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FCC TEST REPORT (15.247)

REPORT NO.: RF110913C20

MODEL NO.: BelAir20E-11 (Refer to item 3.1 for the more details)

FCC ID: RAR-40005001

RECEIVED: Sep. 05, 2011

TESTED: Sep. 05 ~ Sep. 26, 2011

ISSUED: Sep. 29, 2011

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	N/A	Sep. 29, 2011



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1. CERTIFICATION

PRODUCT: 802.11n dual-band WIFI router

MODEL NO.: BelAir20E-11 (Refer to item 3.1 for the more details)

BRAND: BelAir (Refer to item 3.1 for the more details)

APPLICANT: BelAir Networks Inc.

TEST SAMPLE: ENGINEERING SAMPLE

TESTED: Sep. 05 ~ Sep. 26, 2011

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

ANSI C63.4-2003

ANSI C63.10-2009

The above equipment (Model: BelAir20E-11) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY :  , DATE: Sep. 29, 2011
Pettie Chen / Specialist

APPROVED BY :  , DATE: Sep. 29, 2011
Gary Chang / Technical Manager



2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -5.18dB at 14.029MHz.
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 2483.50MHz.
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 30dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 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 $k = 2$.



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3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	802.11n dual-band WIFI router
MODEL NO.	BelAir20E-11 (Refer to NOTE for the more details)
FCC ID	RAR-40005001
NOMINAL VOLTAGE	48Vdc (Adapter) 55Vdc (POE)
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	2.4GHz: 2412.0 ~ 2462.0MHz 5.0GHz: 5745.0 ~ 5825.0MHz
NUMBER OF CHANNEL	2.4GHz: 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) 5.0GHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	873.3mW for 2412.0 ~ 2462.0MHz 583.8mW for 5745.0 ~ 5825.0MHz
ANTENNA TYPE	2.4GHz: PIFA antenna with 3dBi gain 5.0GHz: PIFA antenna with 4dBi gain
ANTENNA CONNECTER	NA
DATA CABLE	NA
I/O PORTS	RJ45, USB
ACCESSORY DEVICES	Adapter

NOTE:

1. The following models are provided to this EUT.

BRAND	MODEL	DESCRIPTION
BelAir	BelAir20E-11	All models are electrically identical, different brand names, model names are for marketing purpose.
MOTOROLA	CW20E-11	



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

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

3. The EUT provides two completed transmitters and two receivers.

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

4. The EUT was powered by the following adapter and POE:

ADAPTER	
BRAND:	LEADER ELECTRONICS INC
MODEL:	MU24-B480050-A1
INPUT:	100-240Vac, 50/60Hz, 1.0A
OUTPUT:	48Vdc, 0.5A
POWER LINE:	1.5 m non-shielded cable without core

POE	
MODEL:	PD-7001G
INPUT:	100-240Vac, 50-60Hz, 0.8A
OUTPUT:	55Vdc, 0.570A

**POE as above is provided as support unit only.

5. 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 and 802.11n (20MHz):

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz



3.3 POWER SETTING

FOR 2.4GHz:

802.11b			802.11g		
CHANNEL	FREQUENCY	POWER SETTING	CHANNEL	FREQUENCY	POWER SETTING
1	2412MHz	21	1	2412MHz	20
6	2437MHz	20	6	2437MHz	19
11	2462MHz	21	11	2462MHz	20

802.11n (20MHz)			802.11n (40MHz)		
CHANNEL	FREQUENCY	POWER SETTING	CHANNEL	FREQUENCY	POWER SETTING
1	2412MHz	20	1	2422MHz	19
6	2437MHz	19	4	2437MHz	19
11	2462MHz	20	7	2452MHz	18

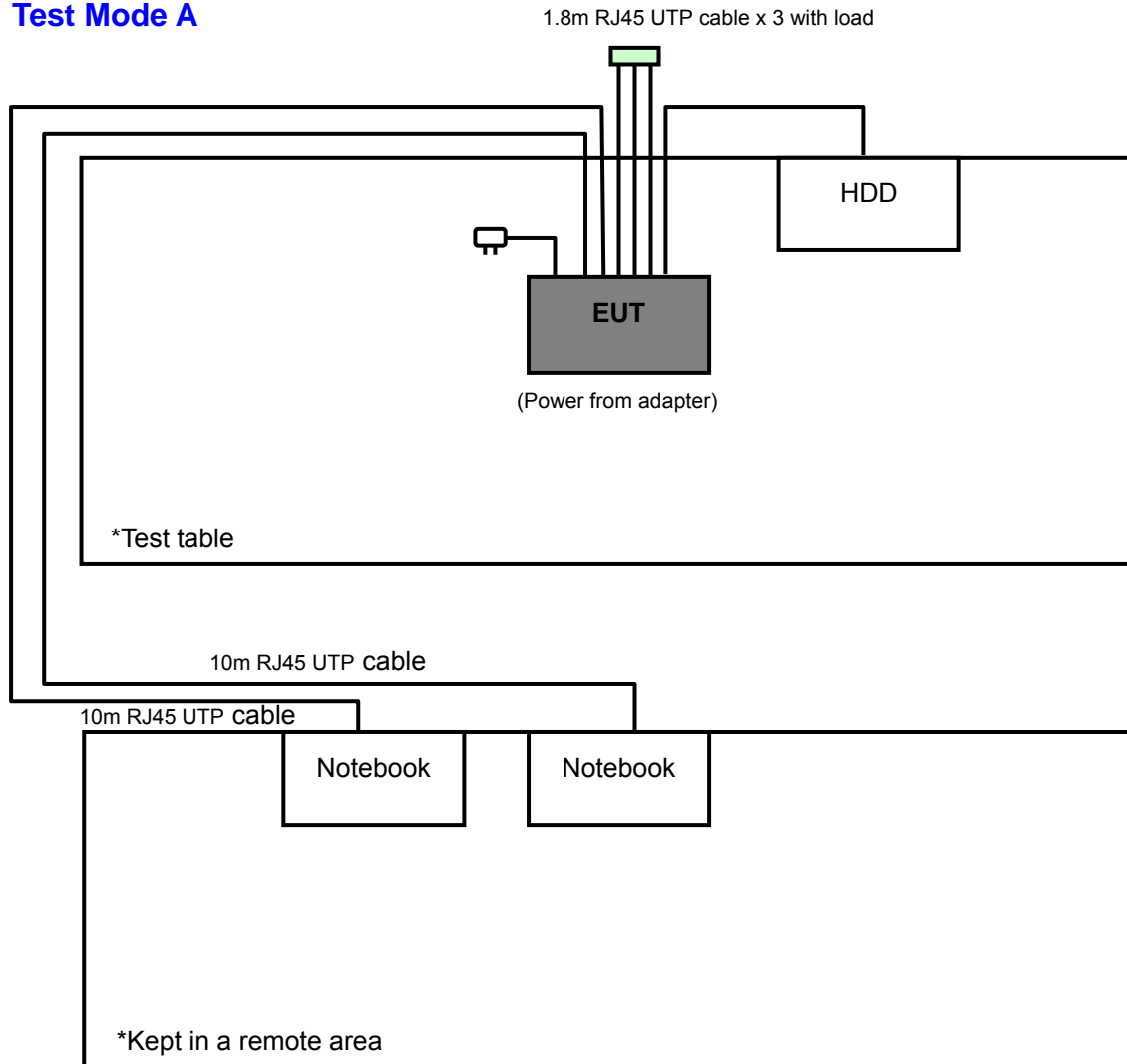
FOR 5.0GHz (5745 ~ 5825MHz):

802.11a			802.11n (20MHz)		
CHANNEL	FREQUENCY	POWER SETTING	CHANNEL	FREQUENCY	POWER SETTING
149	5745MHz	14	149	5745MHz	13
157	5785MHz	14	157	5785MHz	13
165	5825MHz	14	165	5825MHz	13

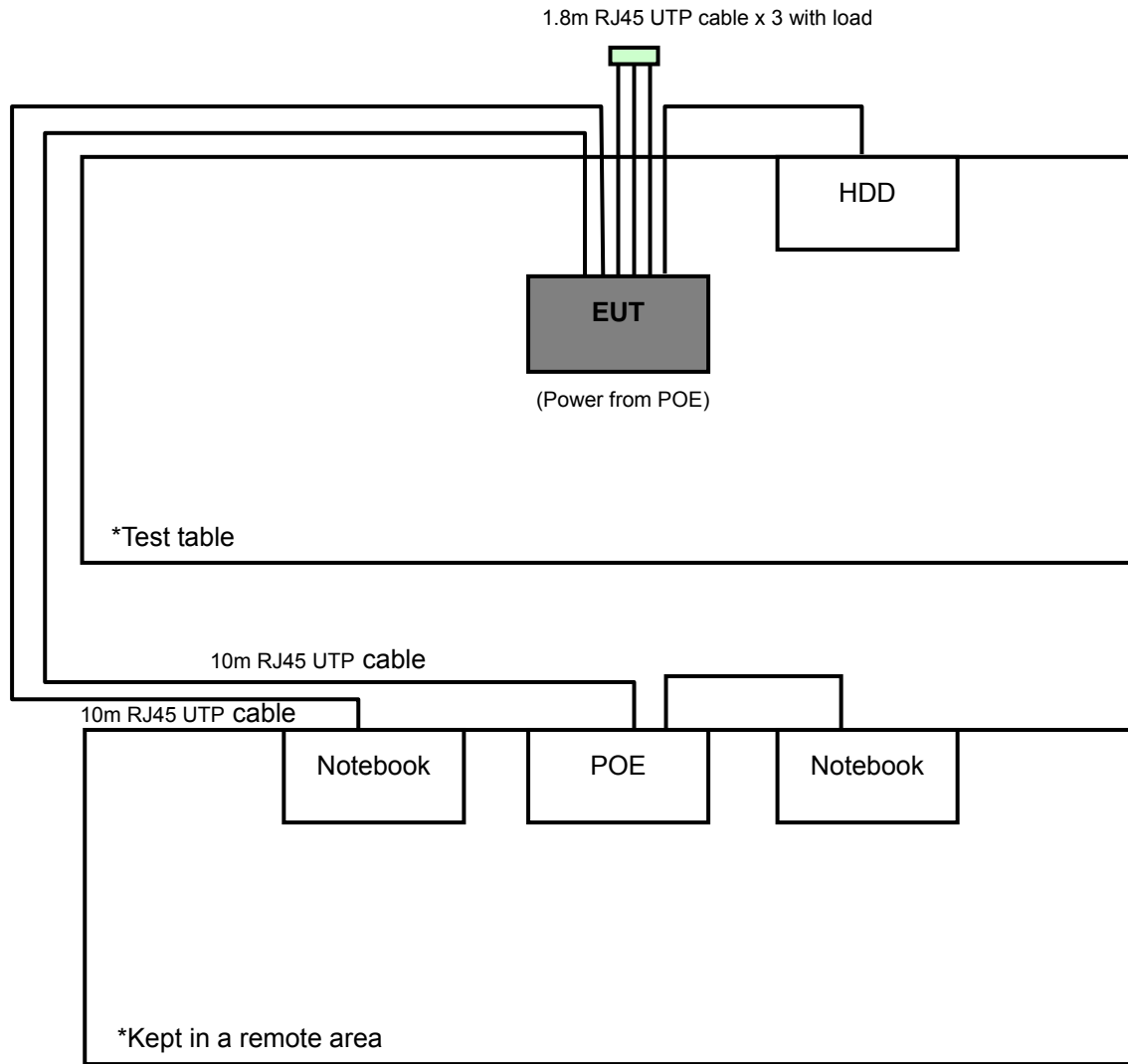
802.11n (40MHz)		
CHANNEL	FREQUENCY	POWER SETTING
151	5755MHz	13
159	5795MHz	13

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST

Test Mode A



Test Mode B





3.3.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR 2.4GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from adapter
B	-	√	√	-	Power from POE

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

NOTE: “-” means no effect.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

RADIATED EMISSION TEST (BELOW 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11g	1 to 11	6	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11g	1 to 11	6	OFDM	BPSK	6.0



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BANDEDGE MEASUREMENT:

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

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

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	25deg. C, 65%RH	120Vac, 60Hz	Sun Lin
RE $<$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Sun Lin
PLC	24deg. C, 66%RH	120Vac, 60Hz	Long Chen
APCM	25deg. C, 65%RH	120Vac, 60Hz	Sun Lin



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FOR 5.745 ~ 5.825GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE \geq 1G	RE $<$ 1G	PLC	APCM	
A	√	√	√	√	Power from adapter
B	-	√	√	-	Power from POE

Where **RE \geq 1G**: Radiated Emission above 1GHz

RE $<$ 1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE: "-" means no effect.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

RADIATED EMISSION TEST (BELOW 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11a	149 to 165	157	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11a	149 to 165	157	OFDM	BPSK	6.0



BANDEDGE MEASUREMENT:

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

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

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Sun Lin
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Sun Lin
PLC	24deg. C, 66%RH	120Vac, 60Hz	Long Chen
APCM	25deg. C, 65%RH	120Vac, 60Hz	Sun Lin



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3.4 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.

3.5 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	External Hard Disk	Terasys	F12-UF	A0100222-4A60004	FCC DoC Approved
2	Notebook	DELL	D531	CN-0XM006-48643-81U-2610	QDS-BRCM1020
3	Notebook	DELL	D820	21498926752	FCC DoC Approved
4	POE	NA	PD-7001G	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.5 m shielded cable, terminated with USB connector, w/o core.
2	10m RJ45 UTP cable.
3	10m RJ45 UTP cable. (For test mode A) 3.0m RJ45 UTP cable. (For test mode B)
4	10m RJ45 UTP cable.

NOTE:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item 2~4 acted communication partners to transfer data.
3. Item 4 was provided by client.



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.



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4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 19, 2011	Apr. 18, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jan. 06, 2011	Jan. 05, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 12, 2011	Apr. 11, 2012
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-563	Sep. 06, 2011	Sep. 05, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8449B	3008A01911	Nov. 03, 2010	Nov. 02, 2011
Preamplifier Agilent	8447D	2944A10638	Nov. 03, 2010	Nov. 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295013/4 283403/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 13, 2011	Aug. 12, 2012
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	NA	NA

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 9.
 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 460141.
 5. The IC Site Registration No. is IC 7450F-4.



4.1.3 TEST PROCEDURES

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

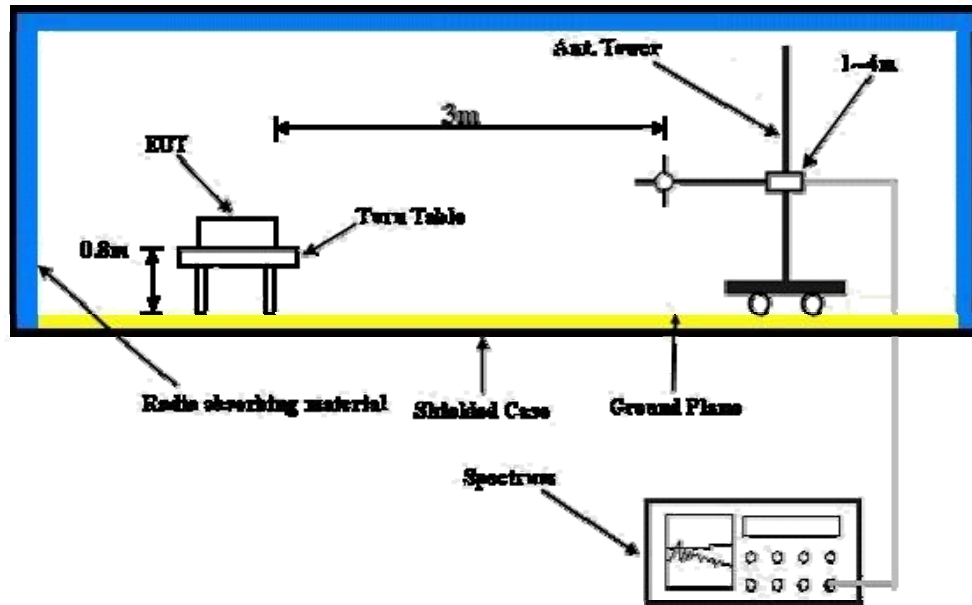
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 100kHz and video bandwidth is 300kHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

4.1.6 EUT OPERATING CONDITIONS

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



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4.1.7 TEST RESULTS

ABOVE 1GHz WORST-CASE DATA : 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, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.0 PK	74.0	-9.0	1.23 H	281	33.90	31.10
2	2390.00	45.5 AV	54.0	-8.5	1.23 H	281	14.40	31.10
3	*2412.00	105.5 PK			1.29 H	73	74.40	31.10
4	*2412.00	101.7 AV			1.29 H	73	70.60	31.10
5	4824.00	50.3 PK	74.0	-23.7	1.50 H	327	13.10	37.20
6	4824.00	46.7 AV	54.0	-7.3	1.50 H	327	9.50	37.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.9 PK	74.0	-3.1	1.23 V	148	39.80	31.10
2	2390.00	45.1 AV	54.0	-8.9	1.23 V	148	14.00	31.10
3	*2412.00	106.7 PK			1.23 V	148	75.60	31.10
4	*2412.00	102.7 AV			1.23 V	148	71.60	31.10
5	4824.00	56.2 PK	74.0	-17.8	1.12 V	171	19.00	37.20
6	4824.00	50.0 AV	54.0	-4.0	1.12 V	171	12.80	37.20

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



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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, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.8 PK			1.00 H	355	74.60	31.20
2	*2437.00	101.9 AV			1.00 H	355	70.70	31.20
3	4874.00	52.3 PK	74.0	-21.7	1.00 H	314	15.00	37.30
4	4874.00	48.5 AV	54.0	-5.5	1.00 H	314	11.20	37.30
5	7311.00	52.6 PK	74.0	-21.4	1.32 H	345	9.50	43.10
6	7311.00	44.5 AV	54.0	-9.5	1.32 H	345	1.40	43.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.1 PK			1.27 V	107	75.90	31.20
2	*2437.00	103.0 AV			1.27 V	107	71.80	31.20
3	4874.00	54.4 PK	74.0	-19.6	1.80 V	214	17.10	37.30
4	4874.00	48.9 AV	54.0	-5.1	1.80 V	214	11.60	37.30
5	7311.00	58.1 PK	74.0	-15.9	1.77 V	190	15.00	43.10
6	7311.00	50.7 AV	54.0	-3.3	1.77 V	190	7.60	43.10

- 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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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, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.2 PK			1.00 H	99	74.90	31.30
2	*2462.00	102.3 AV			1.00 H	99	71.00	31.30
3	2483.50	67.3 PK	74.0	-6.7	1.00 H	9	35.90	31.40
4	2483.50	47.5 AV	54.0	-6.5	1.00 H	9	16.10	31.40
5	4924.00	49.3 PK	74.0	-24.7	1.03 H	342	11.90	37.40
6	4924.00	44.1 AV	54.0	-9.9	1.03 H	342	6.70	37.40
7	7386.00	51.8 PK	74.0	-22.2	1.45 H	67	8.50	43.30
8	7386.00	40.2 AV	54.0	-13.8	1.45 H	67	-3.10	43.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.4 PK			1.25 V	85	76.10	31.30
2	*2462.00	103.5 AV			1.25 V	85	72.20	31.30
3	2484.00	70.0 PK	74.0	-4.0	1.22 V	120	38.60	31.40
4	2484.00	47.2 AV	54.0	-6.8	1.22 V	120	15.80	31.40
5	4924.00	52.7 PK	74.0	-21.3	1.22 V	26	15.30	37.40
6	4924.00	49.6 AV	54.0	-4.4	1.22 V	26	12.20	37.40
7	7386.00	54.6 PK	74.0	-19.4	1.83 V	169	11.30	43.30
8	7386.00	47.1 AV	54.0	-6.9	1.83 V	169	3.80	43.30

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



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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, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.4 PK	74.0	-7.6	1.27 H	34	35.30	31.10
2	2390.00	47.6 AV	54.0	-6.4	1.27 H	34	16.50	31.10
3	*2412.00	108.2 PK			1.22 H	64	77.10	31.10
4	*2412.00	97.2 AV			1.22 H	64	66.10	31.10
5	4824.00	47.4 PK	74.0	-26.6	1.38 H	145	10.20	37.20
6	4824.00	33.0 AV	54.0	-21.0	1.38 H	145	-4.20	37.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.4 PK	74.0	-6.6	1.29 V	107	36.30	31.10
2	2390.00	48.7 AV	54.0	-5.3	1.29 V	107	17.60	31.10
3	*2412.00	108.7 PK			1.29 V	95	77.60	31.10
4	*2412.00	97.5 AV			1.29 V	95	66.40	31.10
5	4824.00	48.6 PK	74.0	-25.4	1.45 V	157	11.40	37.20
6	4824.00	34.0 AV	54.0	-20.0	1.45 V	157	-3.20	37.20

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



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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, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.5 PK			1.00 H	188	77.30	31.20
2	*2437.00	97.6 AV			1.00 H	188	66.40	31.20
3	4874.00	54.4 PK	74.0	-19.6	1.13 H	293	17.10	37.30
4	4874.00	37.7 AV	54.0	-16.3	1.13 H	293	0.40	37.30
5	7311.00	62.2 PK	74.0	-11.8	1.17 H	46	19.10	43.10
6	7311.00	41.3 AV	54.0	-12.7	1.17 H	46	-1.80	43.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	109.0 PK			1.26 V	105	77.80	31.20
2	*2437.00	97.8 AV			1.26 V	105	66.60	31.20
3	4874.00	55.9 PK	74.0	-18.1	1.57 V	243	18.60	37.30
4	4874.00	38.0 AV	54.0	-16.0	1.57 V	243	0.70	37.30
5	7311.00	68.9 PK	74.0	-5.1	1.96 V	209	25.80	43.10
6	7311.00	48.1 AV	54.0	-5.9	1.96 V	209	5.00	43.10

- 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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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, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.9 PK			1.16 H	68	77.60	31.30
2	*2462.00	97.9 AV			1.16 H	68	66.60	31.30
3	2483.50	69.2 PK	74.0	-4.8	1.16 H	67	37.80	31.40
4	2483.50	48.2 AV	54.0	-5.8	1.16 H	67	16.80	31.40
5	4924.00	47.8 PK	74.0	-26.2	1.28 H	48	10.40	37.40
6	4924.00	33.8 AV	54.0	-20.2	1.28 H	48	-3.60	37.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.3 PK			1.20 V	113	78.00	31.30
2	*2462.00	98.2 AV			1.20 V	113	66.90	31.30
3	2483.50	70.3 PK	74.0	-3.7	1.20 V	118	38.90	31.40
4	2483.50	50.2 AV	54.0	-3.8	1.20 V	118	18.80	31.40
5	4924.00	49.2 PK	74.0	-24.8	1.57 V	328	11.80	37.40
6	4924.00	35.2 AV	54.0	-18.8	1.57 V	328	-2.20	37.40

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



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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, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.0 PK	74.0	-9.0	1.16 H	210	33.90	31.10
2	2390.00	49.2 AV	54.0	-4.8	1.16 H	210	18.10	31.10
3	*2412.00	108.0 PK			1.15 H	207	76.90	31.10
4	*2412.00	97.1 AV			1.15 H	207	66.00	31.10
5	4824.00	45.4 PK	74.0	-28.6	1.24 H	152	8.20	37.20
6	4824.00	34.2 AV	54.0	-19.8	1.24 H	152	-3.00	37.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.9 PK	74.0	-8.1	1.18 V	134	34.80	31.10
2	2390.00	49.4 AV	54.0	-4.6	1.18 V	134	18.30	31.10
3	*2412.00	108.5 PK			1.18 V	138	77.40	31.10
4	*2412.00	97.1 AV			1.18 V	138	66.00	31.10
5	4824.00	46.2 PK	74.0	-27.8	1.34 V	285	9.00	37.20
6	4824.00	33.8 AV	54.0	-20.2	1.34 V	285	-3.40	37.20

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



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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, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.2 PK			1.02 H	203	77.00	31.20
2	*2437.00	96.8 AV			1.02 H	203	65.60	31.20
3	4874.00	55.8 PK	74.0	-18.2	1.16 H	323	18.50	37.30
4	4874.00	38.0 AV	54.0	-16.0	1.16 H	323	0.70	37.30
5	7311.00	66.0 PK	74.0	-8.0	1.17 H	48	22.90	43.10
6	7311.00	44.8 AV	54.0	-9.2	1.17 H	48	1.70	43.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.8 PK			1.21 V	138	77.60	31.20
2	*2437.00	97.3 AV			1.21 V	138	66.10	31.20
3	4874.00	57.1 PK	74.0	-16.9	1.36 V	169	19.80	37.30
4	4874.00	37.5 AV	54.0	-16.5	1.36 V	169	0.20	37.30
5	7311.00	68.8 PK	74.0	-5.2	1.76 V	136	25.70	43.10
6	7311.00	47.3 AV	54.0	-6.7	1.76 V	136	4.20	43.10

- 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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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, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.5 PK			1.24 H	122	77.20	31.30
2	*2462.00	97.0 AV			1.24 H	122	65.70	31.30
3	2483.50	67.6 PK	74.0	-6.4	1.25 H	91	36.20	31.40
4	2483.50	49.0 AV	54.0	-5.0	1.25 H	91	17.60	31.40
5	4924.00	45.3 PK	74.0	-28.7	1.54 H	228	7.90	37.40
6	4924.00	34.4 AV	54.0	-19.6	1.54 H	228	-3.00	37.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.2 PK			1.17 V	138	77.90	31.30
2	*2462.00	97.5 AV			1.17 V	138	66.20	31.30
3	2483.50	68.7 PK	74.0	-5.3	1.29 V	127	37.30	31.40
4	2483.50	49.2 AV	54.0	-4.8	1.29 V	127	17.80	31.40
5	4924.00	45.5 PK	74.0	-28.5	1.37 V	92	8.10	37.40
6	4924.00	34.5 AV	54.0	-19.5	1.37 V	92	-2.90	37.40

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



A D T

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, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.0 PK	74.0	-6.0	1.26 H	288	36.90	31.10
2	2390.00	52.5 AV	54.0	-1.5	1.26 H	288	21.40	31.10
3	*2422.00	104.3 PK			1.26 H	290	73.10	31.20
4	*2422.00	93.0 AV			1.26 H	290	61.80	31.20
5	4844.00	43.8 PK	74.0	-30.2	1.03 H	47	6.50	37.30
6	4844.00	33.0 AV	54.0	-21.0	1.03 H	47	-4.30	37.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.4 PK	74.0	-6.6	1.18 V	219	36.30	31.10
2	2390.00	52.8 AV	54.0	-1.2	1.18 V	219	21.70	31.10
3	*2422.00	105.0 PK			1.16 V	228	73.80	31.20
4	*2422.00	93.6 AV			1.16 V	228	62.40	31.20
5	4844.00	45.2 PK	74.0	-28.8	1.32 V	328	7.90	37.30
6	4844.00	33.8 AV	54.0	-20.2	1.32 V	328	-3.50	37.30

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



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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, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.5 PK	74.0	-6.5	1.18 H	107	36.40	31.10
2	2390.00	52.4 AV	54.0	-1.6	1.18 H	107	21.30	31.10
3	*2437.00	104.7 PK			1.18 H	107	73.50	31.20
4	*2437.00	93.4 AV			1.18 H	107	62.20	31.20
5	4874.00	45.1 PK	74.0	-28.9	1.02 H	95	7.80	37.30
6	4874.00	32.6 AV	54.0	-21.4	1.02 H	95	-4.70	37.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.9 PK	74.0	-4.1	1.18 V	228	38.80	31.10
2	2390.00	52.7 AV	54.0	-1.3	1.18 V	228	21.60	31.10
3	*2437.00	105.6 PK			1.18 V	258	74.40	31.20
4	*2437.00	94.0 AV			1.18 V	258	62.80	31.20
5	4874.00	46.3 PK	74.0	-27.7	1.50 V	135	9.00	37.30
6	4874.00	34.5 AV	54.0	-19.5	1.50 V	135	-2.80	37.30

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: 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, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	105.0 PK			1.20 H	241	73.70	31.30
2	*2452.00	93.8 AV			1.20 H	241	62.50	31.30
3	2483.50	70.2 PK	74.0	-3.8	1.24 H	188	38.80	31.40
4	2483.50	52.6 AV	54.0	-1.4	1.24 H	188	21.20	31.40
5	4904.00	45.3 PK	74.0	-28.7	1.47 H	231	7.90	37.40
6	4904.00	34.5 AV	54.0	-19.5	1.47 H	231	-2.90	37.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	105.9 PK			1.30 V	69	74.60	31.30
2	*2452.00	94.3 AV			1.30 V	69	63.00	31.30
3	2483.50	70.9 PK	74.0	-3.1	1.32 V	257	39.50	31.40
4	2483.50	53.0 AV	54.0	-1.0	1.32 V	257	21.60	31.40
5	4904.00	45.4 PK	74.0	-28.6	1.54 V	228	8.00	37.40
6	4904.00	33.9 AV	54.0	-20.1	1.54 V	228	-3.50	37.40

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



A D T

BELOW 1GHz WORST-CASE DATA : 802.11g

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

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	121.28	38.1 QP	43.5	-5.4	1.50 H	250	26.60	11.50
2	214.61	38.3 QP	43.5	-5.2	1.50 H	100	27.30	11.00
3	249.60	38.1 QP	46.0	-7.9	1.25 H	130	25.50	12.60
4	276.82	35.1 QP	46.0	-10.9	1.00 H	154	21.40	13.70
5	480.97	39.2 QP	46.0	-6.8	1.50 H	217	20.10	19.10
6	500.42	41.9 QP	46.0	-4.1	1.50 H	214	22.20	19.70
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	30.96	34.9 QP	40.0	-5.1	1.12 V	271	22.80	12.10
2	55.92	34.8 QP	40.0	-5.2	1.08 V	22	21.70	13.10
3	134.89	37.8 QP	43.5	-5.7	1.00 V	85	24.50	13.30
4	226.27	35.7 QP	46.0	-10.3	1.00 V	298	24.20	11.50
5	274.88	33.0 QP	46.0	-13.0	1.25 V	205	19.40	13.60
6	480.97	38.3 QP	46.0	-7.7	1.00 V	139	19.20	19.10

- 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.



A D T

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	Sun Lin
TEST MODE	B		

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	140.72	32.8 QP	43.5	-10.7	1.25 H	223	19.00	13.80
2	249.60	34.7 QP	46.0	-11.3	1.00 H	274	22.10	12.60
3	375.98	32.5 QP	46.0	-13.5	1.00 H	253	16.10	16.40
4	480.97	40.9 QP	46.0	-5.1	1.50 H	328	21.80	19.10
5	500.42	38.3 QP	46.0	-7.7	1.50 H	268	18.60	19.70
6	640.41	35.5 QP	46.0	-10.5	1.00 H	112	12.90	22.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	37.1 QP	40.0	-2.9	1.25 V	118	25.10	12.00
2	53.23	36.1 QP	40.0	-3.9	1.00 V	10	22.90	13.20
3	138.78	33.1 QP	43.5	-10.4	1.25 V	226	19.30	13.80
4	245.72	37.3 QP	46.0	-8.7	1.00 V	10	24.90	12.40
5	480.97	36.3 QP	46.0	-9.7	1.00 V	301	17.20	19.10
6	852.33	39.9 QP	46.0	-6.1	1.00 V	61	14.60	25.30

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



4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Nov. 30, 2010	Nov. 29, 2011
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 30, 2010	Dec. 29, 2011
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jul. 07, 2011	Jul. 06, 2012
LISN ROHDE & SCHWARZ	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_Cond_ V7.3.7	NA	NA	NA

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



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4.2.3 TEST PROCEDURES

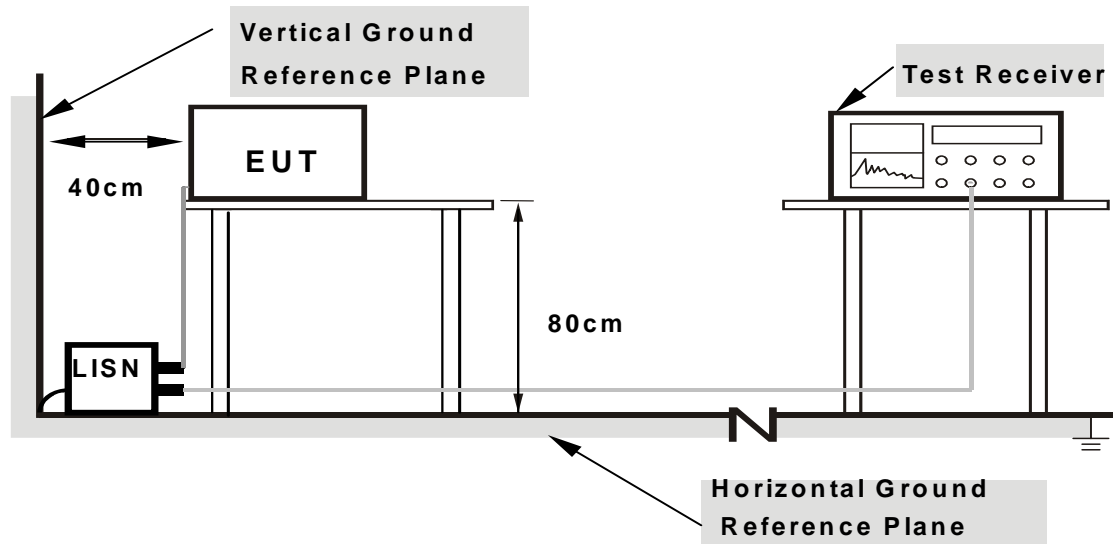
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

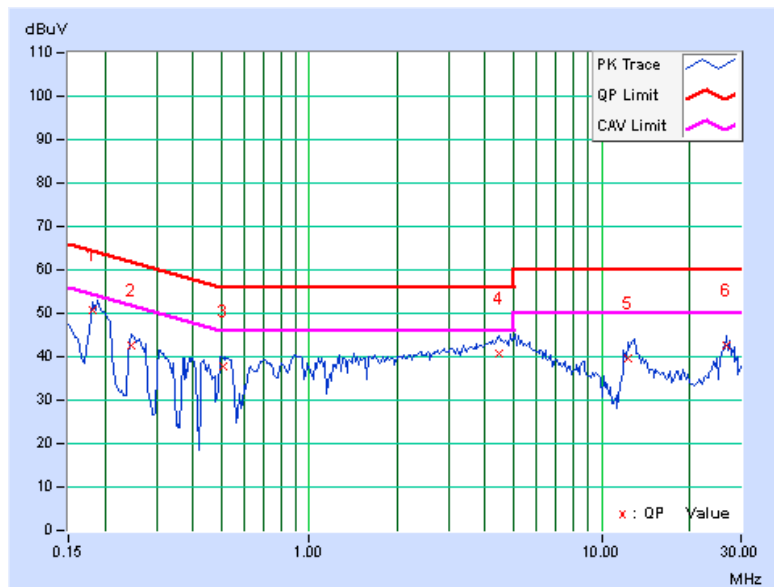
4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA : 802.11g

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.183	0.12	50.48	34.24	50.60	34.36	64.37	54.37	-13.77	-20.01
2	0.248	0.12	42.35	31.00	42.47	31.12	61.84	51.84	-19.37	-20.72
3	0.505	0.13	37.50	23.40	37.63	23.53	56.00	46.00	-18.37	-22.47
4	4.480	0.34	40.27	29.77	40.61	30.11	56.00	46.00	-15.39	-15.89
5	12.281	0.76	38.86	30.79	39.62	31.55	60.00	50.00	-20.38	-18.45
6	26.844	1.43	41.24	40.72	42.67	42.15	60.00	50.00	-17.33	-7.85

- 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.



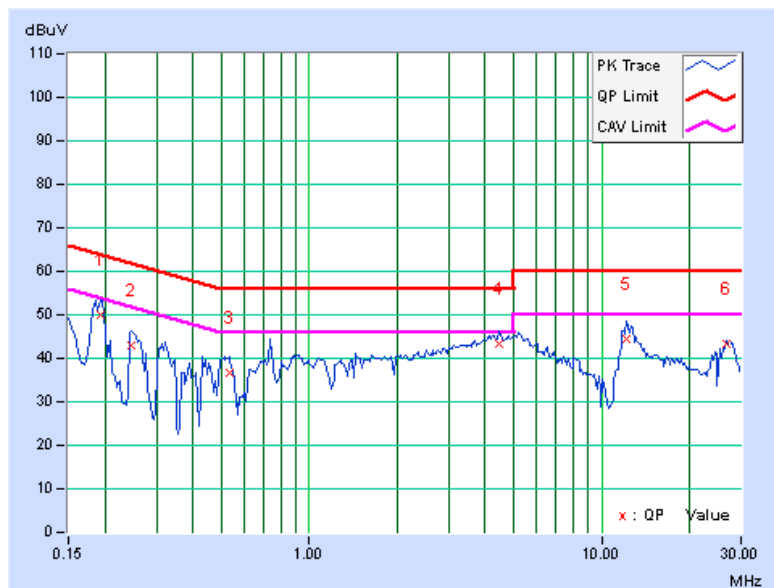


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PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.193	0.13	50.02	37.19	50.15	37.32	63.91	53.91	-13.76	-16.59
2	0.248	0.13	42.76	31.82	42.89	31.95	61.84	51.84	-18.94	-19.88
3	0.533	0.15	36.58	21.52	36.73	21.67	56.00	46.00	-19.27	-24.33
4	4.484	0.34	43.10	31.76	43.44	32.10	56.00	46.00	-12.56	-13.90
5	12.227	0.67	43.87	35.66	44.54	36.33	60.00	50.00	-15.46	-13.67
6	26.797	1.15	42.29	42.10	43.44	43.25	60.00	50.00	-16.56	-6.75

- 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.



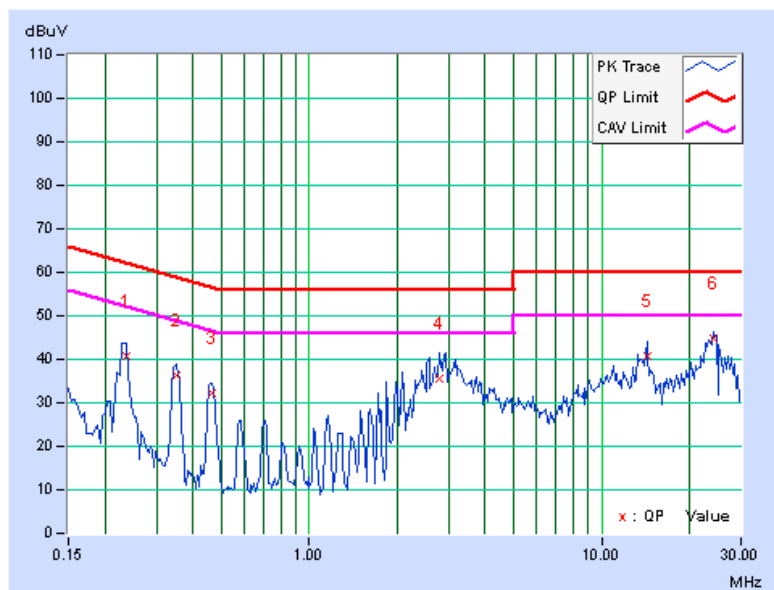


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PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.236	0.12	40.66	28.45	40.78	28.57	62.24	52.24	-21.46	-23.67
2	0.353	0.12	36.19	32.16	36.31	32.28	58.89	48.89	-22.58	-16.61
3	0.463	0.12	32.20	29.69	32.32	29.81	56.65	46.65	-24.32	-16.83
4	2.785	0.24	35.49	28.37	35.73	28.61	56.00	46.00	-20.27	-17.39
5	14.273	0.84	39.83	36.78	40.67	37.62	60.00	50.00	-19.33	-12.38
6	24.075	1.33	43.47	43.06	44.80	44.39	60.00	50.00	-15.20	-5.61

- 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.



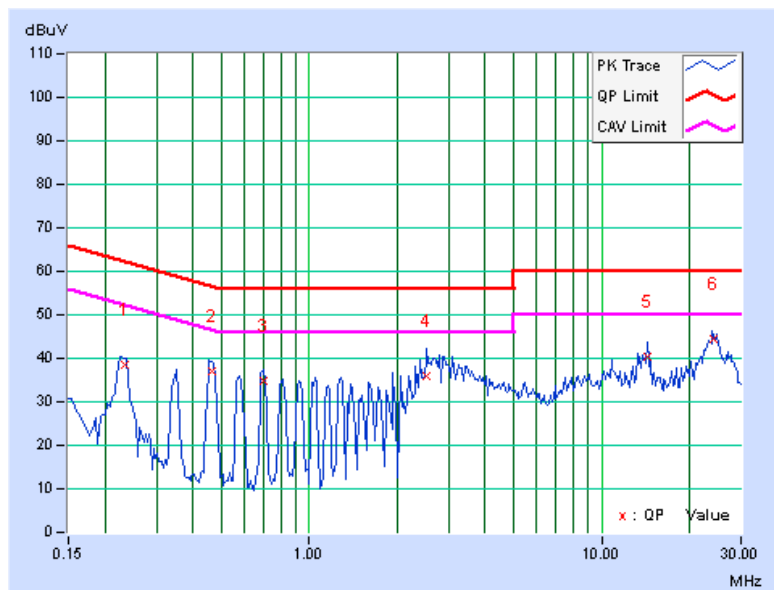


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PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.233	0.13	38.53	38.32	38.66	38.45	62.34	52.34	-23.68	-13.89
2	0.462	0.14	37.04	35.06	37.18	35.20	56.65	46.65	-19.46	-11.44
3	0.697	0.16	34.79	31.92	34.95	32.08	56.00	46.00	-21.05	-13.92
4	2.531	0.23	35.63	24.55	35.86	24.78	56.00	46.00	-20.14	-21.22
5	14.277	0.73	39.54	36.22	40.27	36.95	60.00	50.00	-19.73	-13.05
6	24.045	1.08	43.35	42.25	44.43	43.33	60.00	50.00	-15.57	-6.67

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





A D T

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.



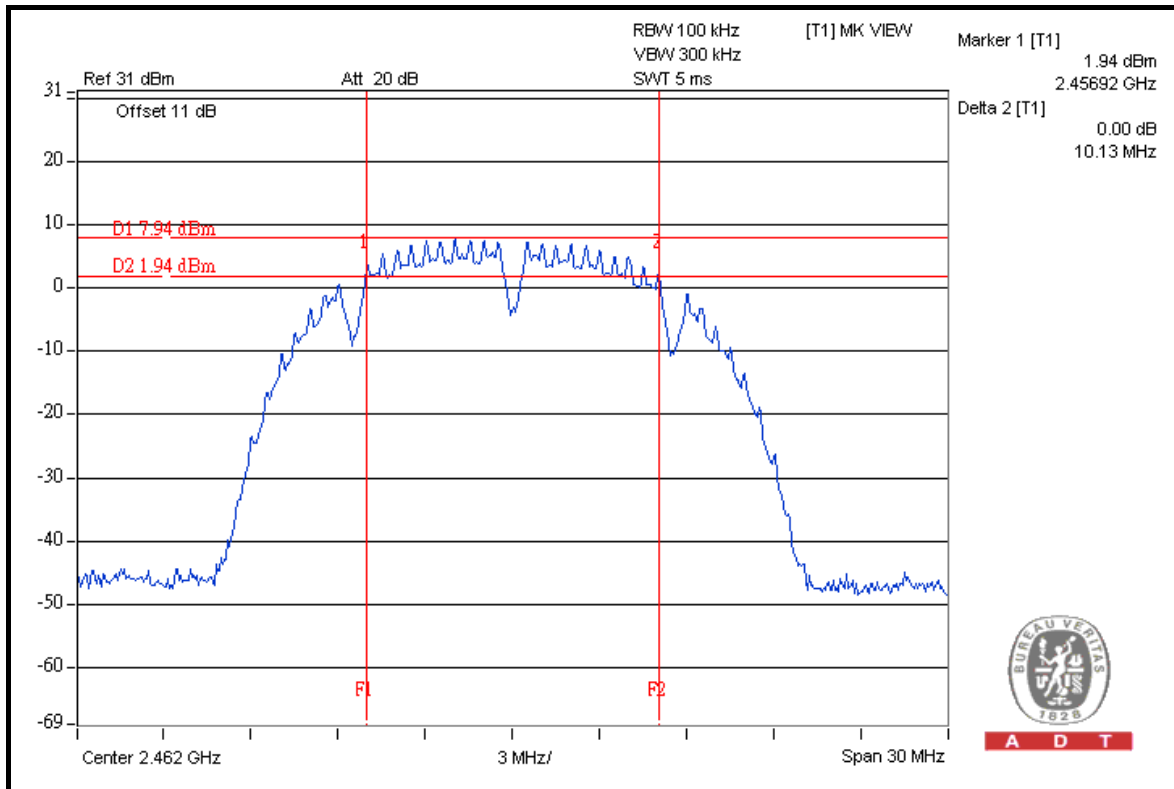
A D T

4.3.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	10.10	10.09	0.5	PASS
6	2437	10.11	10.11	0.5	PASS
11	2462	10.13	9.66	0.5	PASS

CHAIN 0: CH 11



A D T

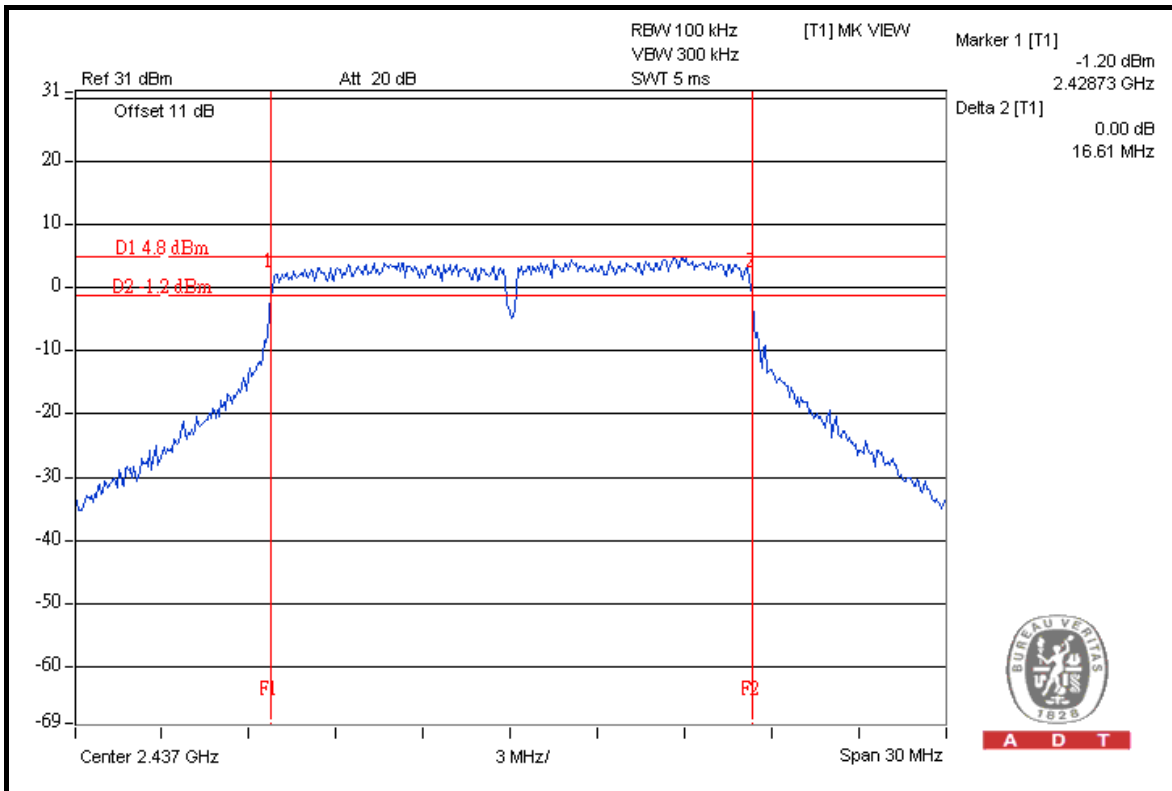


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802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.60	16.54	0.5	PASS
6	2437	16.61	16.56	0.5	PASS
11	2462	16.53	16.43	0.5	PASS

CHAIN 0: CH 6



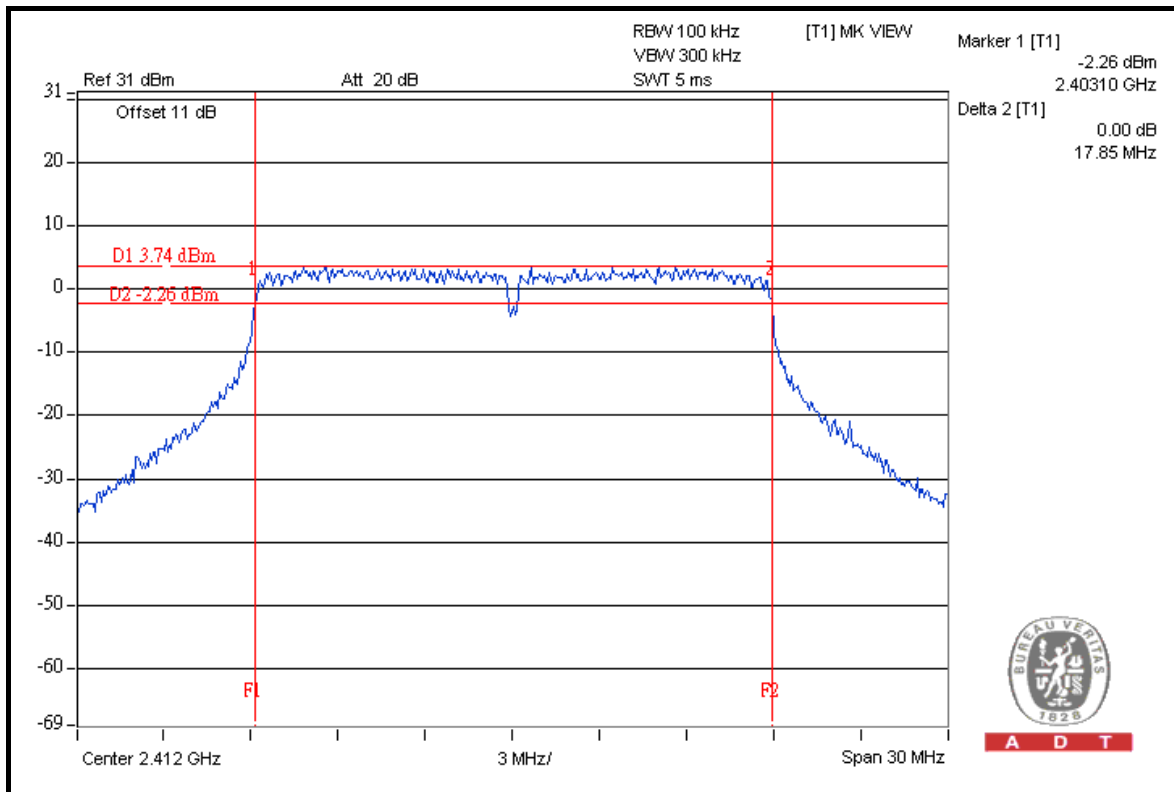


A D T

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.85	17.75	0.5	PASS
6	2437	17.83	17.80	0.5	PASS
11	2462	17.75	17.75	0.5	PASS

FOR CHAIN 0: CH 1



A D T

4.4 MAXIMUM OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

The Maximum Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
High Speed Peak Power Meter	ML2495A	0824011	Aug. 04, 2011	Aug. 03, 2012
Power Sensor	MA2411B	0738171	Aug. 04, 2011	Aug. 03, 2012

NOTE:

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

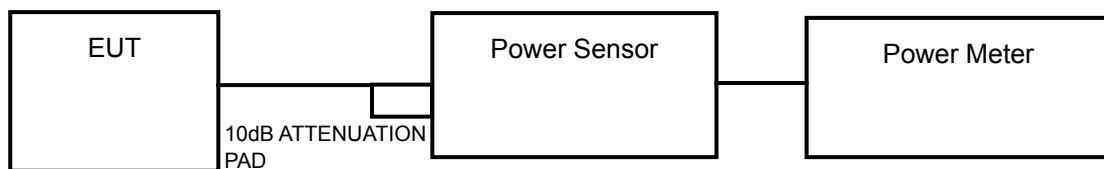
4.4.3 TEST PROCEDURES

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

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



4.4.7 TEST RESULTS

802.11b

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	19.5	18.8	165.0	22.2	30	PASS
6	2437	19.1	18.2	147.4	21.7	30	PASS
11	2462	19.8	19.2	178.7	22.5	30	PASS

NOTE: Directional gain = $3\text{dBi} + 10\log(2) = 6.0\text{dBi} = 6\text{dBi}$, so the conducted power limit is not reduced.

802.11g

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	26.4	26.1	843.9	29.3	30	PASS
6	2437	26.3	26.5	873.3	29.4	30	PASS
11	2462	26.2	25.8	797.1	29.0	30	PASS

NOTE: Directional gain = $3\text{dBi} + 10\log(2) = 6.0\text{dBi} = 6\text{dBi}$, so the conducted power limit is not reduced.

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	25.9	25.5	743.9	28.7	30	PASS
6	2437	25.7	25.6	734.6	28.7	30	PASS
11	2462	26.2	25.3	755.7	28.8	30	PASS

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2422	25.3	24.1	595.9	27.8	30	PASS
4	2437	25.5	25.2	685.9	28.4	30	PASS
7	2452	25.4	25.2	677.9	28.3	30	PASS



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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 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

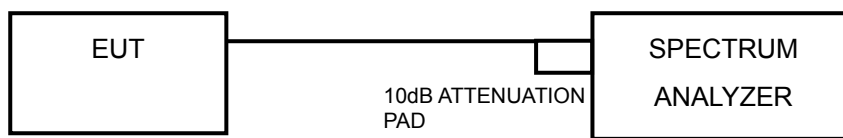
The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation.

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



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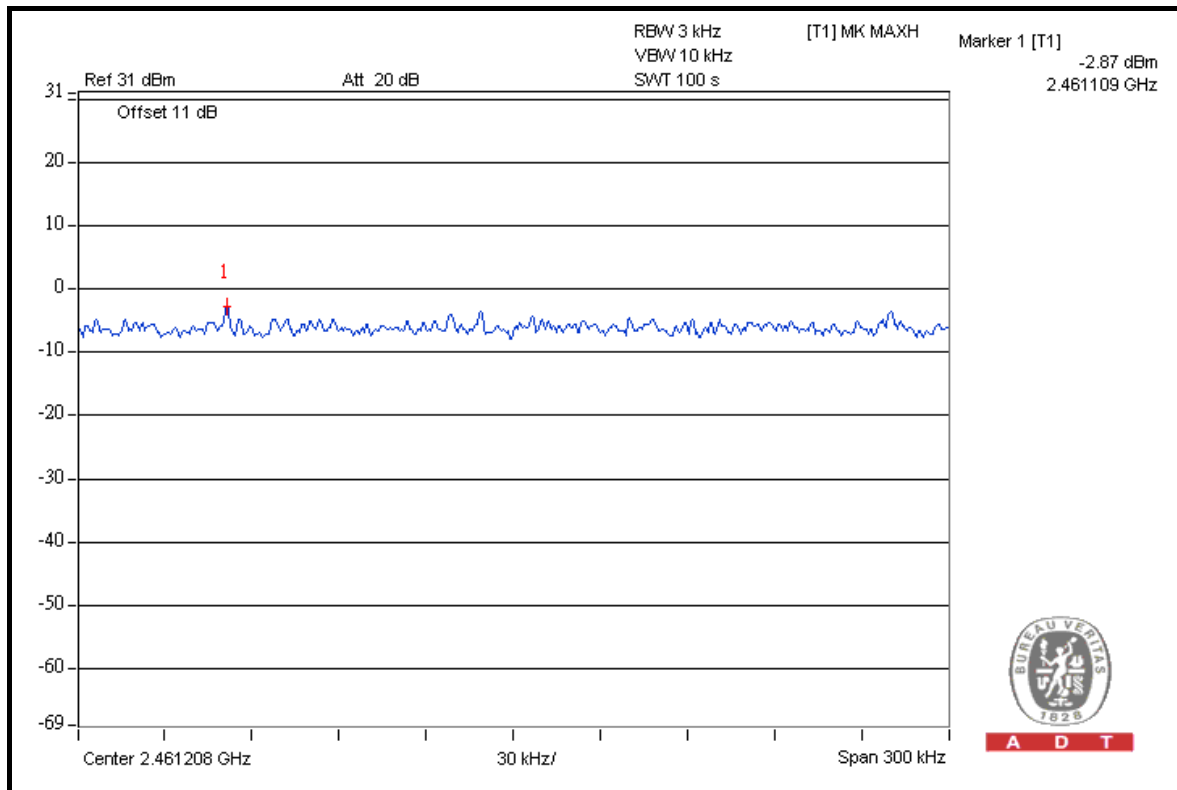
4.5.7 TEST RESULTS

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=2) dB			
0	1	2412	-6.17	3.01	-3.16	8	PASS
	6	2437	-6.40	3.01	-3.39	8	PASS
	11	2462	-5.70	3.01	-2.69	8	PASS
1	1	2412	-3.45	3.01	-0.44	8	PASS
	6	2437	-3.90	3.01	-0.89	8	PASS
	11	2462	-2.87	3.01	0.14	8	PASS

NOTE: Directional gain = 3dBi + 10log(2) = 6.0dBi = 6dBi , so the power density limit is not reduced.

FOR CHAIN 1: CH 11



A D T



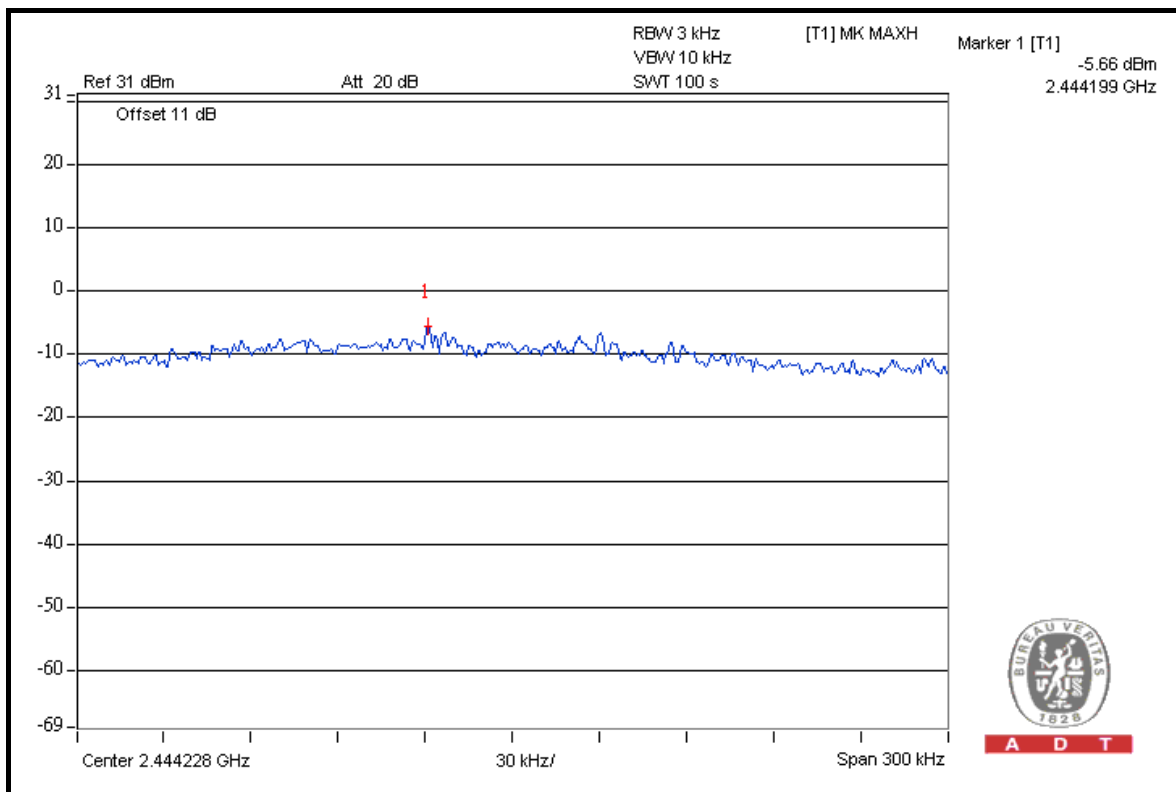
A D T

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=2) dB			
0	1	2412	-5.79	3.01	-2.78	8	PASS
	6	2437	-5.66	3.01	-2.65	8	PASS
	11	2462	-5.76	3.01	-2.75	8	PASS
1	1	2412	-8.85	3.01	-5.84	8	PASS
	6	2437	-8.44	3.01	-5.43	8	PASS
	11	2462	-9.30	3.01	-6.29	8	PASS

NOTE: Directional gain = 3dBi + 10log(2) = 6.0dBi = 6dBi , so the power density limit is not reduced.

FOR CHAIN 0: CH 6



A D T

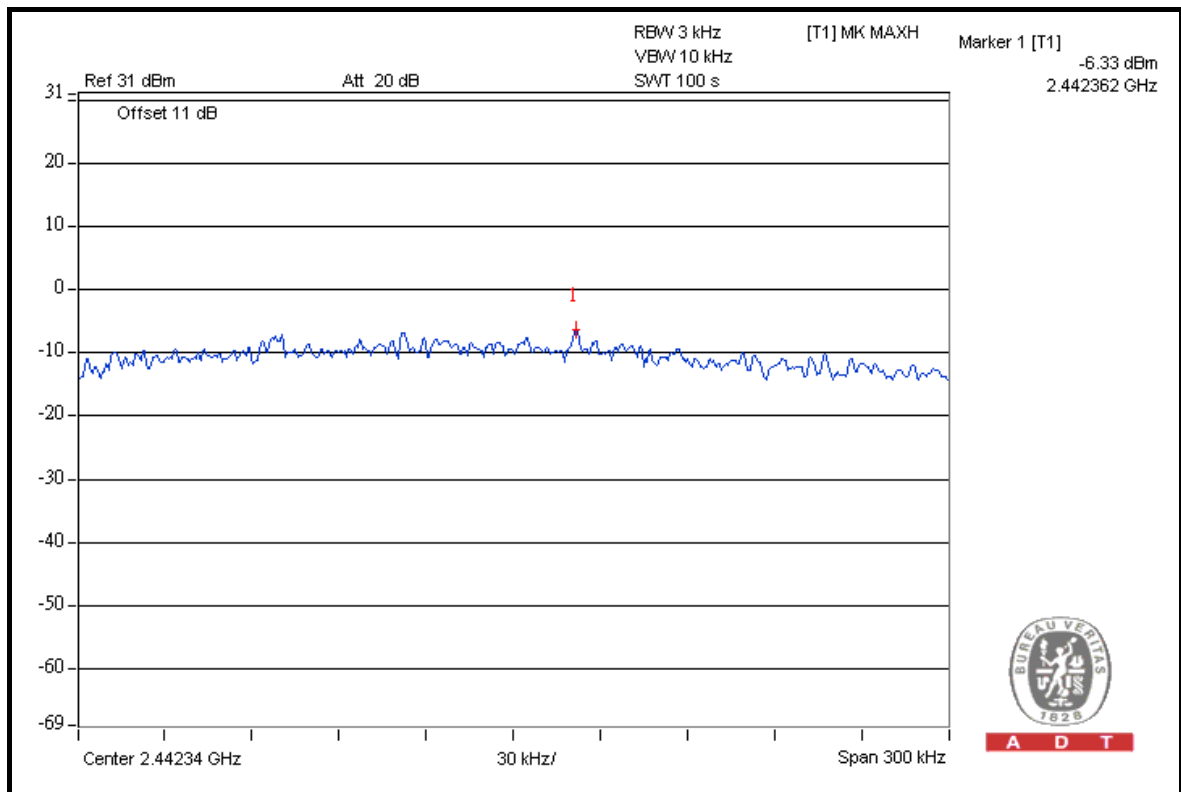


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802.11n (20MHz)

CHAIN	CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
			MEASURED	10 log (N=2) dB			
0	1	2412	-7.89	3.01	-4.88	8	PASS
	6	2437	-8.18	3.01	-5.17	8	PASS
	11	2462	-7.68	3.01	-4.67	8	PASS
1	1	2412	-6.65	3.01	-3.64	8	PASS
	6	2437	-6.33	3.01	-3.32	8	PASS
	11	2462	-6.93	3.01	-3.92	8	PASS

FOR CHAIN 1: CH 6



A D T

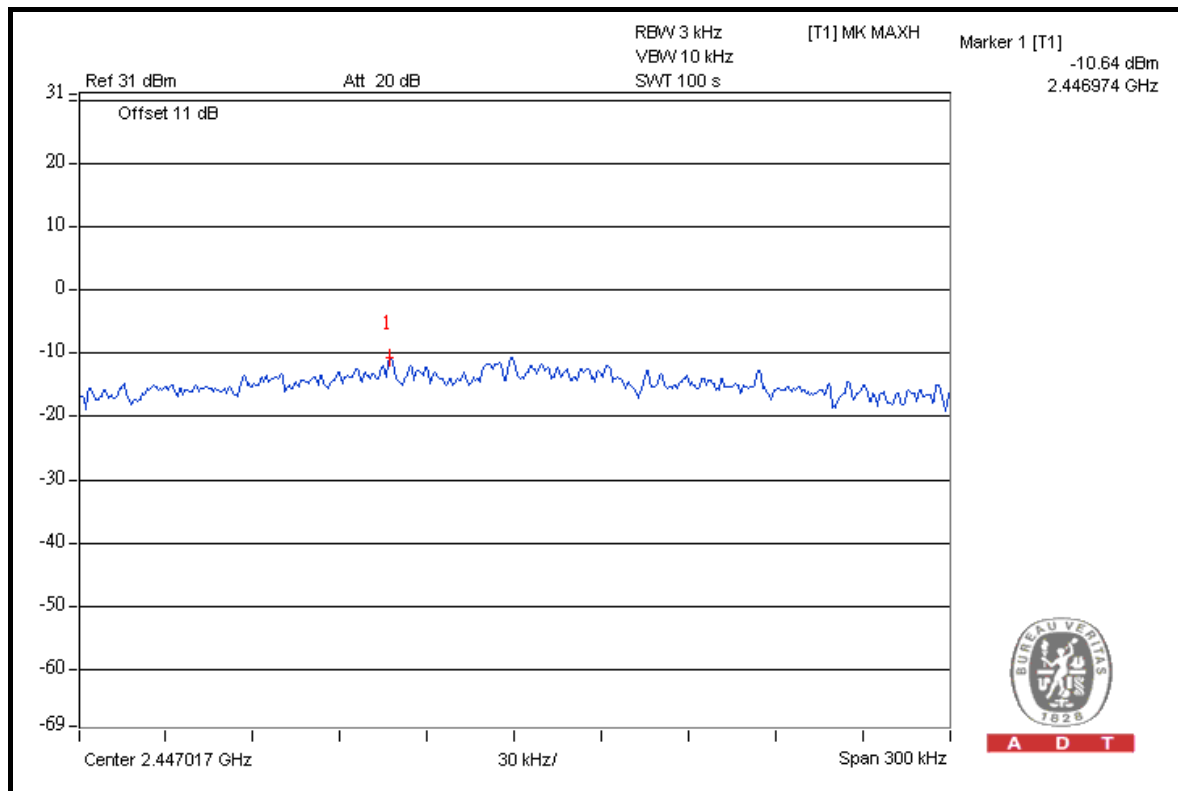


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802.11n (40MHz)

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=2) dB			
0	1	2422	-10.80	3.01	-7.79	8	PASS
	4	2437	-10.74	3.01	-7.73	8	PASS
	7	2452	-10.64	3.01	-7.63	8	PASS
1	1	2422	-11.51	3.01	-8.50	8	PASS
	4	2437	-11.49	3.01	-8.48	8	PASS
	7	2452	-11.54	3.01	-8.53	8	PASS

FOR CHAIN 0: CH 7



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4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below –30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
FOR CONDUCTED MEASUREMENT				
SPECTRUM ANALYZER R&S	FSP40	100039	Feb. 23, 2011	Feb. 22, 2012
FOR RADIATED MEASUREMENT				
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 19, 2011	Apr. 18, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jan. 06, 2011	Jan. 05, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 12, 2011	Apr. 11, 2012
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-563	Sep. 06, 2011	Sep. 05, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8449B	3008A01911	Nov. 03, 2010	Nov. 02, 2011
Preamplifier Agilent	8447D	2944A10638	Nov. 03, 2010	Nov. 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295013/4 283403/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 13, 2011	Aug. 12, 2012
Software	ADT_Radiated_V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	NA	NA

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



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4.6.3 TEST PROCEDURE

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

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

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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation.

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6.



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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 30dB 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)	106.7	51.74	54.96	74.00
2412.00 (AV)	102.7	61.36	41.34	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)	107.4	51.95	55.45	74.00
2462.00 (AV)	103.5	58.79	44.71	54.00

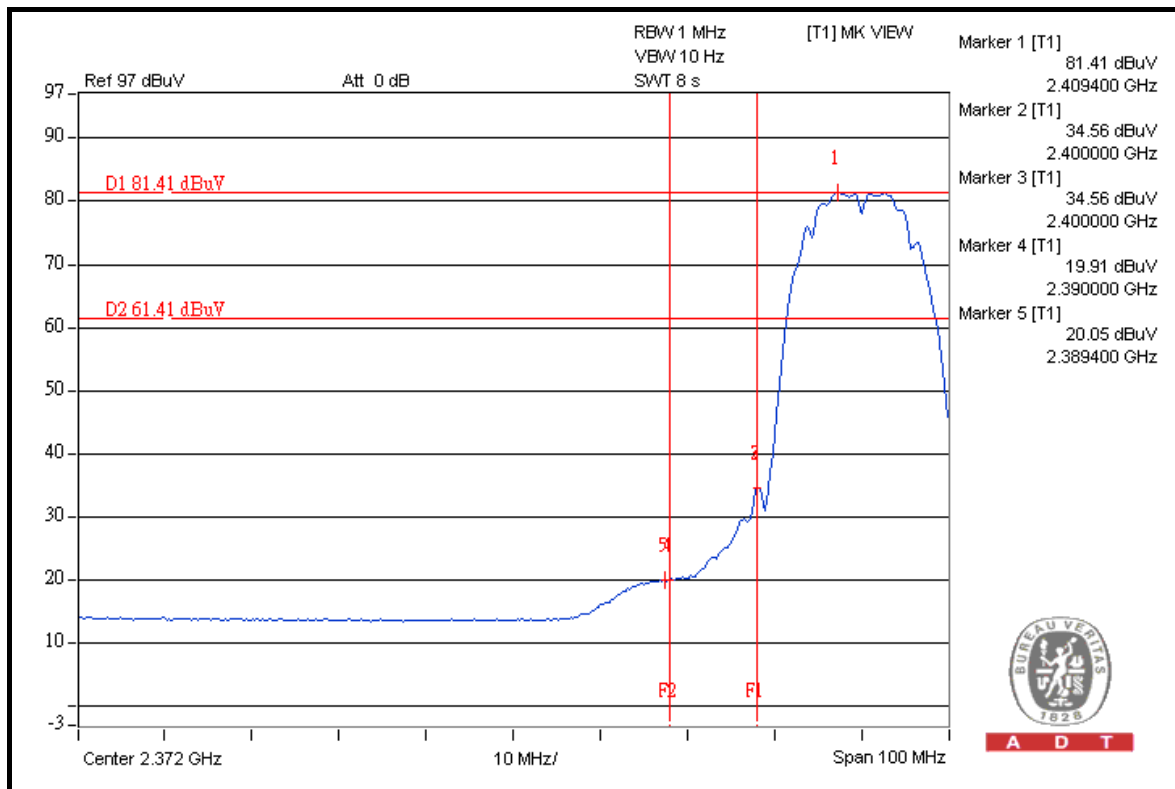
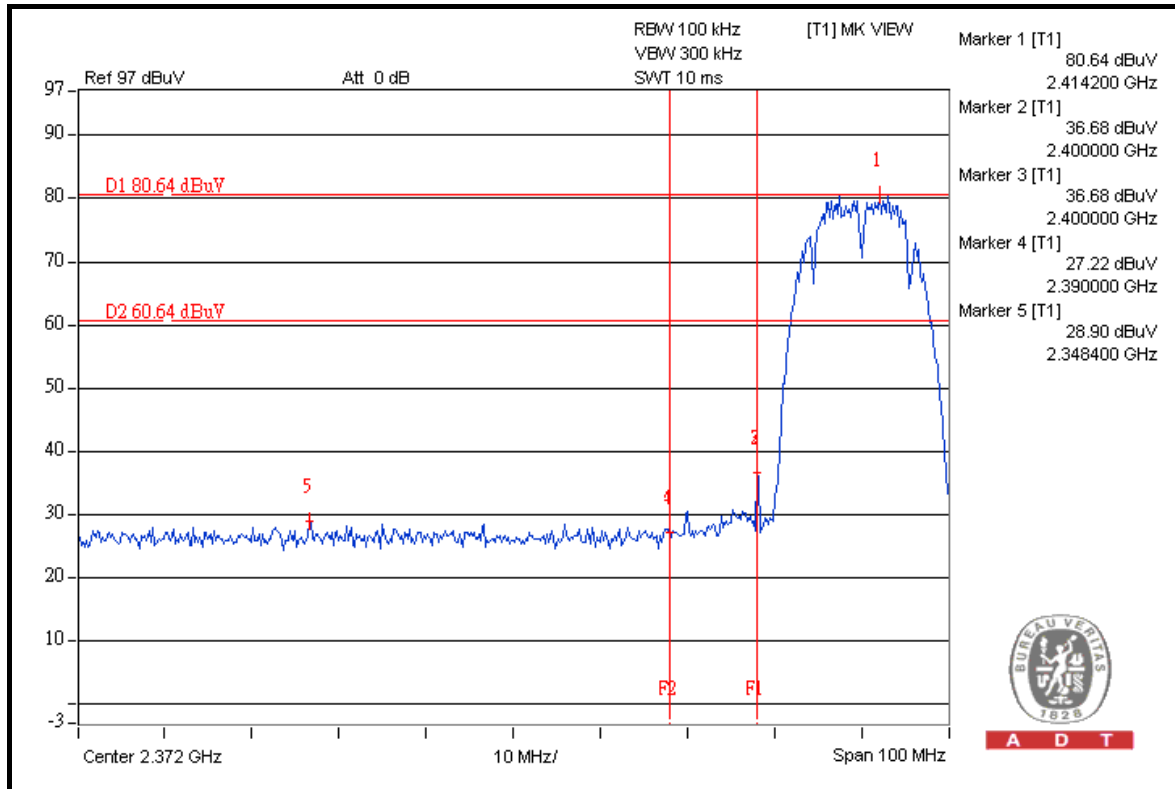
NOTE:

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.



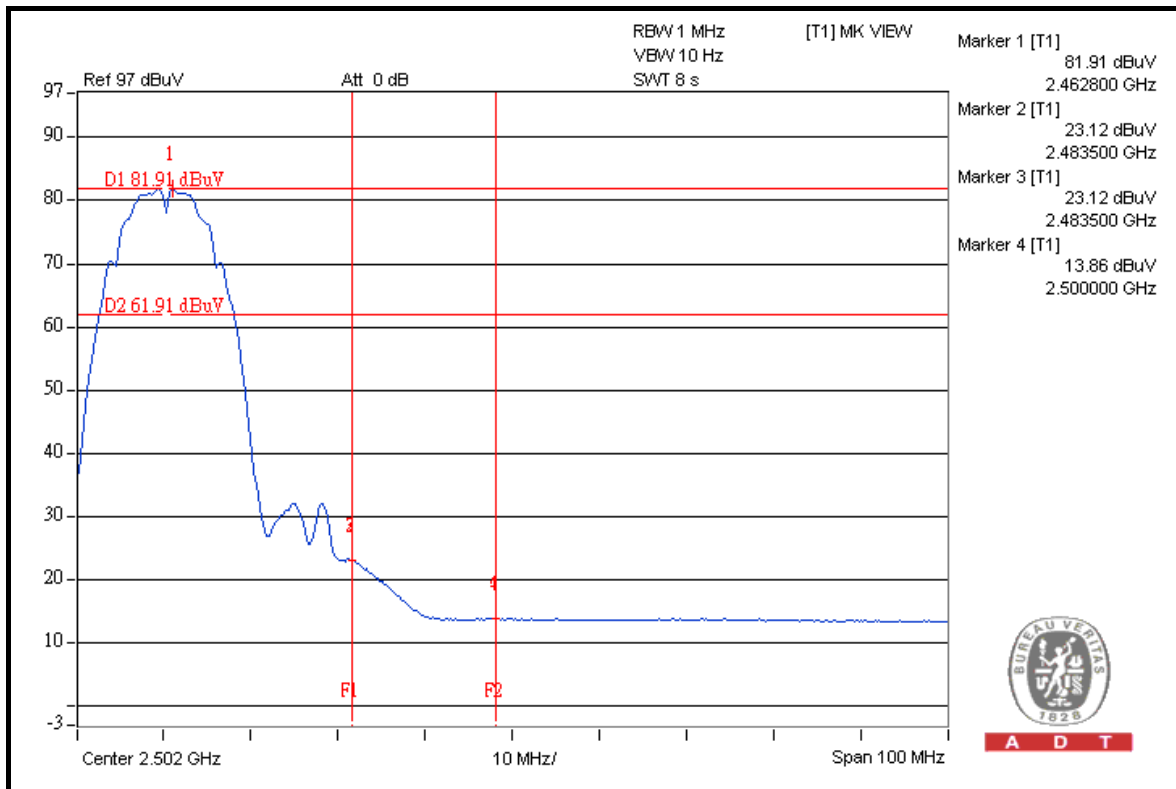
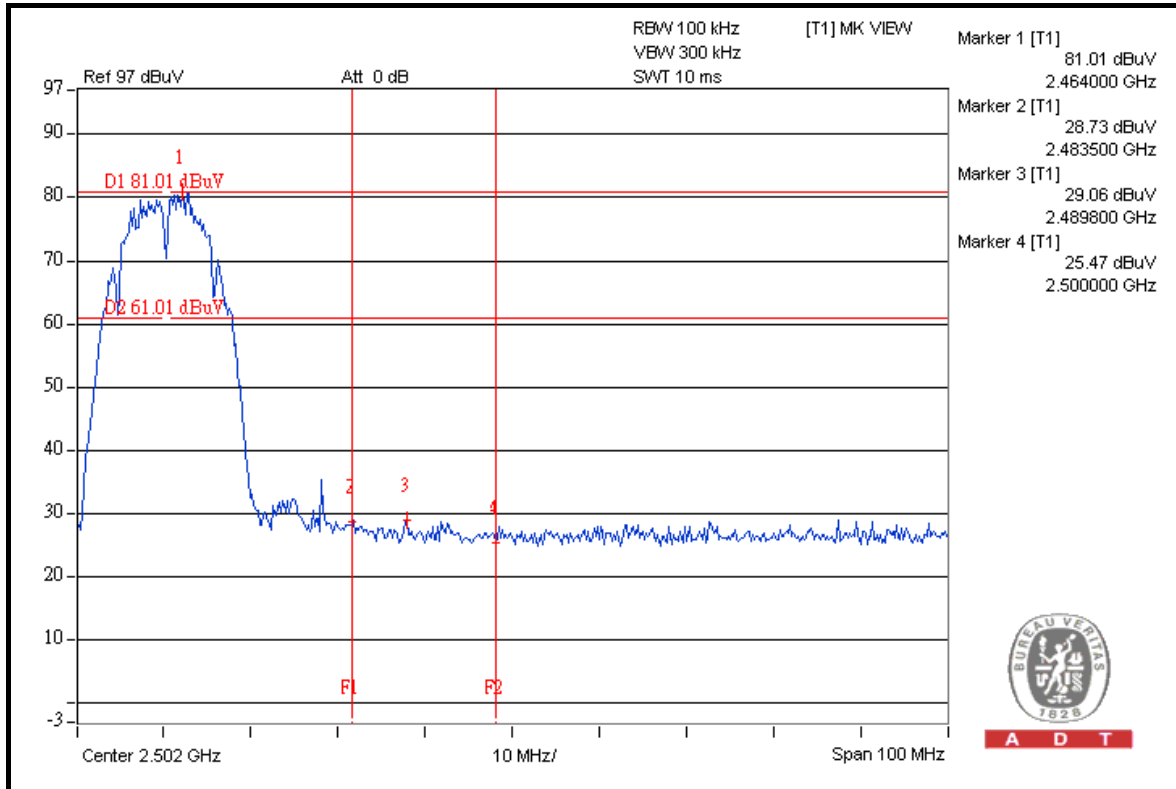
A D T

FOR RADIATED MEASURED (BOTH CHAINS ON)





A D T

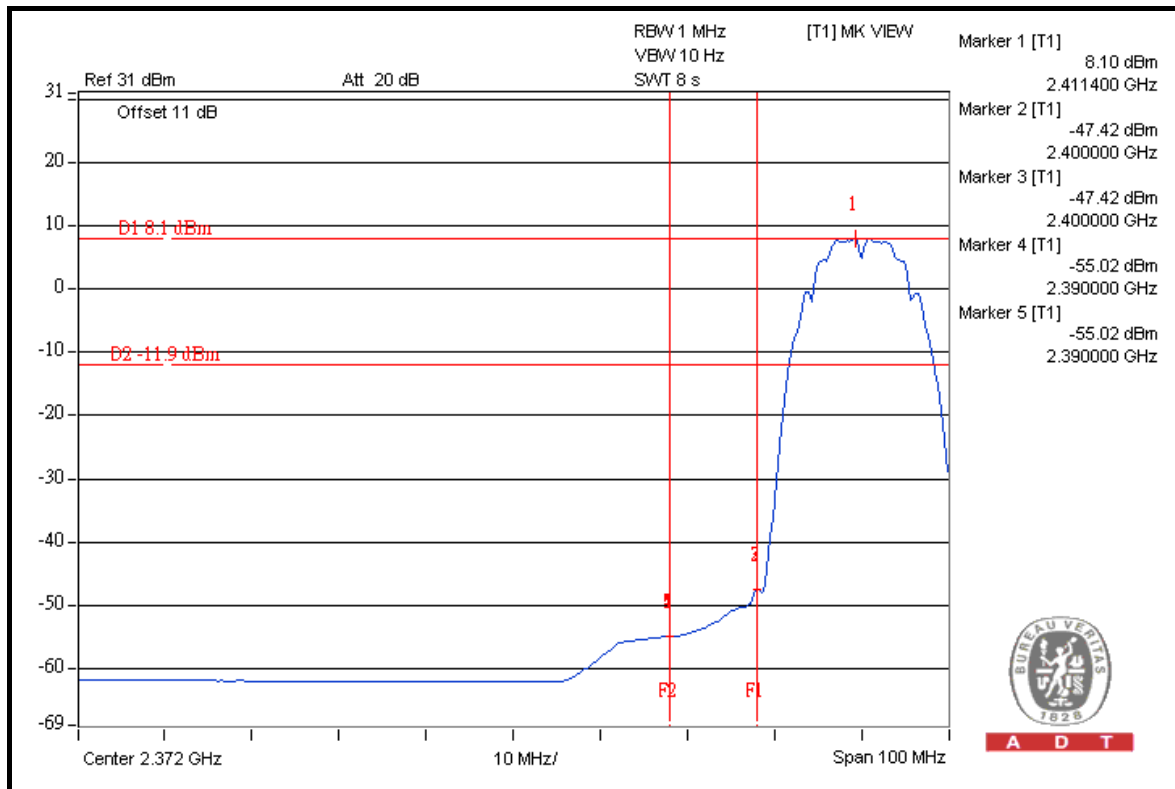
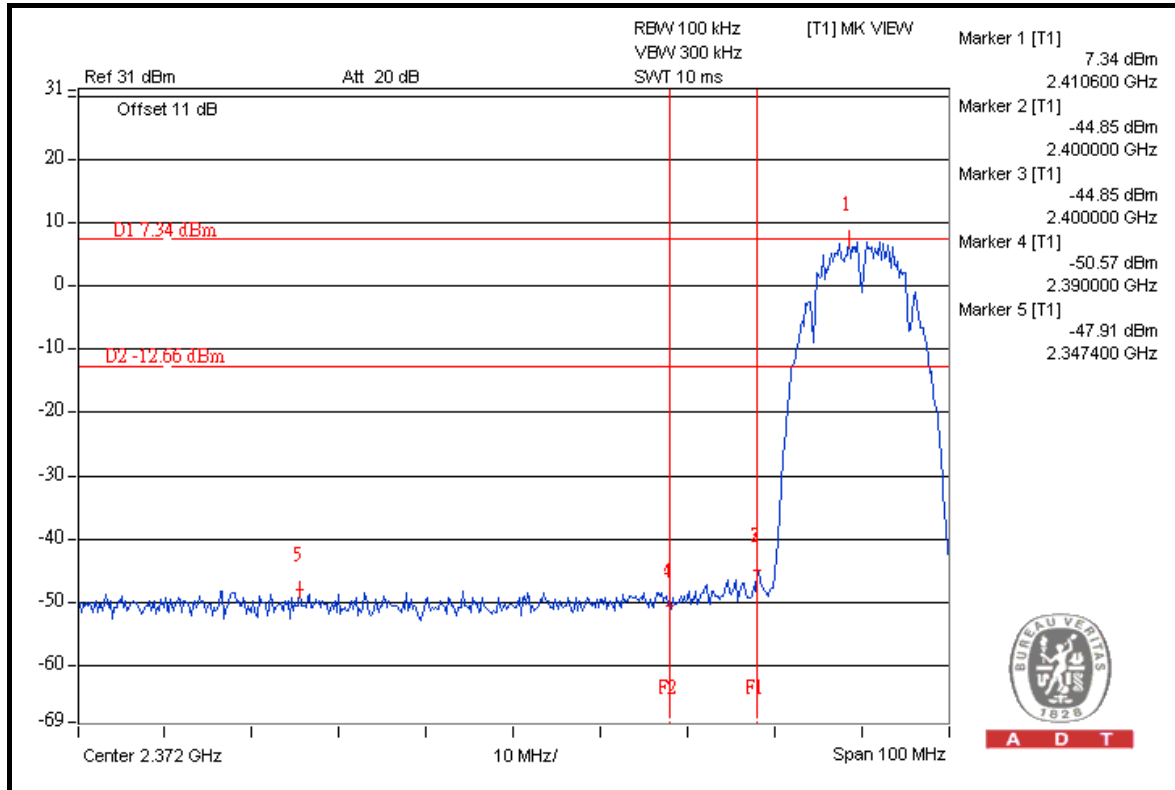




A D T

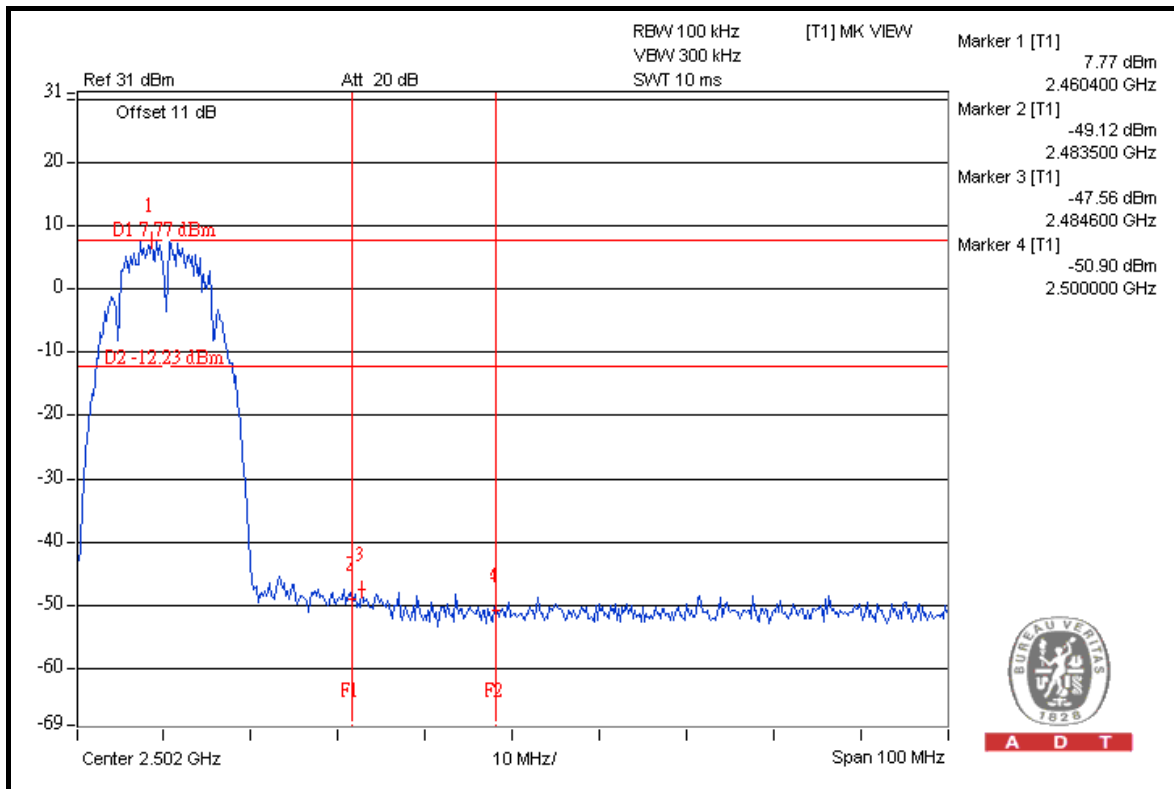
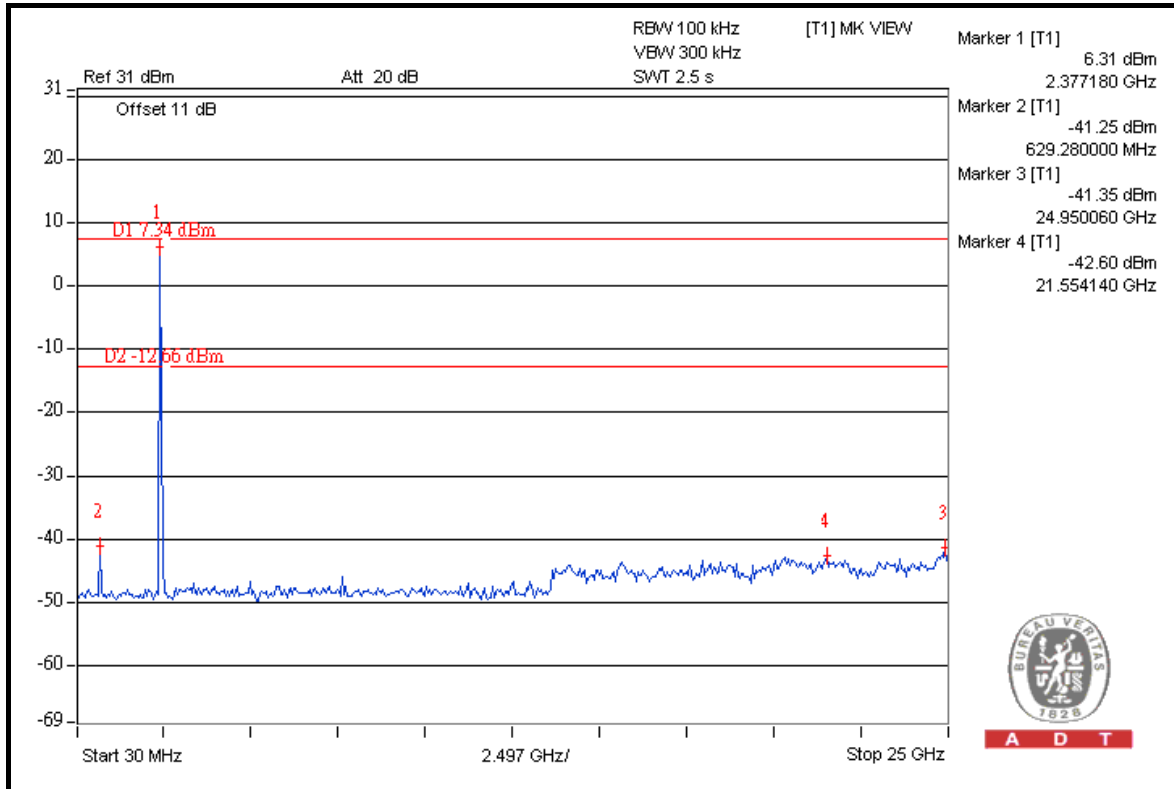
FOR CONDUCTED MEASURED

CHAIN 0



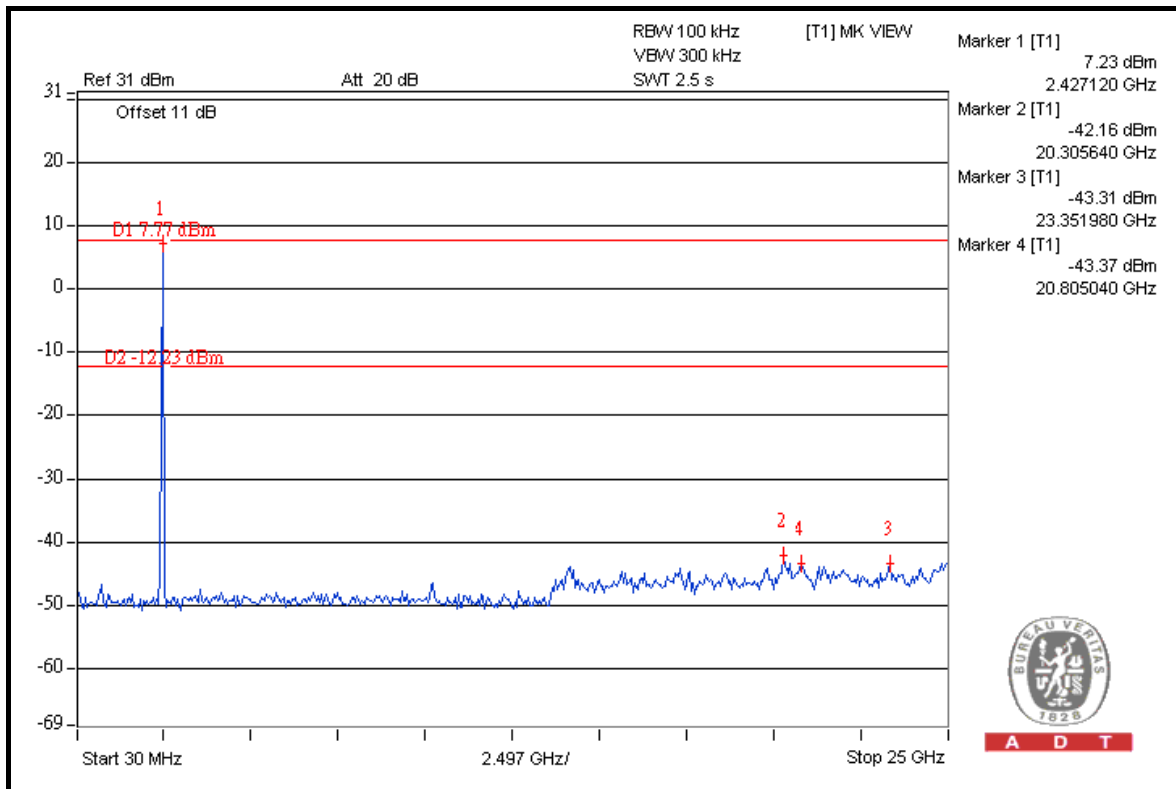
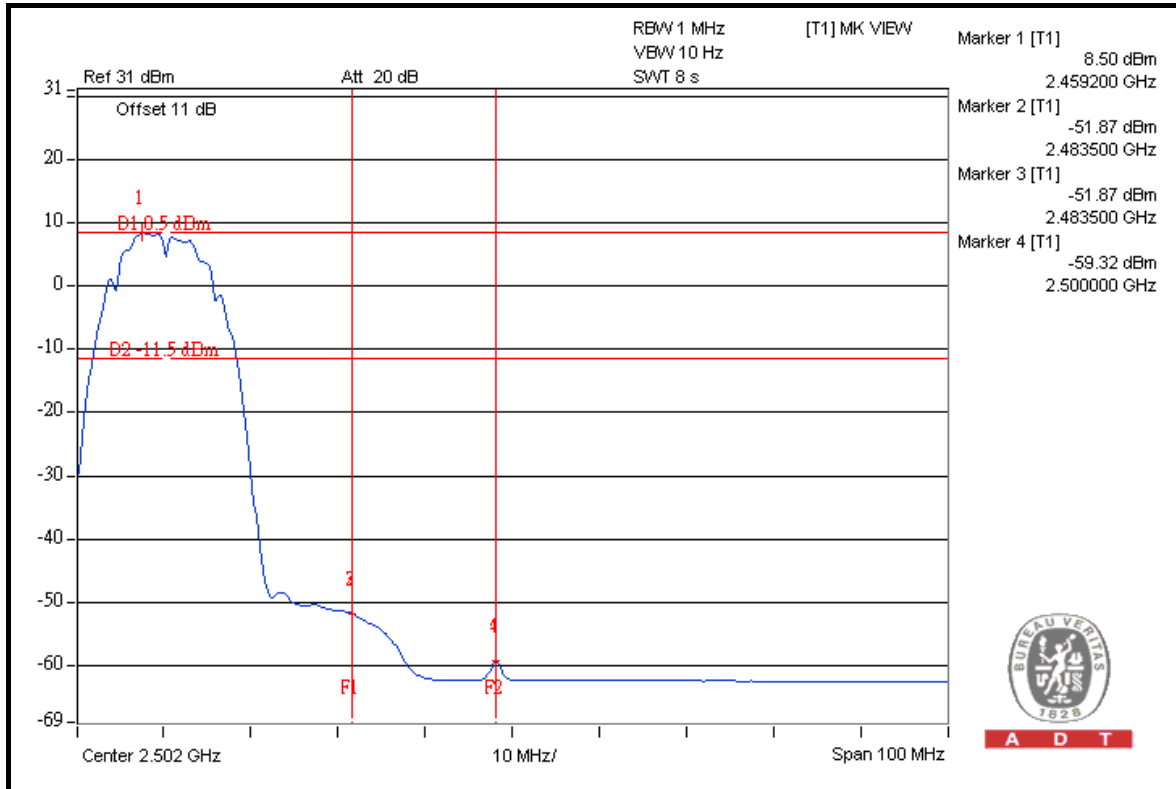


A D T





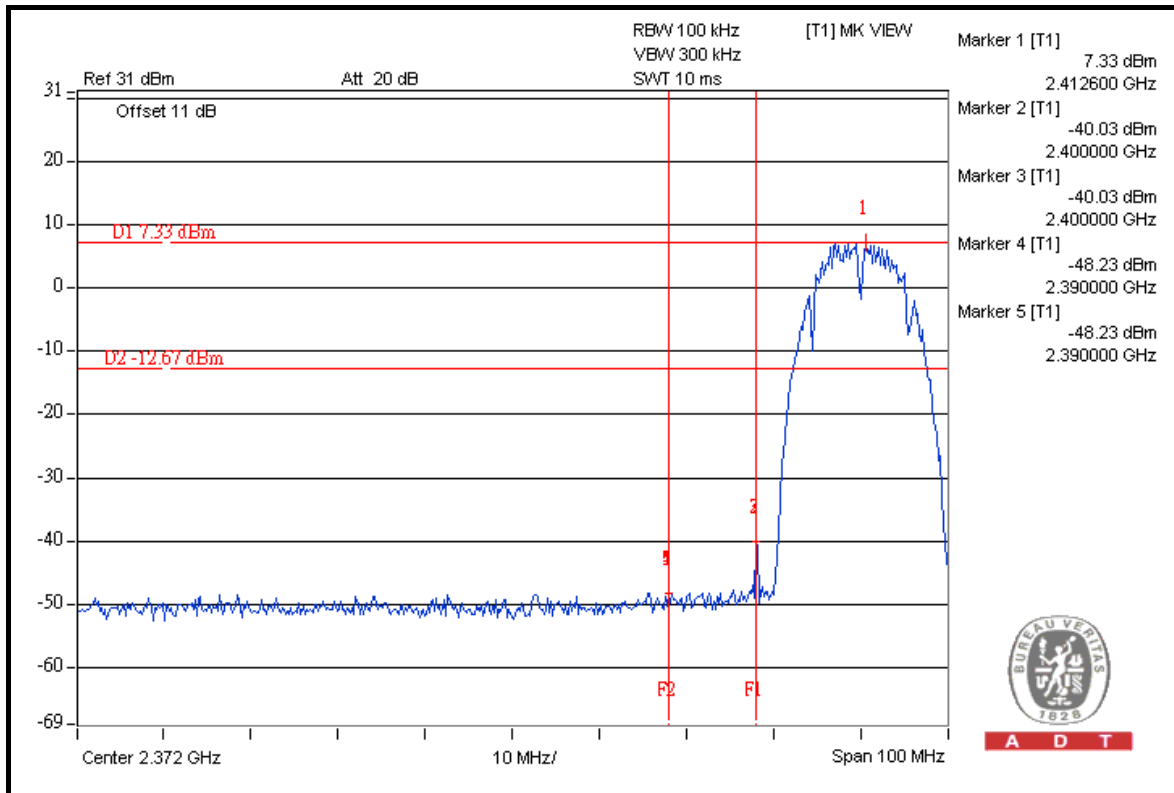
A D T



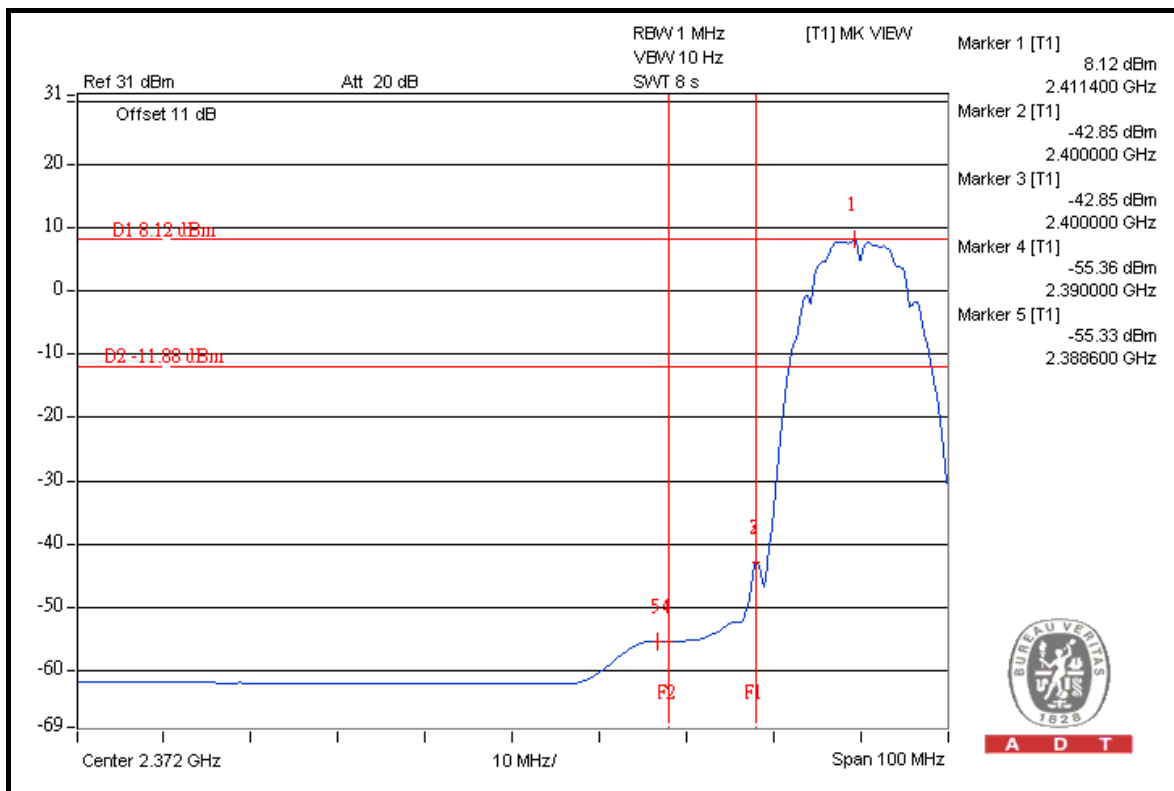


A D T

CHAIN 1



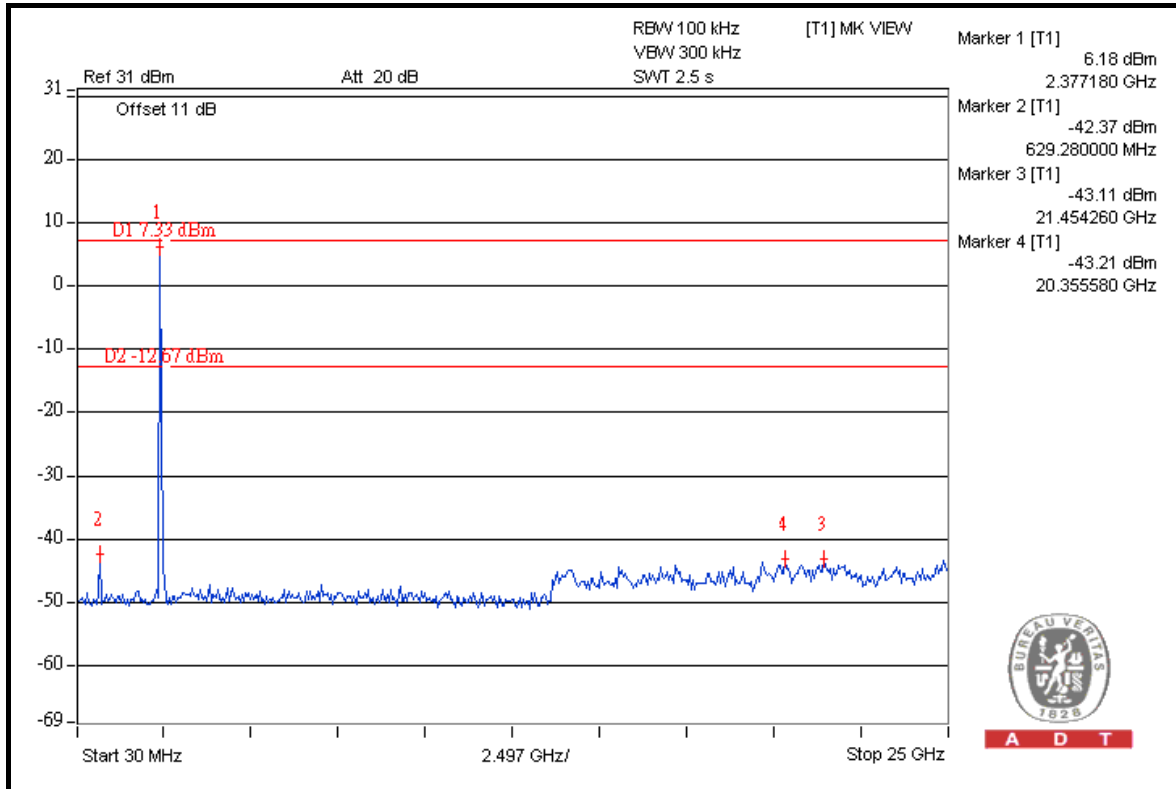
A D T



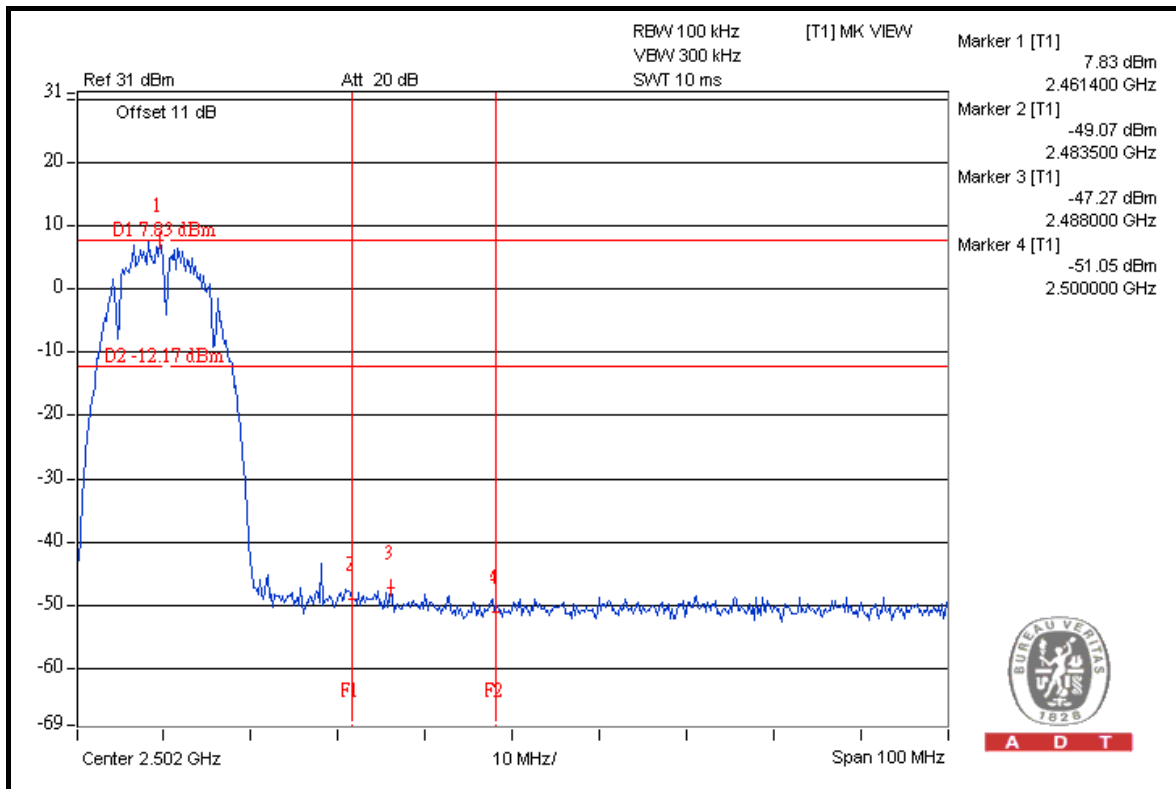
A D T



A D T



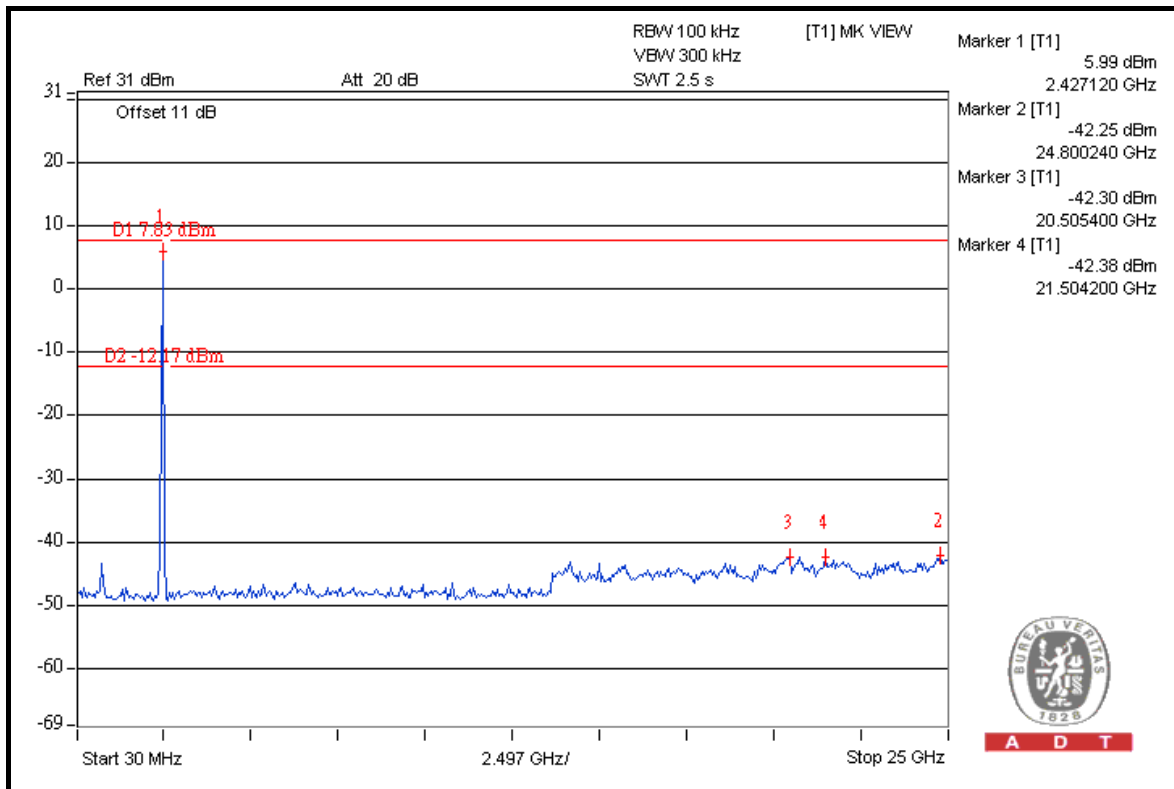
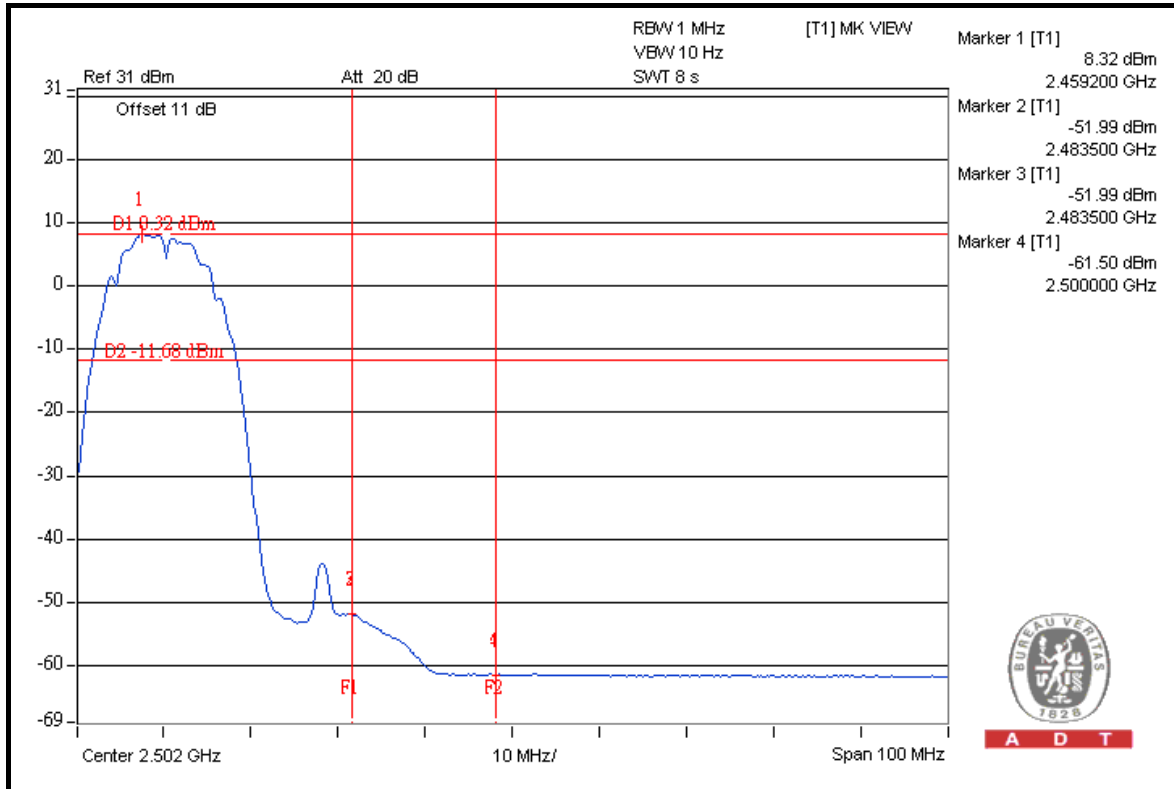
A D T



A D T



A D T





A D T

802.11g

RESTRICT BAND (2310 ~ 2390 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	108.7	43.59	65.11	74.00
2412.00 (AV)	97.5	52.01	45.49	54.00

RESTRICT BAND (2483.5 ~ 2500 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	109.3	40.52	68.78	74.00
2462.00 (AV)	98.2	48.93	49.27	54.00

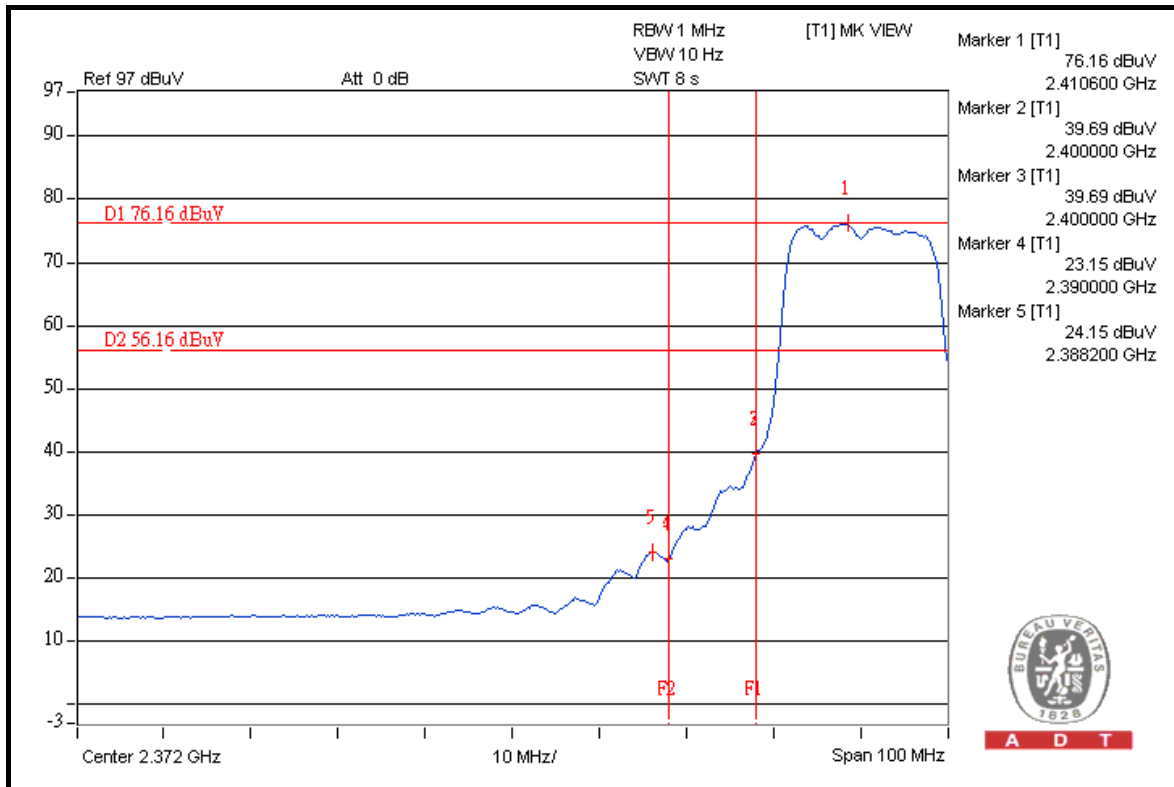
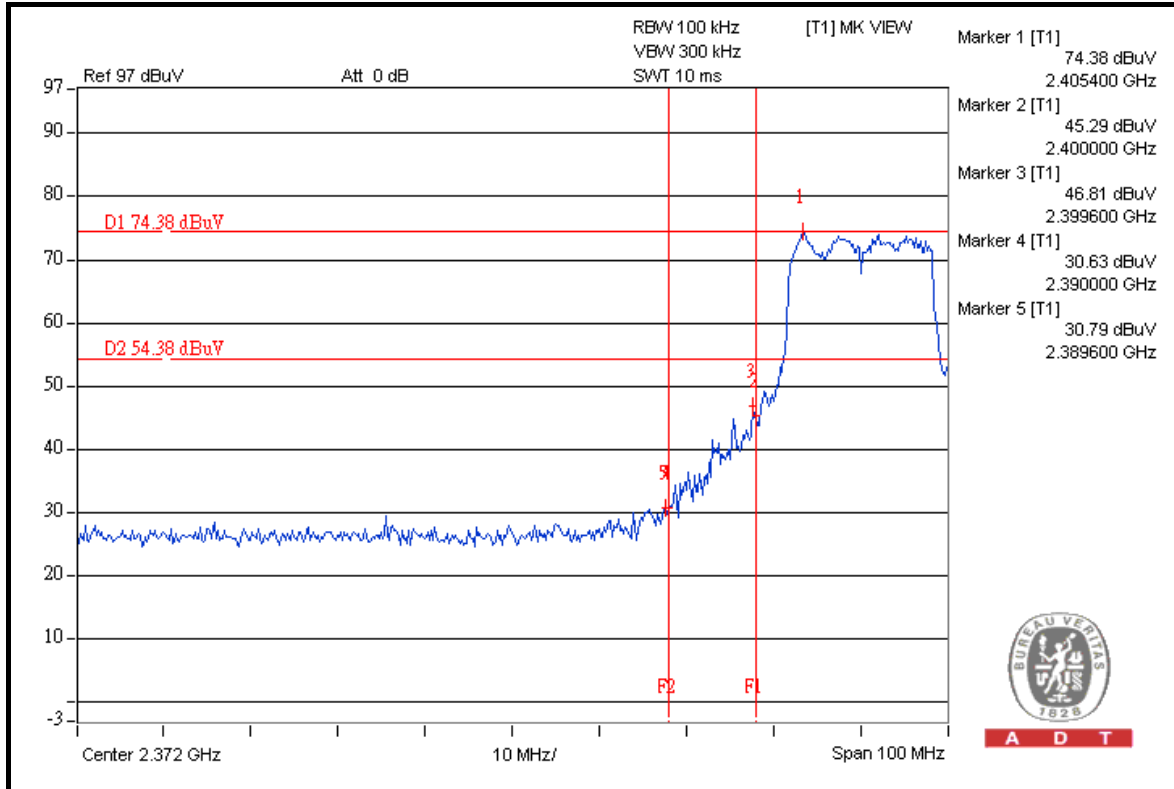
NOTE:

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



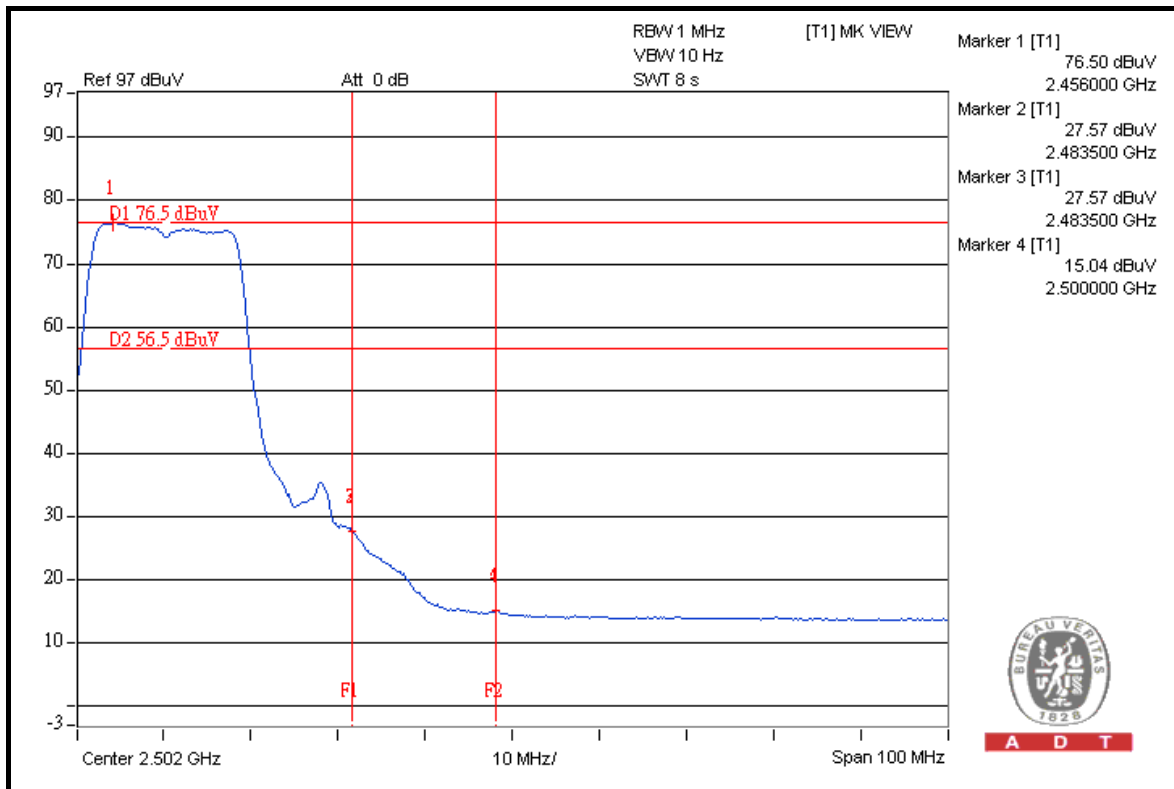
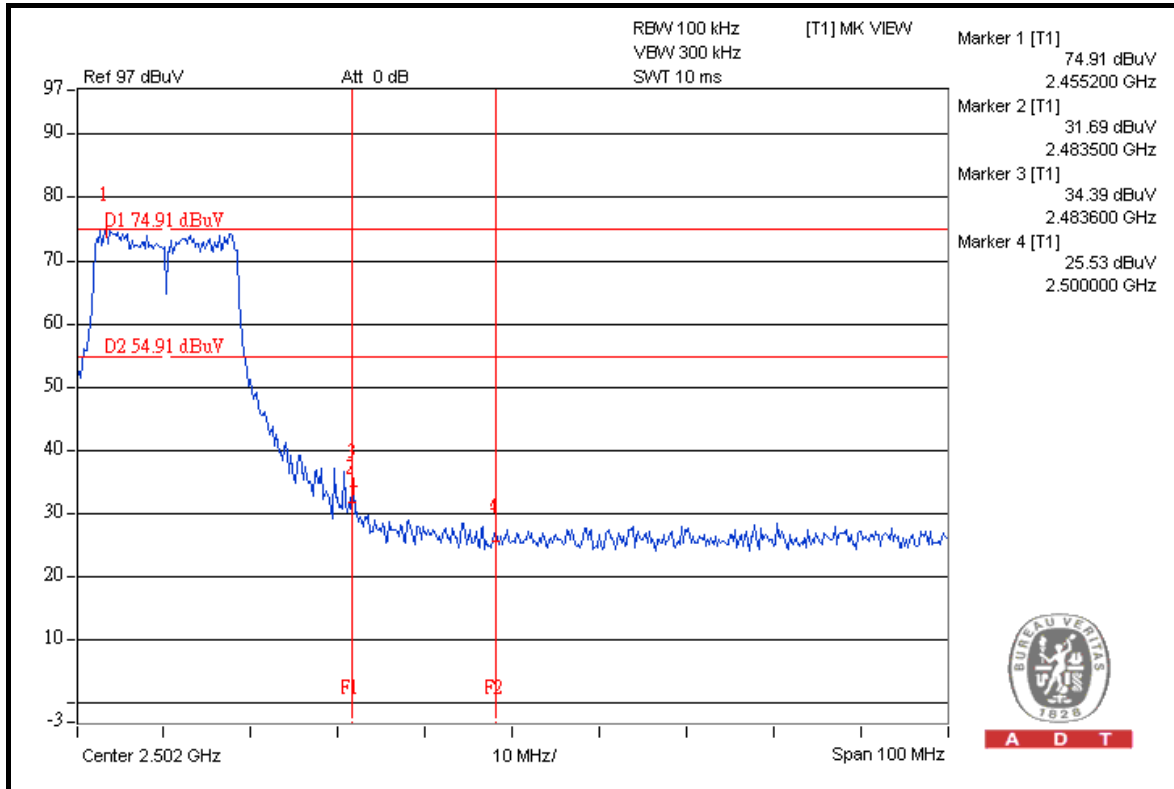
A D T

FOR RADIATED MEASURED (BOTH CHAINS ON)





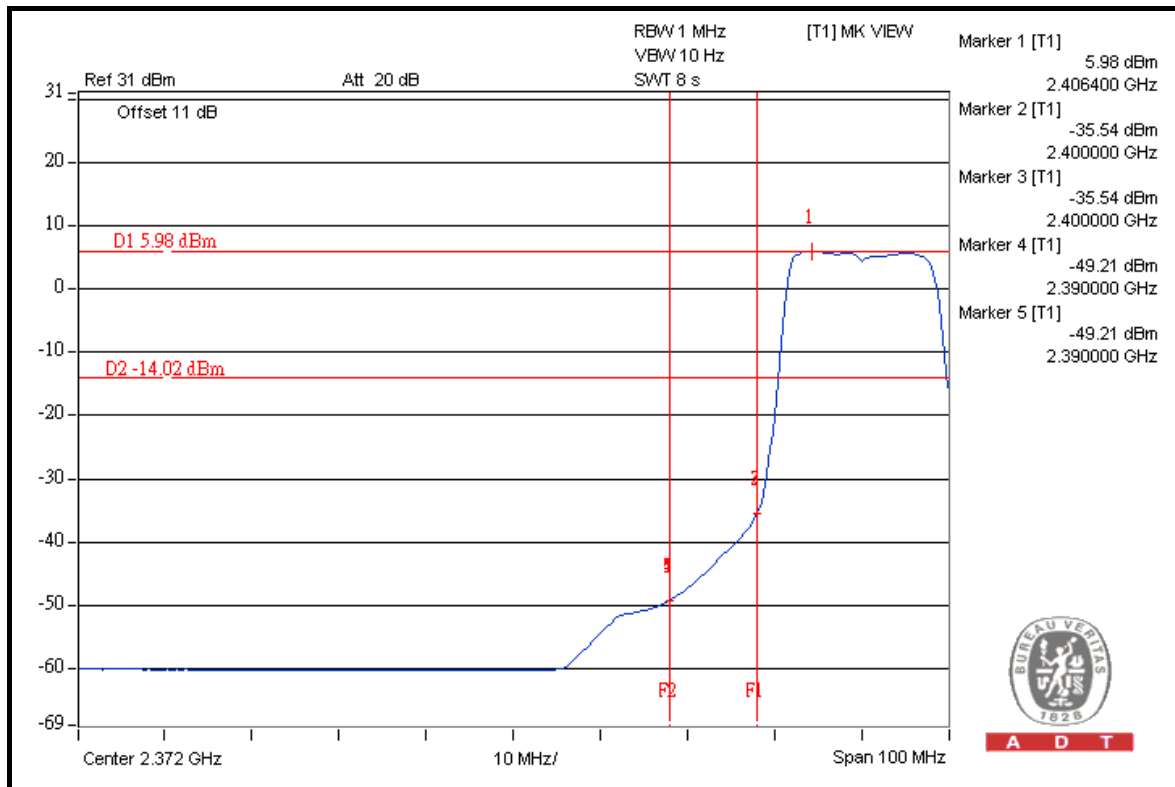
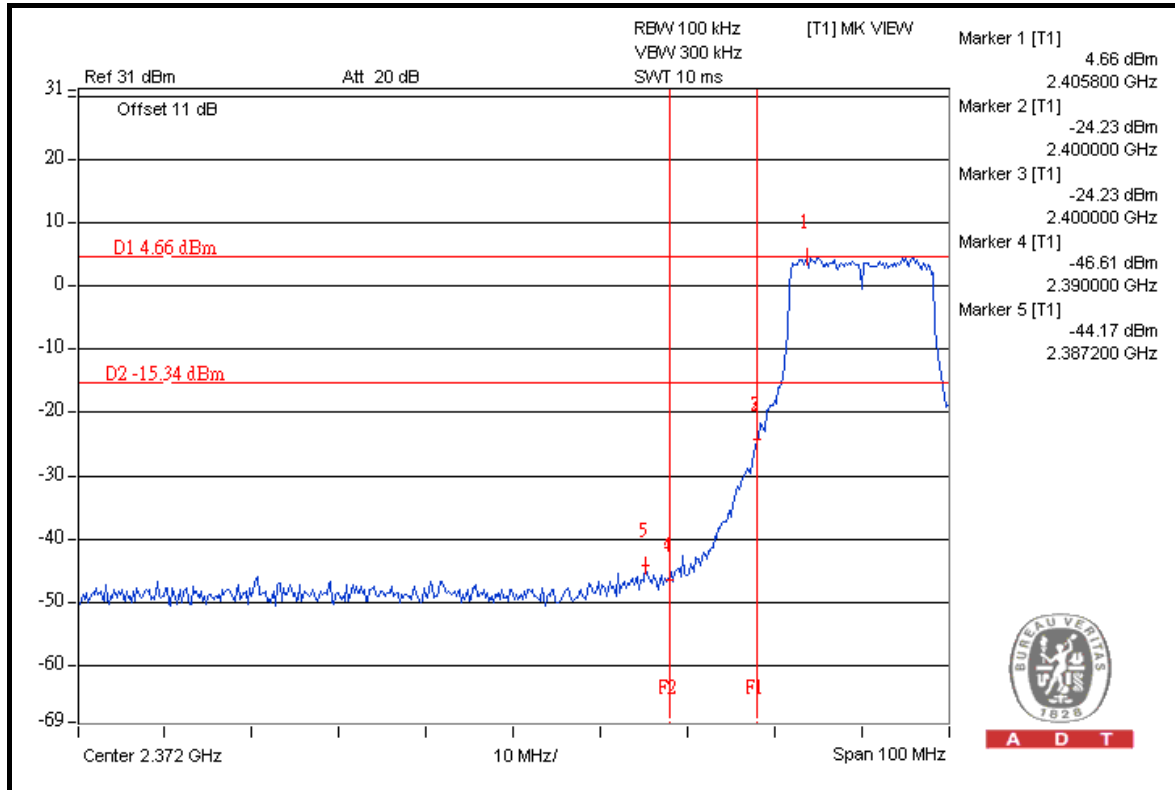
A D T





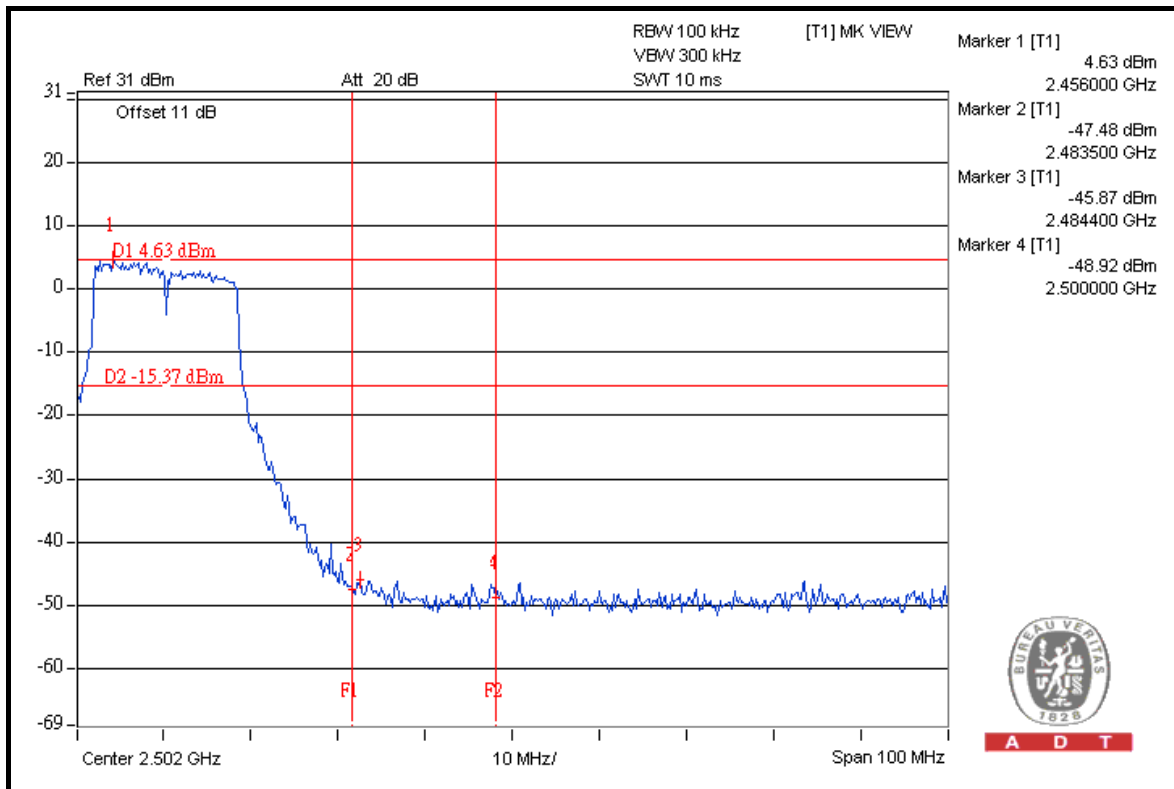
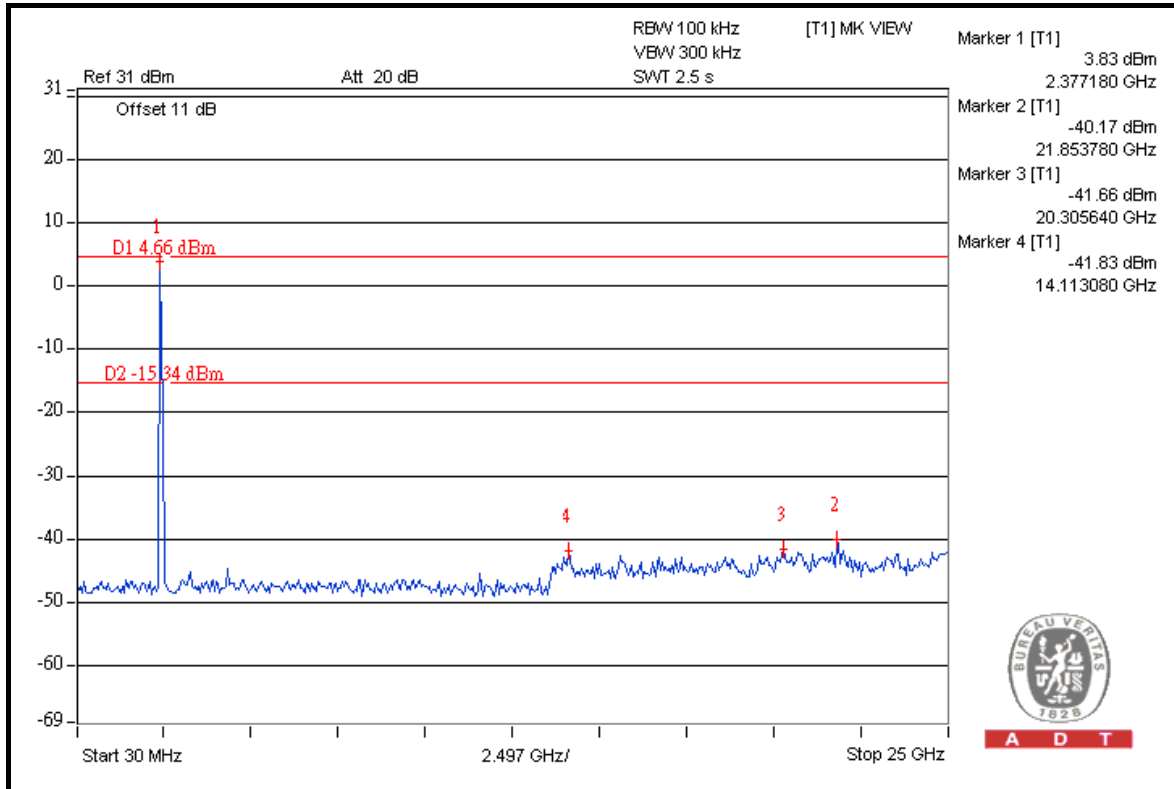
A D T

FOR CONDUCTED MEASURED CHAIN 0



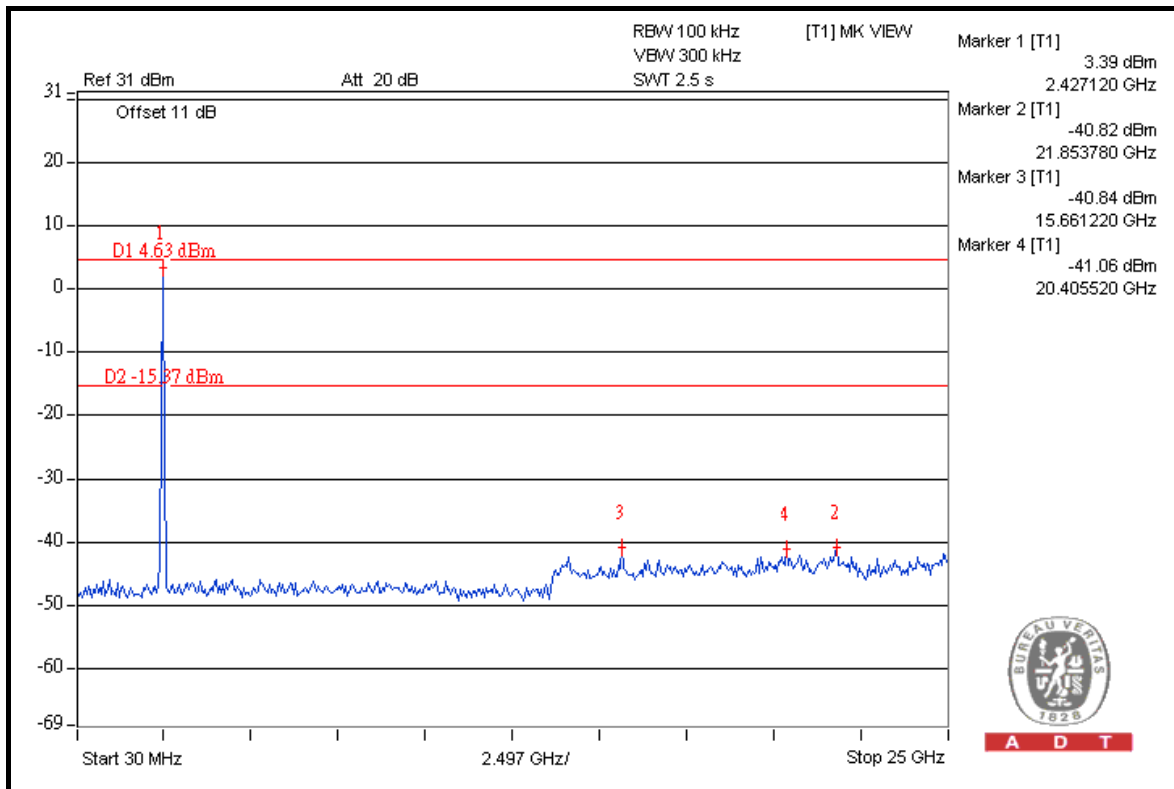
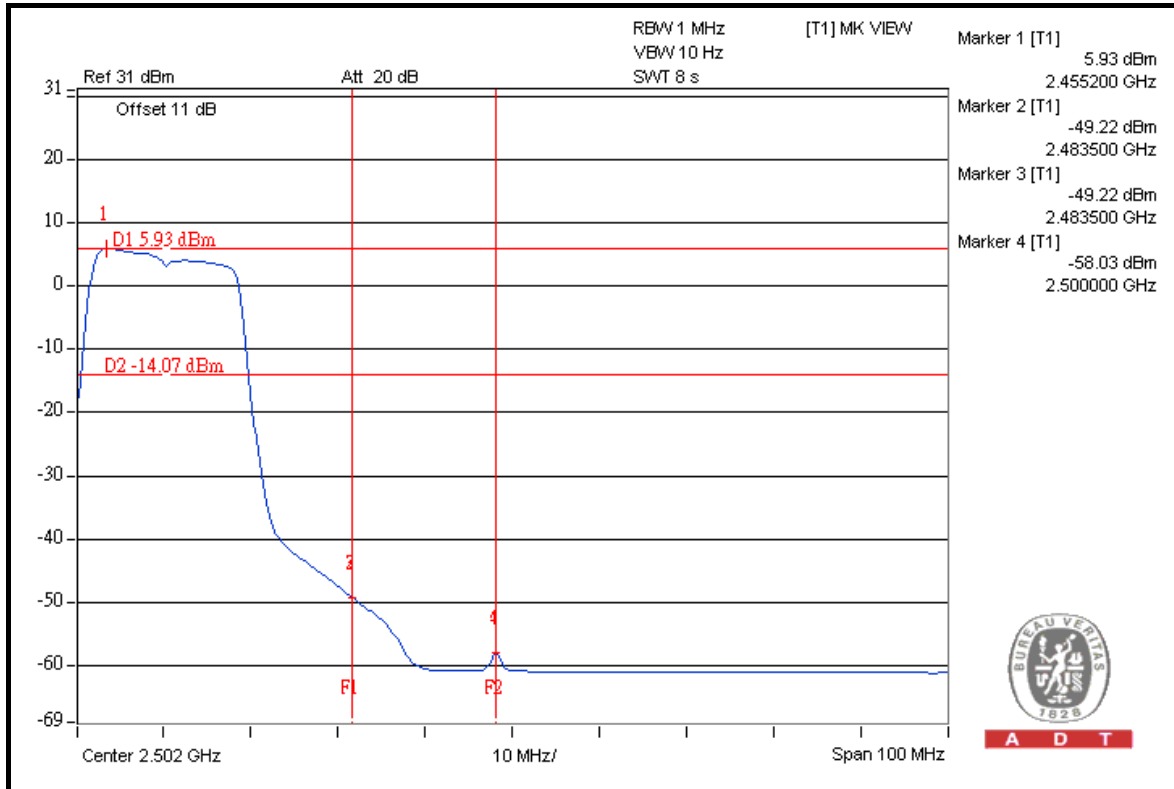


A D T





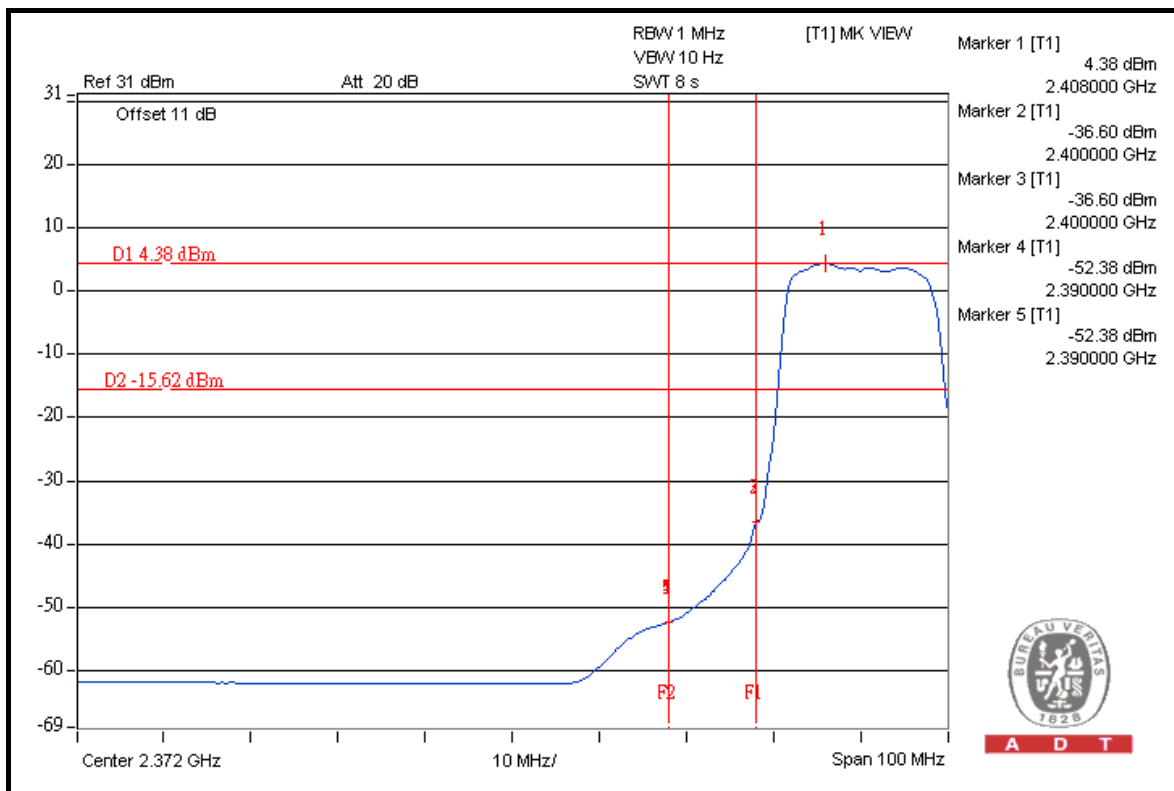
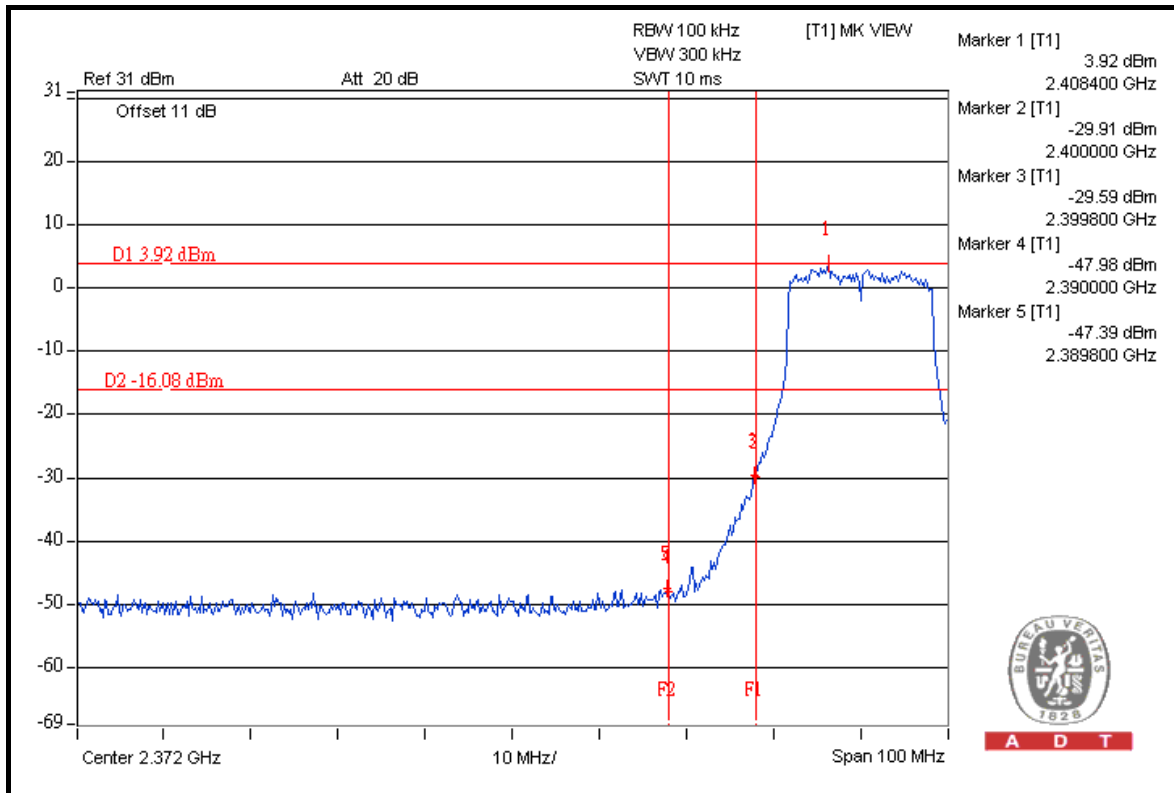
A D T





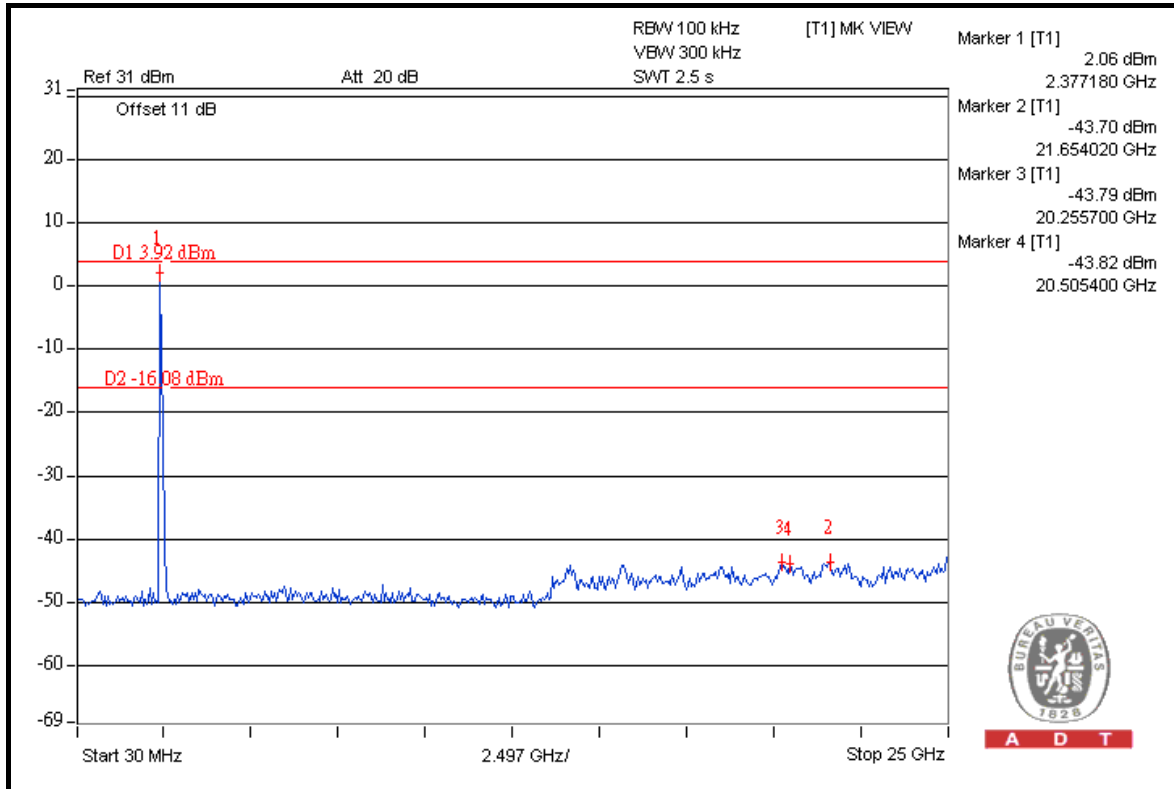
A D T

CHAIN 1

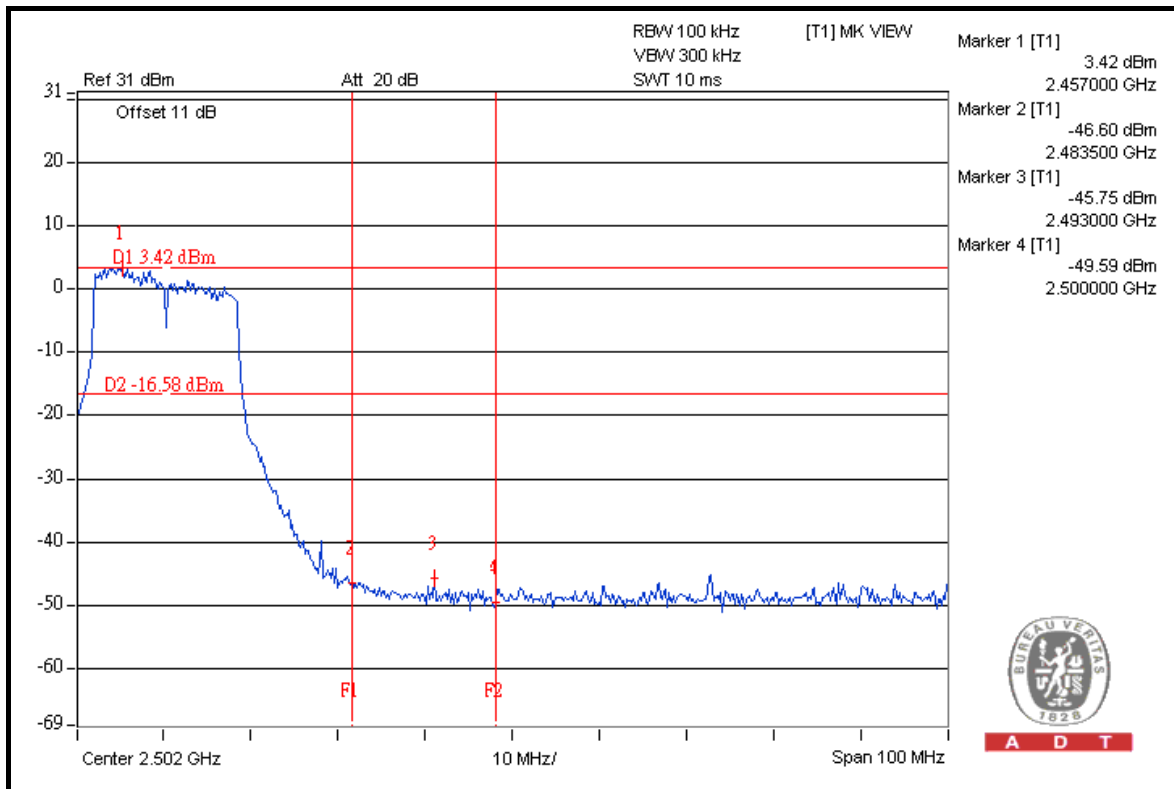




A D T



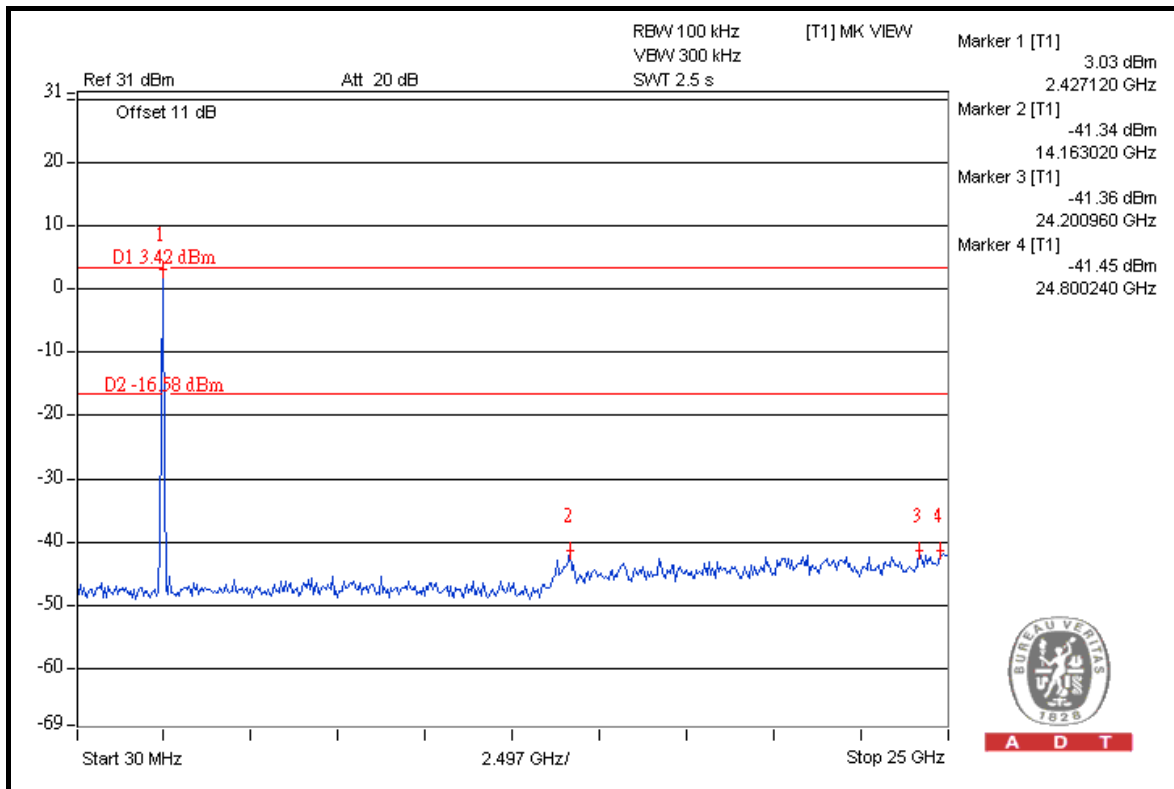
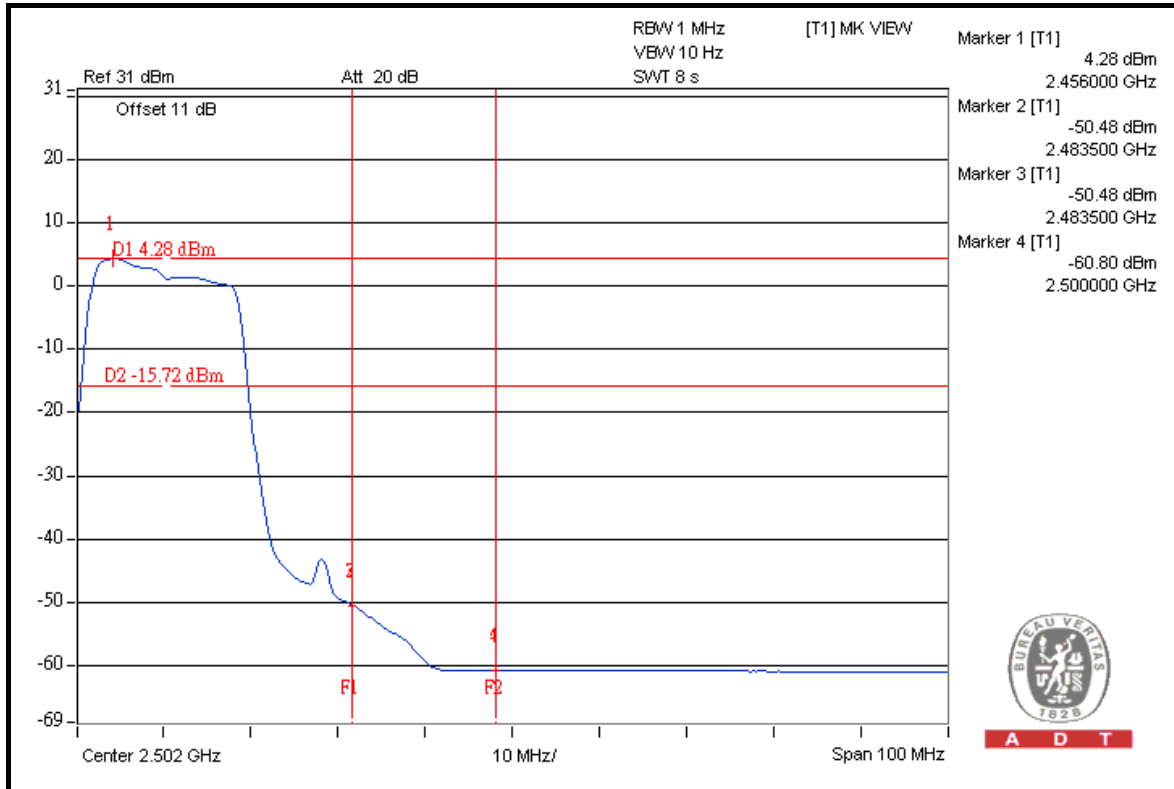
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A D T





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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)	108.5	39.54	68.96	74.00
2412.00 (AV)	97.1	50.74	46.36	54.00

RESTRICT BAND (2483.5 ~ 2500 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	109.2	43.65	65.55	74.00
2462.00 (AV)	97.5	49.04	48.46	54.00

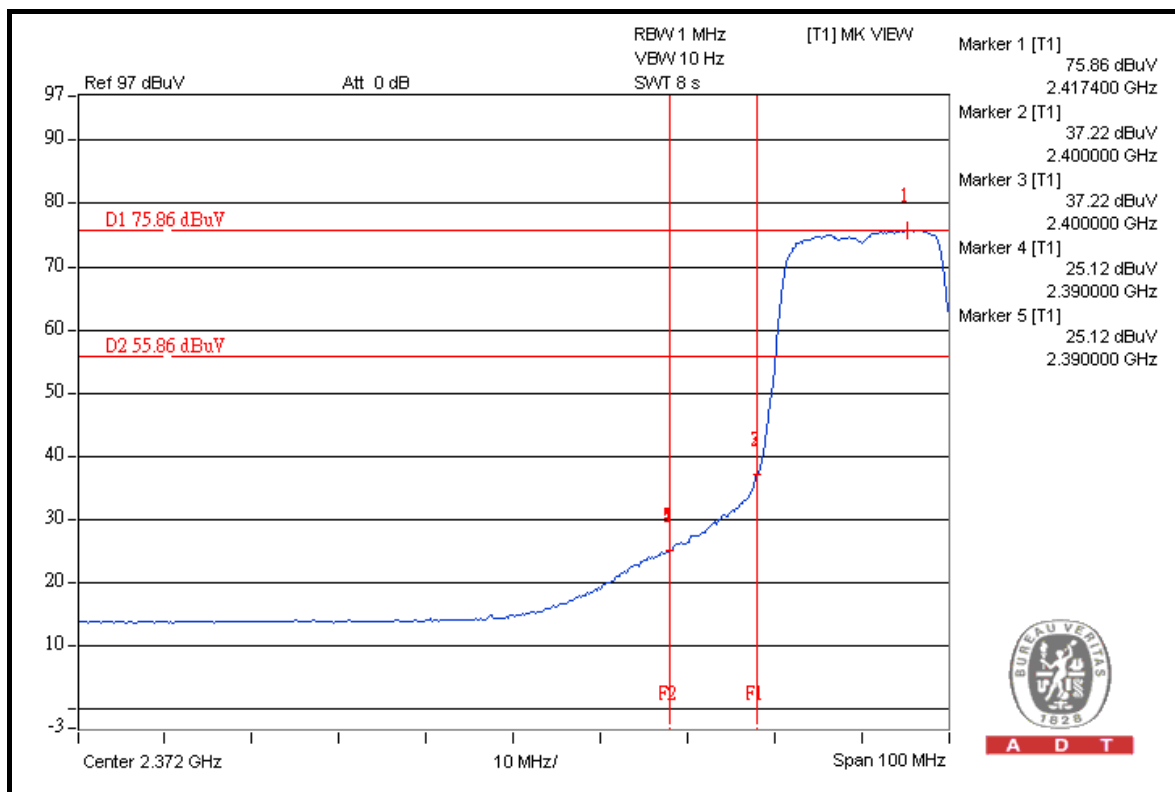
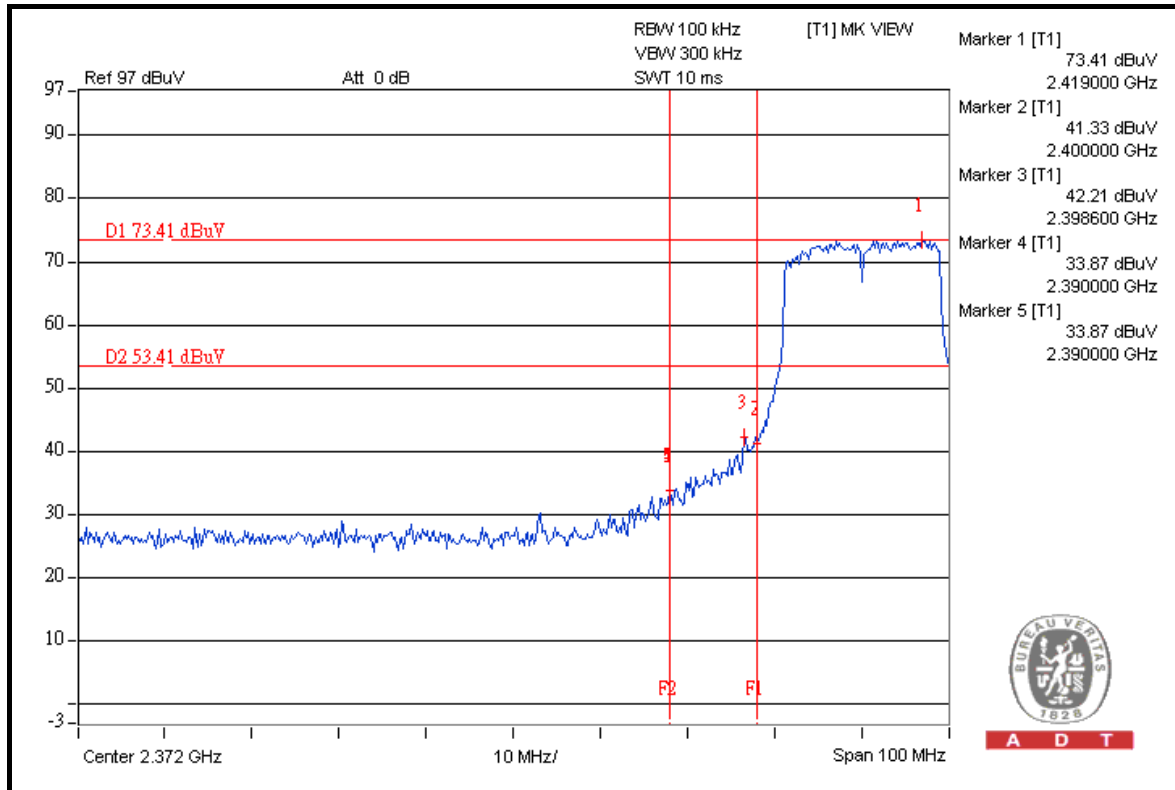
NOTE:

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.



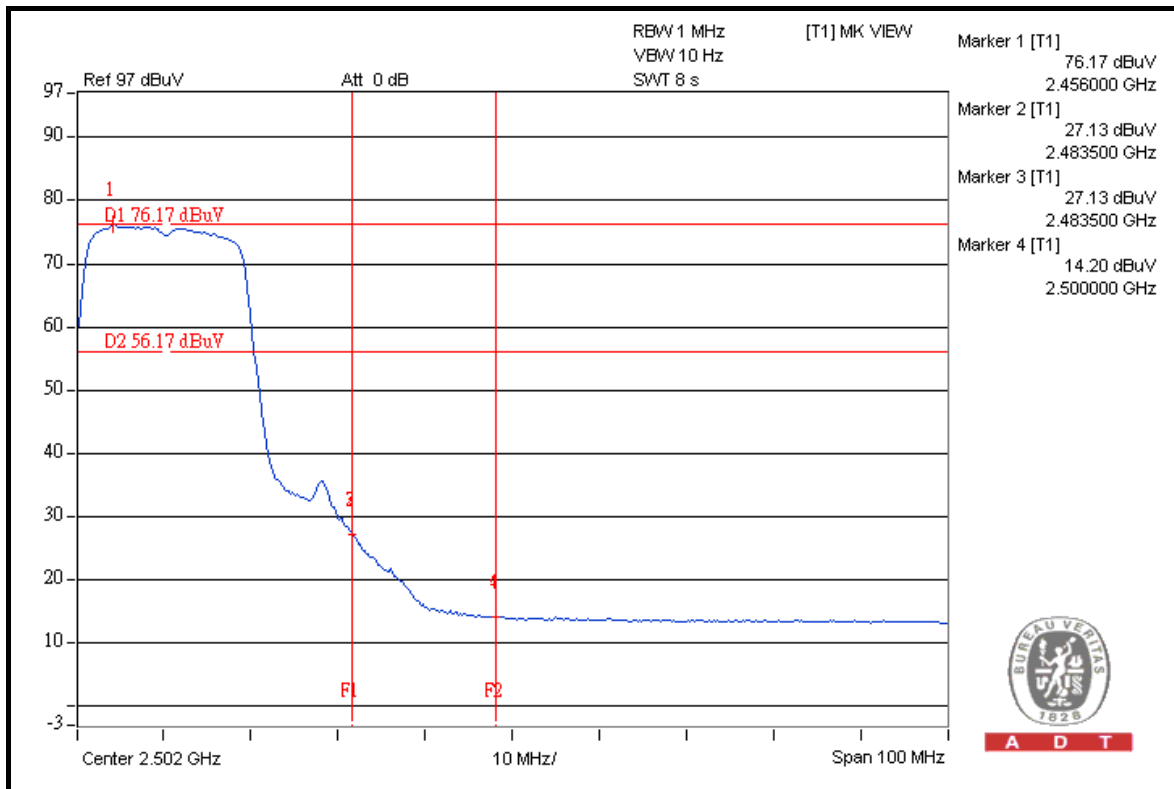
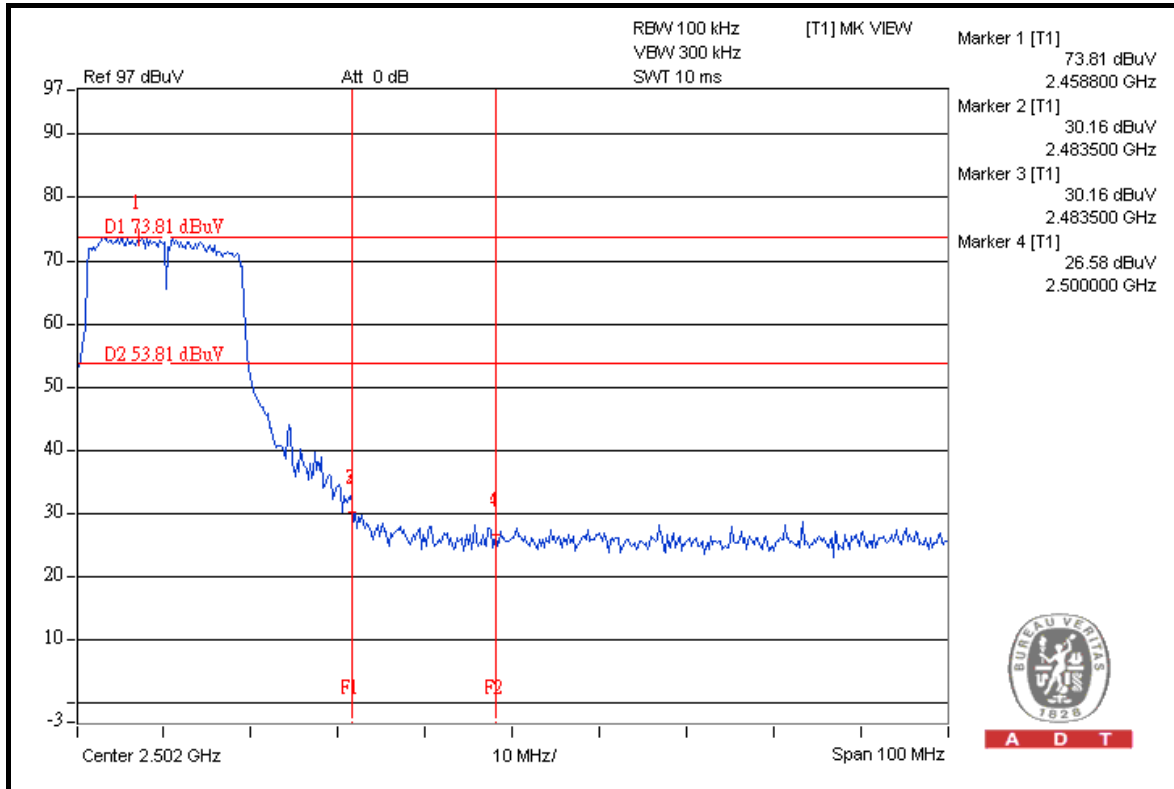
A D T

FOR RADIATED MEASURED (BOTH CHAINS ON)





A D T

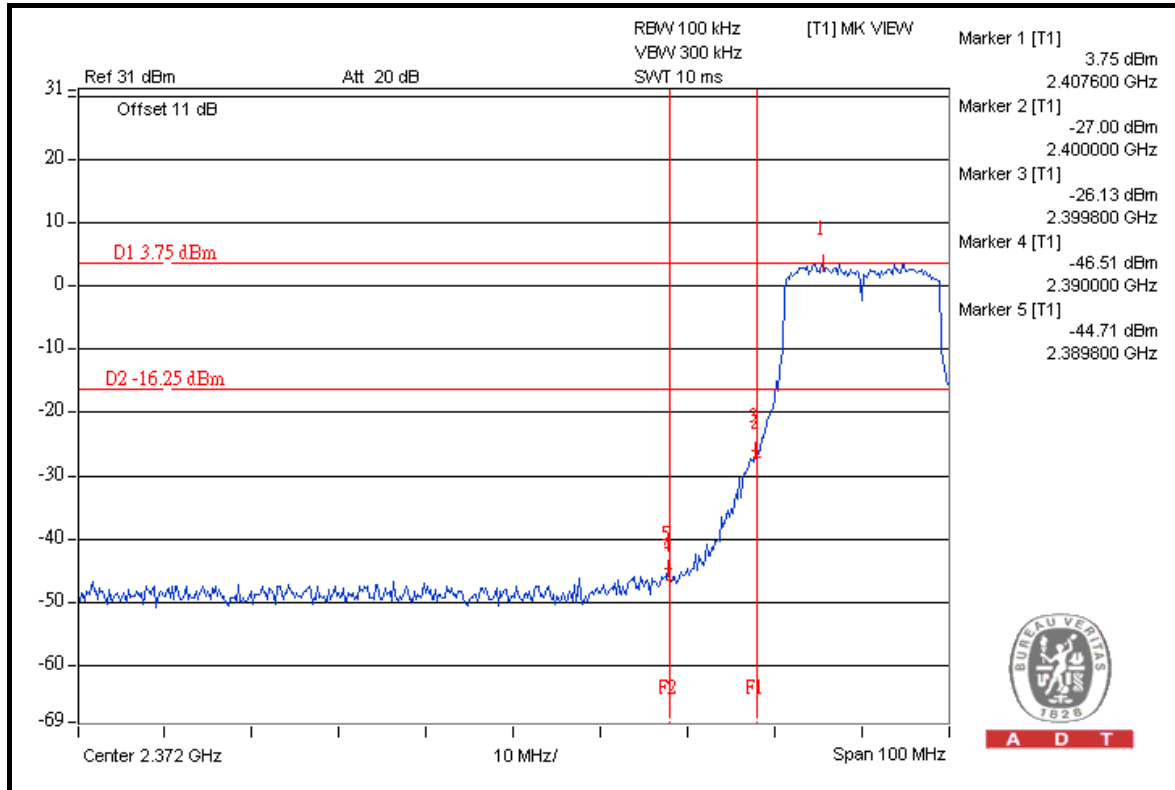




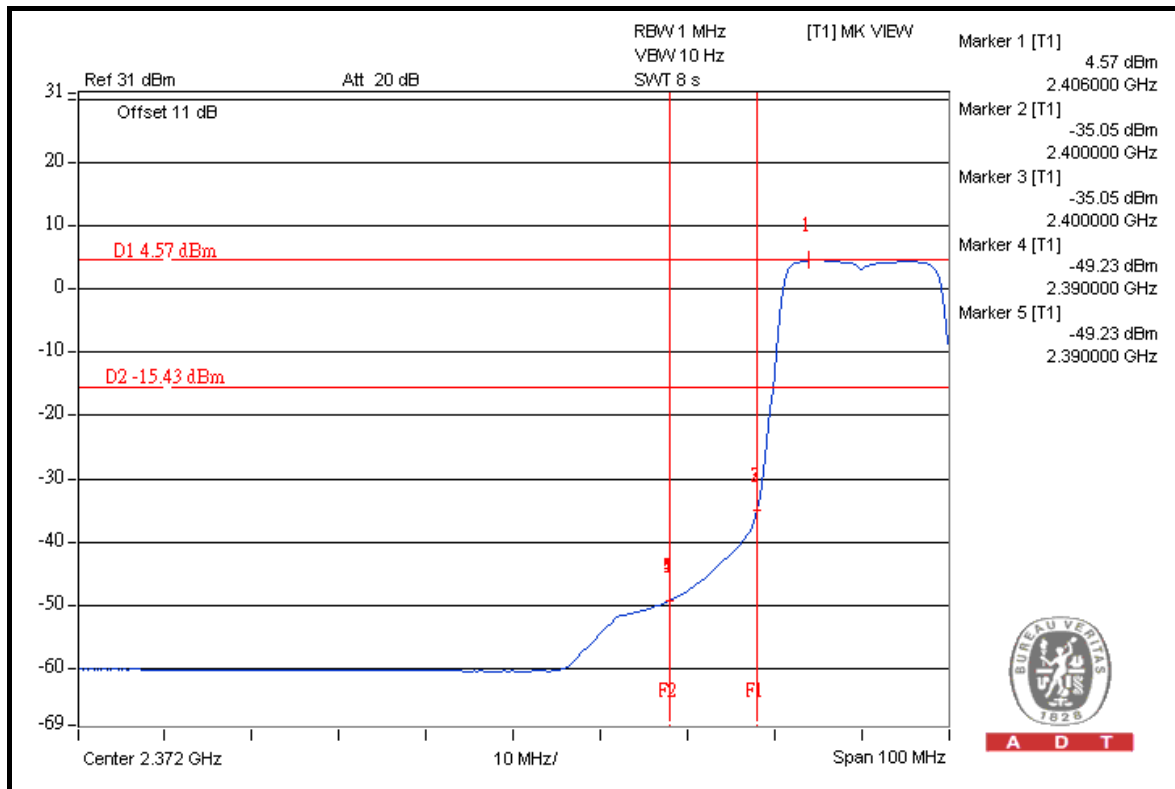
A D T

FOR CONDUCTED MEASURED

CHAIN 0



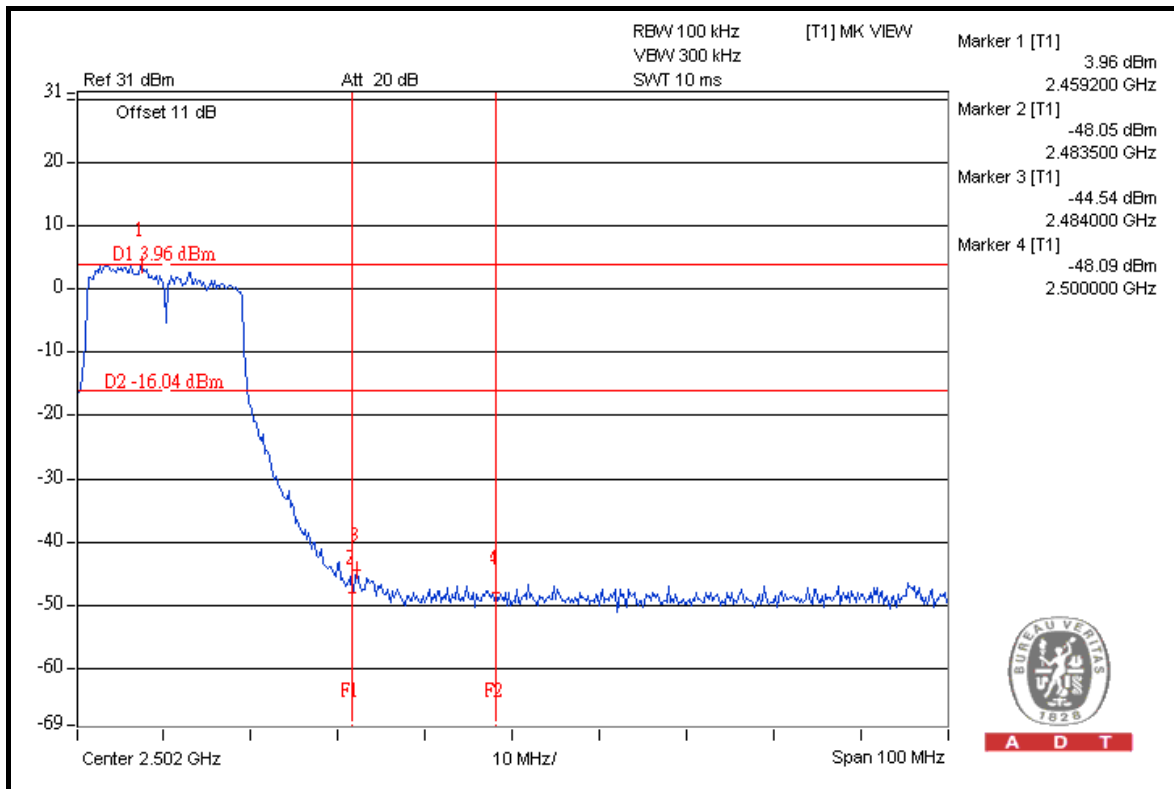
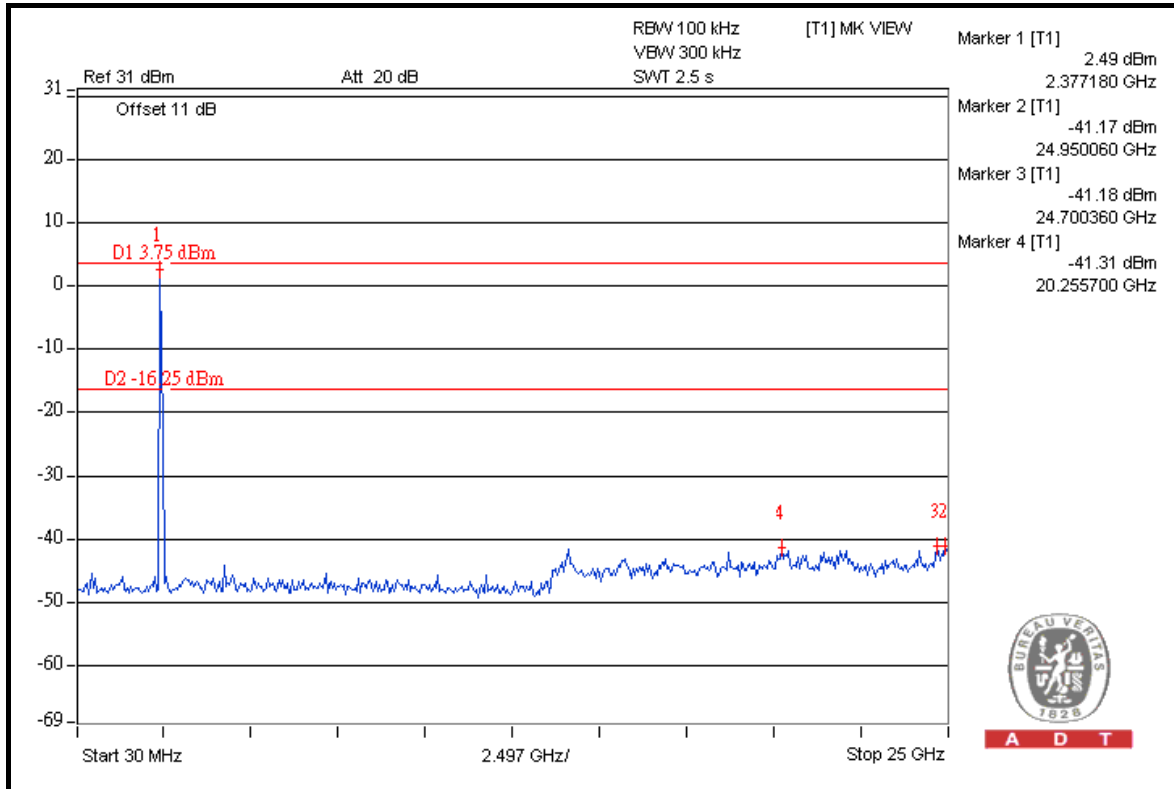
A D T



A D T

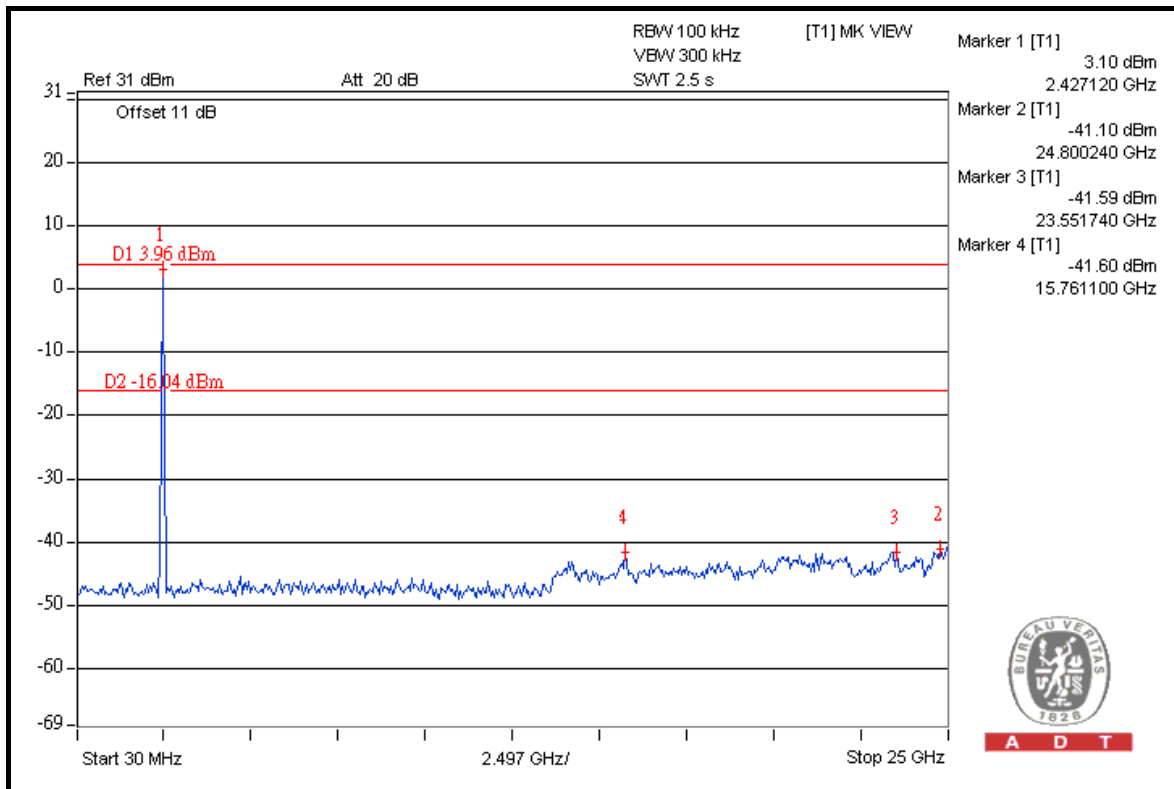
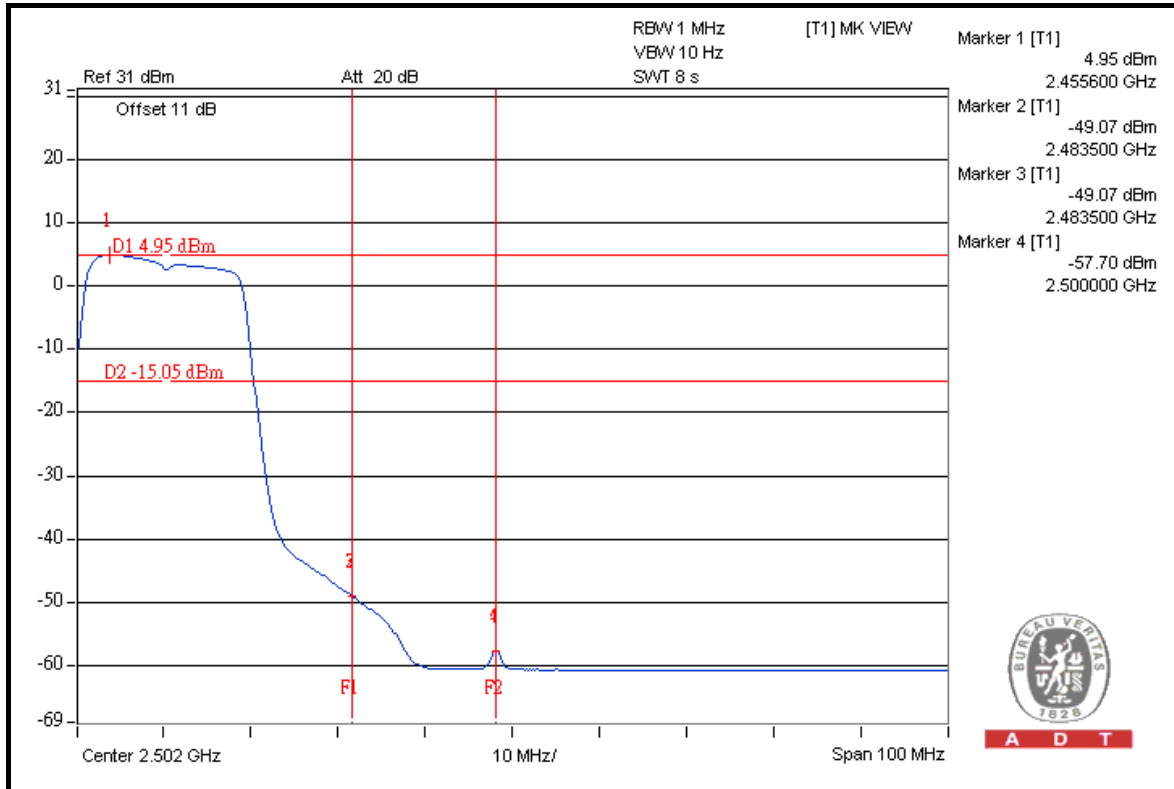


A D T





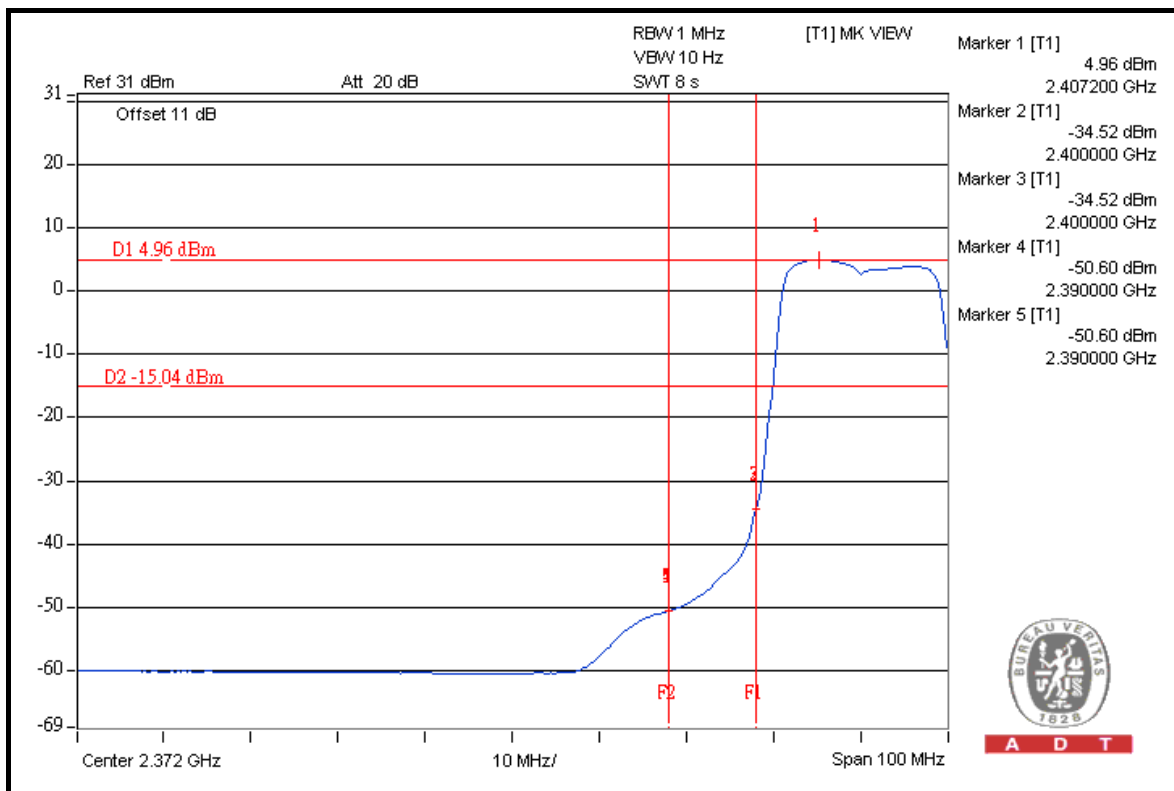
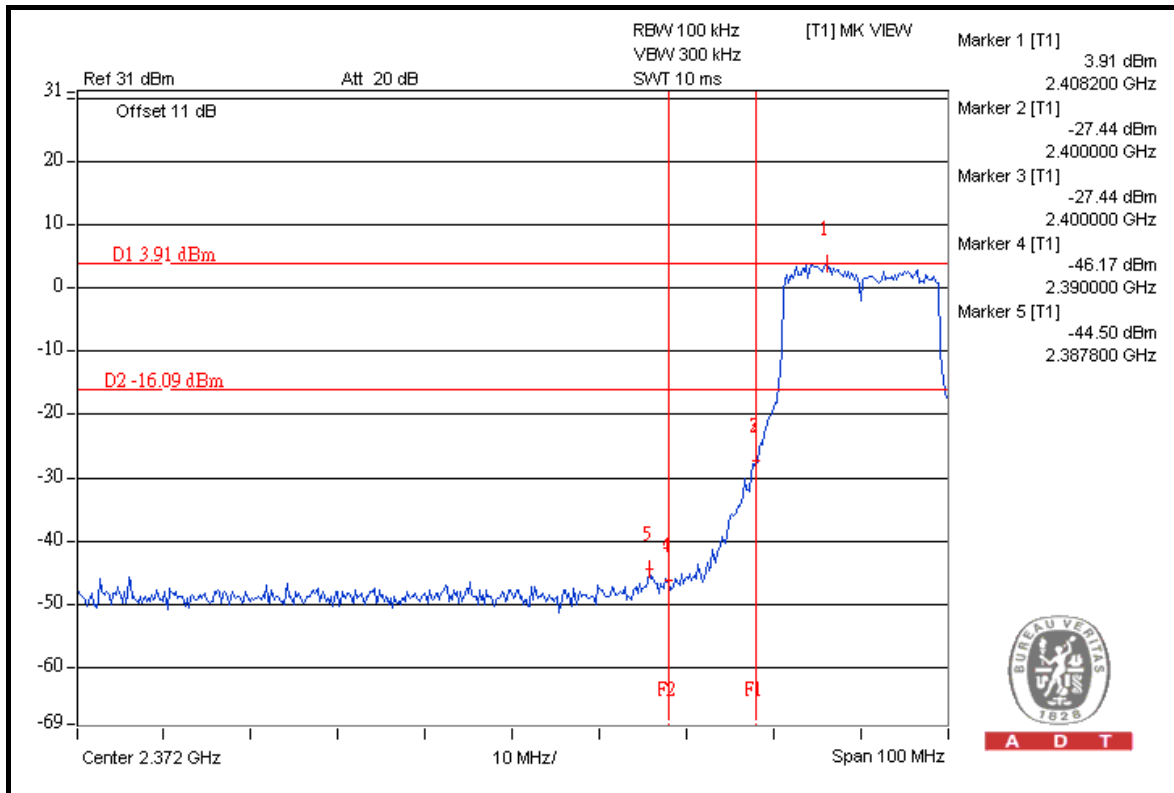
A D T





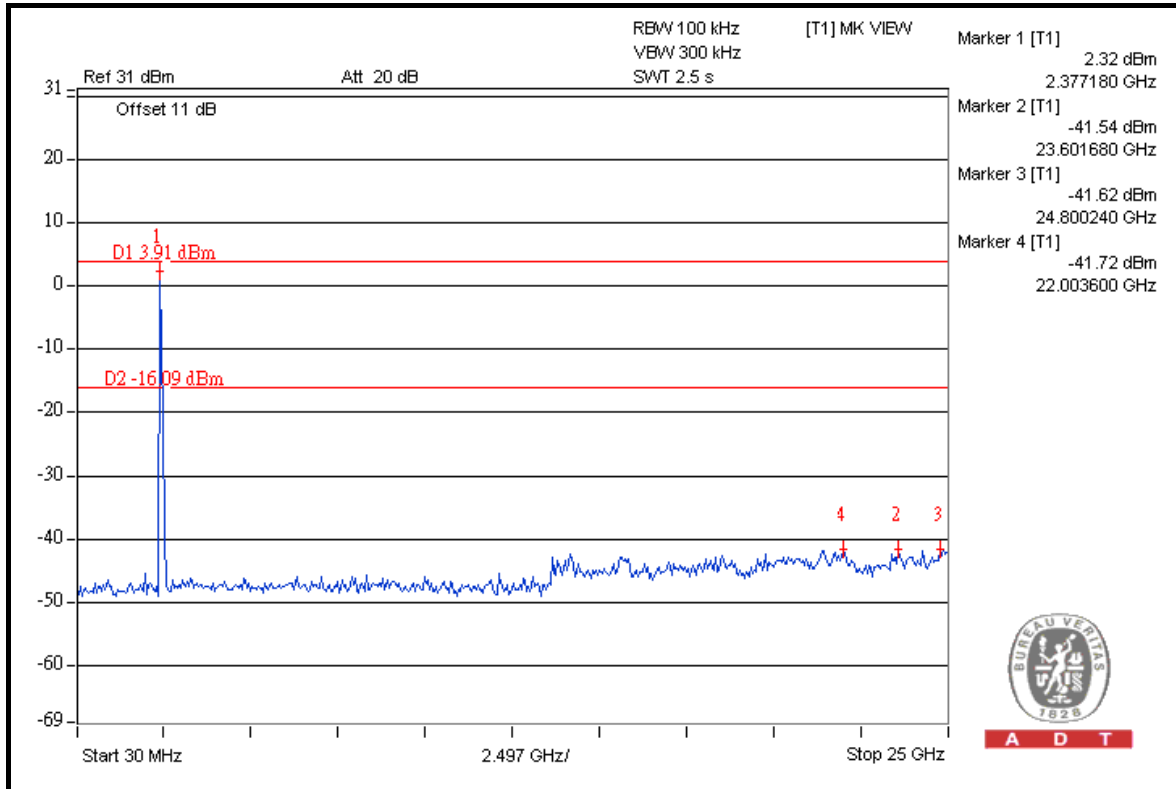
A D T

CHAIN 1

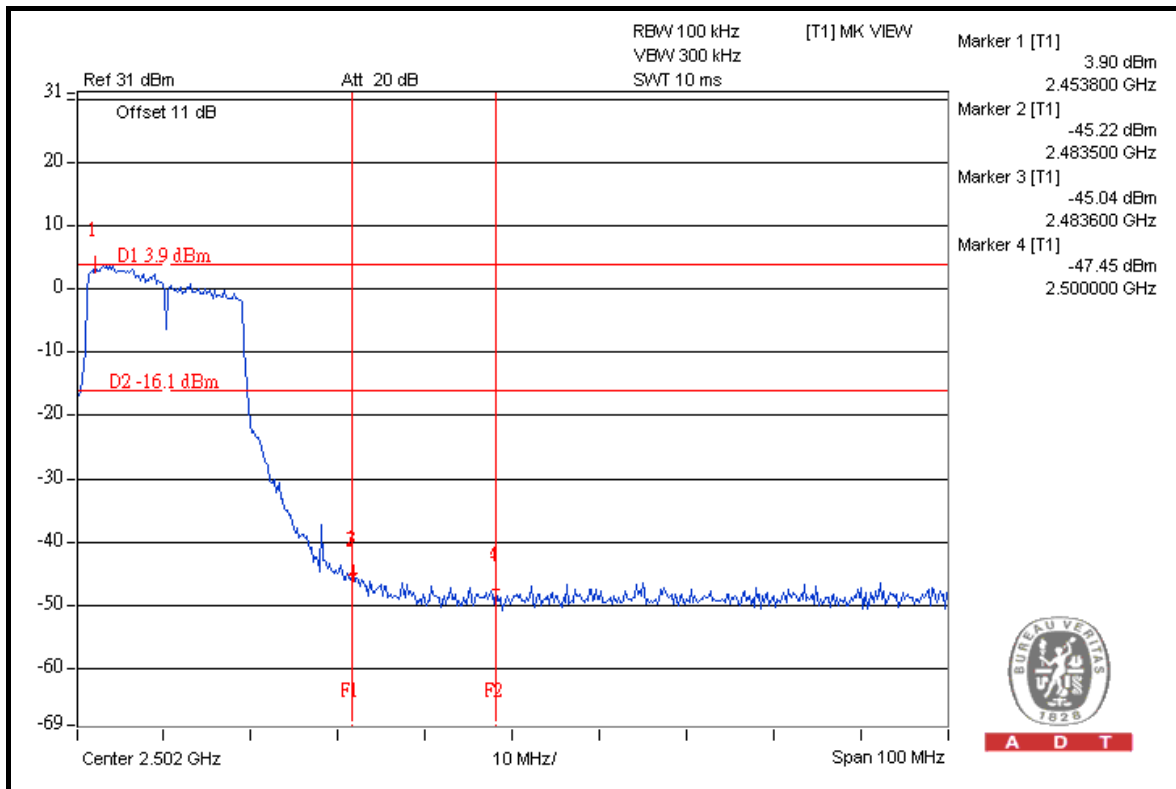




A D T



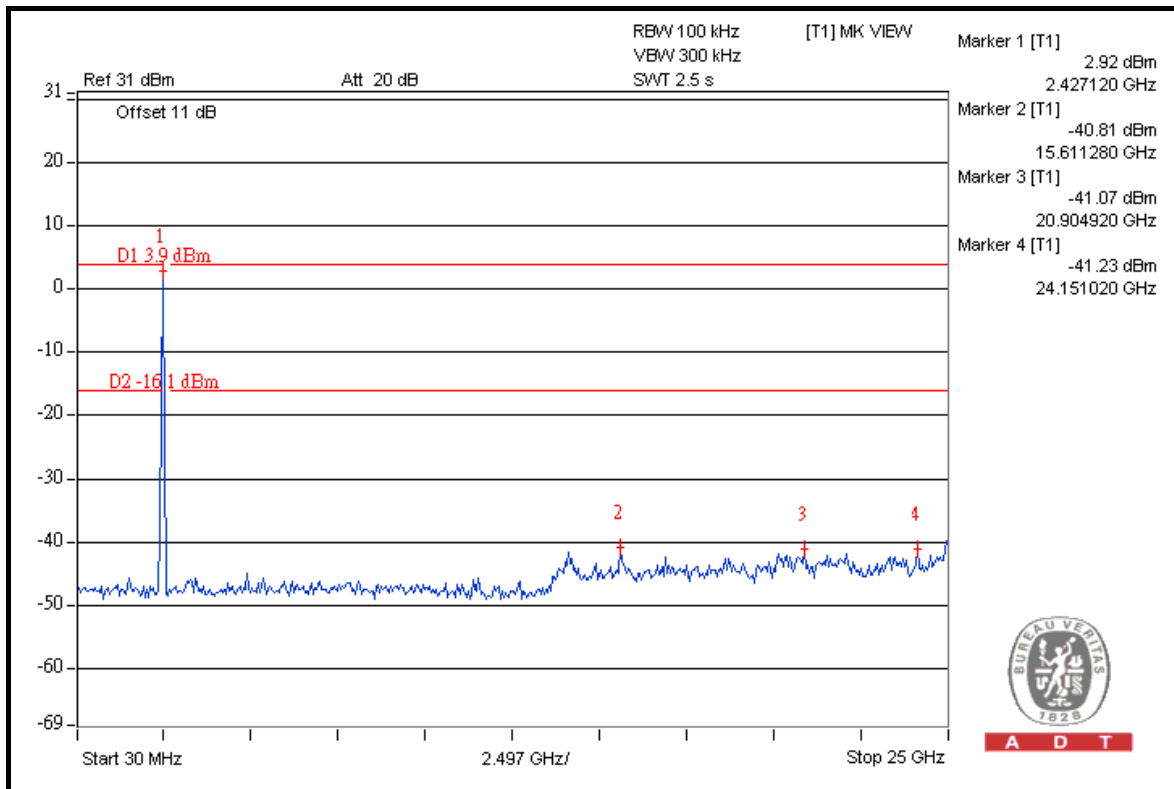
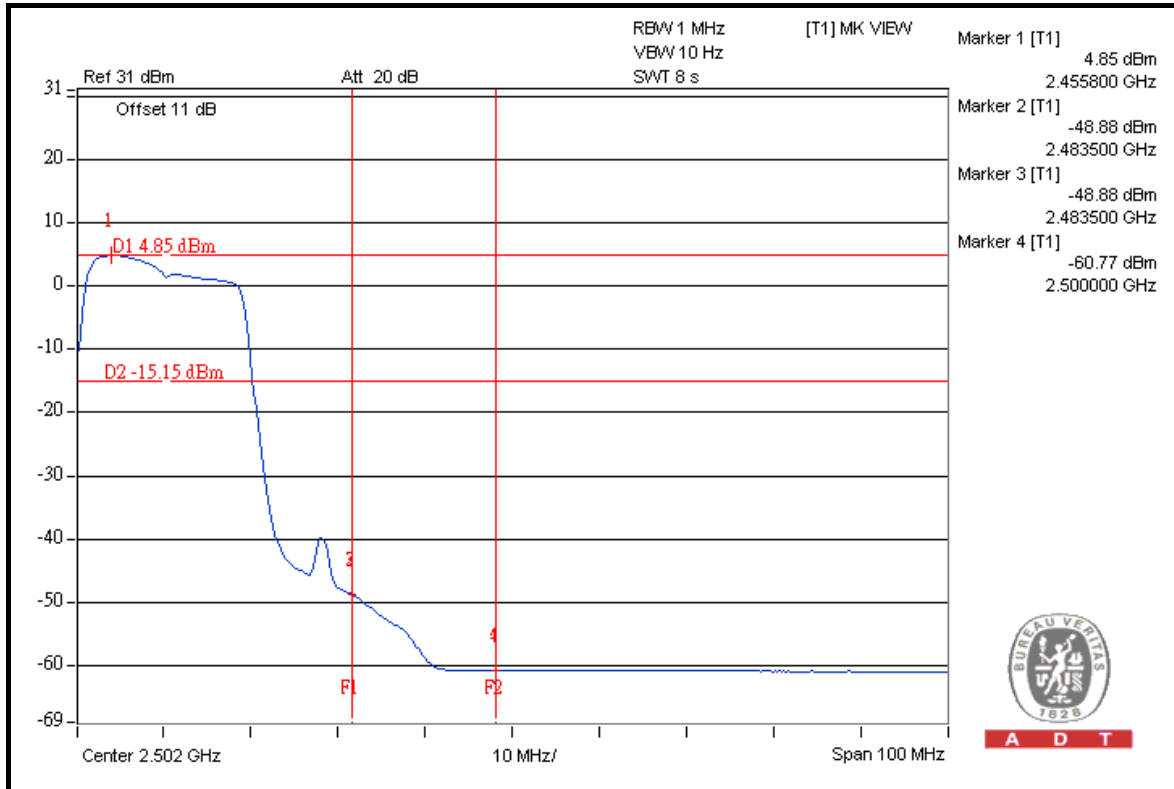
A D T



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)	105.0	32.06	72.94	74.00
2422.00 (AV)	93.6	40.98	52.62	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)	105.9	39.87	66.03	74.00
2452.00 (AV)	94.3	46.06	48.24	54.00

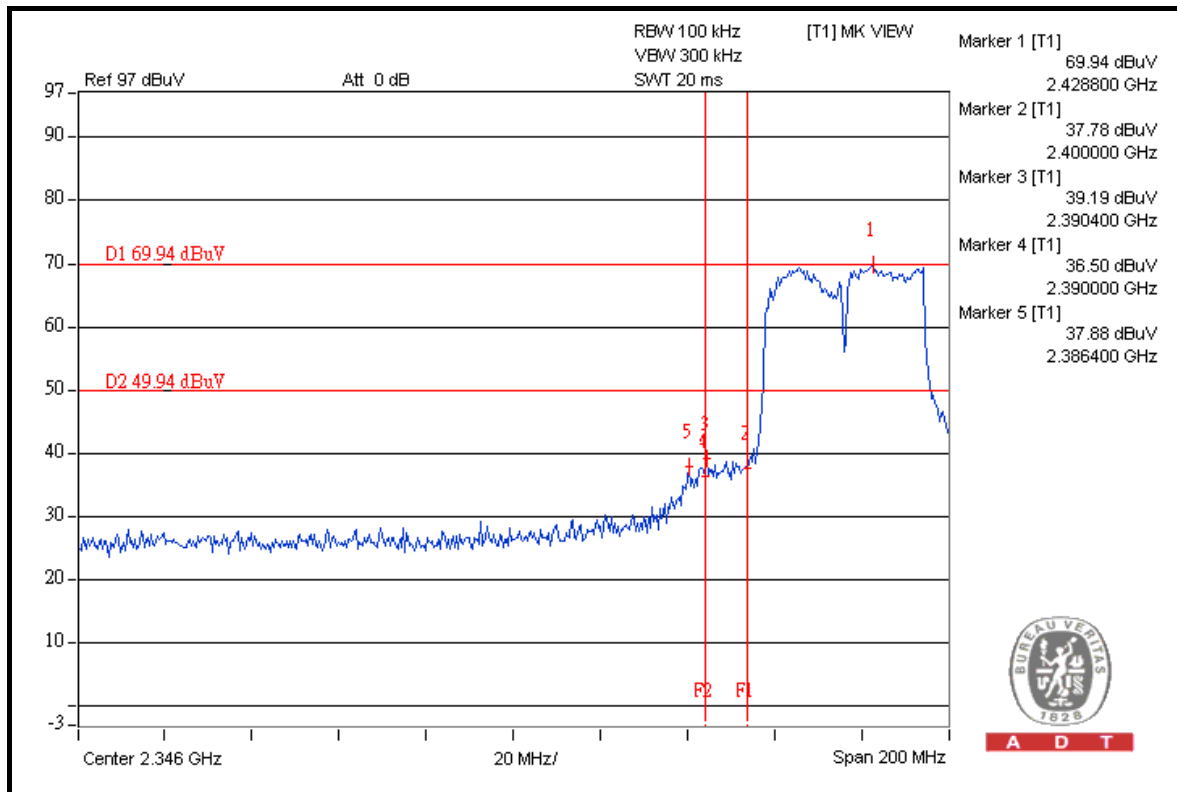
NOTE:

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.

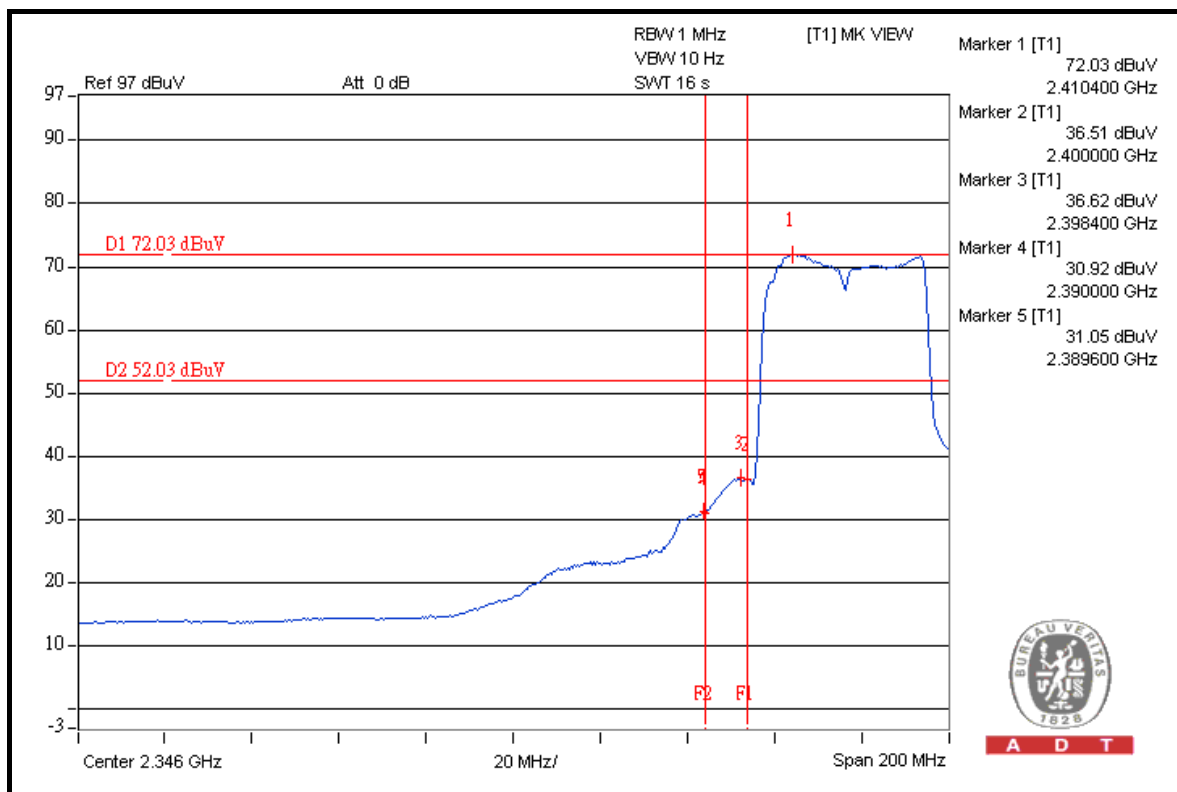


A D T

FOR RADIATED MEASURED (BOTH CHAINS ON)



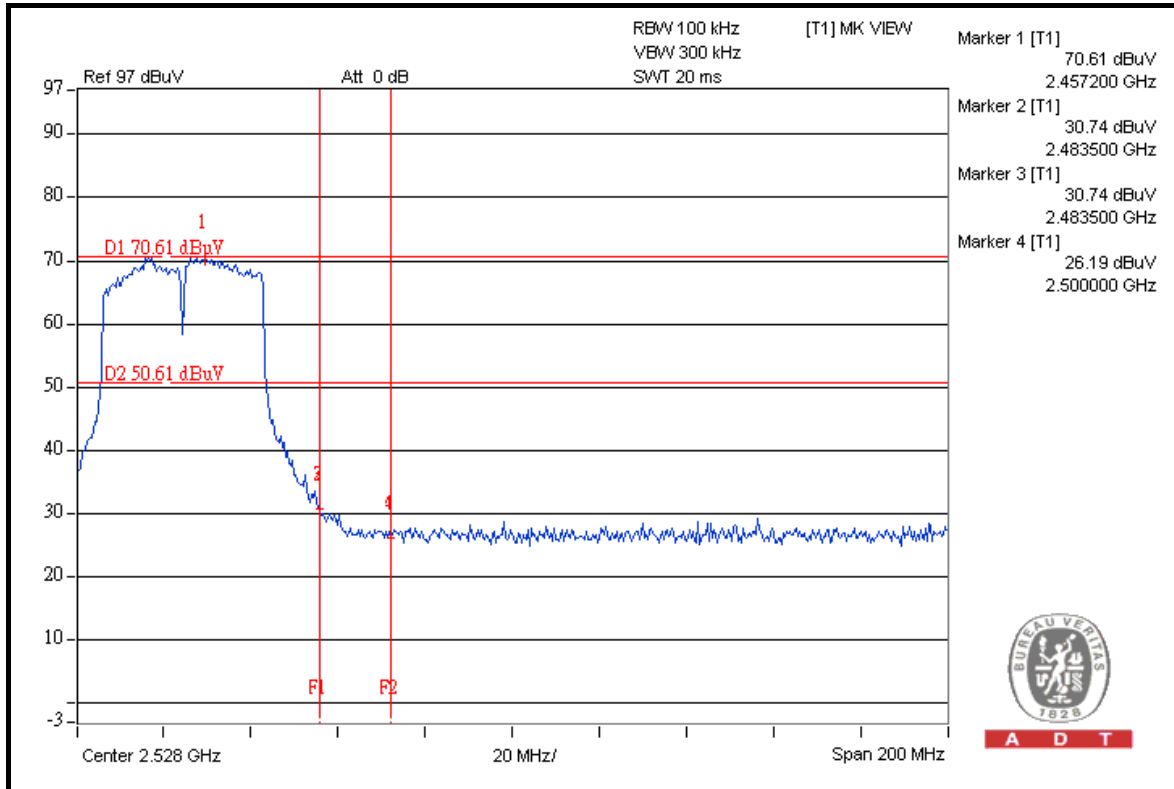
A D T



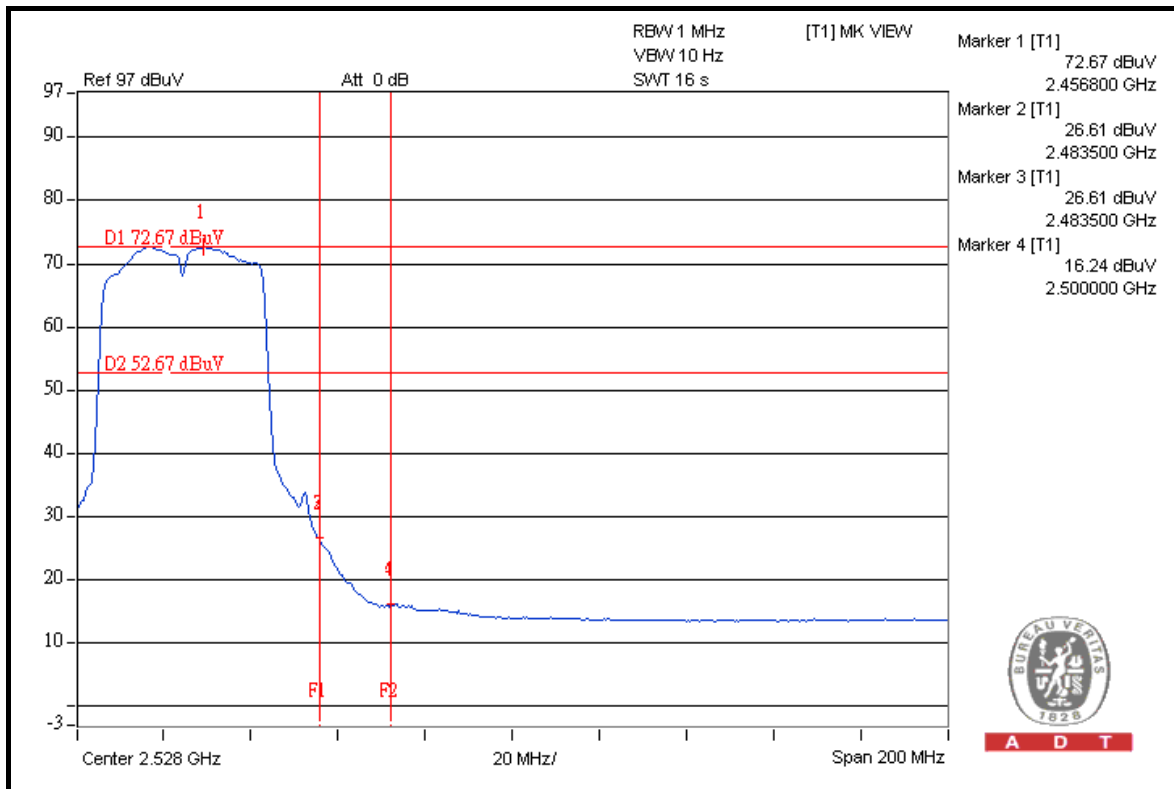
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A D T



A D T

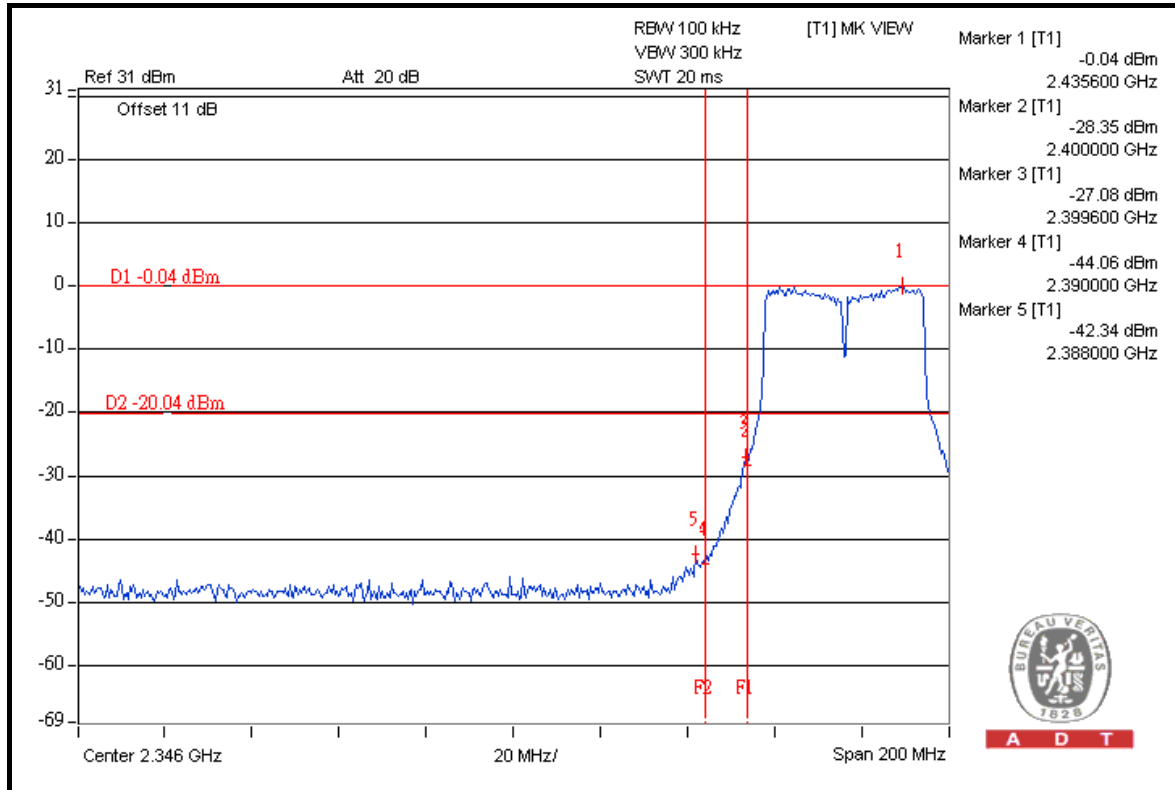


A D T

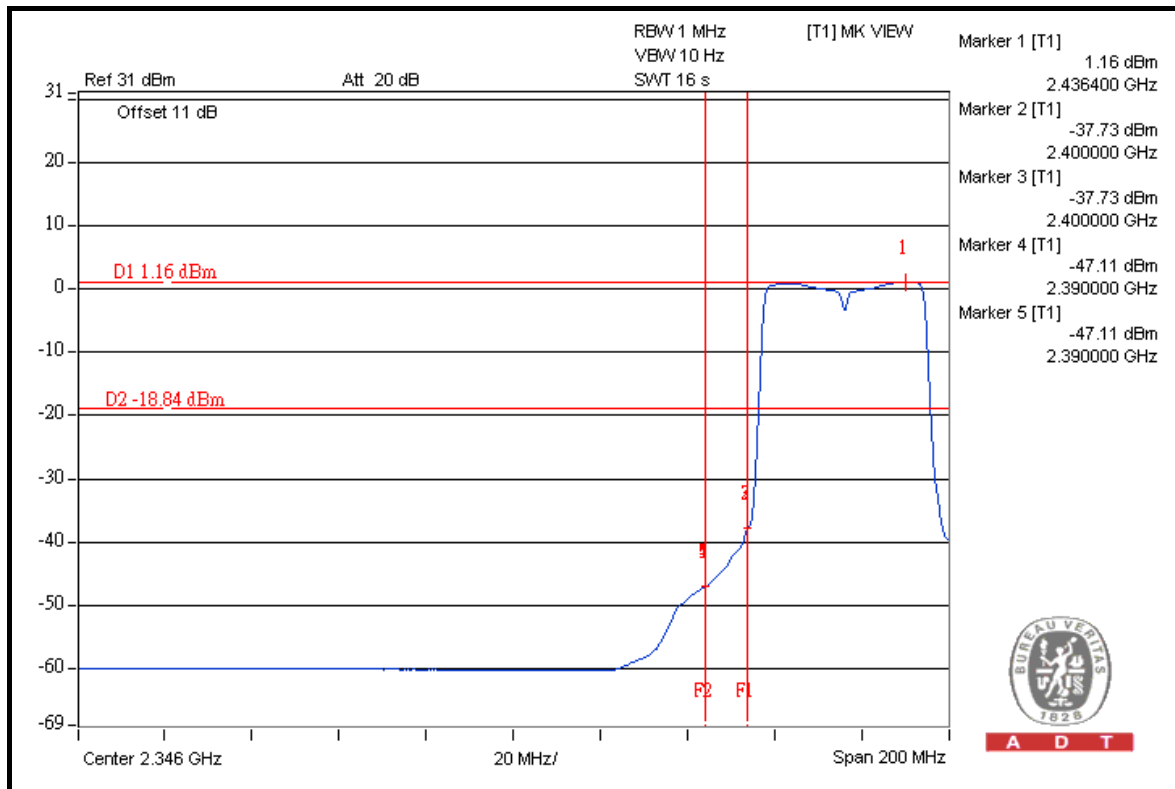


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FOR CONDUCTED MEASURED CHAIN 0



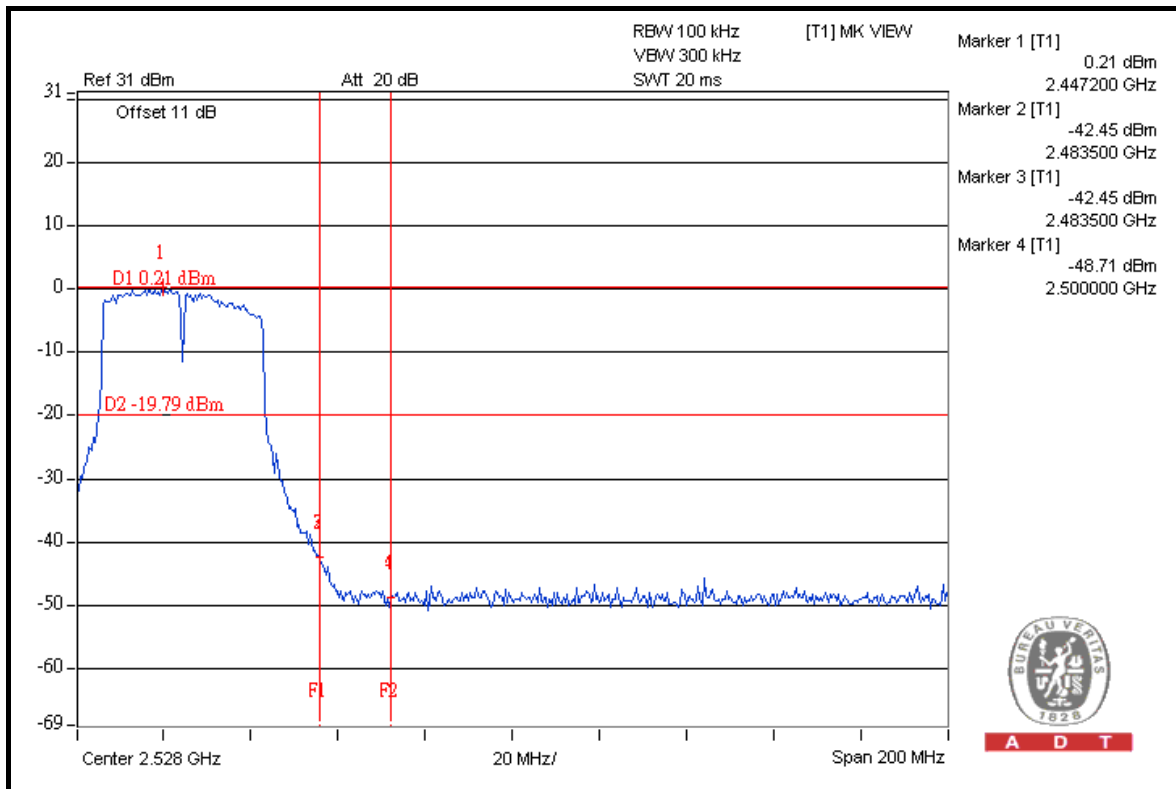
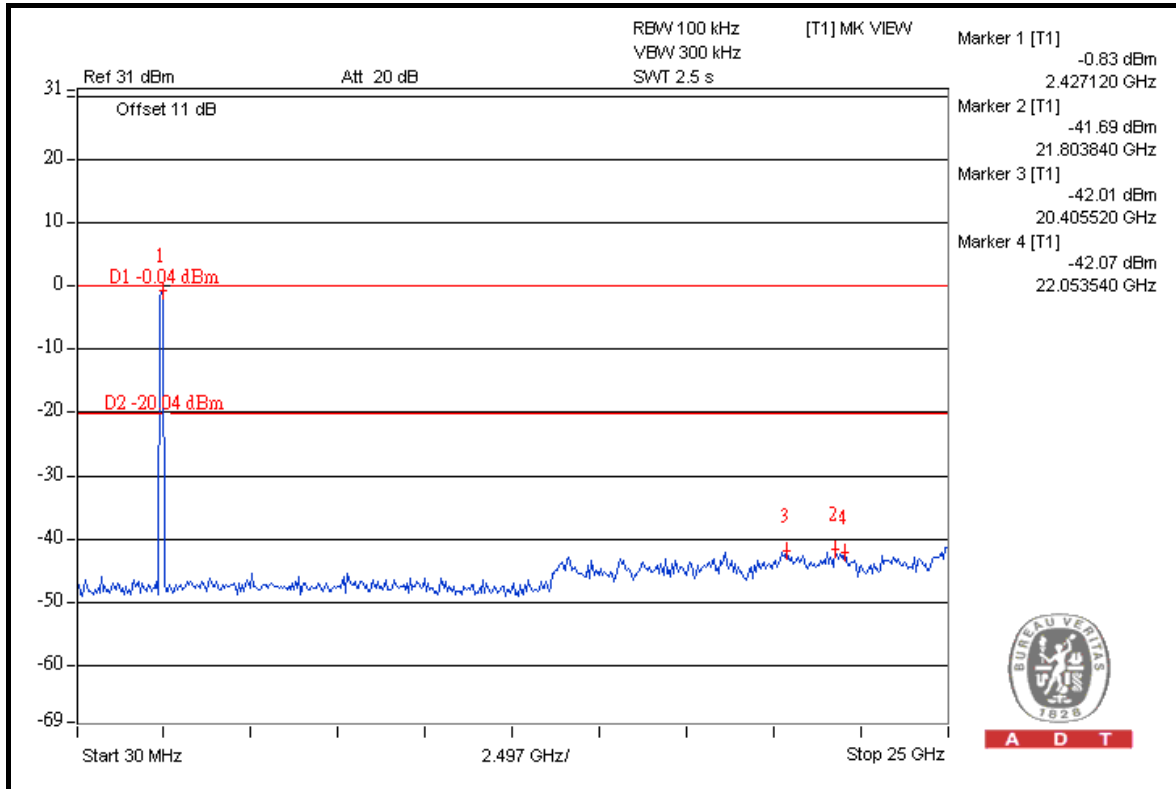
A D T



A D T

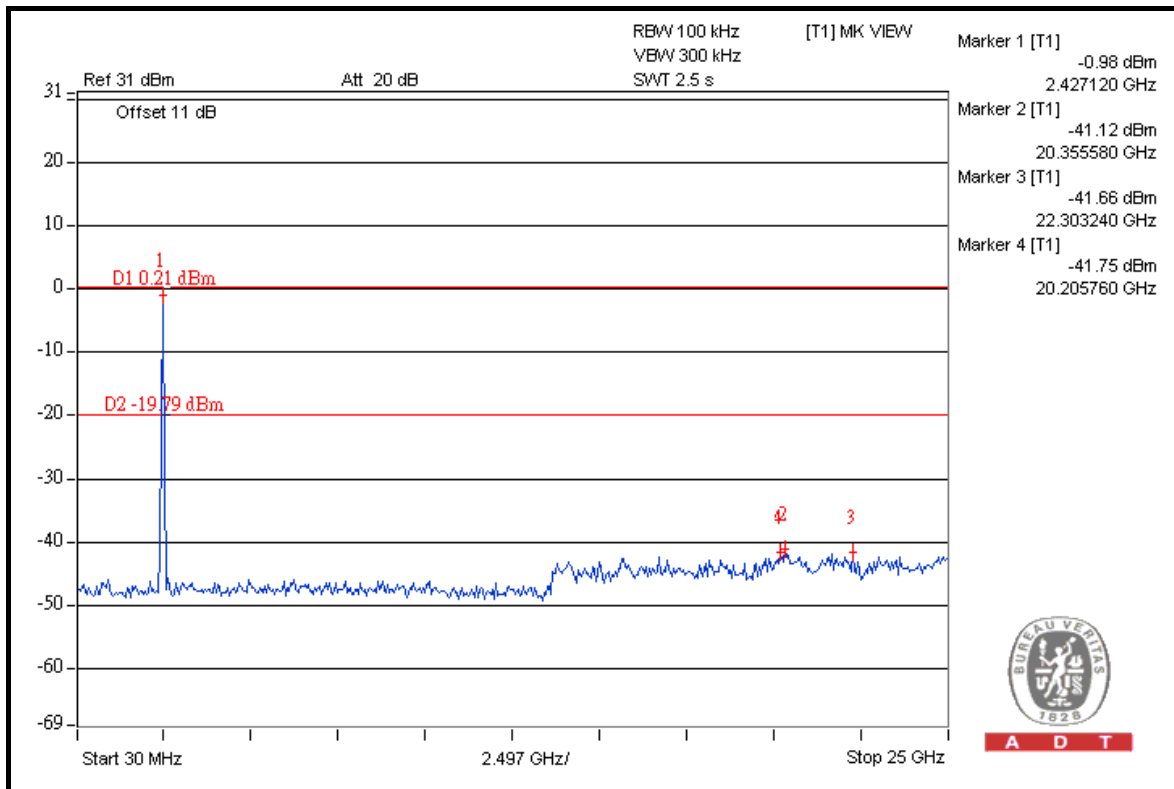
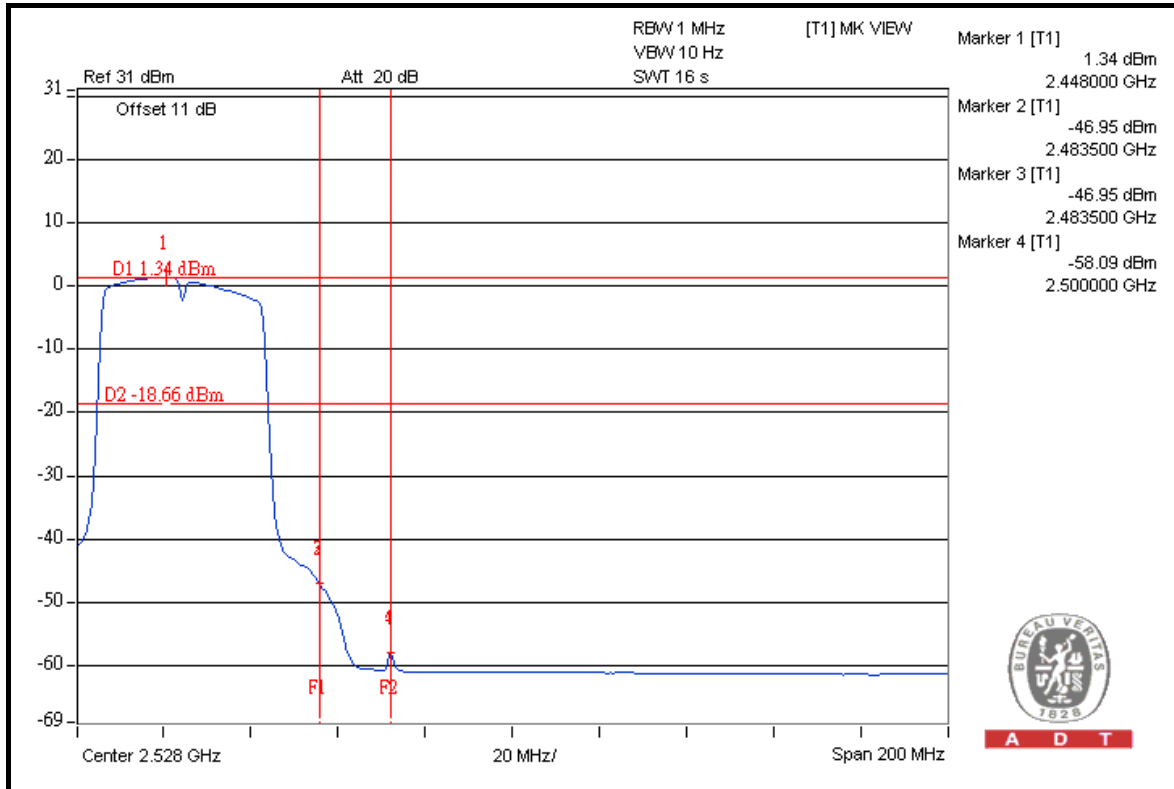


A D T





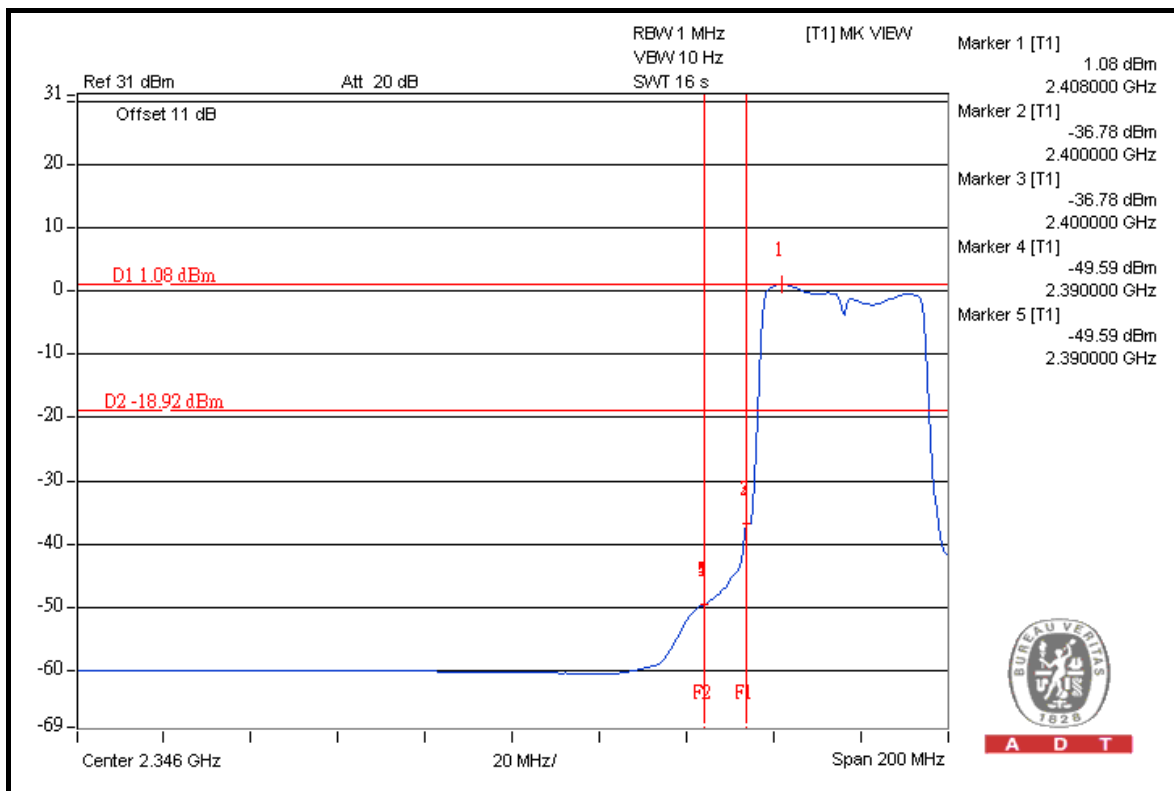
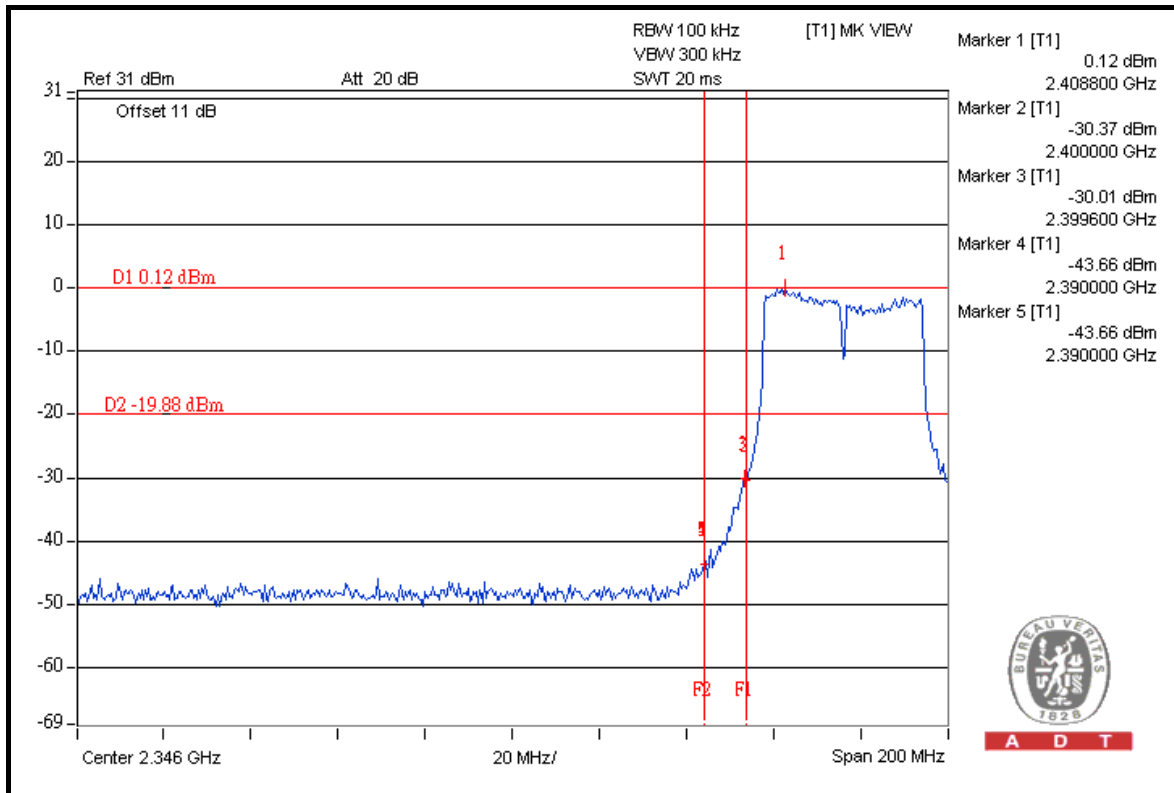
A D T





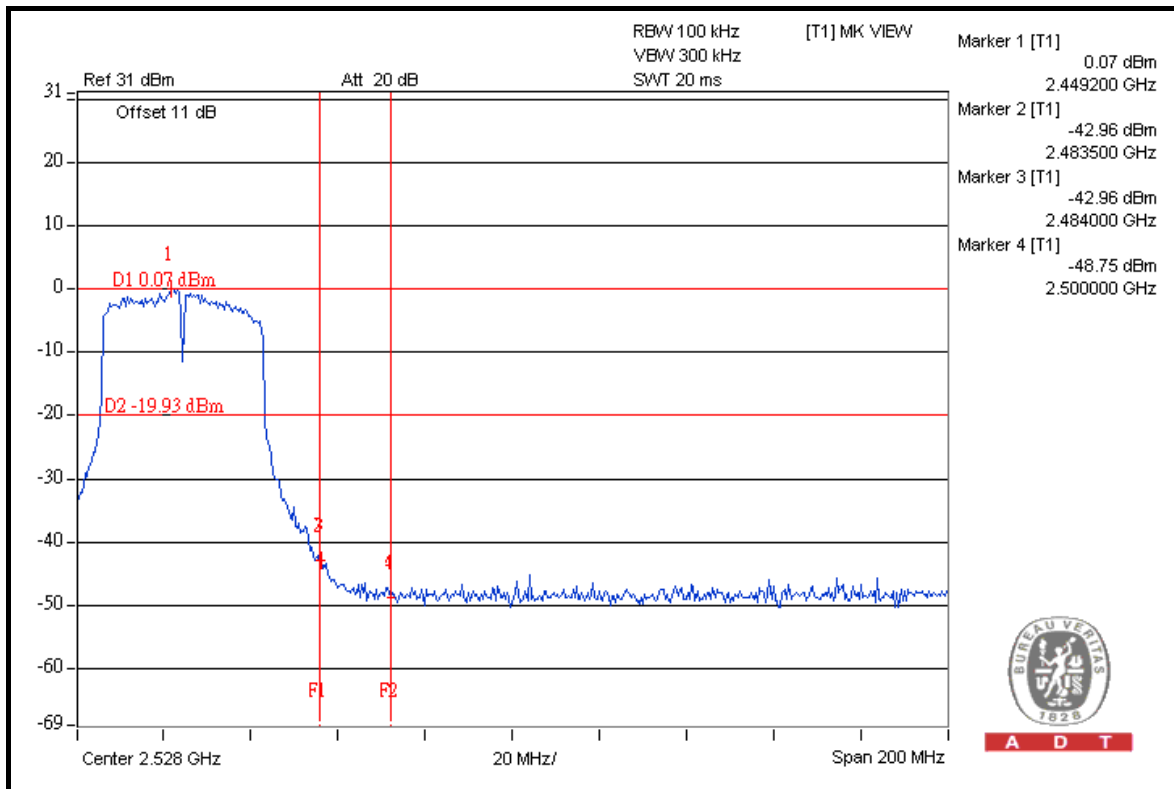
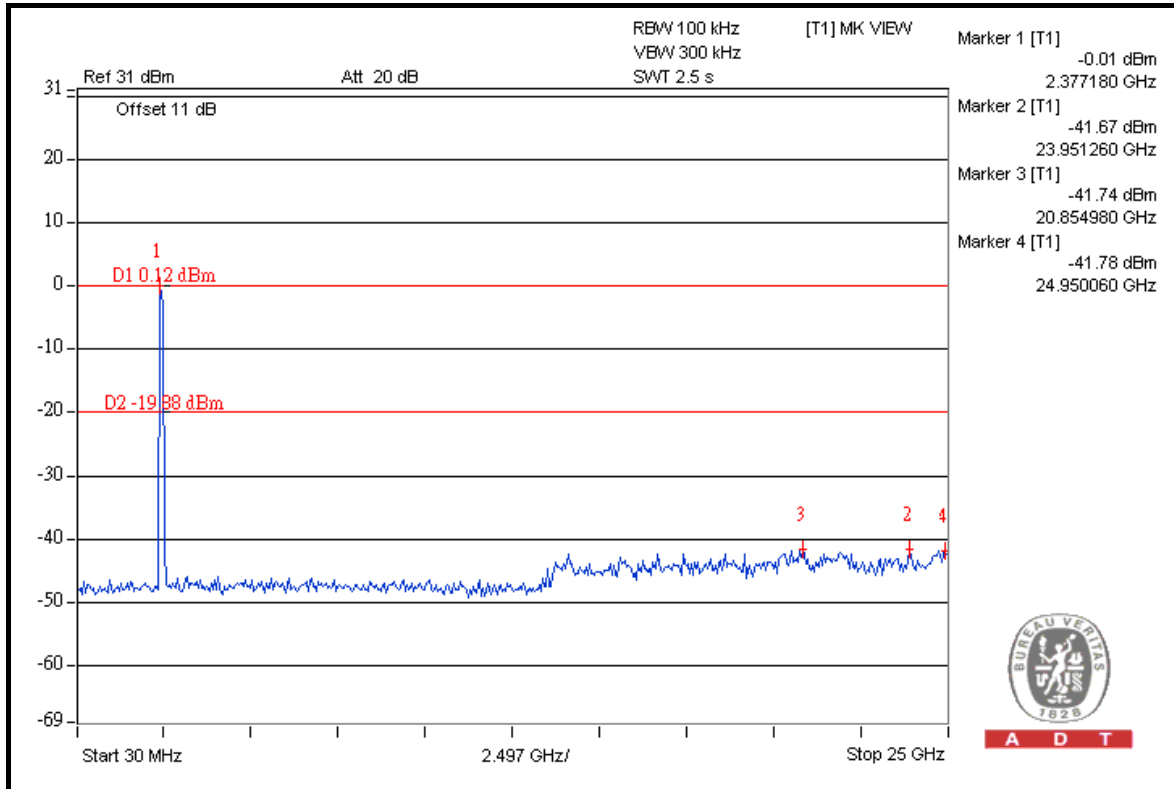
A D T

CHAIN 1



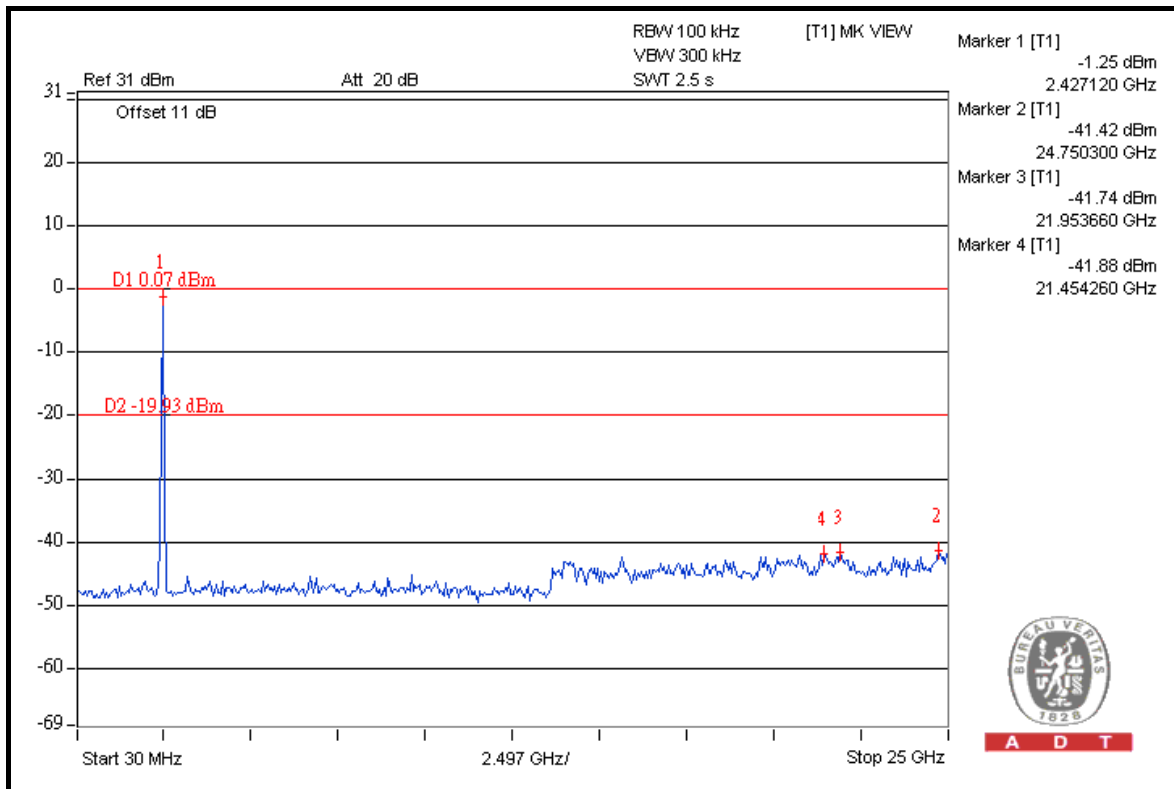
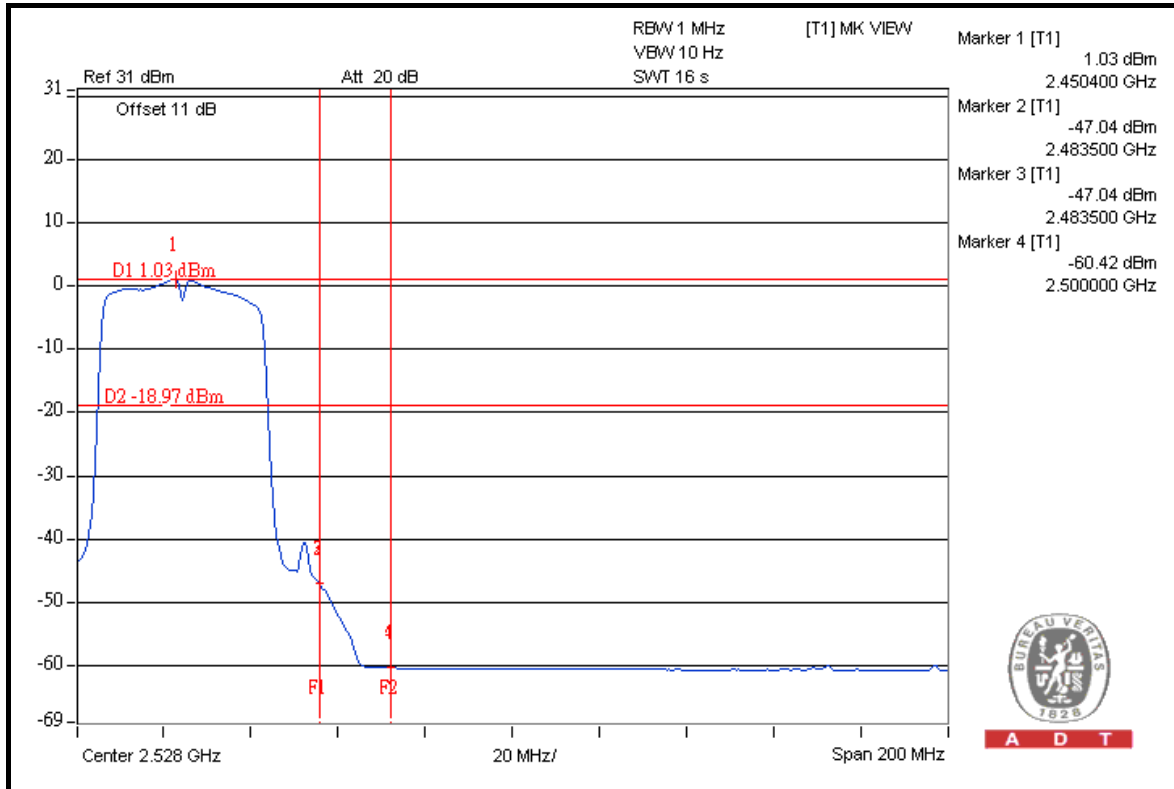


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5. TEST TYPES AND RESULTS (FOR 5.0GHz BAND)

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.



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5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 19, 2011	Apr. 18, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jan. 06, 2011	Jan. 05, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 12, 2011	Apr. 11, 2012
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-563	Sep. 06, 2011	Sep. 05, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8449B	3008A01911	Nov. 03, 2010	Nov. 02, 2011
Preamplifier Agilent	8447D	2944A10638	Nov. 03, 2010	Nov. 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295013/4 283403/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 13, 2011	Aug. 12, 2012
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Nov. 03, 2010	Nov. 02, 2011

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 4.
 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 988962.
 5. The IC Site Registration No. is IC7450F-4.



5.1.3 TEST PROCEDURES

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

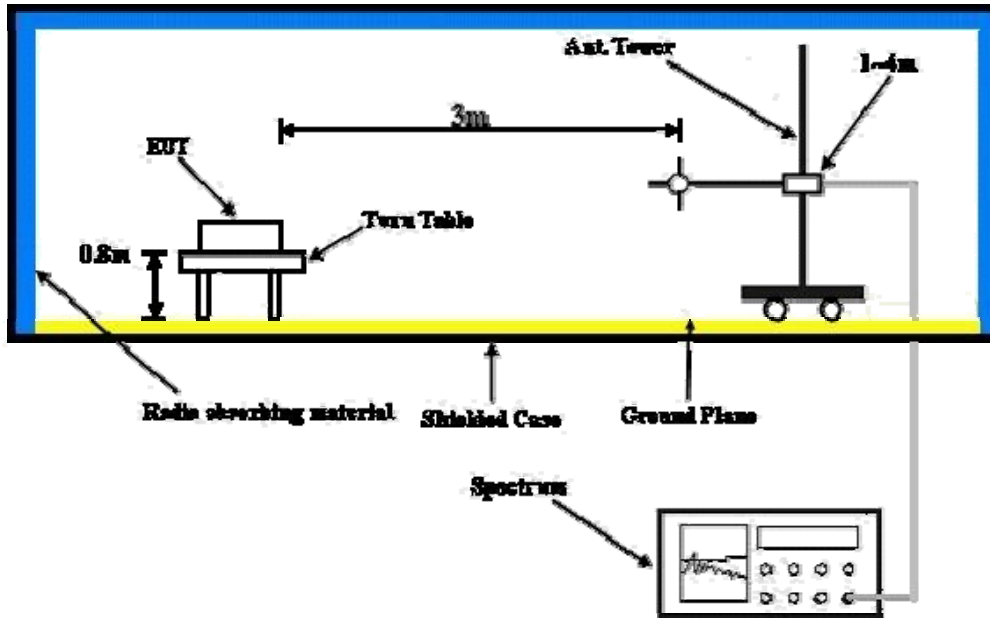
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 100kHz and video bandwidth is 300kHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation.

5.1.5 TEST SETUP



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

5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6



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5.1.7 TEST RESULTS

ABOVE 1GHz WORST-CASE DATA : 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, 68%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5080.00	53.3 PK	74.0	-20.7	1.09 H	242	15.60	37.70
2	5080.00	45.5 AV	54.0	-8.5	1.09 H	242	7.80	37.70
3	#5725.00	59.8 PK	84.7	-24.9	1.03 H	24	21.10	38.70
4	#5725.00	46.1 AV	75.2	-29.1	1.03 H	24	7.40	38.70
5	*5745.00	104.7 PK			1.03 H	26	65.90	38.80
6	*5745.00	95.2 AV			1.03 H	26	56.40	38.80
7	11490.00	63.2 PK	74.0	-10.8	1.37 H	8	13.50	49.70
8	11490.00	49.4 AV	54.0	-4.6	1.37 H	8	-0.30	49.70
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	5080.00	59.3 PK	74.0	-14.7	1.00 V	281	21.60	37.70
2	5080.00	51.2 AV	54.0	-2.8	1.00 V	281	13.50	37.70
3	#5725.00	69.1 PK	91.2	-22.1	1.38 V	15	30.40	38.70
4	#5725.00	49.5 AV	82.2	-32.7	1.38 V	15	10.80	38.70
5	*5745.00	111.2 PK			1.00 V	13	72.40	38.80
6	*5745.00	102.2 AV			1.00 V	13	63.40	38.80
7	11490.00	64.1 PK	74.0	-9.9	1.20 V	25	14.40	49.70
8	11490.00	49.6 AV	54.0	-4.4	1.20 V	25	-0.10	49.70

- 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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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	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5360.00	57.6 PK	74.0	-16.4	1.38 H	221	19.50	38.10
2	5360.00	47.3 AV	54.0	-6.7	1.38 H	221	9.20	38.10
3	5400.00	55.2 PK	74.0	-18.8	1.07 H	98	17.10	38.10
4	5400.00	45.9 AV	54.0	-8.1	1.07 H	98	7.80	38.10
5	5440.00	56.2 PK	74.0	-17.8	1.35 H	169	18.00	38.20
6	5440.00	45.7 AV	54.0	-8.3	1.35 H	169	7.50	38.20
7	*5785.00	105.0 PK			1.47 H	205	66.10	38.90
8	*5785.00	95.5 AV			1.47 H	205	56.60	38.90
9	11570.00	57.2 PK	74.0	-16.8	1.05 H	58	7.70	49.50
10	11570.00	44.3 AV	54.0	-9.7	1.05 H	58	-5.20	49.50

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

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	5360.00	61.7 PK	74.0	-12.3	1.09 V	16	23.60	38.10
2	5360.00	52.4 AV	54.0	-1.6	1.09 V	16	14.30	38.10
3	5400.00	61.8 PK	74.0	-12.2	1.07 V	14	23.70	38.10
4	5400.00	52.6 AV	54.0	-1.4	1.07 V	14	14.50	38.10
5	5440.00	61.6 PK	74.0	-12.4	1.05 V	8	23.40	38.20
6	5440.00	52.5 AV	54.0	-1.5	1.05 V	8	14.30	38.20
7	*5785.00	111.5 PK			1.00 V	8	72.60	38.90
8	*5785.00	102.5 AV			1.00 V	8	63.60	38.90
9	11570.00	59.2 PK	74.0	-14.8	1.02 V	116	9.70	49.50
10	11570.00	44.9 AV	54.0	-9.1	1.02 V	116	-4.60	49.50

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5360.00	56.2 PK	74.0	-17.8	1.45 H	247	18.10	38.10
2	5360.00	46.7 AV	54.0	-7.3	1.45 H	247	8.60	38.10
3	5400.00	54.8 PK	74.0	-19.2	1.45 H	247	16.70	38.10
4	5400.00	46.2 AV	54.0	-7.8	1.45 H	247	8.10	38.10
5	5440.00	56.4 PK	74.0	-17.6	1.25 H	292	18.20	38.20
6	5440.00	47.0 AV	54.0	-7.0	1.25 H	292	8.80	38.20
7	*5825.00	105.2 PK			1.47 H	329	66.20	39.00
8	*5825.00	95.9 AV			1.47 H	329	56.90	39.00
9	#5850.00	68.2 PK	85.2	-17.0	1.47 H	328	29.20	39.00
10	#5850.00	53.2 AV	75.9	-22.7	1.47 H	328	14.20	39.00
11	11650.00	57.5 PK	74.0	-16.5	1.12 H	104	8.10	49.40
12	11650.00	44.7 AV	54.0	-9.3	1.12 H	104	-4.70	49.40

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

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	5360.00	61.9 PK	74.0	-12.1	1.06 V	15	23.80	38.10
2	5360.00	52.6 AV	54.0	-1.4	1.06 V	15	14.50	38.10
3	5400.00	60.5 PK	74.0	-13.5	1.06 V	13	22.40	38.10
4	5400.00	52.4 AV	54.0	-1.6	1.06 V	13	14.30	38.10
5	5440.00	61.2 PK	74.0	-12.8	1.00 V	12	23.00	38.20
6	5440.00	52.1 AV	54.0	-1.9	1.00 V	12	13.90	38.20
7	*5825.00	111.8 PK			1.00 V	10	72.80	39.00
8	*5825.00	102.9 AV			1.00 V	10	63.90	39.00
9	#5850.00	77.4 PK	91.8	-14.4	1.18 V	17	38.40	39.00
10	#5850.00	61.4 AV	82.9	-21.5	1.18 V	17	22.40	39.00
11	11650.00	59.1 PK	74.0	-14.9	1.00 V	6	9.70	49.40
12	11650.00	44.5 AV	54.0	-9.5	1.00 V	6	-4.90	49.40

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



A D T

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	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5360.00	53.7 PK	74.0	-20.3	1.27 H	52	15.60	38.10
2	5360.00	42.5 AV	54.0	-11.5	1.27 H	52	4.40	38.10
3	5400.00	54.7 PK	74.0	-19.3	1.42 H	223	16.60	38.10
4	5400.00	45.2 AV	54.0	-8.8	1.42 H	223	7.10	38.10
5	5440.00	53.7 PK	74.0	-20.3	1.58 H	327	15.50	38.20
6	5440.00	44.5 AV	54.0	-9.5	1.58 H	327	6.30	38.20
7	#5725.00	78.2 PK	84.2	-6.0	1.37 H	48	39.50	38.70
8	#5725.00	62.7 AV	74.7	-12.0	1.37 H	48	24.00	38.70
9	*5745.00	104.2 PK			1.37 H	52	65.40	38.80
10	*5745.00	94.7 AV			1.37 H	52	55.90	38.80
11	11490.00	56.8 PK	74.0	-17.2	1.07 H	57	7.10	49.70
12	11490.00	44.3 AV	54.0	-9.7	1.07 H	57	-5.40	49.70

- 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.



A D T

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	Sun Lin

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	5360.00	60.8 PK	74.0	-13.2	1.07 V	8	22.70	38.10
2	5360.00	50.8 AV	54.0	-3.2	1.07 V	8	12.70	38.10
3	5400.00	61.2 PK	74.0	-12.8	1.19 V	9	23.10	38.10
4	5400.00	50.9 AV	54.0	-3.1	1.19 V	9	12.80	38.10
5	5440.00	61.3 PK	74.0	-12.7	1.04 V	15	23.10	38.20
6	5440.00	51.6 AV	54.0	-2.4	1.04 V	15	13.40	38.20
7	#5725.00	89.1 PK	90.6	-1.5	1.00 V	17	50.40	38.70
8	#5725.00	70.7 AV	81.8	-11.1	1.00 V	17	32.00	38.70
9	*5745.00	110.6 PK			1.00 V	9	71.80	38.80
10	*5745.00	101.8 AV			1.00 V	9	63.00	38.80
11	11490.00	57.1 PK	74.0	-16.9	1.04 V	131	7.40	49.70
12	11490.00	44.0 AV	54.0	-10.0	1.04 V	131	-5.70	49.70

- 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.



A D T

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	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5360.00	53.9 PK	74.0	-20.1	1.31 H	104	15.80	38.10
2	5360.00	42.8 AV	54.0	-11.2	1.31 H	104	4.70	38.10
3	5400.00	55.2 PK	74.0	-18.8	1.47 H	352	17.10	38.10
4	5400.00	45.7 AV	54.0	-8.3	1.47 H	352	7.60	38.10
5	5440.00	55.2 PK	74.0	-18.8	1.53 H	278	17.00	38.20
6	5440.00	45.8 AV	54.0	-8.2	1.53 H	278	7.60	38.20
7	*5785.00	104.5 PK			1.39 H	107	65.60	38.90
8	*5785.00	95.0 AV			1.39 H	107	56.10	38.90
9	11570.00	56.2 PK	74.0	-17.8	1.22 H	107	6.70	49.50
10	11570.00	44.5 AV	54.0	-9.5	1.22 H	107	-5.00	49.50

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



A D T

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	Sun Lin

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	5360.00	61.4 PK	74.0	-12.6	1.10 V	16	23.30	38.10
2	5360.00	50.1 AV	54.0	-3.9	1.10 V	16	12.00	38.10
3	5400.00	61.0 PK	74.0	-13.0	1.08 V	15	22.90	38.10
4	5400.00	50.6 AV	54.0	-3.4	1.08 V	15	12.50	38.10
5	5440.00	61.6 PK	74.0	-12.4	1.05 V	12	23.40	38.20
6	5440.00	51.8 AV	54.0	-2.2	1.05 V	12	13.60	38.20
7	*5785.00	110.8 PK			1.01 V	9	71.90	38.90
8	*5785.00	102.1 AV			1.01 V	9	63.20	38.90
9	11570.00	59.0 PK	74.0	-15.0	1.05 V	112	9.50	49.50
10	11570.00	44.5 AV	54.0	-9.5	1.05 V	112	-5.00	49.50

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



A D T

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	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5360.00	54.1 PK	74.0	-19.9	1.52 H	98	16.00	38.10
2	5360.00	43.2 AV	54.0	-10.8	1.52 H	98	5.10	38.10
3	5400.00	55.7 PK	74.0	-18.3	1.41 H	347	17.60	38.10
4	5400.00	45.9 AV	54.0	-8.1	1.41 H	347	7.80	38.10
5	5440.00	55.8 PK	74.0	-18.2	1.29 H	127	17.60	38.20
6	5440.00	46.8 AV	54.0	-7.2	1.29 H	127	8.60	38.20
7	*5825.00	104.8 PK			1.37 H	252	65.80	39.00
8	*5825.00	95.3 AV			1.37 H	252	56.30	39.00
9	#5850.00	67.8 PK	84.8	-17.0	1.43 H	232	28.80	39.00
10	#5850.00	58.9 AV	75.3	-16.4	1.43 H	232	19.90	39.00
11	11650.00	56.7 PK	74.0	-17.3	1.25 H	147	7.30	49.40
12	11650.00	45.2 AV	54.0	-8.8	1.25 H	147	-4.20	49.40

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



A D T

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	Sun Lin

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	5360.00	61.8 PK	74.0	-12.2	1.05 V	16	23.70	38.10
2	5360.00	51.4 AV	54.0	-2.6	1.05 V	16	13.30	38.10
3	5400.00	60.8 PK	74.0	-13.2	1.05 V	15	22.70	38.10
4	5400.00	50.7 AV	54.0	-3.3	1.05 V	15	12.60	38.10
5	5440.00	61.0 PK	74.0	-13.0	1.02 V	14	22.80	38.20
6	5440.00	51.9 AV	54.0	-2.1	1.02 V	14	13.70	38.20
7	*5825.00	111.2 PK			1.02 V	13	72.20	39.00
8	*5825.00	102.5 AV			1.02 V	13	63.50	39.00
9	#5850.00	77.0 PK	91.2	-14.2	1.02 V	13	38.00	39.00
10	#5850.00	61.1 AV	82.5	-21.4	1.02 V	13	22.10	39.00
11	11650.00	58.8 PK	74.0	-15.2	1.02 V	11	9.40	49.40
12	11650.00	44.3 AV	54.0	-9.7	1.02 V	11	-5.10	49.40

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



A D T

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	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5360.00	53.8 PK	74.0	-20.2	1.37 H	298	15.70	38.10
2	5360.00	45.2 AV	54.0	-8.8	1.37 H	298	7.10	38.10
3	5400.00	53.8 PK	74.0	-20.2	1.47 H	54	15.70	38.10
4	5400.00	44.3 AV	54.0	-9.7	1.47 H	54	6.20	38.10
5	5440.00	56.2 PK	74.0	-17.8	1.34 H	285	18.00	38.20
6	5440.00	45.9 AV	54.0	-8.1	1.34 H	285	7.70	38.20
7	#5725.00	77.5 PK	81.5	-4.0	1.43 H	298	38.80	38.70
8	#5725.00	63.2 AV	72.3	-9.1	1.43 H	298	24.50	38.70
9	*5755.00	101.5 PK			1.02 H	15	62.70	38.80
10	*5755.00	92.3 AV			1.02 H	15	53.50	38.80
11	11510.00	52.3 PK	74.0	-21.7	1.48 H	322	2.70	49.60
12	11510.00	42.1 AV	54.0	-11.9	1.48 H	322	-7.50	49.60

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



A D T

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	Sun Lin

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	5360.00	60.6 PK	74.0	-13.4	1.06 V	14	22.50	38.10
2	5360.00	51.4 AV	54.0	-2.6	1.06 V	14	13.30	38.10
3	5400.00	61.1 PK	74.0	-12.9	1.08 V	12	23.00	38.10
4	5400.00	50.5 AV	54.0	-3.5	1.08 V	12	12.40	38.10
5	5440.00	60.8 PK	74.0	-13.2	1.05 V	9	22.60	38.20
6	5440.00	51.2 AV	54.0	-2.8	1.05 V	9	13.00	38.20
7	#5725.00	87.0 PK	88.2	-1.2	1.00 V	5	48.30	38.70
8	#5725.00	71.9 AV	79.1	-7.2	1.00 V	5	33.20	38.70
9	*5755.00	108.2 PK			1.00 V	1	69.40	38.80
10	*5755.00	99.1 AV			1.00 V	1	60.30	38.80
11	11510.00	57.5 PK	74.0	-16.5	1.05 V	114	7.90	49.60
12	11510.00	44.3 AV	54.0	-9.7	1.05 V	114	-5.30	49.60

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



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	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5360.00	53.7 PK	74.0	-20.3	1.32 H	247	15.60	38.10
2	5360.00	44.3 AV	54.0	-9.7	1.32 H	247	6.20	38.10
3	5400.00	53.9 PK	74.0	-20.1	1.47 H	258	15.80	38.10
4	5400.00	44.5 AV	54.0	-9.5	1.47 H	258	6.40	38.10
5	5440.00	53.5 PK	74.0	-20.5	1.28 H	188	15.30	38.20
6	5440.00	43.4 AV	54.0	-10.6	1.28 H	188	5.20	38.20
7	*5795.00	101.7 PK			1.02 H	85	62.80	38.90
8	*5795.00	92.5 AV			1.02 H	85	53.60	38.90
9	#5850.00	65.5 PK	81.7	-16.2	1.02 H	85	26.50	39.00
10	#5850.00	50.2 AV	72.5	-22.3	1.02 H	85	11.20	39.00
11	11510.00	52.8 PK	74.0	-21.2	1.52 H	357	3.20	49.60
12	11510.00	42.2 AV	54.0	-11.8	1.52 H	357	-7.40	49.60

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



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	Sun Lin

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	5360.00	60.8 PK	74.0	-13.2	1.03 V	15	22.70	38.10
2	5360.00	51.5 AV	54.0	-2.5	1.03 V	15	13.40	38.10
3	5400.00	60.9 PK	74.0	-13.1	1.10 V	11	22.80	38.10
4	5400.00	52.4 AV	54.0	-1.6	1.10 V	11	14.30	38.10
5	5440.00	61.3 PK	74.0	-12.7	1.06 V	11	23.10	38.20
6	5440.00	51.6 AV	54.0	-2.4	1.06 V	11	13.40	38.20
7	*5795.00	108.5 PK			1.00 V	12	69.60	38.90
8	*5795.00	99.6 AV			1.00 V	12	60.70	38.90
9	#5850.00	75.2 PK	88.5	-13.3	1.07 V	358	36.20	39.00
10	#5850.00	59.8 AV	79.6	-19.8	1.07 V	358	20.80	39.00
11	11590.00	57.9 PK	74.0	-16.1	1.03 V	11	8.40	49.50
12	11590.00	44.8 AV	54.0	-9.2	1.03 V	11	-4.70	49.50

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 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 157	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Sun Lin
TEST MODE	A		

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	31.6 QP	43.5	-11.9	1.50 H	280	19.60	12.00
2	249.60	38.2 QP	46.0	-7.8	1.25 H	226	25.60	12.60
3	375.98	33.4 QP	46.0	-12.6	1.00 H	148	17.00	16.40
4	480.97	42.2 QP	46.0	-3.8	1.50 H	220	23.10	19.10
5	500.42	37.8 QP	46.0	-8.2	1.50 H	226	18.10	19.70
6	626.80	38.4 QP	46.0	-7.6	1.00 H	235	16.00	22.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	43.51	32.5 QP	40.0	-7.5	1.50 V	4	19.50	13.00
2	105.73	35.8 QP	43.5	-7.7	1.25 V	295	26.50	9.30
3	142.67	36.7 QP	43.5	-6.8	1.25 V	277	23.20	13.50
4	249.60	36.7 QP	46.0	-9.3	1.00 V	328	24.10	12.60
5	480.97	37.4 QP	46.0	-8.6	2.00 V	271	18.30	19.10
6	626.80	40.5 QP	46.0	-5.5	1.75 V	190	18.10	22.40

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	249.60	38.2 QP	46.0	-7.8	1.00 H	244	25.60	12.60
2	375.98	32.7 QP	46.0	-13.3	2.00 H	247	16.30	16.40
3	480.97	38.5 QP	46.0	-7.5	1.50 H	229	19.40	19.10
4	500.42	39.3 QP	46.0	-6.7	1.50 H	289	19.60	19.70
5	626.80	38.8 QP	46.0	-7.2	1.00 H	256	16.40	22.40
6	877.61	35.8 QP	46.0	-10.2	1.25 H	199	10.10	25.70
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	30.00	37.5 QP	40.0	-2.5	1.50 V	139	25.50	12.00
2	76.56	31.9 QP	40.0	-8.1	1.25 V	244	21.90	10.00
3	125.17	31.2 QP	43.5	-12.3	1.00 V	196	19.20	12.00
4	249.60	32.5 QP	46.0	-13.5	1.25 V	283	19.90	12.60
5	480.97	36.5 QP	46.0	-9.5	1.00 V	298	17.40	19.10
6	500.42	35.7 QP	46.0	-10.3	2.00 V	139	16.00	19.70

- 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.



5.2 CONDUCTED EMISSION MEASUREMENT

5.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ 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.

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_Cond_ V7.3.7	NA	NA	NA

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



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5.2.3 TEST PROCEDURES

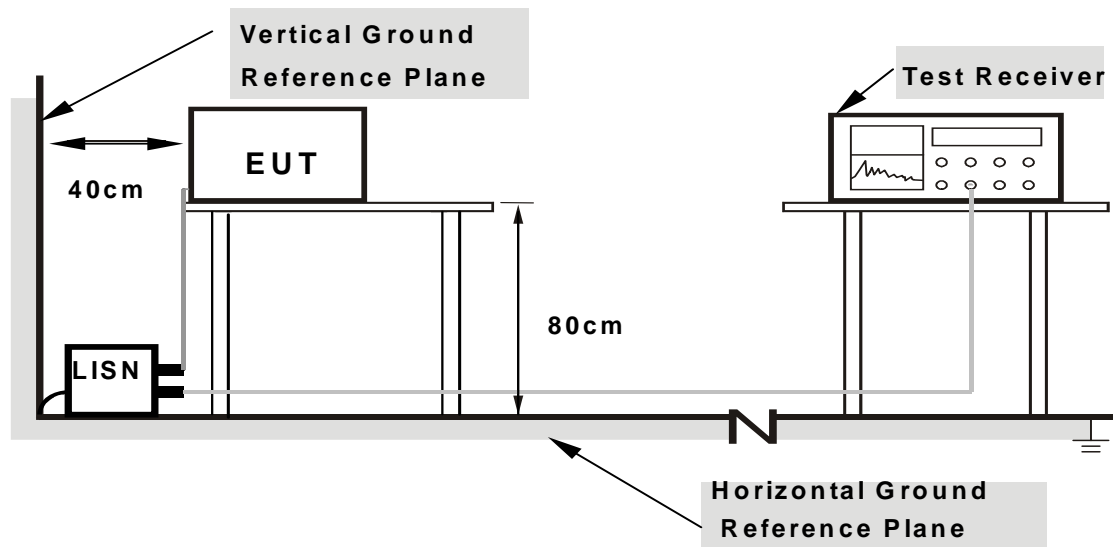
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

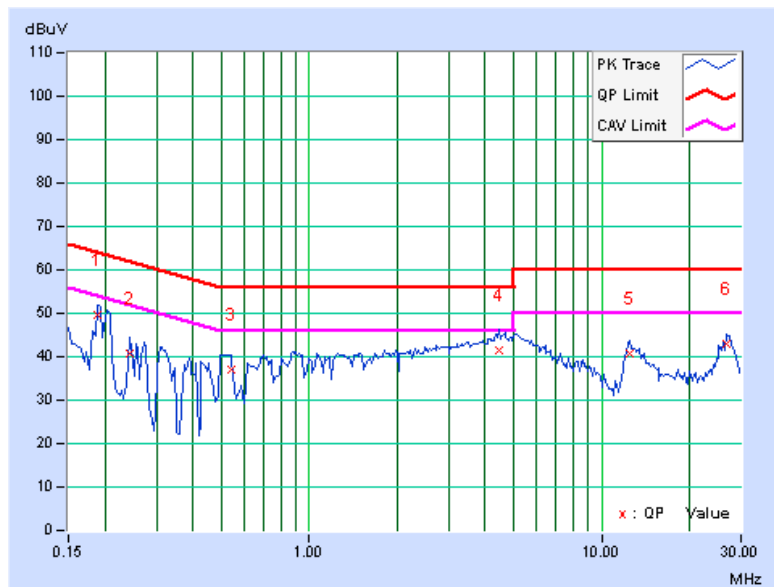
5.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA : 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.189	0.12	49.50	38.13	49.62	38.25	64.08	54.08	-14.46	-15.83
2	0.244	0.12	40.59	27.65	40.71	27.77	61.97	51.97	-21.26	-24.20
3	0.541	0.13	36.74	21.24	36.87	21.37	56.00	46.00	-19.13	-24.63
4	4.488	0.34	41.22	30.80	41.56	31.14	56.00	46.00	-14.44	-14.86
5	12.410	0.76	40.15	31.66	40.91	32.42	60.00	50.00	-19.09	-17.58
6	26.741	1.43	41.63	41.34	43.06	42.77	60.00	50.00	-16.94	-7.23

- 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.



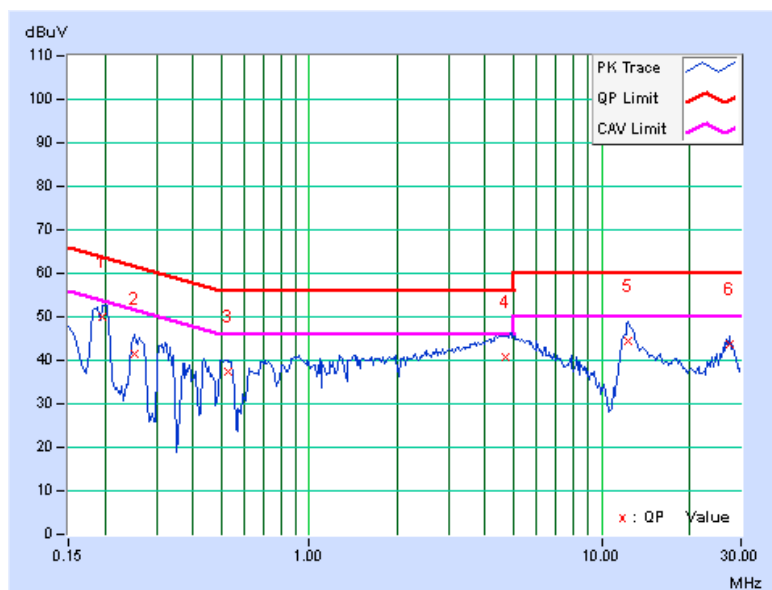


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PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.13	49.94	36.73	50.07	36.86	63.74	53.74	-13.67	-16.88
2	0.252	0.13	41.29	29.34	41.42	29.47	61.71	51.71	-20.28	-22.23
3	0.525	0.15	37.20	22.44	37.35	22.59	56.00	46.00	-18.65	-23.41
4	4.680	0.35	40.23	28.05	40.58	28.40	56.00	46.00	-15.42	-17.60
5	12.352	0.68	43.67	35.74	44.35	36.42	60.00	50.00	-15.65	-13.58
6	27.489	1.16	42.63	42.45	43.79	43.61	60.00	50.00	-16.21	-6.39

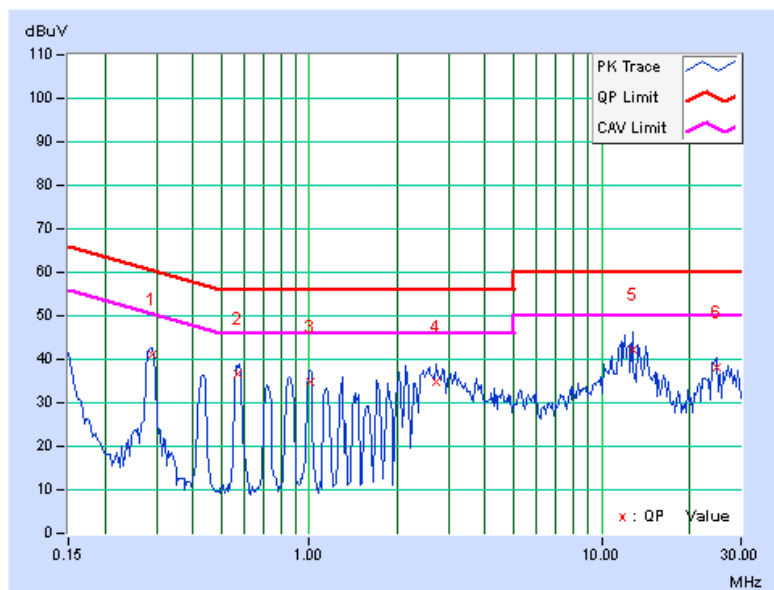
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.291	0.12	40.98	37.93	41.10	38.05	60.51	50.51	-19.41	-12.46
2	0.571	0.13	36.43	33.28	36.56	33.41	56.00	46.00	-19.44	-12.59
3	1.010	0.16	34.53	29.14	34.69	29.30	56.00	46.00	-21.31	-16.70
4	2.730	0.23	34.44	27.73	34.67	27.96	56.00	46.00	-21.33	-18.04
5	12.746	0.78	41.45	40.37	42.23	41.15	60.00	50.00	-17.77	-8.85
6	24.757	1.36	36.92	36.86	38.28	38.22	60.00	50.00	-21.72	-11.78

- 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.



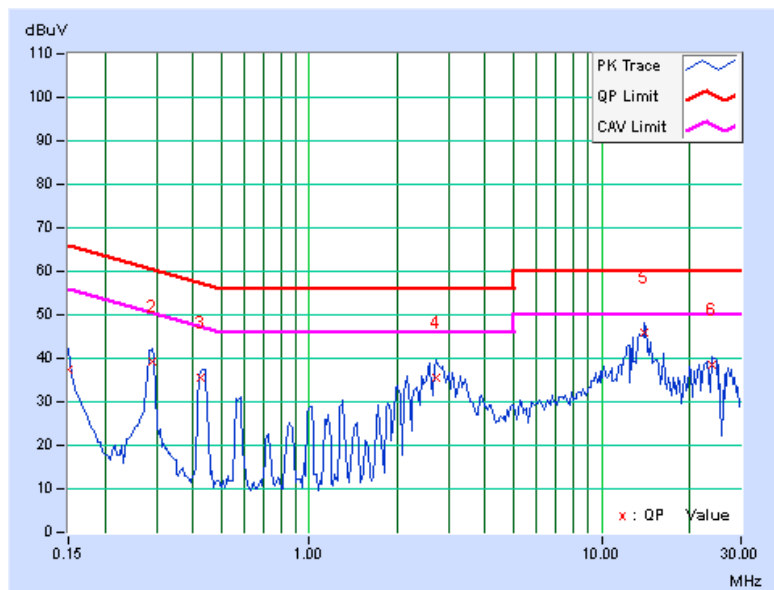


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PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.12	37.45	22.09	37.57	22.21	66.00	56.00	-28.43	-33.79
2	0.291	0.13	39.03	33.82	39.16	33.95	60.51	50.51	-21.34	-16.55
3	0.427	0.14	35.50	32.51	35.64	32.65	57.31	47.31	-21.66	-14.65
4	2.727	0.24	35.19	28.49	35.43	28.73	56.00	46.00	-20.57	-17.27
5	14.029	0.72	45.30	44.10	46.02	44.82	60.00	50.00	-13.98	-5.18
6	23.780	1.07	37.47	36.95	38.54	38.02	60.00	50.00	-21.46	-11.98

- 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.

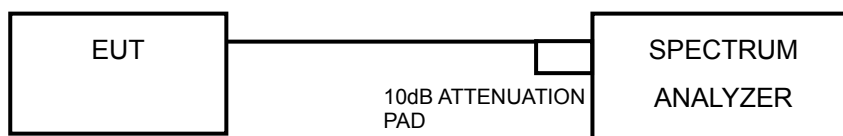
5.3.3 TEST PROCEDURE

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.



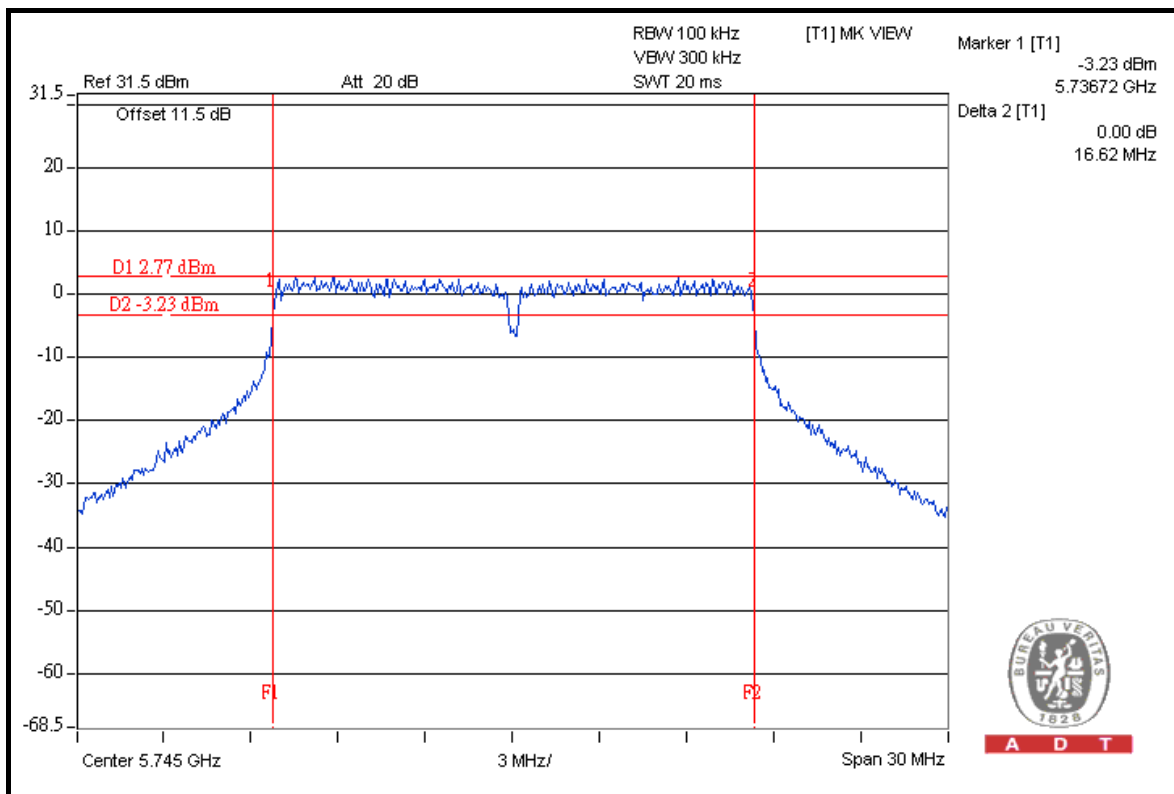
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5.3.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.59	16.62	0.5	PASS
157	5785	16.60	16.60	0.5	PASS
165	5825	16.61	16.61	0.5	PASS

CHAIN 1: CH 149



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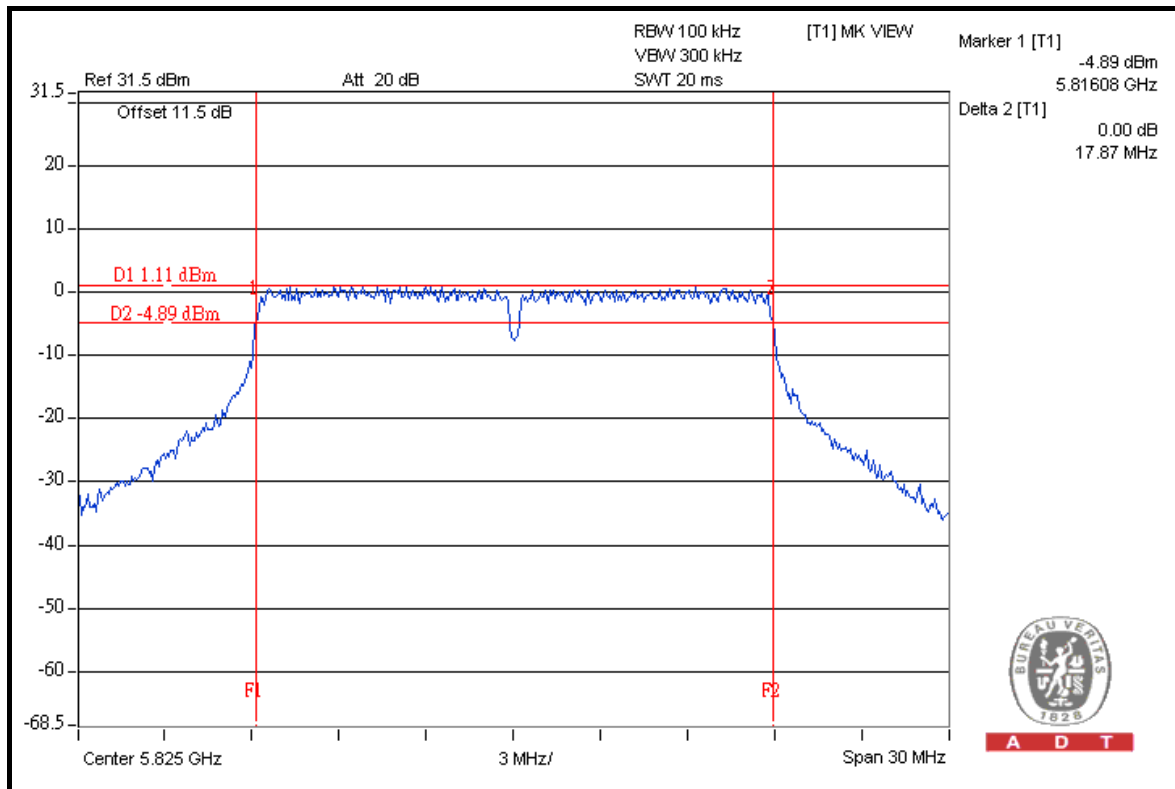


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802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.85	17.86	0.5	PASS
157	5785	17.85	17.85	0.5	PASS
165	5825	17.87	17.87	0.5	PASS

FOR CHAIN 1: CH 165



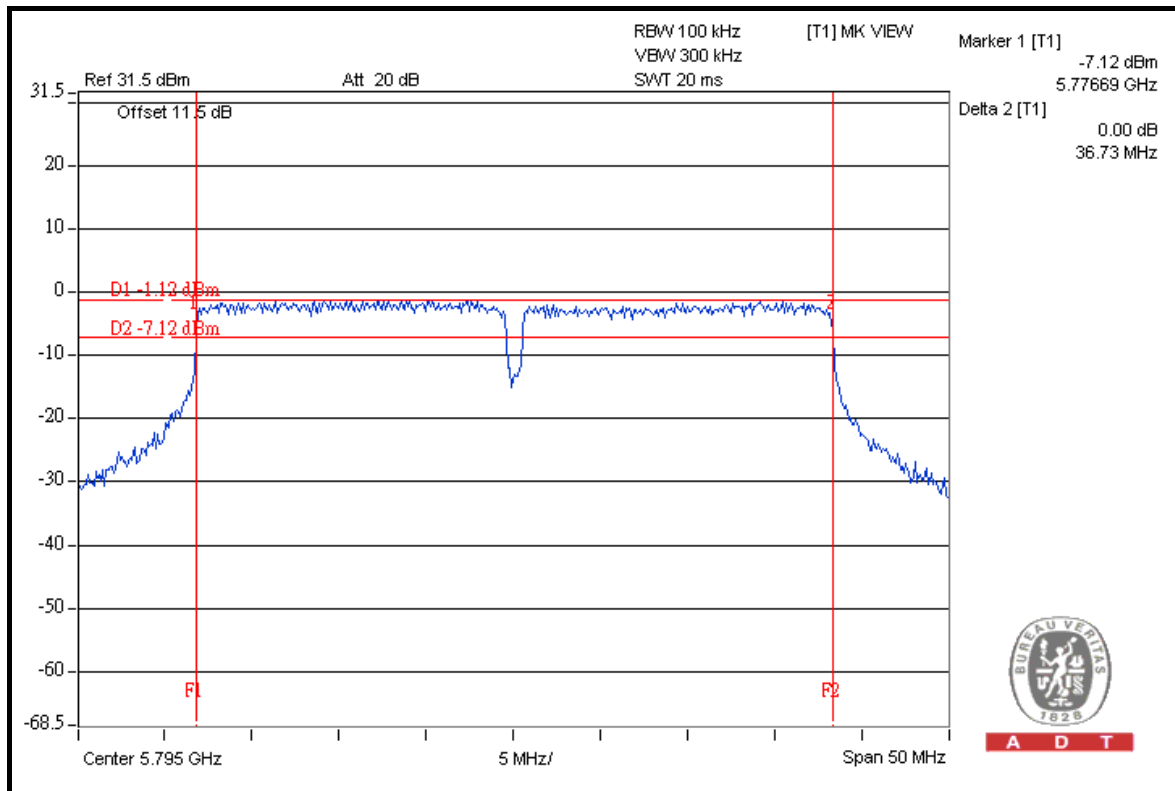


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802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.64	36.69	0.5	PASS
159	5795	36.73	36.68	0.5	PASS

FOR CHAIN 0: CH 159





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5.4 MAXIMUM OUTPUT POWER

5.4.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

5.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
High Speed Peak Power Meter	ML2495A	0824011	Aug. 04, 2011	Aug. 03, 2012
Power Sensor	MA2411B	0738171	Aug. 04, 2011	Aug. 03, 2012

NOTE:

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

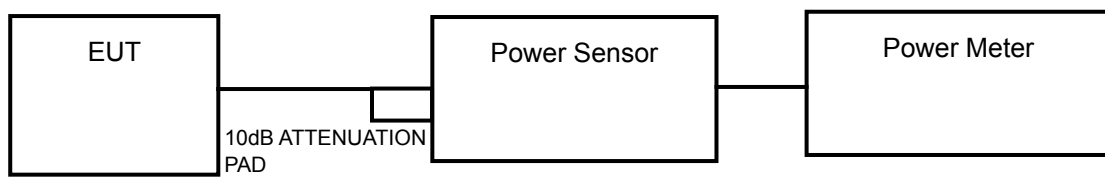
5.4.3 TEST PROCEDURES

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

5.4.4 DEVIATION FROM TEST STANDARD

No deviation.

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

Same as Item 5.3.6.

5.4.7 TEST RESULTS

802.11a

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	24.5	24.7	577.0	27.6	29	PASS
157	5785	24.5	24.8	583.8	27.7	29	PASS
165	5825	24.5	24.7	577.0	27.6	29	PASS

NOTE: Directional gain = 4dBi + 10log(2) = 7.0dBi > 6dBi , so the conducted power limit shall be reduced to 30-(7.0-6) = 29dBm.

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	24.5	24.2	544.9	27.4	30.0	PASS
157	5785	24.1	24.2	520.1	27.2	30.0	PASS
165	5825	24.3	24.2	532.2	27.3	30.0	PASS

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	24.2	24.1	520.1	27.2	30.0	PASS
159	5795	24.1	24.3	526.2	27.2	30.0	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 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

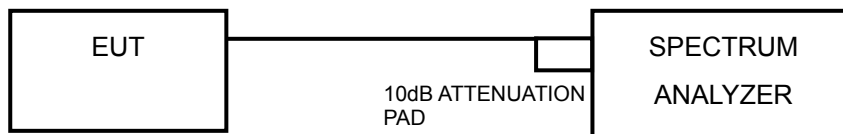
The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

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

5.5.4 DEVIATION FROM TEST STANDARD

No deviation.

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITION

Same as Item 5.3.6.



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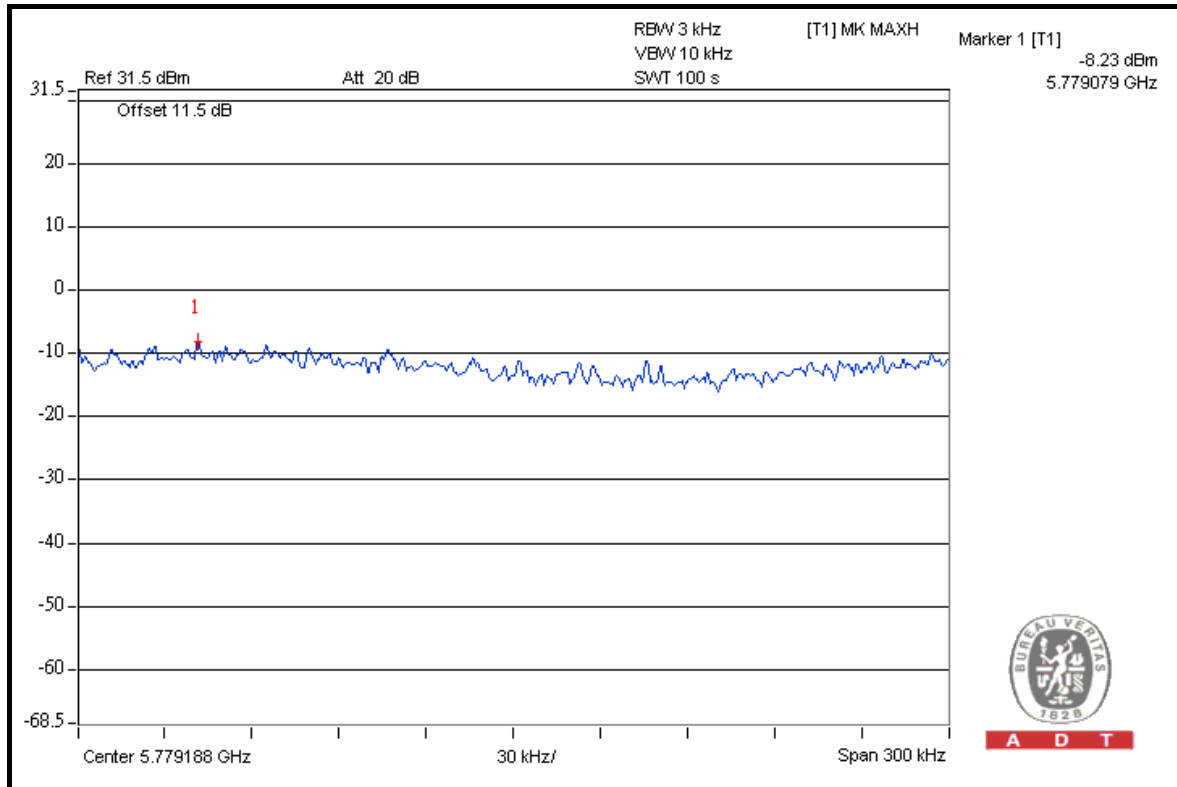
5.5.7 TEST RESULTS

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=2) dB			
0	149	5745	-9.77	3.01	-6.76	7	PASS
	157	5785	-9.69	3.01	-6.68	7	PASS
	165	5825	-9.83	3.01	-6.82	7	PASS
1	149	5745	-8.32	3.01	-5.31	7	PASS
	157	5785	-8.23	3.01	-5.22	7	PASS
	165	5825	-8.52	3.01	-5.51	7	PASS

NOTE: Directional gain = 4dBi + 10log(2) = 7.0dBi > 6dBi , so the power density limit shall be reduced to 8-(7.0-6) = 7.0dBm.

FOR CHAIN 1: CH 157



A D T

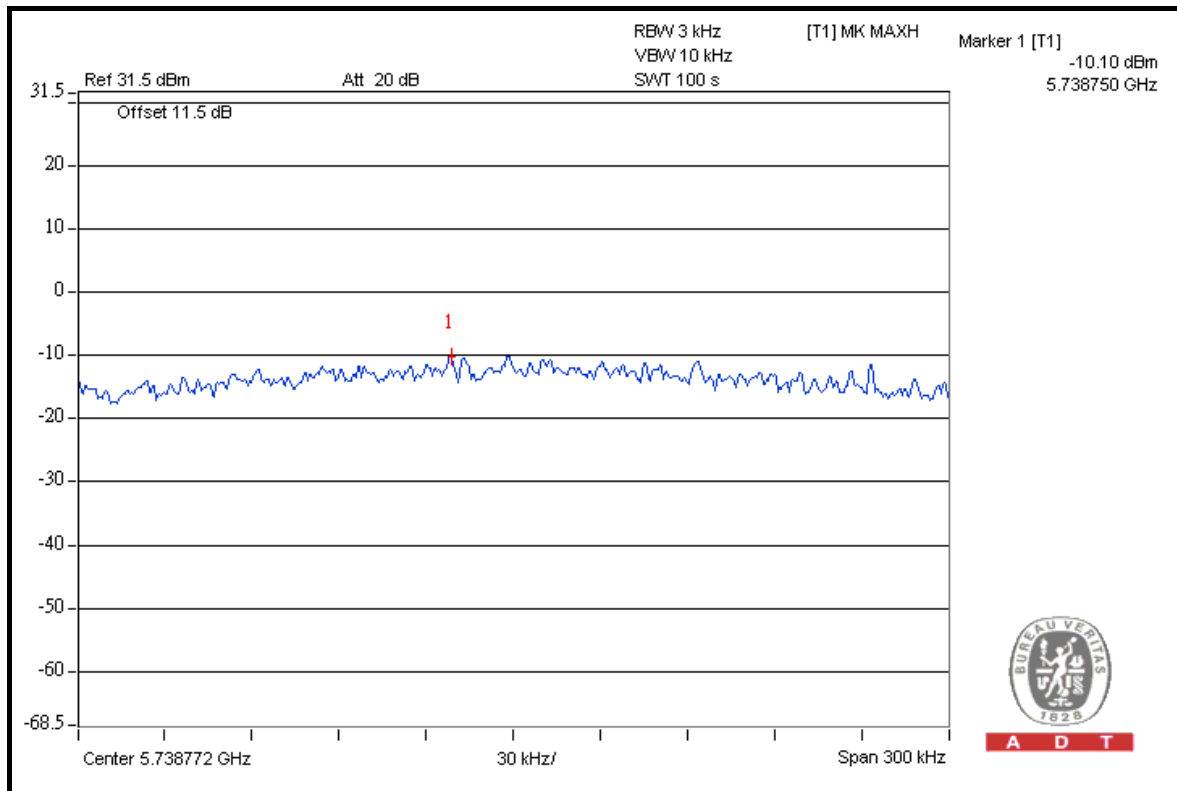


A D T

802.11n (20MHz)

CHAIN	CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
			MEASURED	10 log (N=2) dB			
0	149	5745	-10.10	3.01	-7.09	8	PASS
	157	5785	-10.44	3.01	-7.43	8	PASS
	165	5825	-10.30	3.01	-7.29	8	PASS
1	149	5745	-10.98	3.01	-7.97	8	PASS
	157	5785	-11.13	3.01	-8.12	8	PASS
	165	5825	-11.08	3.01	-8.07	8	PASS

FOR CHAIN 0: CH 149



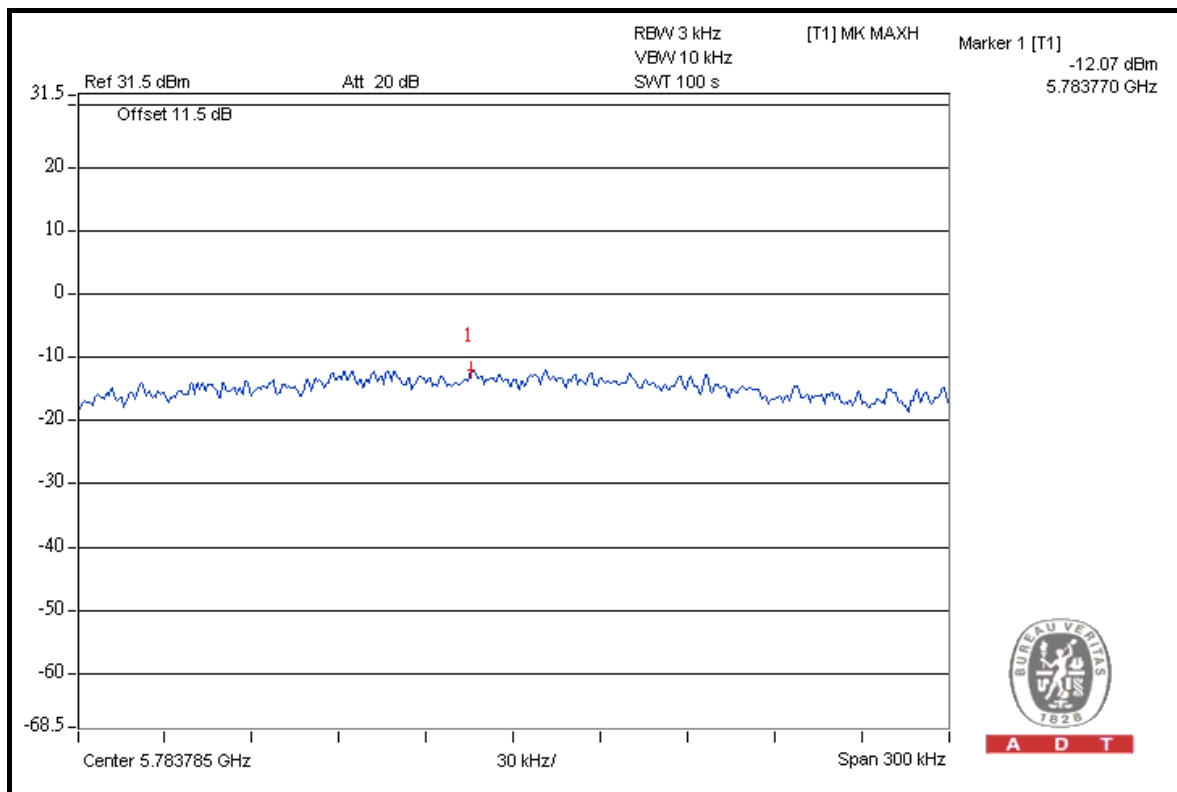


A D T

802.11n (40MHz)

CHAIN	CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
			MEASURED	10 log (N=2) dB			
0	151	5755	-13.78	3.01	-10.77	8	PASS
	159	5795	-13.72	3.01	-10.71	8	PASS
1	151	5755	-12.10	3.01	-9.09	8	PASS
	159	5795	-12.07	3.01	-9.06	8	PASS

FOR CHAIN 1: CH 159



A D T

5.6 BAND EDGES MEASUREMENT

5.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below -30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

5.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
FOR CONDUCTED MEASUREMENT				
SPECTRUM ANALYZER R&S	FSP40	100039	Feb. 23, 2011	Feb. 22, 2012
FOR RADIATED MEASUREMENT				
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 19, 2011	Apr. 18, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jan. 06, 2011	Jan. 05, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 12, 2011	Apr. 11, 2012
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-563	Sep. 06, 2011	Sep. 05, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8449B	3008A01911	Nov. 03, 2010	Nov. 02, 2011
Preamplifier Agilent	8447D	2944A10638	Nov. 03, 2010	Nov. 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295013/4 283403/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 13, 2011	Aug. 12, 2012
Software	ADT_Radiated_V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Nov. 03, 2010	Nov. 02, 2011

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



5.6.3 TEST PROCEDURE

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

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



A D T

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

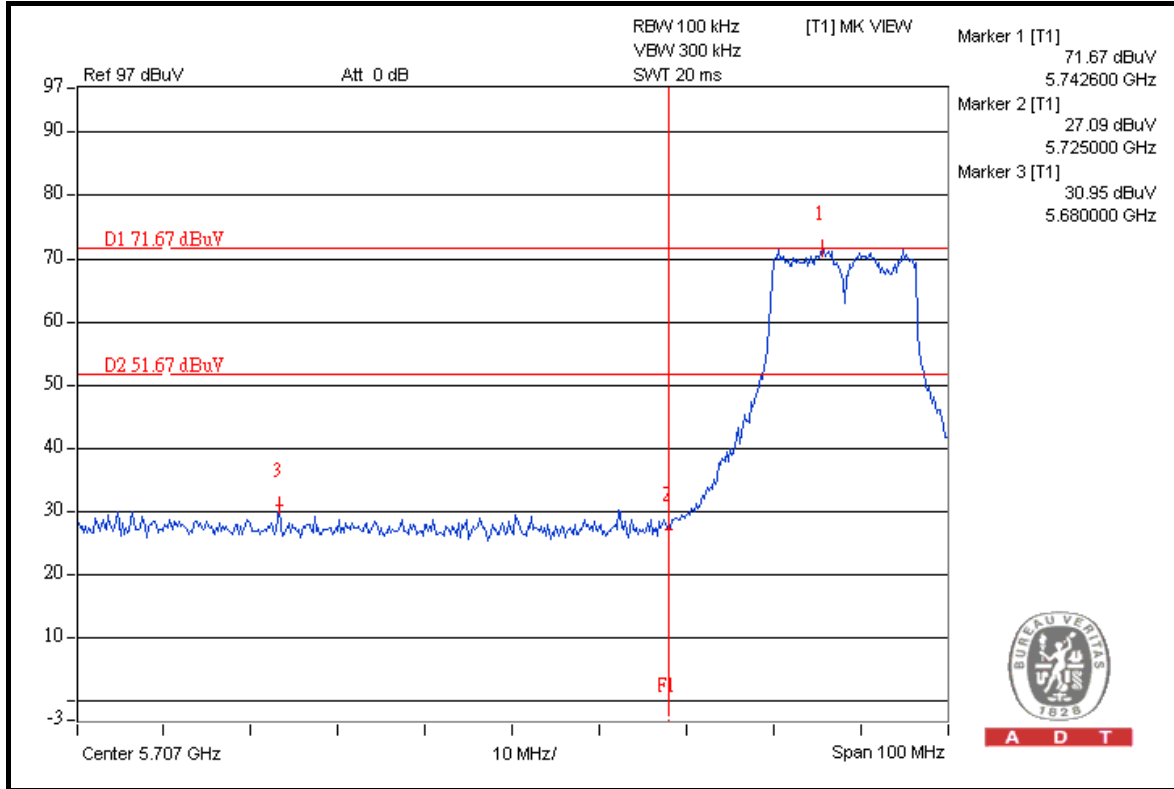
The spectrum plots are attached on the following pages. D1 line indicates the highest level, D2 line indicates the 30dB offset below D1. It shows compliance with the requirement in part 15.247(d).



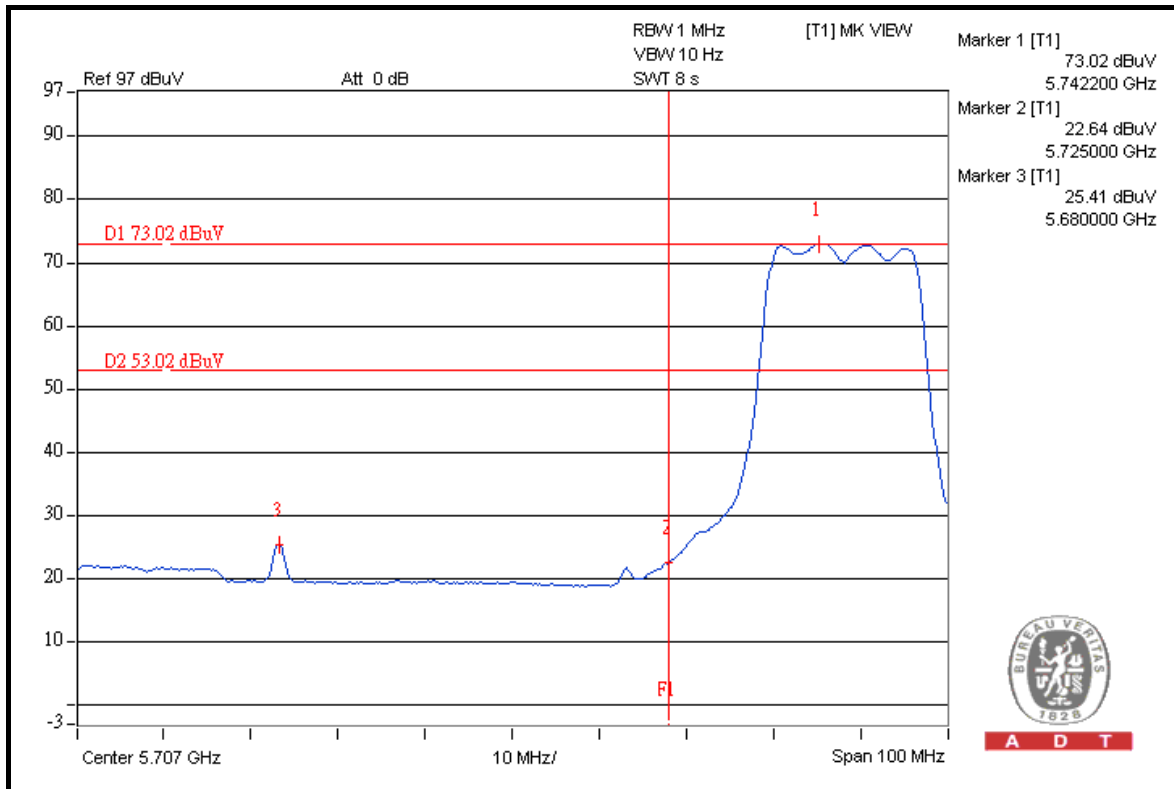
A D T

802.11a

FOR RADIATED MEASURED (BOTH CHAINS ON)



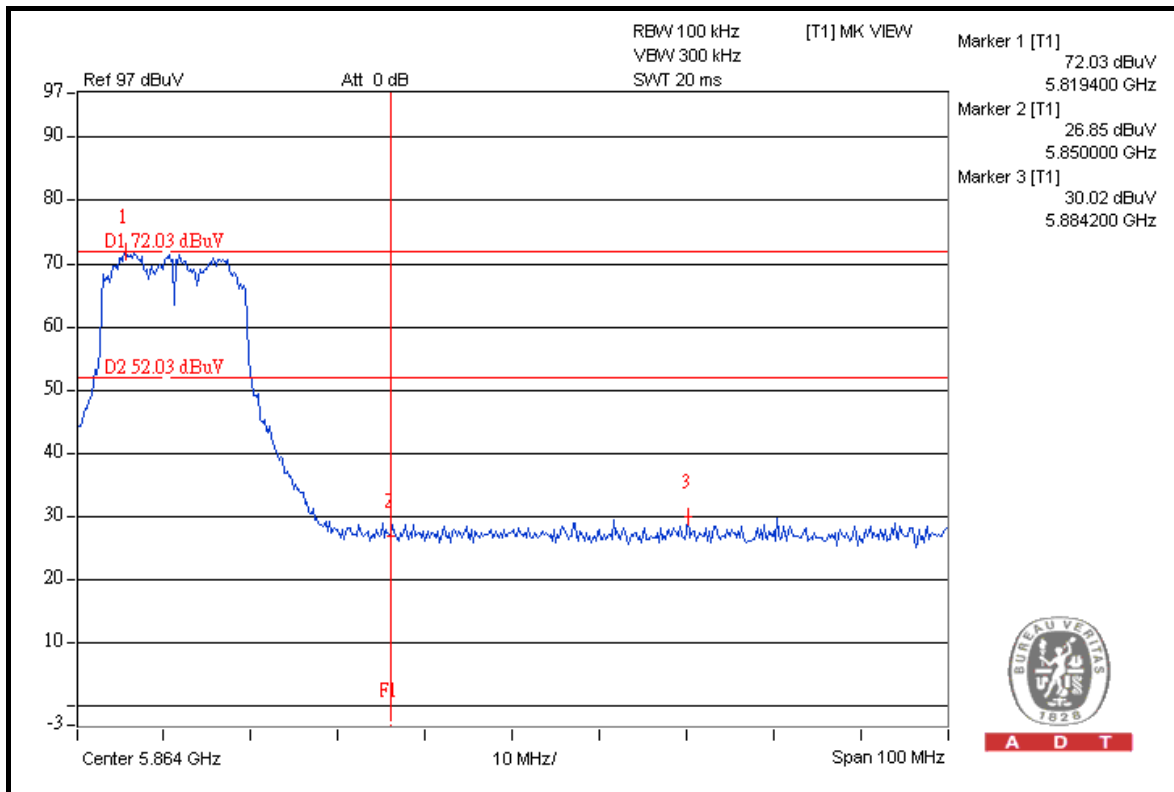
A D T



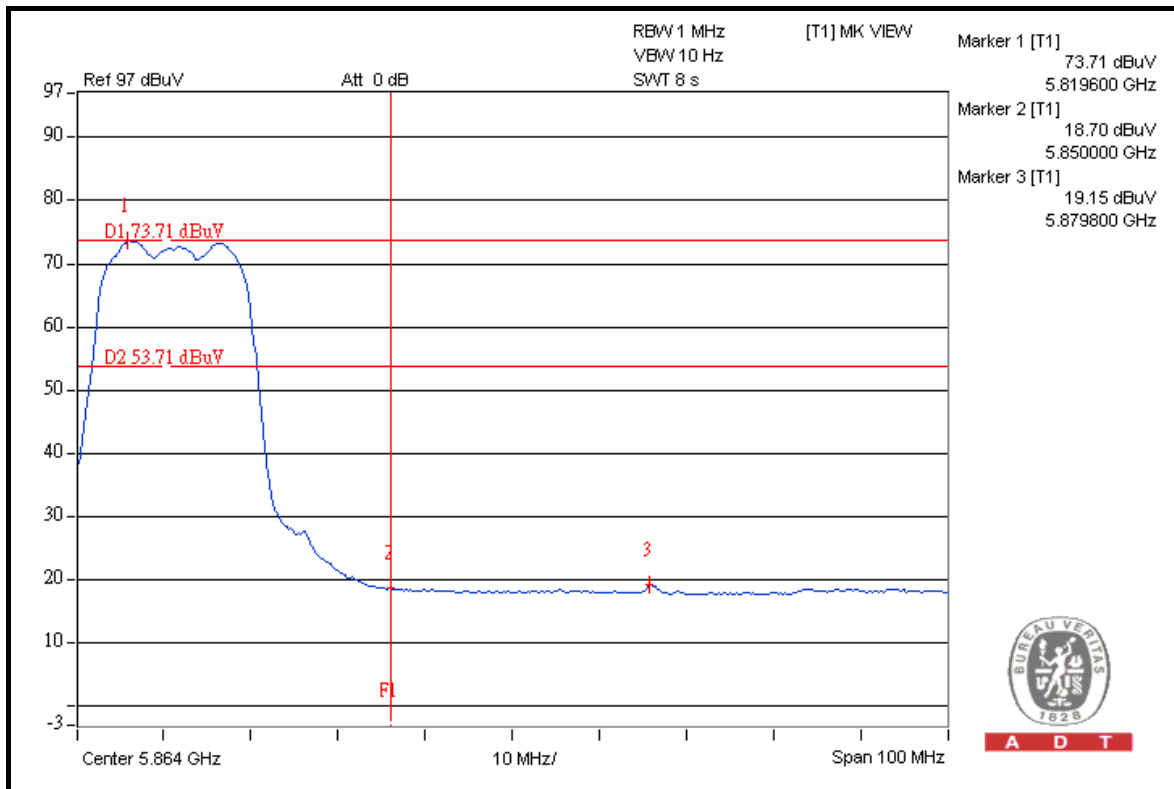
A D T



A D T



A D T



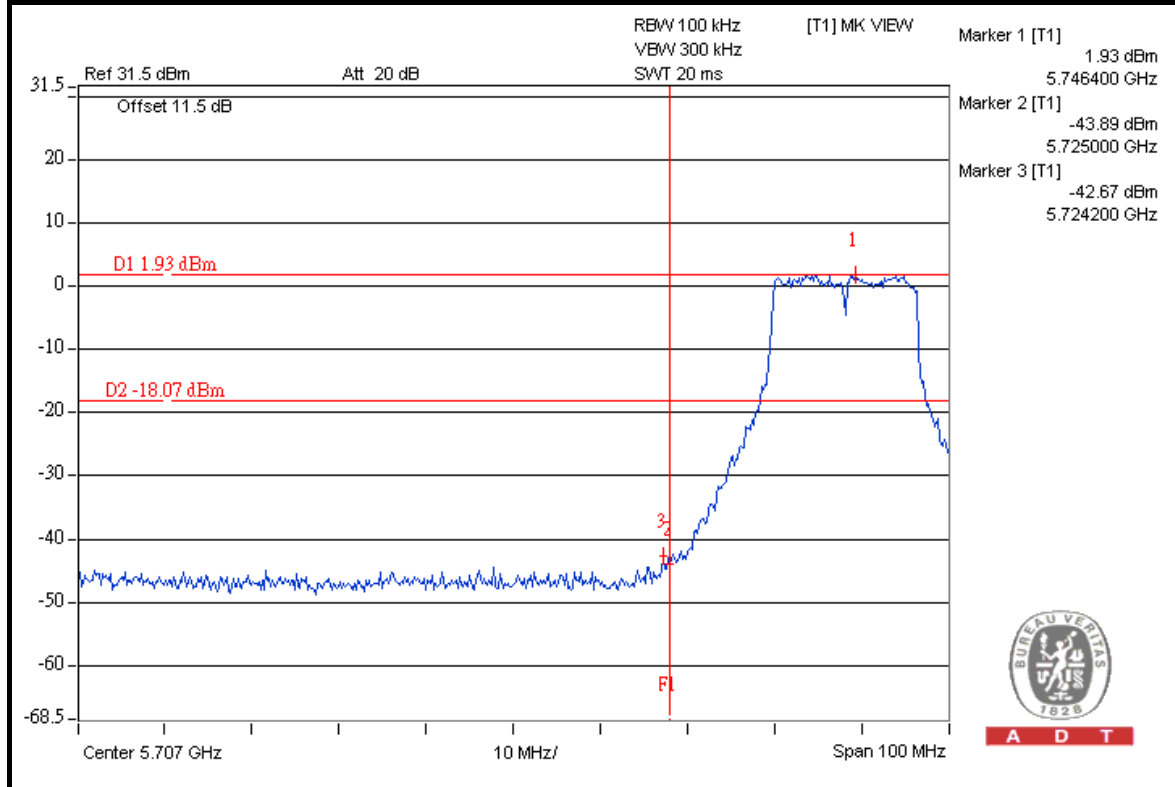
A D T



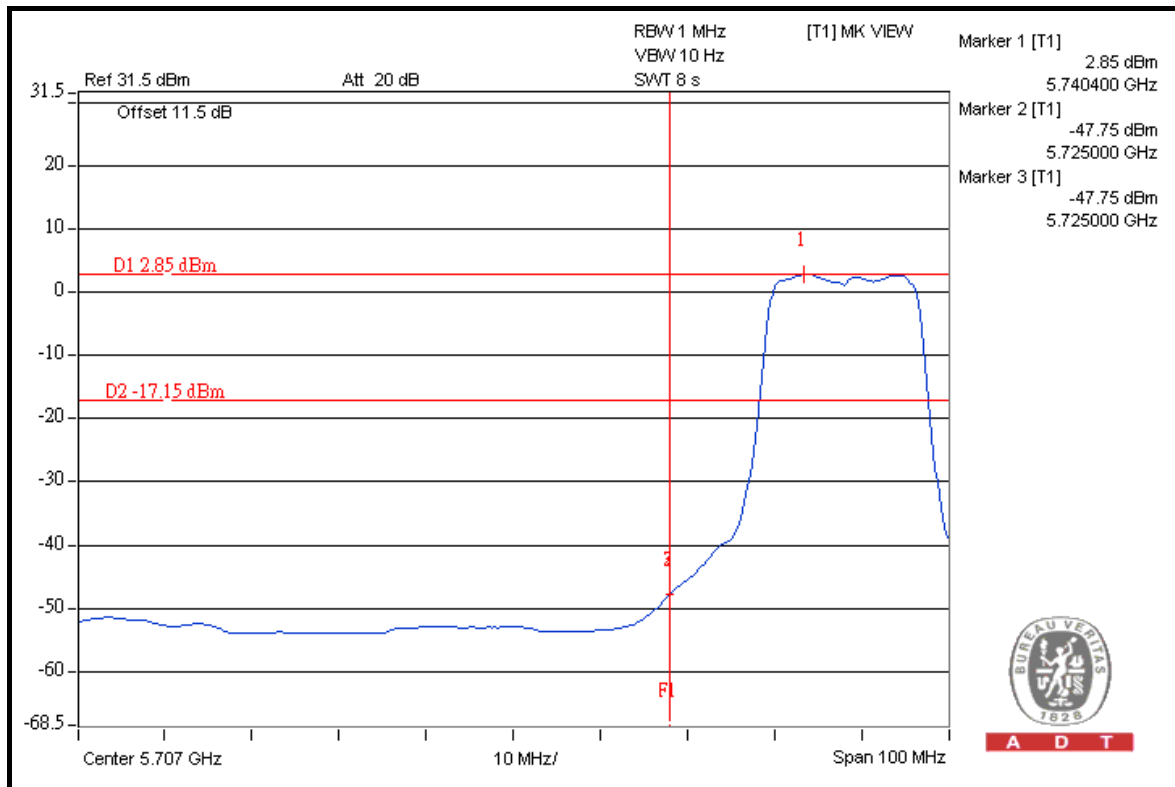
A D T

FOR CONDUCTED MEASURED

CHAIN 0



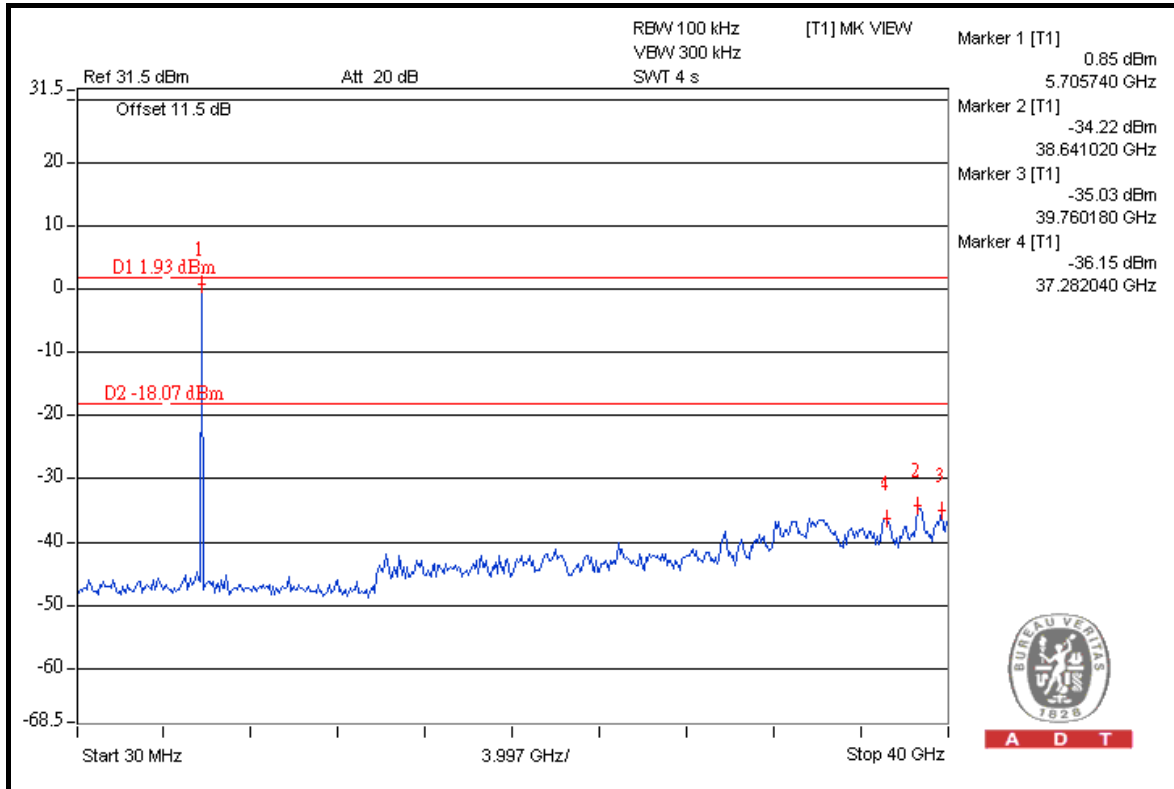
A D T



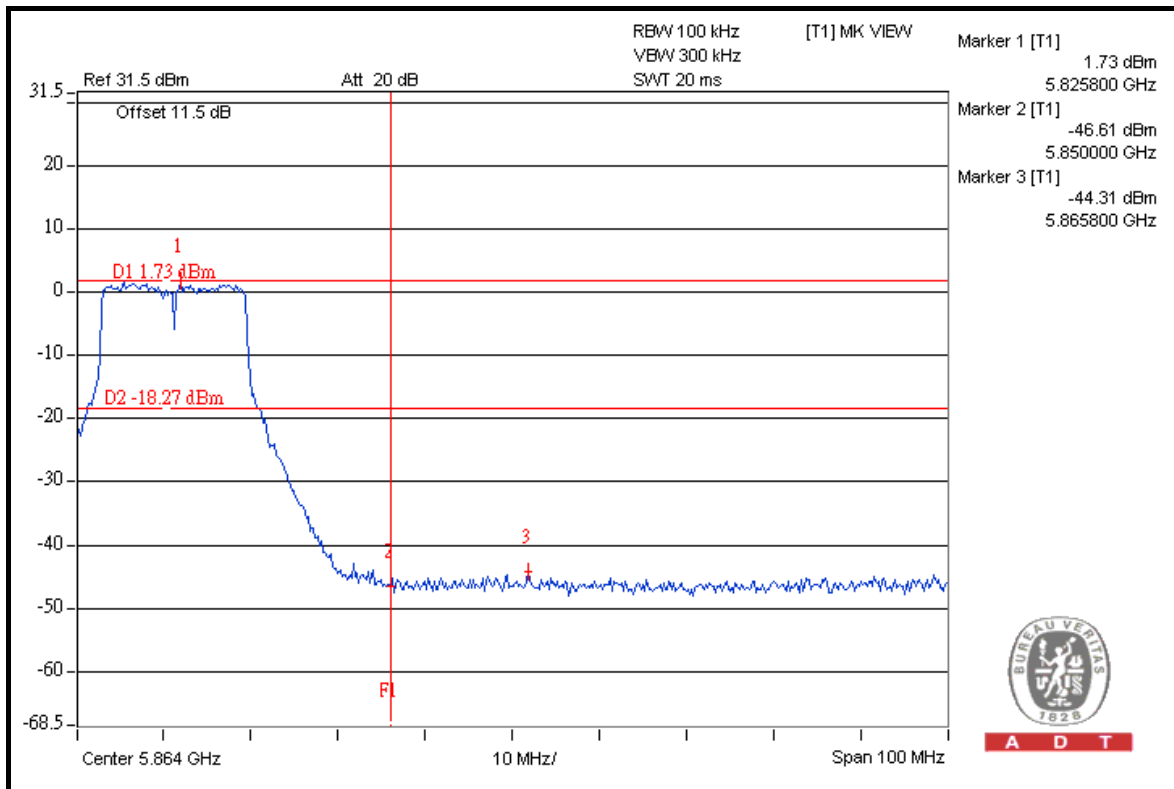
A D T



A D T



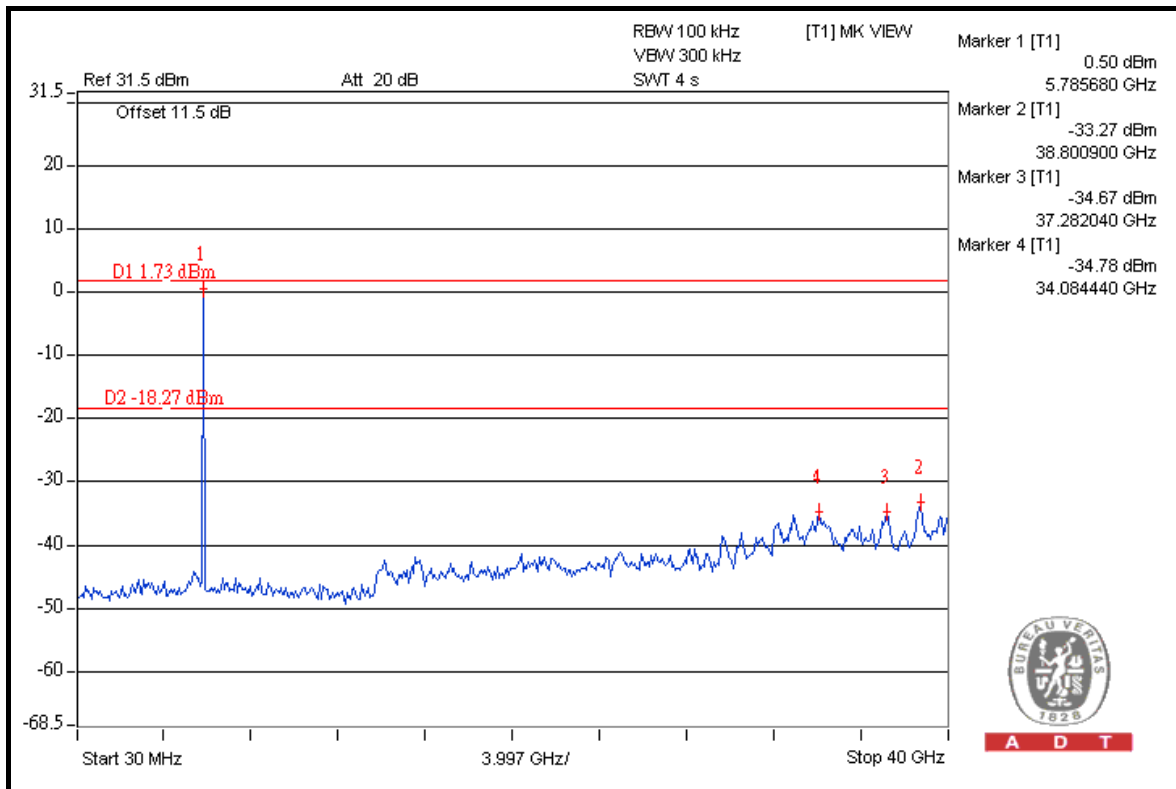
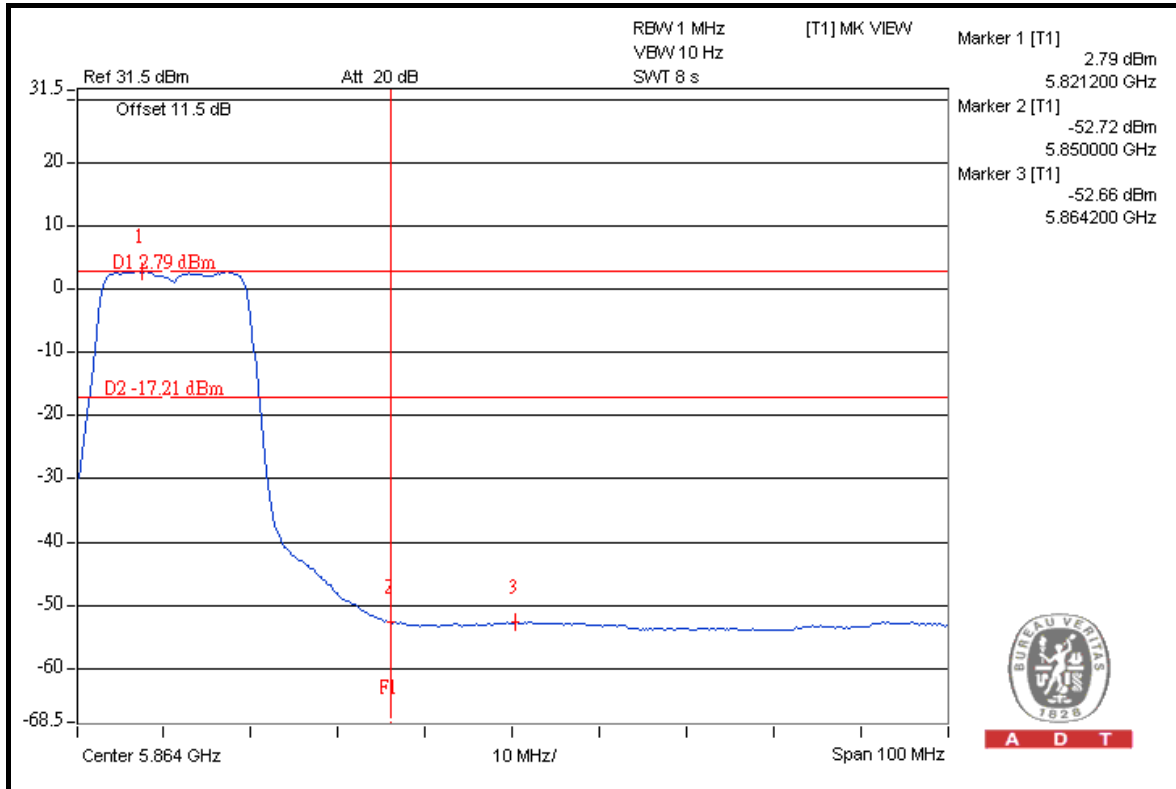
A D T



A D T



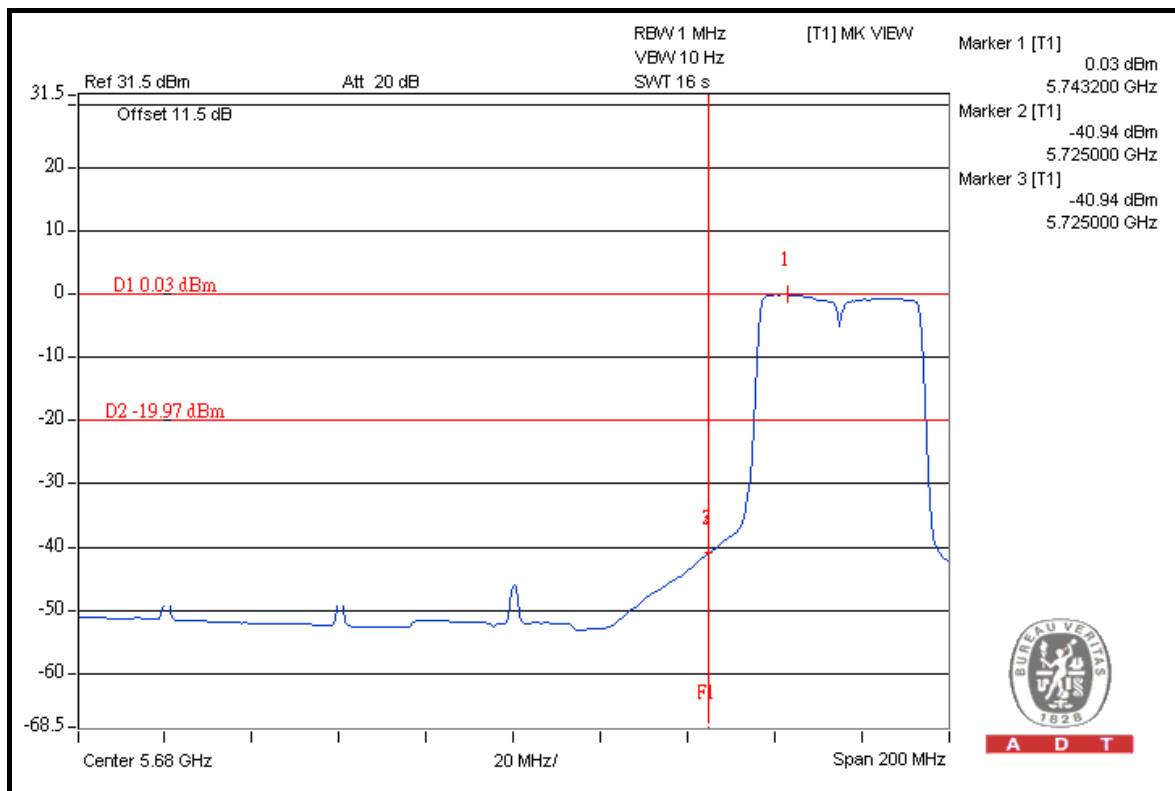
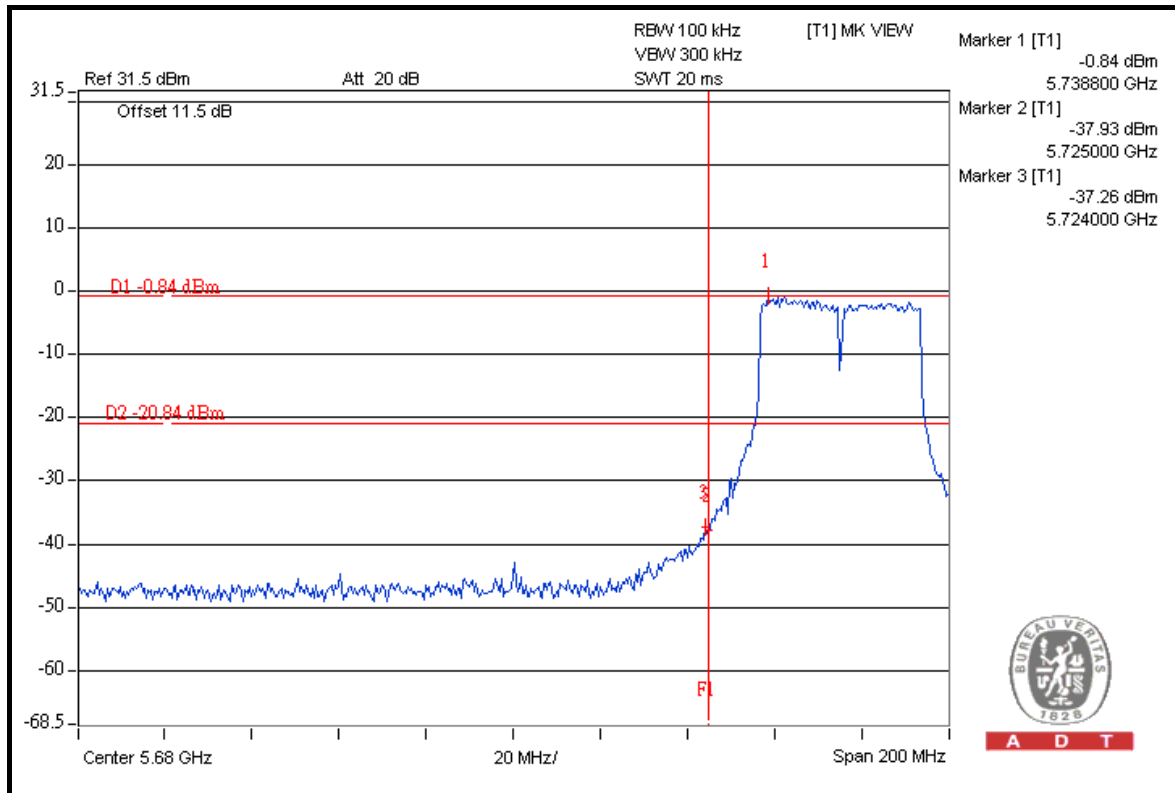
A D T





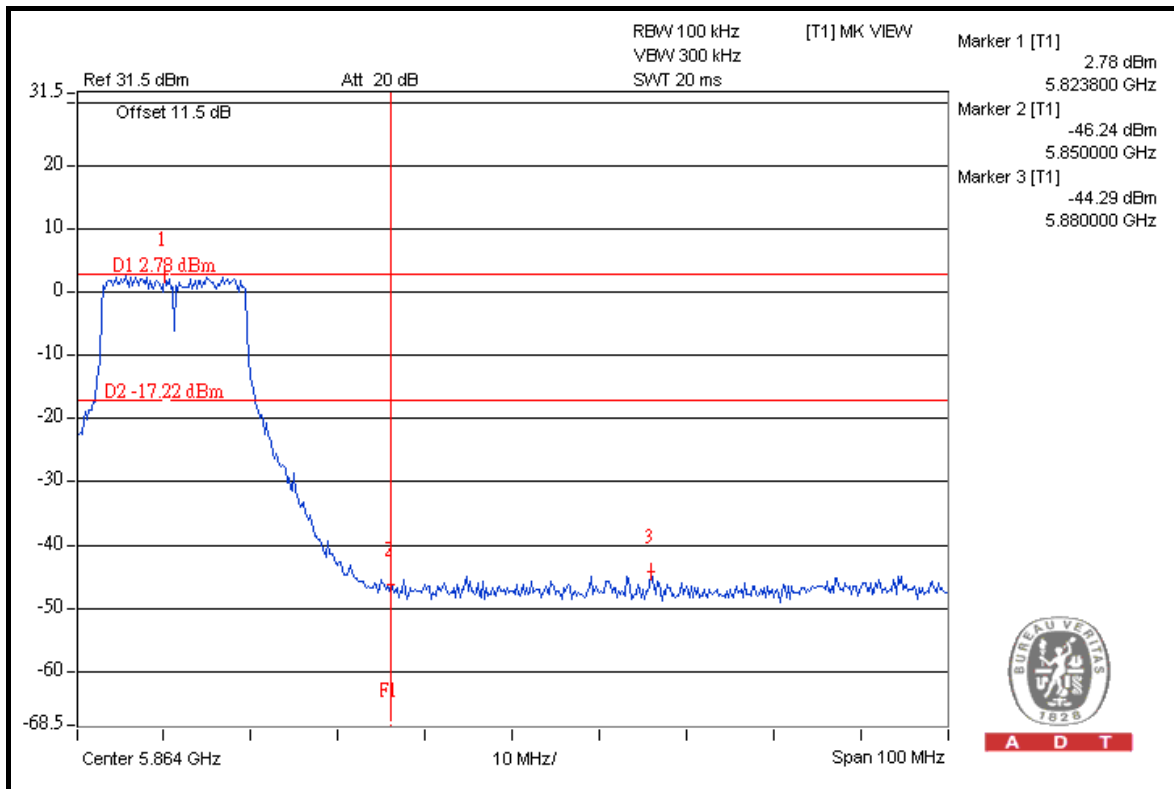
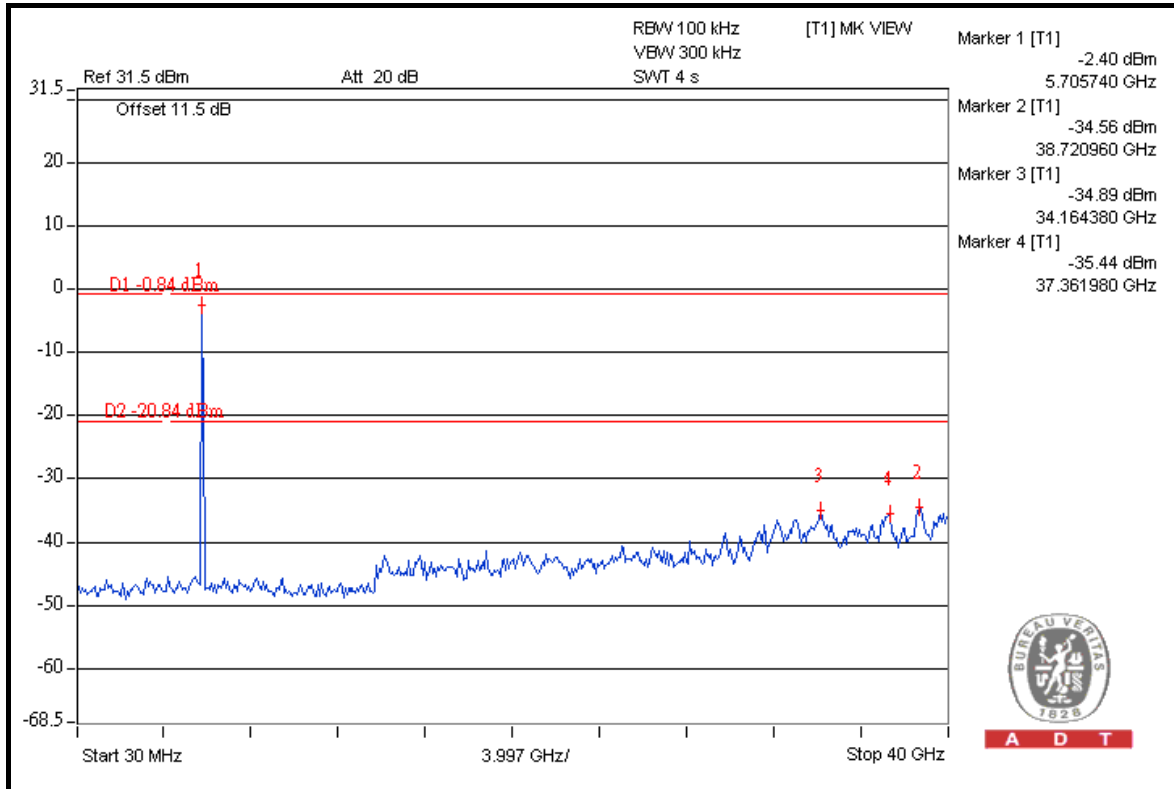
A D T

CHAIN 1



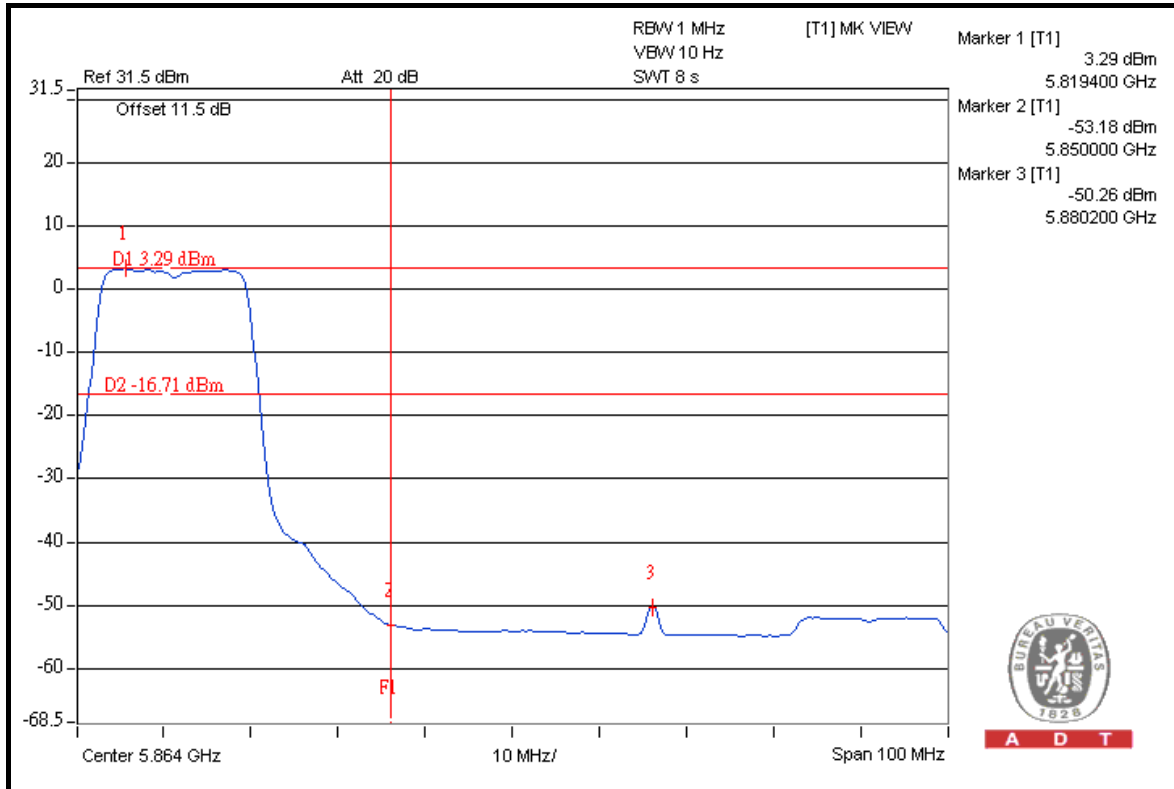


A D T

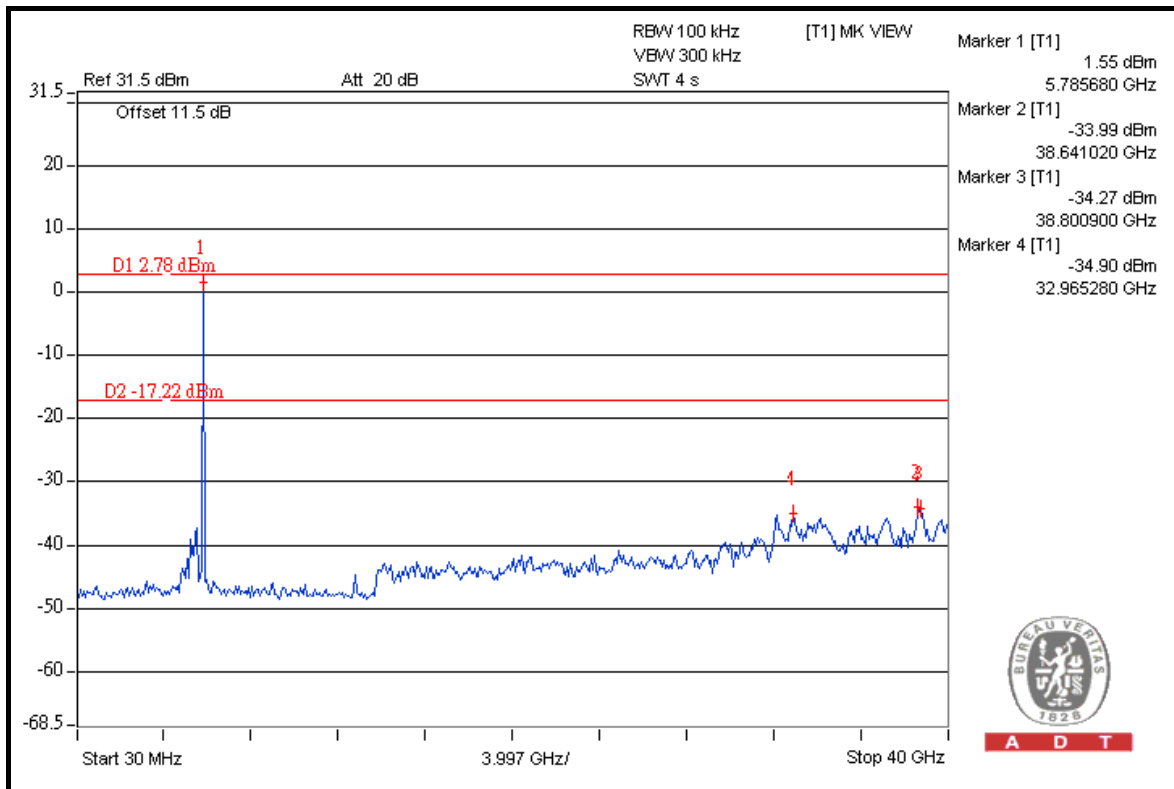




A D T



A D T



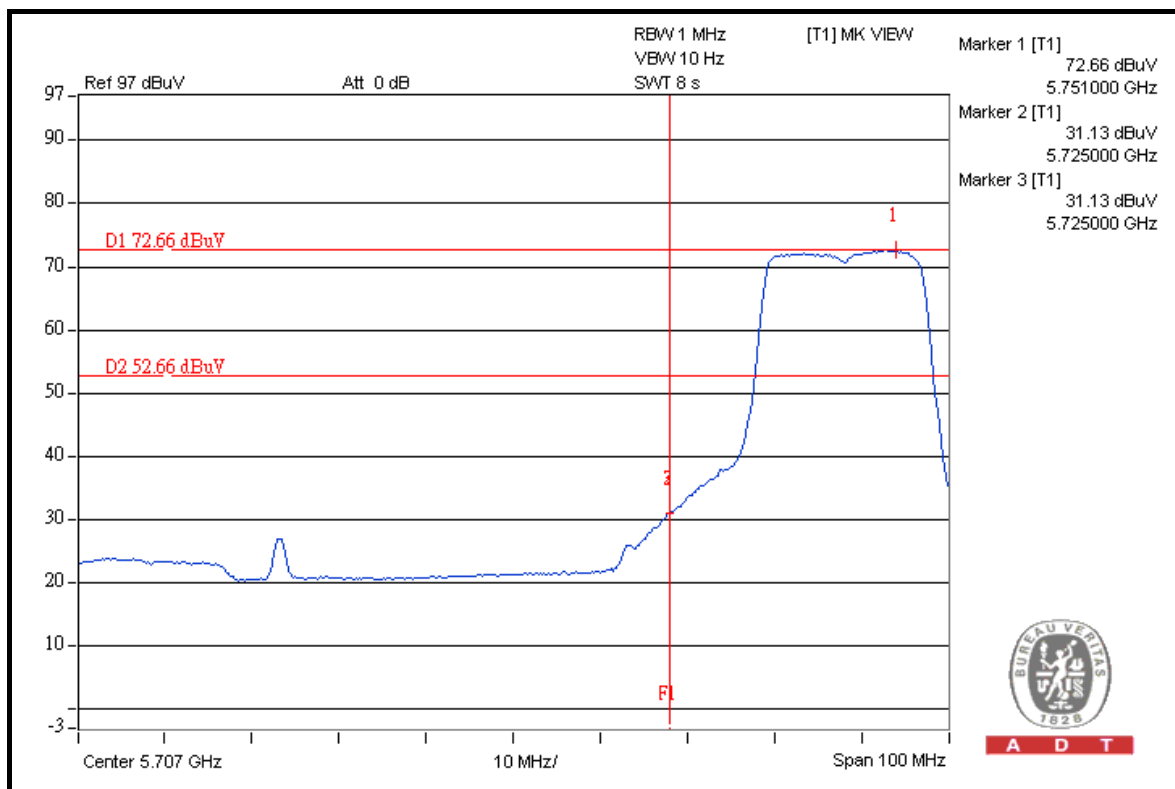
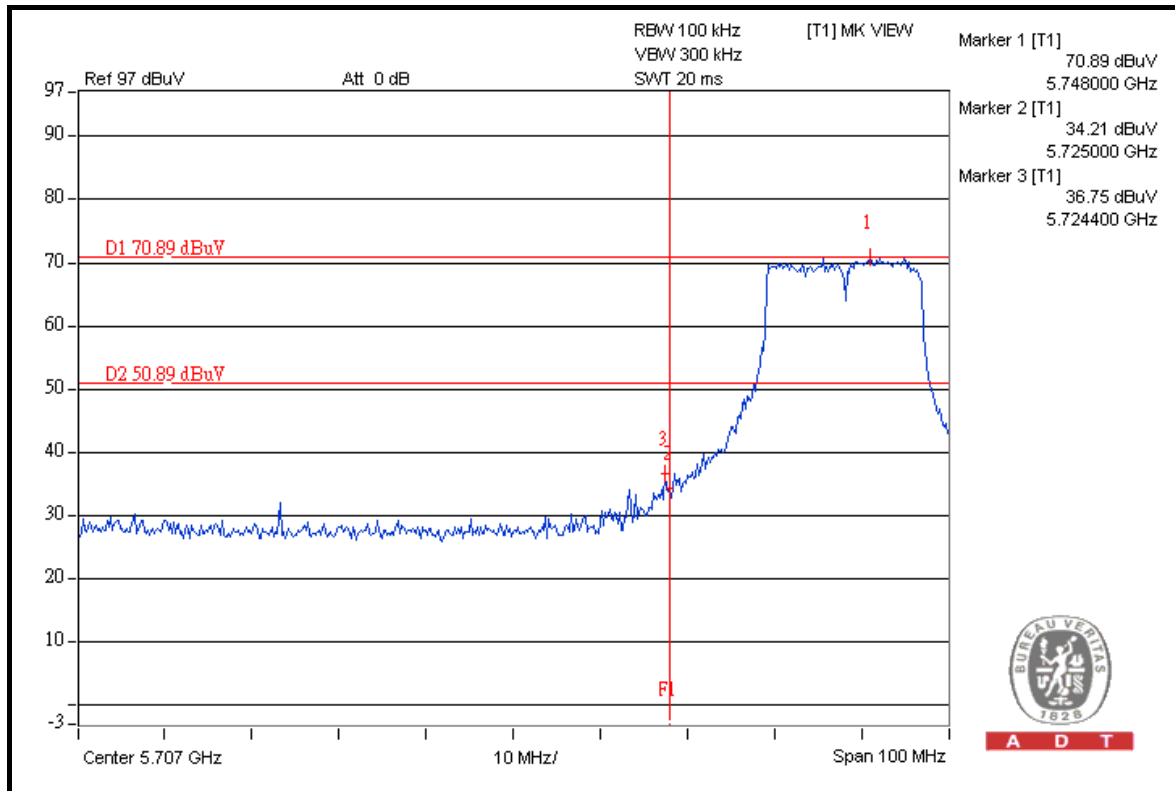
A D T



A D T

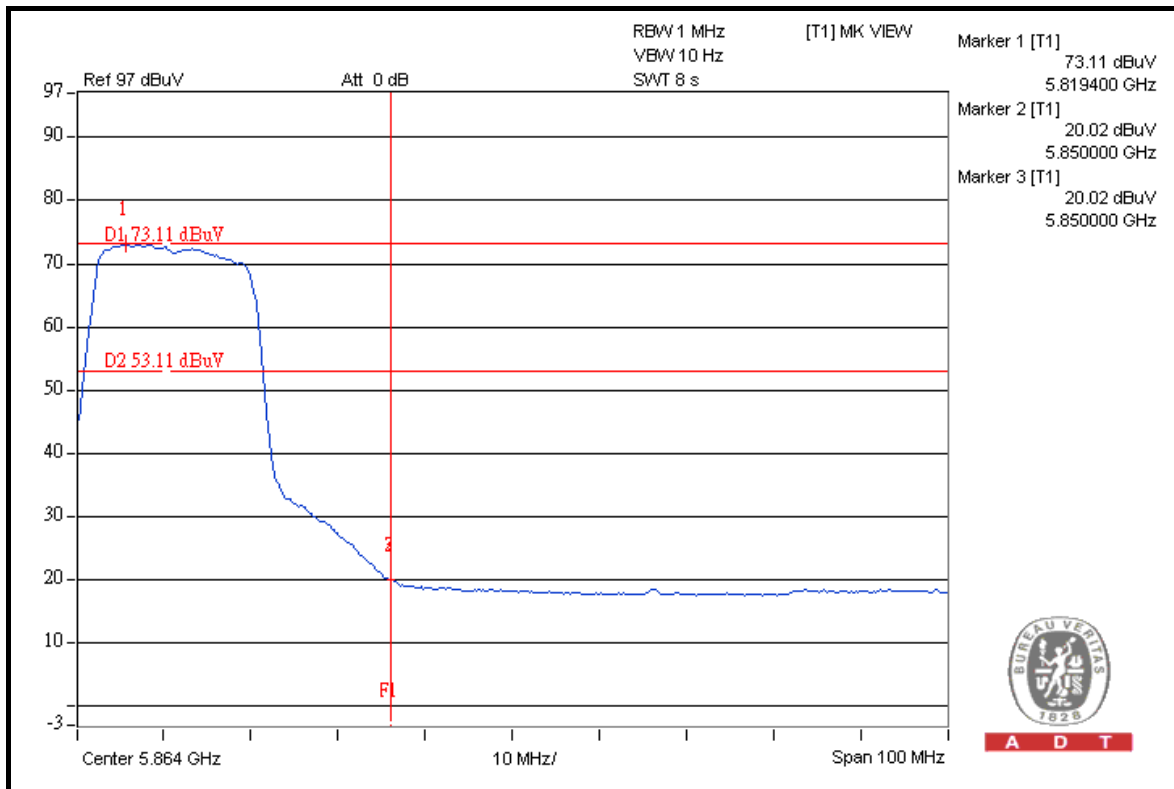
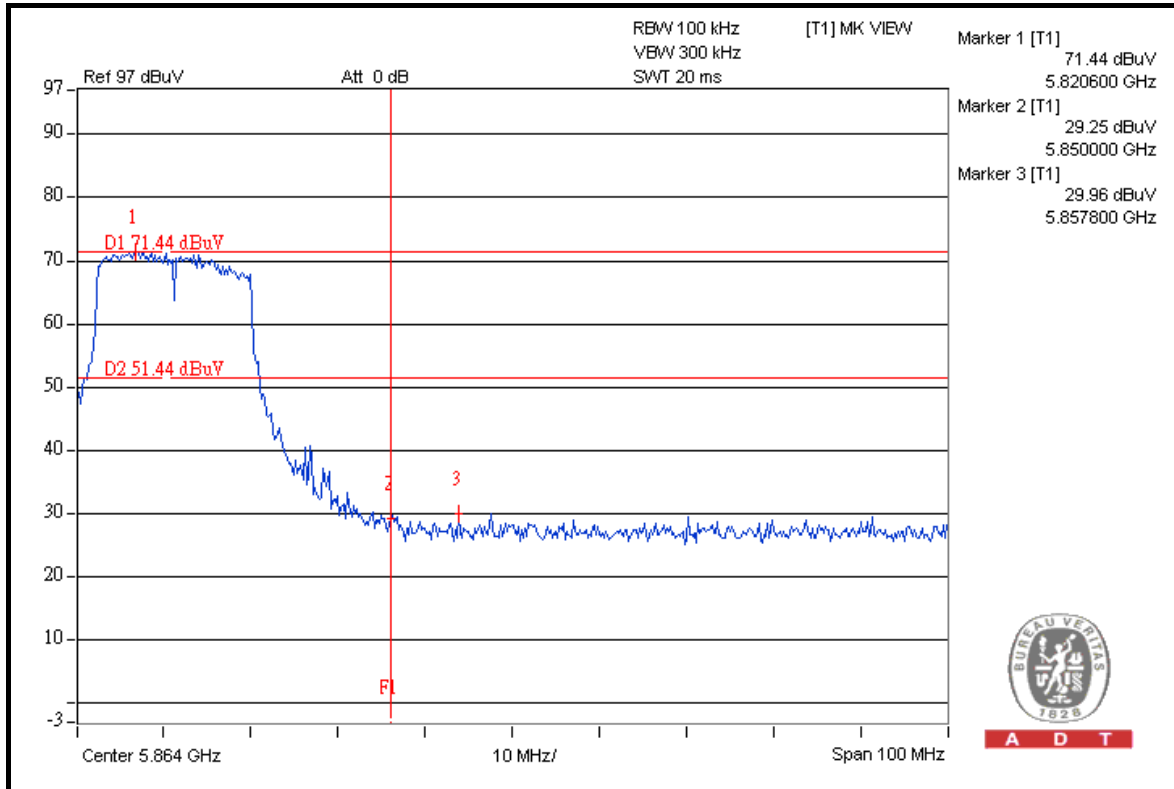
802.11n (20MHz)

FOR RADIATED MEASURED (BOTH CHAINS ON)





A D T

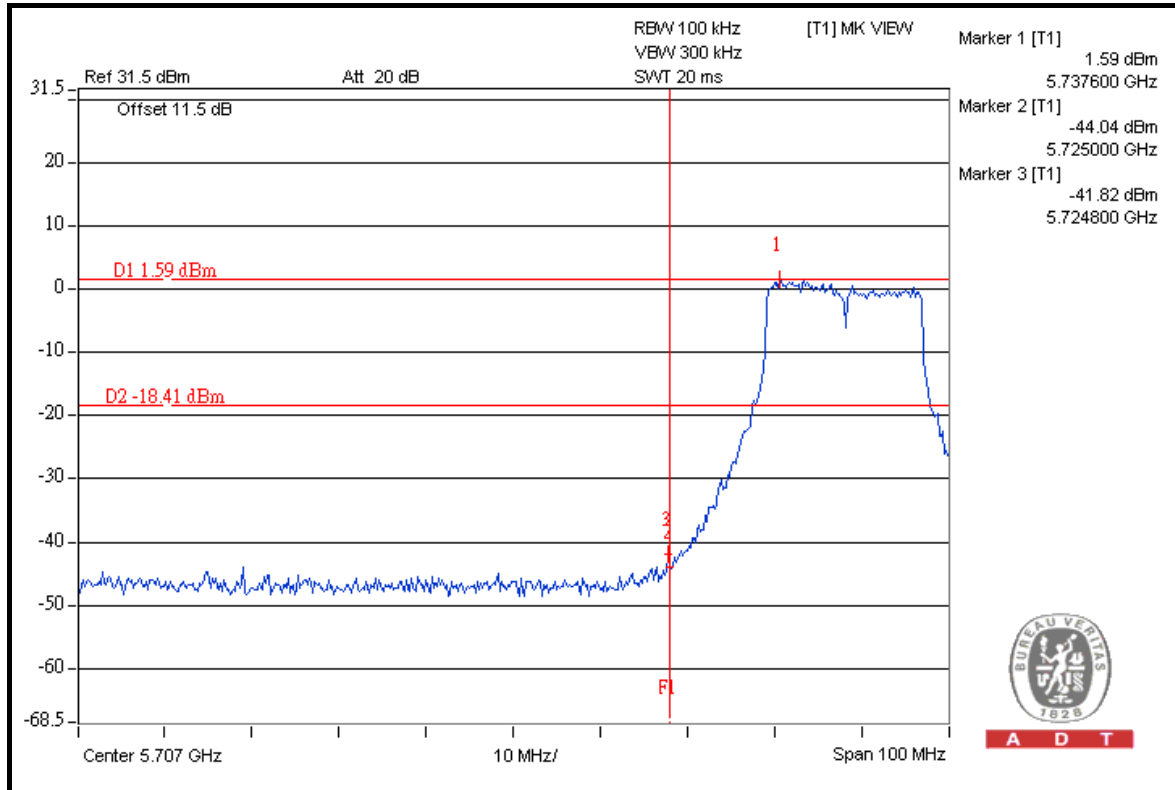




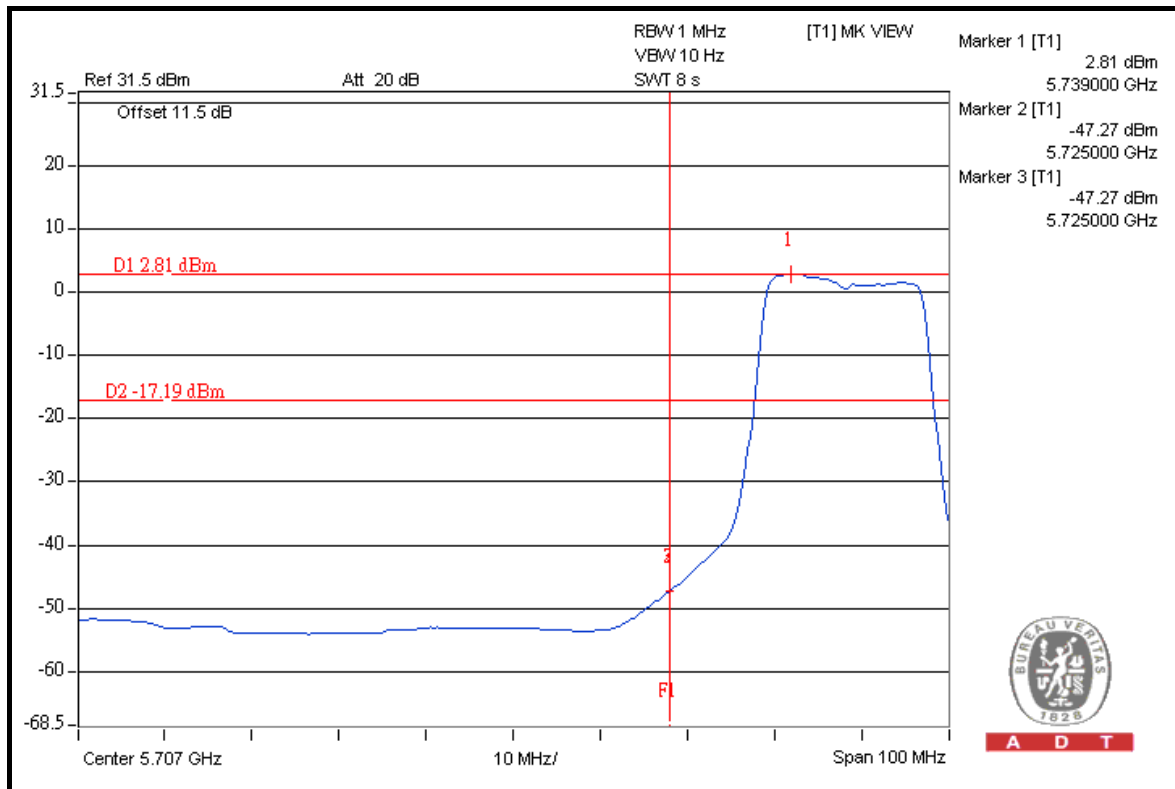
A D T

FOR CONDUCTED MEASURED

CHAIN 0



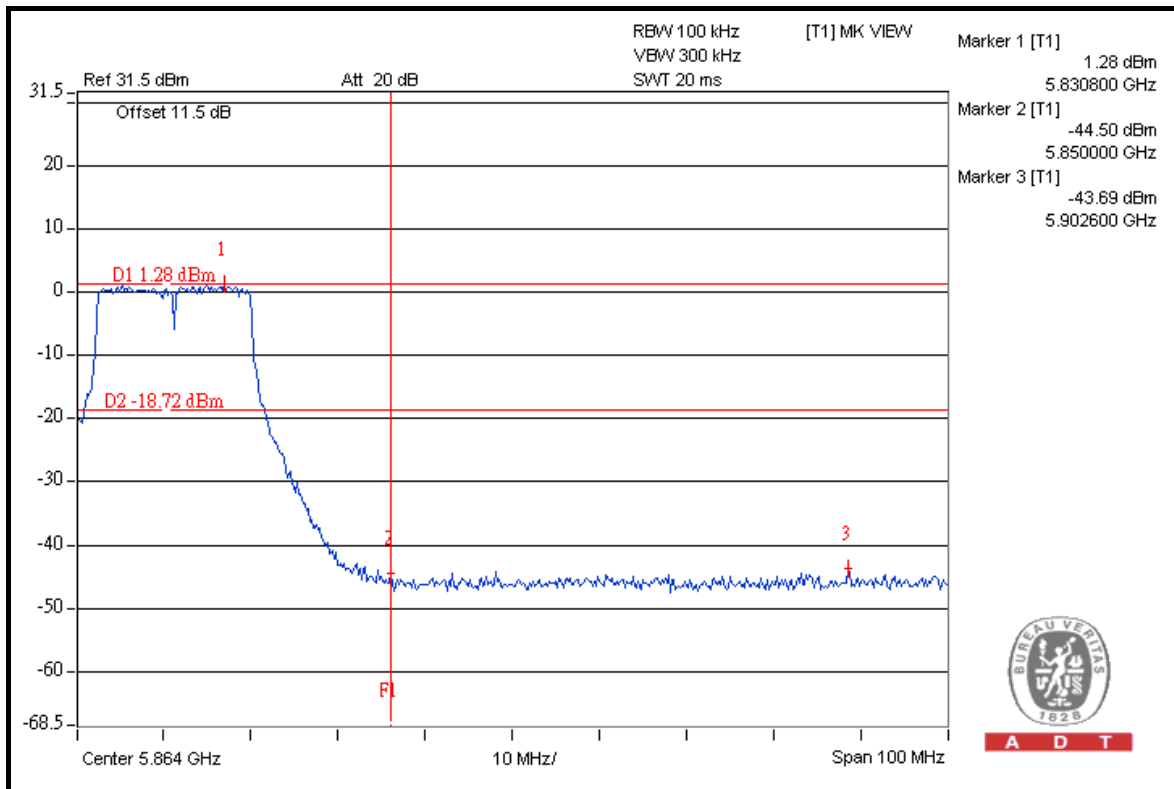
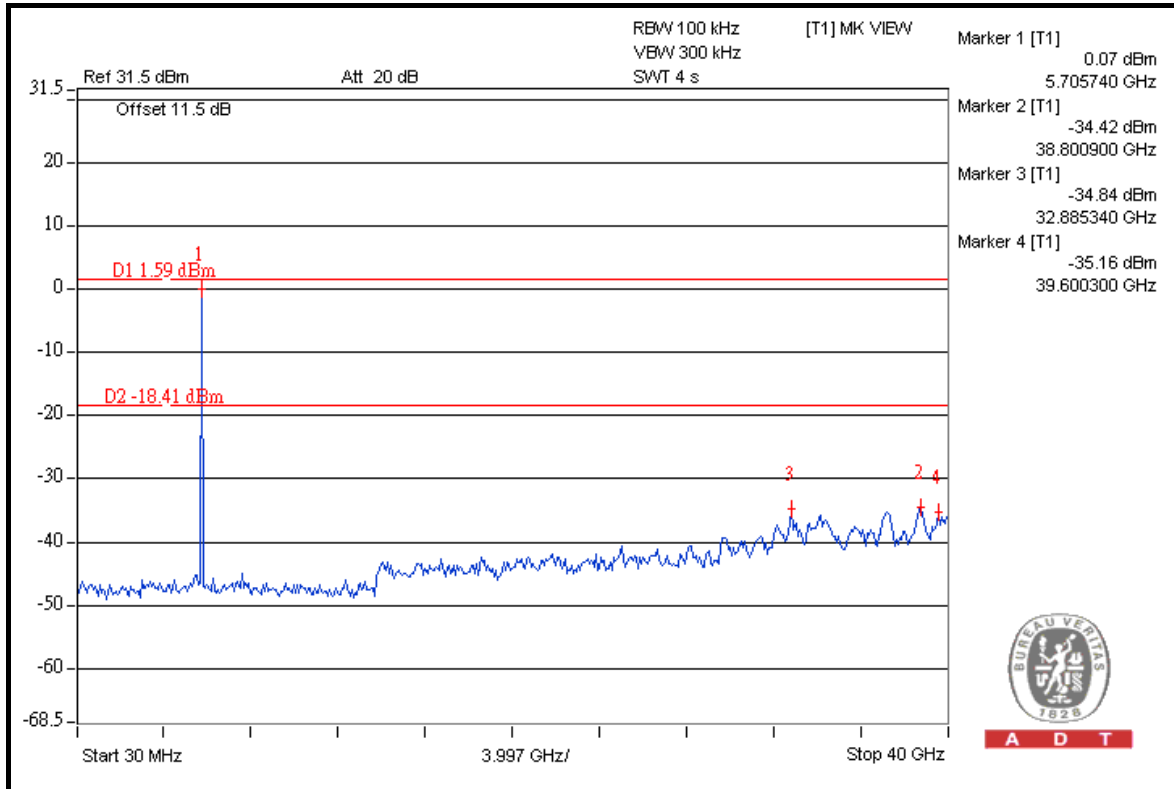
A D T



A D T

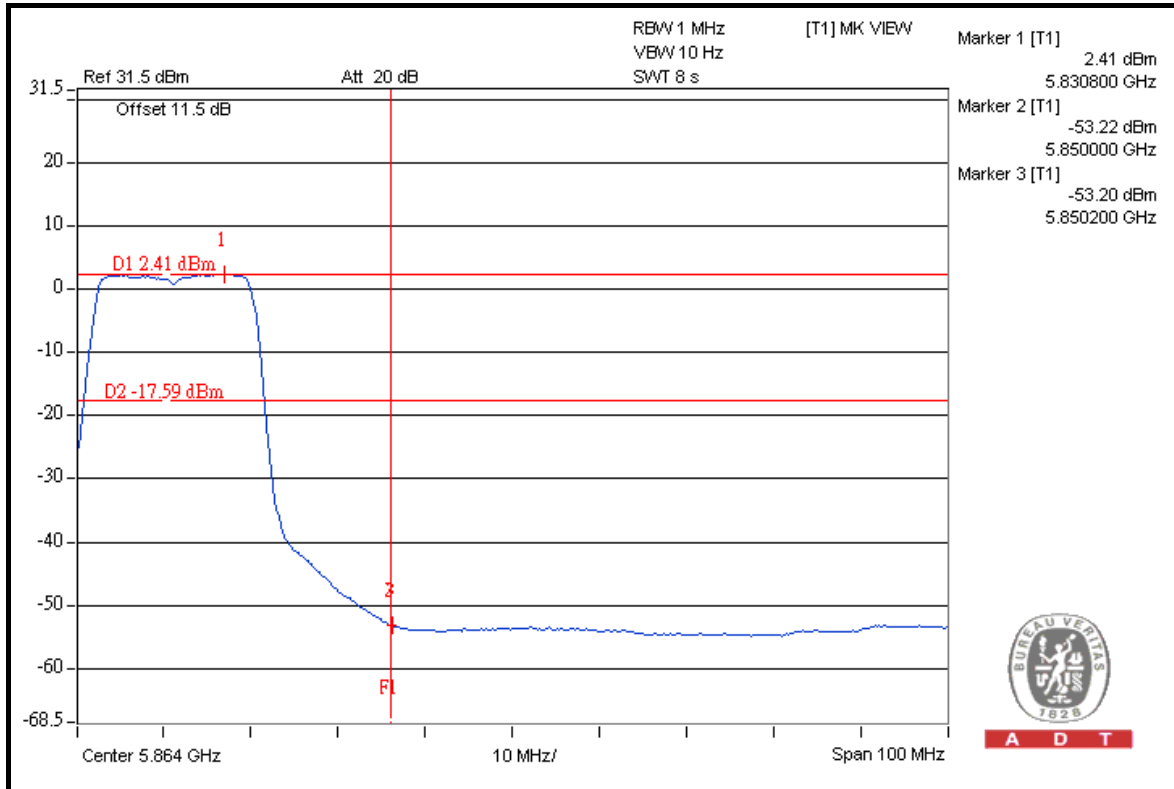


A D T

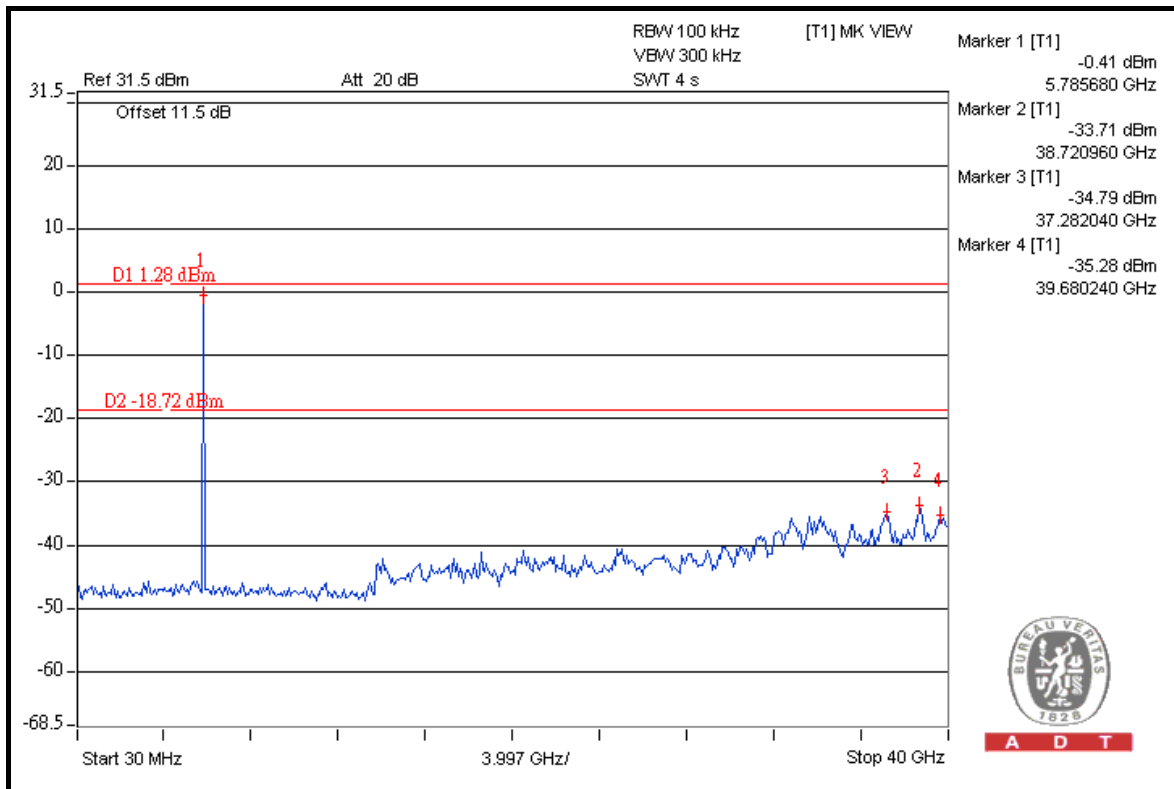




A D T



A D T

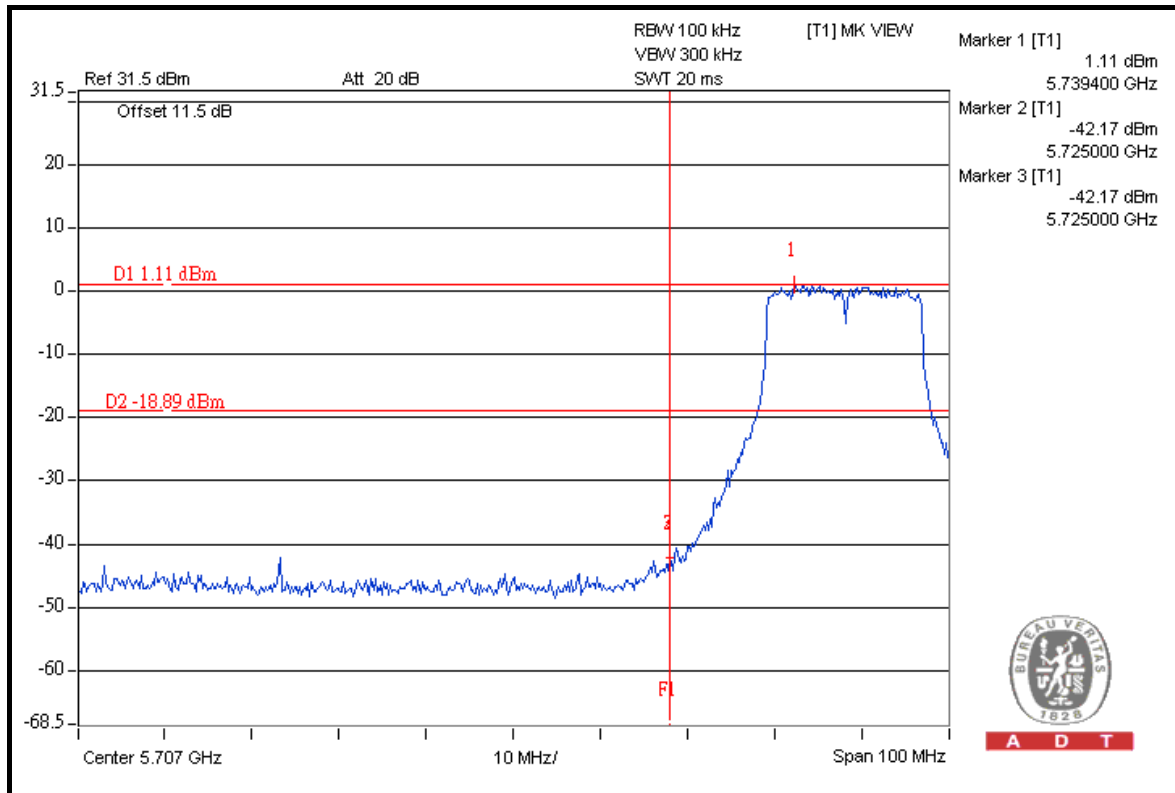


A D T

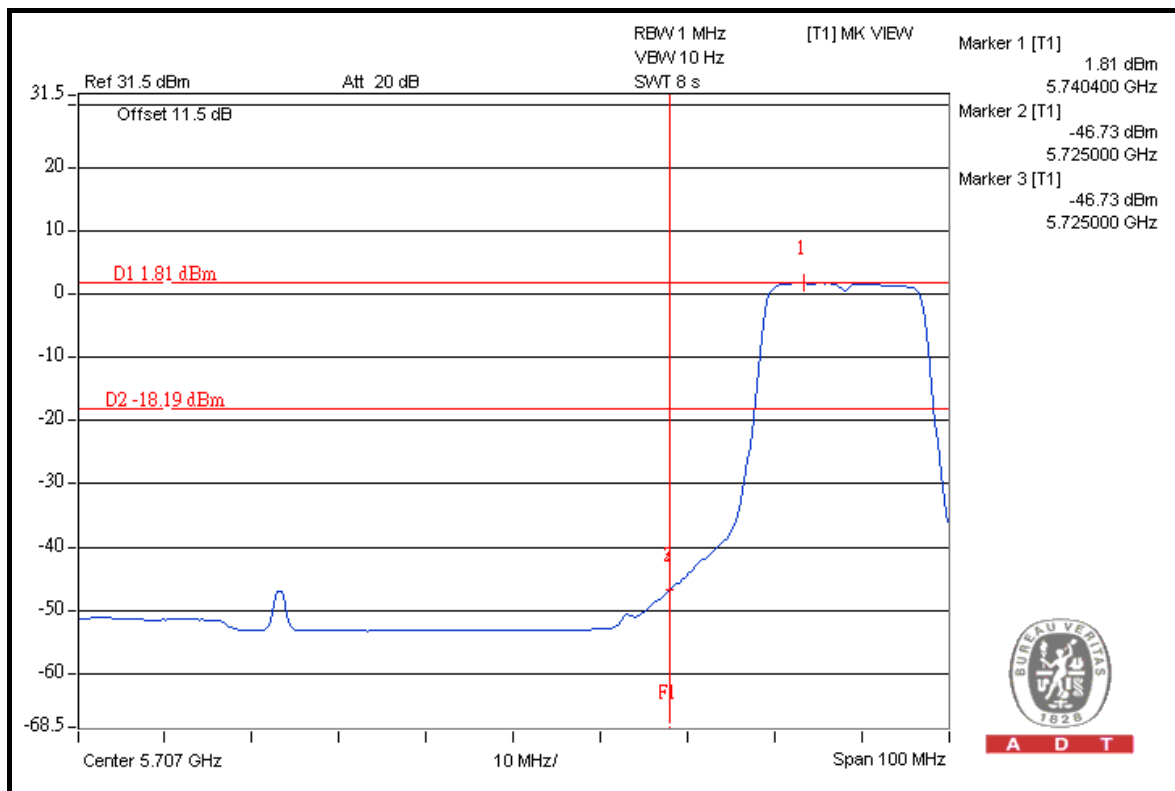


A D T

CHAIN 1



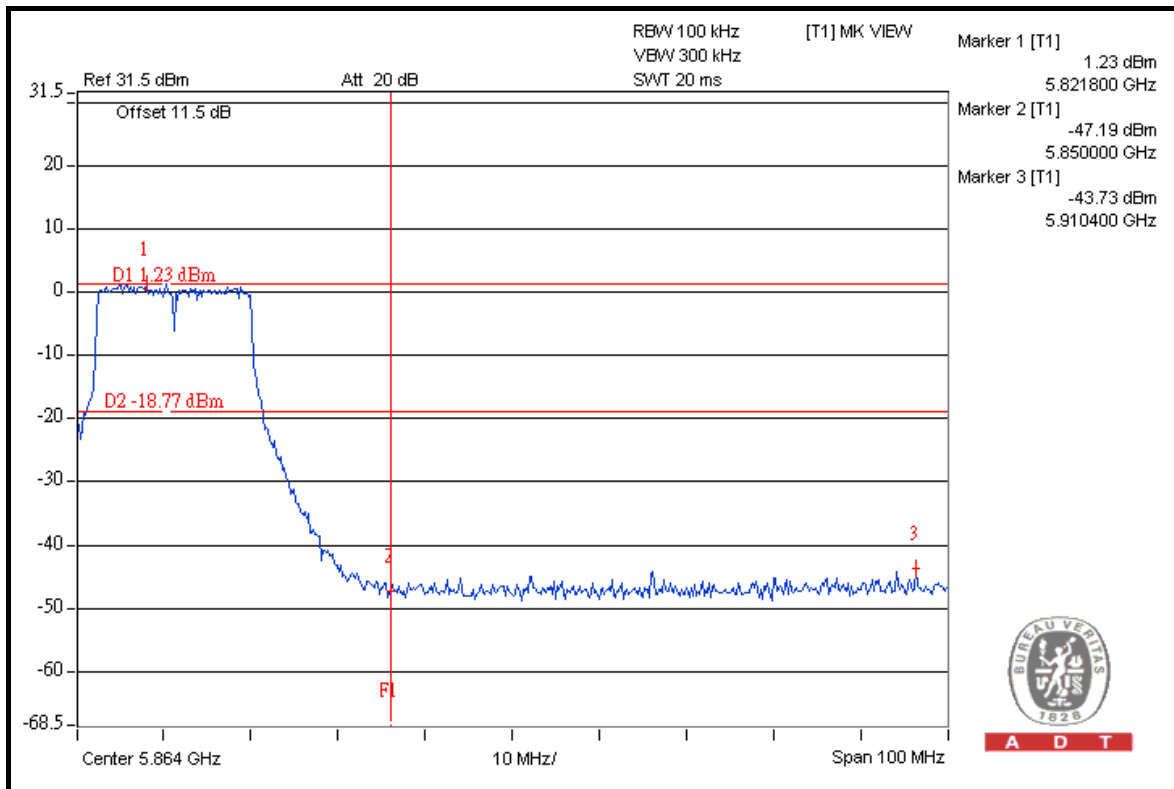
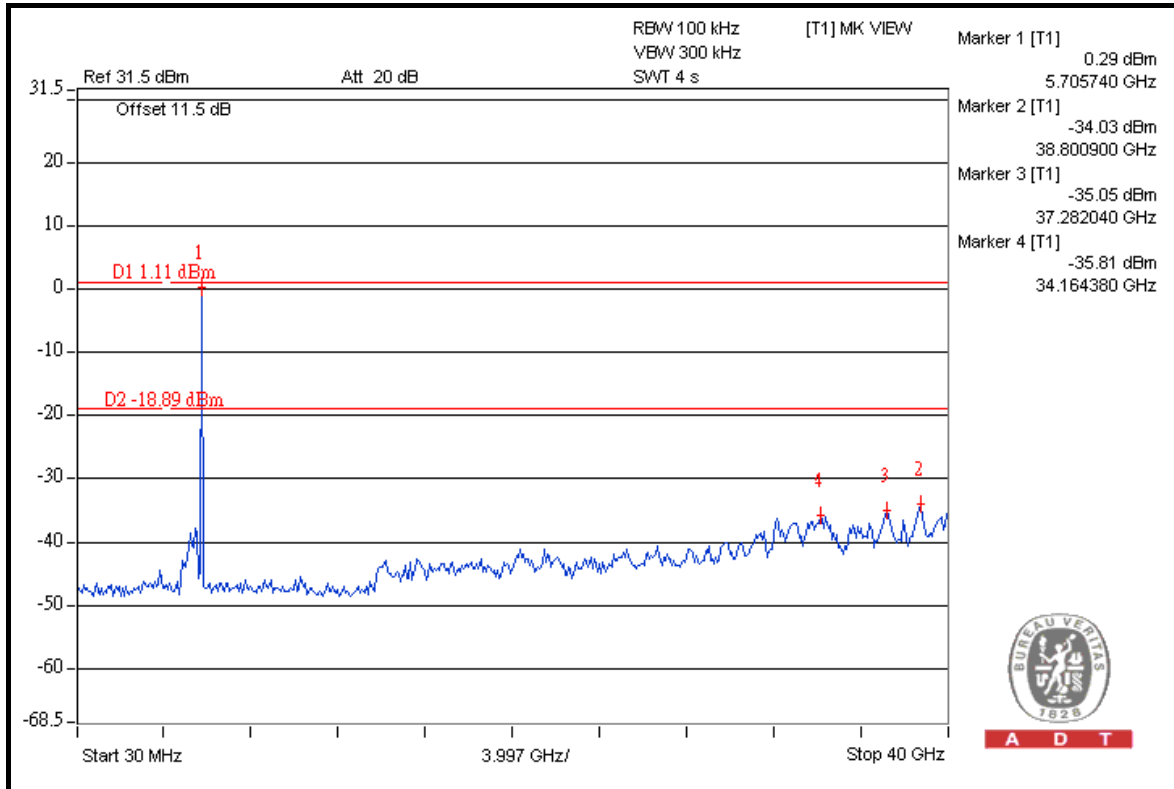
A D T



A D T

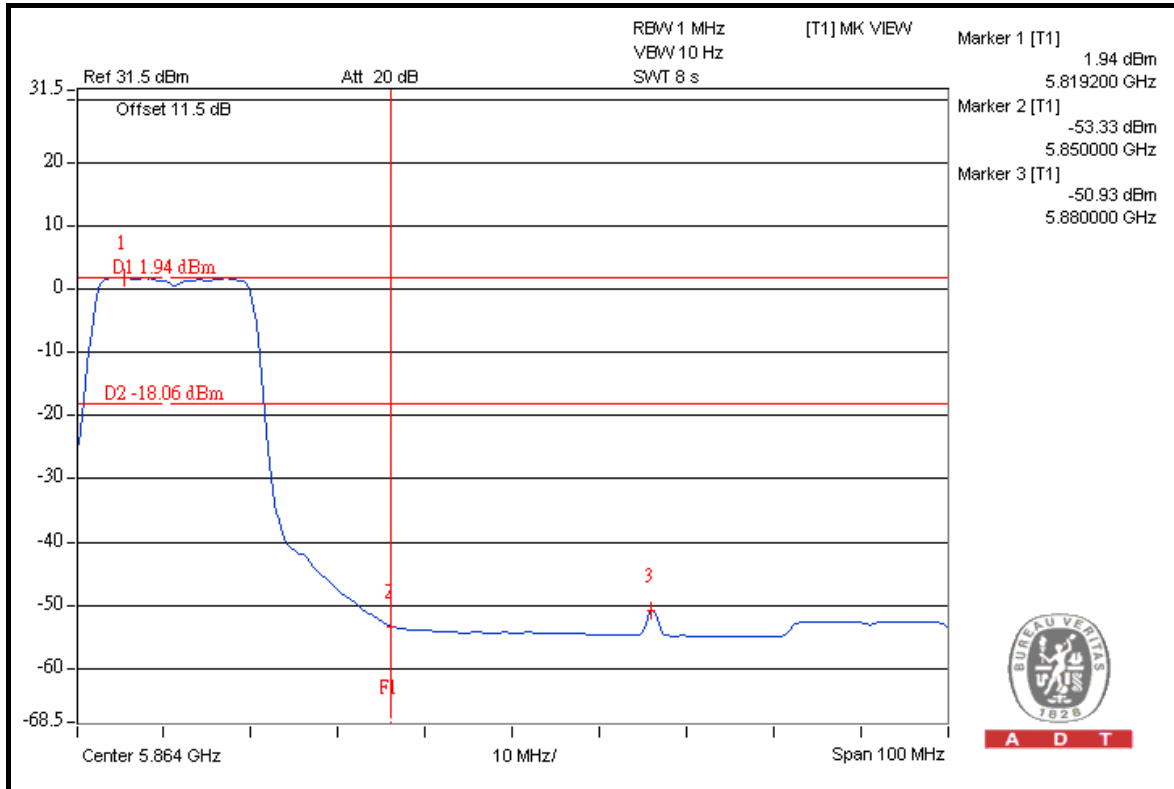


A D T

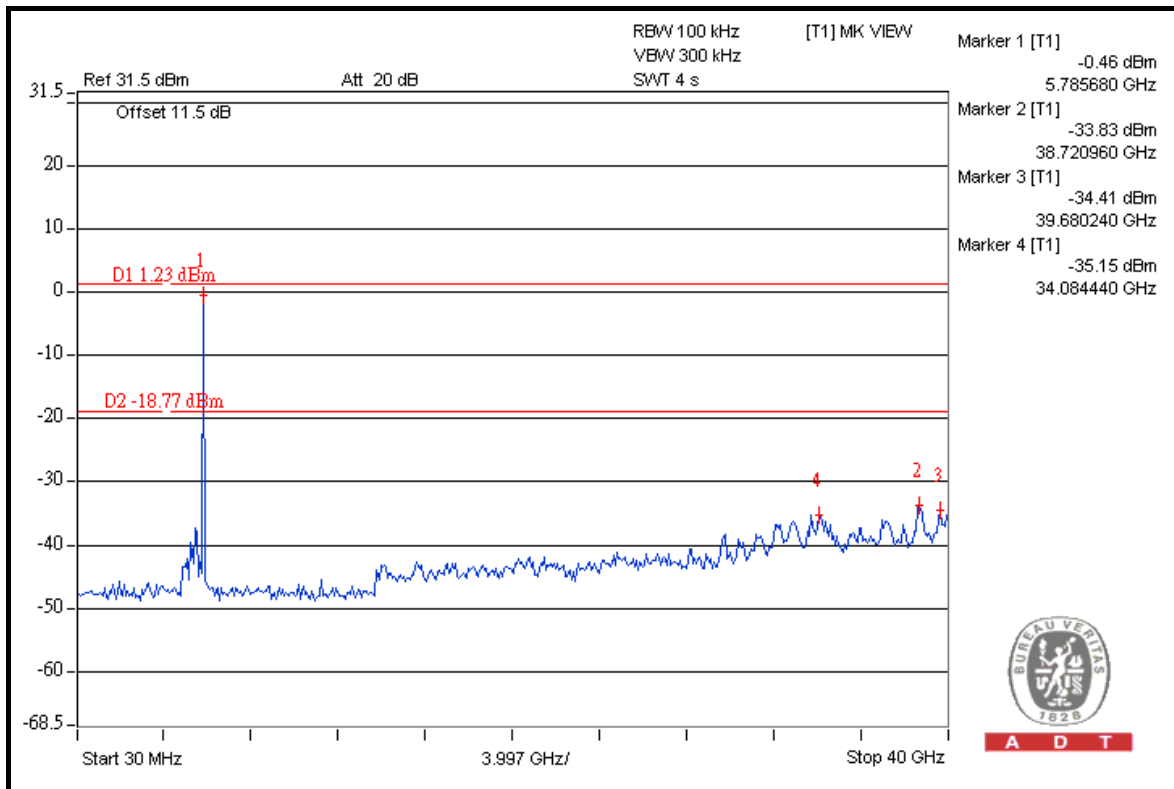




A D T



A D T



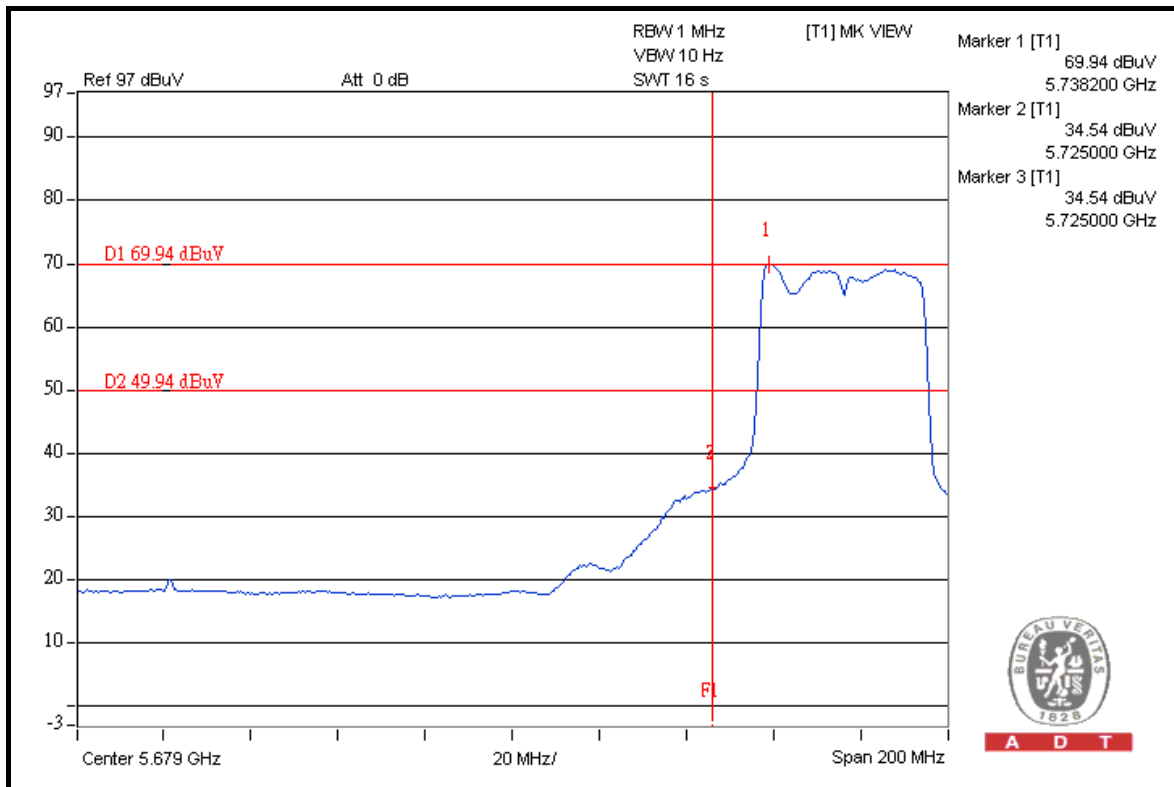
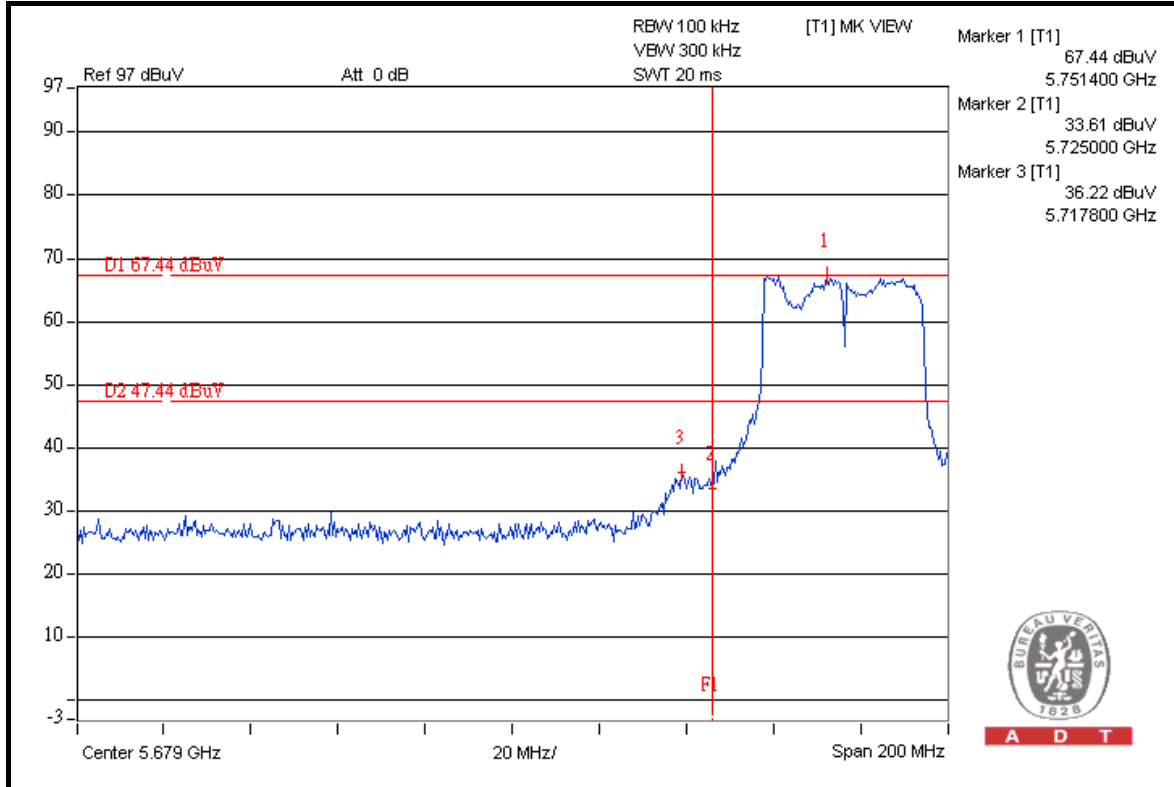
A D T



A D T

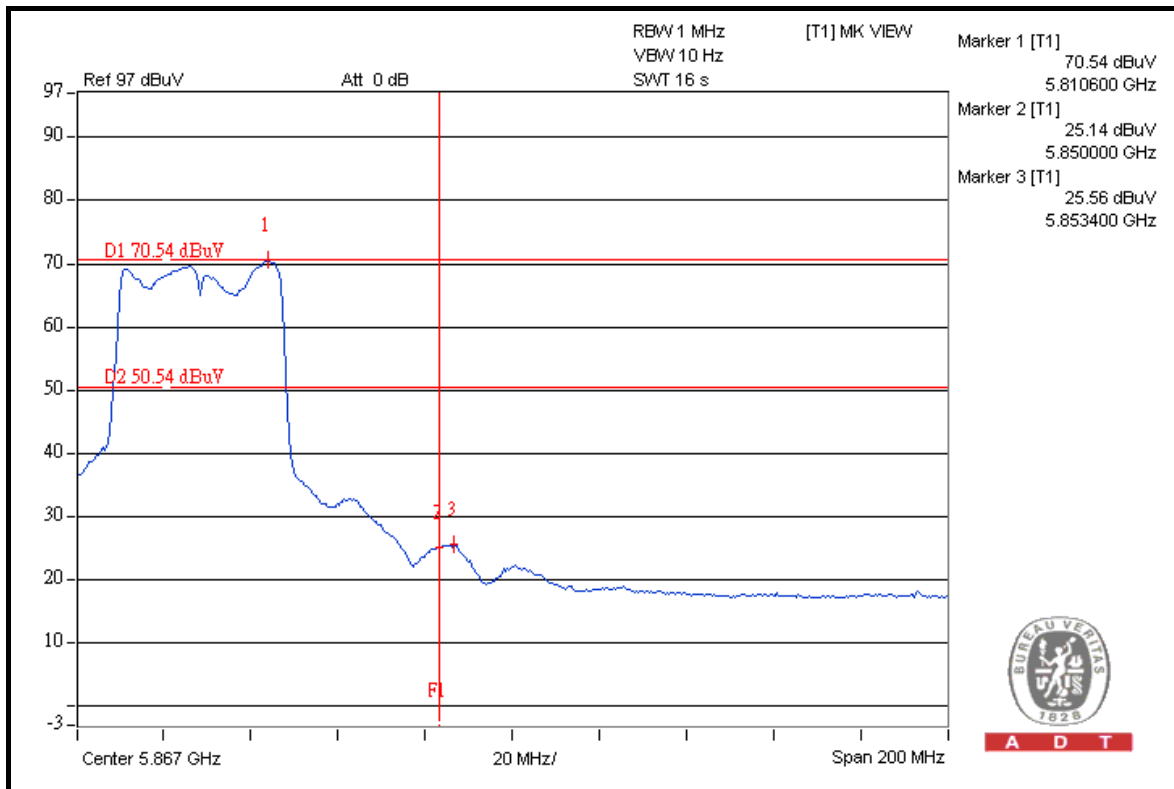
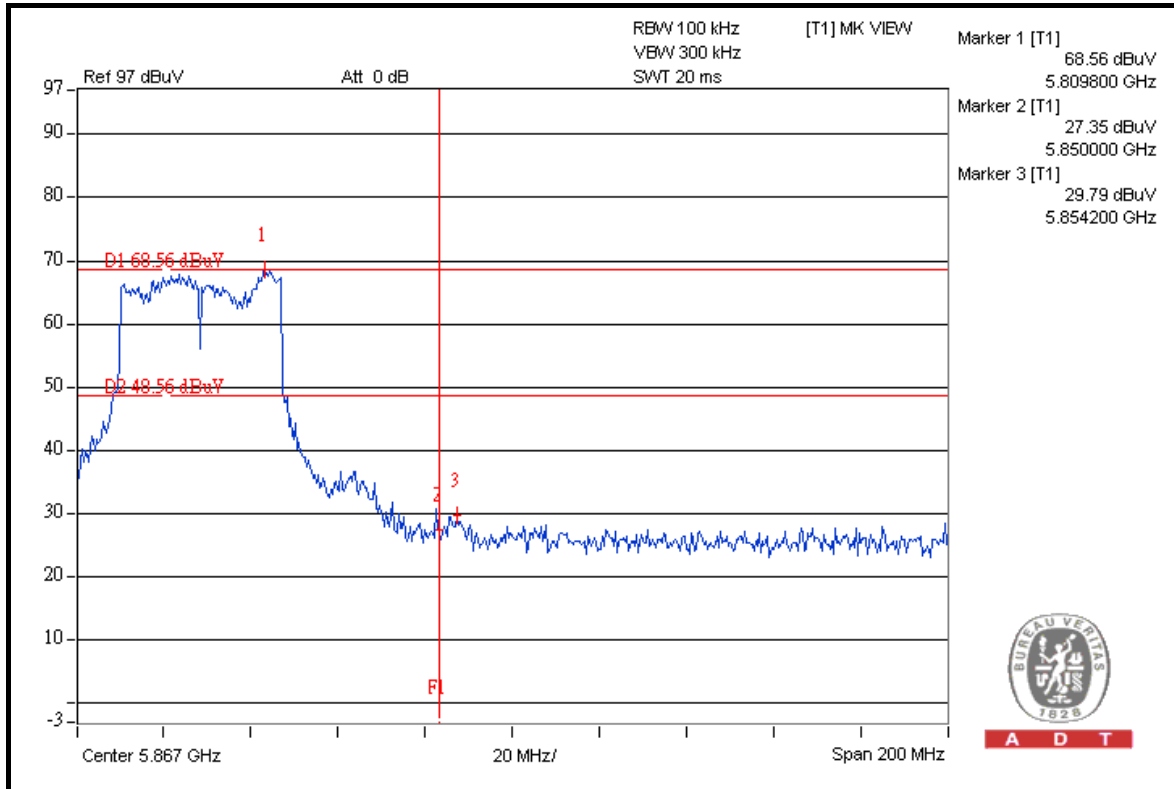
802.11n (40MHz)

FOR RADIATED MEASURED (BOTH CHAINS ON)





A D T

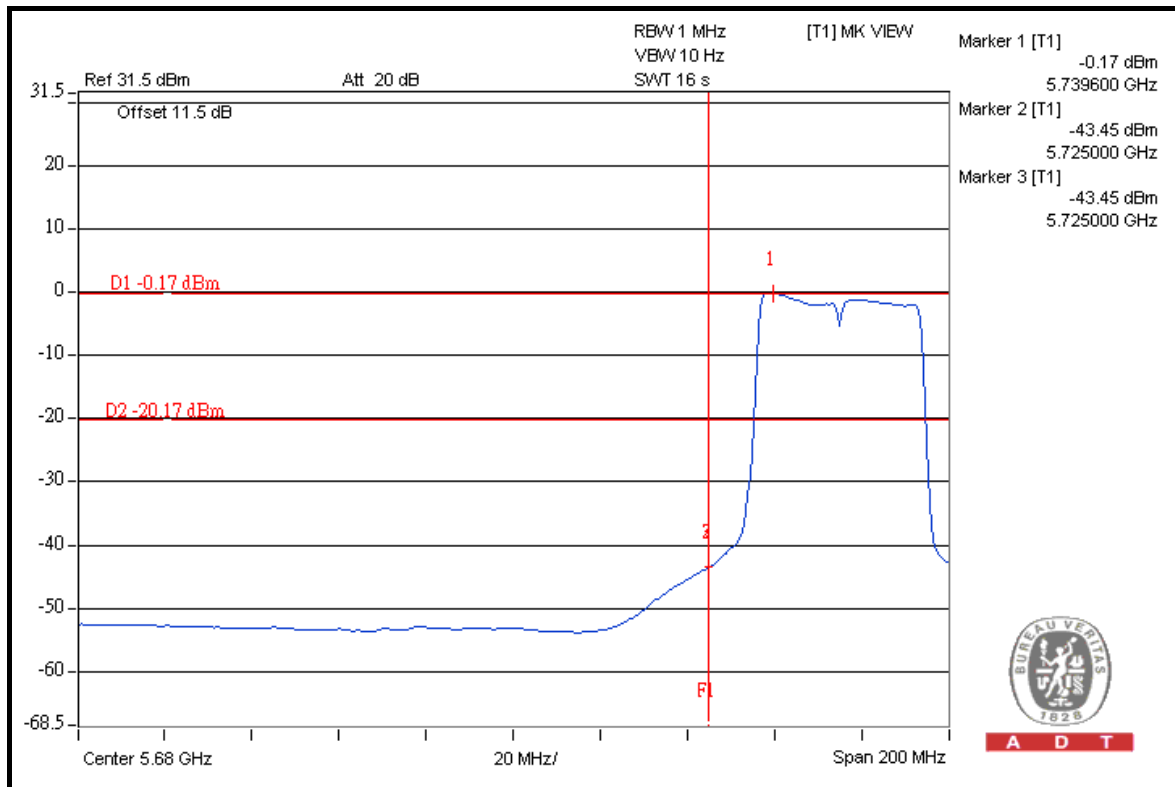
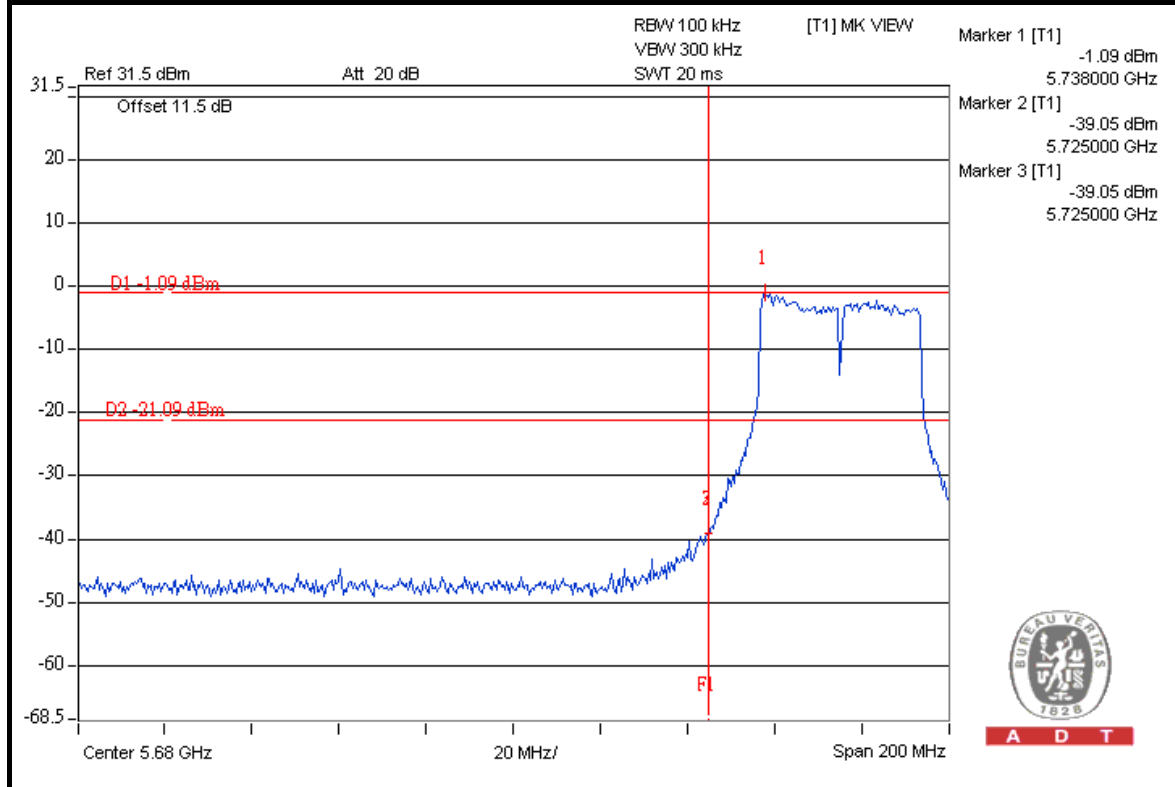




A D T

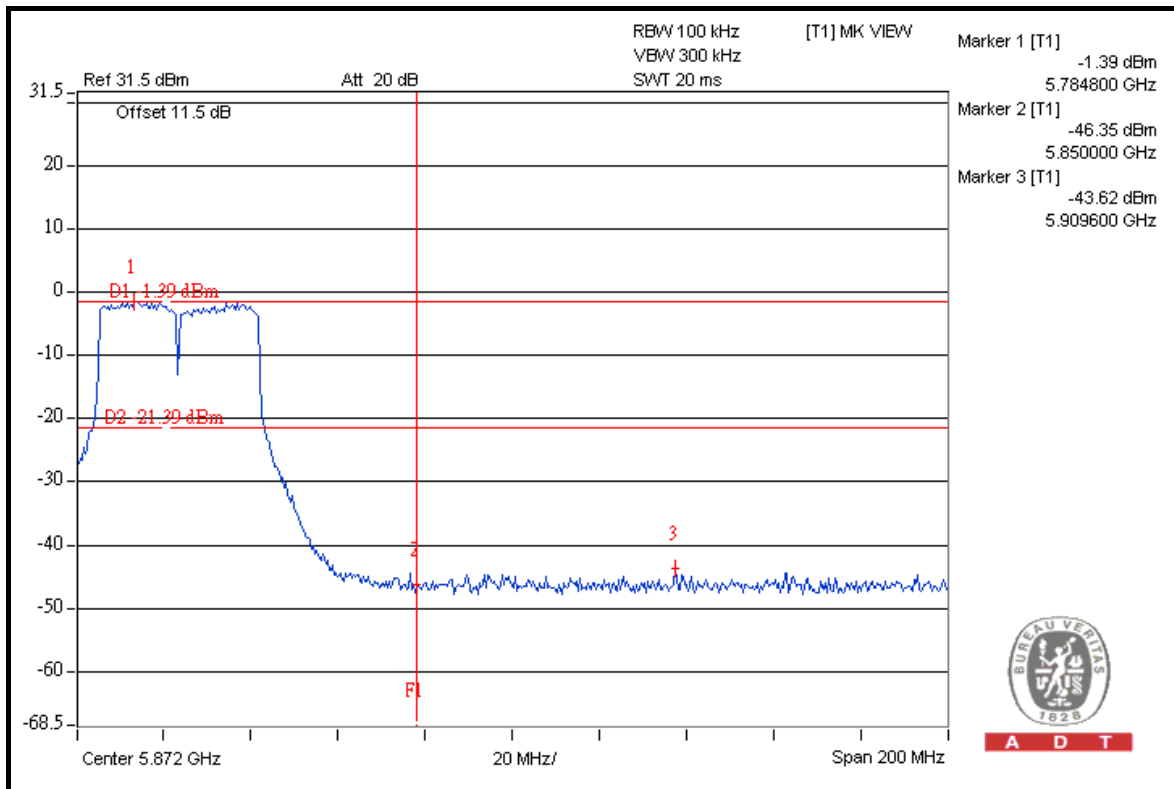
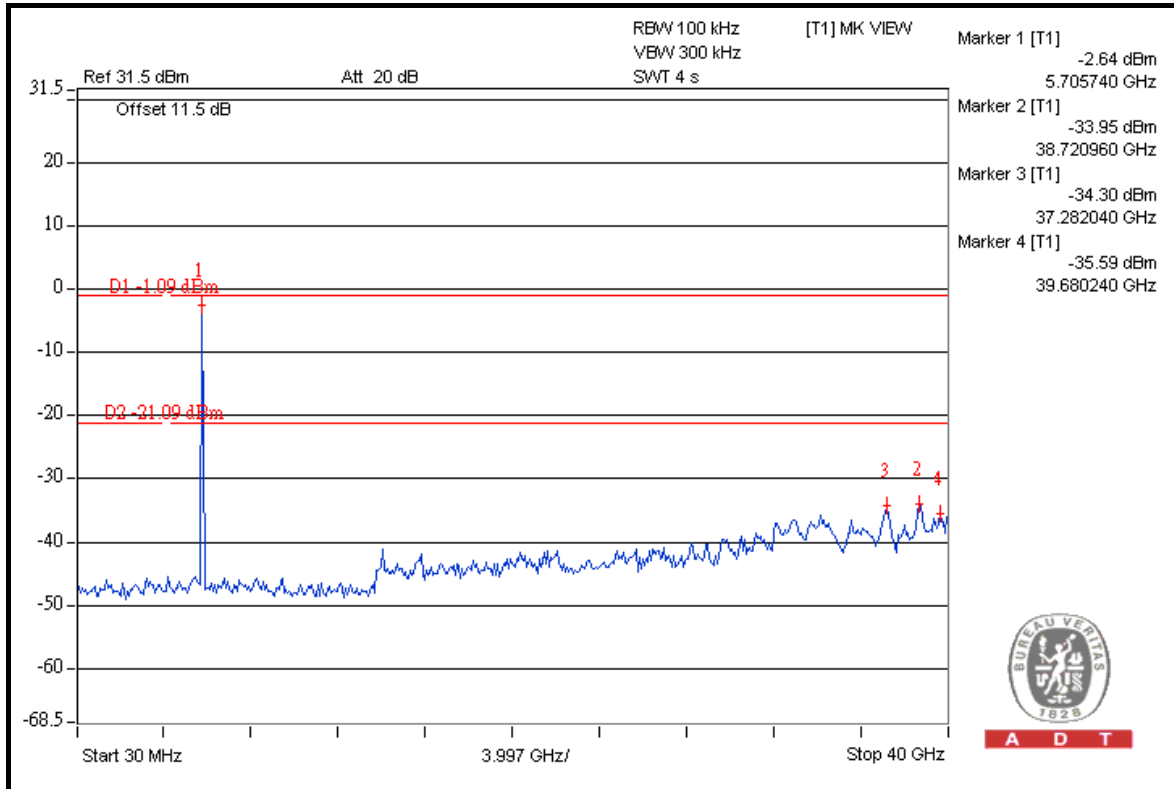
FOR CONDUCTED MEASURED

CHAIN 0



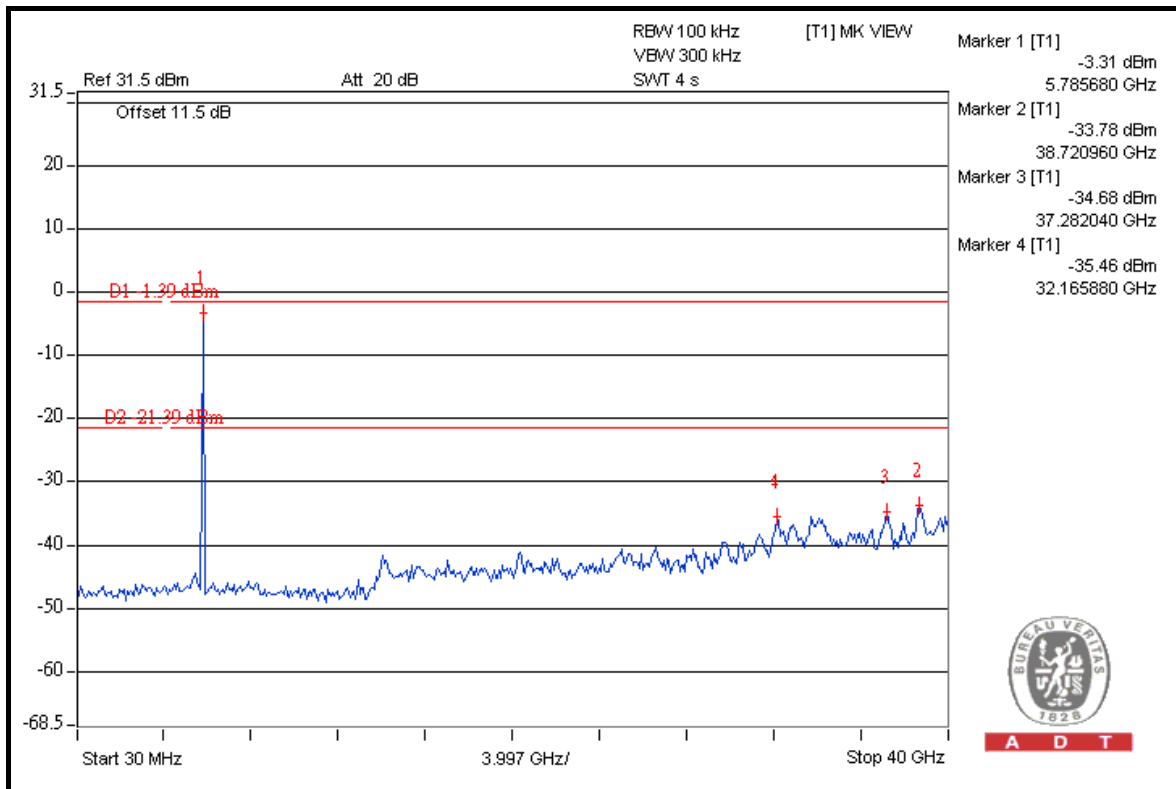
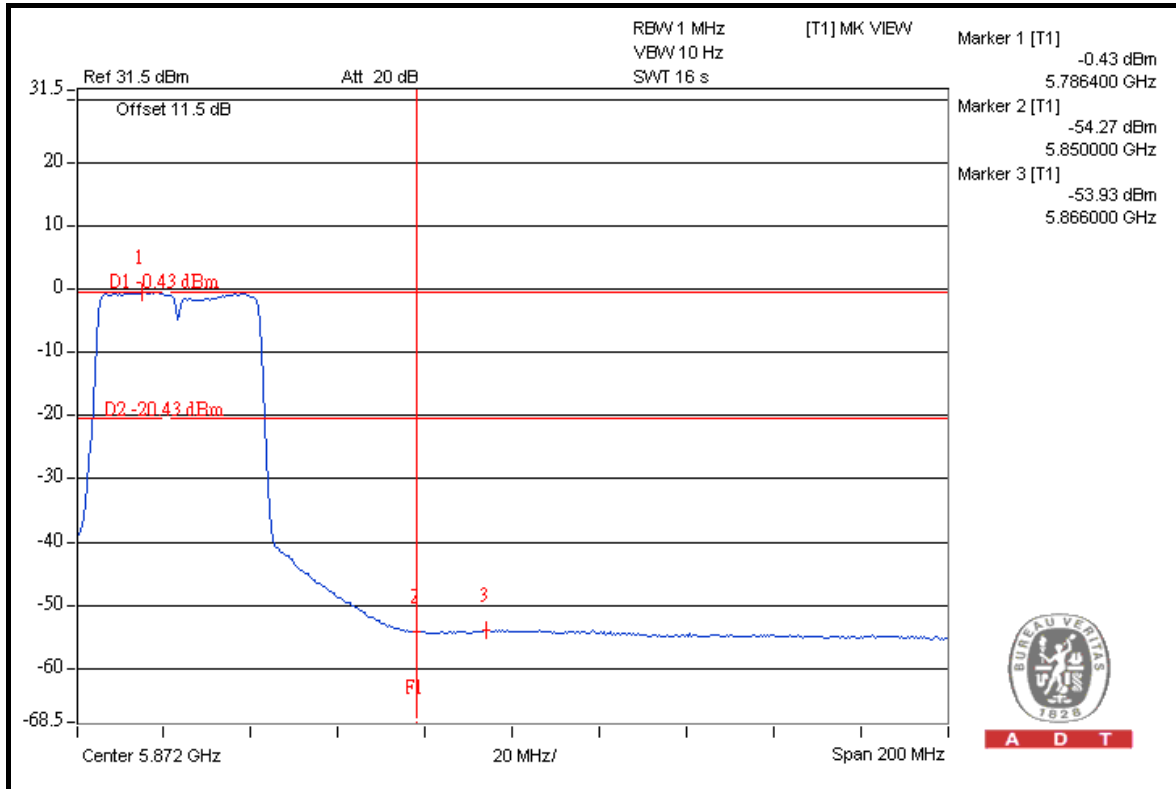


A D T





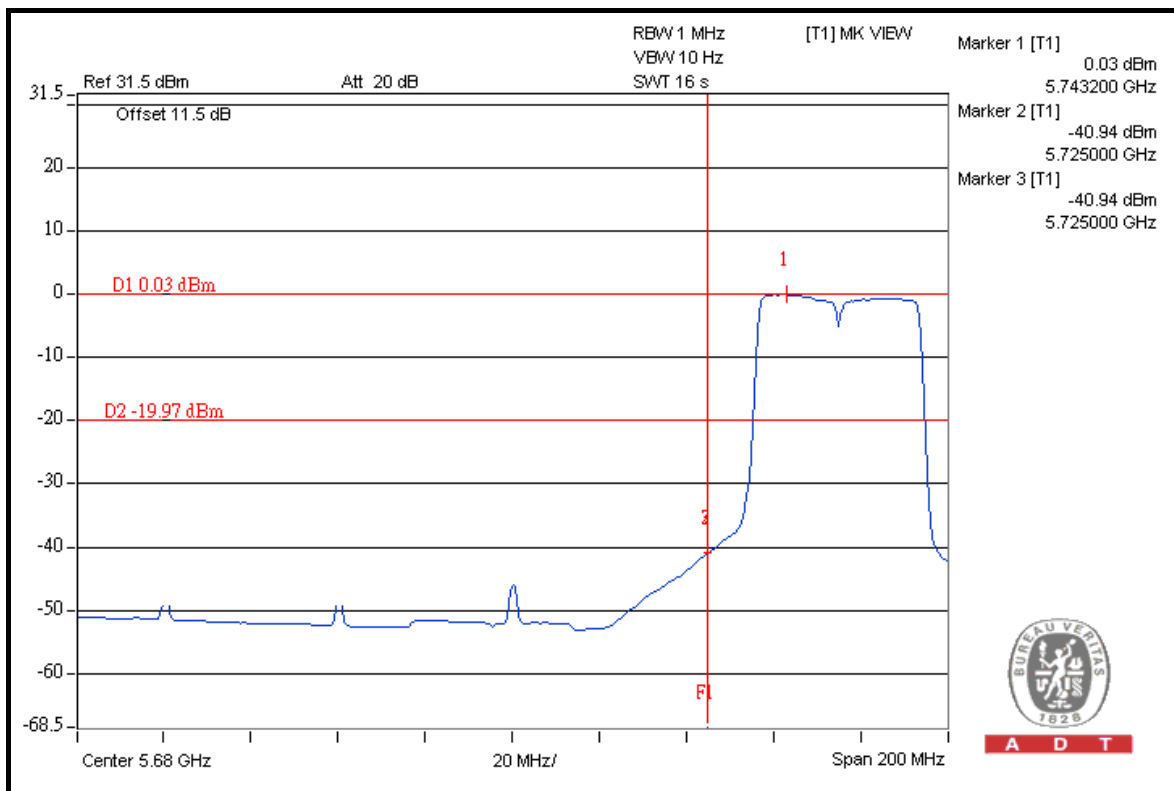
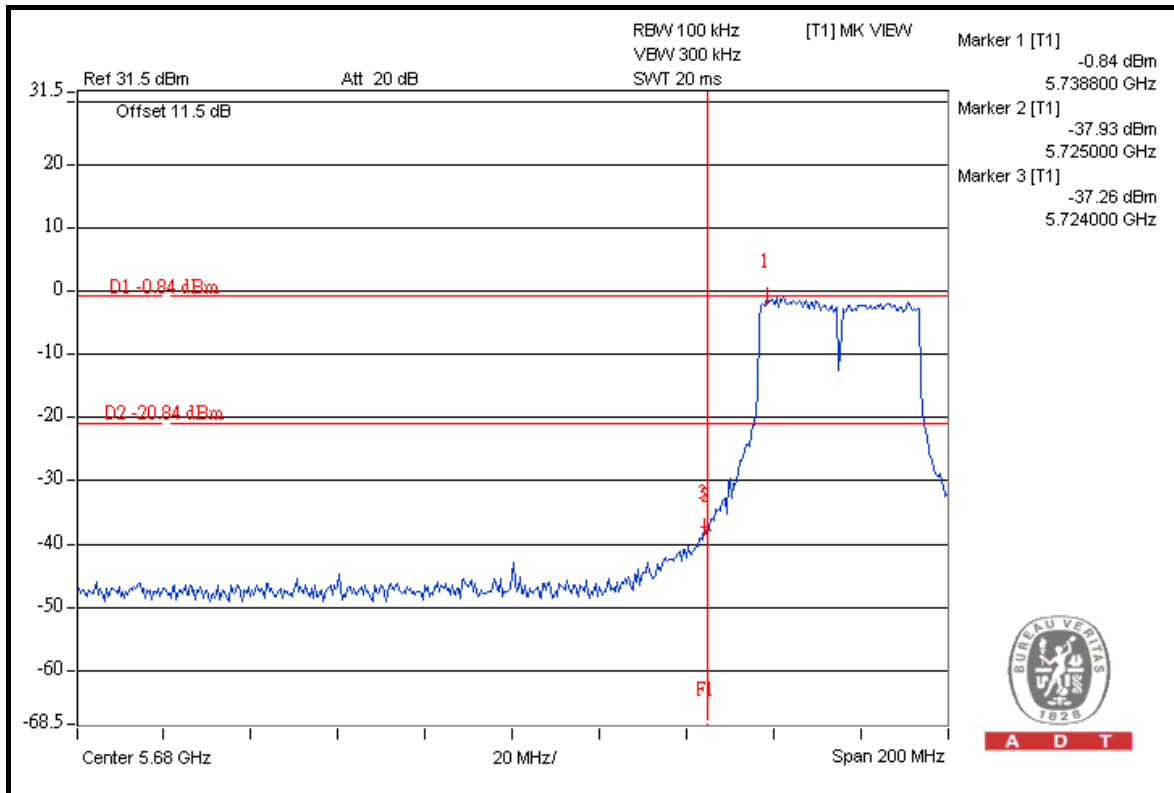
A D T





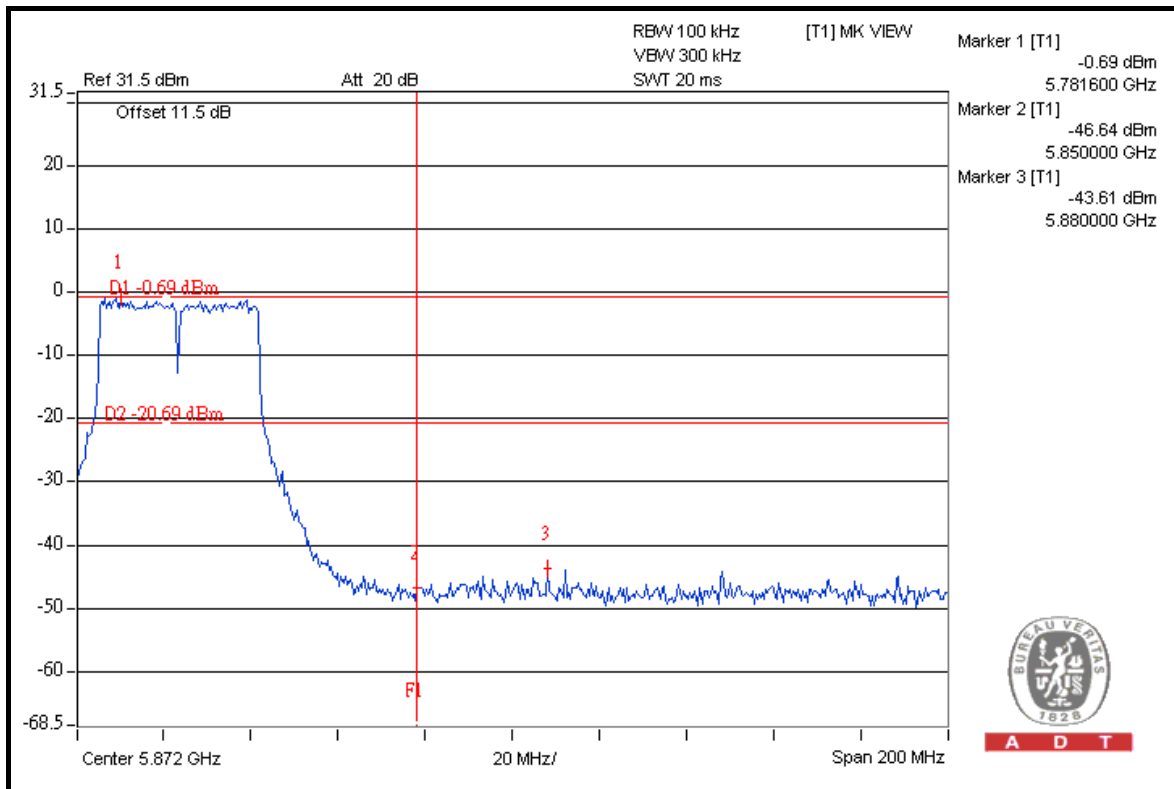
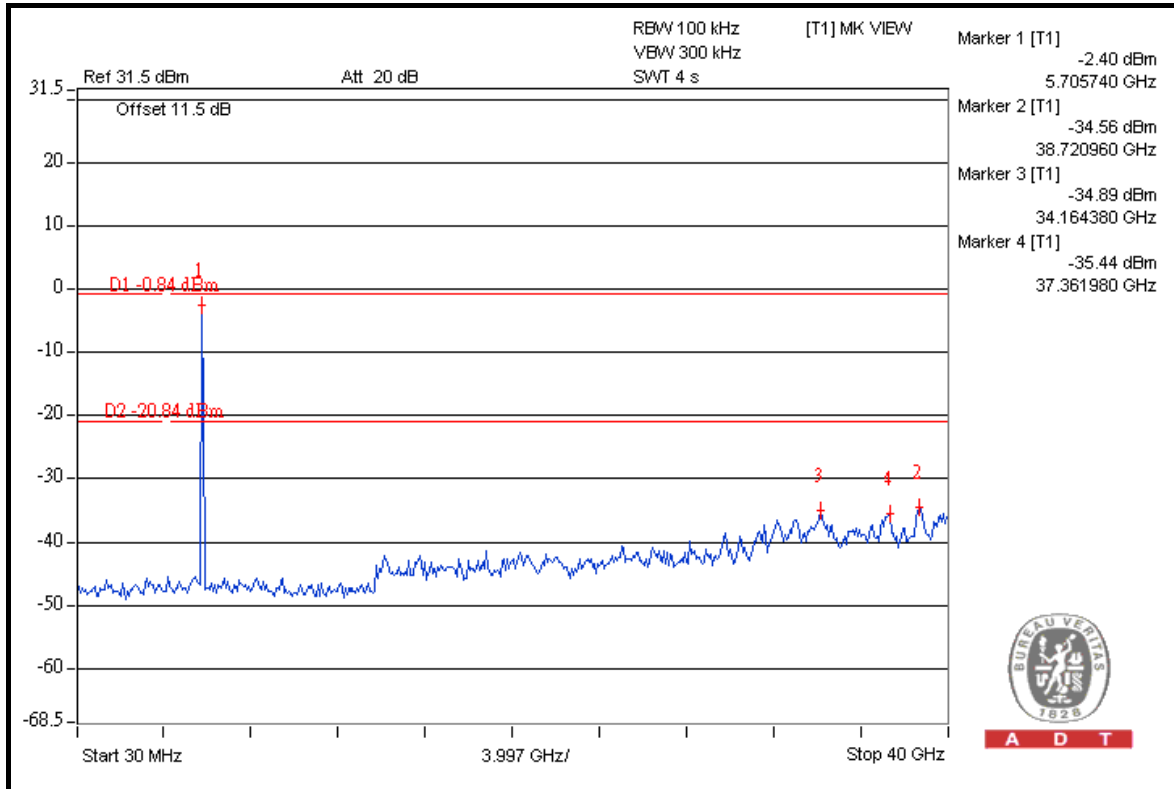
A D T

CHAIN 1



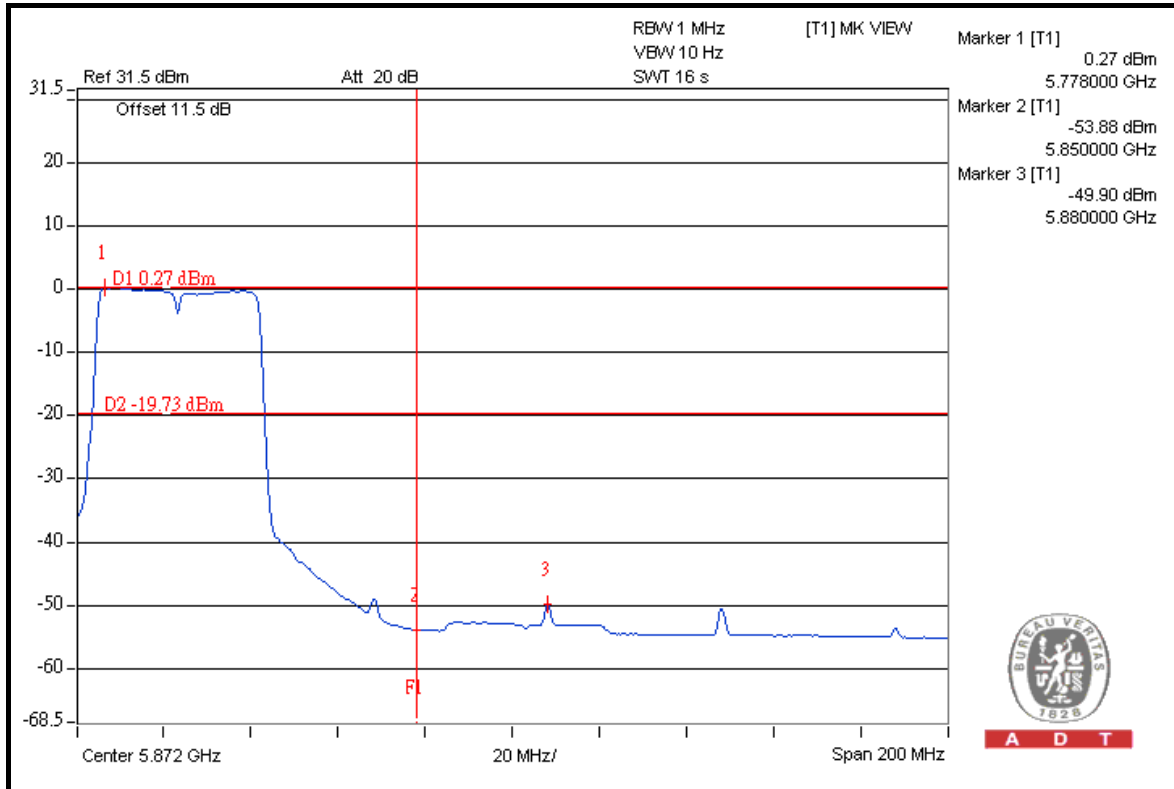


A D T

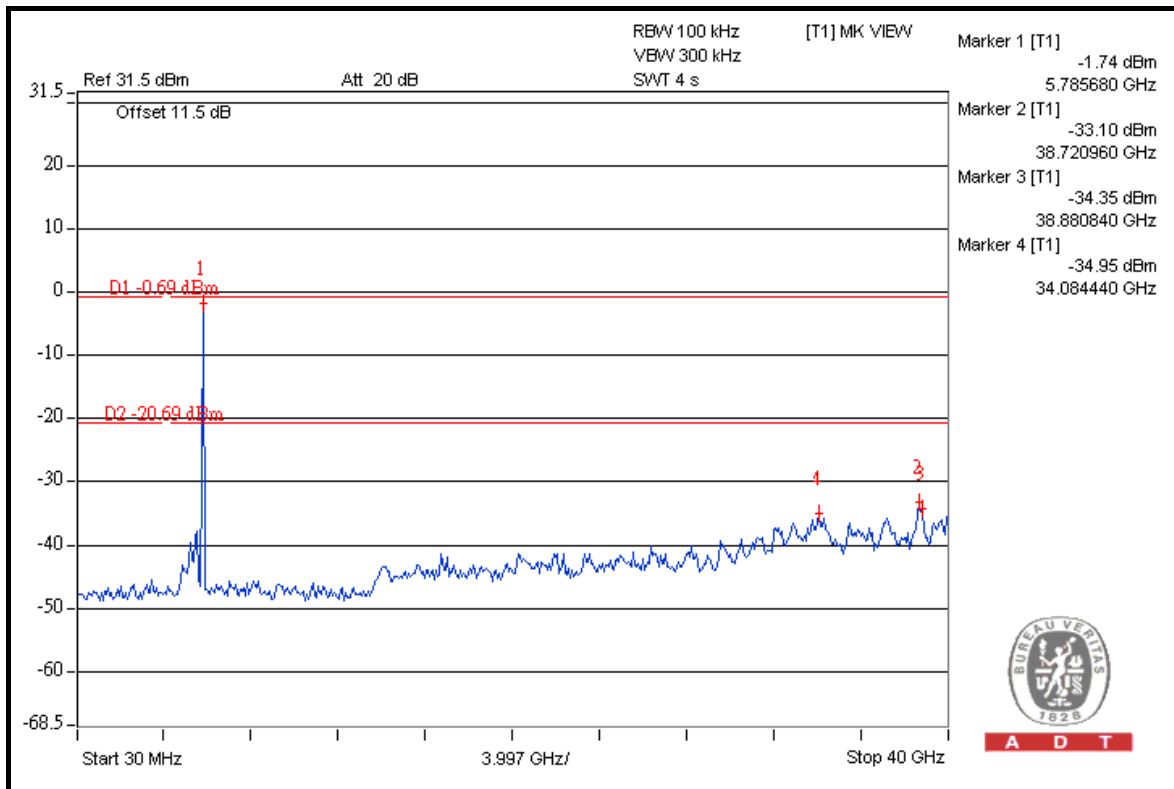




A D T



A D T



A D T



A D T

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 certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

www.adt.com.tw/index.5.phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Web Site: www.adt.com.tw

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



A D T

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---