FCC TEST REPORT (15.407)

REPORT NO.:	RF970915L09-1
MODEL NO.:	WRT400N
RECEIVED:	Sep. 15, 2008
TESTED:	Dec. 16 ~ Dec. 29, 2008
ISSUED:	Dec. 31, 2008

APPLICANT:	Cisco-Linksys LLC
ADDRESS:	121 Theory Drive Irvine, CA 92617 (USA)

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

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1. CERTIFICATION

PRODUCT: Simultaneous Dual-Band Wireless-N Router
MODEL: WRT400N
BRAND: Linksys by Cisco
APPLICANT: Cisco-Linksys LLC
TEST SAMPLE: ENGINEERING SAMPLE
TESTED: Dec. 16 ~ Dec. 29, 2008
STANDARDS: **FCC Part 15, Subpart E (Section 15.407)**
ANSI C63.4-2003

The above equipment (Model: WRT400N) 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 : Peggy Chen , **DATE:** Dec. 31, 2008
Peggy Chen / Specialist

TECHNICAL ACCEPTANCE : Long Chen , **DATE:** Dec. 31, 2008
Responsible for RF
Long Chen / Senior Engineer

APPROVED BY : Gary Chang , **DATE:** Dec. 31, 2008
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 -14.29dB at 0.162MHz.
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 -1.06dB at 10360.00MHz.
15.407(a/1/2/3)	Peak Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.

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 ~ 1000MHz	4.03 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	Simultaneous Dual-Band Wireless-N Router
MODEL NO.	WRT400N
FCC ID	Q87-WRT400N
POWER SUPPLY	12Vdc from AC adapter
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 Draft 802.11n: up to 300.0Mbps
FREQUENCY RANGE	2.4GHz: 2400.0 ~ 2483.5MHz 5.0GHz: 5150.0 ~ 5250.0MHz, 5725.0 ~ 5825.0MHz
NUMBER OF CHANNEL	2.4GHz: 11 for 802.11b, 802.11g, draft 802.11n (20MHz) 7 for draft 802.11n (40MHz) 5.0GHz: 9 for 802.11a, draft 802.11n (20MHz) 4 for draft 802.11n (40MHz)
OUTPUT POWER	406.940mW for 2400.0 ~ 2483.5MHz 41.033mW for 5150.0 ~ 5250.0MHz 577.965mW for 5725.0 ~ 5825.0MHz
ANTENNA TYPE	Refer to Note 5
DATA CABLE	NA
I/O PORTS	RJ45
ACCESSORY DEVICE	Adapter

NOTE:

1. The EUT is a Simultaneous Dual-Band Wireless-N Router. The functions of EUT listed as below:

	TEST STANDARD	REFERENCE REPORT
WLAN 802.11b/g, draft 802.11n	FCC Part 15, Subpart C (Section 15.247)	RF970915L09
WLAN 802.11a, draft 802.11n (5725~5825 MHz)		
WLAN 802.11a, draft 802.11n (5150~ 5250MHz)	FCC Part 15, Subpart E (Section 15.407)	RF970915L09-1

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

Frequency Band (MHz)	2400~2483.5	5150~5250	5725~5825
802.11b	√		
802.11g	√		
802.11a		√	√
Draft 802.11n (20MHz)	√	√	√
Draft 802.11n (40MHz)	√	√	√

3. The EUT was powered by the following adapters:

ADAPTER 1	
BRAND:	BesTec
MODEL:	NA0181WAA
INPUT:	100-240Vac, 1A, 50-60Hz
OUTPUT:	12Vdc, 1.5A
POWER LINE:	1.8m non-shielded cable without core

ADAPTER 2	
BRAND:	LINKSYS
MODEL:	MU18-D120150-A1
INPUT:	100-240Vac, 50/60Hz, 0.6A
OUTPUT:	12Vdc, 1.5A
POWER LINE:	1.8m non-shielded cable without core

4. 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
Draft 802.11n (20MHz)	2TX
Draft 802.11n (40MHz)	2TX

5. There are 4 antennas for the EUT.

No.	Type	Connector	Frequency Band	Antenna Location	Gain(dBi)
1	PIFA	UFL	2.4GHz	Left front	4.19
2				Right rear	1.75
3			5.0GHz	Left rear	5150 MHz: 2.93 dBi 5250 MHz: 2.81 dBi 5350 MHz: 3.19 dBi 5725 MHz: 4.35 dBi 5825 MHz: 3.99 dBi
4				Right front	5150 MHz: 3.23 dBi 5250 MHz: 3.25 dBi 5350 MHz: 3.35 dBi 5725 MHz: 3.44 dBi 5825 MHz: 3.33 dBi

6. 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

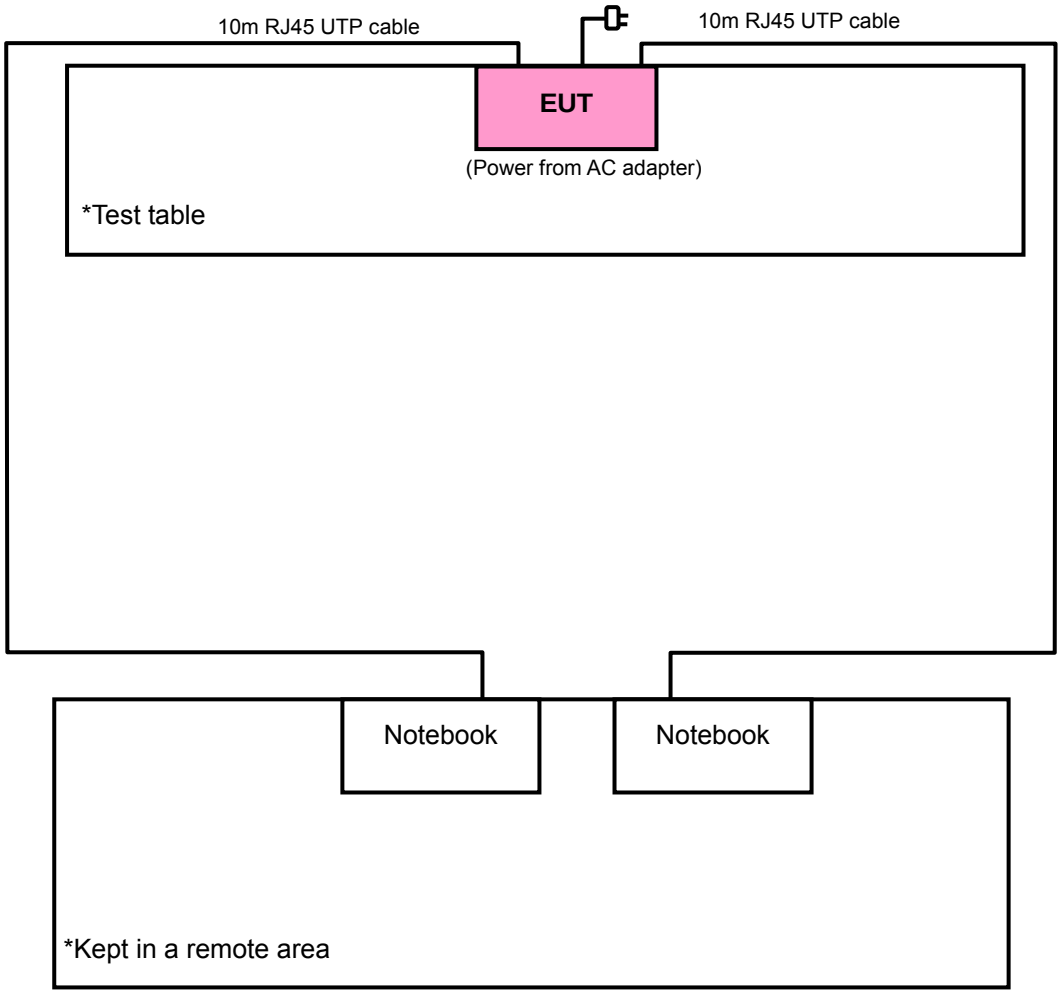
4 channels are provided for 802.11a, draft 802.11n (20MHz):

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190MHz	46	5230MHz

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from AC Adapter 1
B	-	√	√	-	Power from AC Adapter 2

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, XYZ axis 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)	AXIS
A	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0	X
A	Draft 802.11n (20MHz)	36 to 48	36, 40, 48	OFDM	BPSK	7.2	X
A	Draft 802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	15.0	X

RADIATED EMISSION TEST (BELOW 1GHz):

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
A	802.11a	36 to 48	40	OFDM	BPSK	6.0	Z
B	802.11a	36 to 48	40	OFDM	BPSK	6.0	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.

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

BANDEDGE MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis 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)	AXIS
A	802.11a	36 to 48	36, 48	OFDM	BPSK	6.0	X
A	Draft 802.11n (20MHz)	36 to 48	36, 48	OFDM	BPSK	7.2	X
A	Draft 802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	15.0	X

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.

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

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.

Frequency above 1GHz

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP05L	12130898320	E2K24CLNS
2	NOTEBOOK COMPUTER	DELL	PP05L	9954115984	E2K24CLNS

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

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

Frequency below 1GHz

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP05L	24729091408	FCC DoC Approved
2	NOTEBOOK COMPUTER	CLEVO	M54N	NKM540N06H01430	FCC DoC Approved

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

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

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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

4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

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

NOTE:

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

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

4.1.3 TEST INSTRUMENTS

Frequency above 1GHz

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	May 28, 2008	May 27, 2009
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Aug. 08, 2008	Aug. 07, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 25, 2008	Apr. 24, 2009
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 07, 2008	Jan. 06, 2009
Preamplifier Agilent	8449B	3008A01911	Sep. 10, 2008	Sep. 09, 2009
Preamplifier Agilent	8447D	2944A10638	Dec. 26, 2008	Dec. 25, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218190/4 231241/4	May 20, 2008	May 19, 2009
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 09, 2008	Aug. 08, 2009
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.

Frequency below 1GHz

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
ROHDE & SCHWARZ TEST RECEIVER	ESCI	100412	Jul. 22, 2008	Jul. 21, 2009
SCHAFFENR BILOG Antenna	CBL6111D	21872	Apr. 29, 2008	Apr. 28, 2009
CT Turn Table	TT100	NA	NA	NA
CT Tower	AT100	NA	NA	NA
Software	ADT_Radiated _V7.6.15.9.2	NA	NA	NA
ADT RF Switches BOX	EM-H-01-1	1002	Aug. 19, 2008	Aug. 18, 2009
TIMES RF cable	LMR-600	CABLE-ST5-01	Aug. 19, 2008	Aug. 18, 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 Open Site No. 5.
3. The VCCI Site Registration No. R-1039.
4. The Industry Canada Reference No. IC 7450E-5.

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 meters semi-anechoic chamber and a 10 meters open area site. 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:

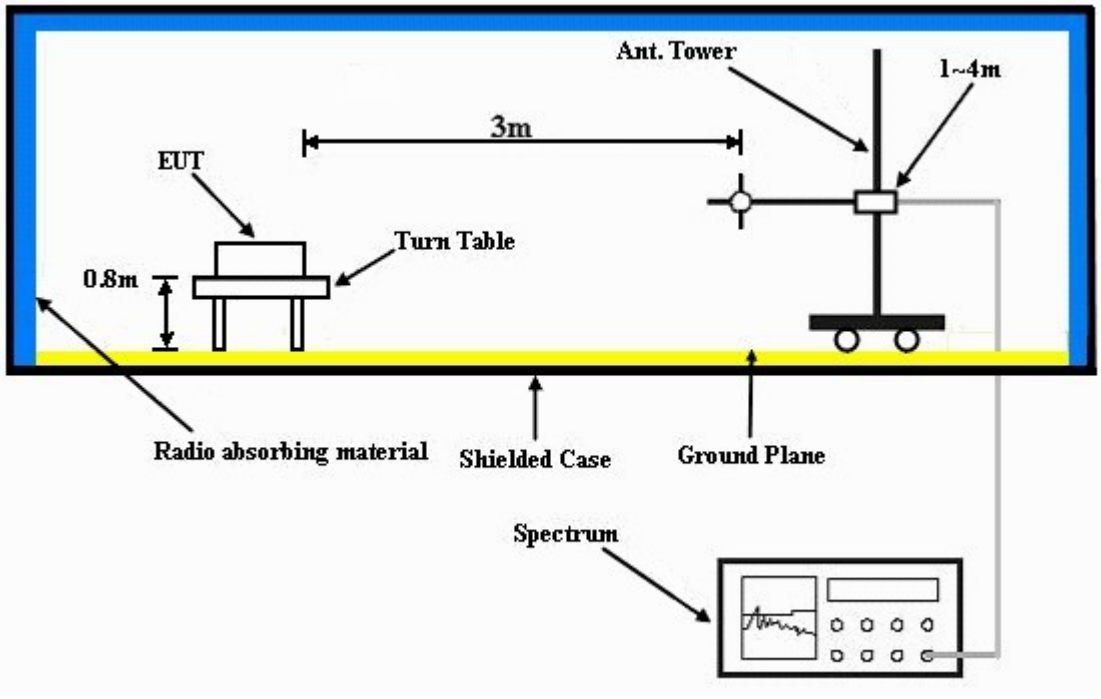
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency 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

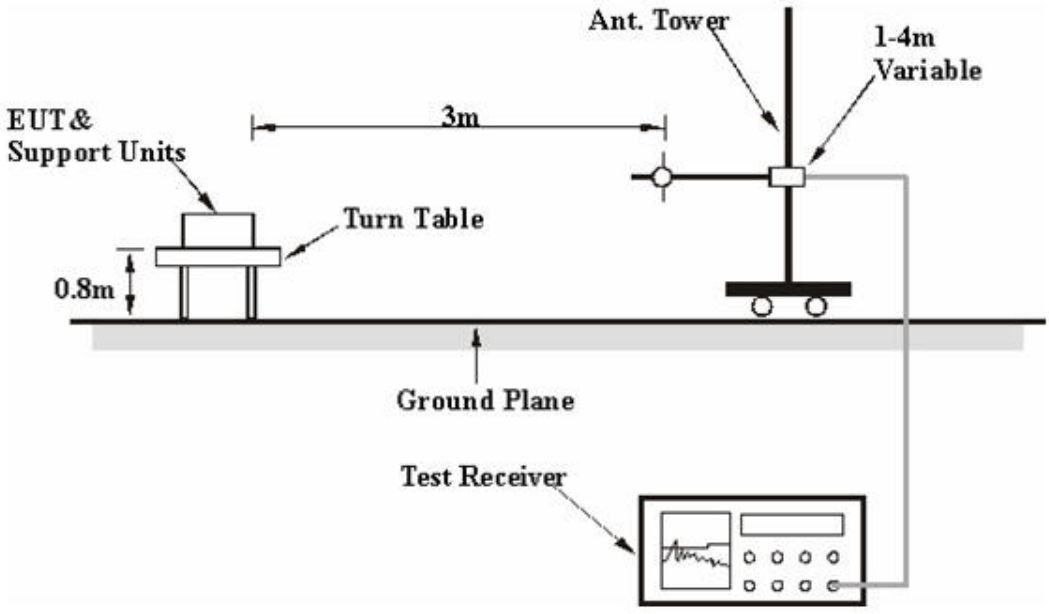
No deviation.

4.1.6 TEST SETUP

Frequency above 1GHz



Frequency below 1GHz



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

4.1.7 EUT OPERATING CONDITION

a. Placed the EUT on the testing table.
b. Prepared two notebook systems outside of testing area to act as communication partners.
c. The communication partners connected with EUT via RJ45 UTP cables 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".

4.1.8 TEST RESULTS

802.11a OFDM MODULATION

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	24deg. C, 64%RH 998hPa	TESTED BY	Mark Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	52.25 PK	74.00	-21.75	1.16 H	68	12.50	39.75
2	5150.00	41.13 AV	54.00	-12.87	1.16 H	68	1.38	39.75
3	*5180.00	106.35 PK			1.16 H	68	66.60	39.75
4	*5180.00	95.89 AV			1.16 H	68	56.14	39.75
5	#10360.00	61.72 PK	68.30	-6.58	1.19 H	216	11.07	50.65
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.83 PK	74.00	-14.17	1.03 V	331	20.08	39.75
2	5150.00	44.99 AV	54.00	-9.01	1.03 V	331	5.24	39.75
3	*5180.00	110.90 PK			1.02 V	343	71.15	39.75
4	*5180.00	99.35 AV			1.02 V	343	59.60	39.75
5	#10360.00	67.23 PK	68.30	-1.07	1.48 V	86	16.58	50.65

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH 998hPa	TESTED BY	Mark Liao

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	*5200.00	105.79 PK			1.06 H	146	66.04	39.75
2	*5200.00	95.48 AV			1.06 H	146	55.73	39.75
3	#10400.00	60.58 PK	68.30	-7.72	1.25 H	227	9.83	50.75
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	*5200.00	110.25 PK			1.03 V	359	70.50	39.75
2	*5200.00	99.66 AV			1.03 V	359	59.91	39.75
3	#10400.00	66.36 PK	68.30	-1.94	1.00 V	3	15.61	50.75

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	24deg. C, 64%RH 998hPa	TESTED BY	Mark Liao

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	*5240.00	106.04 PK			1.16 H	68	66.20	39.84
2	*5240.00	95.87 AV			1.16 H	68	56.03	39.84
3	5350.00	45.26 PK	74.00	-28.74	1.16 H	68	5.21	40.05
4	5350.00	33.69 AV	54.00	-20.31	1.16 H	68	-6.36	40.05
5	#10480.00	59.26 PK	68.30	-9.04	1.31 H	360	8.38	50.88
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	*5240.00	110.47 PK			1.03 V	359	70.63	39.84
2	*5240.00	99.65 AV			1.03 V	359	59.81	39.84
3	5350.00	45.74 PK	74.00	-28.26	1.03 V	359	5.69	40.05
4	5350.00	34.07 AV	54.00	-19.93	1.03 V	359	-5.98	40.05
5	#10480.00	62.81 PK	68.30	-5.49	1.11 V	3	11.93	50.88

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.

DRAFT 802.11n (20MHz) OFDM MODULATION

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	24deg. C, 64%RH 998hPa	TESTED BY	Mark Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	53.46 PK	74.00	-20.54	1.19 H	110	13.71	39.75
2	5150.00	38.46 AV	54.00	-15.54	1.19 H	110	-1.29	39.75
3	*5180.00	105.67 PK			1.03 H	146	65.92	39.75
4	*5180.00	95.07 AV			1.03 H	146	55.32	39.75
5	#10360.00	60.41 PK	68.30	-7.89	1.05 H	223	9.76	50.65
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.93 PK	74.00	-14.07	1.00 V	328	20.18	39.75
2	5150.00	46.17 AV	54.00	-7.83	1.00 V	328	6.42	39.75
3	*5180.00	110.33 PK			1.00 V	338	70.58	39.75
4	*5180.00	99.28 AV			1.00 V	338	59.53	39.75
5	**#10360.00**	**67.24 PK**	**68.30**	**-1.06**	**1.54 V**	**94**	**16.59**	**50.65**

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH 998hPa	TESTED BY	Mark Liao

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	*5200.00	105.47 PK			1.04 H	155	65.72	39.75
2	*5200.00	95.00 AV			1.04 H	155	55.25	39.75
3	#10400.00	59.73 PK	68.30	-8.57	1.11 H	146	8.98	50.75
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	*5200.00	110.05 PK			1.00 V	337	70.30	39.75
2	*5200.00	99.57 AV			1.00 V	337	59.82	39.75
3	#10400.00	66.48 PK	68.30	-1.82	1.67 V	86	15.73	50.75

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	24deg. C, 64%RH 998hPa	TESTED BY	Mark Liao

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	*5240.00	105.52 PK			1.06 H	174	65.68	39.84
2	*5240.00	95.14 AV			1.06 H	174	55.30	39.84
3	5350.00	51.10 PK	74.00	-22.90	1.06 H	174	11.05	40.05
4	5350.00	37.58 AV	54.00	-16.42	1.06 H	174	-2.47	40.05
5	#10480.00	59.41 PK	68.30	-8.89	1.10 H	158	8.53	50.88
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	*5240.00	110.59 PK			1.00 V	338	70.75	39.84
2	*5240.00	99.66 AV			1.00 V	338	59.82	39.84
3	5350.00	51.86 PK	74.00	-22.14	1.00 V	338	11.81	40.05
4	5350.00	34.08 AV	54.00	-19.92	1.00 V	338	-5.97	40.05
5	#10480.00	66.85 PK	68.30	-1.45	1.46 V	96	15.97	50.88

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.

DRAFT 802.11n (40MHz) OFDM MODULATION

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	24deg. C, 64%RH 998hPa	TESTED BY	Mark Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	61.73 PK	74.00	-12.27	1.16 H	70	21.98	39.75
2	5150.00	42.26 AV	54.00	-11.74	1.16 H	70	2.51	39.75
3	*5190.00	104.53 PK			1.16 H	70	64.78	39.75
4	*5190.00	92.84 AV			1.16 H	70	53.09	39.75
5	#10380.00	60.33 PK	68.30	-7.97	1.25 H	142	9.63	50.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	71.74 PK	74.00	-2.26	1.00 V	337	31.99	39.75
2	5150.00	49.19 AV	54.00	-4.81	1.00 V	337	9.44	39.75
3	*5190.00	106.60 PK			1.02 V	336	66.85	39.75
4	*5190.00	95.63 AV			1.02 V	336	55.88	39.75
5	#10380.00	63.37 PK	68.30	-4.93	1.00 V	360	12.67	50.70

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

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	24deg. C, 64%RH 998hPa	TESTED BY	Mark Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	104.35 PK			1.10 H	82	64.53	39.82
2	*5230.00	92.69 AV			1.10 H	82	52.87	39.82
3	5350.00	50.51 PK	74.00	-23.49	1.10 H	82	10.46	40.05
4	5350.00	37.52 AV	54.00	-16.48	1.10 H	82	-2.53	40.05
5	#10460.00	60.17 PK	68.30	-8.13	1.20 H	163	9.32	50.85
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	106.42 PK			1.06 V	360	66.60	39.82
2	*5230.00	95.73 AV			1.06 V	360	55.91	39.82
3	5350.00	49.48 PK	74.00	-24.52	1.06 V	360	9.43	40.05
4	5350.00	36.15 AV	54.00	-17.85	1.06 V	360	-3.90	40.05
5	#10460.00	63.52 PK	68.30	-4.78	1.00 V	355	12.67	50.85

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

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

BELOW 1GHz WORST-CASE DATA：802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	15deg. C, %RH 1023hPa	TESTED BY	Vincent 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	76.91	35.82 QP	40.00	-4.18	1.94 H	83	27.51	8.31
2	340.01	41.43 QP	46.00	-4.57	2.53 H	79	25.13	16.30
3	400.00	35.64 QP	46.00	-10.36	1.34 H	73	17.44	18.20
4	432.33	37.19 QP	46.00	-8.81	2.22 H	349	18.20	18.99
5	650.04	36.82 QP	46.00	-9.18	2.15 H	52	11.92	24.90
6	666.68	38.52 QP	46.00	-7.48	2.04 H	169	13.47	25.05
7	680.01	44.29 QP	46.00	-1.71	2.20 H	33	19.13	25.16
8	750.01	35.28 QP	46.00	-10.72	1.37 H	218	9.01	26.27
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	85.29	33.19 QP	40.00	-6.81	1.00 V	182	23.92	9.27
2	125.00	33.85 QP	43.50	-9.65	1.00 V	78	21.18	12.67
3	225.00	32.85 QP	46.00	-13.15	1.00 V	200	20.35	12.50
4	340.00	34.19 QP	46.00	-11.81	1.00 V	40	17.89	16.30
5	399.99	42.15 QP	46.00	-3.85	2.85 V	86	23.95	18.20
6	500.00	40.02 QP	46.00	-5.98	2.06 V	106	19.36	20.66
7	525.02	43.19 QP	46.00	-2.81	1.43 V	206	21.62	21.57
8	680.00	42.66 QP	46.00	-3.34	1.47 V	55	17.50	25.16
9	800.01	38.55 QP	46.00	-7.45	1.00 V	332	11.33	27.22

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	15deg. C, %RH 1023hPa	TESTED BY	Vincent 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	68.73	29.45 QP	40.00	-10.55	1.49 H	92	22.16	7.29
2	153.92	31.51 QP	43.50	-11.99	1.35 H	178	18.77	12.74
3	340.02	39.62 QP	46.00	-6.38	1.82 H	234	23.32	16.30
4	400.00	35.92 QP	46.00	-10.08	1.52 H	81	17.72	18.20
5	432.33	38.49 QP	46.00	-7.51	1.00 H	16	19.50	18.99
6	666.66	40.61 QP	46.00	-5.39	1.35 H	355	15.56	25.05
7	680.00	44.69 QP	46.00	-1.31	2.15 H	209	19.53	25.16
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	59.63	32.58 QP	40.00	-7.42	1.00 V	236	26.57	6.01
2	340.00	35.96 QP	46.00	-10.04	2.42 V	156	19.66	16.30
3	399.99	42.65 QP	46.00	-3.35	1.52 V	86	24.45	18.20
4	524.99	44.09 QP	46.00	-1.91	2.11 V	119	22.52	21.57
5	600.00	35.73 QP	46.00	-10.27	1.00 V	261	11.49	24.24
6	679.99	42.05 QP	46.00	-3.95	1.33 V	60	16.89	25.16
7	800.00	37.83 QP	46.00	-8.17	1.00 V	50	10.61	27.22

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. 19, 2008	Nov. 18, 2009
RF signal cable Woken	5D-FB	Cable-HYC01-01	Jan. 04, 2008	Jan. 03, 2009
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jun. 13, 2008	Jun. 12, 2009
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Dec. 04, 2008	Dec. 03, 2009
Software ADT	ADT_Cond_ V7.3.6	NA	NA	NA

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Shielded Room 1.

3. The VCCI Site Registration No. is C-2040.

4.2.3 TEST PROCEDURES

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

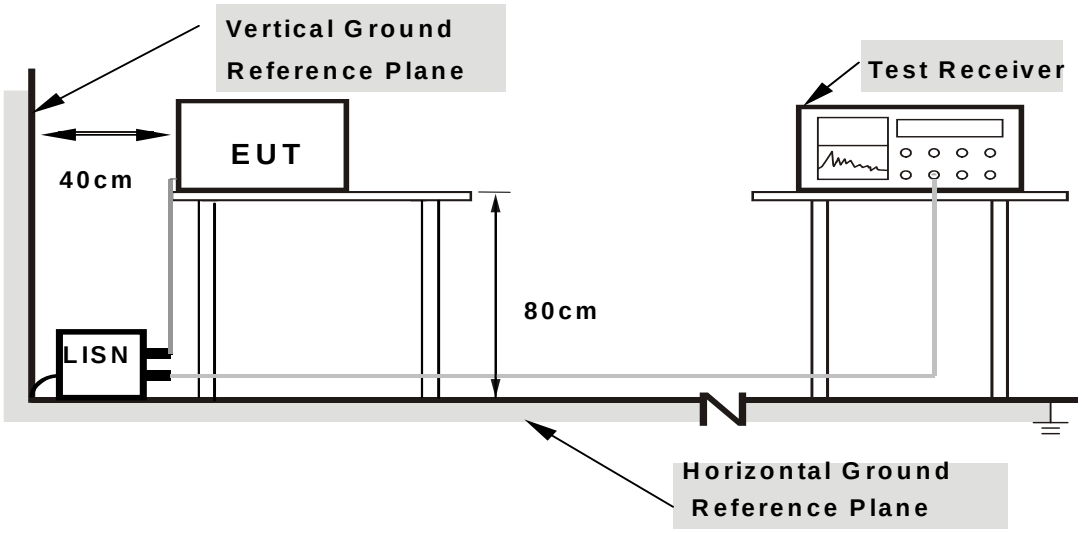
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

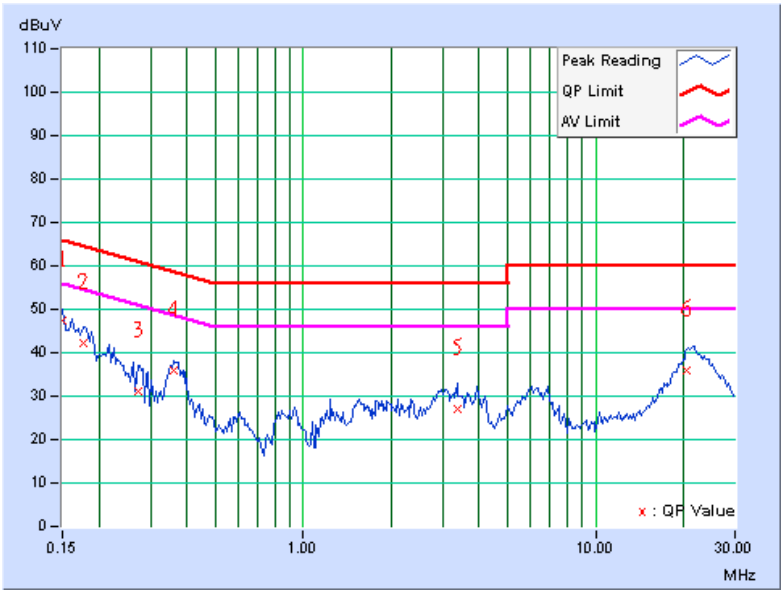
4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA：802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	15.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 1021hPa	TEST MODE	A
TESTED BY	Antony Lee		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.13	46.16	-	46.29	-	66.00	56.00	-19.71	-
2	0.177	0.13	41.19	-	41.32	-	64.61	54.61	-23.29	-
3	0.271	0.13	30.09	-	30.22	-	61.08	51.08	-30.86	-
4	0.361	0.14	34.73	-	34.87	-	58.71	48.71	-23.84	-
5	3.359	0.35	25.82	-	26.17	-	56.00	46.00	-29.83	-
6	20.609	1.17	34.61	-	35.78	-	60.00	50.00	-24.22	-

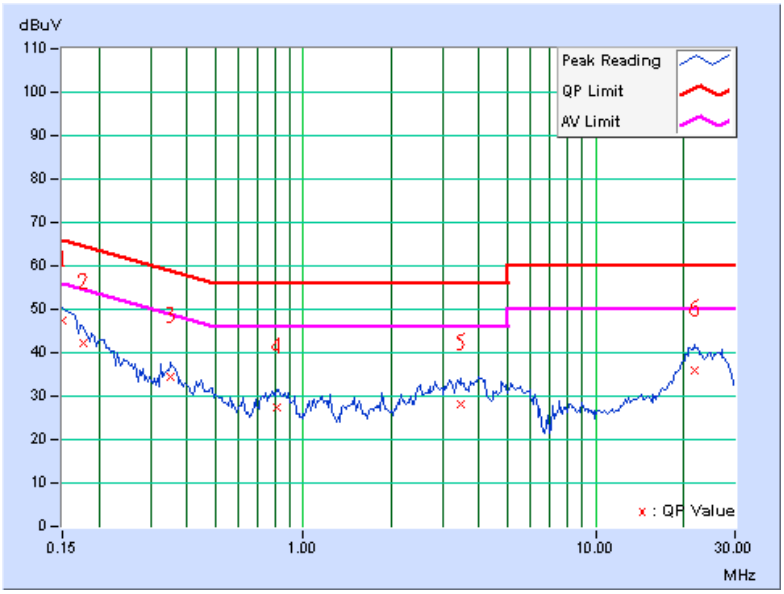
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	15.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 1021hPa	TEST MODE	A
TESTED BY	Antony Lee		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.14	46.40	-	46.54	-	66.00	56.00	-19.46	-
2	0.177	0.15	41.19	-	41.34	-	64.61	54.61	-23.27	-
3	0.353	0.16	33.48	-	33.64	-	58.89	48.89	-25.25	-
4	0.814	0.19	26.28	-	26.47	-	56.00	46.00	-29.53	-
5	3.461	0.37	27.26	-	27.63	-	56.00	46.00	-28.37	-
6	21.754	0.96	34.79	-	35.75	-	60.00	50.00	-24.25	-

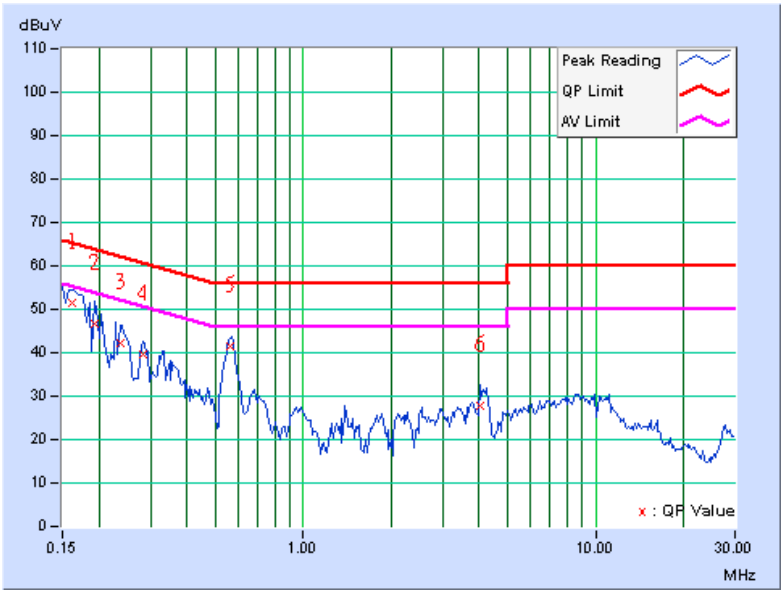
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	15Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 1021hPa	TEST MODE	B
TESTED BY	Antony Lee		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.162**	**0.13**	**50.96**	**-**	**51.09**	**-**	**65.38**	**55.38**	**-14.29**	**-**
2	0.193	0.13	46.27	-	46.40	-	63.91	53.91	-17.51	-
3	0.236	0.13	41.76	-	41.89	-	62.24	52.24	-20.35	-
4	0.283	0.13	39.12	-	39.25	-	60.73	50.73	-21.48	-
5	0.564	0.15	40.92	-	41.07	-	56.00	46.00	-14.93	-
6	4.055	0.40	27.47	-	27.87	-	56.00	46.00	-28.13	-

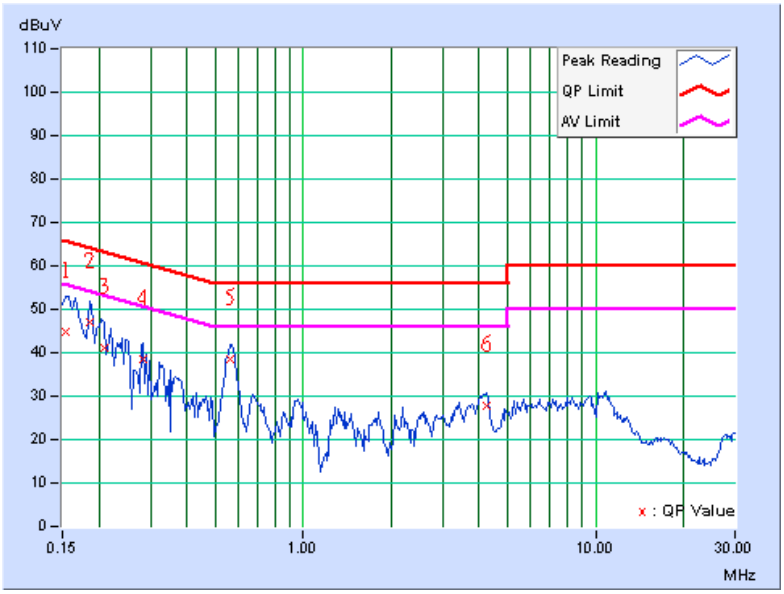
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	15Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 1021hPa	TEST MODE	B
TESTED BY	Antony Lee		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.14	44.46	-	44.60	-	65.79	55.79	-21.19	-
2	0.185	0.15	46.66	-	46.81	-	64.25	54.25	-17.44	-
3	0.209	0.15	40.64	-	40.79	-	63.26	53.26	-22.47	-
4	0.283	0.15	37.97	-	38.12	-	60.73	50.73	-22.61	-
5	0.560	0.17	38.18	-	38.35	-	56.00	46.00	-17.65	-
6	4.227	0.43	27.44	-	27.87	-	56.00	46.00	-28.13	-

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	0824012	Aug. 04, 2008	Aug. 03, 2009
Power Sensor	MA2444B	0738138	Aug. 04, 2008	Aug. 03, 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. Measurement Bandwidth of ML2495A is 65MHz greater than 26dB bandwidth of emission.

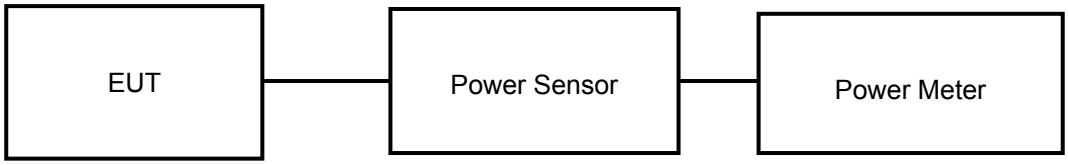
4.3.3 TEST PROCEDURE

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 OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	18 deg.C, 63 %RH, 1021hPa
TESTED BY	Match Tsui		

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	13.56	12.55	40.687	16.09	30	PASS
40	5200	13.61	12.57	**41.033**	16.13	30	PASS
48	5240	13.52	12.52	40.355	16.06	30	PASS

DRAFT 802.11n (20MHz) OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	7.2Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	18 deg.C, 63 %RH, 1021hPa
TESTED BY	Match Tsui		

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	13.54	12.55	40.583	16.08	30	PASS
40	5200	13.57	12.56	40.781	16.10	30	PASS
48	5240	13.55	12.52	40.511	16.08	30	PASS

DRAFT 802.11n (40MHz) OFDM MODULATION

MODULATION TYPE	BPSK	**TRANSFER RATE**	15.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	18 deg.C, 63 %RH, 1021hPa
TESTED BY	Match Tsui		

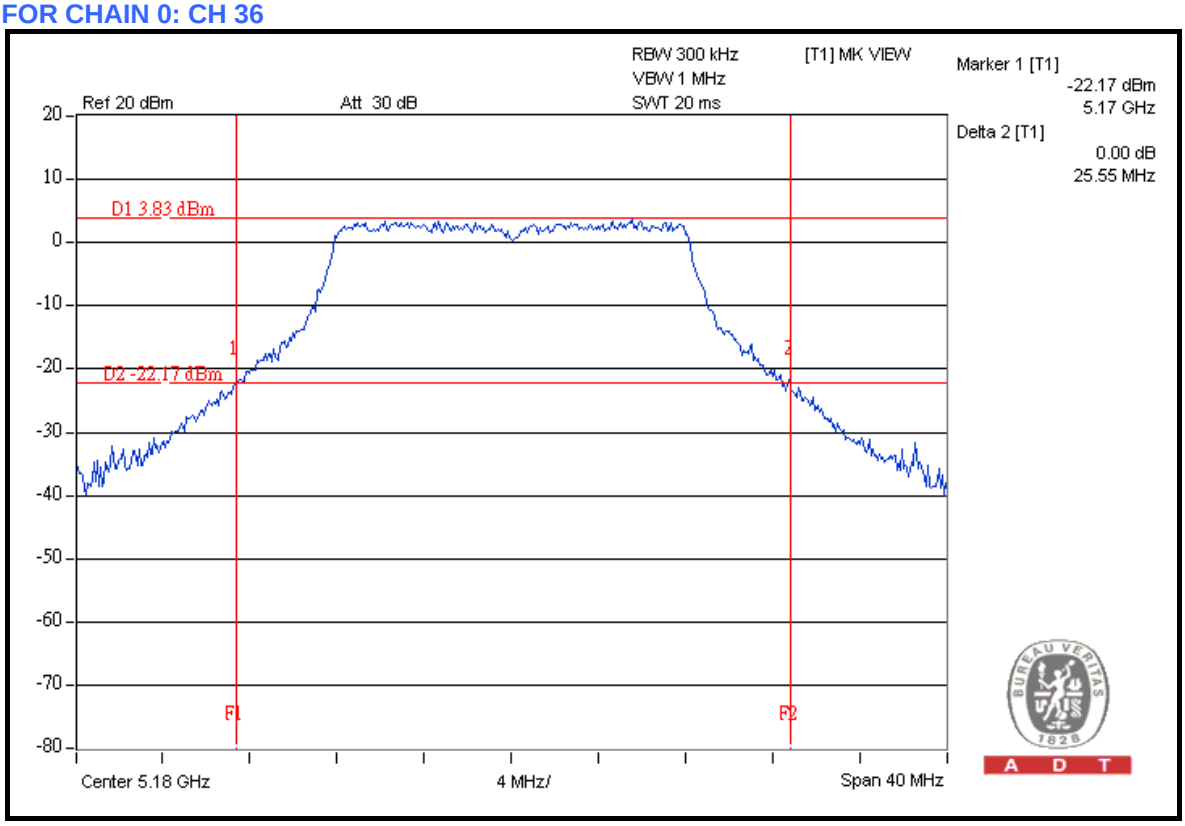
CHAN.	CHAN. FREQ. (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	13.51	12.53	40.345	16.06	30	PASS
46	5230	13.54	12.56	40.625	16.09	30	PASS

26dB OCCUPIED BANDWIDTH: 802.11a OFDM MODULATION

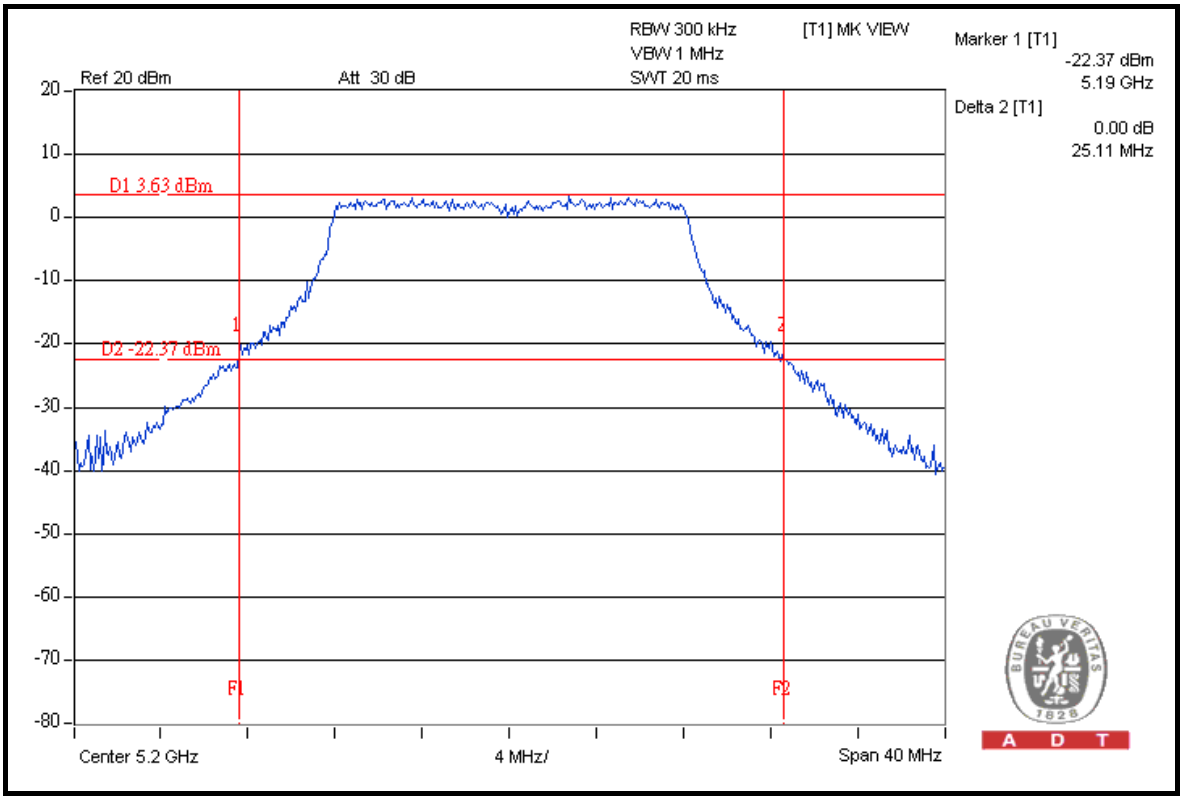
MODULATION TYPE	BPSK	**TRANSFER RATE**	6.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	26 deg.C, 67 %RH, 1021hPa
TESTED BY	Match Tsui		

CHANNEL	**CHANNEL FREQUENCY (MHz)**	**26dBc OCCUPIED BANDWIDTH (MHz)**		**PASS / FAIL**
		CHAIN 0	**CHAIN 1**	
36	5180	25.55	24.46	PASS
40	5200	25.11	23.83	PASS
48	5240	25.72	24.63	PASS

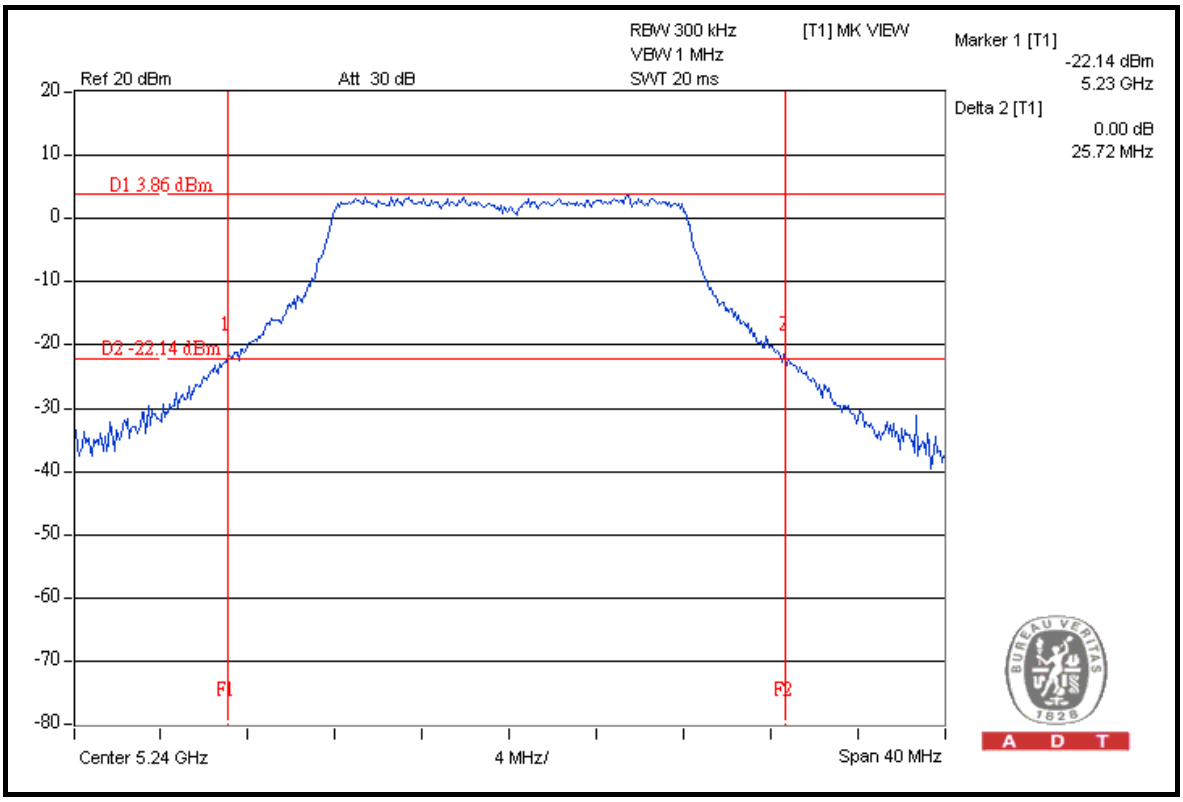
FOR CHAIN 0: CH 36



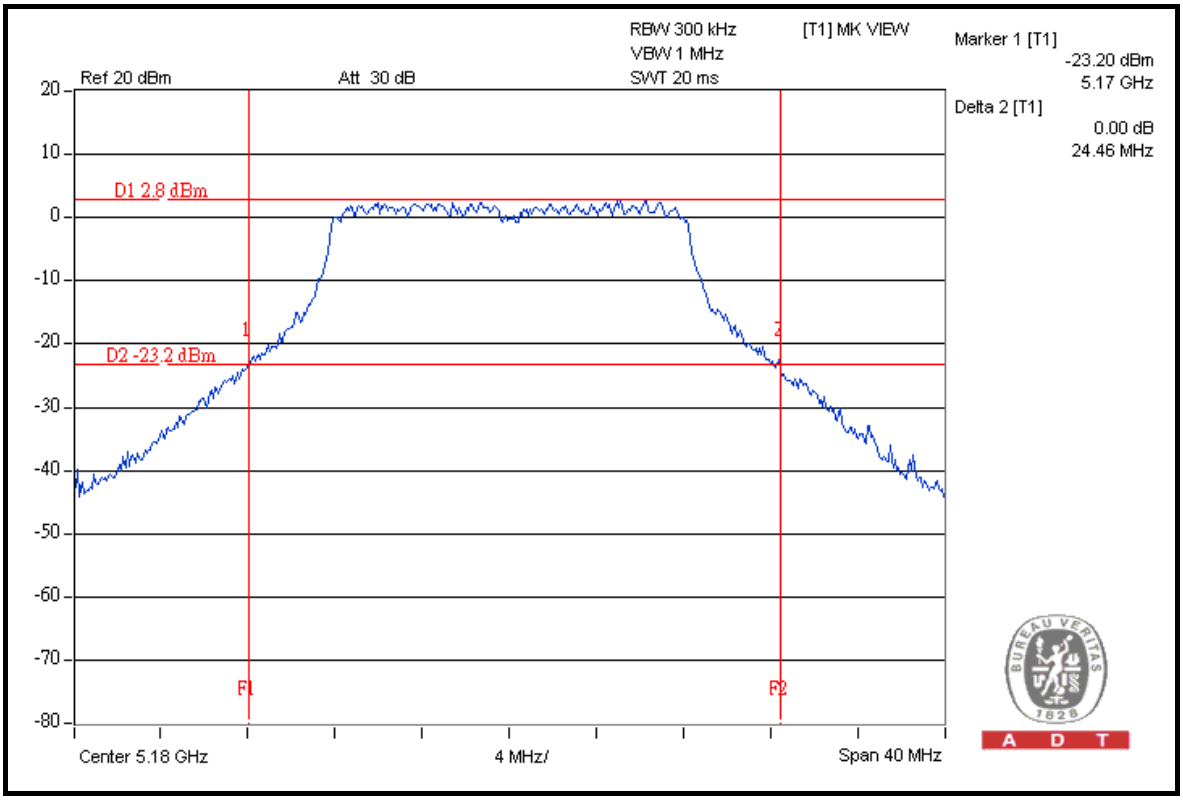
CH 40



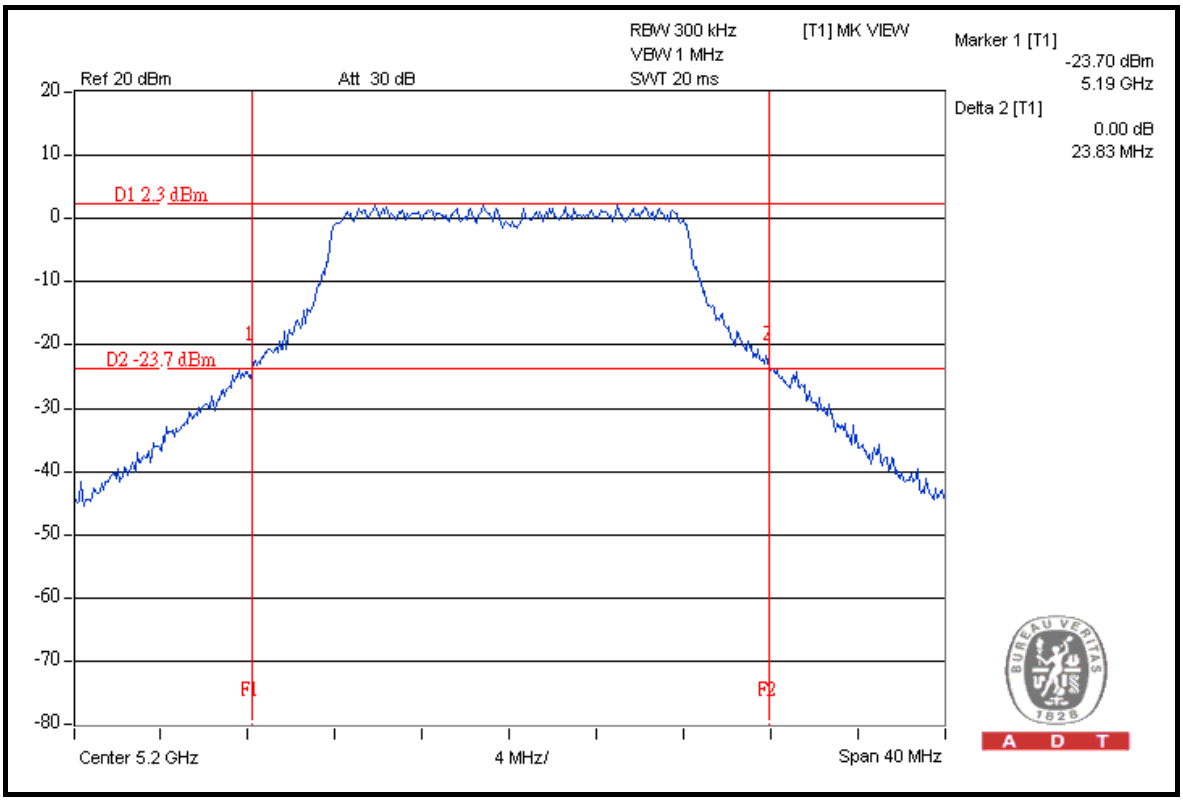
CH 48



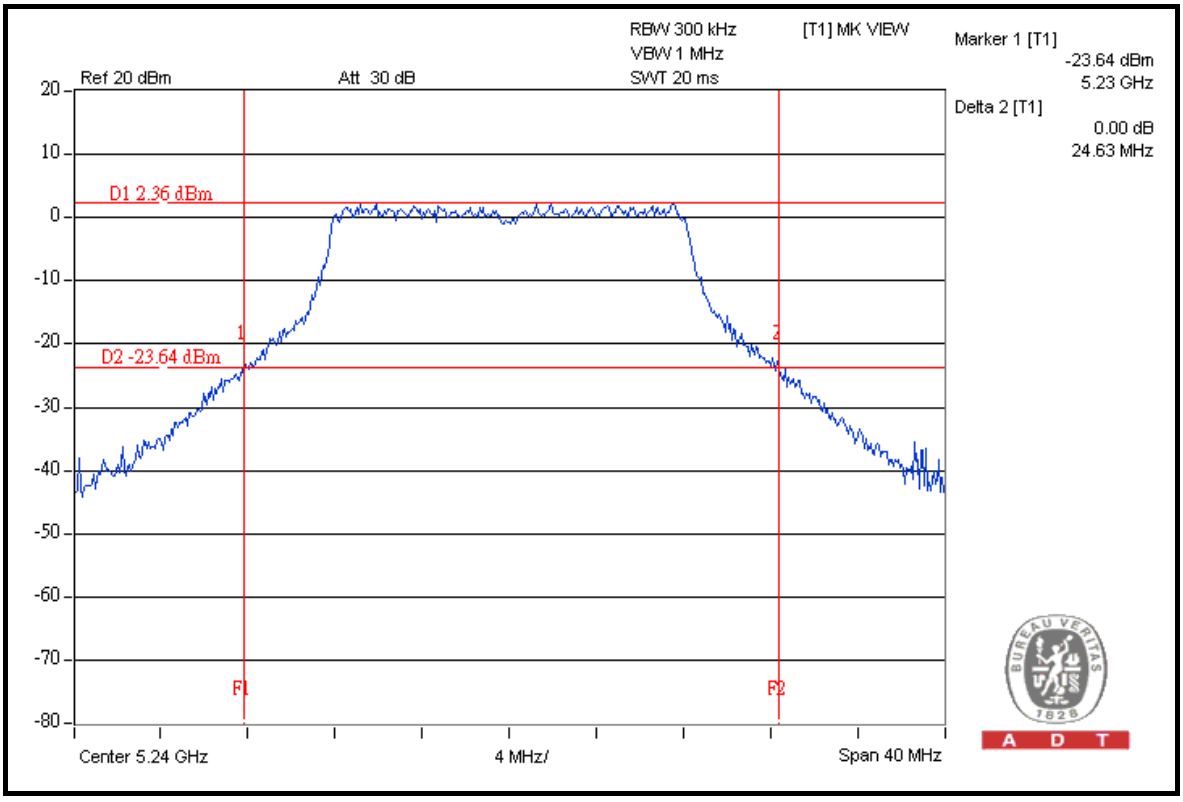
FOR CHAIN 1: CH 36



CH 40


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-23.70 dBm
5.19 GHz
Delta 2 [T1]
0.00 dB
23.83 MHz
Ref 20 dBm
Att 30 dB
D1 2.3 dBm
D2 -23.7 dBm
F1
F2
Center 5.2 GHz
4 MHz/
Span 40 MHz

CH 48

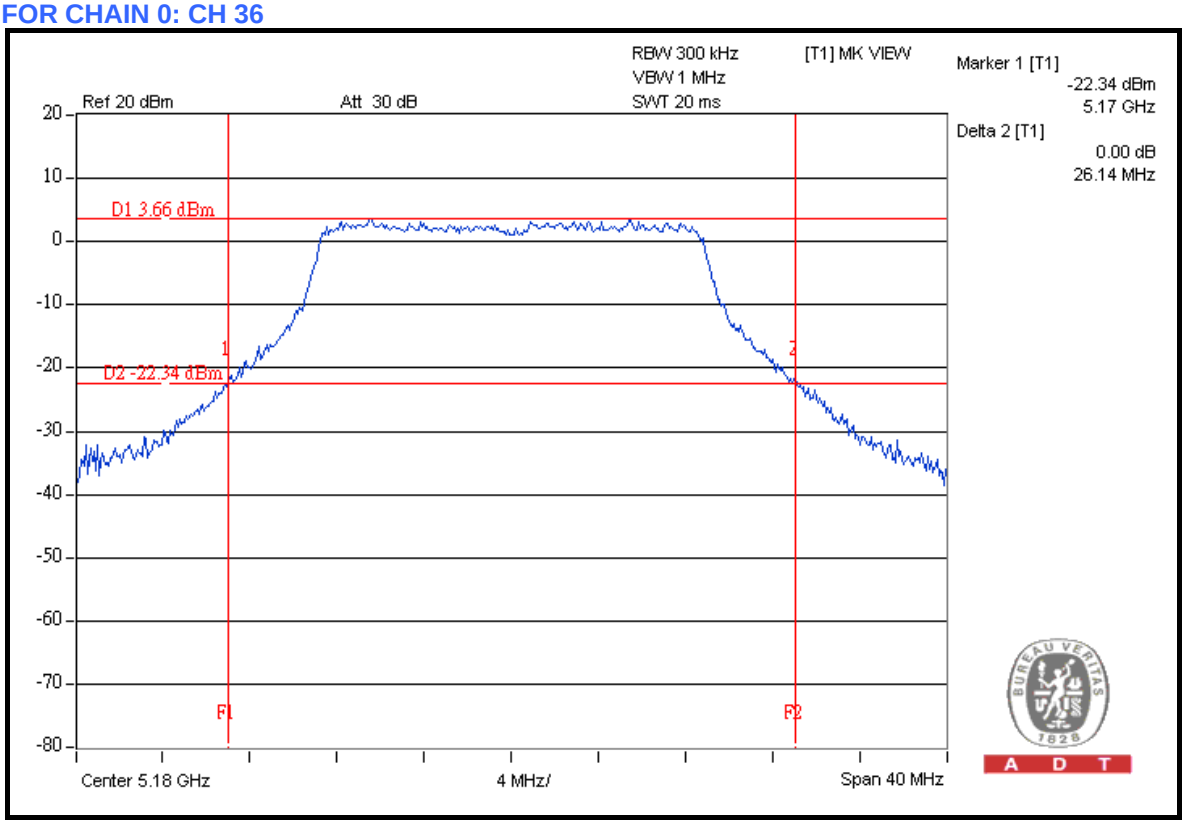

RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-23.64 dBm
5.23 GHz
Delta 2 [T1]
0.00 dB
24.63 MHz
Ref 20 dBm
Att 30 dB
D1 2.36 dBm
D2 -23.64 dBm
F1
F2
Center 5.24 GHz
4 MHz/
Span 40 MHz

DRAFT 802.11n (20MHz) OFDM MODULATION

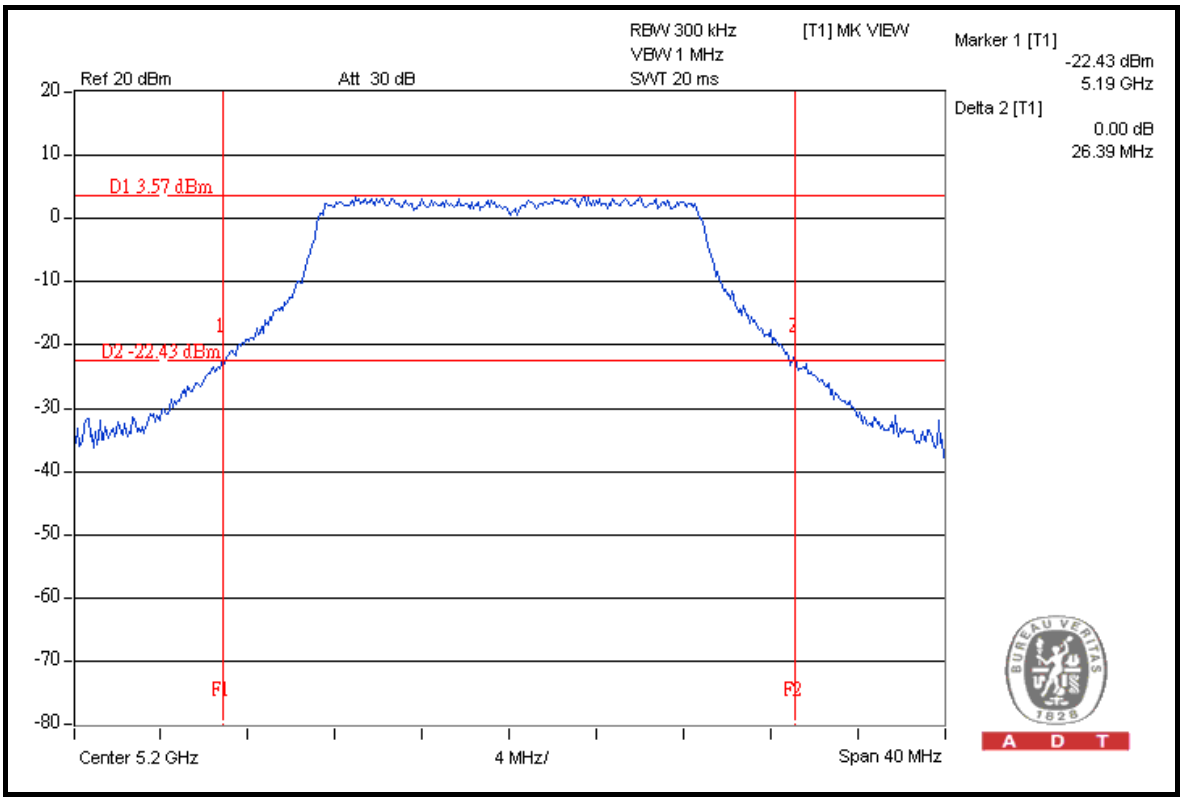
MODULATION TYPE	BPSK	**TRANSFER RATE**	7.2Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	26 deg.C, 67 %RH, 1021hPa
TESTED BY	Match Tsui		

CHANNEL	**CHANNEL FREQUENCY (MHz)**	**26dBc OCCUPIED BANDWIDTH (MHz)**		**PASS / FAIL**
		CHAIN 0	**CHAIN 1**	
36	5180	26.14	26.18	PASS
40	5200	26.39	25.71	PASS
48	5240	26.34	26.04	PASS

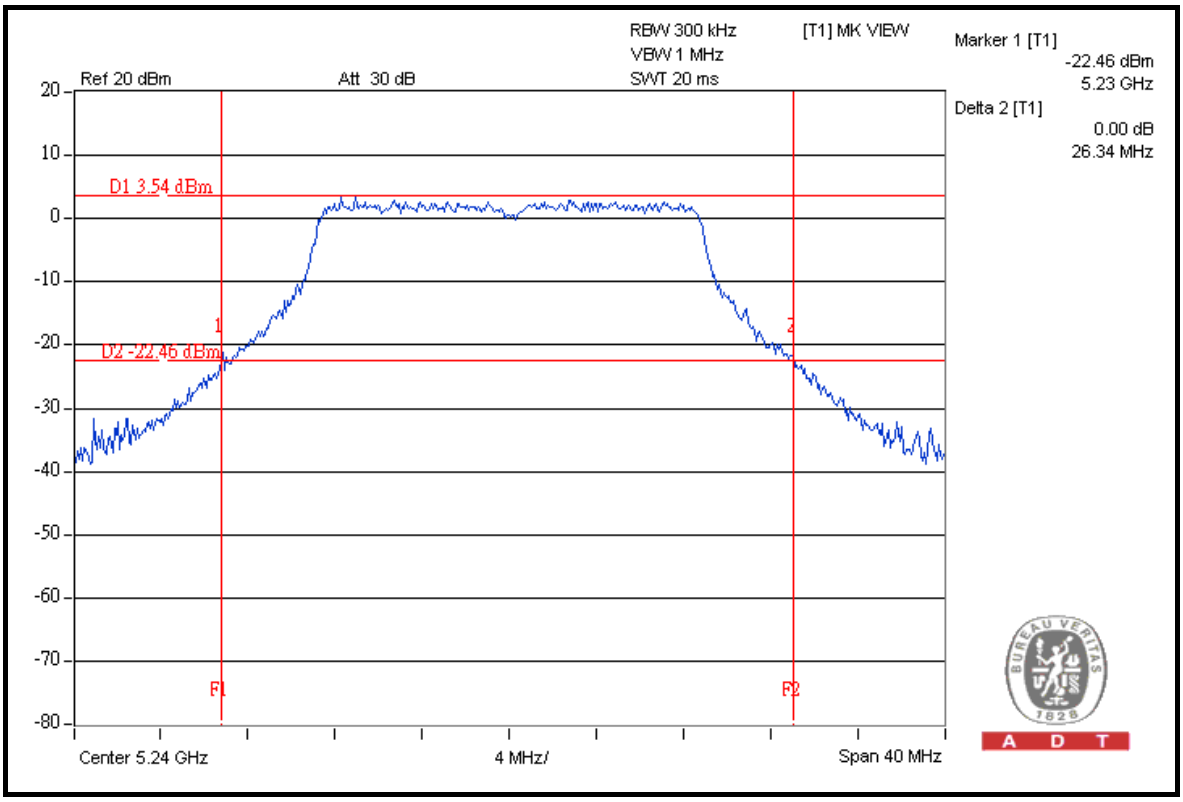
FOR CHAIN 0: CH 36



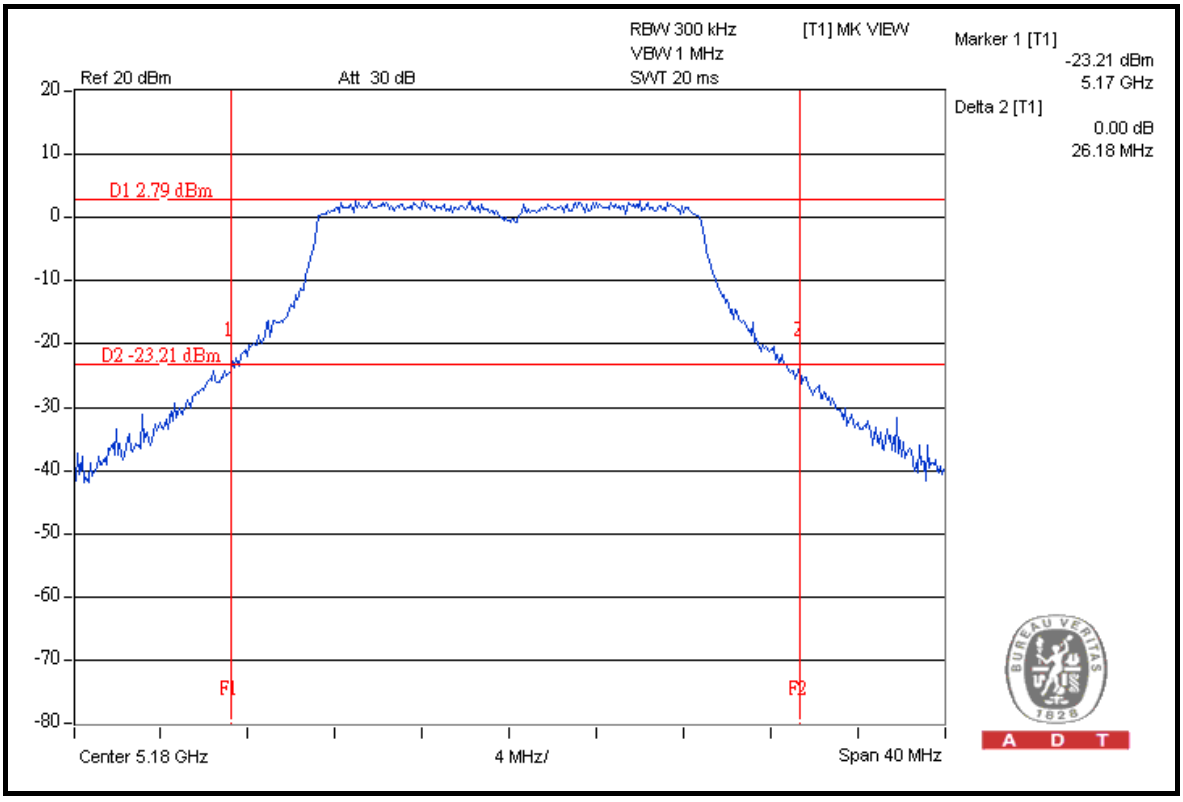
CH 40



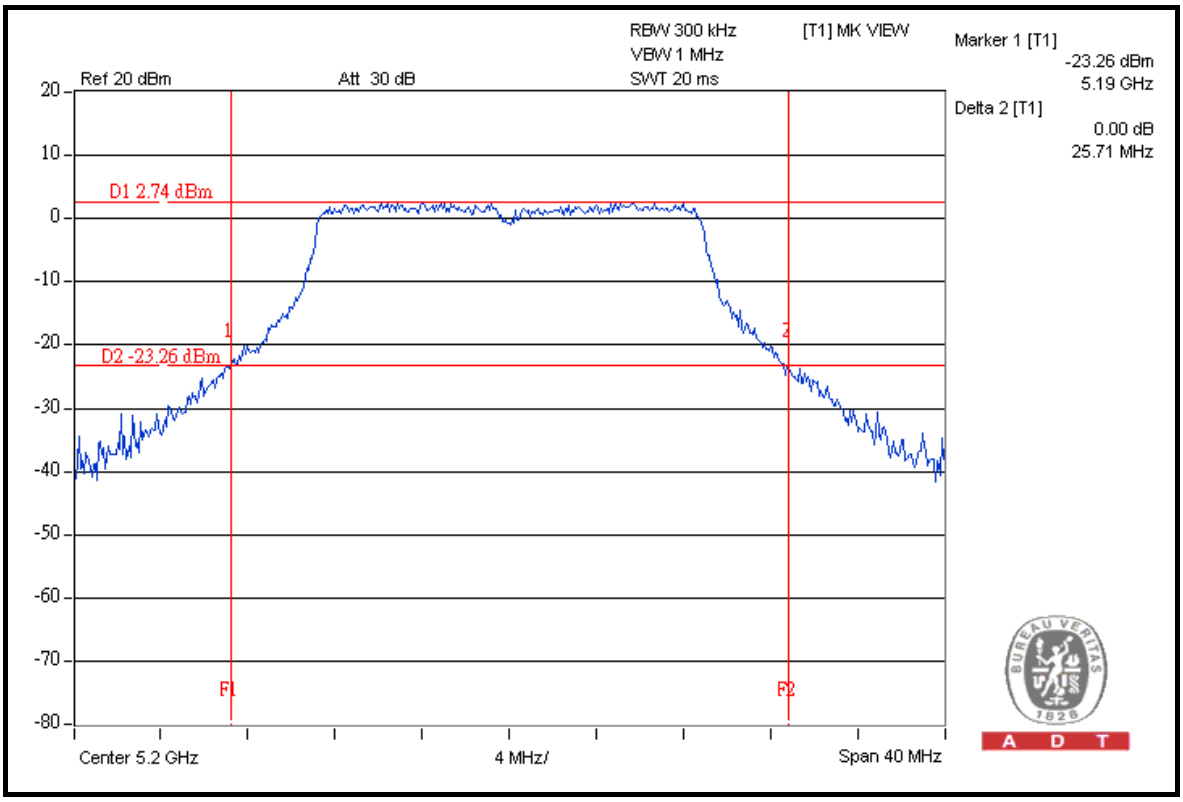
CH 48



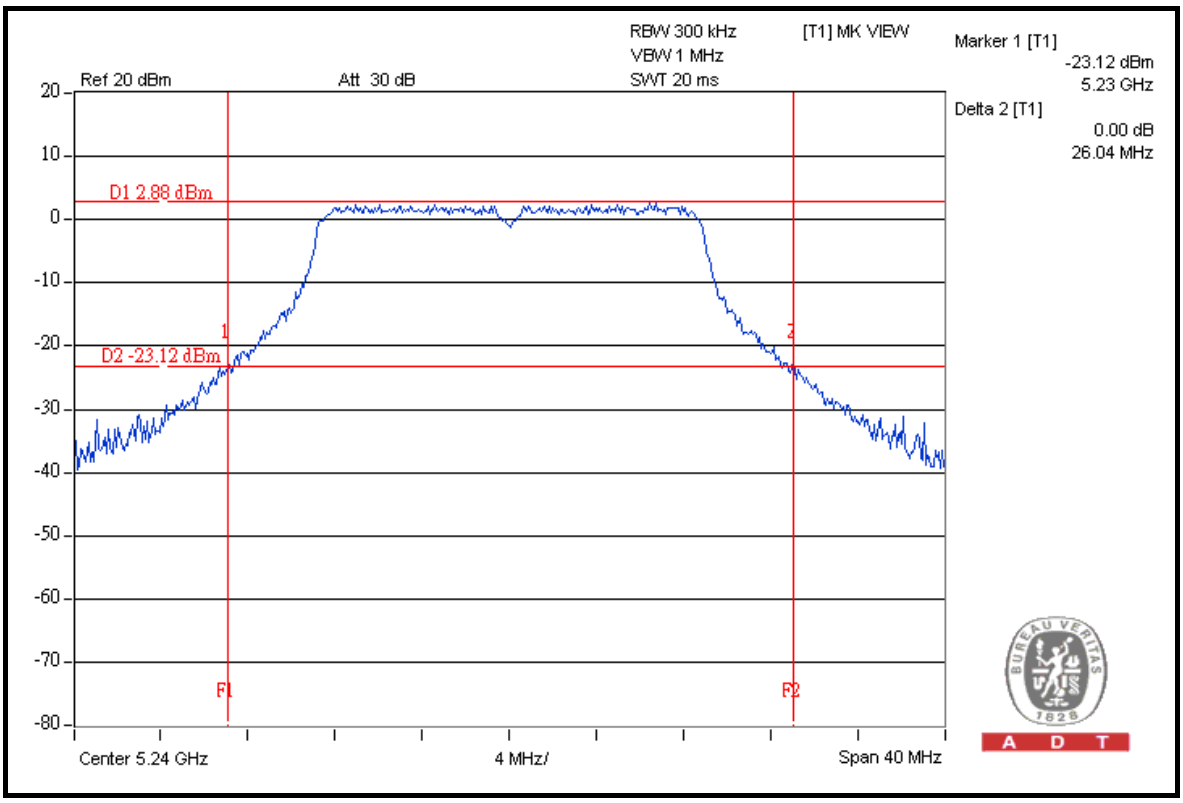
FOR CHAIN 1: CH 36



CH 40


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-23.26 dBm
5.19 GHz
Delta 2 [T1]
0.00 dB
25.71 MHz
Ref 20 dBm
Att 30 dB
D1 2.74 dBm
D2 -23.26 dBm
F1
F2
Center 5.2 GHz
4 MHz/
Span 40 MHz

CH 48

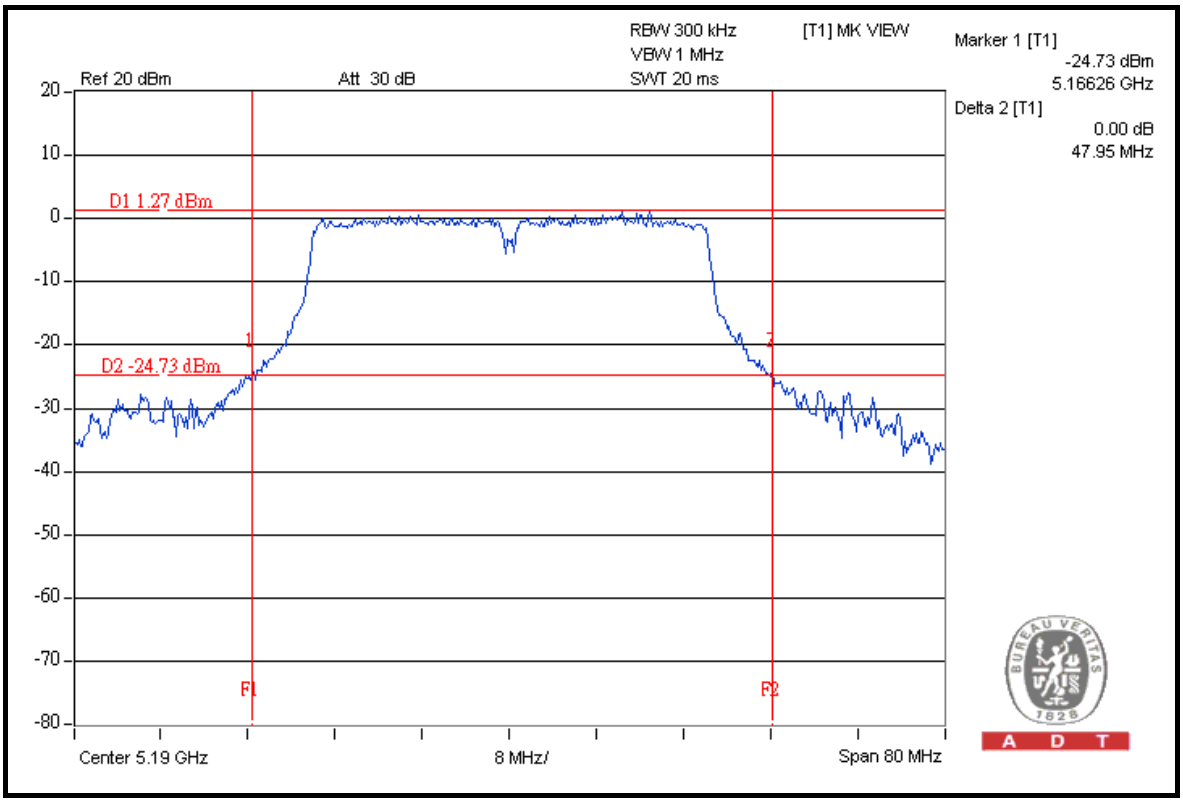

RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-23.12 dBm
5.23 GHz
Delta 2 [T1]
0.00 dB
26.04 MHz
Ref 20 dBm
Att 30 dB
D1 2.88 dBm
D2 -23.12 dBm
F1
F2
Center 5.24 GHz
4 MHz/
Span 40 MHz

DRAFT 802.11n (40MHz) OFDM MODULATION

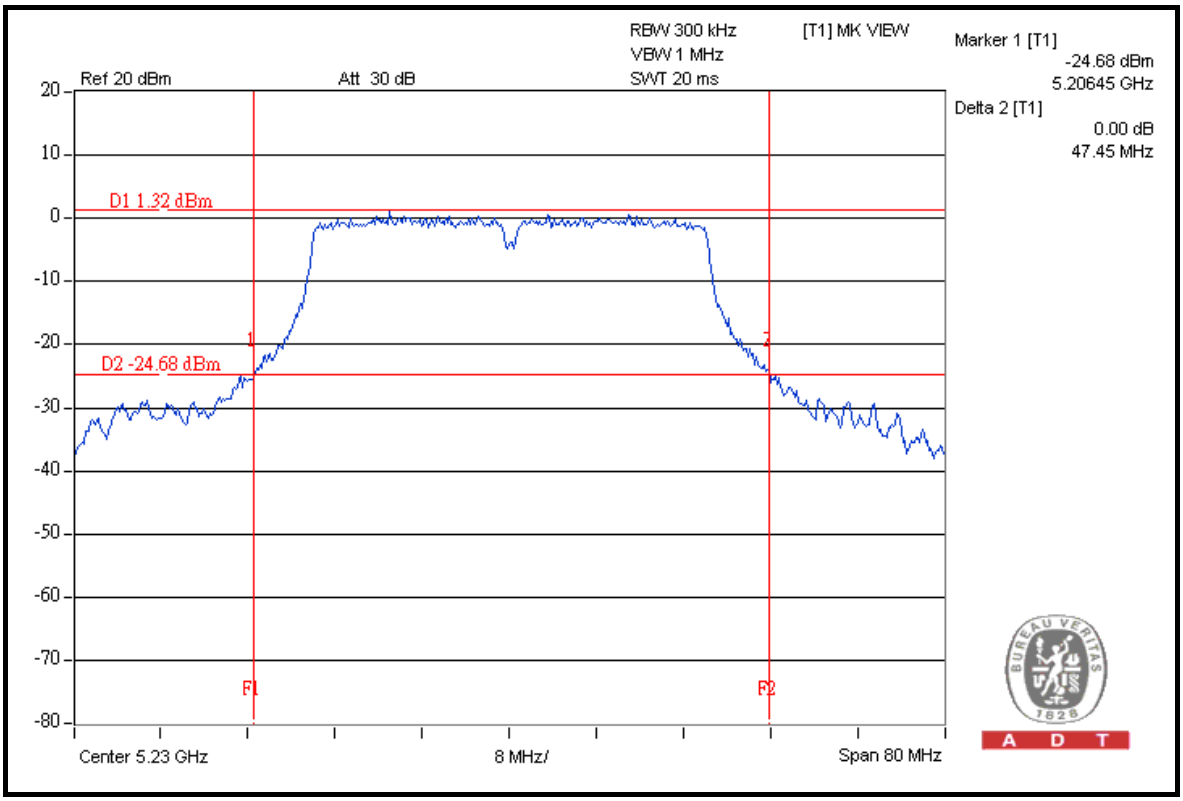
MODULATION TYPE	BPSK	**TRANSFER RATE**	15.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	26 deg.C, 67 %RH, 1021hPa
TESTED BY	Match Tsui		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
38	5190	47.95	47.62	PASS
46	5230	47.45	48.99	PASS

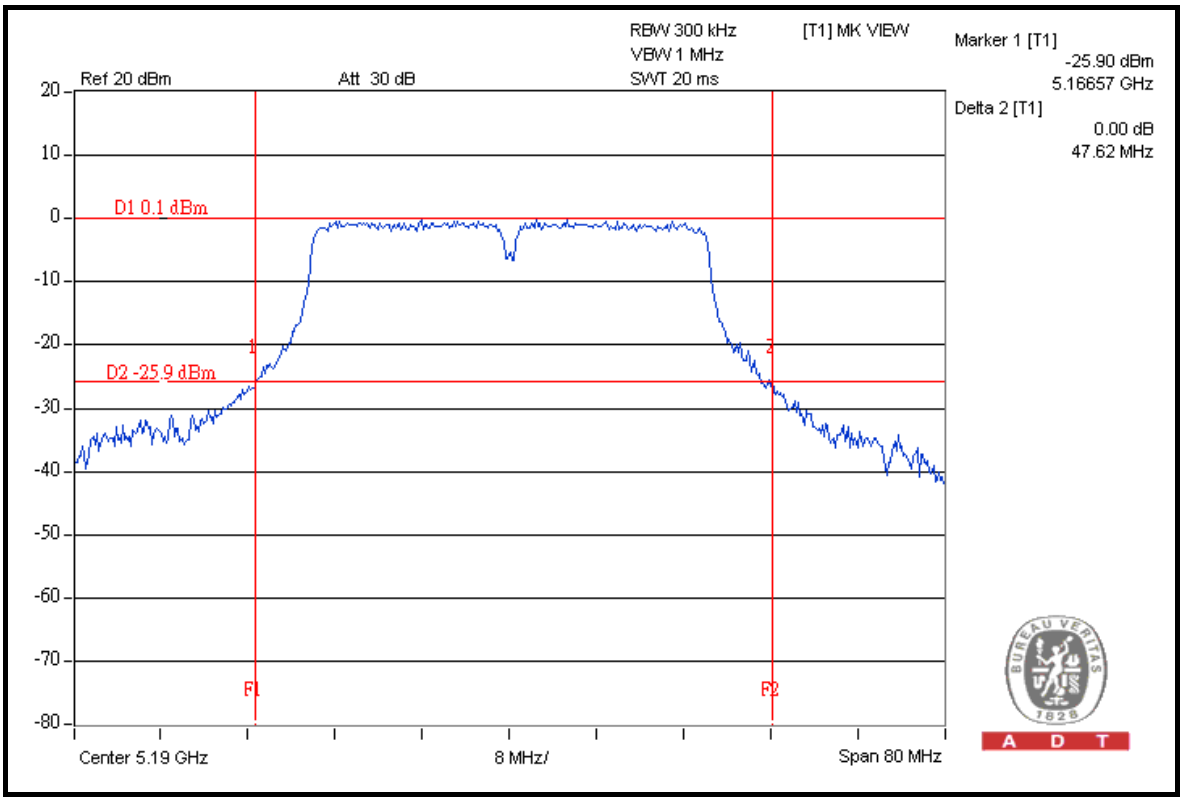
FOR CHAIN 0: CH 38



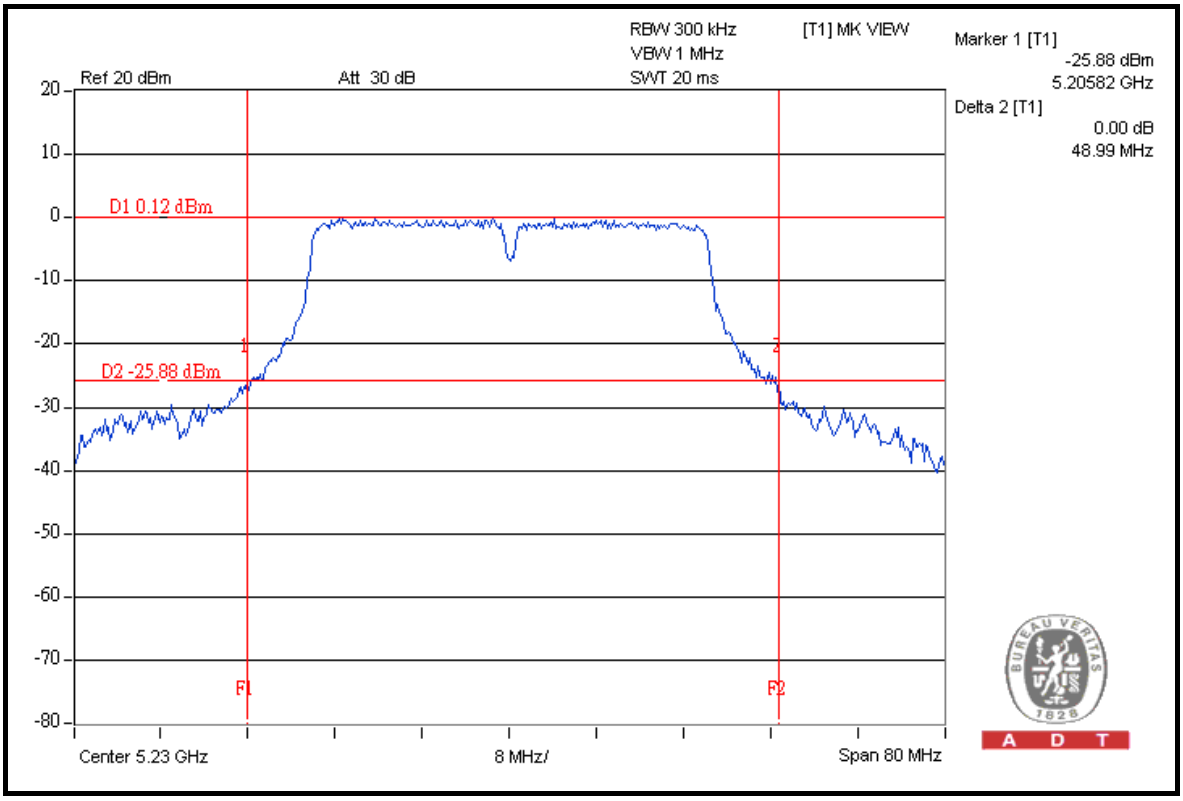
CH 46



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	Apr. 22, 2008	Apr. 21, 2009

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

4.4.3 TEST PROCEDURE

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

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

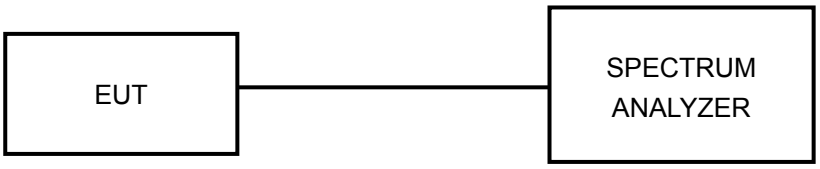
c. Using peak detector and Max-hold function for Trace 1 (RB = 1MHz, VB = 3MHz) and 2 (RB = 1MHz, VB = 300kHz).

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.

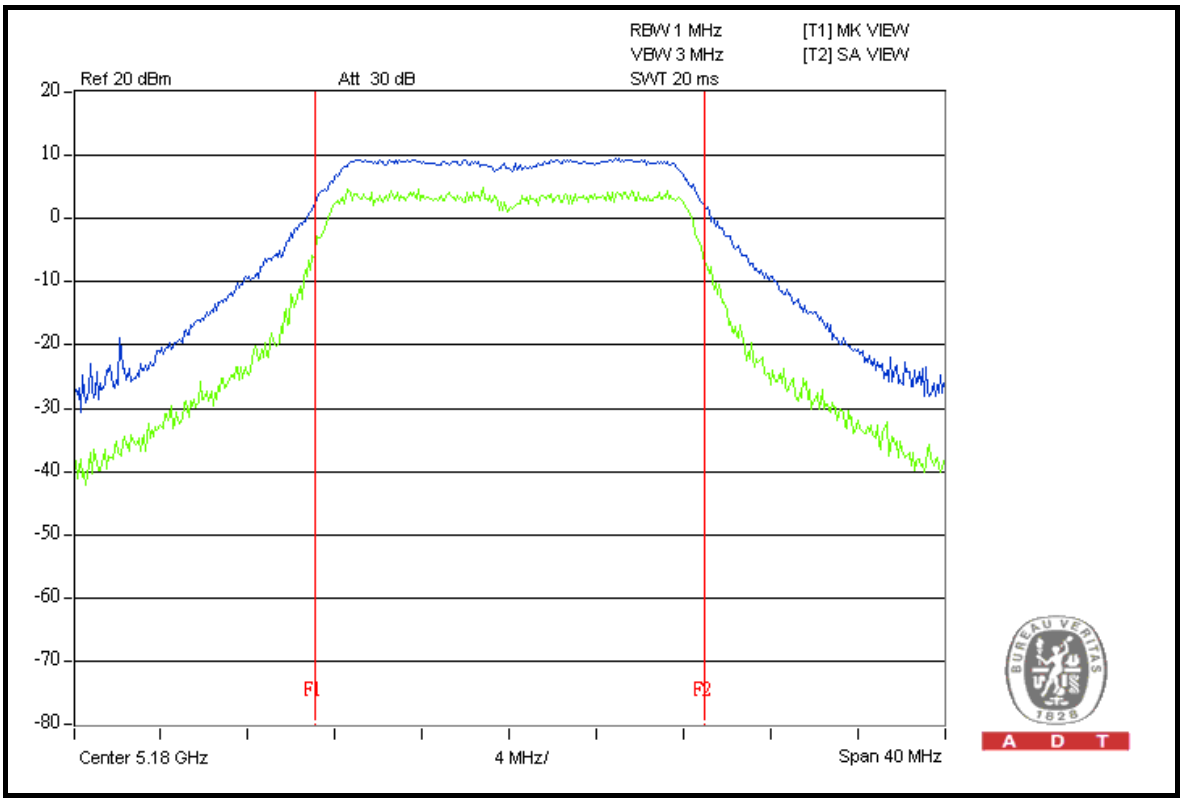
4.4.7 TEST RESULTS

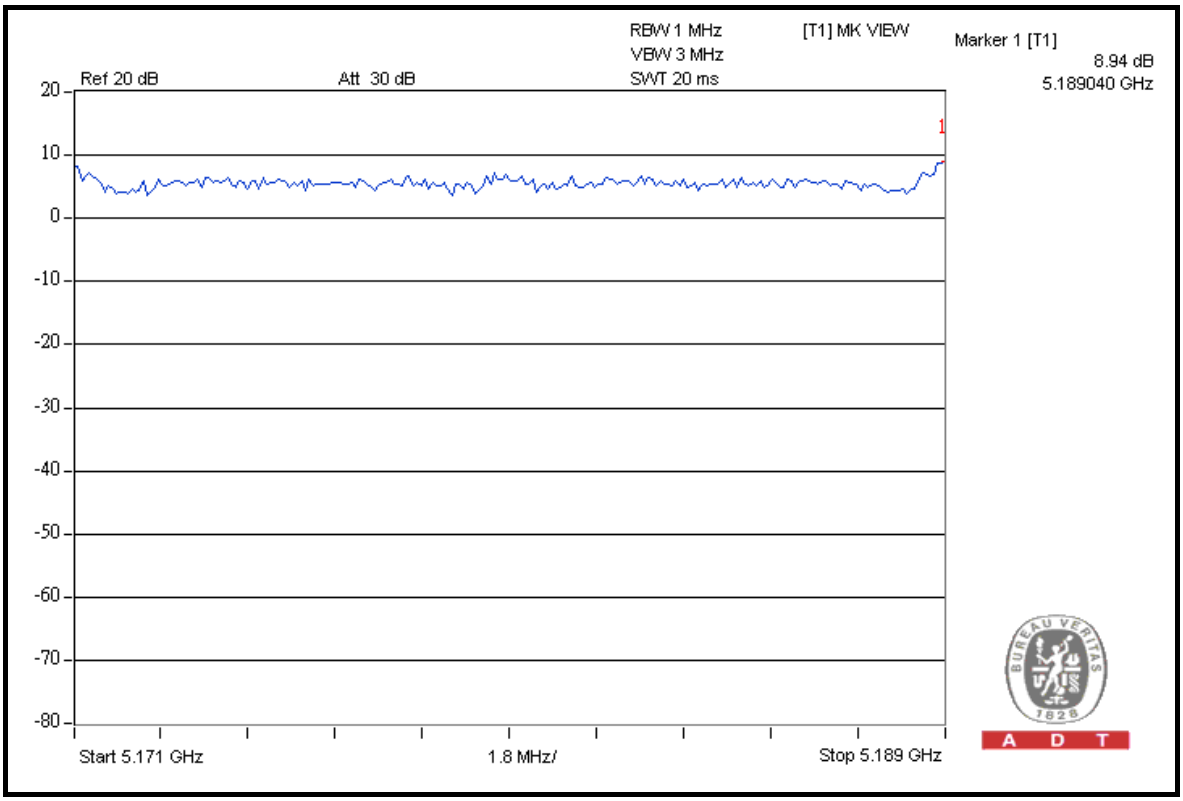
802.11a OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	18 deg.C, 63 %RH, 1021hPa
TESTED BY	Match Tsui		

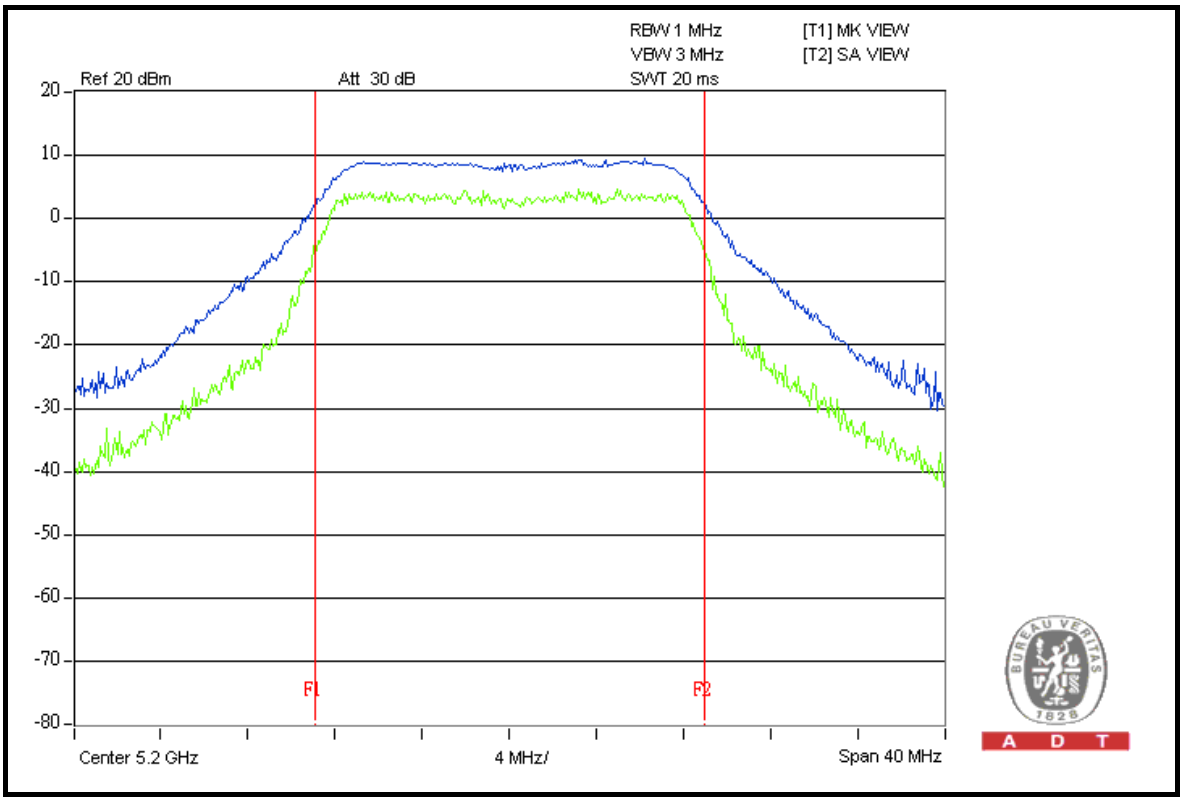
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)		PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1		
36	5180	8.94	7.88	13	PASS
40	5200	8.35	8.13	13	PASS
48	5240	8.39	9.13	13	PASS

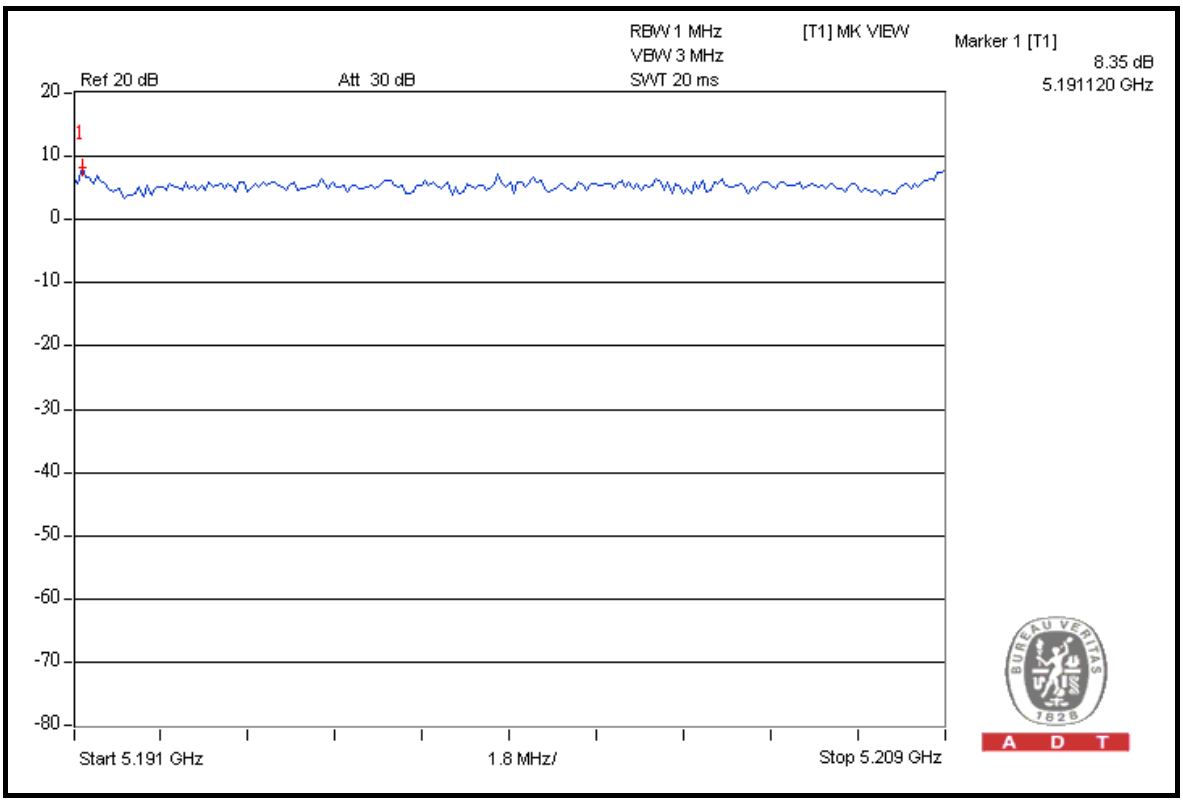
FOR CHAIN 0: CH 36



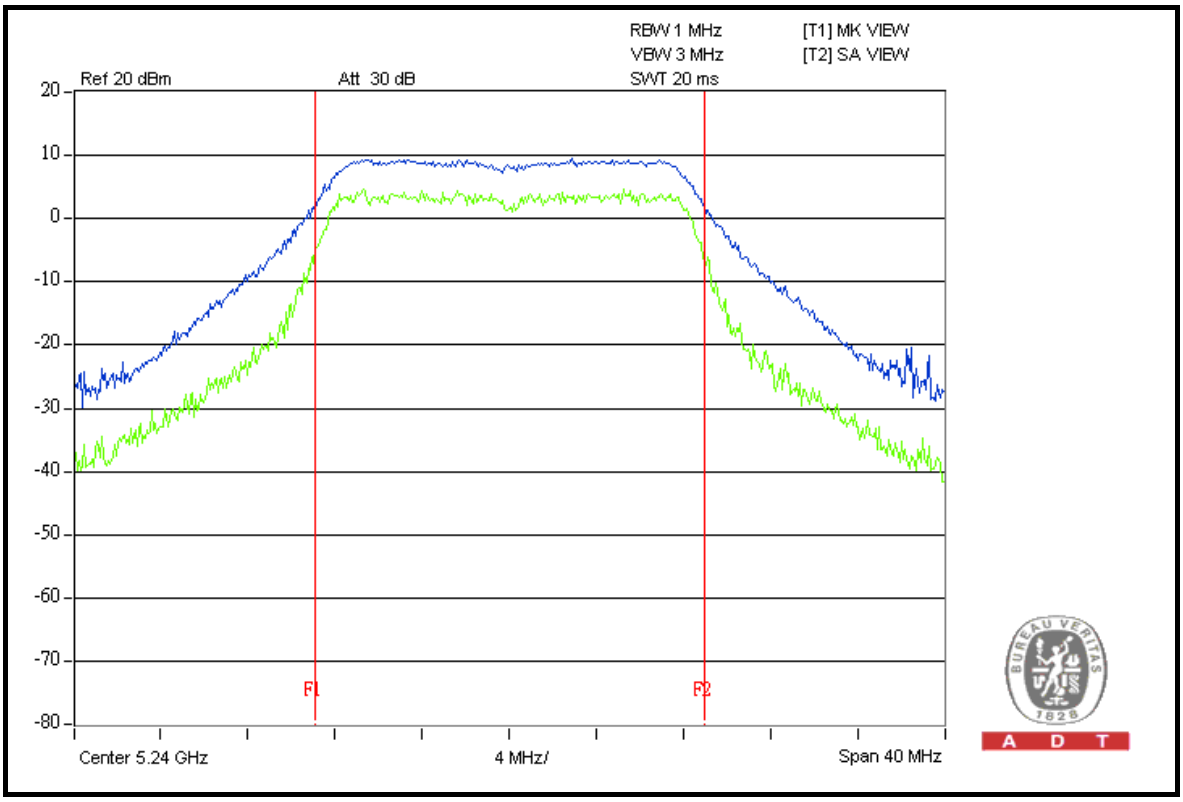


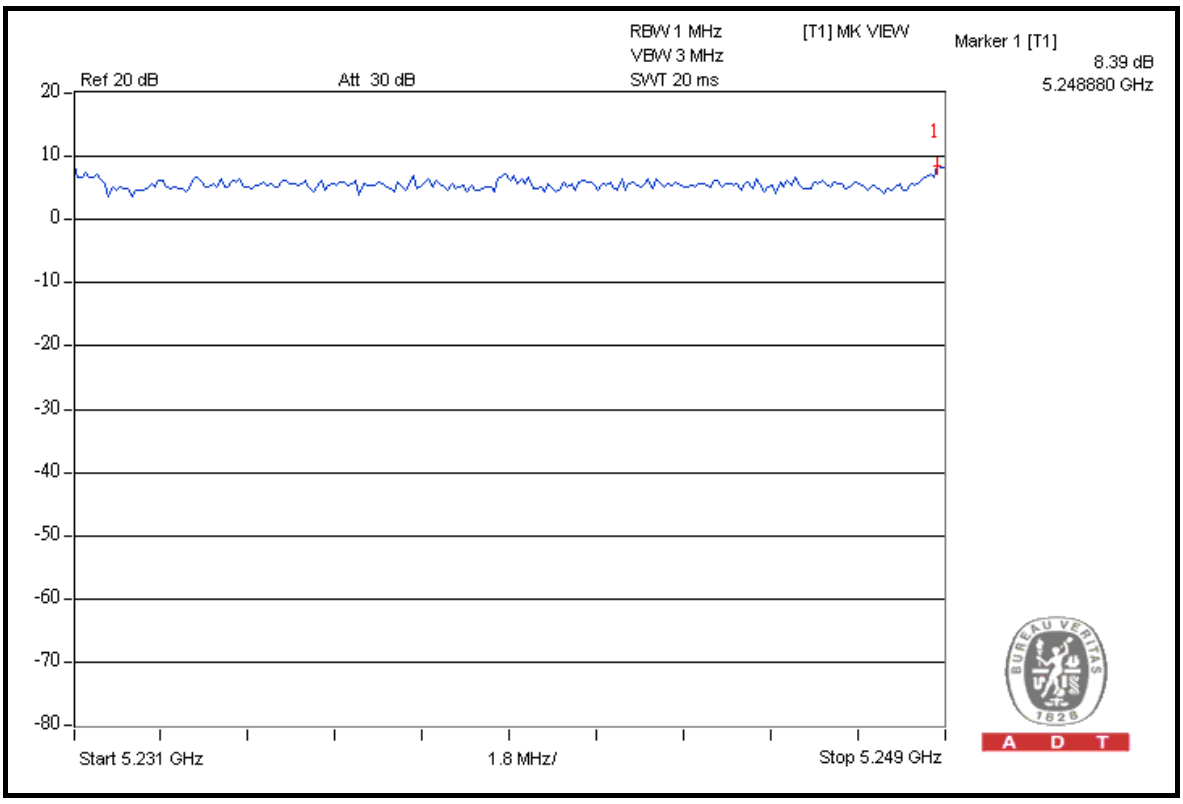
CH 40


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.2 GHz
4 MHz/
Span 40 MHz

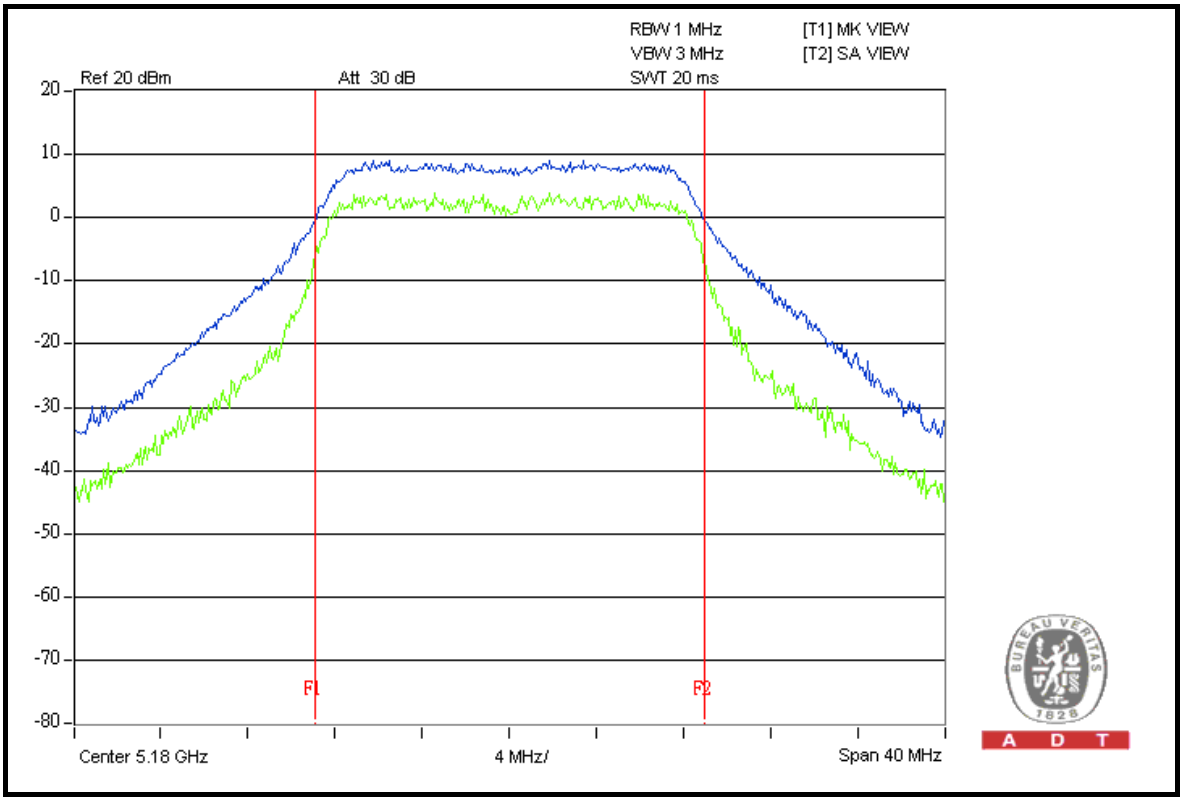

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
8.35 dB
5.191120 GHz
Ref 20 dB
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.191 GHz
1.8 MHz/
Stop 5.209 GHz

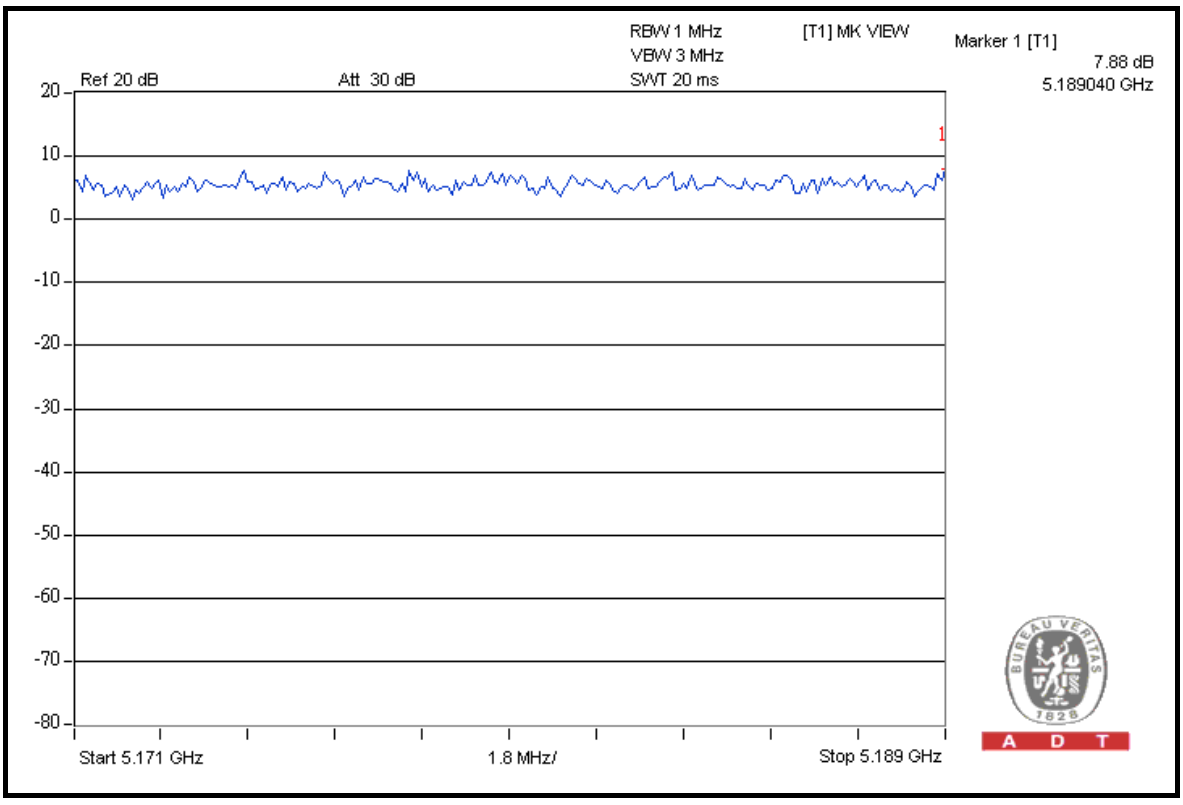
CH 48


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.24 GHz
4 MHz/
Span 40 MHz

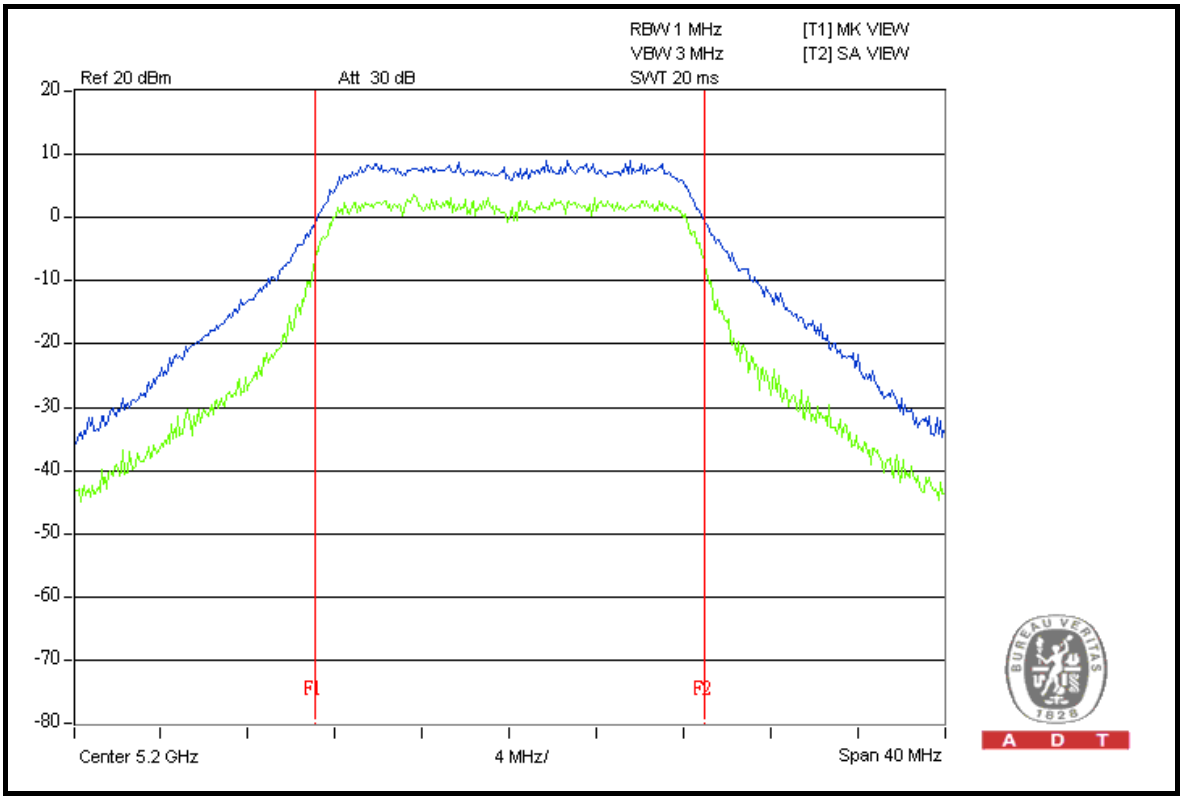

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
8.39 dB
5.248880 GHz
Ref 20 dB
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.231 GHz
1.8 MHz/
Stop 5.249 GHz

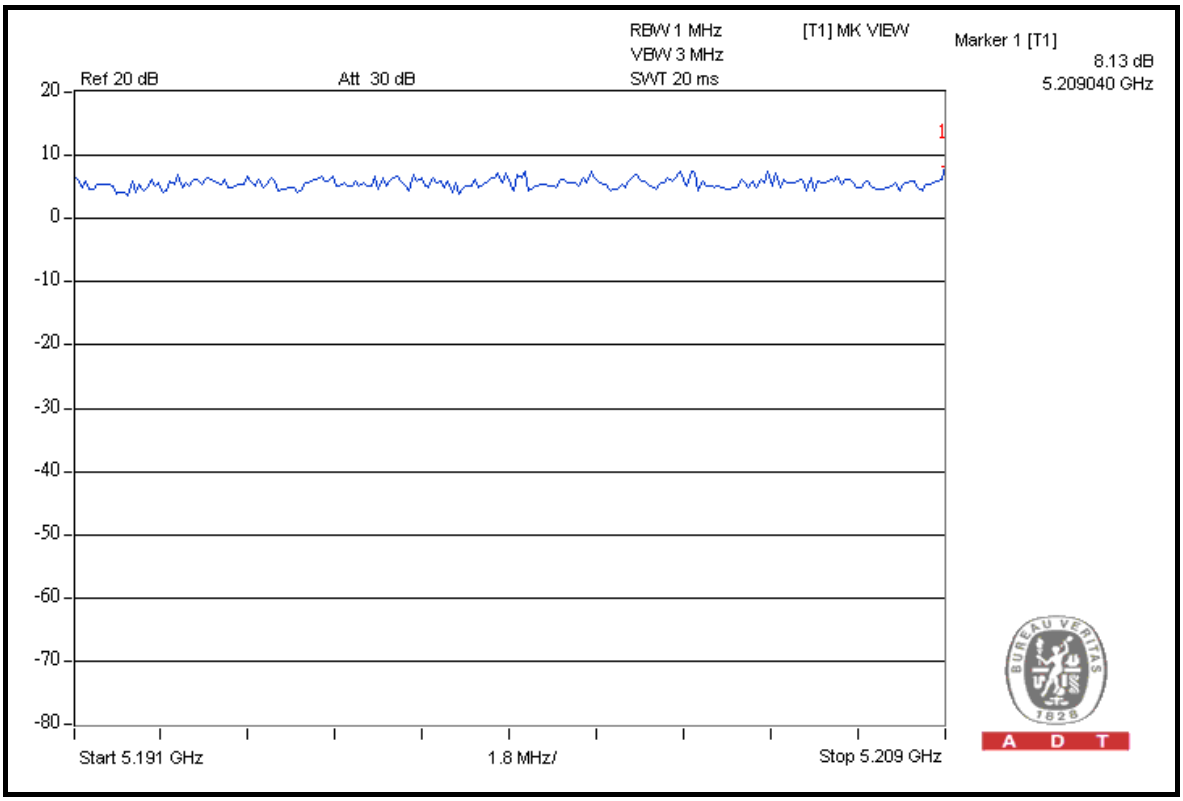
FOR CHAIN 1: CH 36



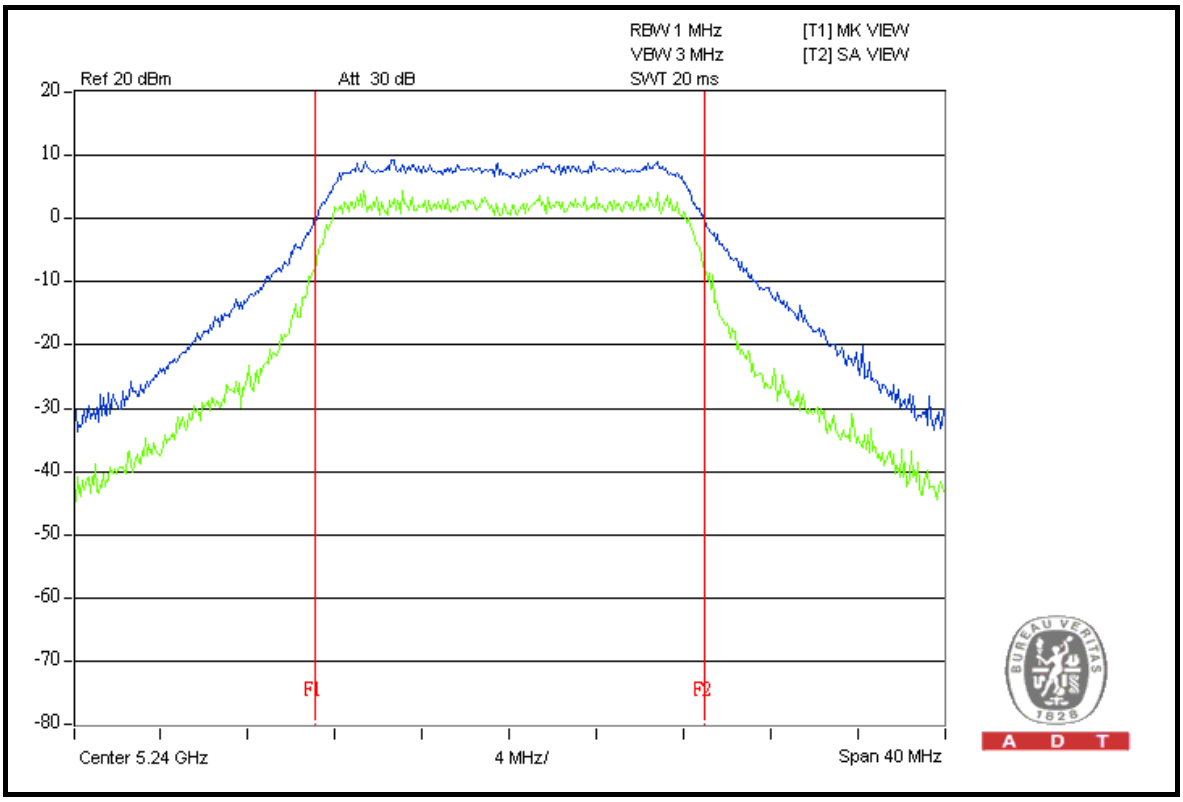


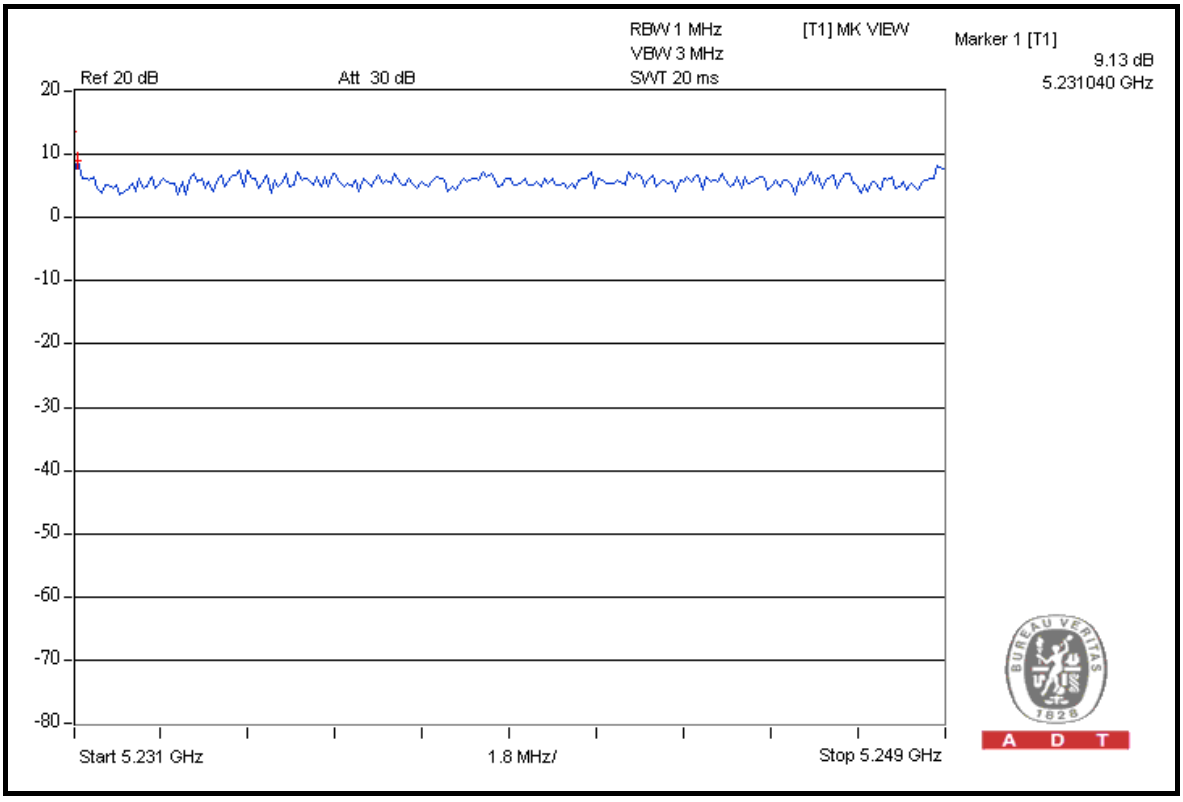
CH 40


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.2 GHz
4 MHz/
Span 40 MHz


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
8.13 dB
5.209040 GHz
Ref 20 dB
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.191 GHz
1.8 MHz/
Stop 5.209 GHz

CH 48


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.24 GHz
4 MHz/
Span 40 MHz

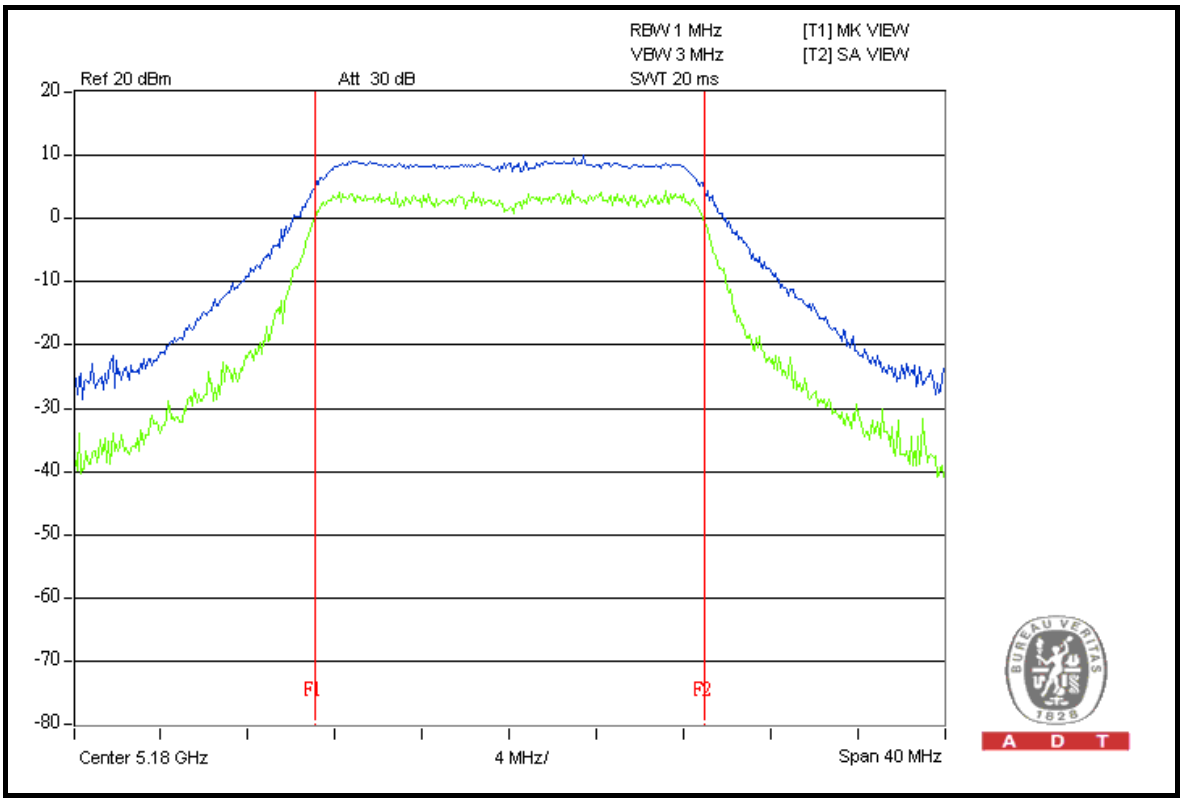

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
9.13 dB
5.231040 GHz
Ref 20 dB
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 5.231 GHz
1.8 MHz/
Stop 5.249 GHz

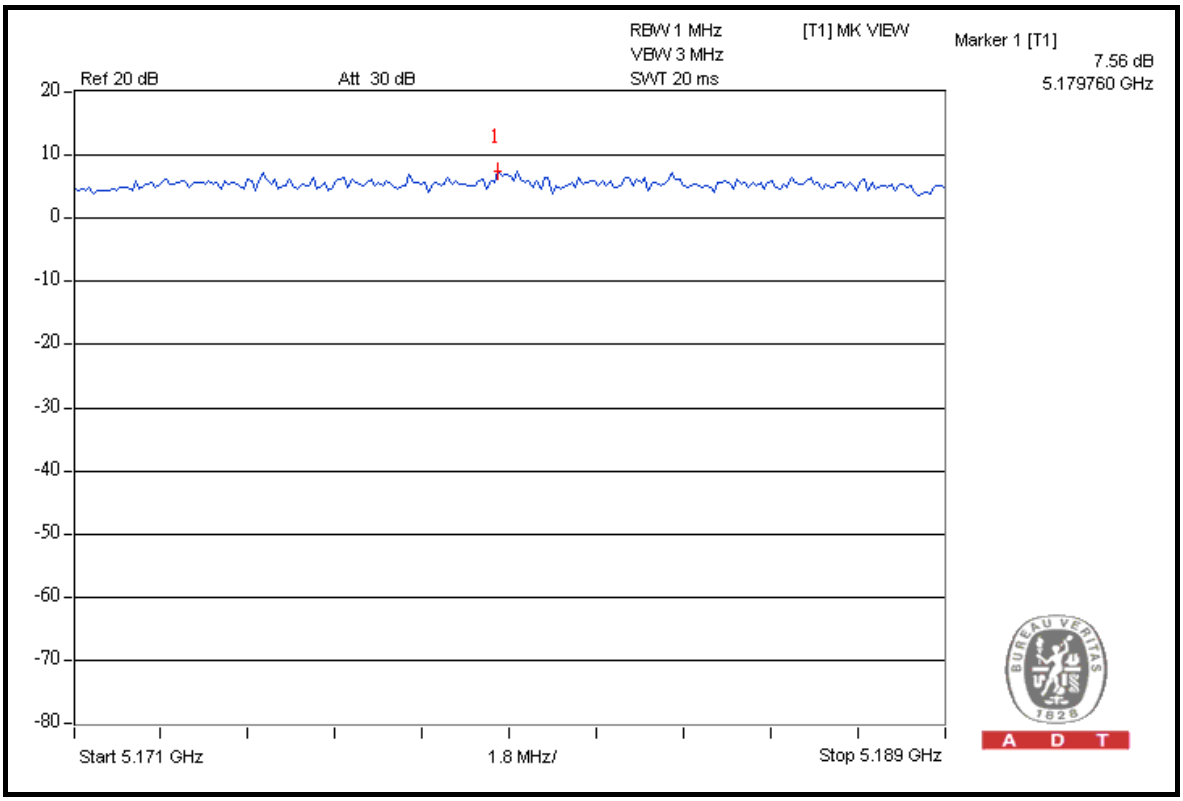
DRAFT 802.11n (20MHz) OFDM MODULATION

MODULATION TYPE	BPSK	**TRANSFER RATE**	7.2Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	18 deg.C, 63 %RH, 1021hPa
TESTED BY	Match Tsui		

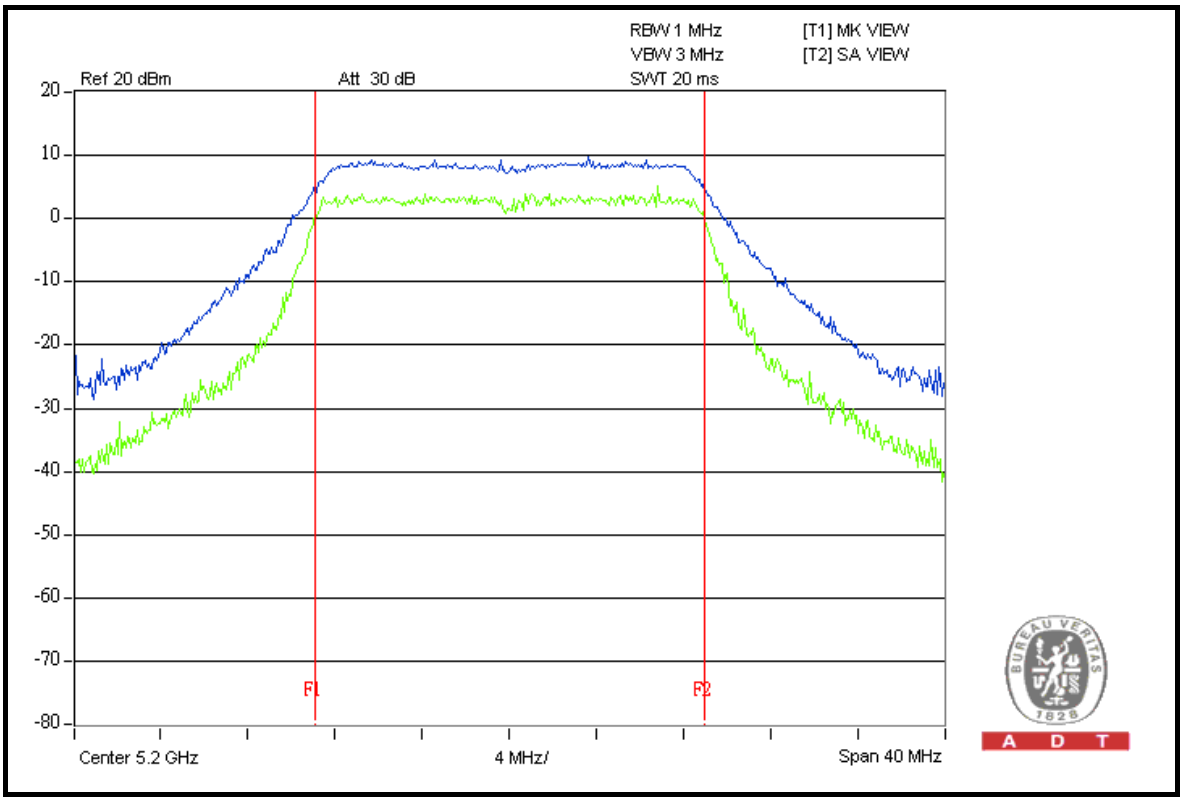
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)		PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1		
36	5180	7.56	7.01	13	PASS
40	5200	7.10	6.73	13	PASS
48	5240	7.60	7.20	13	PASS

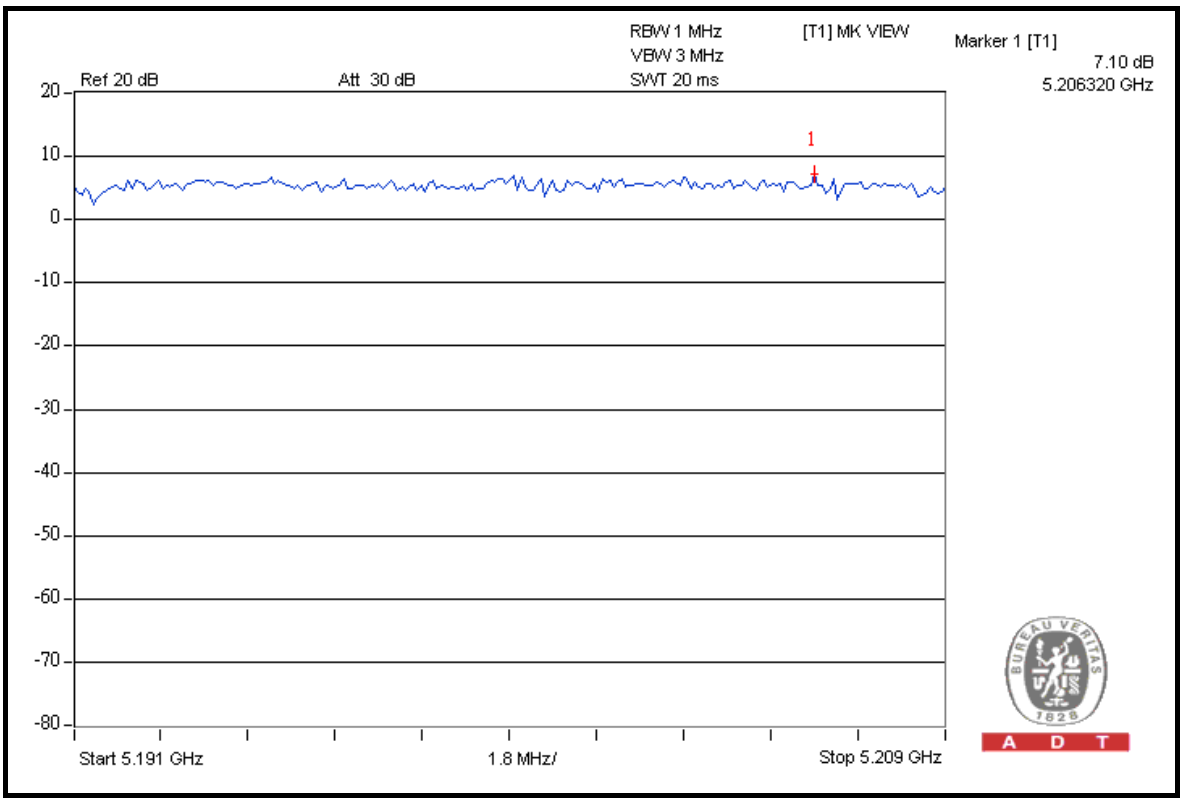
FOR CHAIN 0: CH 36



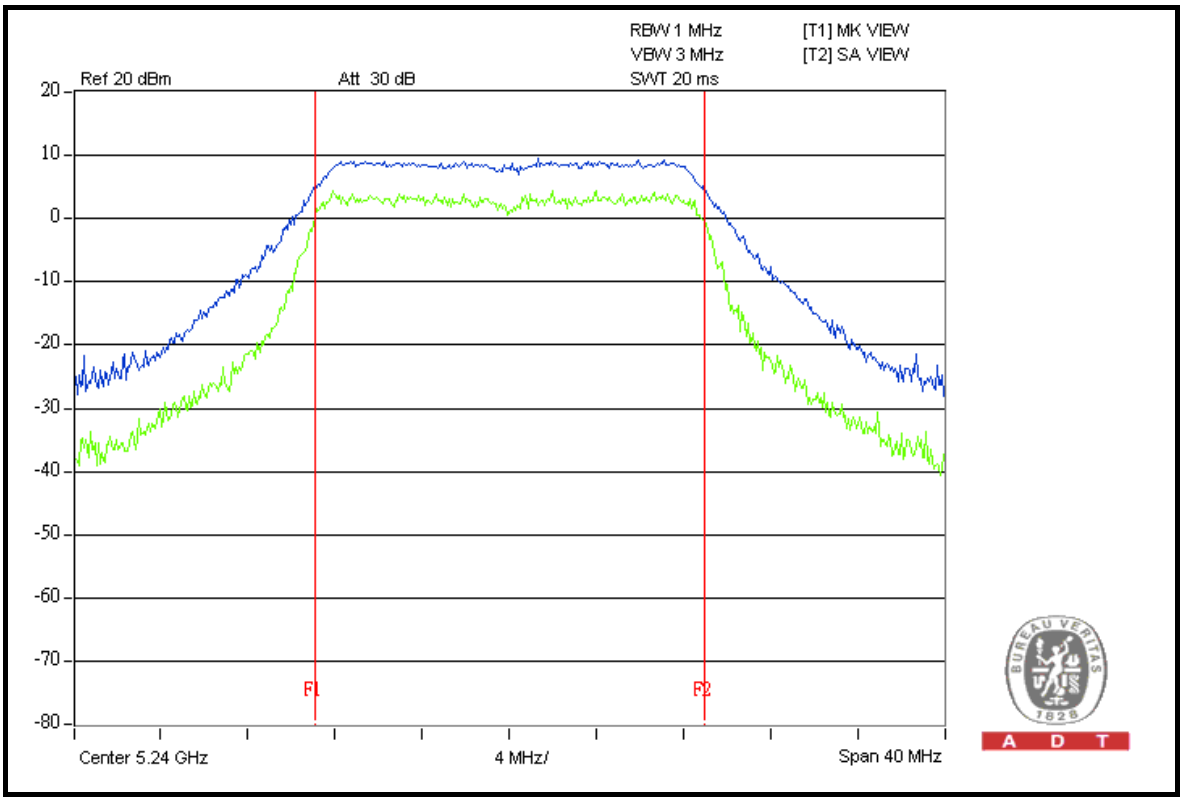


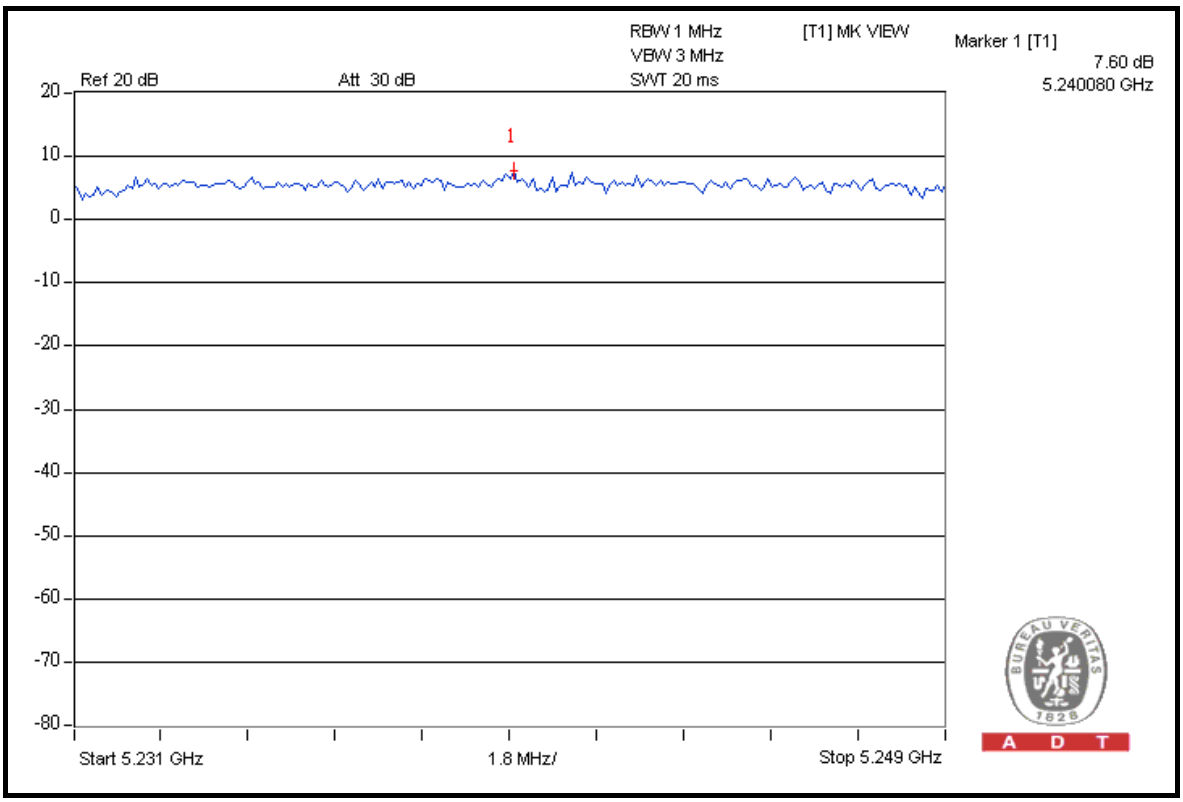
CH 40


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.2 GHz
4 MHz/
Span 40 MHz

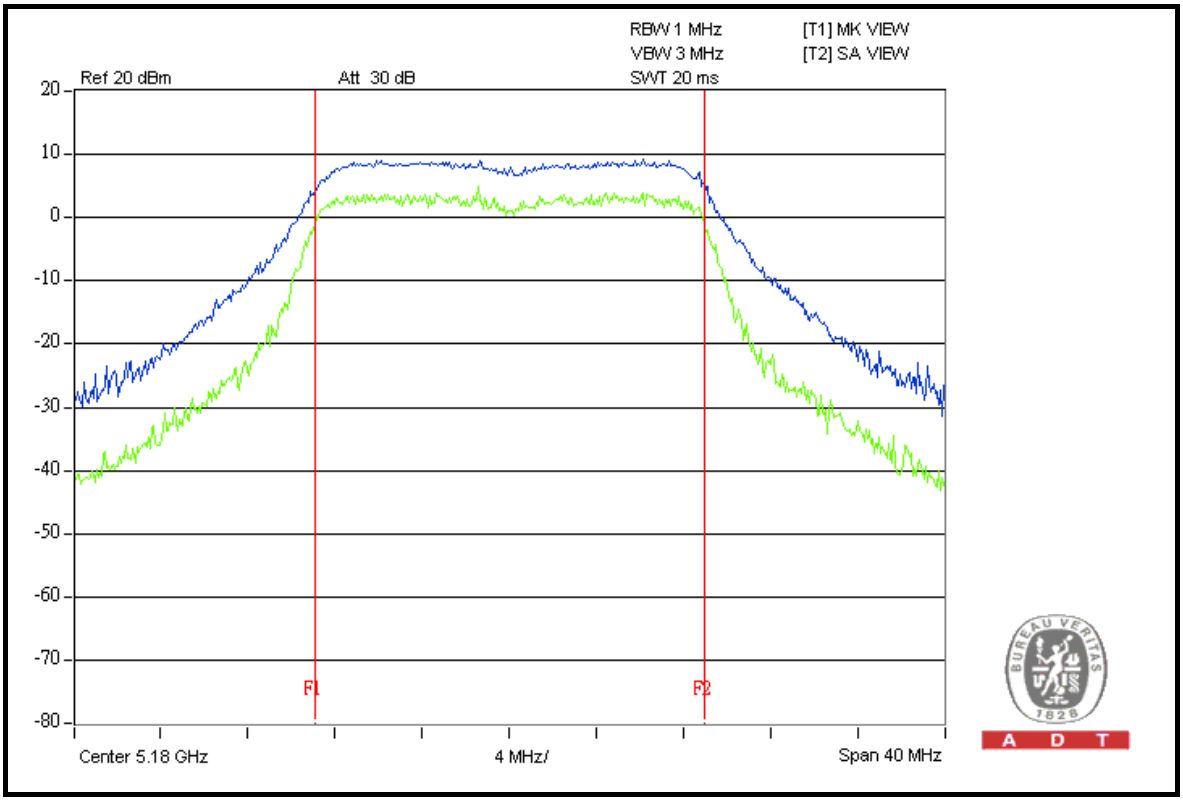

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
7.10 dB
5.206320 GHz
Ref 20 dB
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.191 GHz
1.8 MHz/
Stop 5.209 GHz

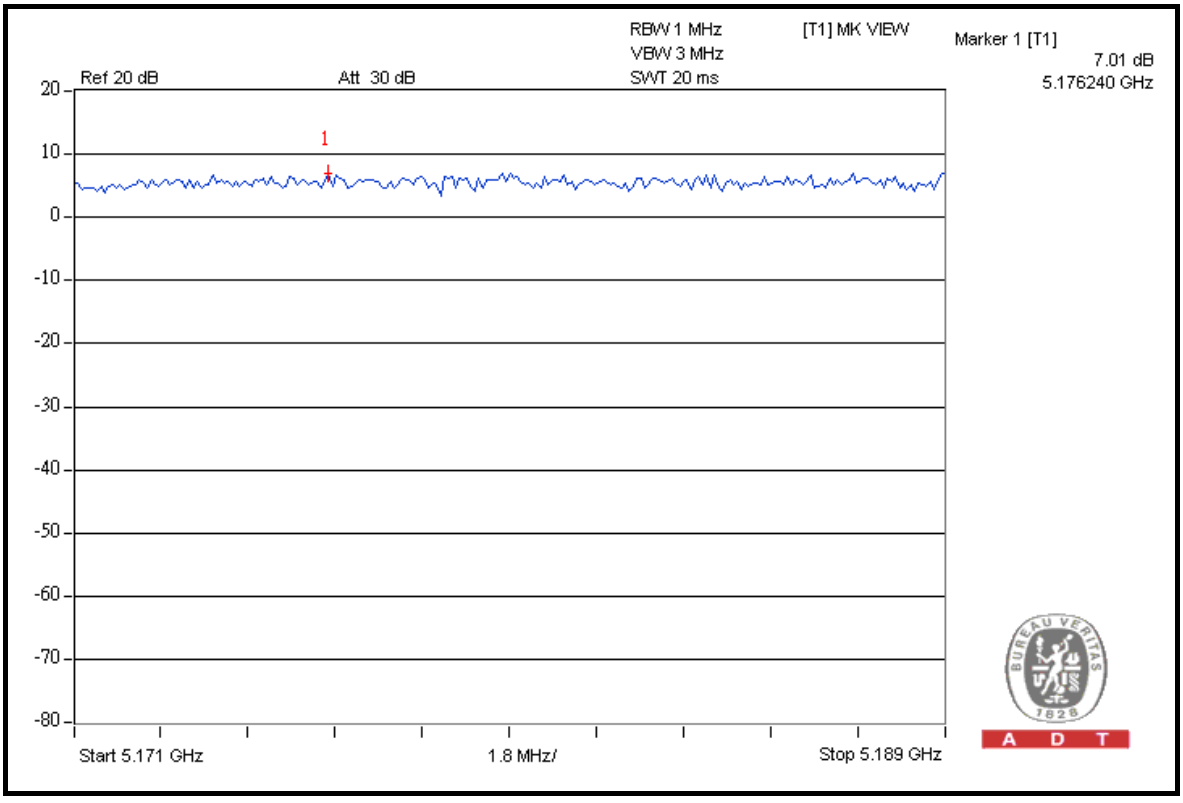
CH 48


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.24 GHz
4 MHz/
Span 40 MHz

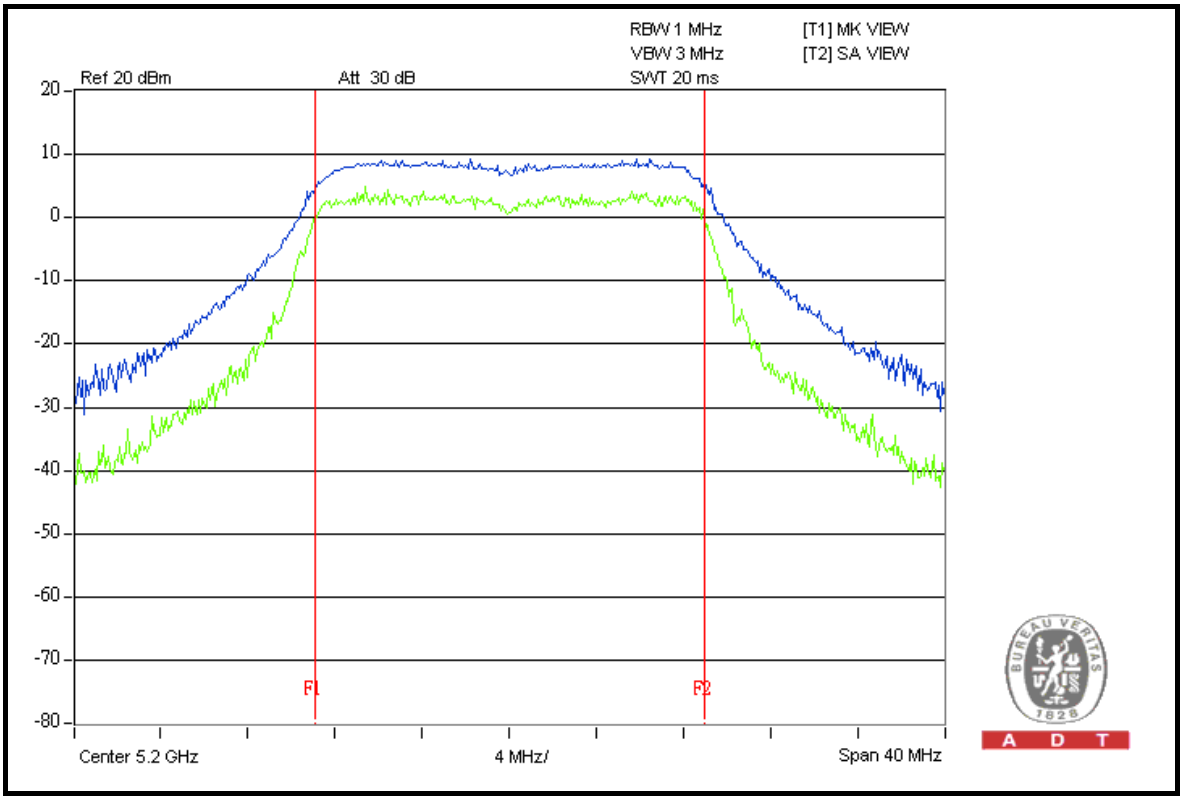

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
7.60 dB
5.240080 GHz
Ref 20 dB
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.231 GHz
1.8 MHz/
Stop 5.249 GHz

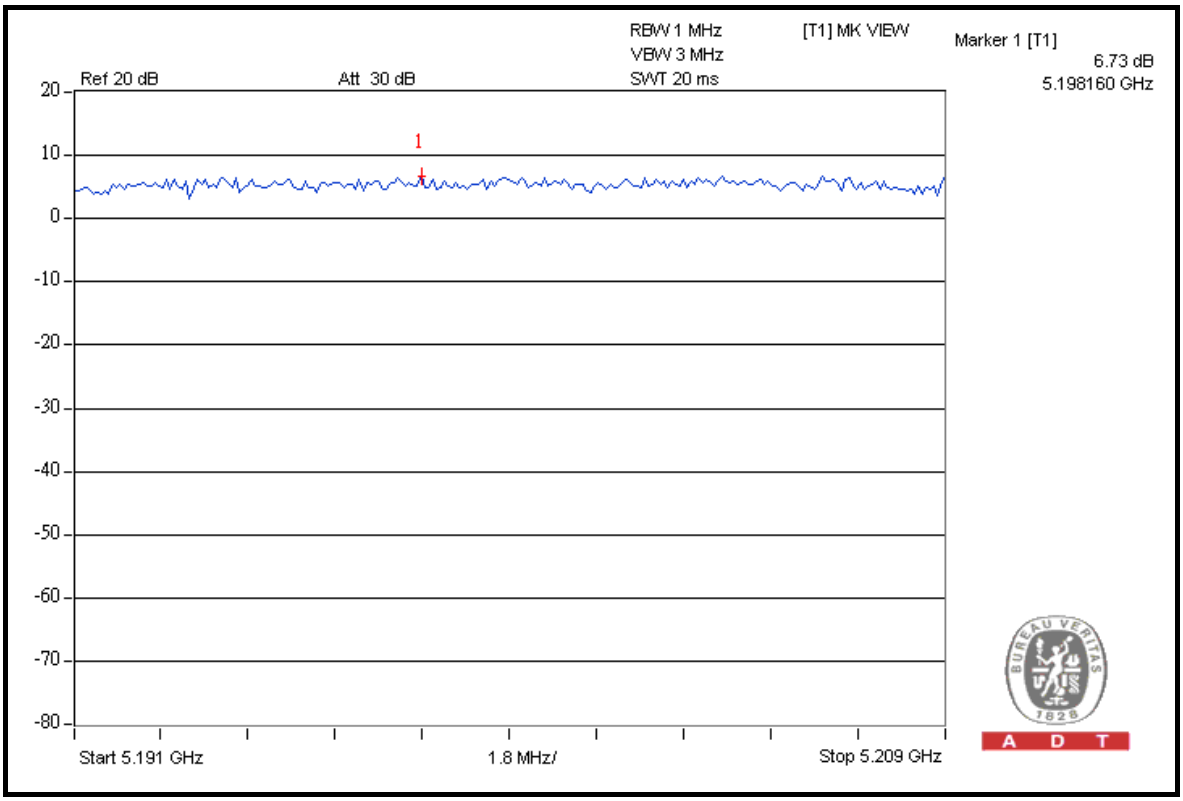
FOR CHAIN 1: CH 36



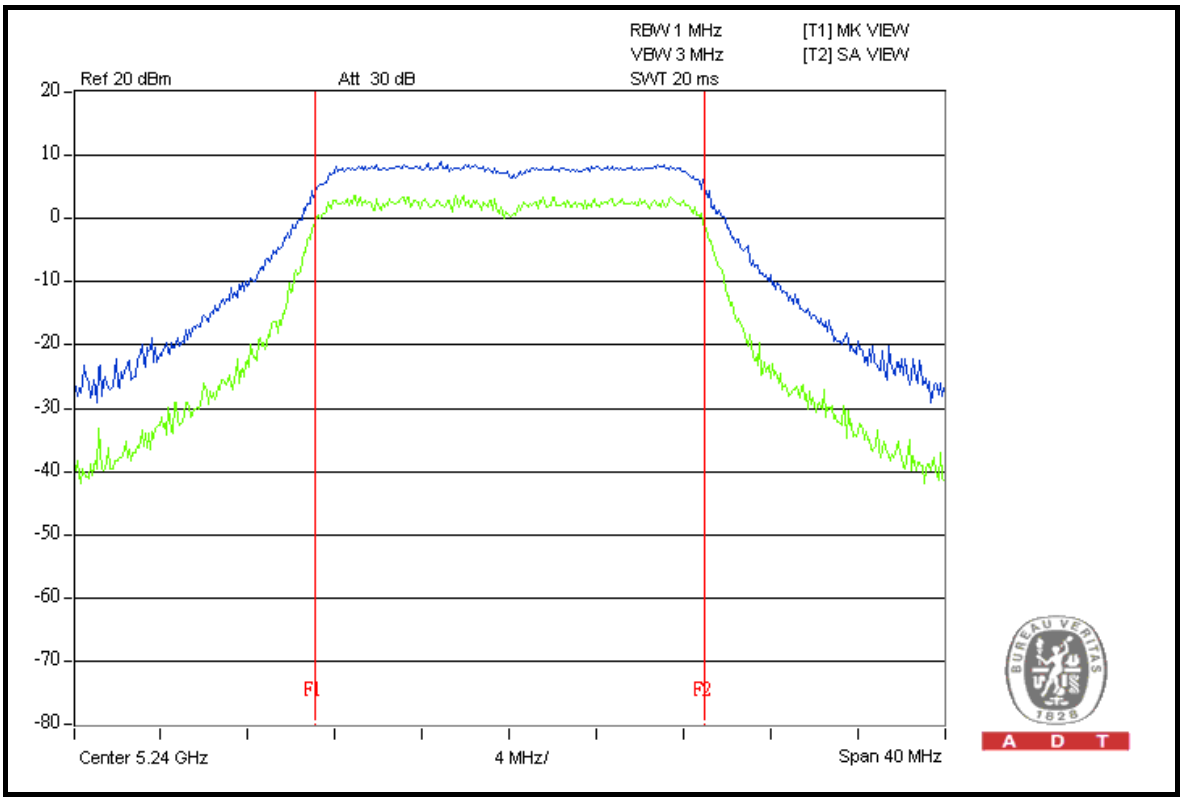


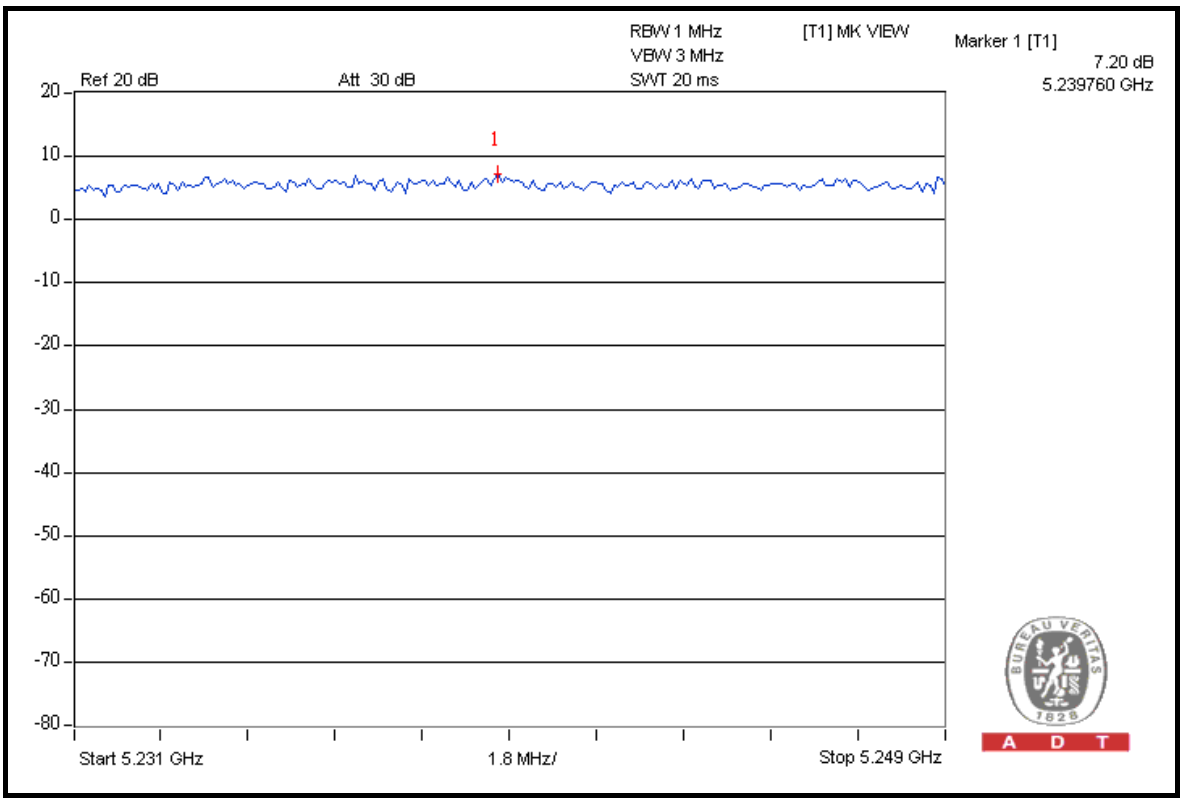
CH 40


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.2 GHz
4 MHz/
Span 40 MHz


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
6.73 dB
5.198160 GHz
Ref 20 dB
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.191 GHz
1.8 MHz/
Stop 5.209 GHz

CH 48


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.24 GHz
4 MHz/
Span 40 MHz

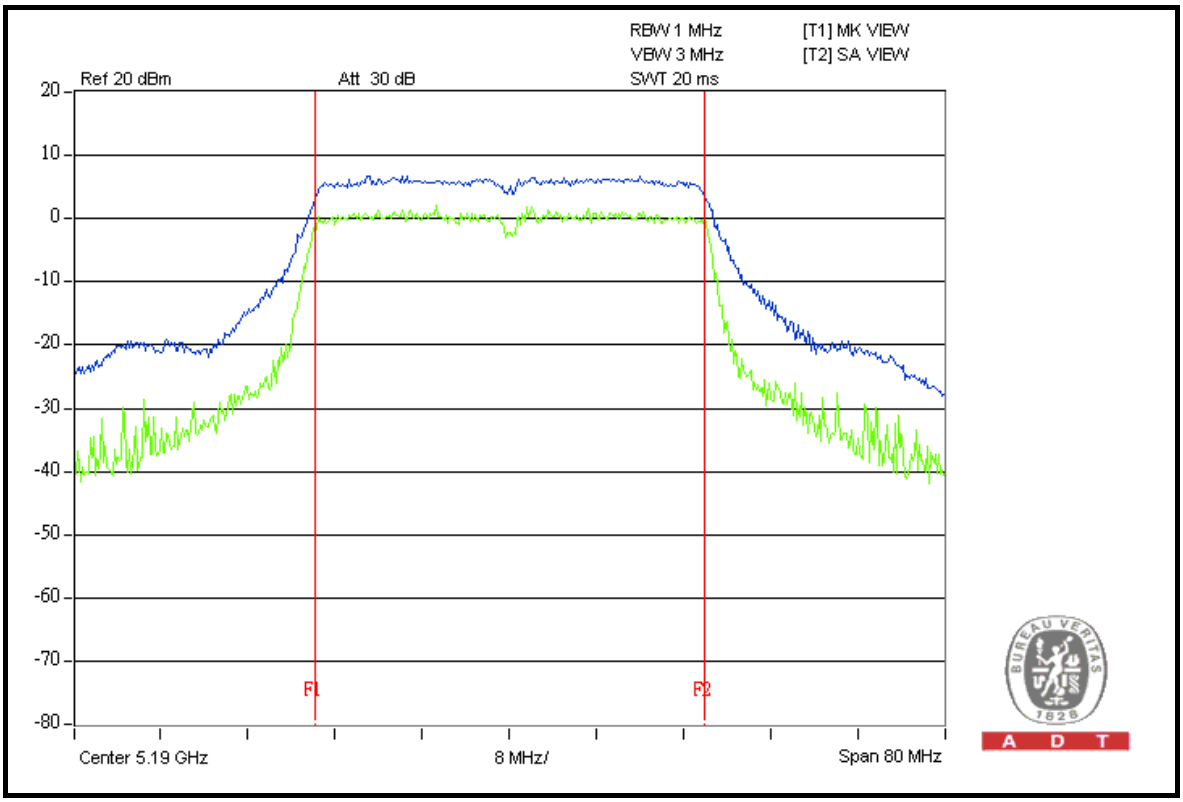

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
7.20 dB
5.239760 GHz
Ref 20 dB
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.231 GHz
1.8 MHz/
Stop 5.249 GHz

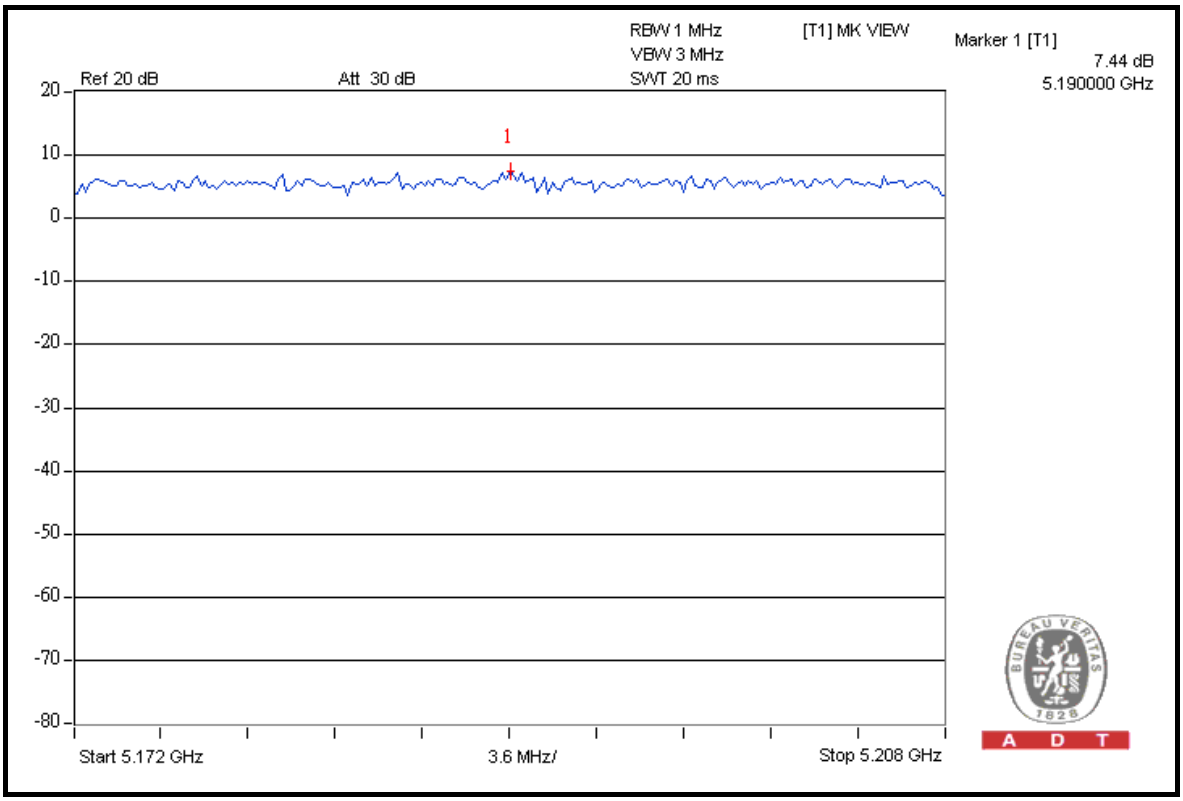
DRAFT 802.11n (40MHz) OFDM MODULATION

MODULATION TYPE	BPSK	**TRANSFER RATE**	15.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	18 deg.C, 63 %RH, 1021hPa
TESTED BY	Match Tsui		

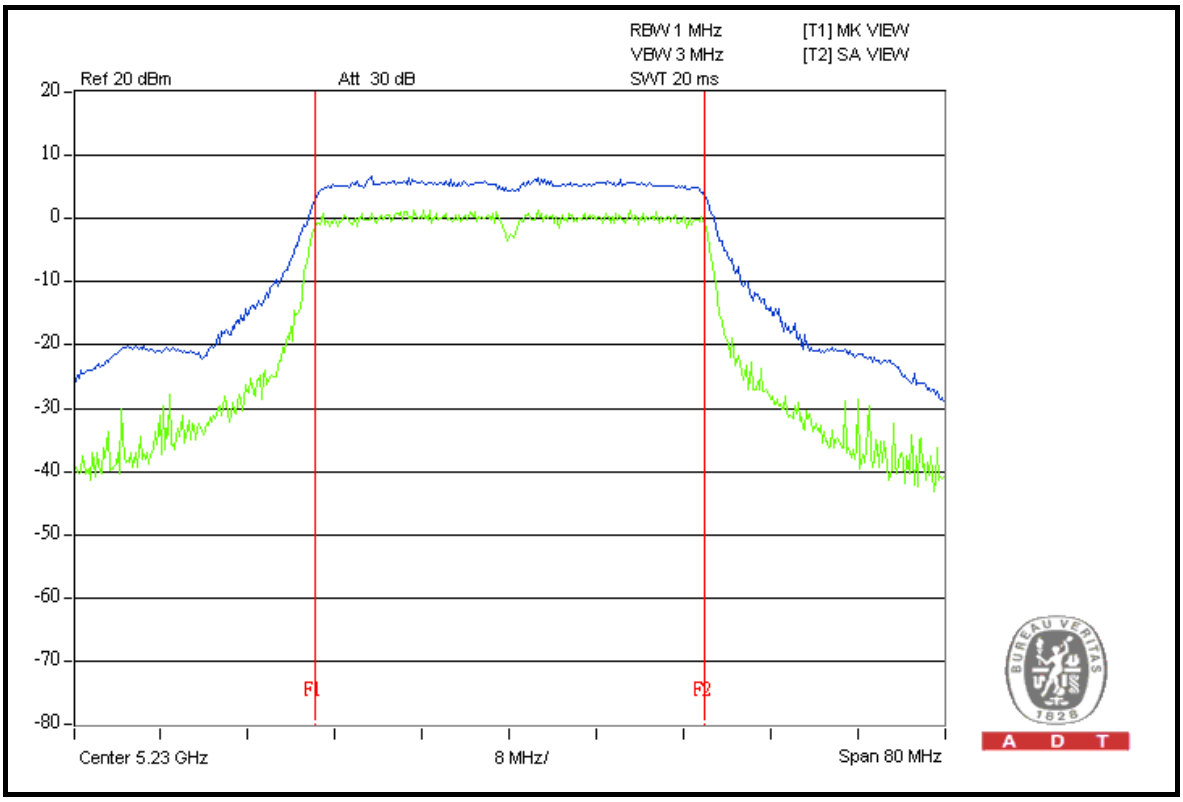
CHANNEL	**CHANNEL FREQUENCY (MHz)**	**PEAK POWER EXCURSION (dB)**		**PEAK to AVERAGE EXCURSION LIMIT (dB)**	**PASS/FAIL**
		CHAIN 0	**CHAIN 1**		
38	5190	7.44	7.66	13	PASS
46	5230	8.14	10.18	13	PASS

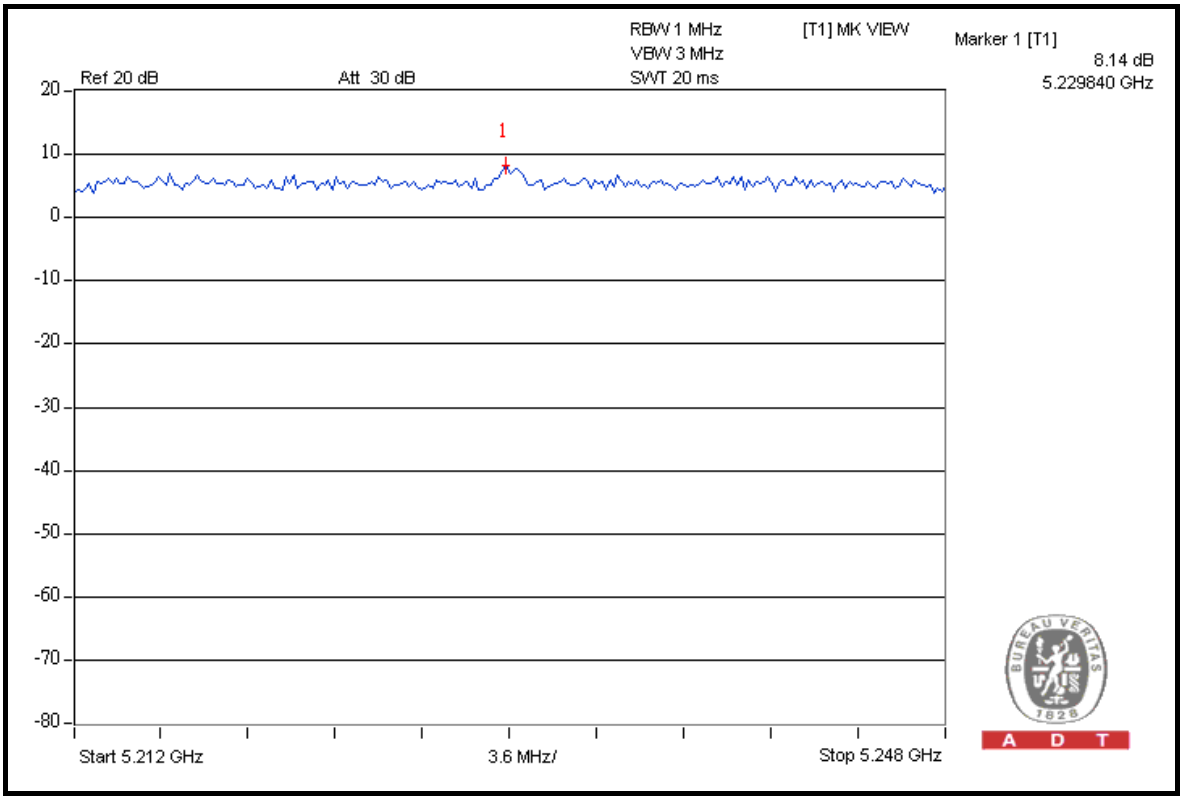
FOR CHAIN 0: CH 38



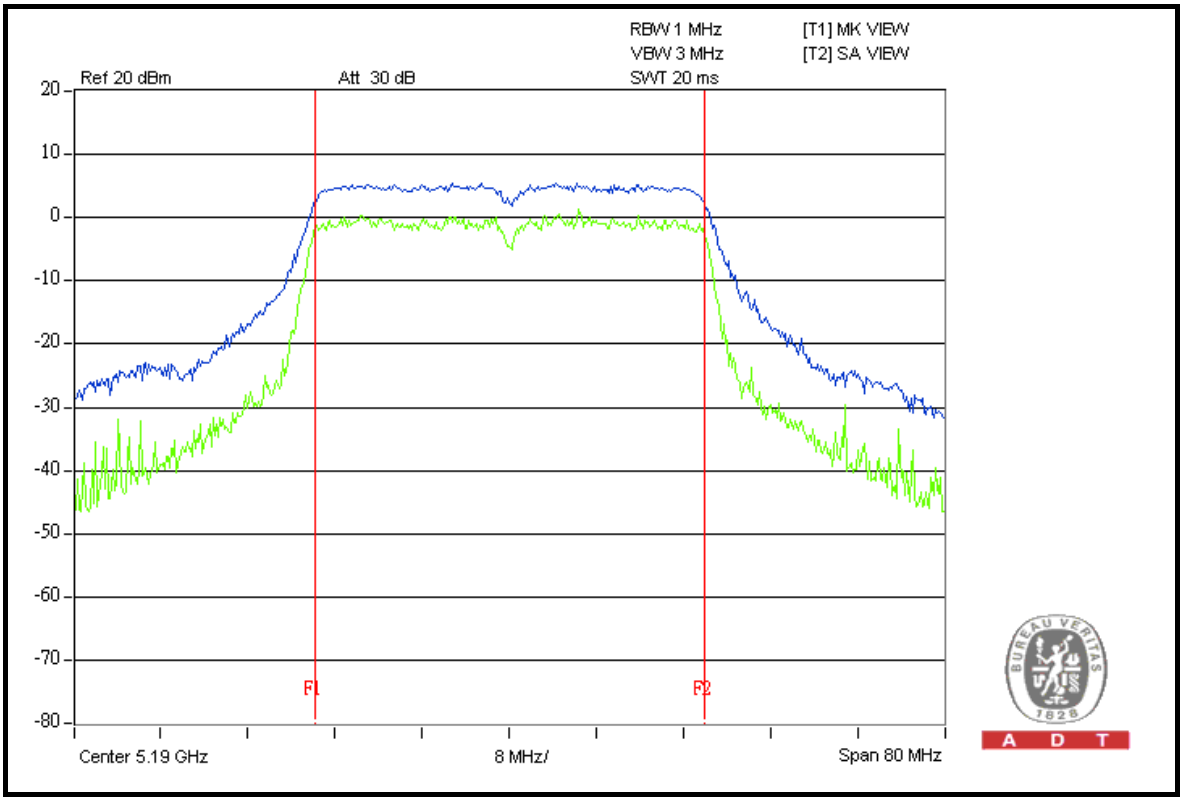


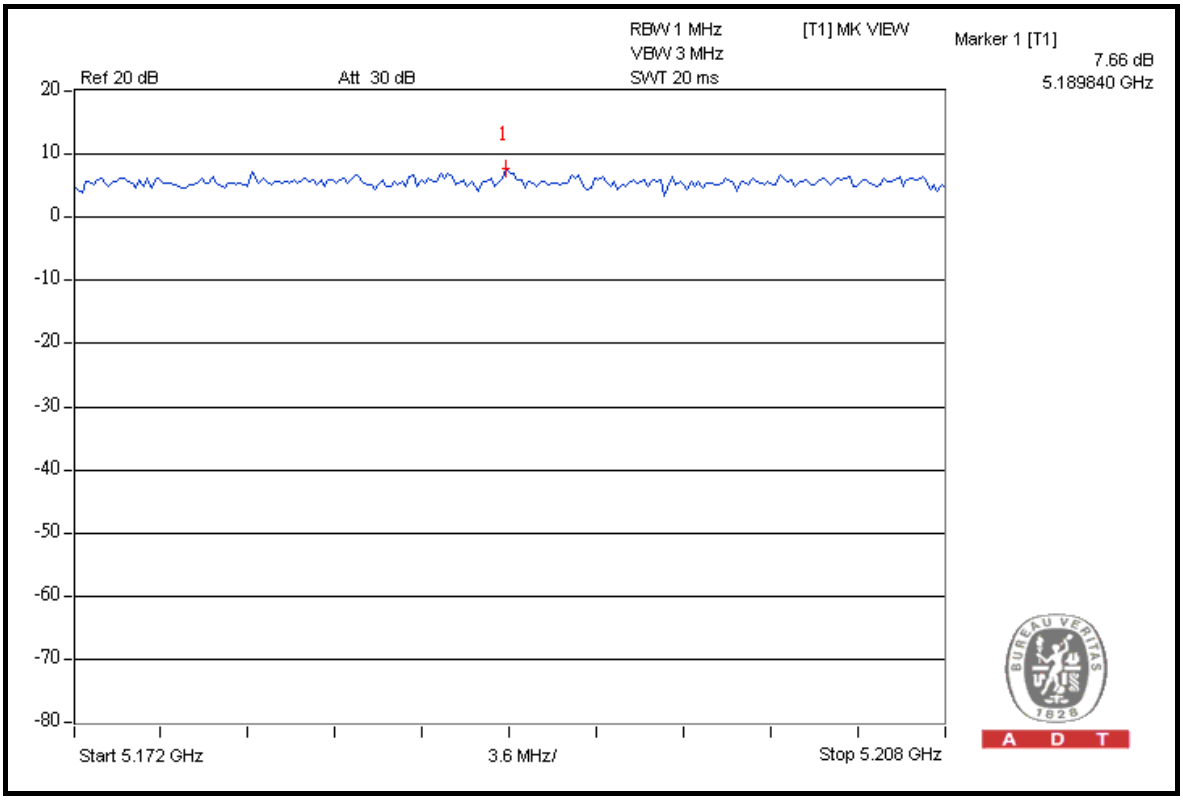
CH 46


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.23 GHz
8 MHz/
Span 80 MHz

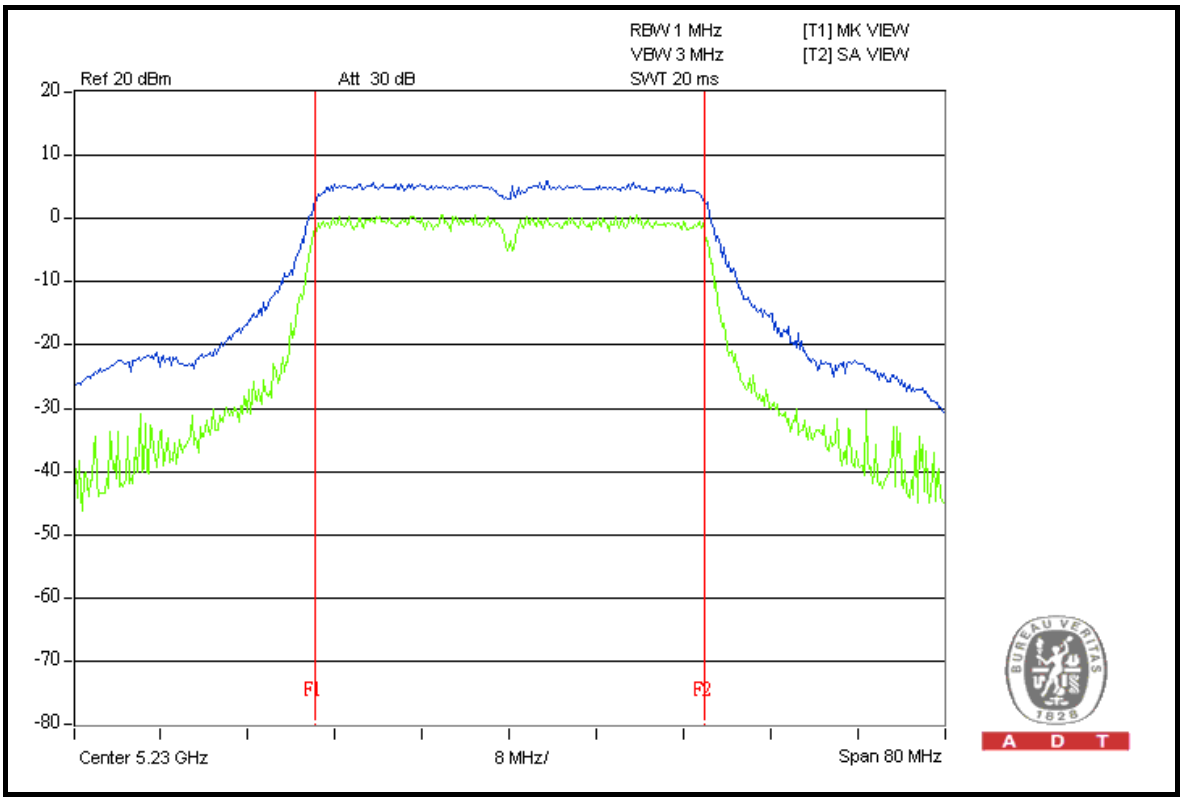

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
8.14 dB
5.229840 GHz
Ref 20 dB
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.212 GHz
3.6 MHz/
Stop 5.248 GHz

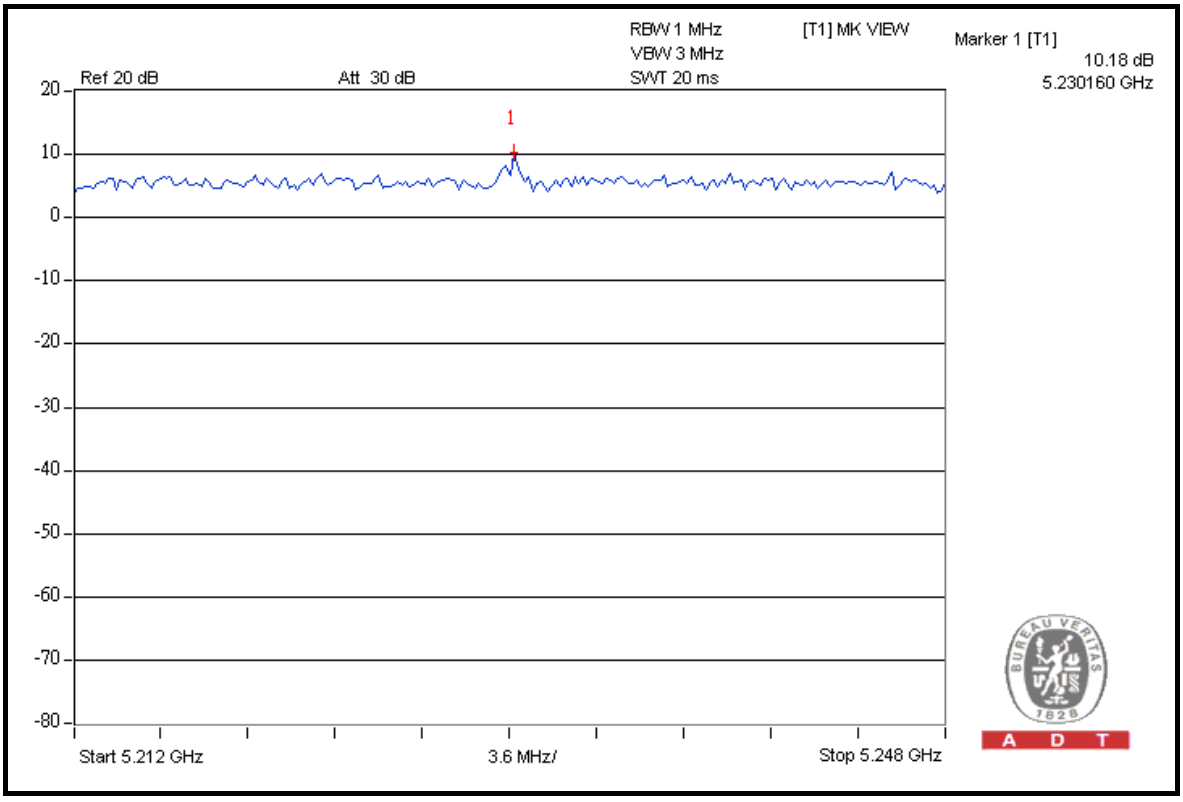
FOR CHAIN 1: CH 38





CH 46


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.23 GHz
8 MHz/
Span 80 MHz


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
10.18 dB
5.230160 GHz
Ref 20 dB
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.212 GHz
3.6 MHz/
Stop 5.248 GHz

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	Apr. 22, 2008	Apr. 21, 2009

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

4.5.3 TEST PROCEDURES

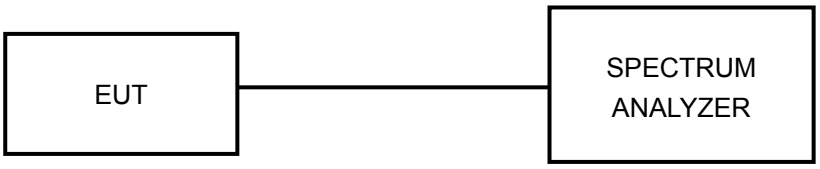
a. The transmitter output was connected to the spectrum analyzer.

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.

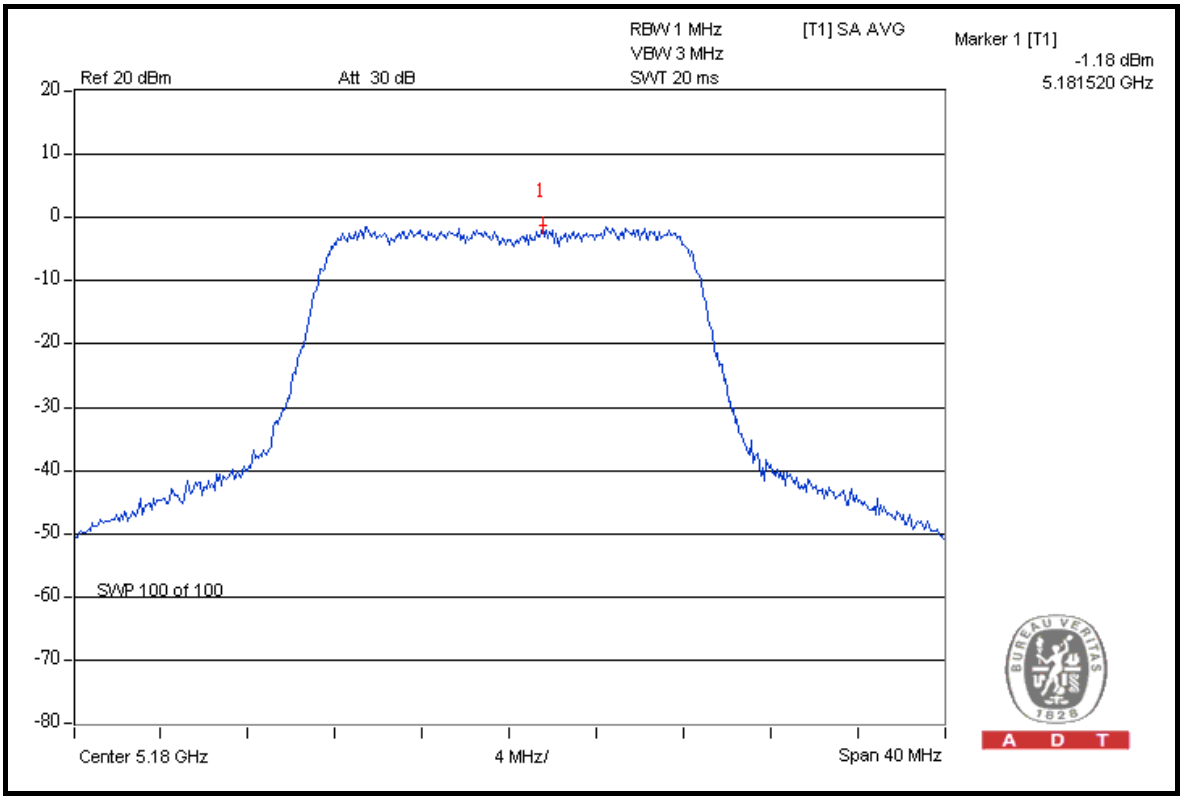
4.5.7 TEST RESULTS

802.11a OFDM MODULATION

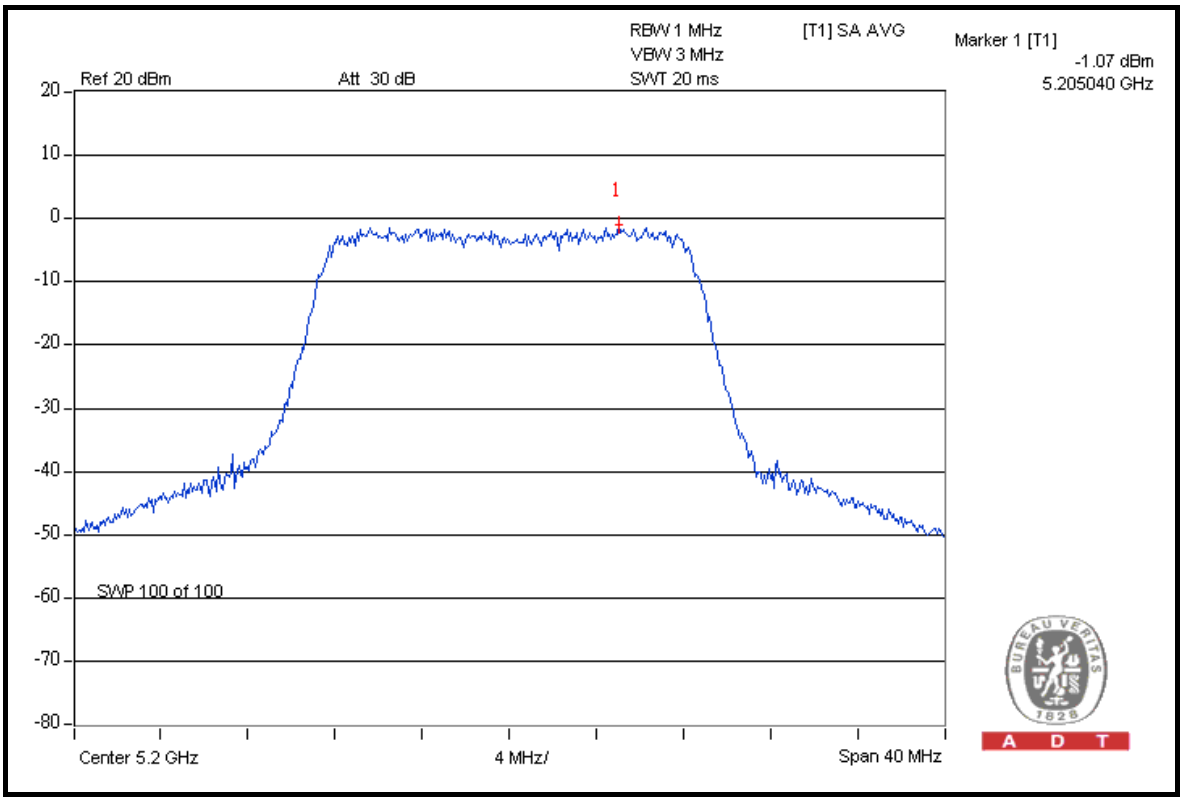
MODULATION TYPE	BPSK	**TRANSFER RATE**	6.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	18 deg.C, 63 %RH, 1021hPa
TESTED BY	Match Tsui		

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	-1.18	-3.02	1.261	1.01	4	PASS
40	5200	-1.07	-3.14	1.267	1.03	4	PASS
48	5240	-1.13	-3.02	1.270	1.04	4	PASS

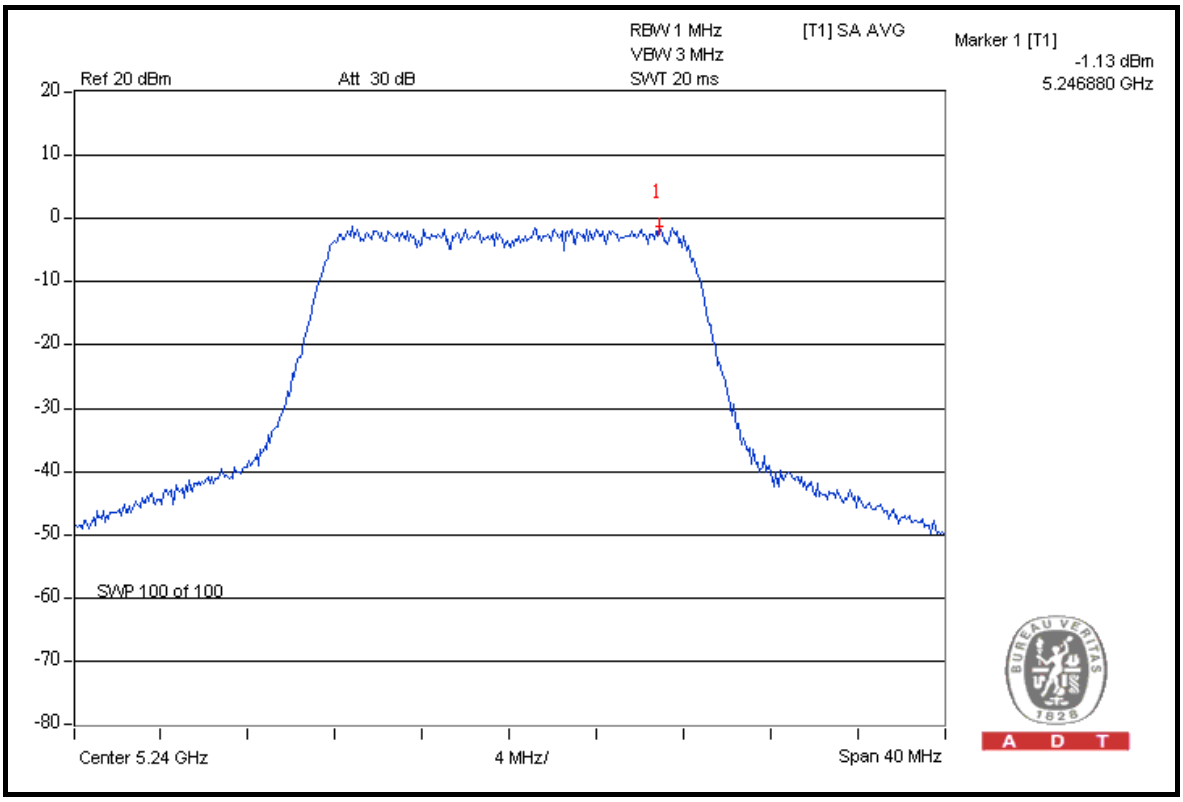
FOR CHAIN 0: CH 36



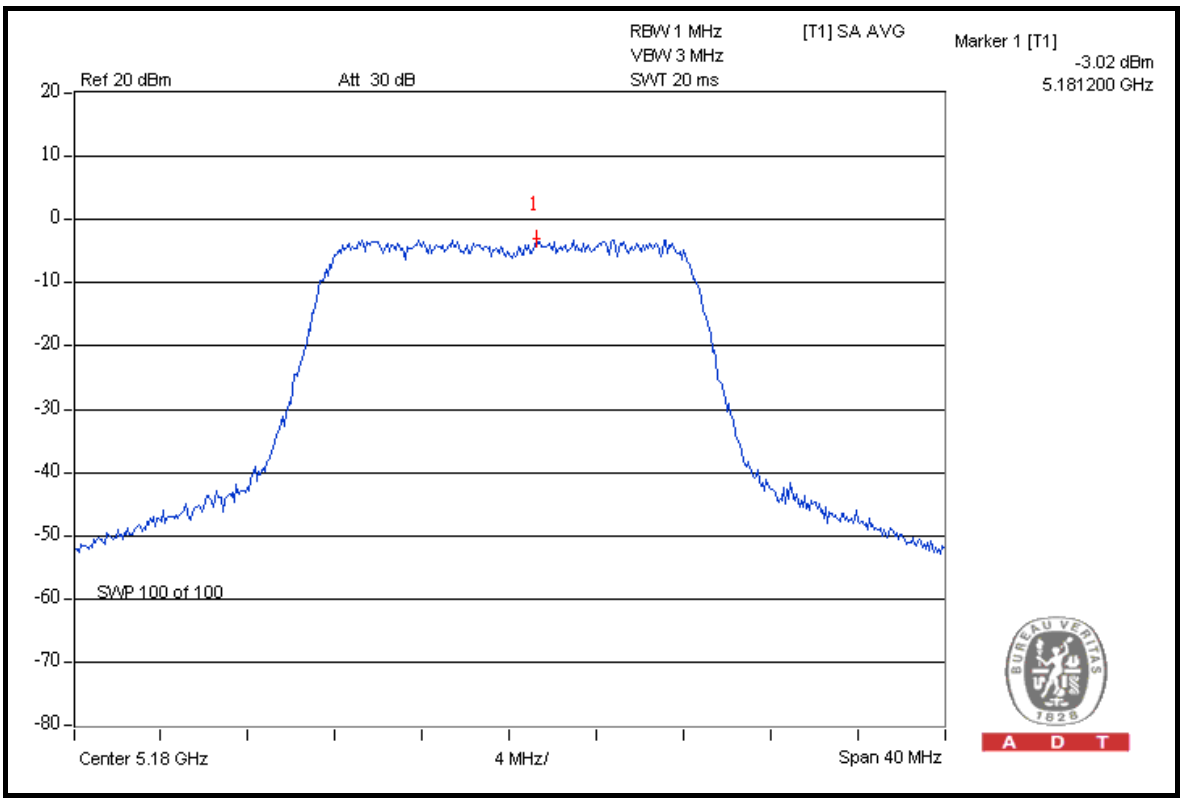
CH 40



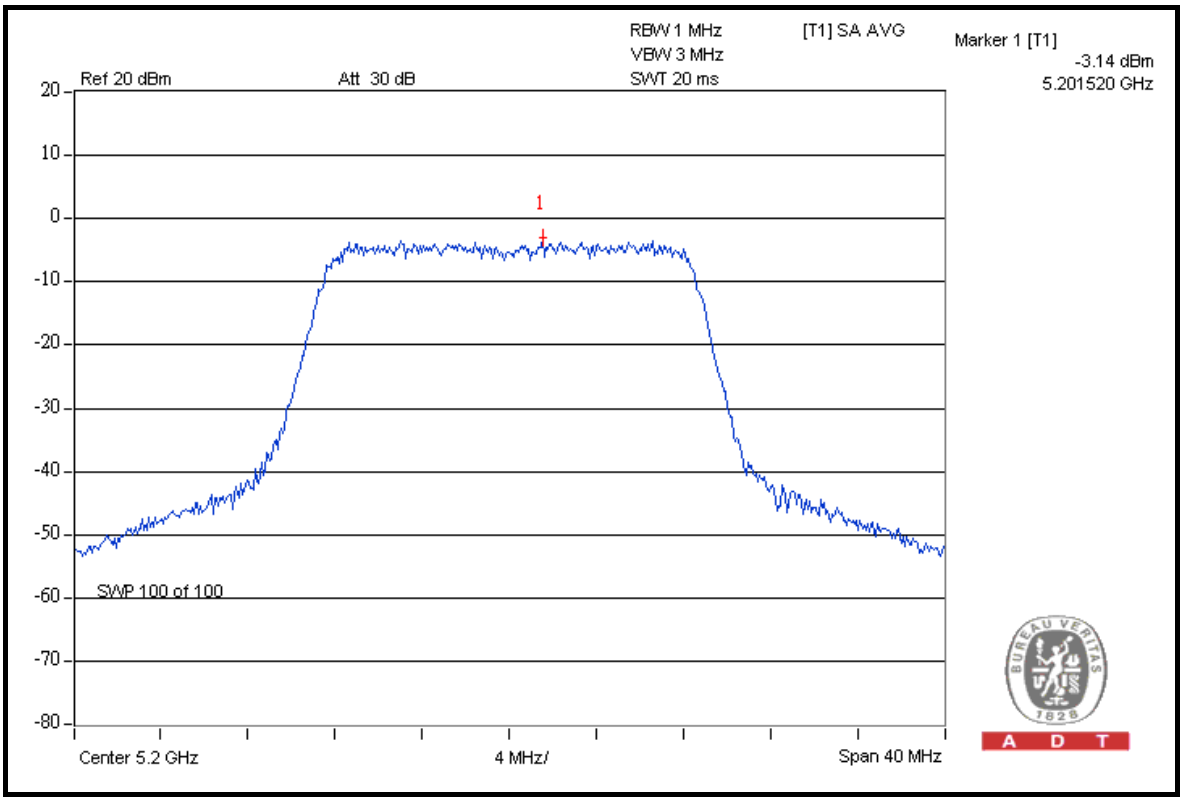
CH 48



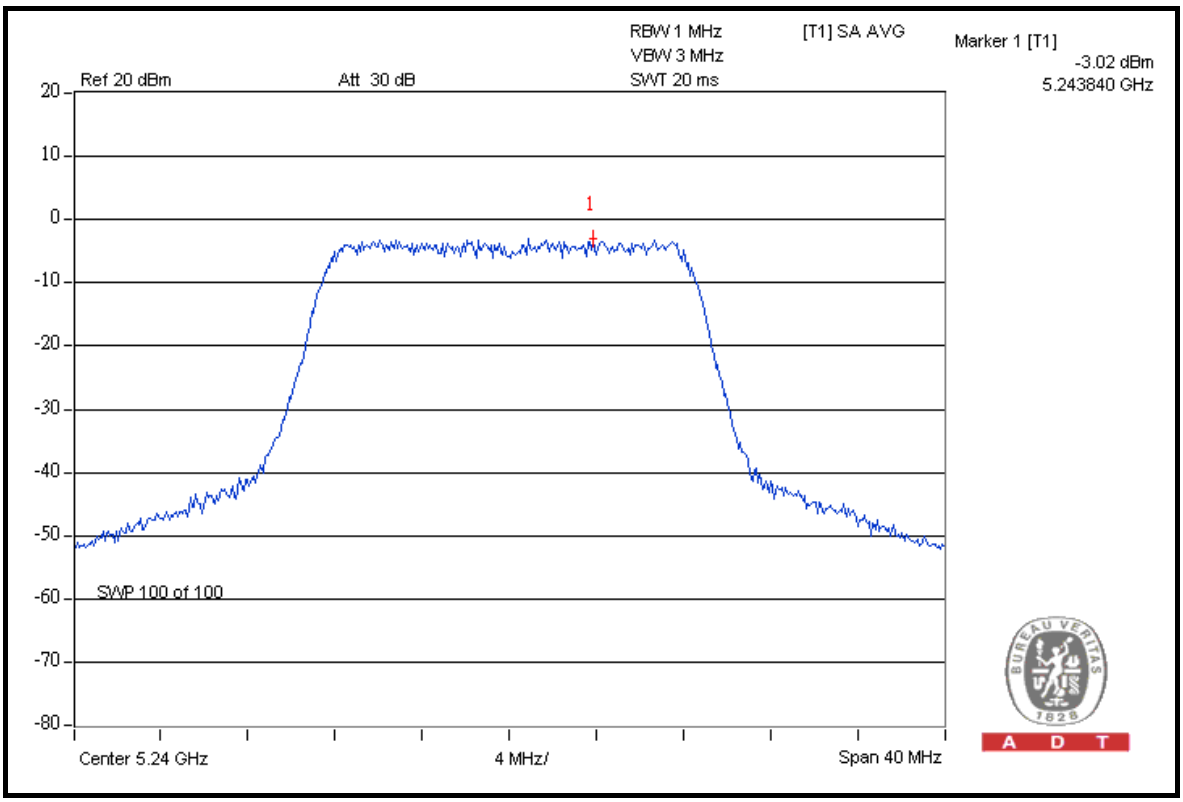
FOR CHAIN 1: CH 36



CH 40


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-3.14 dBm
5.201520 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
SWP 100 of 100
Center 5.2 GHz
4 MHz/
Span 40 MHz

CH 48

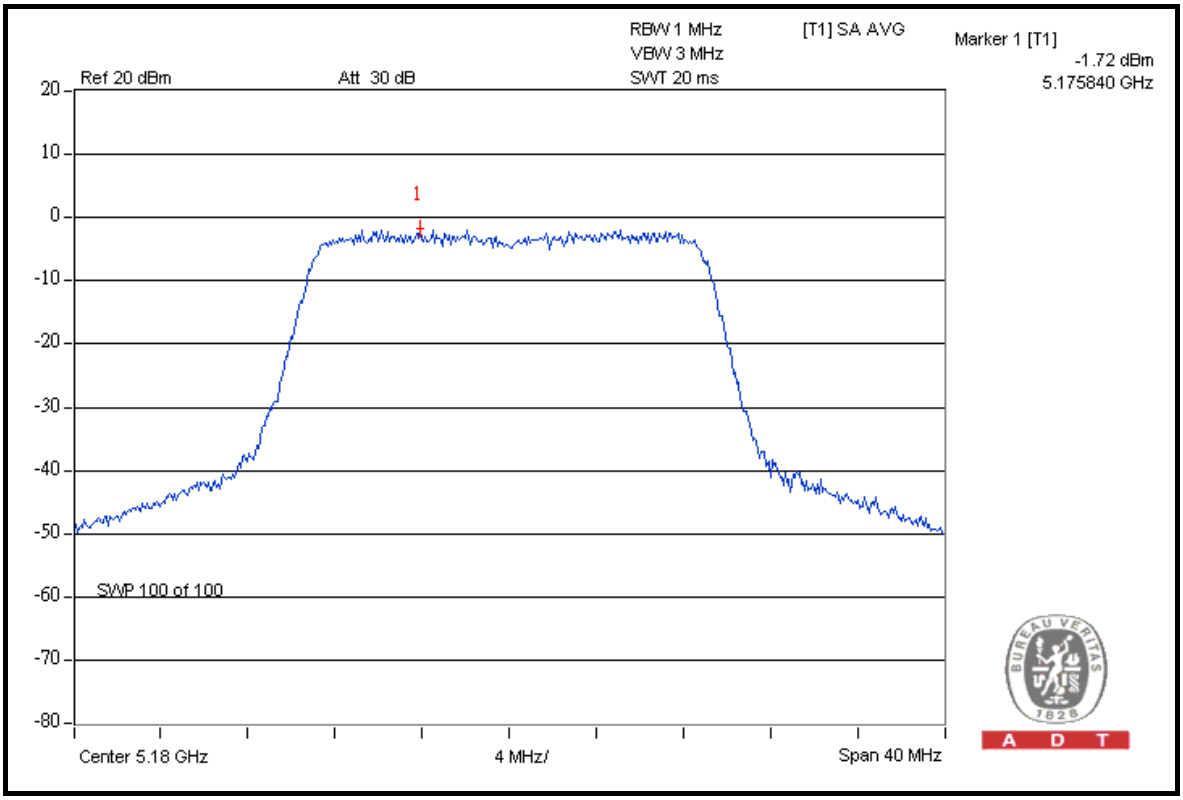

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-3.02 dBm
5.243840 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
SWP 100 of 100
Center 5.24 GHz
4 MHz/
Span 40 MHz

DRAFT 802.11n (20MHz) OFDM MODULATION

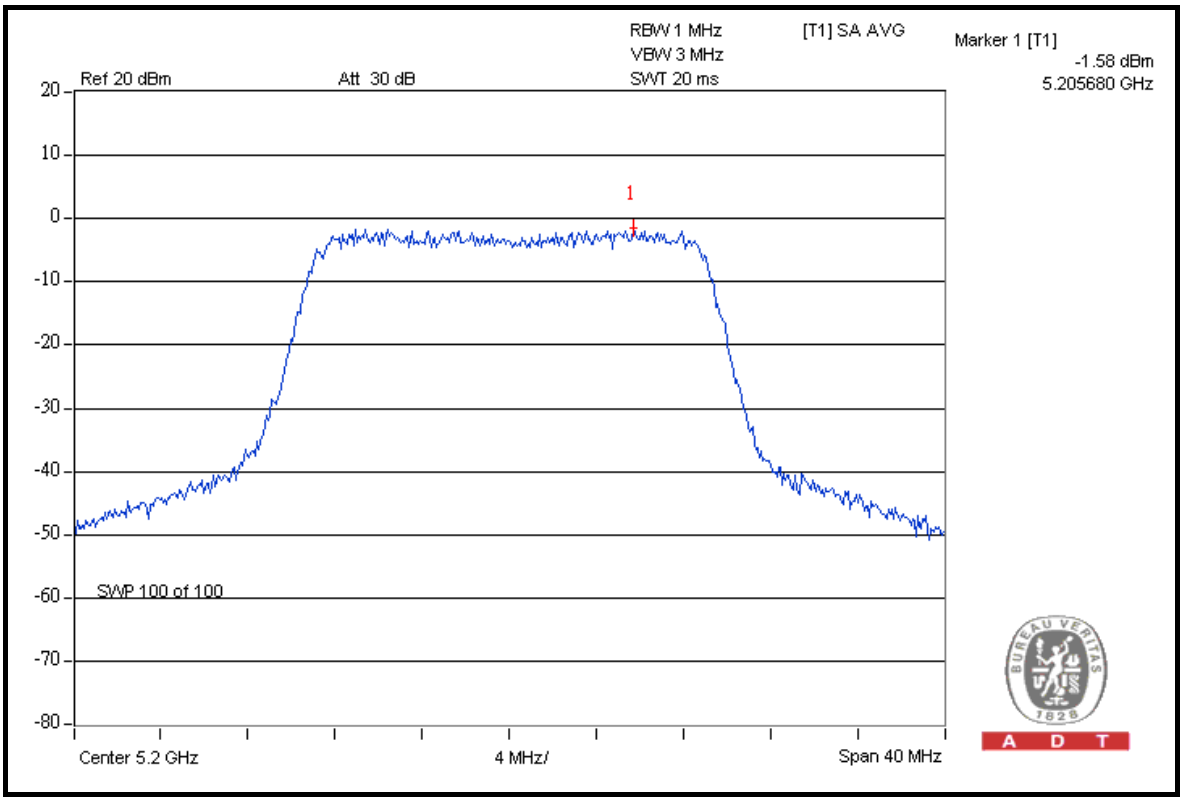
MODULATION TYPE	BPSK	**TRANSFER RATE**	7.2Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	18 deg.C, 63 %RH, 1021hPa
TESTED BY	Match Tsui		

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	-1.72	-2.45	1.242	0.94	4	PASS
40	5200	-1.58	-2.33	1.280	1.07	4	PASS
48	5240	-1.56	-2.51	1.259	1.00	4	PASS

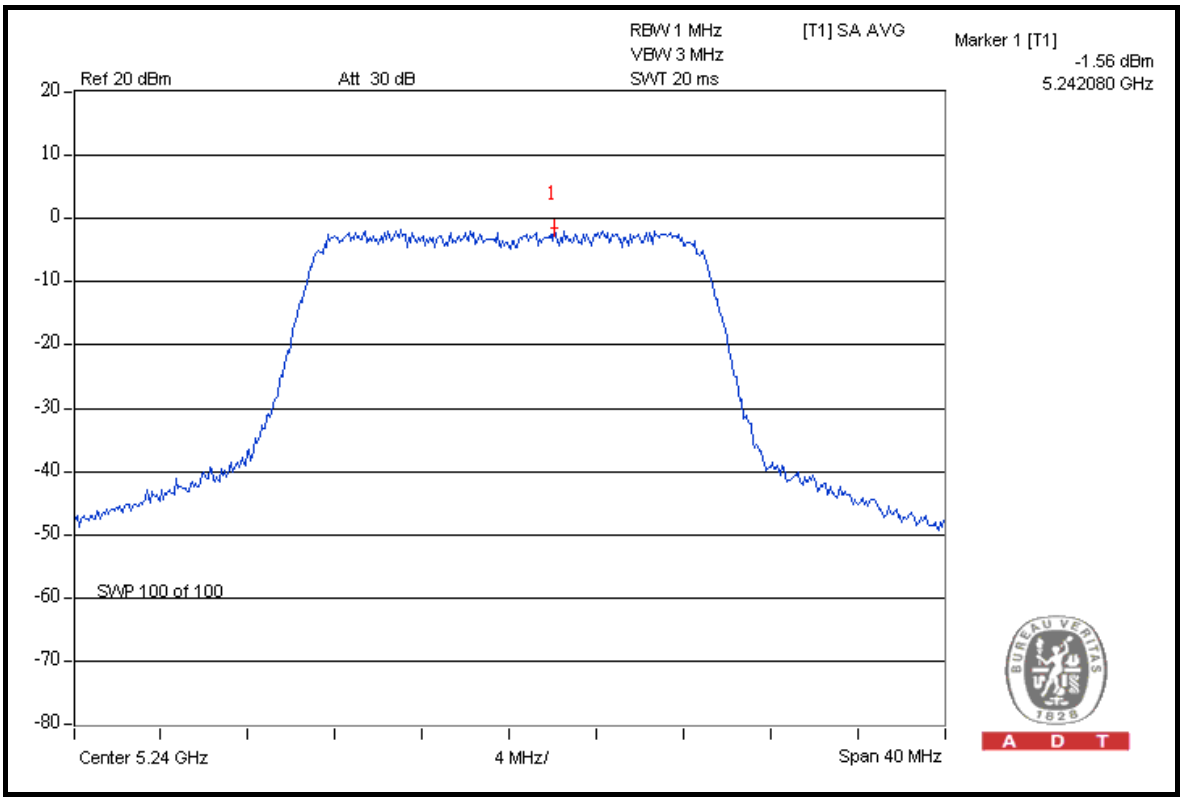
FOR CHAIN 0: CH 36



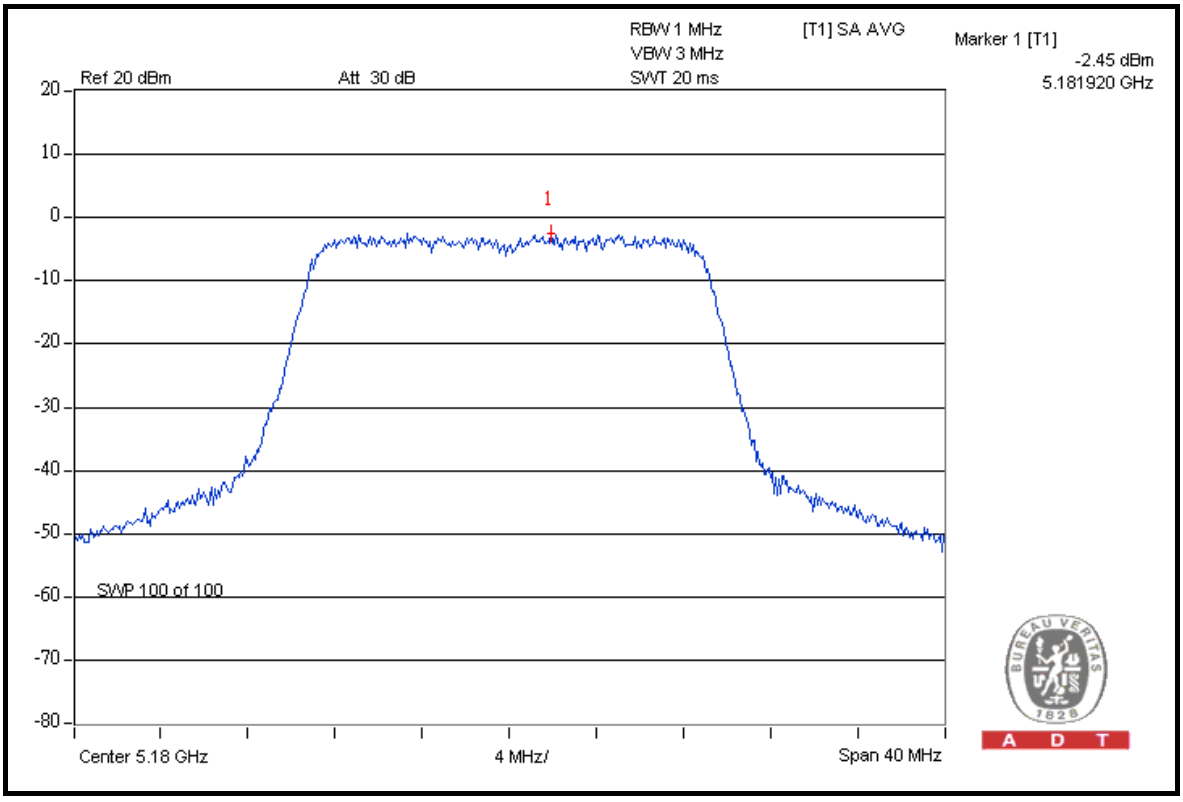
CH 40



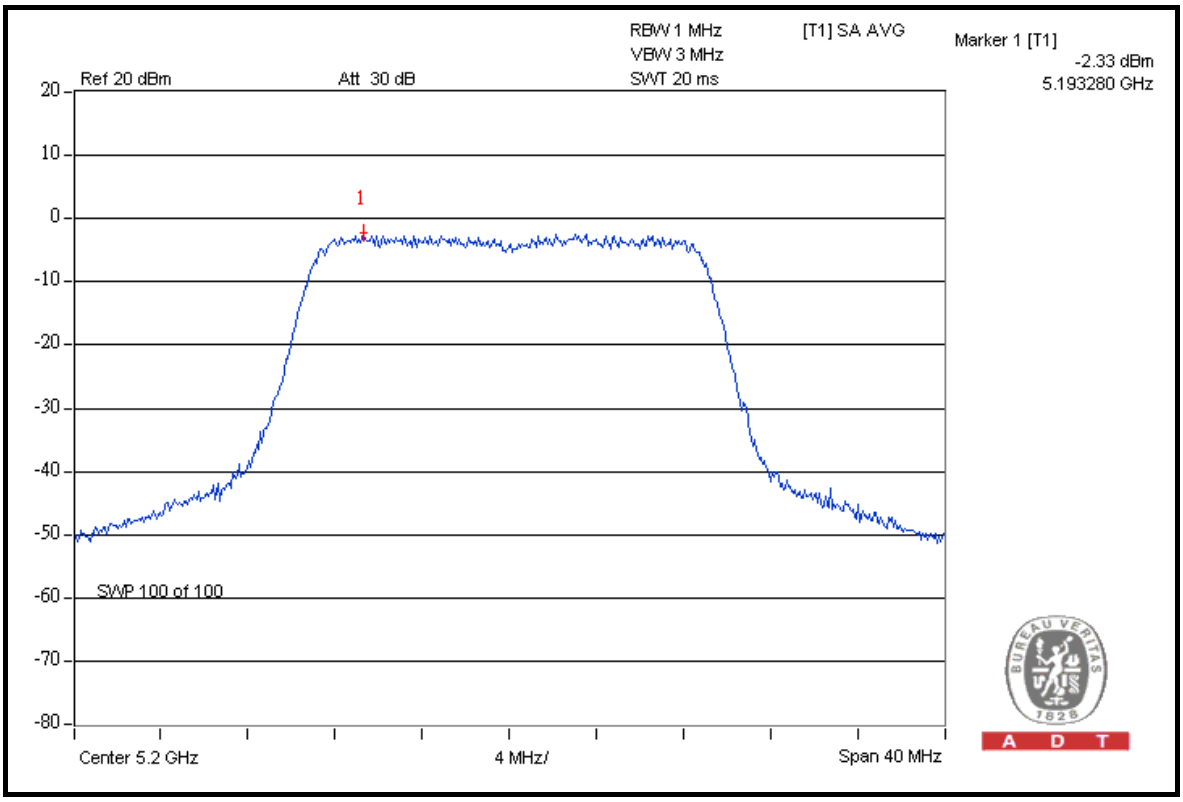
CH 48



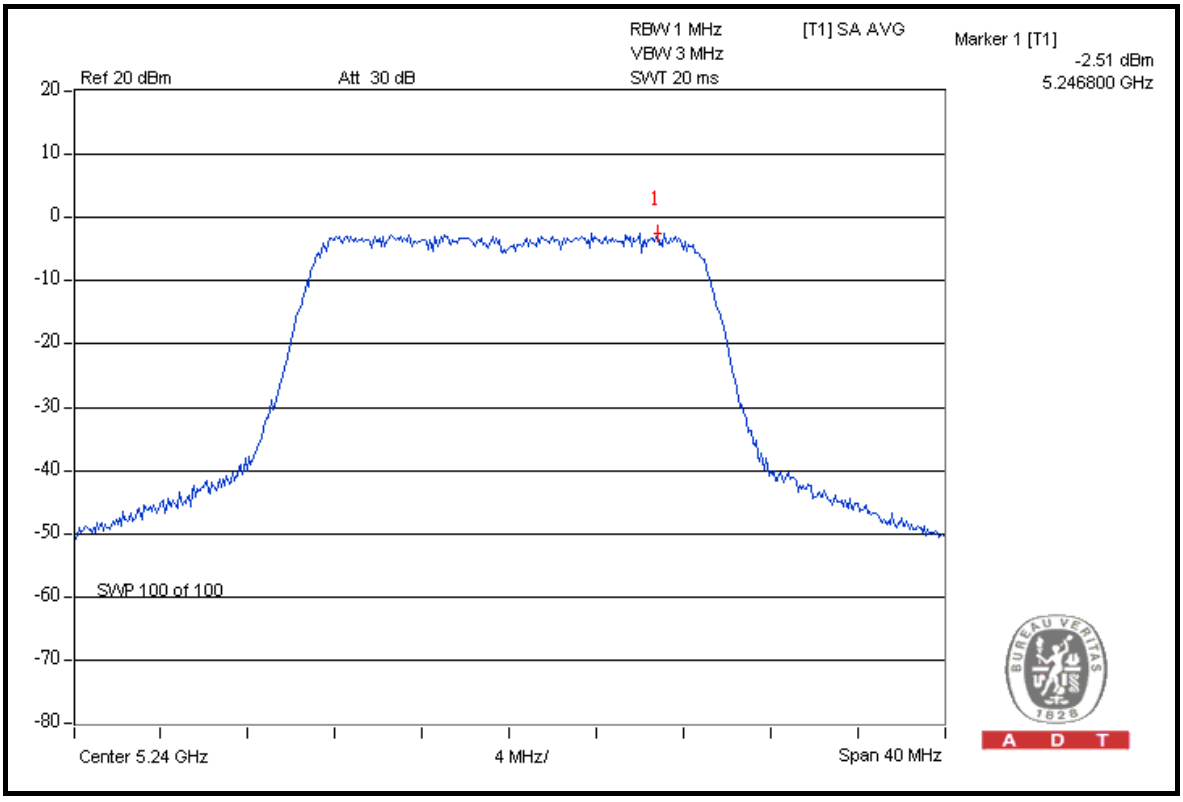
FOR CHAIN 1: CH 36



CH 40


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-2.33 dBm
5.193280 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
SWP 100 of 100
Center 5.2 GHz
4 MHz/
Span 40 MHz

CH 48

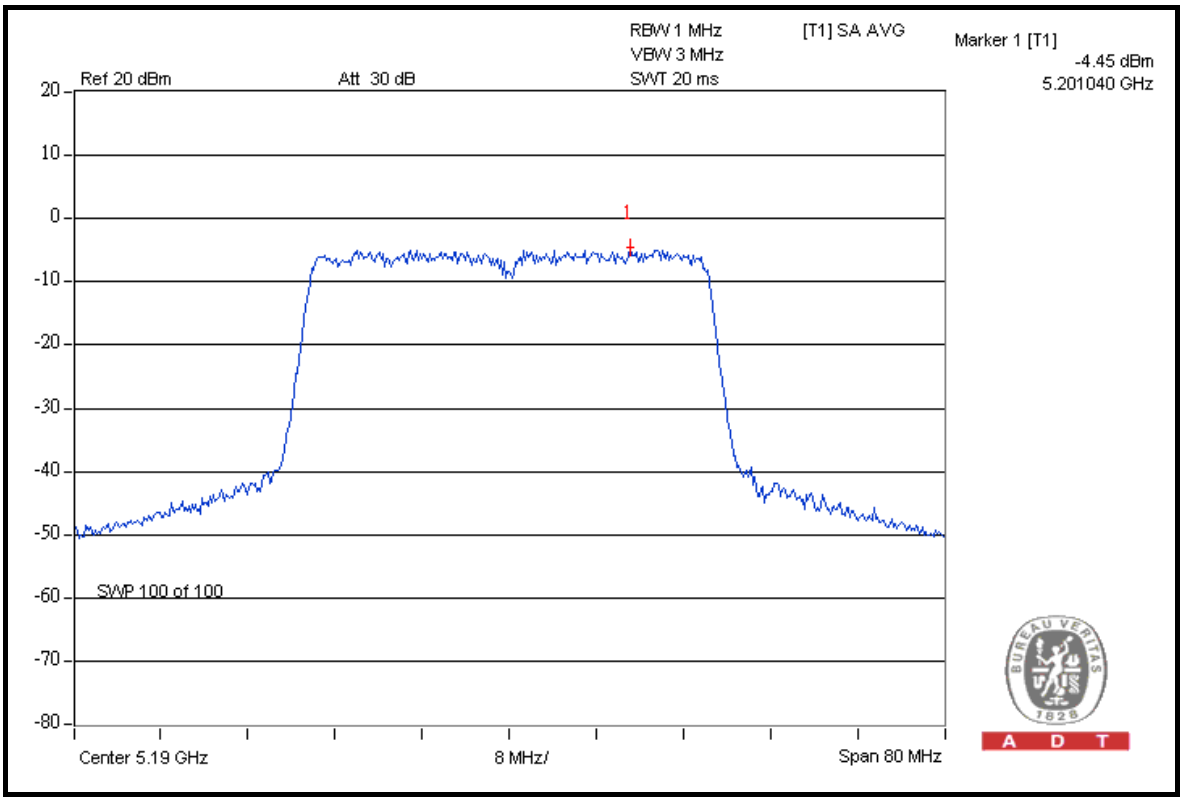

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-2.51 dBm
5.246800 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
SWP 100 of 100
Center 5.24 GHz
4 MHz/
Span 40 MHz

DRAFT 802.11n (40MHz) OFDM MODULATION

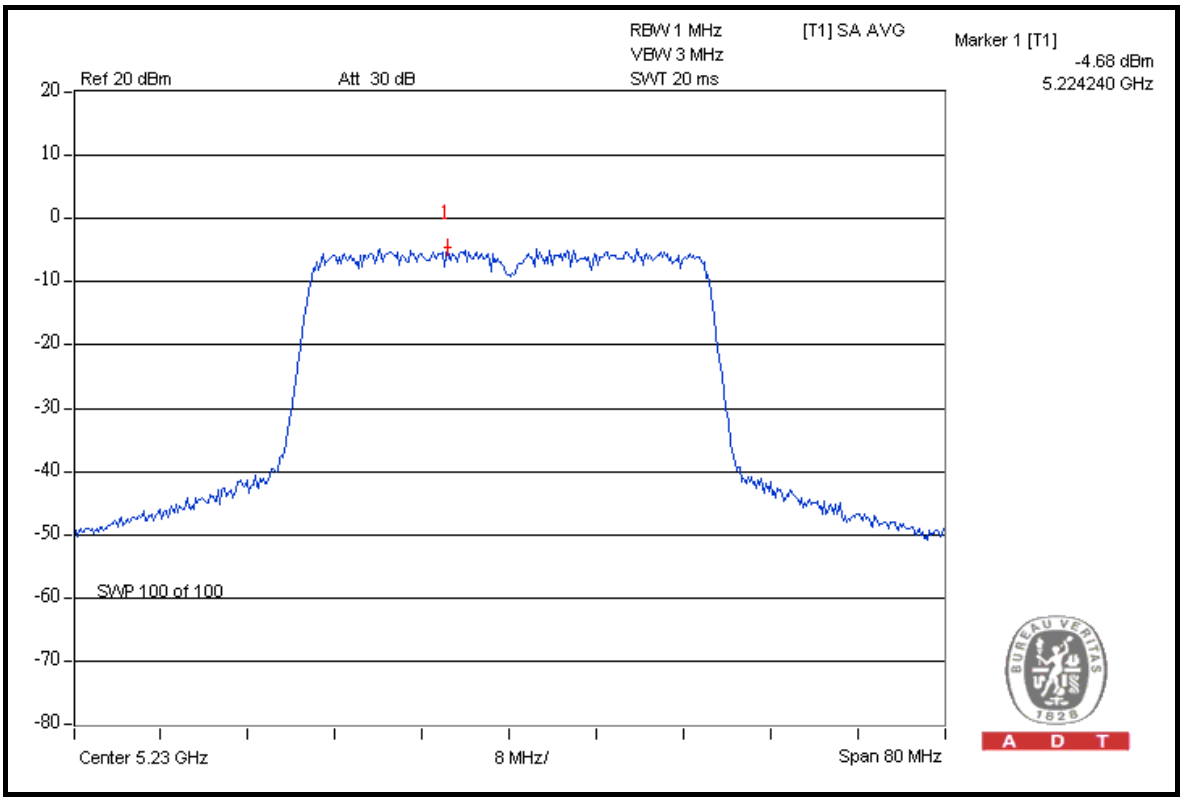
MODULATION TYPE	BPSK	TRANSFER RATE	15.0Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	18 deg.C, 63 %RH, 1021hPa
TESTED BY	Match Tsui		

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	-4.45	-6.33	0.592	-2.28	4	PASS
46	5230	-4.68	-6.10	0.586	-2.32	4	PASS

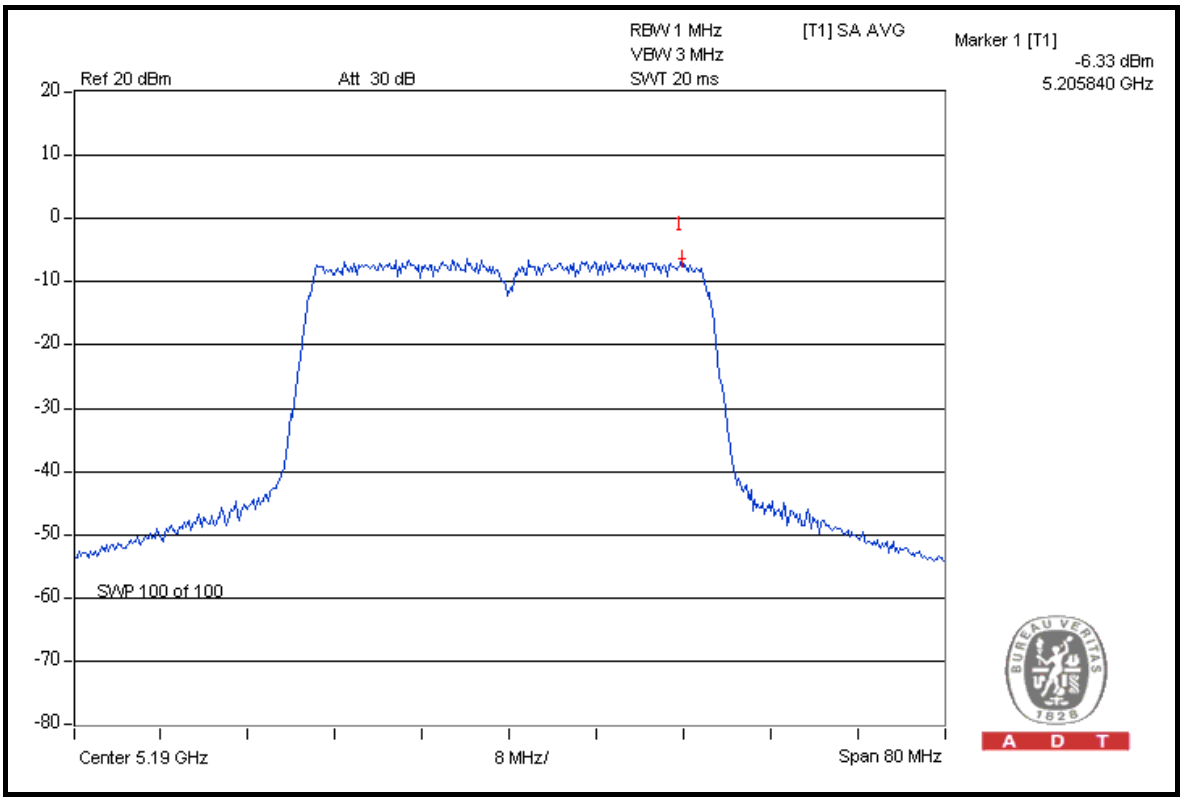
FOR CHAIN 0: CH 38



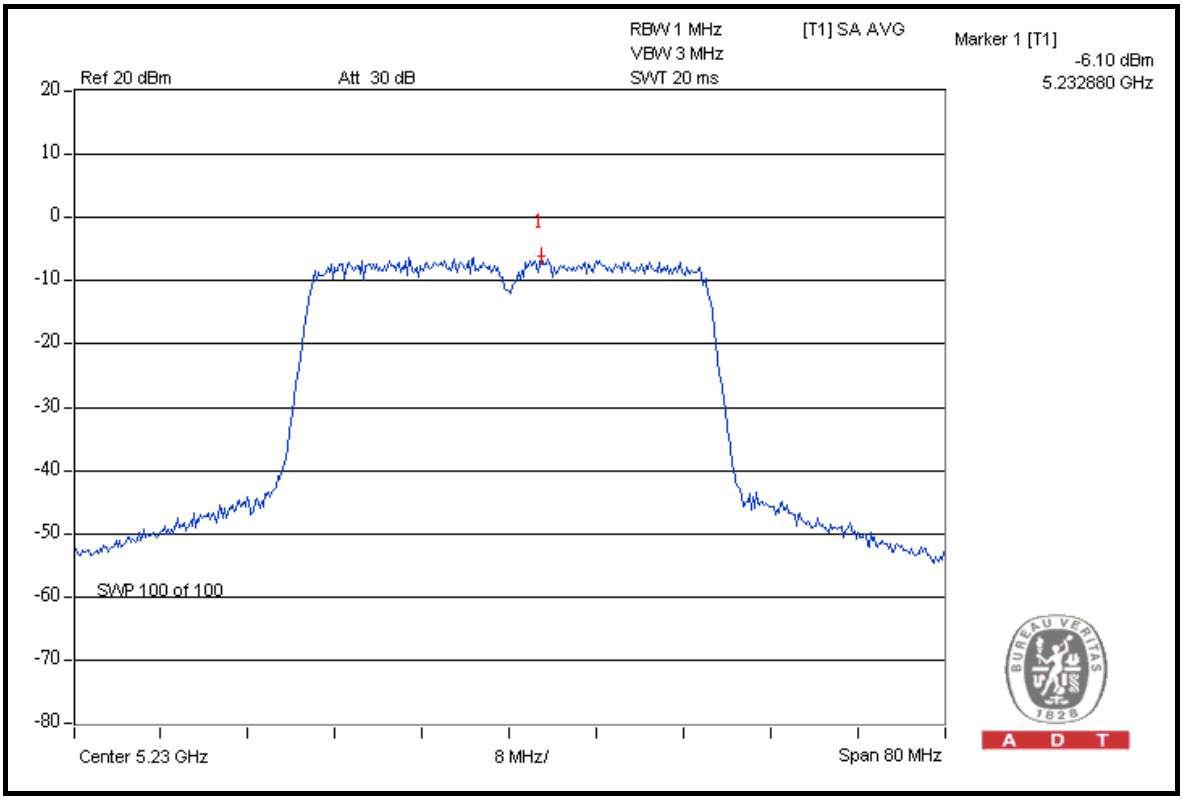
CH 46



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 +/- 0.02% of the operating 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
ANRITSU SPECTRUM ANALYZER	FSP40	100041	Apr. 22, 2008	Apr. 21, 2009
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W981030	Jun. 28, 2008	Jun. 27, 2009

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

4.6.3 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.

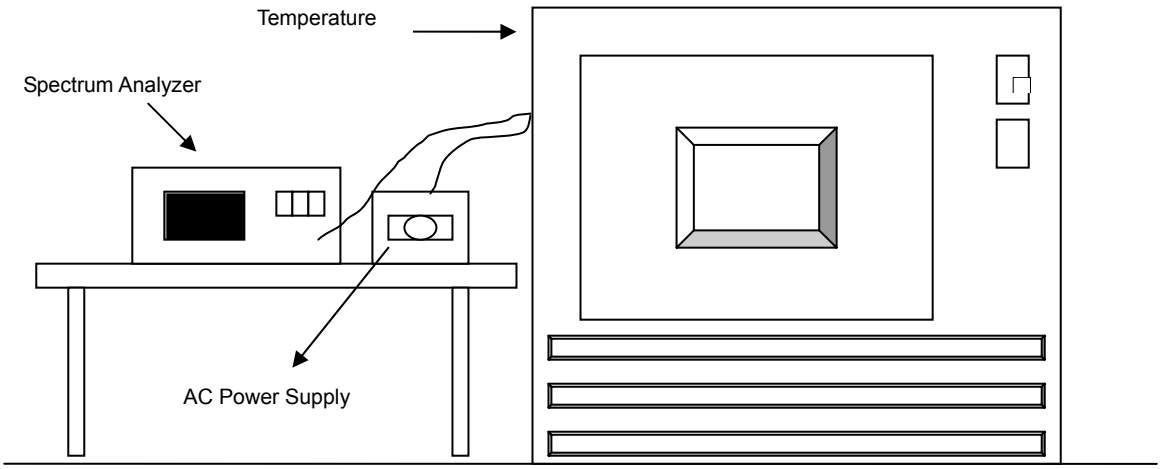
e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.

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

OPERATING FREQUENCY: 5200MHz						LIMIT: ± 0.01%			
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5199.779115	-0.0042478	5199.687064	-0.0060180	5199.587387	-0.0079349	5199.499366	-0.0096276
	110.0	5199.778946	-0.0042510	5199.687158	-0.0060162	5199.587237	-0.0079377	5199.499342	-0.0096280
	93.5	5199.779078	-0.0042485	5199.687321	-0.0060131	5199.587144	-0.0079395	5199.499351	-0.0096279
40	126.5	5199.778934	-0.0042513	5199.686998	-0.0060193	5199.587078	-0.0079408	5199.499297	-0.0096289
	110.0	5199.778895	-0.0042520	5199.687281	-0.0060138	5199.587062	-0.0079411	5199.499557	-0.0096239
	93.5	5199.778927	-0.0042514	5199.687499	-0.0060096	5199.586960	-0.0079431	5199.499047	-0.0096337
30	126.5	5199.778960	-0.0042508	5199.687283	-0.0060138	5199.587280	-0.0079369	5199.499175	-0.0096313
	110.0	5199.779009	-0.0042498	5199.687093	-0.0060174	5199.587040	-0.0079415	5199.499278	-0.0096293
	93.5	5199.778779	-0.0042542	5199.687371	-0.0060121	5199.587473	-0.0079332	5199.499368	-0.0096275
20	126.5	5199.779153	-0.0042471	5199.687372	-0.0060121	5199.587186	-0.0079387	5199.499529	-0.0096244
	110.0	5199.778932	-0.0042513	5199.687073	-0.0060178	5199.587254	-0.0079374	5199.499198	-0.0096308
	93.5	5199.779211	-0.0042459	5199.687190	-0.0060156	5199.587283	-0.0079369	5199.499043	-0.0096338
10	126.5	5199.778842	-0.0042530	5199.687190	-0.0060156	5199.587006	-0.0079422	5199.499137	-0.0096320
	110.0	5199.779012	-0.0042498	5199.687213	-0.0060151	5199.586979	-0.0079427	5199.499290	-0.0096290
	93.5	5199.778788	-0.0042541	5199.687372	-0.0060121	5199.587353	-0.0079355	5199.499549	-0.0096241
0	126.5	5199.779093	-0.0042482	5199.686996	-0.0060193	5199.587000	-0.0079423	5199.499138	-0.0096320
	110.0	5199.778793	-0.0042540	5199.686884	-0.0060215	5199.587247	-0.0079376	5199.499500	-0.0096250
	93.5	5199.778919	-0.0042516	5199.687328	-0.0060129	5199.587087	-0.0079406	5199.499512	-0.0096248
-10	126.5	5199.778889	-0.0042521	5199.687005	-0.0060191	5199.587197	-0.0079385	5199.499252	-0.0096298
	110.0	5199.778906	-0.0042518	5199.687257	-0.0060143	5199.587205	-0.0079384	5199.499169	-0.0096314
	93.5	5199.778706	-0.0042557	5199.687247	-0.0060145	5199.587090	-0.0079406	5199.499307	-0.0096287
-20	126.5	5199.779110	-0.0042479	5199.686927	-0.0060206	5199.586883	-0.0079446	5199.499385	-0.0096272
	110.0	5199.778984	-0.0042503	5199.686951	-0.0060202	5199.586873	-0.0079447	5199.499291	-0.0096290
	93.5	5199.779190	-0.0042463	5199.687039	-0.0060185	5199.587440	-0.0079338	5199.499446	-0.0096260
-30	126.5	5199.779041	-0.0042492	5199.687323	-0.0060130	5199.586941	-0.0079434	5199.499450	-0.0096260
	110.0	5199.778687	-0.0042560	5199.687137	-0.0060166	5199.586921	-0.0079438	5199.499321	-0.0096284
	93.5	5199.779233	-0.0042455	5199.687240	-0.0060146	5199.587186	-0.0079387	5199.499321	-0.0096284

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	ESIB7	100212	May 28, 2008	May 27, 2009
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Aug. 08, 2008	Aug. 07, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 25, 2008	Apr. 24, 2009
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 07, 2008	Jan. 06, 2009
Preamplifier Agilent	8449B	3008A01911	Sep. 10, 2008	Sep. 09, 2009
Preamplifier Agilent	8447D	2944A10638	Dec. 26, 2008	Dec. 25, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218190/4 231241/4	May 20, 2008	May 19, 2009
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 09, 2008	Aug. 08, 2009
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.

4.7.2 TEST PROCEDURE

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

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

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

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

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

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

4.7.3 EUT OPERATING CONDITION

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

4.7.4 TEST RESULTS

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

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

802.11a OFDM MODULATION

Channel 36 (5180MHz)

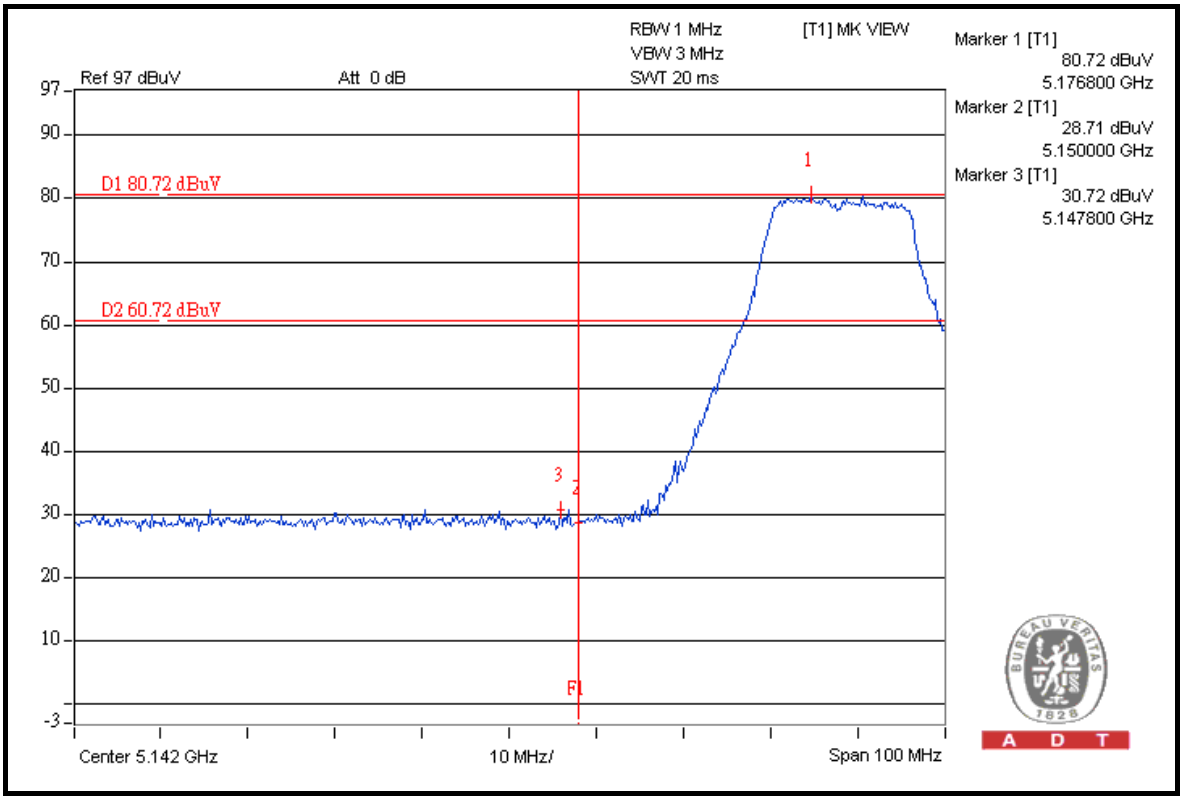
The band edge emission plot on the next page shows 50.00dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 110.90dBuV/m (Peak), so the maximum field strength in restrict band is 110.90 – 50.00 = 60.90dBuV/m which is under 74dBuV/m limit.

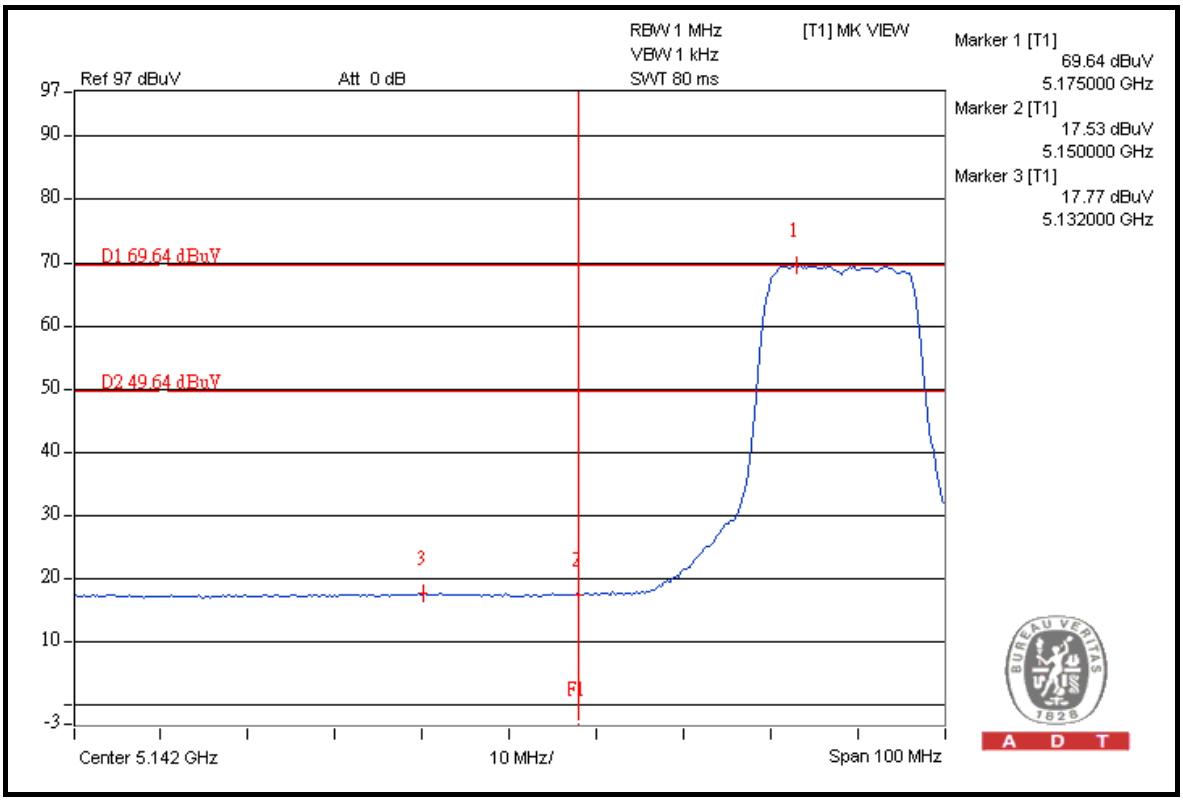
The band edge emission plot on the next page shows 51.87dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 99.35dBuV/m (Average), so the maximum field strength in restrict band is 99.35 – 51.87 = 47.48dBuV/m which is under 54dBuV/m limit.

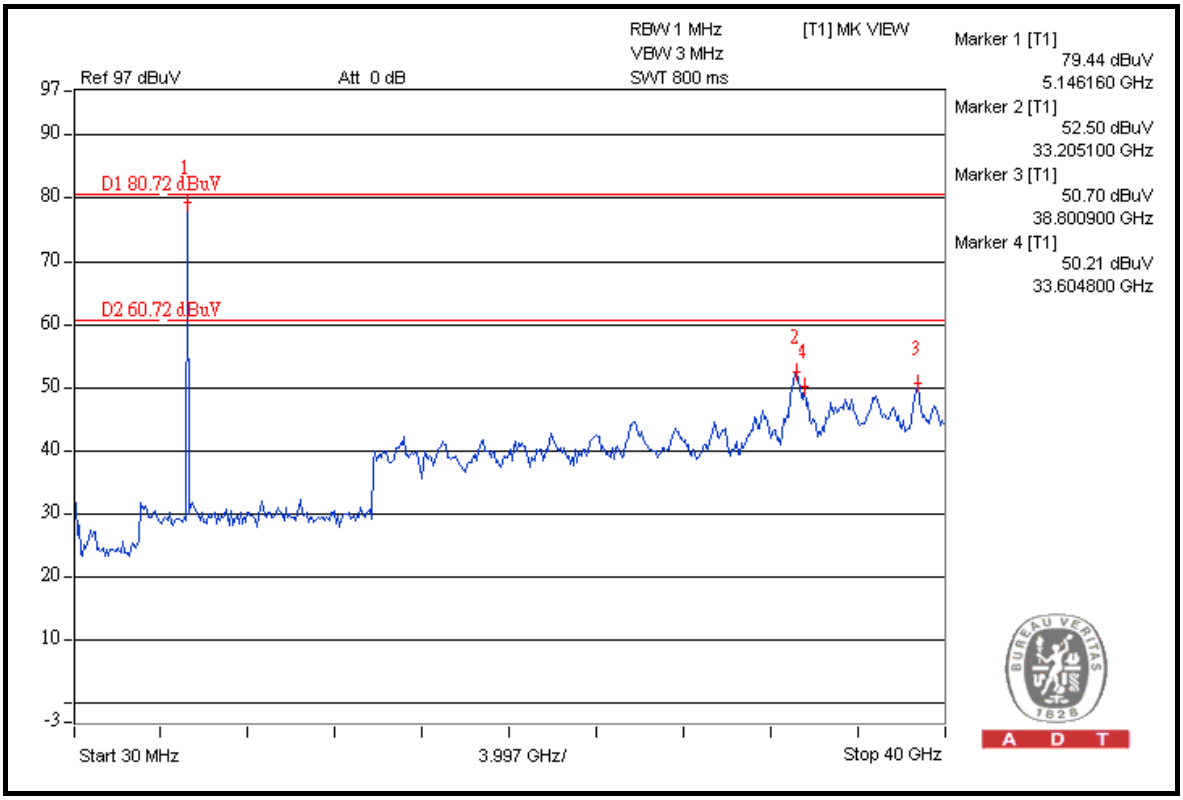
Channel 48 (5240MHz)

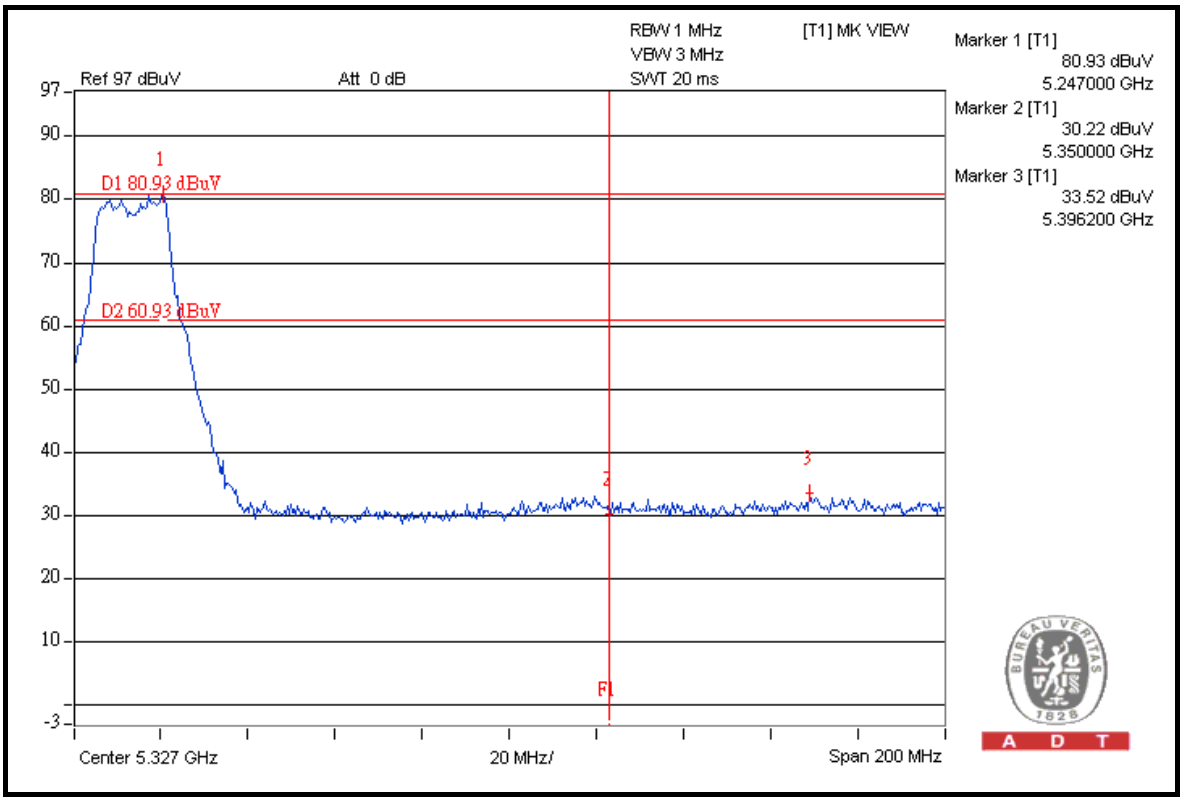
The band edge emission plot on the next second page shows 47.41dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 110.47dBuV/m (Peak), so the maximum field strength in restrict band is 110.47 – 47.41 = 63.06dBuV/m which is under 74dBuV/m limit.

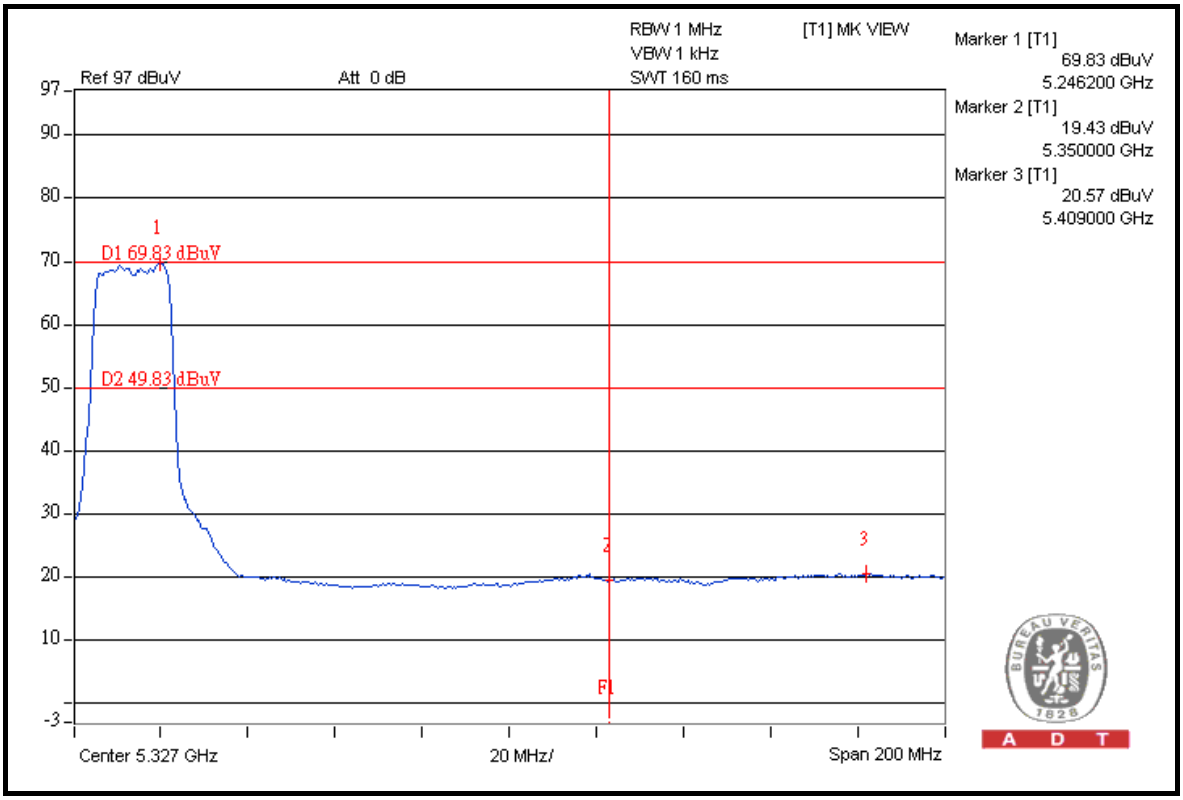
The band edge emission plot on the next third page shows 49.26dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 99.65dBuV/m (Average), so the maximum field strength in restrict band is 99.65 – 49.26 = 50.39dBuV/m which is under 54dBuV/m limit.

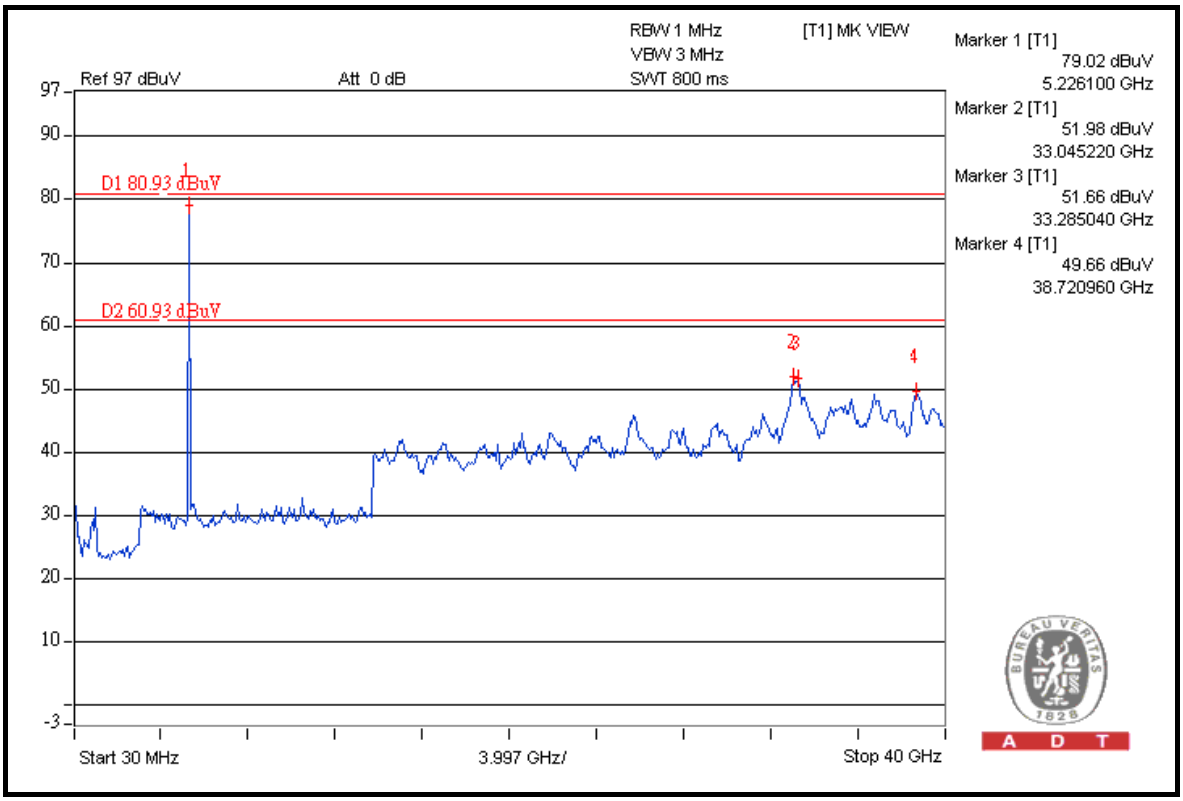

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
80.72 dBuV
5.176800 GHz
Marker 2 [T1]
28.71 dBuV
5.150000 GHz
Marker 3 [T1]
30.72 dBuV
5.147800 GHz
D1 80.72 dBuV
D2 60.72 dBuV
Center 5.142 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 1 kHz
SWT 80 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
69.64 dBuV
5.175000 GHz
Marker 2 [T1]
17.53 dBuV
5.150000 GHz
Marker 3 [T1]
17.77 dBuV
5.132000 GHz
D1 69.64 dBuV
D2 49.64 dBuV
Center 5.142 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 80.72 dBuV
D2 60.72 dBuV
Marker 1 [T1]
79.44 dBuV
5.146160 GHz
Marker 2 [T1]
52.50 dBuV
33.205100 GHz
Marker 3 [T1]
50.70 dBuV
38.800900 GHz
Marker 4 [T1]
50.21 dBuV
33.604800 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 80.93 dBuV
D2 60.93 dBuV
Marker 1 [T1]
80.93 dBuV
5.247000 GHz
Marker 2 [T1]
30.22 dBuV
5.350000 GHz
Marker 3 [T1]
33.52 dBuV
5.396200 GHz
Center 5.327 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 1 kHz
SWT 160 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
69.83 dBuV
5.246200 GHz
Marker 2 [T1]
19.43 dBuV
5.350000 GHz
Marker 3 [T1]
20.57 dBuV
5.409000 GHz
D1 69.83 dBuV
D2 49.83 dBuV
Center 5.327 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
79.02 dBuV
5.226100 GHz
Marker 2 [T1]
51.98 dBuV
33.045220 GHz
Marker 3 [T1]
51.66 dBuV
33.285040 GHz
Marker 4 [T1]
49.66 dBuV
38.720960 GHz
D1 80.93 dBuV
D2 60.93 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz

DRAFT 802.11n (20MHz) OFDM MODULATION

Channel 36 (5180MHz)

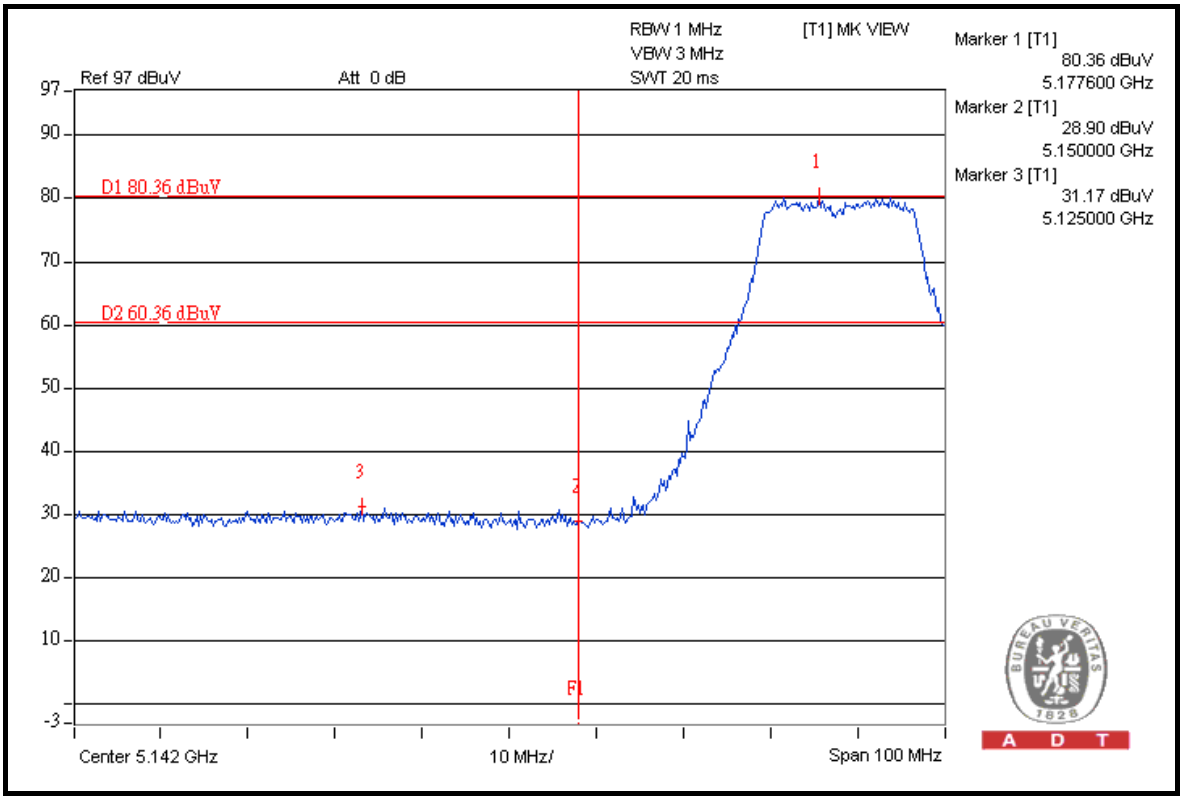
The band edge emission plot on the next page shows 49.19dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 110.33dBuV/m (Peak), so the maximum field strength in restrict band is 110.33 – 49.19 = 61.14dBuV/m which is under 74dBuV/m limit.

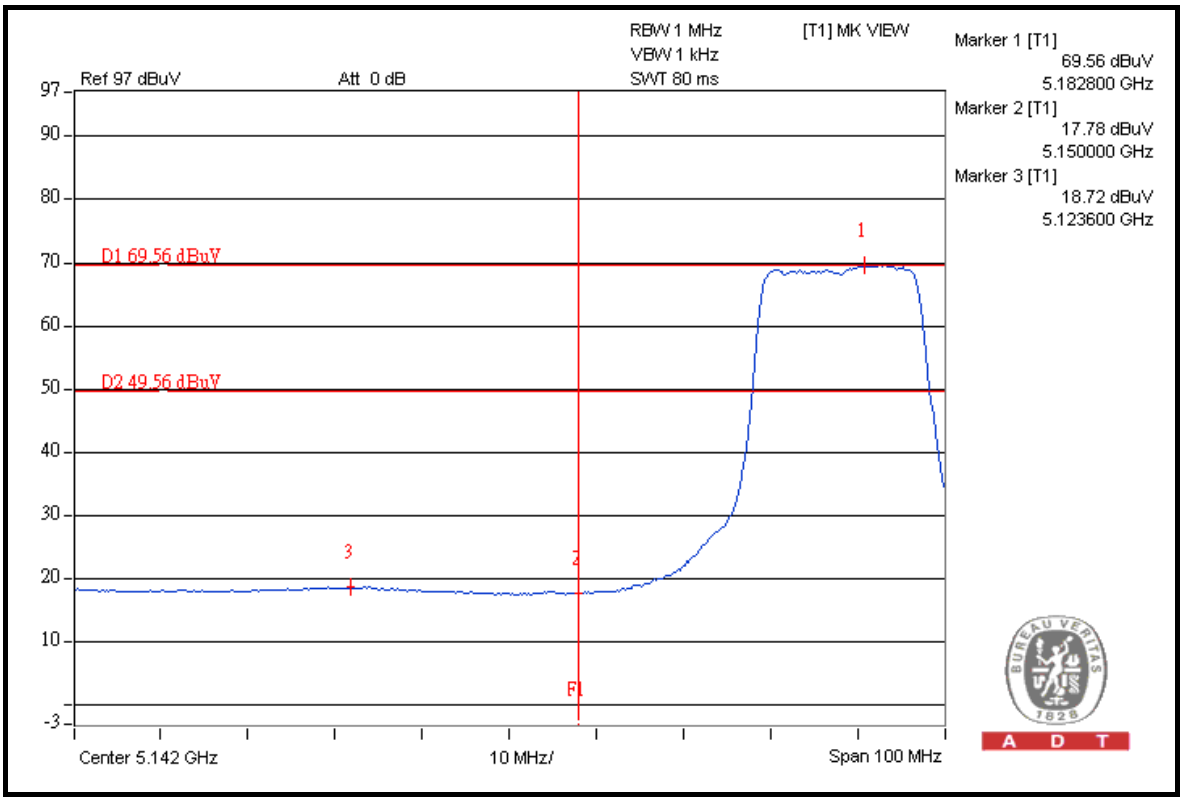
The band edge emission plot on the next page shows 50.84dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 99.28dBuV/m (Average), so the maximum field strength in restrict band is 99.28 – 50.84 = 48.44dBuV/m which is under 54dBuV/m limit.

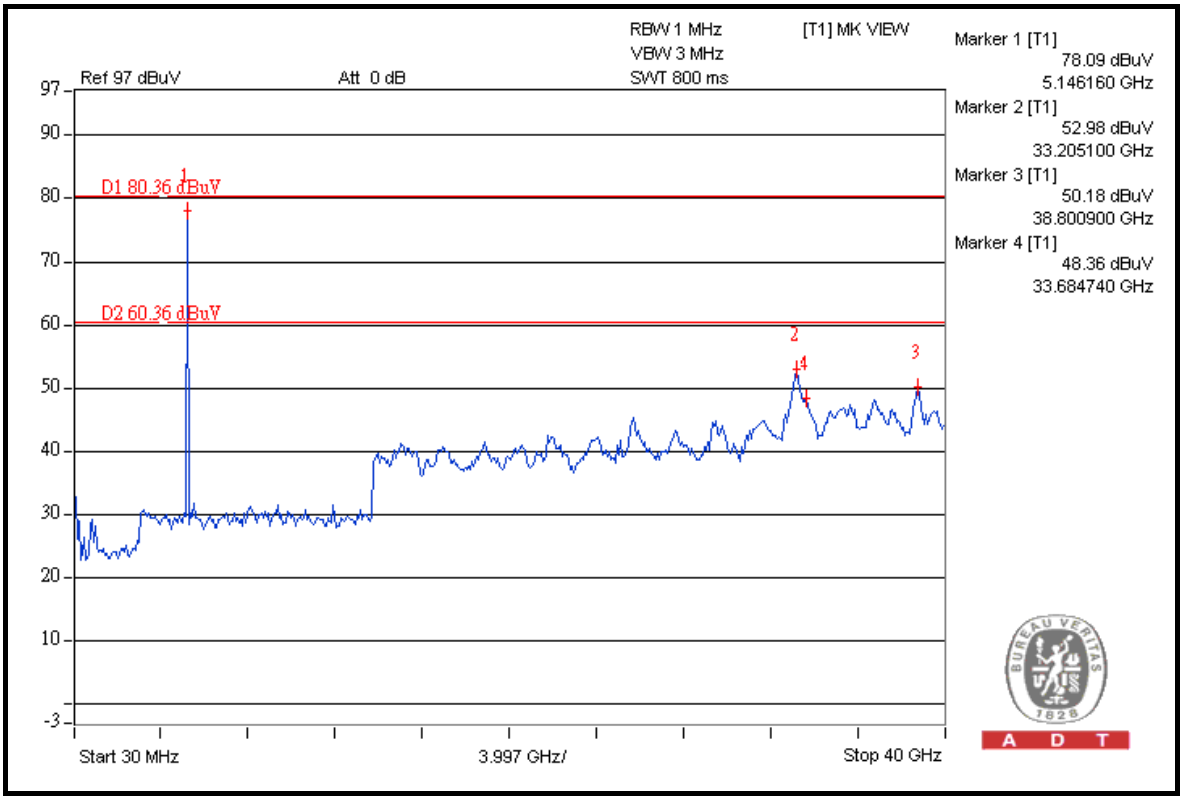
Channel 48 (5240MHz)

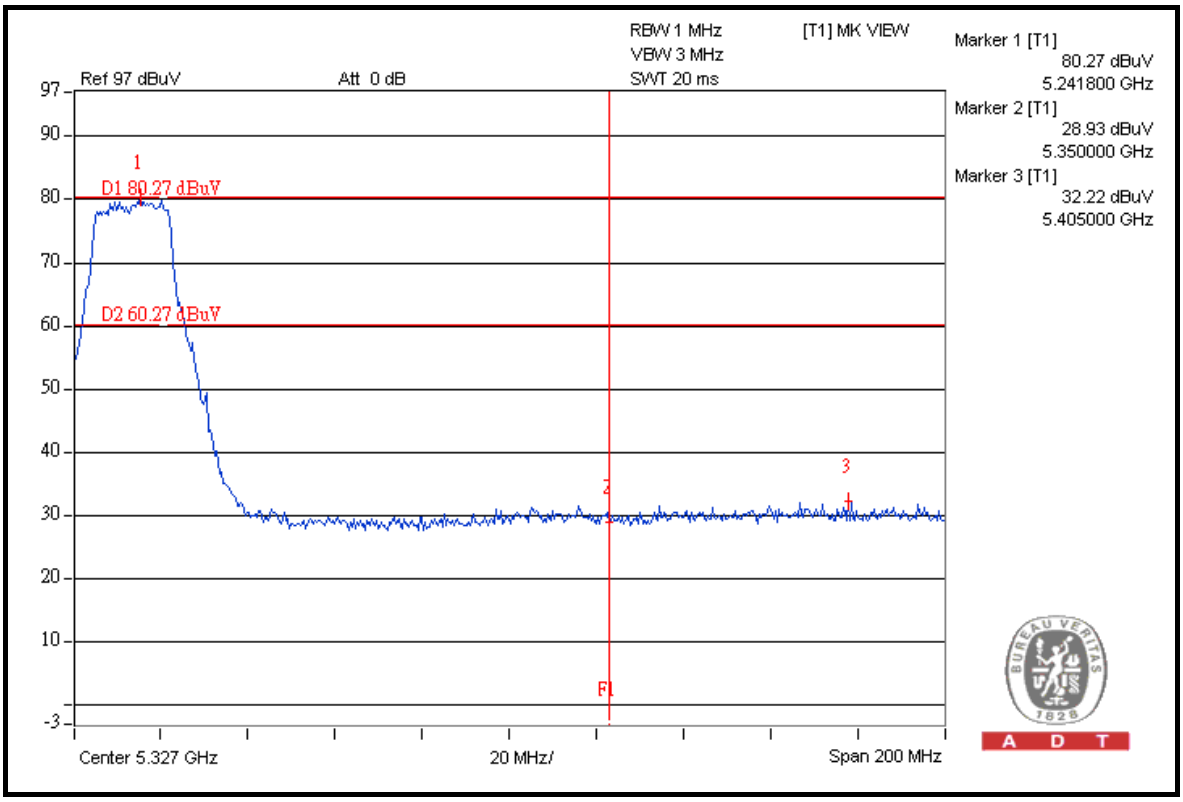
The band edge emission plot on the next second page shows 48.05dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 110.59dBuV/m (Peak), so the maximum field strength in restrict band is 110.59– 48.05 = 62.54dBuV/m which is under 74dBuV/m limit.

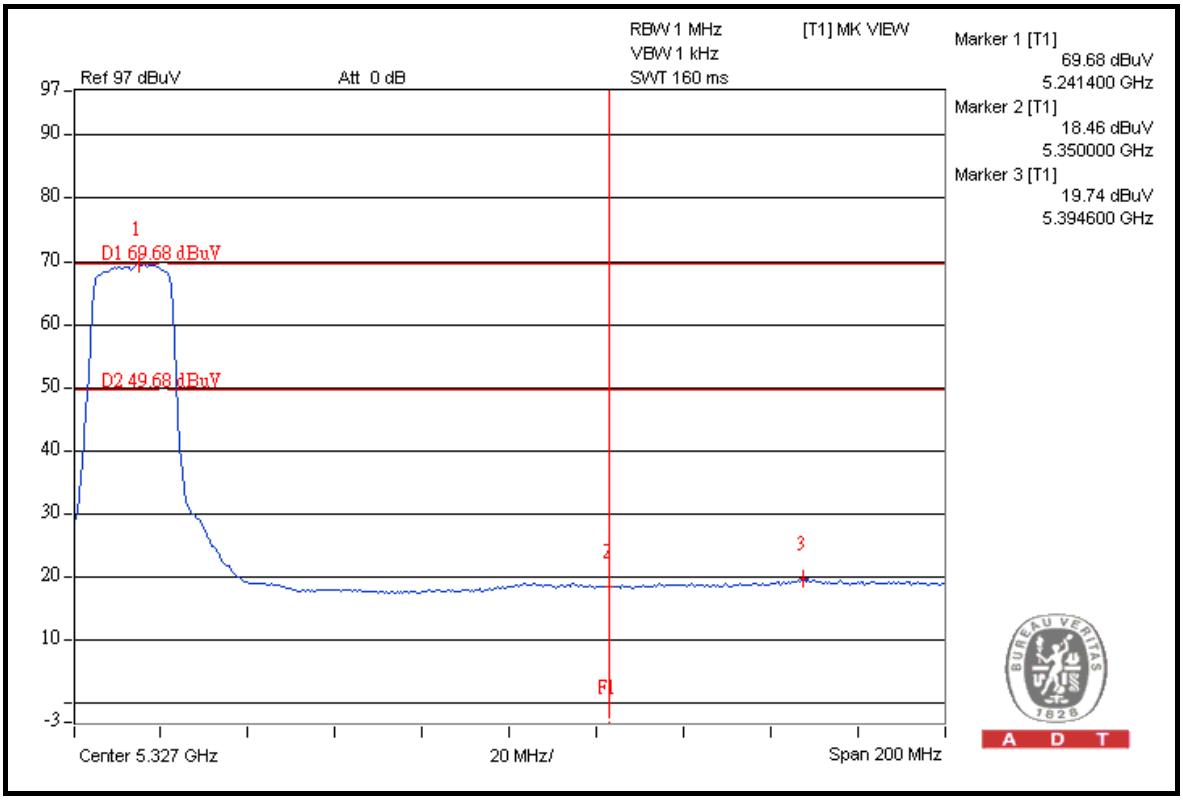
The band edge emission plot on the next third page shows 49.94dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 99.66dBuV/m (Average), so the maximum field strength in restrict band is 99.66 – 49.94 = 49.72dBuV/m which is under 54dBuV/m limit.

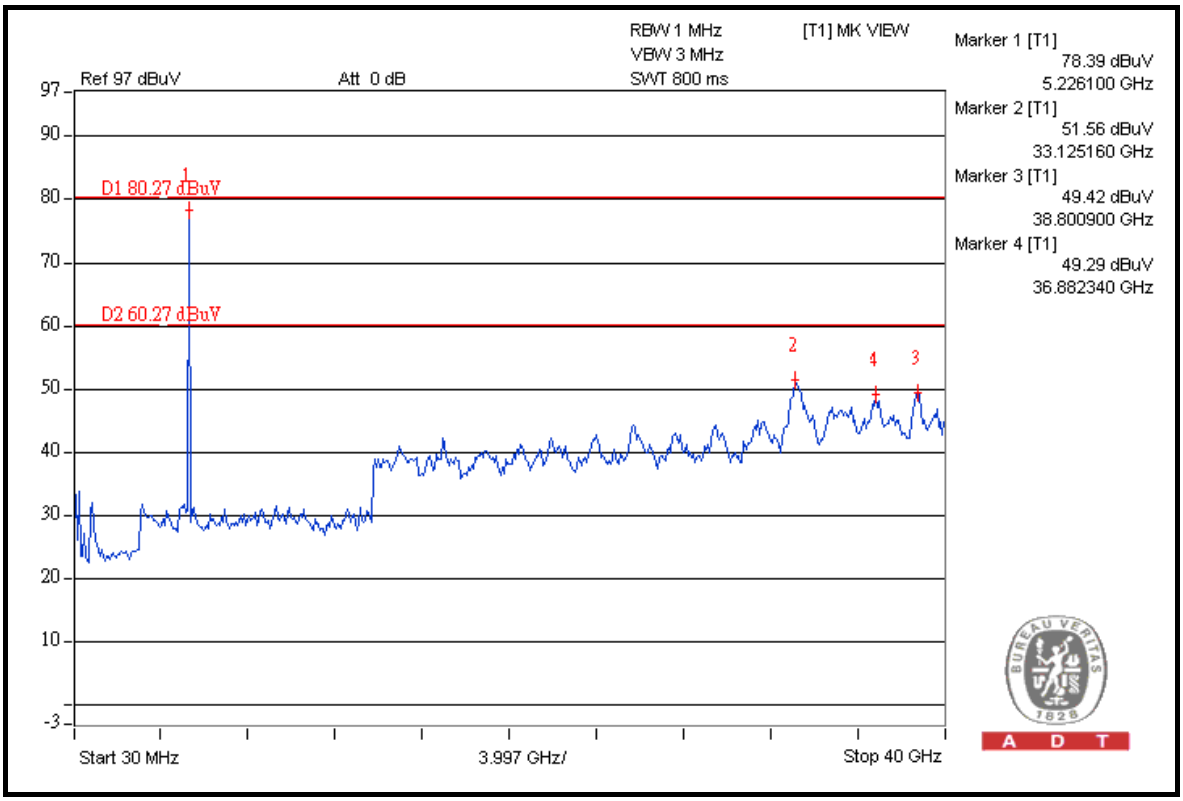

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
80.36 dBuV
5.177600 GHz
Marker 2 [T1]
28.90 dBuV
5.150000 GHz
Marker 3 [T1]
31.17 dBuV
5.125000 GHz
D1 80.36 dBuV
D2 60.36 dBuV
97
90
80
70
60
50
40
30
20
10
-3
Center 5.142 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 1 kHz
SWT 80 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
69.56 dBuV
5.182800 GHz
Marker 2 [T1]
17.78 dBuV
5.150000 GHz
Marker 3 [T1]
18.72 dBuV
5.123600 GHz
D1 69.56 dBuV
D2 49.56 dBuV
97
90
80
70
60
50
40
30
20
10
-3
Center 5.142 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 80.36 dBuV
D2 60.36 dBuV
Marker 1 [T1]
78.09 dBuV
5.146160 GHz
Marker 2 [T1]
52.98 dBuV
33.205100 GHz
Marker 3 [T1]
50.18 dBuV
38.800900 GHz
Marker 4 [T1]
48.36 dBuV
33.684740 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 80.27 dBuV
D2 60.27 dBuV
Marker 1 [T1]
80.27 dBuV
5.241800 GHz
Marker 2 [T1]
28.93 dBuV
5.350000 GHz
Marker 3 [T1]
32.22 dBuV
5.405000 GHz
Center 5.327 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 1 kHz
SWT 160 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
69.68 dBuV
5.241400 GHz
Marker 2 [T1]
18.46 dBuV
5.350000 GHz
Marker 3 [T1]
19.74 dBuV
5.394600 GHz
D1 69.68 dBuV
D2 49.68 dBuV
Center 5.327 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
78.39 dBuV
5.226100 GHz
Marker 2 [T1]
51.56 dBuV
33.125160 GHz
Marker 3 [T1]
49.42 dBuV
38.800900 GHz
Marker 4 [T1]
49.29 dBuV
36.882340 GHz
D1 80.27 dBuV
D2 60.27 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz

DRAFT 802.11n (40MHz) OFDM MODULATION

Channel 38 (5190MHz)

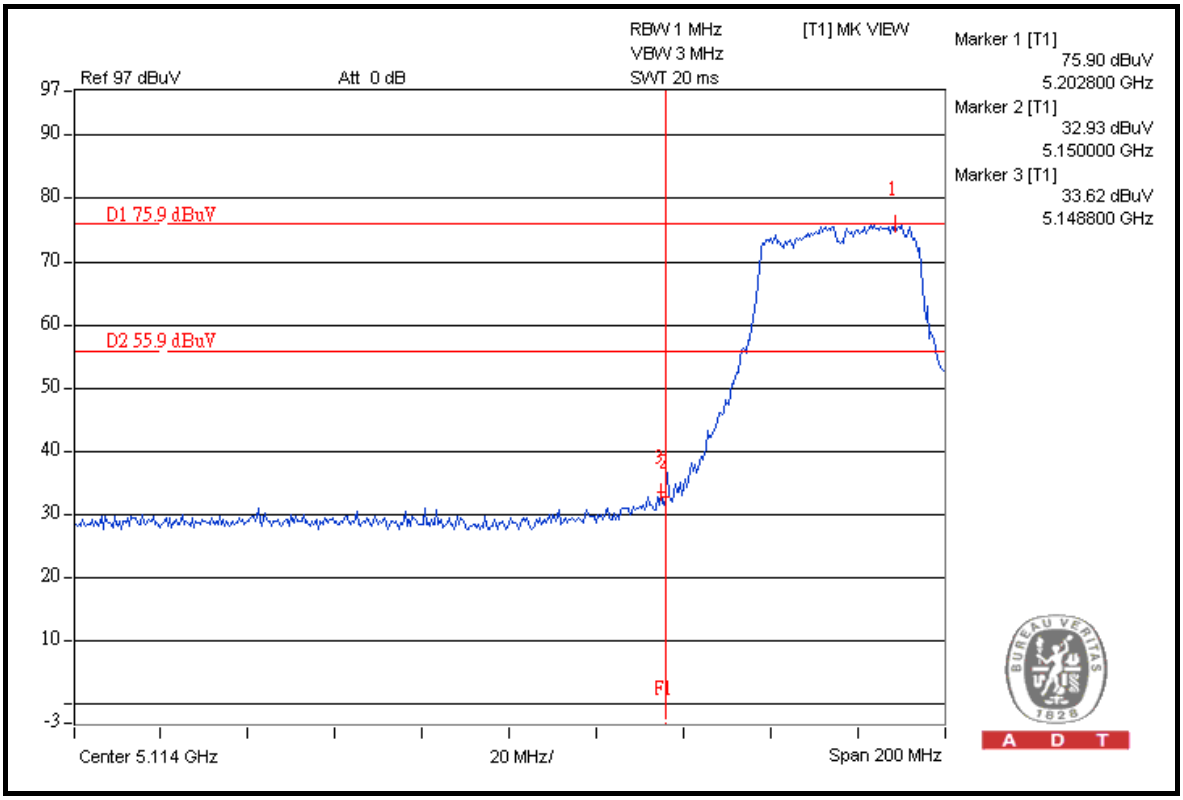
The band edge emission plot on the next page shows 42.28dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 38 is 106.60dBuV/m (Peak), so the maximum field strength in restrict band is 106.60 – 42.28 = 64.32dBuV/m which is under 74dBuV/m limit.

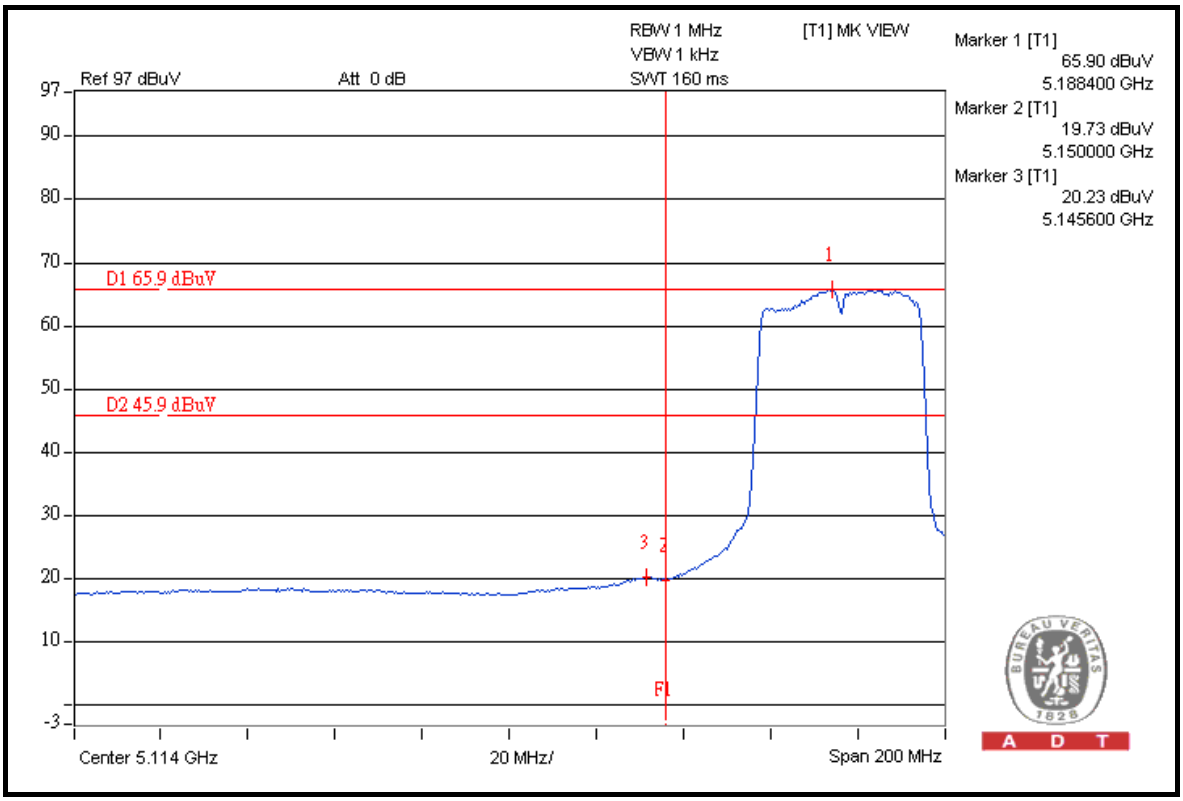
The band edge emission plot on the next page shows 45.67dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 38 is 95.63dBuV/m (Average), so the maximum field strength in restrict band is 95.63 – 45.67 = 49.96dBuV/m which is under 54dBuV/m limit.

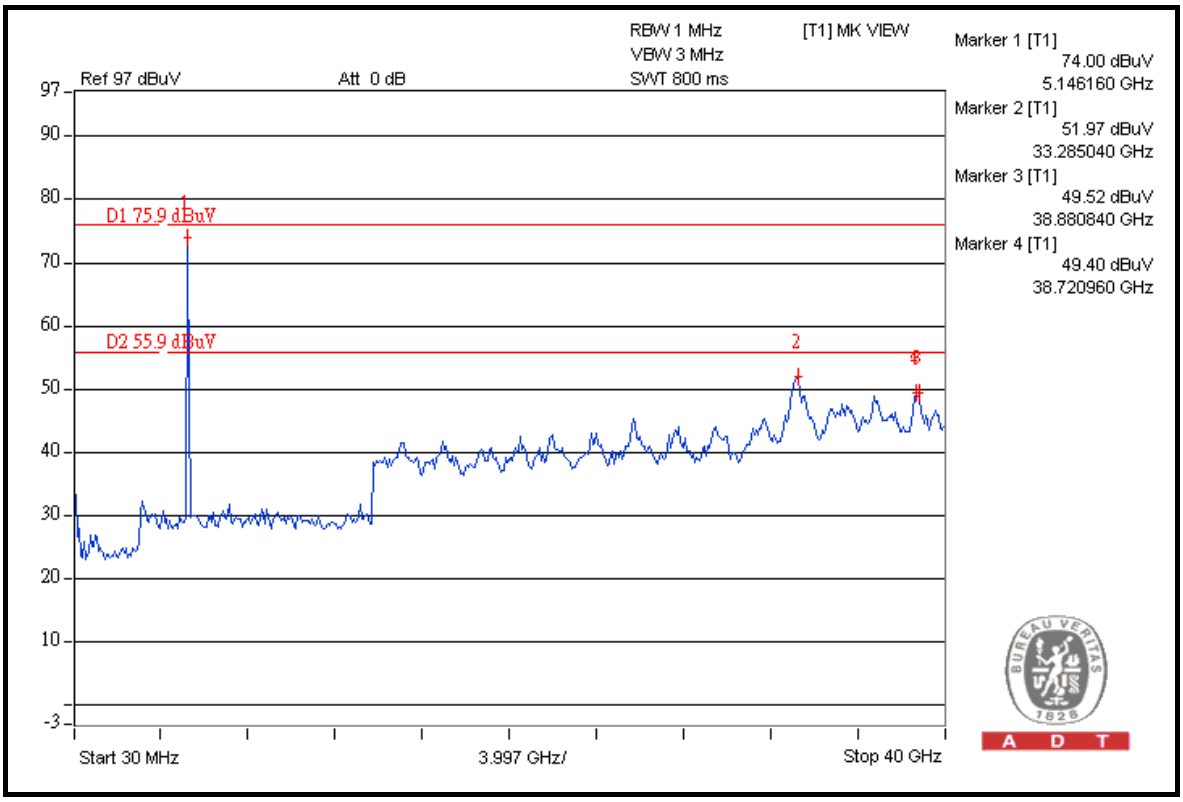
Channel 46 (5230MHz)

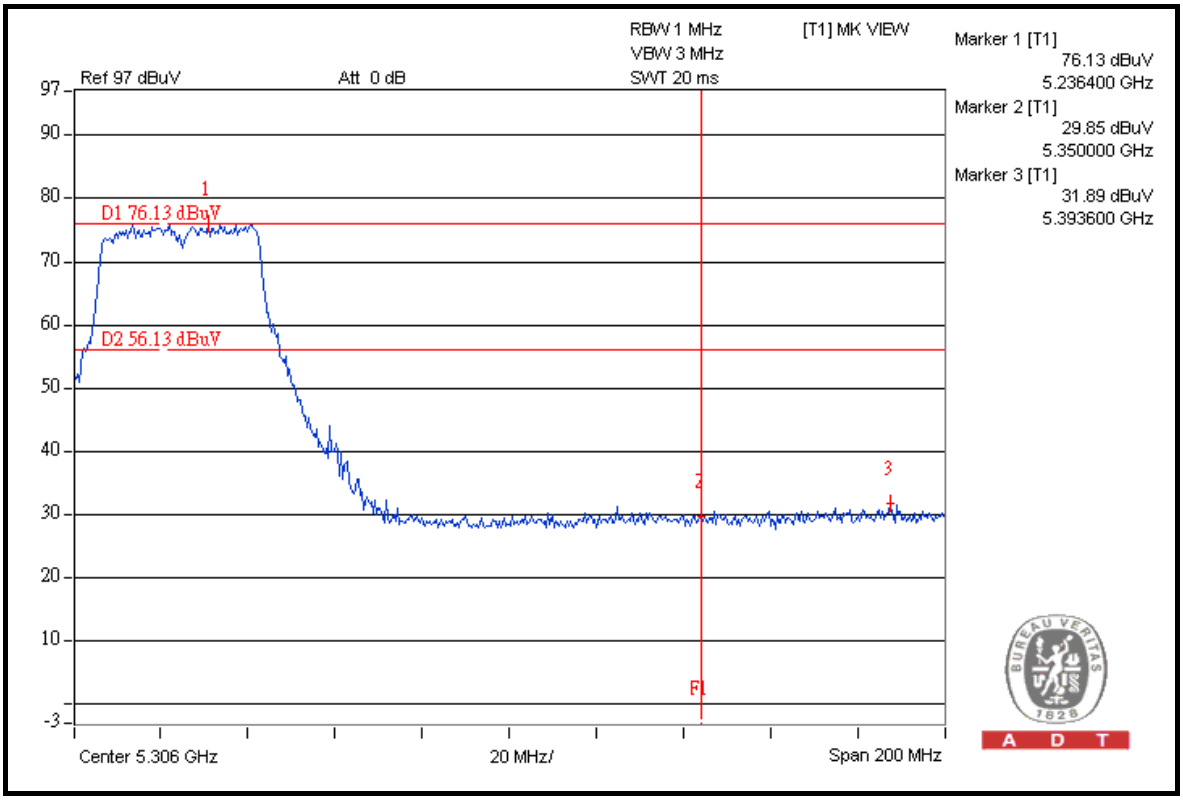
The band edge emission plot on the next second page shows 44.24dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 46 is 106.42dBuV/m (Peak), so the maximum field strength in restrict band is 106.42 – 44.24 = 62.18dBuV/m which is under 74dBuV/m limit.

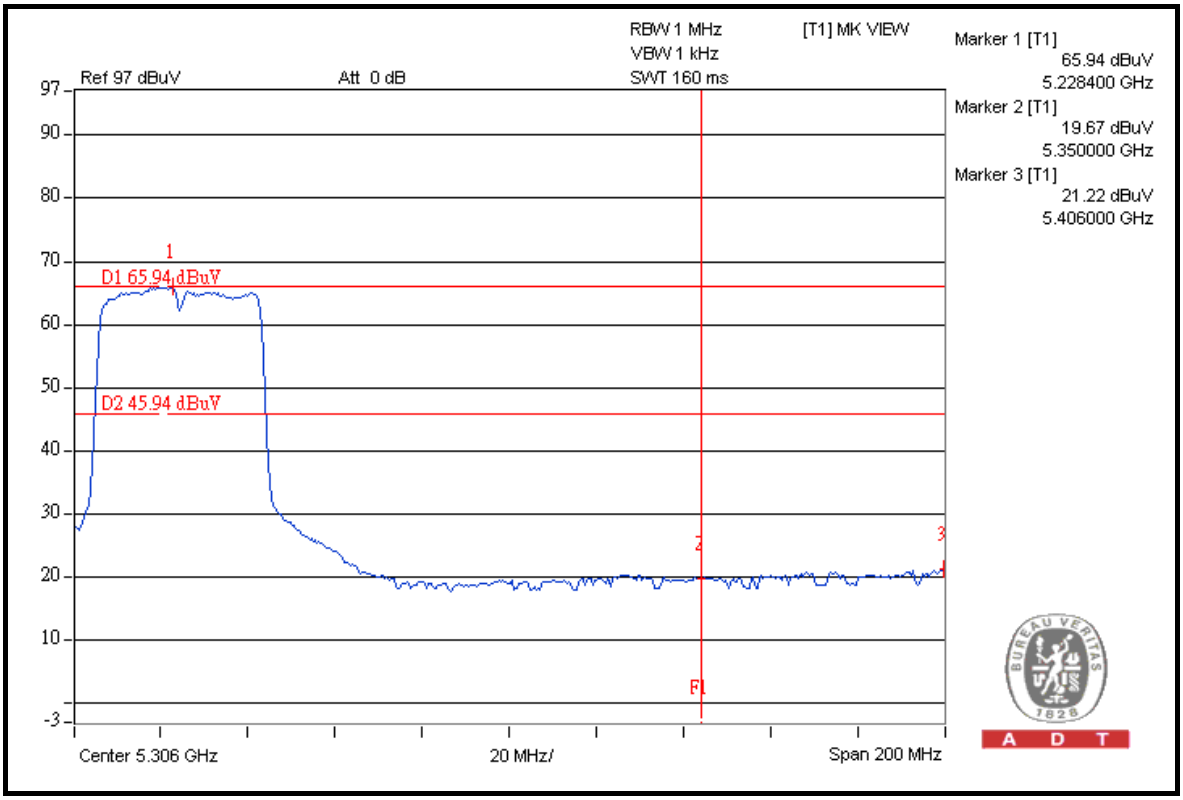
The band edge emission plot on the next third page shows 44.72dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 46 is 95.73dBuV/m (Average), so the maximum field strength in restrict band is 95.73 – 44.72 = 51.01dBuV/m which is under 54dBuV/m limit.

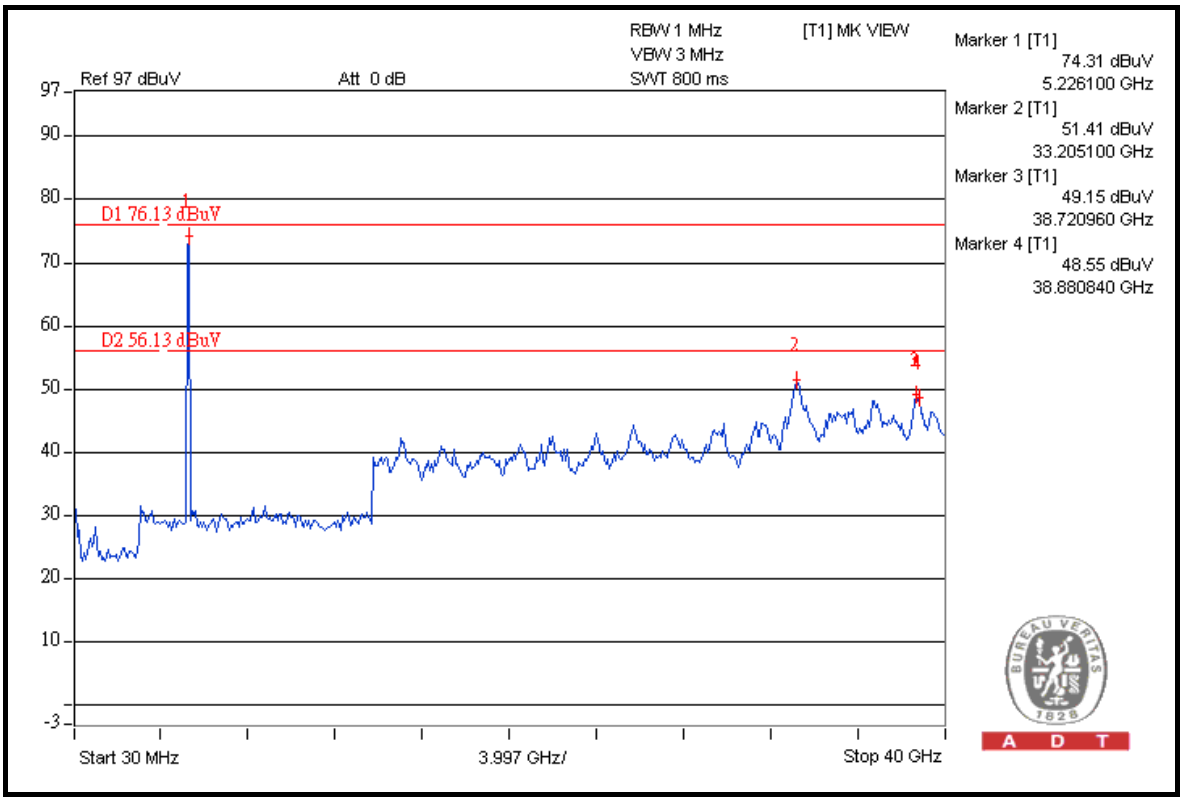

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
75.90 dBuV
5.202800 GHz
Marker 2 [T1]
32.93 dBuV
5.150000 GHz
Marker 3 [T1]
33.62 dBuV
5.148800 GHz
D1 75.9 dBuV
D2 55.9 dBuV
Center 5.114 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 1 kHz
SWT 160 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
65.90 dBuV
5.188400 GHz
Marker 2 [T1]
19.73 dBuV
5.150000 GHz
Marker 3 [T1]
20.23 dBuV
5.145600 GHz
D1 65.9 dBuV
D2 45.9 dBuV
Center 5.114 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
74.00 dBuV
5.146160 GHz
Marker 2 [T1]
51.97 dBuV
33.285040 GHz
Marker 3 [T1]
49.52 dBuV
38.880840 GHz
Marker 4 [T1]
49.40 dBuV
38.720960 GHz
D1 75.9 dBuV
D2 55.9 dBuV
97
90
80
70
60
50
40
30
20
10
-3
Start 30 MHz
3.997 GHz/
Stop 40 GHz


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
76.13 dBuV
5.236400 GHz
Marker 2 [T1]
29.85 dBuV
5.350000 GHz
Marker 3 [T1]
31.89 dBuV
5.393600 GHz
D1 76.13 dBuV
D2 56.13 dBuV
97
90
80
70
60
50
40
30
20
10
-3
Center 5.306 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 1 kHz
SWT 160 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
65.94 dBuV
5.228400 GHz
Marker 2 [T1]
19.67 dBuV
5.350000 GHz
Marker 3 [T1]
21.22 dBuV
5.406000 GHz
D1 65.94 dBuV
D2 45.94 dBuV
Center 5.306 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
74.31 dBuV
5.226100 GHz
Marker 2 [T1]
51.41 dBuV
33.205100 GHz
Marker 3 [T1]
49.15 dBuV
38.720960 GHz
Marker 4 [T1]
48.55 dBuV
38.880840 GHz
D1 76.13 dBuV
D2 56.13 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz

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 antenna used in this product is PIFA antenna with UFL connector. The maximum gain of the antenna is 3.25dBi.

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 by the following approval agencies according to ISO/IEC 17025.

USA	FCC, NVLAP
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA, CSA
R.O.C.	TAF, BSMI, NCC
Netherlands	Telefication
Singapore	GOST-ASIA(MOU)
Russia	CERTIS(MOU)

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---