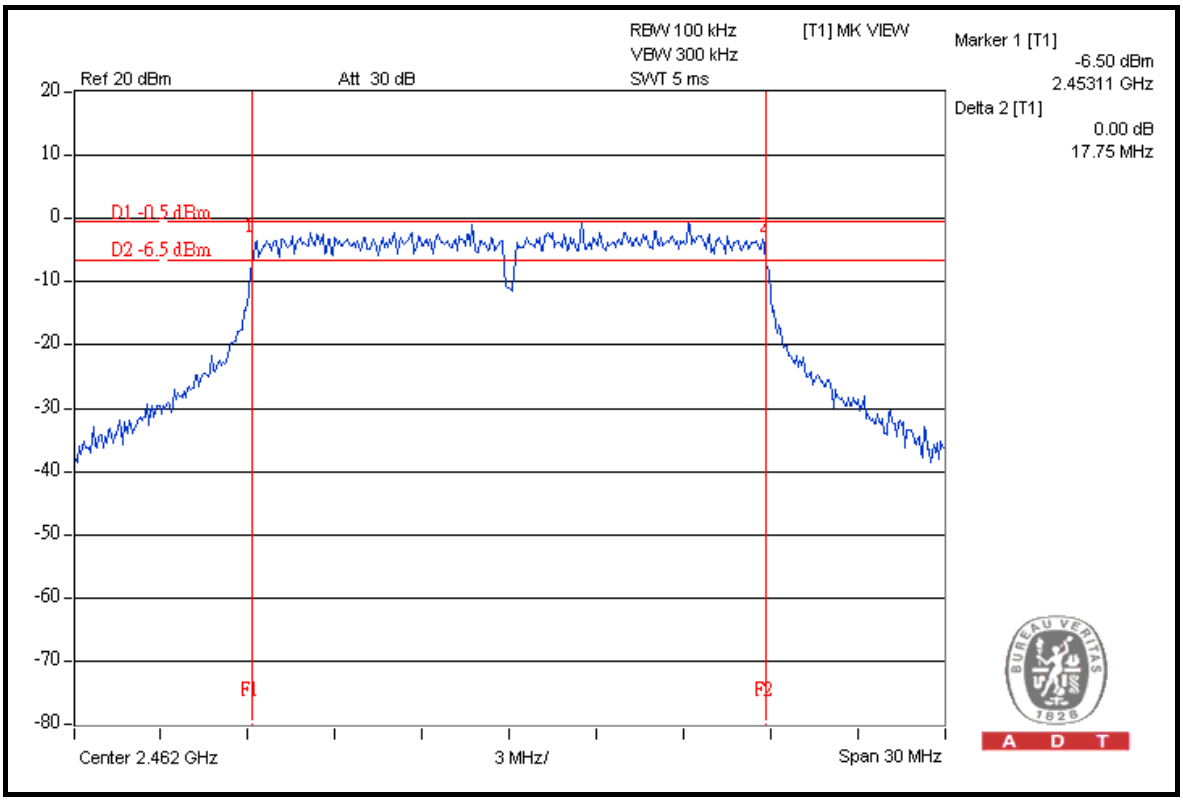
FOR CHAIN 0: CH 1



802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.72	17.73	0.5	PASS
6	2437	17.71	17.68	0.5	PASS
11	2462	17.74	17.75	0.5	PASS

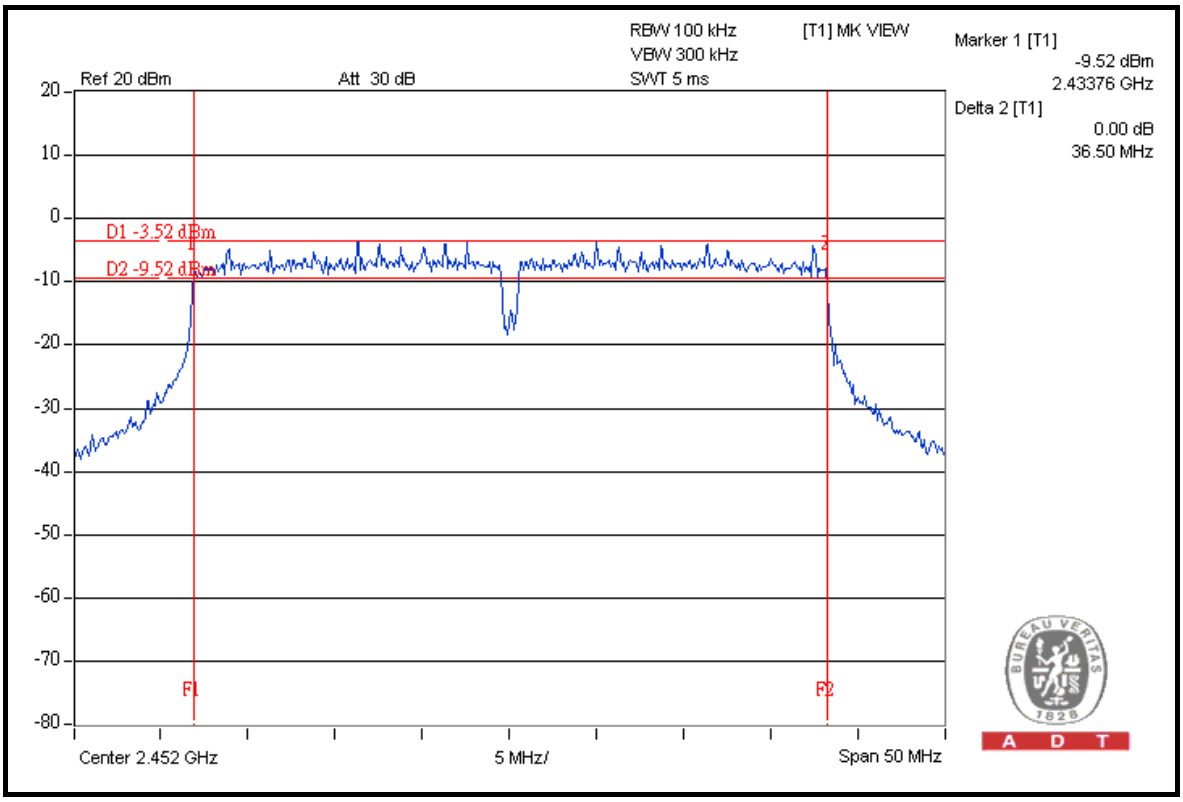
FOR CHAIN 1: CH 11



802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2422	36.48	36.43	0.5	PASS
4	2437	36.47	36.44	0.5	PASS
7	2452	36.48	36.50	0.5	PASS

FOR CHAIN 1: CH 7



4.4 MAXIMUM OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

The Maximum Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
High Speed Peak Power Meter	ML2495A	0824012	Aug. 10, 2009	Aug. 09, 2010
Power Sensor	MA2411B	0738138	Aug. 10, 2009	Aug. 09, 2010

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. Measurement Bandwidth of ML2495A is 65MHz greater than 6dB bandwidth of emission.

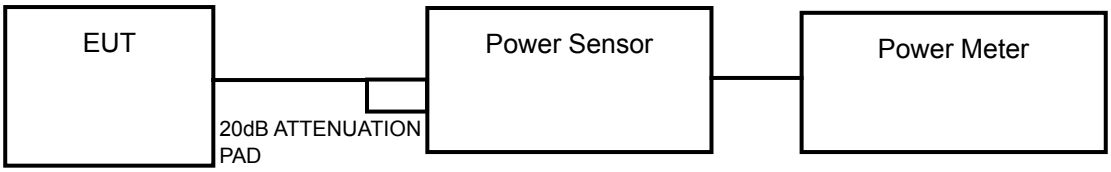
4.4.3 TEST PROCEDURES

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

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.7 TEST RESULTS

802.11b

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	22.2	19.3	251.1	24.0	30	PASS
6	2437	21.1	17.9	190.5	22.8	30	PASS
11	2462	20.1	17.5	158.6	22.0	30	PASS

802.11g

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	24.6	23.5	512.3	27.1	30	PASS
6	2437	24.5	23.8	521.7	27.2	30	PASS
11	2462	24.1	23.3	470.8	26.7	30	PASS

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	24.1	23.6	486.1	26.9	30	PASS
6	2437	24.3	23.8	509.3	27.1	30	PASS
11	2462	23.5	22.6	405.8	26.1	30	PASS

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2422	23.9	23.7	479.9	26.8	30	PASS
4	2437	24.1	23.7	491.5	26.9	30	PASS
7	2452	23.8	22.3	409.7	26.1	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
R&S SPECTRUM ANALYZER	FSP40	100040	Jul. 07, 2009	Jul. 06, 2010

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.5.3 TEST PROCEDURE

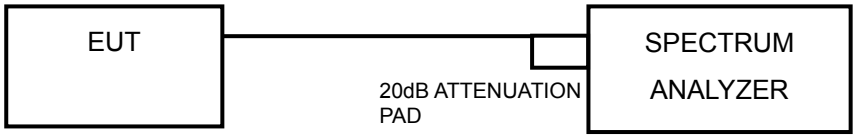
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

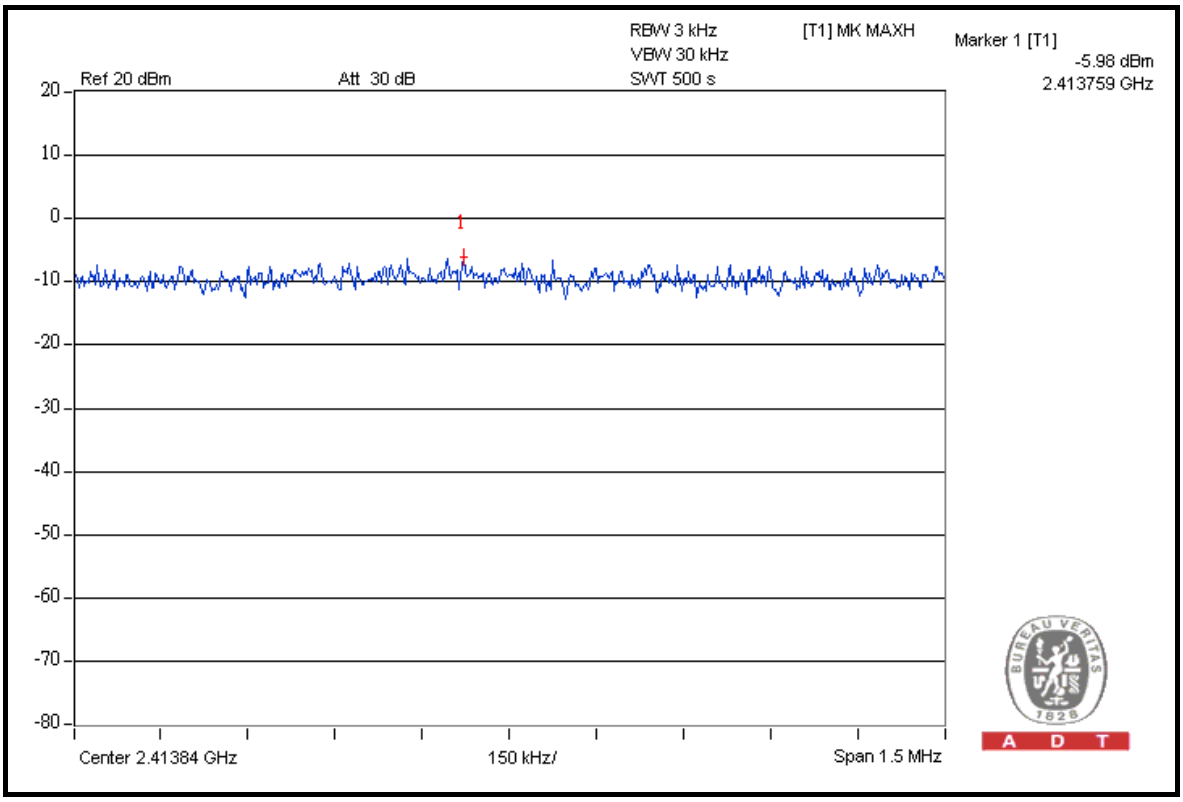
Same as Item 4.3.6

4.5.7 TEST RESULTS

802.11b

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
1	2412	-6.0	-8.8	-4.2	8	PASS
6	2437	-7.0	-10.0	-5.2	8	PASS
11	2462	-7.9	-10.7	-6.1	8	PASS

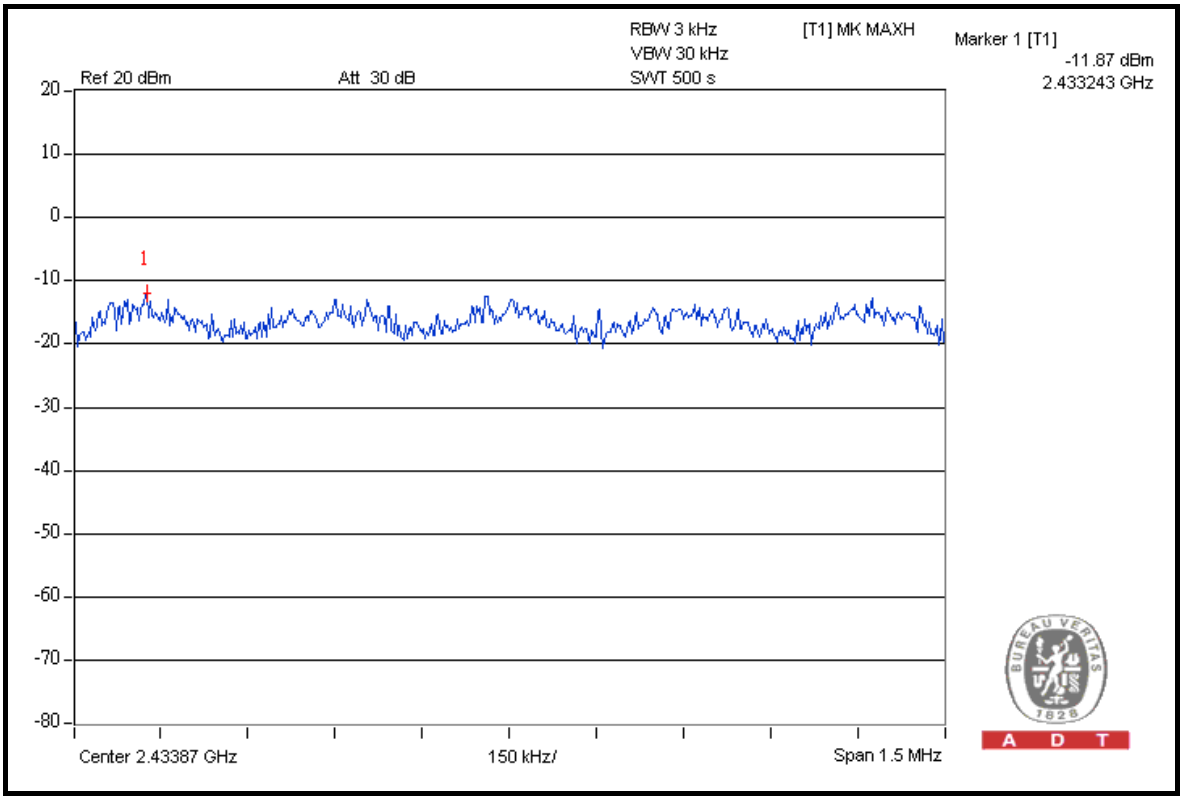
FOR CHAIN 0: CH 1



802.11g

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
1	2412	-11.9	-12.4	-9.1	8	PASS
6	2437	-11.9	-11.9	-8.9	8	PASS
11	2462	-13.0	-12.5	-9.6	8	PASS

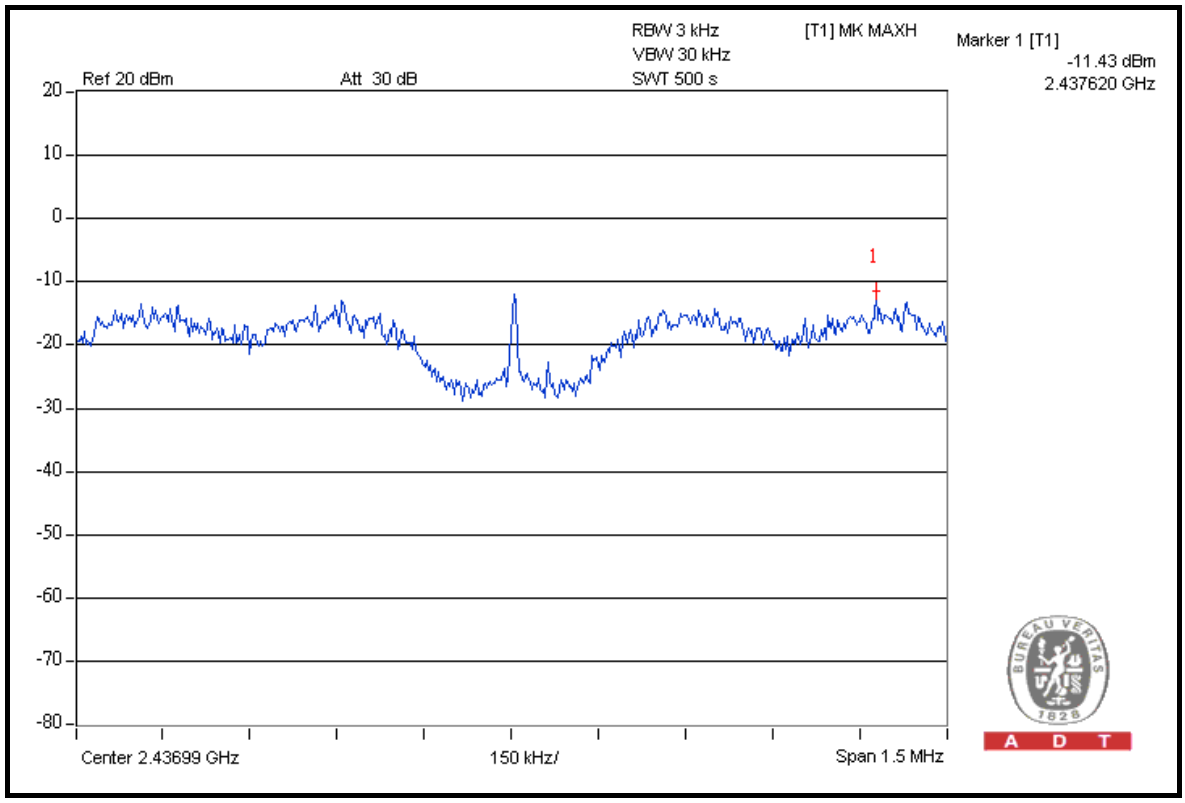
FOR CHAIN 0: CH 6



802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
1	2412	-11.8	-12.7	-9.2	8	PASS
6	2437	-11.4	-12.3	-8.8	8	PASS
11	2462	-12.2	-13.5	-9.8	8	PASS

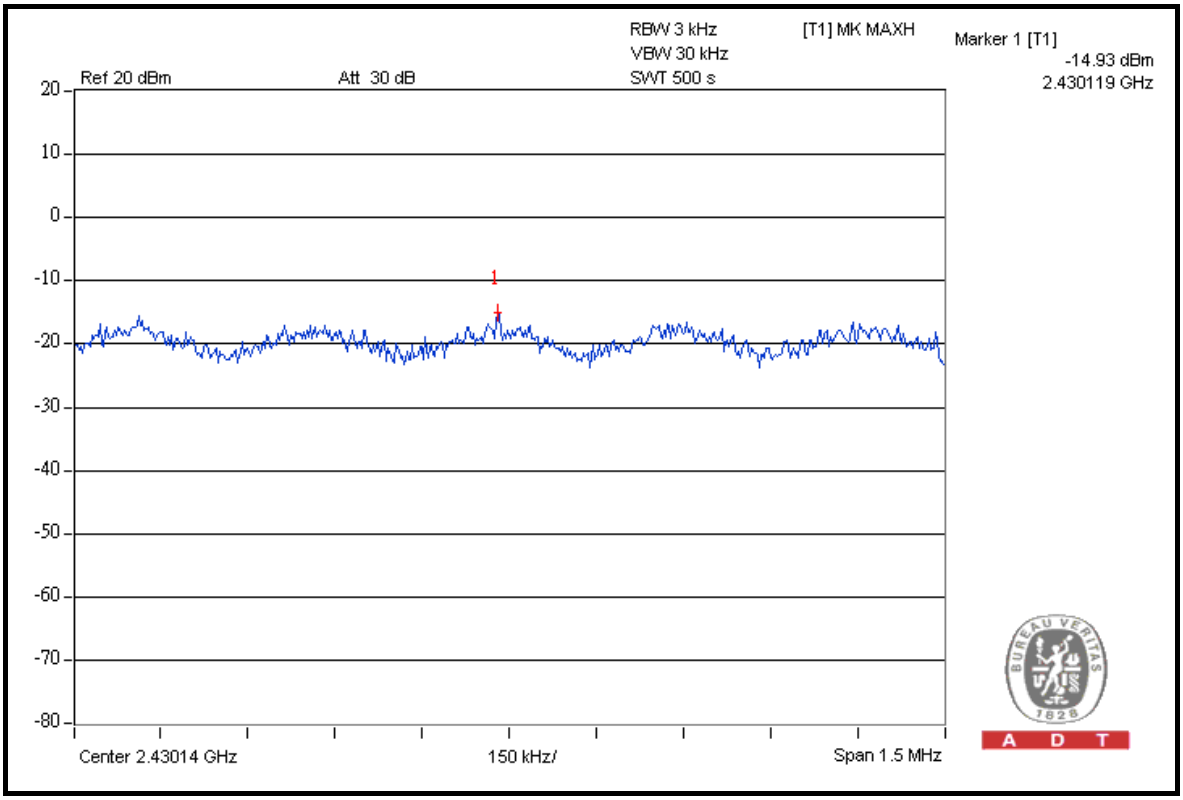
FOR CHAIN 0: CH 6



802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
1	2422	-16.4	-15.0	-12.7	8	PASS
4	2437	-16.3	-14.9	-12.5	8	PASS
7	2452	-16.3	-16.2	-13.3	8	PASS

FOR CHAIN 1: CH 4



4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Dec. 29, 2009	Dec. 28, 2010
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	May 13, 2009	May 12, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 29, 2009	Apr. 28, 2010
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-209	Jul. 01, 2009	Jun. 30, 2010
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Dec. 25, 2009	Dec. 24, 2010
Preamplifier Agilent	8449B	3008A01961	Nov. 04, 2009	Nov. 03, 2010
Preamplifier Agilent	8447D	2944A10738	Nov. 04, 2009	Nov. 03, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274041/4	Aug. 28, 2009	Aug. 27, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283397/4	Aug. 28, 2009	Aug. 27, 2010
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT.	TT100.	TT93021704	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	NA	NA

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.6.3 TEST PROCEDURE

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter 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. The antenna is a broadband antenna, and its height 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. Set both RBW and VBW of spectrum analyzer to 100kHz and 300kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW = 100kHz, VBW = 300kHz) are attached on the following pages.

NOTE: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.6 TEST RESULTS

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b

RESTRICT BAND (2310 ~ 2390 MHz)

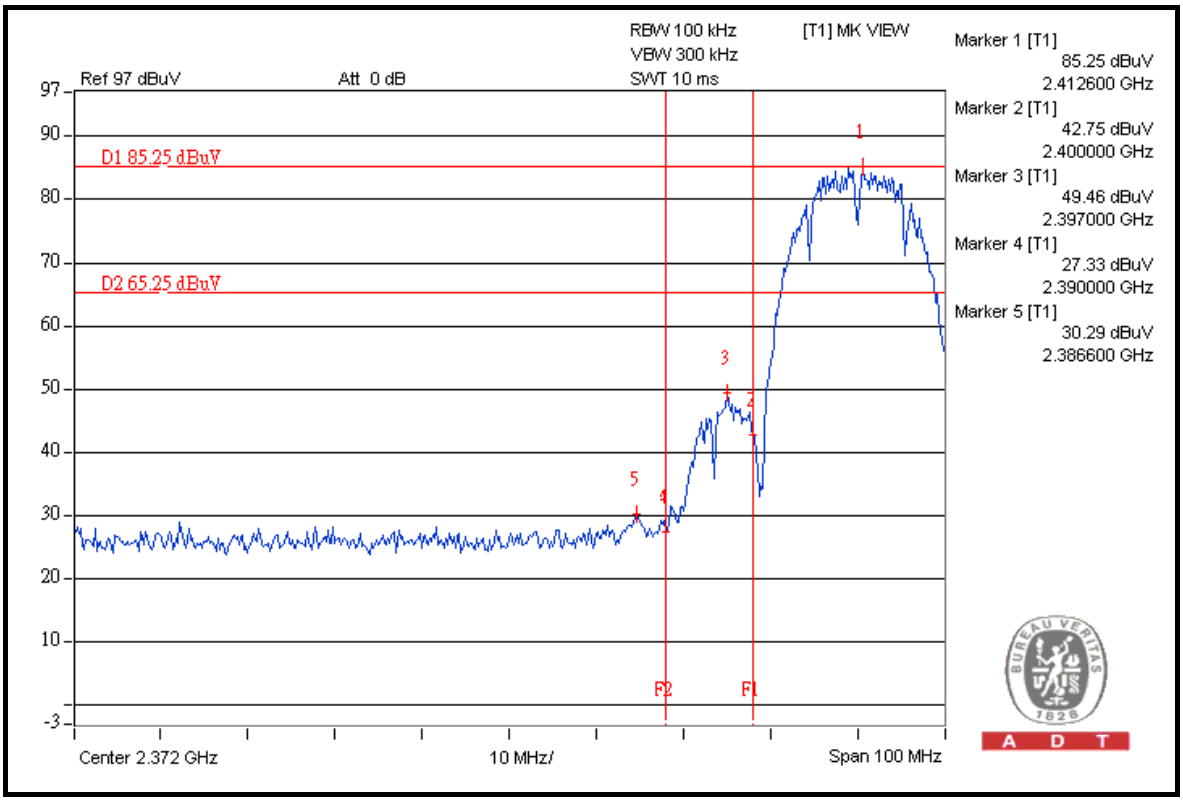
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	112.9	54.96	57.94	74.00
2412.00 (AV)	108.7	57.81	50.89	54.00

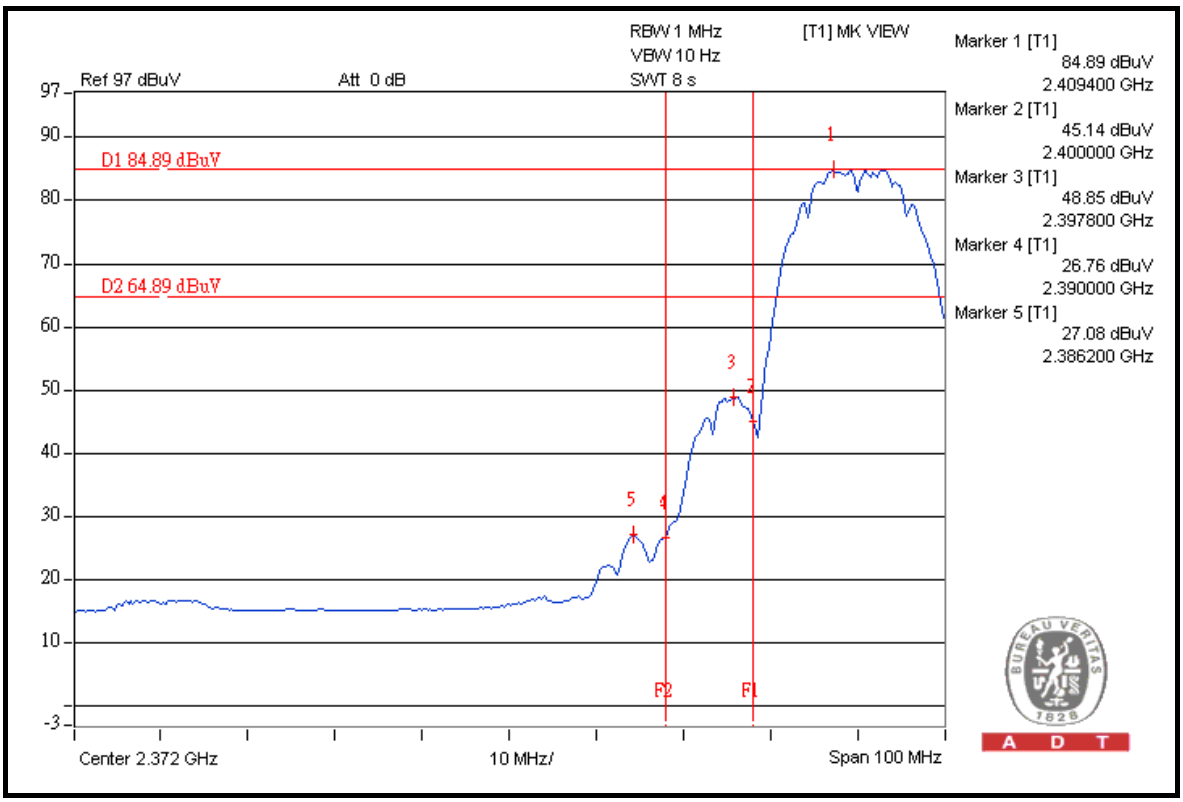
RESTRICT BAND (2483.5 ~ 2500 MHz)

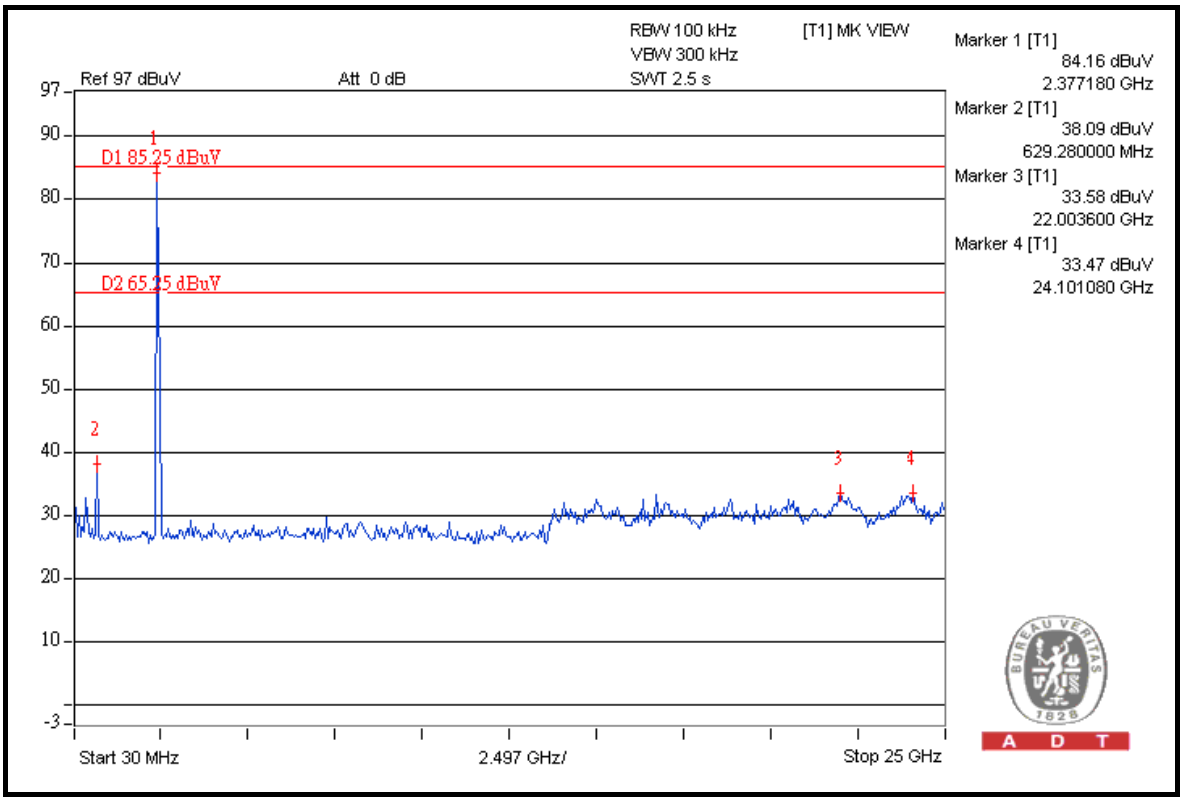
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	110.8	54.58	56.22	74.00
2462.00 (AV)	106.7	62.27	44.43	54.00

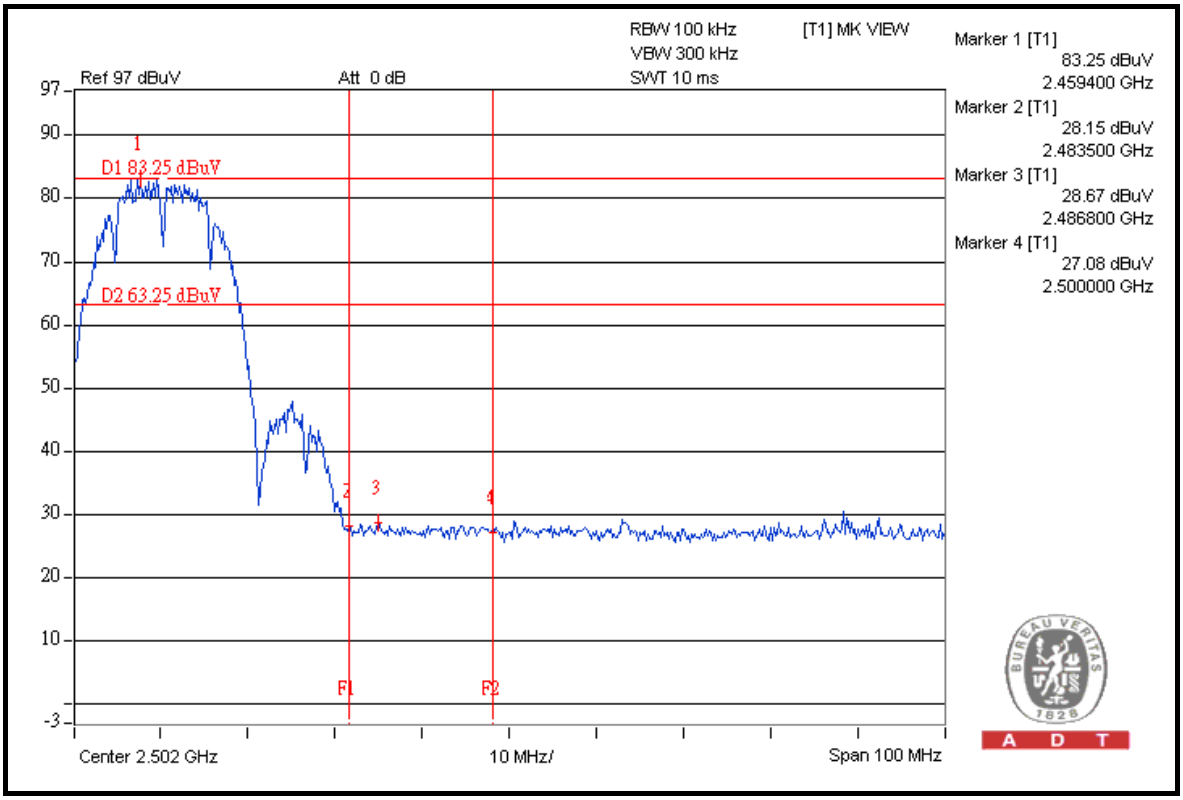
NOTE:

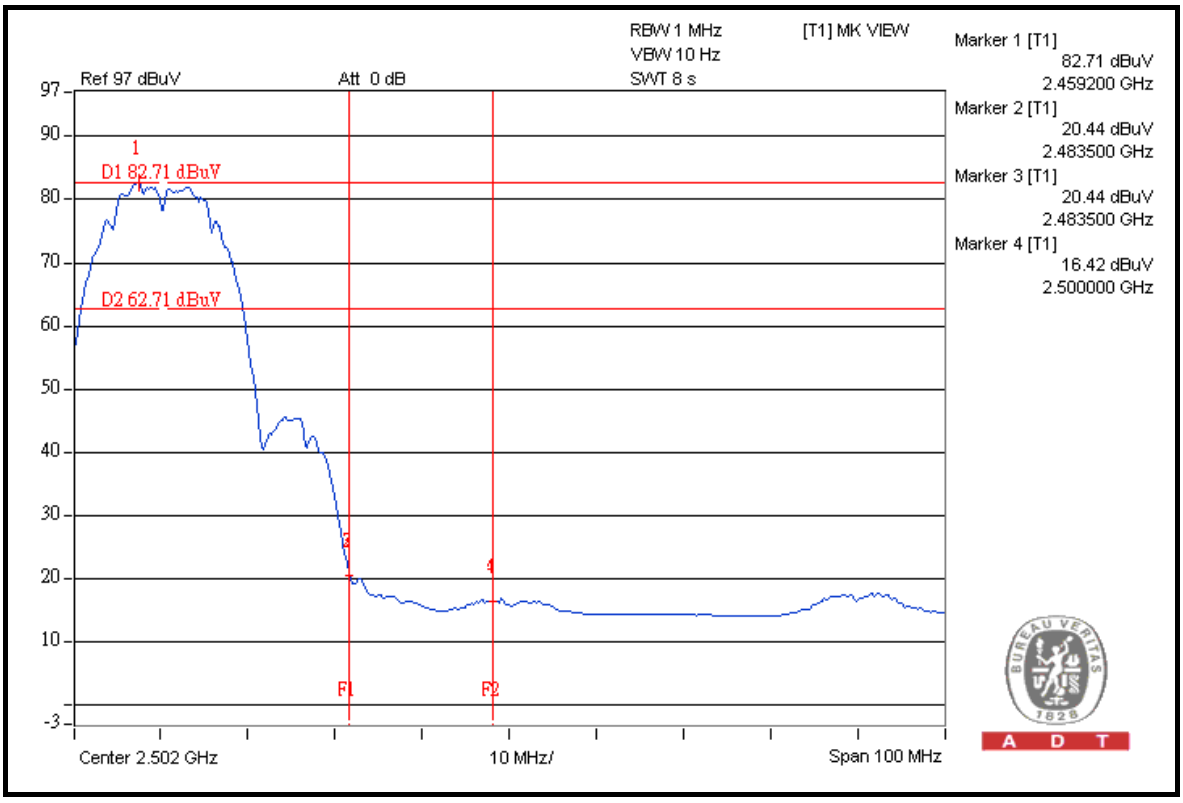
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

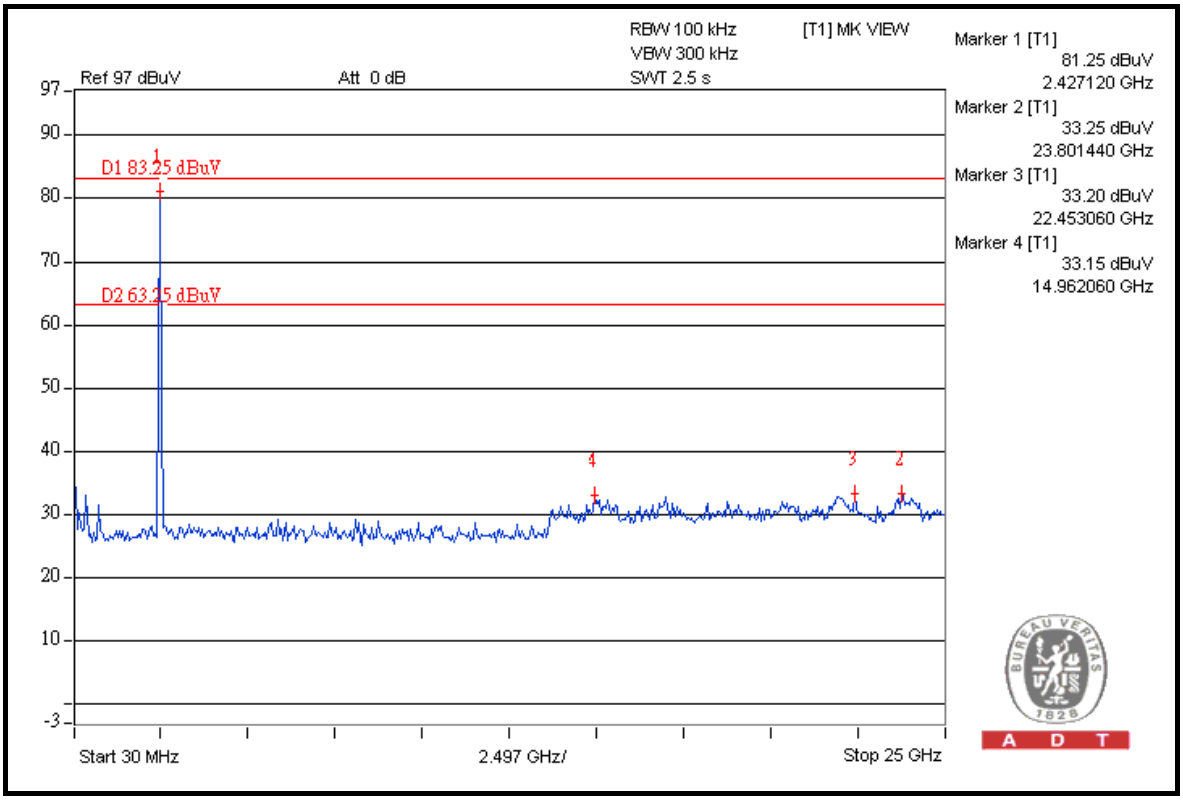

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 85.25 dBuV
D2 65.25 dBuV
Marker 1 [T1]
85.25 dBuV
2.412600 GHz
Marker 2 [T1]
42.75 dBuV
2.400000 GHz
Marker 3 [T1]
49.46 dBuV
2.397000 GHz
Marker 4 [T1]
27.33 dBuV
2.390000 GHz
Marker 5 [T1]
30.29 dBuV
2.386600 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 8 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 84.89 dBuV
D2 64.89 dBuV
Marker 1 [T1]
84.89 dBuV
2.409400 GHz
Marker 2 [T1]
45.14 dBuV
2.400000 GHz
Marker 3 [T1]
48.85 dBuV
2.397800 GHz
Marker 4 [T1]
26.76 dBuV
2.390000 GHz
Marker 5 [T1]
27.08 dBuV
2.386200 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 85.25 dBuV
D2 65.25 dBuV
Marker 1 [T1]
84.16 dBuV
2.377180 GHz
Marker 2 [T1]
38.09 dBuV
629.280000 MHz
Marker 3 [T1]
33.58 dBuV
22.003600 GHz
Marker 4 [T1]
33.47 dBuV
24.101080 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 83.25 dBuV
D2 63.25 dBuV
Marker 1 [T1]
83.25 dBuV
2.459400 GHz
Marker 2 [T1]
28.15 dBuV
2.483500 GHz
Marker 3 [T1]
28.67 dBuV
2.486800 GHz
Marker 4 [T1]
27.08 dBuV
2.500000 GHz
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 8 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 82.71 dBuV
D2 62.71 dBuV
Marker 1 [T1]
82.71 dBuV
2.459200 GHz
Marker 2 [T1]
20.44 dBuV
2.483500 GHz
Marker 3 [T1]
20.44 dBuV
2.483500 GHz
Marker 4 [T1]
16.42 dBuV
2.500000 GHz
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 83.25 dBuV
D2 63.25 dBuV
Marker 1 [T1]
81.25 dBuV
2.427120 GHz
Marker 2 [T1]
33.25 dBuV
23.801440 GHz
Marker 3 [T1]
33.20 dBuV
22.453060 GHz
Marker 4 [T1]
33.15 dBuV
14.962060 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11g

RESTRICT BAND (2310 ~ 2390 MHz)

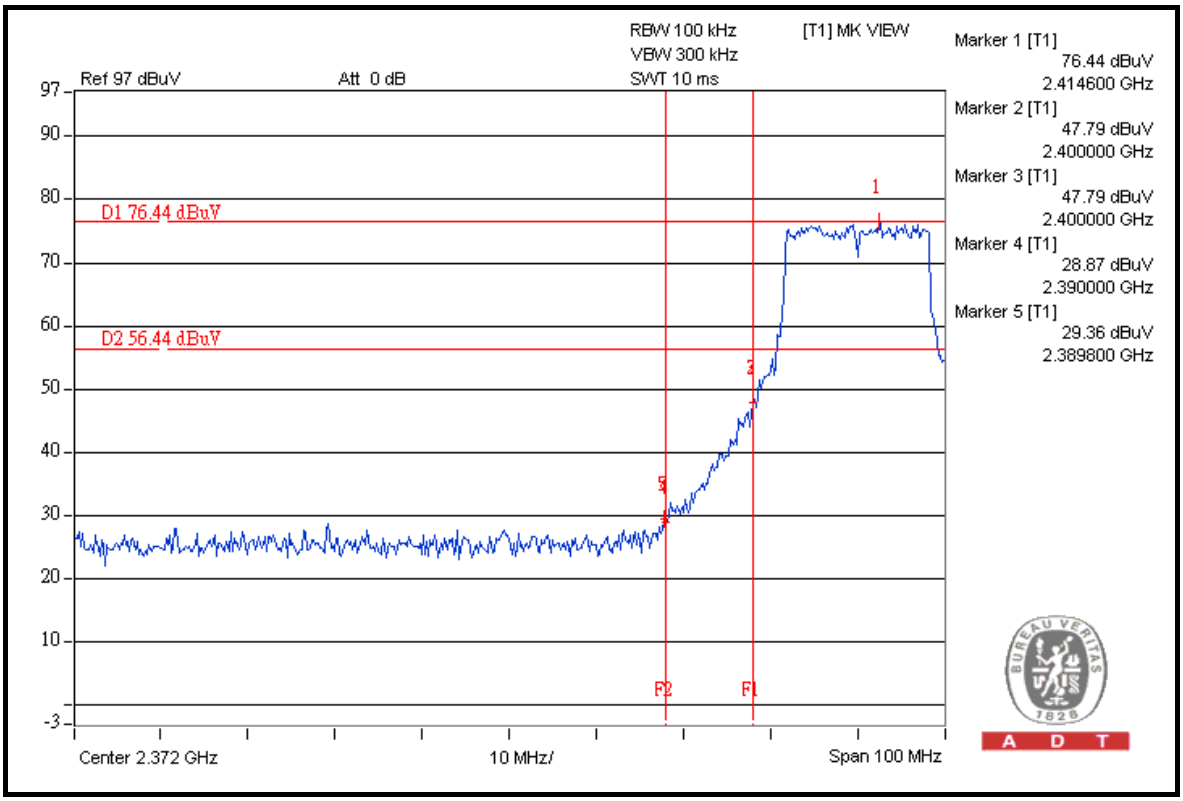
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	111.5	47.08	64.42	74.00
2412.00 (AV)	100.8	50.84	49.96	54.00

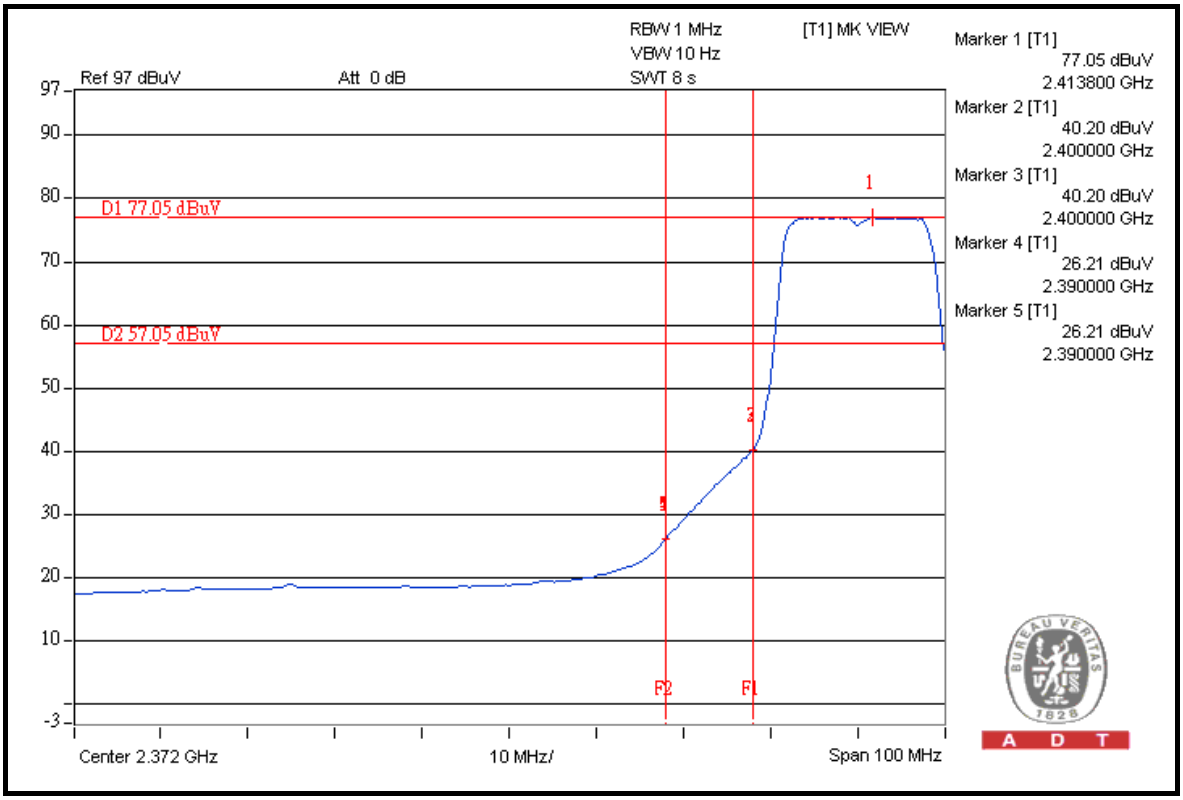
RESTRICT BAND (2483.5 ~ 2500 MHz)

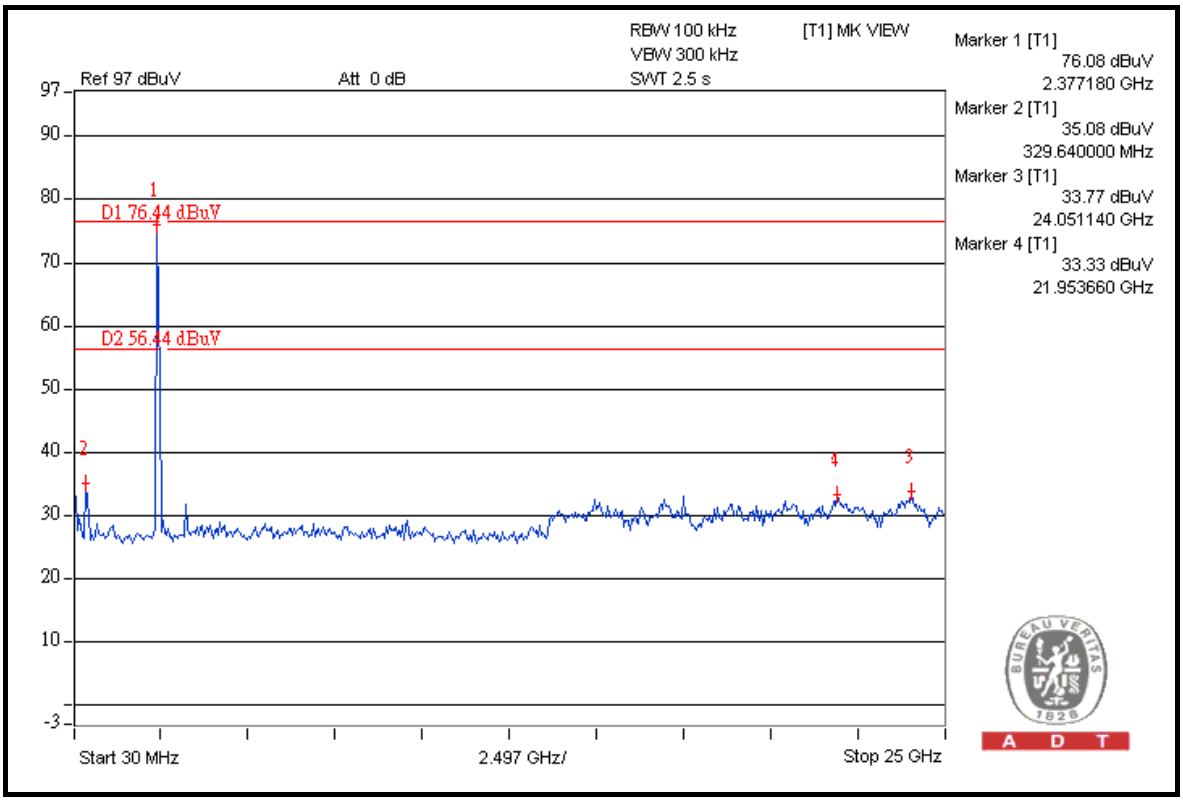
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	110.3	45.63	64.67	74.00
2462.00 (AV)	100.1	49.58	50.52	54.00

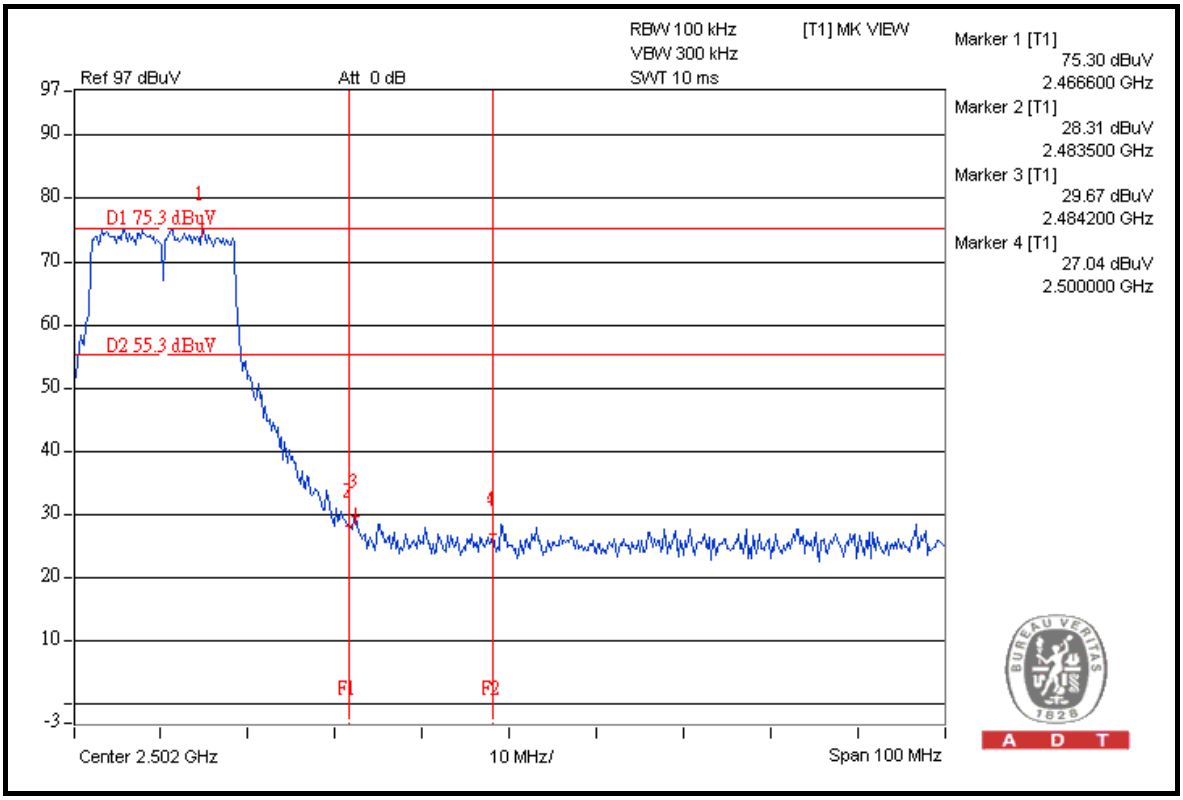
NOTE:

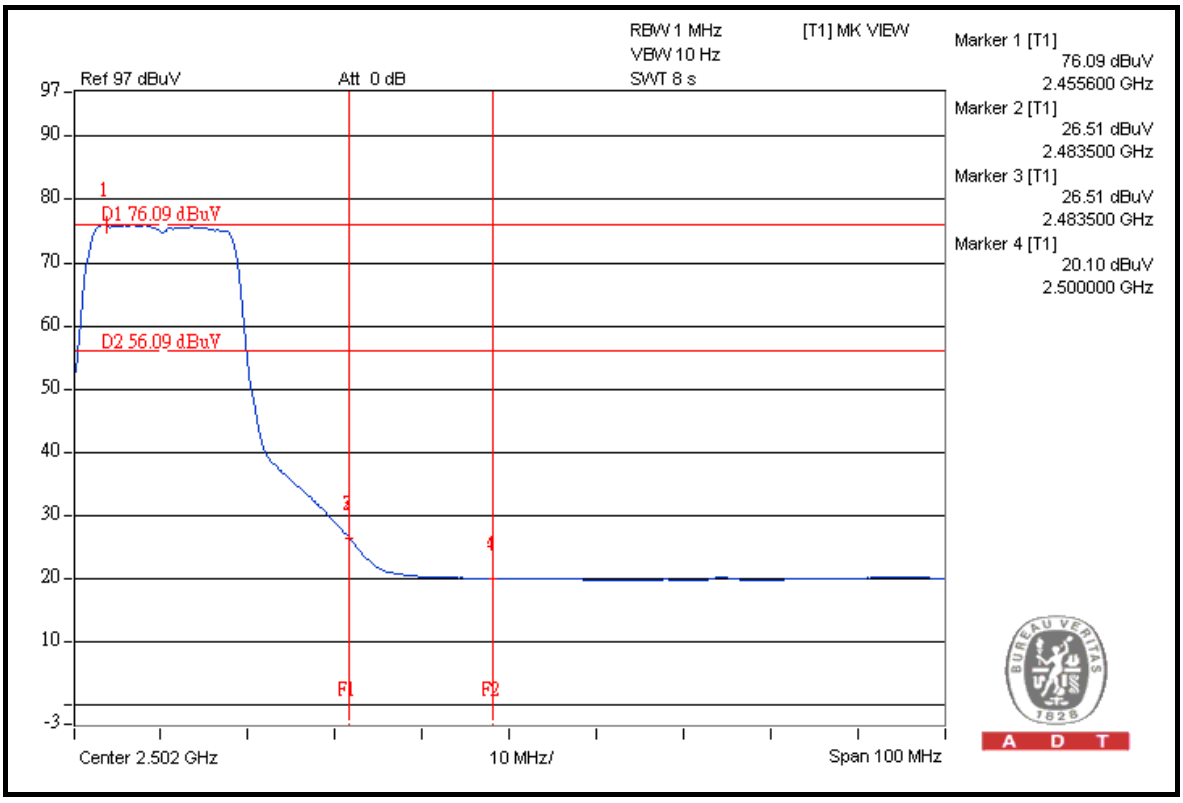
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

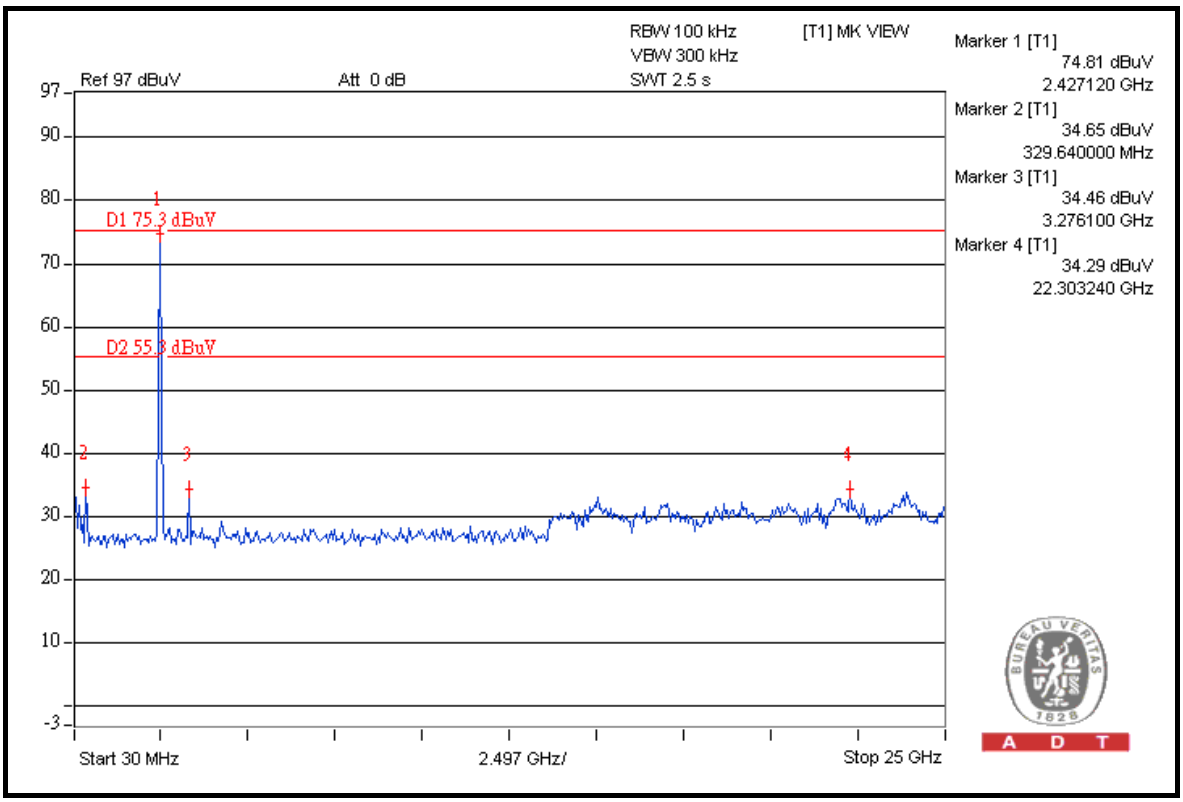

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 76.44 dBuV
D2 56.44 dBuV
Marker 1 [T1]
76.44 dBuV
2.414600 GHz
Marker 2 [T1]
47.79 dBuV
2.400000 GHz
Marker 3 [T1]
47.79 dBuV
2.400000 GHz
Marker 4 [T1]
28.87 dBuV
2.390000 GHz
Marker 5 [T1]
29.36 dBuV
2.389800 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 8 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 77.05 dBuV
D2 57.05 dBuV
Marker 1 [T1]
77.05 dBuV
2.413800 GHz
Marker 2 [T1]
40.20 dBuV
2.400000 GHz
Marker 3 [T1]
40.20 dBuV
2.400000 GHz
Marker 4 [T1]
26.21 dBuV
2.390000 GHz
Marker 5 [T1]
26.21 dBuV
2.390000 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
76.08 dBuV
2.377180 GHz
Marker 2 [T1]
35.08 dBuV
329.640000 MHz
Marker 3 [T1]
33.77 dBuV
24.051140 GHz
Marker 4 [T1]
33.33 dBuV
21.953660 GHz
D1 76.44 dBuV
D2 56.44 dBuV
97
90
80
70
60
50
40
30
20
10
-3
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
75.30 dBuV
2.466600 GHz
Marker 2 [T1]
28.31 dBuV
2.483500 GHz
Marker 3 [T1]
29.67 dBuV
2.484200 GHz
Marker 4 [T1]
27.04 dBuV
2.500000 GHz
D1 75.3 dBuV
D2 55.3 dBuV
97
90
80
70
60
50
40
30
20
10
-3
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 8 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 76.09 dBuV
D2 56.09 dBuV
Marker 1 [T1]
76.09 dBuV
2.455600 GHz
Marker 2 [T1]
26.51 dBuV
2.483500 GHz
Marker 3 [T1]
26.51 dBuV
2.483500 GHz
Marker 4 [T1]
20.10 dBuV
2.500000 GHz
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 75.3 dBuV
D2 55.3 dBuV
Marker 1 [T1]
74.81 dBuV
2.427120 GHz
Marker 2 [T1]
34.65 dBuV
329.640000 MHz
Marker 3 [T1]
34.46 dBuV
3.276100 GHz
Marker 4 [T1]
34.29 dBuV
22.303240 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11n (20MHz)

RESTRICT BAND (2310 ~ 2390 MHz)

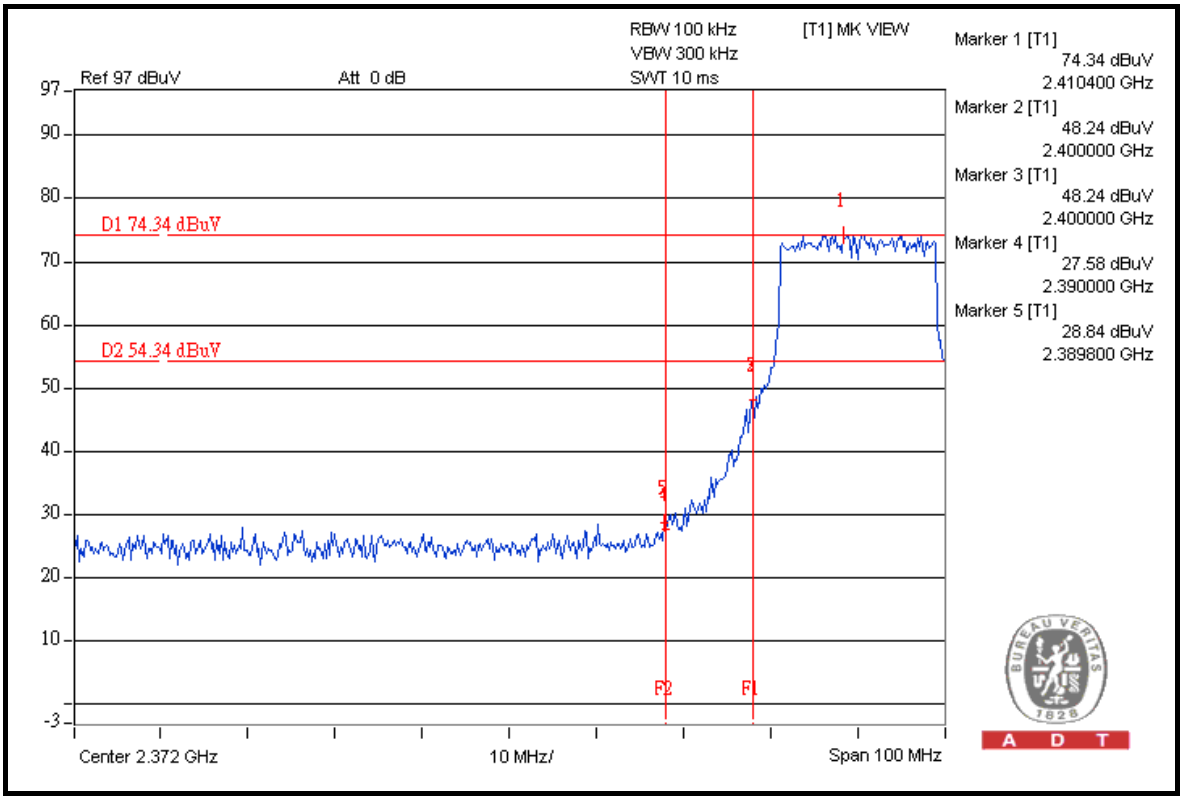
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	110.5	45.50	65.00	74.00
2412.00 (AV)	99.1	50.96	48.14	54.00

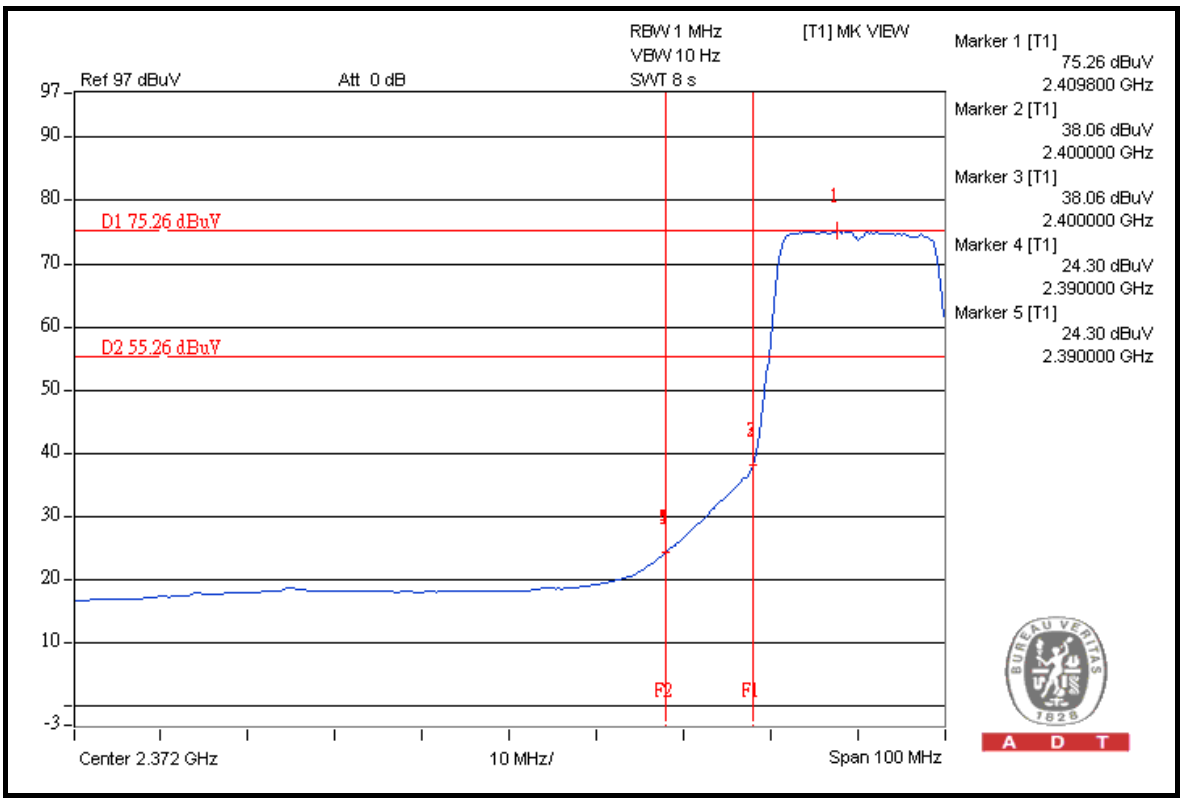
RESTRICT BAND (2483.5 ~ 2500 MHz)

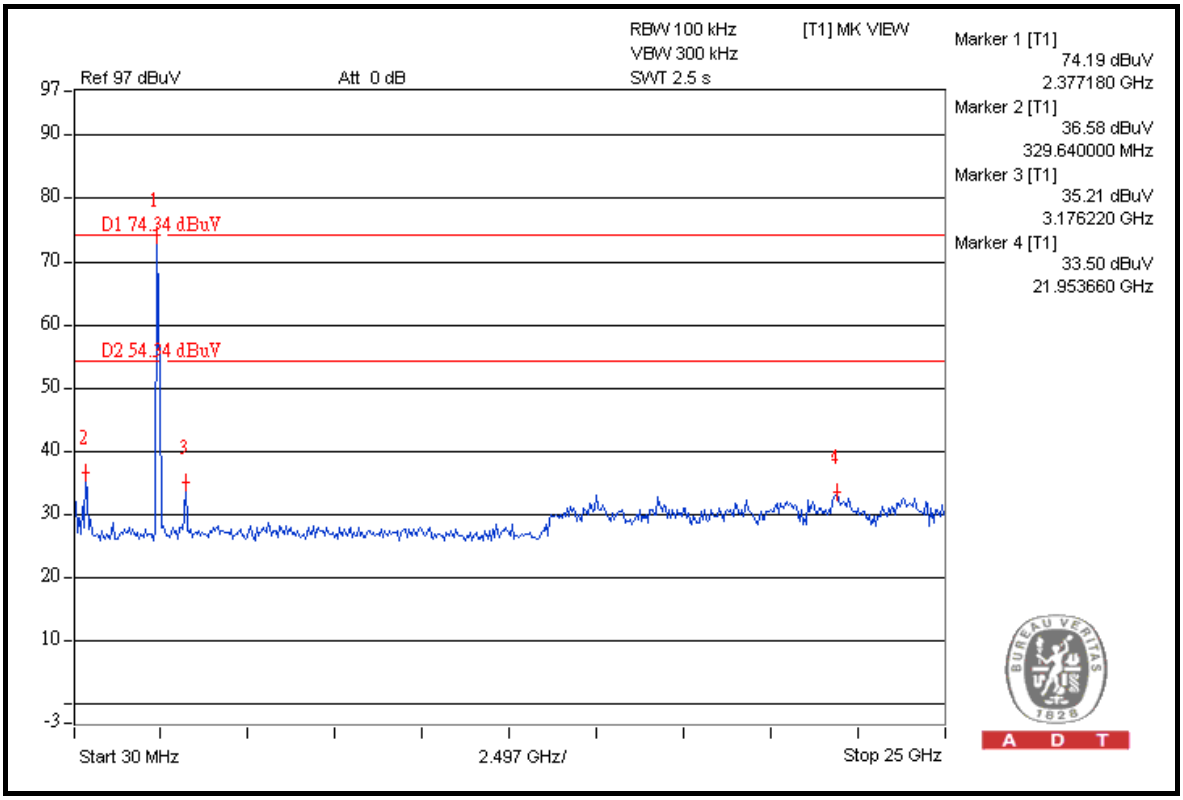
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	109.8	43.93	65.87	74.00
2462.00 (AV)	98.5	48.84	49.66	54.00

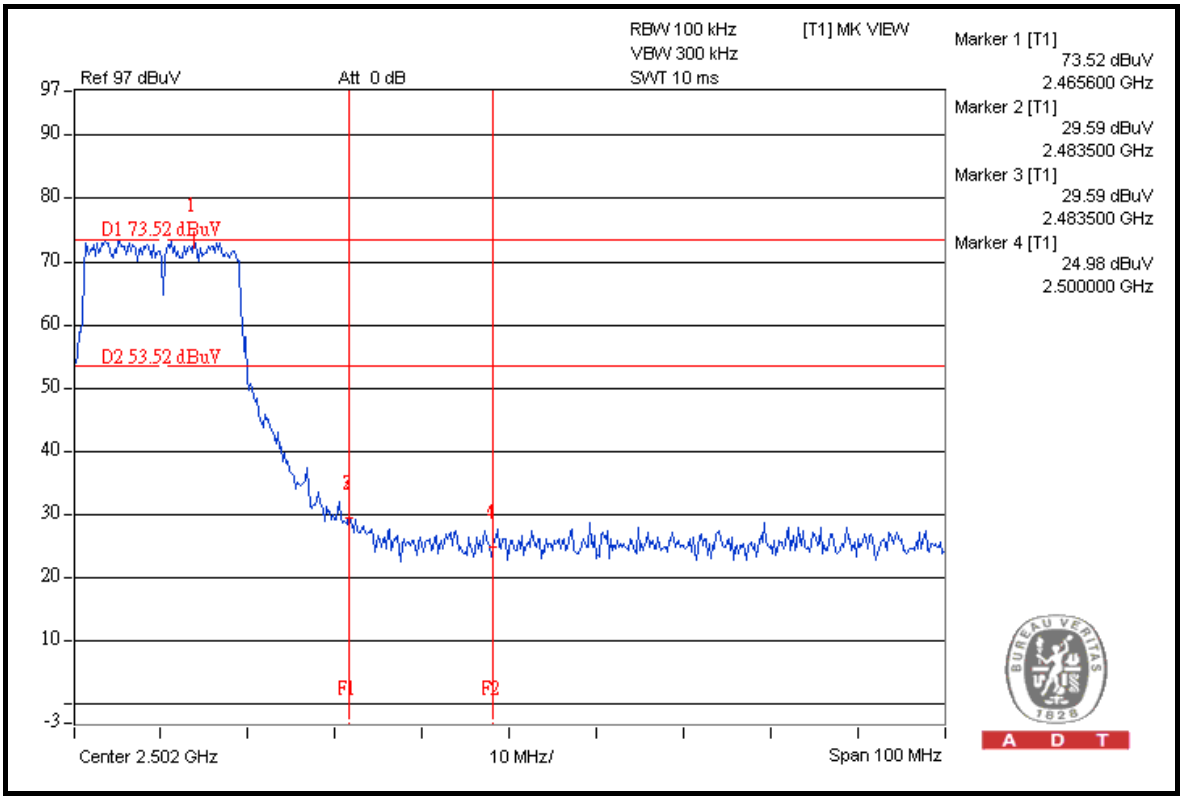
NOTE:

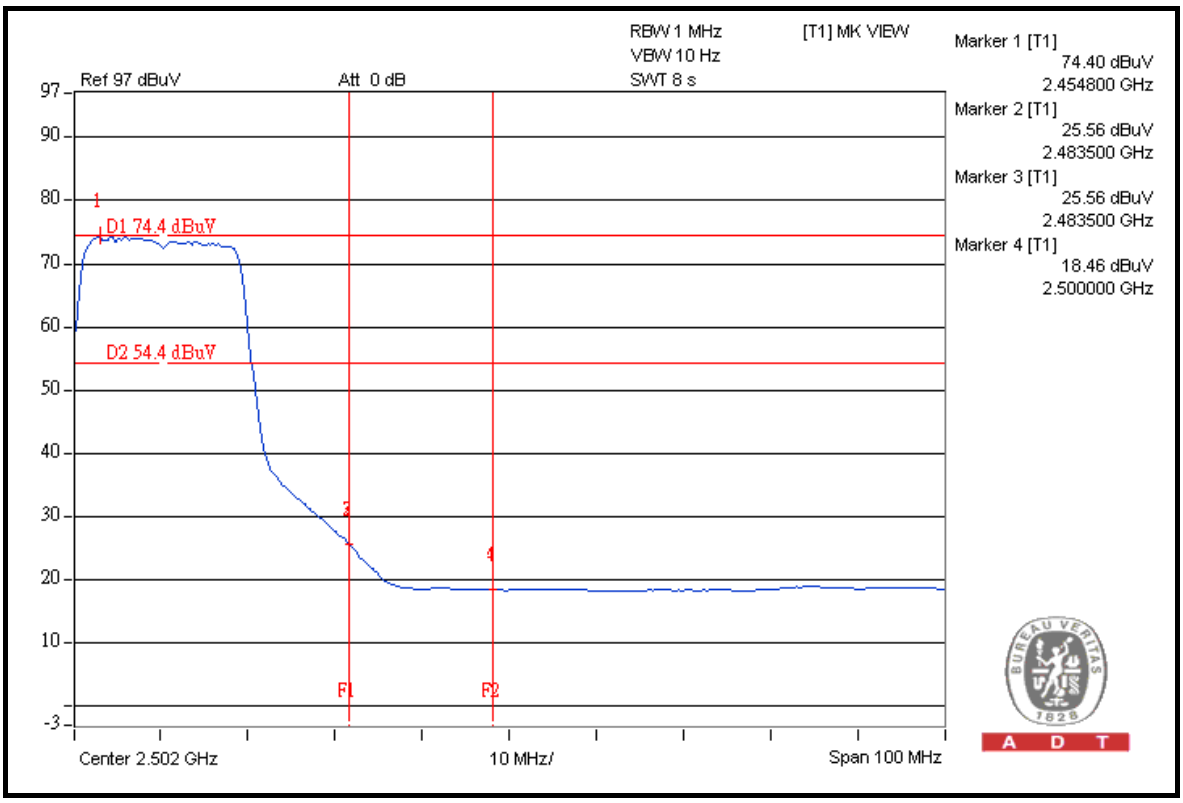
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

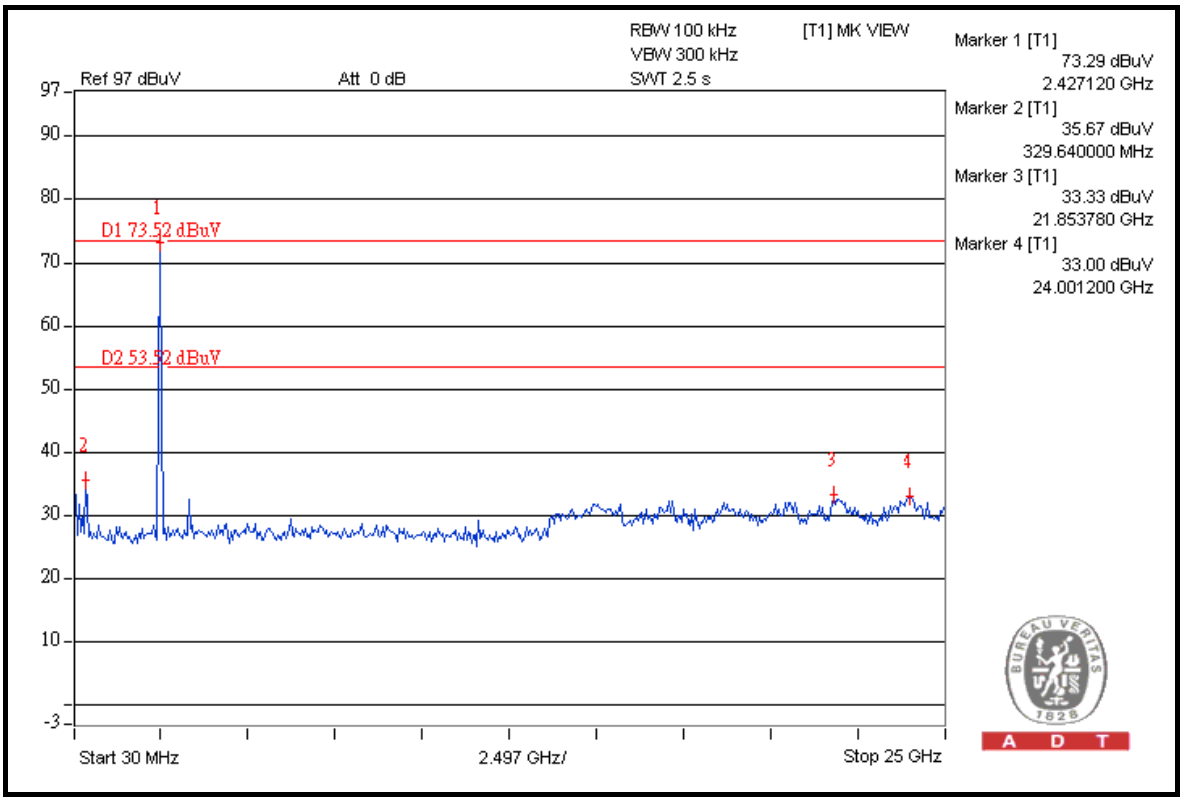

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 74.34 dBuV
D2 54.34 dBuV
Marker 1 [T1]
74.34 dBuV
2.410400 GHz
Marker 2 [T1]
48.24 dBuV
2.400000 GHz
Marker 3 [T1]
48.24 dBuV
2.400000 GHz
Marker 4 [T1]
27.58 dBuV
2.390000 GHz
Marker 5 [T1]
28.84 dBuV
2.389800 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 8 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 75.26 dBuV
D2 55.26 dBuV
Marker 1 [T1]
75.26 dBuV
2.409800 GHz
Marker 2 [T1]
38.06 dBuV
2.400000 GHz
Marker 3 [T1]
38.06 dBuV
2.400000 GHz
Marker 4 [T1]
24.30 dBuV
2.390000 GHz
Marker 5 [T1]
24.30 dBuV
2.390000 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
74.19 dBuV
2.377180 GHz
Marker 2 [T1]
36.58 dBuV
329.640000 MHz
Marker 3 [T1]
35.21 dBuV
3.176220 GHz
Marker 4 [T1]
33.50 dBuV
21.953660 GHz
D1 74.34 dBuV
D2 54.34 dBuV
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
73.52 dBuV
2.465600 GHz
Marker 2 [T1]
29.59 dBuV
2.483500 GHz
Marker 3 [T1]
29.59 dBuV
2.483500 GHz
Marker 4 [T1]
24.98 dBuV
2.500000 GHz
D1 73.52 dBuV
D2 53.52 dBuV
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 8 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
74.40 dBuV
2.454800 GHz
Marker 2 [T1]
25.56 dBuV
2.483500 GHz
Marker 3 [T1]
25.56 dBuV
2.483500 GHz
Marker 4 [T1]
18.46 dBuV
2.500000 GHz
D1 74.4 dBuV
D2 54.4 dBuV
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
73.29 dBuV
2.427120 GHz
Marker 2 [T1]
35.67 dBuV
329.640000 MHz
Marker 3 [T1]
33.33 dBuV
21.853780 GHz
Marker 4 [T1]
33.00 dBuV
24.001200 GHz
D1 73.52 dBuV
D2 53.52 dBuV
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11n (40MHz)

RESTRICT BAND (2310 ~ 2390 MHz)

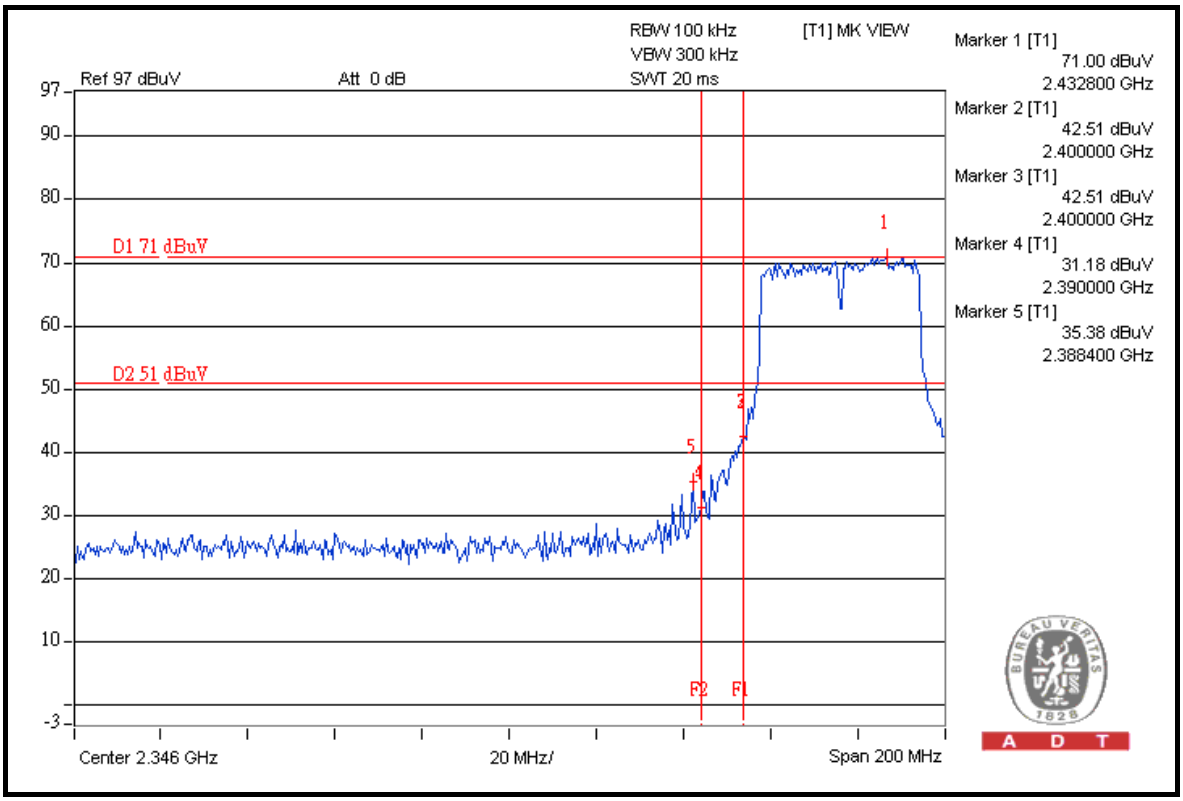
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2422.00 (PK)	107.5	35.62	71.88	74.00
2422.00 (AV)	95.5	44.03	51.47	54.00

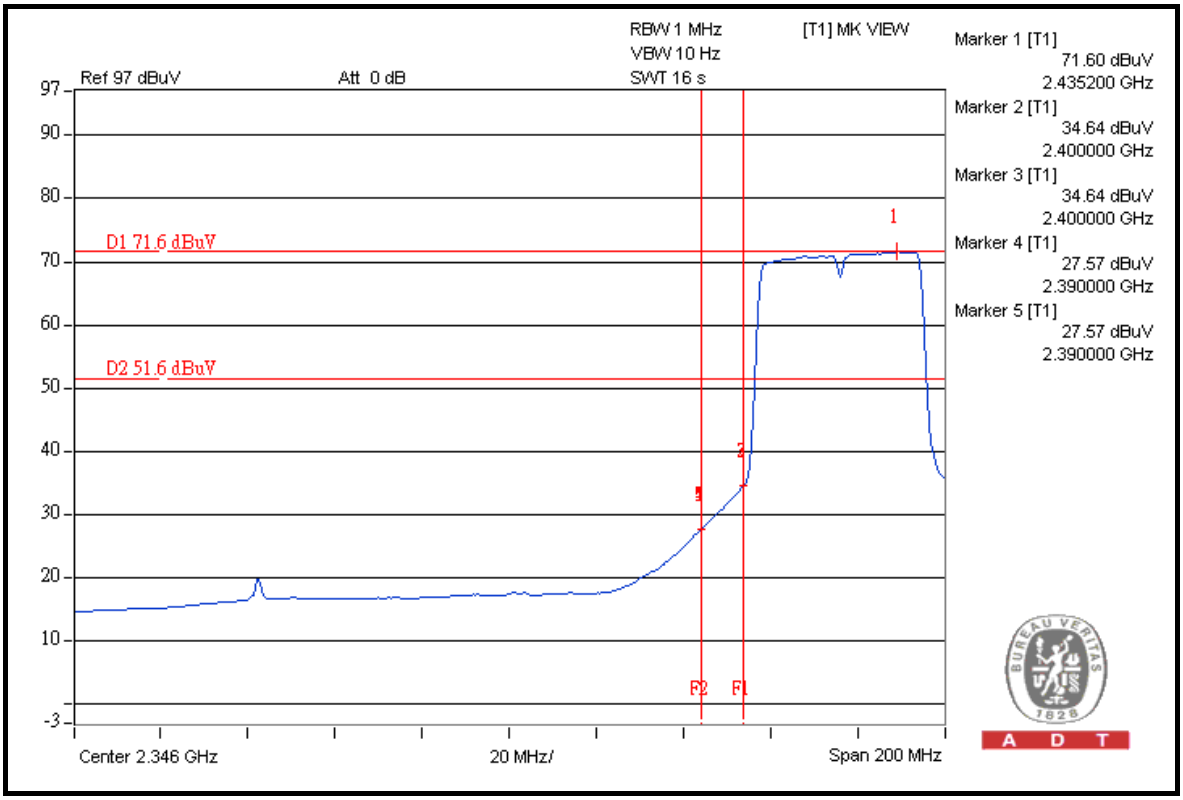
RESTRICT BAND (2483.5 ~ 2500 MHz)

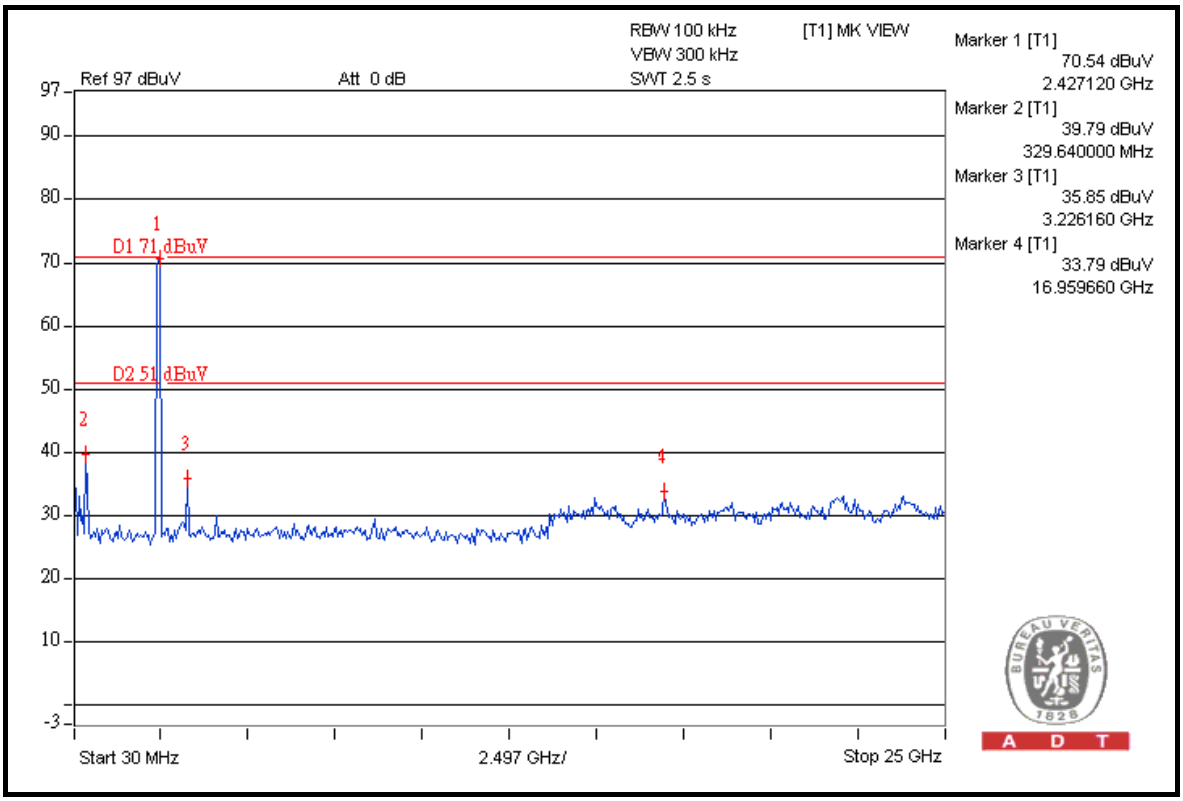
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2452.00 (PK)	106.1	39.19	66.91	74.00
2452.00 (AV)	94.4	42.91	51.49	54.00

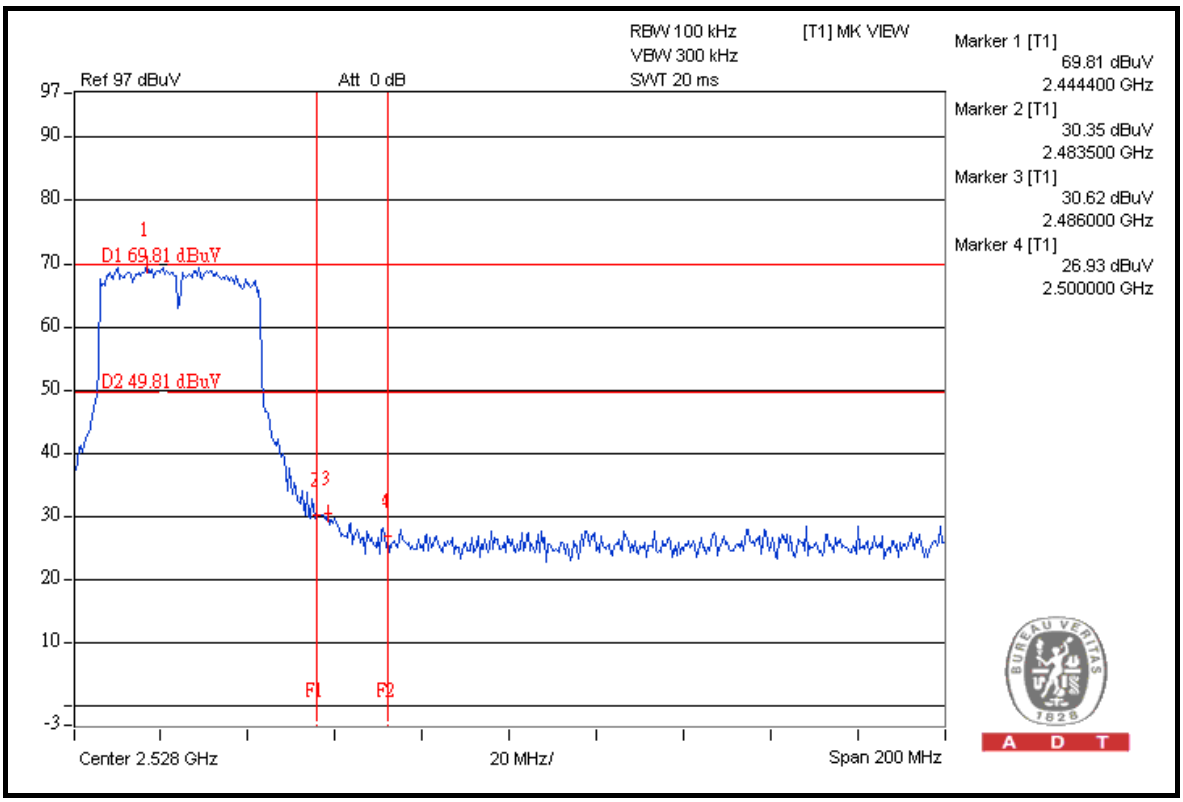
NOTE:

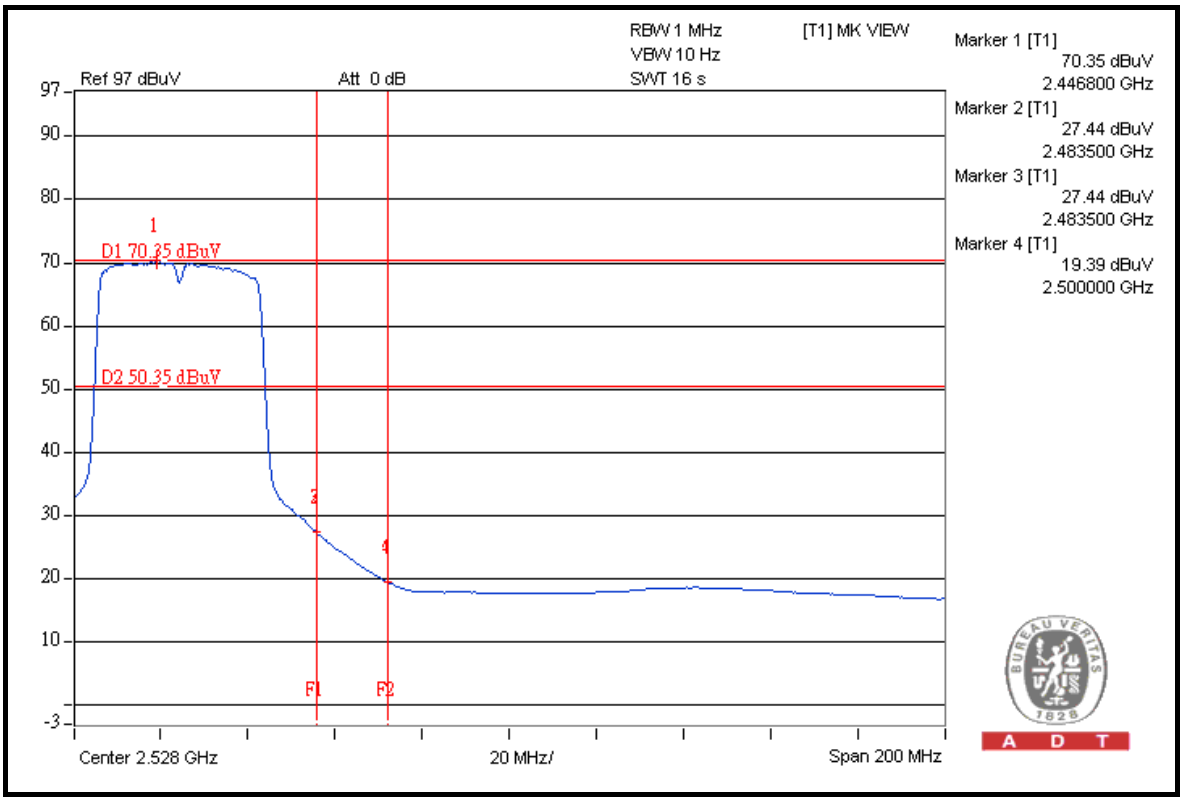
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

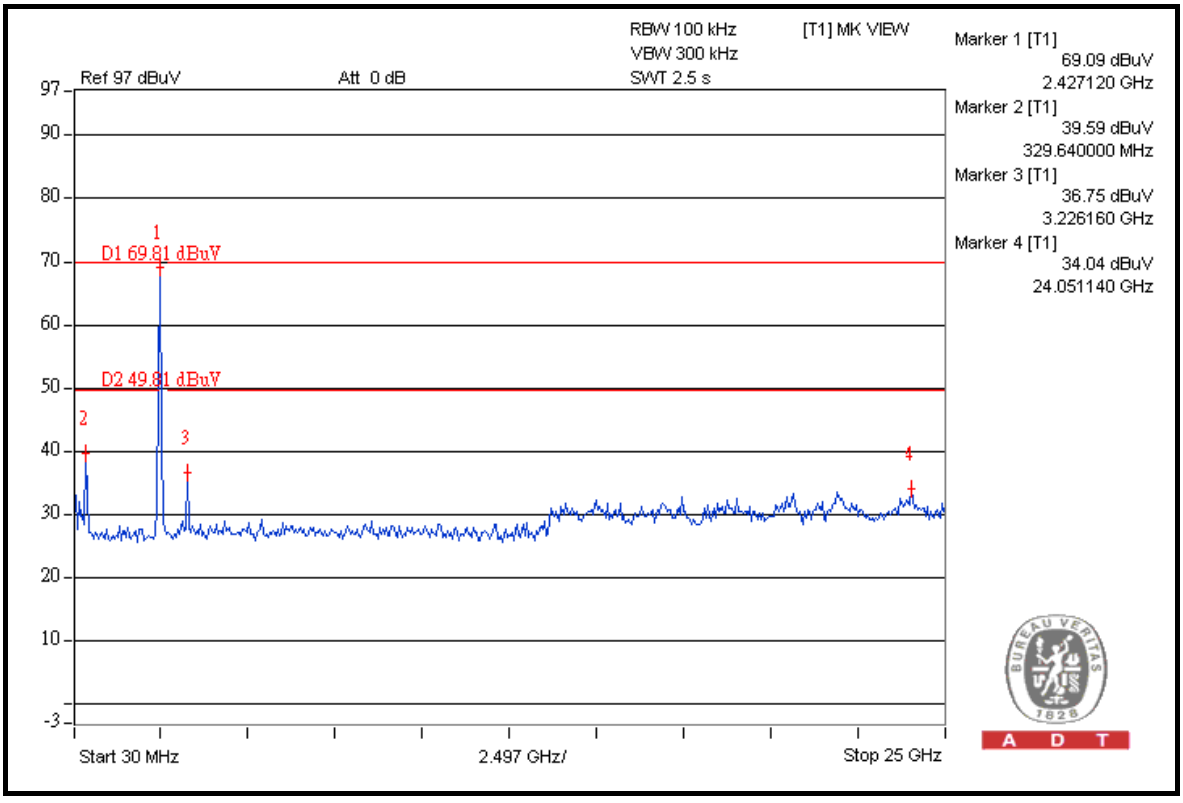

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 71 dBuV
D2 51 dBuV
Marker 1 [T1]
71.00 dBuV
2.432800 GHz
Marker 2 [T1]
42.51 dBuV
2.400000 GHz
Marker 3 [T1]
42.51 dBuV
2.400000 GHz
Marker 4 [T1]
31.18 dBuV
2.390000 GHz
Marker 5 [T1]
35.38 dBuV
2.388400 GHz
Center 2.346 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 71.6 dBuV
D2 51.6 dBuV
Marker 1 [T1]
71.60 dBuV
2.435200 GHz
Marker 2 [T1]
34.64 dBuV
2.400000 GHz
Marker 3 [T1]
34.64 dBuV
2.400000 GHz
Marker 4 [T1]
27.57 dBuV
2.390000 GHz
Marker 5 [T1]
27.57 dBuV
2.390000 GHz
Center 2.346 GHz
20 MHz/
Span 200 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
70.54 dBuV
2.427120 GHz
Marker 2 [T1]
39.79 dBuV
329.640000 MHz
Marker 3 [T1]
35.85 dBuV
3.226160 GHz
Marker 4 [T1]
33.79 dBuV
16.959660 GHz
D1 71 dBuV
D2 51 dBuV
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
69.81 dBuV
2.444400 GHz
Marker 2 [T1]
30.35 dBuV
2.483500 GHz
Marker 3 [T1]
30.62 dBuV
2.486000 GHz
Marker 4 [T1]
26.93 dBuV
2.500000 GHz
D1 69.81 dBuV
D2 49.81 dBuV
F1
F2
Center 2.528 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
70.35 dBuV
2.446800 GHz
Marker 2 [T1]
27.44 dBuV
2.483500 GHz
Marker 3 [T1]
27.44 dBuV
2.483500 GHz
Marker 4 [T1]
19.39 dBuV
2.500000 GHz
D1 70.35 dBuV
D2 50.35 dBuV
F1
F2
Center 2.528 GHz
20 MHz/
Span 200 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
69.09 dBuV
2.427120 GHz
Marker 2 [T1]
39.59 dBuV
329.640000 MHz
Marker 3 [T1]
36.75 dBuV
3.226160 GHz
Marker 4 [T1]
34.04 dBuV
24.051140 GHz
D1 69.81 dBuV
D2 49.81 dBuV
Start 30 MHz
2.497 GHz/
Stop 25 GHz

5. TEST TYPES AND RESULTS (FOR 5.0GHz BAND)

5.1 RADIATED EMISSION MEASUREMENT

5.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

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. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Dec. 29, 2009	Dec. 28, 2010
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	May 13, 2009	May 12, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 29, 2009	Apr. 28, 2010
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-209	Jul. 01, 2009	Jun. 30, 2010
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Dec. 25, 2009	Dec. 24, 2010
Preamplifier Agilent	8449B	3008A01961	Nov. 04, 2009	Nov. 03, 2010
Preamplifier Agilent	8447D	2944A10738	Nov. 04, 2009	Nov. 03, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274041/4	Aug. 28, 2009	Aug. 27, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283397/4	Aug. 28, 2009	Aug. 27, 2010
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT.	TT100.	TT93021704	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	Aug. 27, 2009	Aug. 26, 2010

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 4.

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 IC7450F-4.

5.1.3 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. The antenna is a broadband antenna, and its height 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.

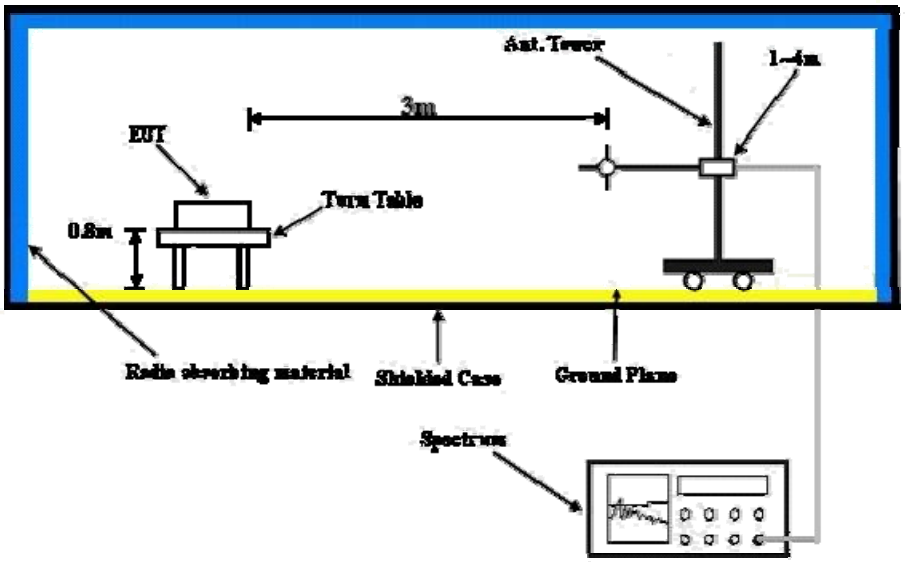
NOTE:

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 100kHz and video bandwidth is 300kHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 TEST SETUP



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

5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6

5.1.7 TEST RESULTS

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

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	#5725.00	85.5 PK	93.0	-7.5	1.17 H	191	42.90	42.60
2	#5725.00	61.8 AV	81.8	-20.0	1.17 H	191	19.20	42.60
3	*5745.00	113.0 PK			1.12 H	191	70.40	42.60
4	*5745.00	101.8 AV			1.12 H	191	59.20	42.60
5	11490.00	69.7 PK	74.0	-4.3	1.37 H	128	15.50	54.20
6	11490.00	52.9 AV	54.0	-1.1	1.37 H	128	-1.30	54.20
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	#5725.00	86.6 PK	95.1	-8.5	1.00 V	171	44.00	42.60
2	#5725.00	63.6 AV	83.9	-20.3	1.00 V	171	21.00	42.60
3	*5745.00	115.1 PK			1.00 V	172	72.50	42.60
4	*5745.00	103.9 AV			1.00 V	172	61.30	42.60
5	11490.00	65.0 PK	74.0	-9.0	1.85 V	67	10.80	54.20
6	11490.00	52.6 AV	54.0	-1.4	1.85 V	67	-1.60	54.20

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	112.8 PK			1.28 H	183	70.20	42.60
2	*5785.00	101.5 AV			1.28 H	183	58.90	42.60
3	11570.00	70.0 PK	74.0	-4.0	1.77 H	186	15.90	54.10
4	**11570.00**	**53.0 AV**	**54.0**	**-1.0**	**1.77 H**	**186**	**-1.10**	**54.10**
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	*5785.00	114.7 PK			1.02 V	165	72.10	42.60
2	*5785.00	103.6 AV			1.02 V	165	61.00	42.60
3	11570.00	65.2 PK	74.0	-8.8	1.69 V	85	11.10	54.10
4	11570.00	52.7 AV	54.0	-1.3	1.69 V	85	-1.40	54.10

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.
6. The limit value is defined as per 15.247.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	109.4 PK			1.24 H	108	66.70	42.70
2	*5825.00	98.3 AV			1.24 H	108	55.60	42.70
3	#5850.00	66.2 PK	89.4	-23.2	1.28 H	108	23.50	42.70
4	#5850.00	46.0 AV	78.3	-32.3	1.28 H	108	3.30	42.70
5	11650.00	66.8 PK	74.0	-7.2	1.13 H	187	12.80	54.00
6	11650.00	52.9 AV	54.0	-1.1	1.13 H	187	-1.10	54.00
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	*5825.00	111.6 PK			1.01 V	158	68.90	42.70
2	*5825.00	99.3 AV			1.01 V	158	56.60	42.70
3	#5850.00	68.9 PK	91.6	-22.7	1.00 V	158	26.20	42.70
4	#5850.00	48.8 AV	79.3	-30.5	1.00 V	158	6.10	42.70
5	11650.00	65.1 PK	74.0	-8.9	1.62 V	72	11.10	54.00
6	11650.00	52.8 AV	54.0	-1.2	1.62 V	72	-1.20	54.00

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

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	#5725.00	88.8 PK	93.8	-5.0	1.26 H	102	46.20	42.60
2	#5725.00	64.7 AV	82.0	-17.3	1.26 H	102	22.10	42.60
3	*5745.00	113.8 PK			1.26 H	102	71.20	42.60
4	*5745.00	102.0 AV			1.26 H	102	59.40	42.60
5	11490.00	70.1 PK	74.0	-3.9	1.63 H	125	15.90	54.20
6	**11490.00**	**53.0 AV**	**54.0**	**-1.0**	**1.63 H**	**125**	**-1.20**	**54.20**
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	#5725.00	90.7 PK	96.7	-6.0	1.00 V	159	48.10	42.60
2	#5725.00	66.2 AV	84.5	-18.3	1.00 V	159	23.60	42.60
3	*5745.00	116.7 PK			1.00 V	157	74.10	42.60
4	*5745.00	104.5 AV			1.00 V	157	61.90	42.60
5	11490.00	64.9 PK	74.0	-9.1	1.75 V	59	10.70	54.20
6	11490.00	52.8 AV	54.0	-1.2	1.75 V	59	-1.40	54.20

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	109.6 PK			1.77 H	90	67.00	42.60
2	*5785.00	98.8 AV			1.77 H	90	56.20	42.60
3	11570.00	67.7 PK	74.0	-6.3	1.65 H	128	13.60	54.10
4	11570.00	52.8 AV	54.0	-1.2	1.65 H	128	-1.30	54.10
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	*5785.00	113.9 PK			1.07 V	159	71.30	42.60
2	*5785.00	101.8 AV			1.07 V	159	59.20	42.60
3	11570.00	61.5 PK	74.0	-12.5	1.82 V	62	7.40	54.10
4	11570.00	52.5 AV	54.0	-1.5	1.82 V	62	-1.60	54.10

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.
6. The limit value is defined as per 15.247.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	108.5 PK			1.28 H	97	65.80	42.70
2	*5825.00	97.7 AV			1.28 H	97	55.00	42.70
3	#5850.00	70.2 PK	88.5	-18.3	1.28 H	100	27.50	42.70
4	#5850.00	49.3 AV	77.7	-28.4	1.28 H	100	6.60	42.70
5	11650.00	67.6 PK	74.0	-6.4	1.67 H	125	13.60	54.00
6	11650.00	52.9 AV	54.0	-1.1	1.67 H	125	-1.10	54.00
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	*5825.00	112.1 PK			1.05 V	163	69.40	42.70
2	*5825.00	100.3 AV			1.05 V	163	57.60	42.70
3	#5850.00	72.9 PK	92.1	-19.2	1.07 V	151	30.20	42.70
4	#5850.00	51.7 AV	80.3	-28.6	1.07 V	151	9.00	42.70
5	11650.00	66.8 PK	74.0	-7.2	1.68 V	135	12.80	54.00
6	11650.00	52.5 AV	54.0	-1.5	1.68 V	135	-1.50	54.00

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

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	#5725.00	87.3 PK	91.2	-3.9	1.28 H	107	44.70	42.60
2	#5725.00	68.5 AV	79.3	-10.8	1.28 H	107	25.90	42.60
3	*5755.00	111.2 PK			1.28 H	102	68.60	42.60
4	*5755.00	99.3 AV			1.28 H	102	56.70	42.60
5	11510.00	68.3 PK	74.0	-5.7	1.66 H	126	14.10	54.20
6	**11510.00**	**53.0 AV**	**54.0**	**-1.0**	**1.66 H**	**126**	**-1.20**	**54.20**
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	#5725.00	89.6 PK	93.3	-3.7	1.00 V	158	47.00	42.60
2	#5725.00	71.5 AV	80.8	-9.3	1.00 V	158	28.90	42.60
3	*5755.00	113.3 PK			1.00 V	155	70.70	42.60
4	*5755.00	100.8 AV			1.00 V	155	58.20	42.60
5	11510.00	65.0 PK	74.0	-9.0	1.77 V	75	10.80	54.20
6	11510.00	52.7 AV	54.0	-1.3	1.77 V	75	-1.50	54.20

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.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%RH 1020 hPa	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	110.9 PK			1.31 H	109	68.20	42.70
2	*5795.00	98.8 AV			1.31 H	109	56.10	42.70
3	#5850.00	82.1 PK	90.9	-8.8	1.27 H	112	39.40	42.70
4	#5850.00	63.2 AV	78.8	-15.6	1.27 H	112	20.50	42.70
5	11590.00	70.3 PK	74.0	-3.7	1.37 H	127	16.30	54.00
6	11590.00	52.8 AV	54.0	-1.2	1.37 H	127	-1.20	54.00
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	*5795.00	112.3 PK			1.02 V	171	69.60	42.70
2	*5795.00	99.2 AV			1.02 V	171	56.50	42.70
3	#5850.00	83.9 PK	92.3	-8.4	1.03 V	169	41.20	42.70
4	#5850.00	65.3 AV	79.2	-13.9	1.03 V	169	22.60	42.70
5	11590.00	64.7 PK	74.0	-9.3	1.79 V	100	10.70	54.00
6	11590.00	52.7 AV	54.0	-1.3	1.79 V	100	-1.30	54.00

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

BELOW 1GHz WORST-CASE DATA：802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 68%RH 1020 hPa	TEST MODE	A
TESTED BY	Sun Lin		

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	249.60	41.6 QP	46.0	-4.4	1.00 H	70	28.40	13.20
2	352.14	43.3 QP	46.0	-2.7	1.00 H	293	26.40	16.90
3	500.42	37.3 QP	46.0	-8.7	1.50 H	136	16.50	20.80
4	599.58	37.2 QP	46.0	-8.8	1.25 H	190	14.00	23.20
5	681.24	40.9 QP	46.0	-5.1	1.25 H	214	16.60	24.30
6	803.73	43.9 QP	46.0	-2.1	1.25 H	343	17.40	26.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	43.51	35.1 QP	40.0	-4.9	1.00 V	298	21.00	14.10
2	62.95	35.0 QP	40.0	-5.0	1.25 V	1	22.10	12.90
3	249.60	36.1 QP	46.0	-9.9	2.25 V	244	22.90	13.20
4	352.65	44.3 QP	46.0	-1.7	1.50 V	325	27.40	16.90
5	500.42	36.3 QP	46.0	-9.7	2.00 V	49	15.50	20.80
6	681.24	38.6 QP	46.0	-7.4	1.50 V	187	14.30	24.30

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH 1020 hPa	TEST MODE	B
TESTED BY	Dean Wang		

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	249.60	44.8 QP	46.0	-1.2	1.25 H	4	31.60	13.20
2	333.21	38.4 QP	46.0	-7.6	1.00 H	196	22.00	16.40
3	500.42	40.9 QP	46.0	-5.1	2.00 H	7	20.10	20.80
4	681.24	43.3 QP	46.0	-2.7	1.25 H	178	19.00	24.30
5	751.23	40.7 QP	46.0	-5.3	1.25 H	358	15.20	25.50
6	797.89	42.3 QP	46.0	-3.7	1.25 H	10	15.90	26.40
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	129.06	35.2 QP	43.5	-8.3	1.25 V	121	22.70	12.50
2	249.60	43.2 QP	46.0	-2.8	1.00 V	10	30.00	13.20
3	395.43	36.3 QP	46.0	-9.7	1.00 V	49	18.40	17.90
4	500.42	36.8 QP	46.0	-9.2	1.25 V	97	16.00	20.80
5	681.24	38.6 QP	46.0	-7.4	1.00 V	10	14.30	24.30
6	751.23	40.7 QP	46.0	-5.3	1.25 V	283	15.20	25.50
7	797.89	43.3 QP	46.0	-2.7	1.25 V	352	16.90	26.40

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.

5.2 CONDUCTED EMISSION MEASUREMENT

5.2.1 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.

5.2.2 T EST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Dec. 16, 2009	Dec. 15, 2010
RF signal cable Woken	5D-FB	Cable-HYC01-01	Nov. 12, 2009	Nov. 11, 2010
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jun. 18, 2009	Jun. 17, 2010
LISN SCHWARZBECK	NNBL 8226-2	8226-142	Jun. 03, 2009	Jun. 02, 2010
Software ADT	ADT_Cond_ V7.3.7	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.

5.2.3 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.

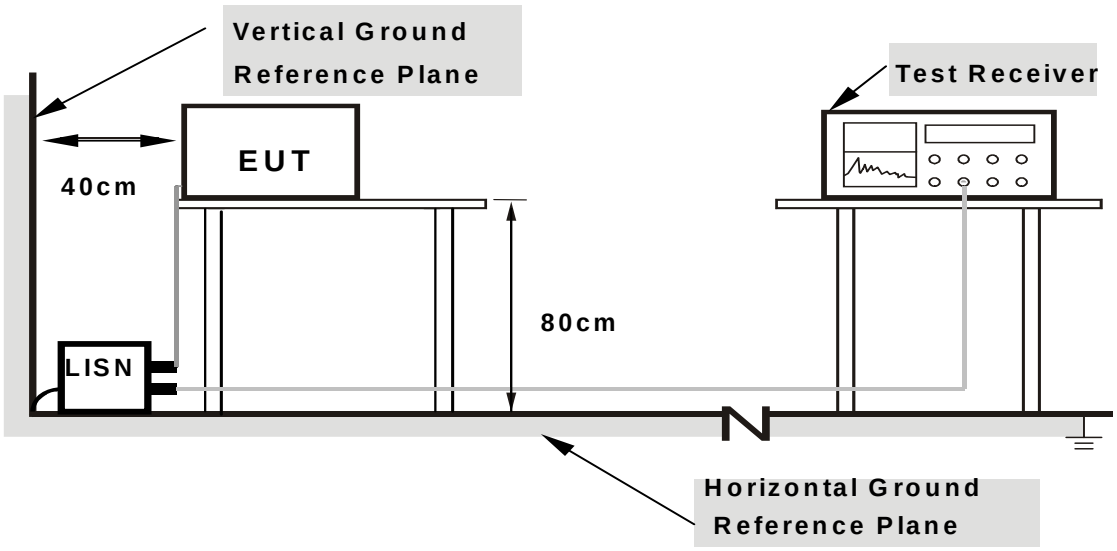
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

5.2.4 DEVIATION FROM TEST STANDARD

No deviation

5.2.5 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).

5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

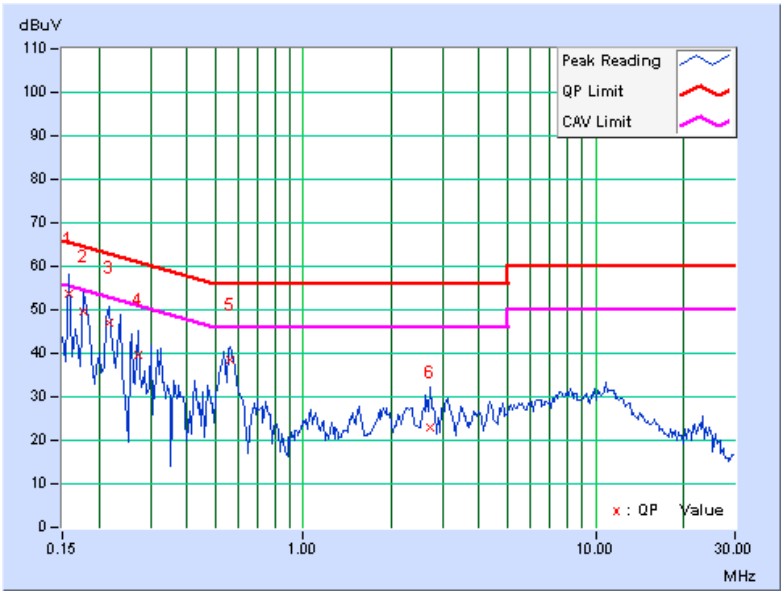
5.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA：802.11n (20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.10	53.72	-	53.82	-	65.58	55.58	-11.76	-
2	0.177	0.10	49.67	-	49.77	-	64.61	54.61	-14.84	-
3	0.216	0.10	46.88	-	46.98	-	62.96	52.96	-15.97	-
4	0.271	0.11	39.63	-	39.74	-	61.08	51.08	-21.35	-
5	0.560	0.13	38.42	-	38.55	-	56.00	46.00	-17.45	-
6	2.703	0.28	22.71	-	22.99	-	56.00	46.00	-33.01	-

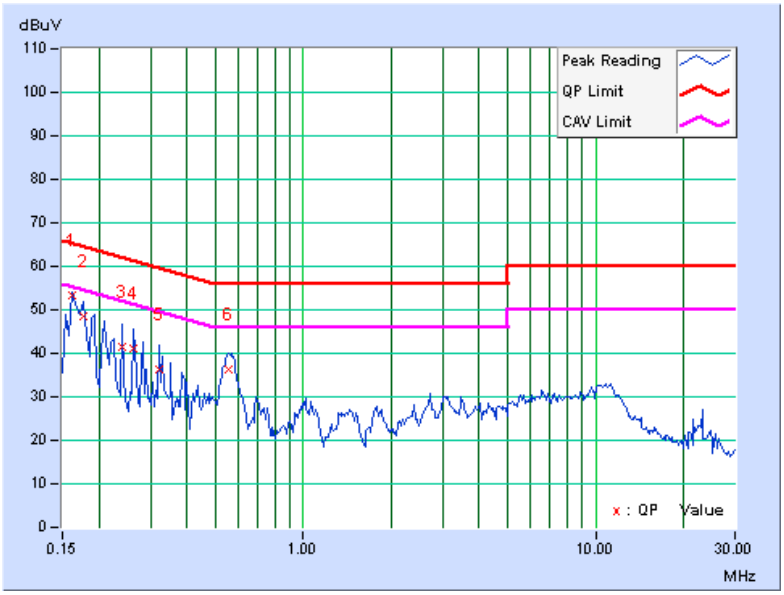
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.162	0.12	53.08	-	53.20	-	65.38	55.38	-12.18	-
2	0.177	0.12	48.56	-	48.68	-	64.61	54.61	-15.93	-
3	0.240	0.12	41.21	-	41.33	-	62.10	52.10	-20.77	-
4	0.263	0.13	41.06	-	41.19	-	61.33	51.33	-20.14	-
5	0.322	0.13	36.05	-	36.18	-	59.66	49.66	-23.48	-
6	0.556	0.15	36.02	-	36.17	-	56.00	46.00	-19.83	-

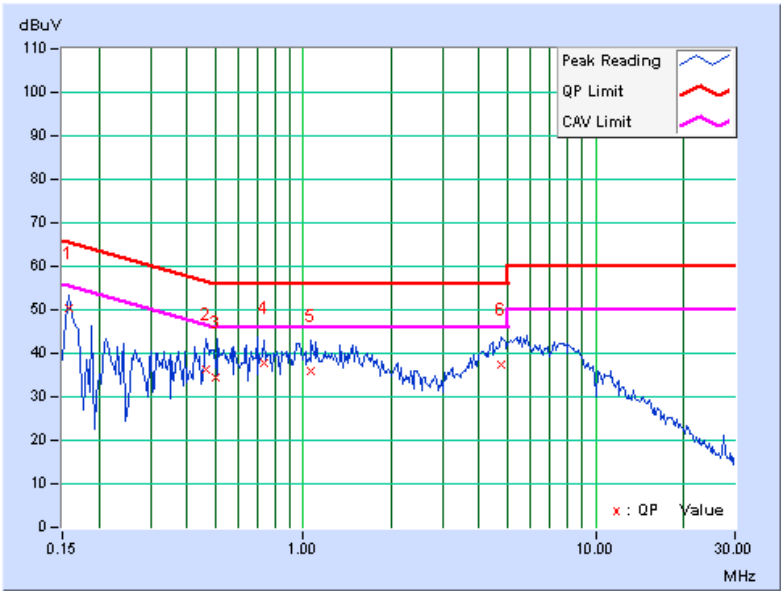
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.10	50.16	-	50.26	-	65.58	55.58	-15.32	-
2	0.463	0.13	36.27	-	36.40	-	56.65	46.65	-20.25	-
3	0.500	0.13	34.44	-	34.57	-	56.00	46.00	-21.43	-
4	0.736	0.15	37.48	-	37.63	-	56.00	46.00	-18.37	-
5	1.066	0.17	35.60	-	35.77	-	56.00	46.00	-20.23	-
6	4.766	0.37	37.01	-	37.38	-	56.00	46.00	-18.62	-

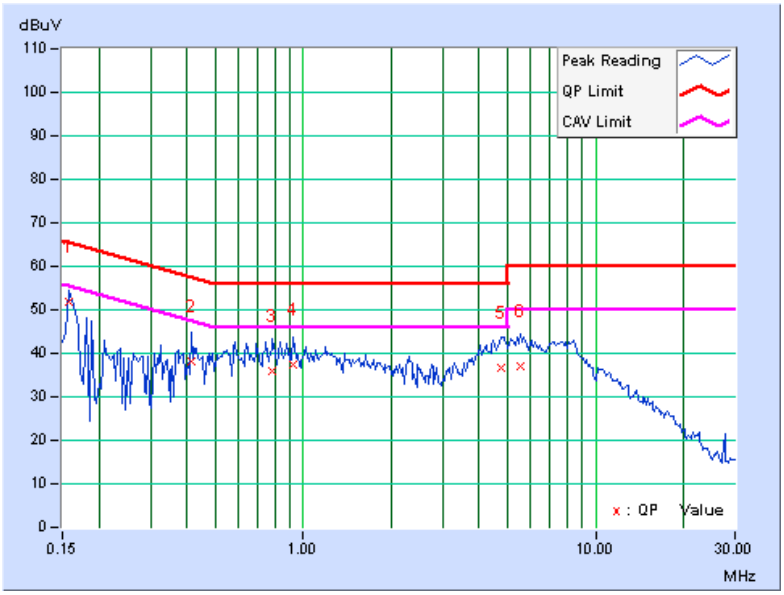
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.12	51.78	-	51.90	-	65.58	55.58	-13.68	-
2	0.416	0.14	38.01	-	38.15	-	57.54	47.54	-19.38	-
3	0.787	0.17	35.83	-	36.00	-	56.00	46.00	-20.00	-
4	0.923	0.17	37.20	-	37.37	-	56.00	46.00	-18.63	-
5	4.738	0.35	36.17	-	36.52	-	56.00	46.00	-19.48	-
6	5.547	0.36	36.69	-	37.05	-	60.00	50.00	-22.95	-

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

5.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
R&S SPECTRUM ANALYZER	FSP40	100040	Jul. 07, 2009	Jul. 06, 2010

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

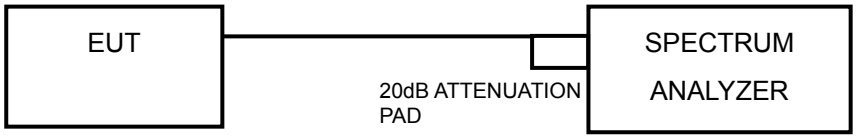
5.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

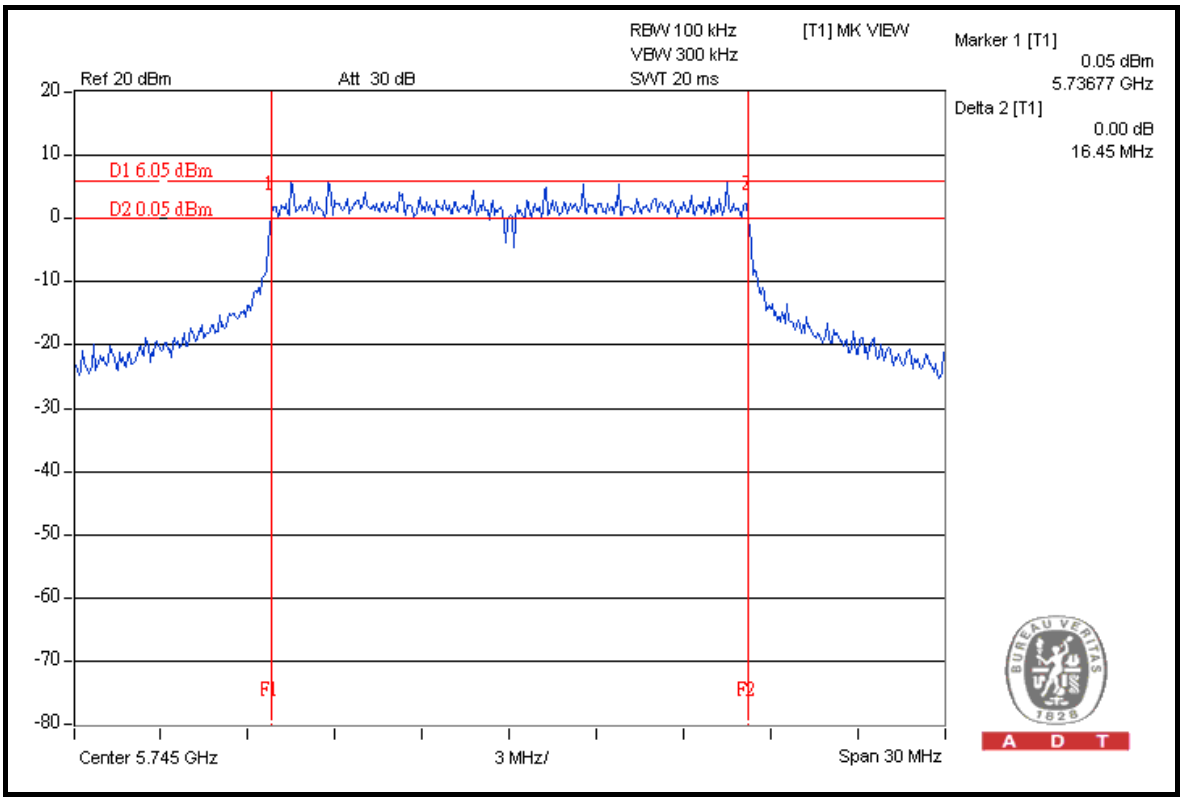
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

5.3.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.40	16.45	0.5	PASS
157	5785	16.38	16.44	0.5	PASS
165	5825	16.41	16.45	0.5	PASS

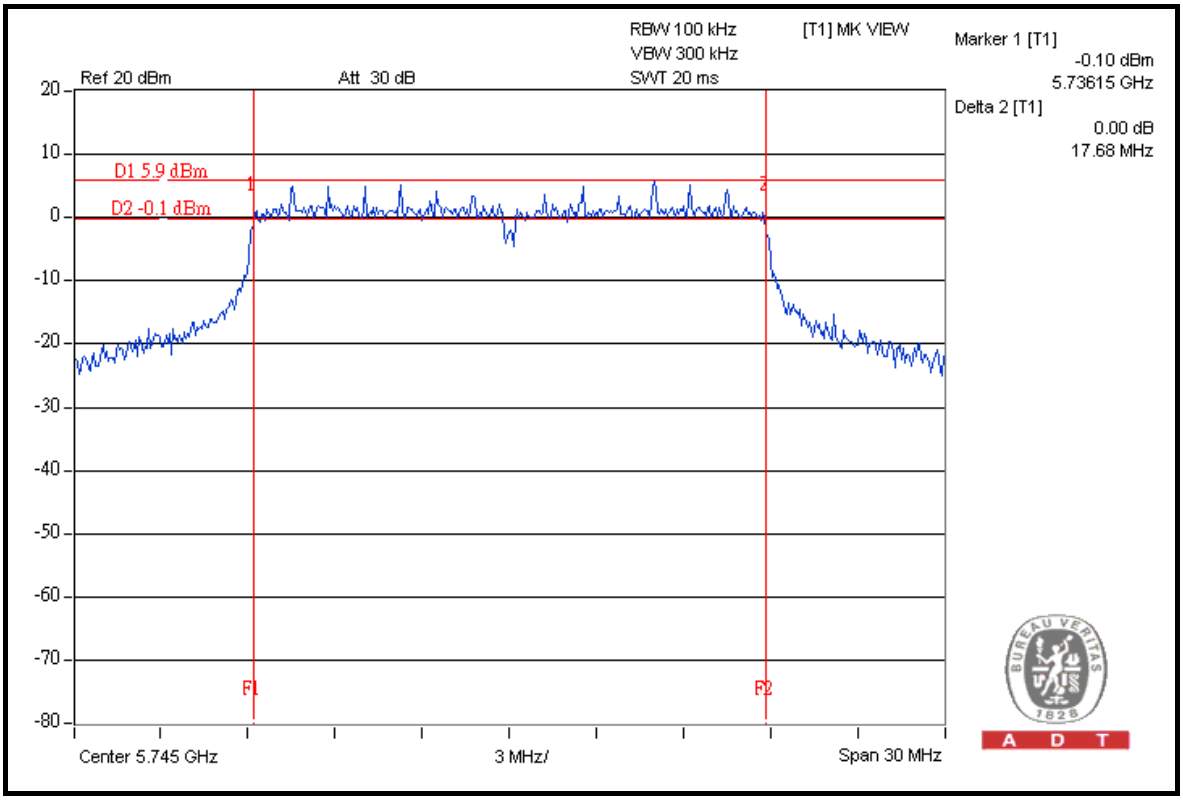
FOR CHAIN 1: CH 149



802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.68	17.65	0.5	PASS
157	5785	17.65	17.62	0.5	PASS
165	5825	17.62	17.64	0.5	PASS

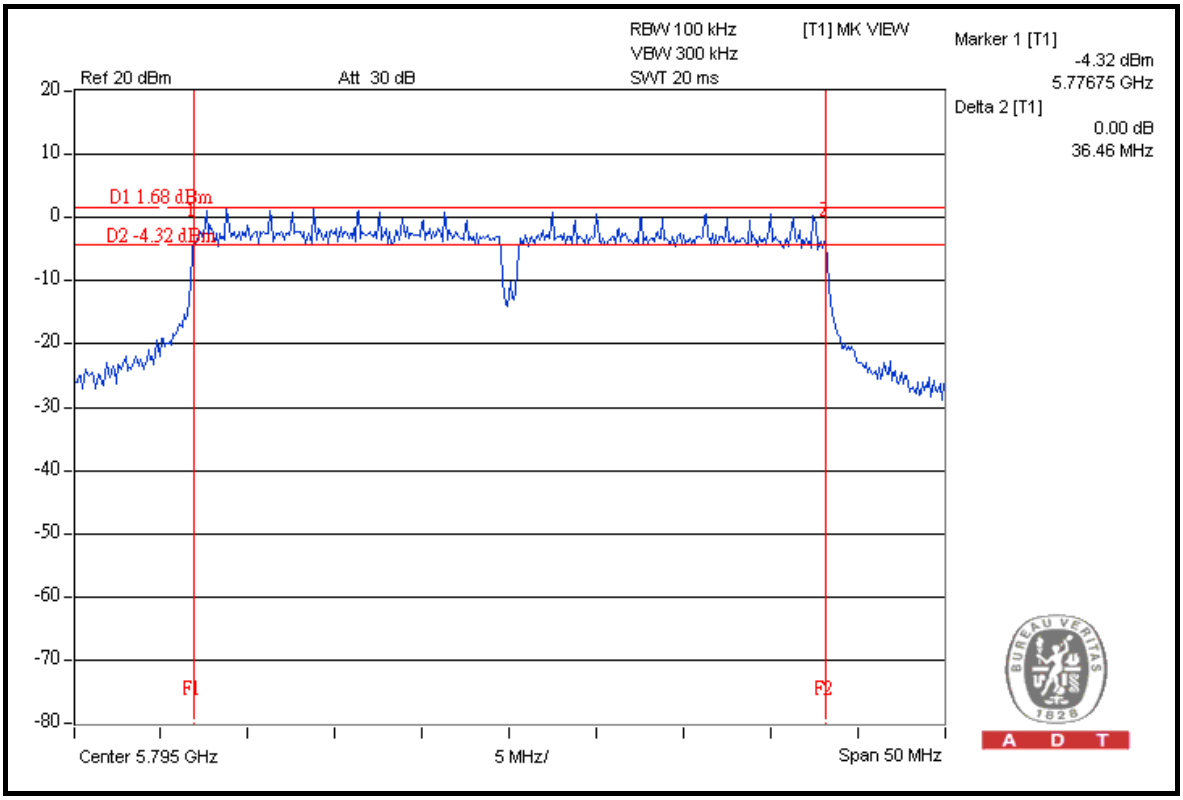
FOR CHAIN 0: CH 149



802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.44	36.42	0.5	PASS
159	5795	36.46	36.29	0.5	PASS

FOR CHAIN 0: CH 159



5.4 MAXIMUM OUTPUT POWER

5.4.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

5.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
High Speed Peak Power Meter	ML2495A	0824012	Aug. 10, 2009	Aug. 09, 2010
Power Sensor	MA2411B	0738138	Aug. 10, 2009	Aug. 09, 2010

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. Measurement Bandwidth of ML2495A is 65MHz greater than 6dB bandwidth of emission.

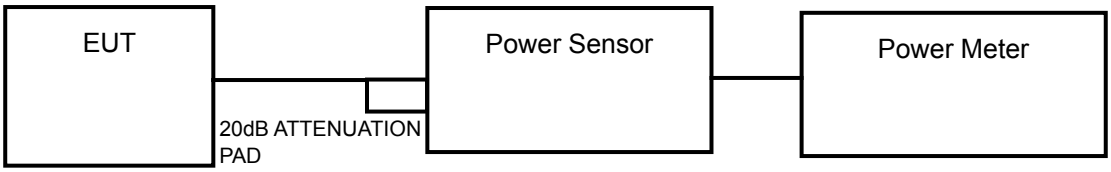
5.4.3 TEST PROCEDURES

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

5.4.4 DEVIATION FROM TEST STANDARD

No deviation

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

Same as Item 5.3.6

5.4.7 TEST RESULTS

802.11a

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	24.7	25.7	666.7	28.2	30	PASS
157	5785	24.5	25.8	662.0	28.2	30	PASS
165	5825	23.6	24.5	510.9	27.1	30	PASS

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	24.8	25.8	682.2	28.3	30	PASS
157	5785	24.3	25.1	592.7	27.7	30	PASS
165	5825	23.9	24.6	533.9	27.3	30	PASS

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	24.3	25.1	592.7	27.7	30	PASS
159	5795	23.0	24.3	468.7	26.7	30	PASS

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
R&S SPECTRUM ANALYZER	FSP40	100040	Jul. 07, 2009	Jul. 06, 2010

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

5.5.3 TEST PROCEDURE

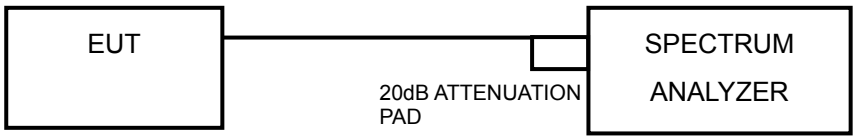
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITION

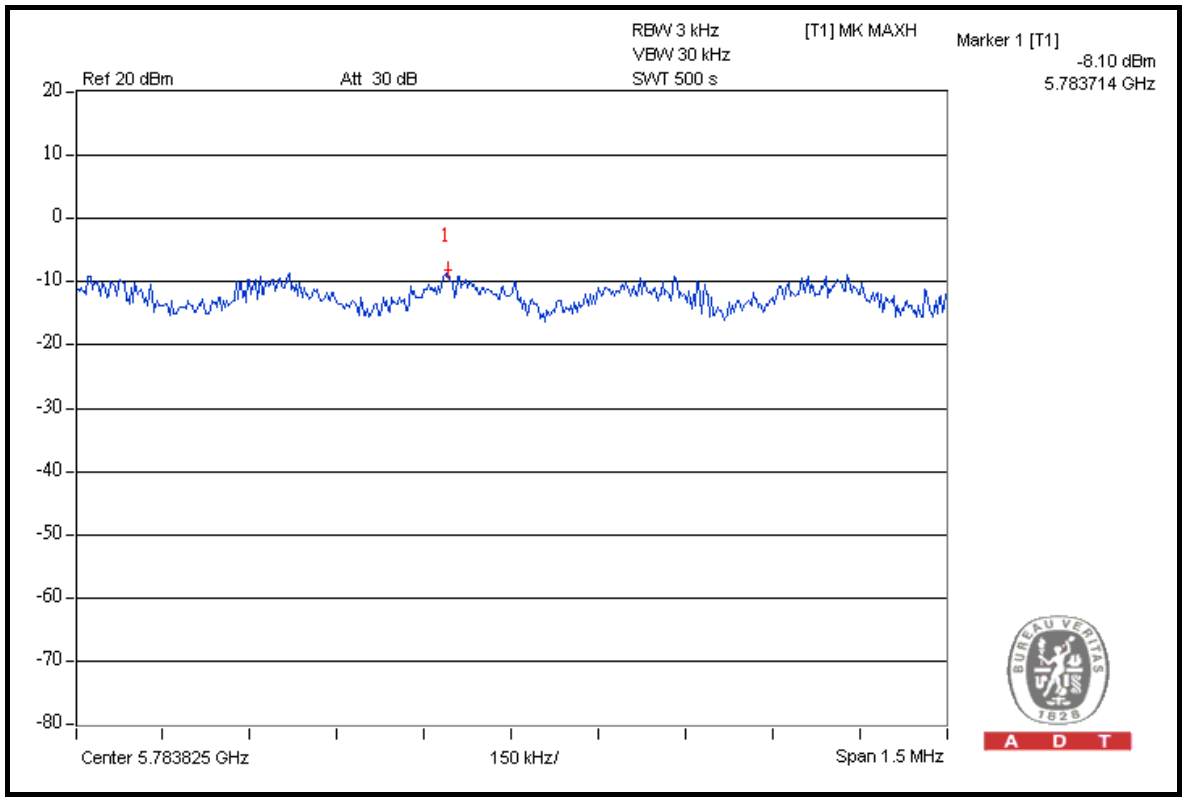
Same as Item 5.3.6

5.5.7 TEST RESULTS

802.11a

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
149	5745	-8.9	-8.4	-5.6	8	PASS
157	5785	-8.9	-8.1	-5.5	8	PASS
165	5825	-10.0	-9.3	-6.6	8	PASS

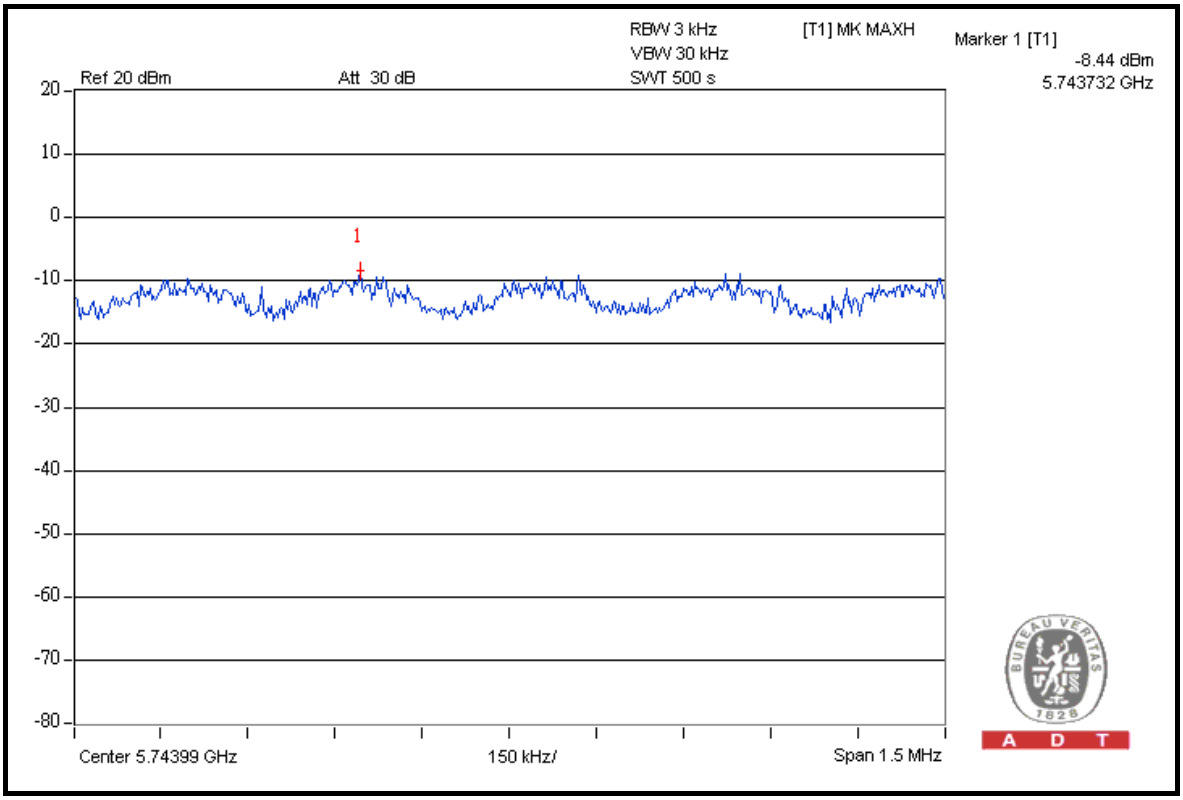
FOR CHAIN 1: CH 157



802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
149	5745	-9.3	-8.4	-5.9	8	PASS
157	5785	-9.8	-9.1	-6.4	8	PASS
165	5825	-10.0	-9.5	-6.7	8	PASS

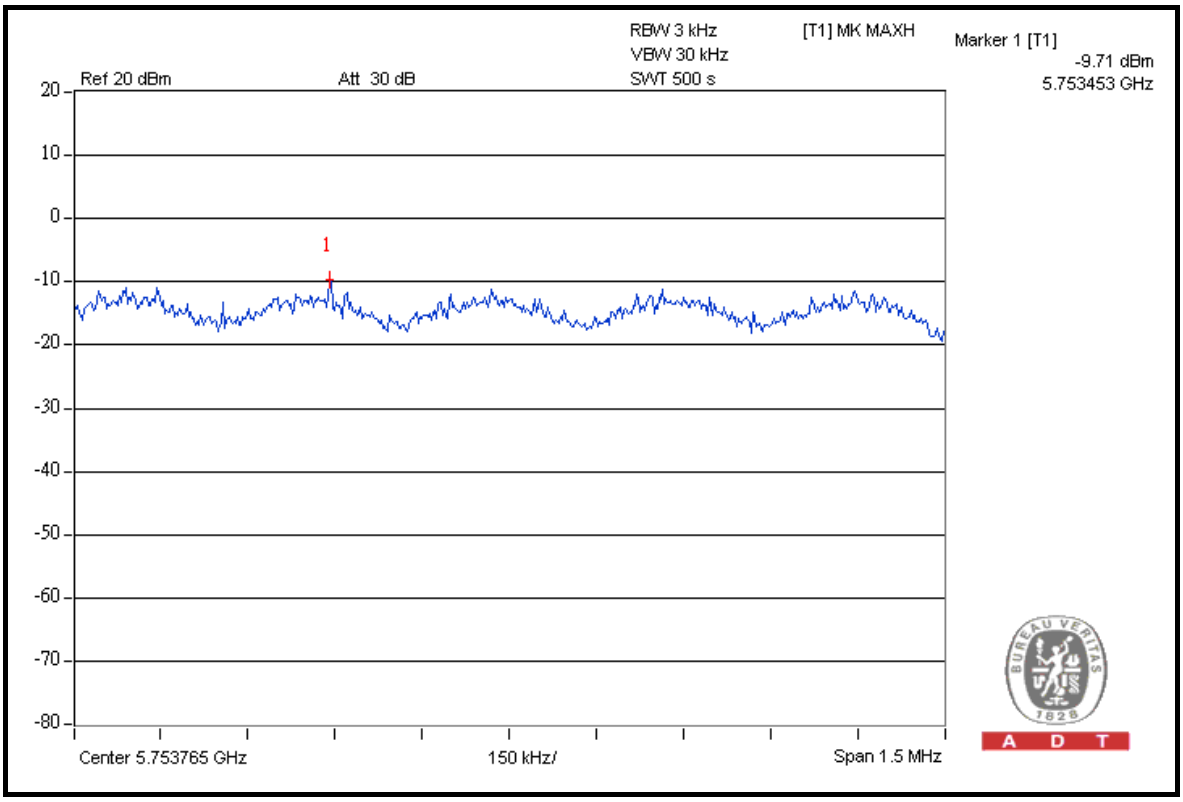
FOR CHAIN 1: CH 149



802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
151	5755	-11.0	-9.7	-7.3	8	PASS
159	5795	-12.2	-10.3	-8.1	8	PASS

FOR CHAIN 1: CH 151



5.6 BAND EDGES MEASUREMENT

5.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

5.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Dec. 29, 2009	Dec. 28, 2010
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	May 13, 2009	May 12, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 29, 2009	Apr. 28, 2010
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-209	Jul. 01, 2009	Jun. 30, 2010
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Dec. 25, 2009	Dec. 24, 2010
Preamplifier Agilent	8449B	3008A01961	Nov. 04, 2009	Nov. 03, 2010
Preamplifier Agilent	8447D	2944A10738	Nov. 04, 2009	Nov. 03, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274041/4	Aug. 28, 2009	Aug. 27, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283397/4	Aug. 28, 2009	Aug. 27, 2010
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT.	TT100.	TT93021704	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	Aug. 27, 2009	Aug. 26, 2010

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

5.6.3 TEST PROCEDURE

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter 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. The antenna is a broadband antenna, and its height 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. Set both RBW and VBW of spectrum analyzer to 100kHz and 300kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

NOTE: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

5.6.4 DEVIATION FROM TEST STANDARD

No deviation

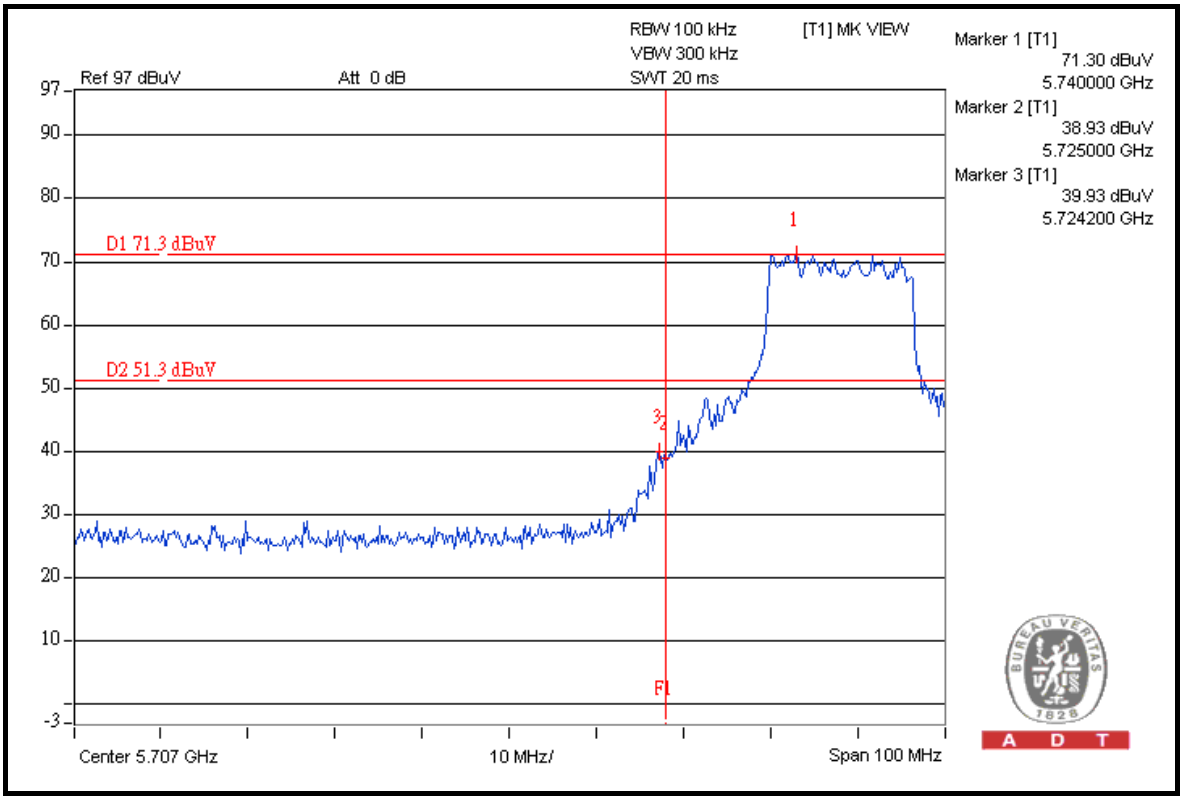
5.6.5 EUT OPERATING CONDITION

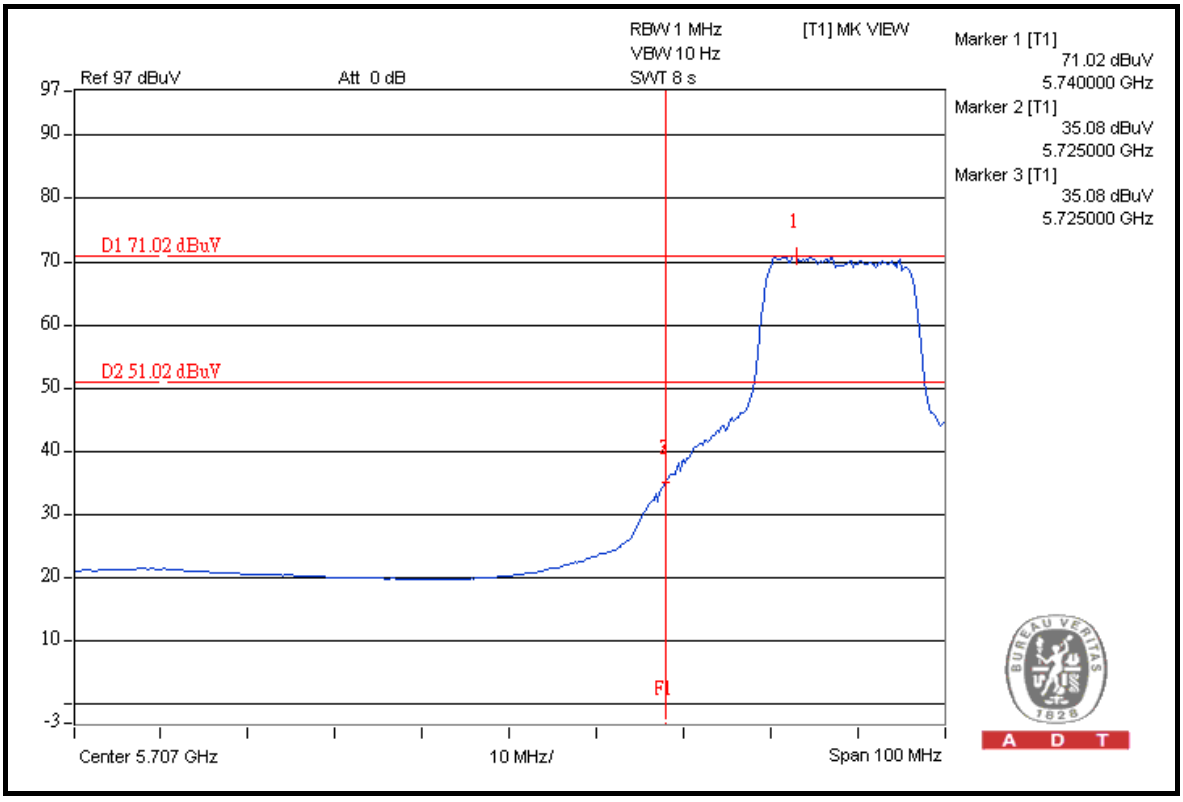
Same as Item 5.3.6

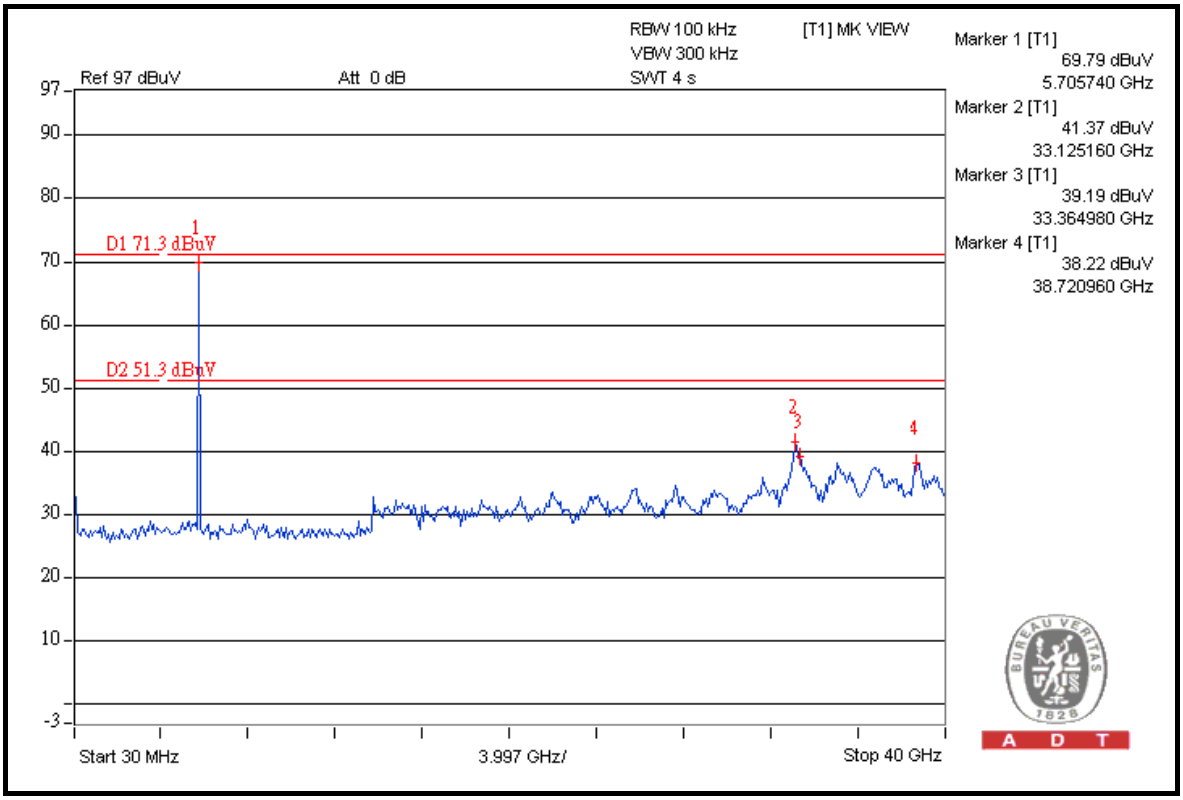
5.6.6 TEST RESULTS

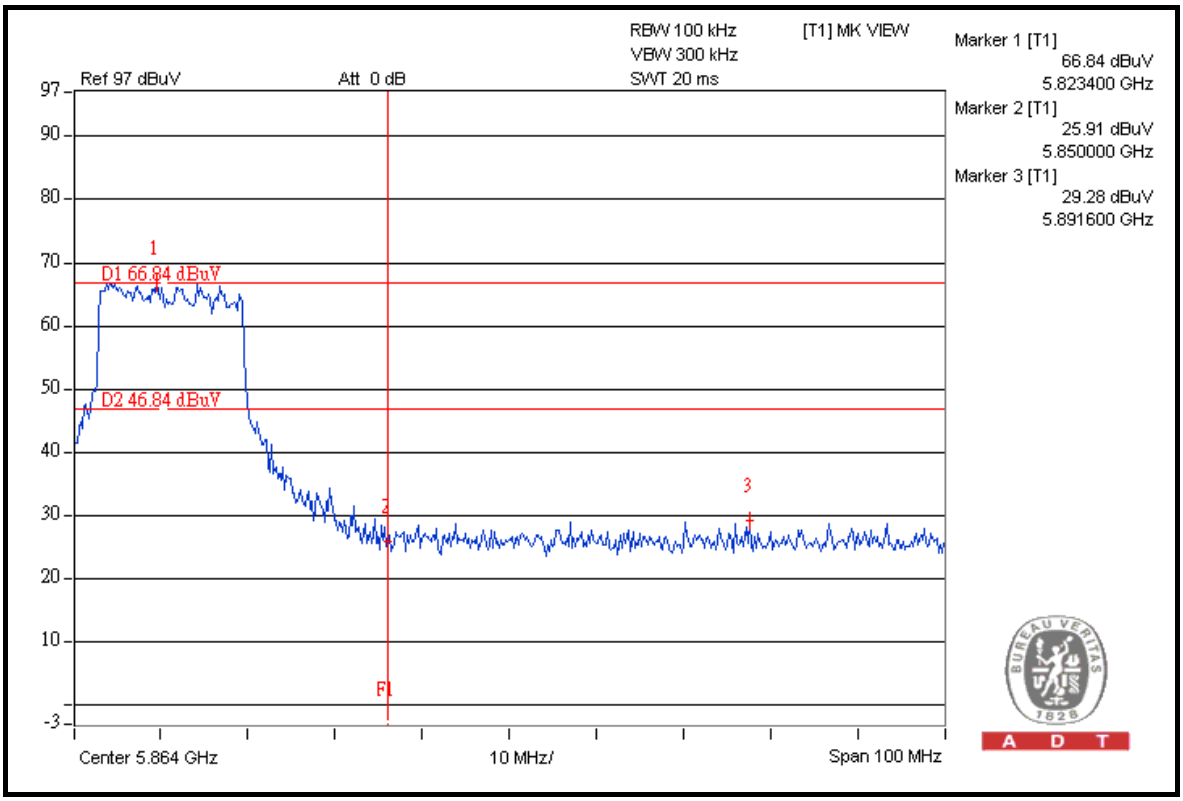
The spectrum plots are attached on the following pages. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

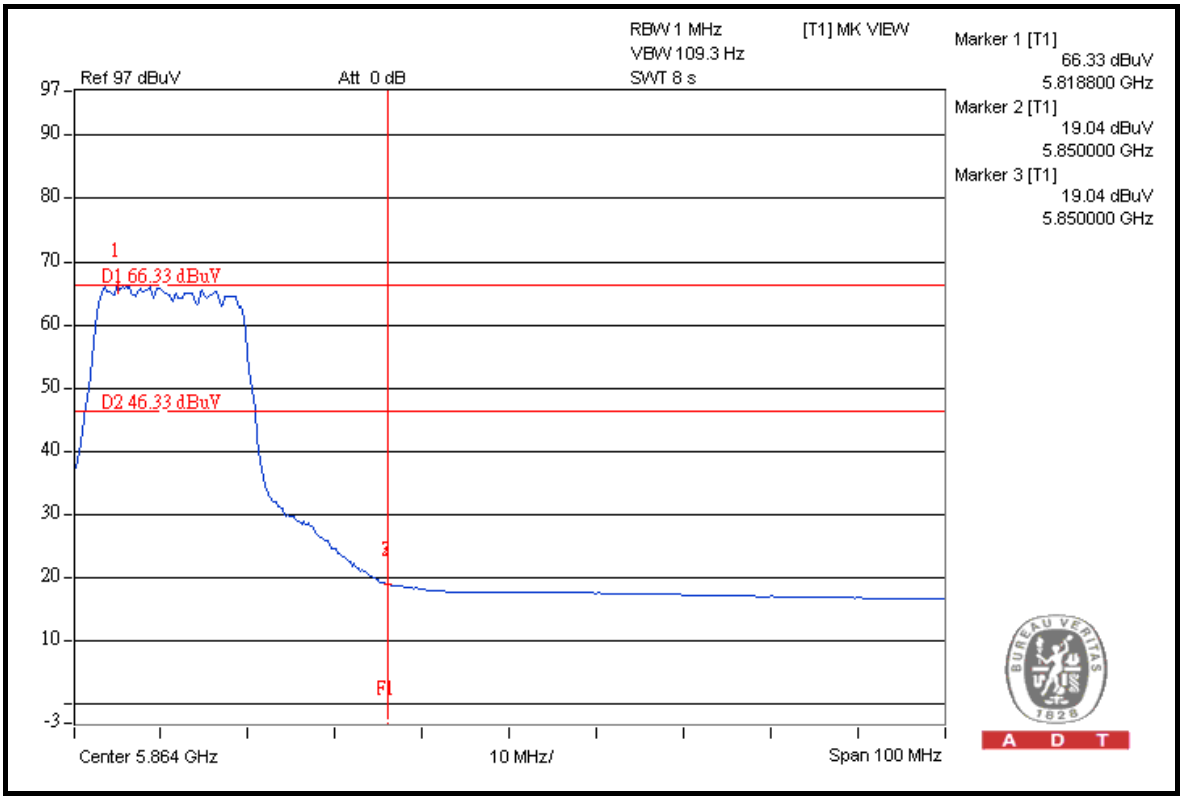
802.11a

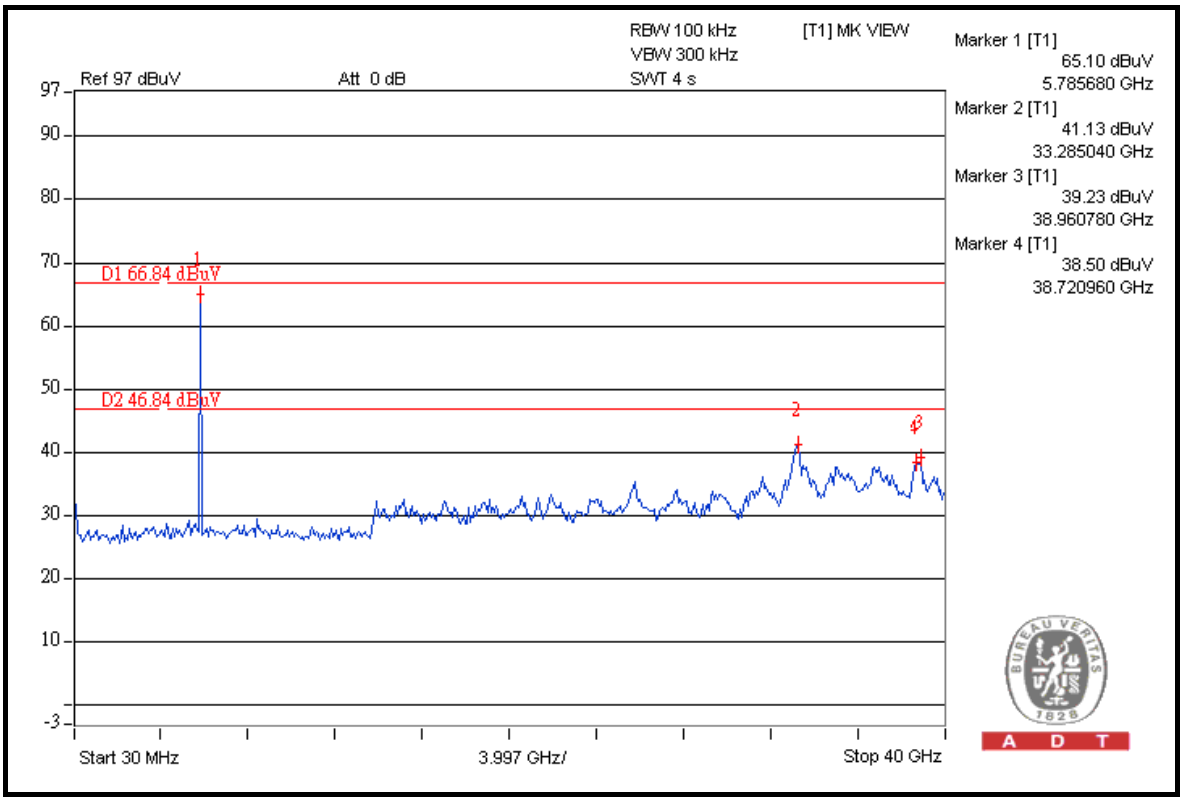

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
71.30 dBuV
5.740000 GHz
Marker 2 [T1]
38.93 dBuV
5.725000 GHz
Marker 3 [T1]
39.93 dBuV
5.724200 GHz
D1 71.3 dBuV
D2 51.3 dBuV
Center 5.707 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 8 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
71.02 dBuV
5.740000 GHz
Marker 2 [T1]
35.08 dBuV
5.725000 GHz
Marker 3 [T1]
35.08 dBuV
5.725000 GHz
D1 71.02 dBuV
D2 51.02 dBuV
Center 5.707 GHz
10 MHz/
Span 100 MHz

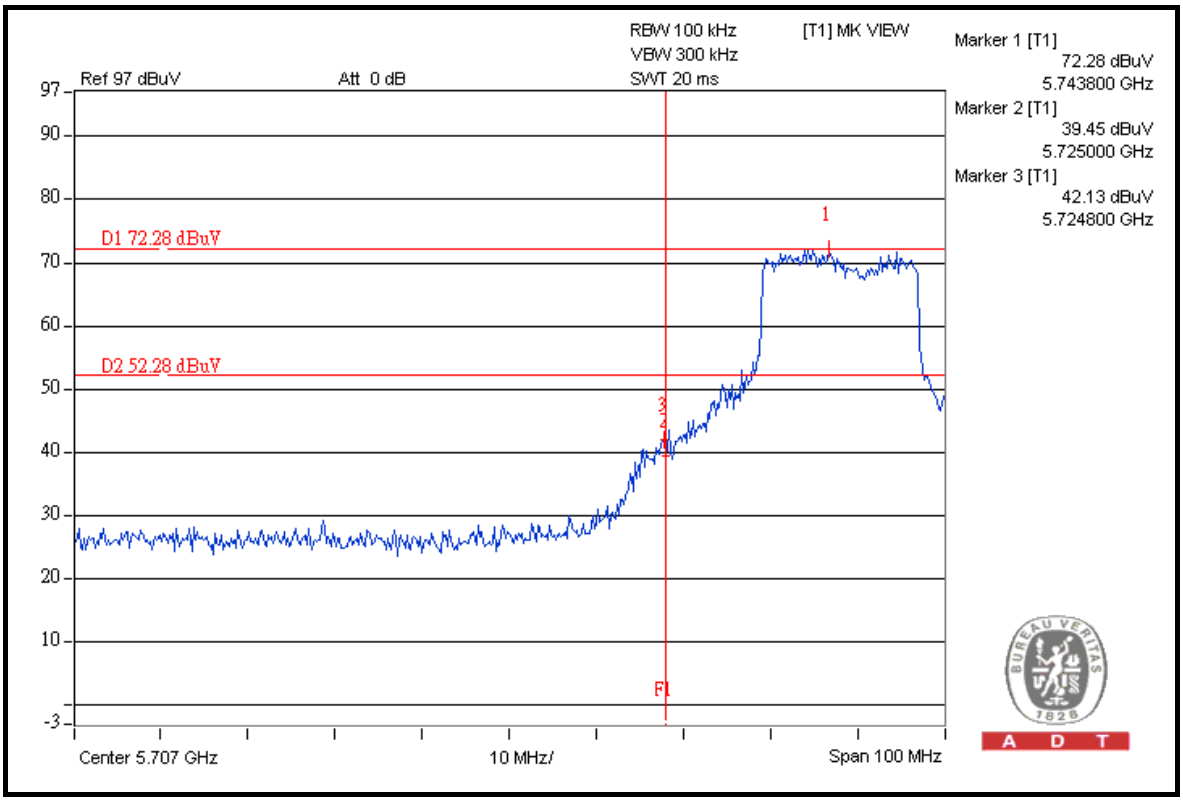

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
69.79 dBuV
5.705740 GHz
Marker 2 [T1]
41.37 dBuV
33.125160 GHz
Marker 3 [T1]
39.19 dBuV
33.364980 GHz
Marker 4 [T1]
38.22 dBuV
38.720960 GHz
D1 71.3 dBuV
D2 51.3 dBuV
97
90
80
70
60
50
40
30
20
10
-3
Start 30 MHz
3.997 GHz/
Stop 40 GHz

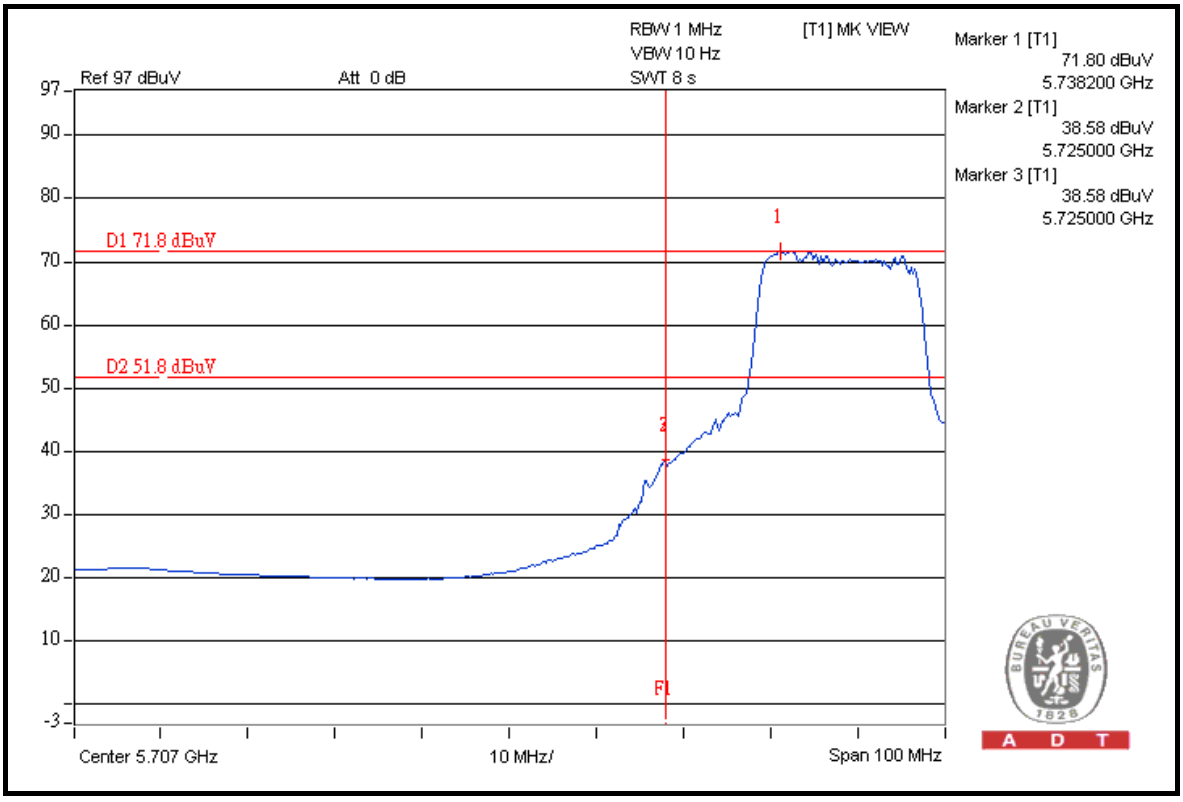

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
66.84 dBuV
5.823400 GHz
Marker 2 [T1]
25.91 dBuV
5.850000 GHz
Marker 3 [T1]
29.28 dBuV
5.891600 GHz
D1 66.84 dBuV
D2 46.84 dBuV
97
90
80
70
60
50
40
30
20
10
-3
Center 5.864 GHz
10 MHz/
Span 100 MHz

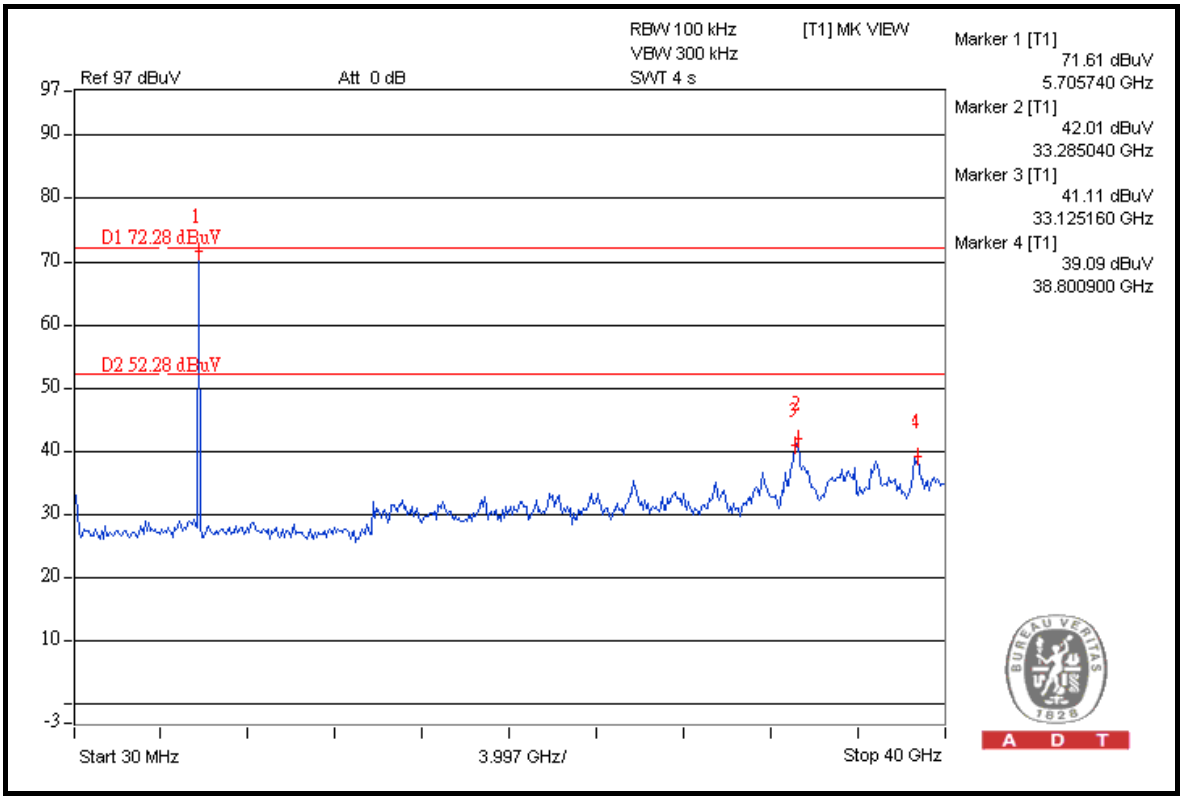

RBW 1 MHz
VBW 109.3 Hz
SWT 8 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
66.33 dBuV
5.818800 GHz
Marker 2 [T1]
19.04 dBuV
5.850000 GHz
Marker 3 [T1]
19.04 dBuV
5.850000 GHz
D1 66.33 dBuV
D2 46.33 dBuV
Center 5.864 GHz
10 MHz/
Span 100 MHz

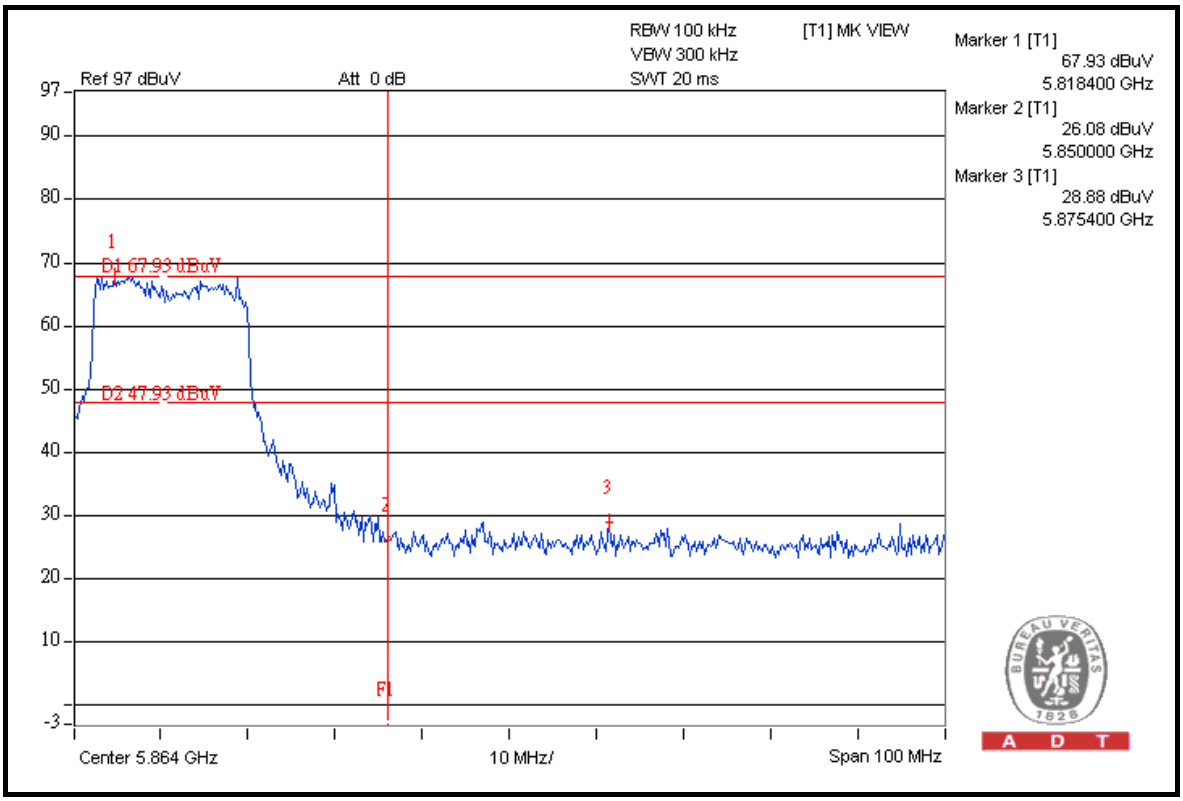

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
65.10 dBuV
5.785680 GHz
Marker 2 [T1]
41.13 dBuV
33.285040 GHz
Marker 3 [T1]
39.23 dBuV
38.960780 GHz
Marker 4 [T1]
38.50 dBuV
38.720960 GHz
D1 66.84 dBuV
D2 46.84 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz

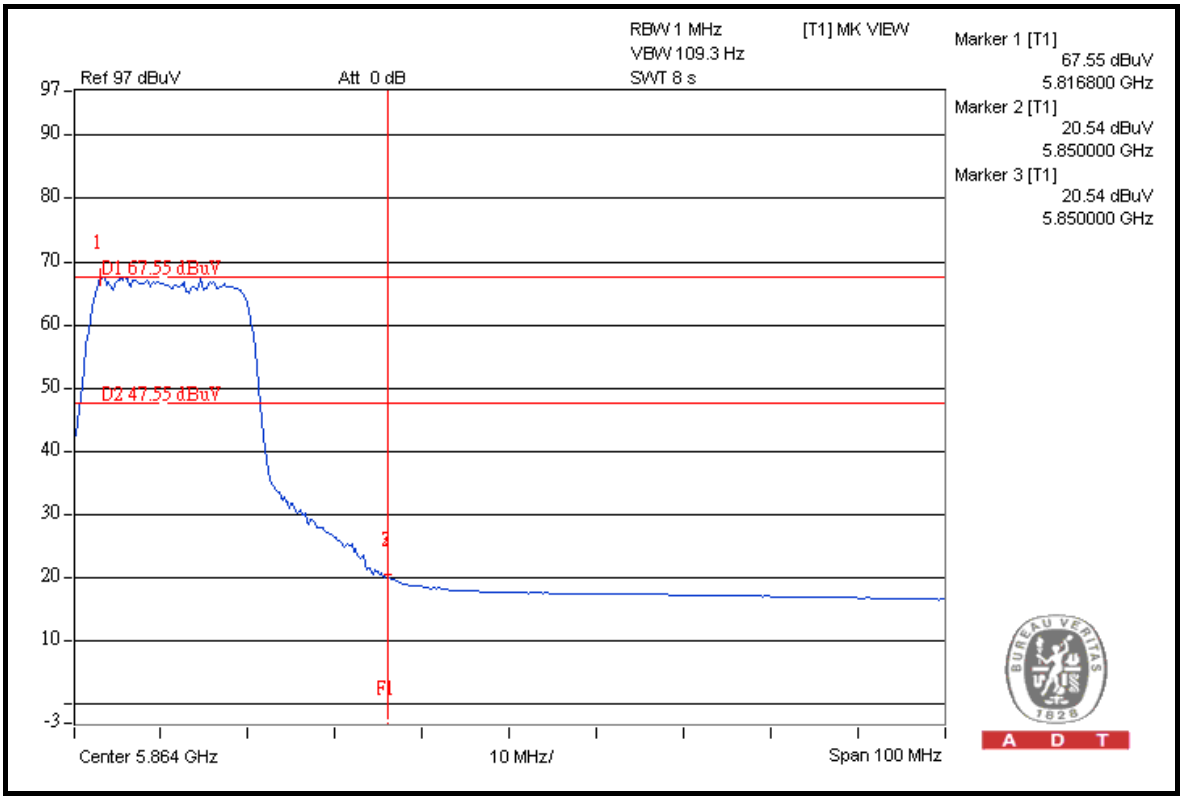
802.11n (20MHz)

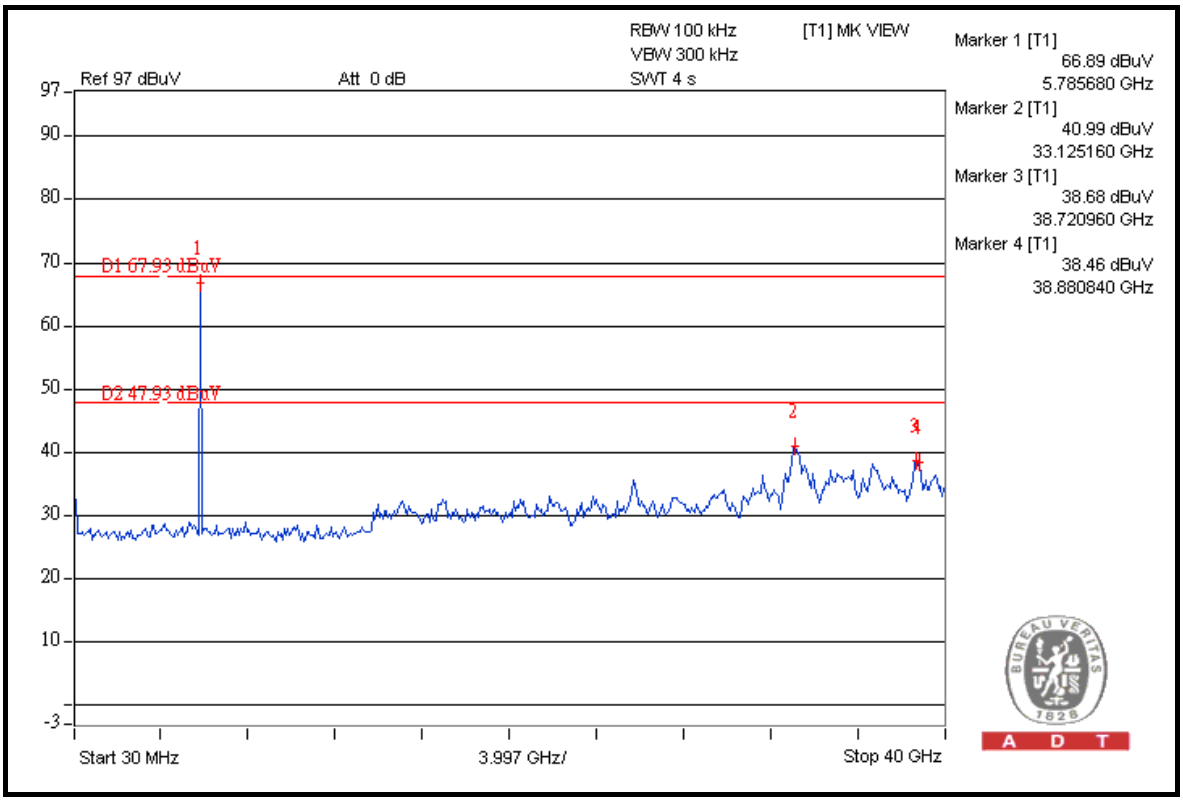




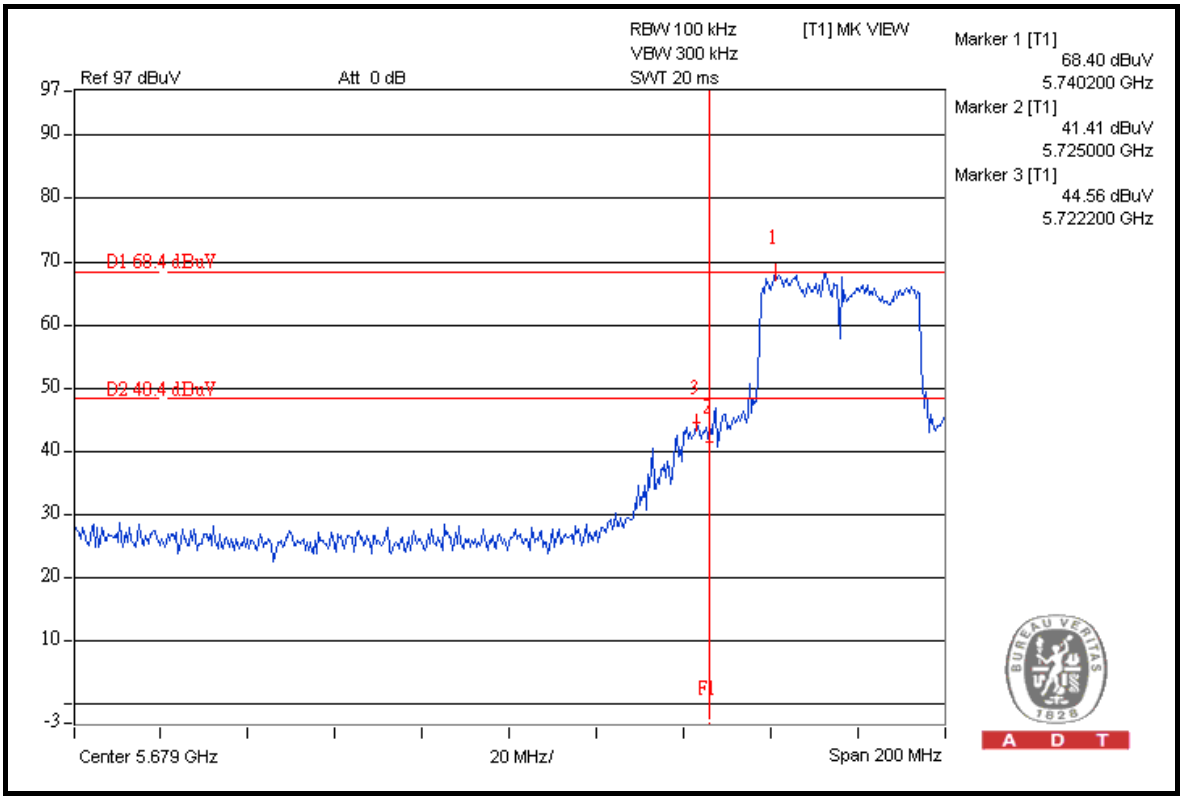

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
71.61 dBuV
5.705740 GHz
Marker 2 [T1]
42.01 dBuV
33.285040 GHz
Marker 3 [T1]
41.11 dBuV
33.125160 GHz
Marker 4 [T1]
39.09 dBuV
38.800900 GHz
D1 72.28 dBuV
D2 52.28 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz

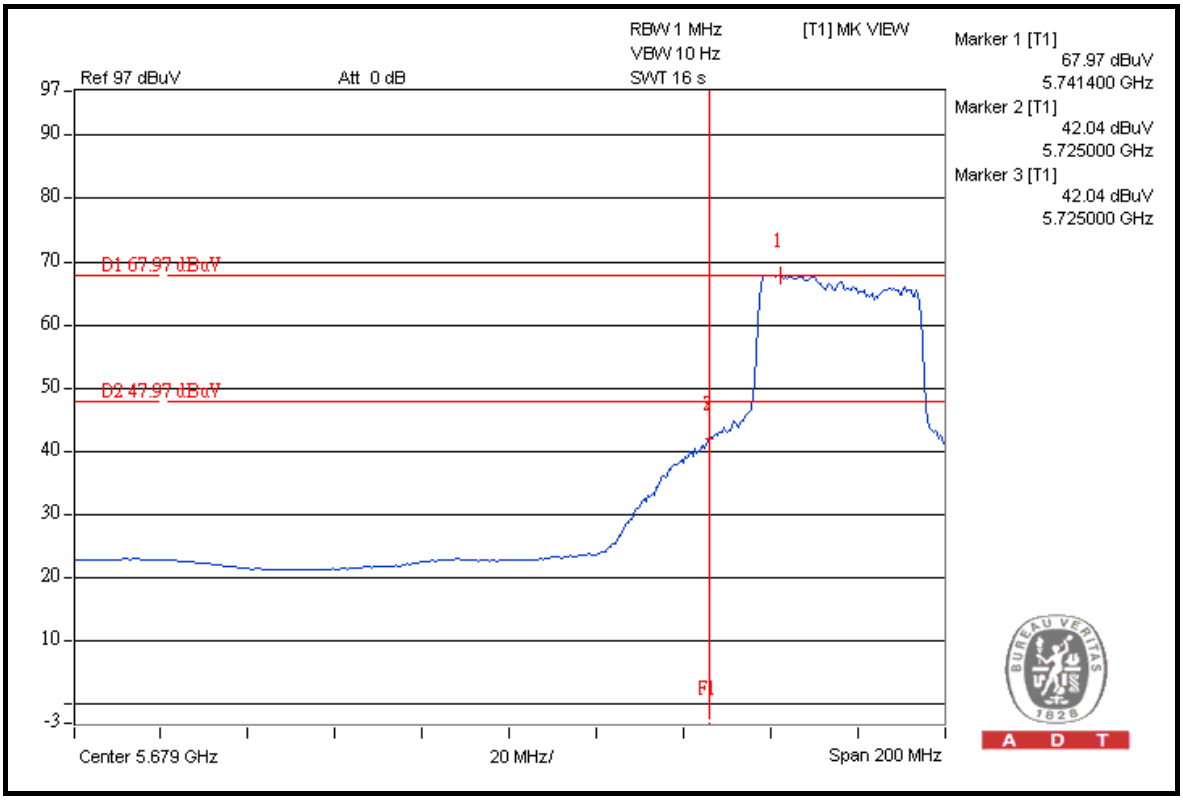

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
67.93 dBuV
5.818400 GHz
Marker 2 [T1]
26.08 dBuV
5.850000 GHz
Marker 3 [T1]
28.88 dBuV
5.875400 GHz
D1 67.93 dBuV
D2 47.93 dBuV
Center 5.864 GHz
10 MHz/
Span 100 MHz

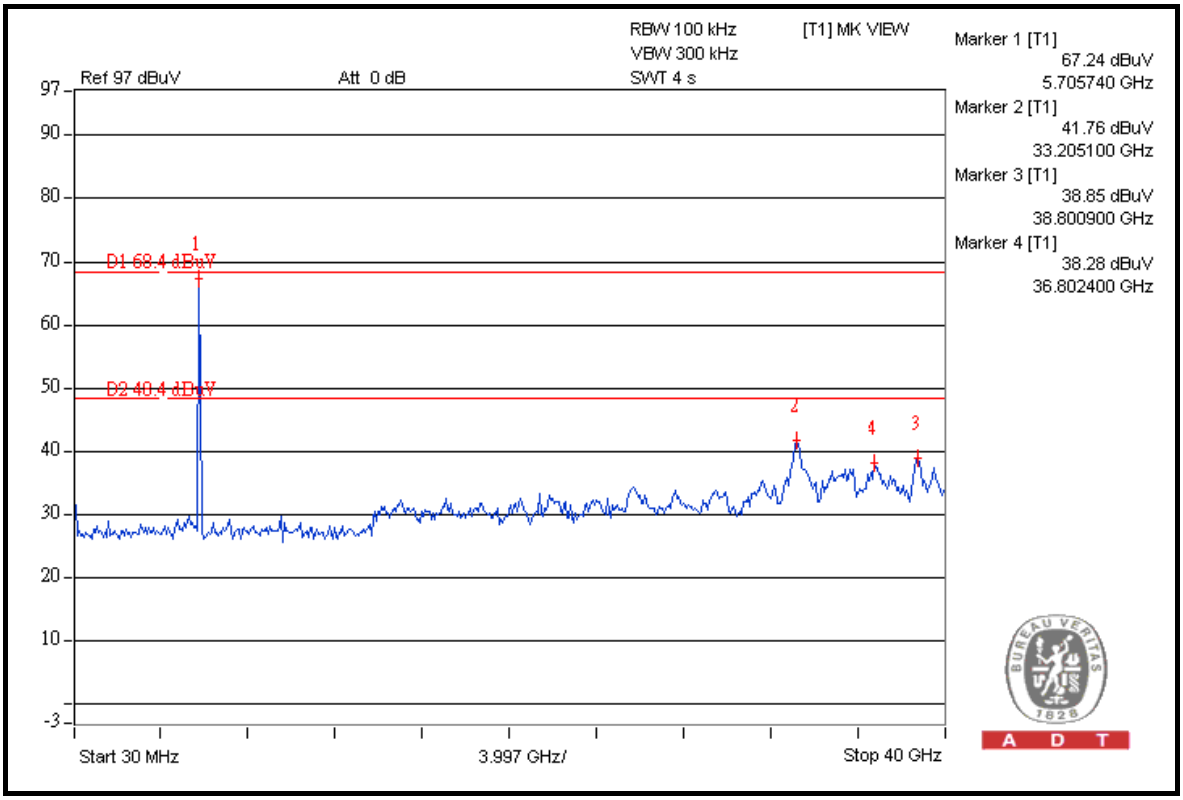

RBW 1 MHz
VBW 109.3 Hz
SWT 8 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
67.55 dBuV
5.816800 GHz
Marker 2 [T1]
20.54 dBuV
5.850000 GHz
Marker 3 [T1]
20.54 dBuV
5.850000 GHz
D1 67.55 dBuV
D2 47.55 dBuV
Center 5.864 GHz
10 MHz/
Span 100 MHz

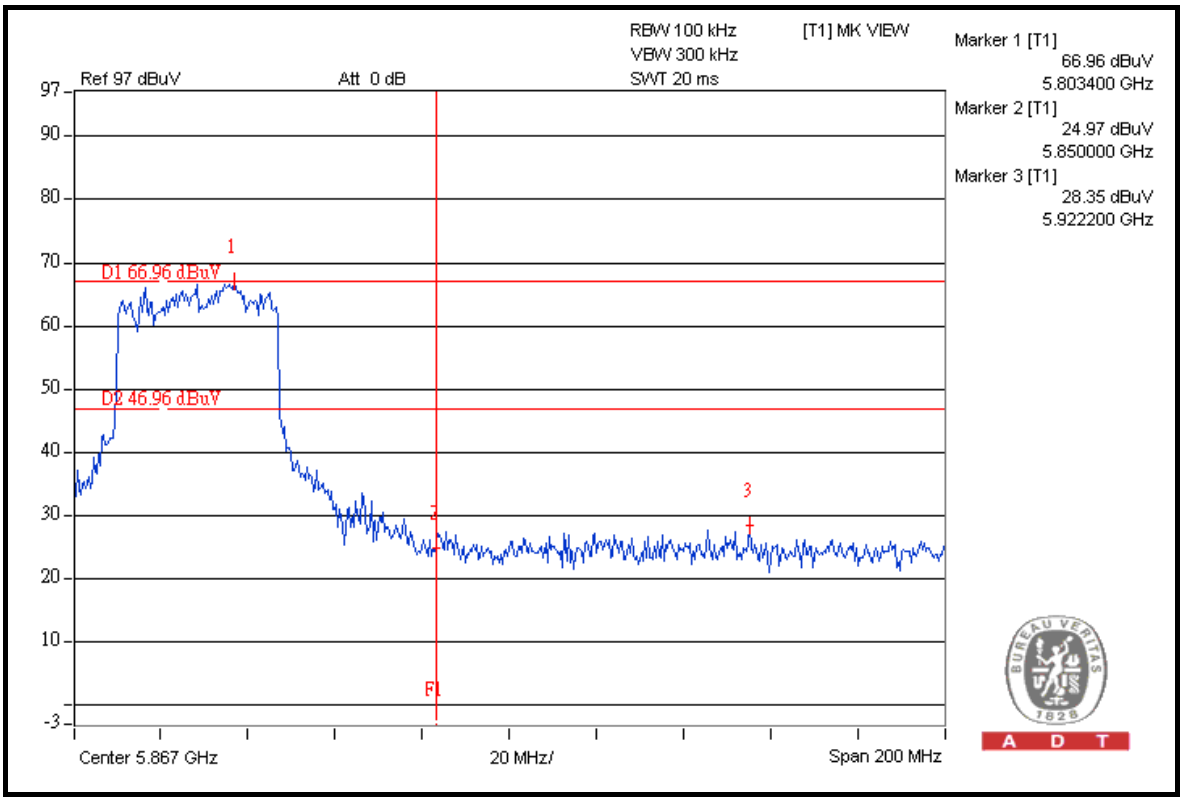

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
66.89 dBuV
5.785680 GHz
Marker 2 [T1]
40.99 dBuV
33.125160 GHz
Marker 3 [T1]
38.68 dBuV
38.720960 GHz
Marker 4 [T1]
38.46 dBuV
38.880840 GHz
D1 67.93 dBuV
D2 47.93 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz

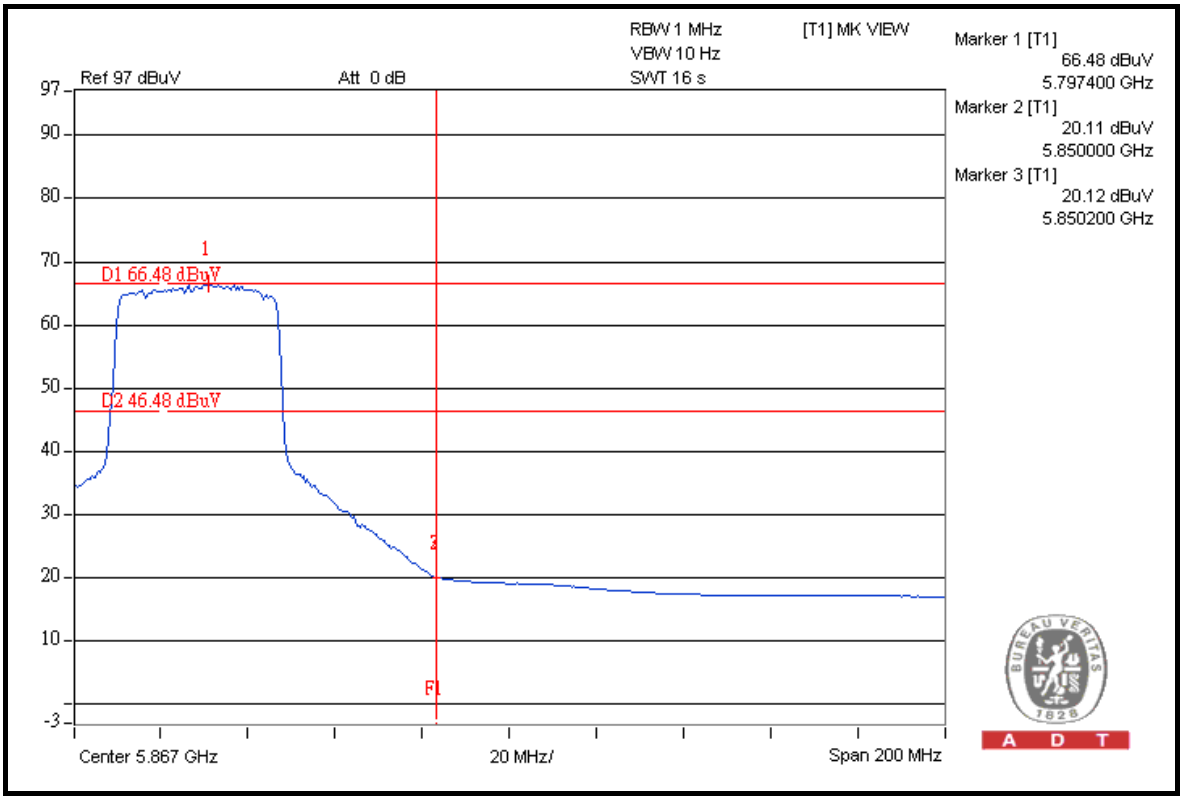
802.11n (40MHz)

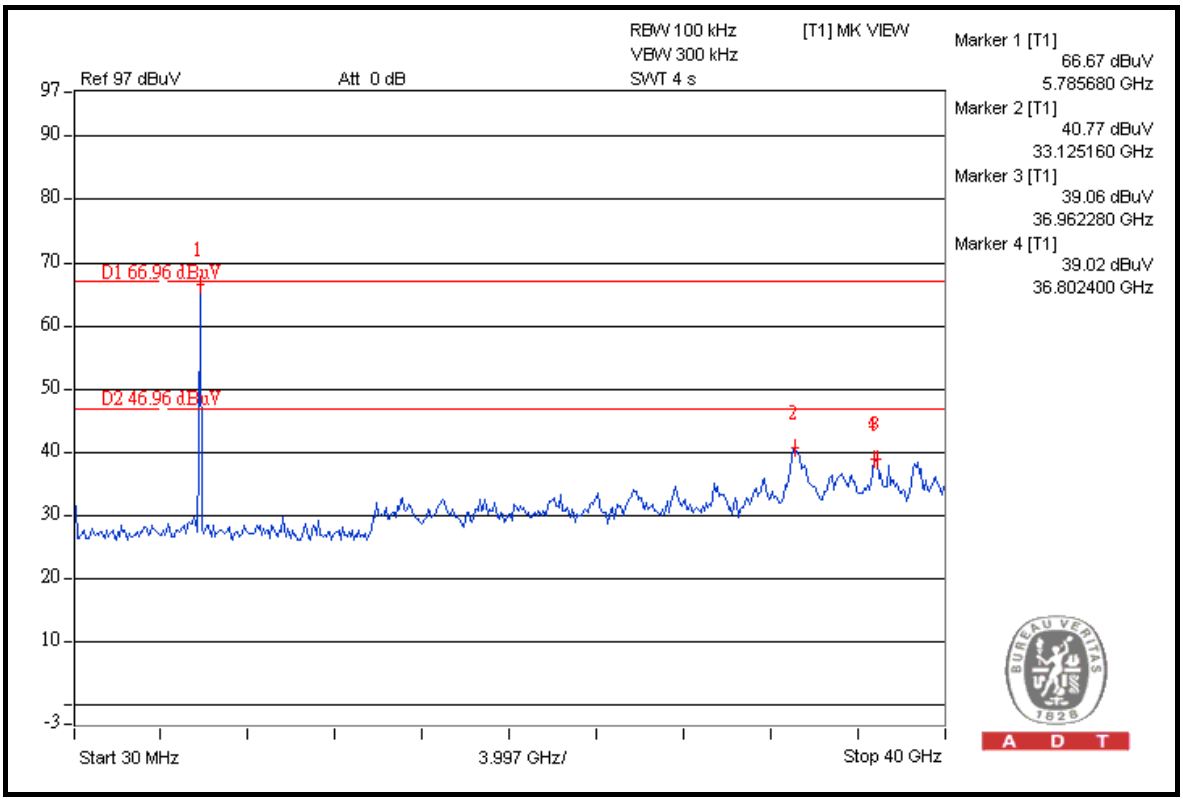





RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
67.24 dBuV
5.705740 GHz
Marker 2 [T1]
41.76 dBuV
33.205100 GHz
Marker 3 [T1]
38.85 dBuV
38.800900 GHz
Marker 4 [T1]
38.28 dBuV
36.802400 GHz
D1 68.4 dBuV
D2 40.4 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
66.96 dBuV
5.803400 GHz
Marker 2 [T1]
24.97 dBuV
5.850000 GHz
Marker 3 [T1]
28.35 dBuV
5.922200 GHz
D1 66.96 dBuV
D2 46.96 dBuV
Center 5.867 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
66.48 dBuV
5.797400 GHz
Marker 2 [T1]
20.11 dBuV
5.850000 GHz
Marker 3 [T1]
20.12 dBuV
5.850200 GHz
D1 66.48 dBuV
D2 46.48 dBuV
Center 5.867 GHz
20 MHz/
Span 200 MHz


RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
66.67 dBuV
5.785680 GHz
Marker 2 [T1]
40.77 dBuV
33.125160 GHz
Marker 3 [T1]
39.06 dBuV
36.962280 GHz
Marker 4 [T1]
39.02 dBuV
36.802400 GHz
D1 66.96 dBuV
D2 46.96 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

7. INFORMATION ON THE TESTING LABORATORIES

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

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml. 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: 886-3-3185050

Web Site: www.adt.com.tw

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

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

No any modifications are made to the EUT by the lab during the test.

---END---