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# FCC TEST REPORT (15.247)

**REPORT NO.:** RF980506L09

**MODEL NO.:** ESR7750

(refer to item 3.1 for more detail)

**RECEIVED:** May 06, 2009

**TESTED:** May 13 ~ Jun. 08, 2009

**ISSUED:** Jun. 12, 2009

**APPLICANT:** Senao Networks Inc.

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**ISSUED BY:** Bureau Veritas Consumer Products Services  
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R.O.C.

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## 1. CERTIFICATION

**PRODUCT:** 802.11 abgn Dual Band Concurrent Router

**MODEL:** ESR7750 (refer to item 3.1 for more detail)

**BRAND:** EnGenius (refer to item 3.1 for more detail)

**APPLICANT:** Senao Networks Inc.

**TEST SAMPLE:** R & D SAMPLE

**TESTED:** May 13 ~ Jun. 08, 2009

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

ANSI C63.4-2003

The above equipment (Model: ESR7750) 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** : Jun. 12, 2009  
Andrea Hsia / Specialist

**TECHNICAL ACCEPTANCE** : Long Chen , **DATE** : Jun. 12, 2009  
Responsible for RF Long Chen / Senior Engineer

**APPROVED BY** : Gary Chang , **DATE** : Jun. 12, 2009  
Gary Chang / Assistant Manager

## SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -8.40dB at 5.566MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -1.01dB at 5350.00MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

## 2.1 MEASUREMENT UNCERTAINTY

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

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

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

## 2. GENERAL INFORMATION

### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	802.11 abgn Dual Band Concurrent Router
<b>MODEL NO.</b>	ESR7750 (refer to note as below)
<b>FCC ID</b>	U2M-SR7750
<b>POWER SUPPLY</b>	12Vdc from AC 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>	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 270.0Mbps
<b>OPERATING FREQUENCY</b>	2.4GHz: 2412 ~ 2462MHz 5.0GHz: 5745 ~ 5825MHz
<b>NUMBER OF CHANNEL</b>	2.4GHz: 11 for 802.11b, 802.11g, draft 802.11n (20MHz) 7 for draft 802.11n (40MHz) 5.0GHz: 5 for 802.11a, draft 802.11n (20MHz) 2 for draft 802.11n (40MHz)
<b>OUTPUT POWER</b>	339.798mW for 2412 ~ 2462MHz 227.526mW for 5745 ~ 5825MHz
<b>ANTENNA TYPE</b>	2.4GHz: PIFA antenna with 4.5dBi gain 5.0GHz: PIFA antenna with 5.0dBi gain
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	RJ45
<b>ASSOCIATED DEVICES</b>	Adapter

#### NOTE:

- The EUT is an 802.11 abgn Dual Band Concurrent 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)	RF980506L09
WLAN 802.11a, draft 802.11n (5745~5825 MHz)		
WLAN 802.11a, draft 802.11n (5180~ 5240MHz)	FCC Part 15, Subpart E (Section 15.407)	RF980506L09-1

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

3. The following models are provided to this EUT.

BRAND	MODEL	DIFFERENCE
EnGenius	ESR7750	Marketing different
TRENDnet	TEW-671BR	
Sitecom	WL-328 v1 001	
Rosewill	RNX-N4-Dual	

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

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

5. The EUT was powered by the following adapter:

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

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

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

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

#### FOR 2.4GHz:

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

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

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

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

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

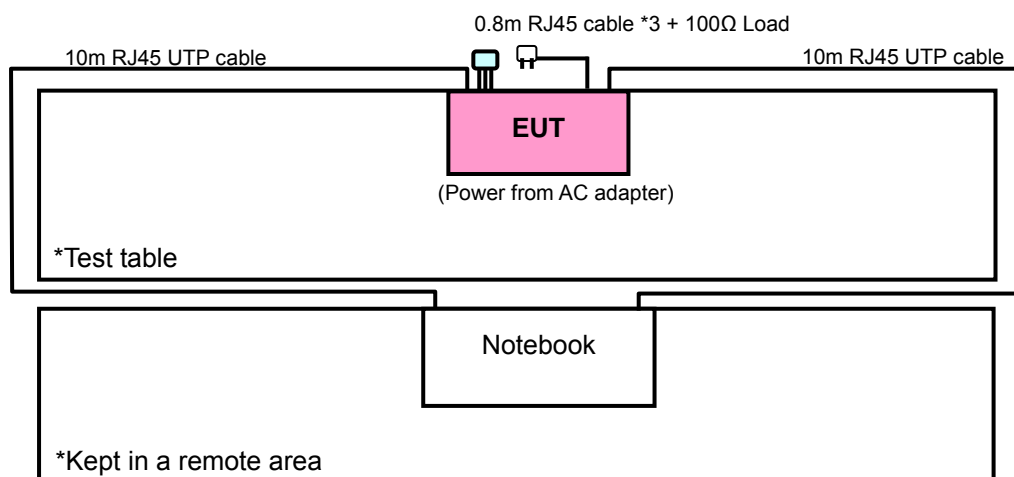
5 channels are provided for 802.11a, draft 802.11n (20MHz):

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

#### 3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



### 3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL FOR 2.4GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 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, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	X
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	X
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	X
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	14.4	X

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
802.11g	1 to 11	6	OFDM	BPSK	6.0	X

#### **POWER LINE CONDUCTED EMISSION TEST:**

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

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

### **BANDEDGE MEASUREMENT:**

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
Draft 802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2
Draft 802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	14.4

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	14.4

### FOR 5.745 ~ 5.825GHz:

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

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

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0	Z
Draft 802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2	Z
Draft 802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	14.4	Z

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
Draft 802.11n (40MHz)	151 to 159	159	OFDM	BPSK	14.4	Z

### POWER LINE CONDUCTED EMISSION TEST:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
Draft 802.11n (40MHz)	151 to 159	159	OFDM	BPSK	14.4

### **BANDEDGE MEASUREMENT:**

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149, 165	OFDM	BPSK	6.0
Draft 802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	7.2
Draft 802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	14.4

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
Draft 802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
Draft 802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	14.4

### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

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

**ANSI C63.4-2003**

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

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

### 3.4 DESCRIPTION OF SUPPORT UNITS

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

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

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

### 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 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	100040	Jul. 04, 2008	Jul. 03, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 27, 2009	Apr. 26, 2010
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 13, 2009	May 12, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	May 13, 2009	May 12, 2010
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA

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



#### 4.1.3 TEST PROCEDURES

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

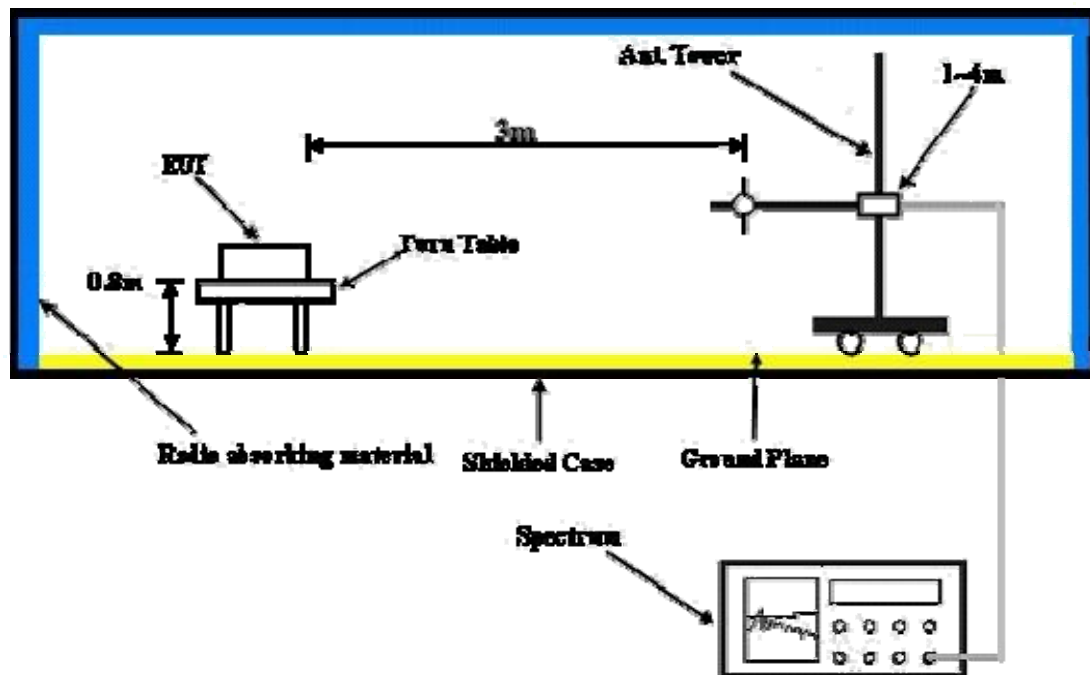
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 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.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.1.5 TEST SETUP



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

#### 4.1.6 EUT OPERATING CONDITIONS

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



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#### 4.1.7 TEST RESULTS

##### 802.11b DSSS MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23.0deg. C, 64.0%RH 1000hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.11 PK	74.00	-16.89	1.00 H	93	24.67	32.44
2	2390.00	45.56 AV	54.00	-8.44	1.00 H	93	13.12	32.44
3	*2412.00	99.34 PK			1.00 H	93	66.82	32.52
4	*2412.00	95.32 AV			1.00 H	93	62.80	32.52
5	4824.00	49.79 PK	74.00	-24.21	1.00 H	316	11.49	38.30
6	4824.00	39.92 AV	54.00	-14.08	1.00 H	316	1.62	38.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.65 PK	74.00	-16.35	1.04 V	175	25.21	32.44
2	2390.00	46.07 AV	54.00	-7.93	1.04 V	175	13.63	32.44
3	*2412.00	105.38 PK			1.04 V	175	72.86	32.52
4	*2412.00	100.66 AV			1.04 V	175	68.14	32.52
5	2495.00	61.24 PK	74.00	-12.76	1.20 V	315	28.45	32.79
6	2495.00	51.36 AV	54.00	-2.64	1.20 V	315	18.57	32.79
7	4824.00	51.28 PK	74.00	-22.72	1.00 V	120	12.98	38.30
8	4824.00	45.75 AV	54.00	-8.25	1.00 V	120	7.45	38.30

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23.0deg. C, 64.0%RH 1000hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	99.58 PK			1.01 H	96	66.98	32.60
2	*2437.00	95.54 AV			1.01 H	96	62.94	32.60
3	4874.00	49.79 PK	74.00	-24.21	1.06 H	133	11.29	38.50
4	4874.00	39.99 AV	54.00	-14.01	1.06 H	133	1.49	38.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.69 PK			1.32 V	210	73.09	32.60
2	*2437.00	101.15 AV			1.32 V	210	68.55	32.60
3	4874.00	53.01 PK	74.00	-20.99	1.11 V	109	14.51	38.50
4	4874.00	47.03 AV	54.00	-6.97	1.11 V	109	8.53	38.50

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23.0deg. C, 64.0%RH 1000hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	99.15 PK			1.03 H	104	66.47	32.68
2	*2462.00	95.13 AV			1.03 H	104	62.45	32.68
3	2483.50	57.14 PK	74.00	-16.86	1.03 H	104	24.38	32.76
4	2483.50	45.92 AV	54.00	-8.08	1.03 H	104	13.16	32.76
5	4924.00	49.24 PK	74.00	-24.76	1.13 H	26	10.60	38.64
6	4924.00	39.51 AV	54.00	-14.49	1.13 H	26	0.87	38.64
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.26 PK			1.09 V	83	72.58	32.68
2	*2462.00	100.53 AV			1.09 V	83	67.85	32.68
3	2483.50	57.69 PK	74.00	-16.31	1.09 V	83	24.93	32.76
4	2483.50	46.32 AV	54.00	-7.68	1.09 V	83	13.56	32.76
5	4924.00	50.64 PK	74.00	-23.36	1.20 V	164	12.00	38.64
6	4924.00	41.42 AV	54.00	-12.58	1.20 V	164	2.78	38.64

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



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**802.11g OFDM MODULATION**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23.0deg. C, 64.0%RH 1000hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.78 PK	74.00	-16.22	1.24 H	181	25.34	32.44
2	2390.00	45.65 AV	54.00	-8.35	1.24 H	181	13.21	32.44
3	*2412.00	103.40 PK			1.24 H	181	70.88	32.52
4	*2412.00	93.25 AV			1.24 H	181	60.73	32.52
5	4824.00	48.53 PK	74.00	-25.47	1.04 H	212	10.23	38.30
6	4824.00	35.81 AV	54.00	-18.19	1.04 H	212	-2.49	38.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.22 PK	74.00	-15.78	1.04 V	176	25.78	32.44
2	2390.00	46.04 AV	54.00	-7.96	1.04 V	176	13.60	32.44
3	*2412.00	107.33 PK			1.04 V	176	74.81	32.52
4	*2412.00	96.95 AV			1.04 V	176	64.43	32.52
5	4824.00	49.08 PK	74.00	-24.92	1.00 V	341	10.78	38.30
6	4824.00	36.39 AV	54.00	-17.61	1.00 V	341	-1.91	38.30

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23.0deg. C, 64.0%RH 1000hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	103.62 PK			1.21 H	183	71.02	32.60
2	*2437.00	93.48 AV			1.21 H	183	60.88	32.60
3	4874.00	48.69 PK	74.00	-25.31	1.14 H	269	10.19	38.50
4	4874.00	35.98 AV	54.00	-18.02	1.14 H	269	-2.52	38.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.67 PK			1.28 V	171	75.07	32.60
2	*2437.00	97.24 AV			1.28 V	171	64.64	32.60
3	4874.00	49.36 PK	74.00	-24.64	1.03 V	214	10.86	38.50
4	4874.00	36.65 AV	54.00	-17.35	1.03 V	214	-1.85	38.50

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23.0deg. C, 64.0%RH 1000hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.66 PK			1.21 H	175	70.98	32.68
2	*2462.00	93.43 AV			1.21 H	175	60.75	32.68
3	2483.50	65.41 PK	74.00	-8.59	1.21 H	175	32.65	32.76
4	2483.50	47.89 AV	54.00	-6.11	1.21 H	175	15.13	32.76
5	4924.00	48.96 PK	74.00	-25.04	1.10 H	96	10.32	38.64
6	4924.00	36.21 AV	54.00	-17.79	1.10 H	96	-2.43	38.64
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.61 PK			1.01 V	176	74.93	32.68
2	*2462.00	97.13 AV			1.01 V	176	64.45	32.68
3	2483.50	70.59 PK	74.00	-3.41	1.25 V	174	37.83	32.76
4	2483.50	51.17 AV	54.00	-2.83	1.25 V	174	18.41	32.76
5	4924.00	49.68 PK	74.00	-24.32	1.11 V	253	11.04	38.64
6	4924.00	36.92 AV	54.00	-17.08	1.11 V	253	-1.72	38.64

**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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**DRAFT 802.11n (20MHz) OFDM MODULATION**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24.0deg. C, 64.0%RH 1000hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.48 PK	74.00	-10.52	1.00 H	112	31.04	32.44
2	2390.00	47.38 AV	54.00	-6.62	1.00 H	112	14.94	32.44
3	*2412.00	103.58 PK			1.00 H	116	71.06	32.52
4	*2412.00	93.40 AV			1.00 H	116	60.88	32.52
5	2498.00	60.21 PK	74.00	-13.79	1.00 H	120	27.41	32.80
6	2498.00	49.20 AV	54.00	-4.80	1.00 H	120	16.40	32.80
7	4824.00	48.18 PK	74.00	-25.82	1.00 H	291	9.88	38.30
8	4824.00	37.59 AV	54.00	-16.41	1.00 H	291	-0.71	38.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	64.69 PK	74.00	-9.31	1.00 V	176	32.25	32.44
2	2390.00	48.10 AV	54.00	-5.90	1.00 V	176	15.66	32.44
3	*2412.00	107.18 PK			1.00 V	180	74.66	32.52
4	*2412.00	96.55 AV			1.00 V	180	64.03	32.52
5	2498.00	60.27 PK	74.00	-13.73	1.23 V	177	27.47	32.80
6	2498.00	49.23 AV	54.00	-4.77	1.23 V	177	16.43	32.80
7	4824.00	51.38 PK	74.00	-22.62	1.00 V	141	13.08	38.30
8	4824.00	44.04 AV	54.00	-9.96	1.00 V	141	5.74	38.30

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24.0deg. C, 64.0%RH 1000hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	103.88 PK			1.00 H	181	71.28	32.60
2	*2437.00	93.61 AV			1.00 H	181	61.01	32.60
3	4874.00	50.07 PK	74.00	-23.93	1.00 H	283	11.57	38.50
4	4874.00	36.28 AV	54.00	-17.72	1.00 H	283	-2.22	38.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.41 PK			1.52 V	168	74.81	32.60
2	*2437.00	96.74 AV			1.52 V	168	64.14	32.60
3	4874.00	52.03 PK	74.00	-21.97	1.00 V	168	13.53	38.50
4	4874.00	43.96 AV	54.00	-10.04	1.00 V	168	5.46	38.50

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24.0deg. C, 64.0%RH 1000hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.22 PK			1.00 H	122	70.54	32.68
2	*2462.00	93.14 AV			1.00 H	122	60.46	32.68
3	2483.50	65.12 PK	74.00	-8.88	1.00 H	114	32.36	32.76
4	2483.50	48.69 AV	54.00	-5.31	1.00 H	114	15.93	32.76
5	4924.00	48.46 PK	74.00	-25.54	1.20 H	43	9.82	38.64
6	4924.00	35.45 AV	54.00	-18.55	1.20 H	43	-3.19	38.64
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.98 PK			1.00 V	186	74.30	32.68
2	*2462.00	96.29 AV			1.00 V	186	63.61	32.68
3	2483.50	62.02 PK	74.00	-11.98	1.00 V	176	29.26	32.76
4	2483.50	47.61 AV	54.00	-6.39	1.00 V	176	14.85	32.76
5	4924.00	50.36 PK	74.00	-23.64	1.00 V	152	11.72	38.64
6	4924.00	43.68 AV	54.00	-10.32	1.00 V	152	5.04	38.64

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



A D T

# DRAFT 802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24.0deg. C, 64.0%RH 1000hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.36 PK	74.00	-10.64	1.00 H	123	30.92	32.44
2	2390.00	49.16 AV	54.00	-4.84	1.00 H	123	16.72	32.44
3	*2422.00	101.45 PK			1.00 H	123	68.90	32.55
4	*2422.00	91.67 AV			1.00 H	123	59.12	32.55
5	4844.00	47.73 PK	74.00	-26.27	1.02 H	261	9.35	38.38
6	4844.00	35.80 AV	54.00	-18.20	1.02 H	261	-2.58	38.38
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.91 PK	74.00	-5.09	1.00 V	69	36.47	32.44
2	2390.00	52.61 AV	54.00	-1.39	1.00 V	69	20.17	32.44
3	*2422.00	102.69 PK			1.25 V	176	70.14	32.55
4	*2422.00	92.33 AV			1.25 V	176	59.78	32.55
5	4844.00	52.29 PK	74.00	-21.71	1.00 V	146	13.91	38.38
6	4844.00	43.78 AV	54.00	-10.22	1.00 V	146	5.40	38.38

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24.0deg. C, 64.0%RH 1000hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	101.33 PK			1.00 H	119	68.73	32.60
2	*2437.00	91.52 AV			1.00 H	119	58.92	32.60
3	4874.00	47.44 PK	74.00	-26.56	1.00 H	263	8.94	38.50
4	4874.00	35.42 AV	54.00	-18.58	1.00 H	263	-3.08	38.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	102.60 PK			1.00 V	174	70.00	32.60
2	*2437.00	92.28 AV			1.00 V	174	59.68	32.60
3	4874.00	49.06 PK	74.00	-24.94	1.00 V	233	10.56	38.50
4	4874.00	36.02 AV	54.00	-17.98	1.00 V	233	-2.48	38.50

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24.0deg. C, 64.0%RH 1000hPa	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	101.65 PK			1.00 H	121	69.00	32.65
2	*2452.00	91.92 AV			1.00 H	121	59.27	32.65
3	2483.50	64.71 PK	74.00	-9.29	1.19 H	119	31.95	32.76
4	2483.50	51.67 AV	54.00	-2.33	1.19 H	119	18.91	32.76
5	4904.00	49.36 PK	74.00	-24.64	1.01 H	18	10.75	38.61
6	4904.00	35.72 AV	54.00	-18.28	1.01 H	18	-2.89	38.61
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	102.85 PK			1.00 V	175	70.20	32.65
2	*2452.00	92.51 AV			1.00 V	175	59.86	32.65
3	2483.50	64.77 PK	74.00	-9.23	1.24 V	175	32.01	32.76
4	2483.50	52.86 AV	54.00	-1.14	1.24 V	175	20.10	32.76
5	4904.00	52.12 PK	74.00	-21.88	1.00 V	146	13.51	38.61
6	4904.00	44.82 AV	54.00	-9.18	1.00 V	146	6.21	38.61

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



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**BELOW 1GHz WORST-CASE DATA : 802.11g OFDM MODULATION**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24.0deg. C, 65.0%RH 999hPa	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	249.60	35.34 QP	46.00	-10.66	1.25 H	280	21.54	13.80
2	374.04	37.16 QP	46.00	-8.84	1.00 H	133	20.21	16.96
3	465.42	40.70 QP	46.00	-5.30	1.50 H	127	21.05	19.65
4	533.47	39.71 QP	46.00	-6.29	1.50 H	184	18.58	21.13
5	751.23	40.98 QP	46.00	-5.02	1.00 H	130	15.47	25.51
6	834.84	43.39 QP	46.00	-2.61	1.25 H	19	16.74	26.65
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	34.64	37.70 QP	40.00	-2.30	1.06 V	13	23.61	14.09
2	55.86	36.11 QP	40.00	-3.89	1.49 V	9	23.11	13.00
3	101.84	41.26 QP	43.50	-2.24	1.25 V	163	29.68	11.58
4	374.04	38.54 QP	46.00	-7.46	1.25 V	256	21.59	16.96
5	640.41	37.95 QP	46.00	-8.05	1.50 V	160	14.42	23.53
6	834.84	42.29 QP	46.00	-3.71	1.75 V	22	15.64	26.65

- 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.

## 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	Dec. 31, 2008	Dec. 30, 2009
LISN SCHWARZBECK	NNBL 8226-2	8226-142	Jun. 03, 2009	Jun. 02, 2010
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Dec. 04, 2008	Dec. 03, 2009
Software ADT	ADT_Conc_ V7.3.7	NA	NA	NA

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



#### 4.2.3 TEST PROCEDURES

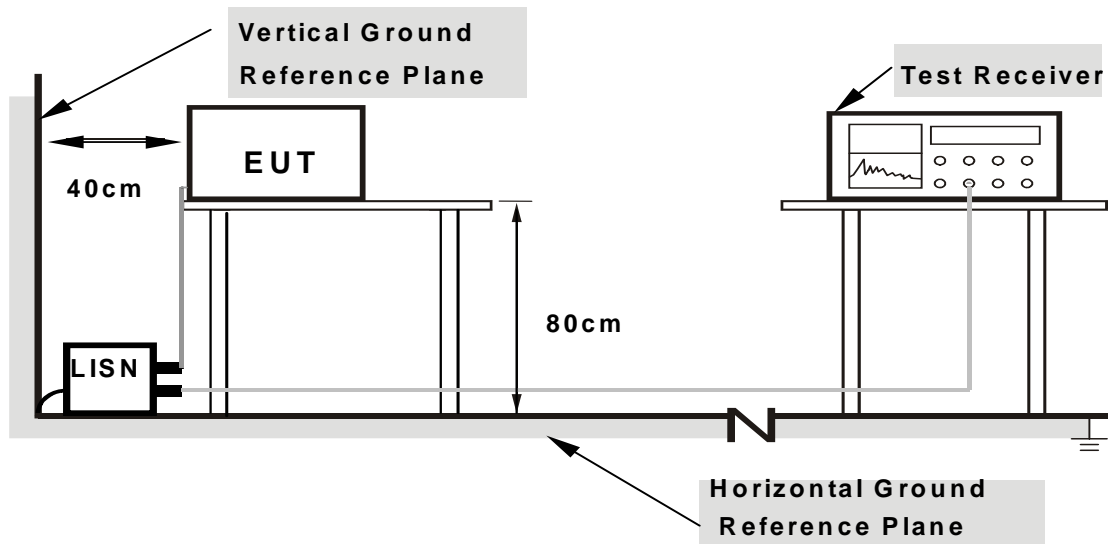
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.2.5 TEST SETUP



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

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

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

#### 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

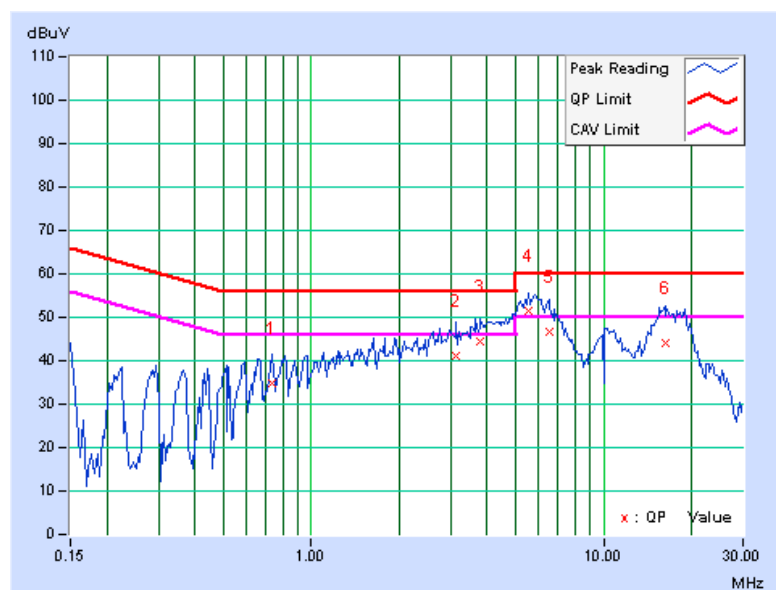
#### 4.2.7 TEST RESULTS

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH, 1021hPa	TESTED BY	Antony Lee

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.732	0.16	34.68	-	34.84	-	56.00	46.00	-21.16	-
2	3.133	0.31	40.84	-	41.15	-	56.00	46.00	-14.85	-
3	3.805	0.36	44.00	-	44.36	-	56.00	46.00	-11.64	-
4	5.566	0.45	51.15	37.22	51.60	37.67	60.00	50.00	-8.40	-12.33
5	6.492	0.49	46.33	-	46.82	-	60.00	50.00	-13.18	-
6	16.270	0.97	42.97	-	43.94	-	60.00	50.00	-16.06	-

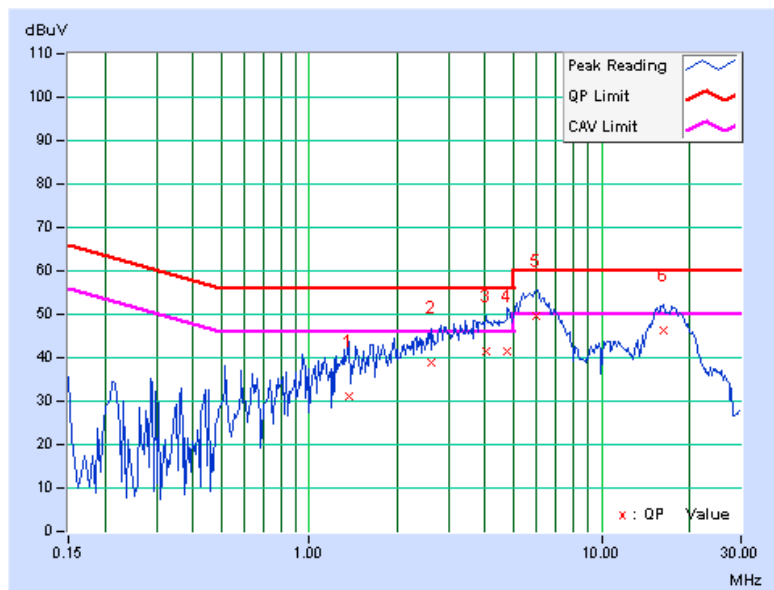
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = 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 6	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH, 1021hPa	TESTED BY	Antony Lee

	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	1.363	0.22	30.71	-	30.93	-	56.00	46.00	-25.07	-
2	2.613	0.29	38.46	-	38.75	-	56.00	46.00	-17.25	-
3	4.031	0.39	41.15	-	41.54	-	56.00	46.00	-14.46	-
4	4.770	0.42	41.13	-	41.55	-	56.00	46.00	-14.45	-
5	5.969	0.48	49.28	-	49.76	-	60.00	50.00	-10.24	-
6	16.395	0.86	45.48	-	46.34	-	60.00	50.00	-13.66	-

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



### 4.3 6dB BANDWIDTH MEASUREMENT

#### 4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100040	Jul. 04, 2008	Jul. 03, 2009

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

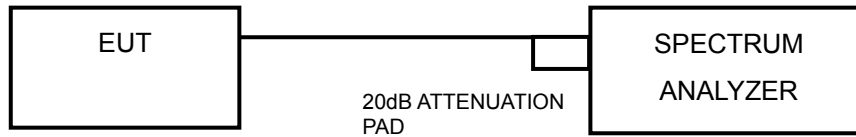
#### 4.3.3 TEST PROCEDURE

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

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.3.5 TEST SETUP



#### 4.3.6 EUT OPERATING CONDITIONS

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

#### 4.3.7 TEST RESULTS

##### 802.11b DSSS MODULATION

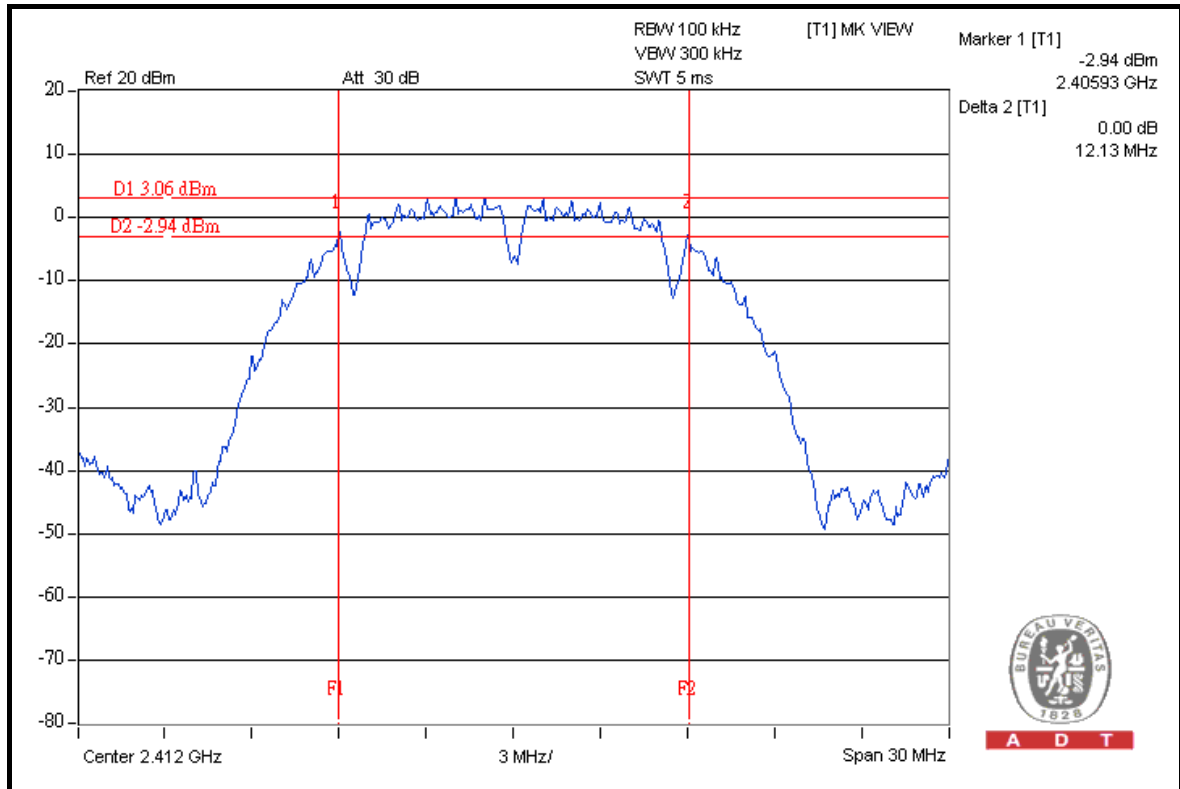
<b>MODULATION TYPE</b>	DBPSK	<b>TRANSFER RATE</b>	1.0Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	12.13	12.13	0.5	PASS
6	2437	12.15	11.17	0.5	PASS
11	2462	12.14	12.14	0.5	PASS

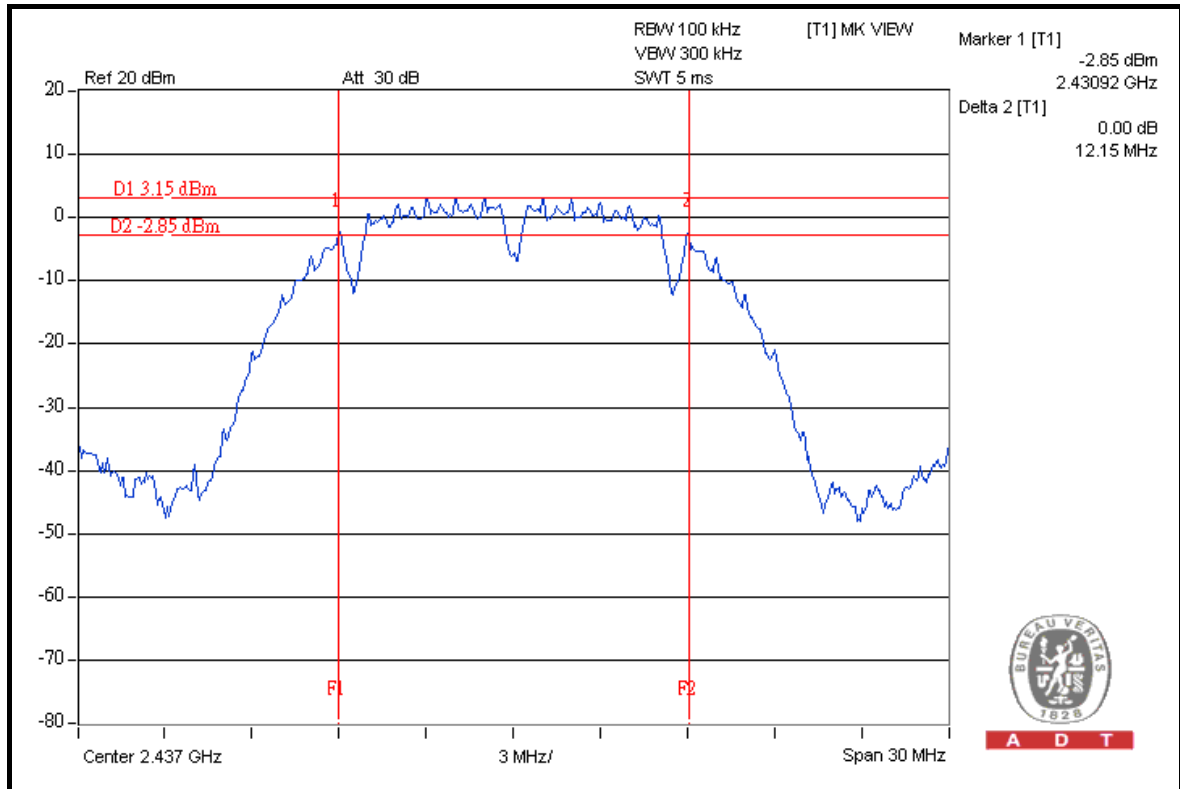


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## FOR CHAIN 0: CH 1



## CH 6

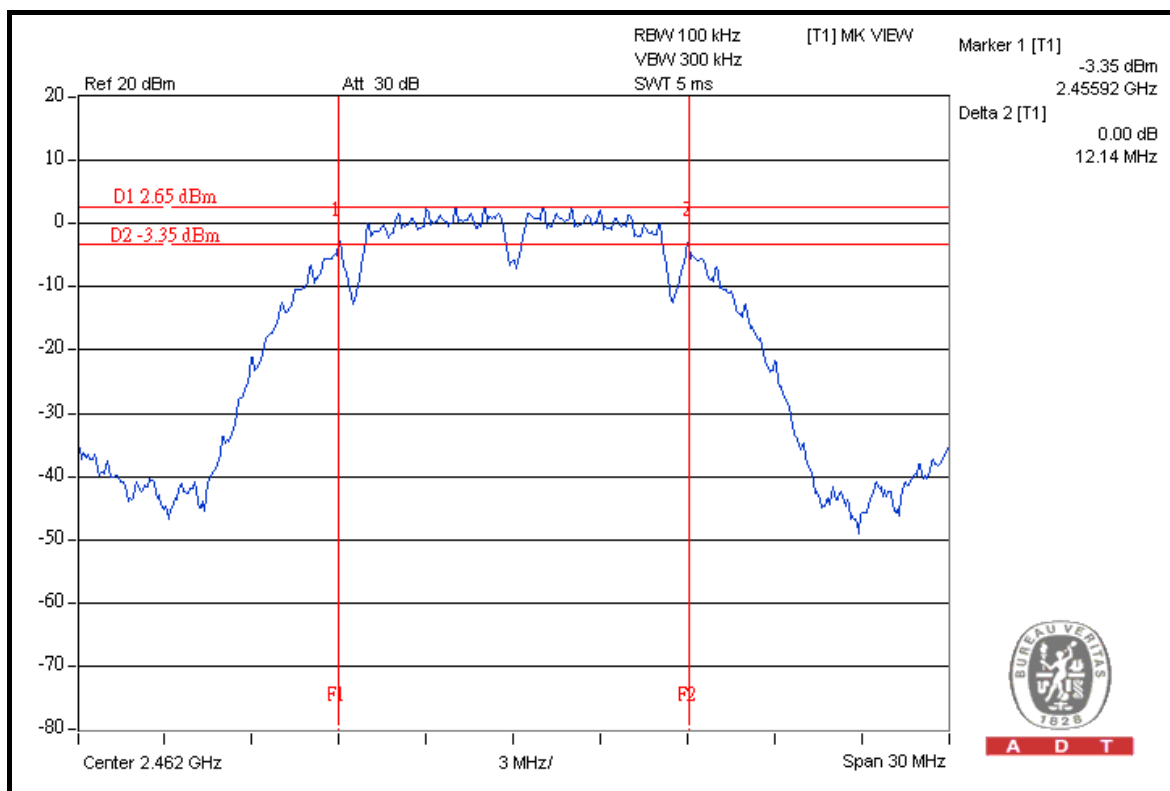




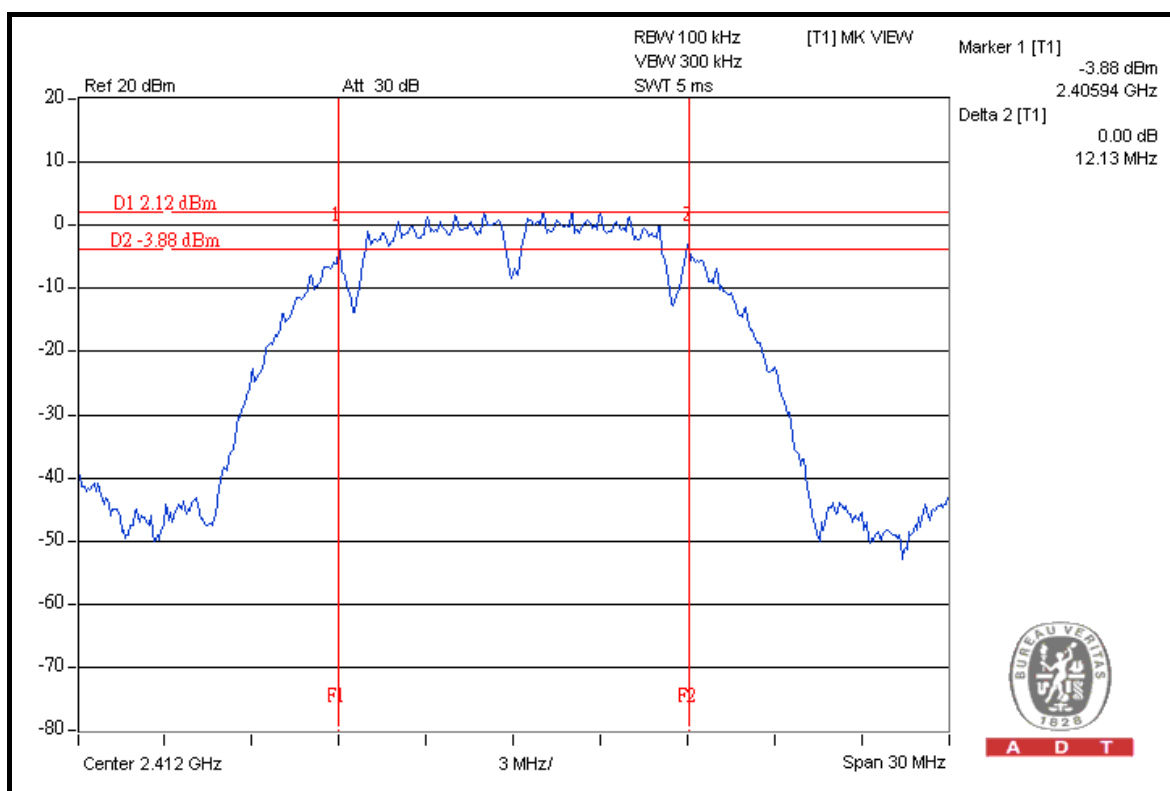


A D T

## CH 11



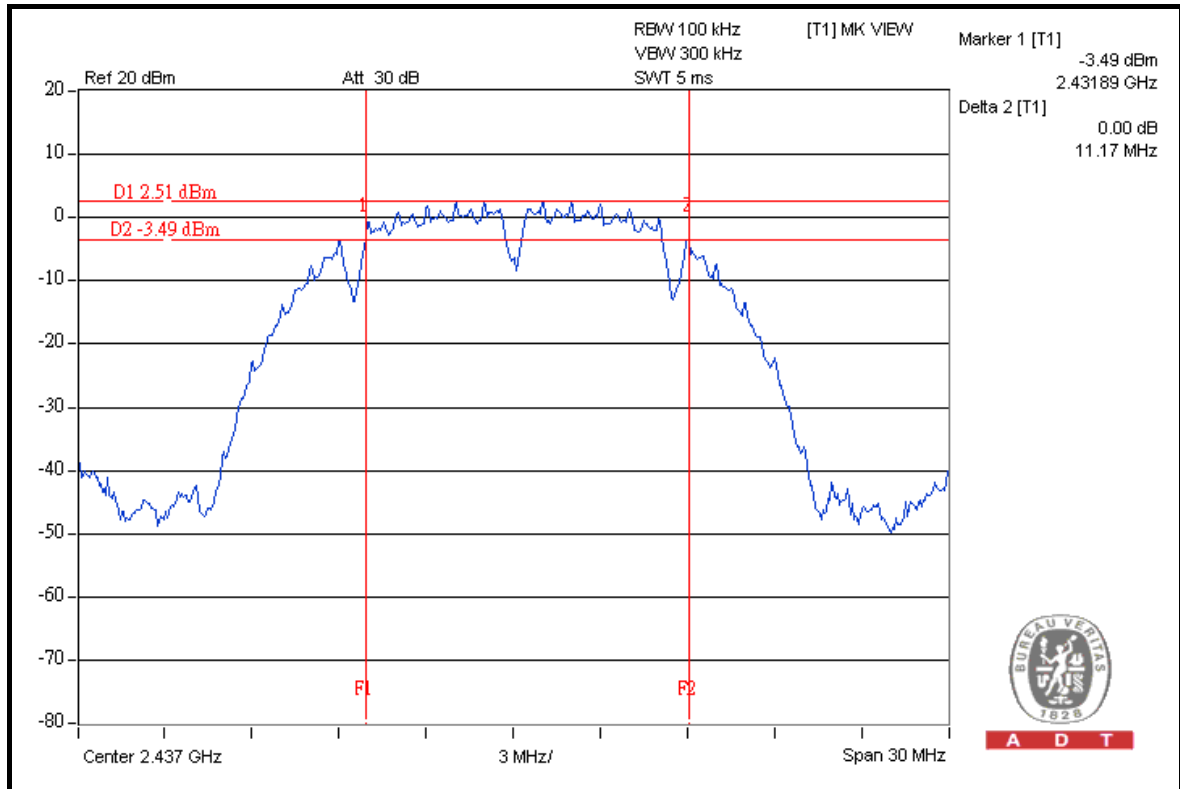
## FOR CHAIN 1: CH 1



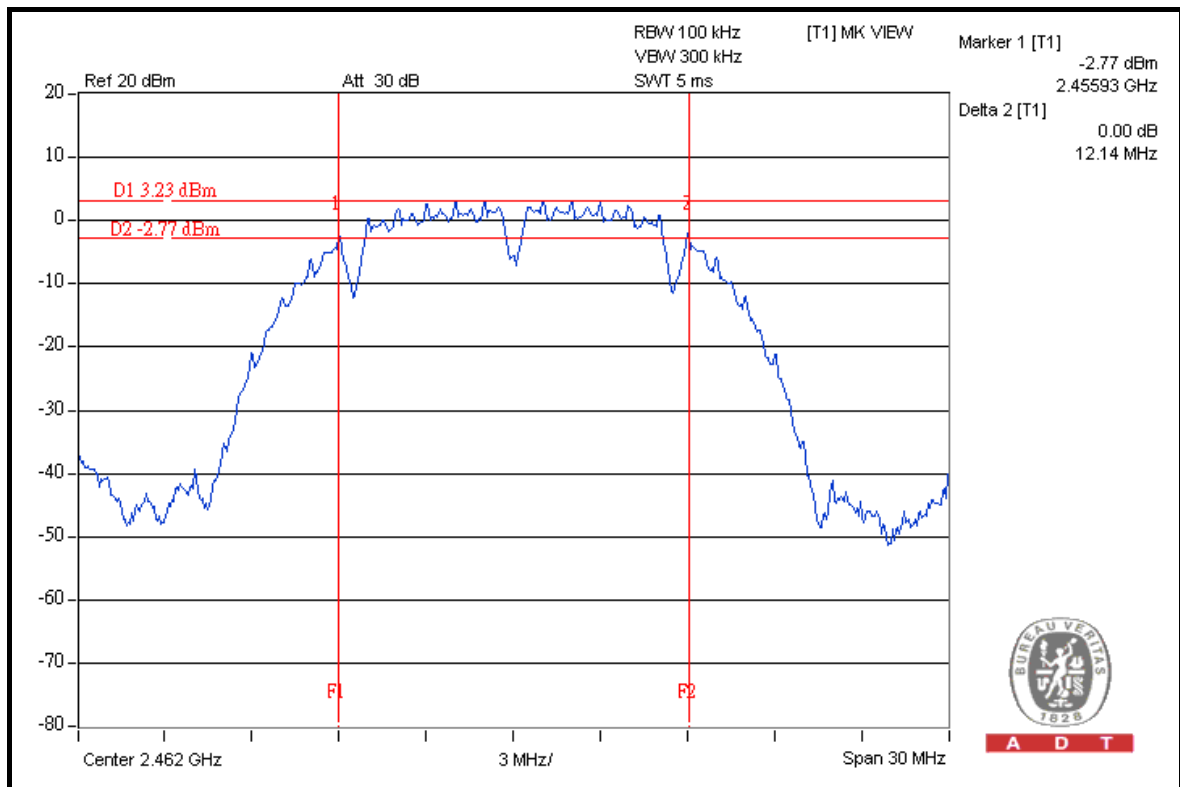


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## CH 6



## CH 11



**A D T****802.11g OFDM MODULATION**

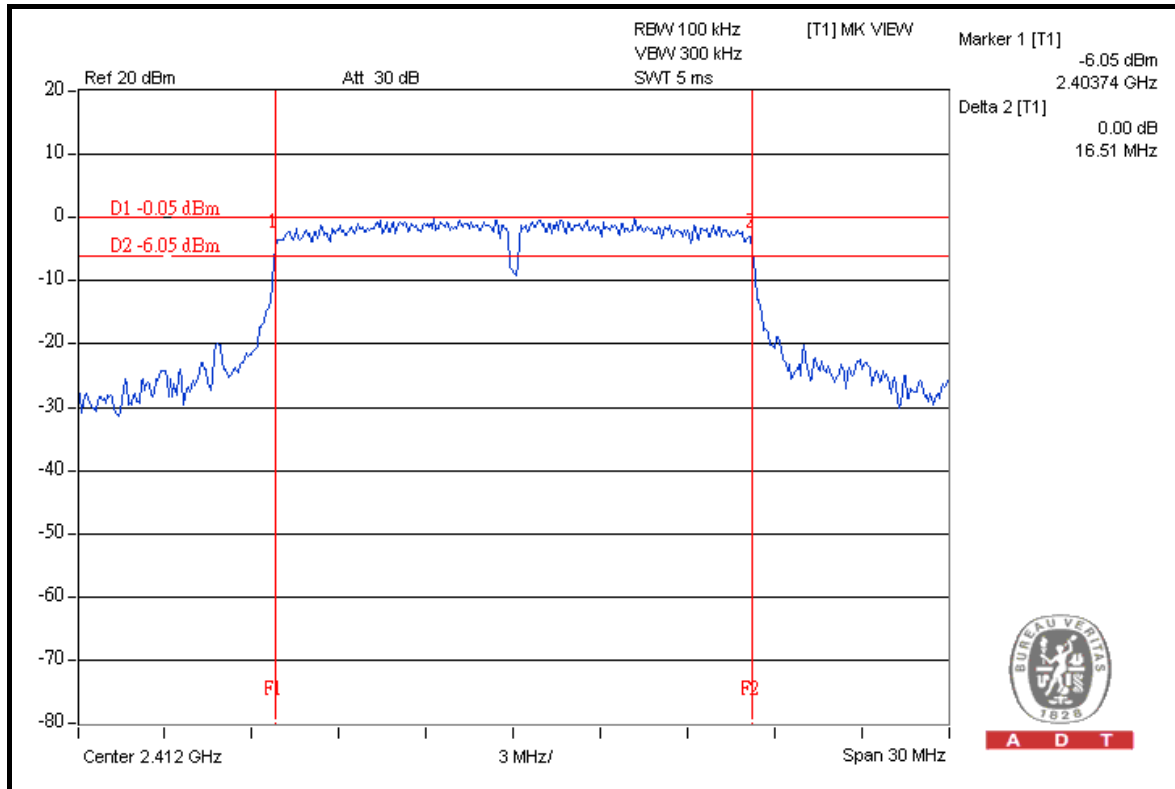
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6.0Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.51	16.49	0.5	PASS
6	2437	16.49	16.49	0.5	PASS
11	2462	16.52	16.54	10.5	PASS

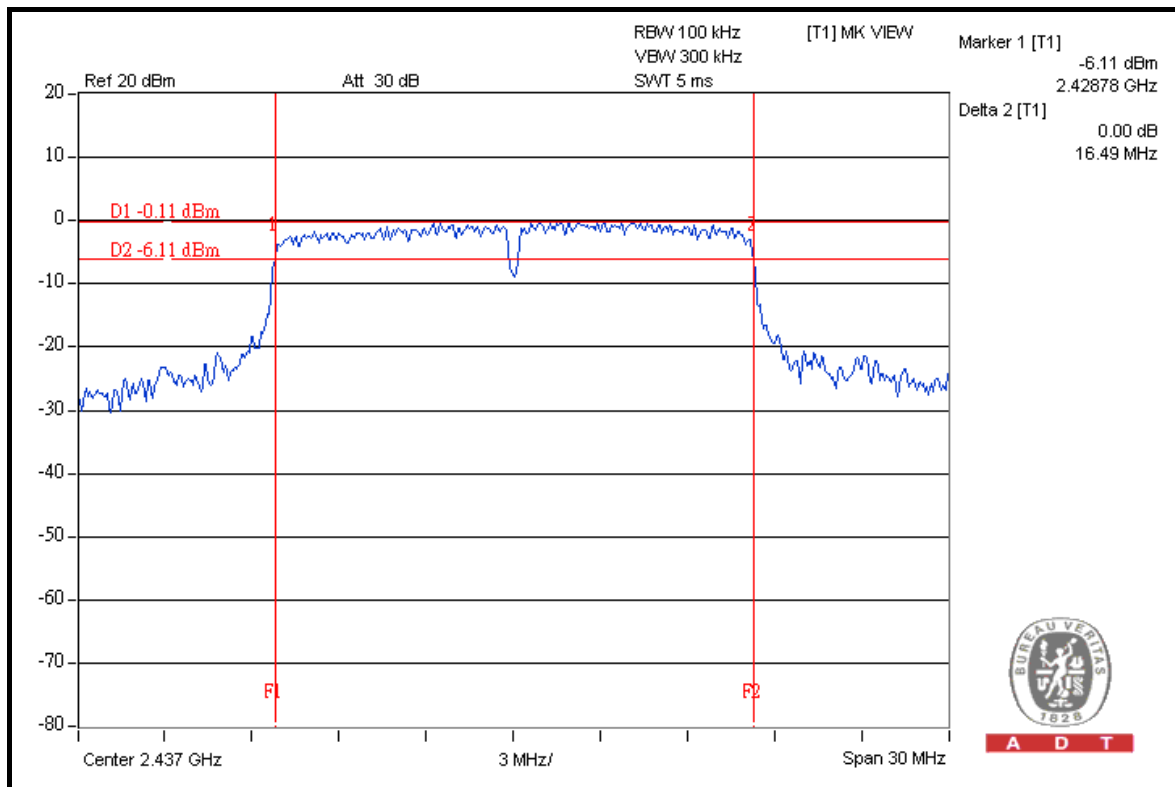


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## FOR CHAIN 0: CH 1



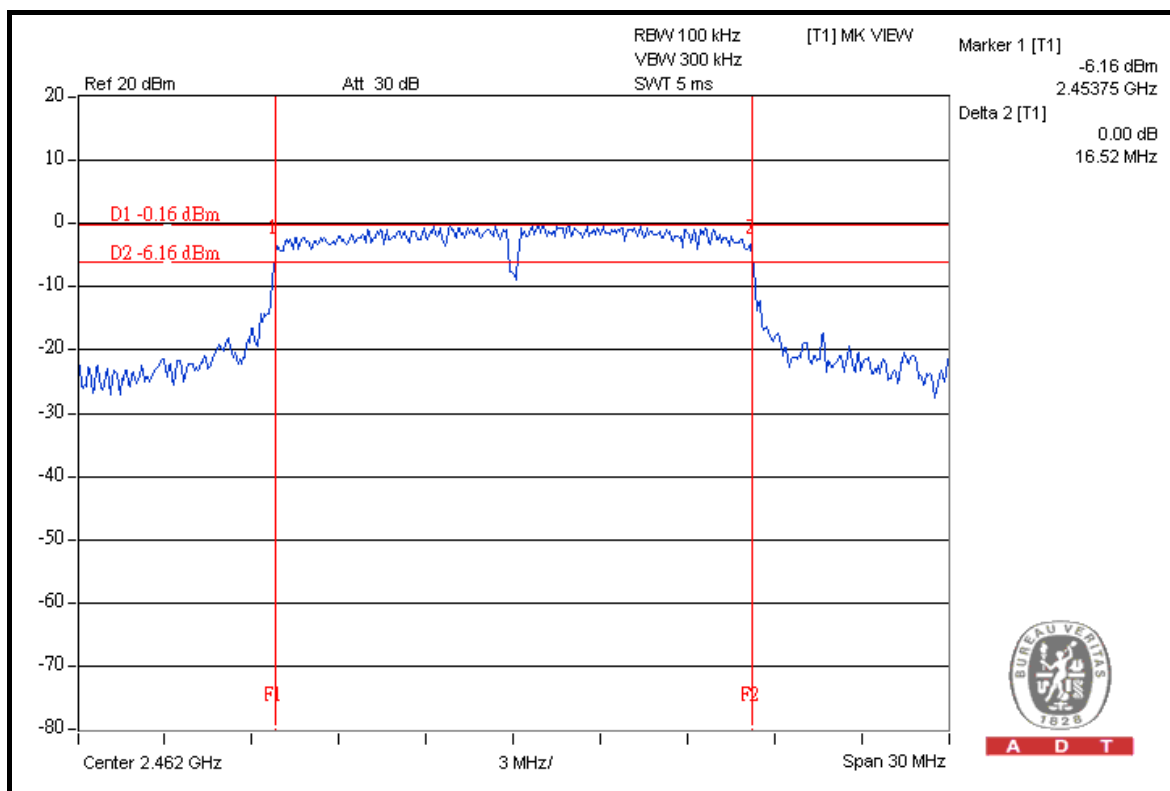
## CH 6





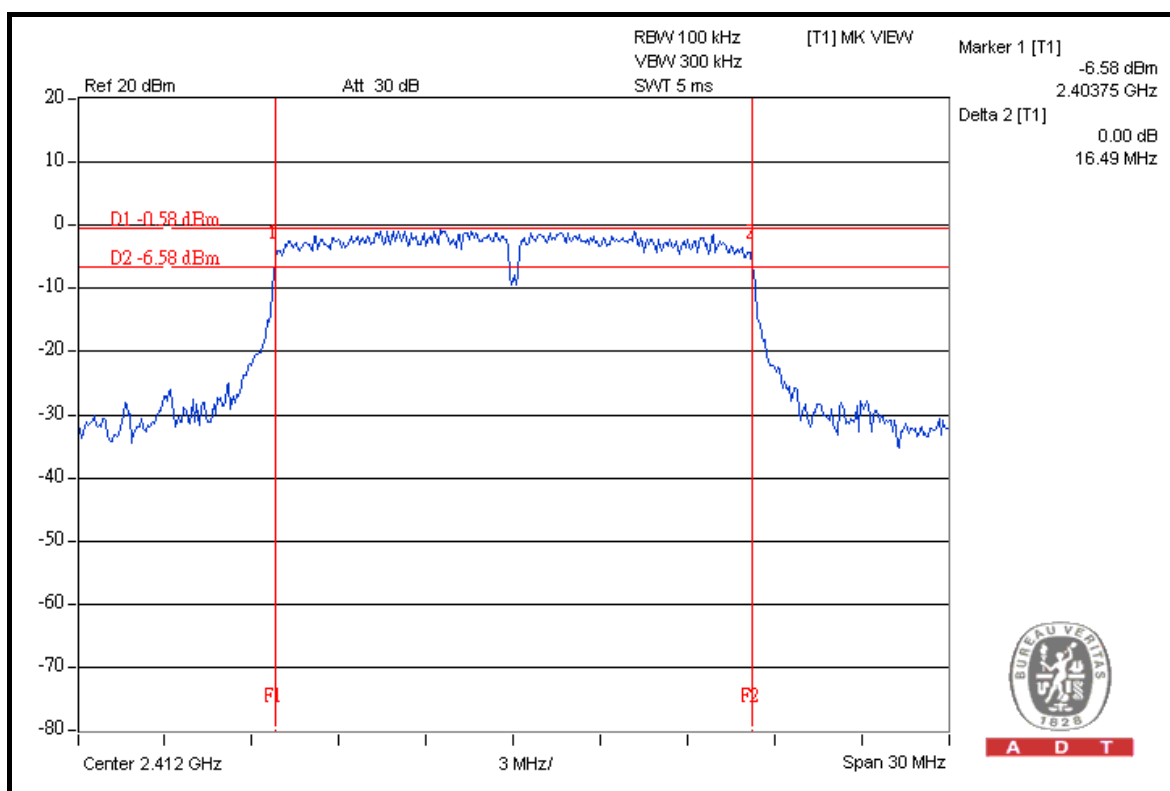
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## CH 11



A D T

## FOR CHAIN 1: CH 1



A D T



Ref 20 dBm Att 30 dB RBW 100 kHz VBW 300 kHz SVT 5 ms [T1] MK VIEW

Marker 1 [T1] -5.98 dBm 2.42873 GHz

Delta 2 [T1] 0.00 dB 16.49 MHz

D1 0.02 dBm D2 -5.98 dBm

Center 2.437 GHz 3 MHz/ Span 30 MHz

F1 F2

BUREAU VERITAS 1828

A D T

**A D T****DRAFT 802.11n (20MHz) OFDM MODULATION**

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	7.2Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>6dB BANDWIDTH (MHz)</b>		<b>MINIMUM LIMIT (MHz)</b>	<b>PASS / FAIL</b>
		<b>CHAIN 0</b>	<b>CHAIN 1</b>		
1	2412	17.66	17.65	0.5	PASS
6	2437	17.67	17.66	0.5	PASS
11	2462	17.61	17.45	0.5	PASS

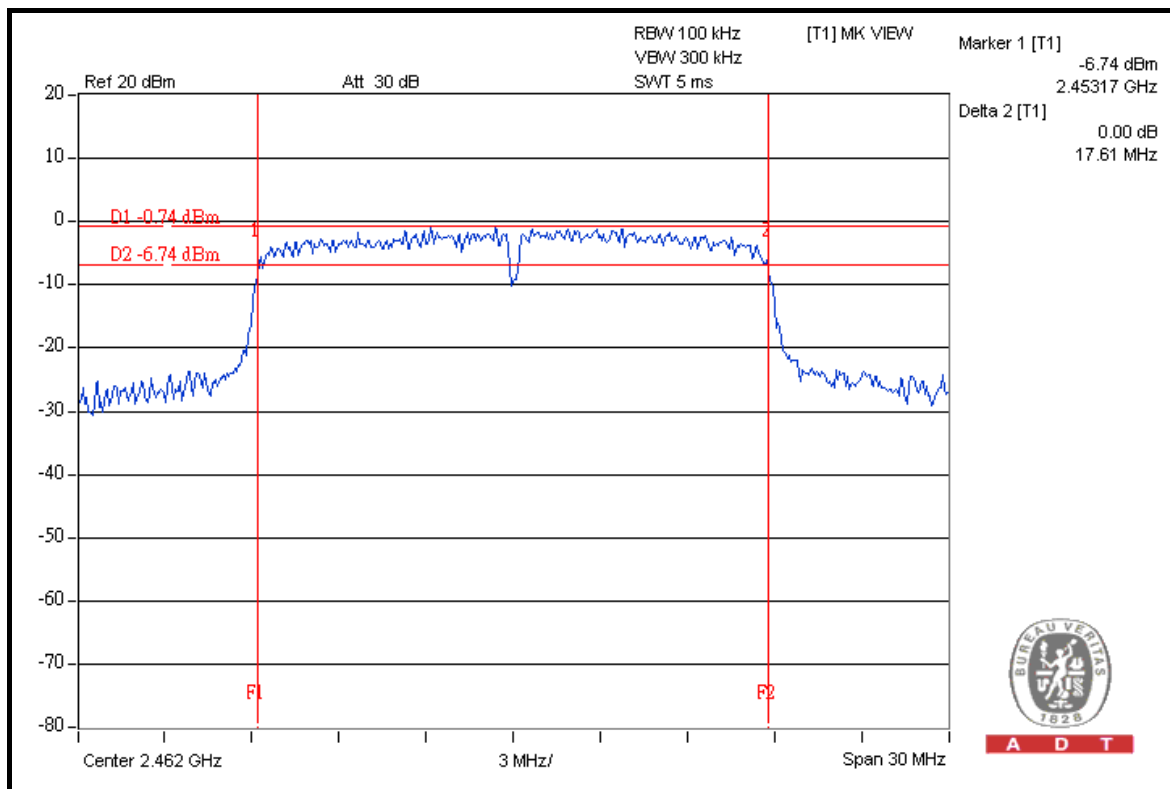






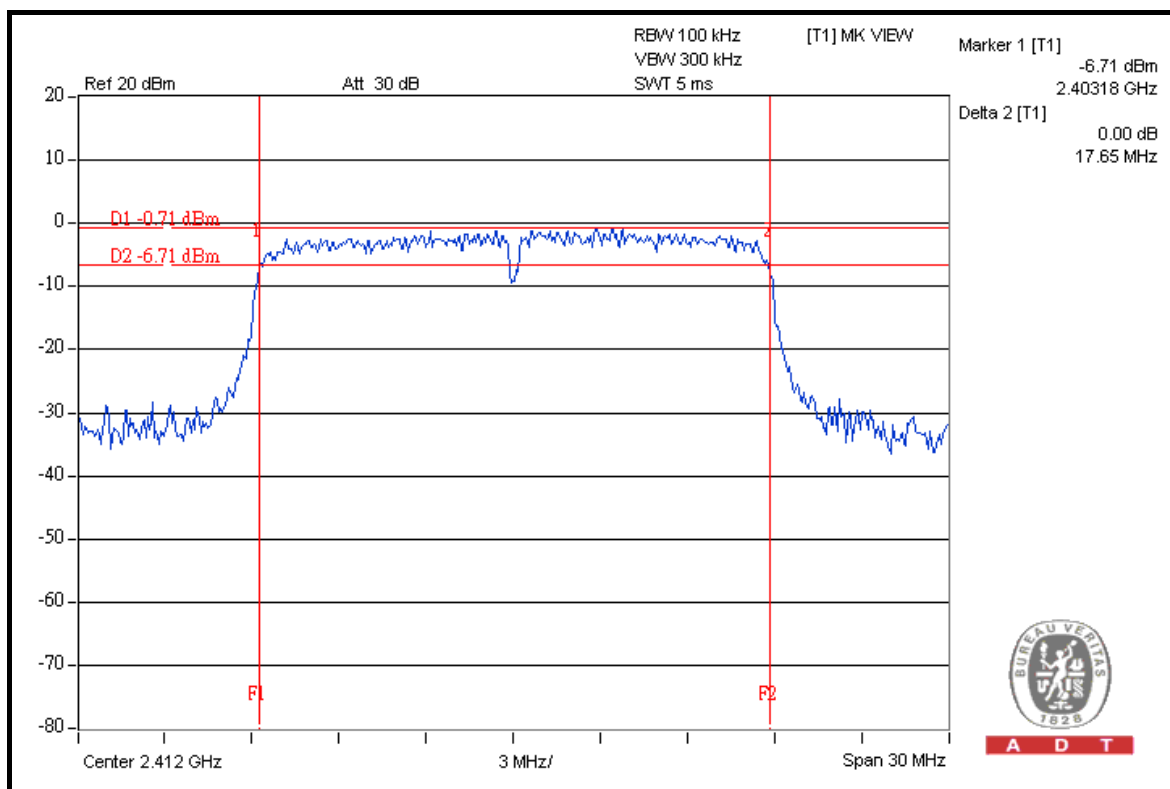
A D T

## CH 11



A D T

## FOR CHAIN 1: CH 1

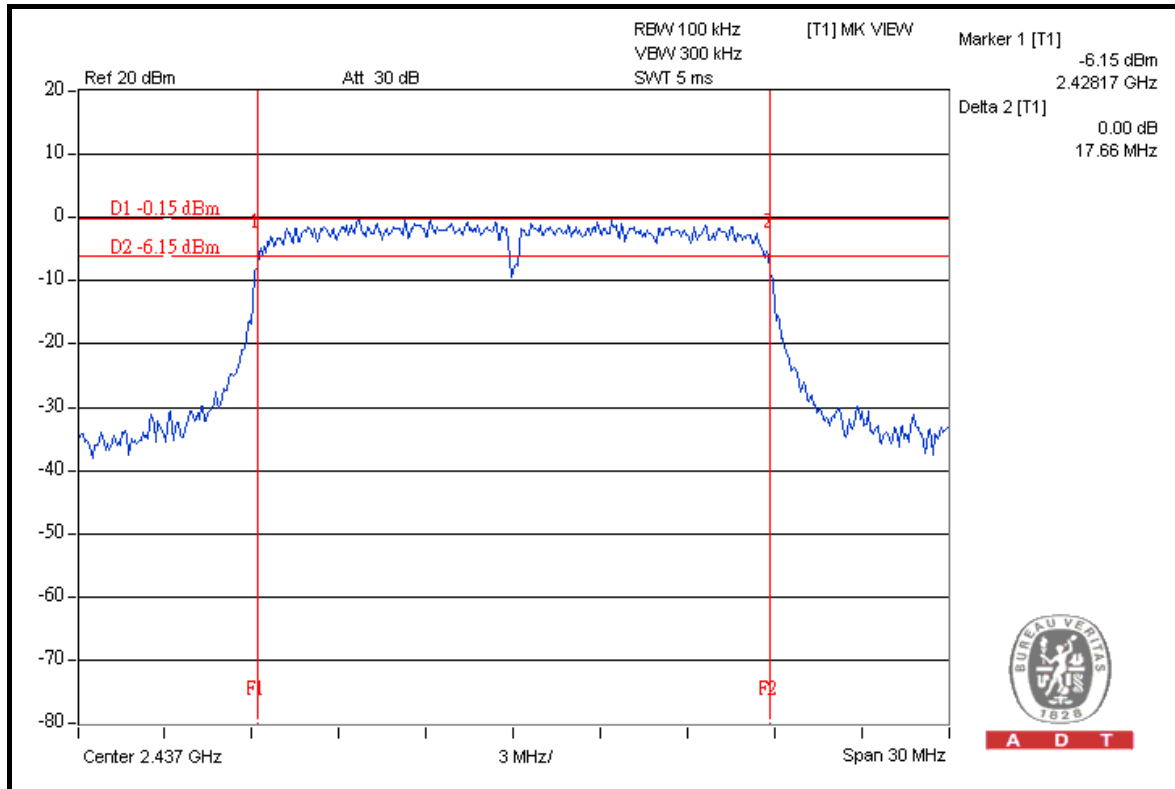


A D T

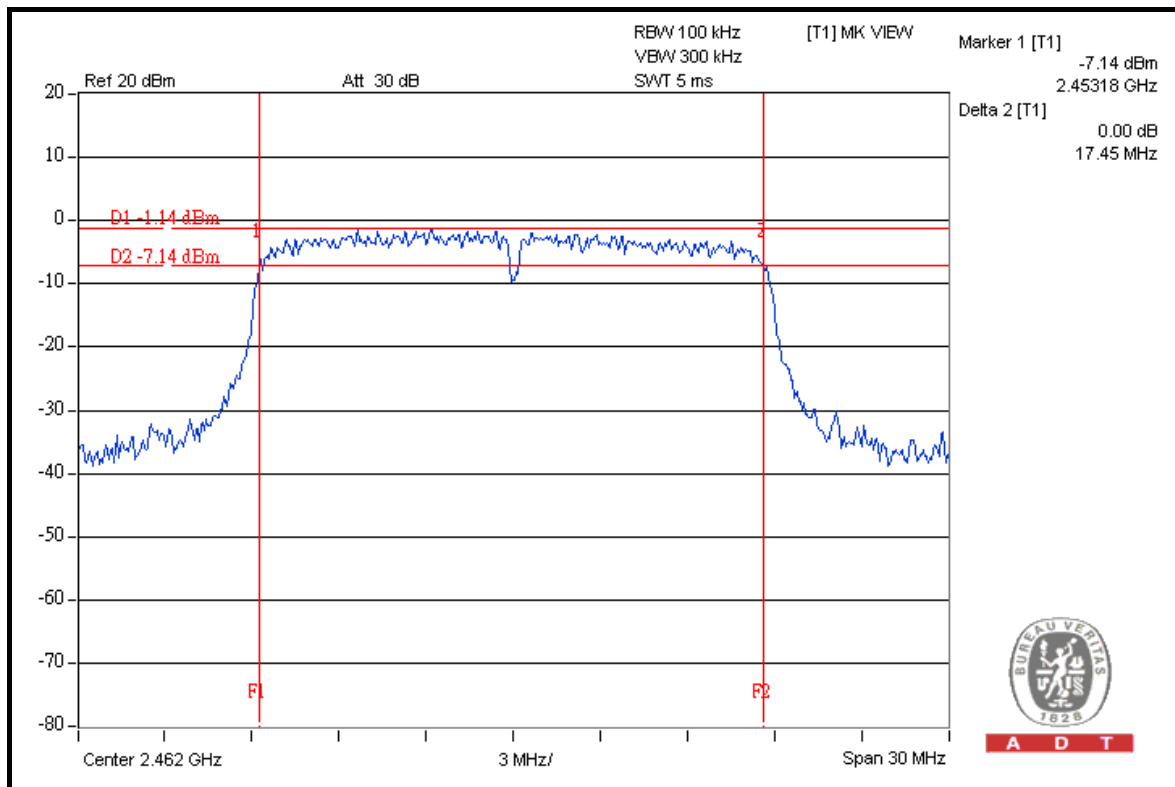


A D T

## CH 6



## CH 11



**A D T****DRAFT 802.11n (40MHz) OFDM MODULATION**

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	14.4Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2422	36.47	36.45	0.5	PASS
4	2437	36.16	36.44	0.5	PASS
7	2452	36.42	36.43	0.5	PASS



Ref 20 dBm Att 30 dB RBW 100 kHz VBW 300 kHz SWT 5 ms [T1] MK VIEW

Marker 1 [T1] -12.20 dBm 2.40380 GHz

Delta 2 [T1] 0.00 dB 36.47 MHz

D1 -6.2 dBm D2 -12.2 dBm

F1 F2

Center 2.422 GHz 5 MHz Span 50 MHz

BUREAU VERITAS 1828

A D T

Ref 20 dBm Att 30 dB RBW 100 kHz VBW 300 kHz SWT 5 ms [T1] MK VIEW

Marker 1 [T1] -12.28 dBm 2.41908 GHz

Delta 2 [T1] 0.00 dB 36.16 MHz

D1 -6.28 dBm D2 -12.28 dBm

F1 F2

Center 2.437 GHz 5 MHz/ Span 50 MHz

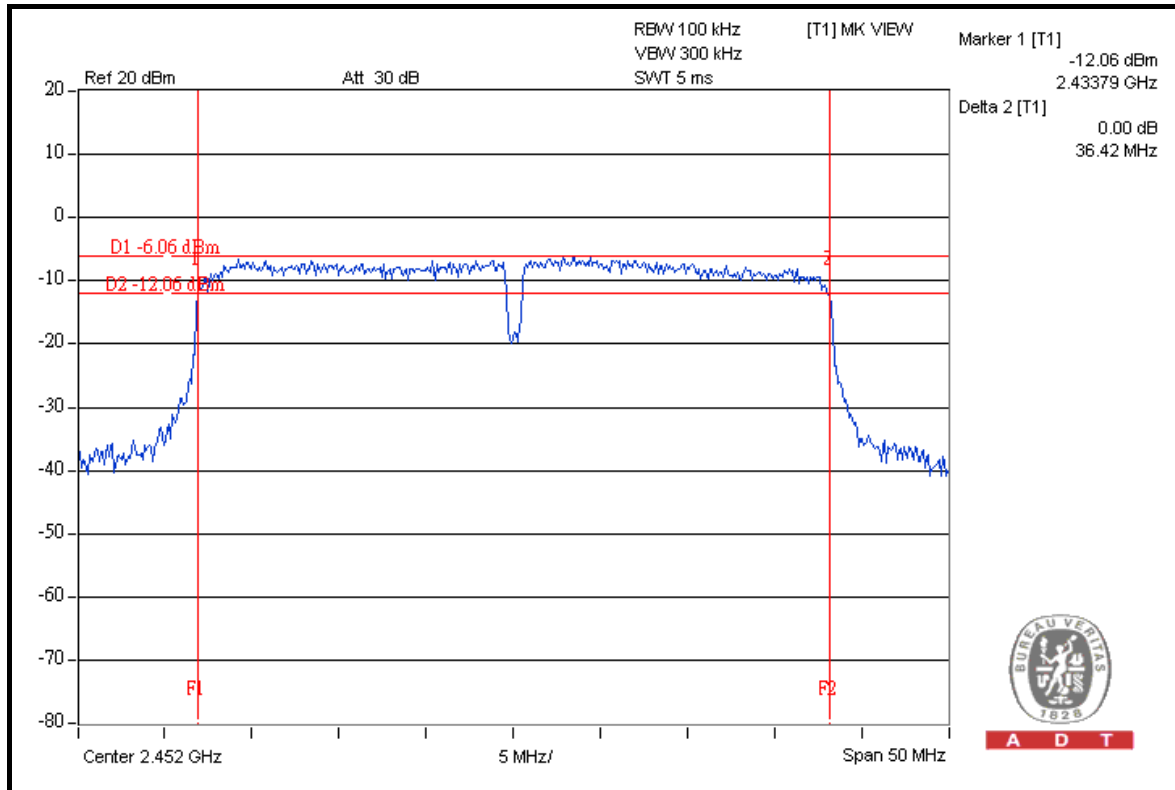
BUREAU VERITAS 1828

A D T

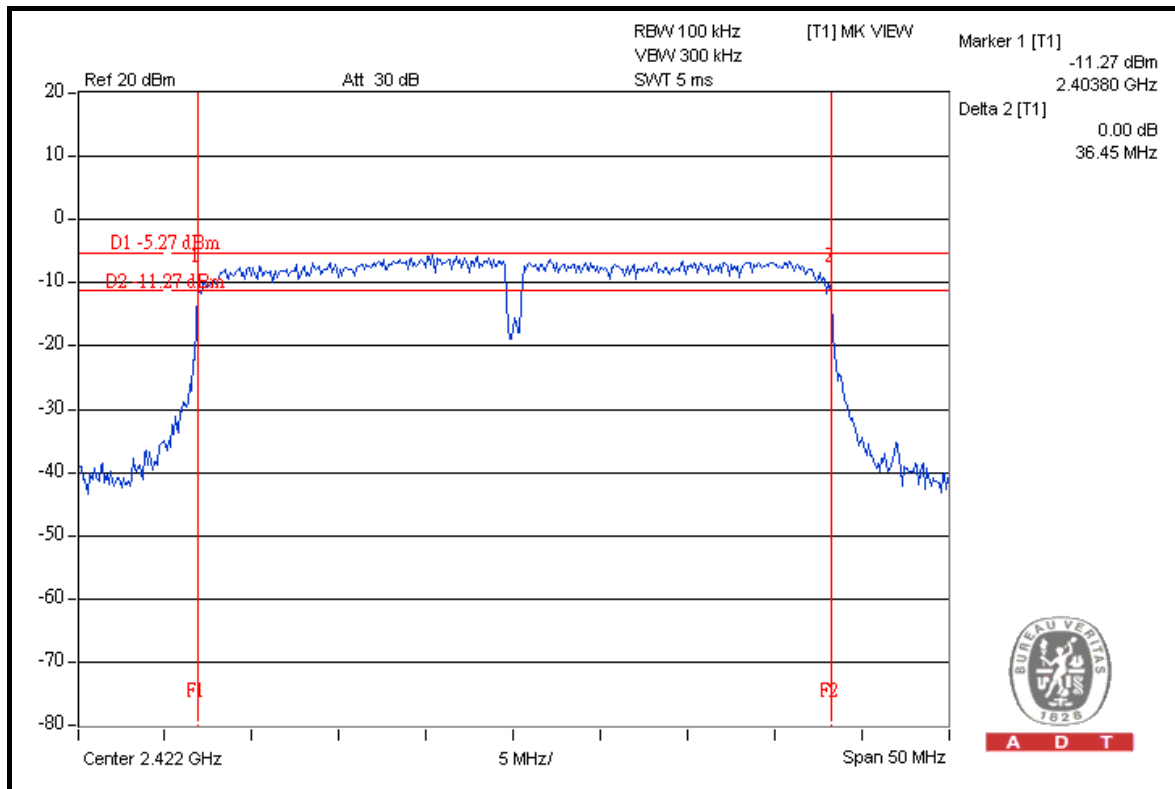


A D T

## CH 7



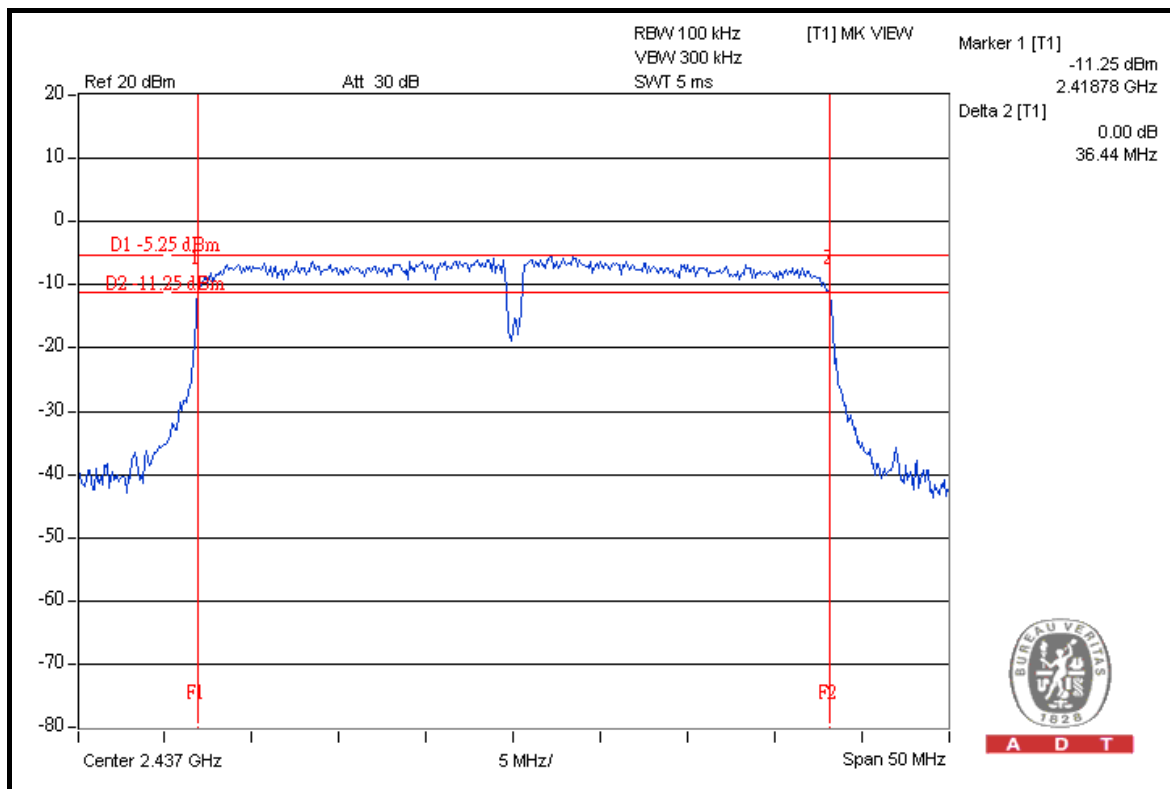
## FOR CHAIN 1: CH 1





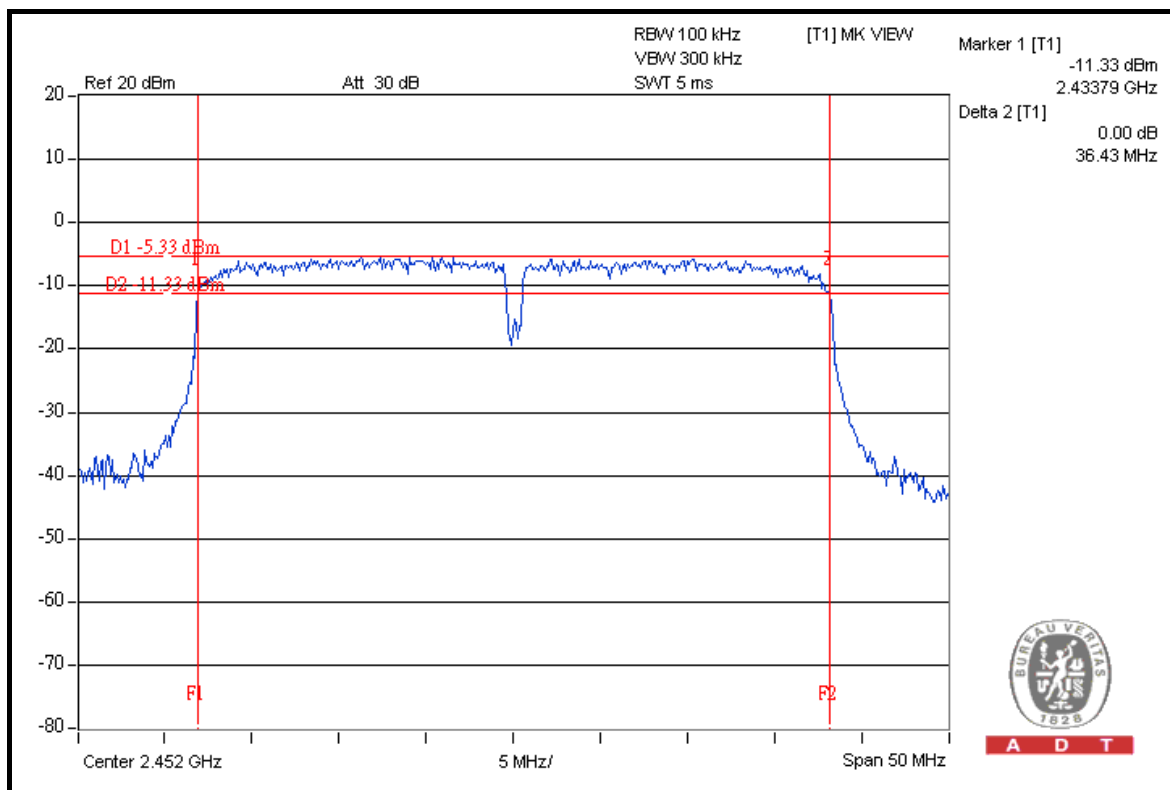
A D T

## CH 4



A D T

## CH 7



A D T

**A D T**

#### 4.4 MAXIMUM PEAK OUTPUT POWER

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

The Maximum Peak Output Power Measurement is 30dBm.

##### 4.4.2 INSTRUMENTS

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 6dB bandwidth of emission.

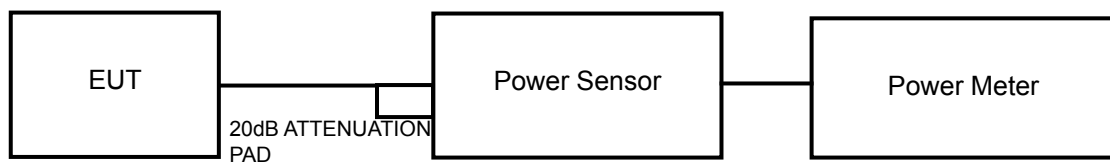
##### 4.4.3 TEST PROCEDURES

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

#### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.4.5 TEST SETUP



#### 4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



#### 4.4.7 TEST RESULTS

##### 802.11b DSSS MODULATION

<b>MODULATION TYPE</b>	DBPSK	<b>TRANSFER RATE</b>	1.0Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

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				
1	2412	16.54	15.52	80.727	19.07	30	PASS
6	2437	16.55	16.03	85.272	19.31	30	PASS
11	2462	16.01	16.57	85.297	19.31	30	PASS

##### 802.11g OFDM MODULATION

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6.0Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

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				
1	2412	22.03	22.06	320.282	25.06	30	PASS
6	2437	22.05	22.54	339.798	25.31	30	PASS
11	2462	22.06	22.01	319.549	25.05	30	PASS

### DRAFT 802.11n (20MHz) OFDM MODULATION

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	7.2Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

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				
1	2412	22.06	22.02	319.915	25.05	30	PASS
6	2437	22.03	22.54	339.061	25.30	30	PASS
11	2462	22.01	21.53	301.088	24.79	30	PASS

### DRAFT 802.11n (40MHz) OFDM MODULATION

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	14.4Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

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				
1	2422	18.04	18.55	135.294	21.31	30	PASS
4	2437	18.06	18.53	135.259	21.31	30	PASS
7	2452	18.05	18.57	135.771	21.33	30	PASS

## 4.5 POWER SPECTRAL DENSITY MEASUREMENT

### 4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100040	Jul. 04, 2008	Jul. 03, 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 PROCEDURE

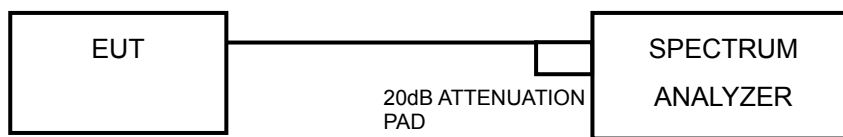
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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

#### 4.5.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.5.5 TEST SETUP



#### 4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

## 4.5.7 TEST RESULTS

### 802.11b DSSS MODULATION

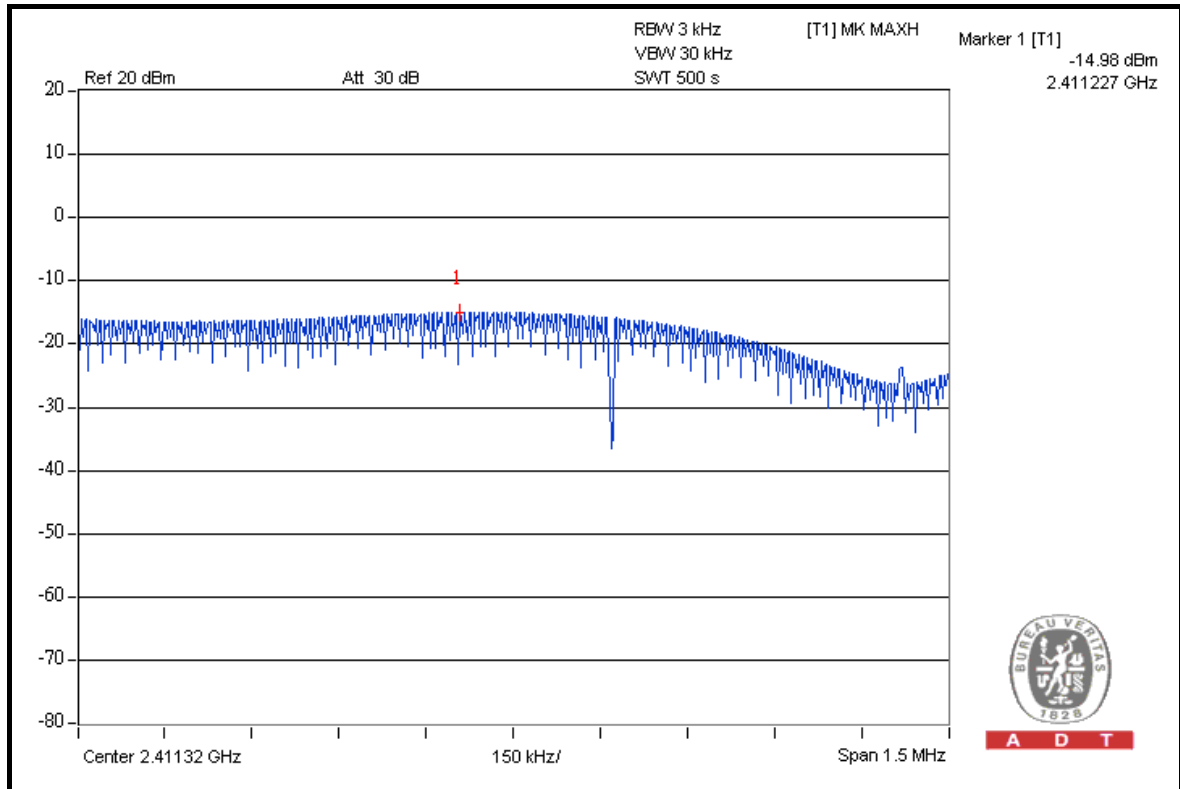
<b>MODULATION TYPE</b>	DBPSK	<b>TRANSFER RATE</b>	1.0Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	-14.98	-16.01	0.057	-12.45	8	PASS
6	2437	-14.97	-15.32	0.061	-12.13	8	PASS
11	2462	-15.25	-14.85	0.063	-12.04	8	PASS

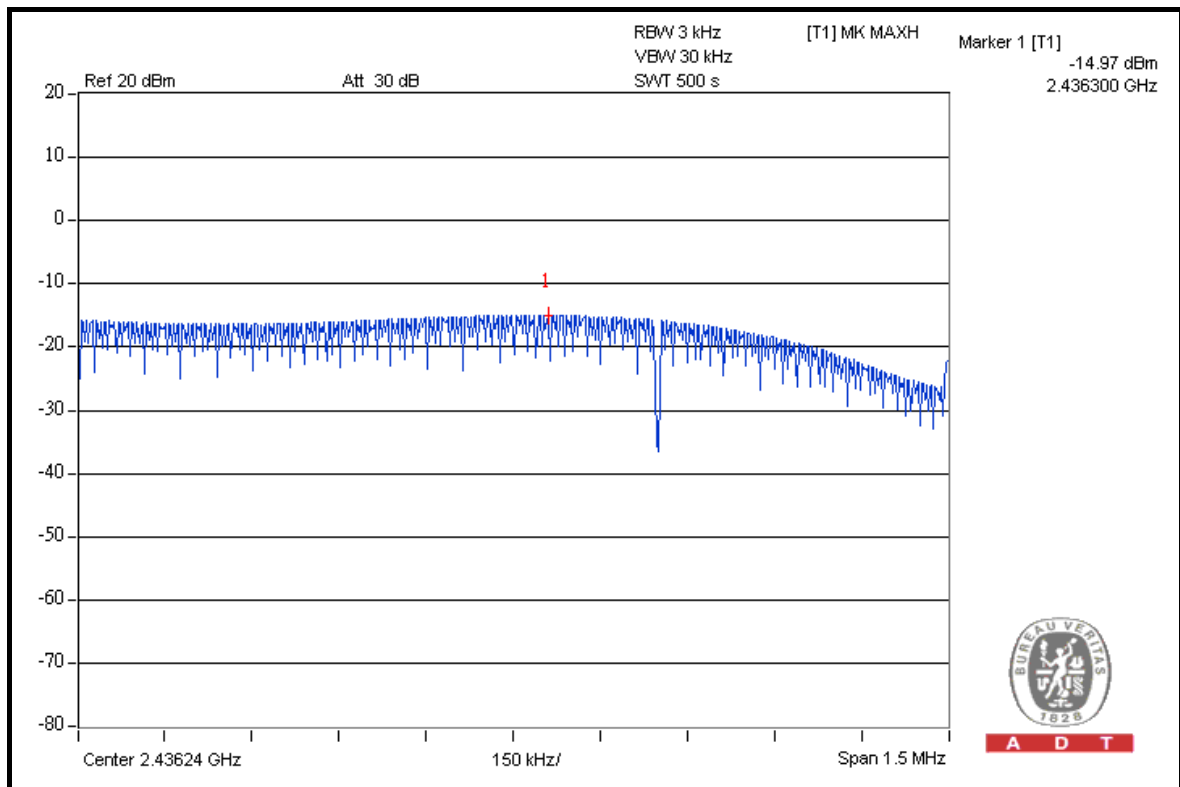


A D T

## FOR CHAIN 0: CH 1



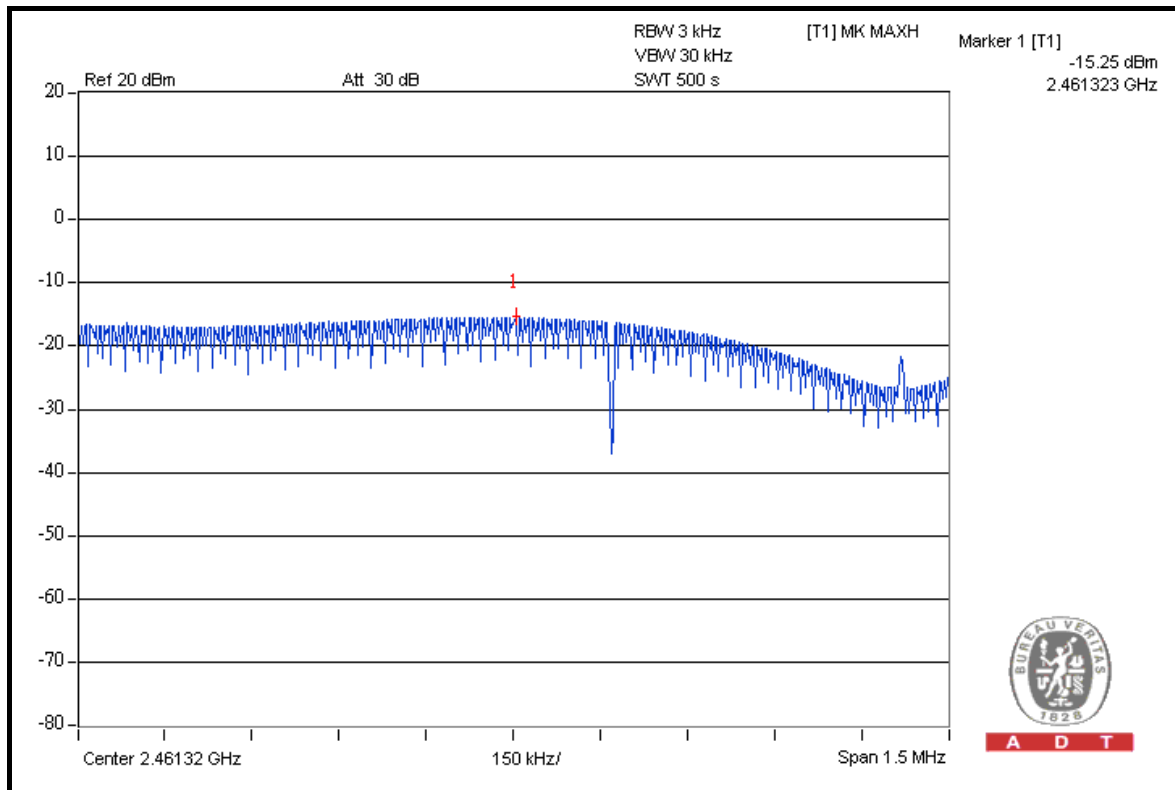
## CH 6





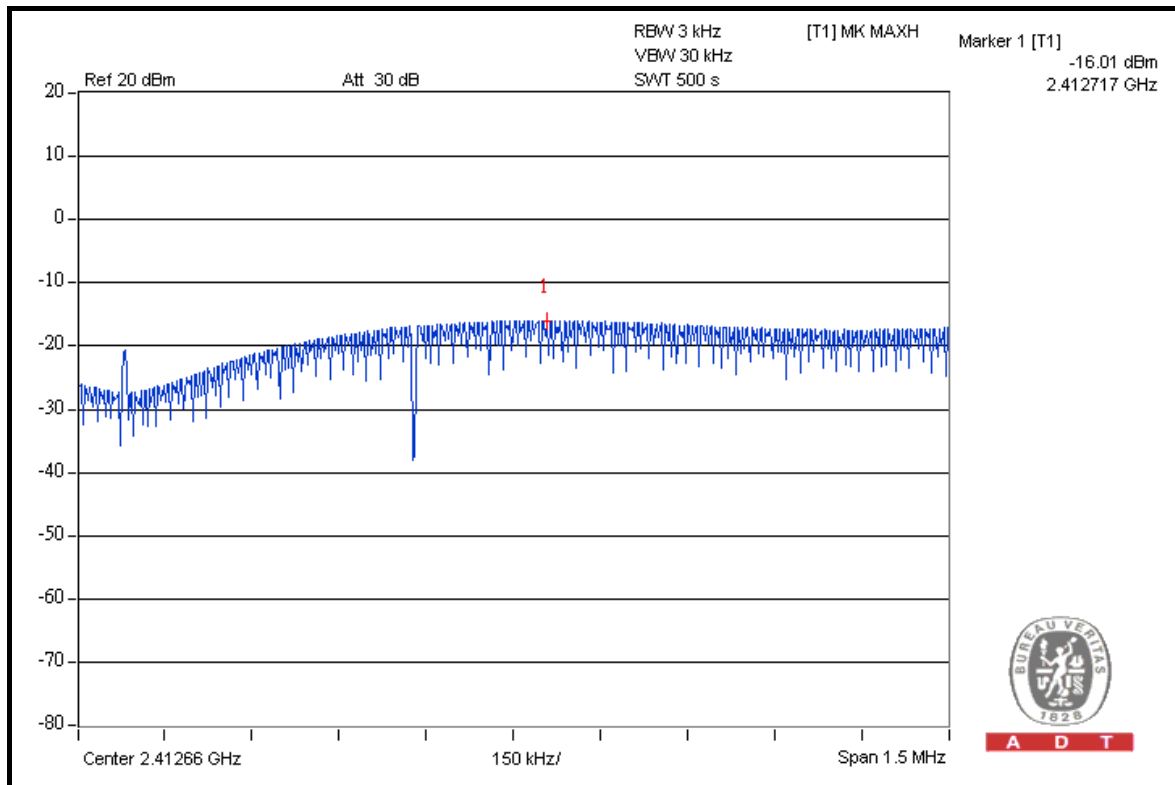
A D T

## CH 11



A D T

## FOR CHAIN 1: CH 1

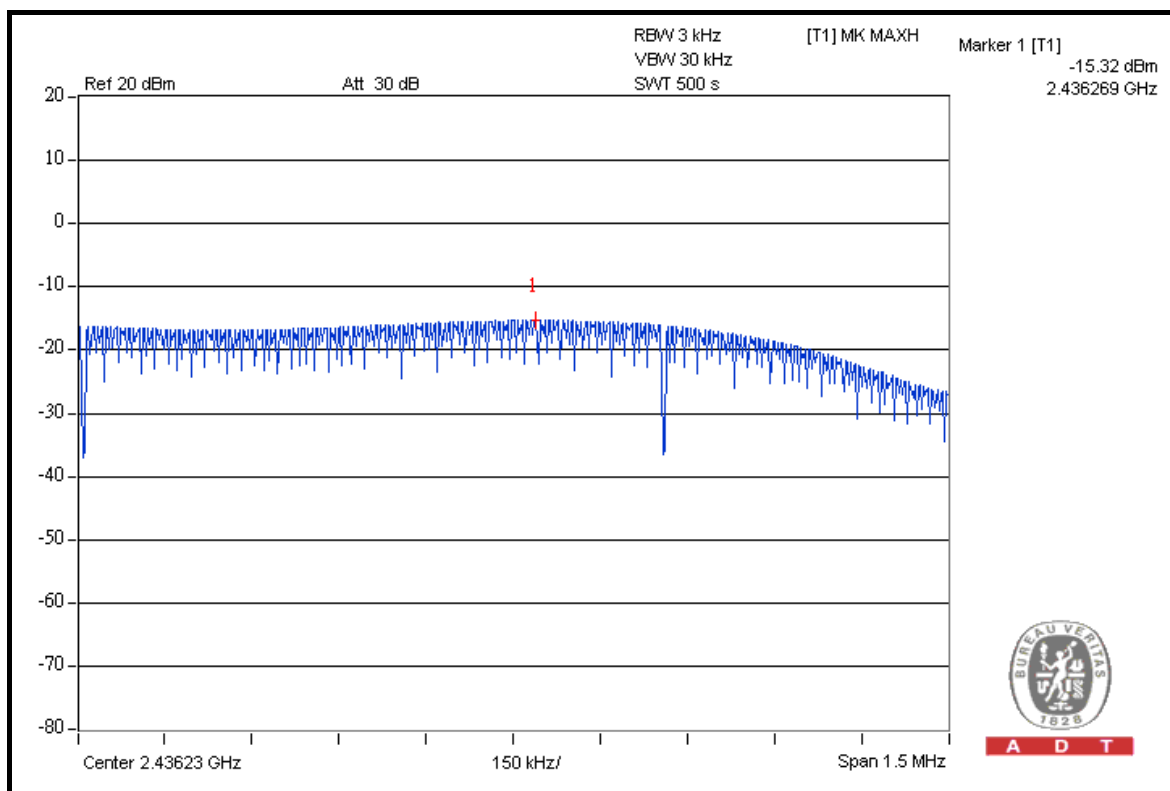


A D T

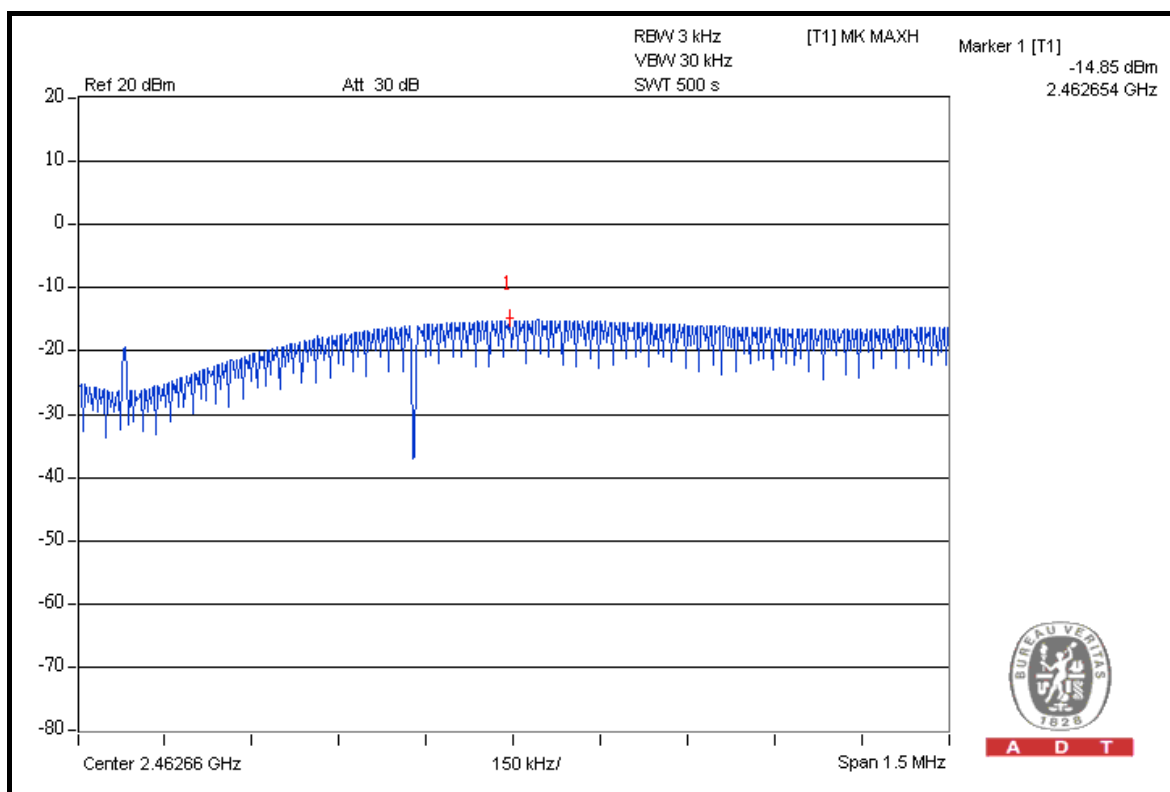


A D T

## CH 6



## CH 11





**A D T****802.11g OFDM MODULATION**

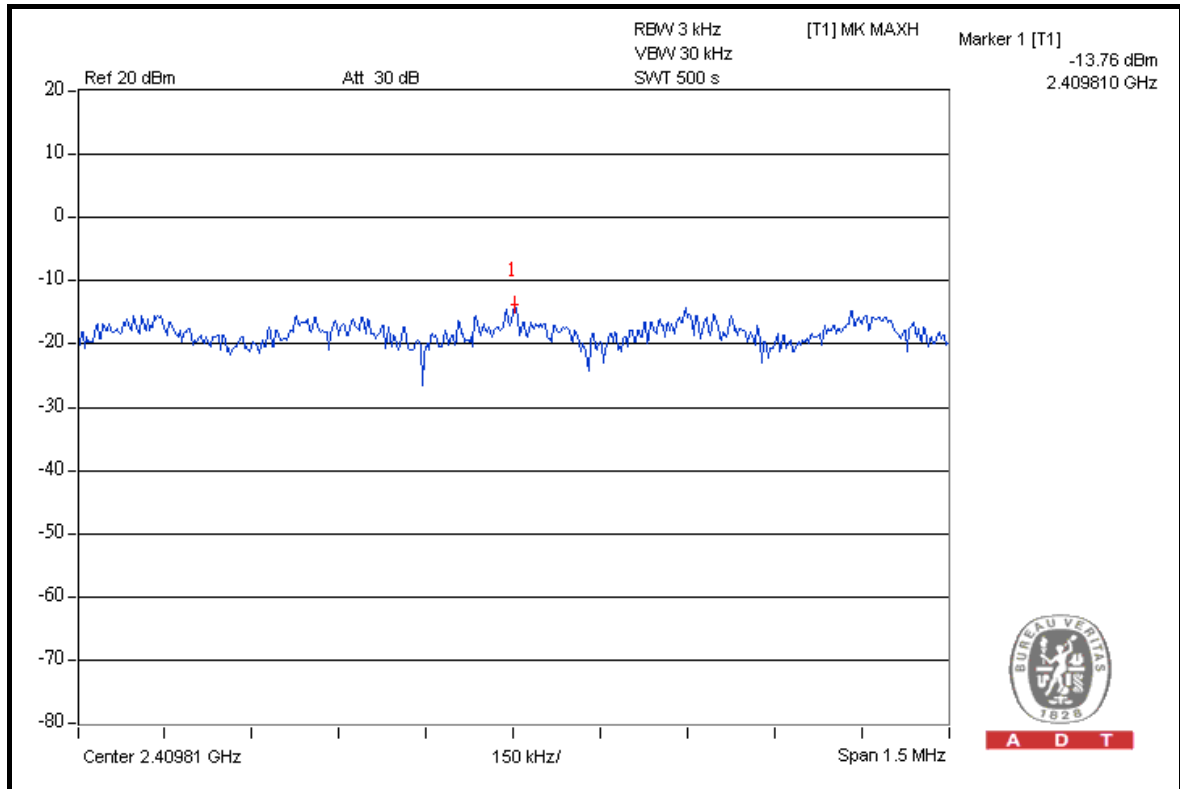
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6.0Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	24deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	-13.76	-14.37	0.079	-11.04	8	PASS
6	2437	-13.62	-13.74	0.086	-10.67	8	PASS
11	2462	-13.69	-14.40	0.079	-11.02	8	PASS

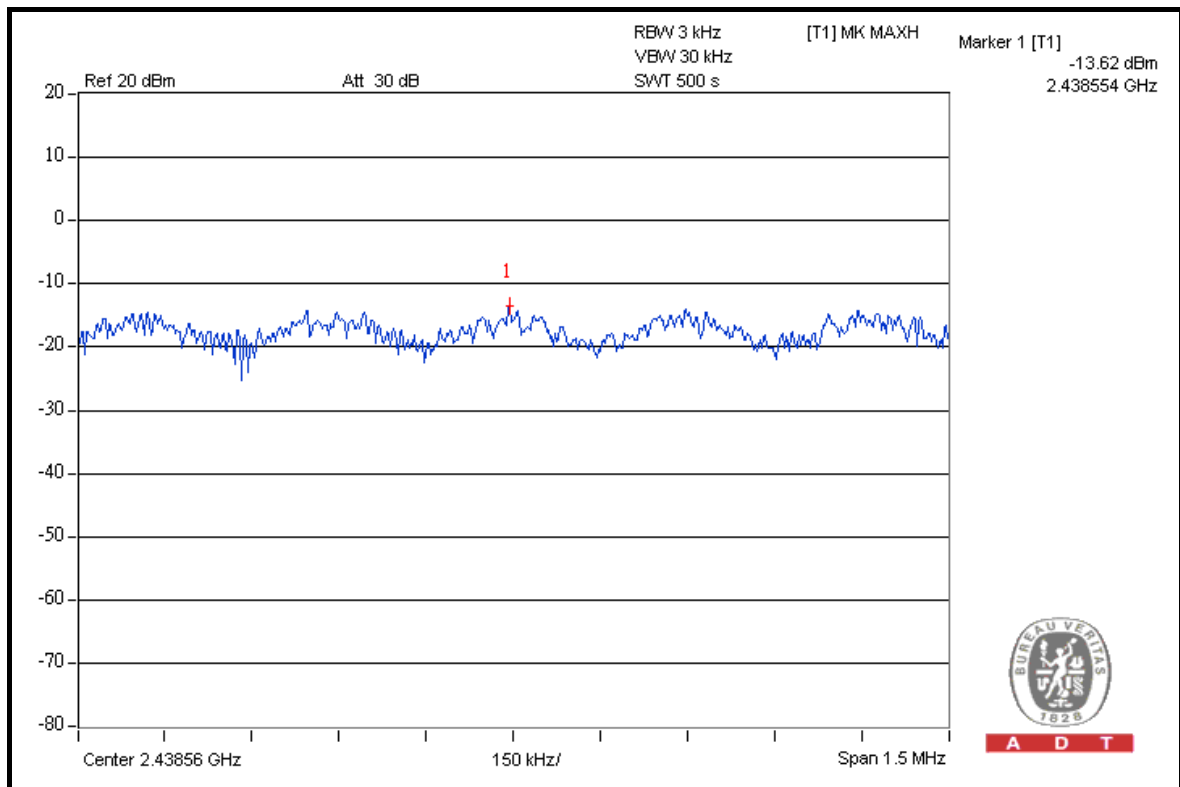


A D T

## FOR CHAIN 0: CH 1



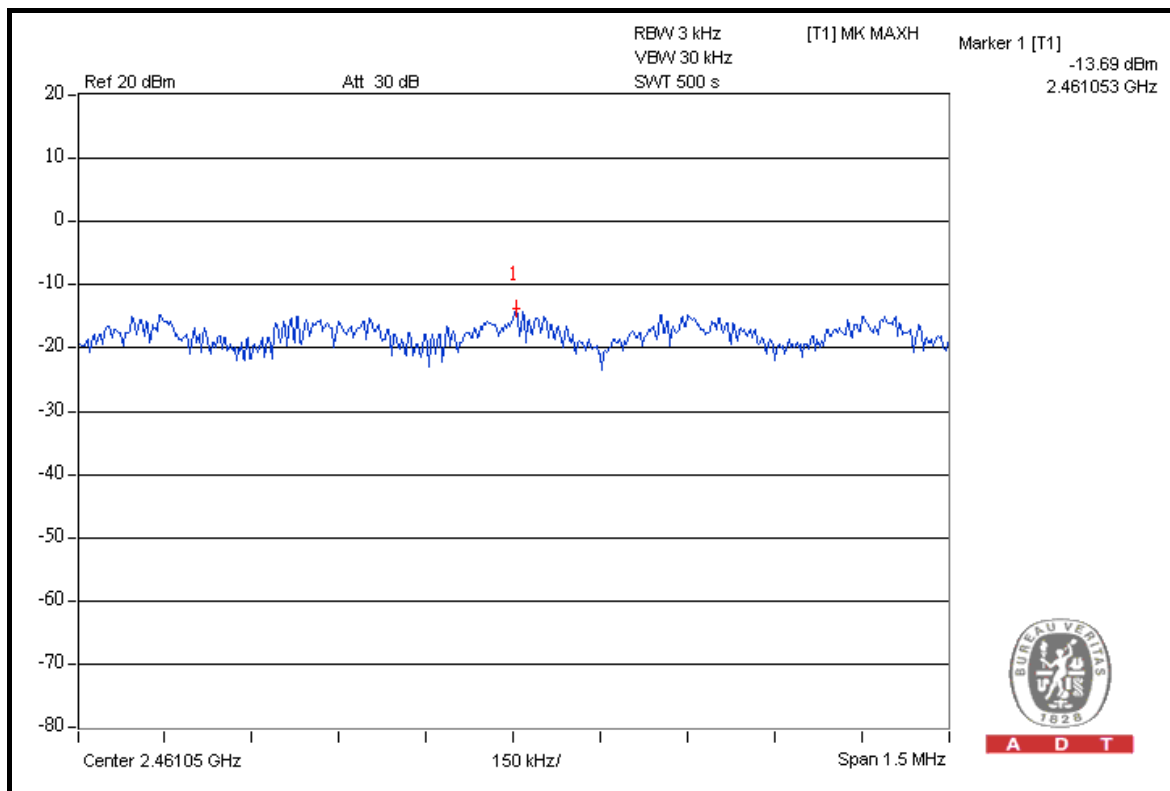
## CH 6



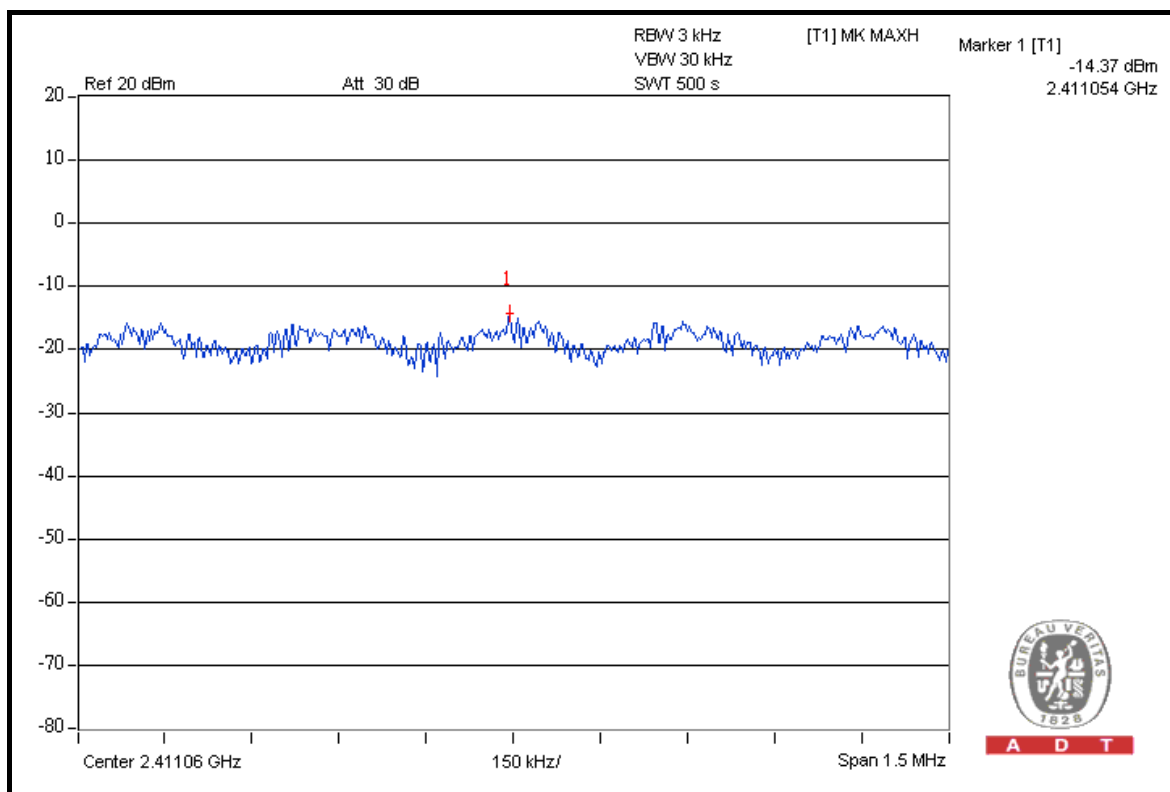


A D T

## CH 11



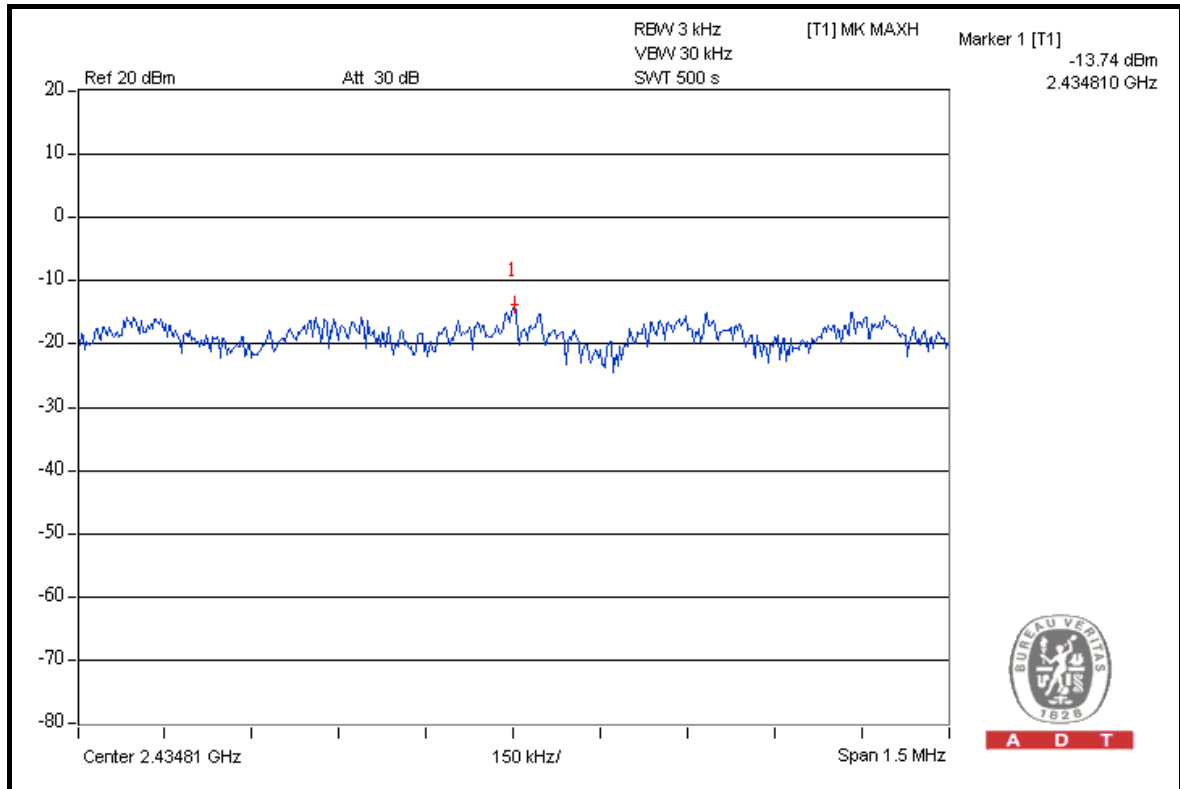
## FOR CHAIN 1: CH 1



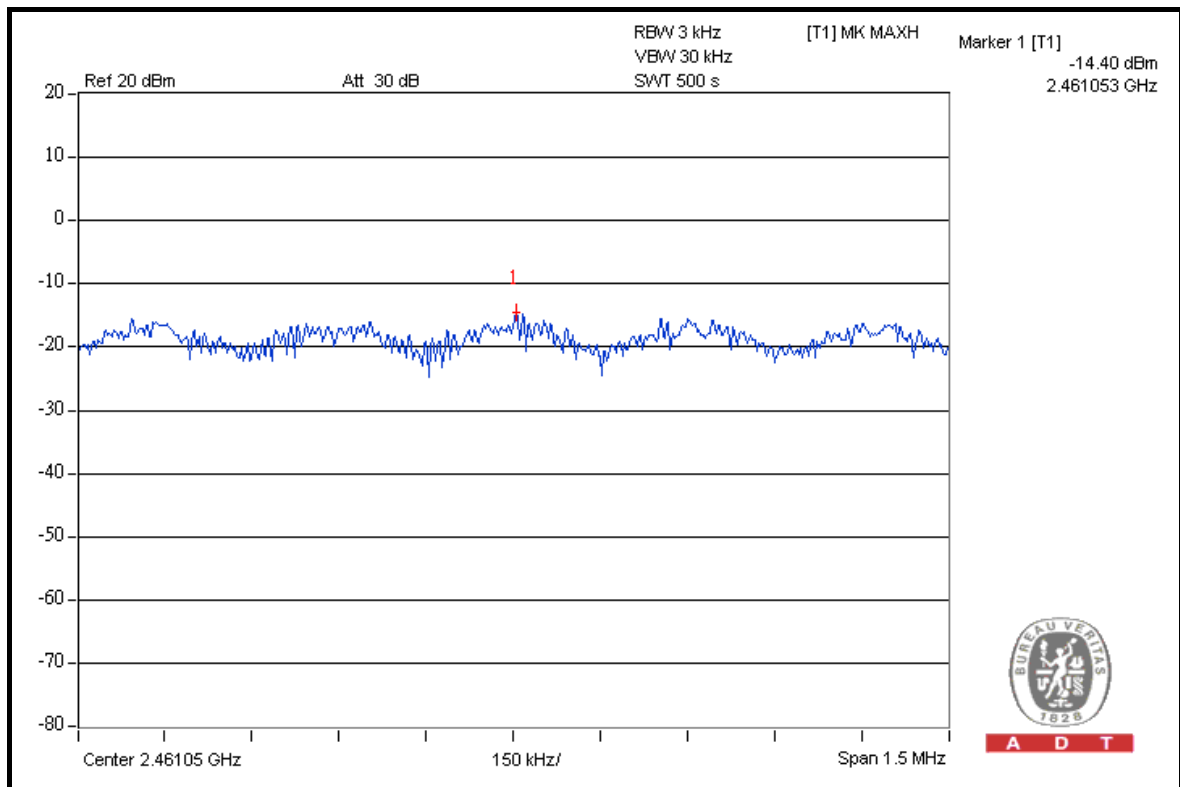


A D T

## CH 6



## CH 11





A D T

**DRAFT 802.11n (20MHz) OFDM MODULATION**

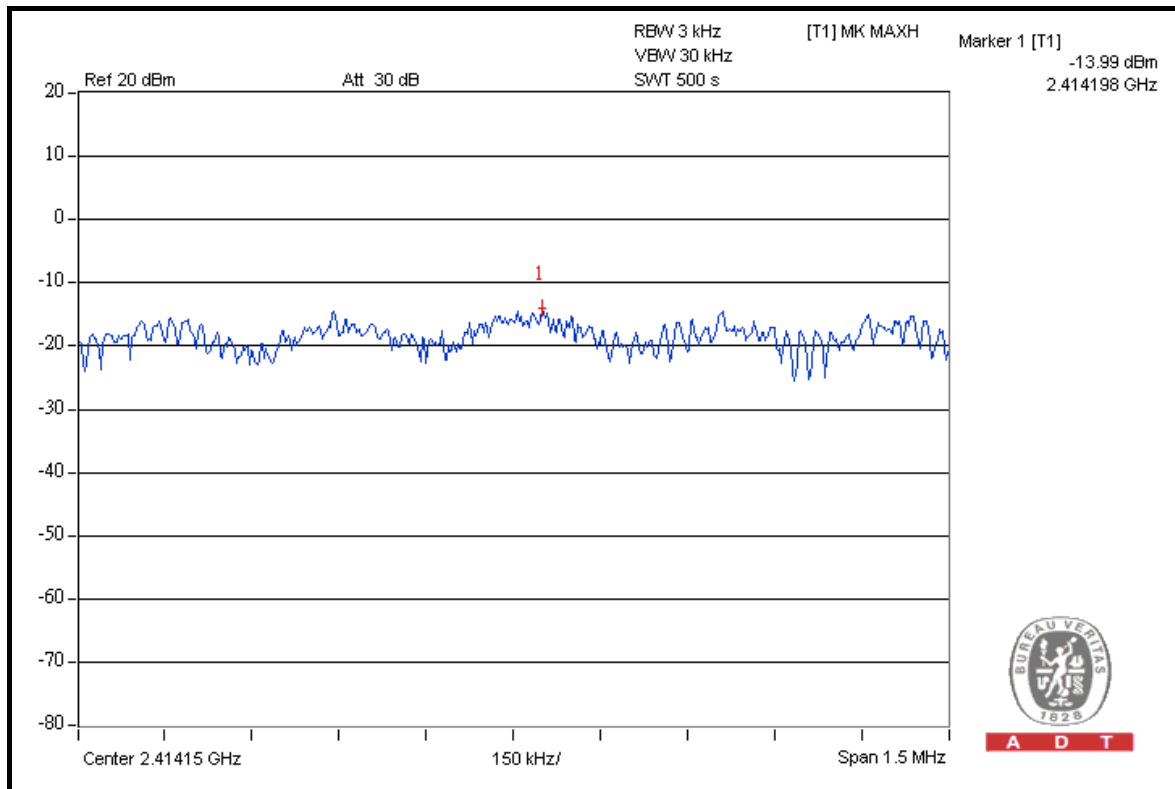
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	7.2Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	-13.99	-14.46	0.076	-11.21	8	PASS
6	2437	-13.84	-13.86	0.082	-10.84	8	PASS
11	2462	-13.77	-14.88	0.074	-11.28	8	PASS

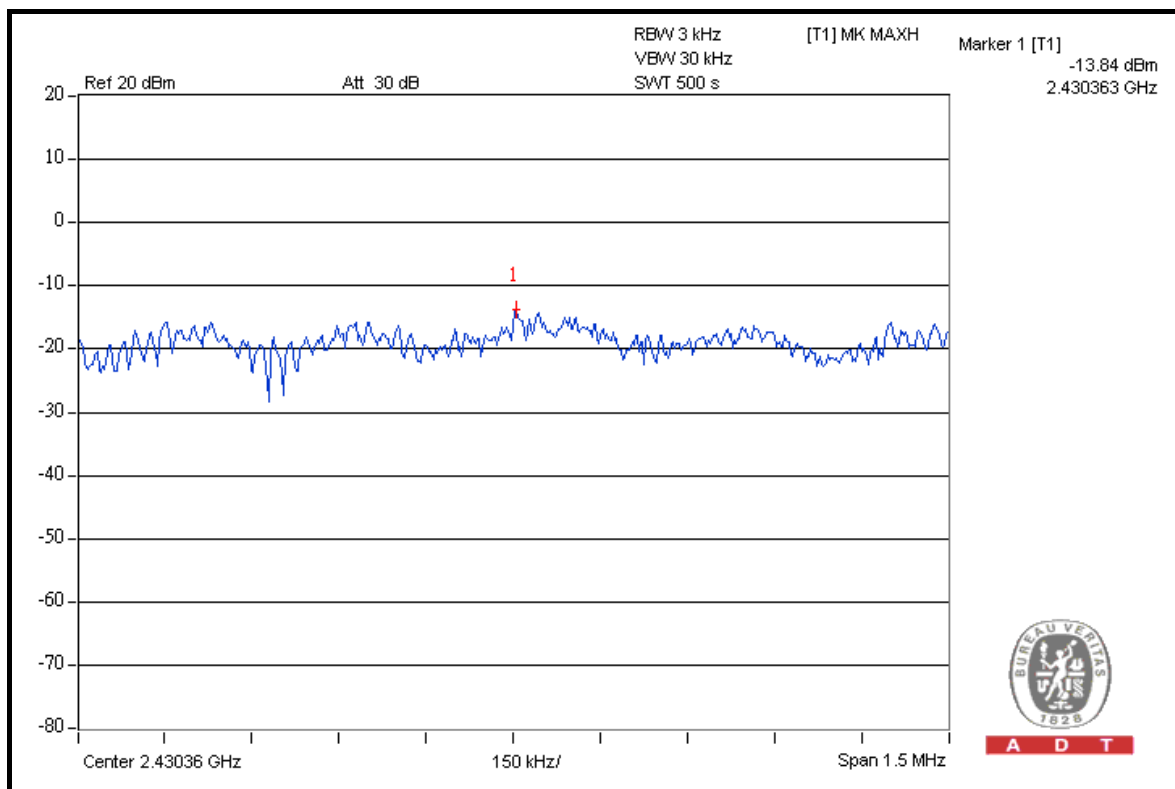


A D T

## FOR CHAIN 0: CH 1



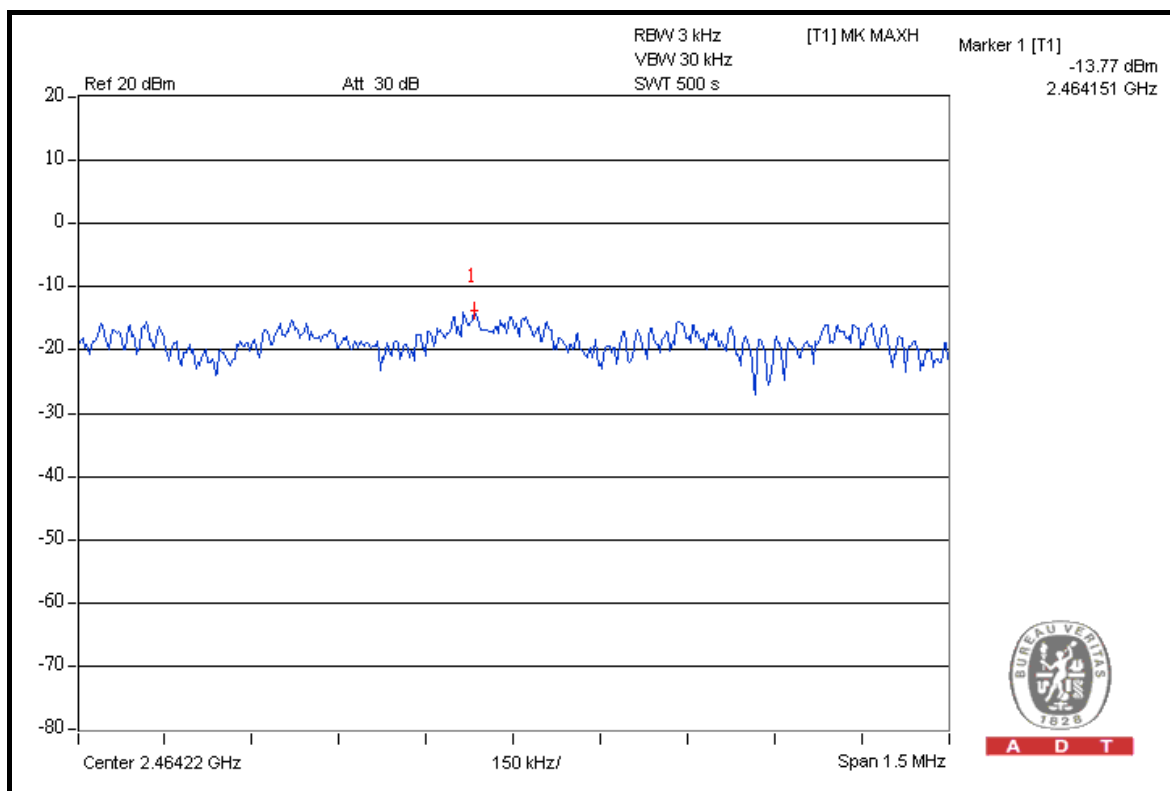
## CH 6



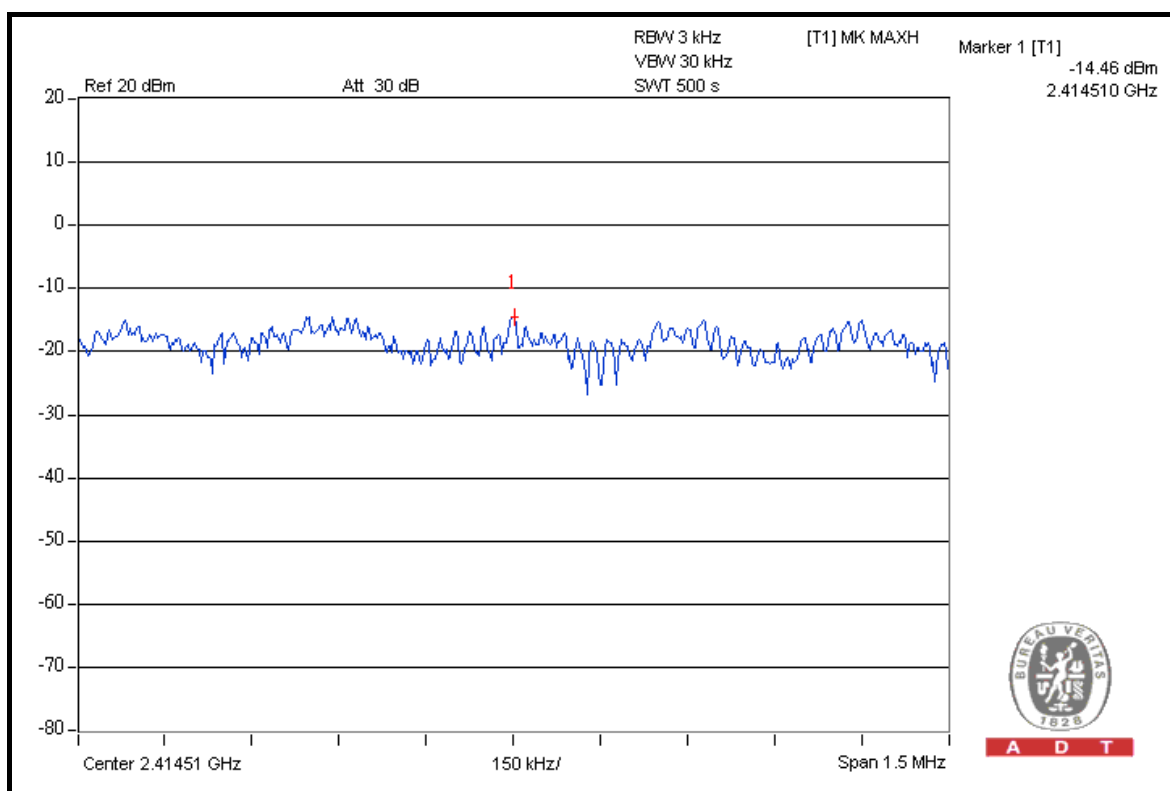


A D T

## CH 11



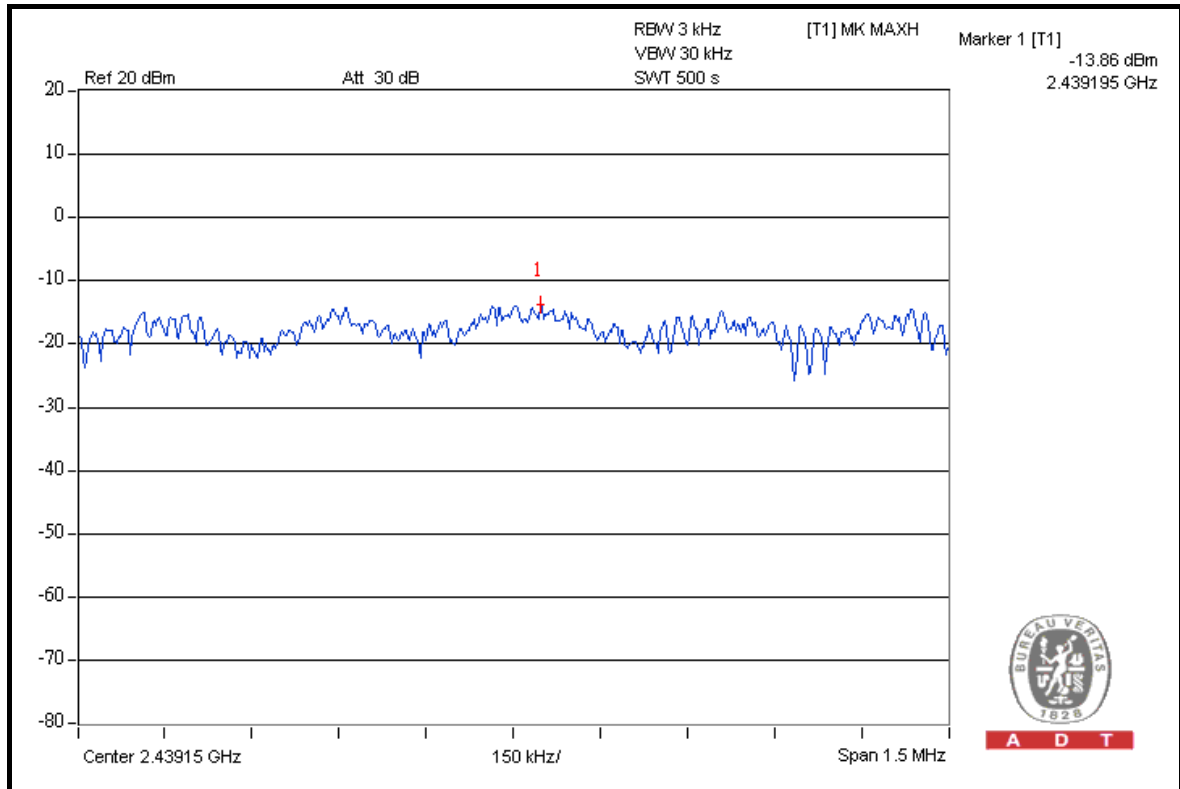
## FOR CHAIN 1: CH 1



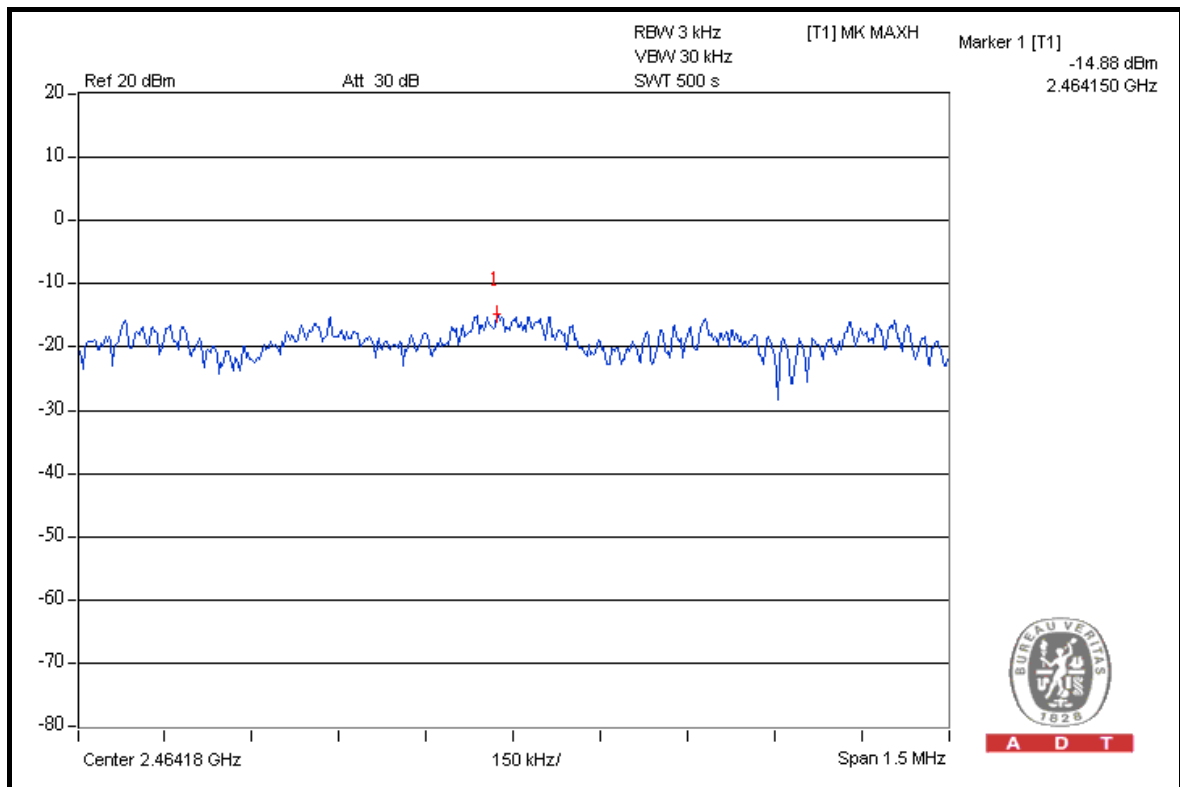


A D T

## CH 6



## CH 11





**A D T****DRAFT 802.11n (40MHz) OFDM MODULATION**

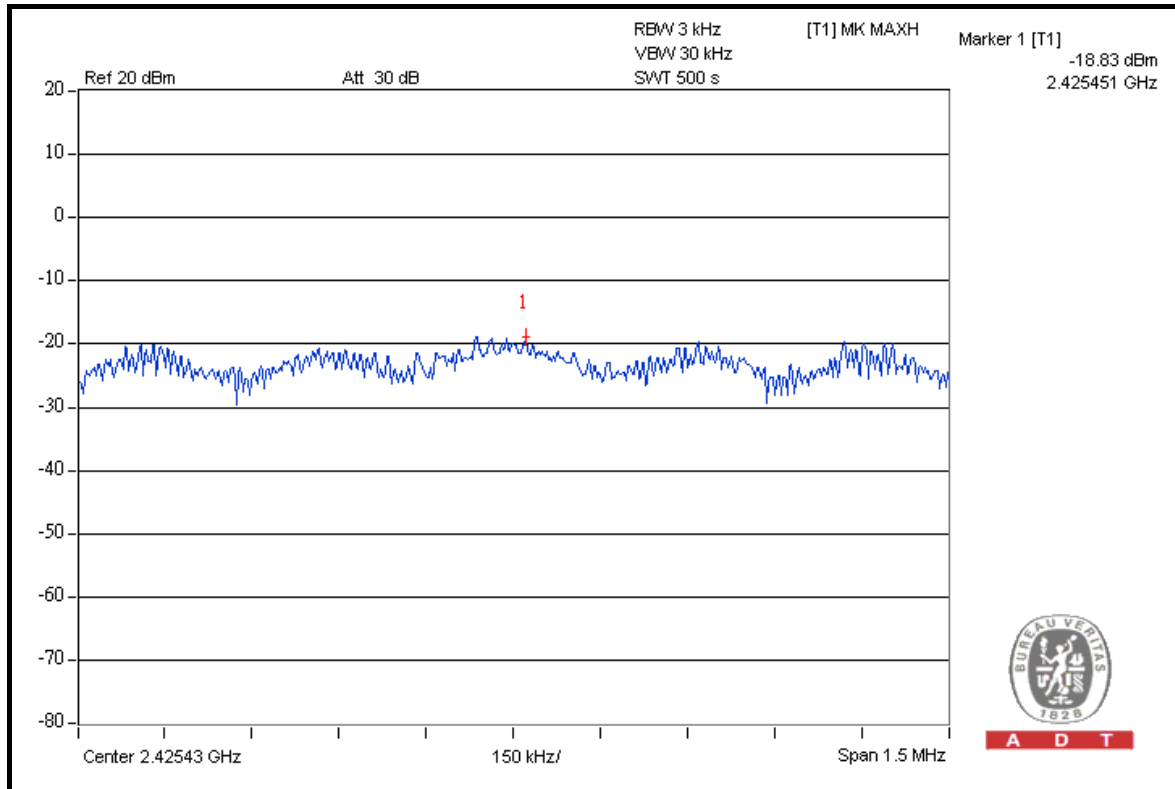
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	14.4Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2422	-18.83	-17.42	0.031	-14.46	8	PASS
4	2437	-18.68	-17.22	0.033	-14.88	8	PASS
7	2452	-18.76	-17.19	0.032	-14.89	8	PASS

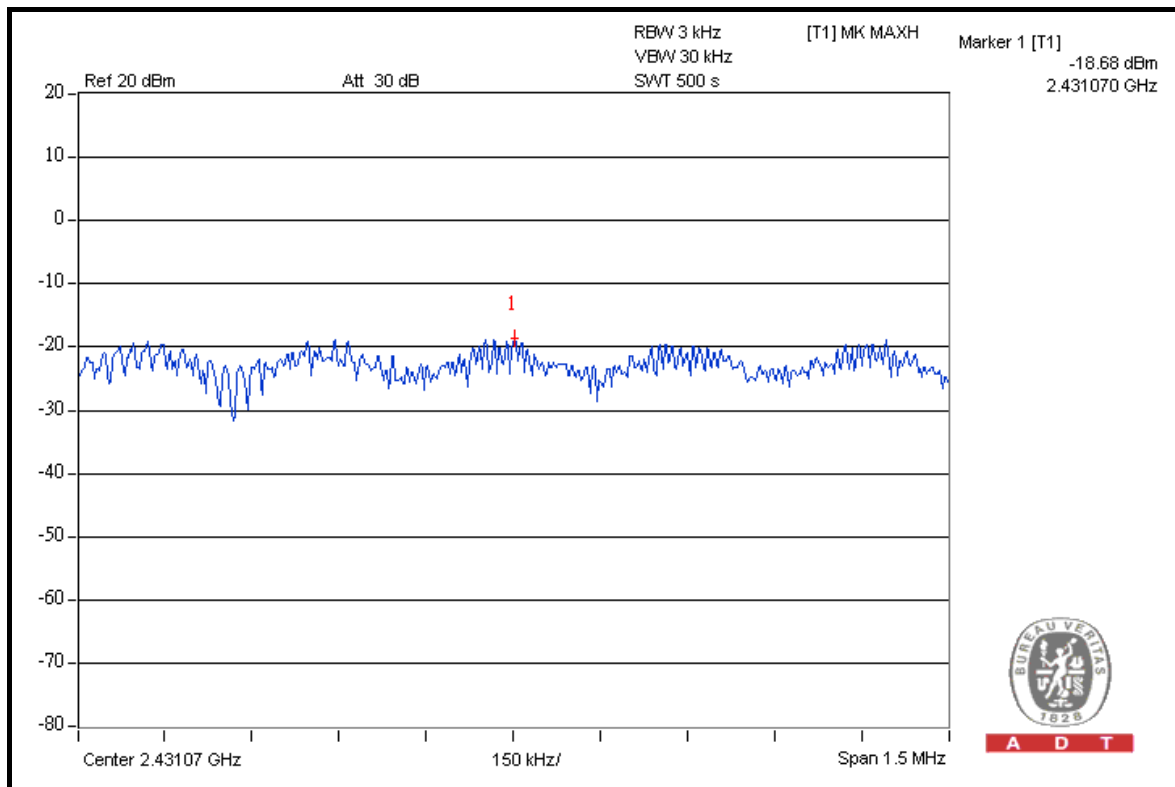


A D T

## FOR CHAIN 0: CH 1



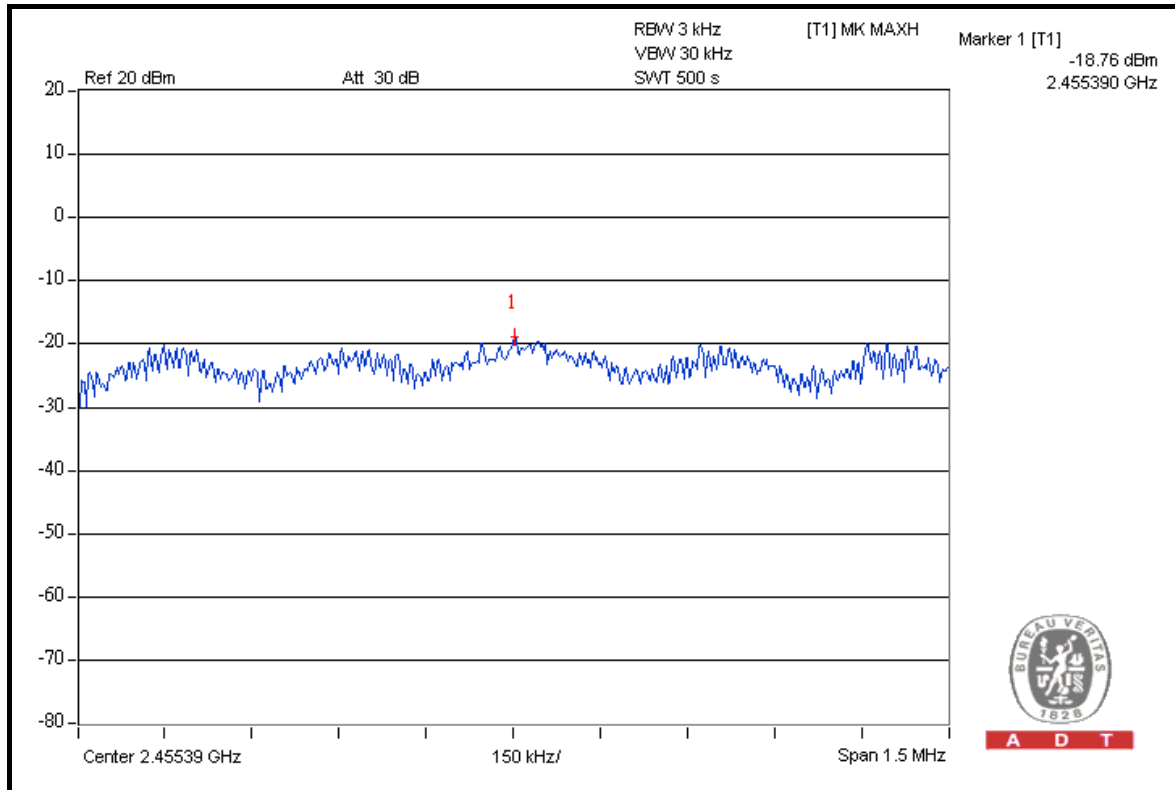
## CH 4



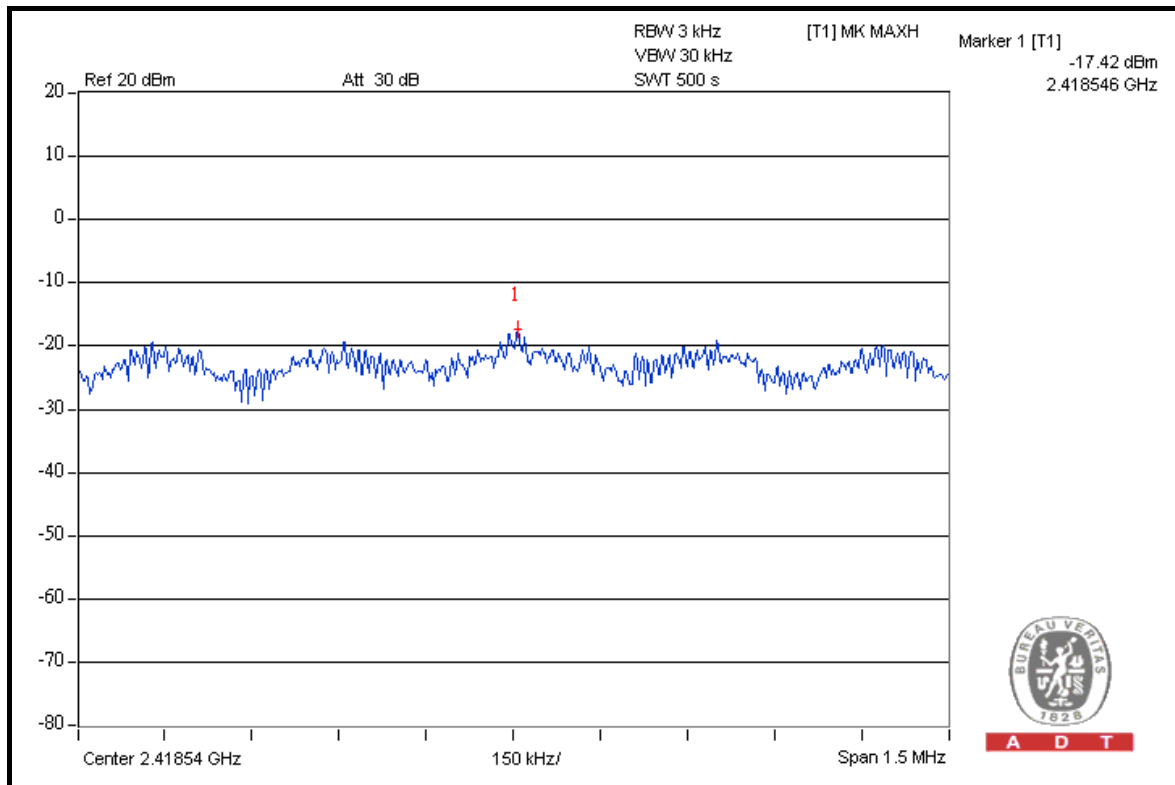


A D T

## CH 7



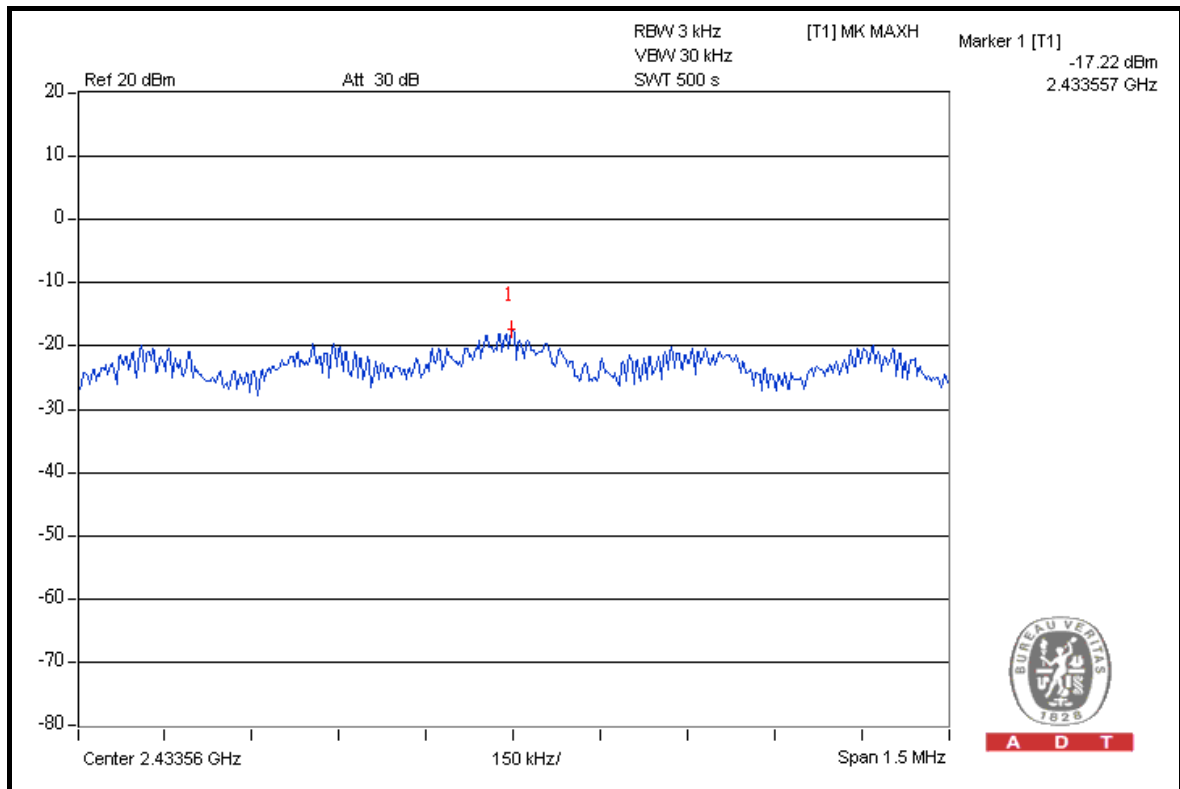
## FOR CHAIN 1: CH 1



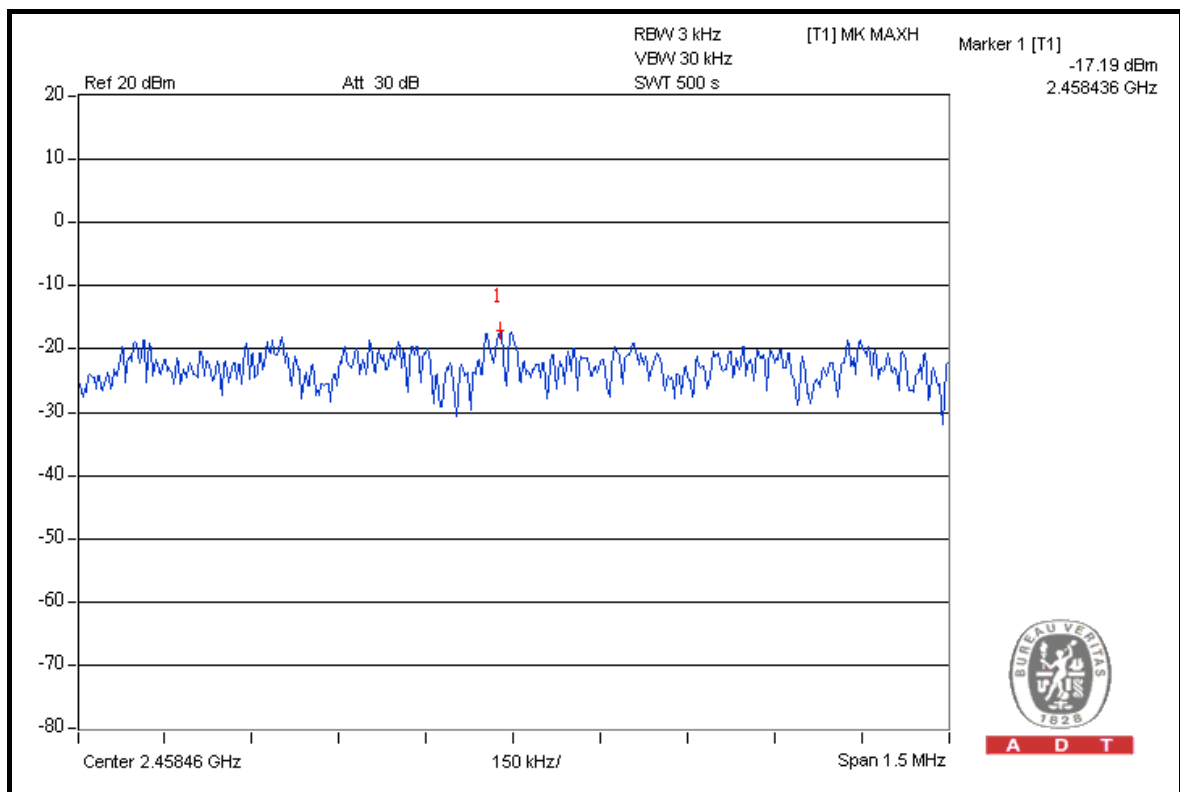


A D T

#### CH 4



#### CH 7



## 4.6 BAND EDGES MEASUREMENT

### 4.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

### 4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	100033	Jun. 30, 2008	Jun. 29, 2009
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Jul. 04, 2008	Jul. 03, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 27, 2009	Apr. 26, 2010
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 13, 2009	May 12, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	May 13, 2009	May 12, 2010
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA

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

#### 4.6.3 TEST PROCEDURE

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

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

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

#### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6.

#### 4.6.6 TEST RESULTS

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

#### 802.11b DSSS MODULATION

**NOTE 1:** The band edge emission plot on the next page shows 48.06dBuV between carrier maximum power and local maximum emission in restrict band (2.3712GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 105.38dBuV/m (Peak), so the maximum field strength in restrict band is  $105.38 - 48.06 = 57.32\text{dBuV/m}$  which is under 74dBuV/m limit.

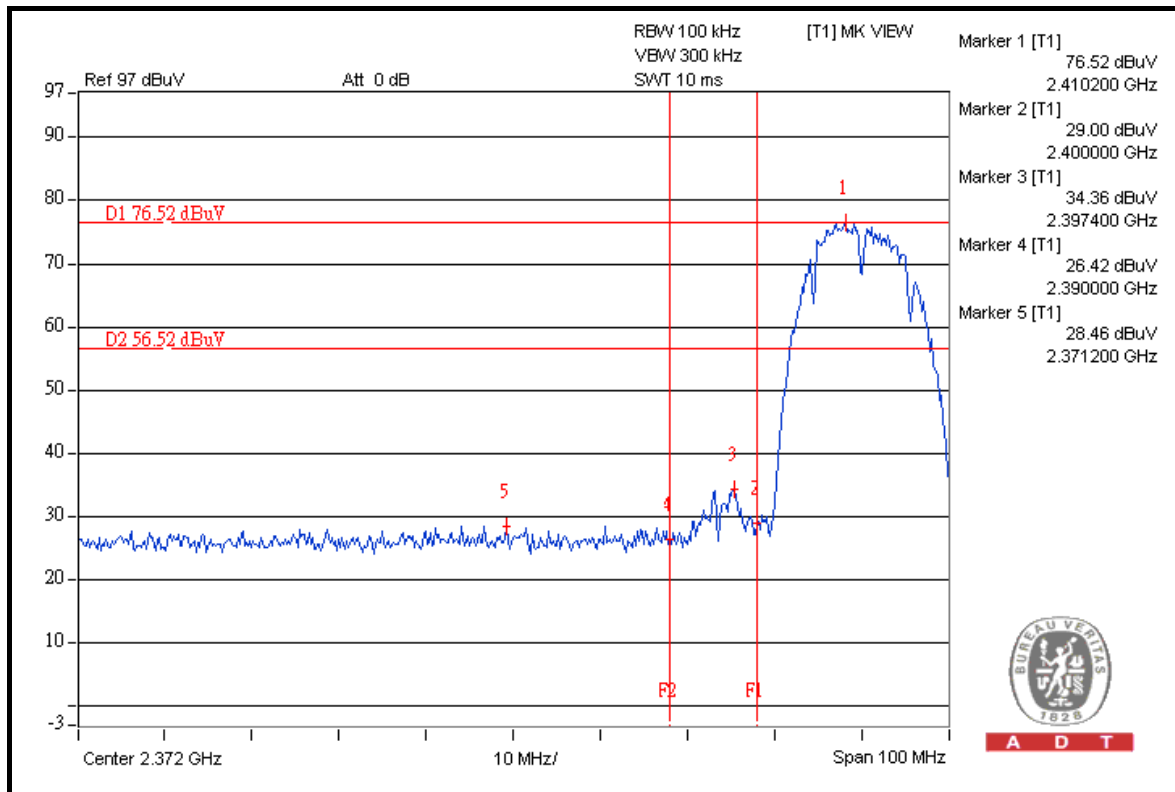
The band edge emission plot of on the next page shows 57.42dBuV between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 100.66dBuV/m (Average), so the maximum field strength in restrict band is  $100.66 - 57.42 = 43.24\text{dBuV/m}$  which is under 54dBuV/m limit.

**NOTE 2:** The band edge emission plot on the next second page shows 48.19dBuV between carrier maximum power and local maximum emission in restrict band (2.4870GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 105.26dBuV/m (Peak), so the maximum field strength in restrict band is  $105.26 - 48.19 = 57.07\text{dBuV/m}$  which is under 74dBuV/m limit.

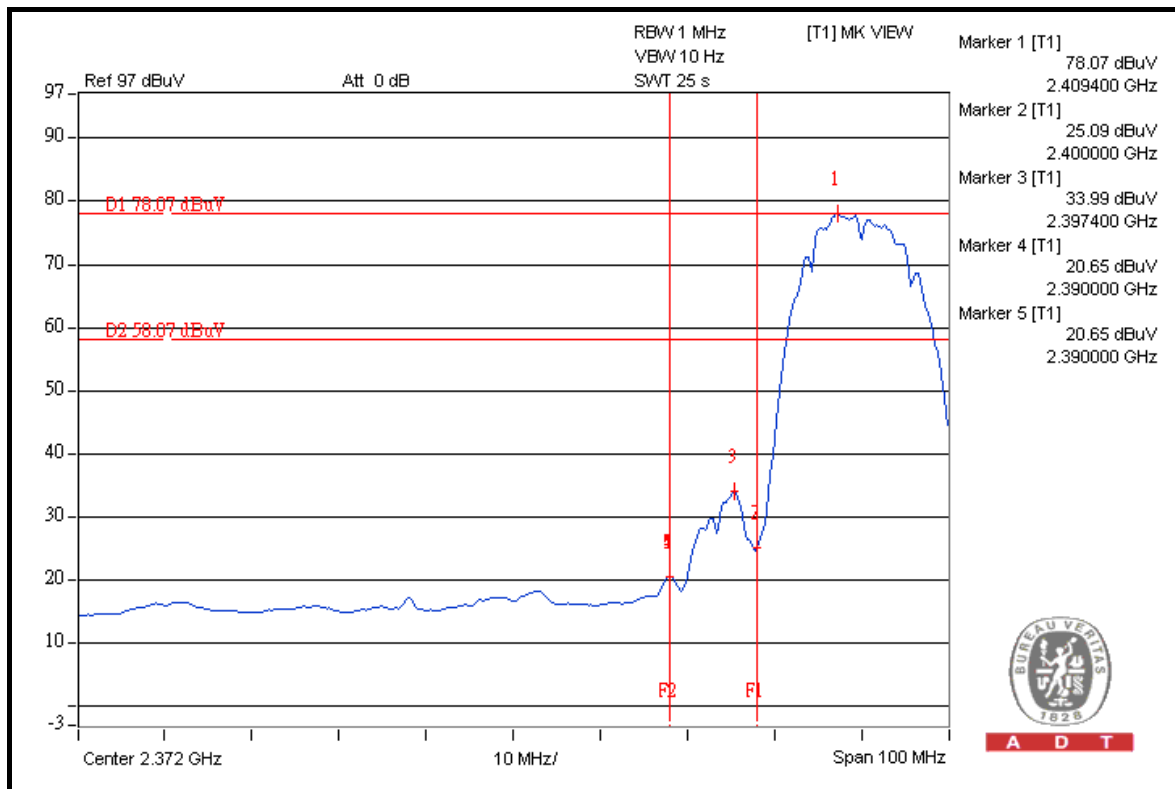
The band edge emission plot on the next third page shows 55.38dBuV between carrier maximum power and local maximum emission in restrict band (2.4878GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 100.53dBuV/m (Average), so the maximum field strength in restrict band is  $100.53 - 55.38 = 45.15\text{dBuV/m}$  which is under 54dBuV/m limit.



A D T



A D T

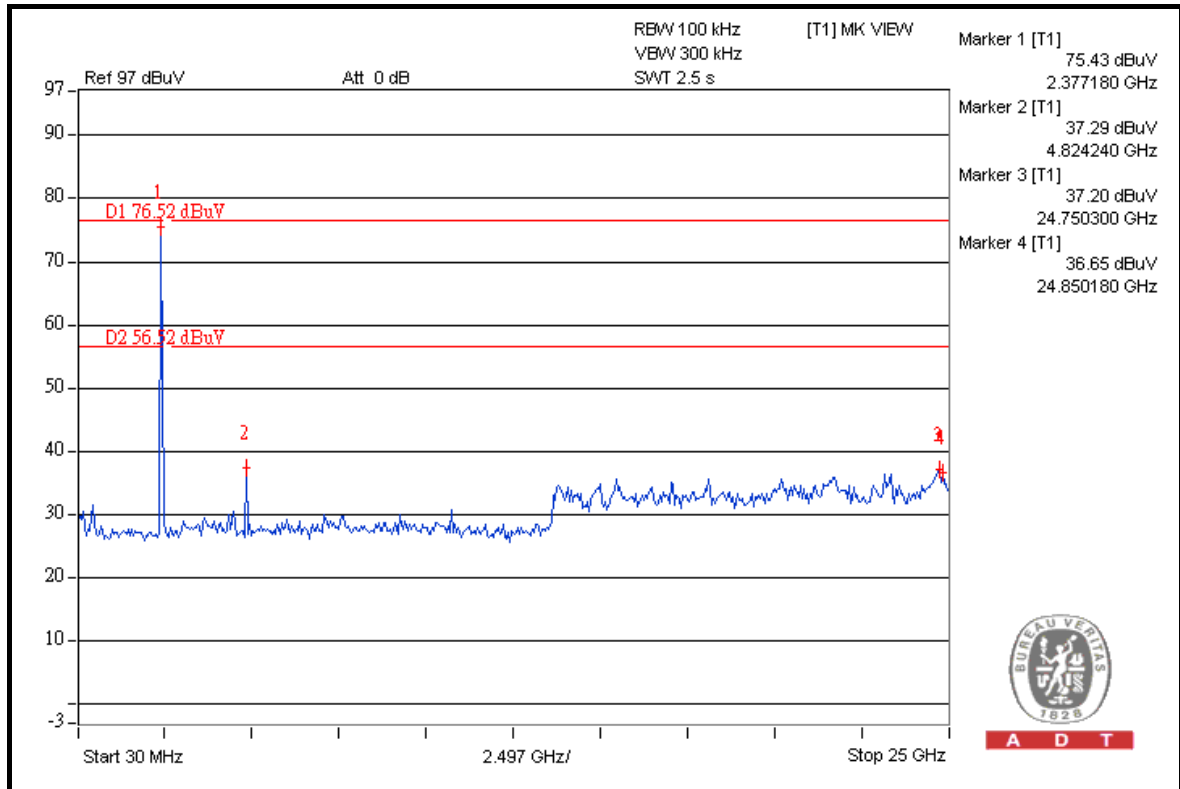


A D T

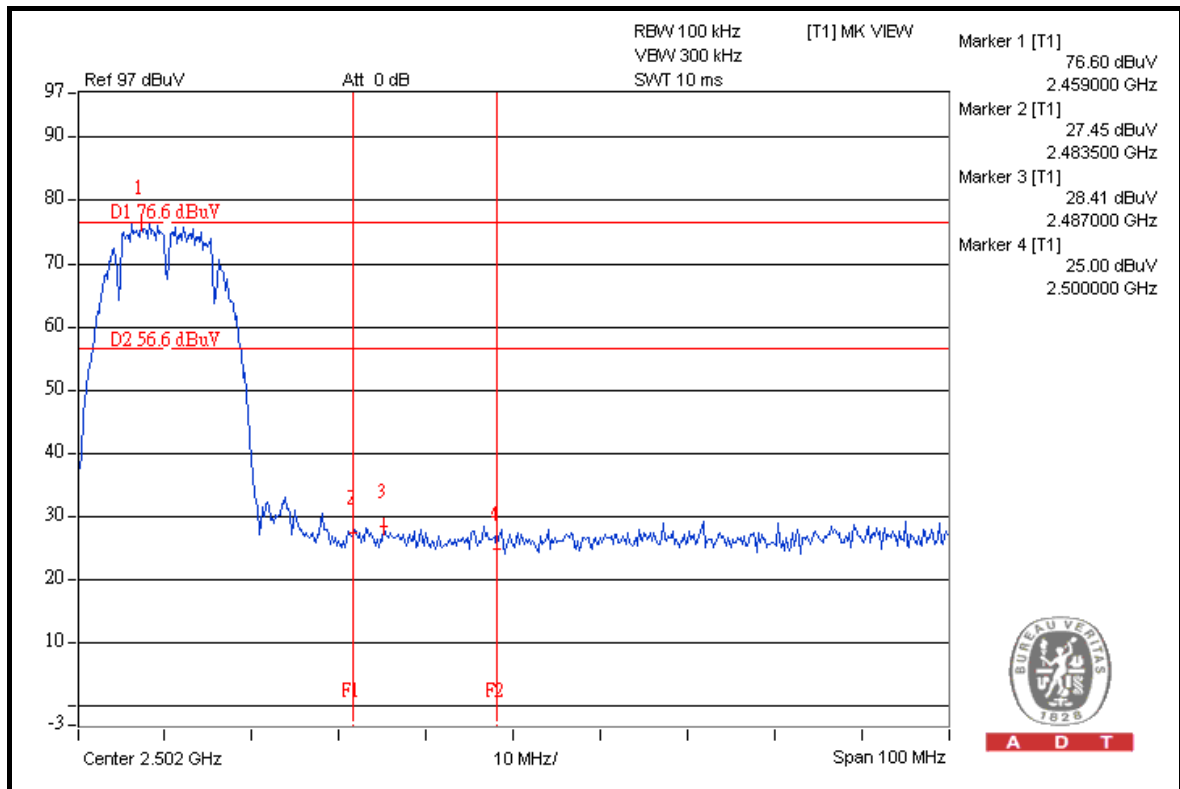




A D T



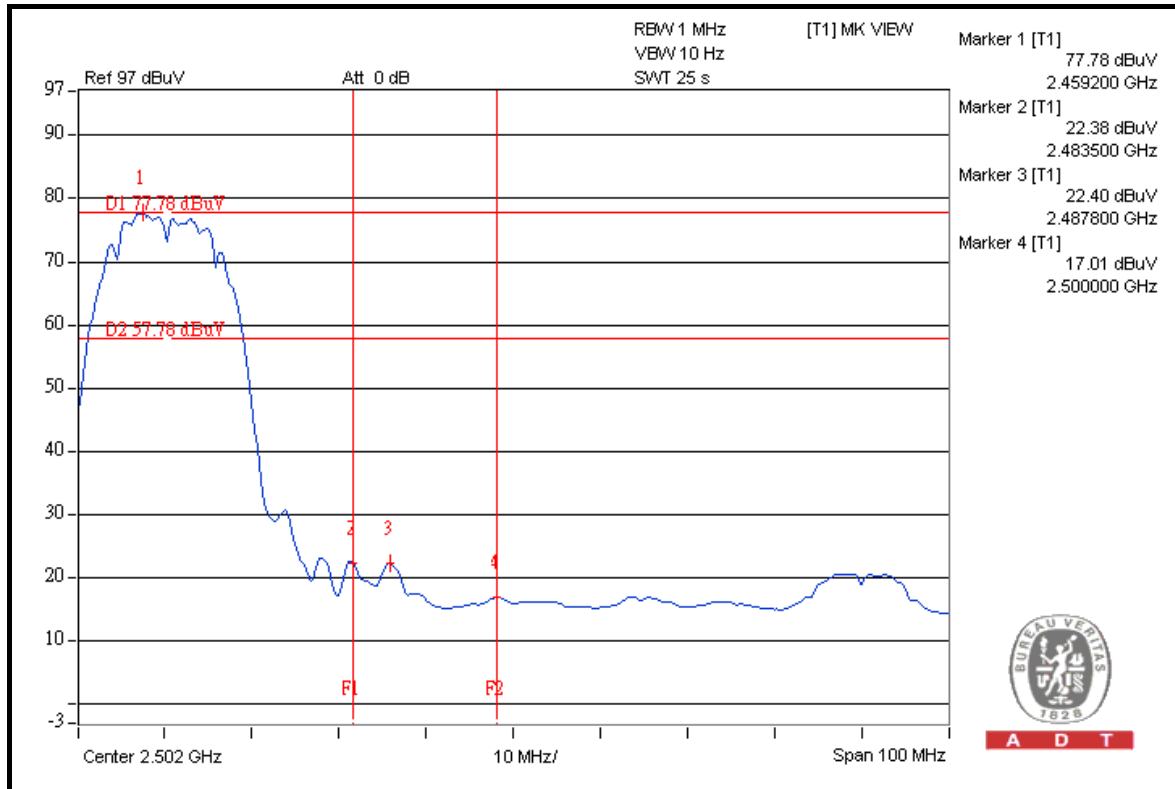
A D T



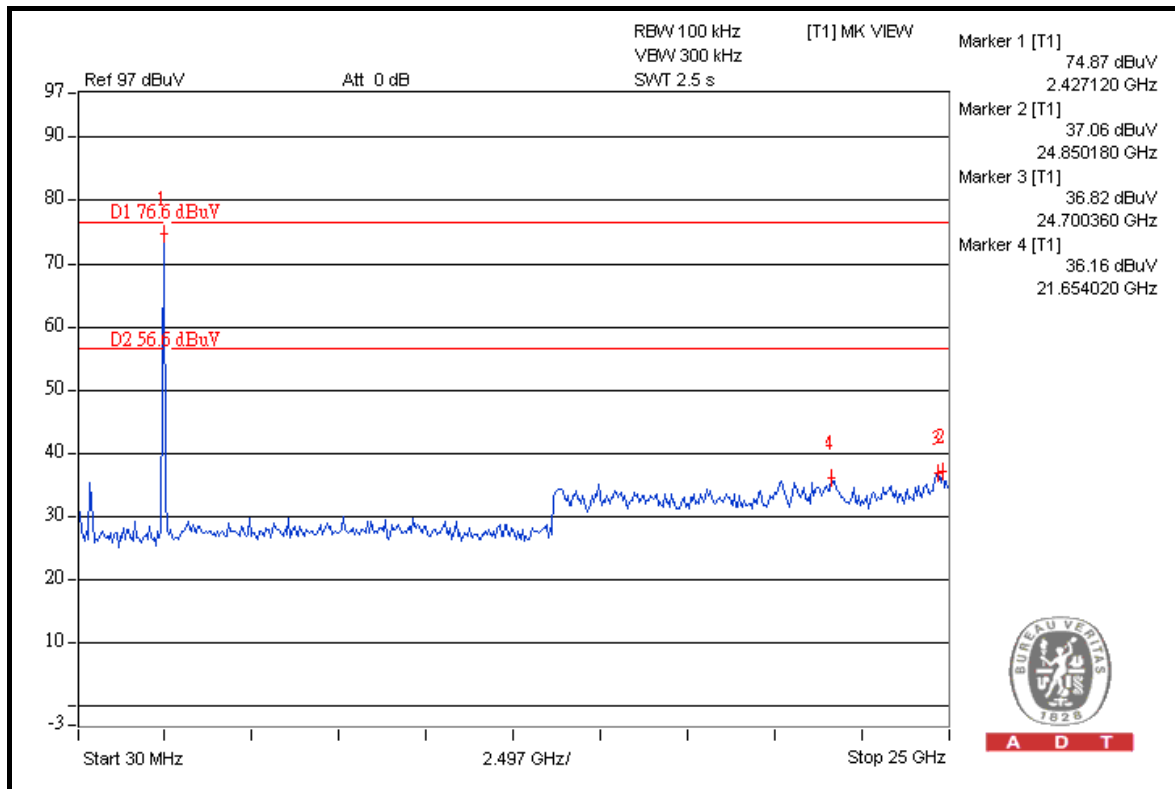
A D T



A D T



A D T



A D T

## 802.11g OFDM MODULATION

**NOTE 1:** The band edge emission plot on the next page shows 38.85dBuV between carrier maximum power and local maximum emission in restrict band (2.3896GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 107.33dBuV/m (Peak), so the maximum field strength in restrict band is  $107.33 - 38.85 = 68.48\text{dBuV/m}$  which is under 74dBuV/m limit.

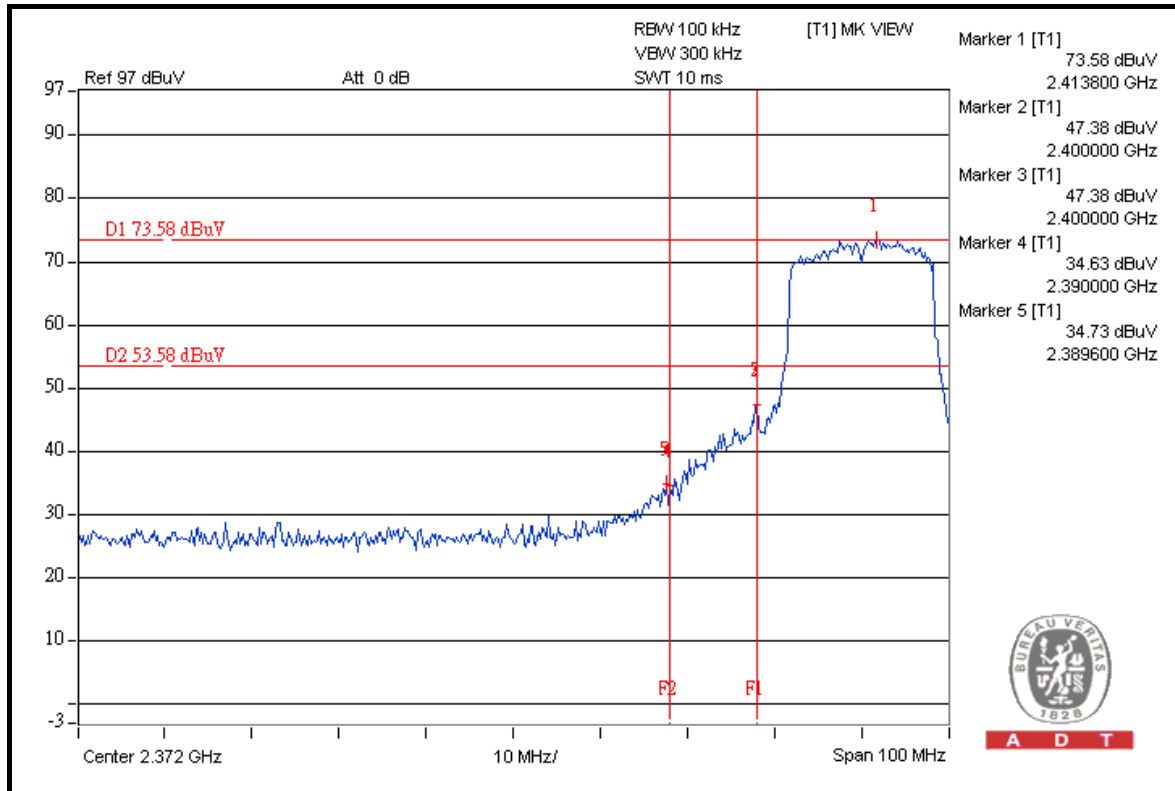
The band edge emission plot of on the next page shows 46.09dBuV between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 96.95dBuV/m (Average), so the maximum field strength in restrict band is  $96.95 - 46.09 = 50.86\text{dBuV/m}$  which is under 54dBuV/m limit.

**NOTE 2:** The band edge emission plot on the next second page shows 41.13dBuV between carrier maximum power and local maximum emission in restrict band (2.4854GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 107.61dBuV/m (Peak), so the maximum field strength in restrict band is  $107.61 - 41.13 = 66.48\text{dBuV/m}$  which is under 74dBuV/m limit.

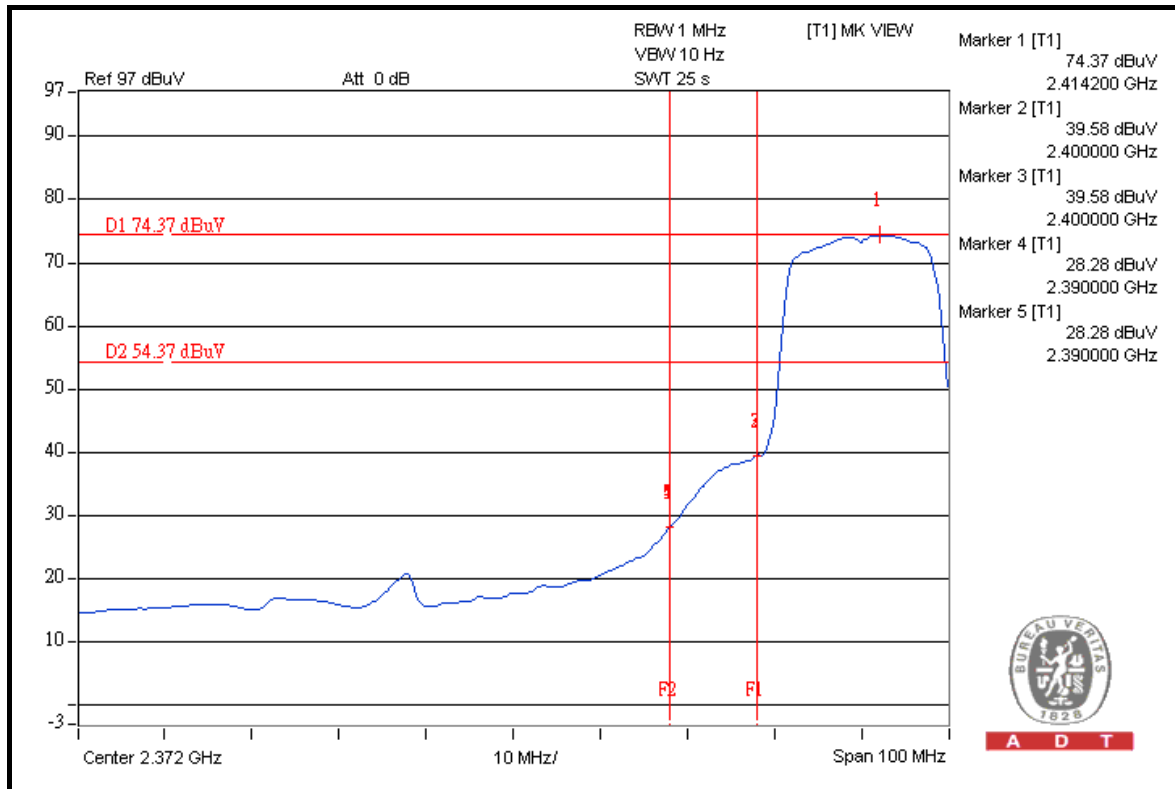
The band edge emission plot on the next third page shows 50.19dBuV between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 97.13dBuV/m (Average), so the maximum field strength in restrict band is  $97.13 - 50.19 = 46.94\text{dBuV/m}$  which is under 54dBuV/m limit.



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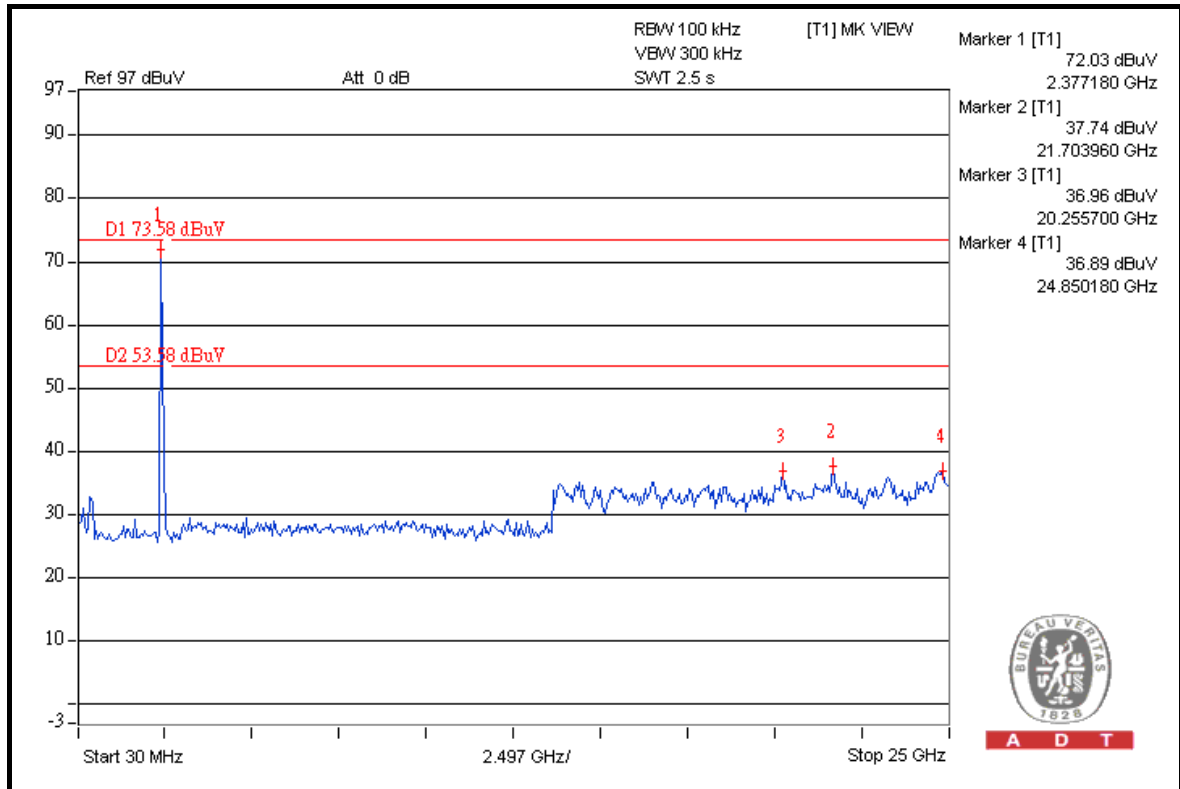
A D T



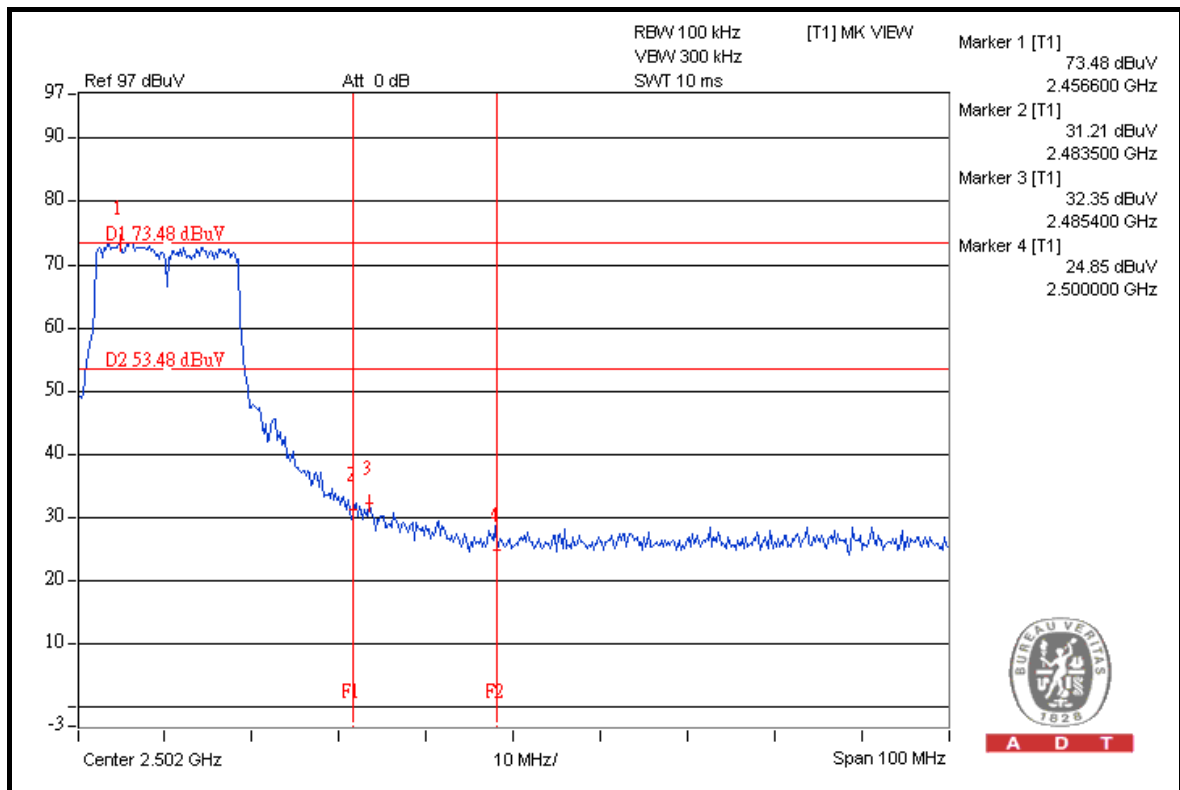
A D T



A D T



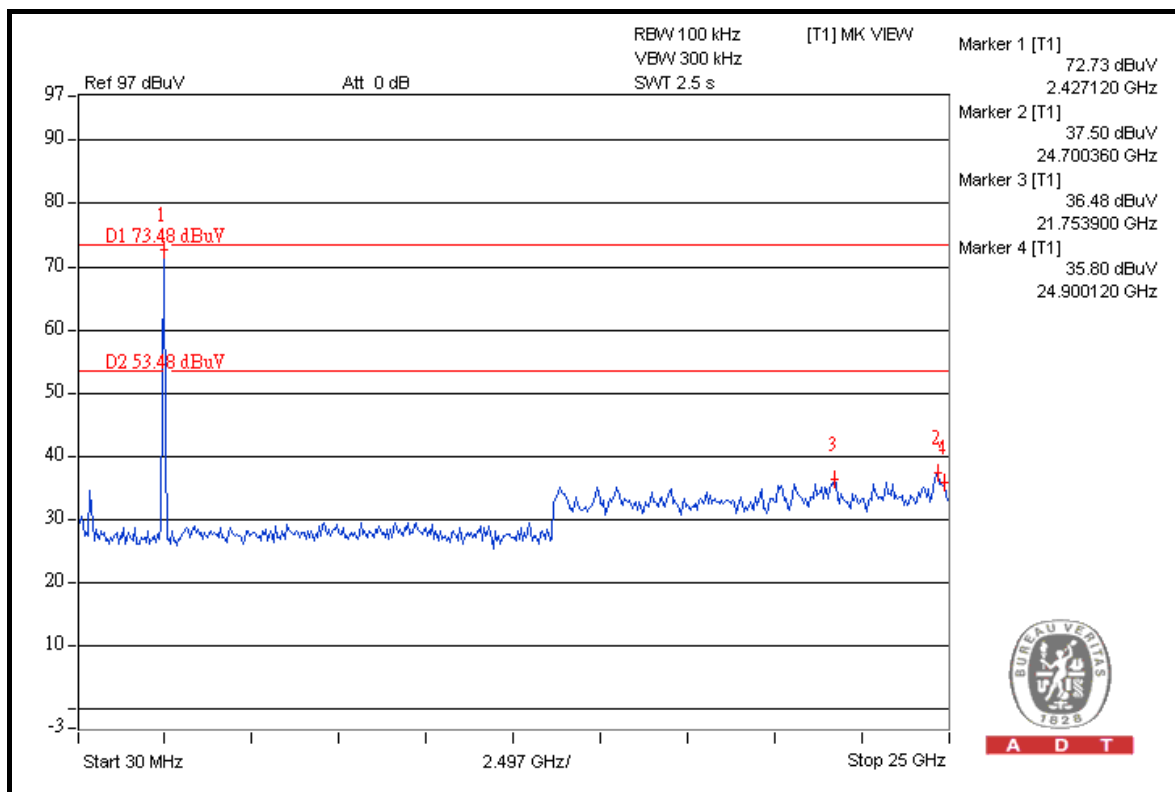
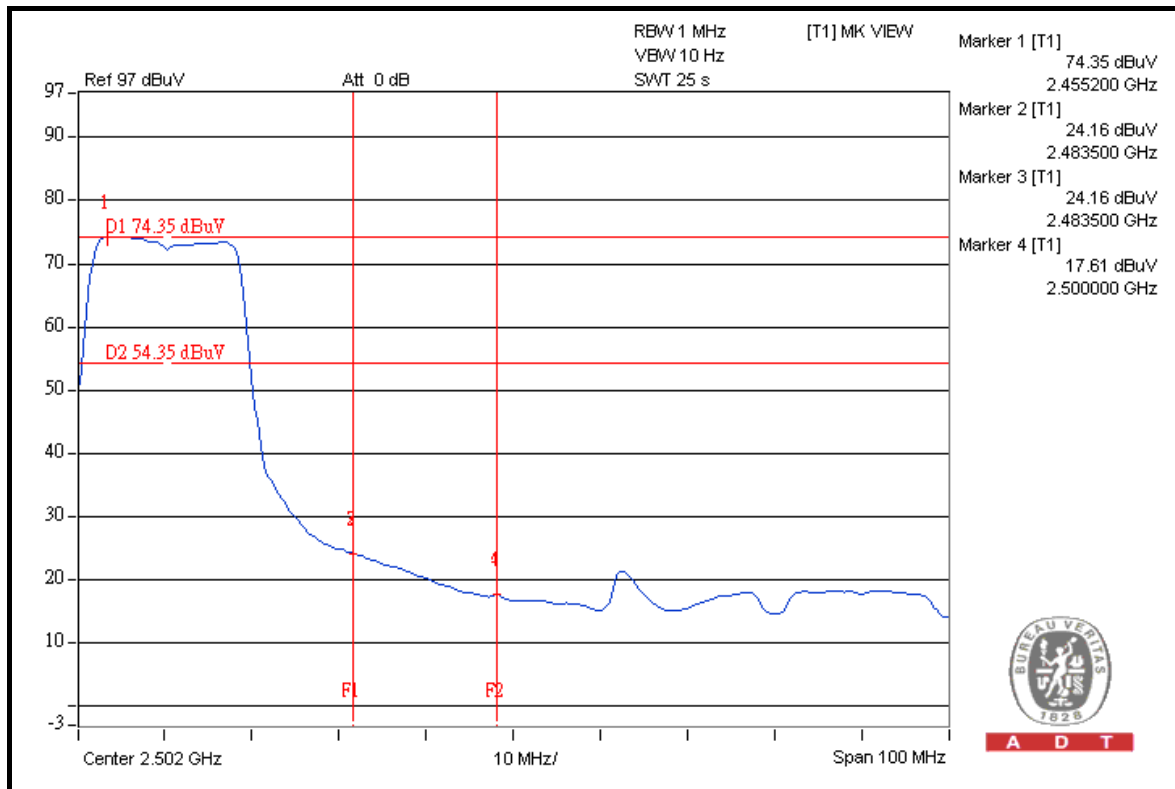
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## DRAFT 802.11n (20MHz) OFDM MODULATION

**NOTE 1:** The band edge emission plot on the next page shows 37.21dBuV between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 107.18dBuV/m (Peak), so the maximum field strength in restrict band is  $107.18 - 37.21 = 69.97\text{dBuV/m}$  which is under 74dBuV/m limit.

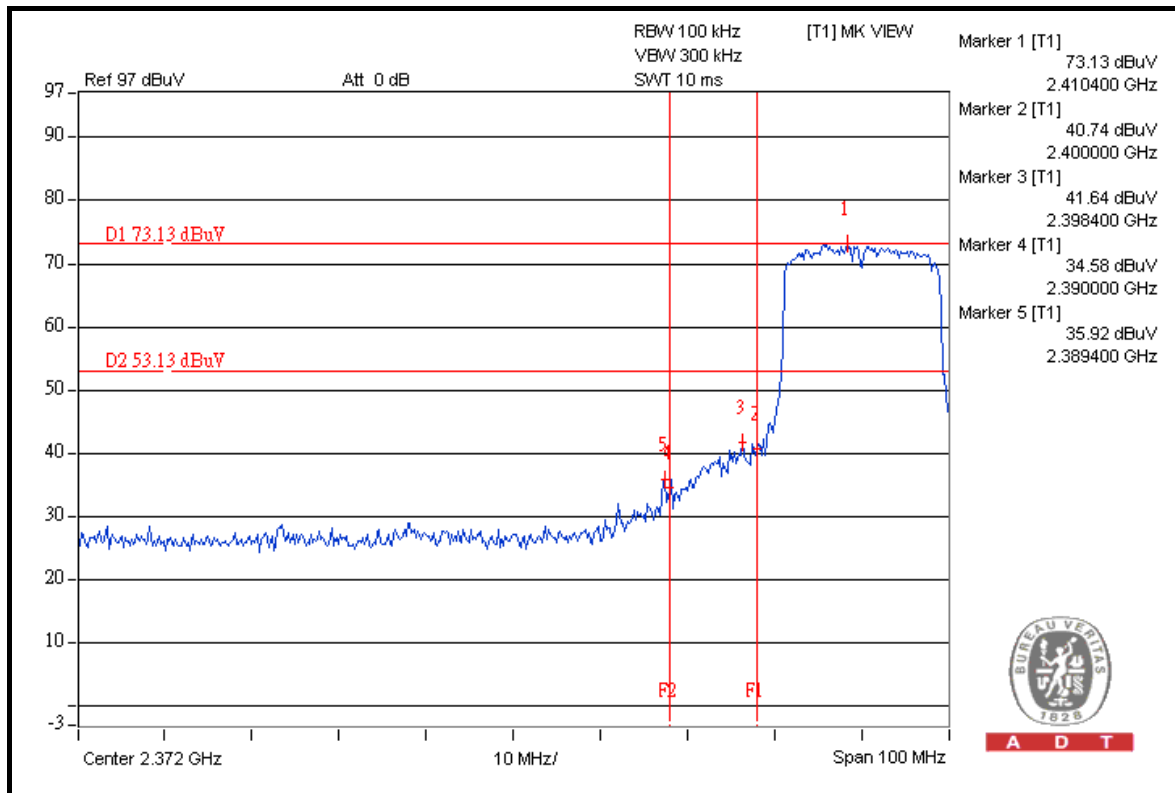
The band edge emission plot of on the next page shows 45.03dBuV between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 96.55dBuV/m (Average), so the maximum field strength in restrict band is  $96.55 - 45.03 = 51.52\text{dBuV/m}$  which is under 54dBuV/m limit.

**NOTE 2:** The band edge emission plot on the next second page shows 42.36dBuV between carrier maximum power and local maximum emission in restrict band (2.4852GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 106.98dBuV/m (Peak), so the maximum field strength in restrict band is  $106.98 - 42.36 = 64.62\text{dBuV/m}$  which is under 74dBuV/m limit.

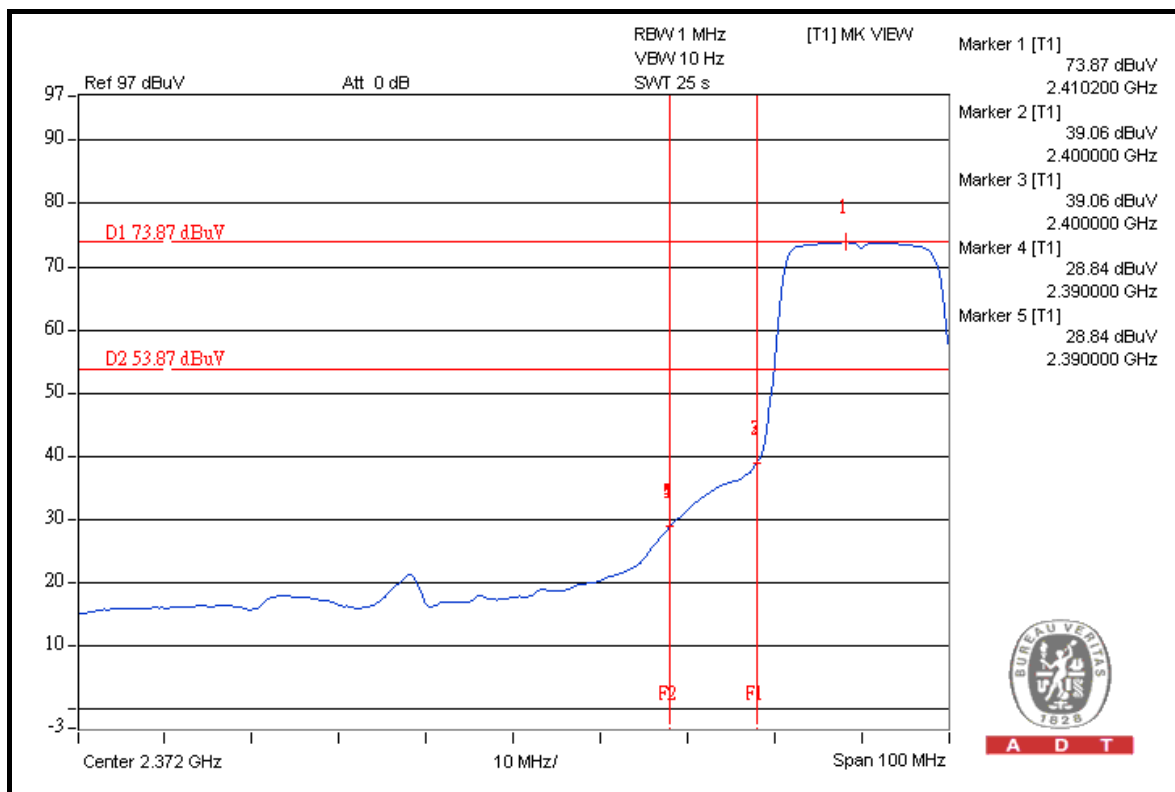
The band edge emission plot on the next third page shows 51.64dBuV between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 96.29dBuV/m (Average), so the maximum field strength in restrict band is  $96.29 - 51.64 = 44.65\text{dBuV/m}$  which is under 54dBuV/m limit.



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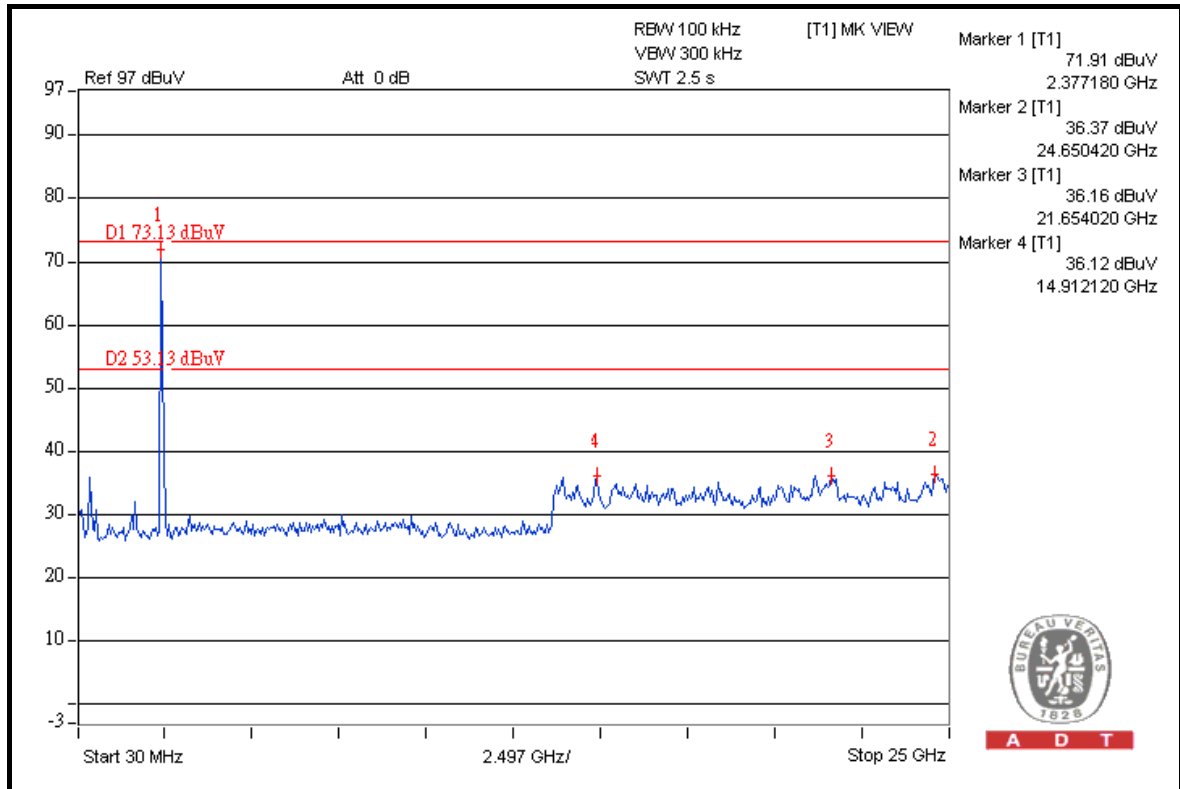


A D T

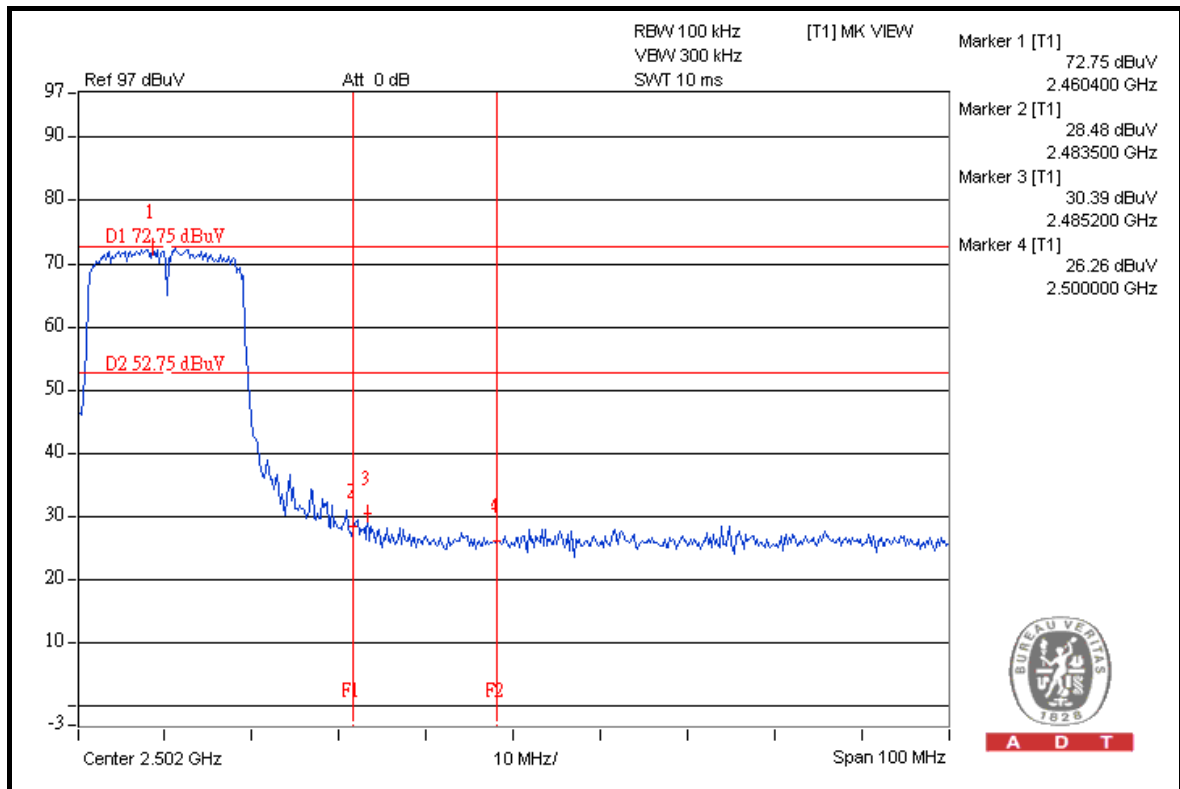




A D T



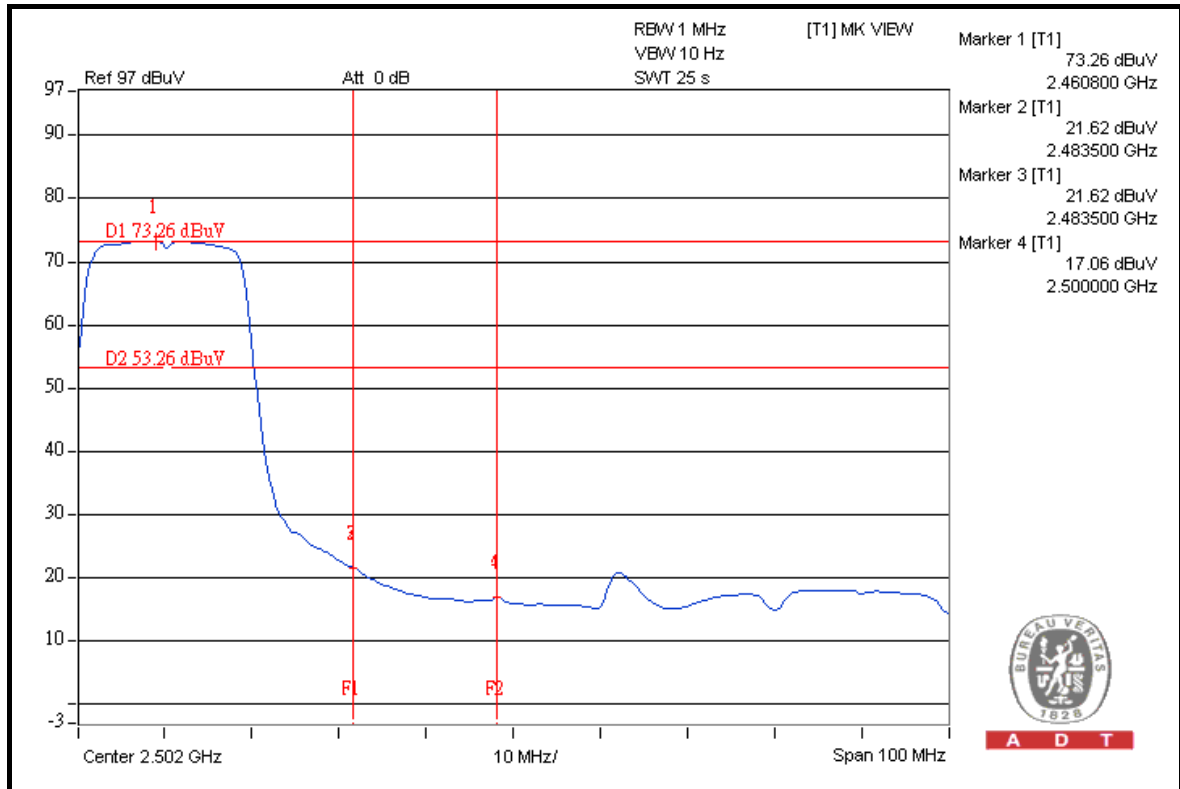
A D T



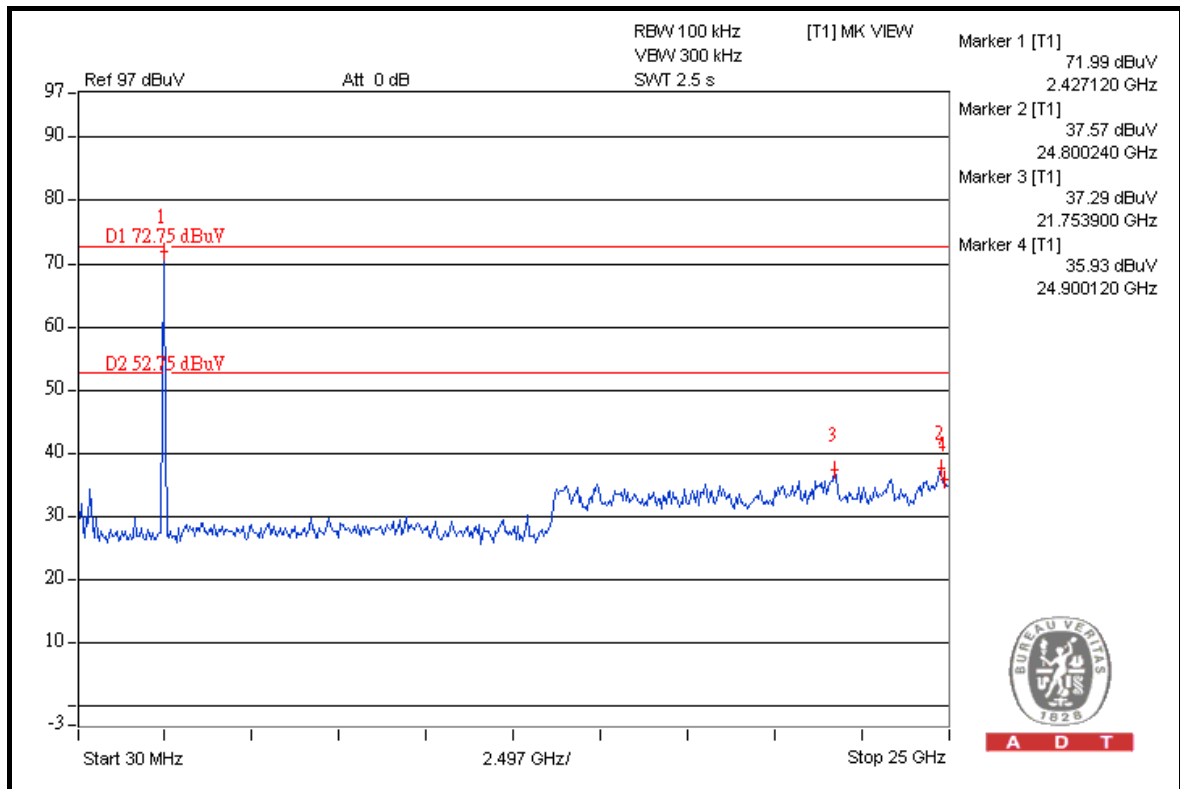
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## **DRAFT 802.11n (40MHz) OFDM MODULATION**

**NOTE 1:** The band edge emission plot on the next page shows 34.50dBuV between carrier maximum power and local maximum emission in restrict band (2.3880GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 102.69dBuV/m (Peak), so the maximum field strength in restrict band is  $102.69 - 34.50 = 68.19\text{dBuV/m}$  which is under 74dBuV/m limit.

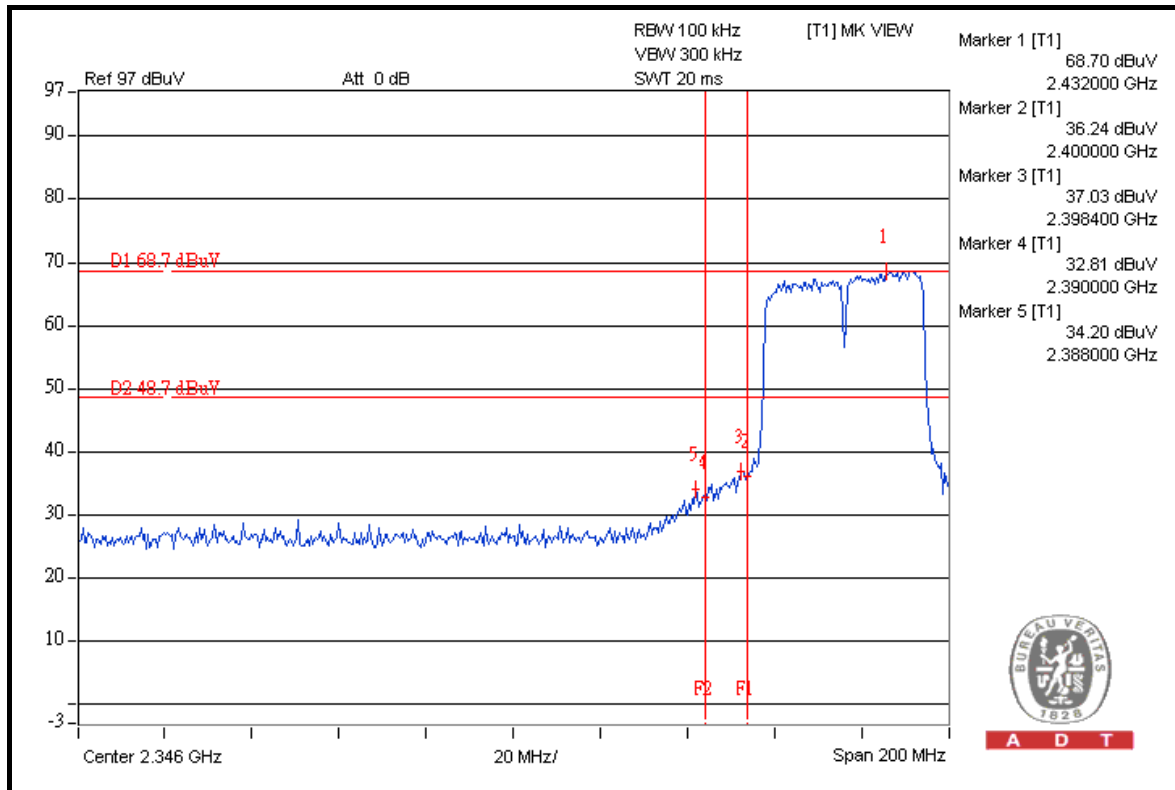
The band edge emission plot of on the next page shows 39.39dBuV between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 92.33dBuV/m (Average), so the maximum field strength in restrict band is  $92.33 - 39.39 = 52.94\text{dBuV/m}$  which is under 54dBuV/m limit.

**NOTE 2:** The band edge emission plot on the next second page shows 32.13dBuV between carrier maximum power and local maximum emission in restrict band (2.4856GHz). The emission of carrier strength list in the test result of channel 7 at the item 4.1.7 is 102.85dBuV/m (Peak), so the maximum field strength in restrict band is  $102.85 - 32.13 = 70.72\text{dBuV/m}$  which is under 74dBuV/m limit.

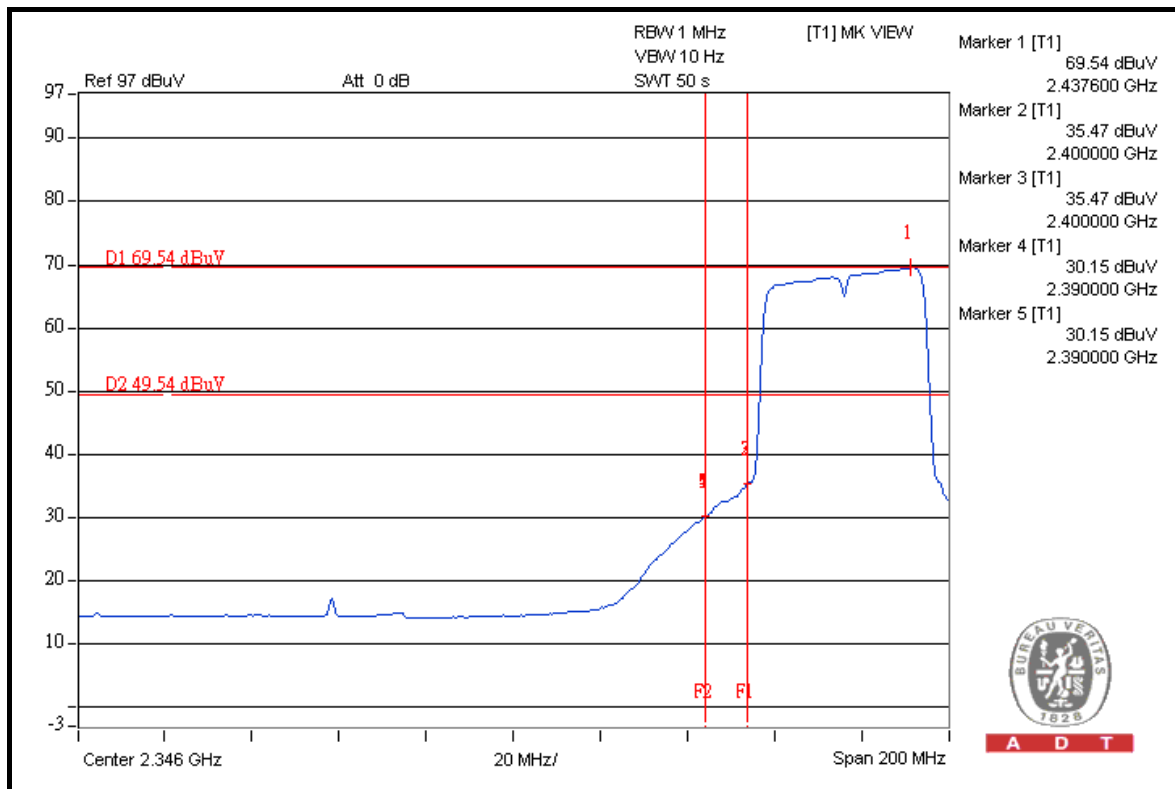
The band edge emission plot on the next third page shows 39.60dBuV between carrier maximum power and local maximum emission in restrict band (2.4840GHz). The emission of carrier strength list in the test result of channel 7 at the item 4.1.7 is 92.51dBuV/m (Average), so the maximum field strength in restrict band is  $92.51 - 39.60 = 52.91\text{dBuV/m}$  which is under 54dBuV/m limit.



A D T



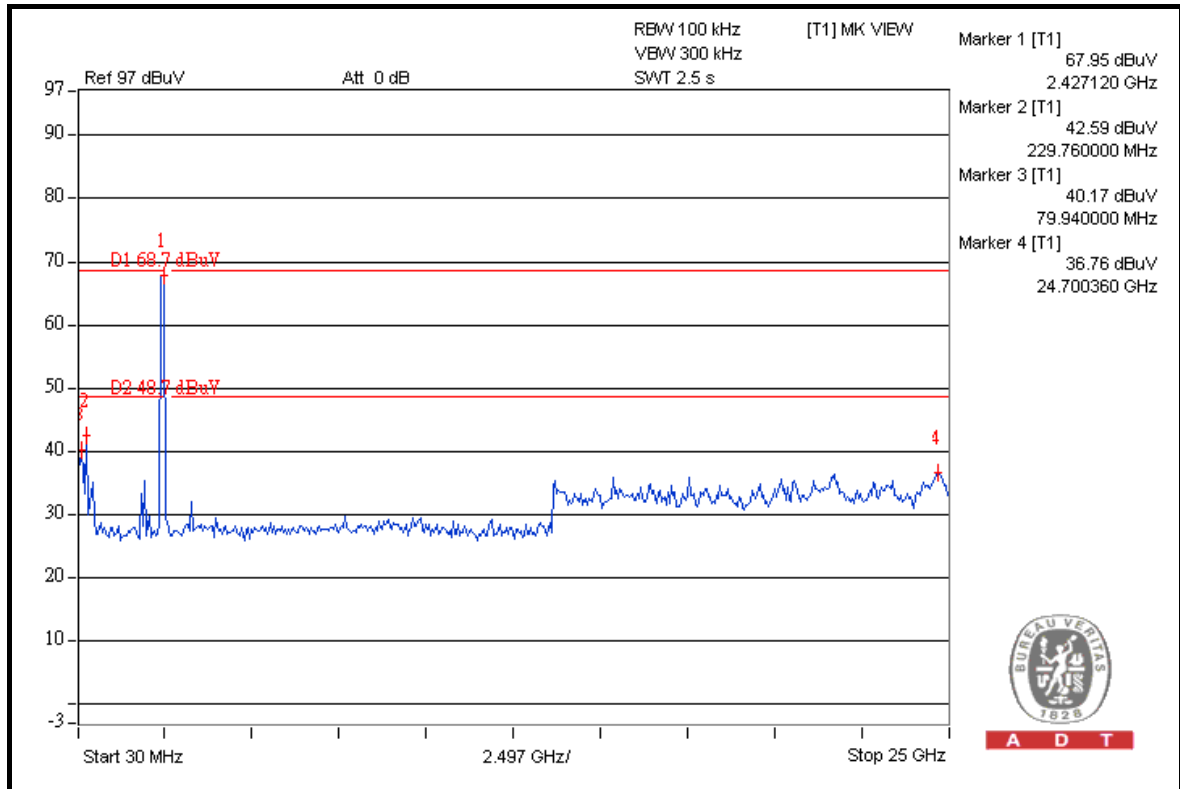
A D T



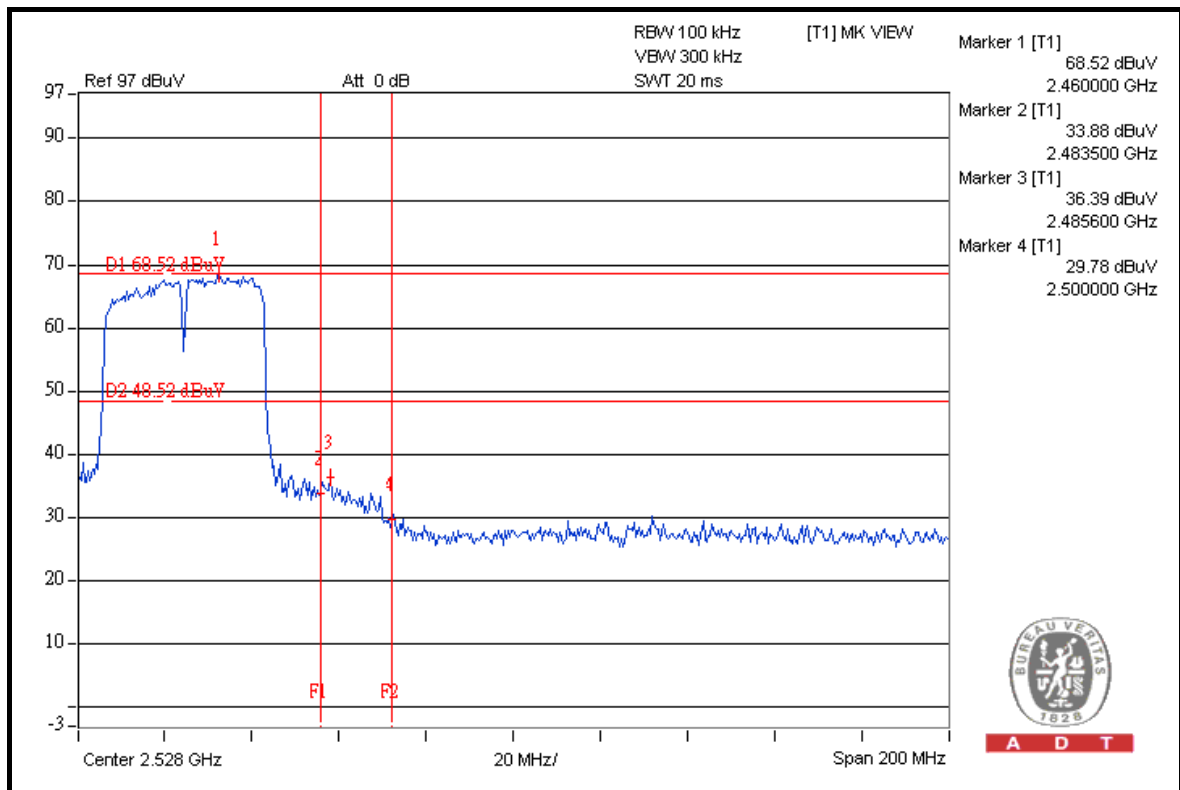
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## **4.7 ANTENNA REQUIREMENT**

### **4.7.1 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 15.247 (b), 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.

### **4.7.2 ANTENNA CONNECTED CONSTRUCTION**

The antenna used in this product is PIFA antenna without connector. The maximum gain of the antenna is 4.5dBi.

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

### 5.1 RADIATED EMISSION MEASUREMENT

#### 5.1.1 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.



## 5.1.2 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	100040	Jul. 04, 2008	Jul. 03, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 27, 2009	Apr. 26, 2010
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 13, 2009	May 12, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	May 13, 2009	May 12, 2010
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	Aug. 27, 2008	Aug. 26, 2009

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

### 5.1.3 TEST PROCEDURES

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

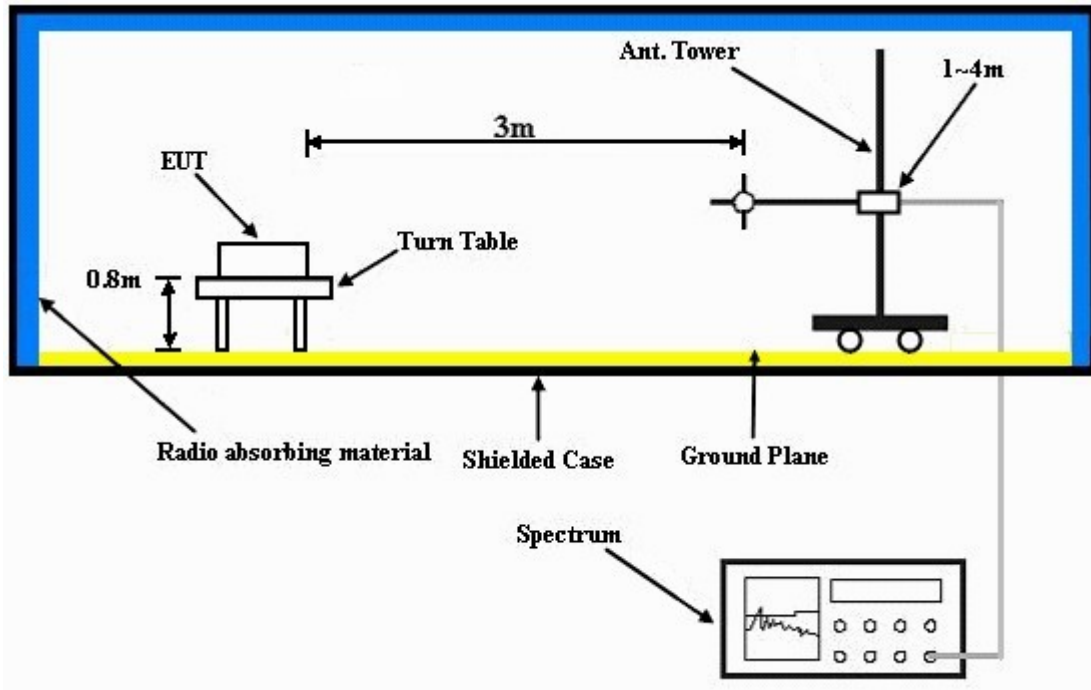
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 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.

### 5.1.4 DEVIATION FROM TEST STANDARD

No deviation.

### 5.1.5 TEST SETUP



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

### 5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

## 5.1.7 TEST RESULTS

### 802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24.0deg. C, 64.0%RH 1000hPa	TESTED BY	Antony Lee

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	4595.00	53.31 PK	74.00	-20.69	1.25 H	19	15.54	37.77
2	4595.00	49.04 AV	54.00	-4.96	1.25 H	19	11.27	37.77
3	5098.00	63.60 PK	74.00	-10.40	1.19 H	18	24.66	38.94
4	5098.00	52.00 AV	54.00	-2.00	1.19 H	18	13.06	38.94
5	#5725.00	71.58 PK	89.97	-18.39	1.00 H	226	31.74	39.84
6	#5725.00	59.27 AV	79.47	-20.20	1.00 H	226	19.43	39.84
7	*5745.00	109.97 PK			1.00 H	226	70.10	39.87
8	*5745.00	99.47 AV			1.00 H	226	59.60	39.87
9	11490.00	60.90 PK	74.00	-13.10	1.00 H	106	10.90	50.00
10	11490.00	47.70 AV	54.00	-6.30	1.00 H	106	-2.30	50.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4595.00	51.29 PK	74.00	-22.71	1.08 V	13	13.52	37.77
2	4595.00	45.92 AV	54.00	-8.08	1.08 V	13	8.15	37.77
3	5098.00	64.94 PK	74.00	-9.06	1.11 V	177	26.00	38.94
4	5098.00	52.72 AV	54.00	-1.28	1.11 V	177	13.78	38.94
5	#5725.00	74.66 PK	90.54	-15.88	1.00 V	179	34.82	39.84
6	#5725.00	60.97 AV	79.88	-18.91	1.00 V	179	21.13	39.84
7	*5745.00	110.54 PK			1.00 V	178	70.67	39.87
8	*5745.00	99.88 AV			1.00 V	178	60.01	39.87
9	11490.00	61.42 PK	74.00	-12.58	1.00 V	28	11.42	50.00
10	11490.00	48.11 AV	54.00	-5.89	1.00 V	28	-1.89	50.00

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24.0deg. C, 64.0%RH 1000hPa	TESTED BY	Antony Lee

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	4628.00	53.55 PK	74.00	-20.45	1.42 H	18	15.70	37.86
2	4628.00	49.23 AV	54.00	-4.77	1.42 H	18	11.38	37.86
3	5138.00	61.97 PK	74.00	-12.03	1.00 H	2	22.92	39.05
4	5138.00	52.11 AV	54.00	-1.89	1.00 H	2	13.06	39.05
5	*5785.00	109.15 PK			1.00 H	225	69.22	39.93
6	*5785.00	98.20 AV			1.00 H	225	58.27	39.93
7	11570.00	60.42 PK	74.00	-13.58	1.05 H	66	10.53	49.89
8	11570.00	47.86 AV	54.00	-6.14	1.05 H	66	-2.03	49.89
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	4628.00	51.84 PK	74.00	-22.16	1.00 V	173	13.99	37.86
2	4628.00	44.97 AV	54.00	-9.03	1.00 V	173	7.12	37.86
3	5138.00	64.18 PK	74.00	-9.82	1.12 V	179	25.13	39.05
4	5138.00	52.79 AV	54.00	-1.21	1.12 V	179	13.74	39.05
5	*5785.00	109.63 PK			1.00 V	176	69.70	39.93
6	*5785.00	98.67 AV			1.00 V	176	58.74	39.93
7	11570.00	60.88 PK	74.00	-13.12	1.02 V	36	10.99	49.89
8	11570.00	47.81 AV	54.00	-6.19	1.02 V	36	-2.08	49.89

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24.0deg. C, 64.0%RH 1000hPa	TESTED BY	Antony Lee

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	4660.00	53.57 PK	74.00	-20.43	1.46 H	24	15.63	37.94
2	4660.00	49.55 AV	54.00	-4.45	1.46 H	24	11.61	37.94
3	5350.00	62.80 PK	74.00	-11.20	1.00 H	18	23.38	39.42
4	5350.00	51.72 AV	54.00	-2.28	1.00 H	18	12.30	39.42
5	*5825.00	109.02 PK			1.00 H	232	68.99	40.03
6	*5825.00	99.21 AV			1.00 H	232	59.18	40.03
7	#5850.00	68.15 PK	89.02	-20.87	1.00 H	232	28.05	40.10
8	#5850.00	57.97 AV	79.21	-21.24	1.00 H	232	17.87	40.10
9	11650.00	59.61 PK	74.00	-14.39	1.00 H	23	9.77	49.84
10	11650.00	48.04 AV	54.00	-5.96	1.00 H	23	-1.80	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	4660.00	53.14 PK	74.00	-20.86	1.00 V	172	15.20	37.94
2	4660.00	48.88 AV	54.00	-5.12	1.00 V	172	10.94	37.94
3	5350.00	63.20 PK	74.00	-10.80	1.07 V	171	23.78	39.42
4	5350.00	52.39 AV	54.00	-1.61	1.07 V	171	12.97	39.42
5	*5825.00	109.28 PK			1.08 V	174	69.25	40.03
6	*5825.00	99.56 AV			1.08 V	174	59.53	40.03
7	#5850.00	68.77 PK	89.28	-20.51	1.00 V	174	28.67	40.10
8	#5850.00	58.31 AV	79.56	-21.25	1.00 V	174	18.21	40.10
9	11650.00	61.11 PK	74.00	-12.89	1.01 V	263	11.27	49.84
10	11650.00	48.31 AV	54.00	-5.69	1.01 V	263	-1.53	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.  
6. The limit value is defined as per 15.247.  
7. “#”: The radiated frequency is out the restricted band.



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**DRAFT 802.11n (20MHz) OFDM MODULATION**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24.0deg. C, 64.0%RH 1000hPa	TESTED BY	Antony Lee

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	5098.00	62.41 PK	74.00	-11.59	1.09 H	26	23.47	38.94
2	5098.00	51.40 AV	54.00	-2.60	1.09 H	26	12.46	38.94
3	#5725.00	76.48 PK	89.79	-13.31	1.00 H	227	36.64	39.84
4	#5725.00	59.23 AV	79.44	-20.21	1.00 H	227	19.39	39.84
5	*5745.00	109.79 PK			1.00 H	227	69.92	39.87
6	*5745.00	99.44 AV			1.00 H	227	59.57	39.87
7	11490.00	61.02 PK	74.00	-12.98	1.00 H	126	11.02	50.00
8	11490.00	48.23 AV	54.00	-5.77	1.00 H	126	-1.77	50.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5098.00	63.99 PK	74.00	-10.01	1.12 V	178	25.05	38.94
2	5098.00	52.94 AV	54.00	-1.06	1.12 V	178	14.00	38.94
3	#5725.00	79.42 PK	89.94	-10.52	1.00 V	177	39.58	39.84
4	#5725.00	61.06 AV	79.60	-18.54	1.00 V	177	21.22	39.84
5	*5745.00	109.94 PK			1.00 V	177	70.07	39.87
6	*5745.00	99.60 AV			1.00 V	177	59.73	39.87
7	11490.00	61.25 PK	74.00	-12.75	1.00 V	31	11.25	50.00
8	11490.00	48.64 AV	54.00	-5.36	1.00 V	31	-1.36	50.00

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24.0deg. C, 64.0%RH 1000hPa	TESTED BY	Antony Lee

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	5138.00	62.96 PK	74.00	-11.04	1.00 H	4	23.91	39.05
2	5138.00	51.77 AV	54.00	-2.23	1.00 H	4	12.72	39.05
3	*5785.00	108.76 PK			1.00 H	228	68.83	39.93
4	*5785.00	98.40 AV			1.00 H	228	58.47	39.93
5	11570.00	60.79 PK	74.00	-13.21	1.03 H	74	10.90	49.89
6	11570.00	47.89 AV	54.00	-6.11	1.03 H	74	-2.00	49.89
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	5138.00	63.29 PK	74.00	-10.71	1.09 V	180	24.24	39.05
2	5138.00	52.96 AV	54.00	-1.04	1.09 V	180	13.91	39.05
3	*5785.00	109.02 PK			1.00 V	175	69.09	39.93
4	*5785.00	98.67 AV			1.00 V	175	58.74	39.93
5	11570.00	60.74 PK	74.00	-13.26	1.01 V	42	10.85	49.89
6	11570.00	48.21 AV	54.00	-5.79	1.01 V	42	-1.68	49.89

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





A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24.0deg. C, 64.0%RH 1000hPa	TESTED BY	Antony Lee

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	5350.00	63.05 PK	74.00	-10.95	1.00 H	23	23.64	39.42
2	5350.00	52.54 AV	54.00	-1.46	1.00 H	23	13.12	39.42
3	*5825.00	109.33 PK			1.00 H	229	69.30	40.03
4	*5825.00	99.41 AV			1.00 H	229	59.38	40.03
5	#5850.00	72.40 PK	89.33	-16.93	1.00 H	229	32.30	40.10
6	#5850.00	58.26 AV	79.41	-21.15	1.00 H	229	18.16	40.10
7	11650.00	59.06 PK	74.00	-14.94	1.00 H	36	9.22	49.84
8	11650.00	48.79 AV	54.00	-5.21	1.00 H	36	-1.05	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	5350.00	63.83 PK	74.00	-10.17	1.07 V	168	24.41	39.42
2	5350.00	52.99 AV	54.00	-1.01	1.07 V	168	13.57	39.42
3	*5825.00	109.49 PK			1.00 V	177	69.46	40.03
4	*5825.00	99.47 AV			1.00 V	177	59.44	40.03
5	#5850.00	71.01 PK	89.49	-18.48	1.00 V	177	30.91	40.10
6	#5850.00	58.04 AV	79.47	-21.43	1.00 V	177	17.94	40.10
7	11650.00	61.82 PK	74.00	-12.18	1.02 V	271	11.98	49.84
8	11650.00	49.55 AV	54.00	-4.45	1.02 V	271	-0.29	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.
  6. The limit value is defined as per 15.247.
  7. “#”: The radiated frequency is out the restricted band.

# DRAFT 802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24.0deg. C, 64.0%RH 1000hPa	TESTED BY	Antony Lee

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	5100.00	63.11 PK	74.00	-10.89	1.00 H	34	24.17	38.94
2	5100.00	52.43 AV	54.00	-1.57	1.00 H	34	13.49	38.94
3	#5725.00	83.89 PK	88.50	-4.61	1.00 H	27	44.05	39.84
4	#5725.00	69.25 AV	77.35	-8.10	1.00 H	27	29.41	39.84
5	*5755.00	108.50 PK			1.00 H	27	68.62	39.88
6	*5755.00	97.35 AV			1.00 H	27	57.47	39.88
7	11510.00	60.71 PK	74.00	-13.29	1.02 H	48	10.72	49.98
8	11510.00	47.67 AV	54.00	-6.33	1.02 H	48	-2.32	49.98
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	5100.00	59.33 PK	74.00	-14.67	1.00 V	186	20.39	38.94
2	5100.00	49.79 AV	54.00	-4.21	1.00 V	186	10.85	38.94
3	#5725.00	80.06 PK	89.78	-9.72	1.23 V	28	40.22	39.84
4	#5725.00	67.94 AV	78.97	-11.03	1.23 V	28	28.10	39.84
5	*5755.00	109.78 PK			1.23 V	28	69.90	39.88
6	*5755.00	98.97 AV			1.23 V	28	59.09	39.88
7	11510.00	59.95 PK	74.00	-14.05	1.00 V	25	9.96	49.98
8	11510.00	47.81 AV	54.00	-6.19	1.00 V	25	-2.18	49.98

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24.0deg. C, 64.0%RH 1000hPa	TESTED BY	Antony Lee

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	63.76 PK	74.00	-10.24	1.00 H	29	24.67	39.09
2	5150.00	52.97 AV	54.00	-1.03	1.00 H	29	13.88	39.09
3	*5795.00	108.83 PK			1.00 H	333	68.89	39.94
4	*5795.00	97.02 AV			1.00 H	333	57.08	39.94
5	#5850.00	68.95 PK	88.83	-19.88	1.00 H	333	28.85	40.10
6	#5850.00	57.95 AV	77.02	-19.07	1.00 H	333	17.85	40.10
7	11590.00	60.29 PK	74.00	-13.71	1.01 H	36	10.42	49.87
8	11590.00	48.15 AV	54.00	-5.85	1.01 H	36	-1.72	49.87
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	60.13 PK	74.00	-13.87	1.00 V	187	21.04	39.09
2	5150.00	49.28 AV	54.00	-4.72	1.00 V	187	10.19	39.09
3	*5795.00	109.51 PK			1.00 V	343	69.57	39.94
4	*5795.00	98.94 AV			1.00 V	343	59.00	39.94
5	#5850.00	67.70 PK	89.51	-21.81	1.00 V	343	27.60	40.10
6	#5850.00	57.86 AV	78.94	-21.08	1.00 V	343	17.76	40.10
7	11590.00	59.64 PK	74.00	-14.36	1.00 V	24	9.77	49.87
8	11590.00	48.21 AV	54.00	-5.79	1.00 V	24	-1.66	49.87

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



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# BELOW 1GHz WORST-CASE DATA : DRAFT 802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24.0deg. C, 65.0%RH 999hPa	TESTED BY	Antony Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	249.60	37.13 QP	46.00	-8.87	1.25 H	208	23.32	13.80
2	374.04	38.81 QP	46.00	-7.19	1.00 H	199	21.85	16.96
3	465.42	39.33 QP	46.00	-6.67	1.25 H	178	19.68	19.65
4	640.41	40.74 QP	46.00	-5.26	1.50 H	4	17.21	23.53
5	825.11	40.68 QP	46.00	-5.32	1.00 H	262	14.20	26.48
6	875.67	41.84 QP	46.00	-4.16	1.50 H	10	14.41	27.43
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	34.63	36.49 QP	40.00	-3.51	1.49 V	262	22.40	14.09
2	68.97	36.26 QP	40.00	-3.74	1.24 V	3	23.03	13.23
3	109.62	37.86 QP	43.50	-5.64	1.25 V	199	26.39	11.47
4	374.04	43.75 QP	46.00	-2.25	1.25 V	169	26.80	16.96
5	465.42	40.93 QP	46.00	-5.07	1.00 V	328	21.28	19.65
6	836.12	40.74 QP	46.00	-5.26	1.00 V	126	14.06	26.68

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

## 5.2 CONDUCTED EMISSION MEASUREMENT

### 5.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ 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.

### 5.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Nov. 19, 2008	Nov. 18, 2009
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 31, 2008	Dec. 30, 2009
LISN SCHWARZBECK	NNBL 8226-2	8226-142	Jun. 03, 2009	Jun. 02, 2010
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Dec. 04, 2008	Dec. 03, 2009
Software ADT	ADT_Conc_ V7.3.7	NA	NA	NA

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

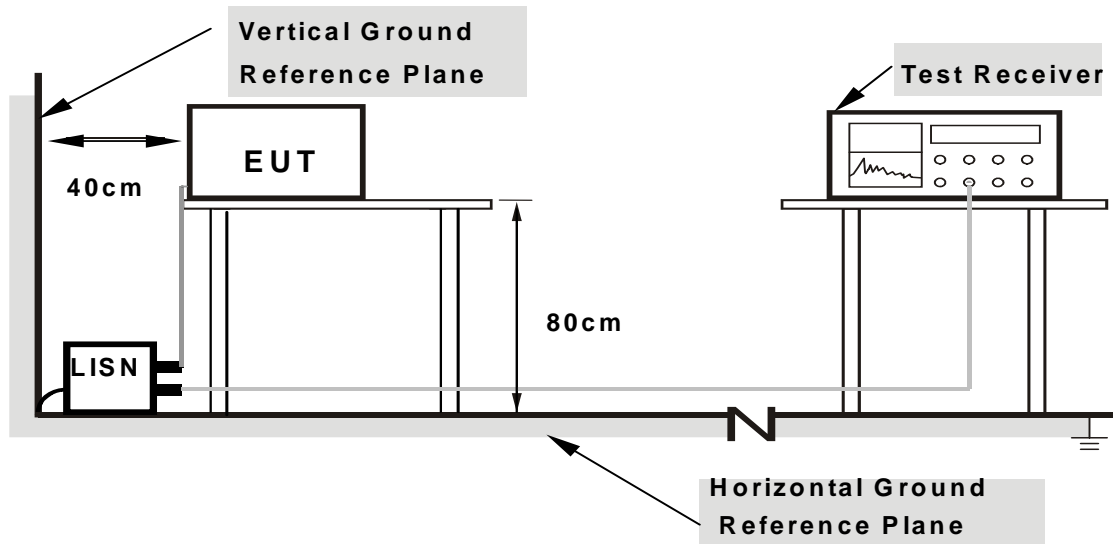
### 5.2.3 TEST PROCEDURES

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

### 5.2.4 DEVIATION FROM TEST STANDARD

No deviation.

## 5.2.5 TEST SETUP



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

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

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

## 5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

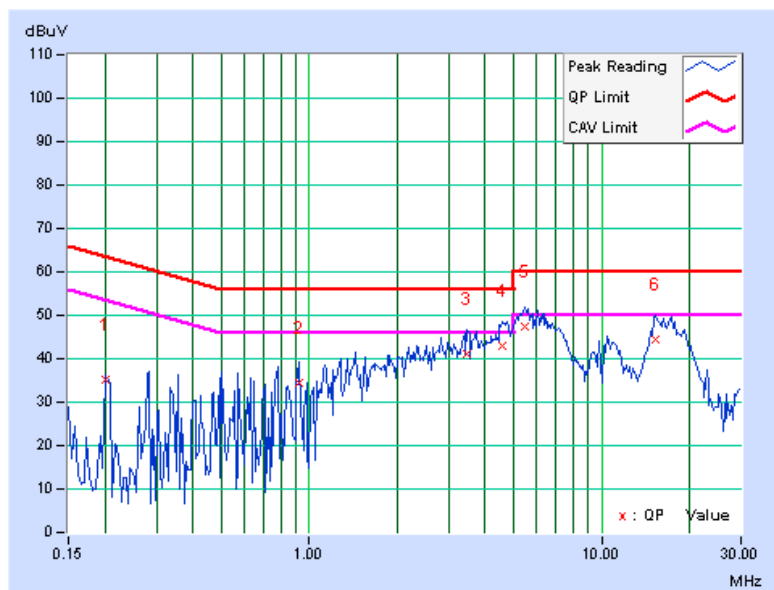
## 5.2.7 TEST RESULTS

### CONDUCTED WORST-CASE DATA : DRAFT 802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	14.4Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH, 1021hPa	TESTED BY	Antony Lee

No	Freq.	Corr.	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	0.201	0.13	34.91	-	35.04	-	63.58	53.58	-28.54	-
2	0.920	0.17	34.17	-	34.34	-	56.00	46.00	-21.66	-
3	3.469	0.33	40.95	-	41.28	-	56.00	46.00	-14.72	-
4	4.602	0.40	42.47	-	42.87	-	56.00	46.00	-13.13	-
5	5.453	0.44	47.03	-	47.47	-	60.00	50.00	-12.53	-
6	15.344	0.92	43.62	-	44.54	-	60.00	50.00	-15.46	-

- 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.

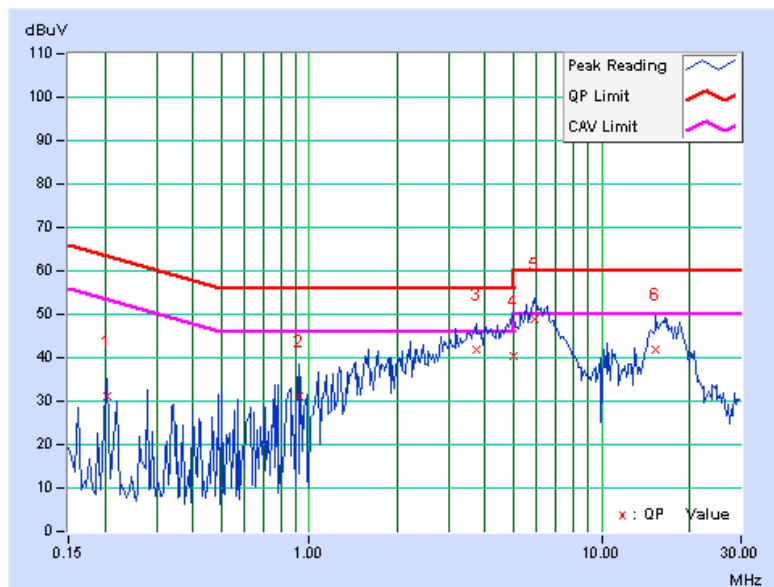




EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	14.4Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH, 1021hPa	TESTED BY	Antony Lee

	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	0.15	30.81	-	30.96	-	63.42	53.42	-32.46	-
2	0.920	0.19	30.92	-	31.11	-	56.00	46.00	-24.89	-
3	3.746	0.37	41.51	-	41.88	-	56.00	46.00	-14.12	-
4	4.973	0.43	39.82	-	40.25	-	56.00	46.00	-15.75	-
5	5.875	0.47	48.51	-	48.98	-	60.00	50.00	-11.02	-
6	15.344	0.83	41.10	-	41.93	-	60.00	50.00	-18.07	-

- 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.



### 5.3 6dB BANDWIDTH MEASUREMENT

#### 5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

#### 5.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100040	Jul. 04, 2008	Jul. 03, 2009

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

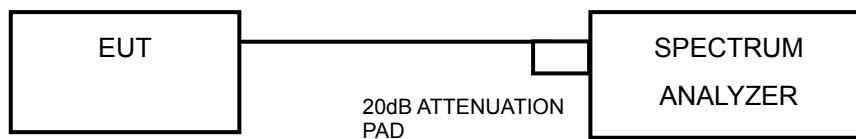
#### 5.3.3 TEST PROCEDURE

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

#### 5.3.4 DEVIATION FROM TEST STANDARD

No deviation

#### 5.3.5 TEST SETUP



#### 5.3.6 EUT OPERATING CONDITIONS

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



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### 5.3.7 TEST RESULTS

#### 802.11a OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	23 deg.C, 64%RH, 1021hPa
TESTED BY	Antony Lee		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.55	16.53	0.5	PASS
157	5785	16.59	16.62	0.5	PASS
165	5825	16.58	16.60	0.5	PASS



Ref 20 dBm Att 30 dB RBW 100 kHz VBW 300 kHz SWT 20 ms [T1] MK VIEW Marker 1 [T1] -8.41 dBm 5.73670 GHz Delta 2 [T1] 0.00 dB 16.55 MHz

D1 -2.41 dBm D2 -8.41 dBm

F1 F2

Center 5.745 GHz 3 MHz/ Span 30 MHz

BUREAU VERITAS 1828

A D T

Ref 20 dBm Att 30 dB RBW 100 kHz VBW 300 kHz SWT 20 ms [T1] MK VIEW

Marker 1 [T1] -7.97 dBm 5.77668 GHz

Delta 2 [T1] 0.00 dB 16.59 MHz

D1 -1.97 dBm D2 -7.97 dBm

F1 F2

Center 5.785 GHz 3 MHz/ Span 30 MHz

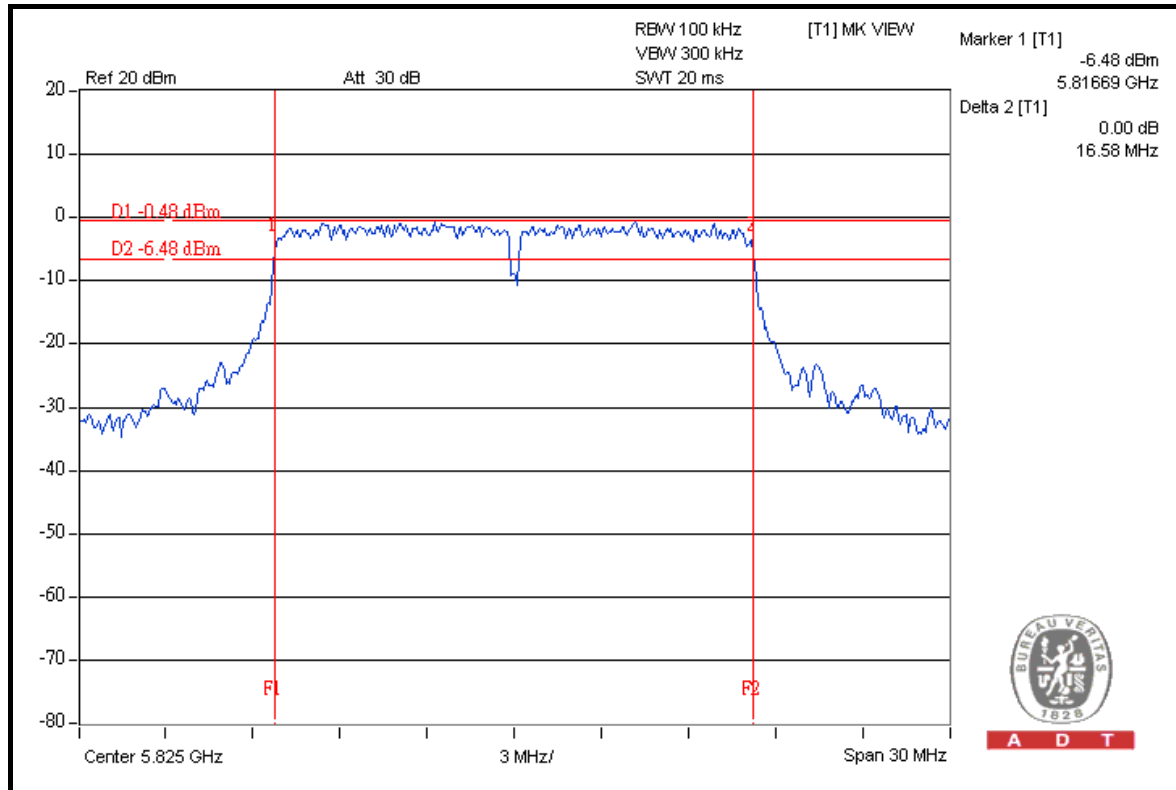
BUREAU VERITAS 1828

A D T



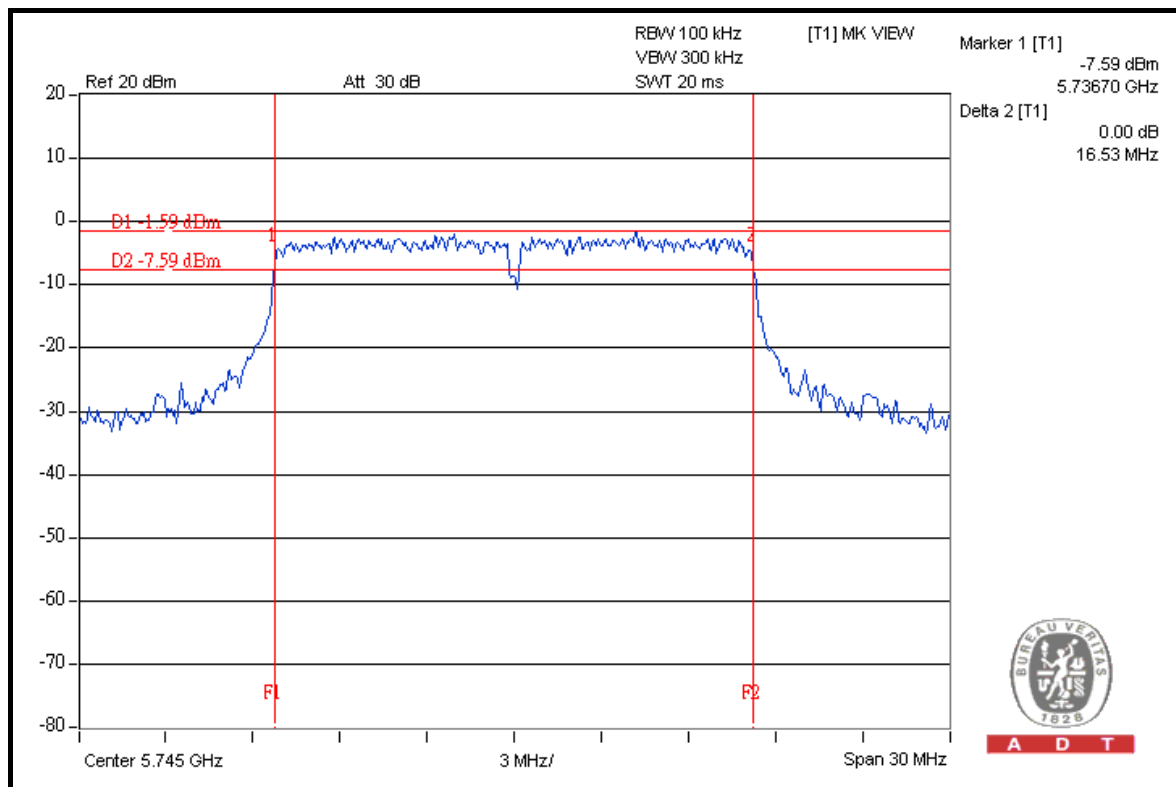
A D T

## CH 165



A D T

## FOR CHAIN 1: CH 149

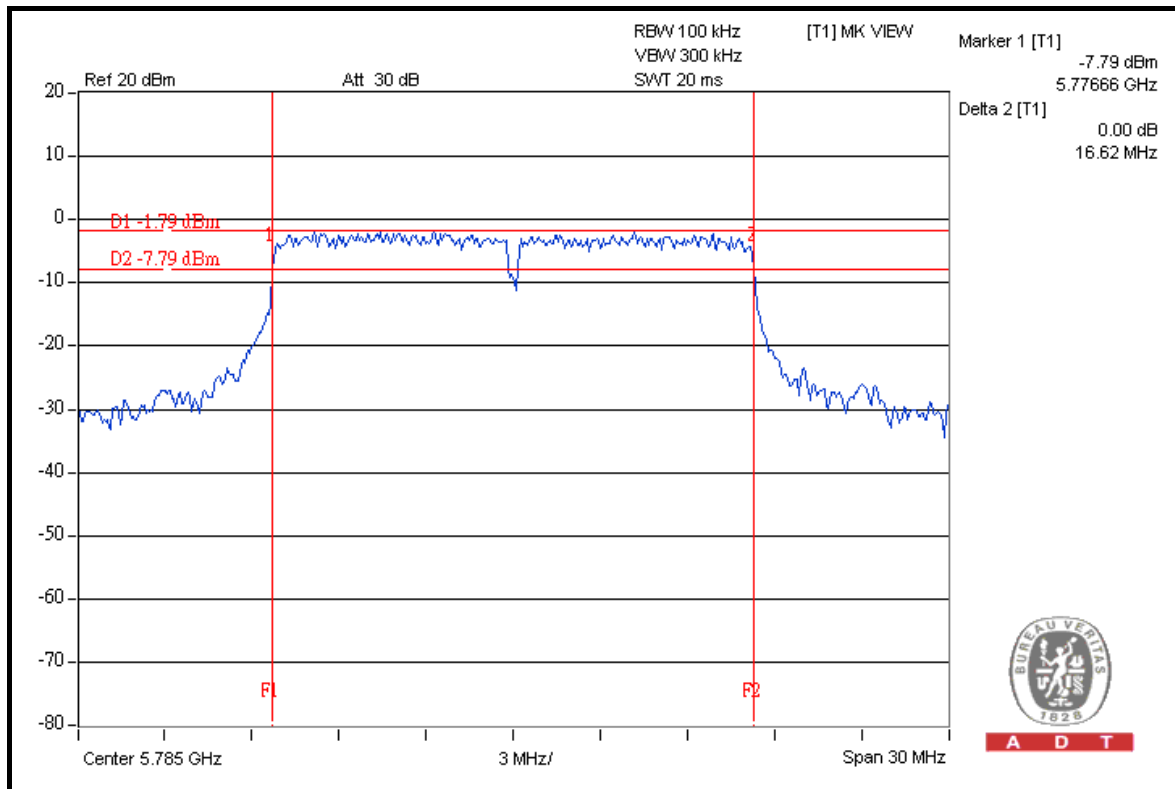


A D T



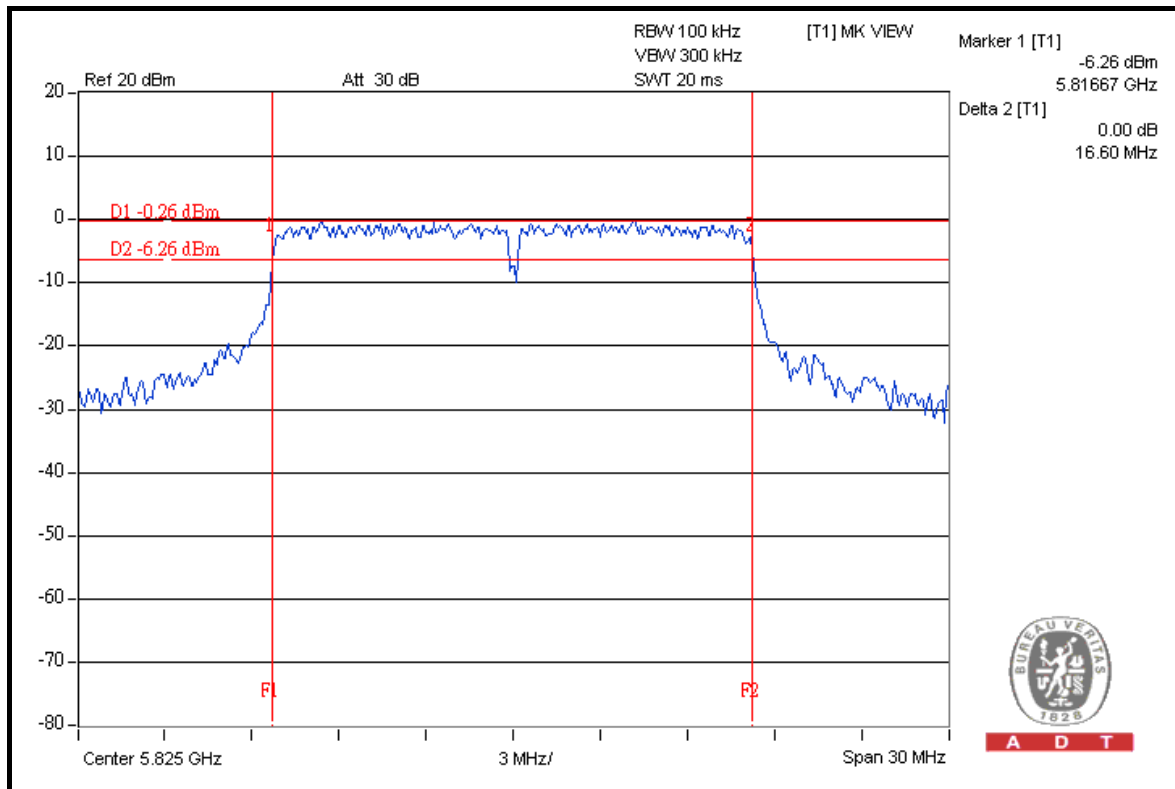
A D T

## CH 157



A D T

## CH 165



A D T

**A D T****DRAFT 802.11n (20MHz) OFDM MODULATION**

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	7.2Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23 deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

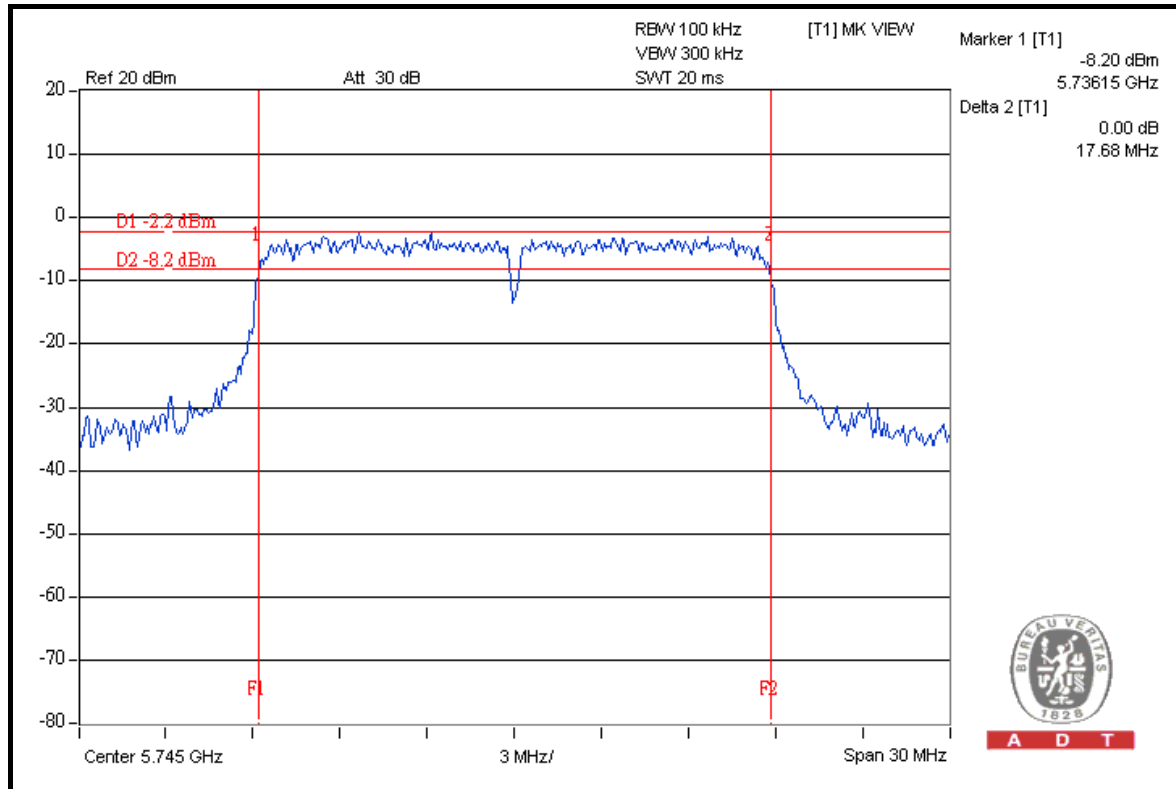
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.68	17.69	0.5	PASS
157	5785	17.64	17.65	0.5	PASS
165	5825	17.67	17.66	0.5	PASS



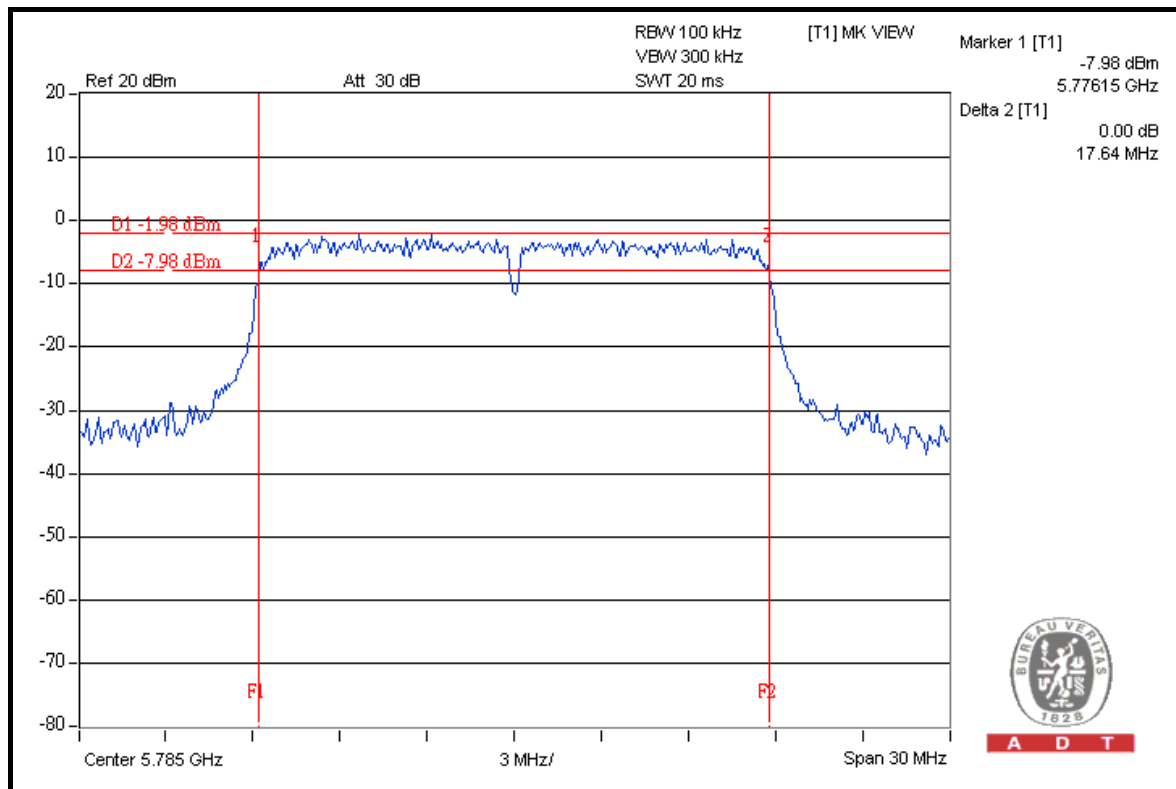


A D T

## FOR CHAIN 0: CH 149



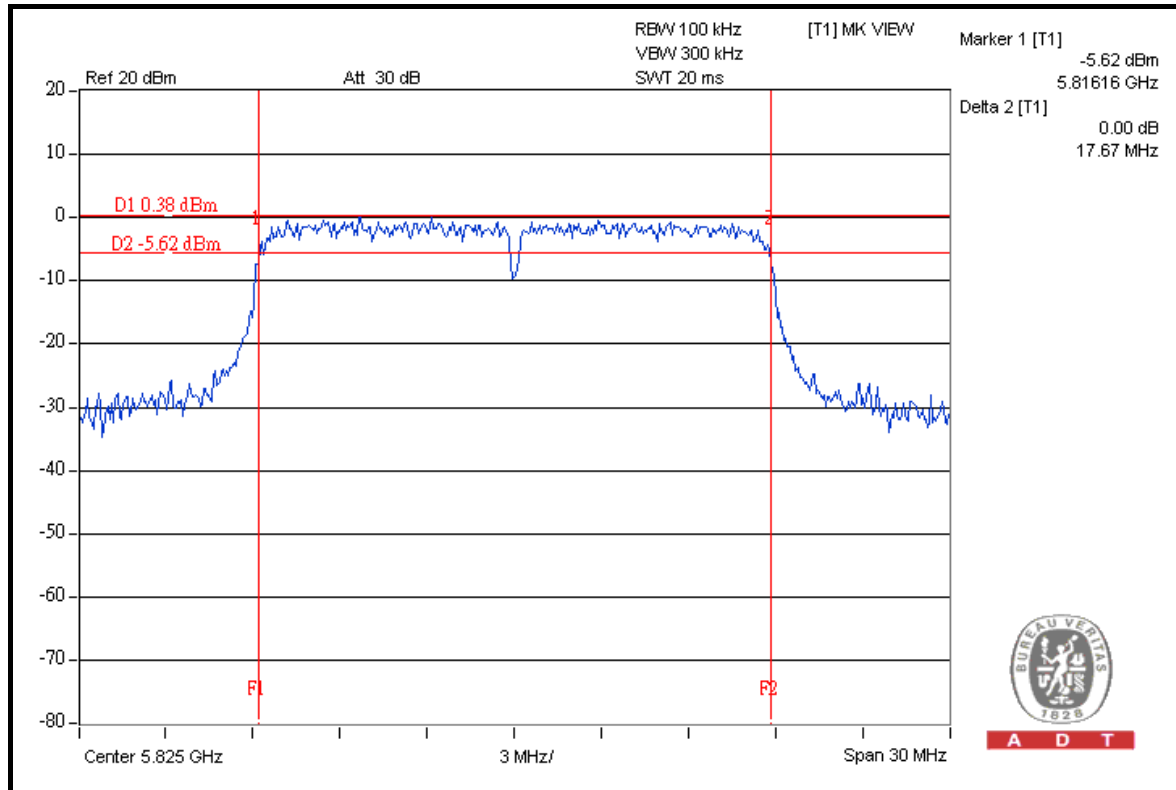
## CH 157





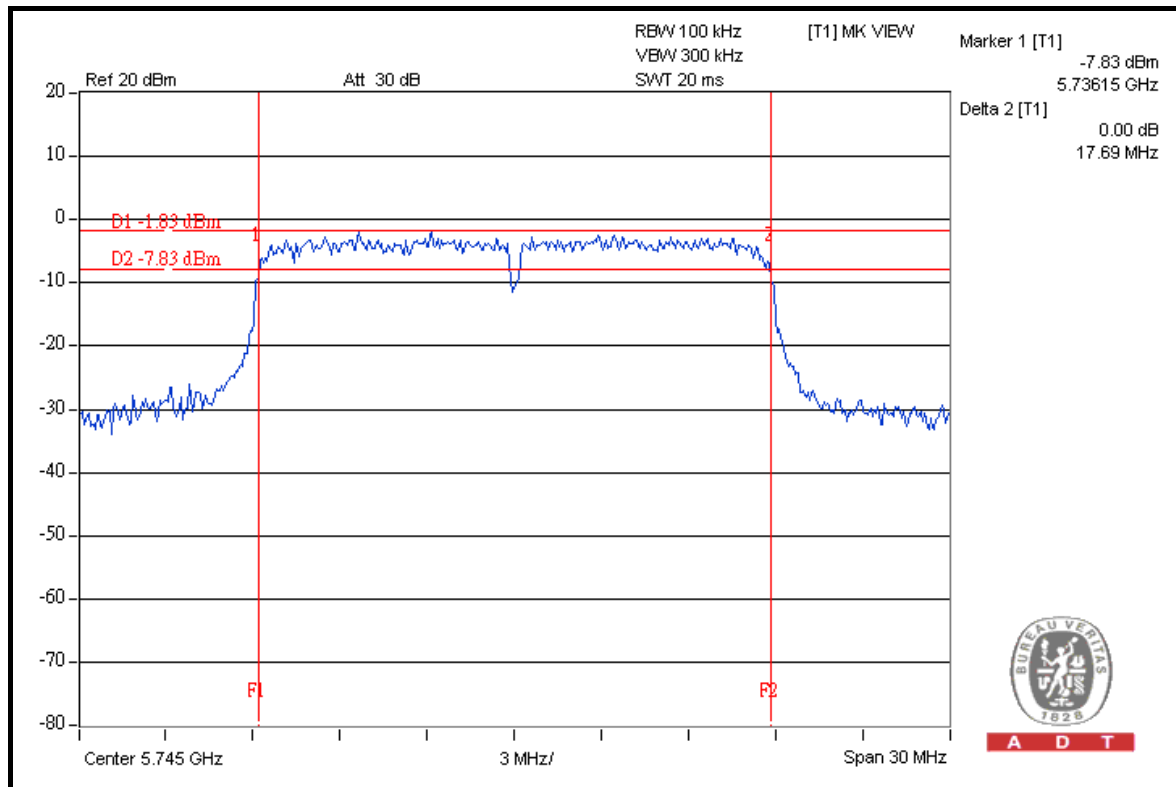
A D T

## CH 165



A D T

## FOR CHAIN 1: CH 149

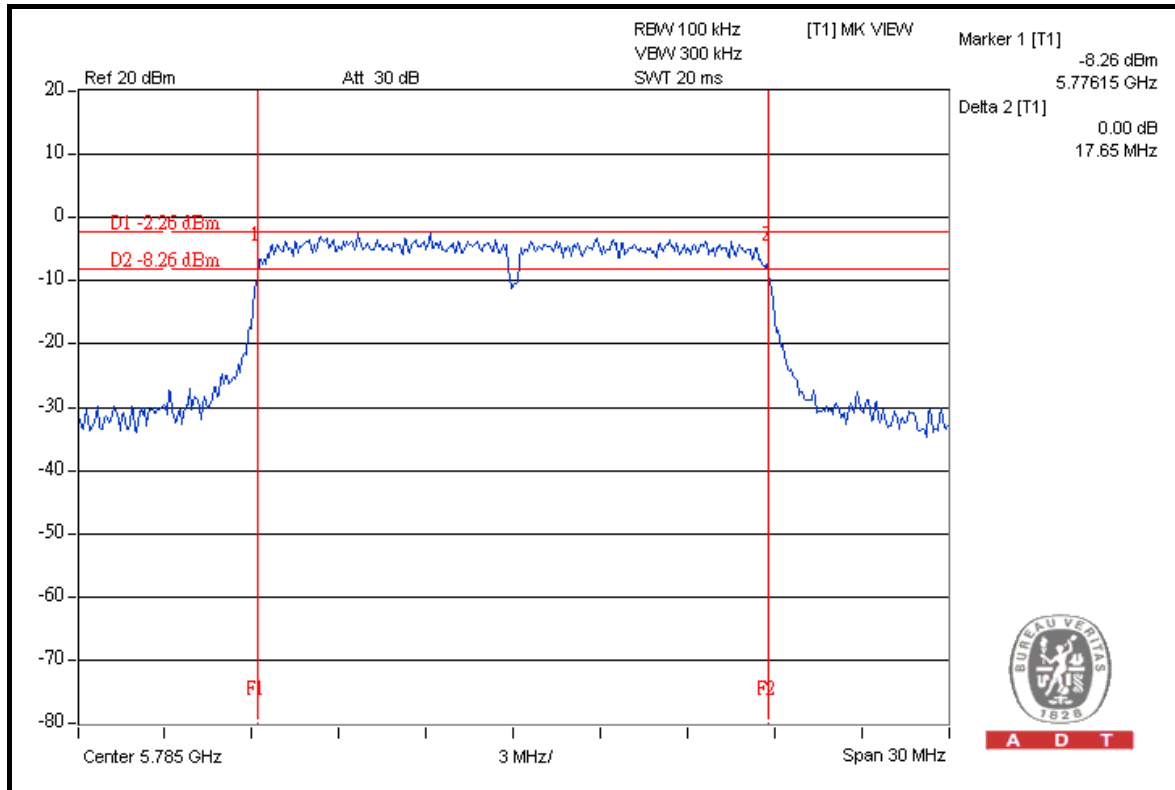


A D T



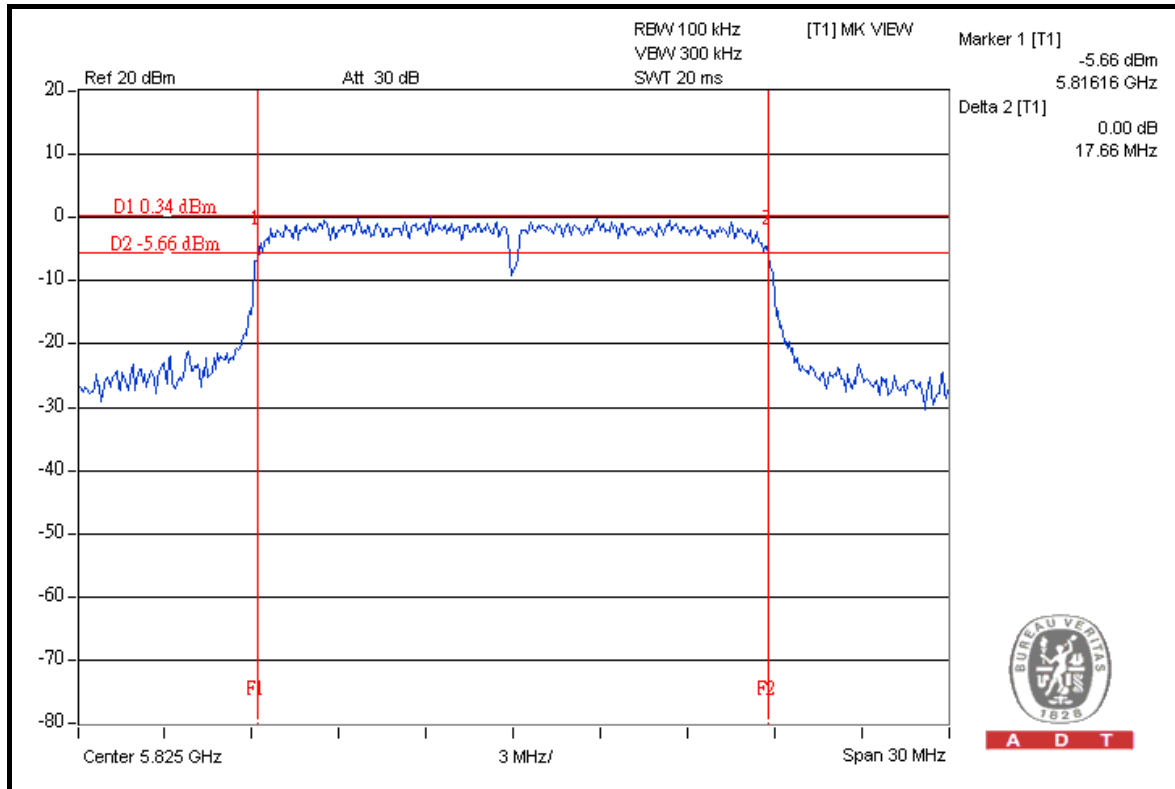
A D T

## CH 157



A D T

## CH 165



A D T

**A D T****DRAFT 802.11n (40MHz) OFDM MODULATION**

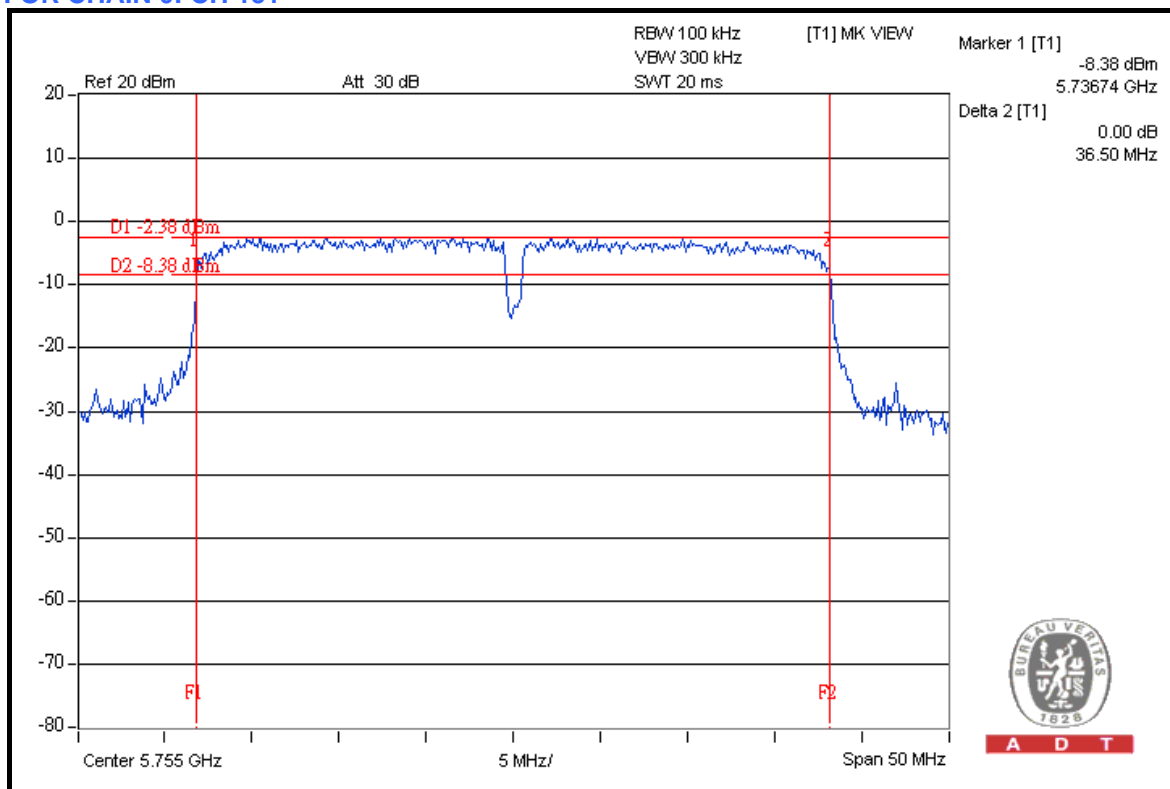
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	14.4Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23 deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>6dB BANDWIDTH (MHz)</b>		<b>MINIMUM LIMIT (MHz)</b>	<b>PASS / FAIL</b>
		<b>CHAIN 0</b>	<b>CHAIN 1</b>		
151	5755	36.50	36.51	0.5	PASS
159	5795	36.52	36.51	0.5	PASS

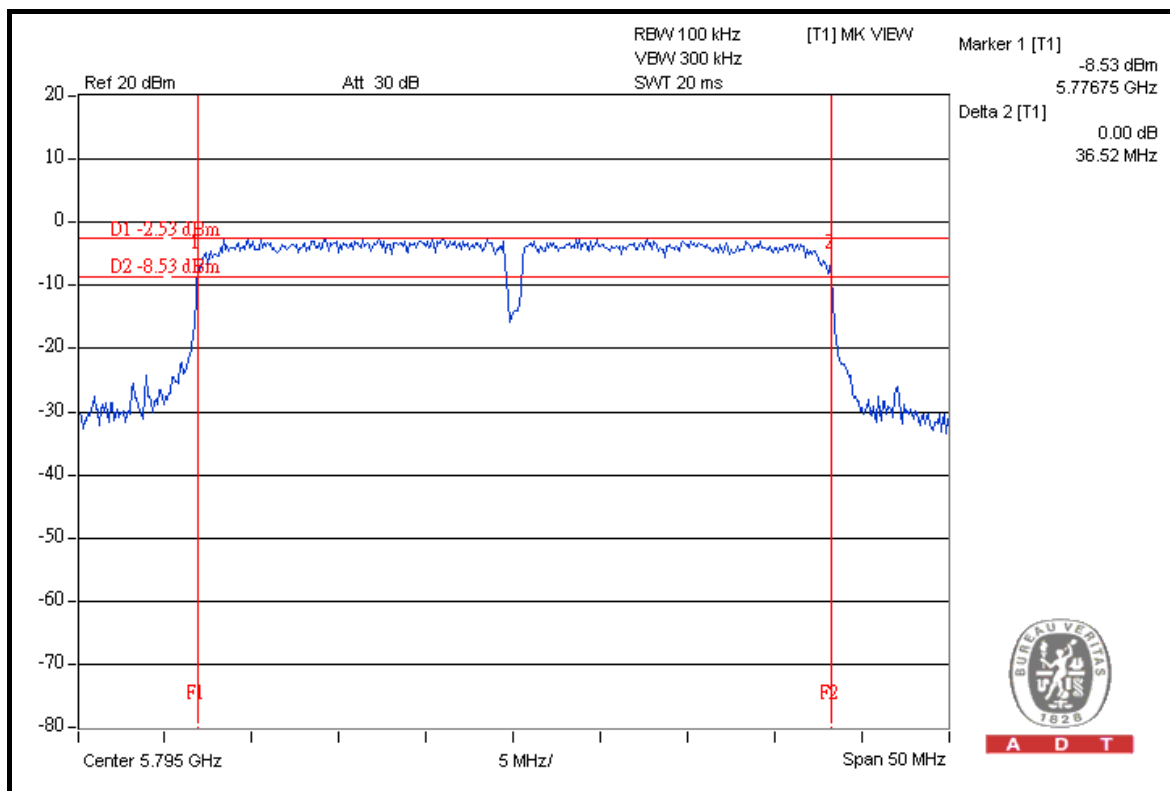


A D T

## FOR CHAIN 0: CH 151



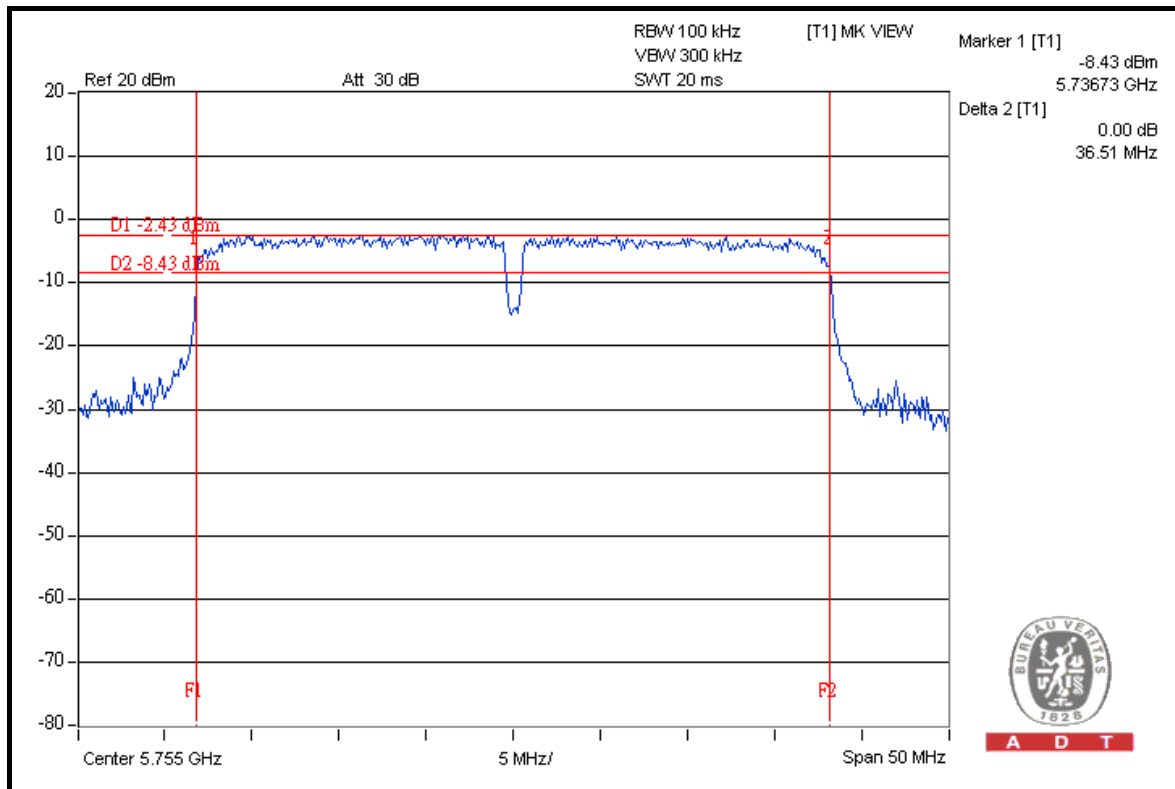
## CH 159



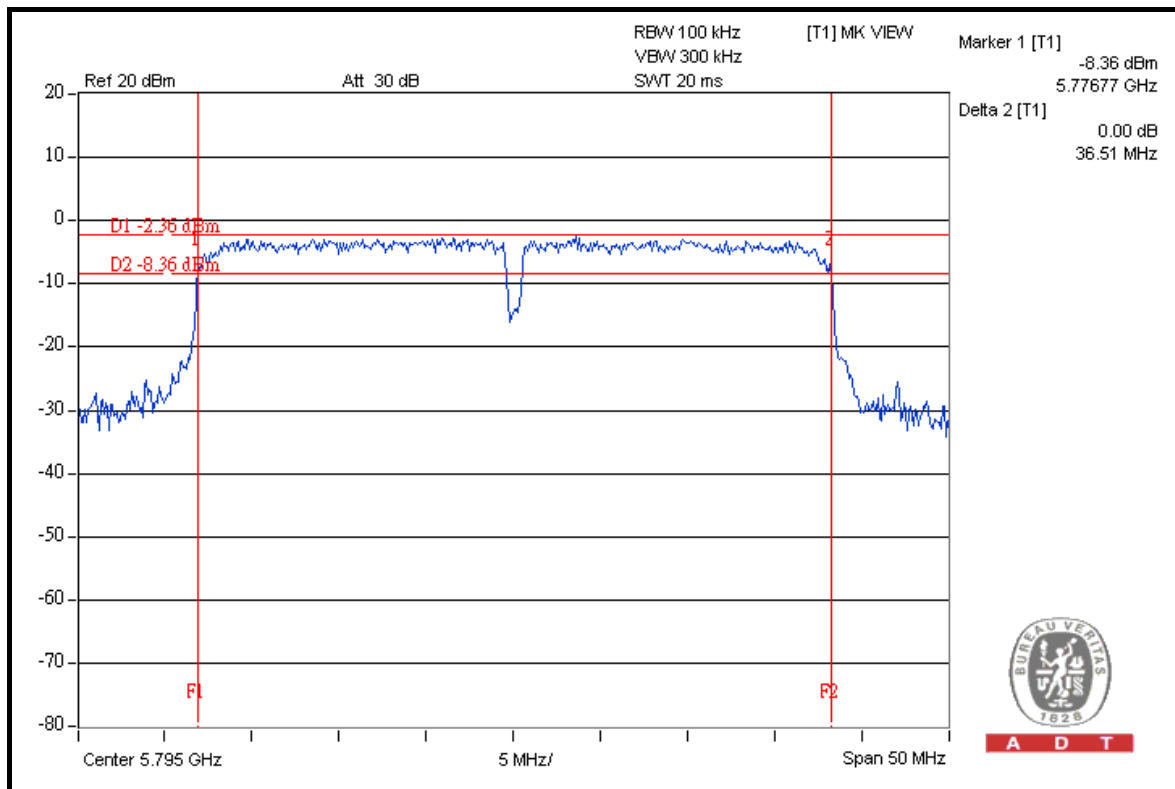


A D T

## FOR CHAIN 1: CH 151



## CH 159





A D T

## 5.4 MAXIMUM PEAK OUTPUT POWER

### 5.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

### 5.4.2 INSTRUMENTS

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 6dB bandwidth of emission.

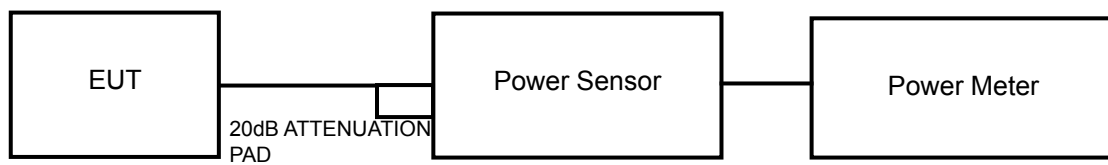
### 5.4.3 TEST PROCEDURES

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

#### 5.4.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 5.4.5 TEST SETUP



#### 5.4.6 EUT OPERATING CONDITIONS

Same as Item 5.3.6



## 5.4.7 TEST RESULTS

### 802.11a OFDM MODULATION

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6.0Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23 deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

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				
149	5745	18.04	18.52	134.801	21.30	30	PASS
157	5785	18.55	18.57	143.559	21.57	30	PASS
165	5825	19.56	19.55	180.522	22.57	30	PASS

### DRAFT 802.11n (20MHz) OFDM MODULATION

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	7.2Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23 deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

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				
149	5745	17.53	18.07	120.745	20.82	30	PASS
157	5785	17.54	17.51	113.118	20.54	30	PASS
165	5825	19.56	19.53	180.108	22.56	30	PASS

**A D T****DRAFT 802.11n (40MHz) OFDM MODULATION**

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	14.4Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23 deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

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				
151	5755	20.53	20.55	226.481	23.55	30	PASS
159	5795	20.55	20.57	227.526	23.57	30	PASS

## 5.5 POWER SPECTRAL DENSITY MEASUREMENT

### 5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 5.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100040	Jul. 04, 2008	Jul. 03, 2009

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

### 5.5.3 TEST PROCEDURE

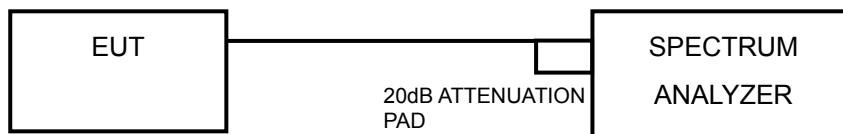
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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

#### 5.5.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 5.5.5 TEST SETUP



#### 5.5.6 EUT OPERATING CONDITION

Same as Item 5.3.6.

**A D T**

## 5.5.7 TEST RESULTS

### 802.11a OFDM MODULATION

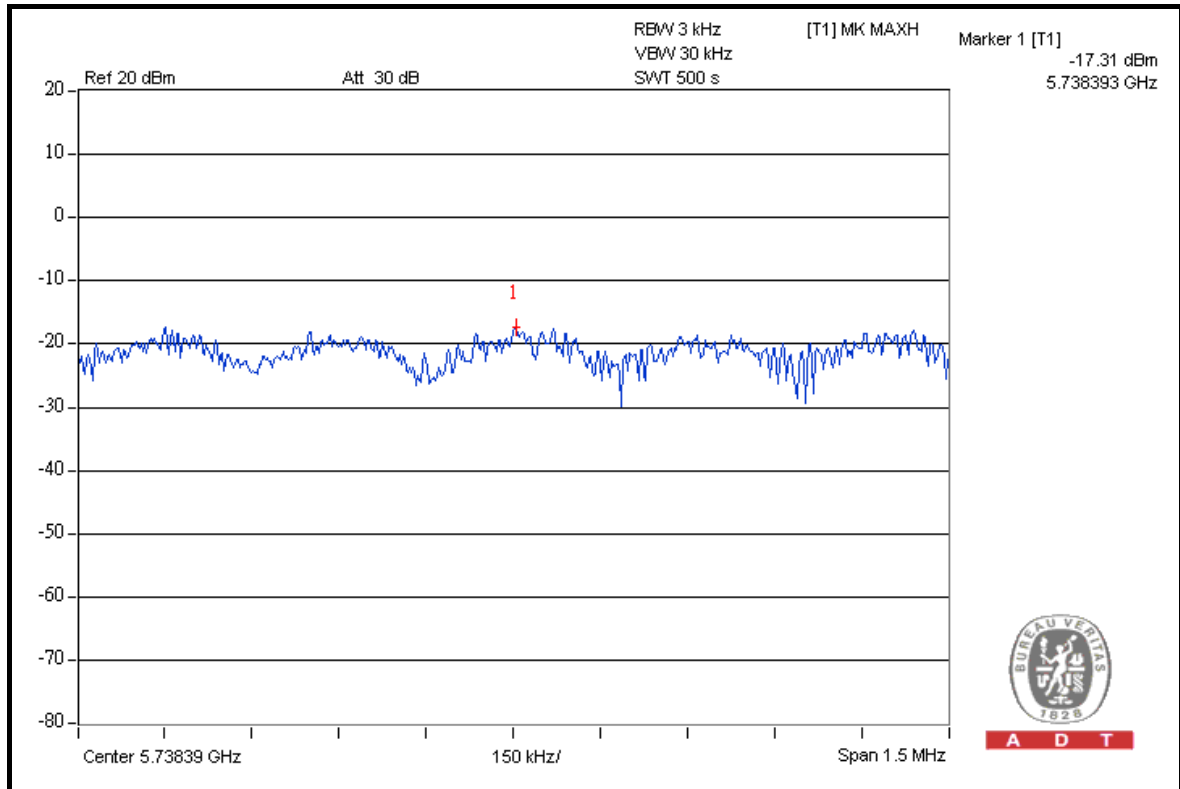
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6.0Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23 deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	-17.31	-16.50	0.041	-13.88	8	PASS
157	5785	-16.60	-16.40	0.045	-13.49	8	PASS
165	5825	-15.13	-14.81	0.064	-11.96	8	PASS

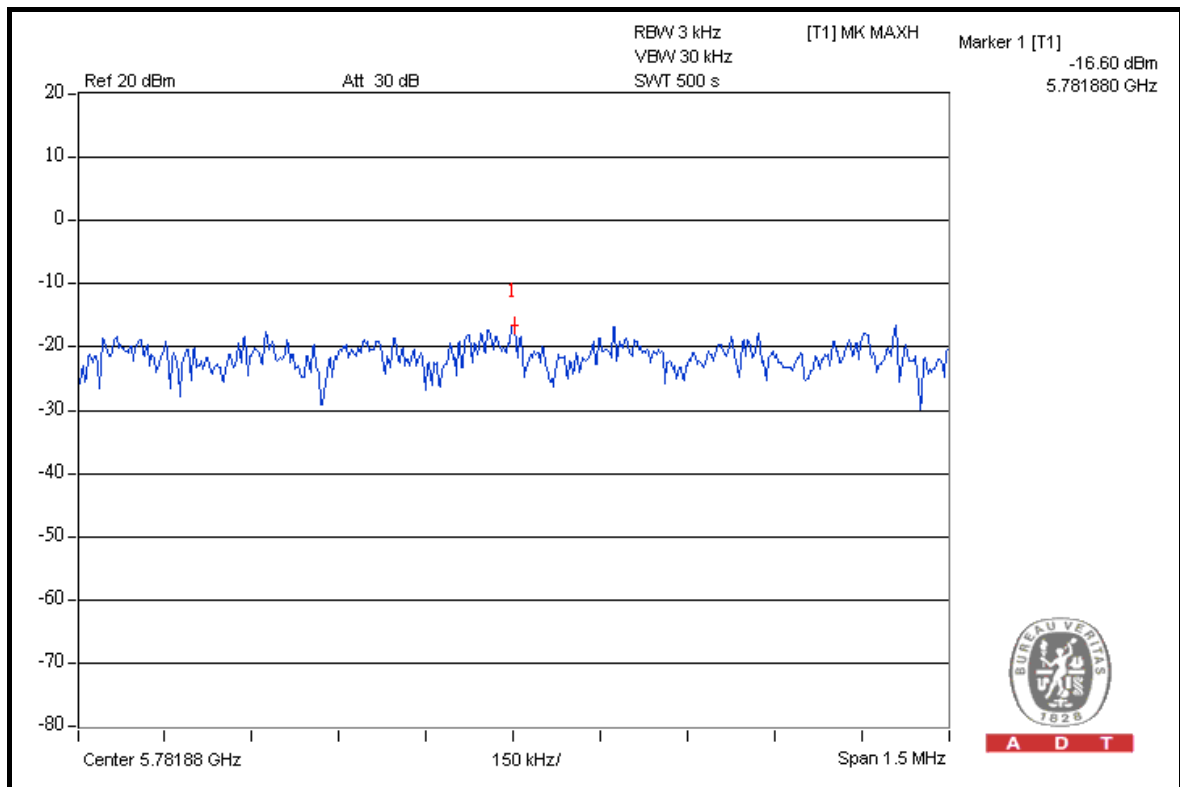


A D T

## FOR CHAIN 0: CH 149



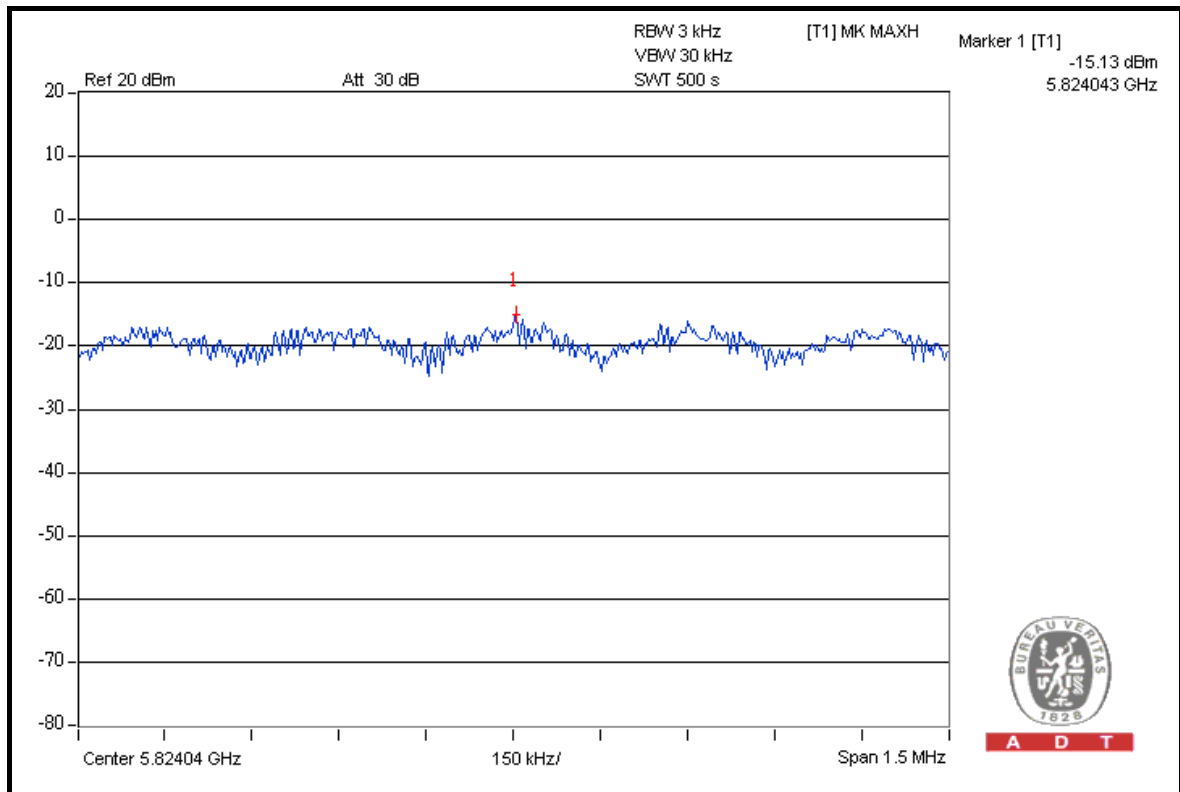
## CH 157



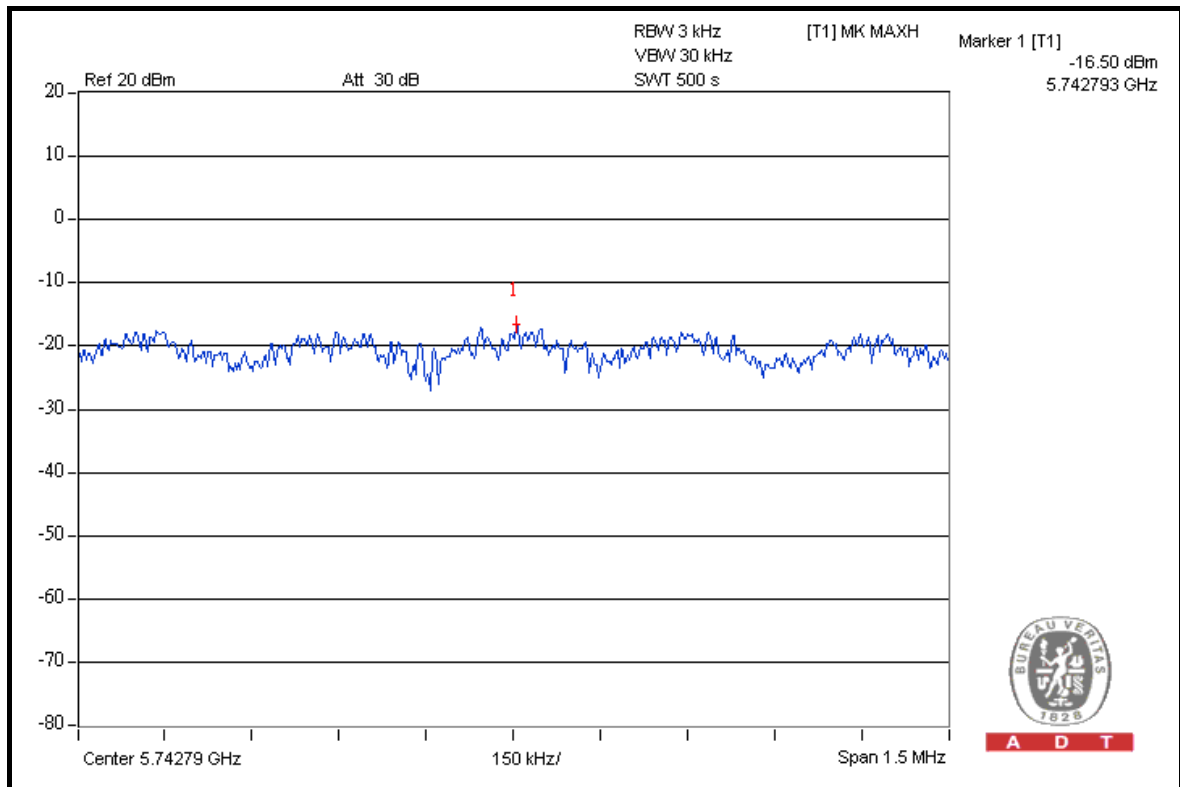


A D T

## CH 165



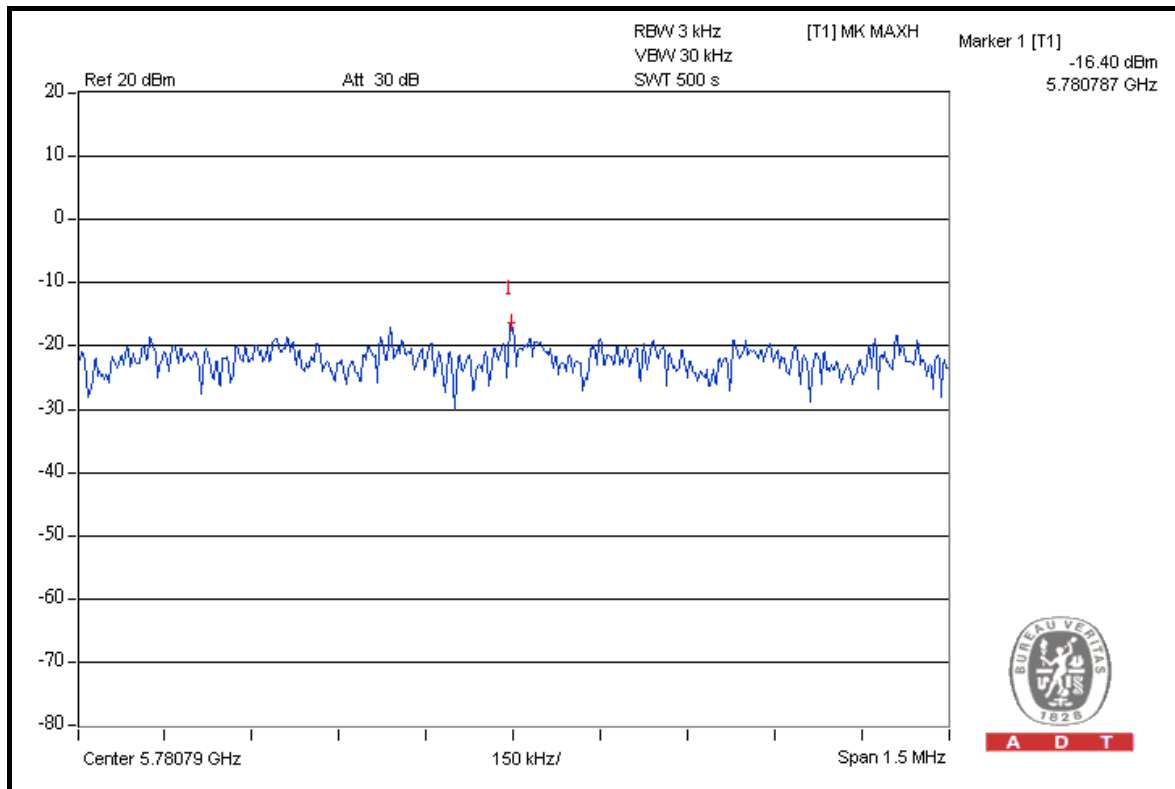
## FOR CHAIN 1: CH 149



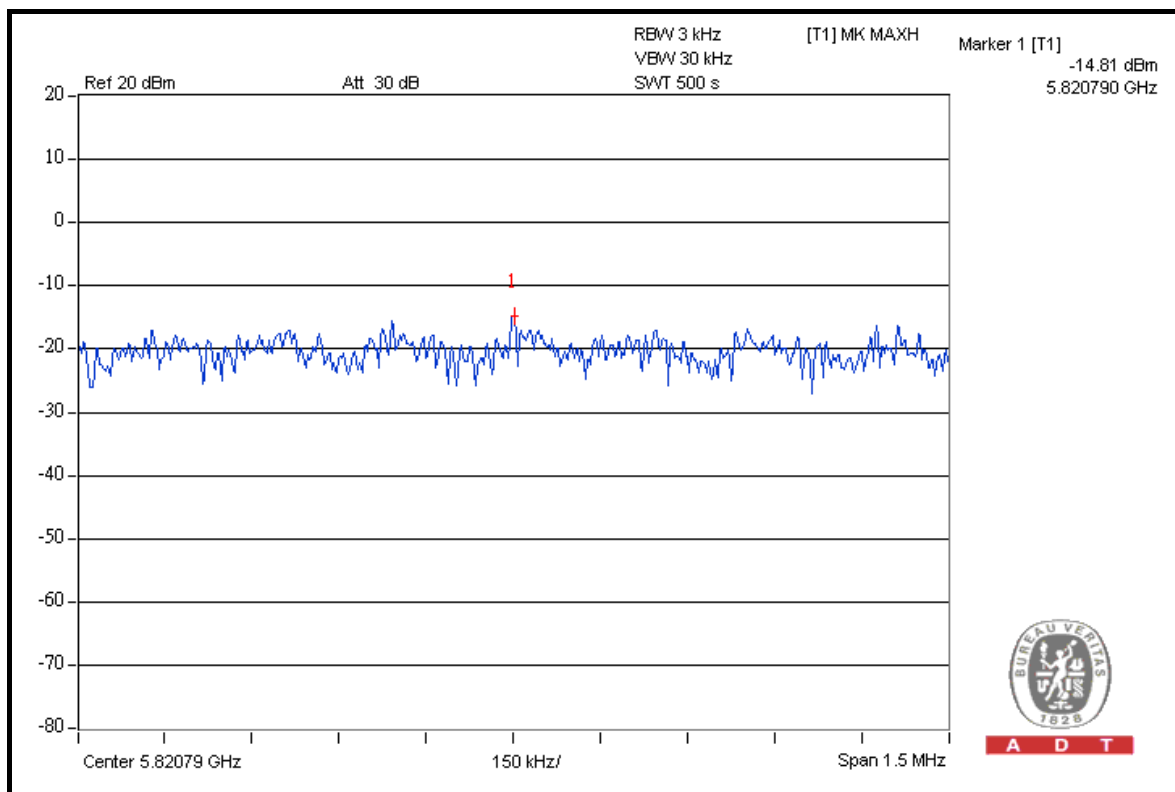


A D T

## CH 157



## CH 165





**A D T****DRAFT 802.11n (20MHz) OFDM MODULATION**

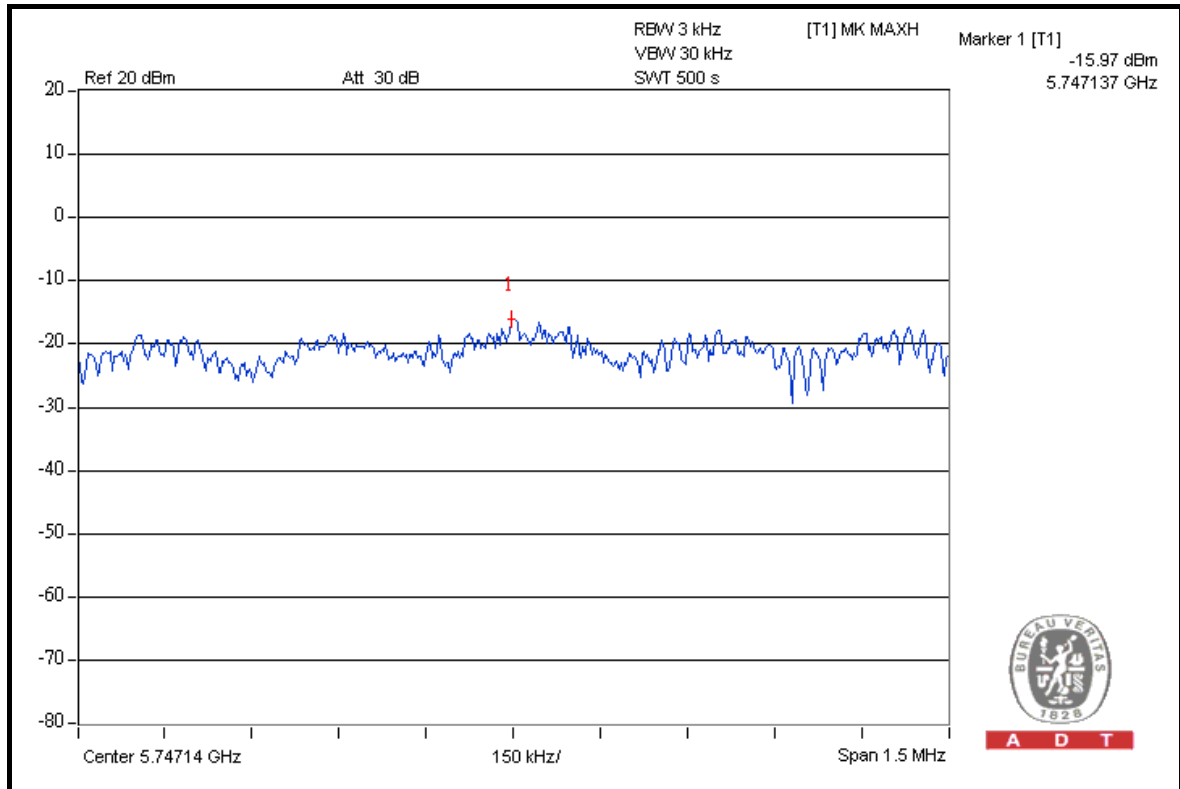
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	7.2Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23 deg.C, 64%RH, 991hPa
<b>TESTED BY</b>	Antony Lee		

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	-15.97	-15.71	0.052	-12.83	8	PASS
157	5785	-15.82	-16.03	0.051	-12.91	8	PASS
165	5825	-13.28	-13.47	0.092	-10.36	8	PASS

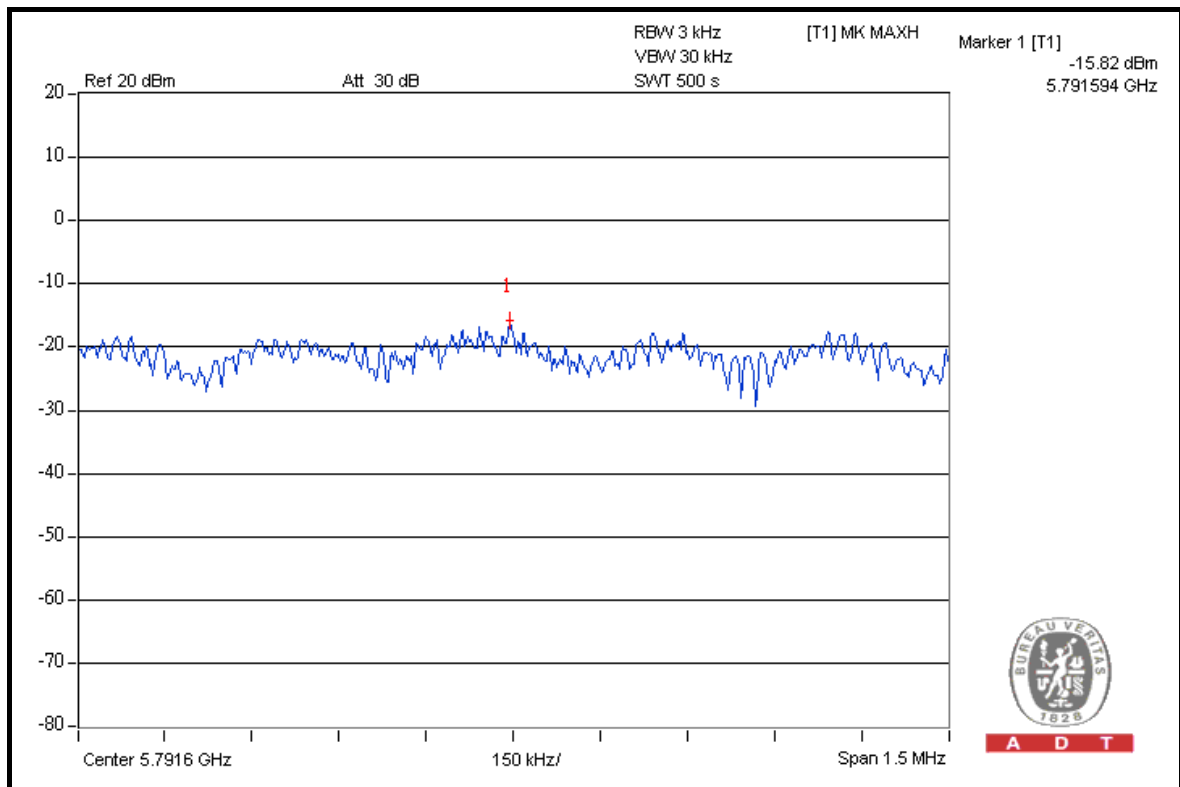


A D T

## FOR CHAIN 0: CH 149



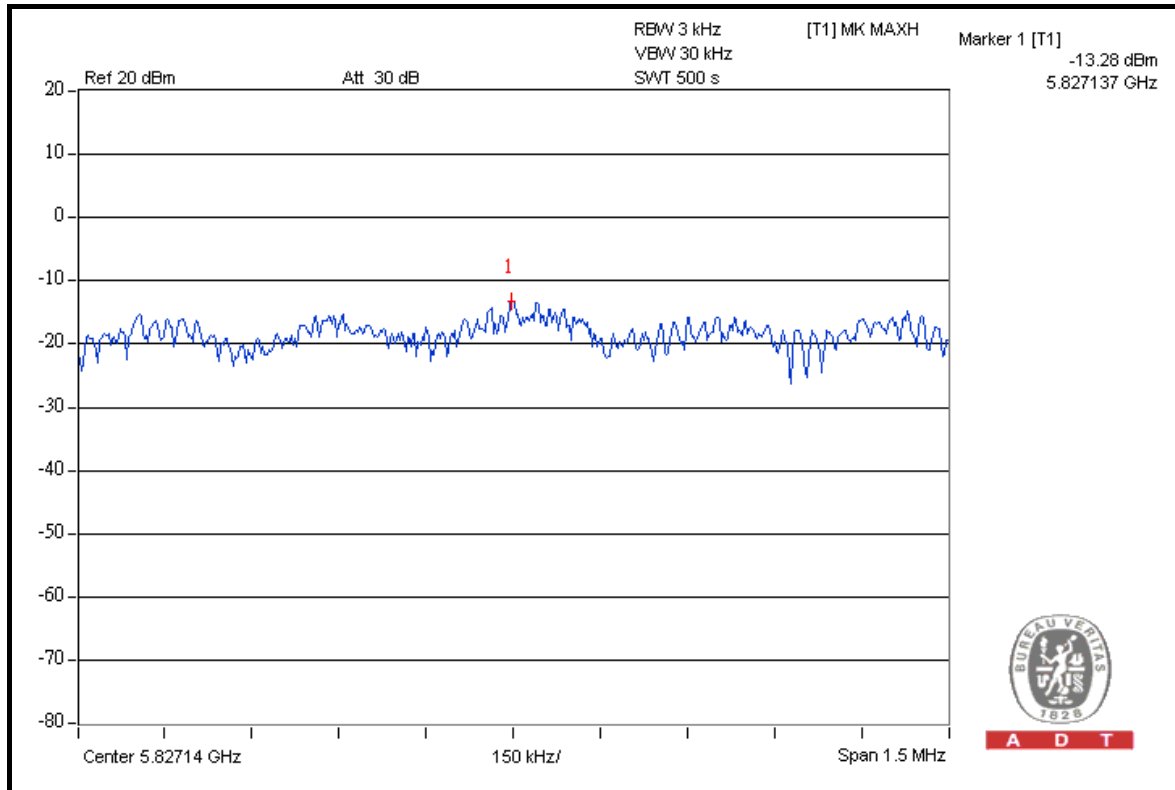
## CH 157



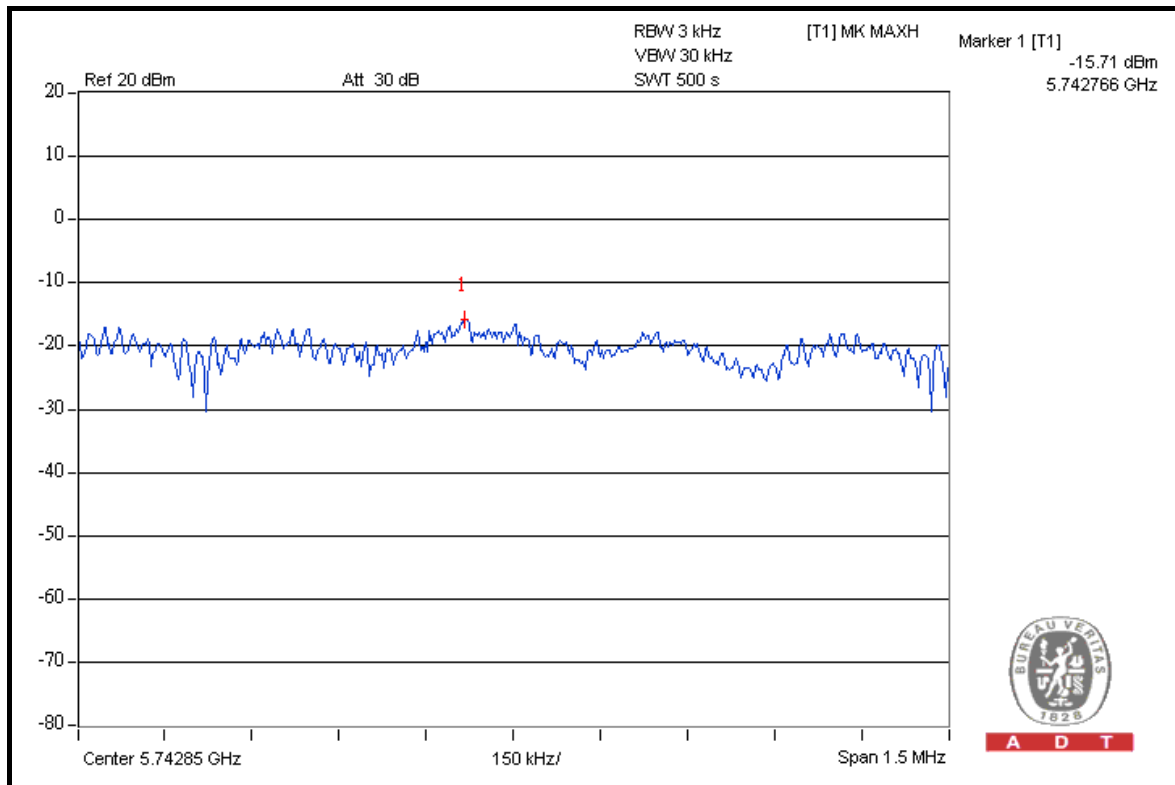


A D T

## CH 165



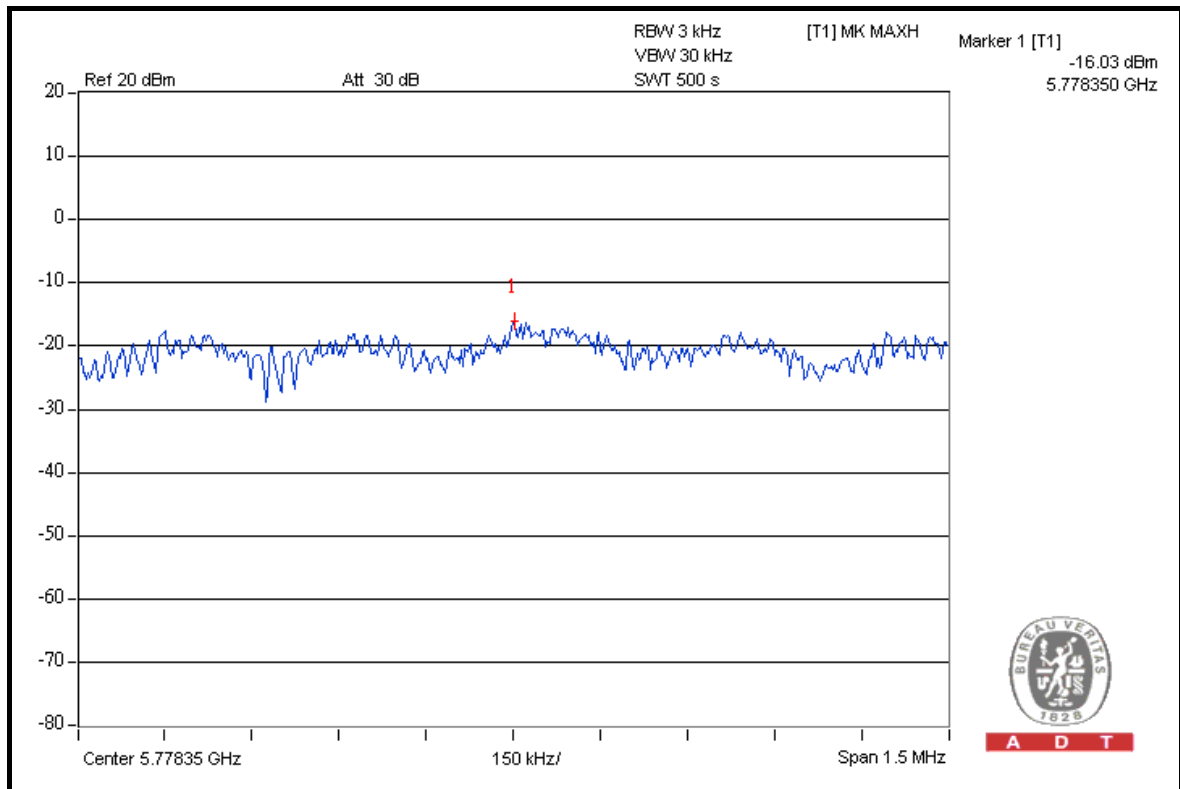
## FOR CHAIN 1: CH 149



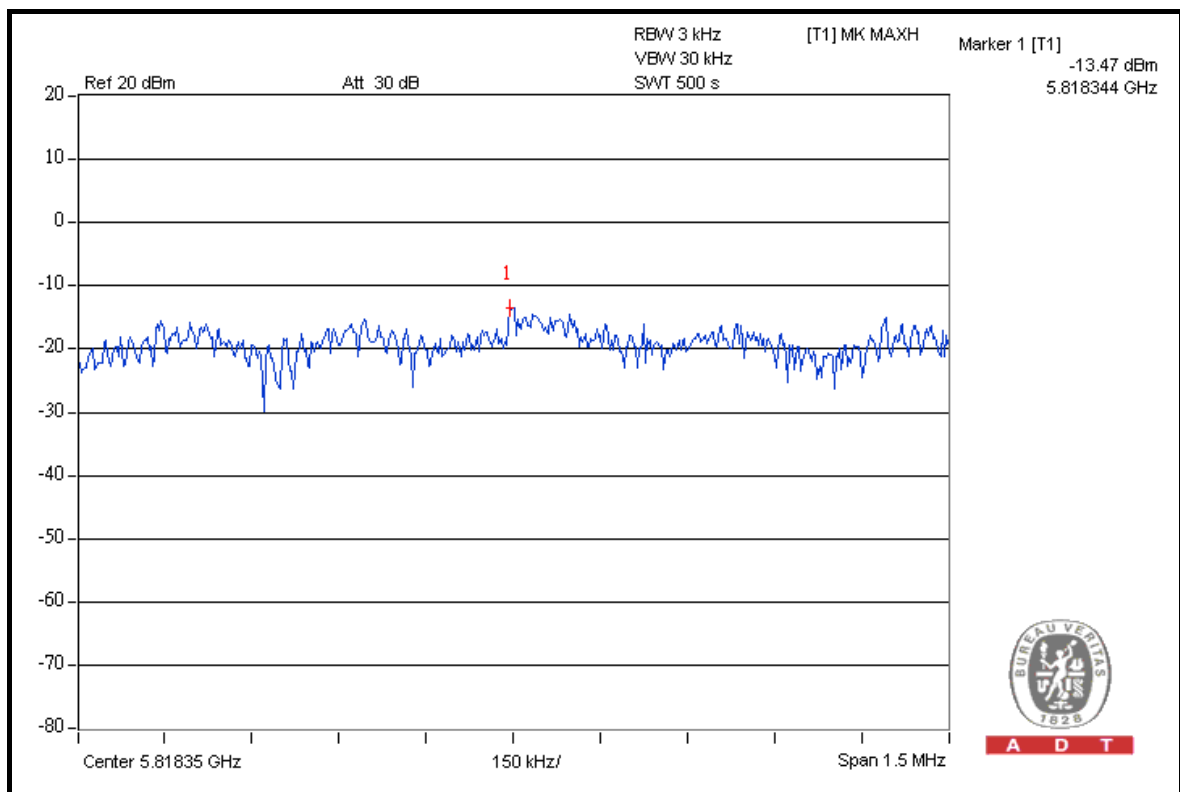


A D T

## CH 157



## CH 165



**A D T****DRAFT 802.11n (40MHz) OFDM MODULATION**

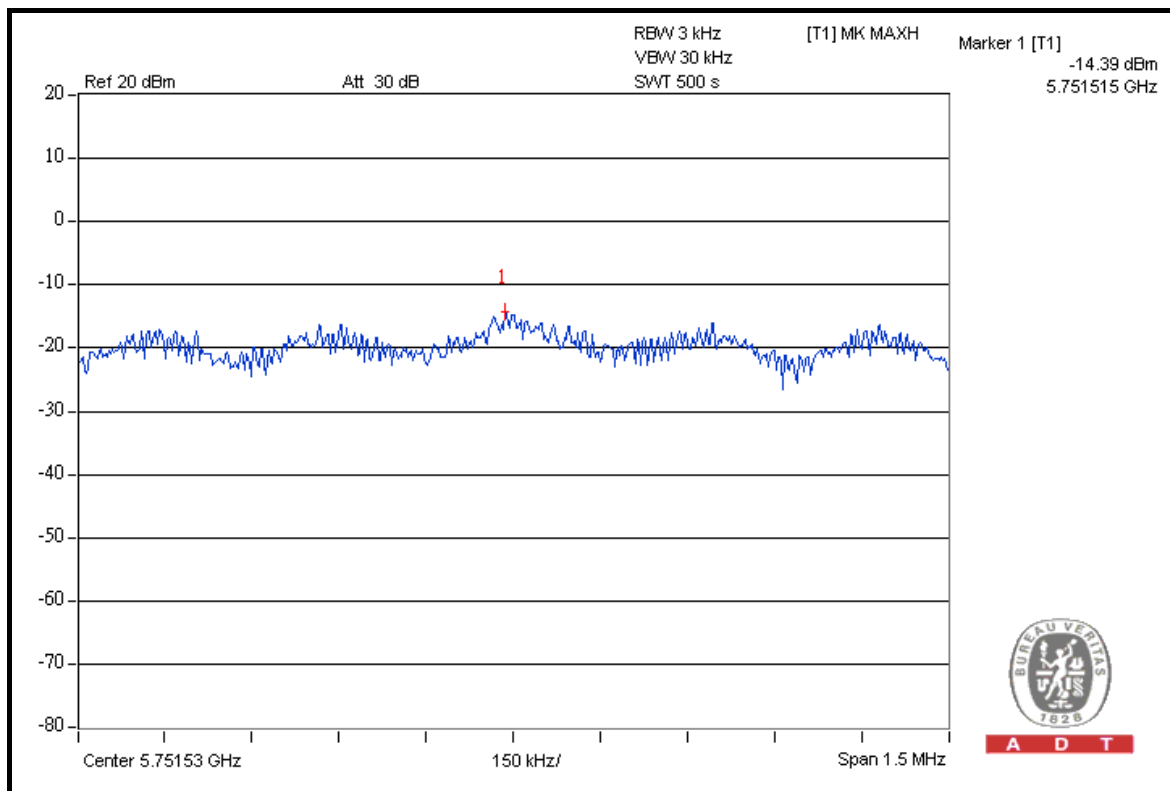
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	14.4Mbps
<b>INPUT POWER</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23 deg.C, 64%RH, 1021hPa
<b>TESTED BY</b>	Antony Lee		

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	-14.39	-15.37	0.065	-11.84	8	PASS
159	5795	-14.24	-15.19	0.068	-11.68	8	PASS

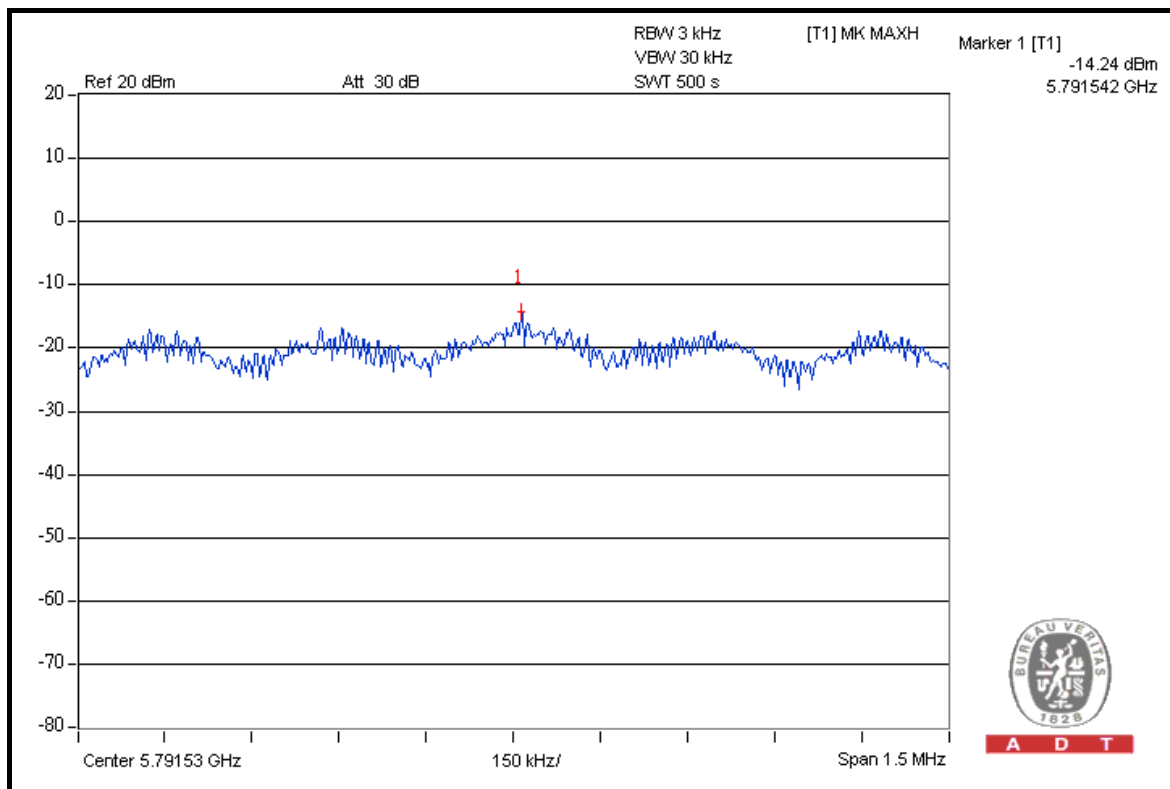


A D T

## FOR CHAIN 0: CH 151



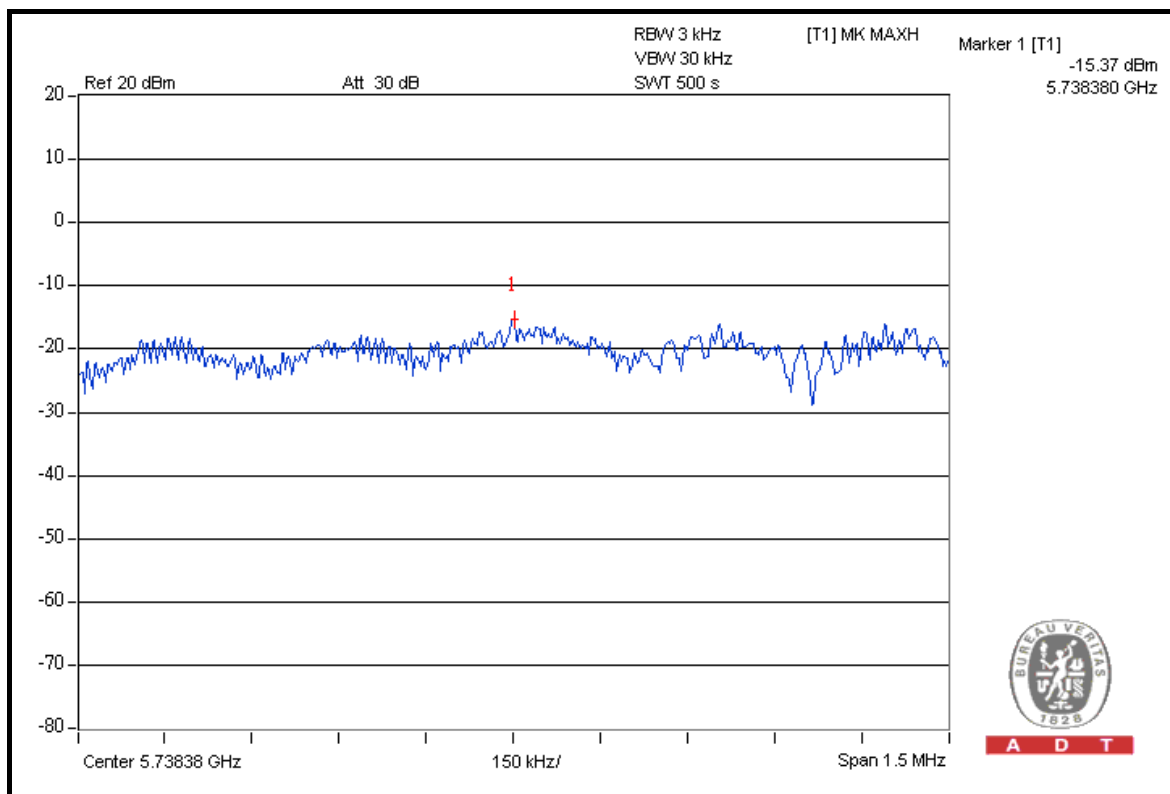
## CH 159



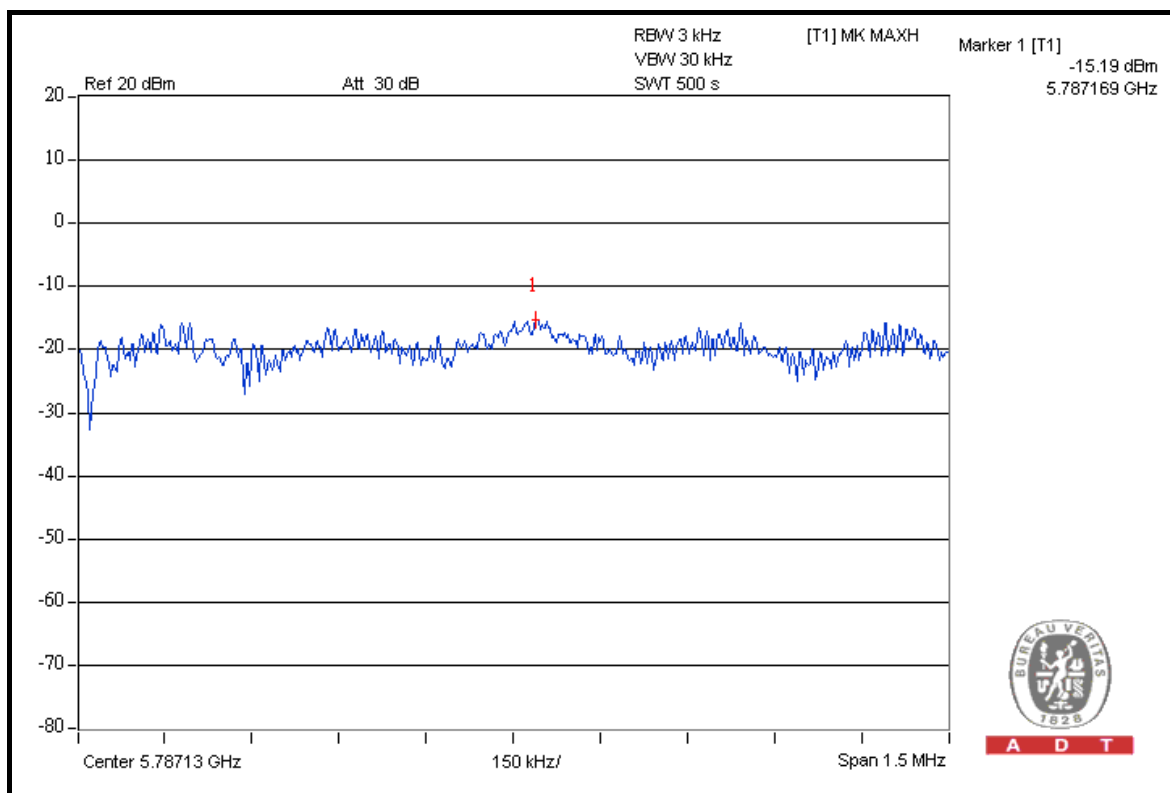


A D T

## FOR CHAIN 1: CH 151



## CH 159



## 5.6 BAND EDGES MEASUREMENT

### 5.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

### 5.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	100033	Jun. 30, 2008	Jun. 29, 2009
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Jul. 04, 2008	Jul. 03, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 27, 2009	Apr. 26, 2010
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 13, 2009	May 12, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	May 13, 2009	May 12, 2010
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	Aug. 27, 2008	Aug. 26, 2009

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



### 5.6.3 TEST PROCEDURE

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

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



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#### 5.6.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 5.6.5 EUT OPERATING CONDITION

Same as Item 5.3.6.

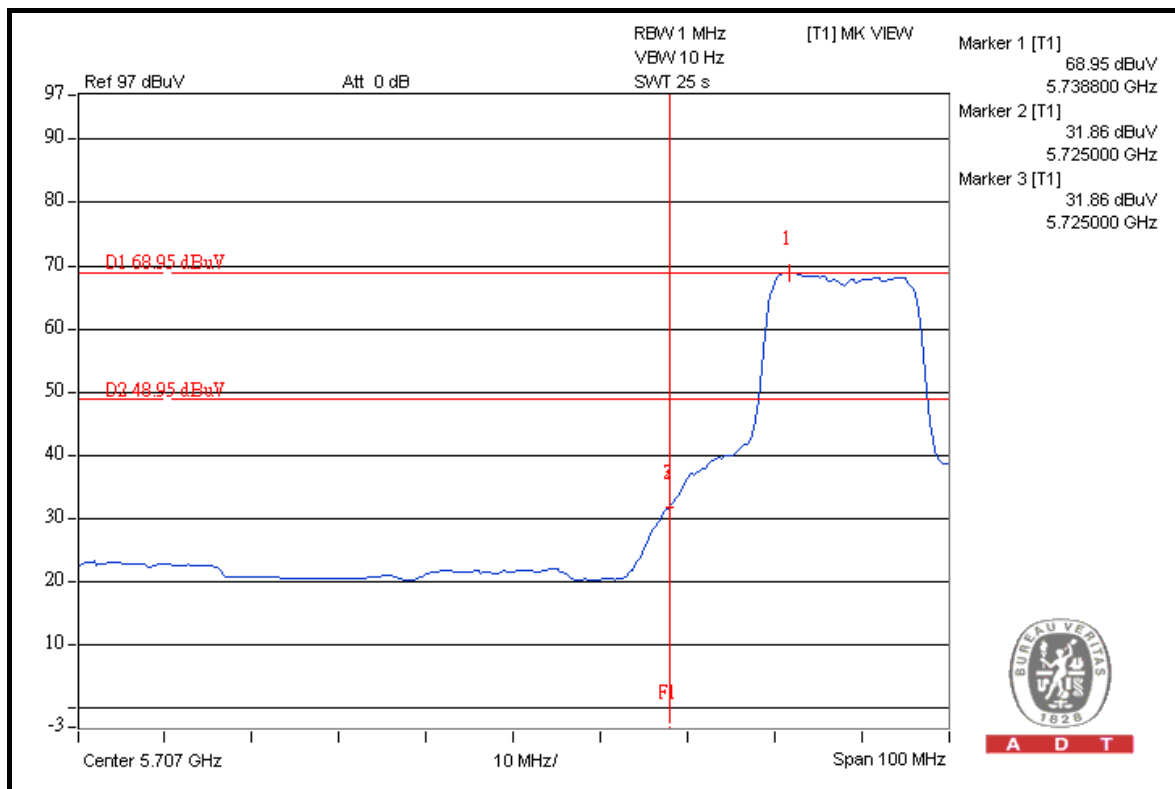
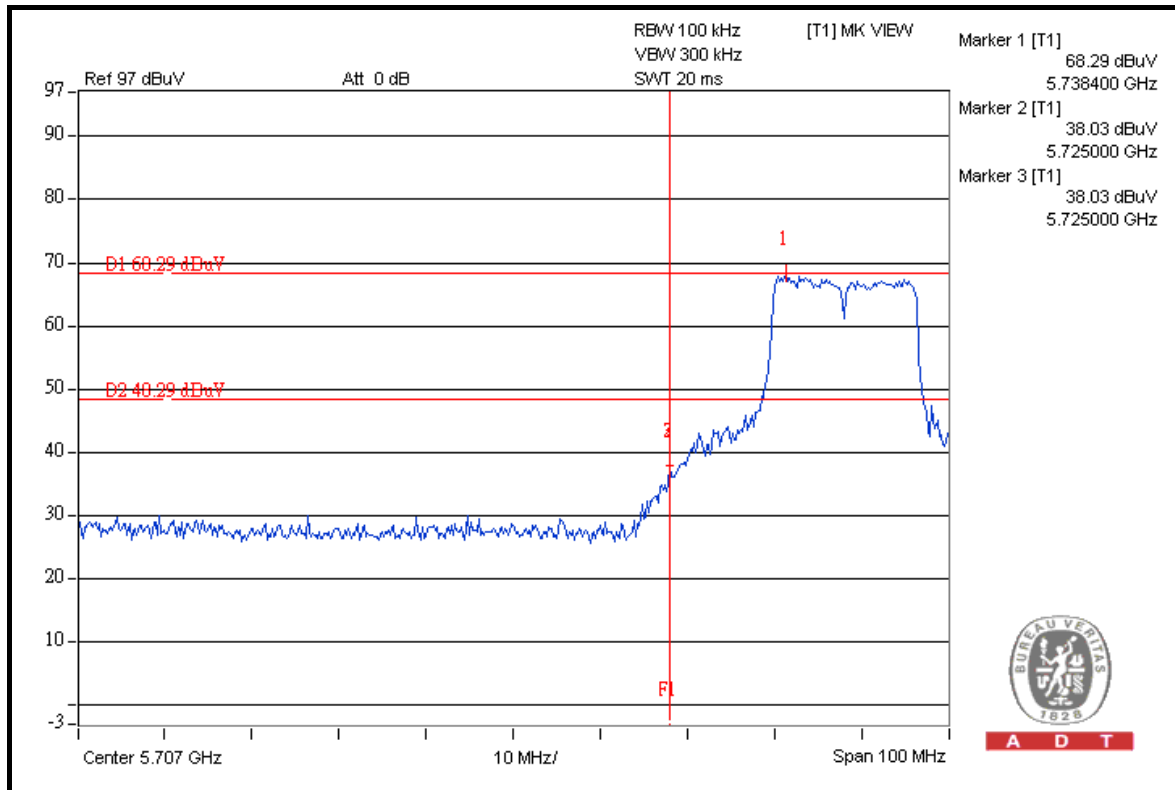
#### 5.6.6 TEST RESULTS

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



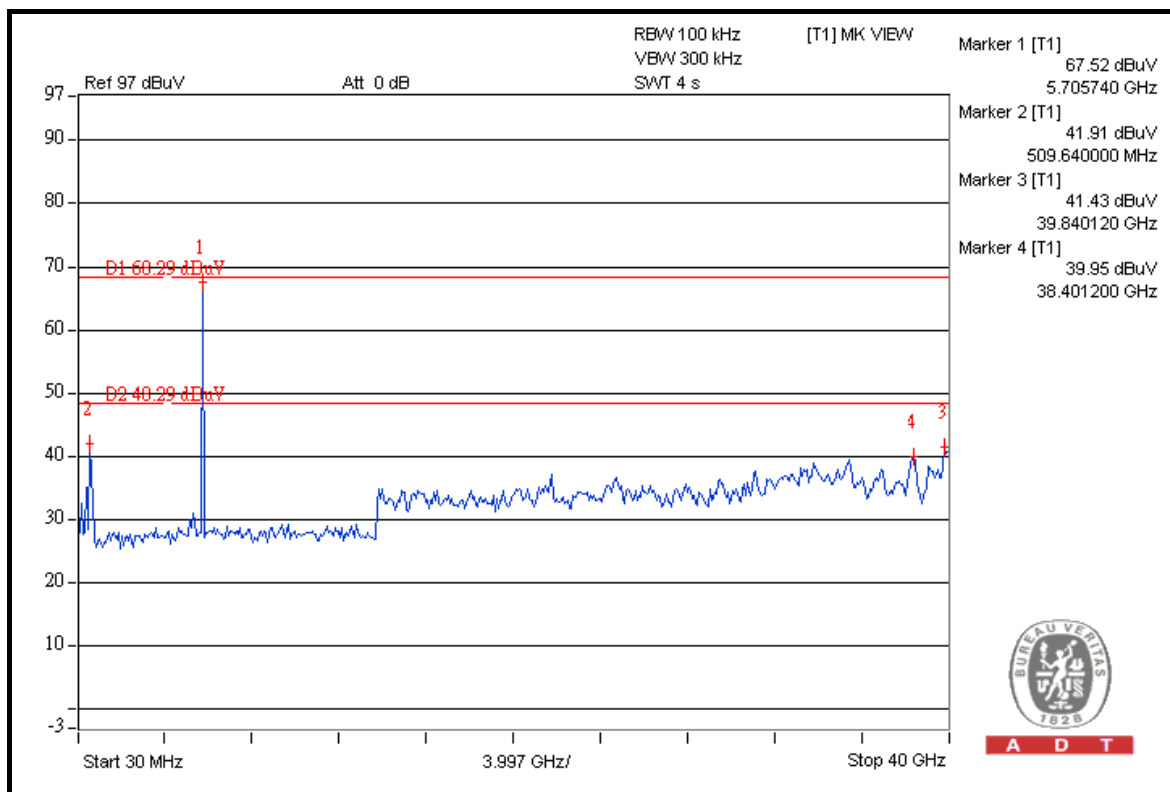
A D T

## 802.11a OFDM MODULATION

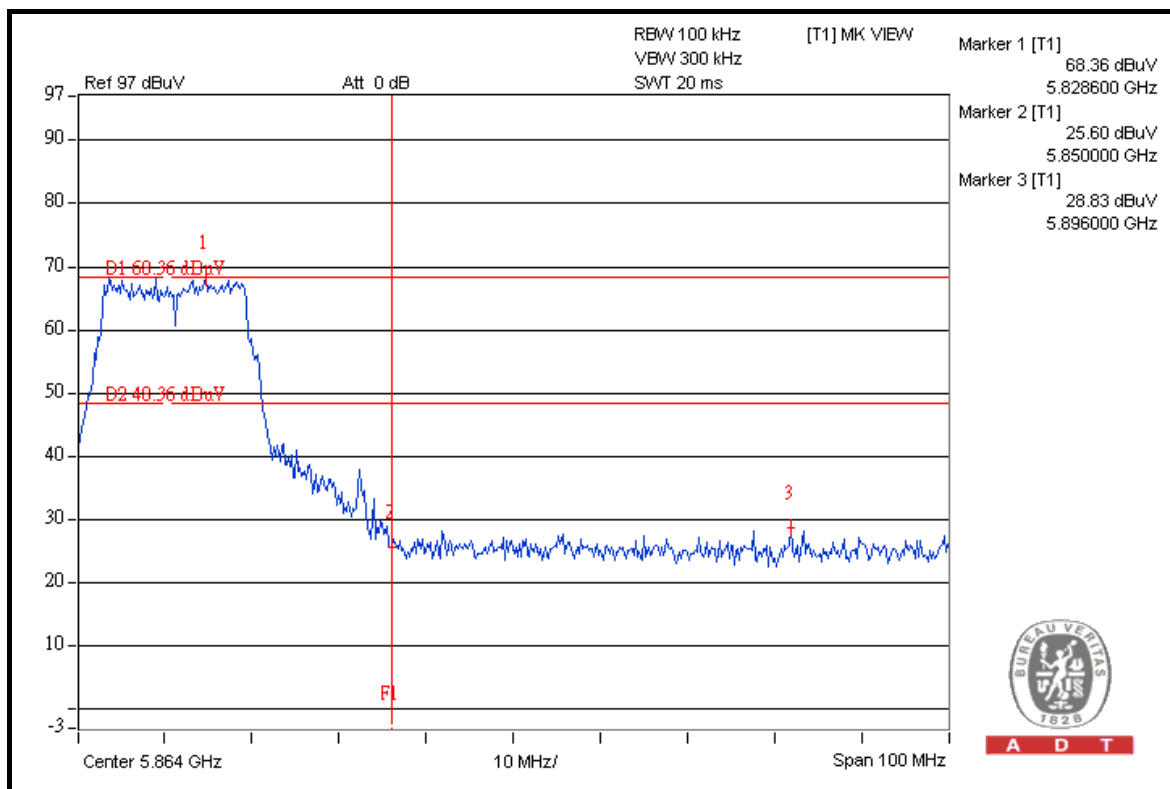




A D T



A D T



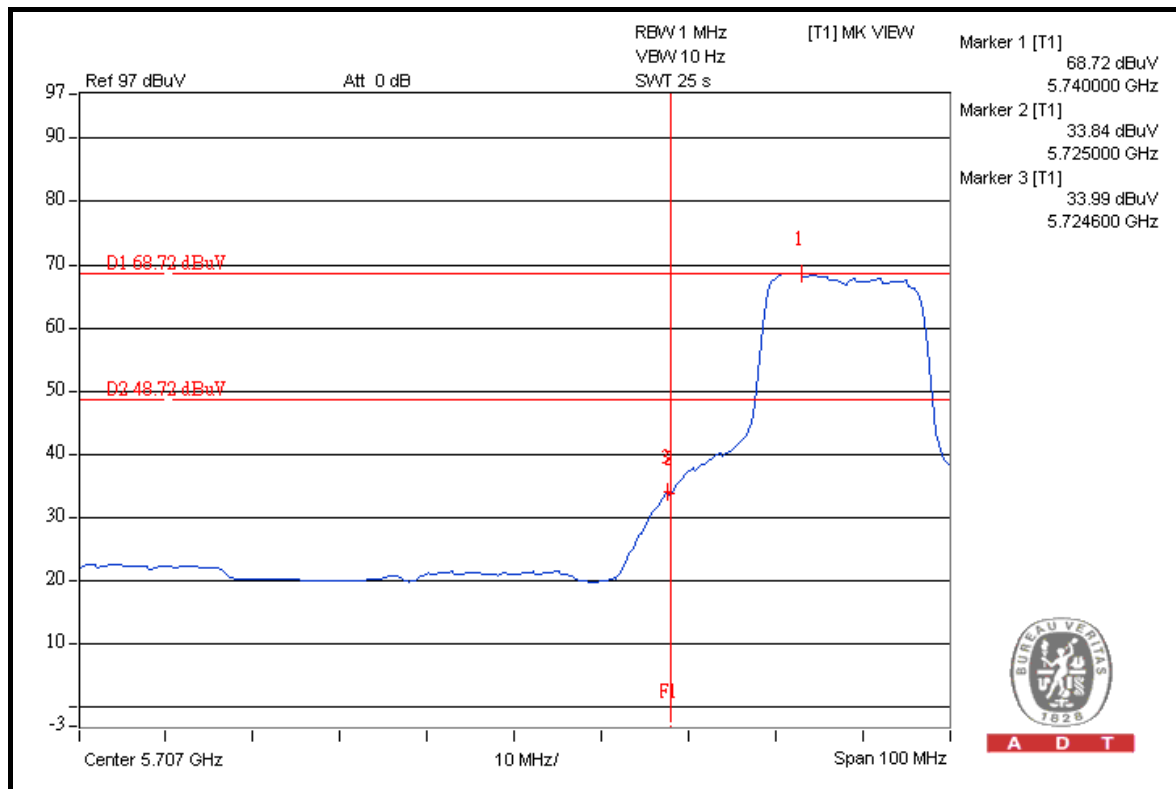
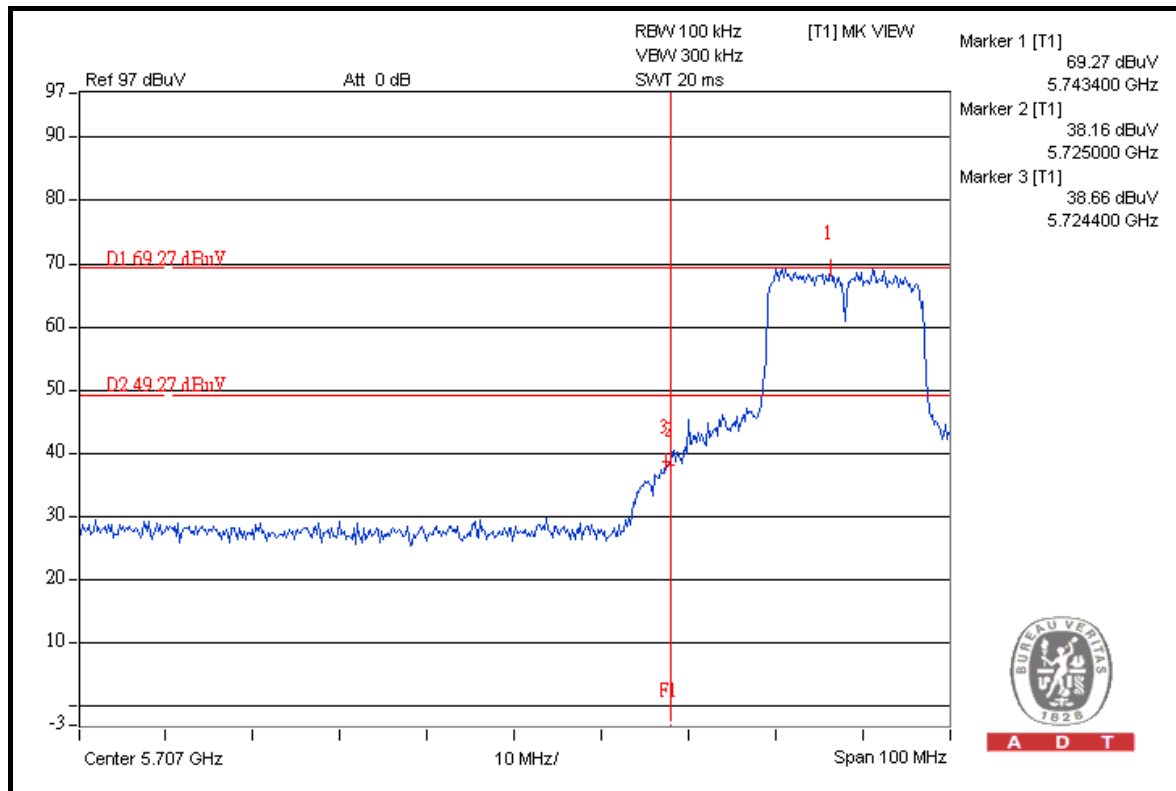
A D T





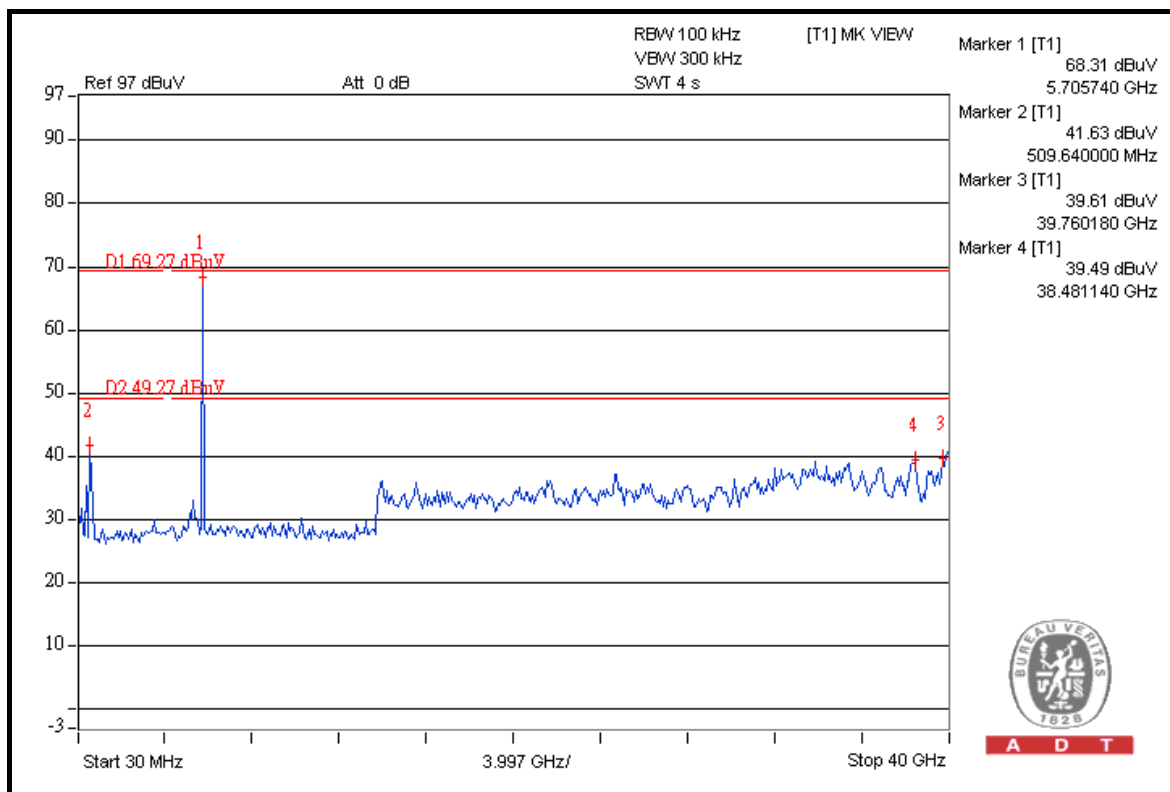
A D T

## DRAFT 802.11n (20MHz) OFDM MODULATION

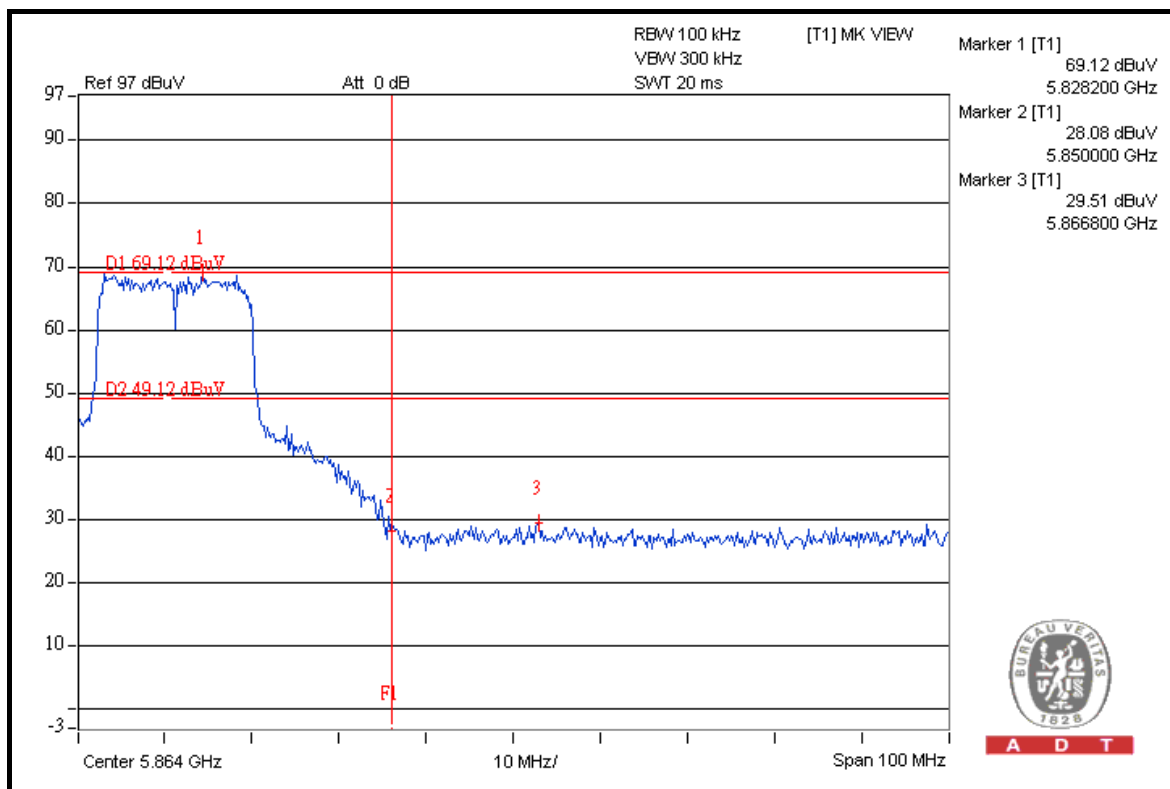




A D T



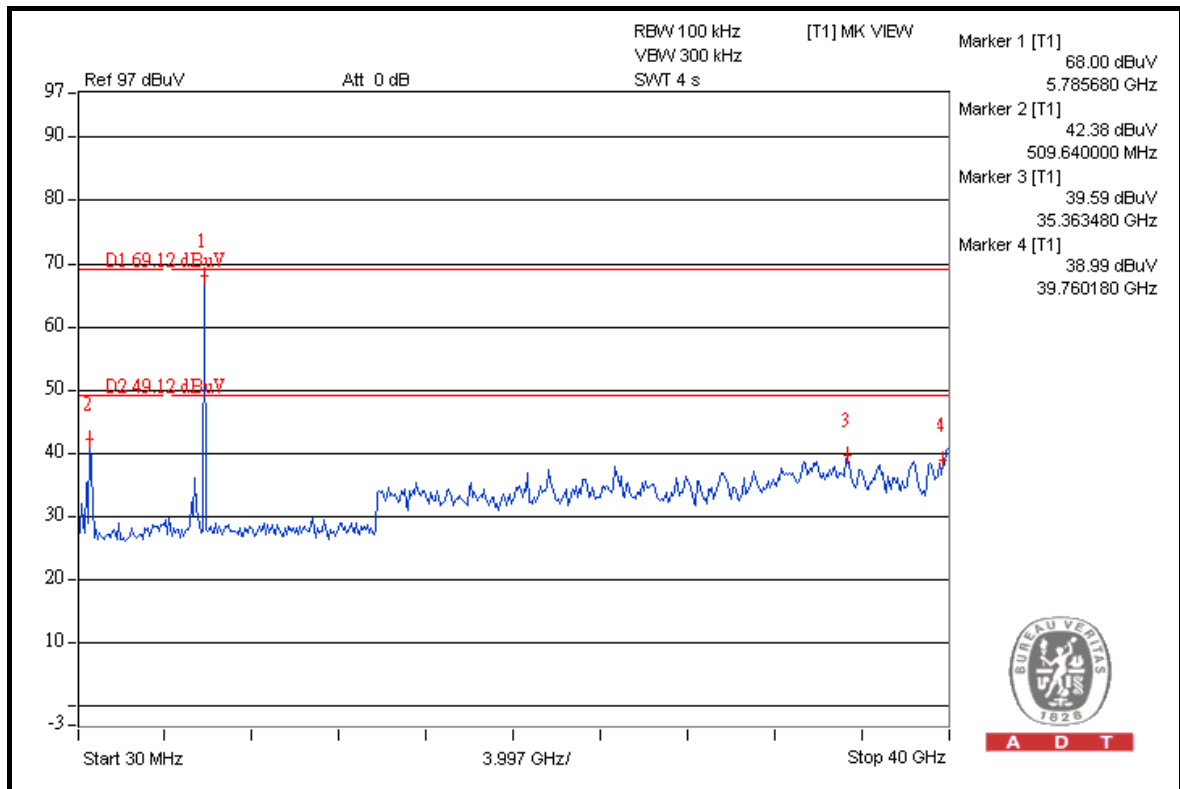
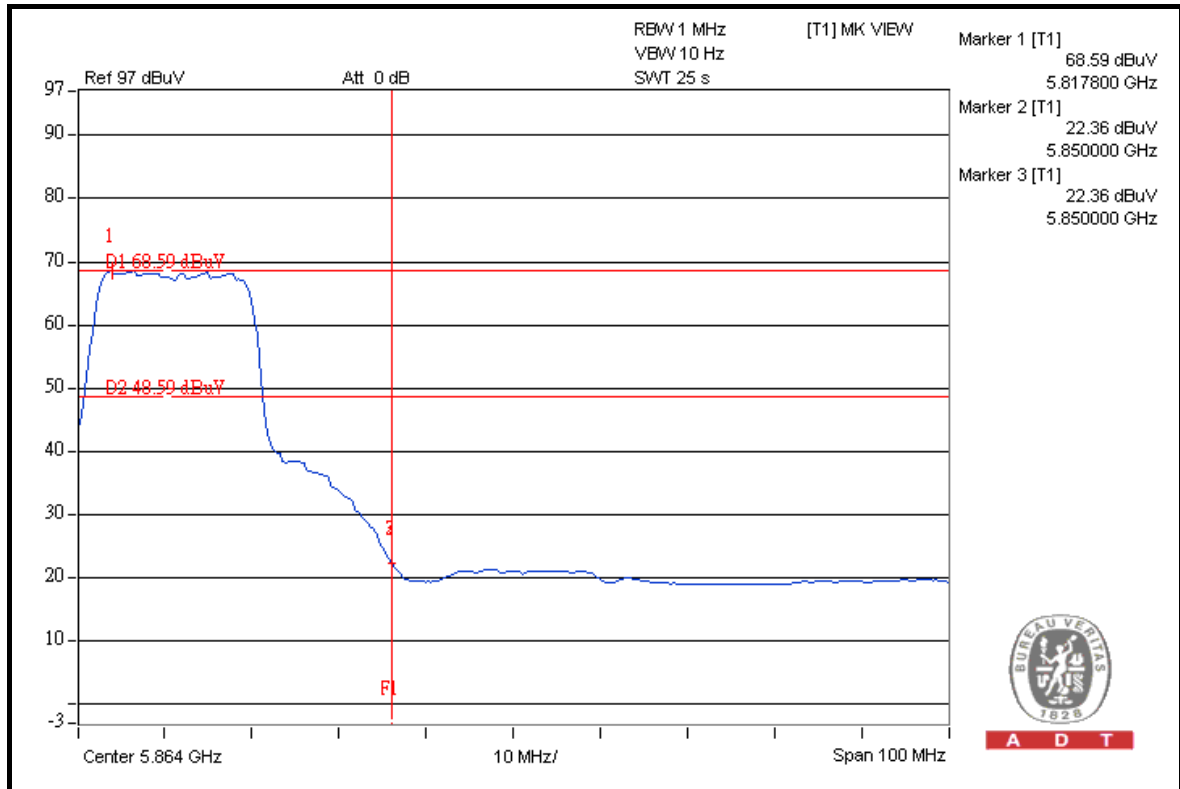
A D T



A D T

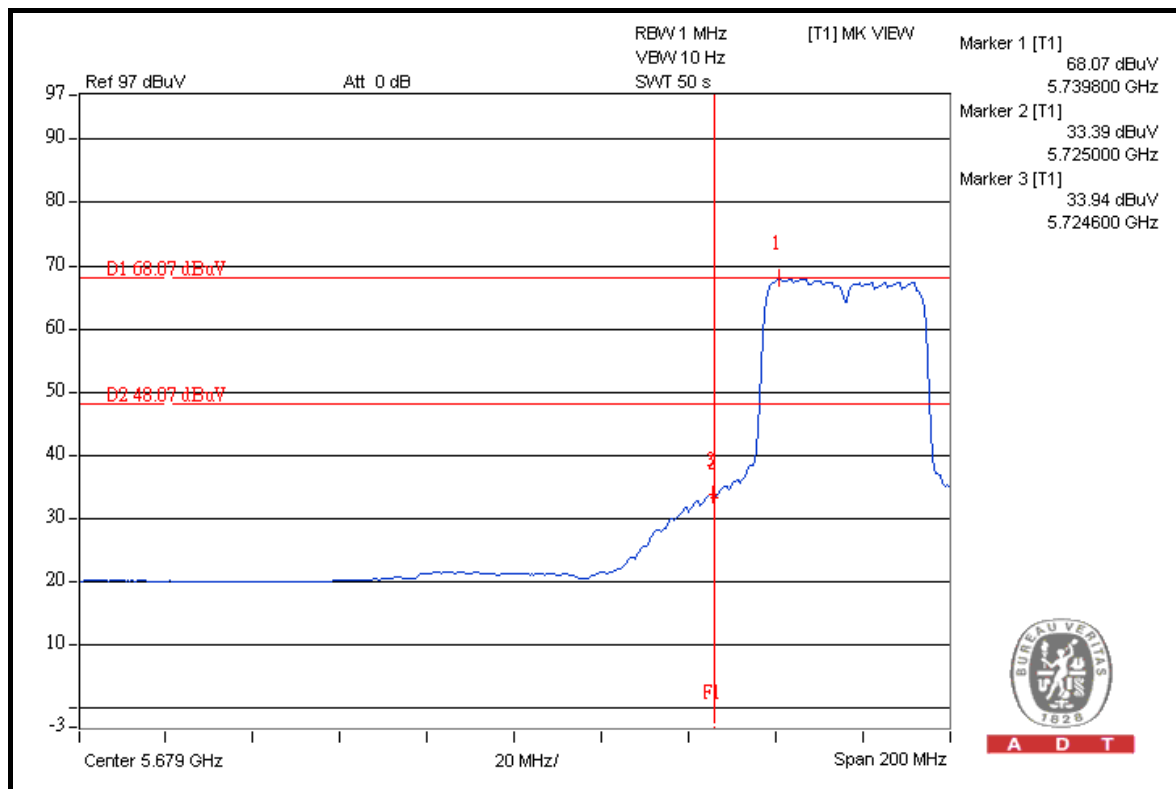
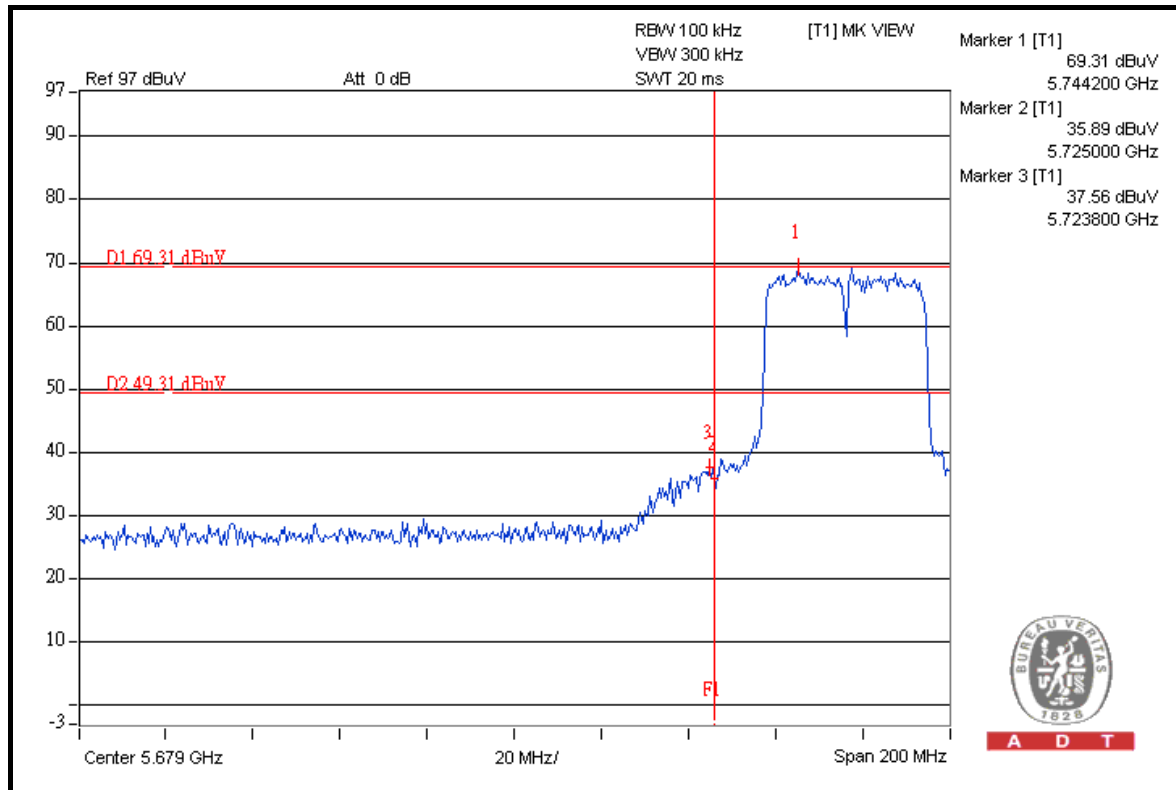


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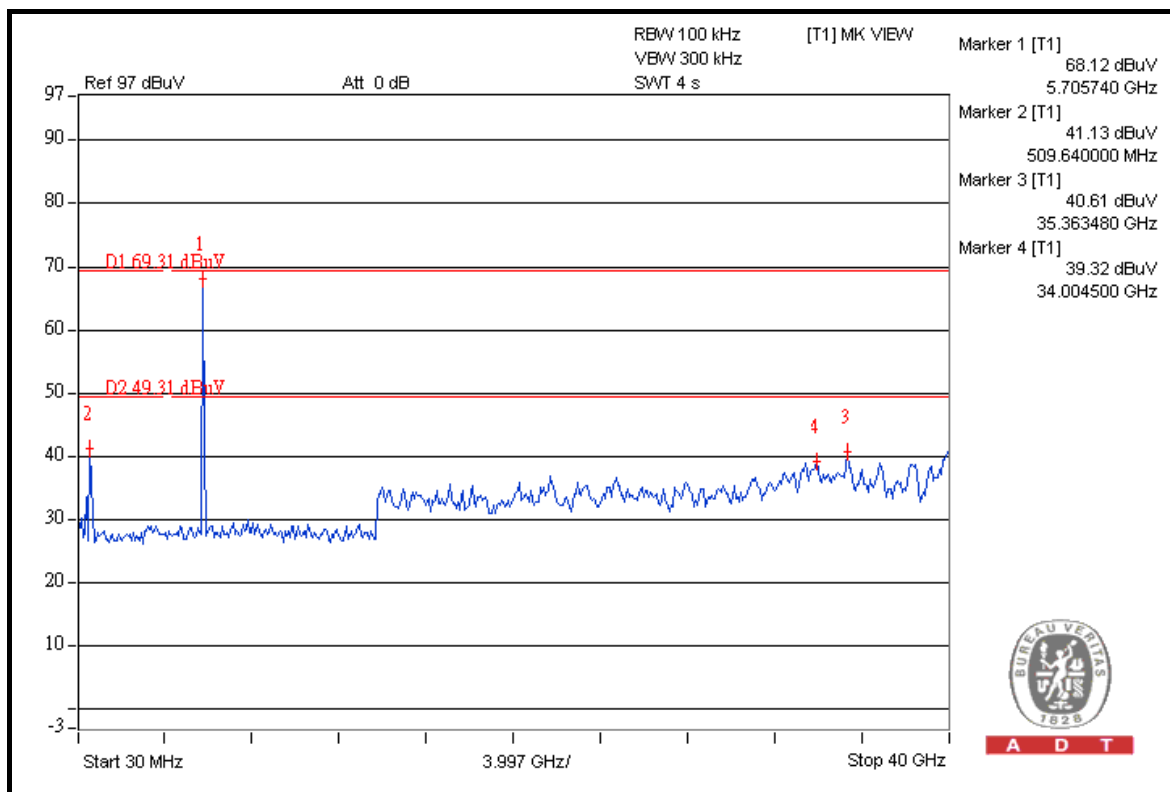


## DRAFT 802.11n (40MHz) OFDM MODULATION

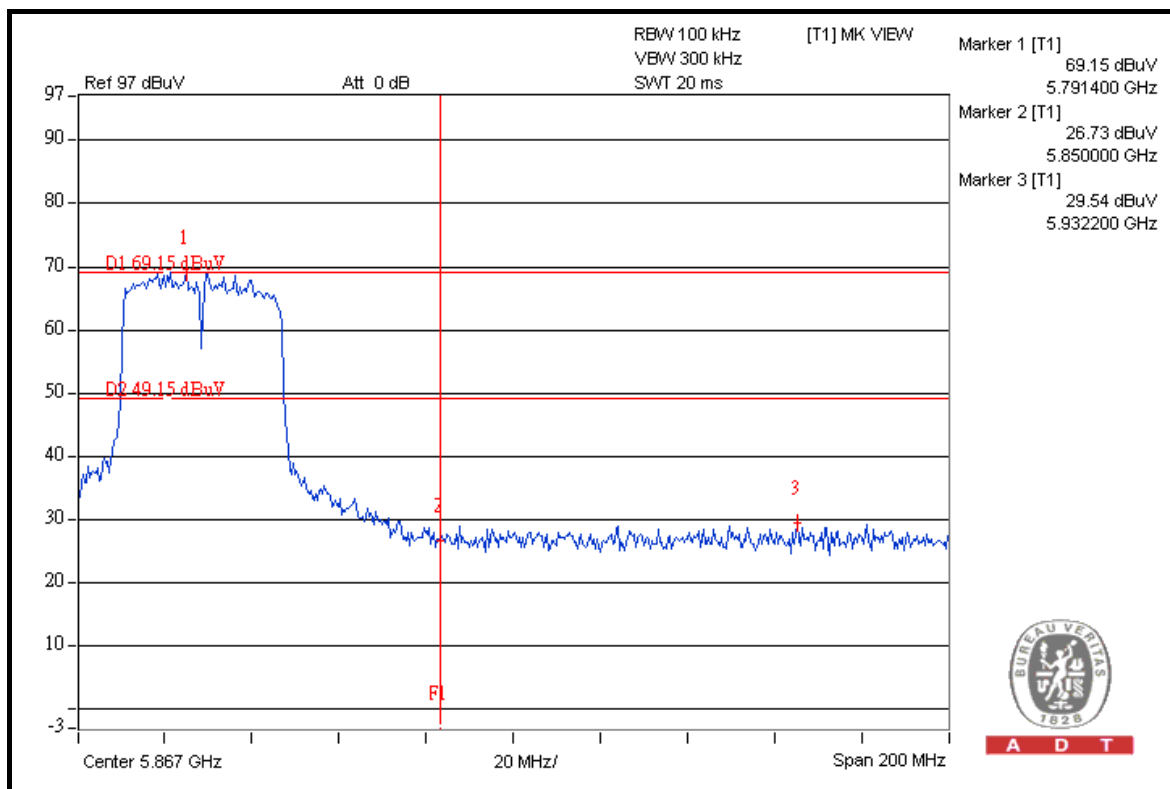




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## **5.7 ANTENNA REQUIREMENT**

### **5.7.1 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 15.247(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.

### **5.7.2 ANTENNA CONNECTED CONSTRUCTION**

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



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## 6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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## 7. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved 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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## **8. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

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

**---END---**