FCC TEST REPORT (15.247)

REPORT NO.:	RF111004C12
MODEL NO.:	Air4420
FCC ID:	Z3W-00001-AIR4420
RECEIVED:	Oct. 04, 2011
TESTED:	Oct. 17 ~ Oct. 28, 2011
ISSUED:	Nov. 01, 2011

APPLICANT:	AirTies Wireless Networks
ADDRESS:	Gülbahar Mah. Avni Dilligil Sok. Celik Is Merkezi No:5 Mecidiyekoy, Istanbul, Turkey

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
LAB ADDRESS:	No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C)
TEST LOCATION:	No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

TABLE OF CONTENTS

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	NA	Nov. 01, 2011

1. CERTIFICATION

PRODUCT:	300 Mbps Dualband 1 Port Ap/Router
MODEL:	Air4420
BRAND:	AirTies
APPLICANT:	AirTies Wireless Networks
TESTED:	Oct. 17 ~ Oct. 28, 2011
TEST SAMPLE:	ENGINEERING SAMPLE
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247)**
	ANSI C63.4-2003
	ANSI C63.10-2009

The above equipment (Model: Air4420) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch,** and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ , DATE: Nov. 01, 2011
Ivy Lin / Specialist

APPROVED BY : _____ , DATE: Nov. 01, 2011
Gary Chang / Technical 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 -4.96dB at 0.216MHz.
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 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 -0.7dB at 2483.5MHz.
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	No antenna connector is used.

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	300 Mbps Dualband 1 Port Ap/Router
MODEL NO.	Air4420
FCC ID	Z3W-00001-AIR4420
POWER SUPPLY	12Vdc (adapter)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b:11.0/ 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 ~ 2462MHz 5.0GHz: 5745 ~ 5825MHz
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	924.8mW for 2412 ~ 2462MHz 470.0mW for 5745 ~ 5825MHz
ANTENNA TYPE	**2.4GHz:** PIFA antenna with 2dBi gain **5.0GHz:** PIFA antenna with 3.5dBi gain
ANTENNA CONNECTOR	NA
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter

NOTE:

1. 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)	√	√	√

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

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11a	1TX
802.11n (20MHz) (MCS 0-7)	1TX
802.11n (20MHz) (MCS 8-15)	2TX
802.11n (40MHz) (MCS 0-7)	1TX
802.11n (40MHz) (MCS 8-15)	2TX

3. The EUT consumes power from the following adapter:

BRAND:	DVE
MODEL:	DSA-12G-12 AUS
INPUT:	100-240Vac, 50/60Hz, 0.3A
OUTPUT:	12Vdc/ 1A
POWER LINE:	1.5m non-shielded cable without core

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

3.2 DESCRIPTION OF TEST MODES

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 (5745 ~ 5825MHz):

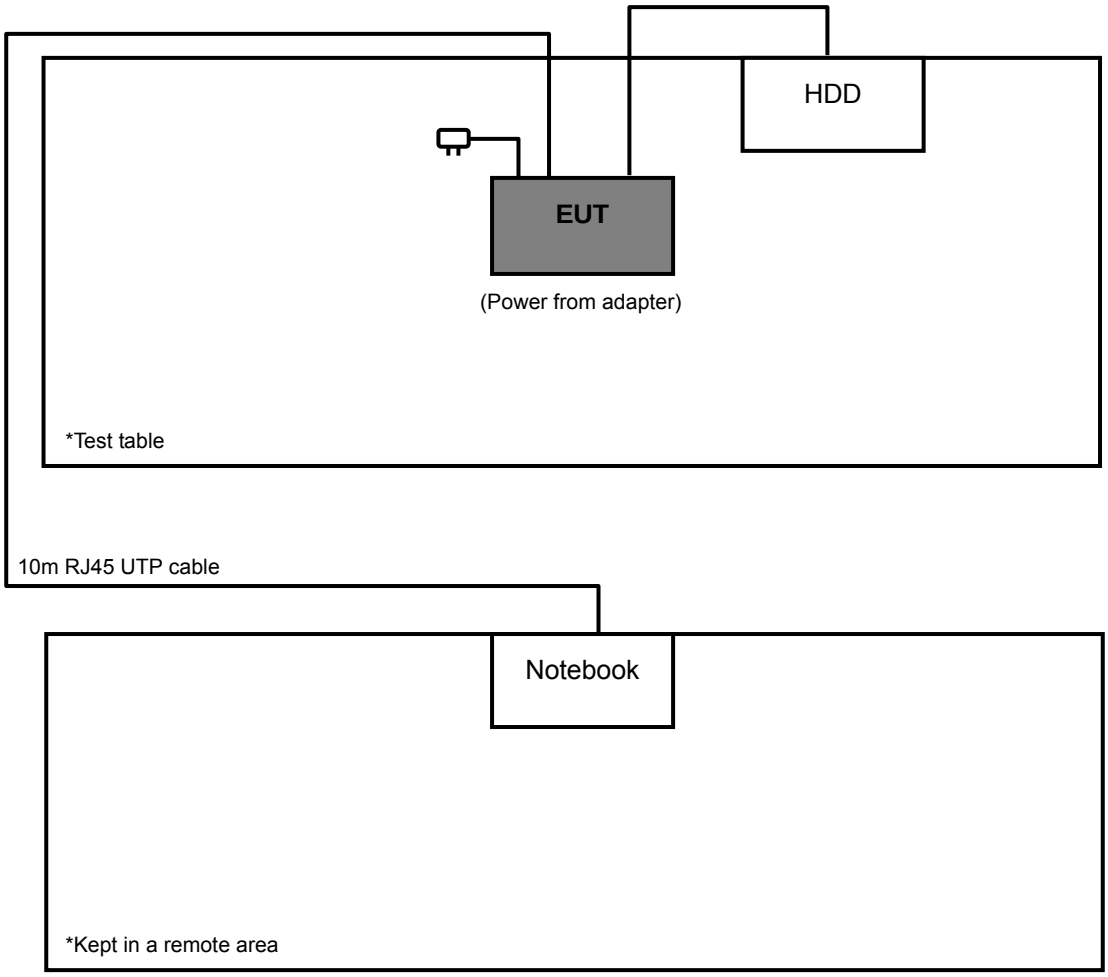
5 channels are provided for 802.11a, 802.11n (20MHz):

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 2.4GHz:

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

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

RADIATED EMISSION TEST (ABOVE 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, 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
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	X
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	X
-	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	X
-	802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	15.0	X

RADIATED EMISSION TEST (BELOW 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations , 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
-	802.11n (20MHz)	1 to 11	6	OFDM	BPSK	7.2	X

POWER LINE CONDUCTED EMISSION TEST:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (20MHz)	1 to 11	6	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, 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
-	802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0	X
-	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0	X
-	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2	X
-	802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	15.0	X

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
-	802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	15.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	David Huang
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
PLC	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
APCM	25deg. C, 68%RH	120Vac, 60Hz	Kay Wu

FOR 5.745 ~ 5.825GHz:

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

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

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0

RADIATED EMISSION TEST (BELOW 1GHz):

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (20MHz)	149 to 165	157	OFDM	BPSK	7.2

POWER LINE CONDUCTED EMISSION TEST:

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (20MHz)	149 to 165	157	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)
-	802.11a	149 to 165	149, 165	OFDM	BPSK	6.0
-	802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	7.2
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	David Huang
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
PLC	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
APCM	25deg. C, 68%RH	120Vac, 60Hz	Kay Wu

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
ANSI C63.10-2009

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

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

3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	EXTERNAL HARD DISK	Terasys	F12-UF	A0100222-4A60004	FCC DoC Approved
2	NOTEBOOK	DELL	PP05L	12130898320	E2K24CLNS

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.5 m shielded cable, terminated with USB connector, w/o core.
2	10m RJ45 UTP cable without core.

NOTE:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item 2 acted 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

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a). Other emissions shall be at least 20dB below the highest level of the desired power.

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. 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	ESIB7	100212	Aug. 02, 2011	Aug. 01, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP 40	100041	Jul. 21, 2011	Jul. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 13, 2011	Apr. 12, 2012
HORN Antenna SCHWARZBECK	9120D	209	Aug. 25, 2011	Aug. 24, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8447D	2944A10633	Nov. 02, 2010	Nov. 01, 2011
Preamplifier Agilent	8449B	3008A01964	Nov. 02, 2010	Nov. 01, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295014/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	Aug. 19, 2011	Aug. 18, 2012
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	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 3.

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

4. The FCC Site Registration No. is 988962.

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

4.1.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

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

c. 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.

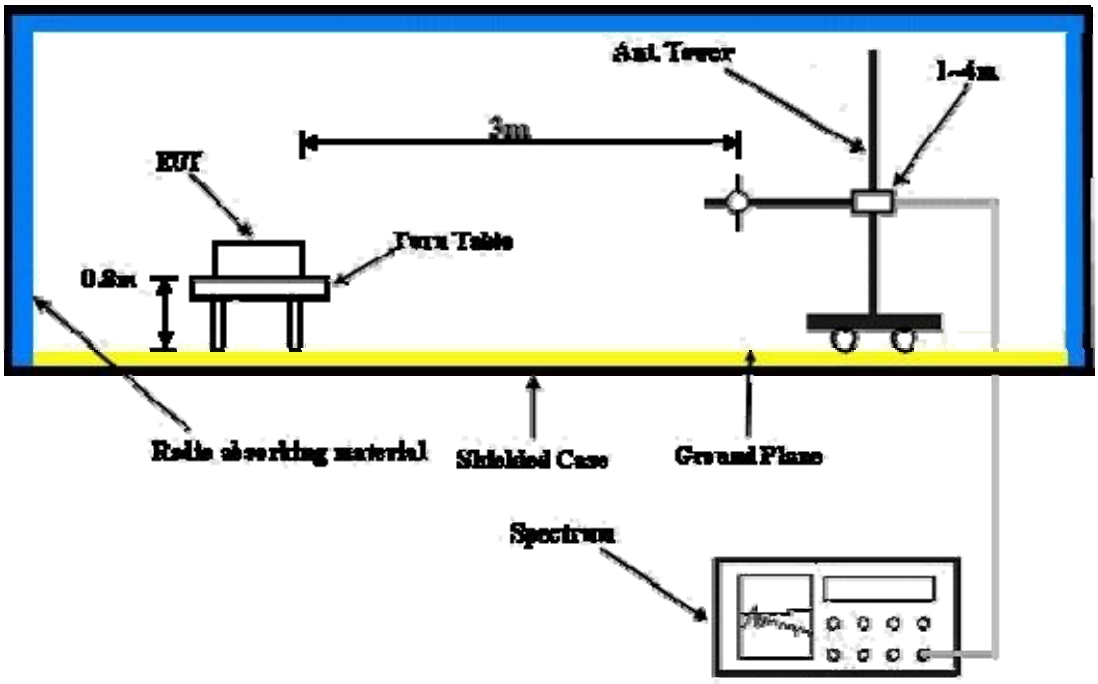
NOTE:

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 1kHz 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 notebooks to act as communication partner and placed it outside of testing area.
c. The communication partner connected with EUT via a RJ45 cable and run a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
d. The communication partner sent data to EUT by command "PING".
e. The communication partner read and wrote with the HDD via EUT.

4.1.7 TEST RESULTS

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	**FREQUENCY RANGE**	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	**TESTED BY**	David Huang

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	52.6 PK	74.0	-21.4	1.34 H	17	21.50	31.10
2	2390.00	40.8 AV	54.0	-13.2	1.34 H	17	9.70	31.10
3	*2412.00	106.4 PK			1.34 H	17	75.20	31.20
4	*2412.00	102.1 AV			1.34 H	17	70.90	31.20
5	4824.00	45.7 PK	74.0	-28.3	1.01 H	301	8.80	36.90
6	4824.00	37.0 AV	54.0	-17.0	1.01 H	301	0.10	36.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	53.8 PK	74.0	-20.2	1.19 V	169	22.70	31.10
2	2390.00	42.2 AV	54.0	-11.8	1.19 V	169	11.10	31.10
3	*2412.00	107.0 PK			1.19 V	169	75.80	31.20
4	*2412.00	102.6 AV			1.19 V	169	71.40	31.20
5	4824.00	48.0 PK	74.0	-26.0	1.11 V	193	11.10	36.90
6	4824.00	40.3 AV	54.0	-13.7	1.11 V	193	3.40	36.90

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	2378.00	49.0 PK	74.0	-25.0	1.06 H	124	18.00	31.00
2	2378.00	39.7 AV	54.0	-14.3	1.06 H	124	8.70	31.00
3	*2437.00	107.3 PK			1.06 H	124	76.00	31.30
4	*2437.00	101.9 AV			1.06 H	124	70.60	31.30
5	4874.00	48.0 PK	74.0	-26.0	1.46 H	251	11.00	37.00
6	4874.00	39.5 AV	54.0	-14.5	1.46 H	251	2.50	37.00
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	2378.00	50.3 PK	74.0	-23.7	1.42 V	168	19.30	31.00
2	2378.00	41.1 AV	54.0	-12.9	1.42 V	168	10.10	31.00
3	*2437.00	108.4 PK			1.42 V	168	77.10	31.30
4	*2437.00	103.9 AV			1.42 V	168	72.60	31.30
5	4874.00	50.3 PK	74.0	-23.7	1.22 V	355	13.30	37.00
6	4874.00	44.4 AV	54.0	-9.6	1.22 V	355	7.40	37.00

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 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	107.4 PK			1.00 H	356	76.00	31.40
2	*2462.00	102.3 AV			1.00 H	356	70.90	31.40
3	2483.50	51.9 PK	74.0	-22.1	1.00 H	356	20.50	31.40
4	2483.50	38.8 AV	54.0	-15.2	1.00 H	356	7.40	31.40
5	4924.00	48.4 PK	74.0	-25.6	1.53 H	266	11.30	37.10
6	4924.00	39.6 AV	54.0	-14.4	1.53 H	266	2.50	37.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.0 PK			1.14 V	177	76.60	31.40
2	*2462.00	102.9 AV			1.14 V	177	71.50	31.40
3	2483.50	54.2 PK	74.0	-19.8	1.14 V	177	22.80	31.40
4	2483.50	41.6 AV	54.0	-12.4	1.14 V	177	10.20	31.40
5	4924.00	50.7 PK	74.0	-23.3	1.02 V	119	13.60	37.10
6	4924.00	44.7 AV	54.0	-9.3	1.02 V	119	7.60	37.10

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

802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	71.3 PK	74.0	-2.7	1.34 H	355	40.20	31.10
2	2390.00	49.6 AV	54.0	-4.4	1.34 H	355	18.50	31.10
3	*2412.00	107.7 PK			1.34 H	355	76.50	31.20
4	*2412.00	93.7 AV			1.34 H	355	62.50	31.20
5	4824.00	45.4 PK	74.0	-28.6	1.00 H	74	8.50	36.90
6	4824.00	32.5 AV	54.0	-21.5	1.00 H	74	-4.40	36.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.0 PK	74.0	-1.0	1.73 V	167	41.90	31.10
2	2390.00	49.7 AV	54.0	-4.3	1.73 V	167	18.60	31.10
3	*2412.00	108.1 PK			1.73 V	167	76.90	31.20
4	*2412.00	94.2 AV			1.73 V	167	63.00	31.20
5	4824.00	45.4 PK	74.0	-28.6	1.00 V	14	8.50	36.90
6	4824.00	33.2 AV	54.0	-20.8	1.00 V	14	-3.70	36.90

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	2378.00	49.5 PK	74.0	-24.5	1.32 H	355	18.50	31.00
2	2378.00	39.6 AV	54.0	-14.4	1.32 H	355	8.60	31.00
3	*2437.00	109.5 PK			1.32 H	355	78.20	31.30
4	*2437.00	95.1 AV			1.32 H	355	63.80	31.30
5	4874.00	50.6 PK	74.0	-23.4	1.00 H	142	13.60	37.00
6	4874.00	35.3 AV	54.0	-18.7	1.00 H	142	-1.70	37.00
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	2378.00	53.3 PK	74.0	-20.7	1.73 V	77	22.30	31.00
2	2378.00	41.3 AV	54.0	-12.7	1.73 V	77	10.30	31.00
3	*2437.00	110.0 PK			1.73 V	77	78.70	31.30
4	*2437.00	96.0 AV			1.73 V	77	64.70	31.30
5	4874.00	51.9 PK	74.0	-22.1	1.00 V	68	14.90	37.00
6	4874.00	35.6 AV	54.0	-18.4	1.00 V	68	-1.40	37.00

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 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	107.6 PK			1.00 H	355	76.20	31.40
2	*2462.00	93.3 AV			1.00 H	355	61.90	31.40
3	2483.50	73.1 PK	74.0	-0.9	1.00 H	355	41.70	31.40
4	2483.50	49.9 AV	54.0	-4.1	1.00 H	355	18.50	31.40
5	4924.00	45.3 PK	74.0	-28.7	1.00 H	77	8.20	37.10
6	4924.00	32.2 AV	54.0	-21.8	1.00 H	77	-4.90	37.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.2 PK			1.12 V	178	76.80	31.40
2	*2462.00	94.3 AV			1.12 V	178	62.90	31.40
3	**2483.50**	**73.3 PK**	**74.0**	**-0.7**	**1.12 V**	**178**	**41.90**	**31.40**
4	2483.50	51.6 AV	54.0	-2.4	1.12 V	178	20.20	31.40
5	4924.00	45.3 PK	74.0	-28.7	1.00 V	20	8.20	37.10
6	4924.00	33.1 AV	54.0	-20.9	1.00 V	20	-4.00	37.10

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

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.8 PK	74.0	-5.2	1.00 H	155	37.70	31.10
2	2390.00	49.7 AV	54.0	-4.3	1.00 H	155	18.60	31.10
3	*2412.00	109.4 PK			1.00 H	155	78.20	31.20
4	*2412.00	91.3 AV			1.00 H	155	60.10	31.20
5	4824.00	45.4 PK	74.0	-28.6	1.00 H	78	8.50	36.90
6	4824.00	34.0 AV	54.0	-20.0	1.00 H	78	-2.90	36.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.8 PK	74.0	-3.2	1.18 V	170	39.70	31.10
2	2390.00	51.7 AV	54.0	-2.3	1.18 V	170	20.60	31.10
3	*2412.00	109.5 PK			1.18 V	170	78.30	31.20
4	*2412.00	91.6 AV			1.18 V	170	60.40	31.20
5	4824.00	45.2 PK	74.0	-28.8	1.00 V	325	8.30	36.90
6	4824.00	34.0 AV	54.0	-20.0	1.00 V	325	-2.90	36.90

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	2378.00	53.0 PK	74.0	-21.0	1.00 H	197	22.00	31.00
2	2378.00	40.1 AV	54.0	-13.9	1.00 H	197	9.10	31.00
3	*2437.00	111.9 PK			1.00 H	197	80.60	31.30
4	*2437.00	92.2 AV			1.00 H	197	60.90	31.30
5	4874.00	45.3 PK	74.0	-28.7	1.00 H	56	8.30	37.00
6	4874.00	33.0 AV	54.0	-21.0	1.00 H	56	-4.00	37.00
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	2378.00	54.3 PK	74.0	-19.7	1.00 V	157	23.30	31.00
2	2378.00	39.7 AV	54.0	-14.3	1.00 V	157	8.70	31.00
3	*2437.00	112.2 PK			1.00 V	157	80.90	31.30
4	*2437.00	93.0 AV			1.00 V	157	61.70	31.30
5	4874.00	45.3 PK	74.0	-28.7	1.00 V	124	8.30	37.00
6	4874.00	32.9 AV	54.0	-21.1	1.00 V	124	-4.10	37.00

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 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	109.5 PK			1.38 H	178	78.10	31.40
2	*2462.00	90.8 AV			1.38 H	178	59.40	31.40
3	2483.50	72.4 PK	74.0	-1.6	1.66 H	180	41.00	31.40
4	2483.50	51.8 AV	54.0	-2.2	1.66 H	180	20.40	31.40
5	4924.00	45.4 PK	74.0	-28.6	1.00 H	74	8.30	37.10
6	4924.00	34.3 AV	54.0	-19.7	1.00 H	74	-2.80	37.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.3 PK			1.00 V	152	78.90	31.40
2	*2462.00	91.4 AV			1.00 V	152	60.00	31.40
3	2483.50	72.6 PK	74.0	-1.4	1.29 V	12	41.20	31.40
4	2483.50	52.7 AV	54.0	-1.3	1.29 V	12	21.30	31.40
5	4924.00	44.5 PK	74.0	-29.5	1.00 V	86	7.40	37.10
6	4924.00	33.5 AV	54.0	-20.5	1.00 V	86	-3.60	37.10

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

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	71.3 PK	74.0	-2.7	1.11 H	165	40.20	31.10
2	2390.00	50.6 AV	54.0	-3.4	1.11 H	165	19.50	31.10
3	*2422.00	104.9 PK			1.17 H	169	73.70	31.20
4	*2422.00	84.1 AV			1.17 H	169	52.90	31.20
5	4844.00	45.2 PK	74.0	-28.8	1.00 H	145	8.30	36.90
6	4844.00	32.8 AV	54.0	-21.2	1.00 H	145	-4.10	36.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.6 PK	74.0	-1.4	1.05 V	156	41.50	31.10
2	2390.00	50.8 AV	54.0	-3.2	1.05 V	156	19.70	31.10
3	*2422.00	106.1 PK			1.05 V	154	74.90	31.20
4	*2422.00	86.5 AV			1.05 V	154	55.30	31.20
5	4844.00	45.3 PK	74.0	-28.7	1.00 V	215	8.40	36.90
6	4844.00	33.0 AV	54.0	-21.0	1.00 V	215	-3.90	36.90

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	69.2 PK	74.0	-4.8	1.45 H	175	38.10	31.10
2	2390.00	51.0 AV	54.0	-3.0	1.45 H	175	19.90	31.10
3	*2437.00	109.1 PK			1.45 H	175	77.80	31.30
4	*2437.00	89.0 AV			1.45 H	175	57.70	31.30
5	4874.00	45.3 PK	74.0	-28.7	1.00 H	85	8.30	37.00
6	4874.00	33.1 AV	54.0	-20.9	1.00 H	85	-3.90	37.00
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	72.5 PK	74.0	-1.5	1.02 V	150	41.40	31.10
2	2390.00	52.1 AV	54.0	-1.9	1.02 V	150	21.00	31.10
3	*2437.00	109.6 PK			1.02 V	155	78.30	31.30
4	*2437.00	89.2 AV			1.02 V	155	57.90	31.30
5	4874.00	45.4 PK	74.0	-28.6	1.00 V	89	8.40	37.00
6	4874.00	32.8 AV	54.0	-21.2	1.00 V	89	-4.20	37.00

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 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	106.6 PK			1.14 H	173	75.30	31.30
2	*2452.00	86.1 AV			1.14 H	173	54.80	31.30
3	2483.50	72.2 PK	74.0	-1.8	1.14 H	173	40.80	31.40
4	2483.50	50.9 AV	54.0	-3.1	1.14 H	173	19.50	31.40
5	4904.00	45.3 PK	74.0	-28.7	1.00 H	154	8.30	37.00
6	4904.00	32.9 AV	54.0	-21.1	1.00 H	154	-4.10	37.00
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	*2452.00	106.7 PK			1.30 V	14	75.40	31.30
2	*2452.00	86.8 AV			1.30 V	14	55.50	31.30
3	2483.50	72.2 PK	74.0	-1.8	1.35 V	7	40.80	31.40
4	2483.50	52.1 AV	54.0	-1.9	1.35 V	7	20.70	31.40
5	4904.00	45.6 PK	74.0	-28.4	1.00 V	74	8.60	37.00
6	4904.00	33.5 AV	54.0	-20.5	1.00 V	74	-3.50	37.00

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.

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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	43.51	25.6 QP	40.0	-14.4	4.00 H	133	11.20	14.40
2	123.23	36.1 QP	43.5	-7.4	3.00 H	295	23.30	12.80
3	270.99	38.0 QP	46.0	-8.0	1.00 H	292	24.20	13.80
4	502.36	37.2 QP	46.0	-8.8	2.00 H	331	16.90	20.30
5	753.18	41.2 QP	46.0	-4.8	1.00 H	34	16.50	24.70
6	877.61	40.4 QP	46.0	-5.6	1.00 H	331	13.80	26.60
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	41.57	33.4 QP	40.0	-6.6	1.00 V	73	19.00	14.40
2	113.50	32.8 QP	43.5	-10.7	1.00 V	274	21.00	11.80
3	234.05	36.0 QP	46.0	-10.0	1.00 V	43	23.80	12.20
4	391.54	33.9 QP	46.0	-12.1	2.00 V	235	16.70	17.20
5	502.36	38.8 QP	46.0	-7.2	1.00 V	325	18.50	20.30
6	753.18	40.2 QP	46.0	-5.8	1.00 V	10	15.50	24.70

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	Nov. 30, 2010	Nov. 29, 2011
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 30, 2010	Dec. 29, 2011
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jul. 07, 2011	Jul. 06, 2012
LISN ROHDE & SCHWARZ	ESH3-Z5	835239/001	Feb. 22, 2011	Feb. 21, 2012
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.

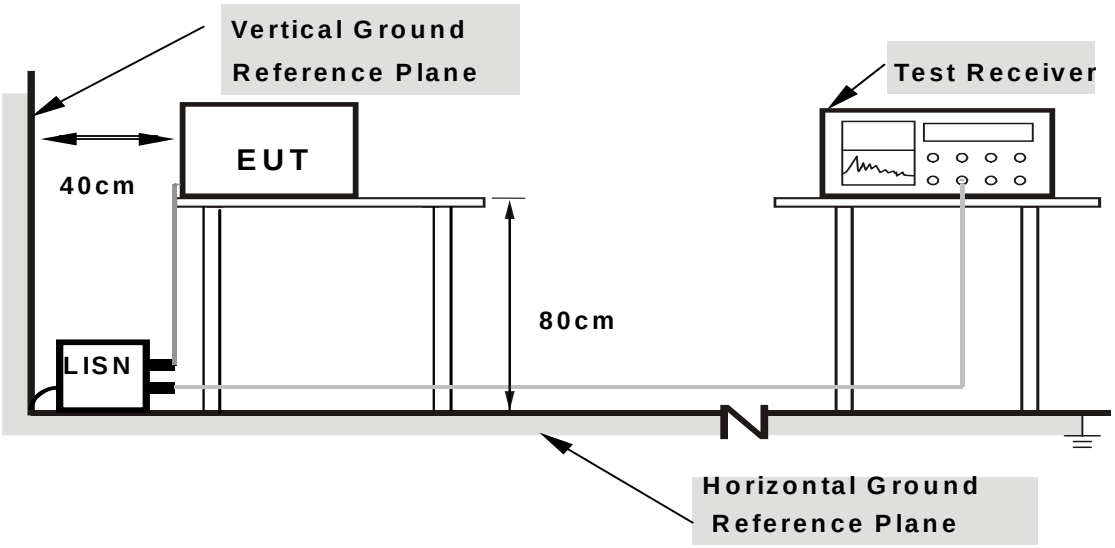
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

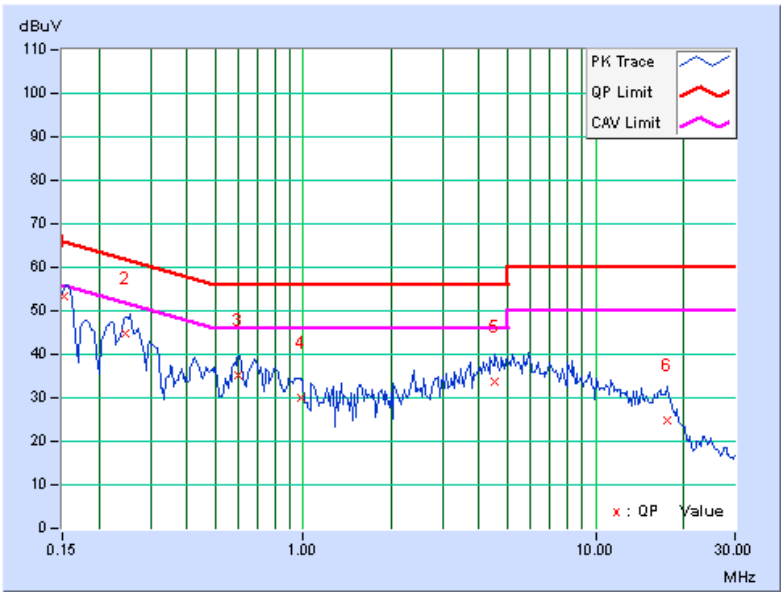
4.2.7 TEST RESULTS

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

PHASE	Line 1	6dB BANDWIDTH	9kHz

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.153	0.12	53.12	45.60	53.24	45.72	65.86	55.86	-12.62	-10.14
2	0.247	0.12	44.88	36.77	45.00	36.89	61.87	51.87	-16.87	-14.98
3	0.598	0.13	34.91	27.23	35.04	27.36	56.00	46.00	-20.96	-18.64
4	0.978	0.16	29.75	20.08	29.91	20.24	56.00	46.00	-26.09	-25.76
5	4.523	0.34	33.30	22.77	33.64	23.11	56.00	46.00	-22.36	-22.89
6	17.586	1.00	23.72	15.73	24.72	16.73	60.00	50.00	-35.28	-33.27

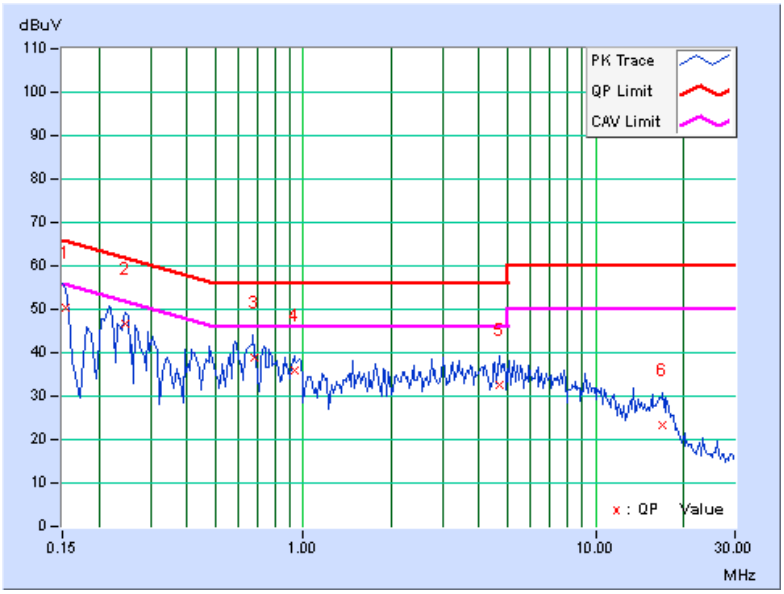
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



PHASE	Line 2	6dB BANDWIDTH	9kHz

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.13	50.07	39.95	50.20	40.08	65.79	55.79	-15.60	-15.72
2	0.248	0.13	46.62	45.78	46.75	45.91	61.84	51.84	-15.08	-5.92
3	0.677	0.16	38.80	33.81	38.96	33.97	56.00	46.00	-17.04	-12.03
4	0.934	0.18	35.77	27.58	35.95	27.76	56.00	46.00	-20.05	-18.24
5	4.688	0.35	32.33	23.14	32.68	23.49	56.00	46.00	-23.32	-22.51
6	17.004	0.82	22.57	14.67	23.39	15.49	60.00	50.00	-36.61	-34.51

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	100039	Jan. 11, 2011	Jan. 10, 2012

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

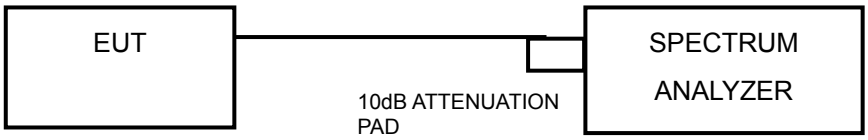
4.3.3 TEST PROCEDURE

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

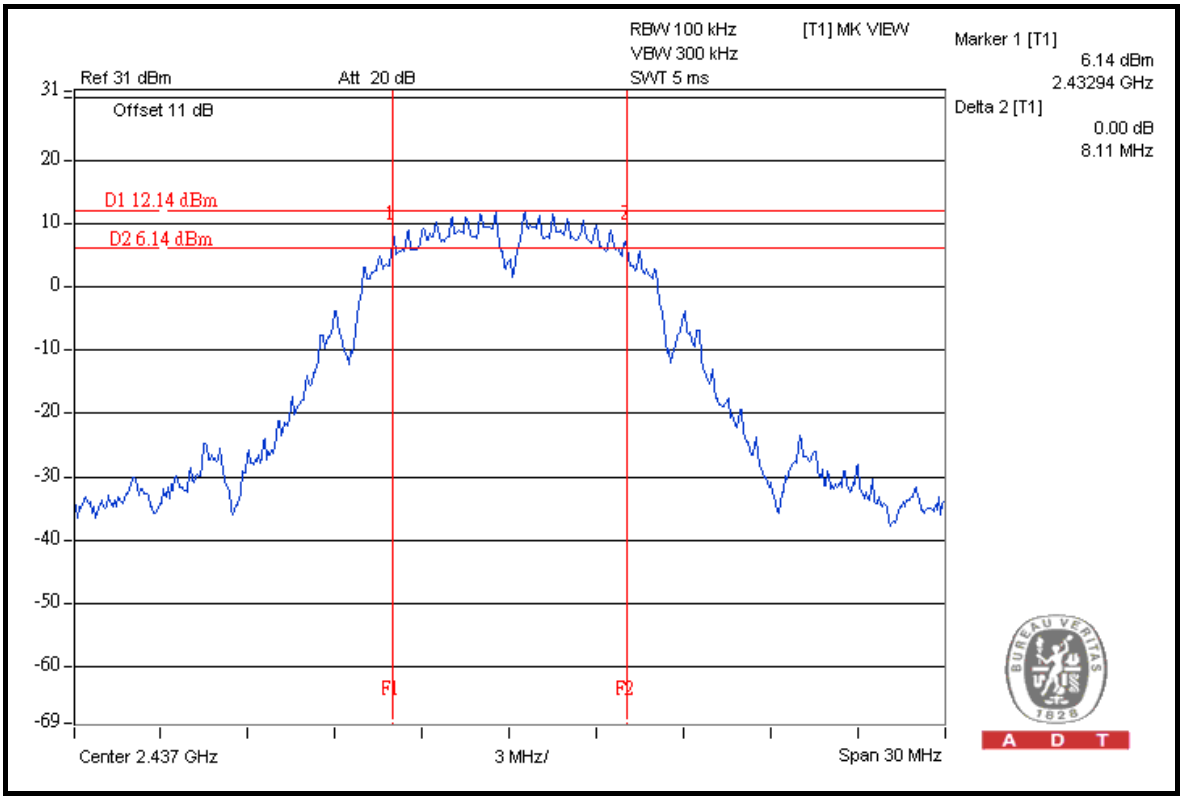
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	8.09	0.5	PASS
6	2437	8.11	0.5	PASS
11	2462	8.09	0.5	PASS

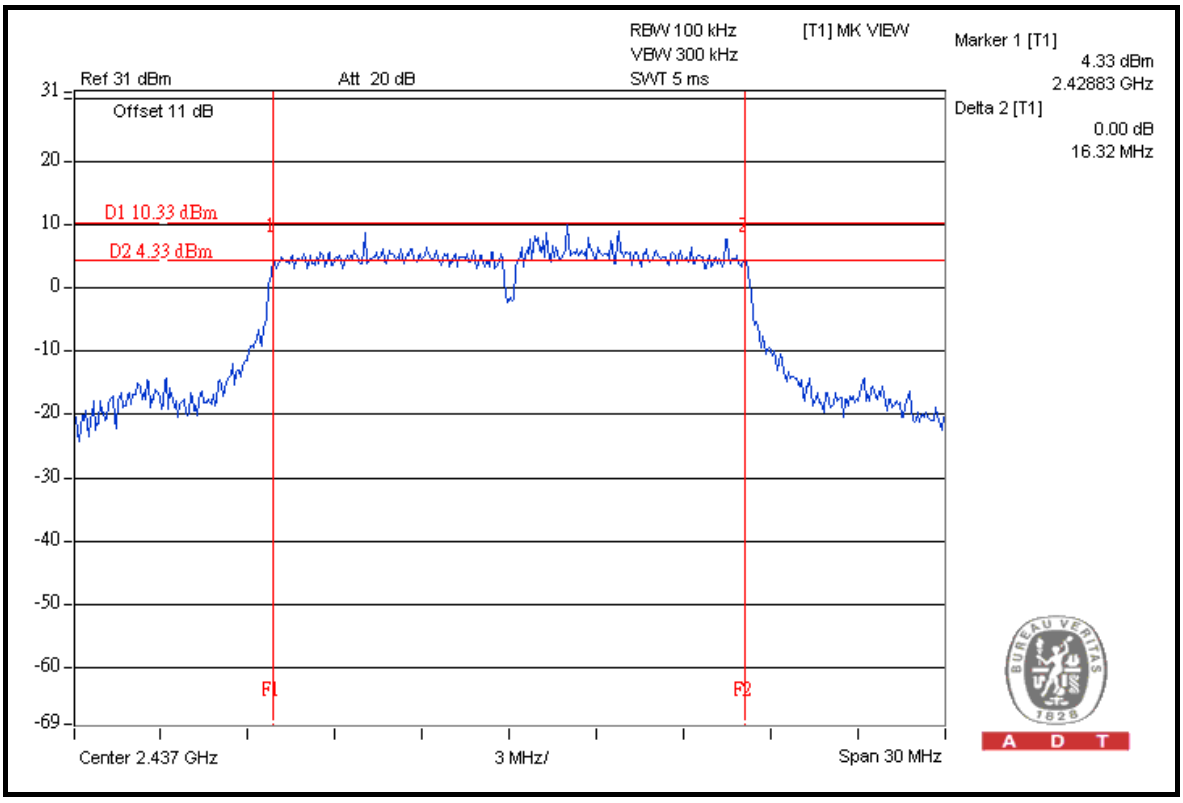
CH 6



802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.79	0.5	PASS
6	2437	16.32	0.5	PASS
11	2462	16.09	0.5	PASS

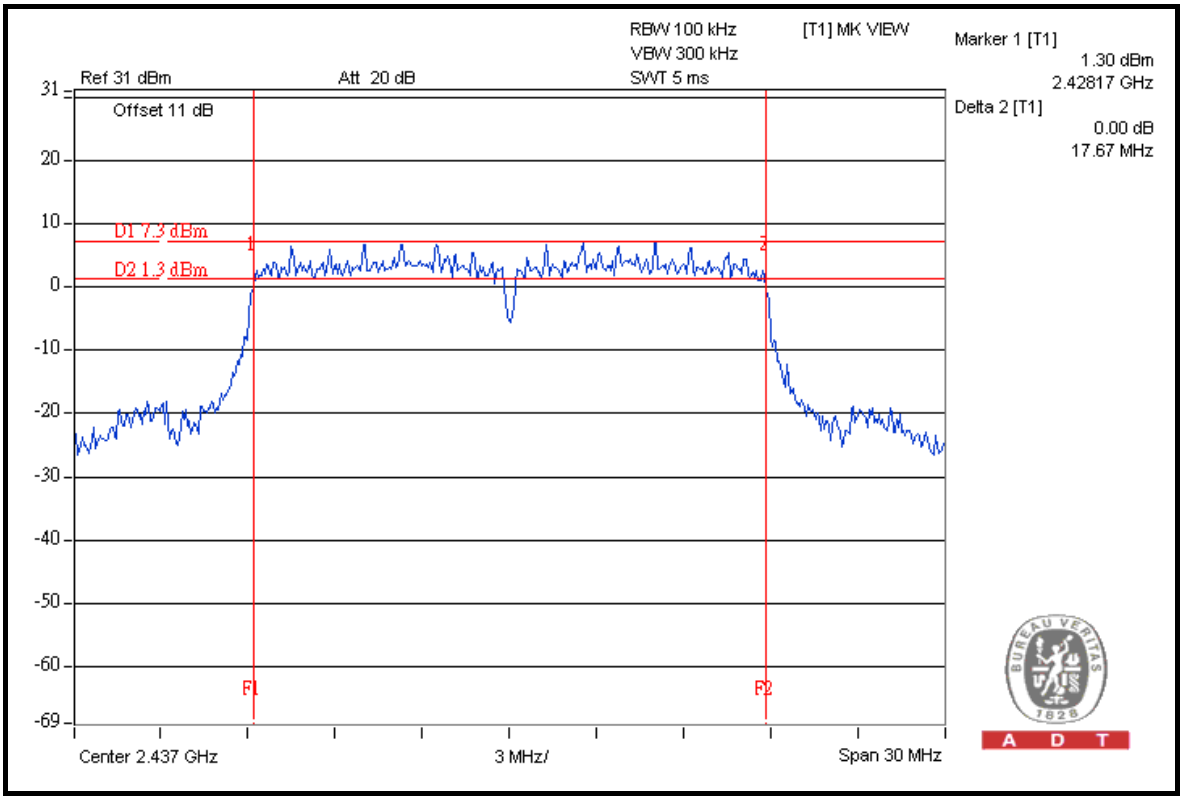
CH 6



802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	15.13	17.67	0.5	PASS
6	2437	16.58	17.67	0.5	PASS
11	2462	15.94	17.65	0.5	PASS

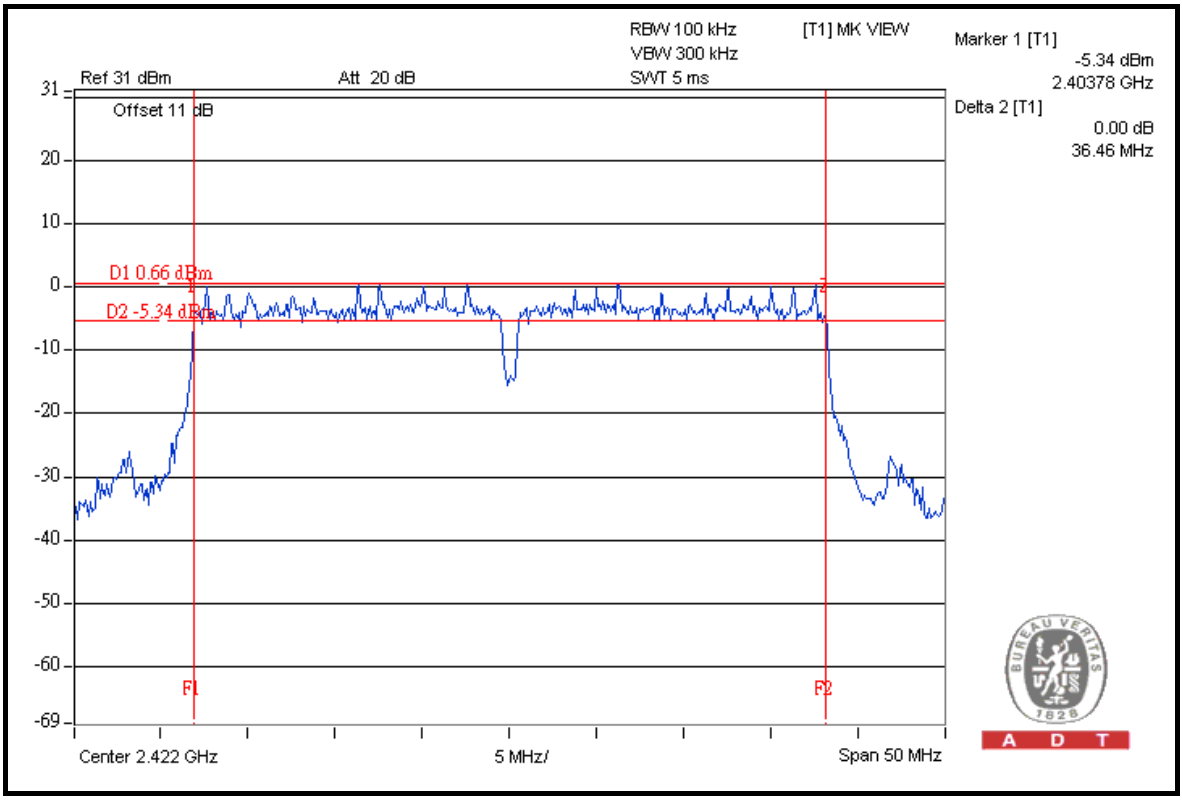
FOR CHAIN 1: CH 6



802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2422	36.18	36.46	0.5	PASS
4	2437	36.44	36.42	0.5	PASS
7	2452	36.43	36.35	0.5	PASS

FOR CHAIN 1: CH 1



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	0824011	Aug. 04, 2011	Aug. 03, 2012
Power Sensor	MA2411B	0738171	Aug. 04, 2011	Aug. 03, 2012

NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Measurement Bandwidth of ML2495A is 65MHz greater than 6dB bandwidth of emission.

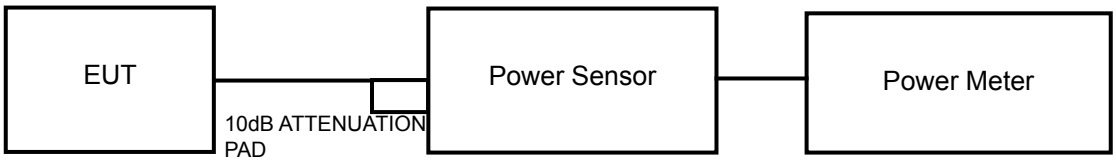
4.4.3 TEST PROCEDURES

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

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	2412	257.0	24.1	30	PASS
6	2437	263.0	24.2	30	PASS
11	2462	257.0	24.1	30	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	2412	407.4	26.1	30	PASS
6	2437	457.1	26.6	30	PASS
11	2462	398.1	26.0	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	25.2	25.1	654.7	28.2	30	PASS
6	2437	26.6	26.7	**924.8**	29.7	30	PASS
11	2462	25.1	25.2	654.7	28.2	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	23.6	23.8	469.0	26.7	30	PASS
4	2437	26.1	26.5	854.1	29.3	30	PASS
7	2452	23.3	23.8	453.7	26.6	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	100039	Jan. 11, 2011	Jan. 10, 2012

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 10kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

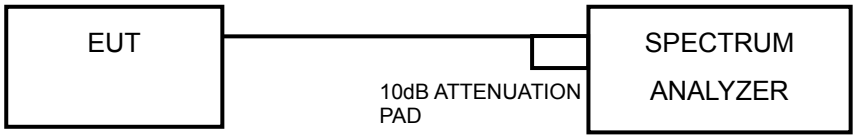
The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

Follow method 2 of KDB 662911 D01 Multiple Transmitter Output v01 to calculate total power density of 2 TX port.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

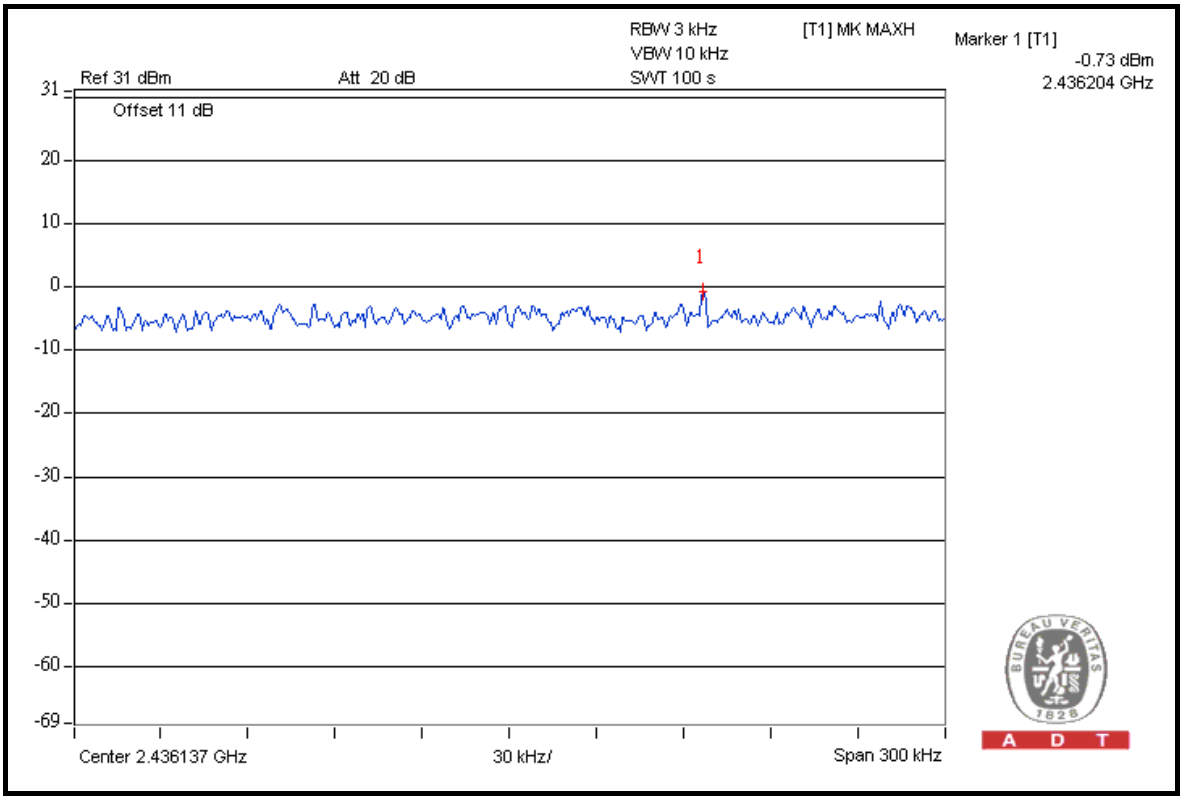
Same as Item 4.3.6

4.5.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-0.92	8	PASS
6	2437	-0.73	8	PASS
11	2462	-0.88	8	PASS

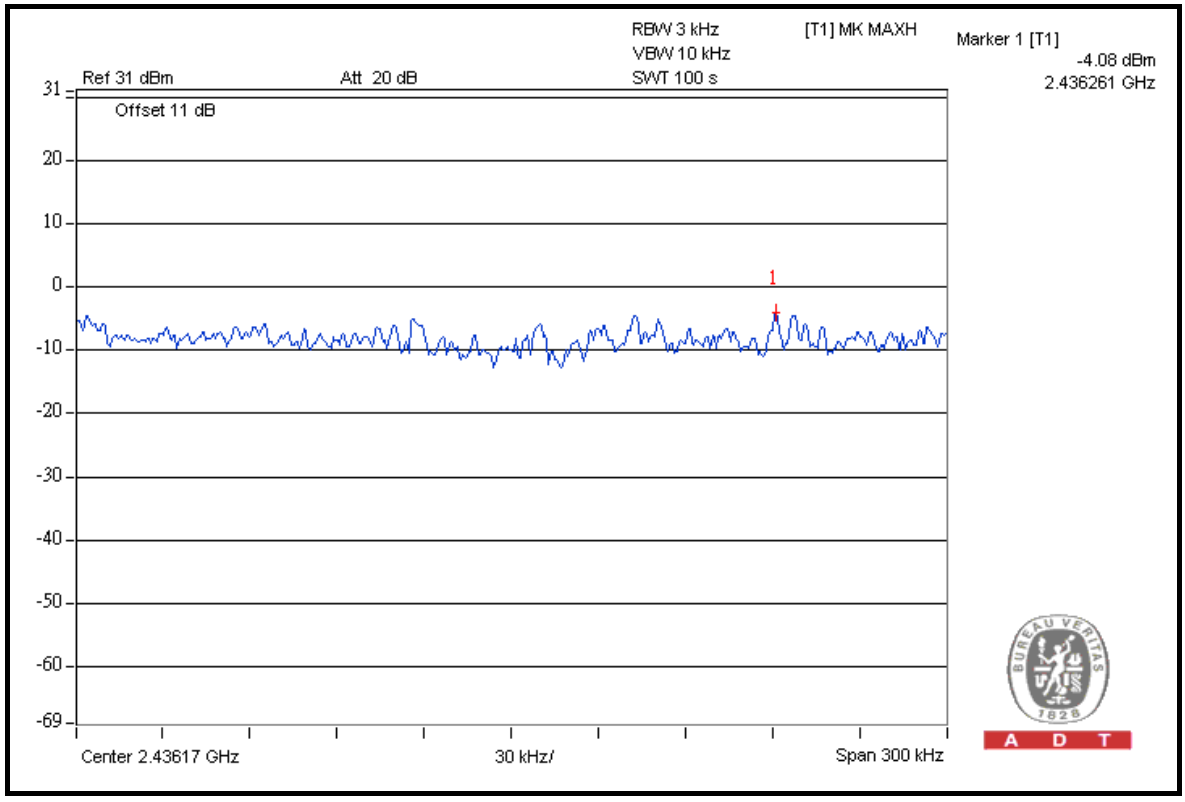
CH 6



802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-4.95	8	PASS
6	2437	-4.08	8	PASS
11	2462	-5.28	8	PASS

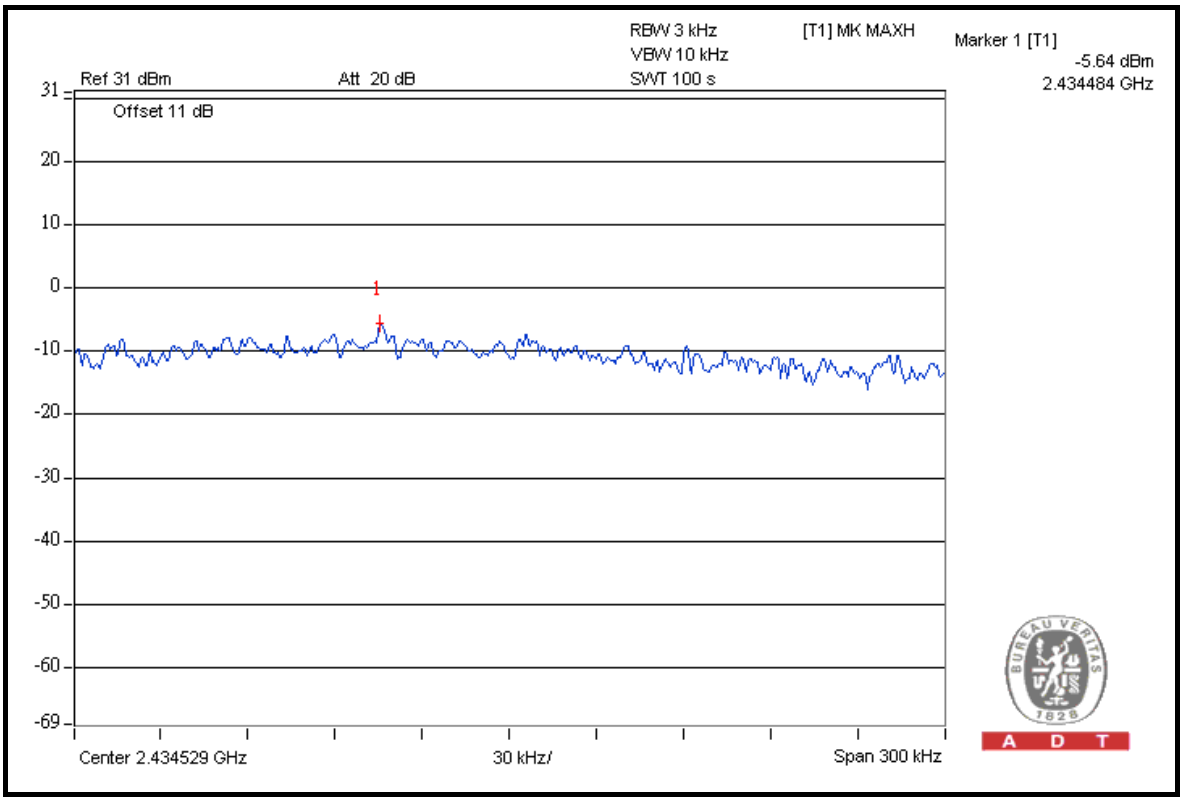
CH 6



802.11n (20MHz)

CHAIN	CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
			MEASURED	10 log (N=2) dB			
0	1	2412	-7.3	3.01	-4.3	8	PASS
	6	2437	-5.9	3.01	-2.9	8	PASS
	11	2462	-7.5	3.01	-4.5	8	PASS
1	1	2412	-7.4	3.01	-4.4	8	PASS
	6	2437	-5.6	3.01	-2.6	8	PASS
	11	2462	-7.5	3.01	-4.5	8	PASS

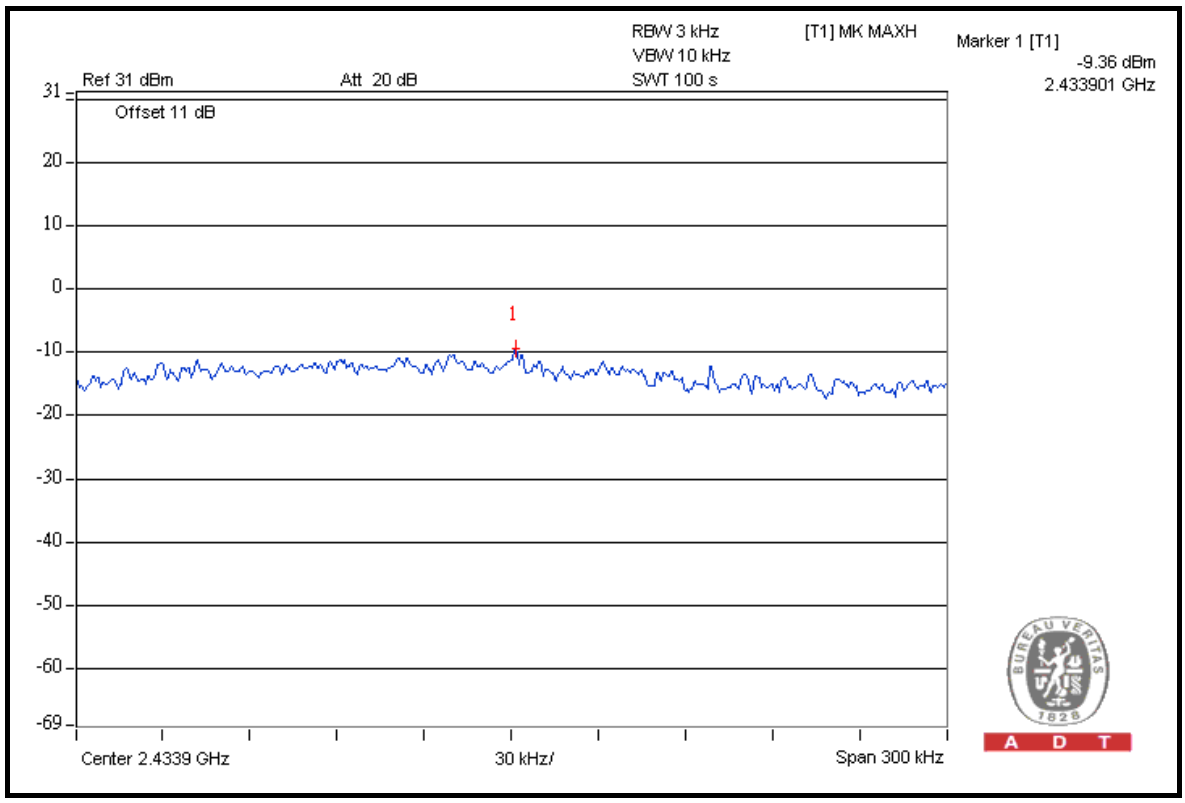
FOR CHAIN 1: CH 6



802.11n (40MHz)

CHAIN	CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
			MEASURED	10 log (N=2) dB			
0	1	2422	-14.4	3.01	-11.4	8	PASS
	4	2437	-11.8	3.01	-8.8	8	PASS
	7	2452	-14.8	3.01	-11.8	8	PASS
1	1	2422	-11.9	3.01	-8.9	8	PASS
	4	2437	-9.4	3.01	-6.4	8	PASS
	7	2452	-12.1	3.01	-9.1	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	DUE DATE OF CALIBRATION
FOR CONDUCTED MEASUREMENT				
R&S SPECTRUM ANALYZER	FSP40	100039	Jan. 11, 2011	Jan. 10, 2012
FOR RADIATED MEASUREMENT				
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Aug. 02, 2011	Aug. 01, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP 40	100041	Jul. 21, 2011	Jul. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 13, 2011	Apr. 12, 2012
HORN Antenna SCHWARZBECK	9120D	209	Aug. 25, 2011	Aug. 24, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8447D	2944A10633	Nov. 02, 2010	Nov. 01, 2011
Preamplifier Agilent	8449B	3008A01964	Nov. 02, 2010	Nov. 01, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295014/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	Aug. 19, 2011	Aug. 18, 2012
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	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

FOR CONDUCTED MEASUREMENT

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 300kMHz bandwidth from band edge. The band edges was measured and recorded.
The spectrum plots (Peak RBW =100kHz, VBW = 300kHz; Average RBW = 1MHz, VBW = 10Hz) are attached on the following pages.

FOR RADIATED MEASUREMENT

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.

f. 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)

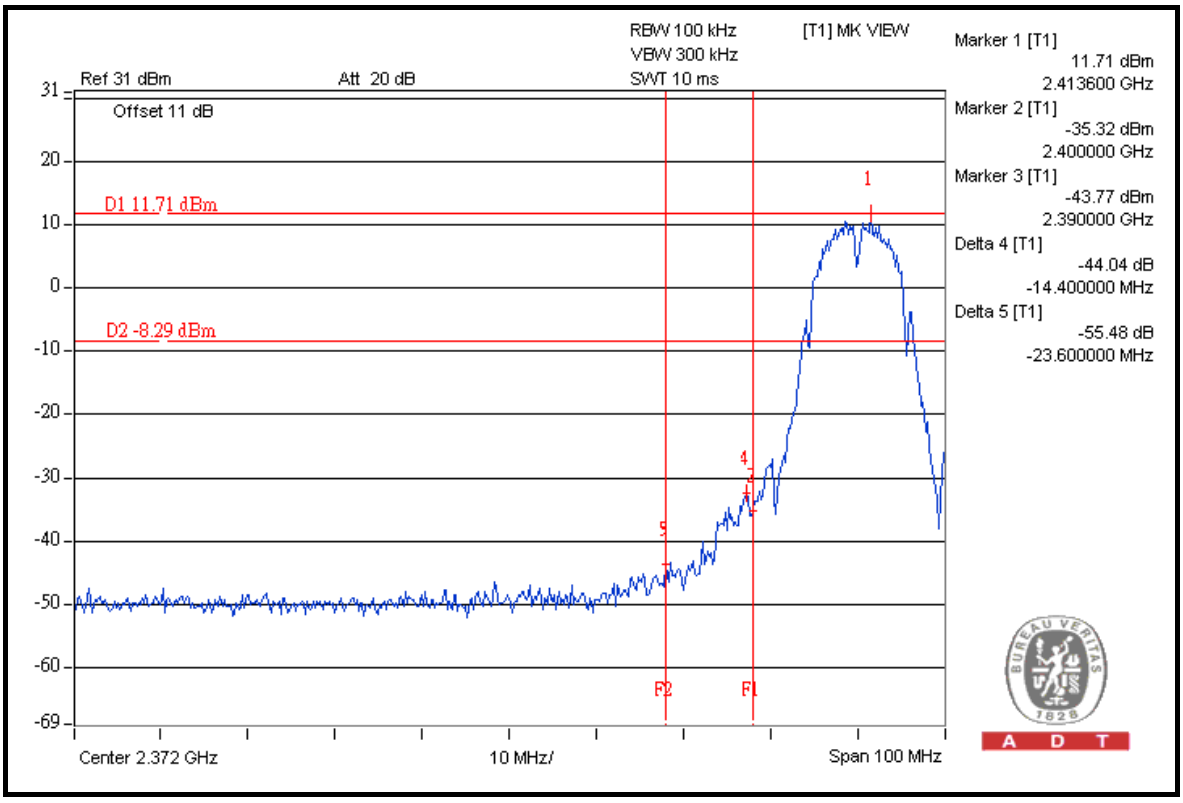
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	107.0	55.48	51.52	74.00
2412.00 (AV)	102.6	57.93	44.67	54.00

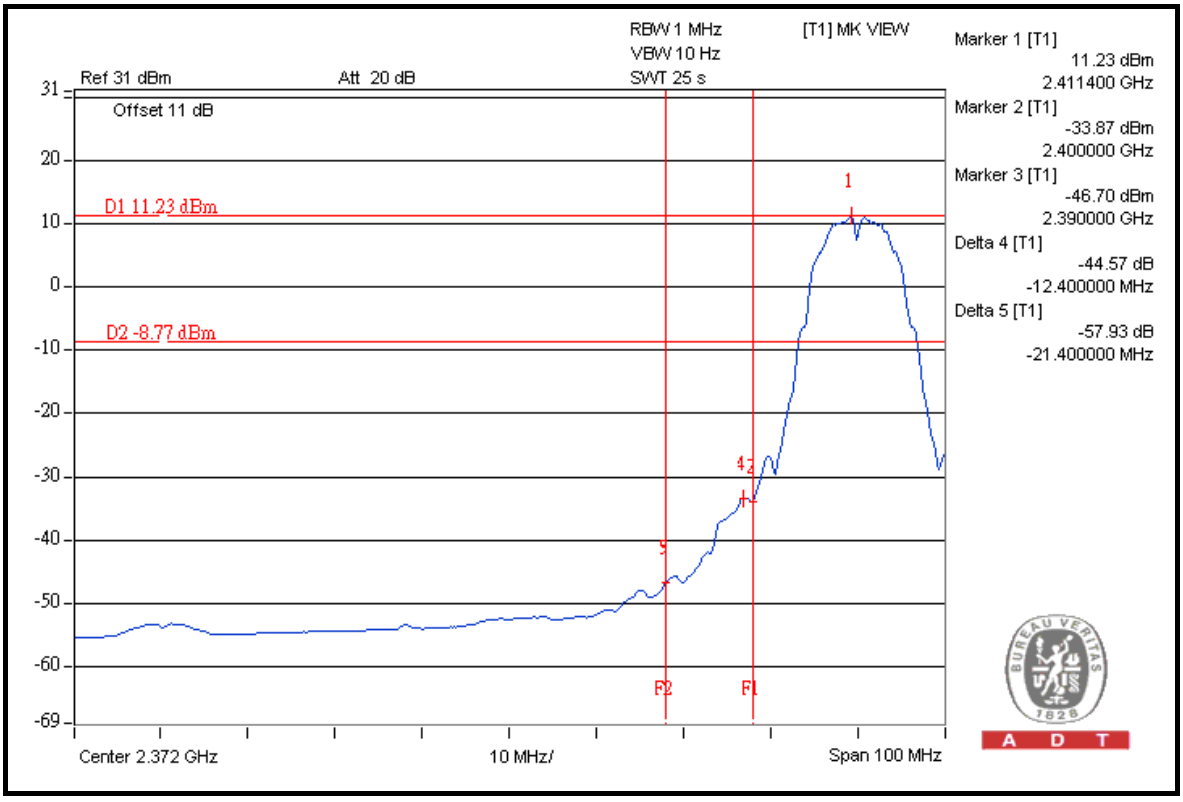
RESTRICT BAND (2483.5 ~ 2500 MHz)

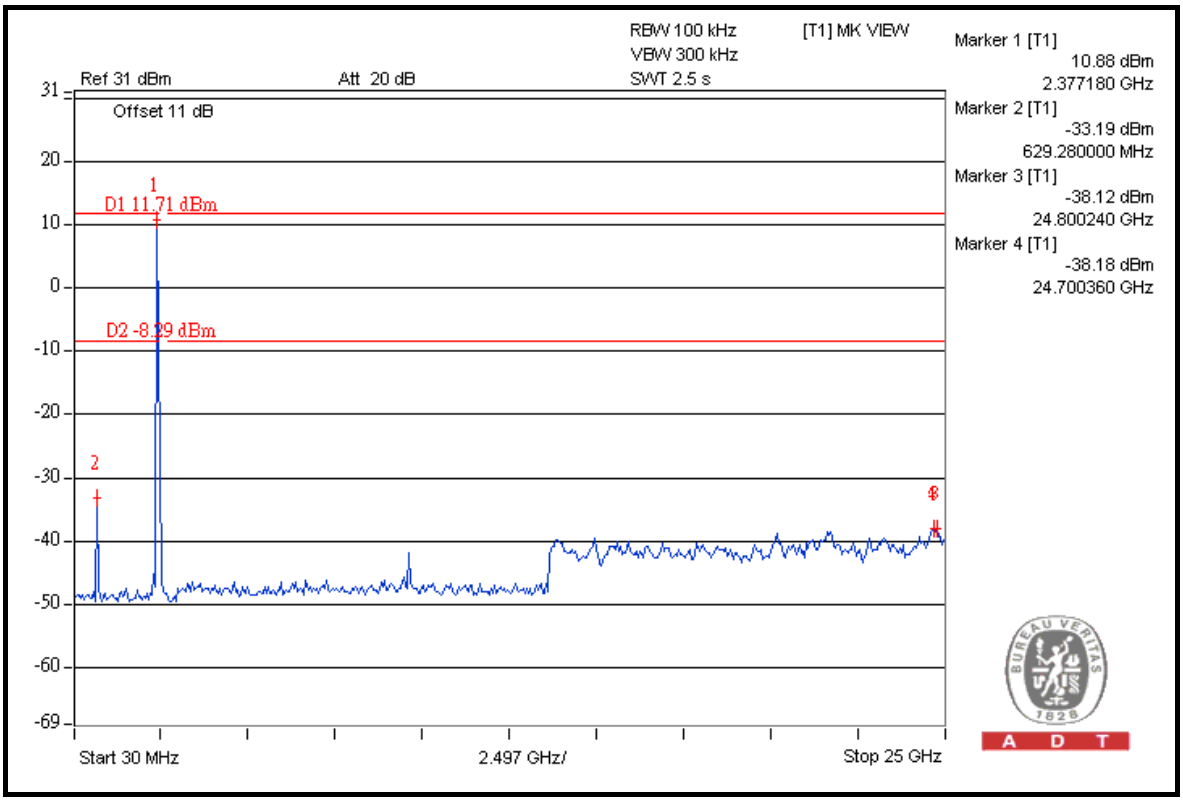
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	108.0	55.65	52.35	74.00
2462.00 (AV)	102.9	57.52	45.38	54.00

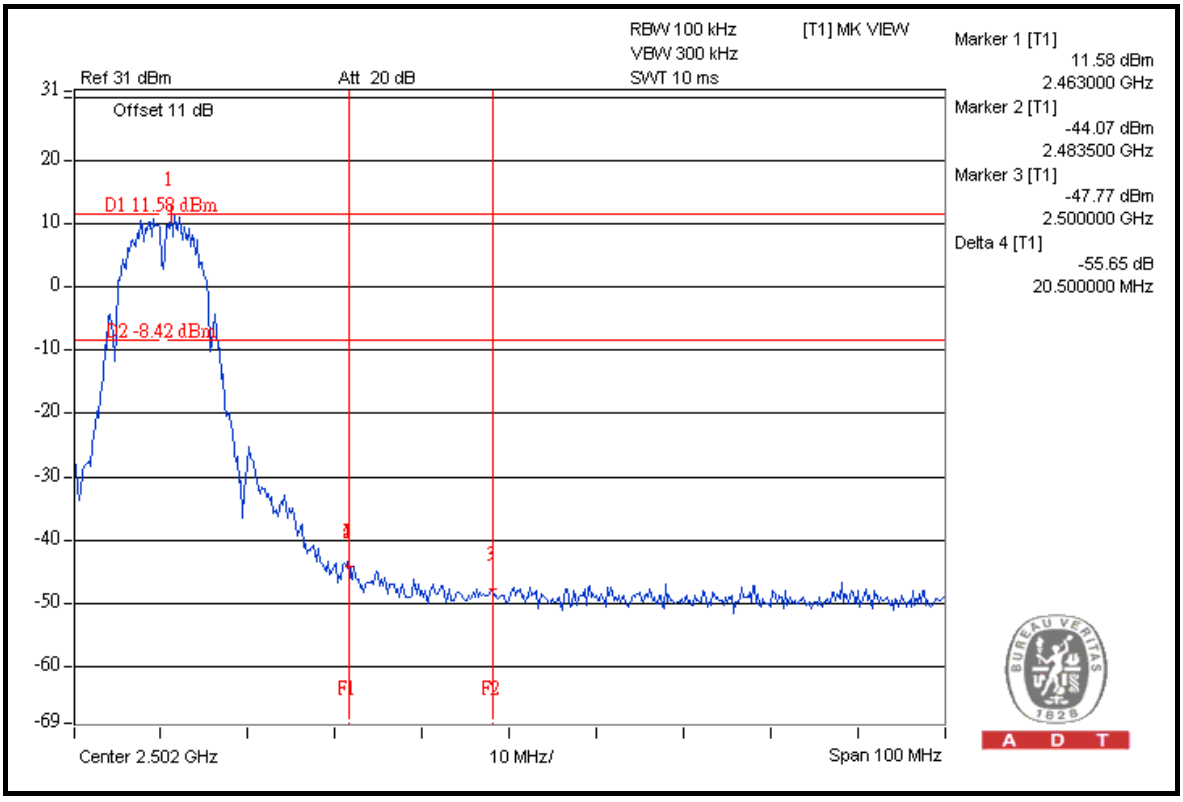
NOTE:

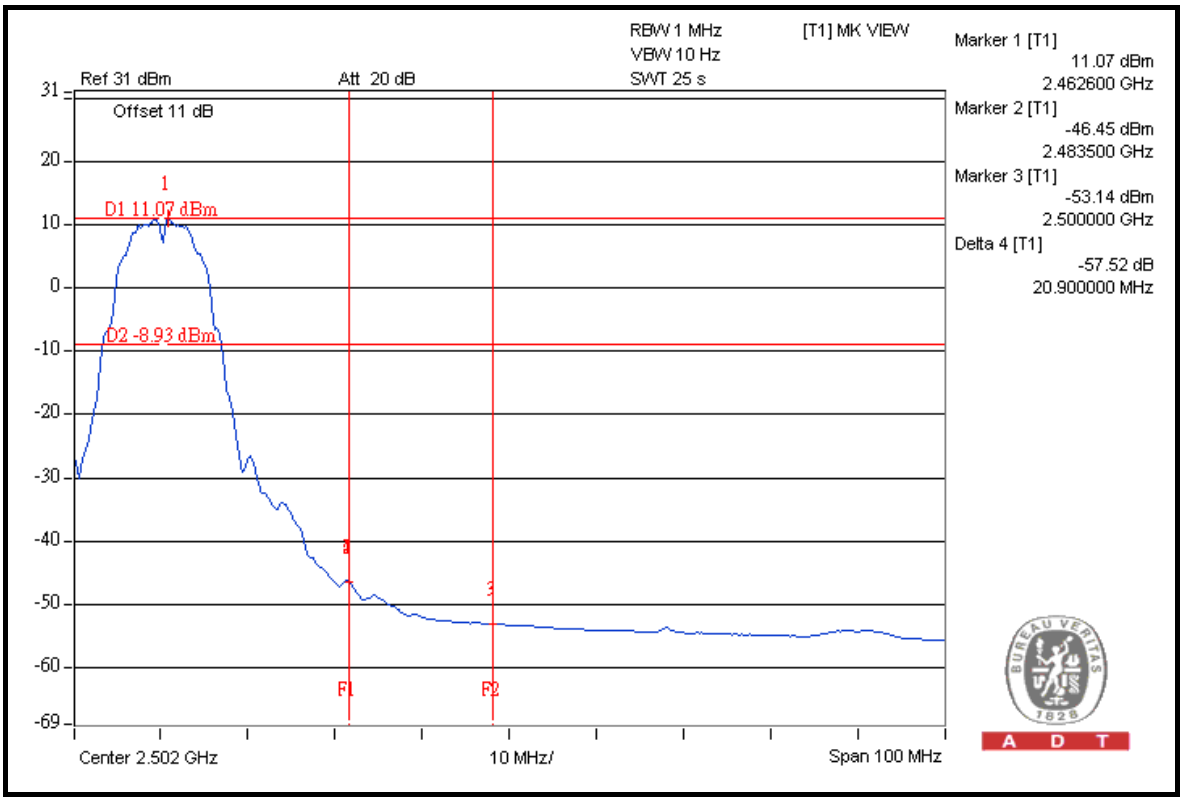
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

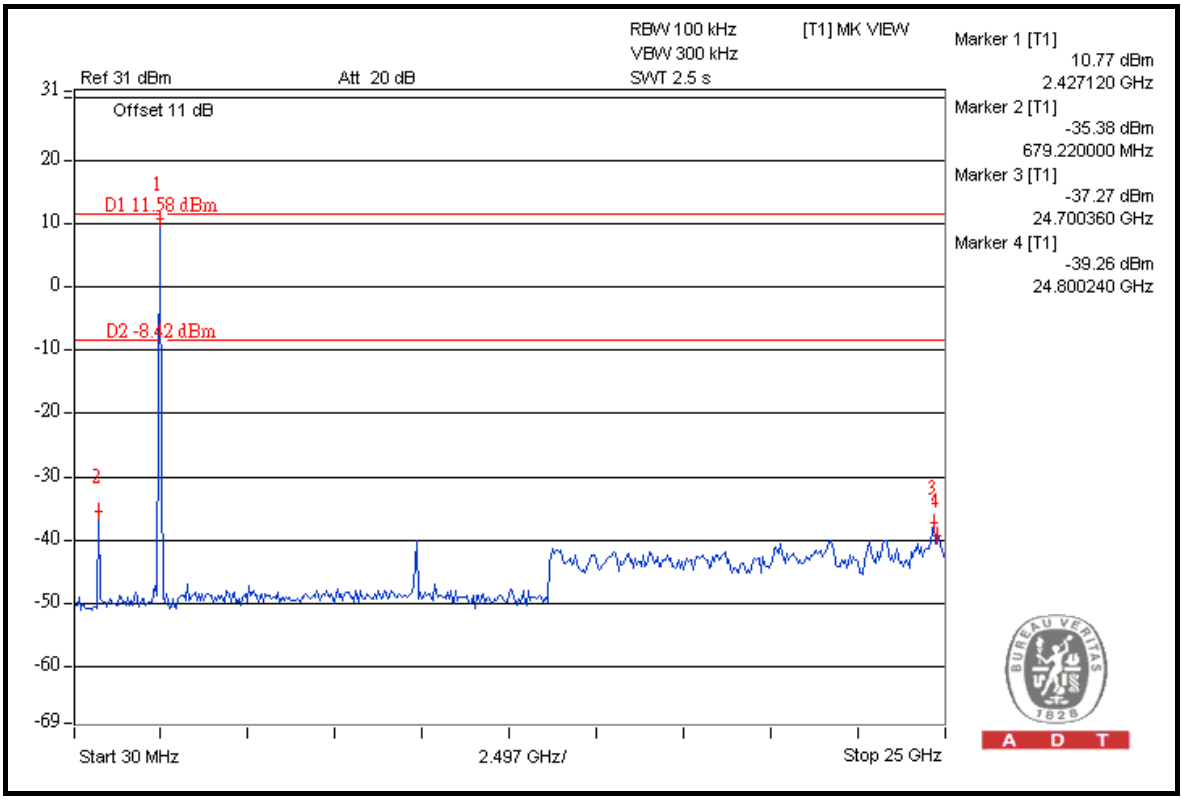

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 11.71 dBm
D2 -8.29 dBm
Marker 1 [T1]
11.71 dBm
2.413600 GHz
Marker 2 [T1]
-35.32 dBm
2.400000 GHz
Marker 3 [T1]
-43.77 dBm
2.390000 GHz
Delta 4 [T1]
-44.04 dB
-14.400000 MHz
Delta 5 [T1]
-55.48 dB
-23.600000 MHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 11.23 dBm
D2 -8.77 dBm
Marker 1 [T1]
11.23 dBm
2.411400 GHz
Marker 2 [T1]
-33.87 dBm
2.400000 GHz
Marker 3 [T1]
-46.70 dBm
2.390000 GHz
Delta 4 [T1]
-44.57 dB
-12.400000 MHz
Delta 5 [T1]
-57.93 dB
-21.400000 MHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 11.71 dBm
D2 -8.29 dBm
Marker 1 [T1]
10.88 dBm
2.377180 GHz
Marker 2 [T1]
-33.19 dBm
629.280000 MHz
Marker 3 [T1]
-38.12 dBm
24.800240 GHz
Marker 4 [T1]
-38.18 dBm
24.700360 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 11.58 dBm
D2 -8.42 dBm
Marker 1 [T1]
11.58 dBm
2.463000 GHz
Marker 2 [T1]
-44.07 dBm
2.483500 GHz
Marker 3 [T1]
-47.77 dBm
2.500000 GHz
Delta 4 [T1]
-55.65 dB
20.500000 MHz
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 11.07 dBm
D2 -8.93 dBm
Marker 1 [T1]
11.07 dBm
2.462600 GHz
Marker 2 [T1]
-46.45 dBm
2.483500 GHz
Marker 3 [T1]
-53.14 dBm
2.500000 GHz
Delta 4 [T1]
-57.52 dB
20.900000 MHz
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 11.58 dBm
D2 -8.42 dBm
Marker 1 [T1]
10.77 dBm
2.427120 GHz
Marker 2 [T1]
-35.38 dBm
679.220000 MHz
Marker 3 [T1]
-37.27 dBm
24.700360 GHz
Marker 4 [T1]
-39.26 dBm
24.800240 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11g

RESTRICT BAND (2310 ~ 2390 MHz)

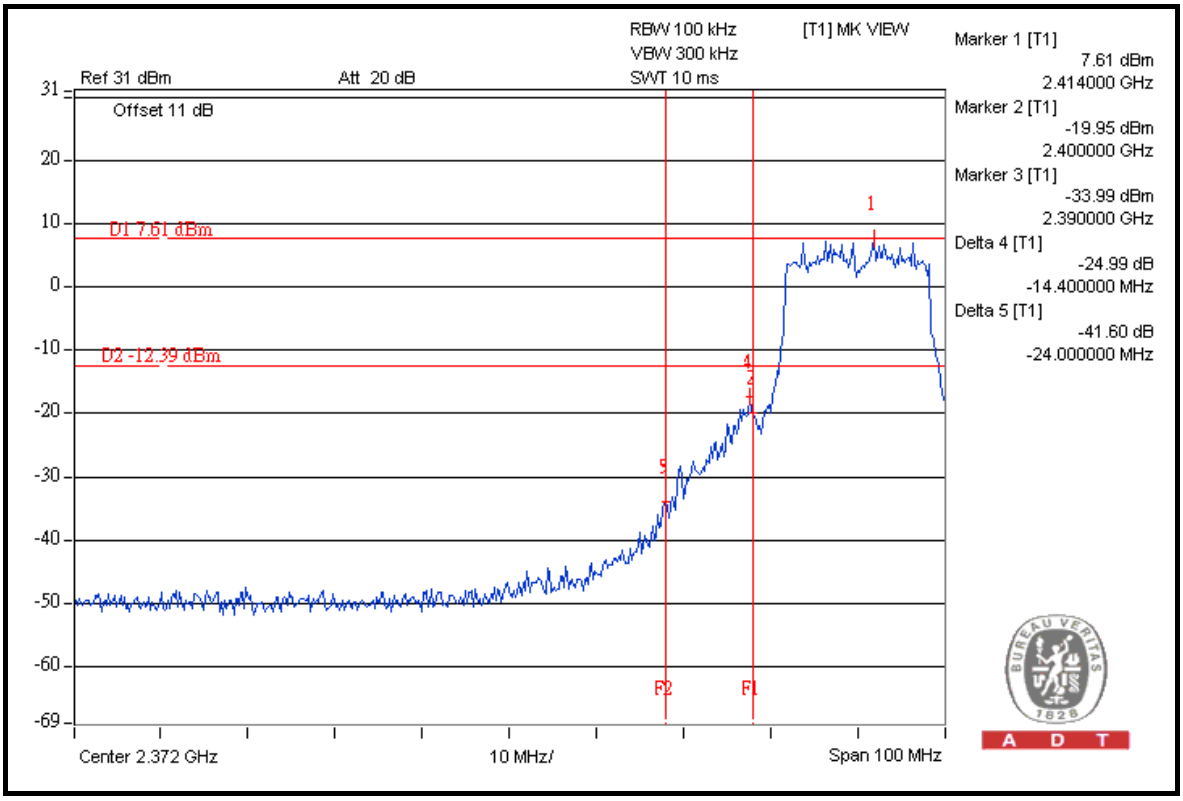
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	108.1	41.60	66.50	74.00
2412.00 (AV)	94.2	42.18	52.02	54.00

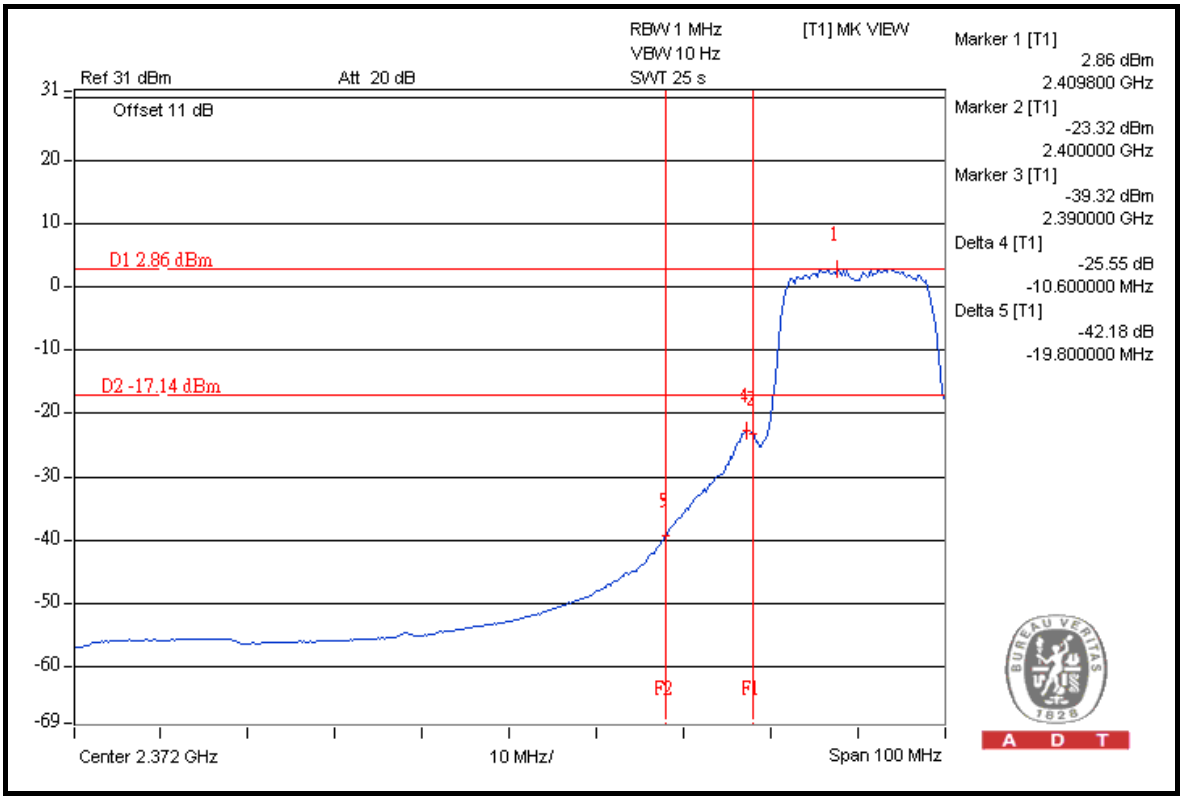
RESTRICT BAND (2483.5 ~ 2500 MHz)

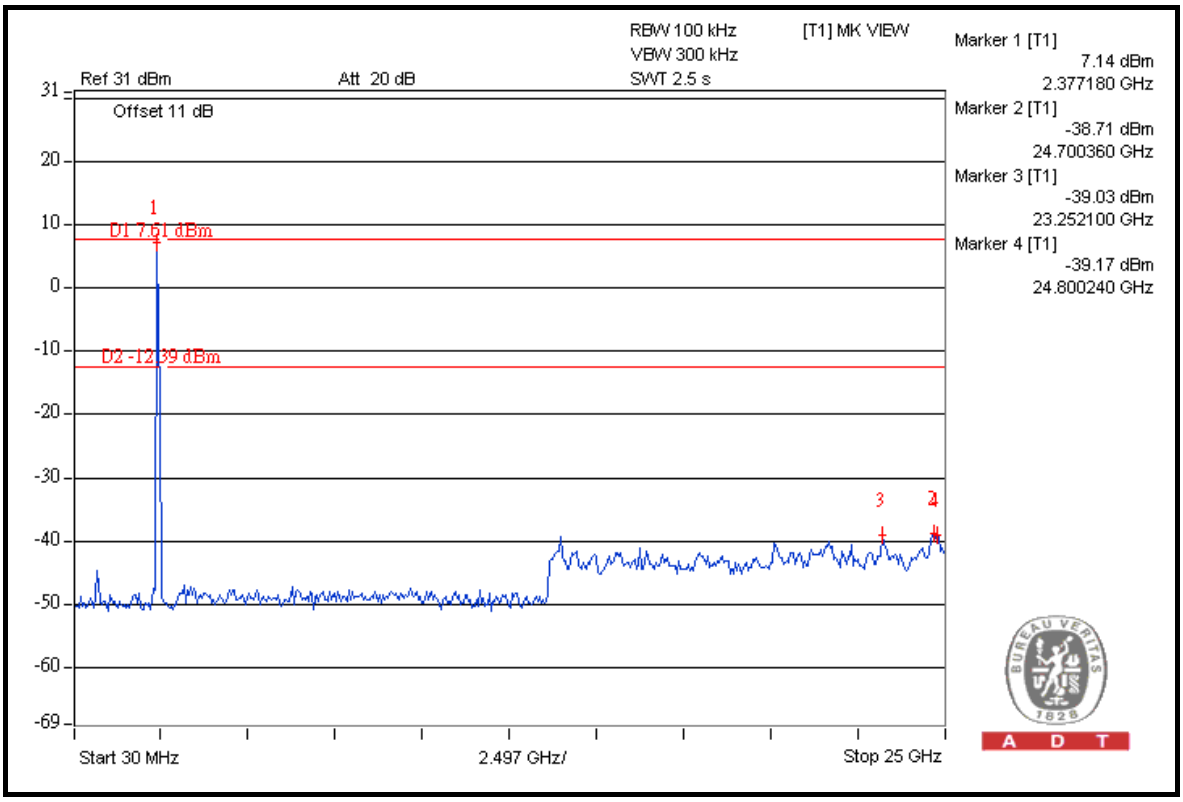
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	108.2	40.77	67.43	74.00
2462.00 (AV)	94.3	42.23	52.07	54.00

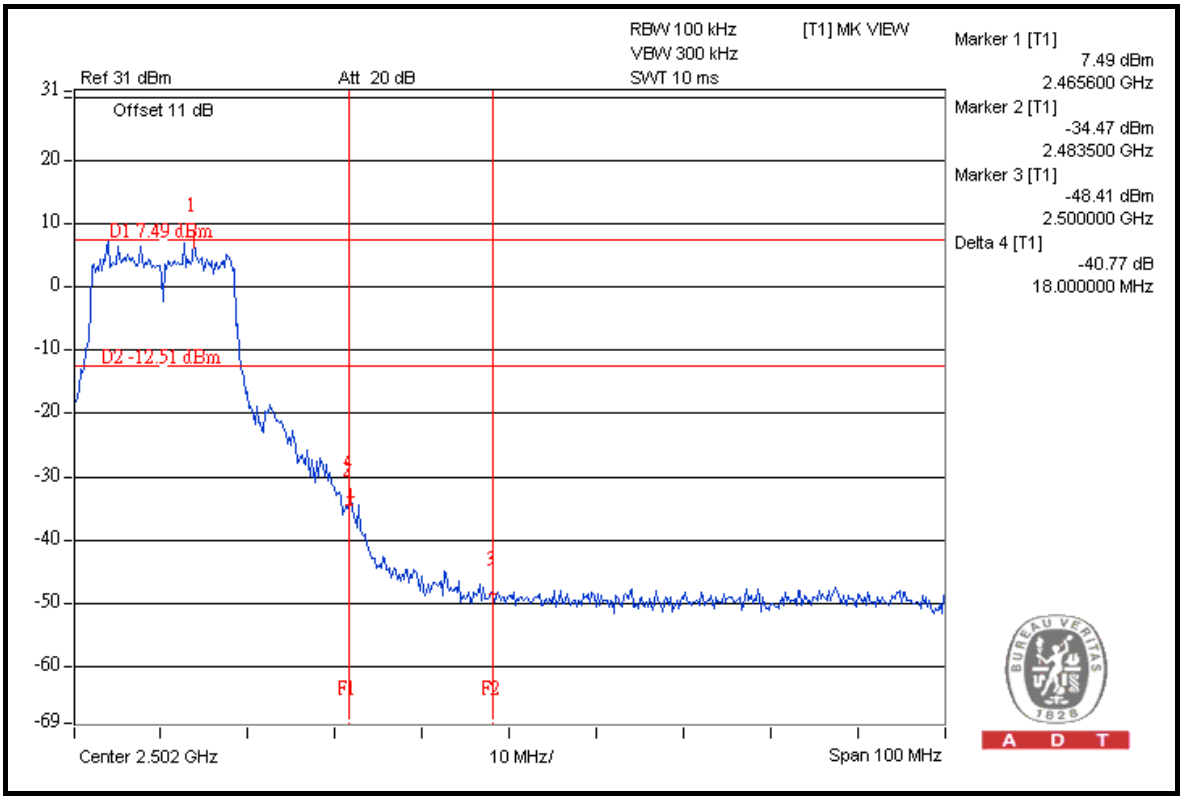
NOTE:

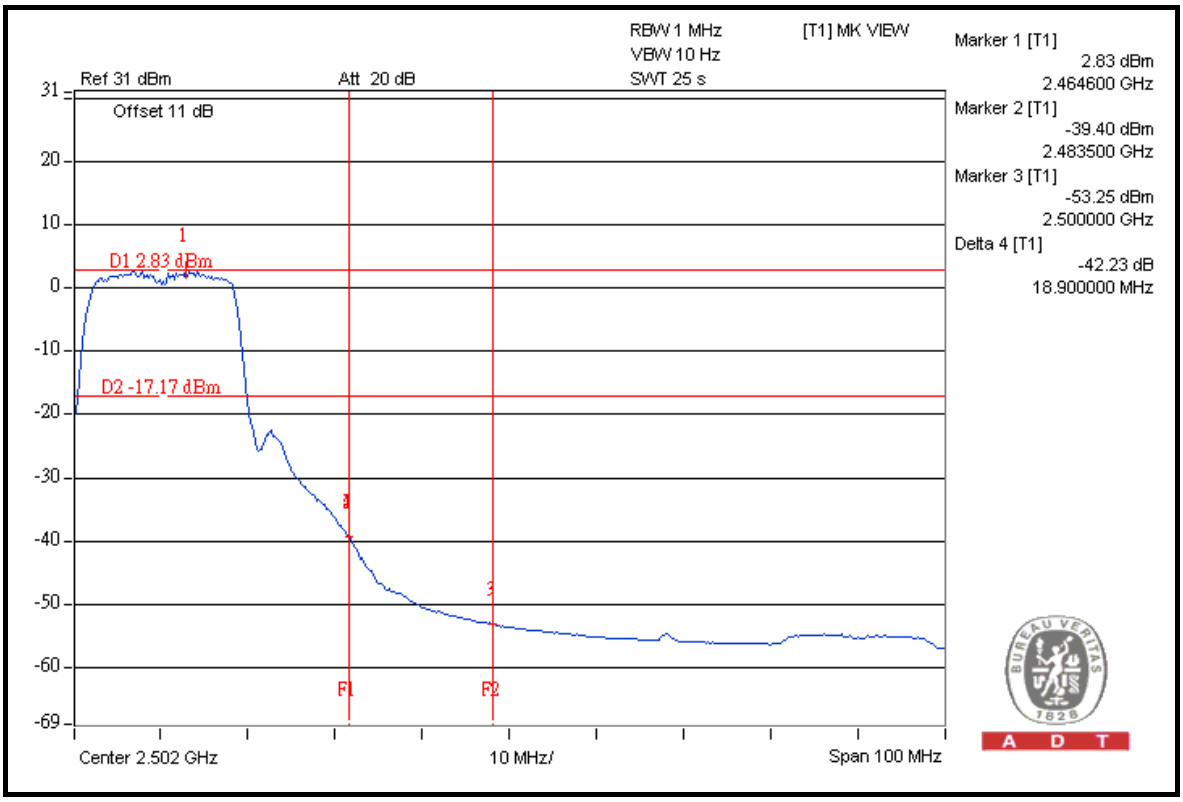
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

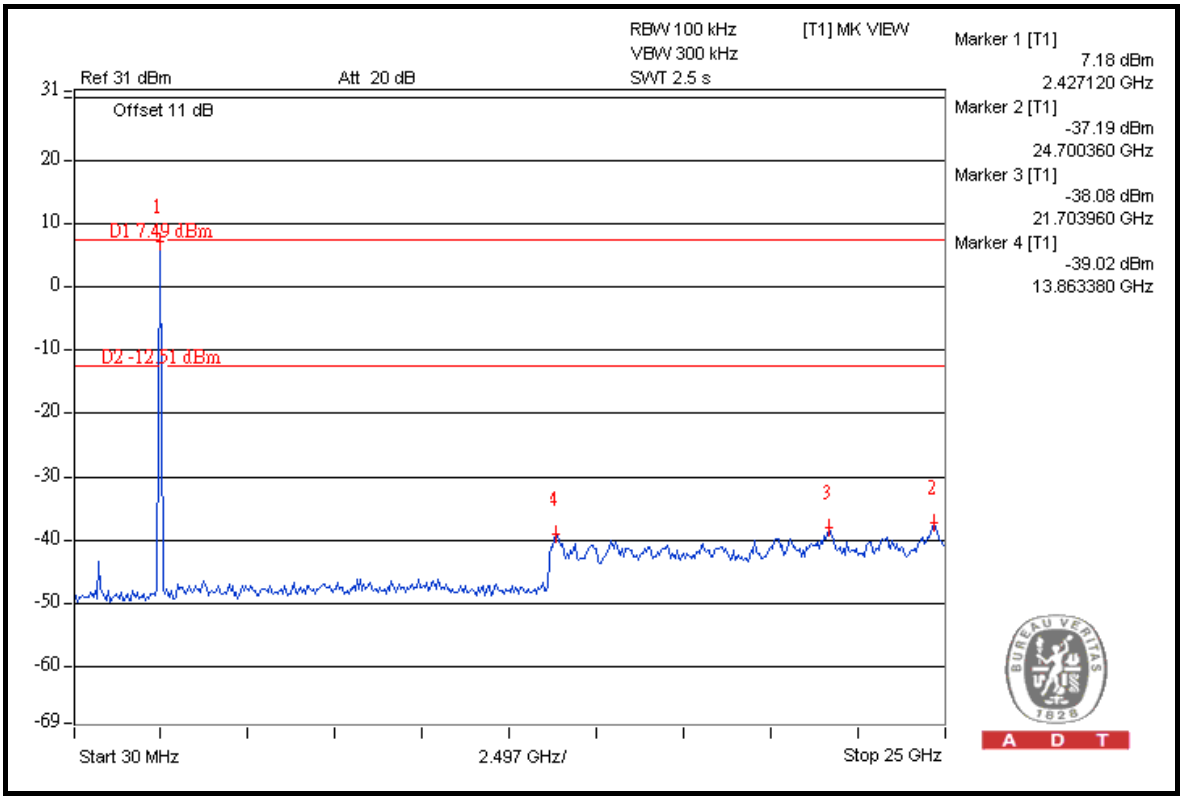

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 7.61 dBm
D2 -12.39 dBm
Marker 1 [T1]
7.61 dBm
2.414000 GHz
Marker 2 [T1]
-19.95 dBm
2.400000 GHz
Marker 3 [T1]
-33.99 dBm
2.390000 GHz
Delta 4 [T1]
-24.99 dB
-14.400000 MHz
Delta 5 [T1]
-41.60 dB
-24.000000 MHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 2.86 dBm
D2 -17.14 dBm
Marker 1 [T1]
2.86 dBm
2.409800 GHz
Marker 2 [T1]
-23.32 dBm
2.400000 GHz
Marker 3 [T1]
-39.32 dBm
2.390000 GHz
Delta 4 [T1]
-25.55 dB
-10.600000 MHz
Delta 5 [T1]
-42.18 dB
-19.800000 MHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 7.51 dBm
D2 -12.39 dBm
Marker 1 [T1]
7.14 dBm
2.377180 GHz
Marker 2 [T1]
-38.71 dBm
24.700360 GHz
Marker 3 [T1]
-39.03 dBm
23.252100 GHz
Marker 4 [T1]
-39.17 dBm
24.800240 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 7.49 dBm
D2 -12.51 dBm
Marker 1 [T1]
7.49 dBm
2.465600 GHz
Marker 2 [T1]
-34.47 dBm
2.483500 GHz
Marker 3 [T1]
-48.41 dBm
2.500000 GHz
Delta 4 [T1]
-40.77 dB
18.000000 MHz
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 2.83 dBm
D2 -17.17 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
2.83 dBm
2.464600 GHz
Marker 2 [T1]
-39.40 dBm
2.483500 GHz
Marker 3 [T1]
-53.25 dBm
2.500000 GHz
Delta 4 [T1]
-42.23 dB
18.900000 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 7.49 dBm
D2 -12.51 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz
Marker 1 [T1]
7.18 dBm
2.427120 GHz
Marker 2 [T1]
-37.19 dBm
24.700360 GHz
Marker 3 [T1]
-38.08 dBm
21.703960 GHz
Marker 4 [T1]
-39.02 dBm
13.863380 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)	109.5	46.91	62.59	74.00
2412.00 (AV)	91.6	40.77	50.83	54.00

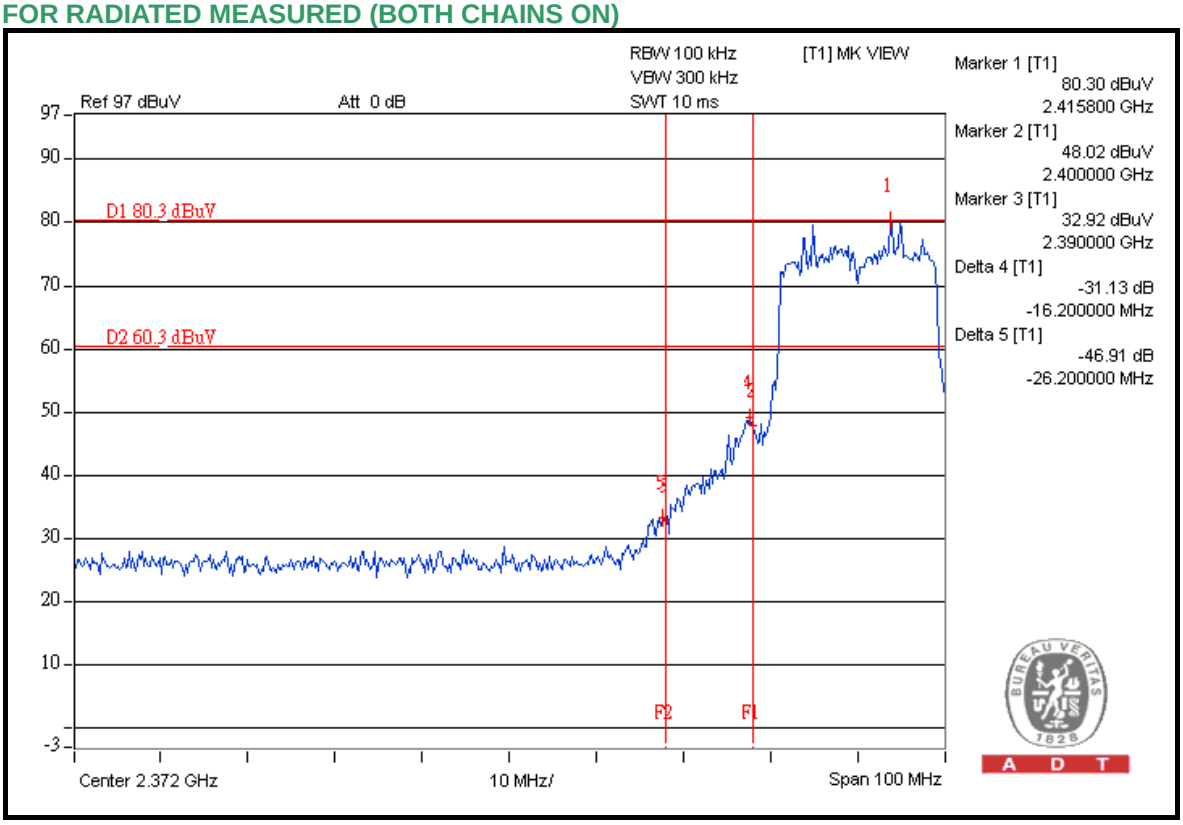
RESTRICT BAND (2483.5 ~ 2500 MHz)

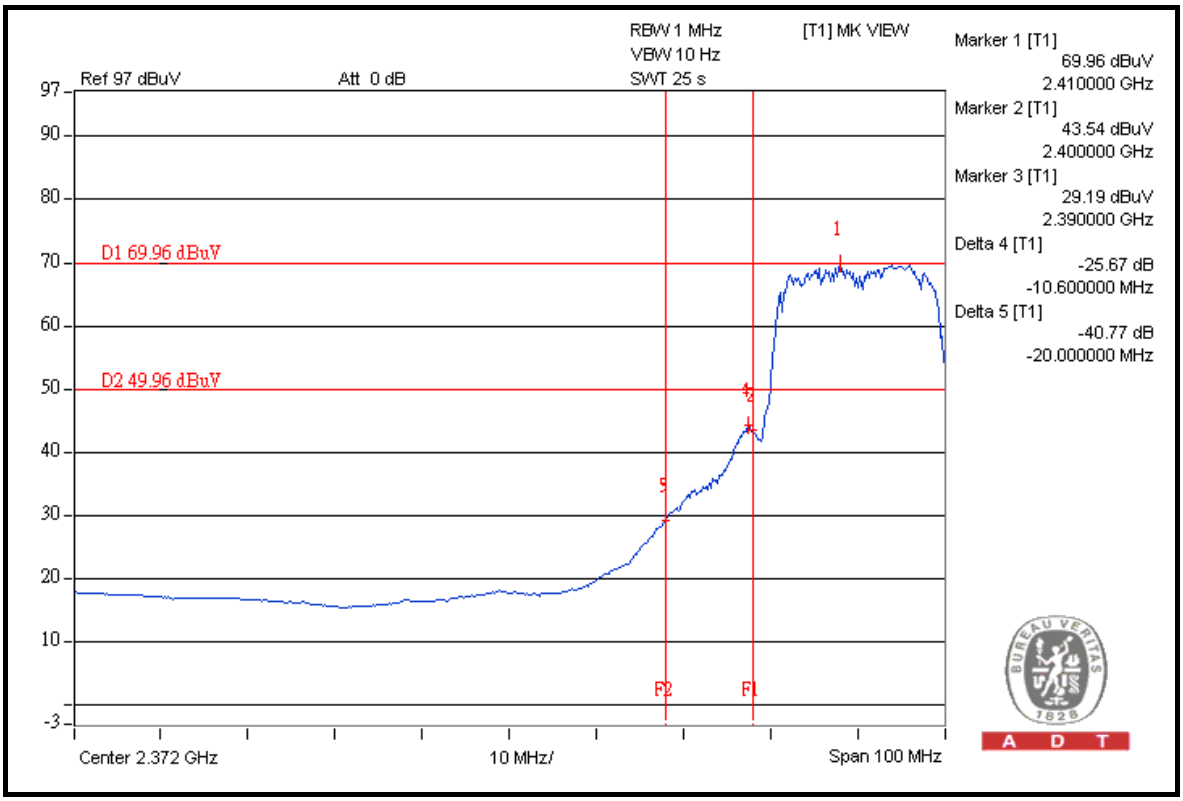
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	110.3	43.38	66.92	74.00
2462.00 (AV)	91.4	39.72	51.68	54.00

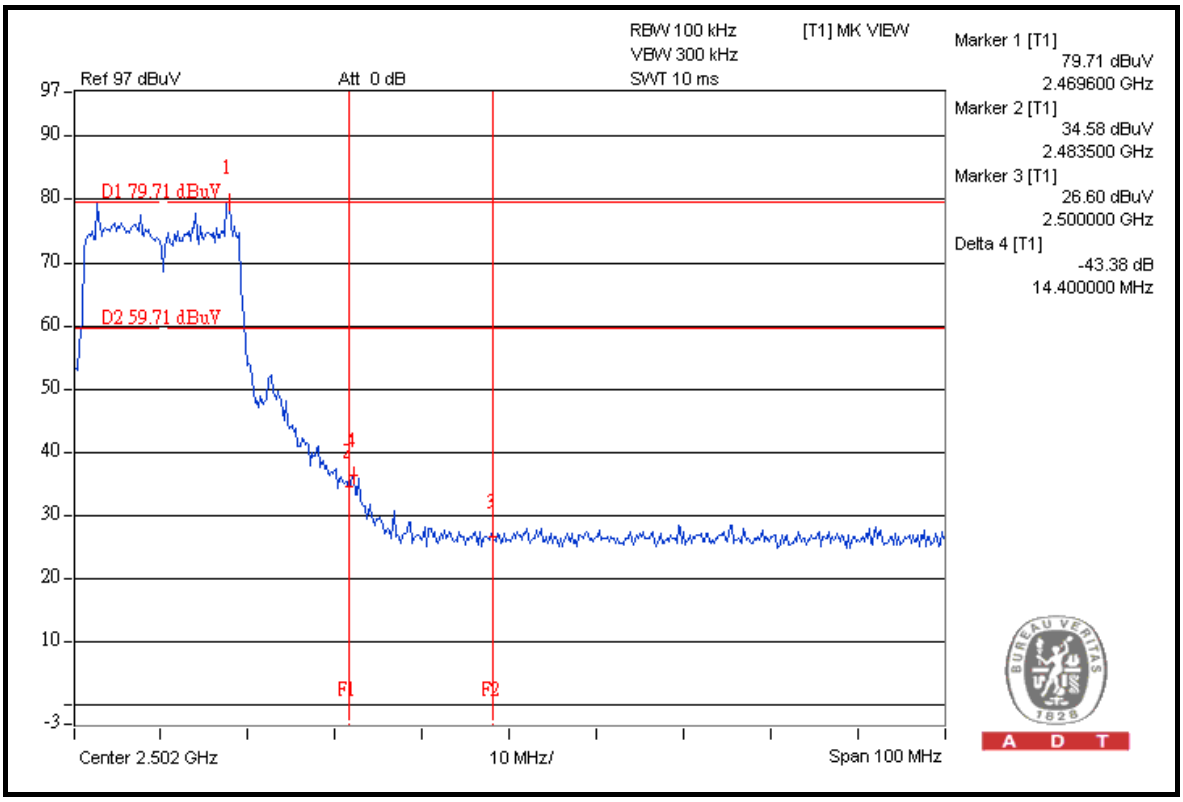
NOTE:

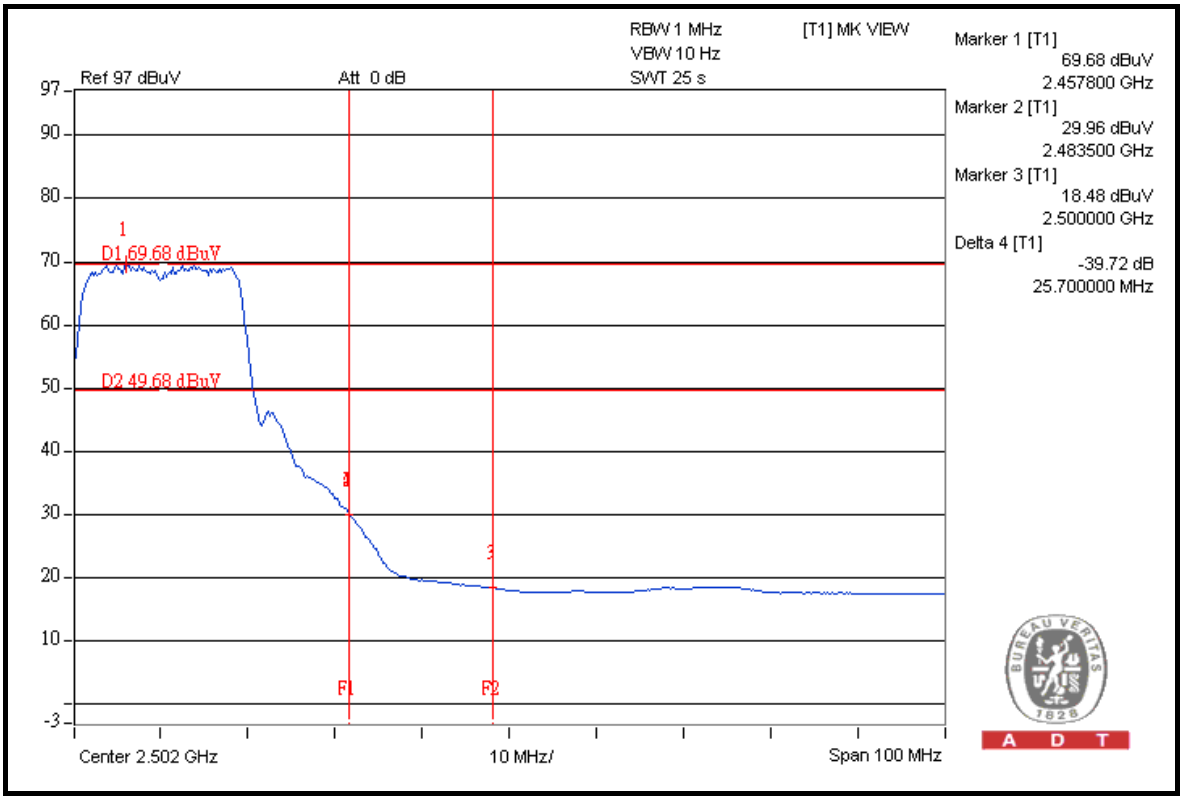
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

FOR RADIATED MEASURED (BOTH CHAINS ON)



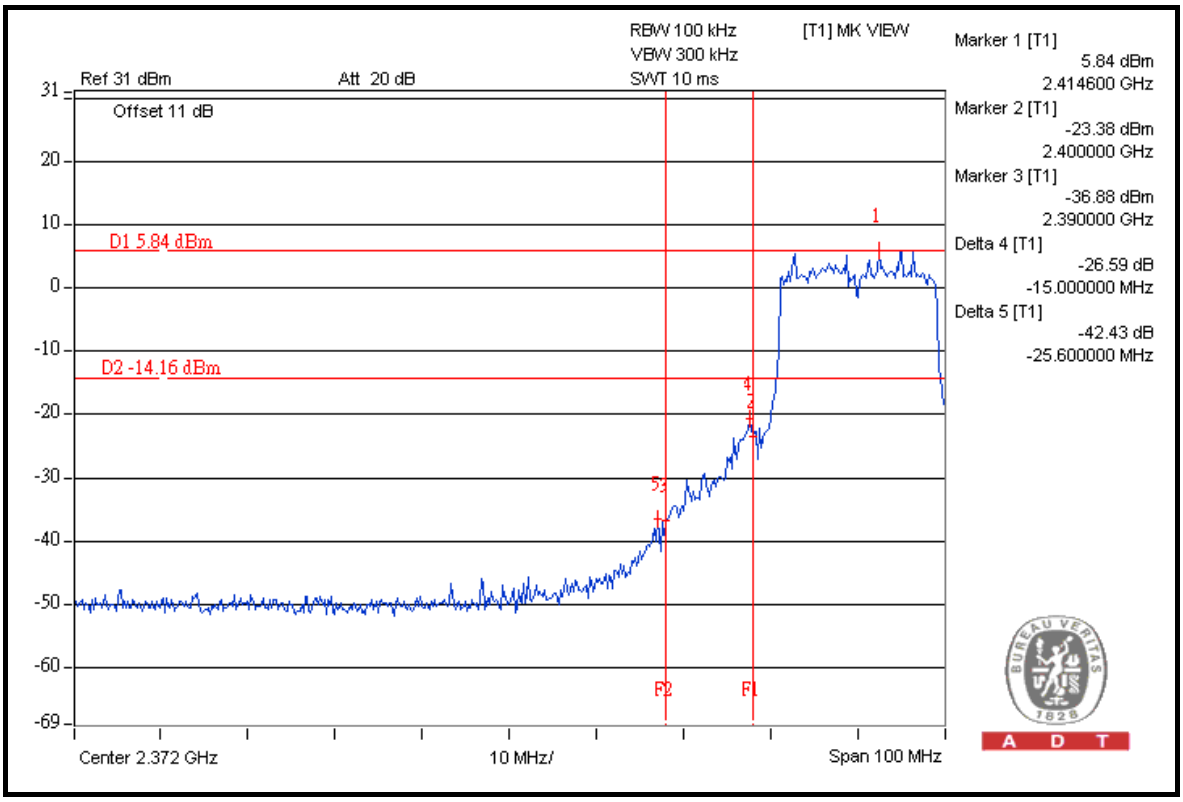


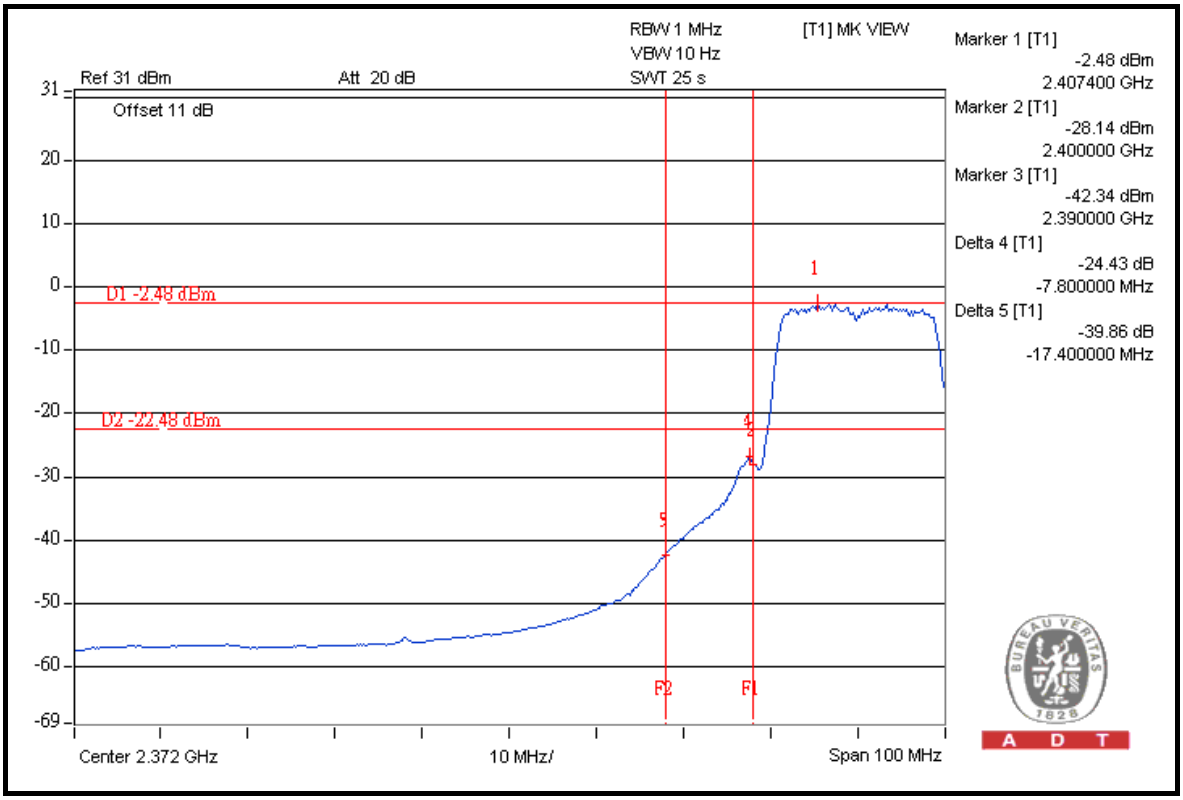

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 79.71 dBuV
D2 59.71 dBuV
Marker 1 [T1]
79.71 dBuV
2.469600 GHz
Marker 2 [T1]
34.58 dBuV
2.483500 GHz
Marker 3 [T1]
26.60 dBuV
2.500000 GHz
Delta 4 [T1]
-43.38 dB
14.400000 MHz
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz

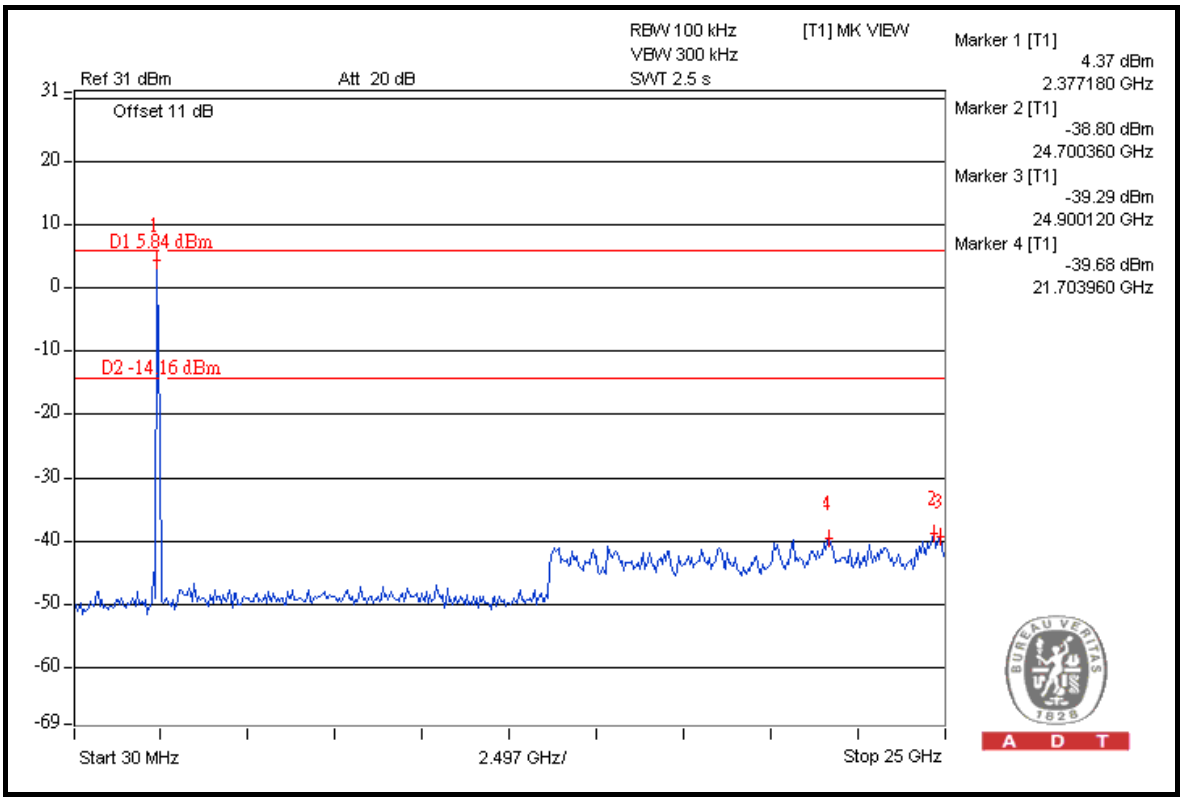

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 69.68 dBuV
D2 49.68 dBuV
Marker 1 [T1]
69.68 dBuV
2.457800 GHz
Marker 2 [T1]
29.96 dBuV
2.483500 GHz
Marker 3 [T1]
18.48 dBuV
2.500000 GHz
Delta 4 [T1]
-39.72 dB
25.700000 MHz
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz

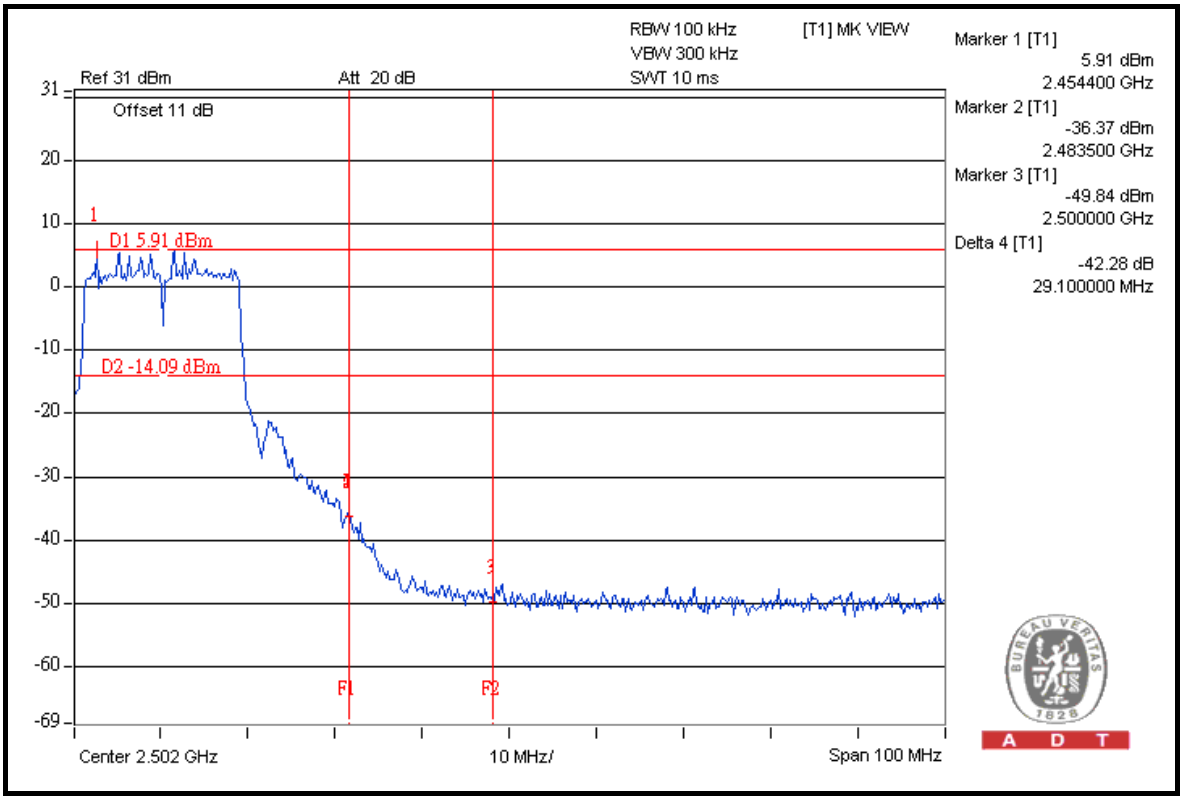
FOR CONDUCTED MEASURED

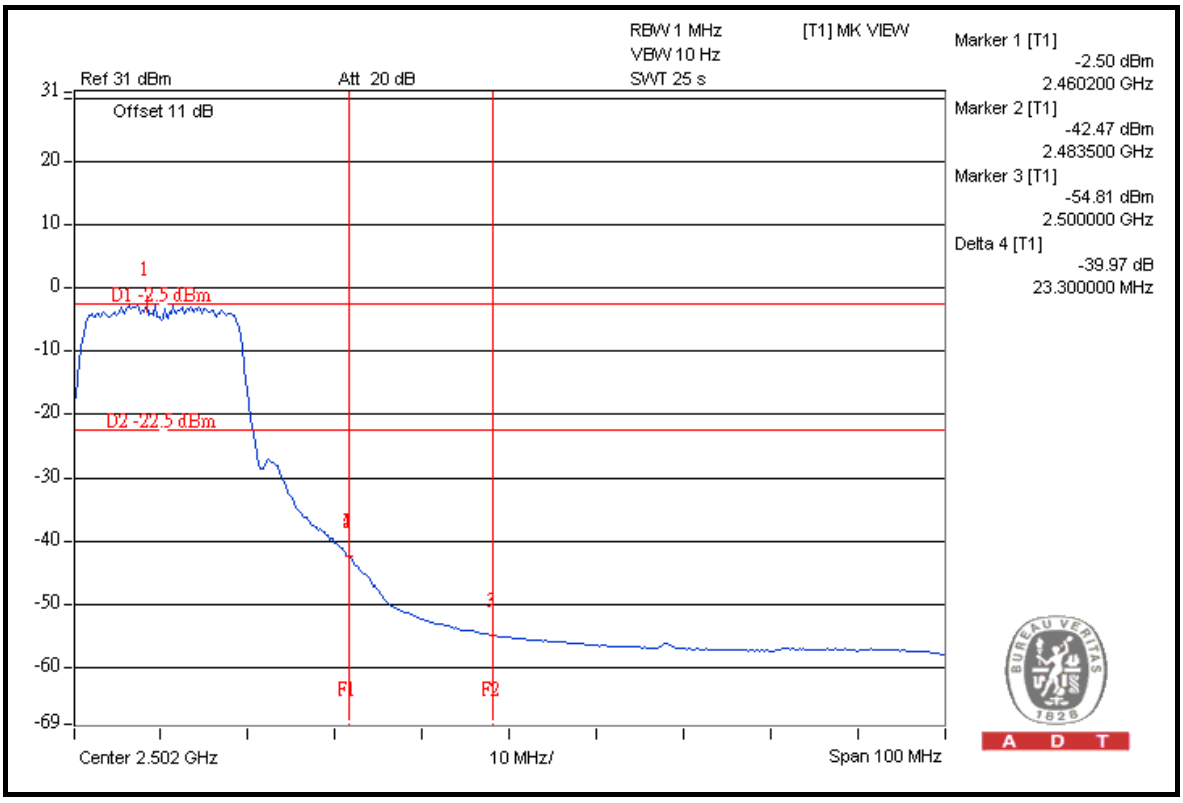
CHAIN 0

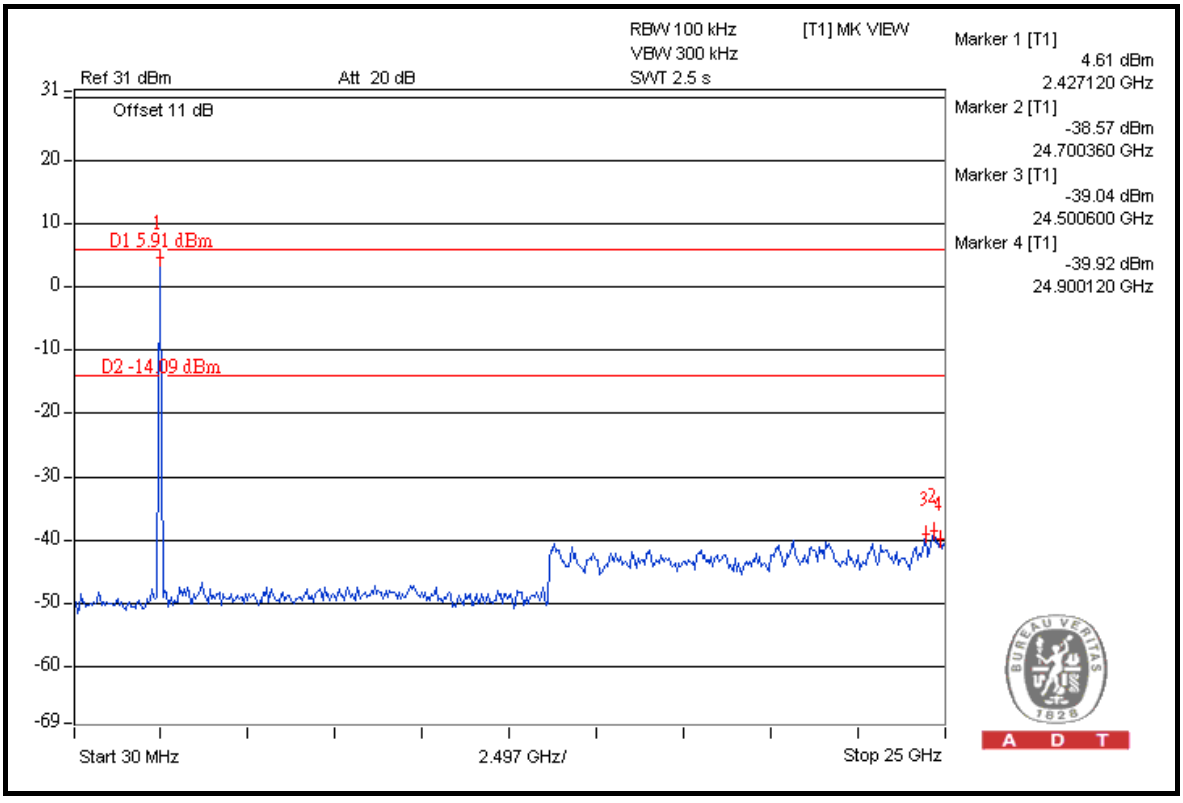




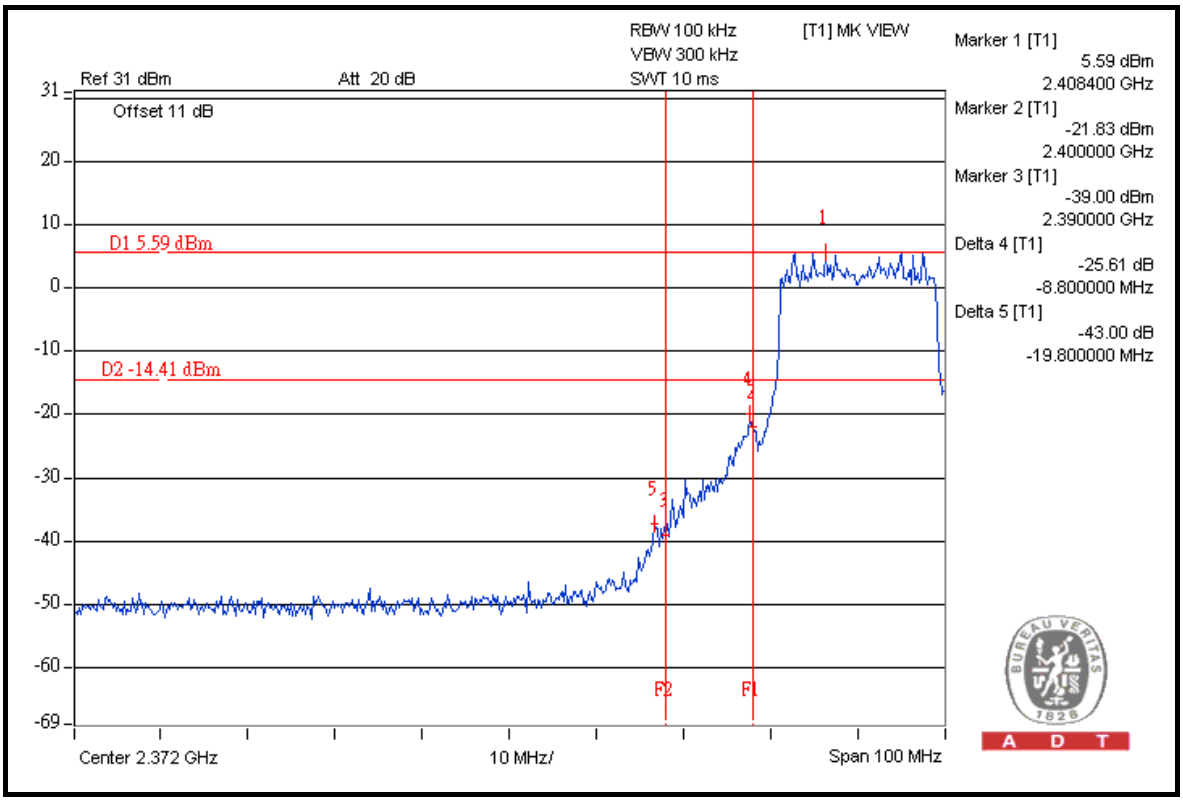

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 5.84 dBm
D2 -14.16 dBm
Marker 1 [T1]
4.37 dBm
2.377180 GHz
Marker 2 [T1]
-38.80 dBm
24.700360 GHz
Marker 3 [T1]
-39.29 dBm
24.900120 GHz
Marker 4 [T1]
-39.68 dBm
21.703960 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz

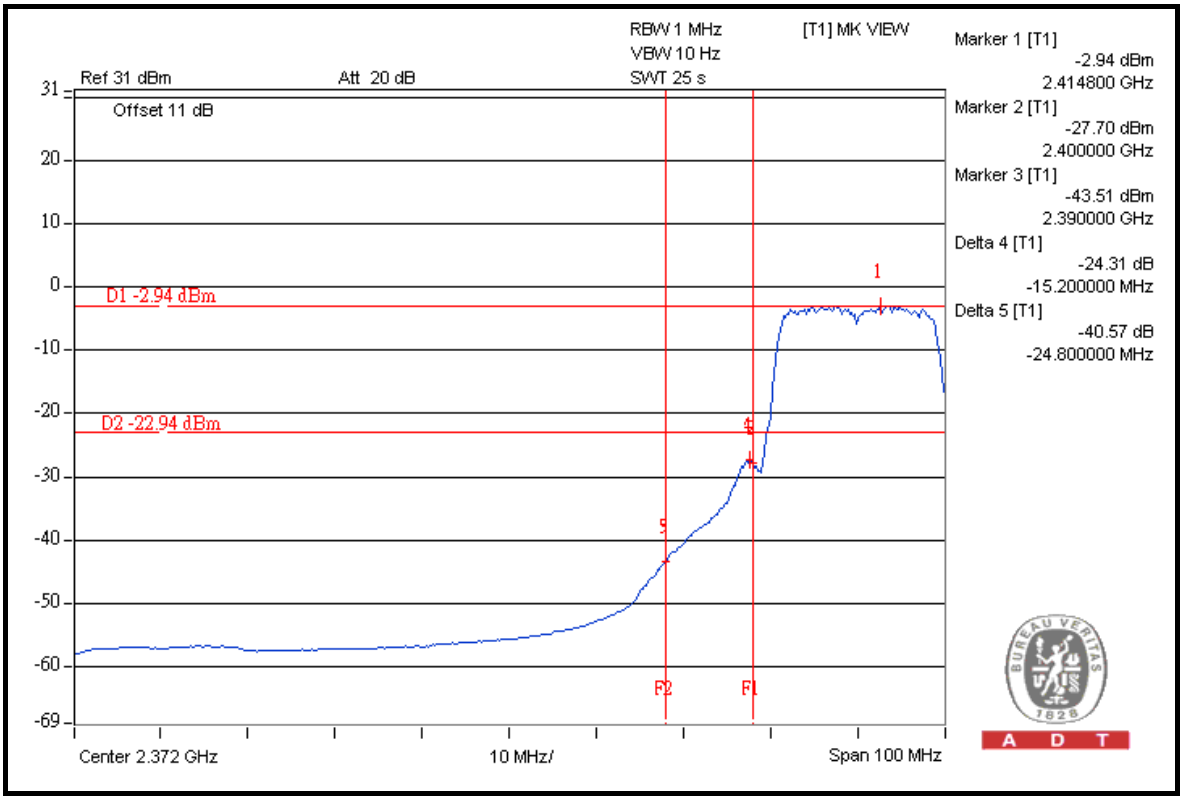

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 5.91 dBm
D2 -14.09 dBm
Marker 1 [T1]
5.91 dBm
2.454400 GHz
Marker 2 [T1]
-36.37 dBm
2.483500 GHz
Marker 3 [T1]
-49.84 dBm
2.500000 GHz
Delta 4 [T1]
-42.28 dB
29.100000 MHz
Center 2.502 GHz
10 MHz/
Span 100 MHz

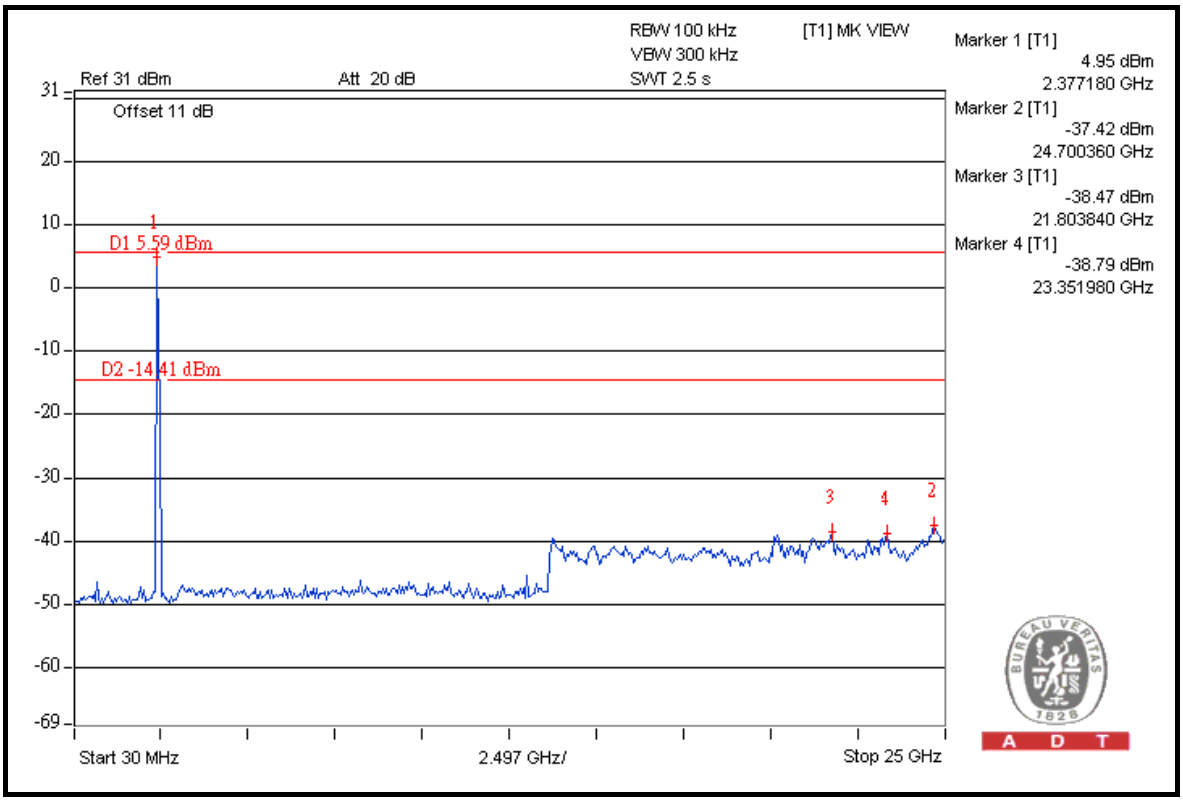

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 -2.5 dBm
D2 -22.5 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
-2.50 dBm
2.460200 GHz
Marker 2 [T1]
-42.47 dBm
2.483500 GHz
Marker 3 [T1]
-54.81 dBm
2.500000 GHz
Delta 4 [T1]
-39.97 dB
23.300000 MHz

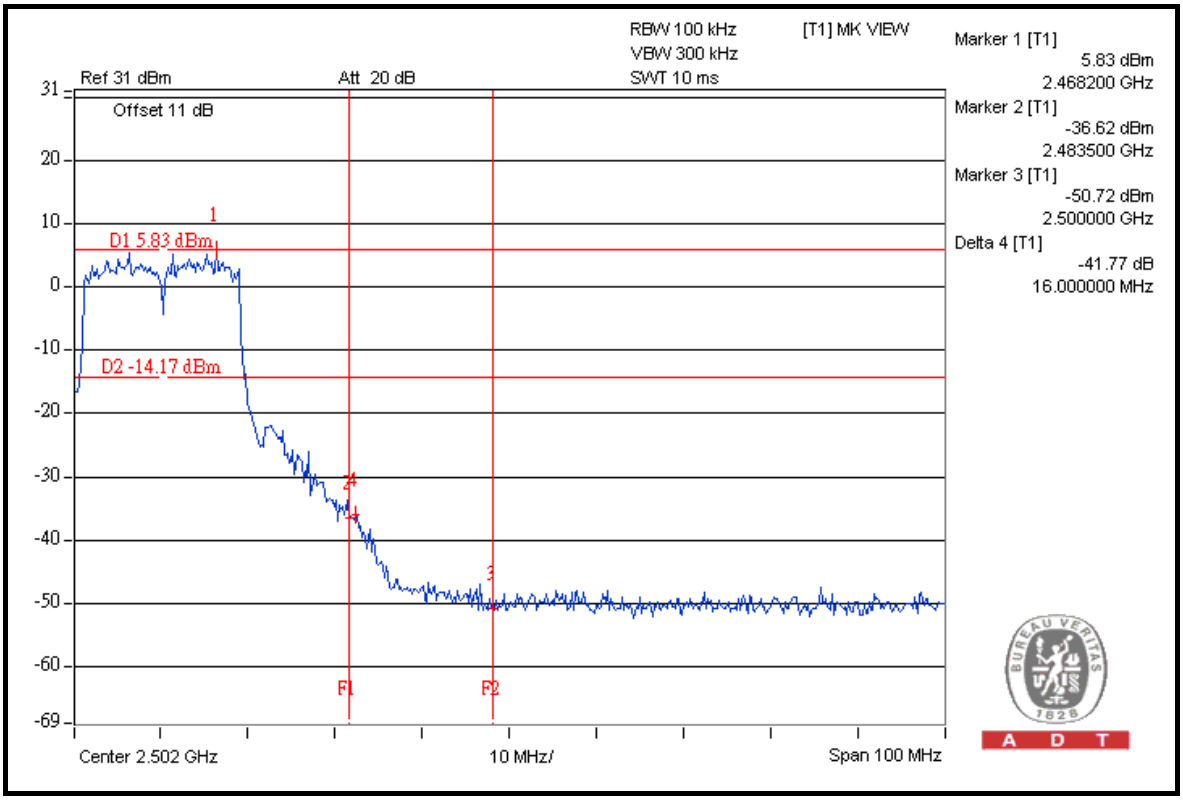

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 5.91 dBm
D2 -14.09 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz
Marker 1 [T1]
4.61 dBm
2.427120 GHz
Marker 2 [T1]
-38.57 dBm
24.700360 GHz
Marker 3 [T1]
-39.04 dBm
24.500600 GHz
Marker 4 [T1]
-39.92 dBm
24.900120 GHz

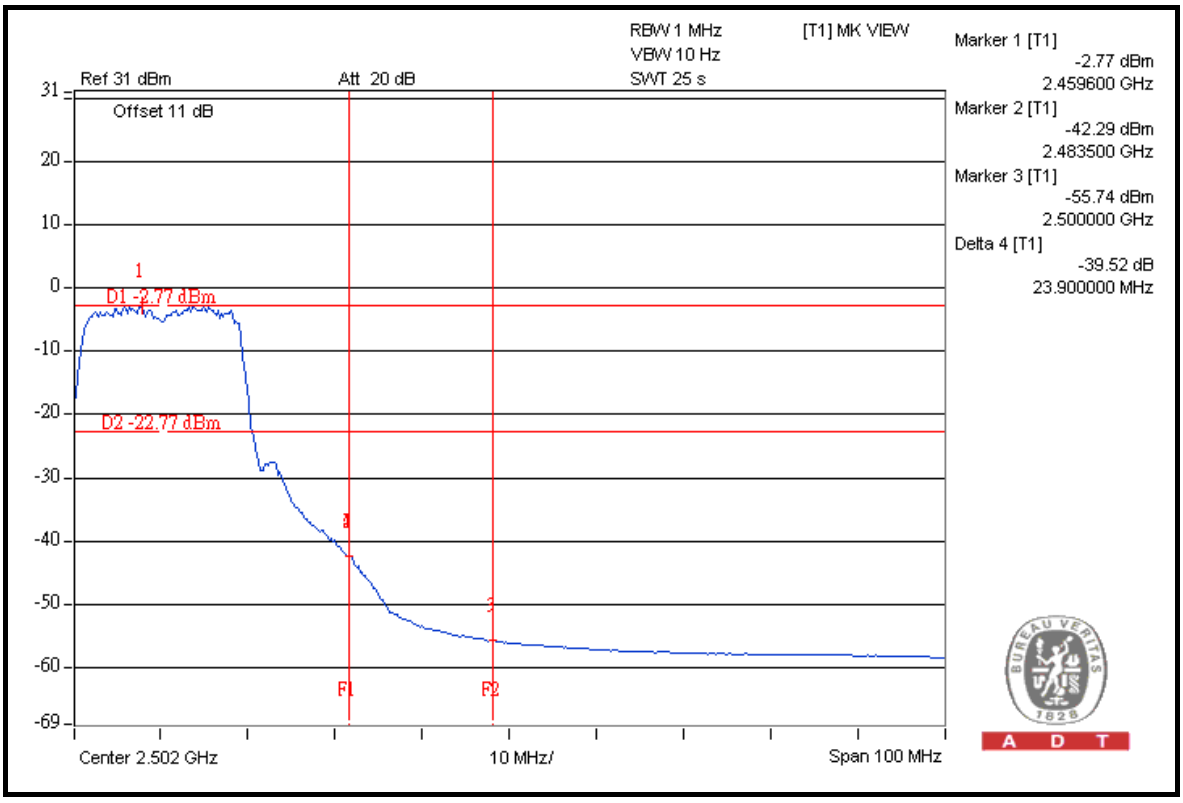
CHAIN 1

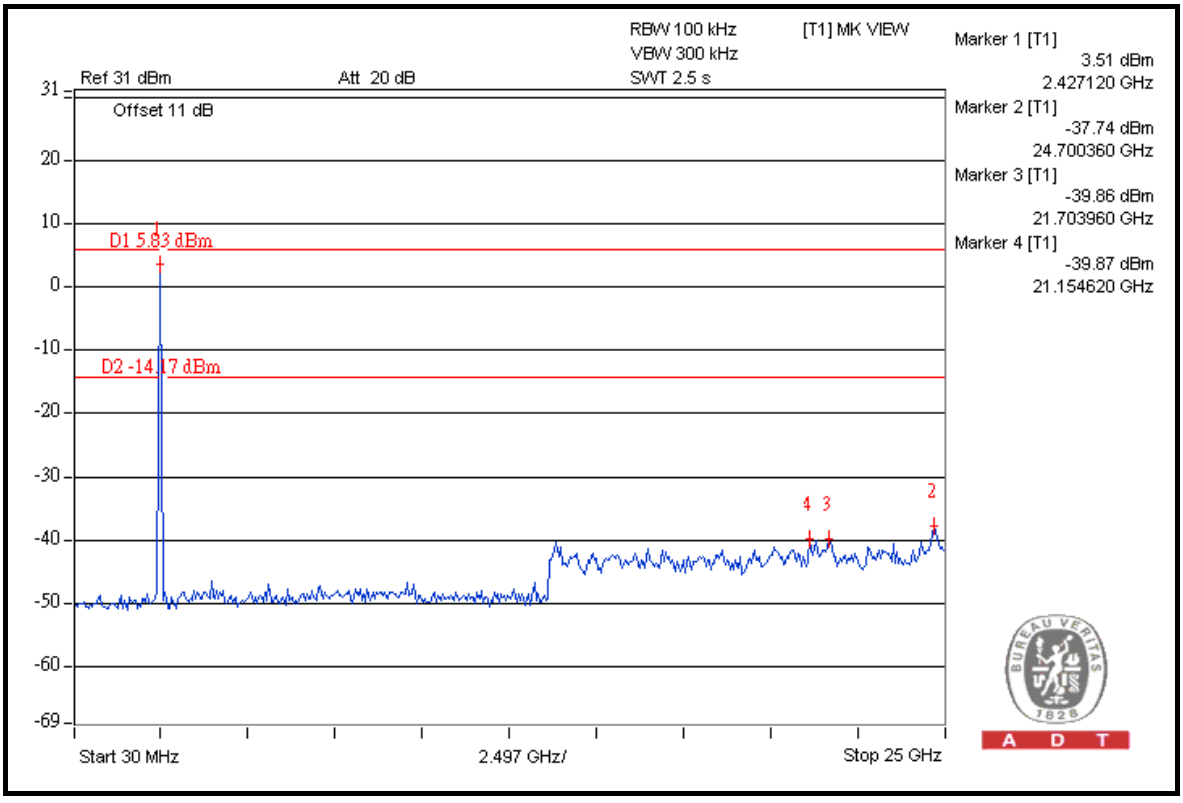

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 5.59 dBm
D2 -14.41 dBm
Marker 1 [T1]
5.59 dBm
2.408400 GHz
Marker 2 [T1]
-21.83 dBm
2.400000 GHz
Marker 3 [T1]
-39.00 dBm
2.390000 GHz
Delta 4 [T1]
-25.61 dB
-8.800000 MHz
Delta 5 [T1]
-43.00 dB
-19.800000 MHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 -2.94 dBm
D2 -22.94 dBm
Marker 1 [T1]
-2.94 dBm
2.414800 GHz
Marker 2 [T1]
-27.70 dBm
2.400000 GHz
Marker 3 [T1]
-43.51 dBm
2.390000 GHz
Delta 4 [T1]
-24.31 dB
-15.200000 MHz
Delta 5 [T1]
-40.57 dB
-24.800000 MHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 5.59 dBm
D2 -14.41 dBm
Marker 1 [T1]
4.95 dBm
2.377180 GHz
Marker 2 [T1]
-37.42 dBm
24.700360 GHz
Marker 3 [T1]
-38.47 dBm
21.803840 GHz
Marker 4 [T1]
-38.79 dBm
23.351980 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 5.83 dBm
D2 -14.17 dBm
Marker 1 [T1]
5.83 dBm
2.468200 GHz
Marker 2 [T1]
-36.62 dBm
2.483500 GHz
Marker 3 [T1]
-50.72 dBm
2.500000 GHz
Delta 4 [T1]
-41.77 dB
16.000000 MHz
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 -2.77 dBm
D2 -22.77 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
-2.77 dBm
2.459600 GHz
Marker 2 [T1]
-42.29 dBm
2.483500 GHz
Marker 3 [T1]
-55.74 dBm
2.500000 GHz
Delta 4 [T1]
-39.52 dB
23.900000 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 5.83 dBm
D2 -14.17 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz
Marker 1 [T1]
3.51 dBm
2.427120 GHz
Marker 2 [T1]
-37.74 dBm
24.700360 GHz
Marker 3 [T1]
-39.86 dBm
21.703960 GHz
Marker 4 [T1]
-39.87 dBm
21.154620 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)	106.1	41.49	64.61	74.00
2422.00 (AV)	86.5	37.61	48.89	54.00

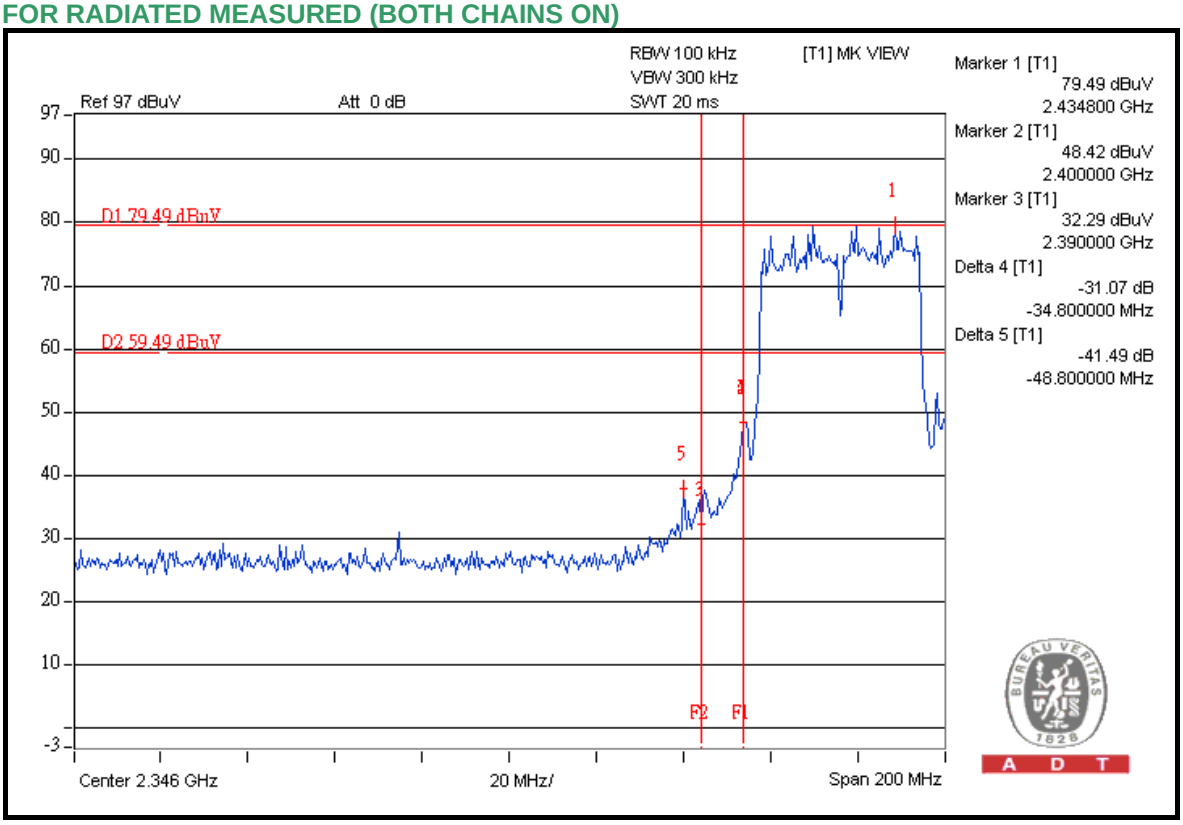
RESTRICT BAND (2483.5 ~ 2500 MHz)

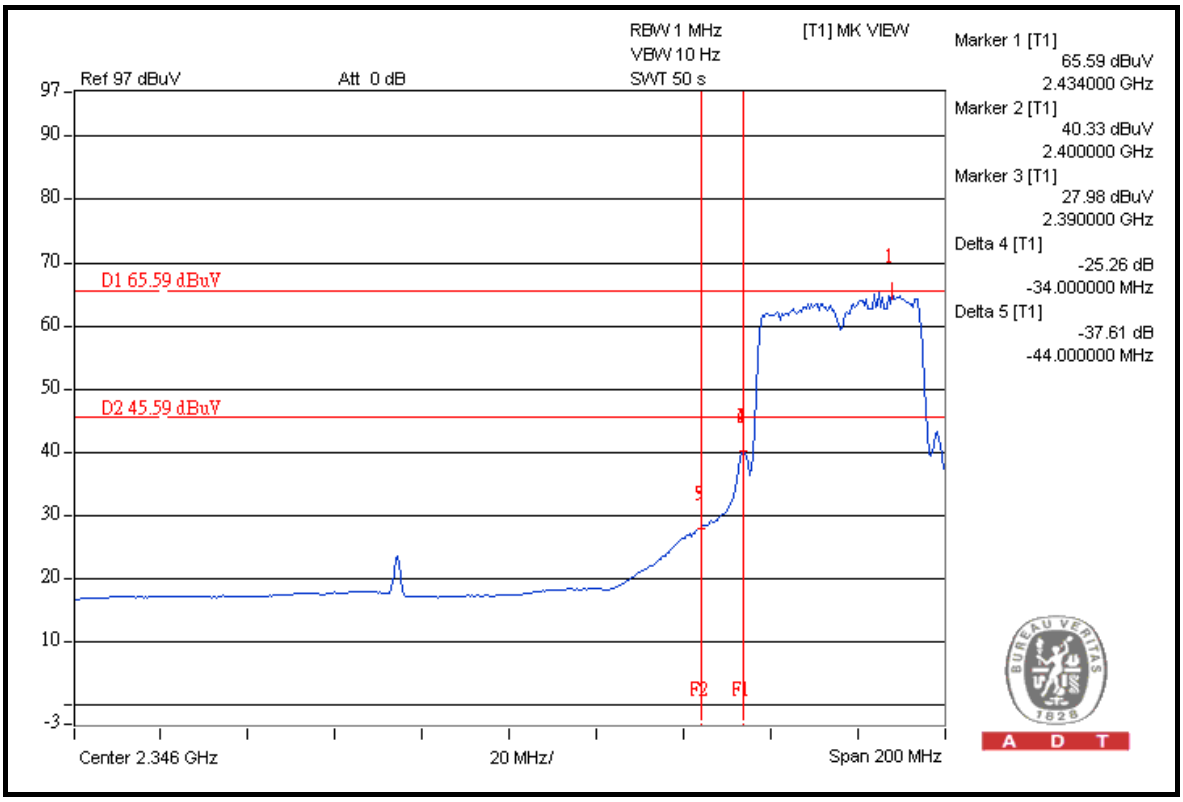
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2452.00 (PK)	106.7	39.27	67.43	74.00
2452.00 (AV)	86.8	35.53	51.27	54.00

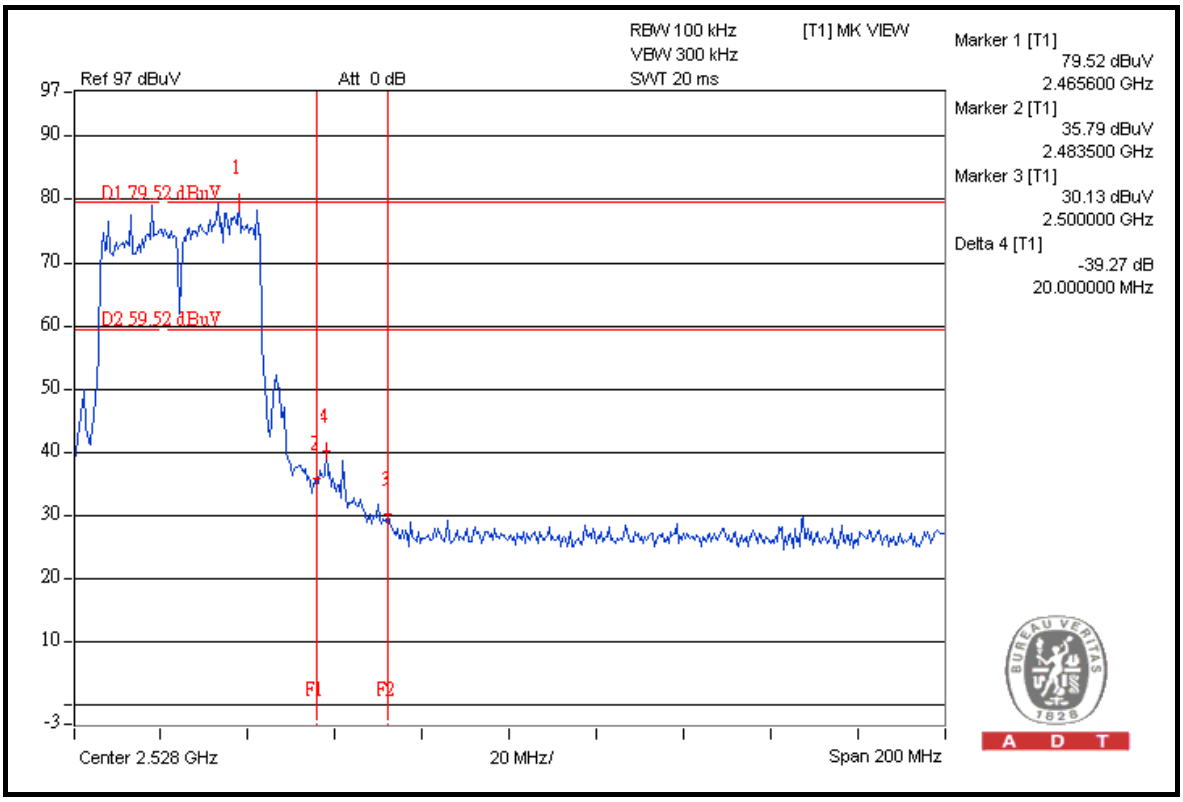
NOTE:

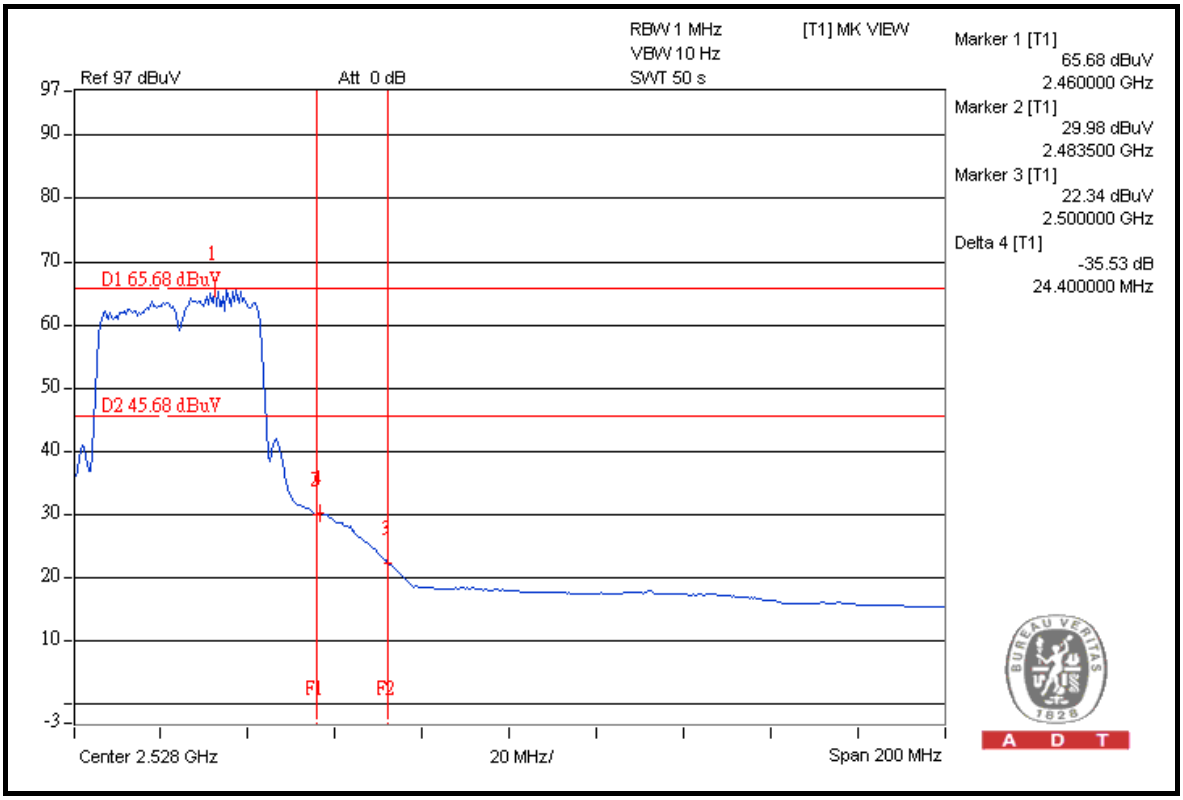
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

FOR RADIATED MEASURED (BOTH CHAINS ON)



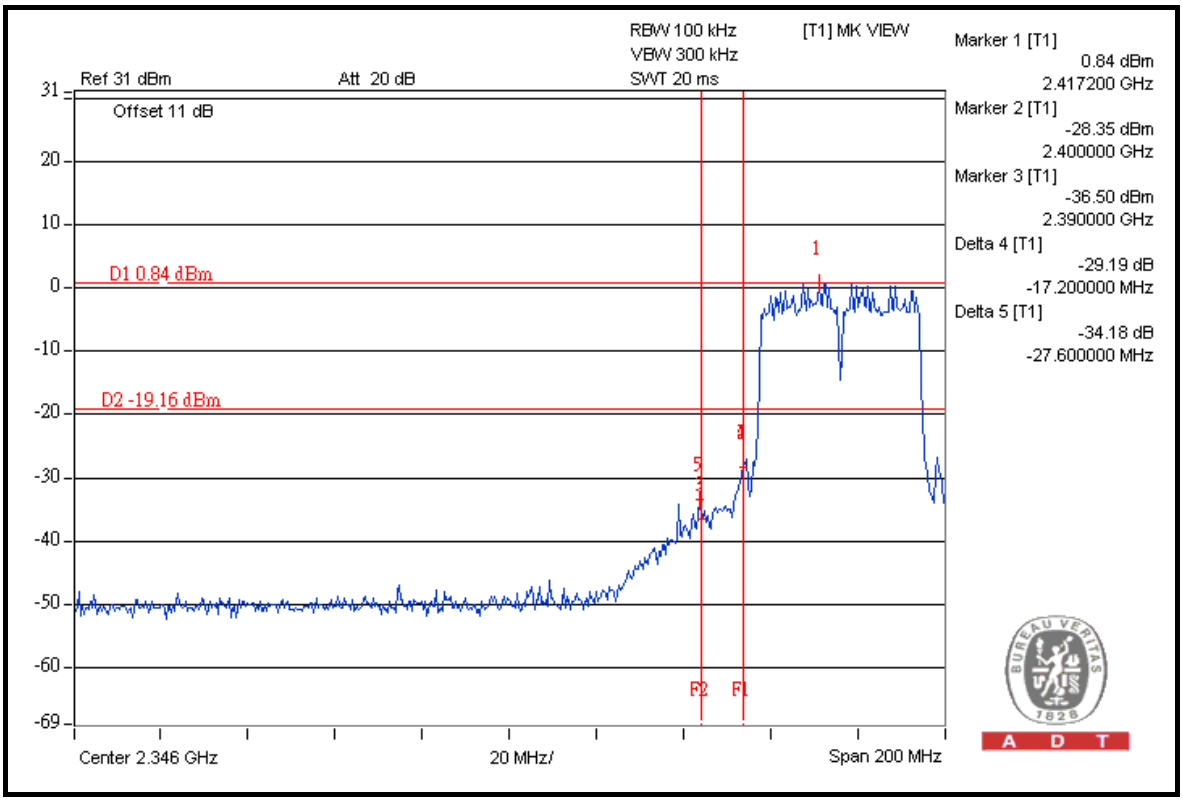


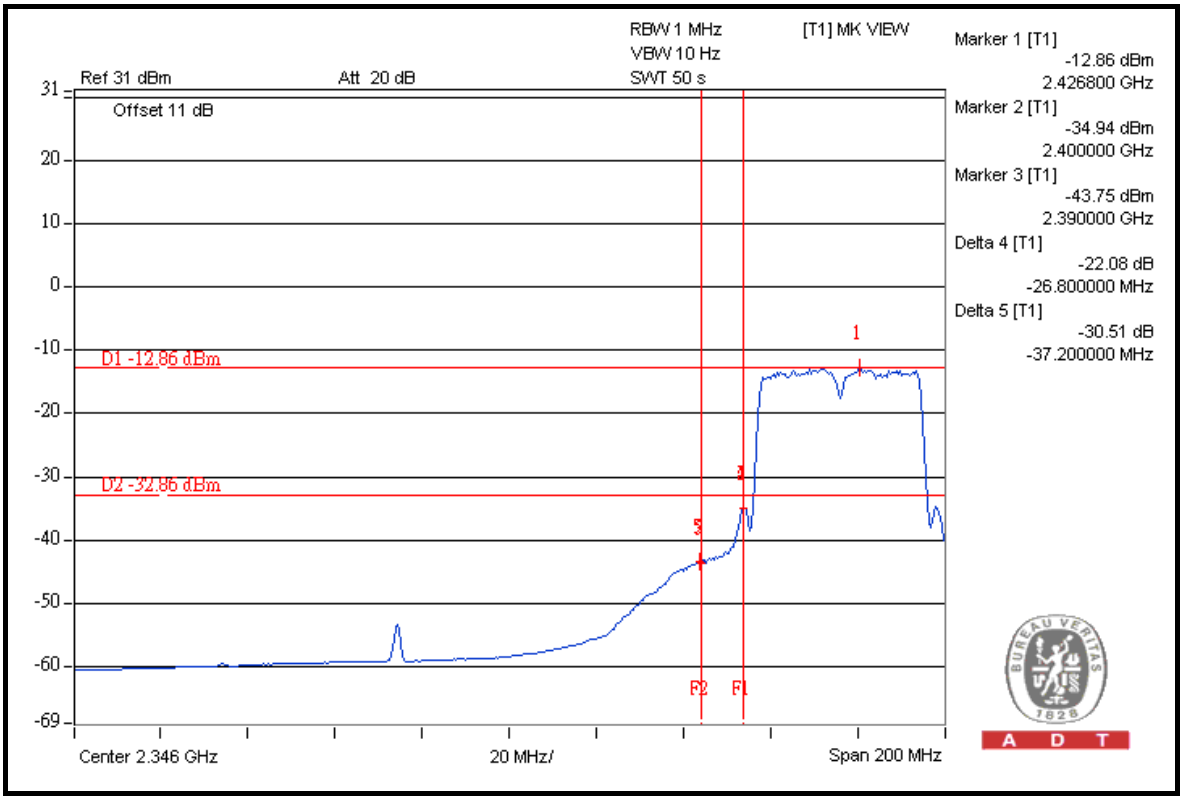

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 79.52 dBuV
D2 59.52 dBuV
Marker 1 [T1]
79.52 dBuV
2.465600 GHz
Marker 2 [T1]
35.79 dBuV
2.483500 GHz
Marker 3 [T1]
30.13 dBuV
2.500000 GHz
Delta 4 [T1]
-39.27 dB
20.000000 MHz
F1
F2
Center 2.528 GHz
20 MHz/
Span 200 MHz

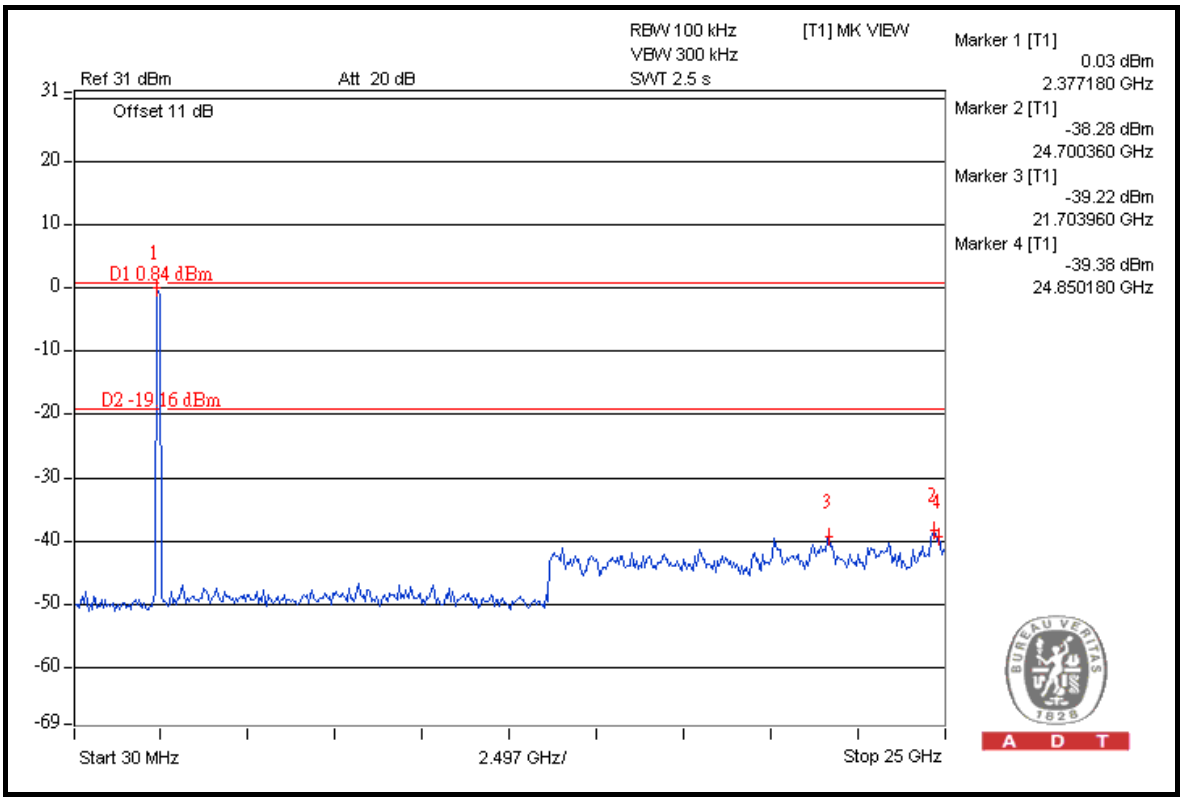

RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 65.68 dBuV
D2 45.68 dBuV
Marker 1 [T1]
65.68 dBuV
2.460000 GHz
Marker 2 [T1]
29.98 dBuV
2.483500 GHz
Marker 3 [T1]
22.34 dBuV
2.500000 GHz
Delta 4 [T1]
-35.53 dB
24.400000 MHz
F1
F2
Center 2.528 GHz
20 MHz/
Span 200 MHz

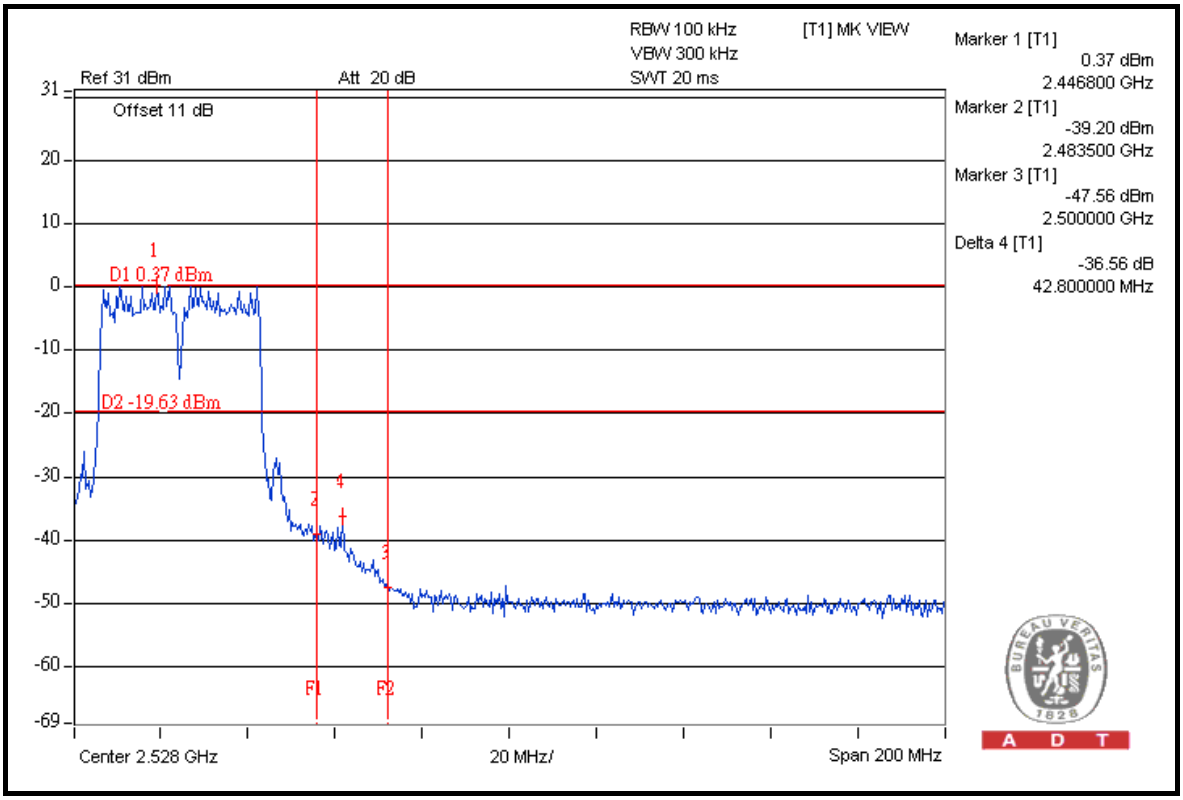
FOR CONDUCTED MEASURED

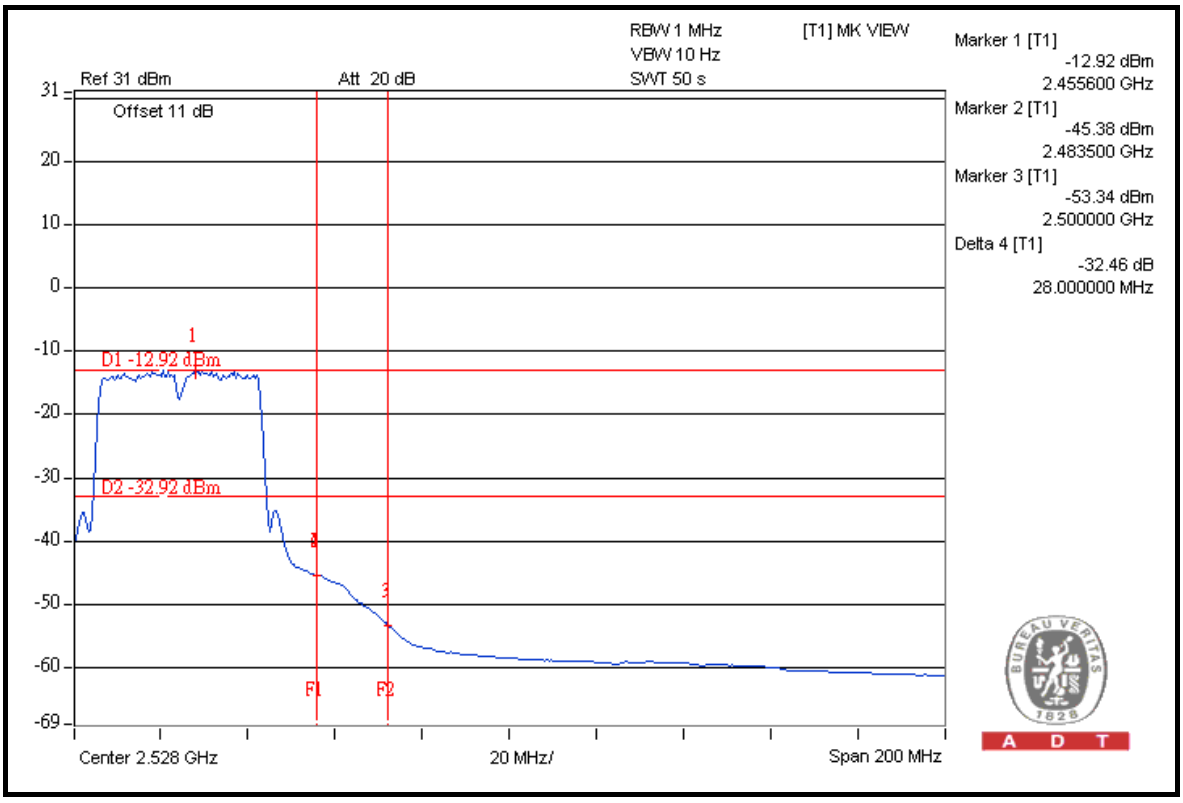
CHAIN 0

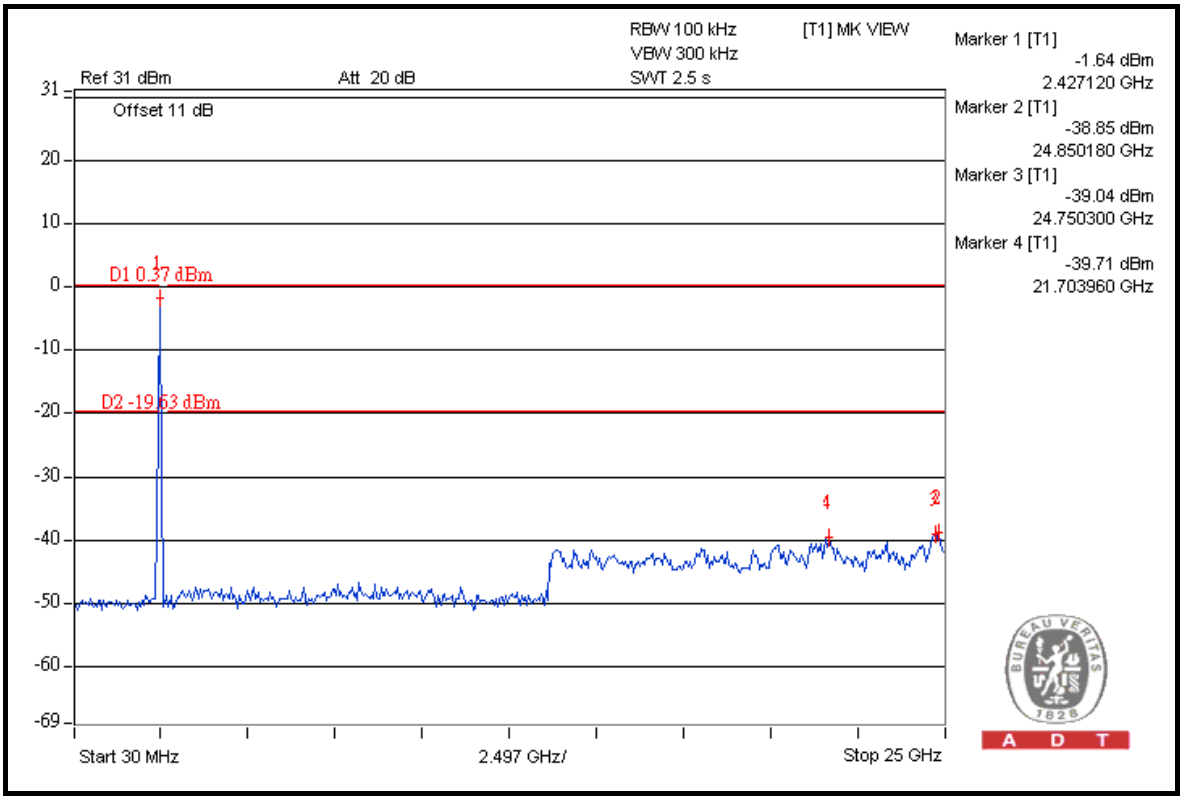




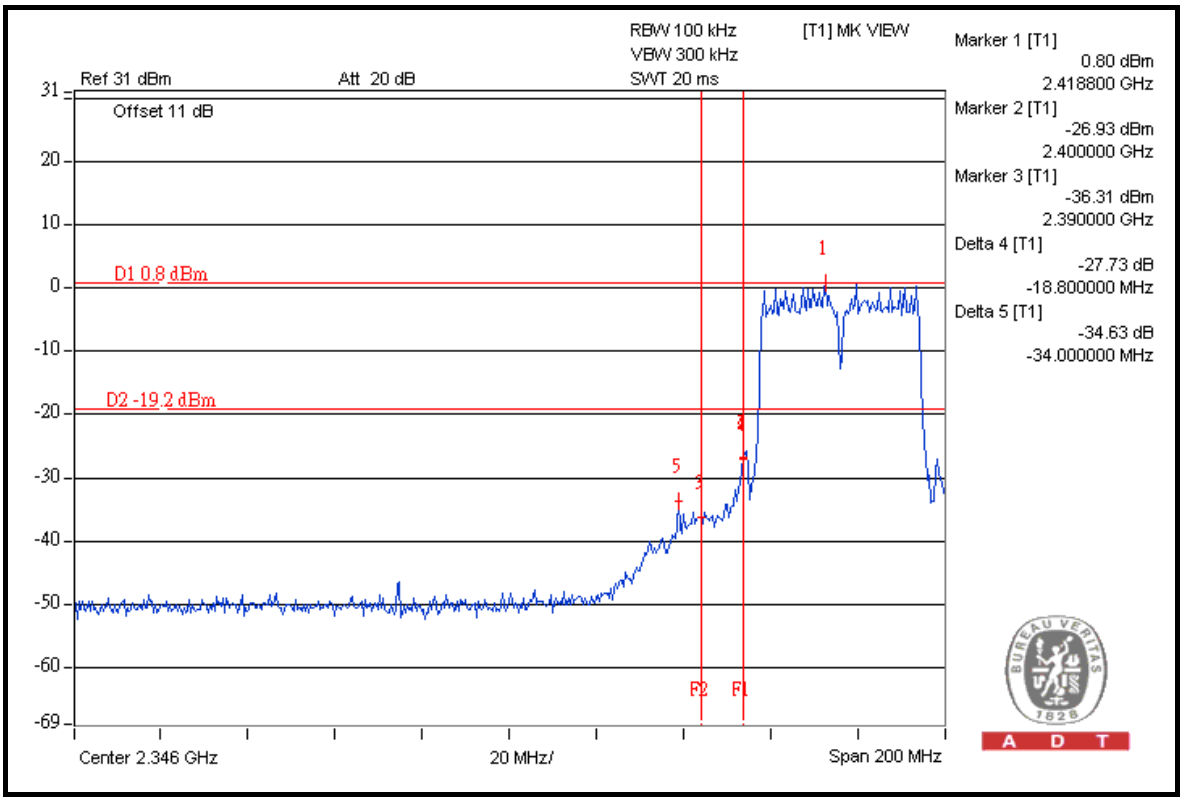

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 0.84 dBm
D2 -19.16 dBm
Marker 1 [T1]
0.03 dBm
2.377180 GHz
Marker 2 [T1]
-38.28 dBm
24.700360 GHz
Marker 3 [T1]
-39.22 dBm
21.703960 GHz
Marker 4 [T1]
-39.38 dBm
24.850180 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz

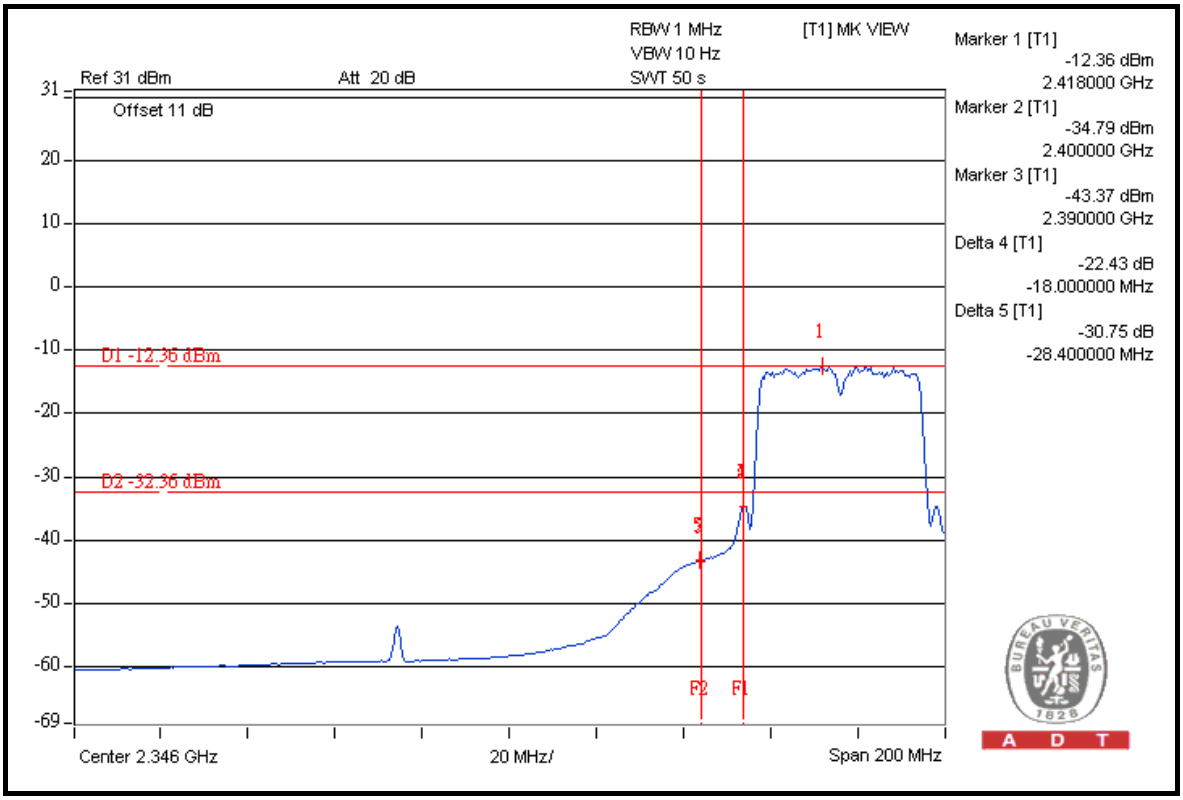

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 0.37 dBm
D2 -19.63 dBm
Marker 1 [T1]
0.37 dBm
2.446800 GHz
Marker 2 [T1]
-39.20 dBm
2.483500 GHz
Marker 3 [T1]
-47.56 dBm
2.500000 GHz
Delta 4 [T1]
-36.56 dB
42.800000 MHz
Center 2.528 GHz
20 MHz/
Span 200 MHz

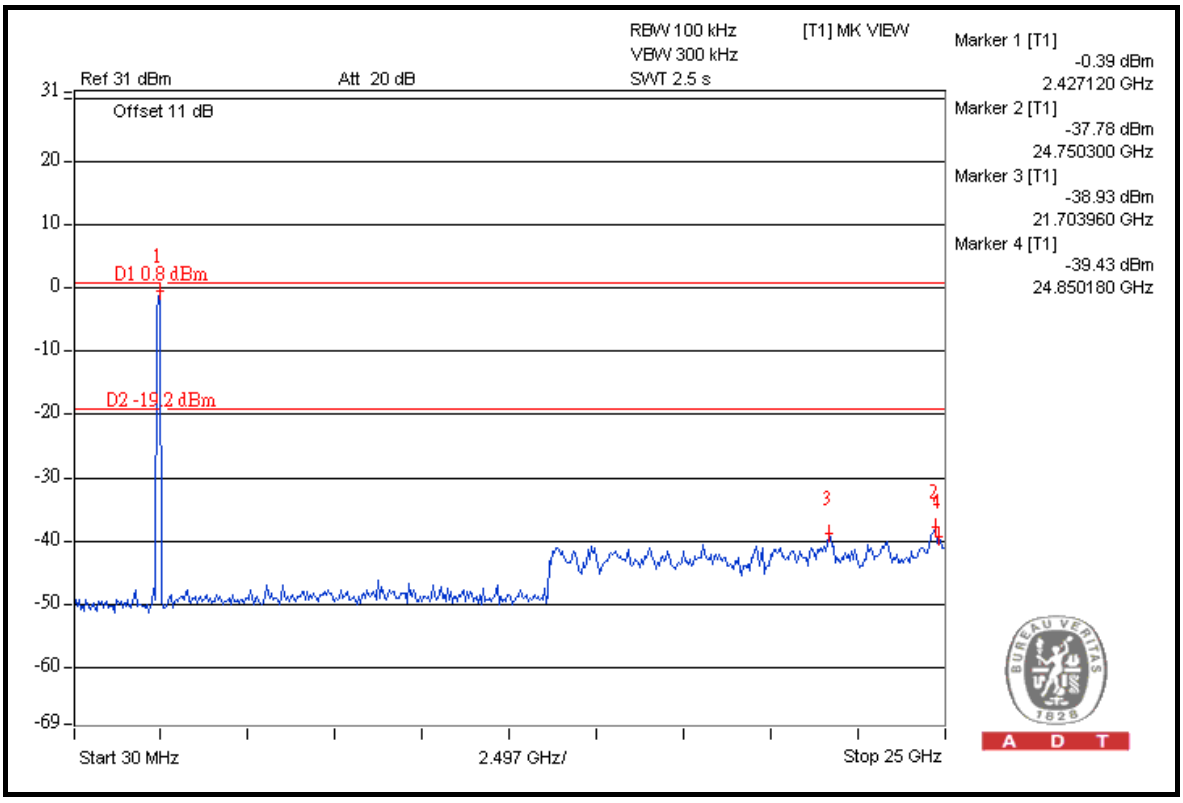

RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
-12.92 dBm
2.455600 GHz
Marker 2 [T1]
-45.38 dBm
2.483500 GHz
Marker 3 [T1]
-53.34 dBm
2.500000 GHz
Delta 4 [T1]
-32.46 dB
28.000000 MHz
D1 -12.92 dBm
D2 -32.92 dBm
F1
F2
Center 2.528 GHz
20 MHz/
Span 200 MHz

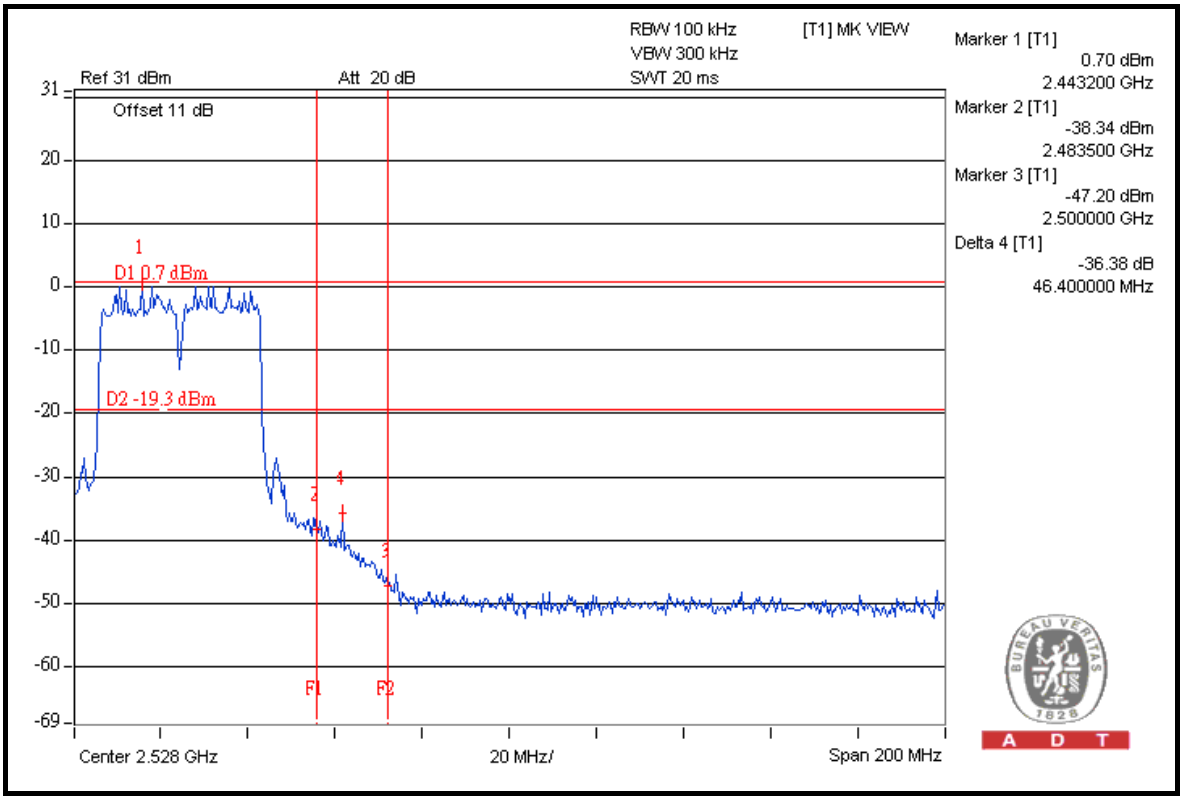

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
-1.64 dBm
2.427120 GHz
Marker 2 [T1]
-38.85 dBm
24.850180 GHz
Marker 3 [T1]
-39.04 dBm
24.750300 GHz
Marker 4 [T1]
-39.71 dBm
21.703960 GHz
D1 0.37 dBm
D2 -19.63 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

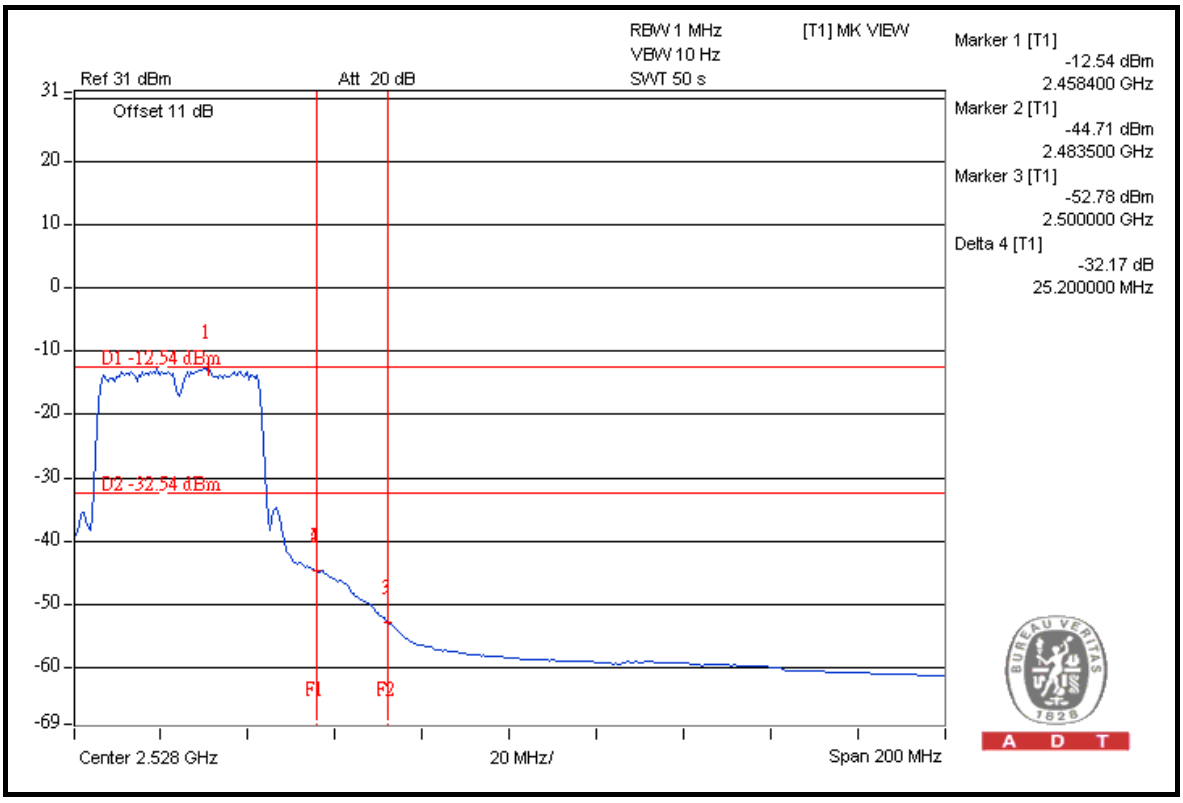
CHAIN 1

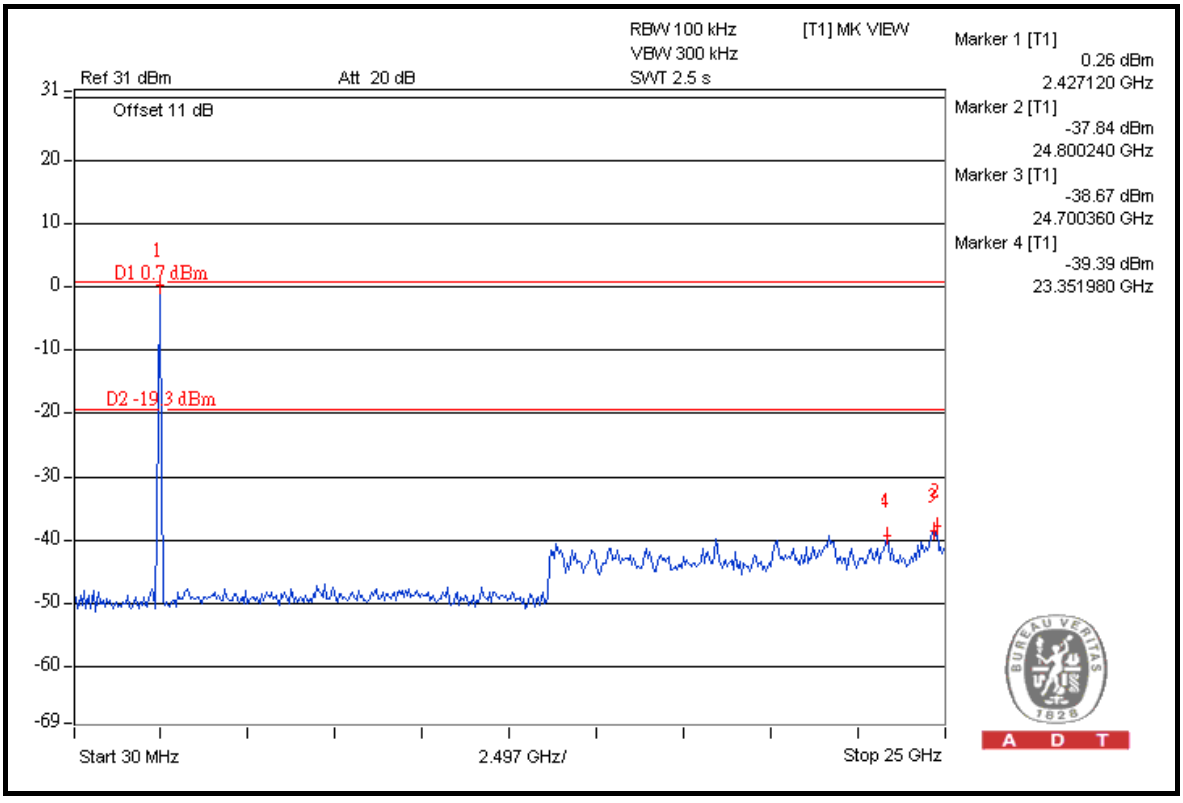

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 0.8 dBm
D2 -19.2 dBm
Marker 1 [T1]
0.80 dBm
2.418800 GHz
Marker 2 [T1]
-26.93 dBm
2.400000 GHz
Marker 3 [T1]
-36.31 dBm
2.390000 GHz
Delta 4 [T1]
-27.73 dB
-18.800000 MHz
Delta 5 [T1]
-34.63 dB
-34.000000 MHz
Center 2.346 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 -12.36 dBm
D2 -32.36 dBm
Marker 1 [T1]
-12.36 dBm
2.418000 GHz
Marker 2 [T1]
-34.79 dBm
2.400000 GHz
Marker 3 [T1]
-43.37 dBm
2.390000 GHz
Delta 4 [T1]
-22.43 dB
-18.000000 MHz
Delta 5 [T1]
-30.75 dB
-28.400000 MHz
Center 2.346 GHz
20 MHz/
Span 200 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 0.8 dBm
D2 -19.2 dBm
Marker 1 [T1]
-0.39 dBm
2.427120 GHz
Marker 2 [T1]
-37.78 dBm
24.750300 GHz
Marker 3 [T1]
-38.93 dBm
21.703960 GHz
Marker 4 [T1]
-39.43 dBm
24.850180 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
D1 0.7 dBm
D2 -19.3 dBm
Marker 1 [T1]
0.70 dBm
2.443200 GHz
Marker 2 [T1]
-38.34 dBm
2.483500 GHz
Marker 3 [T1]
-47.20 dBm
2.500000 GHz
Delta 4 [T1]
-36.38 dB
46.400000 MHz
Center 2.528 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 31 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
-12.54 dBm
2.458400 GHz
Marker 2 [T1]
-44.71 dBm
2.483500 GHz
Marker 3 [T1]
-52.78 dBm
2.500000 GHz
Delta 4 [T1]
-32.17 dB
25.200000 MHz
D1 -12.54 dBm
D2 -32.54 dBm
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 31 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
0.26 dBm
2.427120 GHz
Marker 2 [T1]
-37.84 dBm
24.800240 GHz
Marker 3 [T1]
-38.67 dBm
24.700360 GHz
Marker 4 [T1]
-39.39 dBm
23.351980 GHz
D1 0.7 dBm
D2 -19.3 dBm
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

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a). Other emissions shall be at least 20dB below the highest level of the desired power.

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. 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	ESIB7	100212	Aug. 02, 2011	Aug. 01, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP 40	100041	Jul. 21, 2011	Jul. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 13, 2011	Apr. 12, 2012
HORN Antenna SCHWARZBECK	9120D	209	Aug. 25, 2011	Aug. 24, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8447D	2944A10633	Nov. 02, 2010	Nov. 01, 2011
Preamplifier Agilent	8449B	3008A01964	Nov. 02, 2010	Nov. 01, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295014/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	Aug. 19, 2011	Aug. 18, 2012
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Nov. 03, 2010	Nov. 02, 2011

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Chamber 3.

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

4. The FCC Site Registration No. is 988962.

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

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.

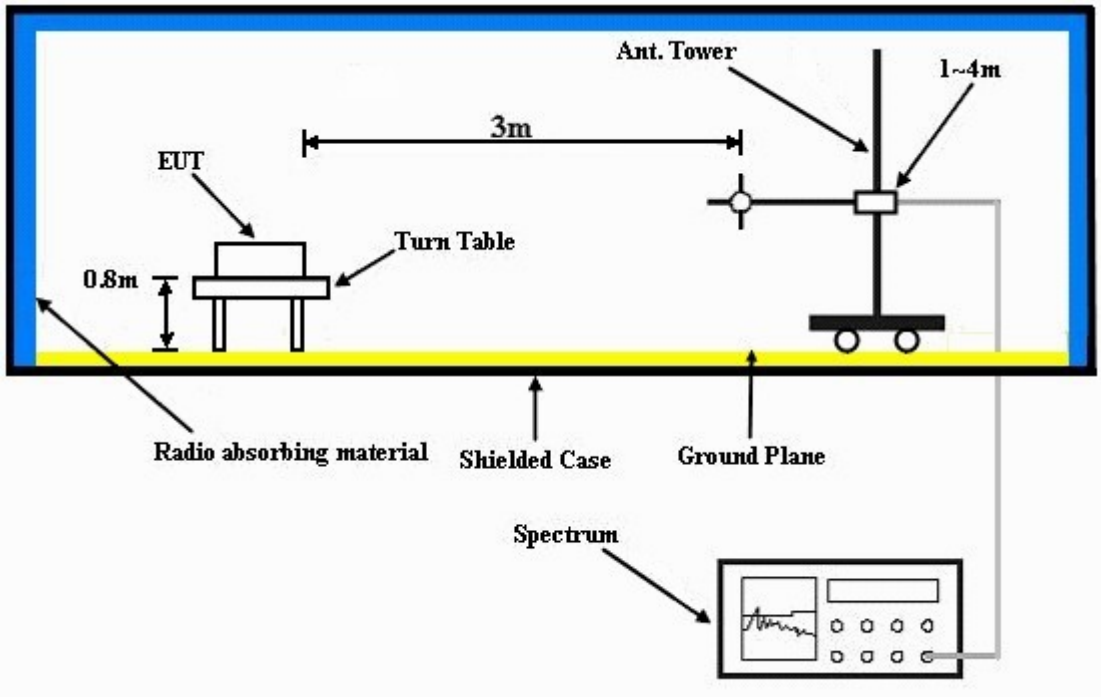
NOTE:

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 1kHz 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, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	80.8 PK	86.4	-5.6	1.04 H	223	42.40	38.40
2	#5725.00	61.1 AV	73.4	-12.3	1.04 H	223	22.70	38.40
3	*5745.00	106.4 PK			1.04 H	223	68.00	38.40
4	*5745.00	93.4 AV			1.04 H	223	55.00	38.40
5	11490.00	59.2 PK	74.0	-14.8	1.00 H	198	10.20	49.00
6	11490.00	49.7 AV	54.0	-4.3	1.00 H	198	0.70	49.00
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	#5725.00	81.3 PK	88.1	-6.8	1.00 V	125	42.90	38.40
2	#5725.00	65.7 AV	75.2	-9.5	1.00 V	125	27.30	38.40
3	*5745.00	108.1 PK			1.00 V	125	69.70	38.40
4	*5745.00	95.2 AV			1.00 V	125	56.80	38.40
5	11490.00	62.1 PK	74.0	-11.9	1.00 V	187	13.10	49.00
6	11490.00	51.2 AV	54.0	-2.8	1.00 V	187	2.20	49.00

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	107.9 PK			1.27 H	223	69.40	38.50
2	*5785.00	94.5 AV			1.27 H	223	56.00	38.50
3	11570.00	66.1 PK	74.0	-7.9	1.10 H	145	17.30	48.80
4	11570.00	50.7 AV	54.0	-3.3	1.10 H	145	1.90	48.80
5	#17355.00	76.1 PK	87.9	-11.8	1.26 H	15	23.50	52.60
6	#17355.00	60.9 AV	74.5	-13.6	1.26 H	15	8.30	52.60
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	*5785.00	110.6 PK			1.56 V	226	72.10	38.50
2	*5785.00	96.7 AV			1.56 V	226	58.20	38.50
3	11570.00	67.8 PK	74.0	-6.2	1.67 V	99	19.00	48.80
4	11570.00	51.4 AV	54.0	-2.6	1.67 V	99	2.60	48.80
5	#17355.00	77.7 PK	90.6	-12.9	1.16 V	140	25.10	52.60
6	#17355.00	61.9 AV	76.7	-14.8	1.16 V	140	9.30	52.60

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	105.6 PK			1.37 H	223	67.00	38.60
2	*5825.00	92.5 AV			1.37 H	223	53.90	38.60
3	#5850.00	76.1 PK	85.6	-9.5	1.37 H	223	37.50	38.60
4	#5850.00	56.9 AV	72.5	-15.6	1.37 H	223	18.30	38.60
5	11650.00	59.4 PK	74.0	-14.6	1.00 H	158	10.70	48.70
6	11650.00	46.7 AV	54.0	-7.3	1.00 H	158	-2.00	48.70
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	108.6 PK			1.00 V	214	70.00	38.60
2	*5825.00	95.5 AV			1.00 V	214	56.90	38.60
3	#5850.00	79.3 PK	88.6	-9.3	1.00 V	214	40.70	38.60
4	#5850.00	60.7 AV	75.5	-14.8	1.00 V	214	22.10	38.60
5	11650.00	61.4 PK	74.0	-12.6	1.00 V	158	12.70	48.70
6	11650.00	51.5 AV	54.0	-2.5	1.00 V	224	2.80	48.70

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, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	78.6 PK	86.7	-8.1	1.11 H	338	40.20	38.40
2	#5725.00	60.4 AV	73.4	-13.0	1.11 H	338	22.00	38.40
3	*5745.00	106.7 PK			1.11 H	338	68.30	38.40
4	*5745.00	93.4 AV			1.11 H	338	55.00	38.40
5	11490.00	63.7 PK	74.0	-10.3	1.62 H	0	14.70	49.00
6	11490.00	50.7 AV	54.0	-3.3	1.62 H	0	1.70	49.00
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	#5725.00	82.9 PK	89.7	-6.8	1.11 V	338	44.50	38.40
2	#5725.00	63.9 AV	75.4	-11.5	1.11 V	338	25.50	38.40
3	*5745.00	109.7 PK			1.11 V	338	71.30	38.40
4	*5745.00	95.4 AV			1.11 V	338	57.00	38.40
5	11490.00	63.7 PK	74.0	-10.3	1.62 V	0	14.70	49.00
6	11490.00	50.2 AV	54.0	-3.8	1.62 V	0	1.20	49.00

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	107.3 PK			1.10 H	137	68.80	38.50
2	*5785.00	94.1 AV			1.10 H	137	55.60	38.50
3	11570.00	67.4 PK	74.0	-6.6	1.10 H	245	18.60	48.80
4	11570.00	51.9 AV	54.0	-2.1	1.10 H	245	3.10	48.80
5	#17355.00	72.1 PK	87.3	-15.2	1.42 H	241	19.50	52.60
6	#17355.00	57.2 AV	74.1	-16.9	1.42 H	241	4.60	52.60
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	*5785.00	110.2 PK			1.30 V	247	71.70	38.50
2	*5785.00	96.1 AV			1.30 V	247	57.60	38.50
3	11570.00	67.2 PK	74.0	-6.8	1.00 V	196	18.40	48.80
4	11570.00	51.7 AV	54.0	-2.3	1.00 V	196	2.90	48.80
5	#17355.00	75.3 PK	90.2	-14.9	1.34 V	192	22.70	52.60
6	#17355.00	59.4 AV	76.1	-16.7	1.34 V	192	6.80	52.60

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	106.1 PK			1.29 H	176	67.50	38.60
2	*5825.00	92.9 AV			1.29 H	176	54.30	38.60
3	#5850.00	75.2 PK	86.1	-10.9	1.20 H	198	36.60	38.60
4	#5850.00	55.3 AV	72.9	-17.6	1.20 H	198	16.70	38.60
5	11650.00	58.5 PK	74.0	-15.5	1.07 H	113	9.80	48.70
6	11650.00	49.6 AV	54.0	-4.4	1.07 H	113	0.90	48.70
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	108.9 PK			1.10 V	275	70.30	38.60
2	*5825.00	94.9 AV			1.10 V	275	56.30	38.60
3	#5850.00	78.4 PK	88.9	-10.5	1.00 V	168	39.80	38.60
4	#5850.00	61.8 AV	74.9	-13.1	1.00 V	168	23.20	38.60
5	11650.00	62.1 PK	74.0	-11.9	1.12 V	258	13.40	48.70
6	11650.00	51.7 AV	54.0	-2.3	1.12 V	258	3.00	48.70

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, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	79.3 PK	82.3	-3.0	1.00 H	173	40.90	38.40
2	#5725.00	56.6 AV	62.0	-5.4	1.00 H	173	18.20	38.40
3	*5755.00	102.3 PK			1.00 H	173	63.80	38.50
4	*5755.00	82.0 AV			1.00 H	173	43.50	38.50
5	11510.00	57.7 PK	74.0	-16.3	1.00 H	45	8.70	49.00
6	11510.00	44.9 AV	54.0	-9.1	1.00 H	45	-4.10	49.00
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	#5725.00	83.0 PK	85.5	-2.5	1.00 V	0	44.60	38.40
2	#5725.00	60.9 AV	65.2	-4.3	1.00 V	0	22.50	38.40
3	*5755.00	105.5 PK			1.00 V	0	67.00	38.50
4	*5755.00	85.2 AV			1.00 V	0	46.70	38.50
5	11510.00	59.9 PK	74.0	-14.1	2.00 V	0	10.90	49.00
6	11510.00	44.9 AV	54.0	-9.1	2.00 V	0	-4.10	49.00
7	#17265.00	69.1 PK	85.5	-16.4	1.13 V	51	17.00	52.10
8	#17265.00	53.3 AV	65.2	-11.9	1.13 V	51	1.20	52.10

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.
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, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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	102.1 PK			1.00 H	171	63.60	38.50
2	*5795.00	82.7 AV			1.00 H	171	44.20	38.50
3	#5850.00	66.4 PK	82.1	-15.7	1.00 H	171	27.80	38.60
4	#5850.00	45.9 AV	62.7	-16.8	1.00 H	171	7.30	38.60
5	11590.00	57.8 PK	74.0	-16.2	1.00 H	56	9.00	48.80
6	11590.00	44.8 AV	54.0	-9.2	1.00 H	56	-4.00	48.80
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	104.9 PK			1.00 V	360	66.40	38.50
2	*5795.00	84.2 AV			1.00 V	360	45.70	38.50
3	#5850.00	72.1 PK	84.9	-12.8	1.00 V	360	33.50	38.60
4	#5850.00	49.6 AV	64.2	-14.6	1.00 V	360	11.00	38.60
5	11590.00	61.2 PK	74.0	-12.8	1.60 V	8	12.40	48.80
6	11590.00	46.4 AV	54.0	-7.6	1.60 V	8	-2.40	48.80
7	#17385.00	72.7 PK	84.9	-12.2	1.14 V	51	19.90	52.80
8	#17385.00	56.9 AV	64.2	-7.3	1.14 V	51	4.10	52.80

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

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
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：802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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	119.34	36.8 QP	43.5	-6.7	3.00 H	286	24.30	12.50
2	206.83	40.2 QP	43.5	-3.3	1.00 H	58	29.50	10.70
3	282.66	40.2 QP	46.0	-5.8	1.00 H	277	26.00	14.20
4	502.36	36.5 QP	46.0	-9.5	2.00 H	10	16.20	20.30
5	753.18	41.4 QP	46.0	-4.6	2.00 H	28	16.70	24.70
6	877.61	40.9 QP	46.0	-5.1	1.00 H	316	14.30	26.60
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	43.51	30.7 QP	40.0	-9.3	1.00 V	49	16.30	14.40
2	115.45	32.5 QP	43.5	-11.0	1.00 V	250	20.50	12.00
3	201.00	35.0 QP	43.5	-8.5	1.00 V	88	24.60	10.40
4	286.55	35.2 QP	46.0	-10.8	2.00 V	271	20.80	14.40
5	403.20	34.1 QP	46.0	-11.9	1.00 V	232	16.60	17.50
6	502.36	38.8 QP	46.0	-7.2	1.00 V	316	18.50	20.30

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.

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	Nov. 30, 2010	Nov. 29, 2011
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 30, 2010	Dec. 29, 2011
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jul. 07, 2011	Jul. 06, 2012
LISN ROHDE & SCHWARZ	ESH3-Z5	835239/001	Feb. 22, 2011	Feb. 21, 2012
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.

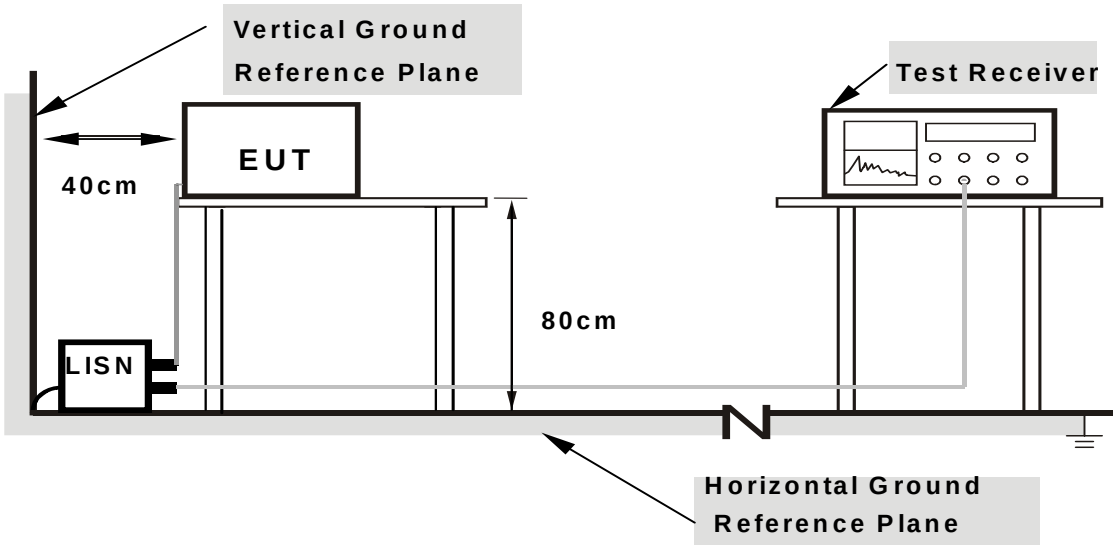
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

5.2.4 DEVIATION FROM TEST STANDARD

No deviation.

5.2.5 TEST SETUP



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

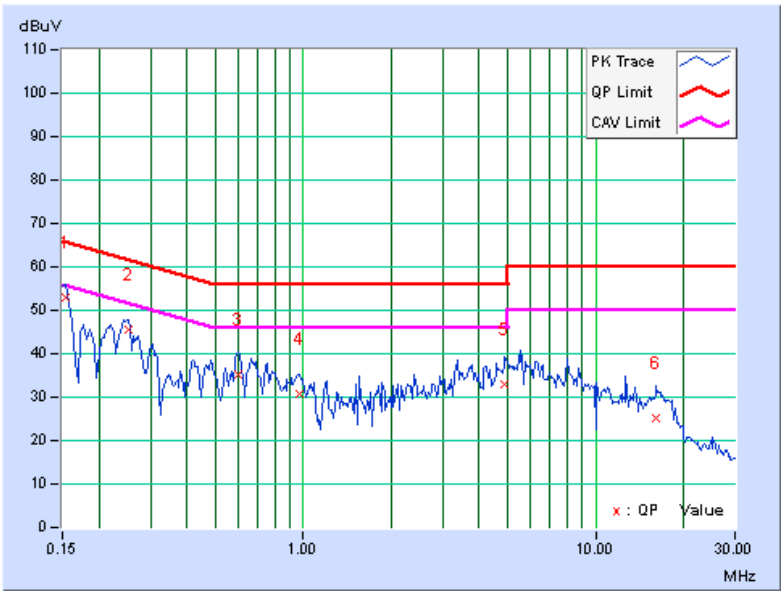
5.2.7 TEST RESULTS

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

PHASE	Line 1	6dB BANDWIDTH	9kHz

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.12	52.78	45.64	52.90	45.76	65.79	55.79	-12.89	-10.03
2	0.252	0.12	45.48	38.92	45.60	39.04	61.71	51.71	-16.11	-12.67
3	0.599	0.13	35.18	26.66	35.31	26.79	56.00	46.00	-20.69	-19.21
4	0.974	0.16	30.40	20.46	30.56	20.62	56.00	46.00	-25.44	-25.38
5	4.895	0.36	32.51	21.43	32.87	21.79	56.00	46.00	-23.13	-24.21
6	16.121	0.93	24.36	16.17	25.29	17.10	60.00	50.00	-34.71	-32.90

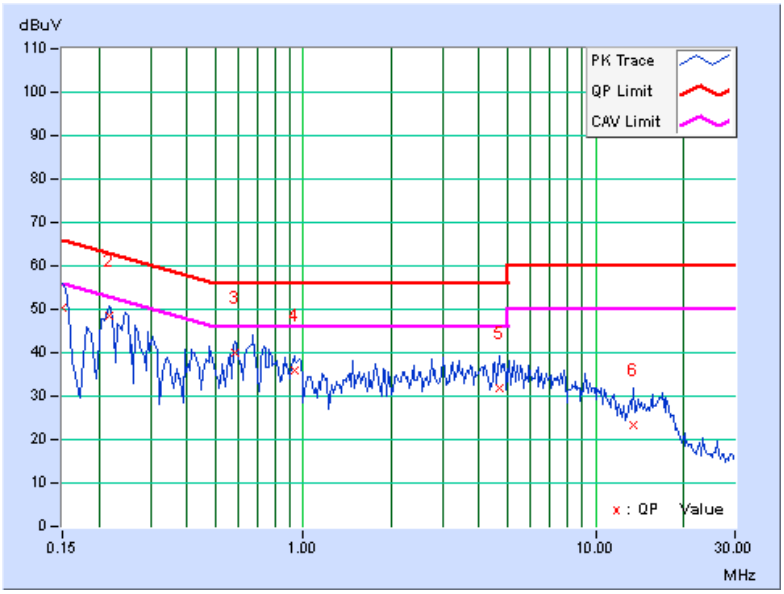
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



PHASE	Line 2	6dB BANDWIDTH	9kHz

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.12	50.14	42.20	50.26	42.32	66.00	56.00	-15.74	-13.68
2	**0.216**	**0.13**	**48.40**	**47.86**	**48.53**	**47.99**	**62.96**	**52.96**	**-14.42**	**-4.96**
3	0.584	0.15	39.81	34.85	39.96	35.00	56.00	46.00	-16.04	-11.00
4	0.931	0.18	35.71	29.27	35.89	29.45	56.00	46.00	-20.11	-16.55
5	4.695	0.35	31.62	23.97	31.97	24.32	56.00	46.00	-24.03	-21.68
6	13.551	0.71	22.64	14.10	23.35	14.81	60.00	50.00	-36.65	-35.19

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	100039	Feb. 23, 2011	Feb. 22, 2012

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

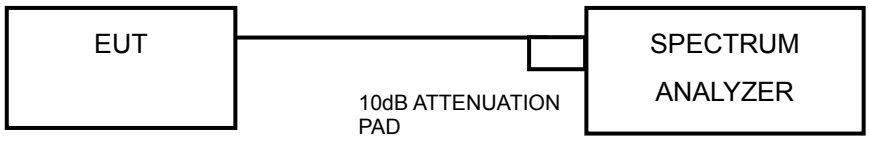
5.3.3 TEST PROCEDURE

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

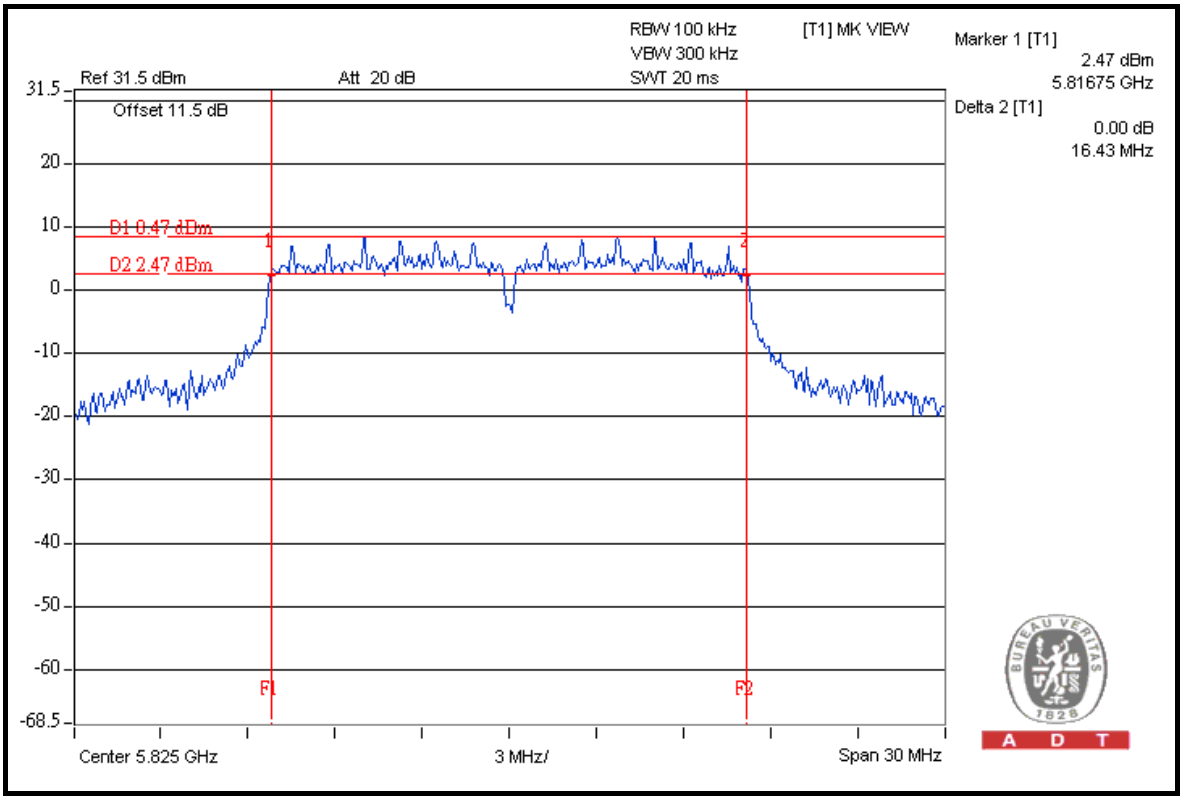
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

5.3.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.38	0.5	PASS
157	5785	16.42	0.5	PASS
165	5825	16.43	0.5	PASS

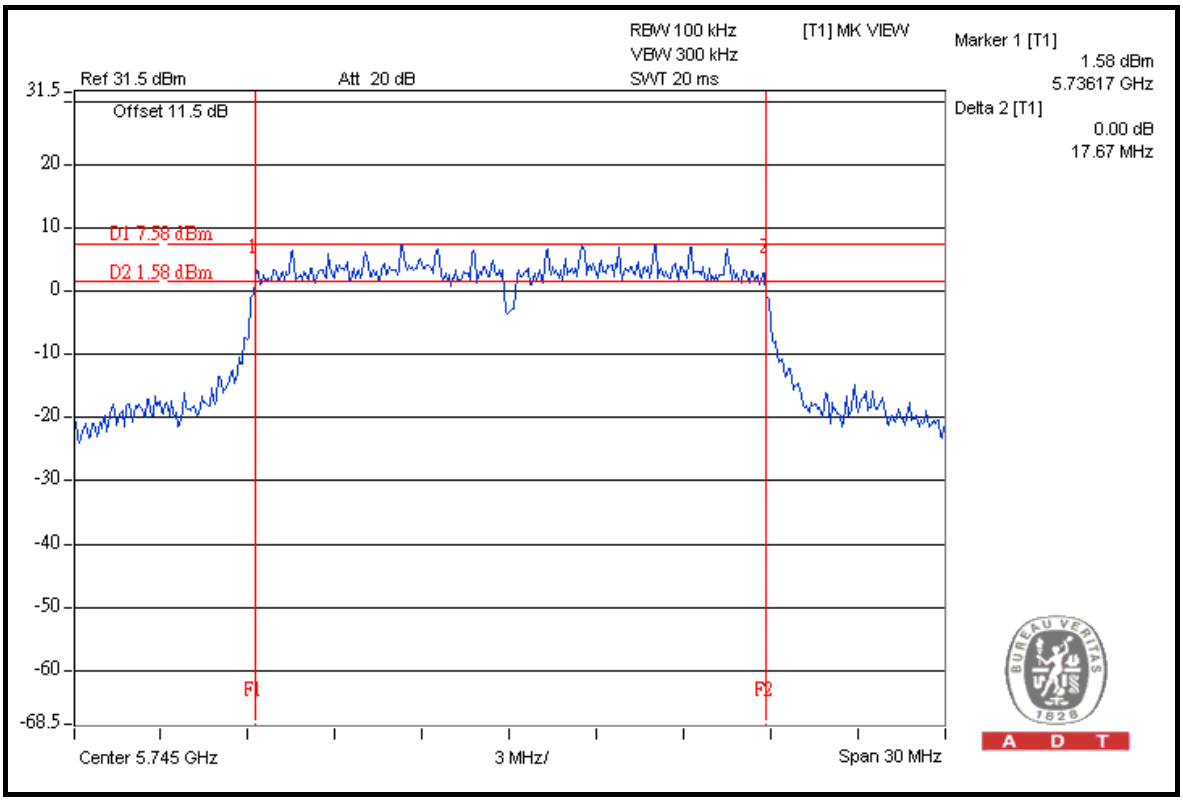
CH 165



802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.62	17.67	0.5	PASS
157	5785	17.62	17.66	0.5	PASS
165	5825	17.62	17.65	0.5	PASS

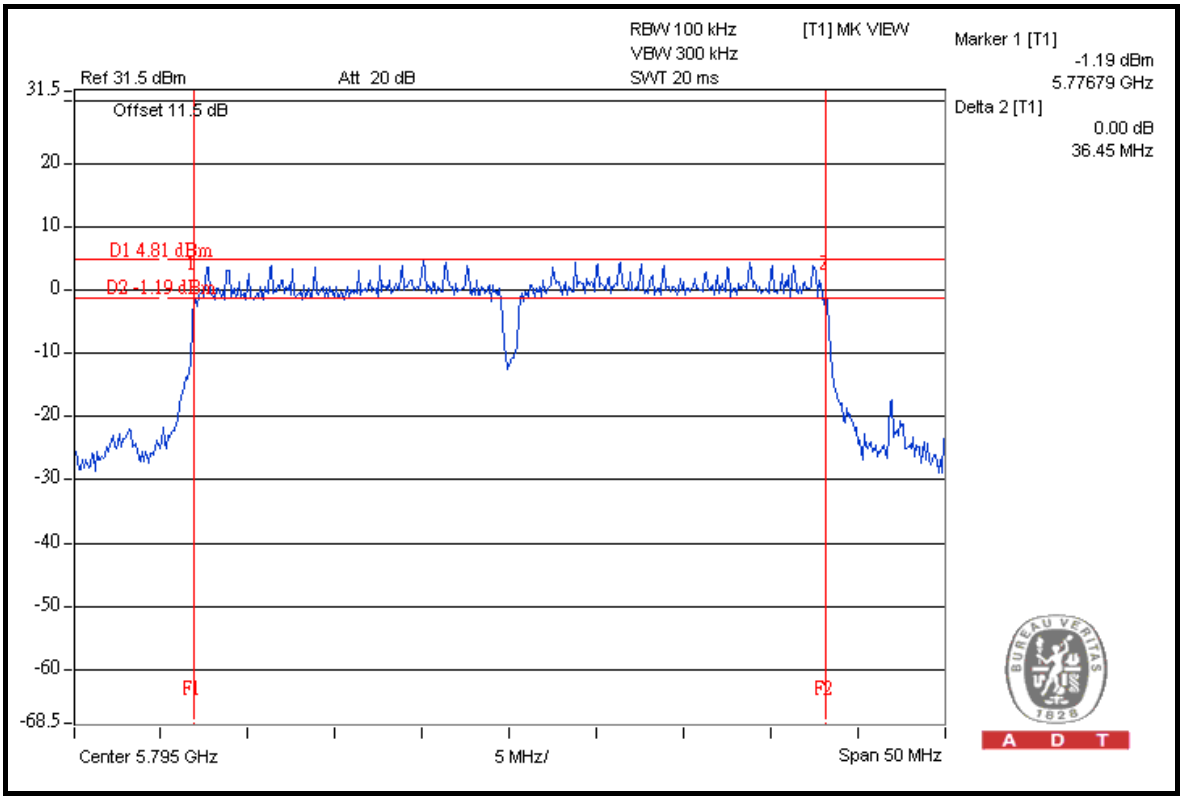
FOR CHAIN 1: CH 149



802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	35.47	36.32	0.5	PASS
159	5795	36.11	36.45	0.5	PASS

FOR CHAIN 1: CH 159



5.4 MAXIMUM OUTPUT POWER

5.4.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

The Maximum 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	0824011	Aug. 04, 2011	Aug. 03, 2012
Power Sensor	MA2411B	0738171	Aug. 04, 2011	Aug. 03, 2012

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Measurement Bandwidth of ML2495A is 65MHz greater than 6dB bandwidth of emission.

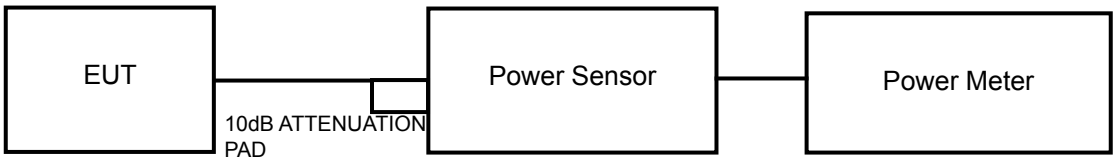
5.4.3 TEST PROCEDURES

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

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (dBm)	PASS/FAIL
149	5745	204.2	23.1	30	PASS
157	5785	213.8	23.3	30	PASS
165	5825	204.2	23.1	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	23.1	23.8	444.1	26.5	30	PASS
157	5785	23.4	24.0	**470.0**	26.7	30	PASS
165	5825	23.1	23.6	433.3	26.4	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	22.8	23.6	419.6	26.2	30	PASS
159	5795	23.0	23.5	423.4	26.3	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	100039	Feb. 23, 2011	Feb. 22, 2012

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 10kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

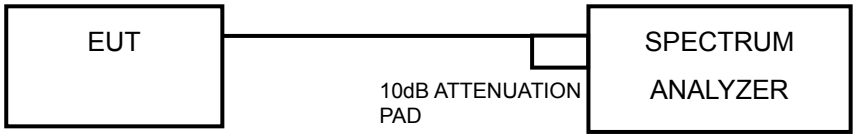
The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

Follow method 2 of KDB 662911 D01 Multiple Transmitter Output v01 to calculate total power density of 2 TX port.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation.

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITION

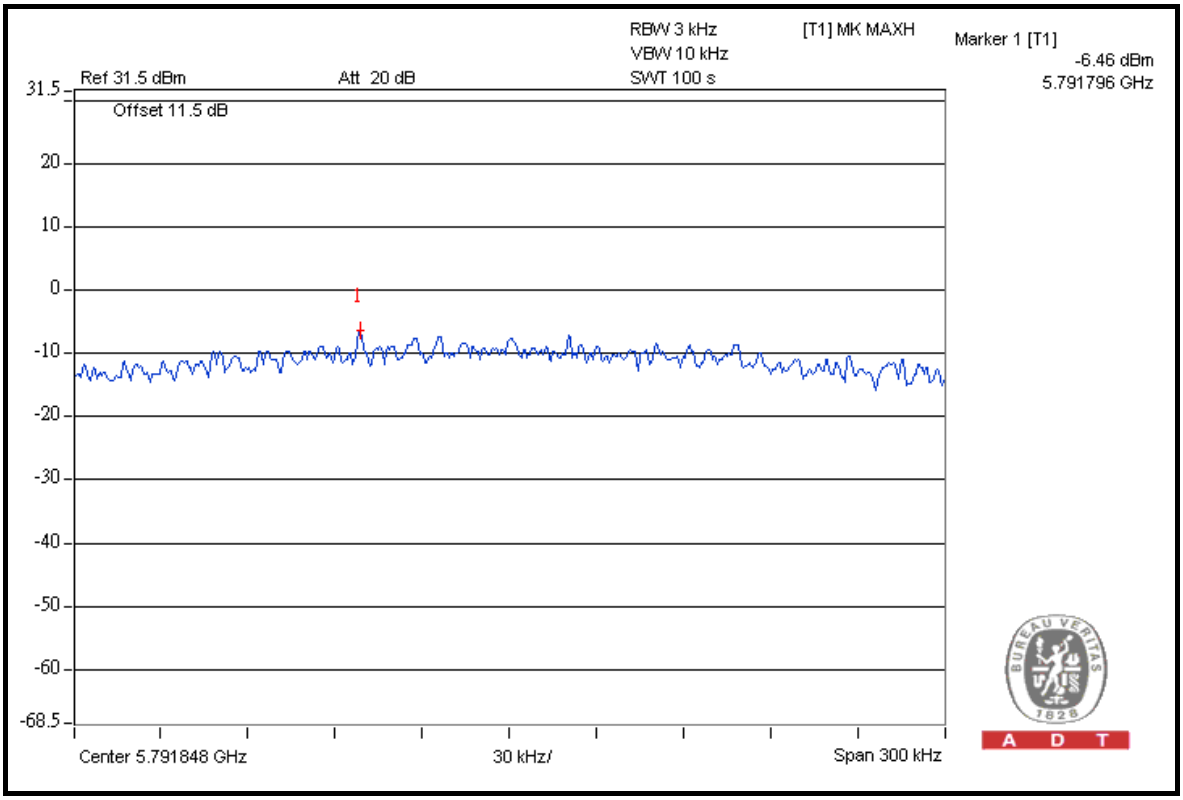
Same as Item 5.3.6.

5.5.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
149	5745	-6.5	8	PASS
157	5785	-6.5	8	PASS
165	5825	-6.7	8	PASS

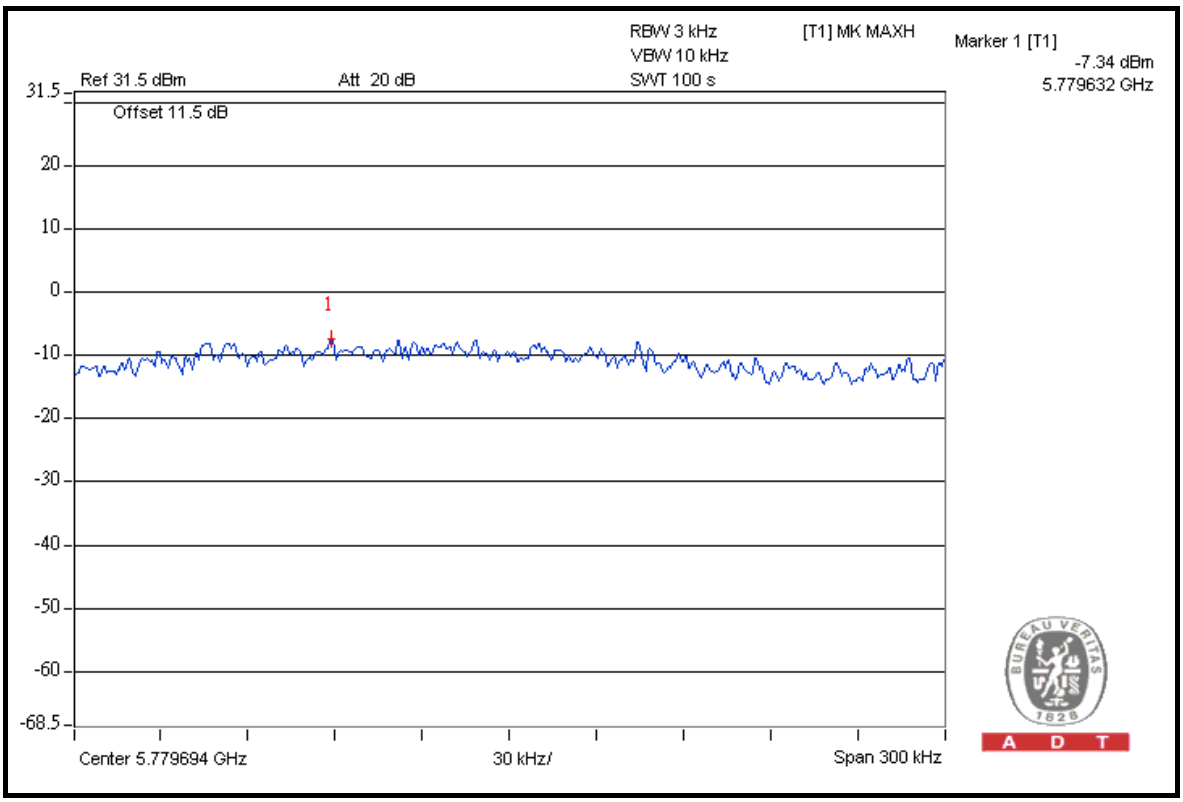
CH 157



802.11n (20MHz)

CHAIN	CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
			MEASURED	10 log (N=2) dB			
0	149	5745	-7.6	3.01	-4.6	8	PASS
	157	5785	-7.3	3.01	-4.3	8	PASS
	165	5825	-7.6	3.01	-4.6	8	PASS
1	149	5745	-7.9	3.01	-4.9	8	PASS
	157	5785	-7.5	3.01	-4.5	8	PASS
	165	5825	-8.1	3.01	-5.1	8	PASS

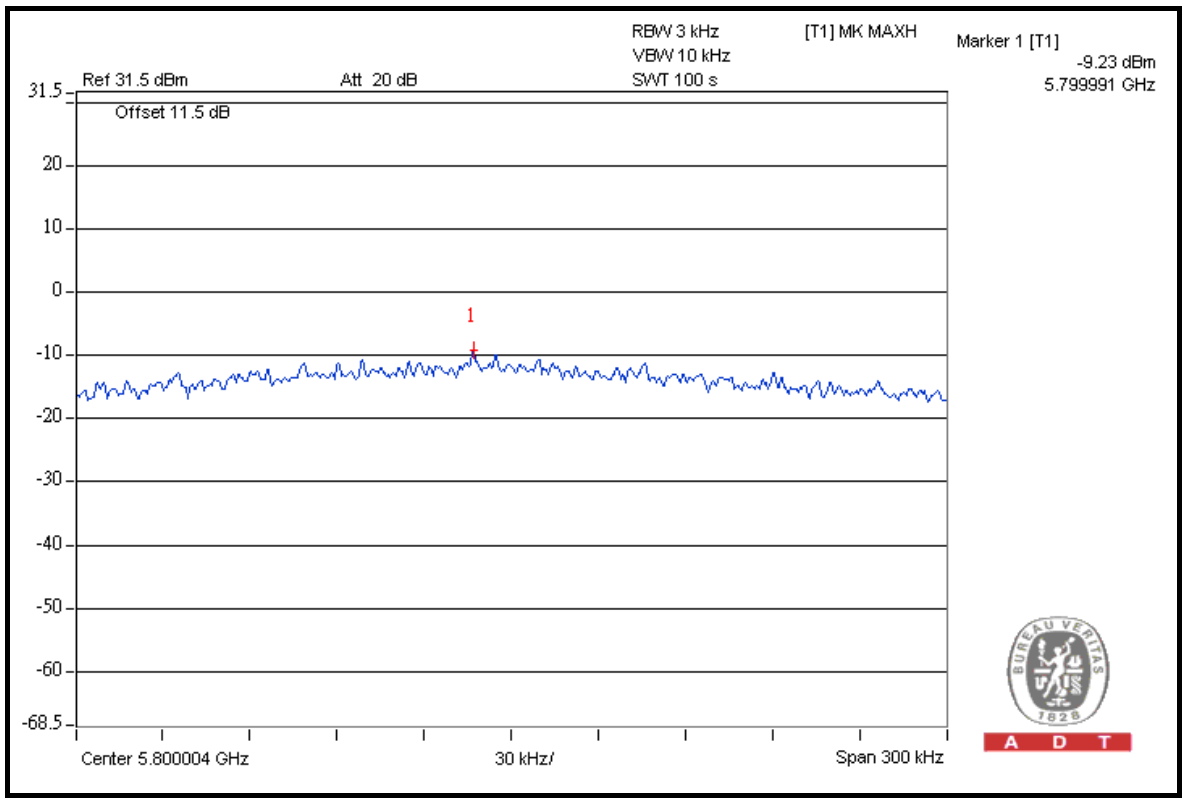
FOR CHAIN 0: CH 157



802.11n (40MHz)

CHAIN	CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
			MEASURED	10 log (N=2) dB			
0	151	5755	-10.5	3.01	-7.5	8	PASS
	159	5795	-10.4	3.01	-7.4	8	PASS
1	151	5755	-9.3	3.01	-6.3	8	PASS
	159	5795	-9.2	3.01	-6.2	8	PASS

FOR CHAIN 1: CH 159



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
FOR CONDUCTED MEASUREMENT				
R&S SPECTRUM ANALYZER	FSP40	100039	Jan. 11, 2011	Jan. 10, 2012
FOR RADIATED MEASUREMENT				
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Aug. 02, 2011	Aug. 01, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP 40	100041	Jul. 21, 2011	Jul. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 13, 2011	Apr. 12, 2012
HORN Antenna SCHWARZBECK	9120D	209	Aug. 25, 2011	Aug. 24, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8447D	2944A10633	Nov. 02, 2010	Nov. 01, 2011
Preamplifier Agilent	8449B	3008A01964	Nov. 02, 2010	Nov. 01, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295014/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	Aug. 19, 2011	Aug. 18, 2012
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Nov. 03, 2010	Nov. 02, 2011

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

FOR CONDUCTED MEASUREMENT

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 300kMHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW =100kHz, VBW = 300kHz; Average RBW = 1MHz, VBW = 10Hz) are attached on the following pages.

FOR RADIATED MEASUREMENT

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.

f. 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.

5.6.4 DEVIATION FROM TEST STANDARD

No deviation.

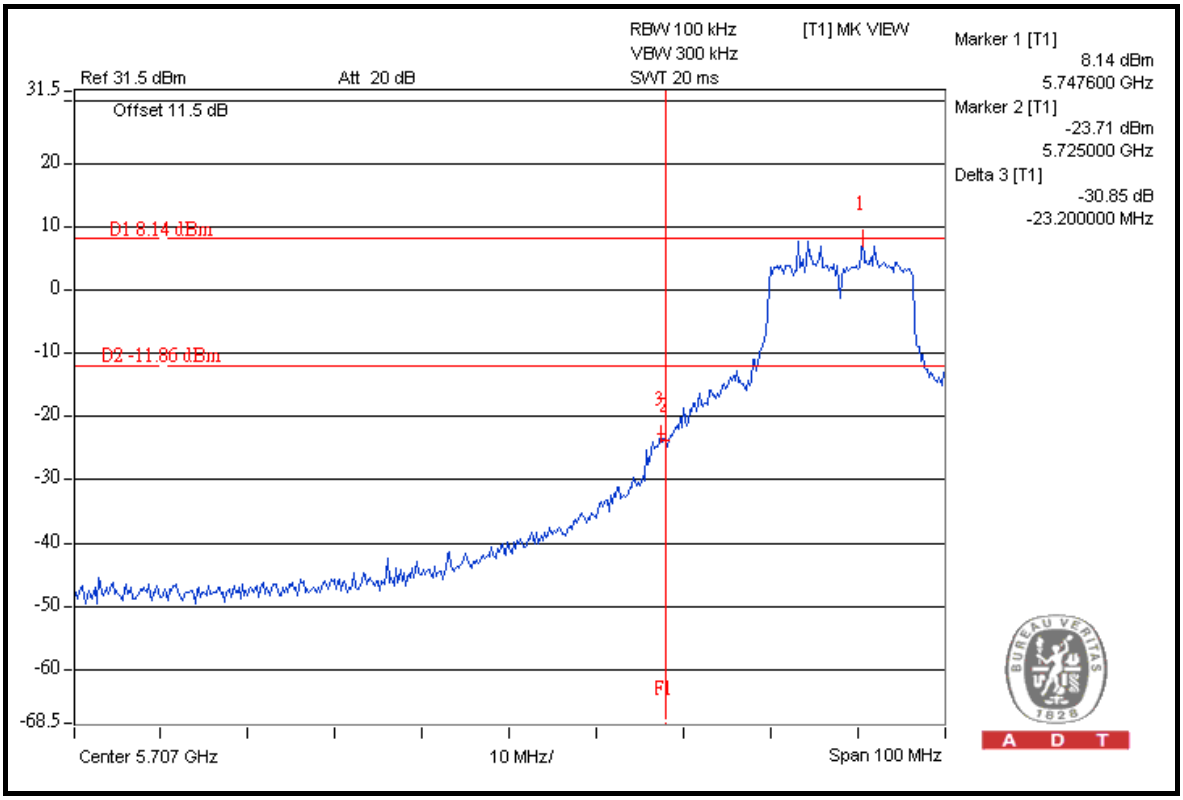
5.6.5 EUT OPERATING CONDITION

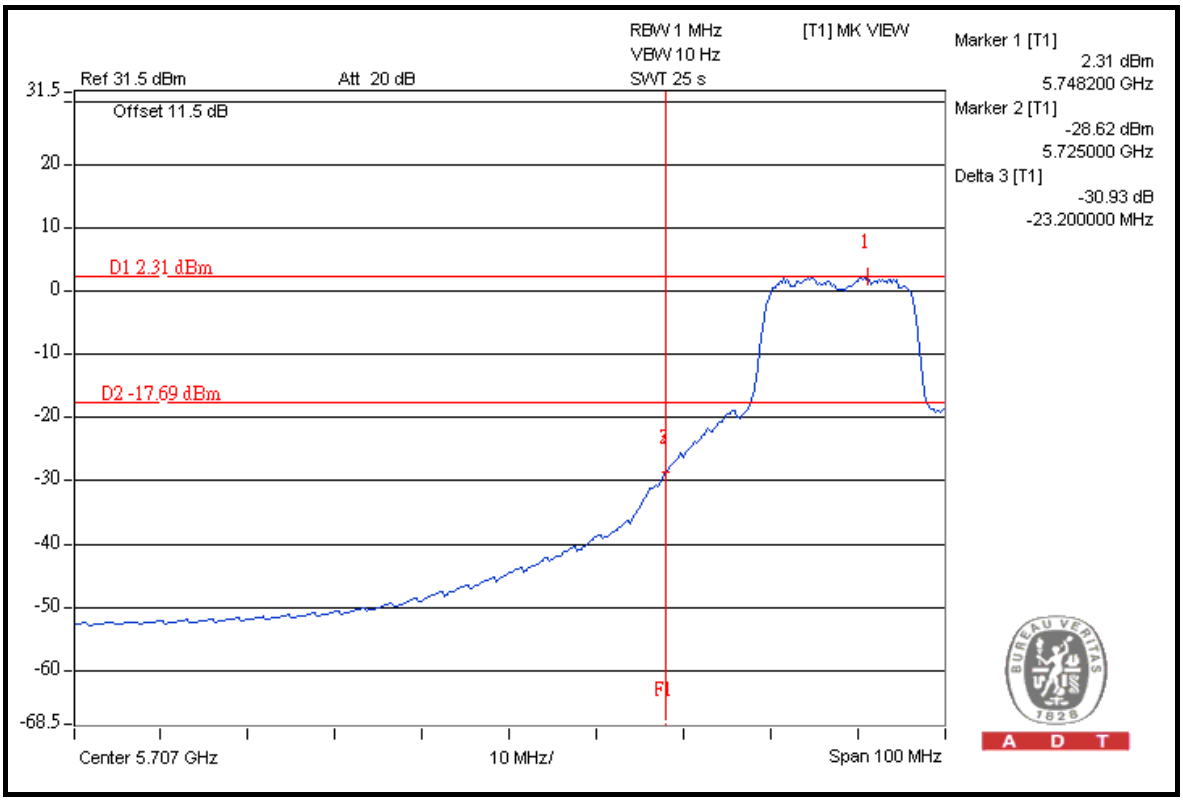
Same as Item 5.3.6.

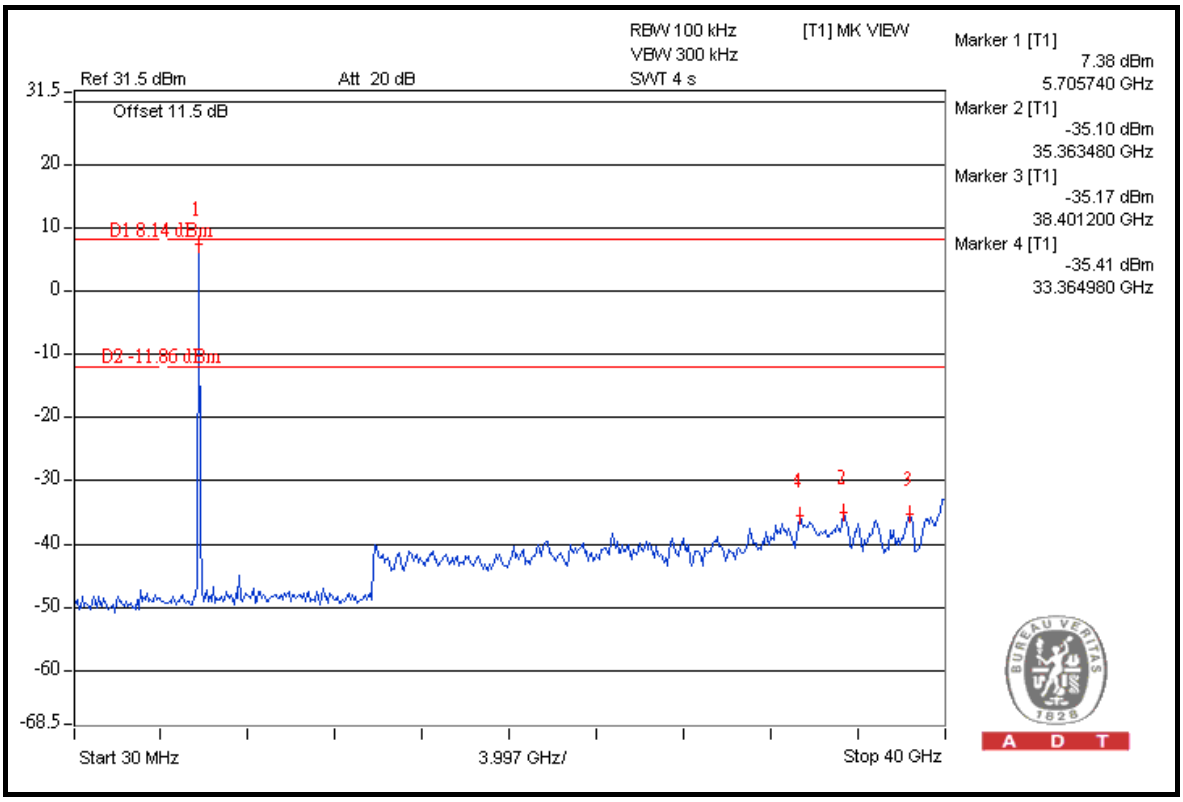
5.6.6 TEST RESULTS

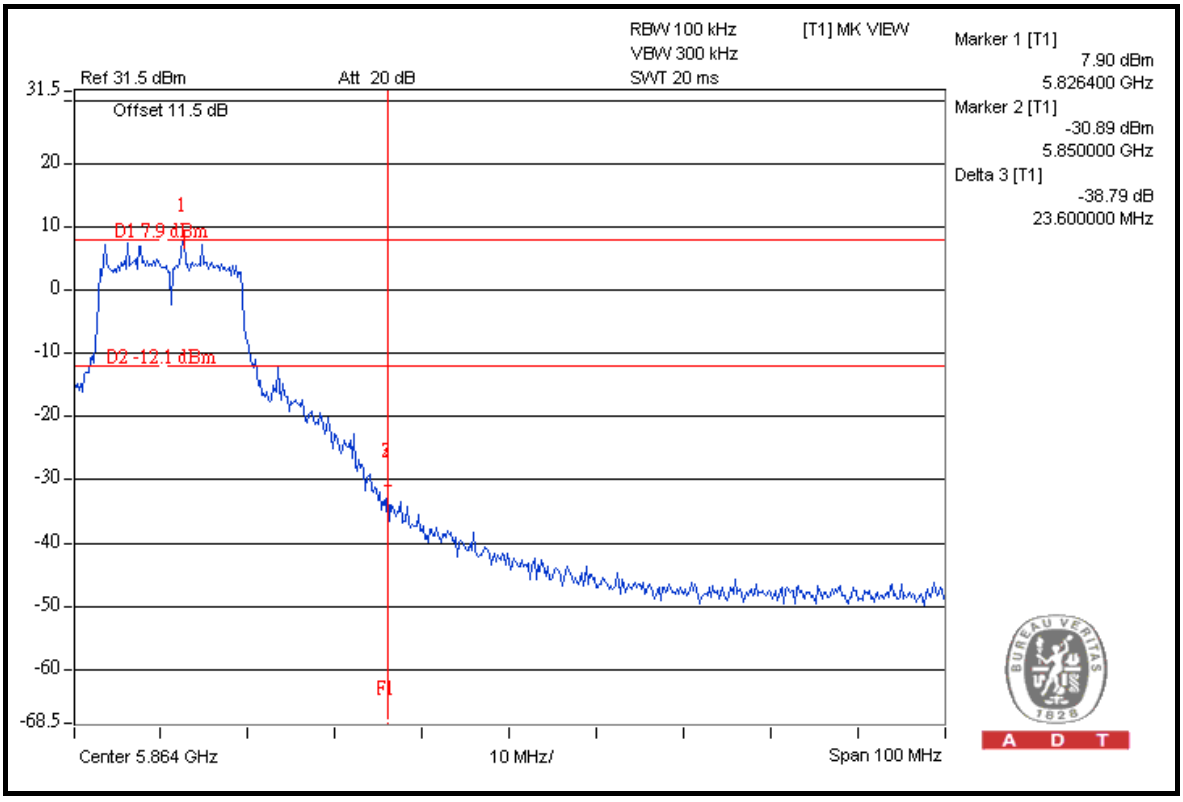
The spectrum plots are attached on the following pages. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

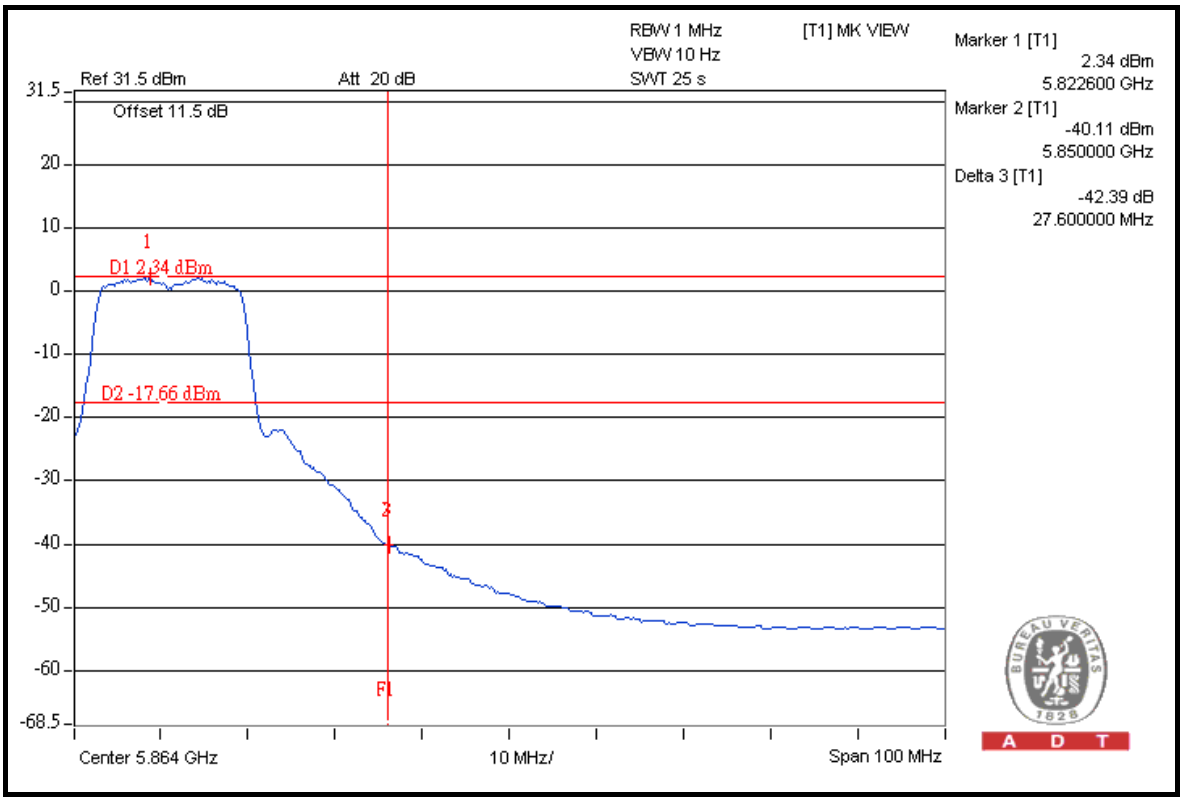
802.11a

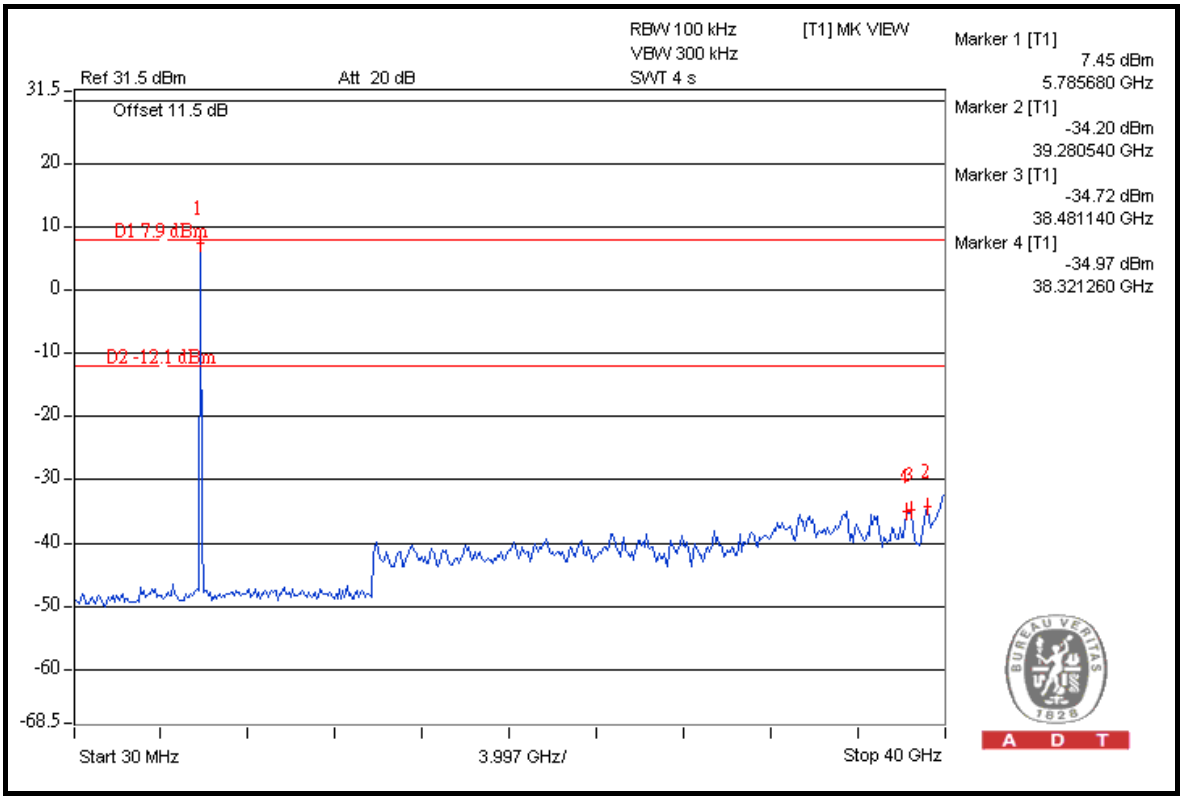

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
8.14 dBm
5.747600 GHz
Marker 2 [T1]
-23.71 dBm
5.725000 GHz
Delta 3 [T1]
-30.85 dB
-23.200000 MHz
D1 8.14 dBm
D2 -11.86 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.707 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
2.31 dBm
5.748200 GHz
Marker 2 [T1]
-28.62 dBm
5.725000 GHz
Delta 3 [T1]
-30.93 dB
-23.200000 MHz
D1 2.31 dBm
D2 -17.69 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.707 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 8.14 dBm
D2 -11.86 dBm
Marker 1 [T1]
7.38 dBm
5.705740 GHz
Marker 2 [T1]
-35.10 dBm
35.363480 GHz
Marker 3 [T1]
-35.17 dBm
38.401200 GHz
Marker 4 [T1]
-35.41 dBm
33.364980 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

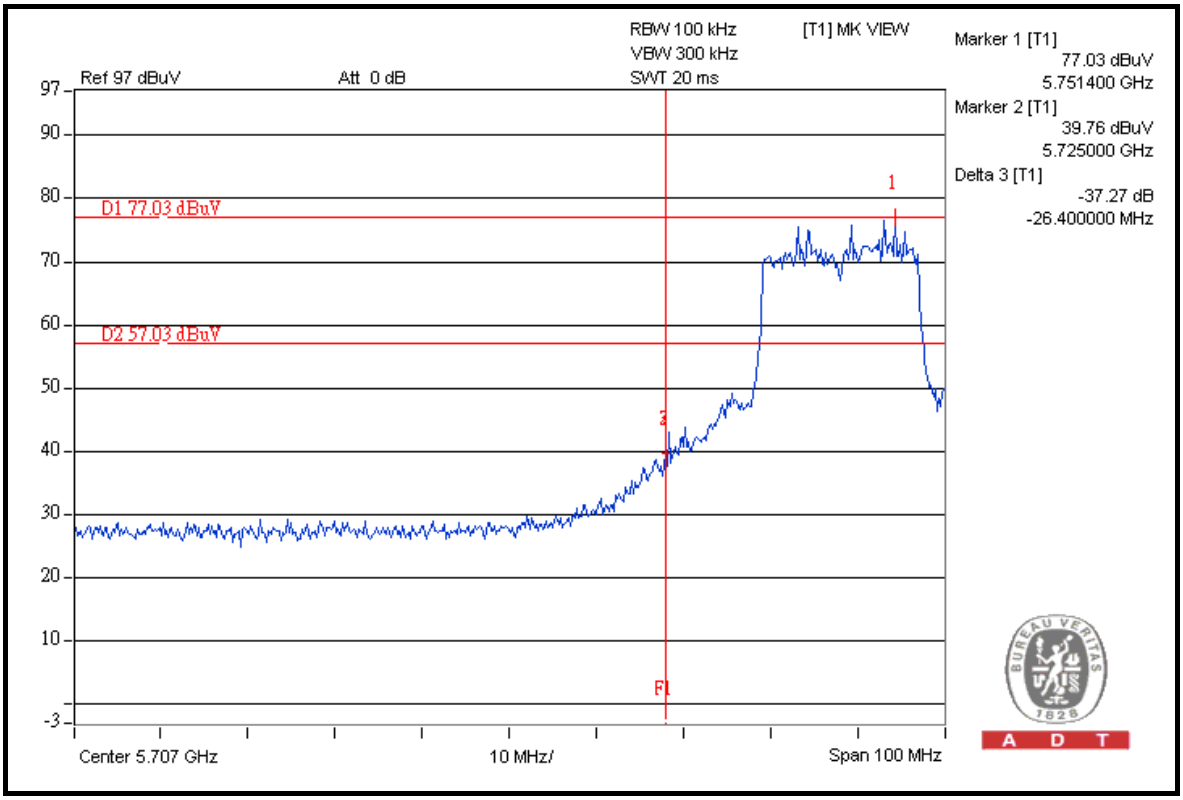

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 7.9 dBm
D2 -12.1 dBm
Marker 1 [T1]
7.90 dBm
5.826400 GHz
Marker 2 [T1]
-30.89 dBm
5.850000 GHz
Delta 3 [T1]
-38.79 dB
23.600000 MHz
Center 5.864 GHz
10 MHz/
Span 100 MHz

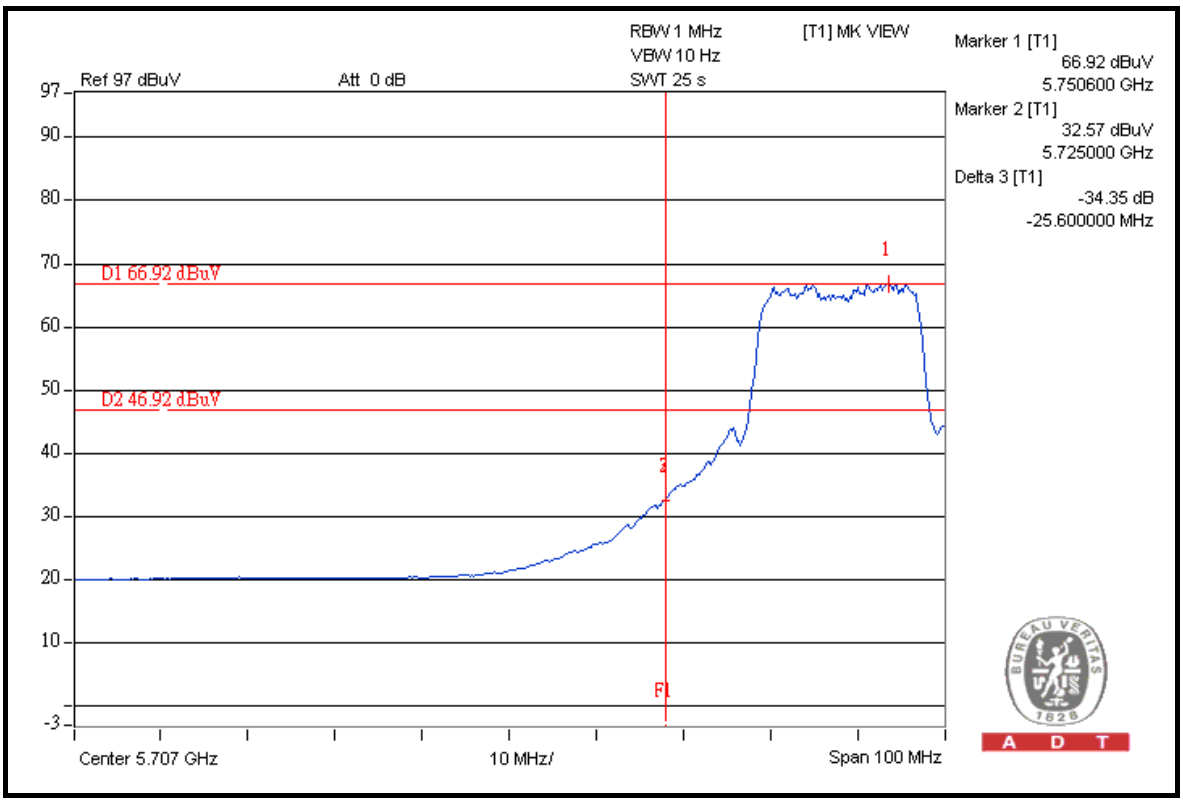

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Marker 1 [T1]
2.34 dBm
5.822600 GHz
Marker 2 [T1]
-40.11 dBm
5.850000 GHz
Delta 3 [T1]
-42.39 dB
27.600000 MHz
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
D1 2.34 dBm
D2 -17.66 dBm
Center 5.864 GHz
10 MHz/
Span 100 MHz

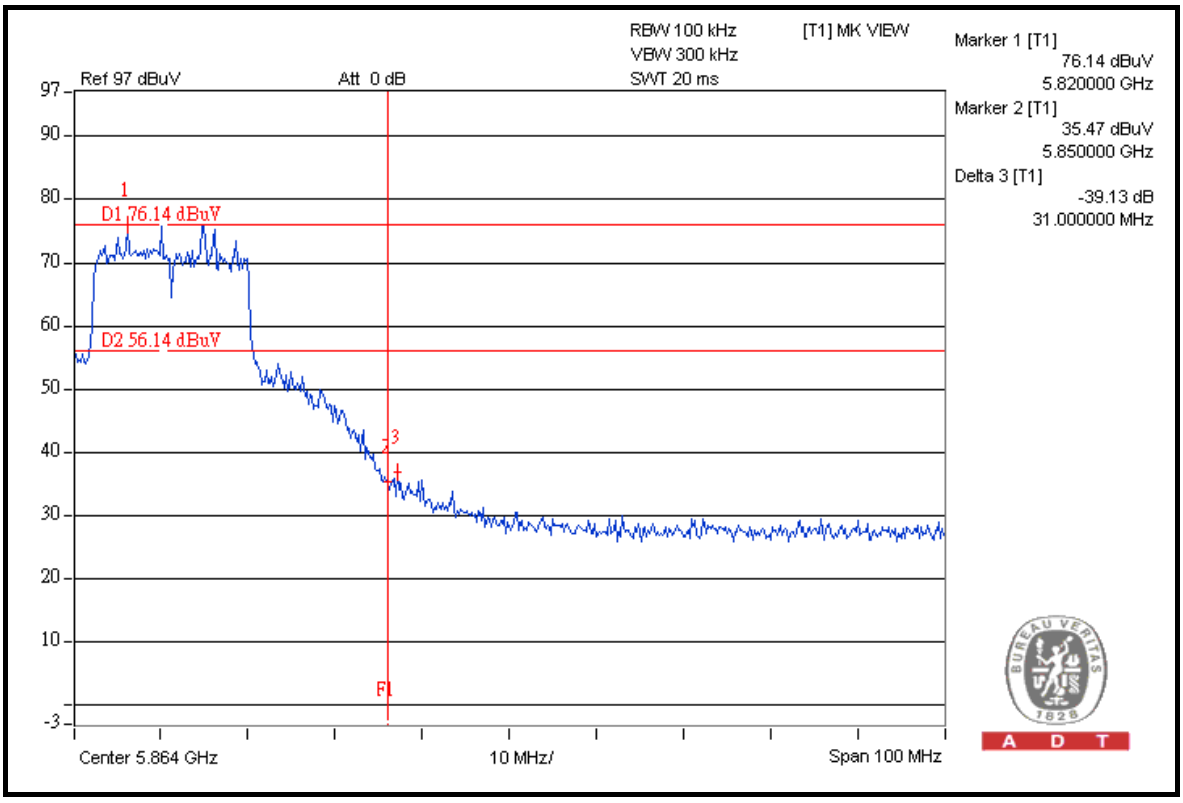

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Marker 1 [T1]
7.45 dBm
5.785680 GHz
Marker 2 [T1]
-34.20 dBm
39.280540 GHz
Marker 3 [T1]
-34.72 dBm
38.481140 GHz
Marker 4 [T1]
-34.97 dBm
38.321260 GHz
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
D1 7.9 dBm
D2 -12.1 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

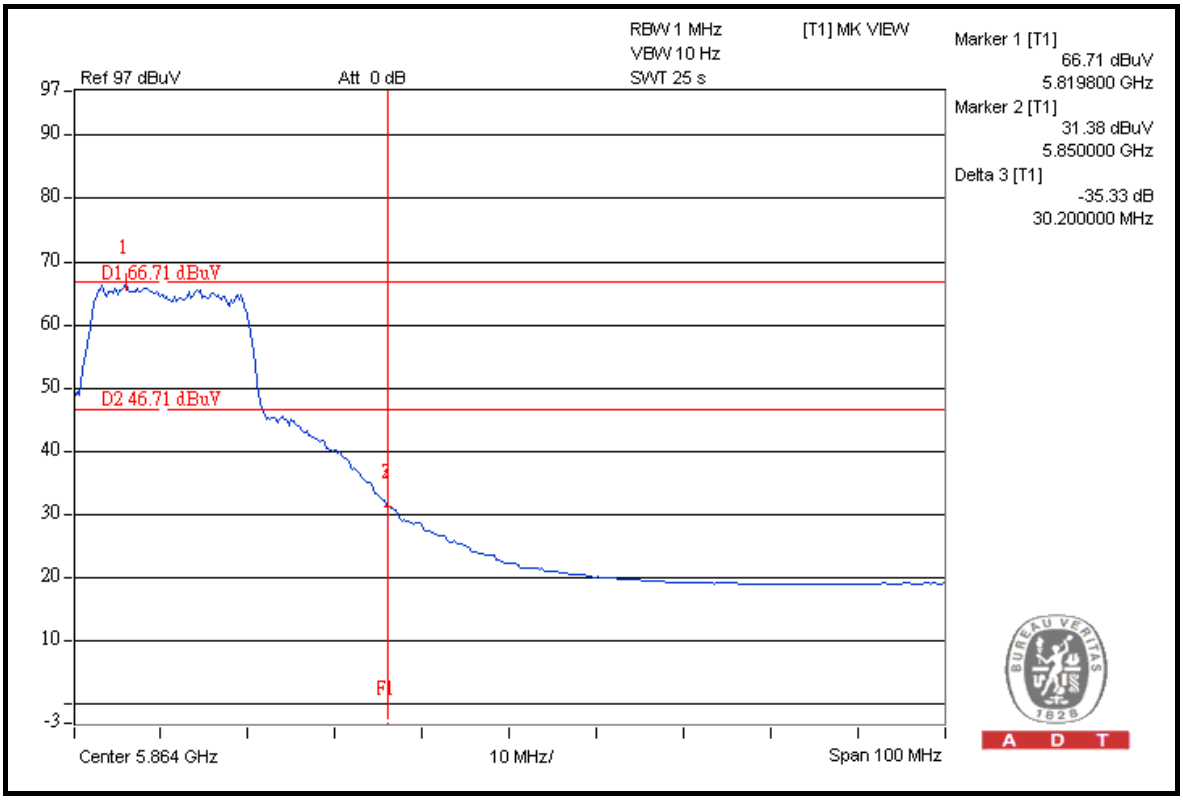
802.11n (20MHz)

FOR RADIATED MEASURED (BOTH CHAINS ON)



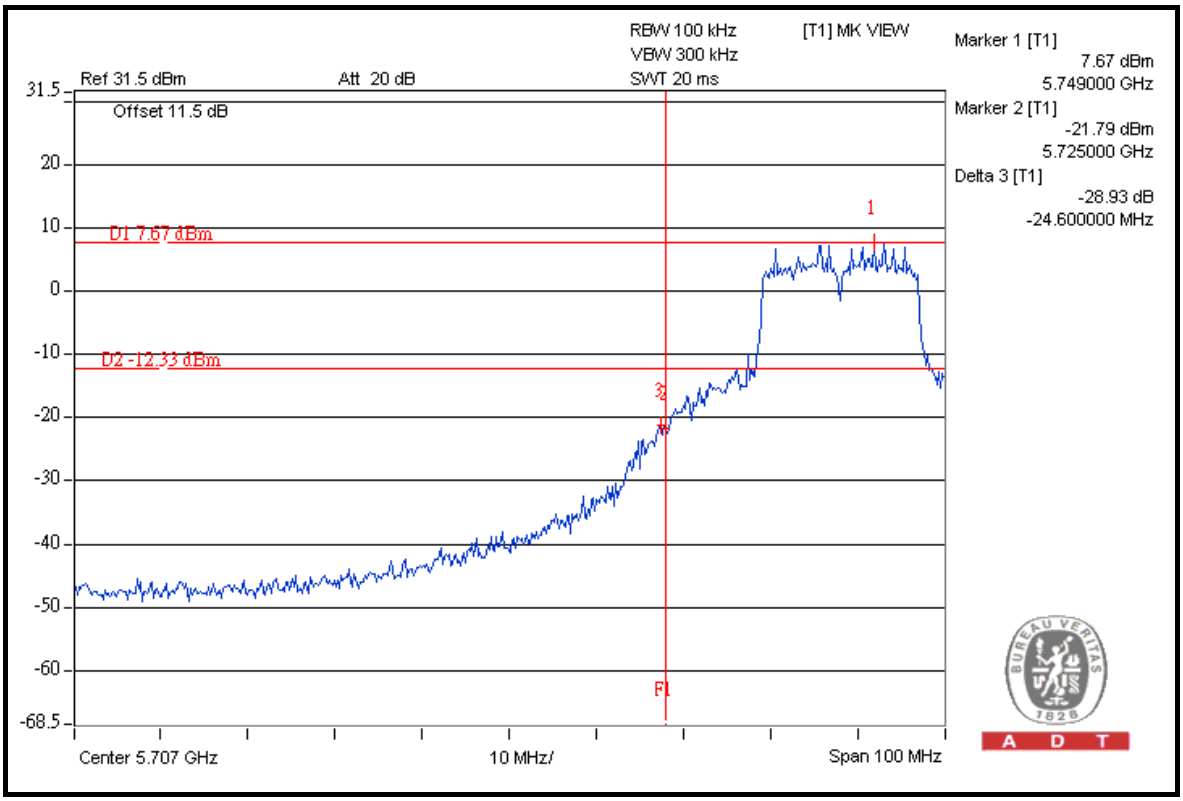


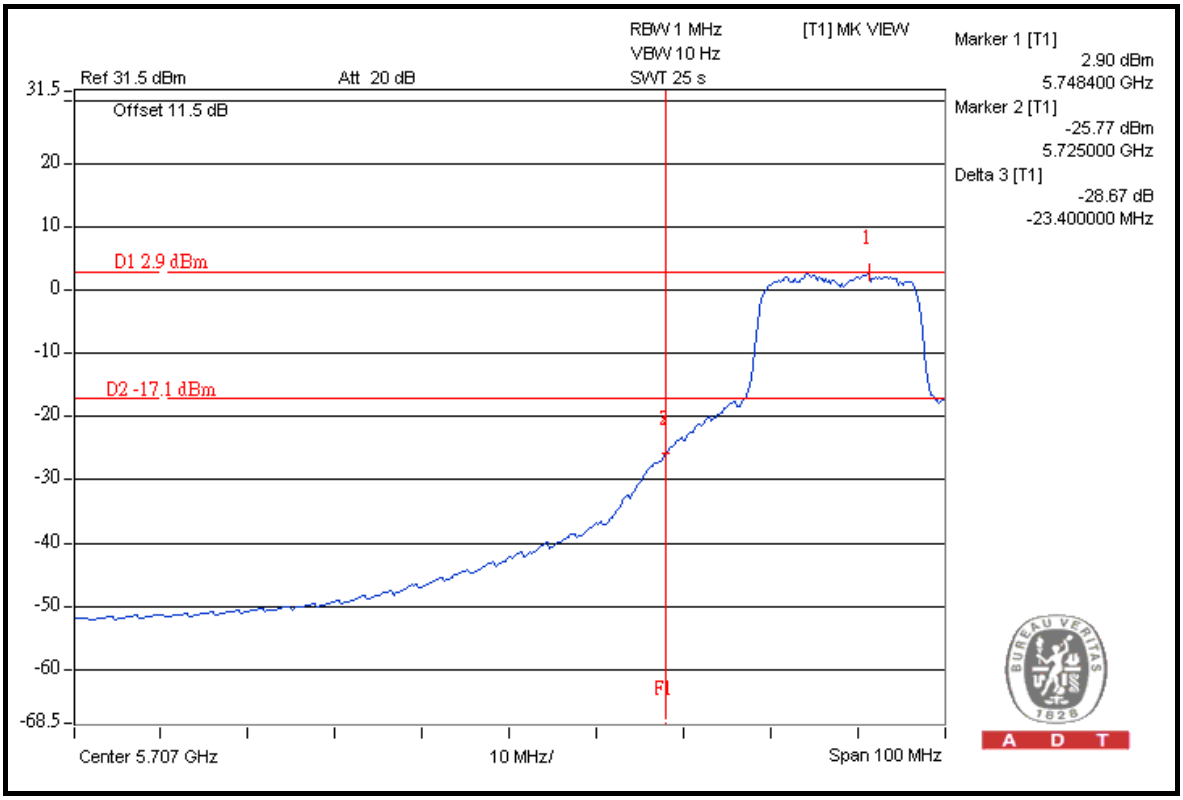

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
76.14 dBuV
5.820000 GHz
Marker 2 [T1]
35.47 dBuV
5.850000 GHz
Delta 3 [T1]
-39.13 dB
31.000000 MHz
Ref 97 dBuV
Att 0 dB
D1 76.14 dBuV
D2 56.14 dBuV
Center 5.864 GHz
10 MHz/
Span 100 MHz

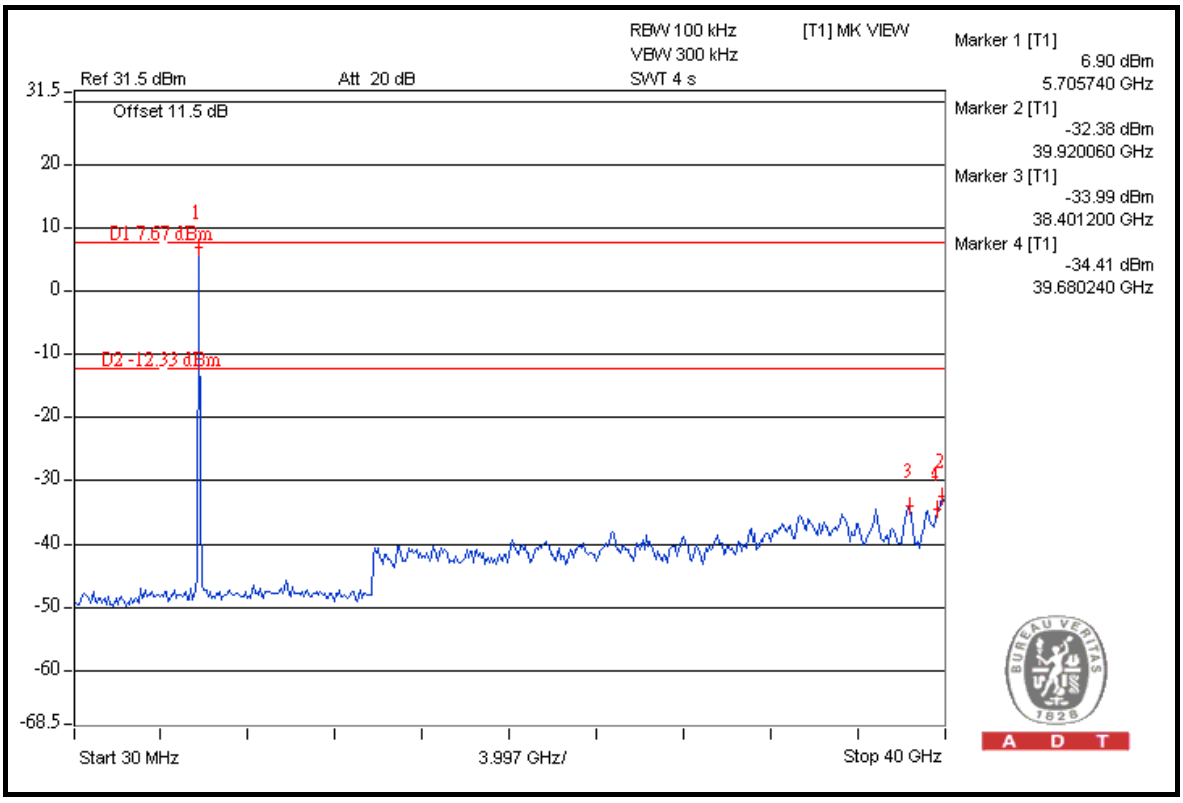

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Marker 1 [T1]
66.71 dBuV
5.819800 GHz
Marker 2 [T1]
31.38 dBuV
5.850000 GHz
Delta 3 [T1]
-35.33 dB
30.200000 MHz
Ref 97 dBuV
Att 0 dB
D1 66.71 dBuV
D2 46.71 dBuV
Center 5.864 GHz
10 MHz/
Span 100 MHz

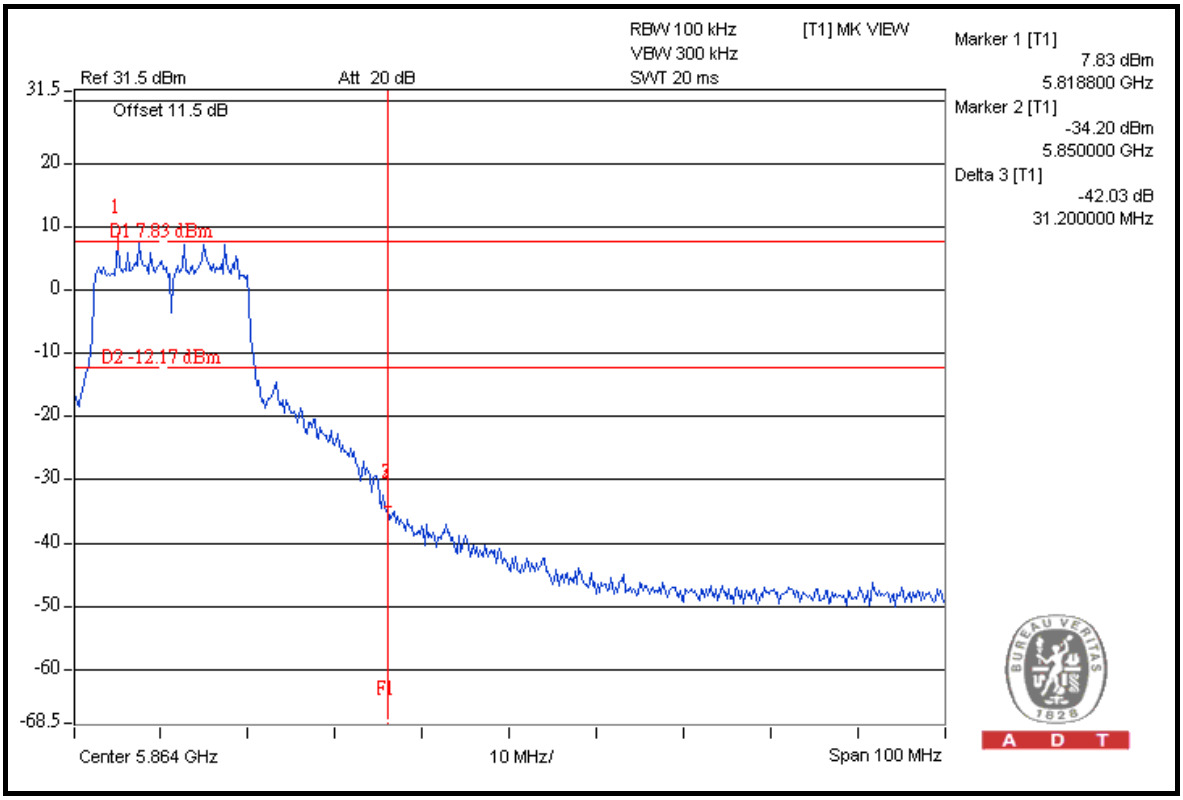
FOR CONDUCTED MEASURED

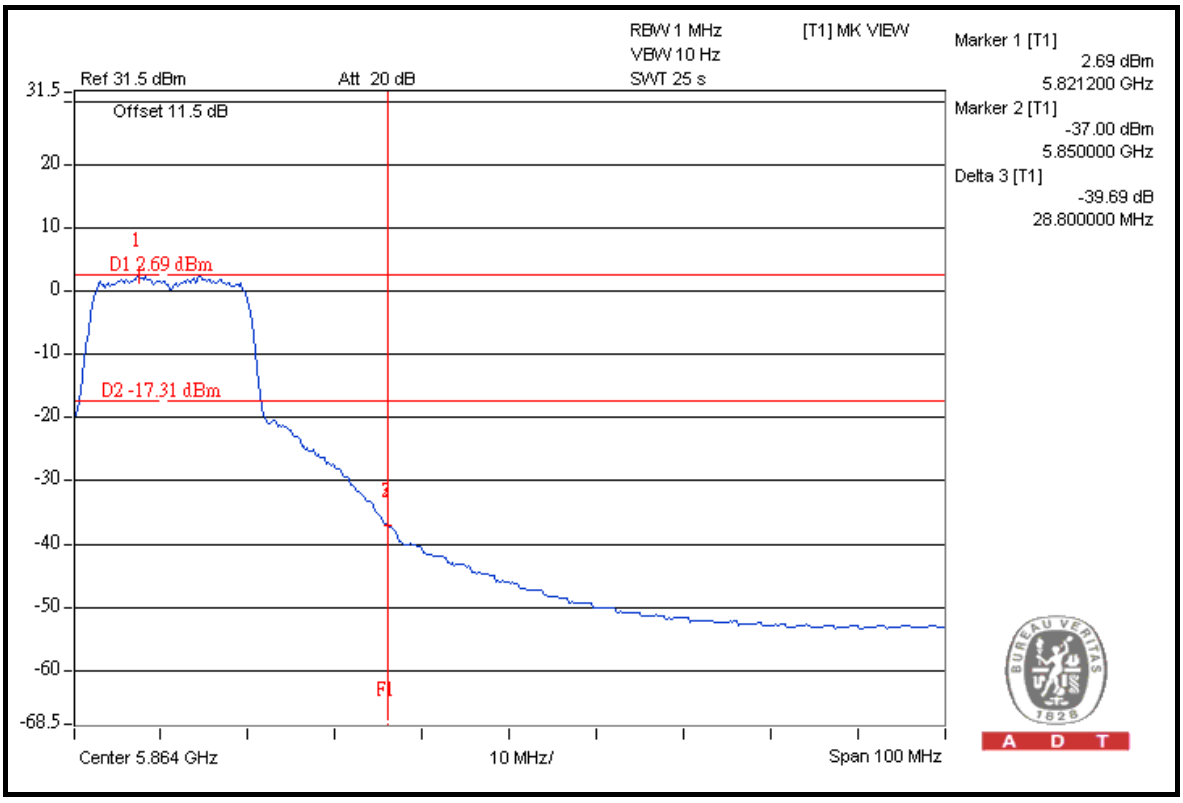
CHAIN 0

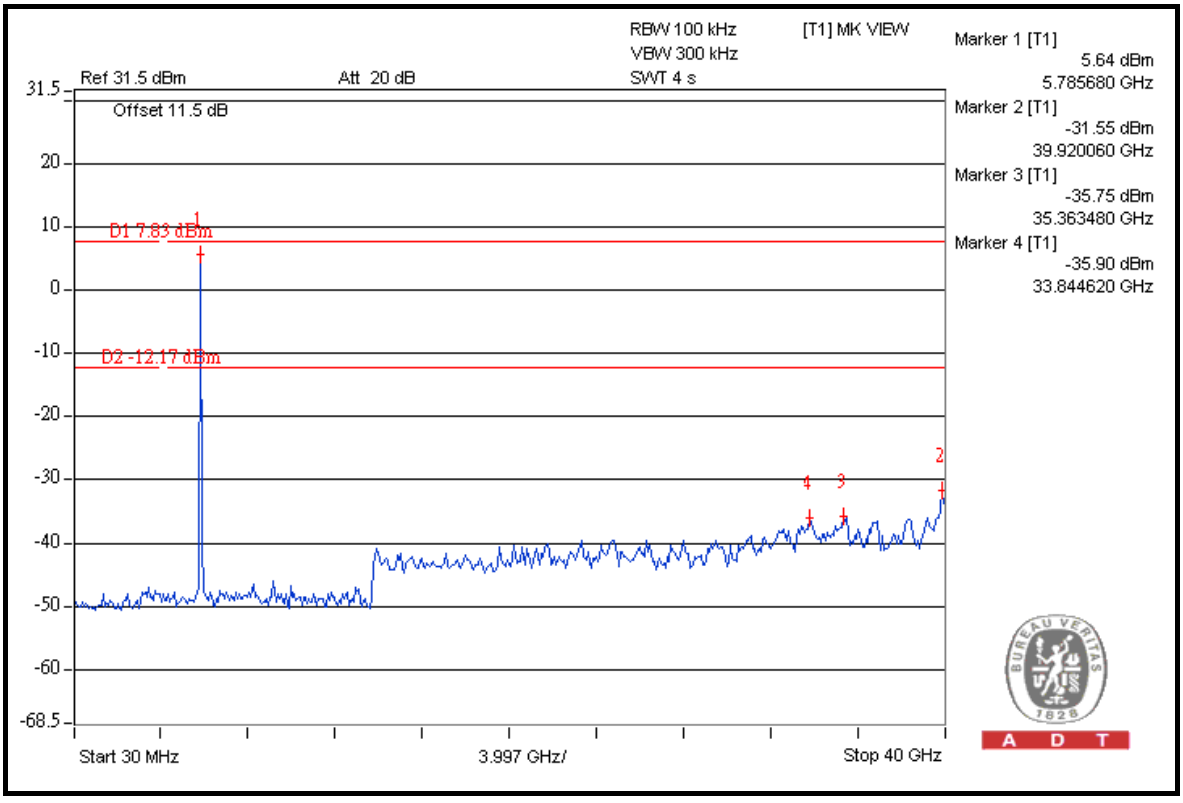




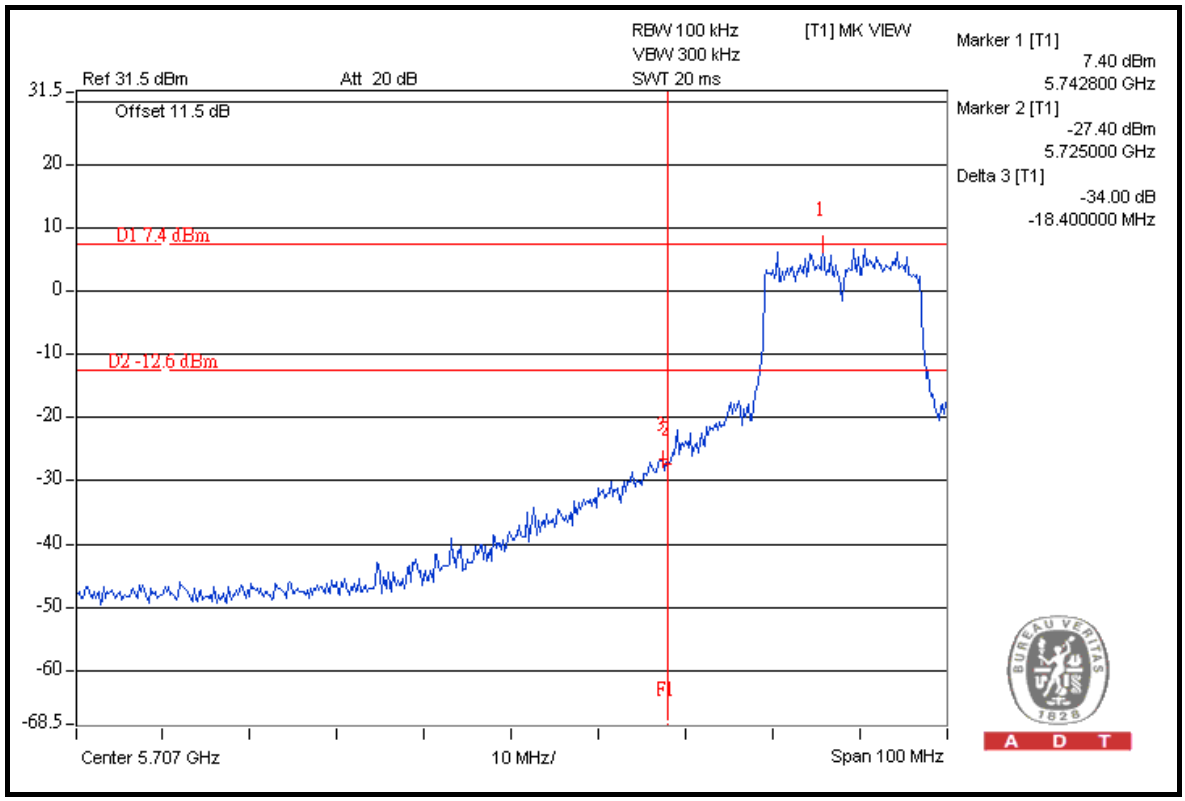

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 7.67 dBm
D2 -12.33 dBm
Marker 1 [T1]
6.90 dBm
5.705740 GHz
Marker 2 [T1]
-32.38 dBm
39.920060 GHz
Marker 3 [T1]
-33.99 dBm
38.401200 GHz
Marker 4 [T1]
-34.41 dBm
39.680240 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Start 30 MHz
3.997 GHz/
Stop 40 GHz

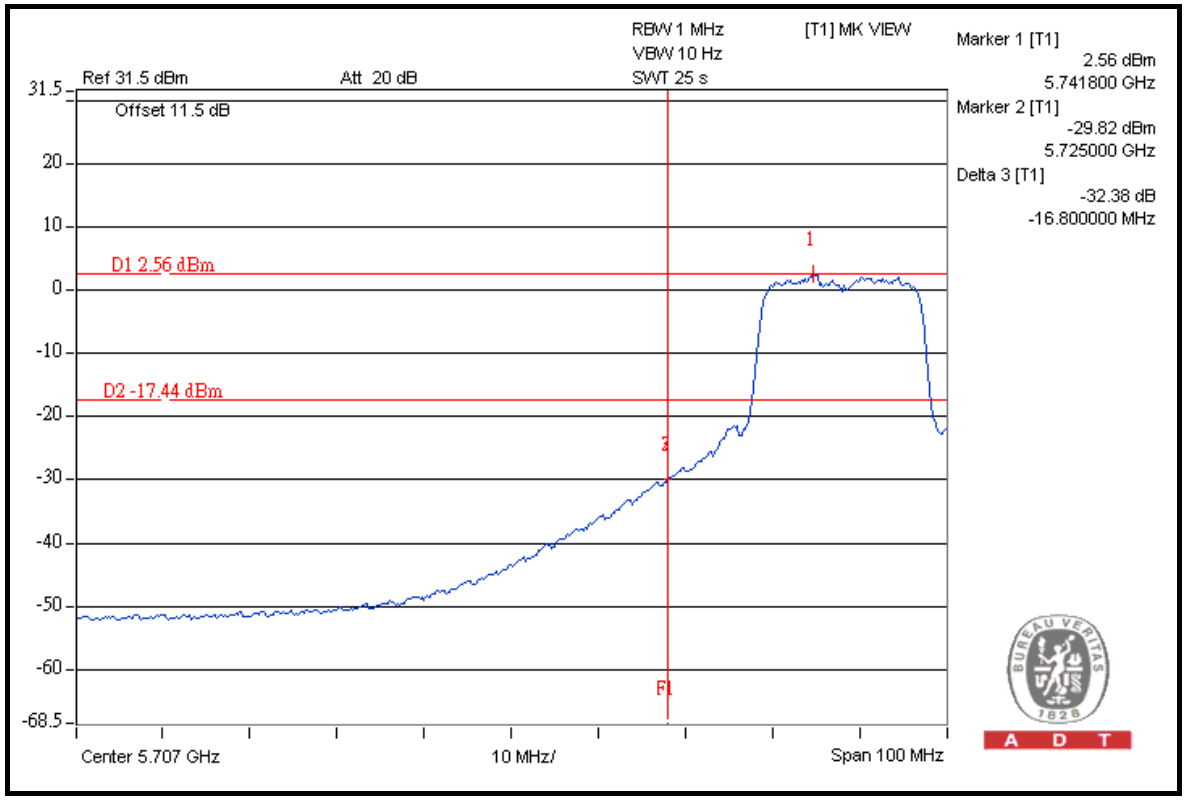

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 7.83 dBm
D2 -12.17 dBm
Marker 1 [T1]
7.83 dBm
5.818800 GHz
Marker 2 [T1]
-34.20 dBm
5.850000 GHz
Delta 3 [T1]
-42.03 dB
31.200000 MHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.864 GHz
10 MHz/
Span 100 MHz

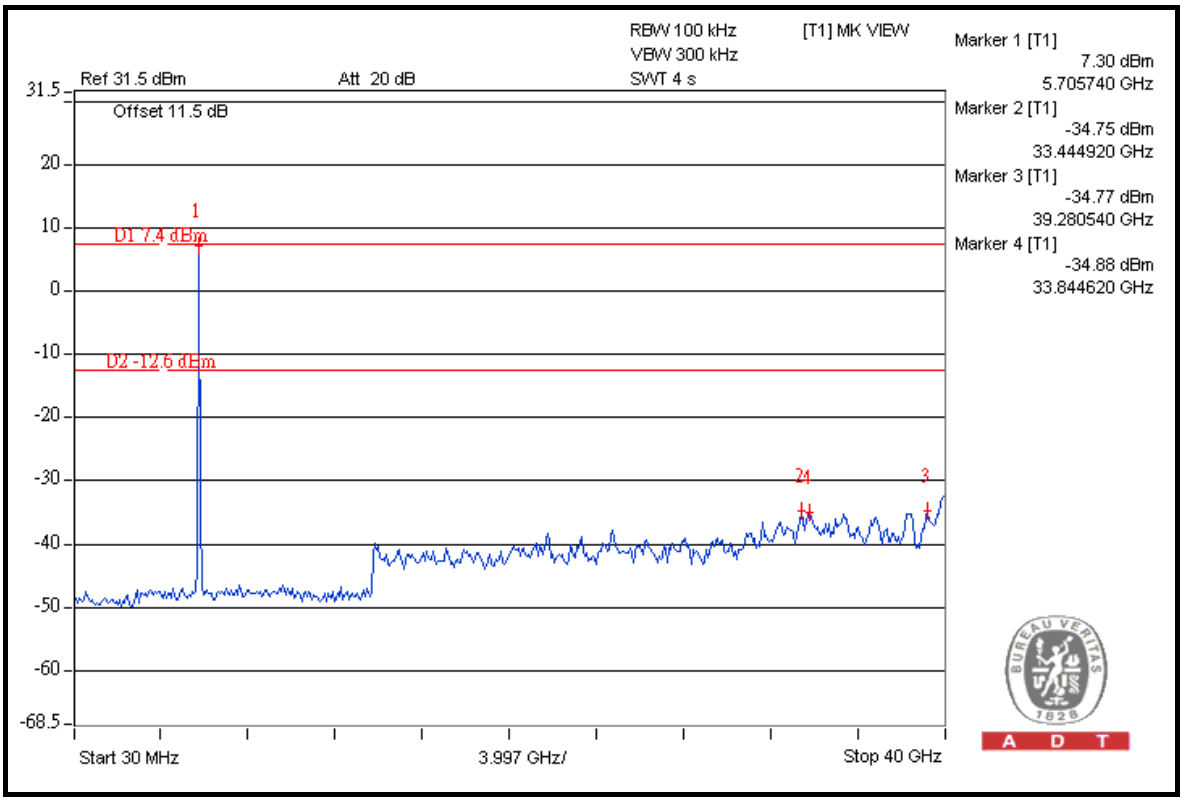

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 2.69 dBm
D2 -17.31 dBm
Marker 1 [T1]
2.69 dBm
5.821200 GHz
Marker 2 [T1]
-37.00 dBm
5.850000 GHz
Delta 3 [T1]
-39.69 dB
28.800000 MHz
Center 5.864 GHz
10 MHz/
Span 100 MHz

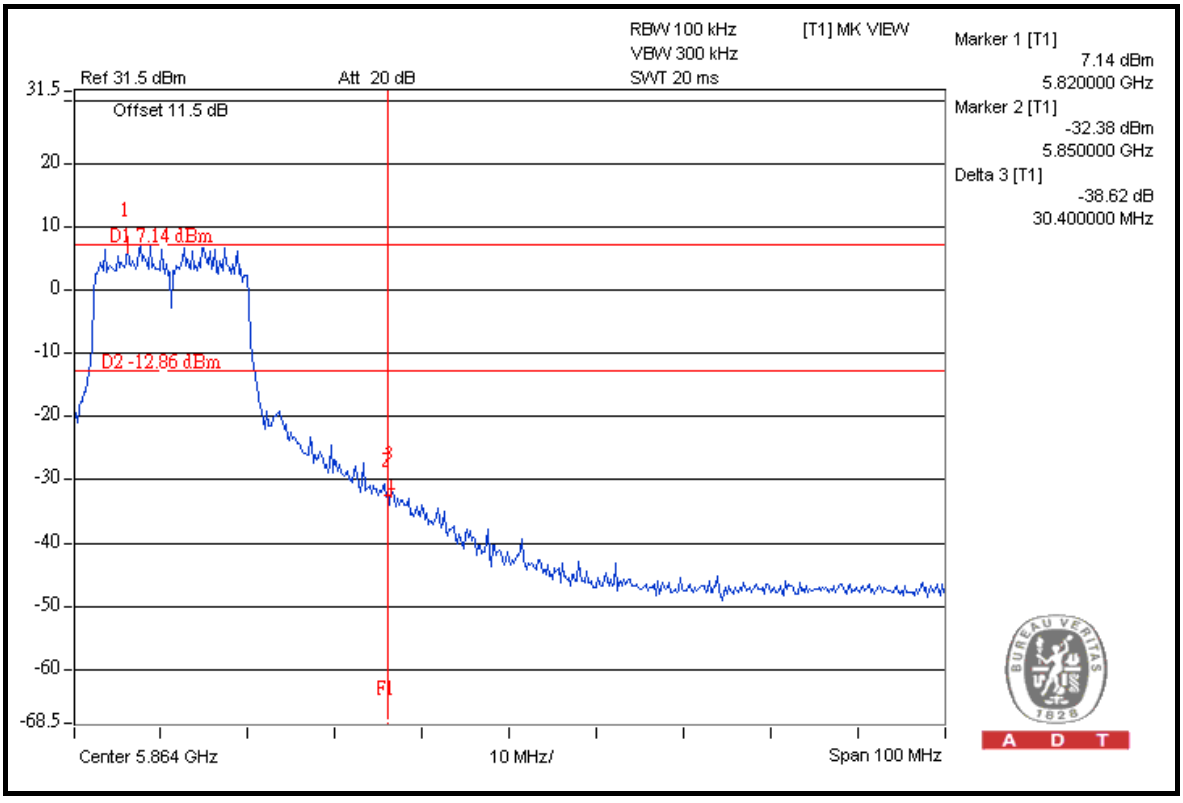

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 7.83 dBm
D2 -12.17 dBm
Marker 1 [T1]
5.64 dBm
5.785680 GHz
Marker 2 [T1]
-31.55 dBm
39.920060 GHz
Marker 3 [T1]
-35.75 dBm
35.363480 GHz
Marker 4 [T1]
-35.90 dBm
33.844620 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

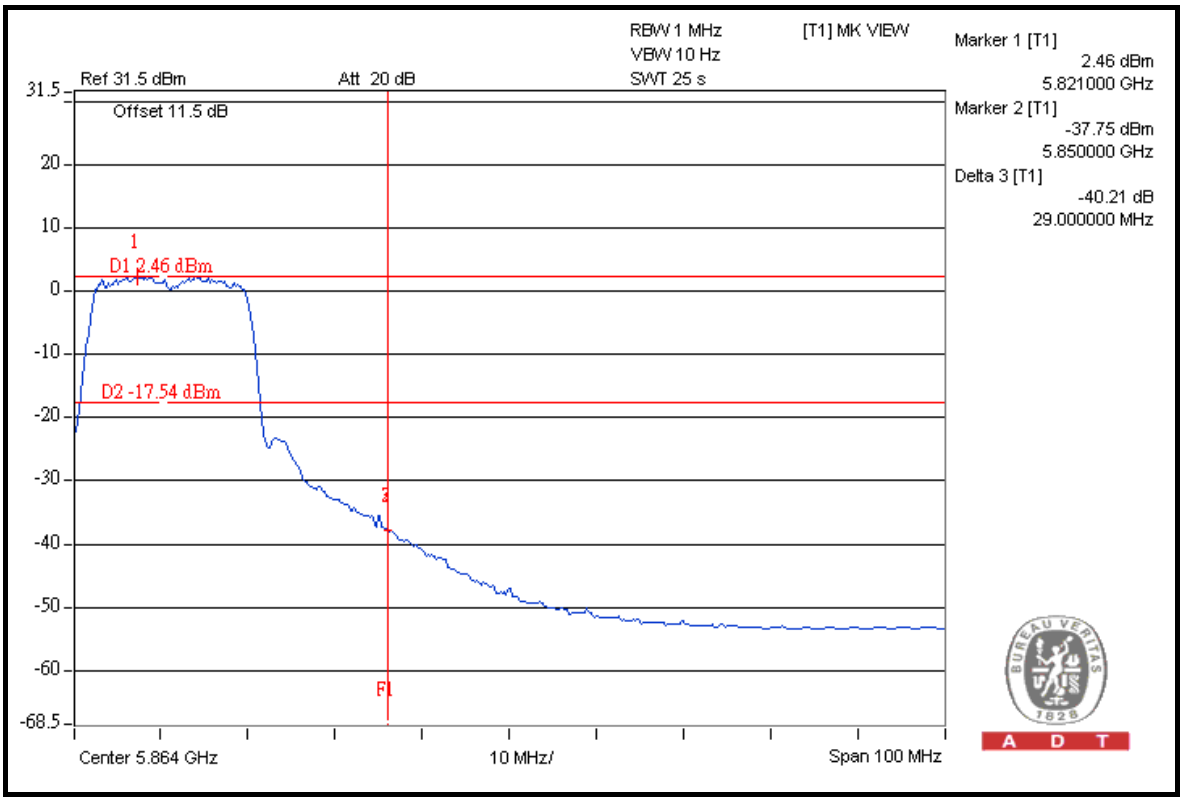
CHAIN 1

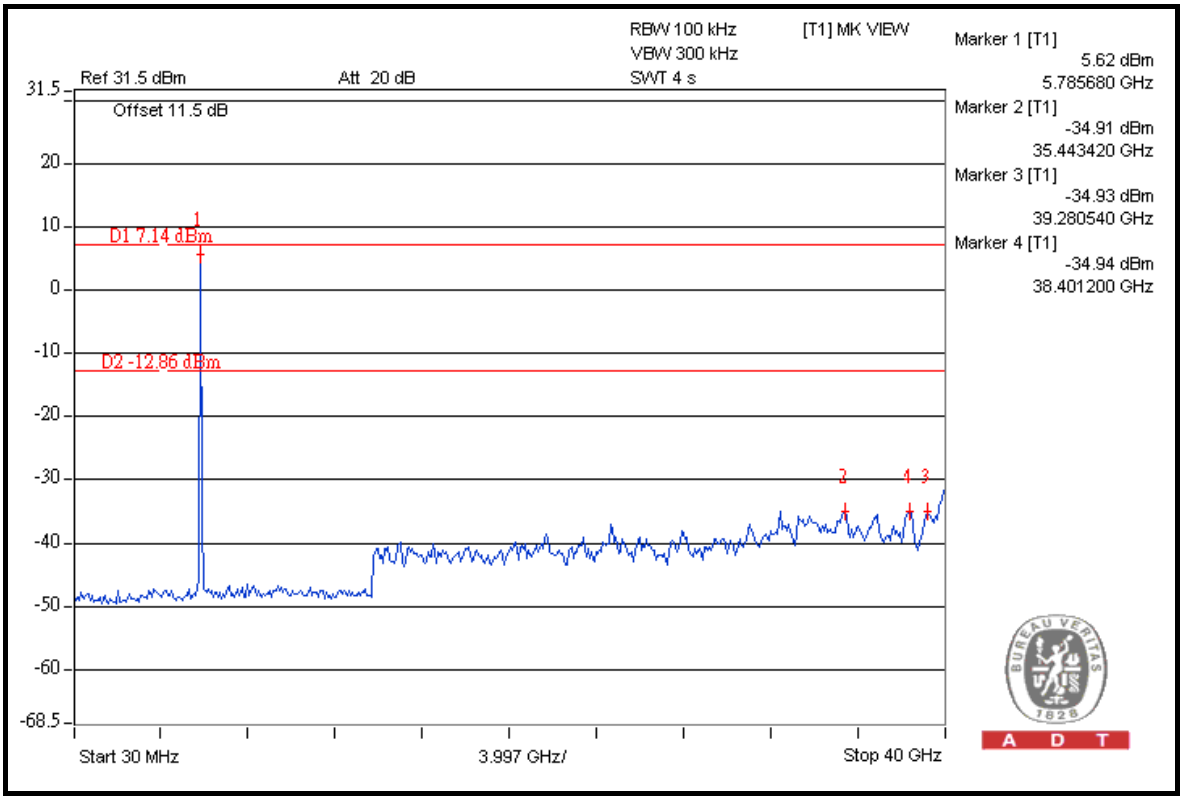

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
7.40 dBm
5.742800 GHz
Marker 2 [T1]
-27.40 dBm
5.725000 GHz
Delta 3 [T1]
-34.00 dB
-18.400000 MHz
D1 7.4 dBm
D2 -12.6 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.707 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
2.56 dBm
5.741800 GHz
Marker 2 [T1]
-29.82 dBm
5.725000 GHz
Delta 3 [T1]
-32.38 dB
-16.800000 MHz
D1 2.56 dBm
D2 -17.44 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.707 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 7.4 dBm
D2 -12.6 dBm
Marker 1 [T1]
7.30 dBm
5.705740 GHz
Marker 2 [T1]
-34.75 dBm
33.444920 GHz
Marker 3 [T1]
-34.77 dBm
39.280540 GHz
Marker 4 [T1]
-34.88 dBm
33.844620 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

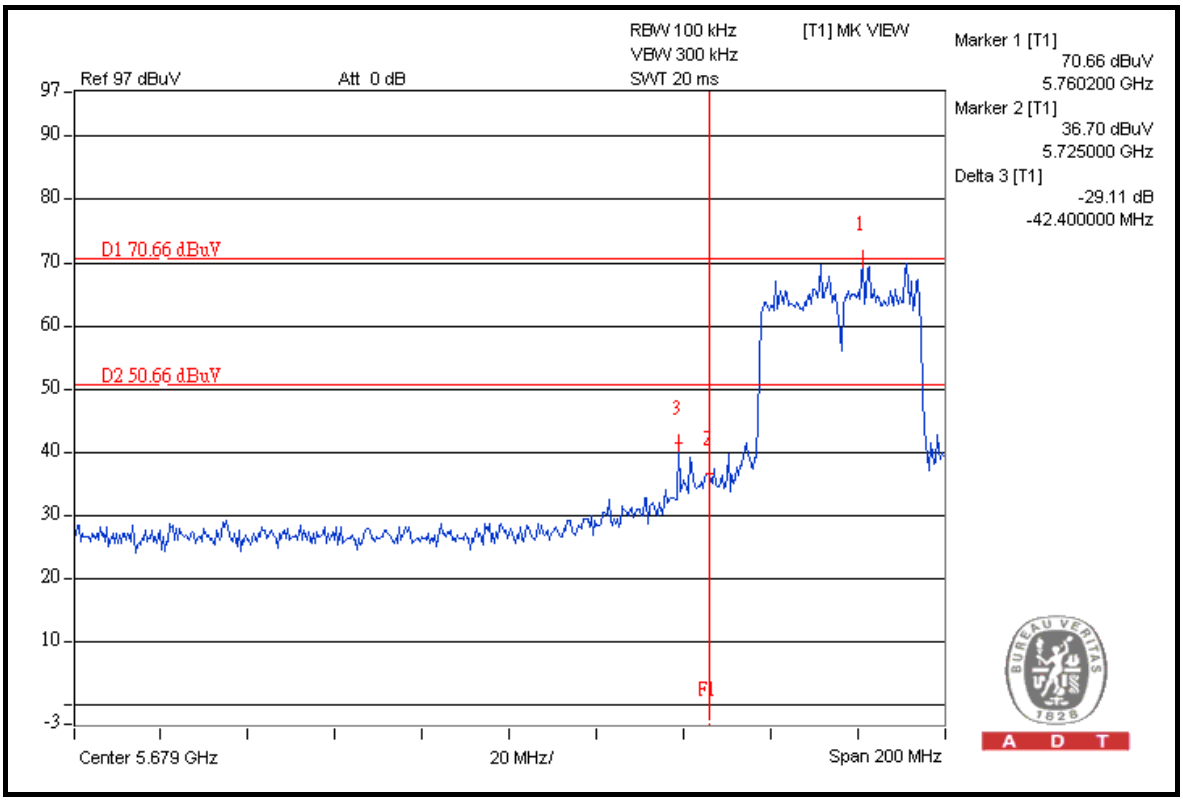

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 7.14 dBm
D2 -12.86 dBm
Marker 1 [T1]
7.14 dBm
5.820000 GHz
Marker 2 [T1]
-32.38 dBm
5.850000 GHz
Delta 3 [T1]
-38.62 dB
30.400000 MHz
Center 5.864 GHz
10 MHz/
Span 100 MHz

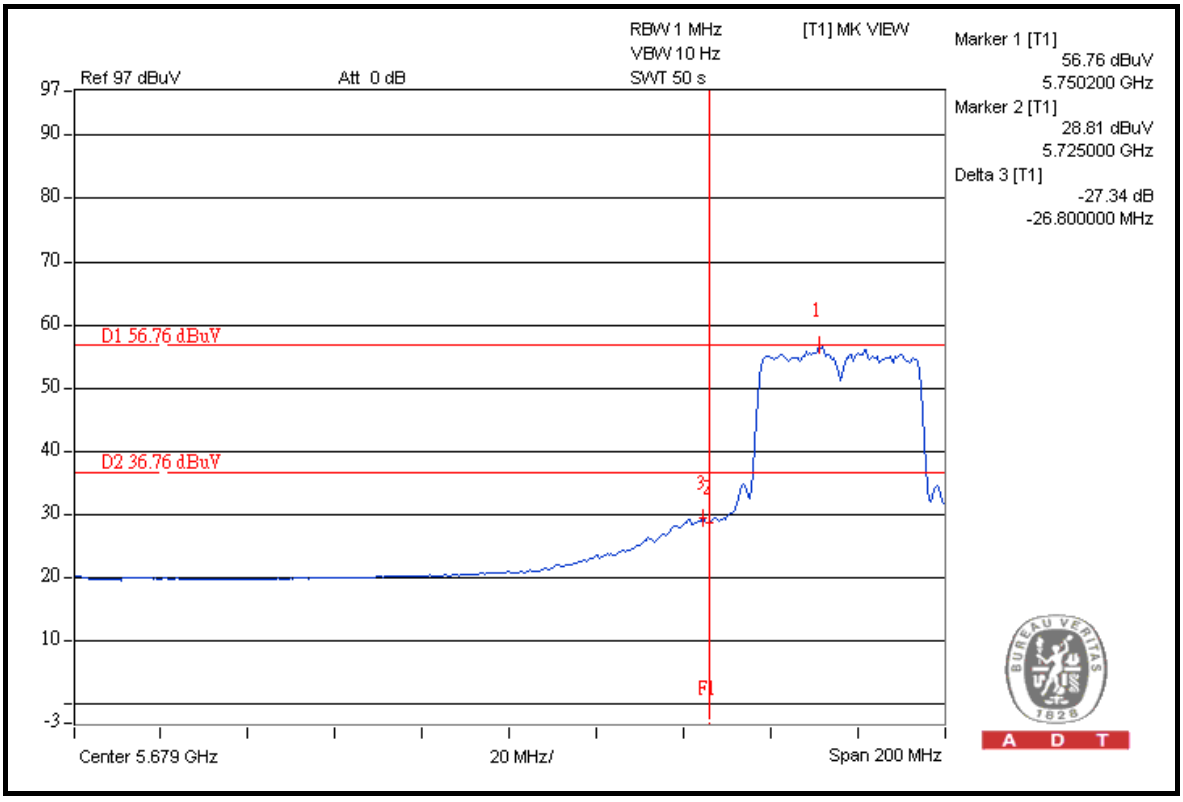

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 2.46 dBm
D2 -17.54 dBm
Marker 1 [T1]
2.46 dBm
5.821000 GHz
Marker 2 [T1]
-37.75 dBm
5.850000 GHz
Delta 3 [T1]
-40.21 dB
29.000000 MHz
Center 5.864 GHz
10 MHz/
Span 100 MHz

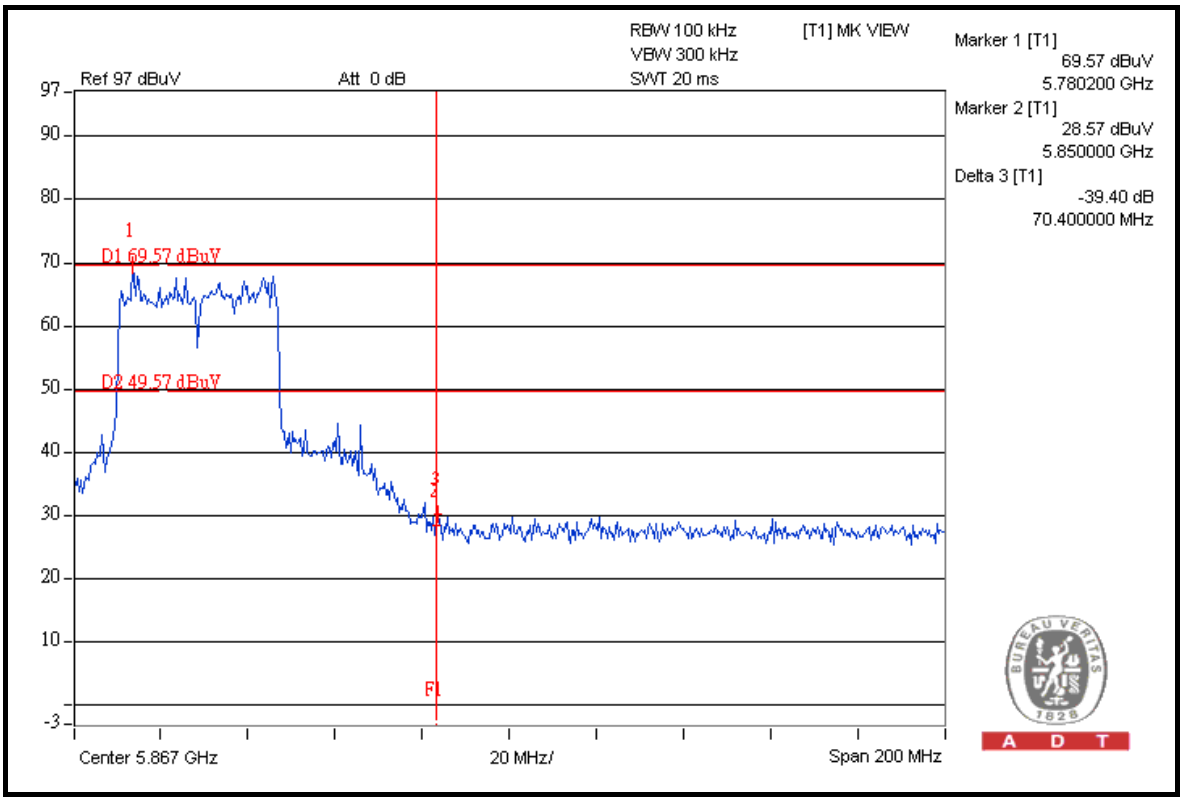

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 7.14 dBm
D2 -12.86 dBm
Marker 1 [T1]
5.62 dBm
5.785680 GHz
Marker 2 [T1]
-34.91 dBm
35.443420 GHz
Marker 3 [T1]
-34.93 dBm
39.280540 GHz
Marker 4 [T1]
-34.94 dBm
38.401200 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

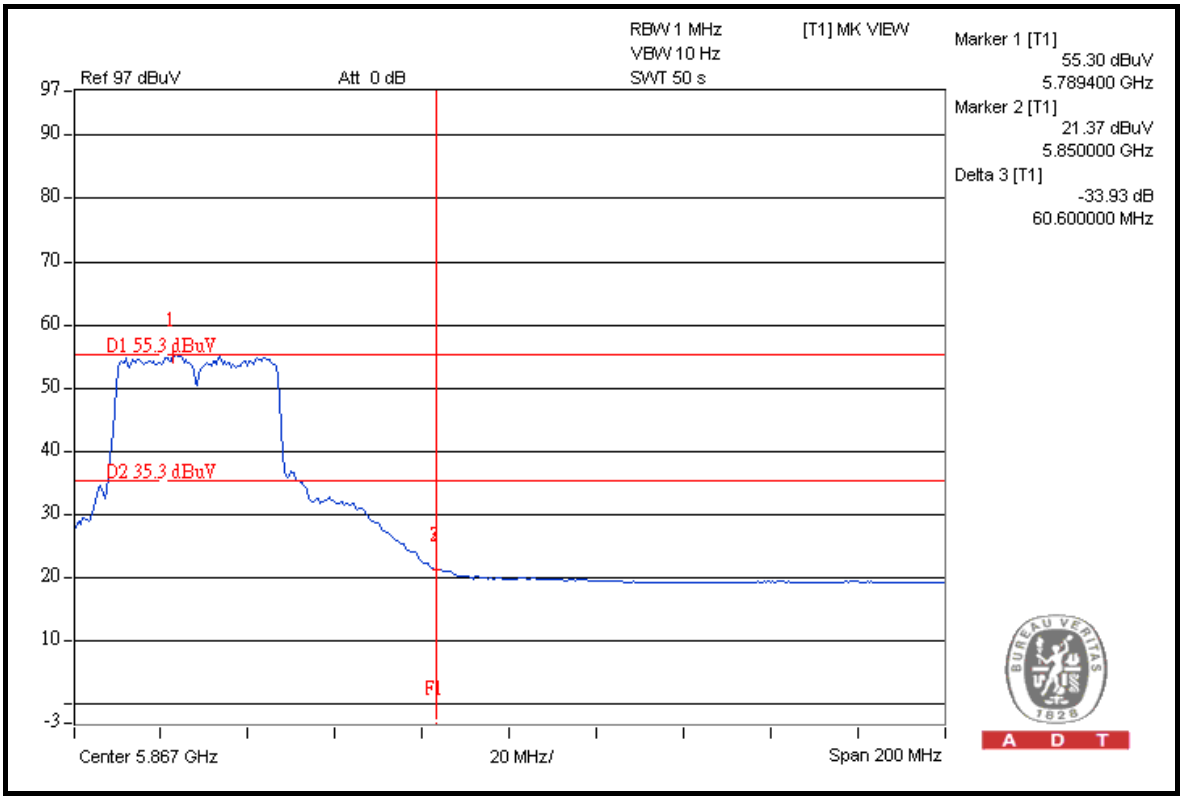
802.11n (40MHz)

FOR RADIATED MEASURED (BOTH CHAINS ON)



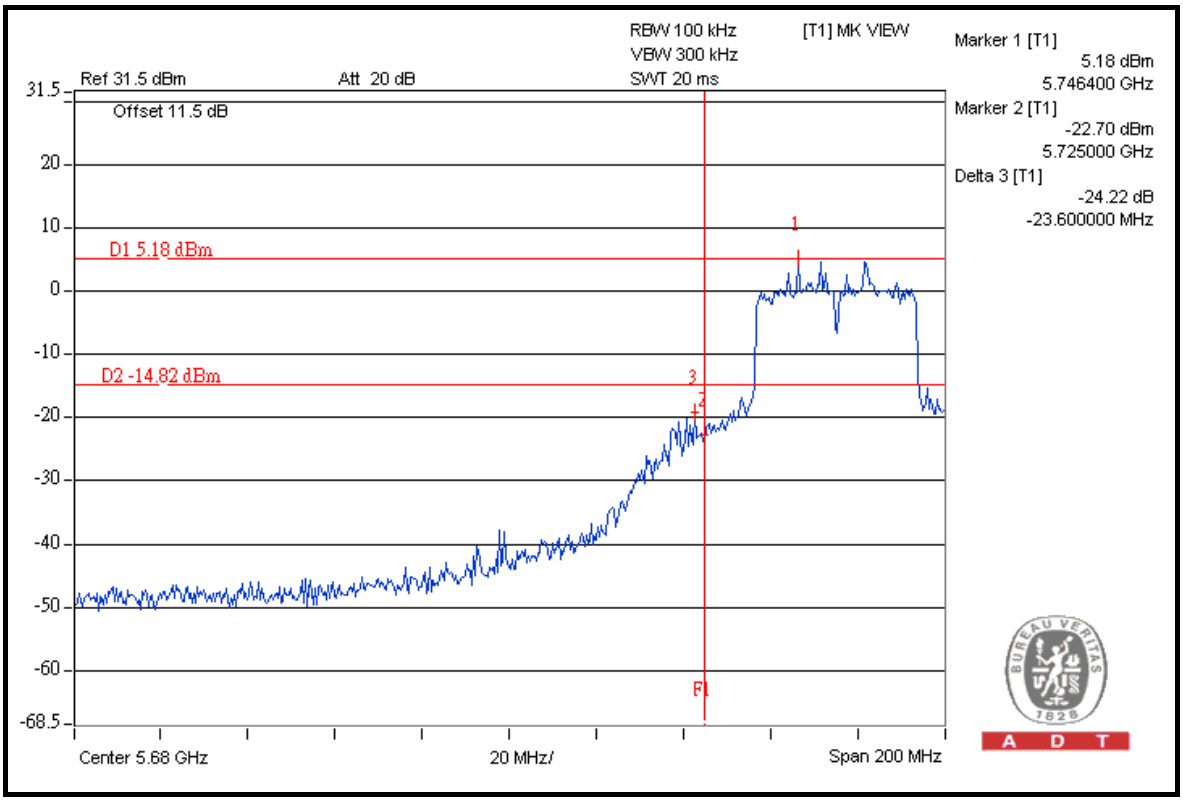


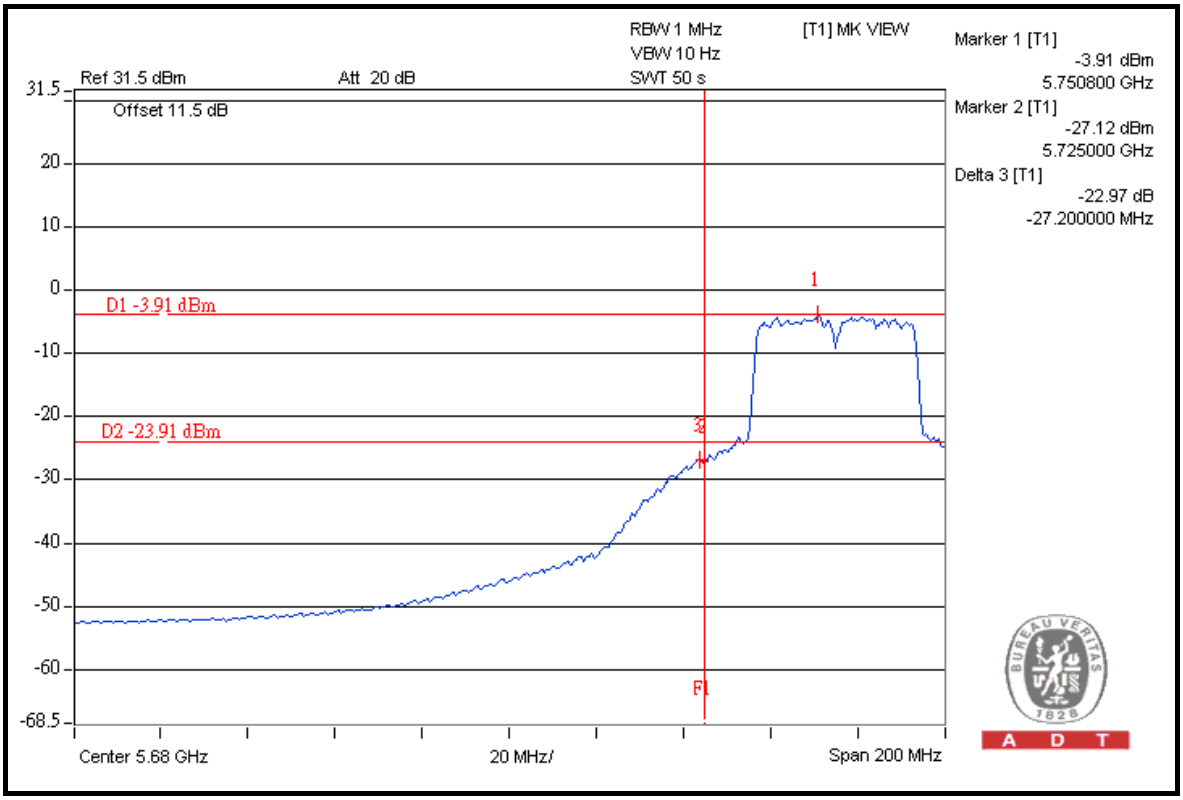

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
69.57 dBuV
5.780200 GHz
Marker 2 [T1]
28.57 dBuV
5.850000 GHz
Delta 3 [T1]
-39.40 dB
70.400000 MHz
D1 69.57 dBuV
D2 49.57 dBuV
Center 5.867 GHz
20 MHz/
Span 200 MHz

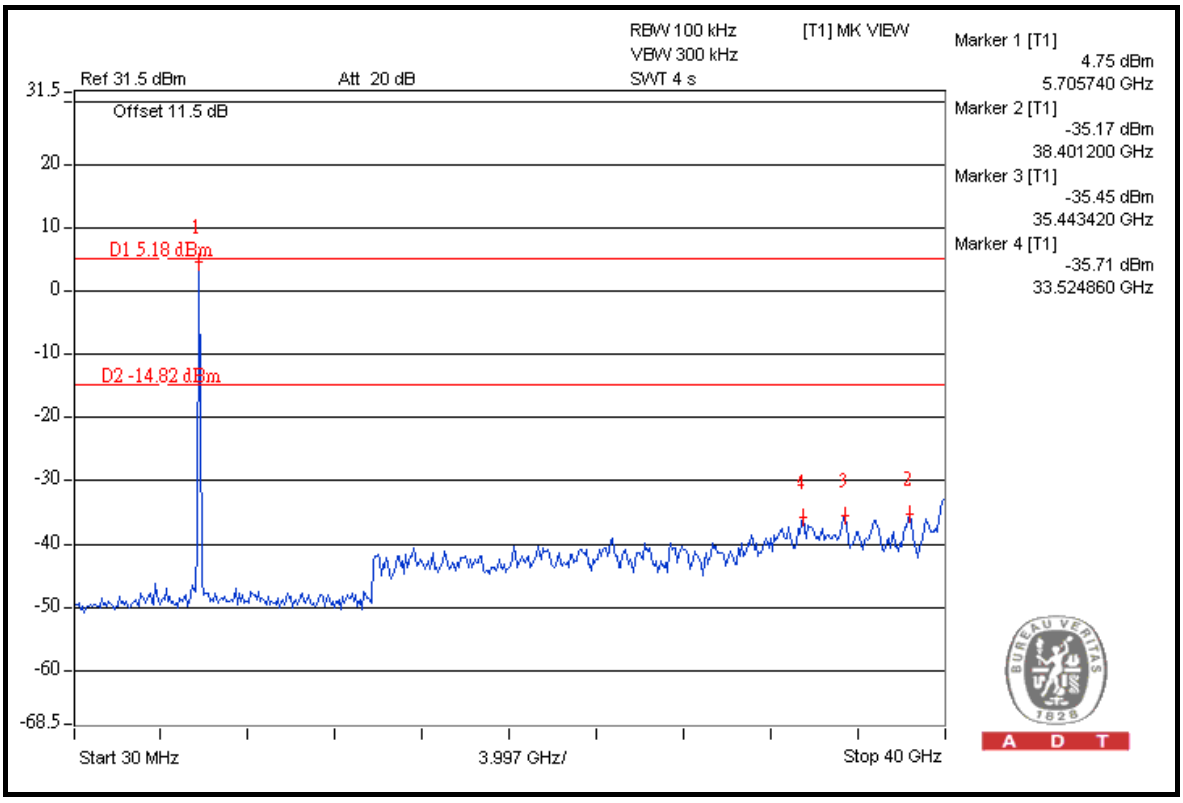

RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
55.30 dBuV
5.789400 GHz
Marker 2 [T1]
21.37 dBuV
5.850000 GHz
Delta 3 [T1]
-33.93 dB
60.600000 MHz
D1 55.3 dBuV
D2 35.3 dBuV
Center 5.867 GHz
20 MHz/
Span 200 MHz

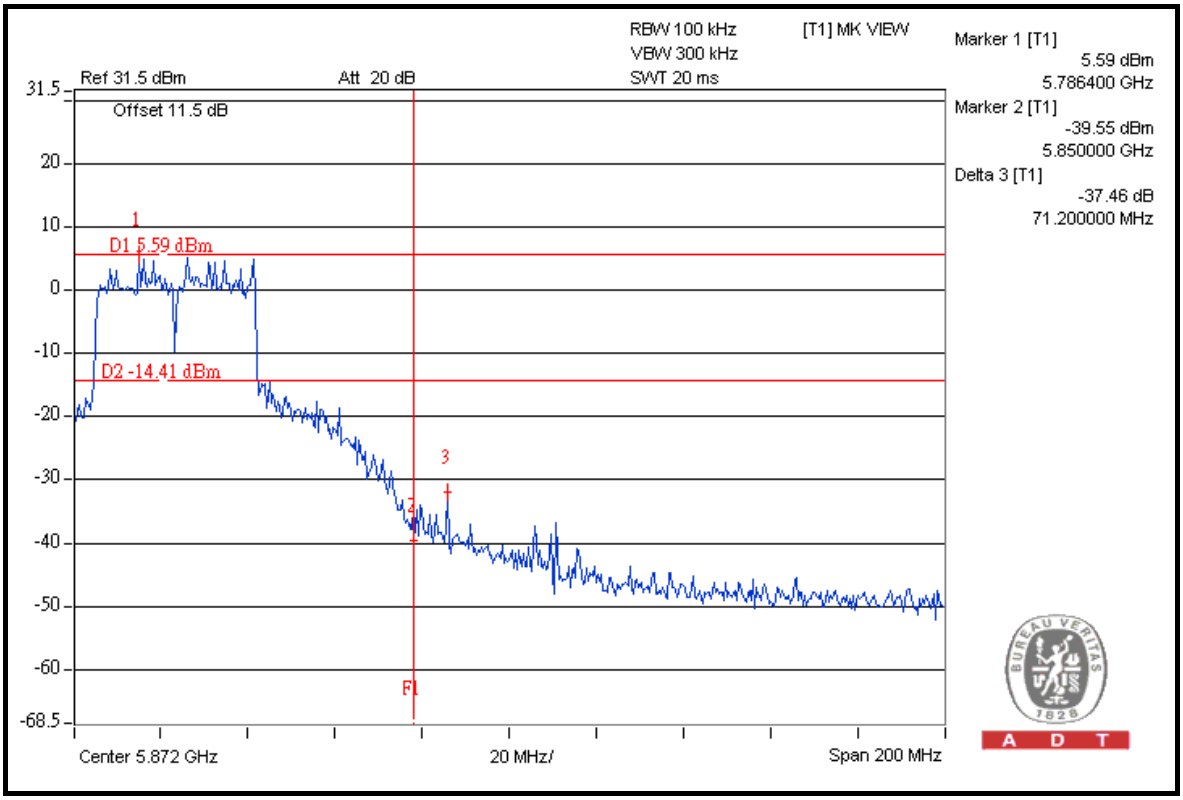
FOR CONDUCTED MEASURED

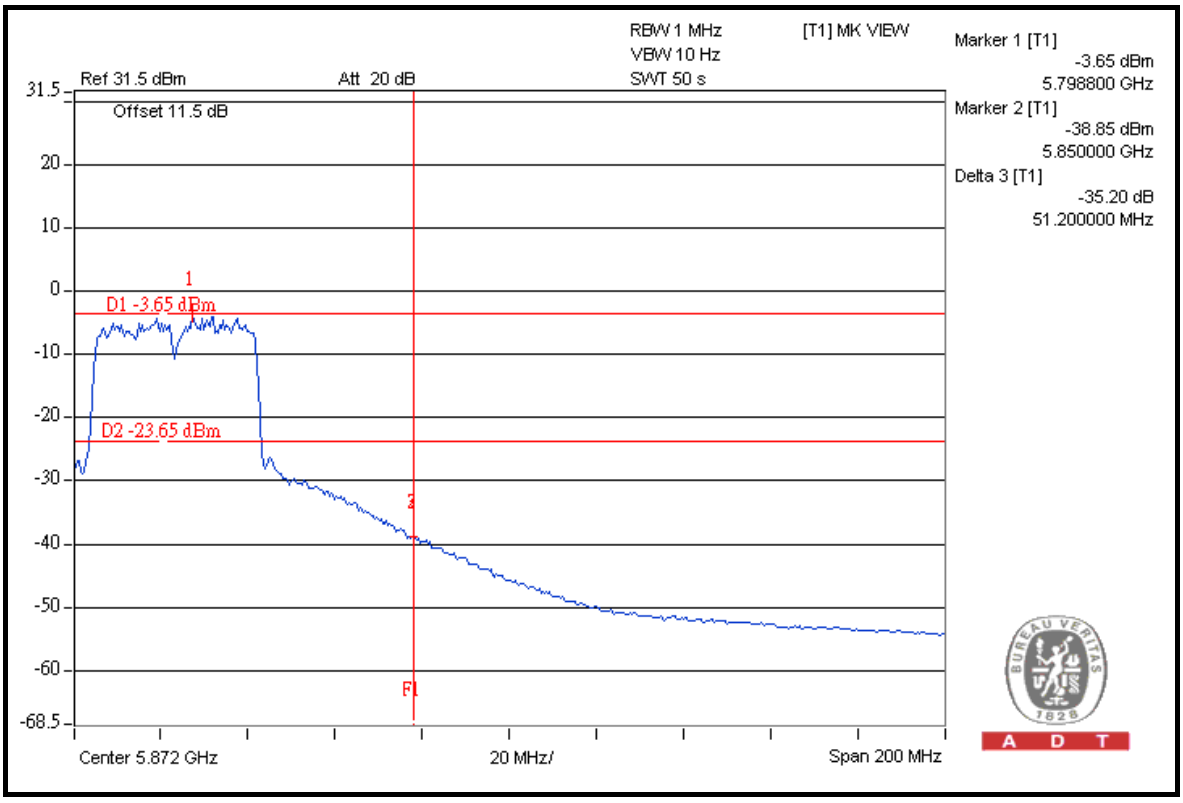
CHAIN 0

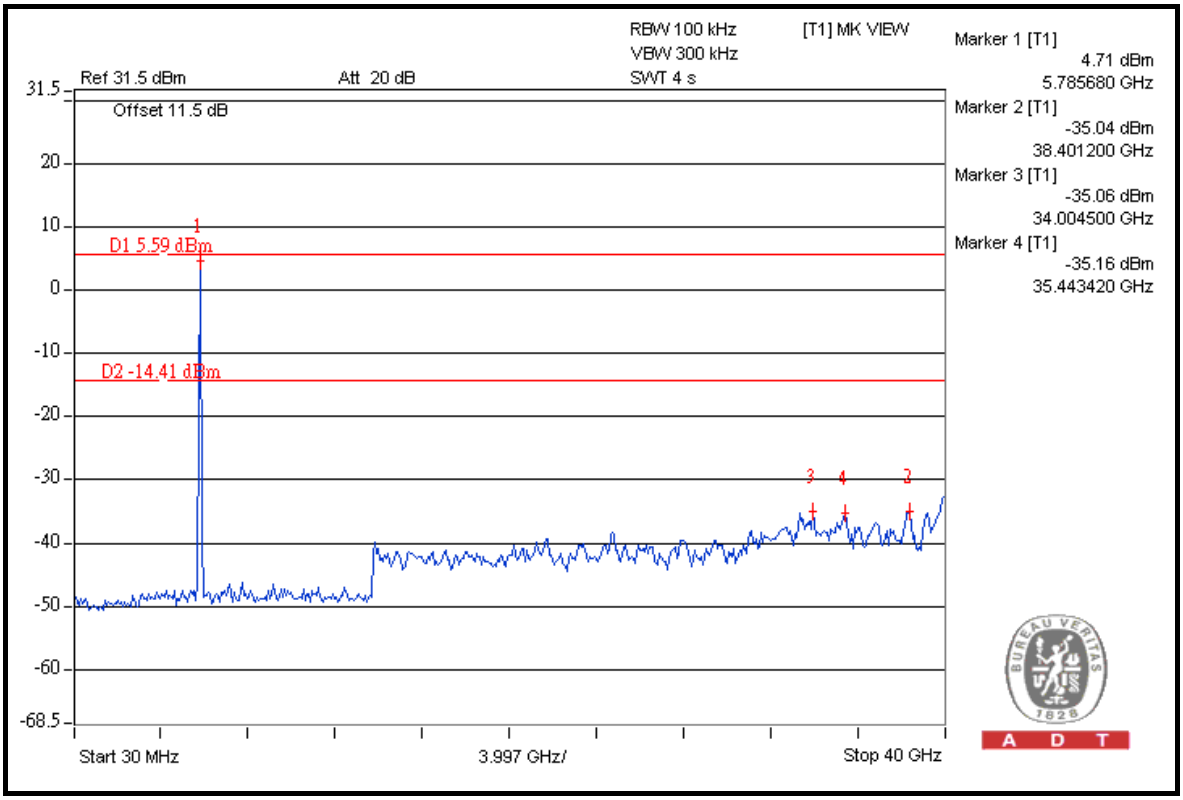




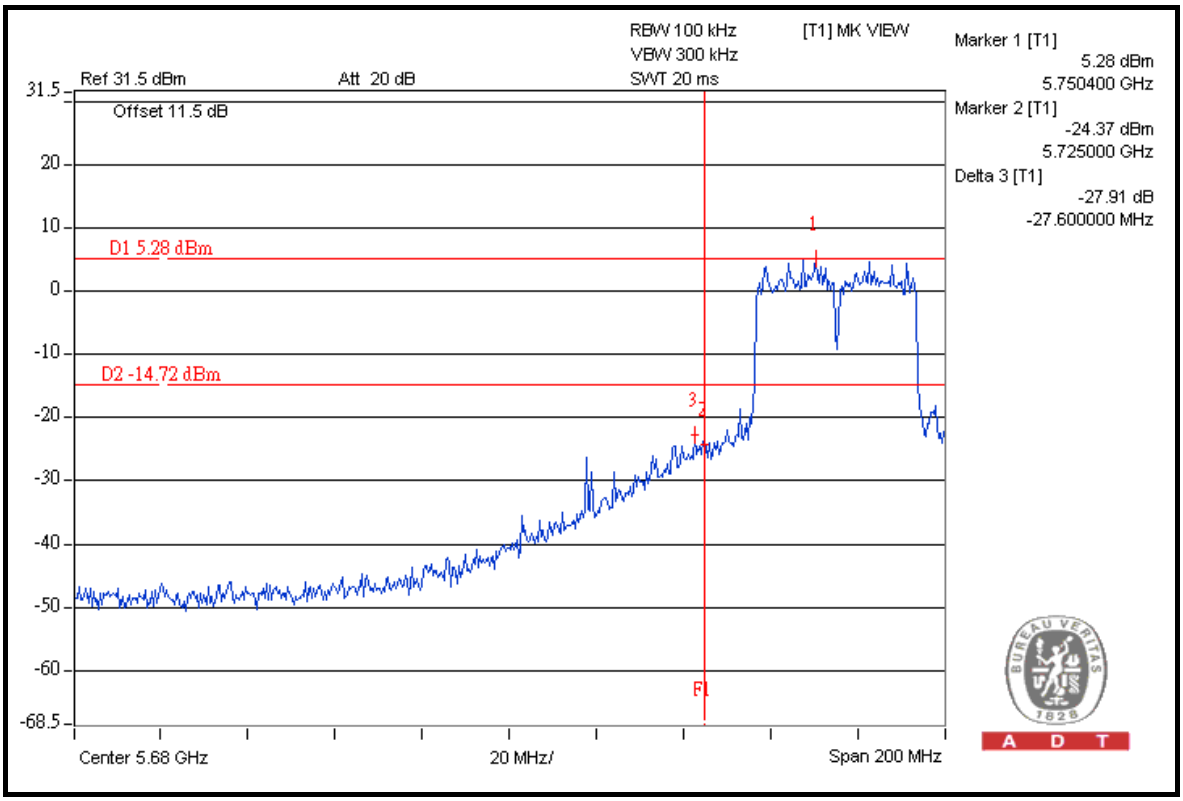

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 5.18 dBm
D2 -14.82 dBm
Marker 1 [T1]
4.75 dBm
5.705740 GHz
Marker 2 [T1]
-35.17 dBm
38.401200 GHz
Marker 3 [T1]
-35.45 dBm
35.443420 GHz
Marker 4 [T1]
-35.71 dBm
33.524860 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

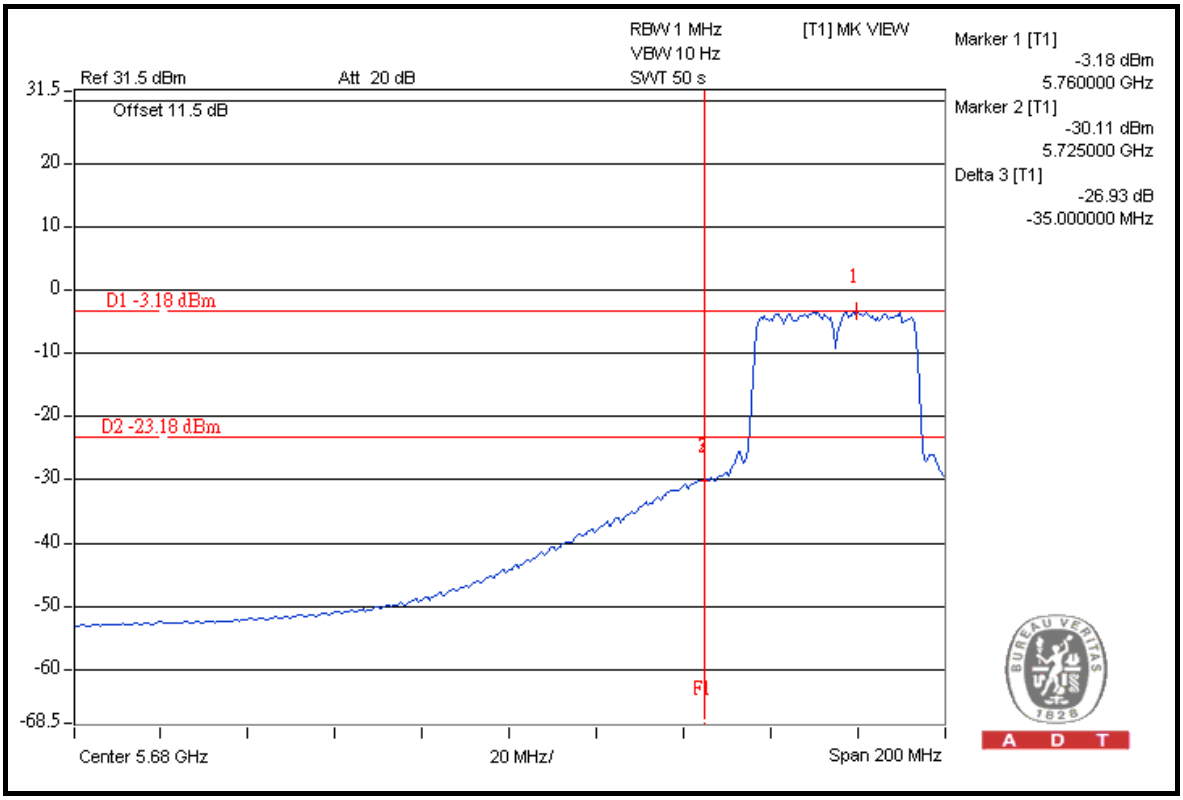

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 5.59 dBm
D2 -14.41 dBm
Marker 1 [T1]
5.59 dBm
5.786400 GHz
Marker 2 [T1]
-39.55 dBm
5.850000 GHz
Delta 3 [T1]
-37.46 dB
71.200000 MHz
Center 5.872 GHz
20 MHz/
Span 200 MHz

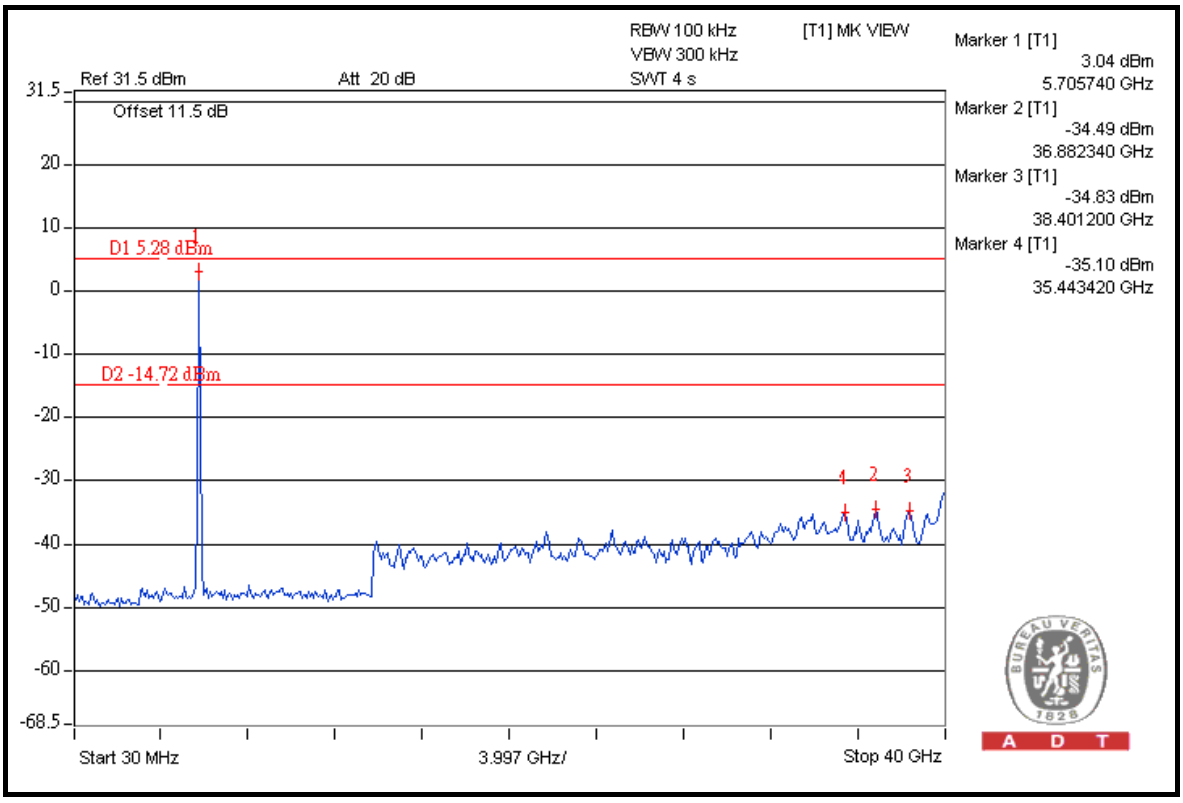

RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
-3.65 dBm
5.798800 GHz
Marker 2 [T1]
-38.85 dBm
5.850000 GHz
Delta 3 [T1]
-35.20 dB
51.200000 MHz
D1 -3.65 dBm
D2 -23.65 dBm
Center 5.872 GHz
20 MHz/
Span 200 MHz

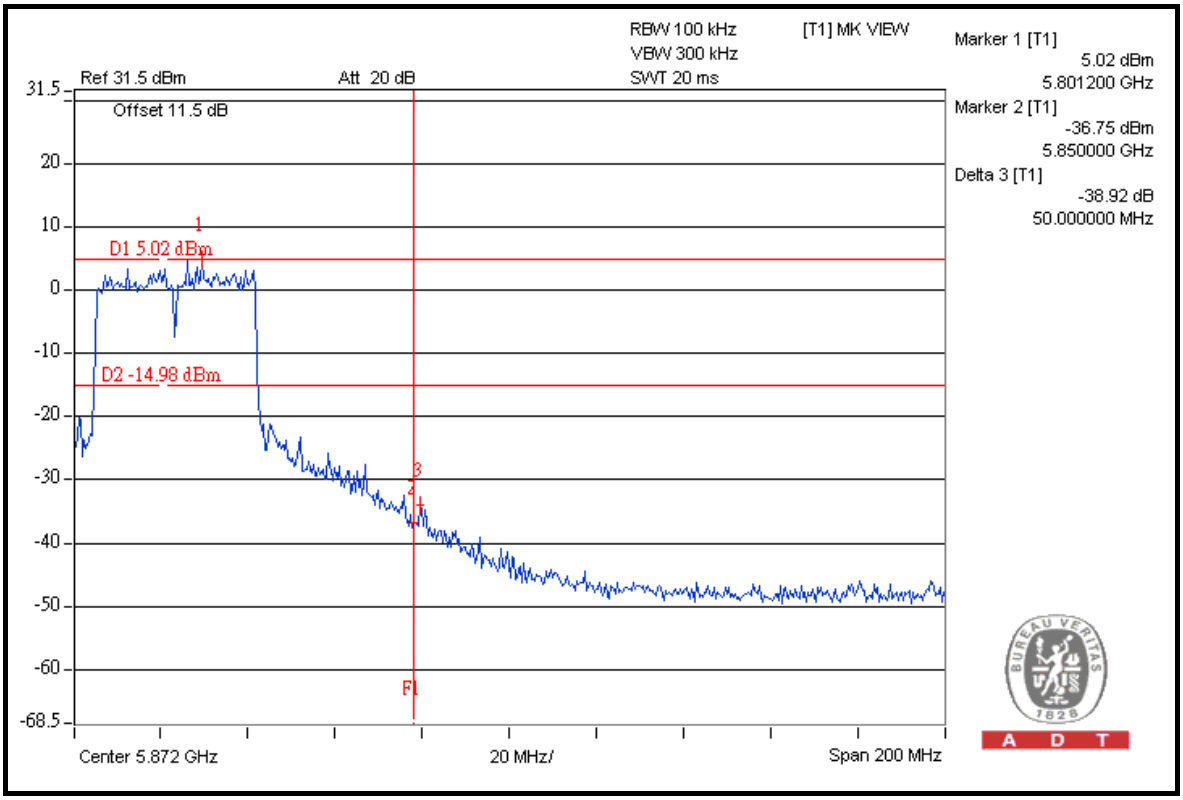

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
4.71 dBm
5.785680 GHz
Marker 2 [T1]
-35.04 dBm
38.401200 GHz
Marker 3 [T1]
-35.06 dBm
34.004500 GHz
Marker 4 [T1]
-35.16 dBm
35.443420 GHz
D1 5.59 dBm
D2 -14.41 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

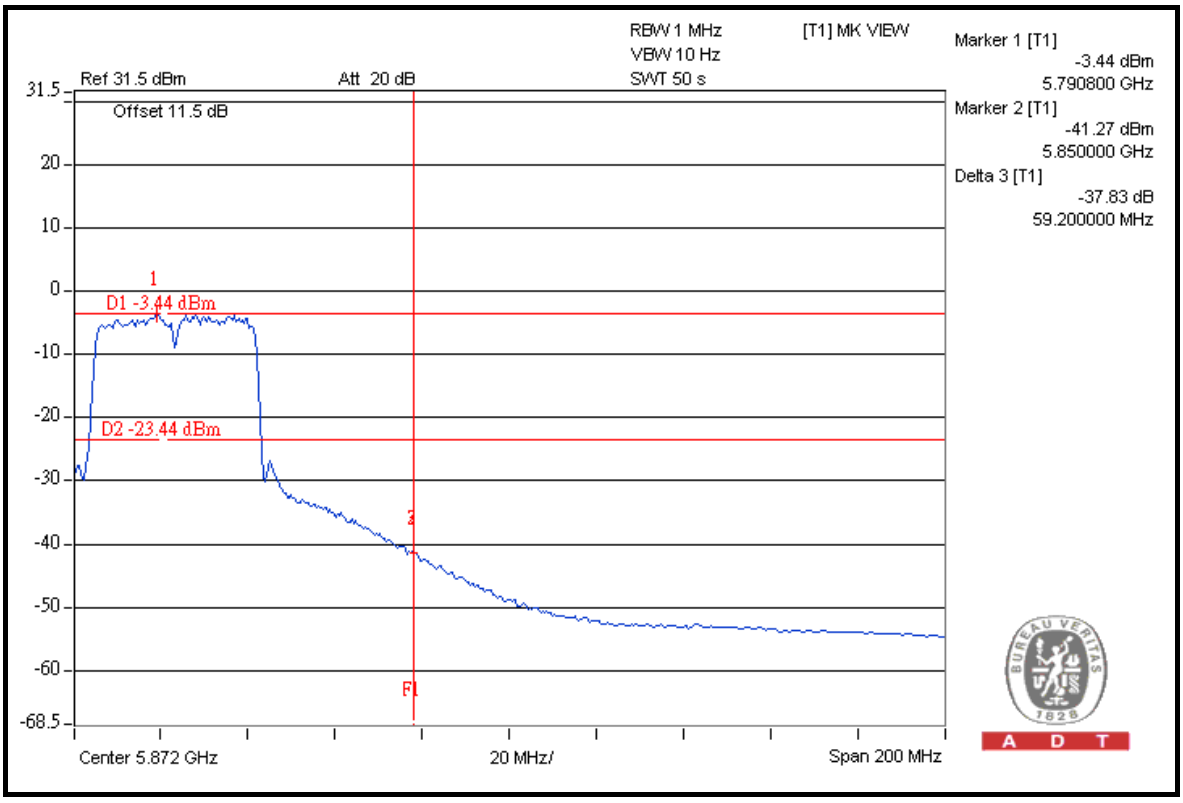
CHAIN 1

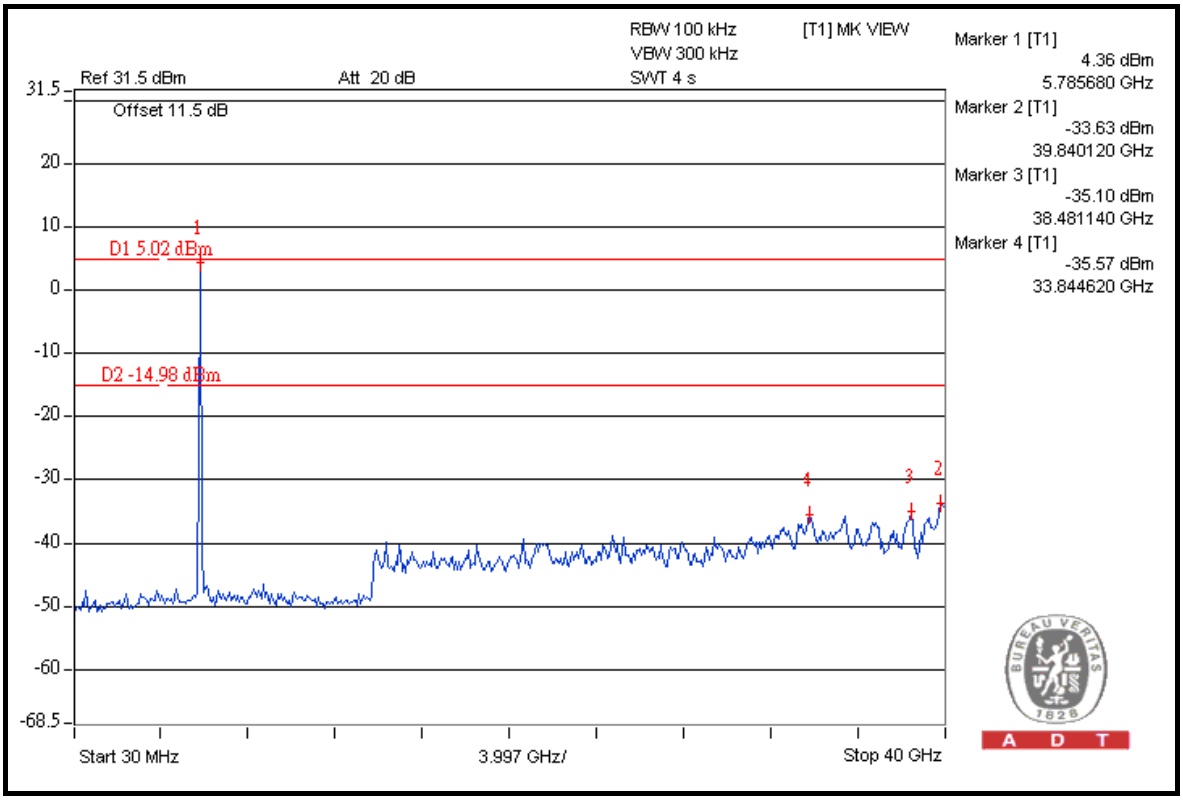

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
5.28 dBm
5.750400 GHz
Marker 2 [T1]
-24.37 dBm
5.725000 GHz
Delta 3 [T1]
-27.91 dB
-27.600000 MHz
D1 5.28 dBm
D2 -14.72 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.68 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
-3.18 dBm
5.760000 GHz
Marker 2 [T1]
-30.11 dBm
5.725000 GHz
Delta 3 [T1]
-26.93 dB
-35.000000 MHz
D1 -3.18 dBm
D2 -23.18 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.68 GHz
20 MHz/
Span 200 MHz


RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 5.28 dBm
D2 -14.72 dBm
Marker 1 [T1]
3.04 dBm
5.705740 GHz
Marker 2 [T1]
-34.49 dBm
36.882340 GHz
Marker 3 [T1]
-34.83 dBm
38.401200 GHz
Marker 4 [T1]
-35.10 dBm
35.443420 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Start 30 MHz
3.997 GHz/
Stop 40 GHz


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 5.02 dBm
D2 -14.98 dBm
Marker 1 [T1]
5.02 dBm
5.801200 GHz
Marker 2 [T1]
-36.75 dBm
5.850000 GHz
Delta 3 [T1]
-38.92 dB
50.000000 MHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.872 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
-3.44 dBm
5.790800 GHz
Marker 2 [T1]
-41.27 dBm
5.850000 GHz
Delta 3 [T1]
-37.83 dB
59.200000 MHz
D1 -3.44 dBm
D2 -23.44 dBm
Center 5.872 GHz
20 MHz/
Span 200 MHz


RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
4.36 dBm
5.785680 GHz
Marker 2 [T1]
-33.63 dBm
39.840120 GHz
Marker 3 [T1]
-35.10 dBm
38.481140 GHz
Marker 4 [T1]
-35.57 dBm
33.844620 GHz
D1 5.02 dBm
D2 -14.98 dBm
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 and authorization 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

Email: service.adt@tw.bureauveritas.com
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---