FCC TEST REPORT (15.407)

REPORT NO.:	RF110325C04-1
MODEL NO.:	DIR-827MO1
FCC ID:	KA2IR827MO1
RECEIVED:	Mar. 25, 2011
TESTED:	Apr. 01 ~ Apr. 12, 2011
ISSUED:	Apr. 15, 2011

APPLICANT:	D-Link Corporation
ADDRESS:	17595 Mt. Herrmann, Fountain Valley, CA 92708, U.S.A.

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
LAB ADDRESS:	No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou Hsiang, Taipei Hsien 244, Taiwan, R.O.C.
TEST LOCATION:	No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	NA	Apr. 15, 2011

1. CERTIFICATION

PRODUCT:	IEEE 802.11a/b/g/n Wireless PCIe Adapter
MODEL NO.:	DIR-827MO1
BRAND:	D-Link
APPLICANT:	D-Link Corporation
TEST SAMPLE:	ENGINEERING SAMPLE
TESTED:	Apr. 01 ~ Apr. 12, 2011
STANDARDS:	**FCC Part 15, Subpart E (Section 15.407)**
	ANSI C63.4-2003
	ANSI C63.10-2009

The above equipment (Model: DIR-827MO1) 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:** Apr. 15, 2011

Andrea Hsia / Specialist

APPROVED BY :  , **DATE:** Apr. 15, 2011

Gary Chang / Assistant Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -14.38dB at 0.154MHz.
15.407(b/1/2/3) (b)(5)	Electric Field Strength Spurious Emissions, 30MHz ~ 40000MHz	PASS	Meet the requirement of limit. Minimum passing margin is -5.3dB at 5080.00MHz.
15.407(a/1/2/3)	Peak Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is UFL

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.34 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

PRODUCT	IEEE 802.11a/b/g/n Wireless PCIe Adapter
MODEL NO.	DIR-827MO1
FCC ID	KA2IR827MO1
NOMINAL VOLTAGE	3.3Vdc
MODULATION TYPE	64QAM, 16QAM, QPSK, BPSK
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 270.0Mbps
OPERATING FREQUENCY	5180.0 ~ 5240.0MHz
NUMBER OF CHANNEL	4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	46.0mW
ANTENNA TYPE	PIFA antenna with 2dBi gain
ANTENNA CONNECTER	UFL
DATA CABLE	NA
I/O PORTS	NA
ACCESSORY DEVICES	NA

NOTE:

1. The EUT is a IEEE 802.11a/b/g/n Wireless PCIe Adapter. The test data are separated into following test reports.

	TEST STANDARD	REFERENCE REPORT
WLAN 802.11b/g, 802.11n	FCC Part 15, Subpart C (Section 15.247)	RF110325C04
WLAN 802.11a, 802.11n (5745~5825 MHz)		
WLAN 802.11a, 802.11n (5180~ 5240MHz)	FCC Part 15, Subpart E (Section 15.407)	RF110325C04-1
CO-Located Report	FCC Part 15, Subpart C (Section 15.247) FCC Part 15, Subpart E (Section 15.407)	RF110325C04-2

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

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

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

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

4. The 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

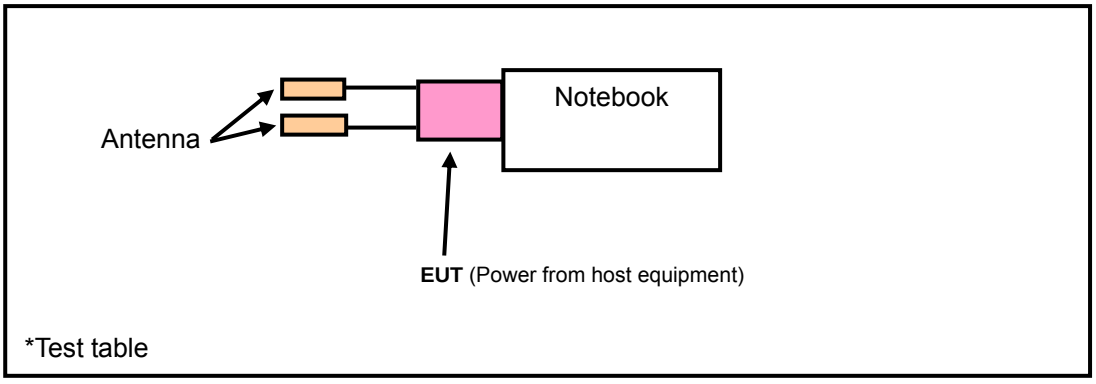
4 channels are provided for 802.11a and 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180MHz	44	5220MHz
40	5200MHz	48	5240MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190MHz	46	5230MHz

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

RADIATED EMISSION TEST (ABOVE 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
802.11n (20MHz)	36 to 48	36, 40, 48	OFDM	BPSK	7.2
802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	15.0

RADIATED EMISSION TEST (BELOW 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48	40	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48	40	OFDM	BPSK	6.0

BANDEDGE MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48	36, 48	OFDM	BPSK	6.0
802.11n (20MHz)	36 to 48	36, 48	OFDM	BPSK	7.2
802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	15.0

ANTENNA PORT CONDUCTED MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
802.11n (20MHz)	36 to 48	36, 40, 48	OFDM	BPSK	7.2
802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	15.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 68%RH, 1010 hPa	120Vac, 60Hz	Sun Lin
RE<1G	22deg. C, 59%RH, 1015 hPa	120Vac, 60Hz	Chad Lee
PLC	25deg. C, 65%RH, 1014 hPa	120Vac, 60Hz	David Huang
APCM	25deg. C, 68%RH, 1014 hPa	120Vac, 60Hz	David Huang

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 E (15.407)
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	NOTEBOOK	DELL	D531	CN-0XM006-48643 -81U-2610	QDS-BRCM1020

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

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

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

FREQUENCIES (MHz)	EIRP LIMIT (dBm)	EQUIVALENT FIELD STRENGTH AT 3m (dBμV/m) *NOTE 3
	PK	PK
5150 ~ 5250	-27	68.3

NOTE: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts).

4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Aug. 04, 2010	Aug. 03, 2011
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Jul. 09, 2010	Jul. 08, 2011
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 30, 2010	Apr. 29, 2011
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Aug. 02, 2010	Aug. 01, 2011
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8449B	3008A01910	Sep. 09, 2010	Sep. 08, 2011
Preamplifier Agilent	8447D	2944A10638	Nov. 03, 2010	Nov. 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218190/4 231241/4	May 14, 2010	May 13, 2011
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 20, 2010	Aug. 19, 2011
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn Table Controller EMCO	2090	NA	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	Aug. 25, 2010	Aug. 24, 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 9.

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

4. The FCC Site Registration No. is 460141.

5. The IC Site Registration No. is IC 7450F-4.

4.1.4 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. 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 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

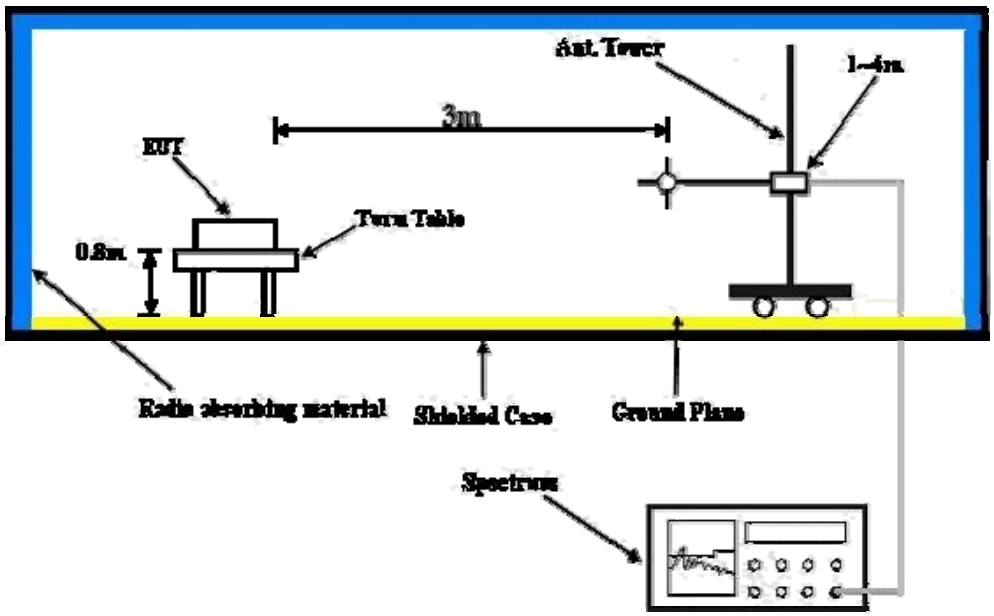
NOTE:

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

4.1.5 DEVIATION FROM TEST STANDARD

No deviation.

4.1.6 TEST SETUP



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

4.1.7 EUT OPERATING CONDITION

a. Plugged the EUT into notebook and placed them on the testing table.
b. The notebook system ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
c. The necessary accessories enable the system in full functions.

4.1.8 TEST RESULTS

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1010 hPa	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.4 PK	74.0	-16.6	1.36 H	139	20.20	37.20
2	5150.00	47.3 AV	54.0	-6.7	1.36 H	139	10.10	37.20
3	*5180.00	107.8 PK			1.36 H	139	70.50	37.30
4	*5180.00	96.2 AV			1.36 H	139	58.90	37.30
5	5360.00	57.5 PK	74.0	-16.5	1.00 H	142	20.00	37.50
6	5360.00	47.7 AV	54.0	-6.3	1.00 H	142	10.20	37.50
7	#10360.00	54.4 PK	68.3	-13.9	1.07 H	223	6.20	48.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	54.4 PK	74.0	-19.6	1.42 V	89	17.20	37.20
2	5150.00	44.8 AV	54.0	-9.2	1.42 V	89	7.60	37.20
3	*5180.00	106.5 PK			1.42 V	89	69.20	37.30
4	*5180.00	94.4 AV			1.42 V	89	57.10	37.30
5	5360.00	52.8 PK	74.0	-21.2	1.27 V	82	15.30	37.50
6	5360.00	46.2 AV	54.0	-7.8	1.27 V	82	8.70	37.50
7	#10360.00	56.2 PK	68.3	-12.1	1.35 V	247	8.00	48.20

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1010 hPa	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5080.00	57.7 PK	74.0	-16.3	1.02 H	145	20.60	37.10
2	5080.00	47.7 AV	54.0	-6.3	1.02 H	145	10.60	37.10
3	*5200.00	107.6 PK			1.00 H	149	70.30	37.30
4	*5200.00	95.7 AV			1.00 H	149	58.40	37.30
5	#10400.00	54.7 PK	68.3	-13.6	1.27 H	158	6.50	48.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5080.00	52.5 PK	74.0	-21.5	1.12 V	64	15.40	37.10
2	5080.00	45.9 AV	54.0	-8.1	1.12 V	64	8.80	37.10
3	*5200.00	106.0 PK			1.52 V	73	68.70	37.30
4	*5200.00	94.0 AV			1.52 V	73	56.70	37.30
5	#10400.00	55.8 PK	68.3	-12.5	1.40 V	222	7.60	48.20

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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1010 hPa	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5080.00	56.5 PK	74.0	-17.5	1.00 H	145	19.40	37.10
2	5080.00	48.5 AV	54.0	-5.5	1.00 H	145	11.40	37.10
3	*5240.00	107.1 PK			1.18 H	149	69.70	37.40
4	*5240.00	95.4 AV			1.18 H	149	58.00	37.40
5	5360.00	54.4 PK	74.0	-19.6	1.31 H	158	16.90	37.50
6	5360.00	42.7 AV	54.0	-11.3	1.31 H	158	5.20	37.50
7	#10480.00	53.8 PK	68.3	-14.5	1.24 H	232	5.40	48.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5080.00	56.2 PK	74.0	-17.8	1.54 V	291	19.10	37.10
2	5080.00	46.8 AV	54.0	-7.2	1.54 V	291	9.70	37.10
3	*5240.00	105.2 PK			1.50 V	77	67.80	37.40
4	*5240.00	93.8 AV			1.50 V	77	56.40	37.40
5	5360.00	53.4 PK	74.0	-20.6	1.00 V	137	15.90	37.50
6	5360.00	42.4 AV	54.0	-11.6	1.00 V	137	4.90	37.50
7	#10480.00	54.2 PK	68.3	-14.1	1.12 V	307	5.80	48.40

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

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

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1010 hPa	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.1 PK	74.0	-17.9	1.28 H	101	18.90	37.20
2	5150.00	46.3 AV	54.0	-7.7	1.28 H	101	9.10	37.20
3	*5180.00	107.5 PK			1.28 H	101	70.20	37.30
4	*5180.00	95.7 AV			1.28 H	101	58.40	37.30
5	5360.00	57.8 PK	74.0	-16.2	1.05 H	157	20.30	37.50
6	5360.00	47.5 AV	54.0	-6.5	1.05 H	157	10.00	37.50
7	#10360.00	54.7 PK	68.3	-13.6	1.15 H	207	6.50	48.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	54.4 PK	74.0	-19.6	1.17 V	45	17.20	37.20
2	5150.00	44.6 AV	54.0	-9.4	1.17 V	45	7.40	37.20
3	*5180.00	105.9 PK			1.21 V	102	68.60	37.30
4	*5180.00	94.0 AV			1.21 V	102	56.70	37.30
5	5360.00	53.0 PK	74.0	-21.0	1.17 V	45	15.50	37.50
6	5360.00	46.4 AV	54.0	-7.6	1.17 V	45	8.90	37.50
7	#10360.00	56.5 PK	68.3	-11.8	1.22 V	332	8.30	48.20

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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1010 hPa	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5080.00	57.2 PK	74.0	-16.8	1.00 H	147	20.10	37.10
2	5080.00	48.3 AV	54.0	-5.7	1.00 H	147	11.20	37.10
3	*5200.00	107.2 PK			1.00 H	151	69.90	37.30
4	*5200.00	95.3 AV			1.00 H	151	58.00	37.30
5	#10400.00	55.2 PK	68.3	-13.1	1.07 H	92	7.00	48.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5080.00	52.8 PK	74.0	-21.2	1.02 V	107	15.70	37.10
2	5080.00	46.5 AV	54.0	-7.5	1.02 V	107	9.40	37.10
3	*5200.00	105.6 PK			1.42 V	58	68.30	37.30
4	*5200.00	93.7 AV			1.42 V	58	56.40	37.30
5	#10400.00	55.7 PK	68.3	-12.6	1.37 V	282	7.50	48.20

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1010 hPa	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5080.00	56.2 PK	74.0	-17.8	1.08 H	168	19.10	37.10
2	**5080.00**	**48.7 AV**	**54.0**	**-5.3**	**1.08 H**	**168**	**11.60**	**37.10**
3	*5240.00	106.7 PK			1.04 H	148	69.30	37.40
4	*5240.00	95.0 AV			1.04 H	148	57.60	37.40
5	5360.00	54.8 PK	74.0	-19.2	1.28 H	200	17.30	37.50
6	5360.00	43.0 AV	54.0	-11.0	1.28 H	200	5.50	37.50
7	#10480.00	54.2 PK	68.3	-14.1	1.22 H	217	5.80	48.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5080.00	56.0 PK	74.0	-18.0	1.52 V	277	18.90	37.10
2	5080.00	46.5 AV	54.0	-7.5	1.52 V	277	9.40	37.10
3	*5240.00	105.2 PK			1.31 V	69	67.80	37.40
4	*5240.00	93.2 AV			1.31 V	69	55.80	37.40
5	5360.00	53.5 PK	74.0	-20.5	1.58 V	147	16.00	37.50
6	5360.00	42.7 AV	54.0	-11.3	1.58 V	147	5.20	37.50
7	#10480.00	54.7 PK	68.3	-13.6	1.15 V	299	6.30	48.40

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

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

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1010 hPa	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5080.00	56.0 PK	74.0	-18.0	1.00 H	145	18.90	37.10
2	5080.00	46.6 AV	54.0	-7.4	1.00 H	145	9.50	37.10
3	5150.00	56.8 PK	74.0	-17.2	1.00 H	149	19.60	37.20
4	5150.00	47.4 AV	54.0	-6.6	1.00 H	149	10.20	37.20
5	*5190.00	104.5 PK			1.00 H	149	67.20	37.30
6	*5190.00	92.9 AV			1.00 H	149	55.60	37.30
7	#10380.00	55.9 PK	68.3	-12.4	1.20 H	169	7.70	48.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5080.00	55.3 PK	74.0	-18.7	1.10 V	46	18.20	37.10
2	5080.00	45.9 AV	54.0	-8.1	1.10 V	46	8.80	37.10
3	5150.00	54.4 PK	74.0	-19.6	1.54 V	75	17.20	37.20
4	5150.00	43.8 AV	54.0	-10.2	1.54 V	75	6.60	37.20
5	*5190.00	102.7 PK			1.54 V	75	65.40	37.30
6	*5190.00	91.3 AV			1.54 V	75	54.00	37.30
7	#10380.00	56.3 PK	68.3	-12.0	1.10 V	157	8.10	48.20

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1010 hPa	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5080.00	58.3 PK	74.0	-15.7	1.00 H	159	21.20	37.10
2	5080.00	48.4 AV	54.0	-5.6	1.00 H	159	11.30	37.10
3	*5230.00	104.1 PK			1.00 H	153	66.70	37.40
4	*5230.00	92.5 AV			1.00 H	153	55.10	37.40
5	5350.00	56.8 PK	74.0	-17.2	1.00 H	153	19.30	37.50
6	5350.00	46.7 AV	54.0	-7.3	1.00 H	153	9.20	37.50
7	#10460.00	54.6 PK	68.3	-13.7	1.20 H	136	6.20	48.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5080.00	57.2 PK	74.0	-16.8	1.10 V	103	20.10	37.10
2	5080.00	47.4 AV	54.0	-6.6	1.10 V	103	10.30	37.10
3	*5230.00	102.4 PK			1.60 V	74	65.00	37.40
4	*5230.00	91.0 AV			1.60 V	74	53.60	37.40
5	5350.00	53.4 PK	74.0	-20.6	1.60 V	74	15.90	37.50
6	5350.00	43.7 AV	54.0	-10.3	1.60 V	74	6.20	37.50
7	#10460.00	56.1 PK	68.3	-12.2	1.13 V	142	7.70	48.40

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

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

BELOW 1GHz WORST-CASE DATA：802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 59%RH 1015 hPa	TESTED BY	Chad Lee

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	199.05	34.4 QP	43.5	-9.1	1.50 H	298	23.90	10.50
2	239.88	35.1 QP	46.0	-10.9	1.50 H	112	22.60	12.50
3	265.16	38.8 QP	46.0	-7.2	1.00 H	91	25.20	13.60
4	375.98	33.7 QP	46.0	-12.3	2.00 H	184	16.80	16.90
5	498.47	35.4 QP	46.0	-10.6	1.50 H	229	15.20	20.20
6	696.79	33.2 QP	46.0	-12.8	1.00 H	40	9.10	24.10
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	265.16	35.7 QP	46.0	-10.3	2.00 V	208	22.10	13.60
2	372.09	31.2 QP	46.0	-14.8	1.00 V	10	14.40	16.80
3	424.59	31.4 QP	46.0	-14.6	1.00 V	10	13.30	18.10
4	498.47	33.7 QP	46.0	-12.3	2.00 V	238	13.50	20.20
5	696.79	32.8 QP	46.0	-13.2	1.50 V	223	8.70	24.10
6	830.95	33.0 QP	46.0	-13.0	2.00 V	112	7.20	25.80

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

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 23, 2010	Nov. 22, 2011
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 30, 2010	Dec. 29, 2011
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 06, 2011	Jan. 05, 2012
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jul. 08, 2010	Jul. 07, 2011
V-LISN SCHWARZBECK	NNBL 8226-2	8226-142	Jul. 12, 2010	Jul. 11, 2011
LISN ROHDE & SCHWARZ	ENV216	100072	Jun. 11, 2010	Jun. 10, 2011
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 2.

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

4.2.3 TEST PROCEDURES

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

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

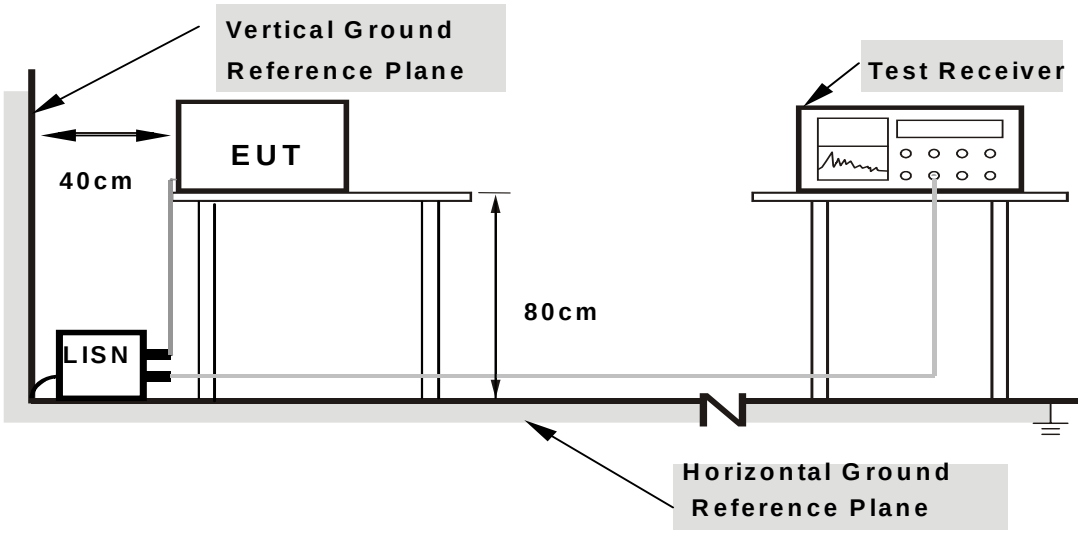
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

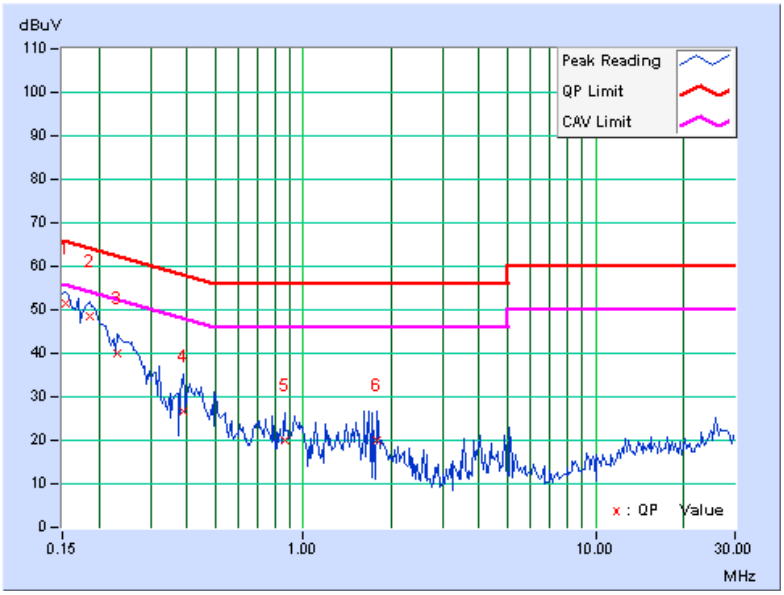
4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA：802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.154**	**0.15**	**51.26**	**-**	**51.41**	**-**	**65.79**	**55.79**	**-14.38**	**-**
2	0.185	0.15	48.27	-	48.42	-	64.25	54.25	-15.83	-
3	0.232	0.15	40.02	-	40.17	-	62.38	52.38	-22.20	-
4	0.388	0.17	26.68	-	26.85	-	58.10	48.10	-31.25	-
5	0.861	0.19	19.68	-	19.87	-	56.00	46.00	-36.13	-
6	1.777	0.21	19.91	-	20.12	-	56.00	46.00	-35.88	-

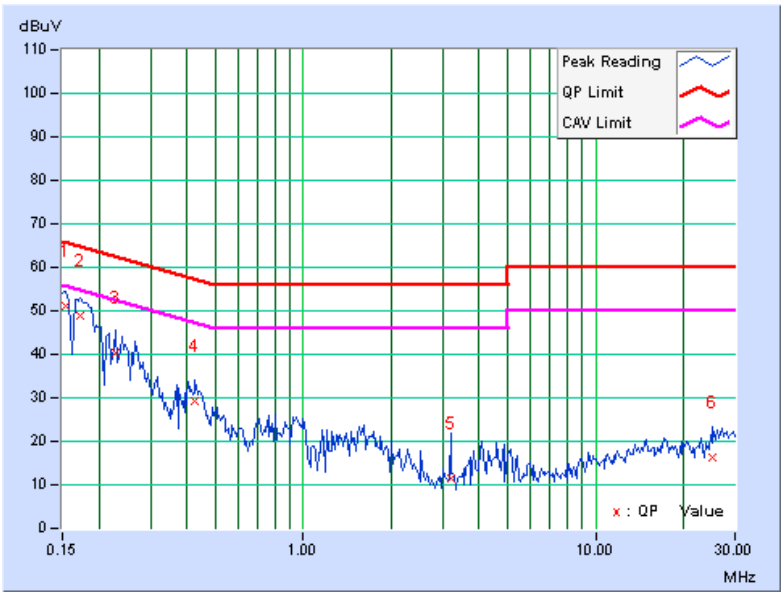
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



PHASE	Line 2	6dB BANDWIDTH	9kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.16	50.81	-	50.97	-	65.79	55.79	-14.82	-
2	0.173	0.16	48.57	-	48.73	-	64.79	54.79	-16.06	-
3	0.228	0.17	40.02	-	40.19	-	62.52	52.52	-22.33	-
4	0.427	0.19	29.07	-	29.26	-	57.30	47.30	-28.04	-
5	3.195	0.28	11.09	-	11.37	-	56.00	46.00	-44.63	-
6	25.027	1.04	15.43	-	16.47	-	60.00	50.00	-43.53	-

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 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

4.3.1 LIMITS OF MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

FREQUENCY BAND	LIMIT
5.15 ~ 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB

NOTE: Where B is the 26dB emission bandwidth in MHz.

4.3.2 TEST INSTRUMENTS

FOR POWER OUTPUT MEASUREMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
High Speed Peak Power Meter	ML2495A	0842014	Apr. 21, 2010	Apr. 20, 2011
Power Sensor	MA2411B	0738404	Apr. 21, 2010	Apr. 20, 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. Measurement Bandwidth of ML2495A is 65MHz greater than 26dB bandwidth of emission.

FOR 26dB OCCUPIED BANDWIDTH

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100040	Jul. 17, 2010	Jul. 16, 2011

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

FOR POWER OUTPUT MEASUREMENT

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.

FOR 26dB OCCUPIED BANDWIDTH

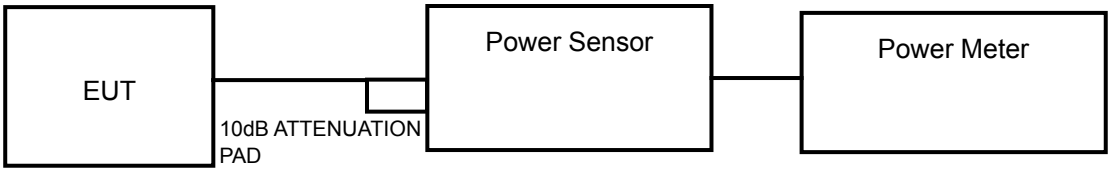
The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 300kHz RBW and 1MHz VBW. The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.

4.3.4 DEVIATION FROM TEST STANDARD

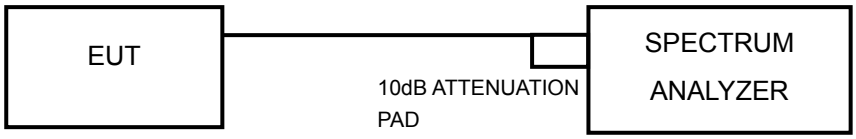
No deviation.

4.3.5 TEST SETUP

FOR POWER OUTPUT MEASUREMENT



FOR 26dB OCCUPIED BANDWIDTH



4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.3.7 TEST RESULTS

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				
36	5180	13.3	13.5	43.8	16.4	17	PASS
40	5200	13.2	14.0	46.0	16.6	17	PASS
48	5240	13.4	13.5	44.3	16.5	17	PASS

NOTE: Directional gain =2dBi + 10log(2)=5.01dBi < 6dBi, so the conducted power limit is not reduced.

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				
36	5180	12.7	13.8	42.6	16.3	17	PASS
40	5200	13.0	13.7	43.4	16.4	17	PASS
48	5240	13.1	13.7	43.9	16.4	17	PASS

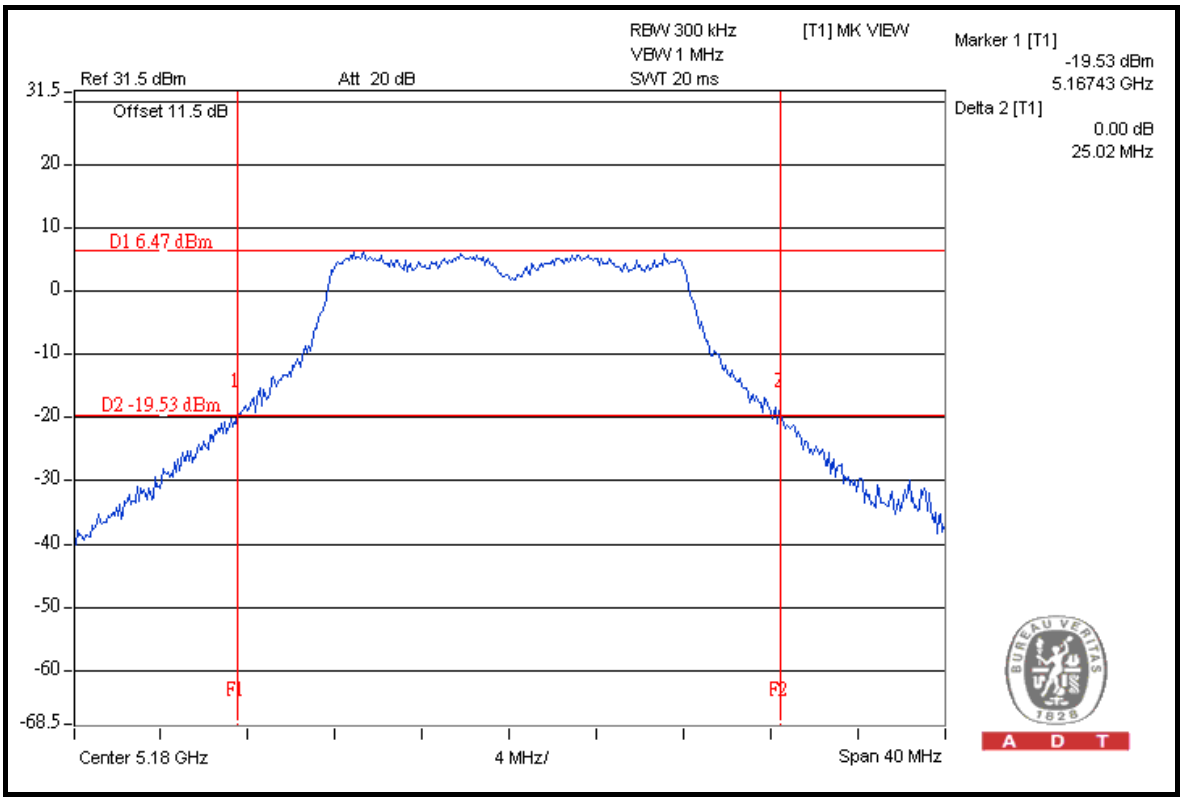
802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	12.7	14.0	43.7	16.4	17	PASS
46	5230	13.2	13.5	43.3	16.4	17	PASS

26dB OCCUPIED BANDWIDTH: 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
36	5180	25.02	23.70	PASS
40	5200	24.42	24.55	PASS
48	5240	24.86	24.11	PASS

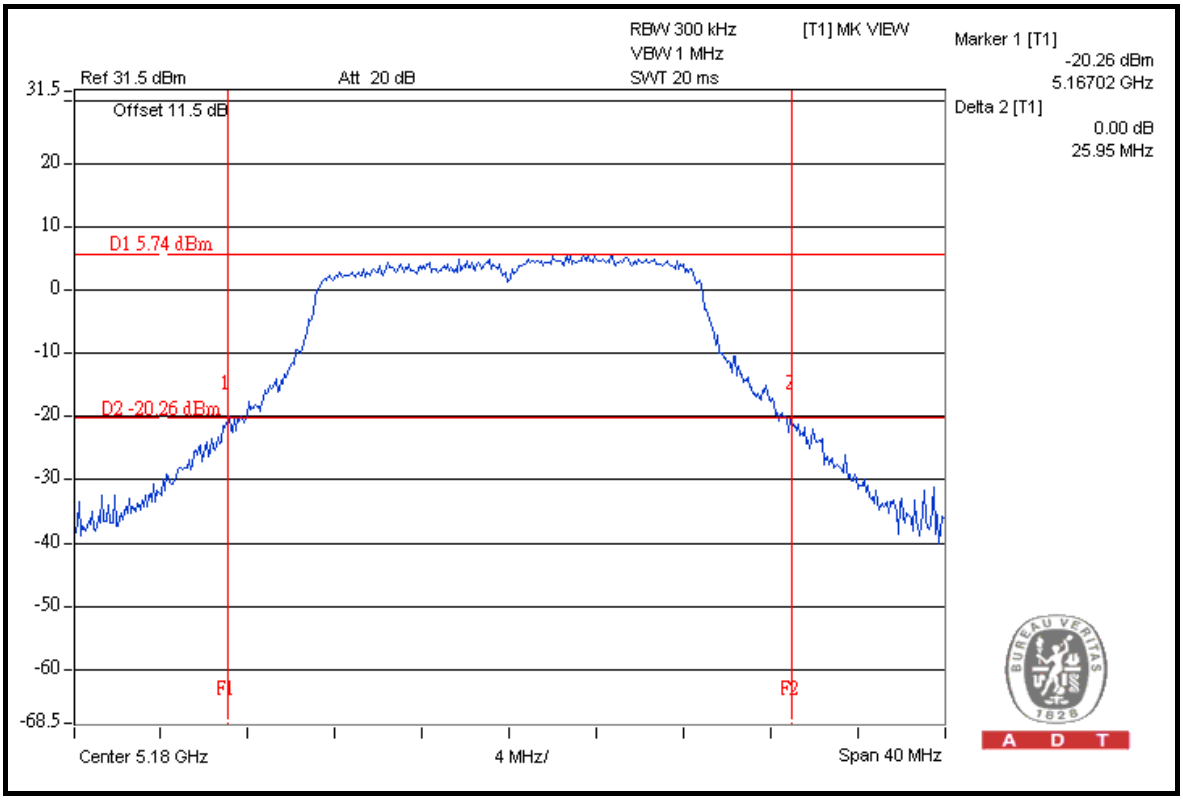
FOR CHAIN 0: CH 36



802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
36	5180	25.95	25.58	PASS
40	5200	25.51	25.81	PASS
48	5240	25.20	25.52	PASS

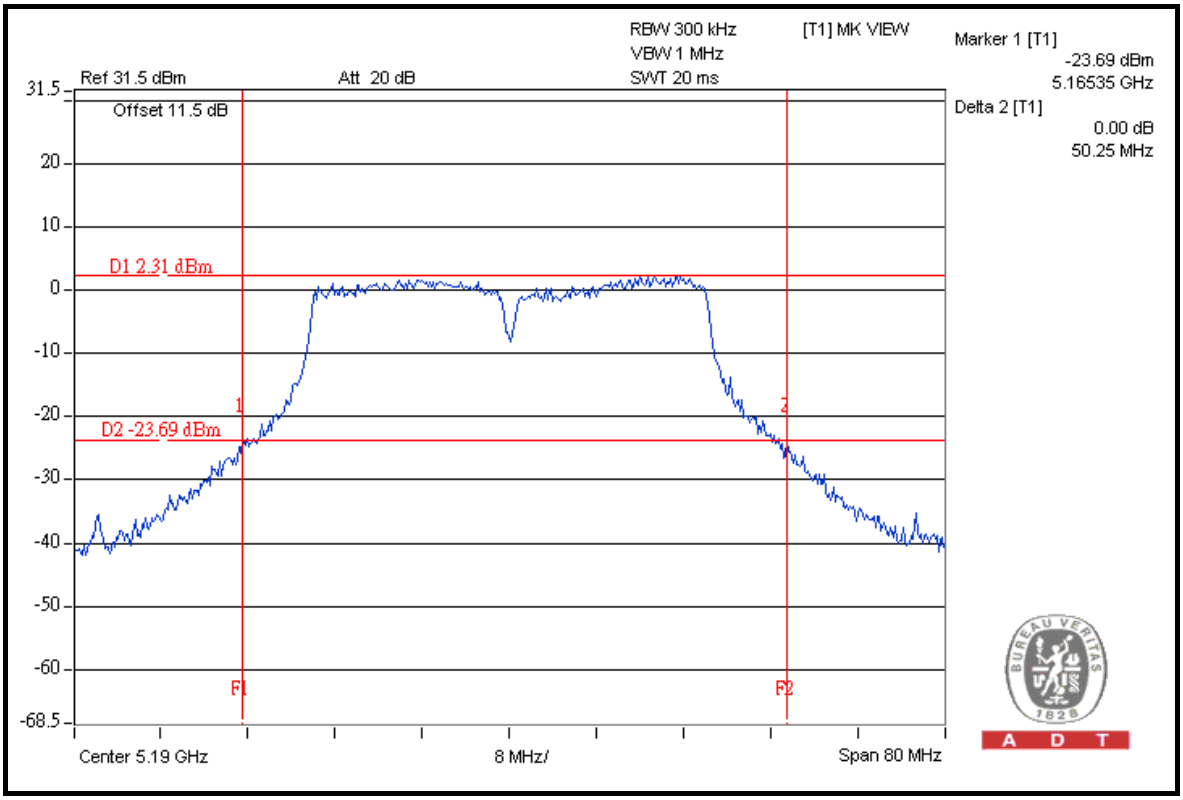
FOR CHAIN 0: CH 36



802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
38	5190	50.25	48.04	PASS
46	5230	49.11	47.08	PASS

FOR CHAIN 0: CH 38



4.4 PEAK POWER EXCURSION MEASUREMENT

4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

FREQUENCY BAND	LIMIT
5.15 ~ 5.25GHz	13dB

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100039	Jul. 09, 2010	Jul. 08, 2011

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

4.4.3 TEST PROCEDURE

a. The transmitter output was connected to the spectrum analyzer.

b. Set the spectrum bandwidth span to view the entire spectrum.

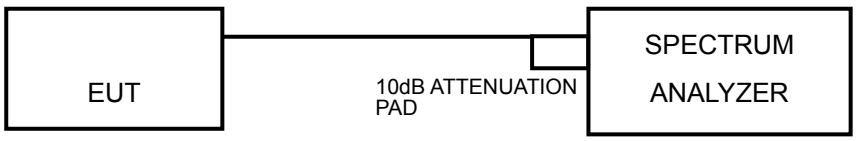
c. Using peak detector and Max-hold function for Trace 1 (RB = 1MHz, VB = 3MHz) and 2 (RB = 1MHz, VB = 300kHz).

d. The differences between Trace1 and Trace 2 in any 1MHz band at f1 to f2 range were recorded and showed to another trace.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

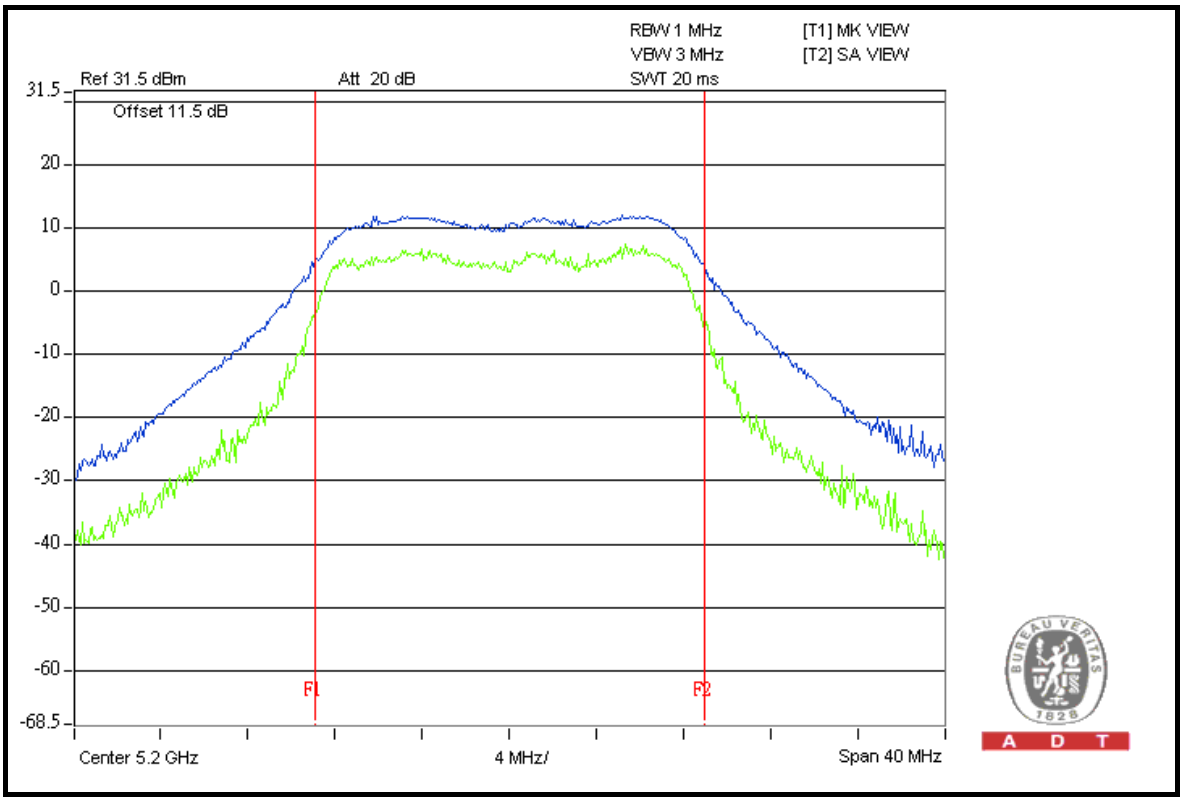
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

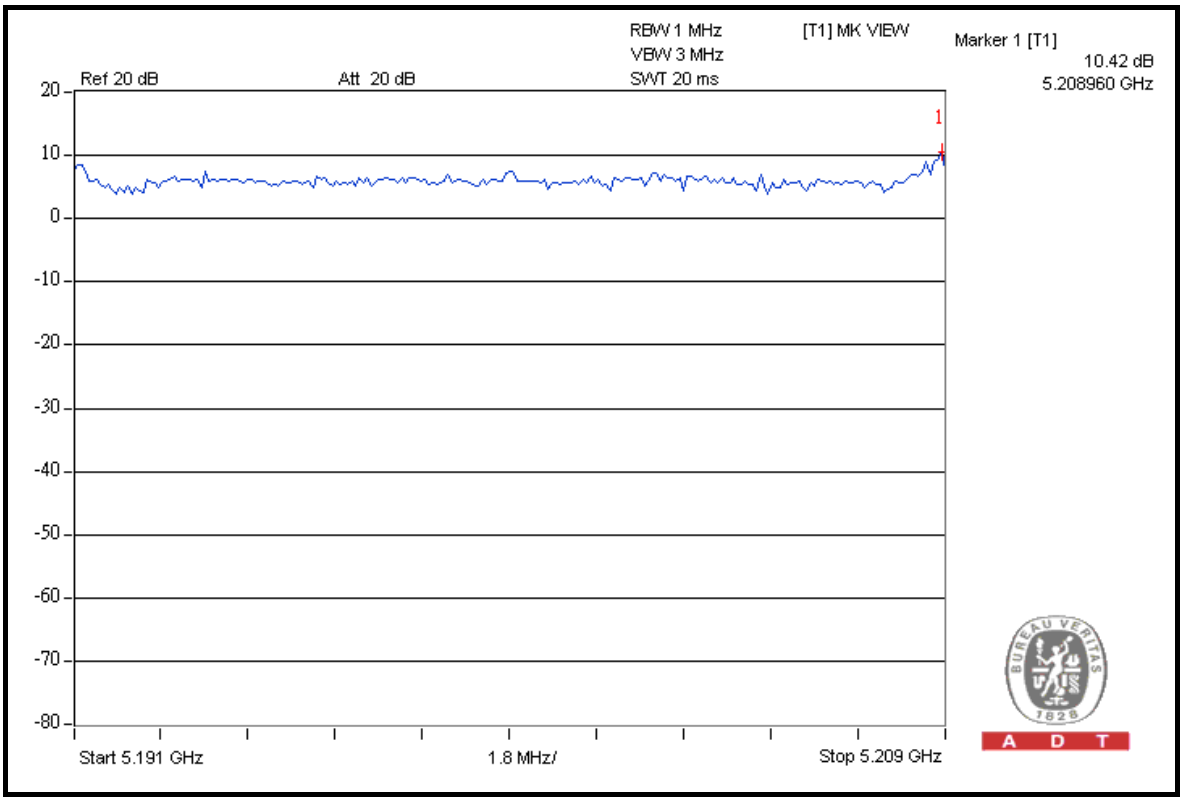
4.4.7 TEST RESULTS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)		PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1		
36	5180	8.69	7.94	13	PASS
40	5200	10.42	9.07	13	PASS
48	5240	8.37	8.31	13	PASS

FOR CHAIN 0: CH 40

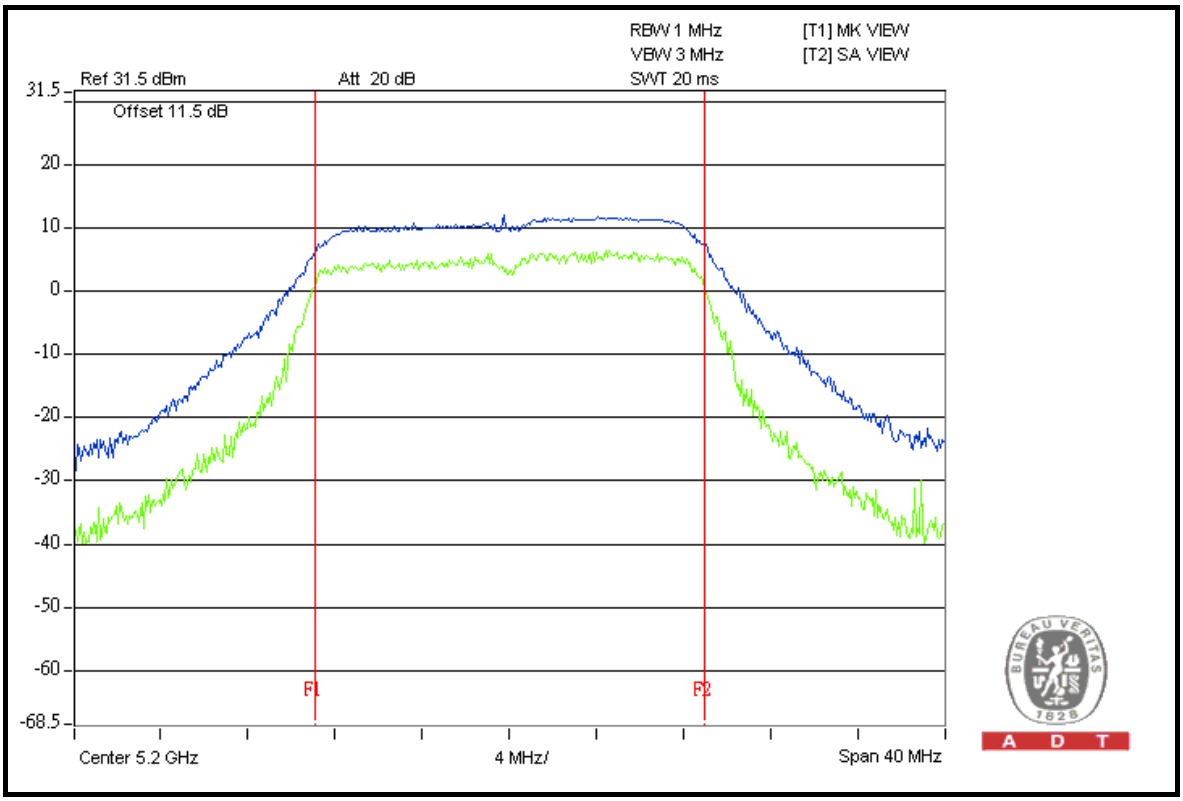


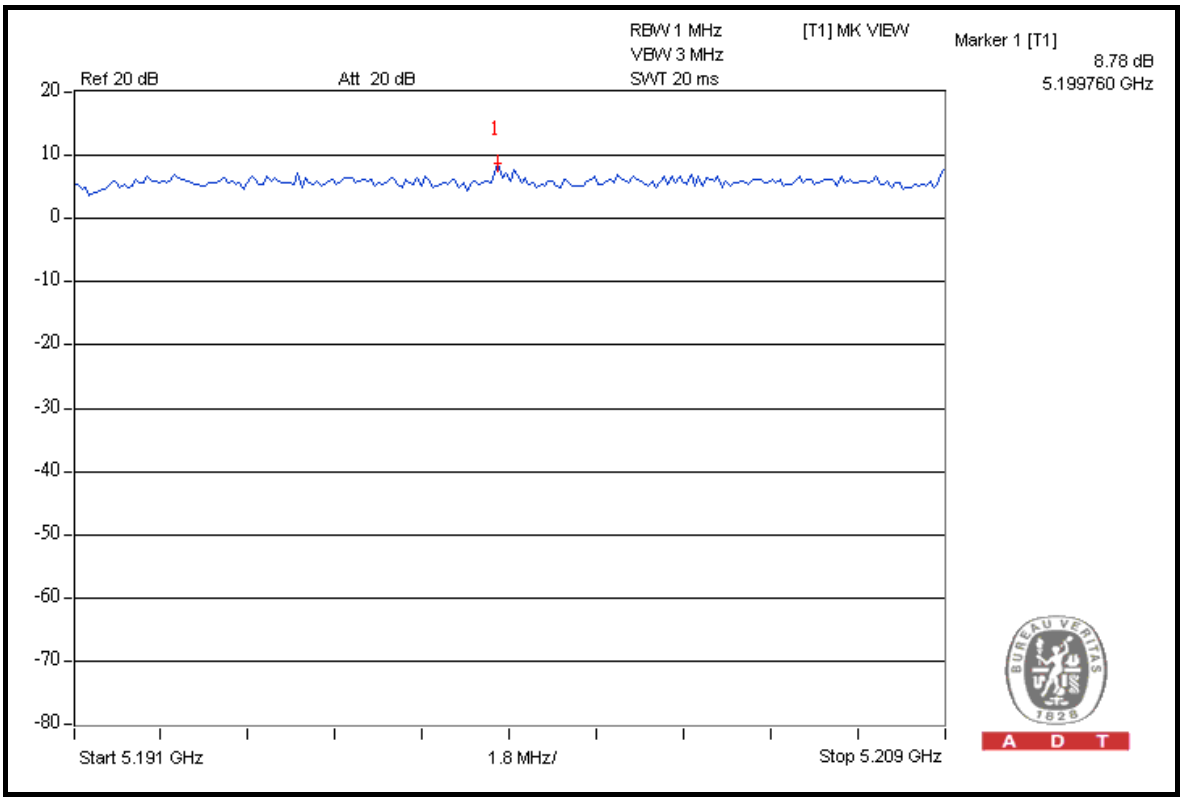


802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)		PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1		
36	5180	7.21	7.51	13	PASS
40	5200	8.78	7.49	13	PASS
48	5240	8.28	7.77	13	PASS

FOR CHAIN 0: CH 40

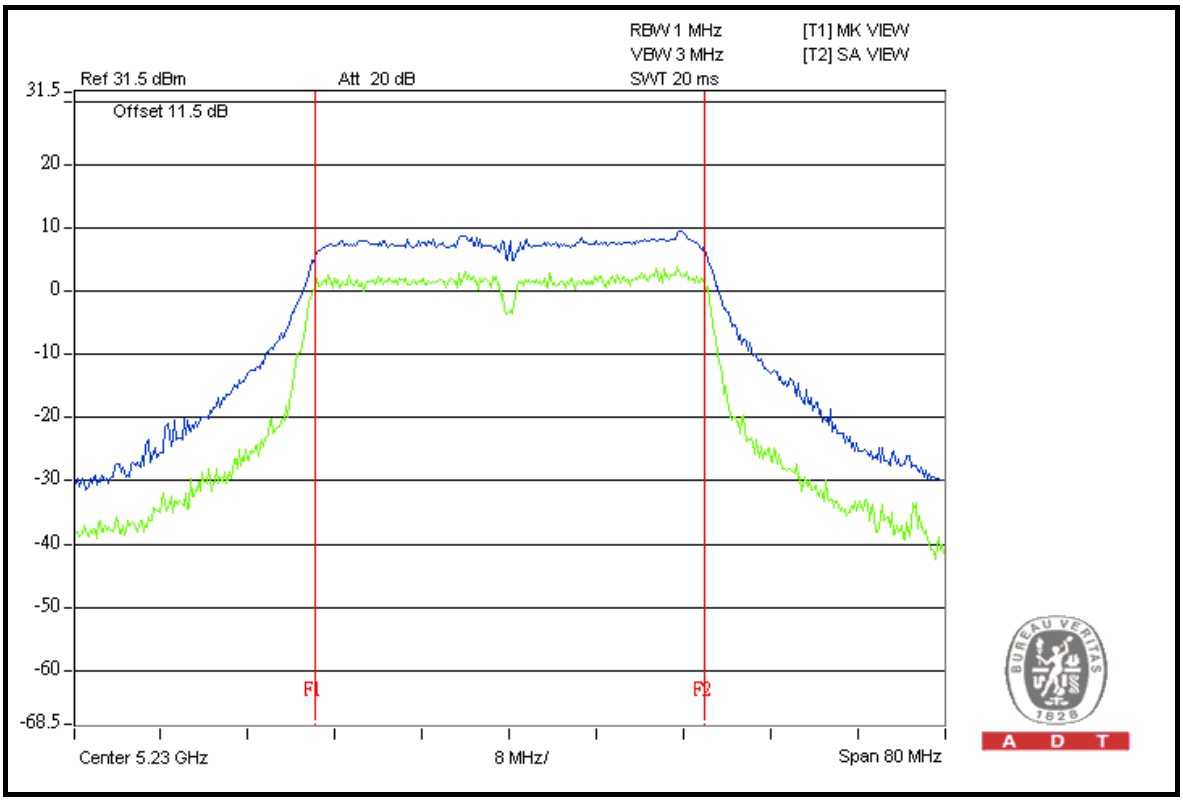


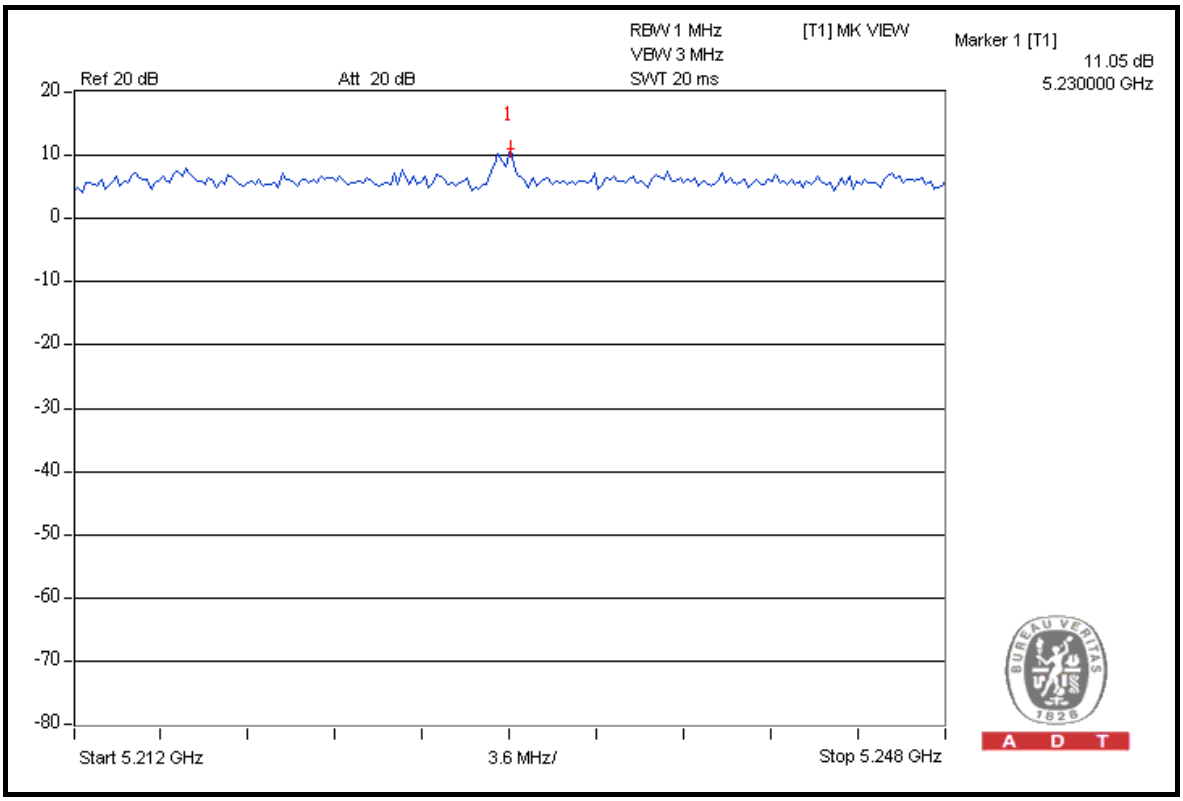


802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)		PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1		
38	5190	9.13	10.96	13	PASS
46	5230	9.46	11.05	13	PASS

FOR CHAIN 1: CH 46





4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

FREQUENCY BAND	LIMIT
5.15 ~ 5.25GHz	4dBm

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100039	Jul. 09, 2010	Jul. 08, 2011

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 PROCEDURES

a. The transmitter output was connected to the spectrum analyzer.

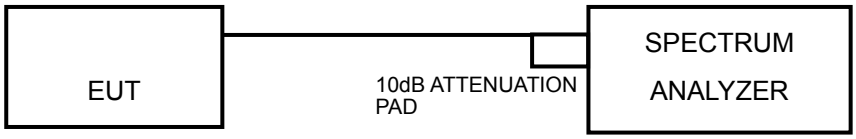
b. Set RBW = 1MHz, VBW = 3MHz. The PPSD is the highest level found across the emission in any 1MHz band.

c. 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 CONDITIONS

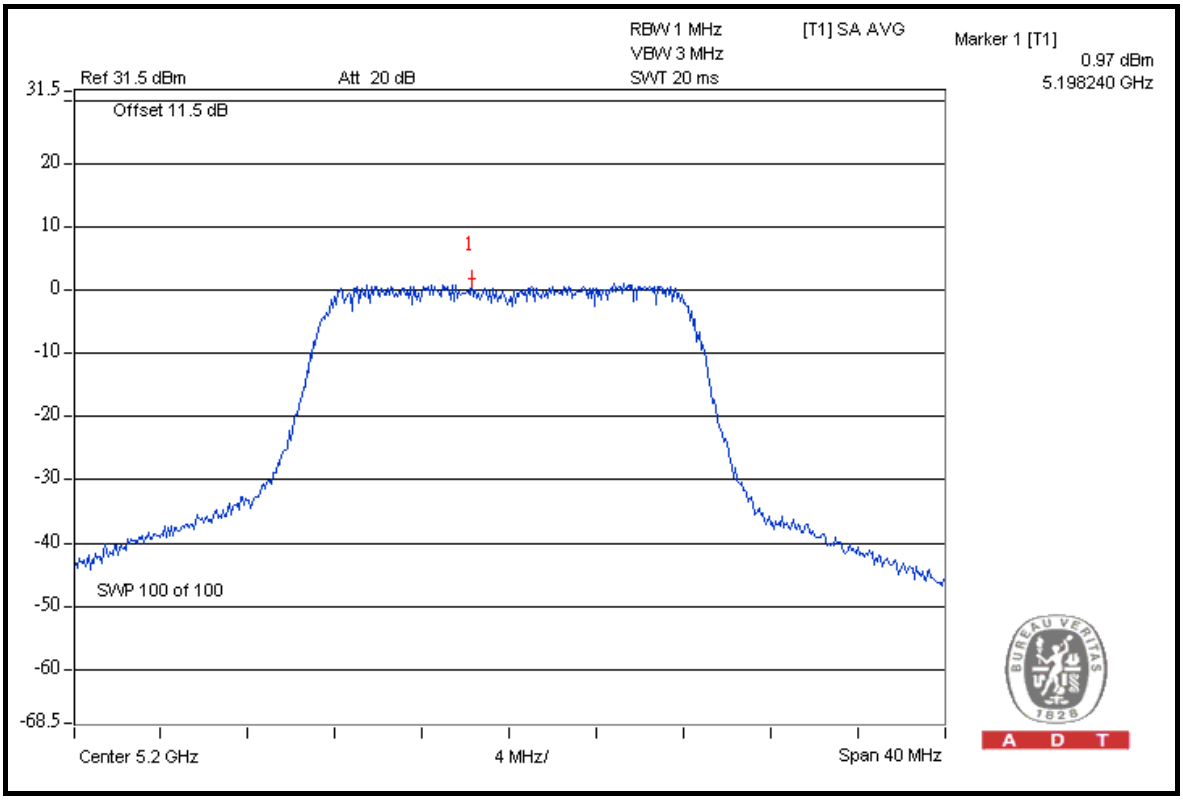
Same as 5.3.6.

4.5.7 TEST RESULTS

802.11a

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	36	5180	0.38	3.01	3.39	4	PASS
	40	5200	0.24	3.01	3.25	4	PASS
	48	5240	0.49	3.01	3.50	4	PASS
1	36	5180	0.48	3.01	3.49	4	PASS
	40	5200	0.97	3.01	3.98	4	PASS
	48	5240	0.53	3.01	3.54	4	PASS

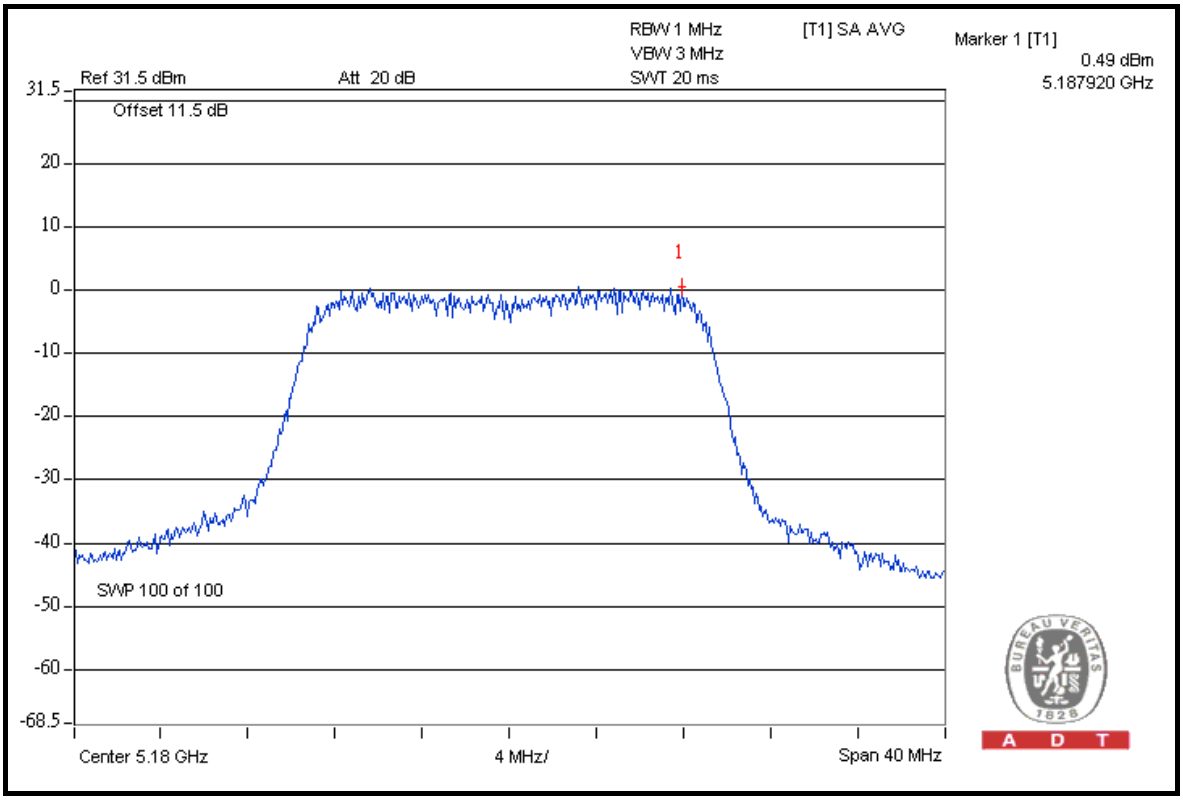
FOR CHAIN 0: CH 40



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	36	5180	-0.3	3.01	2.7	4	PASS
	40	5200	0.1	3.01	3.1	4	PASS
	48	5240	0.1	3.01	3.1	4	PASS
1	36	5180	0.5	3.01	3.5	4	PASS
	40	5200	0.4	3.01	3.4	4	PASS
	48	5240	0.3	3.01	3.3	4	PASS

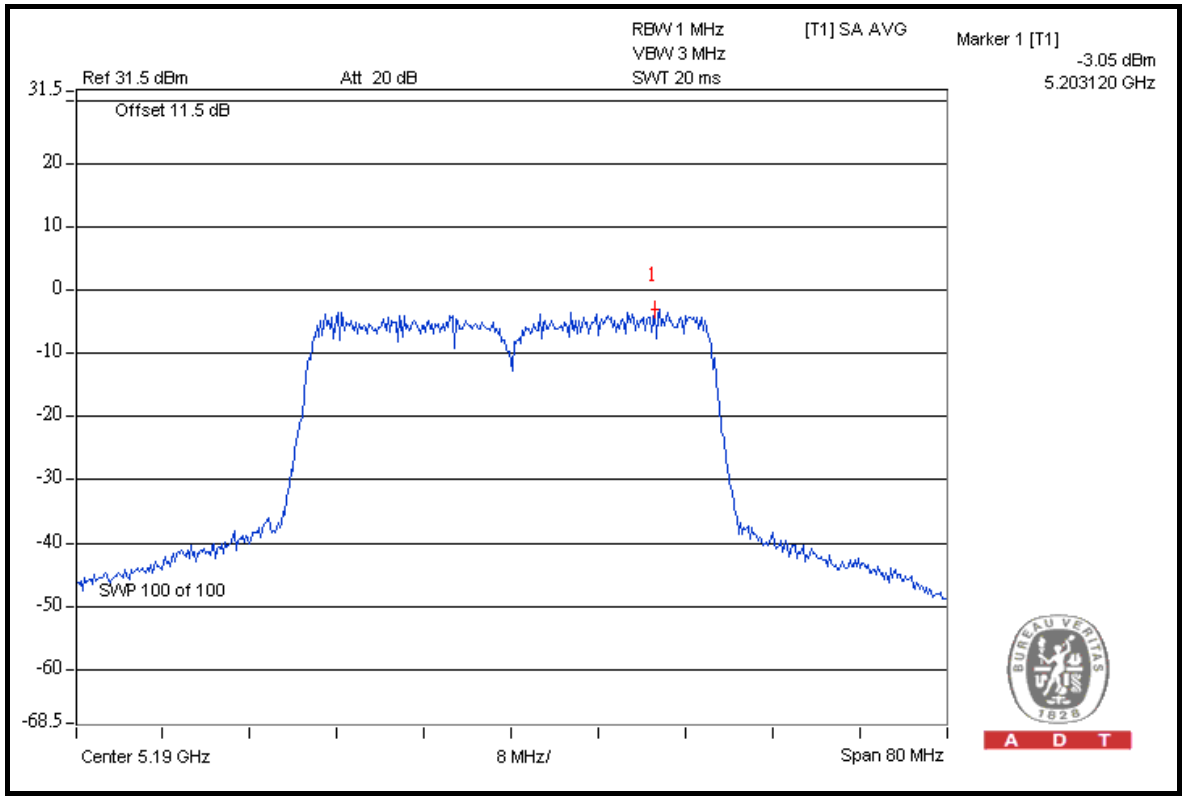
FOR CHAIN 1: CH 36



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	38	5190	-3.7	3.01	-0.7	4	PASS
	46	5230	-3.4	3.01	-0.4	4	PASS
1	38	5190	-3.1	3.01	-0.1	4	PASS
	46	5230	-3.6	3.01	-0.6	4	PASS

FOR CHAIN 1: CH 38



4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within +/- 0.02% of the operating frequency over a temperature variation of -20 degrees to 55 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100039	Jul. 09, 2010	Jul. 08, 2011
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W981030	Jun. 28, 2010	Jun. 27, 2011

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

4.6.3 TEST PROCEDURE

a. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.

b. Turn the EUT on and couple its output to a spectrum analyzer.

c. Turn the EUT off and set the chamber to the highest temperature specified.

d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.

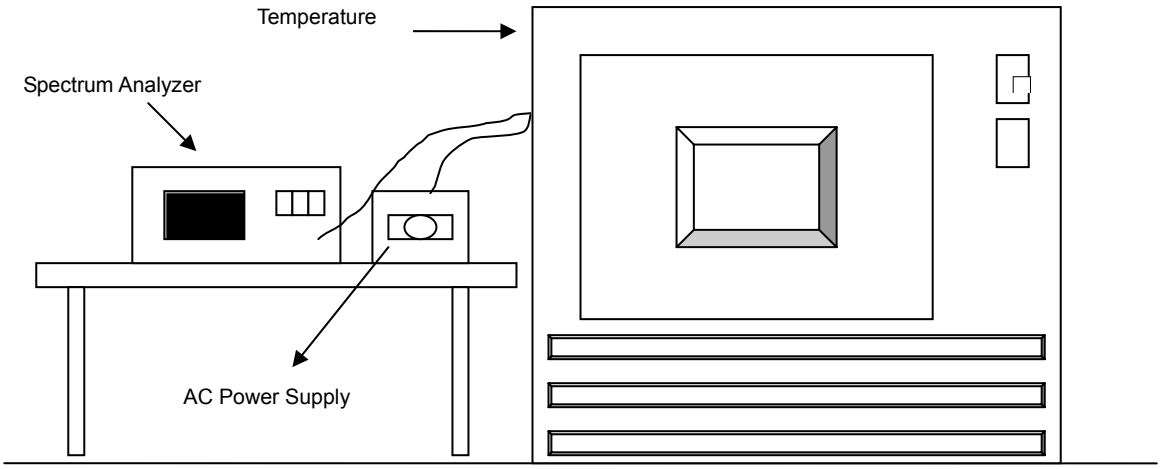
e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.

f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation.

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Same as Item 4.1.6.

4.6.7 TEST RESULTS

FREQUEMCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5200MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	ppm	(MHz)	ppm	(MHz)	ppm	(MHz)	ppm
55	110.0	5199.896575	-19.889	5199.896531	-19.898	5199.896475	-19.909	5199.896841	-19.838
50	110.0	5199.922455	-14.913	5199.922024	-14.995	5199.922031	-14.994	5199.922710	-14.863
40	110.0	5199.944906	-10.595	5199.945232	-10.532	5199.944916	-10.593	5199.945341	-10.511
30	110.0	5199.945541	-10.473	5199.945530	-10.475	5199.945643	-10.453	5199.945367	-10.506
20	110.0	5199.954040	-8.838	5199.954200	-8.808	5199.954134	-8.820	5199.954057	-8.835
10	110.0	5199.958861	-7.911	5199.958468	-7.987	5199.958815	-7.920	5199.958289	-8.021
0	110.0	5199.959467	-7.795	5199.959207	-7.845	5199.959248	-7.837	5199.958927	-7.899
-10	110.0	5199.959377	-7.812	5199.959393	-7.809	5199.959547	-7.779	5199.959615	-7.766
-20	110.0	5199.956487	-8.368	5199.957053	-8.259	5199.956709	-8.325	5199.956477	-8.370
-30	110.0	5199.958184	-8.042	5199.957663	-8.142	5199.958184	-8.042	5199.958398	-8.000

FREQUEMCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5200MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	ppm	(MHz)	ppm	(MHz)	ppm	(MHz)	ppm
20	93.5	5199.945678	-10.447	5199.945895	-10.405	5199.945941	-10.396	5199.946030	-10.379
	110.0	5199.954040	-8.838	5199.954200	-8.808	5199.954134	-8.820	5199.954057	-8.835
	126.5	5199.958960	-7.892	5199.959244	-7.838	5199.959256	-7.835	5199.959097	-7.866

4.7 BAND EDGES MEASUREMENT

4.7.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
FOR CONDUCTED MEASUREMENT				
SPECTRUM ANALYZER R&S	FSP40	100039	Jul. 09, 2010	Jul. 08, 2011
FOR RADIATED MEASUREMENT				
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Aug. 04, 2010	Aug. 03, 2011
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Jul. 09, 2010	Jul. 08, 2011
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 30, 2010	Apr. 29, 2011
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Aug. 02, 2010	Aug. 01, 2011
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8449B	3008A01910	Sep. 09, 2010	Sep. 08, 2011
Preamplifier Agilent	8447D	2944A10638	Nov. 03, 2010	Nov. 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218190/4 231241/4	May 14, 2010	May 13, 2011
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 20, 2010	Aug. 19, 2011
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn Table Controller EMCO	2090	NA	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	Aug. 25, 2010	Aug. 24, 2011

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

4.7.2 TEST PROCEDURE

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

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

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

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

e. Set both RBW and VBW of spectrum analyzer to 1MHz and 3MHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

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

4.7.3 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.7.4 TEST RESULTS

For signals in the restricted bands above and below the 5.15 to 5.25GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

The spectrum plots (Peak RBW = 1MHz, VBW = 3MHz) are attached on the following pages.

802.11a

RESTRICT BAND (4500 ~ 5150 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
5180.00 (PK)	107.8	48.36	59.44	74.00
5180.00 (AV)	96.2	48.95	47.25	54.00

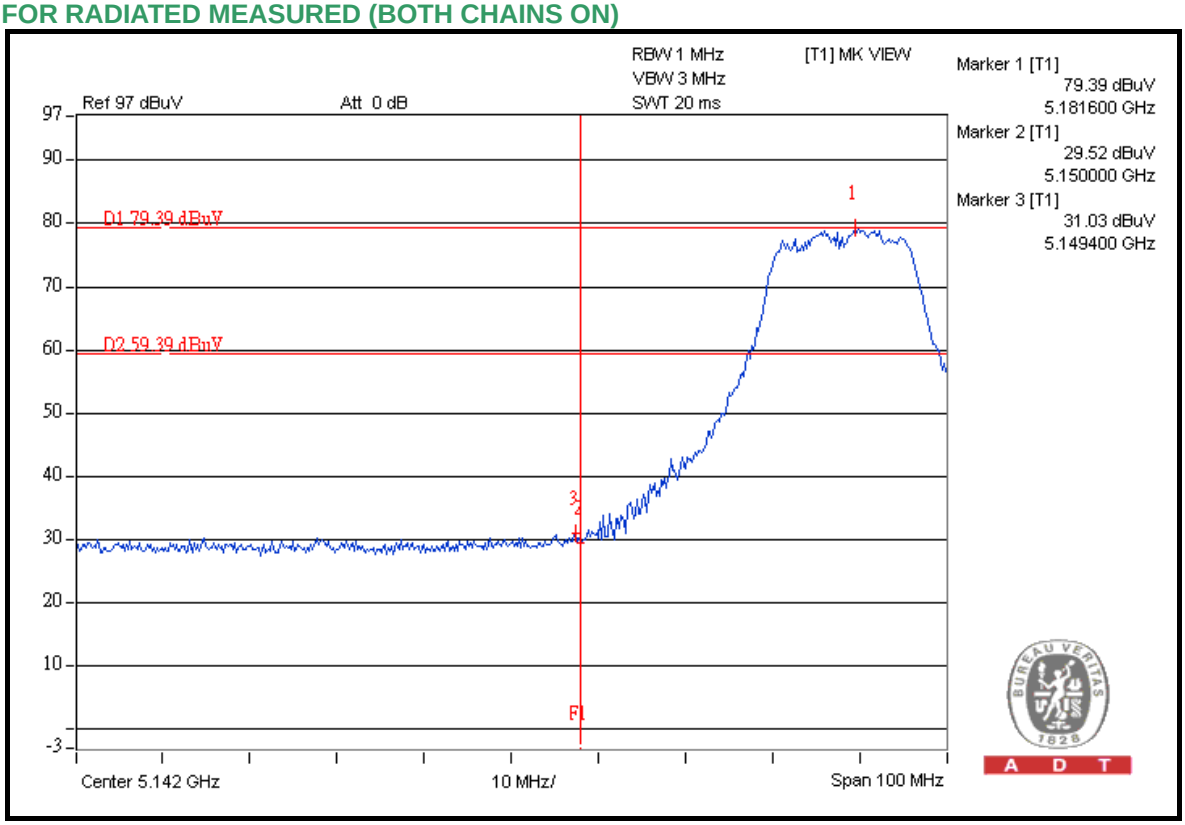
RESTRICT BAND (5350 ~ 5460 MHz)

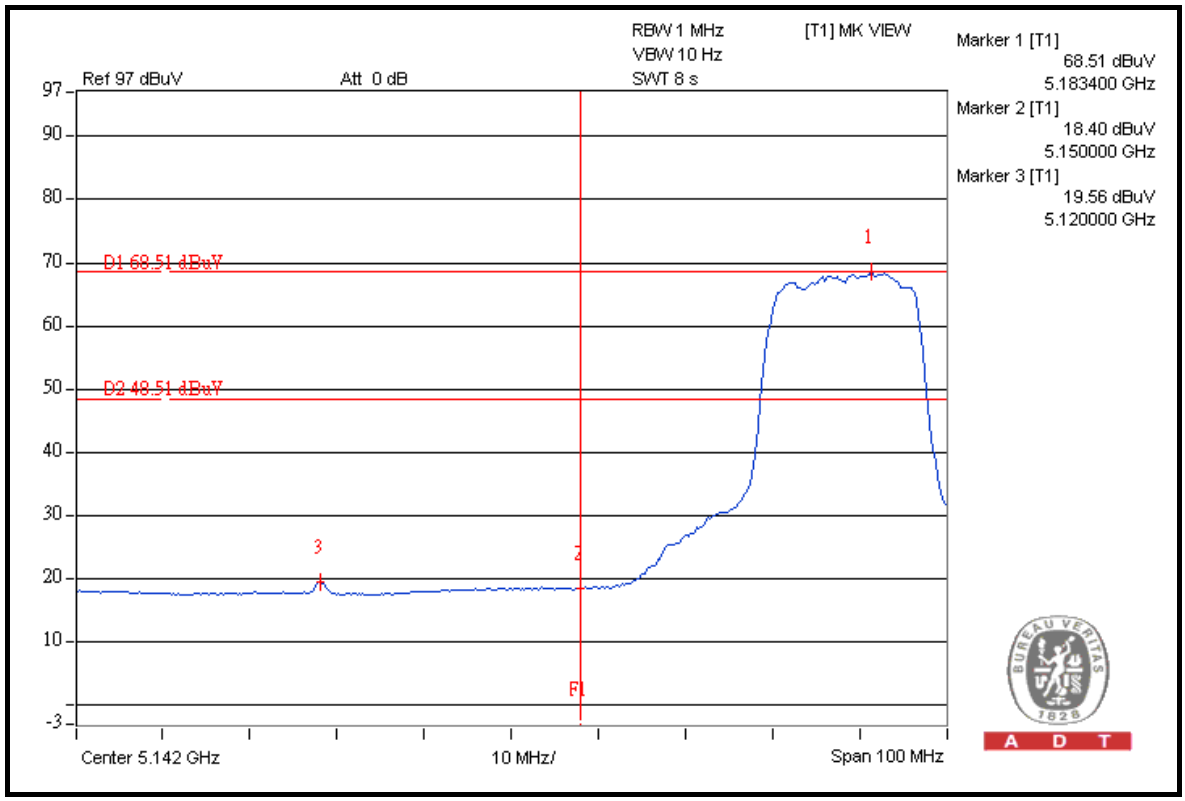
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
5240.00 (PK)	107.1	47.64	59.46	74.00
5240.00 (AV)	95.4	46.46	48.94	54.00

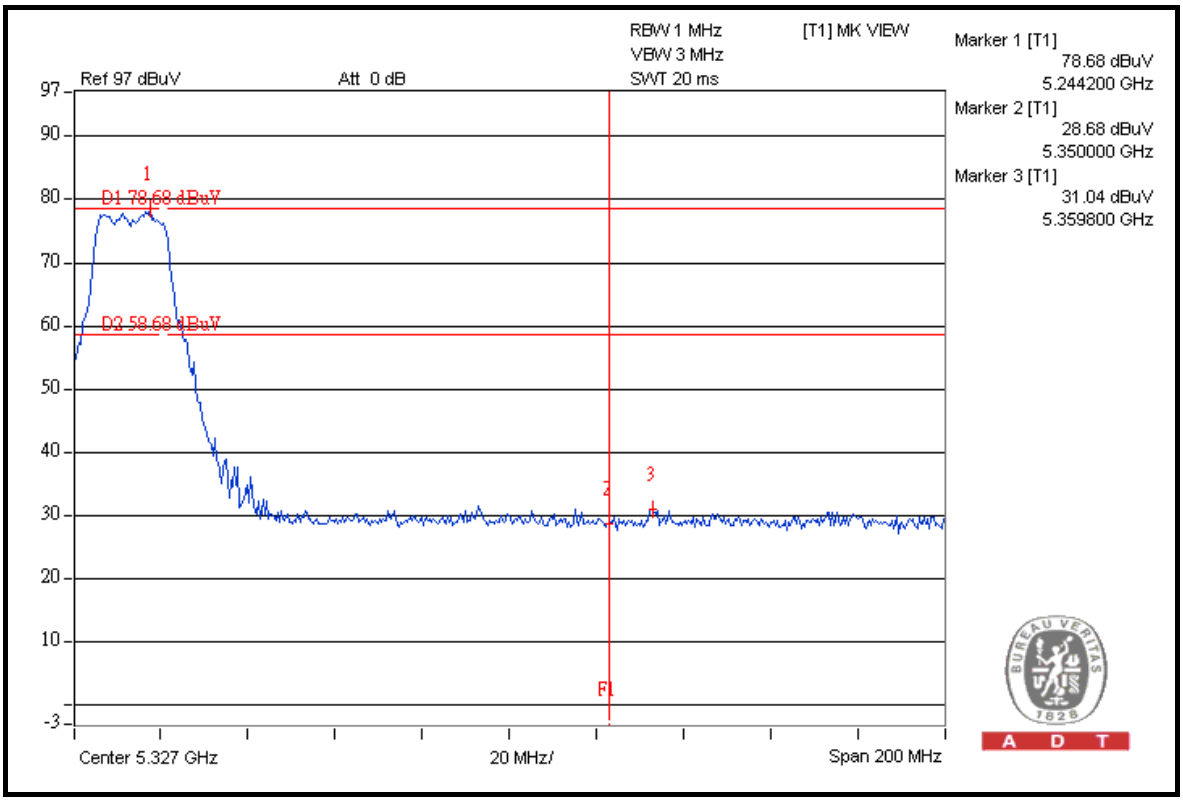
NOTE:

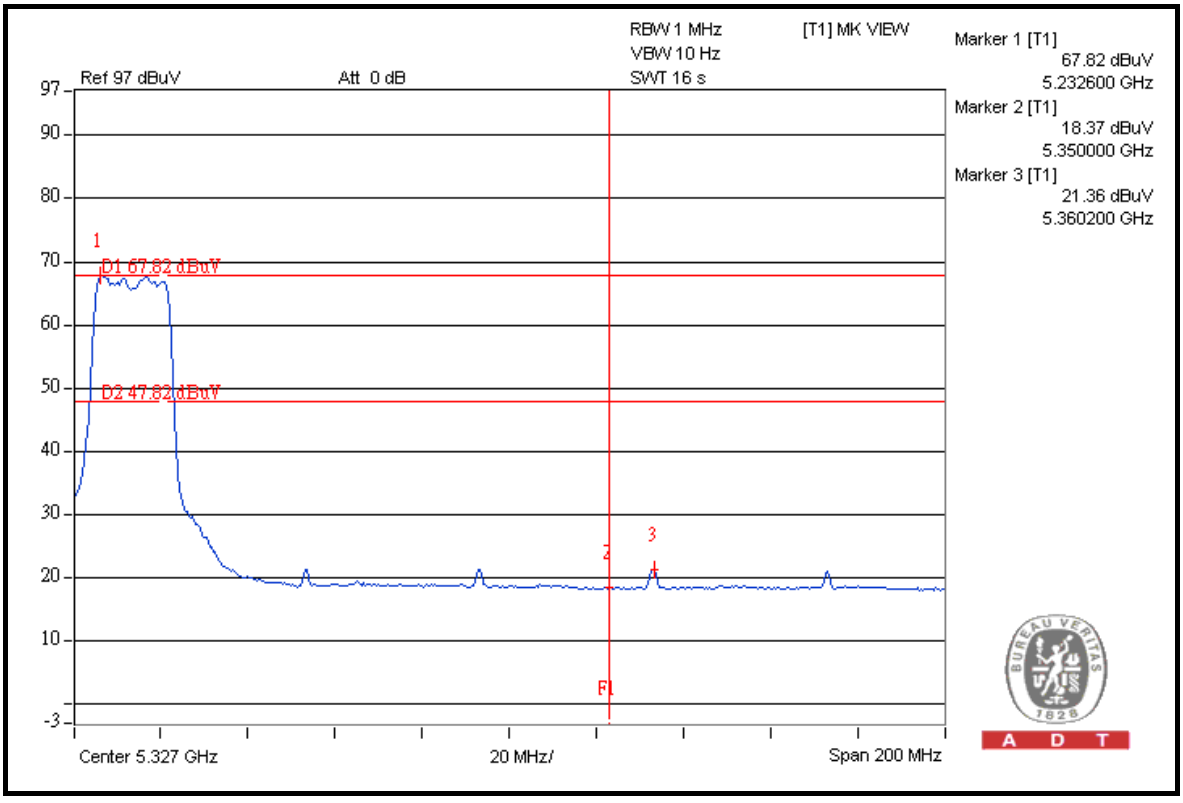
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

FOR RADIATED MEASURED (BOTH CHAINS ON)



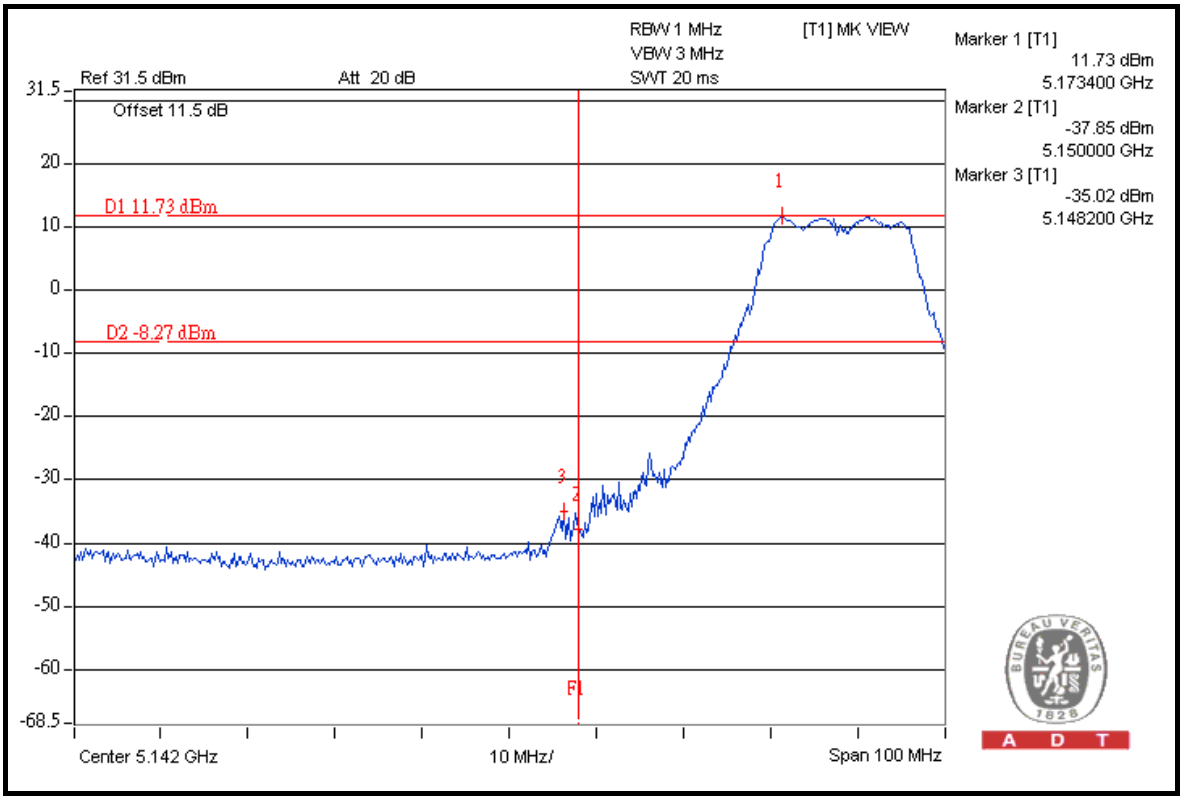


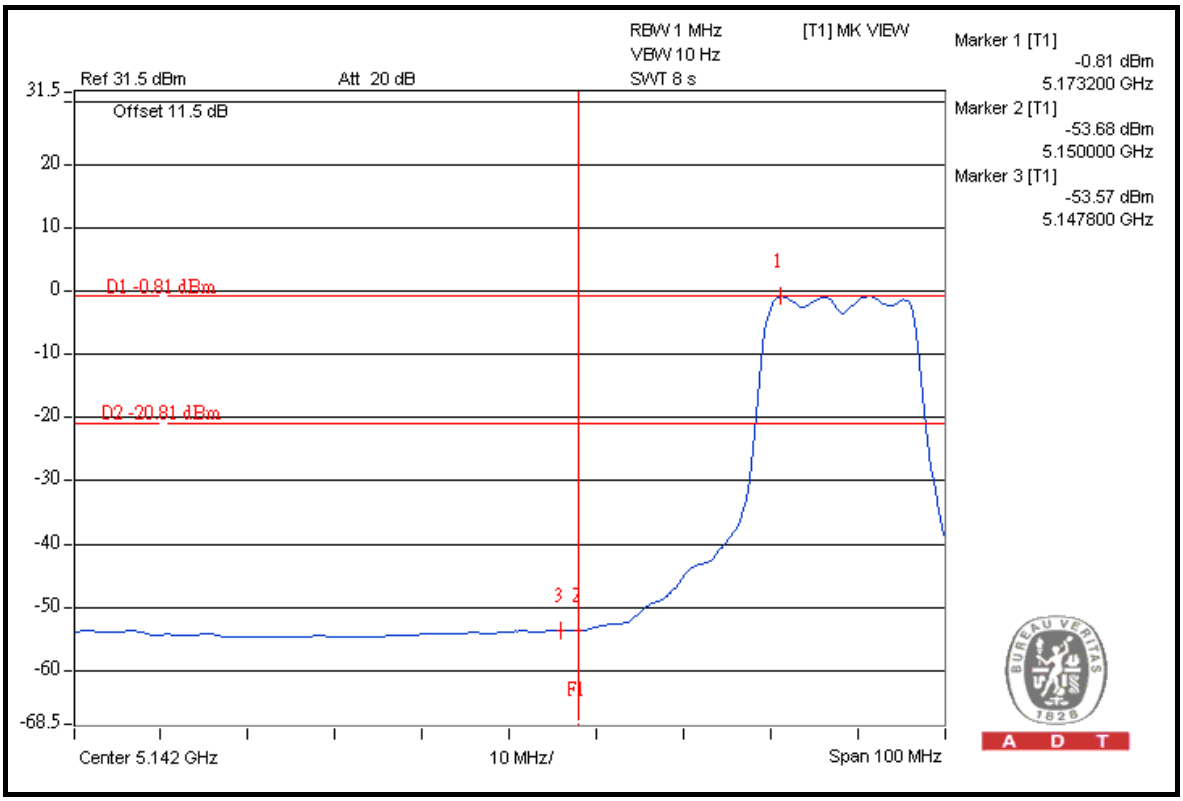

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
78.68 dBuV
5.244200 GHz
Marker 2 [T1]
28.68 dBuV
5.350000 GHz
Marker 3 [T1]
31.04 dBuV
5.359800 GHz
D1 78.68 dBuV
D2 58.68 dBuV
Center 5.327 GHz
20 MHz/
Span 200 MHz

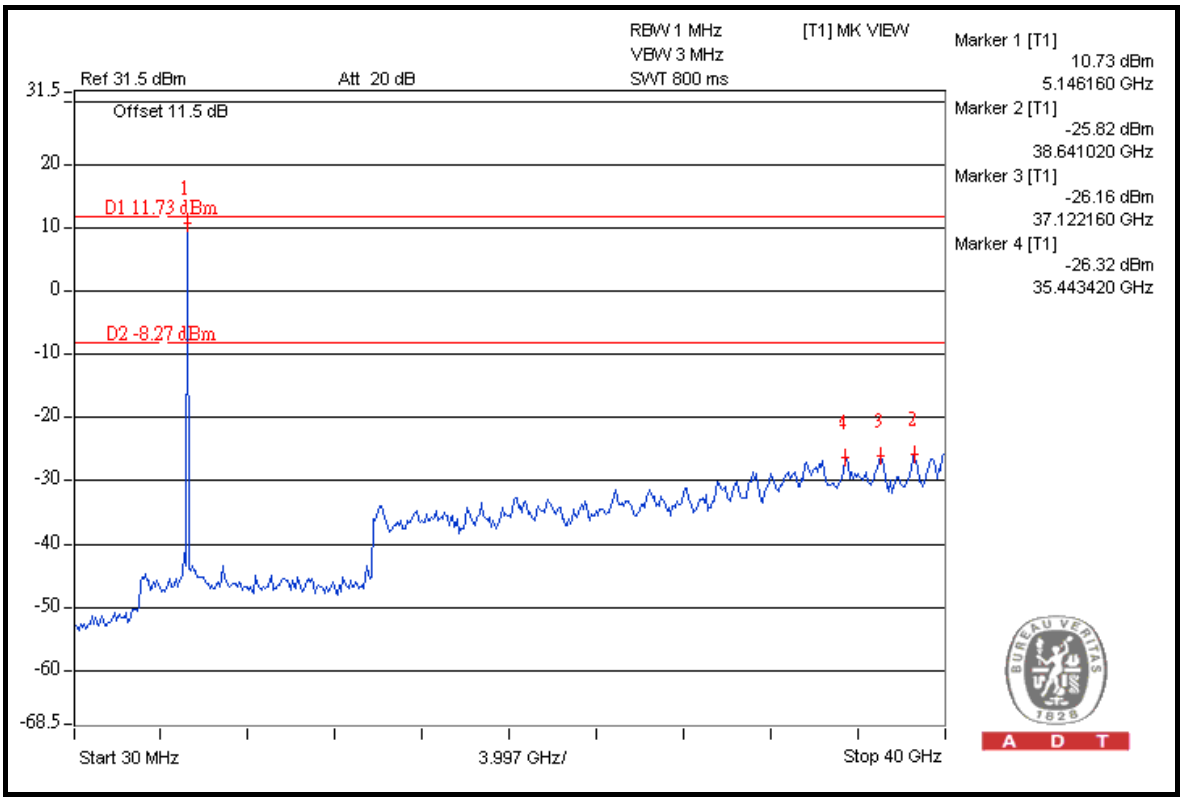

RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
67.82 dBuV
5.232600 GHz
Marker 2 [T1]
18.37 dBuV
5.350000 GHz
Marker 3 [T1]
21.36 dBuV
5.360200 GHz
D1 67.82 dBuV
D2 47.82 dBuV
Center 5.327 GHz
20 MHz/
Span 200 MHz

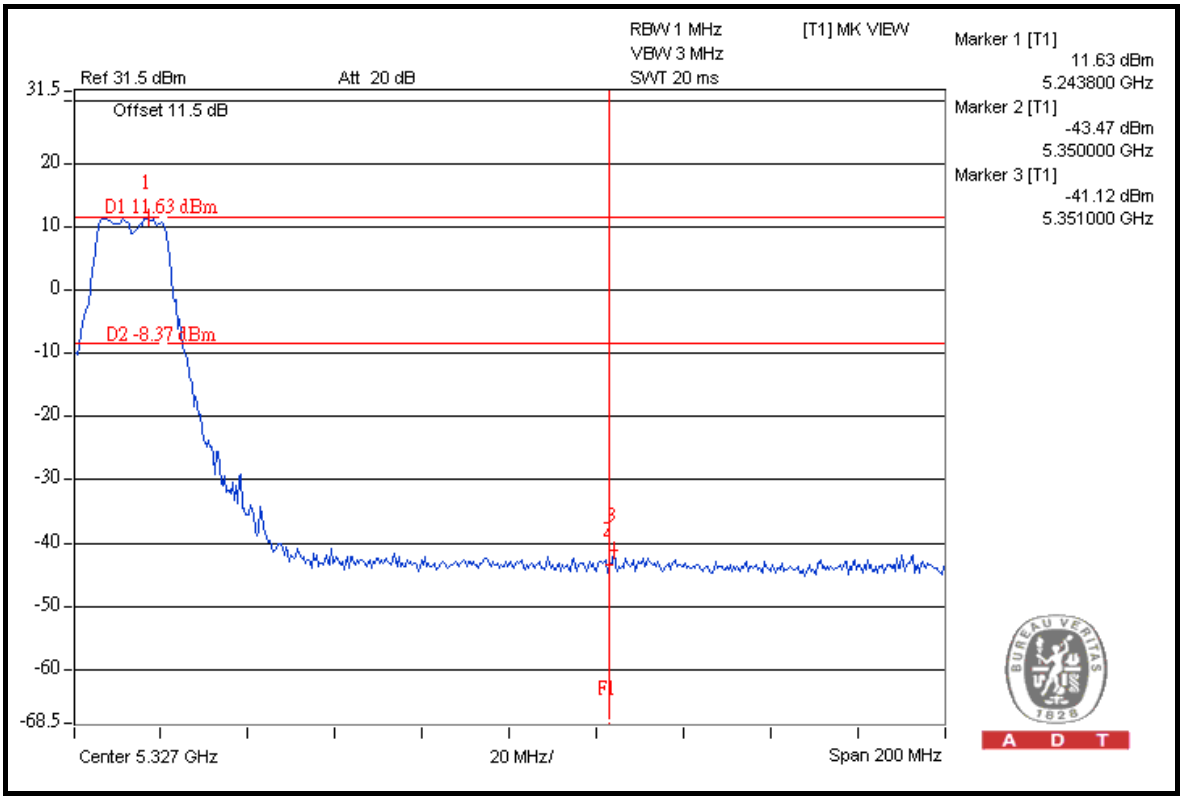
FOR CONDUCTED MEASURED

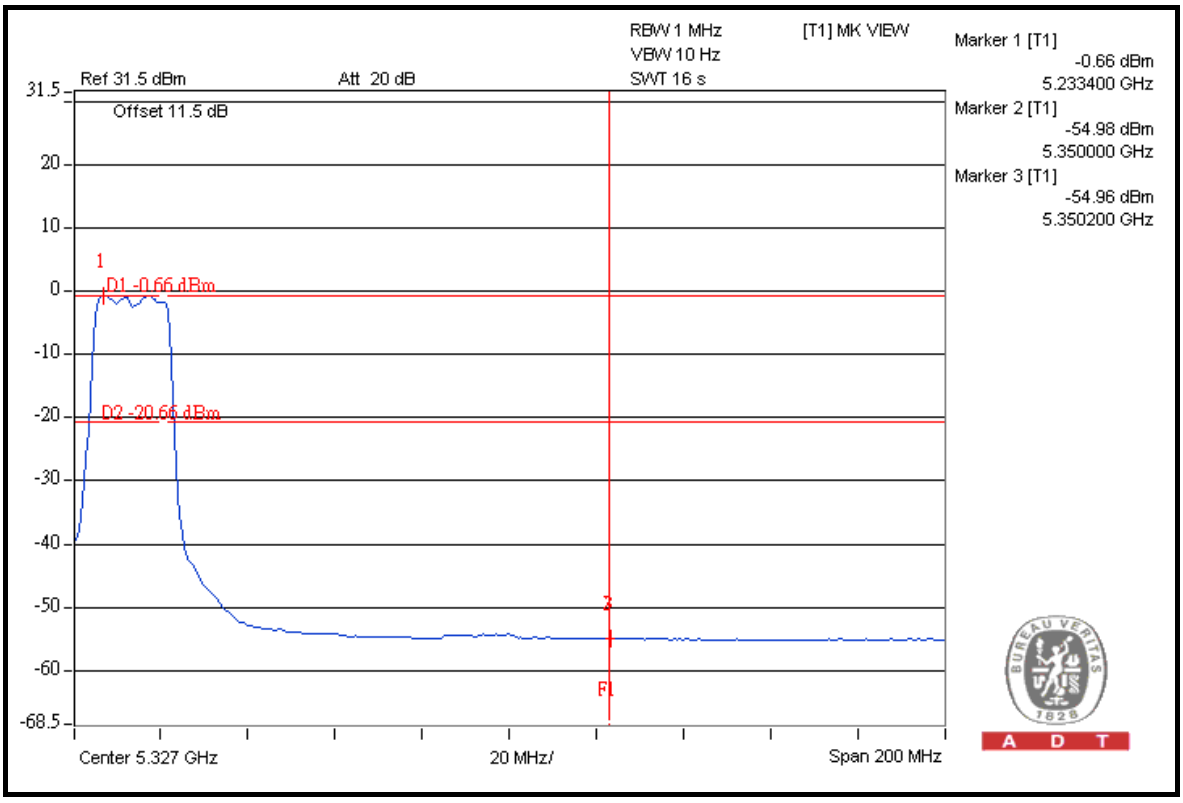
CHAIN 0

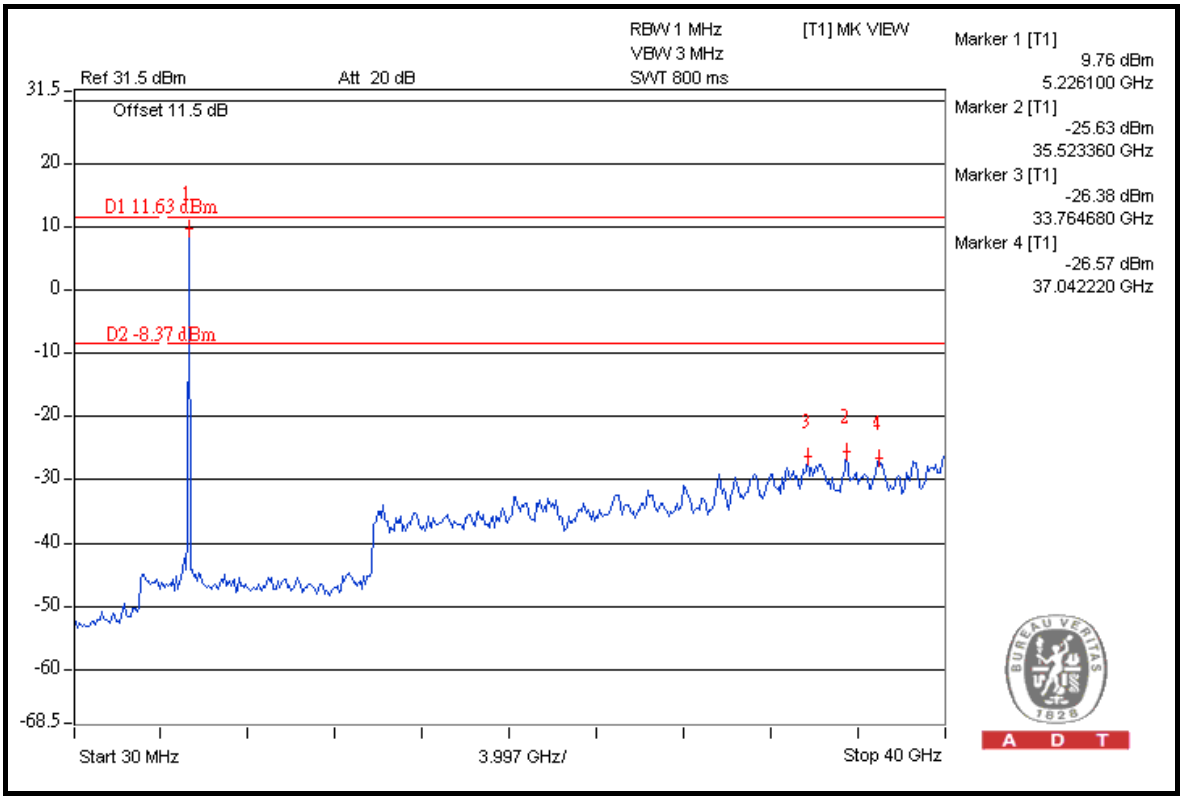




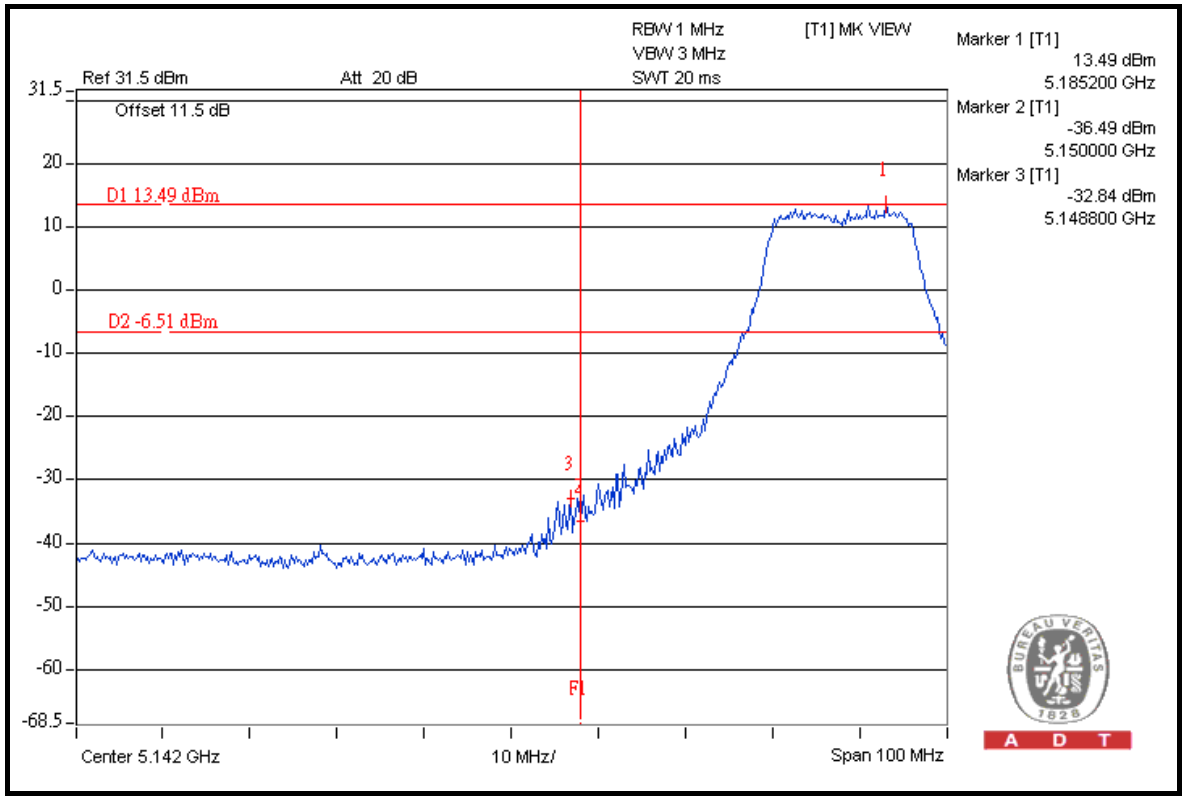

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 11.73 dBm
D2 -8.27 dBm
Marker 1 [T1]
10.73 dBm
5.146160 GHz
Marker 2 [T1]
-25.82 dBm
38.641020 GHz
Marker 3 [T1]
-26.16 dBm
37.122160 GHz
Marker 4 [T1]
-26.32 dBm
35.443420 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Start 30 MHz
3.997 GHz/
Stop 40 GHz

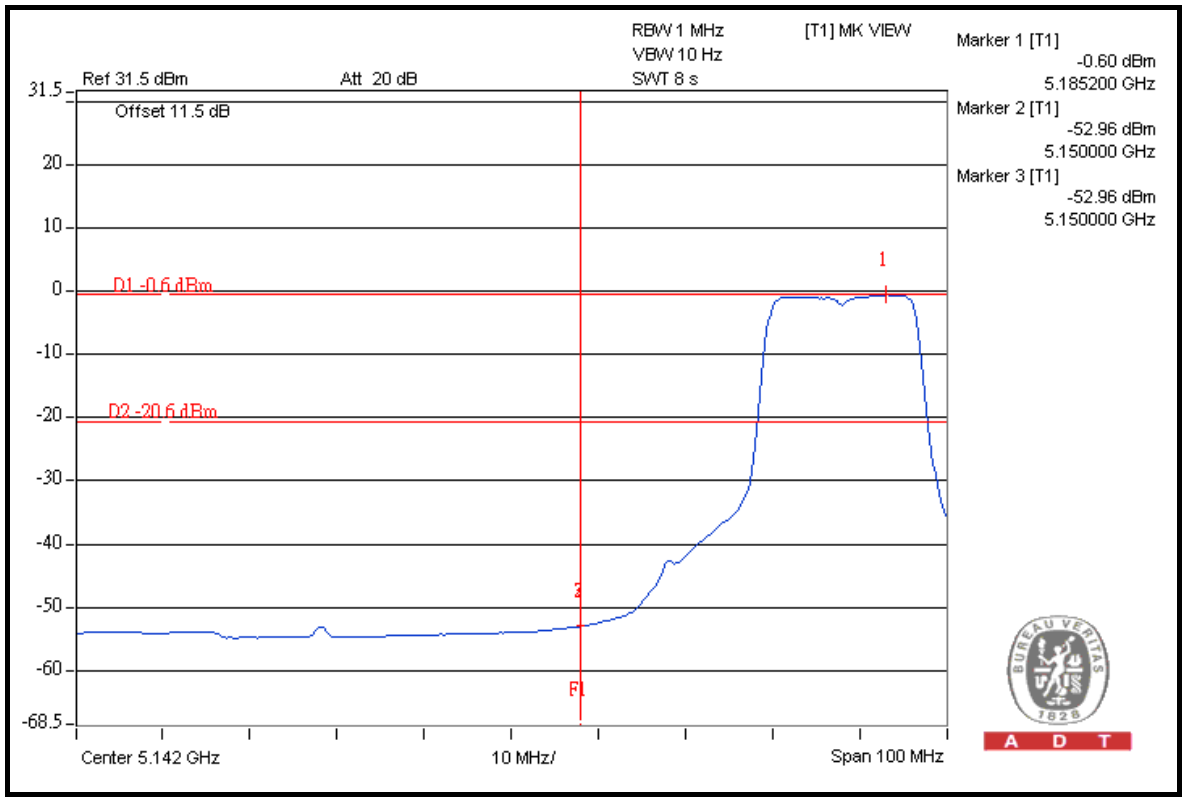

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 11.63 dBm
D2 -8.37 dBm
Marker 1 [T1]
11.63 dBm
5.243800 GHz
Marker 2 [T1]
-43.47 dBm
5.350000 GHz
Marker 3 [T1]
-41.12 dBm
5.351000 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.327 GHz
20 MHz/
Span 200 MHz

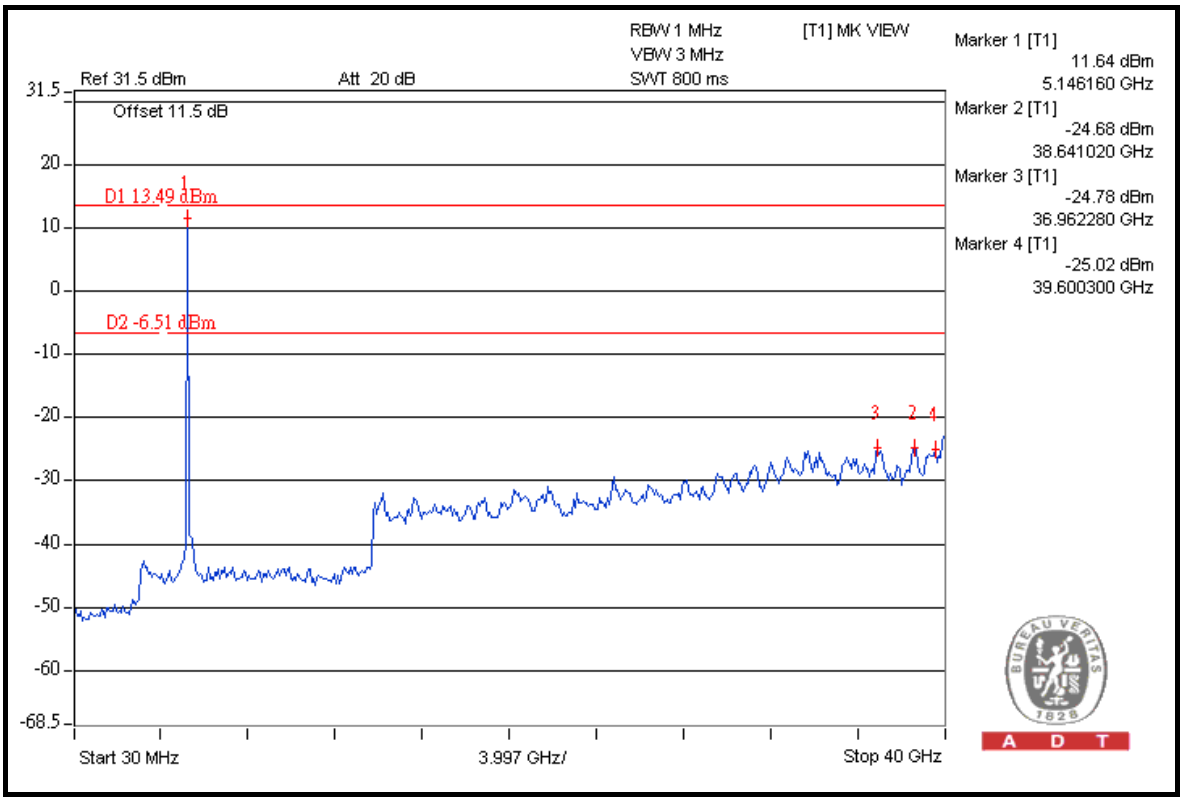

RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
-0.66 dBm
5.233400 GHz
Marker 2 [T1]
-54.98 dBm
5.350000 GHz
Marker 3 [T1]
-54.96 dBm
5.350200 GHz
D1 -0.66 dBm
D2 -20.66 dBm
Center 5.327 GHz
20 MHz/
Span 200 MHz

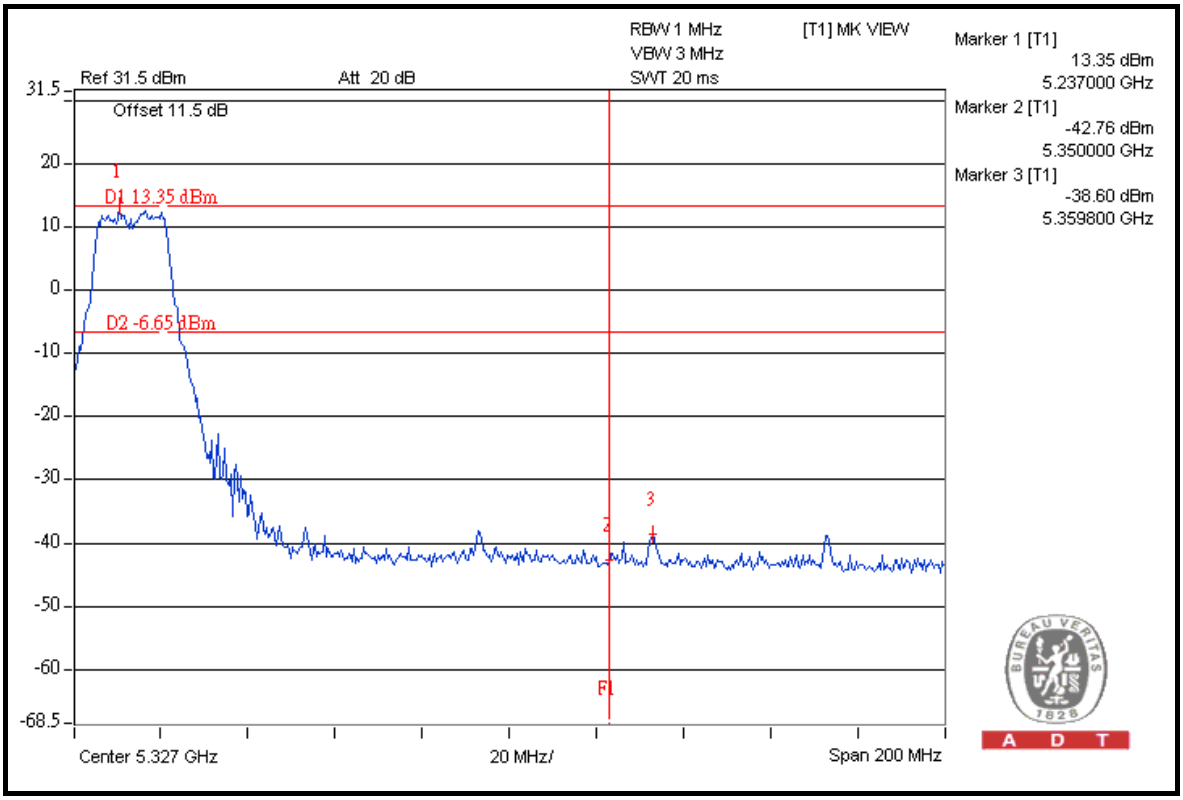

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
9.76 dBm
5.226100 GHz
Marker 2 [T1]
-25.63 dBm
35.523360 GHz
Marker 3 [T1]
-26.38 dBm
33.764680 GHz
Marker 4 [T1]
-26.57 dBm
37.042220 GHz
D1 11.63 dBm
D2 -8.37 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

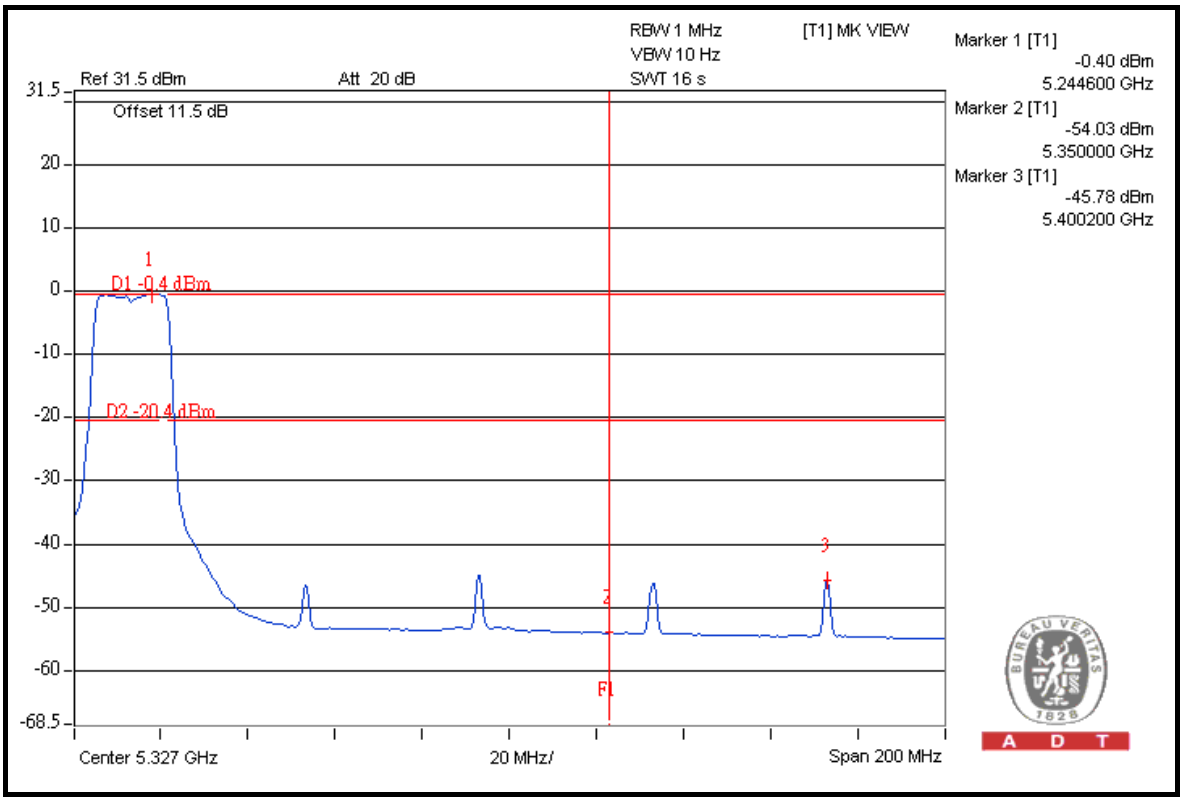
CHAIN 1

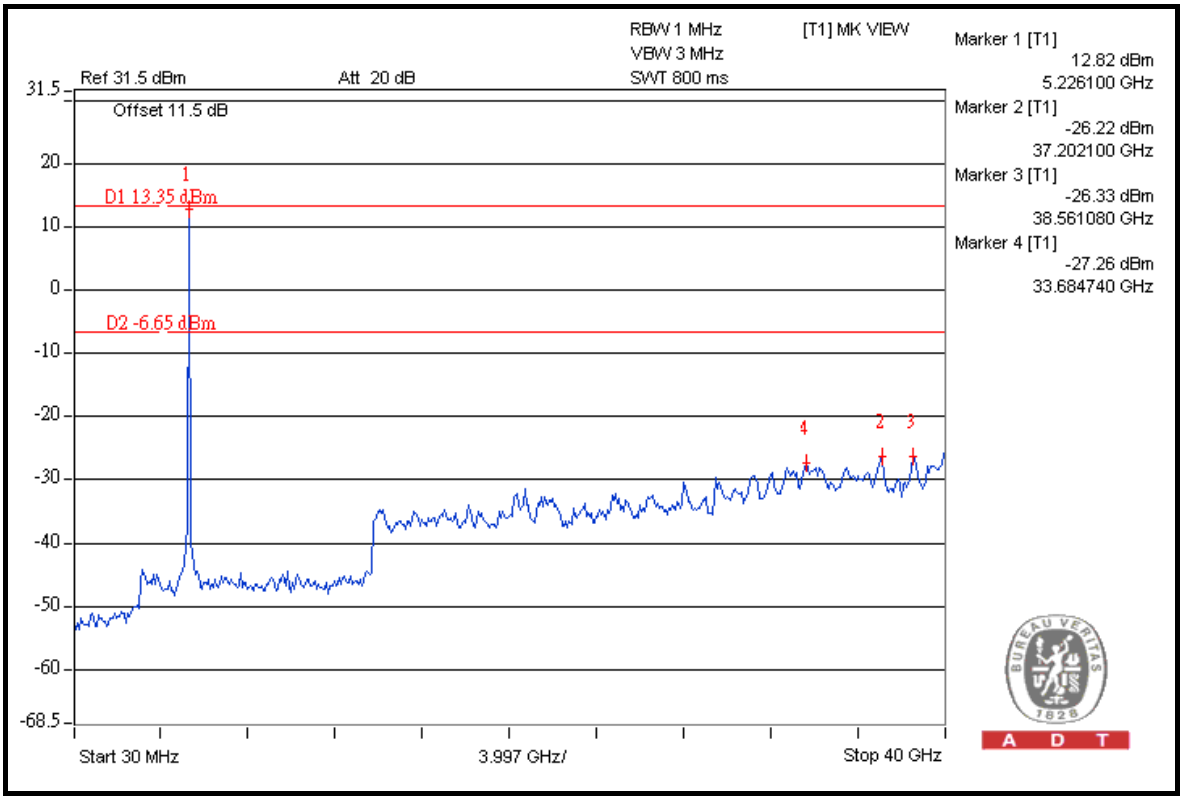

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 13.49 dBm
D2 -6.51 dBm
Marker 1 [T1]
13.49 dBm
5.185200 GHz
Marker 2 [T1]
-36.49 dBm
5.150000 GHz
Marker 3 [T1]
-32.84 dBm
5.148800 GHz
Center 5.142 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 8 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 -0.6 dBm
D2 -20.6 dBm
Marker 1 [T1]
-0.60 dBm
5.185200 GHz
Marker 2 [T1]
-52.96 dBm
5.150000 GHz
Marker 3 [T1]
-52.96 dBm
5.150000 GHz
Center 5.142 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Marker 1 [T1]
11.64 dBm
5.146160 GHz
Marker 2 [T1]
-24.68 dBm
38.641020 GHz
Marker 3 [T1]
-24.78 dBm
36.962280 GHz
Marker 4 [T1]
-25.02 dBm
39.600300 GHz
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 13.49 dBm
D2 -6.51 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Start 30 MHz
3.997 GHz/
Stop 40 GHz


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
13.35 dBm
5.237000 GHz
Marker 2 [T1]
-42.76 dBm
5.350000 GHz
Marker 3 [T1]
-38.60 dBm
5.359800 GHz
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 13.35 dBm
D2 -6.65 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.327 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
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 -0.4 dBm
D2 -20.4 dBm
Center 5.327 GHz
20 MHz/
Span 200 MHz
Marker 1 [T1]
-0.40 dBm
5.244600 GHz
Marker 2 [T1]
-54.03 dBm
5.350000 GHz
Marker 3 [T1]
-45.78 dBm
5.400200 GHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
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 13.35 dBm
D2 -6.65 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Marker 1 [T1]
12.82 dBm
5.226100 GHz
Marker 2 [T1]
-26.22 dBm
37.202100 GHz
Marker 3 [T1]
-26.33 dBm
38.561080 GHz
Marker 4 [T1]
-27.26 dBm
33.684740 GHz

802.11n (20MHz)

RESTRICT BAND (4500 ~ 5150 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
5180.00 (PK)	107.5	47.15	60.35	74.00
5180.00 (AV)	95.7	49.71	45.99	54.00

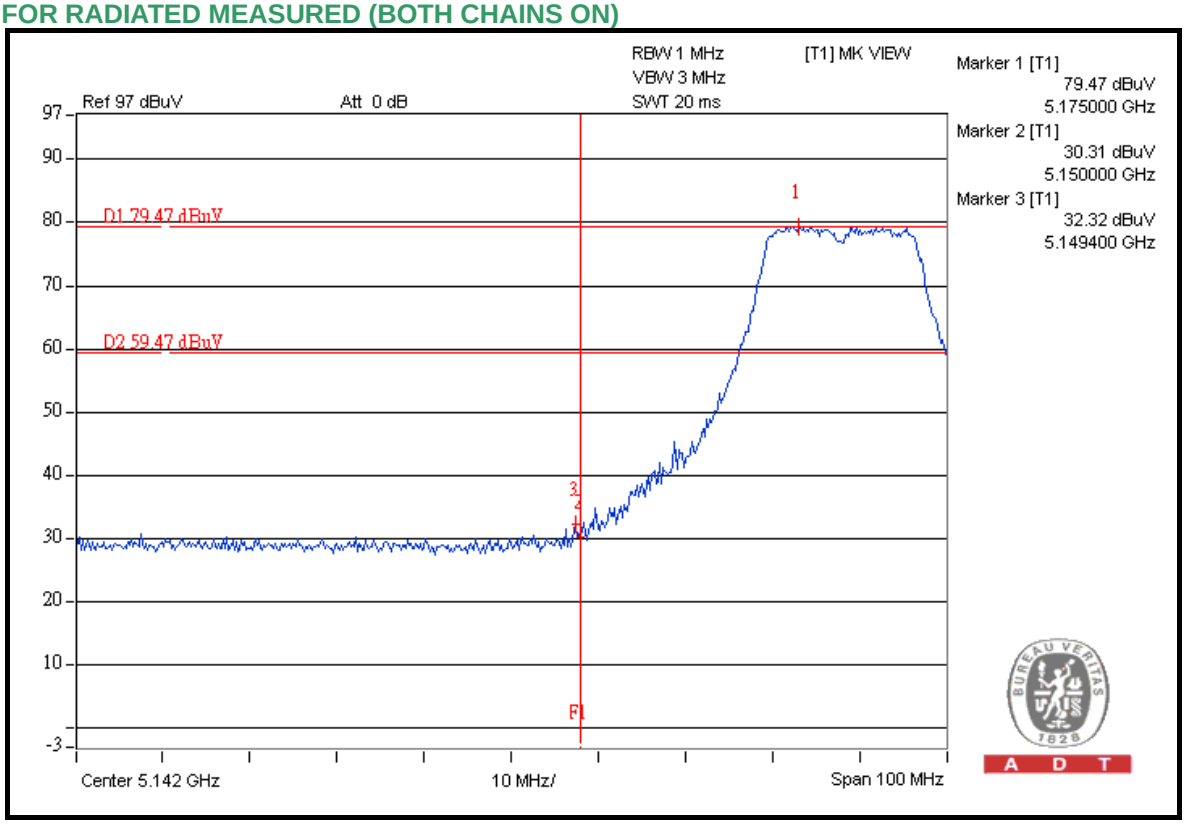
RESTRICT BAND (5350 ~ 5460 MHz)

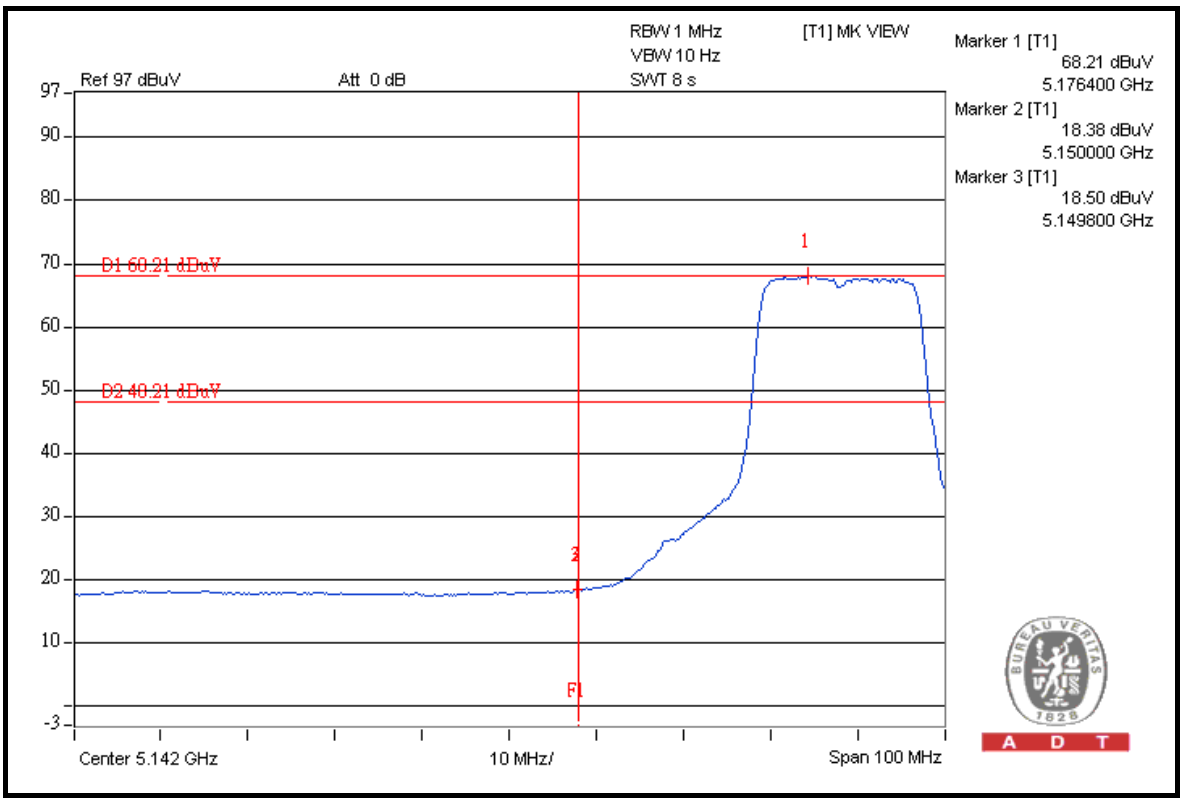
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
5240.00 (PK)	106.7	46.68	60.02	74.00
5240.00 (AV)	95.0	44.05	50.95	54.00

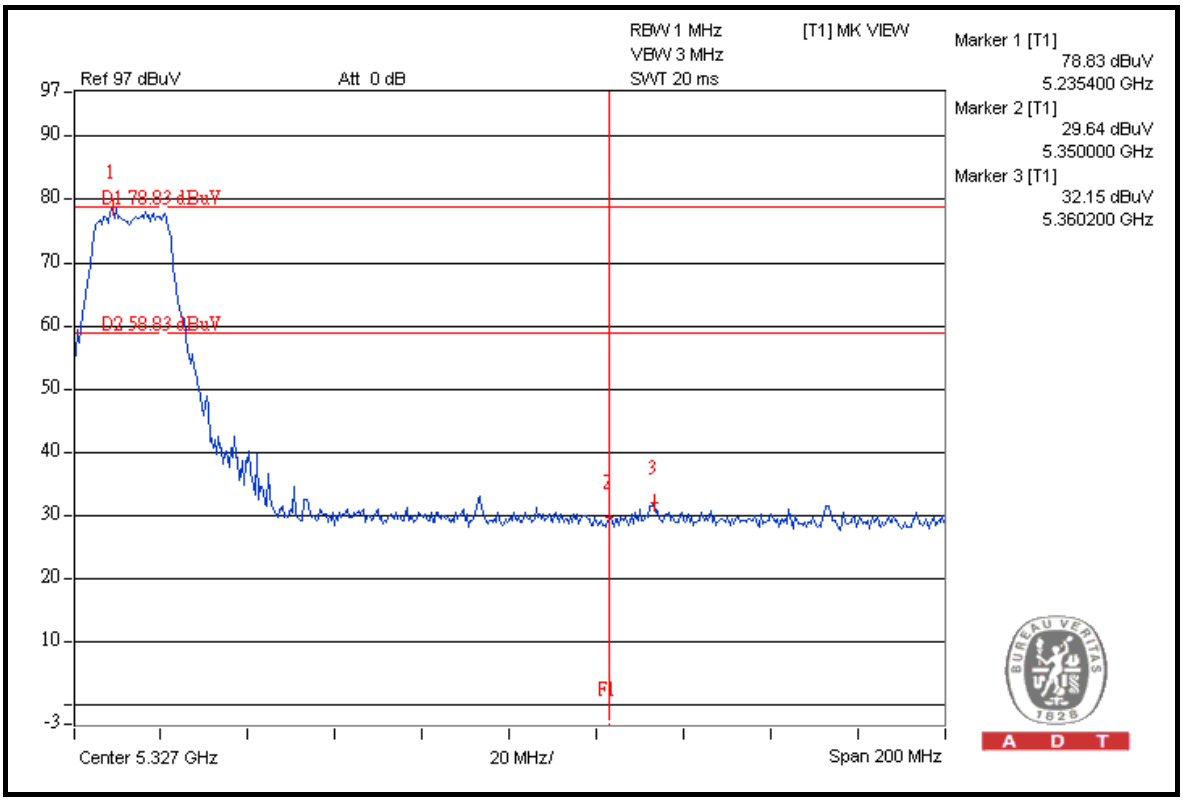
NOTE:

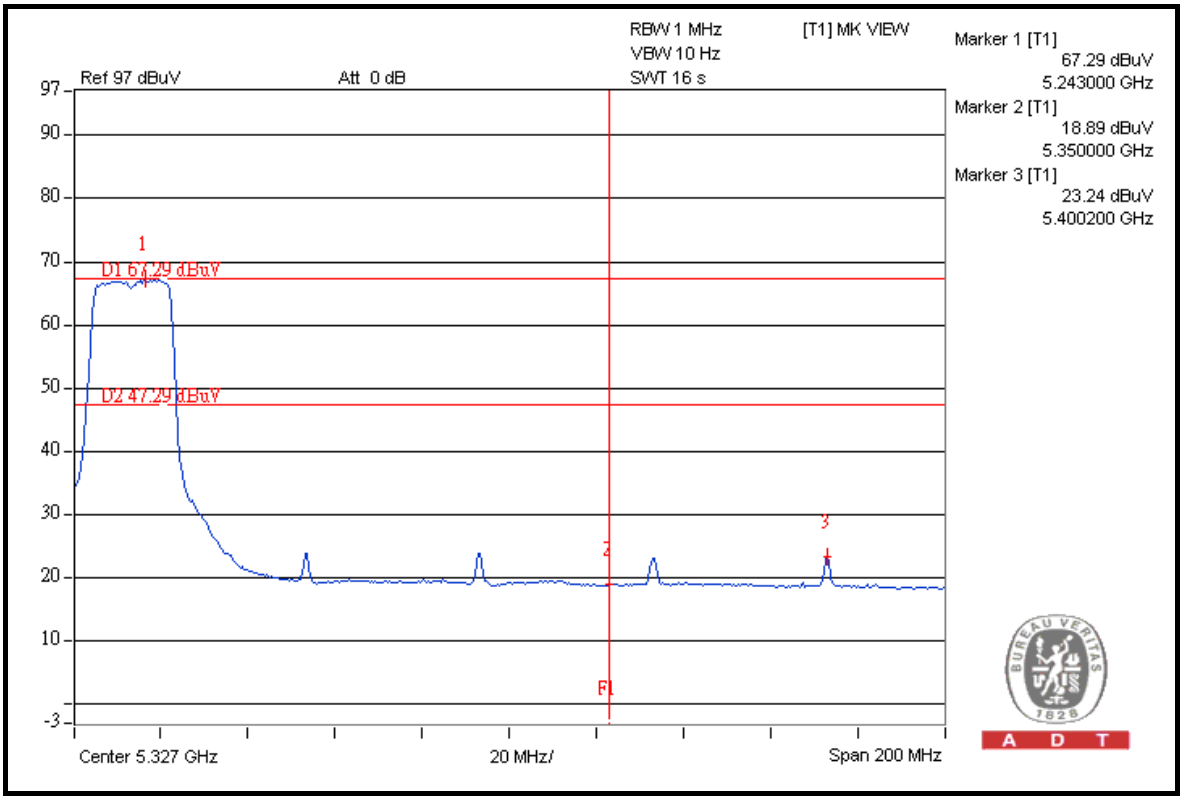
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

FOR RADIATED MEASURED (BOTH CHAINS ON)



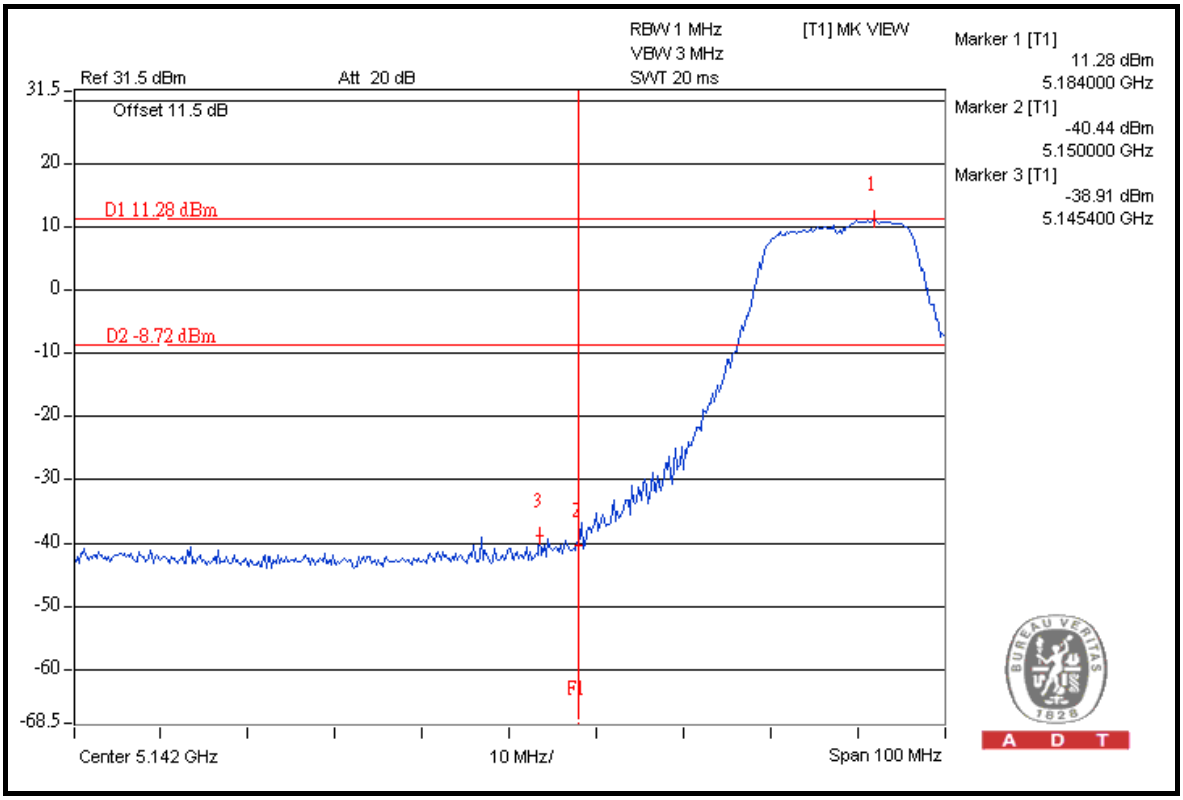


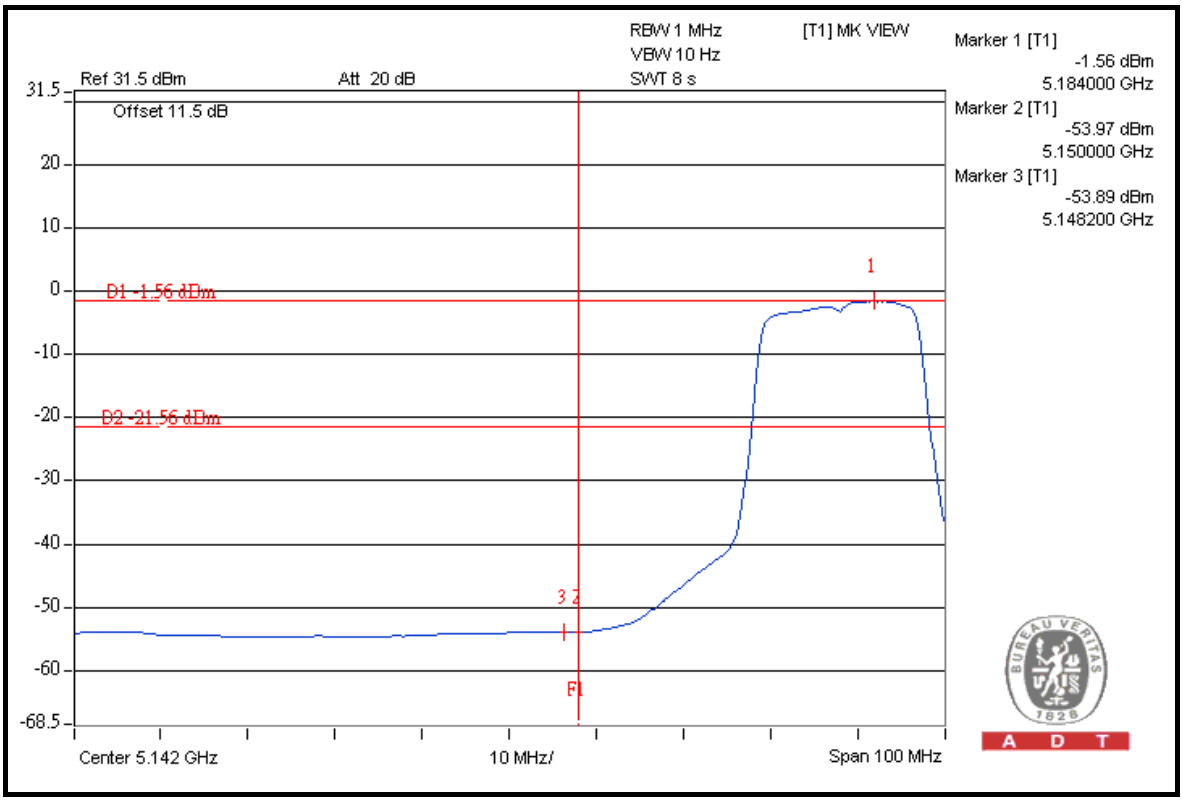

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
78.83 dBuV
5.235400 GHz
Marker 2 [T1]
29.64 dBuV
5.350000 GHz
Marker 3 [T1]
32.15 dBuV
5.360200 GHz
D1 78.83 dBuV
D2 58.83 dBuV
Center 5.327 GHz
20 MHz/
Span 200 MHz

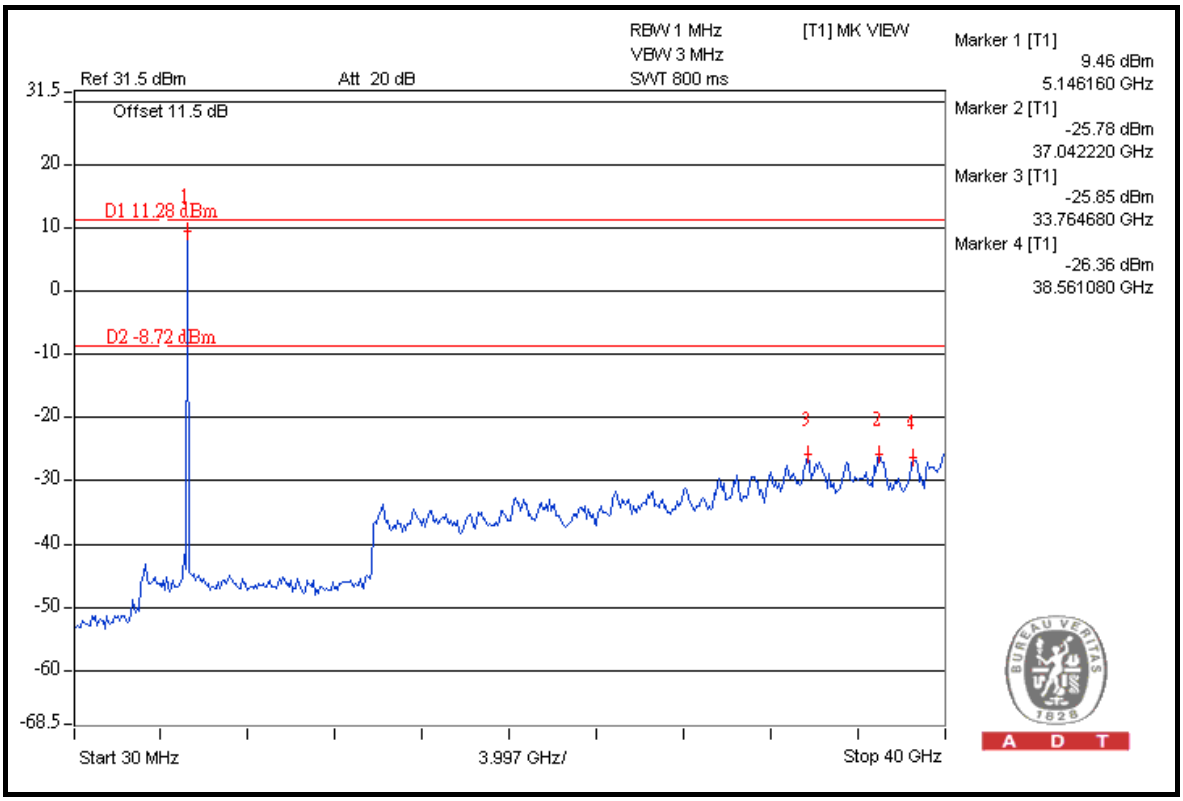

RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
67.29 dBuV
5.243000 GHz
Marker 2 [T1]
18.89 dBuV
5.350000 GHz
Marker 3 [T1]
23.24 dBuV
5.400200 GHz
D1 67.29 dBuV
D2 47.29 dBuV
Center 5.327 GHz
20 MHz/
Span 200 MHz

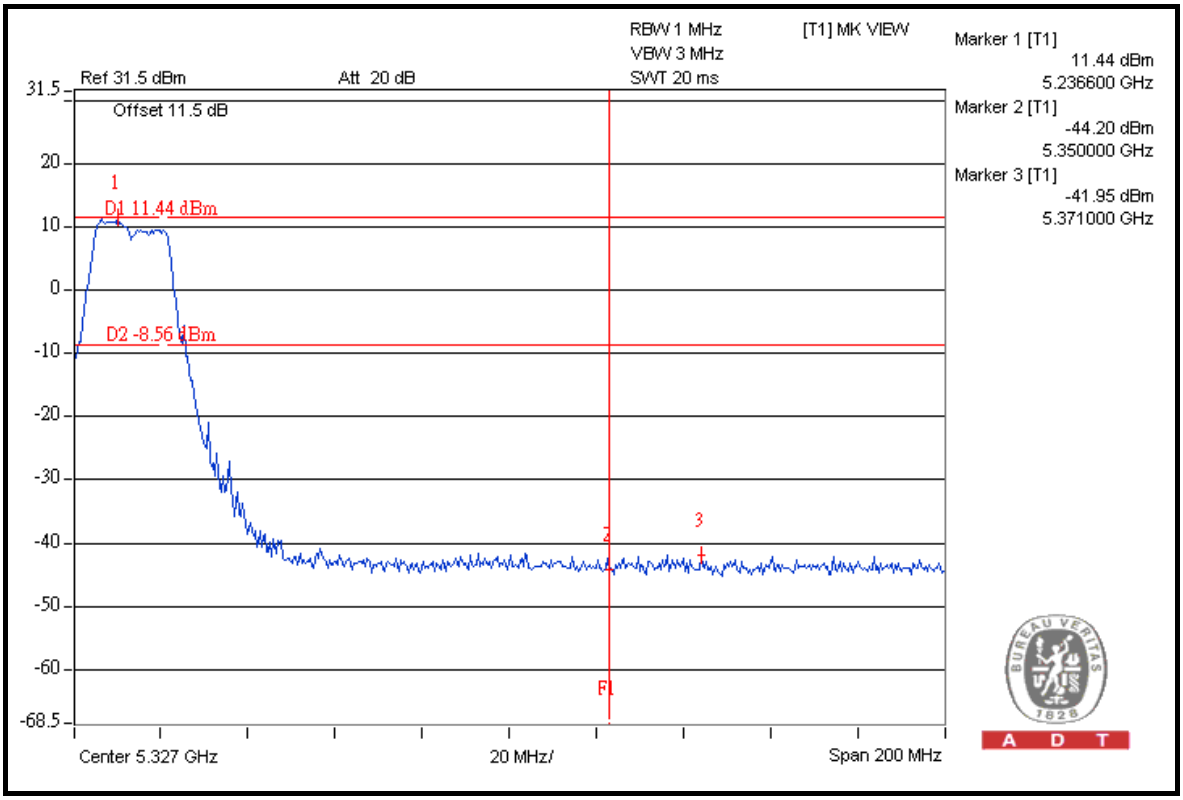
FOR CONDUCTED MEASURED

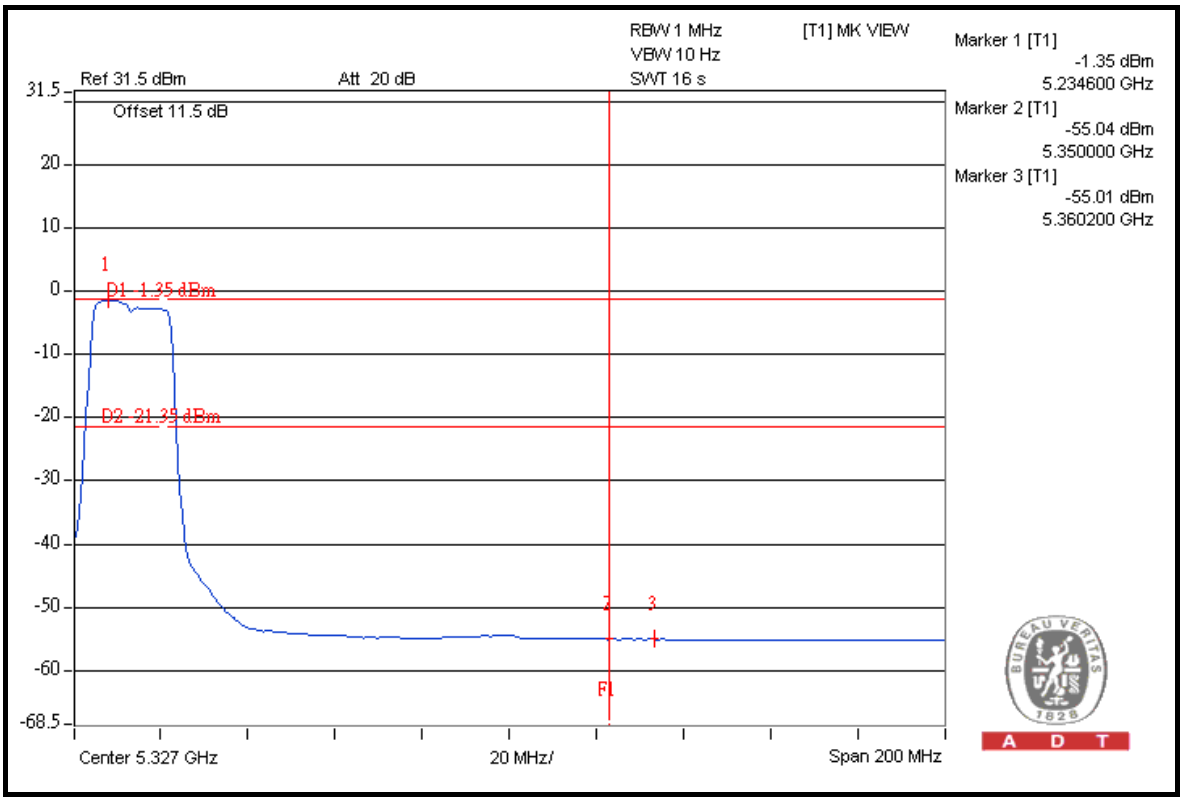
CHAIN 0

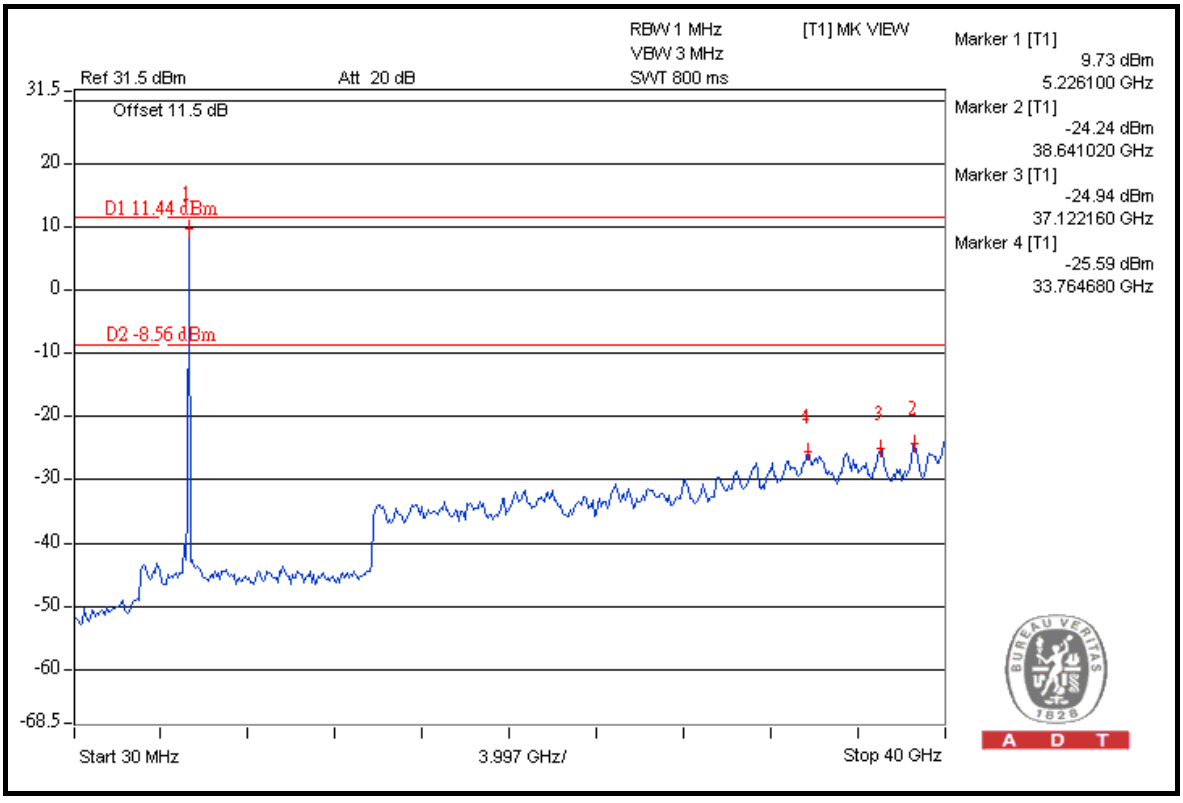




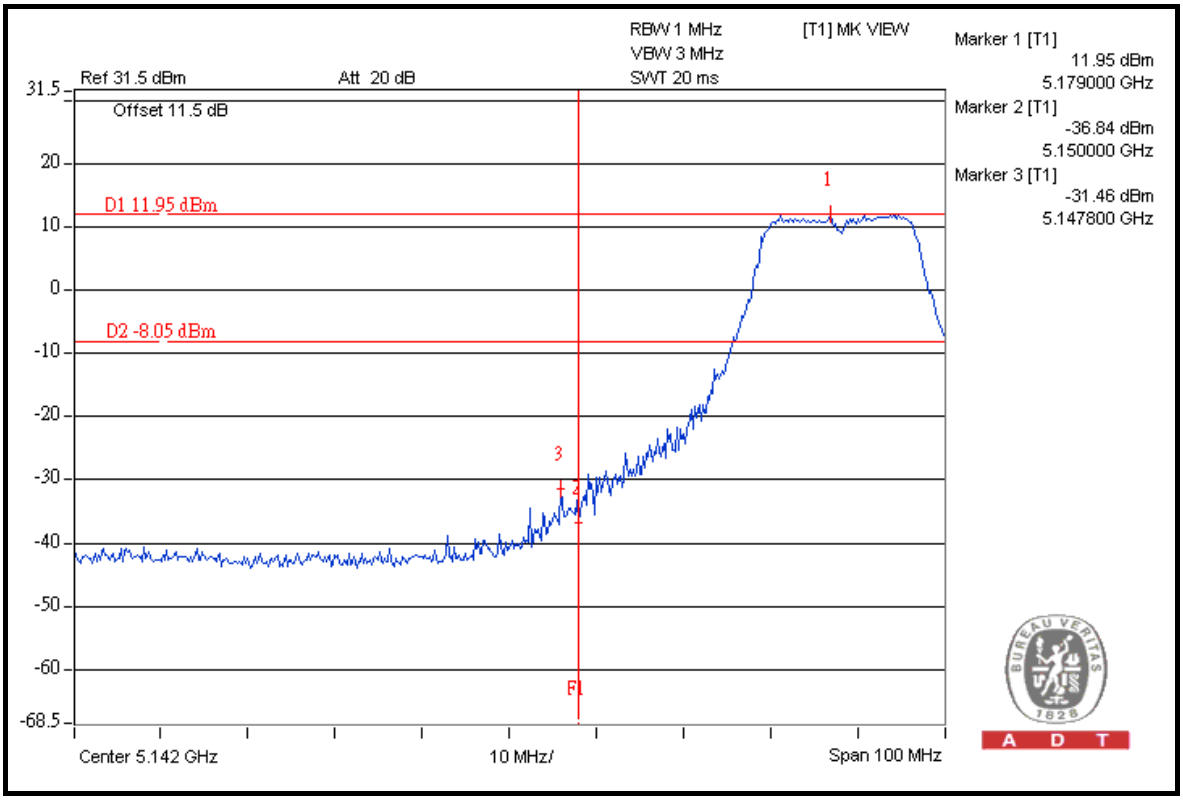

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 11.28 dBm
D2 -8.72 dBm
Marker 1 [T1]
9.46 dBm
5.146160 GHz
Marker 2 [T1]
-25.78 dBm
37.042220 GHz
Marker 3 [T1]
-25.85 dBm
33.764680 GHz
Marker 4 [T1]
-26.36 dBm
38.561080 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Start 30 MHz
3.997 GHz/
Stop 40 GHz

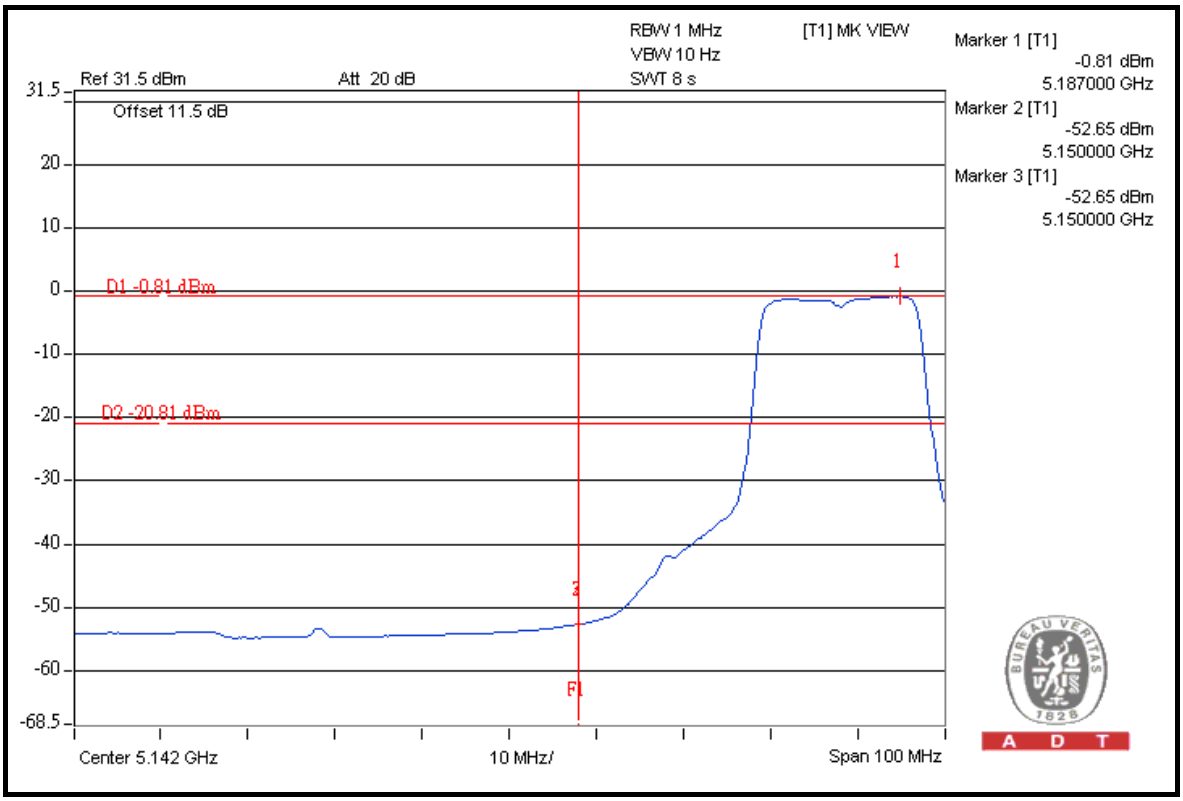

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 11.44 dBm
D2 -8.56 dBm
Marker 1 [T1]
11.44 dBm
5.236600 GHz
Marker 2 [T1]
-44.20 dBm
5.350000 GHz
Marker 3 [T1]
-41.95 dBm
5.371000 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.327 GHz
20 MHz/
Span 200 MHz

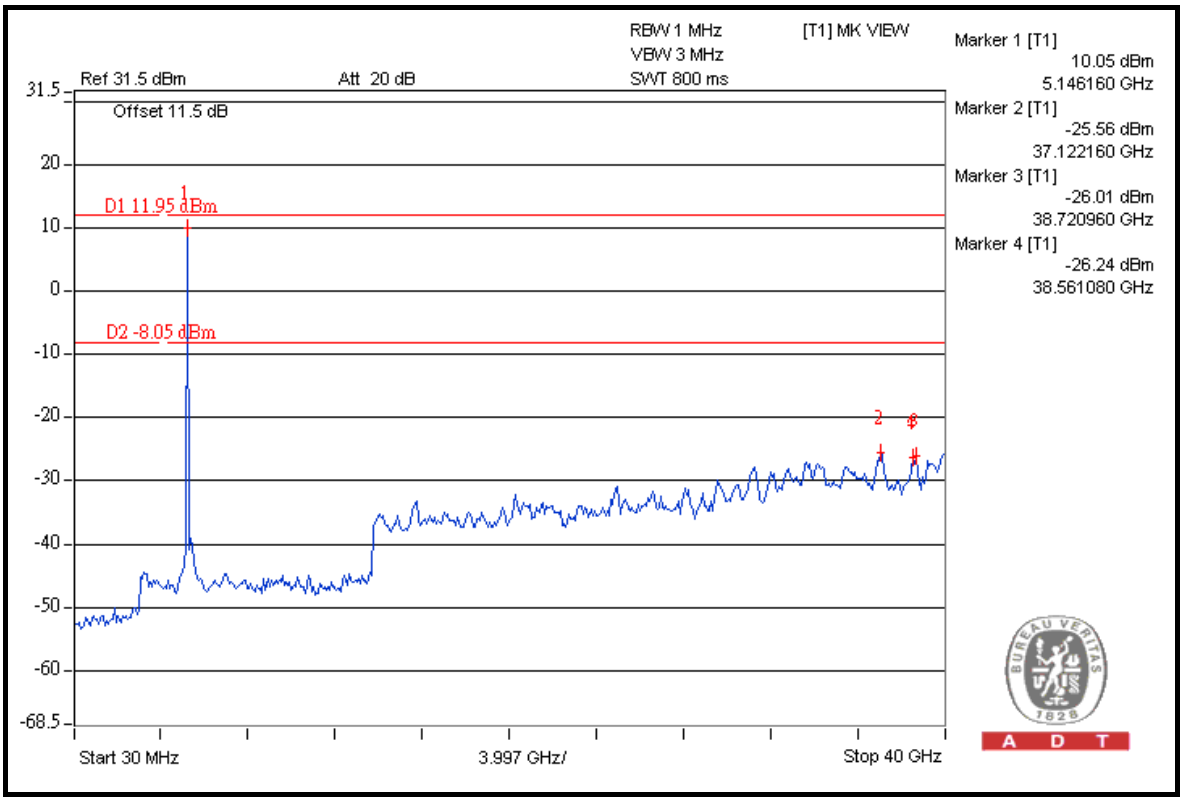

RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
-1.35 dBm
5.234600 GHz
Marker 2 [T1]
-55.04 dBm
5.350000 GHz
Marker 3 [T1]
-55.01 dBm
5.360200 GHz
D1 -1.35 dBm
D2 -21.35 dBm
Center 5.327 GHz
20 MHz/
Span 200 MHz

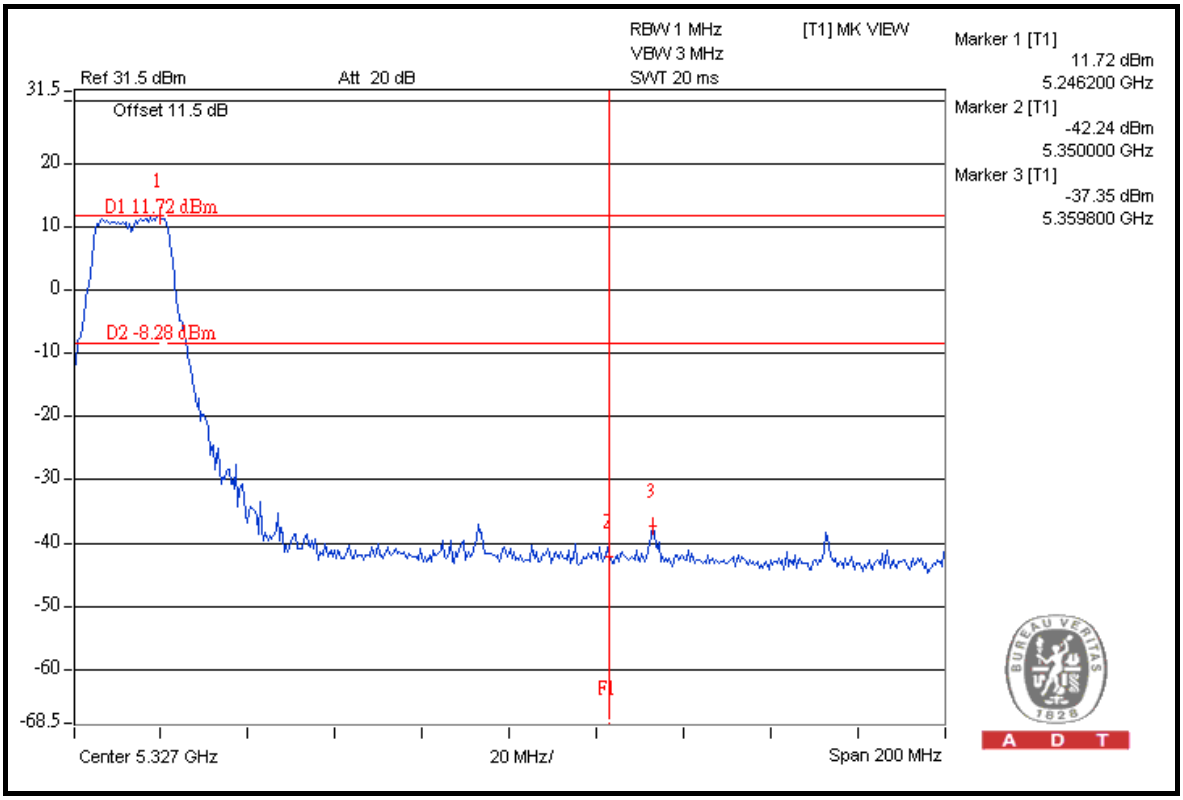

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
9.73 dBm
5.226100 GHz
Marker 2 [T1]
-24.24 dBm
38.641020 GHz
Marker 3 [T1]
-24.94 dBm
37.122160 GHz
Marker 4 [T1]
-25.59 dBm
33.764680 GHz
D1 11.44 dBm
D2 -8.56 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

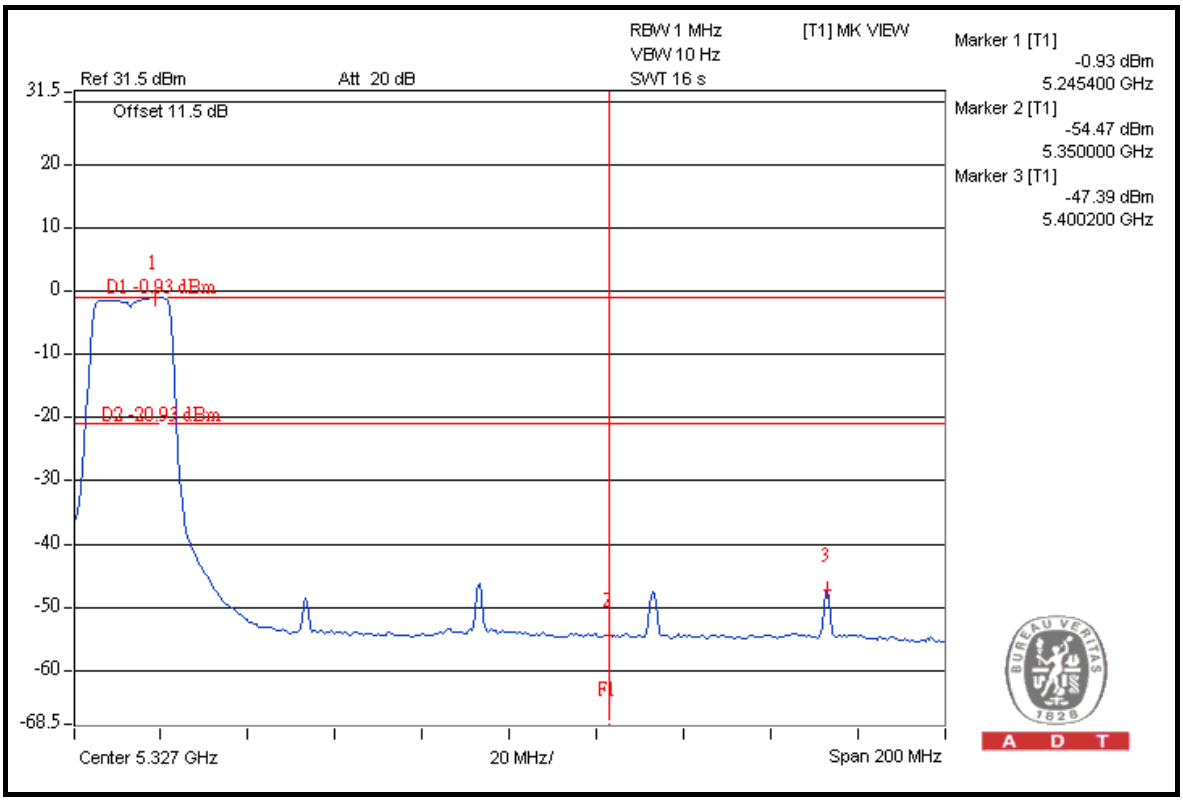
CHAIN 1

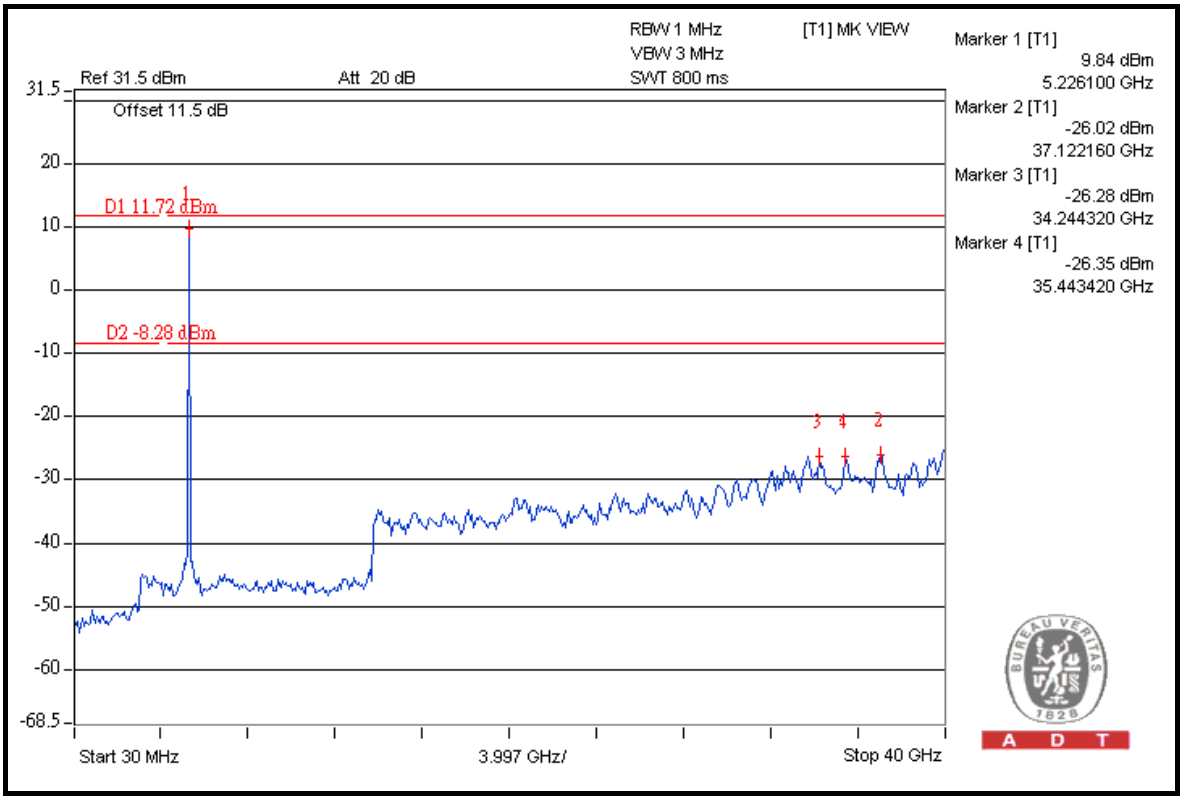

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 11.95 dBm
D2 -8.05 dBm
Marker 1 [T1]
11.95 dBm
5.179000 GHz
Marker 2 [T1]
-36.84 dBm
5.150000 GHz
Marker 3 [T1]
-31.46 dBm
5.147800 GHz
Center 5.142 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 8 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 -0.81 dBm
D2 -20.81 dBm
Marker 1 [T1]
-0.81 dBm
5.187000 GHz
Marker 2 [T1]
-52.65 dBm
5.150000 GHz
Marker 3 [T1]
-52.65 dBm
5.150000 GHz
Center 5.142 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Marker 1 [T1]
10.05 dBm
5.146160 GHz
Marker 2 [T1]
-25.56 dBm
37.122160 GHz
Marker 3 [T1]
-26.01 dBm
38.720960 GHz
Marker 4 [T1]
-26.24 dBm
38.561080 GHz
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 11.95 dBm
D2 -8.05 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Start 30 MHz
3.997 GHz/
Stop 40 GHz


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
11.72 dBm
5.246200 GHz
Marker 2 [T1]
-42.24 dBm
5.350000 GHz
Marker 3 [T1]
-37.35 dBm
5.359800 GHz
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 11.72 dBm
D2 -8.28 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.327 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
-0.93 dBm
5.245400 GHz
Marker 2 [T1]
-54.47 dBm
5.350000 GHz
Marker 3 [T1]
-47.39 dBm
5.400200 GHz
D1 -0.93 dBm
D2 -20.93 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.327 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
9.84 dBm
5.226100 GHz
Marker 2 [T1]
-26.02 dBm
37.122160 GHz
Marker 3 [T1]
-26.28 dBm
34.244320 GHz
Marker 4 [T1]
-26.35 dBm
35.443420 GHz
D1 11.72 dBm
D2 -8.28 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Start 30 MHz
3.997 GHz/
Stop 40 GHz

802.11n (40MHz)

RESTRICT BAND (4500 ~ 5150 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
5190.00 (PK)	104.5	42.19	62.31	74.00
5190.00 (AV)	92.9	41.69	51.21	54.00

RESTRICT BAND (5350 ~ 5460 MHz)

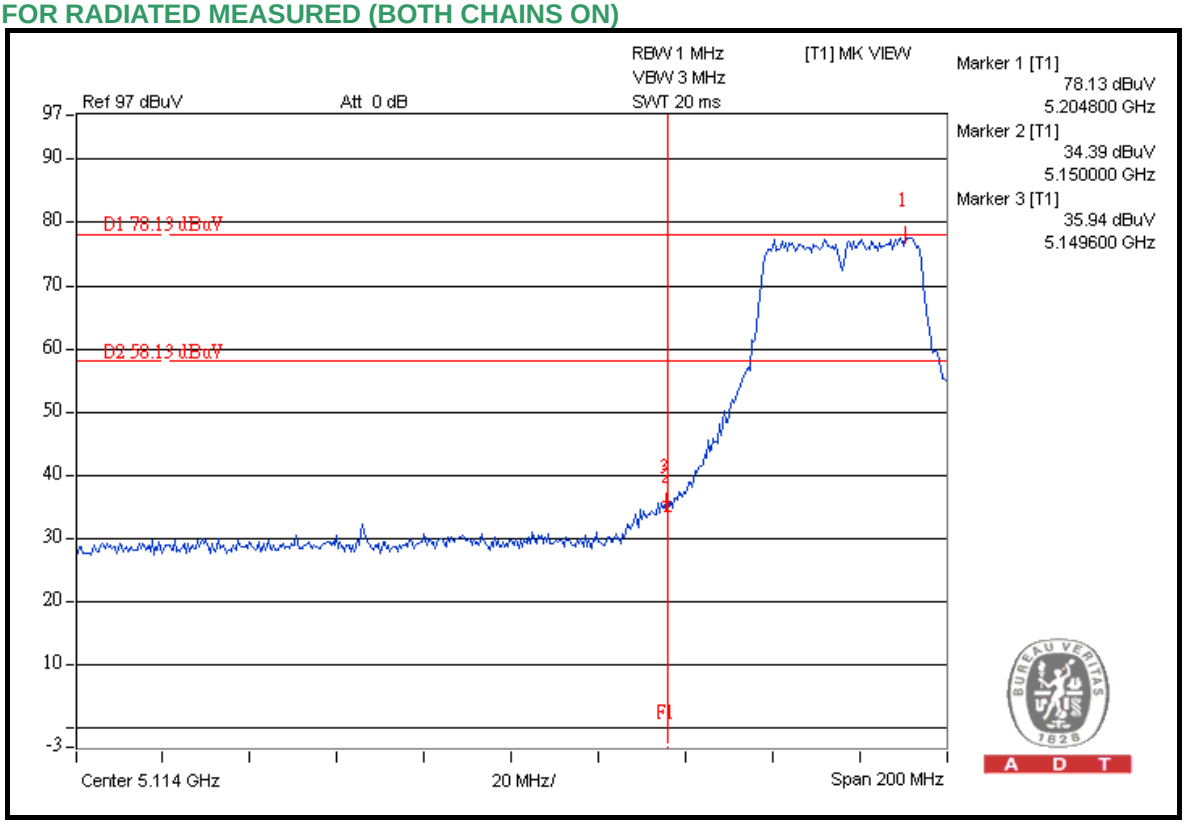
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
5230.00 (PK)	104.1	47.10	57.00	74.00
5230.00 (AV)	92.5	45.41	47.09	54.00

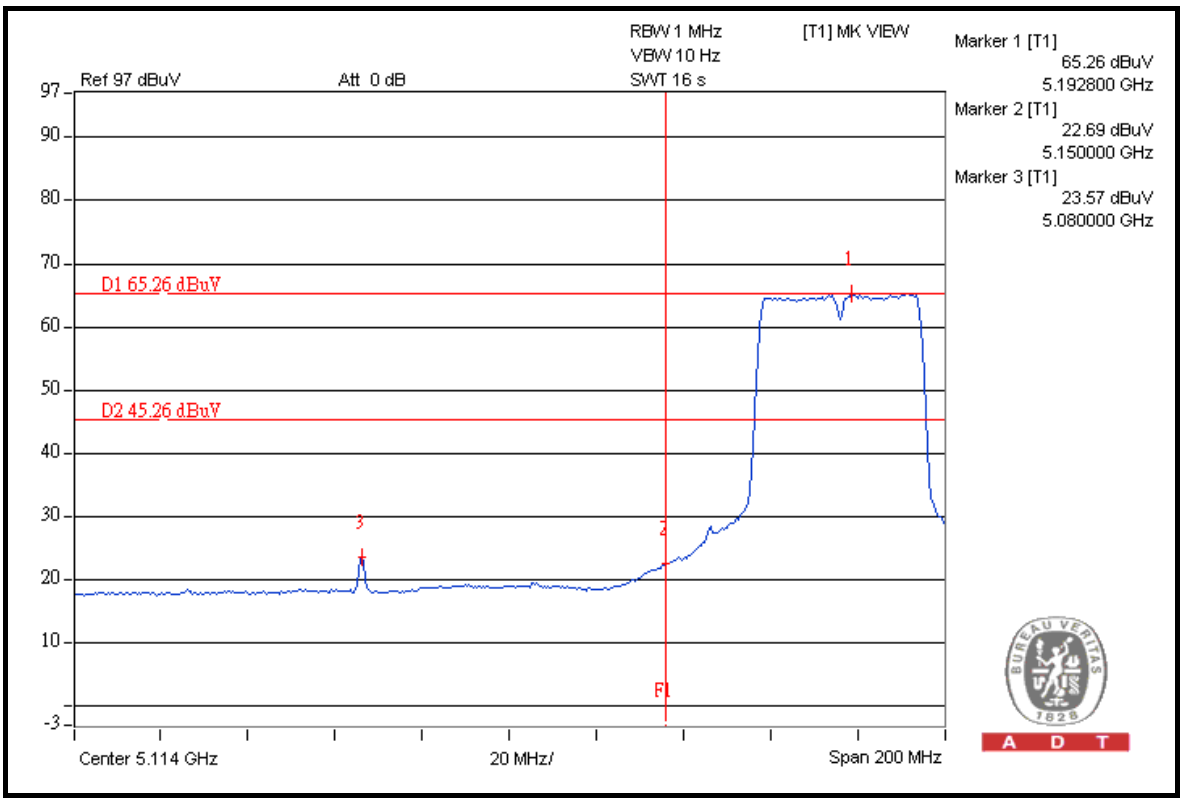
NOTE:

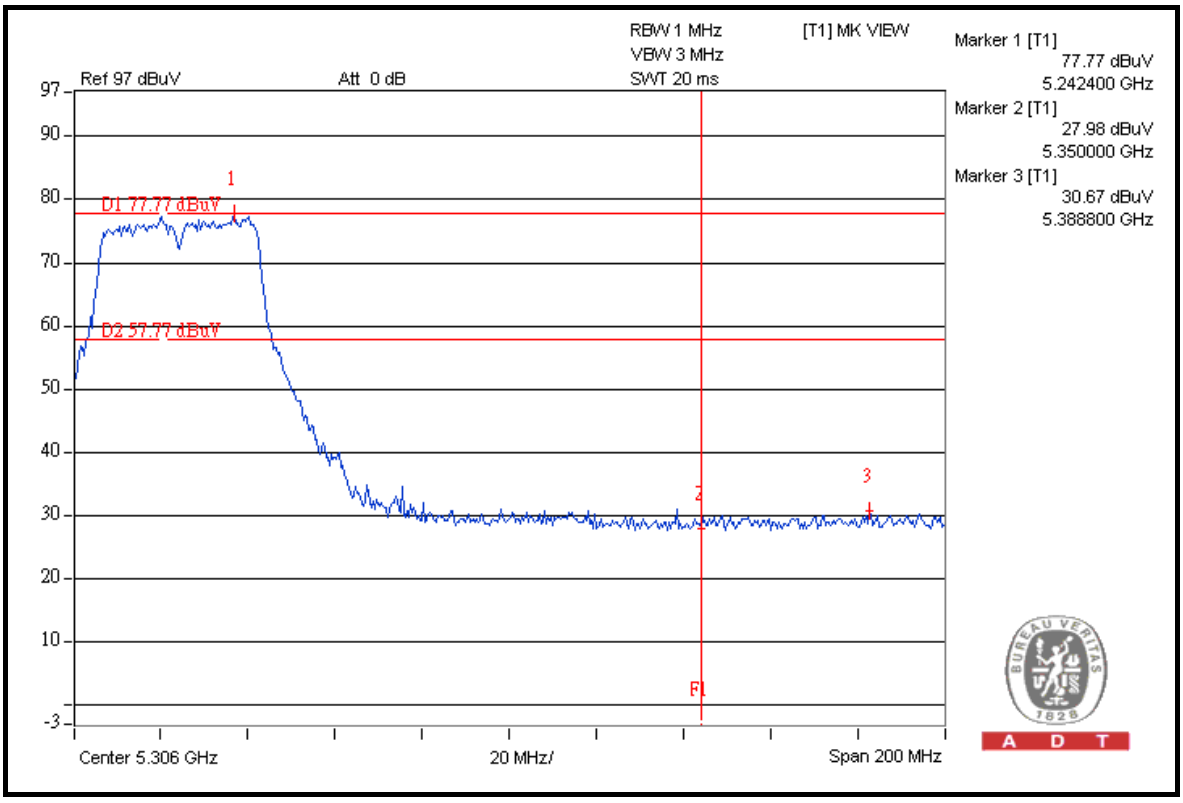
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.

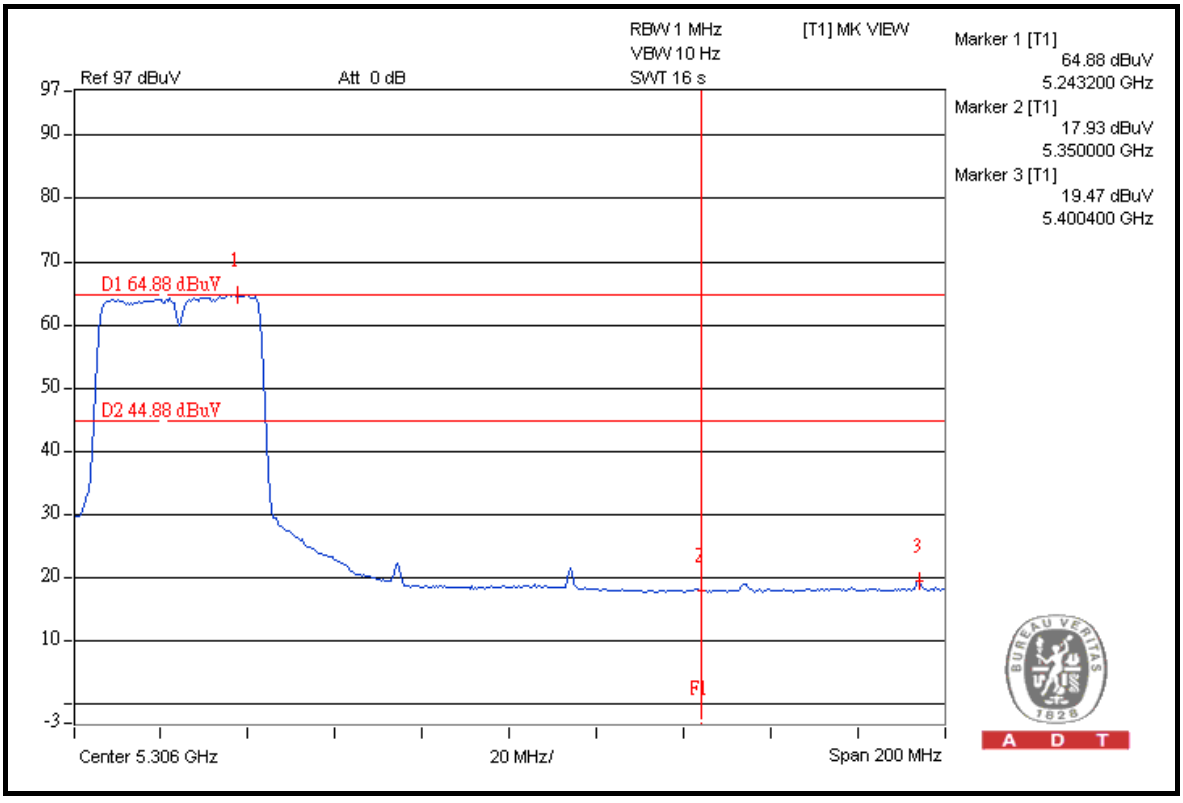
2. Maximum field strength in restrict band = Fundamental emission – Delta.

FOR RADIATED MEASURED (BOTH CHAINS ON)



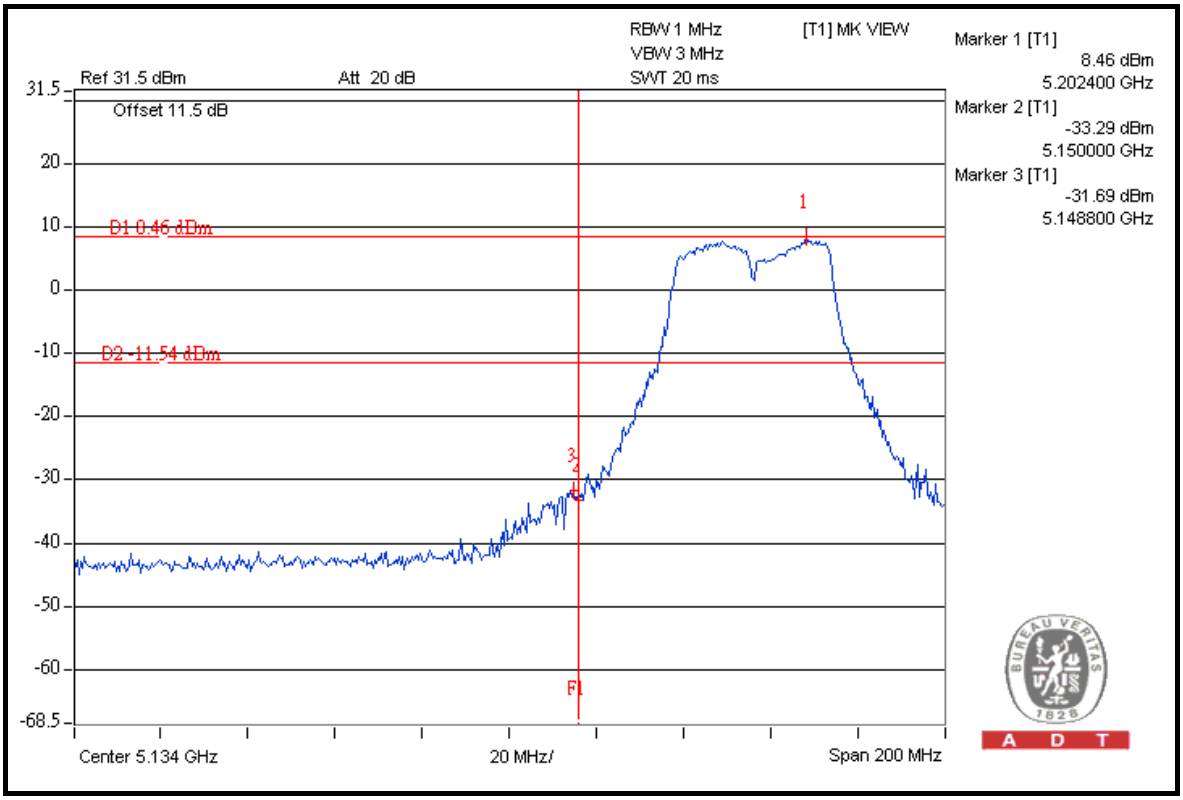


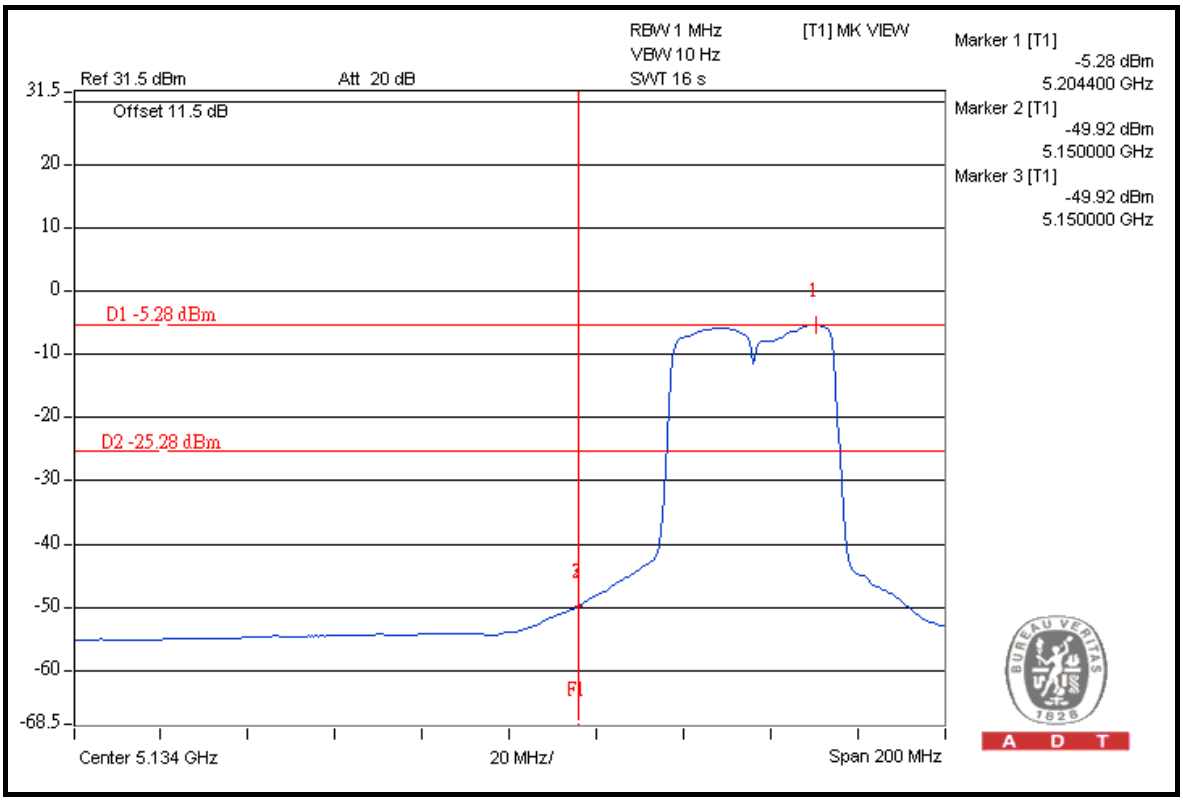

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
77.77 dBuV
5.242400 GHz
Marker 2 [T1]
27.98 dBuV
5.350000 GHz
Marker 3 [T1]
30.67 dBuV
5.388800 GHz
D1 77.77 dBuV
D2 57.77 dBuV
Center 5.306 GHz
20 MHz/
Span 200 MHz

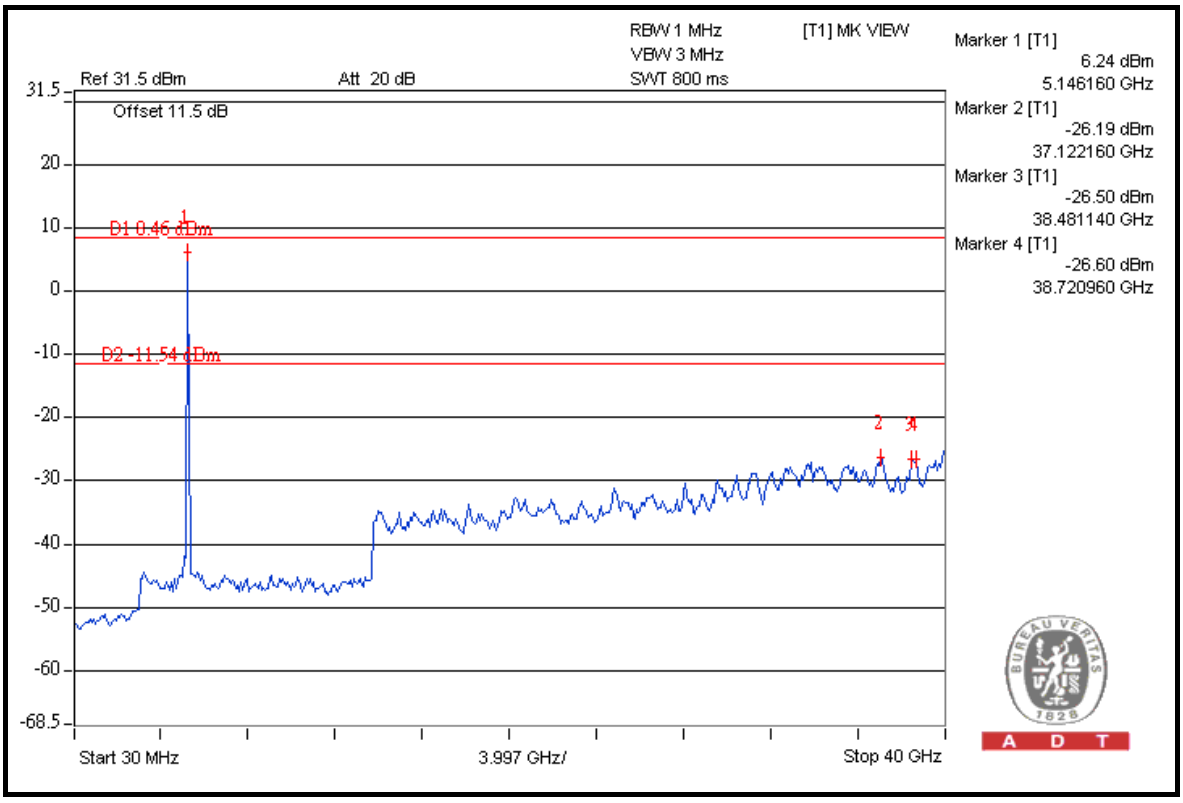

RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
64.88 dBuV
5.243200 GHz
Marker 2 [T1]
17.93 dBuV
5.350000 GHz
Marker 3 [T1]
19.47 dBuV
5.400400 GHz
D1 64.88 dBuV
D2 44.88 dBuV
Center 5.306 GHz
20 MHz/
Span 200 MHz

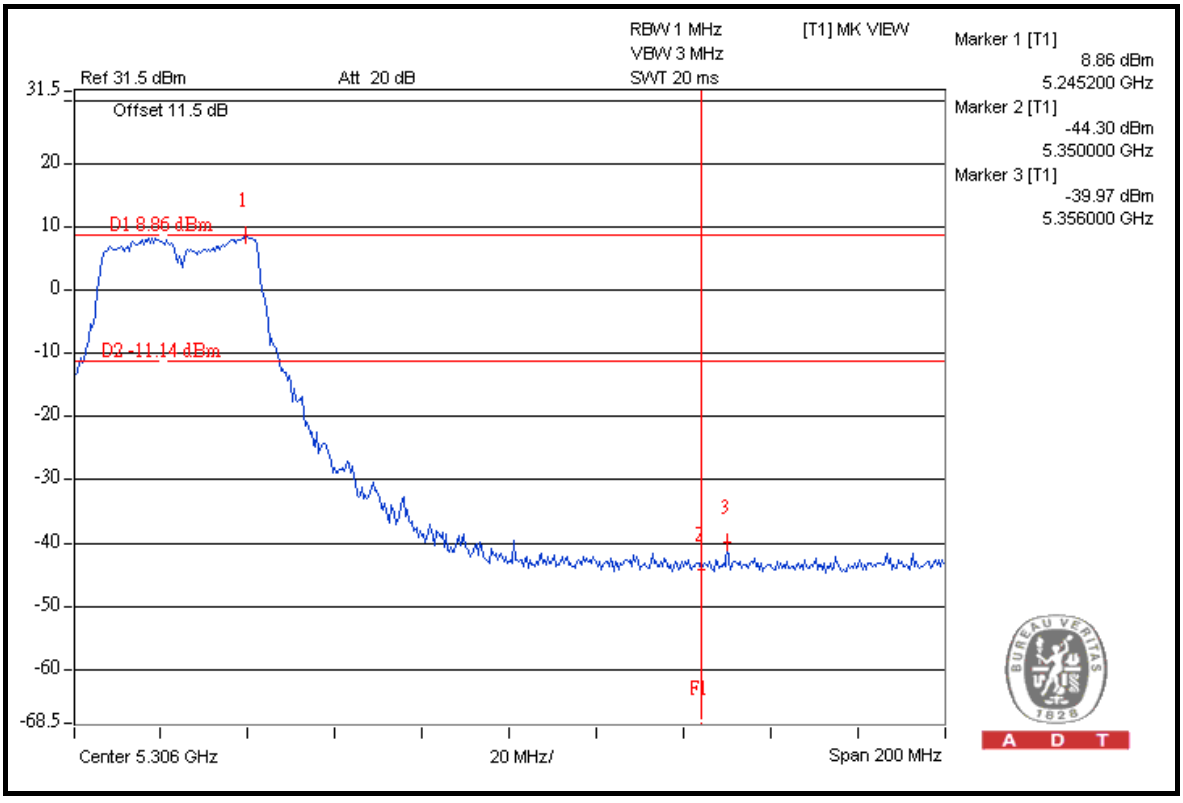
FOR CONDUCTED MEASURED

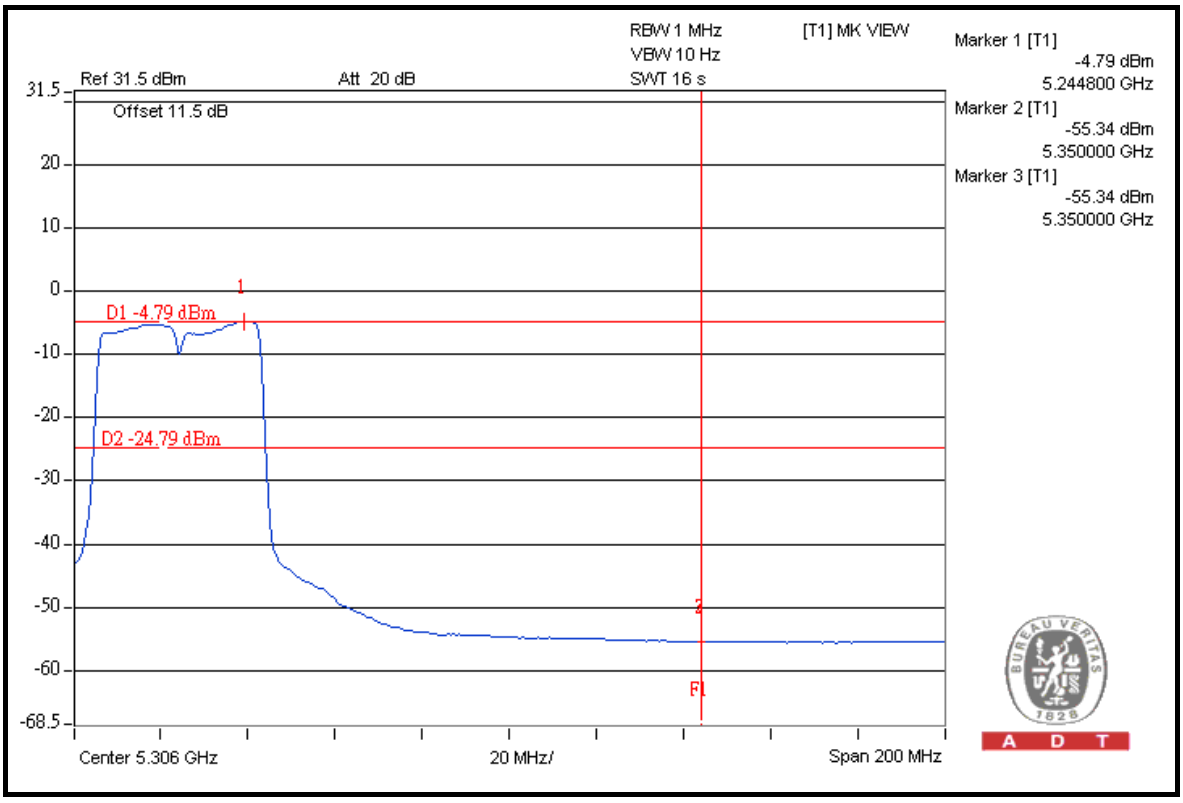
CHAIN 0

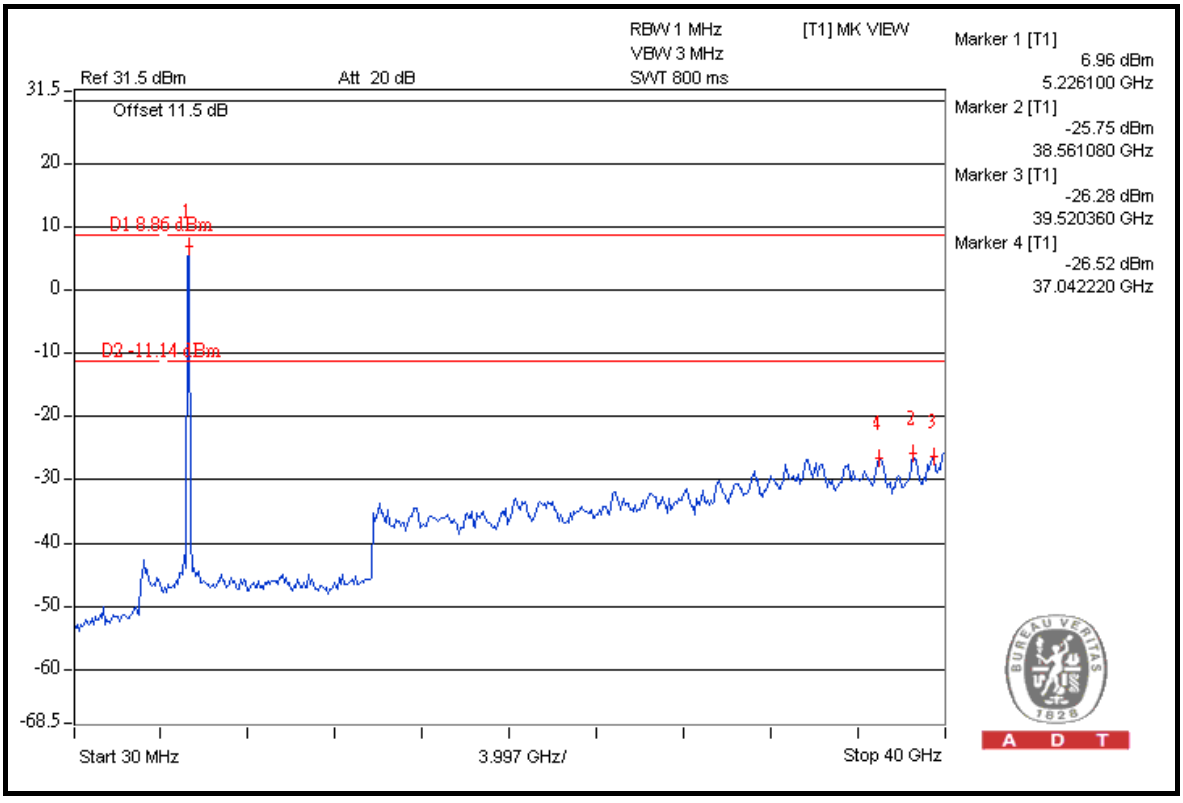




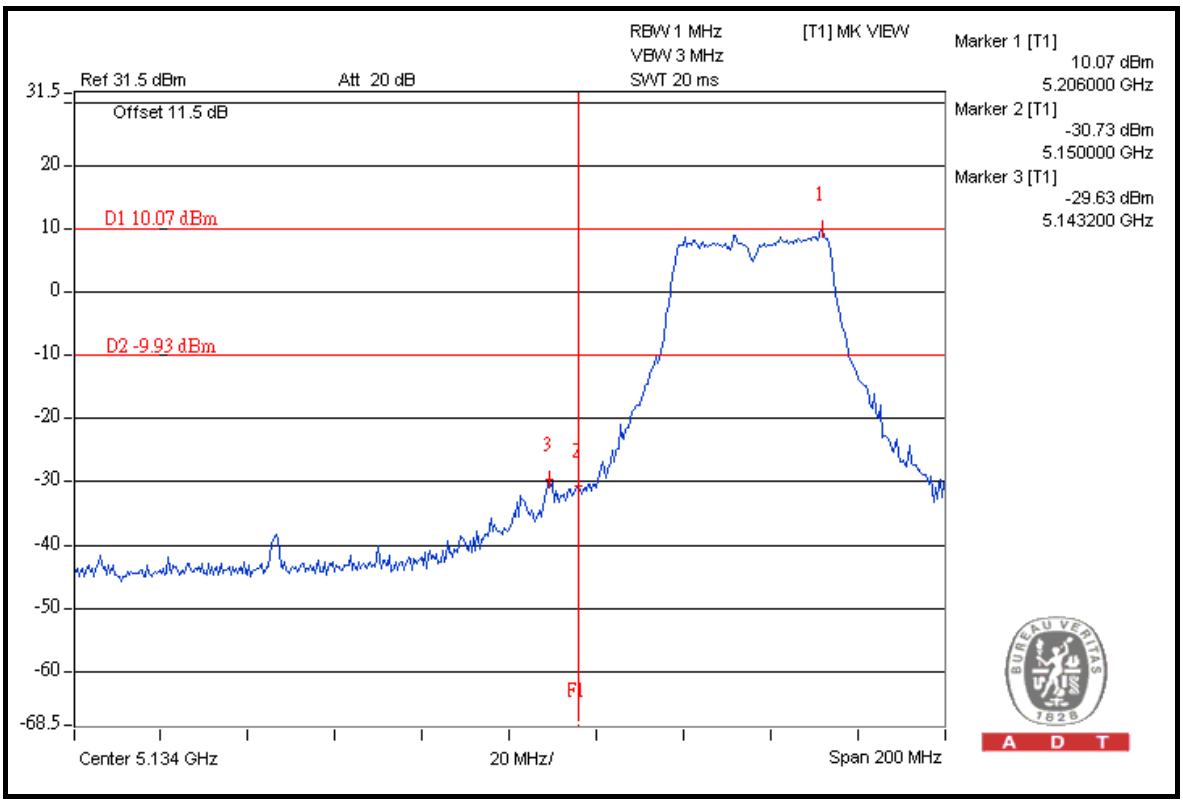

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 0.46 dBm
D2 -11.54 dBm
Marker 1 [T1]
6.24 dBm
5.146160 GHz
Marker 2 [T1]
-26.19 dBm
37.122160 GHz
Marker 3 [T1]
-26.50 dBm
38.481140 GHz
Marker 4 [T1]
-26.60 dBm
38.720960 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Start 30 MHz
3.997 GHz/
Stop 40 GHz

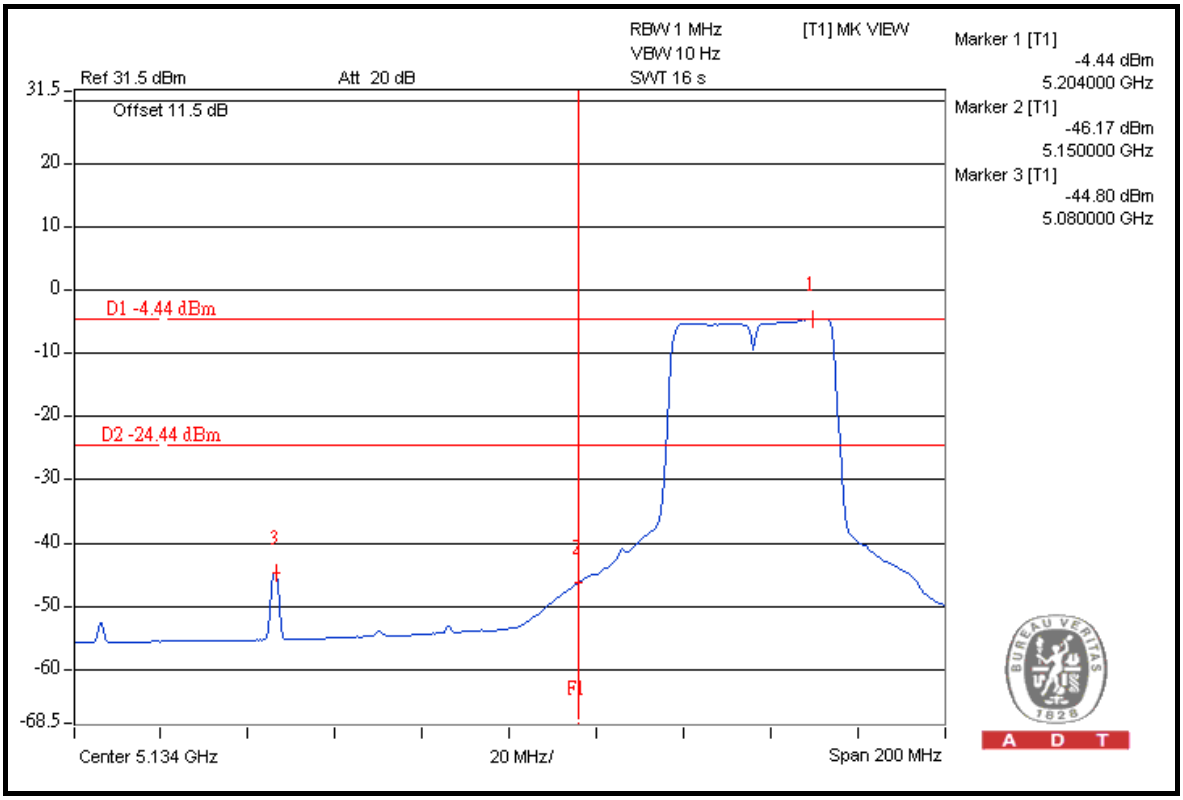

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 8.86 dBm
D2 -11.14 dBm
Marker 1 [T1]
8.86 dBm
5.245200 GHz
Marker 2 [T1]
-44.30 dBm
5.350000 GHz
Marker 3 [T1]
-39.97 dBm
5.356000 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.306 GHz
20 MHz/
Span 200 MHz

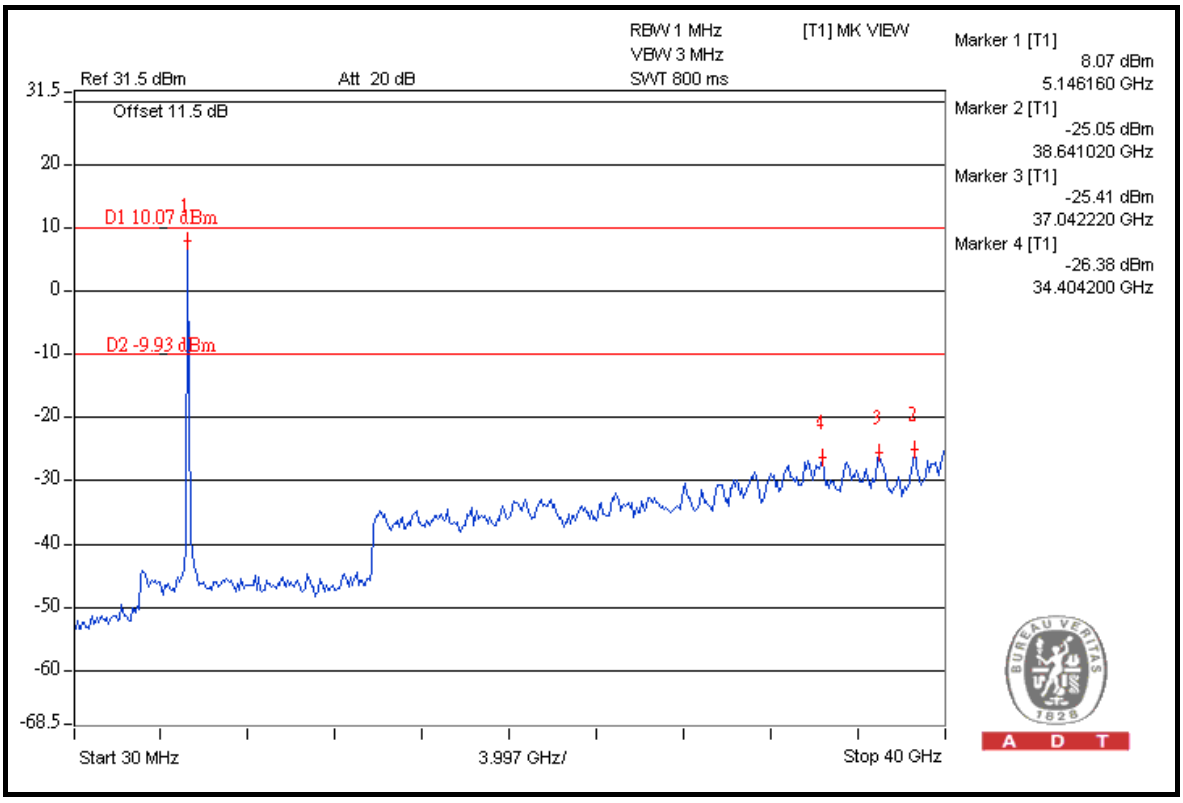

RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
-4.79 dBm
5.244800 GHz
Marker 2 [T1]
-55.34 dBm
5.350000 GHz
Marker 3 [T1]
-55.34 dBm
5.350000 GHz
D1 -4.79 dBm
D2 -24.79 dBm
Center 5.306 GHz
20 MHz/
Span 200 MHz

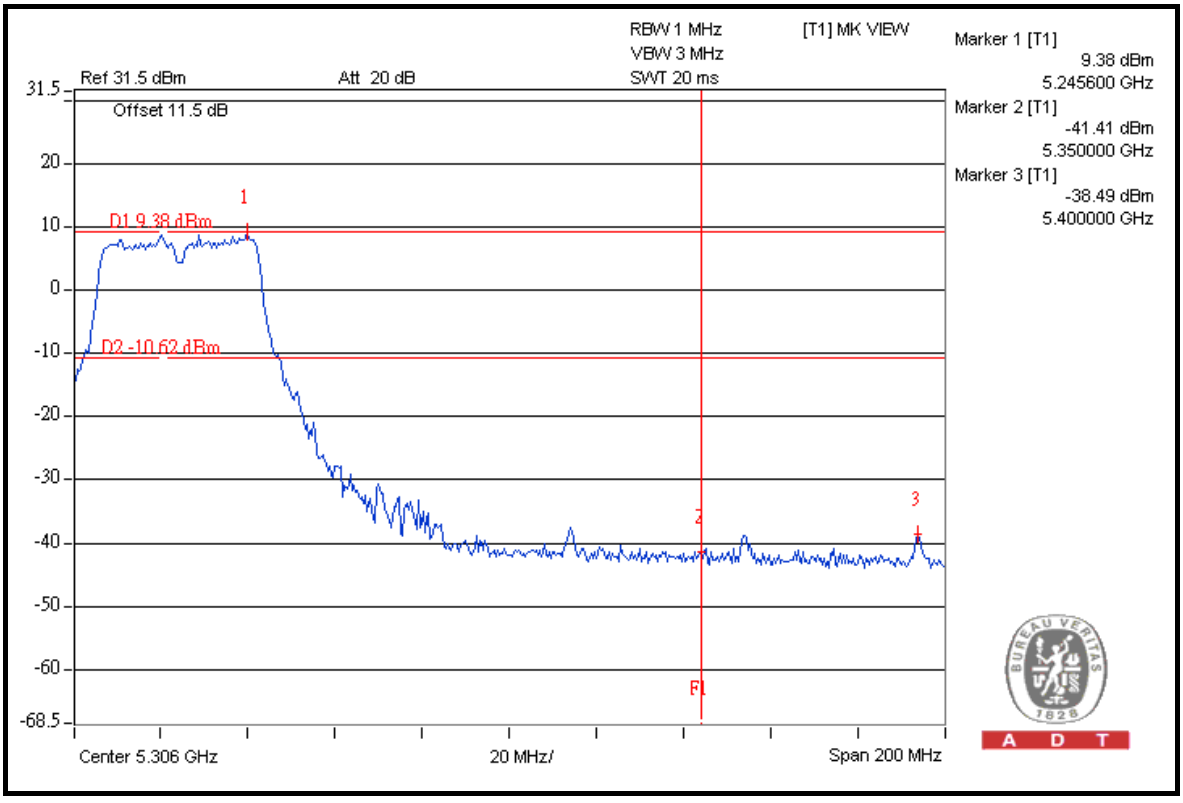

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
6.96 dBm
5.226100 GHz
Marker 2 [T1]
-25.75 dBm
38.561080 GHz
Marker 3 [T1]
-26.28 dBm
39.520360 GHz
Marker 4 [T1]
-26.52 dBm
37.042220 GHz
D1 8.96 dBm
D2 -11.14 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

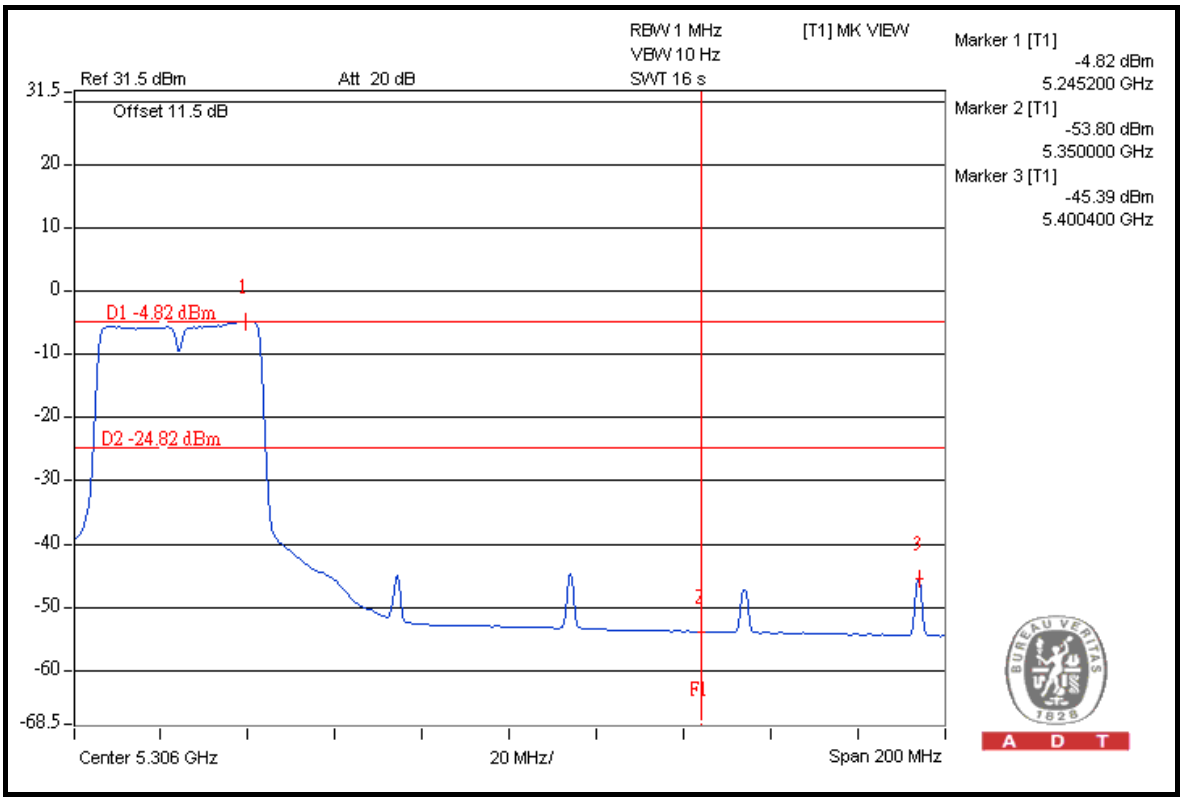
CHAIN 1

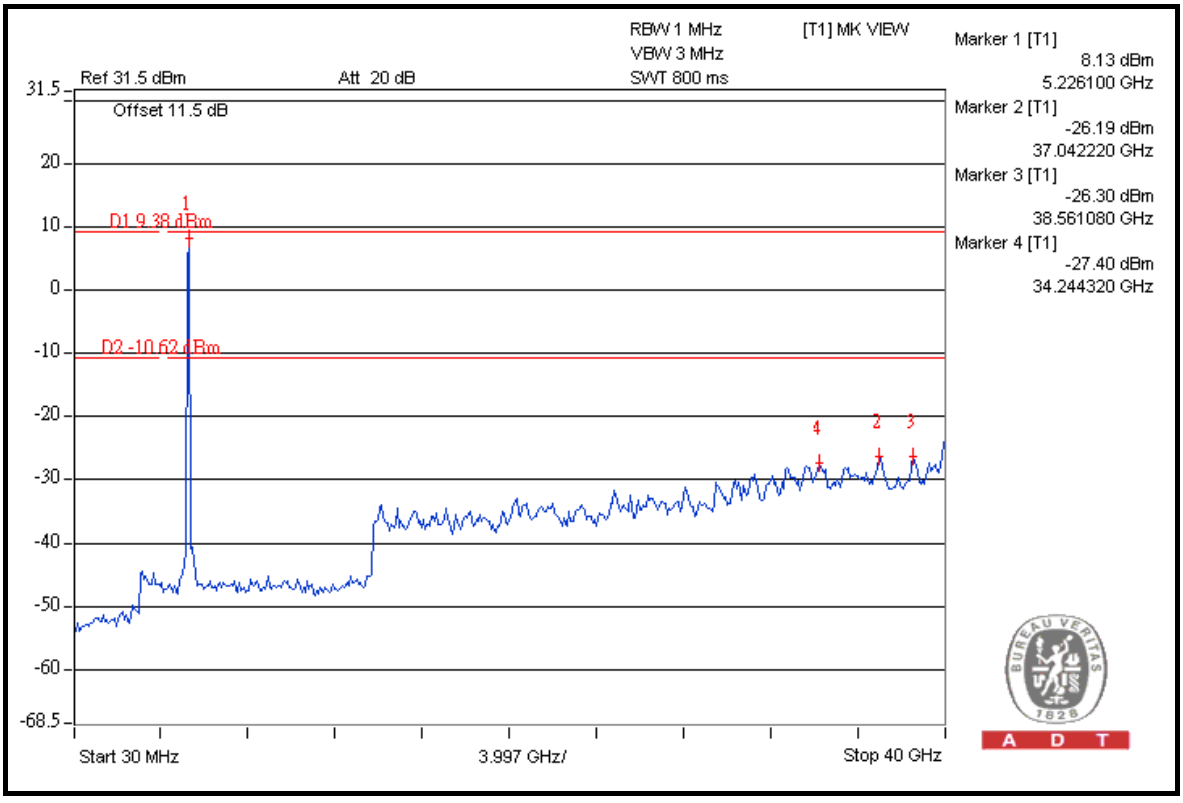

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 10.07 dBm
D2 -9.93 dBm
Marker 1 [T1]
10.07 dBm
5.206000 GHz
Marker 2 [T1]
-30.73 dBm
5.150000 GHz
Marker 3 [T1]
-29.63 dBm
5.143200 GHz
Center 5.134 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 -4.44 dBm
D2 -24.44 dBm
Marker 1 [T1]
-4.44 dBm
5.204000 GHz
Marker 2 [T1]
-46.17 dBm
5.150000 GHz
Marker 3 [T1]
-44.80 dBm
5.080000 GHz
Center 5.134 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 10.07 dBm
D2 -9.93 dBm
Marker 1 [T1]
8.07 dBm
5.146160 GHz
Marker 2 [T1]
-25.05 dBm
38.641020 GHz
Marker 3 [T1]
-25.41 dBm
37.042220 GHz
Marker 4 [T1]
-26.38 dBm
34.404200 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Start 30 MHz
3.997 GHz/
Stop 40 GHz


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 9.38 dBm
D2 -10.62 dBm
Marker 1 [T1]
9.38 dBm
5.245600 GHz
Marker 2 [T1]
-41.41 dBm
5.350000 GHz
Marker 3 [T1]
-38.49 dBm
5.400000 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.306 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
-4.82 dBm
5.245200 GHz
Marker 2 [T1]
-53.80 dBm
5.350000 GHz
Marker 3 [T1]
-45.39 dBm
5.400400 GHz
D1 -4.82 dBm
D2 -24.82 dBm
Center 5.306 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
8.13 dBm
5.226100 GHz
Marker 2 [T1]
-26.19 dBm
37.042220 GHz
Marker 3 [T1]
-26.30 dBm
38.561080 GHz
Marker 4 [T1]
-27.40 dBm
34.244320 GHz
D1 9.38 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. INFORMATION ON THE TESTING LABORATORIES

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

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5.phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26051924

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

Hwa Ya EMC/RF/Safety Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Web Site: www.adt.com.tw

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

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

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

---END---