



FCC TEST REPORT (15.407)

REPORT NO.: RF980806L02C-1

MODEL NO.: TEW-670AP

RECEIVED: Aug. 06, 2009

TESTED: Aug. 12 ~ Aug. 19, 2009 (For original tests
except conducted emission and radiation emission
test below 1GHz test)

Jul. 27 ~ Jul. 30, 2010 (For conducted emission
and radiation emission test below 1GHz test)

ISSUED: Aug. 03, 2010

APPLICANT: TRENDNET, Inc.

ADDRESS: 20675 Manhattan Place, Torrance, CA 90501

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

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou
Hsiang, Taipei Hsien 244, Taiwan, R.O.C.

TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei
Shan Hsiang, Taoyuan Hsien 333, Taiwan,
R.O.C.

This test report consists of 100 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval or endorsement by TAF or any government agency. The test results in the report only apply to the tested sample.



TABLE OF CONTENTS

1.	CERTIFICATION.....	4
2.	SUMMARY OF TEST RESULTS	5
2.1	MEASUREMENT UNCERTAINTY.....	5
3.	GENERAL INFORMATION.....	6
3.1	GENERAL DESCRIPTION OF EUT	6
3.2	DESCRIPTION OF TEST MODES	7
3.2.1	CONFIGURATION OF SYSTEM UNDER TEST	8
3.2.2	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	9
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS	11
3.4	DESCRIPTION OF SUPPORT UNITS	11
4.	TEST TYPES AND RESULTS	12
4.1	RADIATED EMISSION MEASUREMENT	12
4.1.1	LIMITS OF RADIATED EMISSION MEASUREMENT.....	12
4.1.2	LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS.....	12
4.1.3	TEST INSTRUMENTS.....	13
4.1.4	TEST PROCEDURES	15
4.1.5	DEVIATION FROM TEST STANDARD.....	15
4.1.6	TEST SETUP.....	16
4.1.7	EUT OPERATING CONDITION.....	16
4.1.8	TEST RESULTS	17
4.2	CONDUCTED EMISSION MEASUREMENT	26
4.2.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	26
4.2.2	TEST INSTRUMENTS.....	26
4.2.3	TEST PROCEDURES	27
4.2.4	DEVIATION FROM TEST STANDARD.....	27
4.2.5	TEST SETUP.....	28
4.2.6	EUT OPERATING CONDITIONS	28
4.2.7	TEST RESULTS	29
4.3	PEAK TRANSMIT POWER MEASUREMENT	31
4.3.1	LIMITS OF PEAK TRANSMIT POWER MEASUREMENT	31
4.3.2	TEST INSTRUMENTS.....	31
4.3.3	TEST PROCEDURE.....	31
4.3.4	DEVIATION FROM TEST STANDARD.....	32
4.3.5	TEST SETUP.....	32
4.3.6	EUT OPERATING CONDITIONS	32
4.3.7	TEST RESULTS	33
4.4	PEAK POWER EXCURSION MEASUREMENT	46
4.4.1	LIMITS OF PEAK POWER EXCURSION MEASUREMENT.....	46
4.4.2	TEST INSTRUMENTS.....	46
4.4.3	TEST PROCEDURE.....	46
4.4.4	DEVIATION FROM TEST STANDARD.....	47
4.4.5	TEST SETUP.....	47
4.4.6	EUT OPERATING CONDITIONS	47
4.4.7	TEST RESULTS	48
4.5	PEAK POWER SPECTRAL DENSITY MEASUREMENT	63
4.5.1	LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT.....	67
4.5.2	TEST INSTRUMENTS.....	67
4.5.3	TEST PROCEDURES	67



4.5.4	DEVIATION FROM TEST STANDARD.....	68
4.5.5	TEST SETUP.....	68
4.5.6	EUT OPERATING CONDITIONS.....	68
4.5.7	TEST RESULTS.....	69
4.6	FREQUENCY STABILITY.....	80
4.6.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT.....	80
4.6.2	TEST INSTRUMENTS.....	80
4.6.3	TEST PROCEDURE.....	80
4.6.4	DEVIATION FROM TEST STANDARD.....	81
4.6.5	TEST SETUP.....	81
4.6.6	EUT OPERATING CONDITION.....	81
4.6.7	TEST RESULTS.....	82
4.7	BAND EDGES MEASUREMENT.....	83
4.7.1	TEST INSTRUMENTS.....	83
4.7.2	TEST PROCEDURE.....	84
4.7.3	EUT OPERATING CONDITION.....	84
4.7.4	TEST RESULTS.....	85
4.8	ANTENNA REQUIREMENT.....	97
4.8.1	STANDARD APPLICABLE.....	97
4.8.2	ANTENNA CONNECTED CONSTRUCTION.....	97
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	98
6.	INFORMATION ON THE TESTING LABORATORIES.....	99
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	100



1. CERTIFICATION

PRODUCT: Dual Band Wireless N Router

MODEL: TEW-670AP

BRAND: TRENDnet

APPLICANT: TRENDNET, Inc.

TEST SAMPLE: R & D SAMPLE

TESTED: Aug. 12 ~ Aug. 19, 2009 (For original tests except conducted emission and radiation emission test below 1GHz test)
Jul. 27 ~ Jul. 30, 2010 (For conducted emission and radiation emission test below 1GHz test)

STANDARDS: FCC Part 15, Subpart E (Section 15.407)

ANSI C63.4-2003

The above equipment (Model: TEW-670AP) 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 : Pettie Chen , **DATE** : Aug. 03, 2010
Pettie Chen / Specialist

TECHNICAL ACCEPTANCE : Long Chen , **DATE** : Aug. 03, 2010
Responsible for RF Long Chen / Senior Engineer

APPROVED BY : Gary Chang , **DATE** : Aug. 03, 2010
Gary Chang / Assistant Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -14.71dB at 6.840 & 6.836MHz.
15.407(b)(1/2/3) (b)(5)	Electric Field Strength Spurious Emissions, 30MHz ~ 40000MHz	PASS	Meet the requirement of limit. Minimum passing margin is -1.1dB at 500.42MHz.
15.407(a)(1/2/3)	Peak Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a)(1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.

2.1 MEASUREMENT UNCERTAINTY

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

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

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Dual Band Wireless N Router
MODEL NO.	TEW-670AP
FCC ID	XU8TEW670AP
POWER SUPPLY	12Vdc from AC adapter
MODULATION TYPE	64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 270.0Mbps
OPERATING FREQUENCY	5180.0 ~ 5240.0MHz
NUMBER OF CHANNEL	4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	42.88mW
ANTENNA TYPE	Refer to NOTE below
DATA CABLE	NA
I/O PORTS	RJ45
ACCESSORY DEVICES	Adapter

NOTE:

- This report is issued as a supplementary report to the original BVADT report no.: RF980806L02-1. The RF part of EUT is identical to the original application one. The differences are changing the product name, model name, applicant, FCC ID no. and removing 4 LAN ports. Therefore, conducted emission and radiation emission test below 1GHz test had been re-tested and presented in the test report
- The EUT is a Dual Band Wireless N Router. The test data are separated into following test reports.

	TEST STANDARD	REFERENCE REPORT
WLAN 802.11b/g, 802.11n	FCC Part 15, Subpart C (Section 15.247)	RF980806L02C
WLAN 802.11a, 802.11n (5745~5825 MHz)		
WLAN 802.11a, 802.11n (5180~ 5240MHz)	FCC Part 15, Subpart E (Section 15.407)	RF980806L02C-1

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

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

- Spurious emission of the simultaneous operation has been evaluated and no non-compliance found.

5. The EUT was powered by the following adapter:

BRAND:	AMIGO
MODEL:	AMS6-1201000SU
INPUT:	120Vac, 0.5A, 60Hz
OUTPUT:	12Vdc, 1A
POWER LINE:	DC 1.8m non-shielded cable without core

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

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

7. The following antennas are used in this EUT.

ANTENNA	TYPE	GAIN (dBi)	
		2.4GHz	5.0GHz
Internal	PIFA	4.5	5.0
External	Dipole	4.5	5.0

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

3.2 DESCRIPTION OF TEST MODES

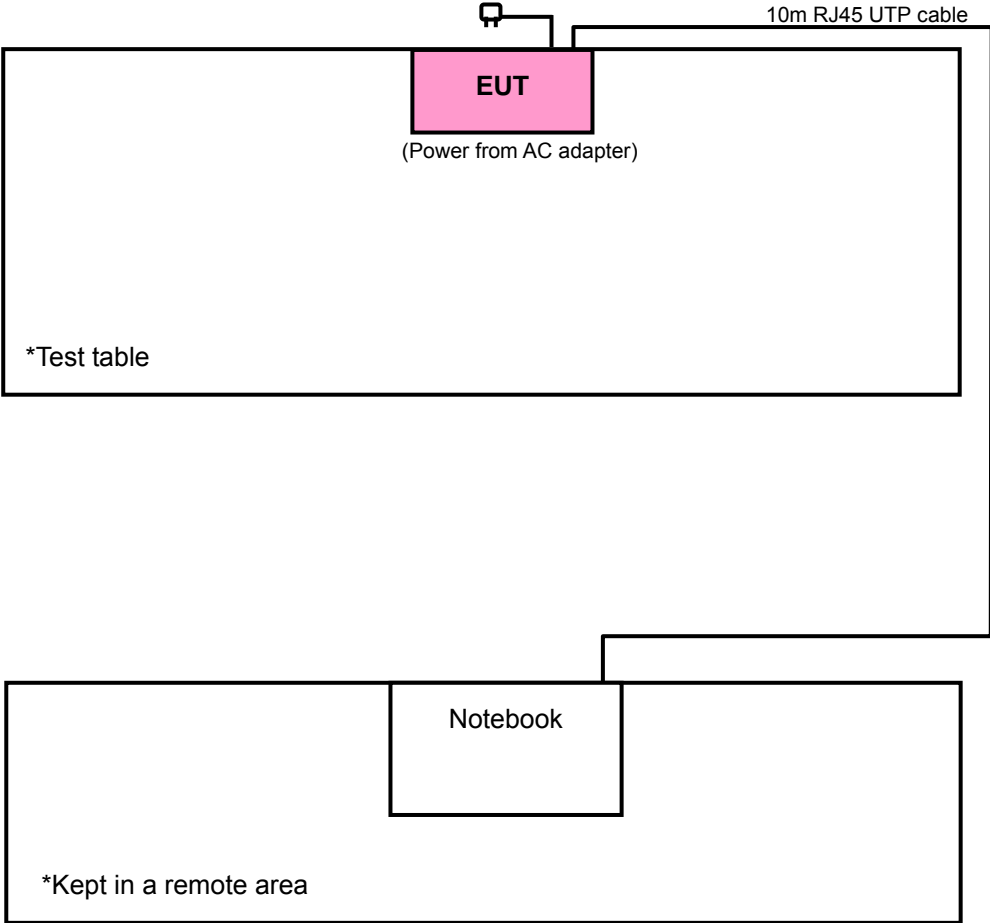
4 channels are provided for 802.11a, 802.11n (20MHz):

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190MHz	46	5230MHz

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST





3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

RADIATED EMISSION TEST (ABOVE 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0	Z
802.11n (20MHz)	36 to 48	36, 40, 48	OFDM	BPSK	6.5	Z
802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	13.5	Z

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
802.11n (40MHz)	38 to 46	46	OFDM	BPSK	13.5	Z

POWER LINE CONDUCTED EMISSION TEST:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (40MHz)	38 to 46	46	OFDM	BPSK	13.5

BANDEDGE MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48	36, 48	OFDM	BPSK	6.0
02.11n (20MHz)	36 to 48	36, 48	OFDM	BPSK	6.5
802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	13.5

ANTENNA PORT CONDUCTED MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
802.11n (20MHz)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	13.5

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart E (15.407)
ANSI C63.4-2003

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

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

3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	PP05L	25191592336	E2K24CLNS

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

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

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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

4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

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

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

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

4.1.3 TEST INSTRUMENTS

For frequency above 1GHz

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	100033	Jul. 06, 2009	Jul. 05, 2010
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100076	May. 26, 2009	May. 25, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 27, 2009	Apr. 26, 2010
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jul. 01, 2009	Jun. 30, 2010
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 25, 2008	Dec. 24, 2009
Preamplifier Agilent	8447D	2944A10633	Nov. 03, 2008	Nov. 02, 2009
Preamplifier Agilent	8449B	3008A01964	Oct. 23, 2008	Oct. 22, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	238141/4	May 13, 2009	May 12, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	May 13, 2009	May 12, 2010
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	Aug. 27, 2008	Aug. 26, 2009

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



For frequency below 1GHz

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100188	Dec. 21, 2009	Dec. 20, 2010
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Dec. 31, 2009	Dec. 30, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 27, 2010	Apr. 26, 2011
HORN Antenna SCHWARZBECK	9120D	9120D-405	Feb. 03, 2010	Feb. 02, 2011
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 25, 2009	Dec. 24, 2010
Preamplifier Agilent	8447D	2944A10633	Nov. 10, 2009	Nov. 09, 2010
Preamplifier Agilent	8449B	3008A01964	Nov. 09, 2009	Nov. 08, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	238141/4	May 14, 2010	May 13, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	May 14, 2010	May 13, 2011
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	Aug. 27, 2009	Aug. 26, 2010

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

4.1.4 TEST PROCEDURES

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

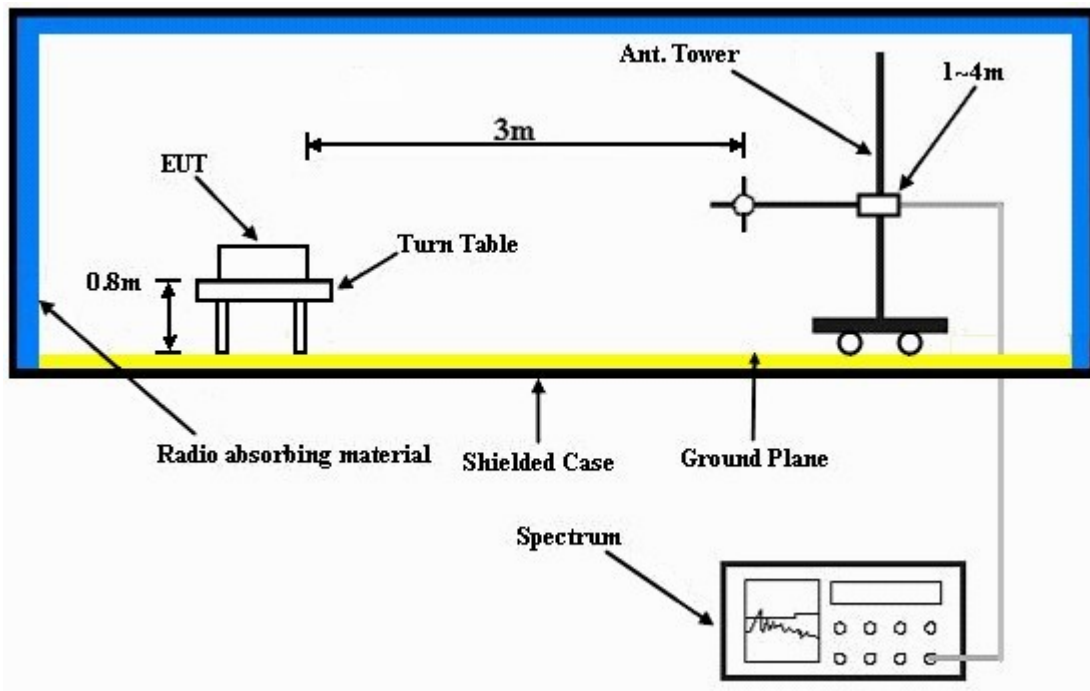
NOTE:

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

4.1.5 DEVIATION FROM TEST STANDARD

No deviation.

4.1.6 TEST SETUP



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

4.1.7 EUT OPERATING CONDITION

- Placed the EUT on the testing table.
- Prepared notebook system outside of testing area to act as a communication partners.
- The communication partner connected with EUT via a RJ45 UTP cable and run a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- The communication partner sent data to EUT by command "PING".

4.1.8 TEST RESULTS

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1002 hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4144.00	50.49 PK	74.00	-23.51	1.15 H	123	15.74	34.76
2	4144.00	45.10 AV	54.00	-8.90	1.15 H	123	10.35	34.76
3	5150.00	56.35 PK	74.00	-17.65	1.18 H	131	19.31	37.04
4	5150.00	42.31 AV	54.00	-11.69	1.18 H	131	5.27	37.04
5	*5180.00	107.48 PK			1.18 H	131	70.41	37.07
6	*5180.00	97.03 AV			1.18 H	131	59.96	37.07
7	8288.00	58.55 PK	74.00	-15.45	1.26 H	14	14.43	44.12
8	8288.00	49.14 AV	54.00	-4.86	1.26 H	14	5.02	44.12
9	#10360.00	64.13 PK	68.30	-4.17	1.25 H	131	16.87	47.26
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	4144.00	65.18 PK	74.00	-8.82	1.17 V	173	30.42	34.76
2	4144.00	52.66 AV	54.00	-1.34	1.17 V	173	17.90	34.76
3	5150.00	58.48 PK	74.00	-15.52	1.12 V	128	21.45	37.04
4	5150.00	44.46 AV	54.00	-9.54	1.12 V	128	7.42	37.04
5	*5180.00	109.84 PK			1.00 V	128	72.77	37.07
6	*5180.00	98.73 AV			1.00 V	128	61.66	37.07
7	8288.00	58.80 PK	74.00	-15.20	1.13 V	42	14.68	44.12
8	8288.00	49.12 AV	54.00	-4.88	1.13 V	42	5.00	44.12
9	#10360.00	66.62 PK	68.30	-1.68	1.22 V	96	19.36	47.26

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1002 hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4160.00	50.68 PK	74.00	-23.32	1.13 H	125	15.90	34.78
2	4160.00	45.26 AV	54.00	-8.74	1.13 H	125	10.48	34.78
3	*5200.00	109.31 PK			1.19 H	134	72.22	37.09
4	*5200.00	98.22 AV			1.19 H	134	61.13	37.09
5	8320.00	58.96 PK	74.00	-15.04	1.21 H	19	14.84	44.12
6	8320.00	49.55 AV	54.00	-4.45	1.21 H	19	5.43	44.12
7	#10400.00	64.69 PK	68.30	-3.61	1.13 H	104	17.22	47.47
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	4160.00	53.54 PK	74.00	-20.46	1.11 V	2	18.76	34.78
2	4160.00	47.33 AV	54.00	-6.67	1.11 V	2	12.55	34.78
3	*5200.00	111.65 PK			1.07 V	3	74.56	37.09
4	*5200.00	100.54 AV			1.07 V	3	63.45	37.09
5	8320.00	58.49 PK	74.00	-15.51	1.07 V	28	14.37	44.12
6	8320.00	50.71 AV	54.00	-3.29	1.07 V	28	6.59	44.12
7	#10400.00	66.87 PK	68.30	-1.43	1.34 V	118	19.40	47.47

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1002 hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4192.00	51.68 PK	74.00	-22.32	1.09 H	125	16.86	34.82
2	4192.00	46.26 AV	54.00	-7.74	1.09 H	125	11.44	34.82
3	*5240.00	107.95 PK			1.16 H	128	70.75	37.20
4	*5240.00	97.48 AV			1.16 H	128	60.28	37.20
5	5350.00	50.87 PK	74.00	-23.13	1.16 H	128	13.47	37.40
6	5350.00	38.67 AV	54.00	-15.33	1.16 H	128	1.27	37.40
7	8384.00	58.64 PK	74.00	-15.36	1.25 H	16	14.58	44.06
8	8384.00	49.29 AV	54.00	-4.71	1.25 H	16	5.23	44.06
9	#10480.00	65.22 PK	68.30	-3.08	1.01 H	245	17.56	47.66
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	4192.00	55.86 PK	74.00	-18.14	1.09 V	334	21.04	34.82
2	4192.00	50.47 AV	54.00	-3.53	1.09 V	334	15.65	34.82
3	*5240.00	109.93 PK			1.48 V	220	72.73	37.20
4	*5240.00	99.14 AV			1.48 V	220	61.94	37.20
5	5350.00	51.98 PK	74.00	-22.02	1.48 V	220	14.58	37.40
6	5350.00	39.82 AV	54.00	-14.18	1.48 V	220	2.42	37.40
7	8384.00	58.46 PK	74.00	-15.54	1.25 V	226	14.40	44.06
8	8384.00	49.19 AV	54.00	-4.81	1.25 V	226	5.13	44.06
9	#10480.00	67.17 PK	68.30	-1.13	1.20 V	95	19.51	47.66

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



802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1002 hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4144.00	51.98 PK	74.00	-22.02	1.07 H	300	17.23	34.76
2	4144.00	46.31 AV	54.00	-7.69	1.07 H	300	11.56	34.76
3	5150.00	56.48 PK	74.00	-17.52	1.19 H	132	19.44	37.04
4	5150.00	42.45 AV	54.00	-11.55	1.19 H	132	5.41	37.04
5	*5180.00	107.54 PK			1.19 H	132	70.47	37.07
6	*5180.00	97.18 AV			1.19 H	132	60.11	37.07
7	8288.00	58.39 PK	74.00	-15.61	1.25 H	14	14.27	44.12
8	8288.00	49.28 AV	54.00	-4.72	1.25 H	14	5.16	44.12
9	#10360.00	66.28 PK	68.30	-2.02	1.31 H	152	19.02	47.26
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	4144.00	52.96 PK	74.00	-21.04	1.19 V	311	18.21	34.76
2	4144.00	44.98 AV	54.00	-9.02	1.19 V	311	10.23	34.76
3	5150.00	68.94 PK	74.00	-5.06	1.33 V	15	31.90	37.04
4	5150.00	46.39 AV	54.00	-7.61	1.33 V	15	9.35	37.04
5	*5180.00	109.94 PK			1.39 V	18	72.87	37.07
6	*5180.00	98.88 AV			1.39 V	18	61.81	37.07
7	8288.00	58.80 PK	74.00	-15.20	1.25 V	204	14.68	44.12
8	8288.00	51.43 AV	54.00	-2.57	1.25 V	204	7.31	44.12
9	#10360.00	66.45 PK	68.30	-1.85	1.42 V	118	19.19	47.26

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1002 hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4160.00	53.21 PK	74.00	-20.79	1.09 H	16	18.43	34.78
2	4160.00	47.05 AV	54.00	-6.95	1.09 H	16	12.27	34.78
3	*5200.00	107.19 PK			1.20 H	135	70.10	37.09
4	*5200.00	96.80 AV			1.20 H	135	59.71	37.09
5	8320.00	58.02 PK	74.00	-15.98	1.01 H	92	13.90	44.12
6	8320.00	50.34 AV	54.00	-3.66	1.01 H	92	6.22	44.12
7	#10400.00	66.04 PK	68.30	-2.26	1.04 H	219	18.57	47.47
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	4160.00	52.48 PK	74.00	-21.52	1.05 V	314	17.70	34.78
2	4160.00	46.23 AV	54.00	-7.77	1.05 V	314	11.45	34.78
3	*5200.00	109.53 PK			1.44 V	326	72.44	37.09
4	*5200.00	98.71 AV			1.44 V	326	61.62	37.09
5	8320.00	59.69 PK	74.00	-14.31	1.43 V	199	15.57	44.12
6	8320.00	52.41 AV	54.00	-1.59	1.43 V	199	8.29	44.12
7	#10400.00	66.77 PK	68.30	-1.53	1.60 V	162	19.30	47.47

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1002 hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4192.00	52.34 PK	74.00	-21.66	1.10 H	131	17.52	34.82
2	4192.00	44.91 AV	54.00	-9.09	1.10 H	131	10.09	34.82
3	*5240.00	107.89 PK			1.18 H	132	70.69	37.20
4	*5240.00	97.62 AV			1.18 H	132	60.42	37.20
5	5350.00	50.28 PK	74.00	-23.72	1.18 H	132	12.88	37.40
6	5350.00	38.04 AV	54.00	-15.96	1.18 H	132	0.64	37.40
7	8384.00	58.96 PK	74.00	-15.04	1.20 H	19	14.90	44.06
8	8384.00	49.65 AV	54.00	-4.35	1.20 H	19	5.59	44.06
9	#10480.00	65.46 PK	68.30	-2.84	1.13 H	241	17.80	47.66

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	4192.00	51.04 PK	74.00	-22.96	1.18 V	316	16.22	34.82
2	4192.00	45.40 AV	54.00	-8.60	1.18 V	316	10.58	34.82
3	*5240.00	109.81 PK			1.57 V	323	72.61	37.20
4	*5240.00	99.52 AV			1.57 V	323	62.32	37.20
5	5350.00	52.41 PK	74.00	-21.59	1.57 V	323	15.01	37.40
6	5350.00	40.33 AV	54.00	-13.67	1.57 V	323	2.93	37.40
7	8384.00	57.89 PK	74.00	-16.11	1.14 V	26	13.83	44.06
8	8384.00	49.72 AV	54.00	-4.28	1.14 V	26	5.66	44.06
9	#10480.00	66.62 PK	68.30	-1.68	1.22 V	98	18.96	47.66

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



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1002 hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4152.00	52.94 PK	74.00	-21.06	1.09 H	319	18.17	34.77
2	4152.00	47.27 AV	54.00	-6.73	1.09 H	319	12.50	34.77
3	5150.00	70.21 PK	74.00	-3.79	1.16 H	135	33.17	37.04
4	5150.00	50.35 AV	54.00	-3.65	1.16 H	135	13.31	37.04
5	*5190.00	107.56 PK			1.16 H	135	70.48	37.08
6	*5190.00	97.22 AV			1.16 H	135	60.14	37.08
7	8304.00	58.30 PK	74.00	-15.70	1.07 H	15	14.16	44.14
8	8304.00	48.96 AV	54.00	-5.04	1.07 H	15	4.82	44.14
9	#10380.00	66.16 PK	68.30	-2.14	1.36 H	154	18.80	47.36
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	4152.00	52.97 PK	74.00	-21.03	1.40 V	5	18.20	34.77
2	4152.00	46.60 AV	54.00	-7.40	1.40 V	5	11.83	34.77
3	5150.00	72.74 PK	74.00	-1.26	1.09 V	13	35.70	37.04
4	5150.00	52.82 AV	54.00	-1.18	1.09 V	13	15.78	37.04
5	*5190.00	110.03 PK			1.07 V	4	72.95	37.08
6	*5190.00	99.41 AV			1.07 V	4	62.33	37.08
7	8304.00	58.90 PK	74.00	-15.10	1.00 V	28	14.76	44.14
8	8304.00	51.33 AV	54.00	-2.67	1.00 V	28	7.19	44.14
9	#10380.00	66.89 PK	68.30	-1.41	1.29 V	94	19.53	47.36

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1002 hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4184.00	53.13 PK	74.00	-20.87	1.10 H	324	18.32	34.81
2	4184.00	48.02 AV	54.00	-5.98	1.10 H	324	13.21	34.81
3	*5230.00	107.81 PK			1.15 H	132	70.64	37.17
4	*5230.00	97.45 AV			1.15 H	132	60.28	37.17
5	5350.00	56.41 PK	74.00	-17.59	1.15 H	132	19.01	37.40
6	5350.00	42.65 AV	54.00	-11.35	1.15 H	132	5.25	37.40
7	8368.00	58.65 PK	74.00	-15.35	1.04 H	56	14.58	44.07
8	8368.00	50.52 AV	54.00	-3.48	1.04 H	56	6.45	44.07
9	#10460.00	66.25 PK	68.30	-2.05	1.02 H	22	18.64	47.61
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	4184.00	52.65 PK	74.00	-21.35	1.00 V	4	17.84	34.81
2	4184.00	47.56 AV	54.00	-6.44	1.00 V	4	12.75	34.81
3	*5230.00	110.29 PK			1.06 V	7	73.12	37.17
4	*5230.00	99.48 AV			1.06 V	7	62.31	37.17
5	5350.00	58.55 PK	74.00	-15.45	1.06 V	7	21.15	37.40
6	5350.00	44.79 AV	54.00	-9.21	1.06 V	7	7.39	37.40
7	8368.00	58.01 PK	74.00	-15.99	1.00 V	26	13.94	44.07
8	8368.00	49.91 AV	54.00	-4.09	1.00 V	26	5.84	44.07
9	#10460.00	67.00 PK	68.30	-1.30	1.27 V	91	19.39	47.61

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

BELOW 1GHz WORST-CASE DATA : 802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH 1000 hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	249.60	39.1 QP	46.0	-6.9	1.00 H	64	26.30	12.80
2	500.42	44.6 QP	46.0	-1.4	1.50 H	322	24.80	19.80
3	624.85	44.3 QP	46.0	-1.7	1.00 H	208	21.90	22.40
4	639.99	44.2 QP	46.0	-1.8	1.15 H	284	21.50	22.70
5	751.23	39.0 QP	46.0	-7.0	1.00 H	202	14.90	24.10
6	933.99	40.1 QP	46.0	-5.9	1.00 H	307	13.70	26.40
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	103.78	33.6 QP	43.5	-9.9	1.00 V	40	23.00	10.60
2	375.98	41.7 QP	46.0	-4.3	1.00 V	196	25.20	16.50
3	500.42	44.9 QP	46.0	-1.1	2.00 V	256	25.10	19.80
4	640.41	42.6 QP	46.0	-3.4	2.00 V	1	19.90	22.70
5	751.23	37.1 QP	46.0	-8.9	1.00 V	10	13.00	24.10
6	933.99	39.8 QP	46.0	-6.2	1.00 V	151	13.40	26.40

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

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (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.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Sep. 24, 2009	Sep. 23, 2010
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 31, 2009	Dec. 30, 2010
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Aug. 24, 2009	Aug. 23, 2010
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jul. 08, 2010	Jul. 07, 2011
Software ADT	ADT_Cond_ V7.3.7	NA	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-2047.

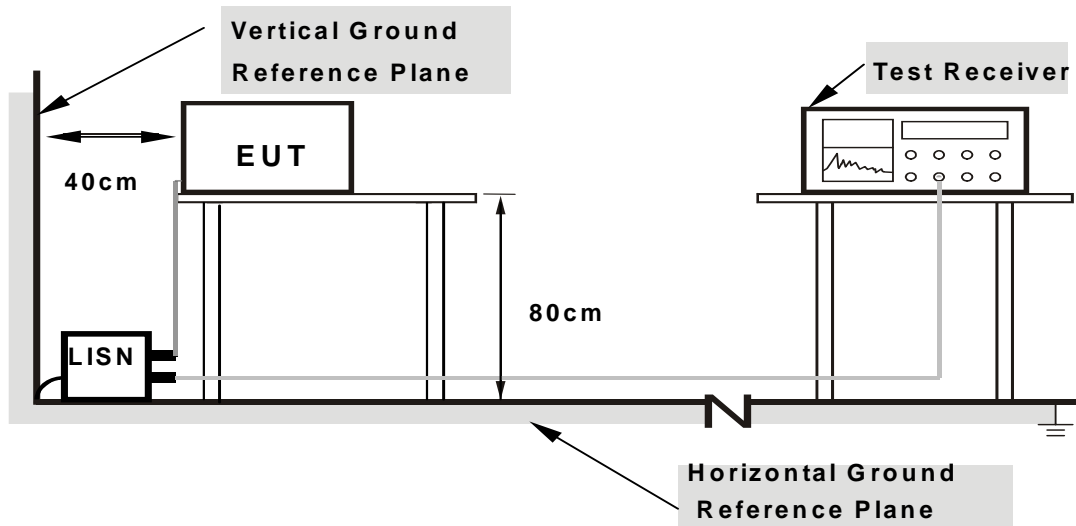
4.2.3 TEST PROCEDURES

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.



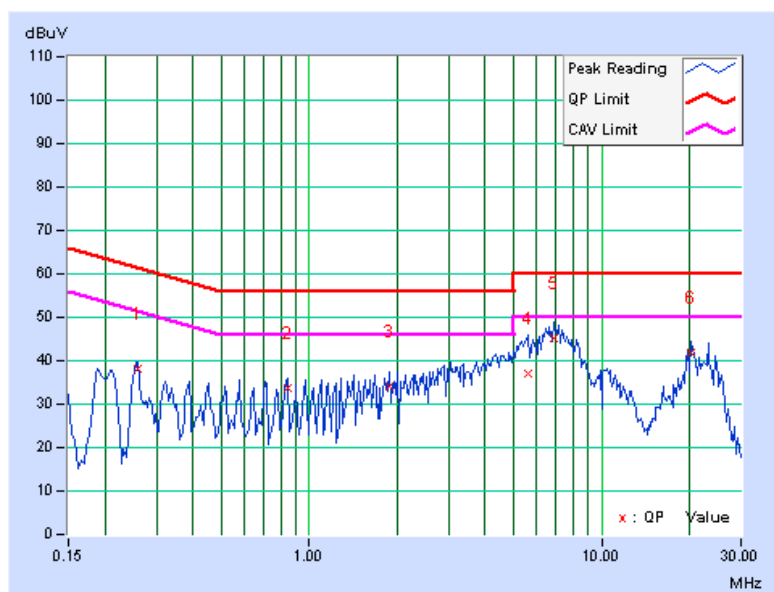
4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA : 802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	13.5Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 62%RH, 1021hPa	TESTED BY	Jacky Lee

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	0.259	0.17	38.02	-	38.19	-	61.45	51.45	-23.27	-
2	0.841	0.22	33.53	-	33.75	-	56.00	46.00	-22.25	-
3	1.871	0.30	33.89	-	34.19	-	56.00	46.00	-21.81	-
4	5.641	0.35	36.58	-	36.93	-	60.00	50.00	-23.07	-
5	6.840	0.35	44.94	-	45.29	-	60.00	50.00	-14.71	-
6	20.258	0.68	41.30	-	41.98	-	60.00	50.00	-18.02	-

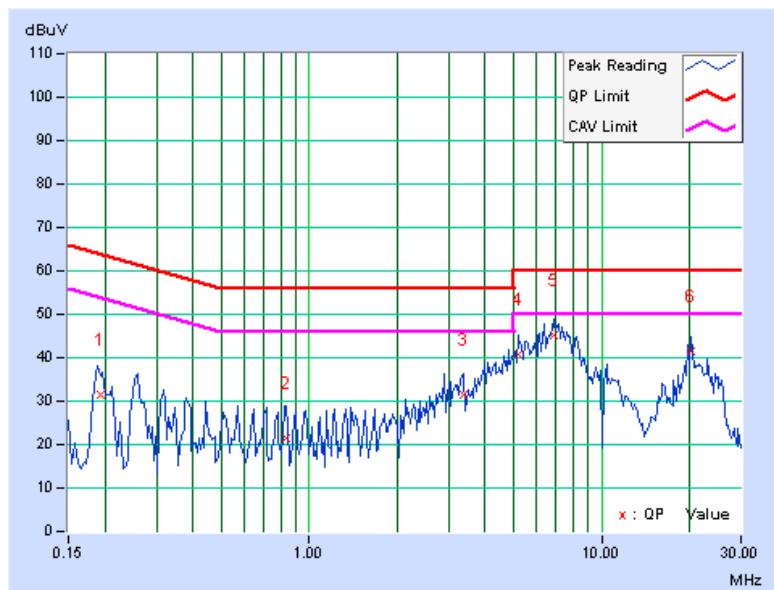
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	13.5Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 62%RH, 1021hPa	TESTED BY	Jacky Lee

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.193	0.13	31.40	-	31.53	-	63.91
2	0.834	0.20	21.35	-	21.55	-	56.00	46.00	-34.45	-
3	3.355	0.34	31.20	-	31.54	-	56.00	46.00	-24.46	-
4	5.221	0.38	40.53	-	40.91	-	60.00	50.00	-19.09	-
5	6.836	0.40	44.89	-	45.29	-	60.00	50.00	-14.71	-
6	20.259	0.92	40.60	-	41.52	-	60.00	50.00	-18.48	-

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



4.3 PEAK TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

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

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

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
High Speed Peak Power Meter	ML2495A	0824011	Jul. 30, 2009	Jul. 29, 2010
Power Sensor	MA2411B	0738171	Jul. 30, 2009	Jul. 29, 2010

NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Measurement Bandwidth of ML2495A is 65MHz greater than 26dB bandwidth of emission.

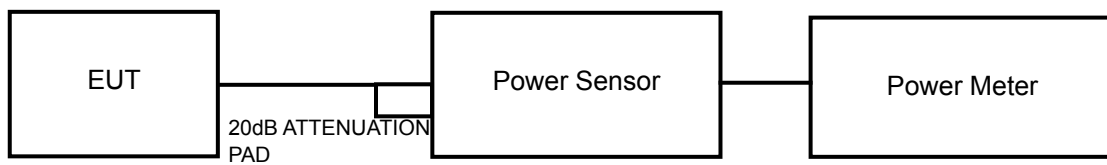
4.3.3 TEST PROCEDURE

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.

4.3.4 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 specific channel frequencies individually.



4.3.7 TEST RESULTS

PEAK POWER OUTPUT: 802.11a

MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Brad Wu		

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	11.03	10.05	22.79	13.58	17	PASS
40	5200	12.04	11.56	30.32	14.82	17	PASS
48	5240	12.02	12.01	31.81	15.03	17	PASS

802.11n (20MHz)

MODULATION TYPE	BPSK	TRANSFER RATE	6.5Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Brad Wu		

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	11.04	10.05	22.82	13.58	17	PASS
40	5200	11.02	10.53	23.95	13.79	17	PASS
48	5240	12.56	11.57	32.39	15.10	17	PASS



A D T

802.11n (40MHz)

MODULATION TYPE	BPSK	TRANSFER RATE	13.5Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Brad Wu		

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	12.52	12.04	33.86	15.30	17	PASS
46	5230	13.55	13.06	42.88	16.32	17	PASS



A D T

26dB OCCUPIED BANDWIDTH: 802.11a

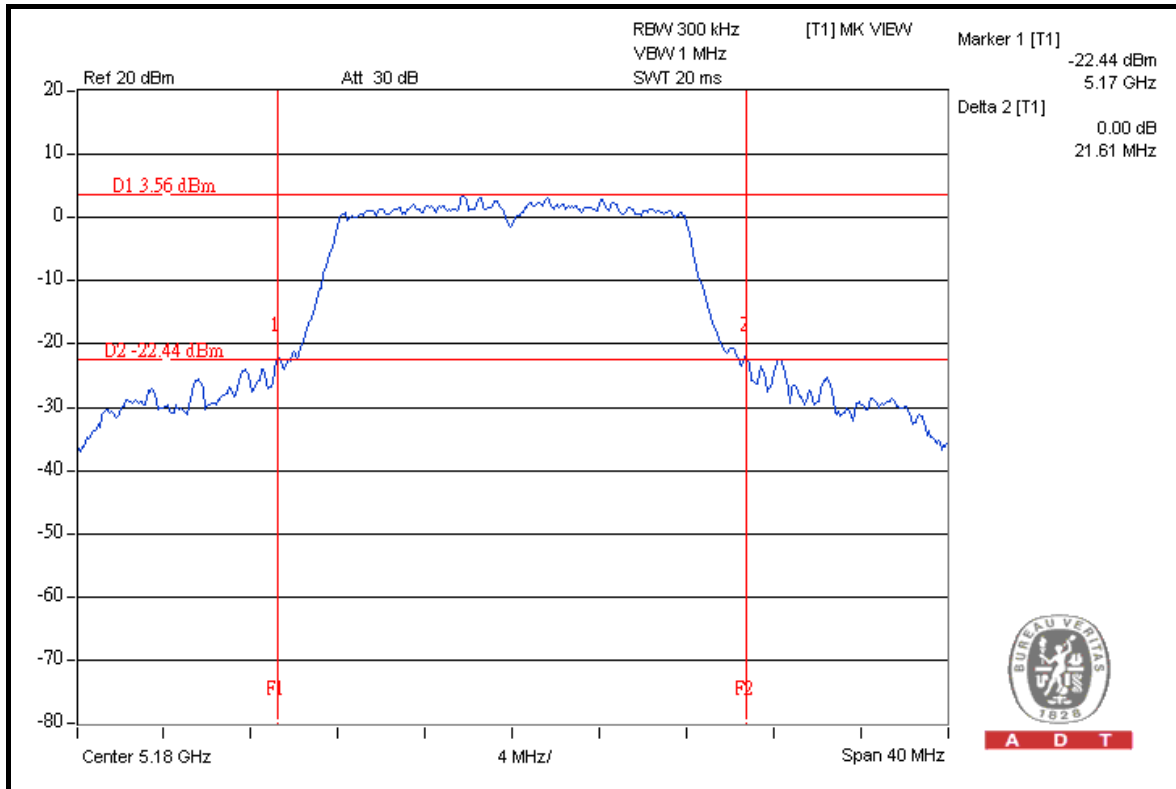
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
36	5180	21.61	25.44	PASS
40	5200	21.40	25.32	PASS
48	5240	23.55	24.73	PASS

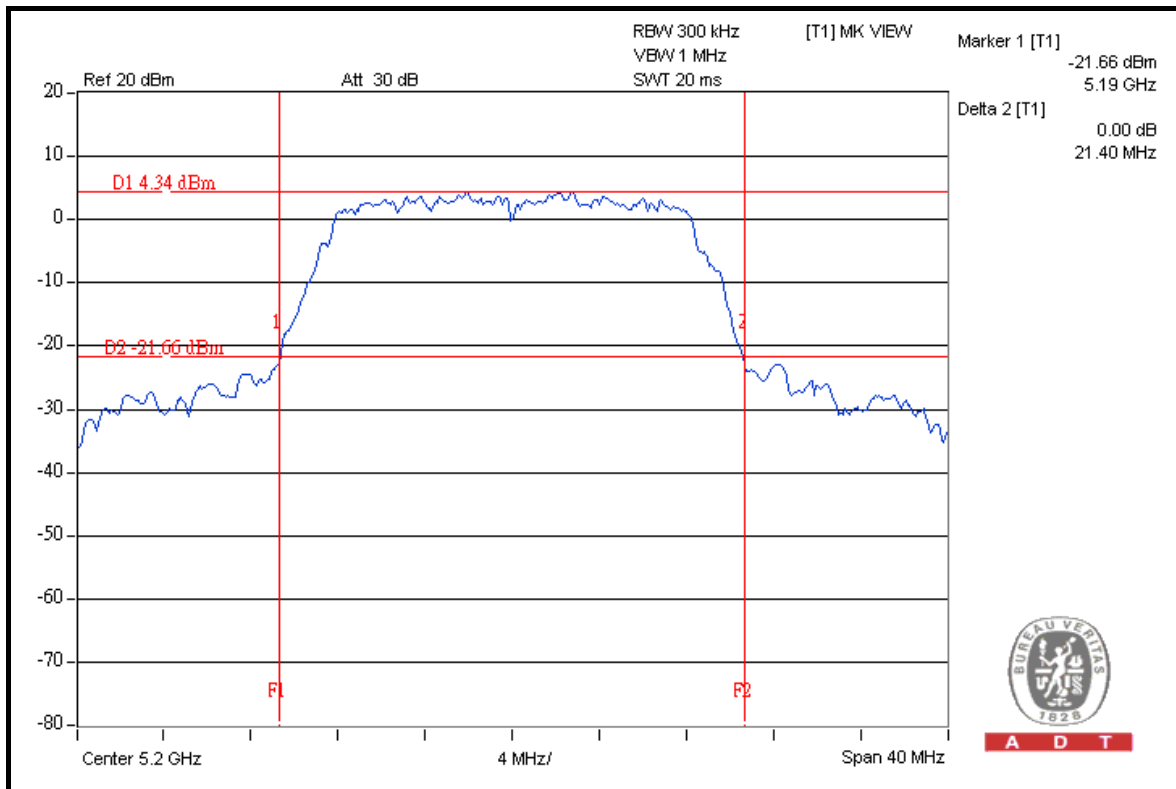


A D T

FOR CHAIN 0: CH 36



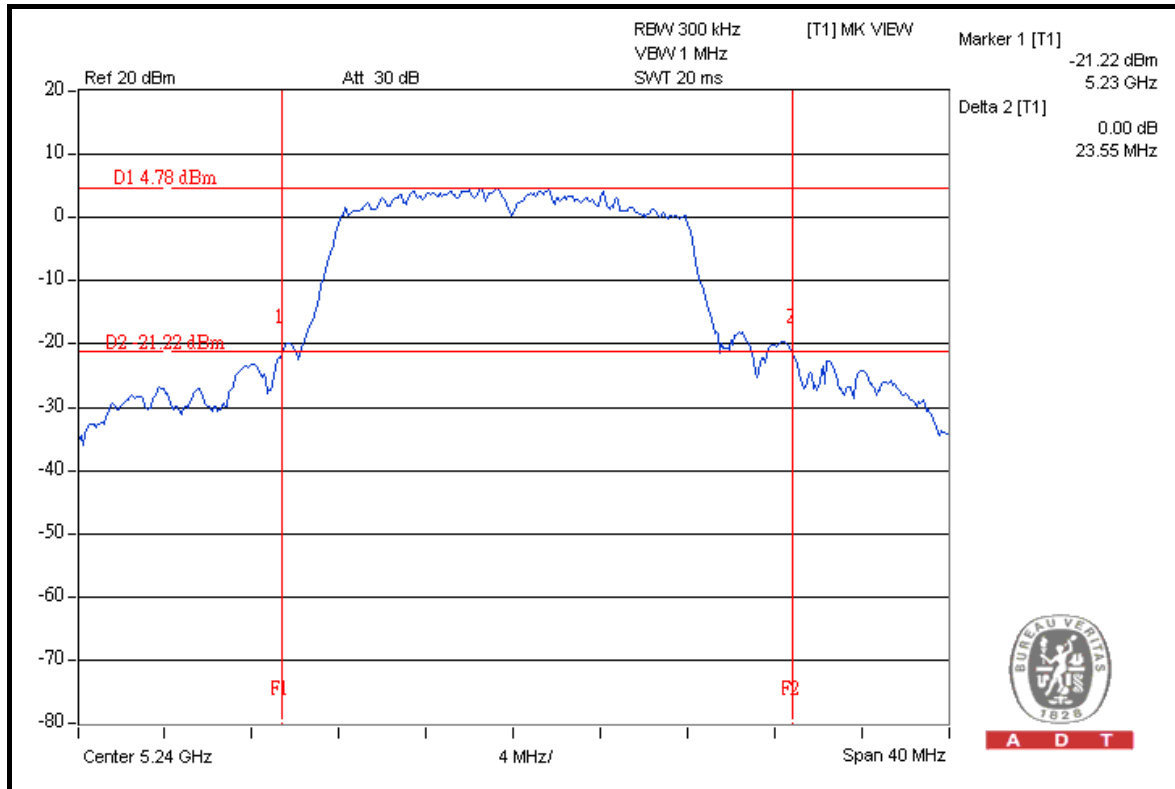
CH 40



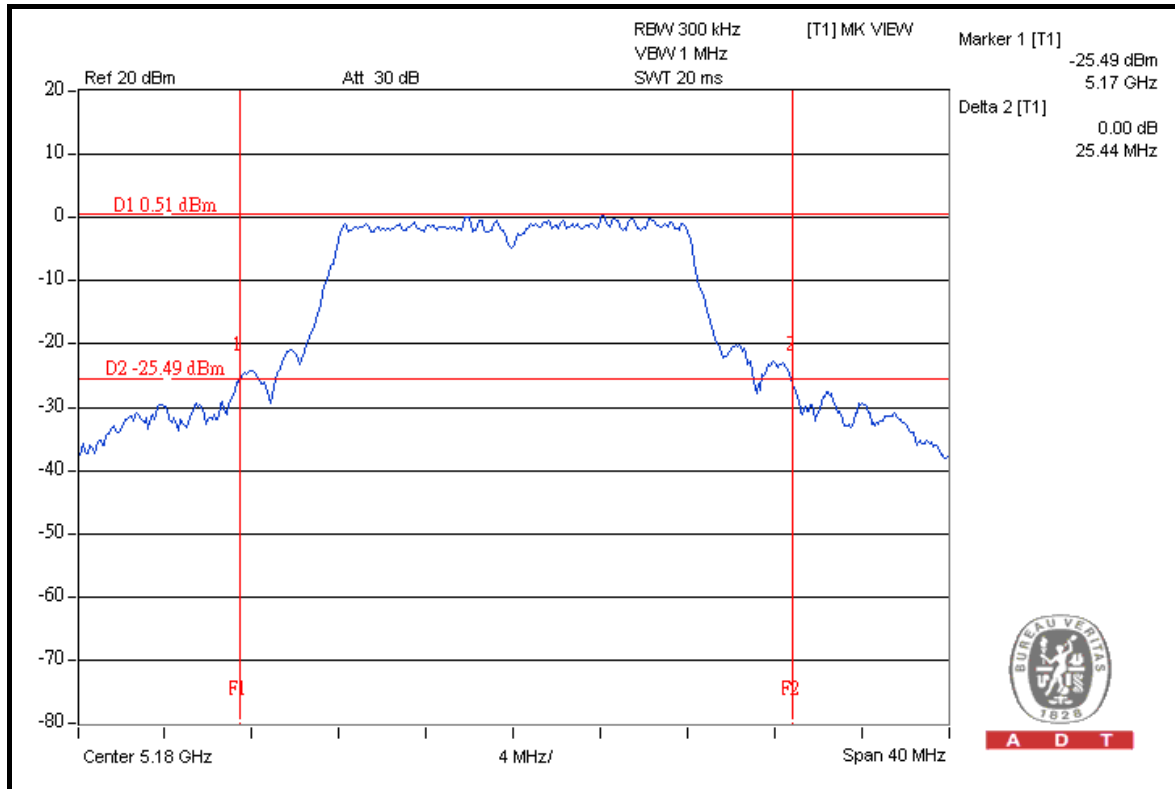


A D T

CH 48



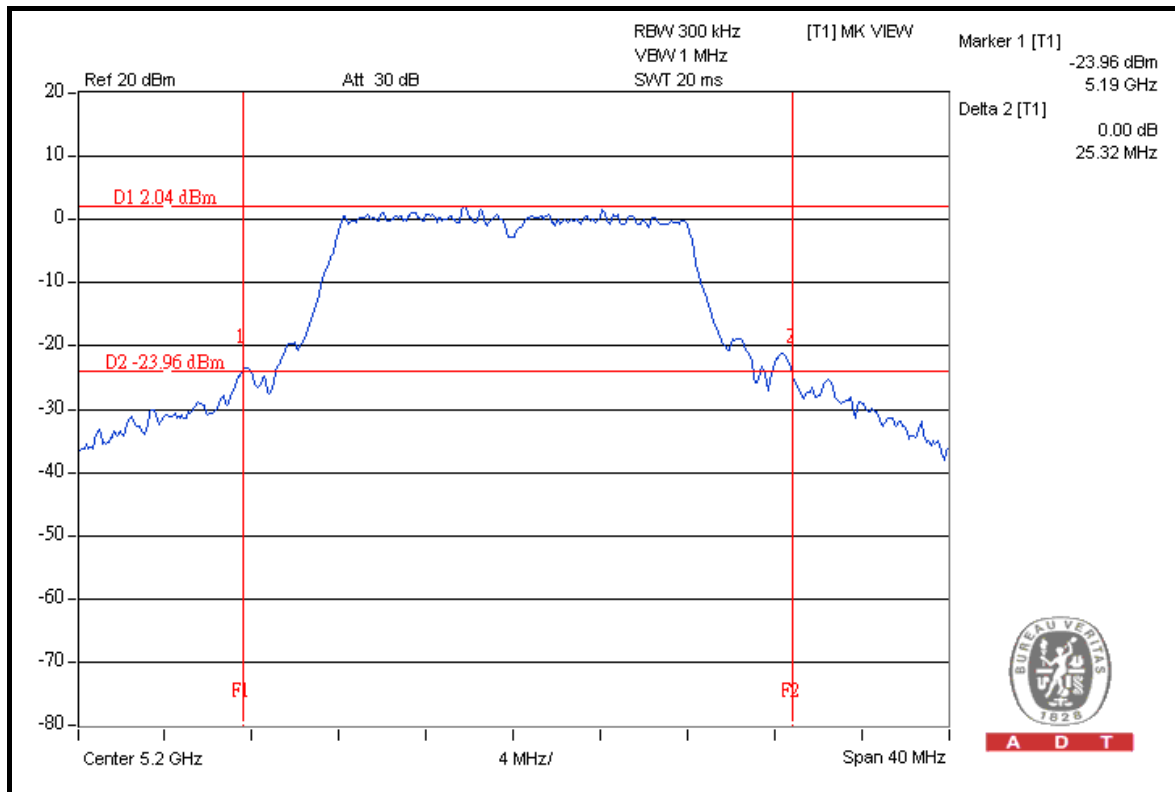
FOR CHAIN 1: CH 36



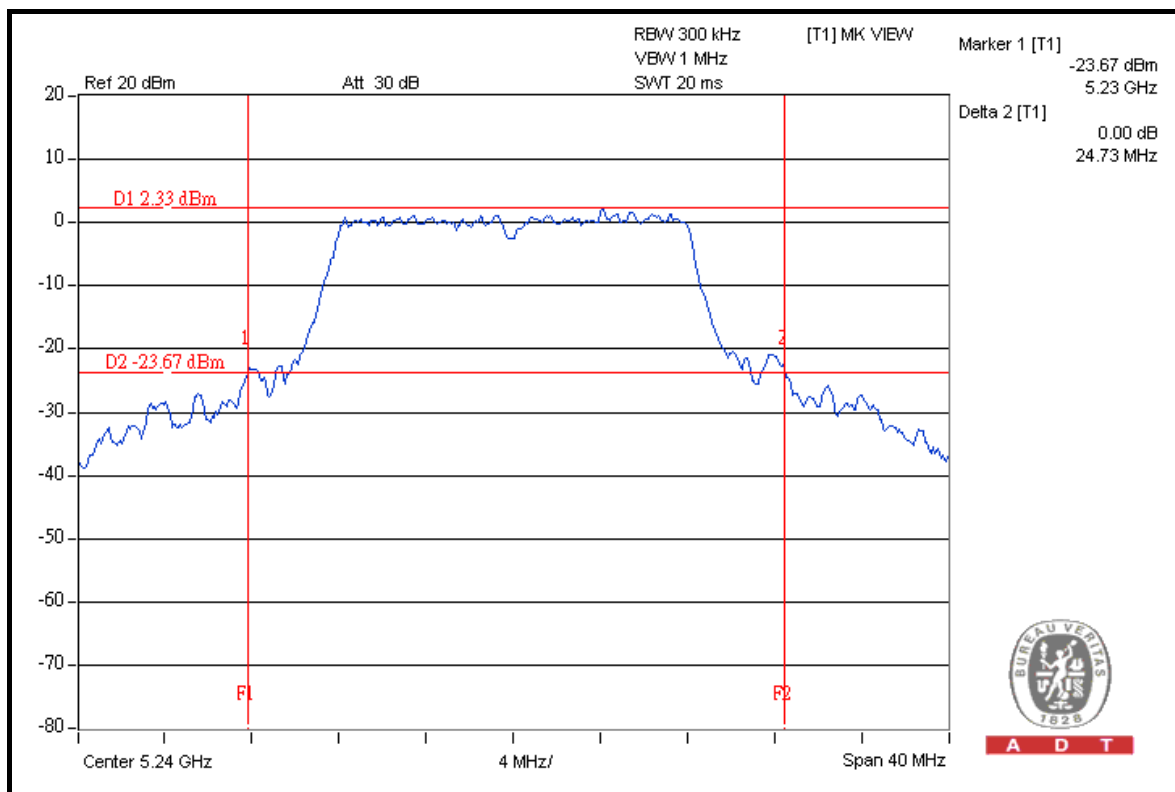


A D T

CH 40



CH 48





A D T

802.11n (20MHz)

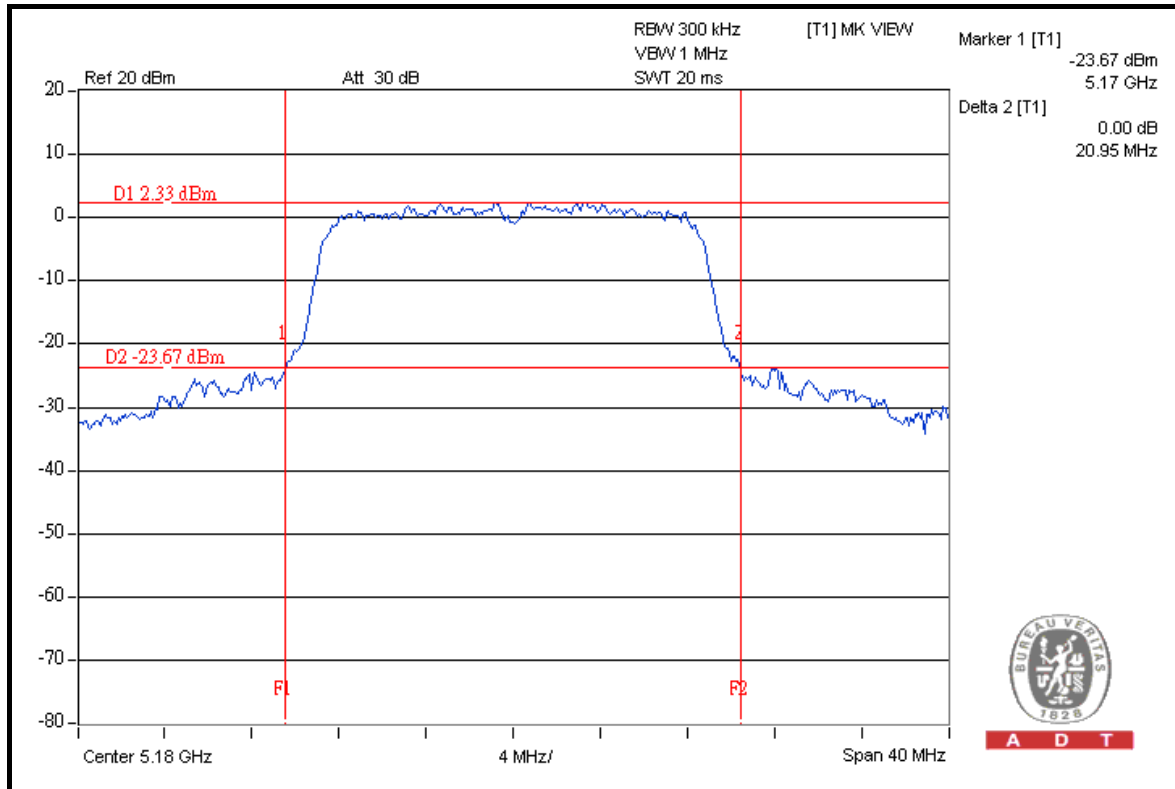
MODULATION TYPE	BPSK	TRANSFER RATE	6.5Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
36	5180	20.95	24.60	PASS
40	5200	20.55	22.51	PASS
48	5240	20.38	21.11	PASS

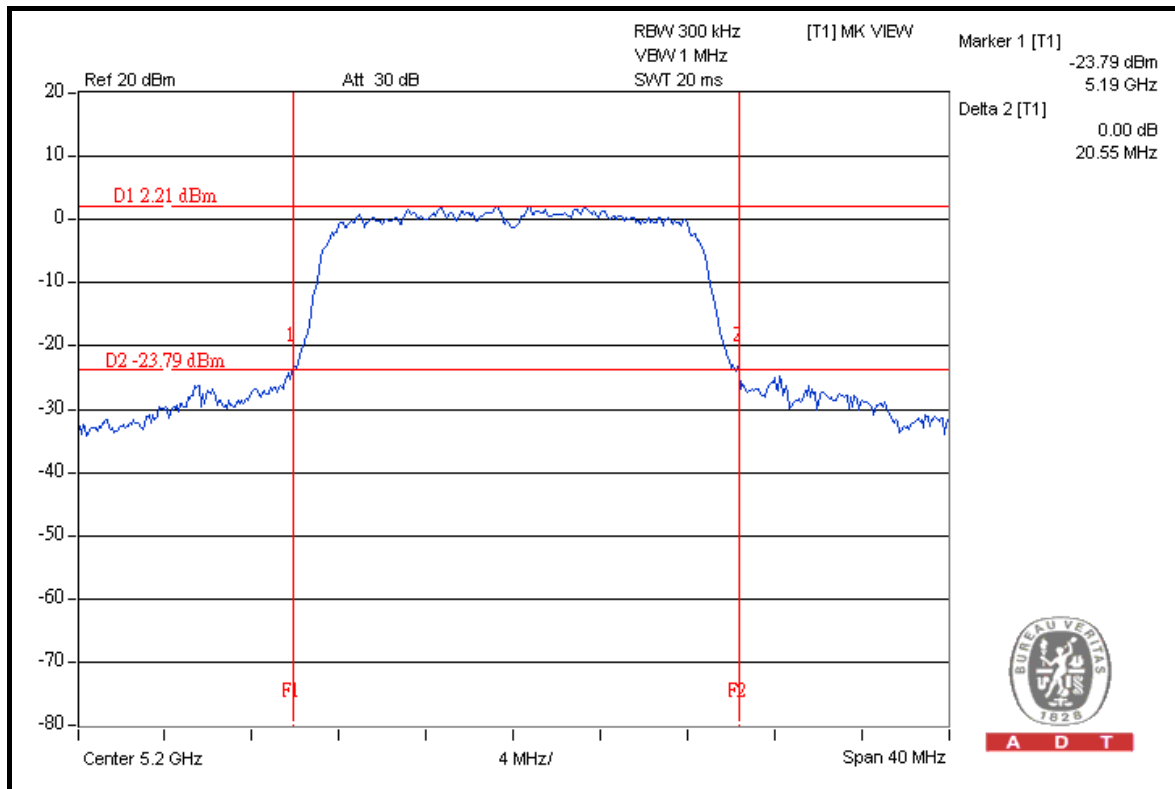


A D T

FOR CHAIN 0: CH 36



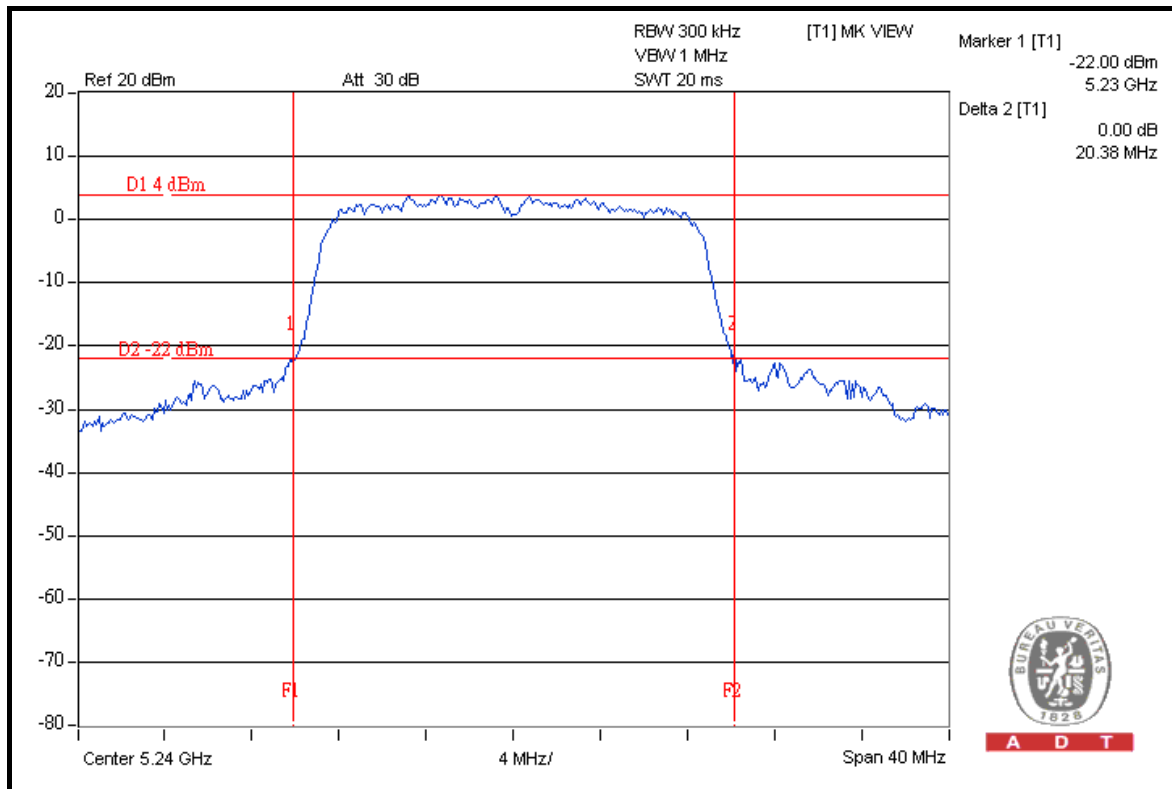
CH 40



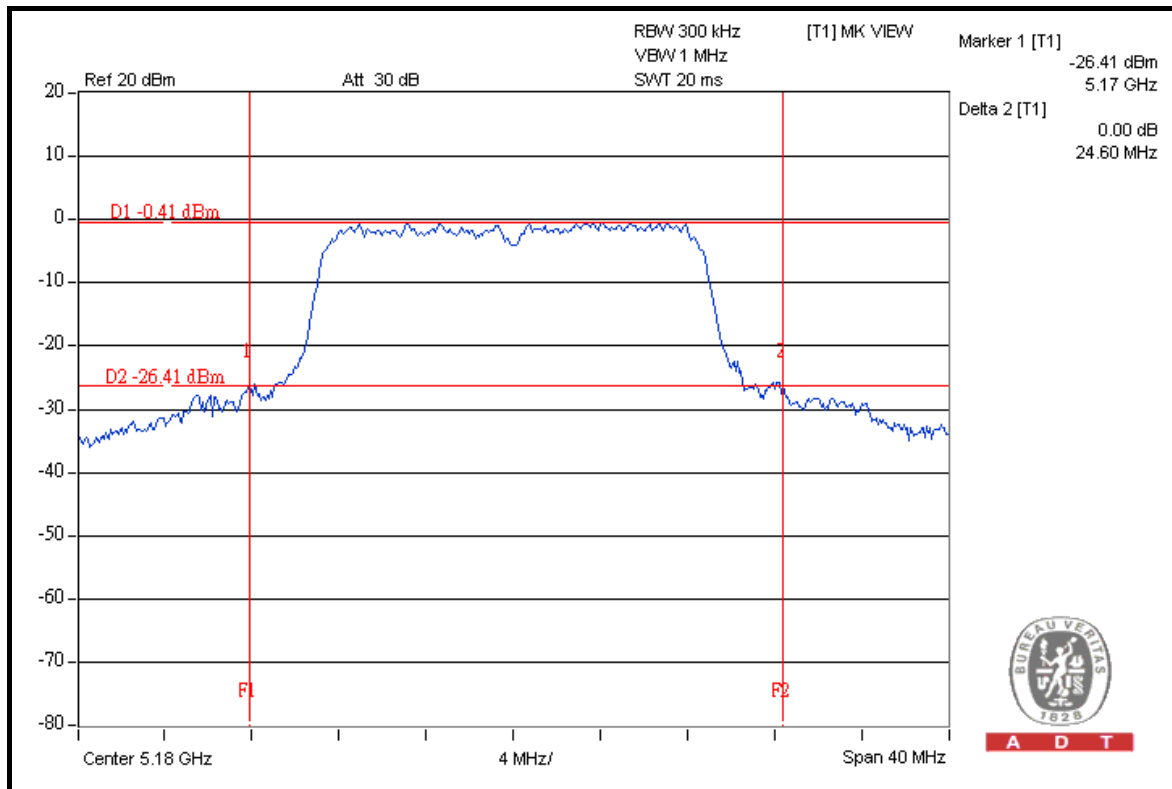


A D T

CH 48



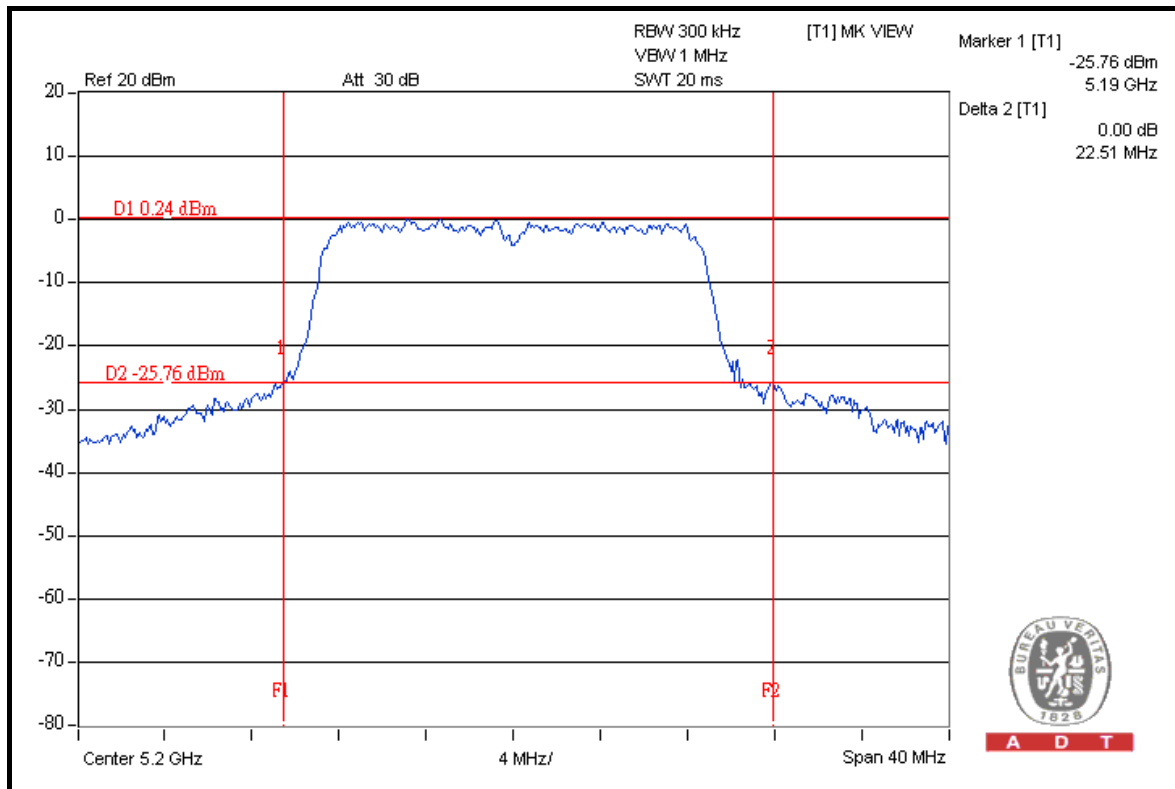
FOR CHAIN 1: CH 36



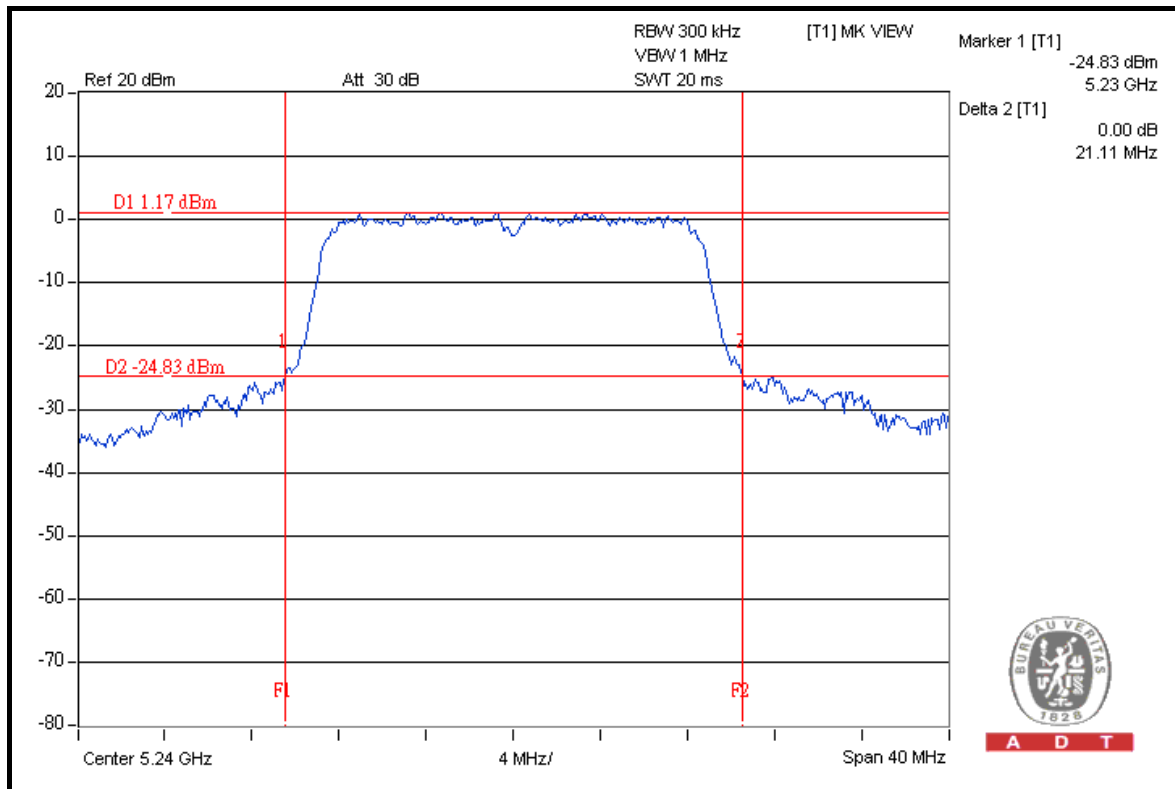


A D T

CH 40



CH 48





A D T

802.11n (40MHz)

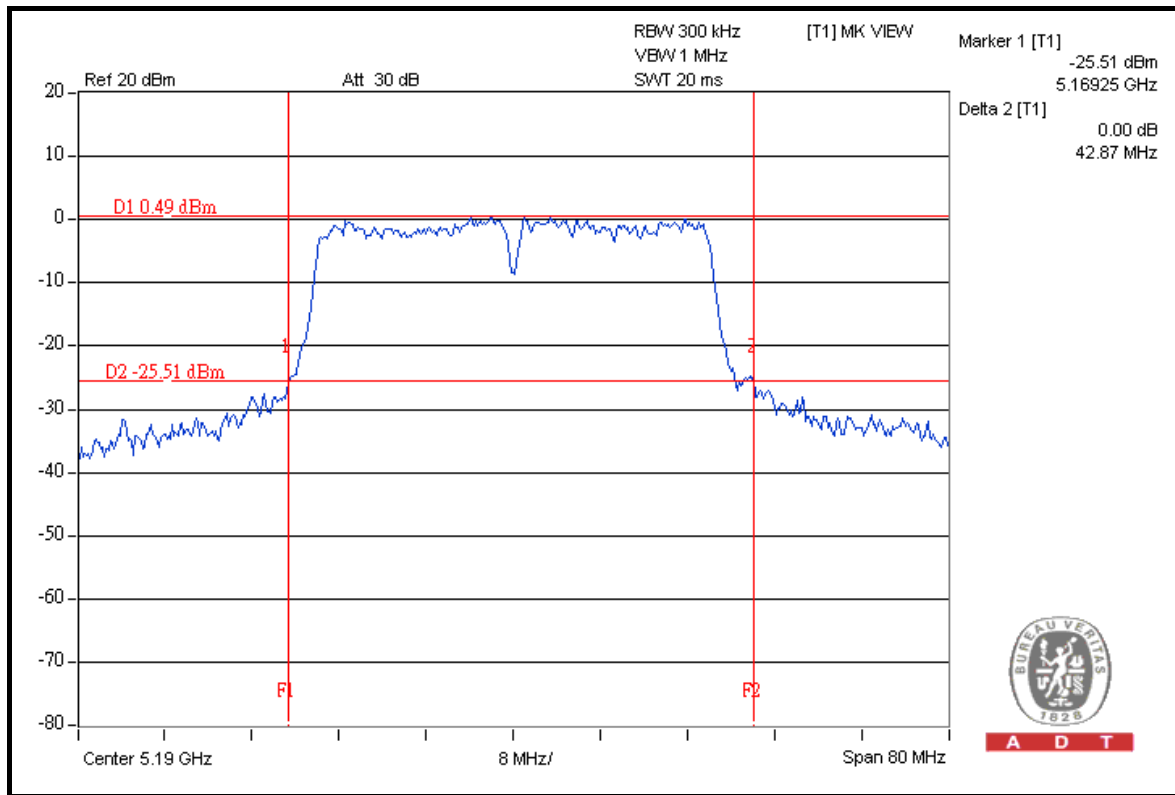
MODULATION TYPE	BPSK	TRANSFER RATE	13.5Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
38	5190	42.87	46.71	PASS
46	5230	42.70	42.43	PASS

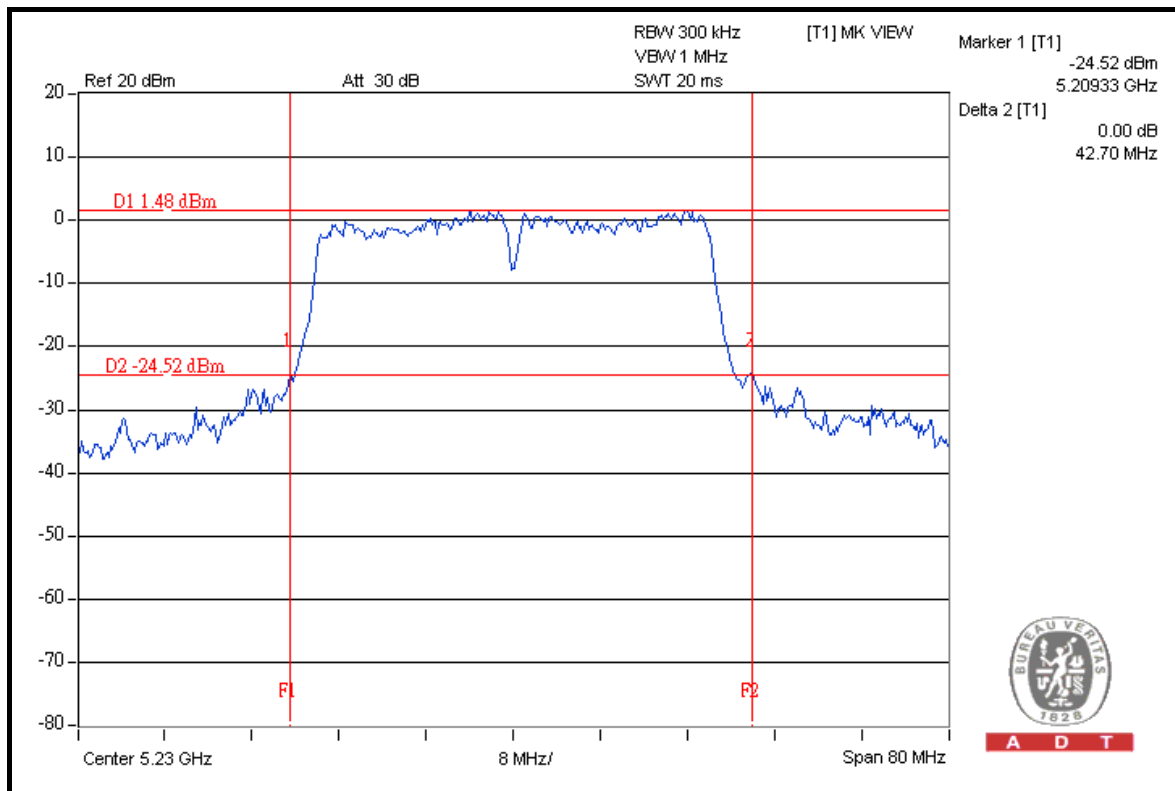


A D T

FOR CHAIN 0: CH 38



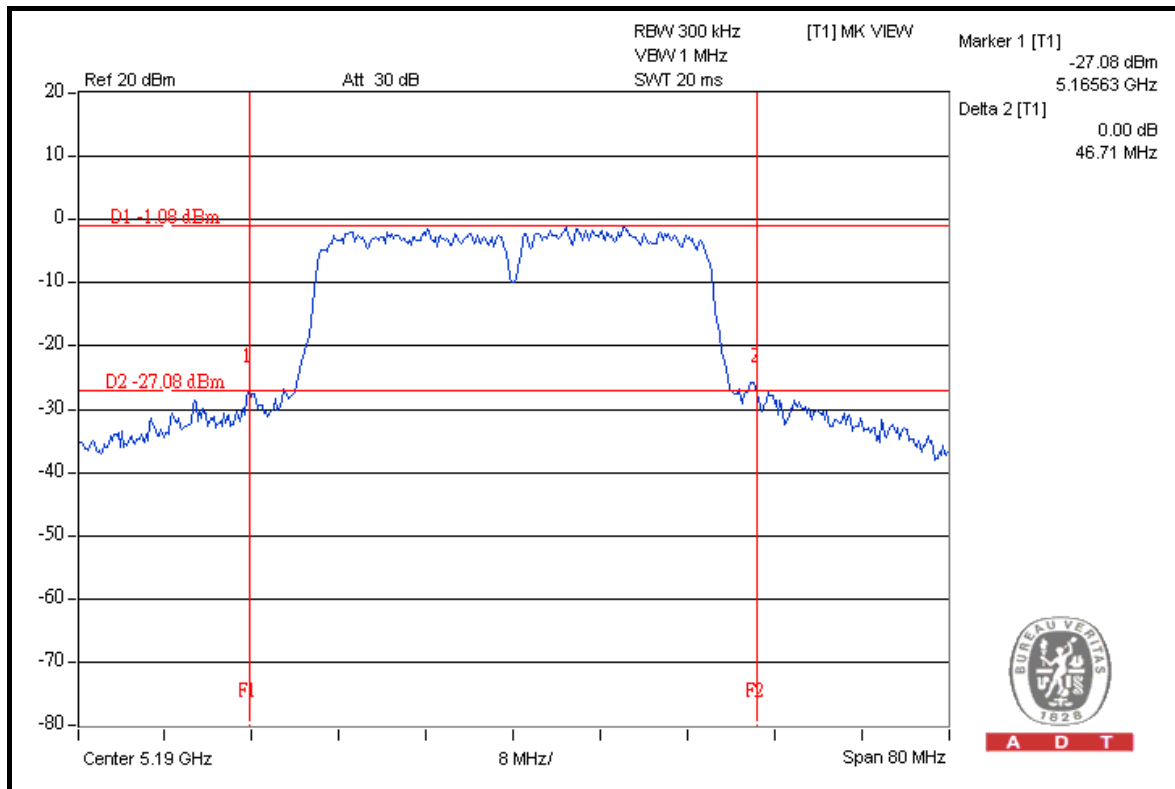
CH 46



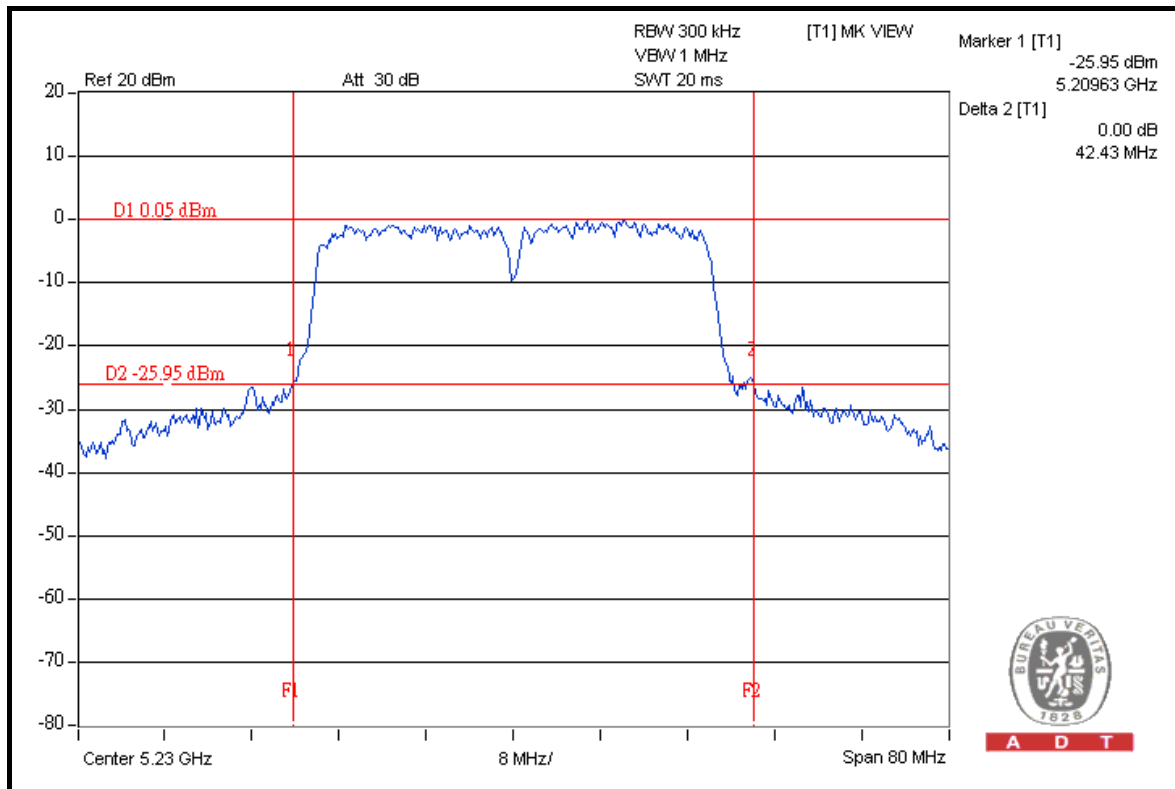


A D T

FOR CHAIN 1: CH 38



CH 46



4.4 PEAK POWER EXCURSION MEASUREMENT

4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

FREQUENCY BAND	LIMIT
5.15 ~ 5.25GHz	13dB

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
R&S SPECTRUM ANALYZER	FSP40	100041	May 13, 2009	May 12, 2010

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

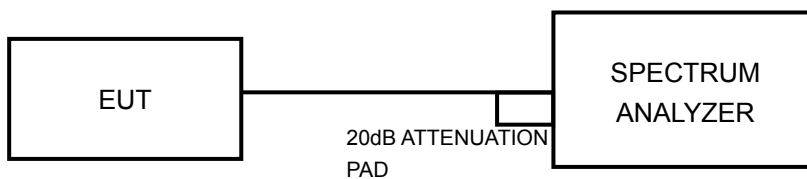
4.4.3 TEST PROCEDURE

- a. The transmitter output was connected to the spectrum analyzer.
- b. Set the spectrum bandwidth span to view the entire spectrum.
- c. Using peak detector and Max-hold function for Trace 1 (RB = 1MHz, VB = 3MHz) and 2 (RB = 1MHz, VB = 300kHz).
- d. The differences between Trace1 and Trace 2 in any 1MHz band at f1 to f2 range were recorded and showed to another trace.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

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



4.4.7 TEST RESULTS

802.11a

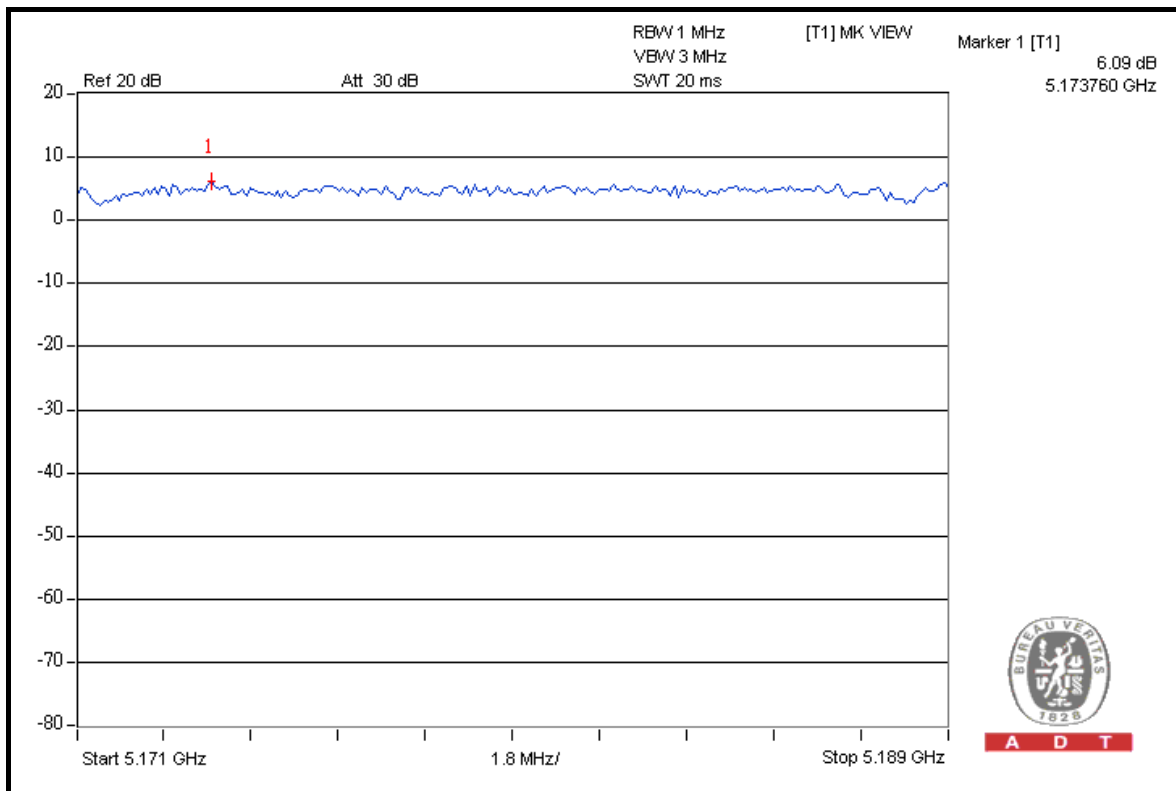
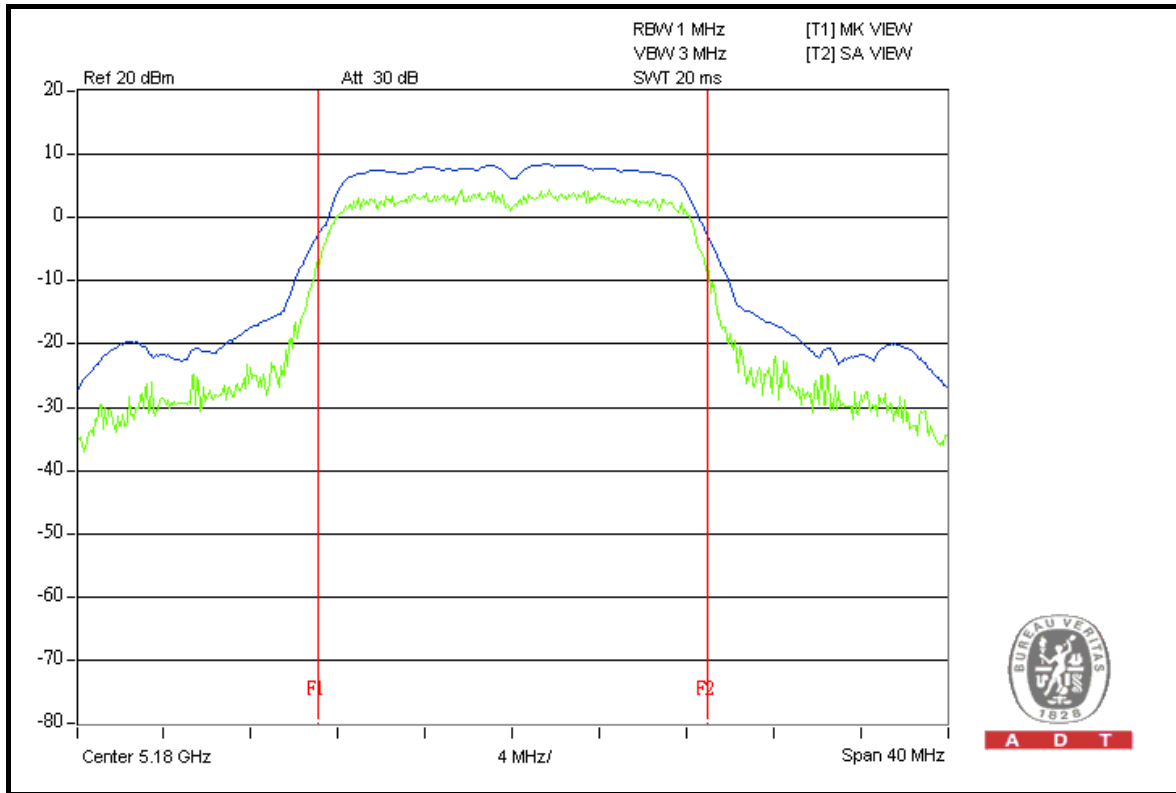
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)		PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1		
36	5180	6.09	6.60	13	PASS
40	5200	6.45	6.19	13	PASS
48	5240	7.06	7.01	13	PASS



A D T

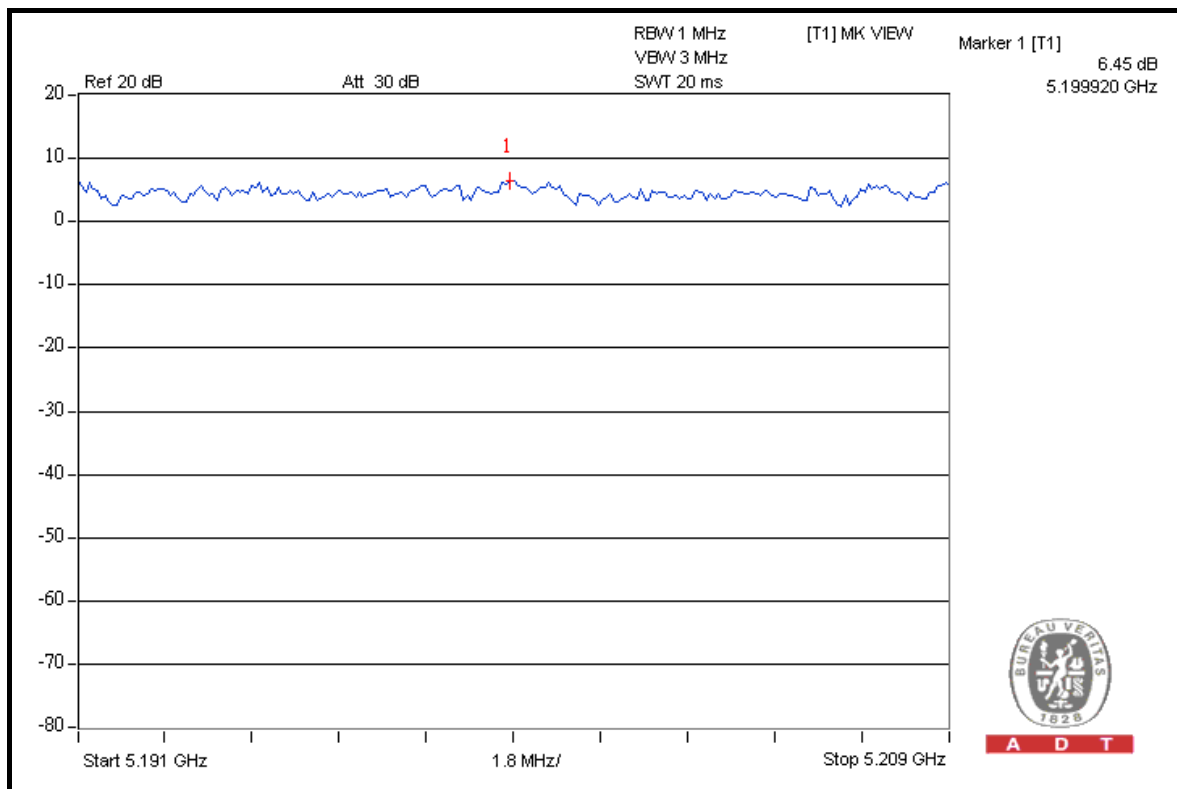
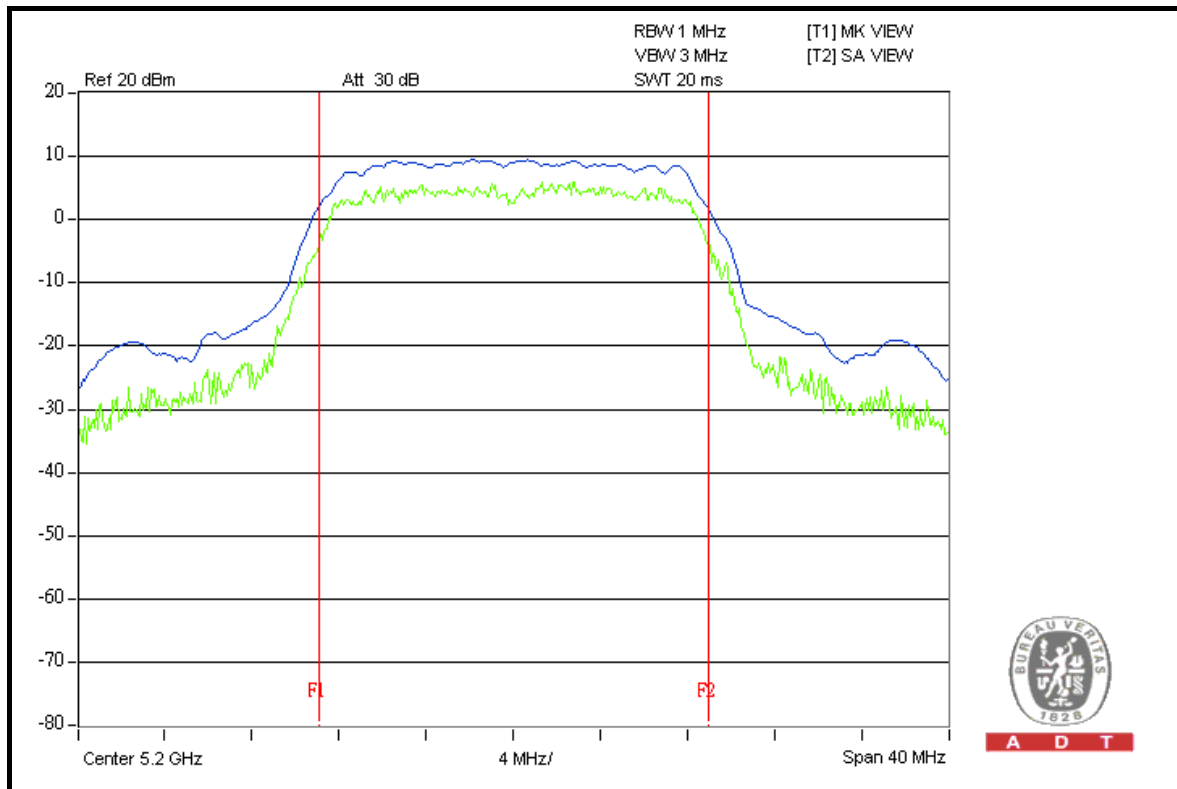
FOR CHAIN 0: CH 36





A D T

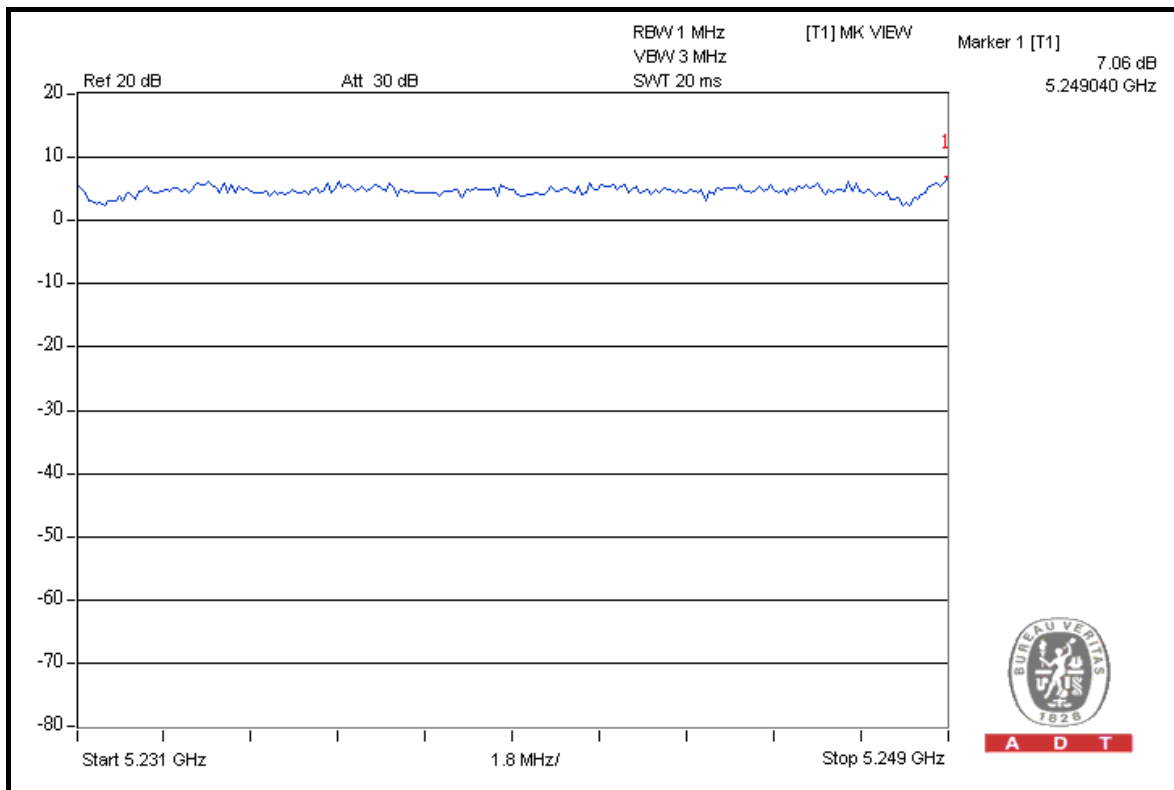
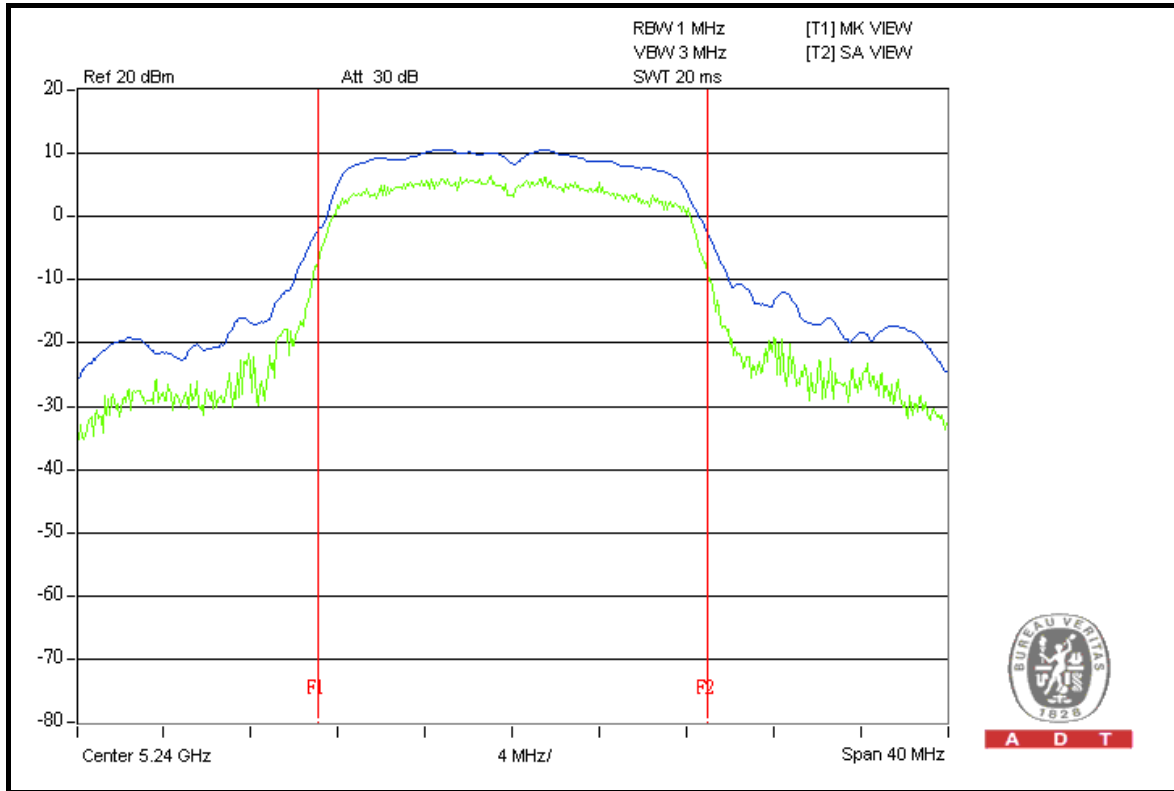
CH 40





A D T

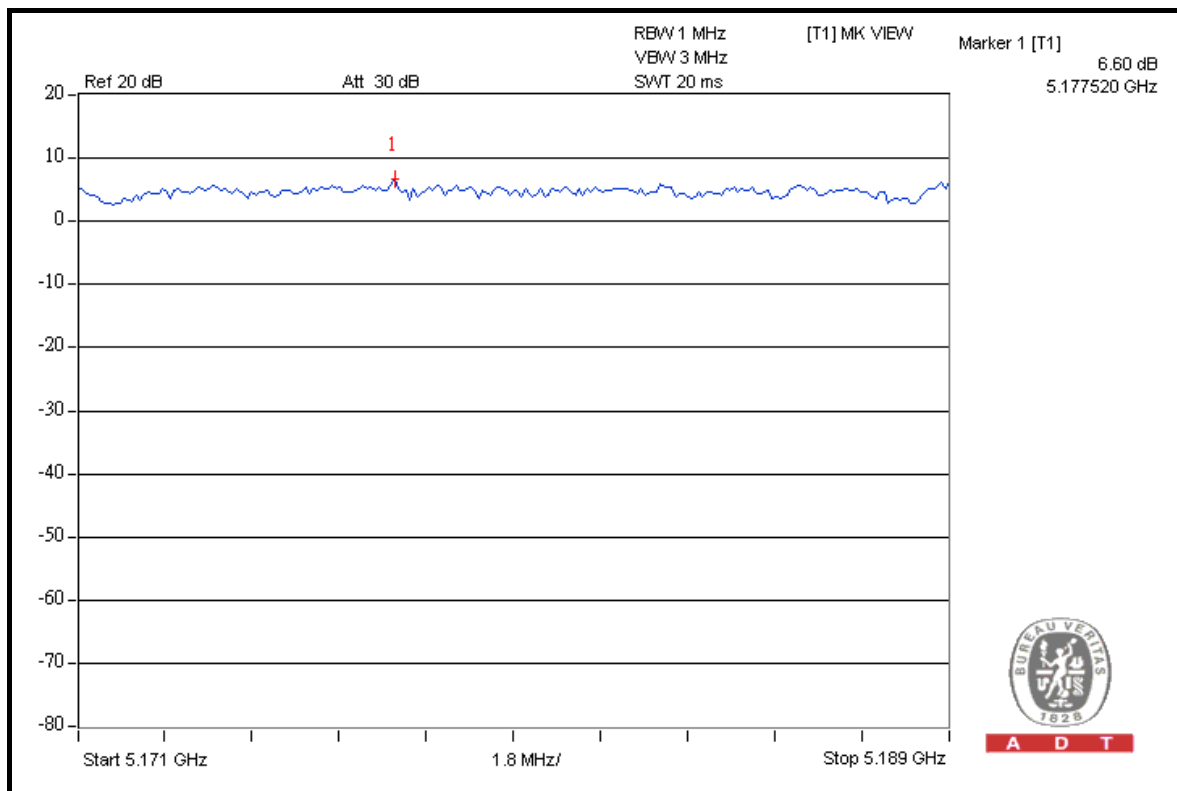
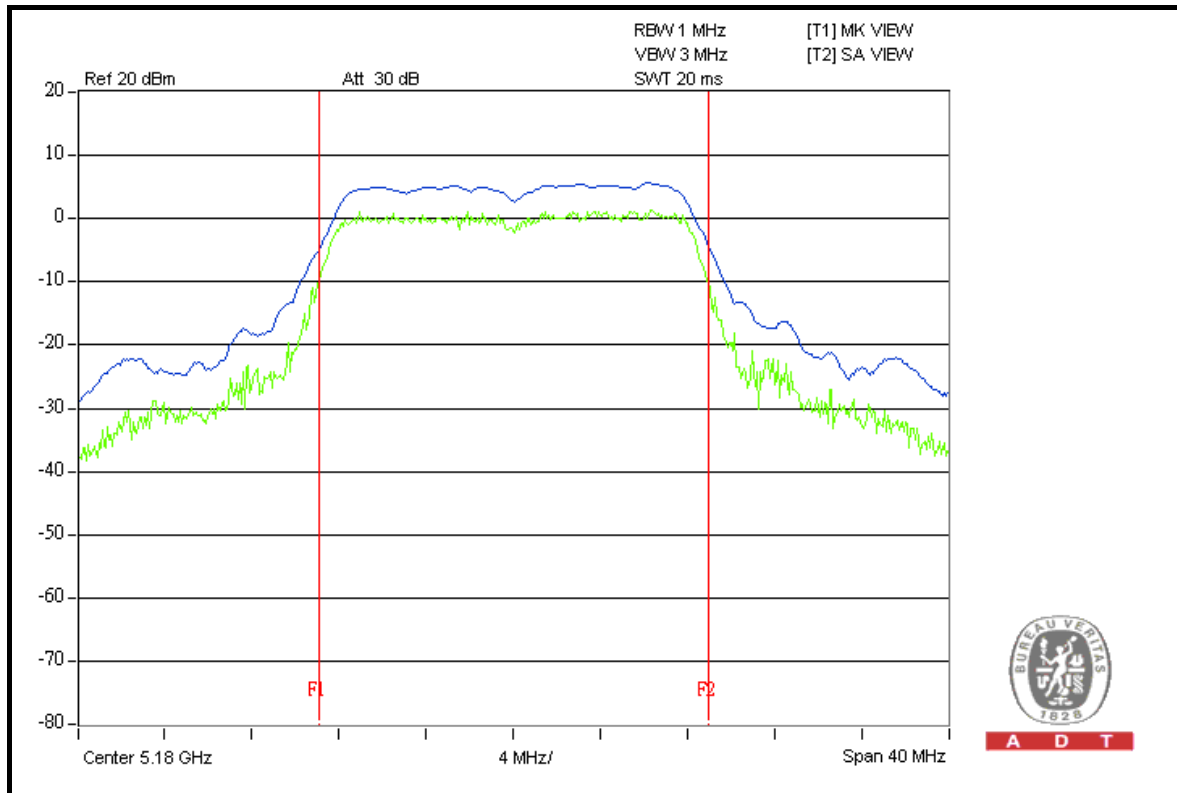
CH 48





A D T

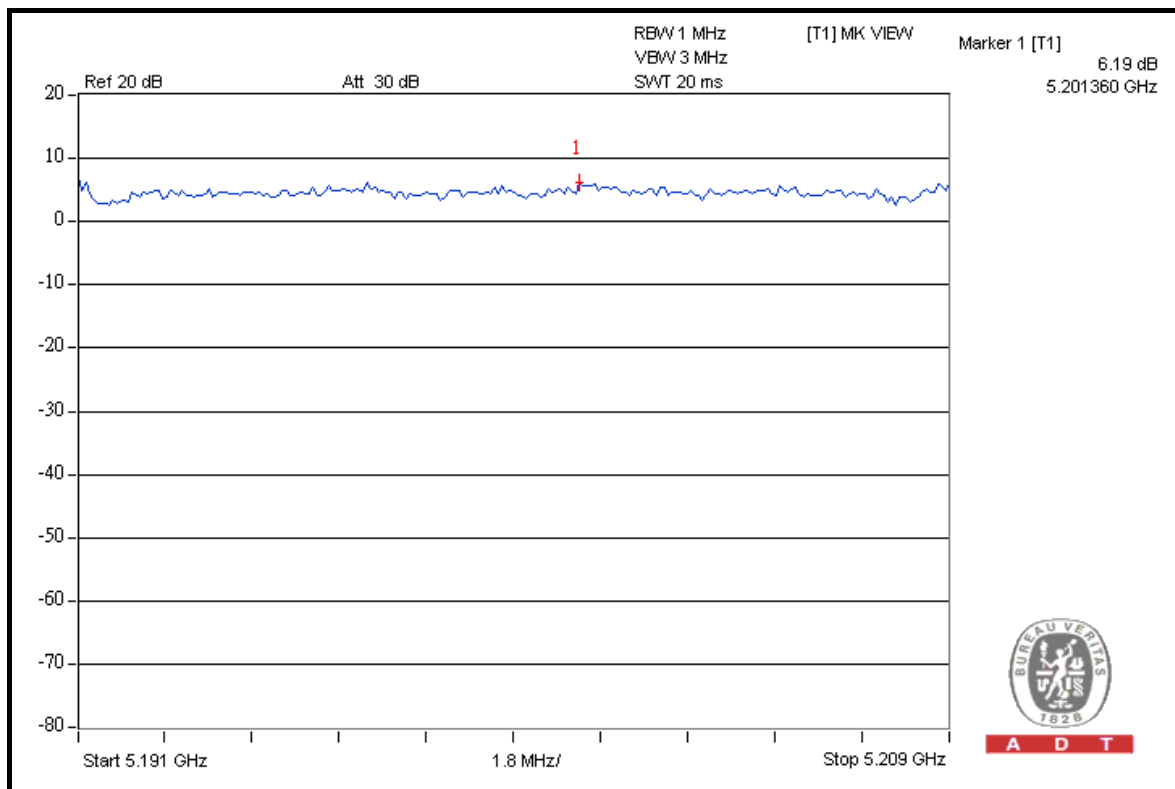
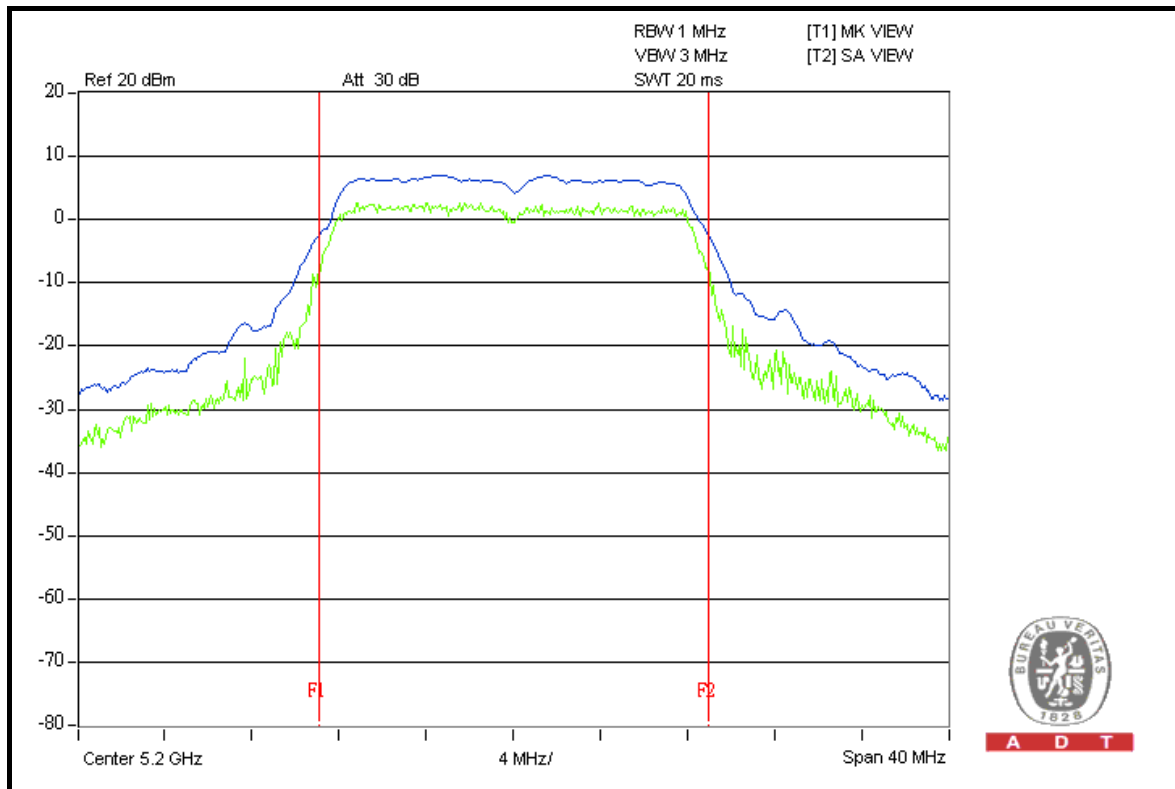
FOR CHAIN 1: CH 36





A D T

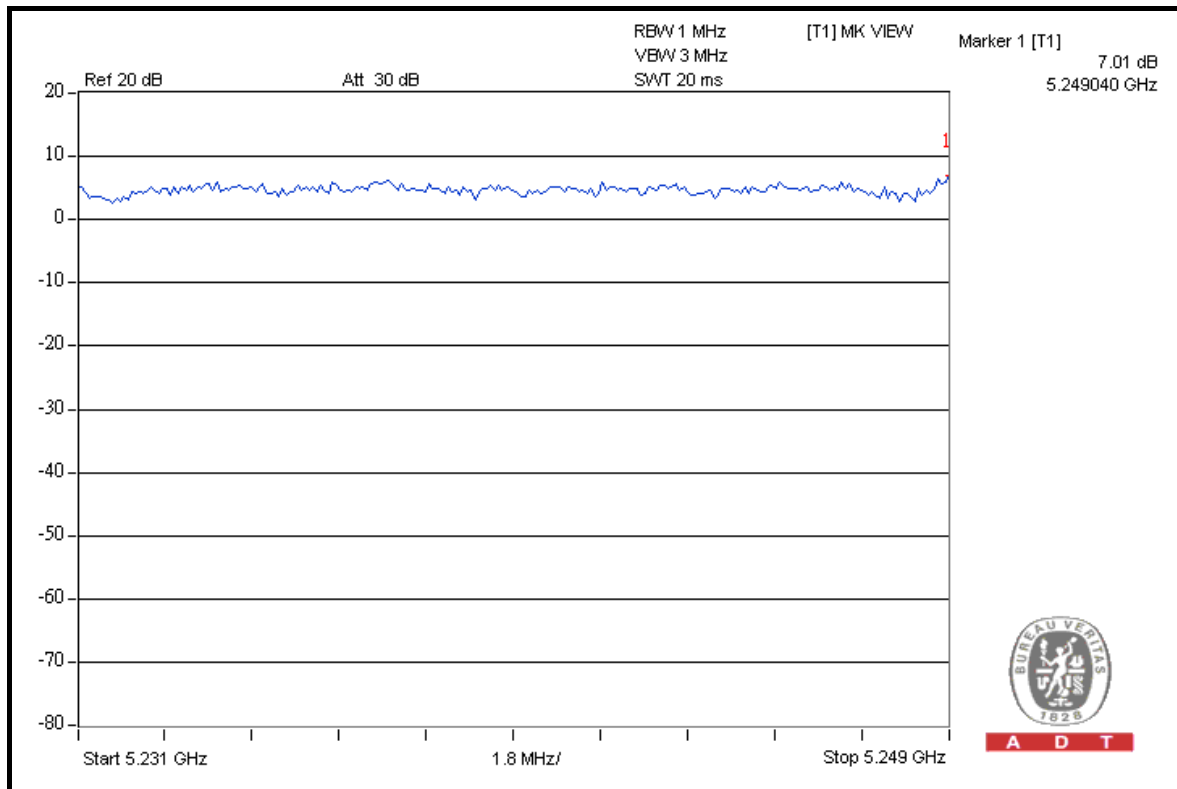
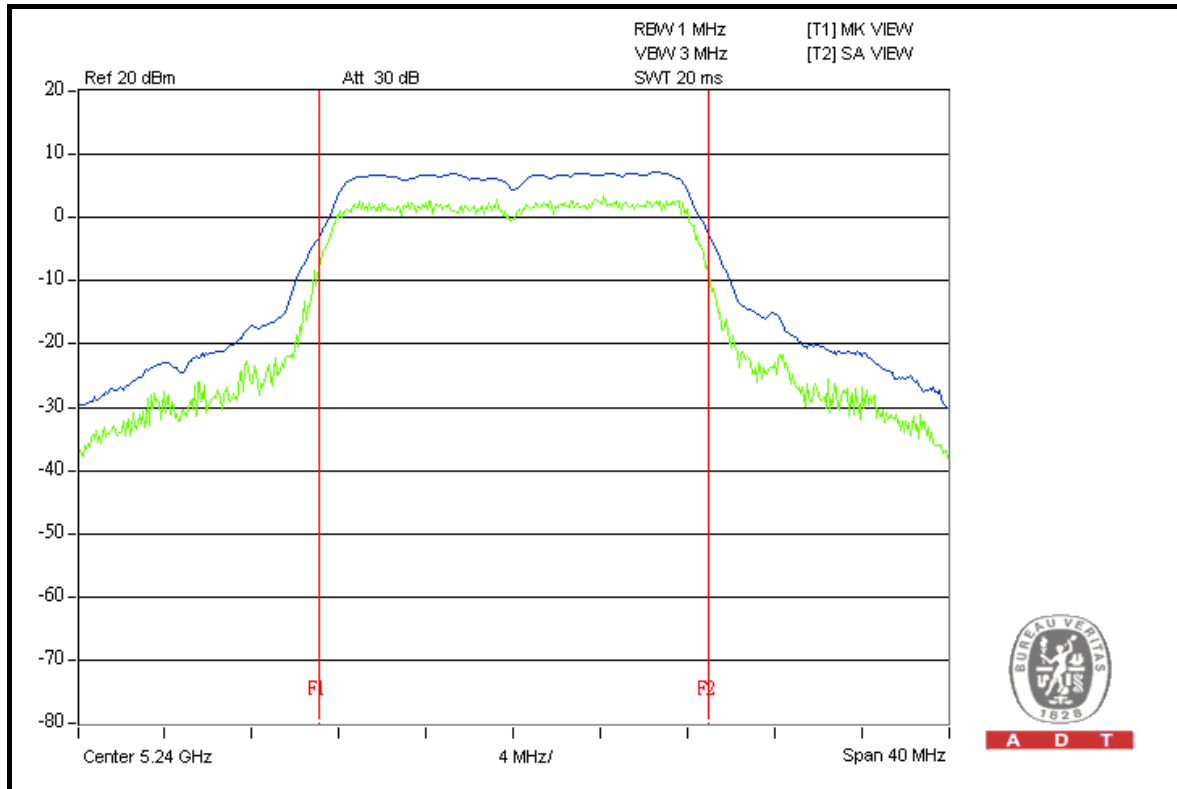
CH 40





A D T

CH 48





A D T

802.11n (20MHz)

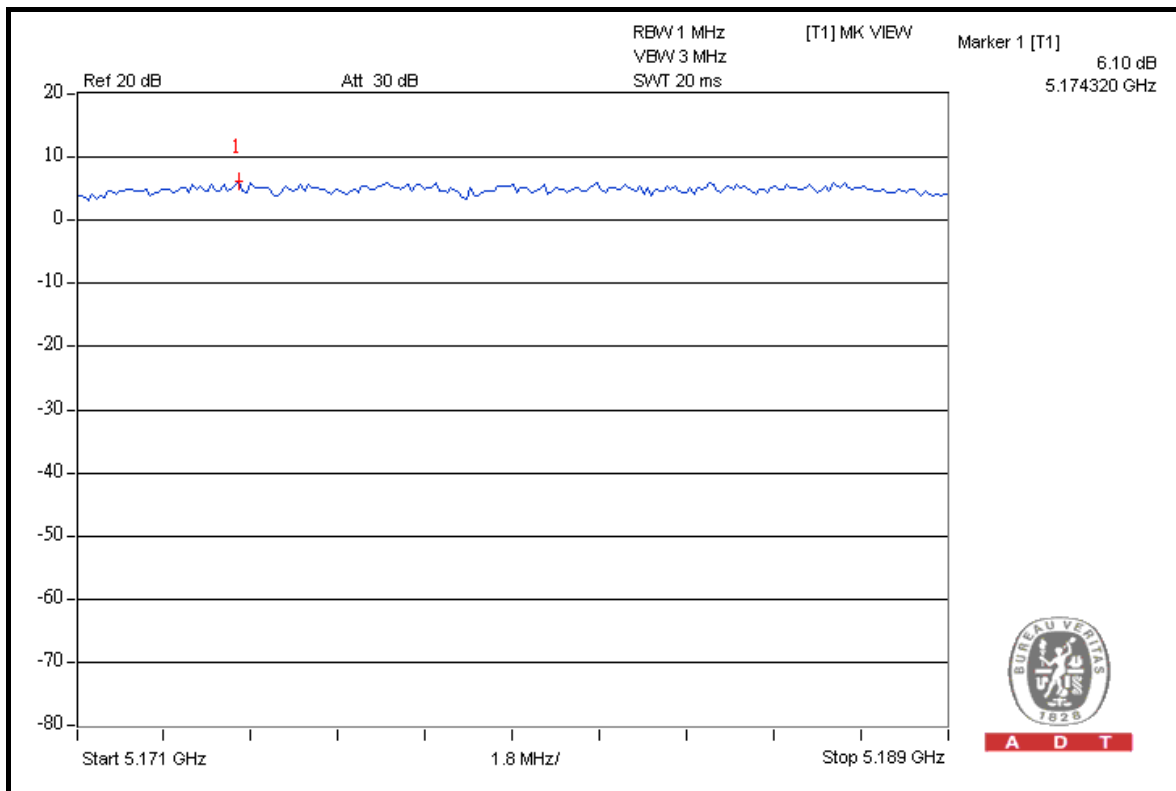
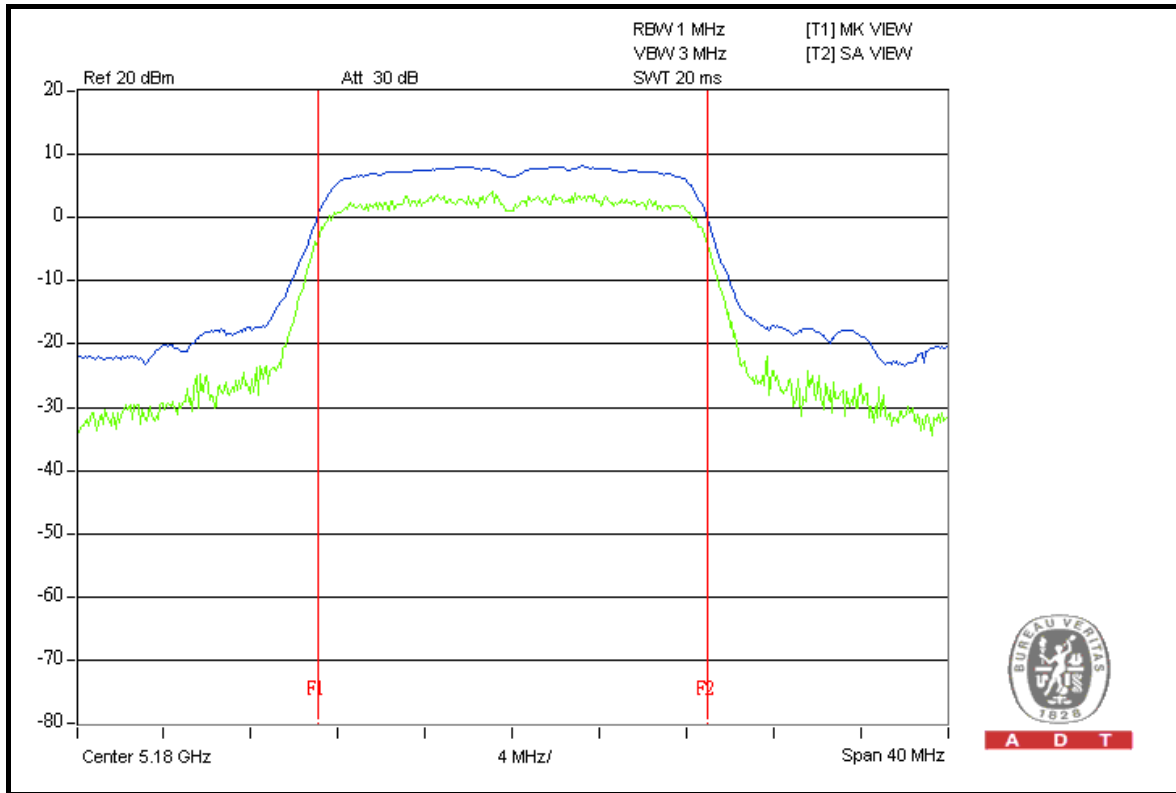
MODULATION TYPE	BPSK	TRANSFER RATE	6.5Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)		PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1		
36	5180	6.10	6.15	13	PASS
40	5200	6.15	6.24	13	PASS
48	5240	6.59	6.40	13	PASS



A D T

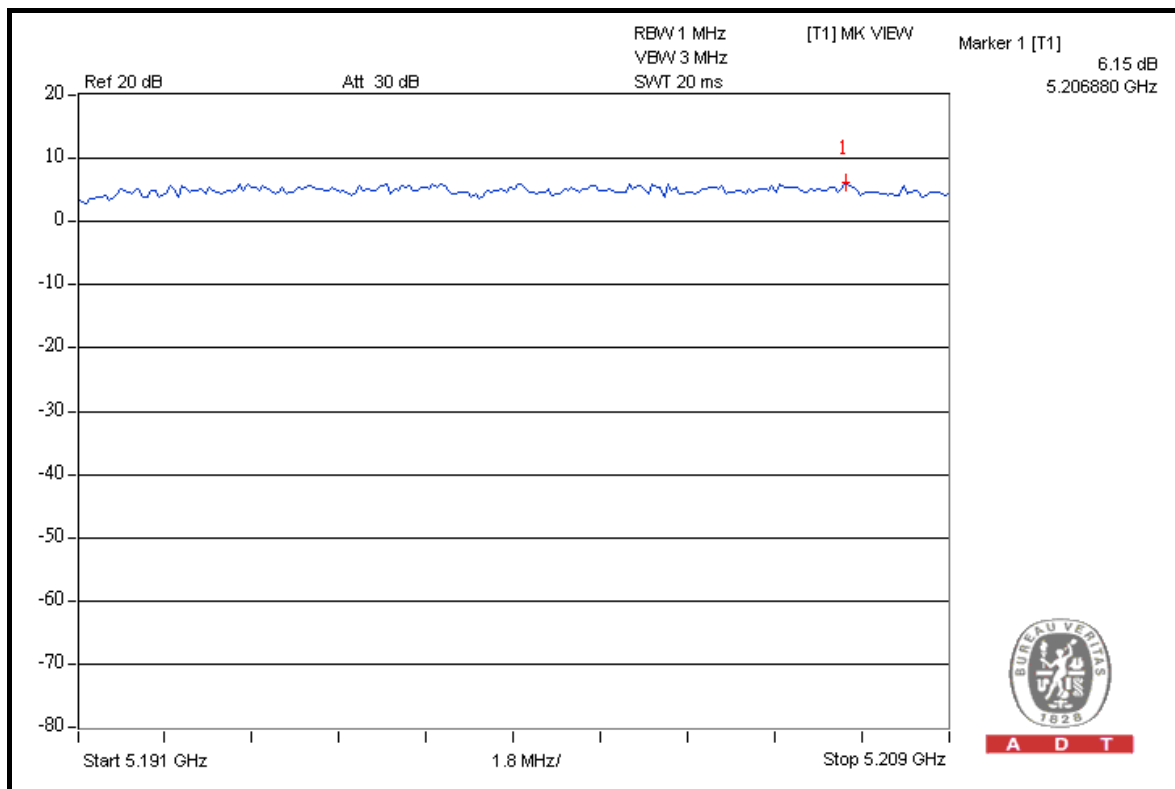
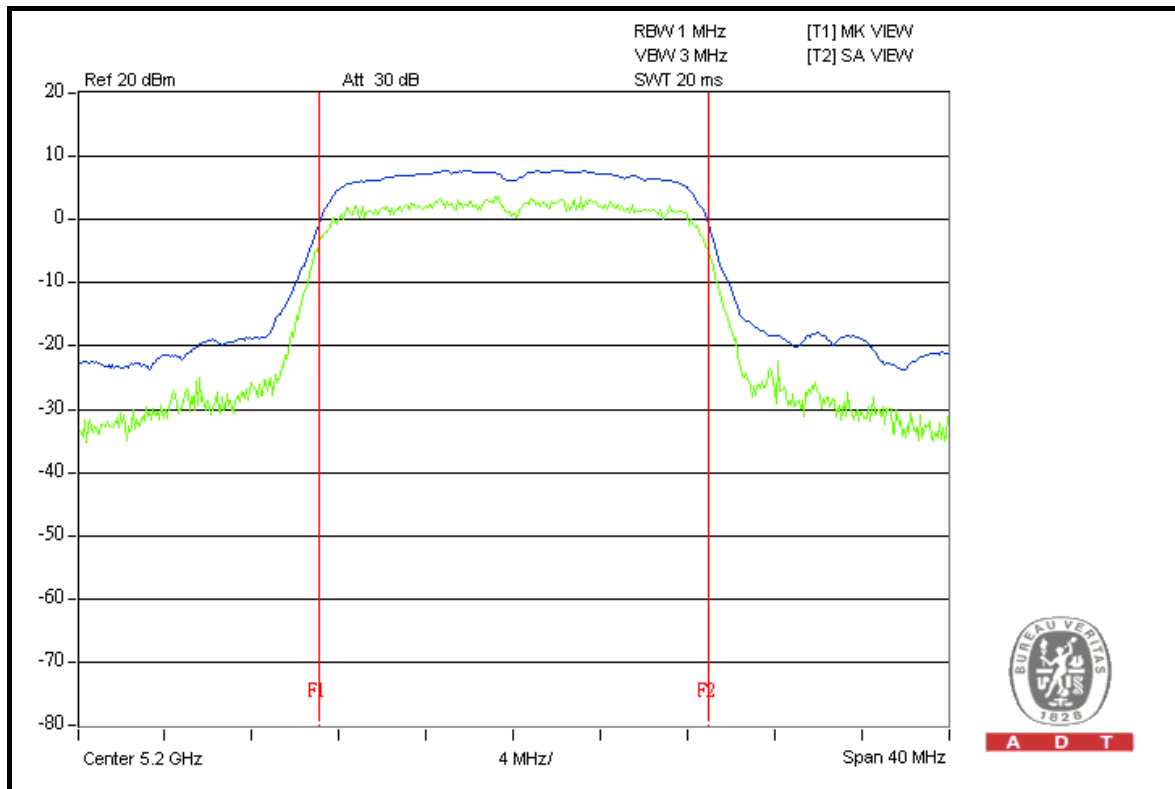
FOR CHAIN 0: CH 36





A D T

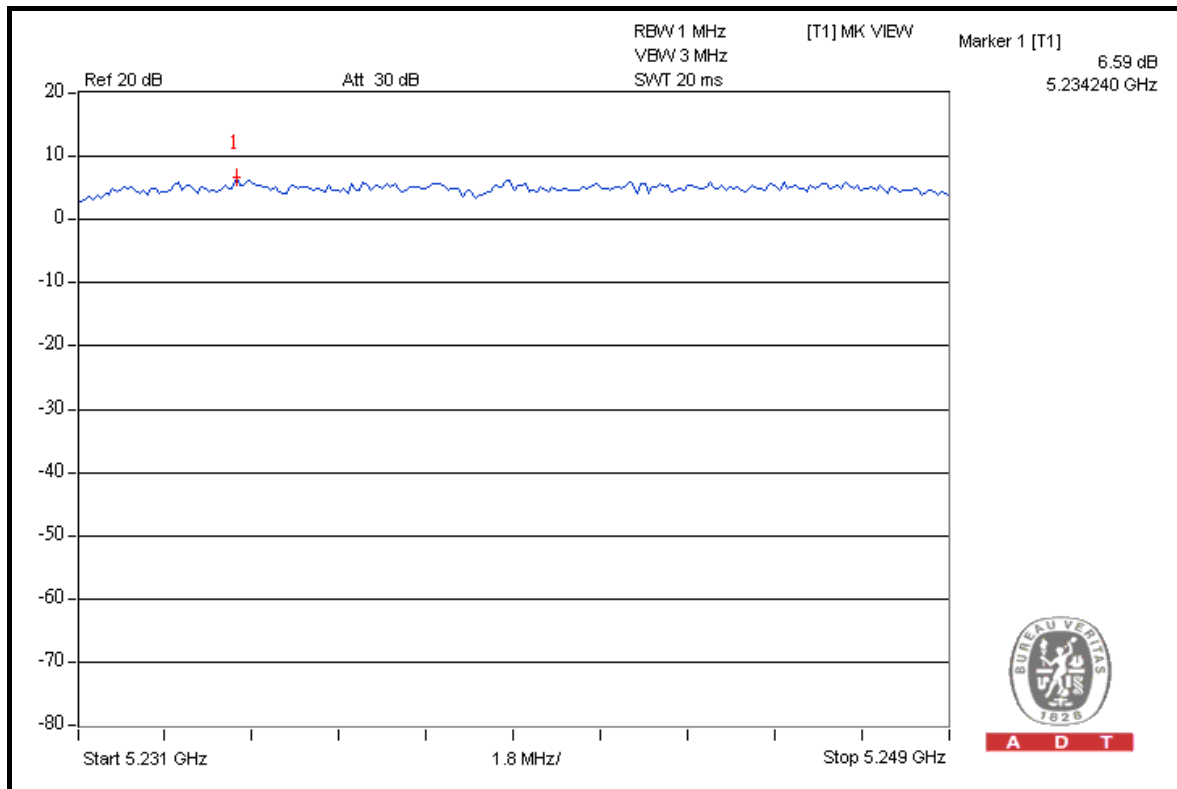
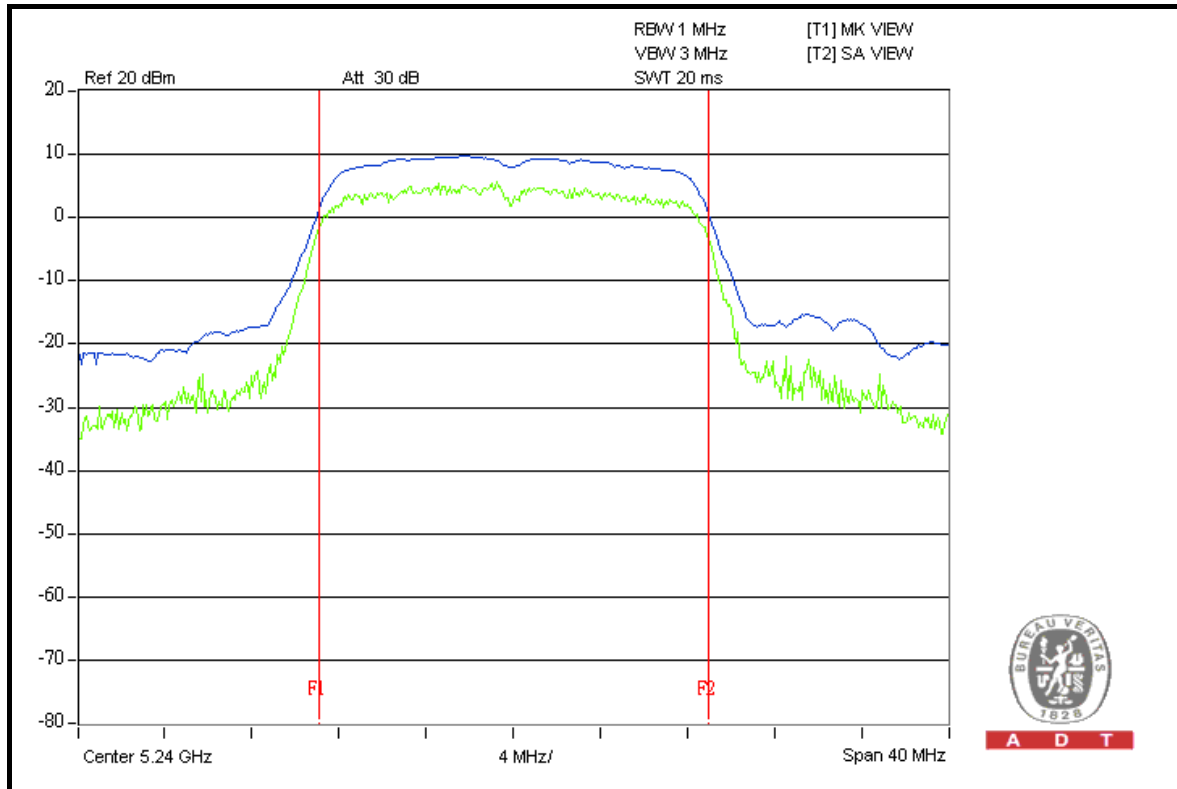
CH 40





A D T

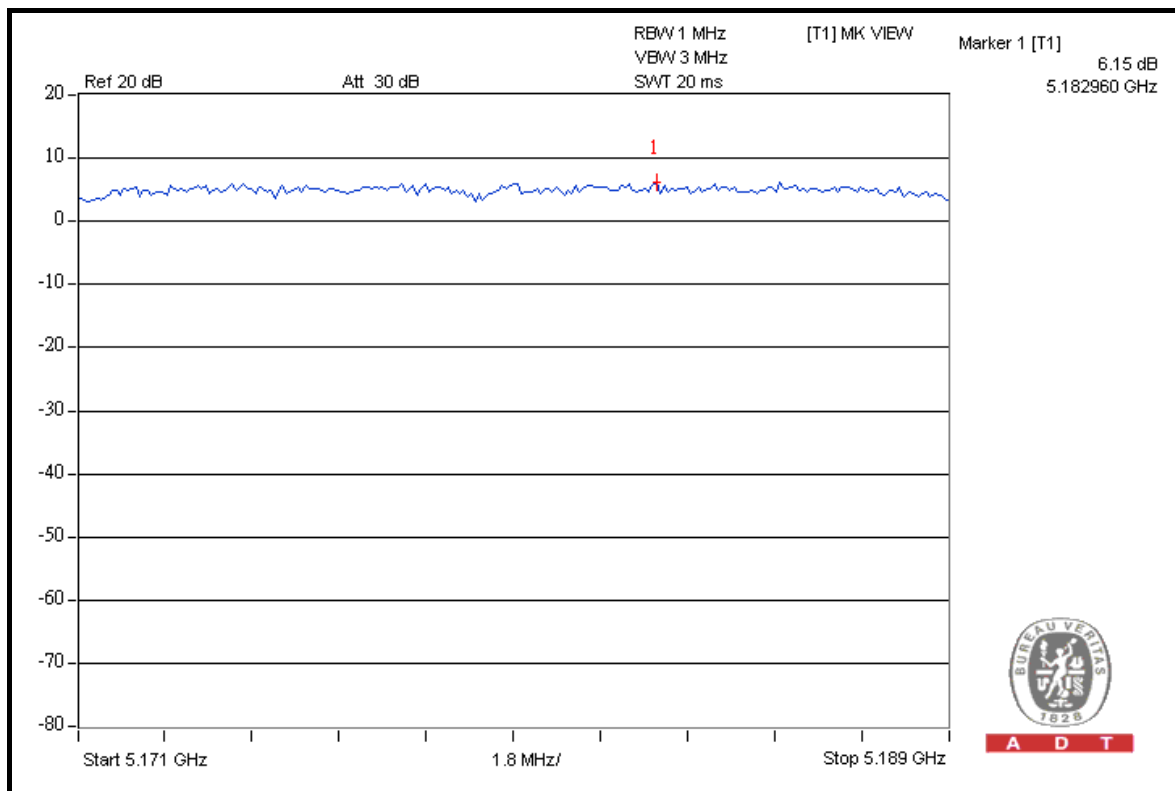
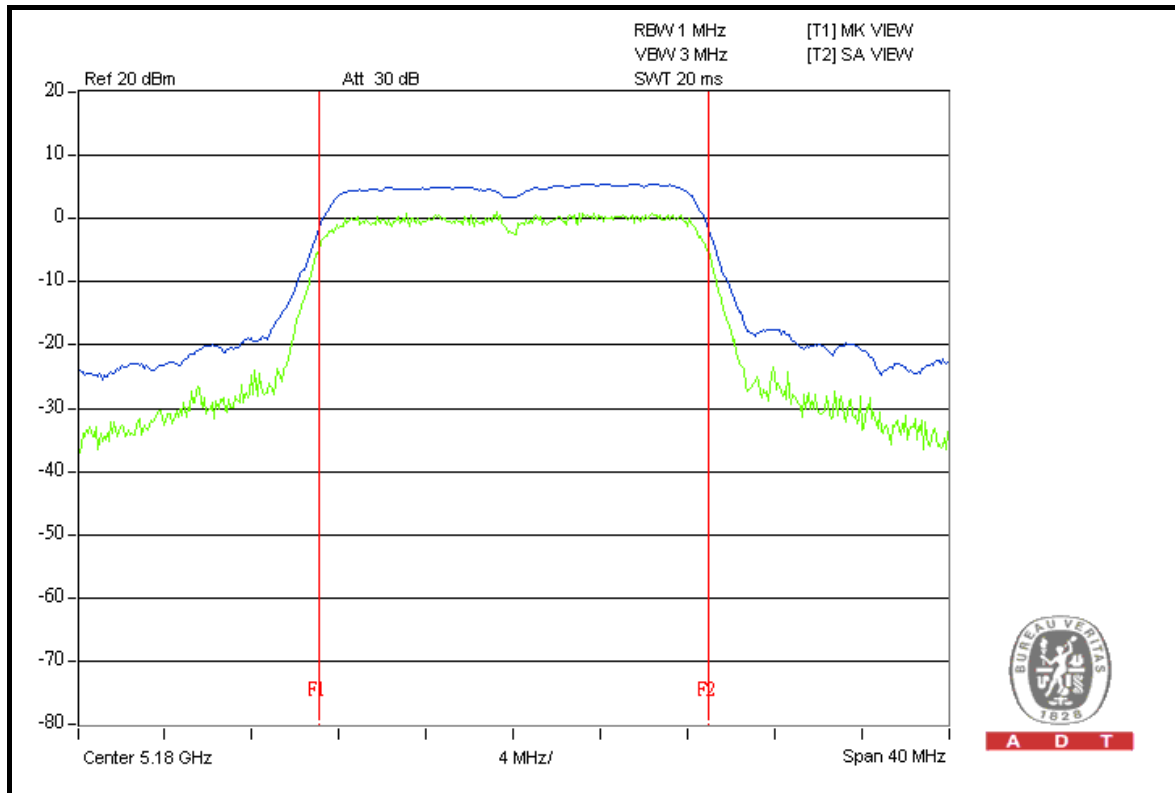
CH 48





A D T

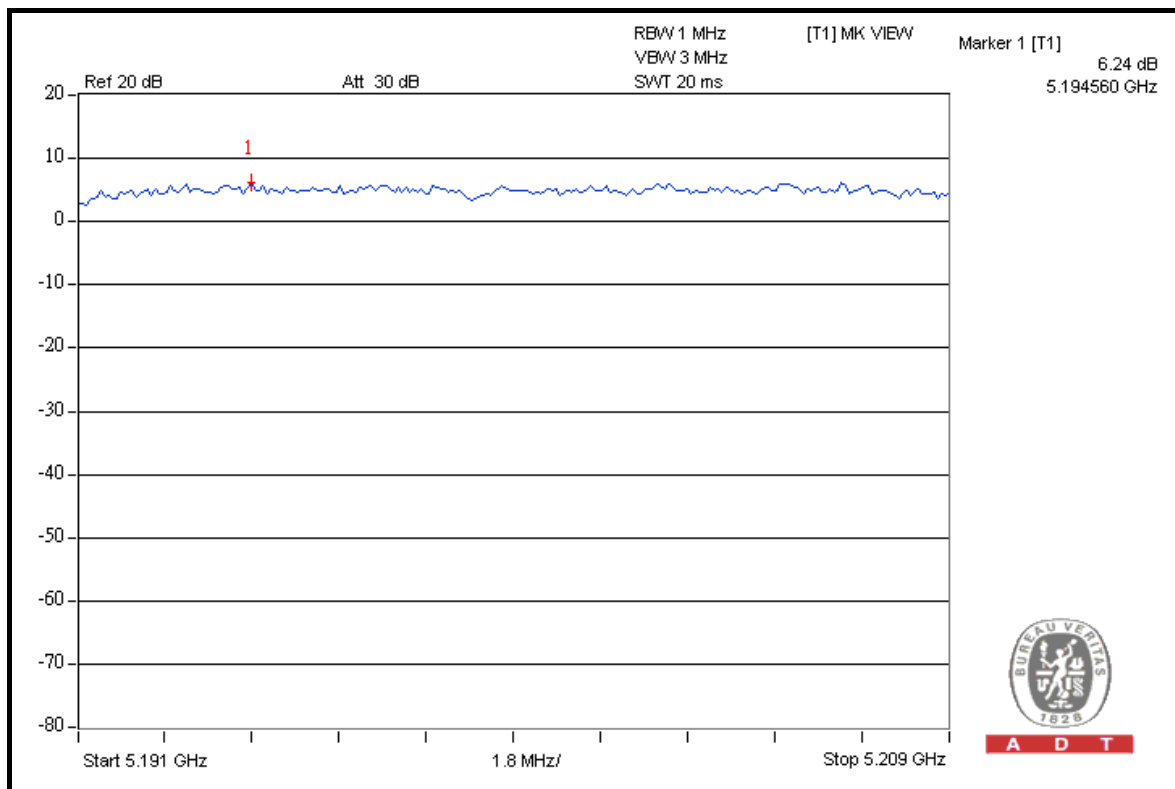
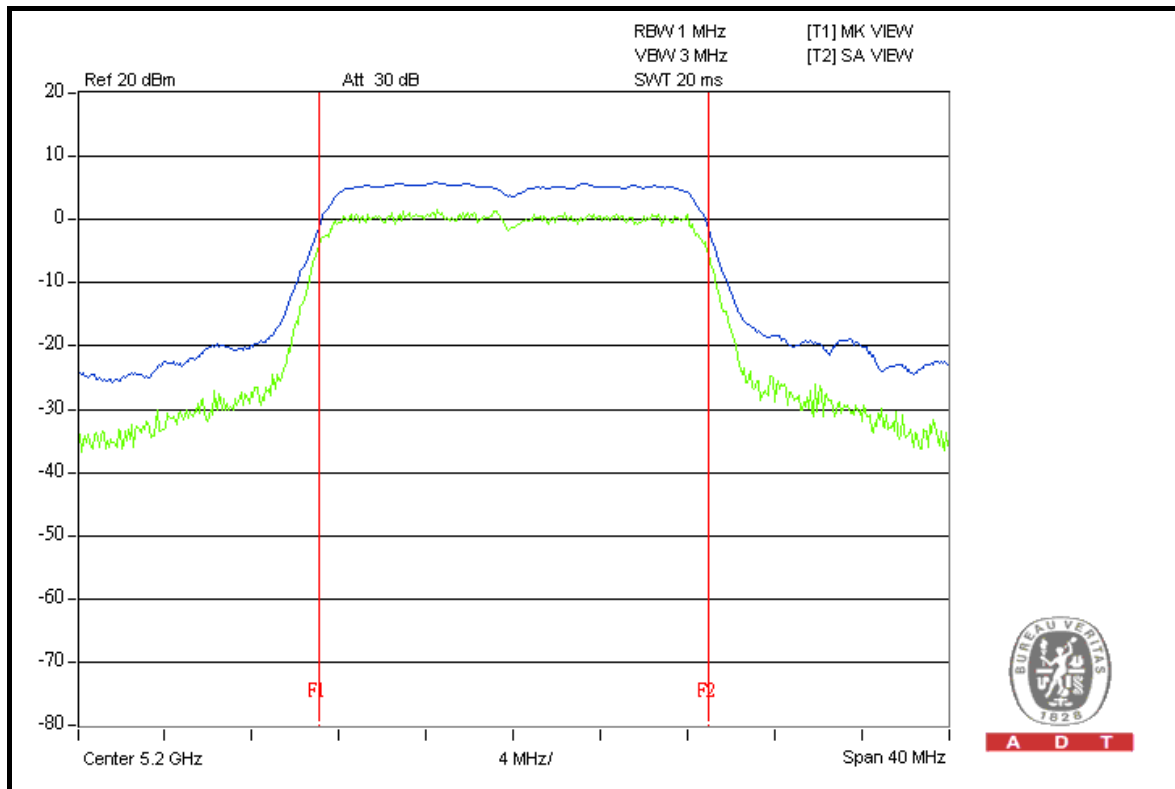
FOR CHAIN 1: CH 36





A D T

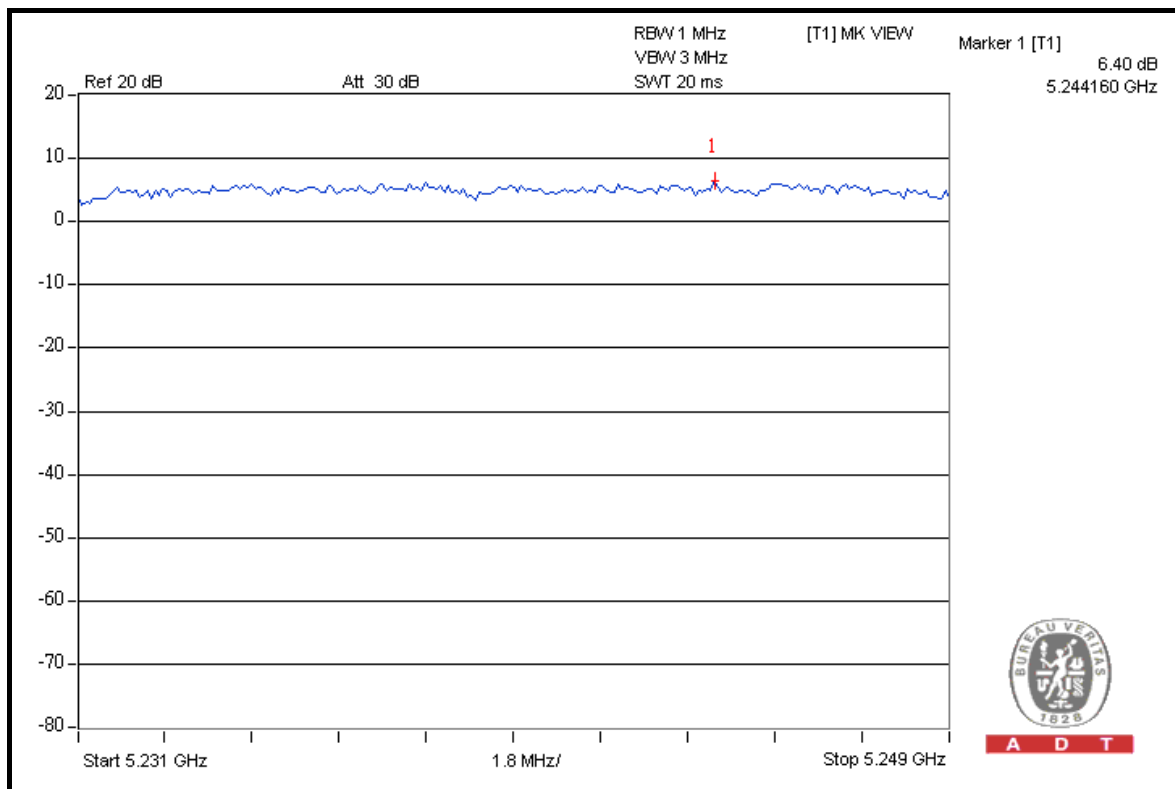
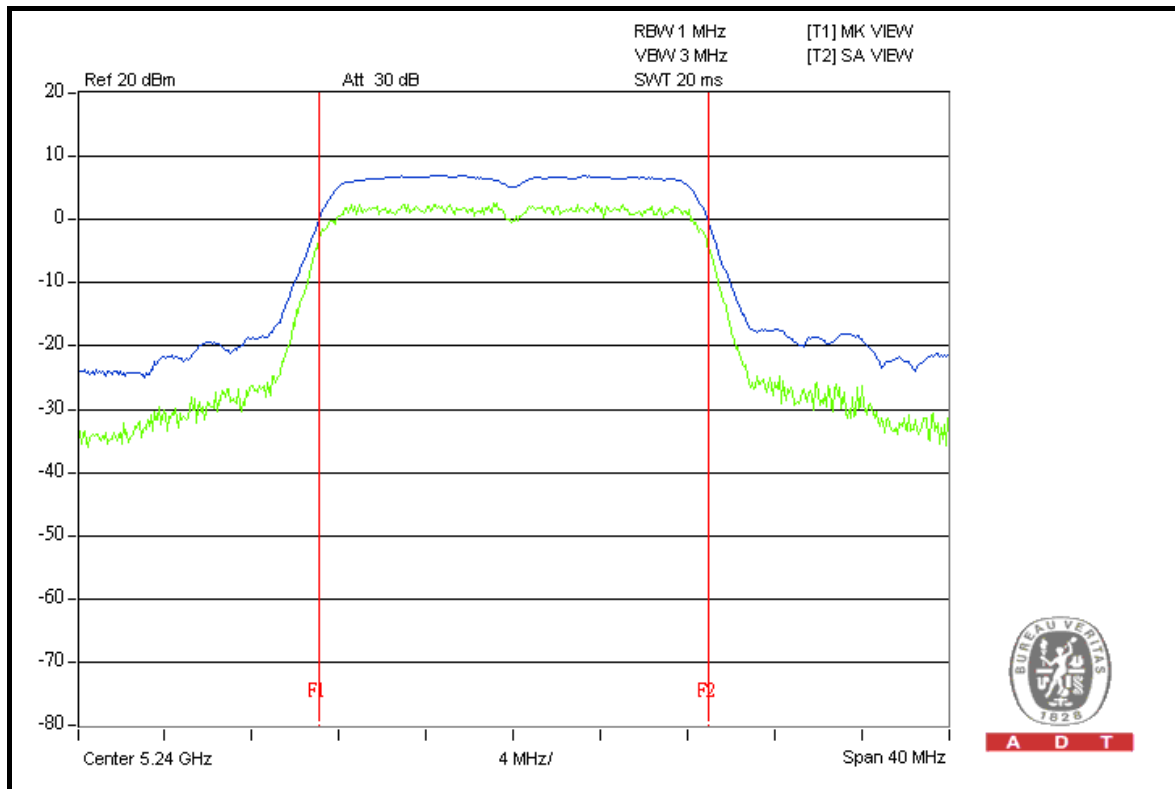
CH 40





A D T

CH 48





A D T

802.11n (40MHz)

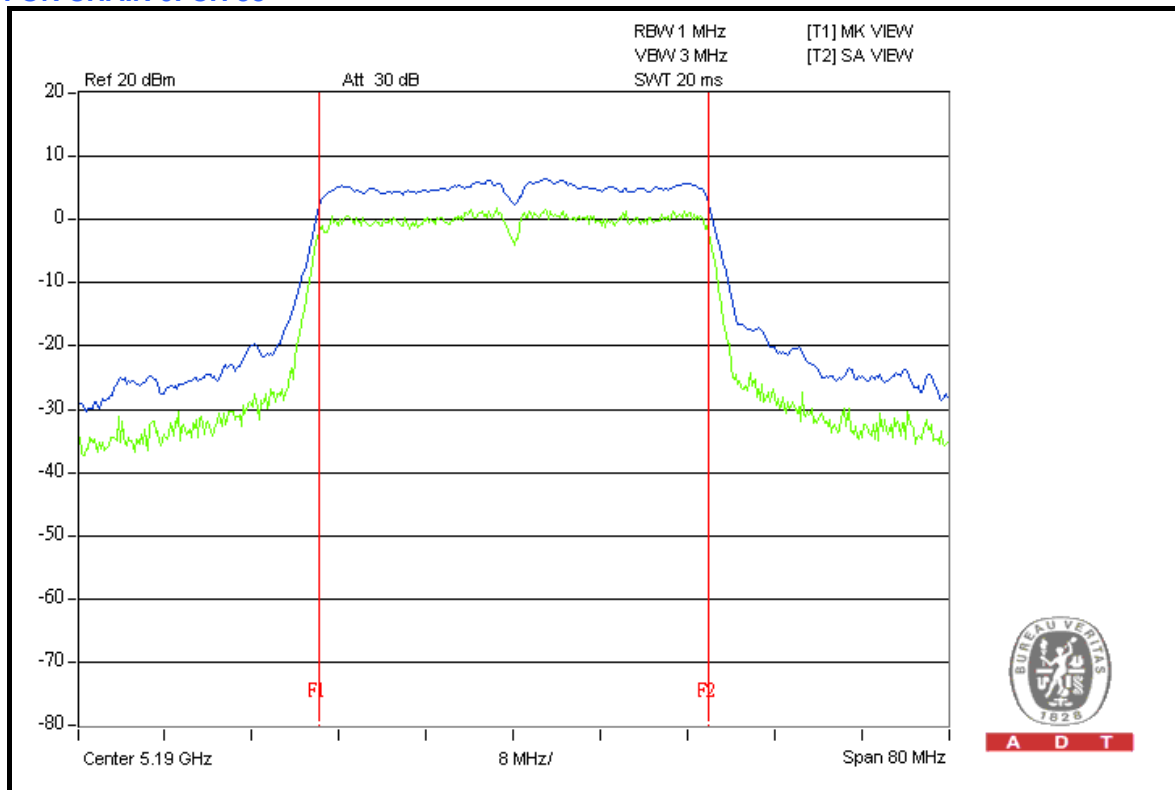
MODULATION TYPE	BPSK	TRANSFER RATE	13.5Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)		PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1		
38	5190	6.29	7.22	13	PASS
46	5230	7.71	7.29	13	PASS

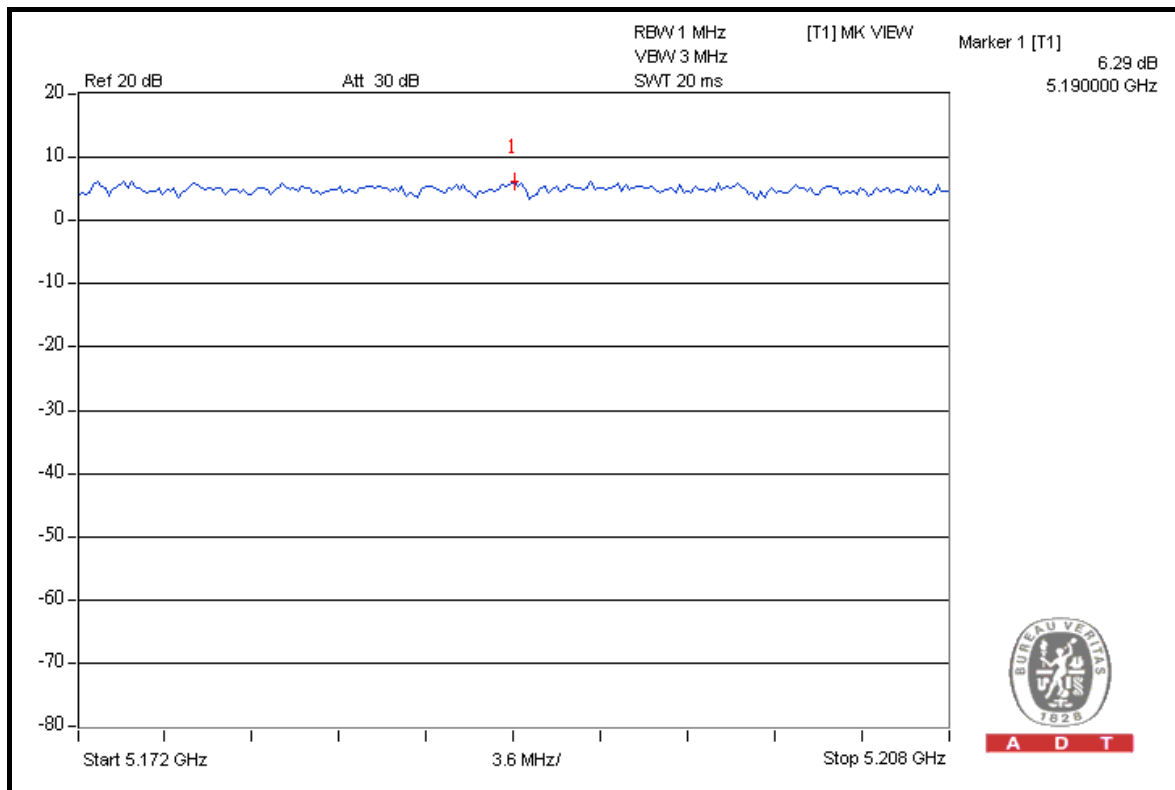


A D T

FOR CHAIN 0: CH 38



A D T

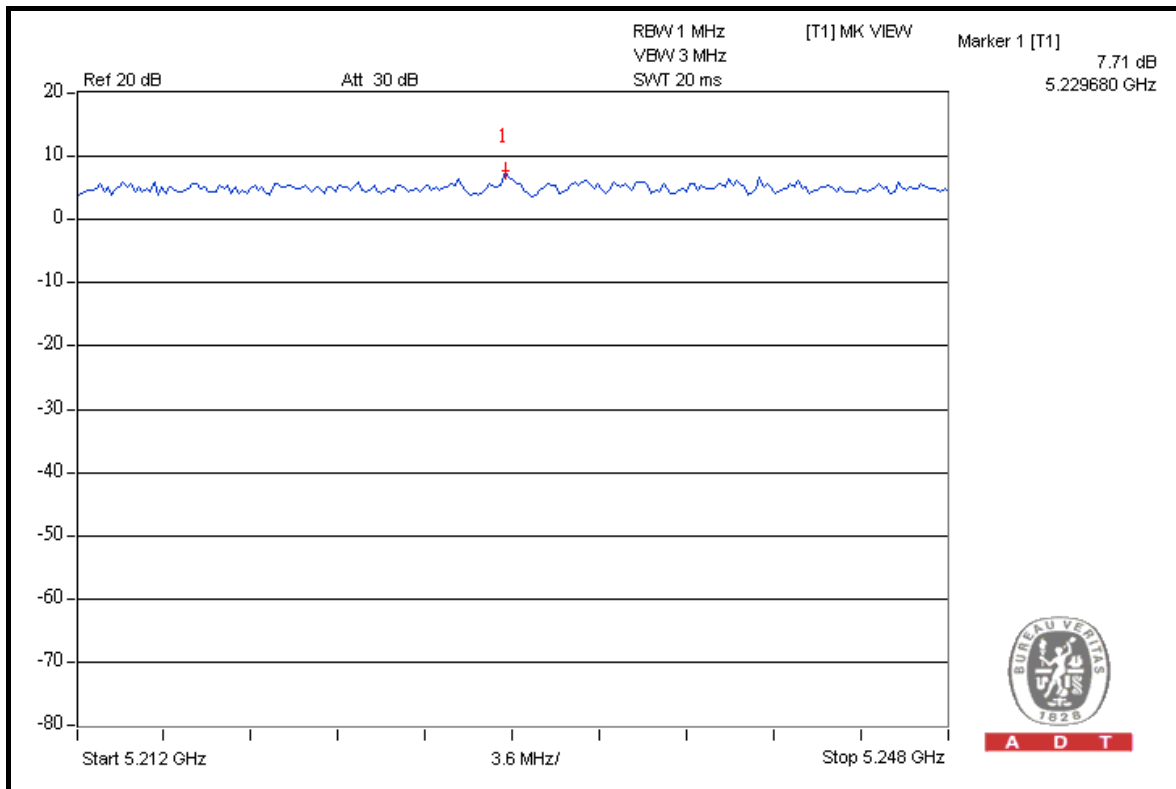
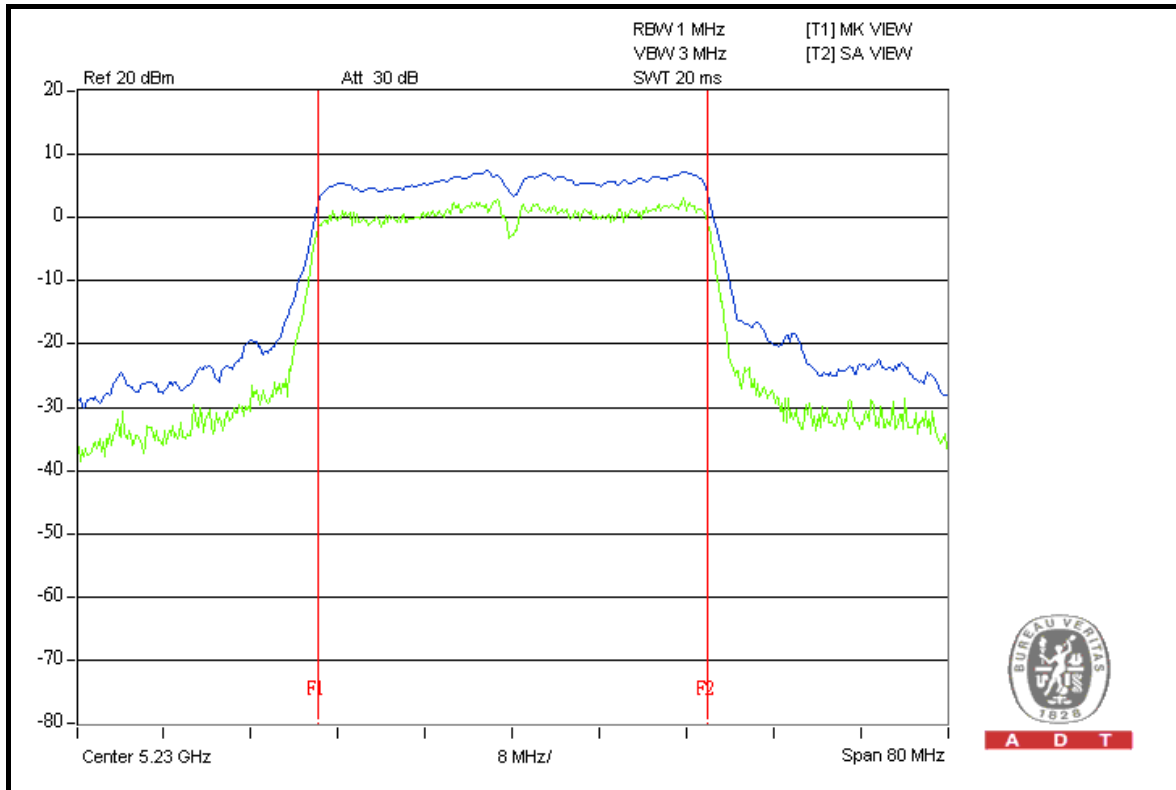


A D T



A D T

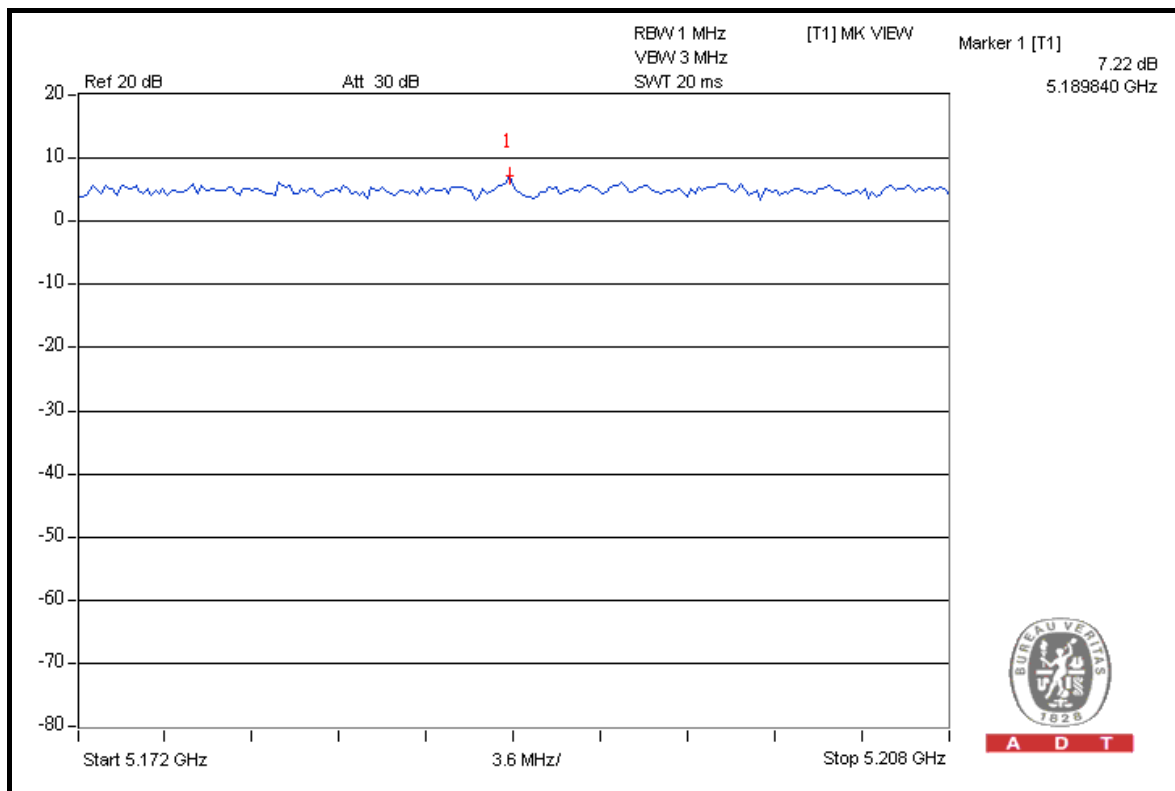
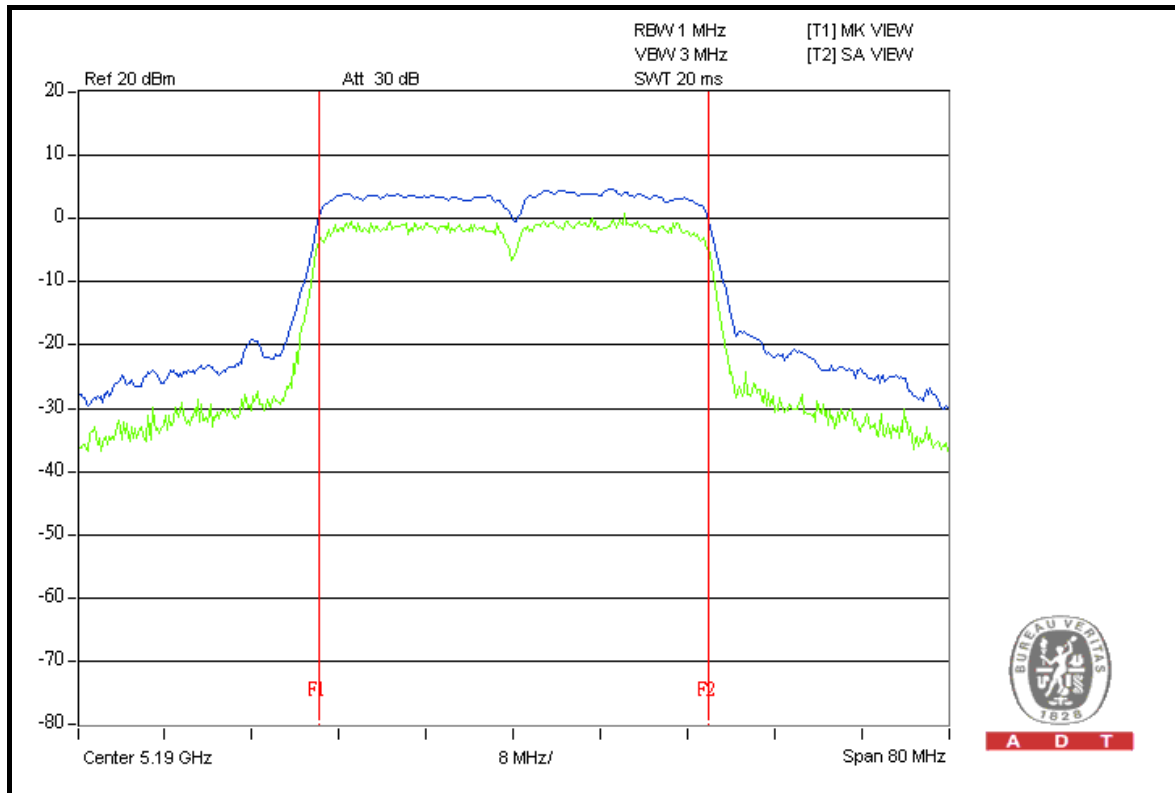
CH 46





A D T

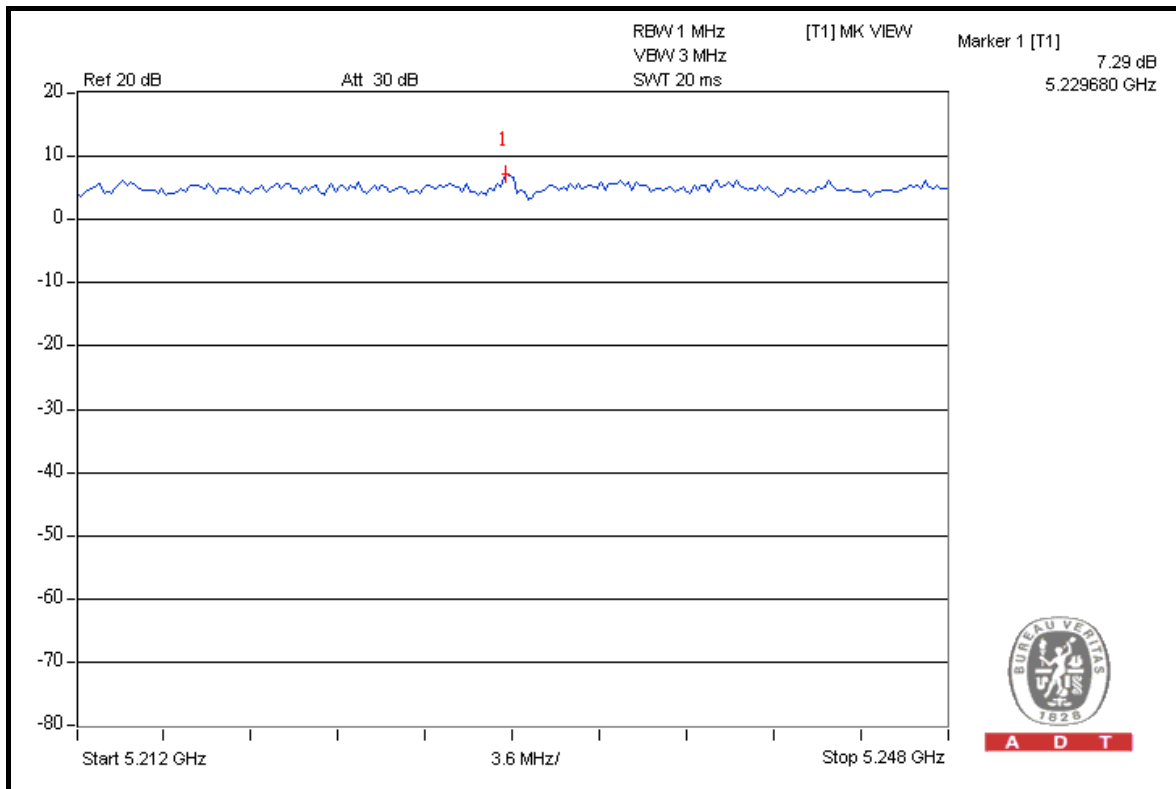
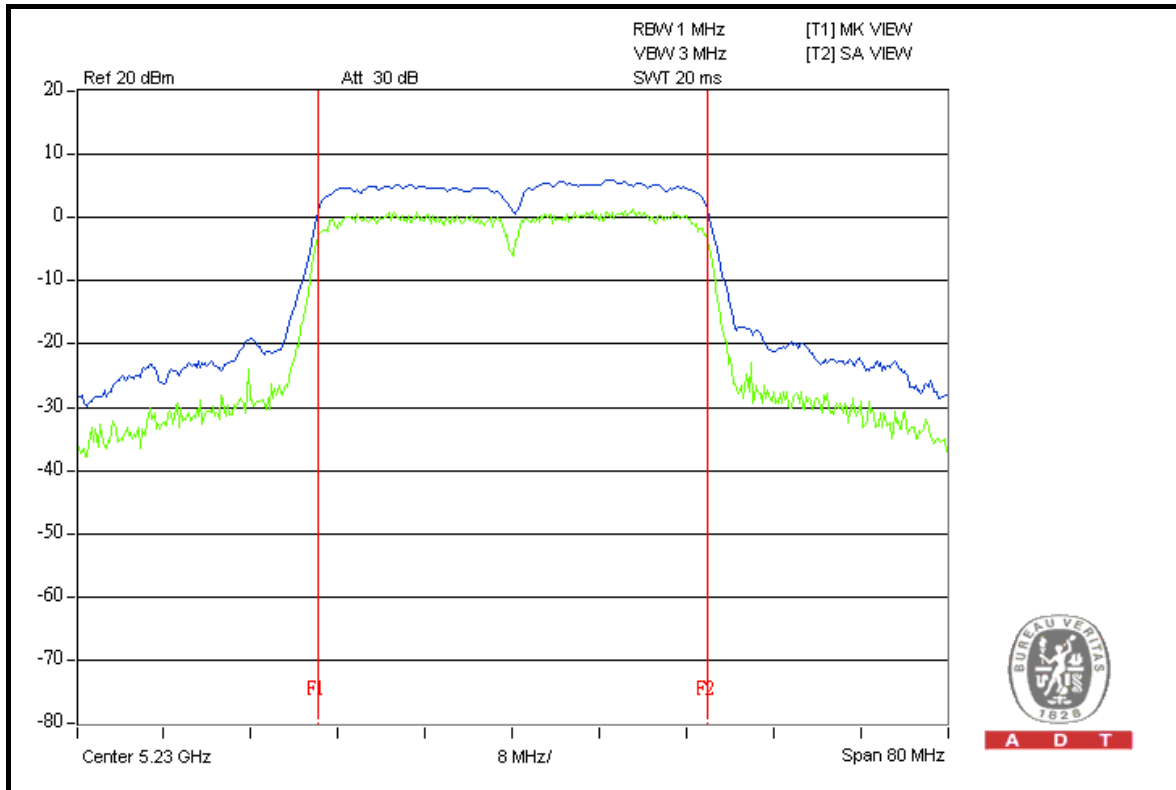
FOR CHAIN 1: CH 38





A D T

CH 46



4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

FREQUENCY BAND	LIMIT
5.15 ~ 5.25GHz	4dBm

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
R&S SPECTRUM ANALYZER	FSP40	100041	May 13, 2009	May 12, 2010

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

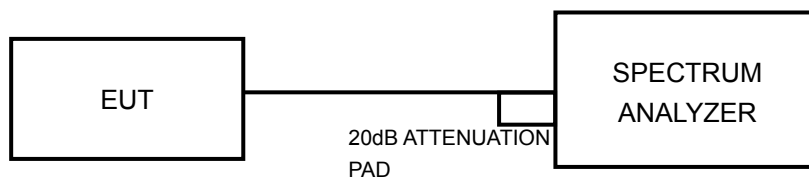
4.5.3 TEST PROCEDURES

- a. The transmitter output was connected to the spectrum analyzer.
- b. Set RBW = 1MHz, VBW = 3MHz. The PPSD is the highest level found across the emission in any 1MHz band.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation.

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITIONS

Same as 5.3.6.

4.5.7 TEST RESULTS

802.11a

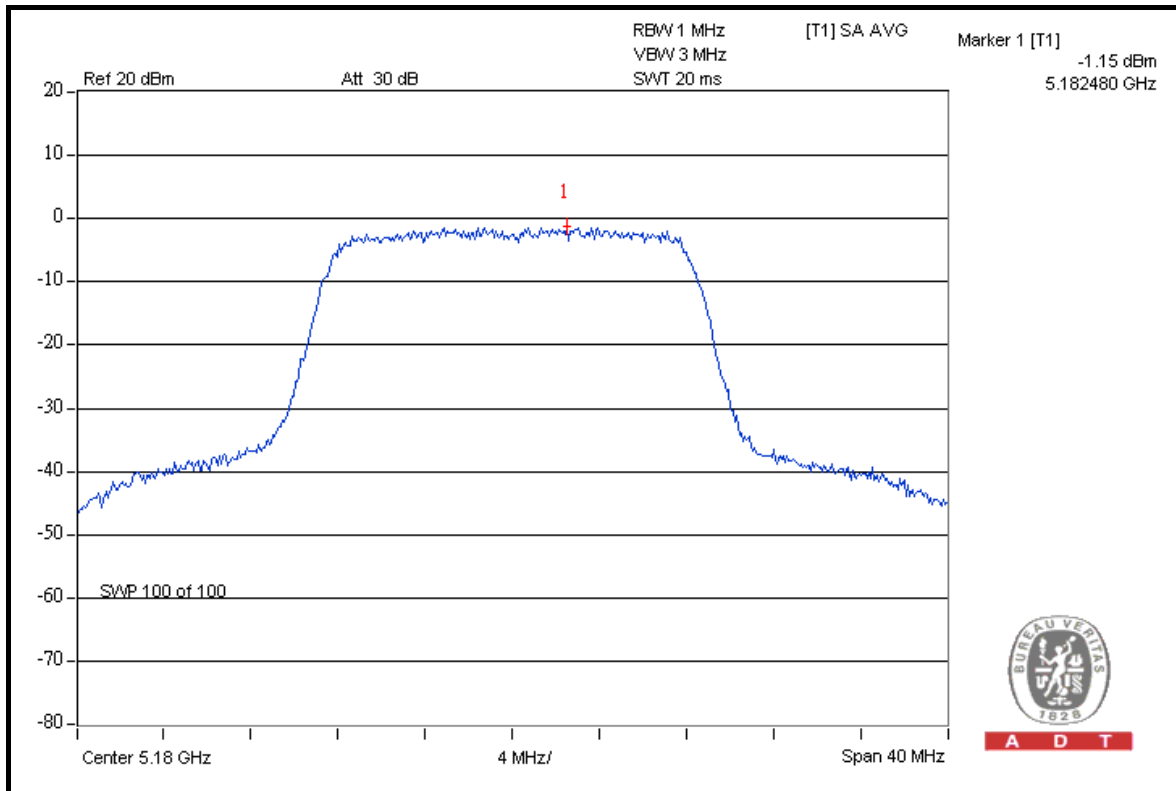
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Brad Wu		

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	-1.15	-3.95	1.17	0.68	4	PASS
40	5200	-0.15	-2.28	1.56	1.93	4	PASS
48	5240	0.03	-1.91	1.65	2.18	4	PASS

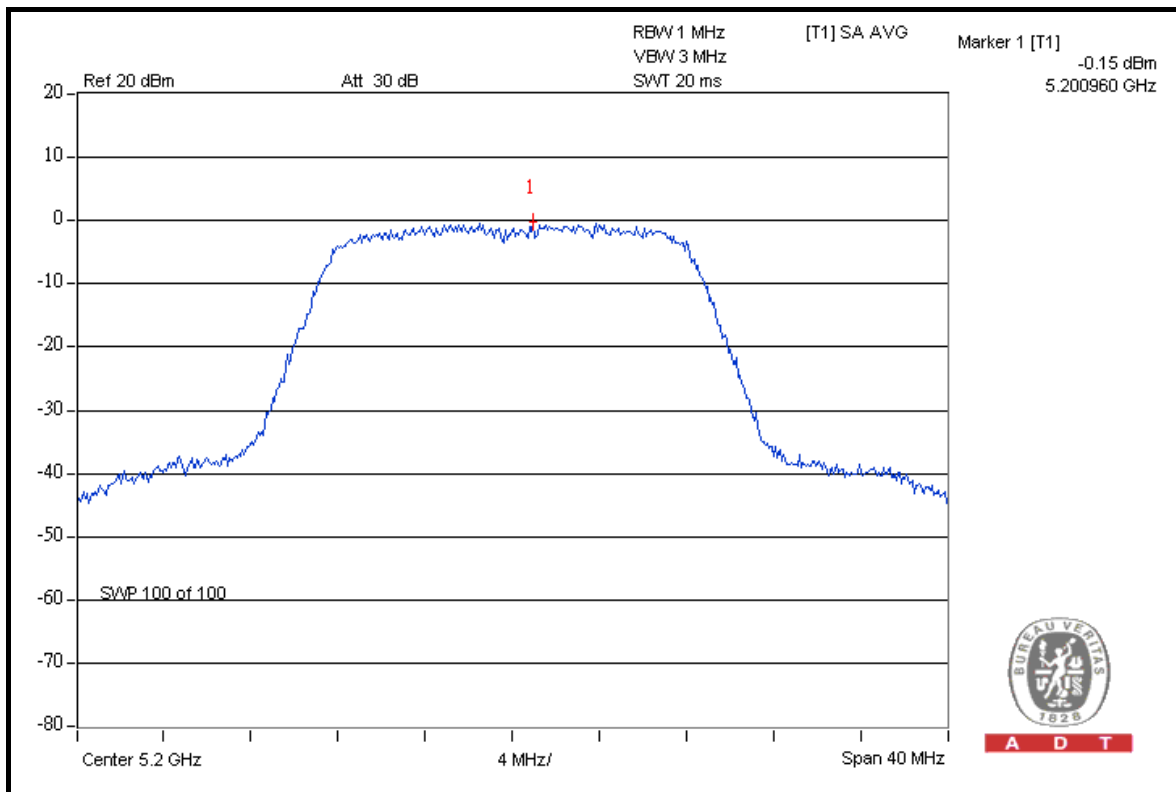


A D T

FOR CHAIN 0: CH 36



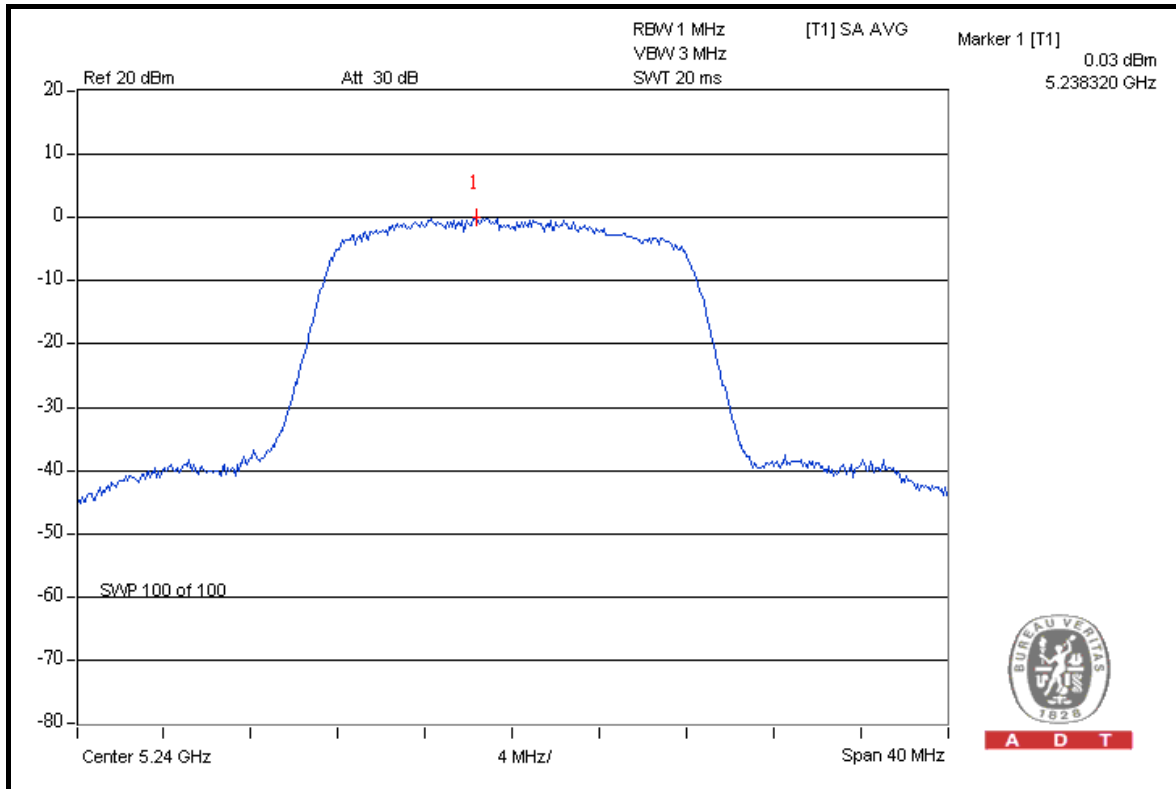
CH 40



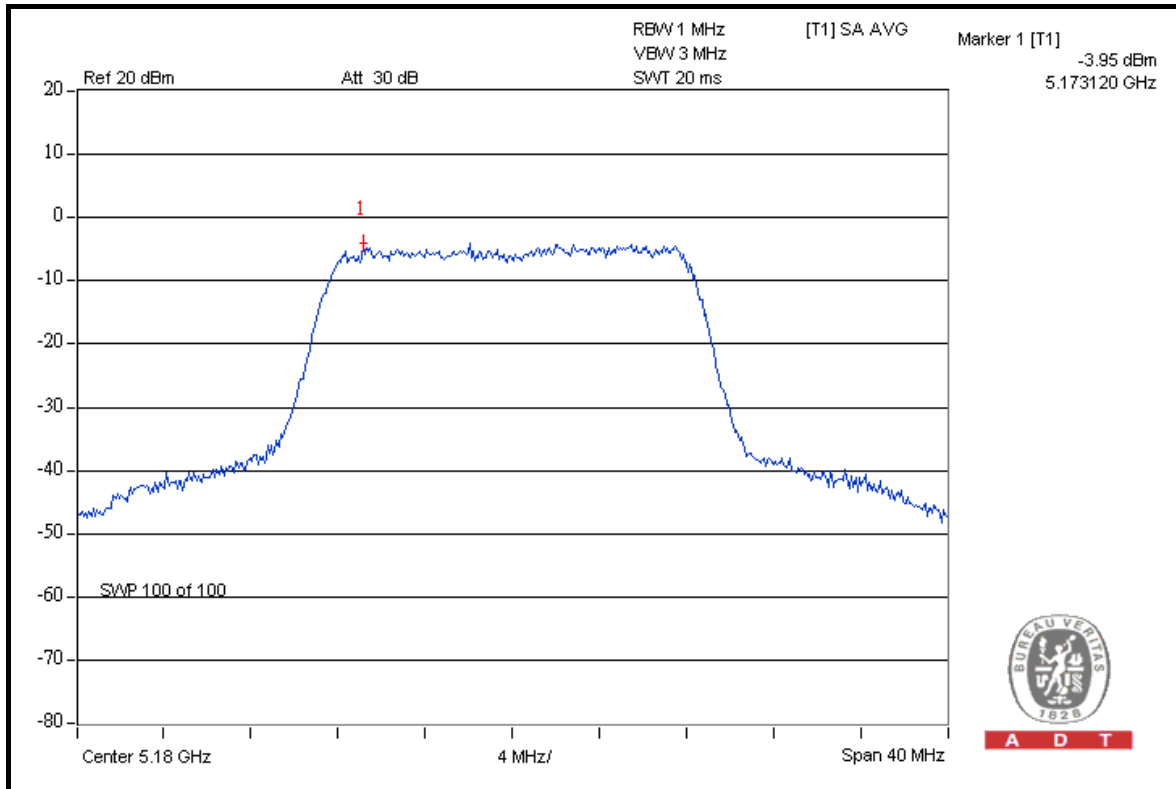


A D T

CH 48



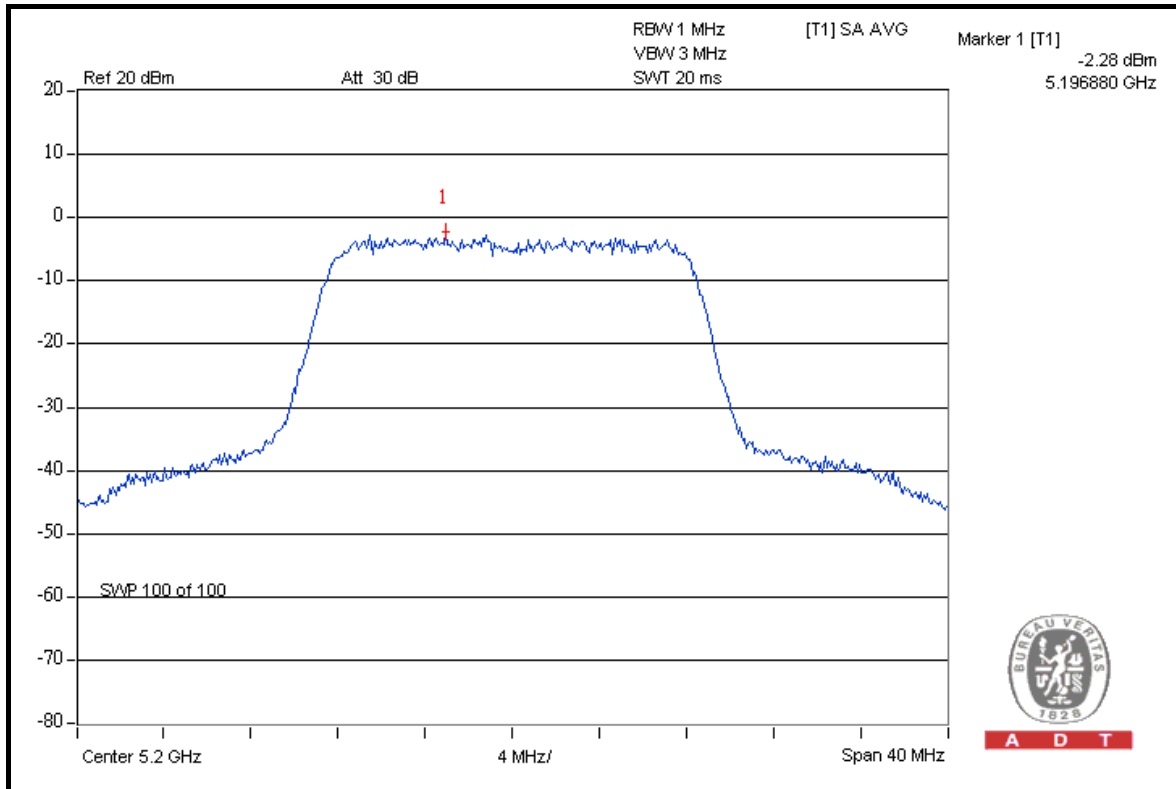
FOR CHAIN 1: CH 36



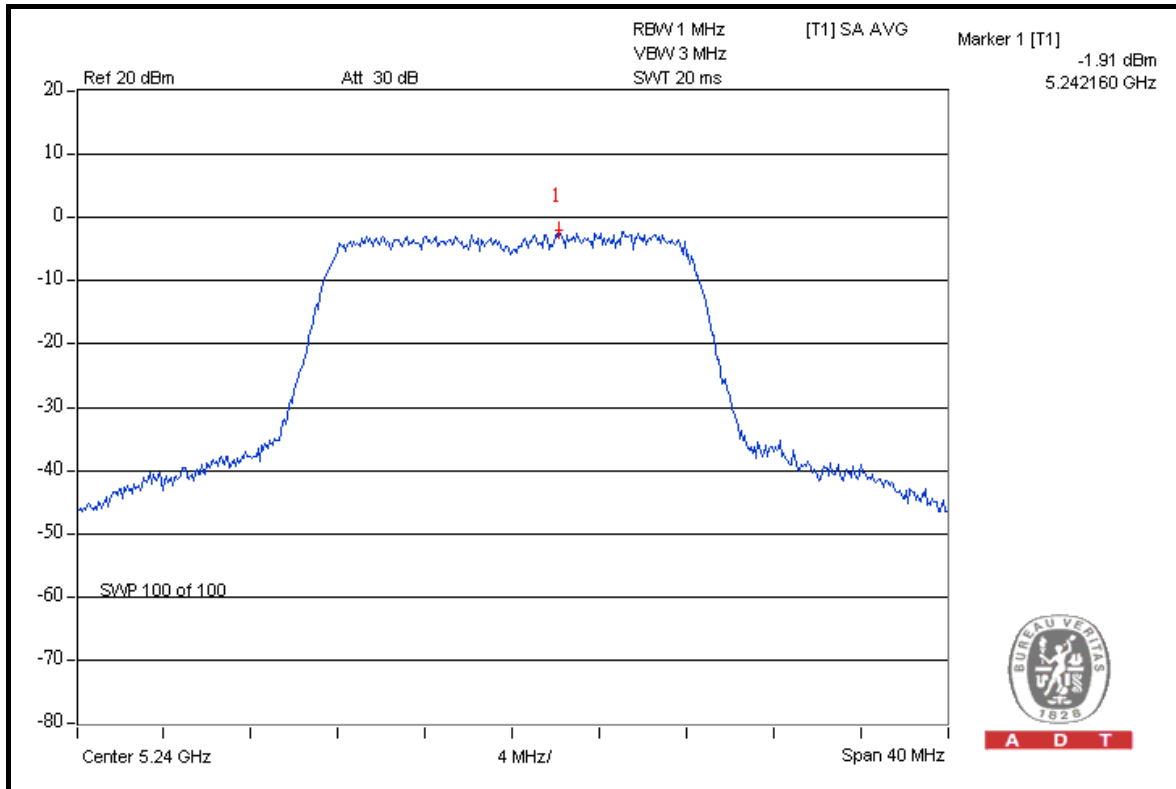


A D T

CH 40



CH 48





A D T

802.11n (20MHz)

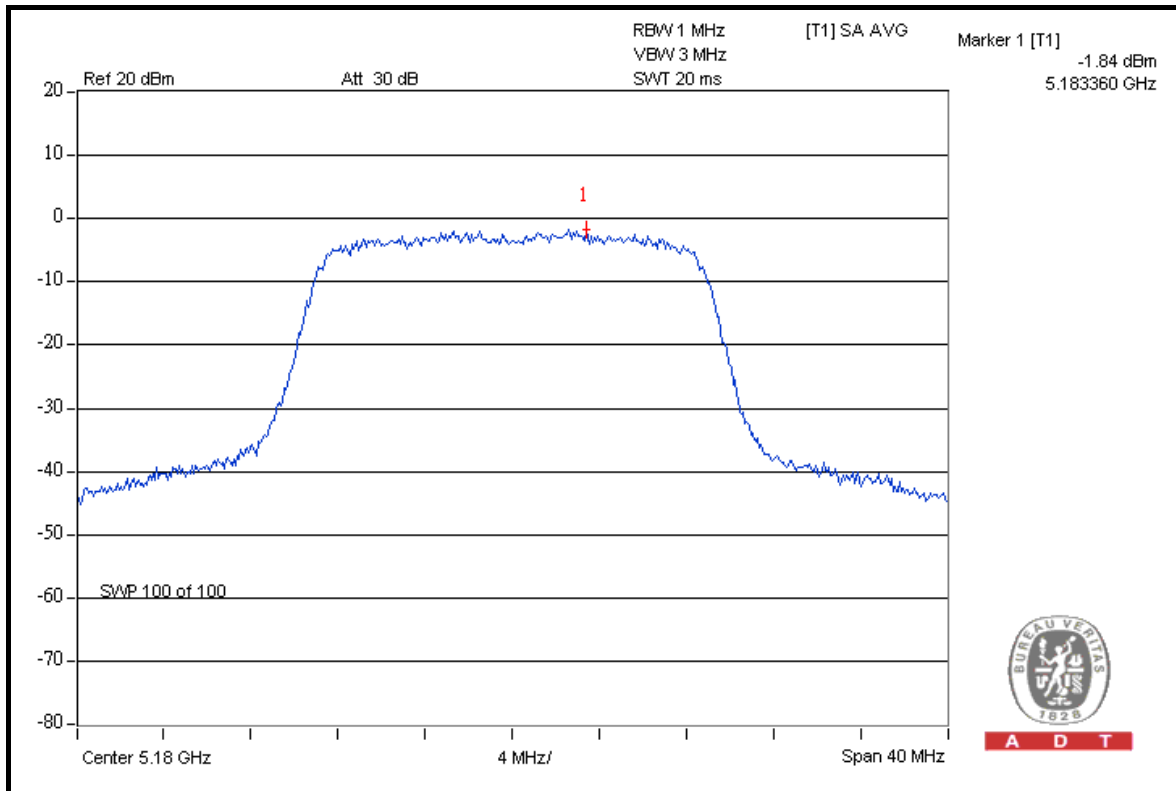
MODULATION TYPE	BPSK	TRANSFER RATE	6.5Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Brad Wu		

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	-1.84	-4.48	1.01	0.05	4	PASS
40	5200	-1.79	-4.02	1.06	0.24	4	PASS
48	5240	-0.48	-2.94	1.40	1.47	4	PASS



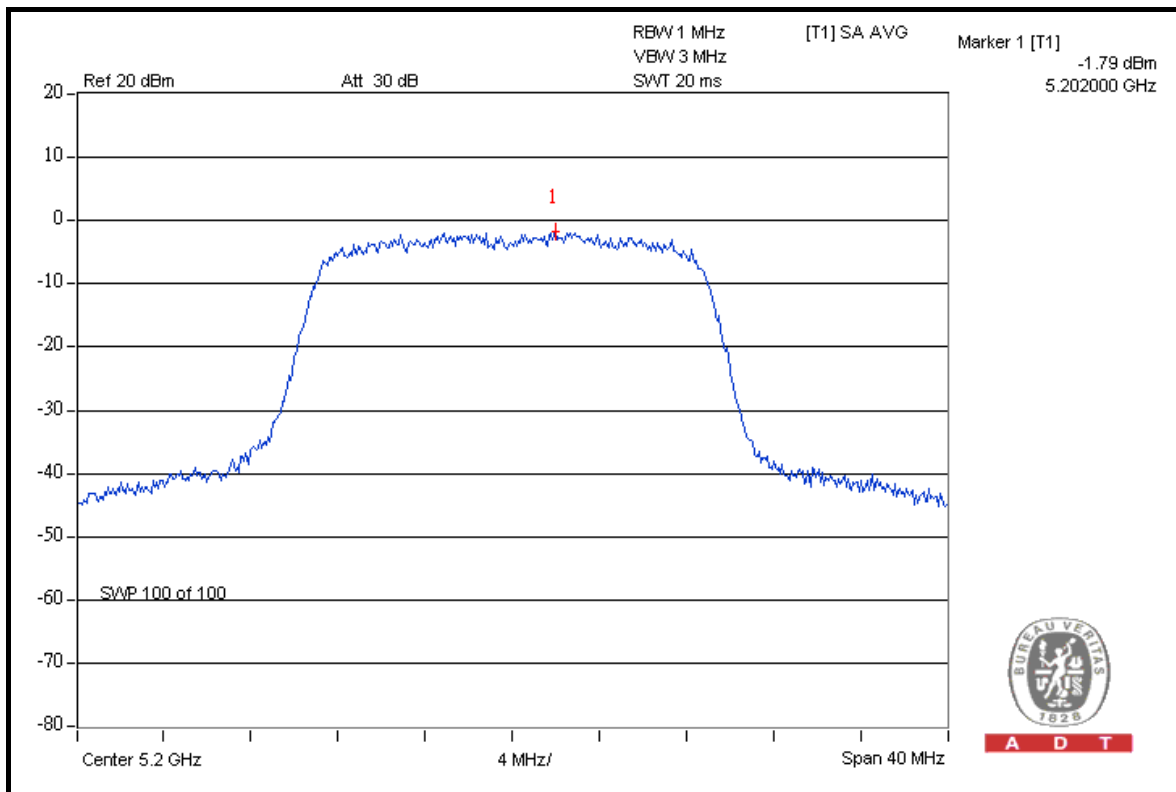
A D T

FOR CHAIN 0: CH 36



A D T

CH 40

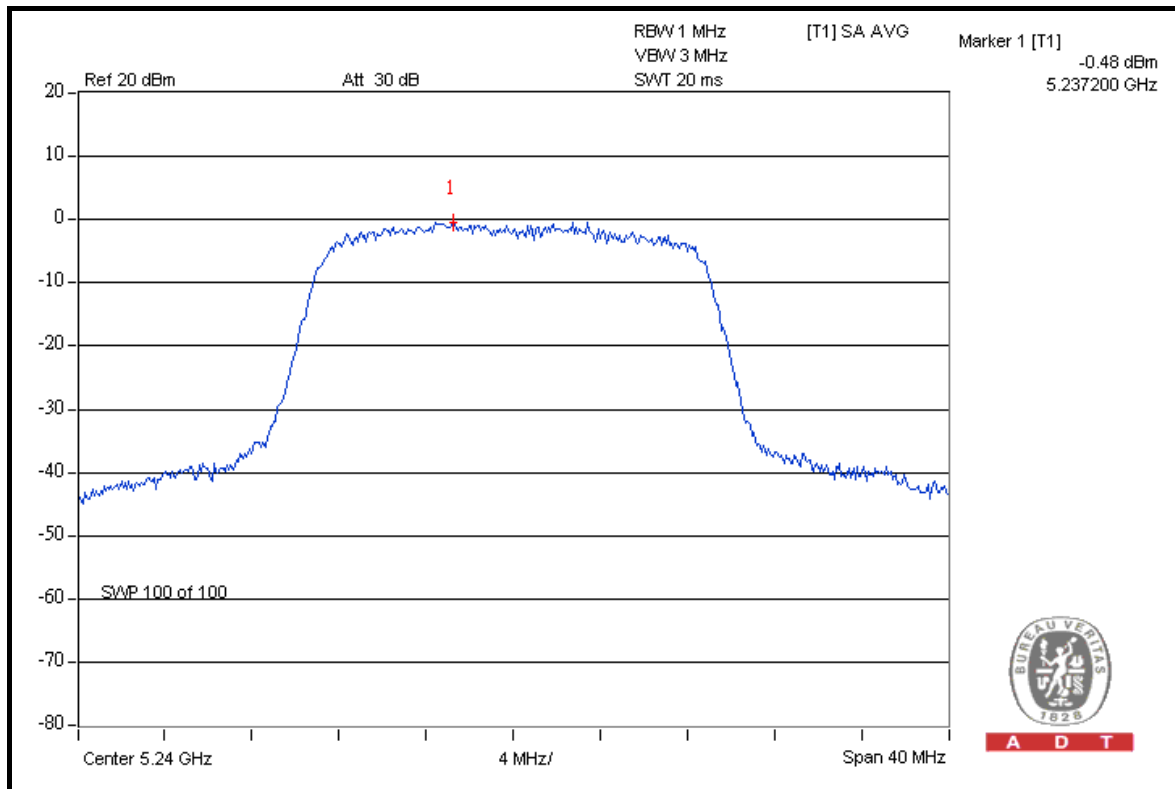


A D T

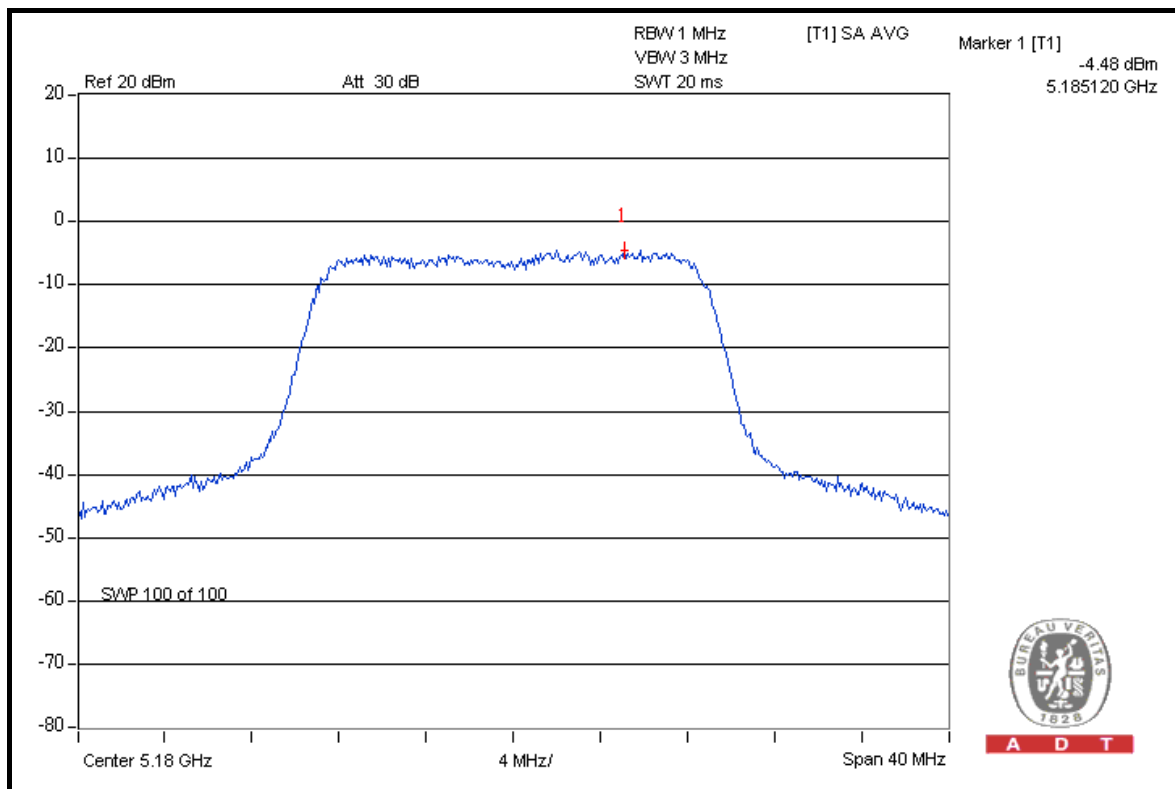


A D T

CH 48



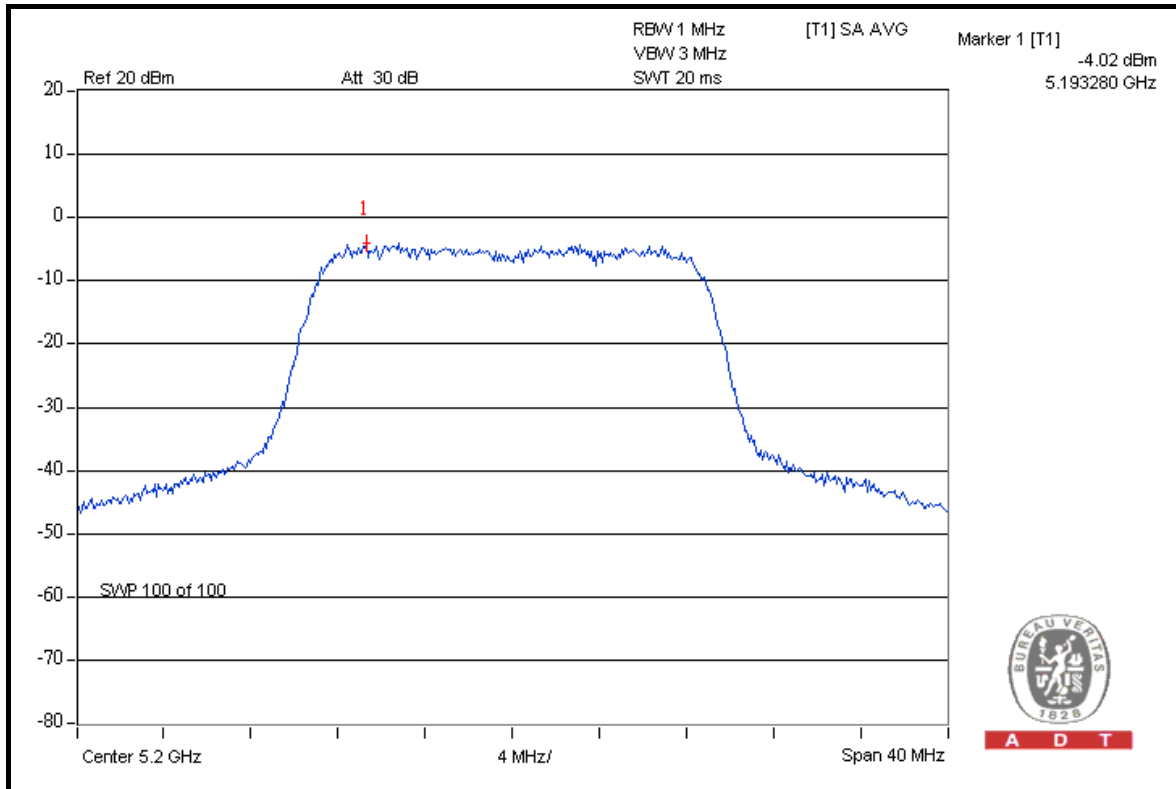
FOR CHAIN 1: CH 36





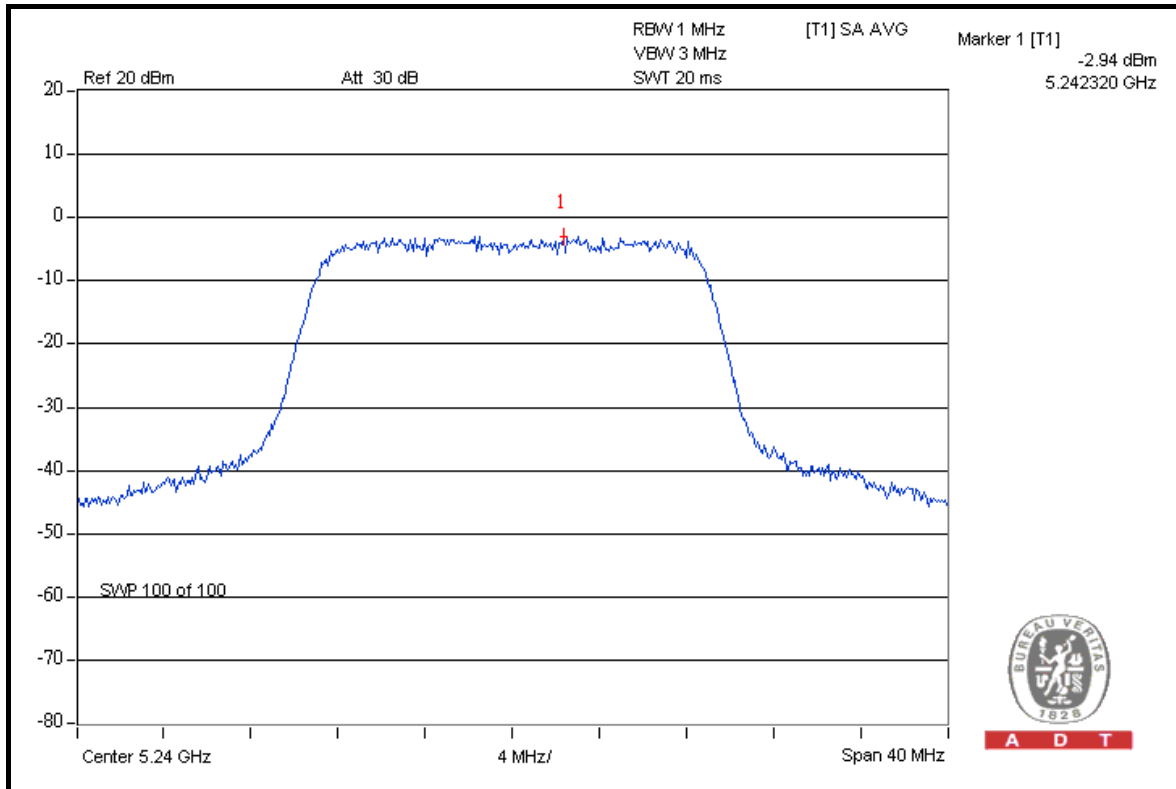
A D T

CH 40



A D T

CH 48



A D T



A D T

802.11n (40MHz)

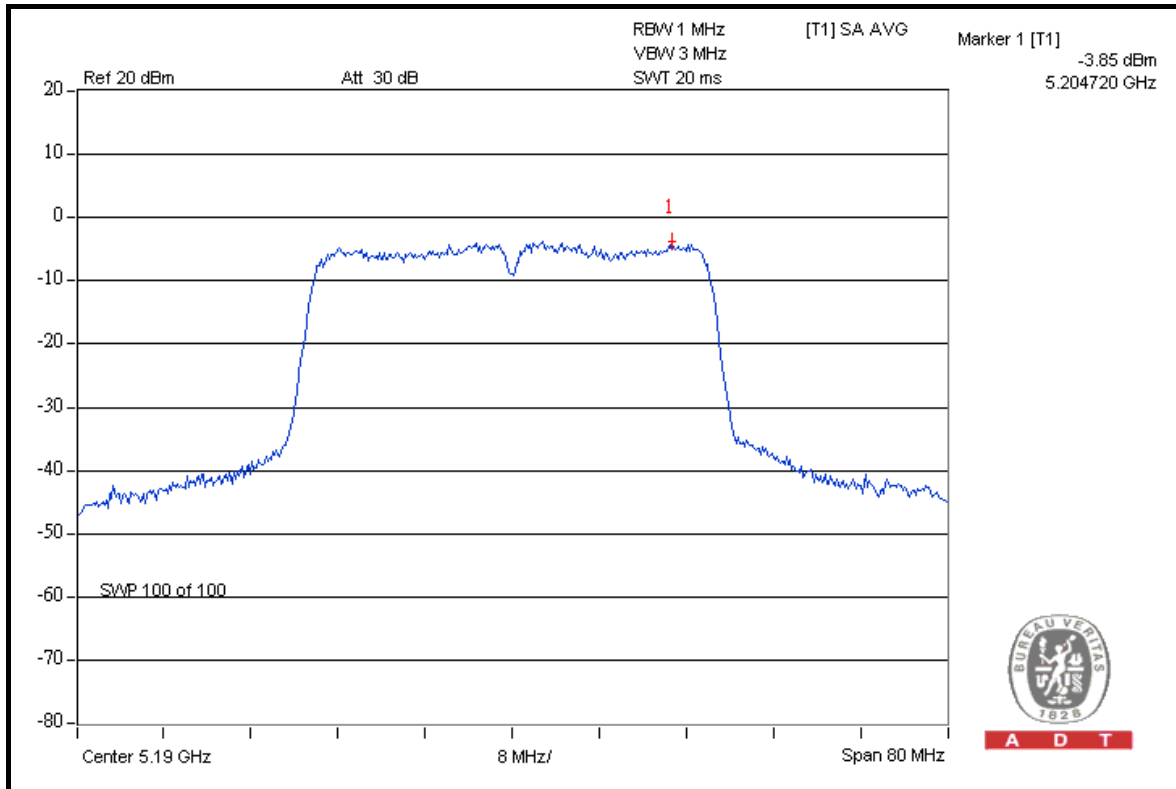
MODULATION TYPE	BPSK	TRANSFER RATE	13.5Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Brad Wu		

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	-3.85	-5.29	0.71	-1.50	4	PASS
46	5230	-2.73	-4.06	0.93	-0.33	4	PASS



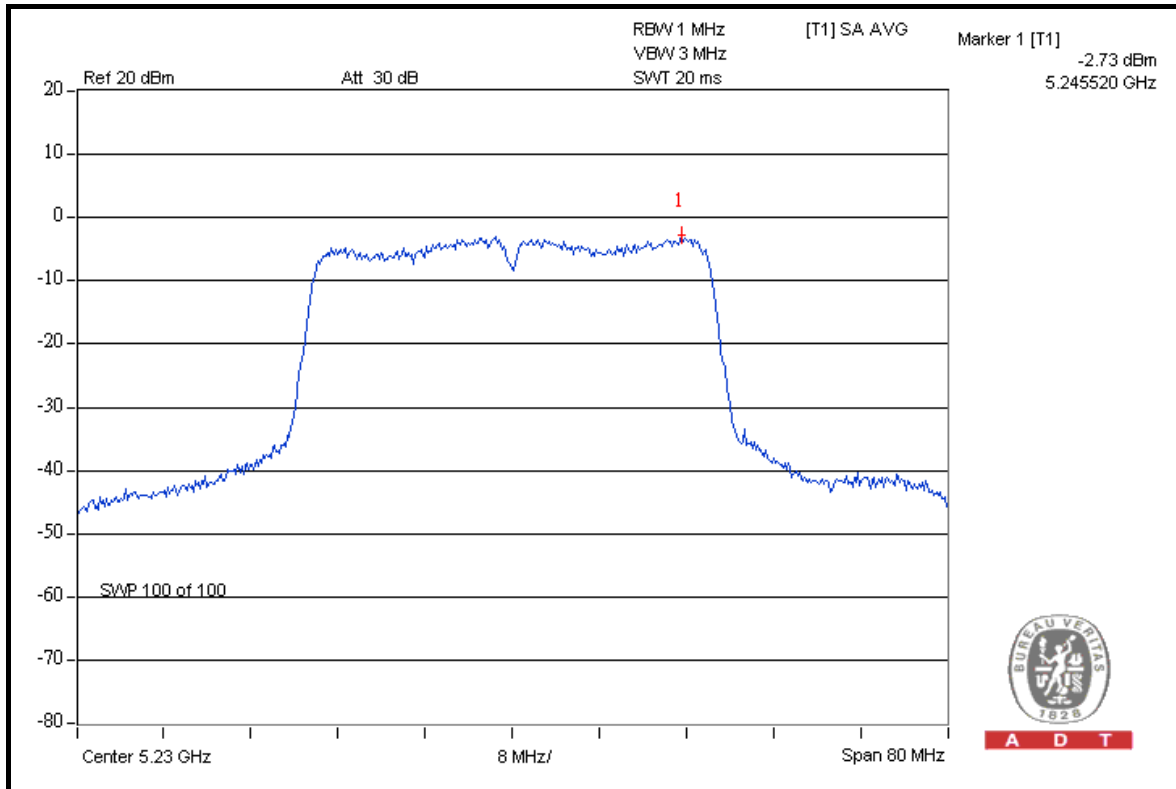
A D T

FOR CHAIN 0: CH 38



A D T

CH 46

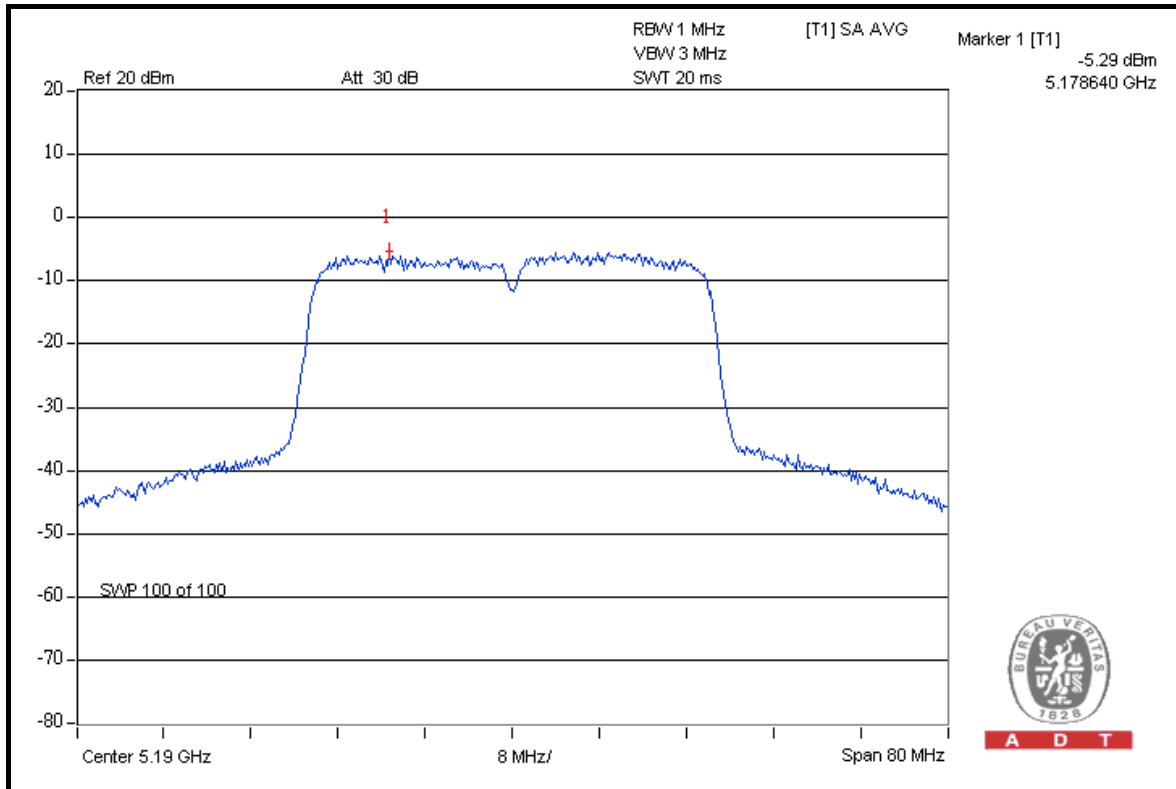


A D T

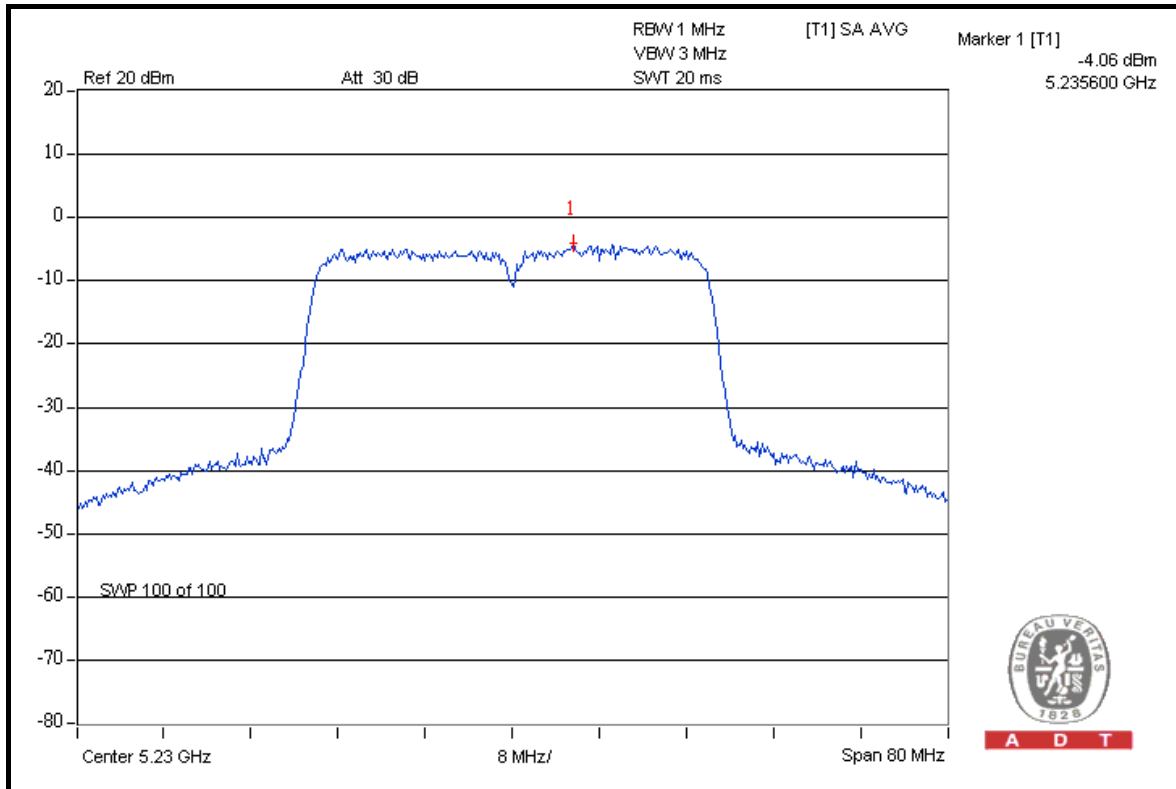


A D T

FOR CHAIN 1: CH 38



CH 46



4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within the band of operation frequency over a temperature variation of –30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
R&S SPECTRUM ANALYZER	FSP40	100041	May 13, 2009	May 12, 2010
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W981030	Jun. 24, 2009	Jun. 23, 2010

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

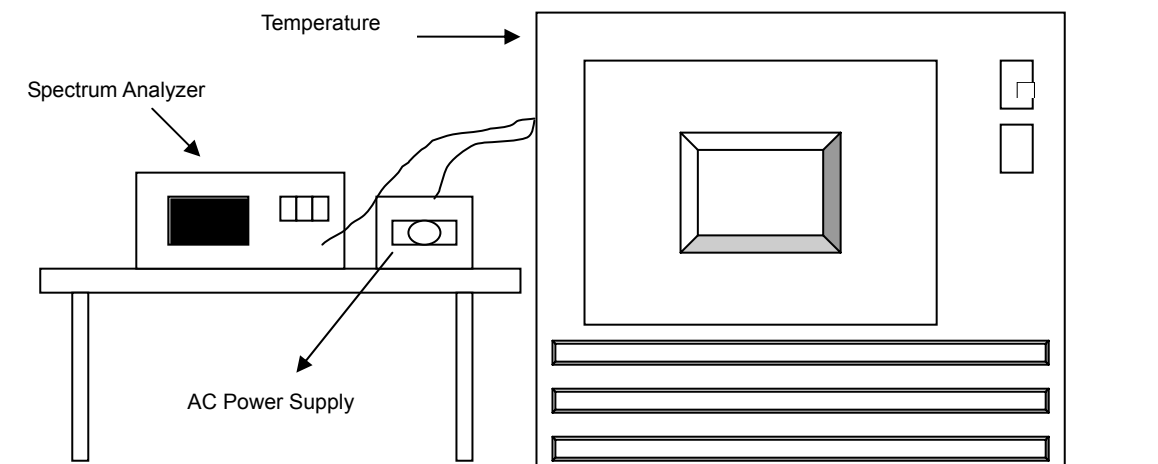
4.6.3 TEST PROCEDURE

- a. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation.

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Same as Item 4.1.6.

4.6.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5200MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	110.0	5199.997065	-0.564	5199.997250	-0.529	5199.997377	-0.504	5199.997334	-0.513
40	110.0	5199.996363	-0.699	5199.996357	-0.701	5199.996797	-0.616	5199.996610	-0.652
30	110.0	5199.997366	-0.507	5199.997591	-0.463	5199.997405	-0.499	5199.997291	-0.521
20	110.0	5199.997542	-0.473	5199.997571	-0.467	5199.997978	-0.389	5199.997662	-0.450
10	110.0	5199.998013	-0.382	5199.998202	-0.346	5199.997927	-0.399	5199.998373	-0.313
0	110.0	5199.997871	-0.409	5199.998238	-0.339	5199.998015	-0.382	5199.997874	-0.409
-10	110.0	5199.996664	-0.642	5199.997045	-0.568	5199.996649	-0.644	5199.996969	-0.583
-20	110.0	5199.997269	-0.525	5199.997363	-0.507	5199.997519	-0.477	5199.997618	-0.458
-30	110.0	5199.996897	-0.597	5199.997197	-0.539	5199.996731	-0.629	5199.996717	-0.631

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5200MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	93.5	5199.997772	-0.428	5199.998414	-0.305	5199.998887	-0.214	5199.998852	-0.221
	110.0	5199.997871	-0.409	5199.998238	-0.339	5199.998015	-0.382	5199.997874	-0.409
	126.5	5199.997125	-0.553	5199.998271	-0.332	5199.998080	-0.369	5199.998478	-0.293

4.7 BAND EDGES MEASUREMENT

4.7.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	100033	Jul. 06, 2009	Jul. 05, 2010
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100076	May. 26, 2009	May. 25, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 27, 2009	Apr. 26, 2010
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jul. 01, 2009	Jun. 30, 2010
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 25, 2008	Dec. 24, 2009
Preamplifier Agilent	8447D	2944A10633	Nov. 03, 2008	Nov. 02, 2009
Preamplifier Agilent	8449B	3008A01964	Oct. 23, 2008	Oct. 22, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	238141/4	May 13, 2009	May 12, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	May 13, 2009	May 12, 2010
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	Aug. 27, 2008	Aug. 26, 2009

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

4.7.2 TEST PROCEDURE

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

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

4.7.3 EUT OPERATING CONDITION

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

4.7.4 TEST RESULTS

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

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

802.11a

Channel 36 (5180MHz)

The band edge emission plot on the next page shows 49.85dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 109.84dBuV/m (Peak), so the maximum field strength in restrict band is $109.84 - 49.85 = 59.99$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next page shows 51.63dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 98.73dBuV/m (Average), so the maximum field strength in restrict band is $98.73 - 51.63 = 47.10$ dBuV/m which is under 54dBuV/m limit.

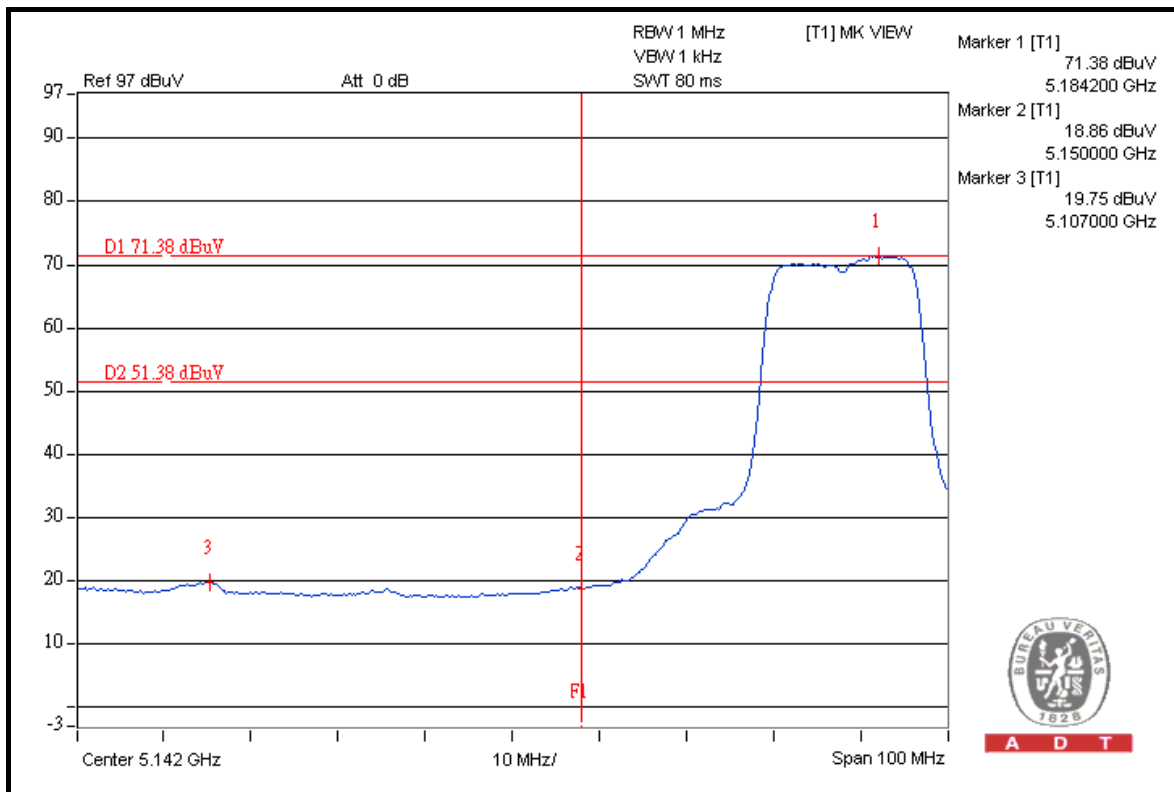
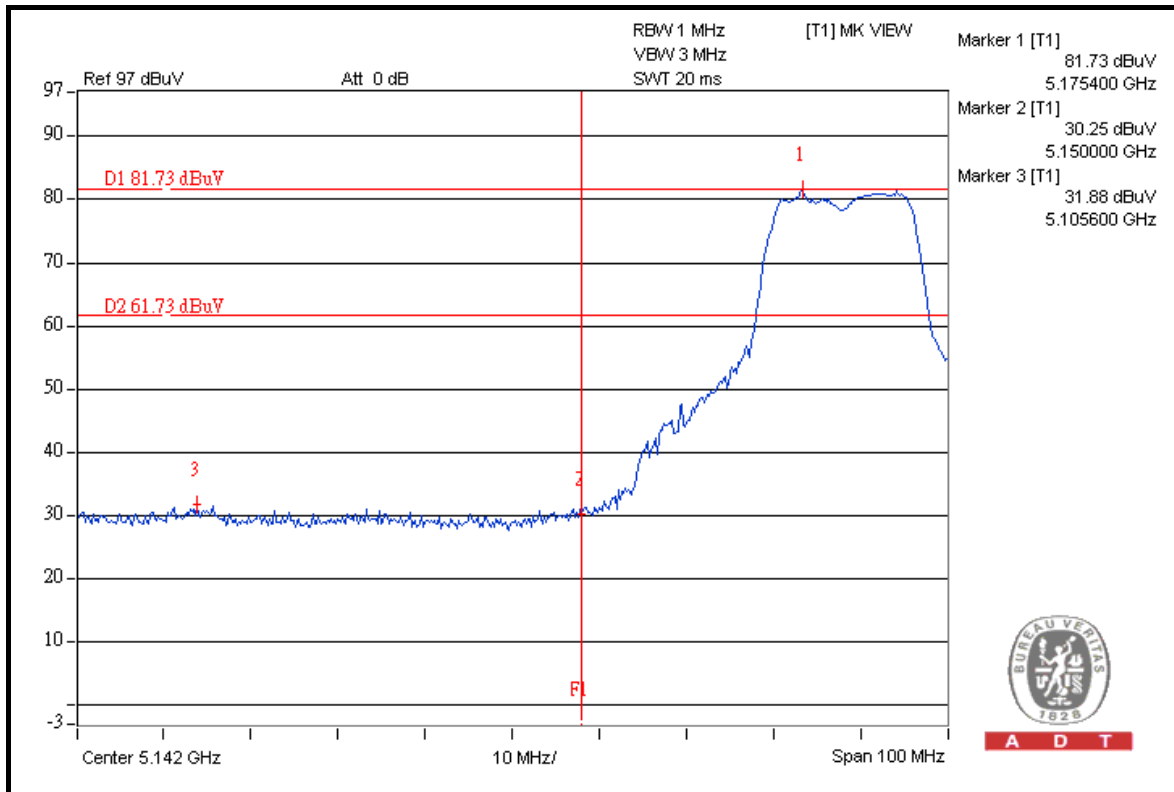
Channel 48 (5240MHz)

The band edge emission plot on the next second page shows 49.08dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 109.93dBuV/m (Peak), so the maximum field strength in restrict band is $109.93 - 49.08 = 60.85$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 50.69dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 99.14dBuV/m (Average), so the maximum field strength in restrict band is $99.14 - 50.69 = 48.45$ dBuV/m which is under 54dBuV/m limit.

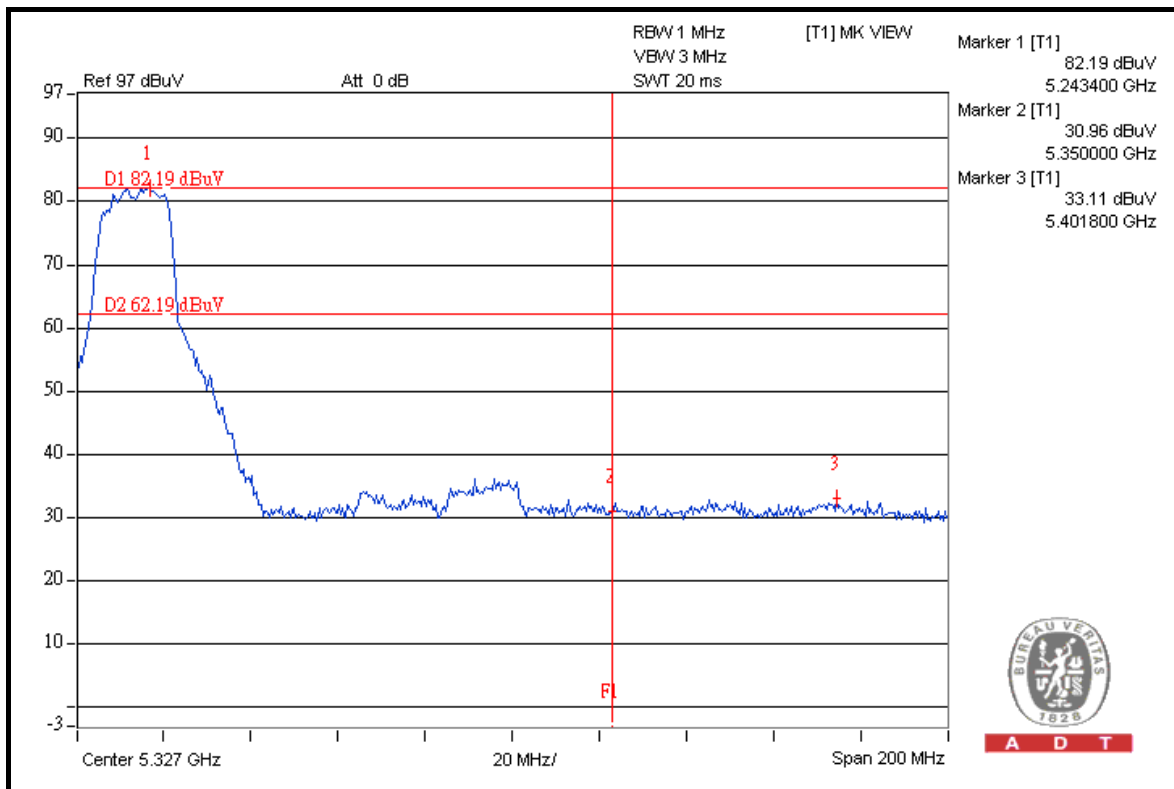
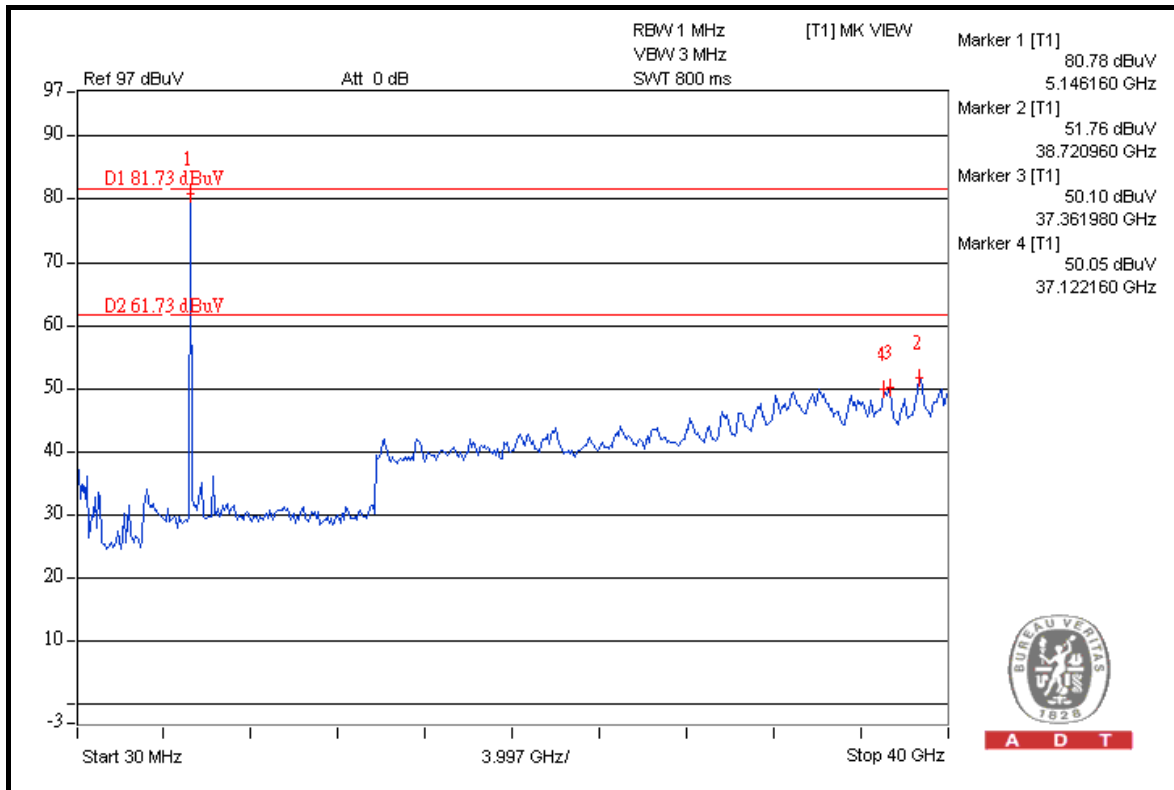


A D T



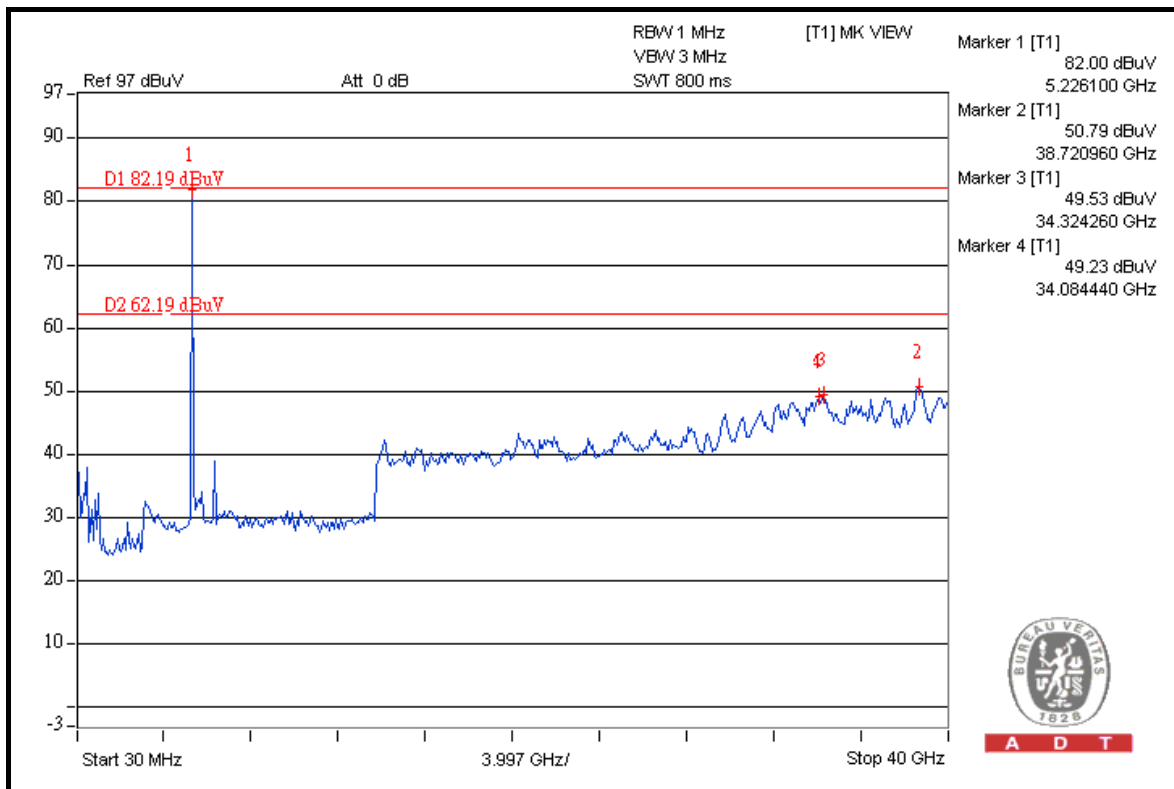
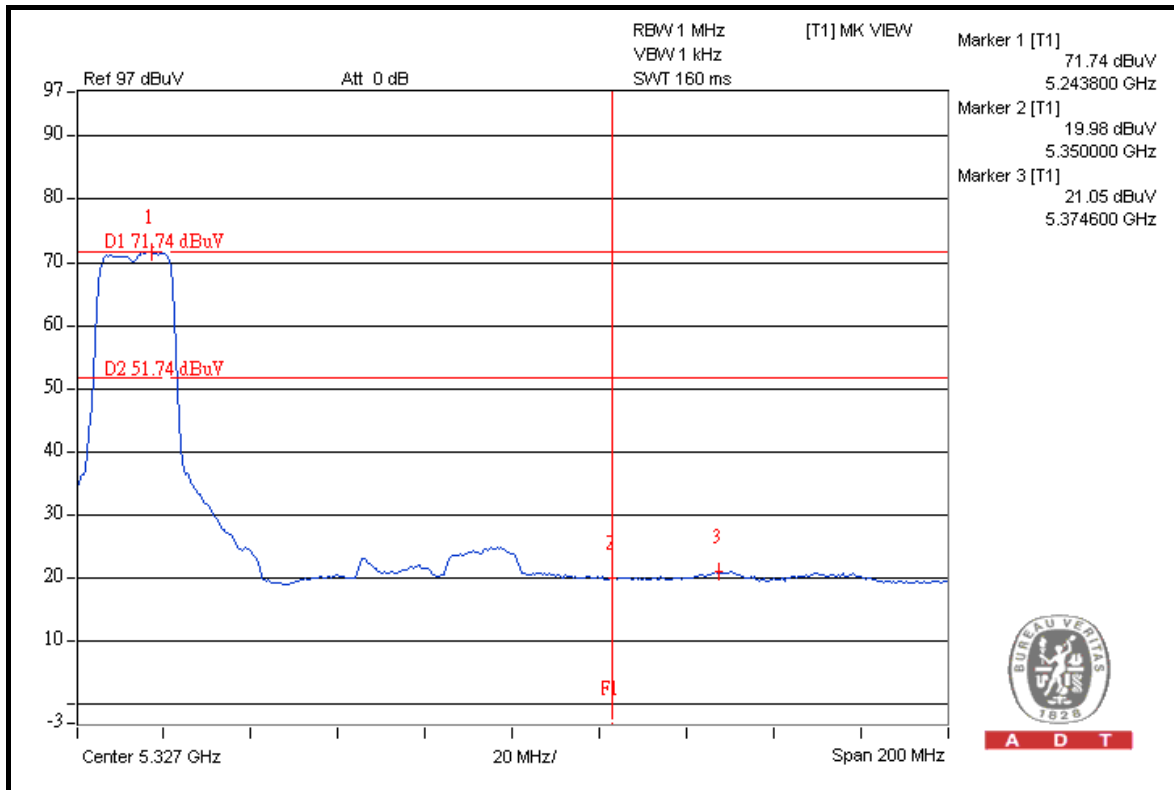


A D T





A D T



802.11n (20MHz)

Channel 36 (5180MHz)

The band edge emission plot on the next page shows 38.42dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 109.94dBuV/m (Peak), so the maximum field strength in restrict band is $109.94 - 38.42 = 71.52$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next page shows 51.39dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 98.88dBuV/m (Average), so the maximum field strength in restrict band is $98.88 - 51.39 = 47.49$ dBuV/m which is under 54dBuV/m limit.

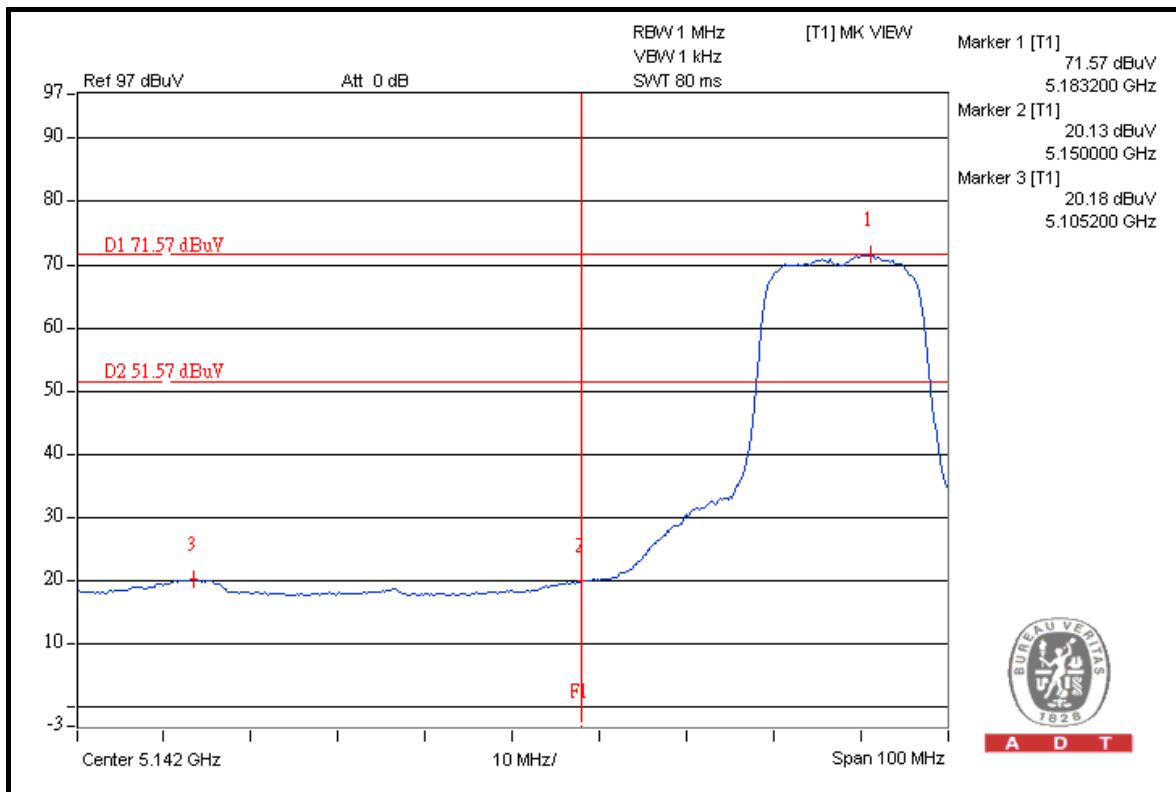
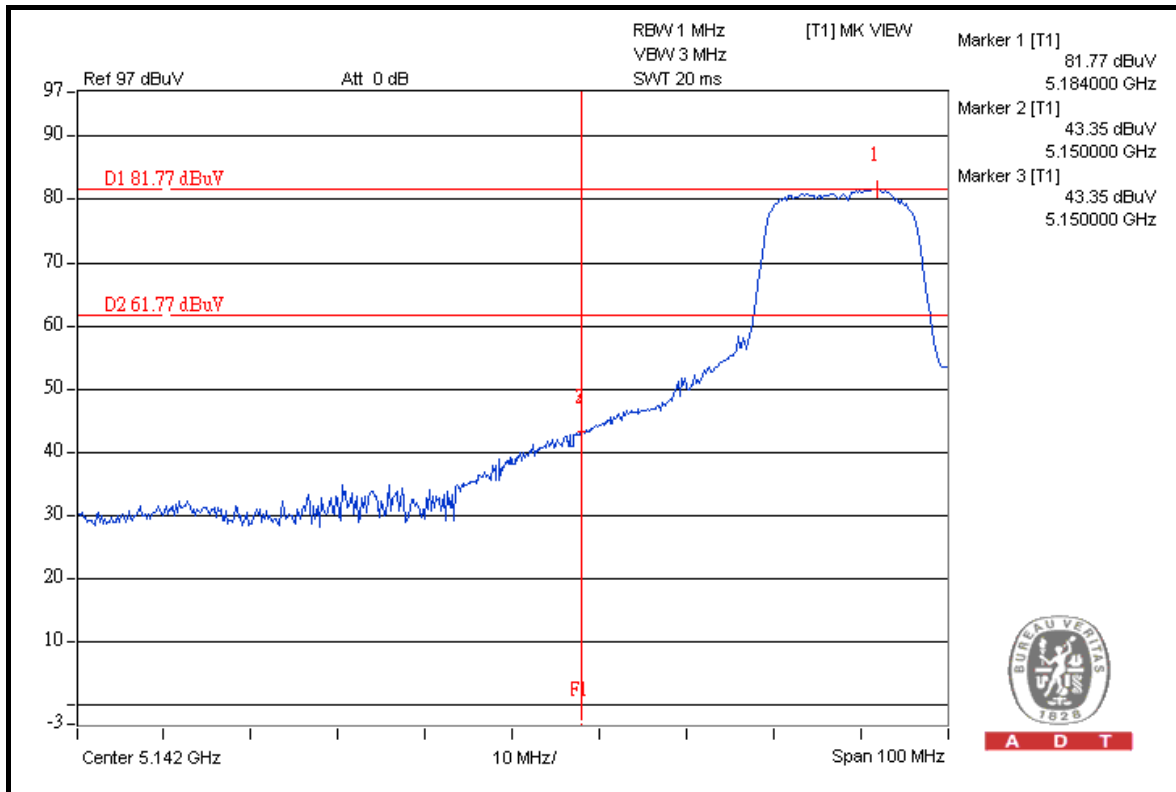
Channel 48 (5240MHz)

The band edge emission plot on the next second page shows 48.13dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 109.81dBuV/m (Peak), so the maximum field strength in restrict band is $109.81 - 48.13 = 61.68$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 50.70dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 99.52dBuV/m (Average), so the maximum field strength in restrict band is $99.52 - 50.70 = 48.82$ dBuV/m which is under 54dBuV/m limit.

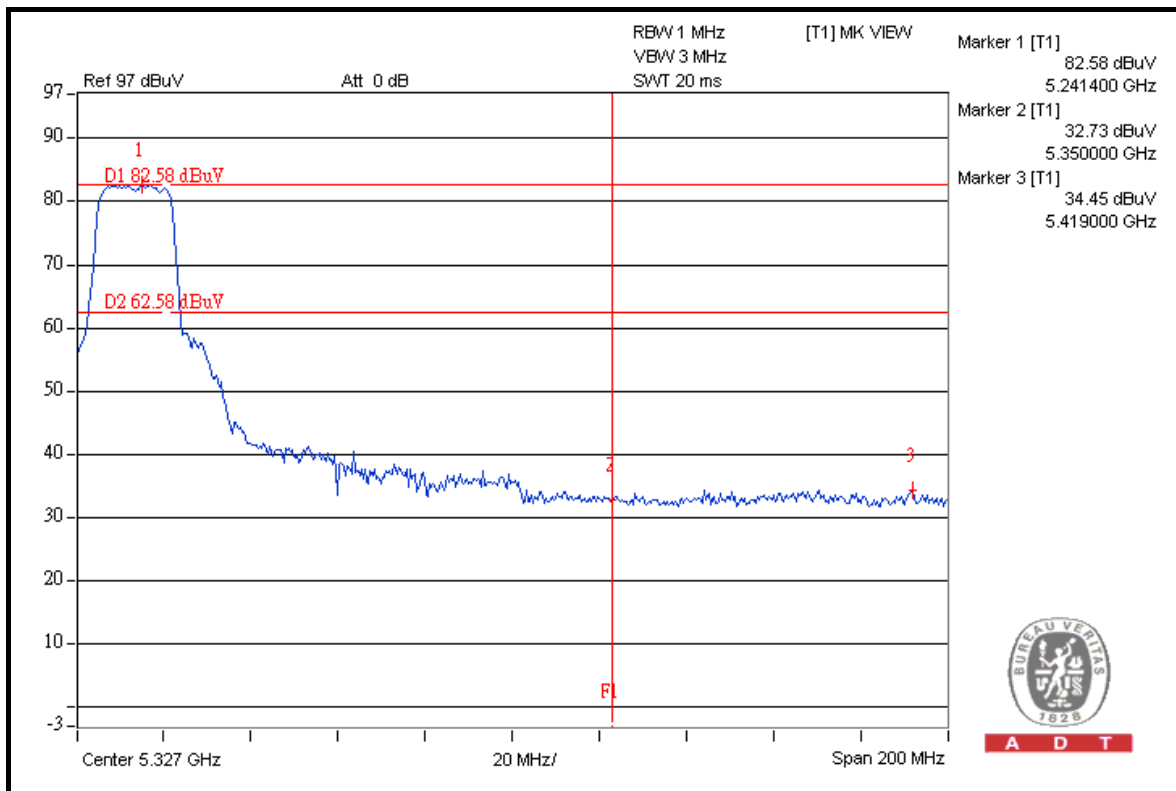
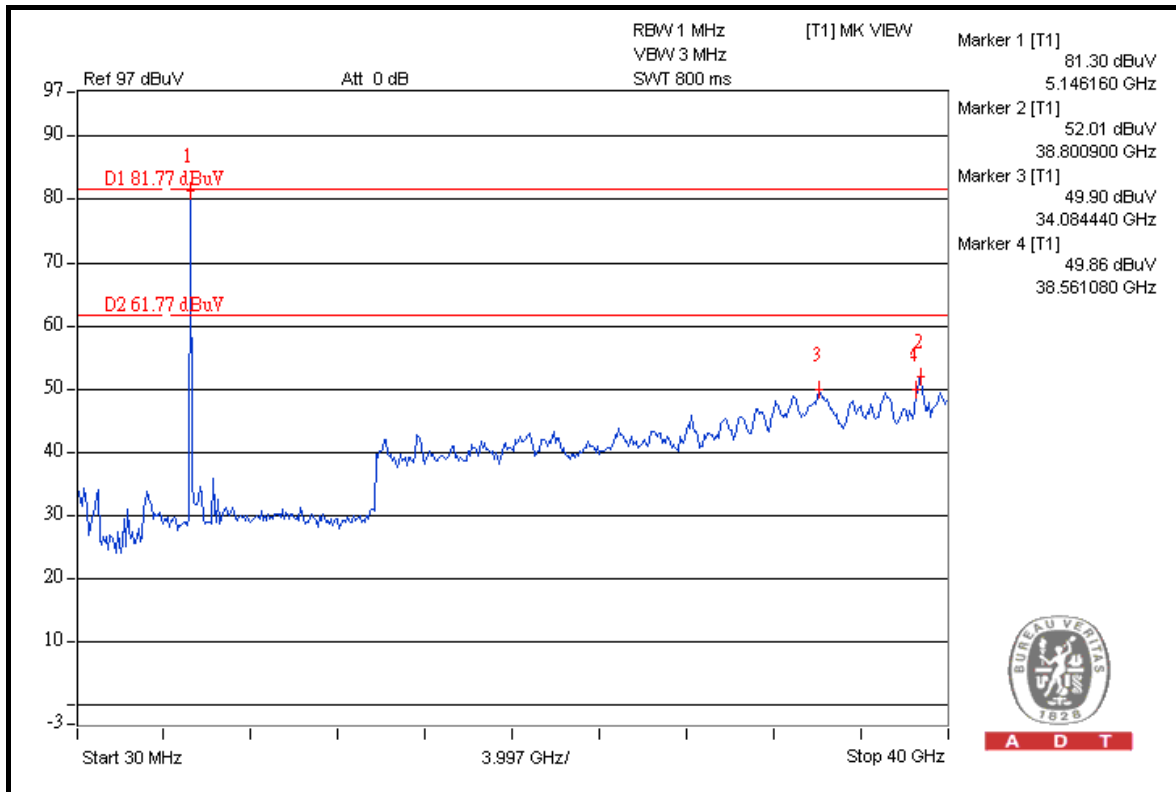


A D T



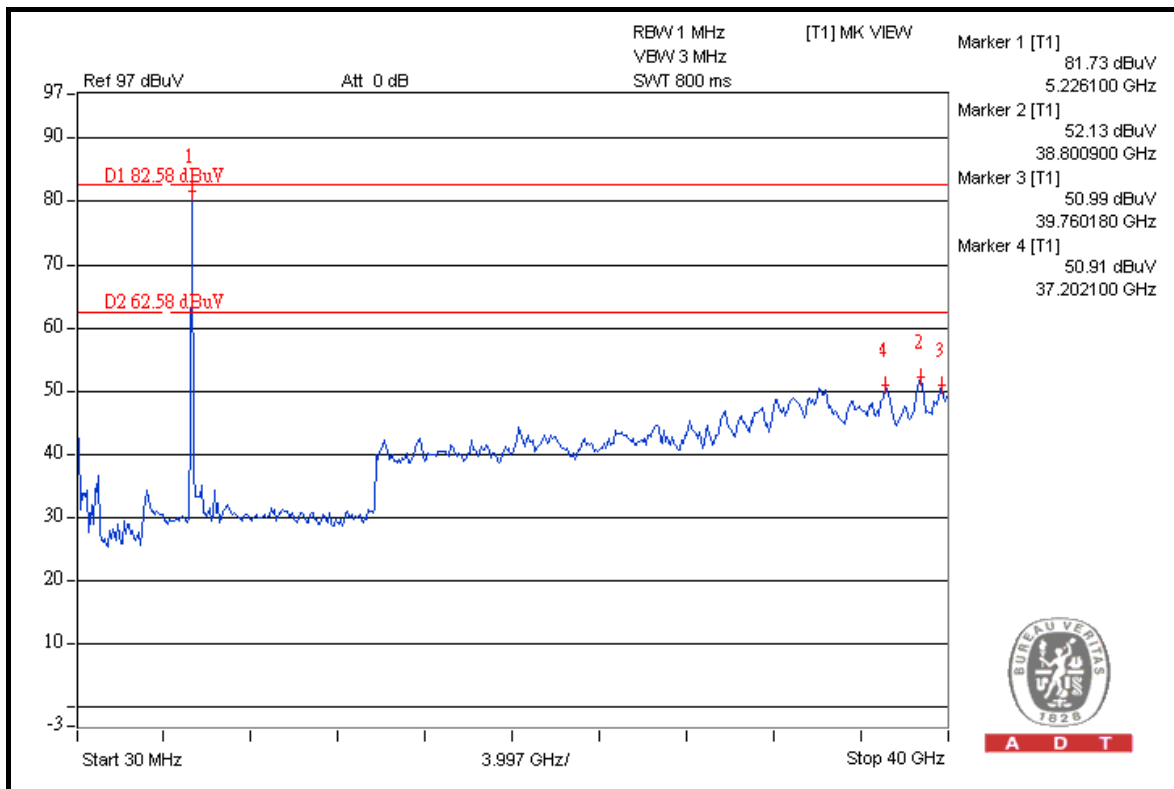
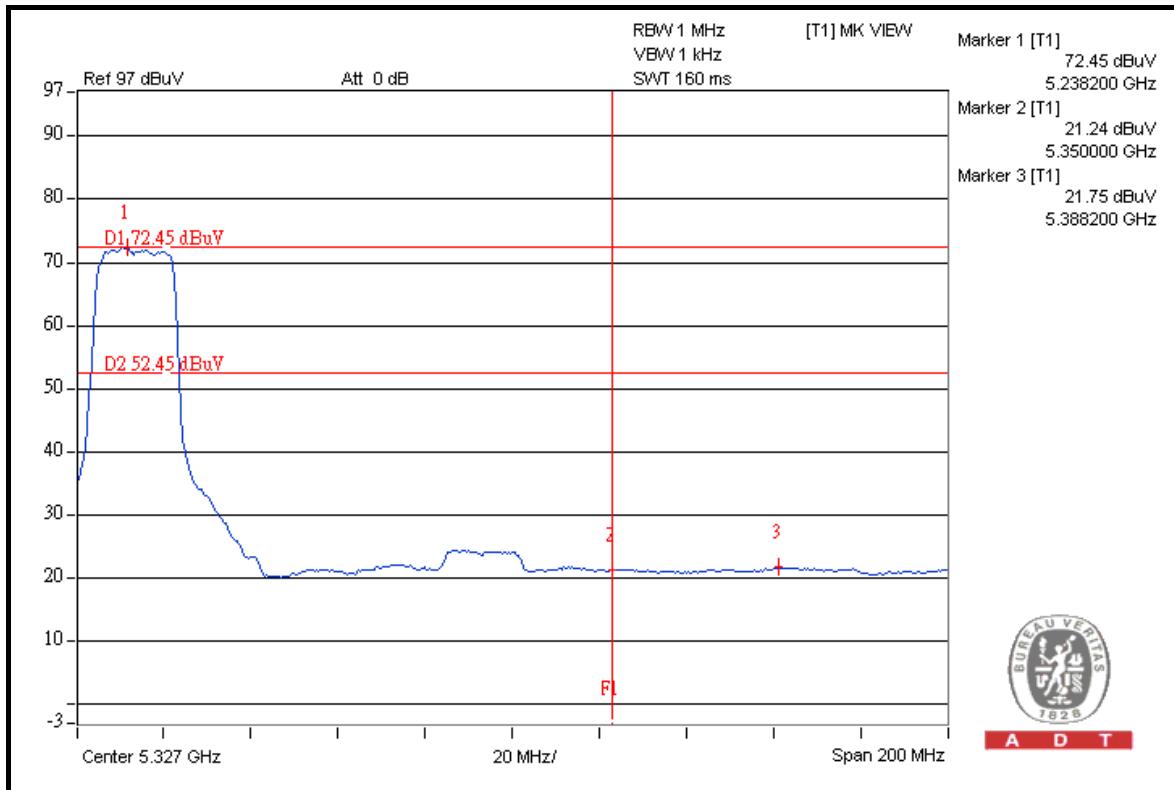


A D T





A D T



802.11n (40MHz)

Channel 38 (5190MHz)

The band edge emission plot on the next page shows 37.91dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 38 is 110.03dBuV/m (Peak), so the maximum field strength in restrict band is $110.03 - 37.91 = 72.12$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next page shows 46.45dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 38 is 99.41dBuV/m (Average), so the maximum field strength in restrict band is $99.41 - 46.45 = 52.96$ dBuV/m which is under 54dBuV/m limit.

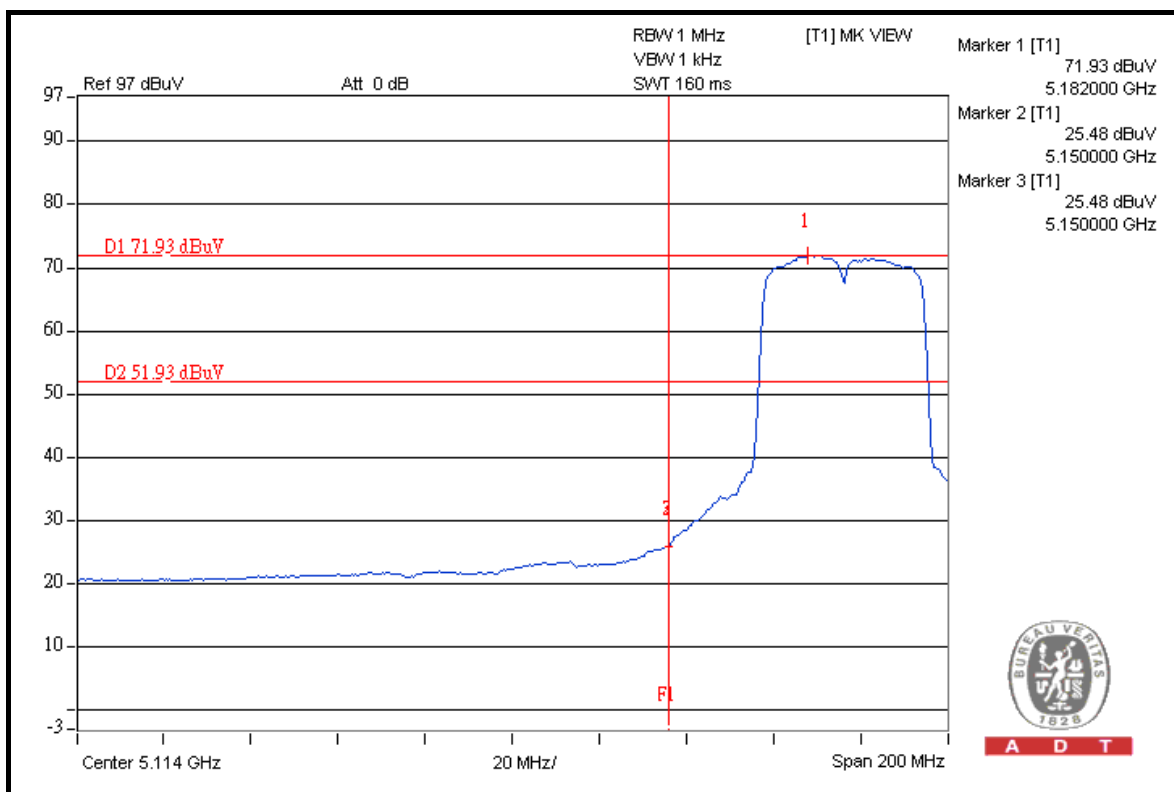
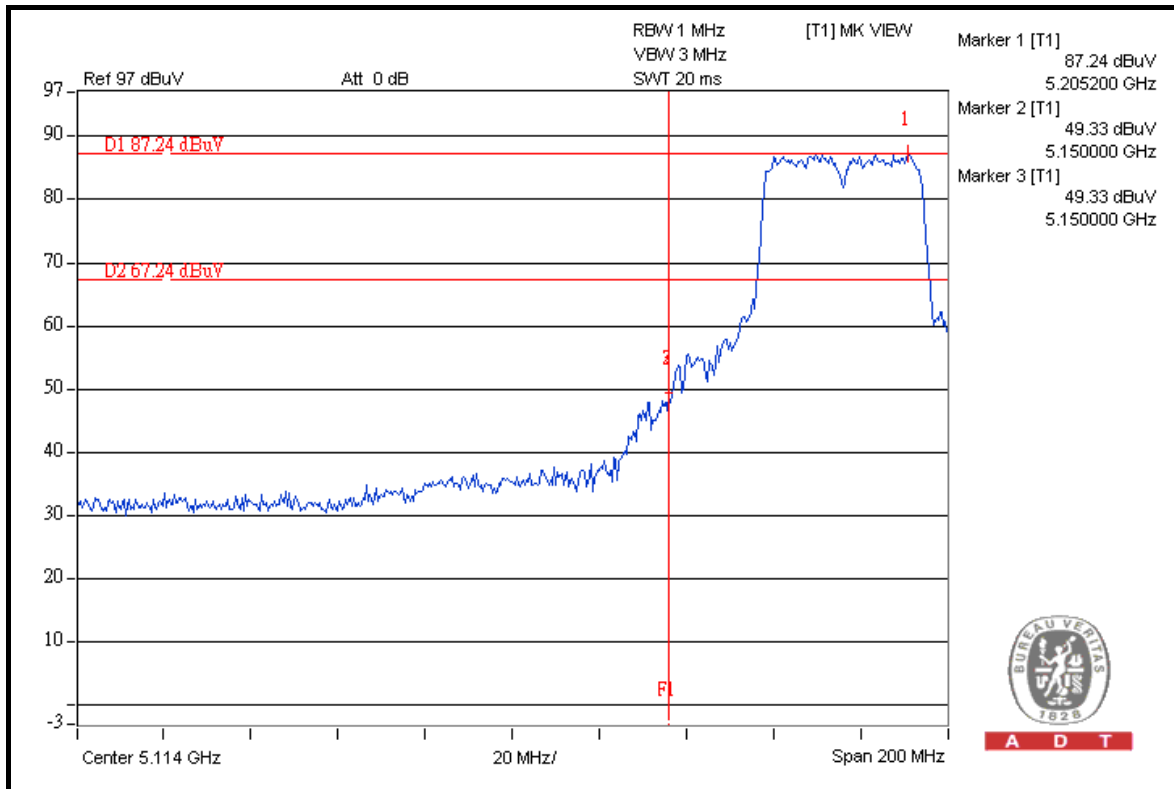
Channel 46 (5230MHz)

The band edge emission plot on the next second page shows 52.35dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 46 is 110.29dBuV/m (Peak), so the maximum field strength in restrict band is $110.29 - 52.35 = 57.94$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 47.01dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 46 is 99.48dBuV/m (Average), so the maximum field strength in restrict band is $99.48 - 47.01 = 52.47$ dBuV/m which is under 54dBuV/m limit.

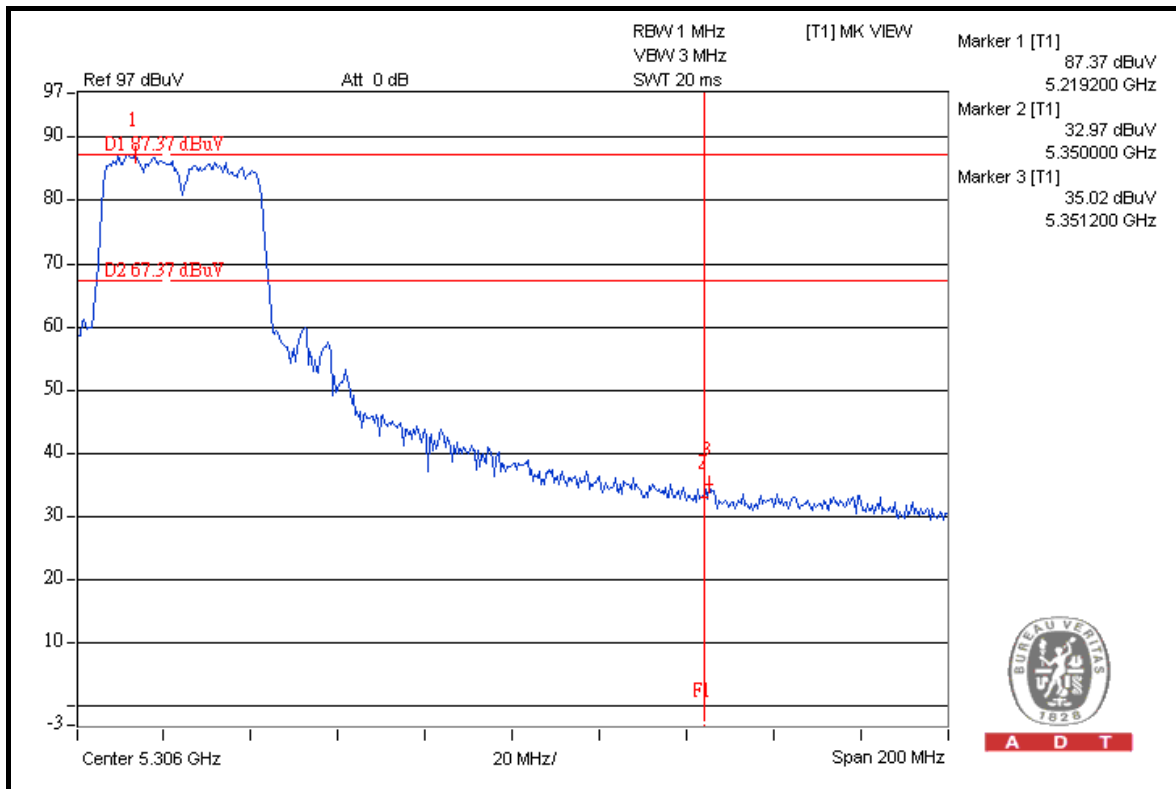
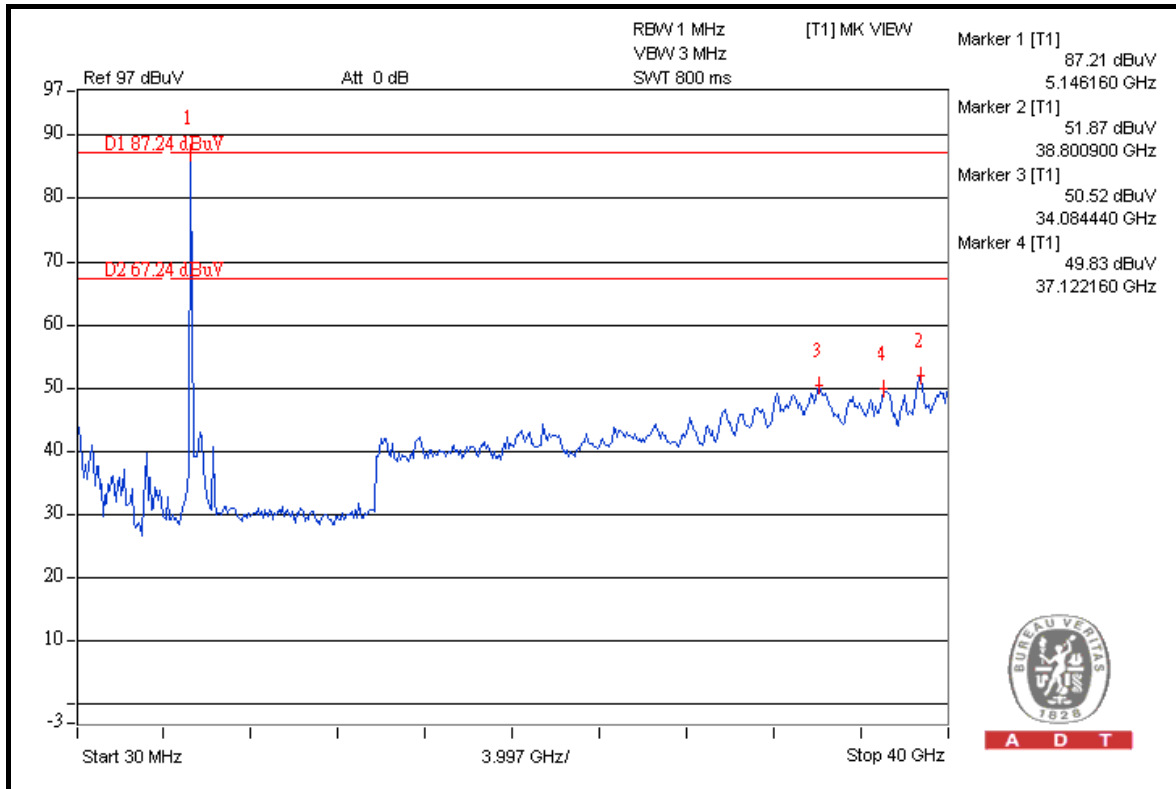


A D T



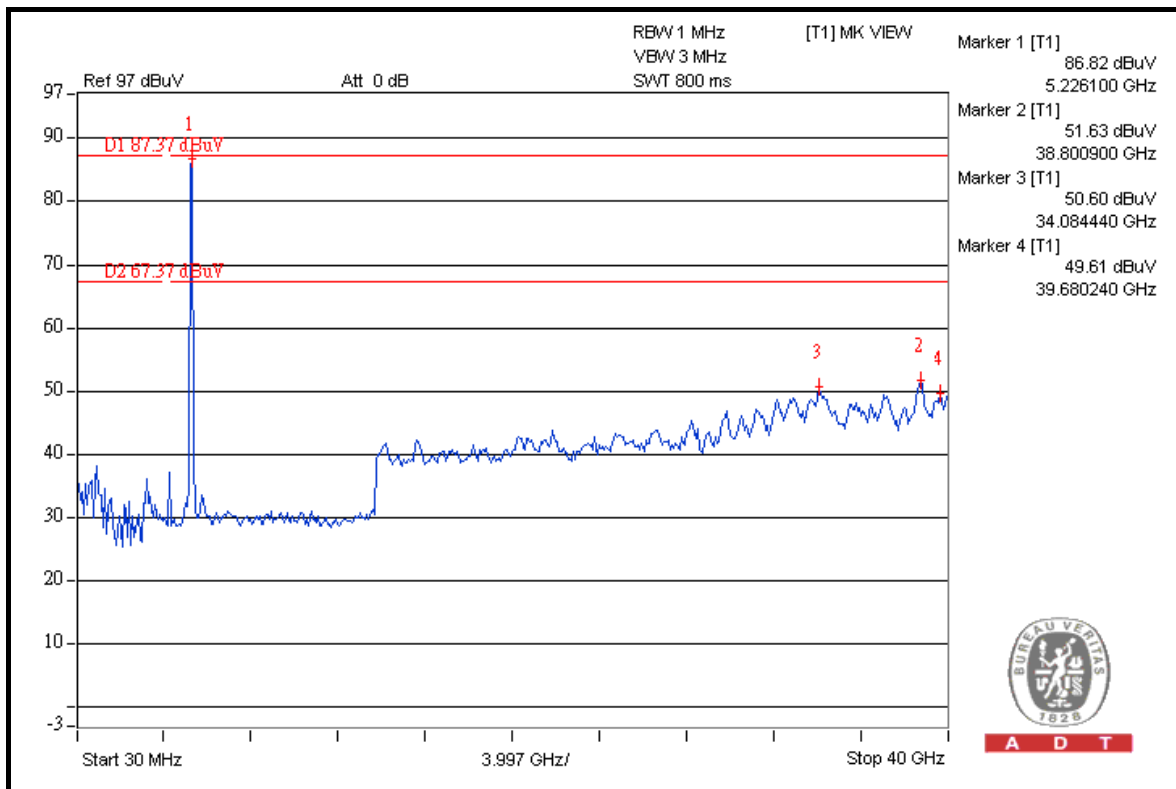
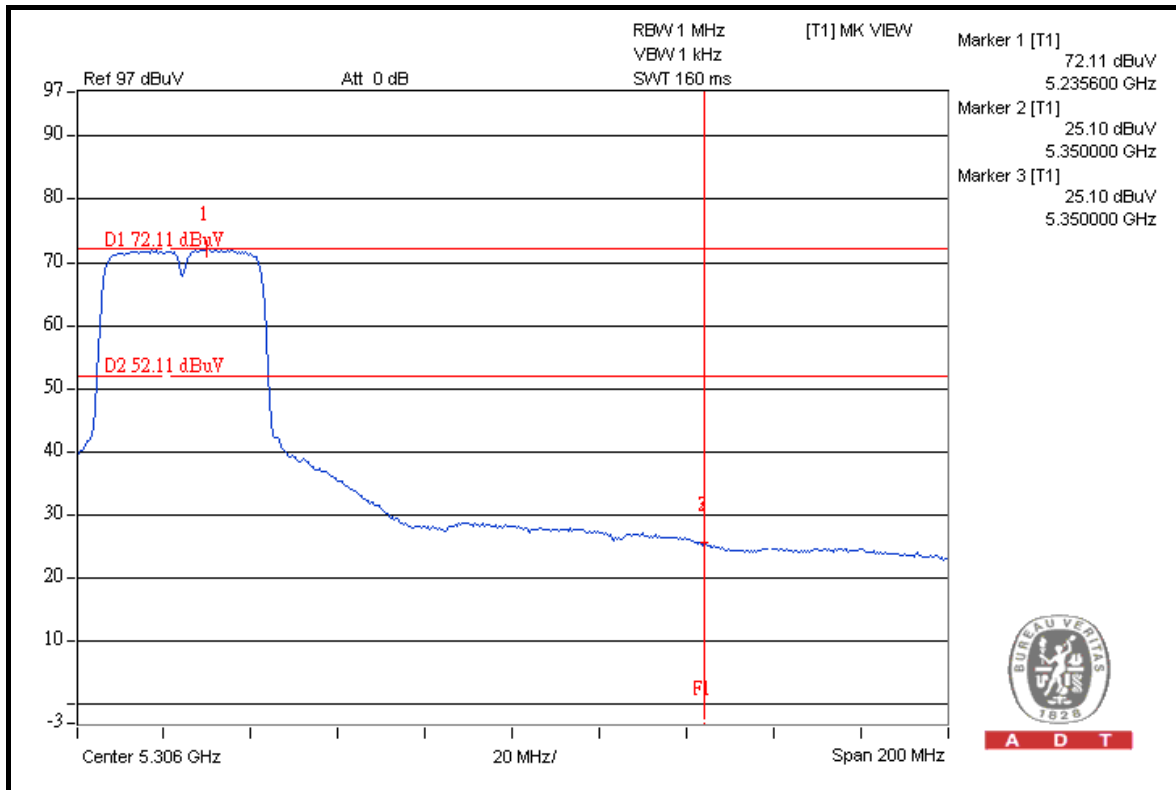


A D T





A D T



4.8 ANTENNA REQUIREMENT

4.8.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.407(a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.8.2 ANTENNA CONNECTED CONSTRUCTION

The antennas used in this product are PIFA & Dipole antenna without connector. The maximum gain of the antenna is 5dBi.

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



6. INFORMATION ON THE TESTING LABORATORIES

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

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

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

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Web Site: www.adt.com.tw

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

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

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

---END---