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# FCC TEST REPORT (15.407)

**REPORT NO.:** RF980313L04-1

**MODEL NO.:** MC9596

**RECEIVED:** Mar. 13, 2009

**TESTED:** Mar. 23 ~ Mar. 30, 2009

**ISSUED:** Mar. 31, 2009

**APPLICANT:** Motorola, Inc.

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**ISSUED BY:** Bureau Veritas Consumer Products Services  
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## 1. CERTIFICATION

**PRODUCT:** Mobile Computer  
**MODEL NO.:** MC9596  
**BRAND:** Motorola  
**APPLICANT:** Motorola, Inc.  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**TESTED:** Mar. 23 ~ Mar. 30, 2009  
**STANDARDS:** **FCC Part 15, Subpart E (Section 15.407)**  
ANSI C63.4-2003

The above equipment (Model: MC9596) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY** : Andrea Hsia , **DATE:** Mar. 31, 2009  
Andrea Hsia / Specialist

**TECHNICAL ACCEPTANCE** : Long Chen , **DATE:** Mar. 31, 2009  
Responsible for RF Long Chen / Senior Engineer

**APPROVED BY** : Gary Chang , **DATE:** Mar. 31, 2009  
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 -14.45dB at 0.205MHz
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 -1.30dB at 5725.00MHz
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 ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	Mobile Computer
<b>MODEL NO.</b>	MC9596
<b>FCC ID</b>	UZ7MC9596
<b>POWER SUPPLY</b>	3.7Vdc from rechargeable lithium battery 12Vdc from power adapter
<b>MODULATION TYPE</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
<b>MODULATION TECHNOLOGY</b>	DSSS, OFDM
<b>TRANSFER RATE</b>	54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps
<b>OPERATING FREQUENCY</b>	5180 ~ 5320MHz & 5500 ~ 5700MHz
<b>NUMBER OF CHANNEL</b>	5180 ~ 5320MHz: 8 for 802.11a 5500 ~ 5700MHz: 11 for 802.11a
<b>OUTPUT POWER</b>	11.376mW for 5180 ~ 5320MHz 30.832mW for 5500 ~ 5700MHz
<b>ANTENNA TYPE</b>	Main antenna: PIFA antenna with 3.52dBi gain Aux. antenna: PIFA antenna with 4.0dBi gain
<b>DATA CABLE</b>	Refer to NOTE as below
<b>I/O PORTS</b>	Refer to user's manual
<b>ACCESSORY DEVICES</b>	Battery

#### NOTE:

- The models identified as below are identical to each other except of the following options:

- Barcode reader: 1D laser scanner / 2D Imager

BRAND	MODEL	DESCRIPTION
Motorola	MC9596	HSDPA 1D Calculator Numeric
Motorola	MC9596	HSDPA 2D Calculator Numeric
Motorola	MC9596	HSDPA 1D Alpha Primary
<b>Motorola</b>	<b>MC9596</b>	<b>HSDPA 2D Alpha Primary</b>
Motorola	MC9596	HSDPA 1D Telephony Numeric
Motorola	MC9596	HSDPA 2D Telephony Numeric
Motorola	MC9596	HSDPA 1D Alpha Numeric Wide
Motorola	MC9596	HSDPA 2D Alpha Numeric Wide
**the worst case had been marked by boldface.		

2. The EUT has one lithium battery listed as below:

LI-ION BATTERY	
<b>BRAND:</b>	MOTOROLA
<b>MODEL:</b>	82-111636-01
<b>RATING:</b>	3.7Vdc, 4800mAh, 17.7Wh

3. The EUT is a Mobile Computer. The functions of EUT listed as below:

	TEST STANDARD	REFERENCE REPORT
<b>WLAN 802.11b/g</b>	FCC Part 15, Subpart C (Section 15.247)	RF980313L04
<b>WLAN 802.11a (5745~5825 MHz)</b>		
<b>WLAN 802.11a (5180 ~ 5320MHz, 5500 ~ 5700MHz )</b>	FCC Part 15, Subpart E (Section 15.407)	RF980313L04-1
<b>WLAN 802.11a (For DFS report) (5260 ~ 5320MHz, 5500 ~ 5700MHz )</b>	FCC Part 15, Subpart E (Section 15.407)	RF980313L04-5
<b>BLUETOOTH</b>	FCC Part 15, Subpart C (Section 15.247)	RF980313L04-2
<b>GSM 850 / WCDMA 850</b>	FCC Part 22	RF980313L04-3
<b>PCS 1900 / WCDMA 1900</b>	FCC Part 24	RF980313L04-4

4. The following accessories are for support units only.

PRODUCT	BRAND	MODEL	P/N	DESCRIPTION
USB charging Y cable	Motorola	-	25-116365-01R	1.8m shielded cable with one core
Headset	Motorola	-	50-11300-050R	0.8m non-shielded cable with one core
Adapter	HIPRO	HP-O2040D43	-	Input: 100-240Vac, 50-60Hz, 1.5A Output: 12Vdc, 3.33A, MAX 40W Power line: AC 1.7m non-shielded cable without core DC1.8m non-shielded cable with one core

5. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.
6. The EUT operates in the 2.4GHz/5GHz frequency spectrum with throughput of up to 54Mbps.
7. 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

### Operated in 5180 ~ 5320MHz

8 channels are provided for 802.11a

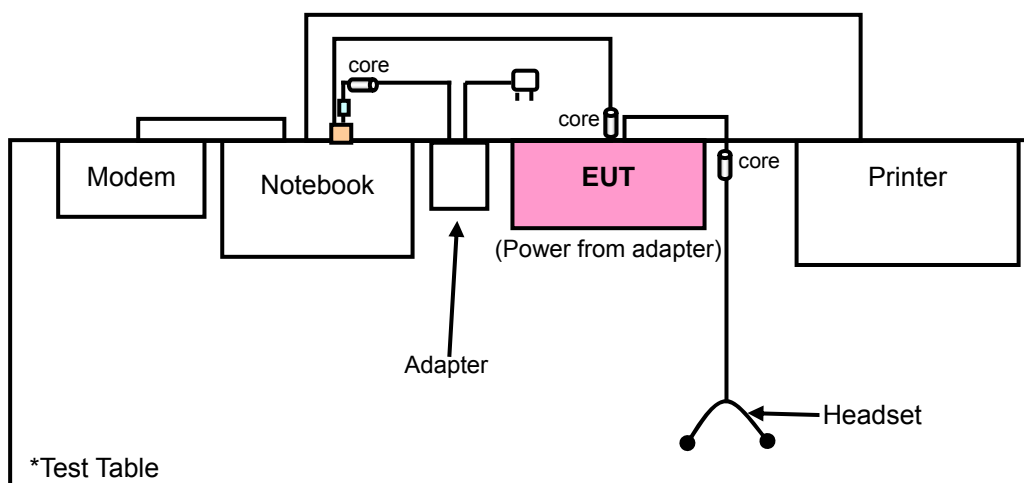
CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	52	5260 MHz
40	5200 MHz	56	5280 MHz
44	5220 MHz	60	5300 MHz
48	5240 MHz	64	5320 MHz

### Operated in 5500 ~ 5700MHz

11 channels are provided for 802.11a

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz		

### 3.2.1 CONFIGURATION OF SYSTEM UNDER TEST





### 3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

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

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
802.11a	5180-5320	36 to 64	36, 40, 48, 52, 60, 64	OFDM	BPSK	6.0	Z
802.11a	5500-5700	100 to 140	100, 120, 140	OFDM	BPSK	6.0	Z

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

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
802.11a	5180-5320	36 to 64	60	OFDM	BPSK	6.0	Z
802.11a	5500-5700	100 to 140	120	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.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5320	36 to 64	60	OFDM	BPSK	6.0
802.11a	5500-5700	100 to 140	120	OFDM	BPSK	6.0

### **BANDEDGE MEASUREMENT:**

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5320	36 to 64	36, 64	OFDM	BPSK	6.0
802.11a	5500-5700	100 to 140	100, 140	OFDM	BPSK	6.0

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

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5320	36 to 64	36, 40, 48, 52, 60, 64	OFDM	BPSK	6.0
802.11a	5500-5700	100 to 140	100, 120, 140	OFDM	BPSK	6.0

### 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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	PP05L	12130898320	E2K24CLNS
2	PRINTER	EPSON	LQ-300+	DCGY054011	FCC DoC Approved
3	MODEM	ACEEX	1414V/3	0401008253	IFAXDM1414

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.8m shielded USB cable with one core
2	1.8m braid shielded wire, DB25 connector, w/o core.
3	1.2m braid shielded wire, DB25 & DB9 connector, w/o core.

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

**NOTE 2:** The 1.8m USB cable was supplied from client and only for test.

## 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
	PK	PK
5150 ~ 5350	-27	68.3
5470 ~ 5725	-27	68.3

**NOTE:**

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

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

#### 4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	100033	Jun. 30, 2008	Jun. 29, 2009
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Apr. 22, 2008	Apr. 21, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	May 02, 2008	May 01, 2009
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jun. 24, 2008	Jun. 23, 2009
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 25, 2008	Dec. 24, 2009
Preamplifier Agilent	8447D	2944A10633	Nov. 03, 2008	Nov. 02, 2009
Preamplifier Agilent	8449B	3008A01964	Oct. 23, 2008	Oct. 22, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	238141/4	May 20, 2008	May 19, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	May 20, 2008	May 19, 2009
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	Aug. 27, 2008	Aug. 26, 2009

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

#### 4.1.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

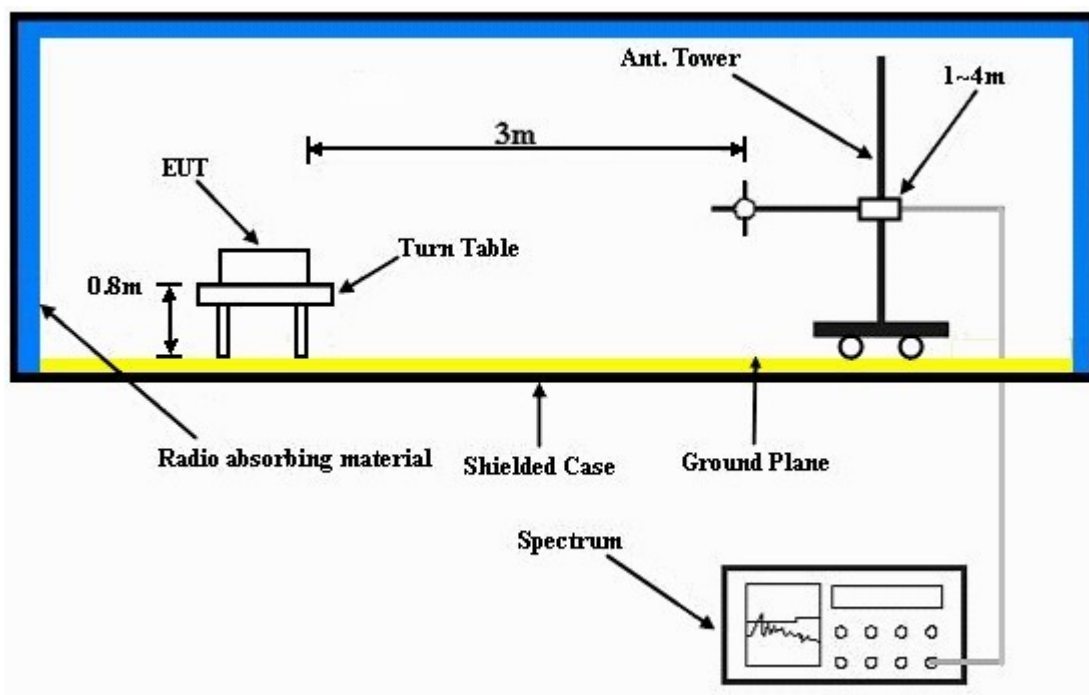
**NOTE:**

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

#### 4.1.5 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.6 TEST SETUP



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

#### 4.1.7 EUT OPERATING CONDITION

- Connected the EUT to a notebook via a USB cable and placed on a testing table.
- The EUT runs a test program (provided by manufacture) to transmit at specific channel.
- The necessary accessories enable the system in full functions.

## 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	23deg. C, 70%RH 1000hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	63.84 PK	74.00	-10.16	1.15 H	136	24.75	39.09
2	5150.00	45.34 AV	54.00	-8.66	1.15 H	136	6.25	39.09
3	*5180.00	108.42 PK			1.15 H	138	69.24	39.18
4	*5180.00	97.91 AV			1.15 H	138	58.73	39.18
5	#10360.00	60.40 PK	68.30	-7.90	1.22 H	176	10.93	49.47
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	64.96 PK	74.00	-9.04	1.00 V	164	25.87	39.09
2	5150.00	45.41 AV	54.00	-8.59	1.00 V	164	6.32	39.09
3	*5180.00	109.05 PK			1.00 V	164	69.87	39.18
4	*5180.00	98.37 AV			1.00 V	164	59.19	39.18
5	#10360.00	60.74 PK	68.30	-7.56	1.17 V	146	11.27	49.47

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





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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	23deg. C, 70%RH 1000hPa	TESTED BY	Match Tsui

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	107.86 PK			1.15 H	138	68.62	39.24
2	*5200.00	97.46 AV			1.15 H	138	58.22	39.24
3	#10400.00	60.42 PK	68.30	-7.88	1.20 H	188	10.82	49.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	108.43 PK			1.00 V	162	69.19	39.24
2	*5200.00	98.18 AV			1.00 V	162	58.94	39.24
3	#10400.00	60.67 PK	68.30	-7.63	1.11 V	151	11.07	49.60

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1000hPa	TESTED BY	Match Tsui

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	109.07 PK			1.08 H	116	69.76	39.31
2	*5240.00	98.80 AV			1.08 H	116	59.49	39.31
3	#10480.00	60.42 PK	68.30	-7.88	1.00 H	360	10.69	49.73
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	110.29 PK			1.02 V	102	70.98	39.31
2	*5240.00	100.32 AV			1.02 V	102	61.01	39.31
3	#10480.00	60.68 PK	68.30	-7.62	1.01 V	180	10.95	49.73

- 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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1000hPa	TESTED BY	Match Tsui

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	*5260.00	109.30 PK			1.31 H	125	69.95	39.35
2	*5260.00	98.46 AV			1.31 H	125	59.11	39.35
3	#10520.00	61.41 PK	68.30	-6.89	1.00 H	360	11.65	49.76
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	*5260.00	110.74 PK			1.03 V	105	71.39	39.35
2	*5260.00	100.14 AV			1.03 V	105	60.79	39.35
3	#10520.00	61.87 PK	68.30	-6.43	1.11 V	162	12.11	49.76

- 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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1000hPa	TESTED BY	Match Tsui

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	*5300.00	109.41 PK			1.12 H	141	69.99	39.42
2	*5300.00	98.84 AV			1.12 H	141	59.42	39.42
3	10600.00	61.80 PK	74.00	-12.20	1.00 H	360	12.04	49.76
4	10600.00	47.63 AV	54.00	-6.37	1.00 H	360	-2.13	49.76
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	*5300.00	110.08 PK			1.04 V	113	70.66	39.42
2	*5300.00	99.29 AV			1.04 V	113	59.87	39.42
3	10600.00	61.30 PK	74.00	-12.70	1.15 V	346	11.54	49.76
4	10600.00	48.30 AV	54.00	-5.70	1.15 V	346	-1.46	49.76

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1000hPa	TESTED BY	Match Tsui

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	*5320.00	109.03 PK			1.22 H	133	69.61	39.42
2	*5320.00	98.73 AV			1.22 H	133	59.31	39.42
3	5350.00	63.79 PK	74.00	-10.21	1.00 H	132	24.37	39.42
4	5350.00	46.38 AV	54.00	-7.62	1.00 H	132	6.96	39.42
5	10640.00	61.15 PK	74.00	-12.85	1.16 H	180	11.31	49.84
6	10640.00	48.24 AV	54.00	-5.76	1.16 H	180	-1.60	49.84
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	*5320.00	109.33 PK			1.07 V	165	69.91	39.42
2	*5320.00	99.18 AV			1.07 V	165	59.76	39.42
3	5350.00	63.65 PK	74.00	-10.35	1.07 V	163	24.23	39.42
4	5350.00	47.45 AV	54.00	-6.55	1.07 V	163	8.03	39.42
5	10640.00	60.69 PK	74.00	-13.31	1.25 V	356	10.85	49.84
6	10640.00	48.43 AV	54.00	-5.57	1.25 V	356	-1.41	49.84

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1000hPa	TESTED BY	Match Tsui

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	5460.00	59.30 PK	74.00	-14.70	1.08 H	144	19.78	39.52
2	5460.00	44.63 AV	54.00	-9.37	1.08 H	144	5.11	39.52
3	#5470.00	63.61 PK	68.30	-4.69	1.18 H	151	24.07	39.54
4	*5500.00	108.76 PK			1.08 H	151	69.17	39.59
5	*5500.00	98.33 AV			1.08 H	151	58.74	39.59
6	11000.00	60.98 PK	74.00	-13.02	1.02 H	301	10.75	50.23
7	11000.00	47.53 AV	54.00	-6.47	1.02 H	301	-2.70	50.23
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	5460.00	57.18 PK	74.00	-16.82	1.02 V	263	17.66	39.52
2	5460.00	42.09 AV	54.00	-11.91	1.02 V	263	2.57	39.52
3	#5470.00	64.89 PK	68.30	-3.41	1.03 V	168	25.35	39.54
4	*5500.00	109.62 PK			1.14 V	167	70.03	39.59
5	*5500.00	98.97 AV			1.14 V	167	59.38	39.59
6	11000.00	62.05 PK	74.00	-11.95	1.34 V	139	11.82	50.23
7	11000.00	48.62 AV	54.00	-5.38	1.34 V	139	-1.61	50.23

- 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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 120	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1000hPa	TESTED BY	Match Tsui

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	*5600.00	111.72 PK			1.04 H	160	72.00	39.72
2	*5600.00	101.38 AV			1.04 H	160	61.66	39.72
3	11200.00	61.93 PK	74.00	-12.07	1.00 H	197	11.79	50.14
4	11200.00	49.54 AV	54.00	-4.46	1.00 H	197	-0.60	50.14
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	*5600.00	112.62 PK			1.00 V	170	72.90	39.72
2	*5600.00	102.19 AV			1.00 V	170	62.47	39.72
3	11200.00	63.46 PK	74.00	-10.54	1.21 V	136	13.32	50.14
4	11200.00	49.98 AV	54.00	-4.02	1.21 V	136	-0.16	50.14

**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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1000hPa	TESTED BY	Match Tsui

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	*5700.00	103.10 PK			1.12 H	165	63.30	39.80
2	*5700.00	93.27 AV			1.12 H	165	53.47	39.80
3	#5725.00	64.08 PK	68.30	-4.22	1.01 H	160	24.25	39.84
4	11400.00	59.93 PK	74.00	-14.07	1.01 H	192	9.91	50.02
5	11400.00	47.61 AV	54.00	-6.39	1.01 H	192	-2.41	50.02
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	*5700.00	105.17 PK			1.09 V	168	65.37	39.80
2	*5700.00	95.02 AV			1.09 V	168	55.22	39.80
3	#5725.00	67.00 PK	68.30	-1.30	1.00 V	165	27.16	39.84
4	11400.00	60.97 PK	74.00	-13.03	1.00 V	152	10.95	50.02
5	11400.00	47.94 AV	54.00	-6.06	1.00 V	152	-2.08	50.02

**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 60	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 67%RH 999hPa	TESTED BY	Match Tsui

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	94.06	30.68 QP	43.50	-12.82	2.00 H	274	21.28	9.40
2	99.89	32.58 QP	43.50	-10.92	2.00 H	274	21.02	11.56
3	212.66	32.43 QP	43.50	-11.07	1.00 H	295	21.12	11.32
4	440.14	33.74 QP	46.00	-12.26	1.00 H	10	14.69	19.06
5	479.03	33.82 QP	46.00	-12.18	1.50 H	223	13.87	19.96
6	665.68	39.61 QP	46.00	-6.39	1.00 H	223	15.43	24.18
7	700.68	33.34 QP	46.00	-12.66	1.50 H	49	8.30	25.04
8	881.50	35.74 QP	46.00	-10.26	1.00 H	211	8.19	27.54
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	39.62	32.24 QP	40.00	-7.76	1.00 V	358	17.15	15.09
2	70.73	30.17 QP	40.00	-9.83	2.00 V	82	17.29	12.88
3	103.78	35.29 QP	43.50	-8.21	1.00 V	319	23.74	11.55
4	288.49	38.82 QP	46.00	-7.18	1.00 V	241	25.07	13.74
5	479.03	39.52 QP	46.00	-6.48	1.00 V	211	19.57	19.96
6	760.95	36.14 QP	46.00	-9.86	1.00 V	211	10.53	25.61
7	900.94	37.28 QP	46.00	-8.72	1.00 V	85	9.36	27.92

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 120	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 67%RH 999hPa	TESTED BY	Match Tsui

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	94.06	34.17 QP	43.50	-9.33	2.00 H	262	24.77	9.40
2	214.61	31.79 QP	43.50	-11.71	2.00 H	10	20.34	11.45
3	440.14	33.62 QP	46.00	-12.38	1.00 H	10	14.57	19.06
4	479.03	33.46 QP	46.00	-12.54	2.00 H	214	13.50	19.96
5	665.68	39.07 QP	46.00	-6.93	1.00 H	295	14.89	24.18
6	700.68	34.20 QP	46.00	-11.80	1.00 H	85	9.16	25.04
7	881.50	36.26 QP	46.00	-9.74	1.00 H	205	8.72	27.54
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.68	32.90 QP	40.00	-7.10	1.00 V	7	18.18	14.72
2	70.73	30.04 QP	40.00	-9.96	1.00 V	310	17.15	12.88
3	109.62	36.46 QP	43.50	-7.04	1.00 V	274	25.00	11.47
4	288.49	37.62 QP	46.00	-8.38	1.00 V	238	23.87	13.74
5	479.03	38.79 QP	46.00	-7.21	1.00 V	208	18.83	19.96
6	900.94	37.49 QP	46.00	-8.51	1.00 V	76	9.57	27.92

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

## 4.2 CONDUCTED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

### 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Sep. 22, 2008	Sep. 21, 2009
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 31, 2008	Dec. 30, 2009
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Dec. 29, 2008	Dec. 28, 2009
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jul. 30, 2008	Jul. 29, 2009
Software ADT	ADT_Cond_ V7.3.7	NA	NA	NA

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

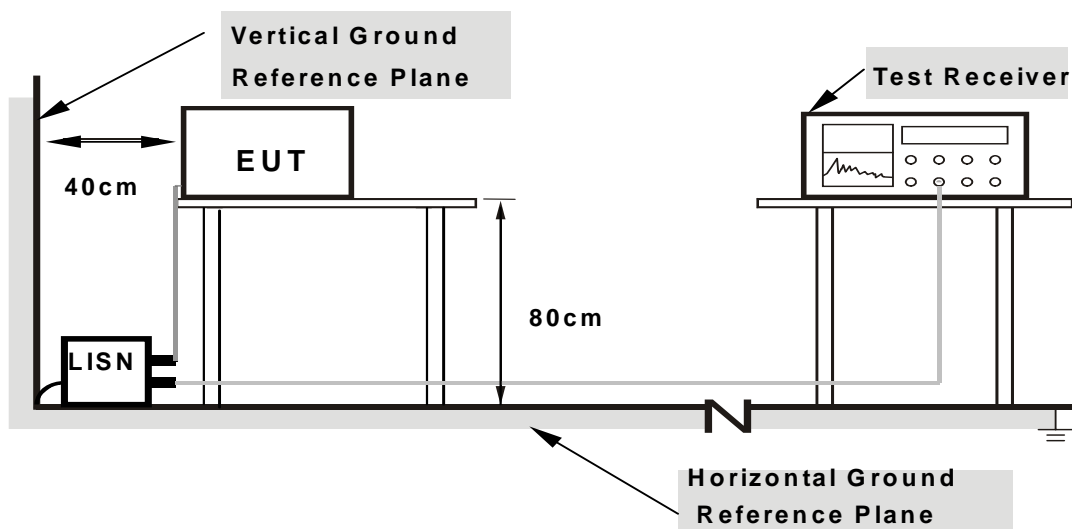
#### 4.2.3 TEST PROCEDURES

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

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation

## 4.2.5 TEST SETUP



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

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

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

## 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

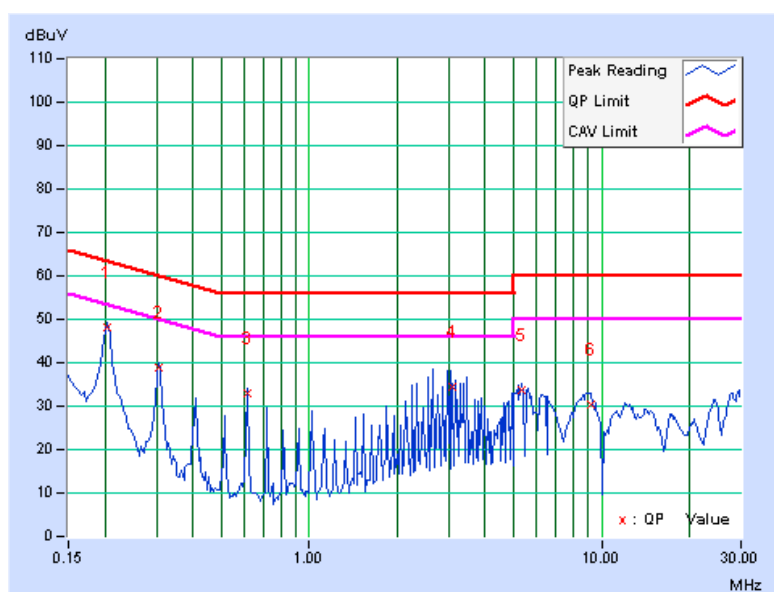
## 4.2.7 TEST RESULTS

### CONDUCTED WORST-CASE DATA : 802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 982hPa	TESTED BY	Mark Liao

No	Freq. [MHz]	Corr. Factor [dB]	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.205	0.13	47.95	-	48.08	-	63.42	53.42	-15.34	-
2	0.306	0.14	38.75	-	38.89	-	60.07	50.07	-21.19	-
3	0.615	0.15	32.91	-	33.06	-	56.00	46.00	-22.94	-
4	3.066	0.24	34.33	-	34.57	-	56.00	46.00	-21.43	-
5	5.320	0.31	33.56	-	33.87	-	60.00	50.00	-26.13	-
6	9.211	0.41	30.05	-	30.46	-	60.00	50.00	-29.54	-

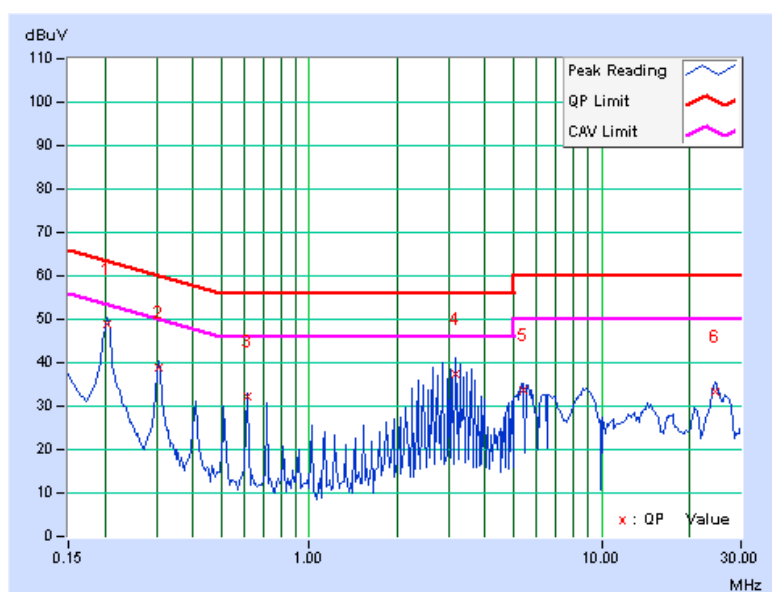
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = 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 60	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 982hPa	TESTED BY	Mark Liao

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.205	0.13	48.84	-	48.97	-	63.42	53.42	-14.45	-
2	0.306	0.14	38.75	-	38.89	-	60.07	50.07	-21.18	-
3	0.615	0.16	32.02	-	32.18	-	56.00	46.00	-23.82	-
4	3.172	0.26	37.16	-	37.42	-	56.00	46.00	-18.58	-
5	5.422	0.35	33.48	-	33.83	-	60.00	50.00	-26.17	-
6	24.559	0.79	32.58	-	33.37	-	60.00	50.00	-26.63	-

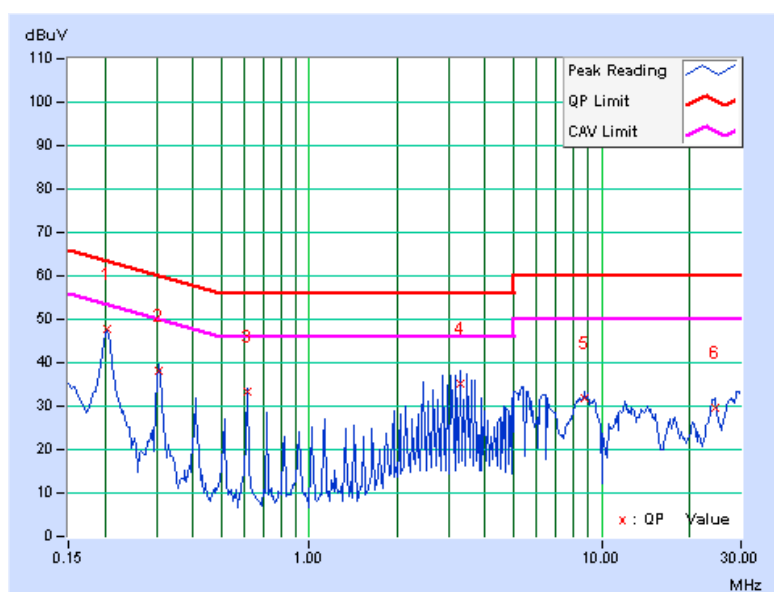
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = 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 120	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 982hPa	TESTED BY	Mark Liao

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.205	0.13	47.52	-	47.65	-	63.42	53.42	-15.77	-
2	0.306	0.14	38.16	-	38.30	-	60.07	50.07	-21.78	-
3	0.615	0.15	33.07	-	33.22	-	56.00	46.00	-22.78	-
4	3.273	0.25	34.95	-	35.20	-	56.00	46.00	-20.80	-
5	8.801	0.40	31.41	-	31.81	-	60.00	50.00	-28.19	-
6	24.355	0.64	29.01	-	29.65	-	60.00	50.00	-30.35	-

- 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.

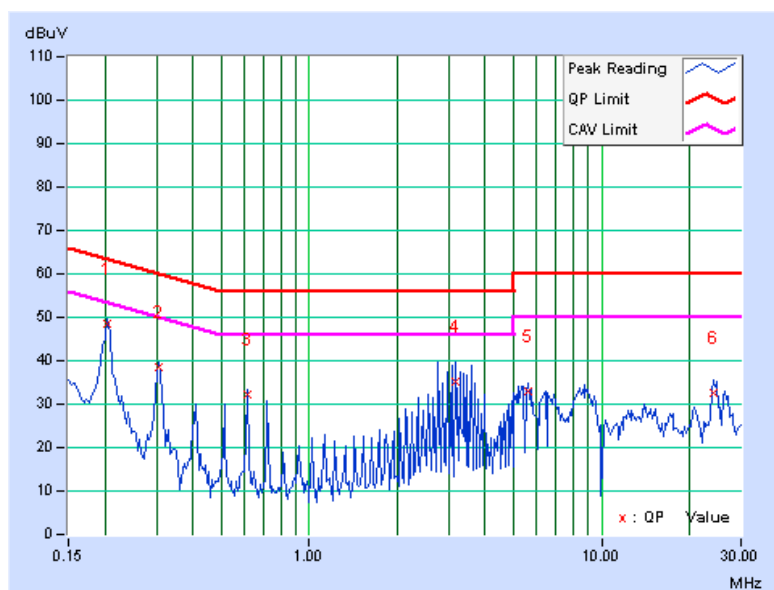




EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 120	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 982hPa	TESTED BY	Mark Liao

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor [dB]	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.205	0.13	48.43	-	48.56	-	63.42	53.42	-14.86	-
2	0.306	0.14	38.27	-	38.41	-	60.07	50.07	-21.66	-
3	0.615	0.16	32.20	-	32.36	-	56.00	46.00	-23.64	-
4	3.168	0.26	35.09	-	35.35	-	56.00	46.00	-20.65	-
5	5.629	0.35	32.71	-	33.06	-	60.00	50.00	-26.94	-
6	24.152	0.79	31.70	-	32.49	-	60.00	50.00	-27.51	-

- 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 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

#### 4.3.1 LIMITS OF MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.250 ~ 5.350GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.470 ~ 5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB

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

#### 4.3.2 TEST INSTRUMENTS

##### FOR POWER OUTPUT MEASUREMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	CALIBRATED UNTIL
High Speed Peak Power Meter	ML2495A	0824012	Aug. 04, 2008	Aug. 03, 2009
Power Sensor	MA2411B	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.

##### FOR 26dB OCCUPIED BANDWIDTH

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.

### 4.3.3 TEST PROCEDURES

#### FOR POWER OUTPUT MEASUREMENT

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

#### FOR 26dB OCCUPIED BANDWIDTH

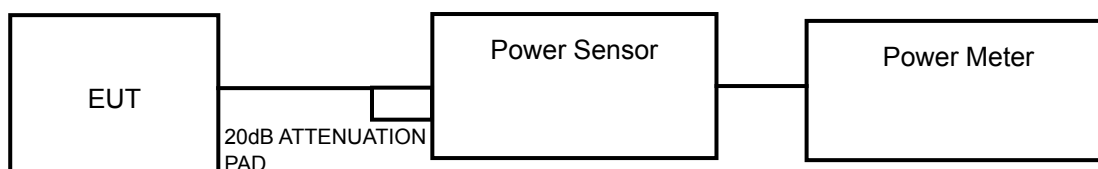
The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 300kHz RBW and 1MHz VBW. The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.

### 4.3.4 DEVIATION FROM TEST STANDARD

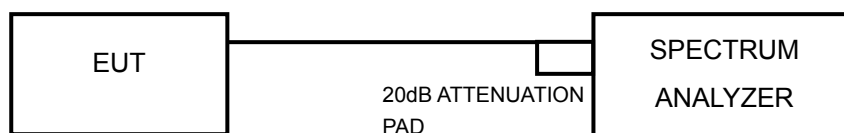
No deviation

### 4.3.5 TEST SETUP

#### FOR POWER OUTPUT MEASUREMENT



#### FOR 26dB OCCUPIED BANDWIDTH



### 4.3.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6



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#### 4.3.7 TEST RESULTS

##### POWER OUTPUT: 802.11a OFDM MODULATION

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6.0Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25deg.C, 65%RH, 991hPa
<b>TESTED BY</b>	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	OUTPUT POWER (mW)	OUTPUT POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
36	5180	11.272	10.52	17	PASS
40	5200	9.638	9.84	17	PASS
48	5240	9.141	9.61	17	PASS
52	5260	10.046	10.02	24	PASS
60	5300	11.376	10.56	24	PASS
64	5320	10.280	10.12	24	PASS
100	5500	11.588	10.64	24	PASS
120	5600	30.832	14.89	24	PASS
140	5700	7.129	8.53	24	PASS

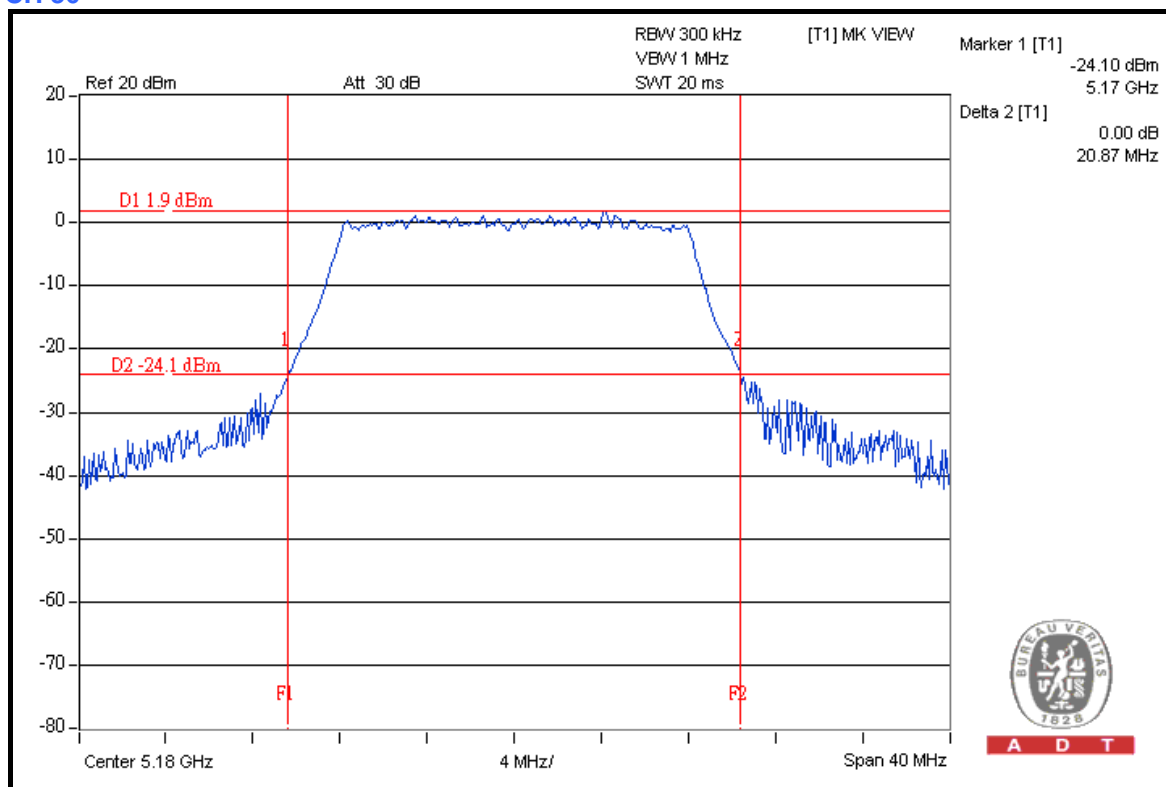


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**26dB OCCUPIED BANDWIDTH: 802.11a OFDM MODULATION**

MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)	PASS / FAIL
36	5180	20.87	PASS
40	5200	20.87	PASS
48	5240	21.02	PASS
52	5260	20.97	PASS
60	5300	20.86	PASS
64	5320	20.87	PASS
100	5500	21.19	PASS
120	5600	25.61	PASS
140	5700	20.71	PASS

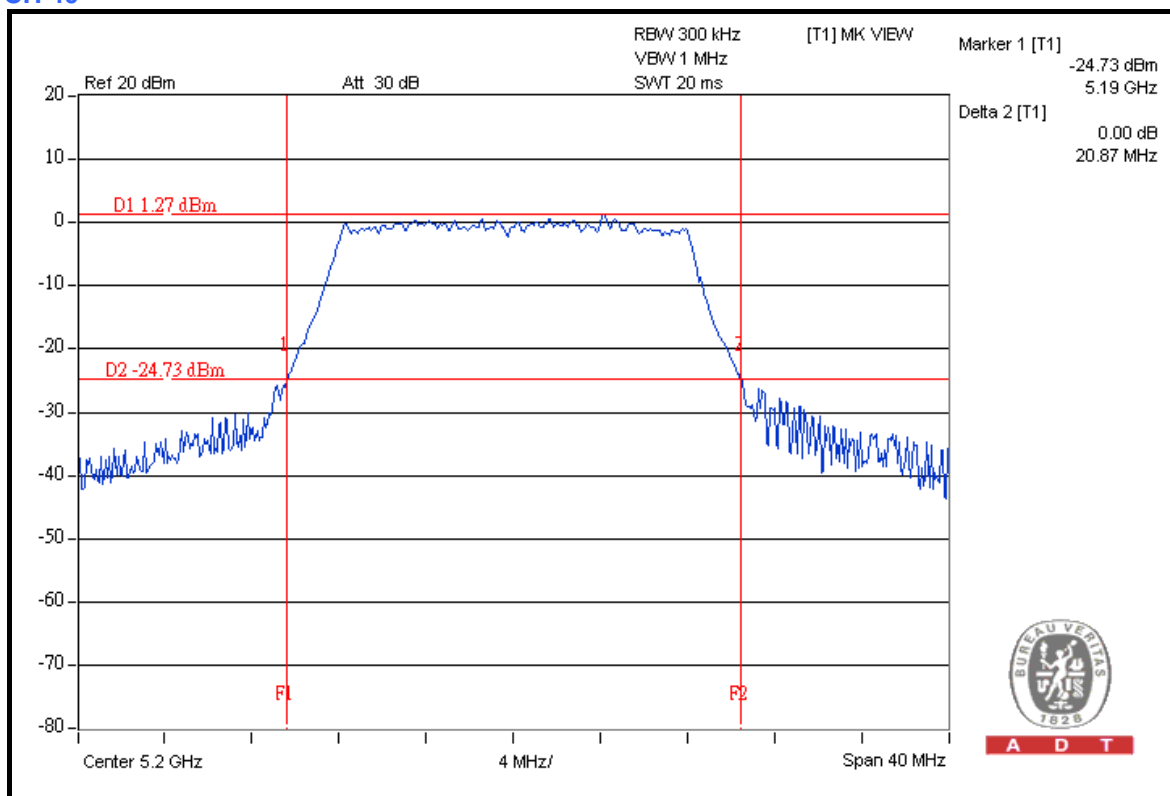
**CH 36**

A D T

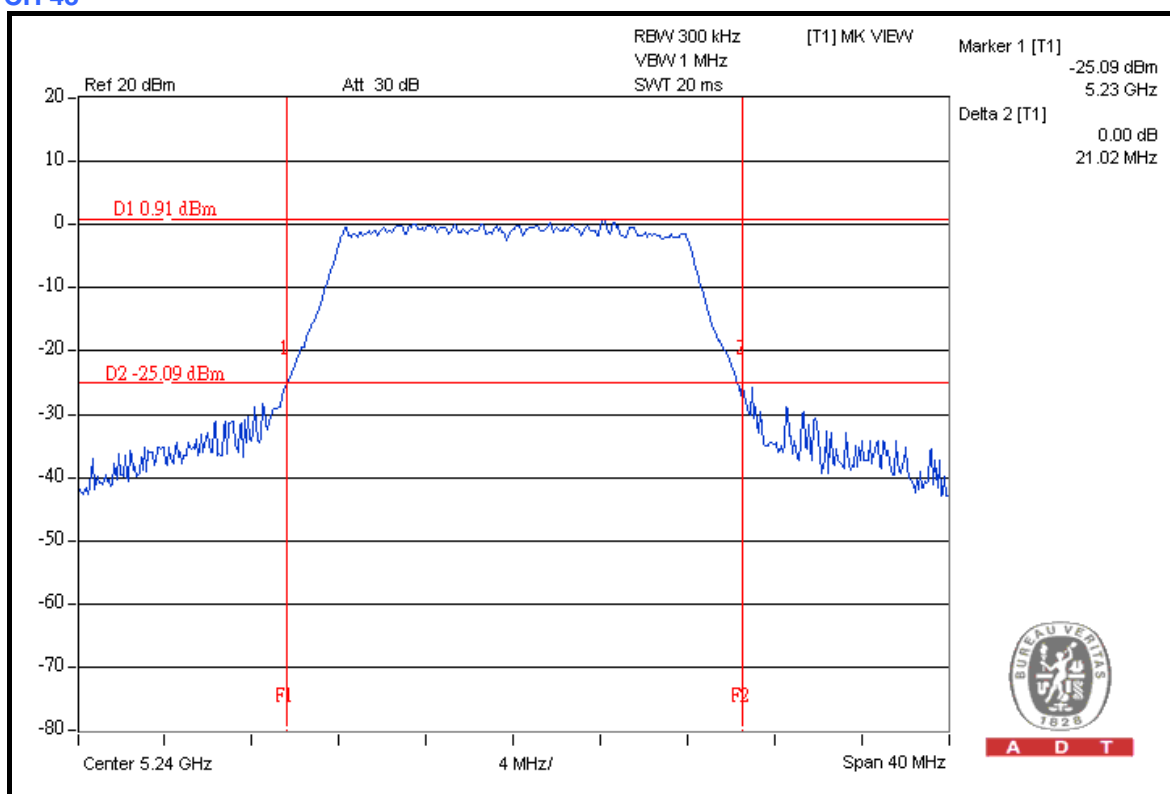


A D T

## CH 40



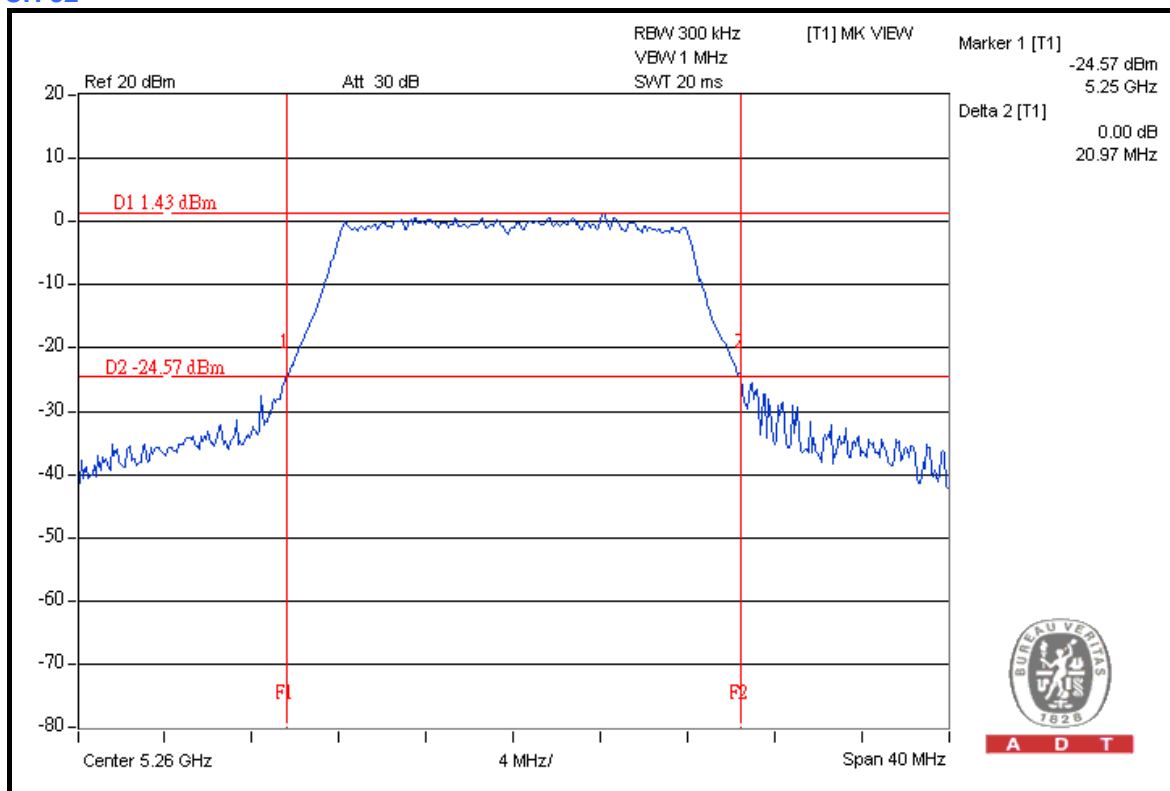
## CH 48



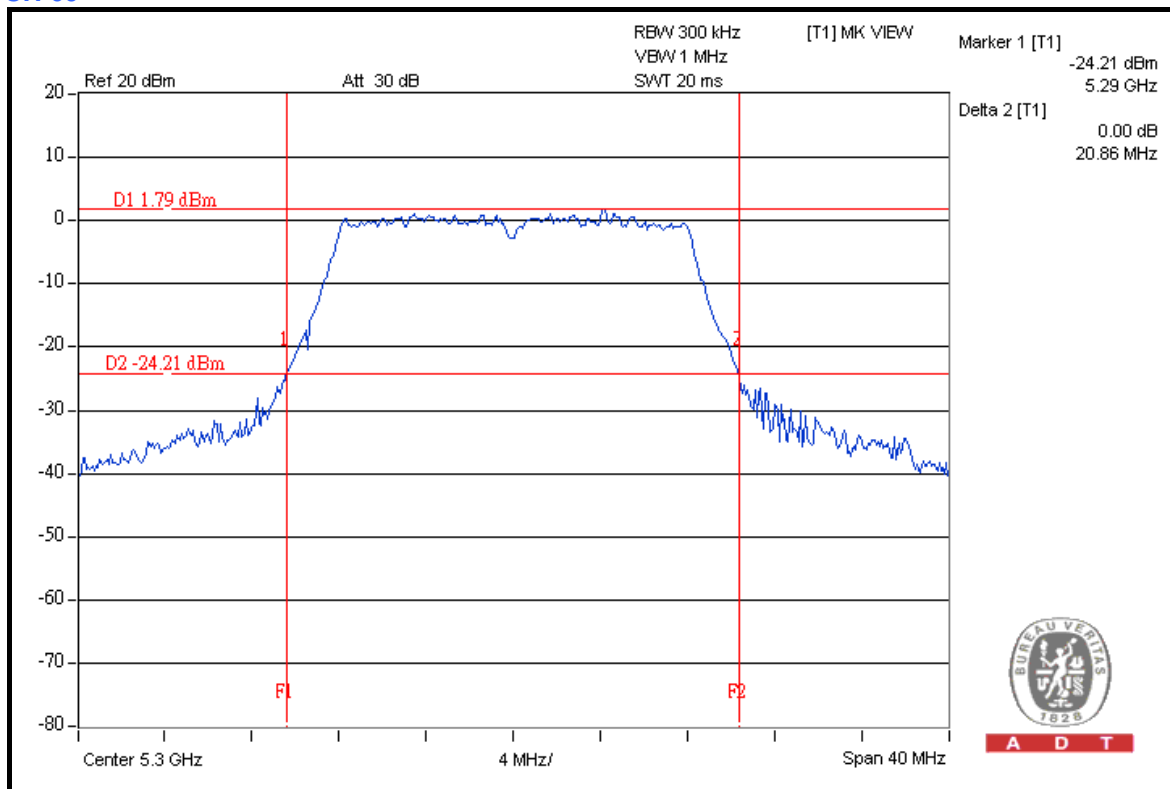


A D T

## CH 52



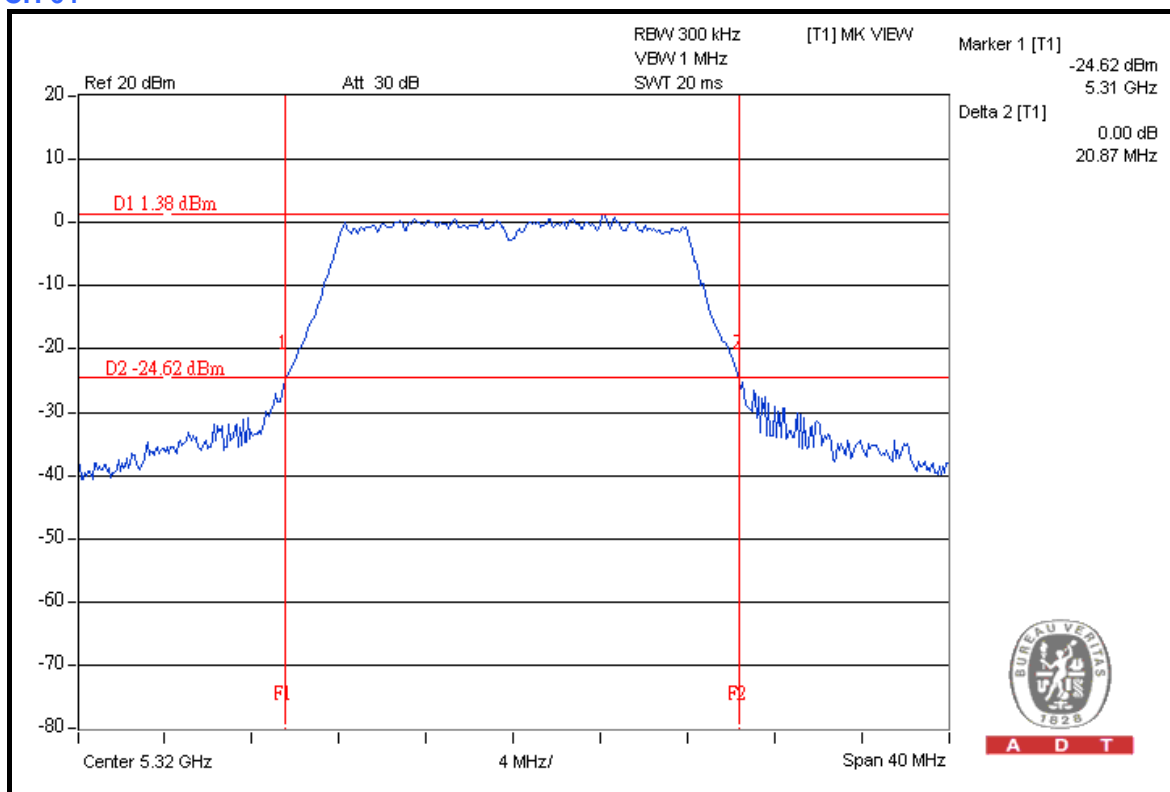
## CH 60



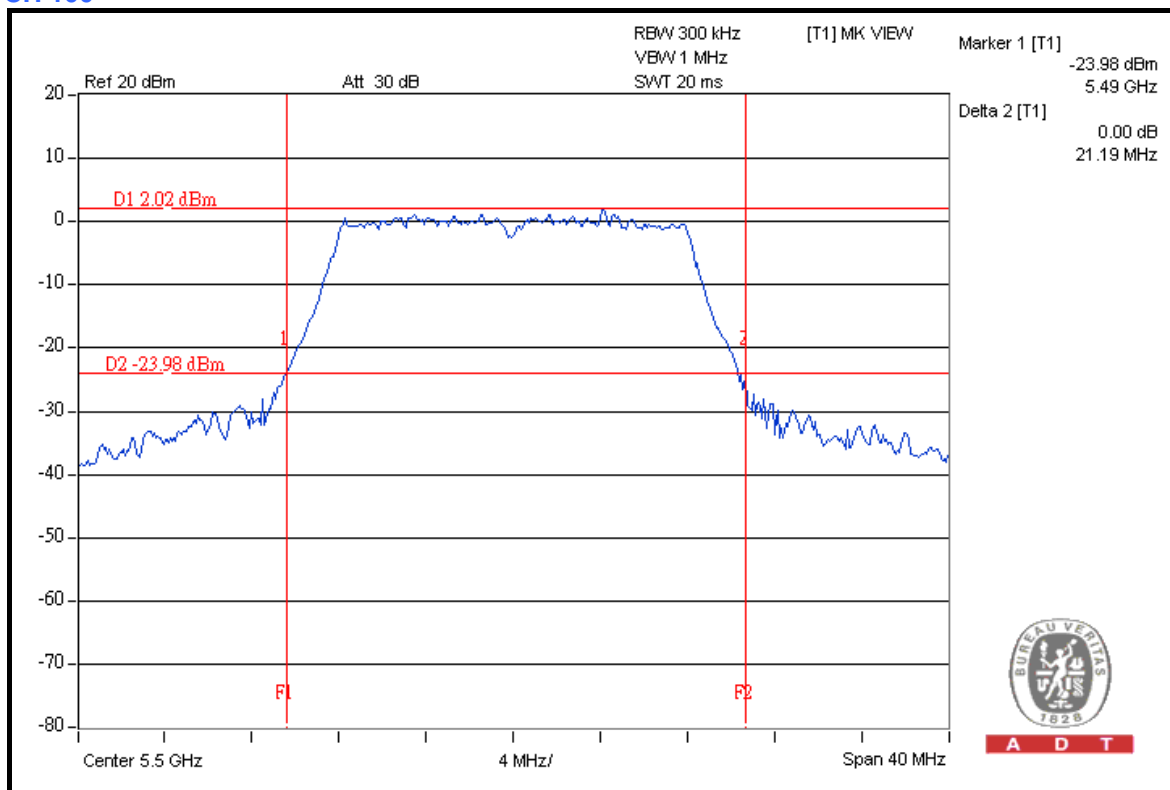


A D T

## CH 64



## CH 100

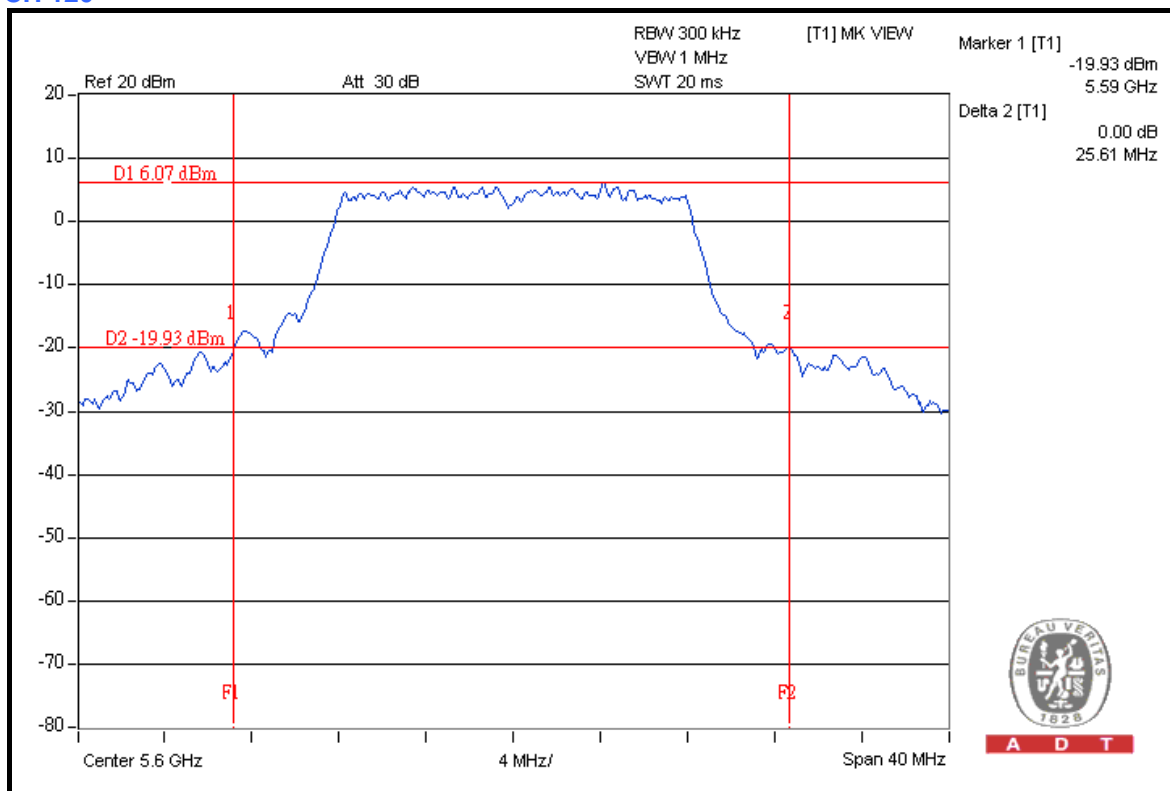




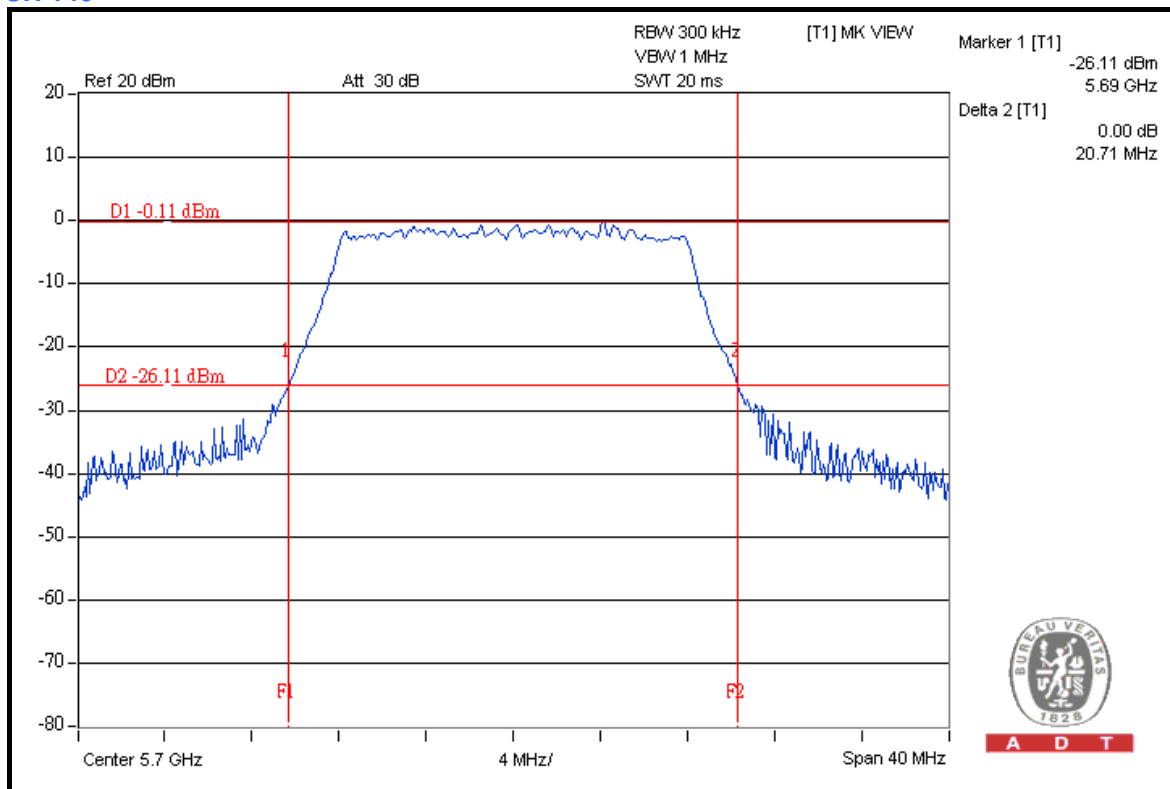


A D T

## CH 120



## CH 140



## 4.4 PEAK POWER EXCURSION MEASUREMENT

### 4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	13dB
5.250 ~ 5.350GHz	13dB
5.470 ~ 5.725GHz	13dB

### 4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	CALIBRATED UNTIL
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.

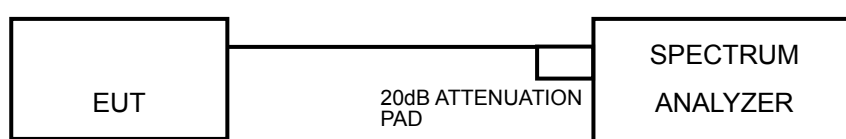
### 4.4.3 TEST PROCEDURE

- The transmitter output was connected to the spectrum analyzer.
- Set the spectrum bandwidth span to view the entire spectrum.
- Using peak detector and Max-hold function for Trace 1 (RB = 1MHz, VB = 3MHz) and 2 (RB = 1MHz, VB = 300 kHz).
- 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.



A D T

#### 4.4.7 TEST RESULTS

##### 802.11a OFDM MODULATION

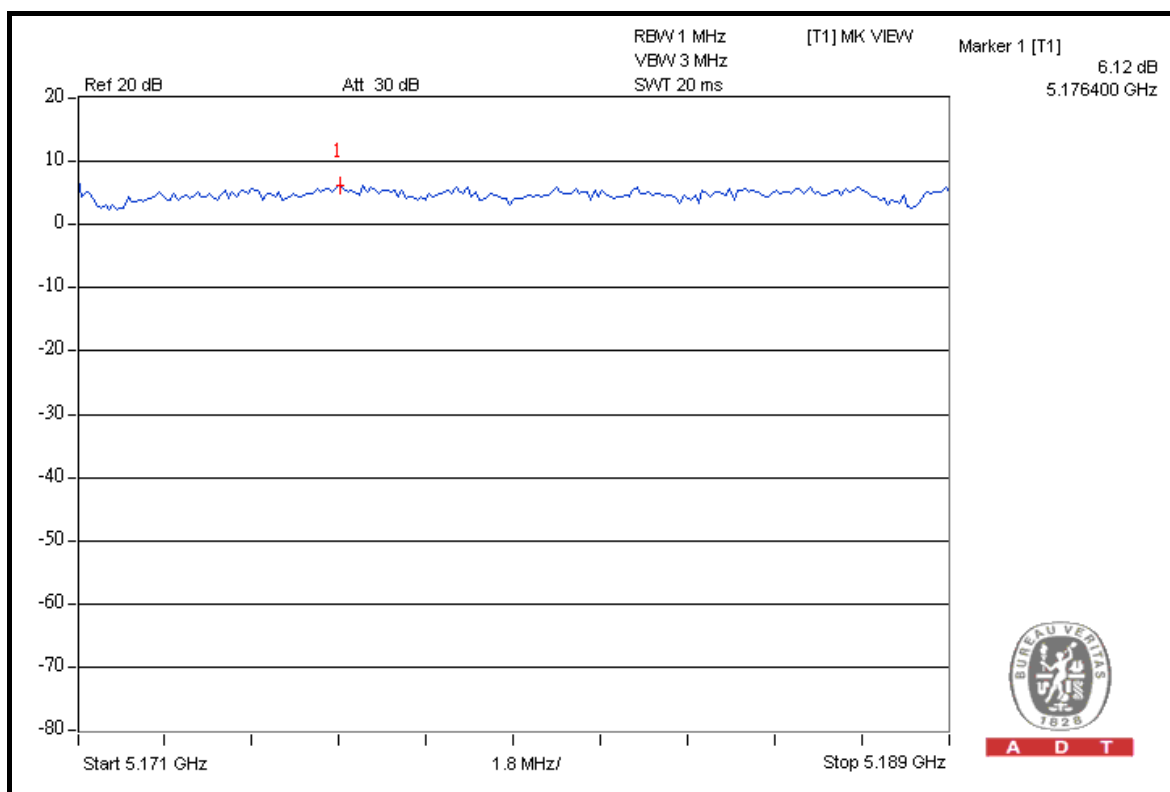
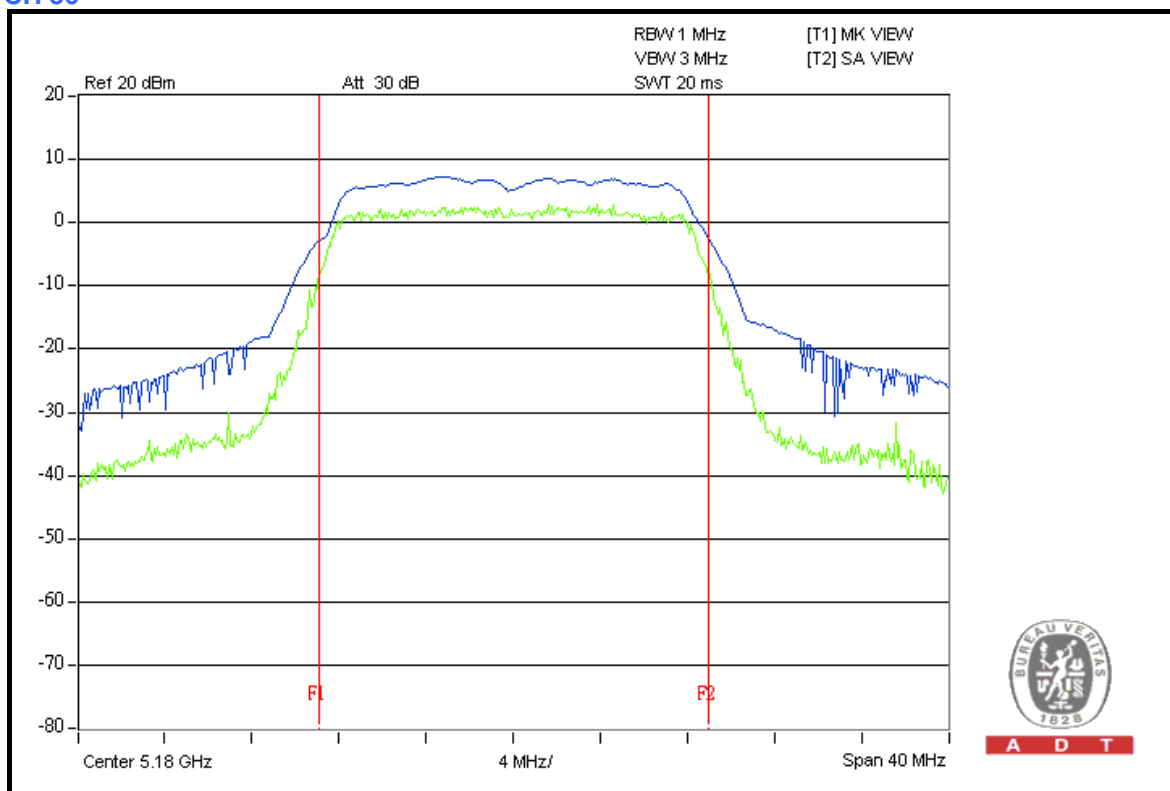
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6.0Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25deg.C, 65%RH, 991hPa
<b>TESTED BY</b>	Brad Wu		

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>PEAK POWER EXCURSION (dB)</b>	<b>PEAK TO AVERAGE EXCURSION LIMIT (dB)</b>	<b>PASS/FAIL</b>
36	5180	6.12	13	PASS
40	5200	7.28	13	PASS
48	5240	6.48	13	PASS
52	5260	7.14	13	PASS
60	5300	7.01	13	PASS
64	5320	7.30	13	PASS
100	5500	7.35	13	PASS
120	5600	7.71	13	PASS
140	5700	6.83	13	PASS



A D T

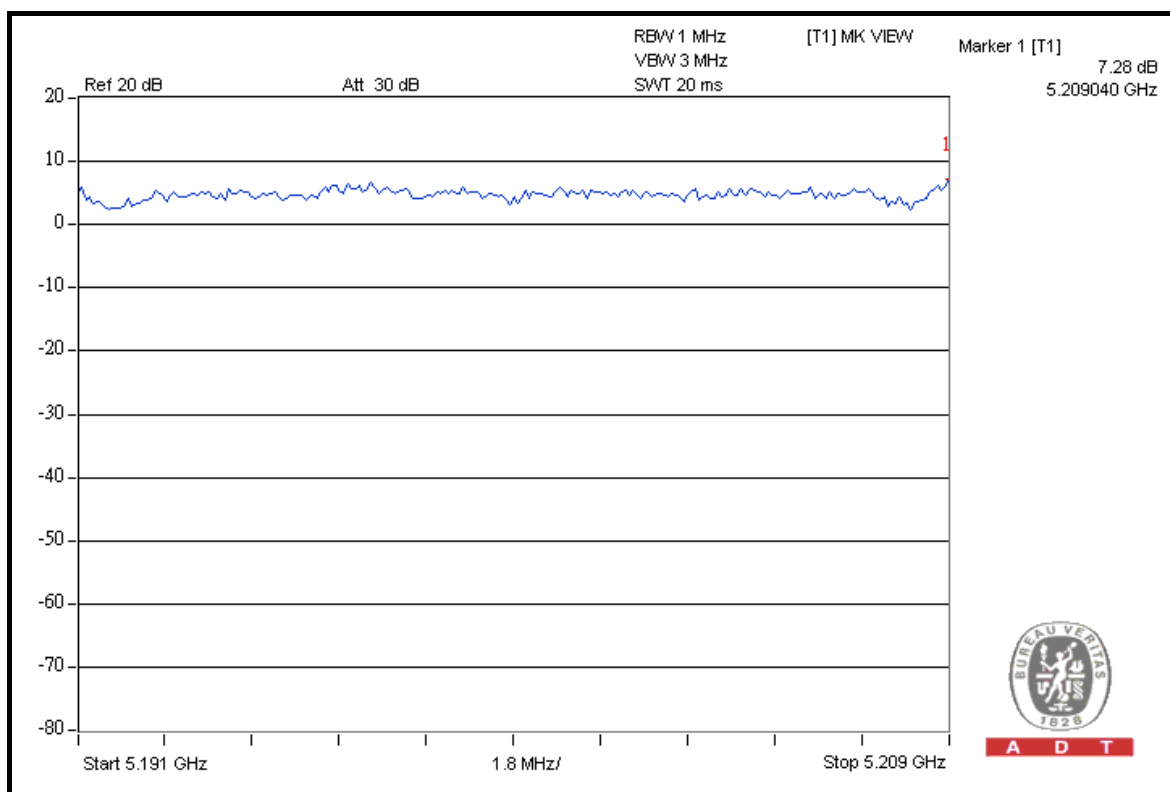
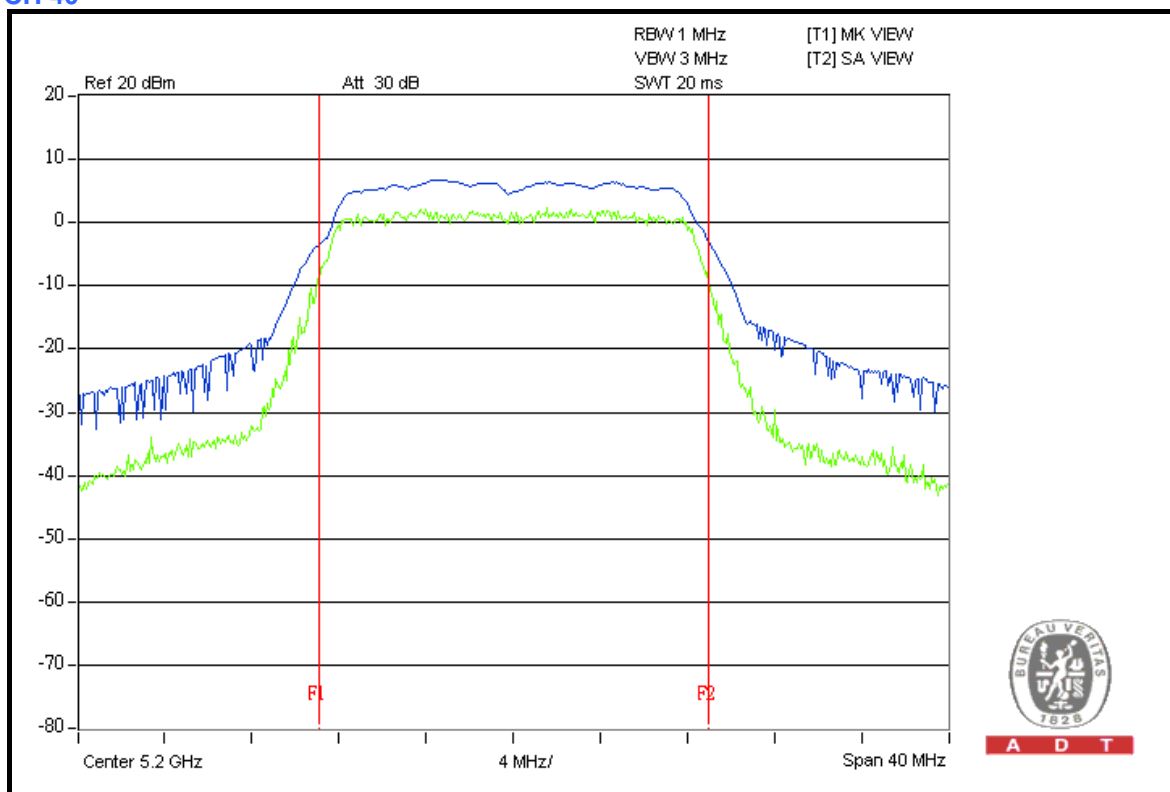
## CH 36





A D T

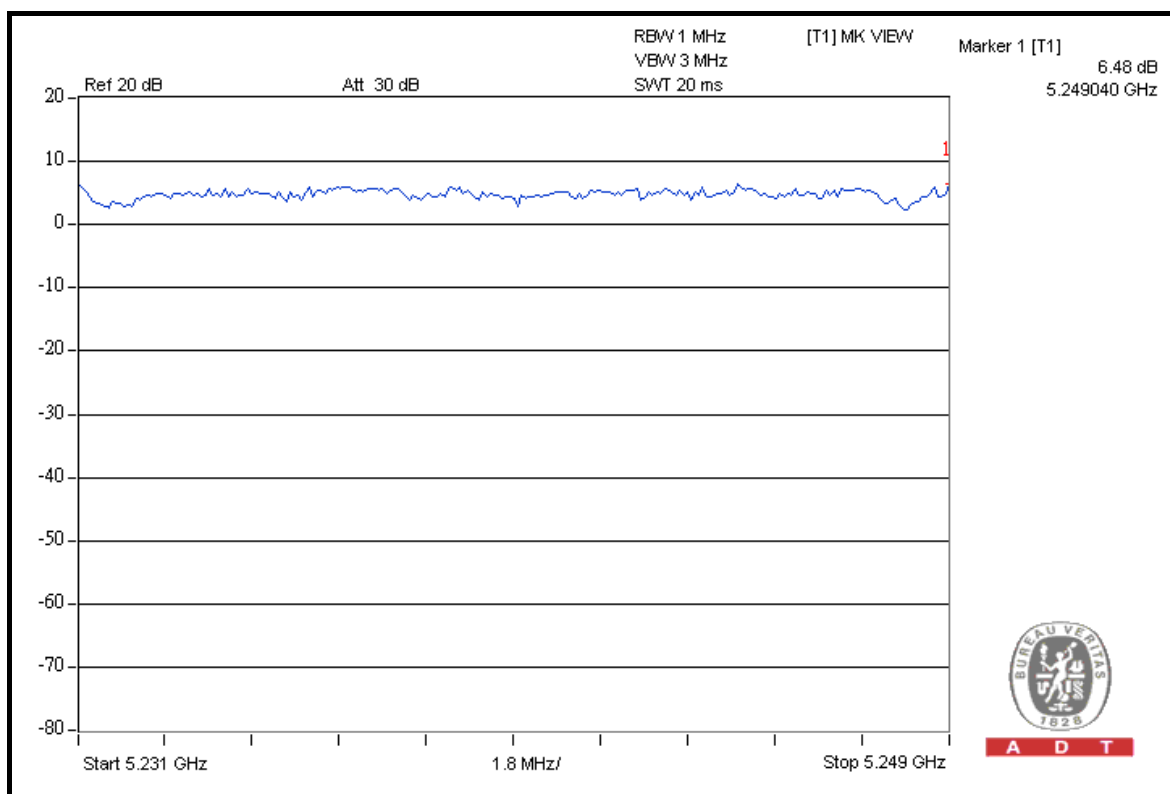
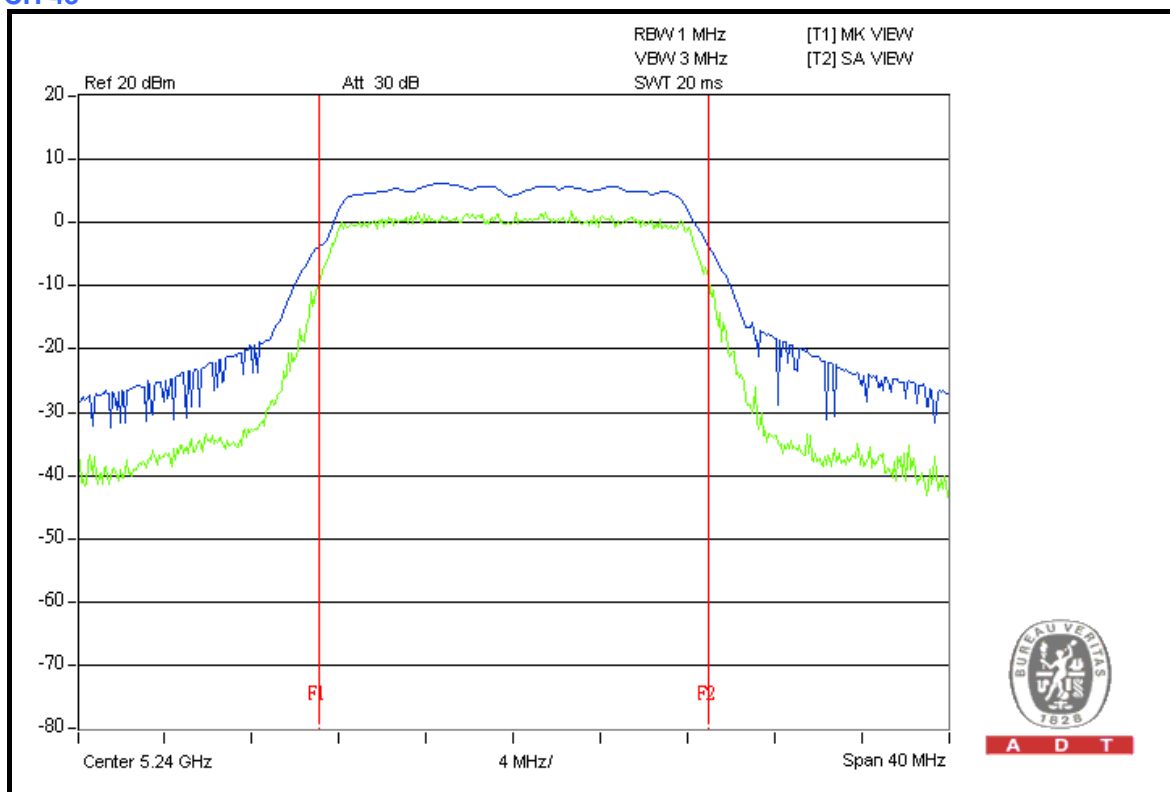
## CH 40





A D T

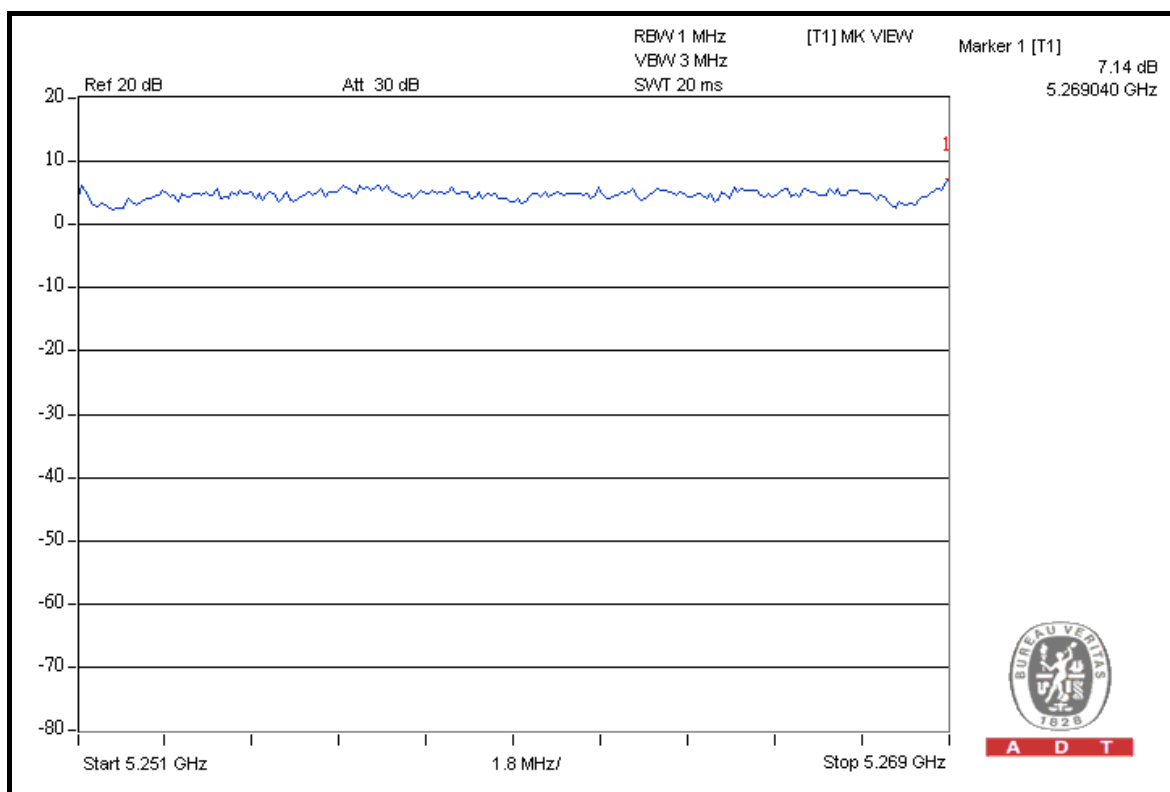
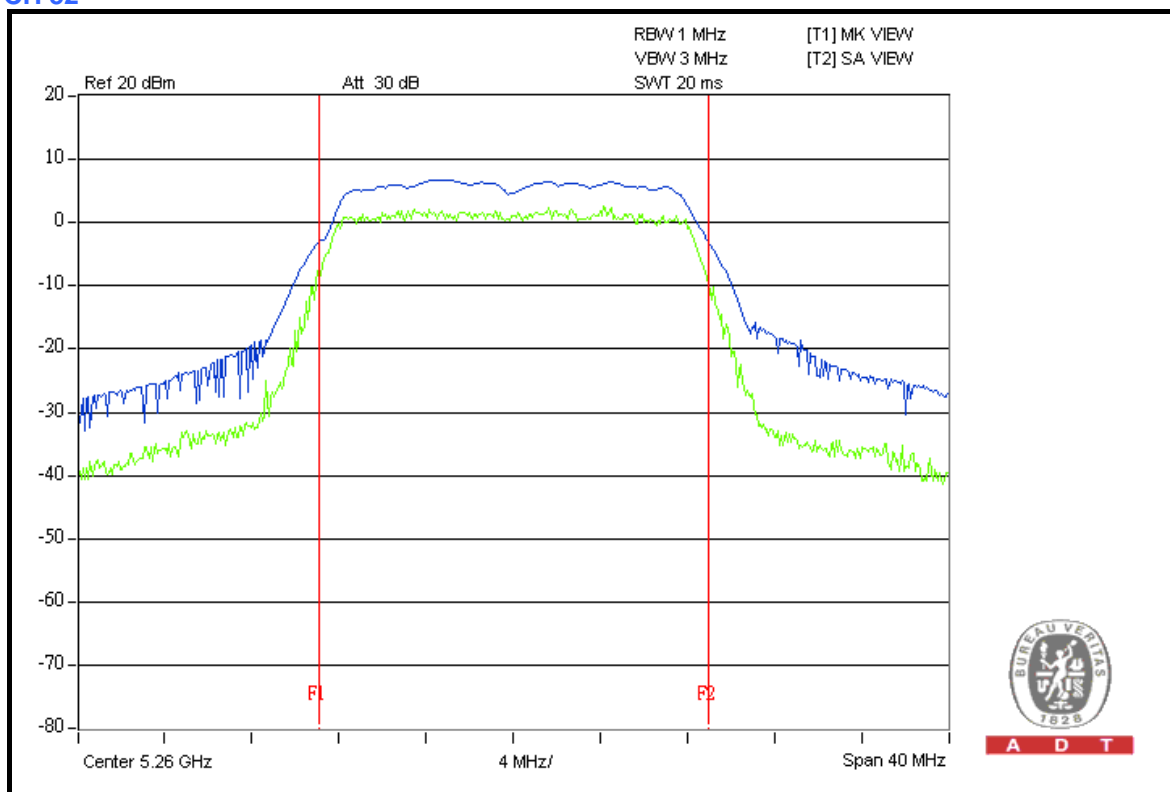
## CH 48





A D T

## CH 52

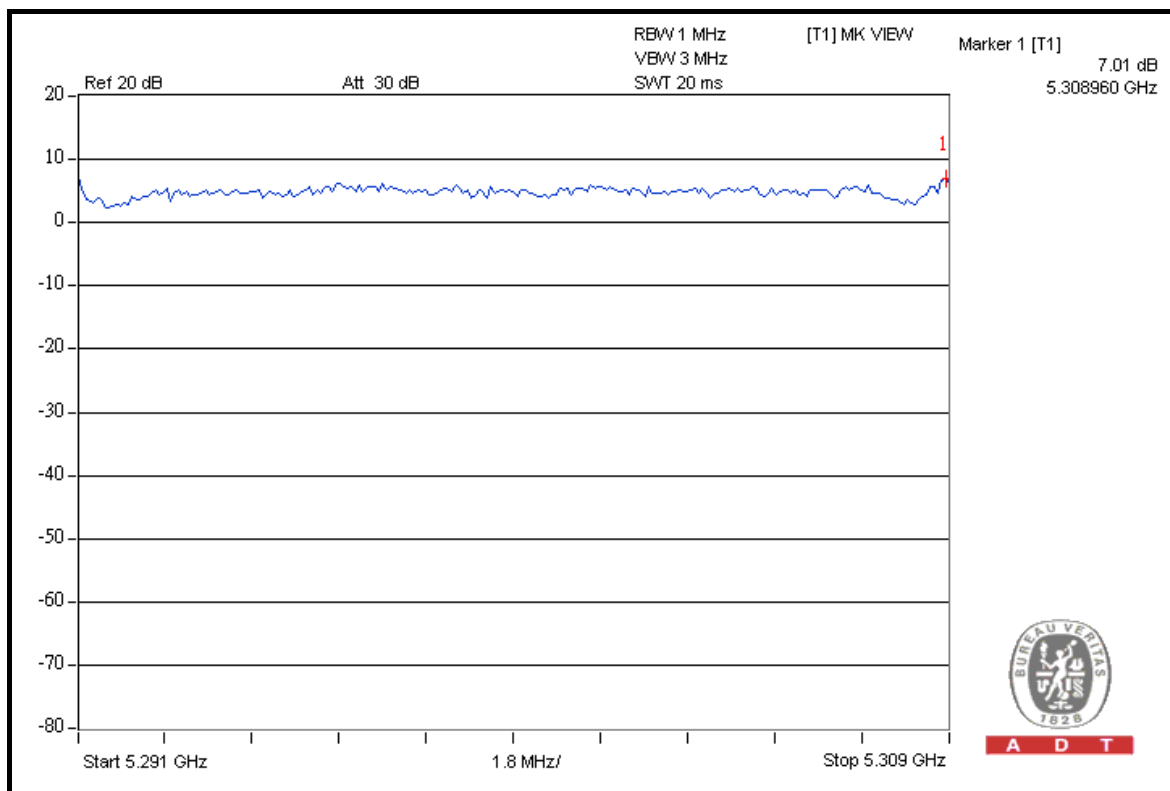
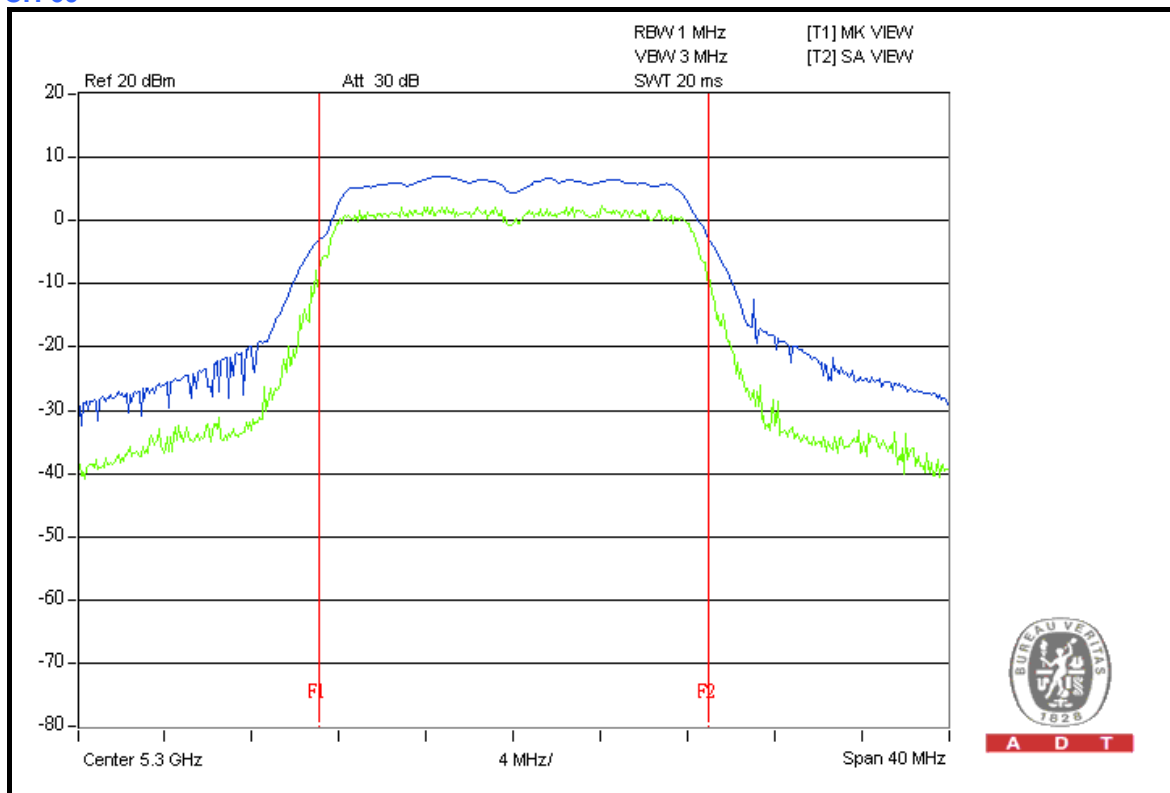






A D T

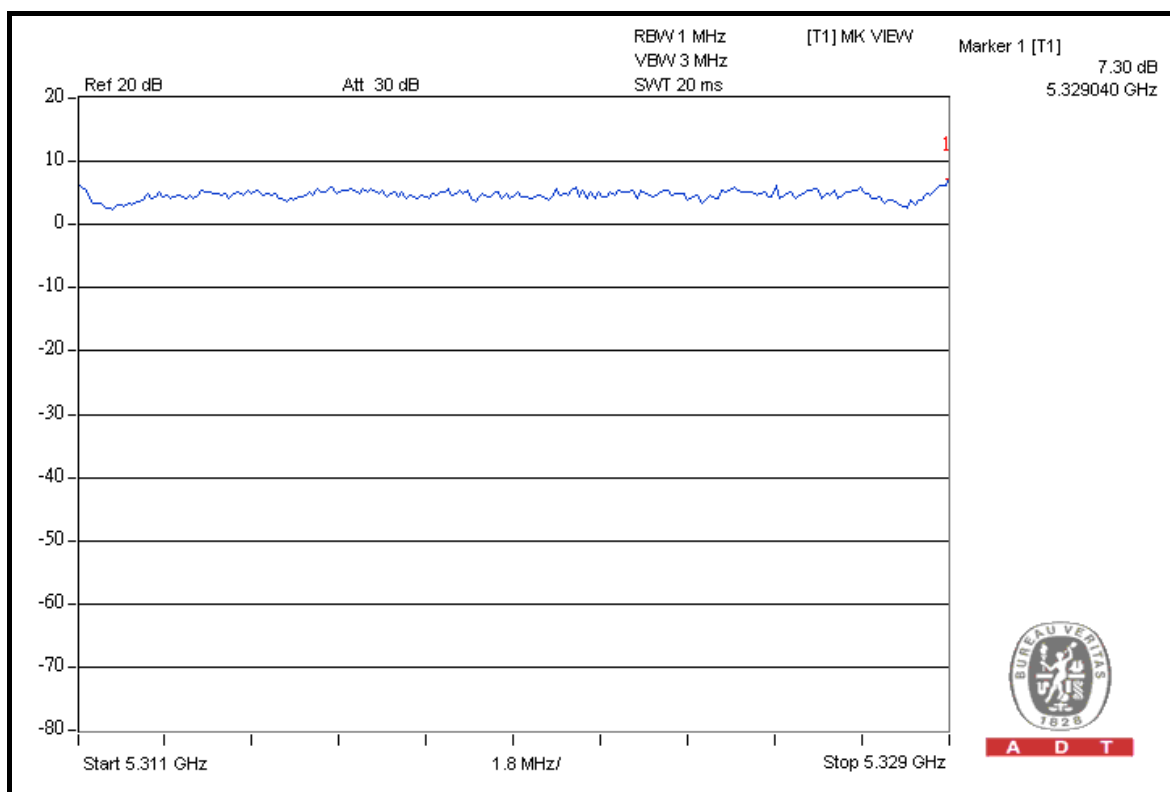
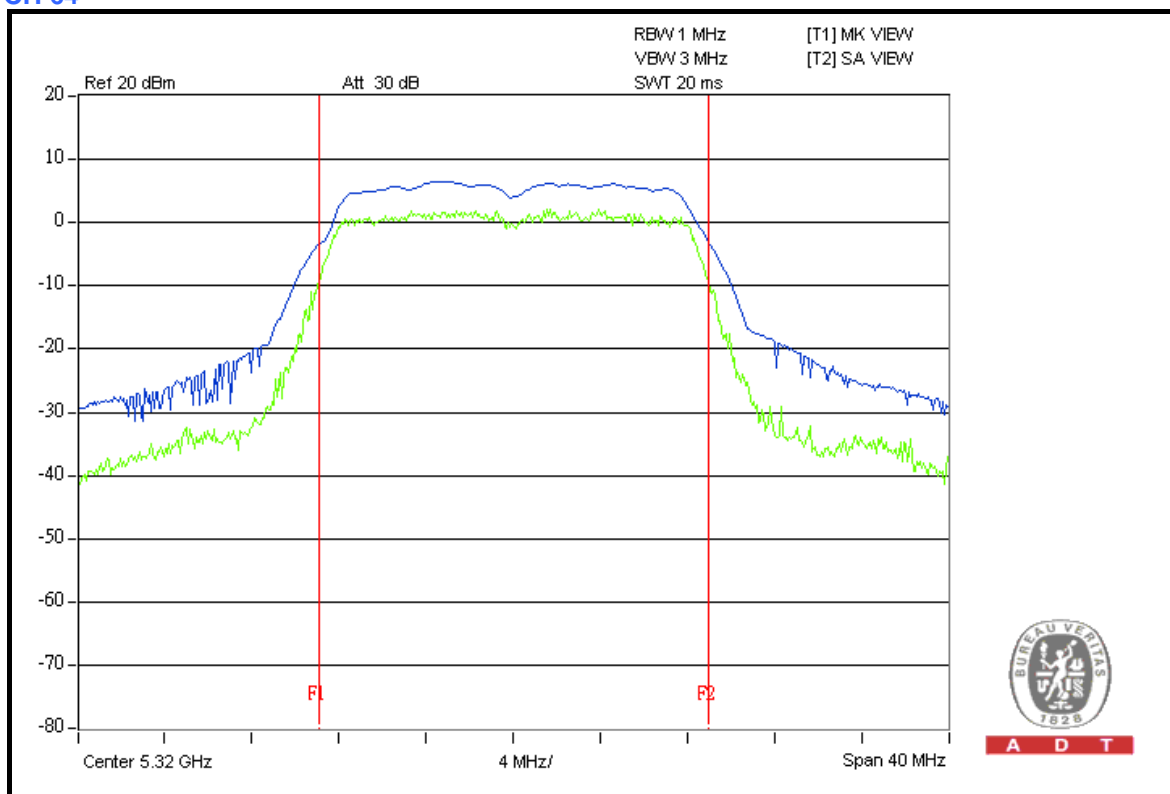
## CH 60





A D T

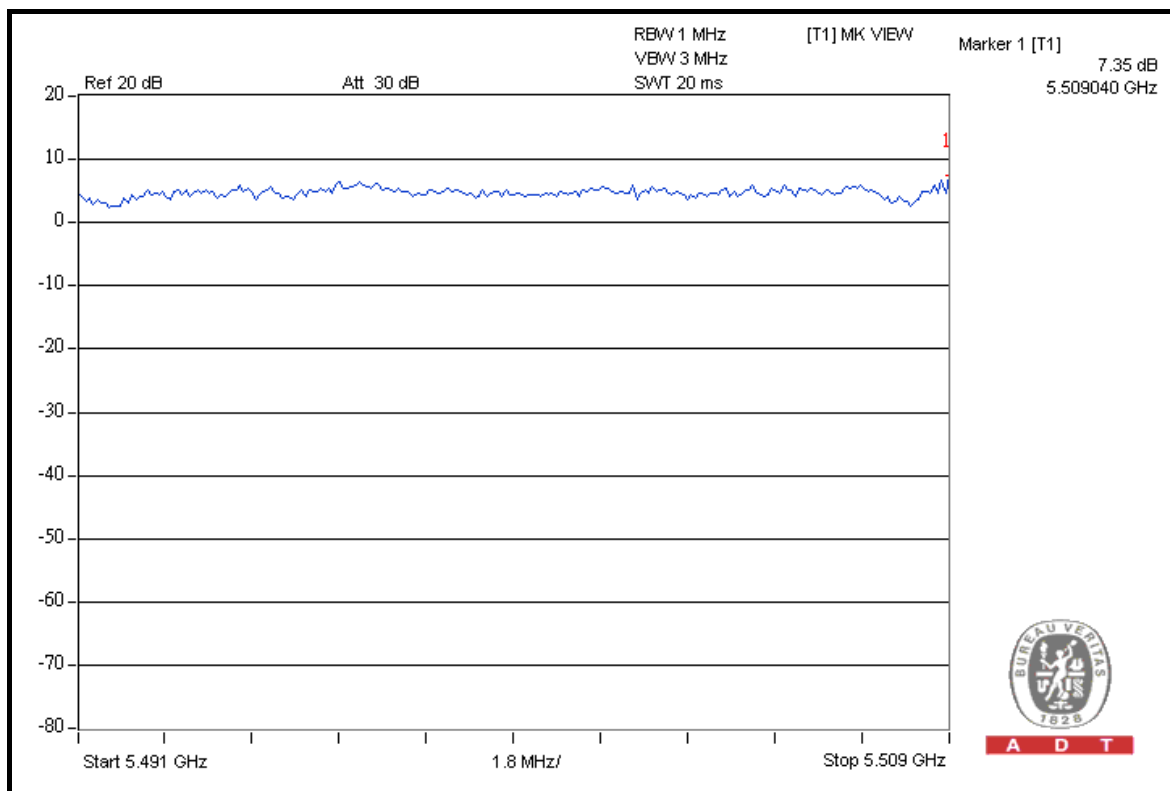
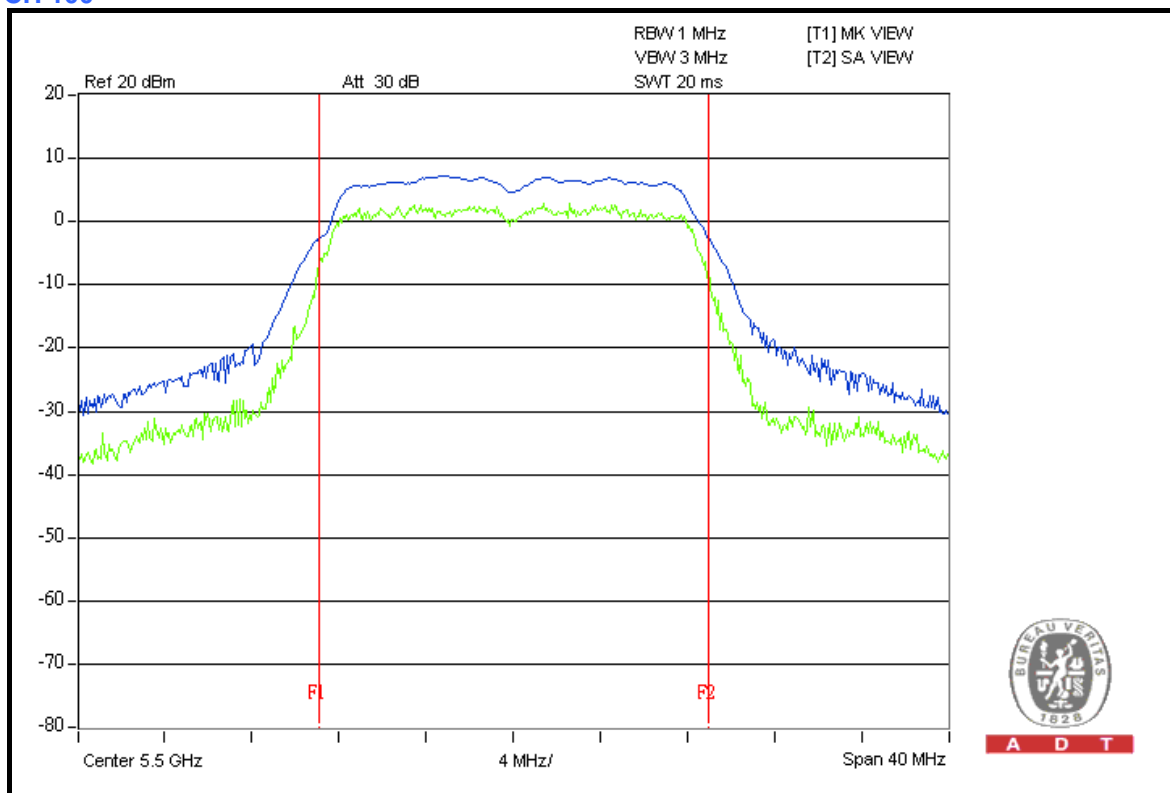
# CH 64





A D T

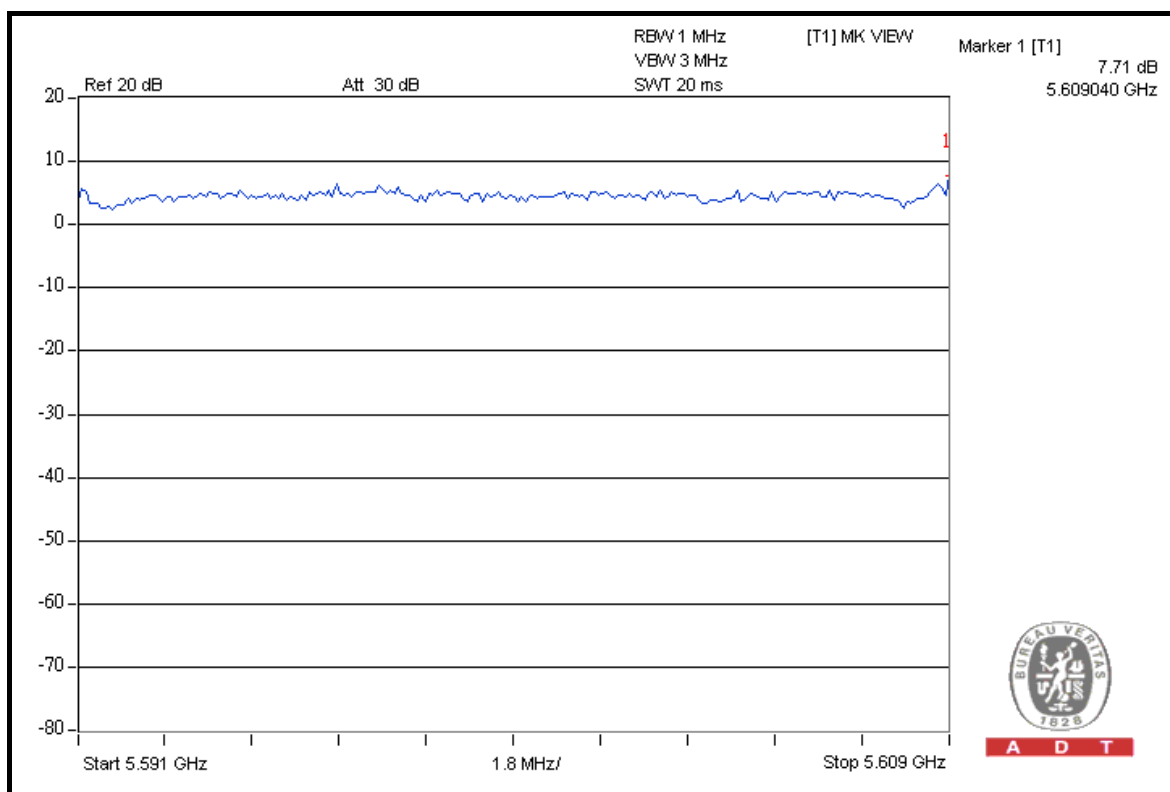
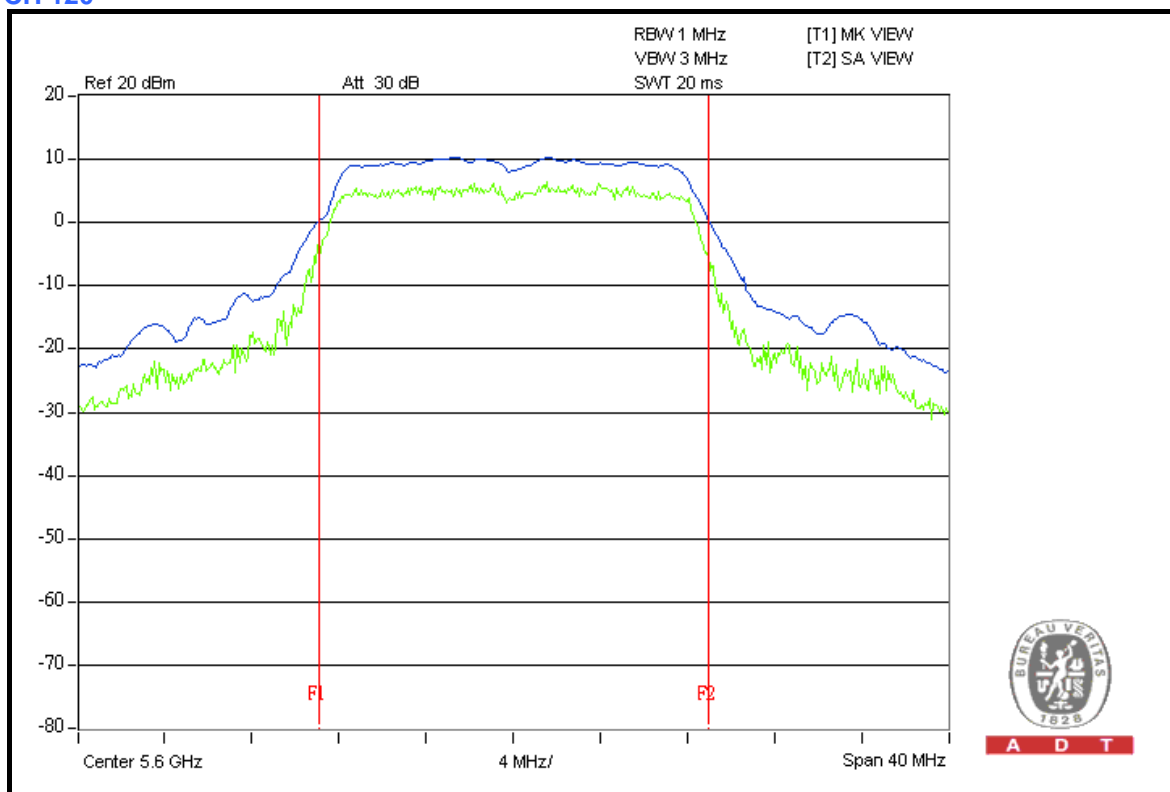
## CH 100





A D T

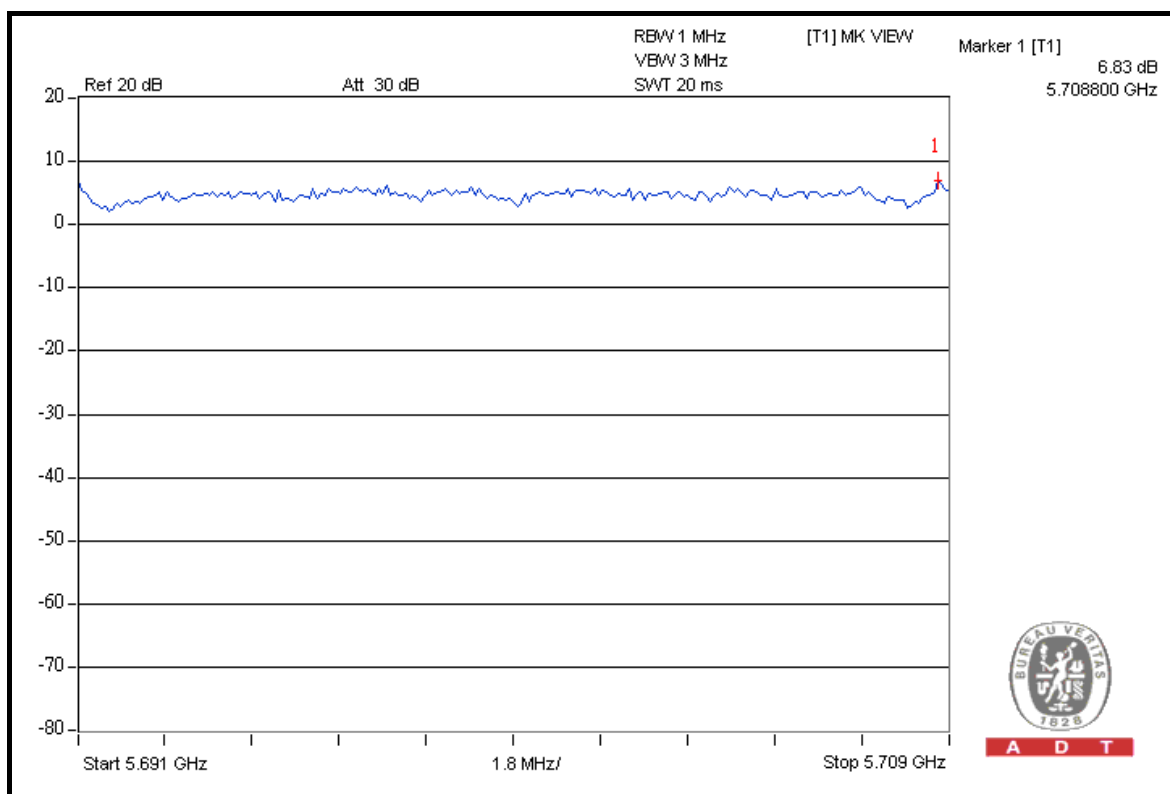
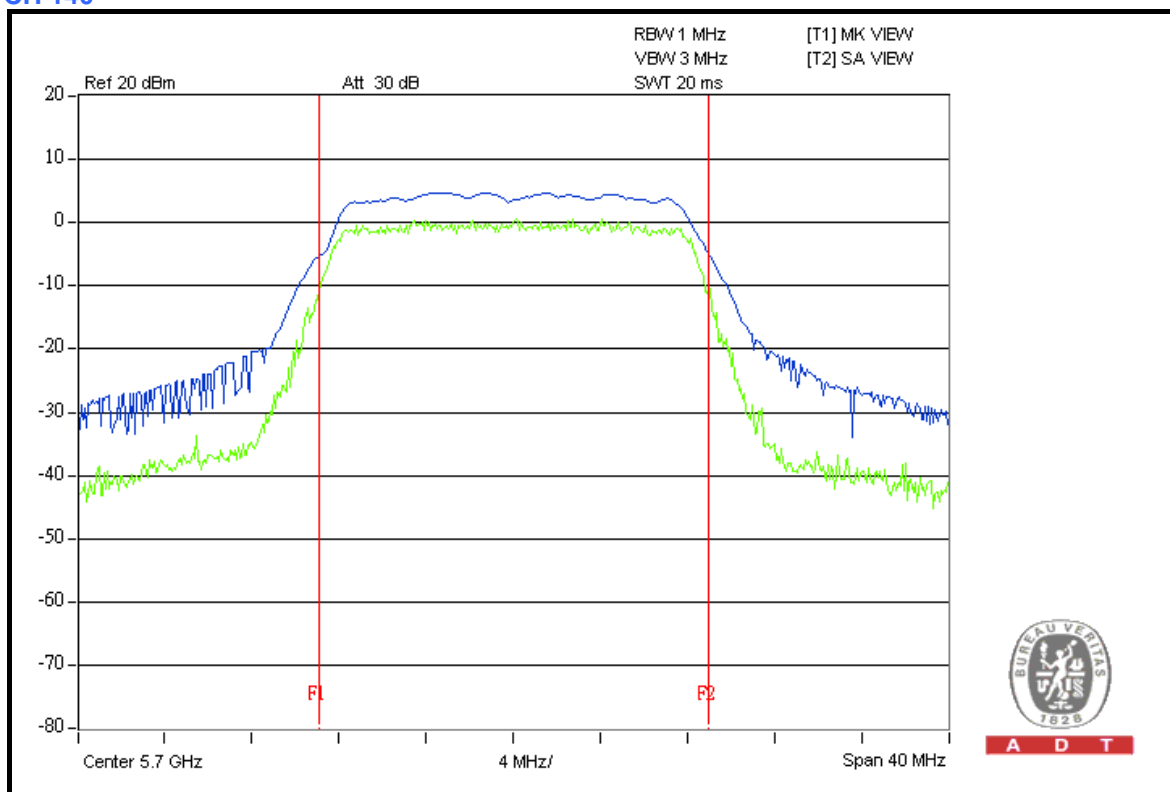
## CH 120





A D T

## CH 140



## 4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

### 4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	4dBm
5.250 ~ 5.350GHz	11dBm
5.470 ~ 5.725GHz	11dBm

### 4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	CALIBRATED UNTIL
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

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



A D T

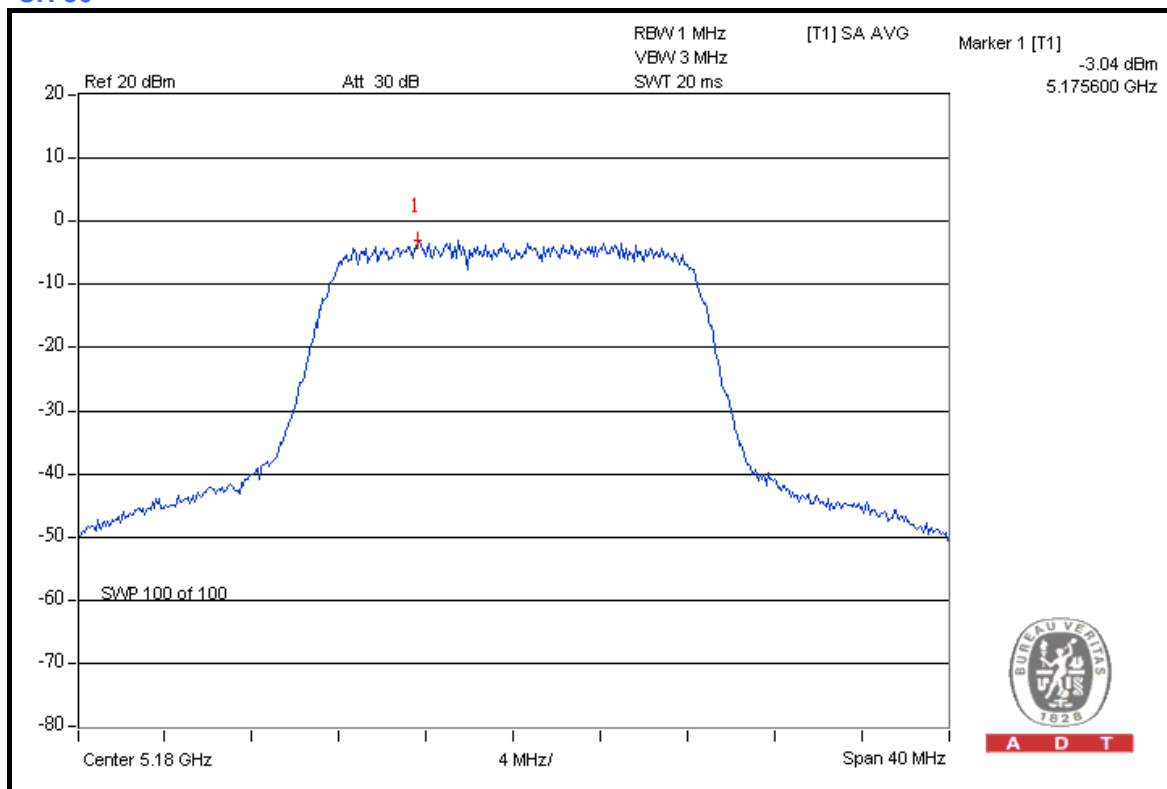
#### 4.5.7 TEST RESULTS

##### 802.11a OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz )	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
36	5180	-3.04	4	PASS
40	5200	-3.52	4	PASS
48	5240	-4.07	4	PASS
52	5260	-3.49	11	PASS
60	5300	-3.13	11	PASS
64	5320	-3.47	11	PASS
100	5500	-3.31	11	PASS
120	5600	0.71	11	PASS
140	5700	-5.20	11	PASS

##### CH 36



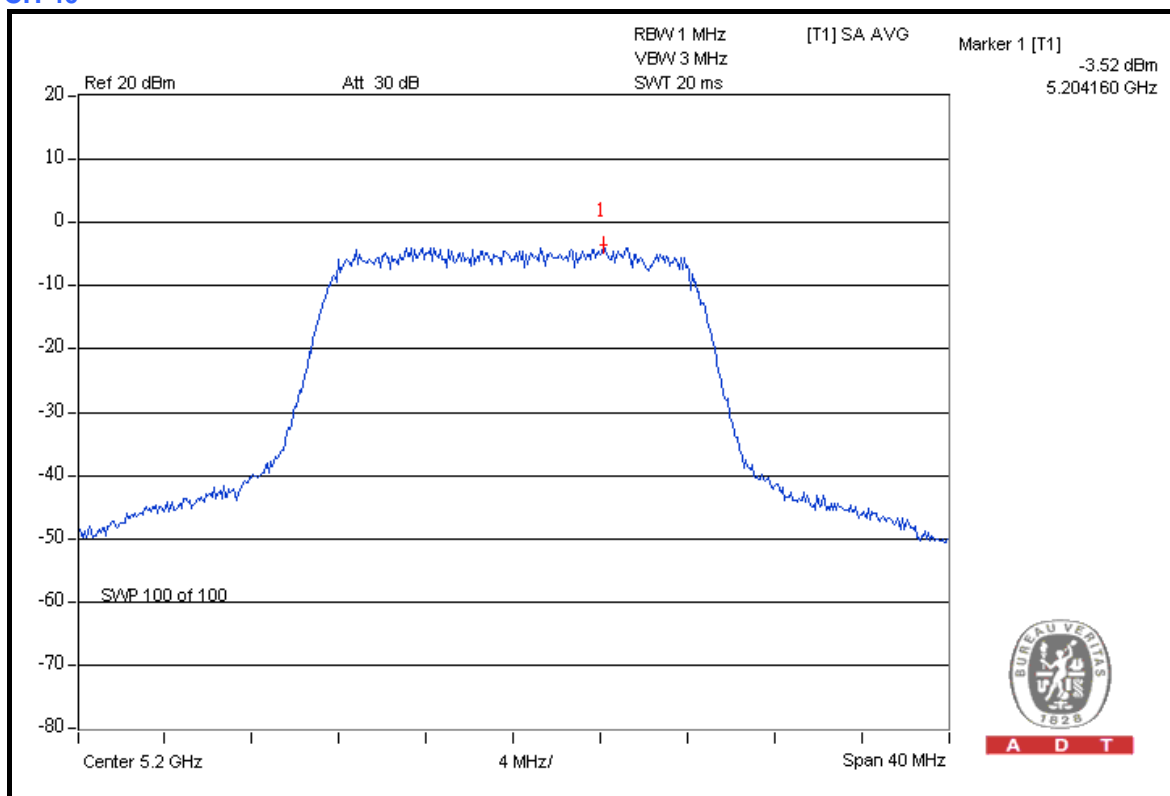
A D T





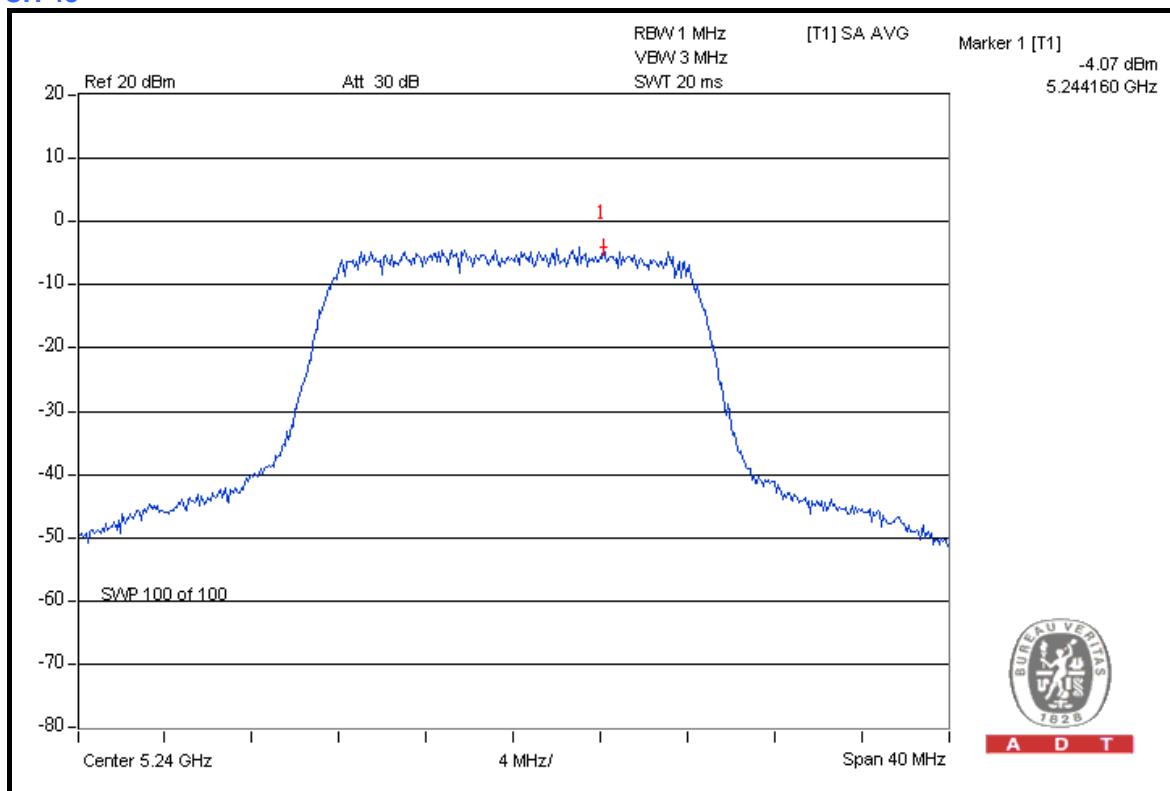
A D T

## CH 40



A D T

## CH 48

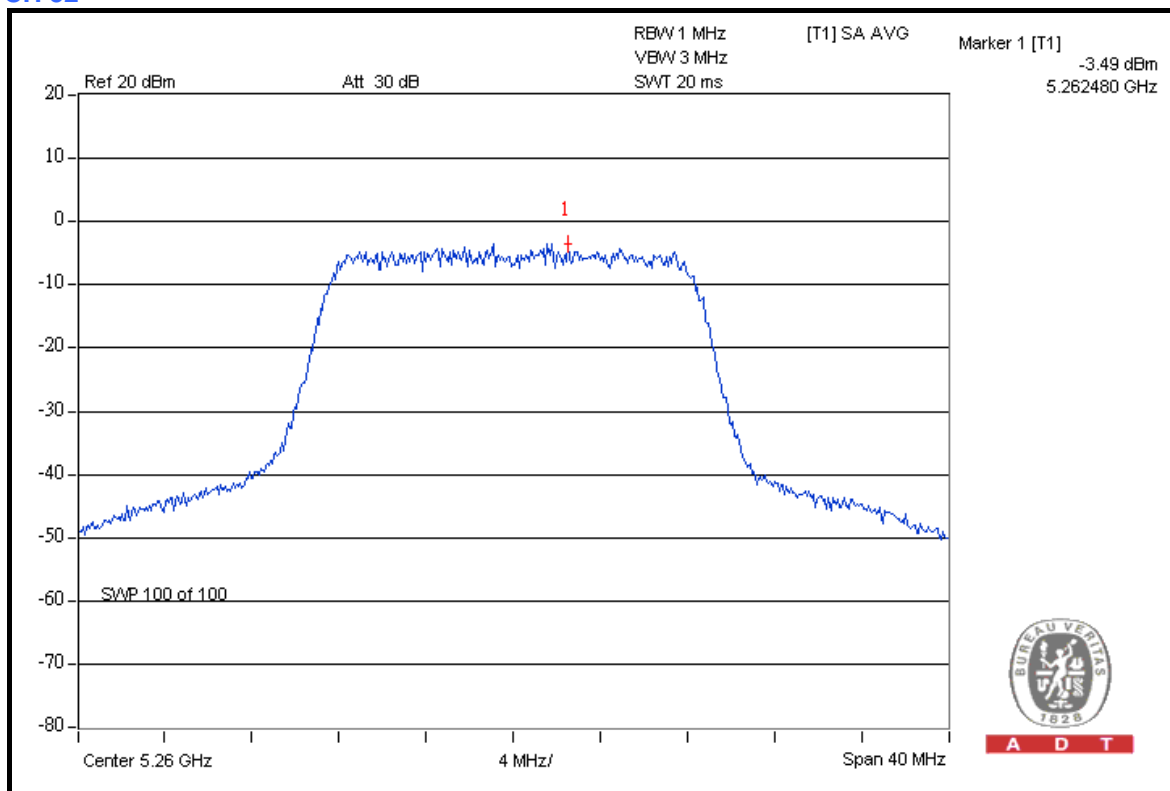


A D T

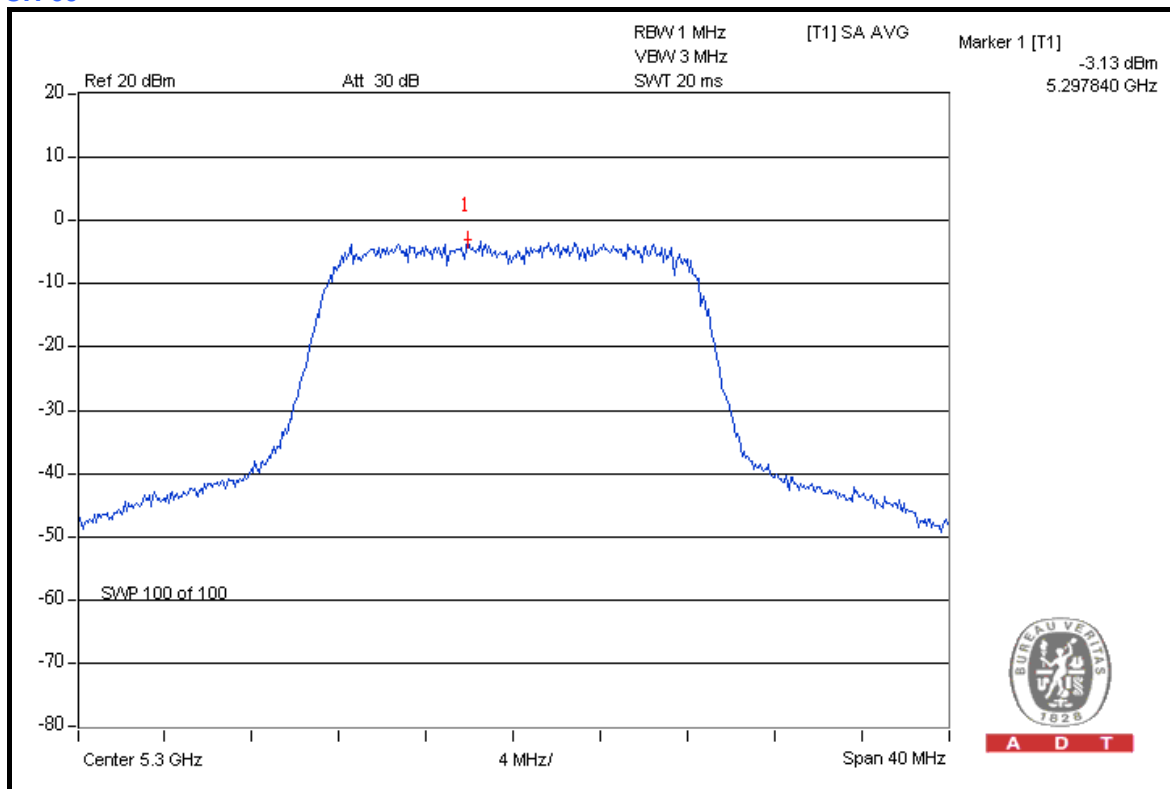


A D T

## CH 52



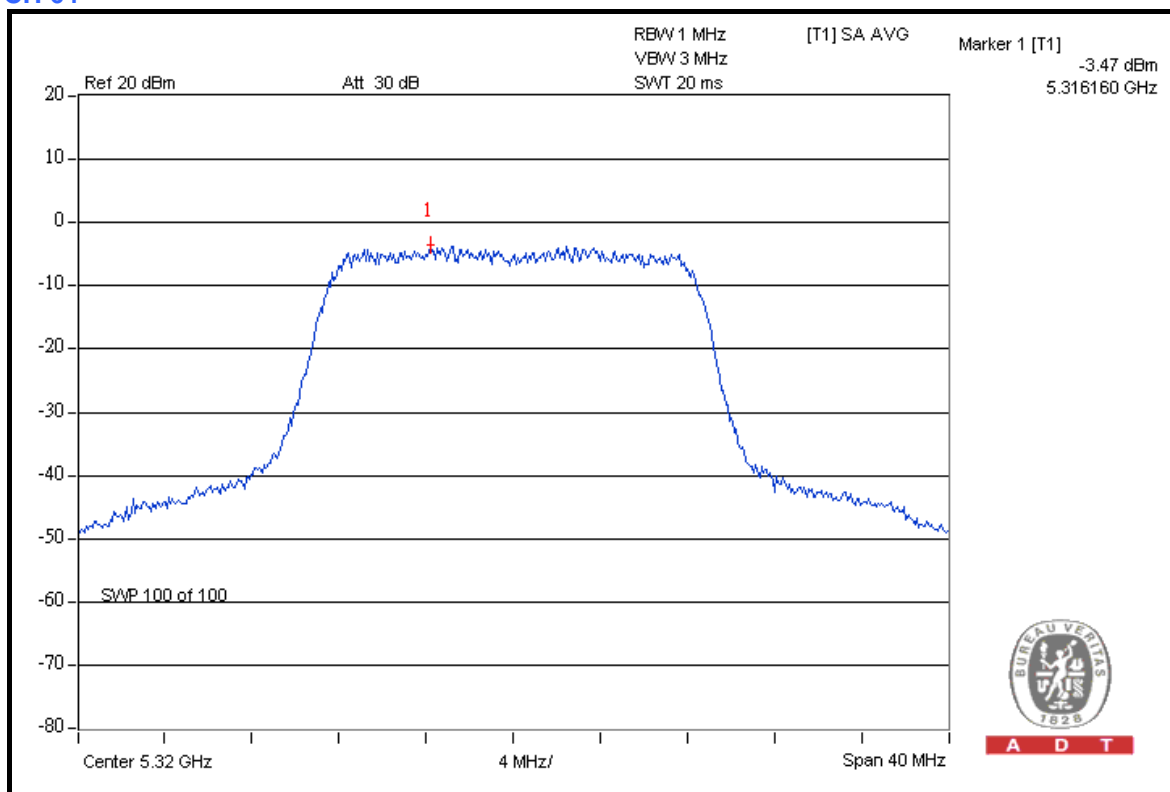
## CH 60





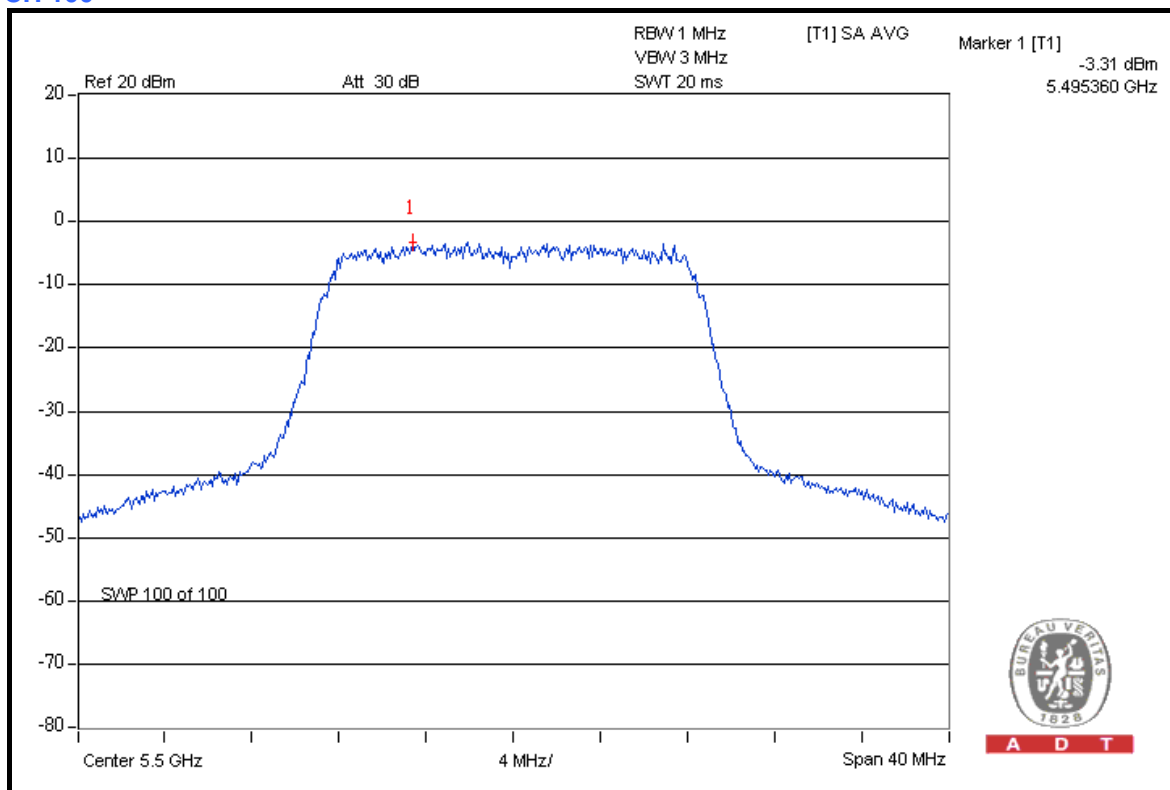
A D T

## CH 64



A D T

## CH 100

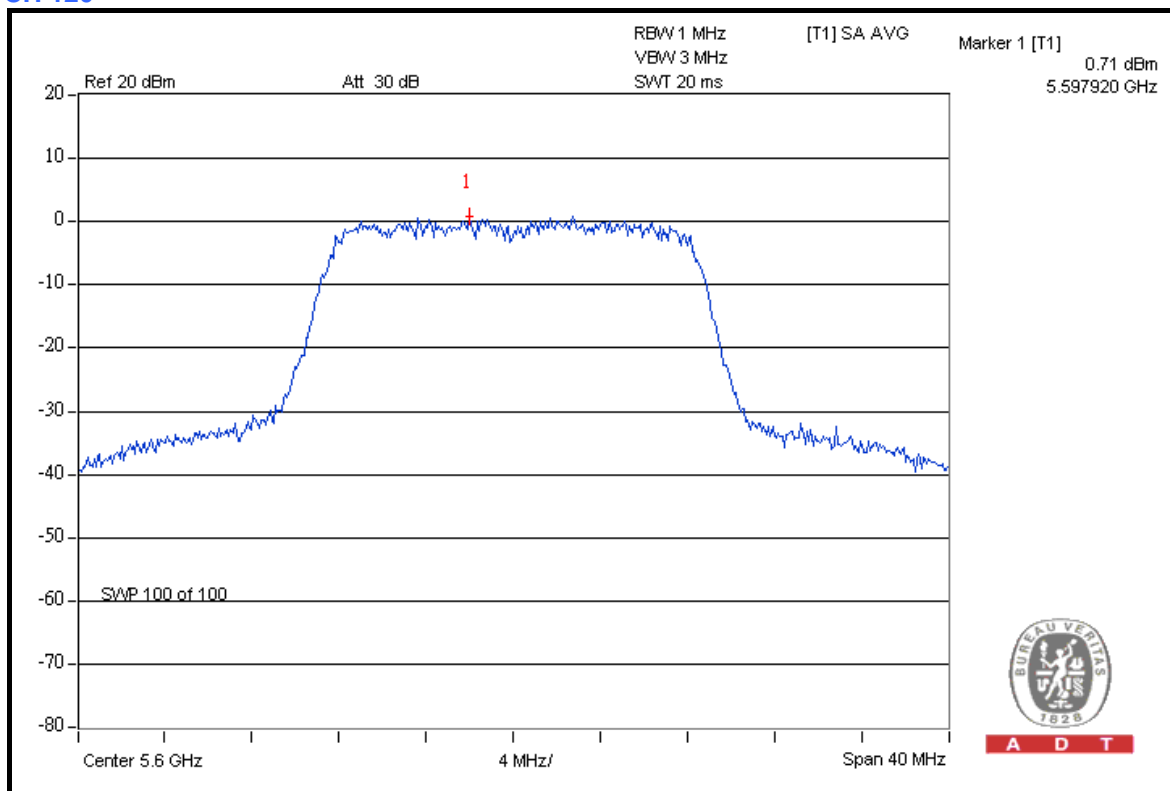


A D T



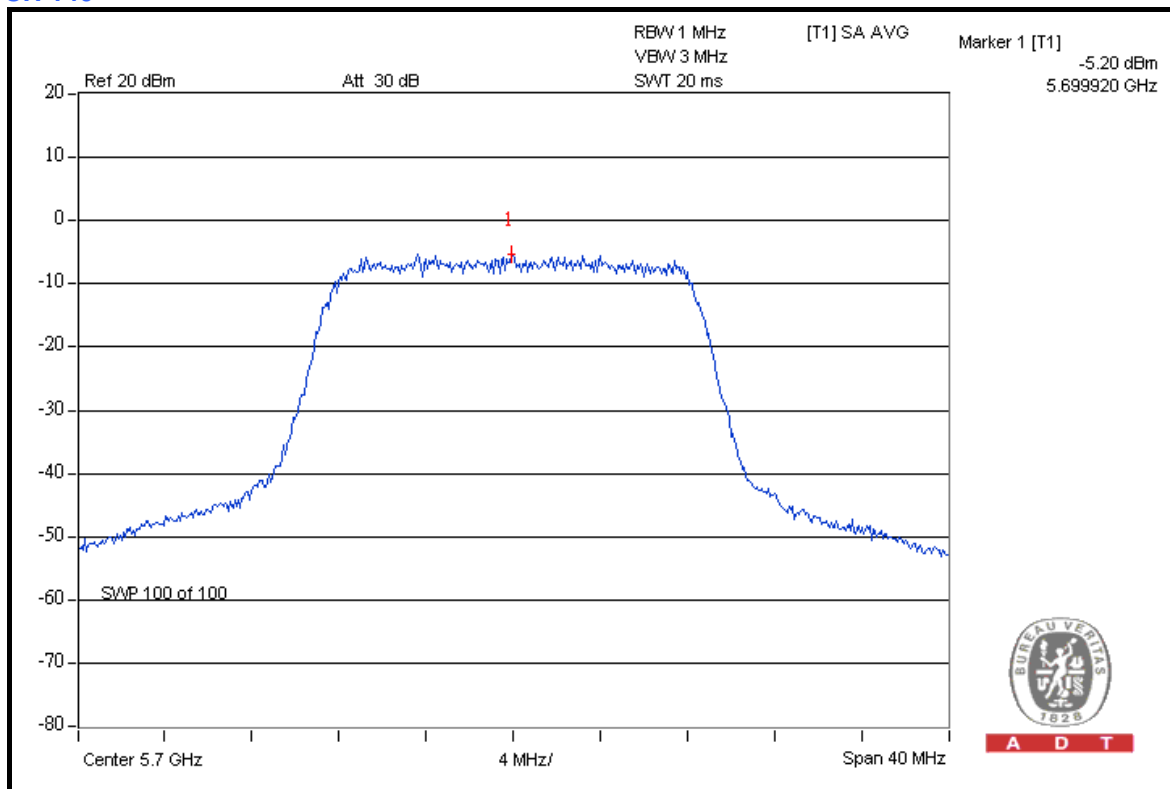
A D T

## CH 120



A D T

## CH 140



A D T

## 4.6 FREQUENCY STABILITY

### 4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

### 4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	CALIBRATED UNTIL
R&S 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.

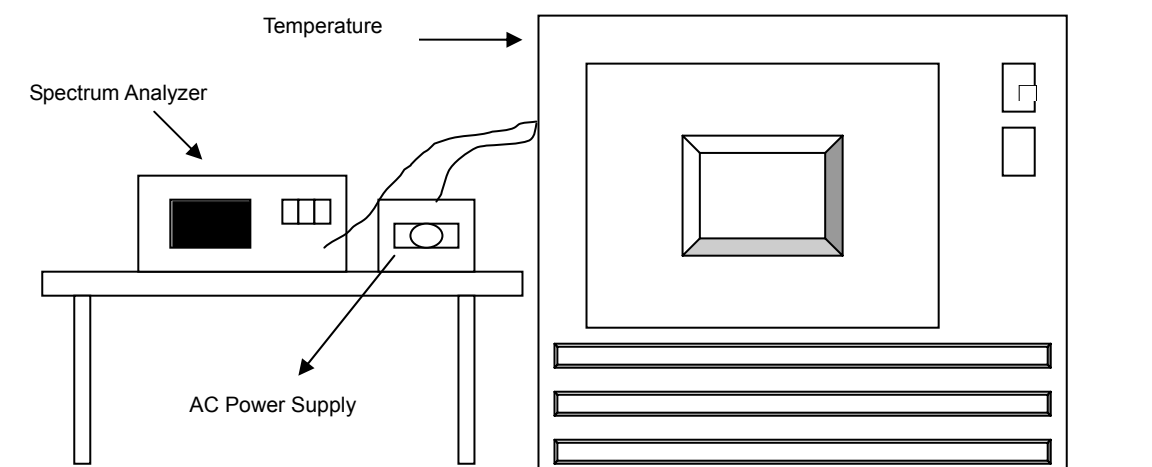
### 4.6.3 TEST PROCEDURE

- The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- 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.
- Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- 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 4.1.7

#### 4.6.7 TEST RESULTS

OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5319.999210	-0.0000148	5319.998967	-0.0000194	5319.999087	-0.0000172	5319.999319	-0.0000128
	110.0	5319.983732	-0.0003058	5319.983646	-0.0003074	5319.983729	-0.0003058	5319.983896	-0.0003027
	93.5	5319.987210	-0.0002404	5319.986898	-0.0002463	5319.986951	-0.0002453	5319.987270	-0.0002393
40	126.5	5319.979115	-0.0003926	5319.979010	-0.0003945	5319.979075	-0.0003933	5319.979107	-0.0003927
	110.0	5319.985017	-0.0002816	5319.985372	-0.0002750	5319.985450	-0.0002735	5319.985399	-0.0002745
	93.5	5319.997262	-0.0000515	5319.996965	-0.0000570	5319.996965	-0.0000570	5319.996854	-0.0000591
30	126.5	5319.980139	-0.0003733	5319.980172	-0.0003727	5319.980030	-0.0003754	5319.979954	-0.0003768
	110.0	5319.986146	-0.0002604	5319.986194	-0.0002595	5319.986003	-0.0002631	5319.986221	-0.0002590
	93.5	5320.003963	0.0000745	5320.004285	0.0000805	5320.004060	0.0000763	5320.003931	0.0000739
20	126.5	5319.986715	-0.0002497	5319.986943	-0.0002454	5319.987028	-0.0002438	5319.986923	-0.0002458
	110.0	5319.987194	-0.0002407	5319.987119	-0.0002421	5319.987099	-0.0002425	5319.987287	-0.0002390
	93.5	5320.011772	0.0002213	5320.011409	0.0002145	5320.011196	0.0002105	5320.011400	0.0002143
10	126.5	5319.994867	-0.0000965	5319.995145	-0.0000913	5319.994625	-0.0001010	5319.994691	-0.0000998
	110.0	5320.002805	0.0000527	5320.002931	0.0000551	5320.002675	0.0000503	5320.002824	0.0000531
	93.5	5320.018010	0.0003385	5320.017746	0.0003336	5320.017740	0.0003335	5320.017895	0.0003364
0	126.5	5319.997670	-0.0000438	5319.997367	-0.0000495	5319.997508	-0.0000468	5319.997260	-0.0000515
	110.0	5320.009878	0.0001857	5320.009993	0.0001878	5320.009730	0.0001829	5320.009755	0.0001834
	93.5	5320.024189	0.0004547	5320.024499	0.0004605	5320.024275	0.0004563	5320.024252	0.0004559
-10	126.5	5320.009950	0.0001870	5320.009998	0.0001879	5320.009619	0.0001808	5320.009801	0.0001842
	110.0	5320.016091	0.0003025	5320.015967	0.0003001	5320.016018	0.0003011	5320.016049	0.0003017
	93.5	5320.030354	0.0005706	5320.030672	0.0005765	5320.030285	0.0005693	5320.030532	0.0005739
-20	126.5	5320.015279	0.0002872	5320.015213	0.0002860	5320.015313	0.0002878	5320.015065	0.0002832
	110.0	5320.020241	0.0003805	5320.020202	0.0003797	5320.020255	0.0003807	5320.020527	0.0003858
	93.5	5320.035407	0.0006655	5320.035666	0.0006704	5320.035481	0.0006669	5320.035500	0.0006673
-30	126.5	5320.020795	0.0003909	5320.020671	0.0003886	5320.020719	0.0003895	5320.020665	0.0003884
	110.0	5320.034872	0.0006555	5320.034908	0.0006562	5320.035216	0.0006620	5320.035266	0.0006629
	93.5	5320.037408	0.0007032	5320.037162	0.0006985	5320.037382	0.0007027	5320.037445	0.0007039

## 4.7 BAND EDGES MEASUREMENT

### 4.7.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	CALIBRATED UNTIL
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.

### 4.7.2 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. 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.

### 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 5.18 to 5.32GHz and 5.50 to 5.70GHz 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.



## FOR 5180-5320MHz BAND: 802.11a OFDM MODULATION

### Channel 36 (5180MHz)

The band edge emission plot on the next page shows 41.47dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 109.05dBuV/m (Peak), so the maximum field strength in restrict band is  $109.05 - 41.47 = 67.58\text{dBuV/m}$  which is under 74dBuV/m limit.

The band edge emission plot on the next page shows 49.98dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 98.37dBuV/m (Average), so the maximum field strength in restrict band is  $98.37 - 49.98 = 48.39\text{dBuV/m}$  which is under 54dBuV/m limit.

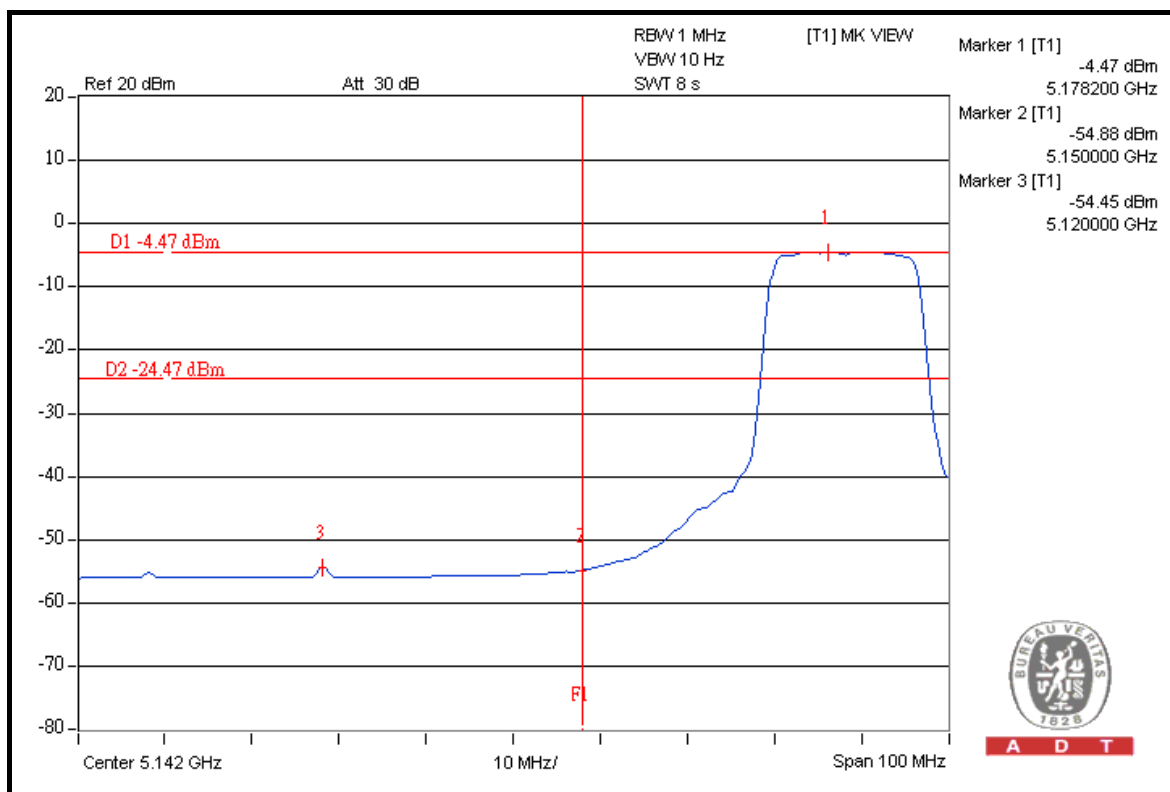
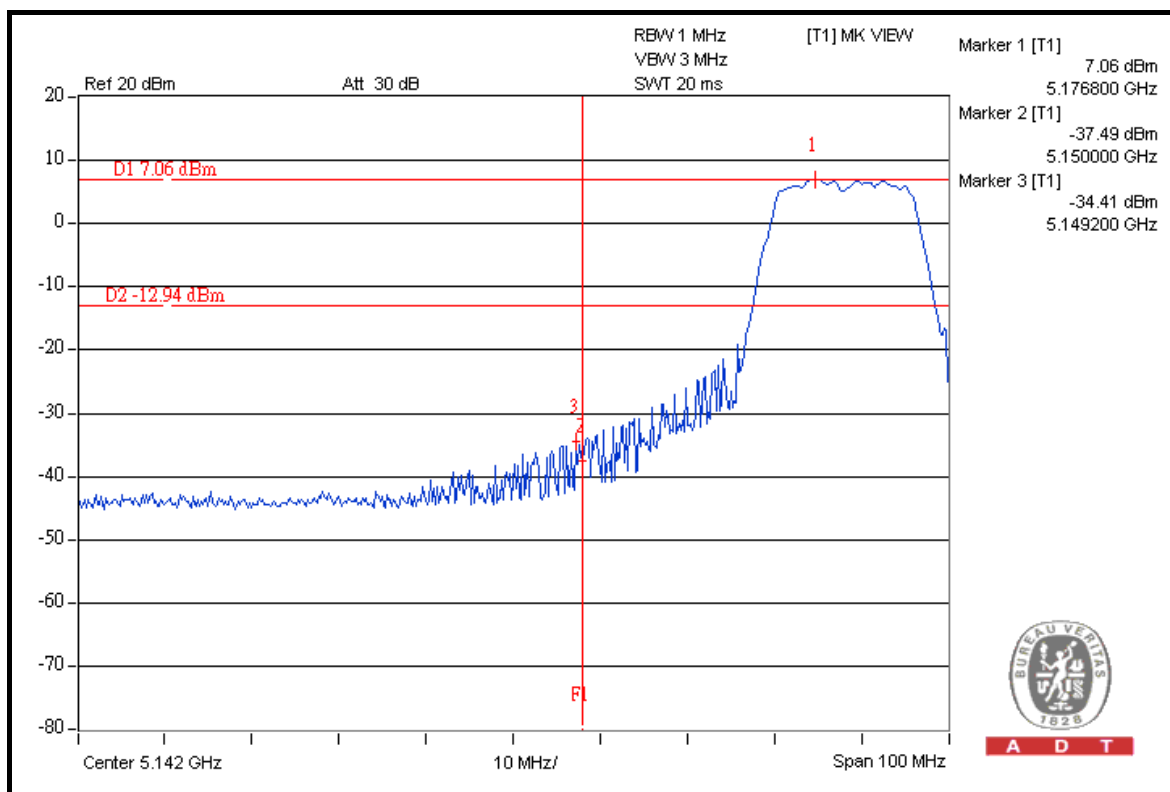
### Channel 64 (5320MHz)

The band edge emission plot on the next second page shows 42.12dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 64 is 109.33dBuV/m (Peak), so the maximum field strength in restrict band is  $109.33 - 42.12 = 67.21\text{dBuV/m}$  which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 49.93dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 64 is 99.18dBuV/m (Average), so the maximum field strength in restrict band is  $99.18 - 49.93 = 49.25\text{dBuV/m}$  which is under 54dBuV/m limit.

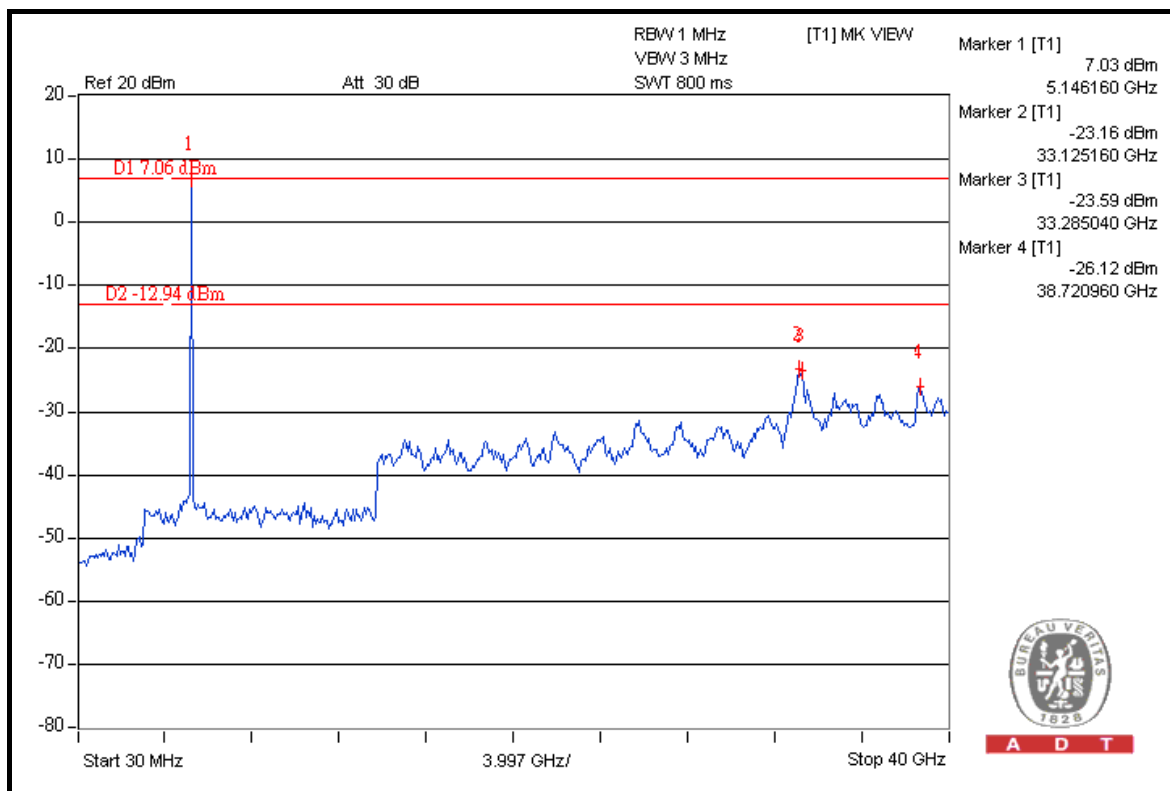


A D T

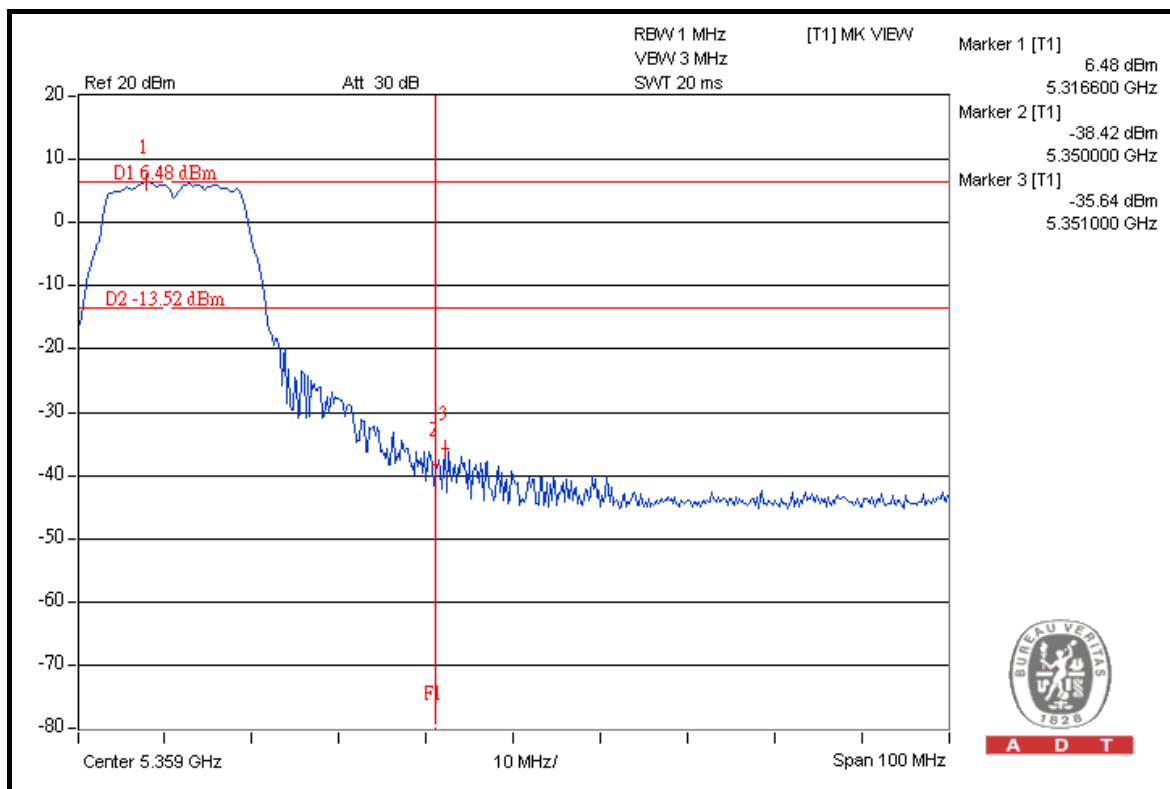




A D T



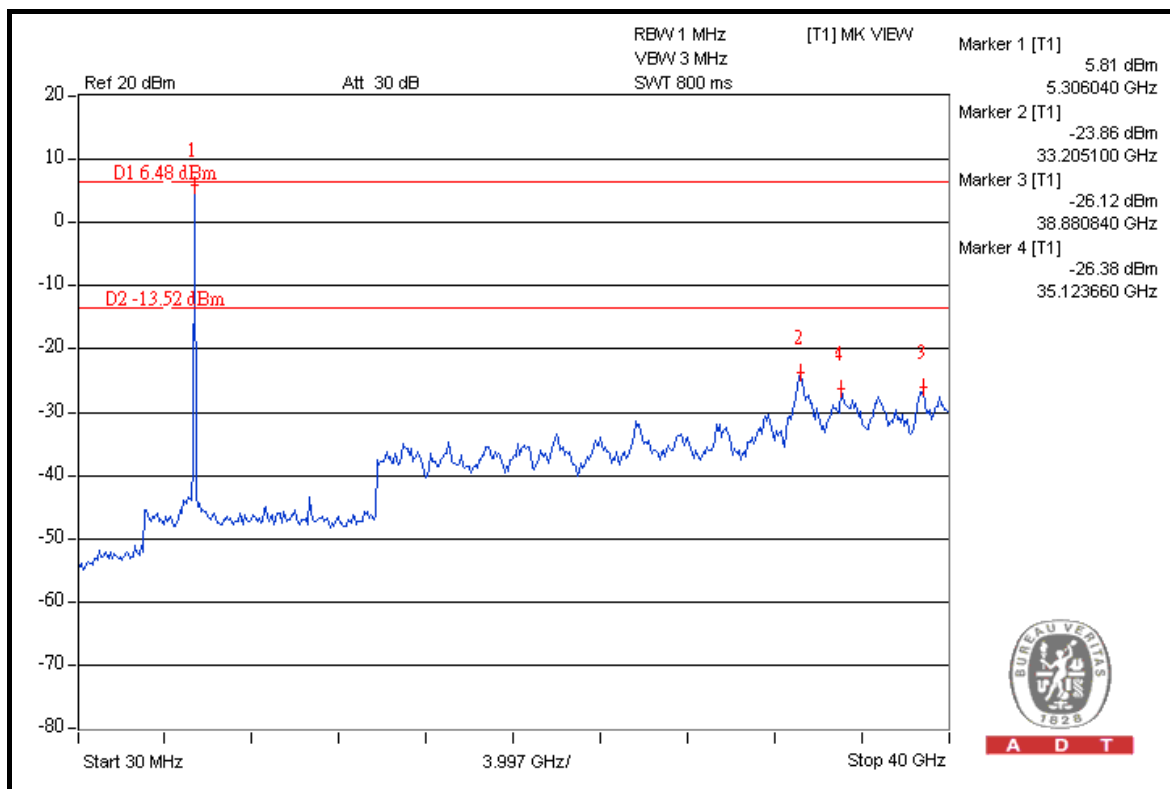
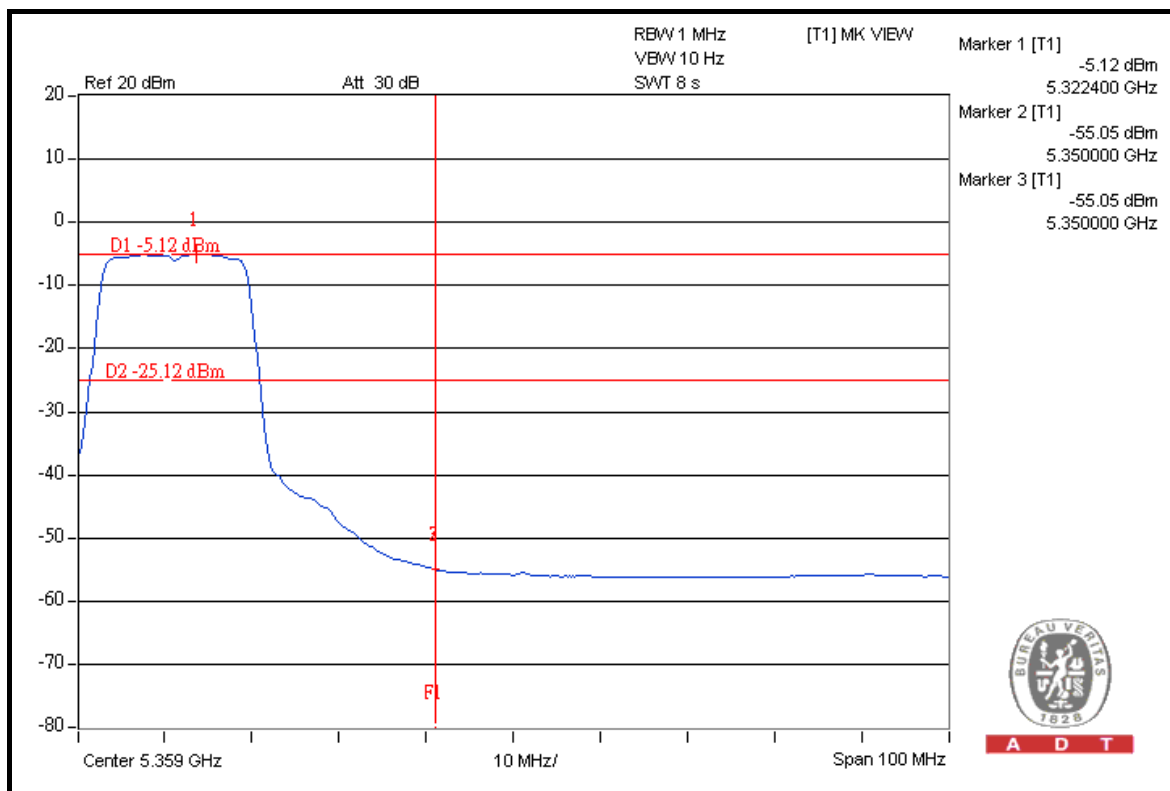
A D T



A D T



A D T



## FOR 5500-5700MHz BAND: 802.11a OFDM MODULATION

### Channel 100 (5500MHz)

The band edge emission plot (5.460GHz) on the next page shows 47.62dBc between carrier maximum power and local maximum emission out of band emission. The emission of carrier strength list in the test result of channel 100 is 109.62dBuV/m (Peak), so the maximum field strength out of band emission is  $109.62 - 47.62 = 62.00\text{dBuV/m}$  which is under 74dBuV/m limit.

The band edge emission plot (5.460GHz) on the next page shows 51.10dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 100 is 98.97dBuV/m (Average), so the maximum field strength in restrict band is  $98.97 - 51.10 = 47.87\text{dBuV/m}$  which is under 54dBuV/m limit.

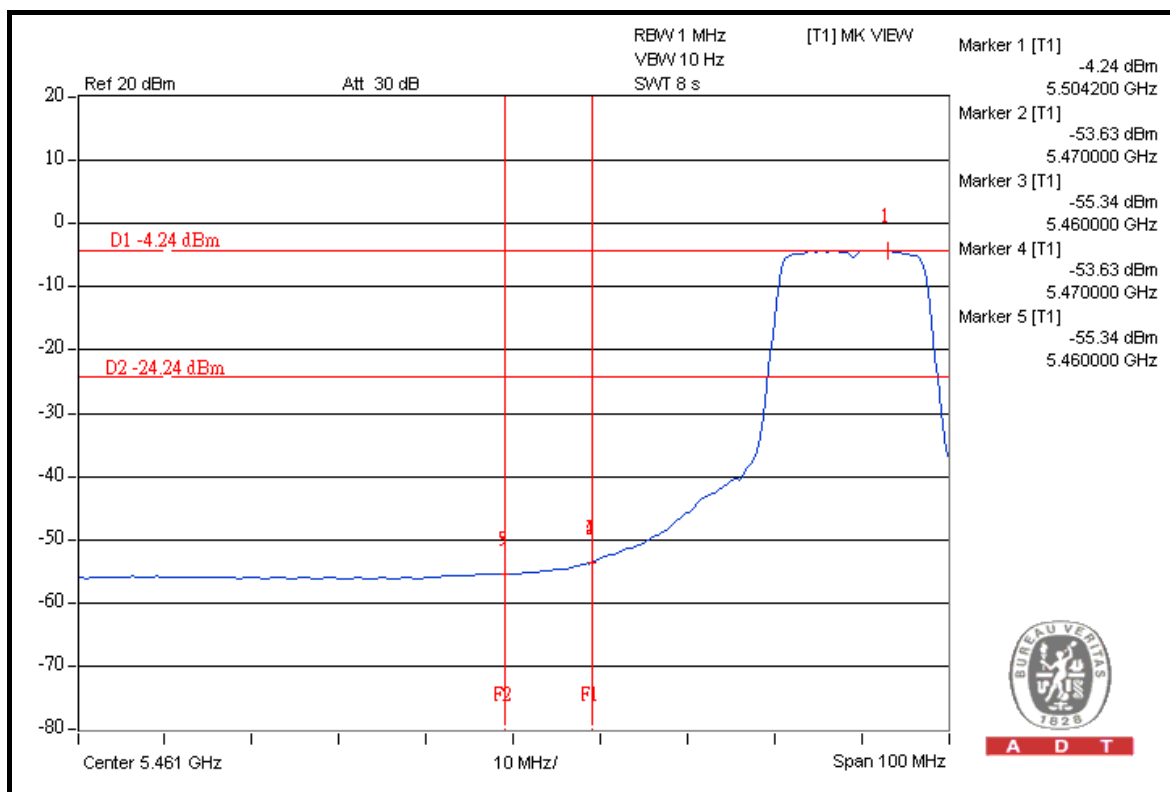
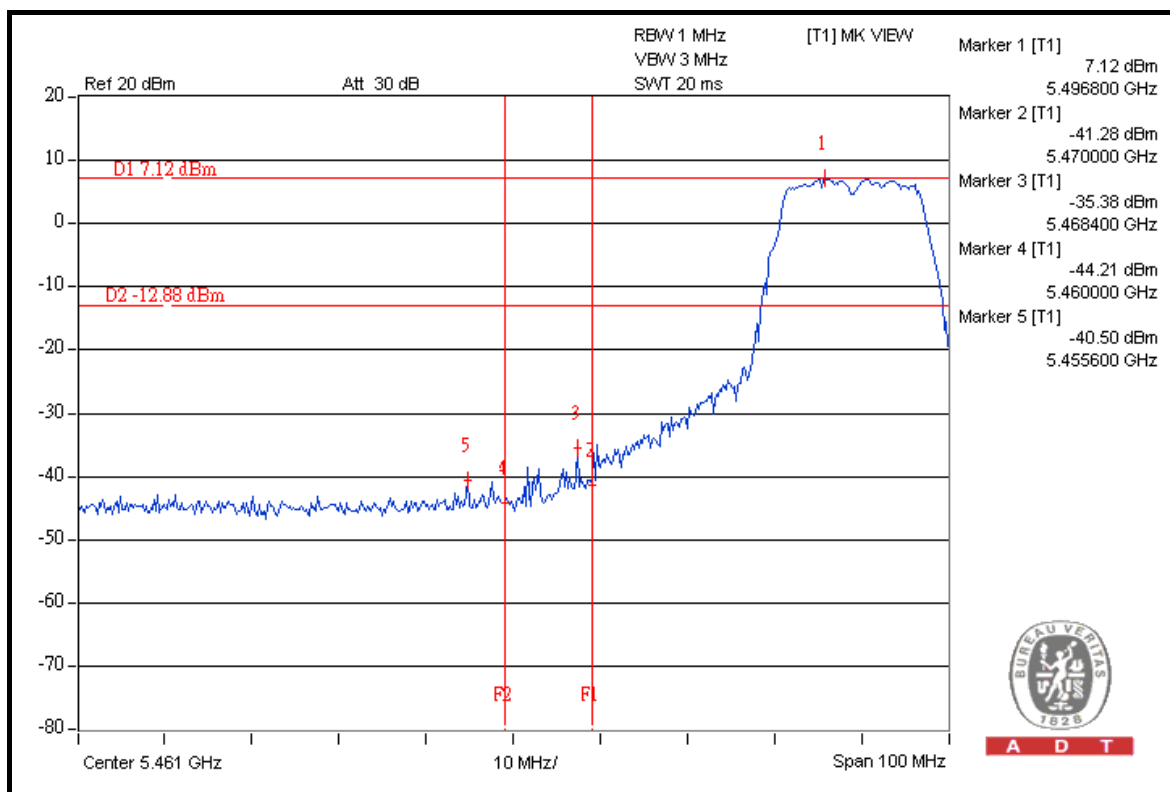
The band edge emission plot (5.470GHz) on the next page shows 42.50dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 100 is 109.62dBuV/m (Peak), so the maximum field strength in restrict band is  $109.62 - 42.50 = 67.12\text{dBuV/m}$  which is under 68.3dBuV/m limit.

### Channel 140 (5700MHz)

The band edge emission plot on the next second page shows 38.45dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 140 is 105.17dBuV/m (Peak), so the maximum field strength in restrict band is  $105.17 - 38.45 = 66.72\text{dBuV/m}$  which is under 68.3dBuV/m limit.

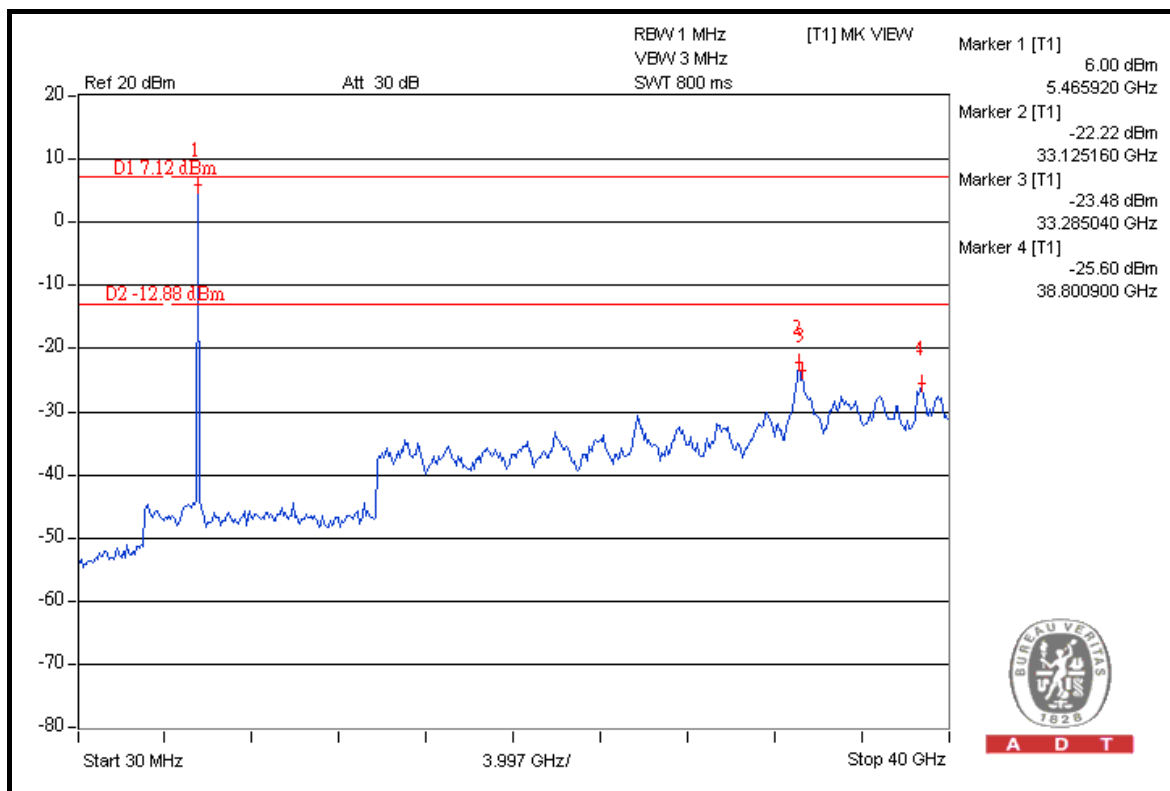


A D T

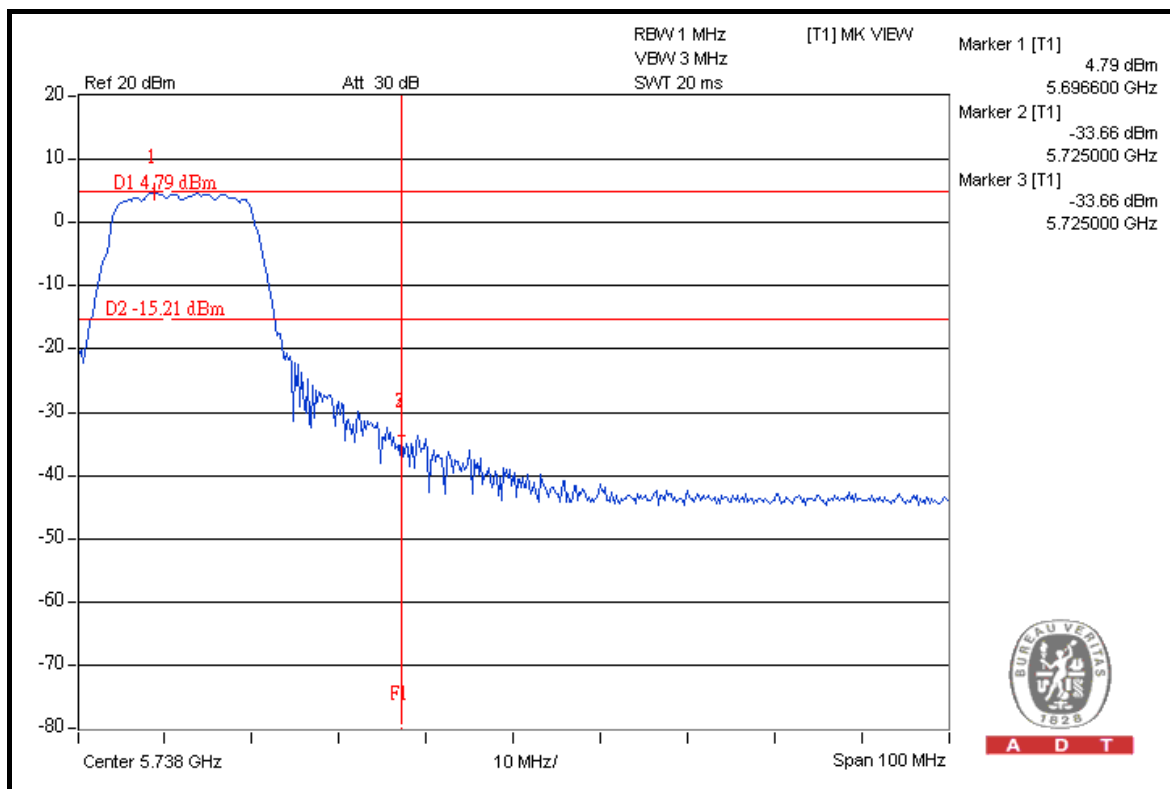




A D T



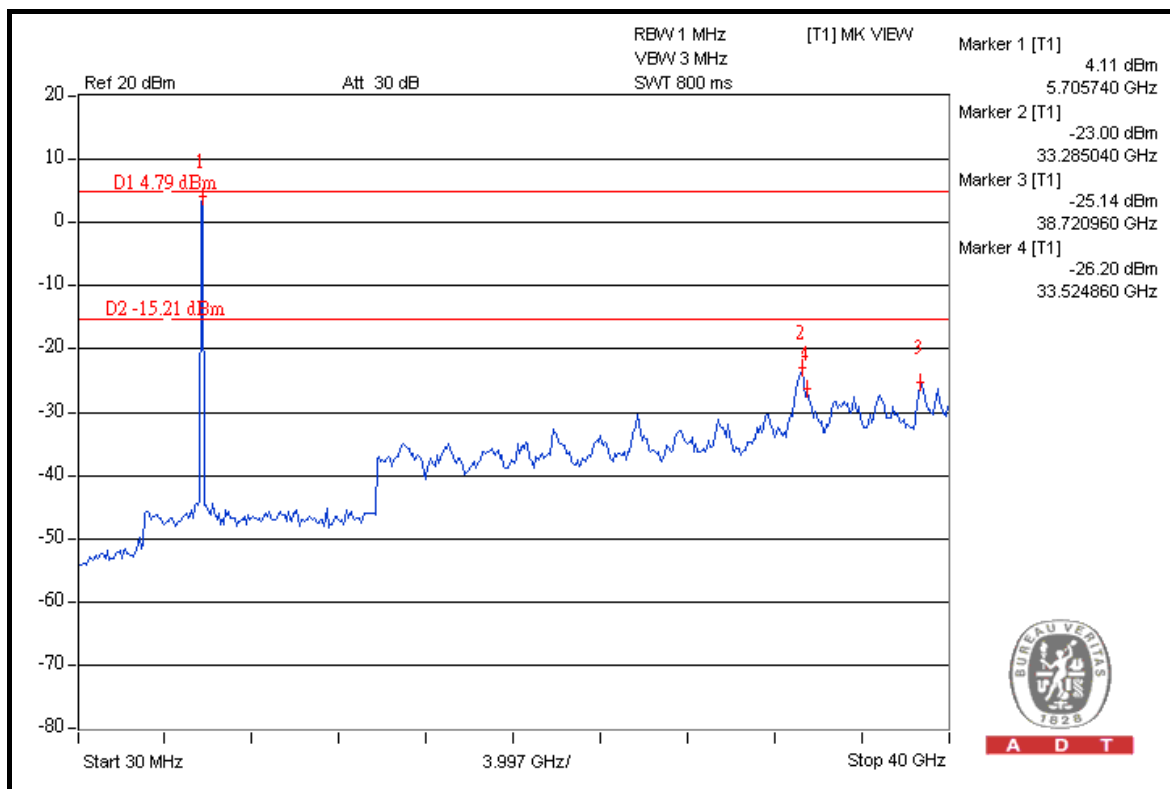
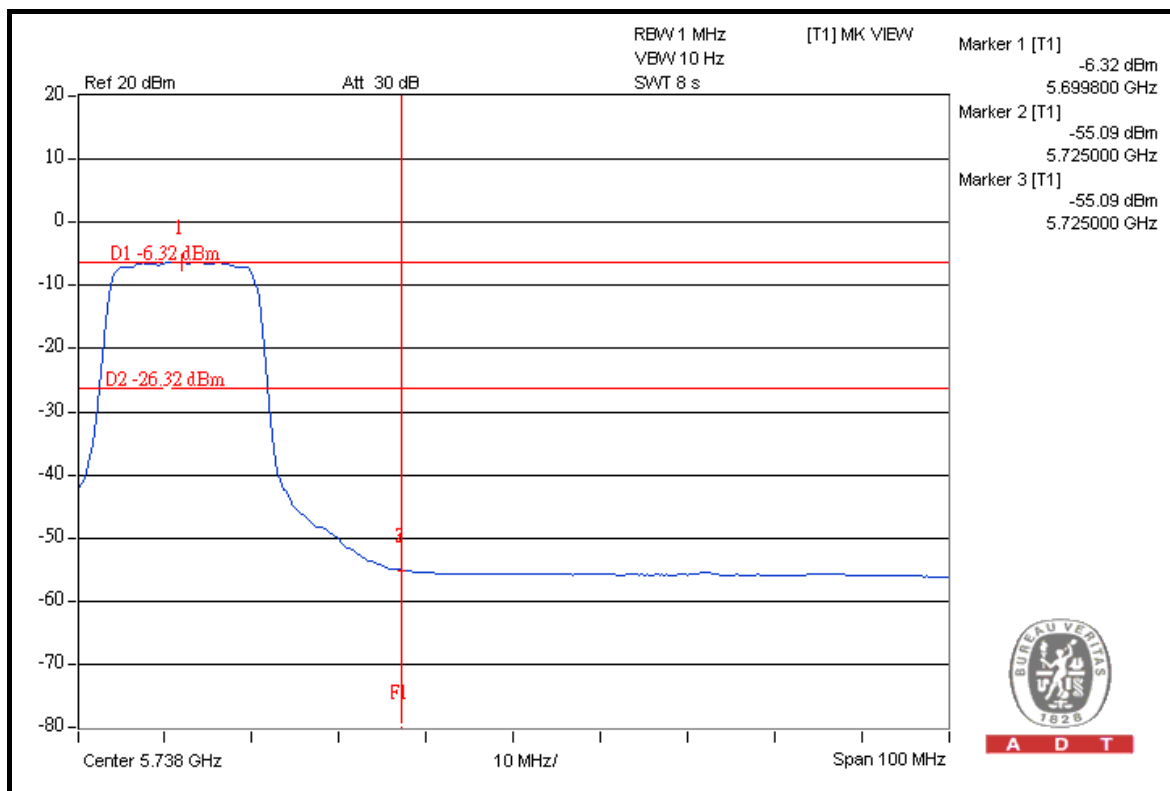
A D T



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## **4.8 ANTENNA REQUIREMENT**

### **4.8.1 STANDARD APPLICABLE**

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

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

### **4.8.2 ANTENNA CONNECTED CONSTRUCTION**

The antennas used in this product is PIFA antenna without connector. The maximum Gain of the antenna is 4.00dBi.

## 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.

<b>USA</b>	FCC, NVLAP
<b>Germany</b>	TUV Rheinland
<b>Japan</b>	VCCI
<b>Norway</b>	NEMKO
<b>Canada</b>	INDUSTRY CANADA , CSA
<b>R.O.C.</b>	TAF, BSMI, NCC
<b>Netherlands</b>	Telefication
<b>Singapore</b>	GOST-ASIA(MOU)
<b>Russia</b>	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](http://www.adt.com.tw/index.5/phtml). If you have any comments, please feel free to contact us at the following:

**Linko EMC/RF Lab:**  
Tel: 886-2-26052180  
Fax: 886-2-26051924

**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](http://www.adt.com.tw)

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



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## **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---**