FCC TEST REPORT (15.407)

REPORT NO.: RF110531C14-1

MODEL NO.: WMDA-612AN_TX

FCC ID: ZQ6–WMDA612ANTX

RECEIVED: May 31, 2011

TESTED: Jun. 16 ~ Jul. 08, 2011

ISSUED: Jul. 18, 2011

APPLICANT: AMPAK Technology Inc.

ADDRESS: No.1 Jen Ai Road, Hsinchu Industrial Park, Hukou, Hsinchu,Taiwan

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	Jul. 18, 2011

1. CERTIFICATION

PRODUCT:	Wireless Home Digital Interface Transmitter Dongle
MODEL:	WMDA-612AN_TX
APPLICANT:	AMPAK Technology Inc.
TESTED:	Jun. 16 ~ Jul. 08, 2011
TEST SAMPLE:	ENGINEERING SAMPLE
STANDARDS:	**FCC Part 15, Subpart E (Section 15.407)**
	ANSI C63.4-2003
	ANSI C63.10-2009

The above equipment (Model: WMDA-612AN_TX) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch,** and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Andrea Hsia / Specialist , **DATE :** Jul. 18, 2011

APPROVED BY : Gary Chang / Assistant Manager , **DATE :** Jul. 18, 2011

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 -23.43dB 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 -3.2dB at 5150.00MHz.
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	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	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.19 dB
	200MHz ~1000MHz	3.21 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Wireless Home Digital Interface Transmitter Dongle
MODEL NO.	WMDA-612AN_TX
FCC ID	ZQ6–WMDA612ANTX
POWER SUPPLY	12Vdc
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	WHDI (40MHz): 63.0Mbps
OPERATING FREQUENCY	5190.0 ~ 5230.0MHz
NUMBER OF CHANNEL	2
OUTPUT POWER	29.0mW
ANTENNA TYPE	Refer to note as below
ANTENNA CONNECTOR	NA
DATA CABLE	1.5m shielded HDMI cable without core
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter

NOTE:

1. The EUT incorporates a MIMO function. Physically, the EUT provides four completed transmitters and one receiver for 5.0GHz band.

MODULATION MODE	TX FUNCTION
WHDI (40MHz)	4TX

2. The test data are separated into following test reports.

	TEST STANDARD	REFERENCE REPORT
WHDI (40MHz) (5755~5795 MHz)	FCC Part 15, Subpart C (Section 15.247)	RF110531C14
WHDI (40MHz) (5190~ 5230MHz)	FCC Part 15, Subpart E (Section 15.407)	RF110531C14-1

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

FREQUENCY BAND (MHz)	5190~5230	5755~5795
WHDI (40MHz)	√	√

4. The EUT was powered by the following adapter:

BRAND:	OEM
MODEL:	ADS0128-W
INPUT:	100-240Vac, 50-60Hz, 0.5A
OUTPUT:	12Vdc, 1A
POWER LINE:	1.5m non-shielded cable without core

5. The EUT used the following antennas:

ITEM	ANTENNA TYPE	ANTENNA GAIN	ANTENNA CONNECTOR
Antenna 1 (Tx)	Printed	3.15dBi for 5.0GHz 2.17dBi for 5.2GHz 4.36dBi for 5.5GHz 5.00dBi for 5.8GHz	none
Antenna 2 (Tx)	Printed	-0.22dBi for 5.0GHz -0.67dBi for 5.2GHz 1.82dBi for 5.5GHz 2.47dBi for 5.8GHz	none
Antenna 3 (Rx)	Printed	-0.61dBi for 5.0GHz 0.19dBi for 5.2GHz 1.14dBi for 5.5GHz 1.33dBi for 5.8GHz	none
Antenna 4 (Tx)	Printed	-0.21dBi for 5.0GHz 0.36dBi for 5.2GHz 1.77dBi for 5.5GHz 2.97dBi for 5.8GHz	none
Antenna 5 (Tx)	Printed	3.00dBi for 5.0GHz 3.74dBi for 5.2GHz 4.26dBi for 5.5GHz 4.06dBi for 5.8GHz	none

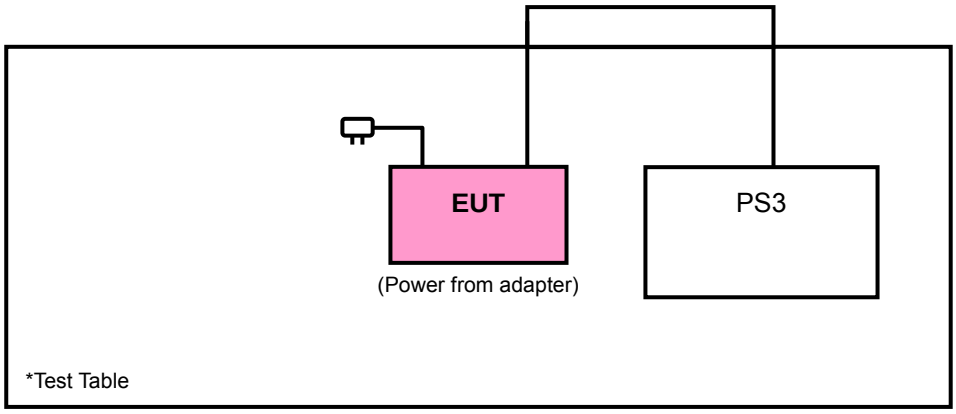
6. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

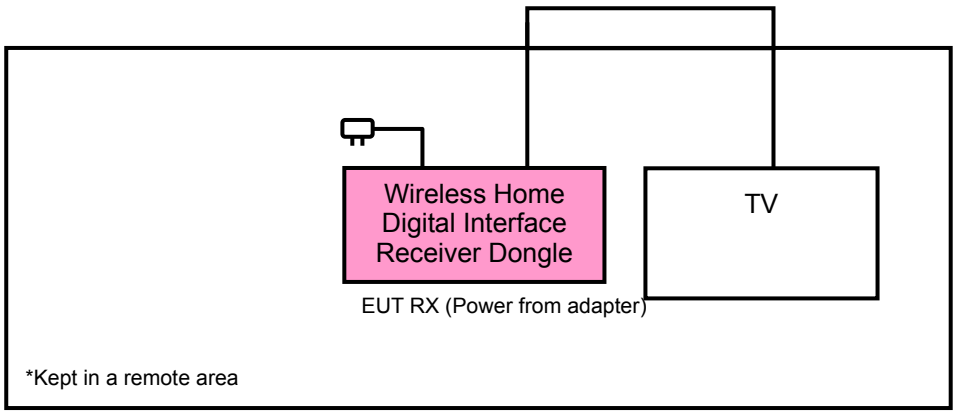
3.2 DESCRIPTION OF TEST MODES

2 channels are provided for WHDI (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 **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, 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)
WHDI (40MHz)	38 to 46	38, 46	OFDM	16QAM	63

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)
WHDI (40MHz)	38 to 46	38	OFDM	16QAM	63

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)
WHDI (40MHz)	38 to 46	38	OFDM	16QAM	63

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)
WHDI (40MHz)	38 to 46	38, 46	OFDM	16QAM	63

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)
WHDI (40MHz)	38 to 46	38, 46	OFDM	16QAM	63

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	26deg. C, 65%RH, 1017 hPa	120Vac, 60Hz	Frank Wang
RE<1G	25deg. C, 66%RH, 1016 hPa	120Vac, 60Hz	Frank Wang
PLC	25deg. C, 65%RH, 1014 hPa	120Vac, 60Hz	David Huang
APCM	25deg. C, 65%RH, 1015 hPa	120Vac, 60Hz	Frank Wang

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	PS3	SONY	CECHA07	02-27430182-955 1173-CECHA07	NA
2	TV	SANYO	SMT-32KE5	NA	NA
3	Wireless Home Digital Interface Receiver Dongle	NA	WMDA-612AN_RX	NA	ZQ6-WMDA612ANRX

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.5m shielded HDMI cable
2	1.5m shielded HDMI cable
3	NA

NOTE 1: All power cords of the above support units are non-shielded (1.8m).

NOTE 2: Item 3 & HDMI cables were supplied from client

NOTE 3: Items 2~3acted as communication partners to transfer data.

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	ESI7	838496/016	Dec. 27, 2010	Dec. 26, 2011
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	100115	Aug. 02, 2010	Aug. 01, 2011
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 12, 2011	Apr. 11, 2012
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-408	Jan. 06, 2011	Jan. 05, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8449B	3008A01961	Nov. 02, 2010	Nov. 01, 2011
Preamplifier Agilent	8447D	2944A10738	Nov. 02, 2010	Nov. 01, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250792/4	Sep. 03, 2010	Sep. 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283397/4	Sep. 03, 2010	Sep. 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295012/4	Sep. 03, 2010	Sep. 02, 2011
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT.	TT100.	TT93021704	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	Aug. 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 4.

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

4. The FCC Site Registration No. is 988962.

5. The IC Site Registration No. is IC7450F-4.

4.1.4 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.

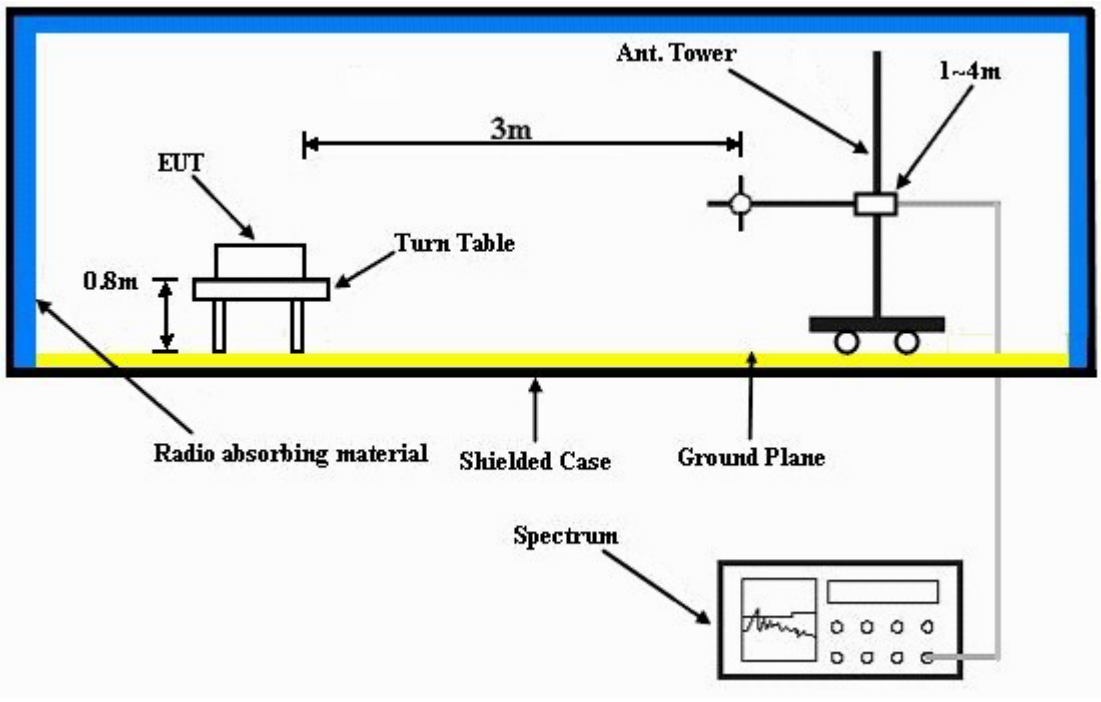
NOTE:

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 1kHz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 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. Placed the EUT on the testing table.

b. Prepared the PS3 on test table to act as a communication partners.

c. The communication partners ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.

4.1.8 TEST RESULTS

ABOVE 1GHz WORST-CASE DATA：

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	26deg. C, 65%RH 1017 hPa	TESTED BY	Frank Wang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	63.7 PK	74.0	-10.3	1.40 H	76	24.10	39.60
2	**5150.00**	**50.8 AV**	**54.0**	**-3.2**	**1.40 H**	**76**	**11.20**	**39.60**
3	*5190.00	112.1 PK			1.40 H	75	72.40	39.70
4	*5190.00	99.1 AV			1.40 H	75	59.40	39.70
5	#10380.00	59.2 PK	68.3	-9.1	1.20 H	55	8.80	50.40
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	5150.00	59.8 PK	74.0	-14.2	1.42 V	38	20.20	39.60
2	5150.00	47.9 AV	54.0	-6.1	1.42 V	38	8.30	39.60
3	*5190.00	106.7 PK			1.40 V	38	67.00	39.70
4	*5190.00	91.5 AV			1.40 V	38	51.80	39.70
5	#10380.00	59.9 PK	68.3	-8.4	1.75 V	350	9.50	50.40

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.

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	26deg. C, 65%RH 1017 hPa	TESTED BY	Frank Wang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	111.9 PK			1.36 H	74	72.20	39.70
2	*5230.00	98.7 AV			1.36 H	74	59.00	39.70
3	5350.00	59.8 PK	74.0	-14.2	1.36 H	68	20.00	39.80
4	5350.00	47.2 AV	54.0	-6.8	1.36 H	68	7.40	39.80
5	#10460.00	59.3 PK	68.3	-9.0	1.13 H	115	8.60	50.70
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	*5230.00	106.6 PK			1.10 V	292	66.90	39.70
2	*5230.00	91.0 AV			1.10 V	292	51.30	39.70
3	5350.00	56.5 PK	74.0	-17.5	1.10 V	290	16.70	39.80
4	5350.00	44.3 AV	54.0	-9.7	1.10 V	290	4.50	39.80
5	#10460.00	60.0 PK	68.3	-8.3	1.20 V	300	9.30	50.70

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 radiated frequency is out the restricted band.

BELOW 1GHz WORST-CASE DATA：

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	26deg. C, 65%RH 1016 hPa	TESTED BY	Frank Wang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	138.78	38.3 QP	43.5	-5.2	2.00 H	310	23.50	14.80
2	187.39	38.3 QP	43.5	-5.2	1.00 H	88	25.20	13.10
3	399.31	39.0 QP	46.0	-7.0	1.00 H	172	20.40	18.60
4	479.03	35.0 QP	46.0	-11.0	2.00 H	16	14.20	20.80
5	593.74	39.8 QP	46.0	-6.2	1.25 H	337	16.20	23.60
6	799.84	34.2 QP	46.0	-11.8	1.00 H	31	6.80	27.40
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	31.84	36.2 QP	40.0	-3.8	1.00 V	10	23.30	12.90
2	66.84	36.7 QP	40.0	-3.3	1.25 V	10	23.60	13.10
3	113.50	37.4 QP	43.5	-6.1	1.50 V	346	25.30	12.10
4	331.26	35.1 QP	46.0	-10.9	1.25 V	274	18.80	16.30
5	593.74	38.4 QP	46.0	-7.6	1.50 V	340	14.80	23.60
6	799.84	33.3 QP	46.0	-12.7	1.00 V	328	5.90	27.40

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.

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	ESH2-Z5	100100	Jan. 06, 2011	Jan. 05, 2012
V-LISN SCHWARZBECK	NNBL 8226-2	8226-142	Jun. 30, 2011	Jun. 29, 2012
LISN ROHDE & SCHWARZ	ENV216	100072	Jun. 10, 2011	Jun. 09, 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 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.

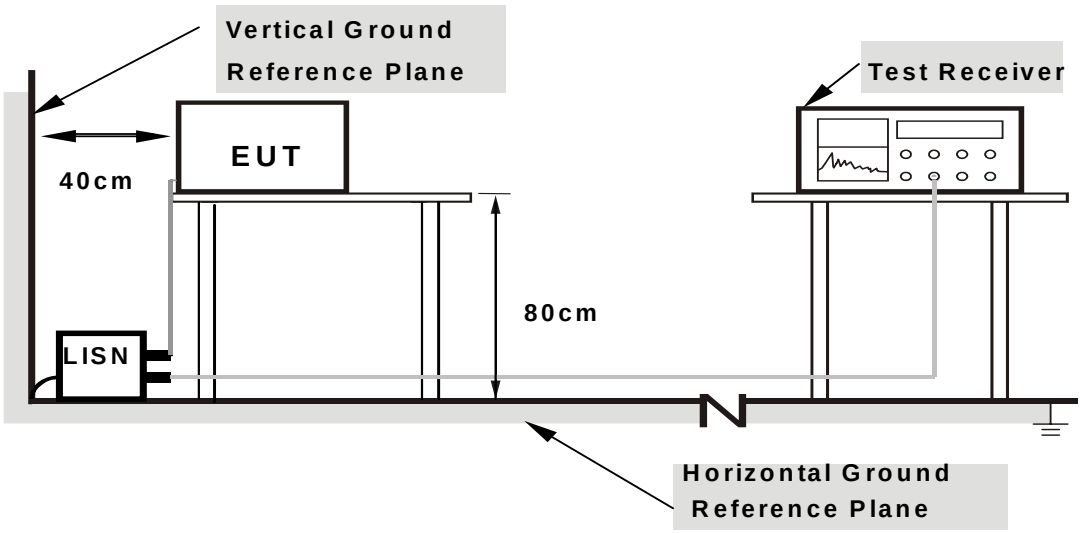
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

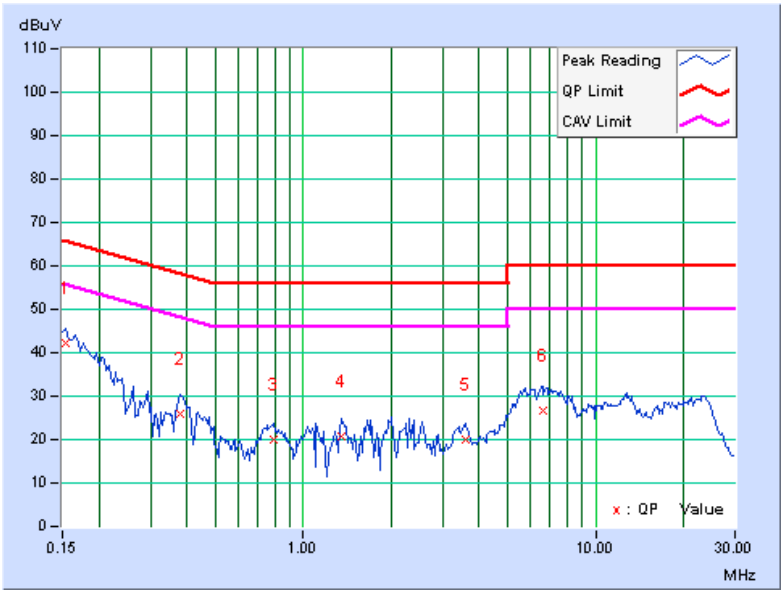
4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA：

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	0.19	41.94	-	42.13	-	65.79	55.79	-23.65	-
2	0.380	0.20	25.55	-	25.75	-	58.27	48.27	-32.52	-
3	0.795	0.23	19.85	-	20.08	-	56.00	46.00	-35.92	-
4	1.359	0.25	20.65	-	20.90	-	56.00	46.00	-35.10	-
5	3.574	0.37	19.54	-	19.91	-	56.00	46.00	-36.09	-
6	6.617	0.57	26.24	-	26.81	-	60.00	50.00	-33.19	-

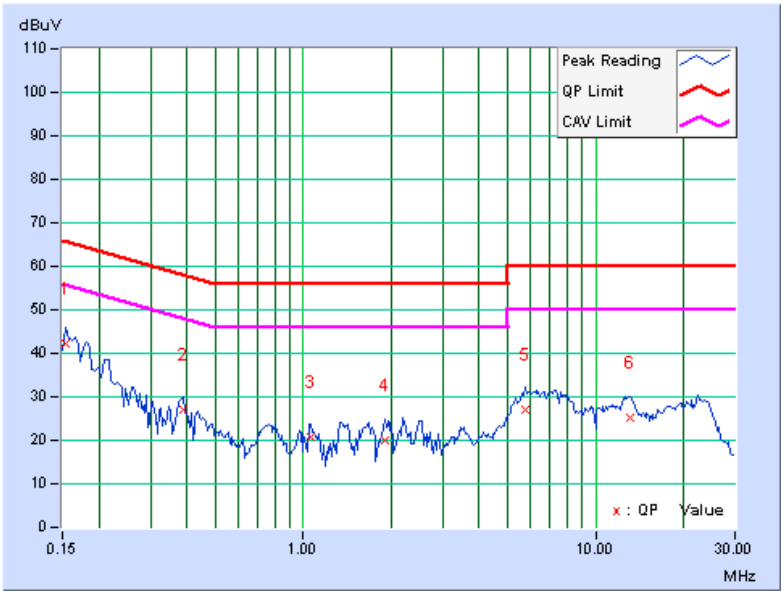
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



PHASE	Line2	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**	**42.20**	**-**	**42.36**	**-**	**65.79**	**55.79**	**-23.43**	**-**
2	0.388	0.17	26.75	-	26.92	-	58.10	48.10	-31.18	-
3	1.055	0.20	20.37	-	20.57	-	56.00	46.00	-35.43	-
4	1.906	0.23	19.70	-	19.93	-	56.00	46.00	-36.07	-
5	5.785	0.45	26.67	-	27.12	-	60.00	50.00	-32.88	-
6	13.113	0.77	24.55	-	25.32	-	60.00	50.00	-34.68	-

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 PEAK TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF PEAK TRANSMIT 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	0824011	Aug. 02, 2010	Aug. 01, 2011
Power Sensor	MA2411B	0738171	Aug. 02, 2010	Aug. 01, 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

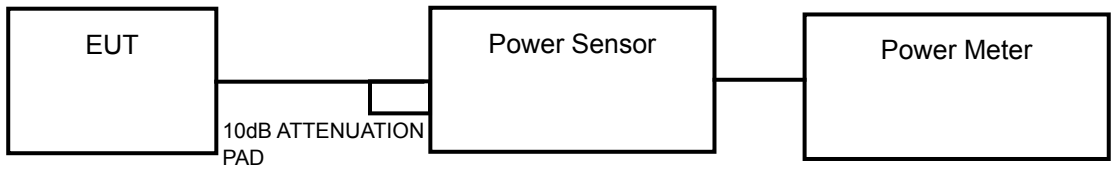
The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 300kHz RBW and 1MHz VBW. The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.

4.3.4 DEVIATION FROM TEST STANDARD

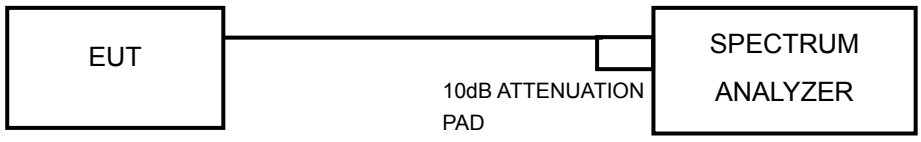
No deviation.

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

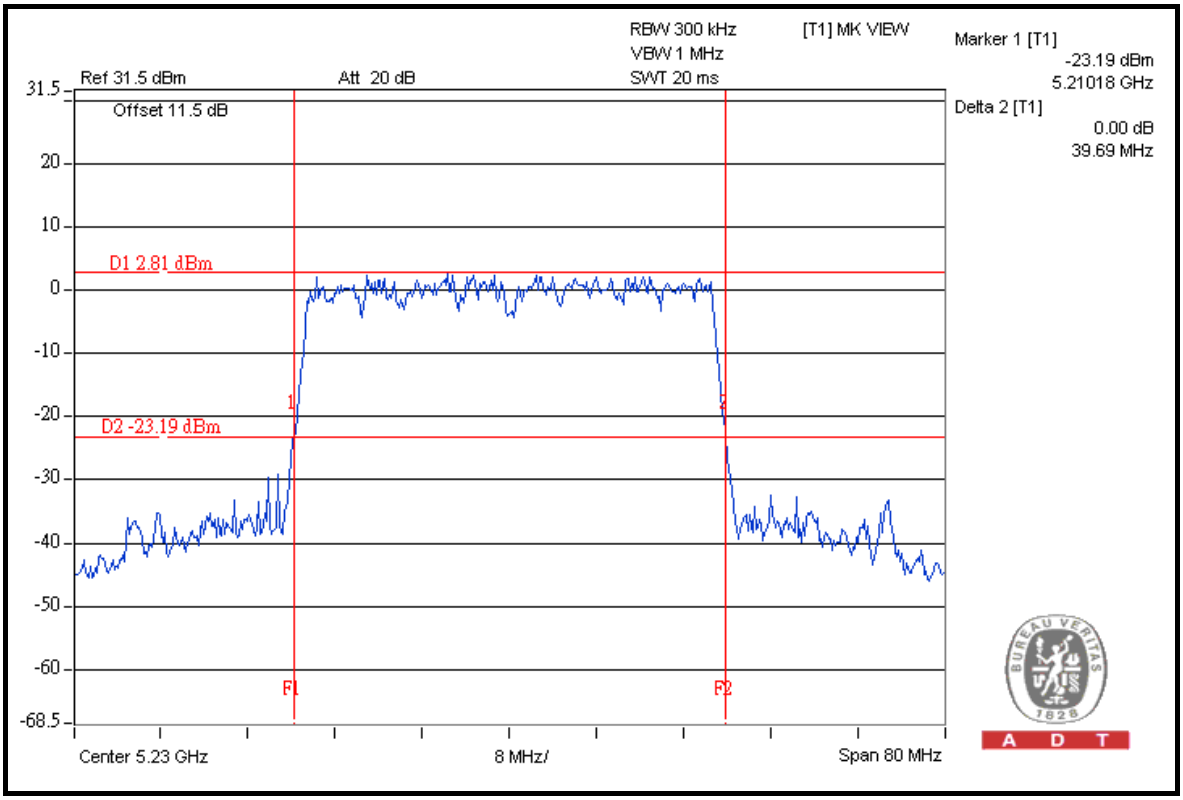
POWER OUTPUT:

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)				TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3				
38	5190	8.7	8.7	8.5	8.5	29.0	14.6	17	PASS
46	5230	8.6	8.5	8.7	8.5	28.8	14.6	17	PASS

26dB OCCUPIED BANDWIDTH:

CHAN.	CHAN. FREQ. (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)				PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	
38	5190	39.63	39.51	39.47	39.49	PASS
46	5230	39.53	39.69	39.43	39.28	PASS

FOR CHAIN 1: CH 46



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	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.

4.4.3 TEST PROCEDURE

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

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

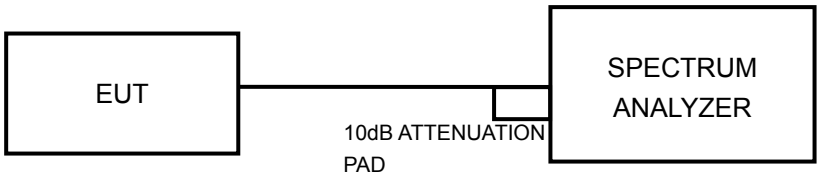
c. Using peak detector and Max-hold function for Trace 1 (RB = 1MHz, VB = 3MHz) and 2 (RB = 1MHz, VB = 300kHz).

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



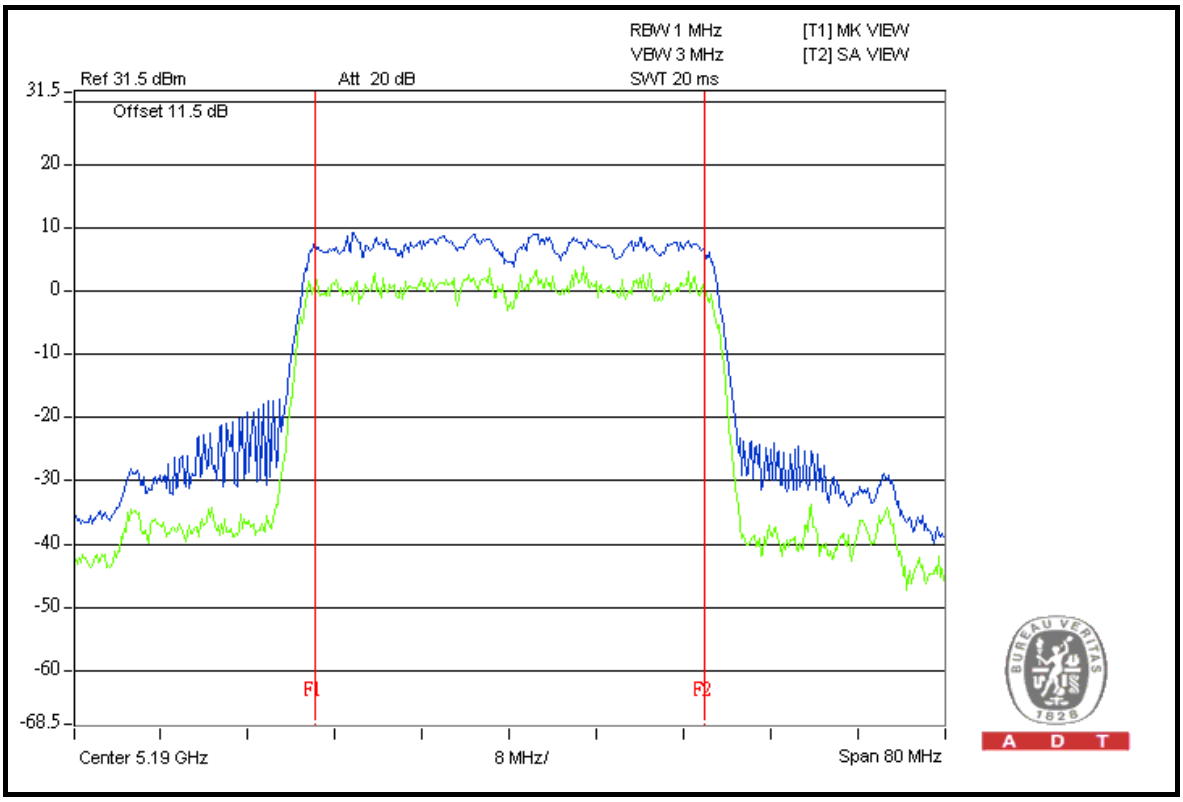
4.4.6 EUT OPERATING CONDITIONS

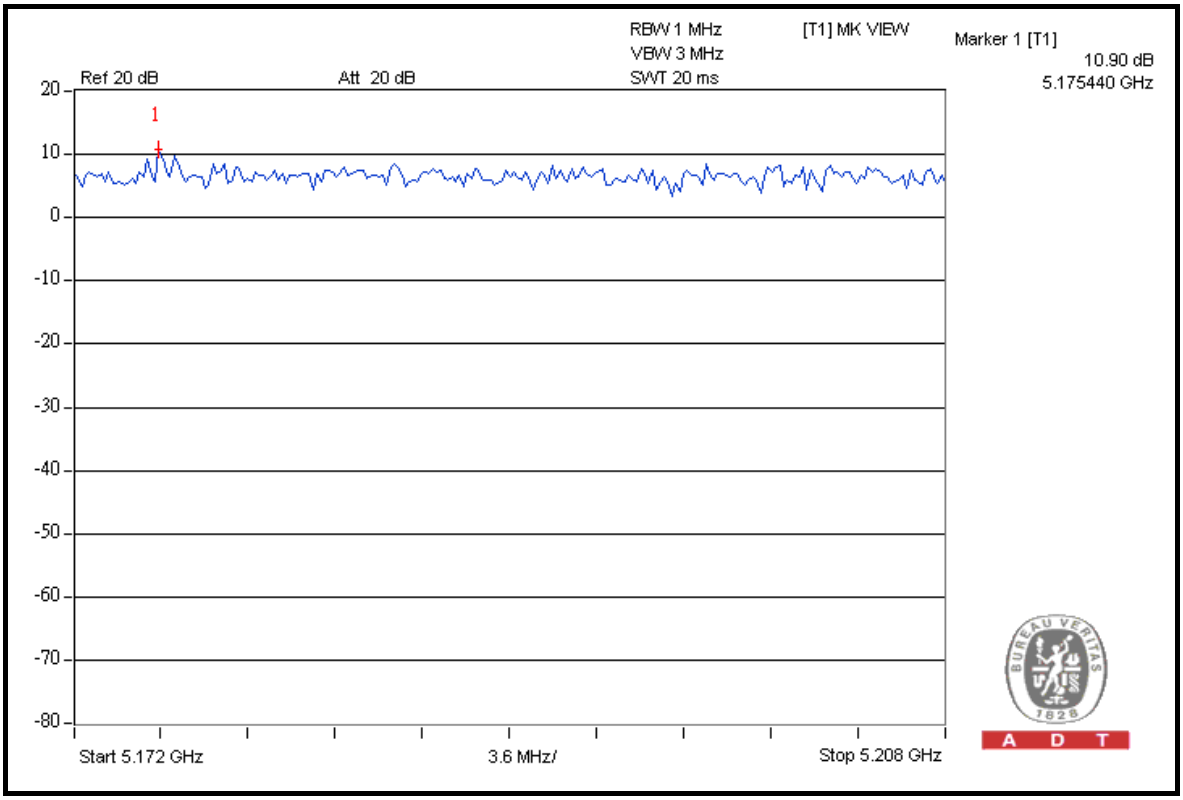
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.4.7 TEST RESULTS

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER EXCURSION (dB)				PEAK TO AVERAGE EXCURSION LIMIT (dB)	PASS/ FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3		
38	5190	9.49	9.86	9.80	10.90	13	PASS
46	5230	10.33	10.14	10.54	9.03	13	PASS

FOR CHAIN 3: CH 38





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	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.

4.5.3 TEST PROCEDURES

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

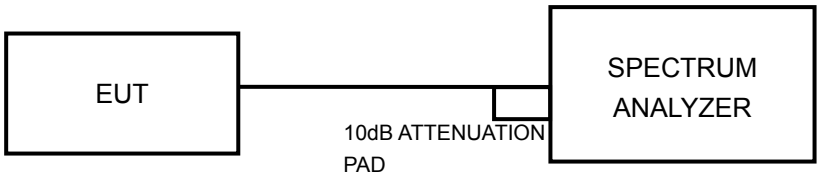
b. Set RBW = 1MHz, VBW = 3MHz. The PPSD is the highest level found across the emission in any 1MHz band.

c. Follow method 2 of KDB 662911 D01 Multiple Transmitter Output v01 to calculate total power density of 4 TX port.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation.

4.5.5 TEST SETUP



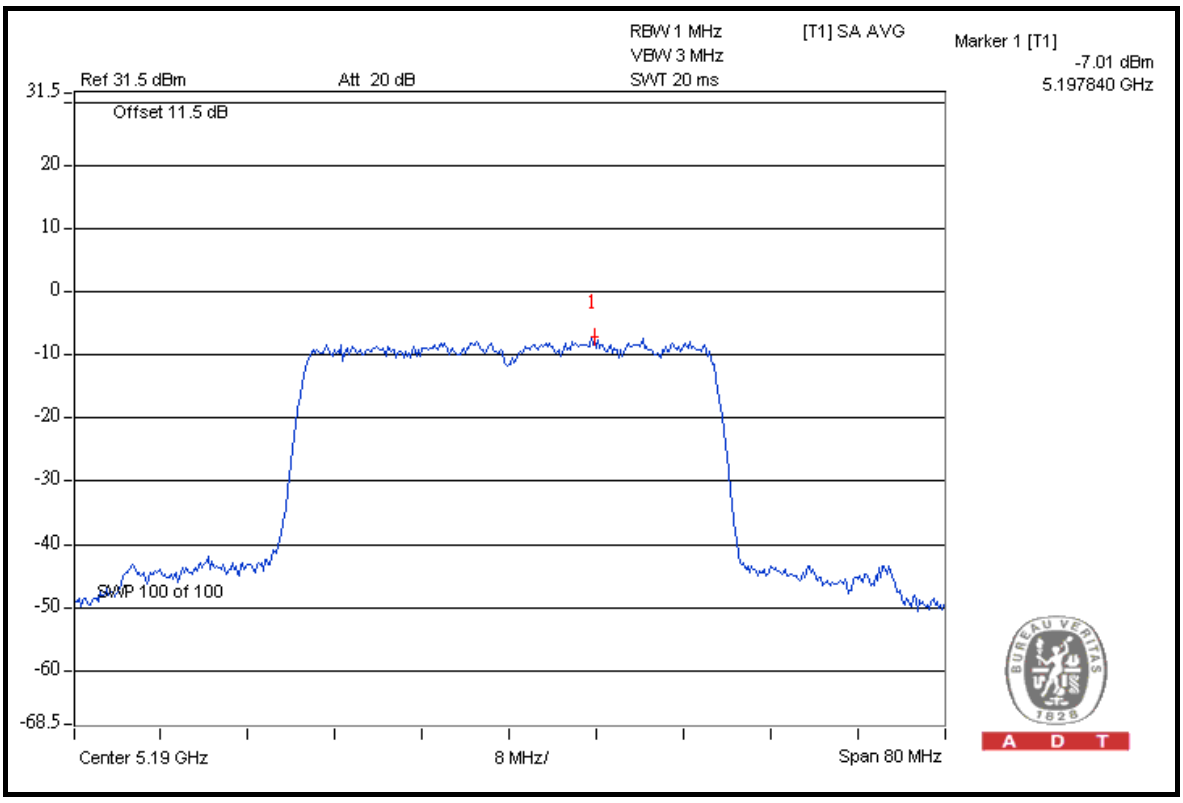
4.5.6 EUT OPERATING CONDITIONS

Same as 4.3.6.

4.5.7 TEST RESULTS

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)				TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3			
38	5190	-7.1	-7.0	-7.9	-7.6	-1.4	8	PASS
46	5230	-7.9	-7.2	-7.5	-7.1	-1.4	8	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 the band of operation 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	100040	Jul. 17, 2010	Jul. 16, 2011
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W981030	Jun. 15, 2011	Jun. 14, 2012

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

4.6.3 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.

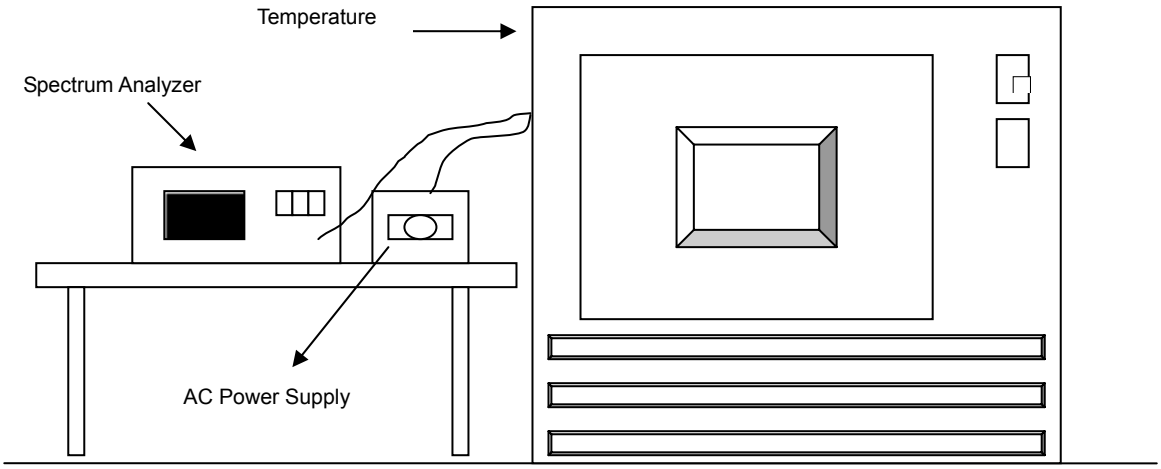
e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.

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: 5190MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	110.0	5189.988178	-2.278	5189.988003	-2.312	5189.988384	-2.238	5189.987952	-2.321
40	110.0	5189.988153	-2.283	5189.988203	-2.273	5189.988403	-2.234	5189.988746	-2.168
30	110.0	5189.990229	-1.883	5189.989777	-1.970	5189.990373	-1.855	5189.989749	-1.975
20	110.0	5189.991185	-1.698	5189.990903	-1.753	5189.990961	-1.742	5189.991360	-1.665
10	110.0	5189.992422	-1.460	5189.992382	-1.468	5189.992320	-1.480	5189.992356	-1.473
0	110.0	5189.990898	-1.754	5189.991059	-1.723	5189.990825	-1.768	5189.990775	-1.777
-10	110.0	5189.989474	-2.028	5189.989709	-1.983	5189.989676	-1.989	5189.989288	-2.064
-20	110.0	5189.989187	-2.083	5189.989116	-2.097	5189.989006	-2.118	5189.988780	-2.162
-30	110.0	5189.987648	-2.380	5189.987698	-2.370	5189.988065	-2.300	5189.988188	-2.276

FREQUEMCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5190MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	93.5	5189.991134	-1.708	5189.991280	-1.680	5189.991451	-1.647	5189.990921	-1.749
	110.0	5189.991216	-1.692	5189.991382	-1.661	5189.991414	-1.654	5189.991225	-1.691
	126.5	5189.991272	-1.682	5189.991509	-1.636	5189.991301	-1.676	5189.991134	-1.708

4.7 BAND EDGES MEASUREMENT

4.7.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Dec. 27, 2010	Dec. 26, 2011
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	100115	Aug. 02, 2010	Aug. 01, 2011
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 12, 2011	Apr. 11, 2012
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-408	Jan. 06, 2011	Jan. 05, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8449B	3008A01961	Nov. 02, 2010	Nov. 01, 2011
Preamplifier Agilent	8447D	2944A10738	Nov. 02, 2010	Nov. 01, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250792/4	Sep. 03, 2010	Sep. 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283397/4	Sep. 03, 2010	Sep. 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295012/4	Sep. 03, 2010	Sep. 02, 2011
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT.	TT100.	TT93021704	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	Aug. 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 1kHz 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.

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)	112.1	48.56	63.54	74.00
5190.00 (AV)	99.1	46.54	52.56	54.00

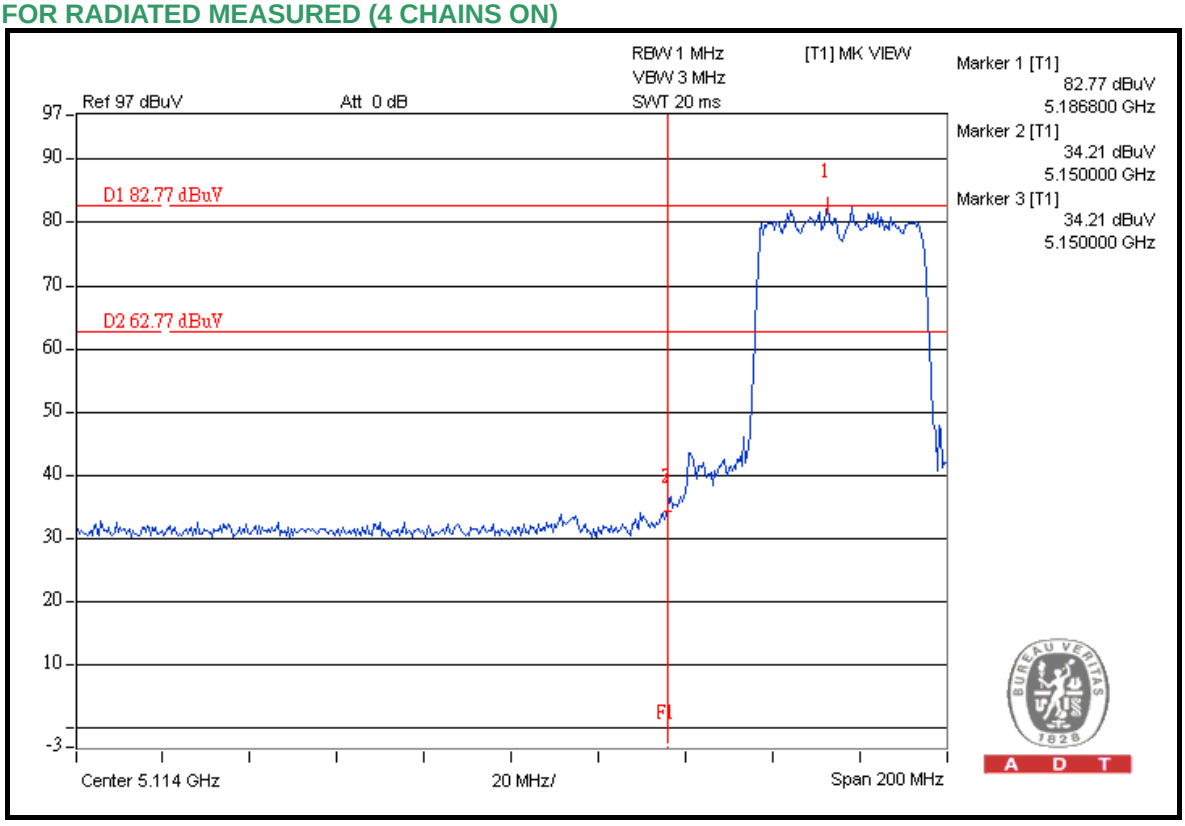
RESTRICT BAND (5350 ~ 5460 MHz)

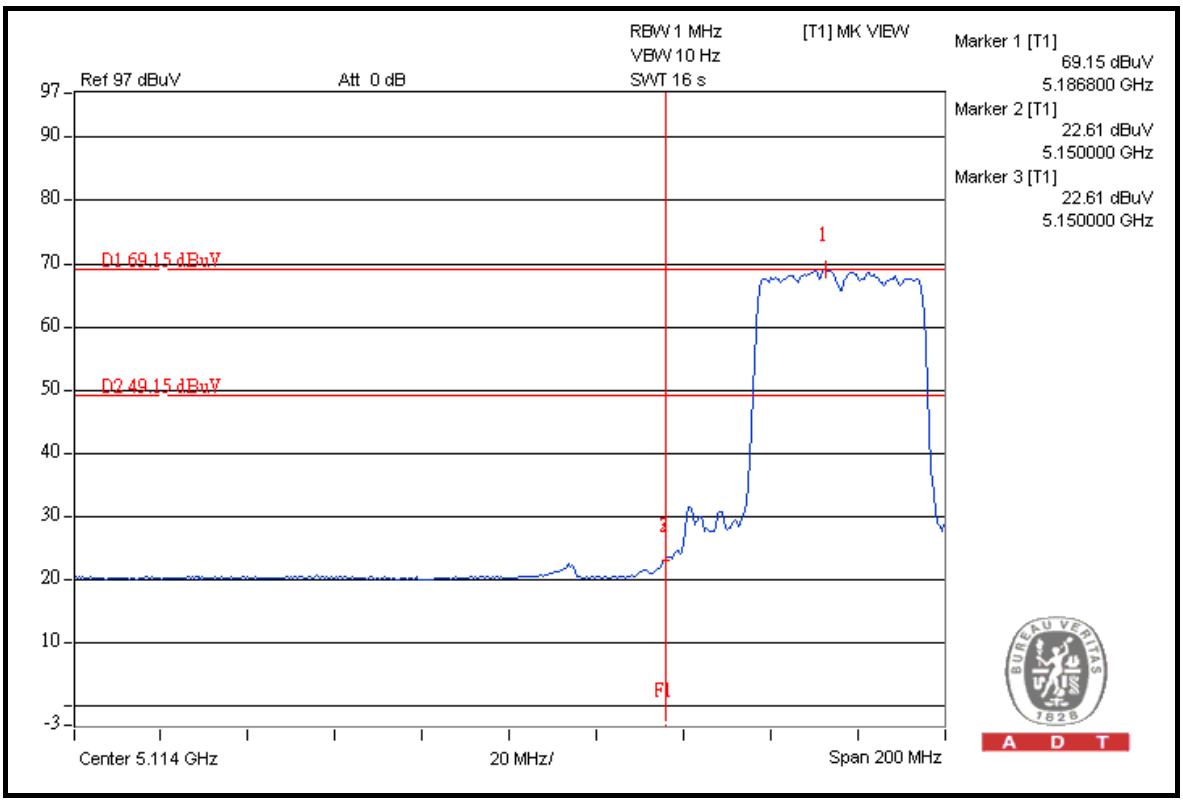
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
5230.00 (PK)	111.9	50.04	61.86	74.00
5230.00 (AV)	98.7	48.98	49.72	54.00

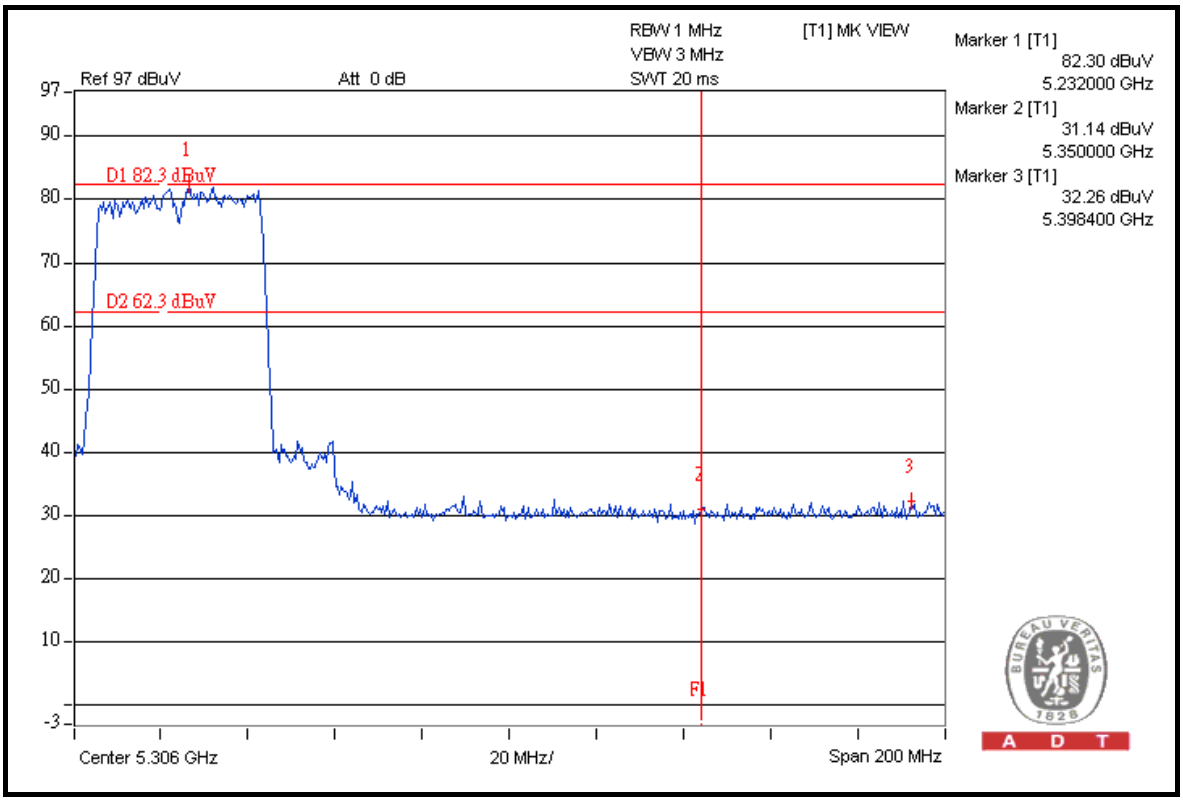
NOTE:

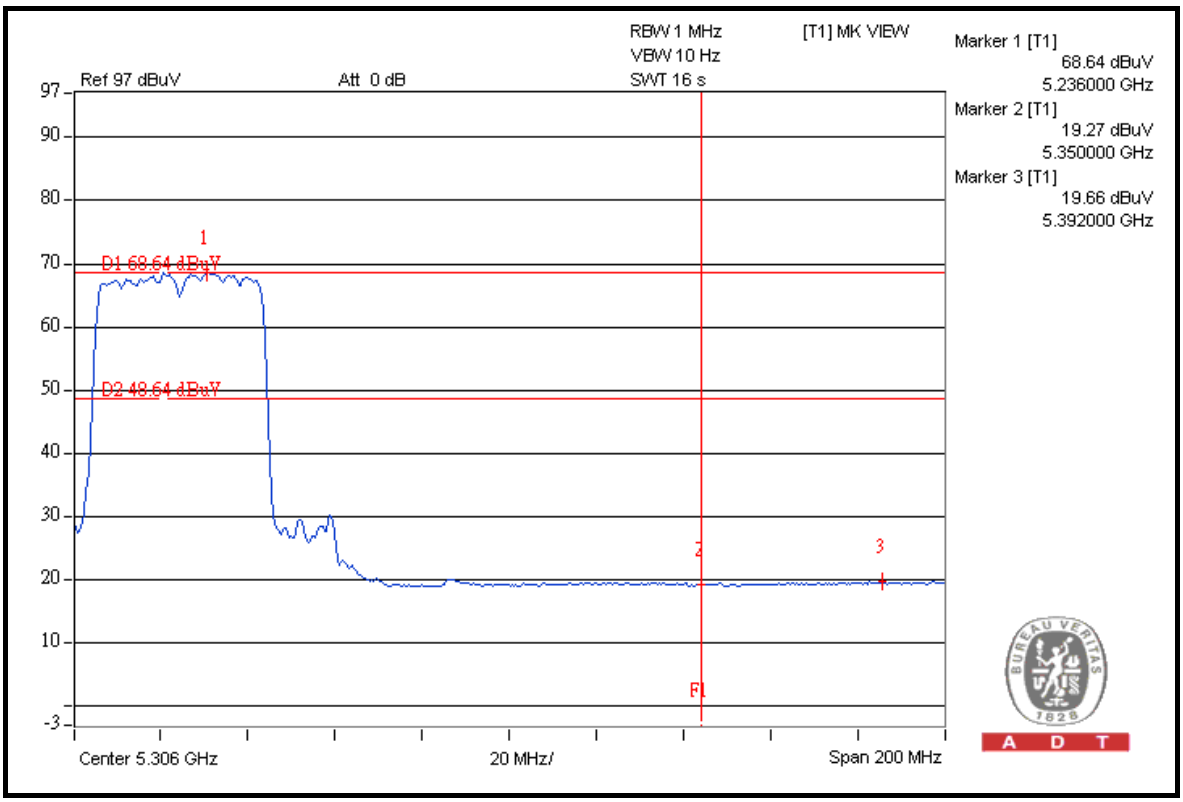
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

FOR RADIATED MEASURED (4 CHAINS ON)



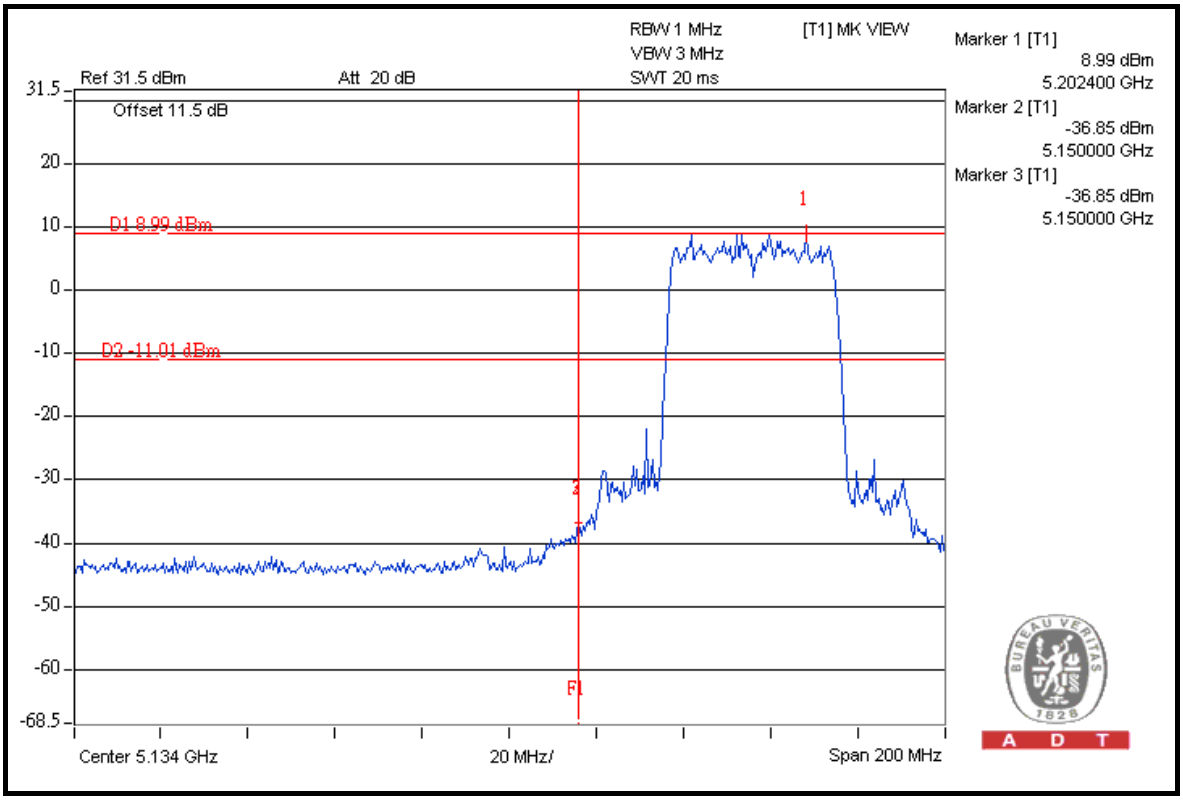


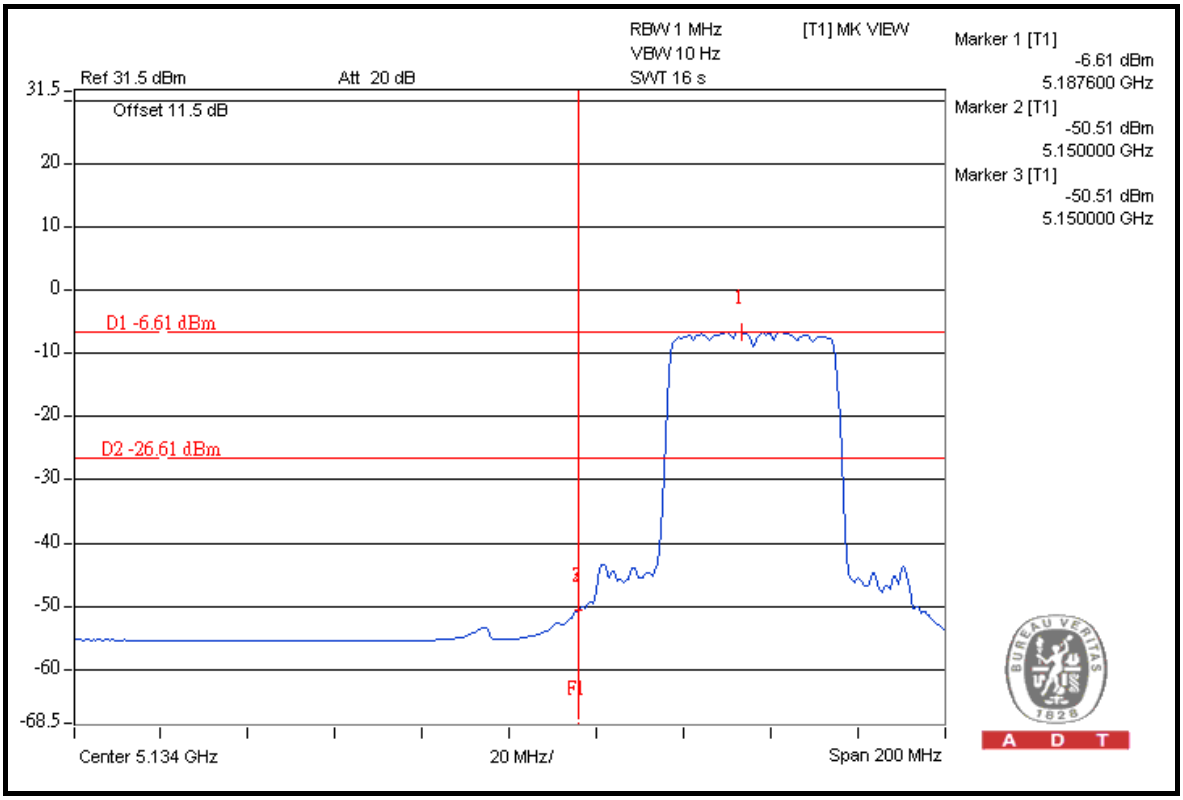

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
82.30 dBuV
5.232000 GHz
Marker 2 [T1]
31.14 dBuV
5.350000 GHz
Marker 3 [T1]
32.26 dBuV
5.398400 GHz
D1 82.3 dBuV
D2 62.3 dBuV
Center 5.306 GHz
20 MHz/
Span 200 MHz

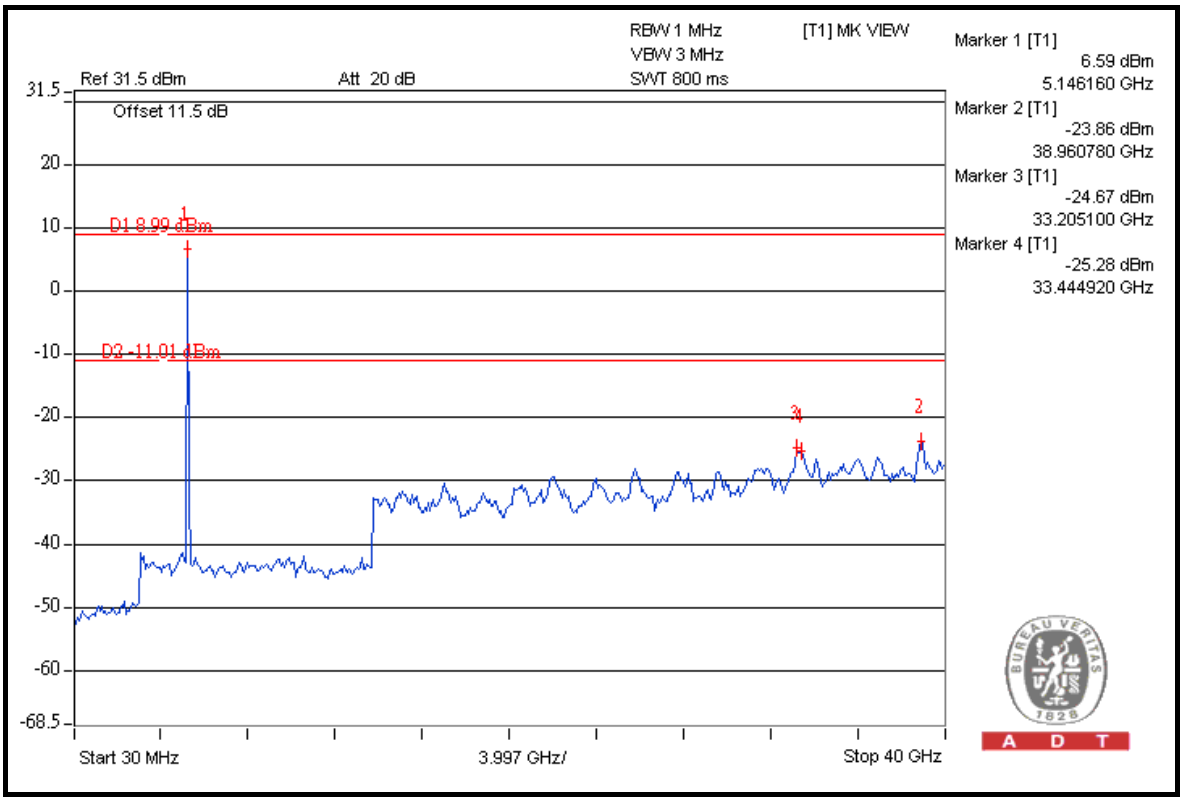

RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
68.64 dBuV
5.236000 GHz
Marker 2 [T1]
19.27 dBuV
5.350000 GHz
Marker 3 [T1]
19.66 dBuV
5.392000 GHz
D1 68.64 dBuV
D2 48.64 dBuV
Center 5.306 GHz
20 MHz/
Span 200 MHz

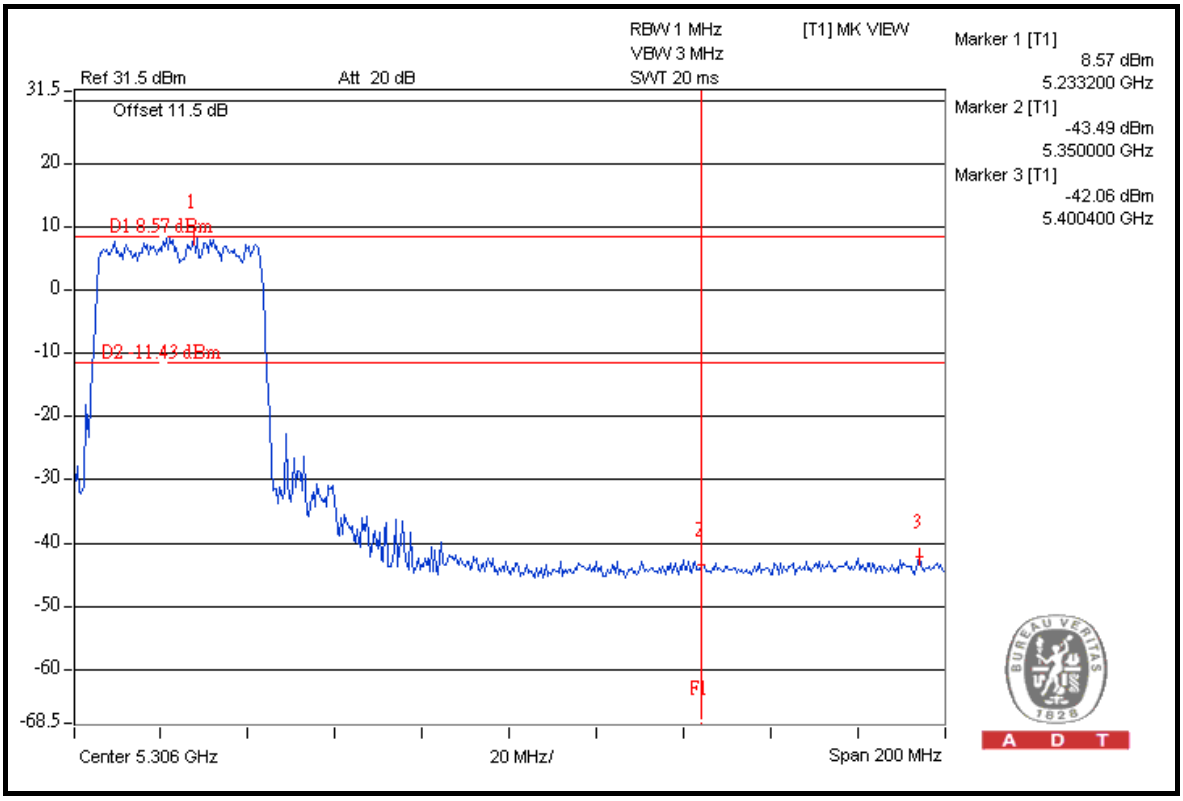
FOR CONDUCTED MEASURED

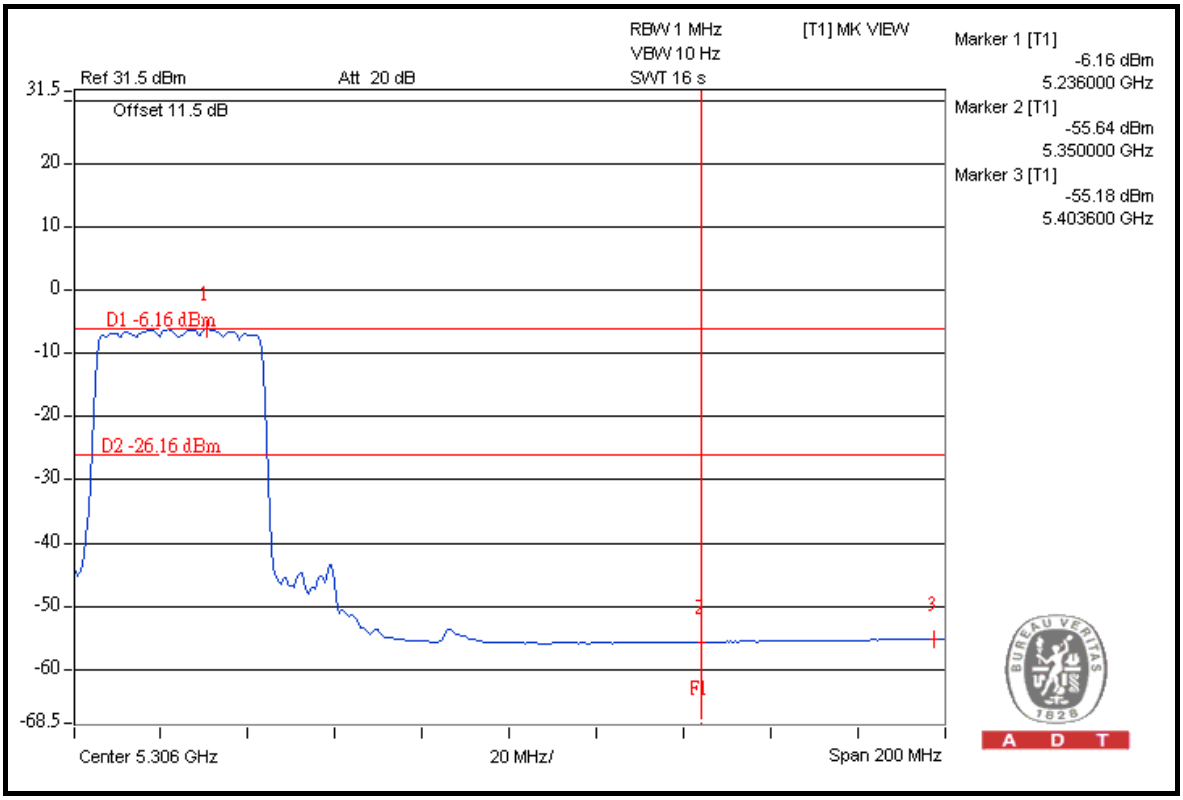
CHAIN 0

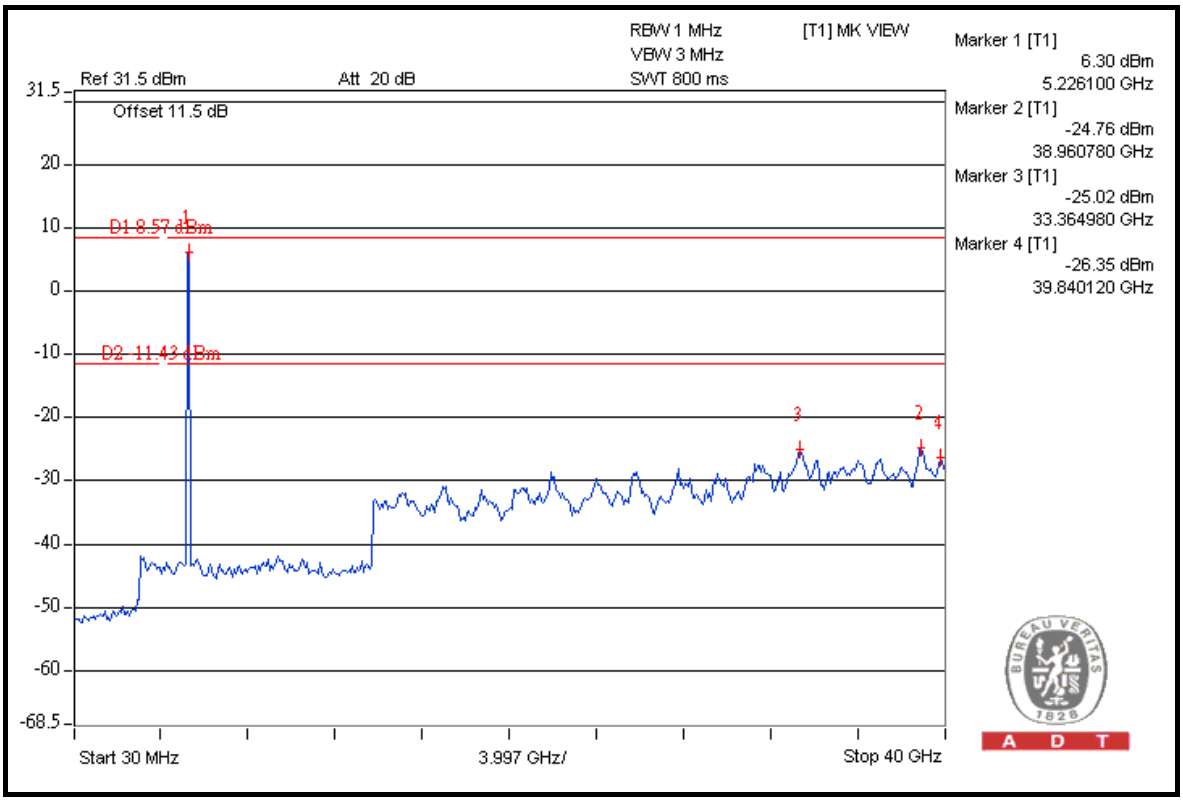




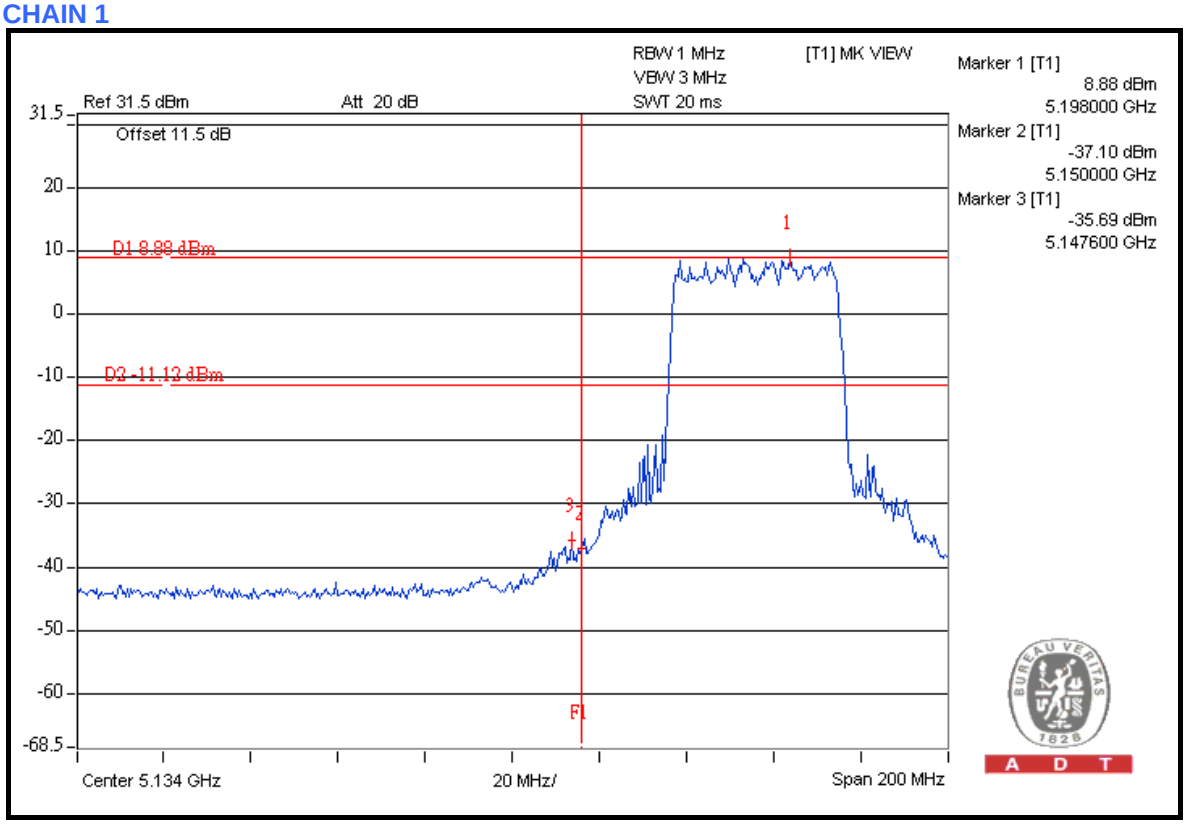

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 8.99 dBm
D2 -11.01 dBm
Marker 1 [T1]
6.59 dBm
5.146160 GHz
Marker 2 [T1]
-23.86 dBm
38.960780 GHz
Marker 3 [T1]
-24.67 dBm
33.205100 GHz
Marker 4 [T1]
-25.28 dBm
33.444920 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Start 30 MHz
3.997 GHz/
Stop 40 GHz

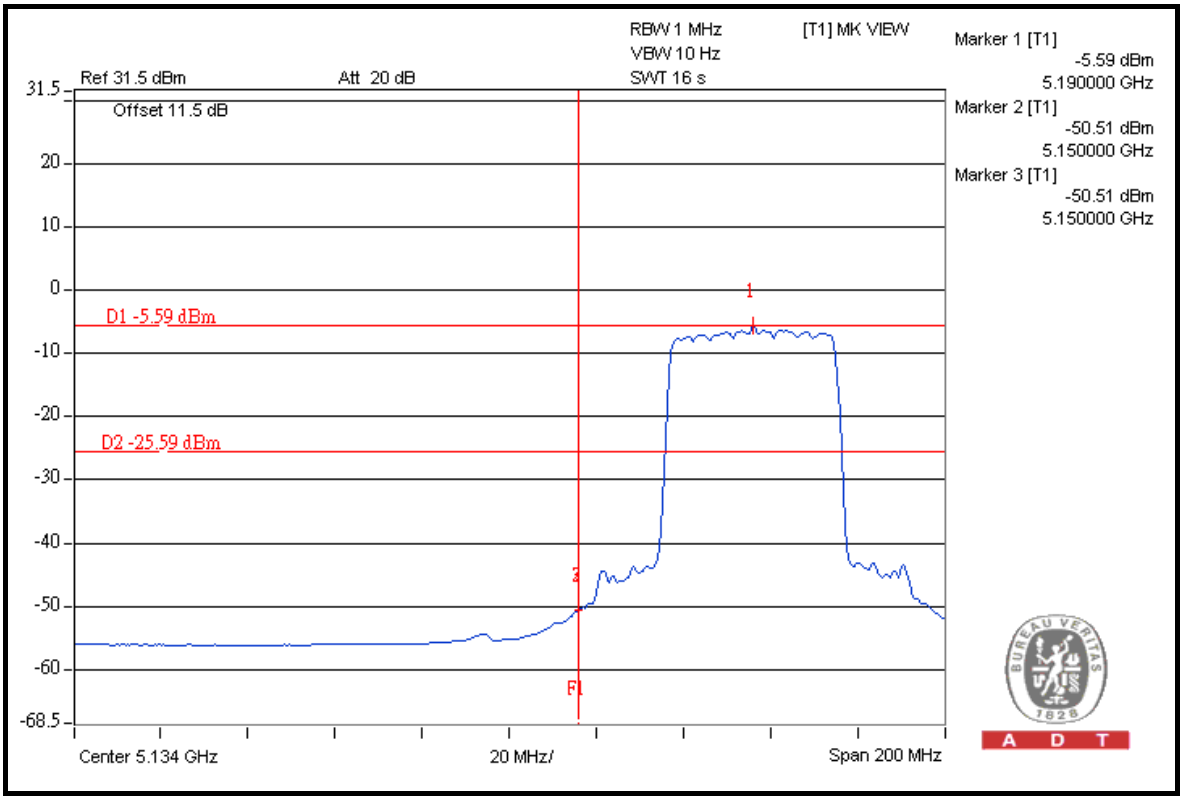

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 8.57 dBm
D2 -11.43 dBm
Marker 1 [T1]
8.57 dBm
5.233200 GHz
Marker 2 [T1]
-43.49 dBm
5.350000 GHz
Marker 3 [T1]
-42.06 dBm
5.400400 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.306 GHz
20 MHz/
Span 200 MHz

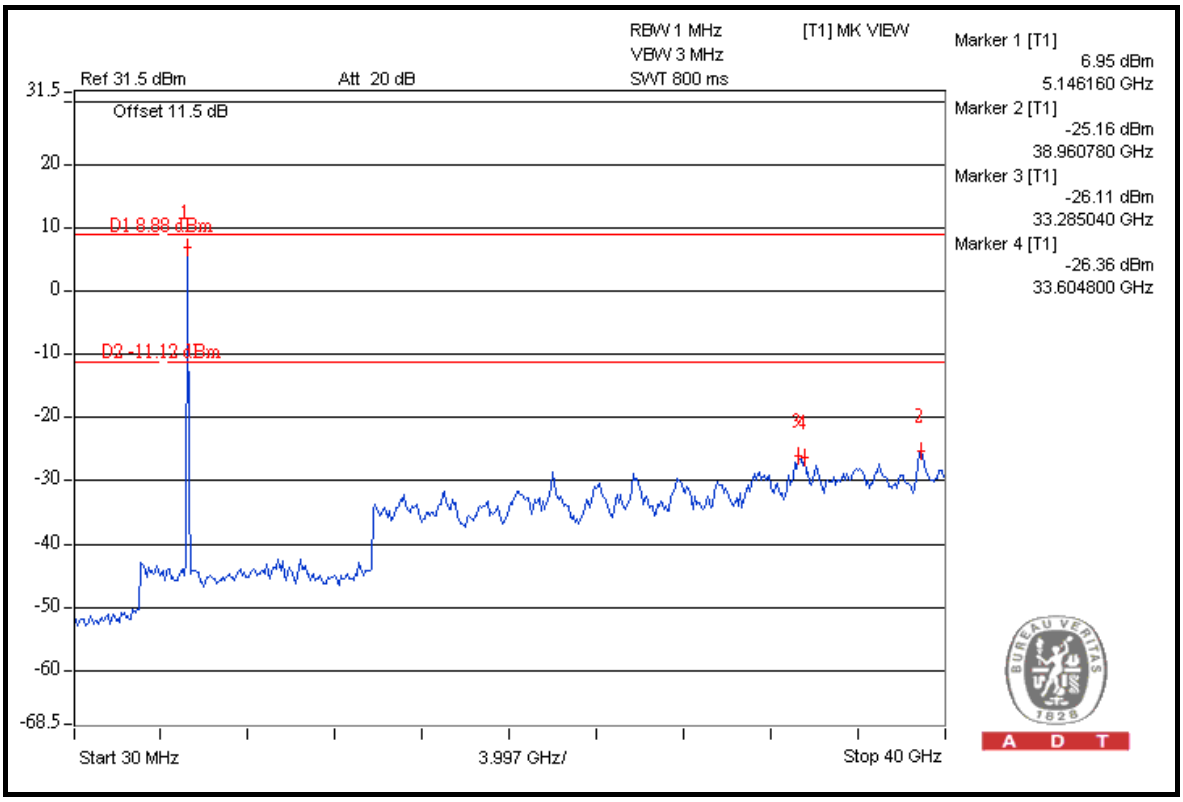

RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
D1 -6.16 dBm
D2 -26.16 dBm
Center 5.306 GHz
20 MHz/
Span 200 MHz
Marker 1 [T1]
-6.16 dBm
5.236000 GHz
Marker 2 [T1]
-55.64 dBm
5.350000 GHz
Marker 3 [T1]
-55.18 dBm
5.403600 GHz

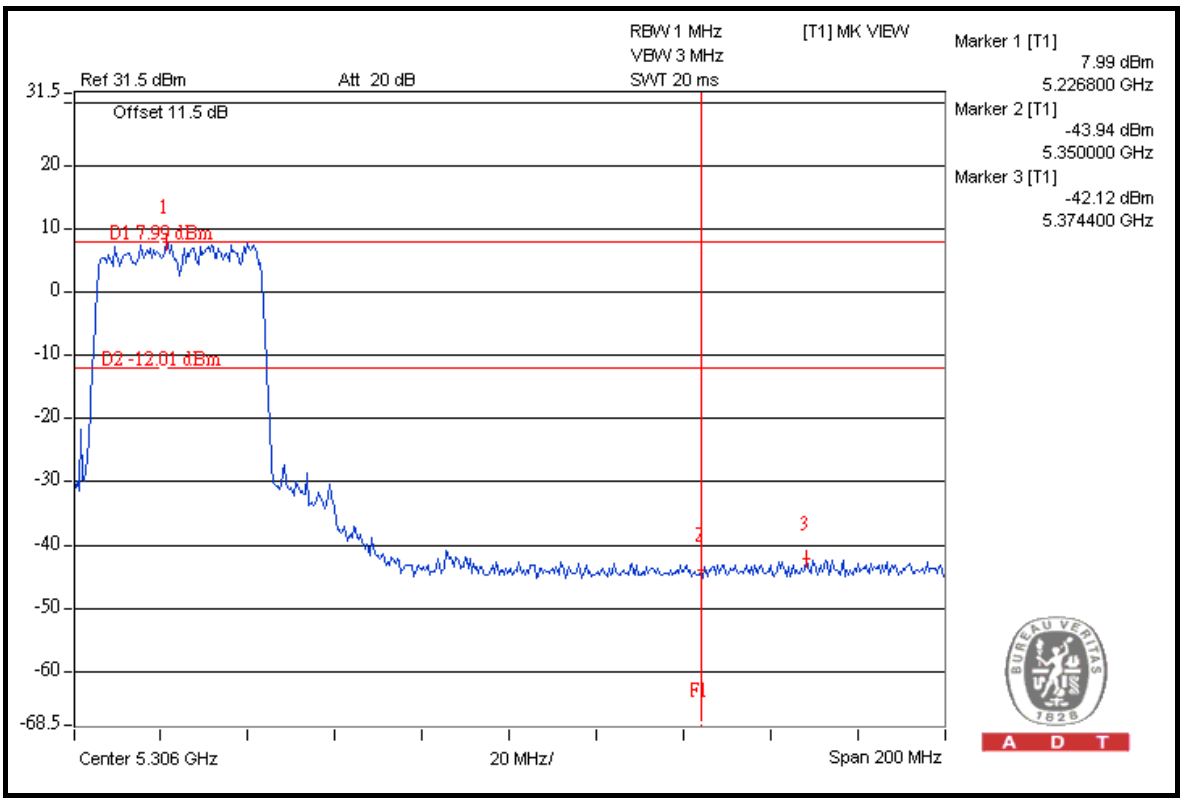

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
D1 8.57 dBm
D2 -11.43 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Marker 1 [T1]
6.30 dBm
5.226100 GHz
Marker 2 [T1]
-24.76 dBm
38.960780 GHz
Marker 3 [T1]
-25.02 dBm
33.364980 GHz
Marker 4 [T1]
-26.35 dBm
39.840120 GHz

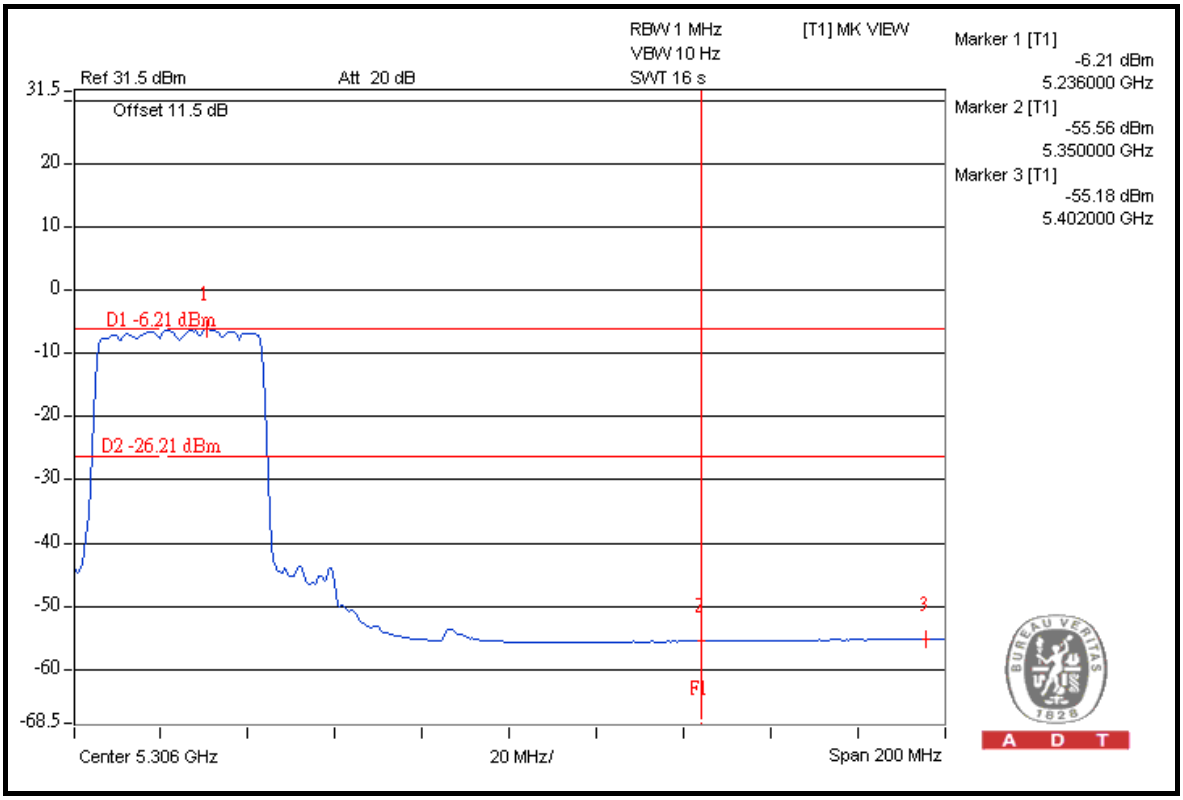
CHAIN 1

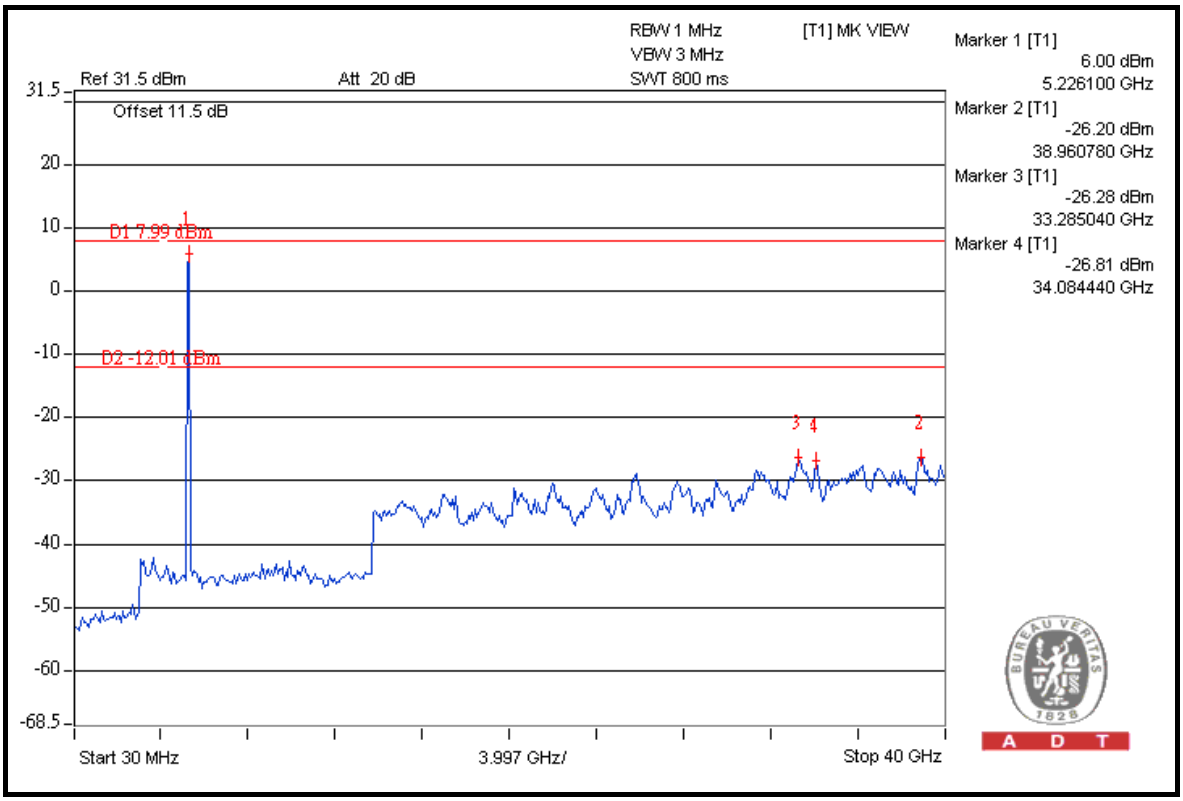

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 8.88 dBm
D2 -11.12 dBm
Marker 1 [T1]
8.88 dBm
5.198000 GHz
Marker 2 [T1]
-37.10 dBm
5.150000 GHz
Marker 3 [T1]
-35.69 dBm
5.147600 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.134 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 -5.59 dBm
D2 -25.59 dBm
Marker 1 [T1]
-5.59 dBm
5.190000 GHz
Marker 2 [T1]
-50.51 dBm
5.150000 GHz
Marker 3 [T1]
-50.51 dBm
5.150000 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.134 GHz
20 MHz/
Span 200 MHz

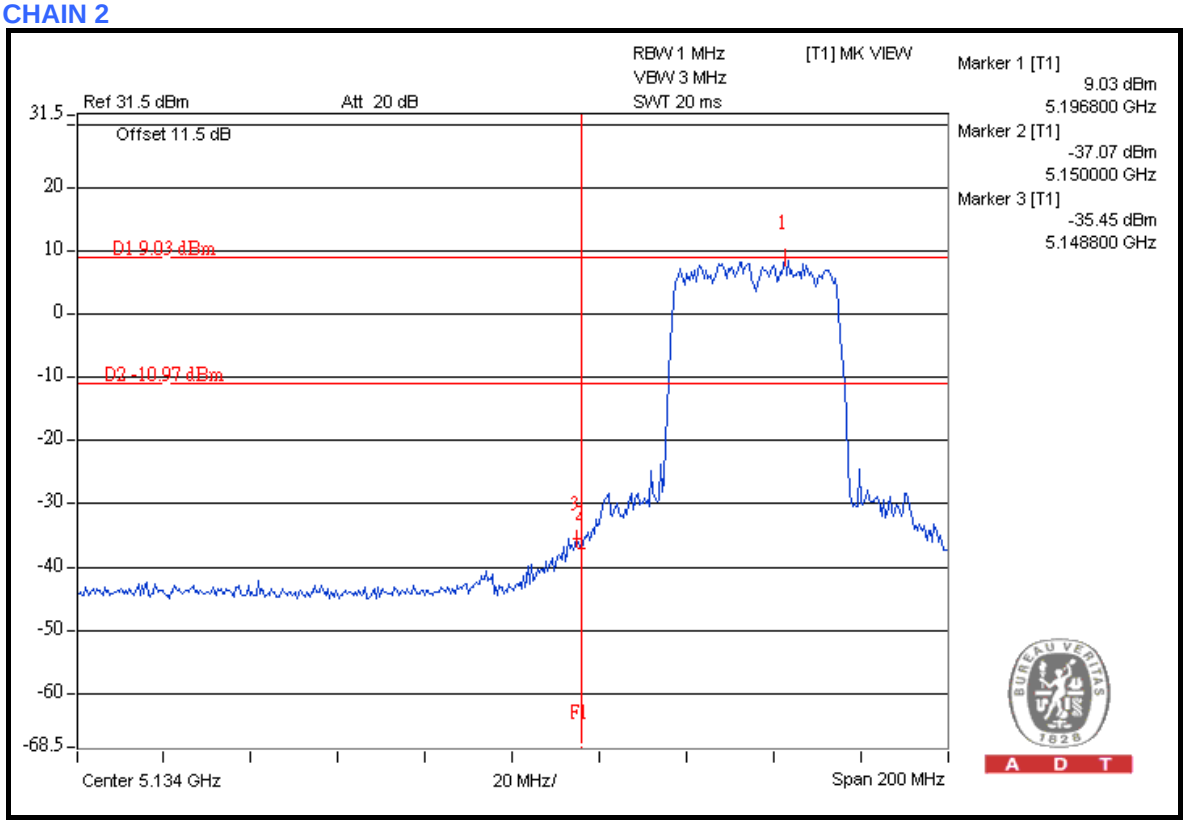

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 8.88 dBm
D2 -11.12 dBm
Marker 1 [T1]
6.95 dBm
5.146160 GHz
Marker 2 [T1]
-25.16 dBm
38.960780 GHz
Marker 3 [T1]
-26.11 dBm
33.285040 GHz
Marker 4 [T1]
-26.36 dBm
33.604800 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

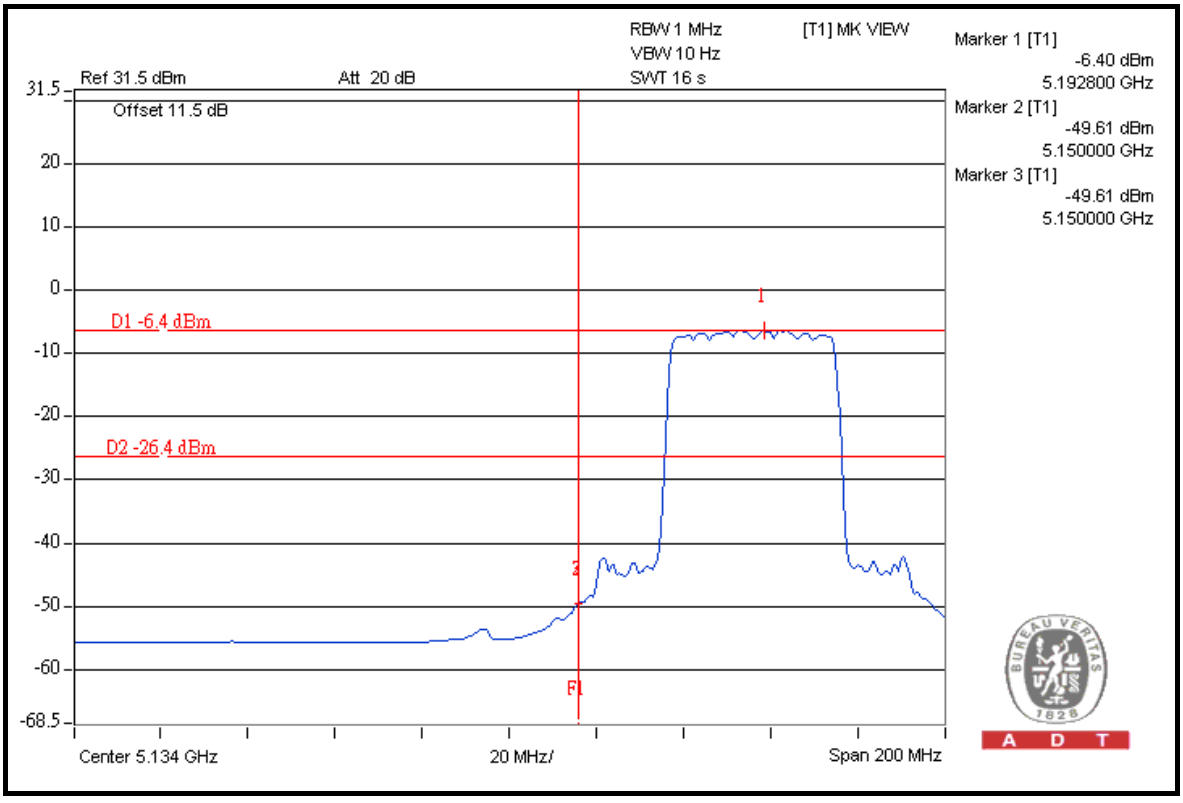

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 7.99 dBm
D2 -12.01 dBm
Marker 1 [T1]
7.99 dBm
5.226800 GHz
Marker 2 [T1]
-43.94 dBm
5.350000 GHz
Marker 3 [T1]
-42.12 dBm
5.374400 GHz
Center 5.306 GHz
20 MHz/
Span 200 MHz

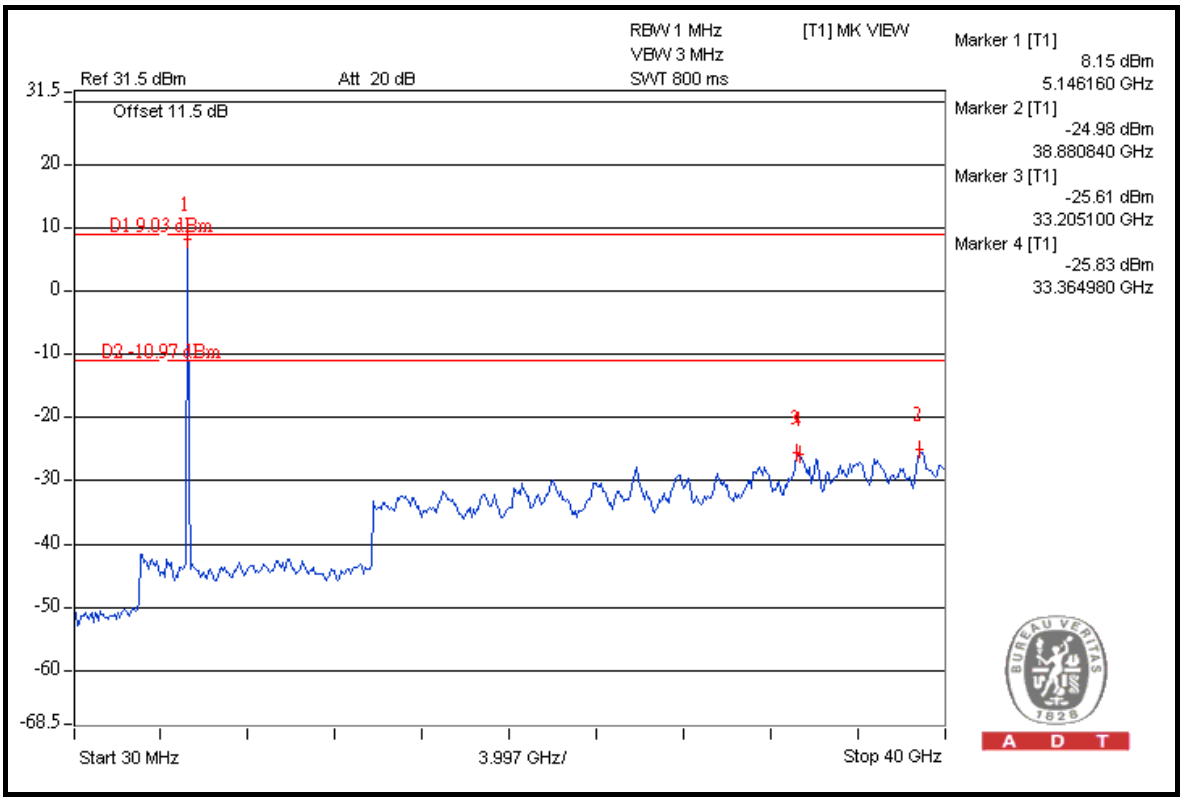

RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
D1 -6.21 dBm
D2 -26.21 dBm
Marker 1 [T1]
-6.21 dBm
5.236000 GHz
Marker 2 [T1]
-55.56 dBm
5.350000 GHz
Marker 3 [T1]
-55.18 dBm
5.402000 GHz
Center 5.306 GHz
20 MHz/
Span 200 MHz

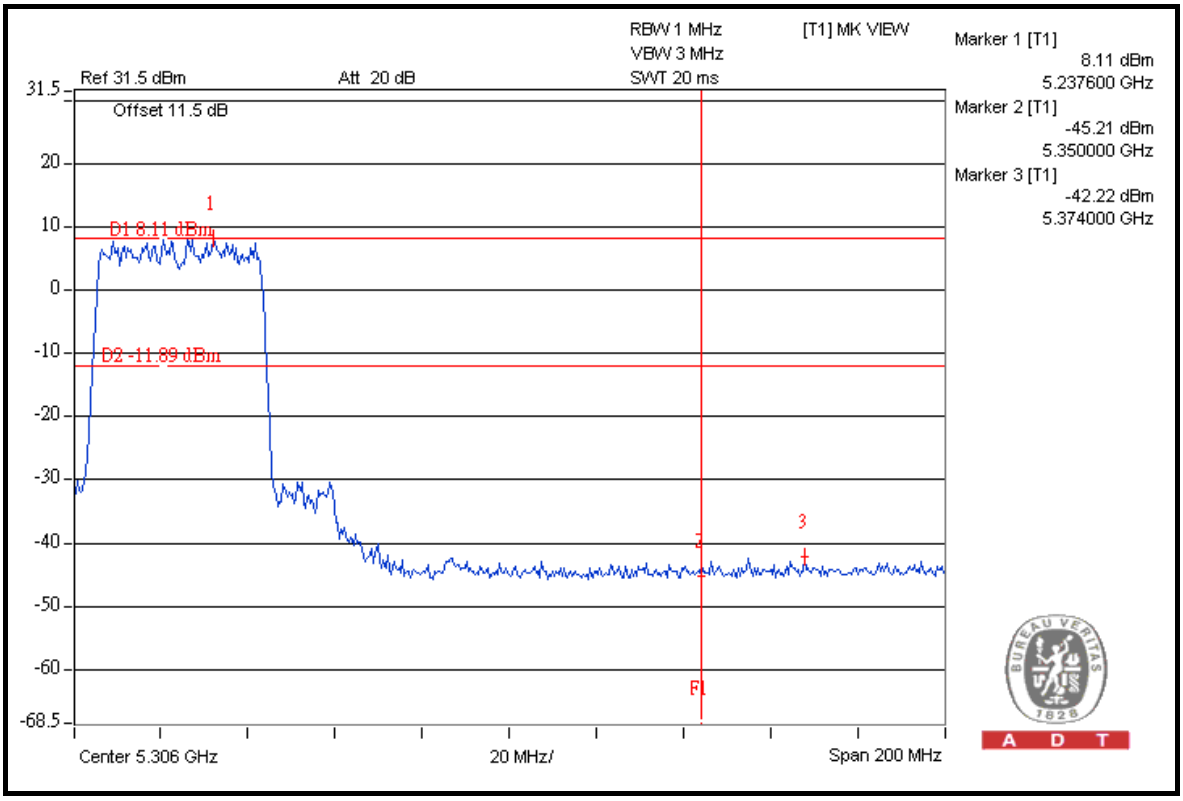

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
D1 7.99 dBm
D2 -12.01 dBm
Marker 1 [T1]
6.00 dBm
5.226100 GHz
Marker 2 [T1]
-26.20 dBm
38.960780 GHz
Marker 3 [T1]
-26.28 dBm
33.285040 GHz
Marker 4 [T1]
-26.81 dBm
34.084440 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

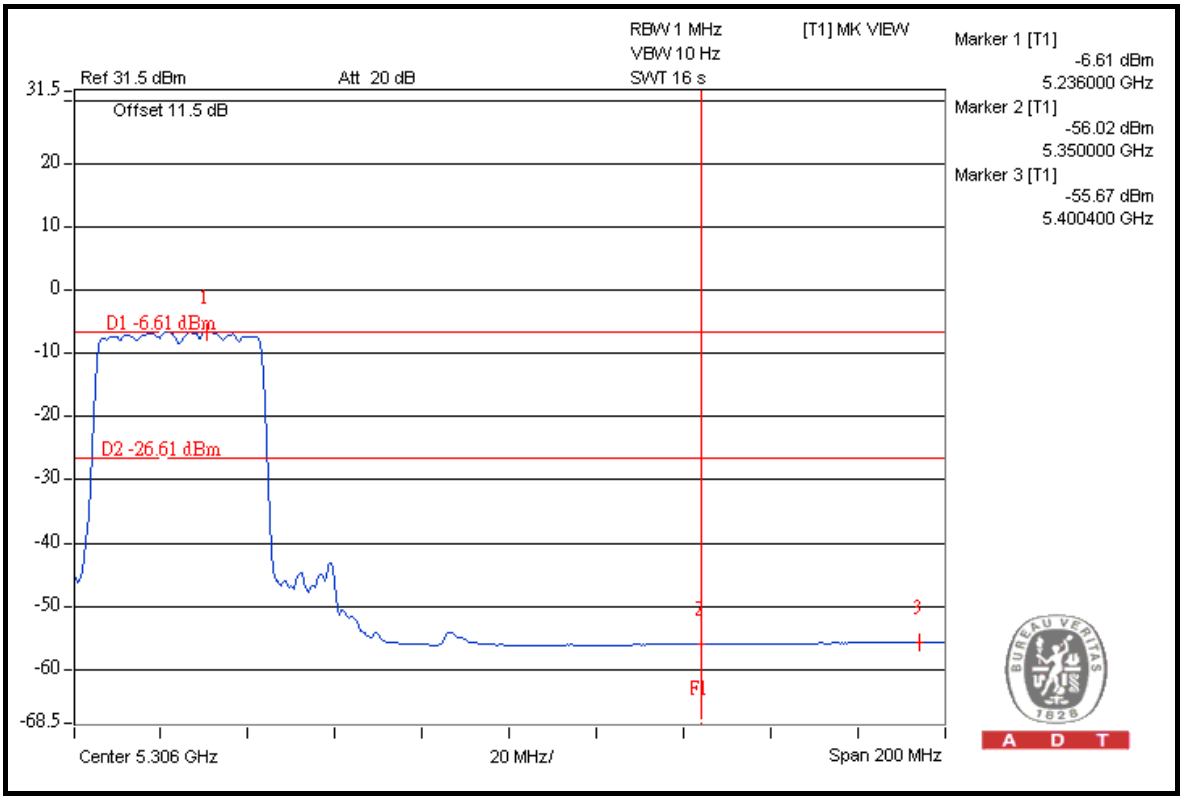
CHAIN 2

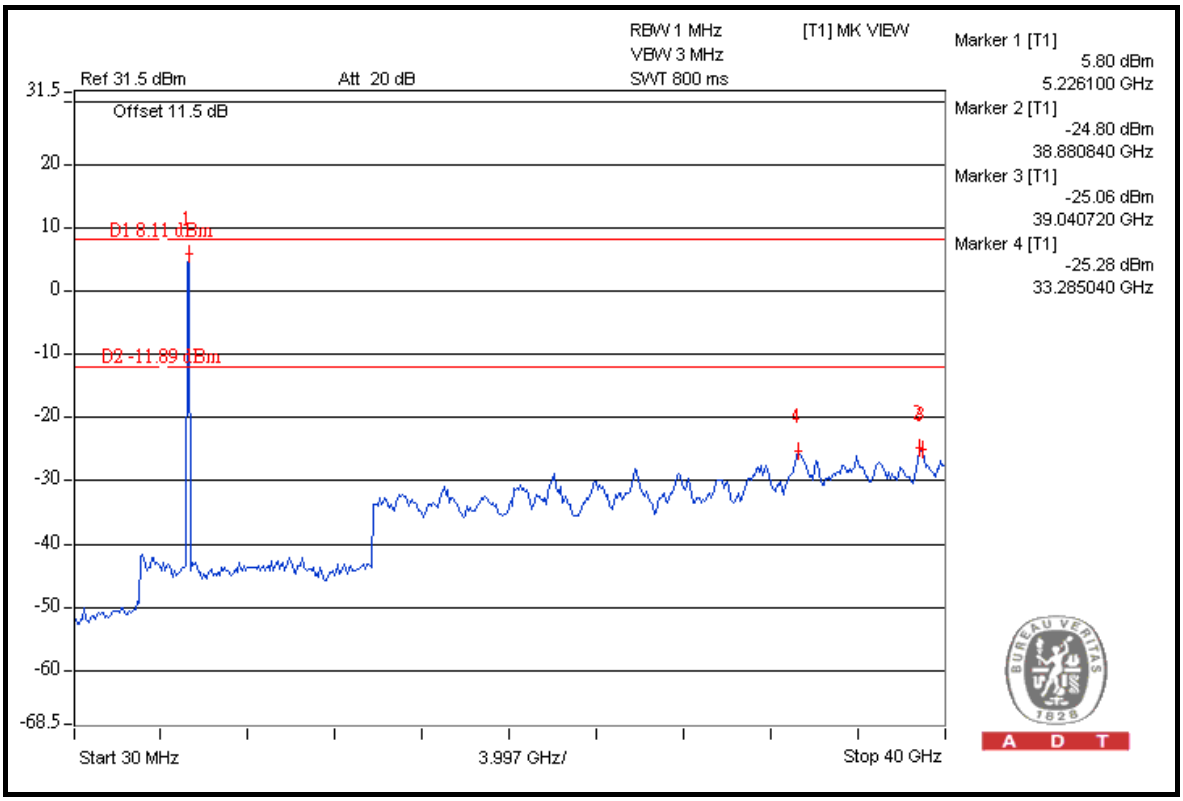

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
9.03 dBm
5.196800 GHz
Marker 2 [T1]
-37.07 dBm
5.150000 GHz
Marker 3 [T1]
-35.45 dBm
5.148800 GHz
D1 9.03 dBm
D2 -10.97 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.134 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
Marker 1 [T1]
-6.40 dBm
5.192800 GHz
Marker 2 [T1]
-49.61 dBm
5.150000 GHz
Marker 3 [T1]
-49.61 dBm
5.150000 GHz
D1 -6.4 dBm
D2 -26.4 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.134 GHz
20 MHz/
Span 200 MHz

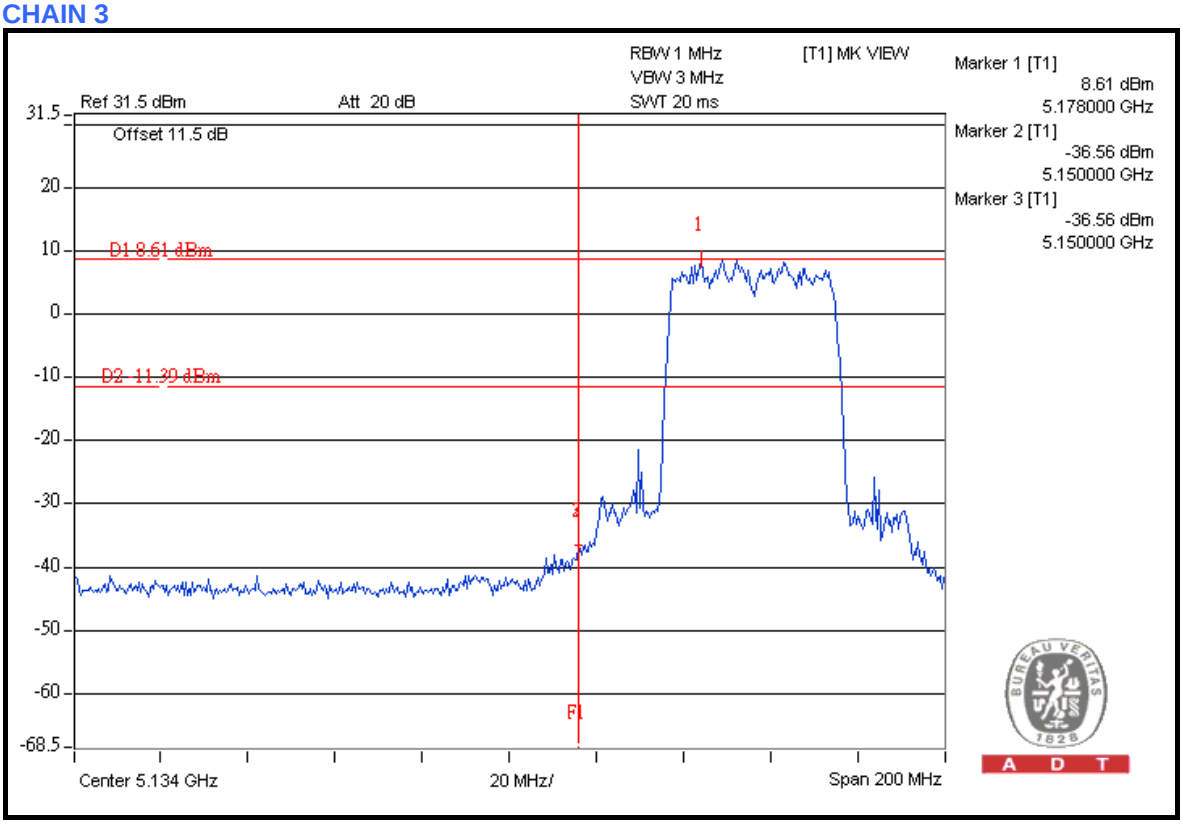

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 9.03 dBm
D2 -10.97 dBm
Marker 1 [T1]
8.15 dBm
5.146160 GHz
Marker 2 [T1]
-24.98 dBm
38.880840 GHz
Marker 3 [T1]
-25.61 dBm
33.205100 GHz
Marker 4 [T1]
-25.83 dBm
33.364980 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Start 30 MHz
3.997 GHz/
Stop 40 GHz

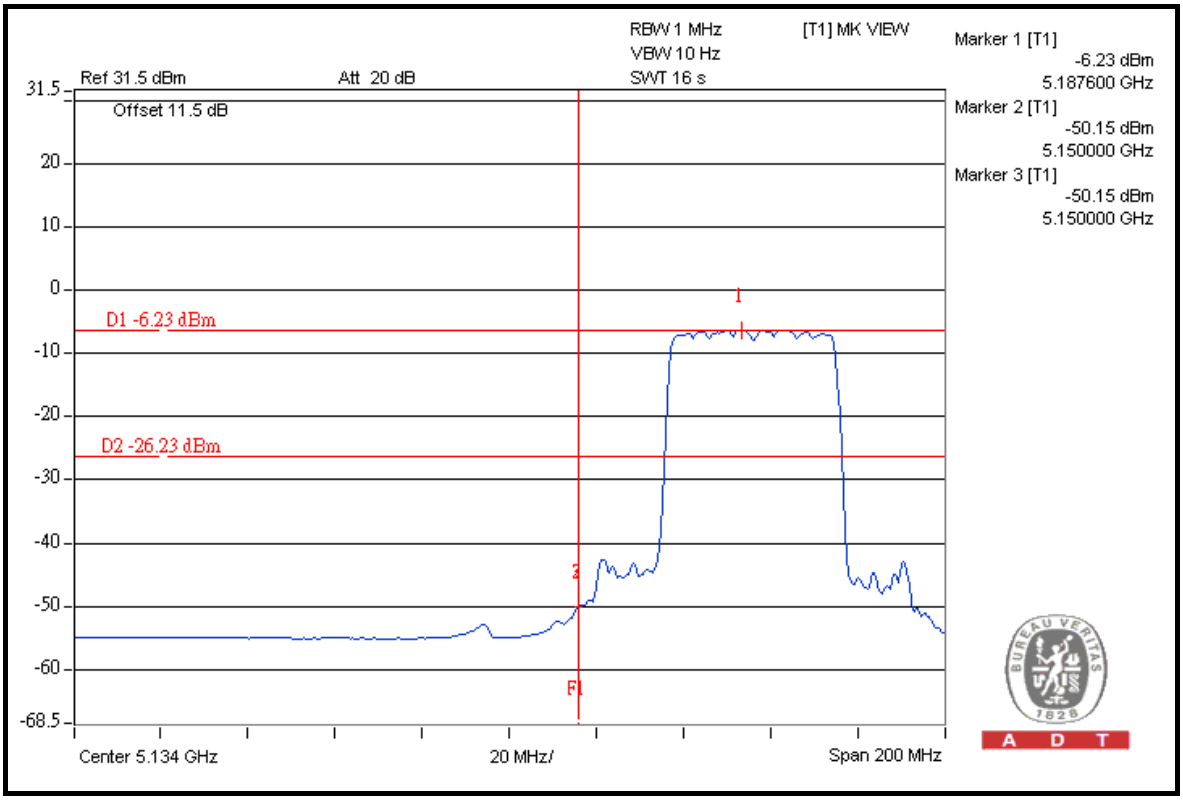

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 8.11 dBm
D2 -11.89 dBm
Marker 1 [T1]
8.11 dBm
5.237600 GHz
Marker 2 [T1]
-45.21 dBm
5.350000 GHz
Marker 3 [T1]
-42.22 dBm
5.374000 GHz
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.306 GHz
20 MHz/
Span 200 MHz

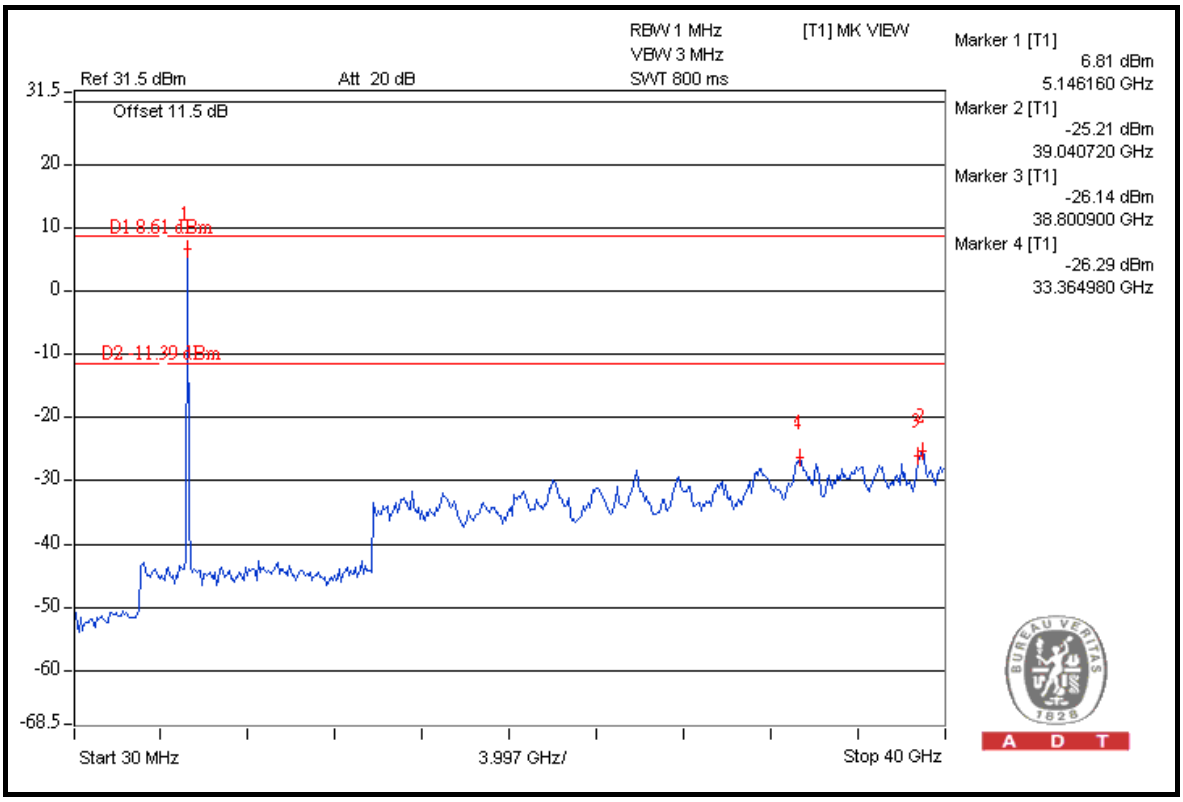

RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
D1 -6.61 dBm
D2 -26.61 dBm
Marker 1 [T1]
-6.61 dBm
5.236000 GHz
Marker 2 [T1]
-56.02 dBm
5.350000 GHz
Marker 3 [T1]
-55.67 dBm
5.400400 GHz
Center 5.306 GHz
20 MHz/
Span 200 MHz

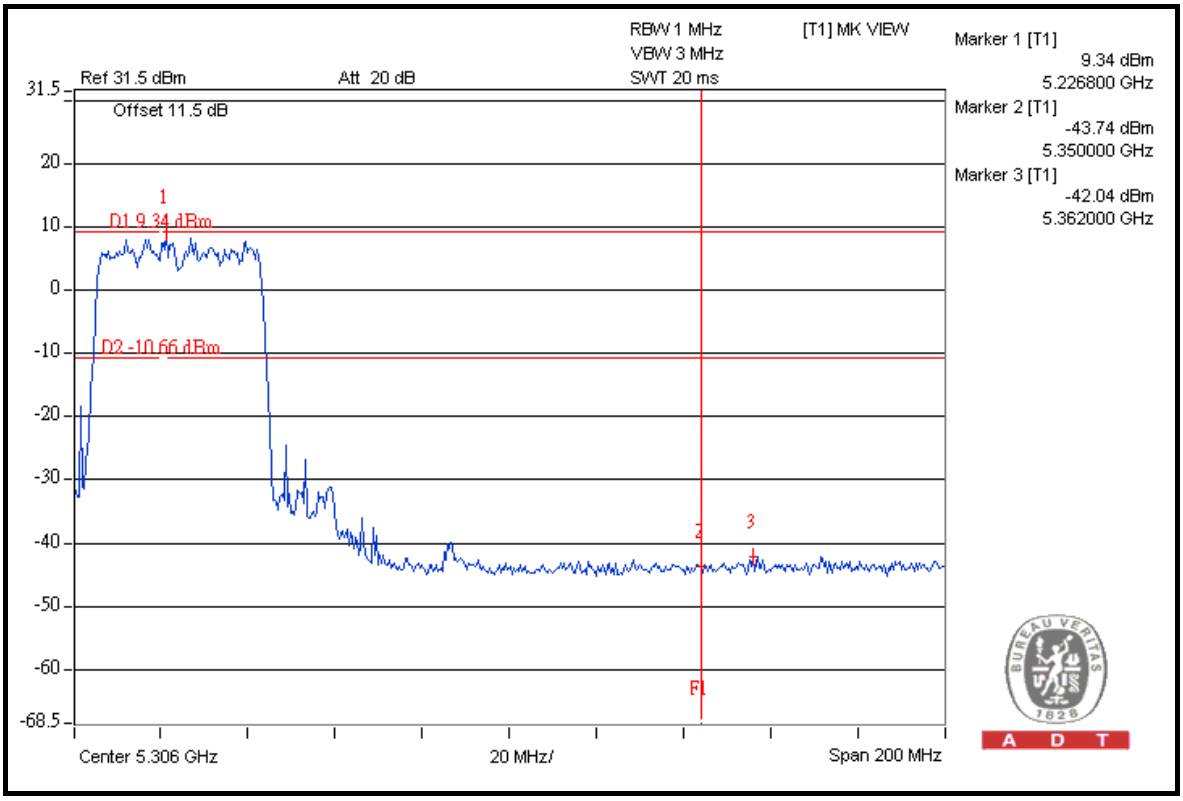

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
D1 8.11 dBm
D2 -11.89 dBm
Marker 1 [T1]
5.80 dBm
5.226100 GHz
Marker 2 [T1]
-24.80 dBm
38.880840 GHz
Marker 3 [T1]
-25.06 dBm
39.040720 GHz
Marker 4 [T1]
-25.28 dBm
33.285040 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

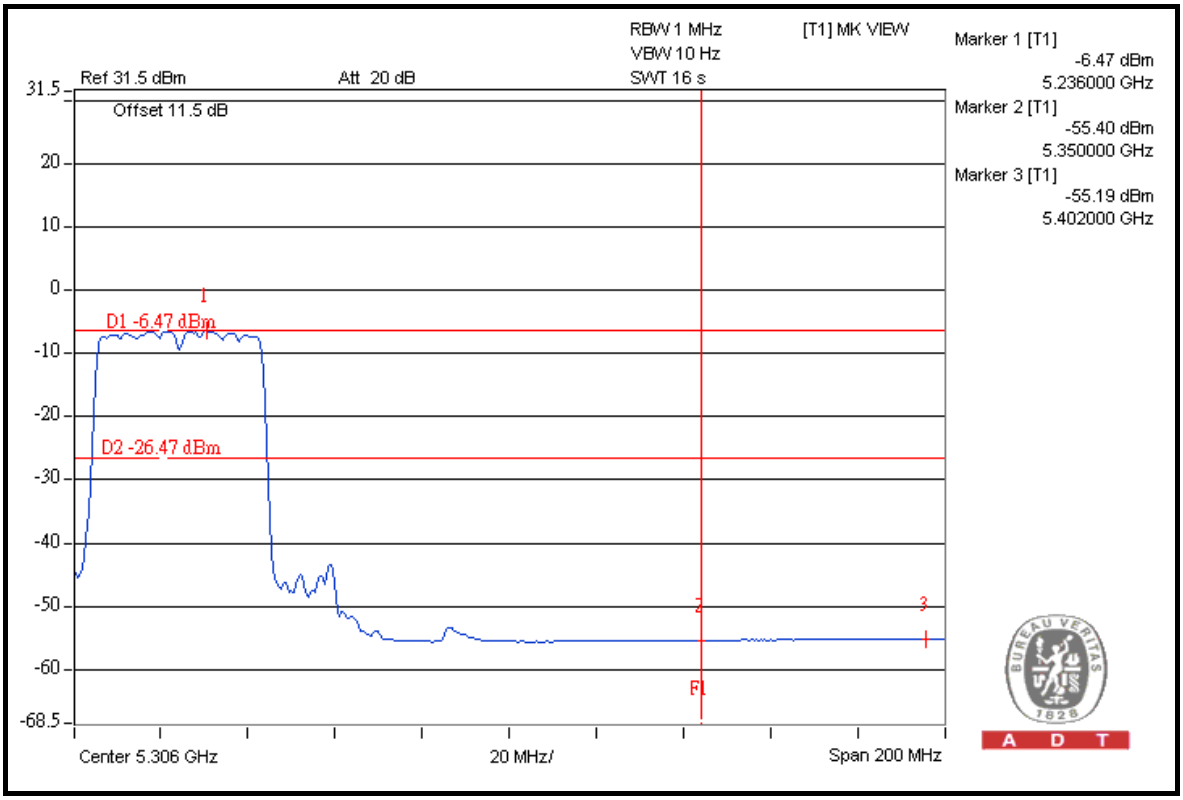
CHAIN 3

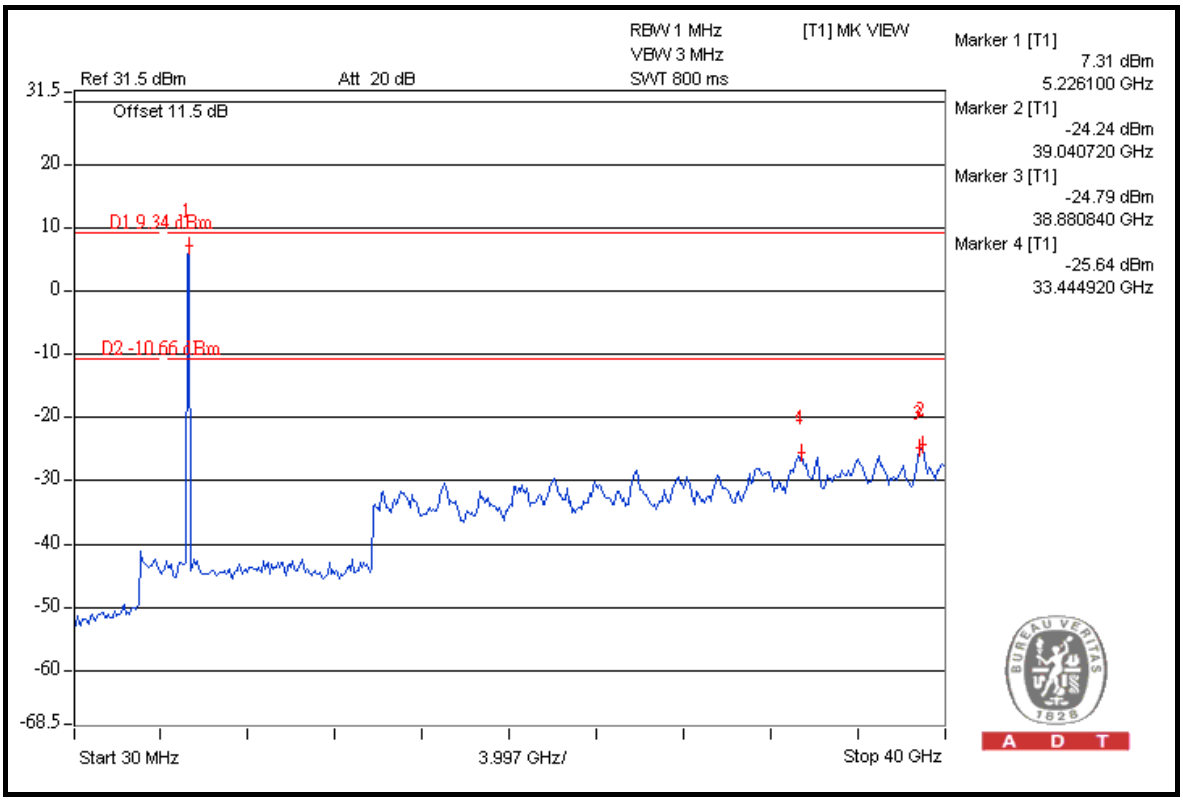

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
8.61 dBm
5.178000 GHz
Marker 2 [T1]
-36.56 dBm
5.150000 GHz
Marker 3 [T1]
-36.56 dBm
5.150000 GHz
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 8.61 dBm
D2 -11.39 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
Center 5.134 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 16 s
[T1] MK VIEW
Marker 1 [T1]
-6.23 dBm
5.187600 GHz
Marker 2 [T1]
-50.15 dBm
5.150000 GHz
Marker 3 [T1]
-50.15 dBm
5.150000 GHz
Ref 31.5 dBm
Att 20 dB
Offset 11.5 dB
D1 -6.23 dBm
D2 -26.23 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
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 8.61 dBm
D2 -11.39 dBm
Marker 1 [T1]
6.81 dBm
5.146160 GHz
Marker 2 [T1]
-25.21 dBm
39.040720 GHz
Marker 3 [T1]
-26.14 dBm
38.800900 GHz
Marker 4 [T1]
-26.29 dBm
33.364980 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 9.34 dBm
D2 -10.66 dBm
Marker 1 [T1]
9.34 dBm
5.226800 GHz
Marker 2 [T1]
-43.74 dBm
5.350000 GHz
Marker 3 [T1]
-42.04 dBm
5.362000 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
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
D1 -6.47 dBm
D2 -26.47 dBm
Center 5.306 GHz
20 MHz/
Span 200 MHz
Marker 1 [T1]
-6.47 dBm
5.236000 GHz
Marker 2 [T1]
-55.40 dBm
5.350000 GHz
Marker 3 [T1]
-55.19 dBm
5.402000 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 9.34 dBm
D2 -10.66 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Marker 1 [T1]
7.31 dBm
5.226100 GHz
Marker 2 [T1]
-24.24 dBm
39.040720 GHz
Marker 3 [T1]
-24.79 dBm
38.880840 GHz
Marker 4 [T1]
-25.64 dBm
33.444920 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
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.

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---