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# FCC TEST REPORT (15.247)

**REPORT NO.:** RF110926C26

**MODEL NO.:** MX60W

**FCC ID:** UDX-60016015

**RECEIVED:** Sep. 26, 2011

**TESTED:** Oct. 02 ~ Oct. 21, 2011

**ISSUED:** Oct. 24, 2011

**APPLICANT:** Meraki Inc.

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94110

**ISSUED BY:** Bureau Veritas Consumer Products Services (H.K.)  
Ltd., Taoyuan Branch

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**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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## TABLE OF CONTENTS

RELEASE CONTROL RECORD .....	5
1. CERTIFICATION .....	6
2. SUMMARY OF TEST RESULTS .....	7
2.1 MEASUREMENT UNCERTAINTY .....	7
3. GENERAL INFORMATION .....	8
3.1 GENERAL DESCRIPTION OF EUT .....	8
3.2 DESCRIPTION OF TEST MODES .....	10
3.2.1 CONFIGURATION OF SYSTEM UNDER TEST .....	11
3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL .....	12
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS .....	16
3.4 DESCRIPTION OF SUPPORT UNITS .....	16
4. TEST TYPES AND RESULTS (FOR 2.4GHz BAND) .....	17
4.1 RADIATED EMISSION MEASUREMENT .....	17
4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT .....	17
4.1.2 TEST INSTRUMENTS .....	18
4.1.3 TEST PROCEDURES .....	19
4.1.4 DEVIATION FROM TEST STANDARD .....	19
4.1.5 TEST SETUP .....	20
4.1.6 EUT OPERATING CONDITIONS .....	20
4.1.7 TEST RESULTS .....	21
4.2 CONDUCTED EMISSION MEASUREMENT .....	34
4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT .....	34
4.2.2 TEST INSTRUMENTS .....	34
4.2.3 TEST PROCEDURES .....	35
4.2.4 DEVIATION FROM TEST STANDARD .....	35
4.2.5 TEST SETUP .....	36
4.2.6 EUT OPERATING CONDITIONS .....	36
4.2.7 TEST RESULTS .....	37
4.3 6dB BANDWIDTH MEASUREMENT .....	39
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT .....	39
4.3.2 TEST INSTRUMENTS .....	39
4.3.3 TEST PROCEDURE .....	39
4.3.4 DEVIATION FROM TEST STANDARD .....	39
4.3.5 TEST SETUP .....	40
4.3.6 EUT OPERATING CONDITIONS .....	40
4.3.7 TEST RESULTS .....	41
4.4 MAXIMUM OUTPUT POWER .....	45
4.4.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT .....	45
4.4.2 INSTRUMENTS .....	45
4.4.3 TEST PROCEDURES .....	45
4.4.4 DEVIATION FROM TEST STANDARD .....	46
4.4.5 TEST SETUP .....	46
4.4.6 EUT OPERATING CONDITIONS .....	46
4.4.7 TEST RESULTS .....	47
4.5 POWER SPECTRAL DENSITY MEASUREMENT .....	48
4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT .....	48
4.5.2 TEST INSTRUMENTS .....	48
4.5.3 TEST PROCEDURE .....	48



A D T

4.5.4	DEVIATION FROM TEST STANDARD.....	49
4.5.5	TEST SETUP.....	49
4.5.6	EUT OPERATING CONDITION.....	49
4.5.7	TEST RESULTS .....	50
4.6	BAND EDGES MEASUREMENT .....	54
4.6.1	LIMITS OF BAND EDGES MEASUREMENT.....	54
4.6.2	TEST INSTRUMENTS.....	54
4.6.3	TEST PROCEDURE.....	55
4.6.4	DEVIATION FROM TEST STANDARD.....	55
4.6.5	EUT OPERATING CONDITION.....	55
4.6.6	TEST RESULTS .....	56
5.	TEST TYPES AND RESULTS (FOR 5.0GHz BAND) .....	104
5.1	RADIATED EMISSION MEASUREMENT .....	104
5.1.1	LIMITS OF RADIATED EMISSION MEASUREMENT.....	104
5.1.2	TEST INSTRUMENTS.....	105
5.1.3	TEST PROCEDURES .....	106
5.1.4	DEVIATION FROM TEST STANDARD.....	106
5.1.5	TEST SETUP.....	107
5.1.6	EUT OPERATING CONDITIONS .....	107
5.1.7	TEST RESULTS .....	108
5.2	CONDUCTED EMISSION MEASUREMENT .....	117
5.2.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT .....	117
5.2.2	TEST INSTRUMENTS.....	117
5.2.3	TEST PROCEDURES .....	118
5.2.4	DEVIATION FROM TEST STANDARD.....	118
5.2.5	TEST SETUP.....	119
5.2.6	EUT OPERATING CONDITIONS .....	119
5.2.7	TEST RESULTS .....	120
5.3	6dB BANDWIDTH MEASUREMENT.....	122
5.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT .....	122
5.3.2	TEST INSTRUMENTS.....	122
5.3.3	TEST PROCEDURE.....	122
5.3.4	DEVIATION FROM TEST STANDARD.....	123
5.3.5	TEST SETUP.....	123
5.3.6	EUT OPERATING CONDITIONS .....	123
5.3.7	TEST RESULTS .....	124
5.4	MAXIMUM OUTPUT POWER.....	127
5.4.1	LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT.....	127
5.4.2	INSTRUMENTS.....	127
5.4.3	TEST PROCEDURES .....	127
5.4.4	DEVIATION FROM TEST STANDARD.....	128
5.4.5	TEST SETUP.....	128
5.4.6	EUT OPERATING CONDITIONS .....	128
5.4.7	TEST RESULTS .....	129
5.5	POWER SPECTRAL DENSITY MEASUREMENT.....	130
5.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT .....	130
5.5.2	TEST INSTRUMENTS.....	130
5.5.3	TEST PROCEDURE.....	130
5.5.4	DEVIATION FROM TEST STANDARD.....	131
5.5.5	TEST SETUP.....	131
5.5.6	EUT OPERATING CONDITION.....	131



A D T

5.5.7	TEST RESULTS .....	132
5.6	BAND EDGES MEASUREMENT .....	135
5.6.1	LIMITS OF BAND EDGES MEASUREMENT .....	135
5.6.2	TEST INSTRUMENTS.....	135
5.6.3	TEST PROCEDURE.....	136
5.6.4	DEVIATION FROM TEST STANDARD.....	137
5.6.5	EUT OPERATING CONDITION.....	137
5.6.6	TEST RESULTS .....	137
6.	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	171
7.	INFORMATION ON THE TESTING LABORATORIES .....	172
8.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	173



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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	N/A	Oct. 24, 2011



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## 1. CERTIFICATION

**PRODUCT:** Wireless 802.11abgn Access Point

**MODEL:** MX60W

**BRAND:** Meraki

**APPLICANT:** Meraki Inc.

**TESTED:** Oct. 02 ~ Oct. 21, 2011

**TEST SAMPLE:** ENGINEERING SAMPLE

**STANDARDS:** **FCC Part 15, Subpart C (Section 15.247)**

ANSI C63.4-2003

ANSI C63.10-2009

The above equipment (Model: MX60W) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Andrea Hsia , DATE : Oct. 24, 2011  
Andrea Hsia / Specialist

APPROVED BY : Gary Chang , DATE : Oct. 24, 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 C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -6.56dB at 0.150MHz.
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2200.00, 2331.00, 2390.00 & 2483.50MHz.
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is R-SMA not a standard connector.

### 2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

EUT	Wireless 802.11abgn Access Point
MODEL NO.	MX60W
FCC ID	UDX-60016015
POWER SUPPLY	12Vdc
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 450.0Mbps
OPERATING FREQUENCY	<b>2.4GHz:</b> 2412 ~ 2462MHz <b>5.0GHz:</b> 5745 ~ 5825MHz
NUMBER OF CHANNEL	<b>2.4GHz:</b> 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) <b>5.0GHz:</b> 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	815.9mW for 2412 ~ 2462MHz 560.7mW for 5745 ~ 5825MHz
ANTENNA TYPE	<b>2.4GHz:</b> Dipole antenna with 3.0dBi gain <b>5.0GHz:</b> Dipole antenna with 3.5dBi gain
ANTENNA CONNECTOR	R-SMA
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter

#### NOTE:

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

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



2. The EUT consumes power from the following adapter:

<b>BRAND:</b>	Powertron
<b>MODEL:</b>	PA1024-2T1
<b>INPUT:</b>	100-240Vac, 50-60Hz, 0.6A
<b>OUTPUT:</b>	12Vdc, 1.5A
<b>POWER LINE:</b>	1.5m non-shielded cable with one core

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

<b>MODULATION MODE</b>	<b>TX FUNCTION</b>
<b>802.11b</b>	3TX
<b>802.11g</b>	3TX
<b>802.11a</b>	3TX
<b>802.11n (20MHz)</b>	3TX
<b>802.11n (40MHz)</b>	3TX

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

### 3.2 DESCRIPTION OF TEST MODES

#### FOR 2.4GHz:

11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

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

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

#### FOR 5.0GHz (5745 ~ 5825MHz):

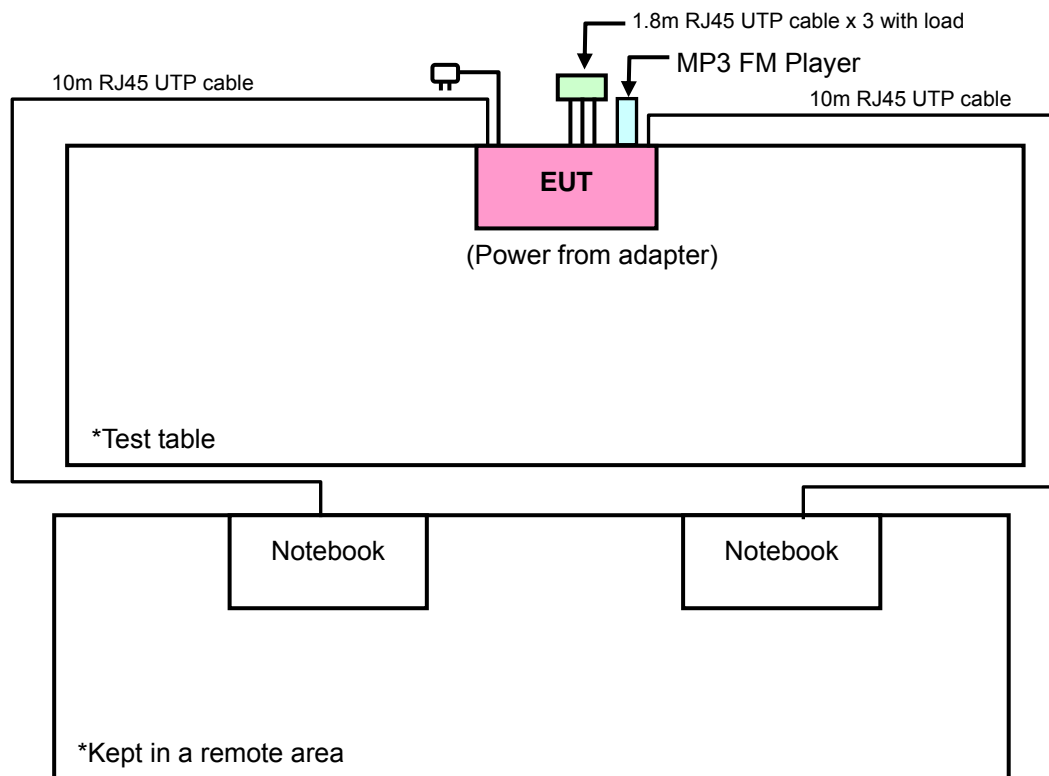
5 channels are provided for 802.11a, 802.11n (20MHz):

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

### 3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



### 3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

#### FOR 2.4GHz:

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

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

#### RADIATED EMISSION TEST (ABOVE 1GHz):



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

#### RADIATED EMISSION TEST (BELOW 1GHz):

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



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



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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
802.11n (20MHz)	1 to 11	6	OFDM	BPSK	7.2	X

#### POWER LINE CONDUCTED EMISSION TEST:



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



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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (20MHz)	1 to 11	6	OFDM	BPSK	7.2

### **BANDEDGE MEASUREMENT:**

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

### **ANTENNA PORT CONDUCTED MEASUREMENT:**

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

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

### **TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 60%RH	120Vac, 60Hz	David Huang
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	David Huang
PLC	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
APCM	25deg. C, 60%RH	120Vac, 60Hz	Sun Lin

#### FOR 5.745 ~ 5.825GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **PLC**: Power Line Conducted Emission **RE<1G**: Radiated Emission below 1GHz  
**RE $\geq$ 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, 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)	AXIS
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0	X
802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2	X
802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0	X

#### RADIATED EMISSION TEST (BELOW 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
802.11a	149 to 165	149	OFDM	BPSK	6.0	X

#### POWER LINE CONDUCTED EMISSION TEST:

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

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

### **ANTENNA PORT CONDUCTED MEASUREMENT:**

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

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

### **TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 60%RH	120Vac, 60Hz	David Huang
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	David Huang
PLC	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
APCM	25deg. C, 60%RH	120Vac, 60Hz	Sun Lin

### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

#### FCC Part 15, Subpart C (15.247)

ANSI C63.4-2003

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	HP	NC6000	CNU4110Y6Q	NA
2	NOTEBOOK	DELL	D531	CN-0XM006-48643-8 1U-2610	QDS-BRCM1020
3	MP3 FM PLAYER	DELL	HV04T	10426972177	FCC DoC APPROVED

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

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



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

### 4.1 RADIATED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

**NOTE:**

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

#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Aug. 02, 2011	Aug. 01, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP 40	100041	Jul. 21, 2011	Jul. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 13, 2011	Apr. 12, 2012
HORN Antenna SCHWARZBECK	9120D	209	Aug. 25, 2011	Aug. 24, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8447D	2944A10633	Nov. 02, 2010	Nov. 01, 2011
Preamplifier Agilent	8449B	3008A01964	Nov. 02, 2010	Nov. 01, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295014/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	Aug. 19, 2011	Aug. 18, 2012
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA
High Speed Peak Power Meter	ML2495A	0824011	Aug. 04, 2011	Aug. 03, 2012
Power Sensor	MA2411B	0738171	Aug. 04, 2011	Aug. 03, 2012

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  2. The test was performed in HwaYa Chamber 3.
  3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
  4. The FCC Site Registration No. is 988962.
  5. The IC Site Registration No. is IC 7450F-3.

#### 4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

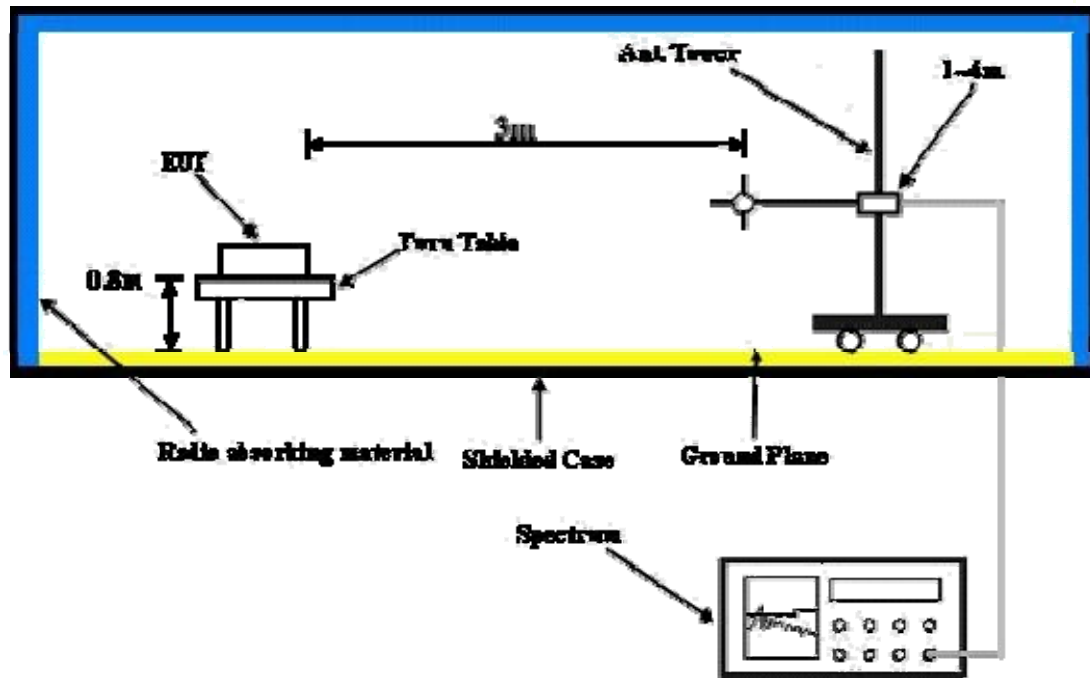
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 100kHz and video bandwidth is 300kHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 1kHz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.1.5 TEST SETUP



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

#### 4.1.6 EUT OPERATING CONDITIONS

- Placed the EUT on the testing table.
- Prepared notebook systems outside of testing area to act as communication partners.
- The notebook system ran a test program (provided by manufacturer) to enable EUT under continuous communication link.
- The communication partner sent data to EUT by command "PING"

#### 4.1.7 TEST RESULTS

##### ABOVE 1GHz: 802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	52.5 PK	74.0	-21.5	1.58 H	30	22.10	30.40
2	2200.00	47.5 AV	54.0	-6.5	1.58 H	30	17.10	30.40
3	2328.00	53.6 PK	74.0	-20.4	1.08 H	150	22.70	30.90
4	2328.00	47.8 AV	54.0	-6.2	1.08 H	150	16.90	30.90
5	*2412.00	105.0 PK			1.03 H	150	73.80	31.20
6	*2412.00	103.3 AV			1.03 H	150	72.10	31.20
7	4824.00	35.9 PK	74.0	-38.1	1.65 H	102	-1.00	36.90
8	4824.00	34.6 AV	54.0	-19.4	1.65 H	102	-2.30	36.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	56.9 PK	74.0	-17.1	1.00 V	164	26.50	30.40
2	2200.00	53.0 AV	54.0	-1.0	1.00 V	164	22.60	30.40
3	2331.00	57.3 PK	74.0	-16.7	1.00 V	175	26.40	30.90
4	2331.00	53.0 AV	54.0	-1.0	1.00 V	175	22.10	30.90
5	*2412.00	114.4 PK			1.14 V	172	83.20	31.20
6	*2412.00	112.9 AV			1.14 V	172	81.70	31.20
7	#3216.00	38.2 PK	94.4	-56.2	1.00 V	78	5.10	33.10
8	#3216.00	33.6 AV	92.9	-59.3	1.00 V	78	0.50	33.10
9	4824.00	44.8 PK	74.0	-29.2	1.00 V	160	7.90	36.90
10	4824.00	43.9 AV	54.0	-10.1	1.00 V	160	7.00	36.90

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



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	52.5 PK	74.0	-21.5	1.21 H	137	22.10	30.40
2	2200.00	47.5 AV	54.0	-6.5	1.21 H	137	17.10	30.40
3	2288.00	51.7 PK	74.0	-22.3	1.12 H	294	21.00	30.70
4	2288.00	46.0 AV	54.0	-8.0	1.12 H	294	15.30	30.70
5	2352.00	53.1 PK	74.0	-20.9	1.49 H	20	22.10	31.00
6	2352.00	46.9 AV	54.0	-7.1	1.49 H	20	15.90	31.00
7	*2437.00	107.5 PK			1.29 H	244	76.20	31.30
8	*2437.00	105.7 AV			1.29 H	244	74.40	31.30
9	4874.00	36.0 PK	74.0	-38.0	1.40 H	43	-1.00	37.00
10	4874.00	34.4 AV	54.0	-19.6	1.40 H	43	-2.60	37.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	55.9 PK	74.0	-18.1	1.00 V	154	25.50	30.40
2	2200.00	52.9 AV	54.0	-1.1	1.00 V	154	22.50	30.40
3	2288.00	55.8 PK	74.0	-18.2	1.23 V	157	25.10	30.70
4	2288.00	51.1 AV	54.0	-2.9	1.23 V	157	20.40	30.70
5	2354.00	55.7 PK	74.0	-18.3	1.16 V	158	24.70	31.00
6	2354.00	51.9 AV	54.0	-2.1	1.16 V	158	20.90	31.00
7	*2437.00	112.9 PK			1.14 V	161	81.60	31.30
8	*2437.00	111.5 AV			1.14 V	161	80.20	31.30
9	#3249.00	37.9 PK	92.9	-55.0	1.26 V	2	4.70	33.20
10	#3249.00	31.5 AV	91.5	-60.0	1.26 V	2	-1.70	33.20
11	4874.00	43.8 PK	74.0	-30.2	1.27 V	165	6.80	37.00
12	4874.00	42.7 AV	54.0	-11.3	1.27 V	165	5.70	37.00

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



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	51.1 PK	74.0	-22.9	1.00 H	20	20.70	30.40
2	2200.00	45.6 AV	54.0	-8.4	1.00 H	20	15.20	30.40
3	2378.00	53.9 PK	74.0	-20.1	1.45 H	136	22.90	31.00
4	2378.00	47.9 AV	54.0	-6.1	1.45 H	136	16.90	31.00
5	*2462.00	103.8 PK			1.36 H	317	72.40	31.40
6	*2462.00	102.1 AV			1.36 H	317	70.70	31.40
7	2483.50	52.8 PK	74.0	-21.2	1.30 H	236	21.40	31.40
8	2483.50	48.0 AV	54.0	-6.0	1.30 H	236	16.60	31.40
9	4924.00	35.8 PK	74.0	-38.2	1.59 H	222	-1.30	37.10
10	4924.00	33.4 AV	54.0	-20.6	1.59 H	222	-3.70	37.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	56.6 PK	74.0	-17.4	1.00 V	166	26.20	30.40
2	2200.00	52.4 AV	54.0	-1.6	1.00 V	166	22.00	30.40
3	2340.00	54.1 PK	74.0	-19.9	1.45 V	150	23.20	30.90
4	2340.00	46.8 AV	54.0	-7.2	1.45 V	150	15.90	30.90
5	2378.00	57.0 PK	74.0	-17.0	1.41 V	200	26.00	31.00
6	2378.00	51.9 AV	54.0	-2.1	1.41 V	200	20.90	31.00
7	*2462.00	112.6 PK			1.10 V	198	81.20	31.40
8	*2462.00	110.9 AV			1.10 V	198	79.50	31.40
9	2499.00	54.9 PK	74.0	-19.1	1.39 V	173	23.40	31.50
10	2499.00	50.5 AV	54.0	-3.5	1.39 V	173	19.00	31.50
11	#3282.00	37.6 PK	92.6	-55.0	1.00 V	269	4.40	33.20
12	#3282.00	32.2 AV	90.9	-58.7	1.00 V	269	-1.00	33.20
13	4924.00	42.2 PK	74.0	-31.8	1.09 V	164	5.10	37.10
14	4924.00	41.3 AV	54.0	-12.7	1.09 V	164	4.20	37.10

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



A D T

## 802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	52.6 PK	74.0	-21.4	1.24 H	23	22.20	30.40
2	2200.00	47.8 AV	54.0	-6.2	1.24 H	23	17.40	30.40
3	2326.00	53.4 PK	74.0	-20.6	1.44 H	322	22.50	30.90
4	2326.00	47.3 AV	54.0	-6.7	1.44 H	322	16.40	30.90
5	2390.00	52.6 PK	74.0	-21.4	1.44 H	322	21.50	31.10
6	2390.00	51.2 AV	54.0	-2.8	1.44 H	322	20.10	31.10
7	*2412.00	107.8 PK			1.04 H	201	76.60	31.20
8	*2412.00	99.7 AV			1.04 H	201	68.50	31.20
9	2495.00	54.7 PK	74.0	-19.3	1.24 H	265	23.20	31.50
10	2495.00	50.9 AV	54.0	-3.1	1.24 H	265	19.40	31.50
11	4824.00	35.6 PK	74.0	-38.4	1.50 H	112	-1.30	36.90
12	4824.00	33.3 AV	54.0	-20.7	1.50 H	112	-3.60	36.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	56.7 PK	74.0	-17.3	1.26 V	163	26.30	30.40
2	2200.00	53.0 AV	54.0	-1.0	1.26 V	163	22.60	30.40
3	2326.00	59.2 PK	74.0	-14.8	1.00 V	186	28.30	30.90
4	2326.00	52.3 AV	54.0	-1.7	1.00 V	186	21.40	30.90
5	2390.00	64.5 PK	74.0	-9.5	1.19 V	157	33.40	31.10
6	2390.00	53.0 AV	54.0	-1.0	1.19 V	157	21.90	31.10
7	*2412.00	117.1 PK			1.17 V	171	85.90	31.20
8	*2412.00	108.8 AV			1.17 V	171	77.60	31.20
9	2495.00	57.3 PK	74.0	-16.7	1.11 V	173	25.80	31.50
10	2495.00	52.7 AV	54.0	-1.3	1.11 V	173	21.20	31.50
11	4824.00	35.5 PK	74.0	-38.5	1.60 V	12	-1.40	36.90
12	4824.00	32.4 AV	54.0	-21.6	1.60 V	12	-4.50	36.90

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





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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	48.4 PK	74.0	-25.6	1.52 H	276	18.00	30.40
2	2200.00	46.2 AV	54.0	-7.8	1.52 H	276	15.80	30.40
3	2351.00	53.6 PK	74.0	-20.4	1.35 H	238	22.60	31.00
4	2351.00	48.2 AV	54.0	-5.8	1.35 H	238	17.20	31.00
5	*2437.00	109.4 PK			1.03 H	200	78.10	31.30
6	*2437.00	100.4 AV			1.03 H	200	69.10	31.30
7	2484.00	55.3 PK	74.0	-18.7	1.21 H	235	23.90	31.40
8	2484.00	49.1 AV	54.0	-4.9	1.21 H	235	17.70	31.40
9	4874.00	36.0 PK	74.0	-38.0	1.00 H	65	-1.00	37.00
10	4874.00	33.4 AV	54.0	-20.6	1.00 H	65	-3.60	37.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	57.7 PK	74.0	-16.3	1.00 V	150	27.30	30.40
2	2200.00	53.0 AV	54.0	-1.0	1.00 V	150	22.60	30.40
3	2351.00	56.5 PK	74.0	-17.5	1.18 V	148	25.50	31.00
4	2351.00	51.8 AV	54.0	-2.2	1.18 V	148	20.80	31.00
5	*2437.00	116.4 PK			1.15 V	195	85.10	31.30
6	*2437.00	107.1 AV			1.15 V	195	75.80	31.30
7	4874.00	35.4 PK	74.0	-38.6	1.31 V	352	-1.60	37.00
8	4874.00	33.5 AV	54.0	-20.5	1.31 V	352	-3.50	37.00

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	52.7 PK	74.0	-21.3	1.21 H	20	22.30	30.40
2	2200.00	47.1 AV	54.0	-6.9	1.21 H	20	16.70	30.40
3	2380.00	53.7 PK	74.0	-20.3	1.34 H	235	22.60	31.10
4	2380.00	47.7 AV	54.0	-6.3	1.34 H	235	16.60	31.10
5	*2462.00	109.5 PK			1.27 H	221	78.10	31.40
6	*2462.00	100.8 AV			1.27 H	221	69.40	31.40
7	2483.90	64.9 PK	74.0	-9.1	1.22 H	239	33.50	31.40
8	2483.90	52.5 AV	54.0	-1.5	1.22 H	239	21.10	31.40
9	4924.00	37.0 PK	74.0	-37.0	1.26 H	335	-0.10	37.10
10	4924.00	34.4 AV	54.0	-19.6	1.26 H	335	-2.70	37.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	55.8 PK	74.0	-18.2	1.31 V	217	25.40	30.40
2	2200.00	51.4 AV	54.0	-2.6	1.31 V	217	21.00	30.40
3	2380.00	53.5 PK	74.0	-20.5	1.19 V	175	22.40	31.10
4	2380.00	48.8 AV	54.0	-5.2	1.19 V	175	17.70	31.10
5	*2462.00	117.7 PK			1.16 V	172	86.30	31.40
6	*2462.00	108.5 AV			1.16 V	172	77.10	31.40
7	2485.00	66.1 PK	74.0	-7.9	1.12 V	170	34.70	31.40
8	2485.00	52.1 AV	54.0	-1.9	1.12 V	170	20.70	31.40
9	4924.00	36.7 PK	74.0	-37.3	1.50 V	235	-0.40	37.10
10	4924.00	34.2 AV	54.0	-19.8	1.50 V	235	-2.90	37.10

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



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## 802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	51.9 PK	74.0	-22.1	1.50 H	76	21.50	30.40
2	2200.00	47.6 AV	54.0	-6.4	1.50 H	76	17.20	30.40
3	2324.00	52.8 PK	74.0	-21.2	1.29 H	239	21.90	30.90
4	2324.00	46.8 AV	54.0	-7.2	1.29 H	239	15.90	30.90
5	2390.00	57.8 PK	74.0	-16.2	1.02 H	223	26.70	31.10
6	2390.00	46.4 AV	54.0	-7.6	1.02 H	223	15.30	31.10
7	*2412.00	108.3 PK			1.02 H	223	77.10	31.20
8	*2412.00	98.1 AV			1.02 H	223	66.90	31.20
9	4824.00	36.6 PK	74.0	-37.4	1.07 H	352	-0.30	36.90
10	4824.00	31.8 AV	54.0	-22.2	1.07 H	352	-5.10	36.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	56.5 PK	74.0	-17.5	1.28 V	166	26.10	30.40
2	2200.00	52.2 AV	54.0	-1.8	1.28 V	166	21.80	30.40
3	2324.00	55.0 PK	74.0	-19.0	1.00 V	180	24.10	30.90
4	2324.00	51.1 AV	54.0	-2.9	1.00 V	180	20.20	30.90
5	2390.00	67.2 PK	74.0	-6.8	1.47 V	154	36.10	31.10
6	2390.00	52.3 AV	54.0	-1.7	1.47 V	154	21.20	31.10
7	*2412.00	116.2 PK			1.17 V	172	85.00	31.20
8	*2412.00	105.3 AV			1.17 V	172	74.10	31.20
9	4824.00	36.3 PK	74.0	-37.7	1.26 V	357	-0.60	36.90
10	4824.00	32.8 AV	54.0	-21.2	1.26 V	357	-4.10	36.90

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



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	52.9 PK	74.0	-21.1	1.46 H	128	22.50	30.40
2	2200.00	48.2 AV	54.0	-5.8	1.46 H	128	17.80	30.40
3	2353.70	53.4 PK	74.0	-20.6	1.44 H	271	22.40	31.00
4	2353.70	46.4 AV	54.0	-7.6	1.44 H	271	15.40	31.00
5	*2437.00	110.2 PK			1.28 H	238	78.90	31.30
6	*2437.00	100.1 AV			1.28 H	238	68.80	31.30
7	4874.00	35.7 PK	74.0	-38.3	1.02 H	252	-1.30	37.00
8	4874.00	33.7 AV	54.0	-20.3	1.02 H	252	-3.30	37.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	56.8 PK	74.0	-17.2	1.00 V	152	26.40	30.40
2	2200.00	52.5 AV	54.0	-1.5	1.00 V	152	22.10	30.40
3	2353.70	56.4 PK	74.0	-17.6	1.17 V	148	25.40	31.00
4	2353.70	51.2 AV	54.0	-2.8	1.17 V	148	20.20	31.00
5	*2437.00	118.1 PK			1.13 V	197	86.80	31.30
6	*2437.00	107.6 AV			1.13 V	197	76.30	31.30
7	4874.00	38.7 PK	74.0	-35.3	1.50 V	22	1.70	37.00
8	4874.00	33.5 AV	54.0	-20.5	1.50 V	22	-3.50	37.00

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



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	50.9 PK	74.0	-23.1	1.30 H	351	20.50	30.40
2	2200.00	46.4 AV	54.0	-7.6	1.30 H	351	16.00	30.40
3	2378.00	52.5 PK	74.0	-21.5	1.05 H	217	21.50	31.00
4	2378.00	46.8 AV	54.0	-7.2	1.05 H	217	15.80	31.00
5	*2462.00	108.1 PK			1.28 H	216	76.70	31.40
6	*2462.00	98.2 AV			1.28 H	216	66.80	31.40
7	2483.50	62.5 PK	74.0	-11.5	1.22 H	233	31.10	31.40
8	2483.50	47.5 AV	54.0	-6.5	1.22 H	233	16.10	31.40
9	4924.00	35.5 PK	74.0	-38.5	1.16 H	125	-1.60	37.10
10	4924.00	31.7 AV	54.0	-22.3	1.16 H	125	-5.40	37.10

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	56.3 PK	74.0	-17.7	1.04 V	9	25.90	30.40
2	2200.00	52.4 AV	54.0	-1.6	1.04 V	9	22.00	30.40
3	2378.00	52.3 PK	74.0	-21.7	1.12 V	74	21.30	31.00
4	2378.00	48.6 AV	54.0	-5.4	1.12 V	74	17.60	31.00
5	*2462.00	116.4 PK			1.10 V	165	85.00	31.40
6	*2462.00	106.0 AV			1.10 V	165	74.60	31.40
7	2483.50	65.9 PK	74.0	-8.1	1.11 V	163	34.50	31.40
8	2483.50	52.6 AV	54.0	-1.4	1.11 V	163	21.20	31.40
9	4924.00	36.7 PK	74.0	-37.3	1.16 V	251	-0.40	37.10
10	4924.00	32.4 AV	54.0	-21.6	1.16 V	251	-4.70	37.10

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

## 802.11n (40MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	51.4 PK	74.0	-22.6	1.30 H	360	21.00	30.40
2	2200.00	46.7 AV	54.0	-7.3	1.30 H	360	16.30	30.40
3	2390.00	53.0 PK	74.0	-21.0	1.05 H	8	21.90	31.10
4	2390.00	47.3 AV	54.0	-6.7	1.05 H	8	16.20	31.10
5	*2422.00	103.7 PK			1.32 H	255	72.50	31.20
6	*2422.00	93.0 AV			1.32 H	255	61.80	31.20
7	4844.00	35.4 PK	74.0	-38.6	1.18 H	25	-1.50	36.90
8	4844.00	30.6 AV	54.0	-23.4	1.18 H	25	-6.30	36.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	56.1 PK	74.0	-17.9	1.04 V	8	25.70	30.40
2	2200.00	52.9 AV	54.0	-1.1	1.04 V	8	22.50	30.40
3	2390.00	64.4 PK	74.0	-9.6	1.20 V	189	33.30	31.10
4	2390.00	52.7 AV	54.0	-1.3	1.20 V	189	21.60	31.10
5	*2422.00	111.5 PK			1.16 V	168	80.30	31.20
6	*2422.00	101.5 AV			1.16 V	168	70.30	31.20
7	4844.00	36.6 PK	74.0	-37.4	1.18 V	155	-0.30	36.90
8	4844.00	32.3 AV	54.0	-21.7	1.18 V	155	-4.60	36.90

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



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	51.3 PK	74.0	-22.7	1.26 H	349	20.90	30.40
2	2200.00	46.4 AV	54.0	-7.6	1.26 H	349	16.00	30.40
3	2390.00	56.1 PK	74.0	-17.9	1.32 H	240	25.00	31.10
4	2390.00	47.6 AV	54.0	-6.4	1.32 H	240	16.50	31.10
5	*2437.00	106.5 PK			1.27 H	237	75.20	31.30
6	*2437.00	97.0 AV			1.27 H	237	65.70	31.30
7	4874.00	36.0 PK	74.0	-38.0	1.21 H	22	-1.00	37.00
8	4874.00	31.3 AV	54.0	-22.7	1.21 H	22	-5.70	37.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	56.7 PK	74.0	-17.3	1.01 V	161	26.30	30.40
2	2200.00	53.0 AV	54.0	-1.0	1.01 V	161	22.60	30.40
3	2390.00	62.8 PK	74.0	-11.2	1.17 V	198	31.70	31.10
4	2390.00	52.0 AV	54.0	-2.0	1.17 V	198	20.90	31.10
5	*2437.00	113.0 PK			1.15 V	169	81.70	31.30
6	*2437.00	103.6 AV			1.15 V	169	72.30	31.30
7	2485.20	65.5 PK	74.0	-8.5	1.38 V	195	34.10	31.40
8	2485.20	51.3 AV	54.0	-2.7	1.38 V	195	19.90	31.40
9	4874.00	36.3 PK	74.0	-37.7	1.42 V	132	-0.70	37.00
10	4874.00	31.7 AV	54.0	-22.3	1.42 V	132	-5.30	37.00

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



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	52.1 PK	74.0	-21.9	1.22 H	21	21.70	30.40
2	2200.00	47.7 AV	54.0	-6.3	1.22 H	21	17.30	30.40
3	2375.00	50.3 PK	74.0	-23.7	1.20 H	247	19.30	31.00
4	2375.00	45.4 AV	54.0	-8.6	1.20 H	247	14.40	31.00
5	*2452.00	103.5 PK			1.29 H	259	72.20	31.30
6	*2452.00	94.5 AV			1.29 H	259	63.20	31.30
7	2483.50	60.8 PK	74.0	-13.2	1.26 H	256	29.40	31.40
8	2483.50	51.8 AV	54.0	-2.2	1.26 H	256	20.40	31.40
9	4904.00	36.7 PK	74.0	-37.3	1.12 H	254	-0.30	37.00
10	4904.00	30.4 AV	54.0	-23.6	1.12 H	254	-6.60	37.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2200.00	56.5 PK	74.0	-17.5	1.26 V	162	26.10	30.40
2	2200.00	53.0 AV	54.0	-1.0	1.26 V	162	22.60	30.40
3	2375.00	52.4 PK	74.0	-21.6	1.43 V	240	21.40	31.00
4	2375.00	46.4 AV	54.0	-7.6	1.43 V	240	15.40	31.00
5	*2452.00	110.4 PK			1.15 V	158	79.10	31.30
6	*2452.00	100.6 AV			1.15 V	158	69.30	31.30
7	2483.50	64.5 PK	74.0	-9.5	1.32 V	240	33.10	31.40
8	2483.50	53.0 AV	54.0	-1.0	1.32 V	240	21.60	31.40
9	4904.00	36.0 PK	74.0	-38.0	1.30 V	262	-1.00	37.00
10	4904.00	32.4 AV	54.0	-21.6	1.30 V	262	-4.60	37.00

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





A D T

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	96.01	36.0 QP	43.5	-7.5	2.50 H	259	26.40	9.60
2	249.60	29.4 QP	46.0	-16.6	1.00 H	256	16.40	13.00
3	350.71	34.6 QP	46.0	-11.4	1.00 H	151	18.40	16.20
4	374.04	33.9 QP	46.0	-12.1	1.00 H	223	17.10	16.80
5	500.42	35.6 QP	46.0	-10.4	2.00 H	133	15.40	20.20
6	624.85	34.3 QP	46.0	-11.7	1.00 H	145	11.40	22.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.68	37.8 QP	40.0	-2.2	1.00 V	10	24.30	13.50
2	348.76	29.8 QP	46.0	-16.2	1.50 V	64	13.70	16.10
3	374.04	34.9 QP	46.0	-11.1	1.50 V	31	18.10	16.80
4	500.42	36.6 QP	46.0	-9.4	1.00 V	139	16.40	20.20
5	624.85	31.9 QP	46.0	-14.1	1.50 V	172	9.00	22.90
6	799.84	34.8 QP	46.0	-11.2	1.00 V	169	9.60	25.20

- 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.

## 4.2 CONDUCTED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:** 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Nov. 30, 2010	Nov. 29, 2011
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 30, 2010	Dec. 29, 2011
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jul. 07, 2011	Jul. 06, 2012
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 06, 2011	Jan. 05, 2012
LISN ROHDE & SCHWARZ	ESH3-Z5	835239/001	Feb. 22, 2011	Feb. 21, 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_Conc_ V7.3.7	NA	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.

#### 4.2.3 TEST PROCEDURES

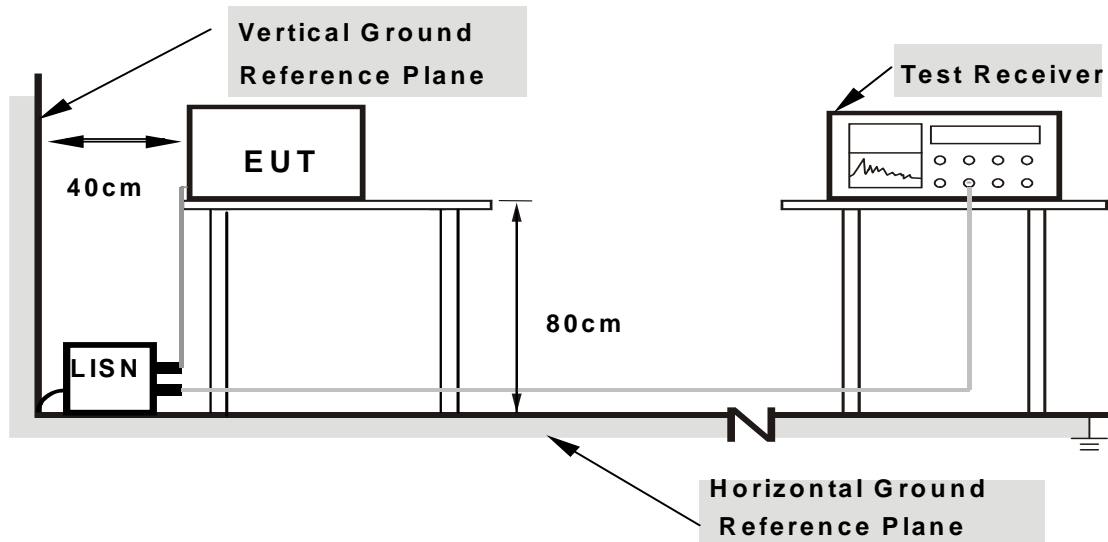
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.2.5 TEST SETUP



**Note: 1.Support units were connected to second LISN.**

**2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

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

#### 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

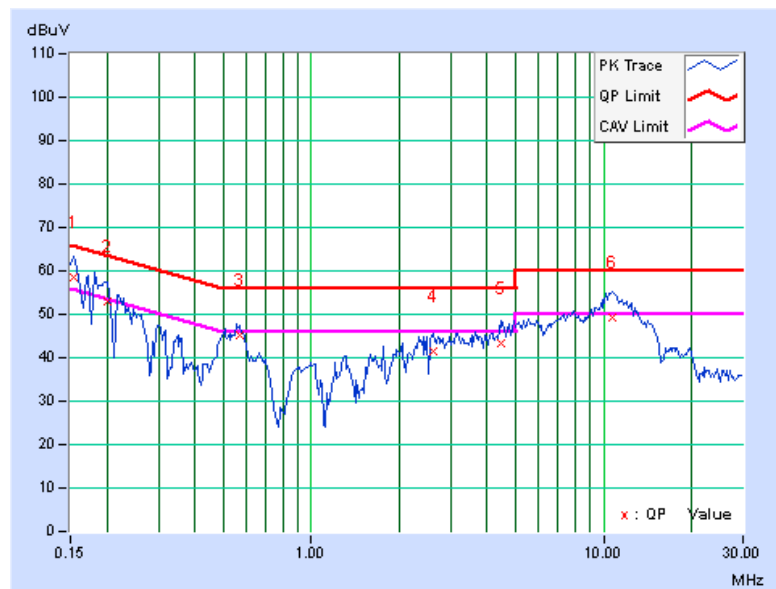
## 4.2.7 TEST RESULTS

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

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.12	58.41	37.20	58.53	37.32	65.79	55.79	-7.26	-18.47
2	0.201	0.12	52.94	-	53.06	-	63.58	53.58	-10.52	-
3	0.568	0.13	45.04	-	45.17	-	56.00	46.00	-10.83	-
4	2.617	0.23	41.33	-	41.56	-	56.00	46.00	-14.44	-
5	4.453	0.34	43.16	-	43.50	-	56.00	46.00	-12.50	-
6	10.703	0.69	48.69	-	49.38	-	60.00	50.00	-10.62	-

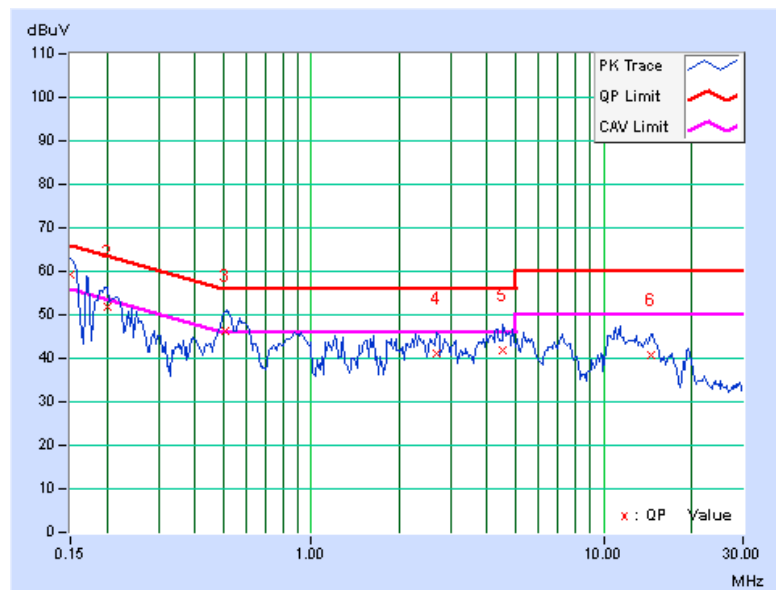
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value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



PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.12	59.32	42.73	59.44	42.85	66.00	56.00	-6.56	-13.15
2	0.201	0.13	51.85	-	51.98	-	63.58	53.58	-11.60	-
3	0.505	0.15	46.17	32.13	46.32	32.28	56.00	46.00	-9.68	-13.72
4	2.688	0.24	40.86	-	41.10	-	56.00	46.00	-14.90	-
5	4.516	0.34	41.49	-	41.83	-	56.00	46.00	-14.17	-
6	14.629	0.74	40.12	-	40.86	-	60.00	50.00	-19.14	-

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



### 4.3 6dB BANDWIDTH MEASUREMENT

#### 4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100039	Feb. 23, 2011	Feb. 22, 2012

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

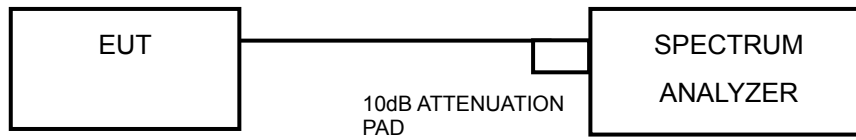
#### 4.3.3 TEST PROCEDURE

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

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.3.5 TEST SETUP



#### 4.3.6 EUT OPERATING CONDITIONS

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

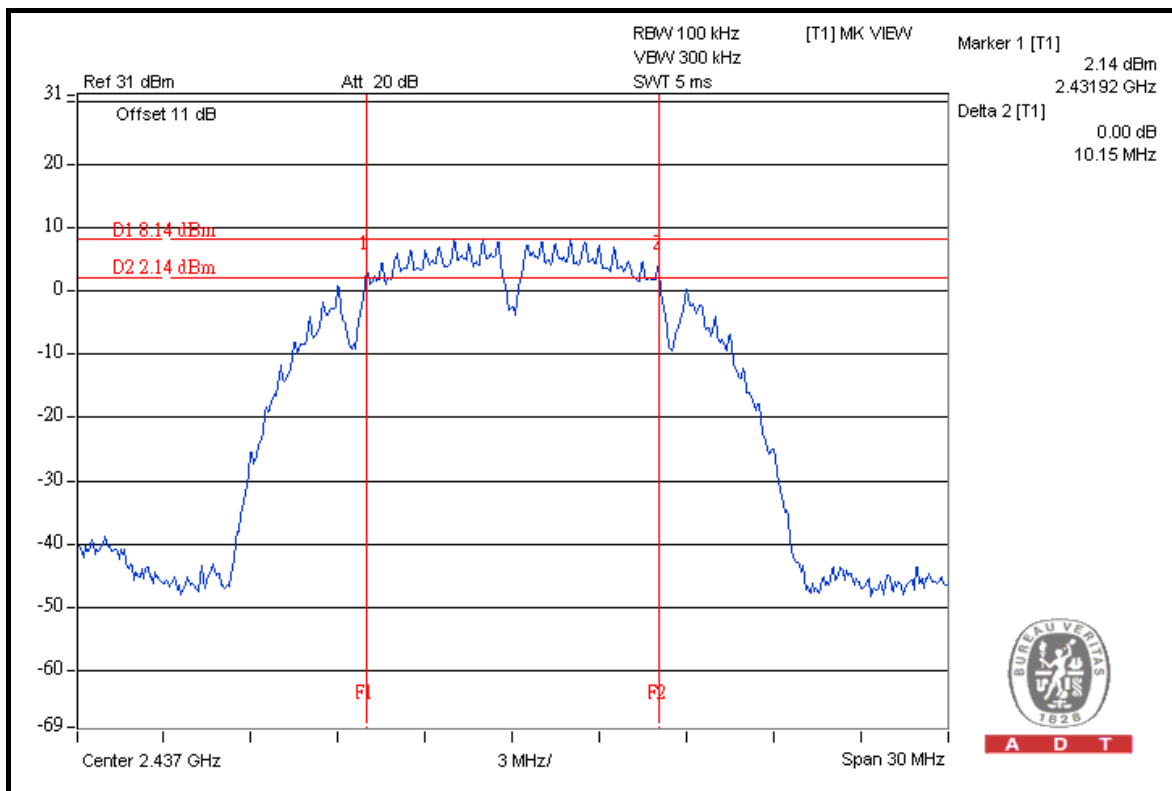


#### 4.3.7 TEST RESULTS

##### 802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	10.11	10.14	10.12	0.5	PASS
6	2437	10.13	10.13	10.15	0.5	PASS
11	2462	10.12	10.12	10.14	0.5	PASS

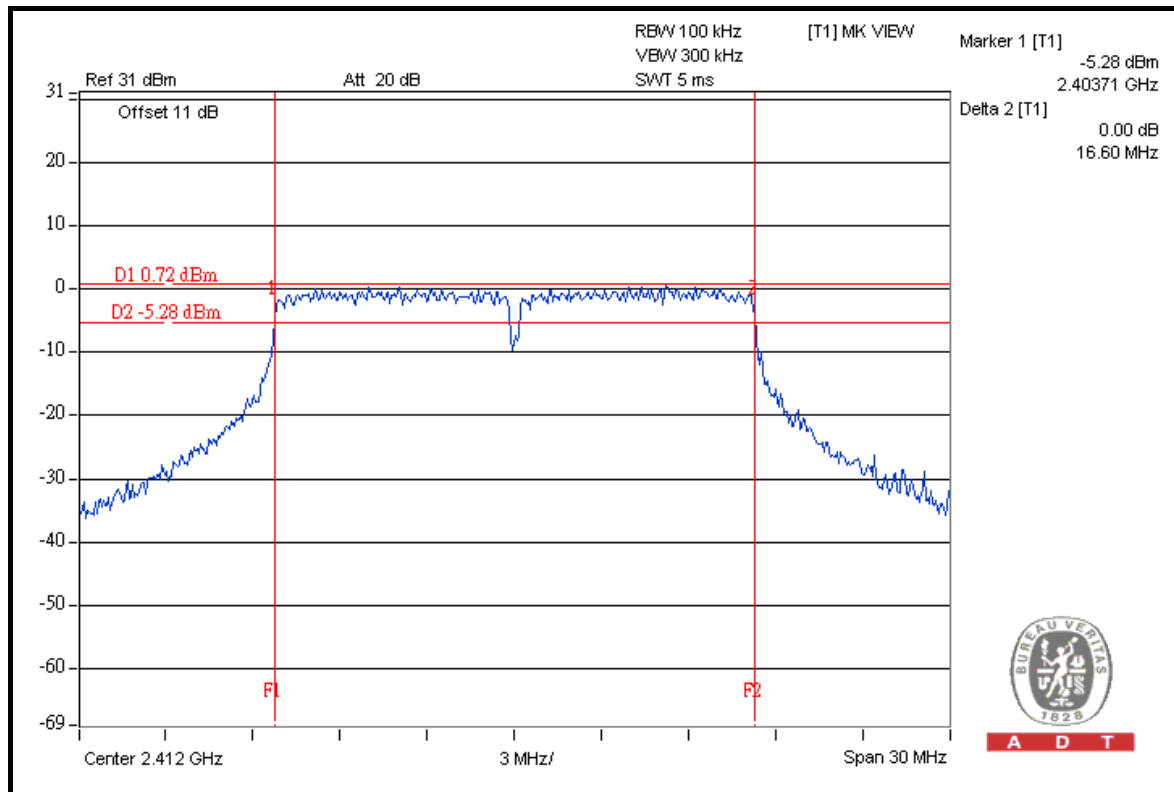
##### FOR CHAIN 2: CH 6



### 802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	16.60	16.58	16.56	0.5	PASS
6	2437	16.46	16.42	16.44	0.5	PASS
11	2462	16.41	16.43	16.42	0.5	PASS

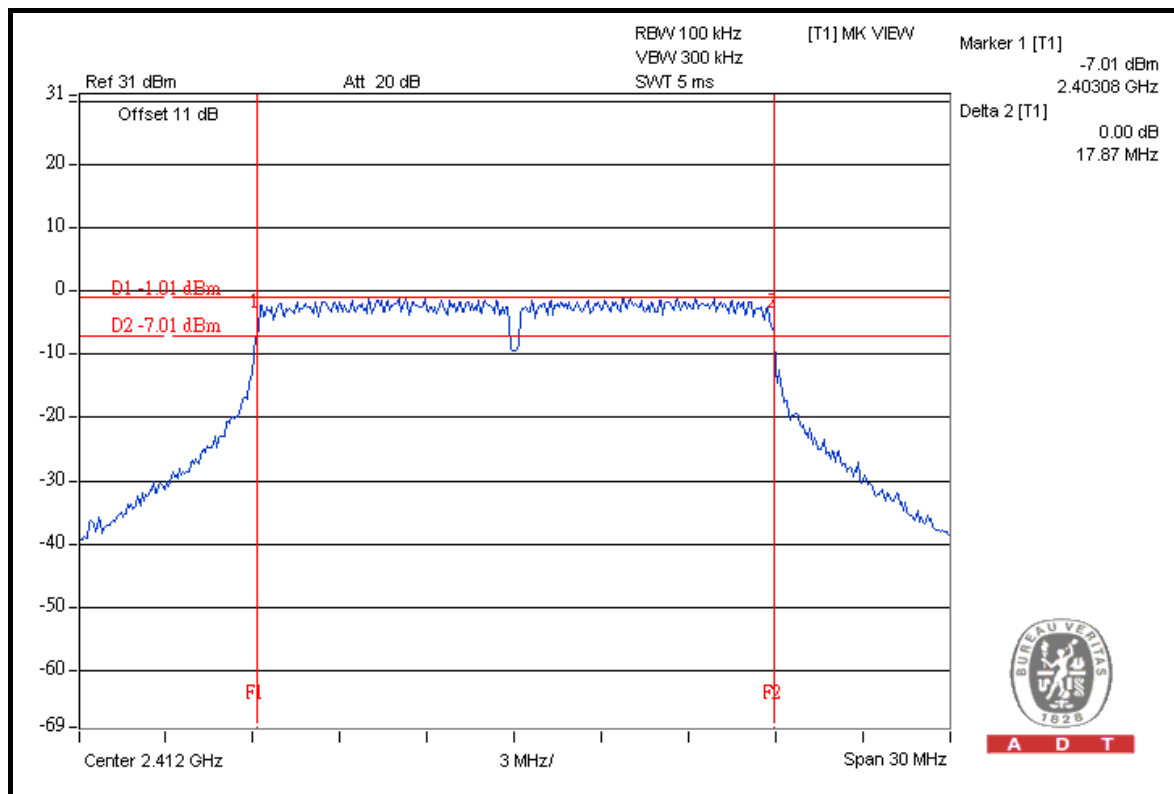
### FOR CHAIN 0: CH 1



### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	17.84	17.83	17.87	0.5	PASS
6	2437	17.62	17.64	17.63	0.5	PASS
11	2462	17.81	17.82	17.87	0.5	PASS

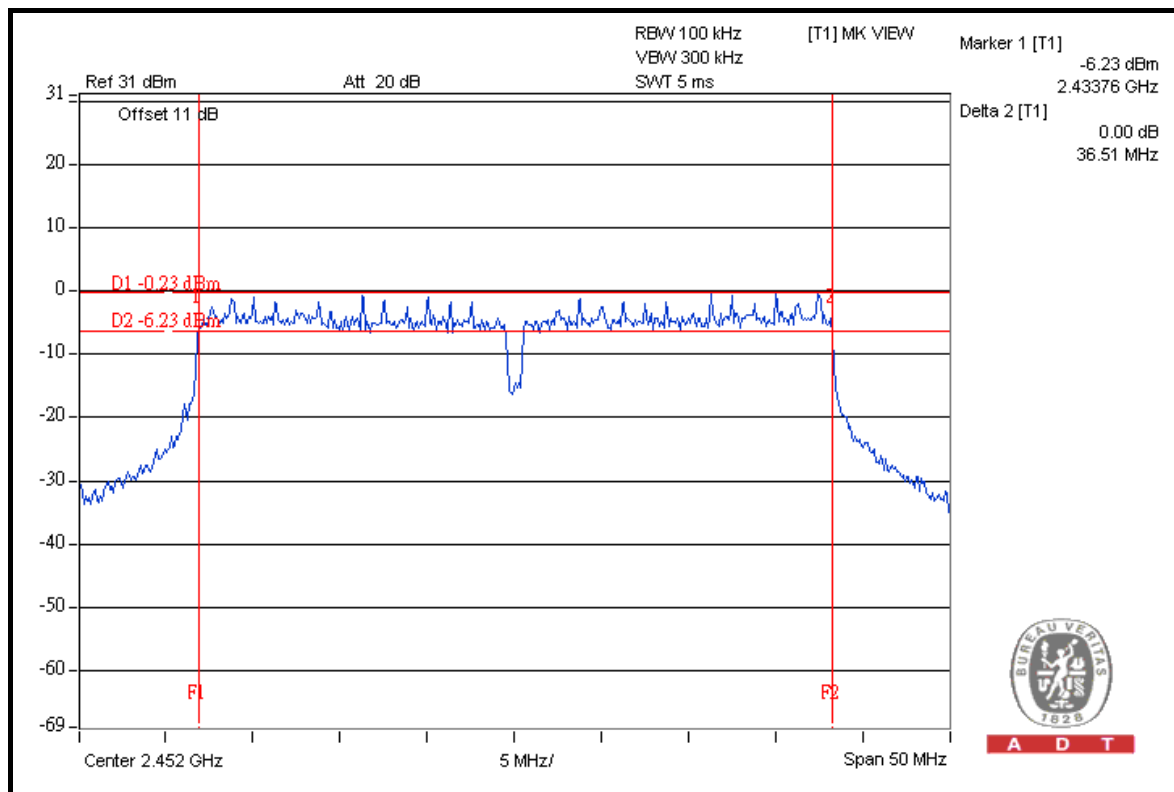
### FOR CHAIN 2: CH 1



### 802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2422	36.49	36.50	36.49	0.5	PASS
4	2437	36.49	36.49	36.49	0.5	PASS
7	2452	36.48	36.51	36.50	0.5	PASS

### FOR CHAIN 1: CH 7



#### 4.4 MAXIMUM OUTPUT POWER

##### 4.4.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

The Maximum Output Power Measurement is 30dBm.

##### 4.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
High Speed Peak Power Meter	ML2495A	0842014	Apr. 26, 2011	Apr. 25, 2012
Power Sensor	MA2411B	0738404	Apr. 26, 2011	Apr. 25, 2012

**NOTE:**

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

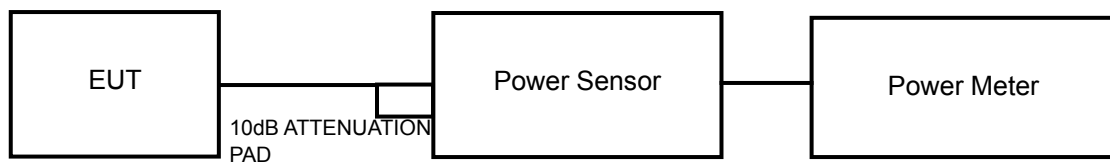
##### 4.4.3 TEST PROCEDURES

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

#### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.4.5 TEST SETUP



#### 4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

#### 4.4.7 TEST RESULTS

##### 802.11b

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	18.6	18.7	18.7	220.7	23.4	28.2	PASS
6	2437	18.4	18.7	19.0	222.7	23.5	28.2	PASS
11	2462	18.8	19.0	18.9	232.9	23.7	28.2	PASS

Directional gain = 3dBi + 10log(3) = 7.8dBi > 6dBi , so the conducted power limit shall be reduced to 30-(7.8-6)=28.2dBm

##### 802.11g

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	22.5	22.7	23.0	563.6	27.5	28.2	PASS
6	2437	22.3	23.5	23.6	622.8	27.9	28.2	PASS
11	2462	22.1	23.2	23.3	584.9	27.7	28.2	PASS

Directional gain = 3dBi + 10log(3) = 7.8dBi > 6dBi , so the conducted power limit shall be reduced to 30-(7.8-6)=28.2dBm

##### 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	CHAIN 2				
1	2412	23.0	23.4	23.2	627.2	28.0	30	PASS
6	2437	23.4	24.7	24.8	815.9	29.1	30	PASS
11	2462	23.2	23.8	23.8	688.7	28.4	30	PASS

##### 802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
1	2422	21.4	21.9	21.8	444.3	26.5	30	PASS
4	2437	23.0	23.8	23.8	679.3	28.3	30	PASS
7	2452	22.3	22.6	22.9	546.8	27.4	30	PASS

## 4.5 POWER SPECTRAL DENSITY MEASUREMENT

### 4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100039	Feb. 23, 2011	Feb. 22, 2012

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

### 4.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 10kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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

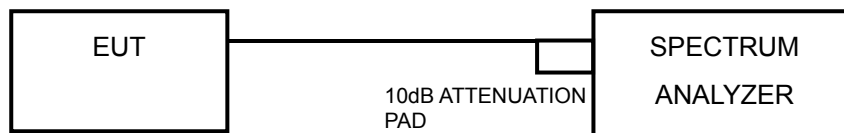
Follow method 2 of KDB 662911 D01 Multiple Transmitter Output v01 to calculate total power density of 3 TX port.



#### 4.5.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.5.5 TEST SETUP



#### 4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

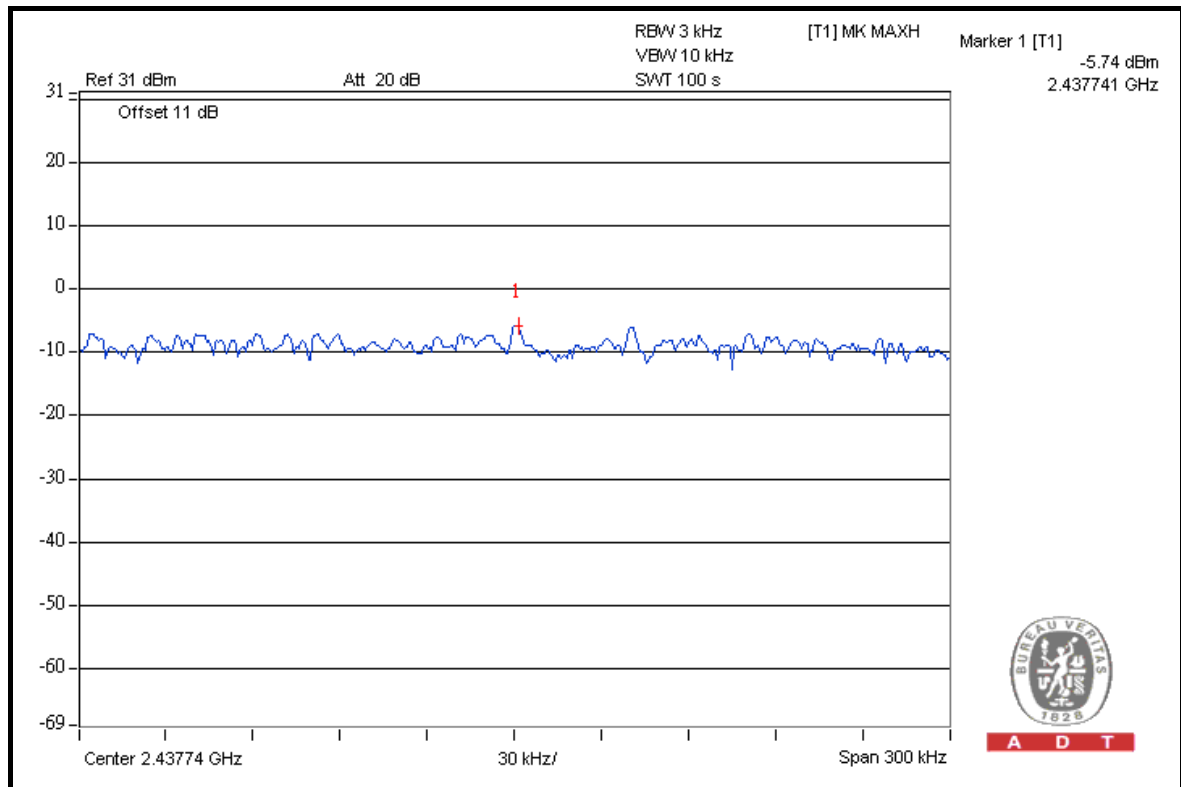
## 4.5.7 TEST RESULTS

### 802.11b

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=3) dB			
0	1	2412	-6.96	4.77	-2.2	6.2	PASS
	6	2437	-6.99	4.77	-2.2	6.2	PASS
	11	2462	-6.94	4.77	-2.2	6.2	PASS
1	1	2412	-7.39	4.77	-2.6	6.2	PASS
	6	2437	-7.18	4.77	-2.4	6.2	PASS
	11	2462	-6.85	4.77	-2.1	6.2	PASS
2	1	2412	-5.91	4.77	-1.1	6.2	PASS
	6	2437	-5.74	4.77	-1.0	6.2	PASS
	11	2462	-5.82	4.77	-1.1	6.2	PASS

Directional gain =  $3\text{dBi} + 10\log(3) = 7.8\text{dBi} > 6\text{dBi}$  , so the conducted power limit shall be reduced to  $8 - (7.8 - 6) = 6.2\text{dBm}$

### FOR CHAIN 2: CH 6

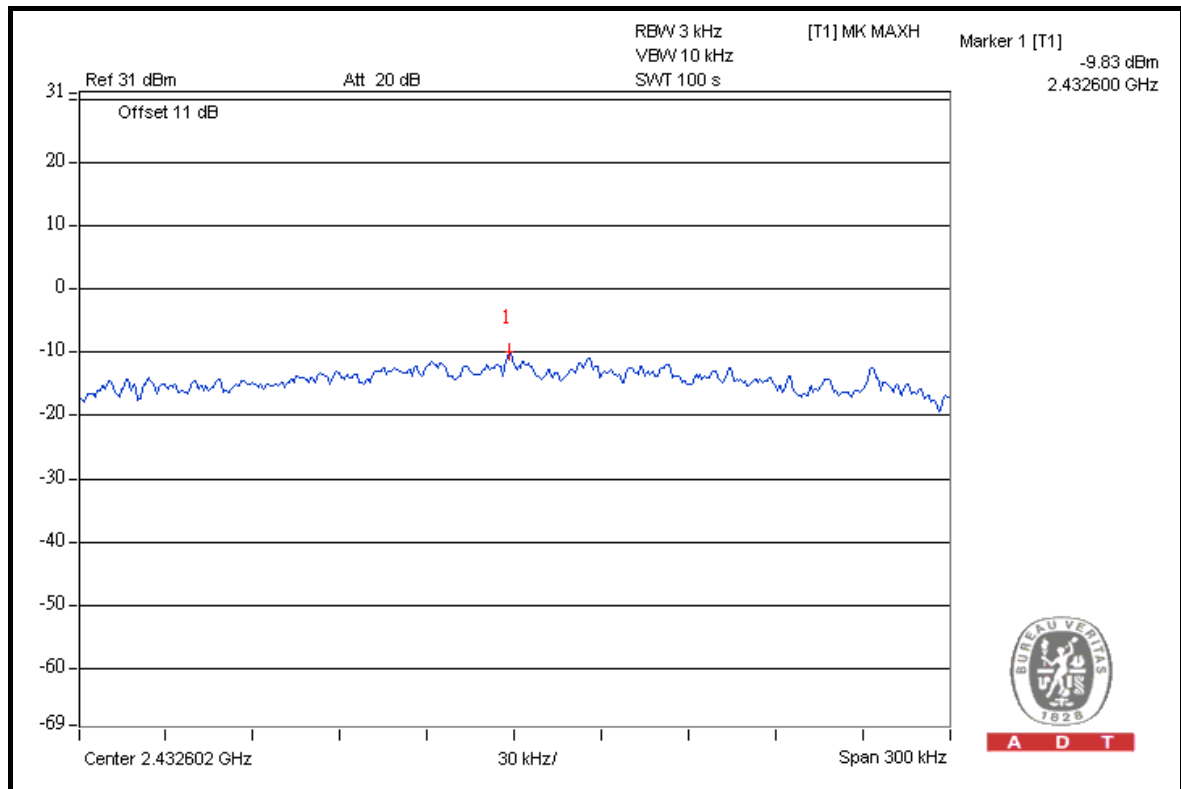


### 802.11g

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=3) dB			
0	1	2412	-11.00	4.77	-6.2	6.2	PASS
	6	2437	-10.85	4.77	-6.1	6.2	PASS
	11	2462	-10.99	4.77	-6.2	6.2	PASS
1	1	2412	-10.10	4.77	-5.3	6.2	PASS
	6	2437	-9.83	4.77	-5.1	6.2	PASS
	11	2462	-10.26	4.77	-5.5	6.2	PASS
2	1	2412	-10.79	4.77	-6.0	6.2	PASS
	6	2437	-9.94	4.77	-5.2	6.2	PASS
	11	2462	-10.23	4.77	-5.5	6.2	PASS

Directional gain =  $3\text{dBi} + 10\log(3) = 7.8\text{dBi} > 6\text{dBi}$ , so the conducted power limit shall be reduced to  $8 - (7.8 - 6) = 6.2\text{dBm}$

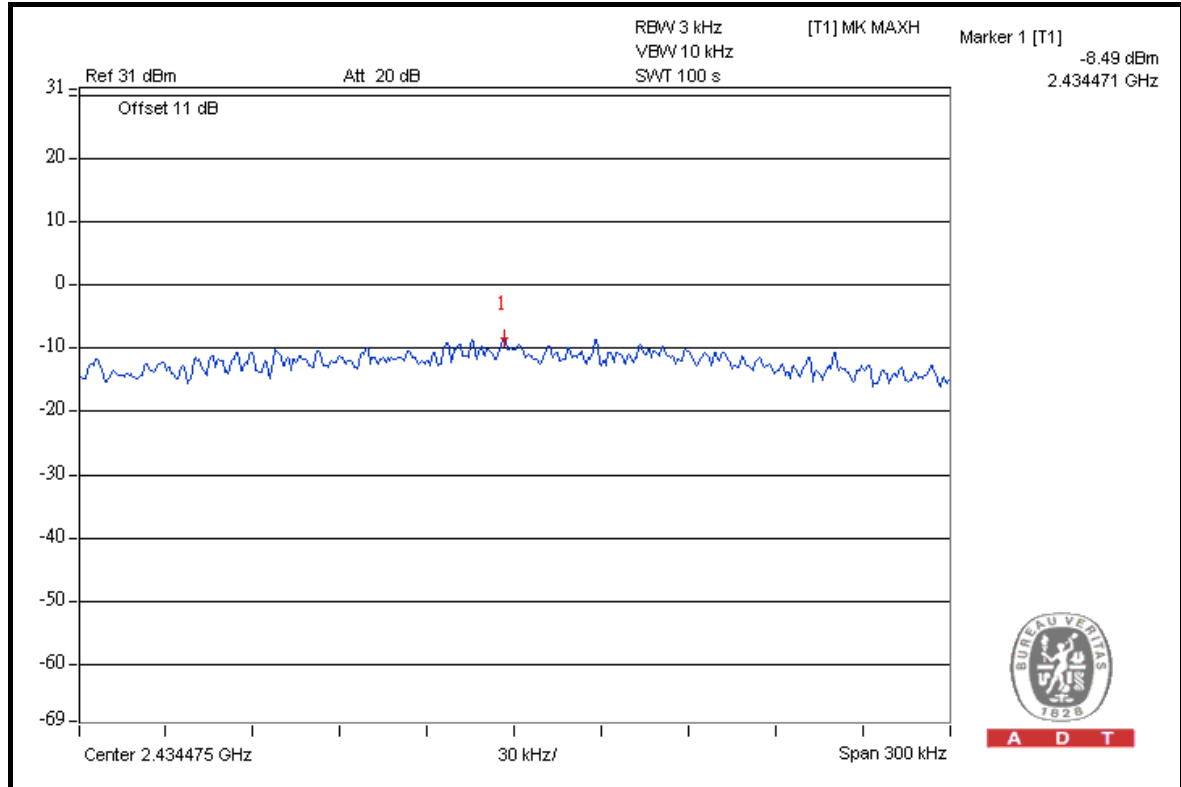
### FOR CHAIN 1: CH 6



### 802.11n (20MHz)

CHAIN	CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
			MEASURED	10 log (N=3) dB			
0	1	2412	-11.11	4.77	-6.3	8	PASS
	6	2437	-9.64	4.77	-4.9	8	PASS
	11	2462	-11.89	4.77	-7.1	8	PASS
1	1	2412	-12.22	4.77	-7.5	8	PASS
	6	2437	-9.18	4.77	-4.4	8	PASS
	11	2462	-11.74	4.77	-7.0	8	PASS
2	1	2412	-12.63	4.77	-7.9	8	PASS
	6	2437	-8.49	4.77	-3.7	8	PASS
	11	2462	-11.15	4.77	-6.4	8	PASS

### FOR CHAIN 2: CH 6



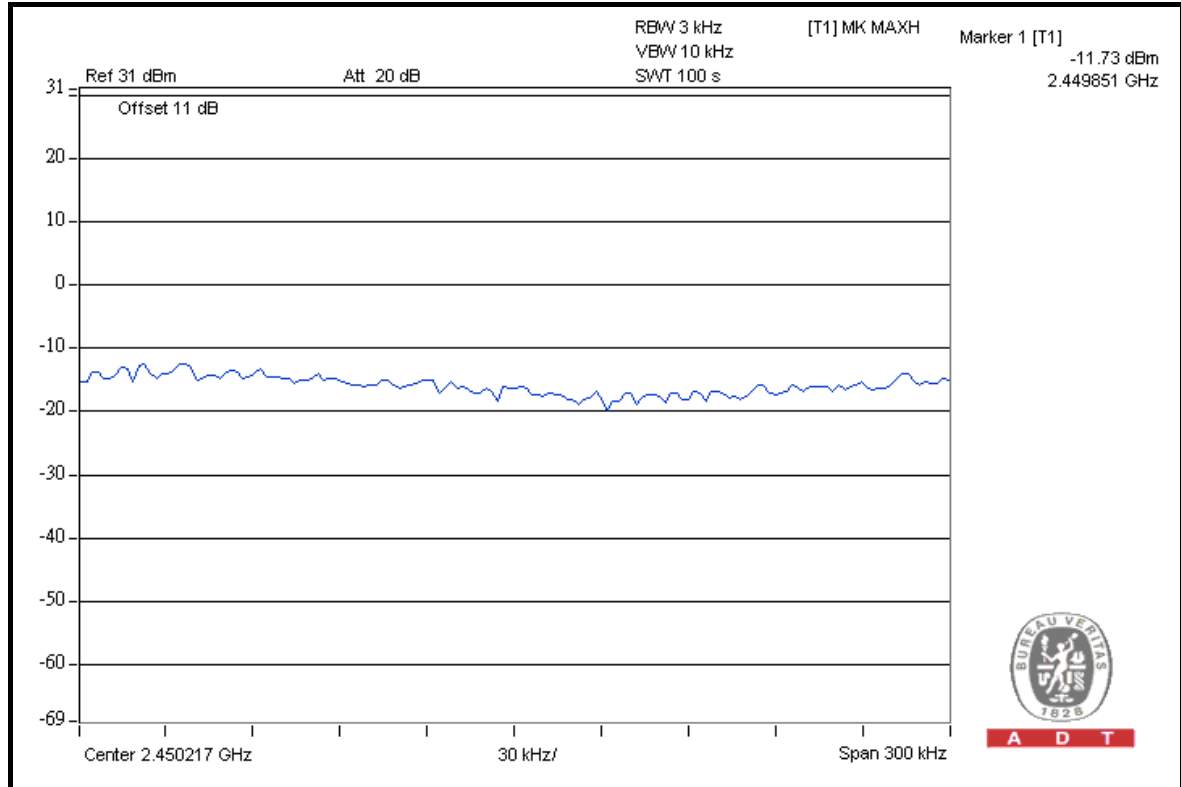


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#### 802.11n (40MHz)

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=3) dB			
0	1	2422	-13.22	4.77	-8.5	8	PASS
	4	2437	-11.73	4.77	-7.0	8	PASS
	7	2452	-12.37	4.77	-7.6	8	PASS
1	1	2422	-16.35	4.77	-11.6	8	PASS
	4	2437	-14.30	4.77	-9.5	8	PASS
	7	2452	-15.66	4.77	-10.9	8	PASS
2	1	2422	-15.92	4.77	-11.2	8	PASS
	4	2437	-13.97	4.77	-9.2	8	PASS
	7	2452	-14.92	4.77	-10.2	8	PASS

#### FOR CHAIN 0: CH 4



## 4.6 BAND EDGES MEASUREMENT

### 4.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

### 4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
<b>FOR CONDUCTED MEASUREMENT</b>				
SPECTRUM ANALYZER R&S	FSP40	100039	Feb. 23, 2011	Feb. 22, 2012
<b>FOR RADIATED MEASUREMENT</b>				
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Aug. 02, 2011	Aug. 01, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP 40	100041	Jul. 21, 2011	Jul. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 13, 2011	Apr. 12, 2012
HORN Antenna SCHWARZBECK	9120D	209	Aug. 25, 2011	Aug. 24, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8447D	2944A10633	Nov. 02, 2010	Nov. 01, 2011
Preamplifier Agilent	8449B	3008A01964	Nov. 02, 2010	Nov. 01, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295014/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	Aug. 19, 2011	Aug. 18, 2012
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA

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

#### 4.6.3 TEST PROCEDURE

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. Set both RBW and VBW of spectrum analyzer to 100kHz and 300kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

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

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

#### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6.

#### 4.6.6 TEST RESULTS

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

#### 802.11b

##### RESTRICT BAND (2310 ~ 2390 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	114.4	56.74	57.66	74.00
2412.00 (AV)	112.9	59.03	53.87	54.00

##### RESTRICT BAND (2483.5 ~ 2500 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	112.6	56.16	56.44	74.00
2462.00 (AV)	110.9	58.62	52.28	54.00

#### NOTE:

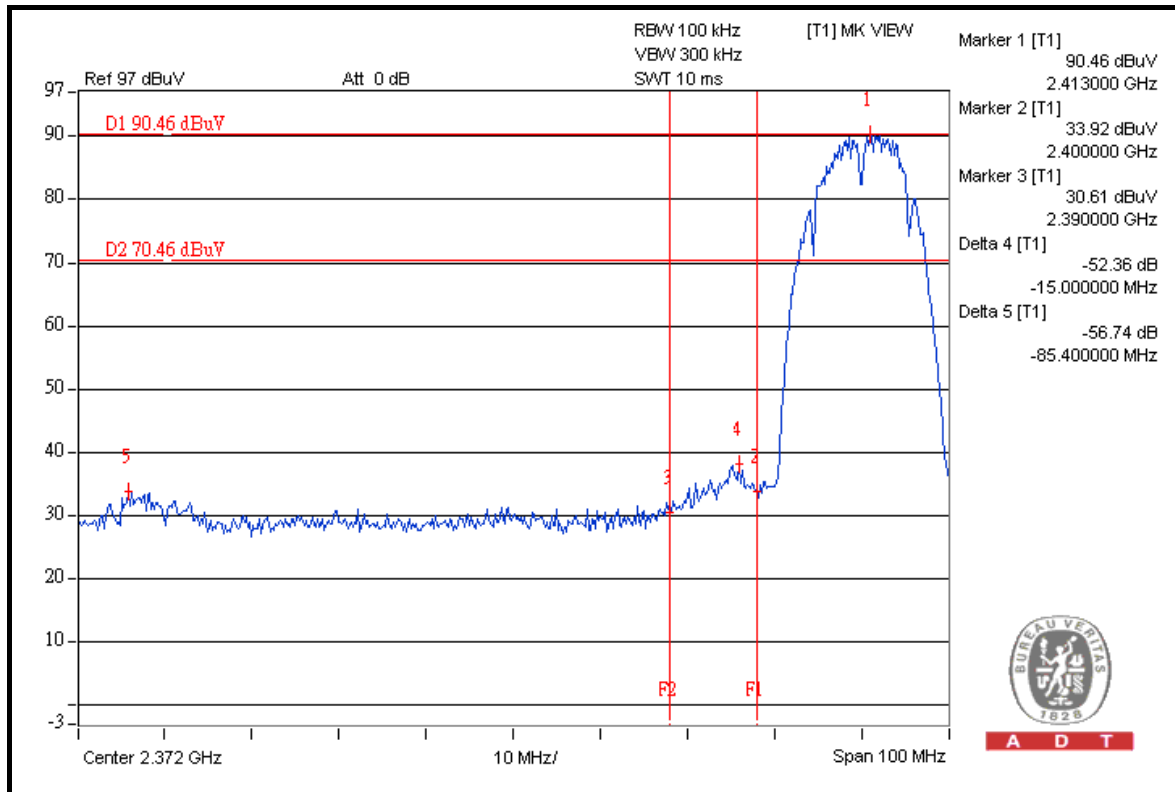
- Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
- Maximum field strength in restrict band = Fundamental emission – Delta.



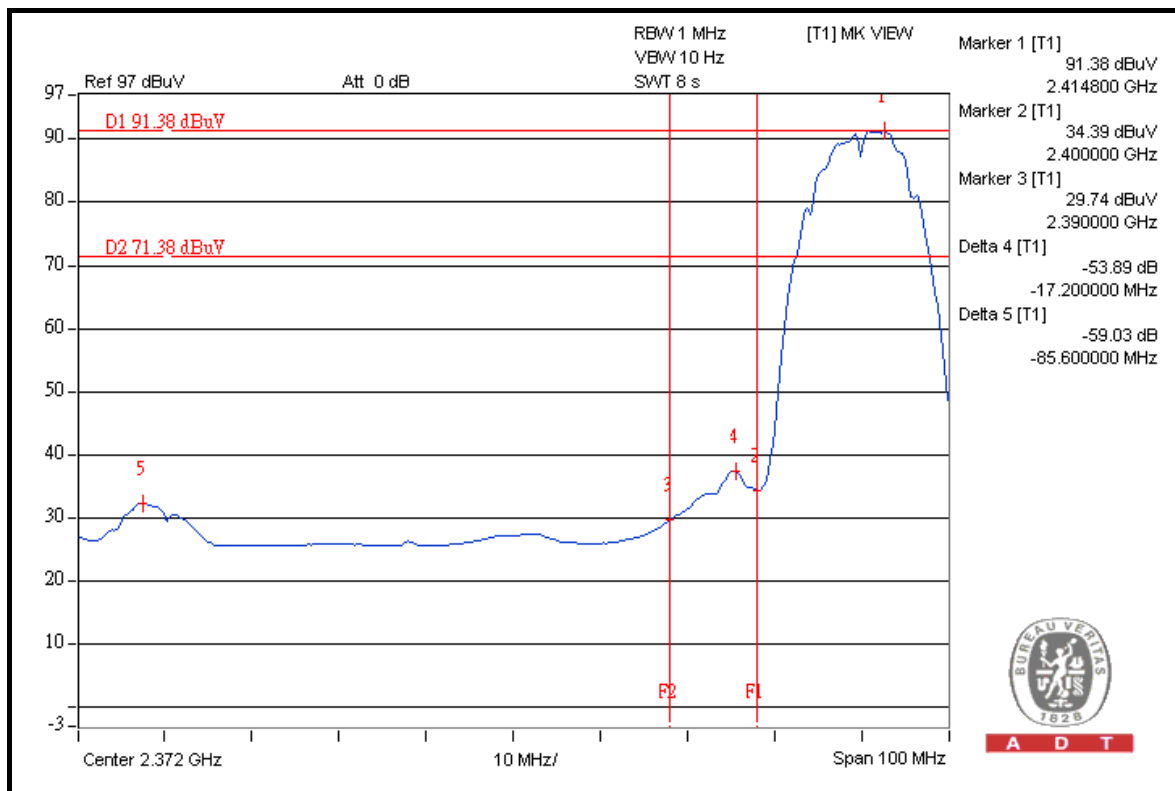


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### FOR RADIATED MEASURED (THREE CHAINS ON)



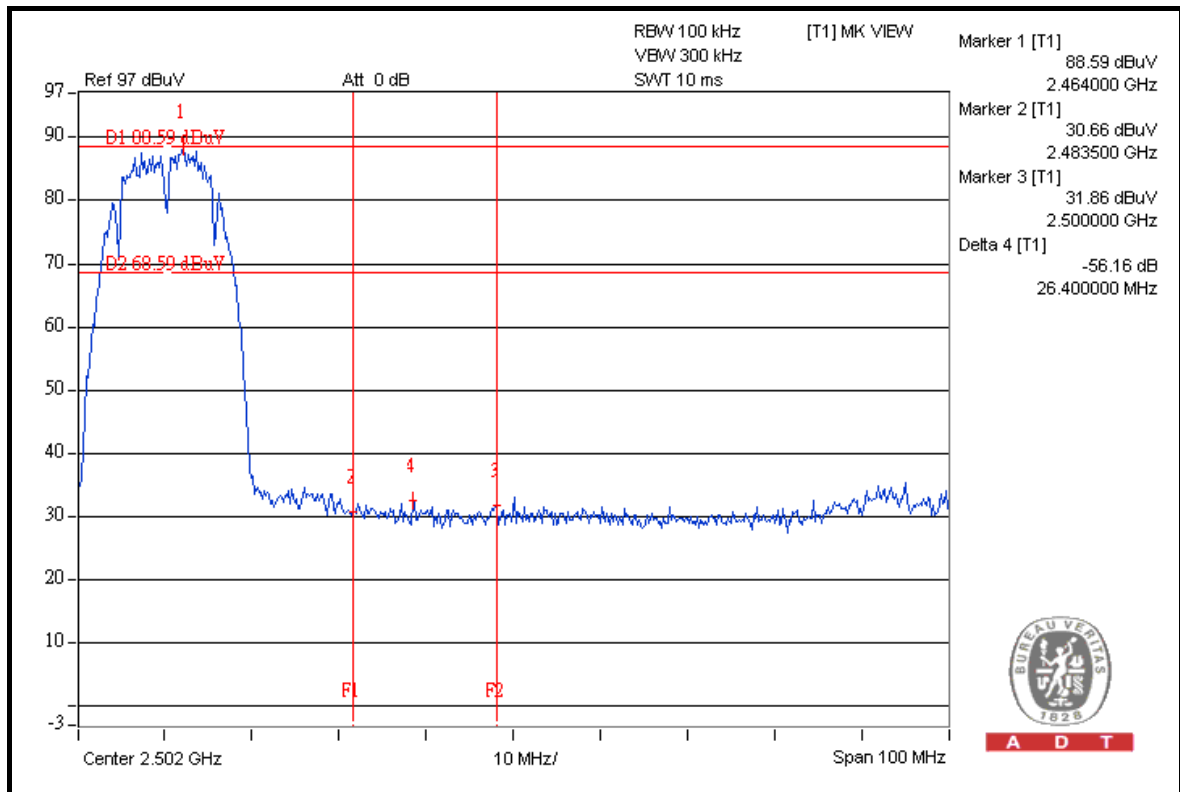
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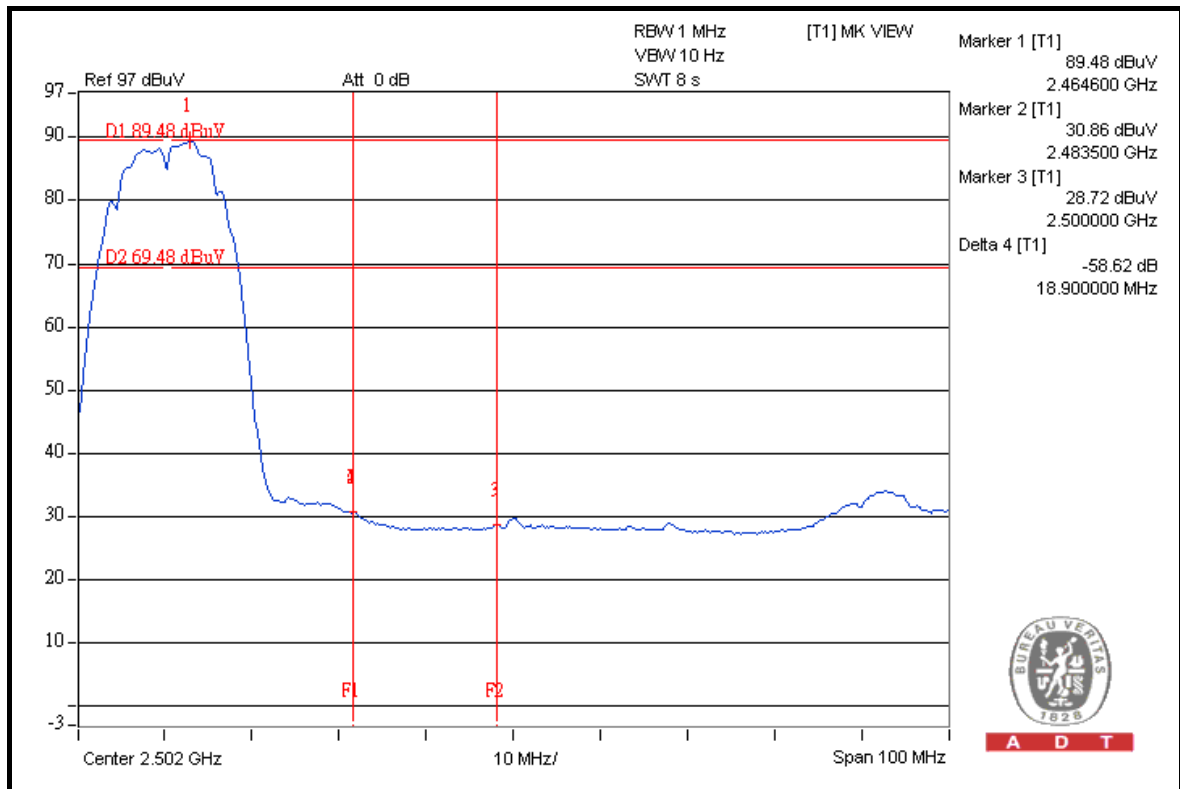
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A D T



A D T

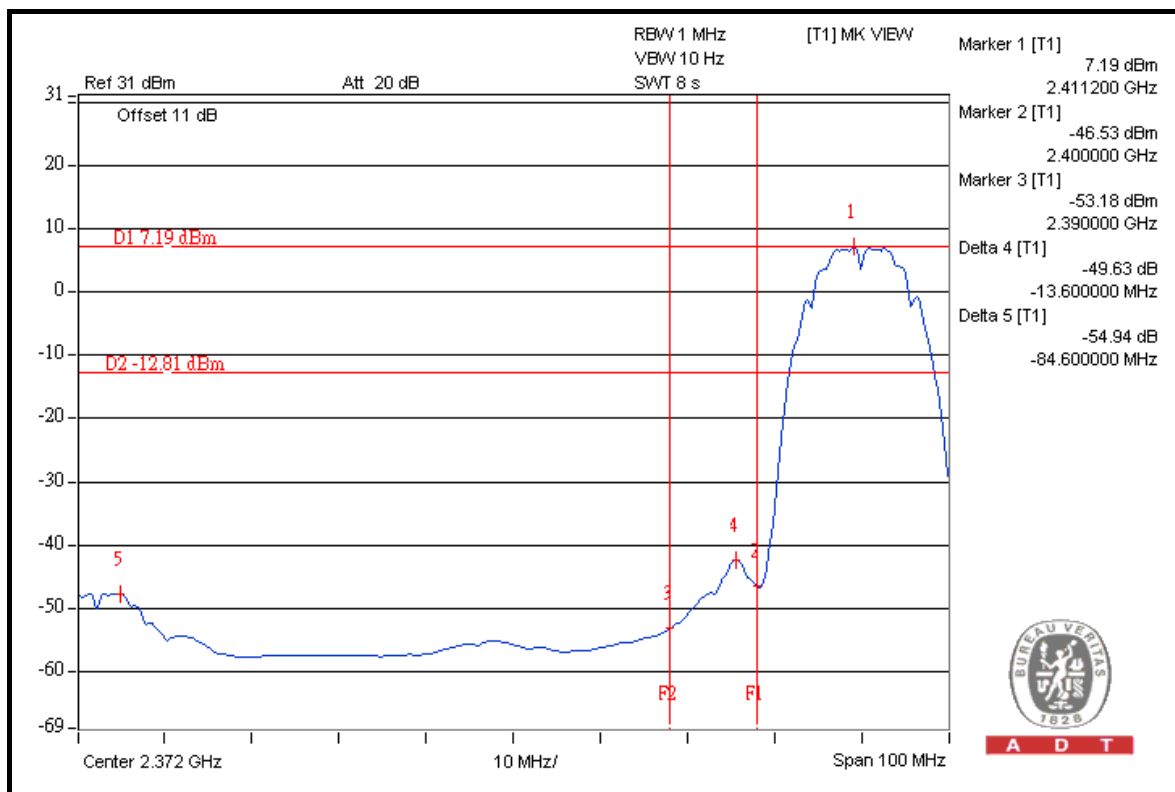
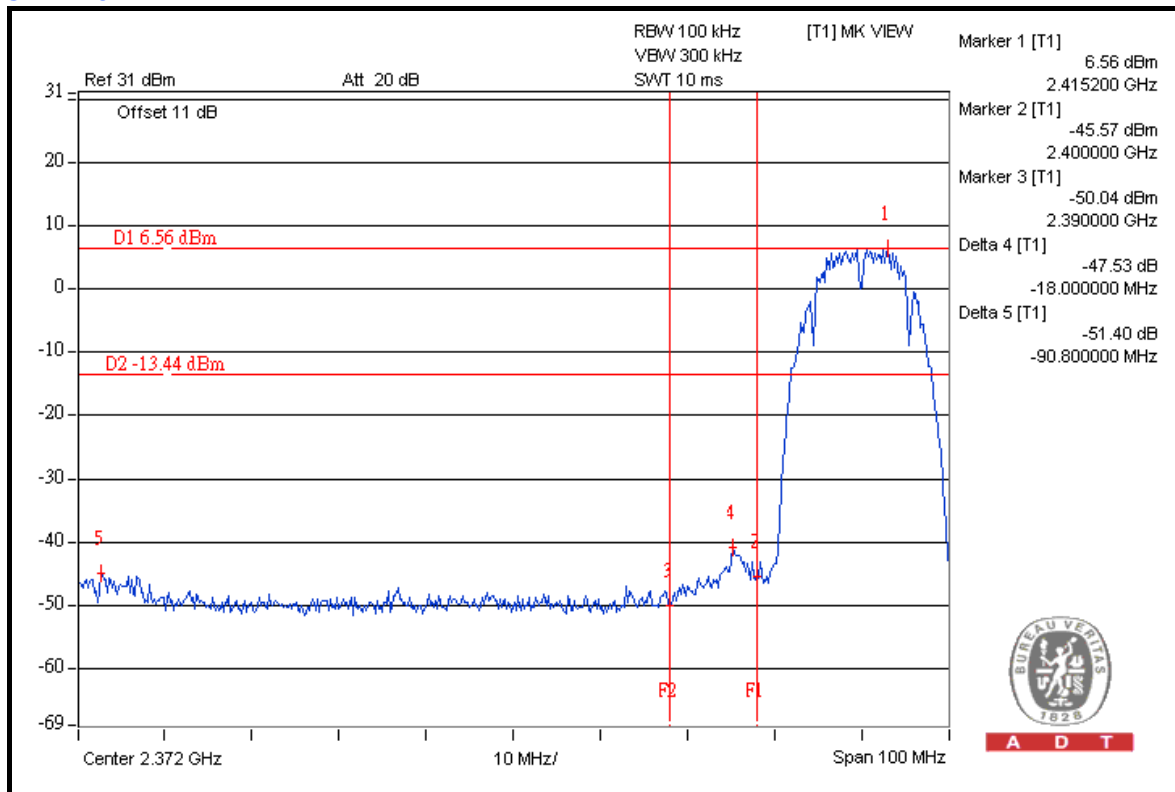


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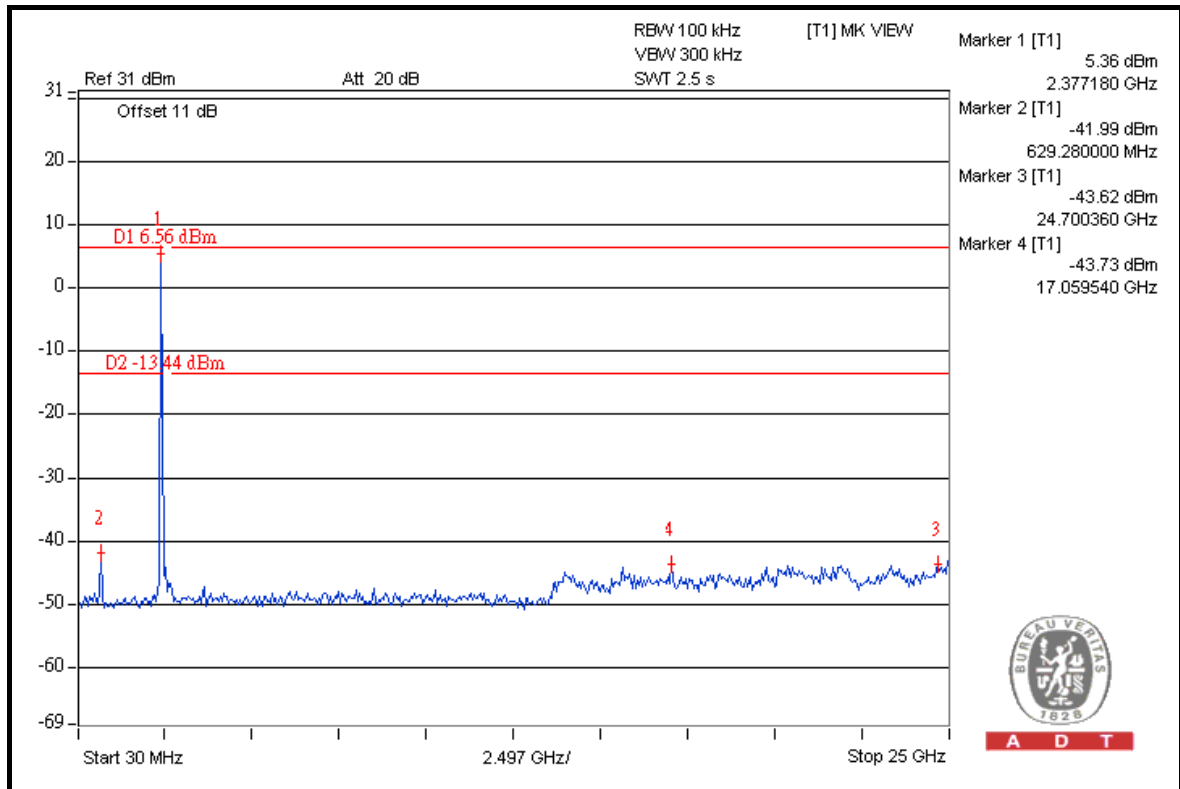
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## FOR CONDUCTED MEASURED CHAIN 0

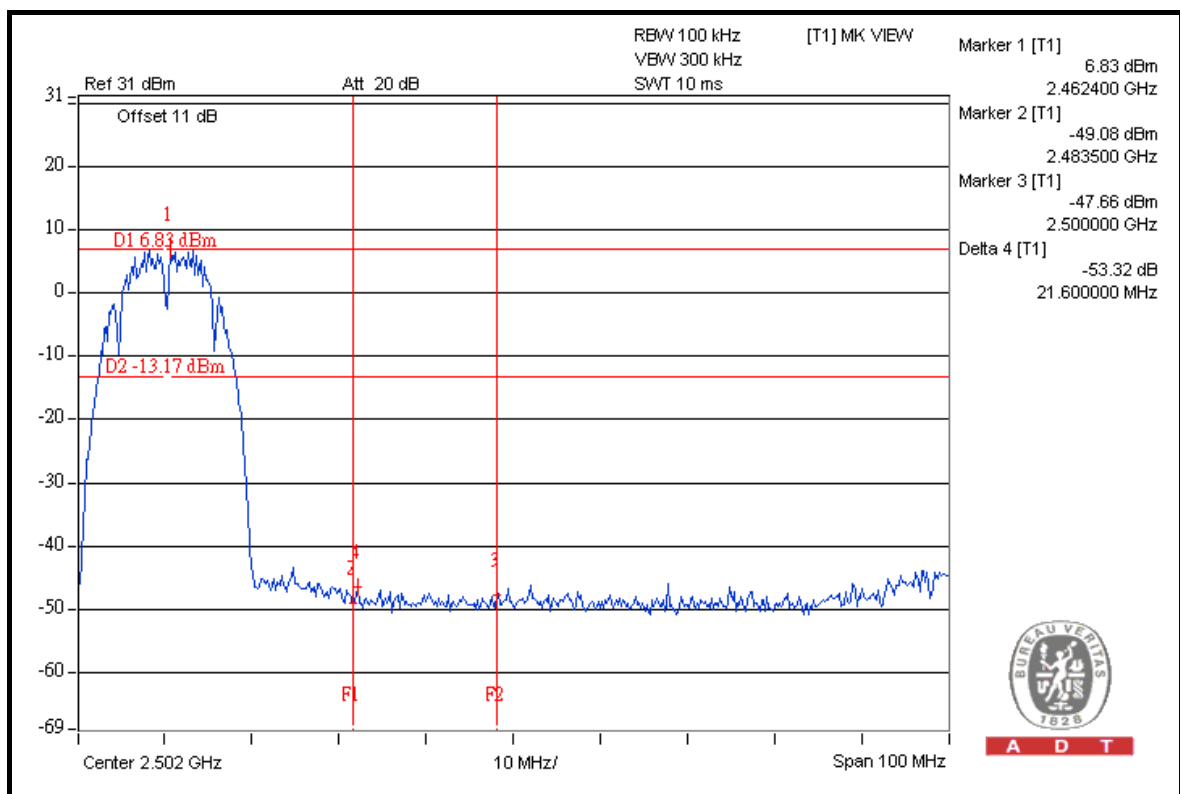




A D T



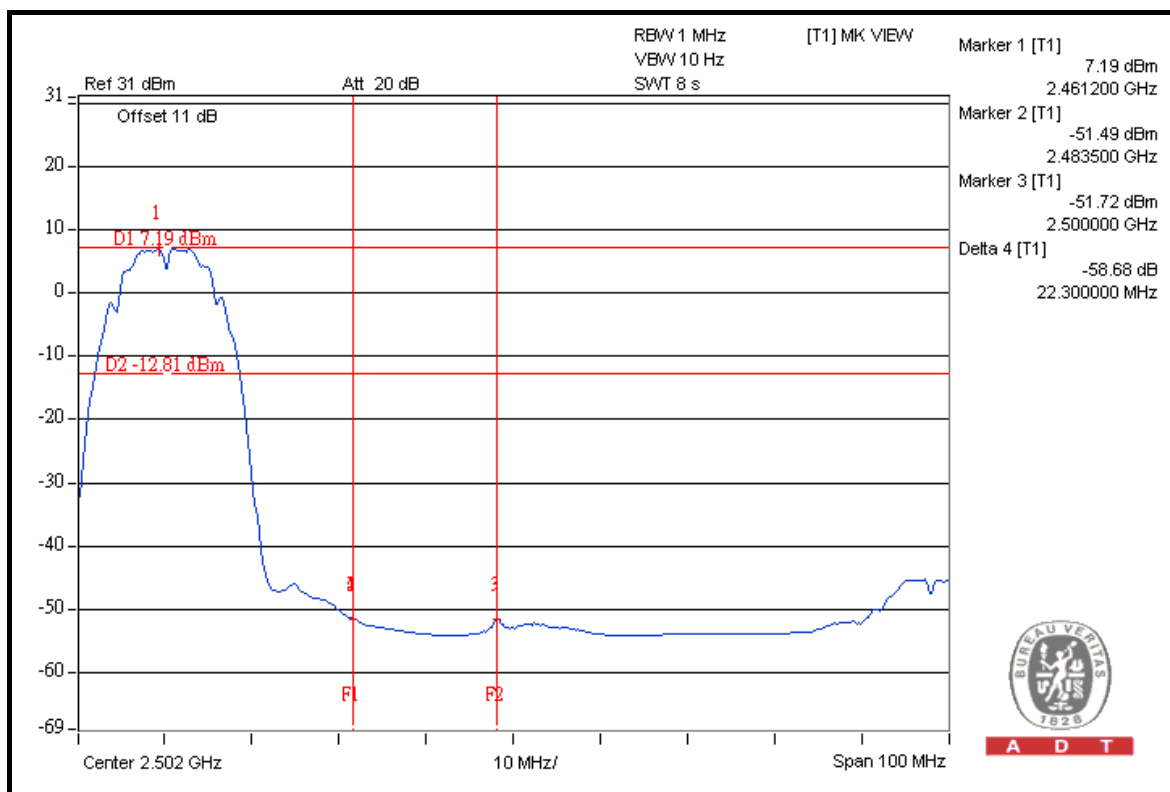
A D T



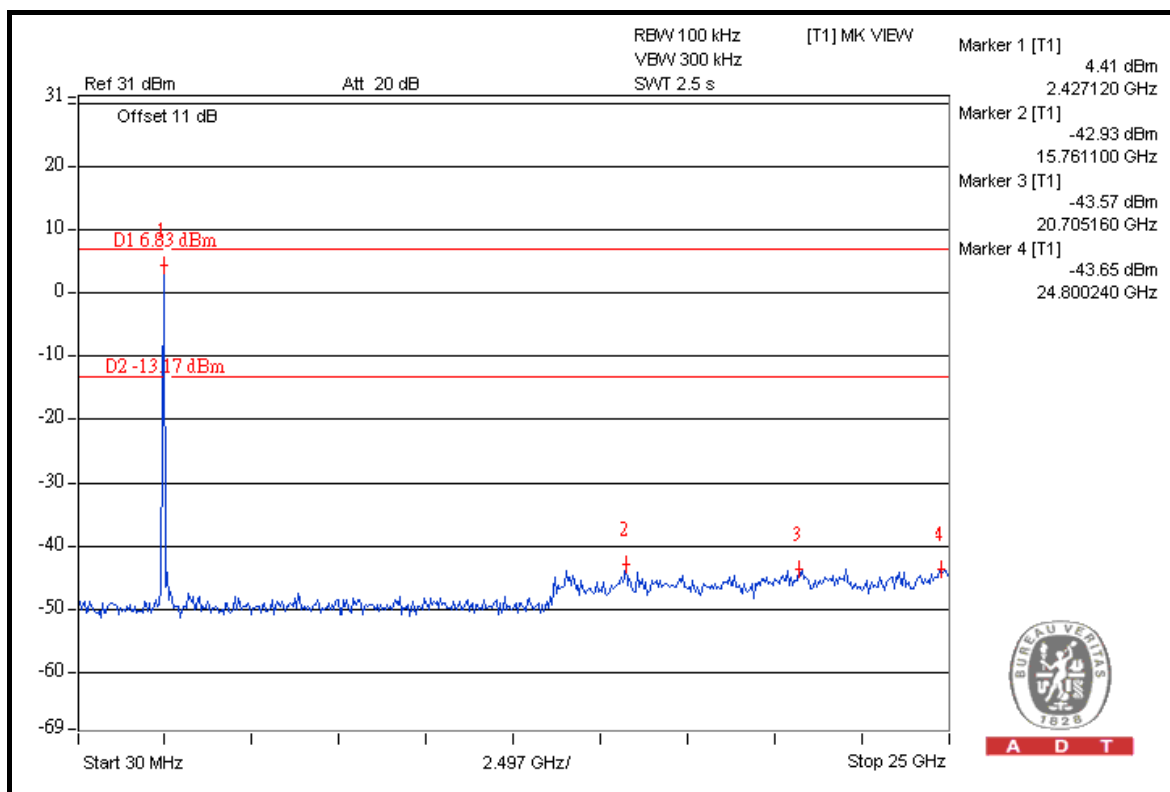
A D T



A D T



A D T

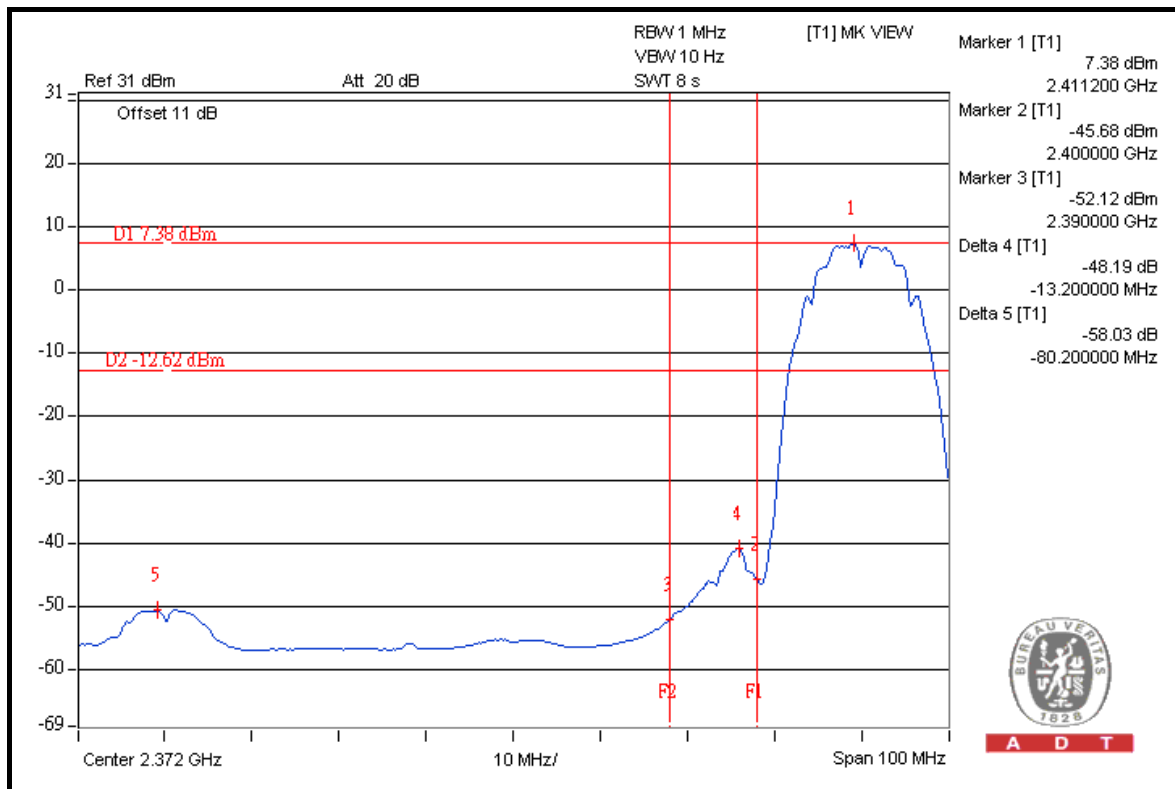
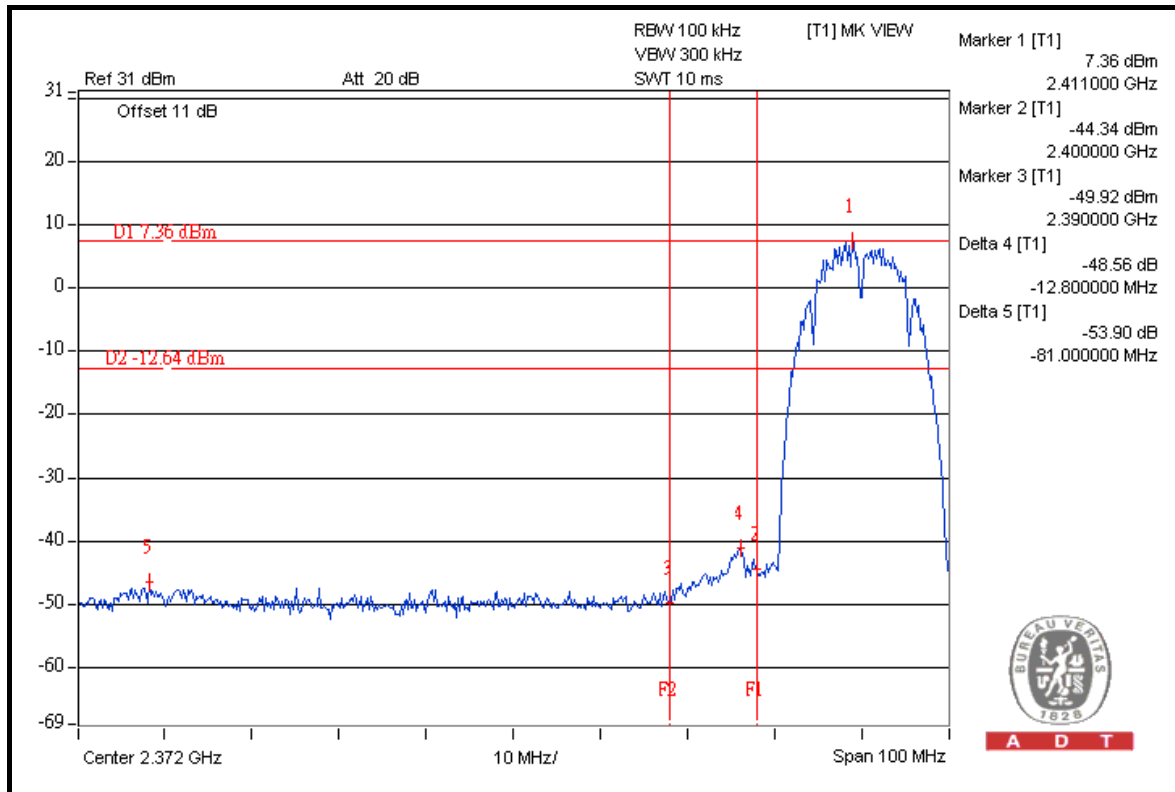


A D T



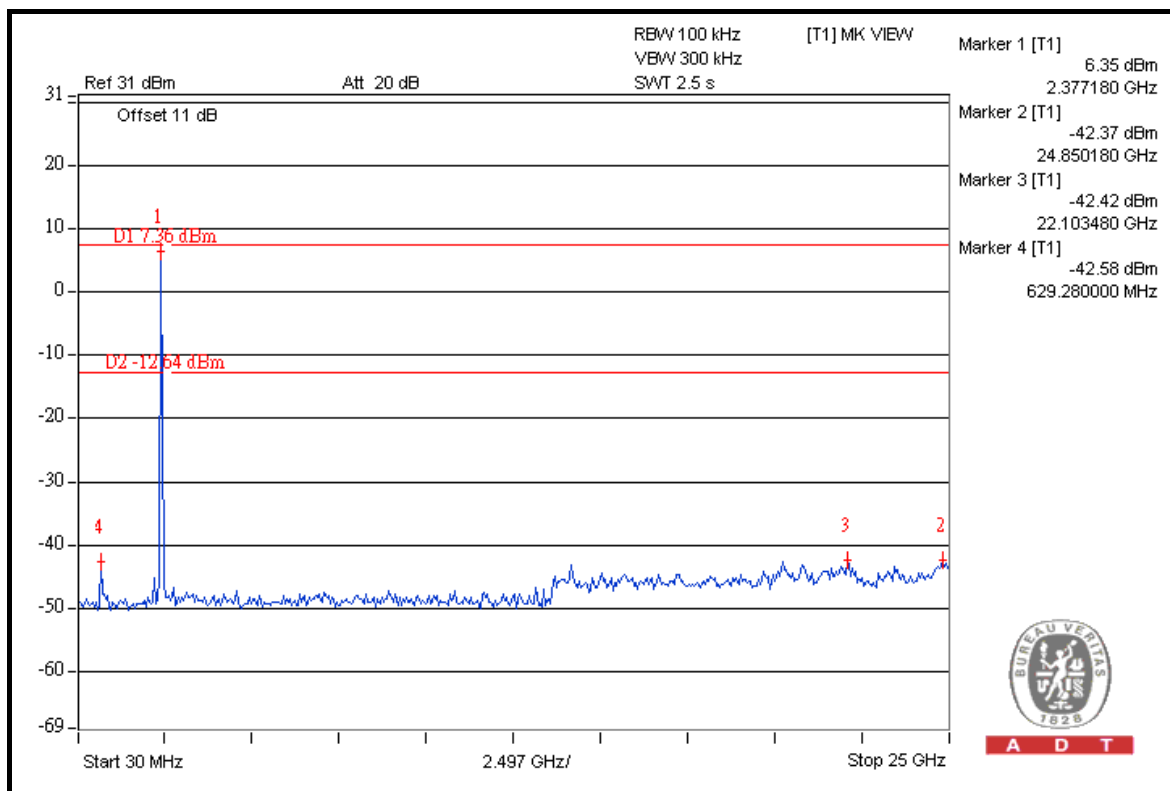
A D T

## CHAIN 1

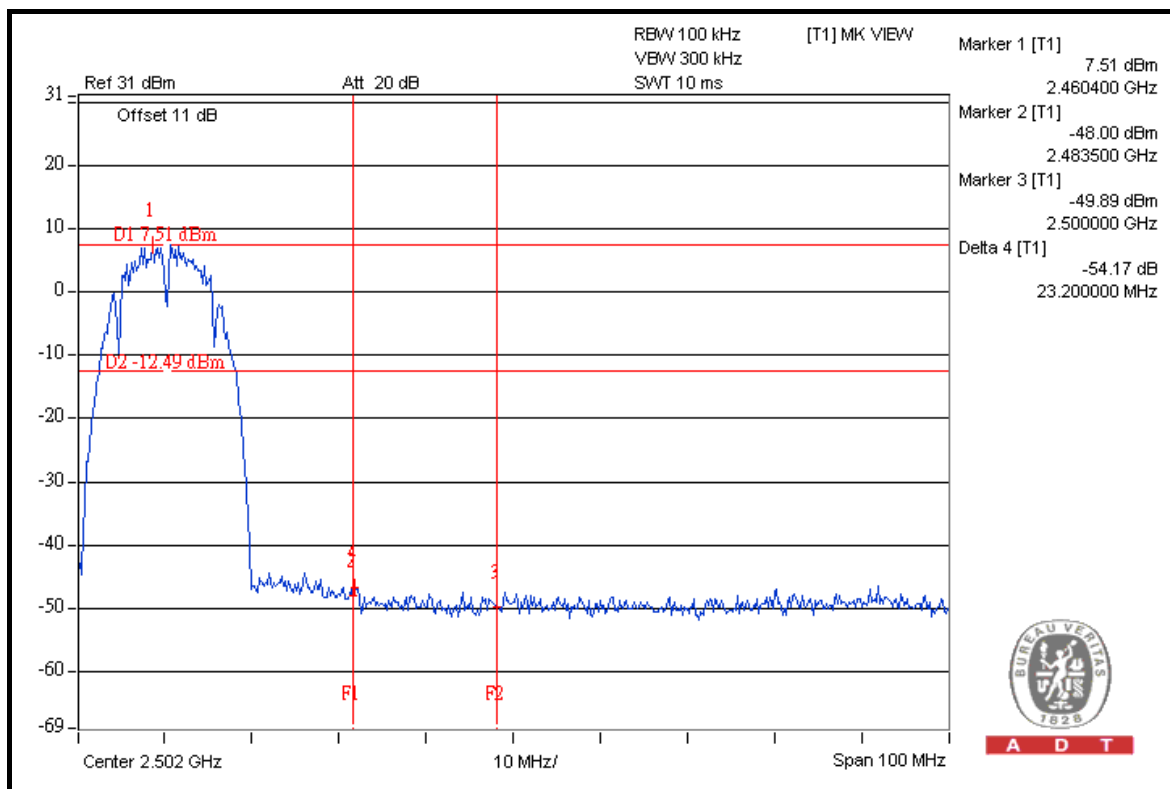




A D T



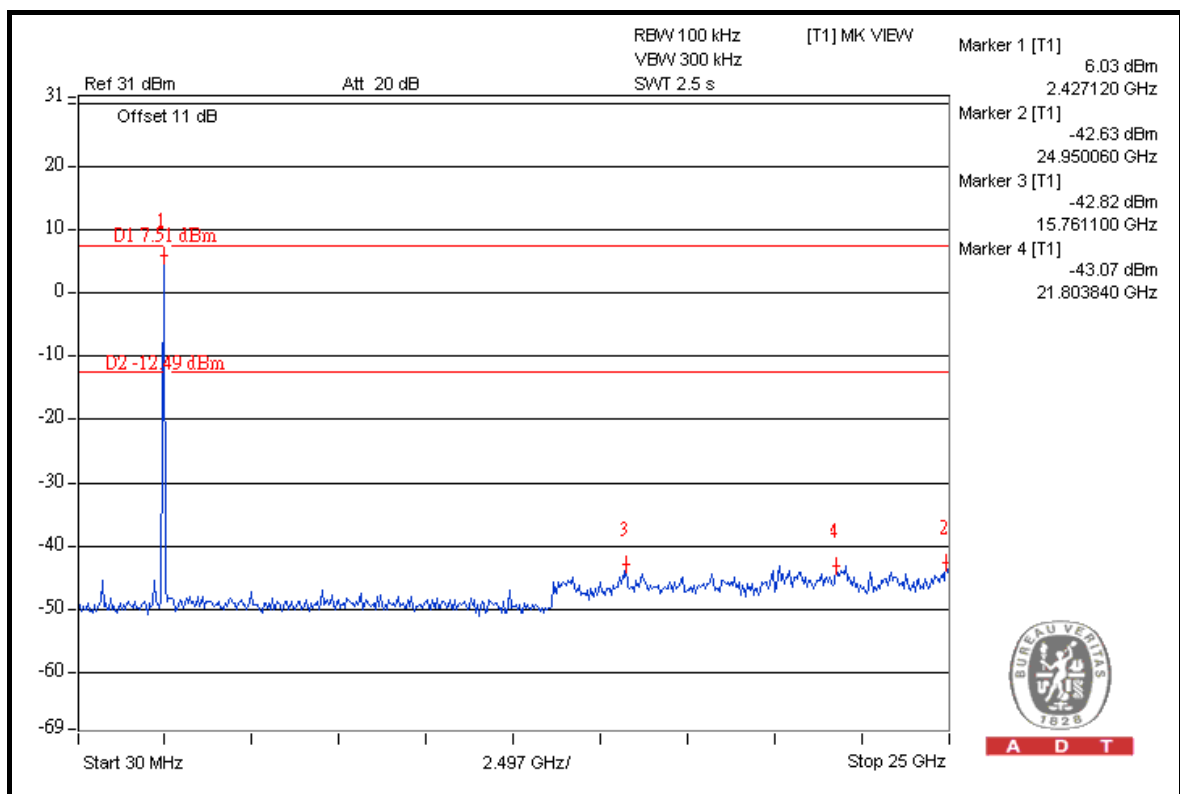
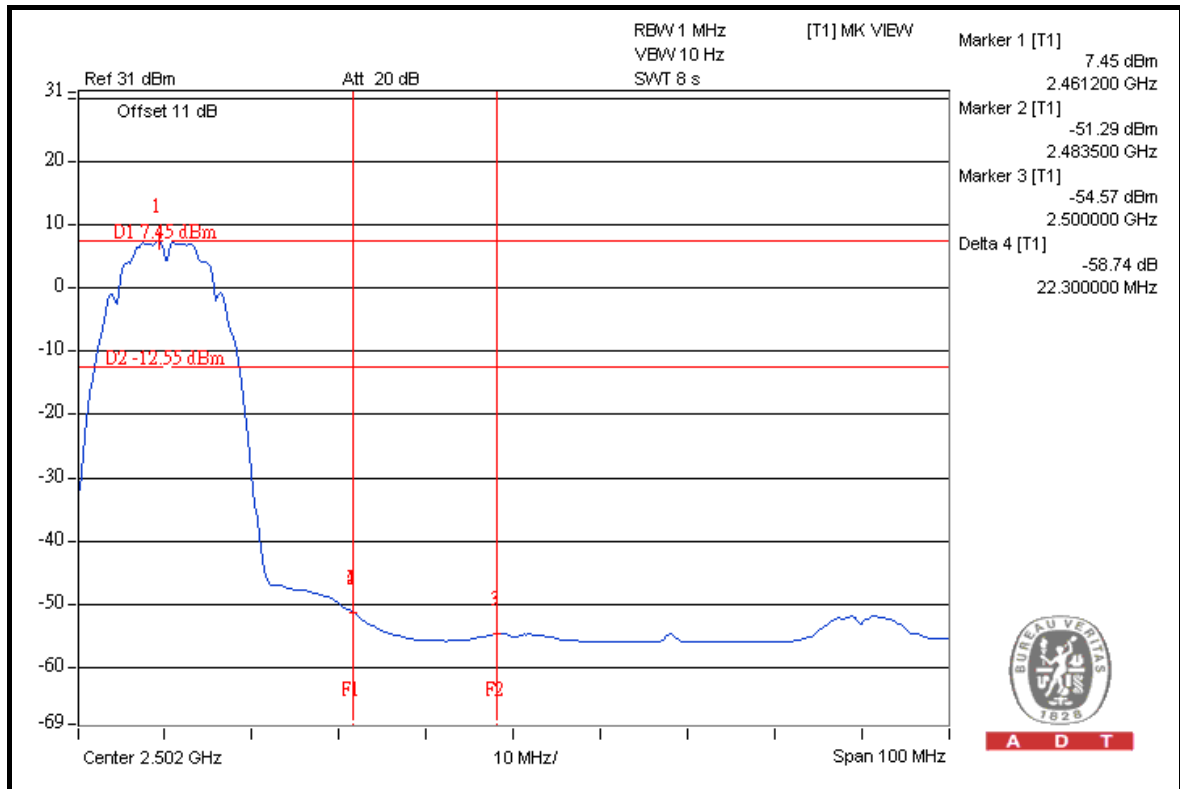
A D T



A D T



A D T

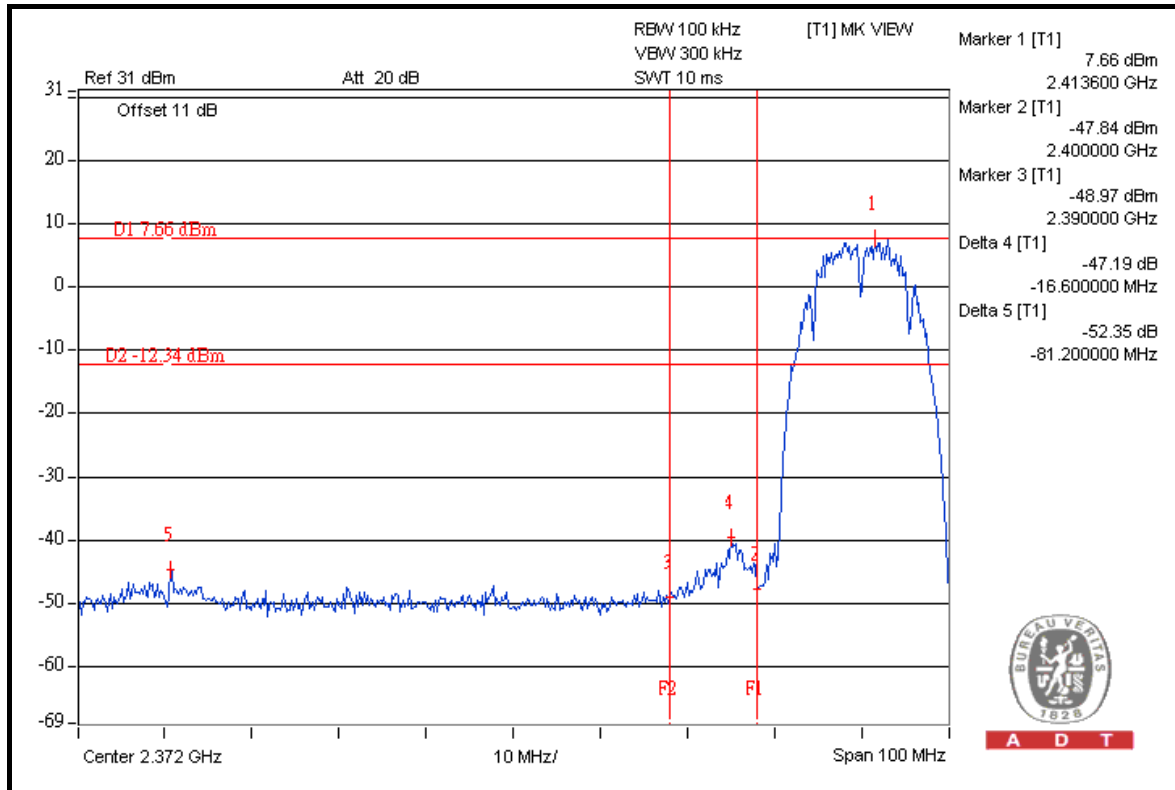




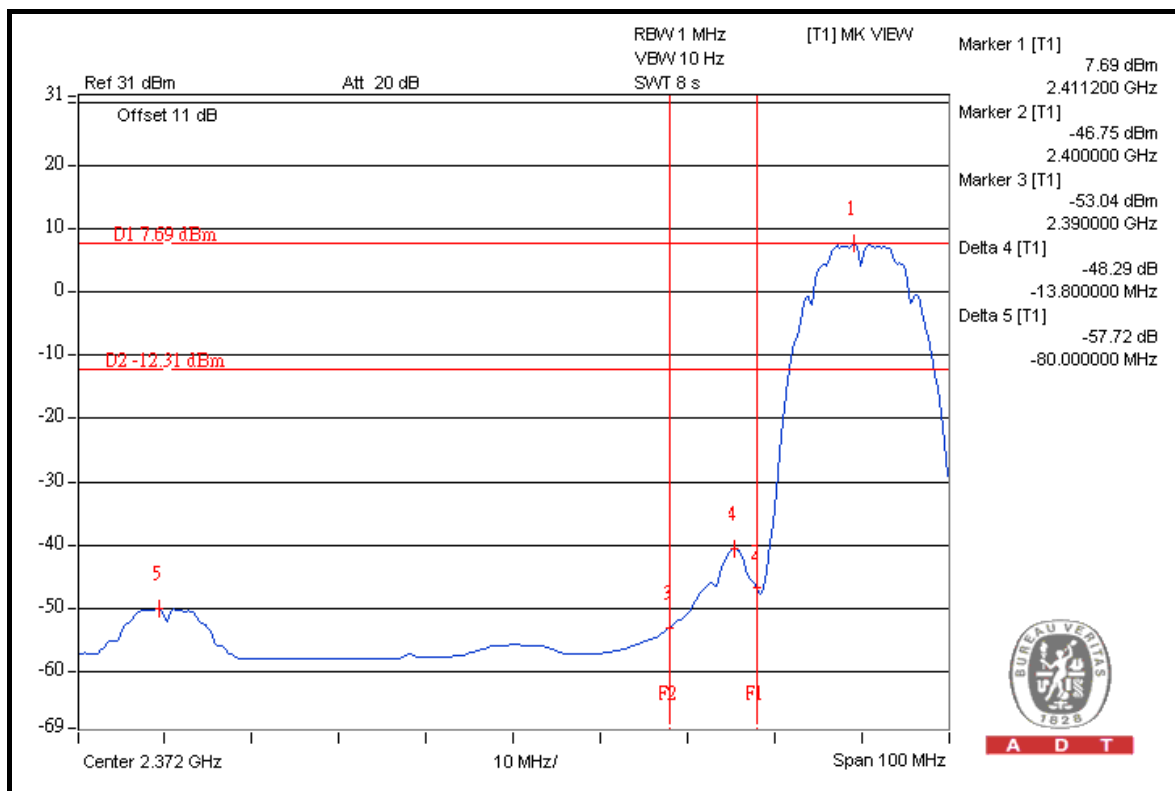


A D T

## CHAIN 2



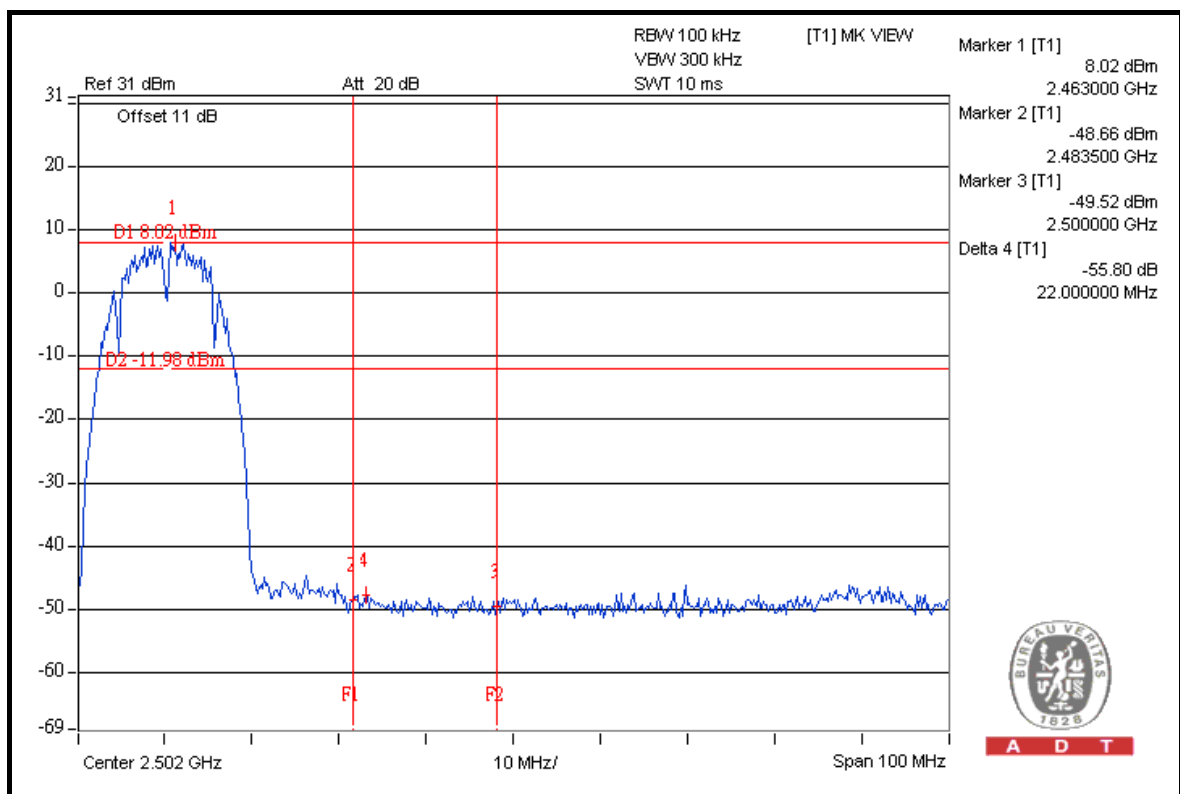
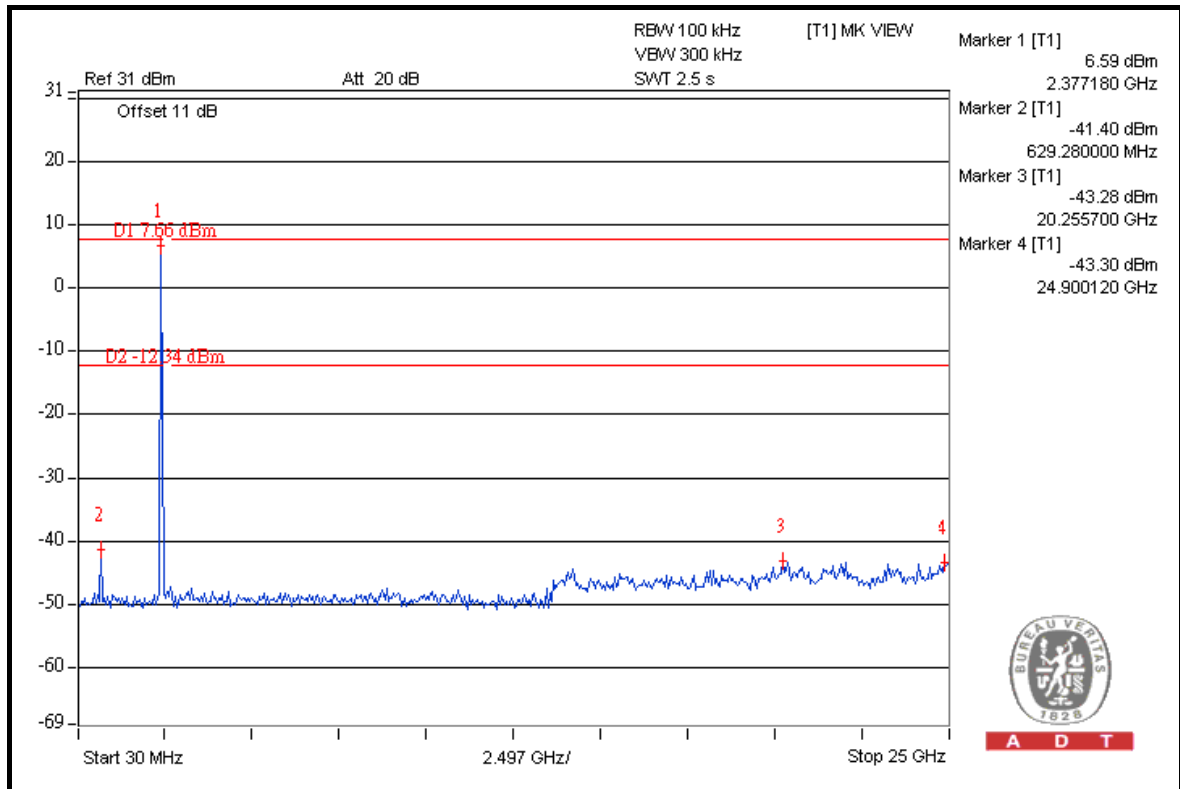
A D T



A D T

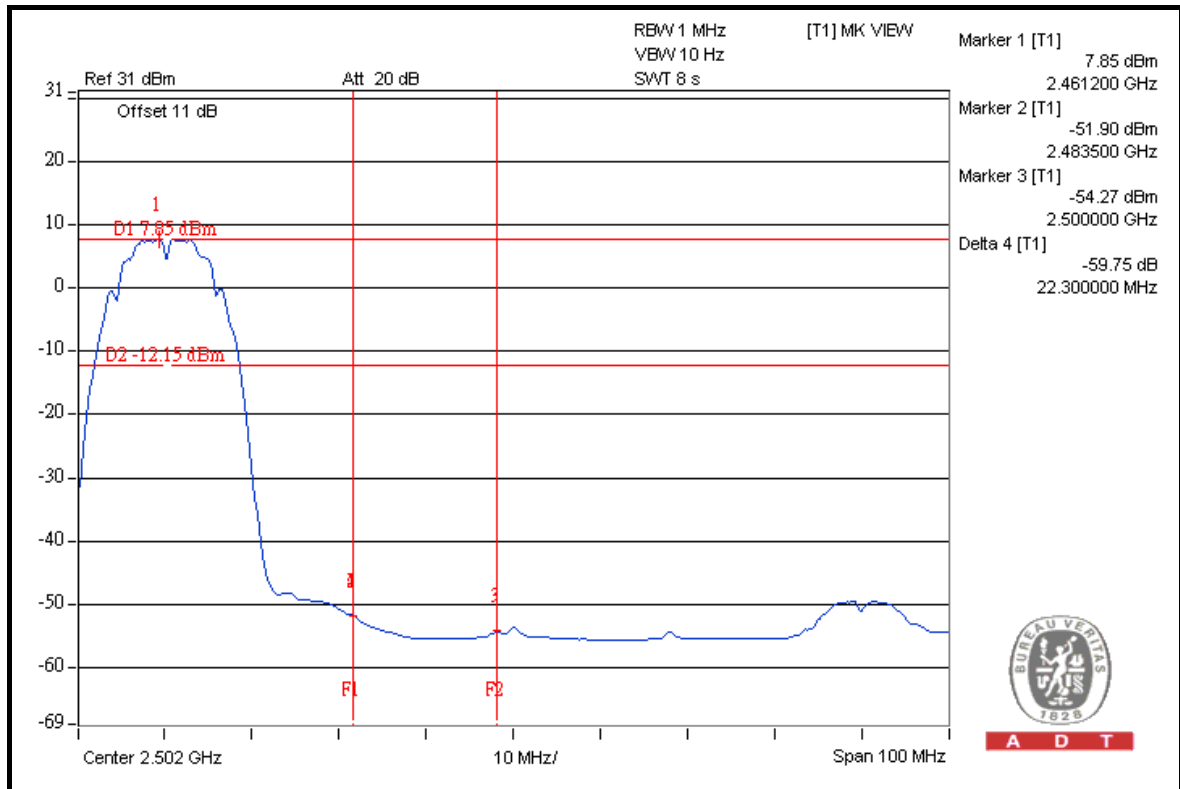


A D T

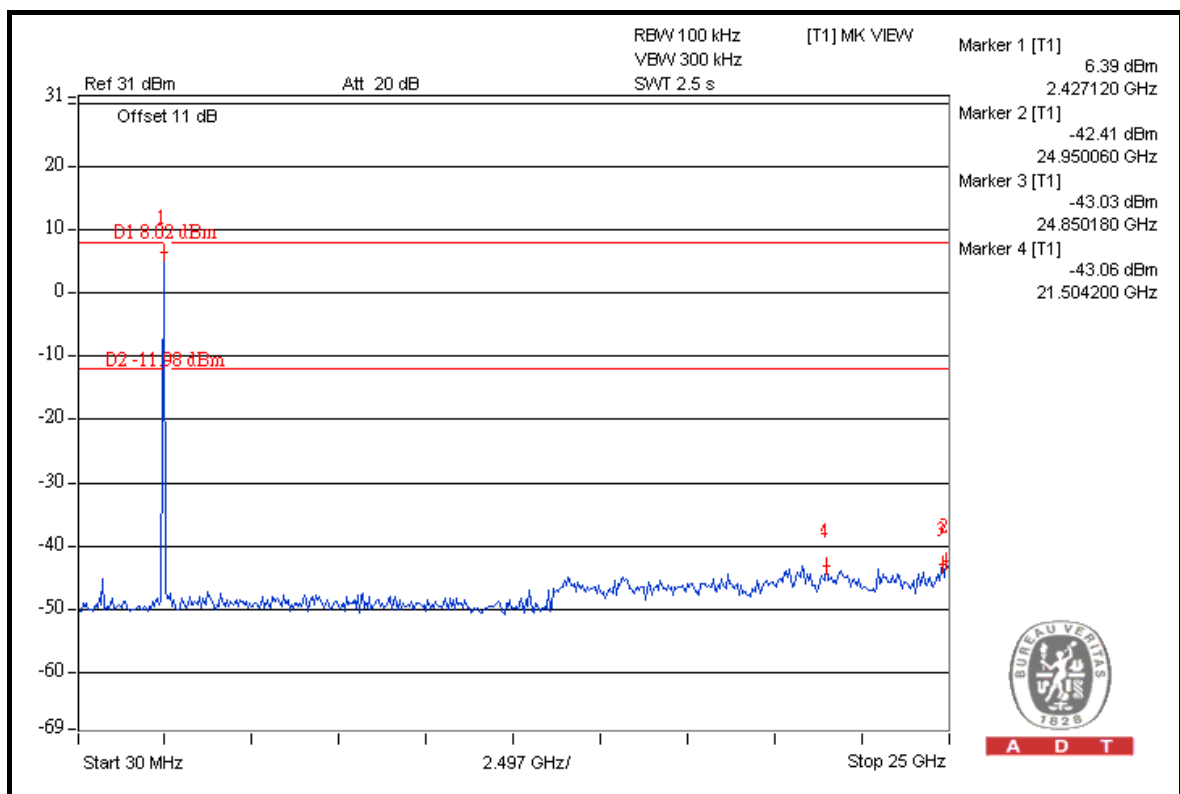




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## 802.11g

### RESTRICT BAND (2310 ~ 2390 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	117.1	50.13	66.97	74.00
2412.00 (AV)	108.8	56.47	52.33	54.00

### RESTRICT BAND (2483.5 ~ 2500 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	117.7	50.67	67.03	74.00
2462.00 (AV)	108.5	56.04	52.46	54.00

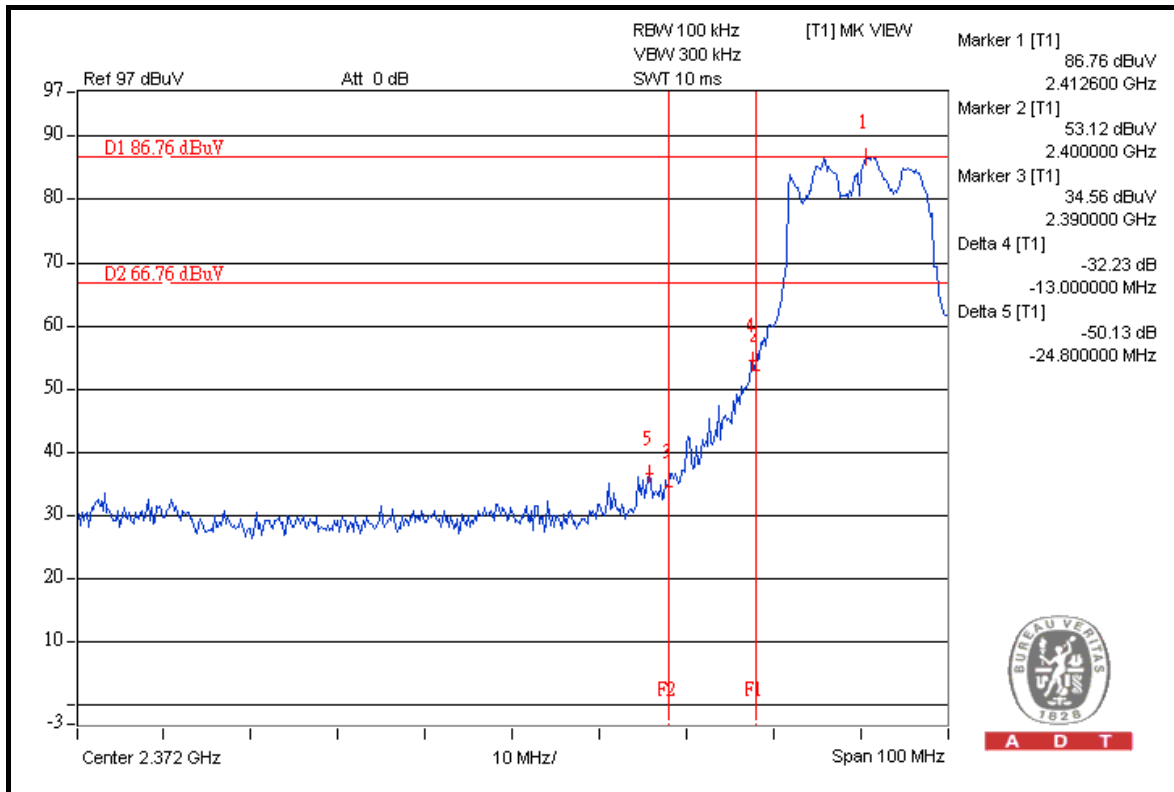
#### NOTE:

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

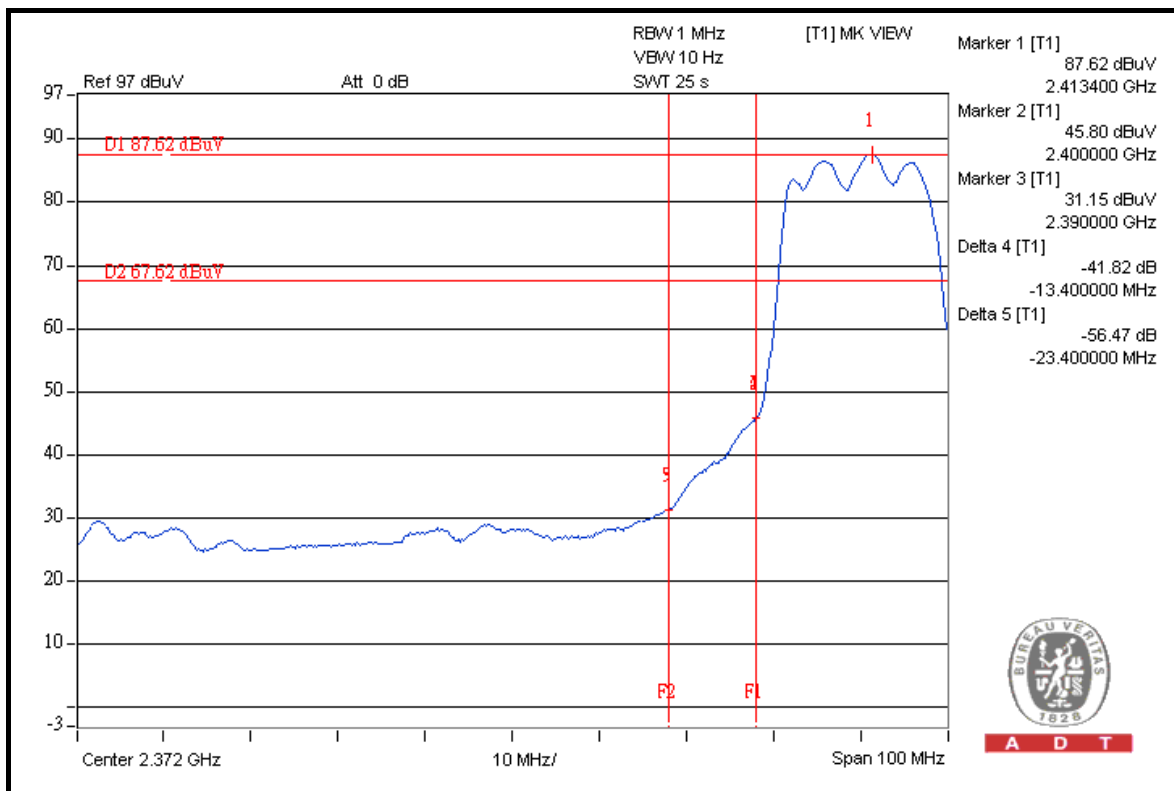


A D T

### FOR RADIATED MEASURED (THREE CHAINS ON)



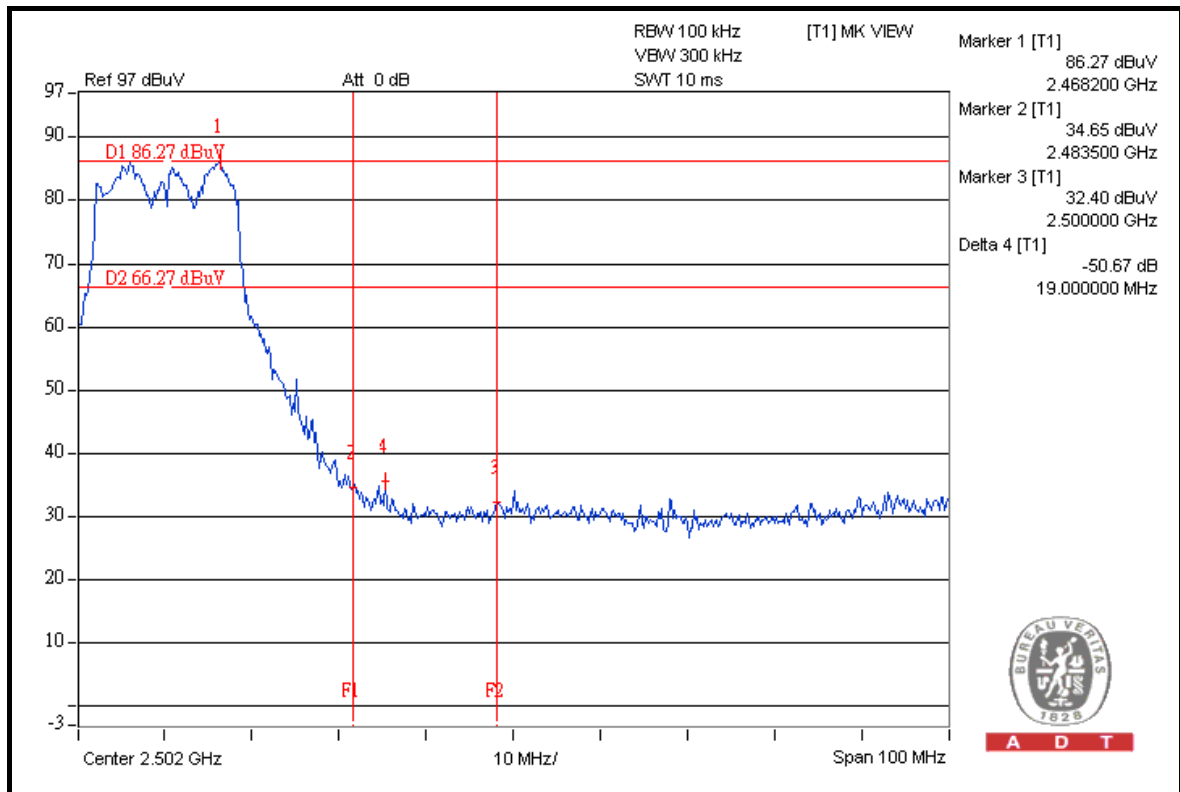
A D T



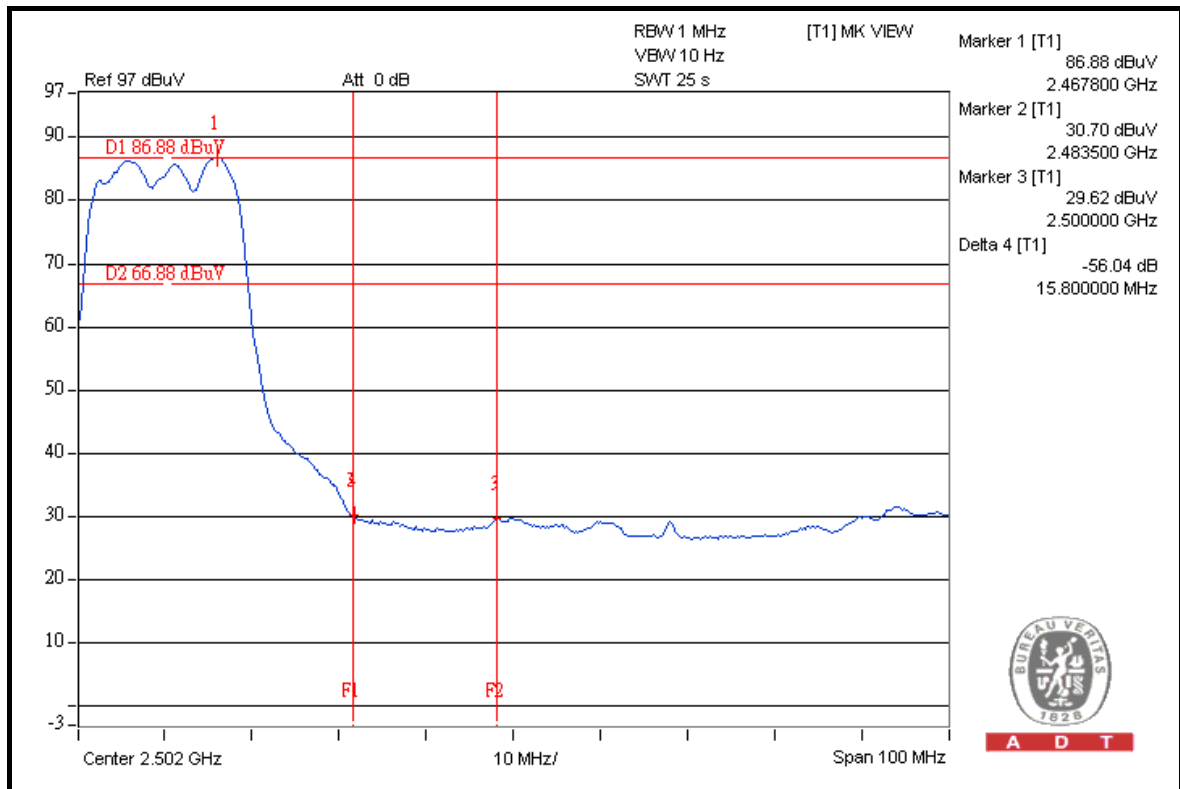
A D T



A D T



A D T

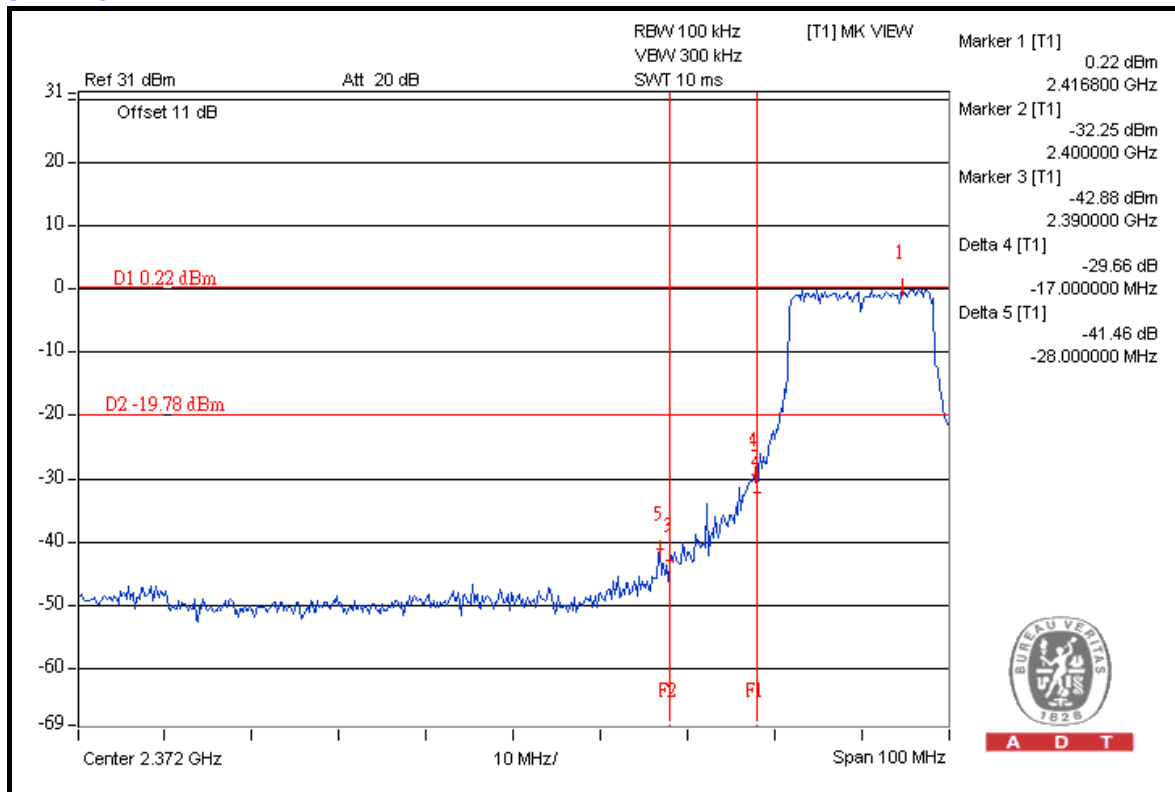


A D T

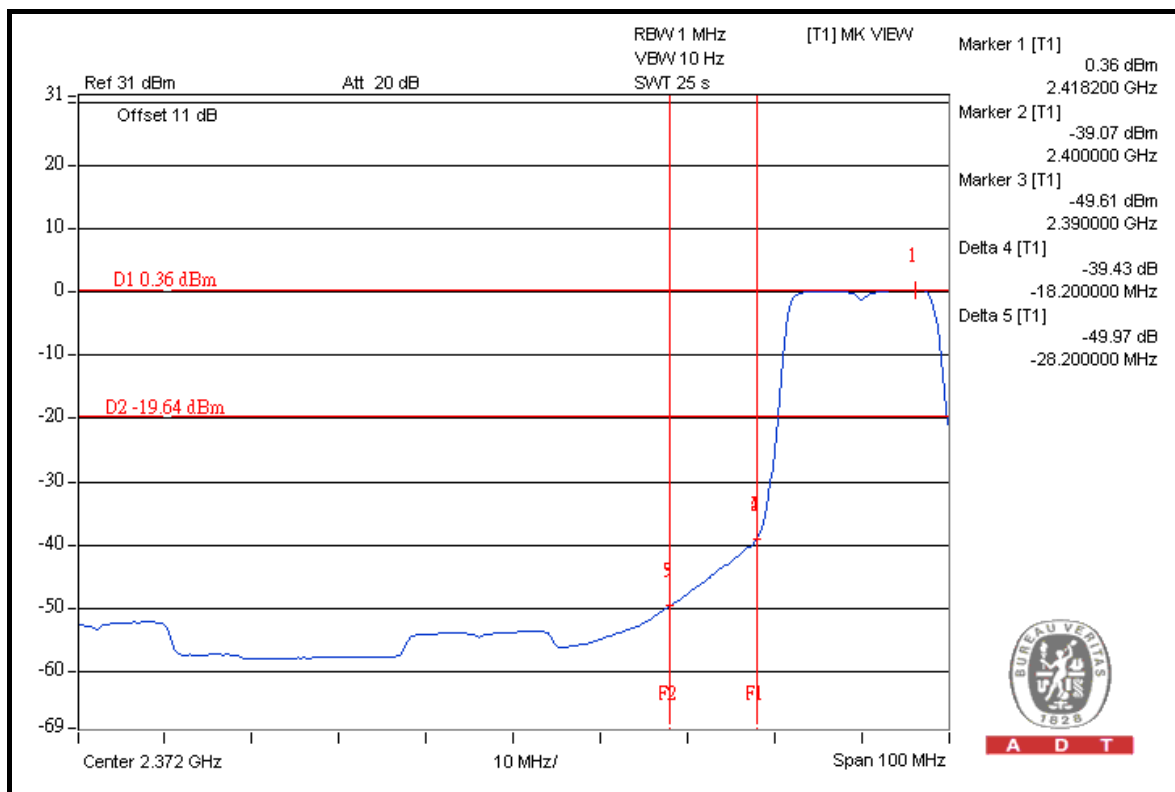


A D T

## FOR CONDUCTED MEASURED CHAIN 0



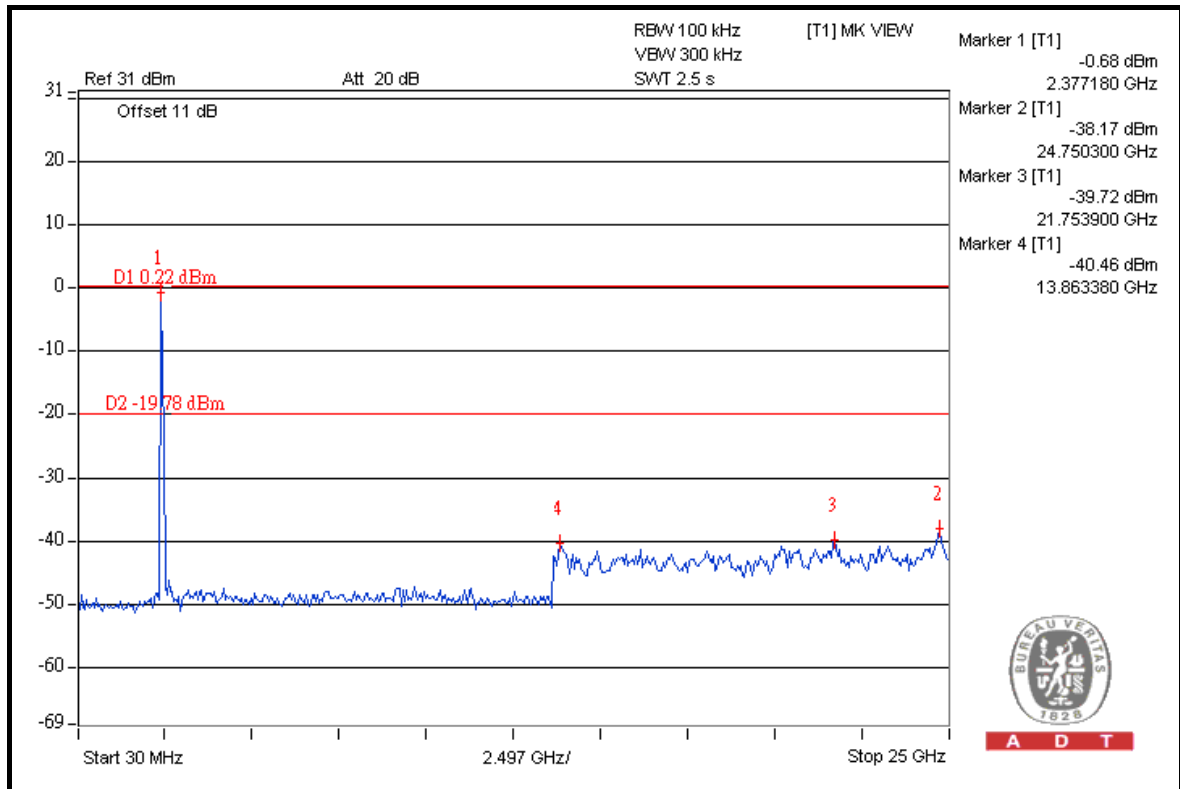
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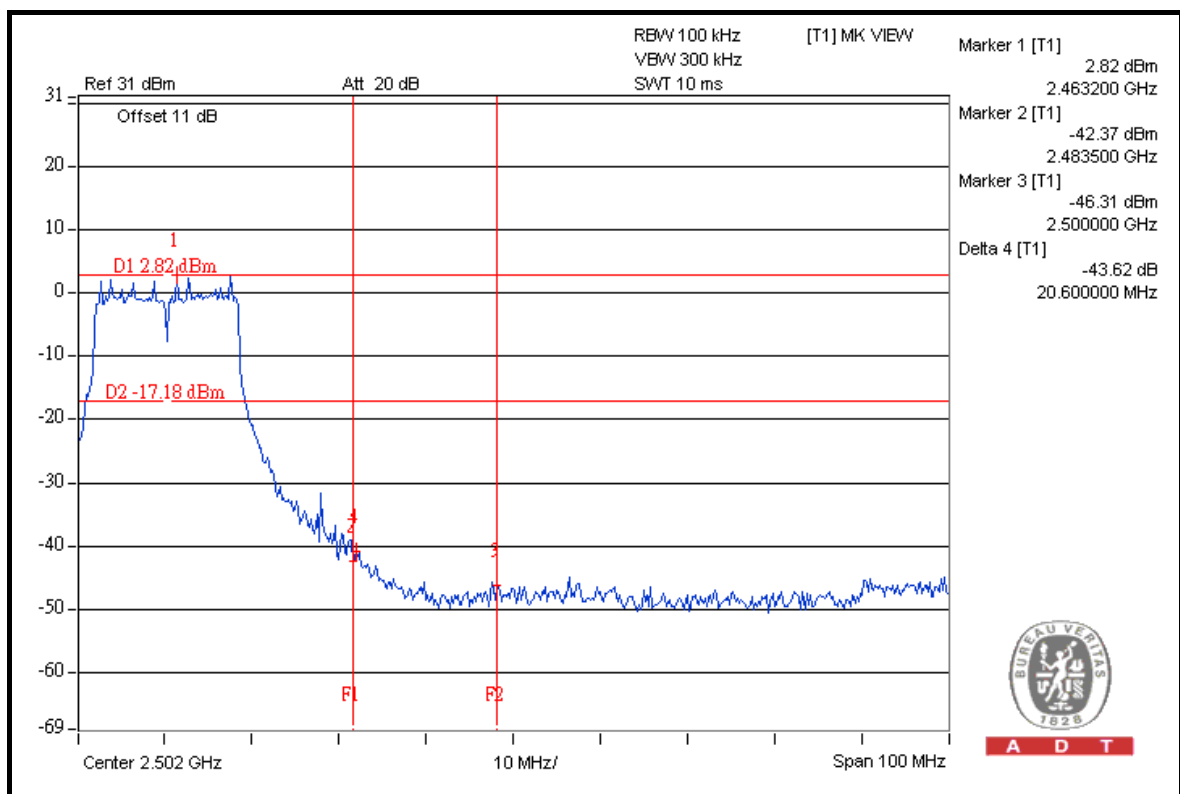
A D T



A D T



A D T

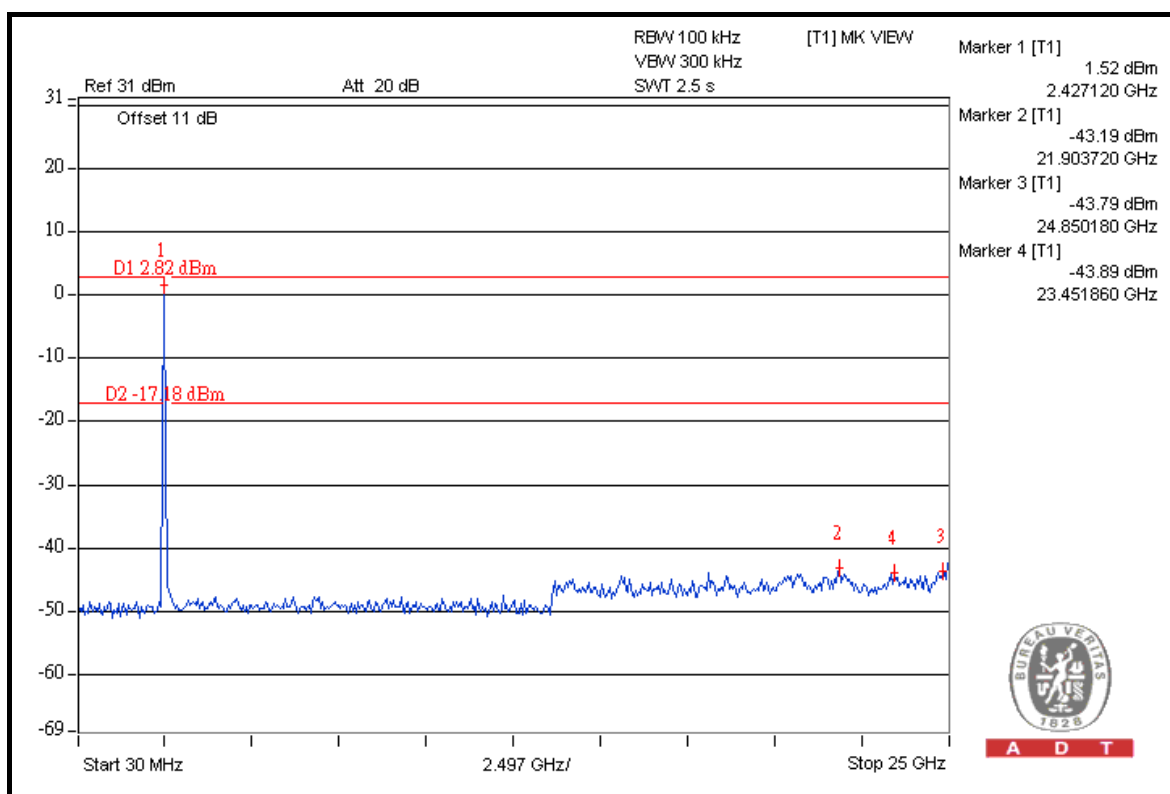
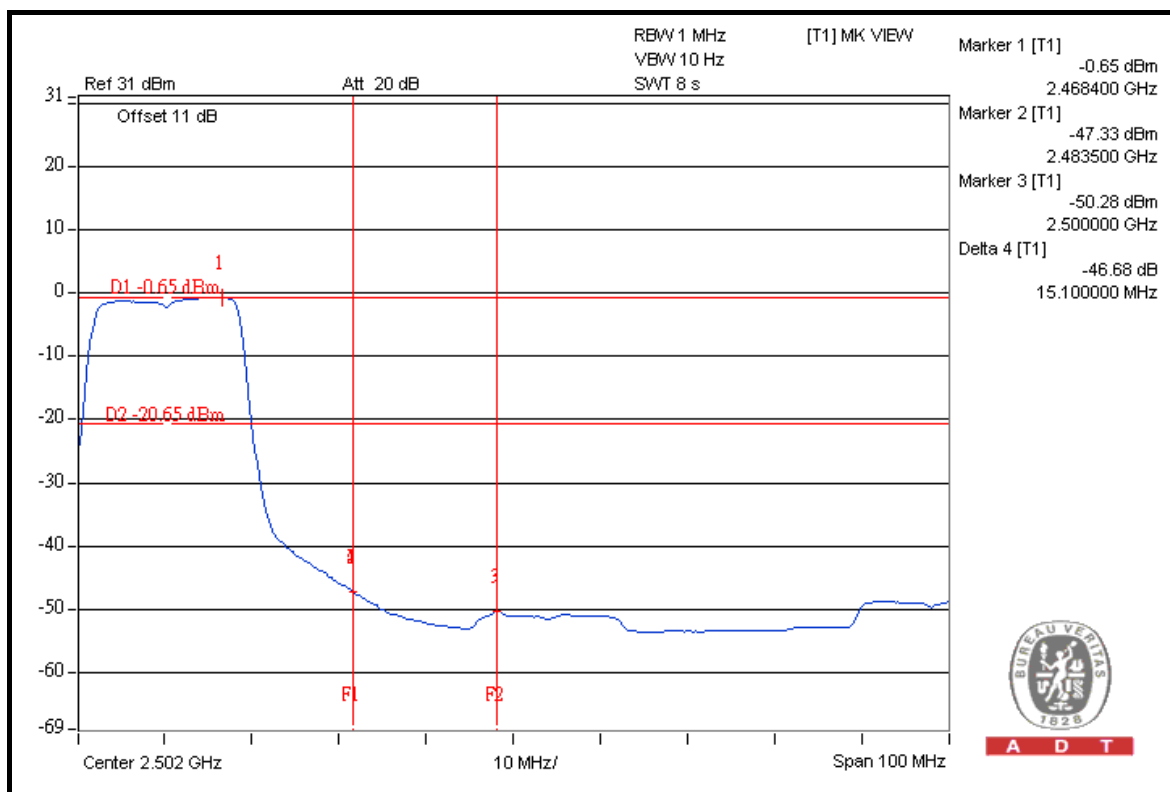


A D T





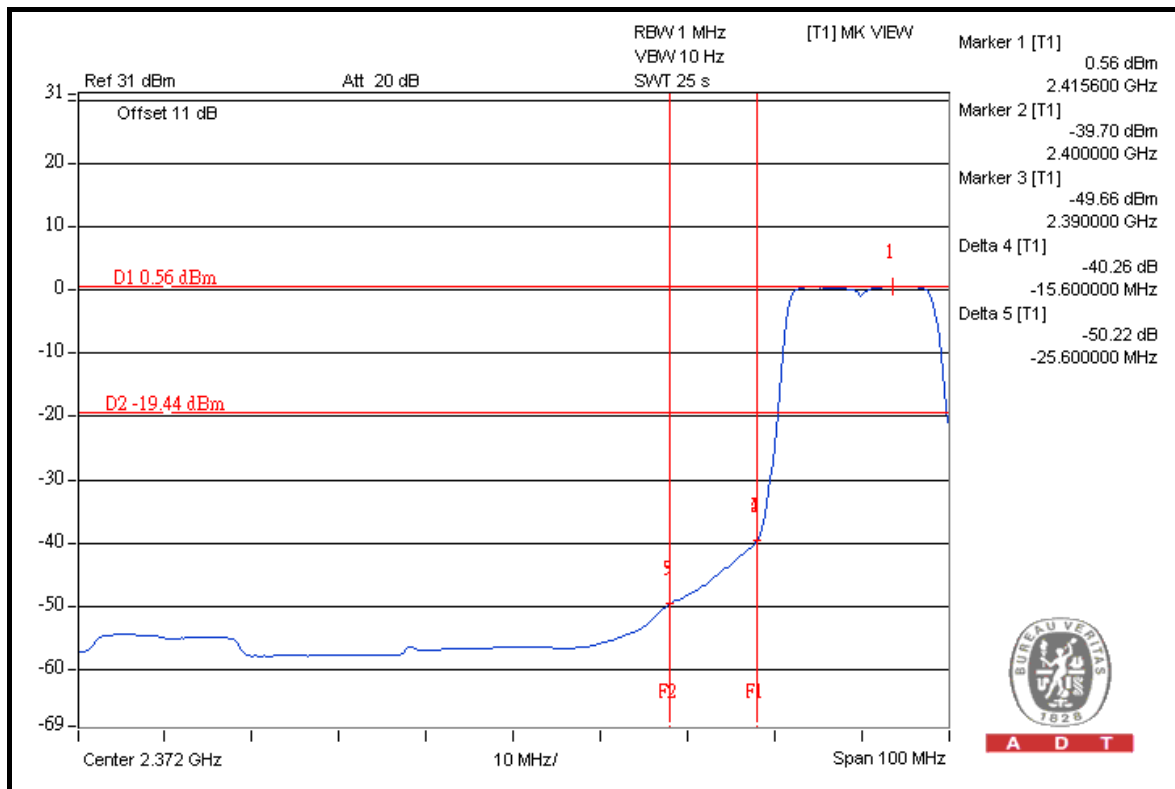
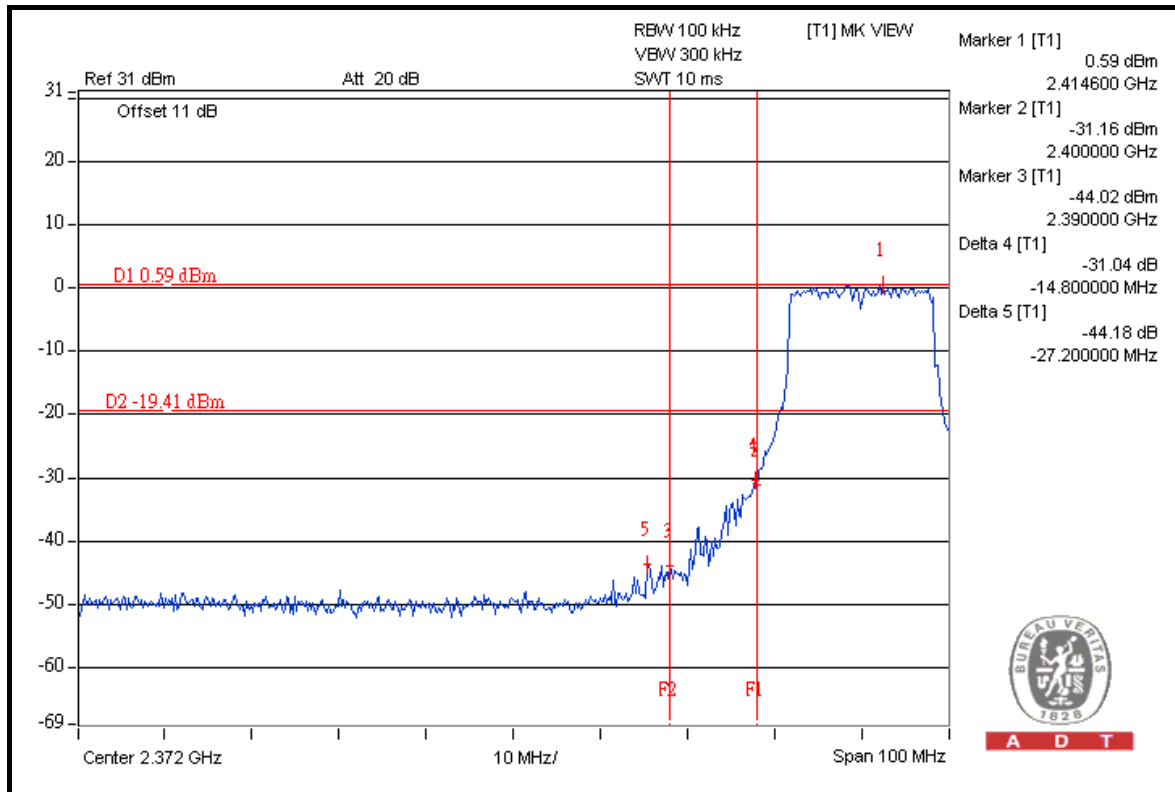
A D T





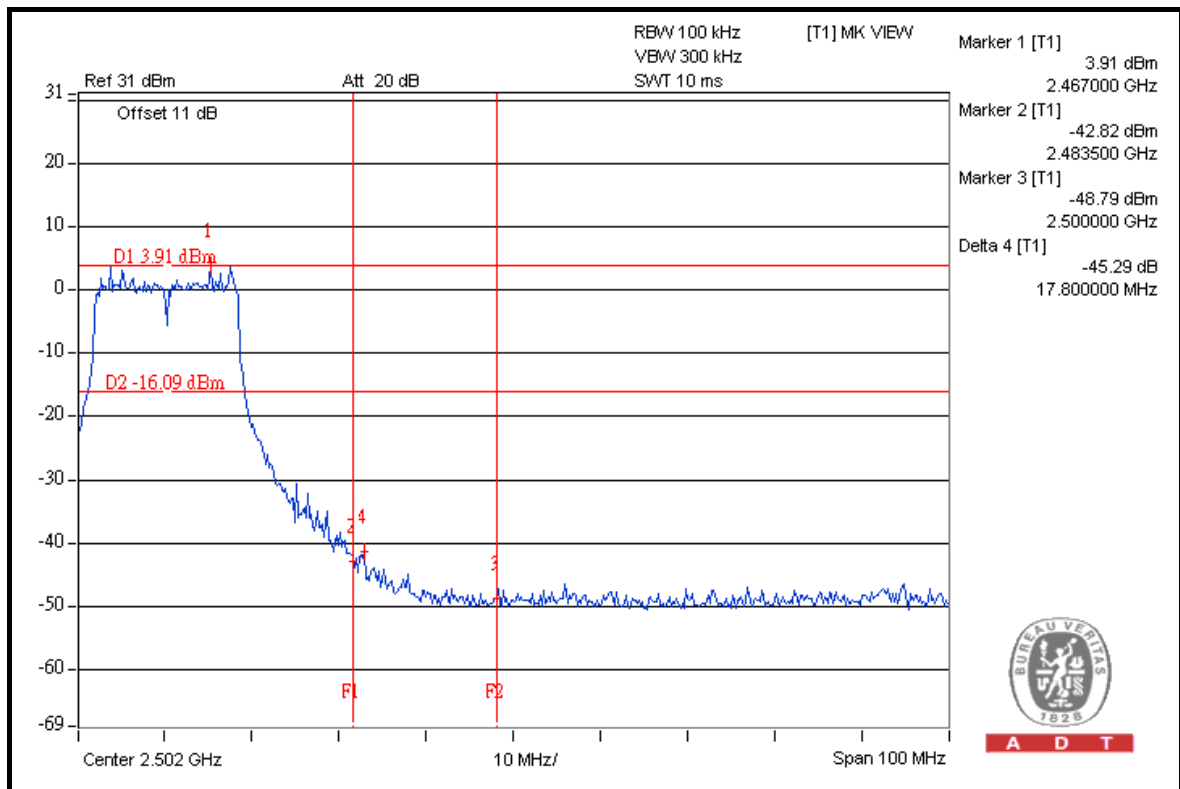
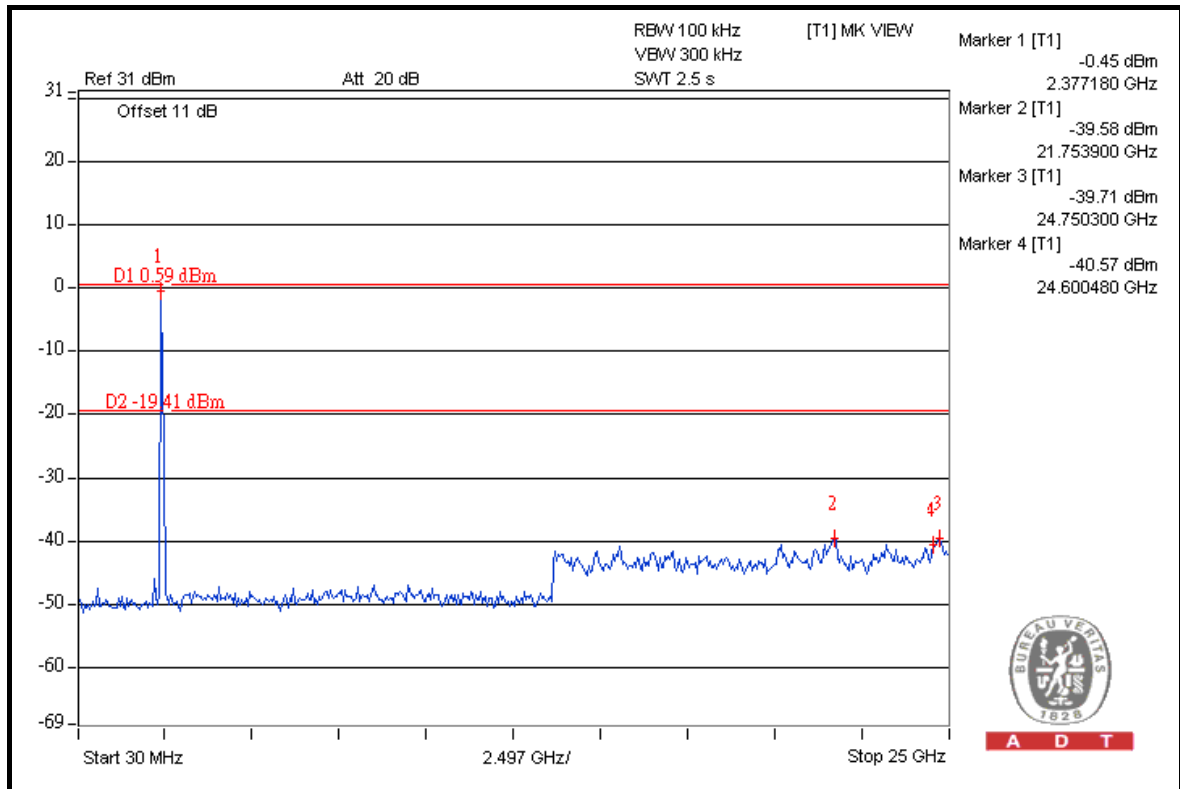
A D T

## CHAIN 1





A D T

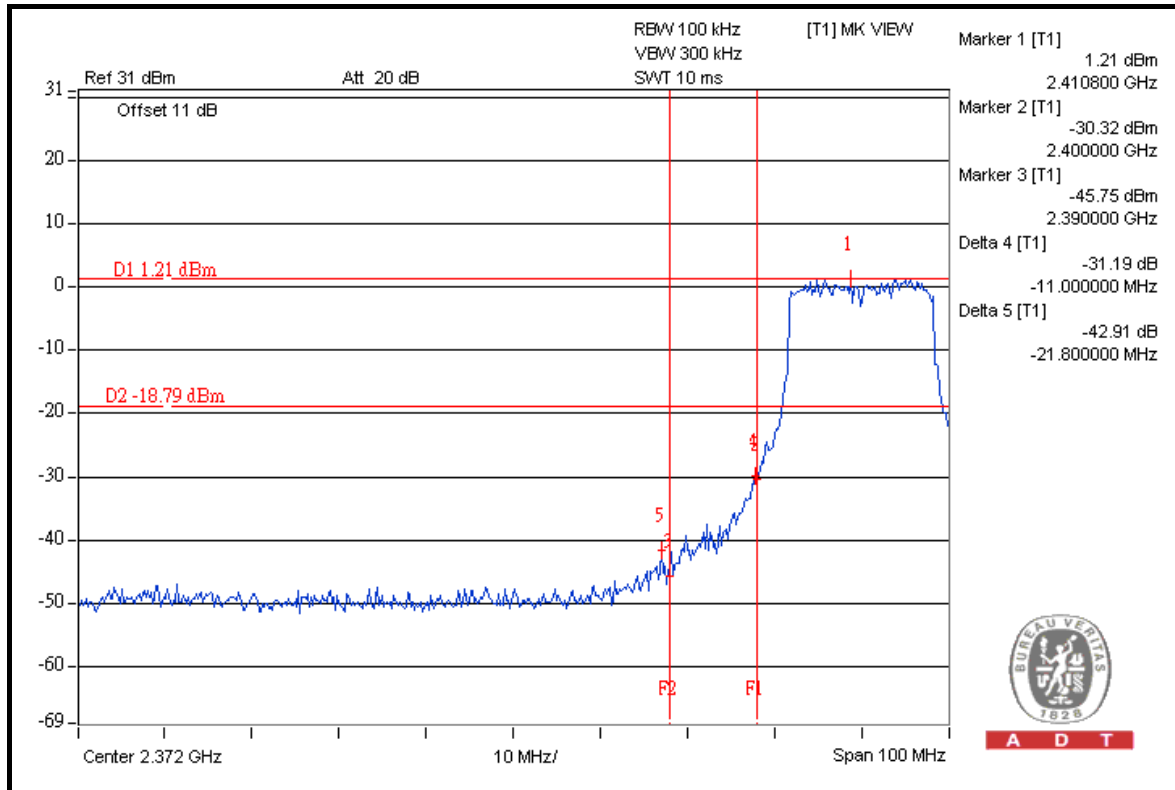




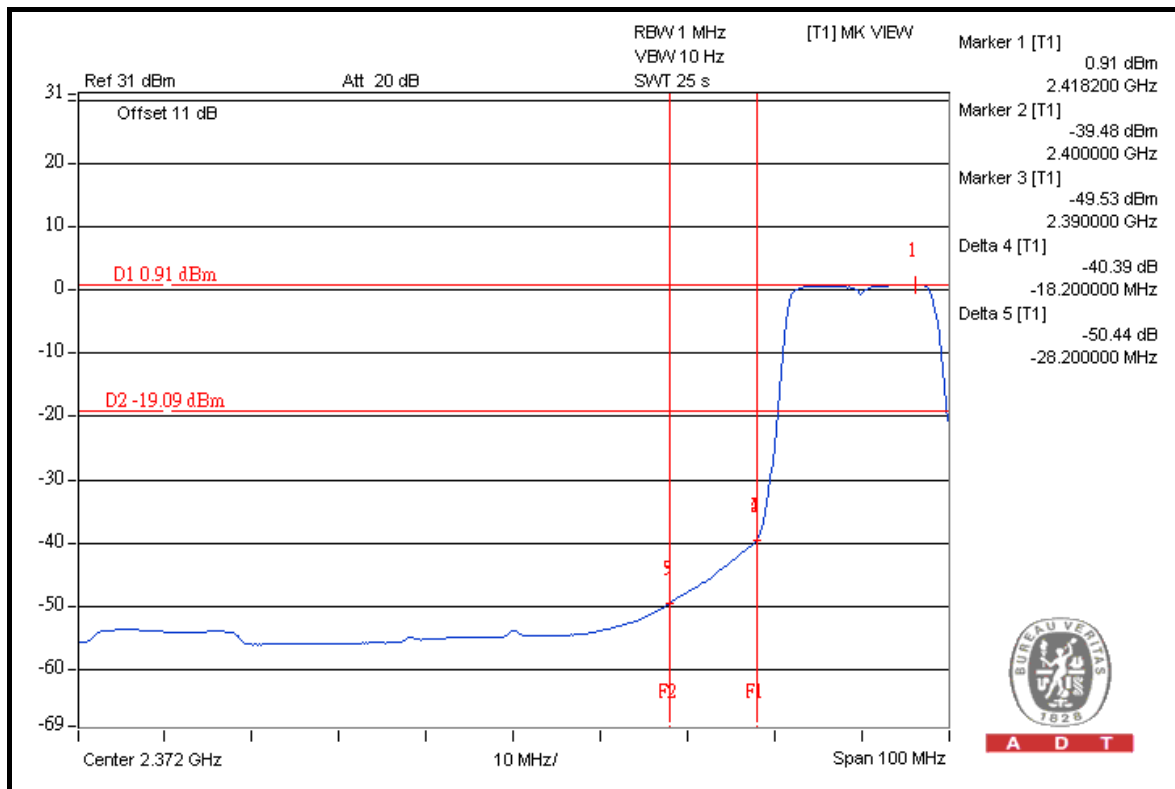


A D T

## CHAIN 2



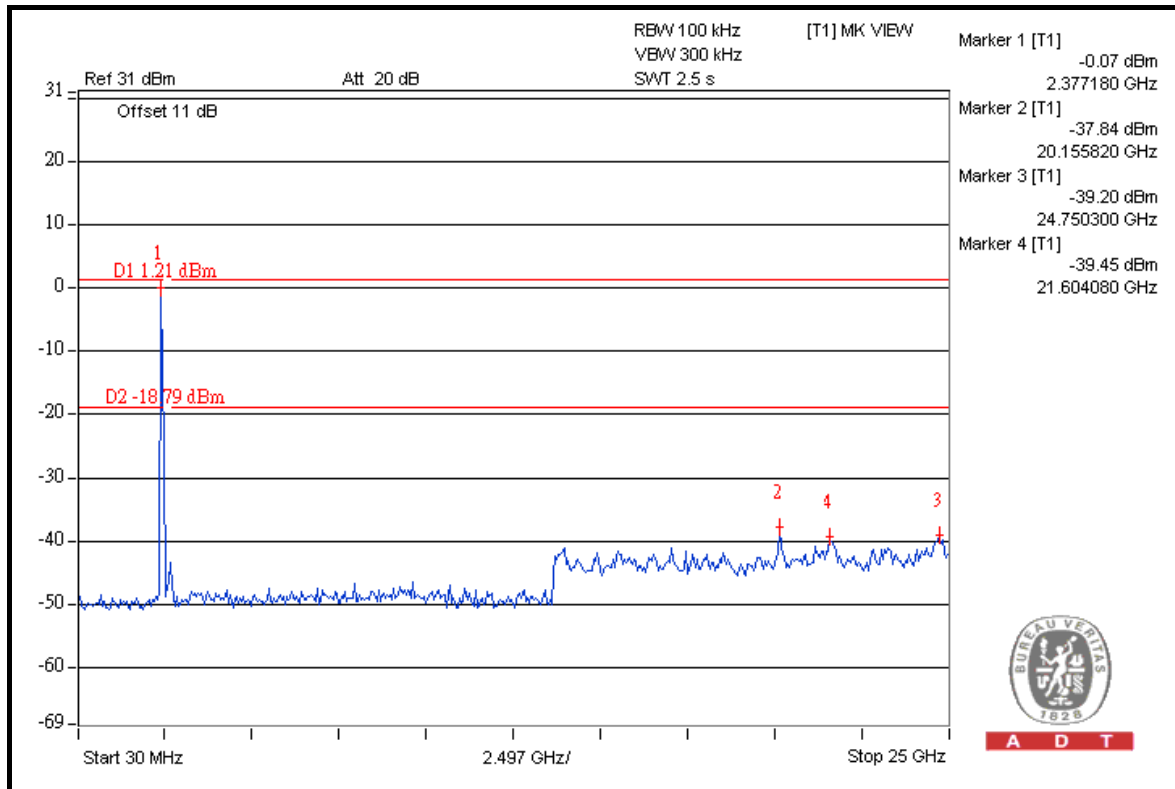
A D T



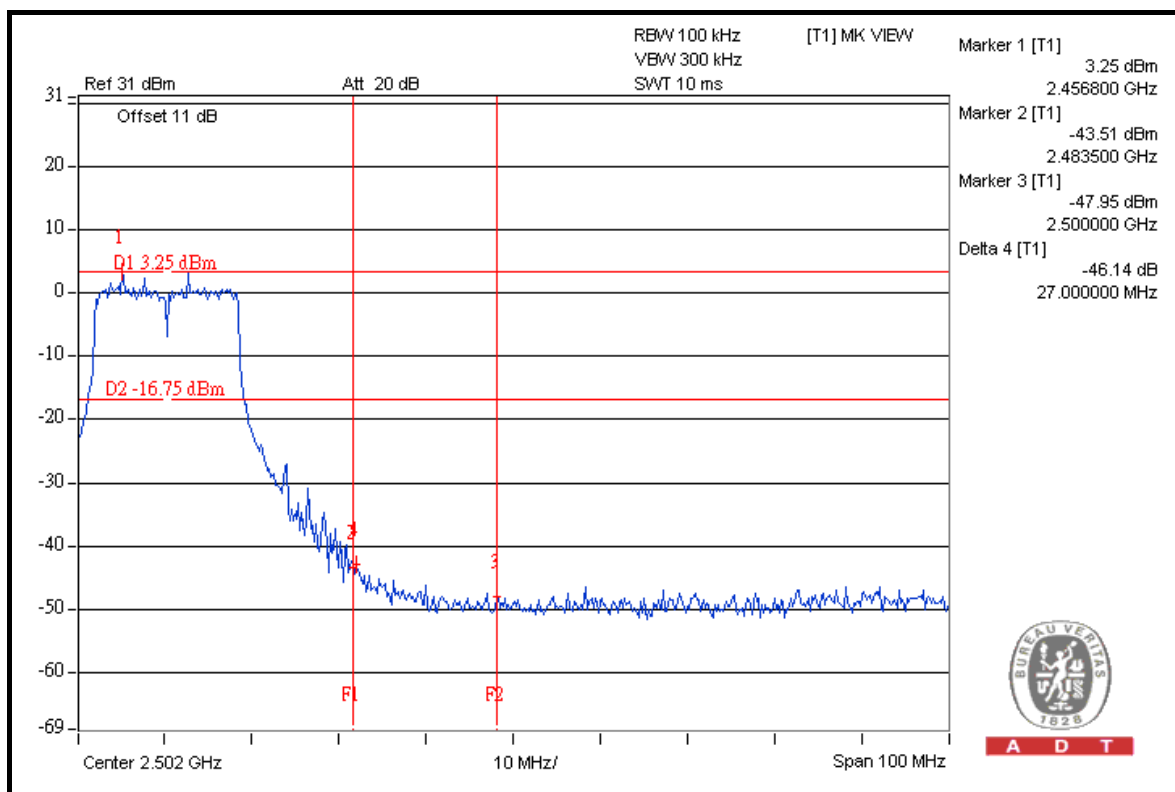
A D T



A D T



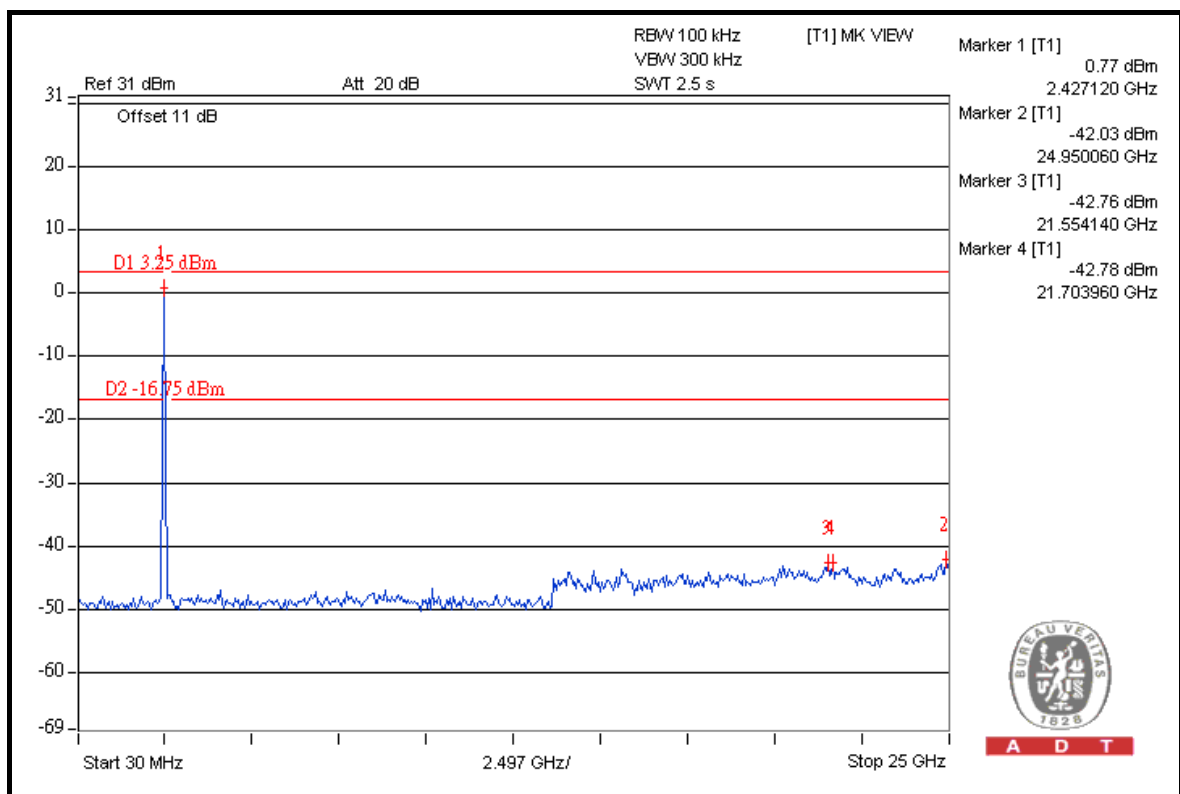
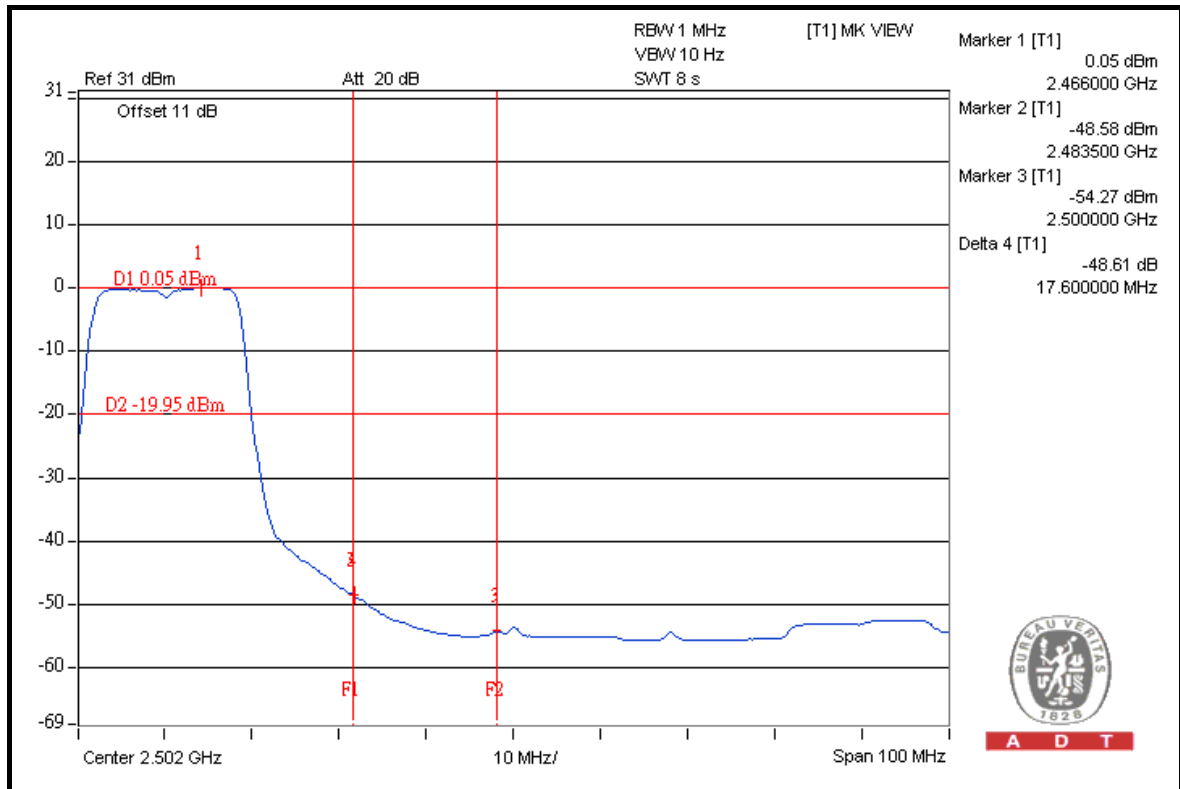
A D T



A D T



A D T



### 802.11n (20MHz)

#### RESTRICT BAND (2310 ~ 2390 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	116.2	49.57	66.63	74.00
2412.00 (AV)	105.3	53.55	51.75	54.00

#### RESTRICT BAND (2483.5 ~ 2500 MHz)

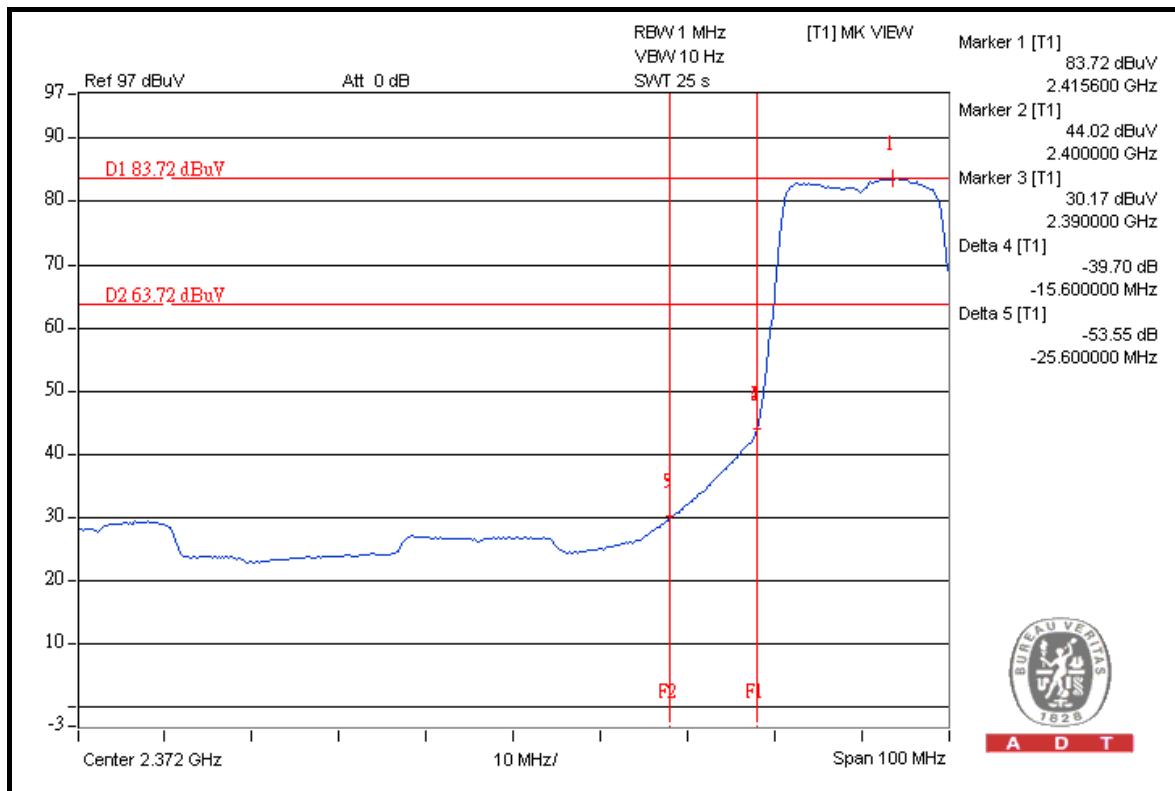
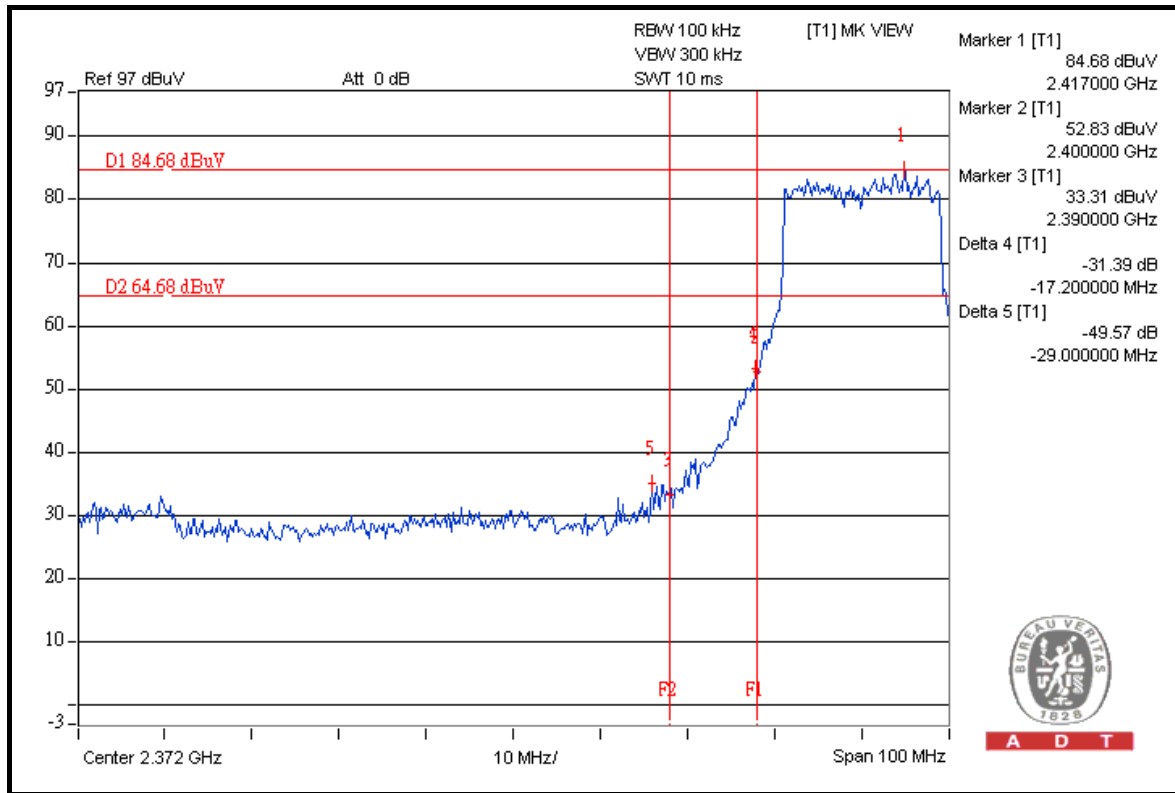
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	116.4	49.44	66.96	74.00
2462.00 (AV)	106.0	53.04	52.96	54.00

#### 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 (THREE CHAINS ON)

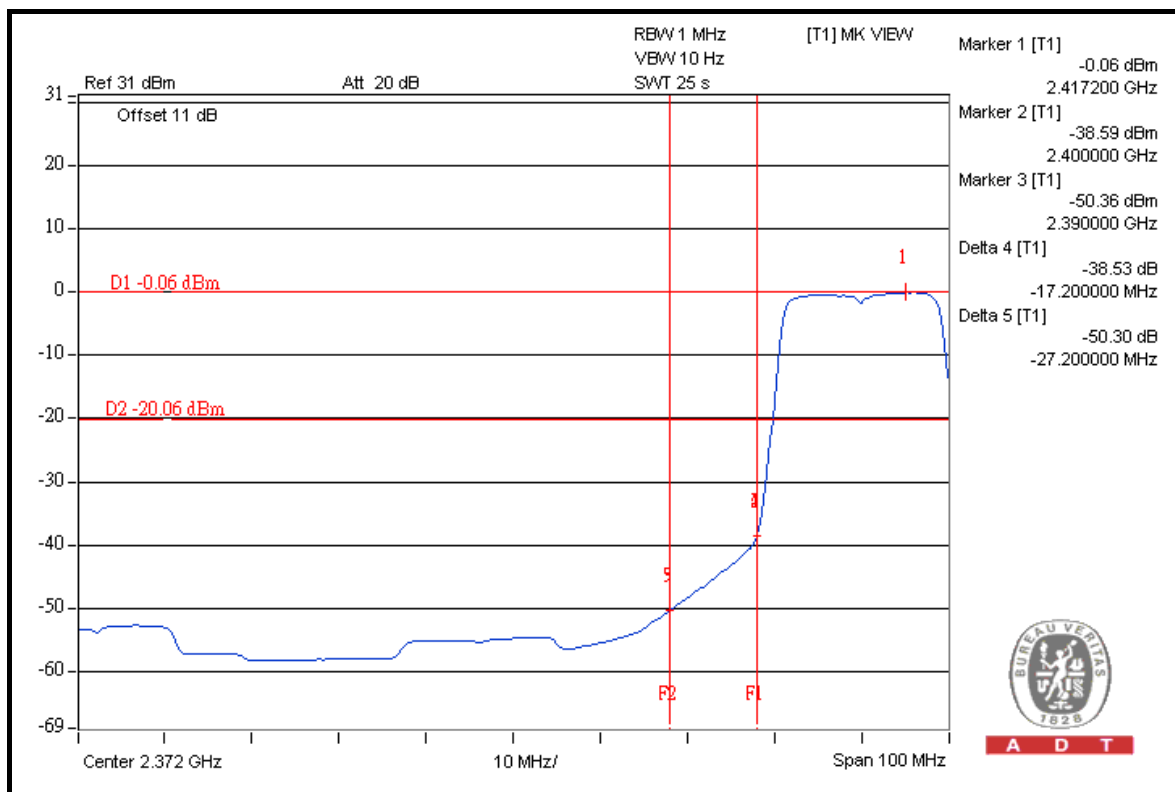
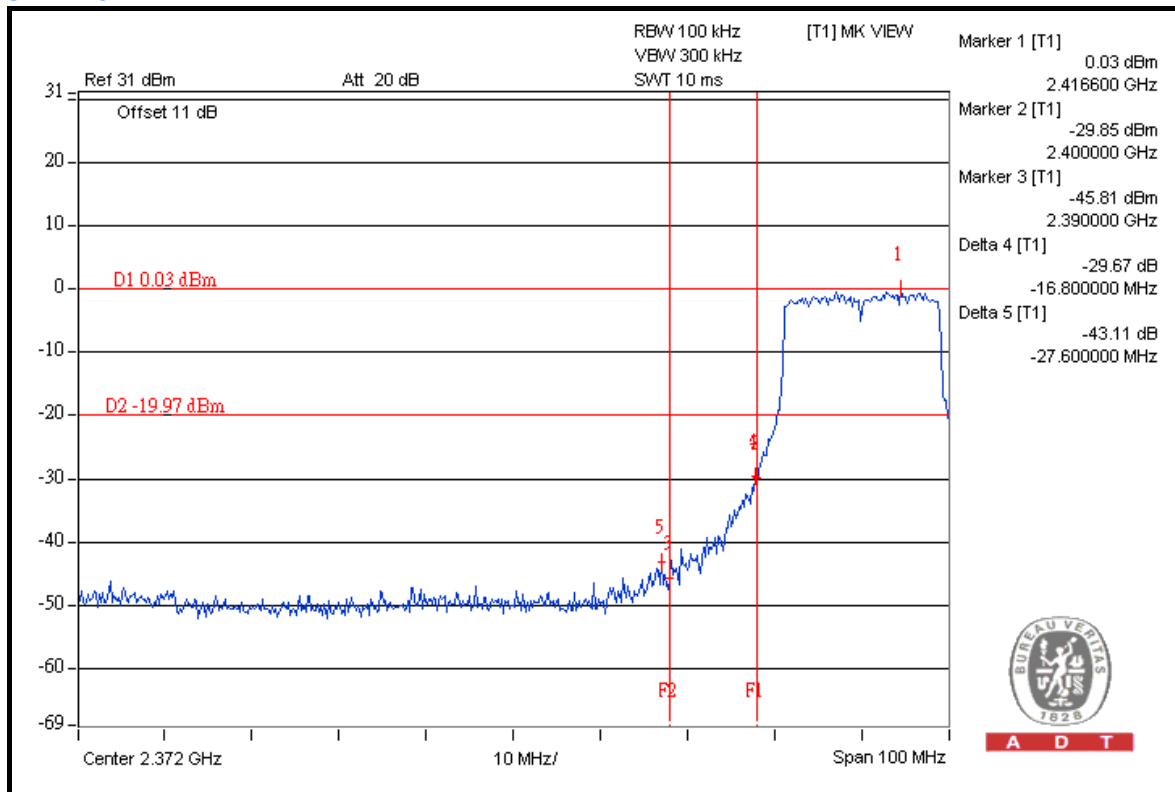






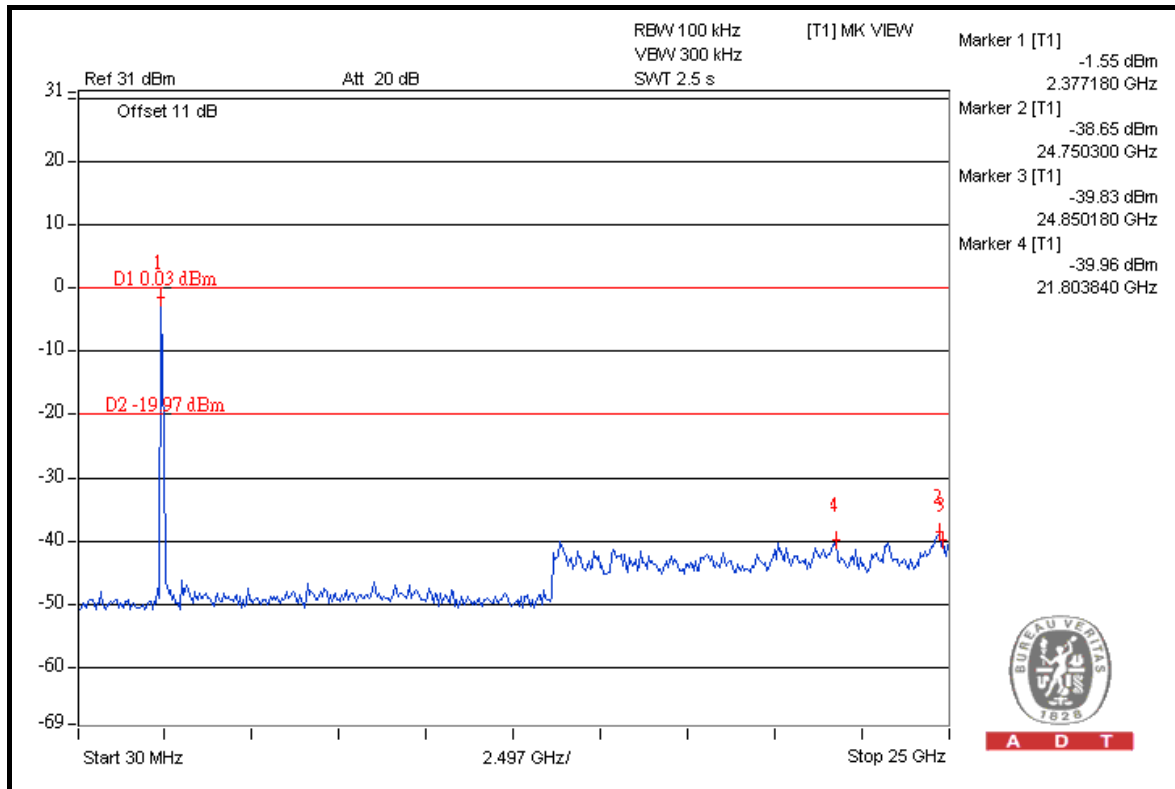
A D T

## FOR CONDUCTED MEASURED CHAIN 0

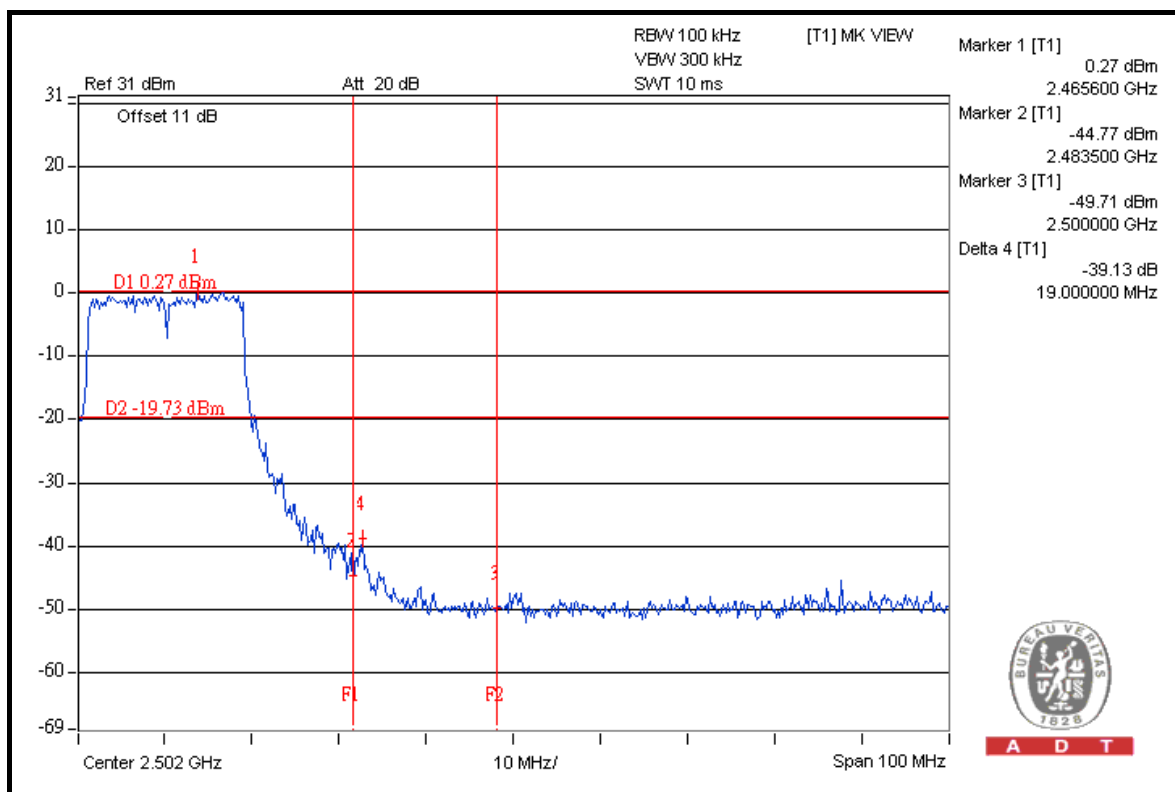




A D T



A D T



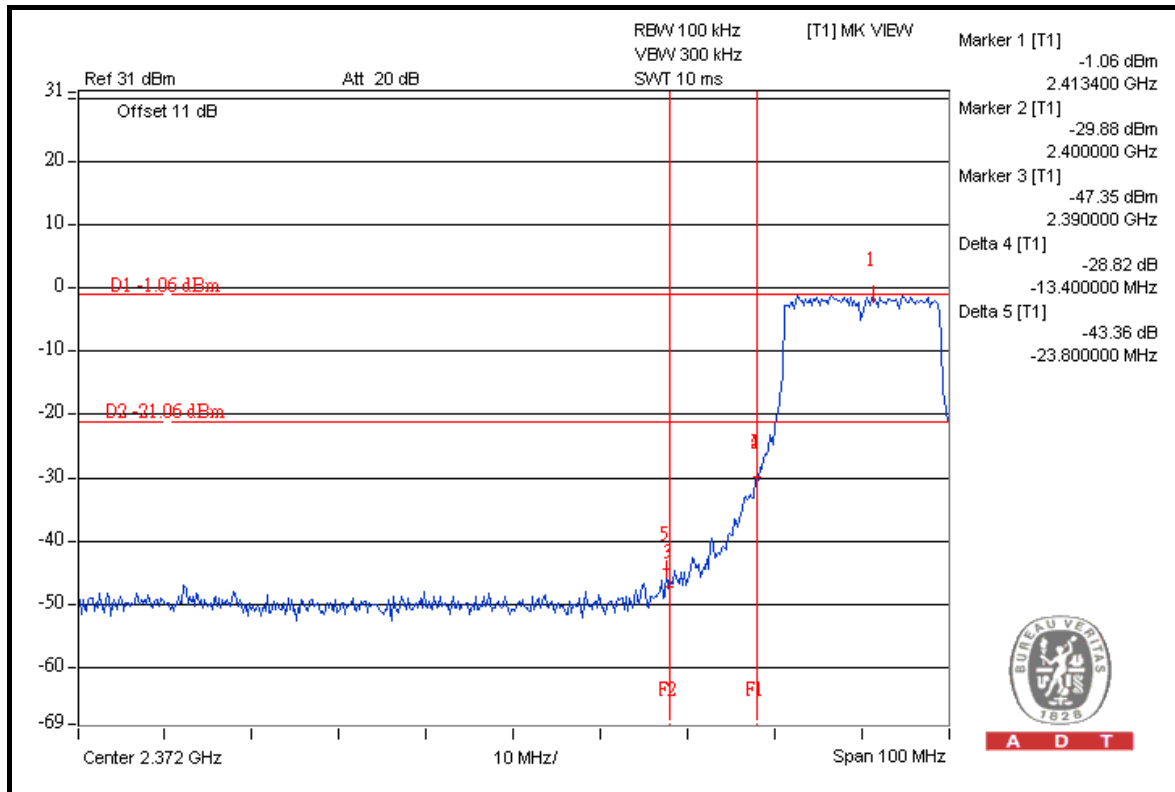
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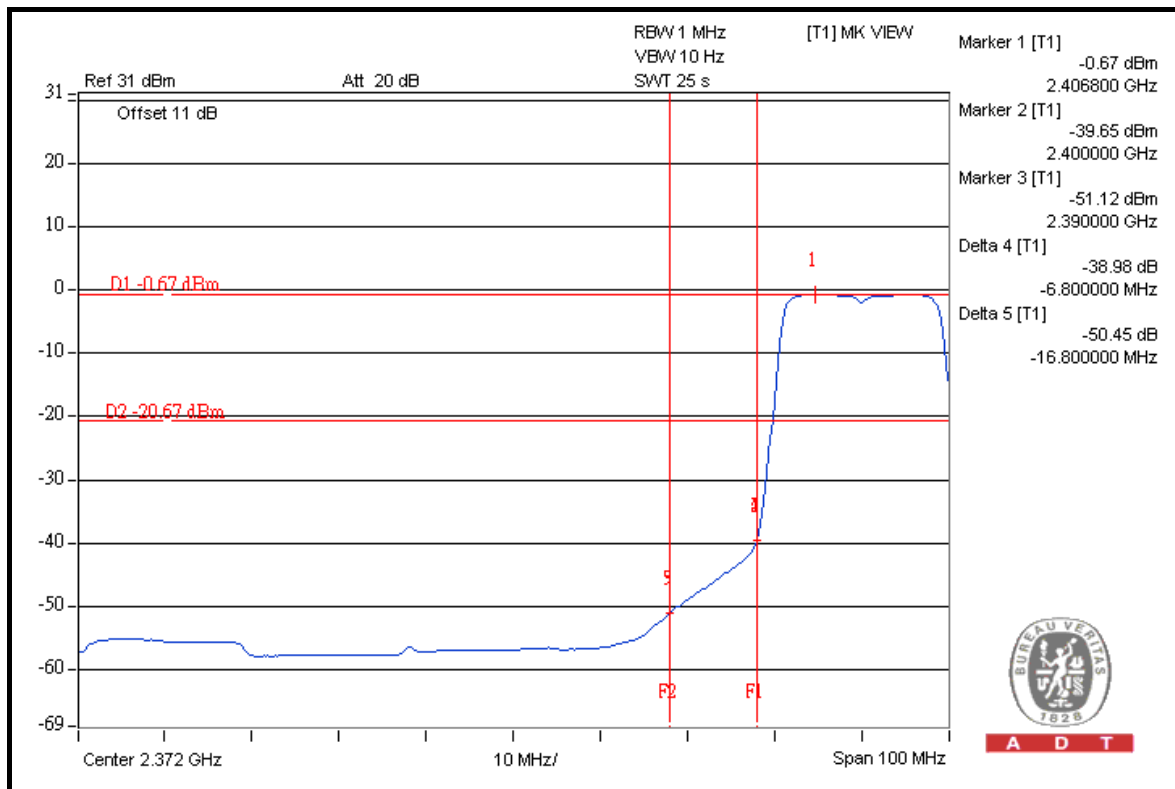


A D T

## CHAIN 1



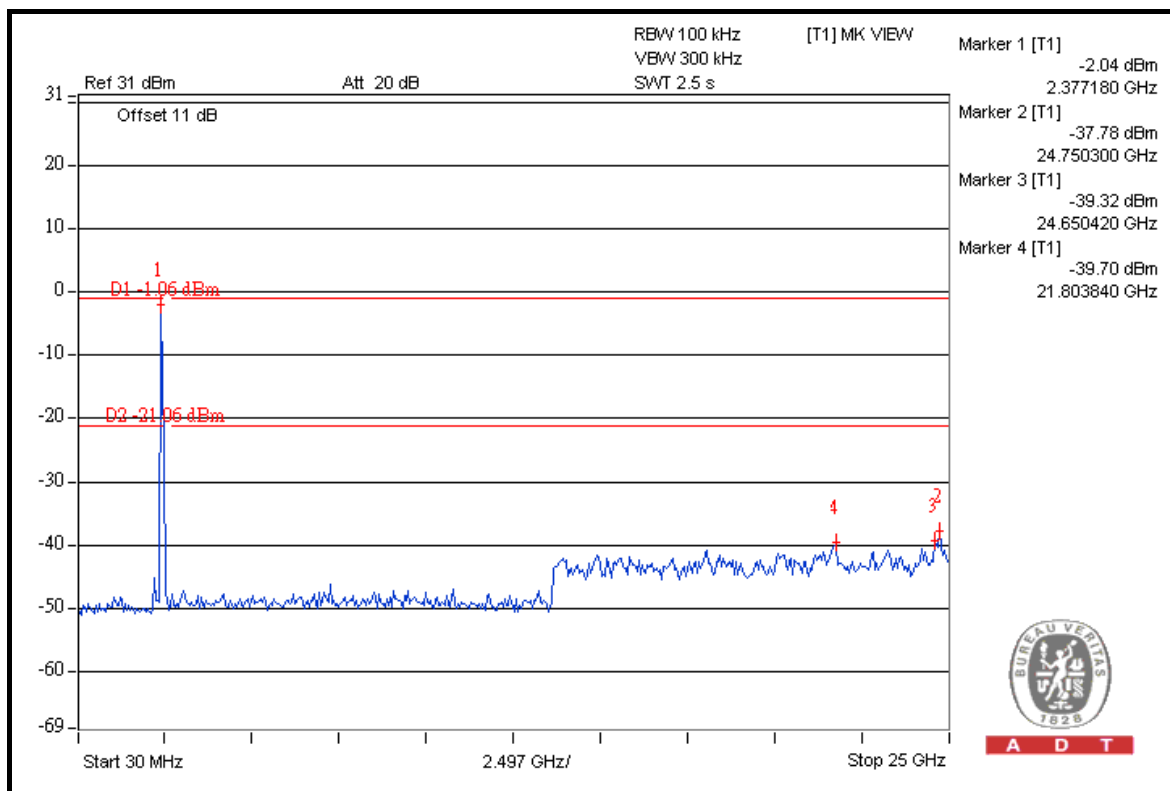
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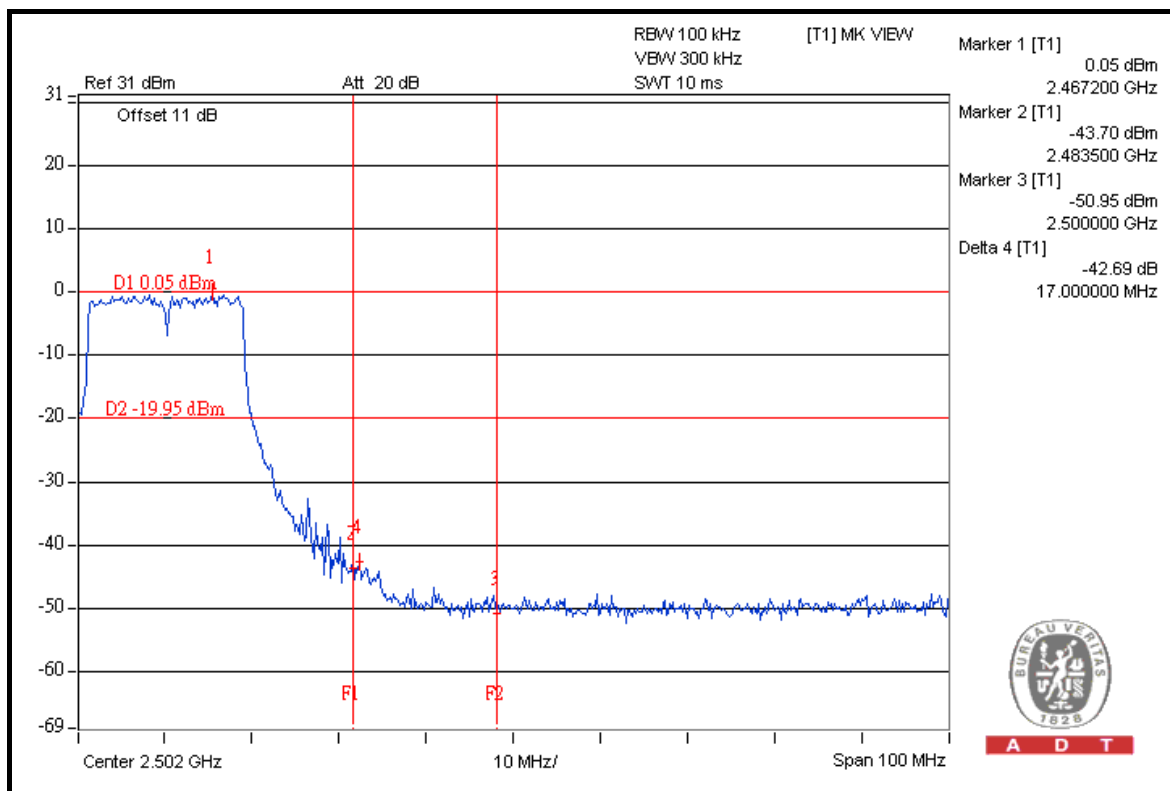
A D T



A D T



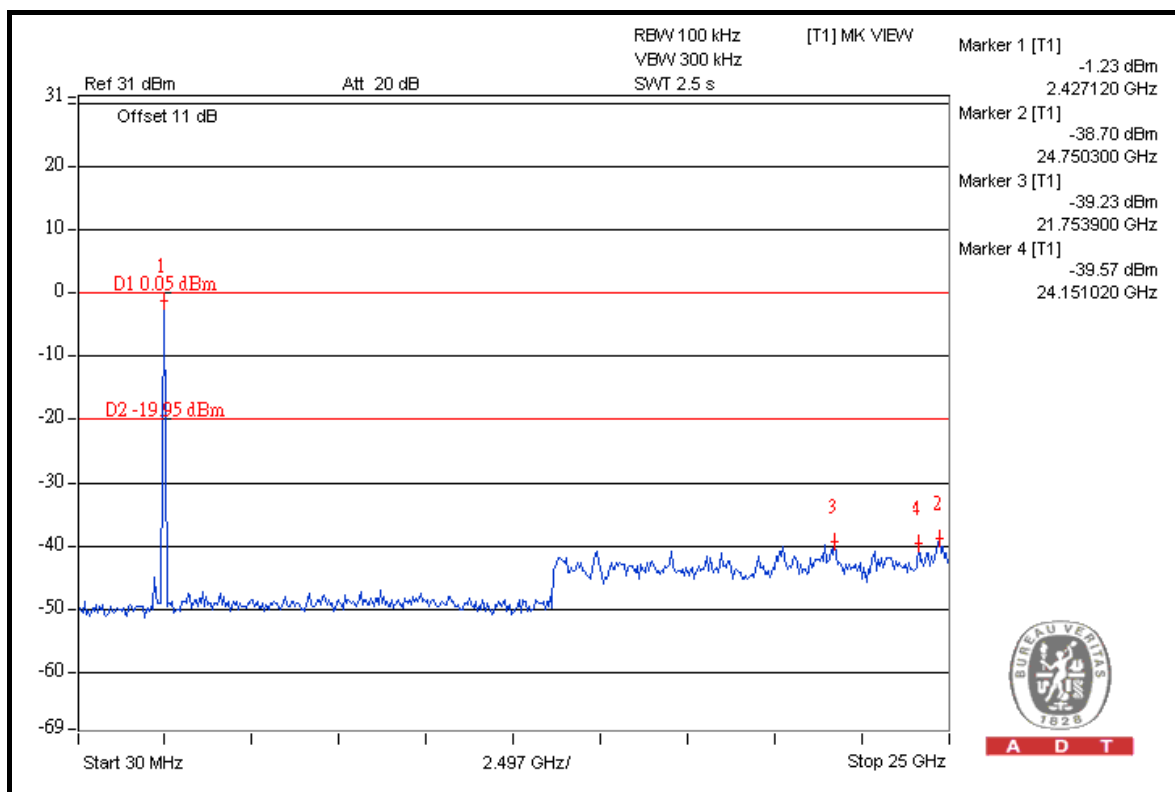
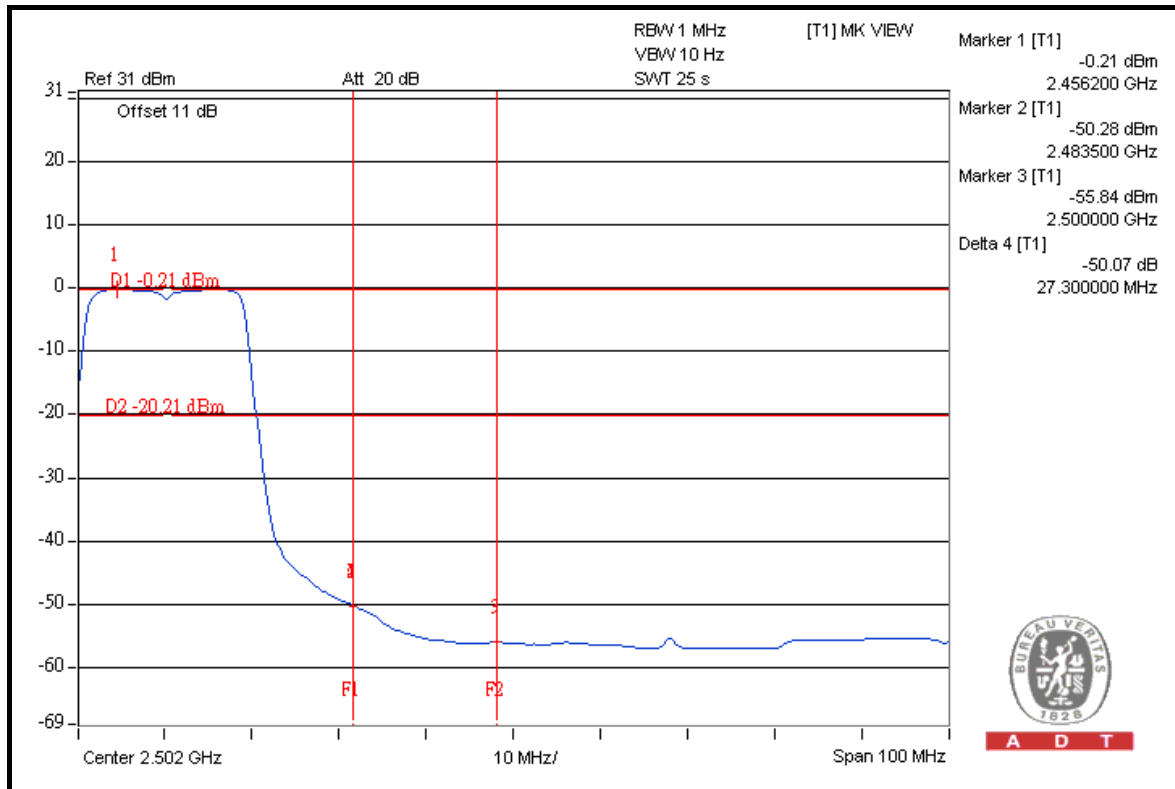
A D T



A D T



A D T

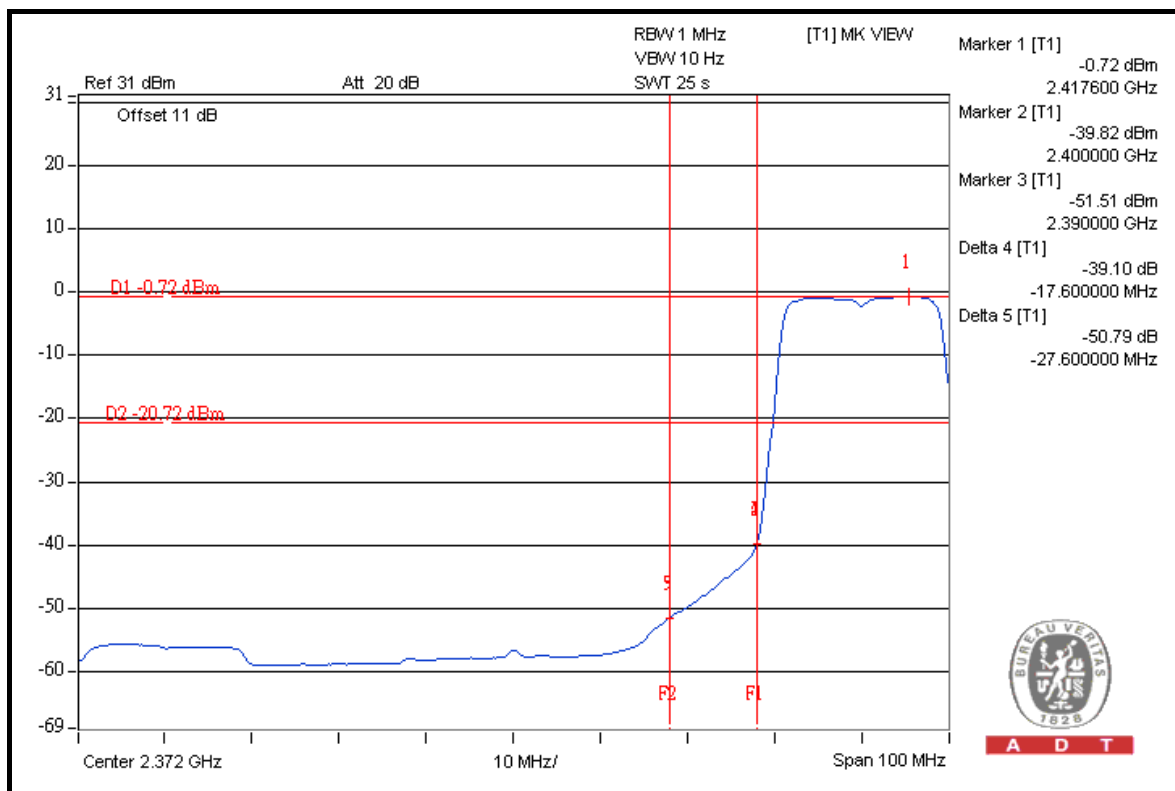
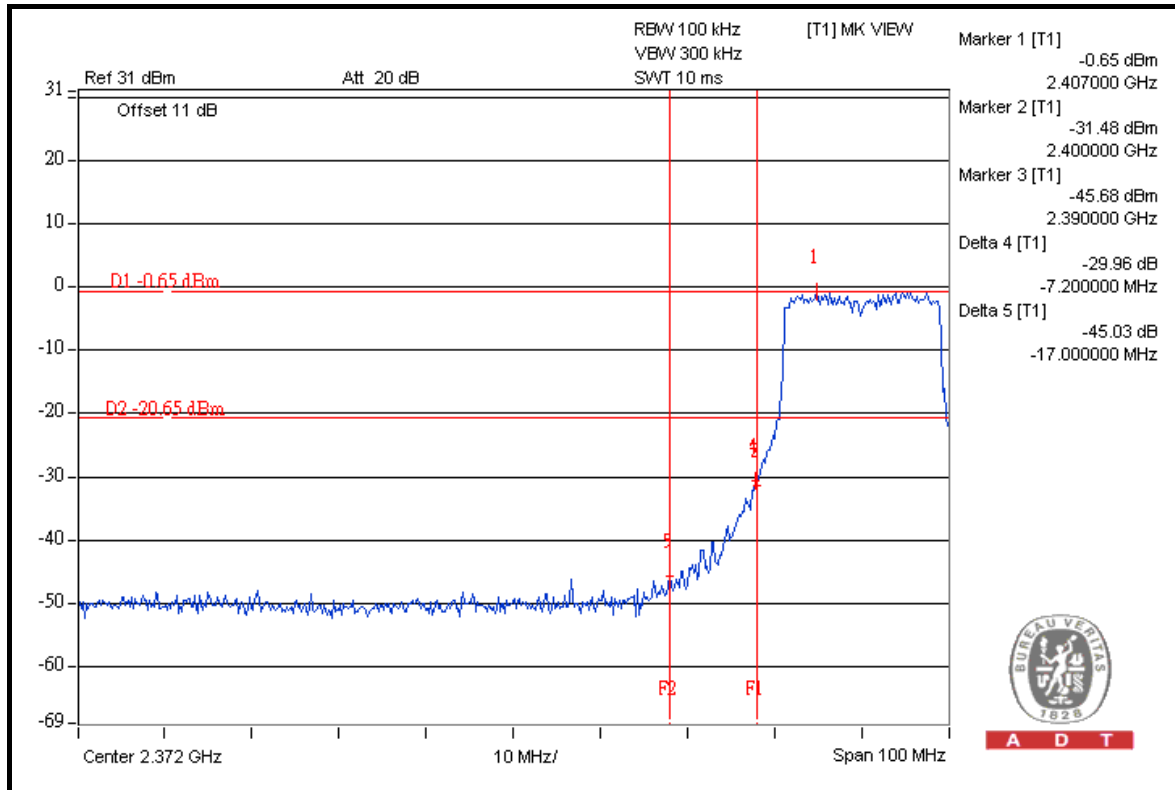






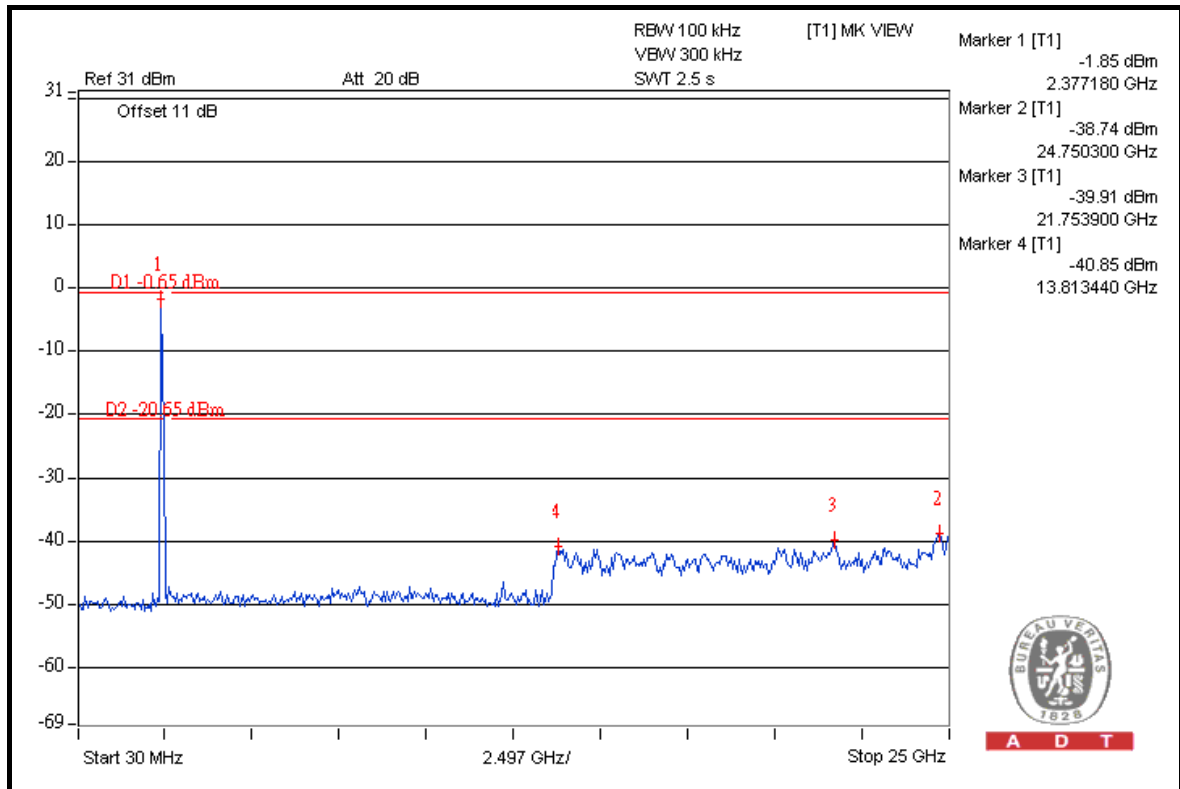
A D T

## CHAIN 2

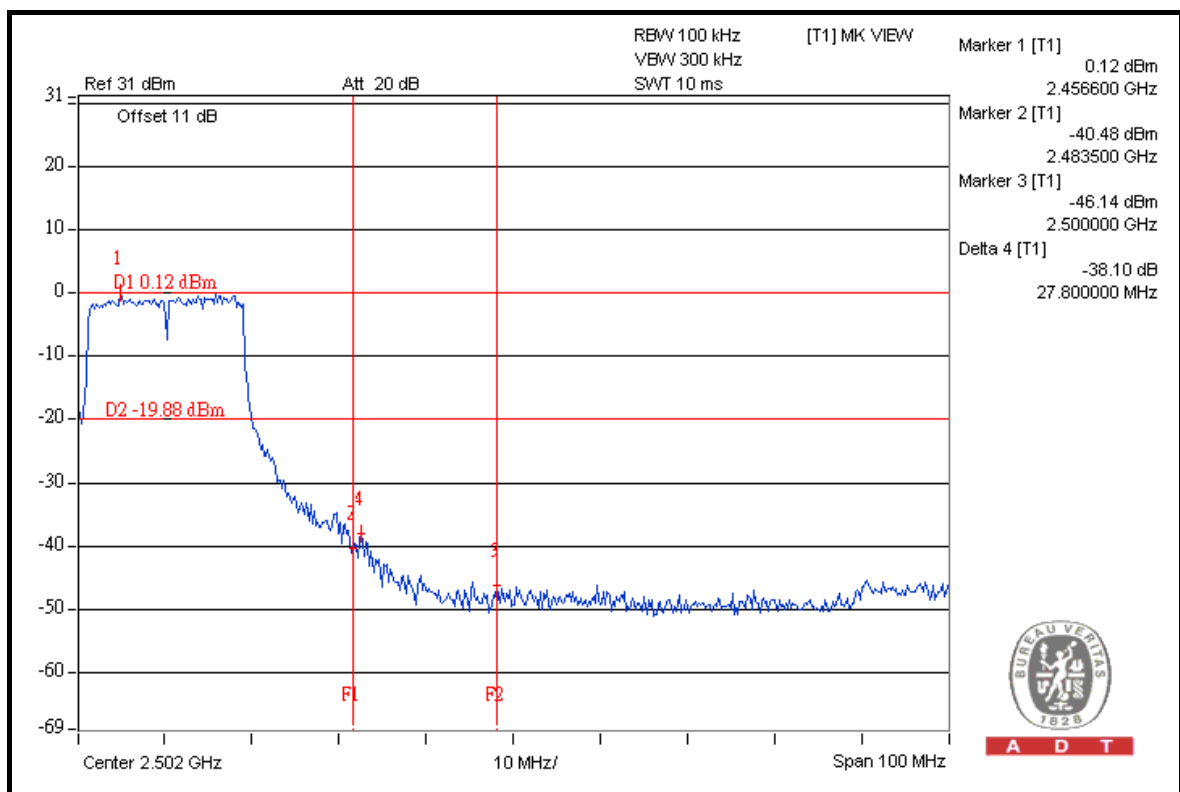




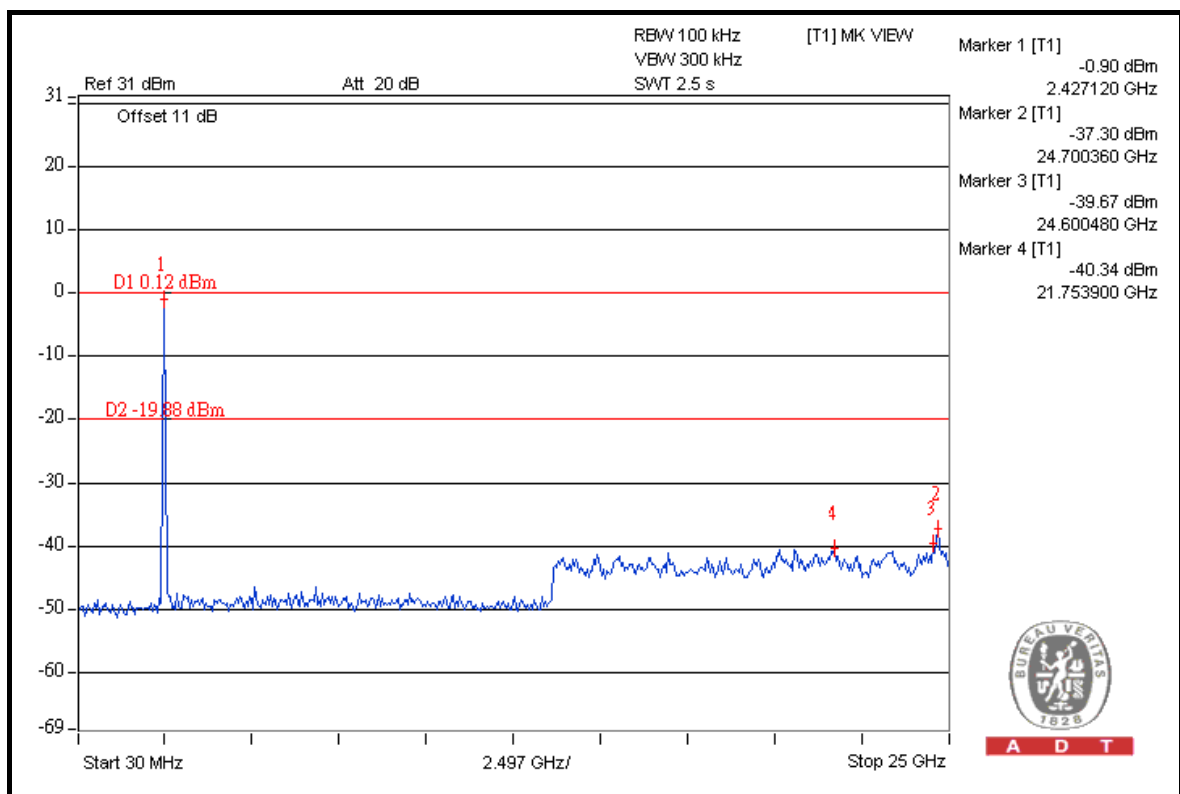
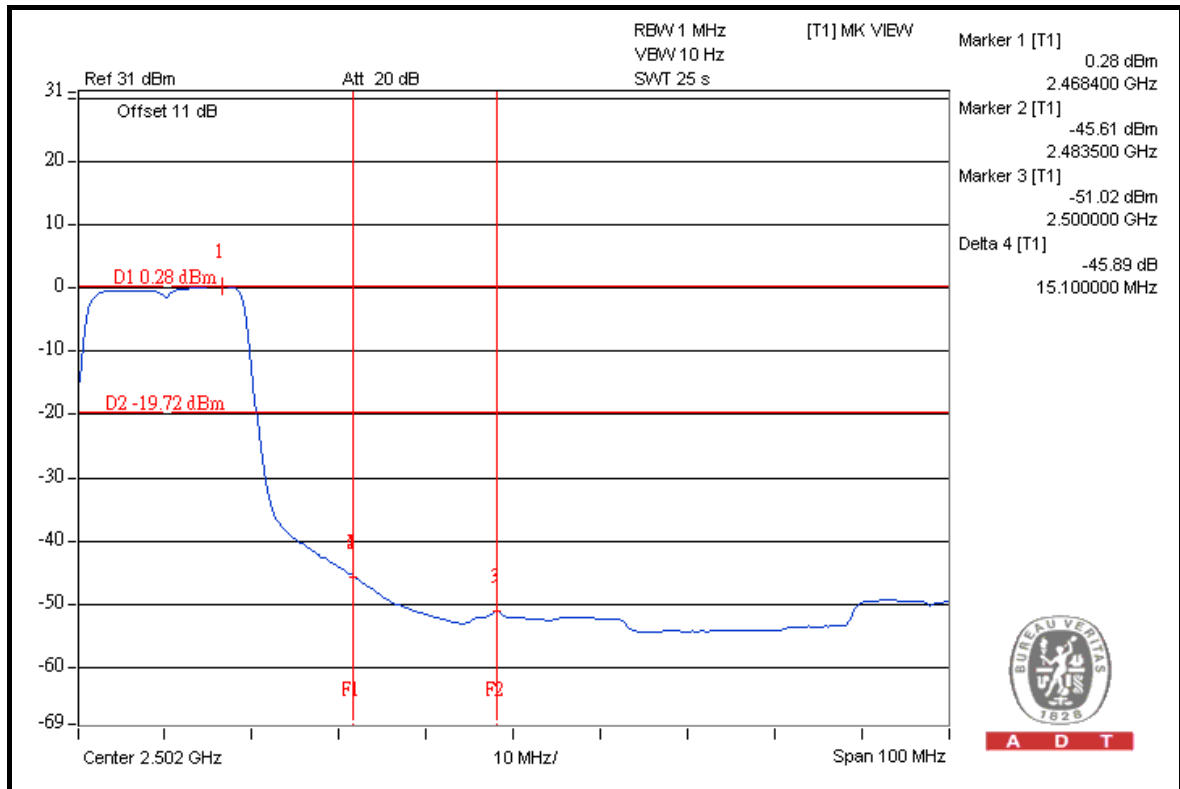
A D T



A D T



A D T



## 802.11n (40MHz)

### RESTRICT BAND (2310 ~ 2390 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2422.00 (PK)	111.5	45.94	65.56	74.00
2422.00 (AV)	101.5	49.34	52.16	54.00

### RESTRICT BAND (2483.5 ~ 2500 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2452.00 (PK)	110.4	42.36	68.04	74.00
2452.00 (AV)	100.6	47.94	52.66	54.00

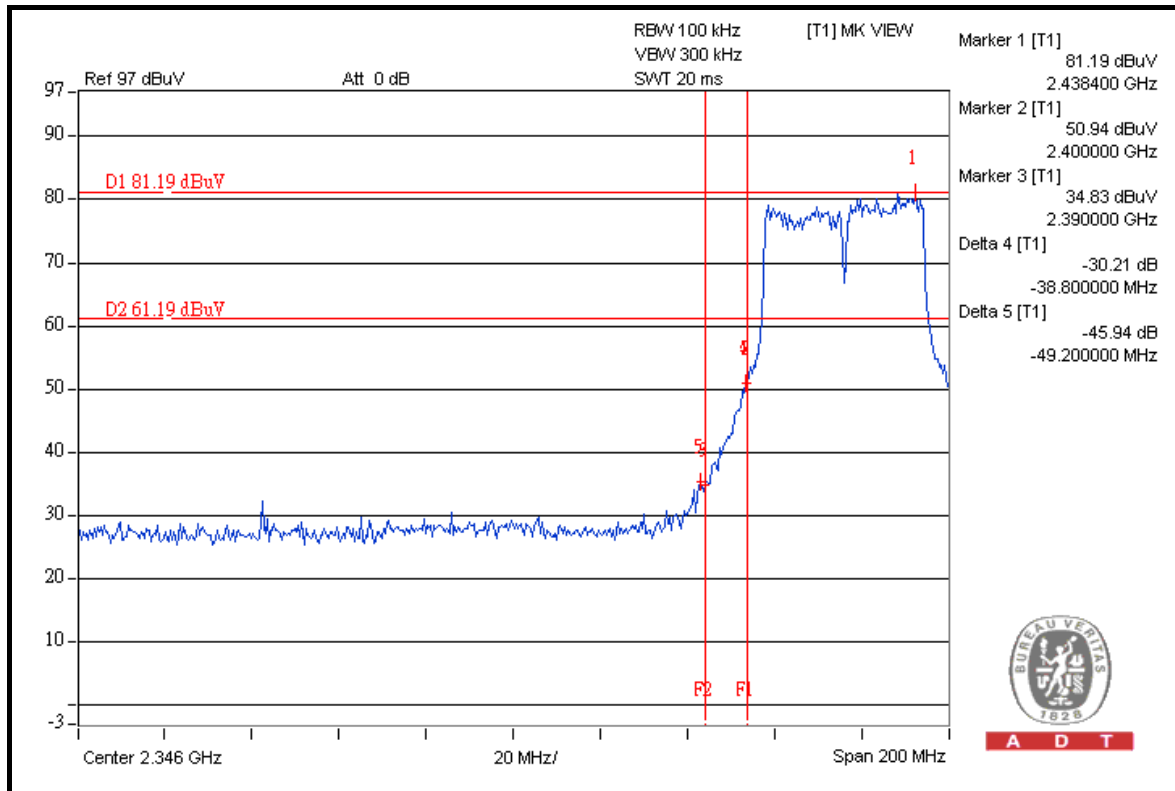
#### NOTE:

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

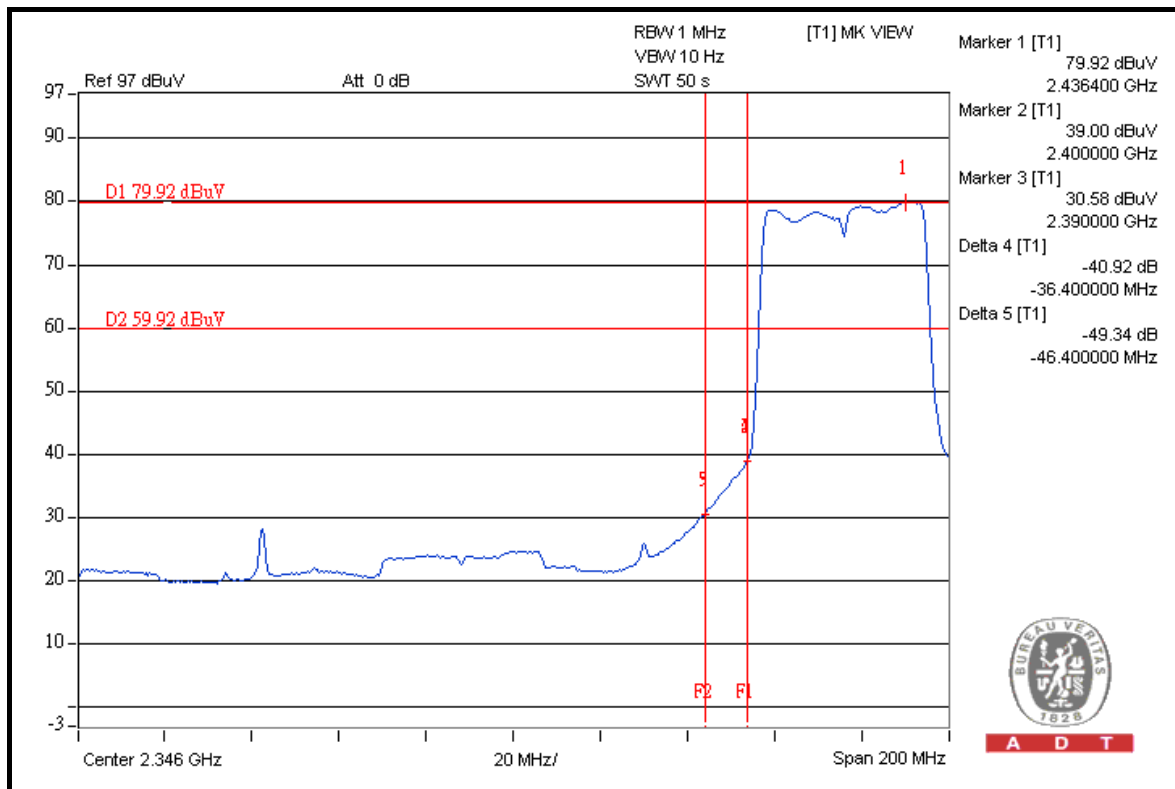


A D T

## FOR RADIATED MEASURED (THREE CHAINS ON)



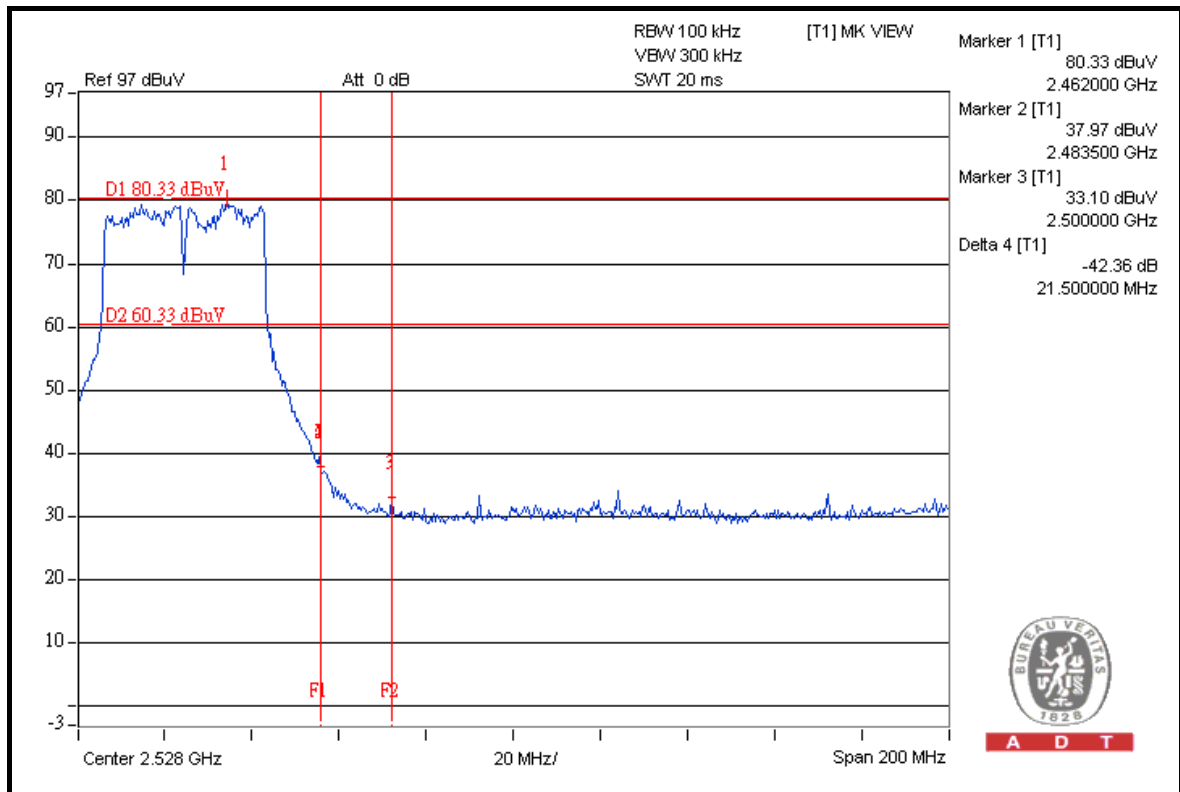
A D T



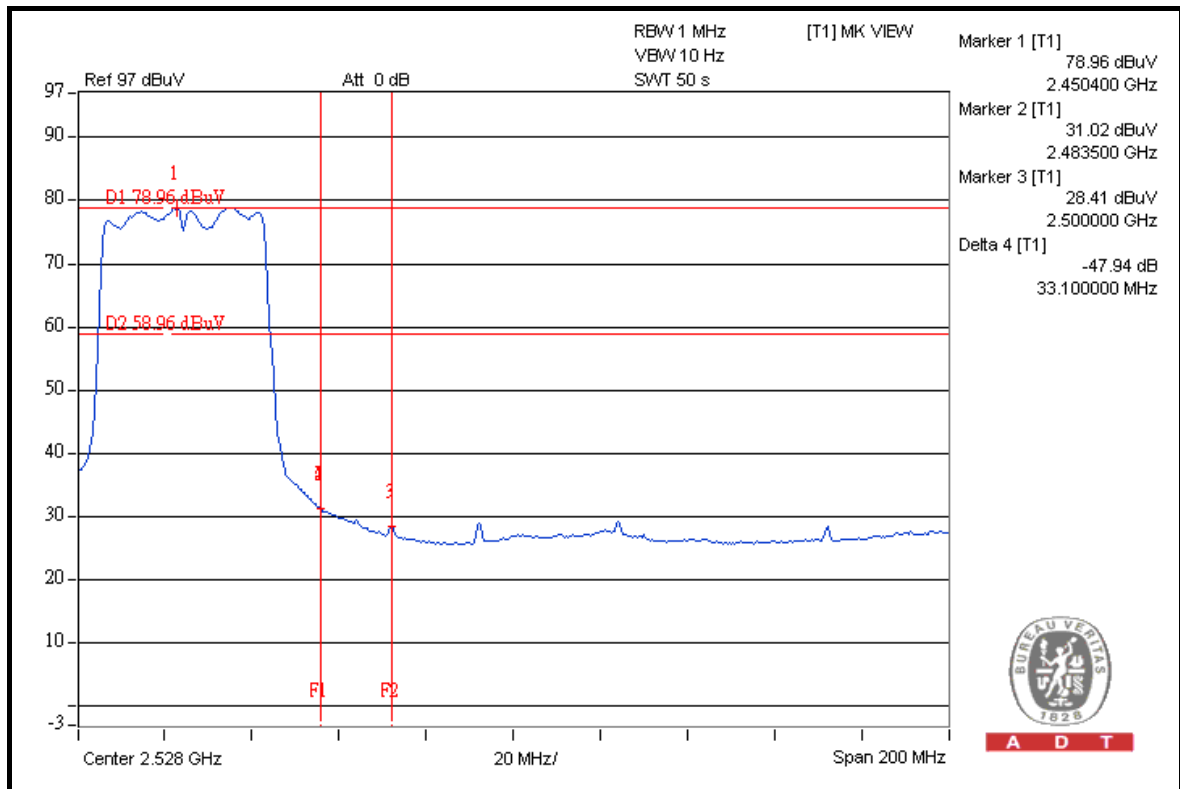
A D T



A D T



A D T

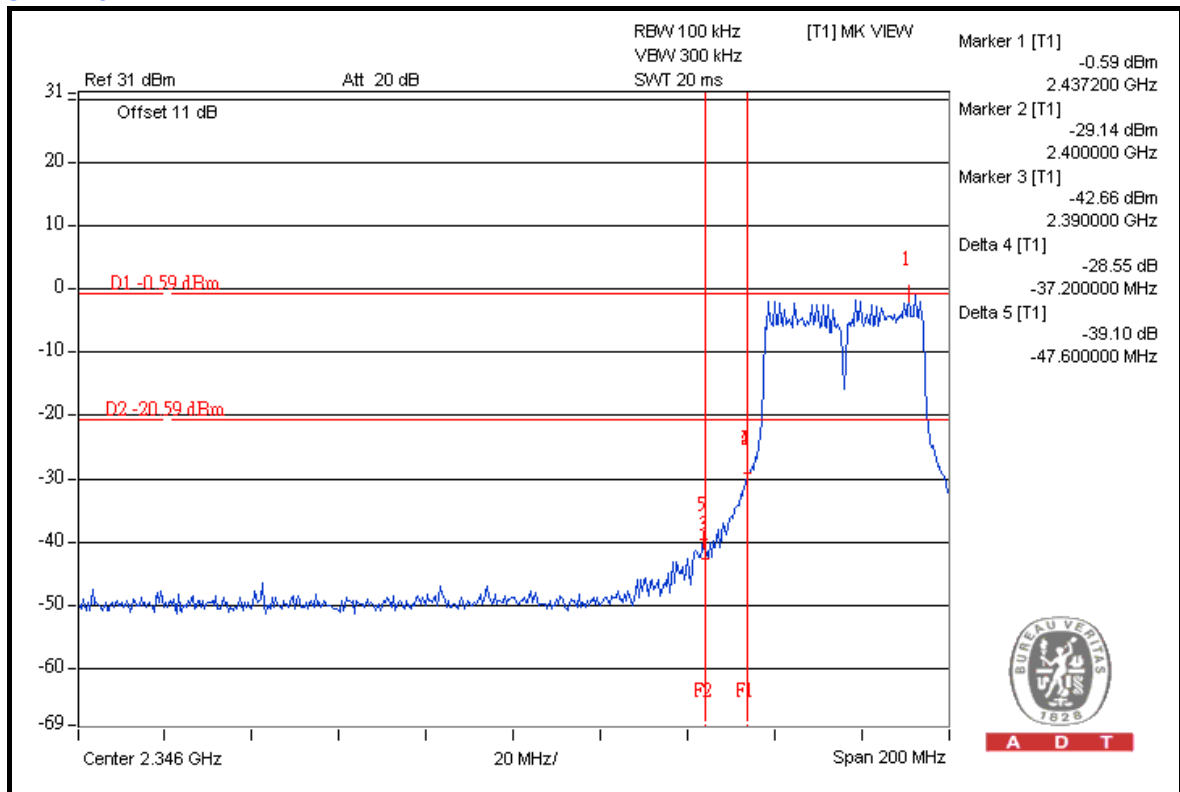


A D T

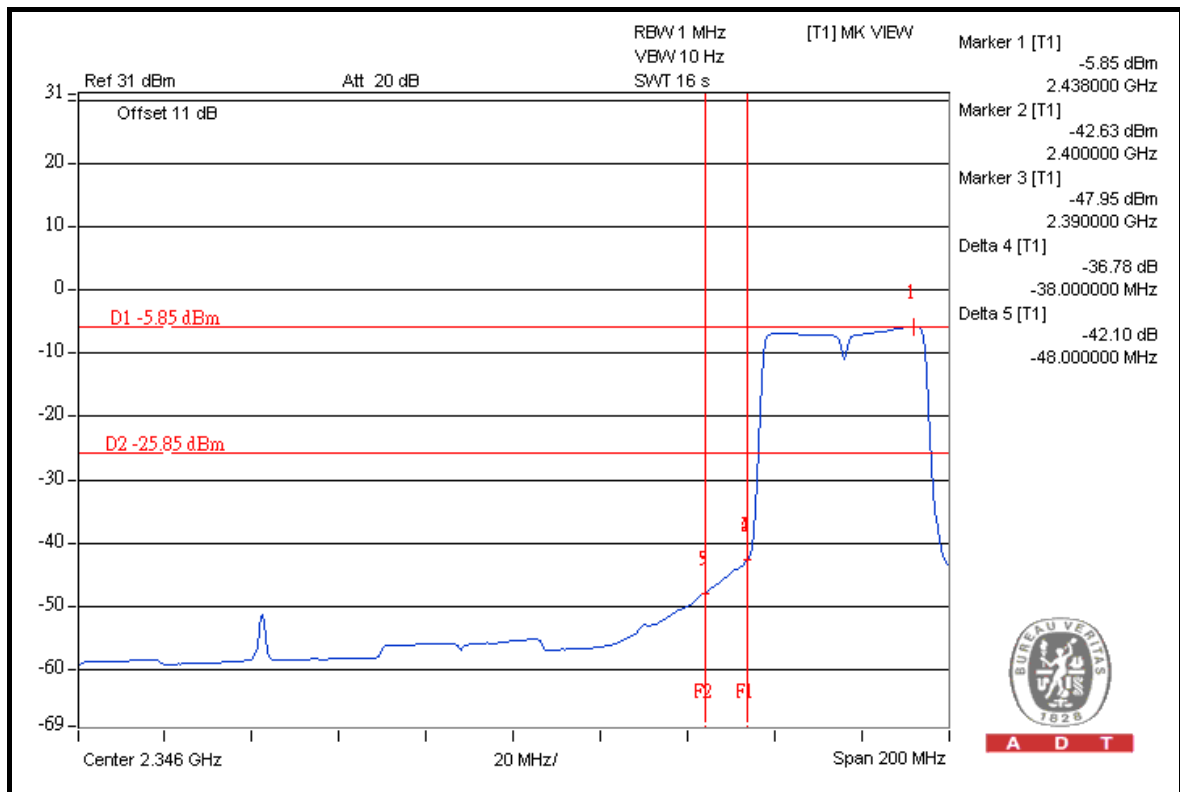


A D T

## FOR CONDUCTED MEASURED CHAIN 0



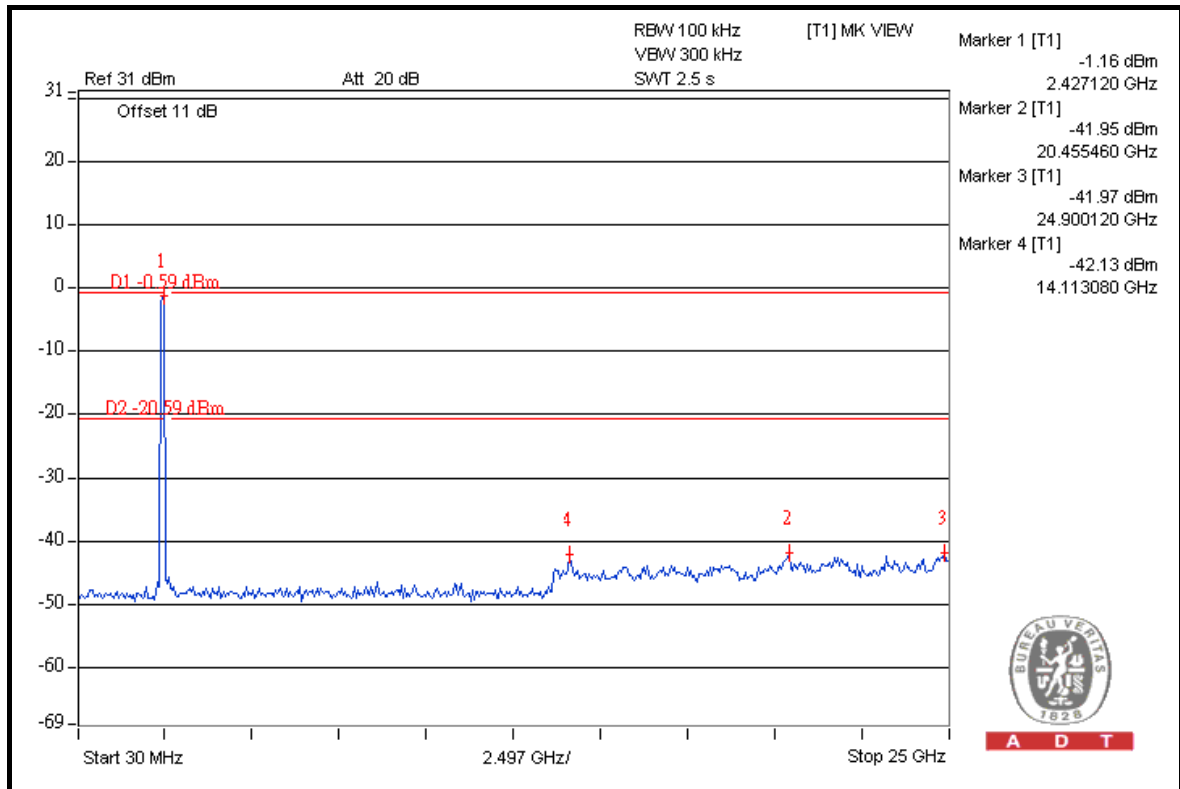
A D T



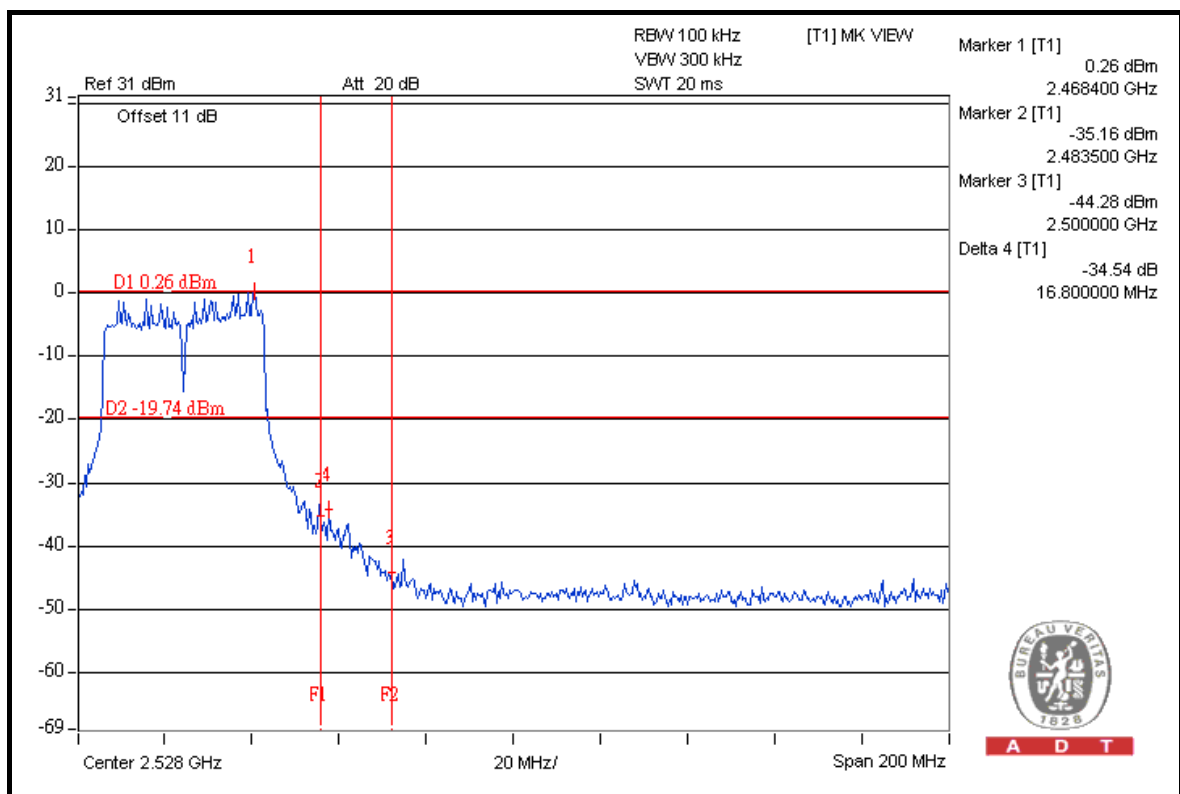
A D T



A D T



A D T



A D T

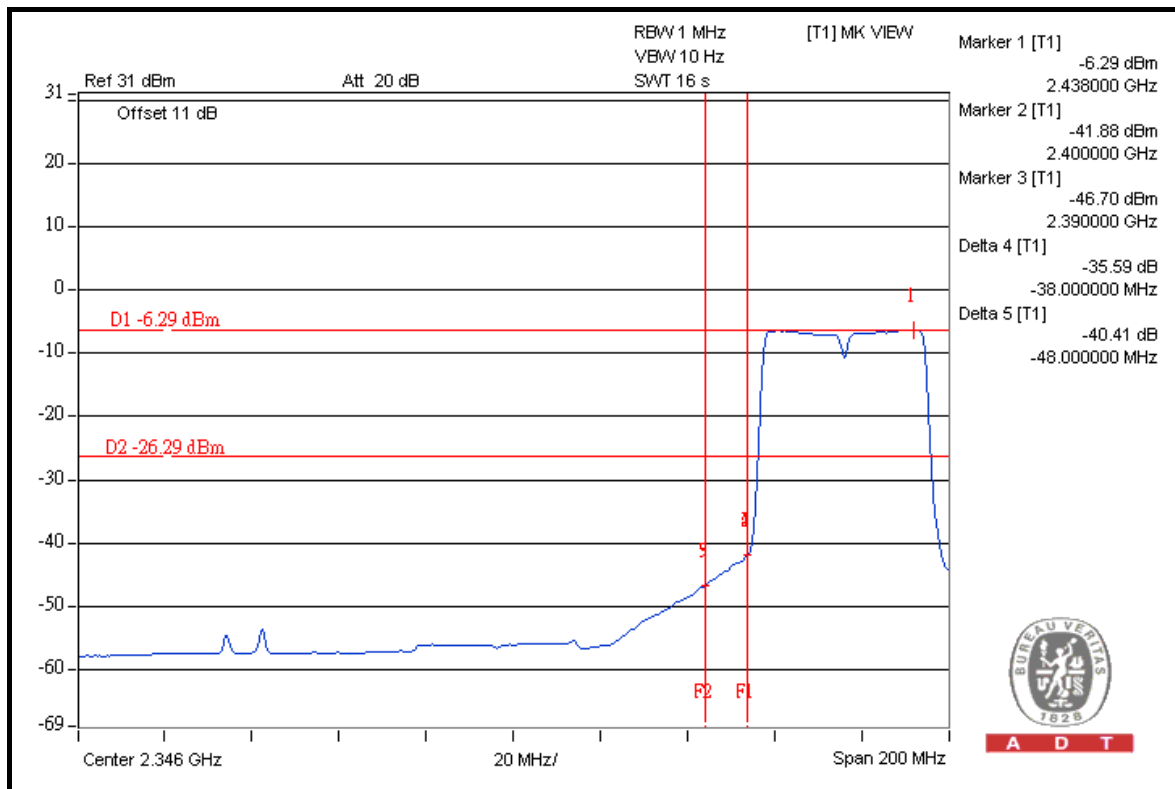
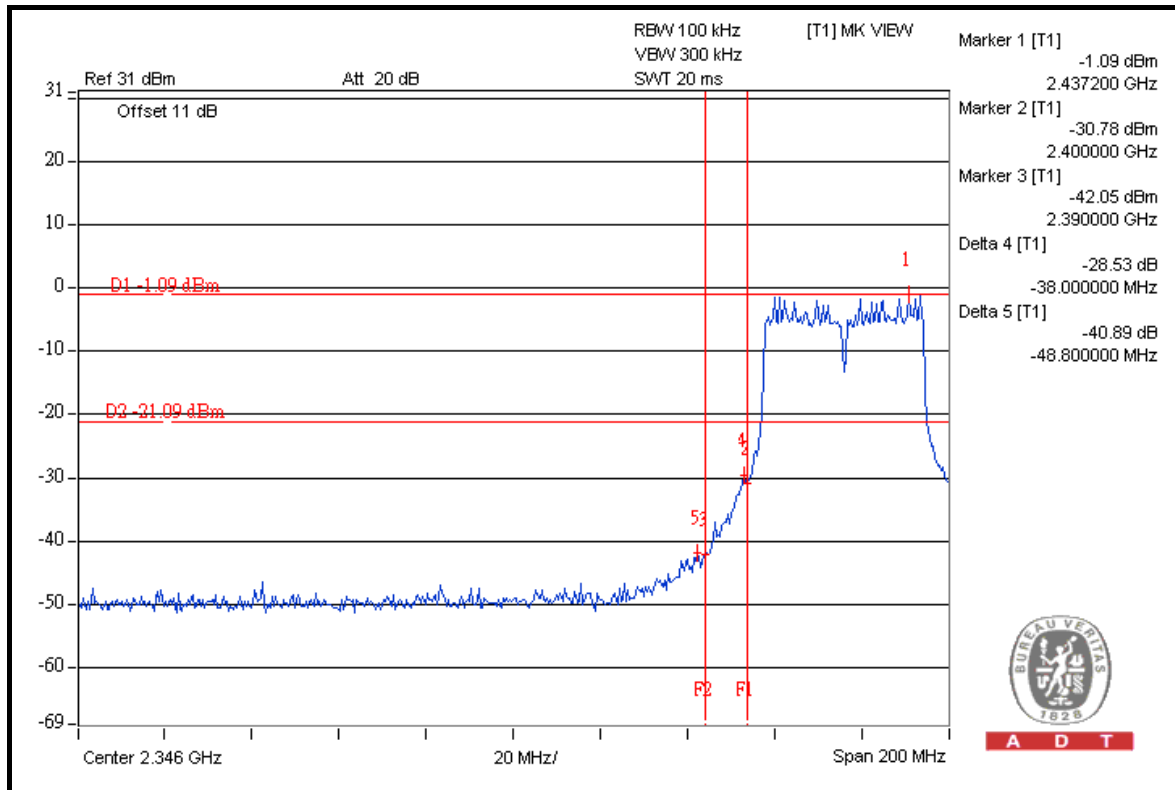






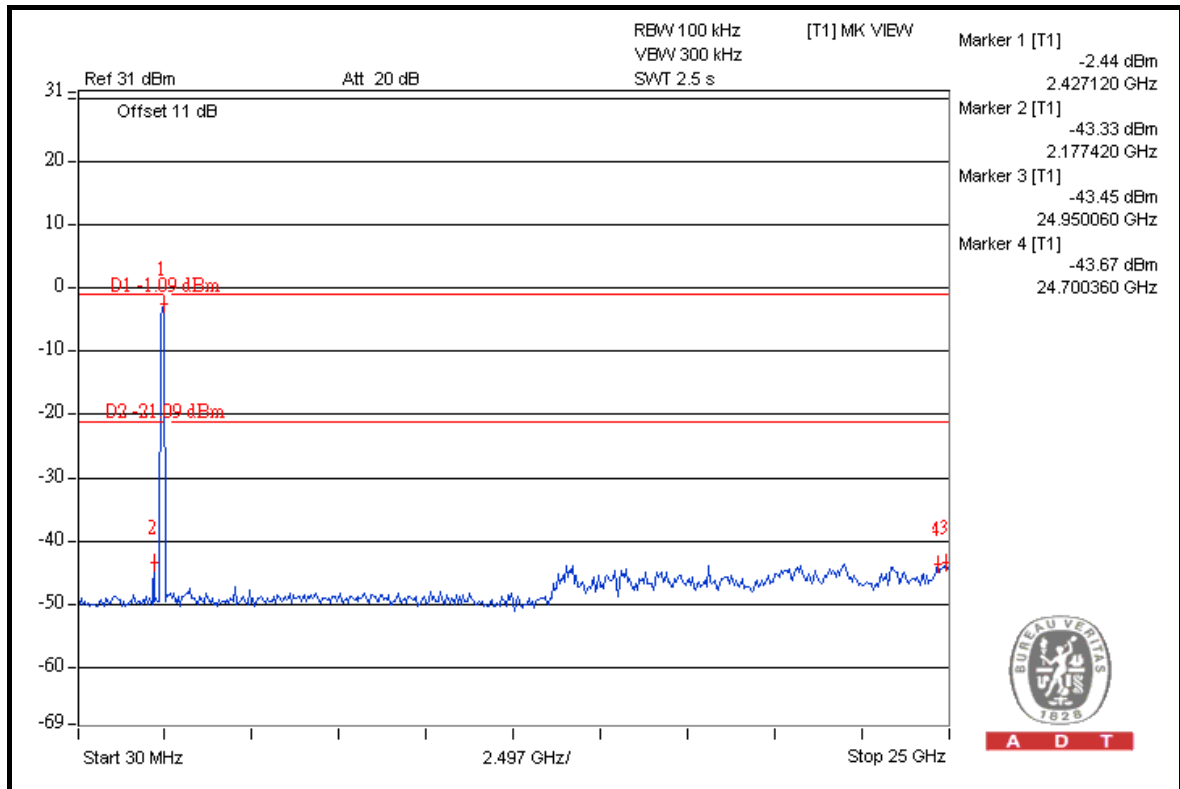
A D T

## CHAIN 1

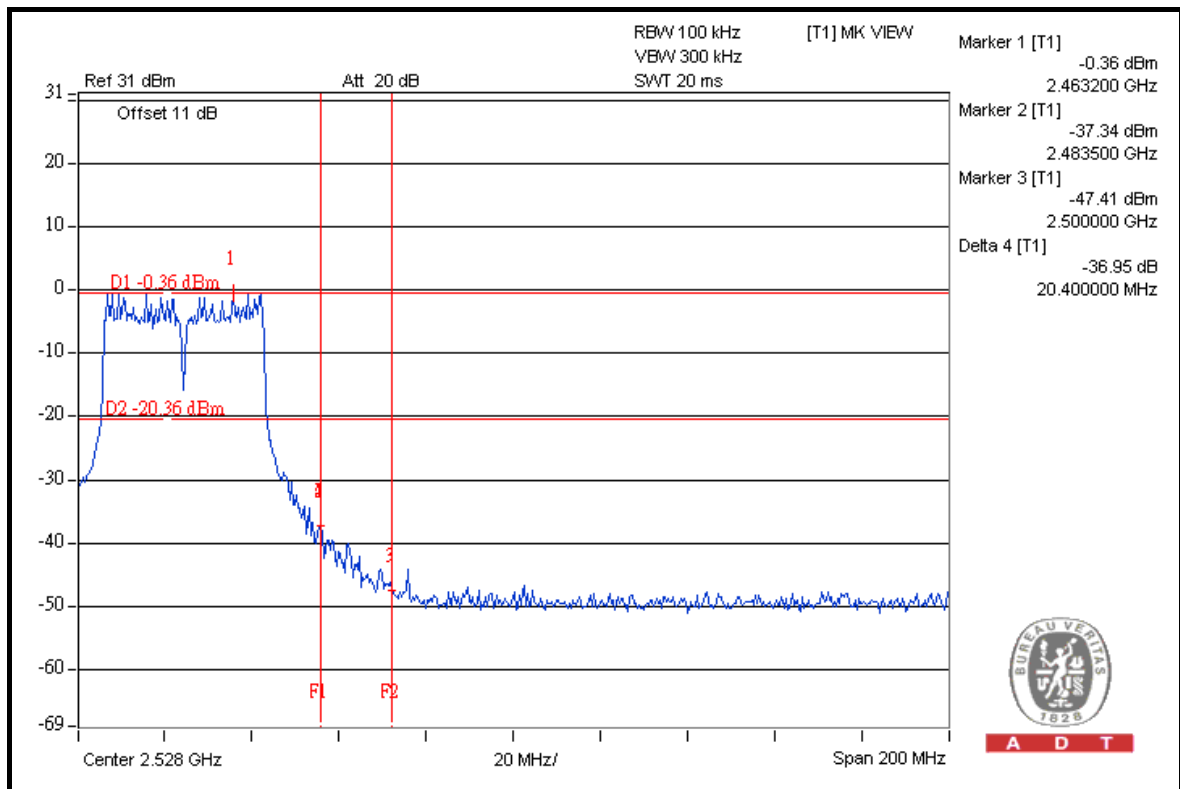




A D T



A D T



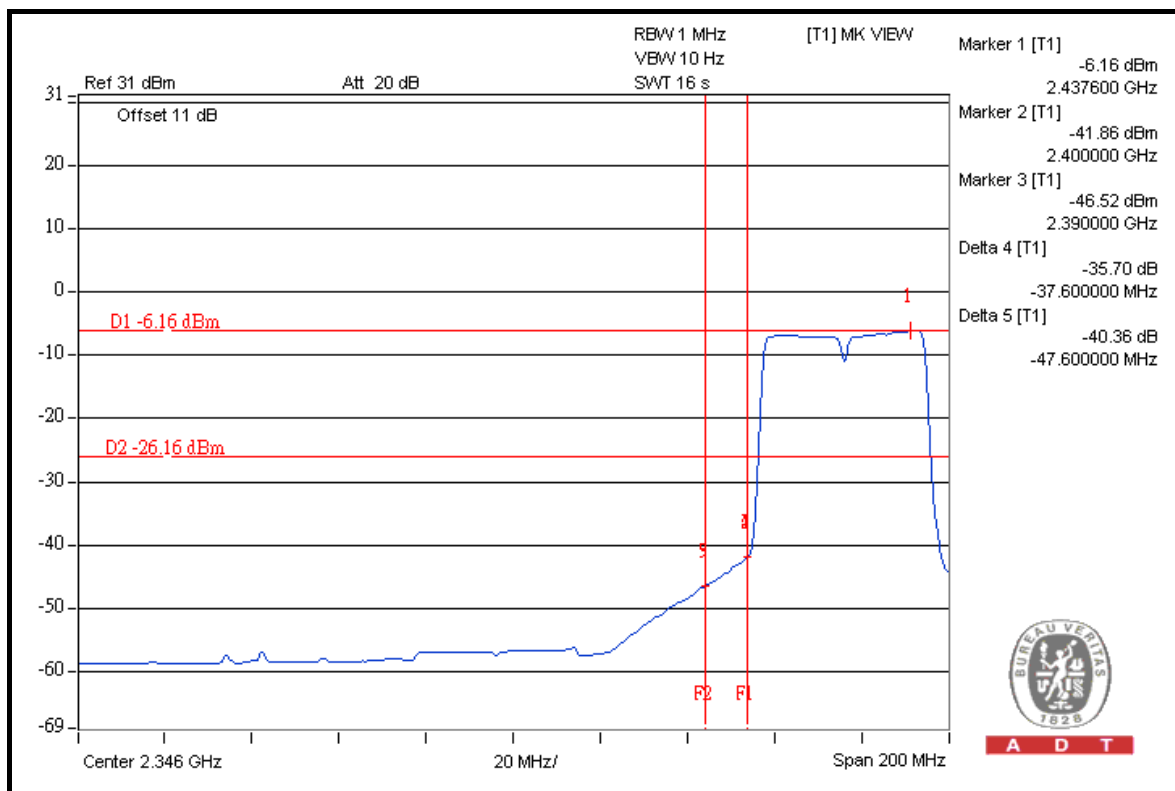
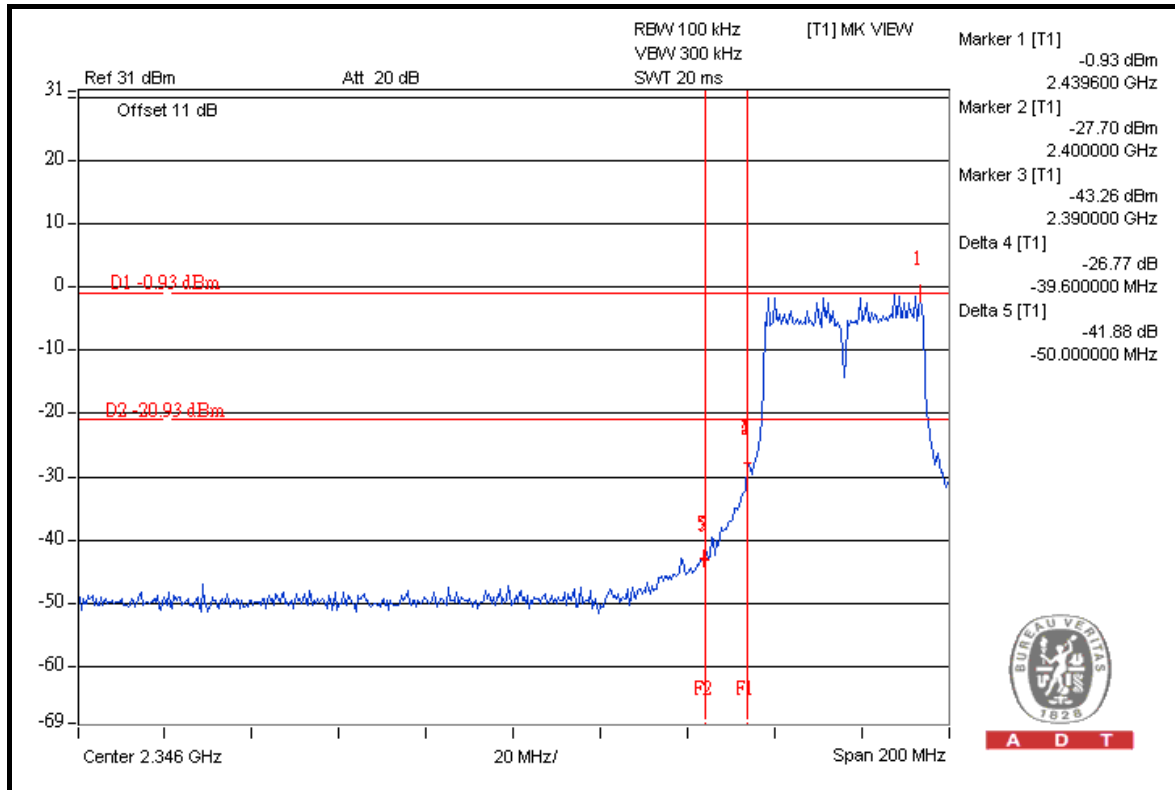
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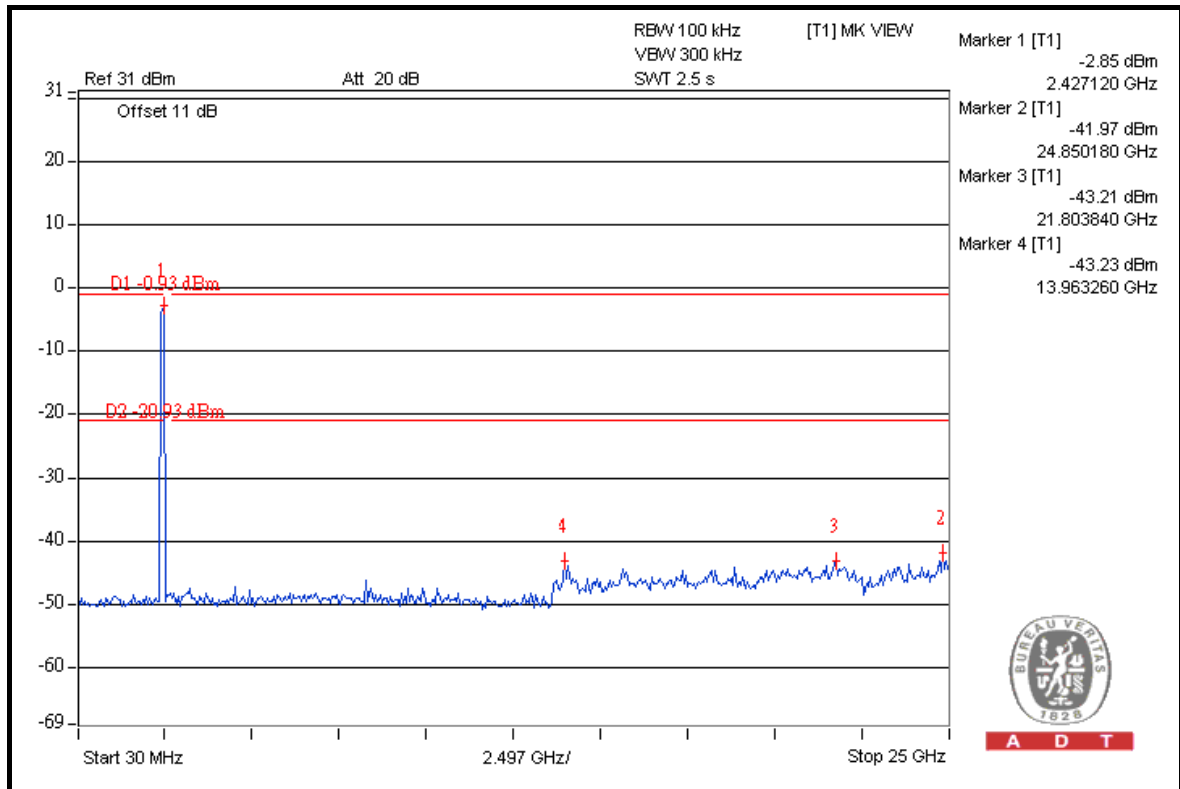
A D T

## CHAIN 2

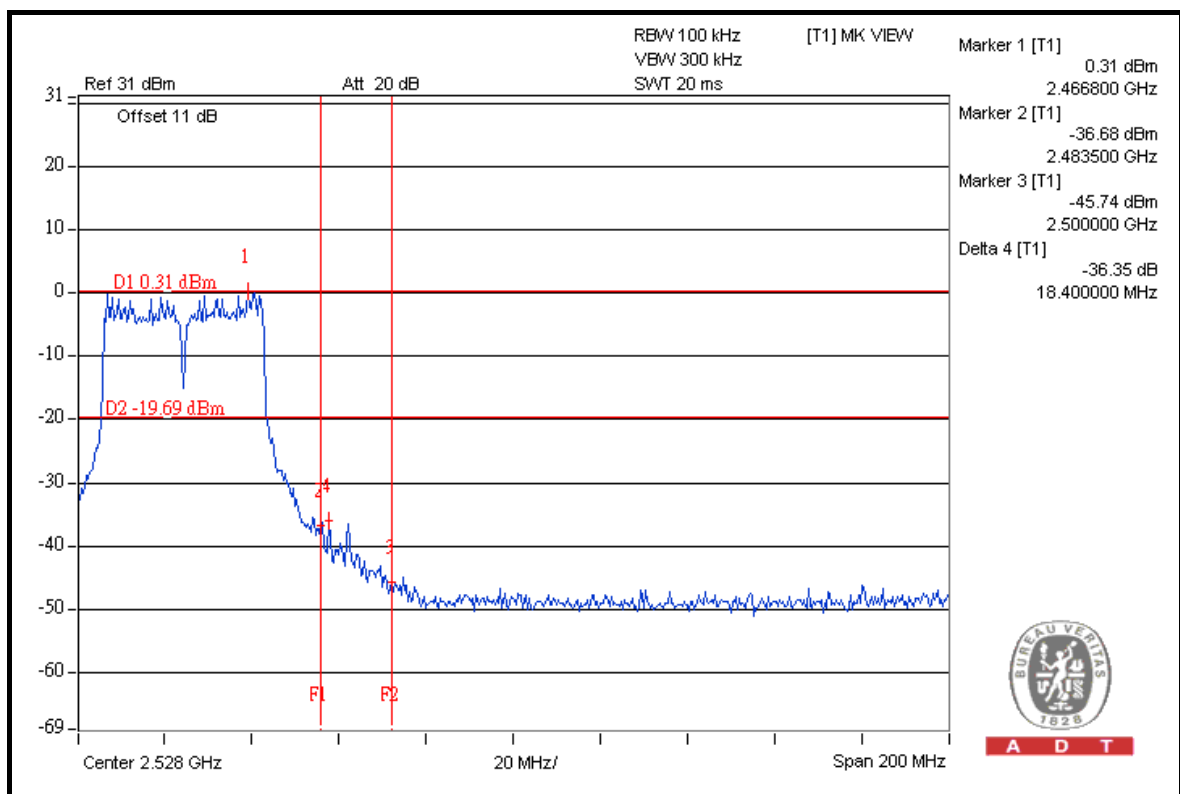




A D T



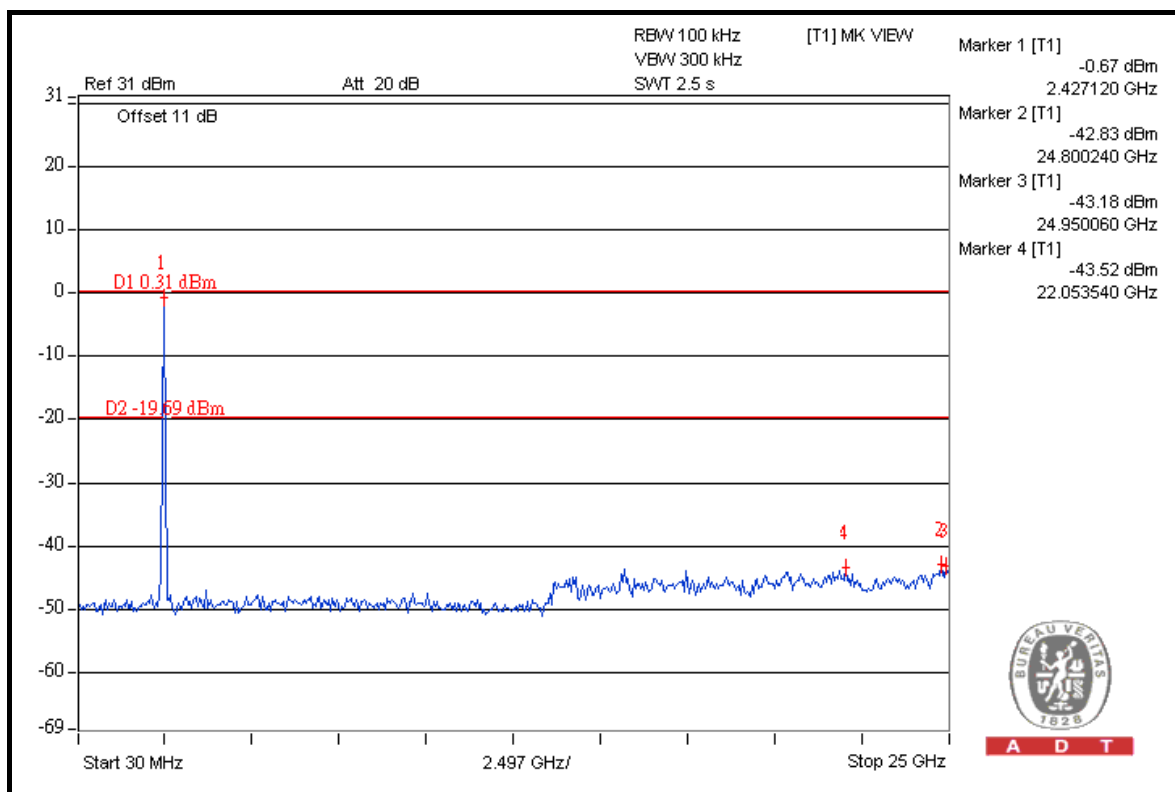
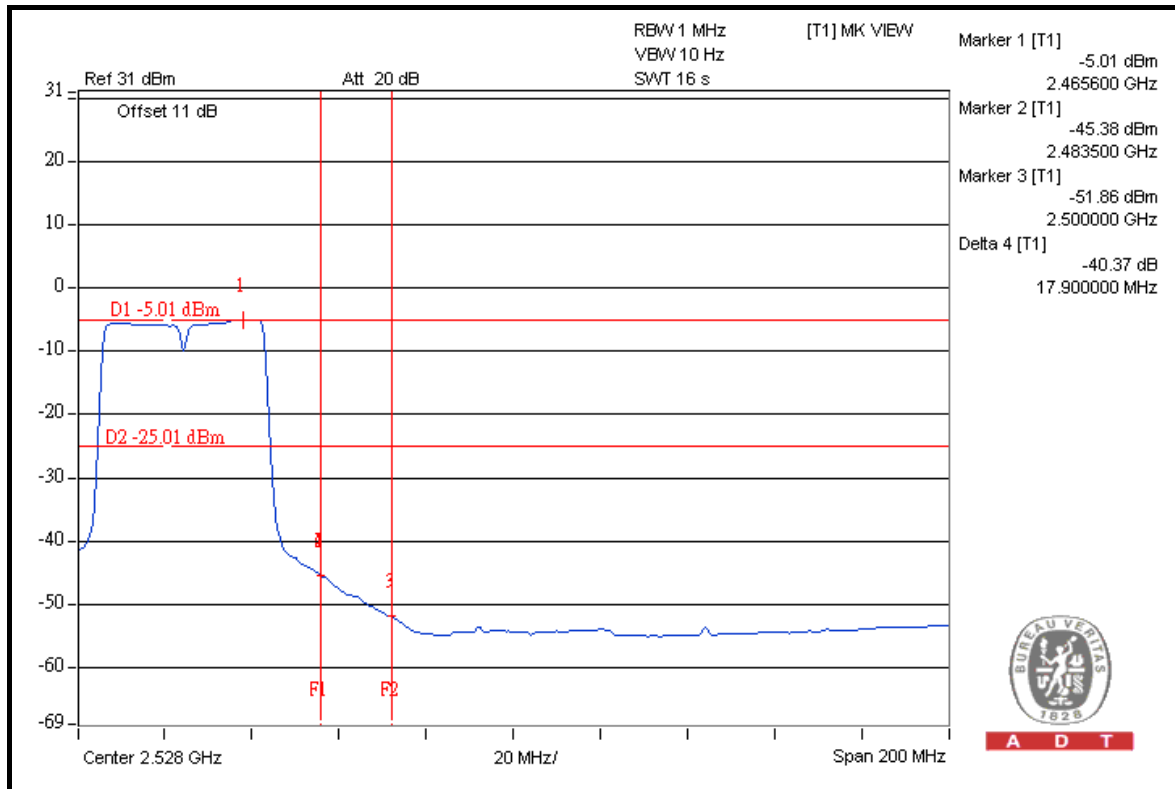
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## 5. TEST TYPES AND RESULTS (FOR 5.0GHz BAND)

### 5.1 RADIATED EMISSION MEASUREMENT

#### 5.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

**NOTE:**

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



## 5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Aug. 02, 2011	Aug. 01, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP 40	100041	Jul. 21, 2011	Jul. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 13, 2011	Apr. 12, 2012
HORN Antenna SCHWARZBECK	9120D	209	Aug. 25, 2011	Aug. 24, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8447D	2944A10633	Nov. 02, 2010	Nov. 01, 2011
Preamplifier Agilent	8449B	3008A01964	Nov. 02, 2010	Nov. 01, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295014/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	Aug. 19, 2011	Aug. 18, 2012
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Nov. 03, 2010	Nov. 02, 2011
High Speed Peak Power Meter	ML2495A	0824011	Aug. 04, 2011	Aug. 03, 2012
Power Sensor	MA2411B	0738171	Aug. 04, 2011	Aug. 03, 2012

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 988962.
5. The IC Site Registration No. is IC 7450F-3.

### 5.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

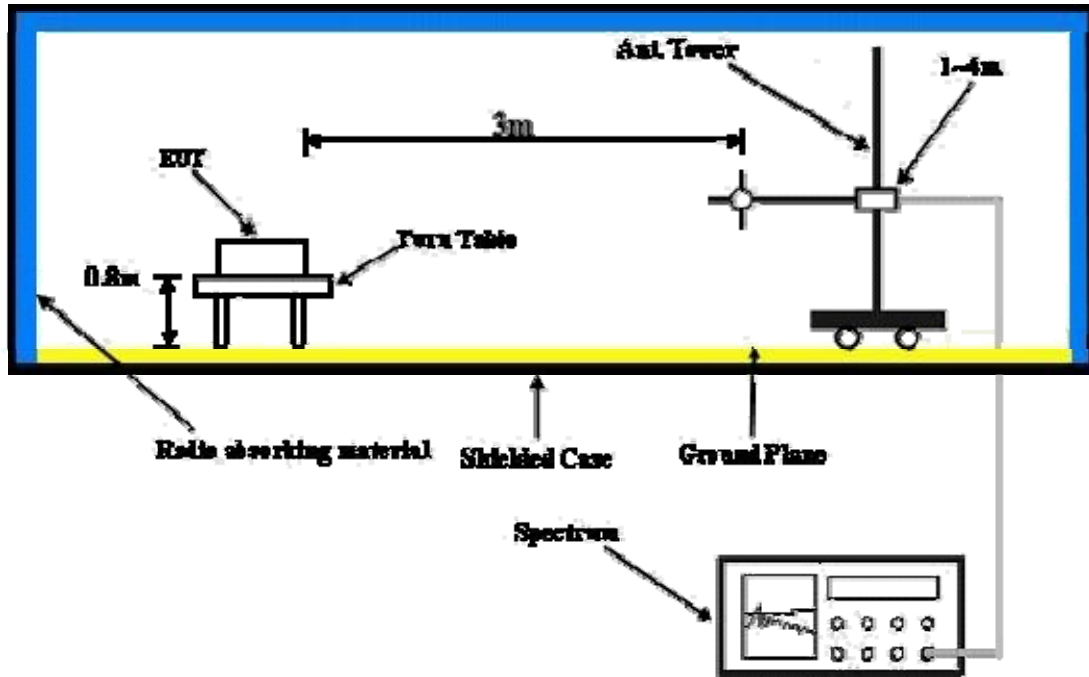
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 100kHz and video bandwidth is 300kHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 1kHz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

### 5.1.4 DEVIATION FROM TEST STANDARD

No deviation.

### 5.1.5 TEST SETUP



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

### 5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6.



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## 5.1.7 TEST RESULTS

ABOVE 1GHz: 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	46.3 PK	74.0	-27.7	1.00 H	150	9.10	37.20
2	5000.00	33.1 AV	54.0	-20.9	1.00 H	150	-4.10	37.20
3	5360.00	47.5 PK	74.0	-26.5	1.00 H	193	9.70	37.80
4	5360.00	35.0 AV	54.0	-19.0	1.00 H	193	-2.80	37.80
5	#5725.00	68.4 PK	79.1	-10.7	1.00 H	203	30.00	38.40
6	#5725.00	45.2 AV	67.5	-22.3	1.00 H	203	6.80	38.40
7	*5745.00	99.1 PK			1.00 H	216	60.70	38.40
8	*5745.00	87.5 AV			1.00 H	216	49.10	38.40
9	11490.00	57.1 PK	74.0	-16.9	1.00 H	12	8.10	49.00
10	11490.00	43.0 AV	54.0	-11.0	1.00 H	12	-6.00	49.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	53.1 PK	74.0	-20.9	1.34 V	100	15.90	37.20
2	5000.00	43.9 AV	54.0	-10.1	1.34 V	100	6.70	37.20
3	5040.00	51.3 PK	74.0	-22.7	1.32 V	99	14.00	37.30
4	5040.00	45.5 AV	54.0	-8.5	1.32 V	99	8.20	37.30
5	5120.00	51.8 PK	74.0	-22.2	1.00 V	103	14.40	37.40
6	5120.00	46.0 AV	54.0	-8.0	1.00 V	103	8.60	37.40
7	5360.00	55.5 PK	74.0	-18.5	1.24 V	163	17.70	37.80
8	5360.00	49.0 AV	54.0	-5.0	1.24 V	163	11.20	37.80
9	#5725.00	67.9 PK	92.3	-24.4	1.16 V	168	29.50	38.40
10	#5725.00	56.8 AV	82.0	-25.2	1.16 V	168	18.40	38.40
11	*5745.00	112.3 PK			1.03 V	168	73.90	38.40
12	*5745.00	102.0 AV			1.03 V	168	63.60	38.40
13	11490.00	56.5 PK	74.0	-17.5	1.00 V	0	7.50	49.00
14	11490.00	43.1 AV	54.0	-10.9	1.00 V	0	-5.90	49.00

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	46.1 PK	74.0	-27.9	1.00 H	120	8.90	37.20
2	5000.00	33.6 AV	54.0	-20.4	1.00 H	120	-3.60	37.20
3	5360.00	47.2 PK	74.0	-26.8	1.00 H	194	9.40	37.80
4	5360.00	35.7 AV	54.0	-18.3	1.00 H	194	-2.10	37.80
5	*5785.00	98.5 PK			1.28 H	203	60.00	38.50
6	*5785.00	88.1 AV			1.28 H	203	49.60	38.50
7	11570.00	56.6 PK	74.0	-17.4	1.00 H	25	7.80	48.80
8	11570.00	42.8 AV	54.0	-11.2	1.00 H	25	-6.00	48.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	52.7 PK	74.0	-21.3	1.43 V	108	15.50	37.20
2	5000.00	43.3 AV	54.0	-10.7	1.43 V	108	6.10	37.20
3	5040.00	52.0 PK	74.0	-22.0	1.45 V	98	14.70	37.30
4	5040.00	46.0 AV	54.0	-8.0	1.45 V	98	8.70	37.30
5	5120.00	51.6 PK	74.0	-22.4	1.00 V	104	14.20	37.40
6	5120.00	45.8 AV	54.0	-8.2	1.00 V	104	8.40	37.40
7	5360.00	54.0 PK	74.0	-20.0	1.00 V	165	16.20	37.80
8	5360.00	47.1 AV	54.0	-6.9	1.00 V	165	9.30	37.80
9	*5785.00	113.5 PK			1.00 V	167	75.00	38.50
10	*5785.00	102.1 AV			1.00 V	167	63.60	38.50
11	11570.00	56.9 PK	74.0	-17.1	1.00 V	99	8.10	48.80
12	11570.00	42.8 AV	54.0	-11.2	1.00 V	99	-6.00	48.80

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
  2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “ \* ”: Fundamental frequency.
  6. The limit value is defined as per 15.247.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	46.9 PK	74.0	-27.1	1.00 H	119	9.70	37.20
2	5000.00	34.9 AV	54.0	-19.1	1.00 H	119	-2.30	37.20
3	5360.00	47.7 PK	74.0	-26.3	1.00 H	192	9.90	37.80
4	5360.00	34.9 AV	54.0	-19.1	1.00 H	192	-2.90	37.80
5	*5825.00	99.1 PK			1.52 H	222	60.50	38.60
6	*5825.00	87.7 AV			1.52 H	222	49.10	38.60
7	#5850.00	62.8 PK	79.1	-16.3	1.50 H	110	24.20	38.60
8	#5850.00	35.9 AV	67.7	-31.8	1.50 H	110	-2.70	38.60
9	11650.00	56.8 PK	74.0	-17.2	1.00 H	23	8.10	48.70
10	11650.00	42.3 AV	54.0	-11.7	1.00 H	23	-6.40	48.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	54.1 PK	74.0	-19.9	1.55 V	86	16.90	37.20
2	5000.00	46.1 AV	54.0	-7.9	1.55 V	86	8.90	37.20
3	5040.00	52.0 PK	74.0	-22.0	1.57 V	100	14.70	37.30
4	5040.00	45.9 AV	54.0	-8.1	1.57 V	100	8.60	37.30
5	5120.00	52.1 PK	74.0	-21.9	1.00 V	103	14.70	37.40
6	5120.00	45.7 AV	54.0	-8.3	1.00 V	103	8.30	37.40
7	5360.00	55.2 PK	74.0	-18.8	1.24 V	163	17.40	37.80
8	5360.00	47.5 AV	54.0	-6.5	1.24 V	163	9.70	37.80
9	*5825.00	112.9 PK			1.06 V	171	74.30	38.60
10	*5825.00	102.1 AV			1.06 V	171	63.50	38.60
11	#5850.00	72.6 PK	92.9	-20.3	1.05 V	170	34.00	38.60
12	#5850.00	45.2 AV	82.1	-36.9	1.05 V	170	6.60	38.60
13	11650.00	56.5 PK	74.0	-17.5	1.00 V	56	7.80	48.70
14	11650.00	42.2 AV	54.0	-11.8	1.00 V	56	-6.50	48.70

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. “ \* ”: Fundamental frequency.  
6. The limit value is defined as per 15.247.  
7. “#”: The radiated frequency is out the restricted band.



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## 802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	46.1 PK	74.0	-27.9	1.08 H	154	8.90	37.20
2	5000.00	33.6 AV	54.0	-20.4	1.08 H	154	-3.60	37.20
3	5360.00	47.8 PK	74.0	-26.2	1.00 H	194	10.00	37.80
4	5360.00	36.8 AV	54.0	-17.2	1.00 H	194	-1.00	37.80
5	#5725.00	60.4 PK	75.7	-15.3	1.62 H	113	22.00	38.40
6	#5725.00	40.5 AV	64.8	-24.3	1.62 H	113	2.10	38.40
7	*5745.00	95.7 PK			1.00 H	219	57.30	38.40
8	*5745.00	84.8 AV			1.00 H	219	46.40	38.40
9	11490.00	56.8 PK	74.0	-17.2	1.00 H	15	7.80	49.00
10	11490.00	42.6 AV	54.0	-11.4	1.00 H	15	-6.40	49.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	53.8 PK	74.0	-20.2	1.38 V	98	16.60	37.20
2	5000.00	44.6 AV	54.0	-9.4	1.38 V	98	7.40	37.20
3	5040.00	52.0 PK	74.0	-22.0	1.32 V	99	14.70	37.30
4	5040.00	46.1 AV	54.0	-7.9	1.32 V	99	8.80	37.30
5	5120.00	52.6 PK	74.0	-21.4	1.00 V	102	15.20	37.40
6	5120.00	46.4 AV	54.0	-7.6	1.00 V	102	9.00	37.40
7	5360.00	54.9 PK	74.0	-19.1	1.25 V	164	17.10	37.80
8	5360.00	49.5 AV	54.0	-4.5	1.25 V	164	11.70	37.80
9	#5725.00	67.9 PK	89.4	-21.5	1.05 V	174	29.50	38.40
10	#5725.00	48.9 AV	78.3	-29.4	1.05 V	174	10.50	38.40
11	*5745.00	109.4 PK			1.06 V	171	71.00	38.40
12	*5745.00	98.3 AV			1.06 V	171	59.90	38.40
13	11490.00	57.3 PK	74.0	-16.7	1.00 V	51	8.30	49.00
14	11490.00	43.0 AV	54.0	-11.0	1.00 V	51	-6.00	49.00

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	46.1 PK	74.0	-27.9	1.00 H	118	8.90	37.20
2	5000.00	33.8 AV	54.0	-20.2	1.00 H	118	-3.40	37.20
3	5360.00	47.6 PK	74.0	-26.4	1.00 H	194	9.80	37.80
4	5360.00	36.8 AV	54.0	-17.2	1.00 H	194	-1.00	37.80
5	*5785.00	95.9 PK			1.21 H	204	57.40	38.50
6	*5785.00	85.3 AV			1.21 H	204	46.80	38.50
7	11570.00	55.7 PK	74.0	-18.3	1.00 H	85	6.90	48.80
8	11570.00	42.5 AV	54.0	-11.5	1.00 H	85	-6.30	48.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4840.00	50.3 PK	74.0	-23.7	1.00 V	154	13.40	36.90
2	4840.00	41.9 AV	54.0	-12.1	1.00 V	154	5.00	36.90
3	5000.00	53.3 PK	74.0	-20.7	1.47 V	96	16.10	37.20
4	5000.00	44.3 AV	54.0	-9.7	1.47 V	96	7.10	37.20
5	5040.00	53.2 PK	74.0	-20.8	1.44 V	99	15.90	37.30
6	5040.00	46.0 AV	54.0	-8.0	1.44 V	99	8.70	37.30
7	5120.00	51.6 PK	74.0	-22.4	1.00 V	103	14.20	37.40
8	5120.00	46.0 AV	54.0	-8.0	1.00 V	103	8.60	37.40
9	5360.00	54.9 PK	74.0	-19.1	1.24 V	163	17.10	37.80
10	5360.00	49.5 AV	54.0	-4.5	1.24 V	163	11.70	37.80
11	*5785.00	109.9 PK			1.05 V	137	71.40	38.50
12	*5785.00	99.0 AV			1.05 V	137	60.50	38.50
13	11570.00	54.9 PK	74.0	-19.1	1.00 V	30	6.10	48.80
14	11570.00	42.7 AV	54.0	-11.3	1.00 V	30	-6.10	48.80

- REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. “ \* ”: Fundamental frequency.  
6. The limit value is defined as per 15.247.





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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	46.4 PK	74.0	-27.6	1.00 H	118	9.20	37.20
2	5000.00	33.9 AV	54.0	-20.1	1.00 H	118	-3.30	37.20
3	5360.00	47.5 PK	74.0	-26.5	1.00 H	195	9.70	37.80
4	5360.00	36.6 AV	54.0	-17.4	1.00 H	195	-1.20	37.80
5	*5825.00	96.0 PK			1.00 H	199	57.40	38.60
6	*5825.00	84.5 AV			1.00 H	199	45.90	38.60
7	#5850.00	51.1 PK	76.0	-24.9	1.00 H	110	12.50	38.60
8	#5850.00	33.9 AV	64.5	-30.6	1.00 H	110	-4.70	38.60
9	11650.00	56.0 PK	74.0	-18.0	1.00 H	74	7.30	48.70
10	11650.00	42.8 AV	54.0	-11.2	1.00 H	74	-5.90	48.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	53.4 PK	74.0	-20.6	1.38 V	97	16.20	37.20
2	5000.00	44.5 AV	54.0	-9.5	1.38 V	97	7.30	37.20
3	5040.00	51.9 PK	74.0	-22.1	1.45 V	100	14.60	37.30
4	5040.00	45.9 AV	54.0	-8.1	1.45 V	100	8.60	37.30
5	5120.00	51.8 PK	74.0	-22.2	1.00 V	102	14.40	37.40
6	5120.00	46.4 AV	54.0	-7.6	1.00 V	102	9.00	37.40
7	5360.00	55.2 PK	74.0	-18.8	1.24 V	163	17.40	37.80
8	5360.00	49.4 AV	54.0	-4.6	1.24 V	163	11.60	37.80
9	*5825.00	109.3 PK			1.00 V	166	70.70	38.60
10	*5825.00	98.6 AV			1.00 V	166	60.00	38.60
11	#5850.00	58.1 PK	89.3	-31.2	1.02 V	170	19.50	38.60
12	#5850.00	39.6 AV	78.6	-39.0	1.02 V	170	1.00	38.60
13	11650.00	56.0 PK	74.0	-18.0	1.00 V	0	7.30	48.70
14	11650.00	43.2 AV	54.0	-10.8	1.00 V	0	-5.50	48.70

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. “ \* ”: Fundamental frequency.  
6. The limit value is defined as per 15.247.  
7. “#”:The radiated frequency is out the restricted band.



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## 802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	47.3 PK	74.0	-26.7	1.00 H	154	10.10	37.20
2	5000.00	32.9 AV	54.0	-21.1	1.00 H	154	-4.30	37.20
3	5360.00	46.2 PK	74.0	-27.8	1.00 H	121	8.40	37.80
4	5360.00	34.2 AV	54.0	-19.8	1.00 H	121	-3.60	37.80
5	#5725.00	62.5 PK	70.5	-8.0	1.00 H	114	24.10	38.40
6	#5725.00	42.5 AV	60.1	-17.6	1.00 H	114	4.10	38.40
7	*5755.00	90.5 PK			1.54 H	222	52.00	38.50
8	*5755.00	80.1 AV			1.54 H	222	41.60	38.50
9	11510.00	57.3 PK	74.0	-16.7	1.00 H	20	8.30	49.00
10	11510.00	43.4 AV	54.0	-10.6	1.00 H	20	-5.60	49.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	53.2 PK	74.0	-20.8	1.29 V	86	16.00	37.20
2	5000.00	44.0 AV	54.0	-10.0	1.29 V	86	6.80	37.20
3	5040.00	51.7 PK	74.0	-22.3	1.46 V	101	14.40	37.30
4	5040.00	46.2 AV	54.0	-7.8	1.46 V	101	8.90	37.30
5	5120.00	52.5 PK	74.0	-21.5	1.00 V	103	15.10	37.40
6	5120.00	46.3 AV	54.0	-7.7	1.00 V	103	8.90	37.40
7	5360.00	54.3 PK	74.0	-19.7	1.00 V	162	16.50	37.80
8	5360.00	48.3 AV	54.0	-5.7	1.00 V	162	10.50	37.80
9	#5725.00	72.7 PK	85.1	-12.4	1.00 V	176	34.30	38.40
10	#5725.00	51.2 AV	74.7	-23.5	1.00 V	176	12.80	38.40
11	*5755.00	105.1 PK			1.03 V	170	66.60	38.50
12	*5755.00	94.7 AV			1.03 V	170	56.20	38.50
13	11510.00	57.3 PK	74.0	-16.7	1.00 V	85	8.30	49.00
14	11510.00	43.5 AV	54.0	-10.5	1.00 V	85	-5.50	49.00

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	45.9 PK	74.0	-28.1	1.04 H	214	8.70	37.20
2	5000.00	32.8 AV	54.0	-21.2	1.04 H	214	-4.40	37.20
3	5360.00	46.5 PK	74.0	-27.5	1.00 H	124	8.70	37.80
4	5360.00	34.4 AV	54.0	-19.6	1.00 H	124	-3.40	37.80
5	*5795.00	90.4 PK			1.50 H	117	51.90	38.50
6	*5795.00	80.7 AV			1.50 H	117	42.20	38.50
7	#5850.00	46.4 PK	70.4	-24.0	1.00 H	288	7.80	38.60
8	#5850.00	32.0 AV	60.7	-28.7	1.00 H	288	-6.60	38.60
9	11590.00	56.6 PK	74.0	-17.4	1.00 H	56	7.80	48.80
10	11590.00	43.4 AV	54.0	-10.6	1.00 H	56	-5.40	48.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	53.4 PK	74.0	-20.6	1.34 V	93	16.20	37.20
2	5000.00	44.3 AV	54.0	-9.7	1.34 V	93	7.10	37.20
3	5040.00	49.0 PK	74.0	-25.0	1.30 V	100	11.70	37.30
4	5040.00	45.2 AV	54.0	-8.8	1.30 V	100	7.90	37.30
5	5120.00	52.3 PK	74.0	-21.7	1.00 V	102	14.90	37.40
6	5120.00	46.4 AV	54.0	-7.6	1.00 V	102	9.00	37.40
7	5360.00	53.6 PK	74.0	-20.4	1.18 V	115	15.80	37.80
8	5360.00	48.0 AV	54.0	-6.0	1.18 V	115	10.20	37.80
9	*5795.00	105.3 PK			1.06 V	172	66.80	38.50
10	*5795.00	94.0 AV			1.06 V	172	55.50	38.50
11	#5850.00	58.5 PK	85.3	-26.8	1.05 V	170	19.90	38.60
12	#5850.00	35.5 AV	74.0	-38.5	1.05 V	170	-3.10	38.60
13	11590.00	57.4 PK	74.0	-16.6	1.00 V	123	8.60	48.80
14	11590.00	43.3 AV	54.0	-10.7	1.00 V	123	-5.50	48.80

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. “ \* ”: Fundamental frequency.  
6. The limit value is defined as per 15.247.  
7. “#”: The radiated frequency is out the restricted band.



A D T

## BELOW 1GHz WORST-CASE DATA : 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	125.17	36.7 QP	43.5	-6.8	2.50 H	82	23.80	12.90
2	374.04	31.1 QP	46.0	-14.9	1.00 H	22	14.30	16.80
3	500.42	35.8 QP	46.0	-10.2	1.50 H	127	15.60	20.20
4	624.85	32.0 QP	46.0	-14.0	1.00 H	145	9.10	22.90
5	799.84	34.7 QP	46.0	-11.3	1.50 H	136	9.50	25.20
6	875.67	31.6 QP	46.0	-14.4	1.50 H	130	5.10	26.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.12	35.9 QP	40.0	-4.1	1.00 V	340	22.40	13.50
2	125.17	35.5 QP	43.5	-8.0	1.50 V	169	22.60	12.90
3	201.00	20.8 QP	43.5	-22.7	1.00 V	112	10.40	10.40
4	374.04	32.5 QP	46.0	-13.5	1.00 V	166	15.70	16.80
5	500.42	37.8 QP	46.0	-8.2	1.00 V	352	17.60	20.20
6	624.85	30.0 QP	46.0	-16.0	1.50 V	190	7.10	22.90

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

## 5.2 CONDUCTED EMISSION MEASUREMENT

### 5.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

- NOTE:** 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 5.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Nov. 30, 2010	Nov. 29, 2011
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 30, 2010	Dec. 29, 2011
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jul. 07, 2011	Jul. 06, 2012
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 06, 2011	Jan. 05, 2012
LISN ROHDE & SCHWARZ	ESH3-Z5	835239/001	Feb. 22, 2011	Feb. 21, 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_Conc_ V7.3.7	NA	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.

### 5.2.3 TEST PROCEDURES

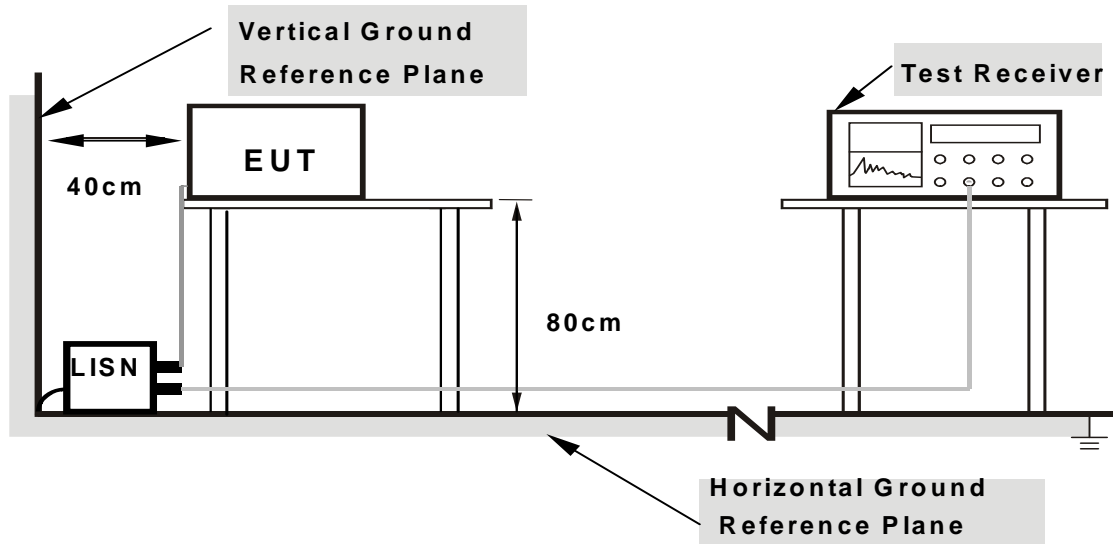
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

### 5.2.4 DEVIATION FROM TEST STANDARD

No deviation.

## 5.2.5 TEST SETUP



**Note: 1.Support units were connected to second LISN.**

**2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

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

## 5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

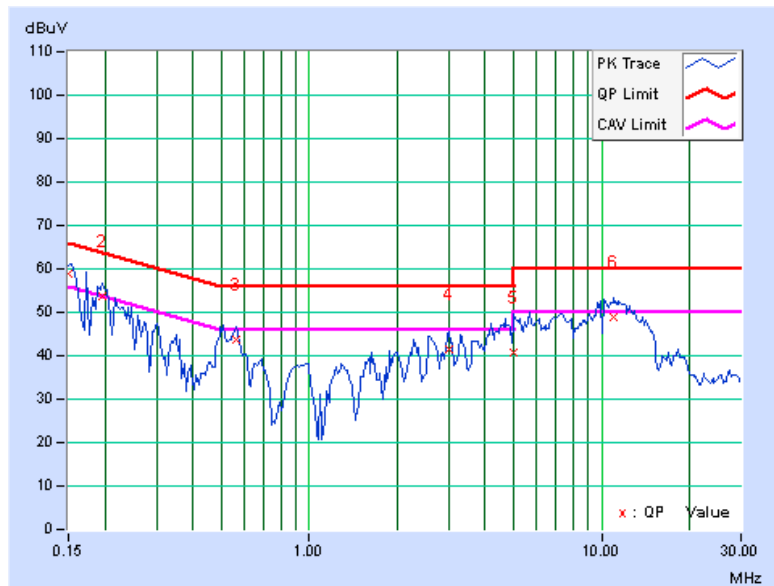
## 5.2.7 TEST RESULTS

### CONDUCTED WORST-CASE DATA : 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.11	58.72	43.34	58.84	43.46	66.00	56.00	-7.16	-12.54
2	0.197	0.12	53.66	37.78	53.78	37.90	63.74	53.74	-9.96	-15.84
3	0.564	0.13	43.55	-	43.68	-	56.00	46.00	-12.32	-
4	3.016	0.25	41.26	-	41.51	-	56.00	46.00	-14.49	-
5	5.020	0.37	40.21	-	40.58	-	60.00	50.00	-19.42	-
6	11.055	0.71	48.21	-	48.92	-	60.00	50.00	-11.08	-

- 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.

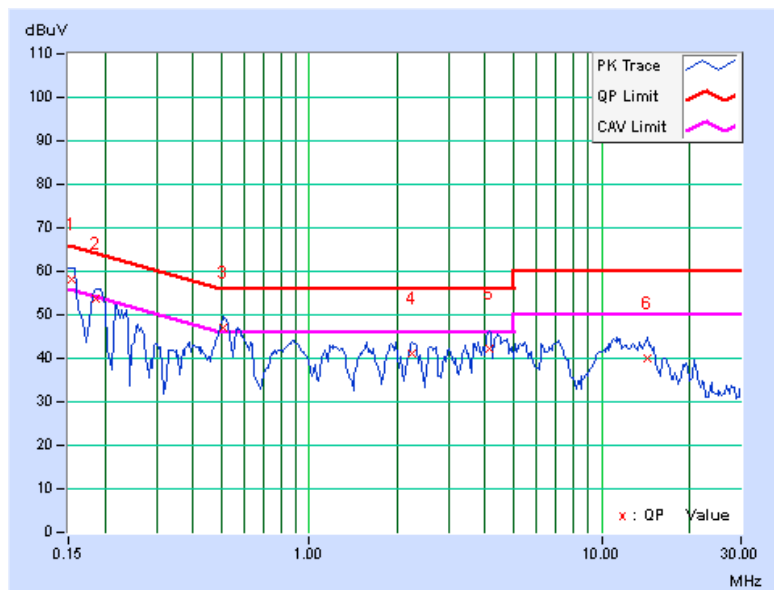




PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.13	58.15	44.64	58.28	44.77	65.79	55.79	-7.51	-11.02
2	0.187	0.13	53.48	-	53.61	-	64.19	54.19	-10.58	-
3	0.505	0.15	46.85	36.11	47.00	36.26	56.00	46.00	-9.00	-9.74
4	2.254	0.22	40.90	-	41.12	-	56.00	46.00	-14.88	-
5	4.141	0.33	41.99	-	42.32	-	56.00	46.00	-13.68	-
6	14.379	0.73	39.25	-	39.98	-	60.00	50.00	-20.02	-

- 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.





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### 5.3 6dB BANDWIDTH MEASUREMENT

#### 5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

#### 5.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100039	Feb. 23, 2011	Feb. 22, 2012

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

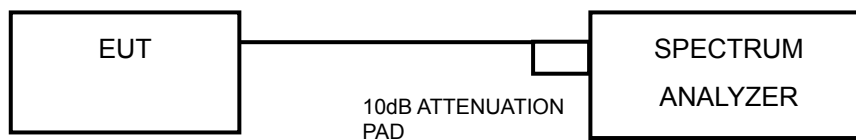
#### 5.3.3 TEST PROCEDURE

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

#### 5.3.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 5.3.5 TEST SETUP



#### 5.3.6 EUT OPERATING CONDITIONS

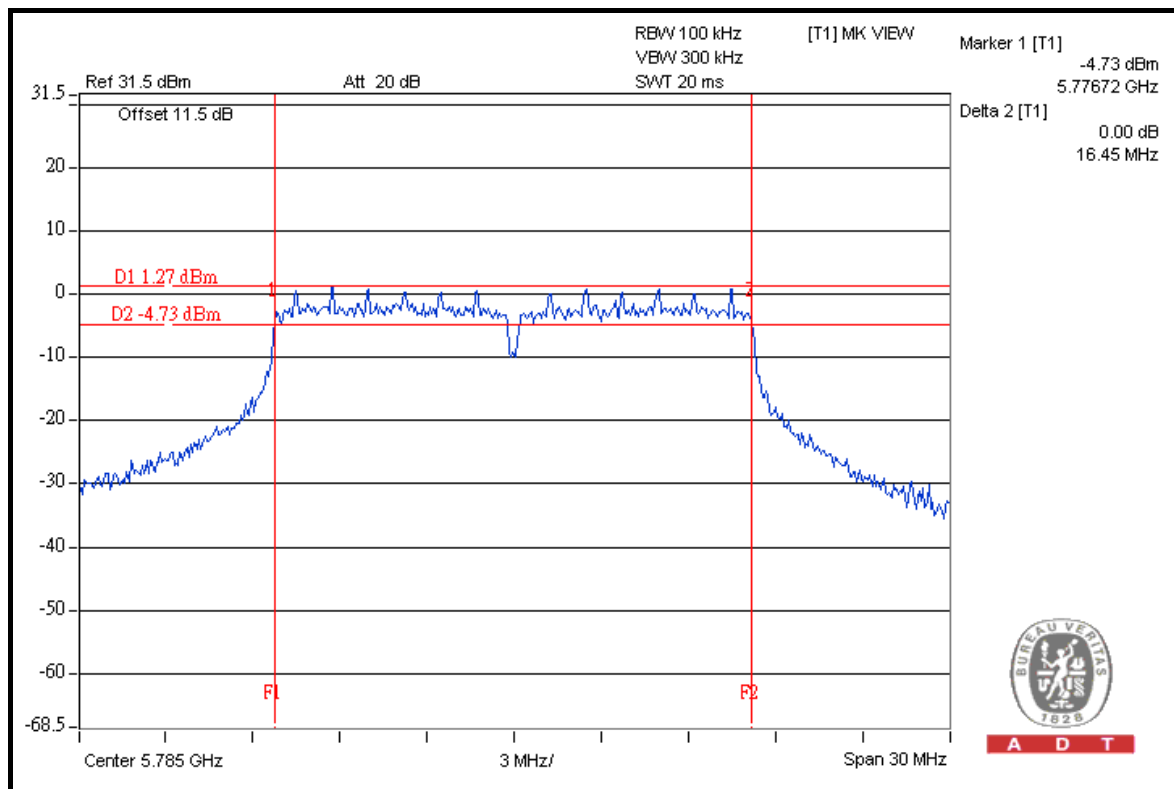
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

### 5.3.7 TEST RESULTS

## 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	16.39	16.42	16.44	0.5	PASS
157	5785	16.44	16.45	16.45	0.5	PASS
165	5825	16.41	16.43	16.45	0.5	PASS

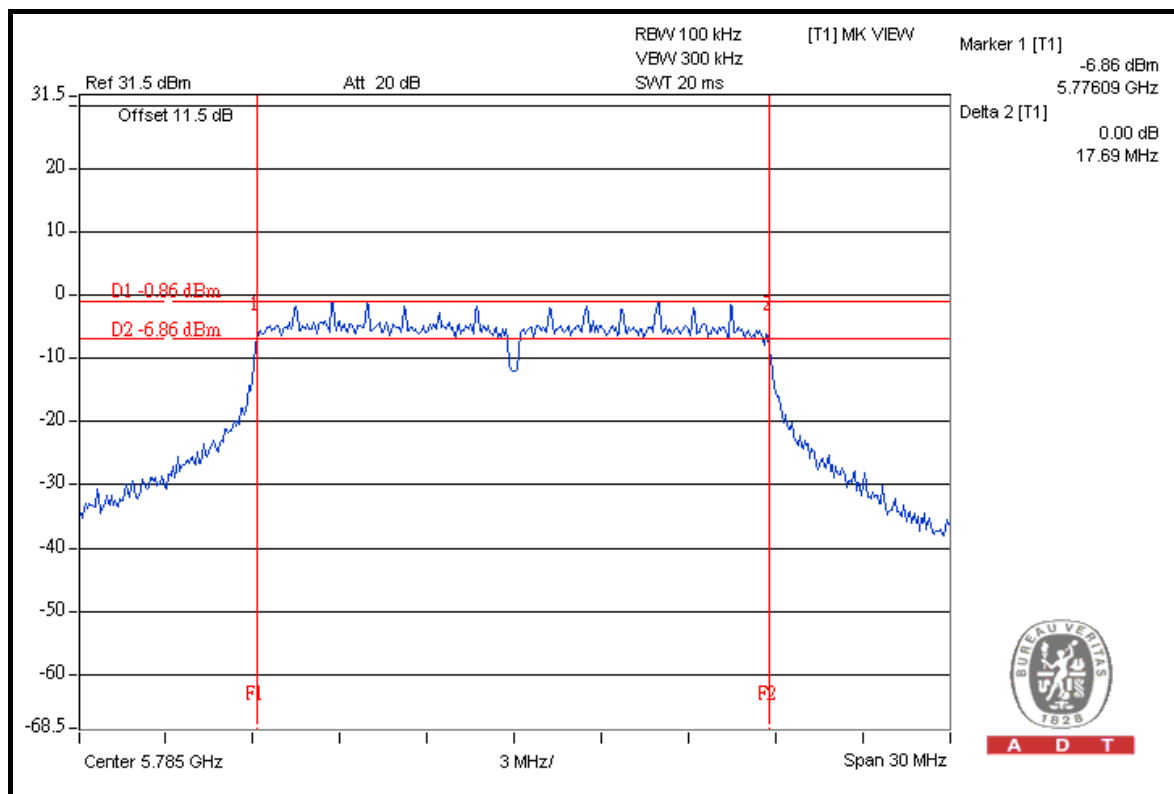
**FOR CHAIN 1: CH 157**



### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	17.67	17.66	17.67	0.5	PASS
157	5785	17.69	17.64	17.68	0.5	PASS
165	5825	17.62	17.65	17.65	0.5	PASS

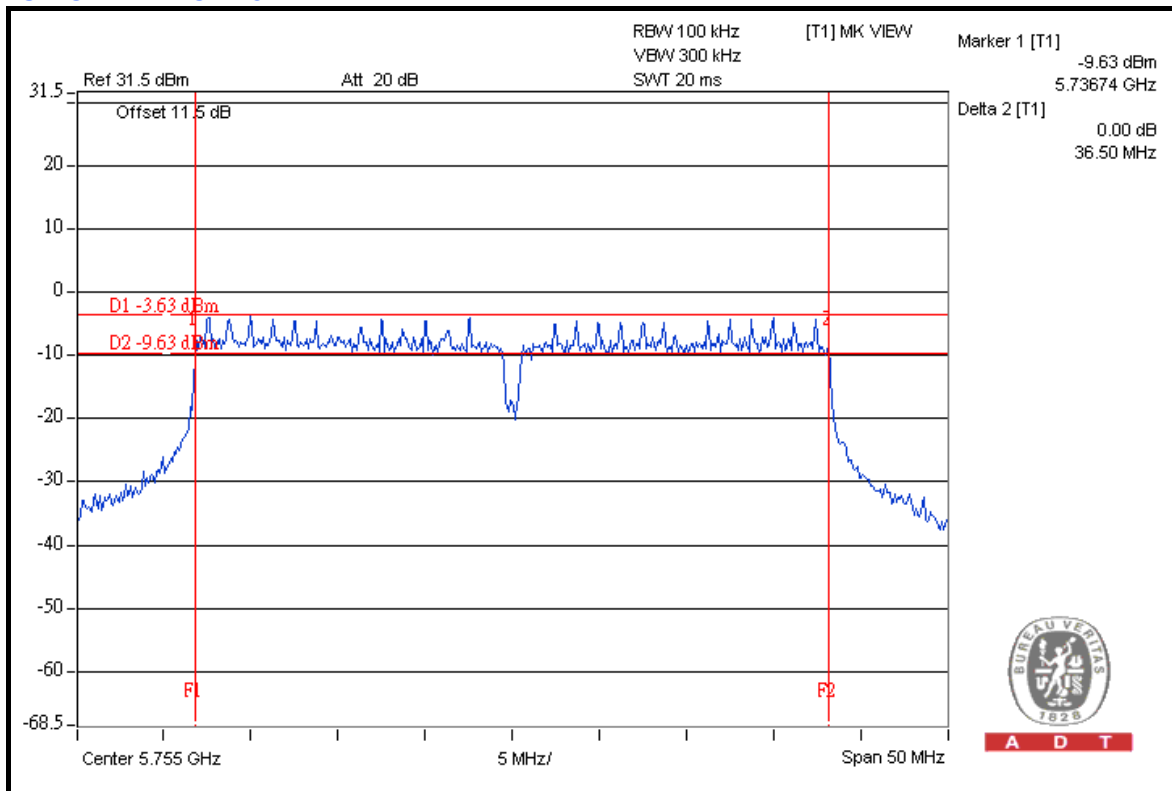
### FOR CHAIN 0: CH 157



### 802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
151	5755	36.45	36.47	36.50	0.5	PASS
159	5795	36.38	35.85	36.40	0.5	PASS

### FOR CHAIN 2: CH 151



## 5.4 MAXIMUM OUTPUT POWER

### 5.4.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

The Maximum Output Power Measurement is 30dBm.

### 5.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
High Speed Peak Power Meter	ML2495A	0842014	Apr. 26, 2011	Apr. 25, 2012
Power Sensor	MA2411B	0738404	Apr. 26, 2011	Apr. 25, 2012

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

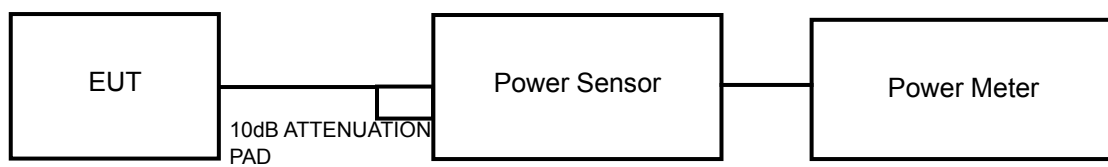
### 5.4.3 TEST PROCEDURES

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

#### 5.4.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 5.4.5 TEST SETUP



#### 5.4.6 EUT OPERATING CONDITIONS

Same as Item 5.3.6



## 5.4.7 TEST RESULTS

### 802.11a

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
149	5745	22.2	22.8	23.1	560.7	27.5	27.7	PASS
157	5785	22.3	22.8	22.9	555.4	27.4	27.7	PASS
165	5825	22.7	22.3	22.8	546.6	27.4	27.7	PASS

Directional gain =  $3.5\text{dBi} + 10\log(3) = 8.3\text{dBi} > 6\text{dBi}$  , so the conducted power limit shall be reduced to  $30 - (8.3 - 6) = 27.7\text{dBm}$

### 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	CHAIN 2				
149	5745	20.9	21.1	21.6	396.4	26.0	30	PASS
157	5785	21.3	21.0	21.8	412.1	26.2	30	PASS
165	5825	21.3	21.2	21.8	418.1	26.2	30	PASS

### 802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
151	5755	21.8	21.3	22.5	464.1	26.7	30	PASS
159	5795	21.0	21.3	21.8	412.1	26.2	30	PASS

## 5.5 POWER SPECTRAL DENSITY MEASUREMENT

### 5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 5.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100039	Feb. 23, 2011	Feb. 22, 2012

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

### 5.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 10kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

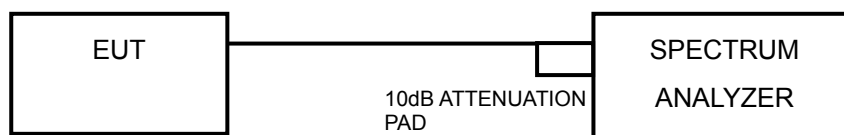
The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

Follow method 2 of KDB 662911 D01 Multiple Transmitter Output v01 to calculate total power density of 3 TX port.

#### 5.5.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 5.5.5 TEST SETUP



#### 5.5.6 EUT OPERATING CONDITION

Same as Item 5.3.6.

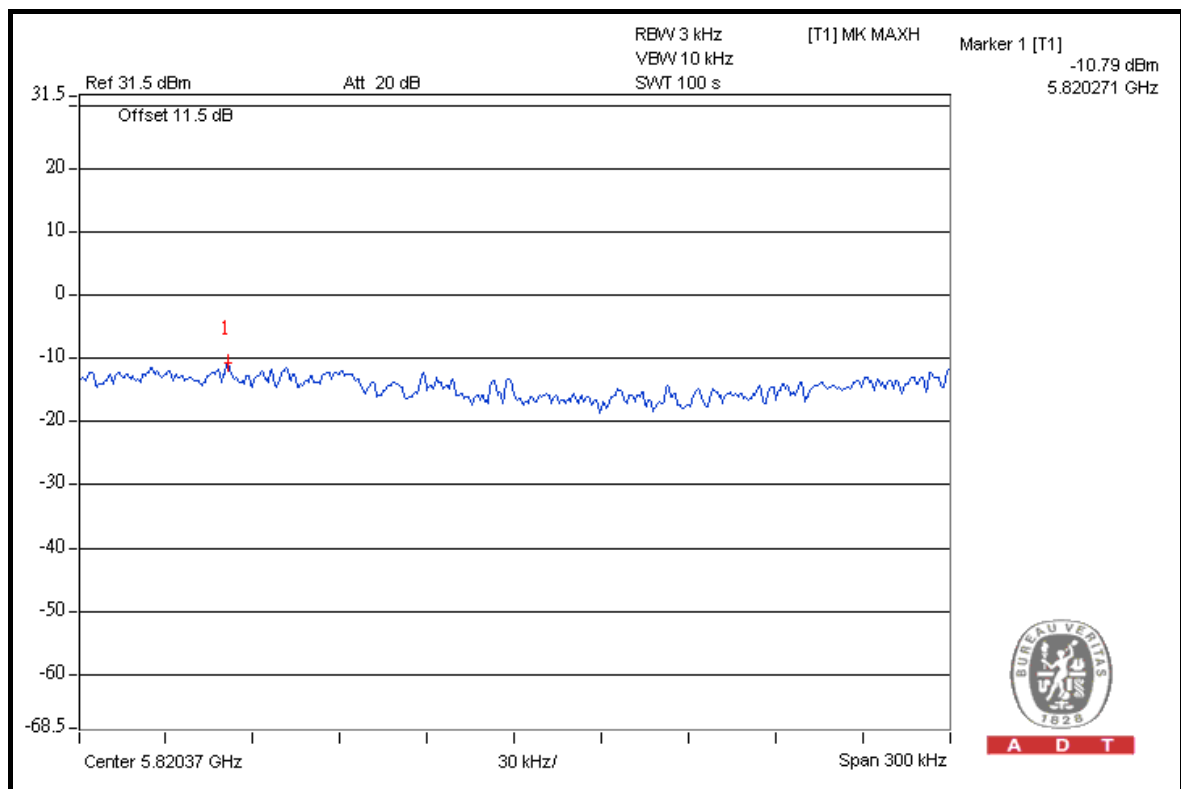
## 5.5.7 TEST RESULTS

### 802.11a

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=3) dB			
0	149	5745	-11.39	4.77	-6.6	5.7	PASS
	157	5785	-11.20	4.77	-6.4	5.7	PASS
	165	5825	-10.79	4.77	-6.0	5.7	PASS
1	149	5745	-12.82	4.77	-8.1	5.7	PASS
	157	5785	-12.67	4.77	-7.9	5.7	PASS
	165	5825	-13.40	4.77	-8.6	5.7	PASS
2	149	5745	-12.95	4.77	-8.2	5.7	PASS
	157	5785	-12.92	4.77	-8.2	5.7	PASS
	165	5825	-13.15	4.77	-8.4	5.7	PASS

Directional gain =  $3.5\text{dBi} + 10\log(3) = 8.3\text{dBi} > 6\text{dBi}$ , so the conducted power limit shall be reduced to  $8 - (8.3 - 6) = 5.7\text{dBm}$

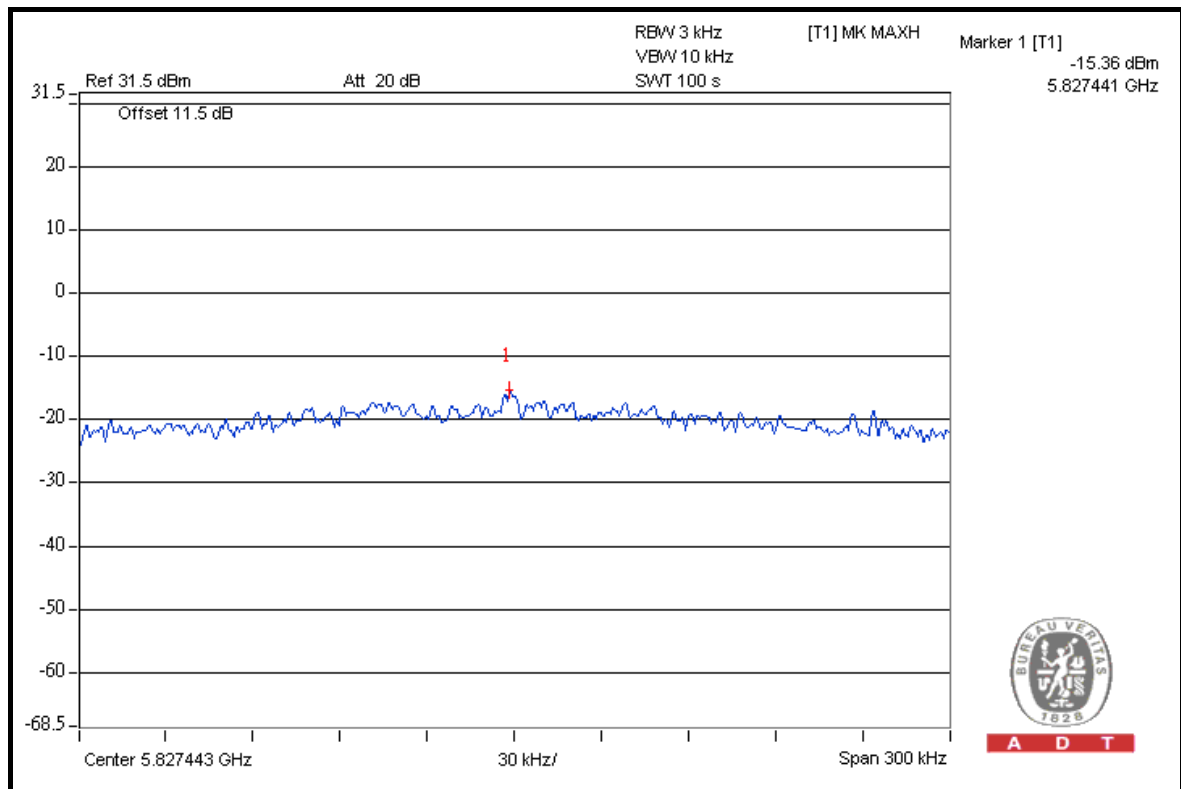
### FOR CHAIN 0: CH 165



### 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=3) dB			
0	149	5745	-15.90	4.77	-11.1	8	PASS
	157	5785	-15.38	4.77	-10.6	8	PASS
	165	5825	-15.36	4.77	-10.6	8	PASS
1	149	5745	-16.68	4.77	-11.9	8	PASS
	157	5785	-16.69	4.77	-11.9	8	PASS
	165	5825	-16.43	4.77	-11.7	8	PASS
2	149	5745	-15.85	4.77	-11.1	8	PASS
	157	5785	-15.56	4.77	-10.8	8	PASS
	165	5825	-15.77	4.77	-11.0	8	PASS

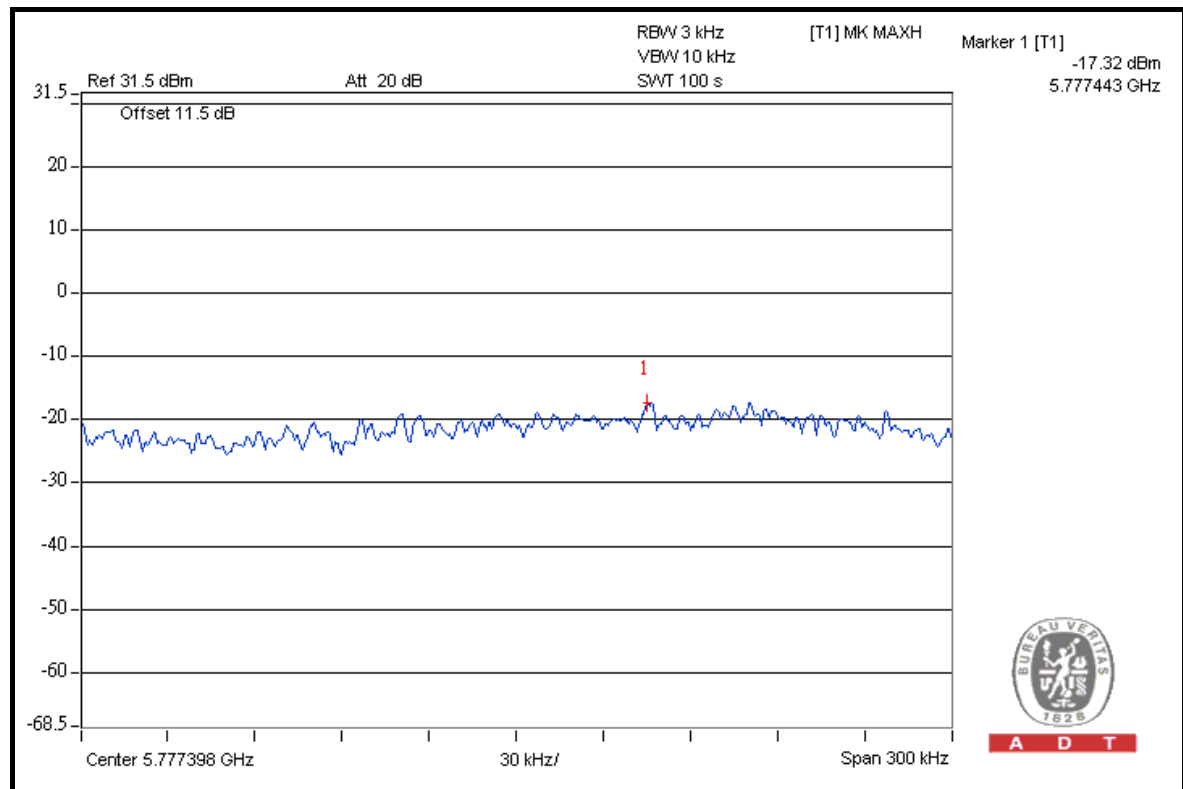
### FOR CHAIN 0: CH 165



### 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=3) dB			
0	151	5755	-17.68	4.77	-12.9	8	PASS
	159	5795	-18.69	4.77	-13.9	8	PASS
1	151	5755	-17.55	4.77	-12.8	8	PASS
	159	5795	-17.32	4.77	-12.6	8	PASS
2	151	5755	-18.04	4.77	-13.3	8	PASS
	159	5795	-18.83	4.77	-14.1	8	PASS

### FOR CHAIN 1: CH 159



## 5.6 BAND EDGES MEASUREMENT

### 5.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

### 5.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
<b>FOR CONDUCTED MEASUREMENT</b>				
SPECTRUM ANALYZER R&S	FSP40	100039	Feb. 23, 2011	Feb. 22, 2012
<b>FOR RADIATED MEASUREMENT</b>				
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Aug. 02, 2011	Aug. 01, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP 40	100041	Jul. 21, 2011	Jul. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 13, 2011	Apr. 12, 2012
HORN Antenna SCHWARZBECK	9120D	209	Aug. 25, 2011	Aug. 24, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8447D	2944A10633	Nov. 02, 2010	Nov. 01, 2011
Preamplifier Agilent	8449B	3008A01964	Nov. 02, 2010	Nov. 01, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295014/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	Aug. 19, 2011	Aug. 18, 2012
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA

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

### 5.6.3 TEST PROCEDURE

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. Set both RBW and VBW of spectrum analyzer to 100kHz and 300kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

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





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#### 5.6.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 5.6.5 EUT OPERATING CONDITION

Same as Item 5.3.6.

#### 5.6.6 TEST RESULTS

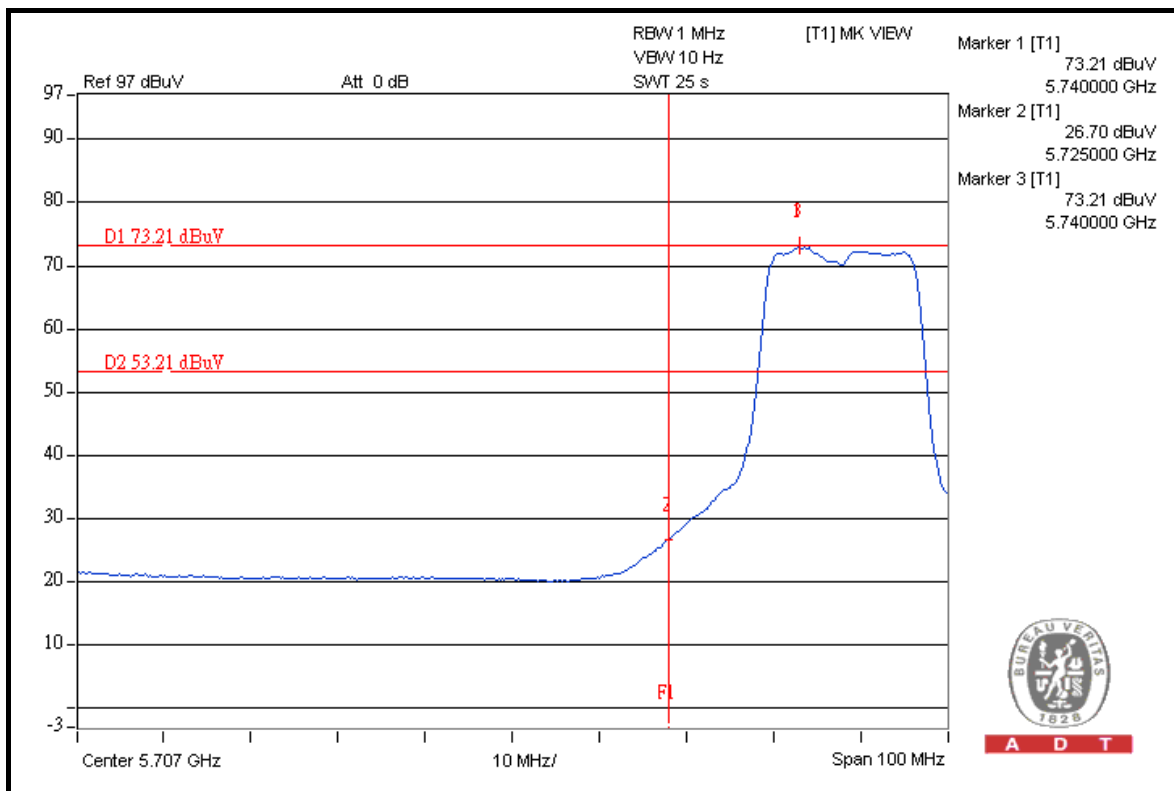
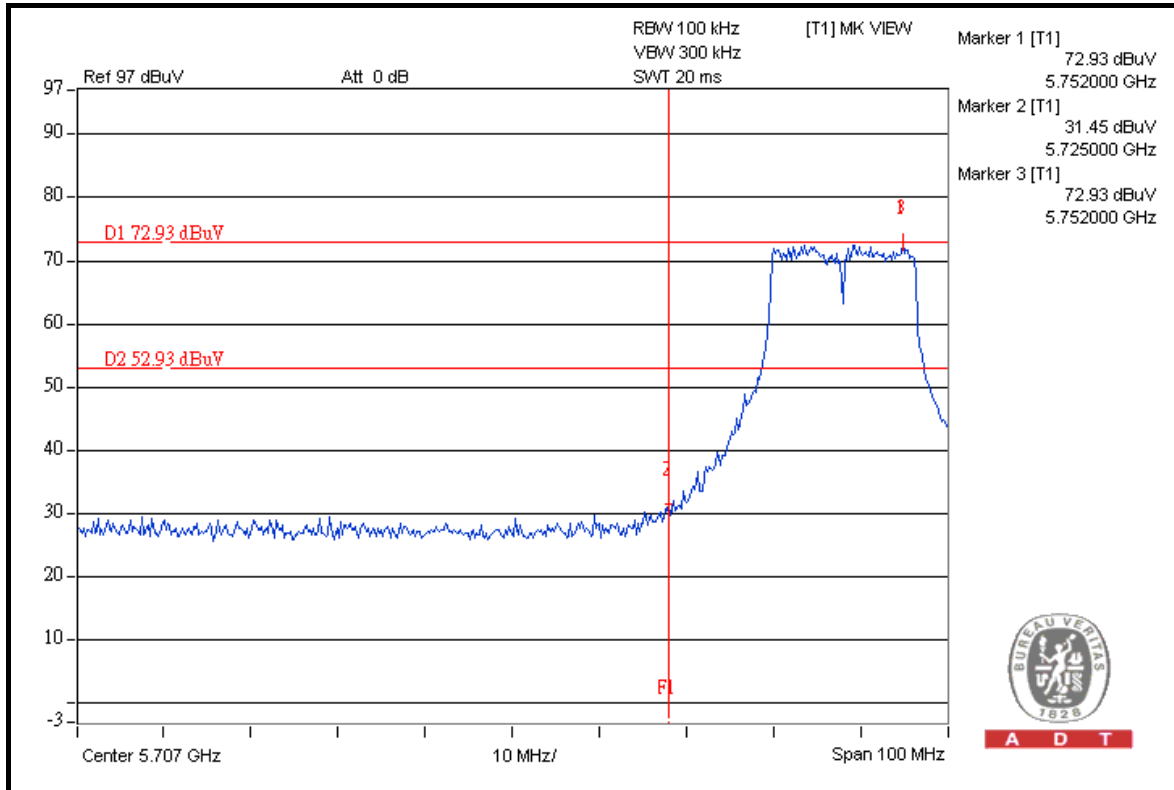
The spectrum plots are attached on the following pages. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).



A D T

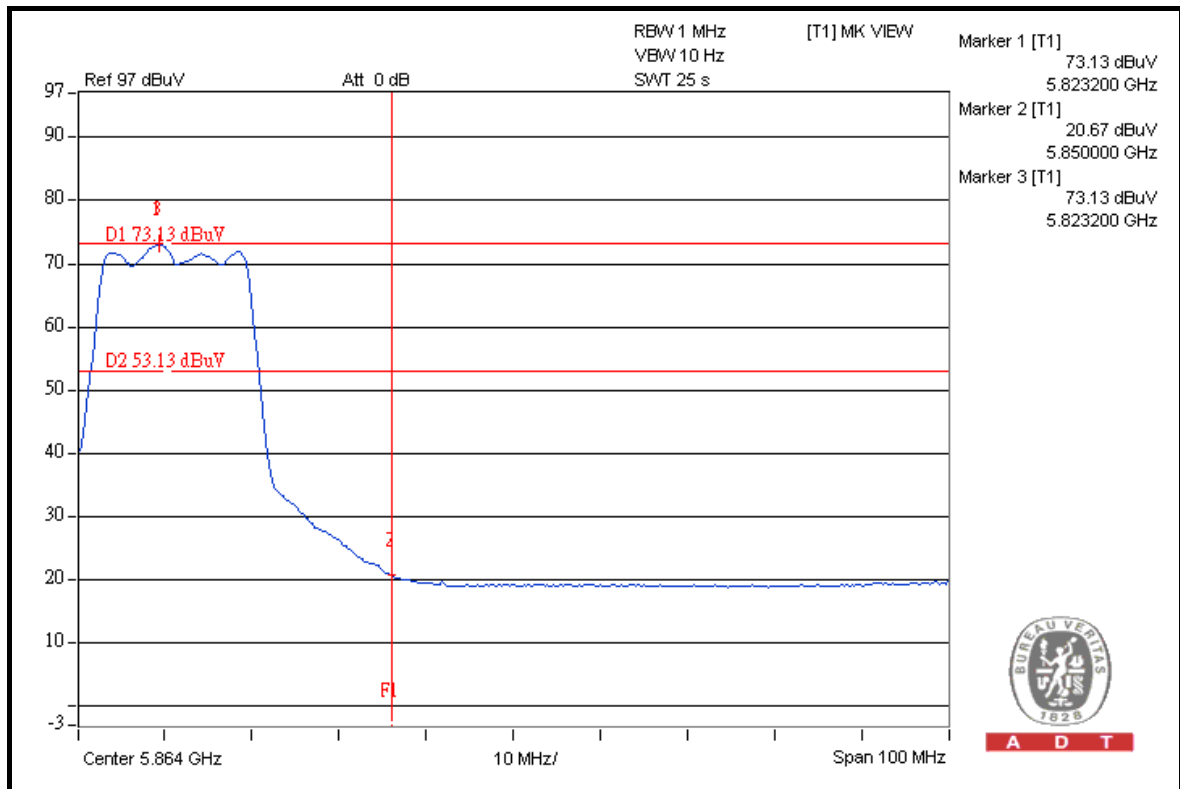
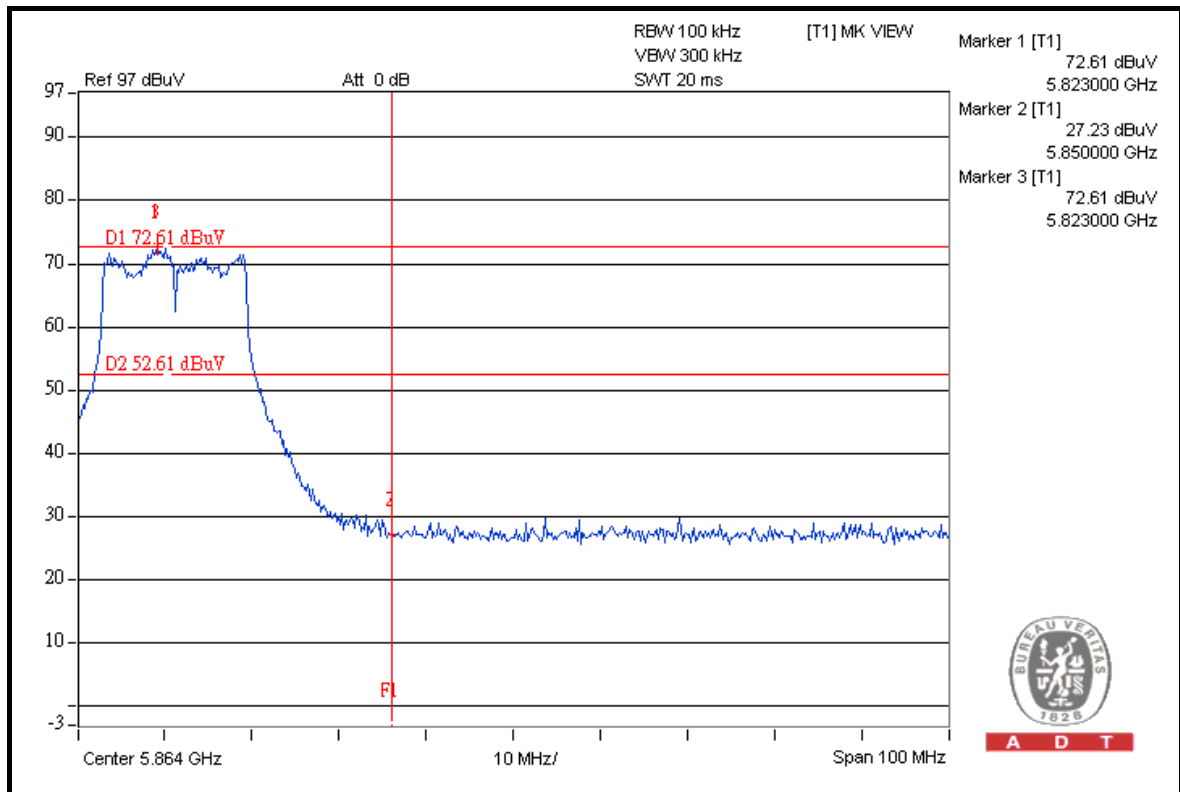
802.11a

FOR RADIATED MEASURED (THREE CHAINS ON)





A D T

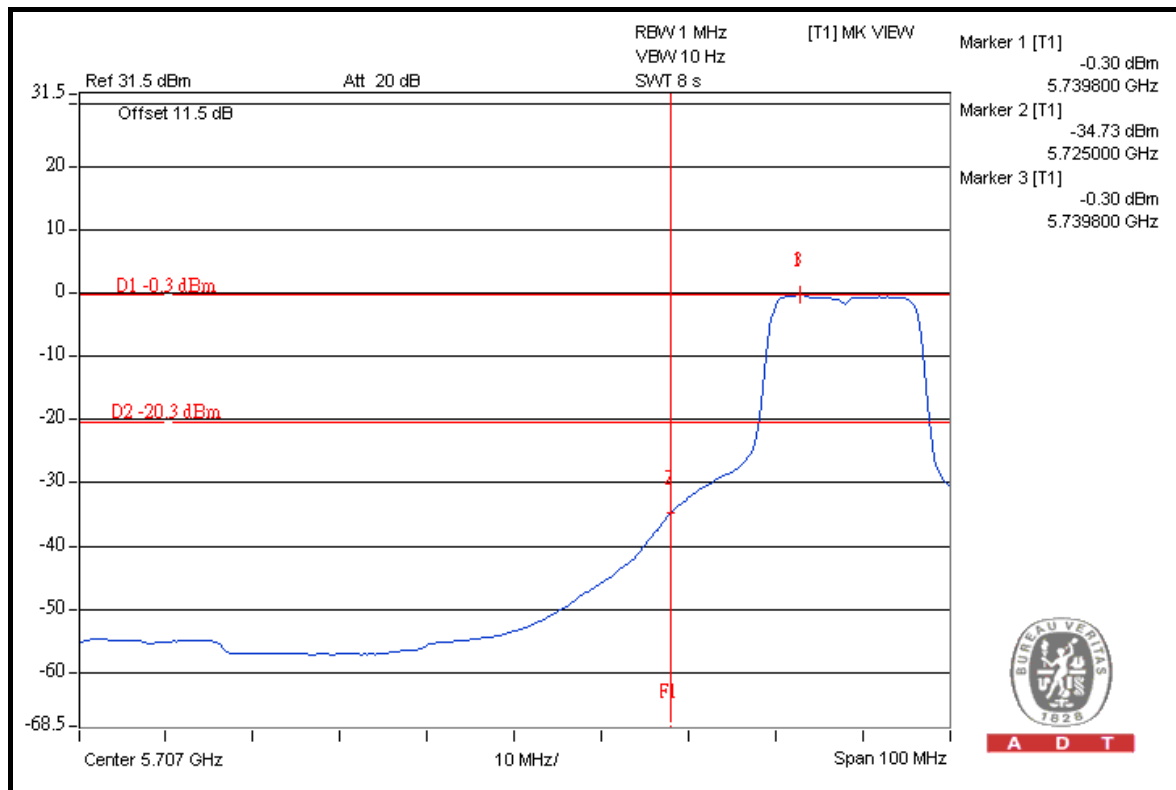
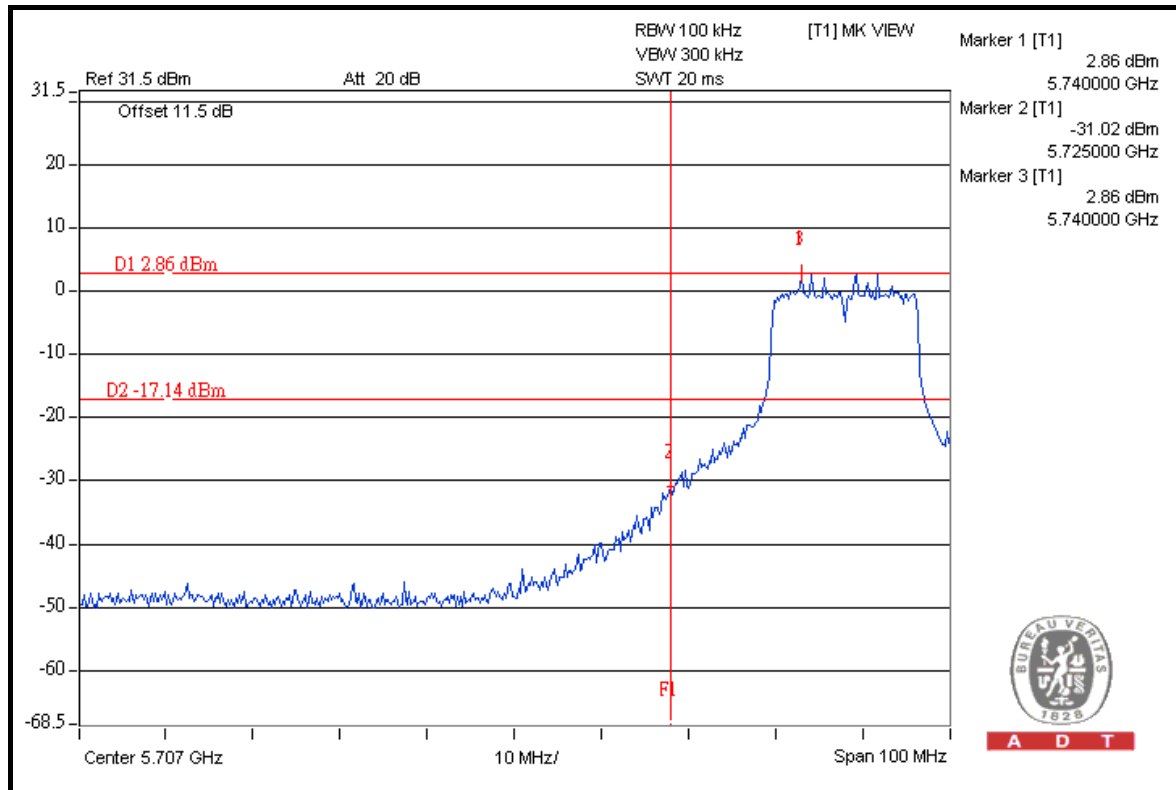




A D T

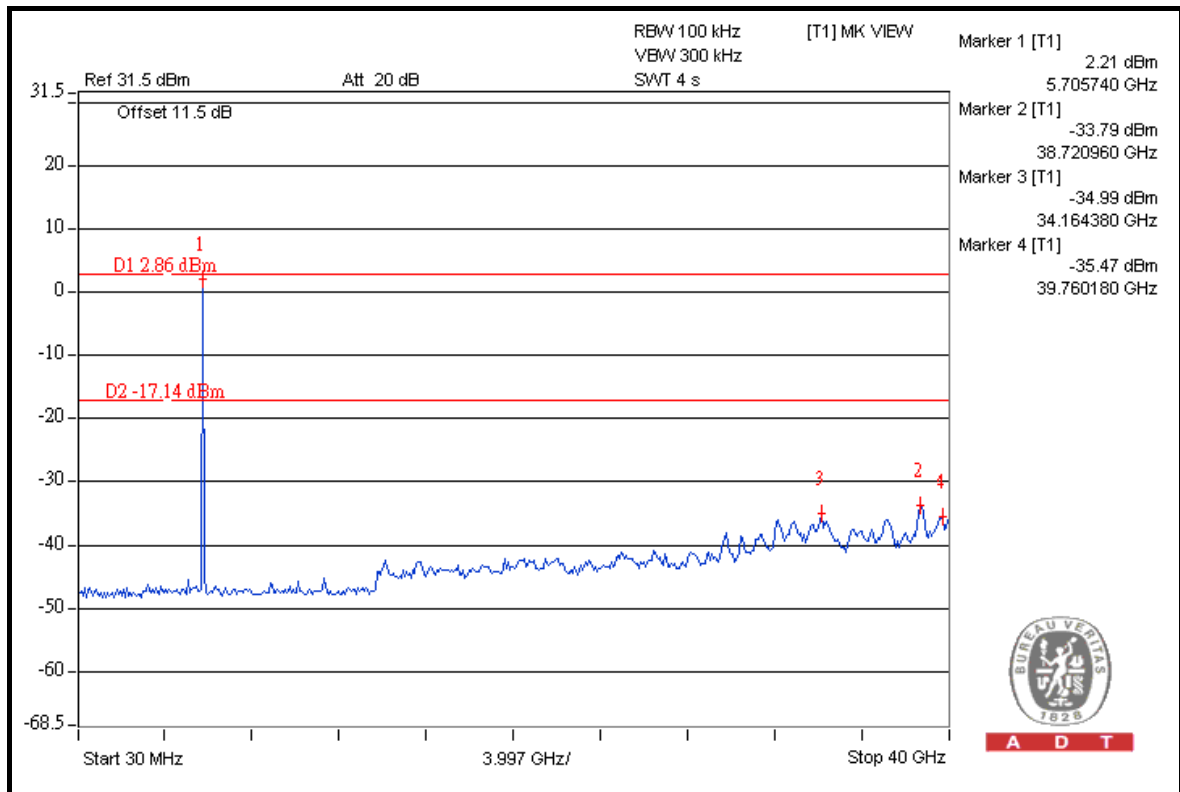
## FOR CONDUCTED MEASURED

### CHAIN 0

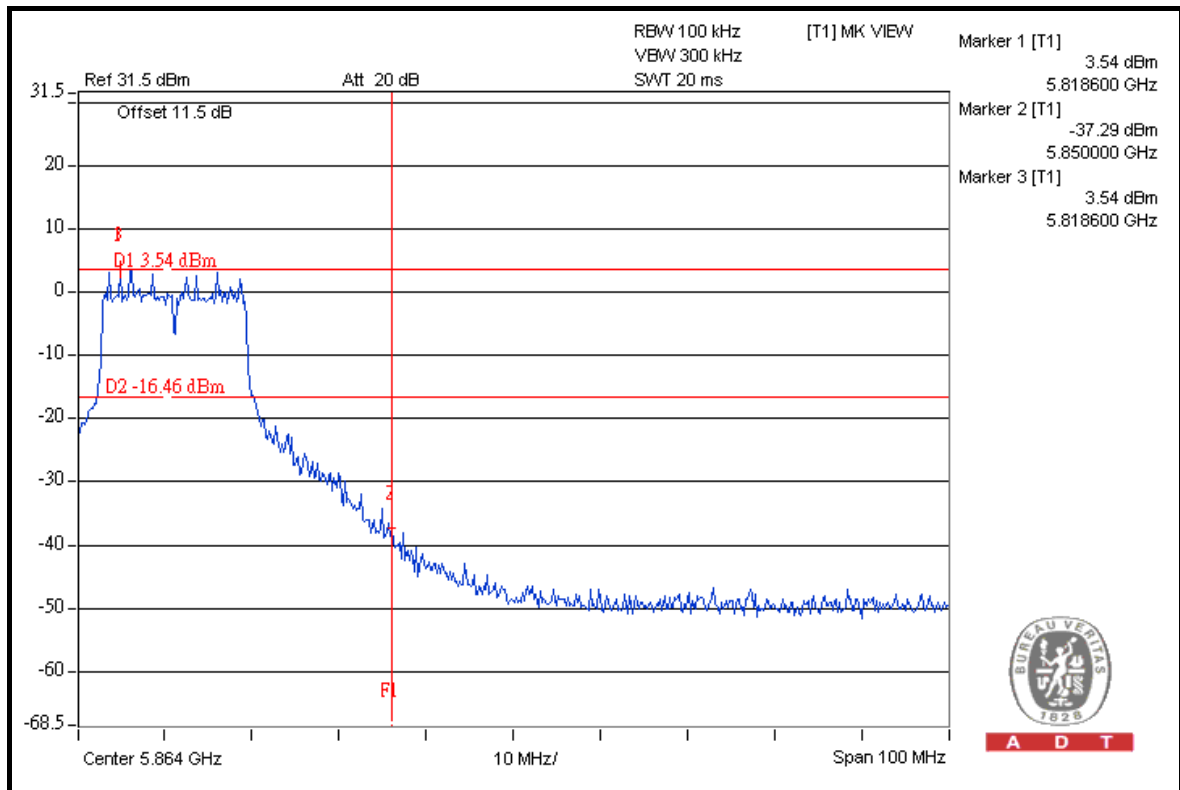




A D T



A D T



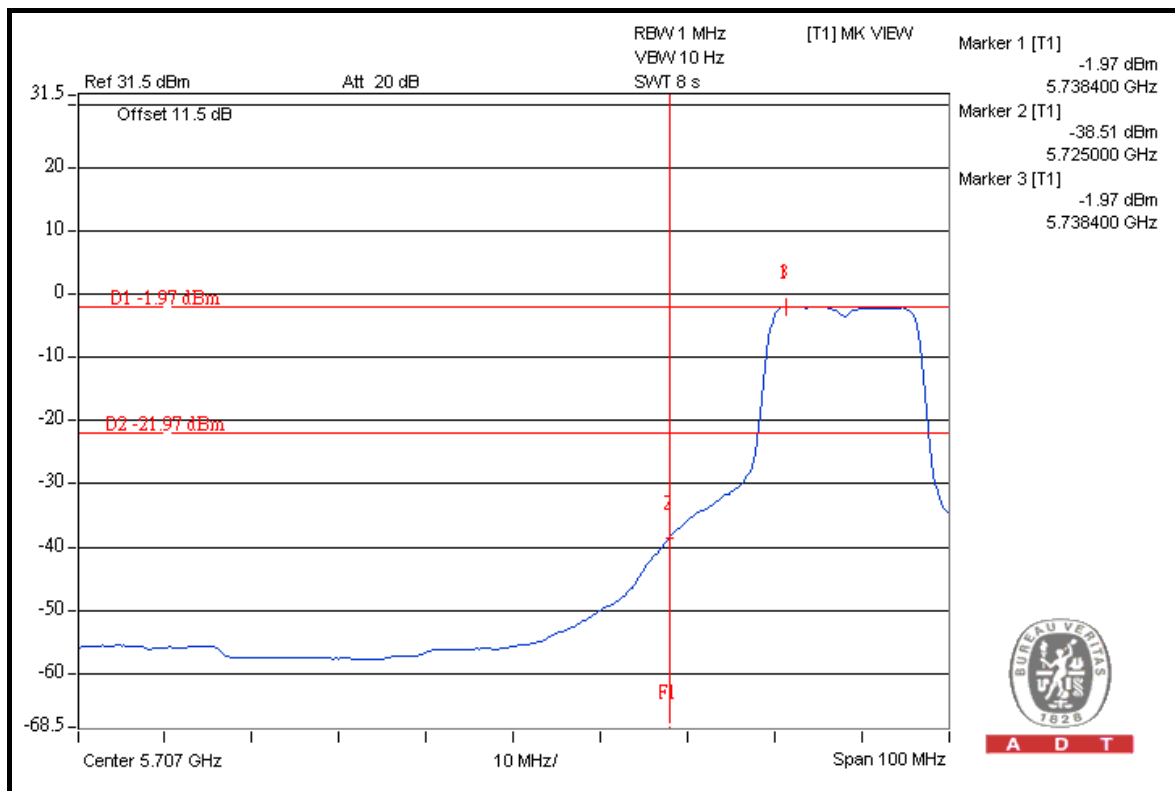
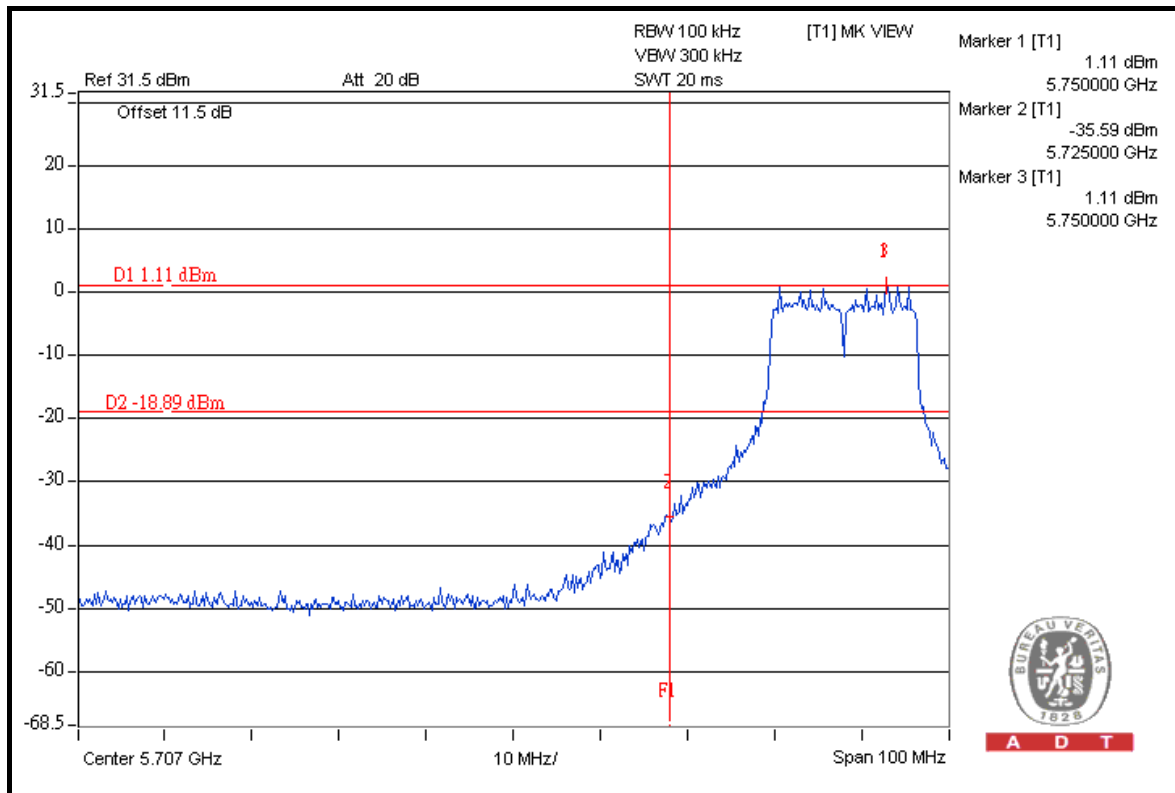
A D T





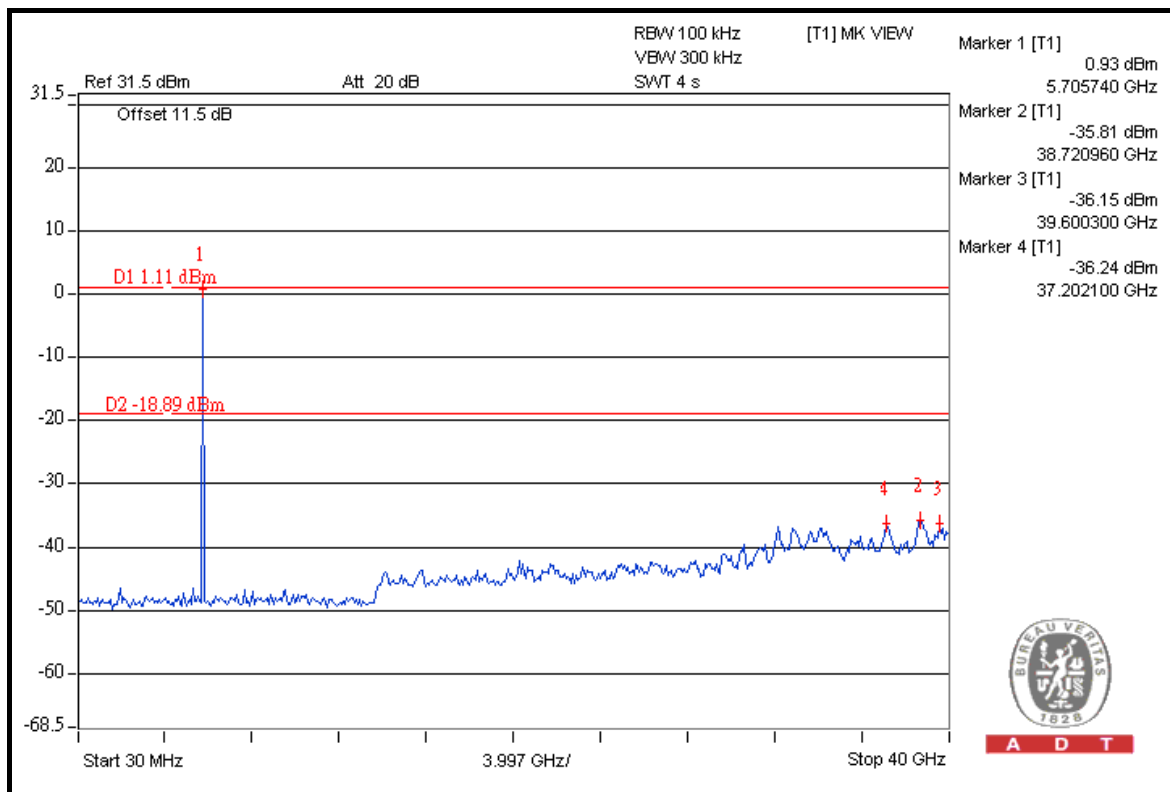
A D T

## CHAIN 1

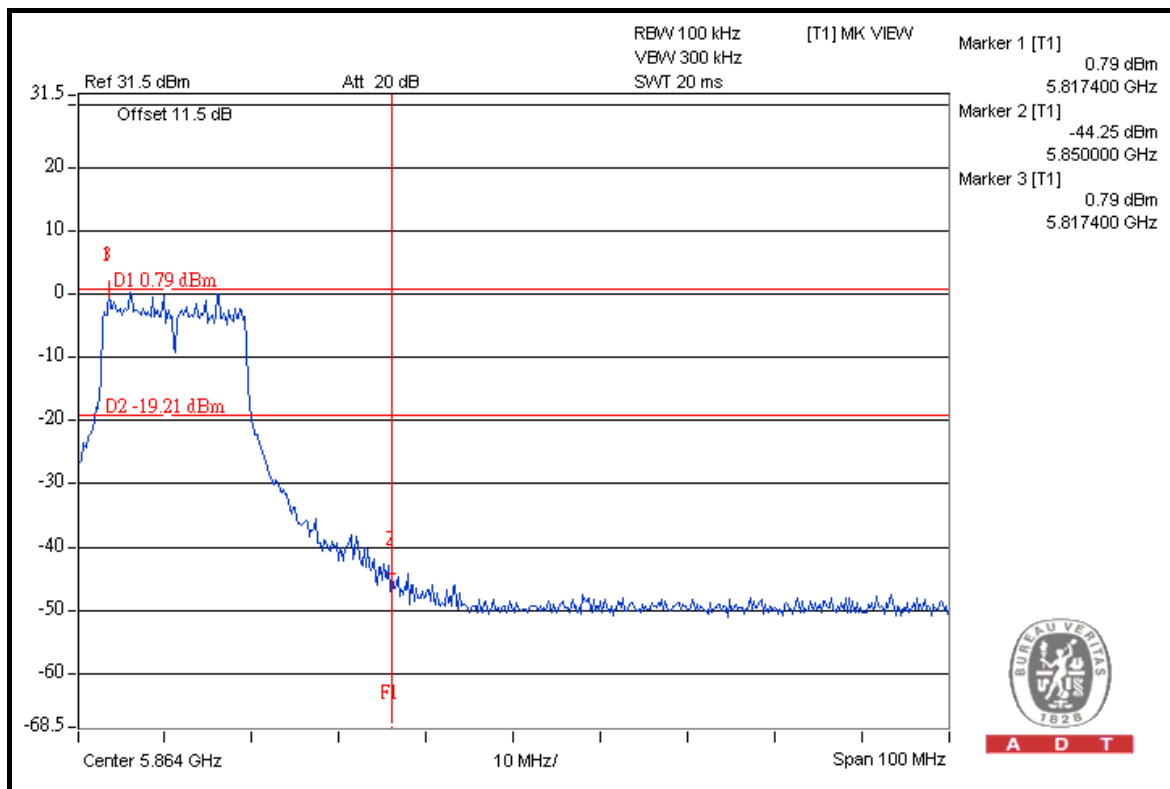




A D T



A D T

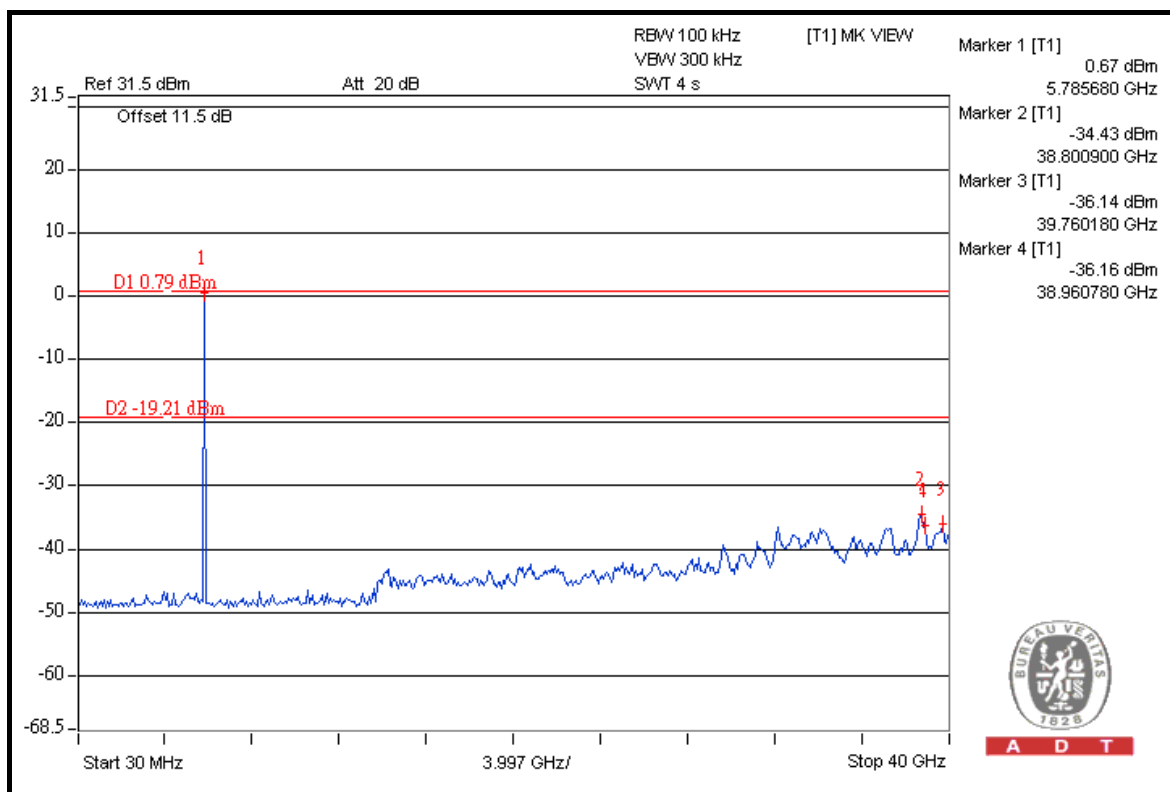
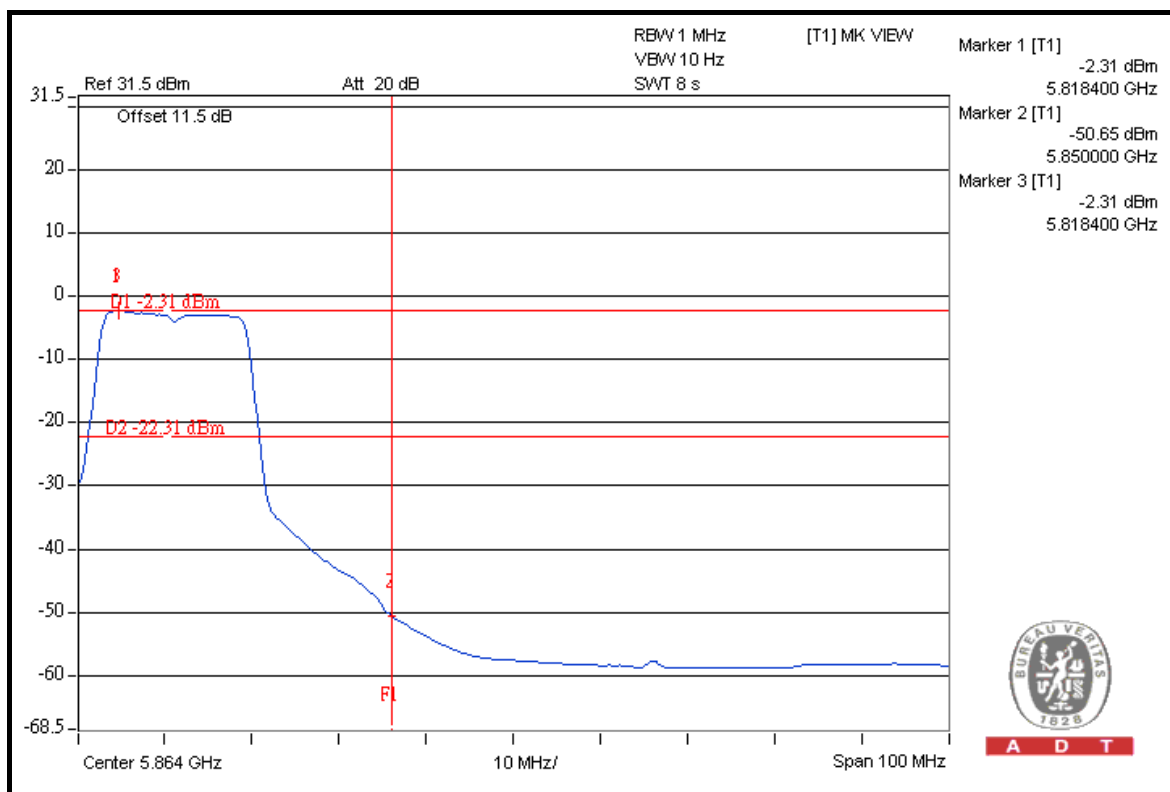


A D T





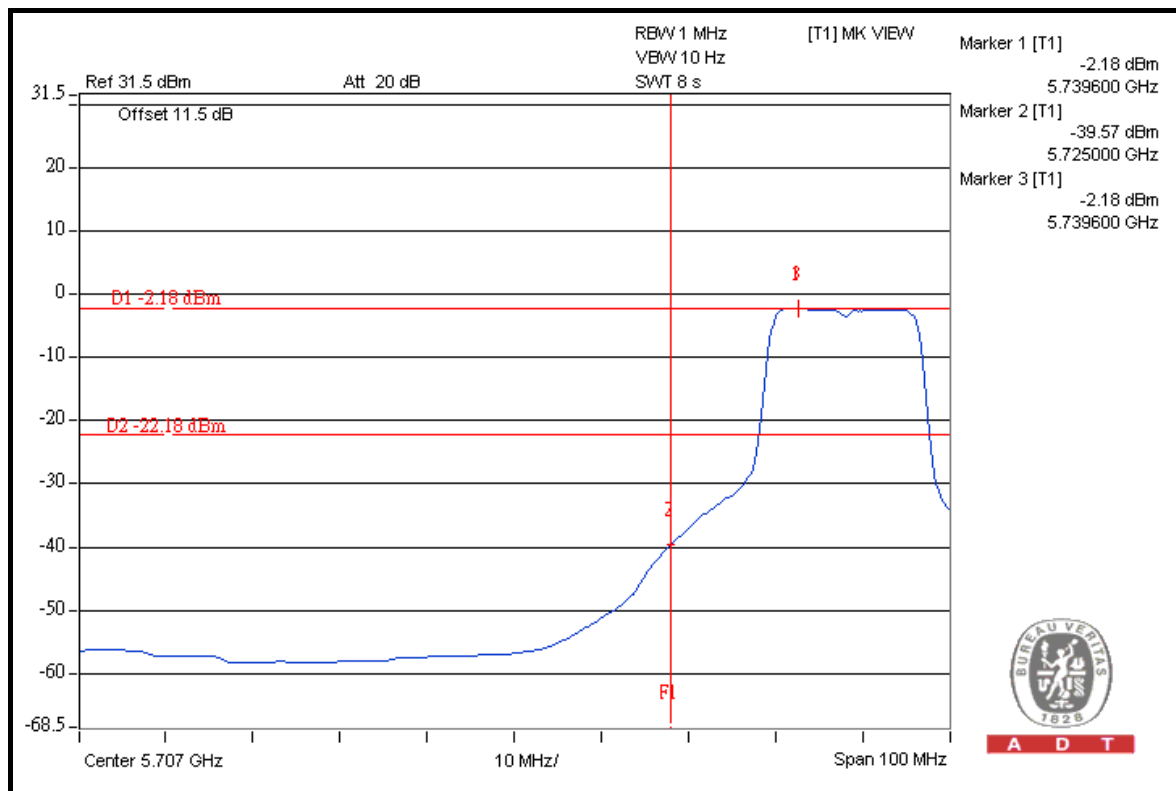
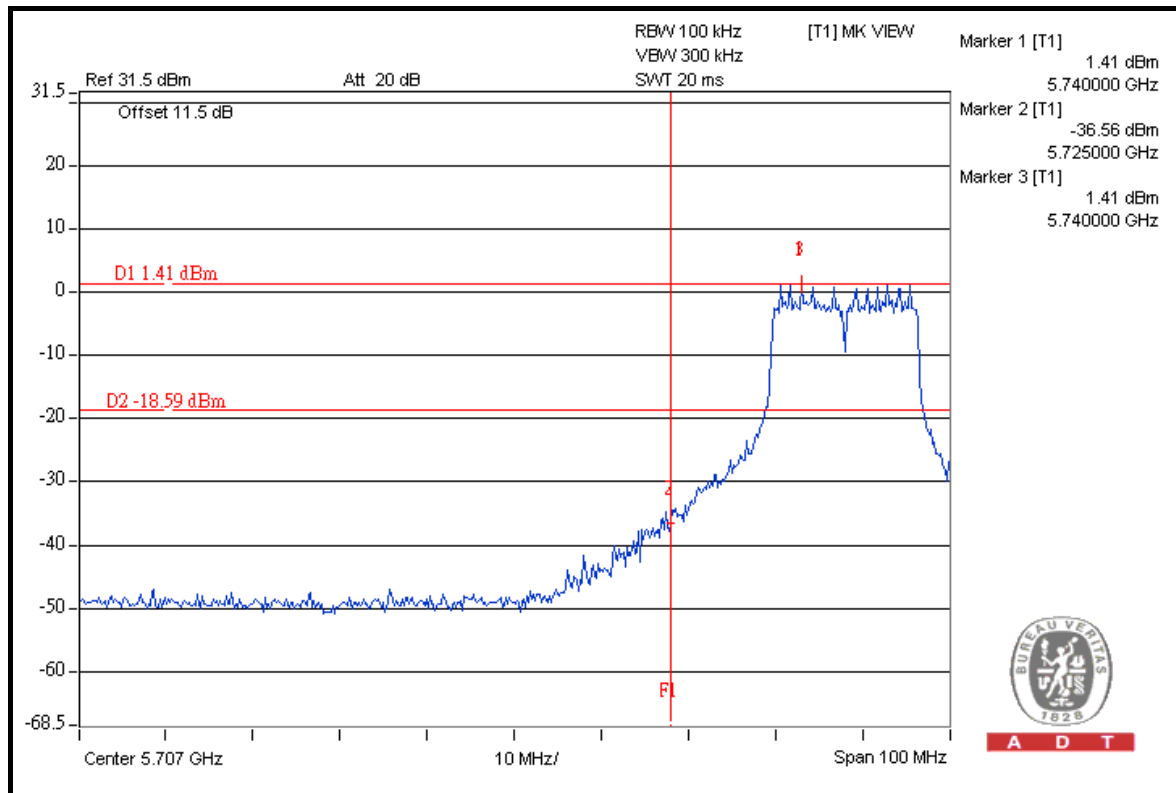
A D T





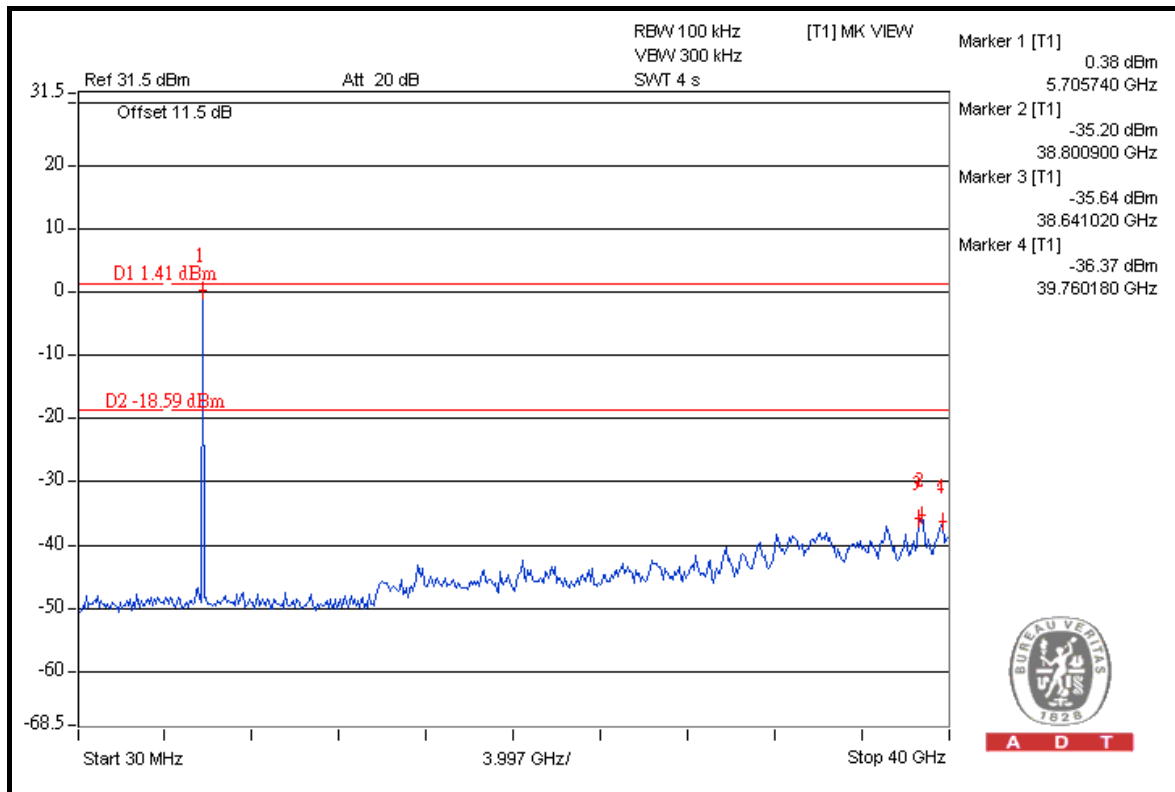
A D T

## CHAIN 2

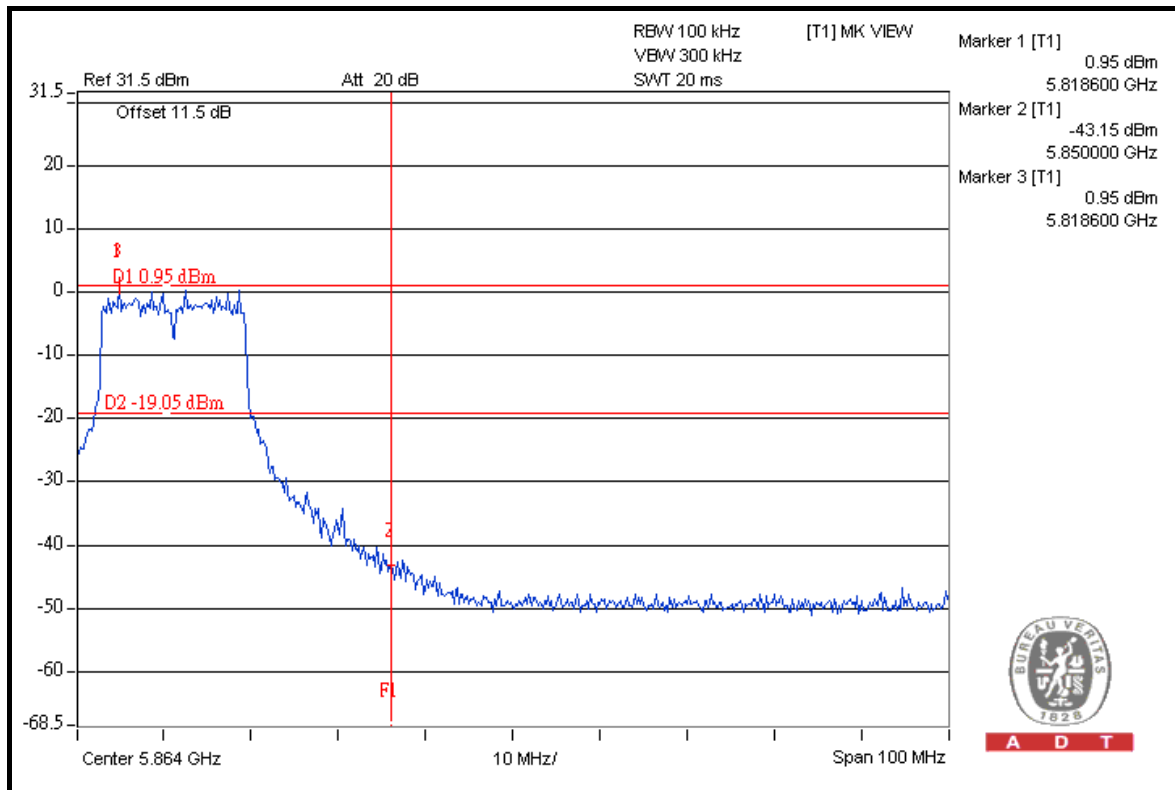




A D T



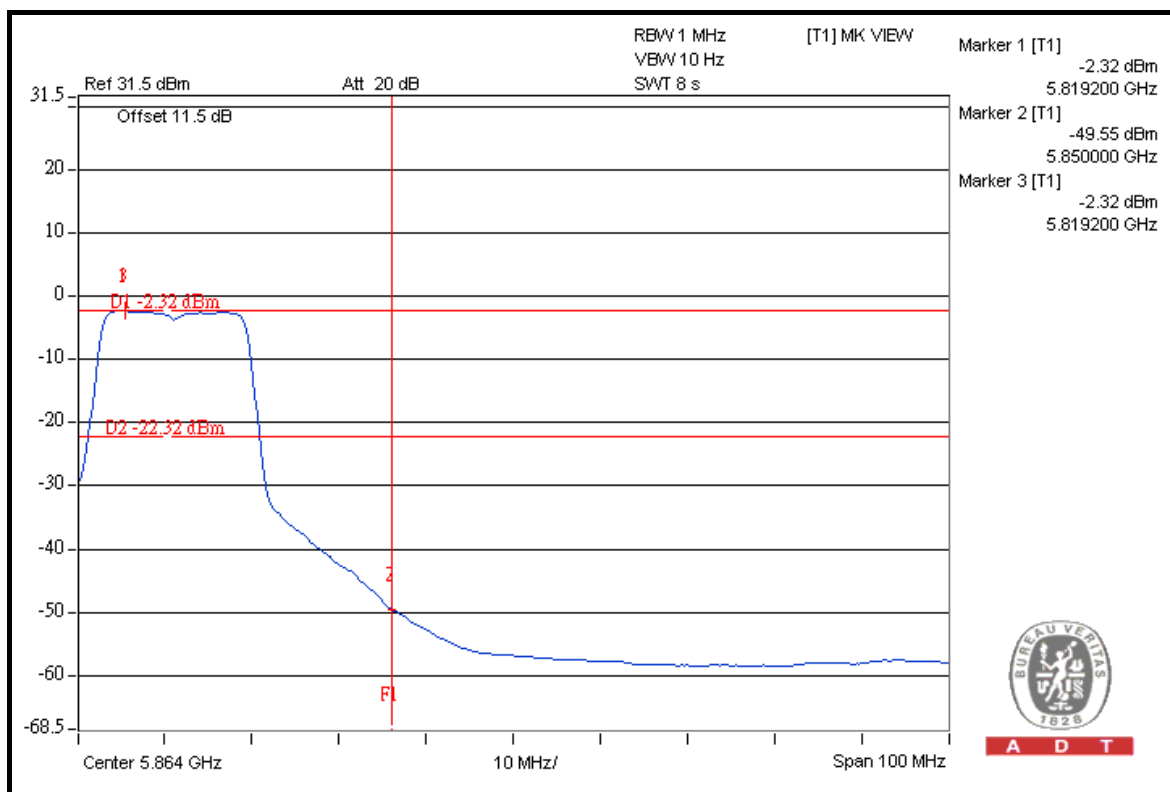
A D T



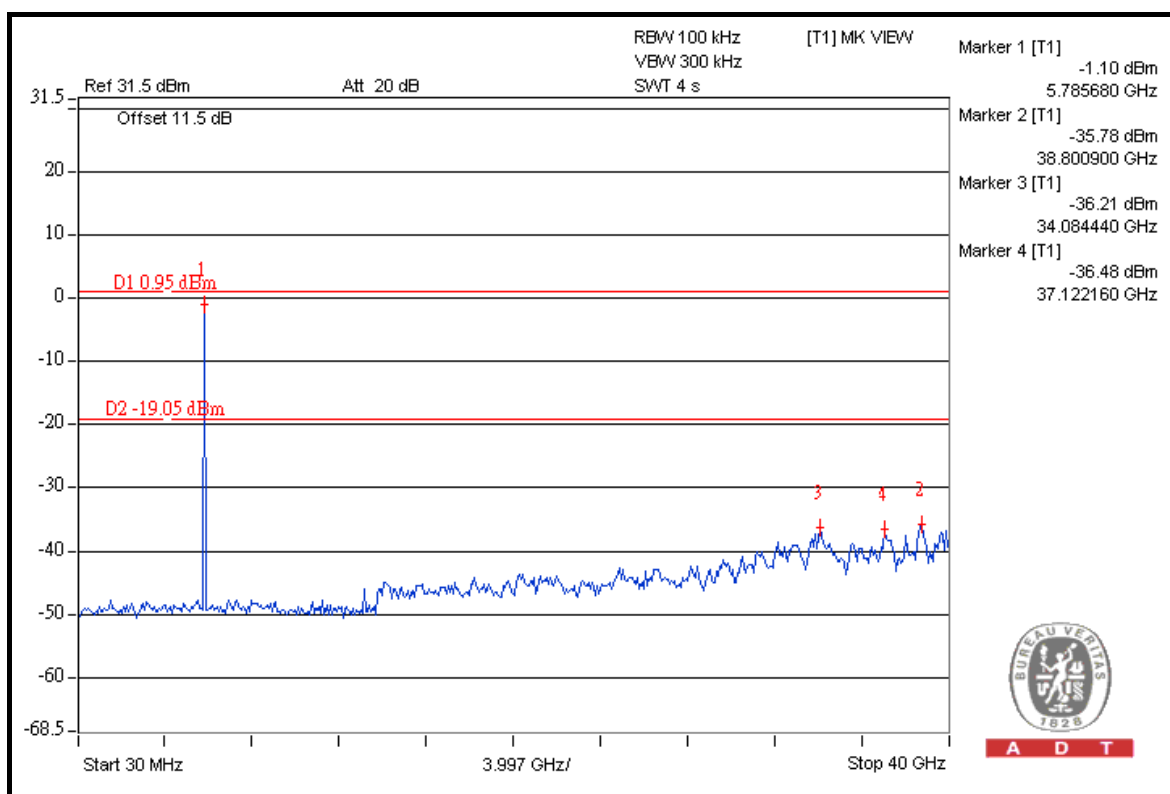
A D T



A D T



A D T



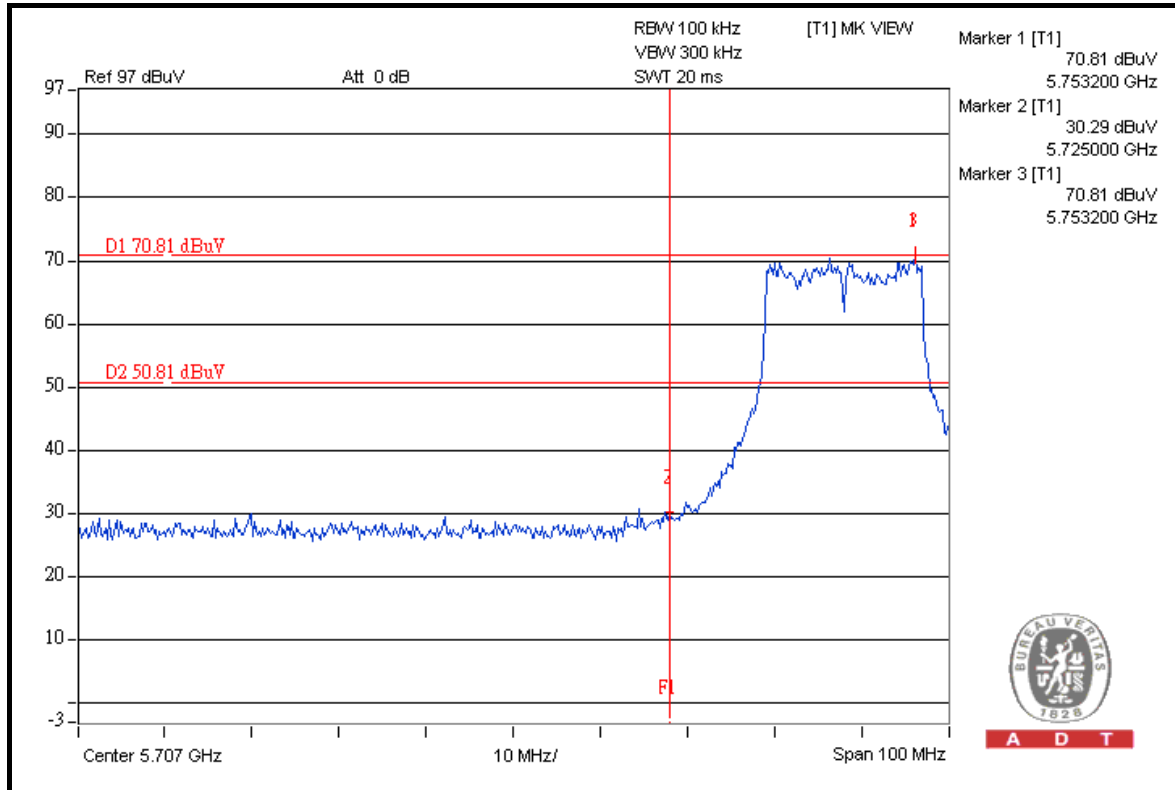
A D T



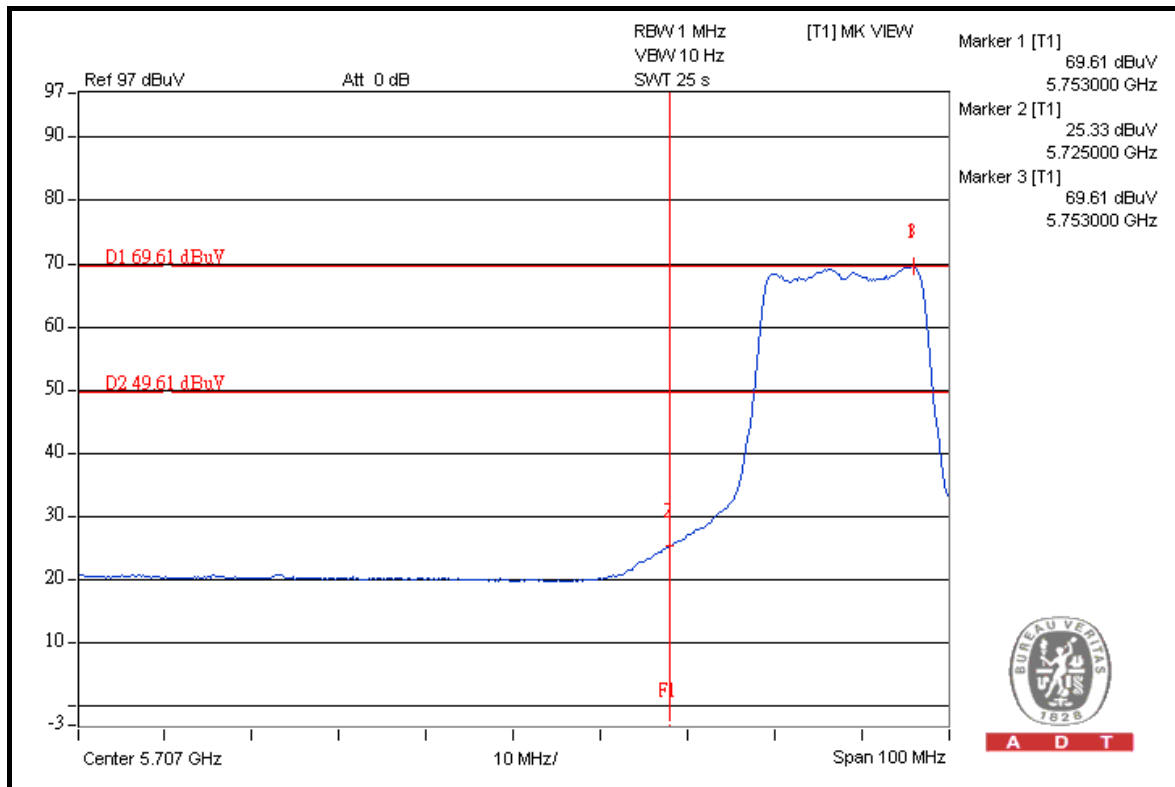
A D T

802.11n (20MHz)

FOR RADIATED MEASURED (THREE CHAINS ON)



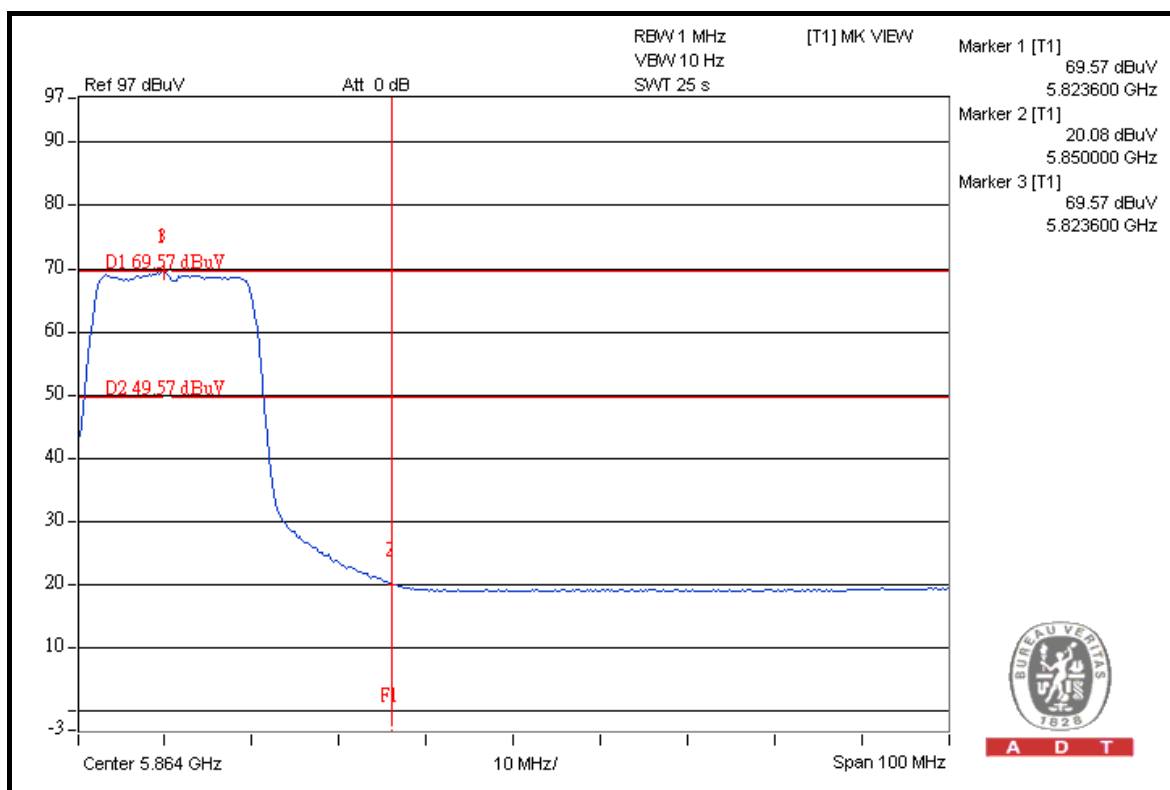
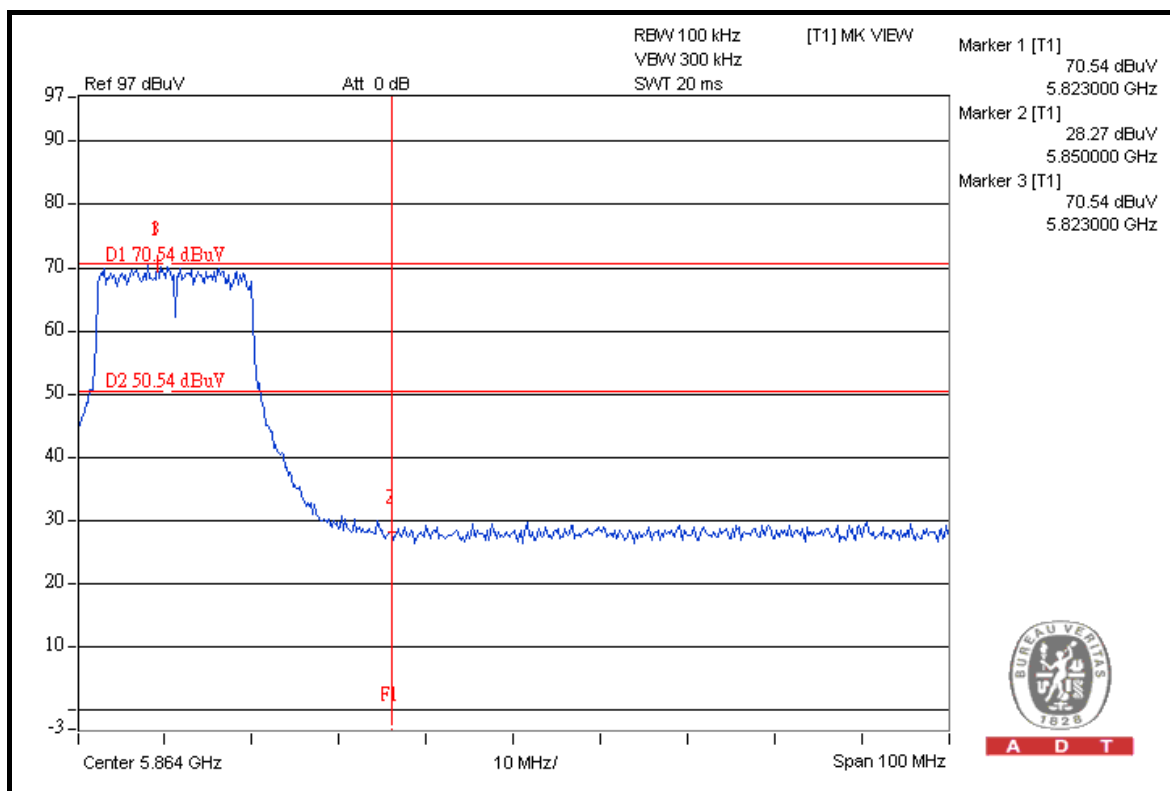
A D T



A D T



A D T

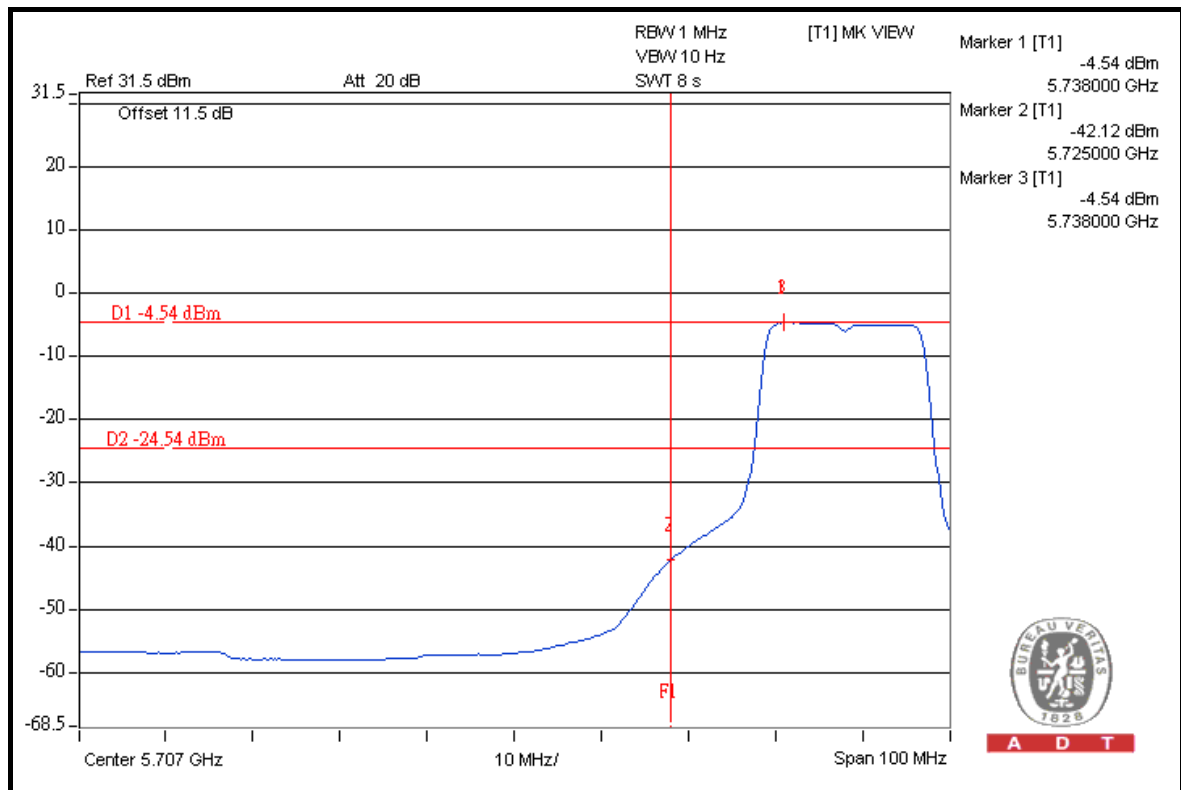
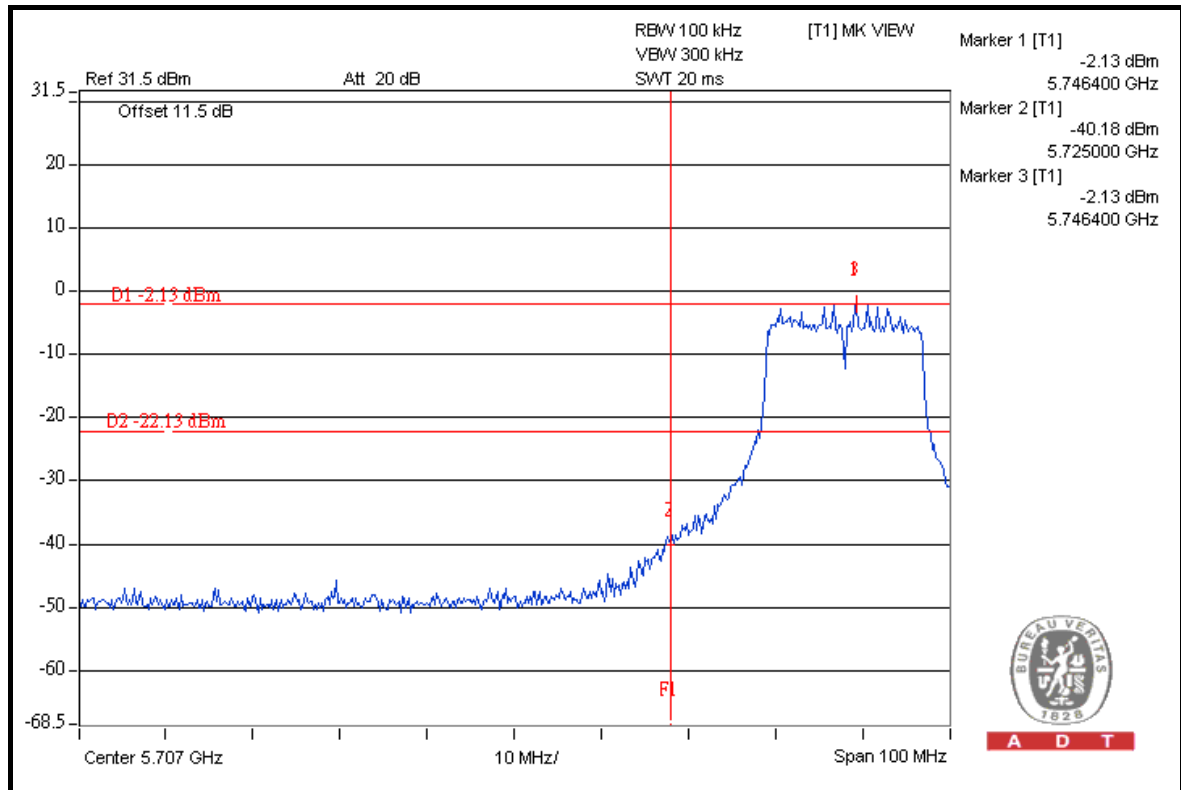




A D T

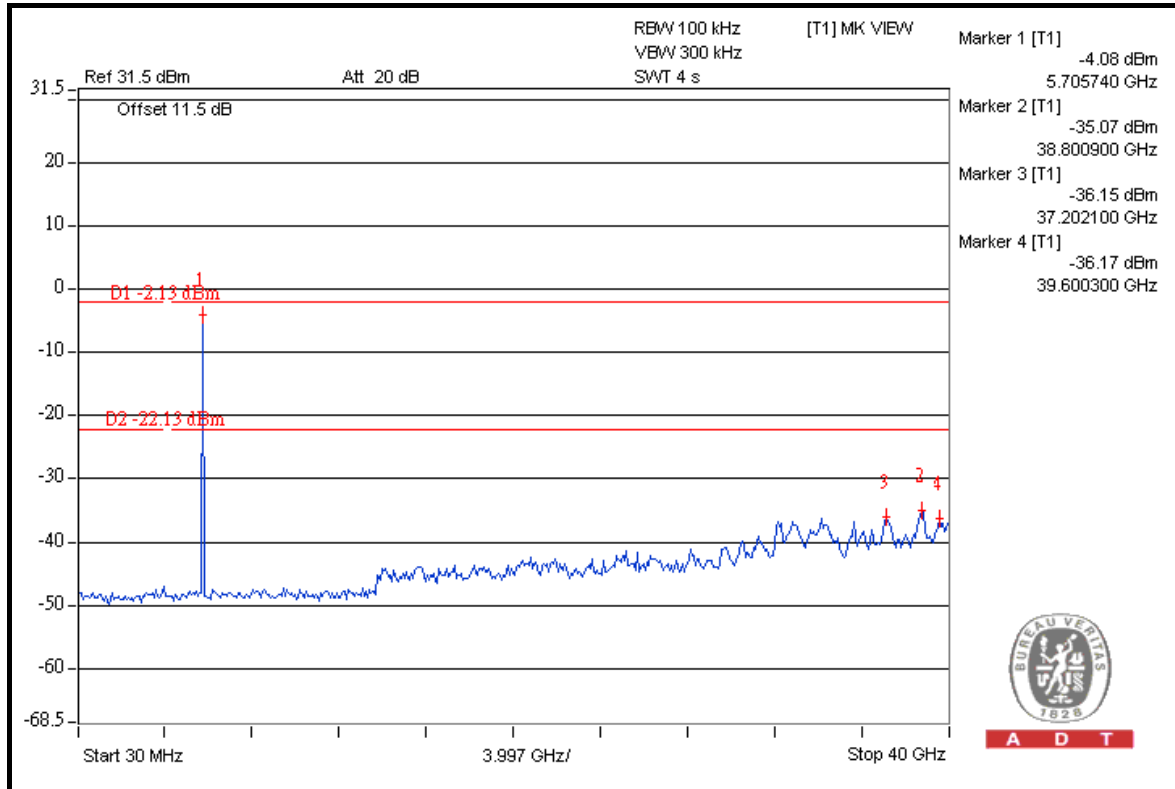
## FOR CONDUCTED MEASURED

### CHAIN 0

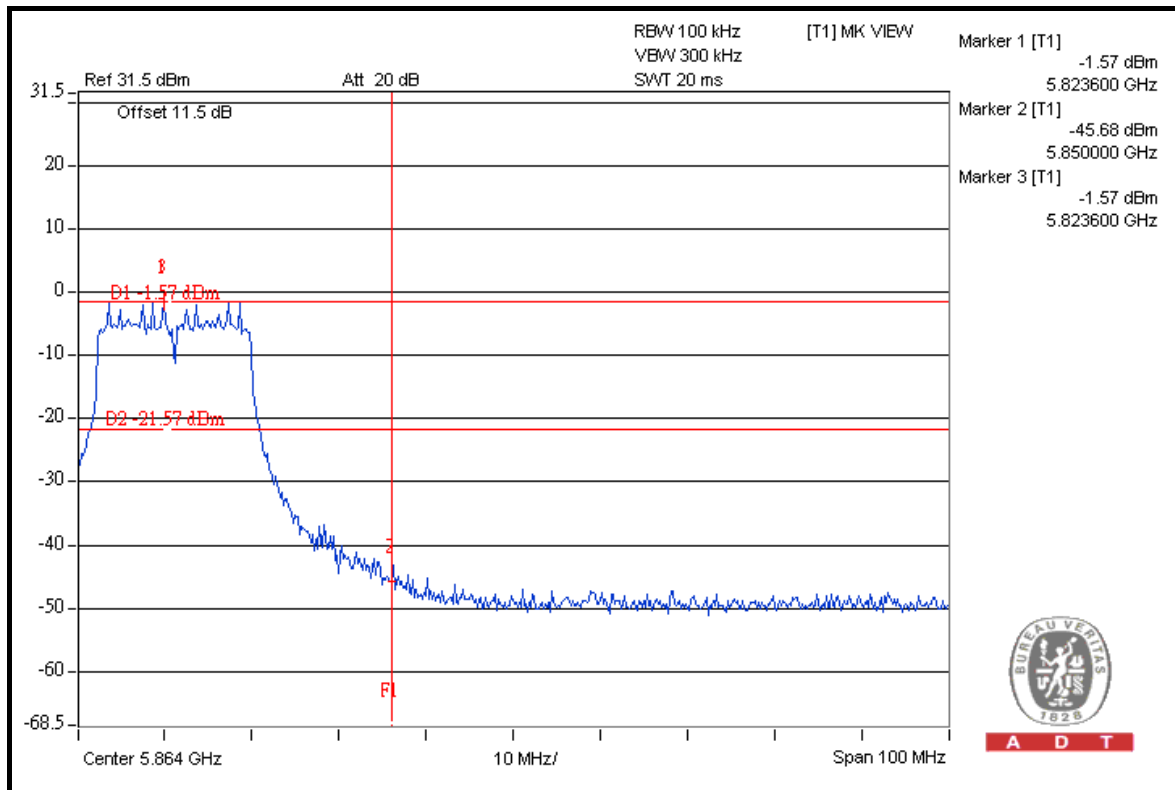




A D T



A D T

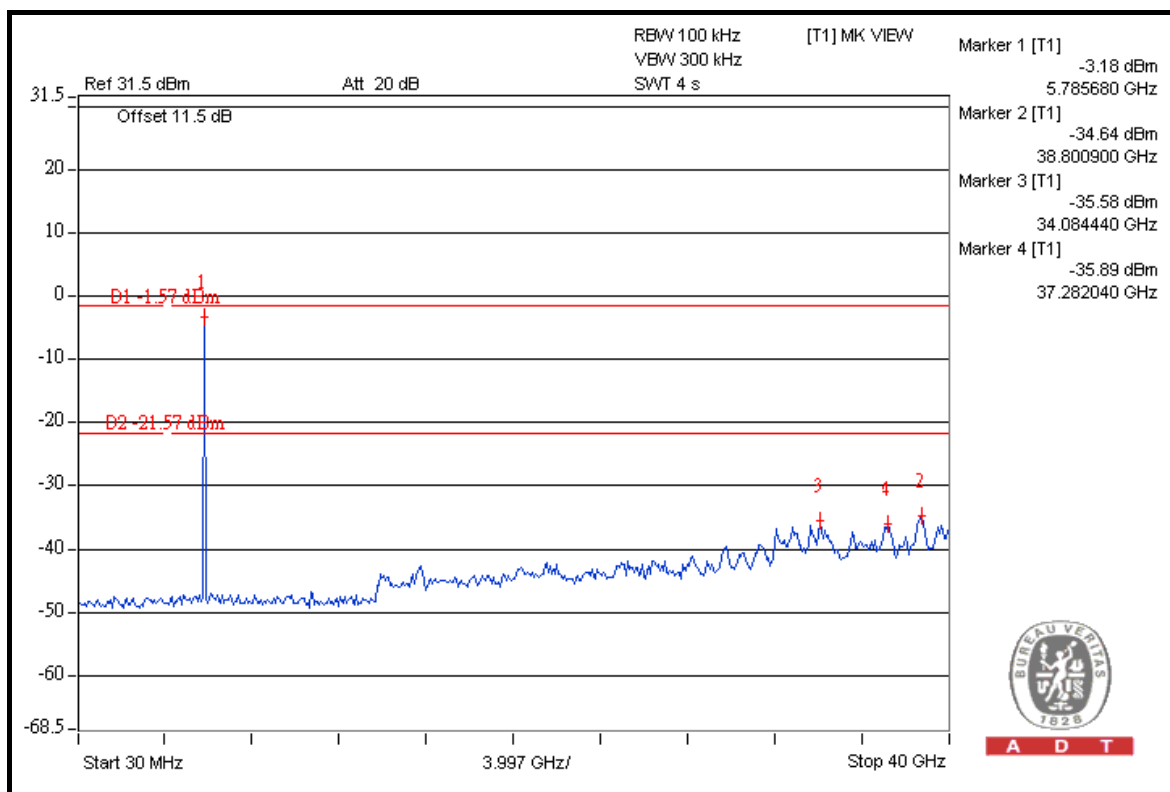
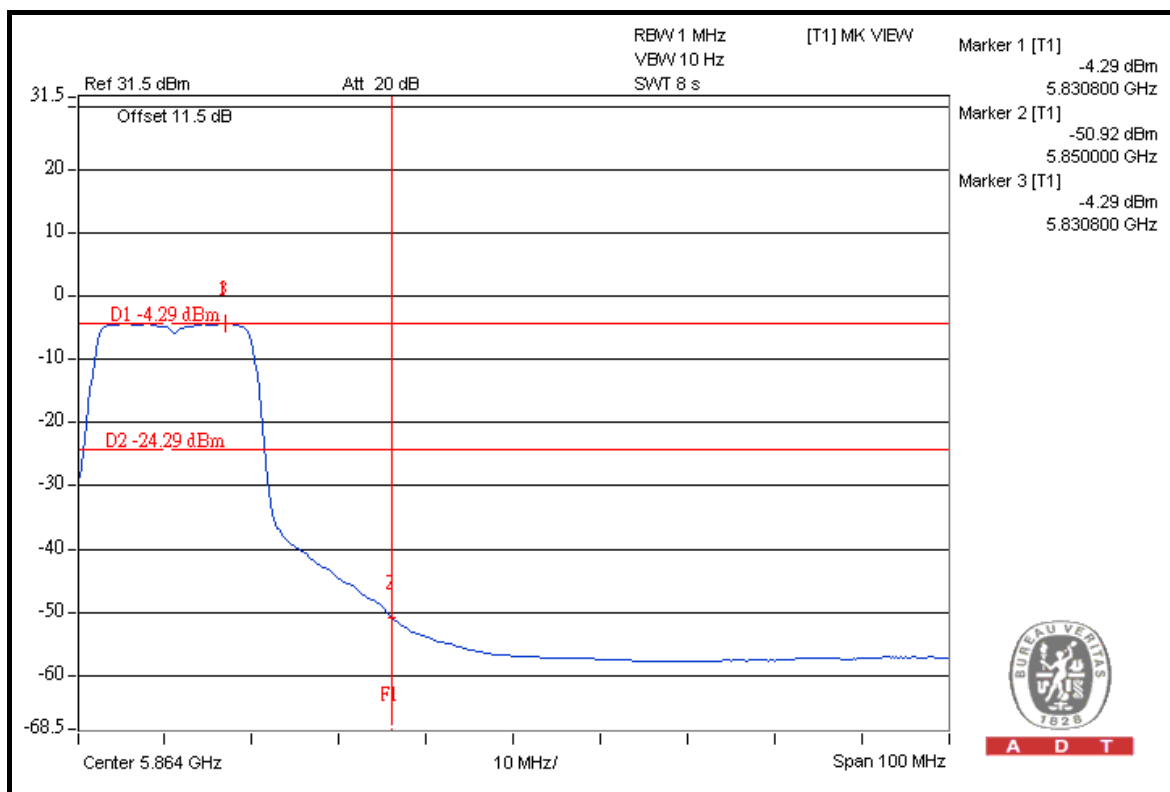


A D T





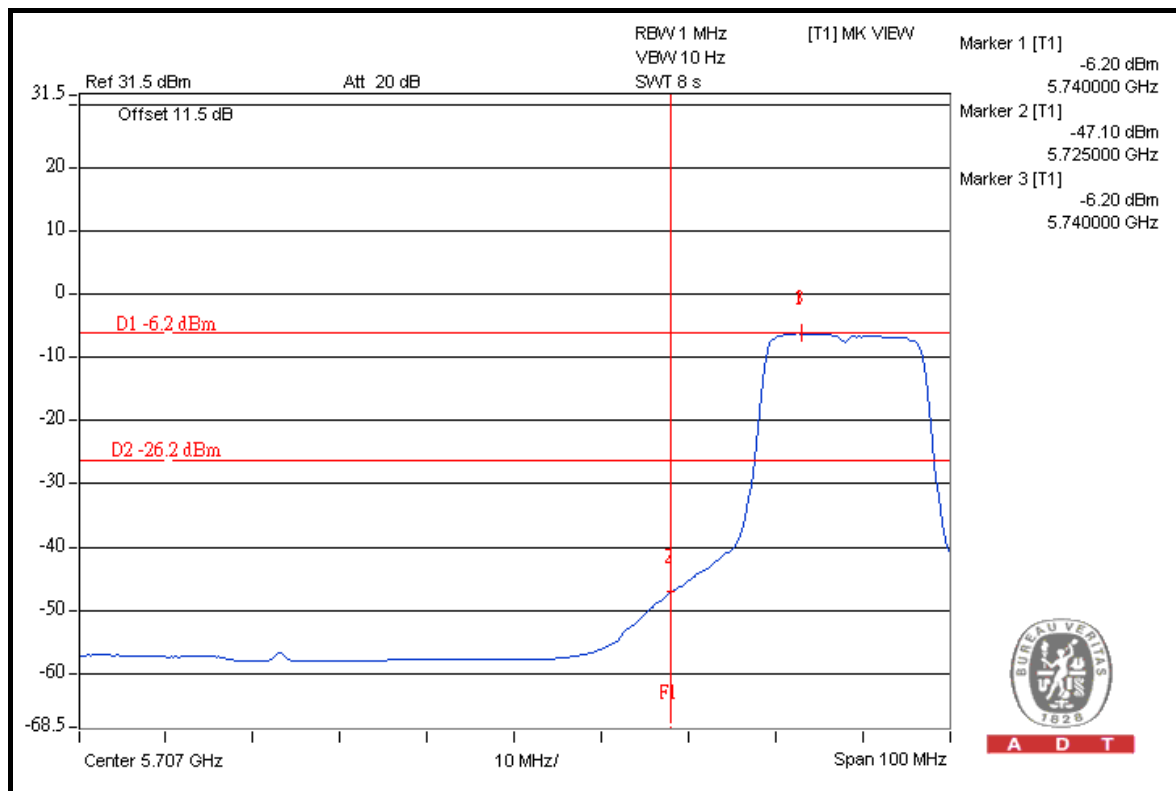
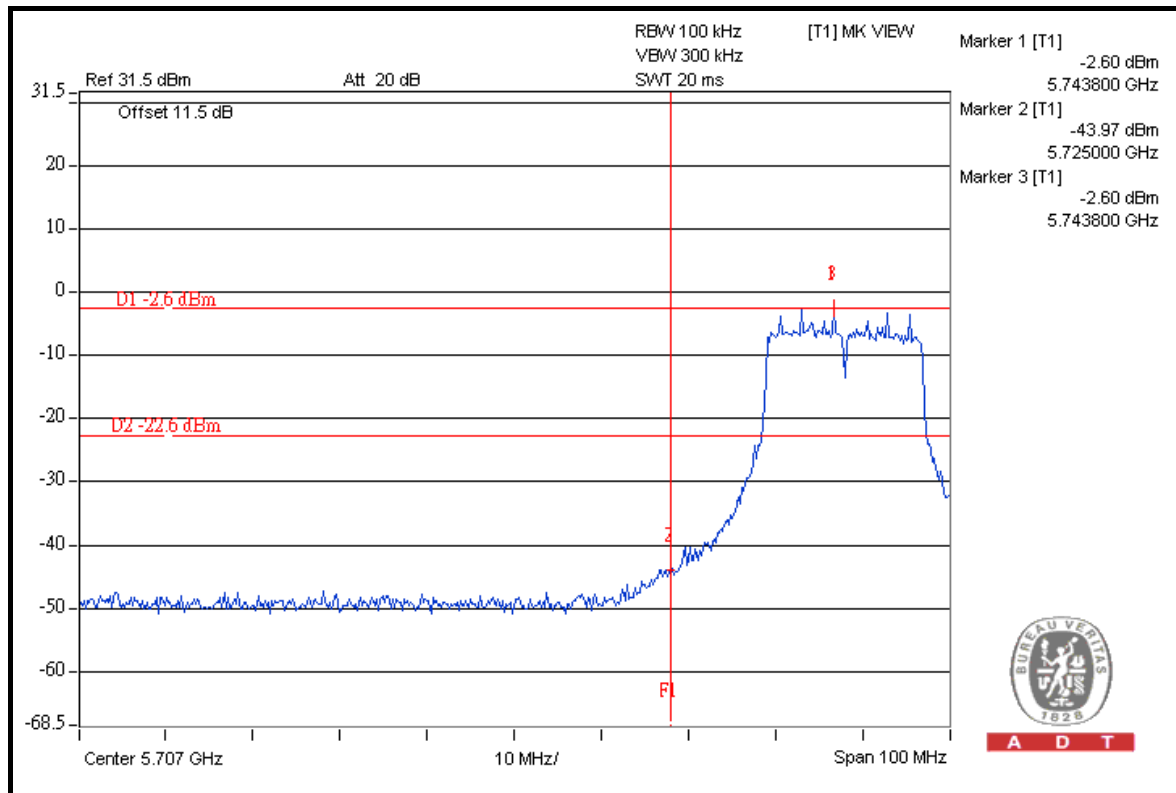
A D T





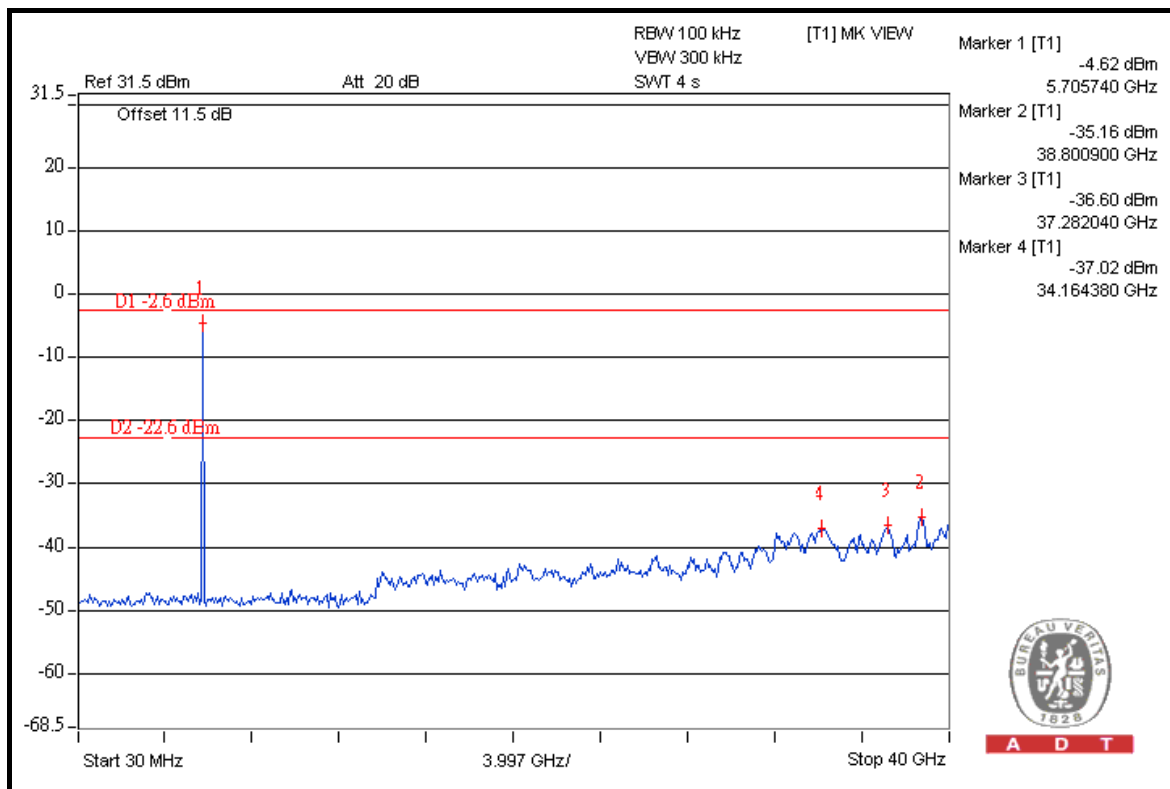
A D T

## CHAIN 1

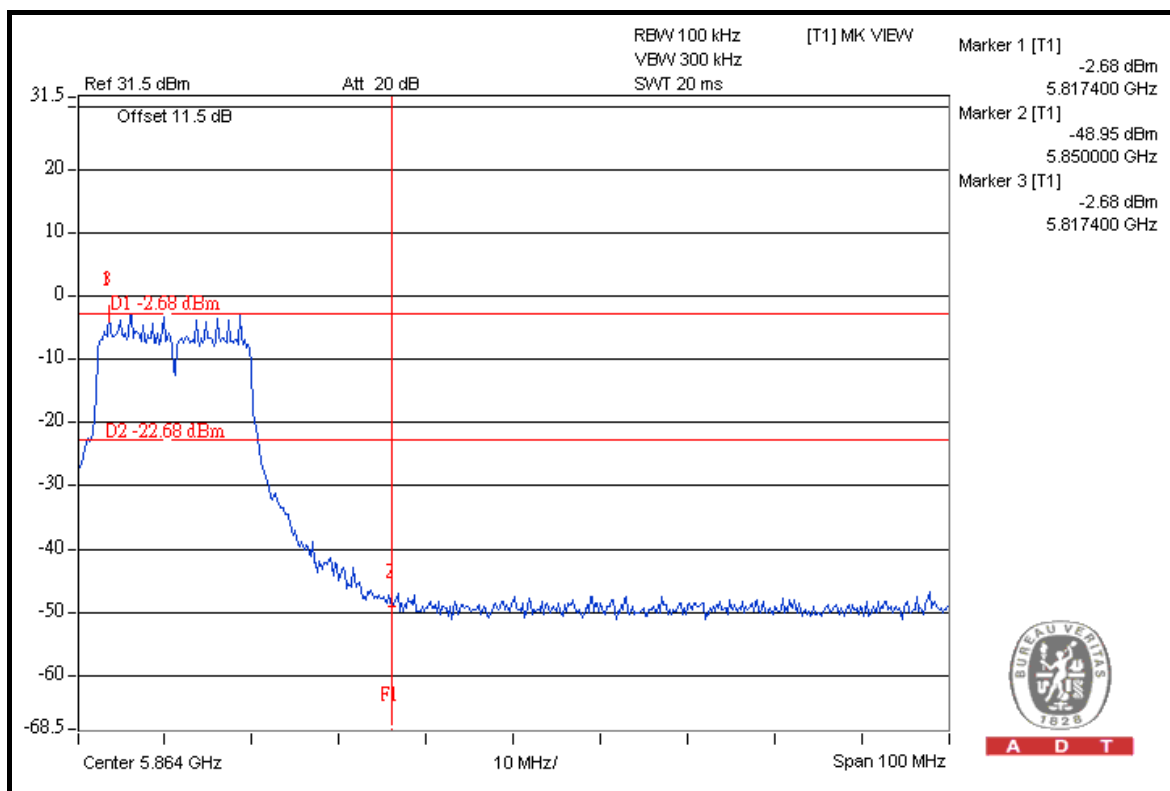




A D T



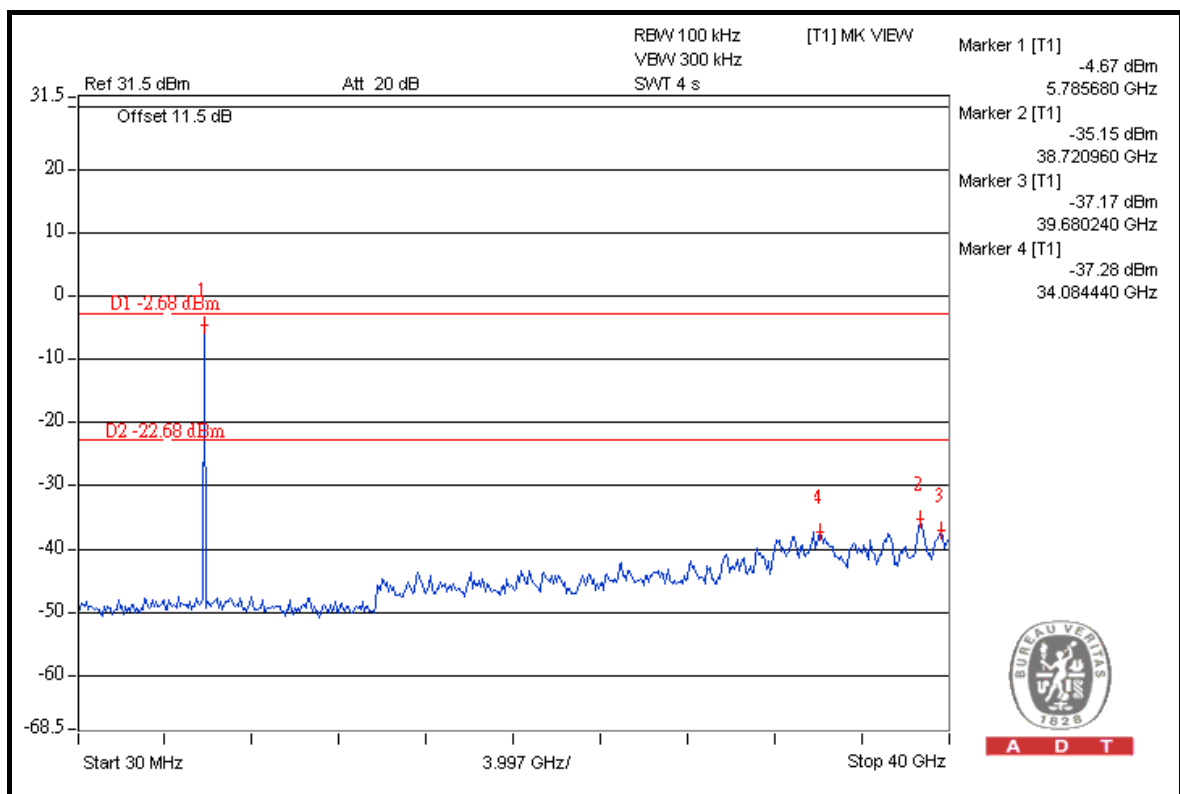
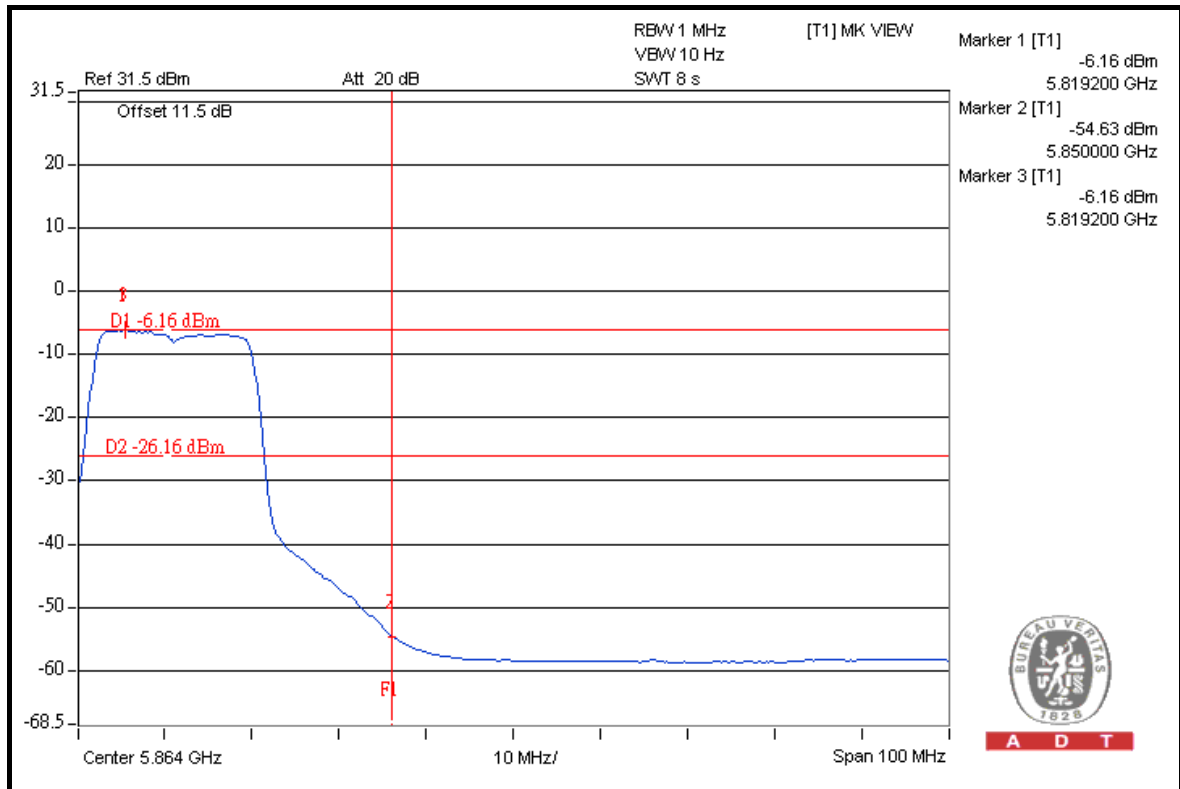
A D T



A D T



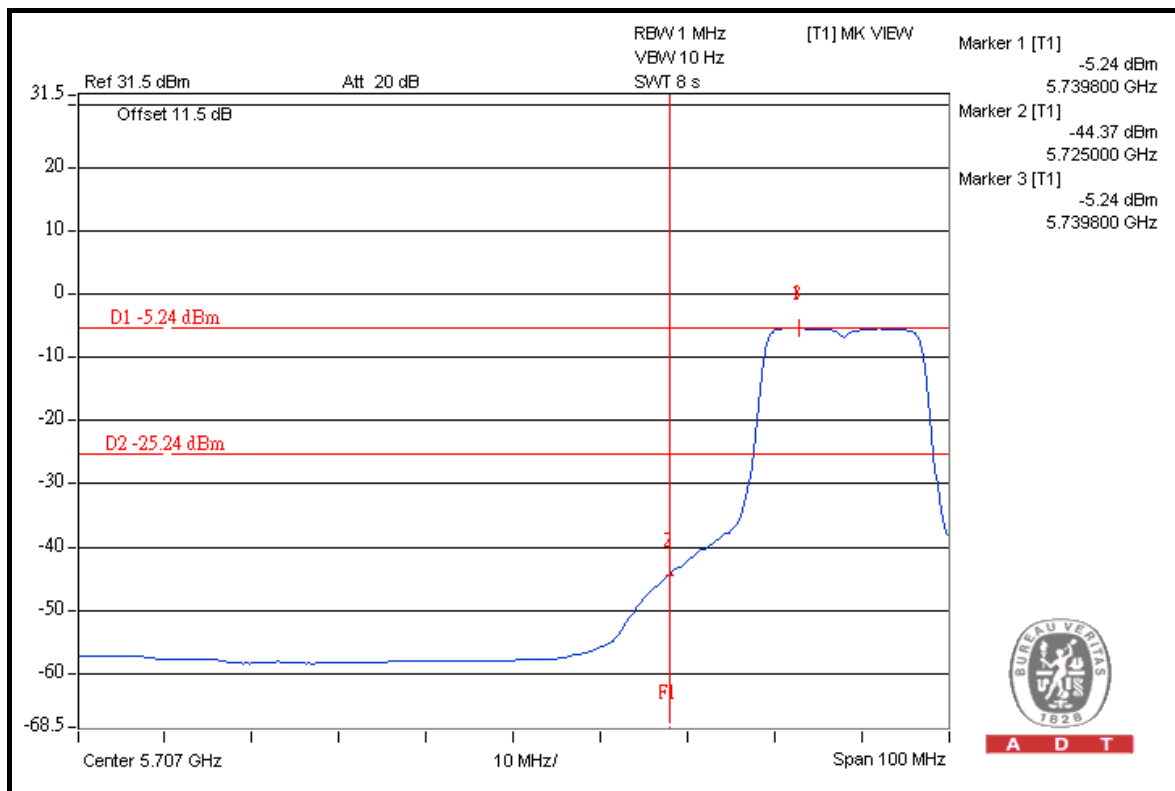
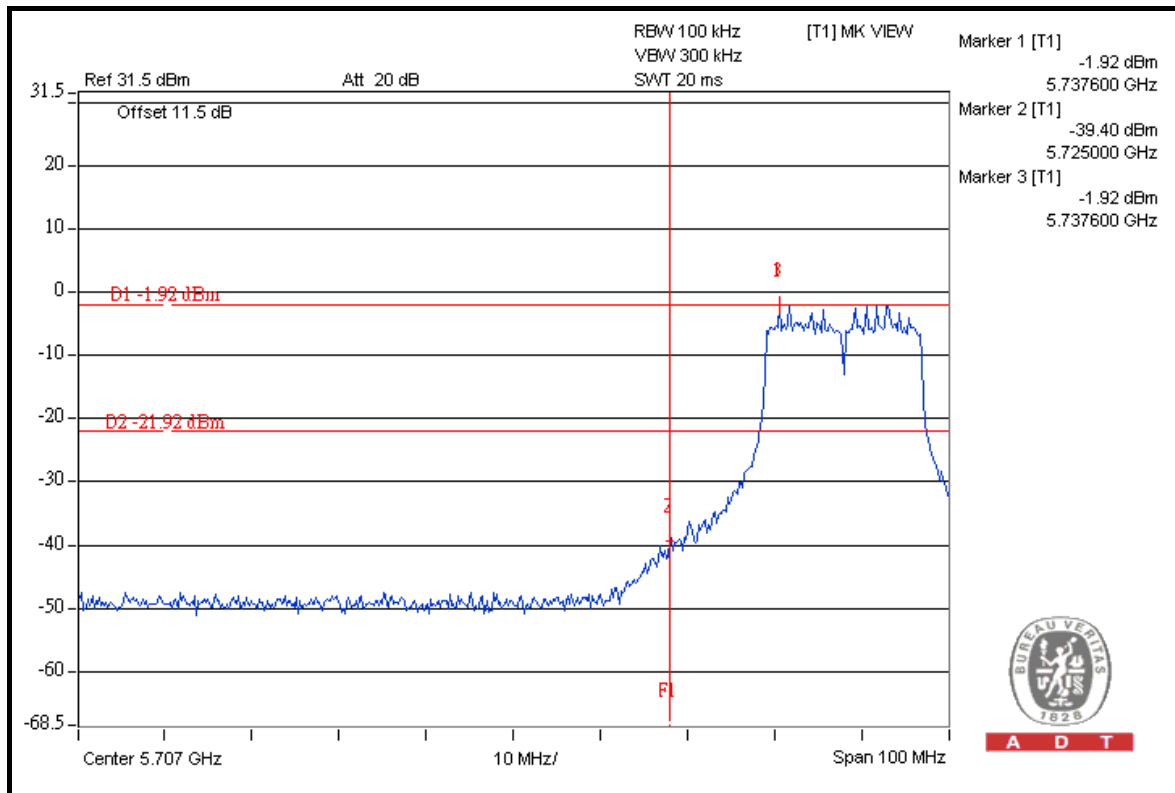
A D T





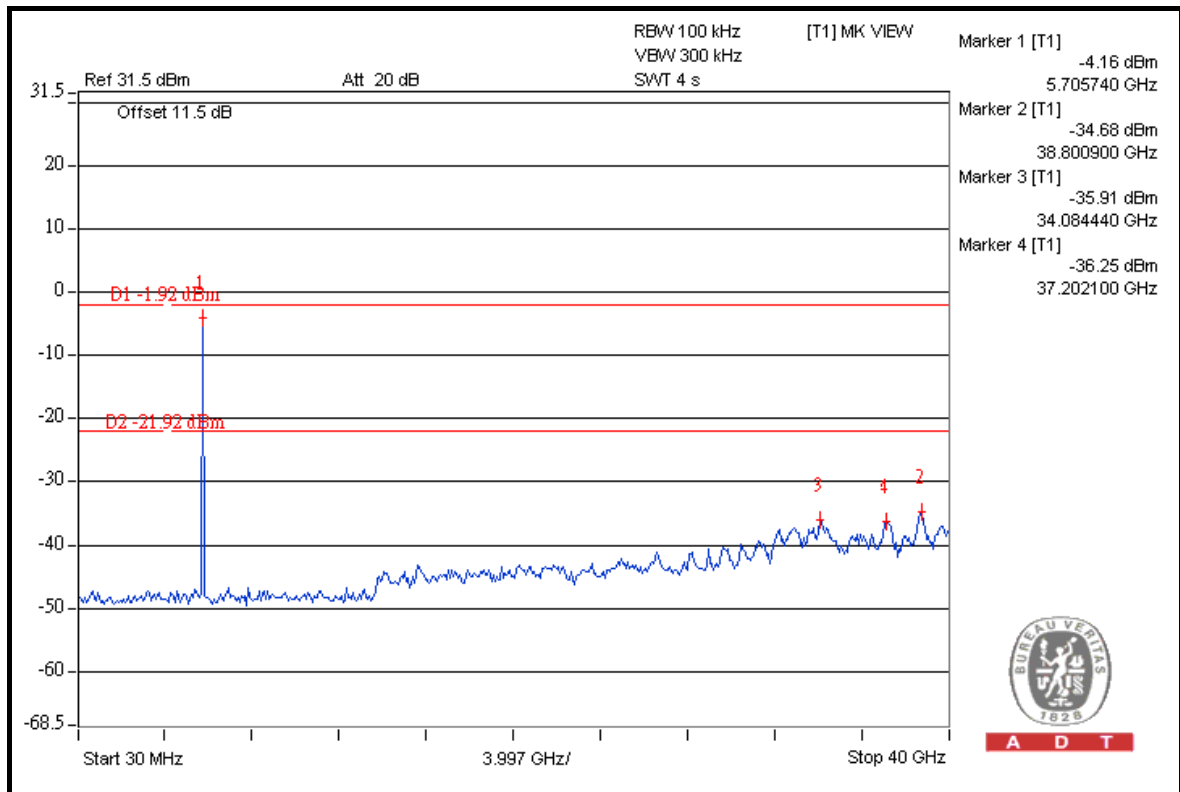
A D T

## CHAIN 2

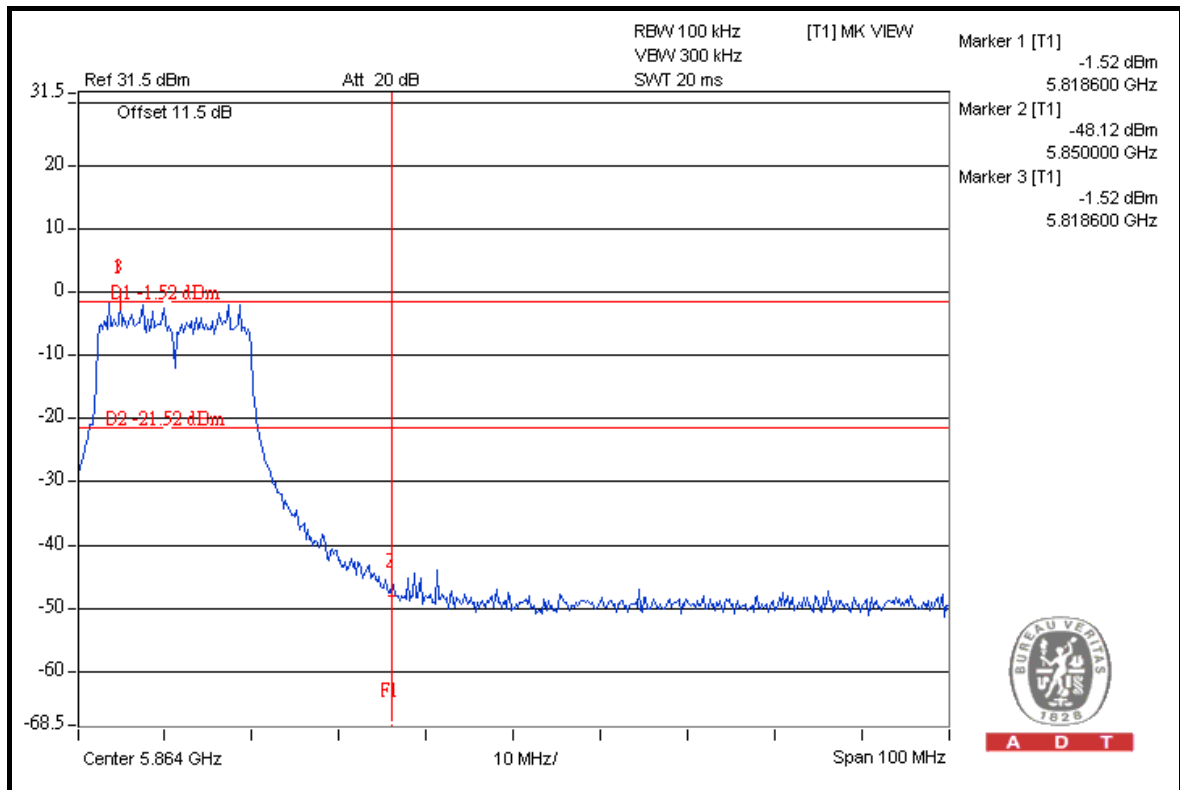




A D T



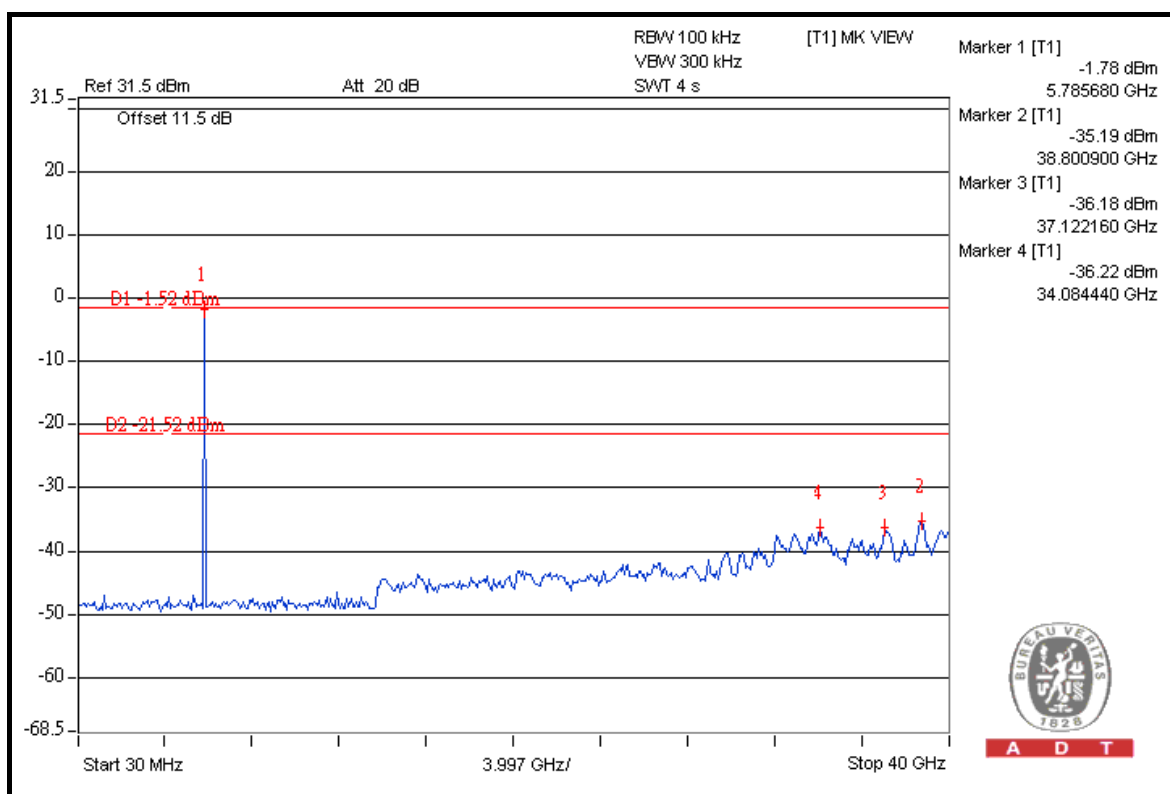
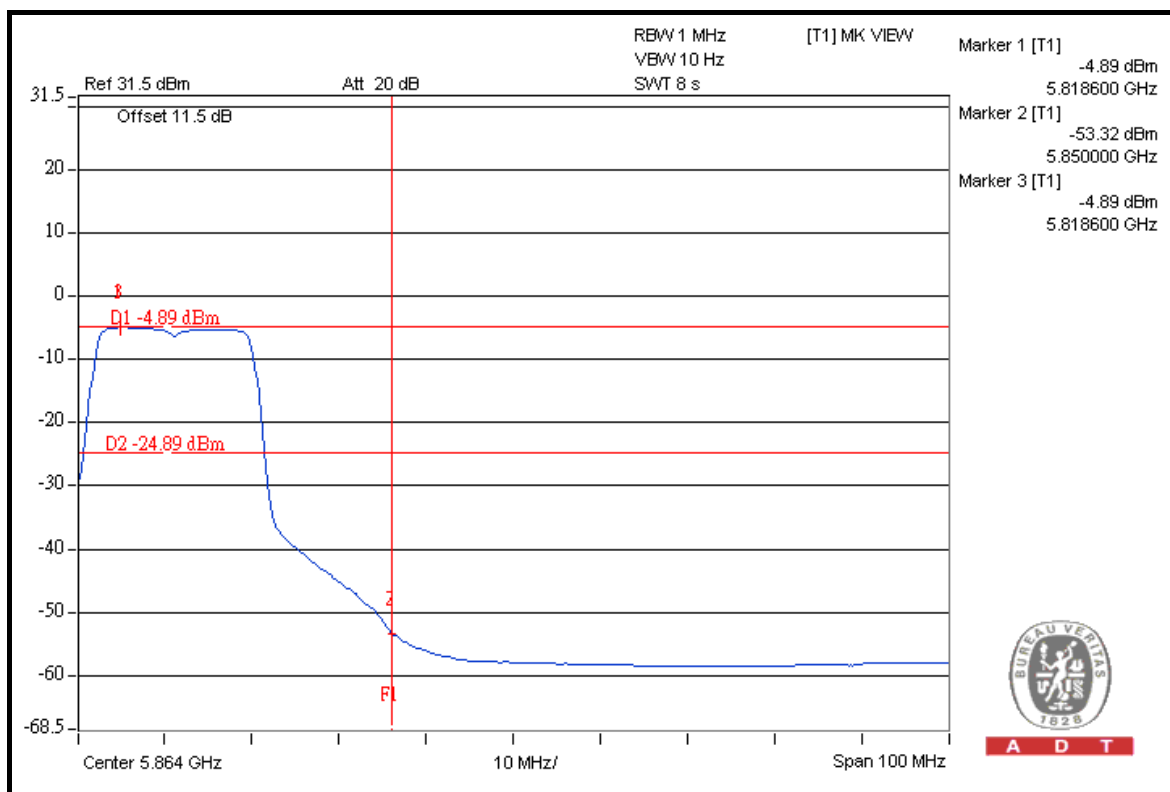
A D T



A D T



A D T

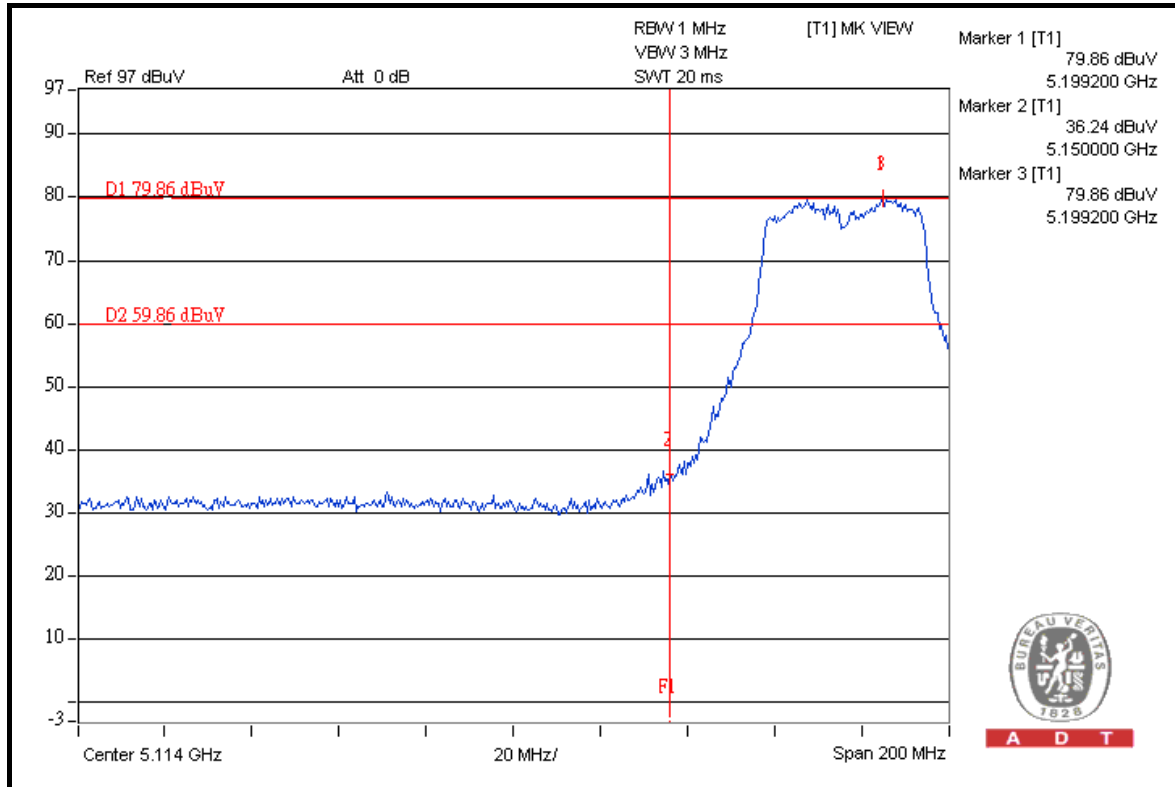




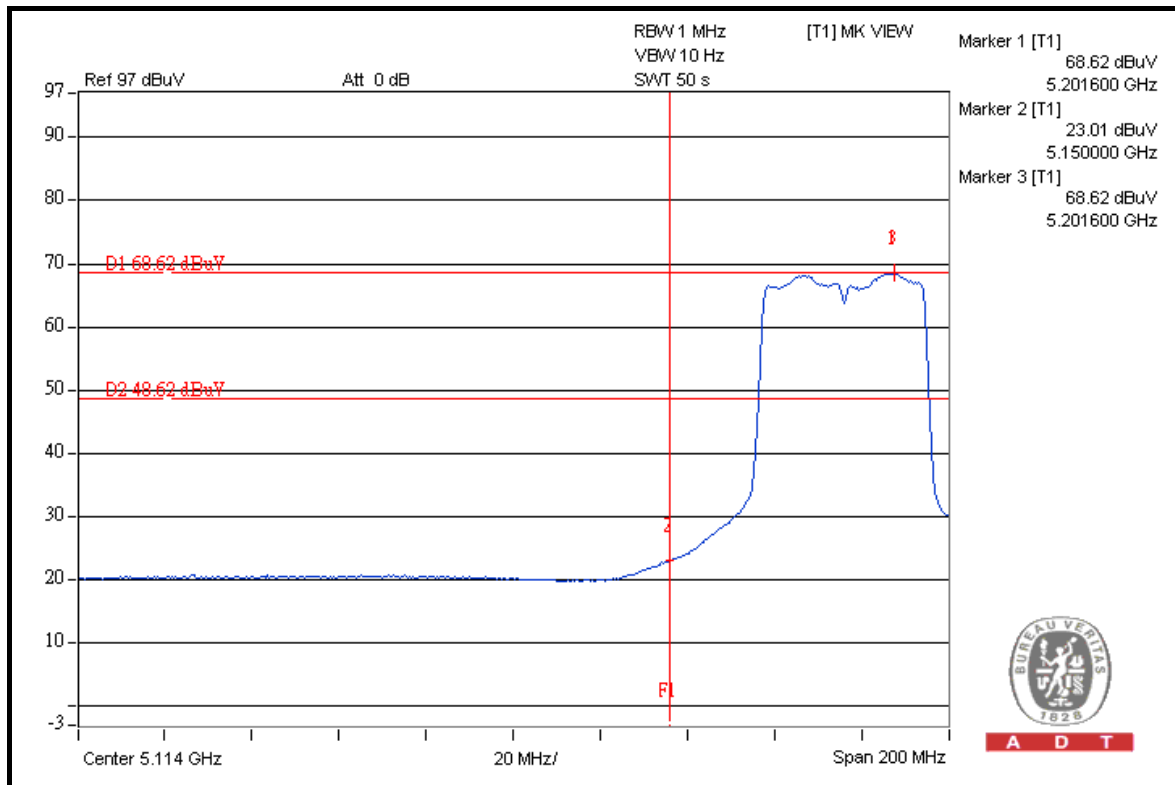
A D T

802.11n (40MHz)

FOR RADIATED MEASURED (THREE CHAINS ON)



A D T

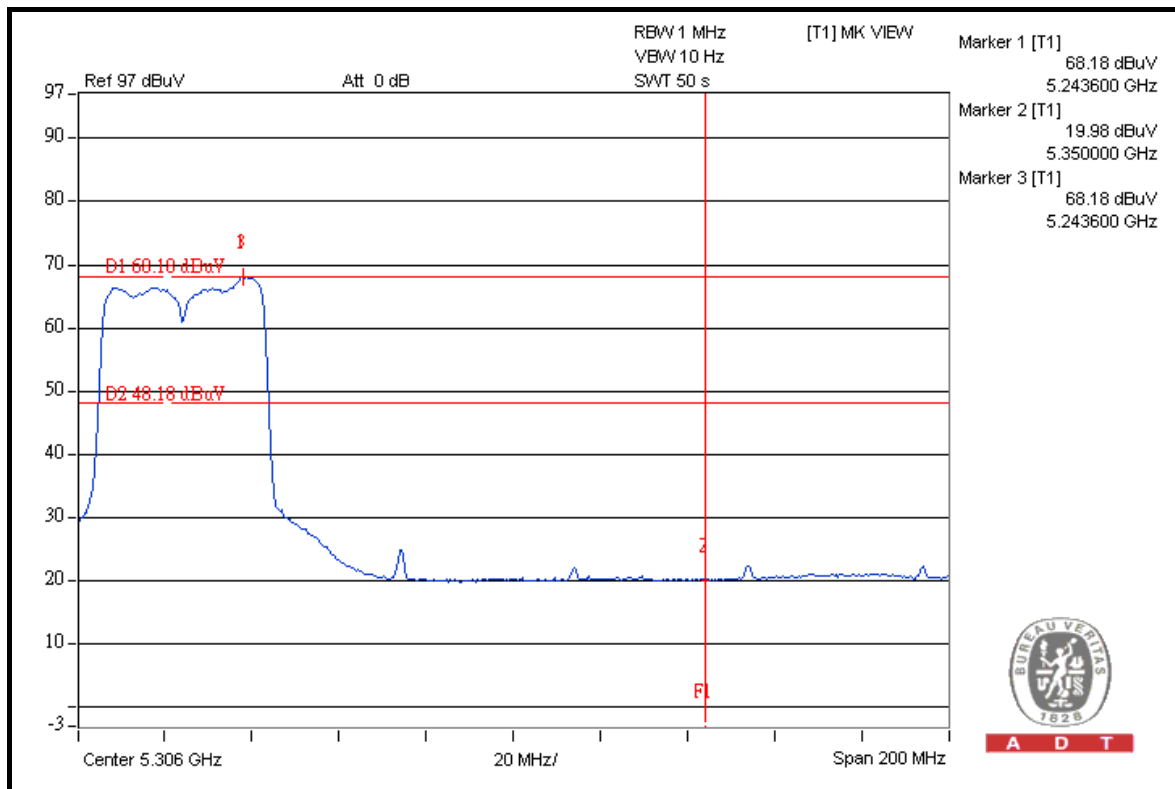
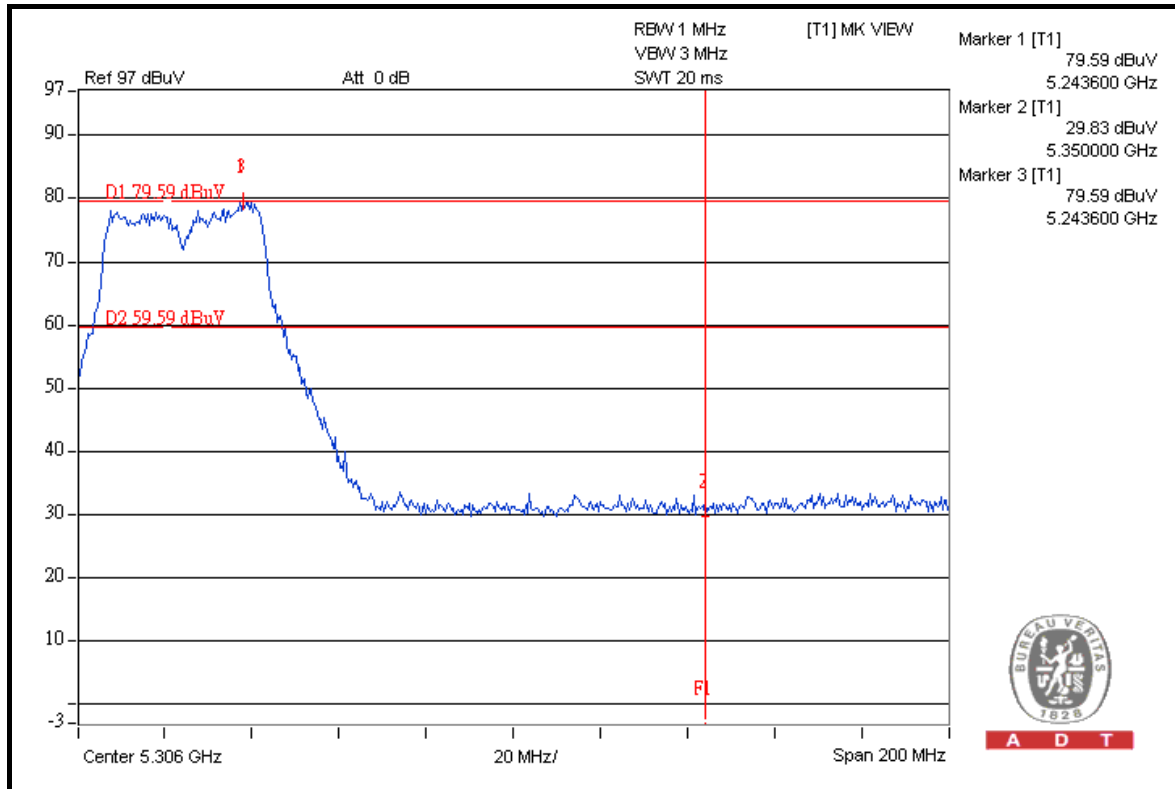


A D T





A D T

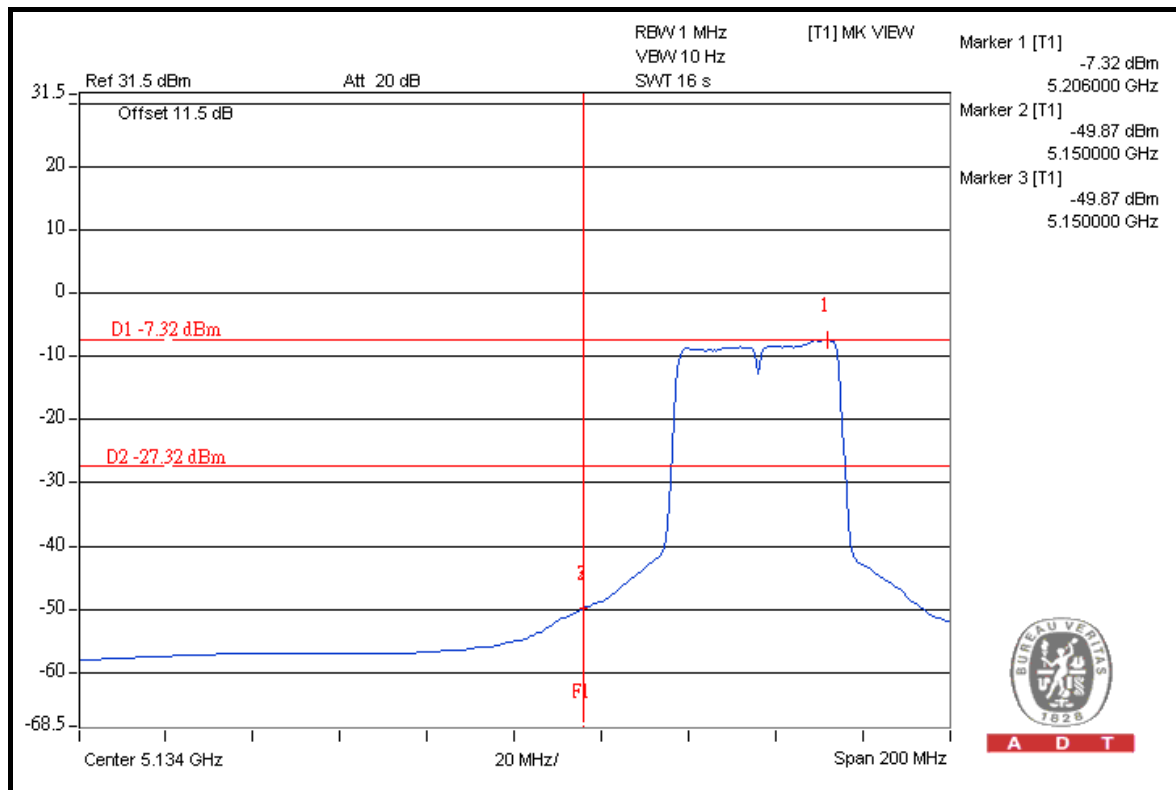
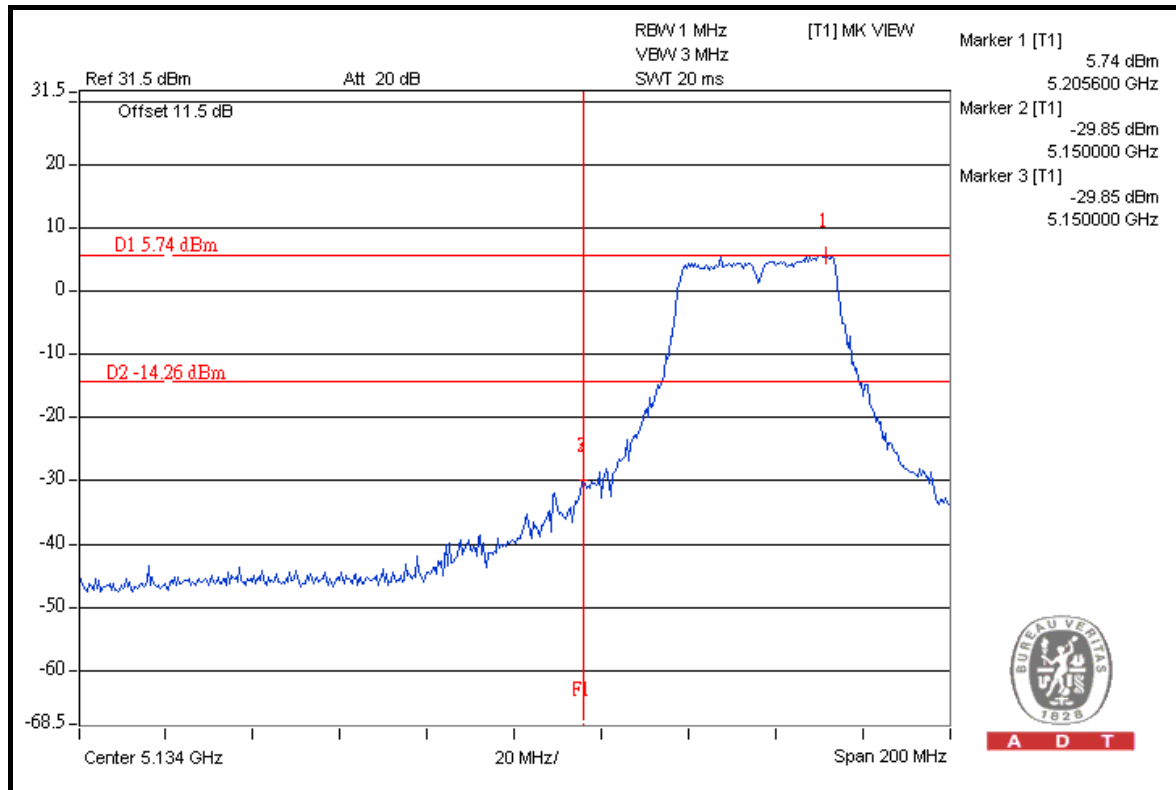




A D T

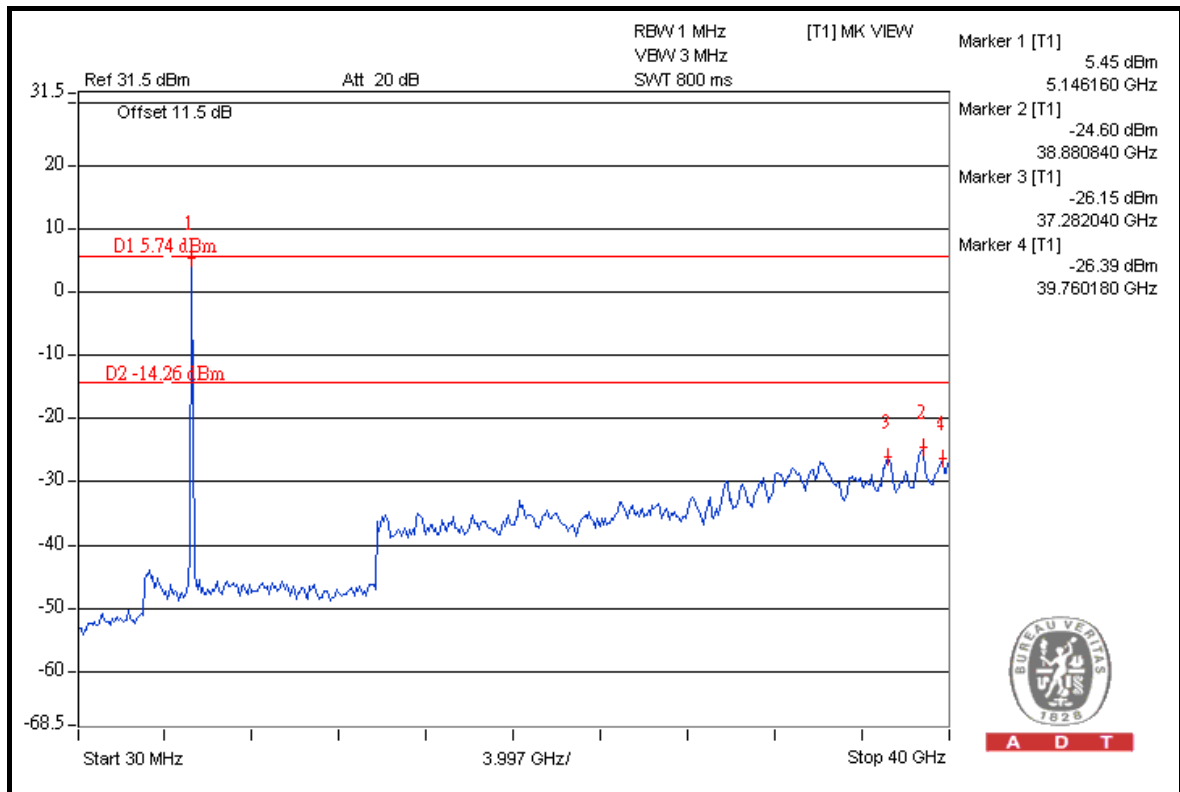
## FOR CONDUCTED MEASURED

### CHAIN 0

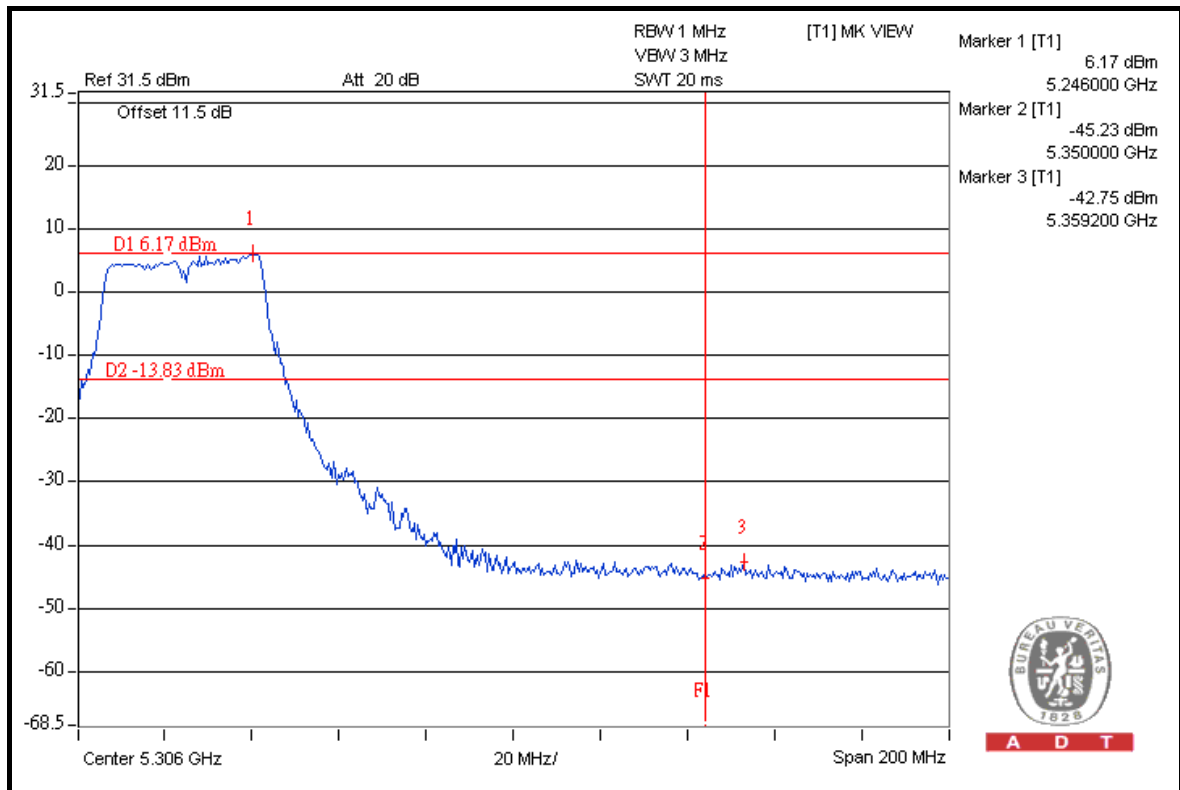




A D T



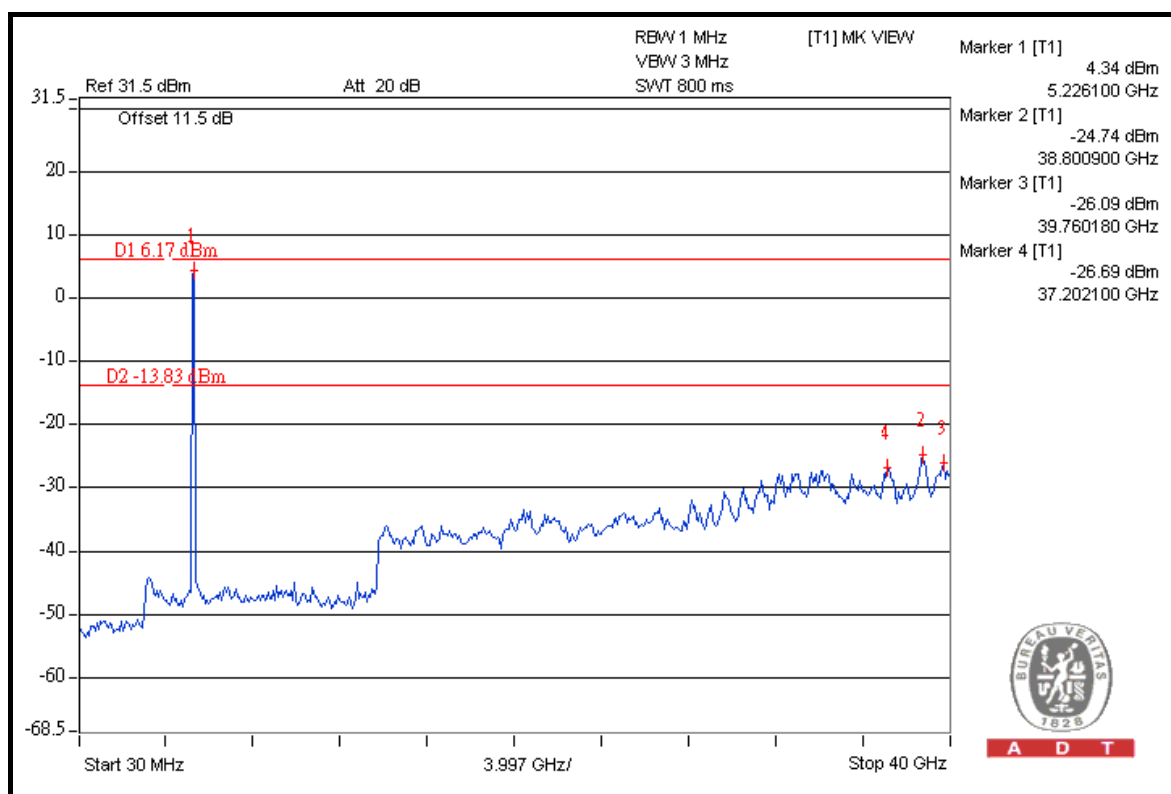
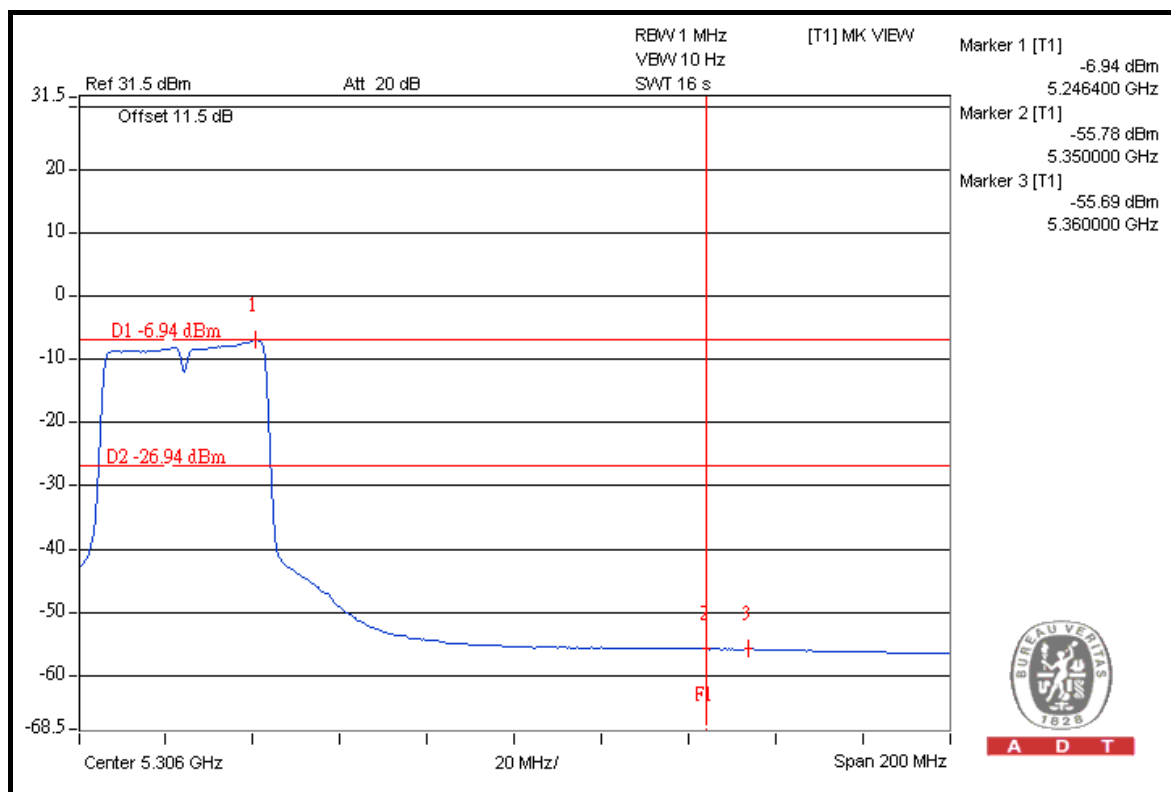
A D T



A D T



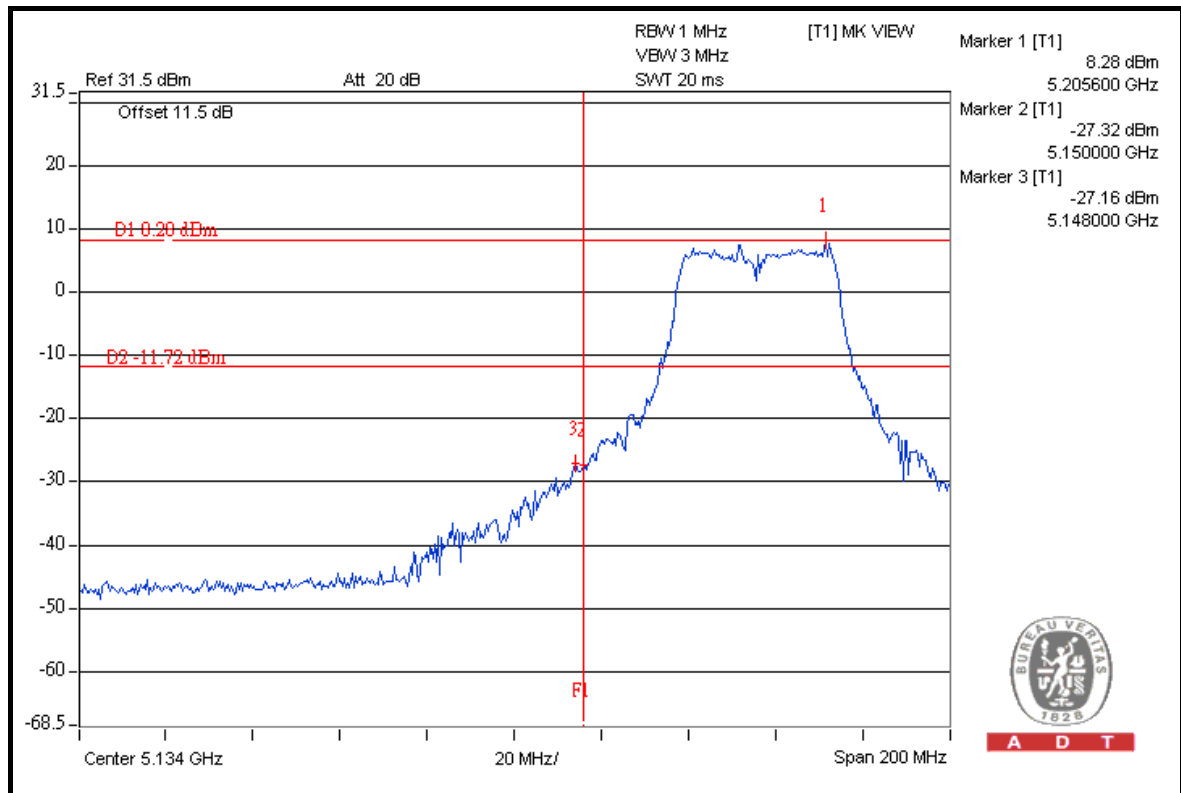
A D T



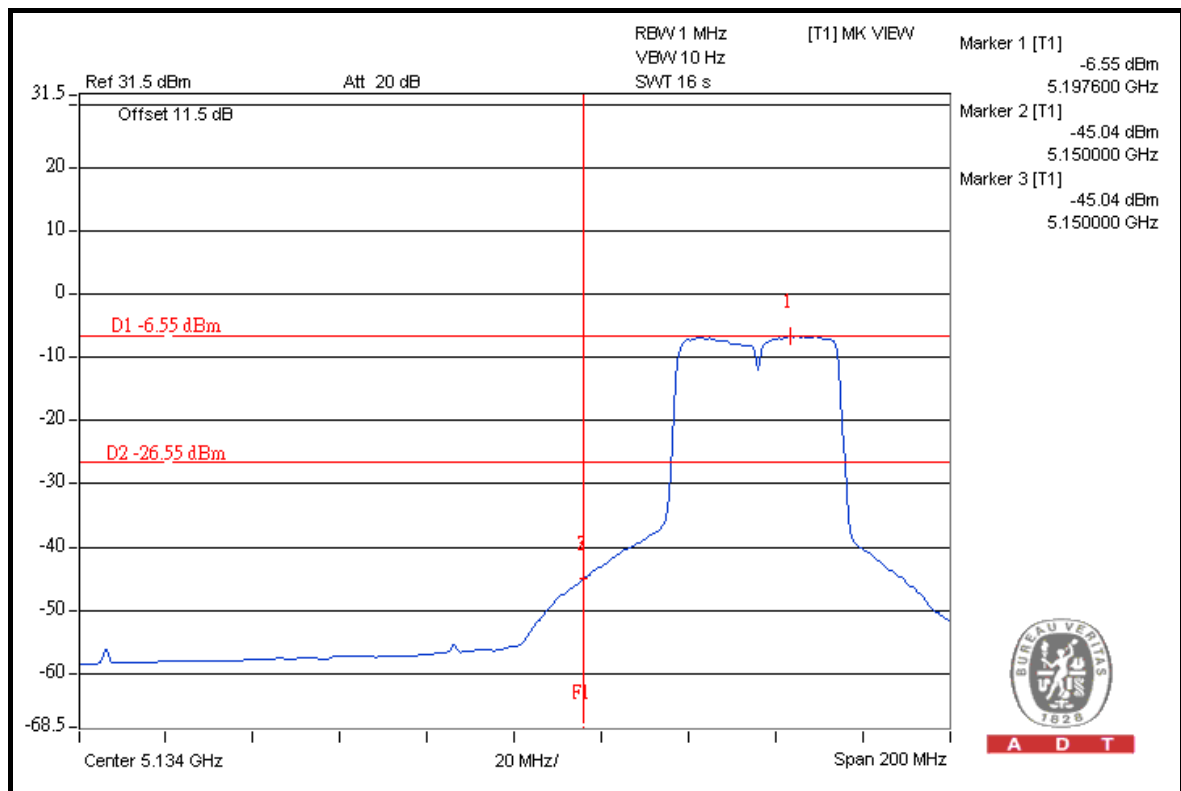


A D T

## CHAIN 1



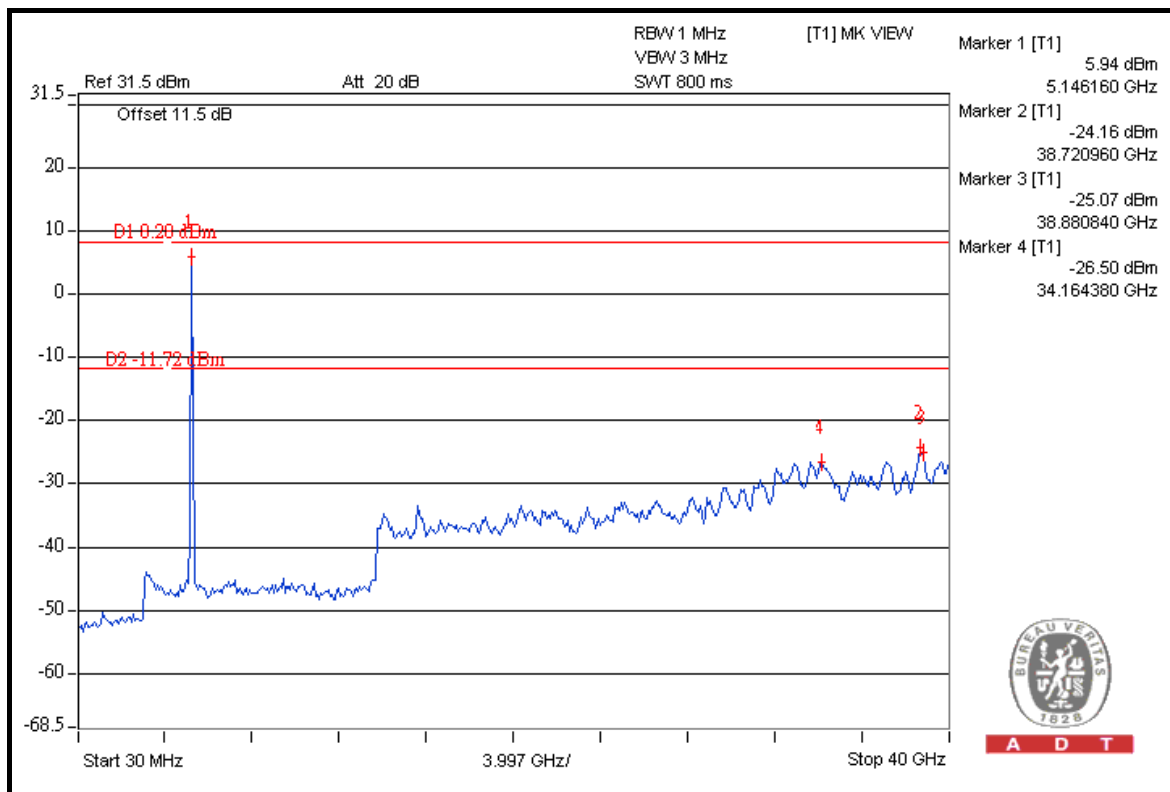
A D T



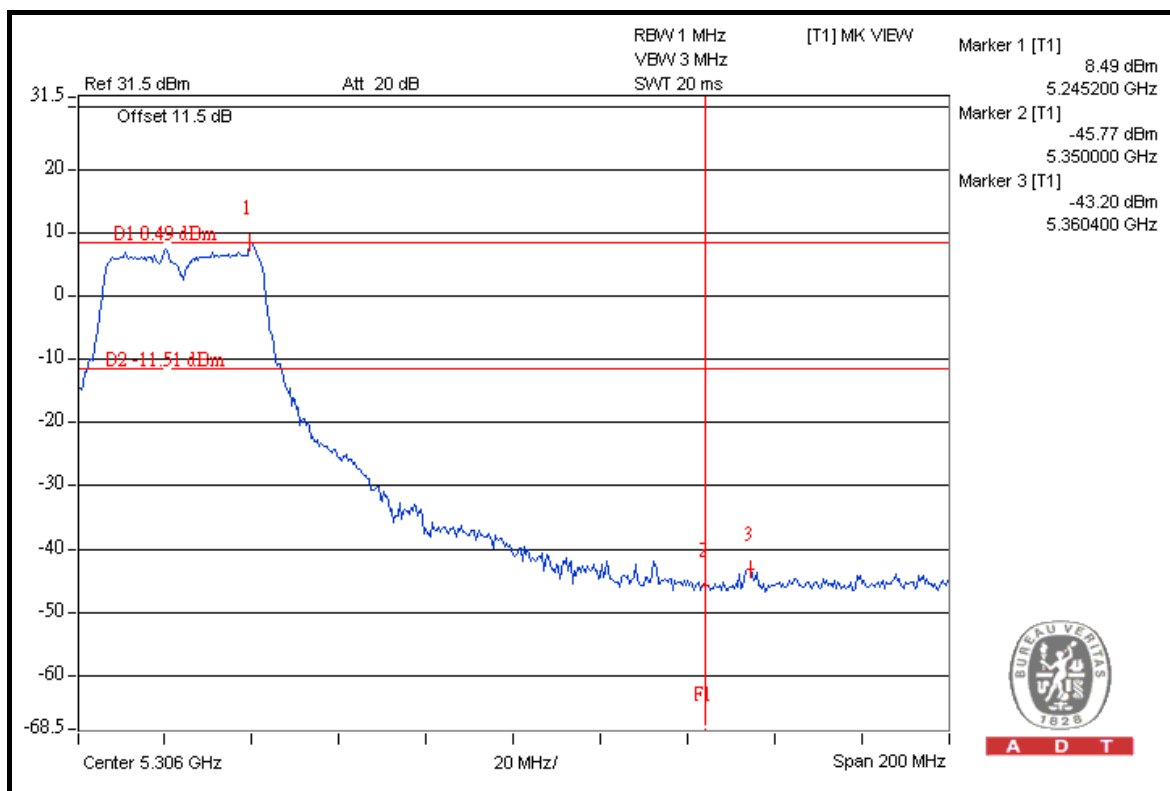
A D T



A D T



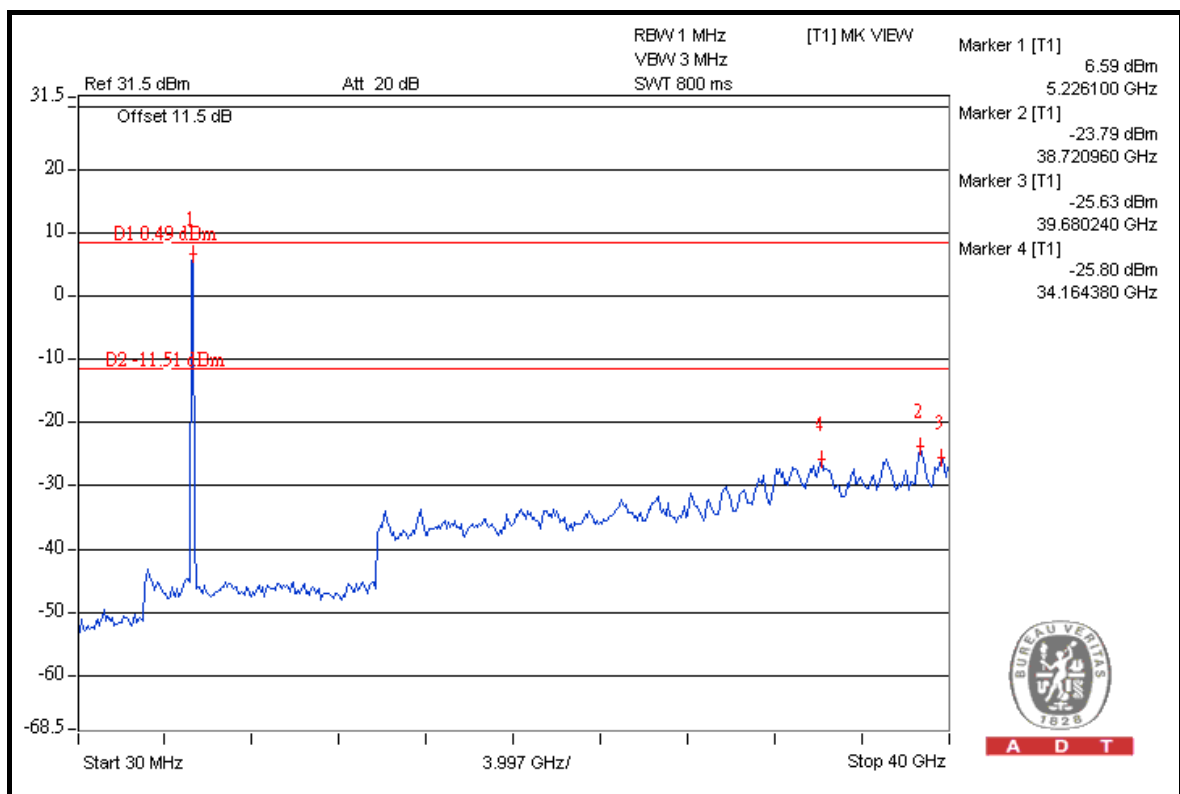
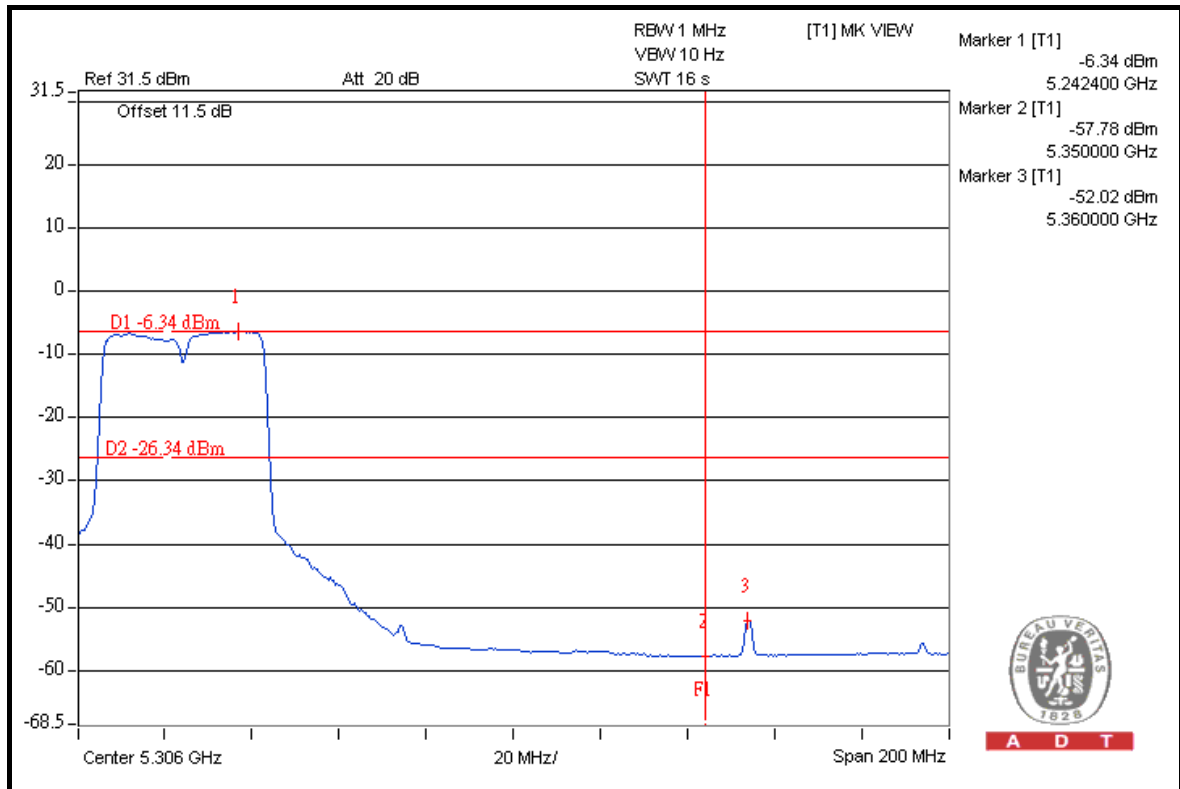
A D T



A D T



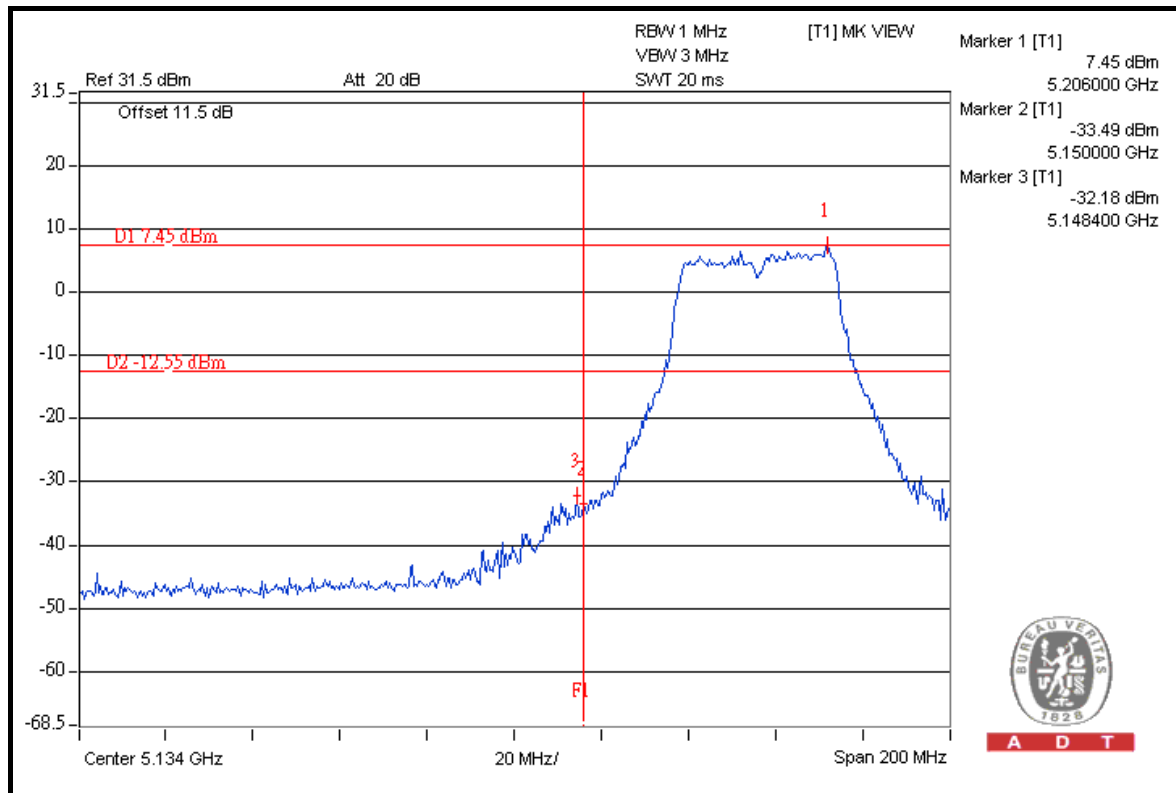
A D T



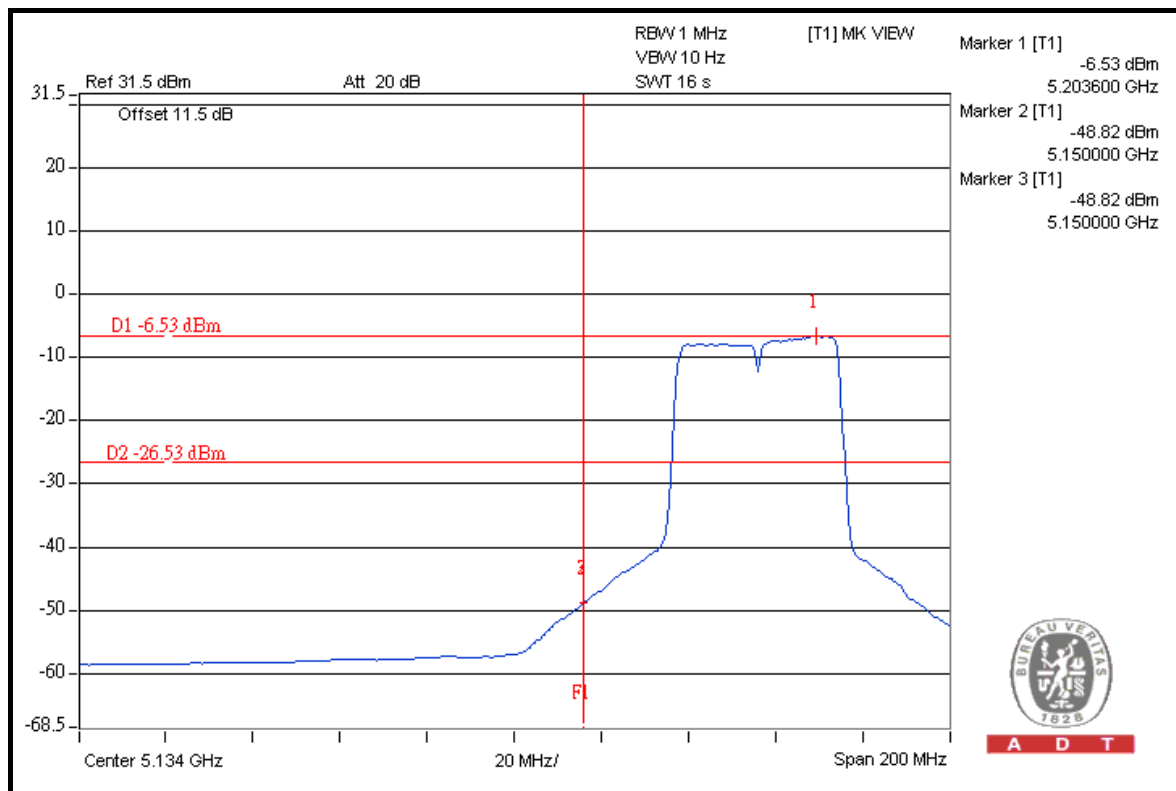


A D T

## CHAIN 2



A D T

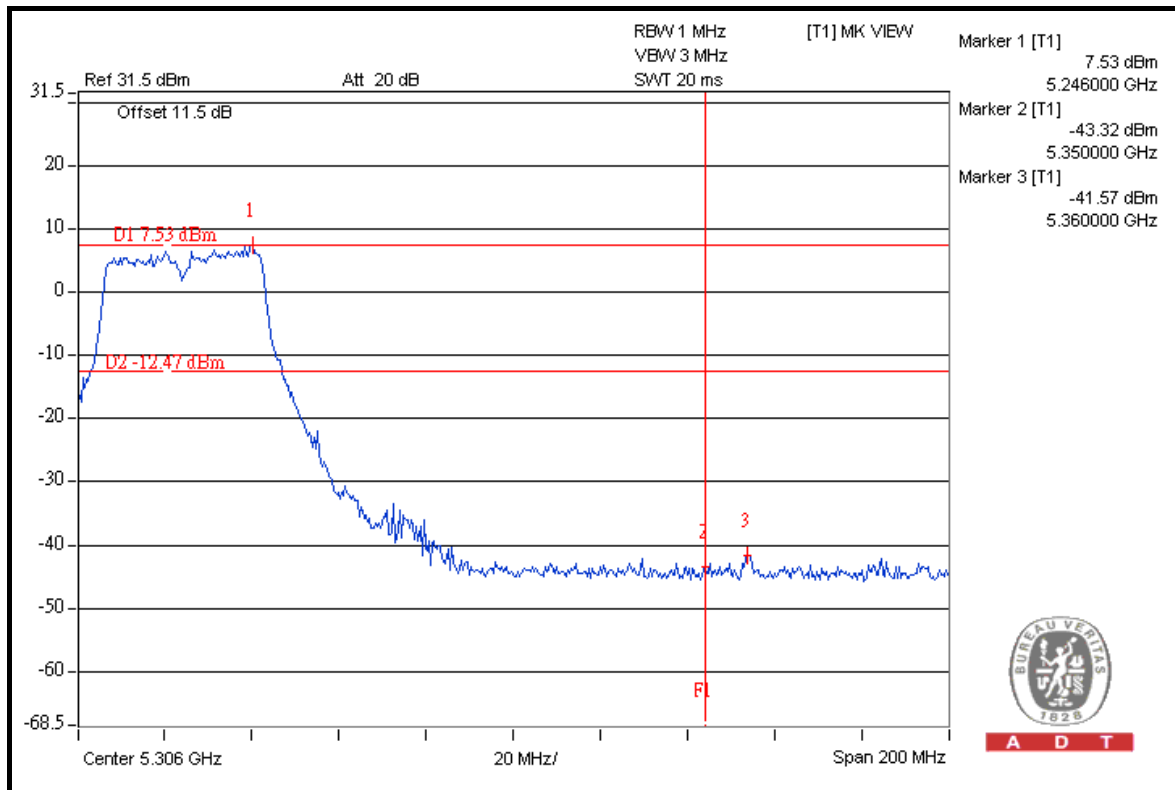
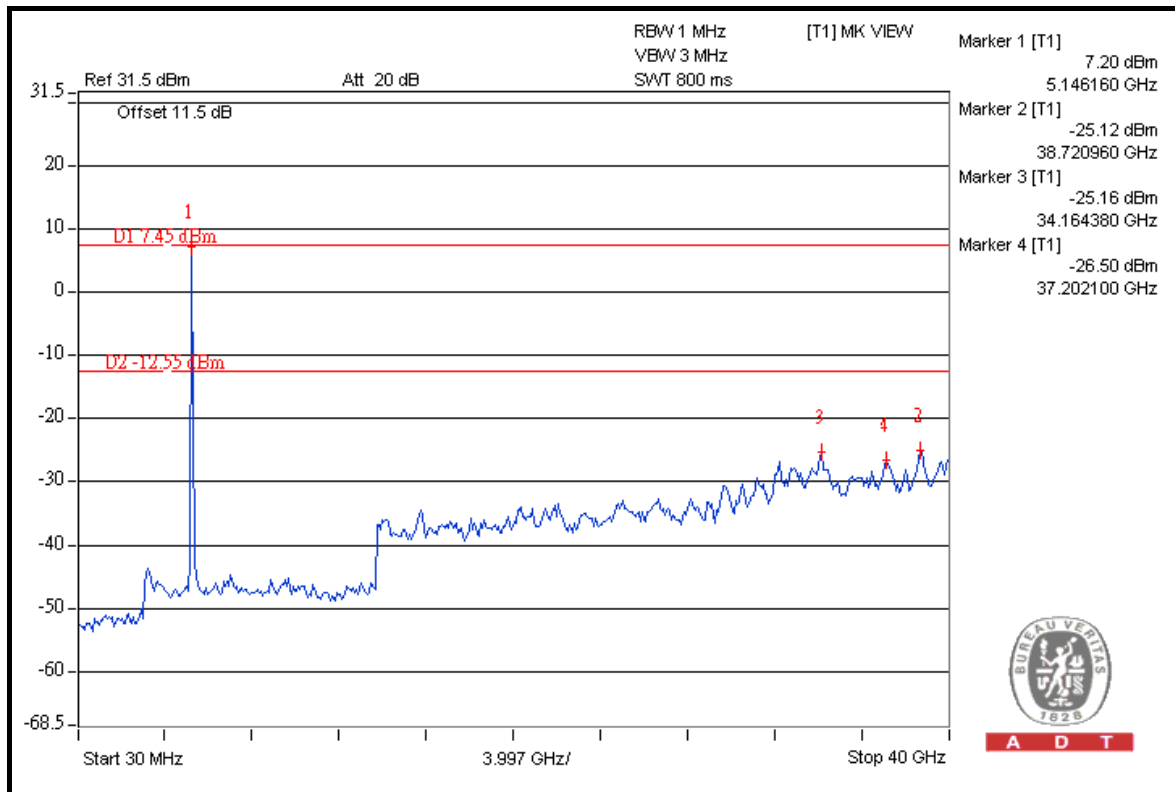


A D T



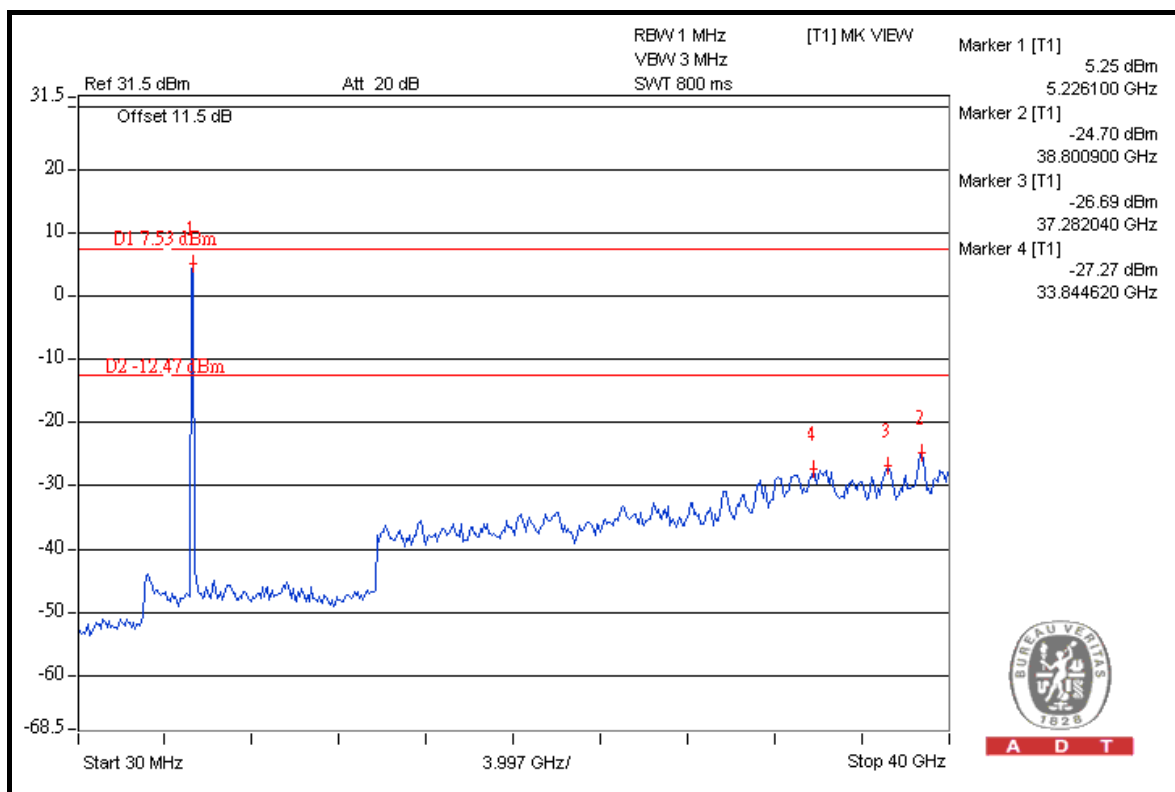
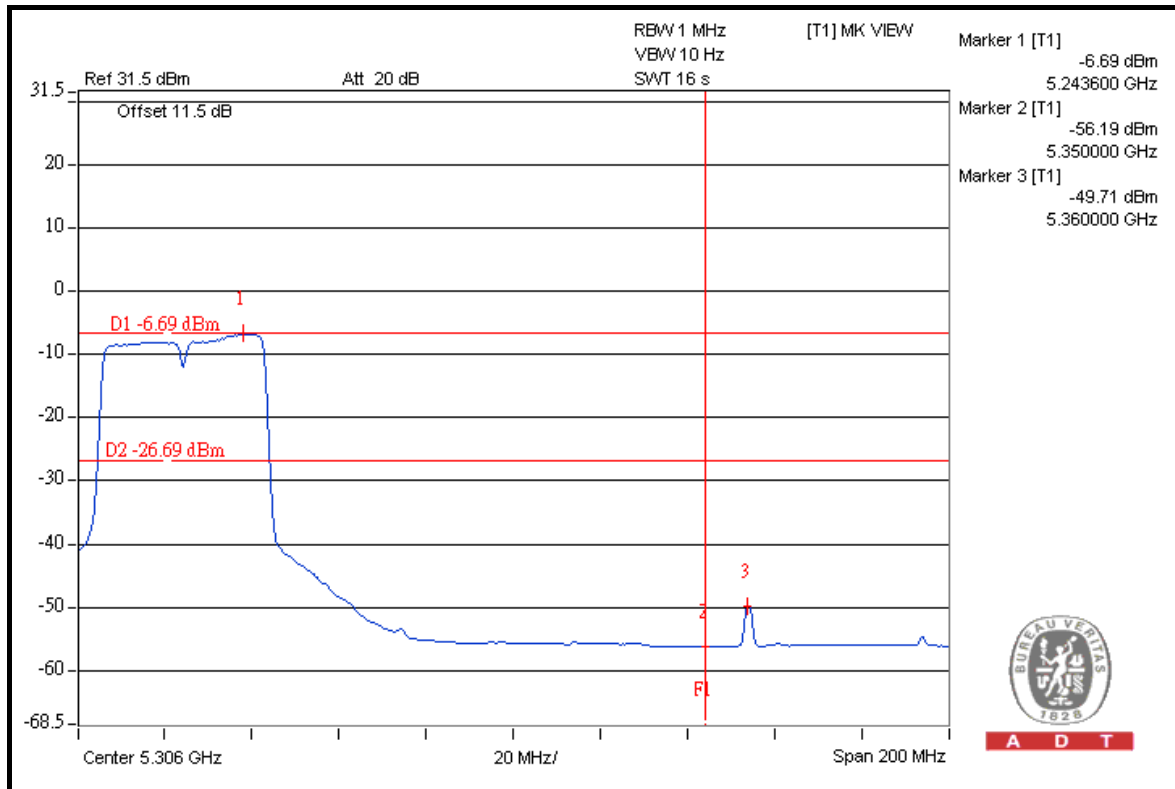


A D T





A D T





A D T

## 6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



A D T

## 7. INFORMATION ON THE TESTING LABORATORIES

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

Copies of accreditation and authorization certificates of our laboratories obtained from approval agencies can be downloaded from our web site: [www.adt.com.tw/index.5.phtml](http://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

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



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

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

**---END---**