FCC TEST REPORT (15.247)

REPORT NO.: RF980618L05

MODEL NO.: WNDR3700

RECEIVED: Jun. 18, 2009

TESTED: Jul. 16 ~ Jul. 28, 2009

ISSUED: Jul. 30, 2009

APPLICANT: NETGEAR, INC.

ADDRESS: 350 East Plumeria Drive San Jose, CA 95134

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

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

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

TABLE OF CONTENTS

1. CERTIFICATION

PRODUCT: RangeMax Dual Band Wireless-N Gigabit Router
MODEL: WNDR3700
BRAND: NETGEAR
APPLICANT: NETGEAR, INC.
TEST SAMPLE: ENGINEERING SAMPLE
TESTED: Jul. 16 ~ Jul. 28, 2009
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.4-2003

The above equipment (Model: WNDR3700) 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 / Specialist	**, DATE :**	Jul. 30, 2009
TECHNICAL ACCEPTANCE Responsible for RF	: Long Chen / Senior Engineer	**, DATE :**	Jul. 30, 2009
APPROVED BY	: Gary Chang / Assistant Manager	**, DATE :**	Jul. 30, 2009

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -2.61dB at 0.150MHz
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 -1.03dB at 2386.00MHz
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	2.44dB
Radiated emissions (10m)	30MHz ~ 200MHz	3.69 dB
	200MHz ~1000MHz	3.84 dB
Radiated emissions (3m)	1GHz ~ 18GHz	2.26dB
	18GHz ~ 40GHz	1.94dB

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	RangeMax Dual Band Wireless-N Gigabit Router
MODEL NO.	WNDR3700
FCC ID	PY308300092
POWER SUPPLY	12Vdc from AC adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b:11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps Draft 802.11n: up to 300.0Mbps
OPERATING FREQUENCY	2.4GHz: 2412 ~ 2462MHz 5.0GHz: 5745 ~ 5825MHz
NUMBER OF CHANNEL	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)
OUTPUT POWER	453.974mW for 2412 ~ 2462MHz 187.163mW for 5745 ~ 5825MHz
ANTENNA TYPE	Refer to Note as below
I/O PORTS	1.5m shielded RJ45 cable without core
DATA CABLE	USB, RJ45
ACCESSORY DEVICES	Adapter

NOTE:

1. The EUT is a RangeMax Dual Band Wireless-N Gigabit 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)	RF980618L05
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)	RF980618L05-1

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

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

3. The EUT were powered by the following adapter:

ADAPTER 1	
BRAND:	NETGEAR
MODEL:	P030WF120B
P/N:	332-10100-01
INPUT:	100-240Vac, 1.0A, 50/60Hz
OUTPUT:	12Vdc, 2.5A
POWER LINE:	DC 1.8m non-shielded cable without core

ADAPTER 2	
BRAND:	NETGEAR
MODEL:	MU30-5120250-A1
P/N:	332-10100-01
INPUT:	100-240Vac, 0.8A, 50/60Hz
OUTPUT:	12Vdc, 2.5A
POWER LINE:	DC 1.8m non-shielded cable without core

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

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

5. The following antennas are used in this EUT.

Antenna Item	Type	Gain (dBi)
2.4GHz		
1	Printed	2.8
2	Printed	1.5
3	Printed	1.2
4	Printed	2.2
5.0GHz		
5	Printed	3.7
6	Printed	3.8
7	Printed	3.8
8	Printed	3.9

6. Antenna pair for transmission is defined by client

2.4GHz		
Antenna Pair	**Antenna item**	**Antenna item**
1	4	2
2	**4**	**1**
3	3	2
4	3	1
5.0GHz		
Antenna Pair	**Antenna item**	**Antenna item**
5	6	5
6	6	7
7	8	5
8	**8**	**7**

**After pretesting of radiated power and emission, Antenna pair 2 is worst case of 2.4GHz and Antenna pair 8 is worst case of 5GHz.

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):

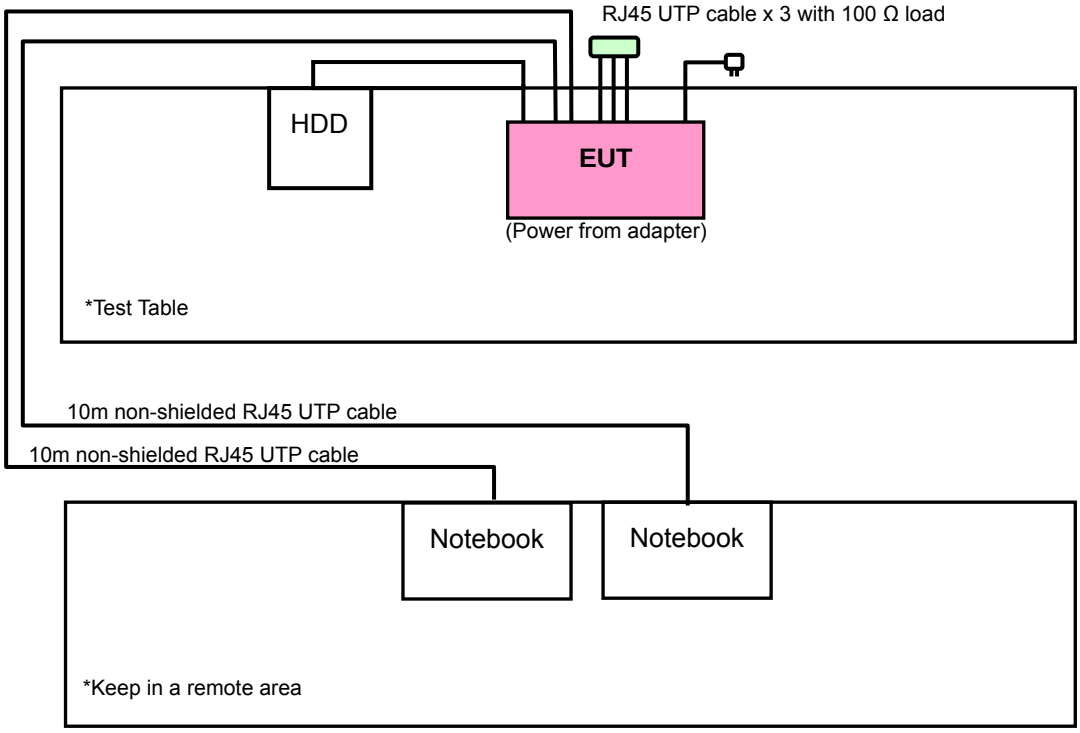
5 channels are provided for 802.11a, draft 802.11n (20MHz):

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≥1G	RE<1G	PLC	APCM	
A	-	√	√	-	Power from AC Adapter 1
B	√	√	√	√	Power from AC Adapter 2

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement
NOTE: "-"means no effect.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

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

RADIATED EMISSION TEST (BELOW 1GHz):

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
A	802.11b	1 to 11	6	DSSS	DBPSK	1.0	X
B	802.11b	1 to 11	6	DSSS	DBPSK	1.0	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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	6	DSSS	DBPSK	1.0
B	802.11b	1 to 11	6	DSSS	DBPSK	1.0

BANDEDGE MEASUREMENT:

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

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

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

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

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

FOR 5.745 ~ 5.825GHz:

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

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement
NOTE: "-"means no effect.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

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

RADIATED EMISSION TEST (BELOW 1GHz):

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
A	Draft 802.11n (20MHz)	149 to 165	149	OFDM	BPSK	7.2	Z
B	Draft 802.11n (20MHz)	149 to 165	149	OFDM	BPSK	7.2	Z

POWER LINE CONDUCTED EMISSION TEST:

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	Draft 802.11n (20MHz)	149 to 165	149	OFDM	BPSK	7.2
B	Draft 802.11n (20MHz)	149 to 165	149	OFDM	BPSK	7.2

BANDEDGE MEASUREMENT:

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

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

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

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

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

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart 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	EXTERNAL HARD DISK	DELL	RD1000	HK-0XM763-72953-77P-000F	NA
2	NOTEBOOK	DELL	PP05L	12130898320	E2K24CLNS
3	NOTEBOOK	DELL	PP05L	25191592336	E2K24CLNS

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	2 m shielded cable, terminated with USB connector, with core.
2	10m non-shielded RJ45 UTP cable
3	10m non-shielded RJ45 UTP cable

NOTE: 1. All power cords of the above support units are non shielded (1.8m).
2. Item 2 ~ 3 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

Above 1GHz Test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Dec. 29, 2008	Dec. 28, 2009
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Dec. 08, 2008	Dec. 07, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 29, 2009	Apr. 28, 2010
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-408	Dec. 29, 2008	Dec. 28, 2009
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 06, 2009	Jan. 05, 2010
Preamplifier Agilent	8449B	3008A01960	Nov. 03, 2008	Nov. 02, 2009
Preamplifier Agilent	8447D	2944A10631	Nov. 03, 2008	Nov. 02, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274041/4	Aug. 21, 2008	Aug. 20, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283397/4	Aug. 21, 2008	Aug. 20, 2009
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT.	TT100.	TT93021704	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	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 4.

3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 988962.

5. The IC Site Registration No. is IC7450F-4.

Below 1GHz Test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100186	Dec. 05, 2008	Dec. 04, 2009
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	Sep. 22, 2008	Sep. 21, 2009
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100025	Oct. 22, 2008	Oct. 21, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-148	Apr. 28, 2009	Apr. 27, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-149	Apr. 28, 2009	Apr. 27, 2010
Preamplifier Agilent	8447D	2944A10637	Dec. 04, 2008	Dec. 03, 2009
Preamplifier Agilent	8447D	2944A10636	Dec. 04, 2008	Dec. 03, 2009
RF signal cable Woken	8D-FB	Cable-Hych1-01	Oct. 28, 2008	Oct. 27, 2009
RF signal cable Woken	8D-FB	Cable-Hych1-02	Oct. 28, 2008	Oct. 27, 2009
Software ADT	ADT_Radiated_ V 7.7.03.6	NA	NA	NA
Antenna Tower(V)	MFA-440	9707	NA	NA
Antenna Tower(H)	MFA-440	970705	NA	NA
Turn Table	DS430	50303	NA	NA
Controller	MF7802	074	NA	NA
Controller	MF7802	08093	NA	NA
RF signal cable EAST COST Microwave	HP 160S-29	NA	Feb. 17, 2009	Feb. 16, 2010

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

2. The test was performed in HwaYa Chamber 1.
3. The FCC Site Registration No. is 477732.
4. The IC Site Registration No. is IC 7450F-1.
5. The VCCI Site Registration No. is R-1893.

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 & 10 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.

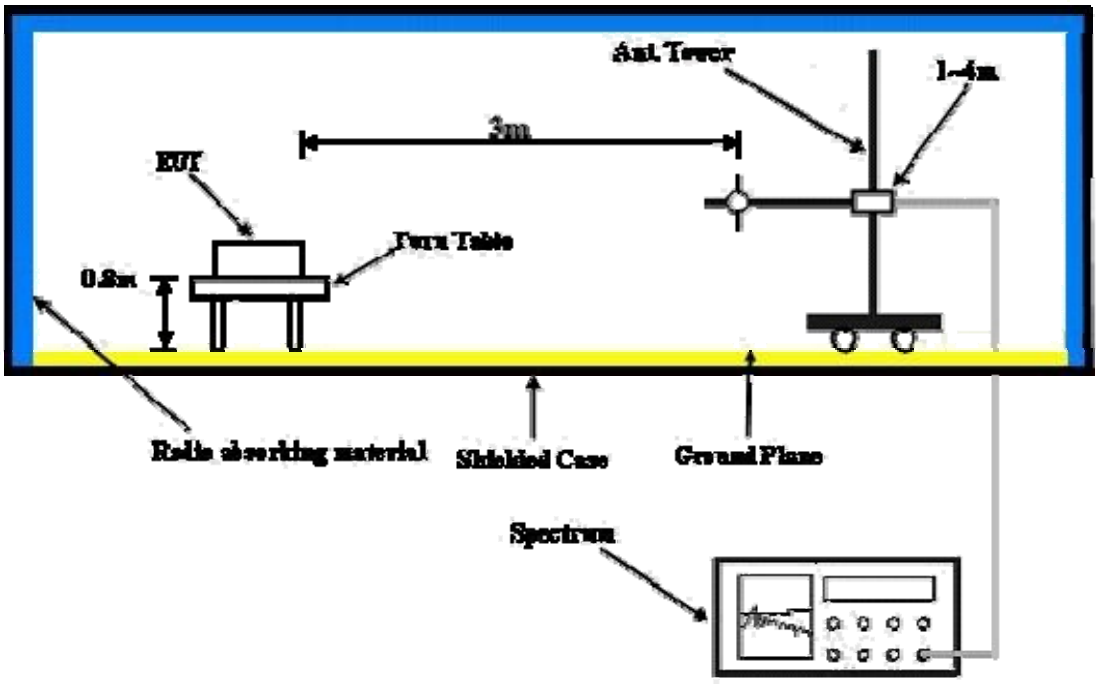
NOTE:

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

a. Placed the EUT on the testing table.
b. Prepared notebook system outside of testing area to act as a communication partners.
c. 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.
d. The communication partner sent data to EUT by command "PING".

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	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2386.00	62.59 PK	74.00	-11.41	1.37 H	242	30.32	32.27
2	**2386.00**	**52.97 AV**	**54.00**	**-1.03**	**1.37 H**	**242**	**20.70**	**32.27**
3	*2412.00	114.78 PK			1.08 H	228	82.40	32.38
4	*2412.00	110.47 AV			1.08 H	228	78.09	32.38
5	4824.00	50.89 PK	74.00	-23.11	1.46 H	170	12.32	38.56
6	4824.00	45.11 AV	54.00	-8.89	1.46 H	170	6.54	38.56
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	2386.00	60.78 PK	74.00	-13.22	1.01 V	241	28.51	32.27
2	2386.00	50.14 AV	54.00	-3.86	1.01 V	241	17.87	32.27
3	*2412.00	110.67 PK			1.00 V	245	78.29	32.38
4	*2412.00	106.45 AV			1.00 V	245	74.07	32.38
5	4824.00	53.15 PK	74.00	-20.85	1.03 V	25	14.59	38.56
6	4824.00	49.54 AV	54.00	-4.46	1.03 V	25	10.98	38.56

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.74 PK	74.00	-14.26	2.04 H	255	27.45	32.29
2	2390.00	47.75 AV	54.00	-6.25	2.04 H	255	15.46	32.29
3	*2437.00	116.22 PK			2.01 H	252	83.74	32.48
4	*2437.00	111.51 AV			2.01 H	252	79.03	32.48
5	2483.50	60.05 PK	74.00	-13.95	1.95 H	233	27.39	32.66
6	2483.50	48.08 AV	54.00	-5.92	1.95 H	233	15.42	32.66
7	4874.00	52.45 PK	74.00	-21.55	1.60 H	266	13.77	38.67
8	4874.00	46.48 AV	54.00	-7.52	1.60 H	266	7.80	38.67
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	55.42 PK	74.00	-18.58	1.15 V	213	23.13	32.29
2	2390.00	42.97 AV	54.00	-11.03	1.15 V	213	10.68	32.29
3	*2437.00	112.11 PK			1.12 V	241	79.63	32.48
4	*2437.00	107.43 AV			1.12 V	241	74.95	32.48
5	2483.50	56.12 PK	74.00	-17.88	1.14 V	159	23.46	32.66
6	2483.50	43.84 AV	54.00	-10.16	1.14 V	159	11.18	32.66
7	4874.00	54.58 PK	74.00	-19.42	1.02 V	14	15.91	38.67
8	4874.00	48.55 AV	54.00	-5.45	1.02 V	14	9.88	38.67

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

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	114.53 PK			2.05 H	346	81.95	32.58
2	*2462.00	110.06 AV			2.05 H	346	77.48	32.58
3	2483.50	61.67 PK	74.00	-12.33	2.01 H	255	29.01	32.66
4	2483.50	52.83 AV	54.00	-1.17	2.01 H	255	20.17	32.66
5	4924.00	50.14 PK	74.00	-23.86	2.03 H	340	11.35	38.79
6	4924.00	37.71 AV	54.00	-16.29	2.03 H	340	-1.08	38.79
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	110.42 PK			1.08 V	246	77.84	32.58
2	*2462.00	106.01 AV			1.08 V	246	73.43	32.58
3	2483.50	57.45 PK	74.00	-16.55	1.12 V	250	24.79	32.66
4	2483.50	47.42 AV	54.00	-6.58	1.12 V	250	14.76	32.66
5	4924.00	52.75 PK	74.00	-21.25	1.05 V	188	13.96	38.79
6	4924.00	39.94 AV	54.00	-14.06	1.05 V	188	1.15	38.79

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.

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	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.87 PK	74.00	-2.13	2.09 H	232	39.58	32.29
2	2390.00	51.91 AV	54.00	-2.09	2.09 H	232	19.62	32.29
3	*2412.00	112.90 PK			2.05 H	234	80.52	32.38
4	*2412.00	100.60 AV			2.05 H	234	68.22	32.38
5	4824.00	48.94 PK	74.00	-25.06	1.08 H	72	10.38	38.56
6	4824.00	36.45 AV	54.00	-17.55	1.08 H	72	-2.11	38.56
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.12 PK	74.00	-8.88	1.08 V	122	32.83	32.29
2	2390.00	46.64 AV	54.00	-7.36	1.08 V	122	14.35	32.29
3	*2412.00	107.84 PK			1.05 V	147	75.46	32.38
4	*2412.00	96.57 AV			1.05 V	147	64.19	32.38
5	4824.00	47.12 PK	74.00	-26.88	1.02 V	42	8.56	38.56
6	4824.00	35.11 AV	54.00	-18.89	1.02 V	42	-3.45	38.56

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.04 PK	74.00	-8.96	2.05 H	256	32.75	32.29
2	2390.00	51.79 AV	54.00	-2.21	2.05 H	256	19.50	32.29
3	*2437.00	118.34 PK			1.11 H	221	85.86	32.48
4	*2437.00	106.06 AV			1.11 H	221	73.58	32.48
5	2483.50	67.88 PK	74.00	-6.12	1.94 H	228	35.22	32.66
6	2483.50	51.66 AV	54.00	-2.34	1.94 H	228	19.00	32.66
7	4874.00	51.12 PK	74.00	-22.88	1.02 H	58	12.45	38.67
8	4874.00	39.47 AV	54.00	-14.53	1.02 H	58	0.80	38.67
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	59.42 PK	74.00	-14.58	1.01 V	142	27.13	32.29
2	2390.00	47.51 AV	54.00	-6.49	1.01 V	142	15.22	32.29
3	*2437.00	113.12 PK			1.02 V	211	80.64	32.48
4	*2437.00	101.89 AV			1.02 V	211	69.41	32.48
5	2483.50	62.42 PK	74.00	-11.58	1.09 V	251	29.76	32.66
6	2483.50	47.11 AV	54.00	-6.89	1.09 V	251	14.45	32.66
7	4874.00	50.12 PK	74.00	-23.88	1.00 V	120	11.45	38.67
8	4874.00	37.94 AV	54.00	-16.06	1.00 V	120	-0.73	38.67

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

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	113.74 PK			2.02 H	252	81.16	32.58
2	*2462.00	101.19 AV			2.02 H	252	68.61	32.58
3	2483.50	69.37 PK	74.00	-4.63	1.94 H	232	36.71	32.66
4	2483.50	52.48 AV	54.00	-1.52	1.94 H	232	19.82	32.66
5	4924.00	48.12 PK	74.00	-25.88	1.35 H	262	9.33	38.79
6	4924.00	34.60 AV	54.00	-19.40	1.35 H	262	-4.19	38.79
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	108.42 PK			1.08 V	94	75.84	32.58
2	*2462.00	96.06 AV			1.08 V	94	63.48	32.58
3	2483.50	65.12 PK	74.00	-8.88	1.05 V	115	32.46	32.66
4	2483.50	48.02 AV	54.00	-5.98	1.05 V	115	15.36	32.66
5	4924.00	47.89 PK	74.00	-26.11	1.05 V	122	9.10	38.79
6	4924.00	34.11 AV	54.00	-19.89	1.05 V	122	-4.68	38.79

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.

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	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.95 PK	74.00	-1.05	2.05 H	251	40.66	32.29
2	2390.00	52.59 AV	54.00	-1.41	2.05 H	251	20.30	32.29
3	*2412.00	112.26 PK			2.07 H	251	79.88	32.38
4	*2412.00	100.17 AV			2.07 H	251	67.79	32.38
5	4824.00	47.03 PK	74.00	-26.97	1.54 H	241	8.47	38.56
6	4824.00	33.42 AV	54.00	-20.58	1.54 H	241	-5.14	38.56
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	66.74 PK	74.00	-7.26	1.00 V	45	34.45	32.29
2	2390.00	47.12 AV	54.00	-6.88	1.00 V	45	14.83	32.29
3	*2412.00	106.55 PK			1.05 V	146	74.17	32.38
4	*2412.00	95.59 AV			1.05 V	146	63.21	32.38
5	4824.00	46.14 PK	74.00	-27.86	1.18 V	136	7.58	38.56
6	4824.00	32.28 AV	54.00	-21.72	1.18 V	136	-6.28	38.56

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.56 PK	74.00	-7.44	2.09 H	254	34.27	32.29
2	2390.00	52.17 AV	54.00	-1.83	2.09 H	254	19.88	32.29
3	*2437.00	119.02 PK			2.02 H	347	86.54	32.48
4	*2437.00	106.04 AV			2.02 H	347	73.56	32.48
5	2483.50	70.85 PK	74.00	-3.15	1.95 H	229	38.19	32.66
6	2483.50	51.21 AV	54.00	-2.79	1.95 H	229	18.55	32.66
7	4874.00	54.11 PK	74.00	-19.89	1.55 H	210	15.44	38.67
8	4874.00	40.23 AV	54.00	-13.77	1.55 H	210	1.56	38.67
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	61.12 PK	74.00	-12.88	1.12 V	122	28.83	32.29
2	2390.00	47.02 AV	54.00	-6.98	1.12 V	122	14.73	32.29
3	*2437.00	113.99 PK			1.10 V	44	81.51	32.48
4	*2437.00	102.11 AV			1.10 V	44	69.63	32.48
5	2483.50	64.58 PK	74.00	-9.42	1.09 V	118	31.92	32.66
6	2483.50	47.09 AV	54.00	-6.91	1.09 V	118	14.43	32.66
7	4874.00	53.11 PK	74.00	-20.89	1.29 V	147	14.44	38.67
8	4874.00	39.84 AV	54.00	-14.16	1.29 V	147	1.17	38.67

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

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	112.64 PK			1.95 H	230	80.06	32.58
2	*2462.00	100.54 AV			1.95 H	230	67.96	32.58
3	2483.50	71.69 PK	74.00	-2.31	2.02 H	253	39.03	32.66
4	2483.50	52.94 AV	54.00	-1.06	2.02 H	253	20.28	32.66
5	4924.00	48.21 PK	74.00	-25.79	1.44 H	251	9.42	38.79
6	4924.00	34.45 AV	54.00	-19.55	1.44 H	251	-4.34	38.79
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	107.42 PK			1.08 V	39	74.84	32.58
2	*2462.00	96.31 AV			1.08 V	39	63.73	32.58
3	2483.50	66.11 PK	74.00	-7.89	1.08 V	122	33.45	32.66
4	2483.50	47.35 AV	54.00	-6.65	1.08 V	122	14.69	32.66
5	4924.00	47.18 PK	74.00	-26.82	1.06 V	158	8.39	38.79
6	4924.00	33.54 AV	54.00	-20.46	1.06 V	158	-5.25	38.79

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.

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	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.41 PK	74.00	-1.59	2.04 H	242	40.12	32.29
2	2390.00	52.92 AV	54.00	-1.08	2.04 H	242	20.63	32.29
3	*2422.00	109.50 PK			1.99 H	237	77.08	32.42
4	*2422.00	96.29 AV			1.99 H	237	63.87	32.42
5	4844.00	50.12 PK	74.00	-23.88	1.42 H	136	11.51	38.61
6	4844.00	37.84 AV	54.00	-16.16	1.42 H	136	-0.77	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	2390.00	64.45 PK	74.00	-9.55	1.01 V	142	32.16	32.29
2	2390.00	47.98 AV	54.00	-6.02	1.01 V	142	15.69	32.29
3	*2422.00	104.42 PK			1.03 V	45	72.00	32.42
4	*2422.00	91.11 AV			1.03 V	45	58.69	32.42
5	4844.00	49.24 PK	74.00	-24.76	1.13 V	153	10.63	38.61
6	4844.00	36.68 AV	54.00	-17.32	1.13 V	153	-1.93	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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.23 PK	74.00	-6.77	2.05 H	242	34.94	32.29
2	2390.00	49.39 AV	54.00	-4.61	2.05 H	242	17.10	32.29
3	*2437.00	110.11 PK			2.08 H	268	77.63	32.48
4	*2437.00	98.01 AV			2.08 H	268	65.53	32.48
5	2483.50	69.98 PK	74.00	-4.02	2.04 H	275	37.32	32.66
6	2483.50	50.29 AV	54.00	-3.71	2.04 H	275	17.63	32.66
7	4874.00	52.45 PK	74.00	-21.55	1.39 H	188	13.78	38.67
8	4874.00	39.94 AV	54.00	-14.06	1.39 H	188	1.27	38.67
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	62.28 PK	74.00	-11.72	1.06 V	67	29.99	32.29
2	2390.00	44.94 AV	54.00	-9.06	1.06 V	67	12.65	32.29
3	*2437.00	105.22 PK			1.12 V	94	72.74	32.48
4	*2437.00	93.10 AV			1.12 V	94	60.62	32.48
5	2483.50	65.22 PK	74.00	-8.78	1.06 V	127	32.56	32.66
6	2483.50	45.01 AV	54.00	-8.99	1.06 V	127	12.35	32.66
7	4874.00	51.23 PK	74.00	-22.77	1.05 V	221	12.56	38.67
8	4874.00	38.67 AV	54.00	-15.33	1.05 V	221	0.00	38.67

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

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	107.99 PK			1.98 H	241	75.45	32.54
2	*2452.00	94.92 AV			1.98 H	241	62.38	32.54
3	2483.50	72.83 PK	74.00	-1.17	2.02 H	276	40.17	32.66
4	2483.50	52.21 AV	54.00	-1.79	2.02 H	276	19.55	32.66
5	4904.00	47.12 PK	74.00	-26.88	1.36 H	210	8.38	38.74
6	4904.00	33.02 AV	54.00	-20.98	1.36 H	210	-5.72	38.74
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	102.79 PK			1.13 V	157	70.25	32.54
2	*2452.00	89.84 AV			1.13 V	157	57.30	32.54
3	2483.50	65.75 PK	74.00	-8.25	1.19 V	251	33.09	32.66
4	2483.50	46.68 AV	54.00	-7.32	1.19 V	251	14.02	32.66
5	4904.00	45.84 PK	74.00	-28.16	1.22 V	100	7.10	38.74
6	4904.00	31.96 AV	54.00	-22.04	1.22 V	100	-6.78	38.74

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.

BELOW 1GHz WORST-CASE DATA：802.11b DSSS 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	23deg. C, 69%RH 999 hPa	TEST MODE	A
TESTED BY	Peter Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	250.00	42.02 QP	46.00	-3.98	1.00 H	280	29.04	12.98
2	374.69	41.25 QP	46.00	-4.75	1.00 H	26	24.48	16.77
3	467.52	42.03 QP	46.00	-3.97	1.50 H	51	23.18	18.85
4	500.03	42.45 QP	46.00	-3.55	1.00 H	270	22.84	19.61
5	533.33	42.00 QP	46.00	-4.00	1.50 H	84	21.56	20.44
6	600.01	40.96 QP	46.00	-5.04	1.50 H	57	18.90	22.06
7	624.53	42.42 QP	46.00	-3.58	1.50 H	226	20.05	22.37
8	666.69	42.85 QP	46.00	-3.15	1.00 H	15	19.93	22.92
9	750.03	42.50 QP	46.00	-3.50	1.00 H	220	18.24	24.26
10	799.89	41.02 QP	46.00	-4.98	1.00 H	316	15.99	25.03
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	61.10	32.79 QP	40.00	-7.21	1.00 V	39	20.07	12.72
2	374.96	41.32 QP	46.00	-4.68	1.00 V	218	24.54	16.78
3	500.01	42.67 QP	46.00	-3.33	1.00 V	113	23.06	19.61
4	533.36	40.12 QP	46.00	-5.88	1.50 V	311	19.68	20.44
5	624.38	40.36 QP	46.00	-5.64	1.50 V	176	18.00	22.36
6	733.33	41.69 QP	46.00	-4.31	1.00 V	269	17.72	23.97
7	875.51	40.27 QP	46.00	-5.73	1.00 V	246	14.23	26.04

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 999 hPa	TEST MODE	B
TESTED BY	Peter Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	250.01	42.40 QP	46.00	-3.60	1.00 H	291	29.42	12.98
2	333.25	41.51 QP	46.00	-4.49	1.00 H	160	25.94	15.57
3	374.07	41.87 QP	46.00	-4.13	1.00 H	2	25.12	16.75
4	467.37	41.87 QP	46.00	-4.13	1.00 H	15	23.02	18.84
5	500.00	42.69 QP	46.00	-3.31	1.50 H	237	23.08	19.61
6	533.34	42.11 QP	46.00	-3.89	1.50 H	36	21.67	20.44
7	599.99	39.94 QP	46.00	-6.06	2.00 H	16	17.88	22.06
8	624.83	42.95 QP	46.00	-3.05	1.50 H	202	20.58	22.37
9	666.66	43.09 QP	46.00	-2.91	1.00 H	352	20.17	22.92
10	733.34	39.79 QP	46.00	-6.21	1.50 H	35	15.82	23.97
11	749.99	42.65 QP	46.00	-3.35	1.00 H	209	18.39	24.26
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	49.23	34.59 QP	40.00	-5.41	1.00 V	206	21.02	13.57
2	64.99	36.41 QP	40.00	-3.59	1.00 V	121	24.20	12.21
3	374.07	41.74 QP	46.00	-4.26	1.50 V	222	24.99	16.75
4	499.99	43.06 QP	46.00	-2.94	1.00 V	103	23.45	19.61
5	624.83	40.97 QP	46.00	-5.03	1.50 V	186	18.60	22.37
6	667.60	40.21 QP	46.00	-5.79	1.50 V	316	17.28	22.94
7	733.33	41.81 QP	46.00	-4.19	1.00 V	264	17.84	23.97

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	100288	Sep. 22, 2008	Sep. 21, 2009
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 31, 2008	Dec. 30, 2009
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Dec. 29, 2008	Dec. 28, 2009
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Dec. 04, 2008	Dec. 03, 2009
Software ADT	ADT_Cond_ V7.3.7	NA	NA	NA

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

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

3. The VCCI Site Registration No. is C-2047.

4.2.3 TEST PROCEDURES

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

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

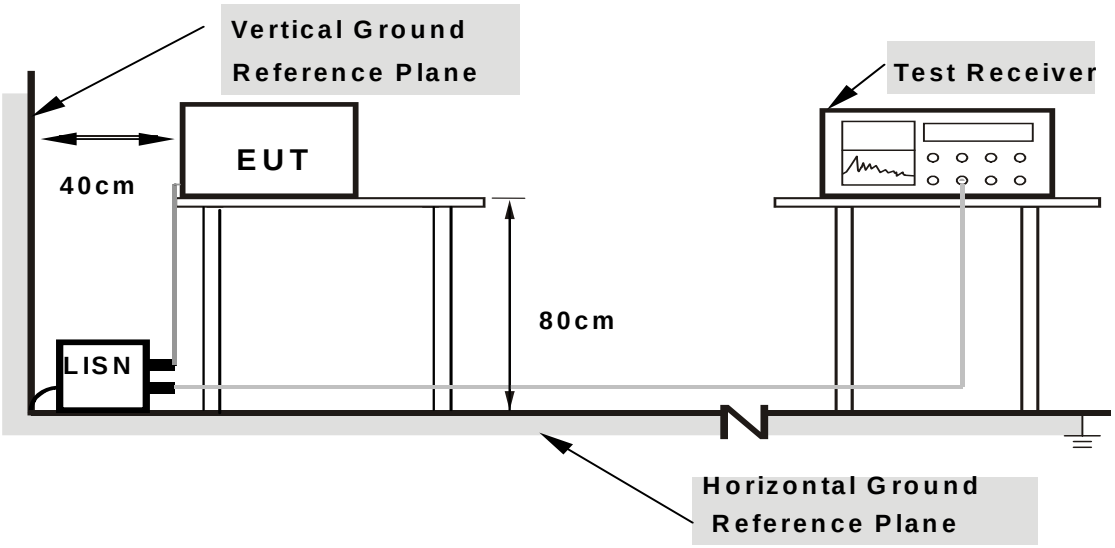
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

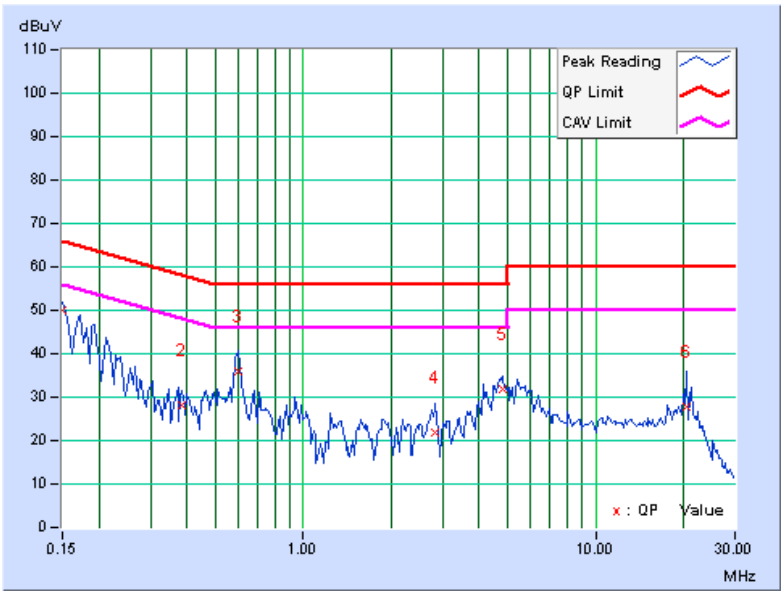
4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA：802.11b DSSS MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 1
MODULATION TYPE	DBPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	1.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1021hPa	TEST MODE	A
TESTED BY	Match Tsui		

	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	0.150	0.13	49.95	-	50.08	-	66.00	56.00	-15.92	-
2	0.384	0.14	28.06	-	28.20	-	58.19	48.19	-29.99	-
3	0.599	0.15	35.80	-	35.95	-	56.00	46.00	-20.05	-
4	2.840	0.23	21.47	-	21.70	-	56.00	46.00	-34.30	-
5	4.785	0.30	31.38	-	31.68	-	56.00	46.00	-24.32	-
6	20.488	0.67	27.19	-	27.86	-	60.00	50.00	-32.14	-

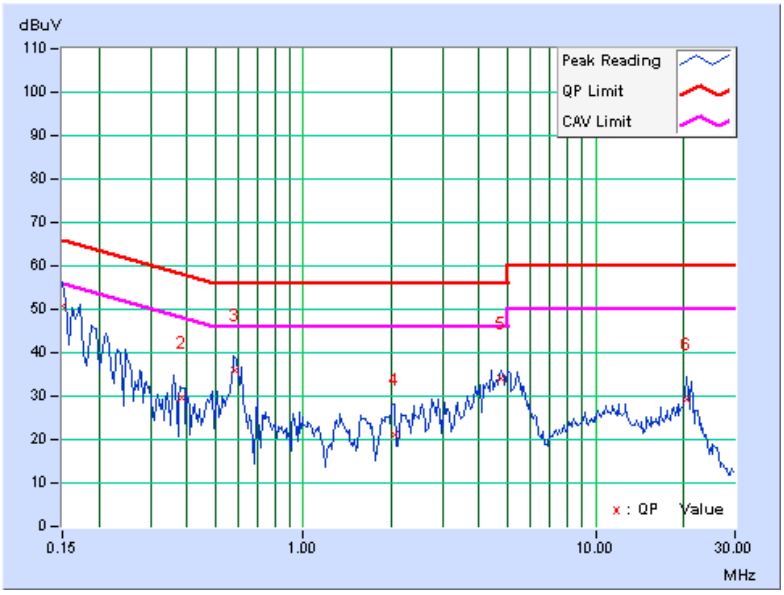
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission 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	DBPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	1.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1021hPa	TEST MODE	A
TESTED BY	Match Tsui		

	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	0.150	0.13	50.55	-	50.68	-	66.00	56.00	-15.32	-
2	0.383	0.15	29.61	-	29.76	-	58.21	48.21	-28.45	-
3	0.585	0.16	35.62	-	35.78	-	56.00	46.00	-20.22	-
4	2.051	0.20	21.09	-	21.29	-	56.00	46.00	-34.71	-
5	4.754	0.33	33.83	-	34.16	-	56.00	46.00	-21.84	-
6	20.449	0.82	28.62	-	29.44	-	60.00	50.00	-30.56	-

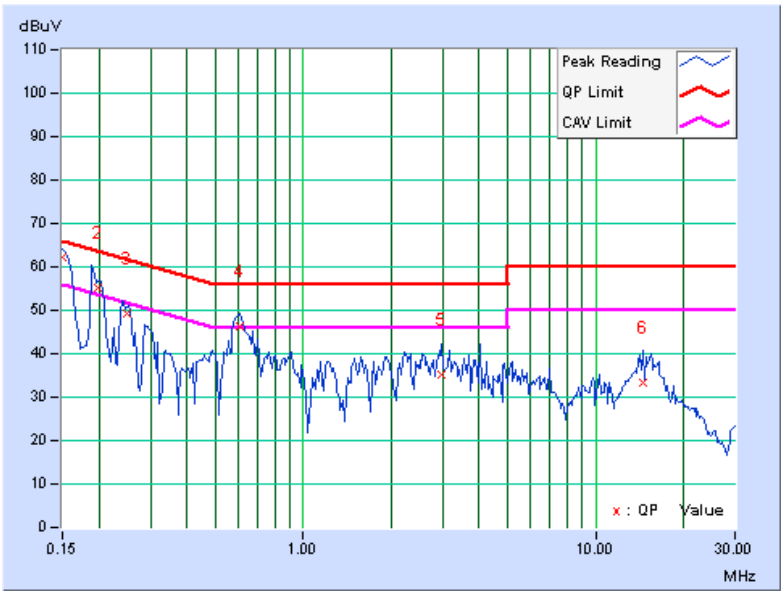
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission 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 1
MODULATION TYPE	DBPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	1.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1021hPa	TEST MODE	B
TESTED BY	Match Tsui		

	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	0.150	0.13	62.09	52.45	62.22	52.58	66.00	56.00	-3.78	-3.42
2	0.198	0.13	55.15	45.56	55.28	45.69	63.70	53.70	-8.42	-8.01
3	0.249	0.13	49.23	-	49.36	-	61.80	51.80	-12.44	-
4	0.603	0.15	46.19	37.68	46.34	37.83	56.00	46.00	-9.66	-8.17
5	2.957	0.23	34.99	-	35.22	-	56.00	46.00	-20.78	-
6	14.629	0.55	32.62	-	33.17	-	60.00	50.00	-26.83	-

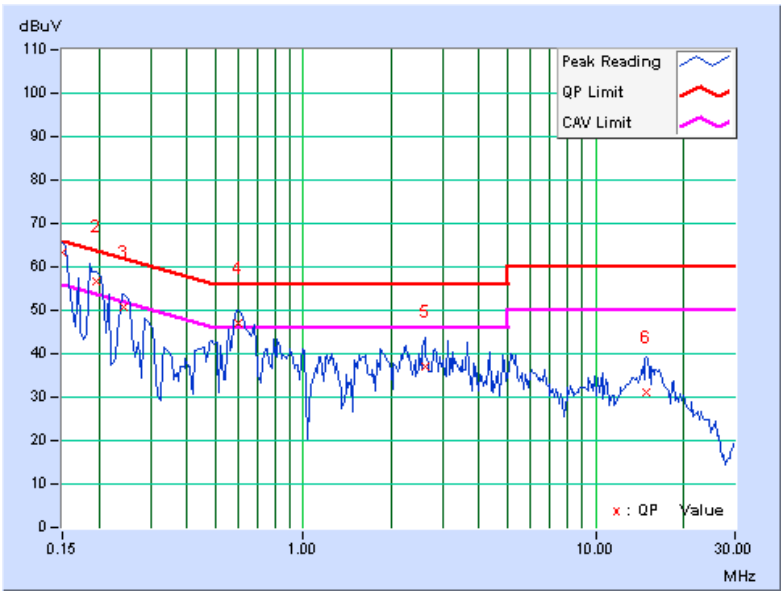
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission 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	DBPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	1.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1021hPa	TEST MODE	B
TESTED BY	Match Tsui		

	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	**0.150**	**0.13**	**63.26**	**51.99**	**63.39**	**52.12**	**66.00**	**56.00**	**-2.61**	**-3.88**
2	0.195	0.13	56.67	46.84	56.80	46.97	63.81	53.81	-7.01	-6.84
3	0.244	0.13	50.62	-	50.75	-	61.97	51.97	-11.21	-
4	0.599	0.16	47.04	36.03	47.20	36.19	56.00	46.00	-8.80	-9.81
5	2.605	0.23	36.87	-	37.10	-	56.00	46.00	-18.90	-
6	14.887	0.66	30.49	-	31.15	-	60.00	50.00	-28.85	-

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



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. 07, 2009	Jul. 06, 2010

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

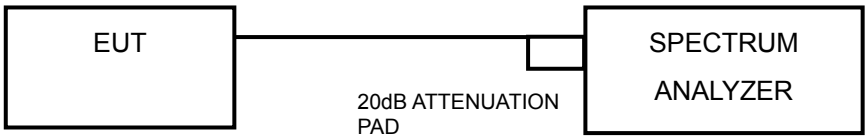
4.3.3 TEST PROCEDURE

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.

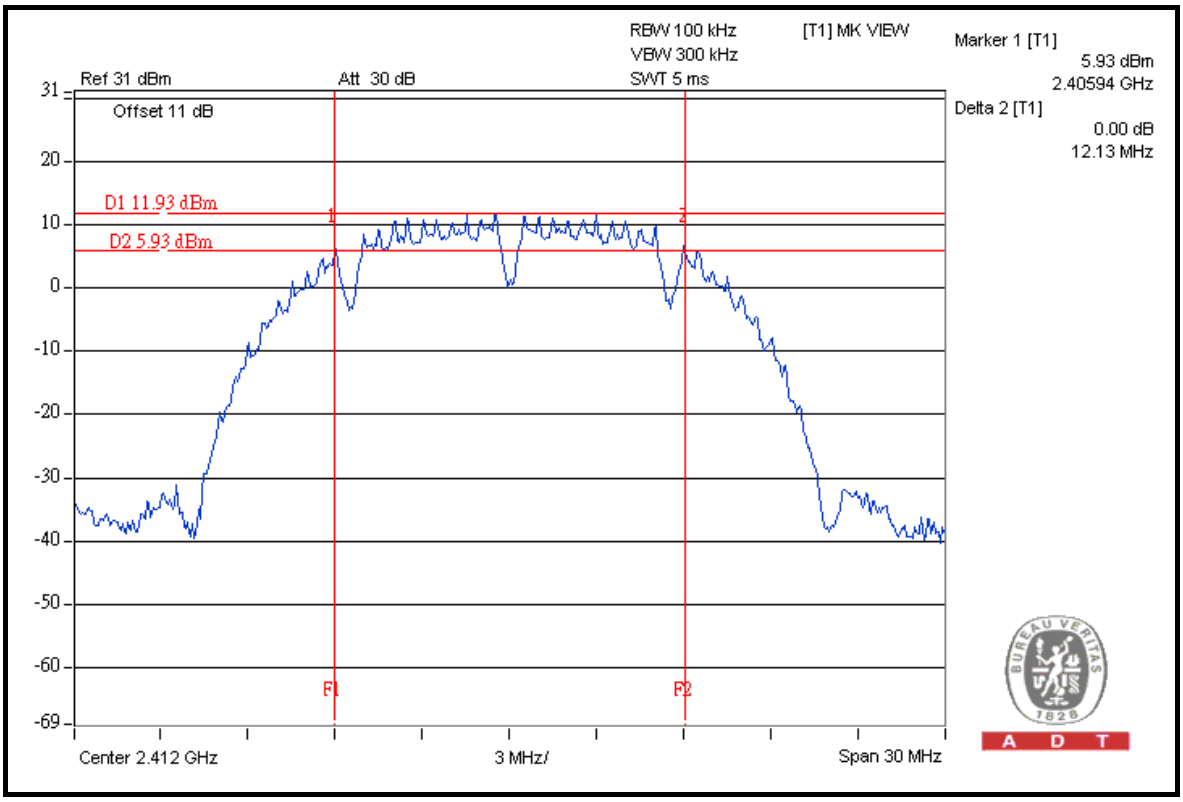
4.3.7 TEST RESULTS

802.11b DSSS MODULATION

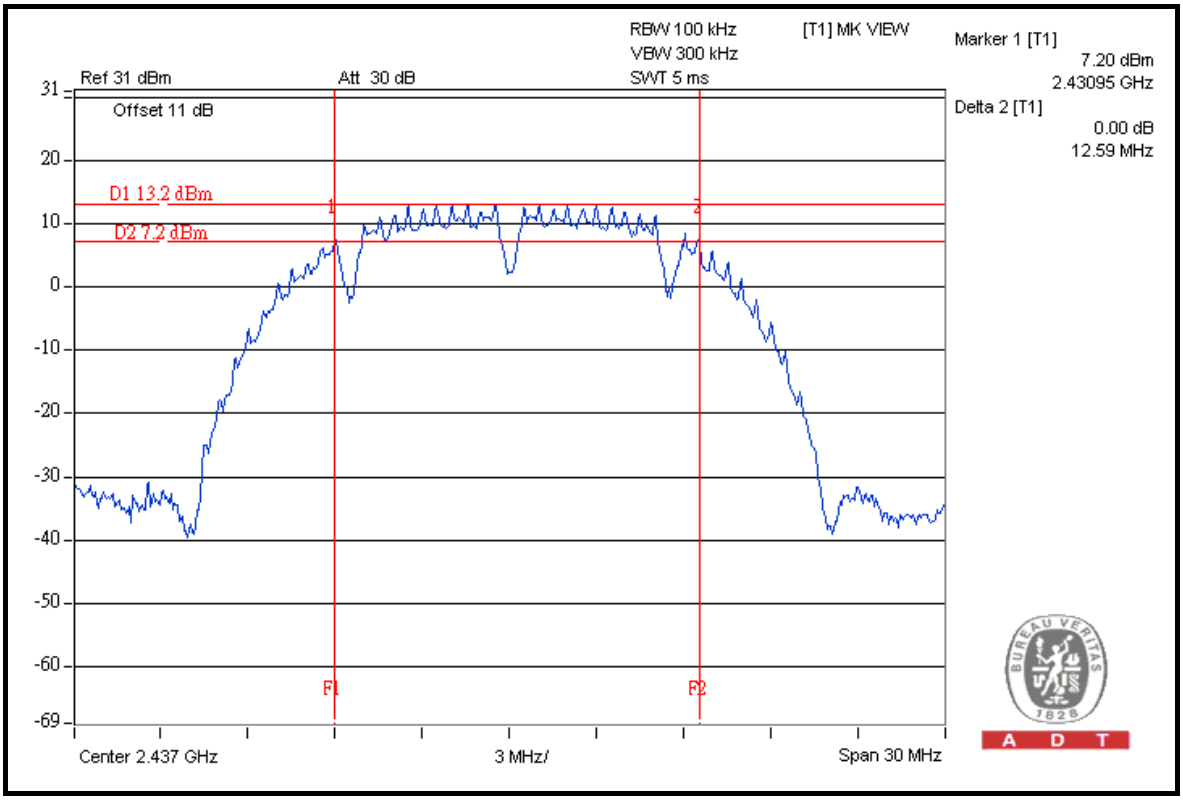
MODULATION TYPE	DBPSK	**TRANSFER RATE**	1.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	12.13	12.04	0.5	PASS
6	2437	12.59	12.16	0.5	PASS
11	2462	12.15	12.63	0.5	PASS

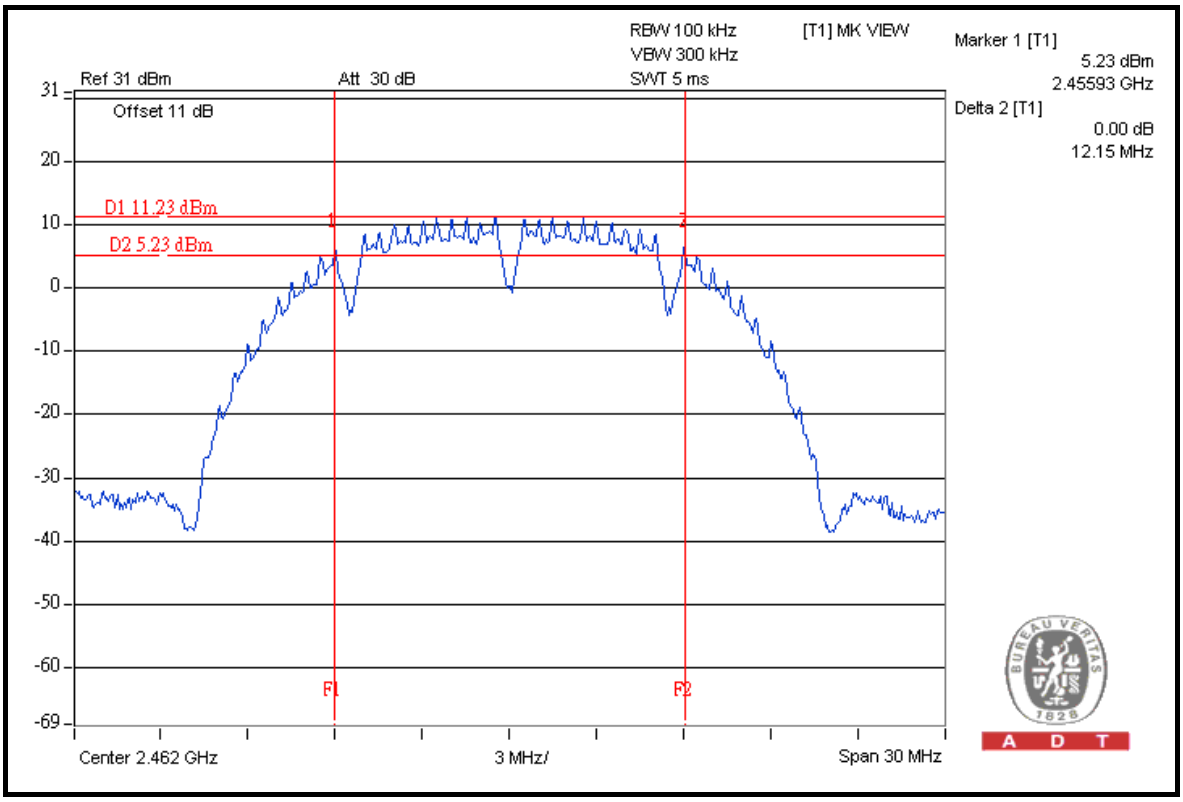
FOR CHAIN 0: CH 1



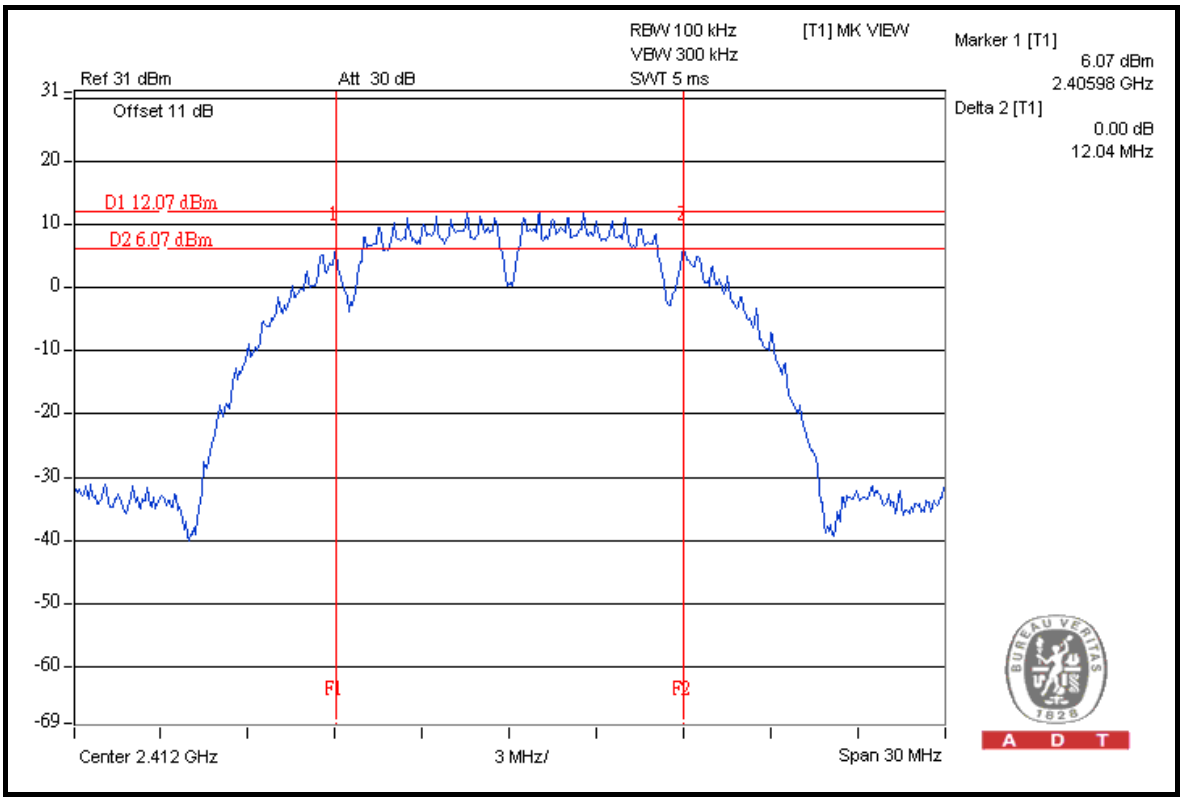
CH 6



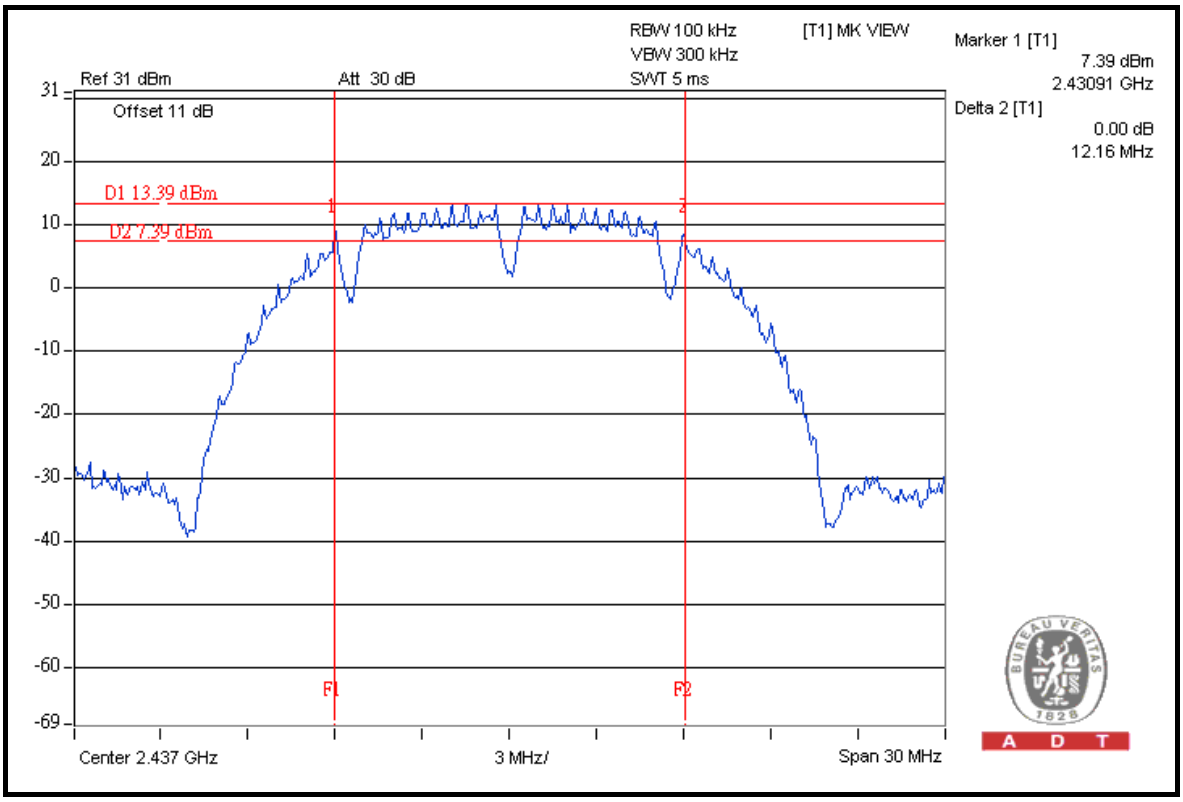
CH 11



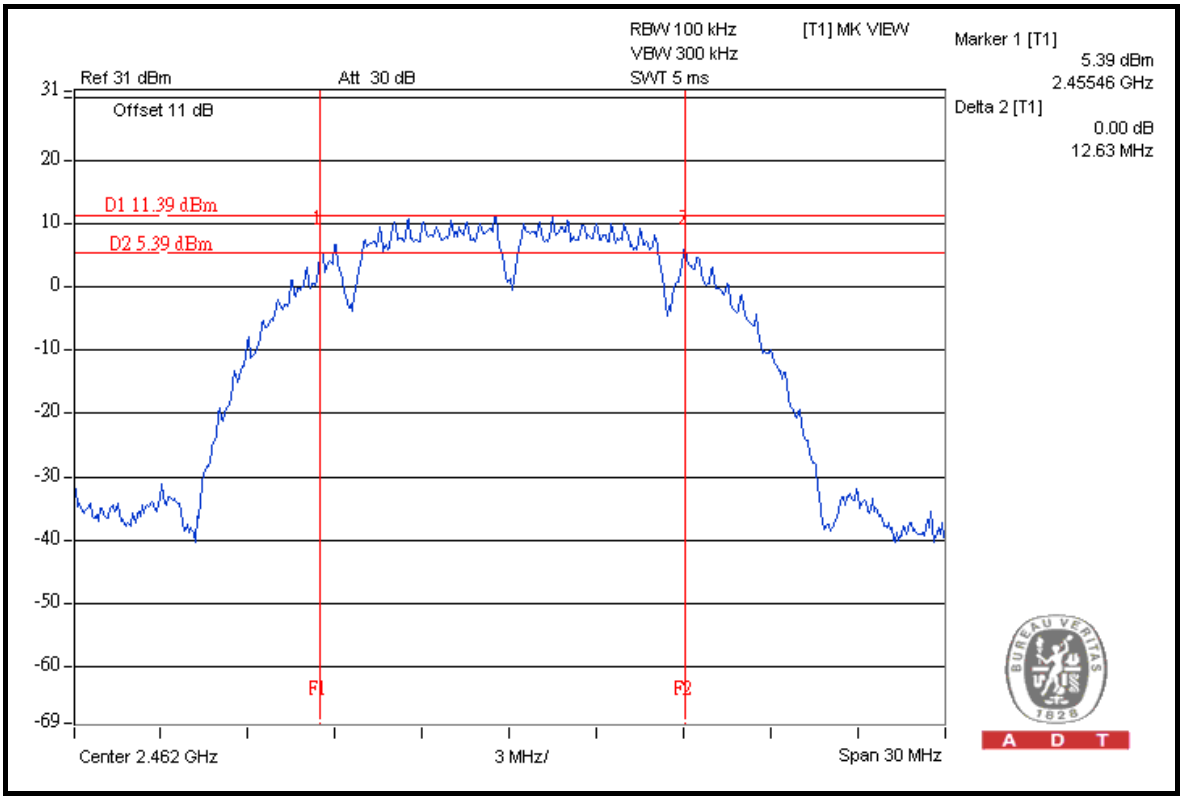
FOR CHAIN 1: CH 1



CH 6


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
7.39 dBm
2.43091 GHz
Delta 2 [T1]
0.00 dB
12.16 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 13.39 dBm
D2 7.39 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.437 GHz
3 MHz/
Span 30 MHz

CH 11

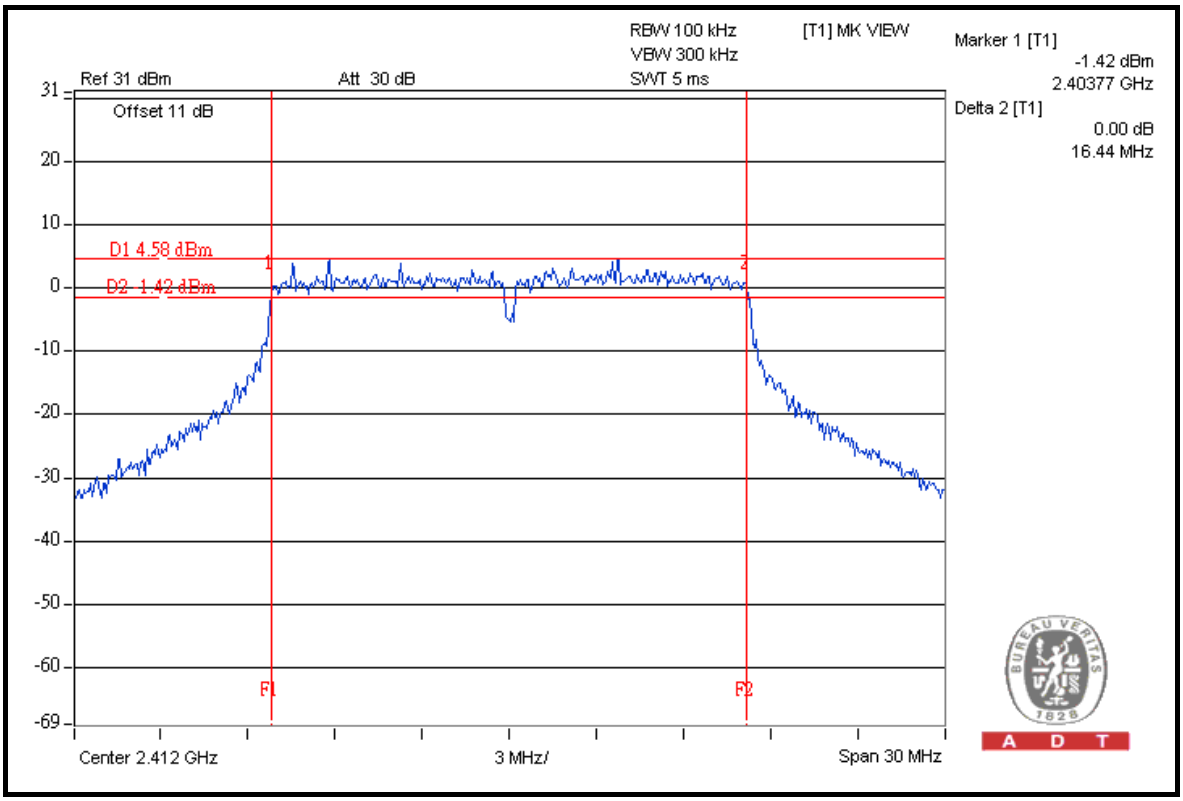

RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
5.39 dBm
2.45546 GHz
Delta 2 [T1]
0.00 dB
12.63 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 11.39 dBm
D2 5.39 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.462 GHz
3 MHz/
Span 30 MHz

802.11g OFDM MODULATION

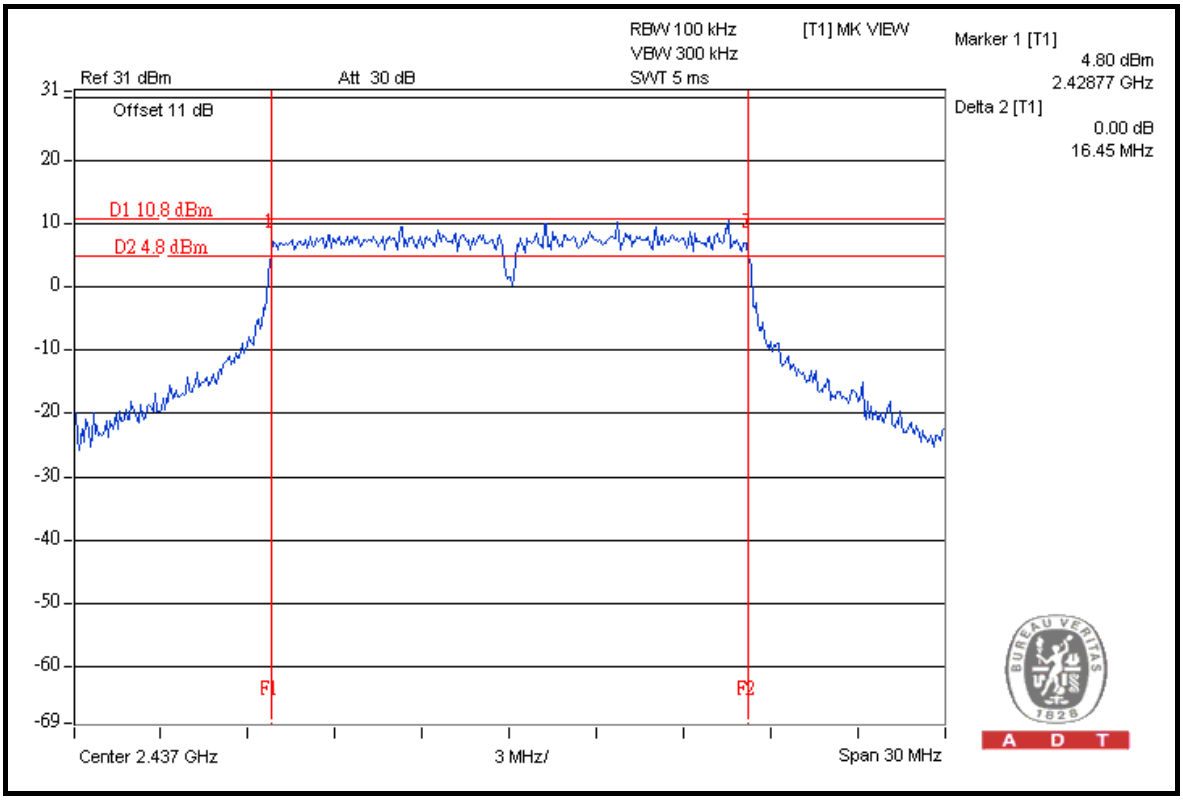
MODULATION TYPE	BPSK	**TRANSFER RATE**	6.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.44	16.43	0.5	PASS
6	2437	16.45	16.47	0.5	PASS
11	2462	16.50	16.46	10.5	PASS

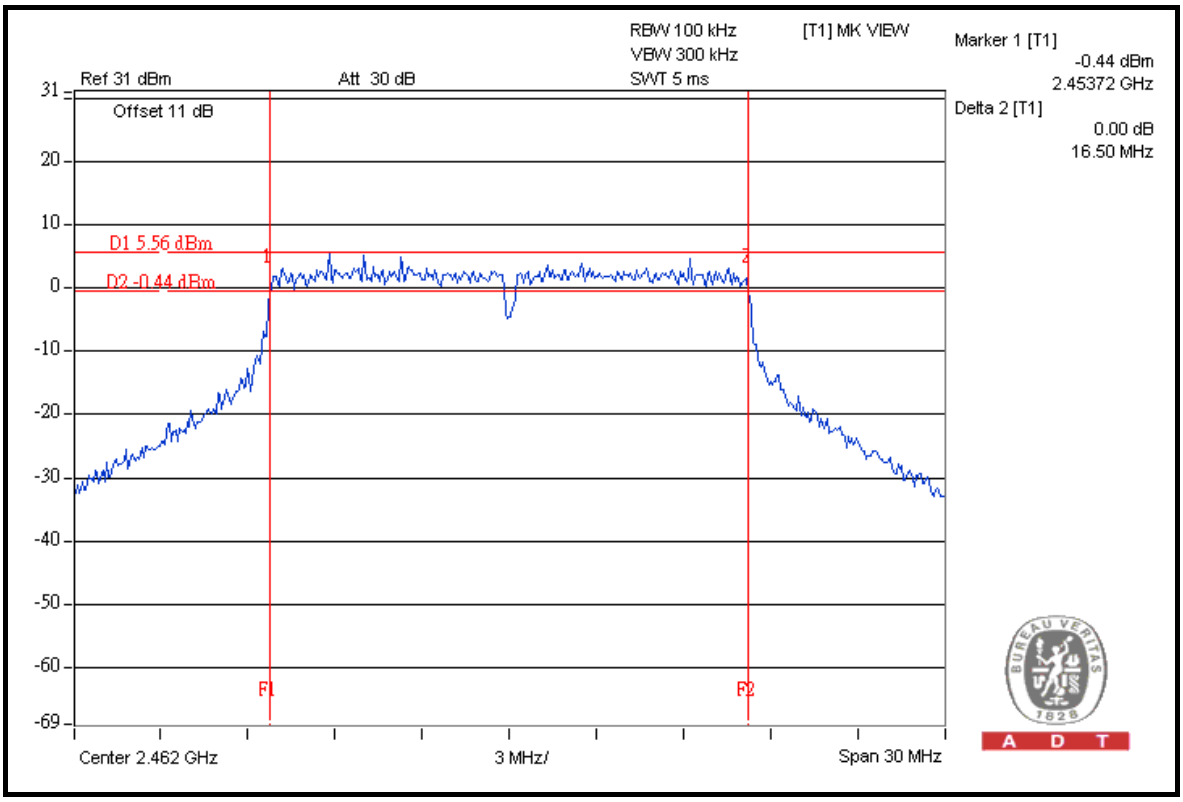
FOR CHAIN 0: CH 1



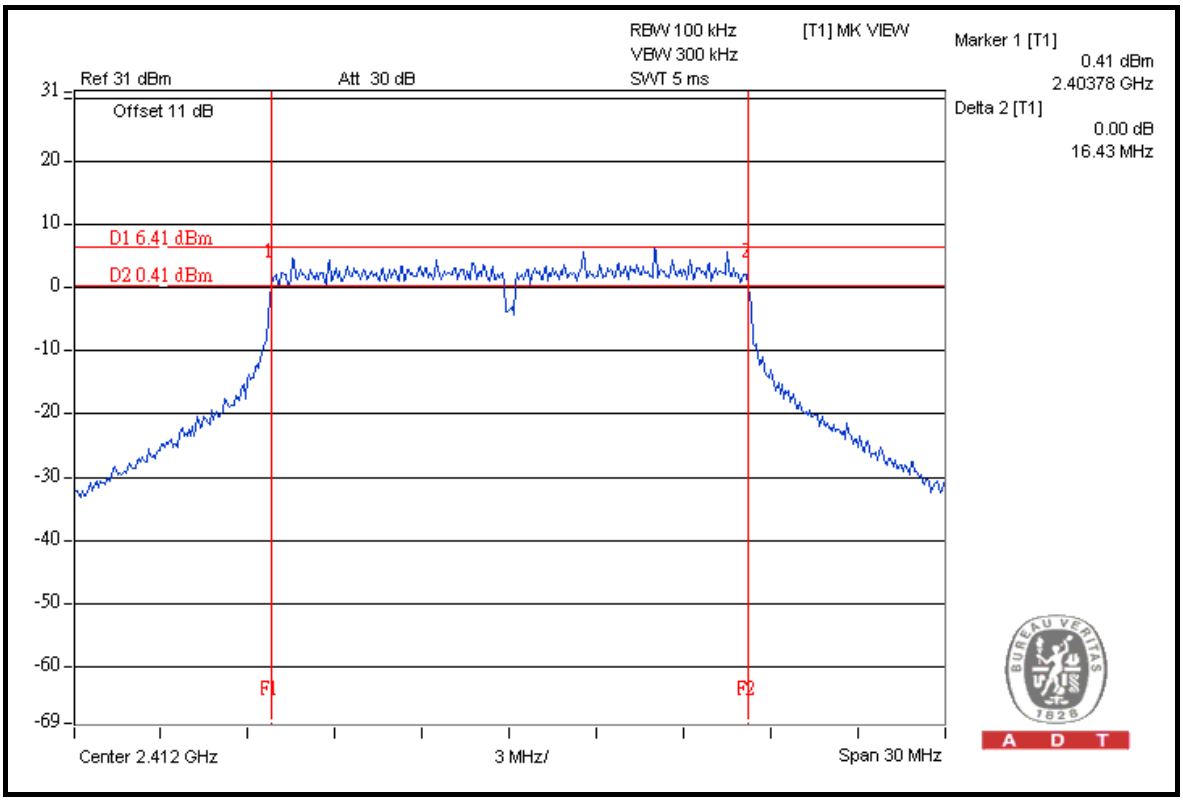
CH 6



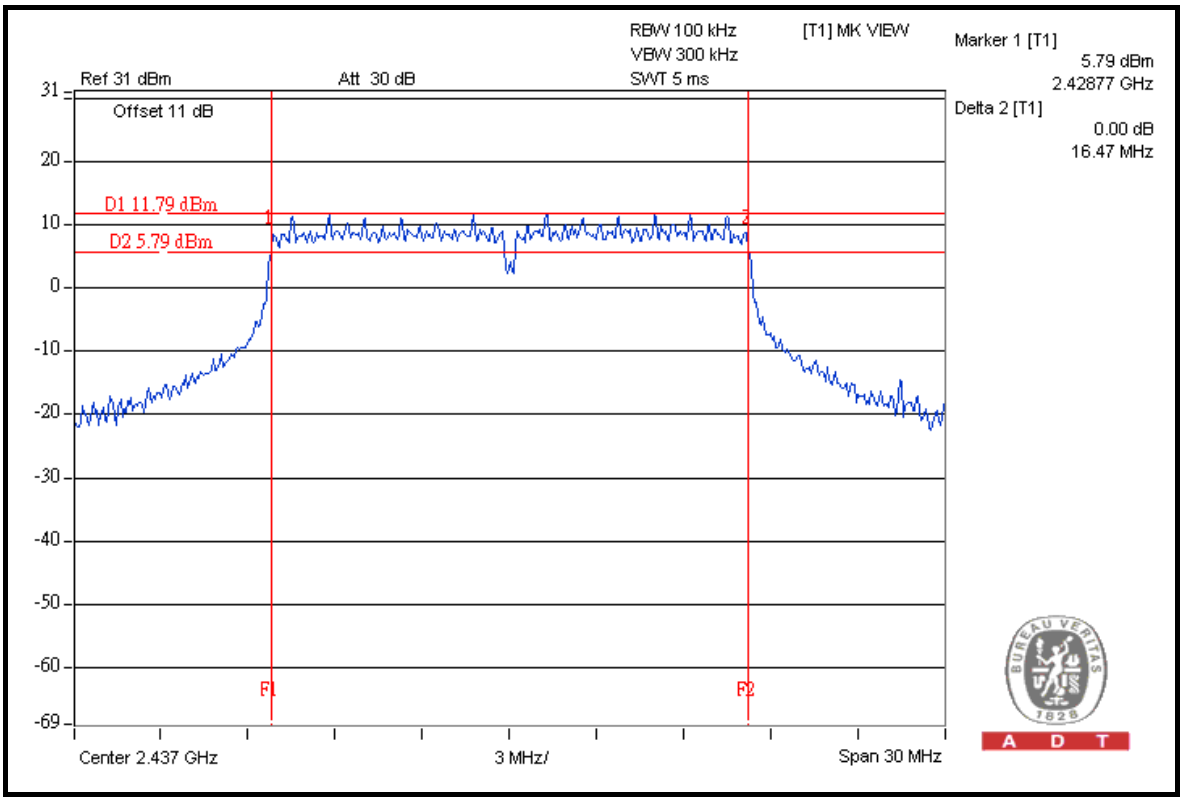
CH 11



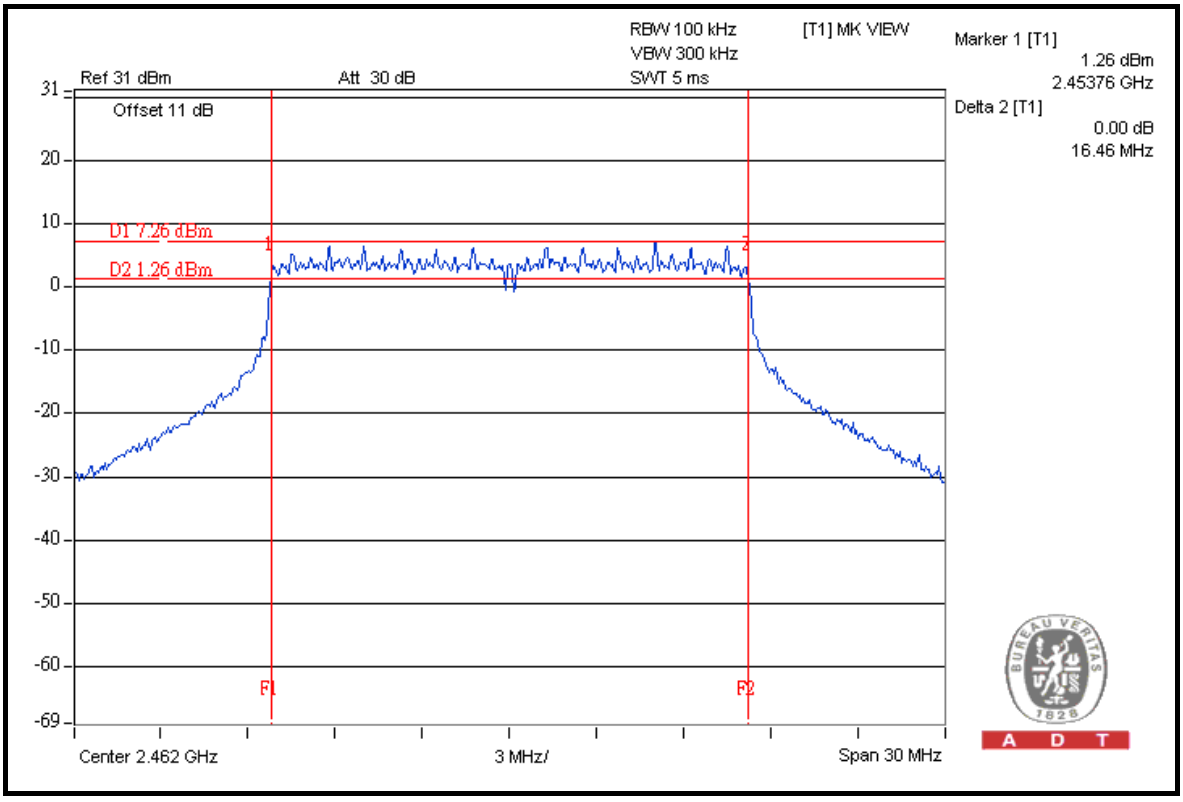
FOR CHAIN 1: CH 1



CH 6


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
5.79 dBm
2.42877 GHz
Delta 2 [T1]
0.00 dB
16.47 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 11.79 dBm
D2 5.79 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.437 GHz
3 MHz/
Span 30 MHz

CH 11

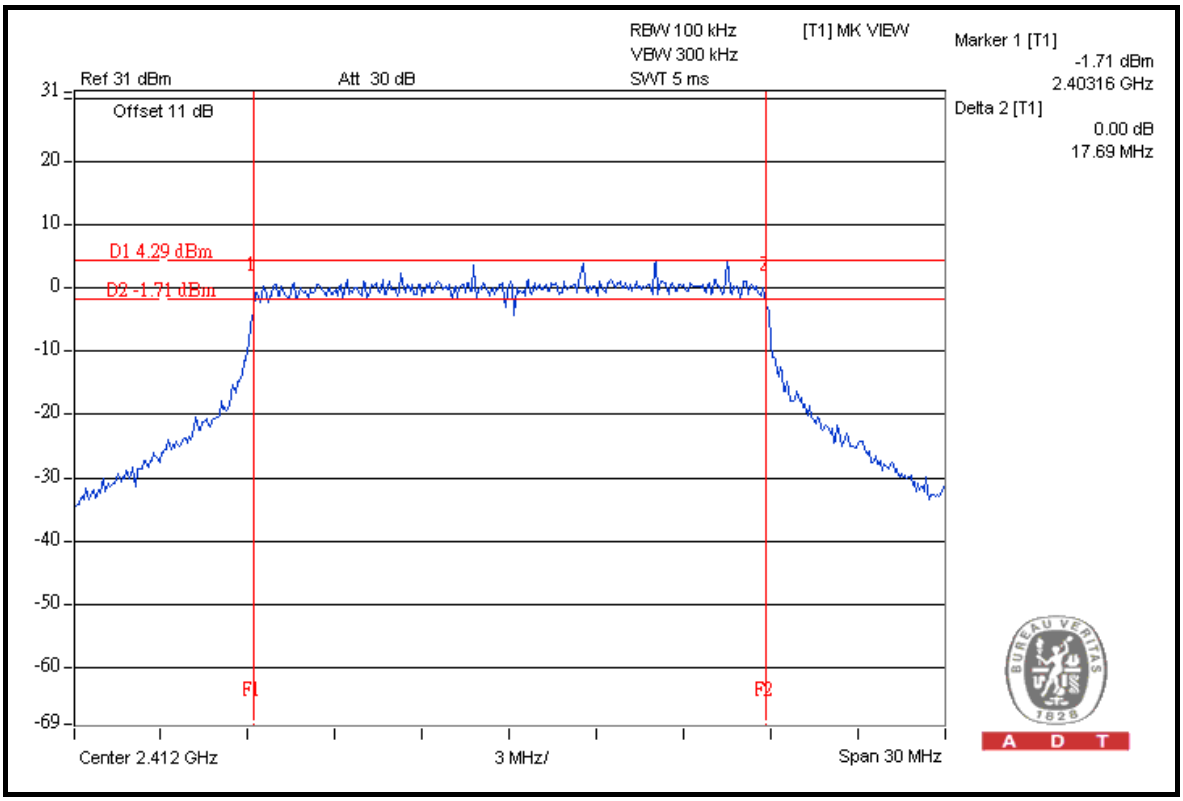

RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
1.26 dBm
2.45376 GHz
Delta 2 [T1]
0.00 dB
16.46 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 7.26 dBm
D2 1.26 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.462 GHz
3 MHz/
Span 30 MHz

DRAFT 802.11n (20MHz) OFDM MODULATION

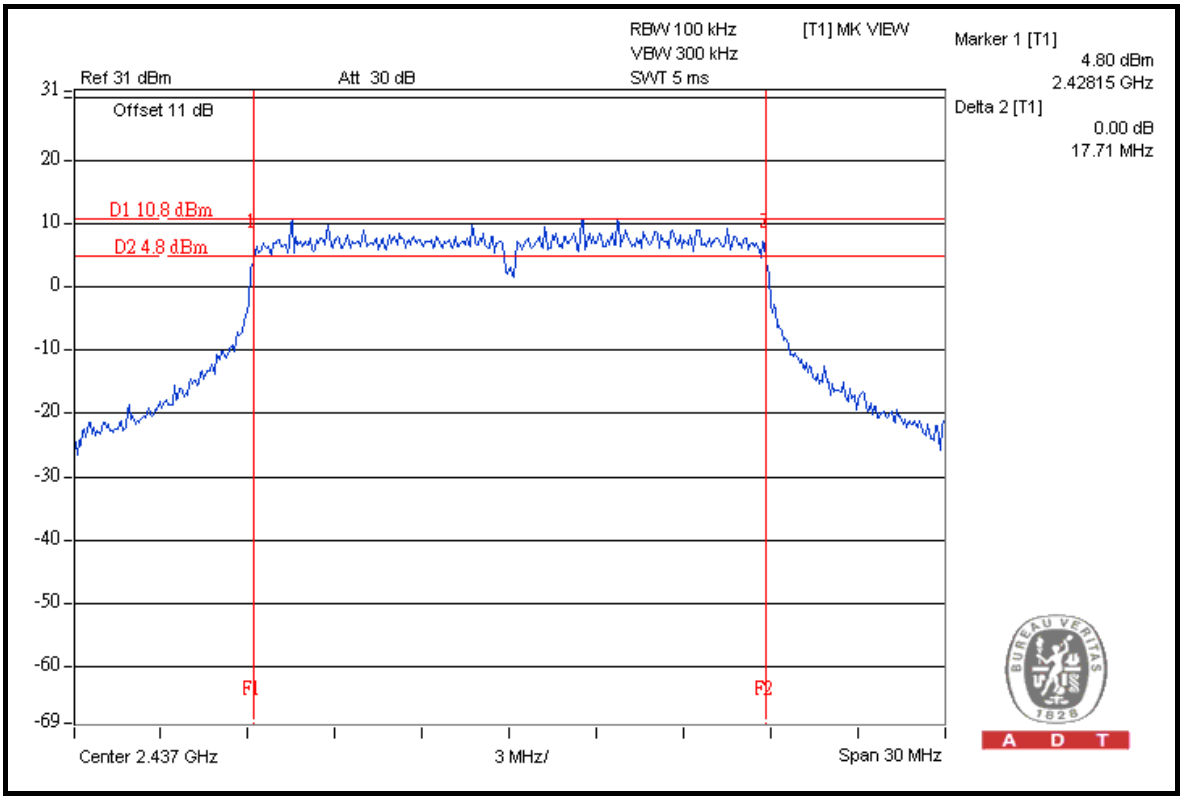
MODULATION TYPE	BPSK	**TRANSFER RATE**	7.2Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.69	17.72	0.5	PASS
6	2437	17.71	17.72	0.5	PASS
11	2462	17.71	17.68	0.5	PASS

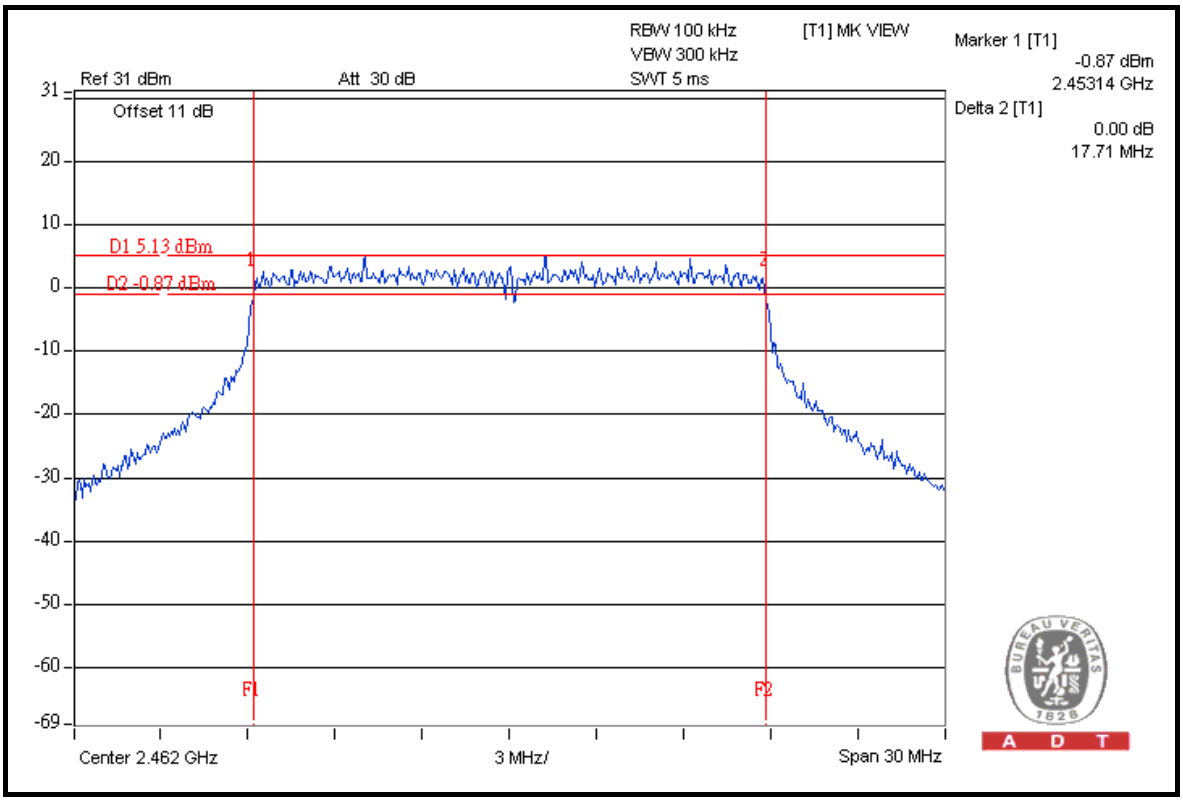
FOR CHAIN 0: CH 1



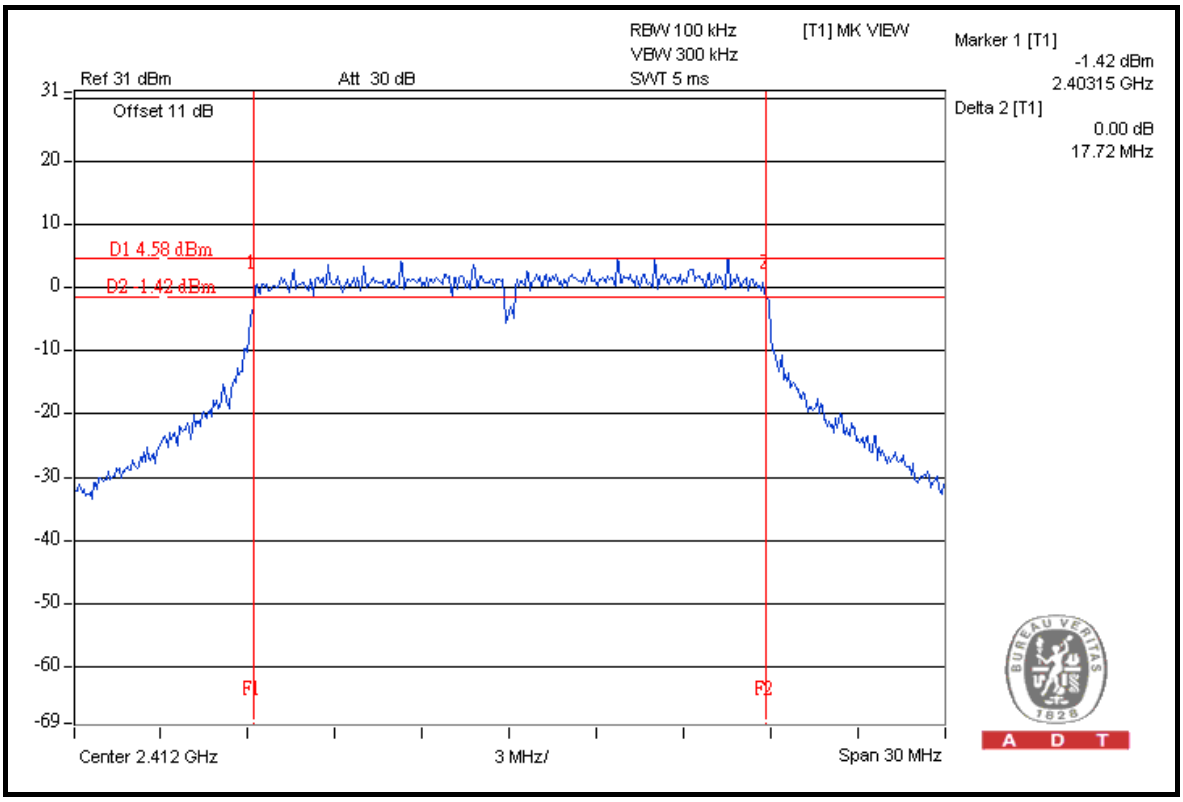
CH 6



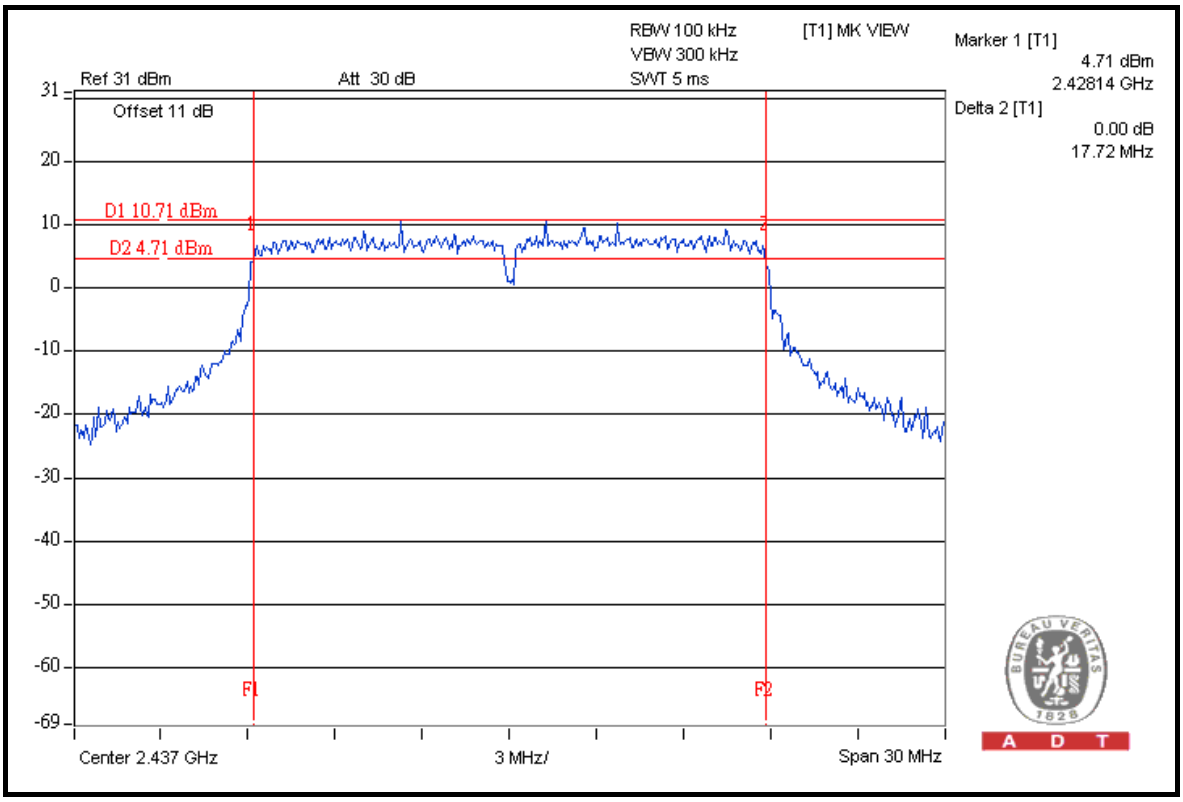
CH 11



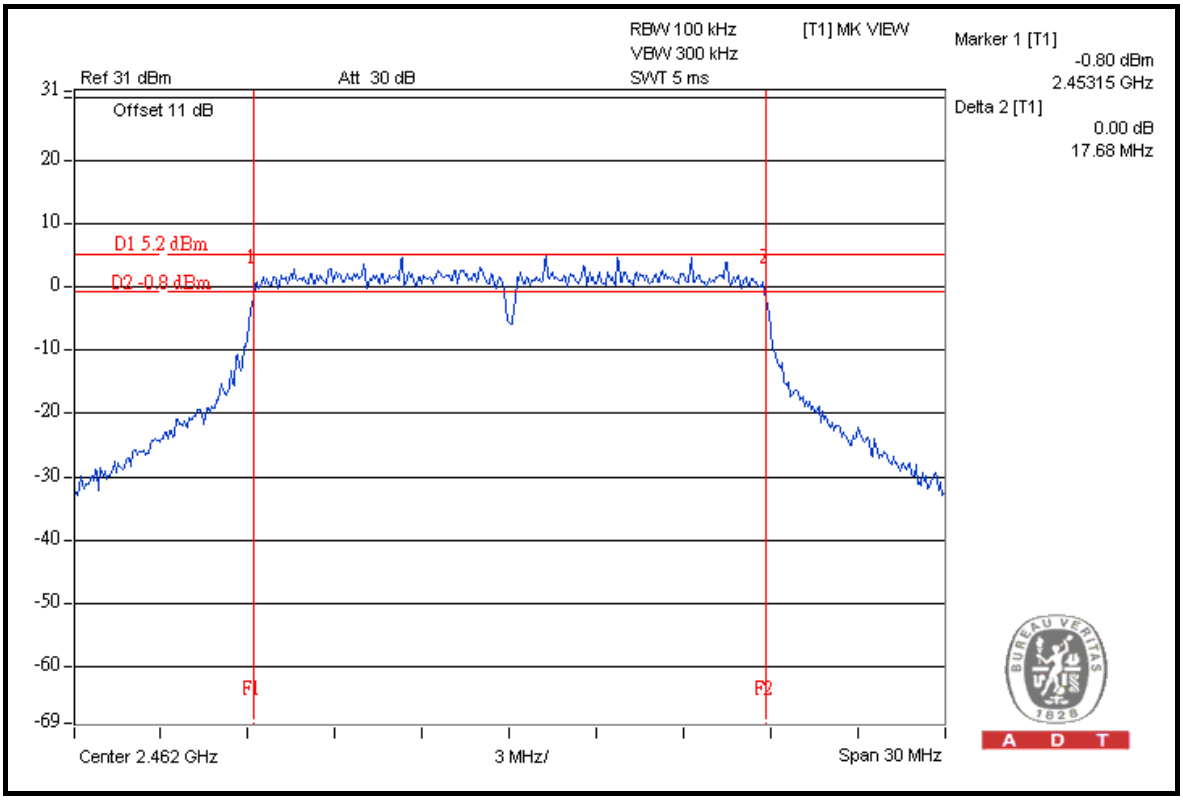
FOR CHAIN 1: CH 1



CH 6


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
4.71 dBm
2.42814 GHz
Delta 2 [T1]
0.00 dB
17.72 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 10.71 dBm
D2 4.71 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.437 GHz
3 MHz/
Span 30 MHz

CH 11

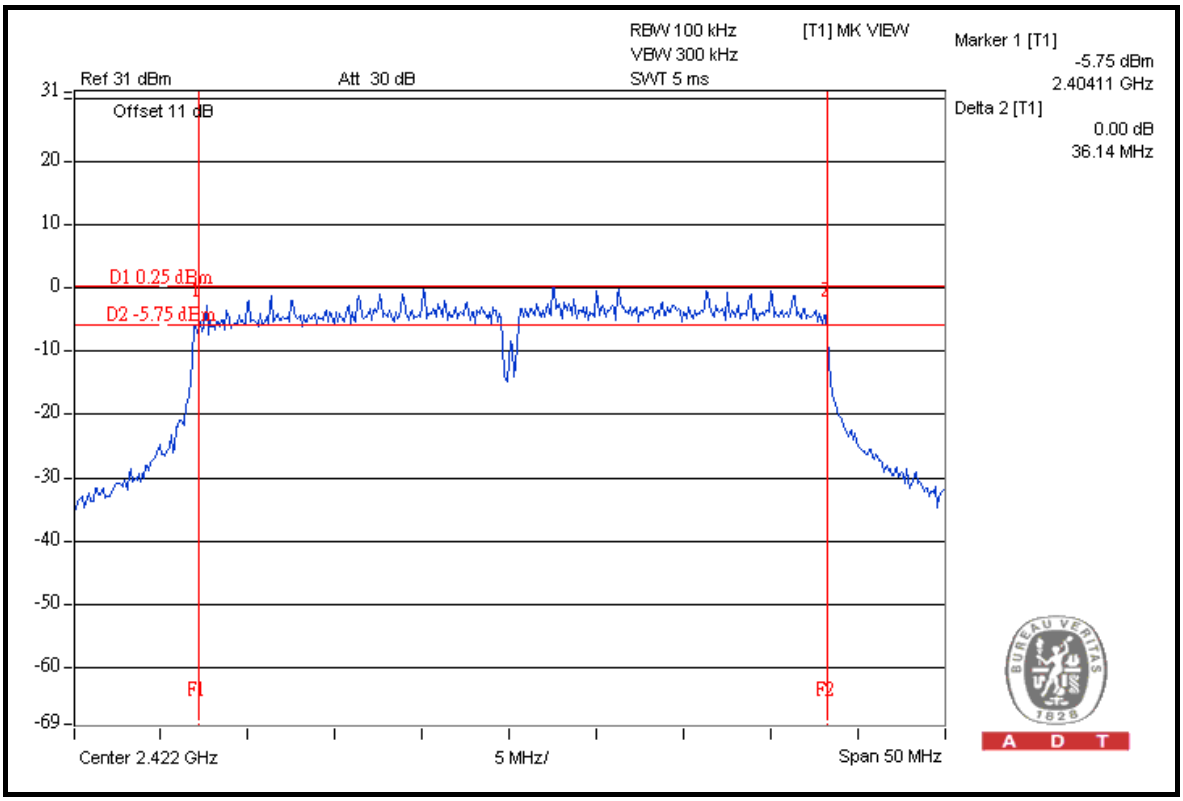

RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-0.80 dBm
2.45315 GHz
Delta 2 [T1]
0.00 dB
17.68 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 5.2 dBm
D2 -0.8 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.462 GHz
3 MHz/
Span 30 MHz

DRAFT 802.11n (40MHz) OFDM MODULATION

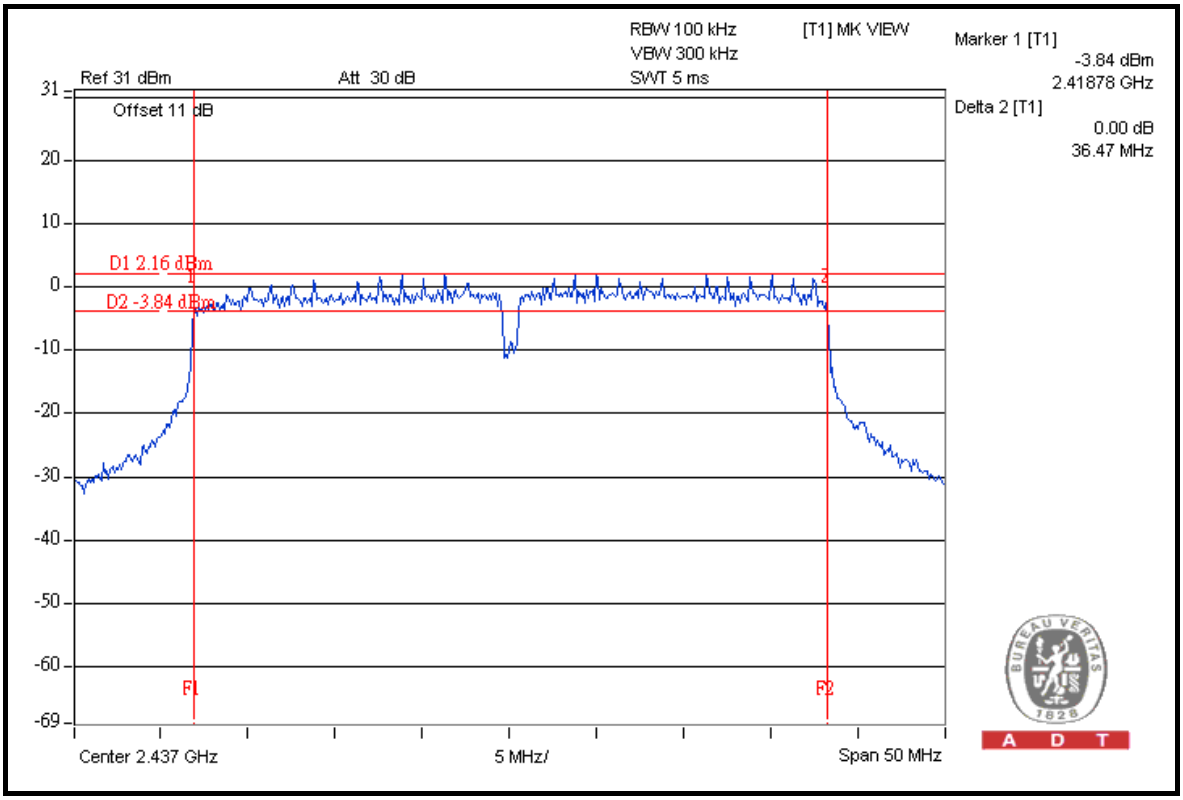
MODULATION TYPE	BPSK	**TRANSFER RATE**	15.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2422	36.14	36.23	0.5	PASS
4	2437	36.47	35.81	0.5	PASS
7	2452	35.55	36.41	0.5	PASS

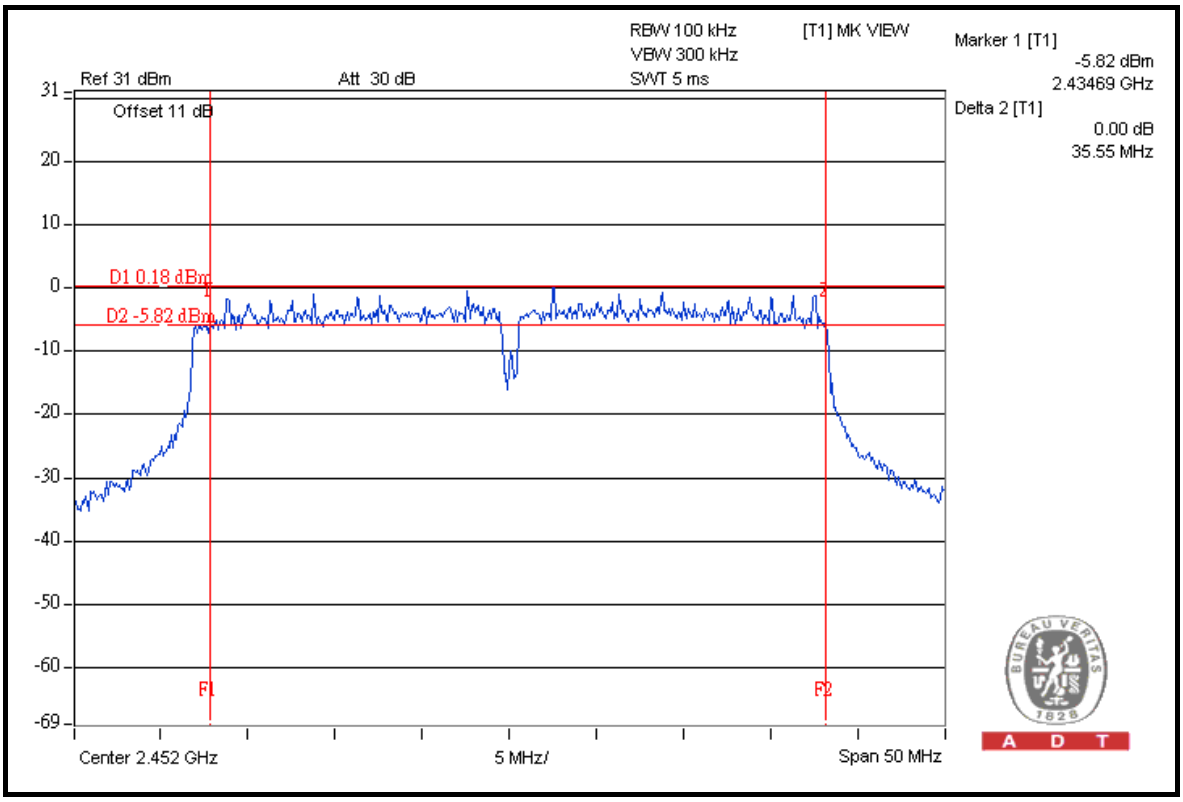
FOR CHAIN 0: CH 1



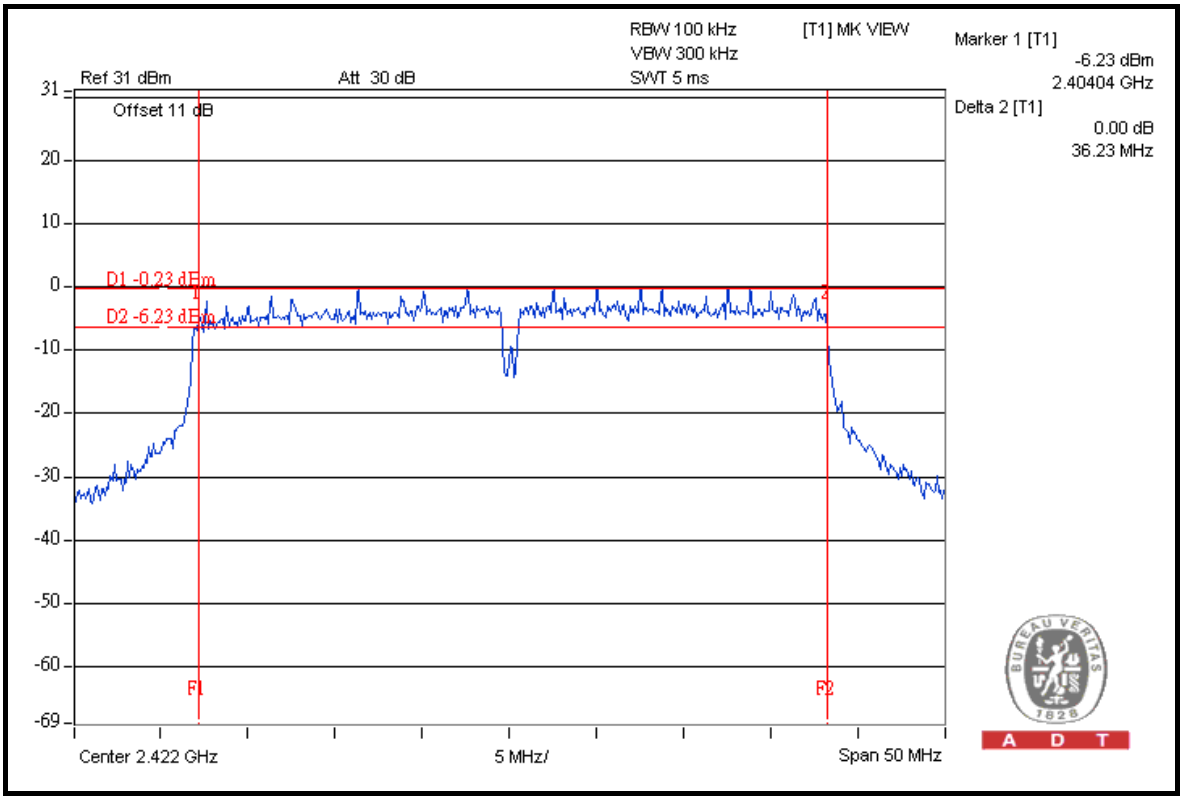
CH 4



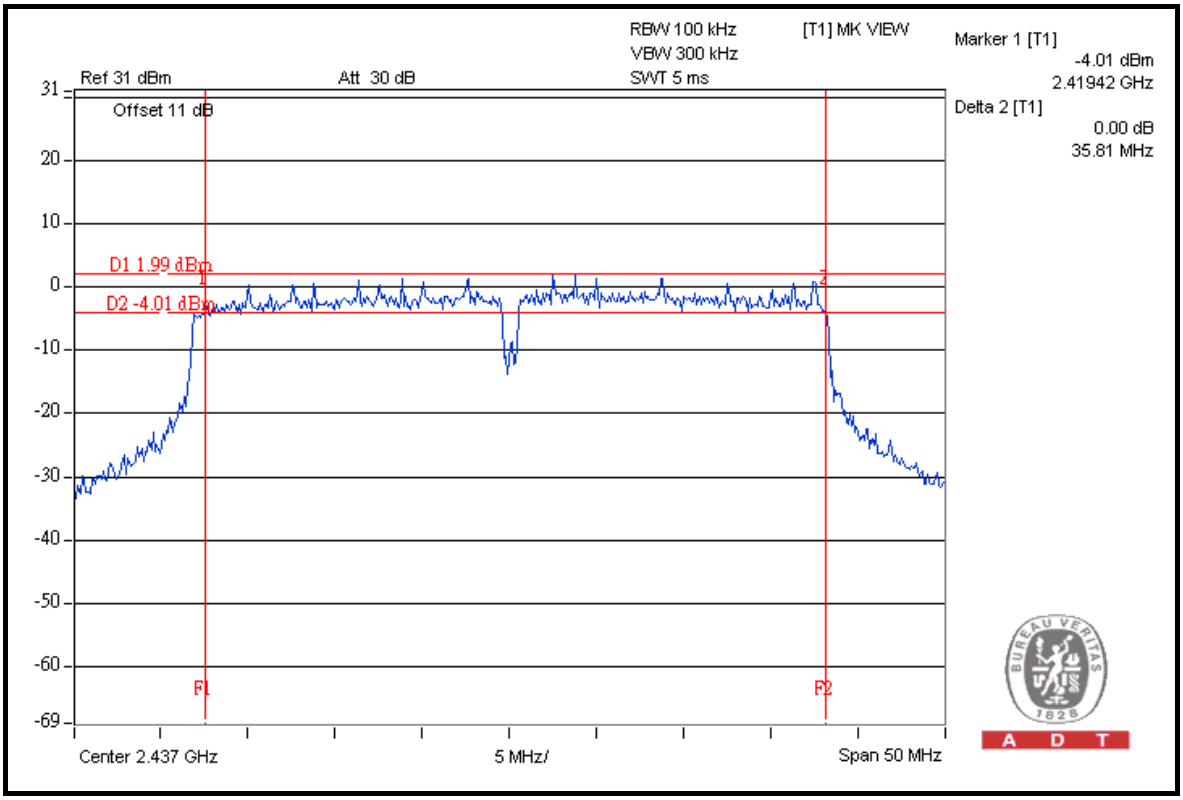
CH 7



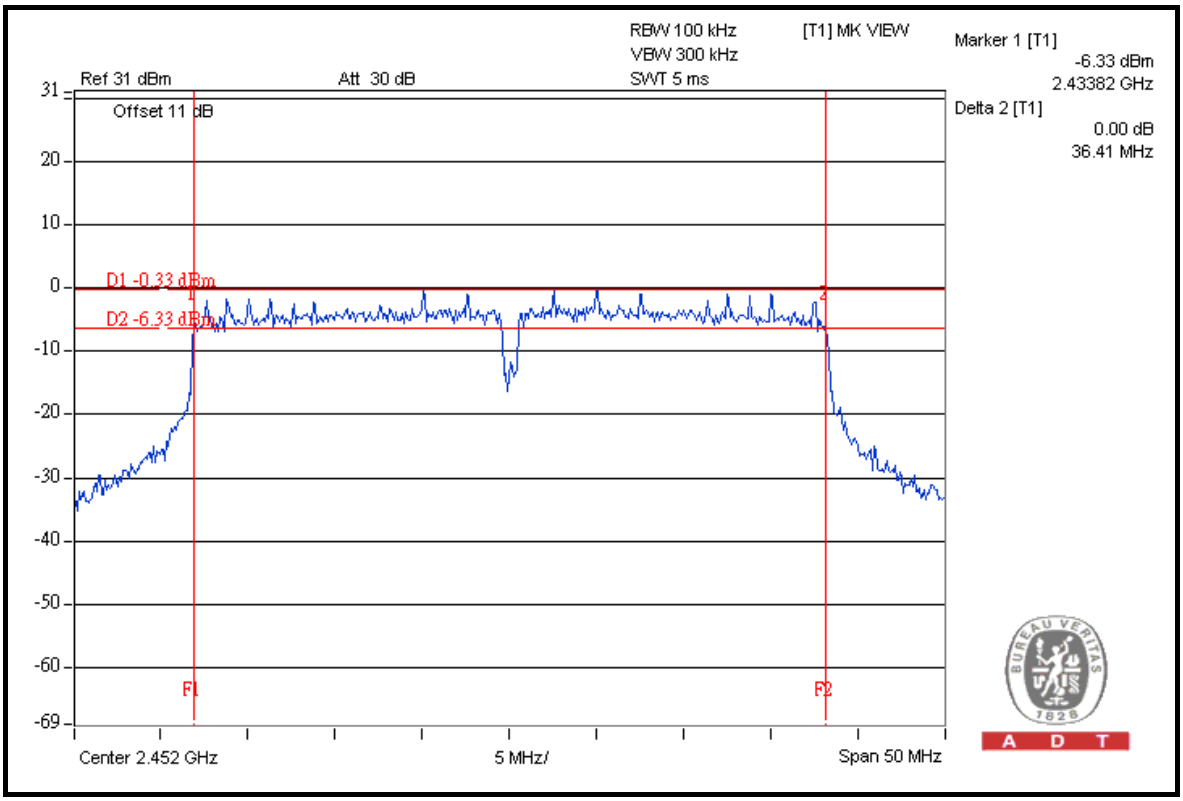
FOR CHAIN 1: CH 1



CH 4


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-4.01 dBm
2.41942 GHz
Delta 2 [T1]
0.00 dB
35.81 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 1.99 dBm
D2 -4.01 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.437 GHz
5 MHz/
Span 50 MHz

CH 7


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-6.33 dBm
2.43382 GHz
Delta 2 [T1]
0.00 dB
36.41 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 -0.33 dBm
D2 -6.33 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.452 GHz
5 MHz/
Span 50 MHz

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
R&S SPECTRUM ANALYZER	FSP40	100040	Jul. 07, 2009	Jul. 06, 2010

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

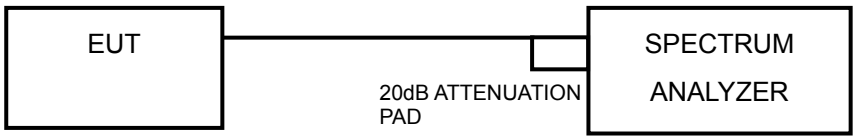
4.4.3 TEST PROCEDURE

1. Follow DTS measurement (Power Output Option 2), the transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer.
2. Set span to encompass the entire emission bandwidth (EBW) of the signal.
3. Set RBW = 1 MHz ;VBW $\geqq$3 MHz.
4. Use sample detector mode and video trigger with the trigger level set to enable triggering only on full power pulses.
5. Trace average 100 traces in power averaging mode.
6. Compute power by integrating the spectrum across the 26 dB EBW of the signal.
7. 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.

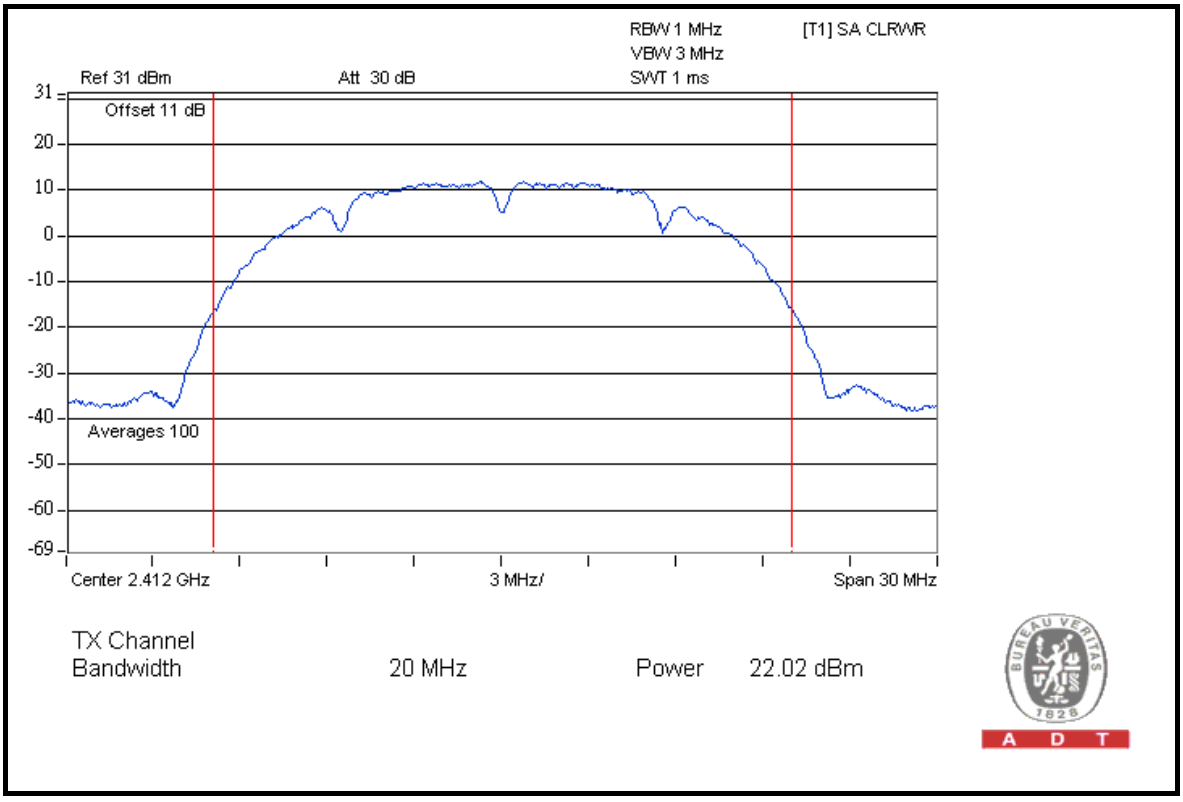
4.4.7 TEST RESULTS

802.11b DSSS MODULATION

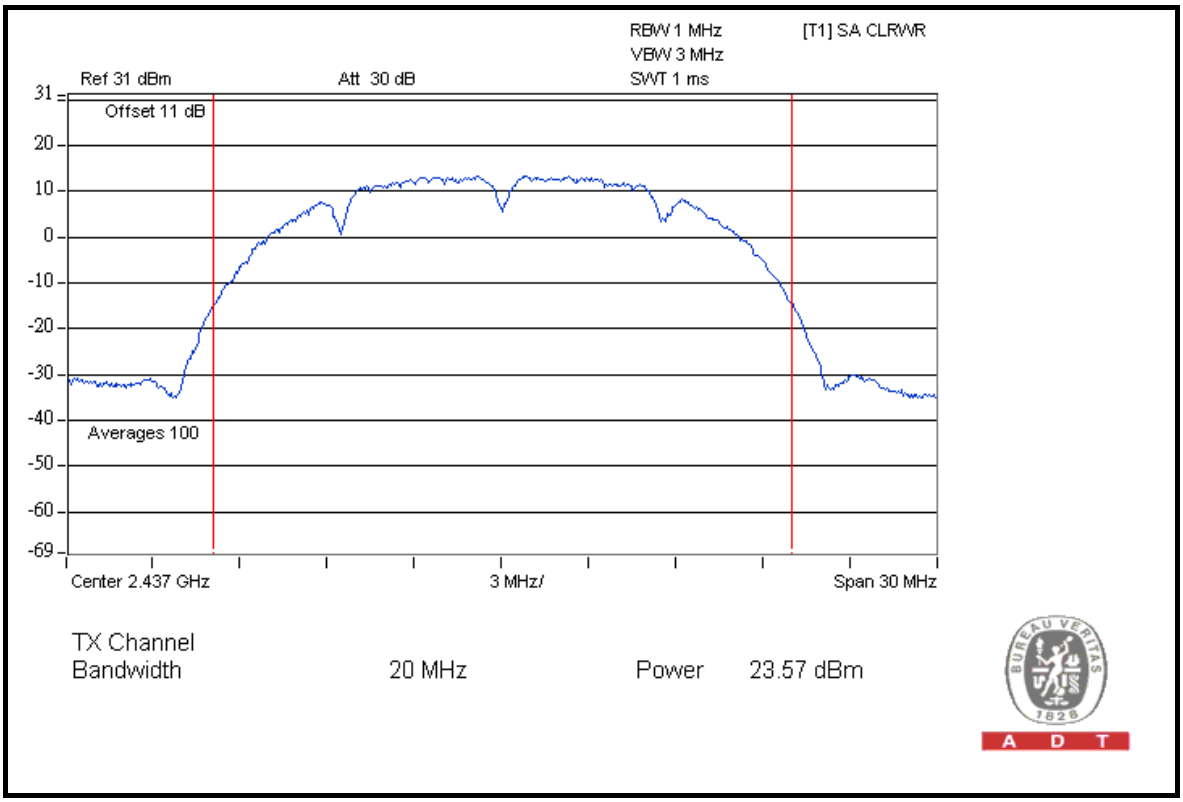
MODULATION TYPE	DBPSK	TRANSFER RATE	1.0Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

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	22.02	22.11	321.776	25.08	30	PASS
6	2437	23.57	23.55	453.974	26.57	30	PASS
11	2462	21.56	21.51	284.798	24.55	30	PASS

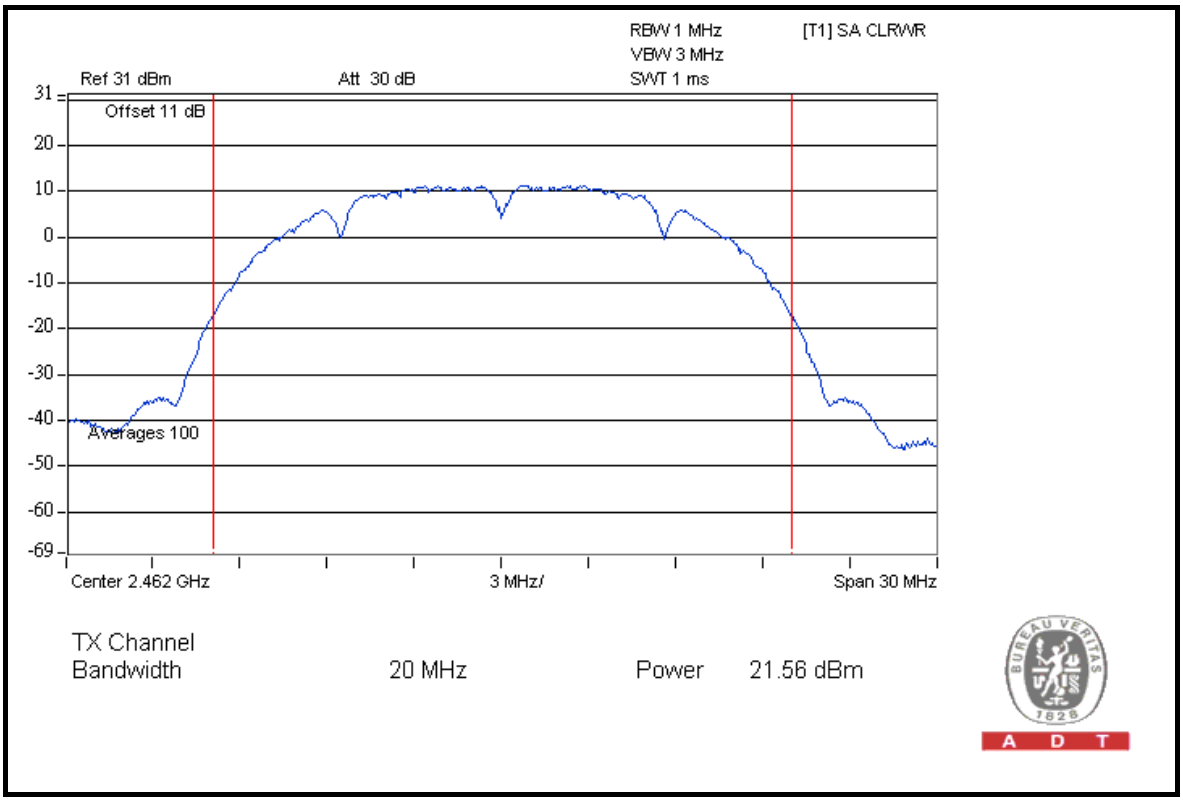
FOR CHAIN 0: CH 1



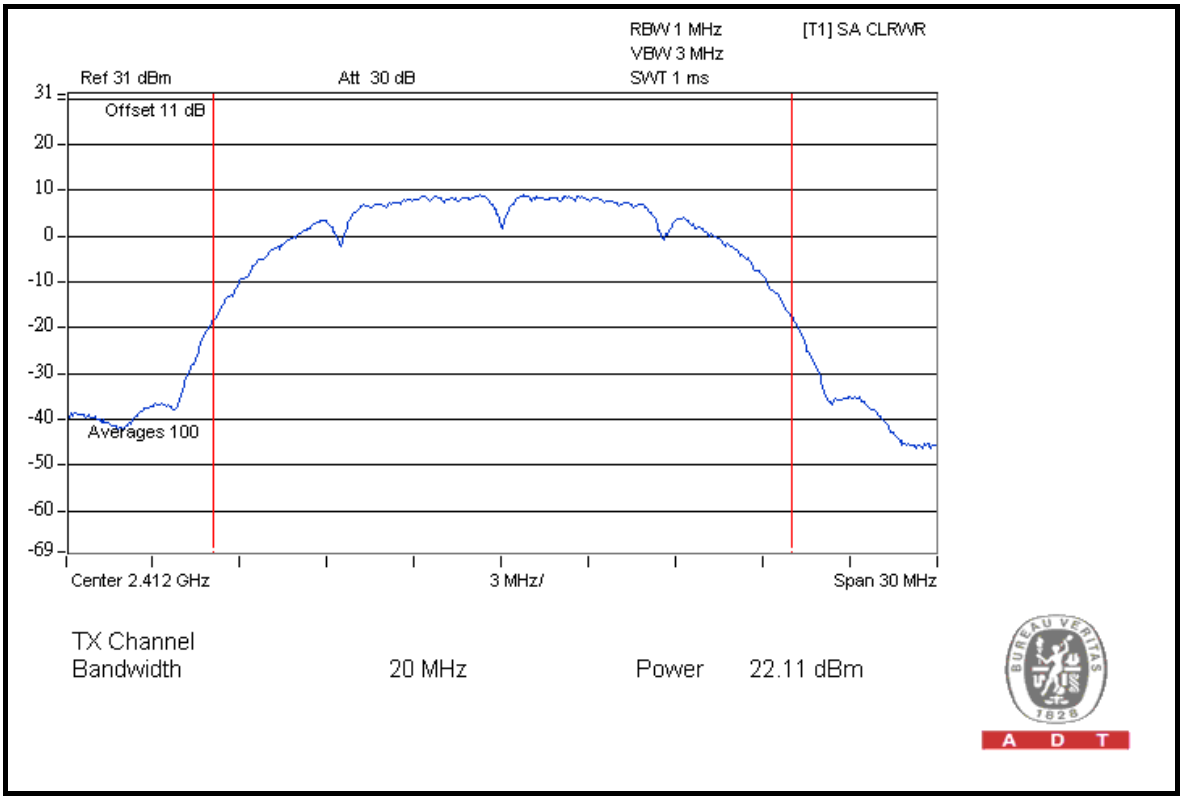
CH 6



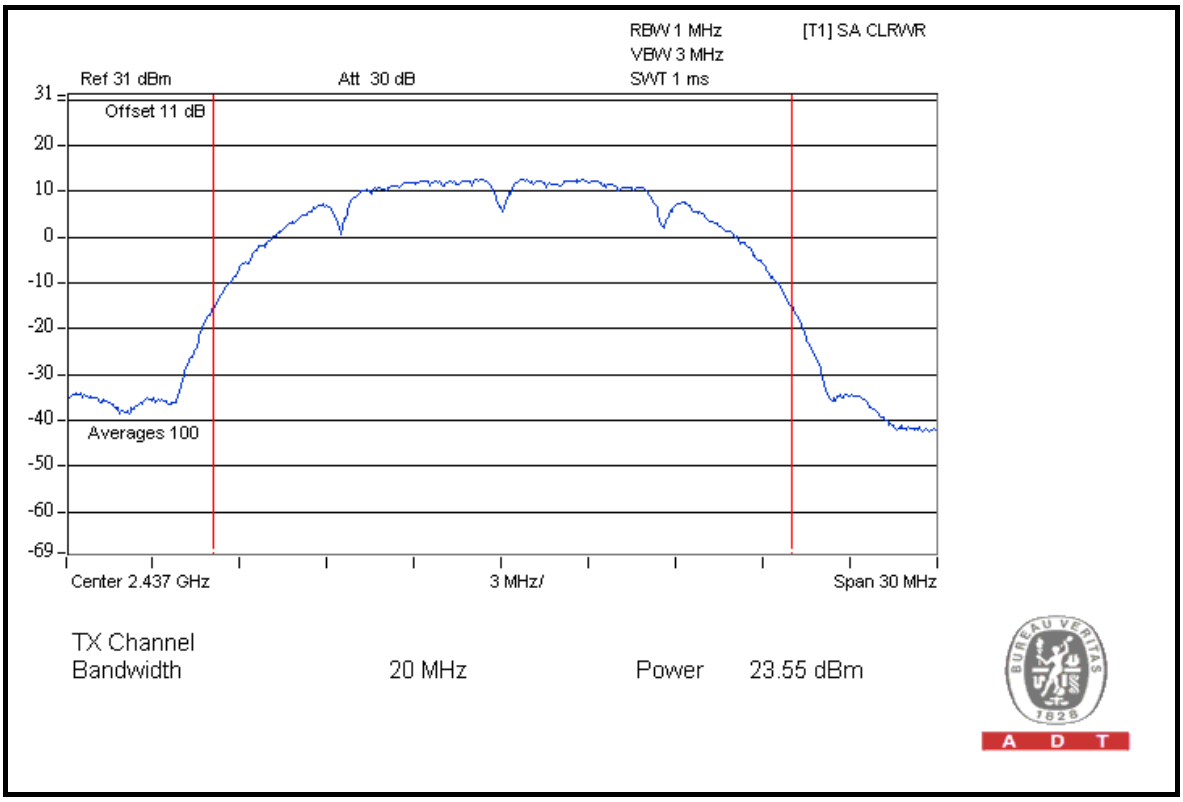
CH 11



FOR CHAIN 1: CH 1

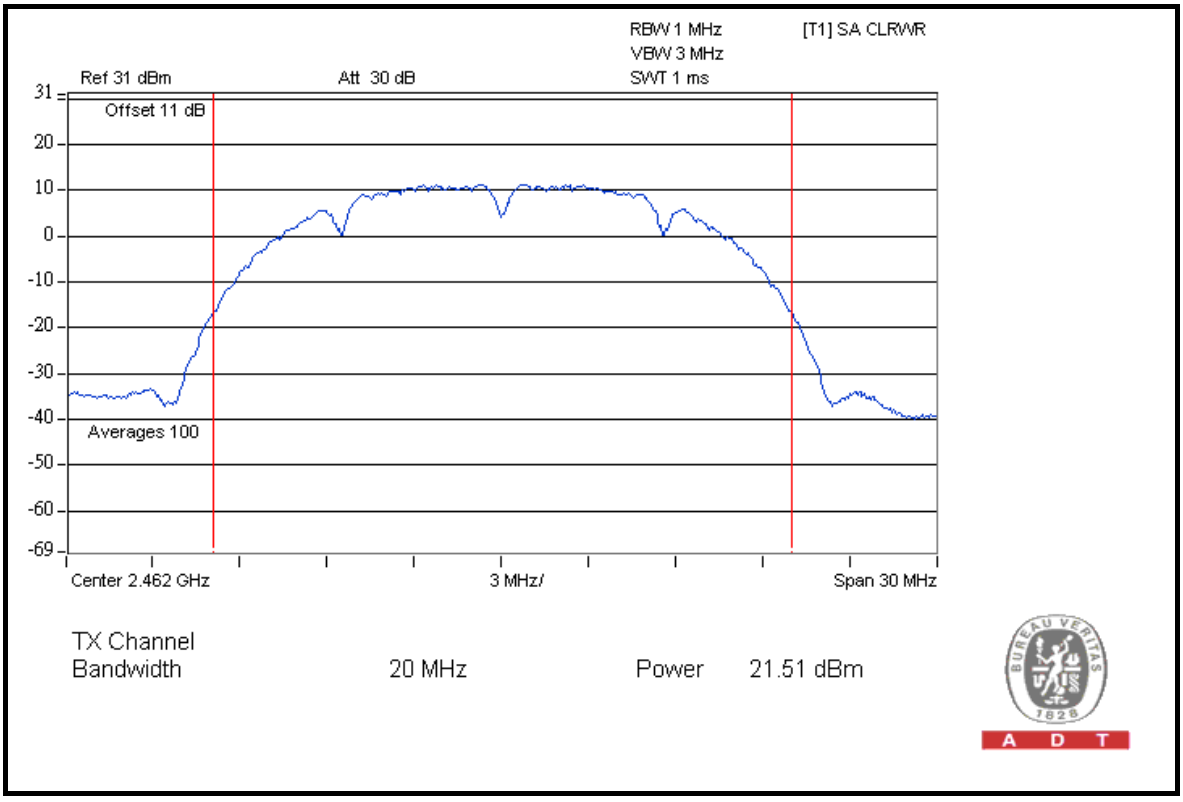


CH 6



TX Channel Bandwidth 20 MHz Power 23.55 dBm

CH 11



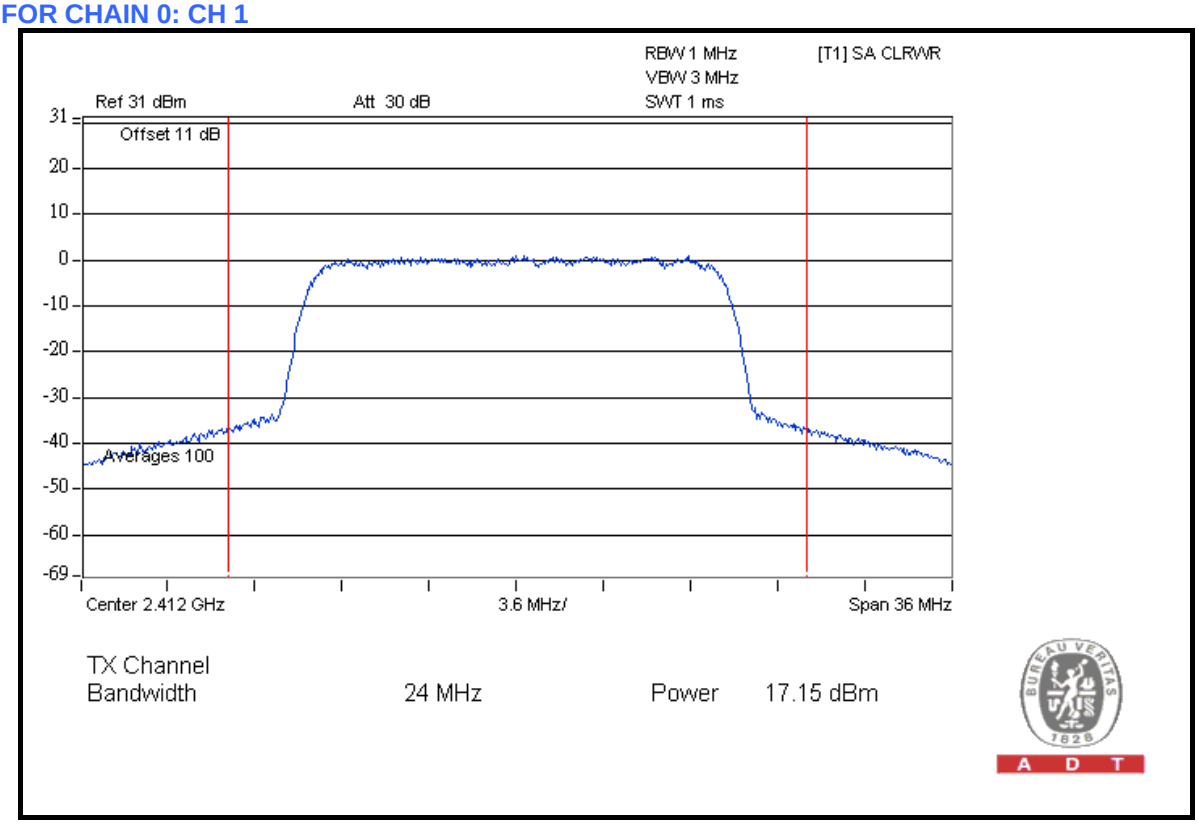
TX Channel Bandwidth 20 MHz Power 21.51 dBm

802.11g OFDM MODULATION

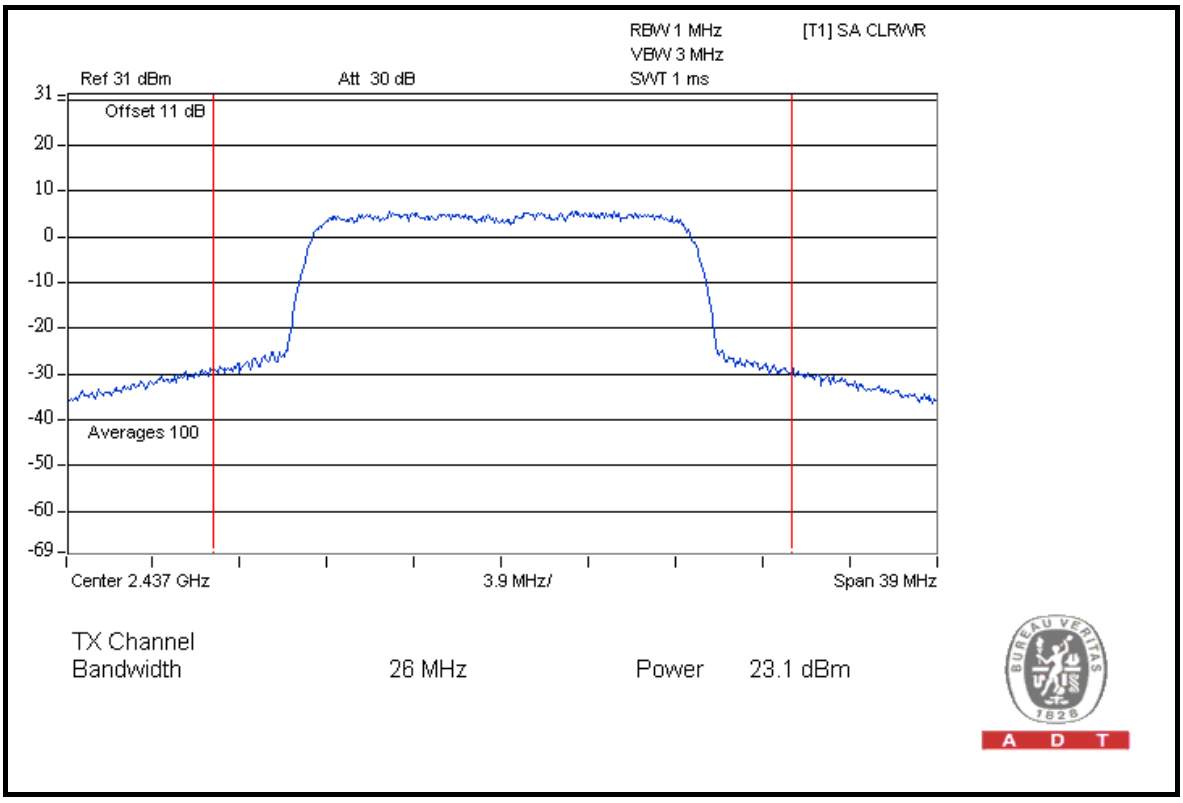
MODULATION TYPE	BPSK	**TRANSFER RATE**	6.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

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	17.15	17.63	109.823	20.41	30	PASS
6	2437	23.10	23.06	406.476	26.09	30	PASS
11	2462	18.59	18.58	144.388	21.60	30	PASS

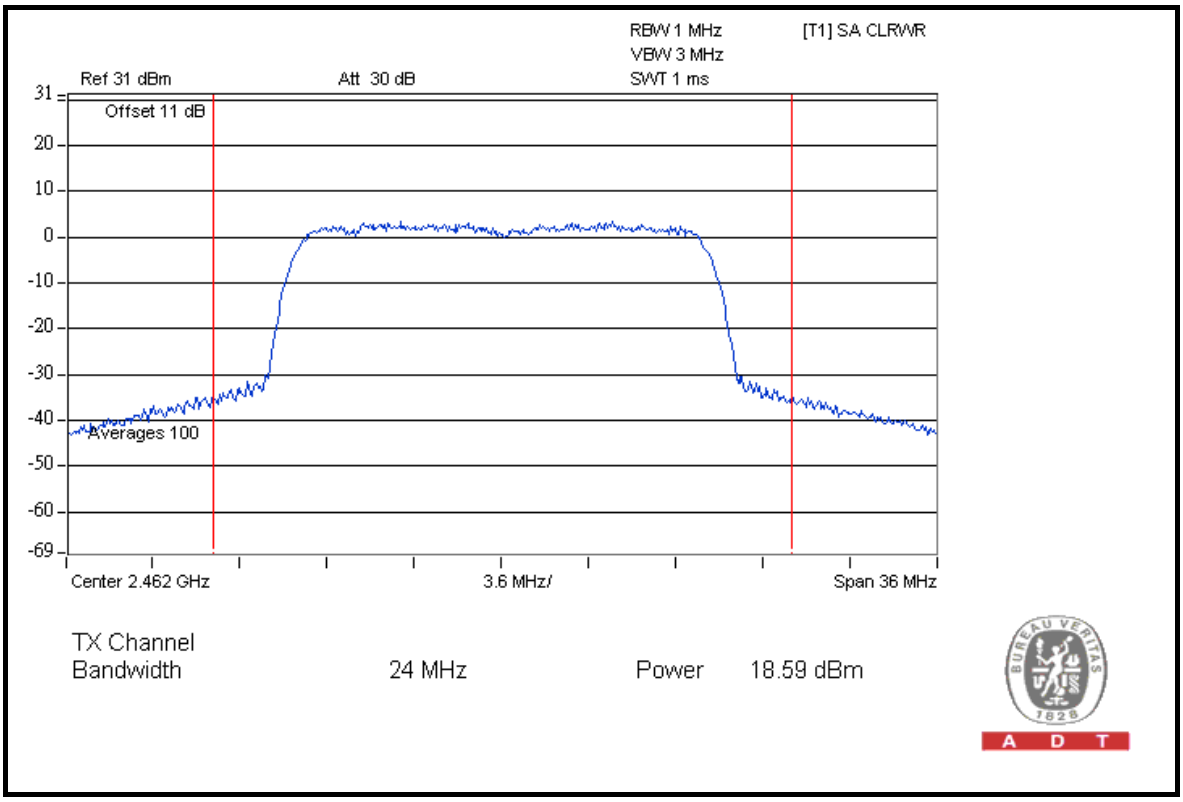
FOR CHAIN 0: CH 1



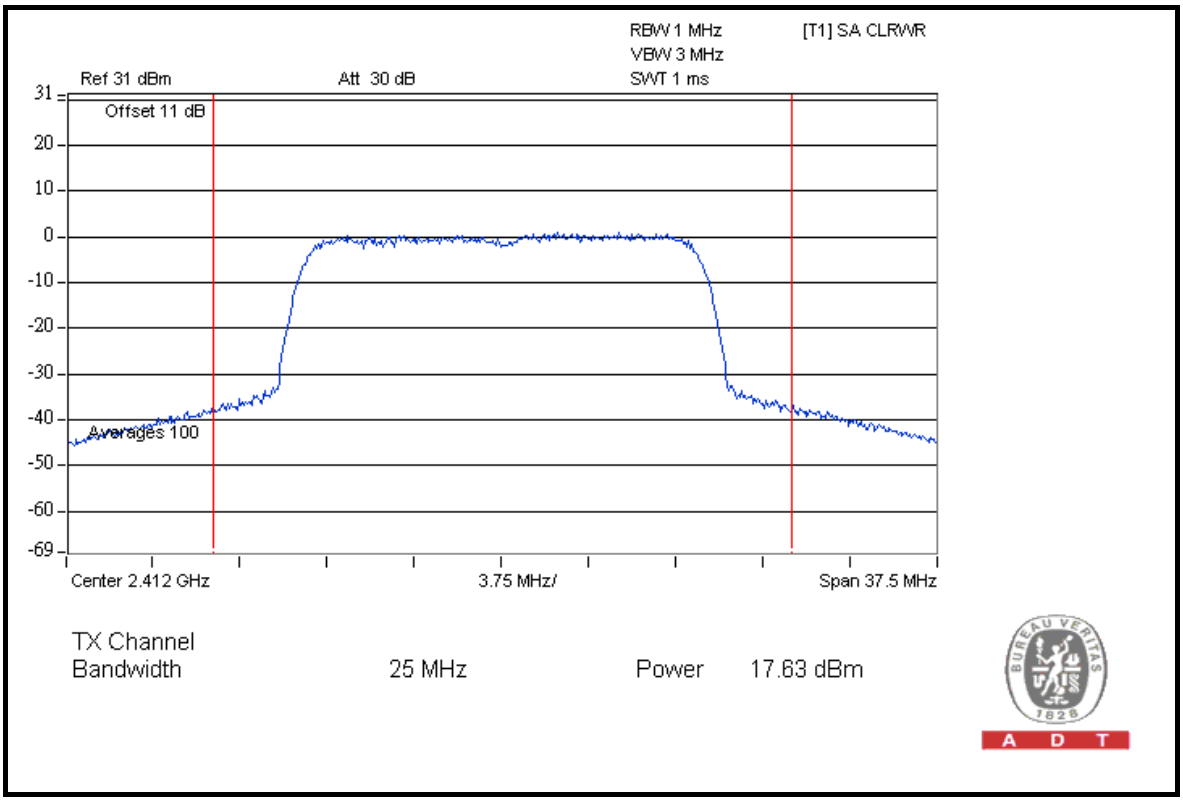
CH 6



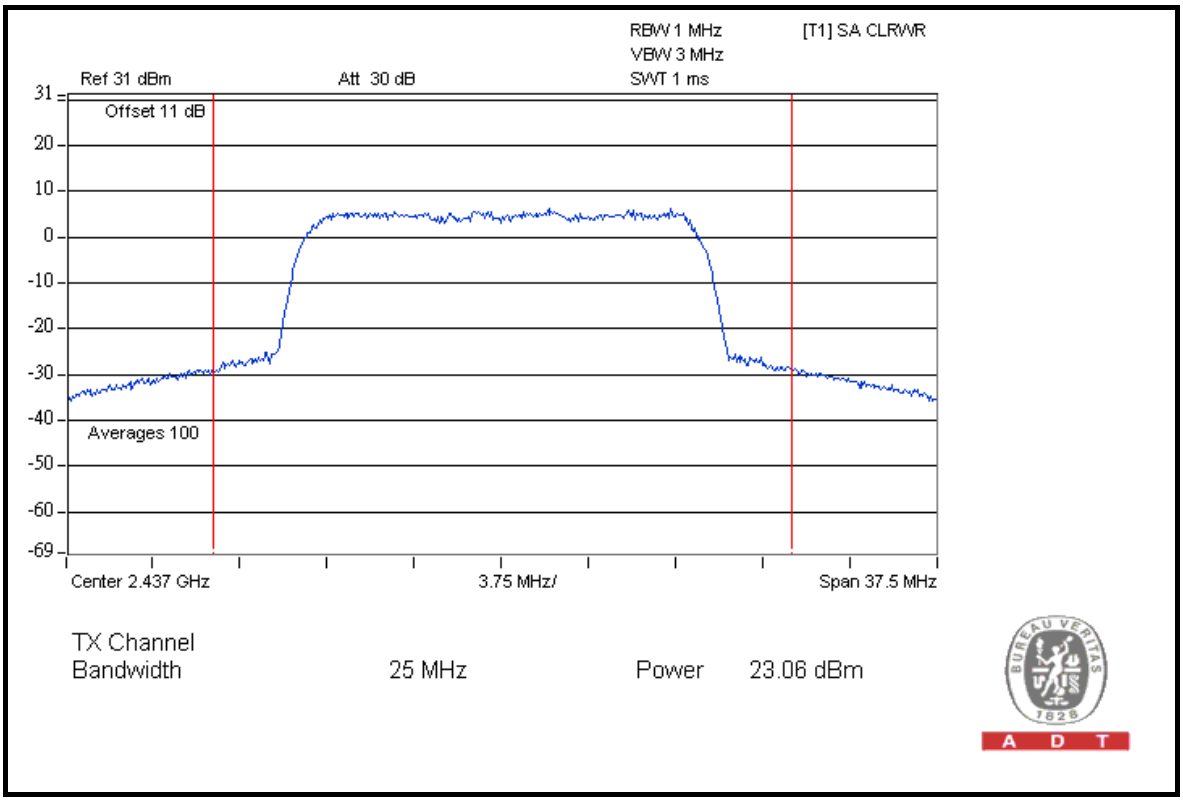
CH 11



FOR CHAIN 1: CH 1

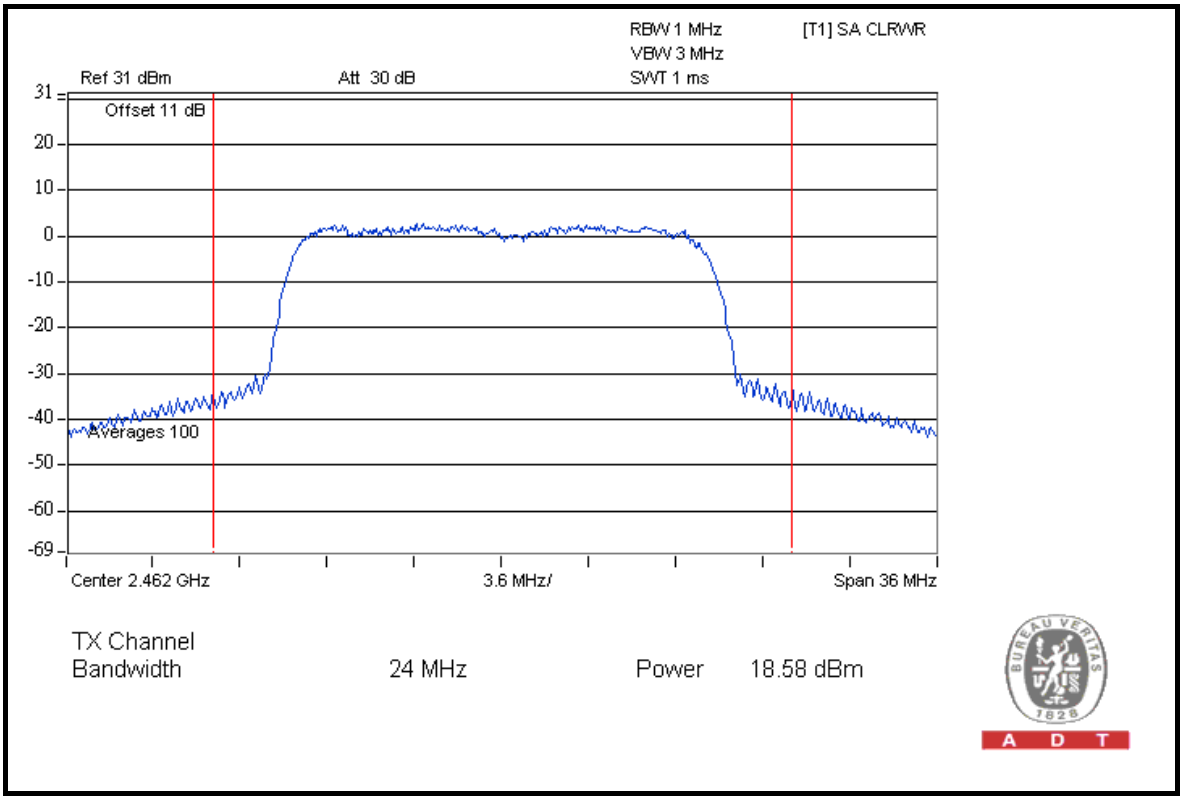


CH 6



TX Channel Bandwidth 25 MHz Power 23.06 dBm

CH 11



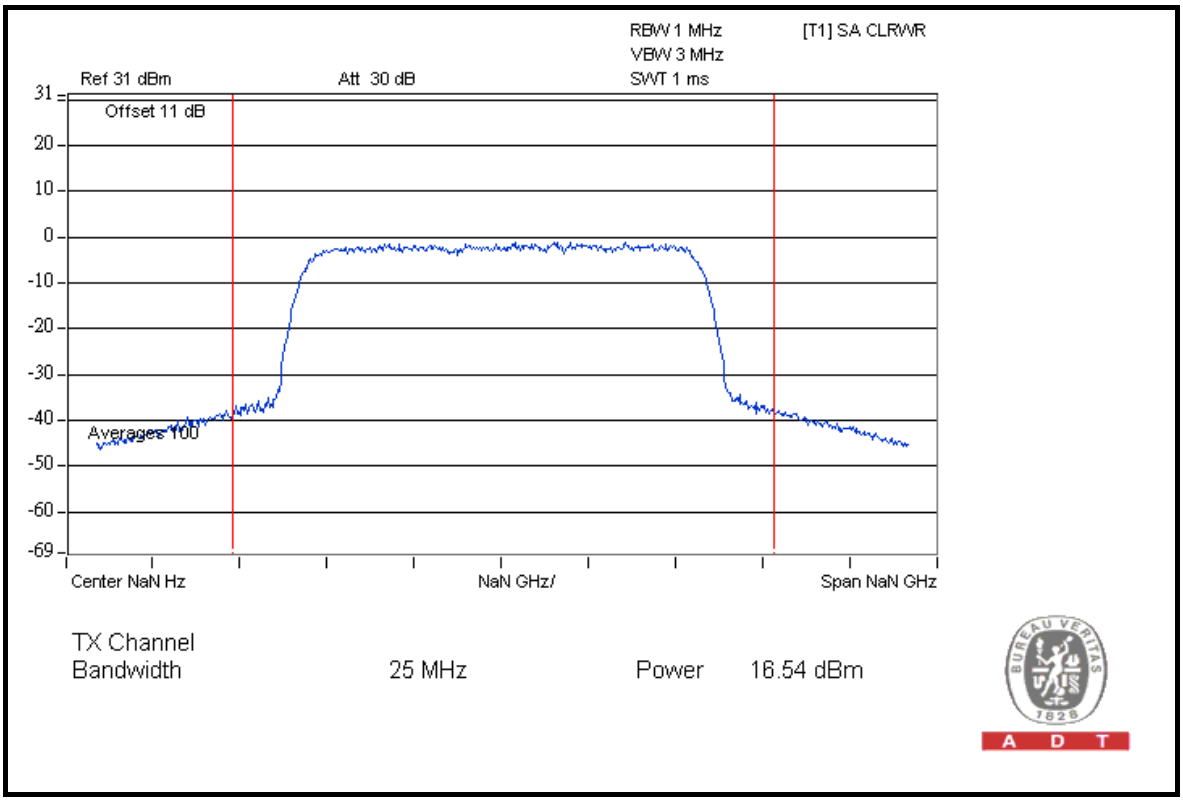
TX Channel Bandwidth 24 MHz Power 18.58 dBm

DRAFT 802.11n (20MHz) OFDM MODULATION

MODULATION TYPE	BPSK	**TRANSFER RATE**	7.2Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

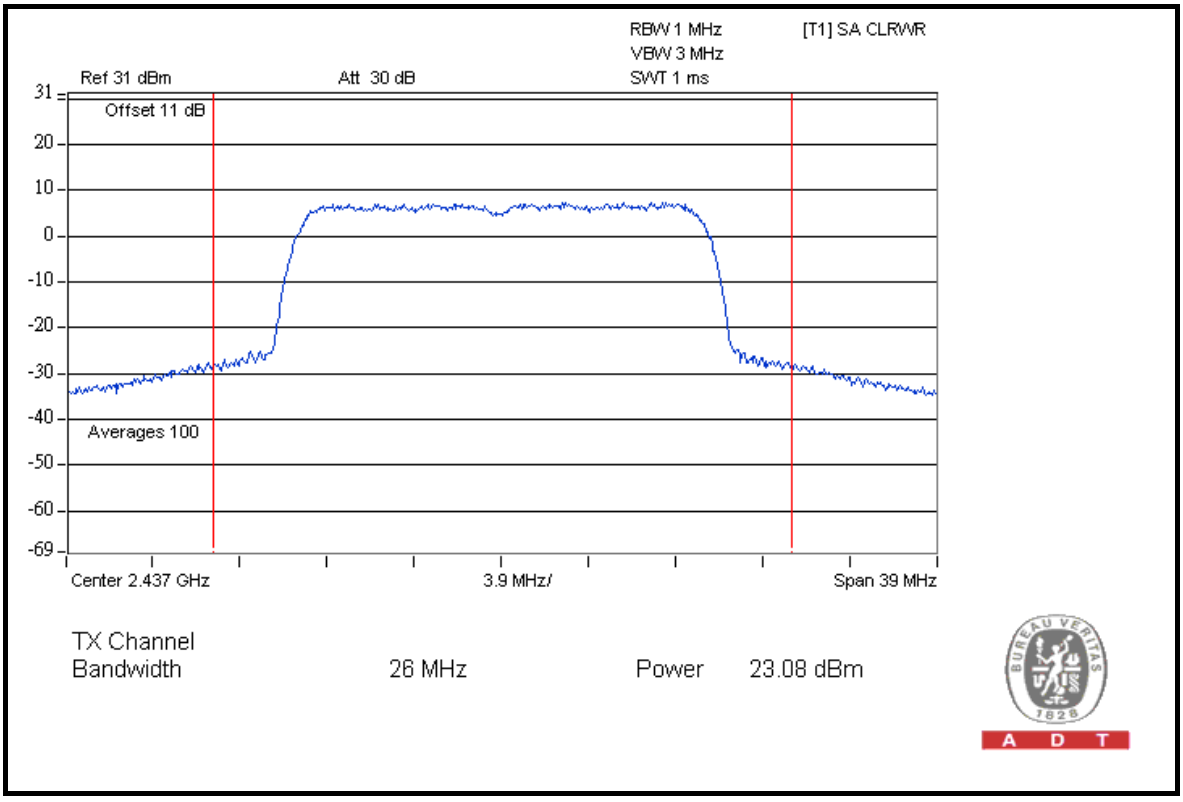
CHAN.	CHAN. FREQ. (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	16.54	17.13	96.723	19.86	30	PASS
6	2437	23.08	23.13	408.825	26.12	30	PASS
11	2462	17.60	17.58	114.824	20.60	30	PASS

FOR CHAIN 0: CH 1



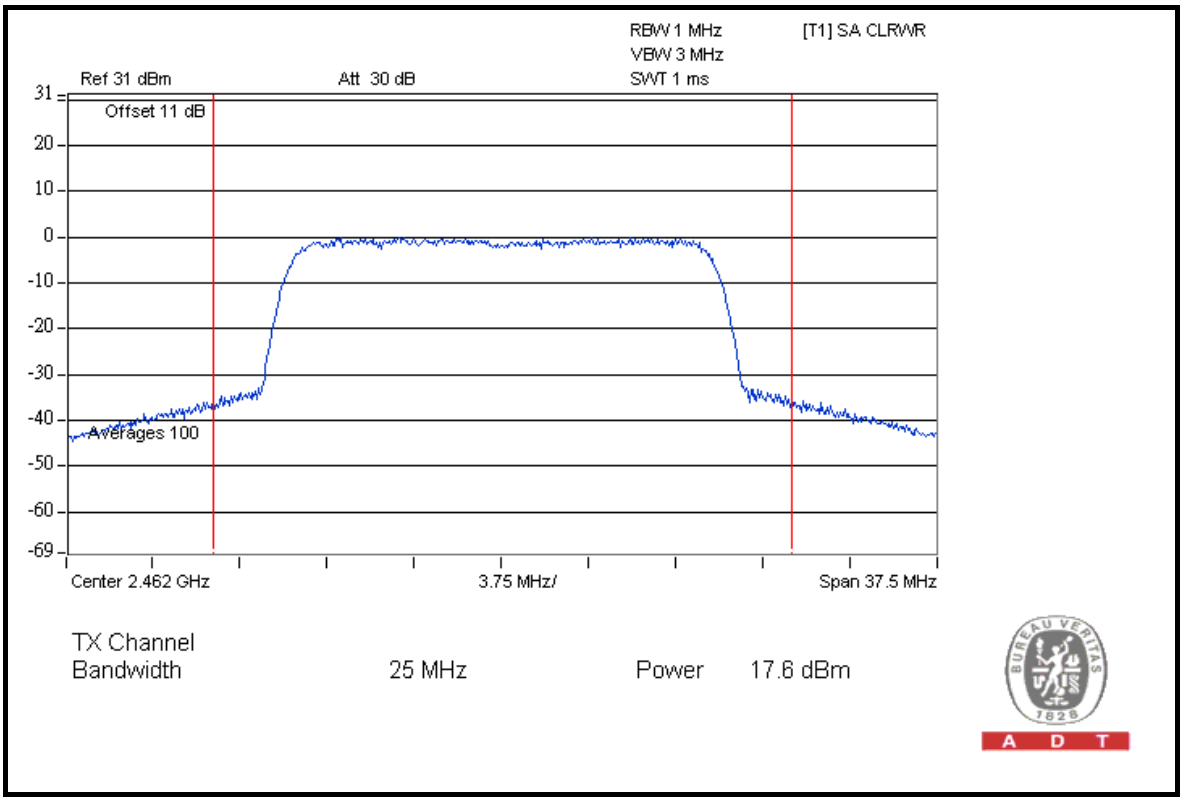
TX Channel Bandwidth 25 MHz Power 16.54 dBm

CH 6



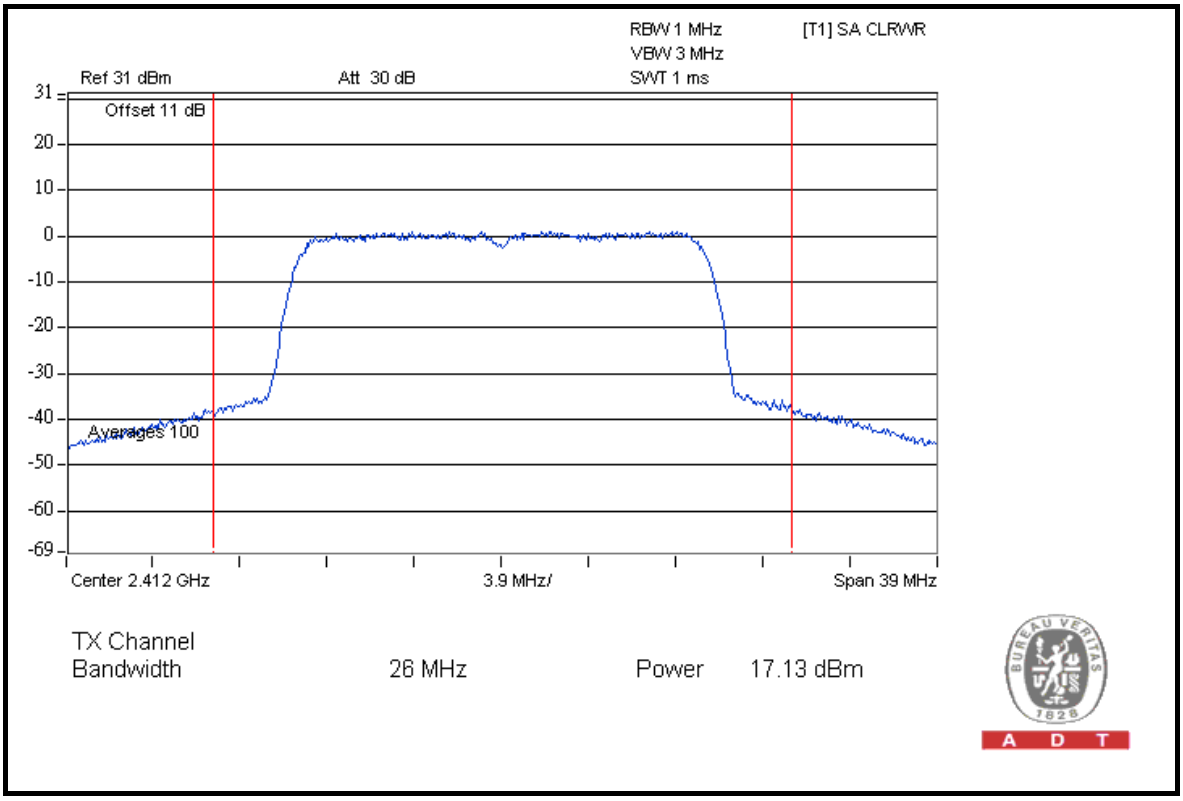
TX Channel Bandwidth 26 MHz Power 23.08 dBm

CH 11



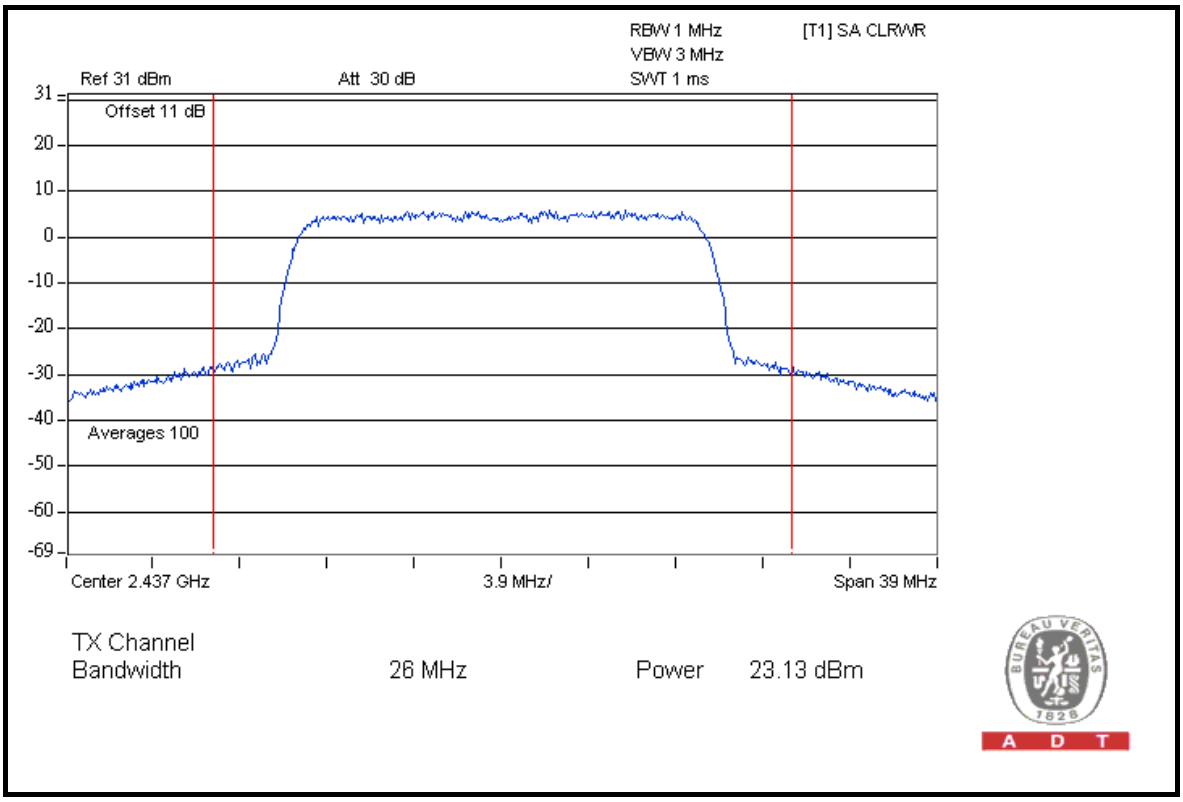
TX Channel Bandwidth 25 MHz Power 17.6 dBm

FOR CHAIN 1: CH 1



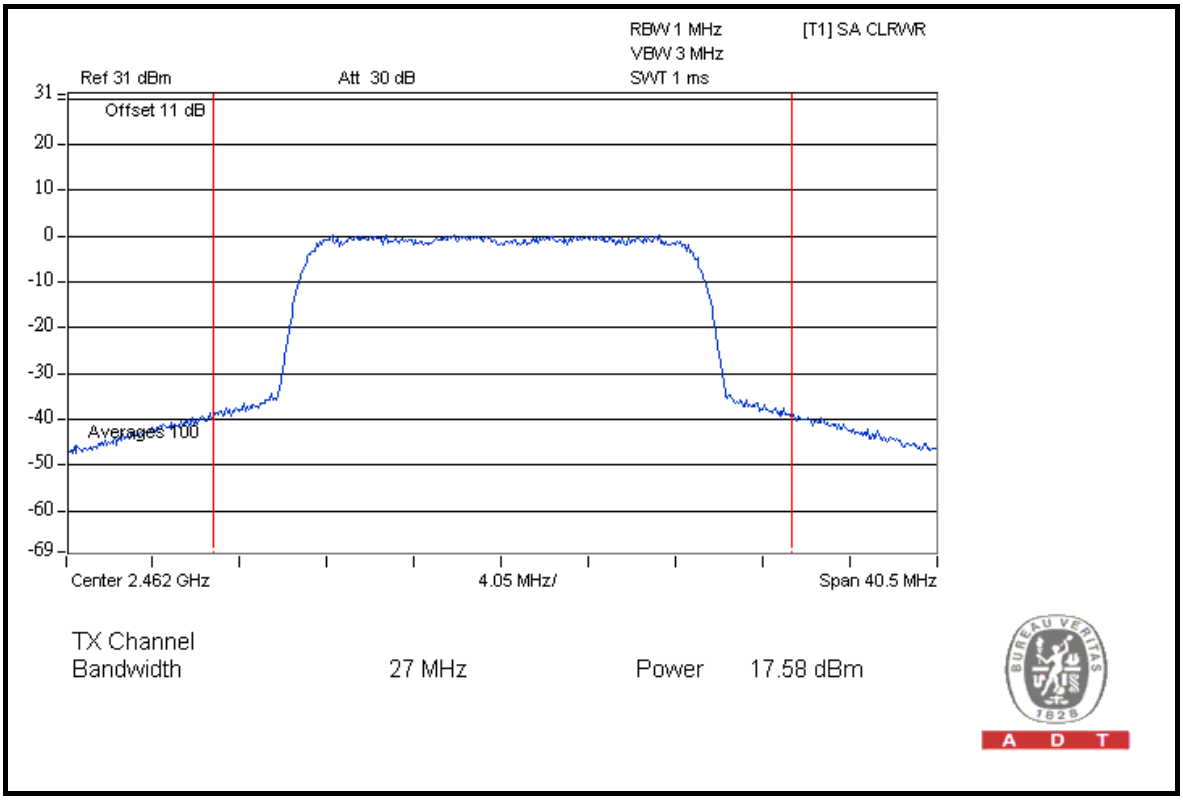
TX Channel Bandwidth 26 MHz Power 17.13 dBm

CH 6



TX Channel Bandwidth 26 MHz Power 23.13 dBm

CH 11



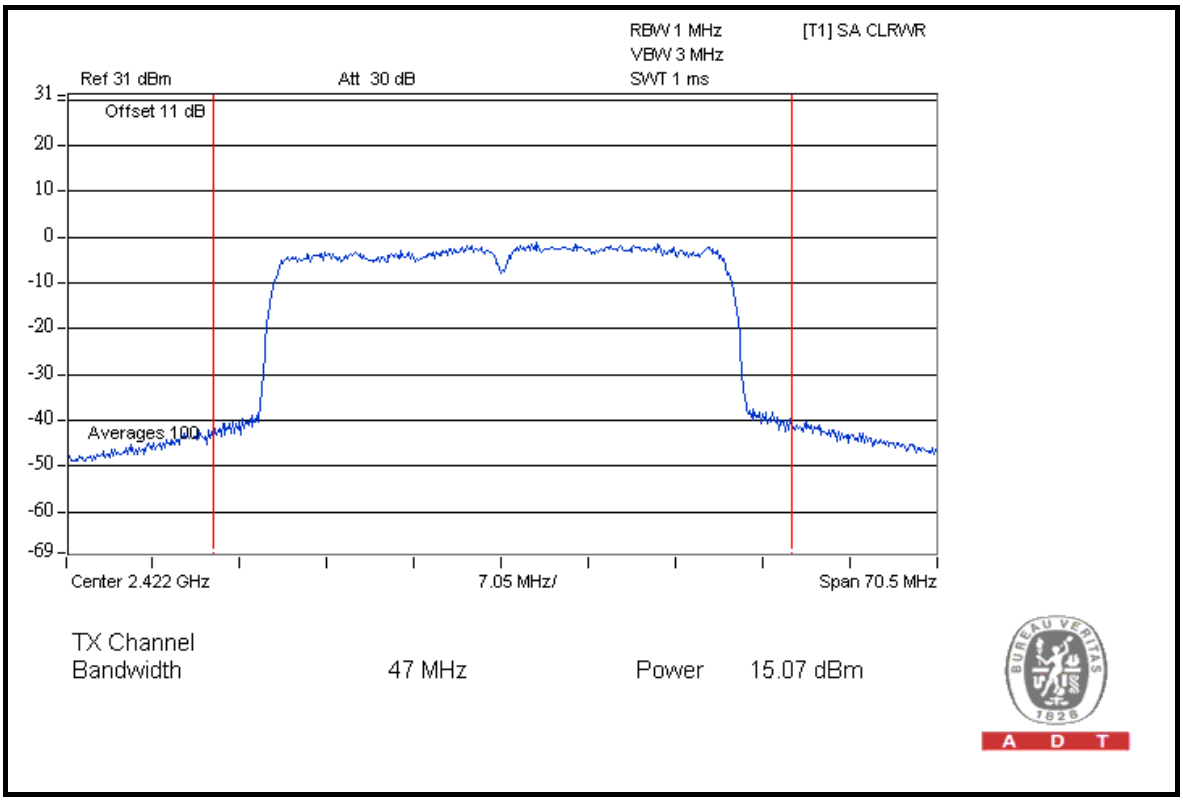
TX Channel Bandwidth 27 MHz Power 17.58 dBm

DRAFT 802.11n (40MHz) OFDM MODULATION

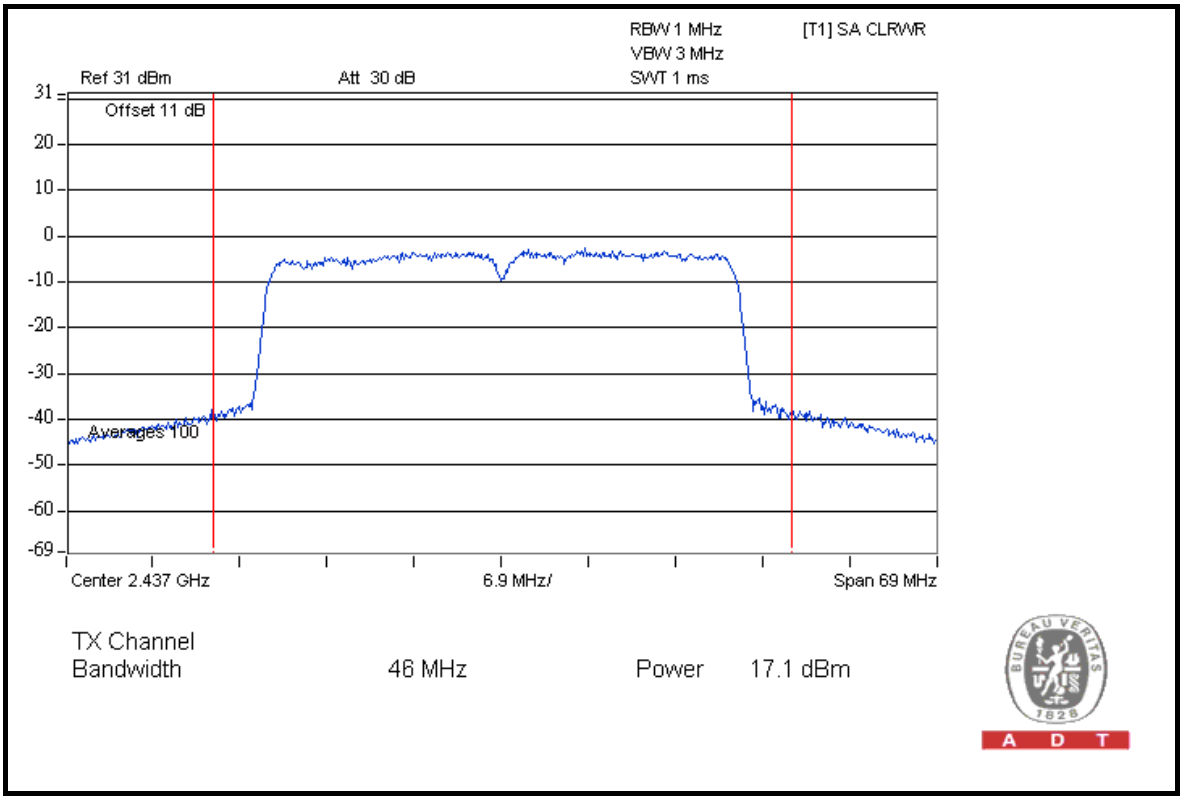
MODULATION TYPE	BPSK	**TRANSFER RATE**	15.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

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	15.07	15.10	64.496	18.10	30	PASS
4	2437	17.10	17.11	102.691	20.12	30	PASS
7	2452	14.91	14.87	61.664	17.90	30	PASS

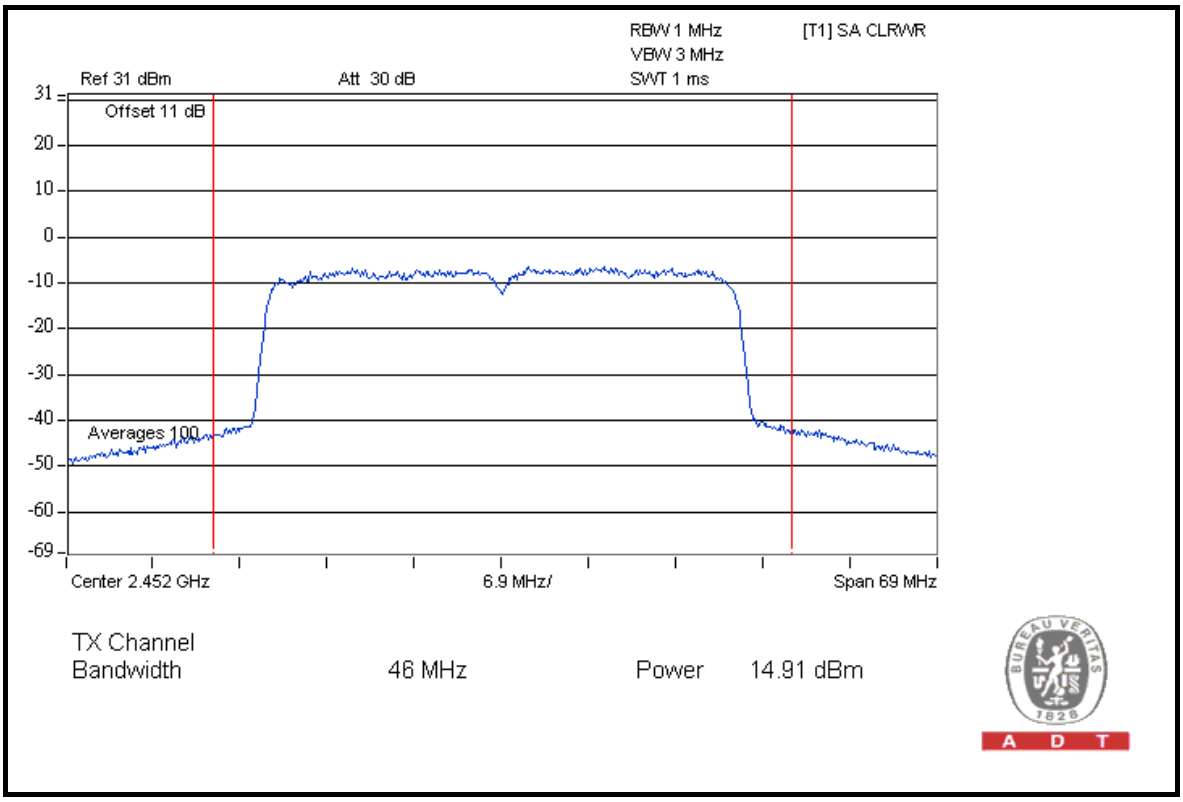
FOR CHAIN 0: CH 1



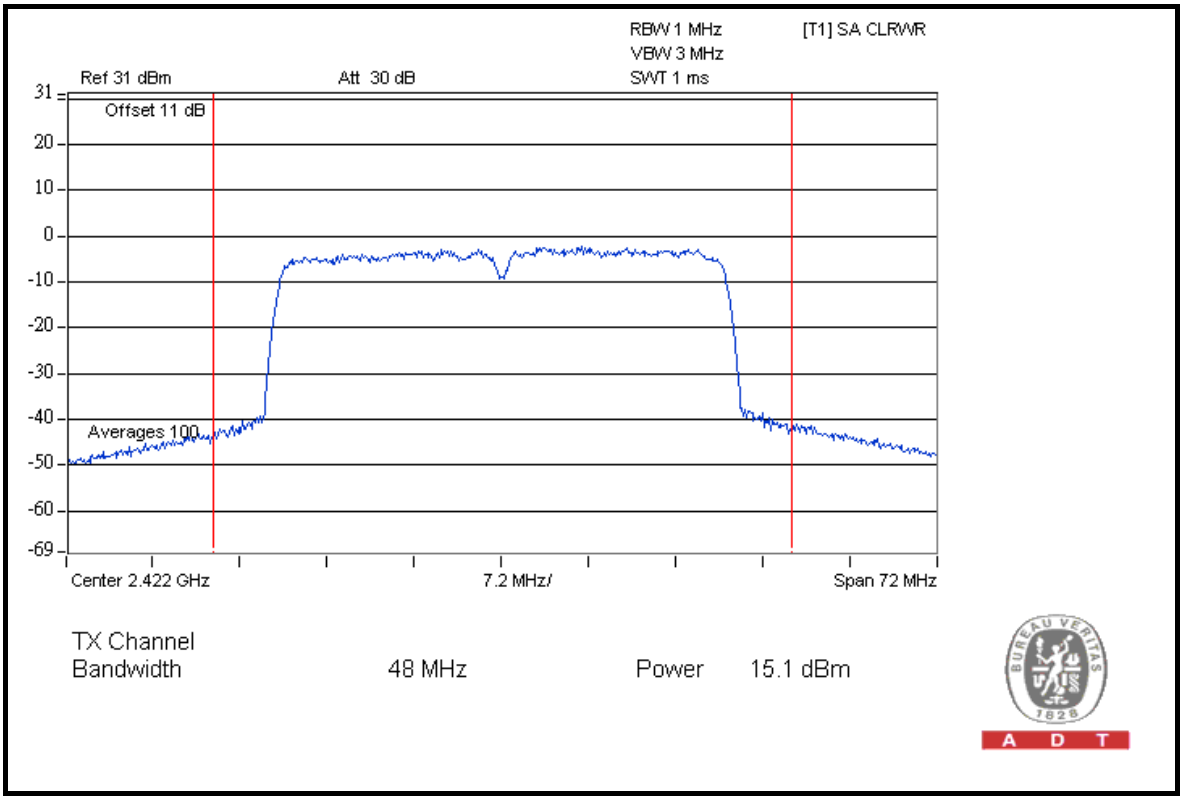
CH 4



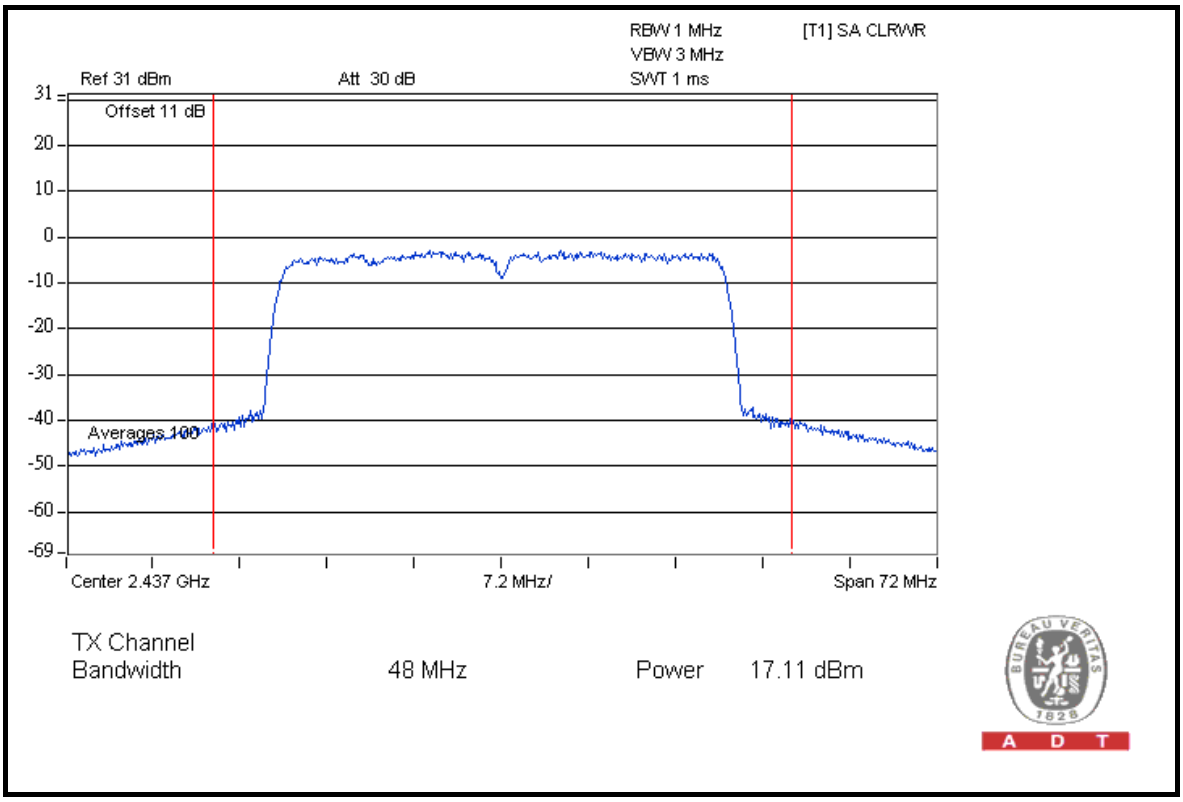
CH 7



FOR CHAIN 1: CH 1

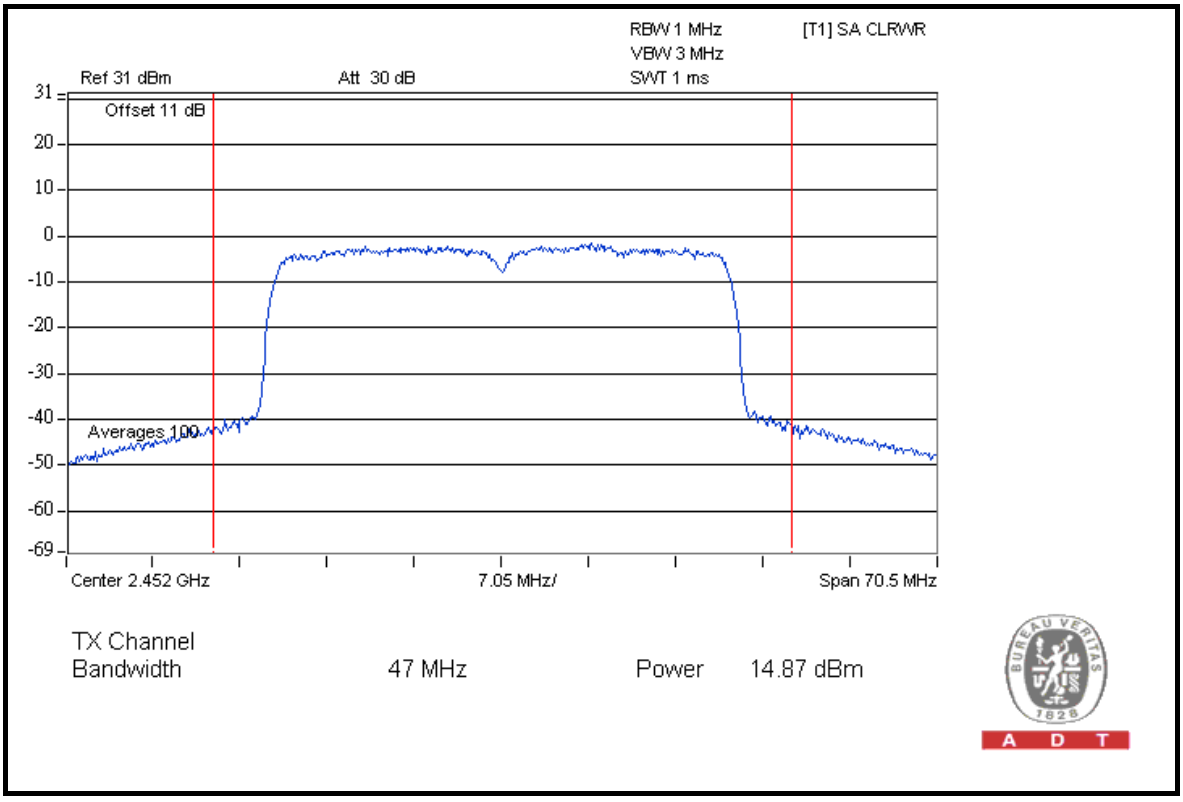


CH 4



TX Channel Bandwidth 48 MHz Power 17.11 dBm

CH 7



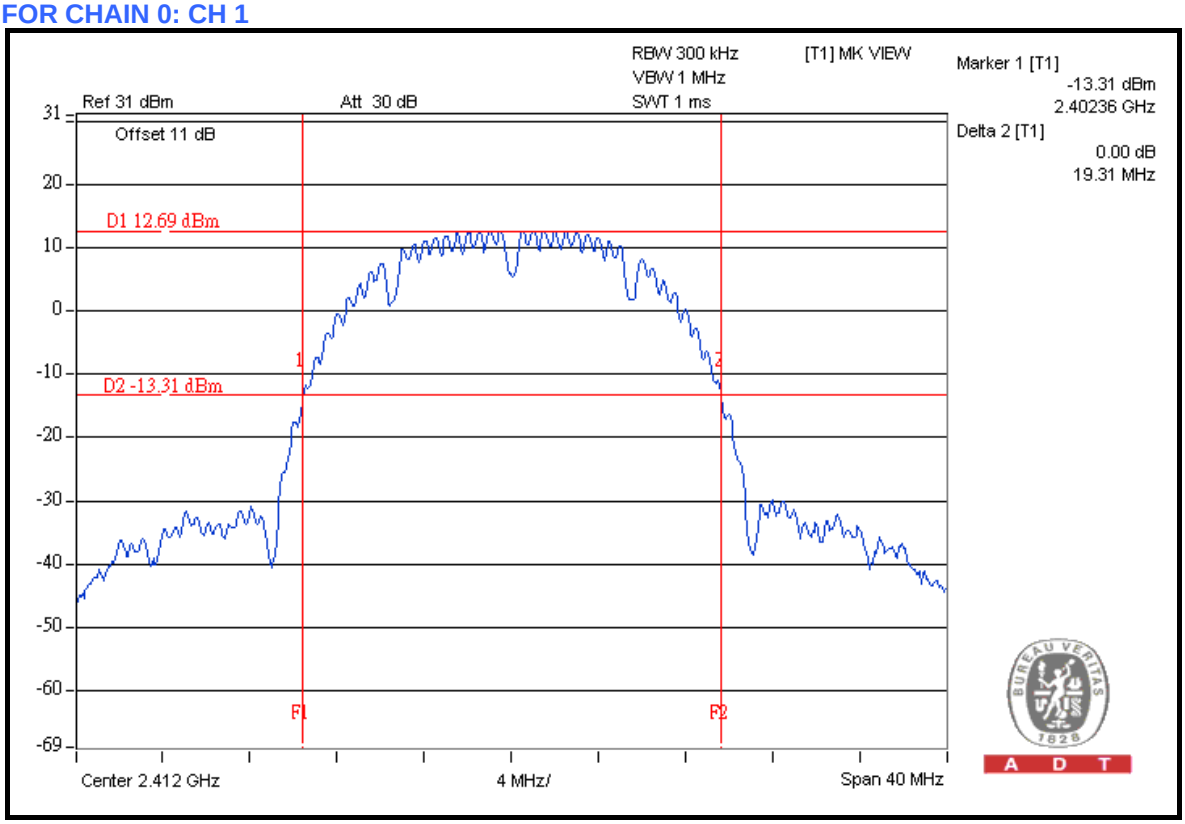
TX Channel Bandwidth 47 MHz Power 14.87 dBm

26dB OCCUPIED BANDWIDTH: 802.11b DSSS MODULATION

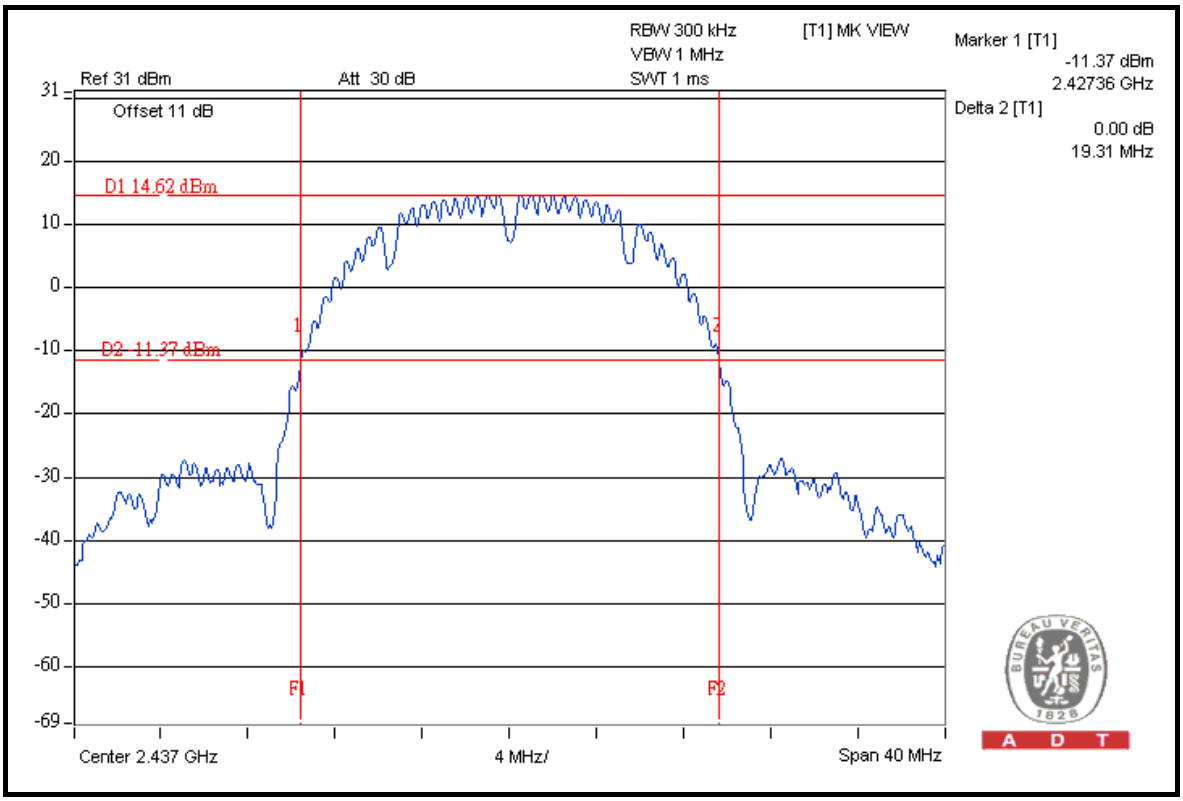
MODULATION TYPE	DSSS	**TRANSFER RATE**	1.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 991hPa
TESTED BY	Mark Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
1	2412	19.31	19.32	PASS
6	2437	19.31	19.30	PASS
11	2462	19.29	19.32	PASS

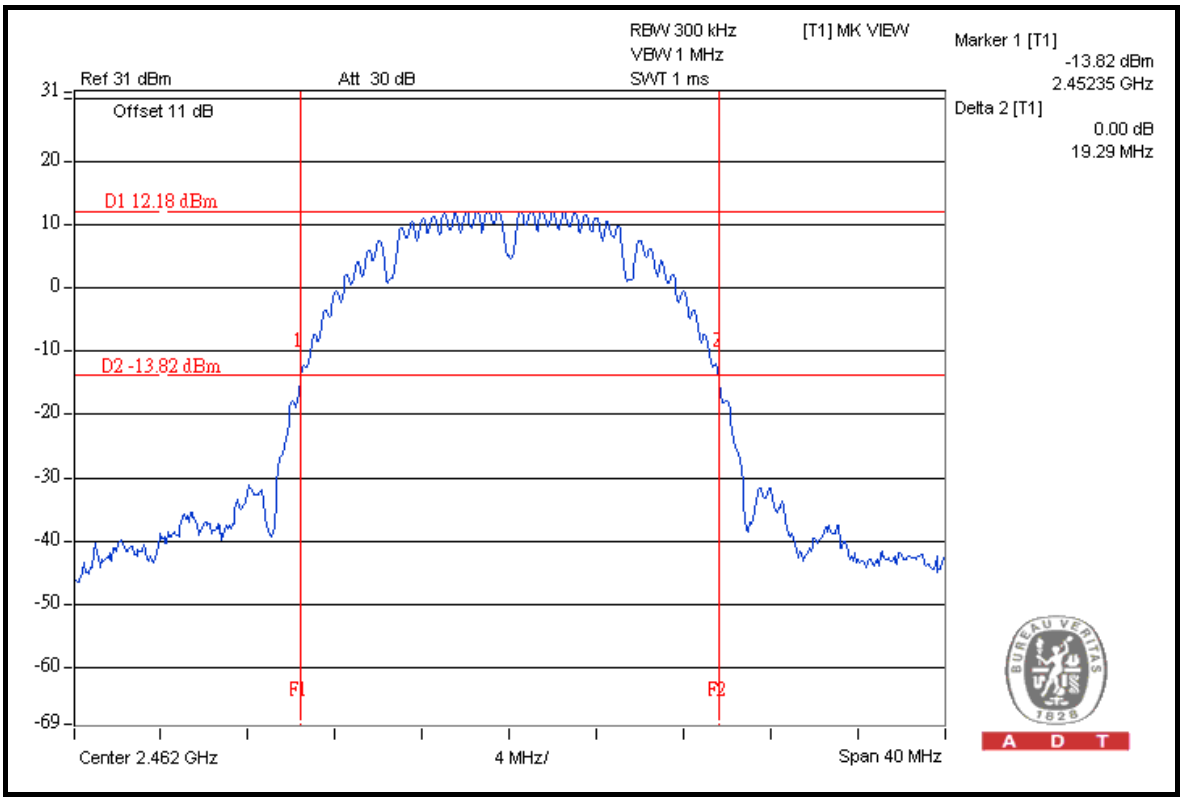
FOR CHAIN 0: CH 1



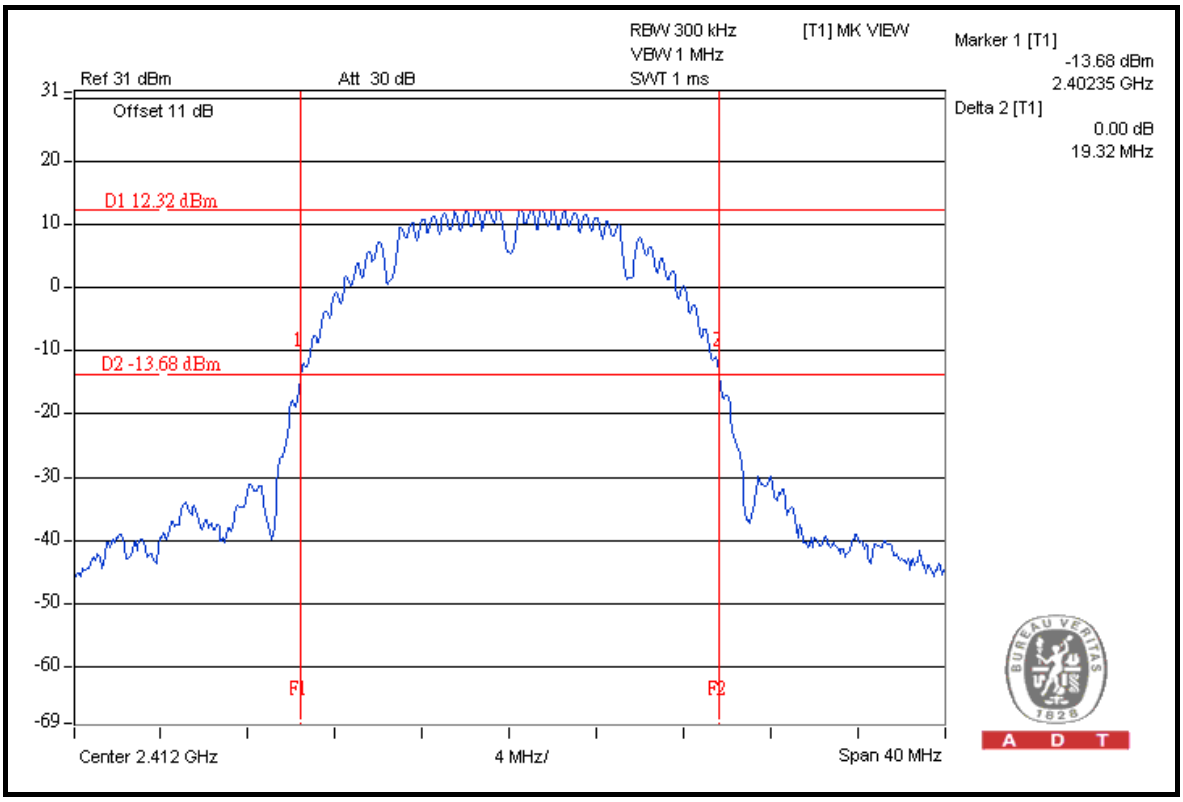
CH 6



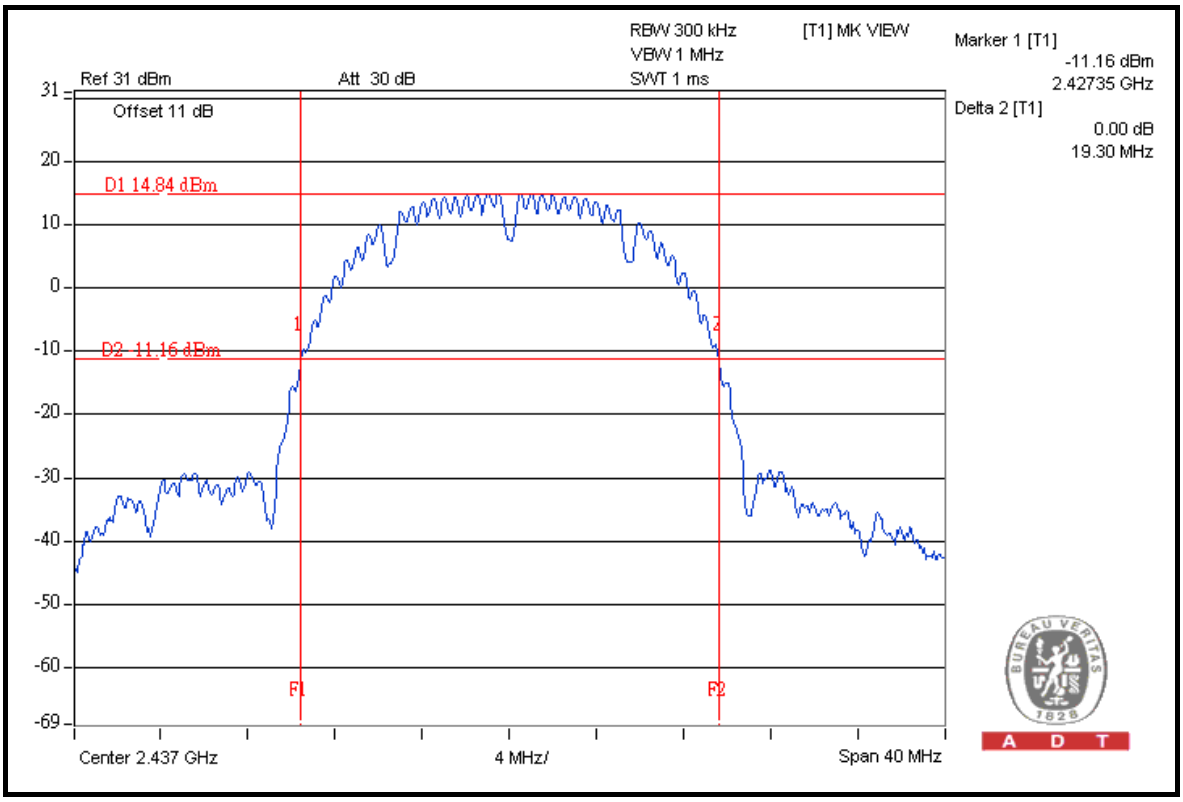
CH 11



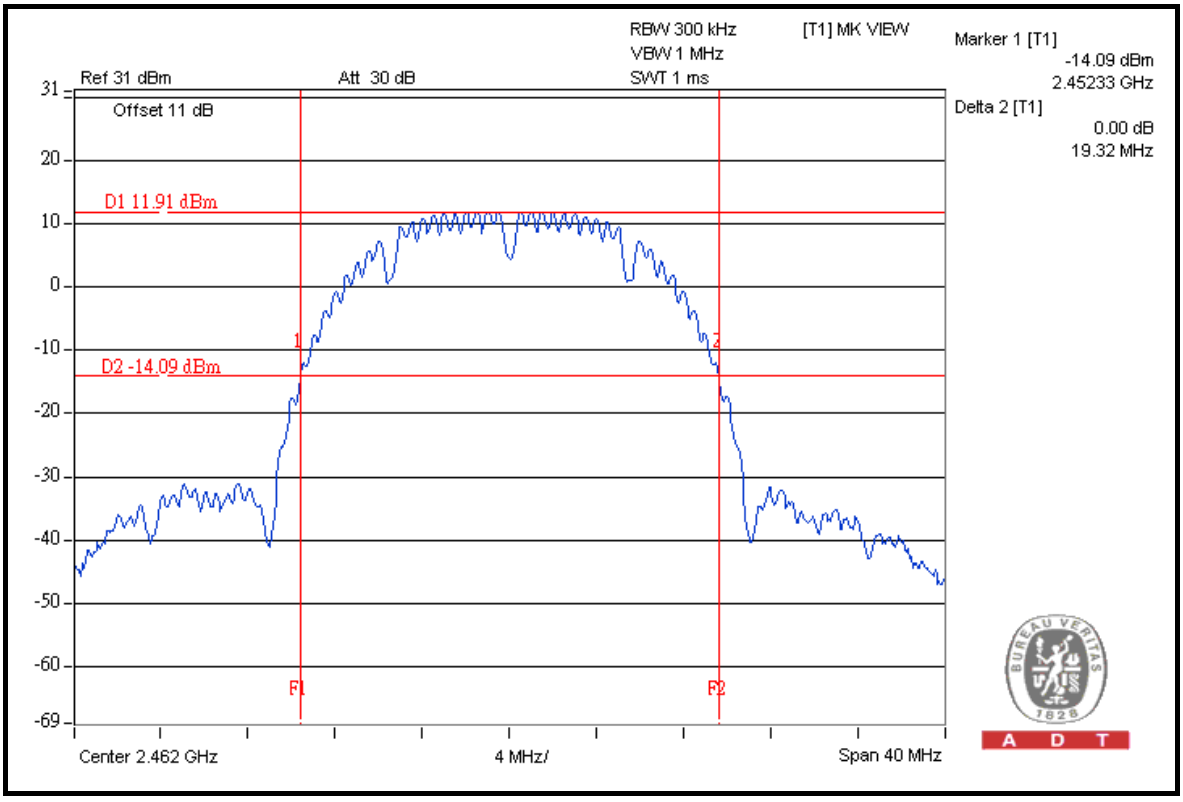
FOR CHAIN 1: CH 1



CH 6


RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-11.16 dBm
2.42735 GHz
Delta 2 [T1]
0.00 dB
19.30 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 14.84 dBm
D2 -11.16 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.437 GHz
4 MHz/
Span 40 MHz

CH 11

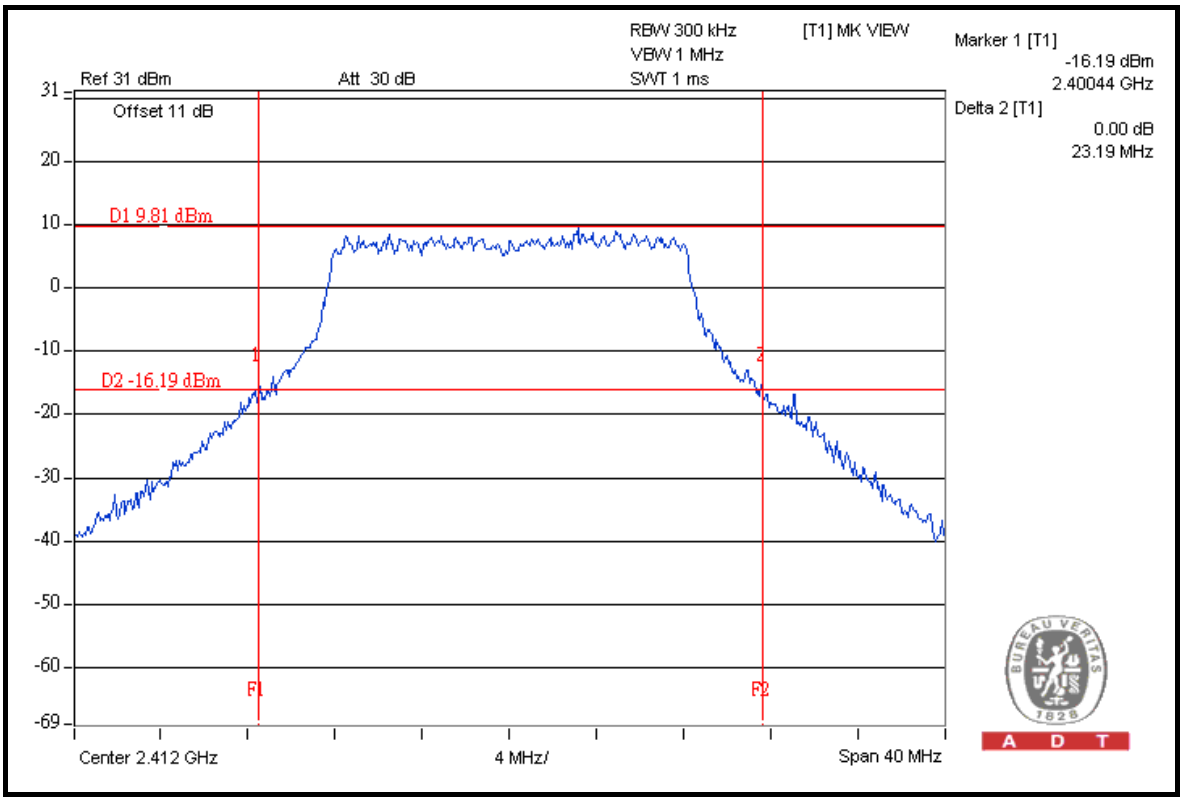

RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-14.09 dBm
2.45233 GHz
Delta 2 [T1]
0.00 dB
19.32 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 11.91 dBm
D2 -14.09 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.462 GHz
4 MHz/
Span 40 MHz

802.11g OFDM MODULATION

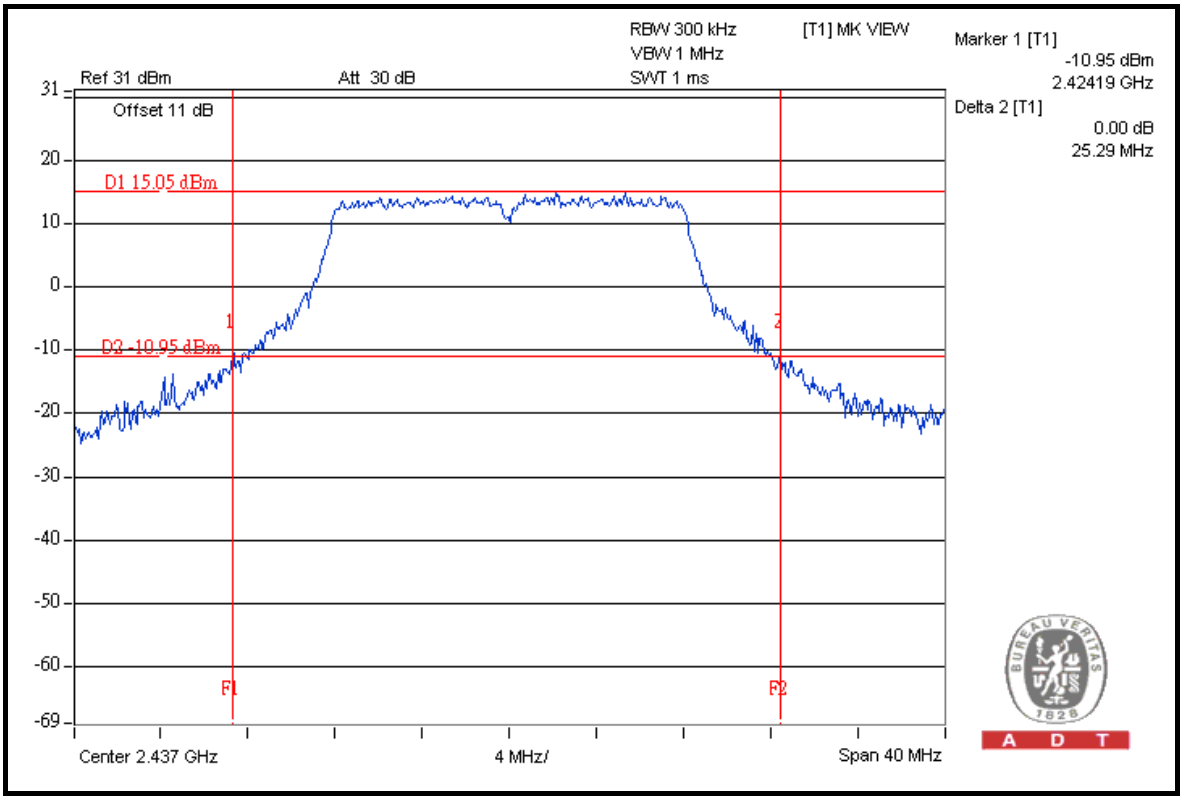
MODULATION TYPE	OFDM	**TRANSFER RATE**	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 991hPa
TESTED BY	Mark Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
1	2412	23.19	24.78	PASS
6	2437	25.29	24.41	PASS
11	2462	23.95	23.48	PASS

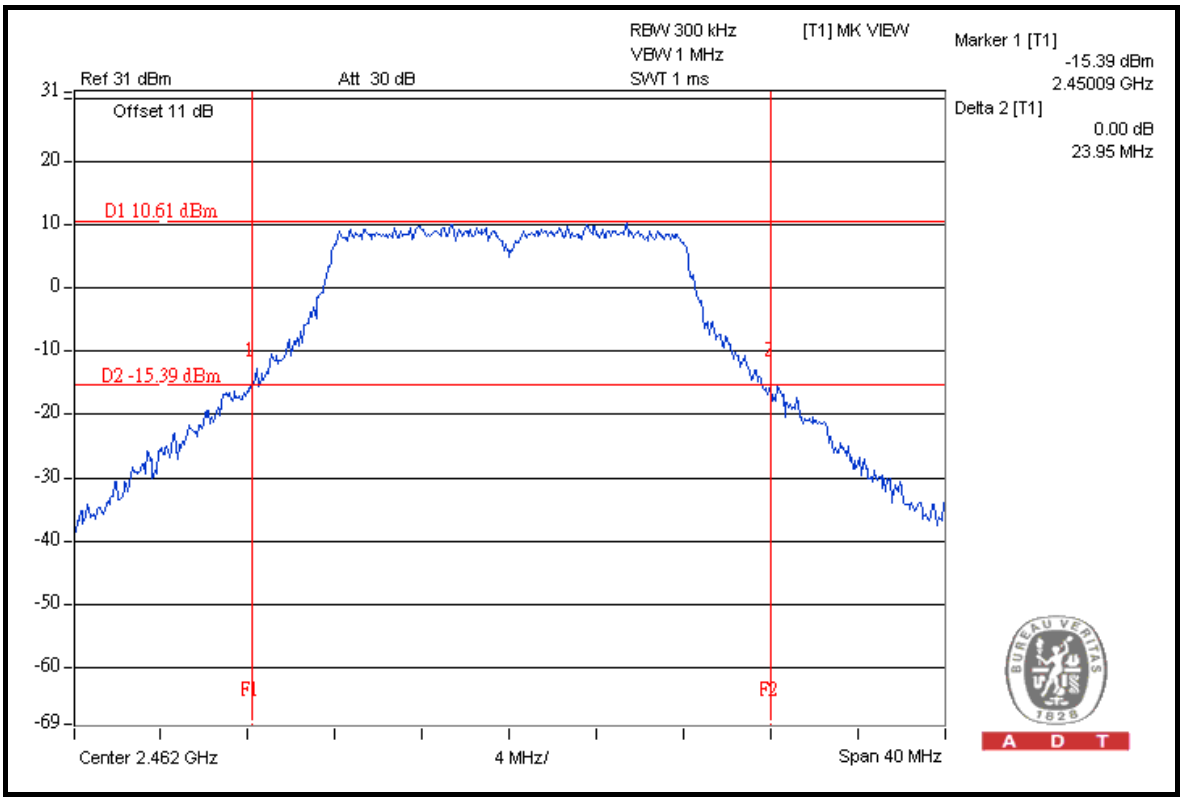
FOR CHAIN 0: CH 1



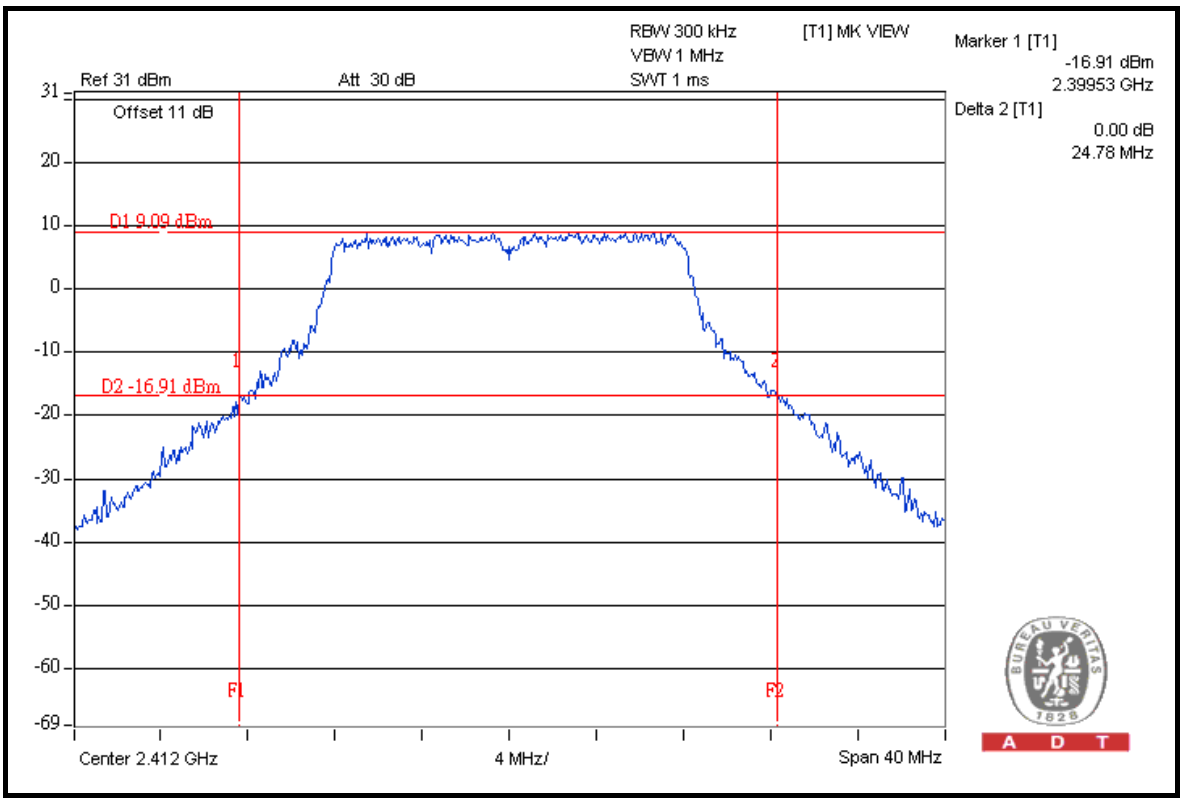
CH 6



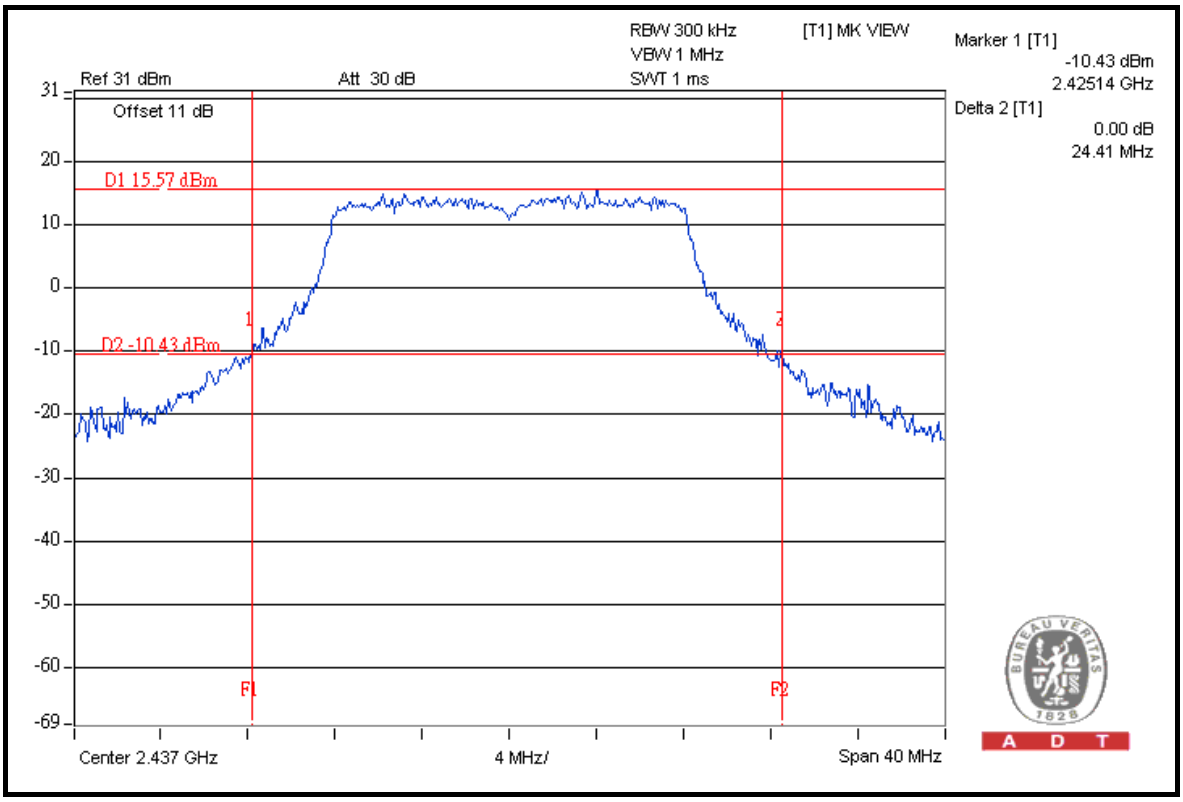
CH 11



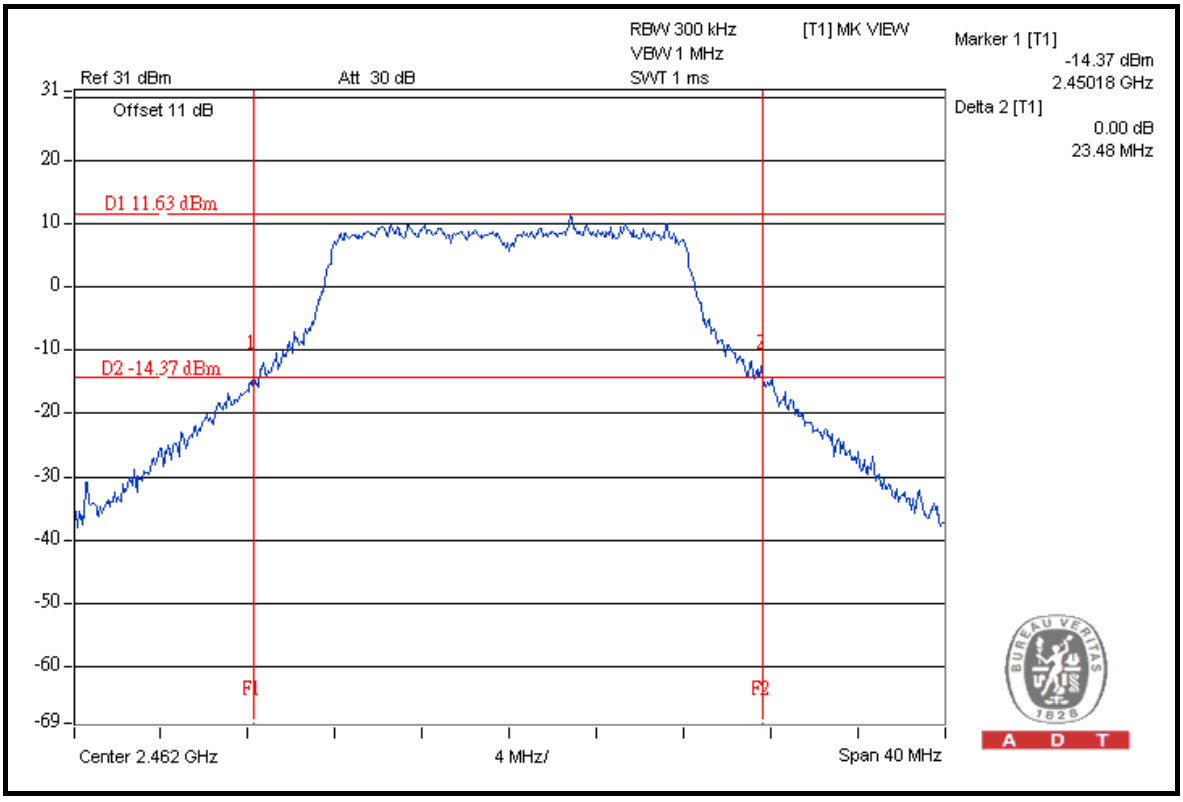
FOR CHAIN 1: CH 1



CH 6


RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-10.43 dBm
2.42514 GHz
Delta 2 [T1]
0.00 dB
24.41 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 15.57 dBm
D2 -10.43 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.437 GHz
4 MHz/
Span 40 MHz

CH 11

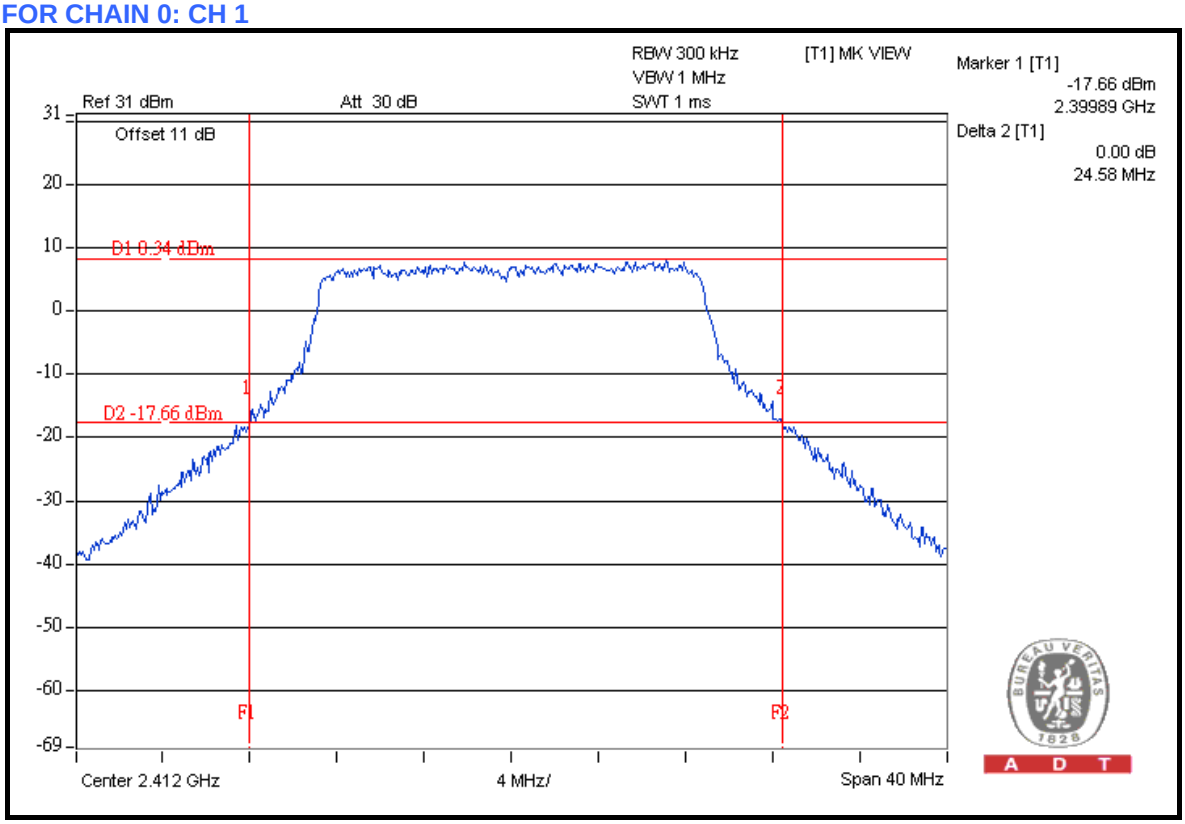

RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-14.37 dBm
2.45018 GHz
Delta 2 [T1]
0.00 dB
23.48 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 11.63 dBm
D2 -14.37 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.462 GHz
4 MHz/
Span 40 MHz

DRAFT 802.11n (20MHz) OFDM MODULATION

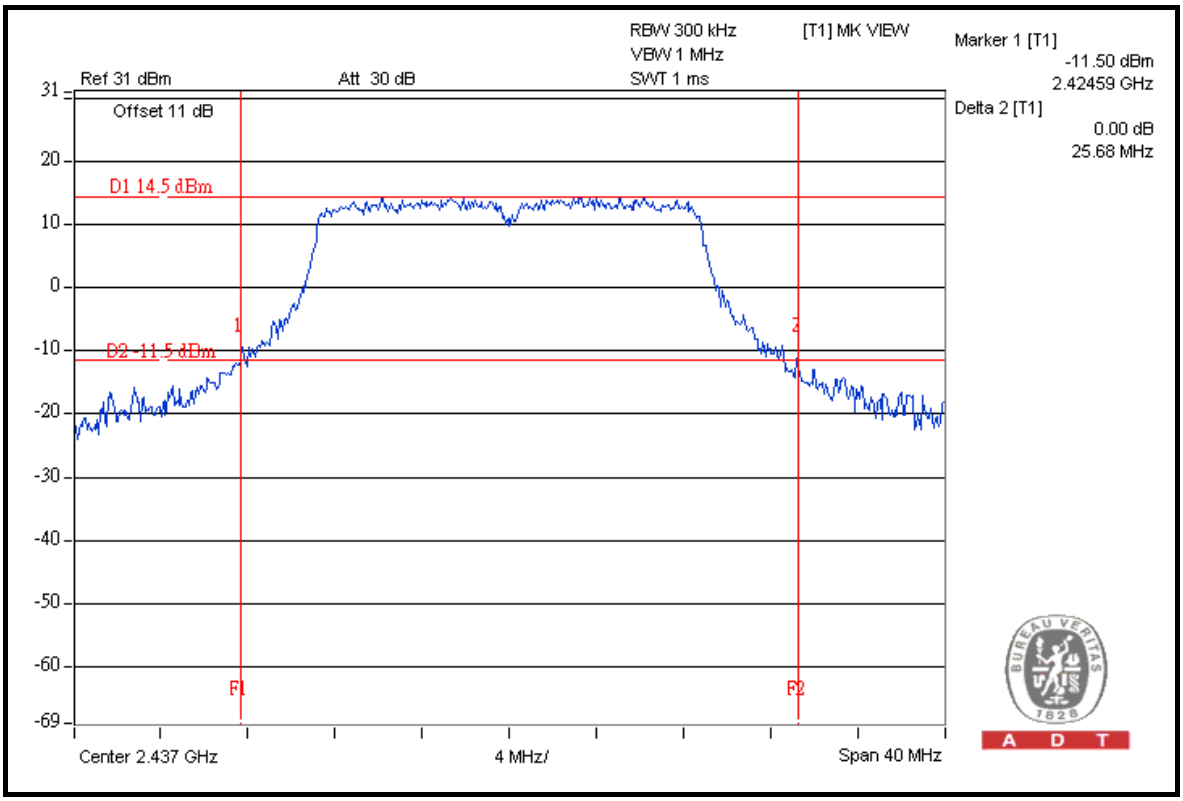
MODULATION TYPE	OFDM	**TRANSFER RATE**	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 991hPa
TESTED BY	Mark Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
1	2412	24.58	25.75	PASS
6	2437	25.68	25.70	PASS
11	2462	24.88	26.03	PASS

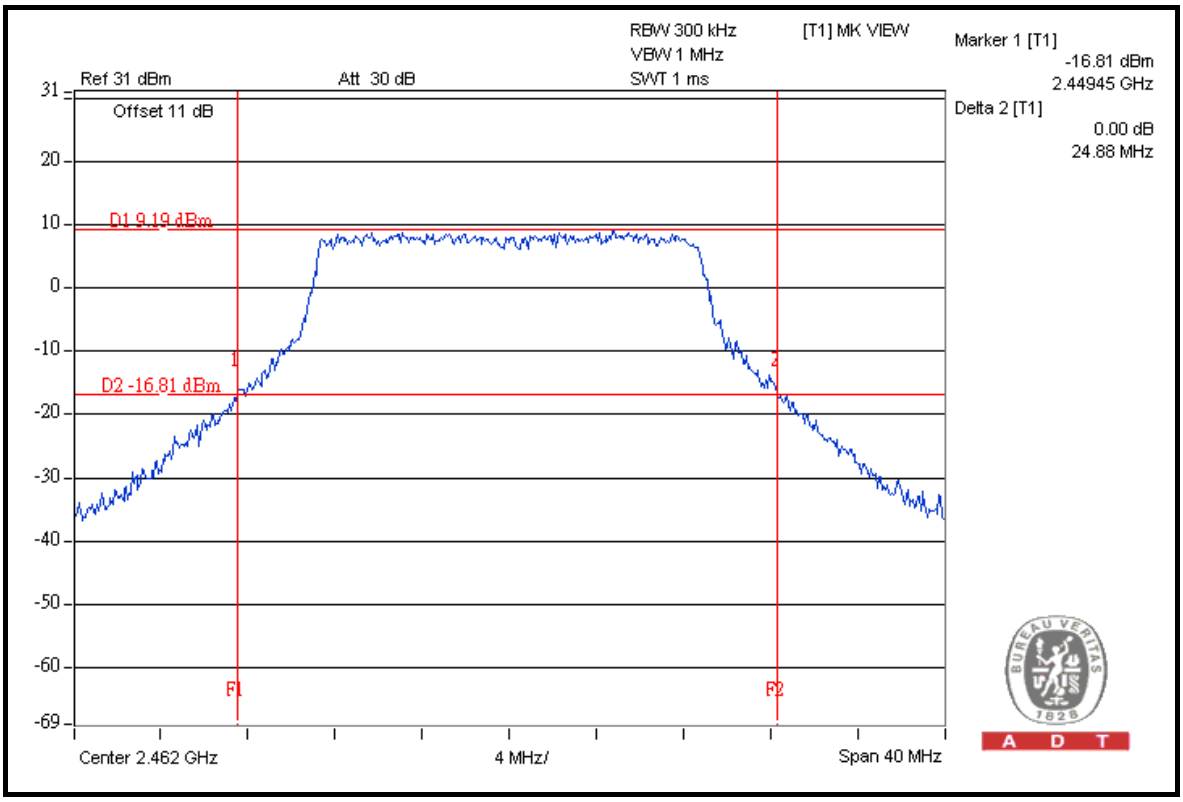
FOR CHAIN 0: CH 1



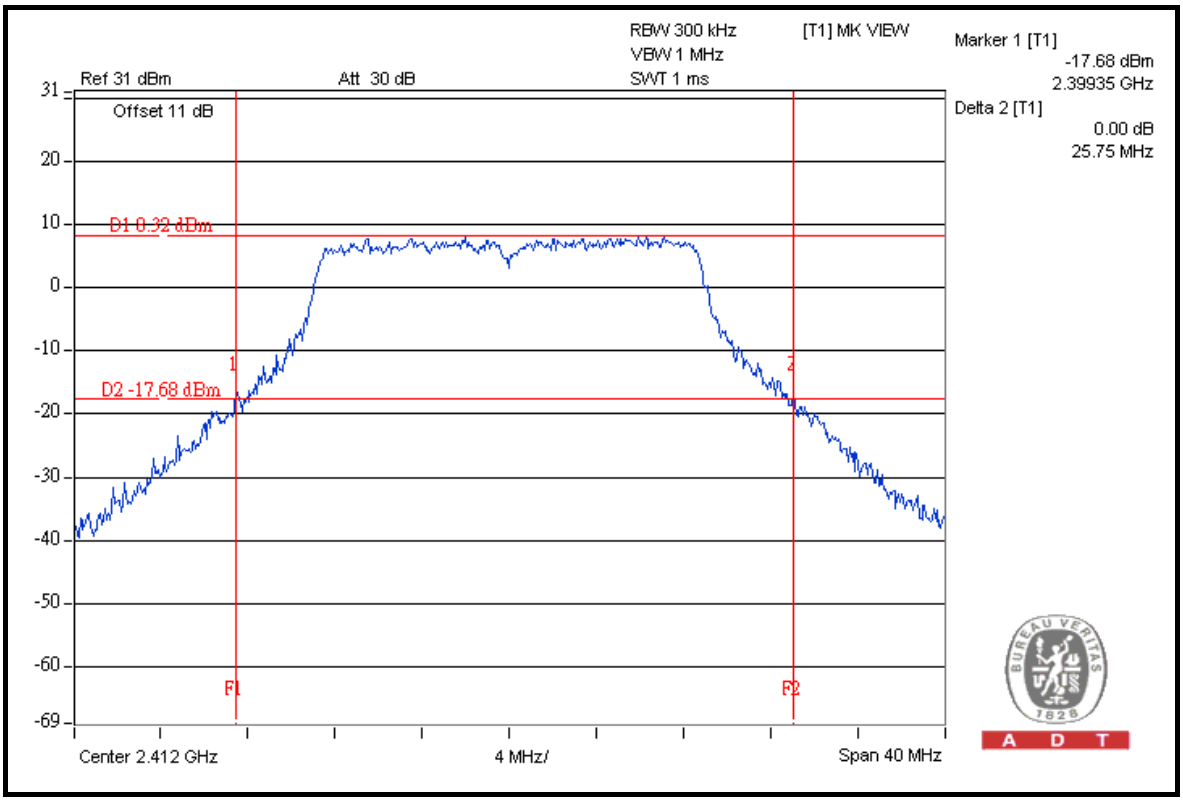
CH 6



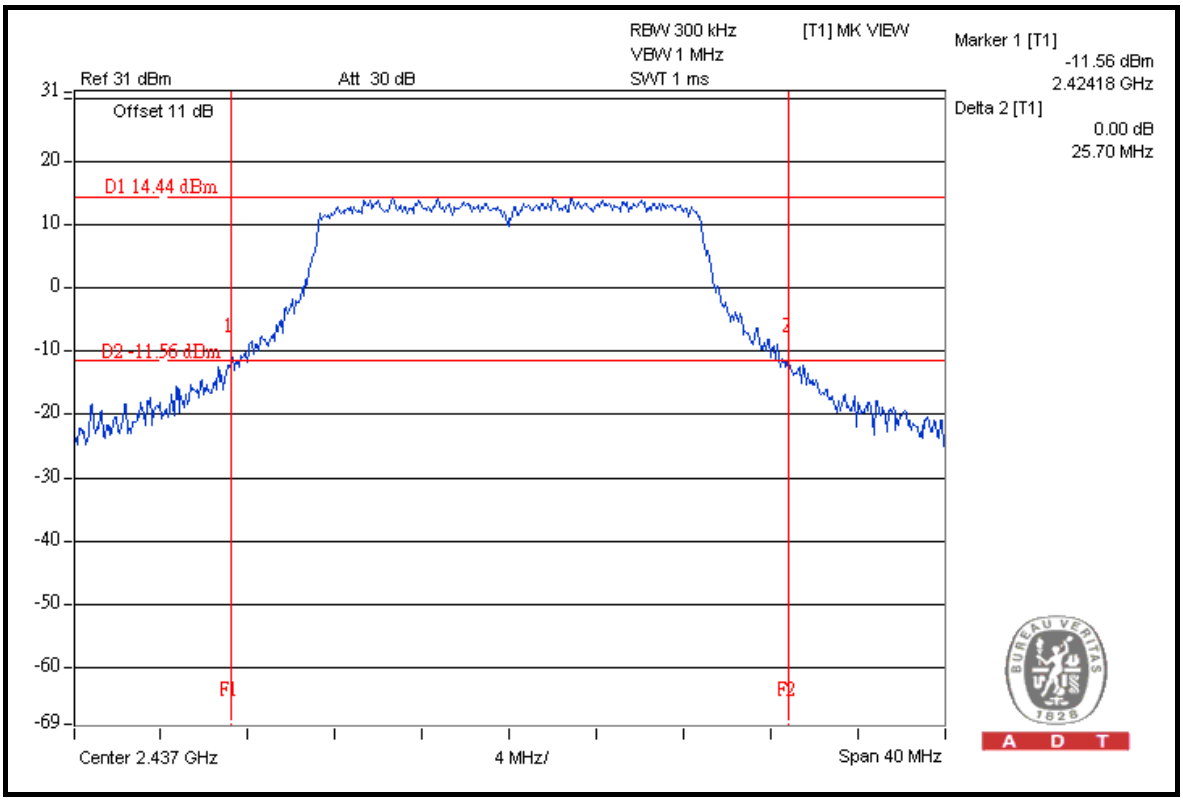
CH 11



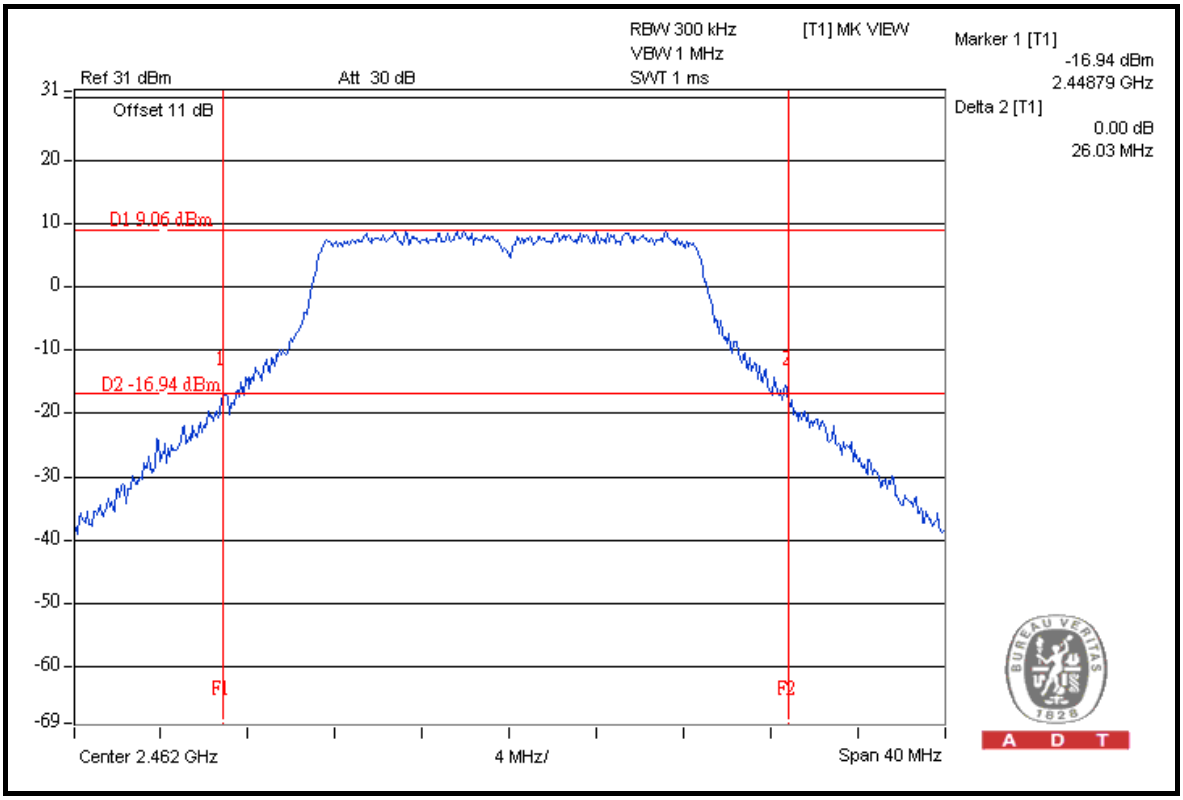
FOR CHAIN 1: CH 1



CH 6


RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-11.56 dBm
2.42418 GHz
Delta 2 [T1]
0.00 dB
25.70 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 14.44 dBm
D2 -11.56 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.437 GHz
4 MHz/
Span 40 MHz

CH 11

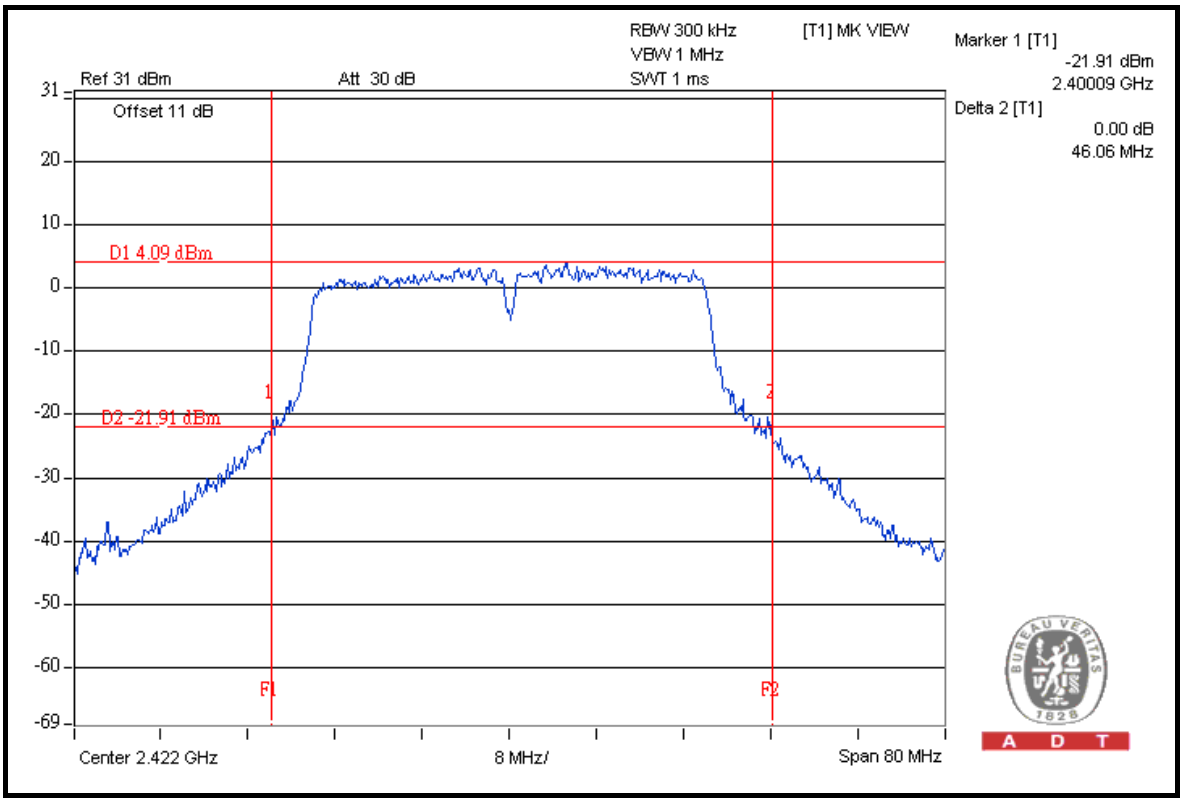

RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-16.94 dBm
2.44879 GHz
Delta 2 [T1]
0.00 dB
26.03 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 9.06 dBm
D2 -16.94 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.462 GHz
4 MHz/
Span 40 MHz

DRAFT 802.11n (40MHz) OFDM MODULATION

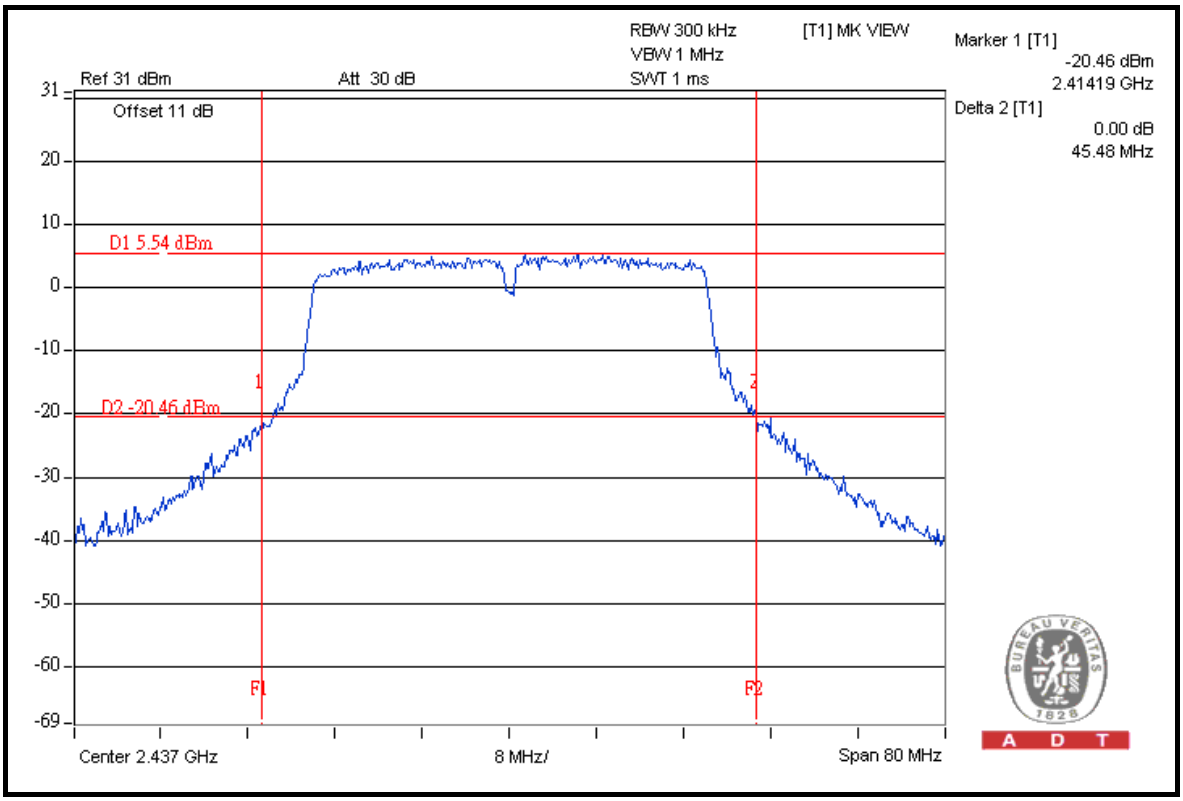
MODULATION TYPE	OFDM	**TRANSFER RATE**	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 991hPa
TESTED BY	Mark Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
1	2422	46.06	47.16	PASS
4	2437	45.48	47.02	PASS
7	2452	45.40	46.10	PASS

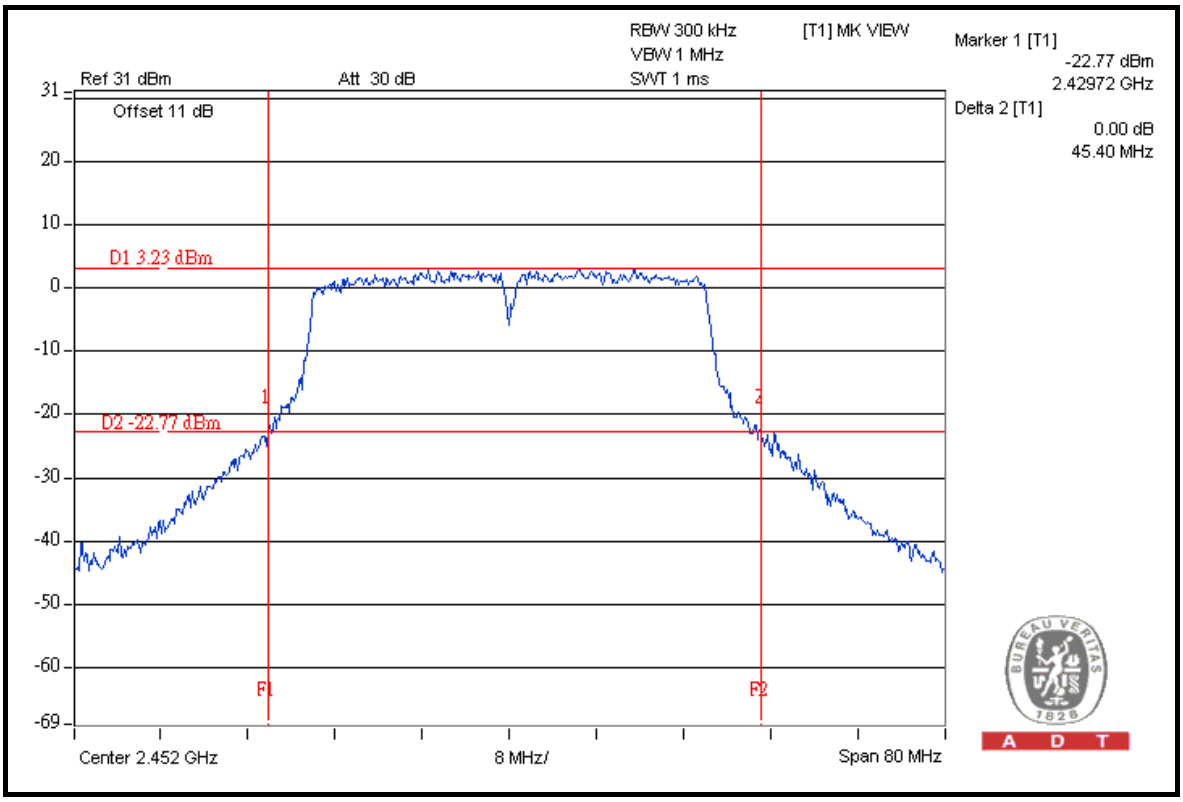
FOR CHAIN 0: CH 1



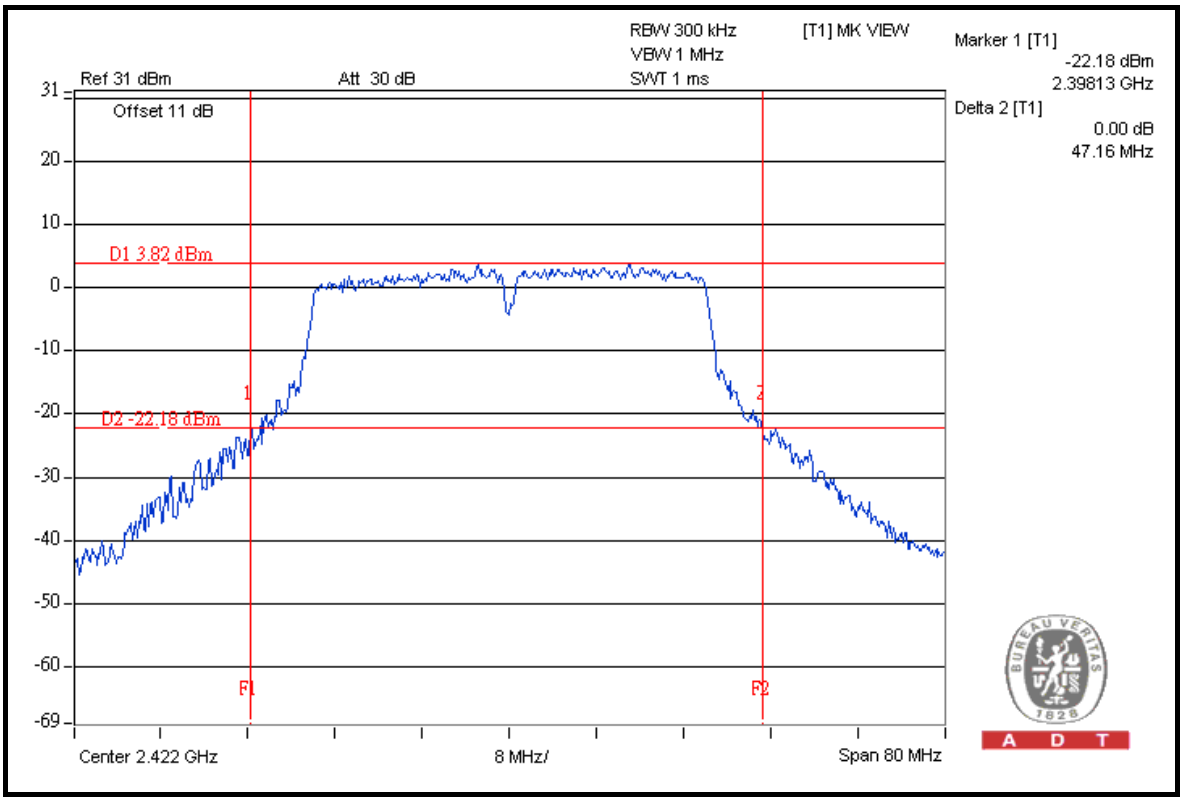
CH 4



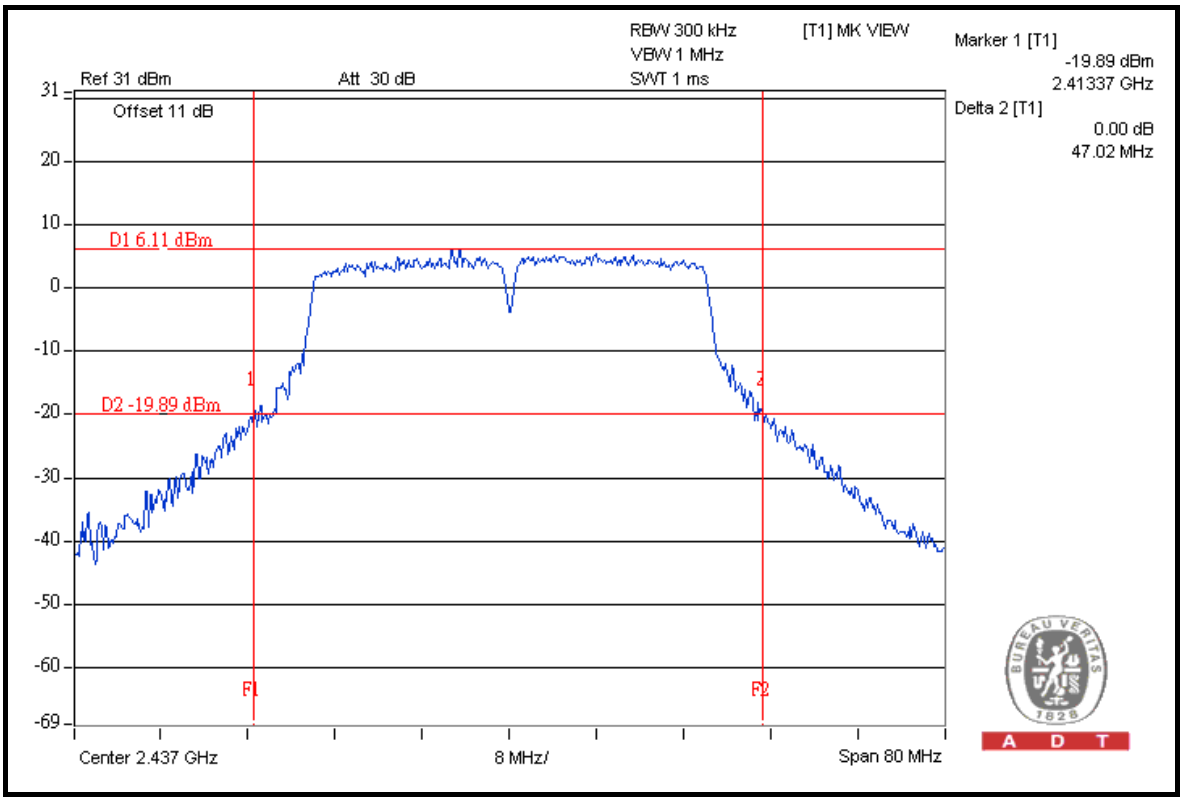
CH 7



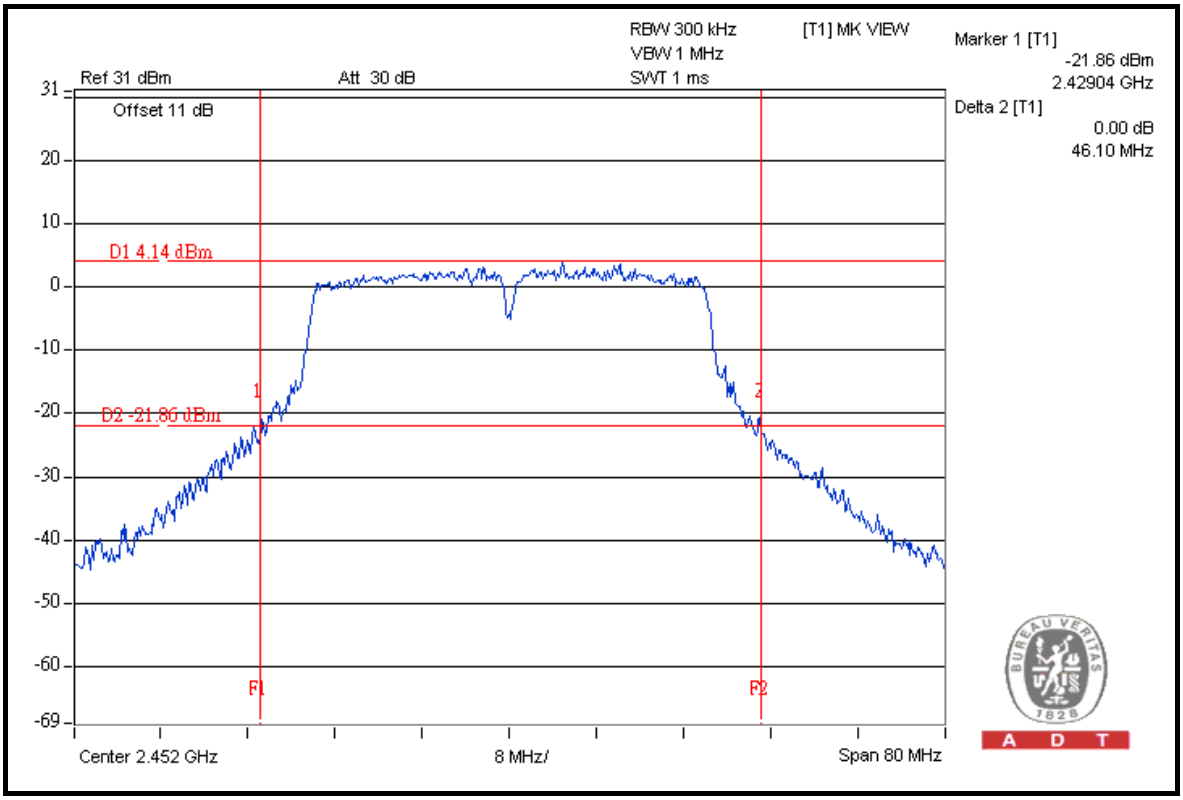
FOR CHAIN 1: CH 1



CH 4


RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-19.89 dBm
2.41337 GHz
Delta 2 [T1]
0.00 dB
47.02 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 6.11 dBm
D2 -19.89 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.437 GHz
8 MHz/
Span 80 MHz

CH 7


RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-21.86 dBm
2.42904 GHz
Delta 2 [T1]
0.00 dB
46.10 MHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
D1 4.14 dBm
D2 -21.86 dBm
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
F1
F2
Center 2.452 GHz
8 MHz/
Span 80 MHz

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. 07, 2009	Jul. 06, 2010

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

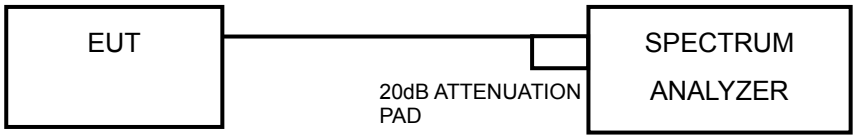
4.5.3 TEST PROCEDURE

1. Follow DTS measurement (PSD Option 2), the transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer. Locate and zoom in on emission peak(s) within the pass band.
2. Set RBW = 3 kHz /VBW > 9 kHz and sweep time to Automatic.
3. Detector use peak mode and a video trigger with the trigger level set to enable triggering only on full power pulses.
4. Trace average 100 traces in power averaging mode. The power spectral density was measured and recorded.

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

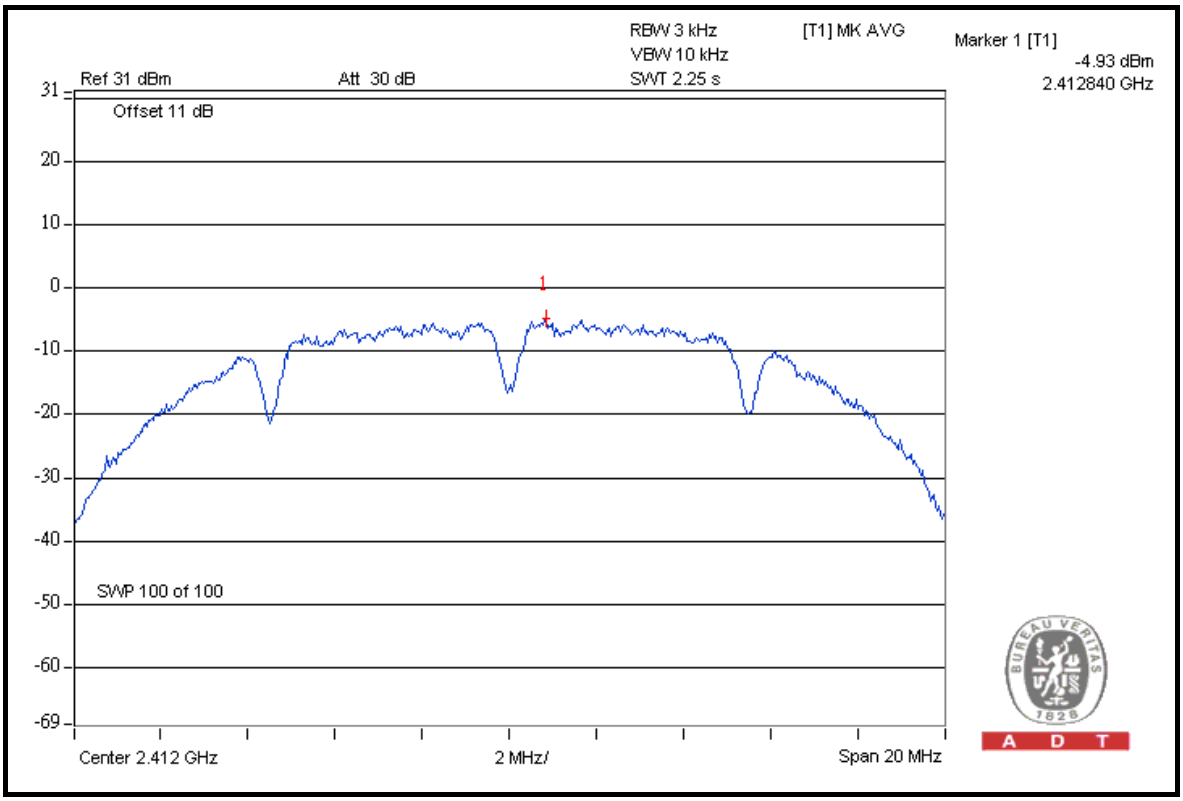
4.5.7 TEST RESULTS

802.11b DSSS MODULATION

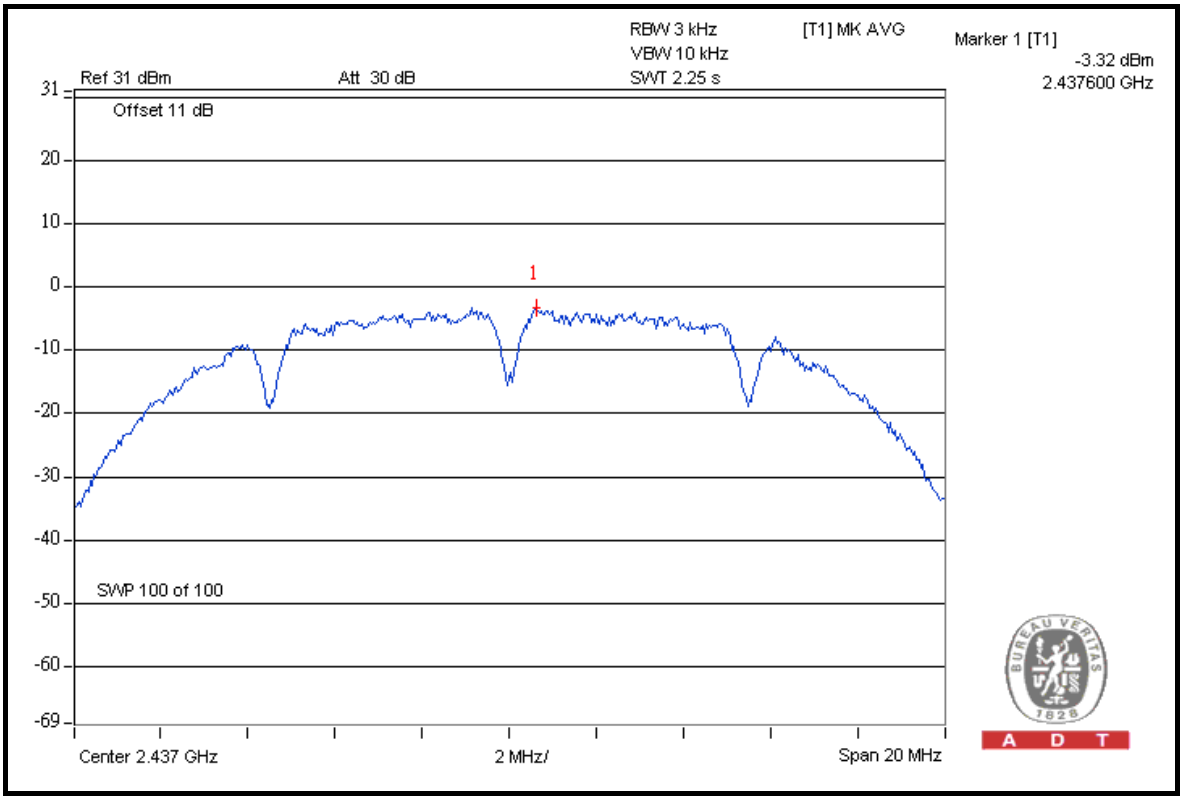
MODULATION TYPE	DBPSK	TRANSFER RATE	1.0Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

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	-4.93	-5.53	0.601	-2.21	8	PASS
6	2437	-3.32	-3.85	0.878	-0.57	8	PASS
11	2462	-5.42	-5.88	0.545	-2.64	8	PASS

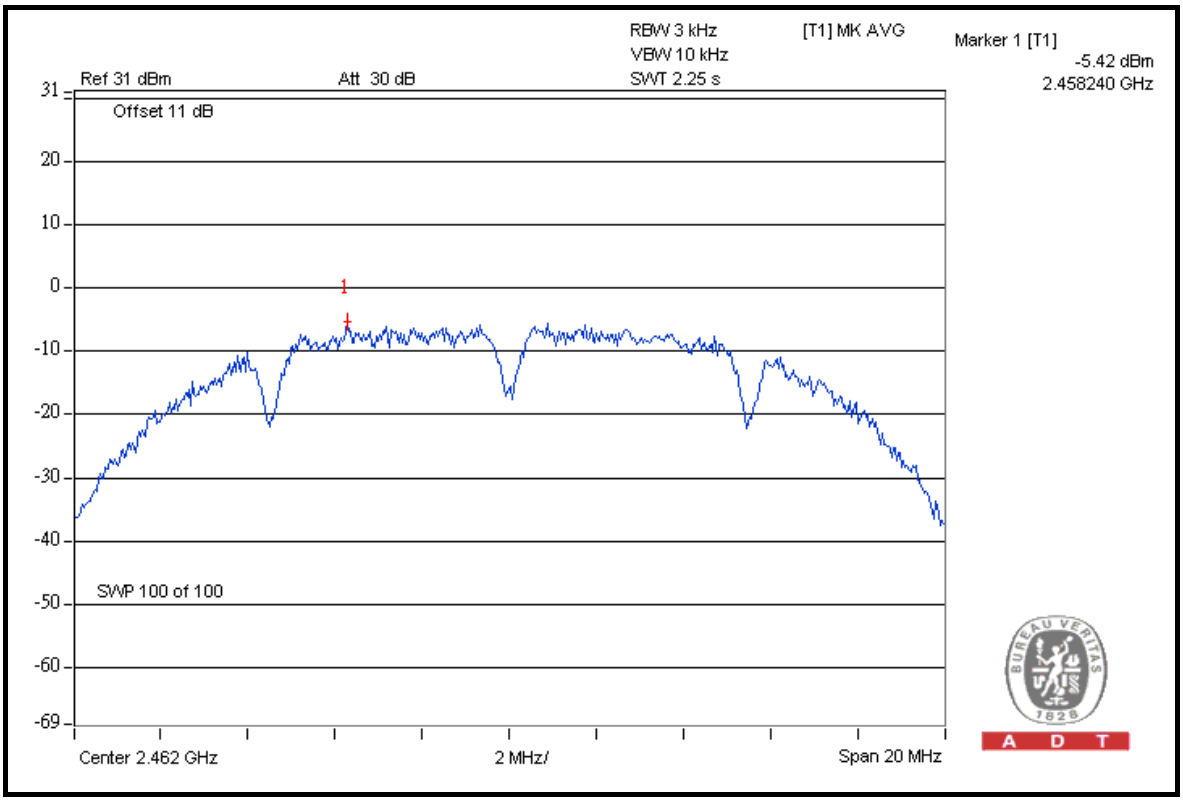
FOR CHAIN 0: CH 1



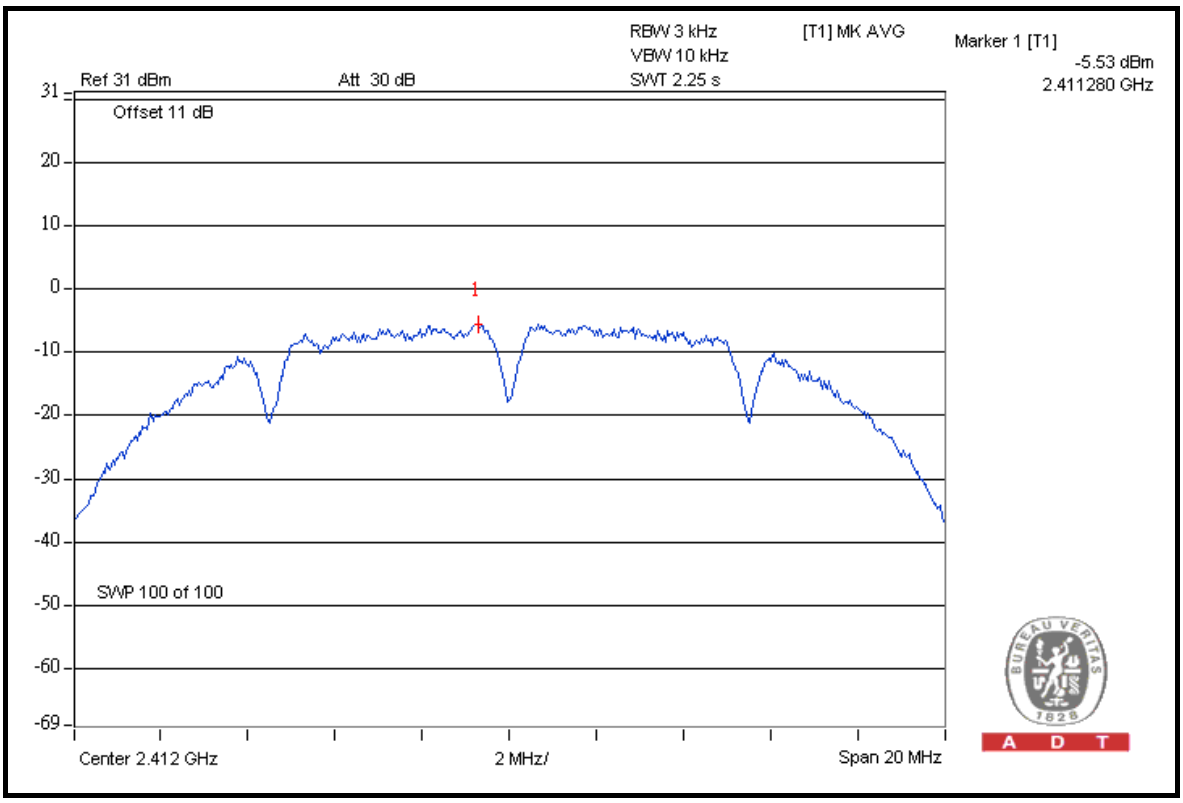
CH 6



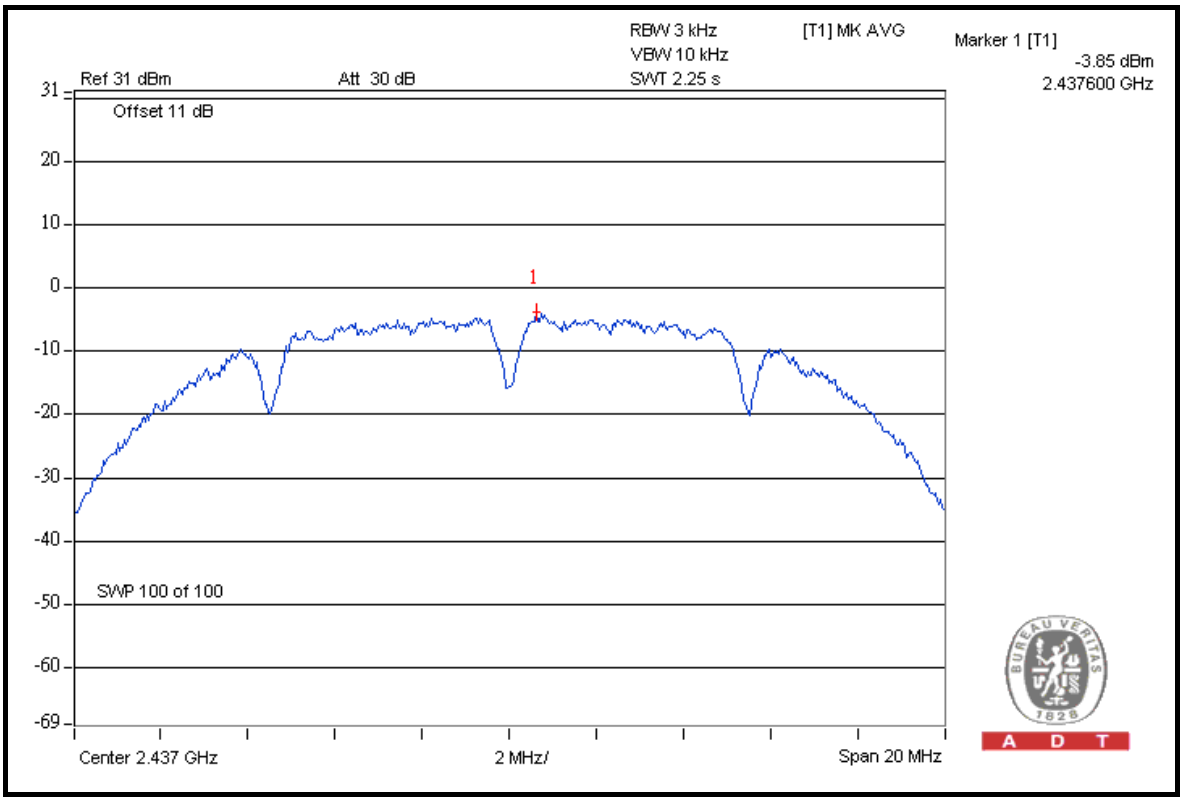
CH 11



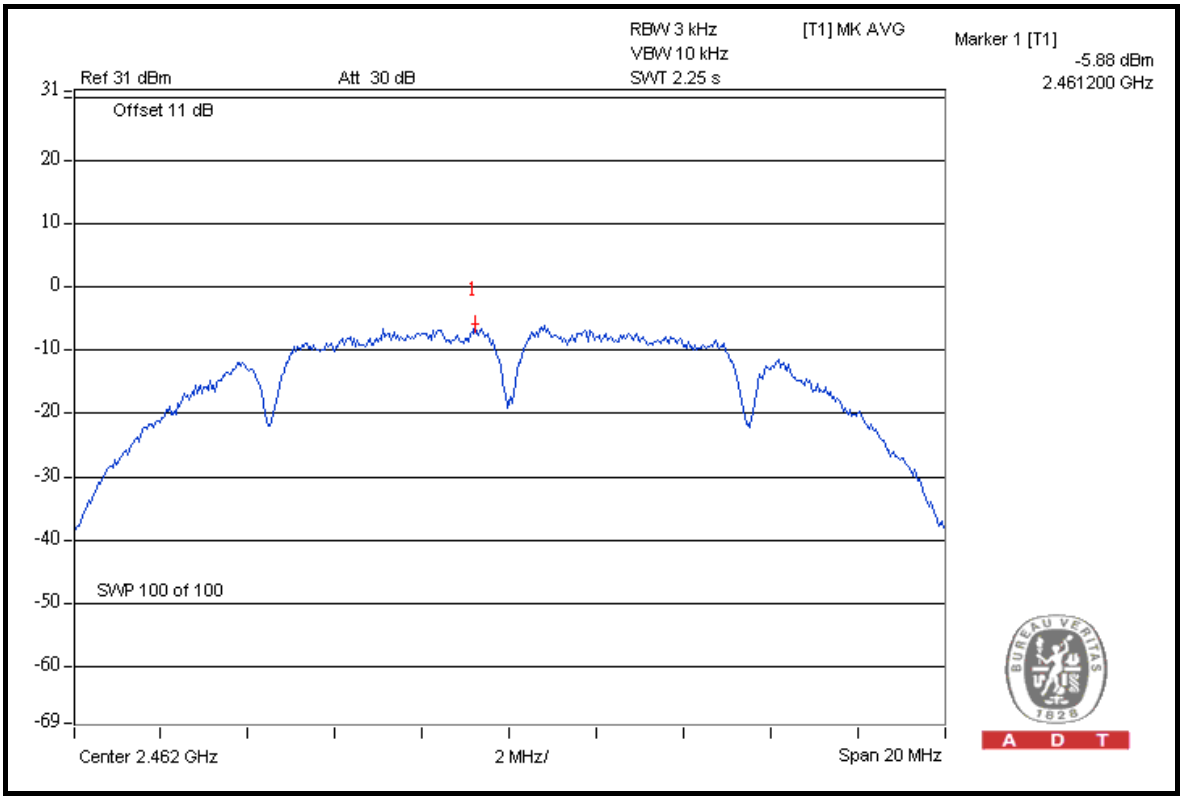
FOR CHAIN 1: CH 1



CH 6


RBW 3 kHz
VBW 10 kHz
SWT 2.25 s
[T1] MK AVG
Marker 1 [T1]
-3.85 dBm
2.437600 GHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
SWP 100 of 100
Center 2.437 GHz
2 MHz/
Span 20 MHz

CH 11

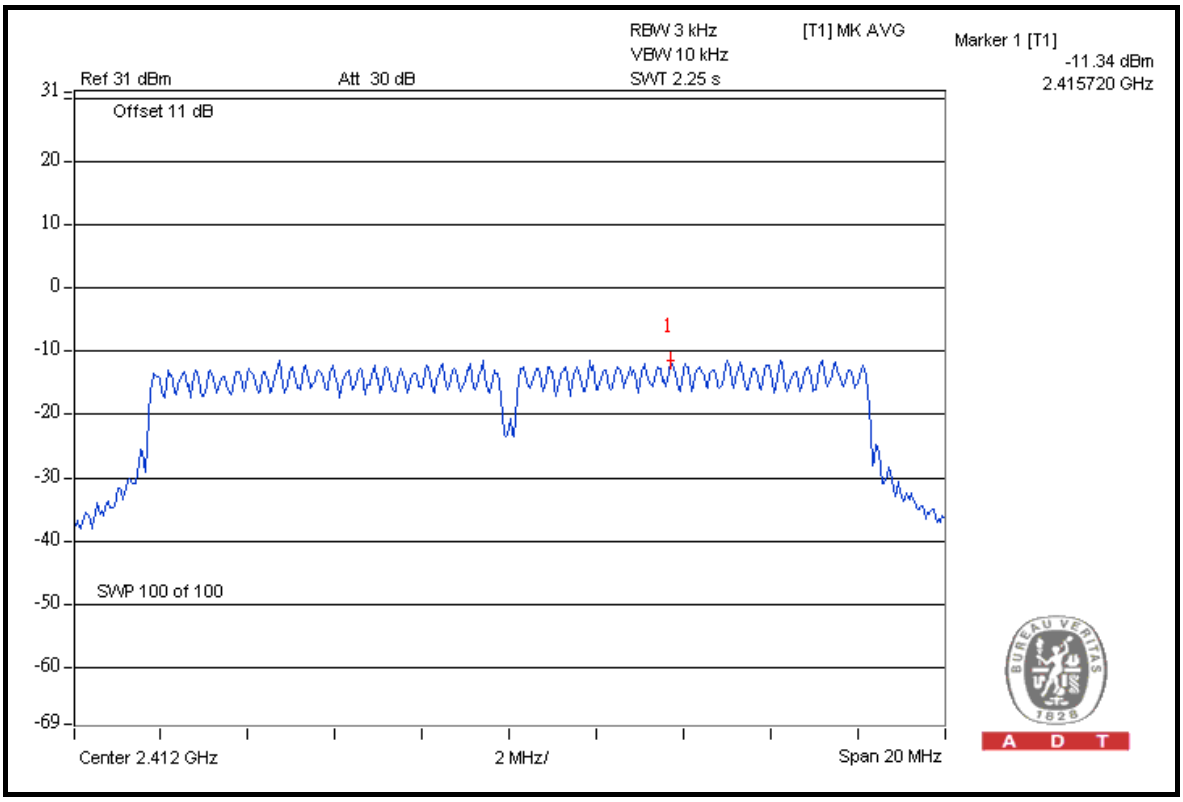

RBW 3 kHz
VBW 10 kHz
SWT 2.25 s
[T1] MK AVG
Marker 1 [T1]
-5.88 dBm
2.461200 GHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
SWP 100 of 100
Center 2.462 GHz
2 MHz/
Span 20 MHz

802.11g OFDM MODULATION

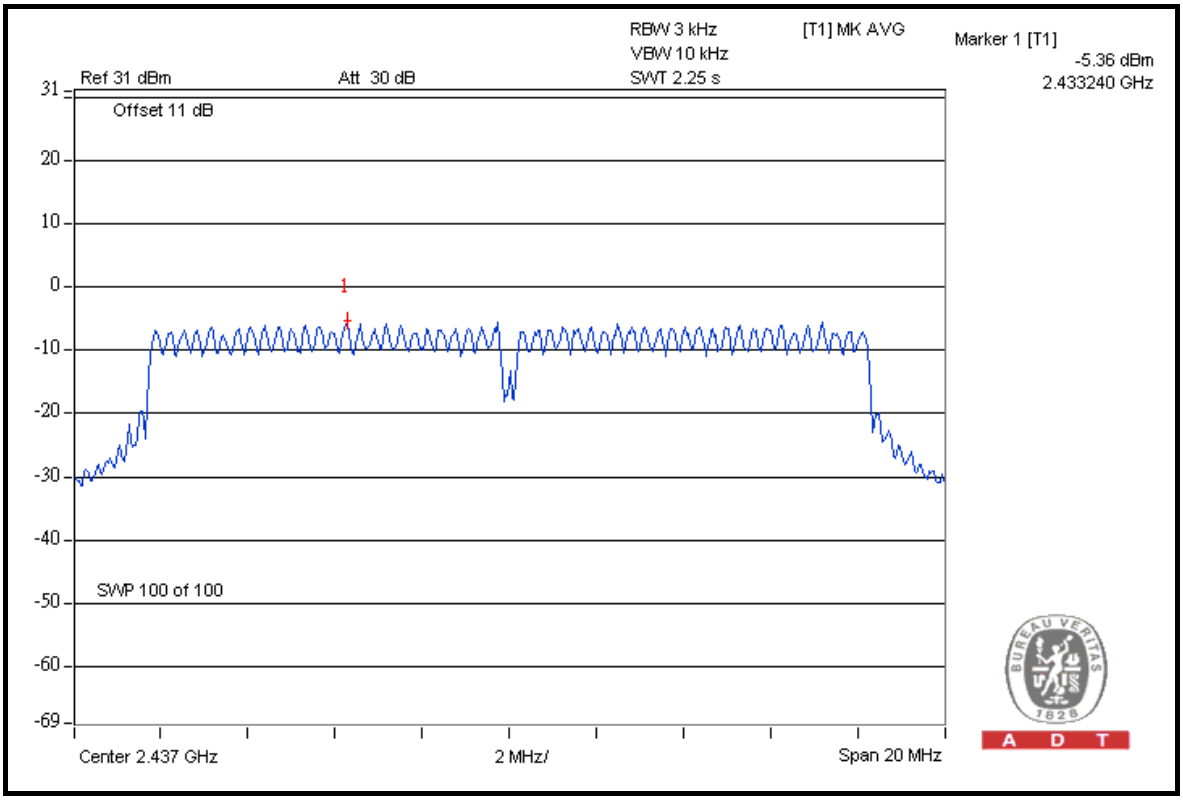
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg.C, 64%RH, 1021hPa
TESTED BY	Mark Liao		

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	-11.34	-10.44	0.164	-7.85	8	PASS
6	2437	-5.36	-4.99	0.608	-2.16	8	PASS
11	2462	-10.29	-0.51	0.983	-0.07	8	PASS

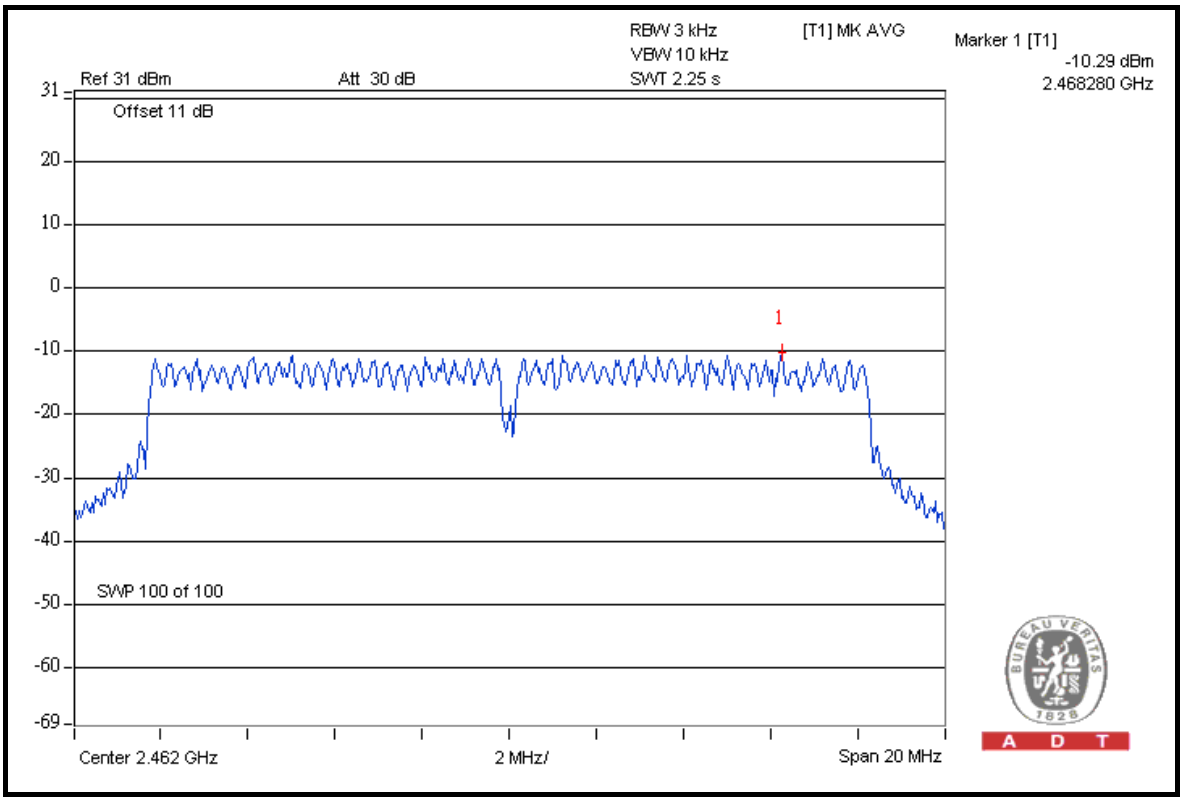
FOR CHAIN 0: CH 1



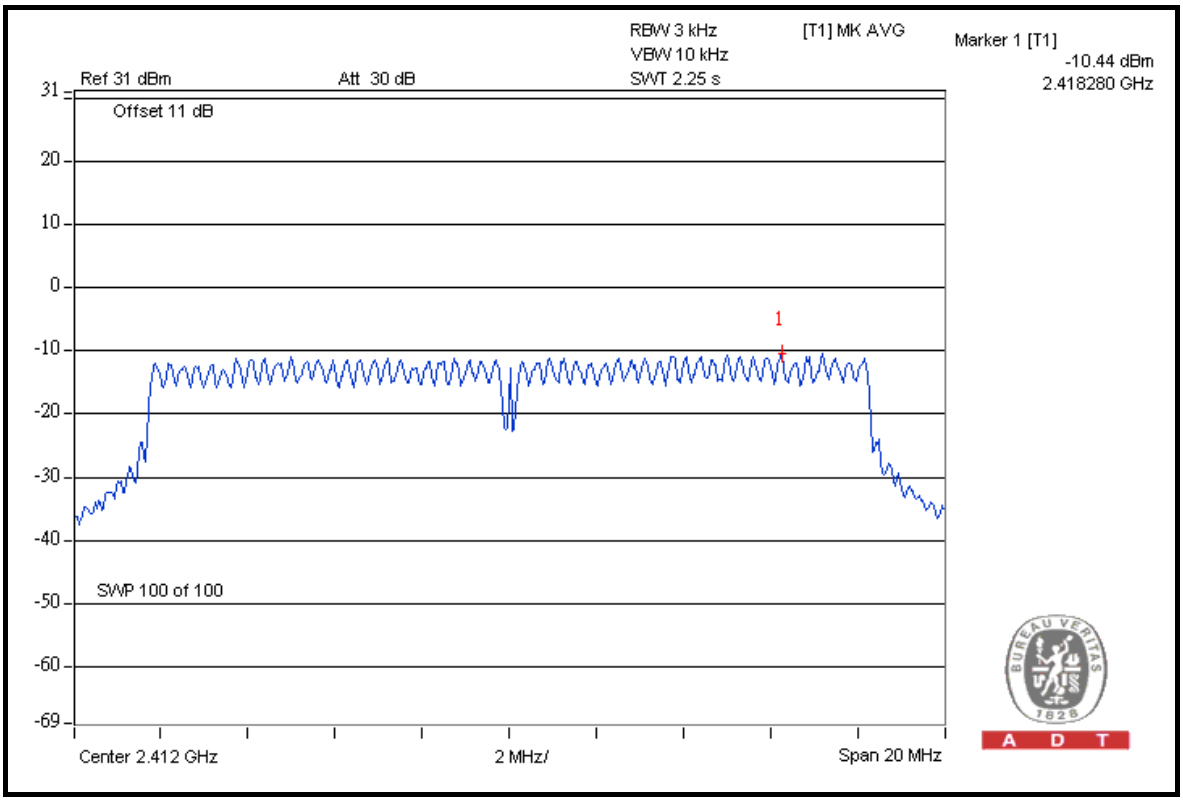
CH 6



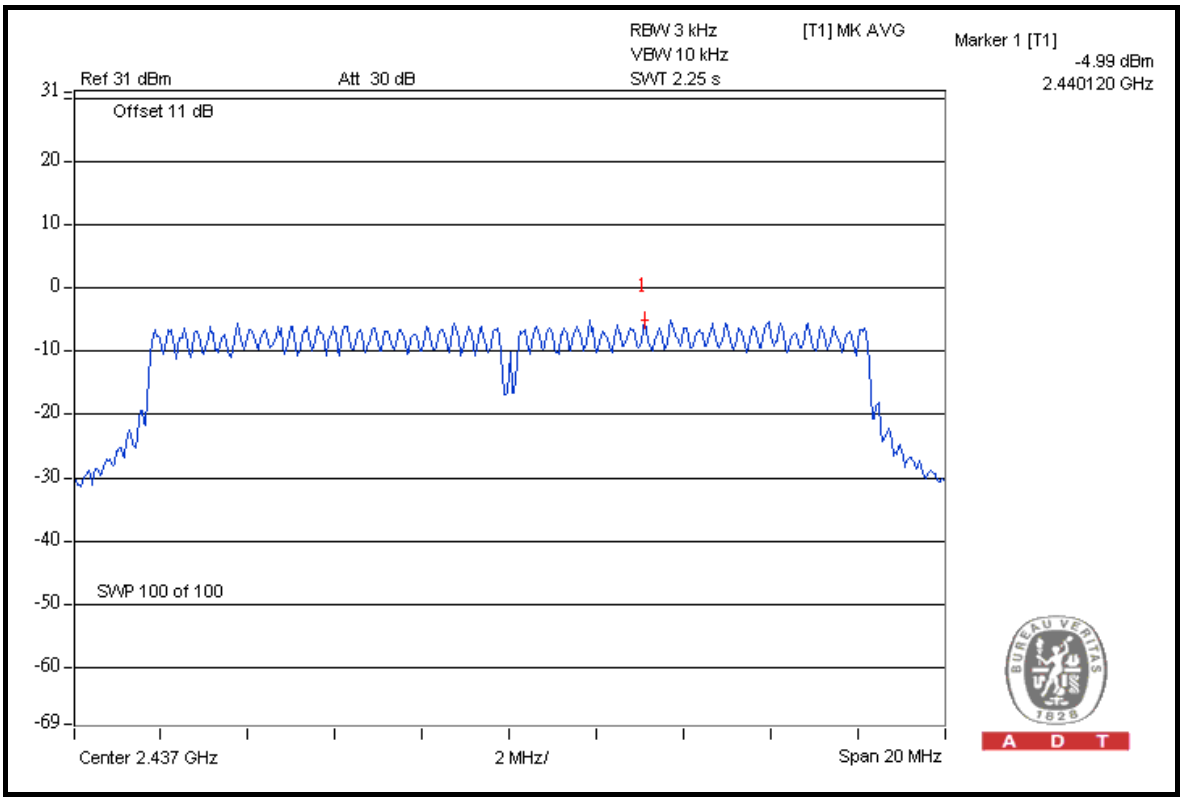
CH 11



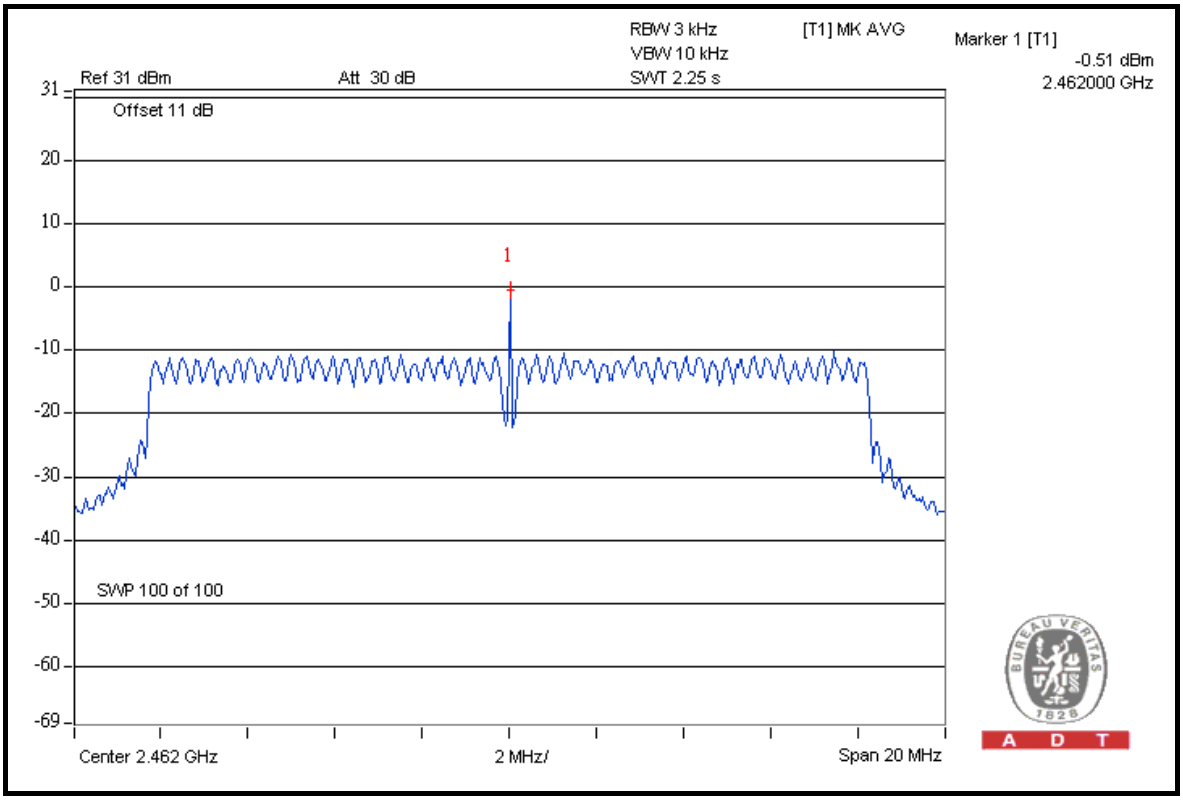
FOR CHAIN 1: CH 1



CH 6


RBW 3 kHz
VBW 10 kHz
SWT 2.25 s
[T1] MK AVG
Marker 1 [T1]
-4.99 dBm
2.440120 GHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
SWP 100 of 100
Center 2.437 GHz
2 MHz/
Span 20 MHz

CH 11

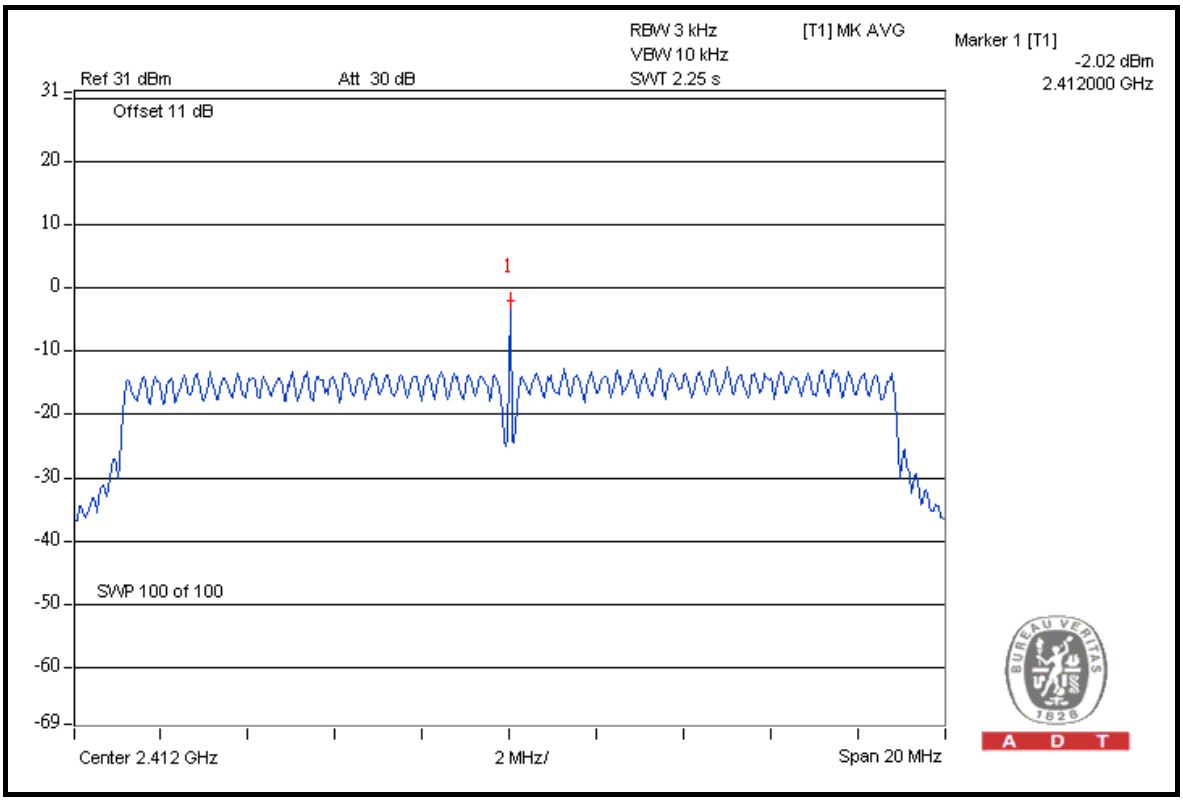

RBW 3 kHz
VBW 10 kHz
SWT 2.25 s
[T1] MK AVG
Marker 1 [T1]
-0.51 dBm
2.462000 GHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
SWP 100 of 100
Center 2.462 GHz
2 MHz/
Span 20 MHz

DRAFT 802.11n (20MHz) OFDM MODULATION

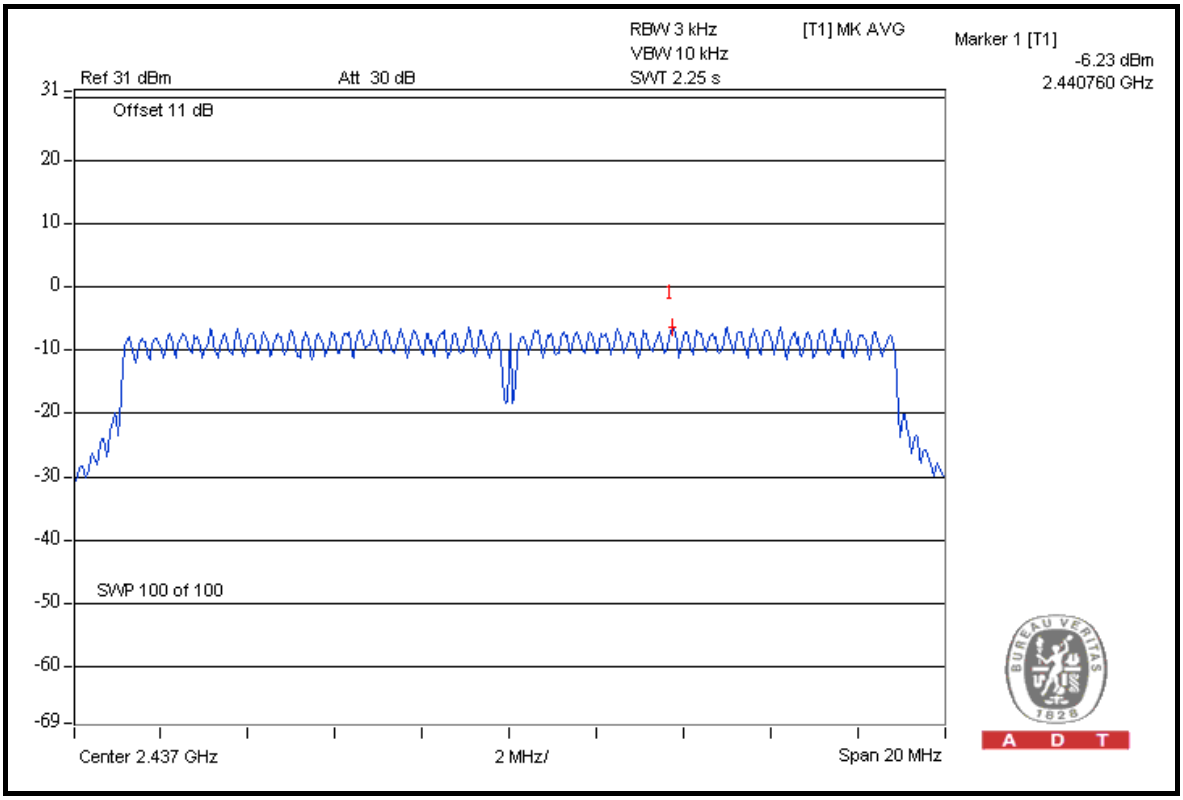
MODULATION TYPE	BPSK	TRANSFER RATE	7.2Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

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	-2.02	-11.31	0.702	-1.54	8	PASS
6	2437	-6.23	-5.36	0.529	-2.77	8	PASS
11	2462	-0.86	-10.65	0.906	-0.43	8	PASS

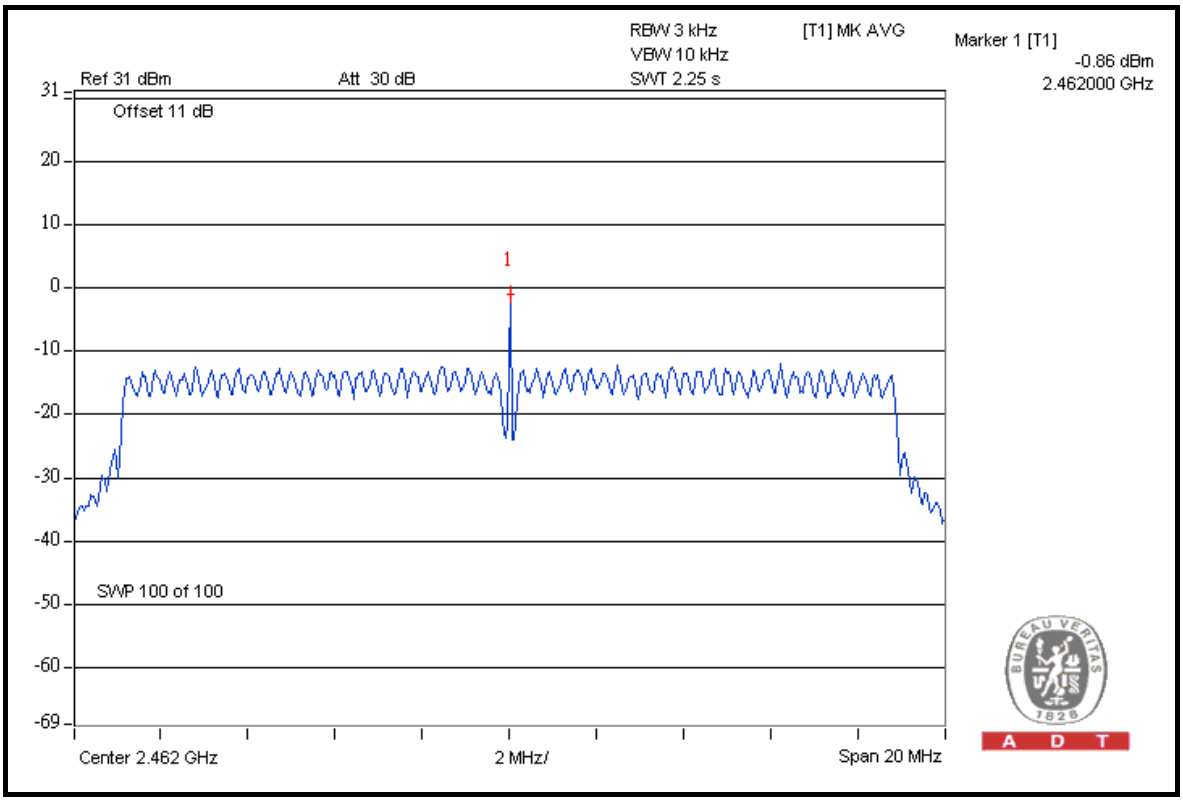
FOR CHAIN 0: CH 1



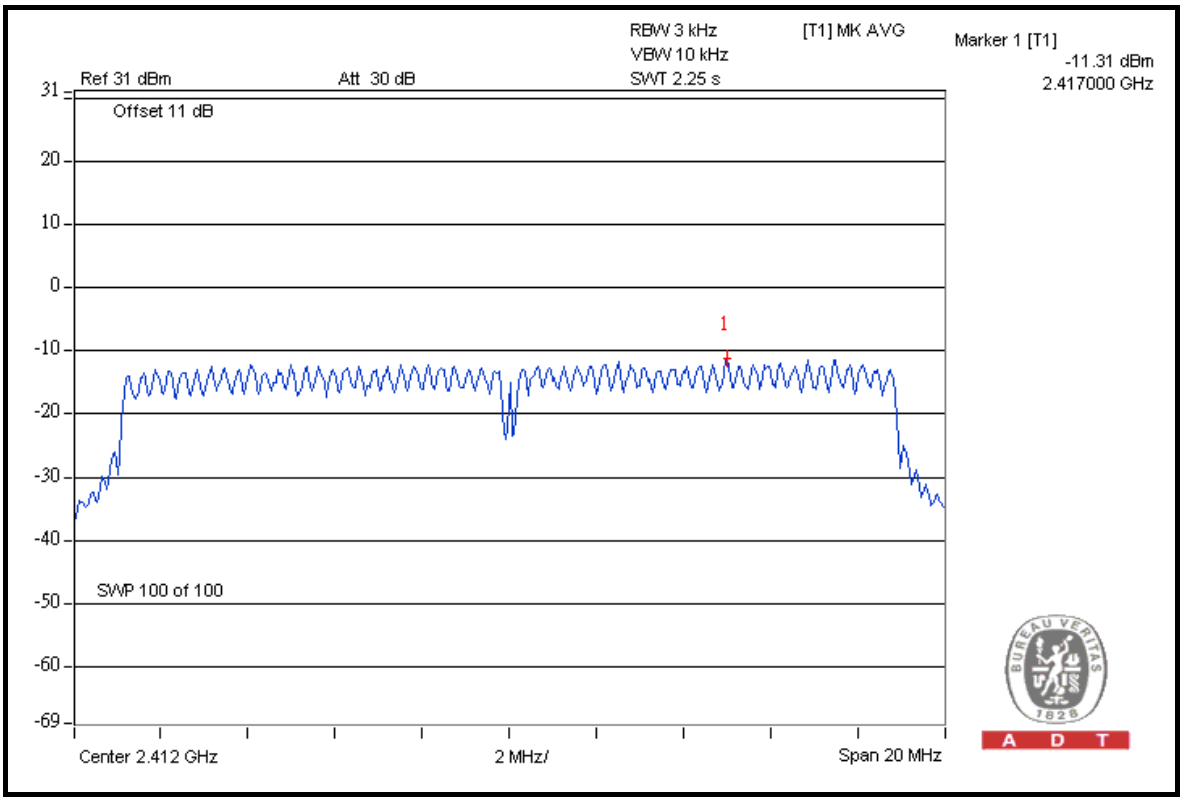
CH 6



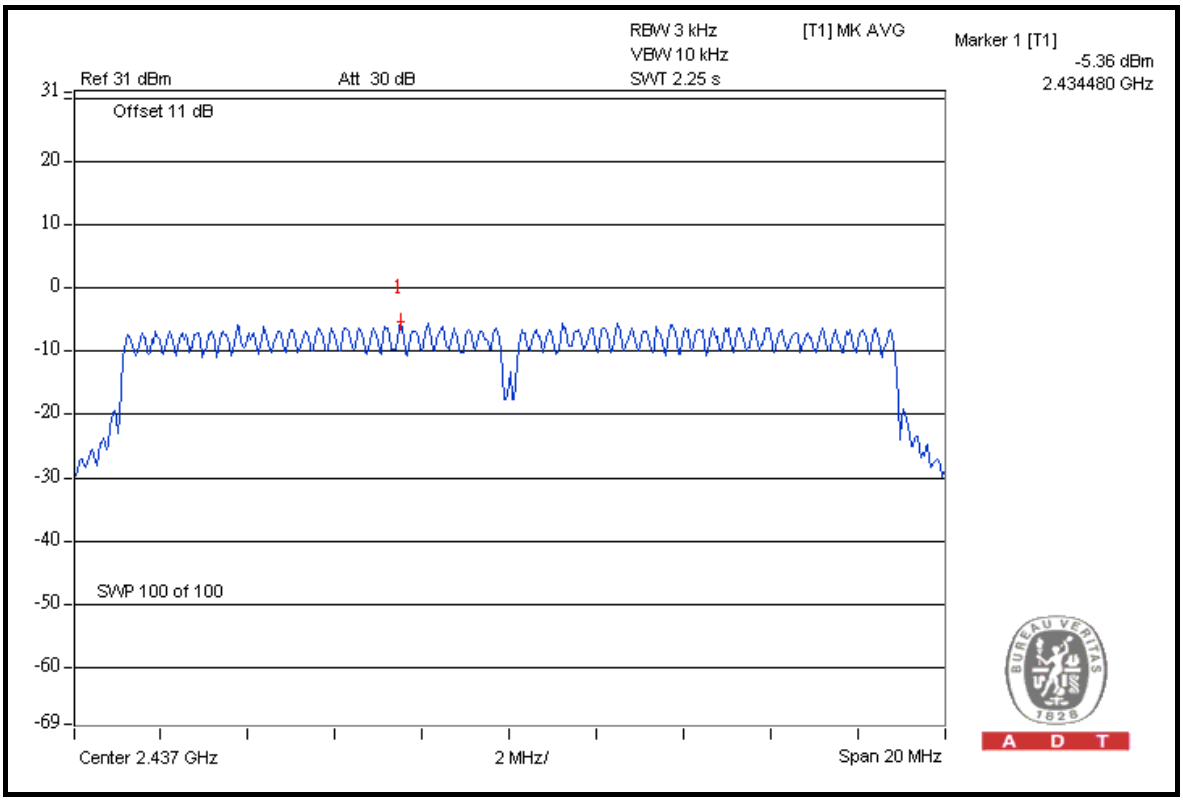
CH 11



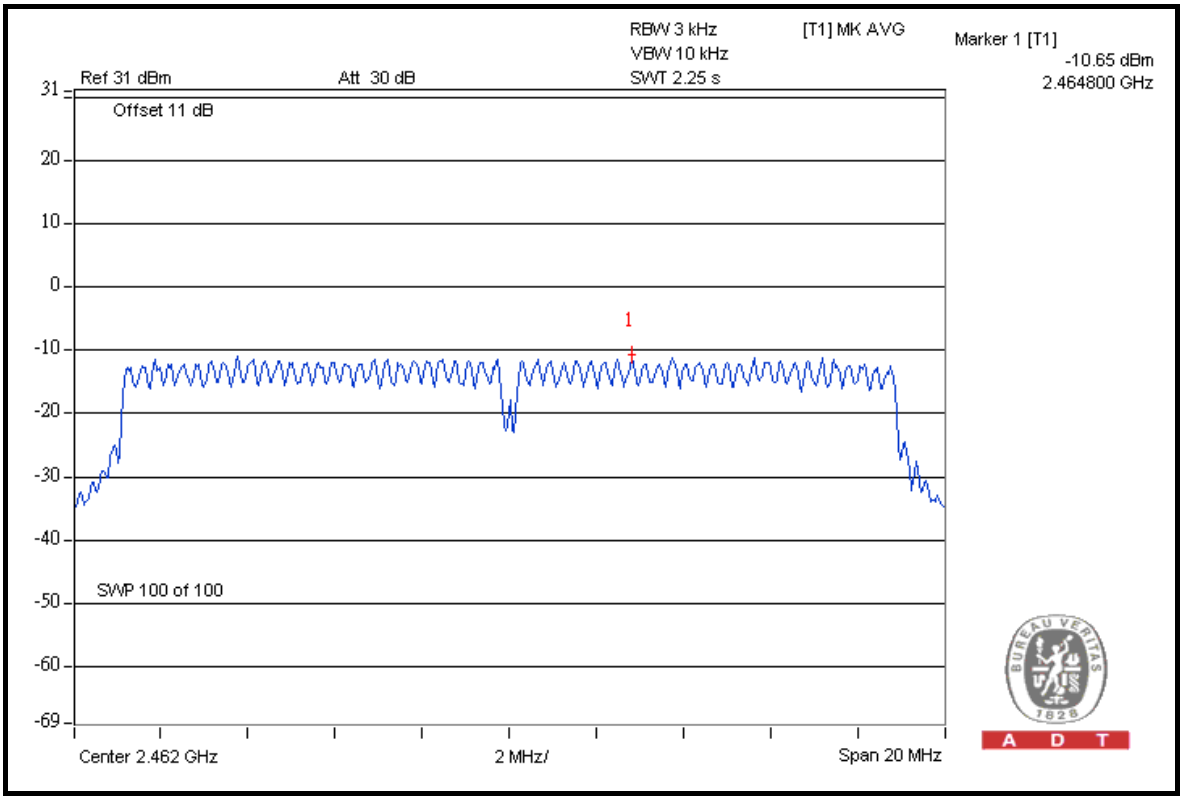
FOR CHAIN 1: CH 1



CH 6


RBW 3 kHz
VBW 10 kHz
SWT 2.25 s
[T1] MK AVG
Marker 1 [T1]
-5.36 dBm
2.434480 GHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
SWP 100 of 100
Center 2.437 GHz
2 MHz/
Span 20 MHz

CH 11

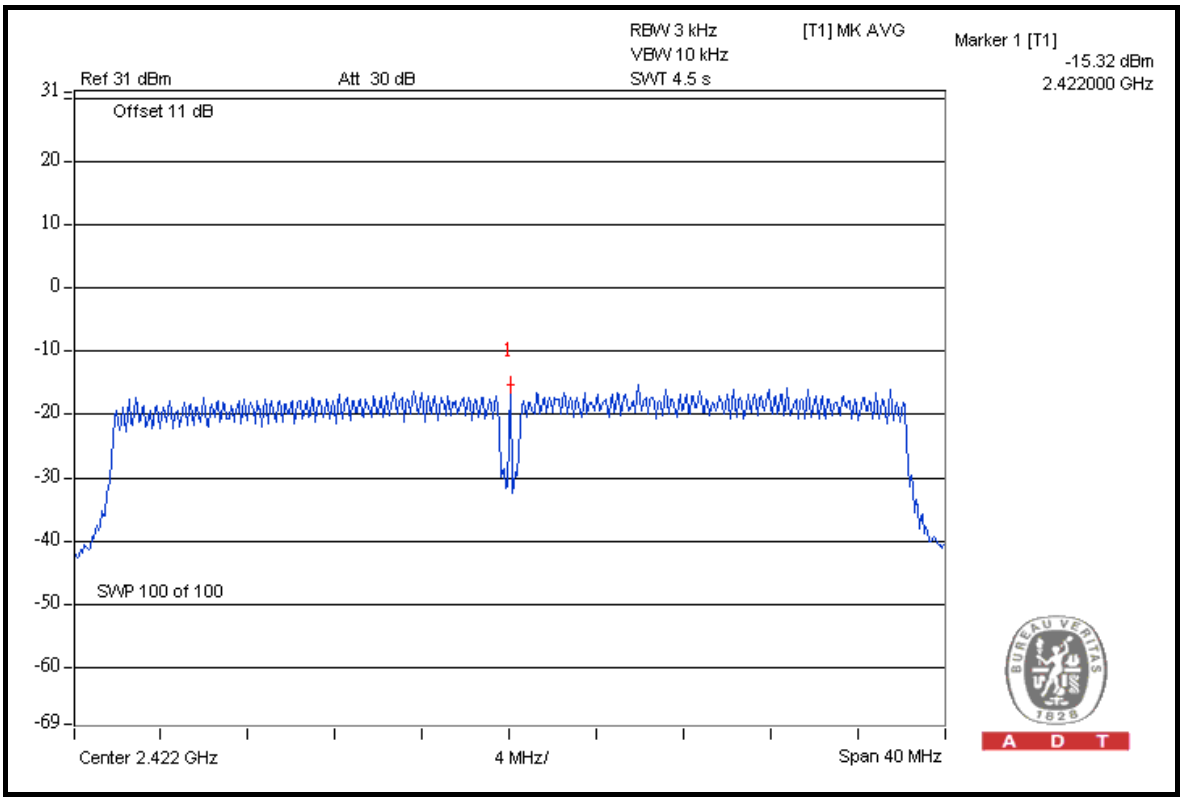

RBW 3 kHz
VBW 10 kHz
SWT 2.25 s
[T1] MK AVG
Marker 1 [T1]
-10.65 dBm
2.464800 GHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
SWP 100 of 100
Center 2.462 GHz
2 MHz/
Span 20 MHz

DRAFT 802.11n (40MHz) OFDM MODULATION

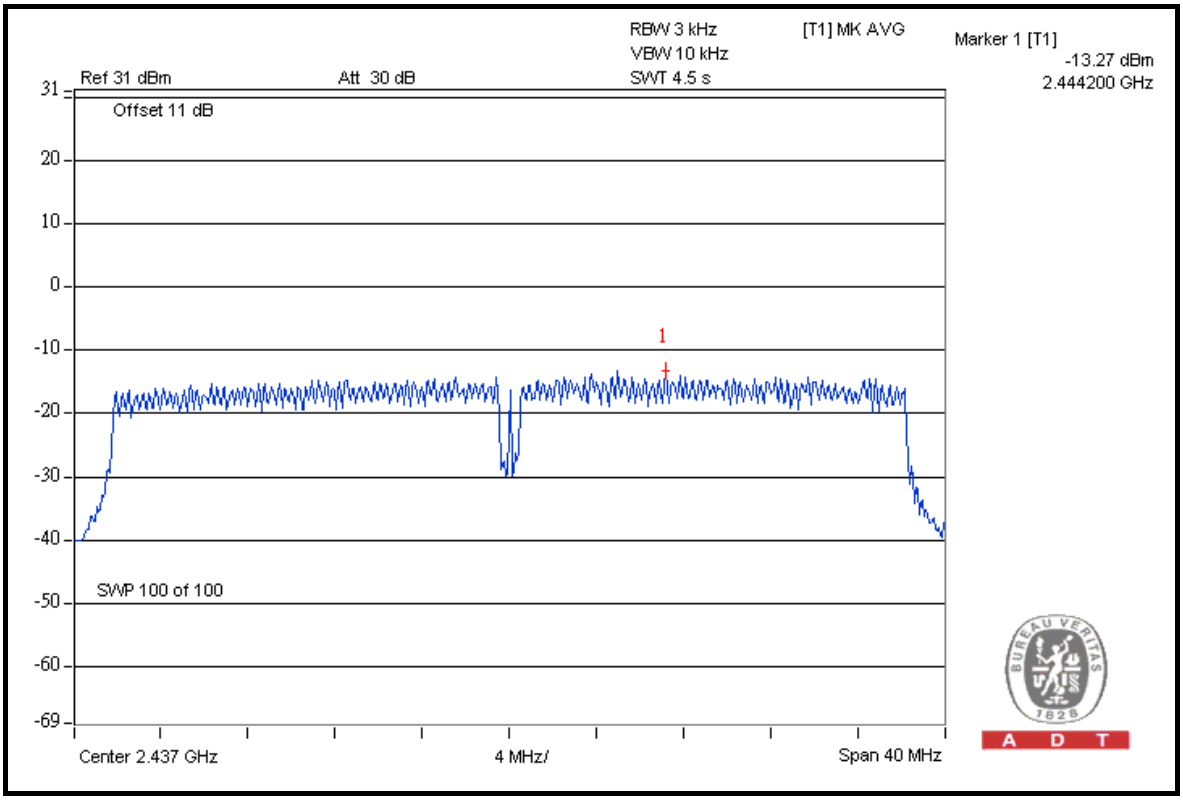
MODULATION TYPE	BPSK	**TRANSFER RATE**	15.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

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	-15.32	-13.86	0.070	-11.55	8	PASS
4	2437	-13.27	-11.83	0.113	-9.47	8	PASS
7	2452	-15.56	-14.16	0.066	-11.80	8	PASS

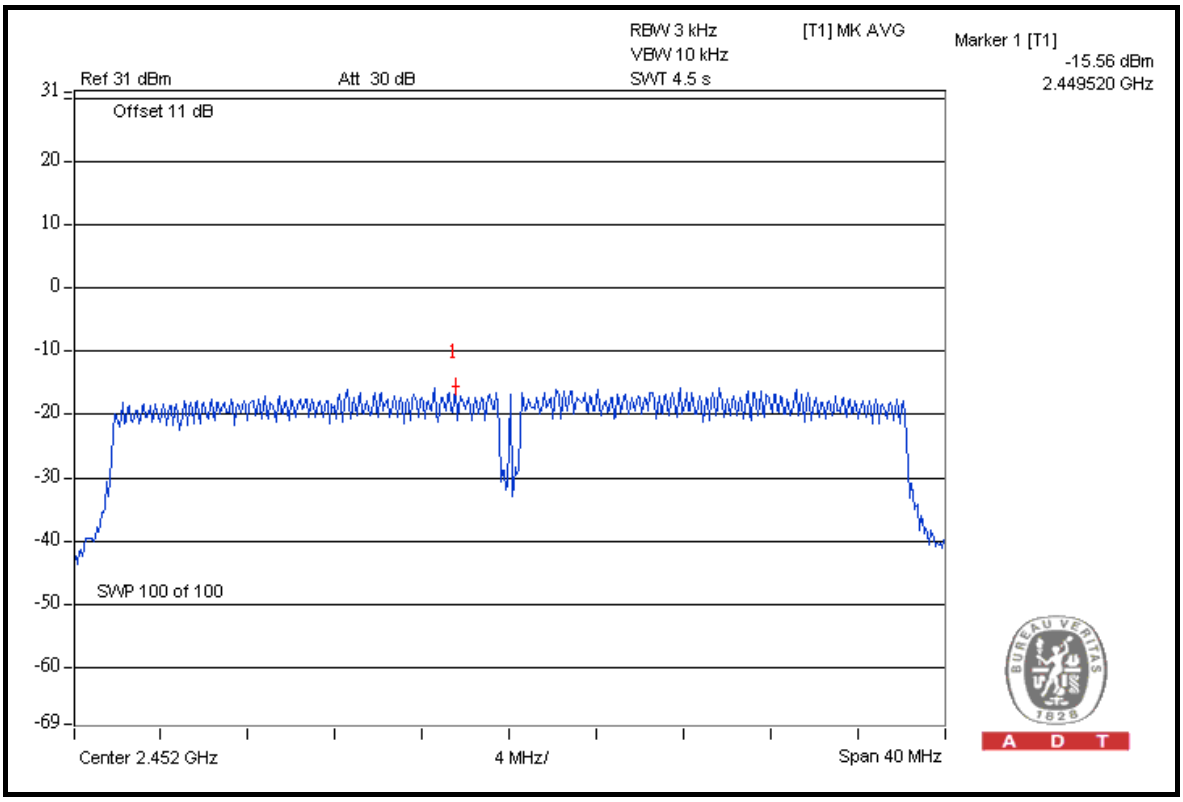
FOR CHAIN 0: CH 1



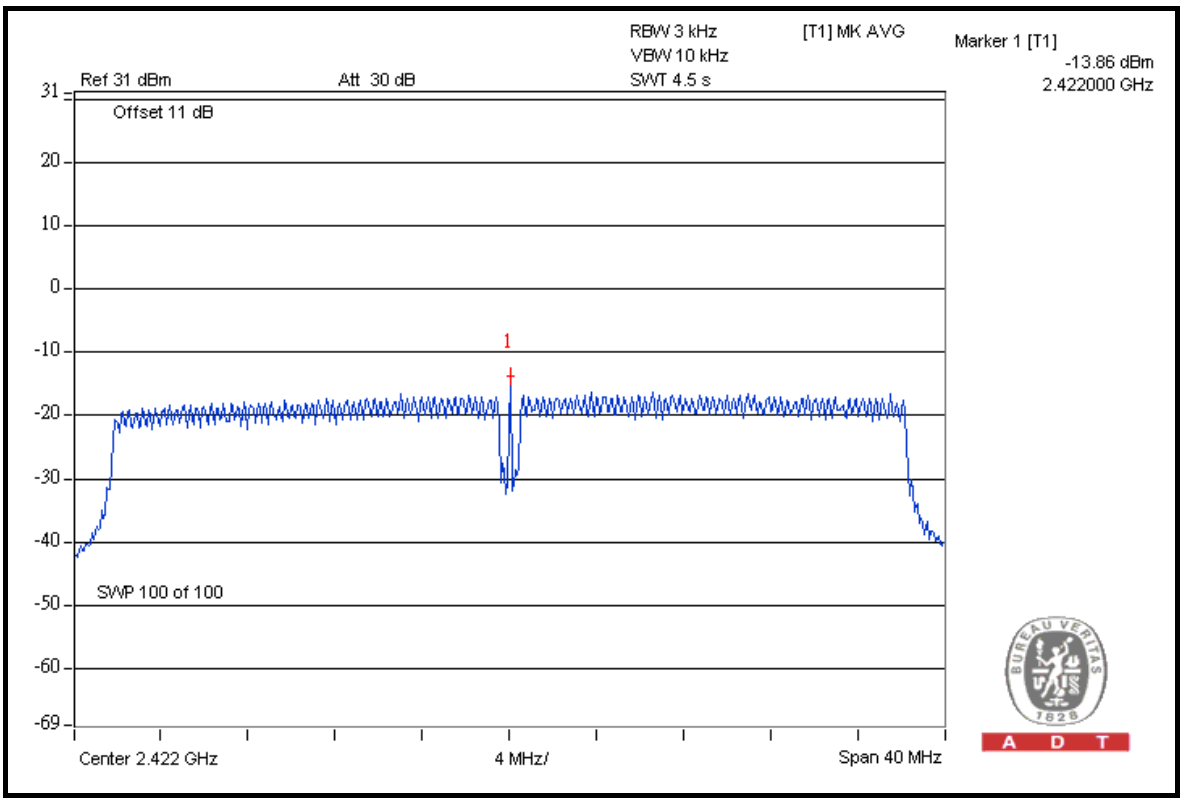
CH 4



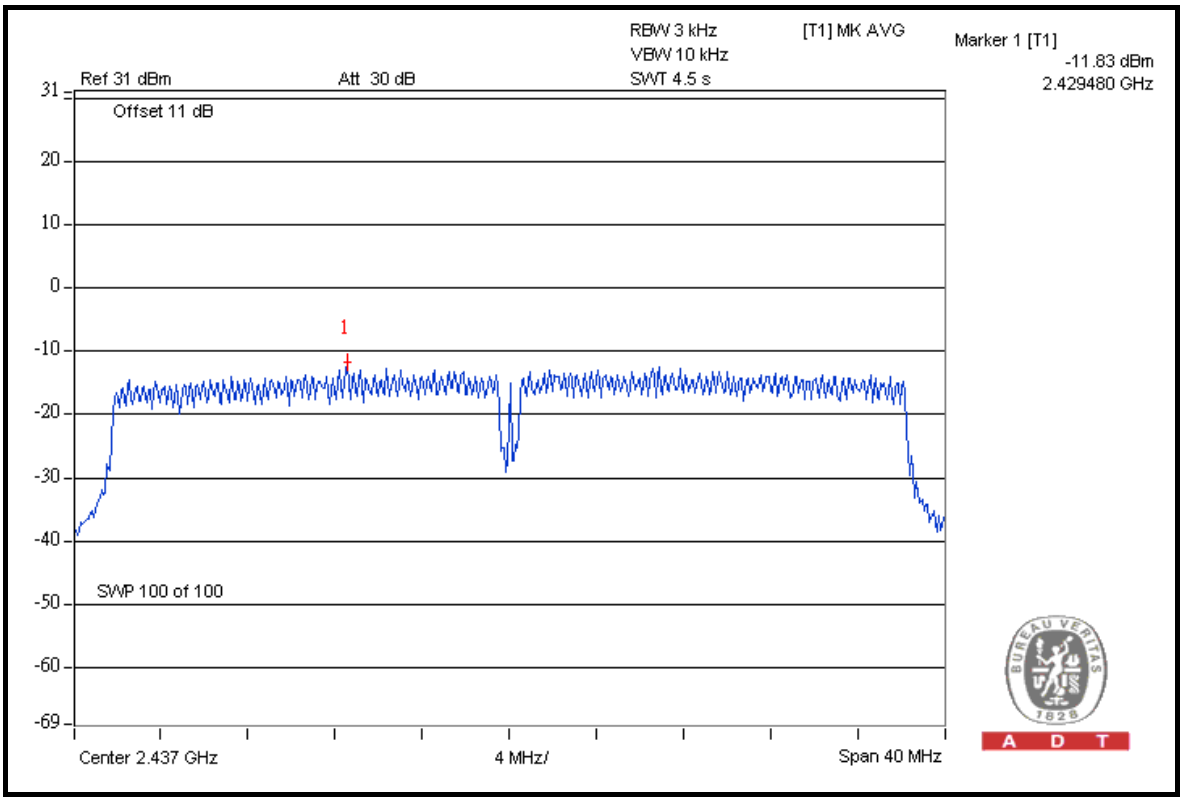
CH 7



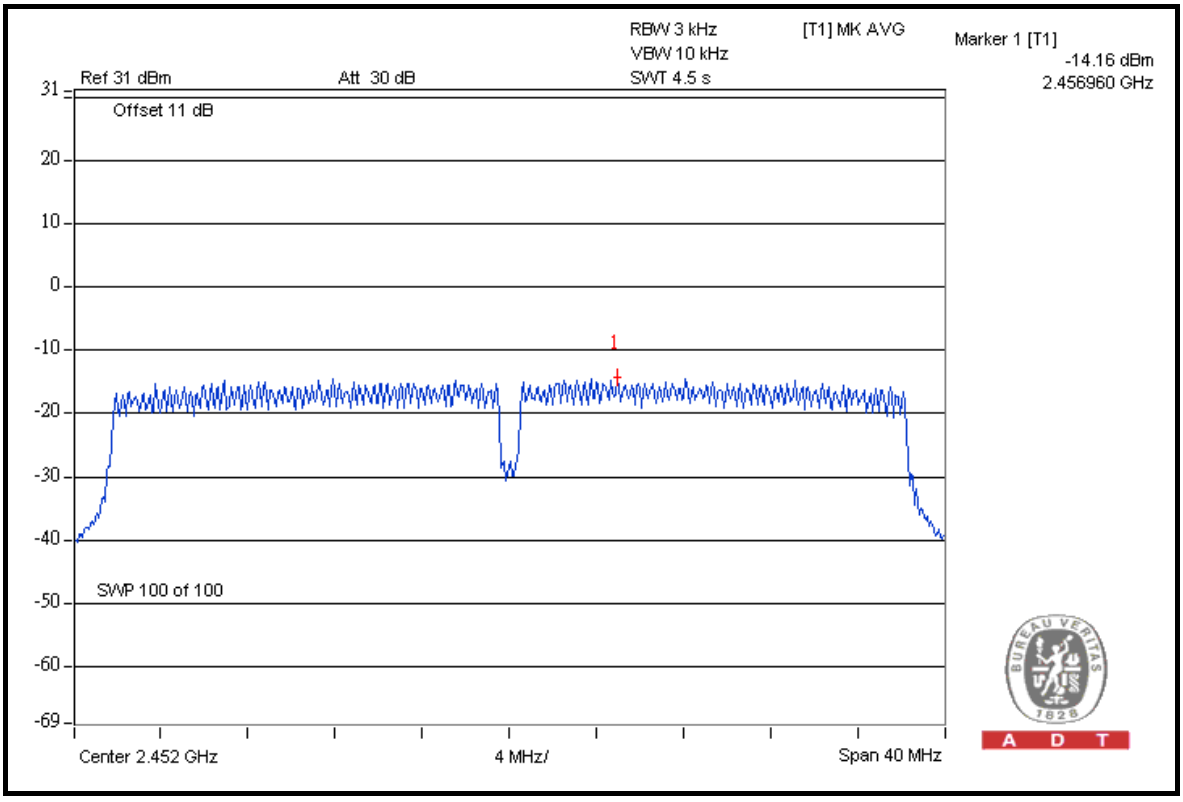
FOR CHAIN 1: CH 1



CH 4


RBW 3 kHz
VBW 10 kHz
SWT 4.5 s
[T1] MK AVG
Marker 1 [T1]
-11.83 dBm
2.429480 GHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
SWP 100 of 100
Center 2.437 GHz
4 MHz/
Span 40 MHz

CH 7


RBW 3 kHz
VBW 10 kHz
SWT 4.5 s
[T1] MK AVG
Marker 1 [T1]
-14.16 dBm
2.456960 GHz
Ref 31 dBm
Att 30 dB
Offset 11 dB
31
20
10
0
-10
-20
-30
-40
-50
-60
-69
SWP 100 of 100
Center 2.452 GHz
4 MHz/
Span 40 MHz

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).

Note: Follow DTS measurement, If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Dec. 29, 2008	Dec. 28, 2009
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Dec. 08, 2008	Dec. 07, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 29, 2009	Apr. 28, 2010
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-408	Dec. 29, 2008	Dec. 28, 2009
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 06, 2009	Jan. 05, 2010
Preamplifier Agilent	8449B	3008A01960	Nov. 03, 2008	Nov. 02, 2009
Preamplifier Agilent	8447D	2944A10631	Nov. 03, 2008	Nov. 02, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274041/4	Aug. 21, 2008	Aug. 20, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283397/4	Aug. 21, 2008	Aug. 20, 2009
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT.	TT100.	TT93021704	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	NA	NA

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

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).

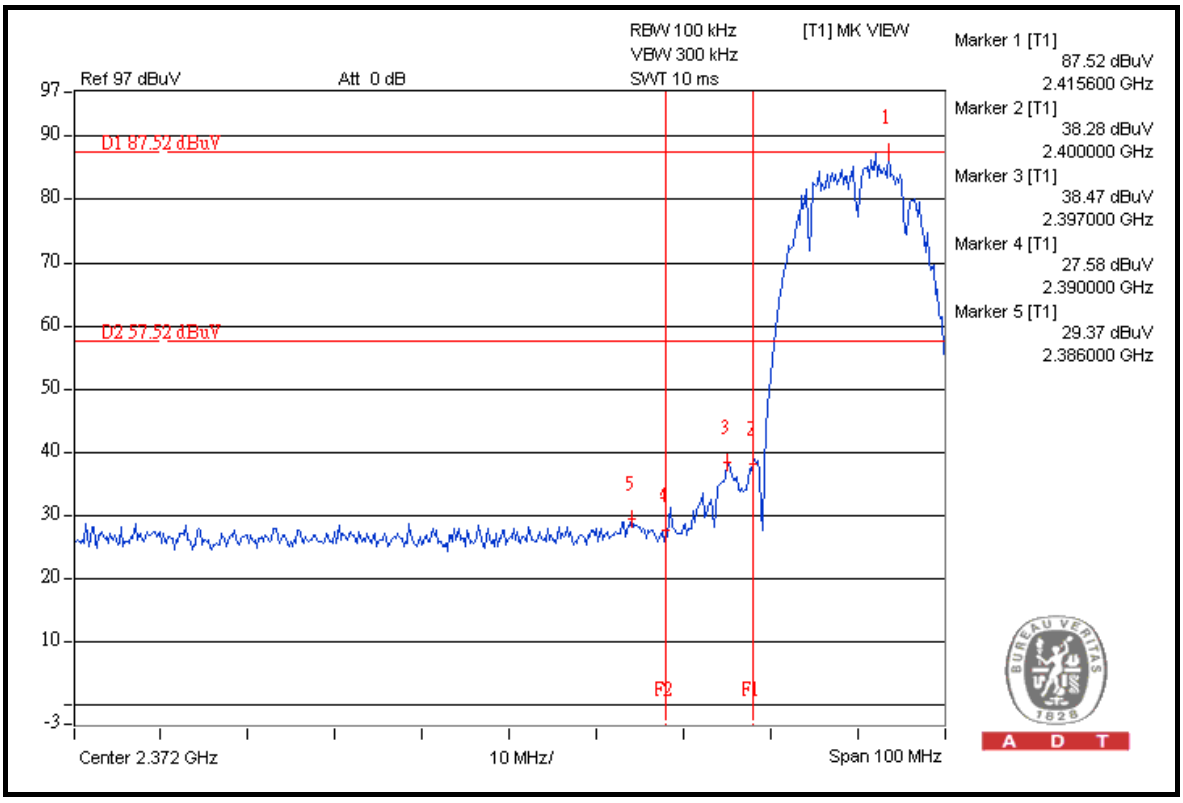
802.11b DSSS MODULATION

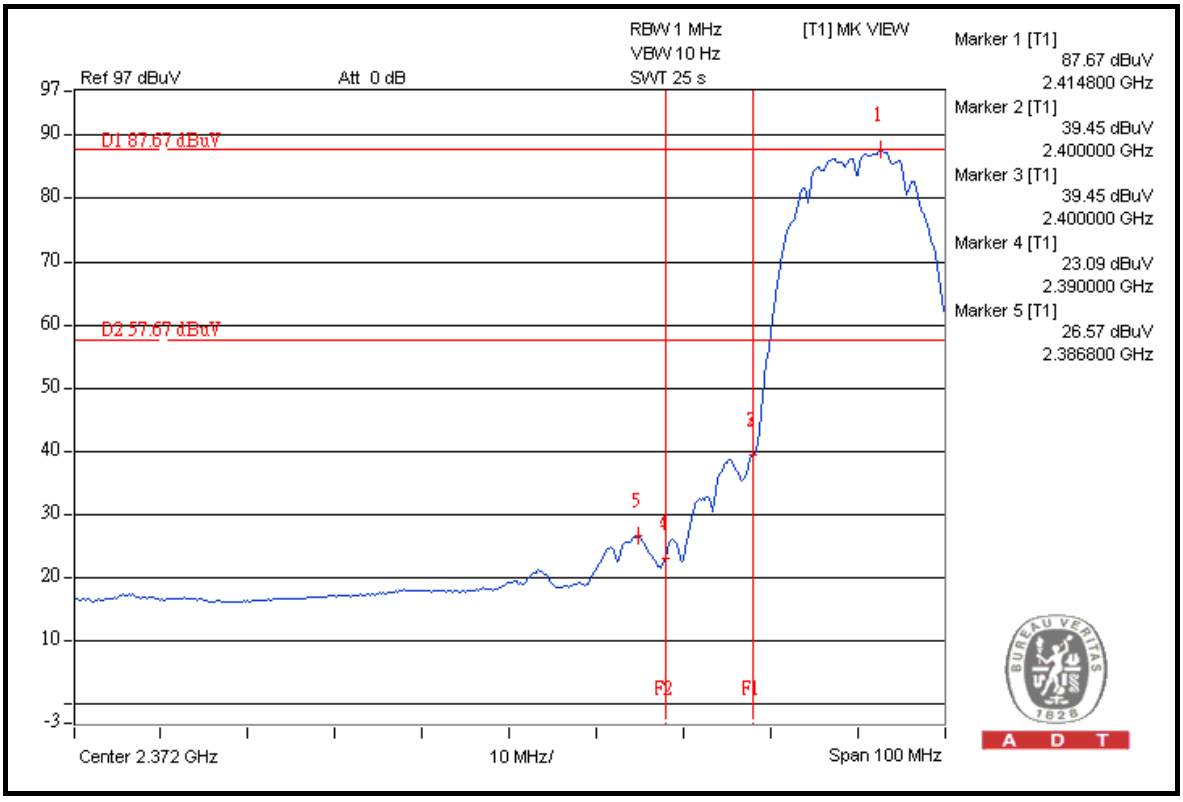
NOTE 1: The band edge emission plot on the next page shows 58.15dBuV between carrier maximum power and local maximum emission in restrict band (2.3860GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 114.78dBuV/m (Peak), so the maximum field strength in restrict band is 114.78 – 58.15 = 56.63dBuV/m which is under 74dBuV/m limit.

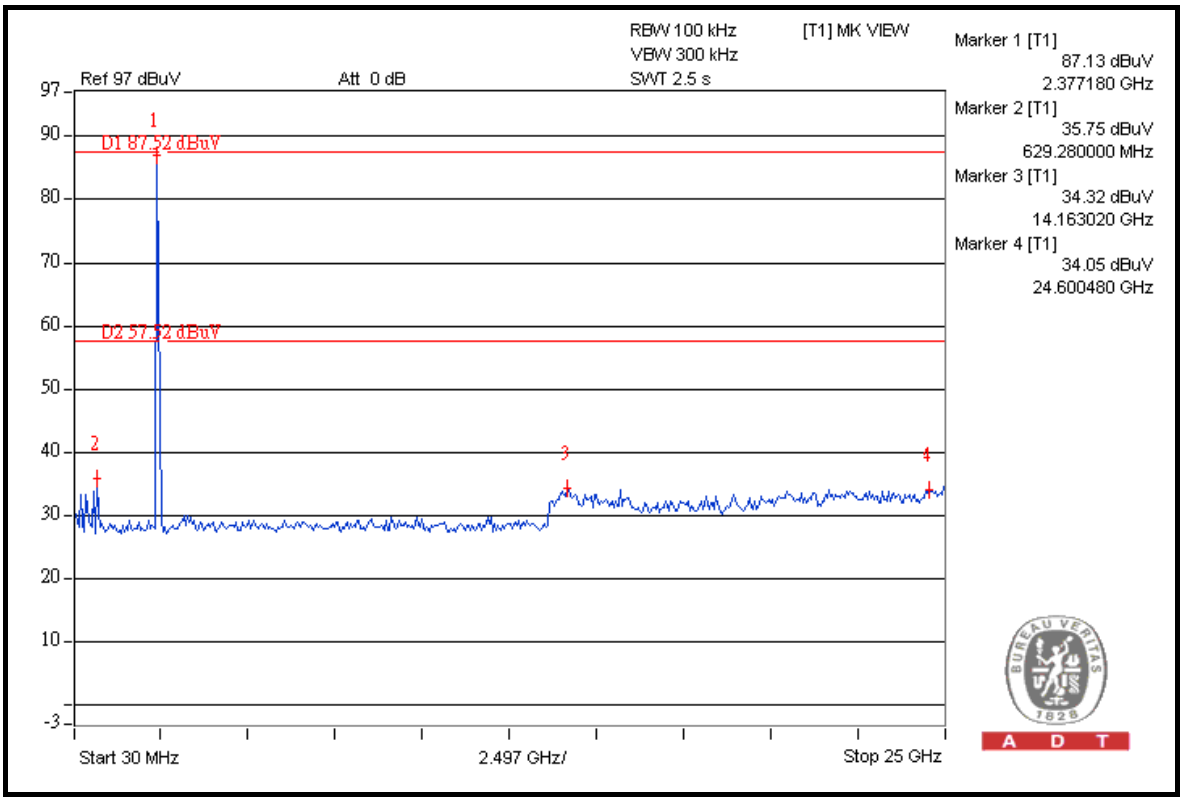
The band edge emission plot of on the next page shows 61.10dBuV between carrier maximum power and local maximum emission in restrict band (2.3868GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 110.47dBuV/m (Average), so the maximum field strength in restrict band is 110.47 – 61.10 = 49.37dBuV/m which is under 54dBuV/m limit.

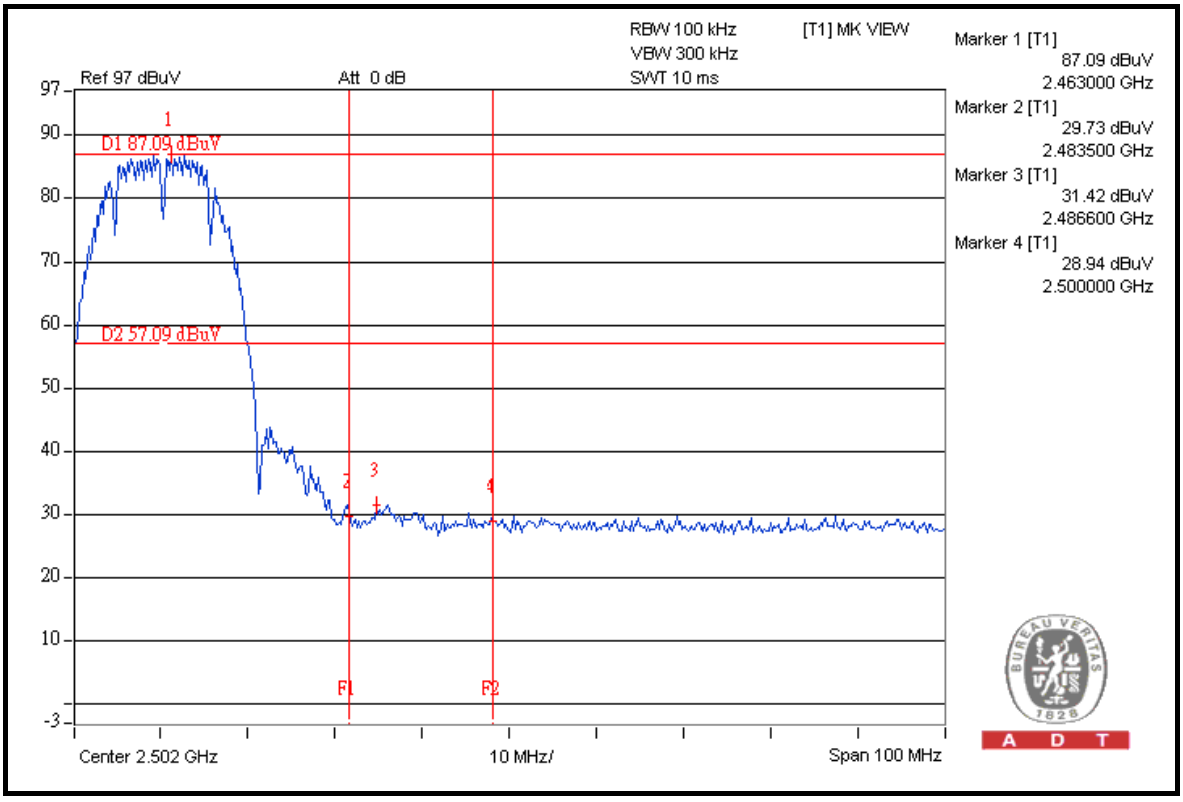
NOTE 2: The band edge emission plot on the next second page shows 55.67dBuV between carrier maximum power and local maximum emission in restrict band (2.4866GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 114.53dBuV/m (Peak), so the maximum field strength in restrict band is 114.53 – 55.67 = 58.86dBuV/m which is under 74dBuV/m limit.

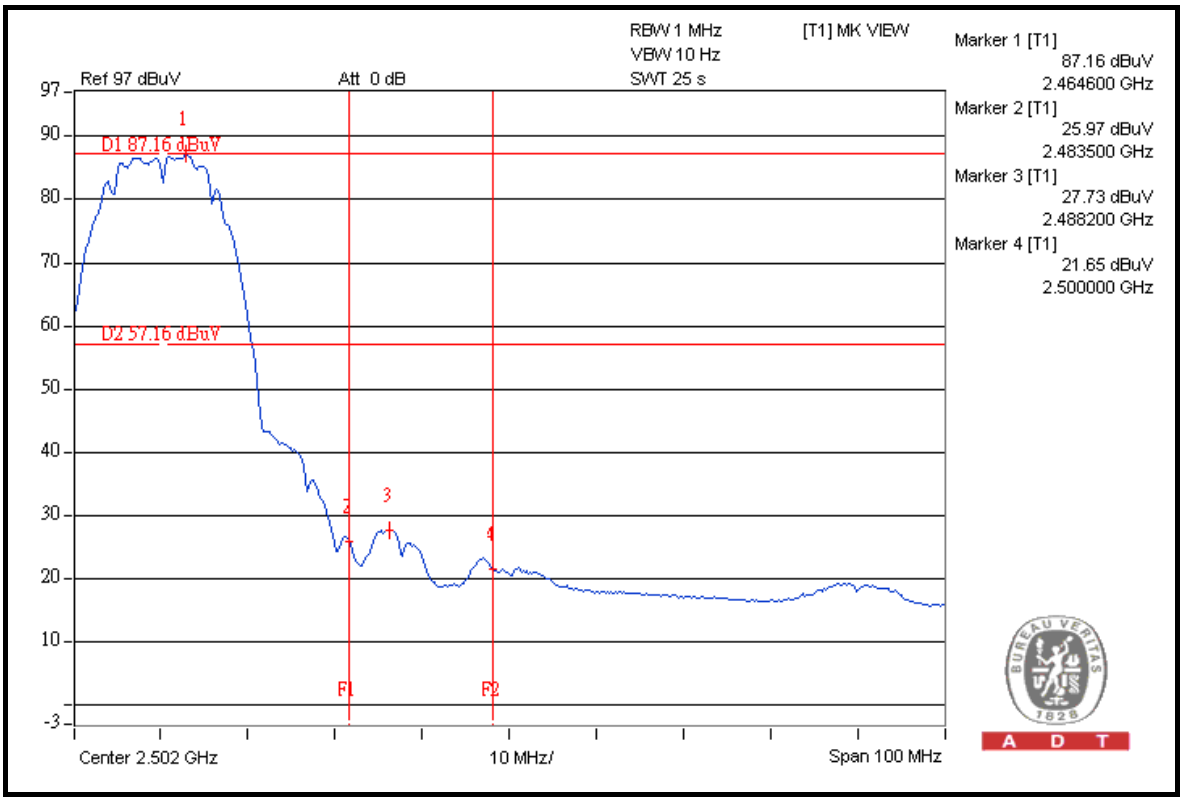
The band edge emission plot on the next third page shows 59.43dBuV between carrier maximum power and local maximum emission in restrict band (2.4882GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 110.06dBuV/m (Average), so the maximum field strength in restrict band is 110.06 – 59.43 = 50.63dBuV/m which is under 54dBuV/m limit.

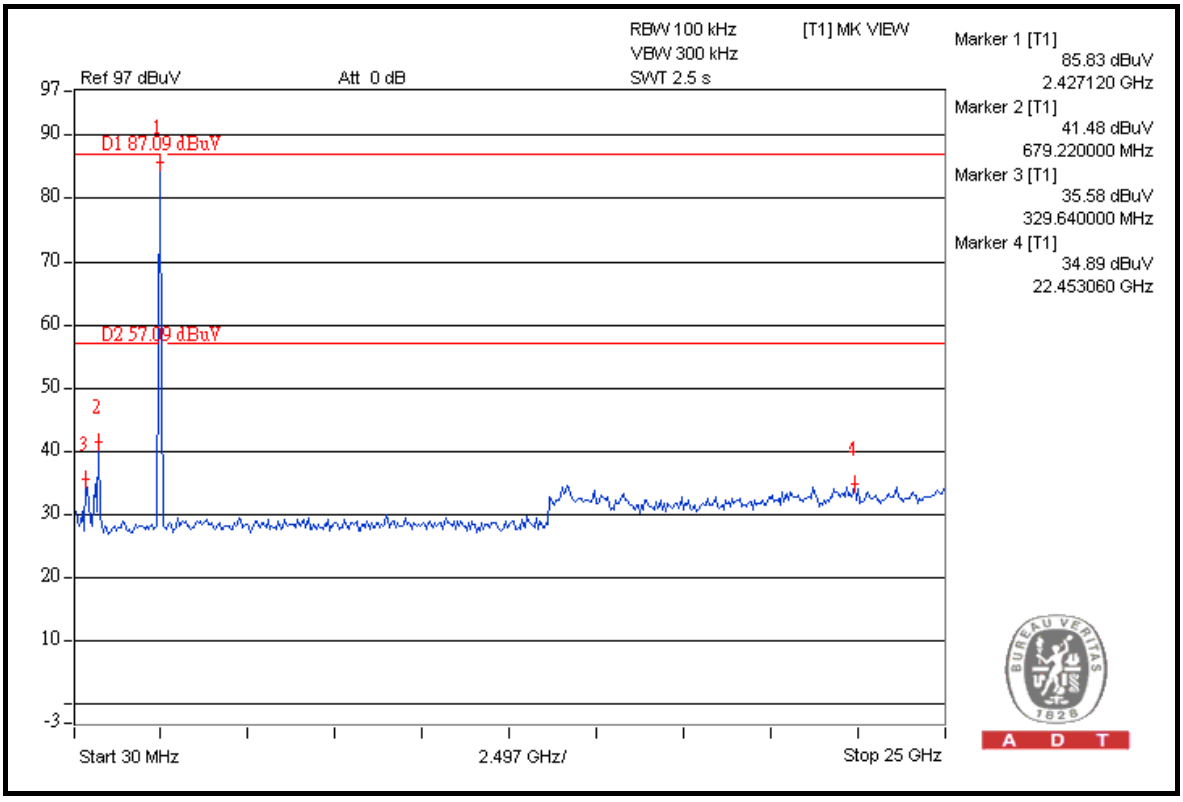

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 87.52 dBuV
D2 57.52 dBuV
Marker 1 [T1]
87.52 dBuV
2.415600 GHz
Marker 2 [T1]
38.28 dBuV
2.400000 GHz
Marker 3 [T1]
38.47 dBuV
2.397000 GHz
Marker 4 [T1]
27.58 dBuV
2.390000 GHz
Marker 5 [T1]
29.37 dBuV
2.386000 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 87.67 dBuV
D2 57.67 dBuV
Marker 1 [T1]
87.67 dBuV
2.414800 GHz
Marker 2 [T1]
39.45 dBuV
2.400000 GHz
Marker 3 [T1]
39.45 dBuV
2.400000 GHz
Marker 4 [T1]
23.09 dBuV
2.390000 GHz
Marker 5 [T1]
26.57 dBuV
2.386800 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 87.52 dBuV
D2 57.52 dBuV
Marker 1 [T1]
87.13 dBuV
2.377180 GHz
Marker 2 [T1]
35.75 dBuV
629.280000 MHz
Marker 3 [T1]
34.32 dBuV
14.163020 GHz
Marker 4 [T1]
34.05 dBuV
24.600480 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 87.09 dBuV
D2 57.09 dBuV
Marker 1 [T1]
87.09 dBuV
2.463000 GHz
Marker 2 [T1]
29.73 dBuV
2.483500 GHz
Marker 3 [T1]
31.42 dBuV
2.486600 GHz
Marker 4 [T1]
28.94 dBuV
2.500000 GHz
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 87.16 dBuV
D2 57.16 dBuV
Marker 1 [T1]
87.16 dBuV
2.464600 GHz
Marker 2 [T1]
25.97 dBuV
2.483500 GHz
Marker 3 [T1]
27.73 dBuV
2.488200 GHz
Marker 4 [T1]
21.65 dBuV
2.500000 GHz
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 87.09 dBuV
D2 57.09 dBuV
Marker 1 [T1]
85.83 dBuV
2.427120 GHz
Marker 2 [T1]
41.48 dBuV
679.220000 MHz
Marker 3 [T1]
35.58 dBuV
329.640000 MHz
Marker 4 [T1]
34.89 dBuV
22.453060 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz

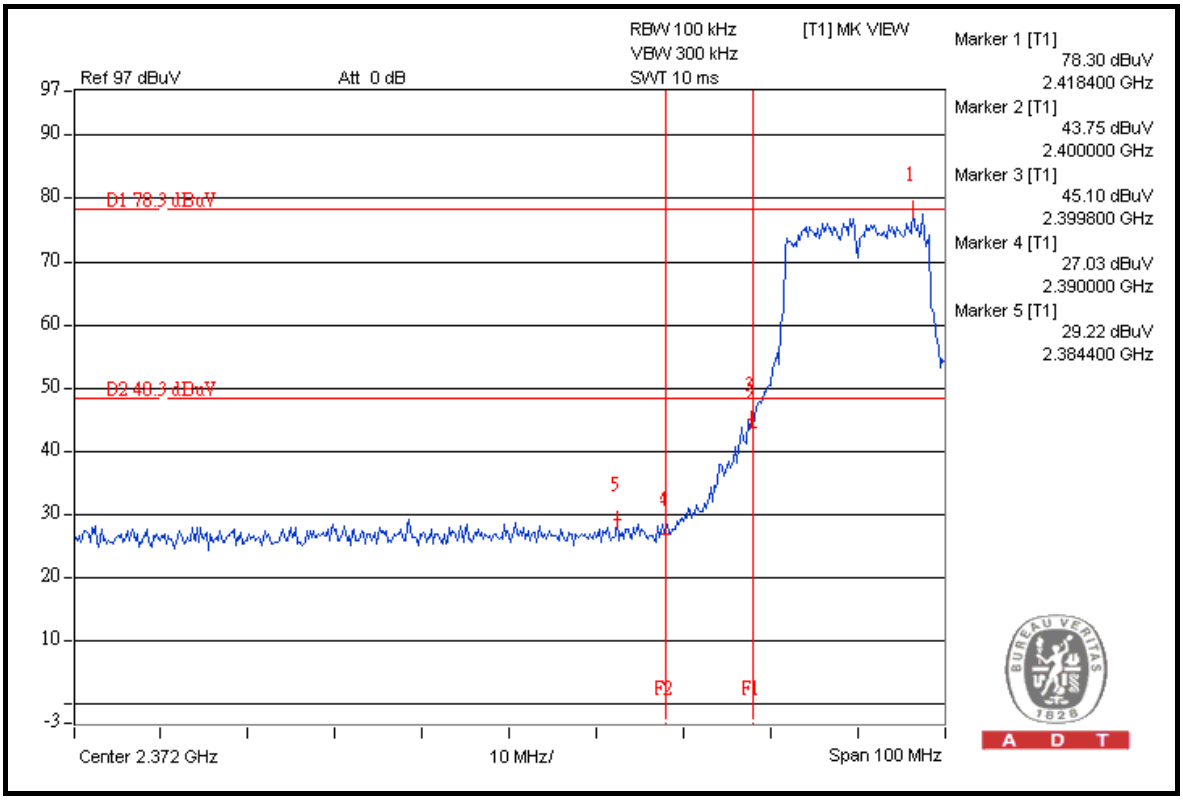
802.11g OFDM MODULATION

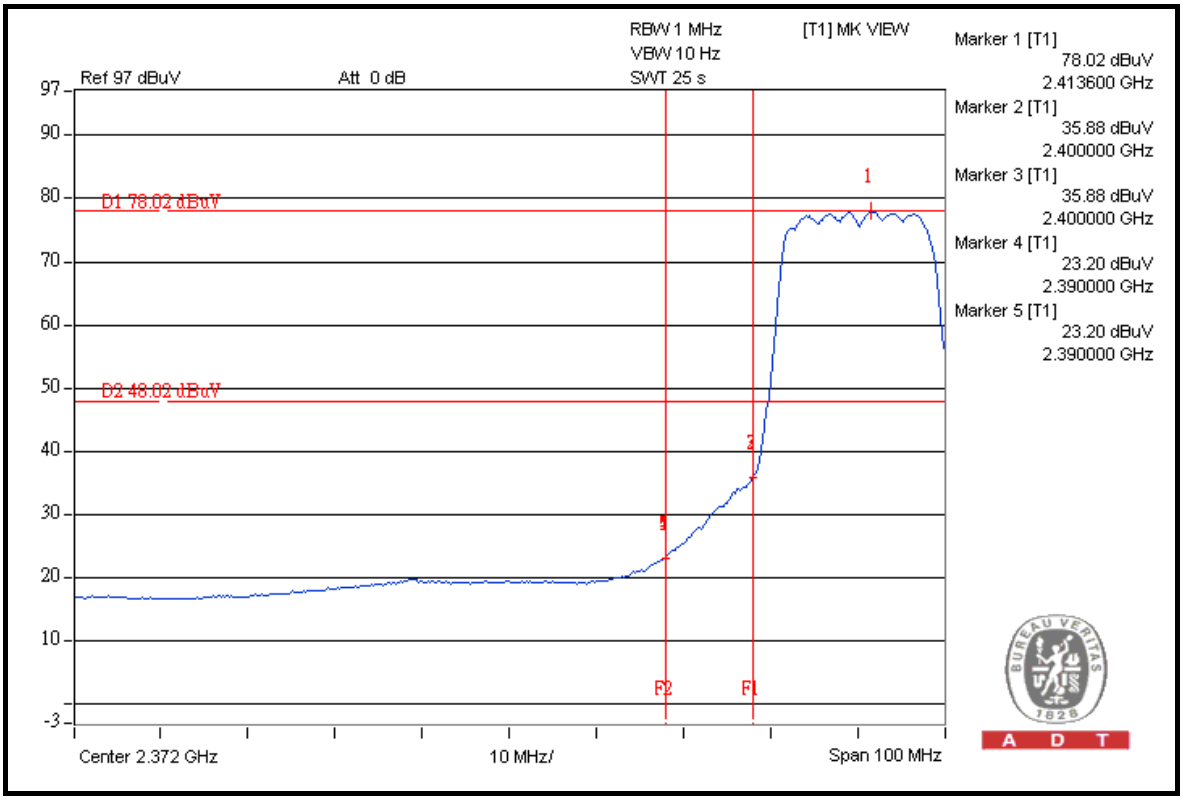
NOTE 1: The band edge emission plot on the next page shows 49.08dBuV between carrier maximum power and local maximum emission in restrict band (2.3844GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 112.90dBuV/m (Peak), so the maximum field strength in restrict band is 112.90 – 49.08 = 63.82dBuV/m which is under 74dBuV/m limit.

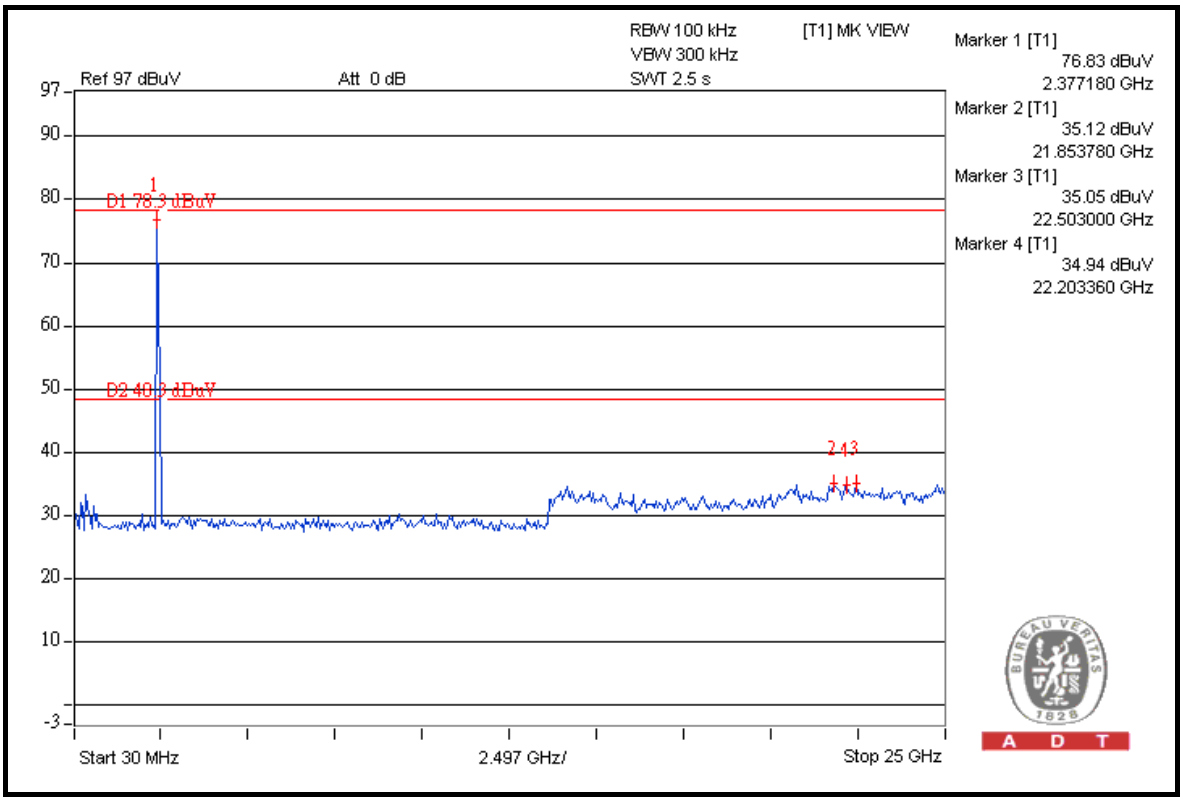
The band edge emission plot of on the next page shows 54.82dBuV between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 100.60dBuV/m (Average), so the maximum field strength in restrict band is 100.60 – 54.82 = 45.78dBuV/m which is under 54dBuV/m limit.

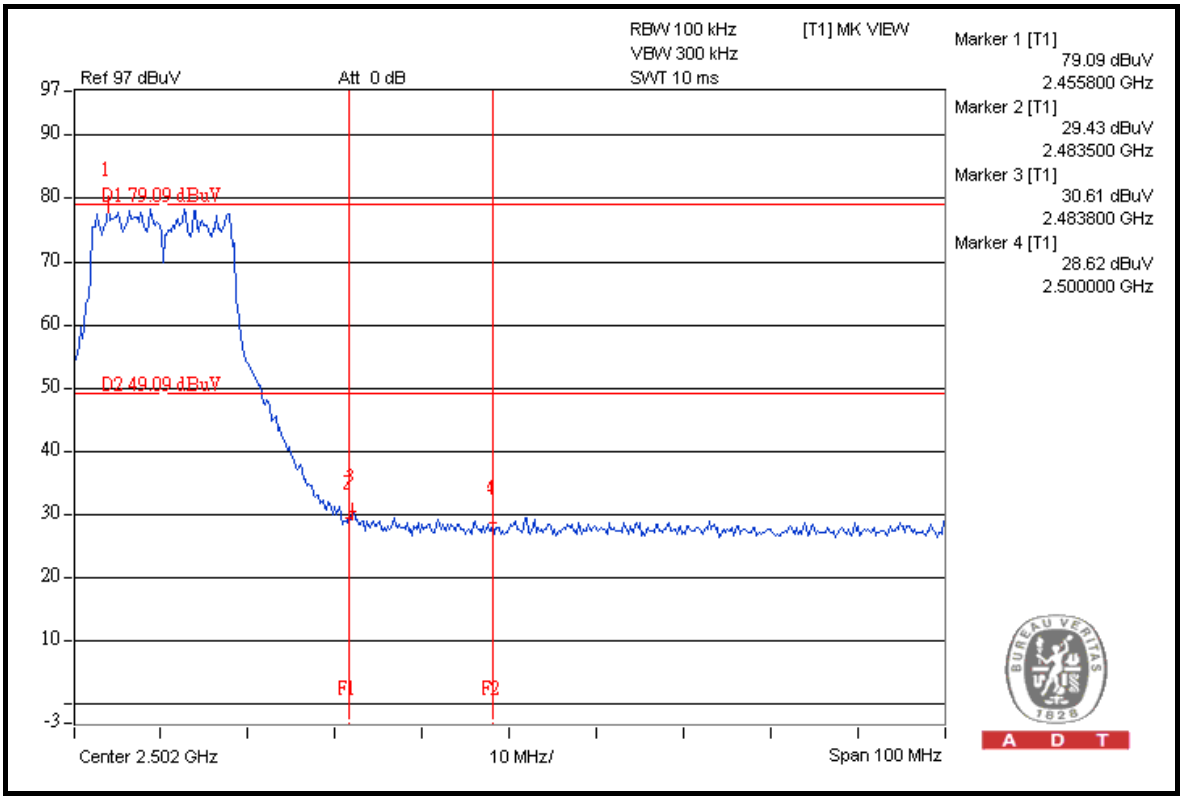
NOTE 2: The band edge emission plot on the next second page shows 48.48dBuV between carrier maximum power and local maximum emission in restrict band (2.4838GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 113.74dBuV/m (Peak), so the maximum field strength in restrict band is 113.74 – 48.48 = 65.26dBuV/m which is under 74dBuV/m limit.

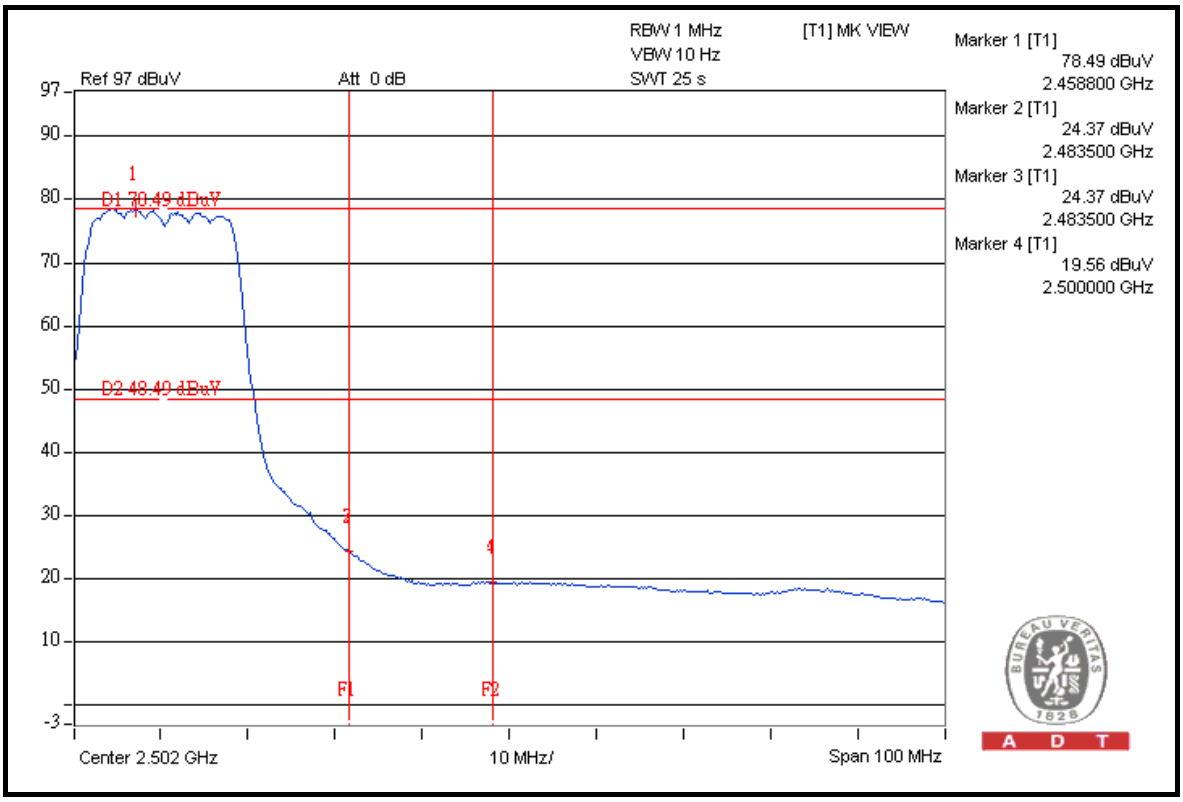
The band edge emission plot on the next third page shows 54.12dBuV between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 101.19dBuV/m (Average), so the maximum field strength in restrict band is 101.19 – 54.12 = 47.07dBuV/m which is under 54dBuV/m limit.

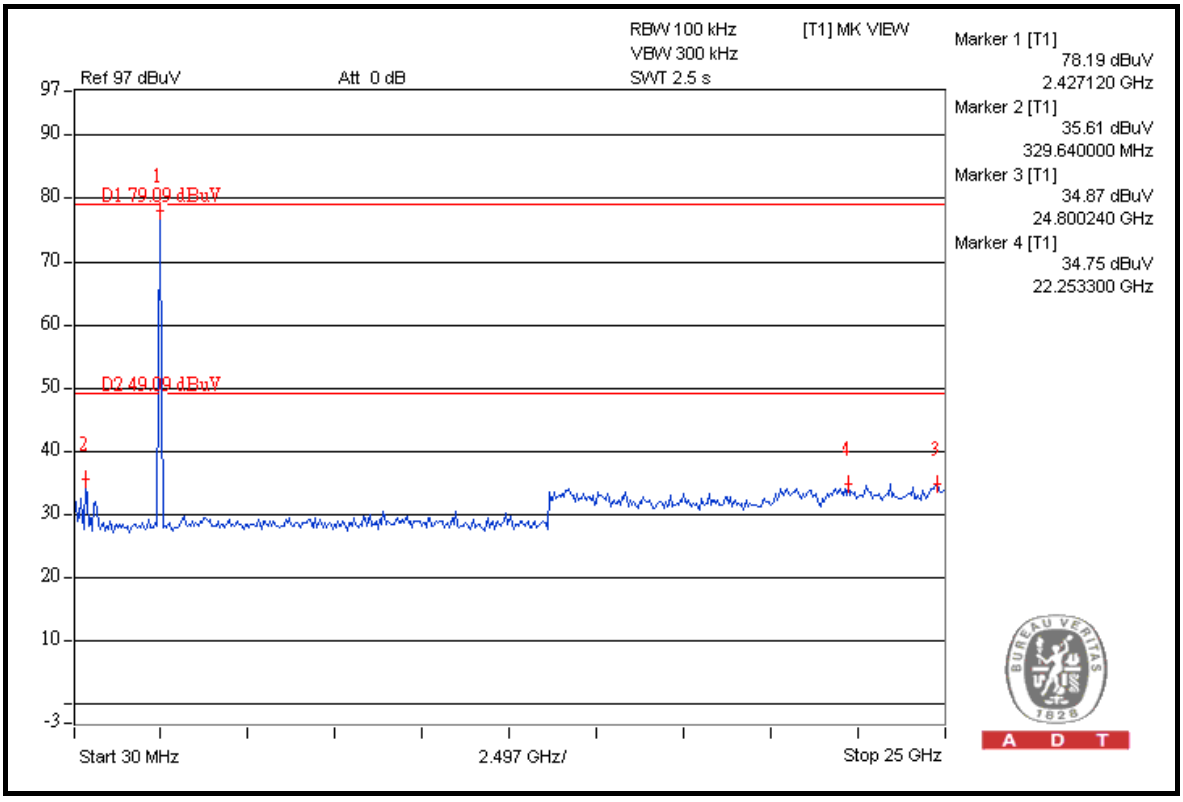

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 78.3 dBuV
D2 40.3 dBuV
Marker 1 [T1]
78.30 dBuV
2.418400 GHz
Marker 2 [T1]
43.75 dBuV
2.400000 GHz
Marker 3 [T1]
45.10 dBuV
2.399800 GHz
Marker 4 [T1]
27.03 dBuV
2.390000 GHz
Marker 5 [T1]
29.22 dBuV
2.384400 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 78.02 dBuV
D2 48.02 dBuV
Marker 1 [T1]
78.02 dBuV
2.413600 GHz
Marker 2 [T1]
35.88 dBuV
2.400000 GHz
Marker 3 [T1]
35.88 dBuV
2.400000 GHz
Marker 4 [T1]
23.20 dBuV
2.390000 GHz
Marker 5 [T1]
23.20 dBuV
2.390000 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 78.3 dBuV
D2 40.3 dBuV
Marker 1 [T1]
76.83 dBuV
2.377180 GHz
Marker 2 [T1]
35.12 dBuV
21.853780 GHz
Marker 3 [T1]
35.05 dBuV
22.503000 GHz
Marker 4 [T1]
34.94 dBuV
22.203360 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 79.09 dBuV
D2 49.09 dBuV
Marker 1 [T1]
79.09 dBuV
2.455800 GHz
Marker 2 [T1]
29.43 dBuV
2.483500 GHz
Marker 3 [T1]
30.61 dBuV
2.483800 GHz
Marker 4 [T1]
28.62 dBuV
2.500000 GHz
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
78.49 dBuV
2.458800 GHz
Marker 2 [T1]
24.37 dBuV
2.483500 GHz
Marker 3 [T1]
24.37 dBuV
2.483500 GHz
Marker 4 [T1]
19.56 dBuV
2.500000 GHz
D1 78.49 dBuV
D2 48.49 dBuV
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
78.19 dBuV
2.427120 GHz
Marker 2 [T1]
35.61 dBuV
329.640000 MHz
Marker 3 [T1]
34.87 dBuV
24.800240 GHz
Marker 4 [T1]
34.75 dBuV
22.253300 GHz
D1 79.09 dBuV
D2 49.09 dBuV
Start 30 MHz
2.497 GHz/
Stop 25 GHz

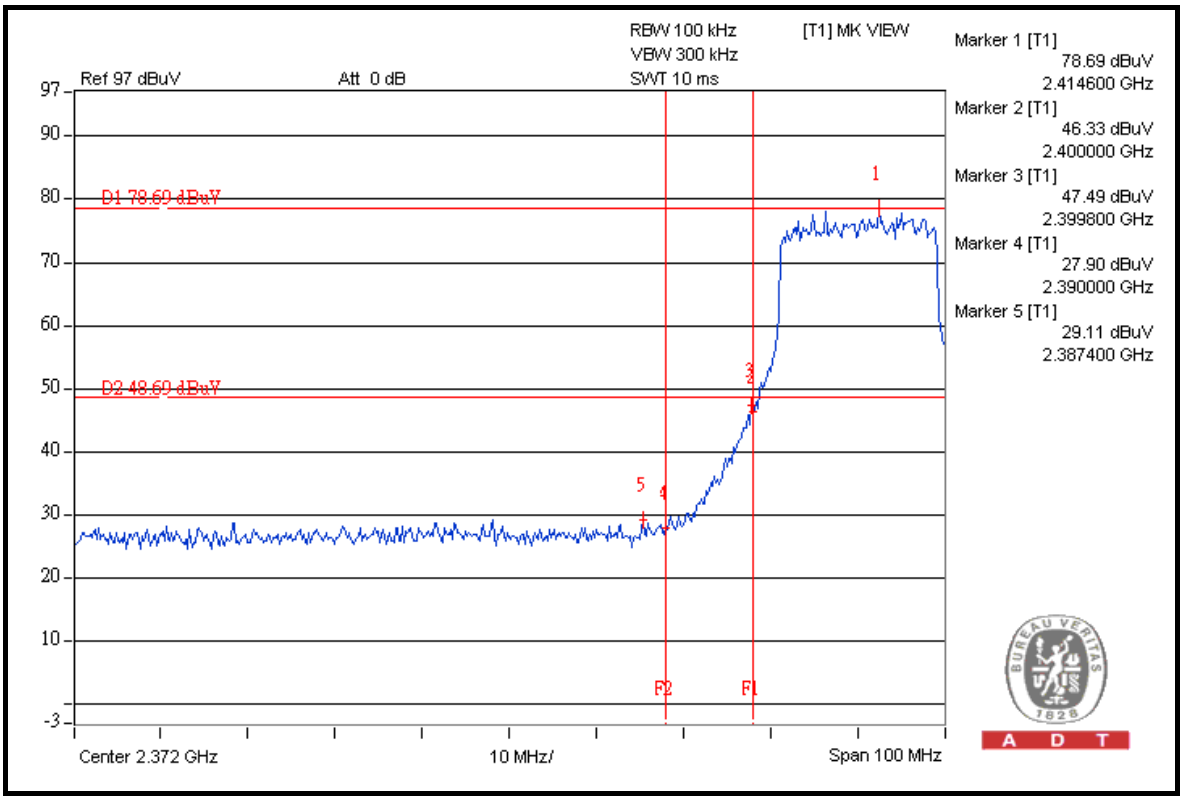
DRAFT 802.11n (20MHz) OFDM MODULATION

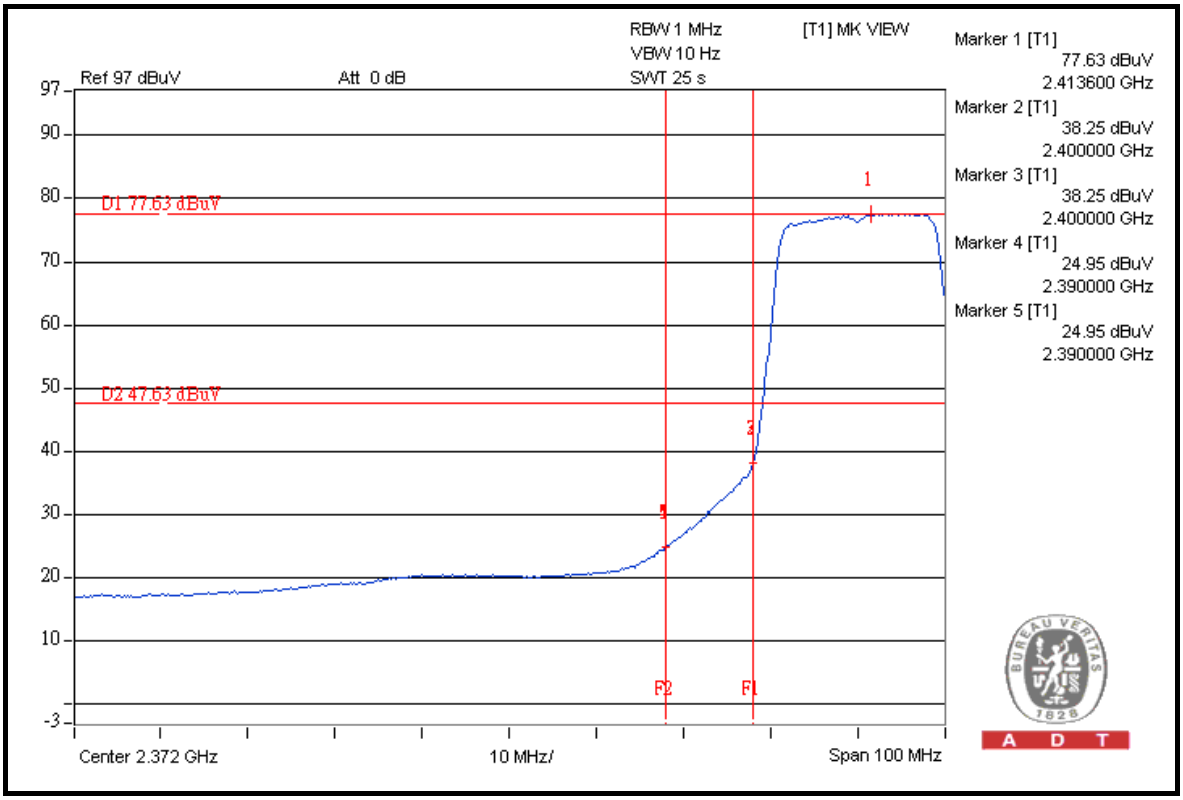
NOTE 1: The band edge emission plot on the next page shows 49.58dBuV between carrier maximum power and local maximum emission in restrict band (2.3874GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 112.26dBuV/m (Peak), so the maximum field strength in restrict band is 112.26 – 49.58 = 62.68dBuV/m which is under 74dBuV/m limit.

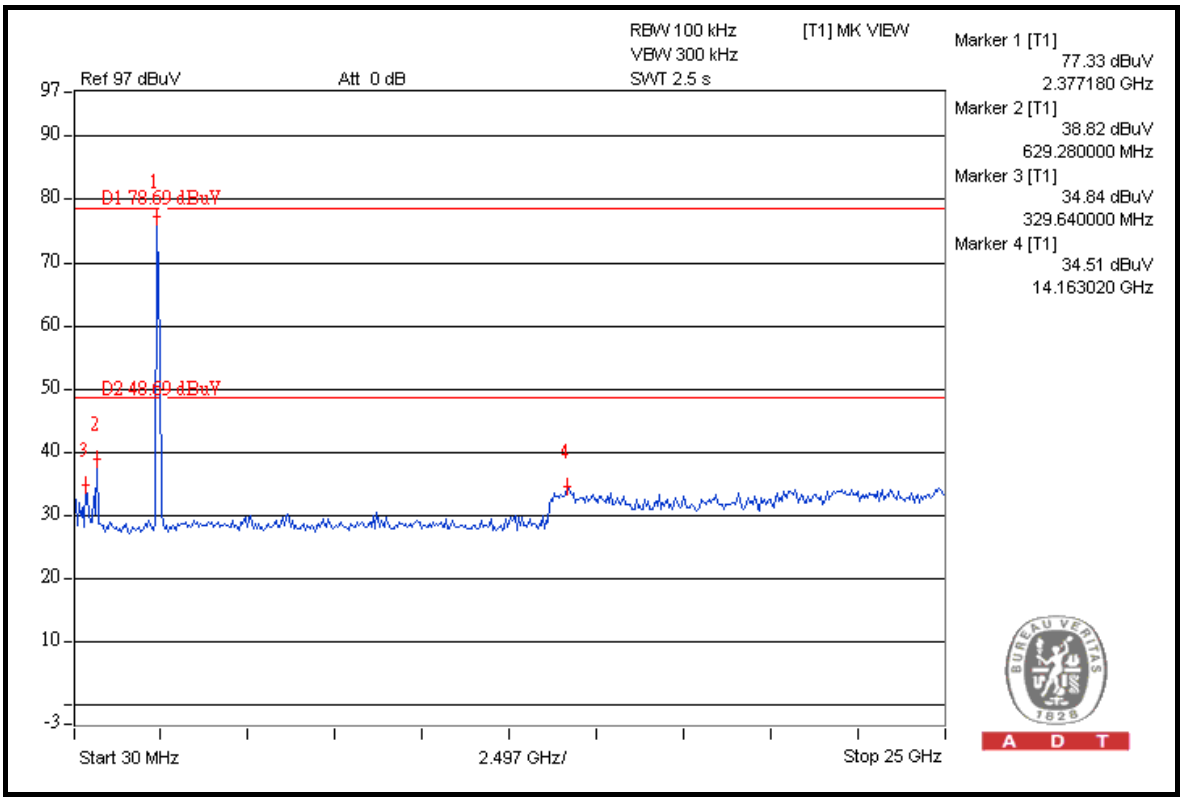
The band edge emission plot of on the next page shows 52.60dBuV between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 100.17dBuV/m (Average), so the maximum field strength in restrict band is 100.17 – 52.60 = 47.49dBuV/m which is under 54dBuV/m limit.

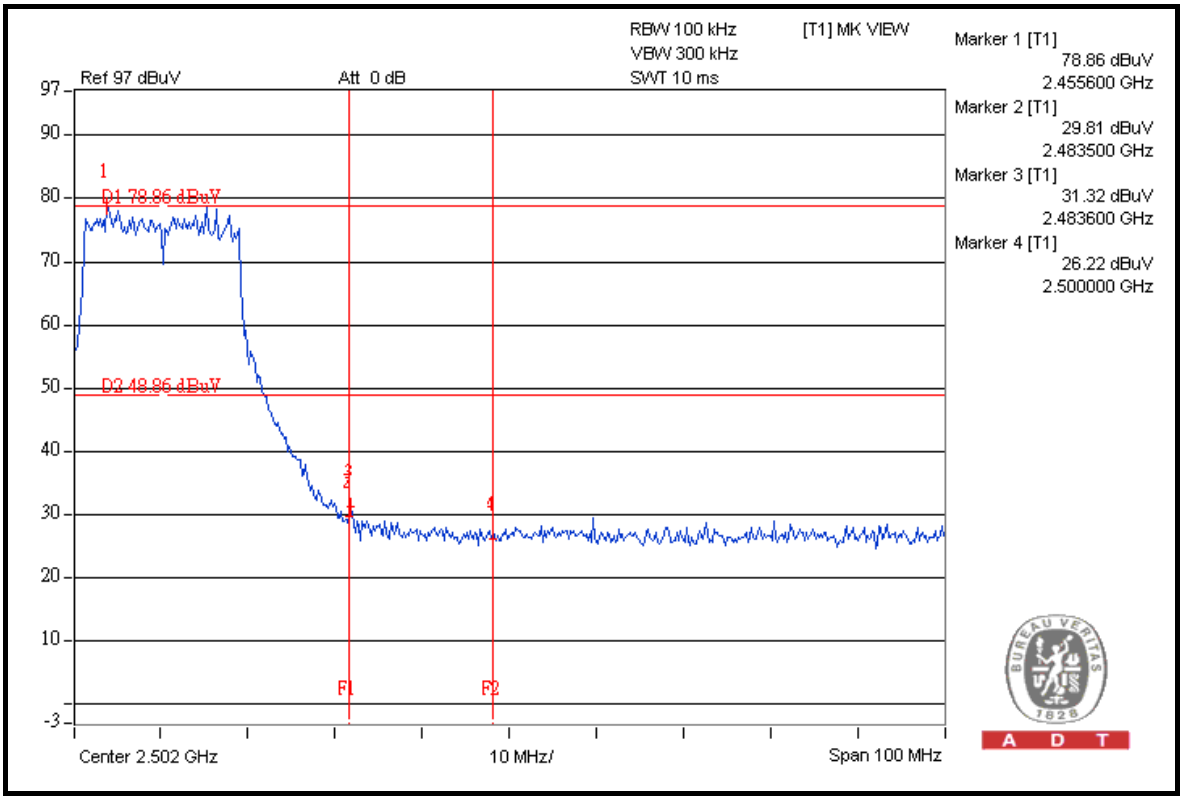
NOTE 2: The band edge emission plot on the next second page shows 47.54dBuV between carrier maximum power and local maximum emission in restrict band (2.4836GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 112.64dBuV/m (Peak), so the maximum field strength in restrict band is 112.64 – 47.54 = 65.10dBuV/m which is under 74dBuV/m limit.

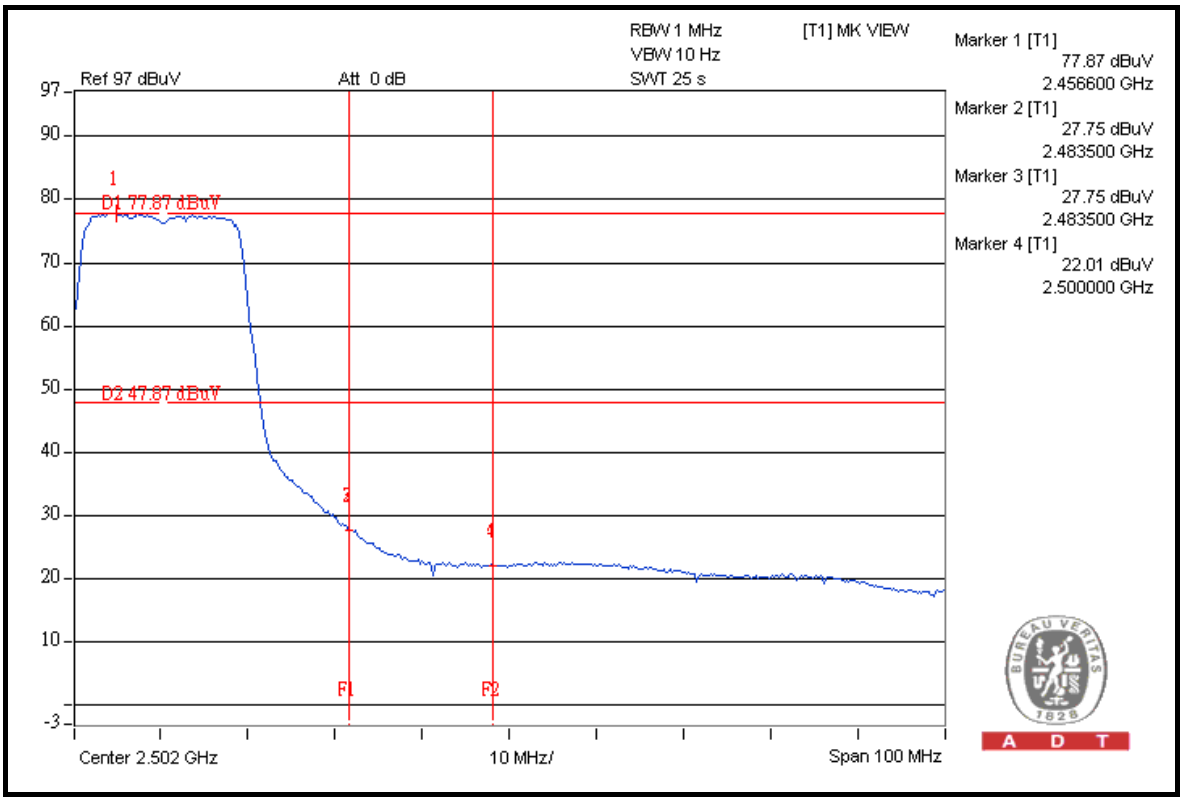
The band edge emission plot on the next third page shows 50.12dBuV between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 100.54dBuV/m (Average), so the maximum field strength in restrict band is 100.54 – 50.12 = 50.42dBuV/m which is under 54dBuV/m limit.

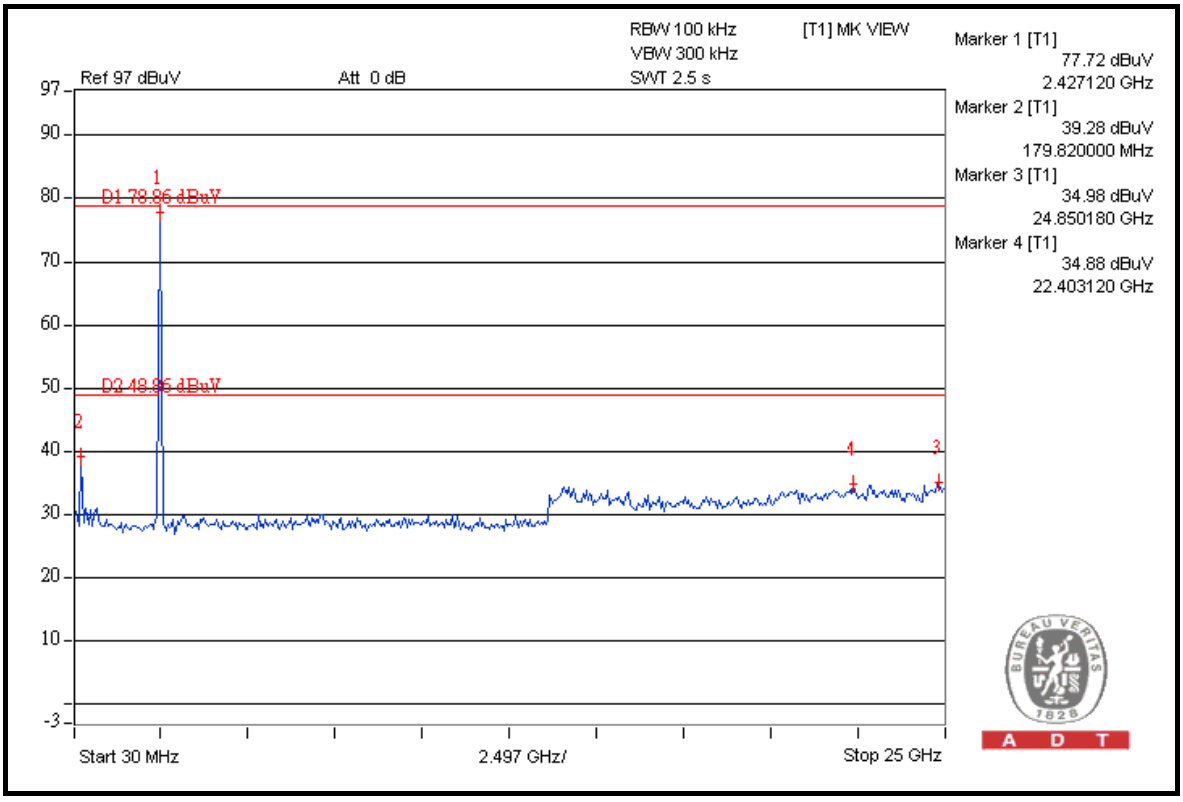

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 78.69 dBuV
D2 48.69 dBuV
Marker 1 [T1]
78.69 dBuV
2.414600 GHz
Marker 2 [T1]
46.33 dBuV
2.400000 GHz
Marker 3 [T1]
47.49 dBuV
2.399800 GHz
Marker 4 [T1]
27.90 dBuV
2.390000 GHz
Marker 5 [T1]
29.11 dBuV
2.387400 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 77.63 dBuV
D2 47.63 dBuV
Marker 1 [T1]
77.63 dBuV
2.413600 GHz
Marker 2 [T1]
38.25 dBuV
2.400000 GHz
Marker 3 [T1]
38.25 dBuV
2.400000 GHz
Marker 4 [T1]
24.95 dBuV
2.390000 GHz
Marker 5 [T1]
24.95 dBuV
2.390000 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 78.69 dBuV
D2 48.69 dBuV
Marker 1 [T1]
77.33 dBuV
2.377180 GHz
Marker 2 [T1]
38.82 dBuV
629.280000 MHz
Marker 3 [T1]
34.84 dBuV
329.640000 MHz
Marker 4 [T1]
34.51 dBuV
14.163020 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 78.86 dBuV
D2 48.86 dBuV
Marker 1 [T1]
78.86 dBuV
2.455600 GHz
Marker 2 [T1]
29.81 dBuV
2.483500 GHz
Marker 3 [T1]
31.32 dBuV
2.483600 GHz
Marker 4 [T1]
26.22 dBuV
2.500000 GHz
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
77.87 dBuV
2.456600 GHz
Marker 2 [T1]
27.75 dBuV
2.483500 GHz
Marker 3 [T1]
27.75 dBuV
2.483500 GHz
Marker 4 [T1]
22.01 dBuV
2.500000 GHz
D1 77.87 dBuV
D2 47.87 dBuV
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
77.72 dBuV
2.427120 GHz
Marker 2 [T1]
39.28 dBuV
179.820000 MHz
Marker 3 [T1]
34.98 dBuV
24.850180 GHz
Marker 4 [T1]
34.88 dBuV
22.403120 GHz
D1 78.86 dBuV
D2 48.86 dBuV
Start 30 MHz
2.497 GHz/
Stop 25 GHz

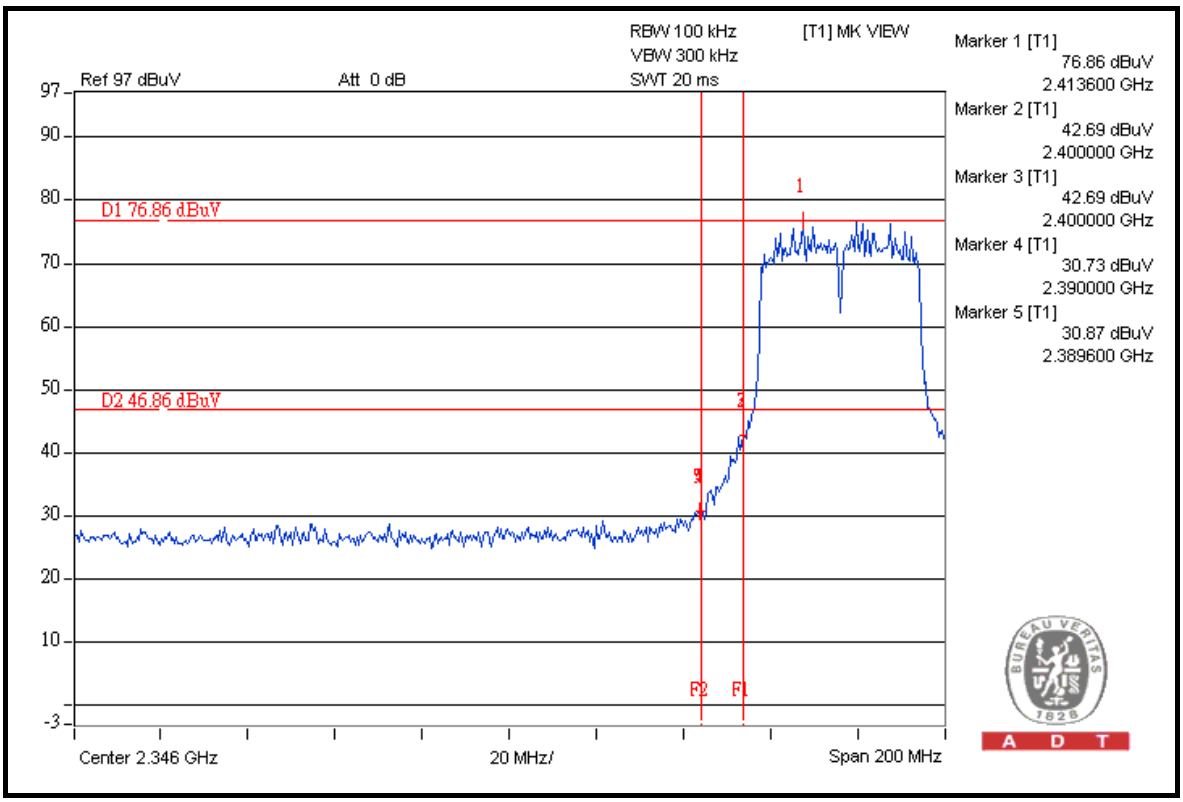
DRAFT 802.11n (40MHz) OFDM MODULATION

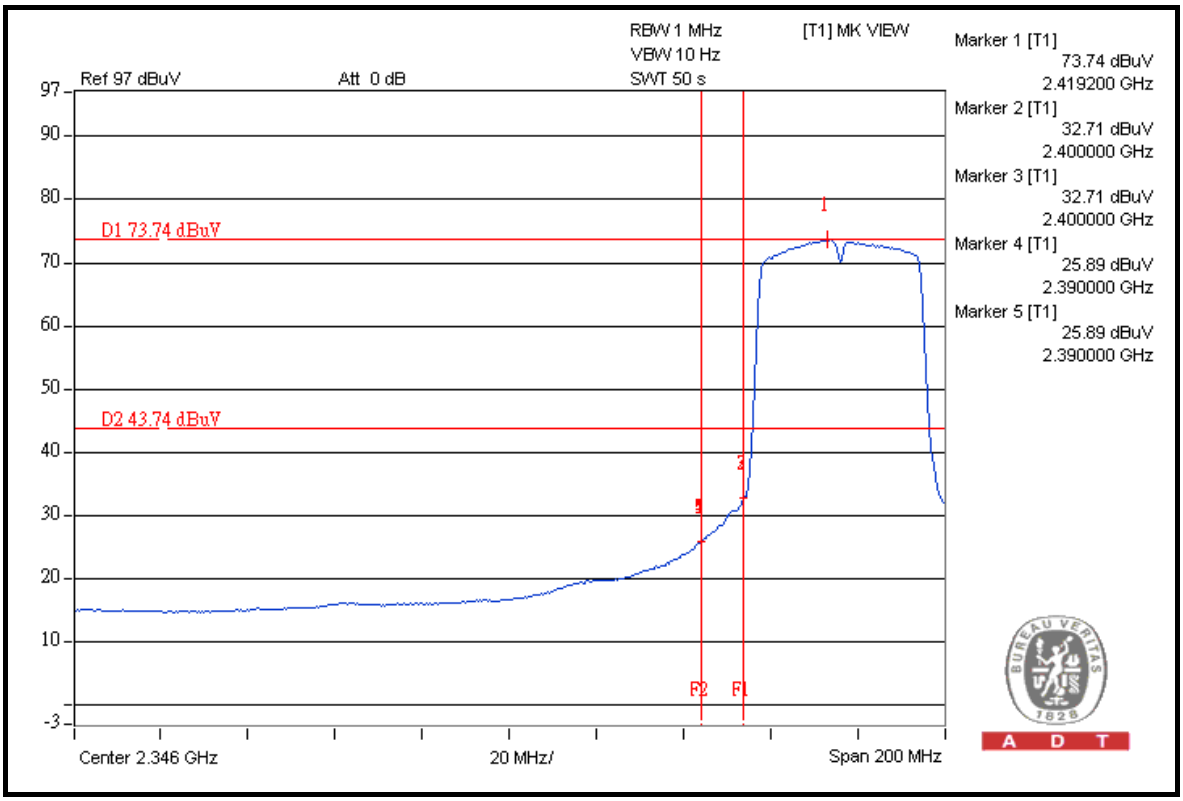
NOTE 1: The band edge emission plot on the next page shows 45.99dBuV between carrier maximum power and local maximum emission in restrict band (2.3896GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 109.50dBuV/m (Peak), so the maximum field strength in restrict band is 109.50 – 45.99 = 63.51dBuV/m which is under 74dBuV/m limit.

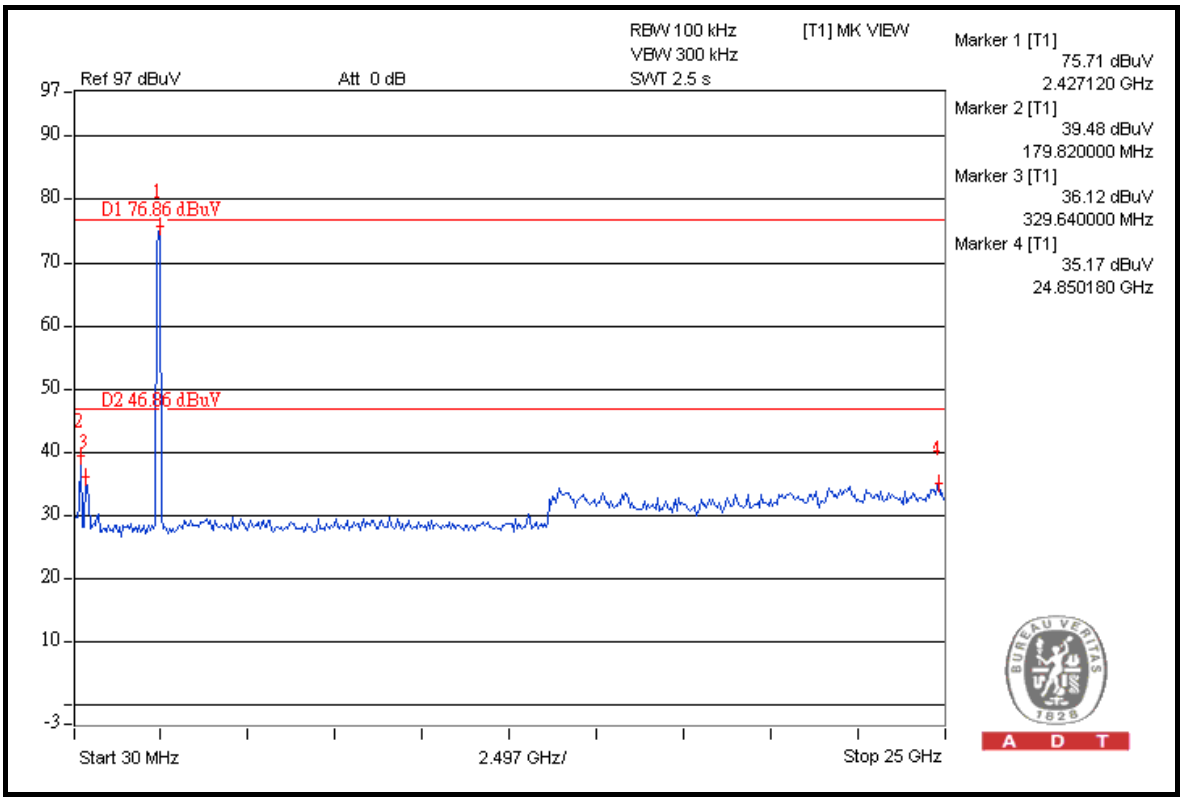
The band edge emission plot of on the next page shows 47.85dBuV between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 96.29dBuV/m (Average), so the maximum field strength in restrict band is 96.29 – 47.85 = 48.44dBuV/m which is under 54dBuV/m limit.

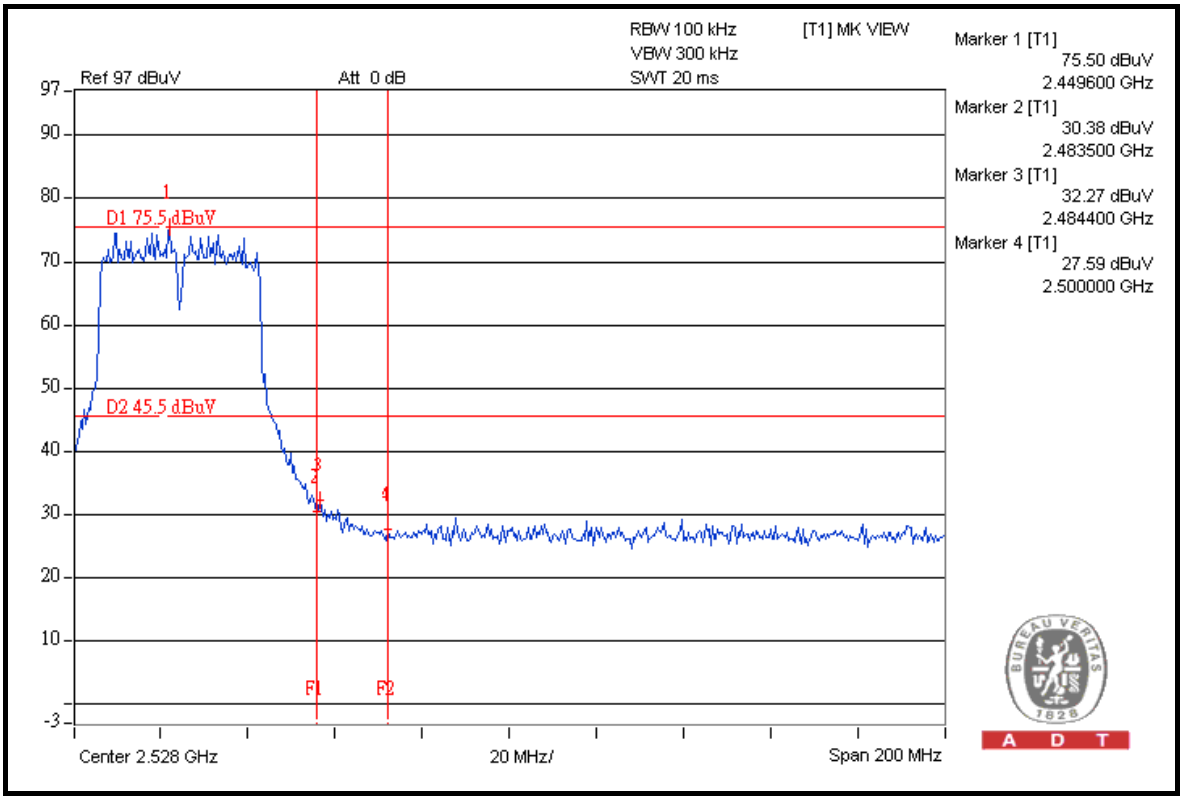
NOTE 2: The band edge emission plot on the next second page shows 43.23dBuV between carrier maximum power and local maximum emission in restrict band (2.4844GHz). The emission of carrier strength list in the test result of channel 7 at the item 4.1.7 is 107.99dBuV/m (Peak), so the maximum field strength in restrict band is 107.99 – 43.23 = 64.76dBuV/m which is under 74dBuV/m limit.

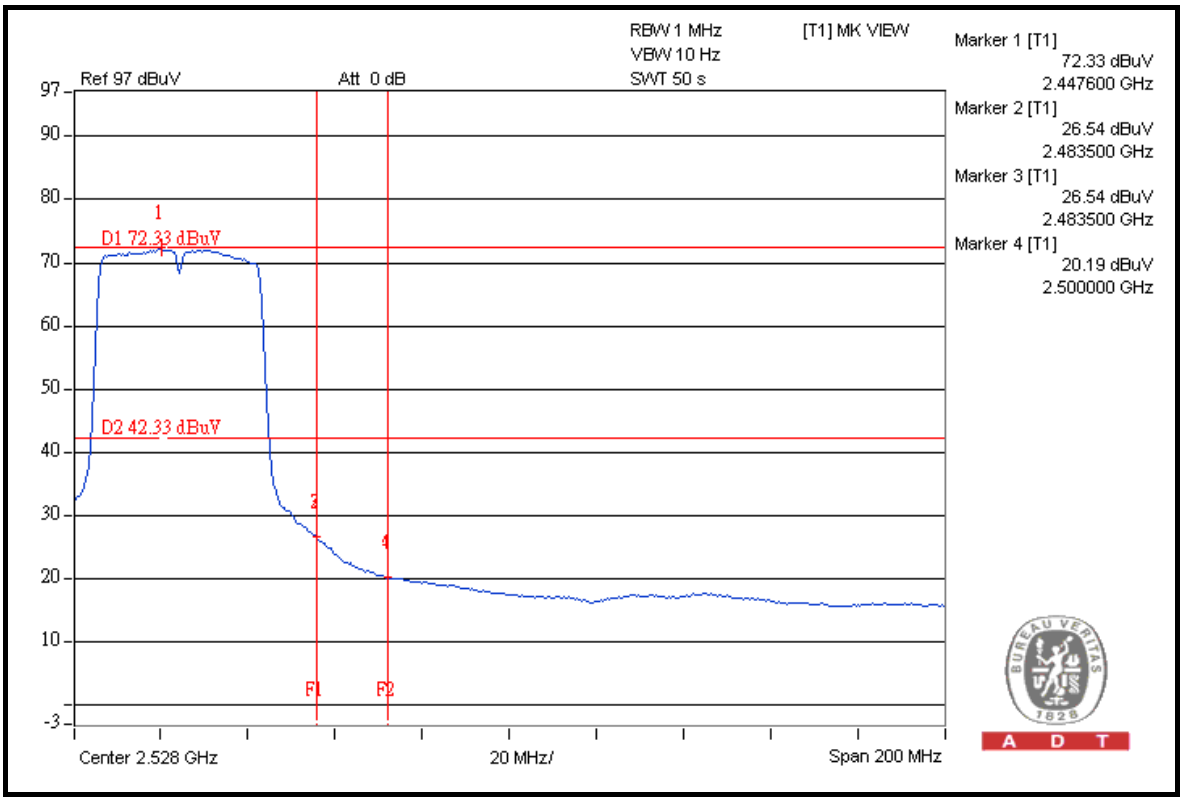
The band edge emission plot on the next third page shows 45.79dBuV between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 7 at the item 4.1.7 is 94.92dBuV/m (Average), so the maximum field strength in restrict band is 94.92 – 45.79 = 49.13dBuV/m which is under 54dBuV/m limit.

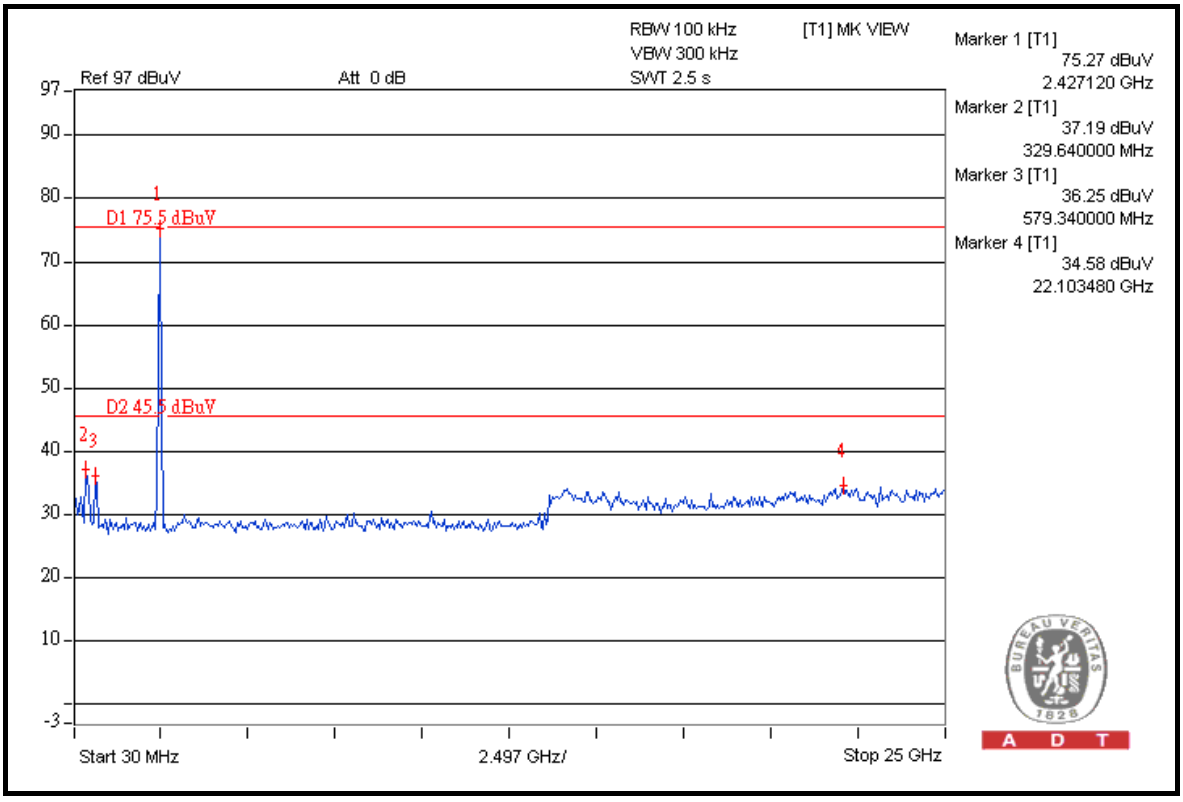

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 76.86 dBuV
D2 46.86 dBuV
Marker 1 [T1]
76.86 dBuV
2.413600 GHz
Marker 2 [T1]
42.69 dBuV
2.400000 GHz
Marker 3 [T1]
42.69 dBuV
2.400000 GHz
Marker 4 [T1]
30.73 dBuV
2.390000 GHz
Marker 5 [T1]
30.87 dBuV
2.389600 GHz
Center 2.346 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 73.74 dBuV
D2 43.74 dBuV
Marker 1 [T1]
73.74 dBuV
2.419200 GHz
Marker 2 [T1]
32.71 dBuV
2.400000 GHz
Marker 3 [T1]
32.71 dBuV
2.400000 GHz
Marker 4 [T1]
25.89 dBuV
2.390000 GHz
Marker 5 [T1]
25.89 dBuV
2.390000 GHz
Center 2.346 GHz
20 MHz/
Span 200 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 76.86 dBuV
D2 46.86 dBuV
Marker 1 [T1]
75.71 dBuV
2.427120 GHz
Marker 2 [T1]
39.48 dBuV
179.820000 MHz
Marker 3 [T1]
36.12 dBuV
329.640000 MHz
Marker 4 [T1]
35.17 dBuV
24.850180 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 75.5 dBuV
D2 45.5 dBuV
Marker 1 [T1]
75.50 dBuV
2.449600 GHz
Marker 2 [T1]
30.38 dBuV
2.483500 GHz
Marker 3 [T1]
32.27 dBuV
2.484400 GHz
Marker 4 [T1]
27.59 dBuV
2.500000 GHz
F1
F2
Center 2.528 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
72.33 dBuV
2.447600 GHz
Marker 2 [T1]
26.54 dBuV
2.483500 GHz
Marker 3 [T1]
26.54 dBuV
2.483500 GHz
Marker 4 [T1]
20.19 dBuV
2.500000 GHz
D1 72.33 dBuV
D2 42.33 dBuV
97
90
80
70
60
50
40
30
20
10
-3
F1
F2
Center 2.528 GHz
20 MHz/
Span 200 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
75.27 dBuV
2.427120 GHz
Marker 2 [T1]
37.19 dBuV
329.640000 MHz
Marker 3 [T1]
36.25 dBuV
579.340000 MHz
Marker 4 [T1]
34.58 dBuV
22.103480 GHz
D1 75.5 dBuV
D2 45.5 dBuV
97
90
80
70
60
50
40
30
20
10
-3
Start 30 MHz
2.497 GHz/
Stop 25 GHz

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 Printed antenna without connector. The maximum gain of the antenna is 2.8dBi.

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

Above 1GHz Test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Dec. 29, 2008	Dec. 28, 2009
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Dec. 08, 2008	Dec. 07, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 30, 2009	Apr. 28, 2010
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-408	Dec. 29, 2008	Dec. 28, 2009
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 06, 2009	Jan. 05, 2010
Preamplifier Agilent	8449B	3008A01960	Nov. 03, 2008	Nov. 02, 2009
Preamplifier Agilent	8447D	2944A10631	Nov. 03, 2008	Nov. 02, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274041/4	Aug. 21, 2008	Aug. 20, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283397/4	Aug. 21, 2008	Aug. 20, 2009
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT.	TT100.	TT93021704	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	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 4.

3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 988962.

5. The IC Site Registration No. is IC7450F-4.

Below 1GHz Test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100186	Dec. 05, 2008	Dec. 04, 2009
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	Sep. 22, 2008	Sep. 21, 2009
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100025	Oct. 22, 2008	Oct. 21, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-148	Apr. 28, 2009	Apr. 27, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-149	Apr. 28, 2009	Apr. 27, 2010
Preamplifier Agilent	8447D	2944A10637	Dec. 04, 2008	Dec. 03, 2009
Preamplifier Agilent	8447D	2944A10636	Dec. 04, 2008	Dec. 03, 2009
RF signal cable Woken	8D-FB	Cable-Hych1-01	Oct. 28, 2008	Oct. 27, 2009
RF signal cable Woken	8D-FB	Cable-Hych1-02	Oct. 28, 2008	Oct. 27, 2009
Software ADT	ADT_Radiated_ V 7.7.03.6	NA	NA	NA
Antenna Tower(V)	MFA-440	9707	NA	NA
Antenna Tower(H)	MFA-440	970705	NA	NA
Turn Table	DS430	50303	NA	NA
Controller	MF7802	074	NA	NA
Controller	MF7802	08093	NA	NA
RF signal cable EAST COST Microwave	HP 160S-29	NA	Feb. 17, 2009	Feb. 16, 2010

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

2. The test was performed in HwaYa Chamber 1.

3. The FCC Site Registration No. is 477732.

4. The IC Site Registration No. is IC 7450F-1.

5. The VCCI Site Registration No. is R-1893.

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 & 10 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.

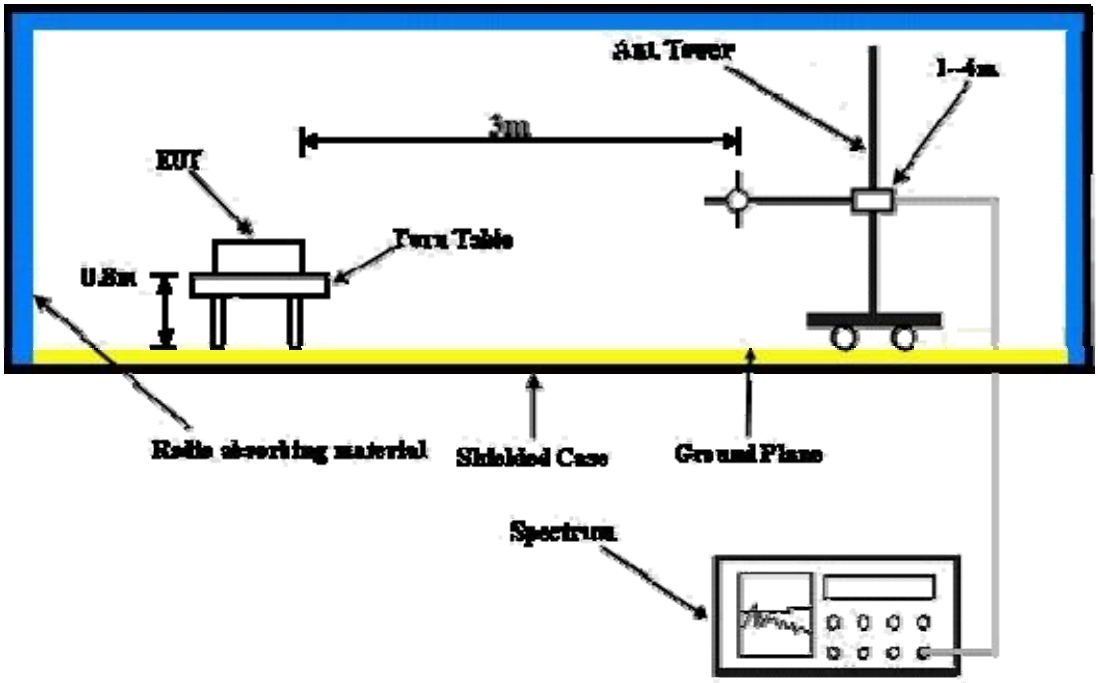
NOTE:

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	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	78.24 PK	85.03	-6.79	1.06 H	43	38.21	40.03
2	#5725.00	57.22 AV	74.67	-17.45	1.06 H	43	17.19	40.03
3	*5745.00	115.03 PK			1.05 H	36	74.96	40.07
4	*5745.00	104.67 AV			1.05 H	36	64.60	40.07
5	11490.00	60.94 PK	74.00	-13.06	1.28 H	284	9.79	51.15
6	11490.00	50.42 AV	54.00	-3.58	1.28 H	284	-0.73	51.15
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	#5725.00	79.70 PK	85.81	-6.11	1.11 V	303	39.67	40.03
2	#5725.00	58.90 AV	75.11	-16.21	1.11 V	303	18.87	40.03
3	*5745.00	115.81 PK			1.02 V	302	75.74	40.07
4	*5745.00	105.11 AV			1.02 V	302	65.04	40.07
5	11490.00	61.85 PK	74.00	-12.15	1.00 V	133	10.70	51.15
6	11490.00	51.52 AV	54.00	-2.48	1.00 V	133	0.37	51.15

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	115.04 PK			1.02 H	32	74.88	40.16
2	*5785.00	105.11 AV			1.02 H	32	64.95	40.16
3	11570.00	61.08 PK	74.00	-12.92	1.25 H	310	10.05	51.03
4	11570.00	50.13 AV	54.00	-3.87	1.25 H	310	-0.90	51.03
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	*5785.00	115.26 PK			1.02 V	323	75.10	40.16
2	*5785.00	105.45 AV			1.02 V	323	65.29	40.16
3	11570.00	62.20 PK	74.00	-11.80	1.01 V	120	11.17	51.03
4	11570.00	51.08 AV	54.00	-2.92	1.01 V	120	0.05	51.03

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	115.12 PK			1.09 H	77	74.87	40.25
2	*5825.00	105.21 AV			1.09 H	77	64.96	40.25
3	#5850.00	73.12 PK	85.12	-12.00	1.15 H	86	32.82	40.30
4	#5850.00	52.54 AV	75.21	-22.67	1.15 H	86	12.24	40.30
5	11650.00	62.18 PK	74.00	-11.82	1.19 H	45	11.29	50.89
6	11650.00	48.01 AV	54.00	-5.99	1.19 H	45	-2.88	50.89
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	*5825.00	115.84 PK			1.00 V	303	75.59	40.25
2	*5825.00	105.91 AV			1.00 V	303	65.66	40.25
3	#5850.00	76.54 PK	85.84	-9.30	1.03 V	310	36.24	40.30
4	#5850.00	55.12 AV	75.91	-20.79	1.03 V	310	14.82	40.30
5	11650.00	64.11 PK	74.00	-9.89	1.36 V	55	13.22	50.89
6	11650.00	50.15 AV	54.00	-3.85	1.36 V	55	-0.74	50.89

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.

7. "#":The radiated frequency is out the restricted band.

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	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	77.09 PK	84.99	-7.90	1.12 H	284	37.06	40.03
2	#5725.00	56.45 AV	74.87	-18.42	1.12 H	284	16.42	40.03
3	*5745.00	114.99 PK			1.07 H	310	74.92	40.07
4	*5745.00	104.87 AV			1.07 H	310	64.80	40.07
5	11490.00	58.75 PK	74.00	-15.25	1.25 H	196	7.60	51.15
6	11490.00	49.10 AV	54.00	-4.90	1.25 H	196	-2.05	51.15
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	#5725.00	80.11 PK	85.86	-5.75	1.05 V	310	40.08	40.03
2	#5725.00	59.84 AV	75.11	-15.27	1.05 V	310	19.81	40.03
3	*5745.00	115.86 PK			1.02 V	302	75.79	40.07
4	*5745.00	105.11 AV			1.02 V	302	65.04	40.07
5	11490.00	60.46 PK	74.00	-13.54	1.50 V	117	9.31	51.15
6	11490.00	51.21 AV	54.00	-2.79	1.50 V	117	0.06	51.15

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	114.95 PK			1.03 H	251	74.79	40.16
2	*5785.00	104.84 AV			1.03 H	251	64.68	40.16
3	11570.00	61.74 PK	74.00	-12.26	1.06 H	301	10.71	51.03
4	11570.00	50.66 AV	54.00	-3.34	1.06 H	301	-0.37	51.03
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	*5785.00	115.34 PK			1.51 V	82	75.18	40.16
2	*5785.00	105.24 AV			1.51 V	82	65.08	40.16
3	11570.00	62.58 PK	74.00	-11.42	1.14 V	135	11.55	51.03
4	11570.00	51.49 AV	54.00	-2.51	1.14 V	135	0.46	51.03

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	115.21 PK			1.07 H	258	74.96	40.25
2	*5825.00	105.75 AV			1.07 H	258	65.50	40.25
3	#5850.00	77.45 PK	85.21	-7.76	1.10 H	245	37.15	40.30
4	#5850.00	56.64 AV	75.75	-19.11	1.10 H	245	16.34	40.30
5	11650.00	60.42 PK	74.00	-13.58	1.25 H	254	9.53	50.89
6	11650.00	50.13 AV	54.00	-3.87	1.25 H	254	-0.76	50.89
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	*5825.00	115.37 PK			1.40 V	183	75.13	40.25
2	*5825.00	105.95 AV			1.40 V	183	65.70	40.25
3	#5850.00	79.02 PK	85.37	-6.35	1.36 V	190	38.72	40.30
4	#5850.00	58.44 AV	75.95	-17.51	1.36 V	190	18.14	40.30
5	11650.00	61.93 PK	74.00	-12.07	1.62 V	58	11.04	50.89
6	11650.00	51.38 AV	54.00	-2.62	1.62 V	58	0.49	50.89

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.
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	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	80.94 PK	83.43	-2.49	1.12 H	251	40.91	40.03
2	#5725.00	60.53 AV	73.84	-13.31	1.12 H	251	20.50	40.03
3	*5755.00	113.43 PK			1.06 H	269	73.33	40.10
4	*5755.00	103.84 AV			1.06 H	269	63.74	40.10
5	11510.00	60.52 PK	74.00	-13.48	1.07 H	163	9.39	51.13
6	11510.00	47.21 AV	54.00	-6.79	1.07 H	163	-3.92	51.13
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	#5725.00	80.54 PK	83.57	-3.03	1.03 V	294	40.51	40.03
2	#5725.00	59.97 AV	73.95	-13.98	1.03 V	294	19.94	40.03
3	*5755.00	113.57 PK			1.00 V	301	73.47	40.10
4	*5755.00	103.95 AV			1.00 V	301	63.85	40.10
5	11510.00	61.83 PK	74.00	-12.17	1.23 V	251	10.70	51.13
6	11510.00	48.72 AV	54.00	-5.28	1.23 V	251	-2.41	51.13

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1000 hPa	TEST MODE	B
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	113.97 PK			1.05 H	132	73.79	40.18
2	*5795.00	103.86 AV			1.05 H	132	63.68	40.18
3	#5850.00	65.75 PK	83.97	-18.22	1.10 H	120	25.45	40.30
4	#5850.00	48.66 AV	73.86	-25.20	1.10 H	120	8.36	40.30
5	11590.00	61.12 PK	74.00	-12.88	1.22 H	142	10.12	51.00
6	11590.00	49.87 AV	54.00	-4.13	1.22 H	142	-1.13	51.00
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	*5795.00	114.14 PK			1.47 V	233	73.96	40.18
2	*5795.00	103.99 AV			1.47 V	233	63.81	40.18
3	#5850.00	65.42 PK	84.14	-18.72	1.39 V	251	25.12	40.30
4	#5850.00	48.46 AV	73.99	-25.53	1.39 V	251	8.16	40.30
5	11590.00	62.54 PK	74.00	-11.46	1.05 V	270	11.54	51.00
6	11590.00	50.25 AV	54.00	-3.75	1.05 V	270	-0.75	51.00

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.

BELOW 1GHz WORST-CASE DATA：DRAFT 802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 999 hPa	TEST MODE	A
TESTED BY	Peter Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	250.00	42.08 QP	46.00	-3.92	1.50 H	303	29.10	12.98
2	375.01	41.69 QP	46.00	-4.31	1.00 H	226	24.91	16.78
3	500.00	41.44 QP	46.00	-4.56	1.00 H	81	21.83	19.61
4	624.76	41.33 QP	46.00	-4.67	1.00 H	104	18.96	22.37
5	750.00	41.89 QP	46.00	-4.11	1.00 H	260	17.63	24.26
6	875.32	41.01 QP	46.00	-4.99	1.00 H	110	14.97	26.04
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	61.10	34.22 QP	40.00	-5.78	1.00 V	146	21.50	12.72
2	374.78	41.11 QP	46.00	-4.89	1.50 V	226	24.34	16.77
3	466.69	41.77 QP	46.00	-4.23	1.50 V	246	22.94	18.83
4	500.03	41.89 QP	46.00	-4.11	1.00 V	336	22.28	19.61
5	533.33	42.64 QP	46.00	-3.36	1.00 V	169	22.20	20.44
6	600.01	42.25 QP	46.00	-3.75	1.00 V	138	20.19	22.06
7	666.65	41.59 QP	46.00	-4.41	1.00 V	351	18.67	22.92
8	733.32	42.10 QP	46.00	-3.90	1.50 V	200	18.13	23.97

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH 999 hPa	TEST MODE	B
TESTED BY	Peter Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	250.01	42.77 QP	46.00	-3.23	1.00 H	300	29.79	12.98
2	333.25	40.17 QP	46.00	-5.83	1.00 H	178	24.60	15.57
3	375.00	42.36 QP	46.00	-3.64	1.00 H	209	25.58	16.78
4	500.01	41.98 QP	46.00	-4.02	1.50 H	30	22.37	19.61
5	624.83	41.77 QP	46.00	-4.23	1.00 H	104	19.40	22.37
6	750.01	42.60 QP	46.00	-3.40	1.00 H	236	18.34	24.26
7	875.59	41.20 QP	46.00	-4.80	1.00 H	81	15.16	26.04
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	45.34	33.57 QP	40.00	-6.43	1.00 V	211	19.28	14.30
2	66.67	36.66 QP	40.00	-3.34	1.00 V	123	24.67	11.99
3	374.07	41.32 QP	46.00	-4.68	1.00 V	230	24.57	16.75
4	466.67	42.55 QP	46.00	-3.45	1.50 V	253	23.72	18.83
5	500.42	42.92 QP	46.00	-3.08	1.00 V	301	23.30	19.62
6	533.34	43.63 QP	46.00	-2.37	1.00 V	140	23.19	20.44
7	600.00	42.76 QP	46.00	-3.24	1.00 V	109	20.70	22.06
8	666.67	42.45 QP	46.00	-3.55	1.50 V	308	19.53	22.92
9	733.34	42.57 QP	46.00	-3.43	1.50 V	153	18.60	23.97
10	799.78	40.36 QP	46.00	-5.64	1.50 V	40	15.34	25.03
11	867.82	40.09 QP	46.00	-5.91	1.50 V	189	14.14	25.95

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 (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.

5.2.2 T EST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Sep. 22, 2008	Sep. 21, 2009
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 31, 2008	Dec. 30, 2009
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Dec. 29, 2008	Dec. 28, 2009
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Dec. 04, 2008	Dec. 03, 2009
Software ADT	ADT_Cond_ V7.3.7	NA	NA	NA

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

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

3. The VCCI Site Registration No. is C-2047.

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.

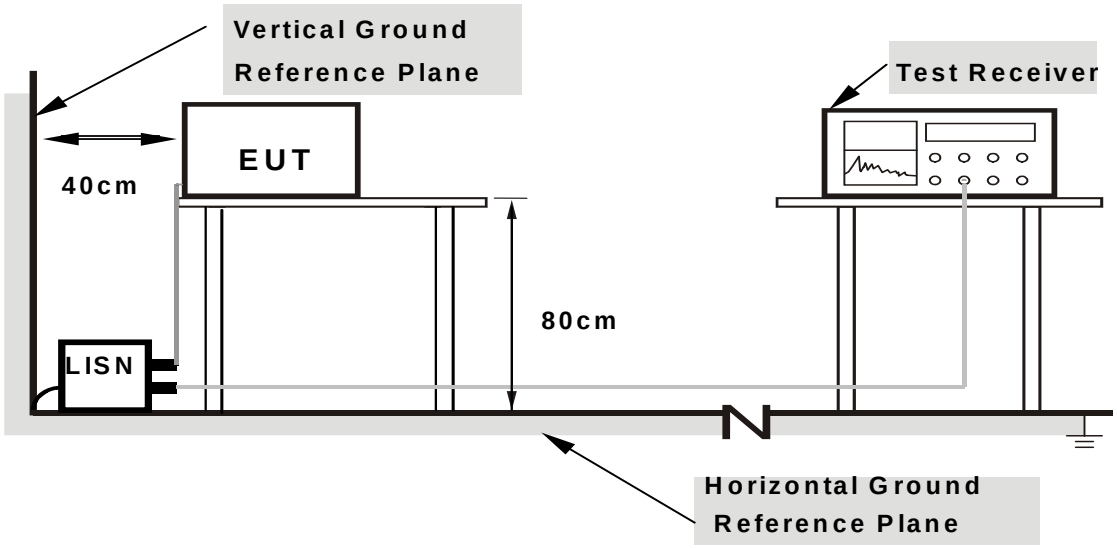
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

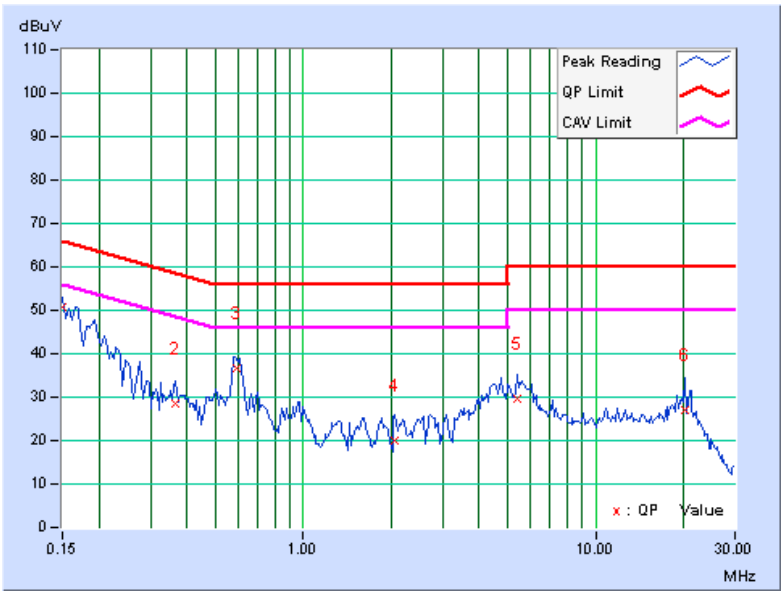
5.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA： DRAFT 802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	7.2Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1021hPa	TEST MODE	A
TESTED BY	Match Tsui		

	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	0.150	0.13	50.53	-	50.66	-	66.00	56.00	-15.34	-
2	0.365	0.14	28.30	-	28.44	-	58.62	48.62	-30.18	-
3	0.589	0.15	36.62	-	36.77	-	56.00	46.00	-19.23	-
4	2.066	0.19	19.64	-	19.83	-	56.00	46.00	-36.17	-
5	5.383	0.31	29.25	-	29.56	-	60.00	50.00	-30.44	-
6	20.320	0.67	26.47	-	27.14	-	60.00	50.00	-32.86	-

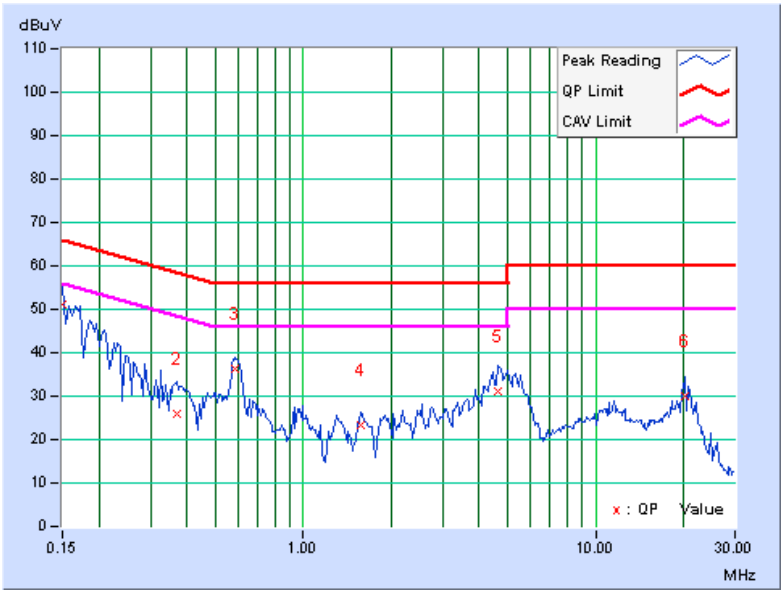
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	7.2Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1021hPa	TEST MODE	A
TESTED BY	Match Tsui		

	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	0.150	0.13	50.91	-	51.04	-	66.00	56.00	-14.96	-
2	0.369	0.15	25.76	-	25.91	-	58.53	48.53	-32.62	-
3	0.584	0.16	36.09	-	36.25	-	56.00	46.00	-19.75	-
4	1.578	0.19	23.21	-	23.40	-	56.00	46.00	-32.60	-
5	4.656	0.32	30.82	-	31.14	-	56.00	46.00	-24.86	-
6	20.215	0.82	29.26	-	30.08	-	60.00	50.00	-29.92	-

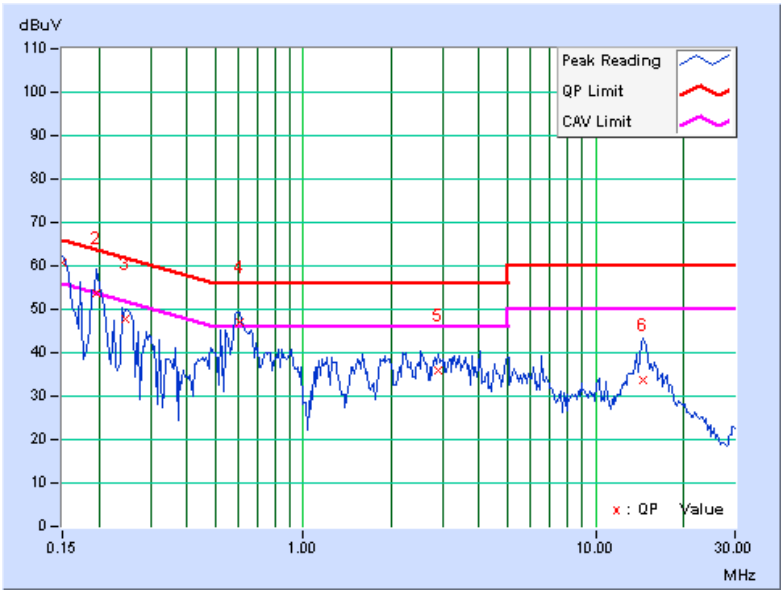
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	7.2Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1021hPa	TEST MODE	B
TESTED BY	Match Tsui		

	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	0.150	0.13	60.54	51.71	60.67	51.84	66.00	56.00	-5.33	-4.16
2	0.197	0.13	53.60	-	53.73	-	63.74	53.74	-10.01	-
3	0.248	0.13	47.81	-	47.94	-	61.84	51.84	-13.89	-
4	0.603	0.15	46.82	40.12	46.97	40.27	56.00	46.00	-9.03	-5.73
5	2.895	0.23	35.81	-	36.04	-	56.00	46.00	-19.96	-
6	14.512	0.54	33.10	-	33.64	-	60.00	50.00	-26.36	-

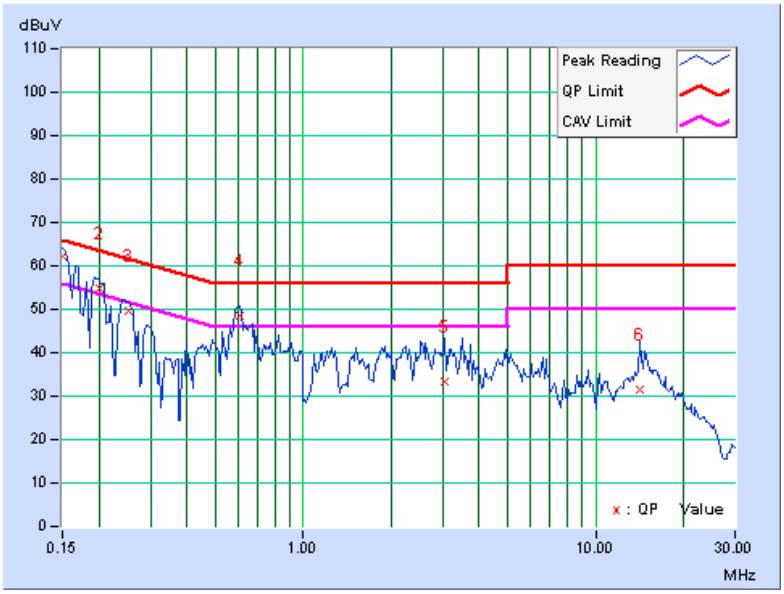
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	7.2Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1021hPa	TEST MODE	B
TESTED BY	Match Tsui		

	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	0.150	0.13	62.07	52.63	62.20	52.76	66.00	56.00	-3.80	-3.24
2	0.201	0.13	54.74	46.39	54.87	46.52	63.59	53.59	-8.72	-7.07
3	0.251	0.14	49.31	-	49.45	-	61.71	51.71	-12.27	-
4	0.603	0.16	48.20	42.37	48.36	42.53	56.00	46.00	-7.64	-3.47
5	3.043	0.25	32.95	-	33.20	-	56.00	46.00	-22.80	-
6	14.188	0.64	31.02	-	31.66	-	60.00	50.00	-28.34	-

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. 07, 2009	Jul. 06, 2010

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

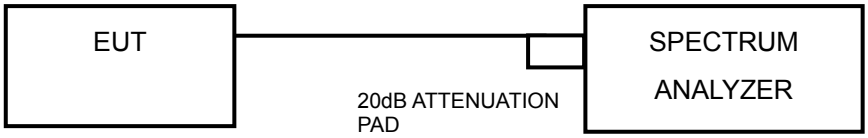
5.3.3 TEST PROCEDURE

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.

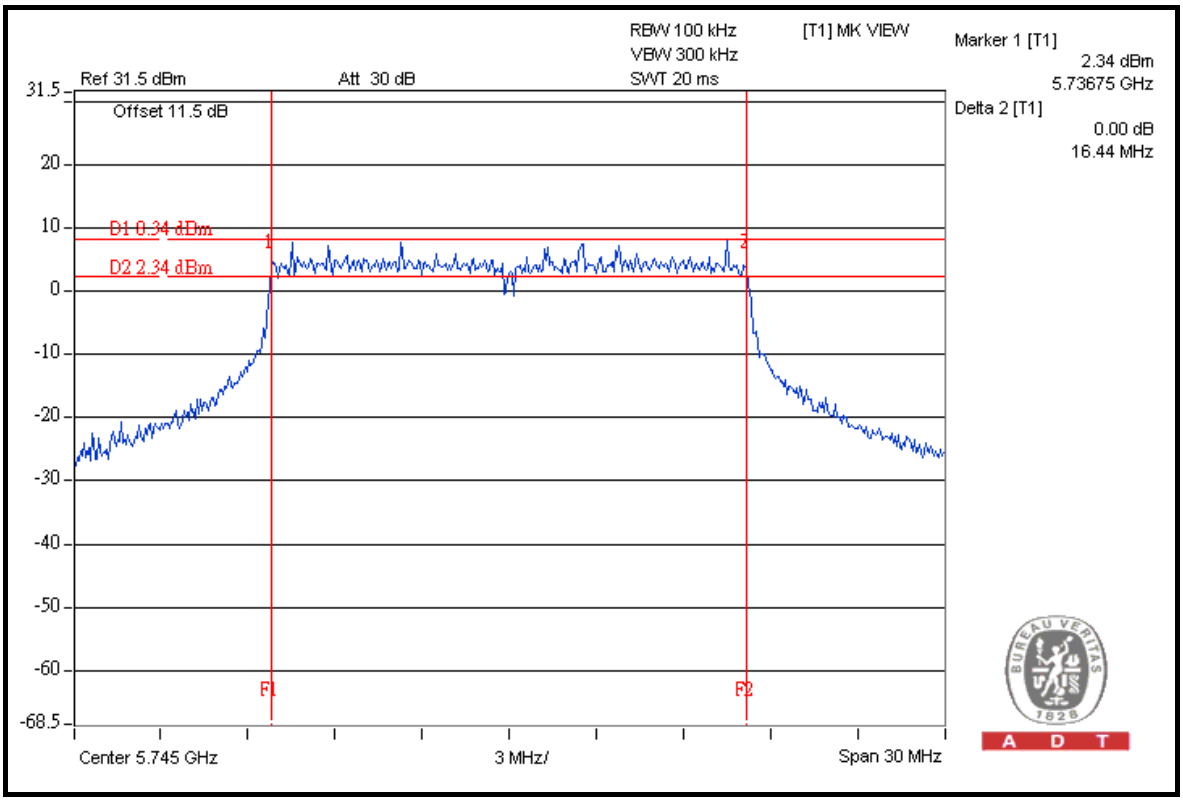
5.3.7 TEST RESULTS

802.11a OFDM MODULATION

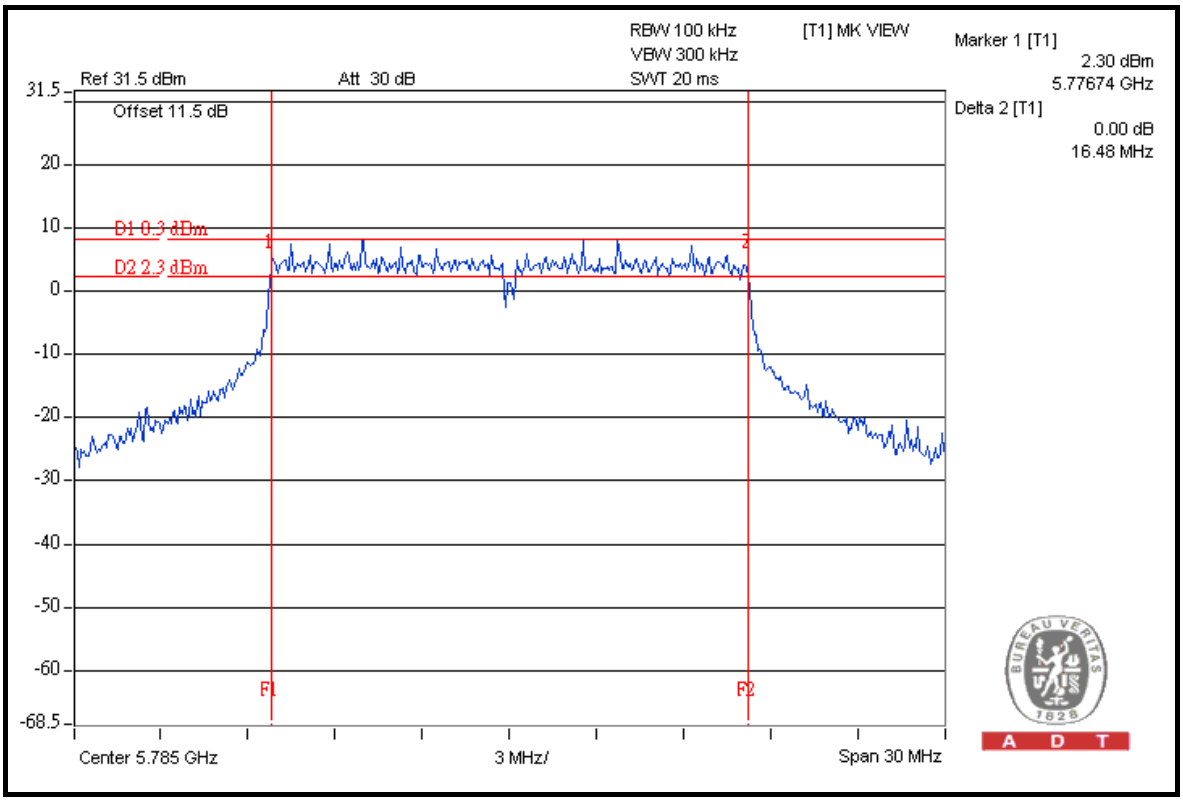
MODULATION TYPE	BPSK	**TRANSFER RATE**	6.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.44	16.42	0.5	PASS
157	5785	16.48	16.46	0.5	PASS
165	5825	16.44	16.46	0.5	PASS

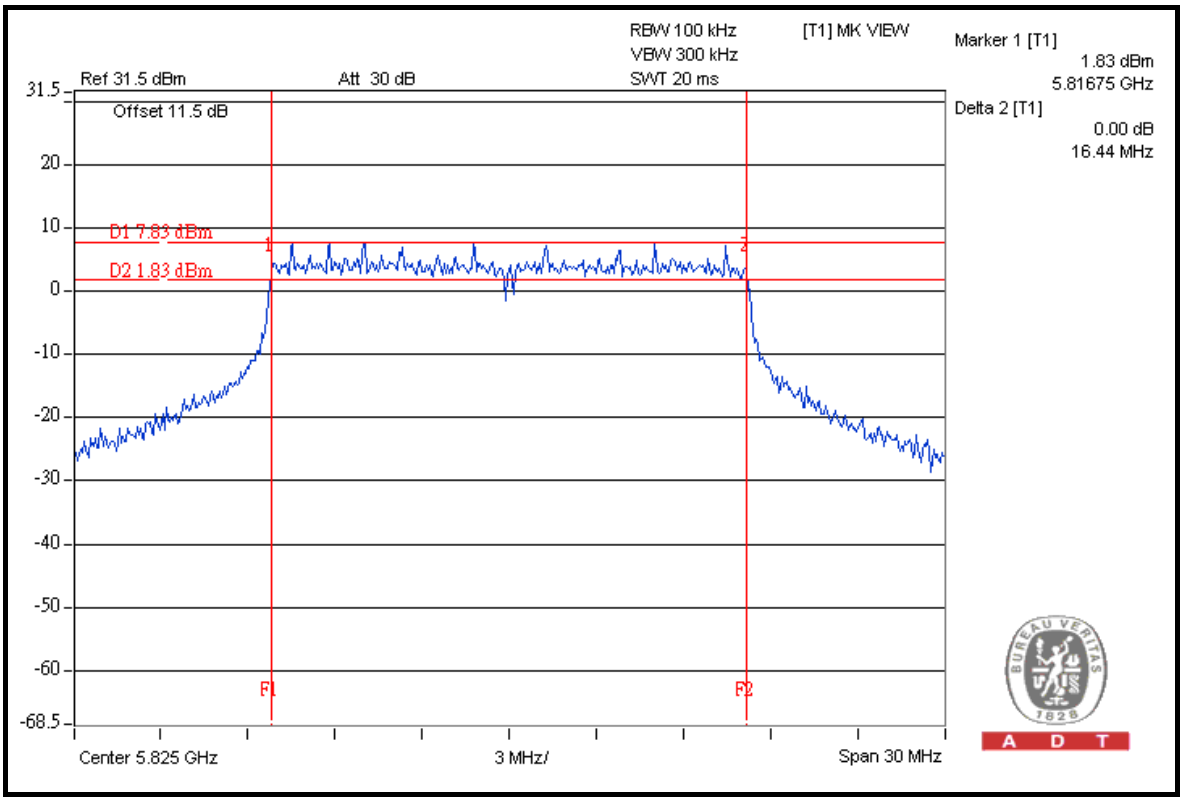
FOR CHAIN 0: CH 149



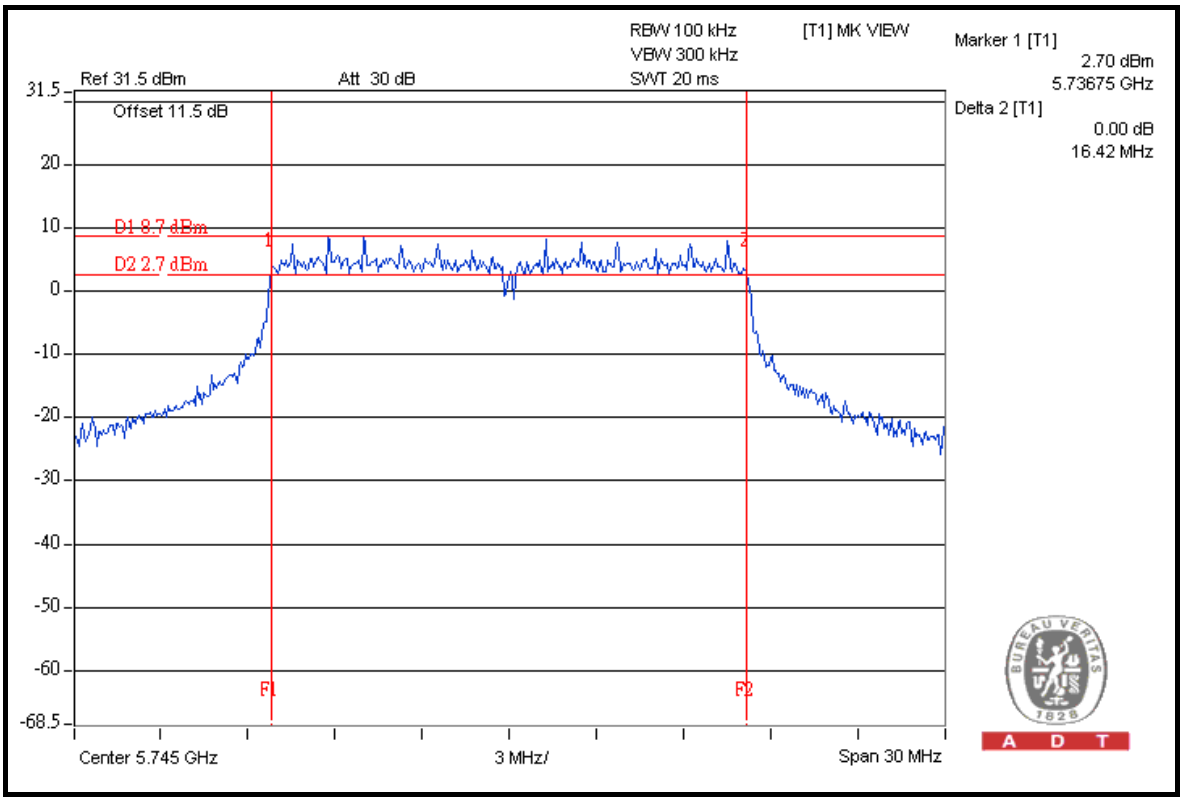
CH 157



CH 165



FOR CHAIN 1: CH 149



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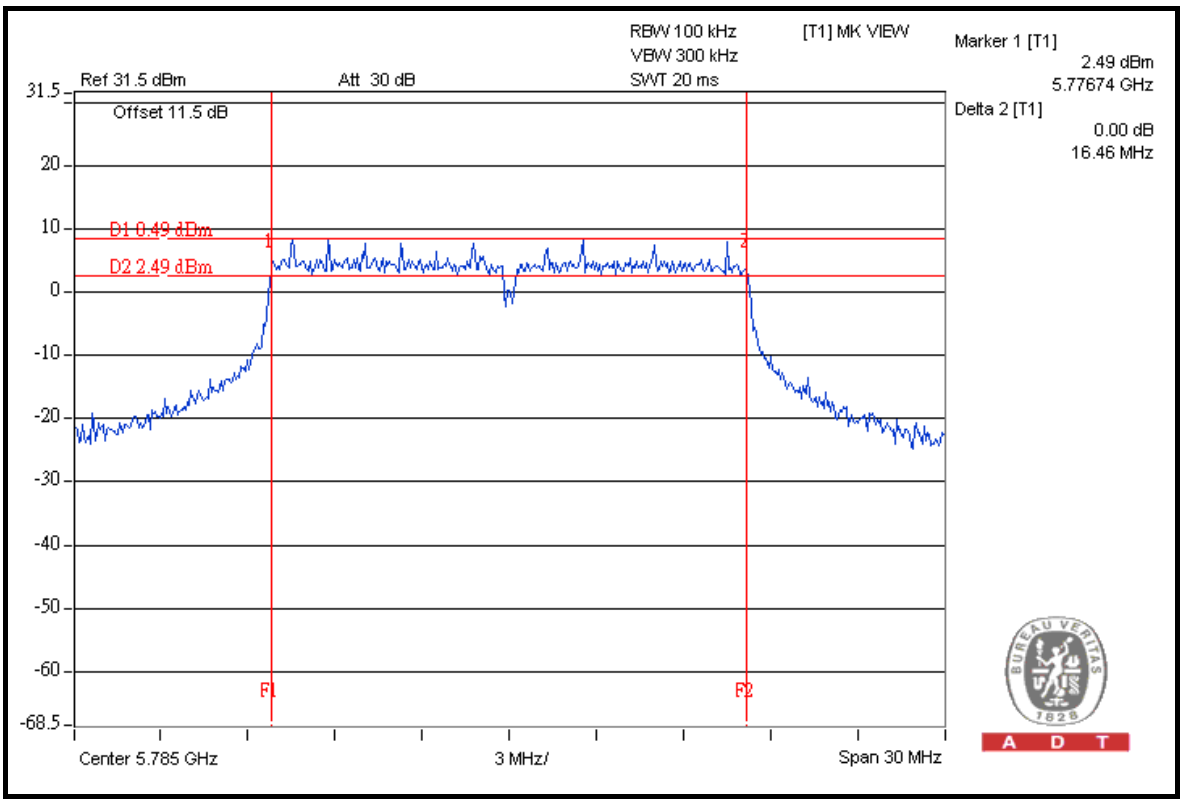
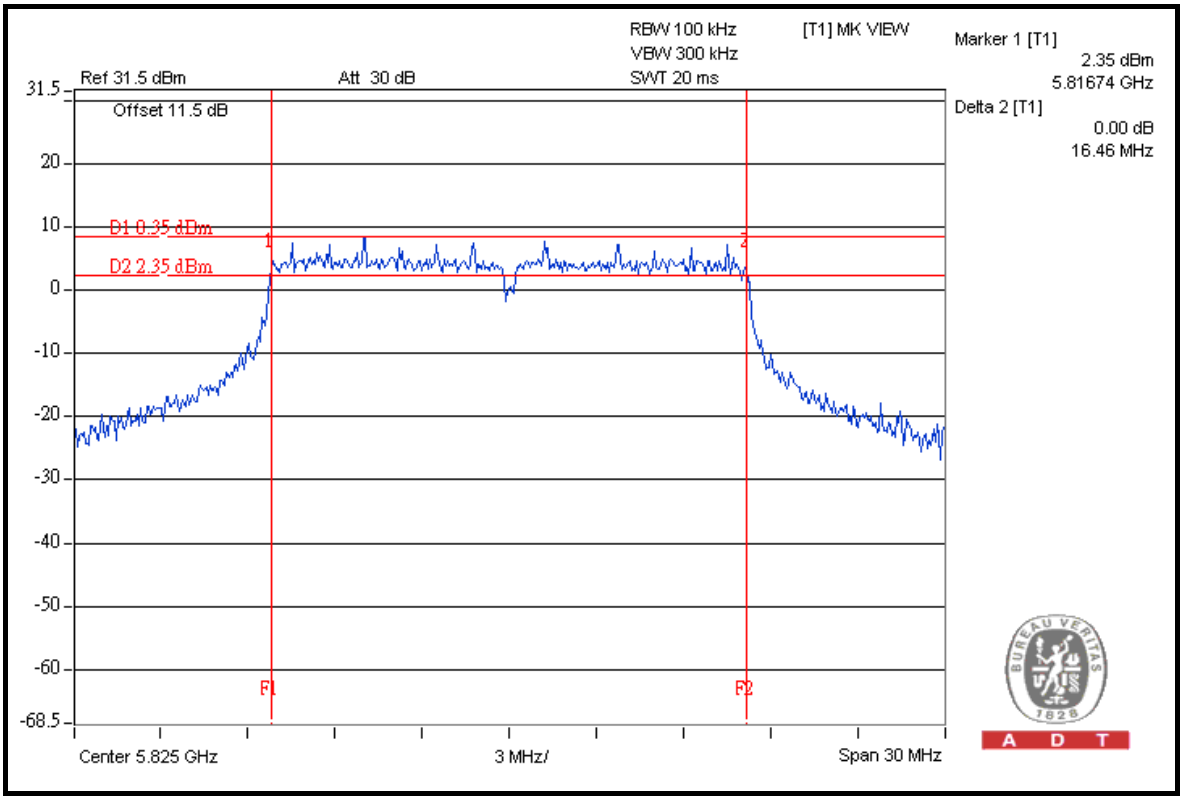

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
2.49 dBm
5.77674 GHz
Delta 2 [T1]
0.00 dB
16.46 MHz
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
D1 0.49 dBm
D2 2.49 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
F1
F2
Center 5.785 GHz
3 MHz/
Span 30 MHz

CH 165

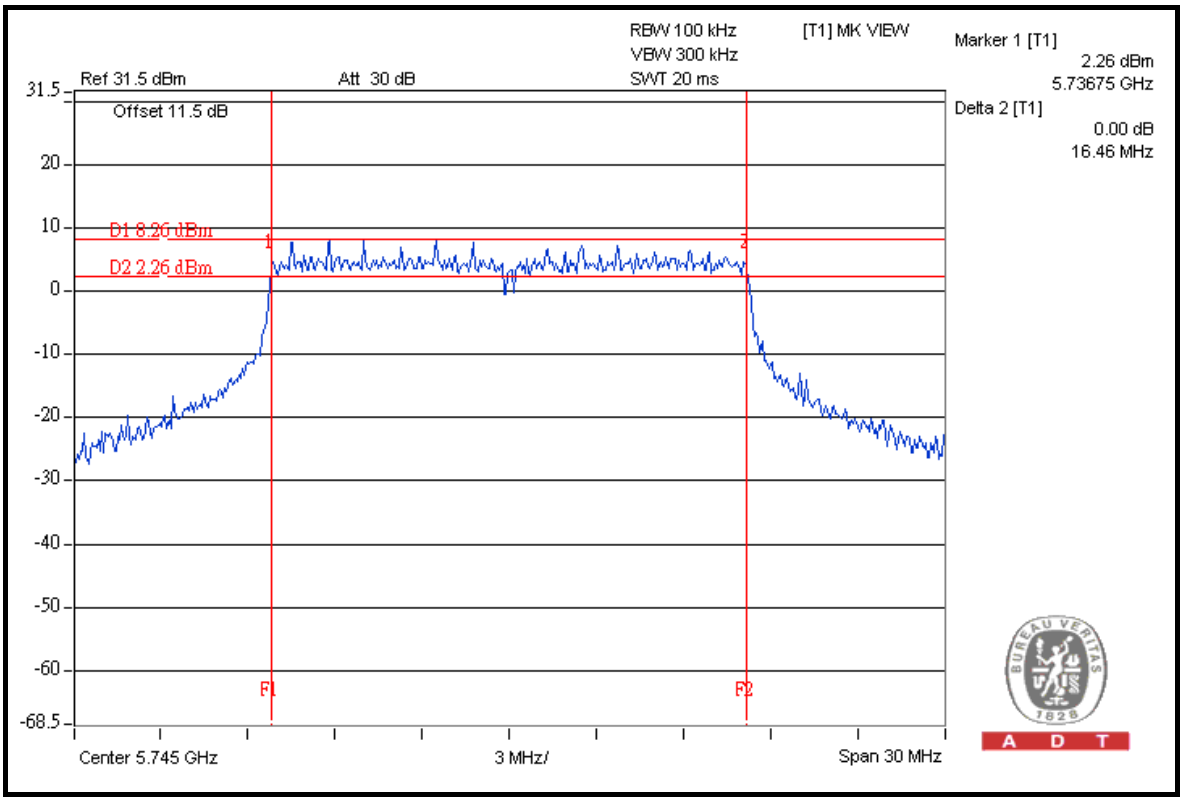

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
2.35 dBm
5.81674 GHz
Delta 2 [T1]
0.00 dB
16.46 MHz
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
D1 0.35 dBm
D2 2.35 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
F1
F2
Center 5.825 GHz
3 MHz/
Span 30 MHz

DRAFT 802.11n (20MHz) OFDM MODULATION

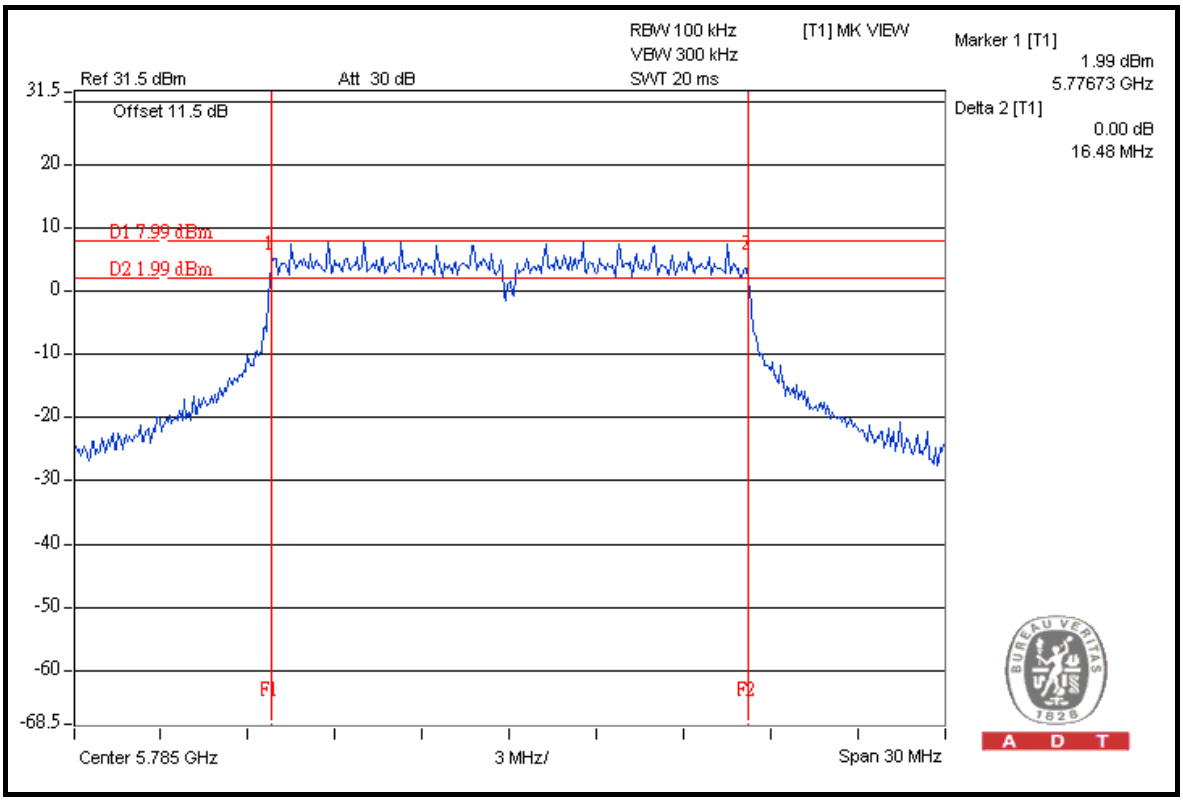
MODULATION TYPE	BPSK	**TRANSFER RATE**	7.2Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.46	16.45	0.5	PASS
157	5785	16.48	16.45	0.5	PASS
165	5825	16.49	16.45	0.5	PASS

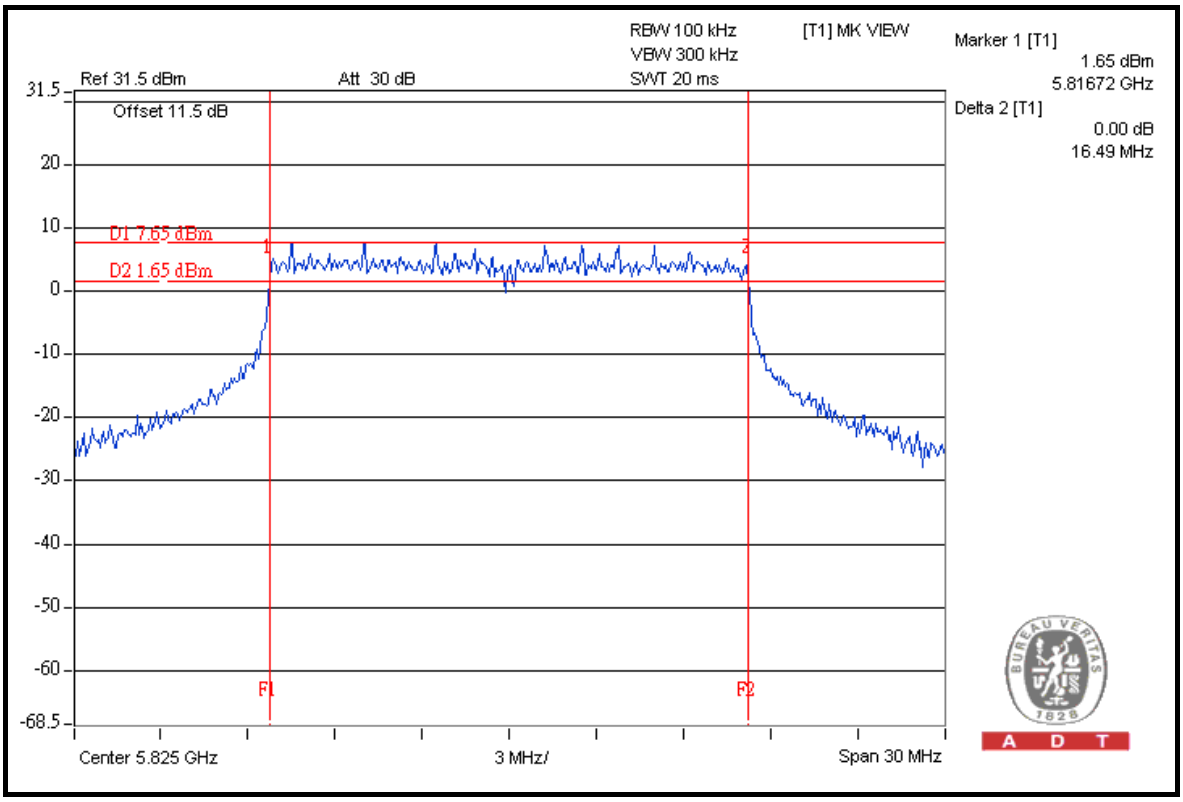
FOR CHAIN 0: CH 149



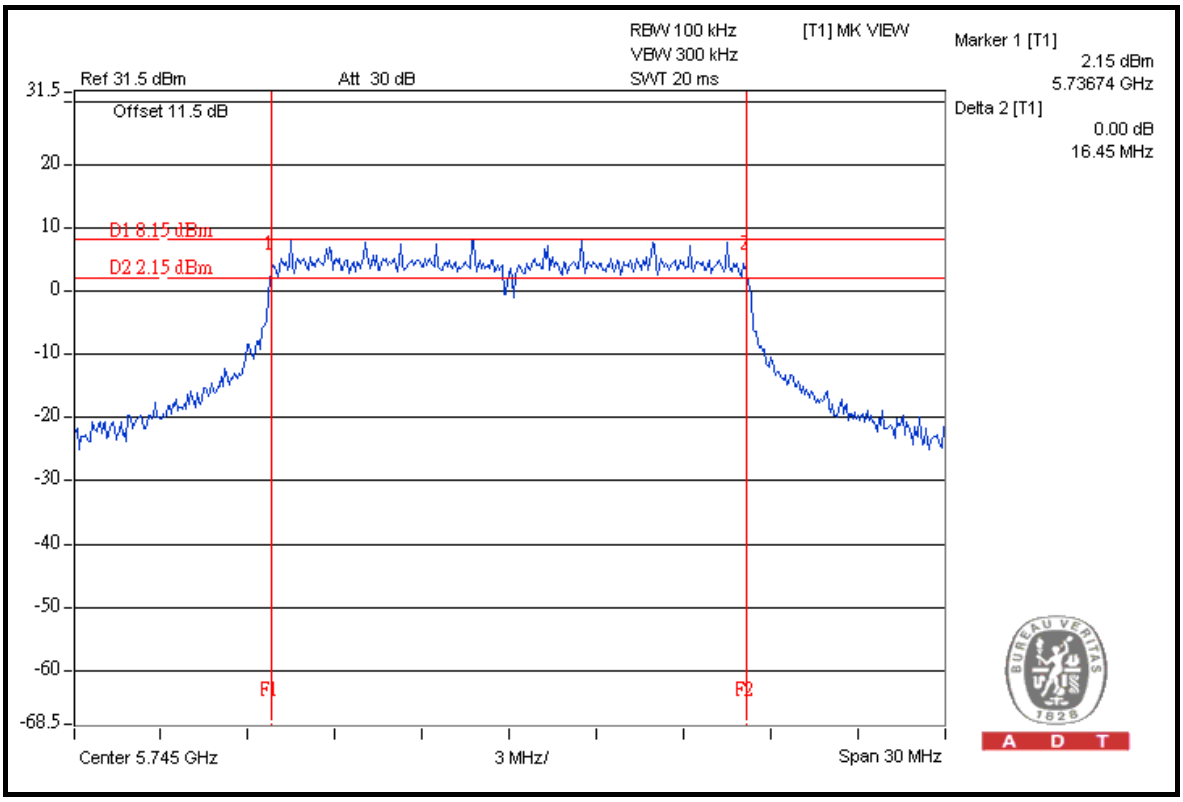
CH 157



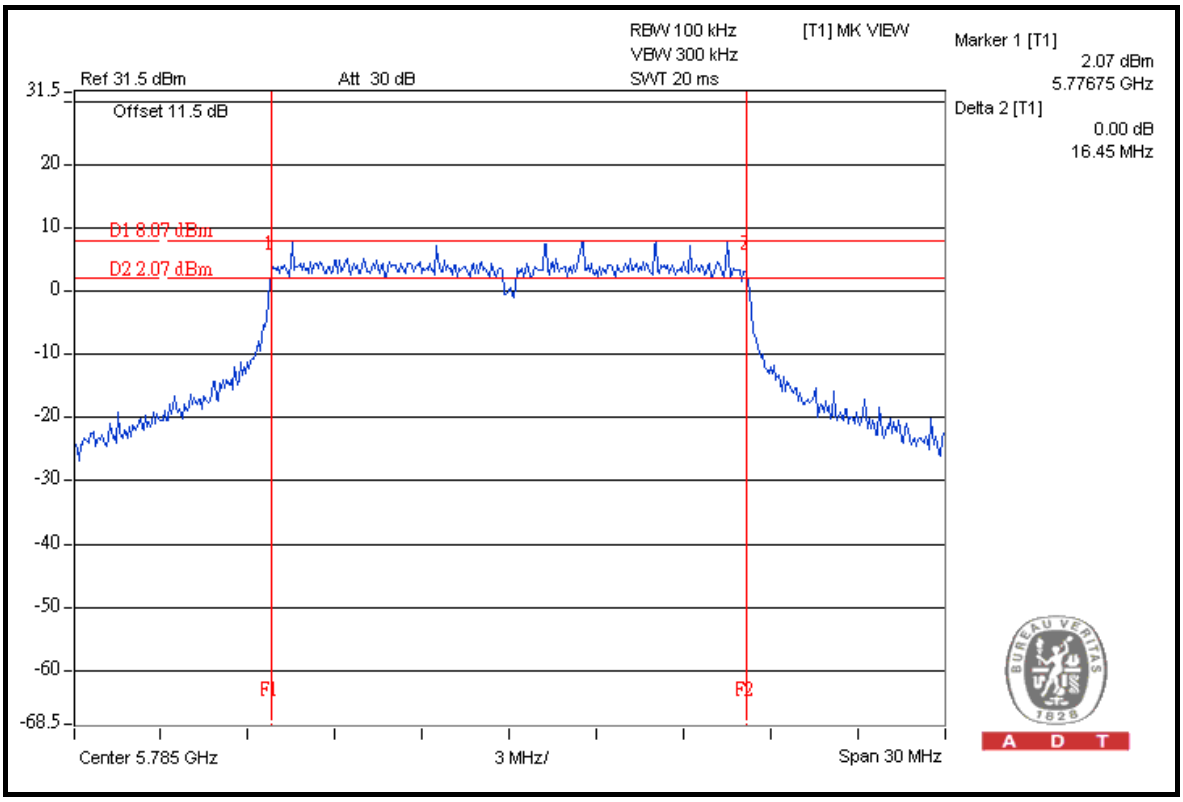
CH 165



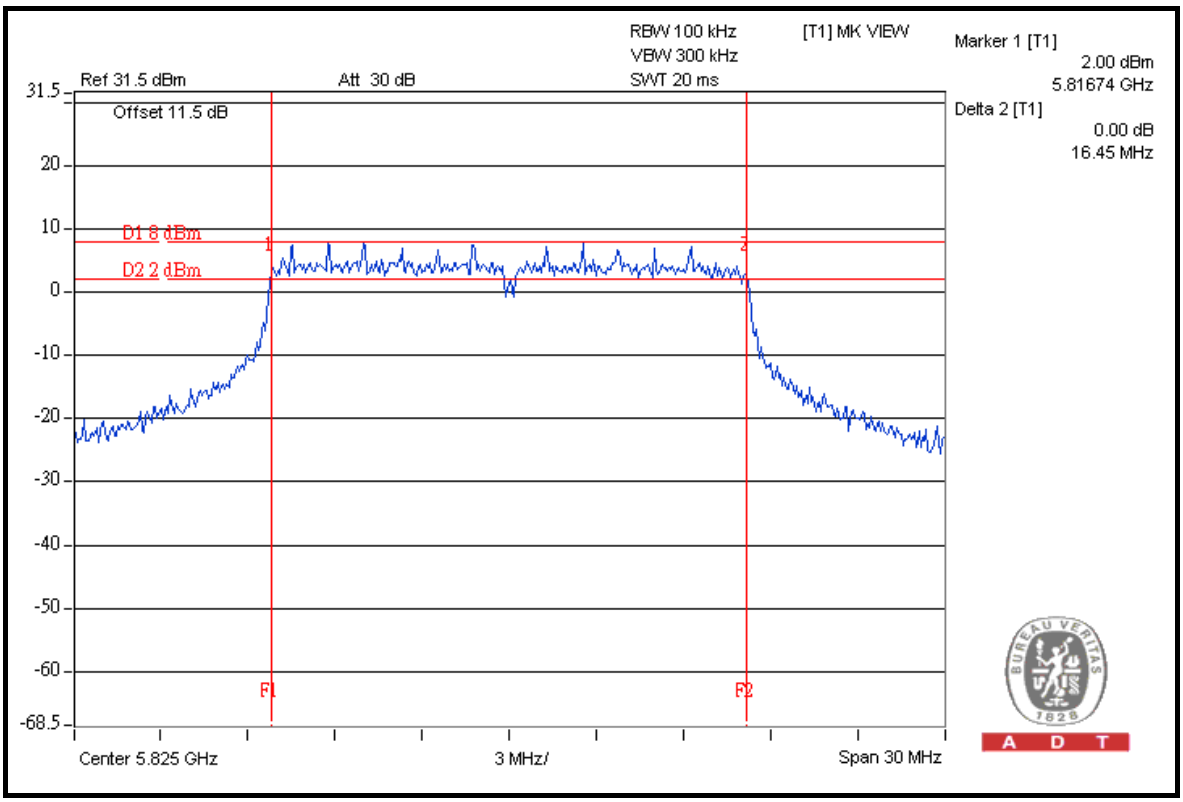
FOR CHAIN 1: CH 149



CH 157


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
2.07 dBm
5.77675 GHz
Delta 2 [T1]
0.00 dB
16.45 MHz
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
D1 8.07 dBm
D2 2.07 dBm
F1
F2
Center 5.785 GHz
3 MHz/
Span 30 MHz

CH 165

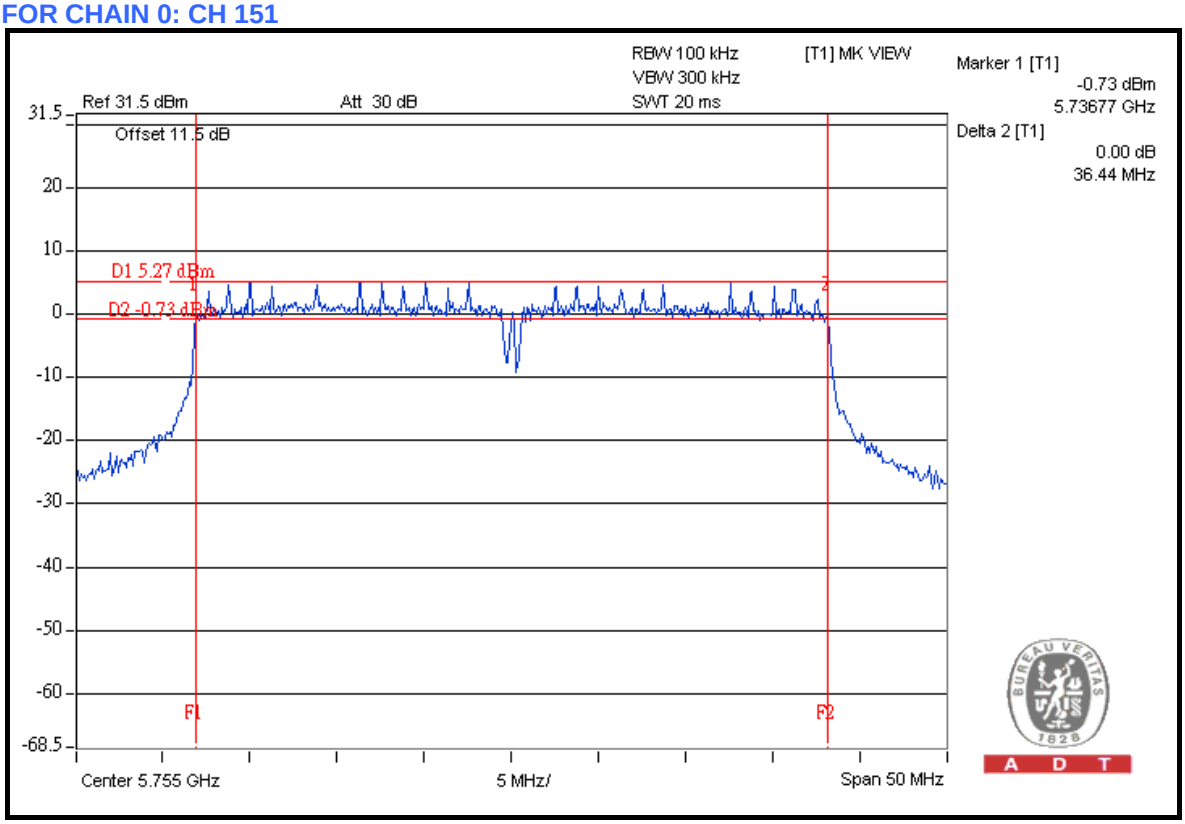

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
2.00 dBm
5.81674 GHz
Delta 2 [T1]
0.00 dB
16.45 MHz
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
D1 8 dBm
D2 2 dBm
F1
F2
Center 5.825 GHz
3 MHz/
Span 30 MHz

DRAFT 802.11n (40MHz) OFDM MODULATION

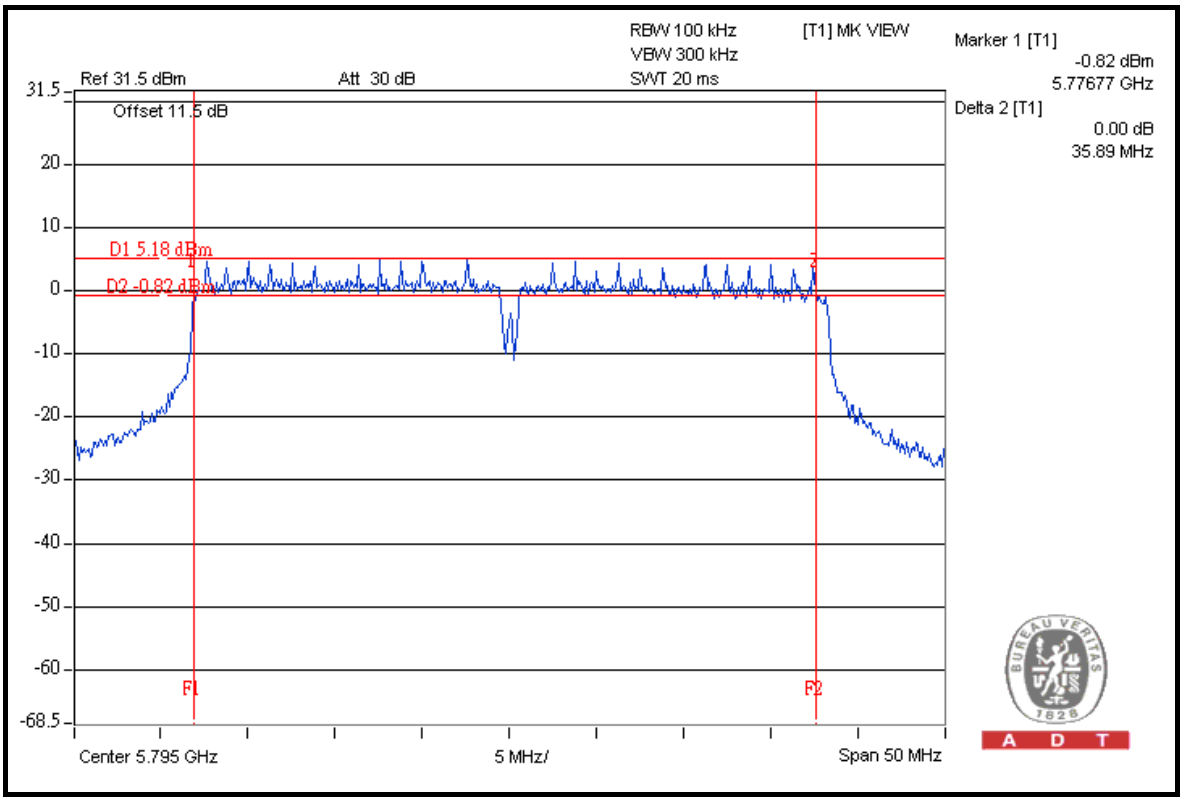
MODULATION TYPE	BPSK	**TRANSFER RATE**	15.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.44	36.44	0.5	PASS
159	5795	35.89	36.05	0.5	PASS

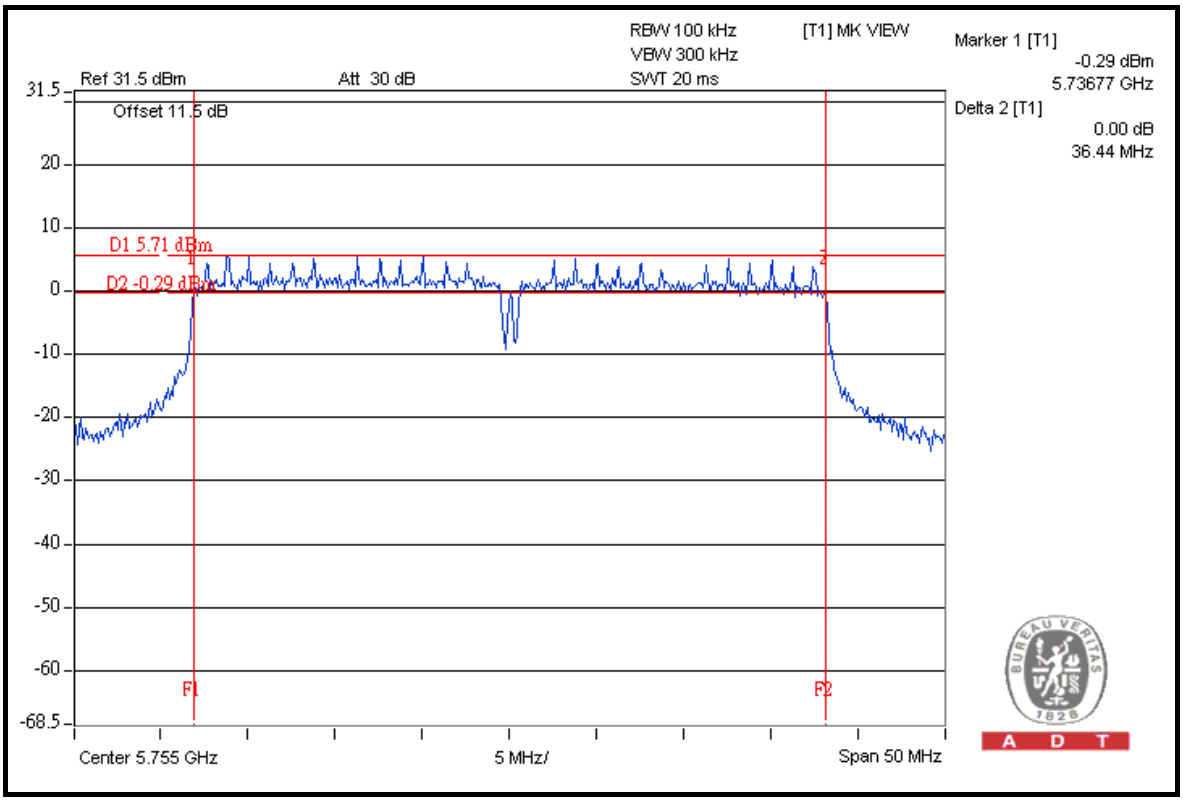
FOR CHAIN 0: CH 151



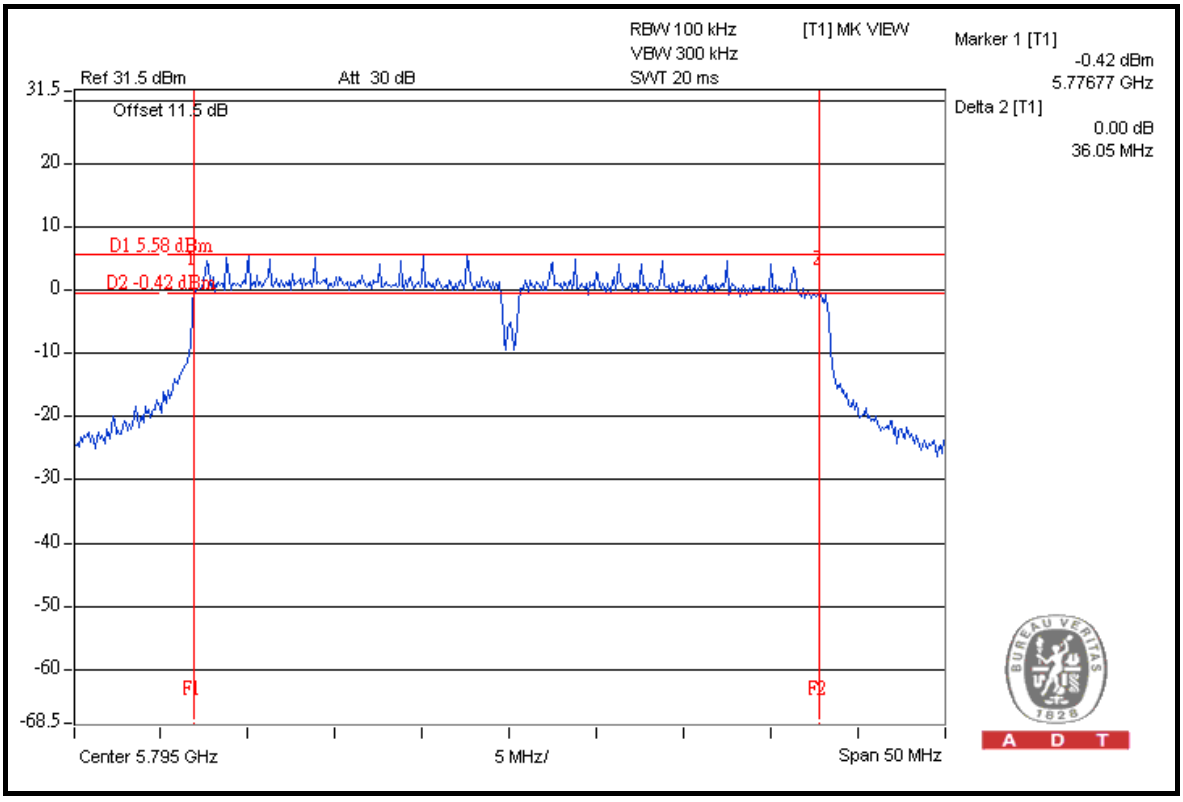
CH 159



FOR CHAIN 1: CH 151



CH 159



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
R&S SPECTRUM ANALYZER	FSP40	100040	Jul. 07, 2009	Jul. 06, 2010

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

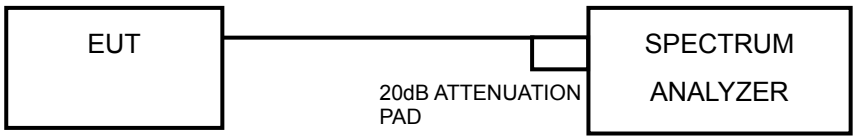
5.4.3 TEST PROCEDURE

1. Follow DTS measurement (Power Output Option 2), the transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer.
2. Set span to encompass the entire emission bandwidth (EBW) of the signal.
3. Set RBW = 1 MHz ;VBW ≧3 MHz.
4. Use sample detector mode and video trigger with the trigger level set to enable triggering only on full power pulses.
5. Trace average 100 traces in power averaging mode.
6. Compute power by integrating the spectrum across the 26 dB EBW of the signal.
7. 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

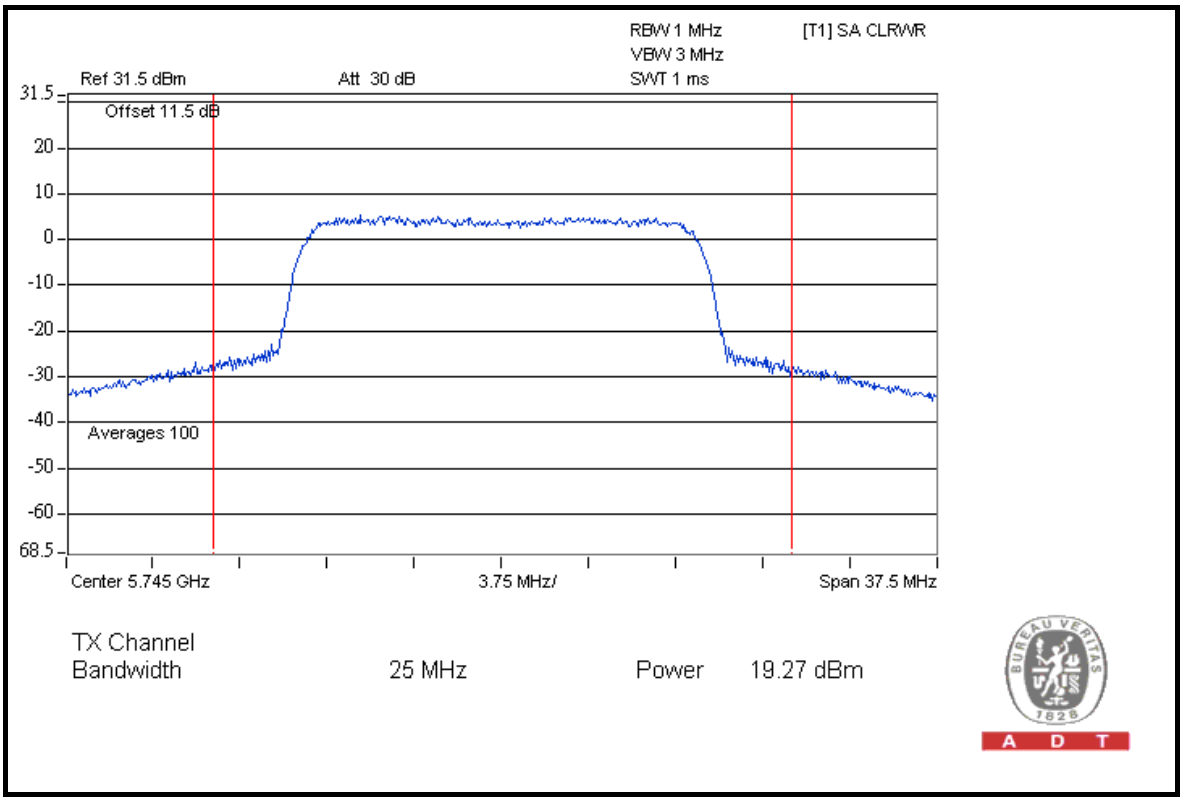
5.4.7 TEST RESULTS

802.11a OFDM MODULATION

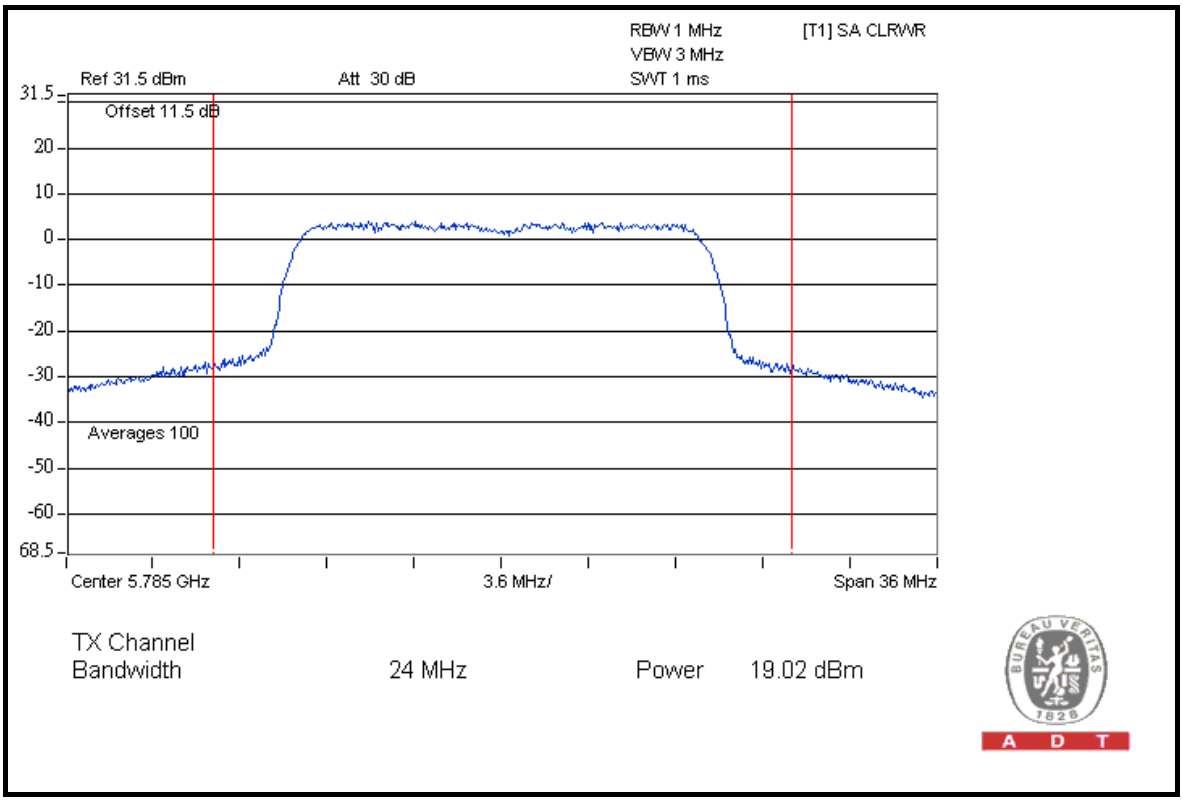
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

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	19.27	20.01	184.758	22.67	30	PASS
157	5785	19.02	19.73	173.772	22.40	30	PASS
165	5825	19.07	19.89	178.222	22.51	30	PASS

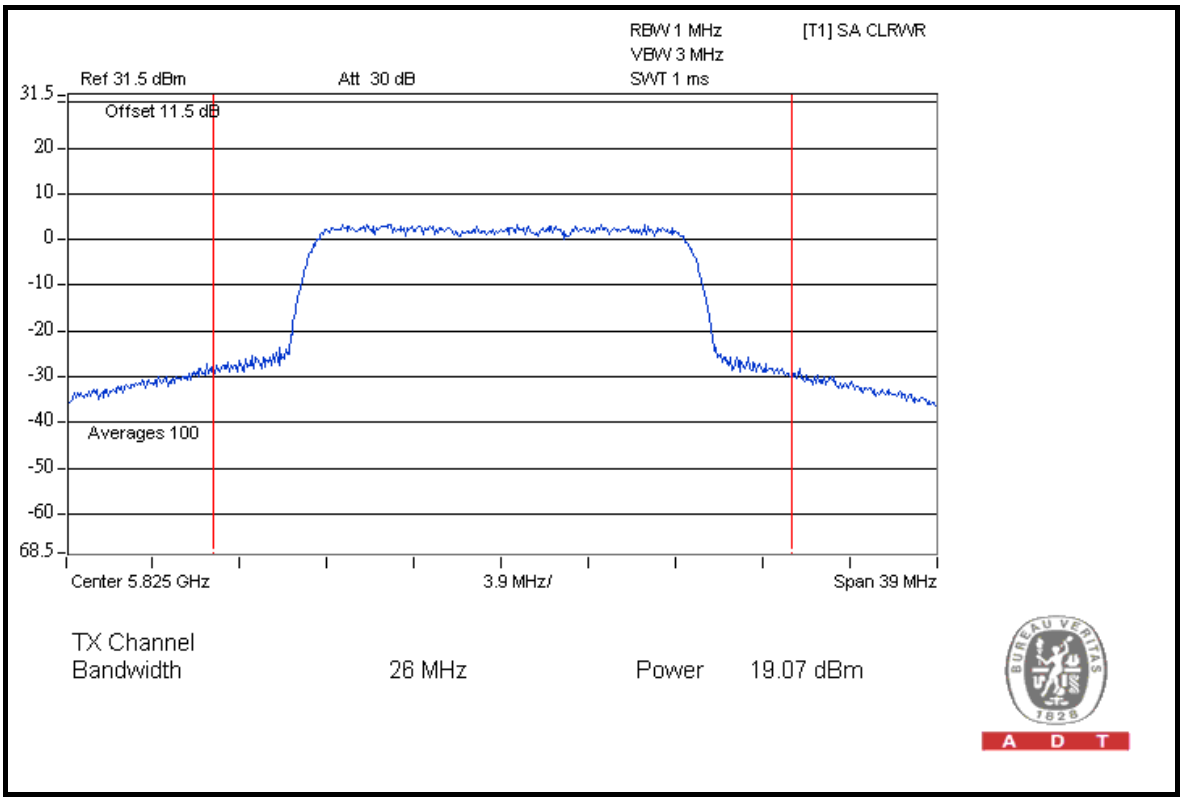
FOR CHAIN 0: CH 149



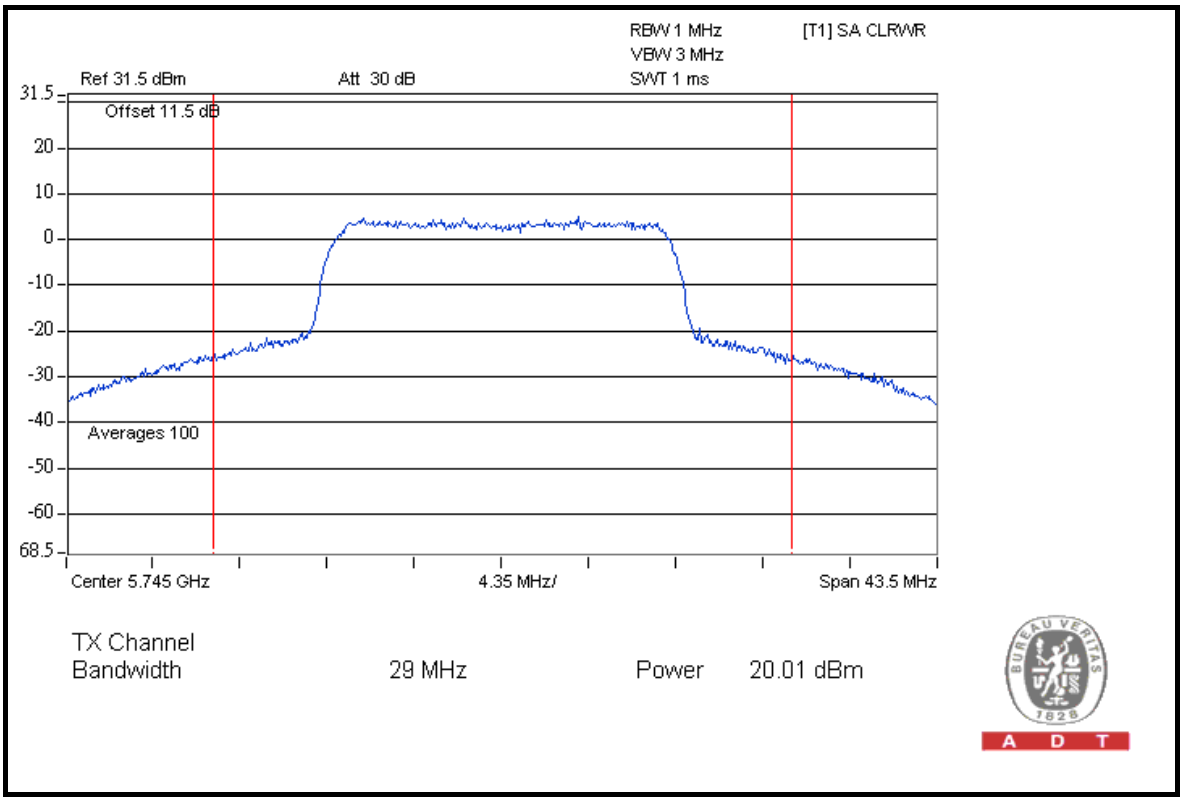
CH 157



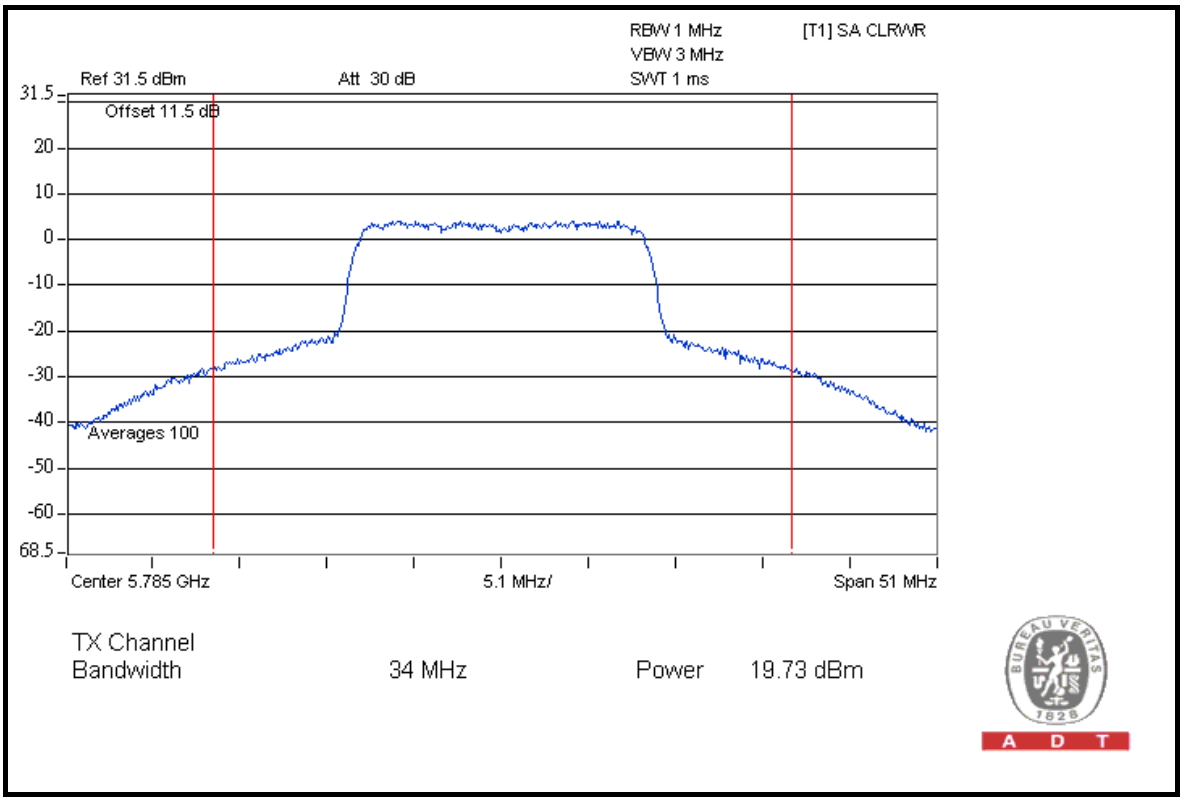
CH 165



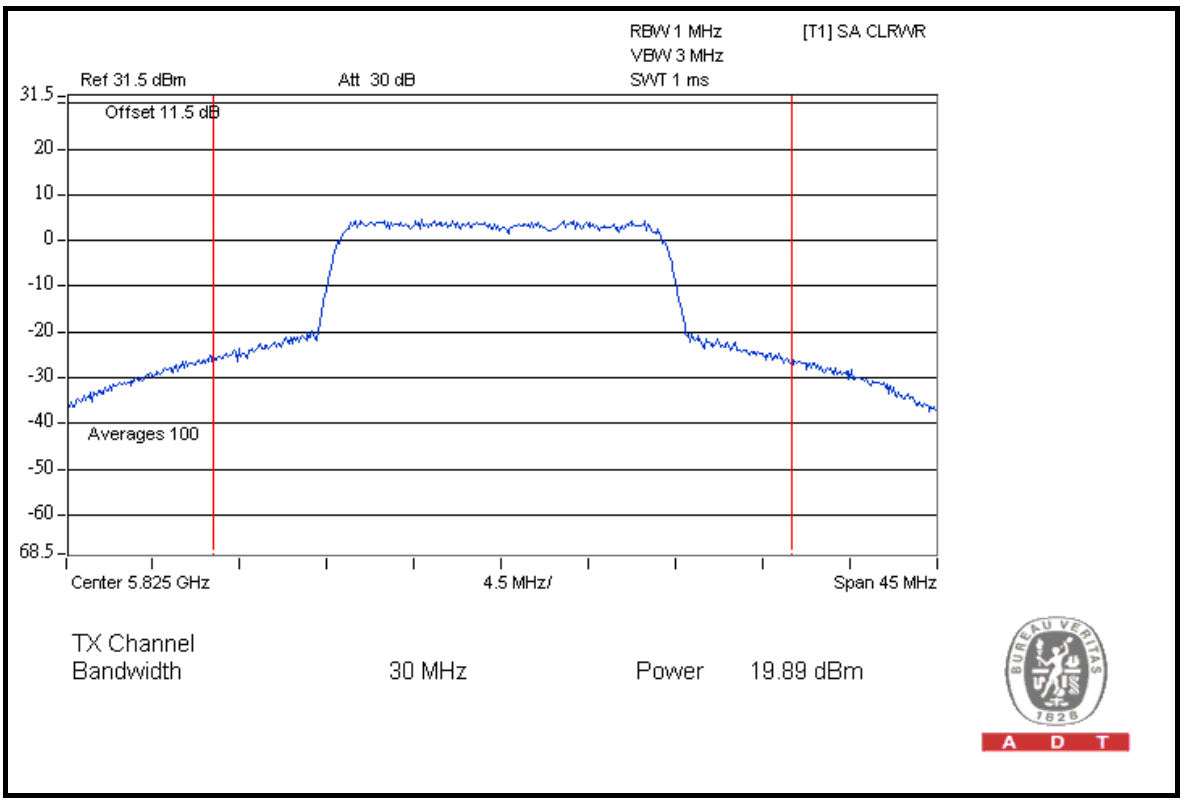
FOR CHAIN 1: CH 149



CH 157


RBW 1 MHz
VBW 3 MHz
SWT 1 ms
[T1] SA CLRWR
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
68.5
Averages 100
Center 5.785 GHz
5.1 MHz/
Span 51 MHz
TX Channel Bandwidth
34 MHz
Power
19.73 dBm

CH 165

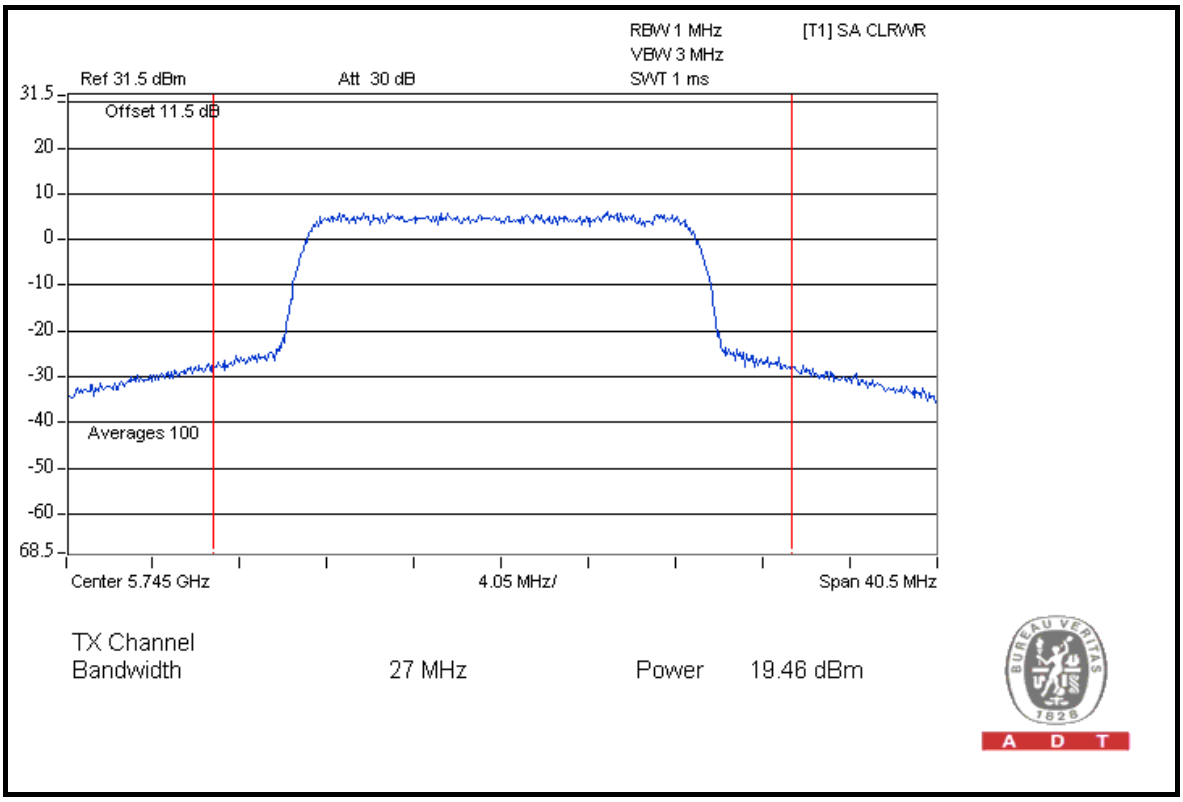

RBW 1 MHz
VBW 3 MHz
SWT 1 ms
[T1] SA CLRWR
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
68.5
Averages 100
Center 5.825 GHz
4.5 MHz/
Span 45 MHz
TX Channel Bandwidth
30 MHz
Power
19.89 dBm

DRAFT 802.11n (20MHz) OFDM MODULATION

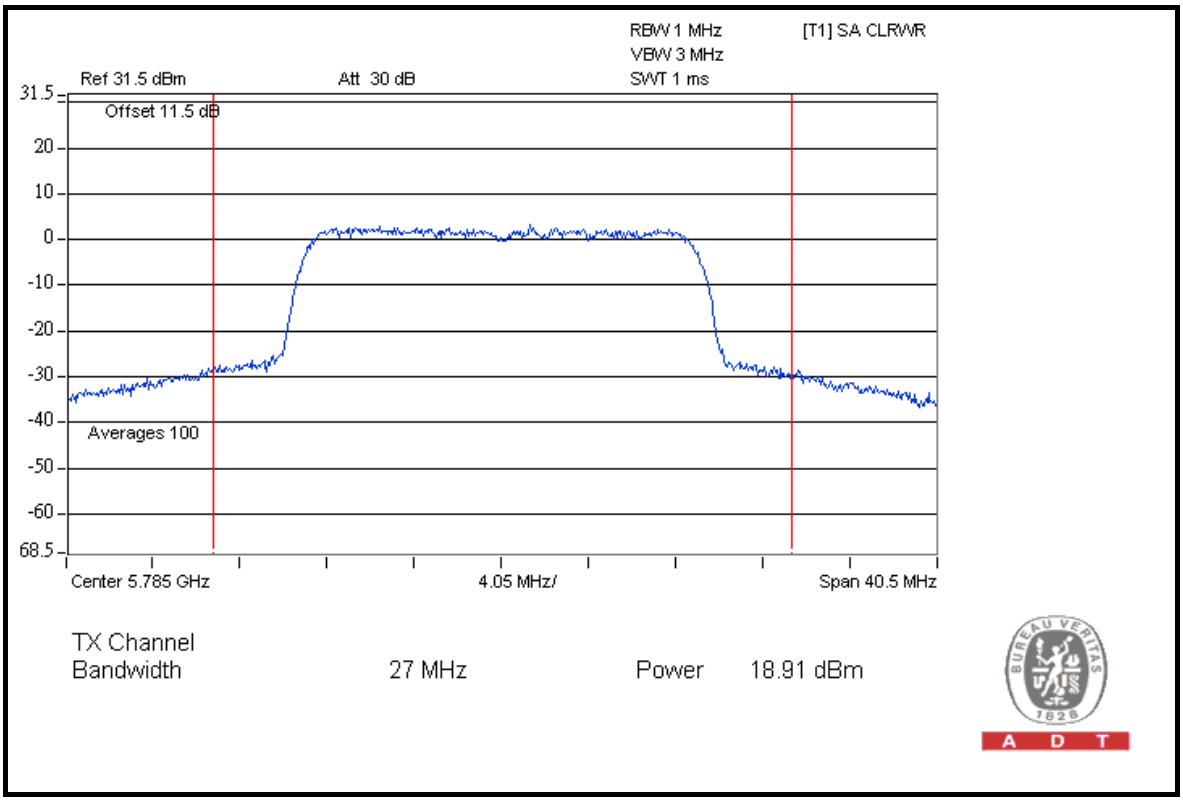
MODULATION TYPE	BPSK	**TRANSFER RATE**	7.2Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

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	19.46	19.95	187.163	22.72	30	PASS
157	5785	18.91	19.67	170.487	22.32	30	PASS
165	5825	18.98	18.93	157.231	21.93	30	PASS

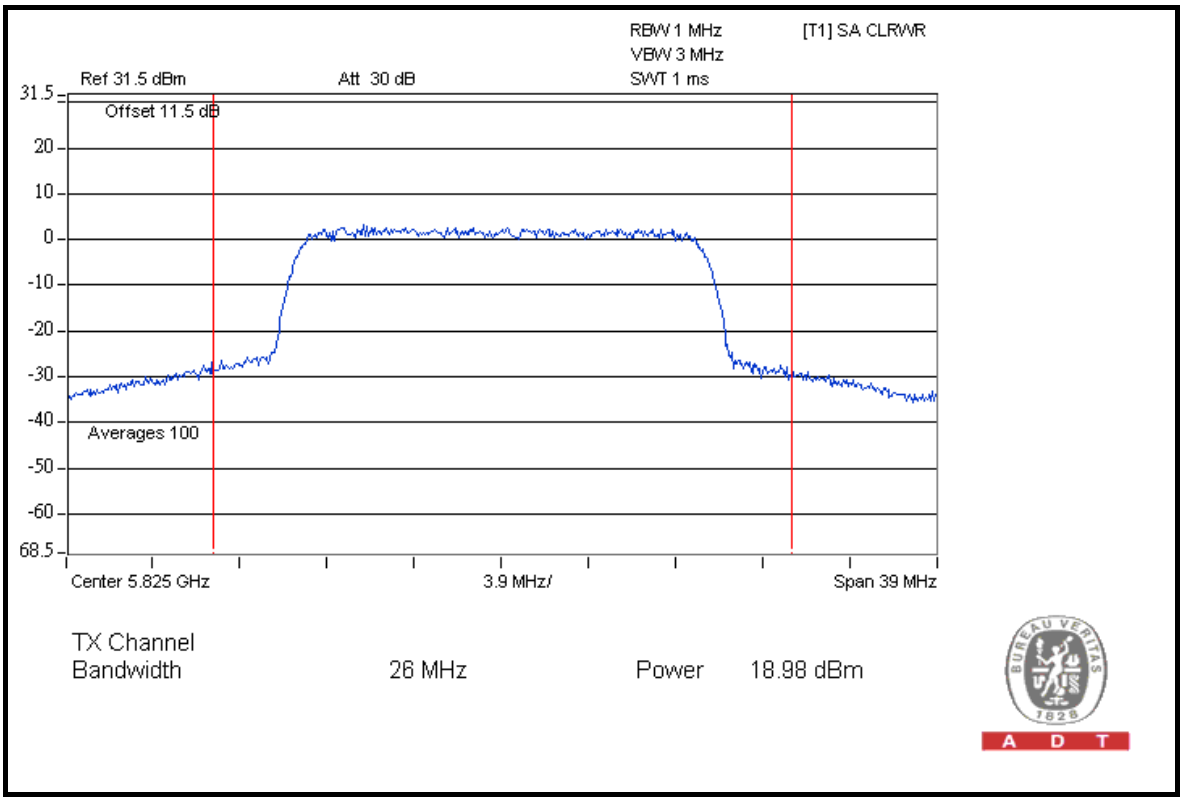
FOR CHAIN 0: CH 149



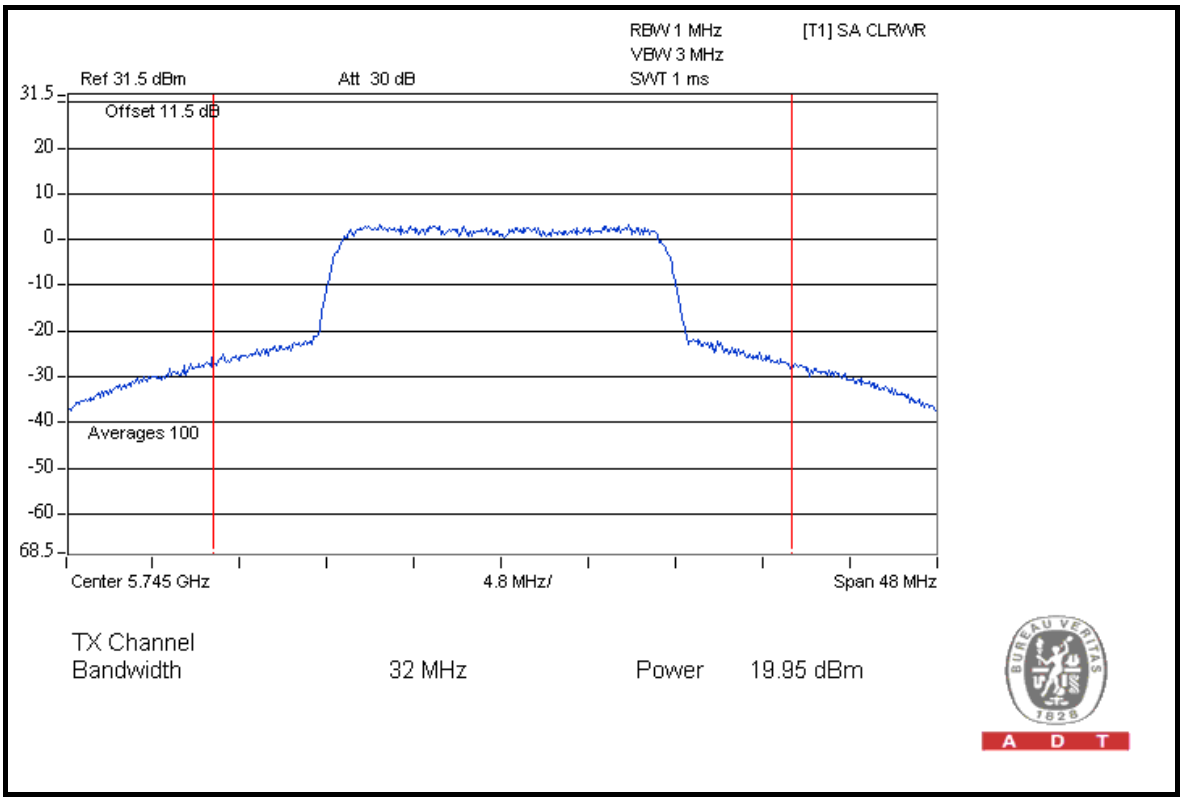
CH 157



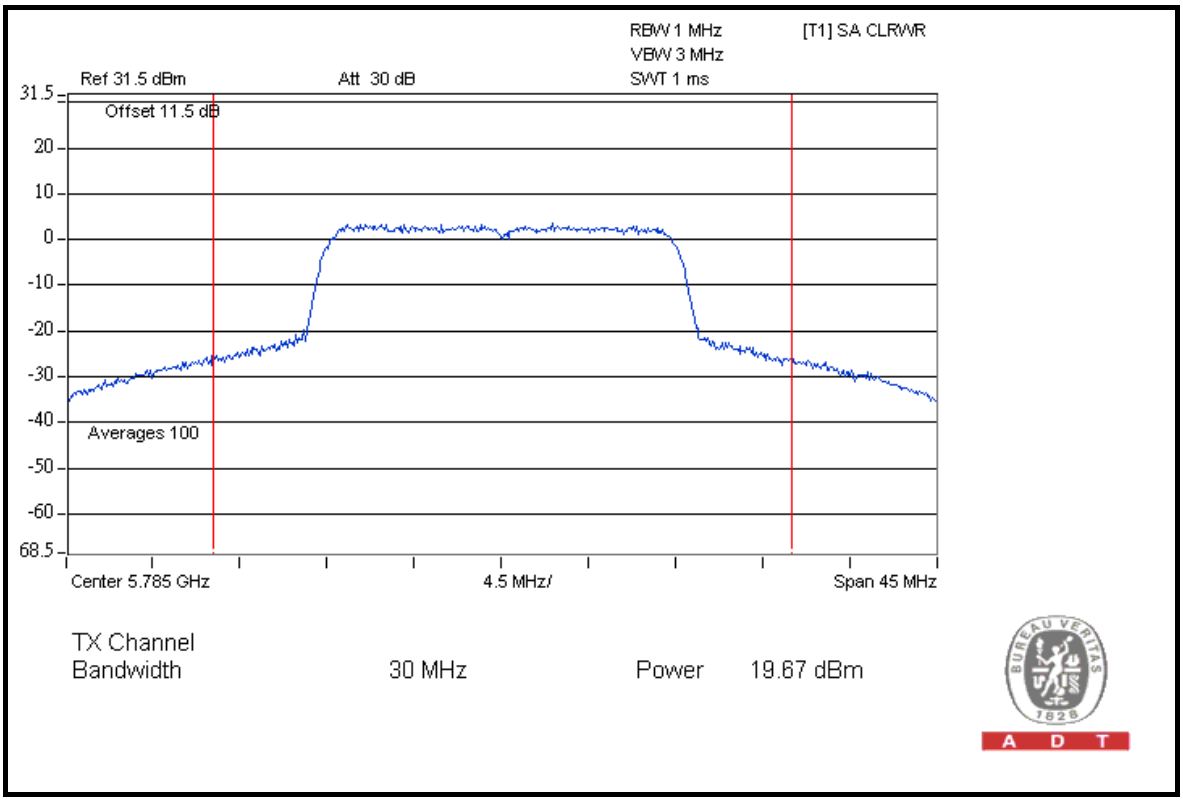
CH 165



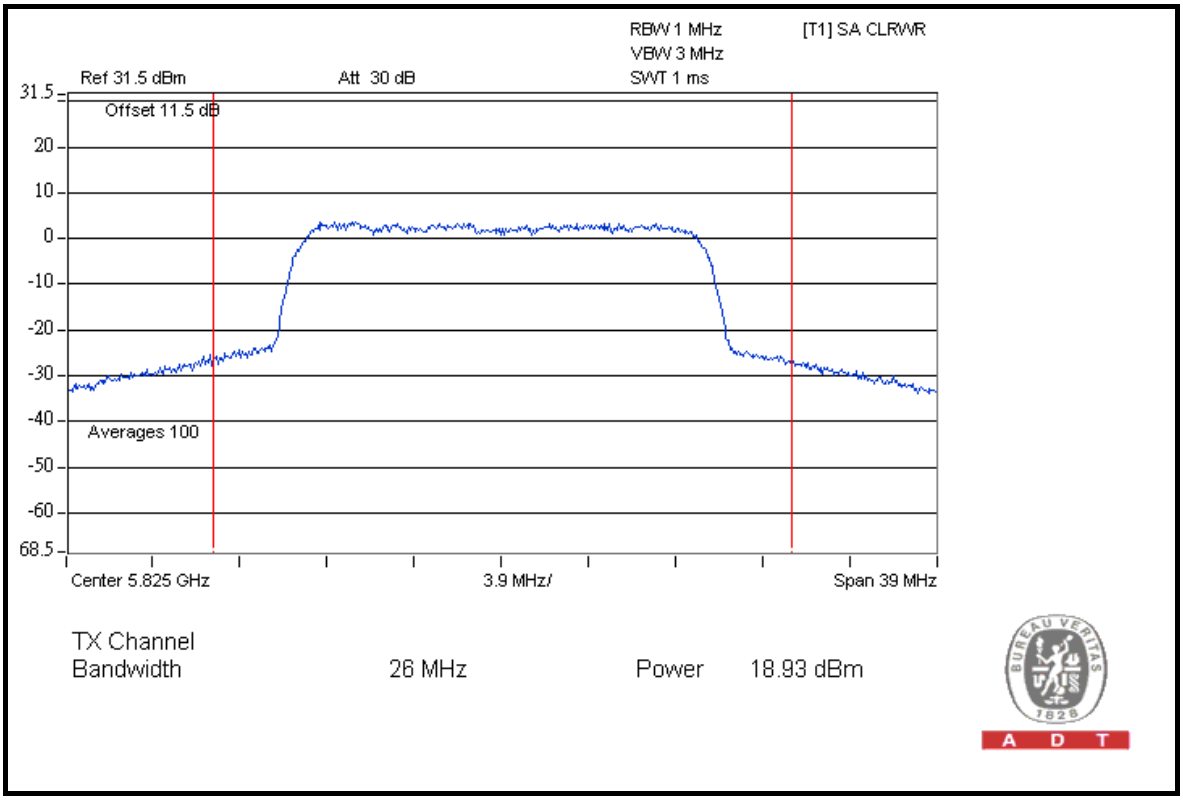
FOR CHAIN 1: CH 149



CH 157


RBW 1 MHz
VBW 3 MHz
SWT 1 ms
[T1] SA CLRWR
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
68.5
Averages 100
Center 5.785 GHz
4.5 MHz/
Span 45 MHz
TX Channel Bandwidth
30 MHz
Power
19.67 dBm

CH 165

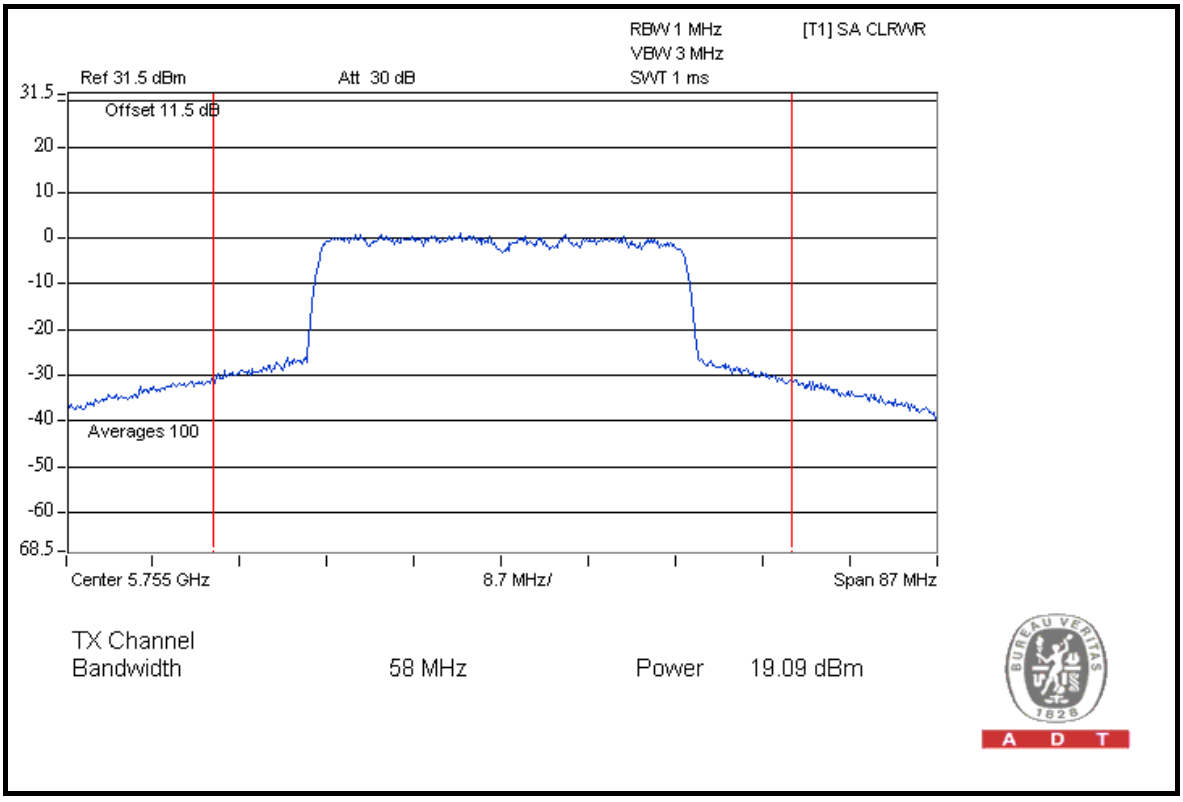

RBW 1 MHz
VBW 3 MHz
SWT 1 ms
[T1] SA CLRWR
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
68.5
Averages 100
Center 5.825 GHz
3.9 MHz/
Span 39 MHz
TX Channel Bandwidth
26 MHz
Power
18.93 dBm

DRAFT 802.11n (40MHz) OFDM MODULATION

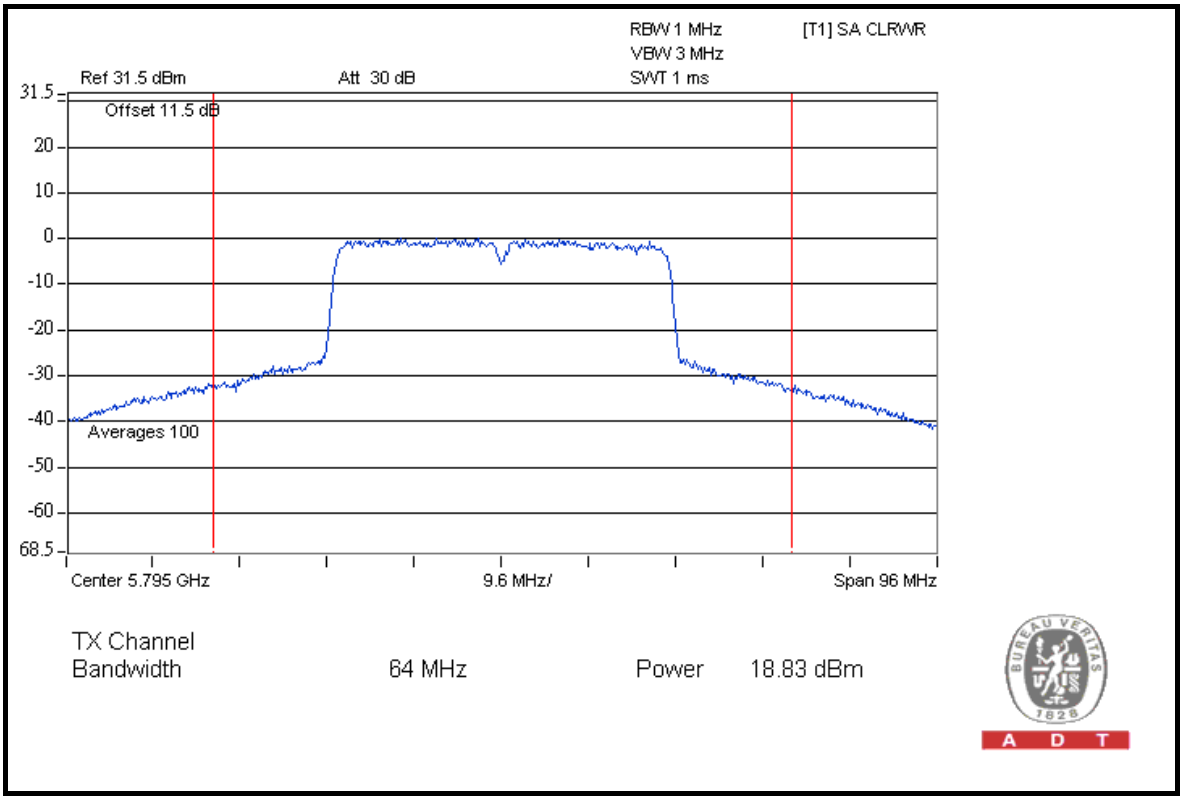
MODULATION TYPE	BPSK	**TRANSFER RATE**	15.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

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	19.09	19.66	173.566	22.39	30	PASS
159	5795	18.83	19.83	172.545	22.37	30	PASS

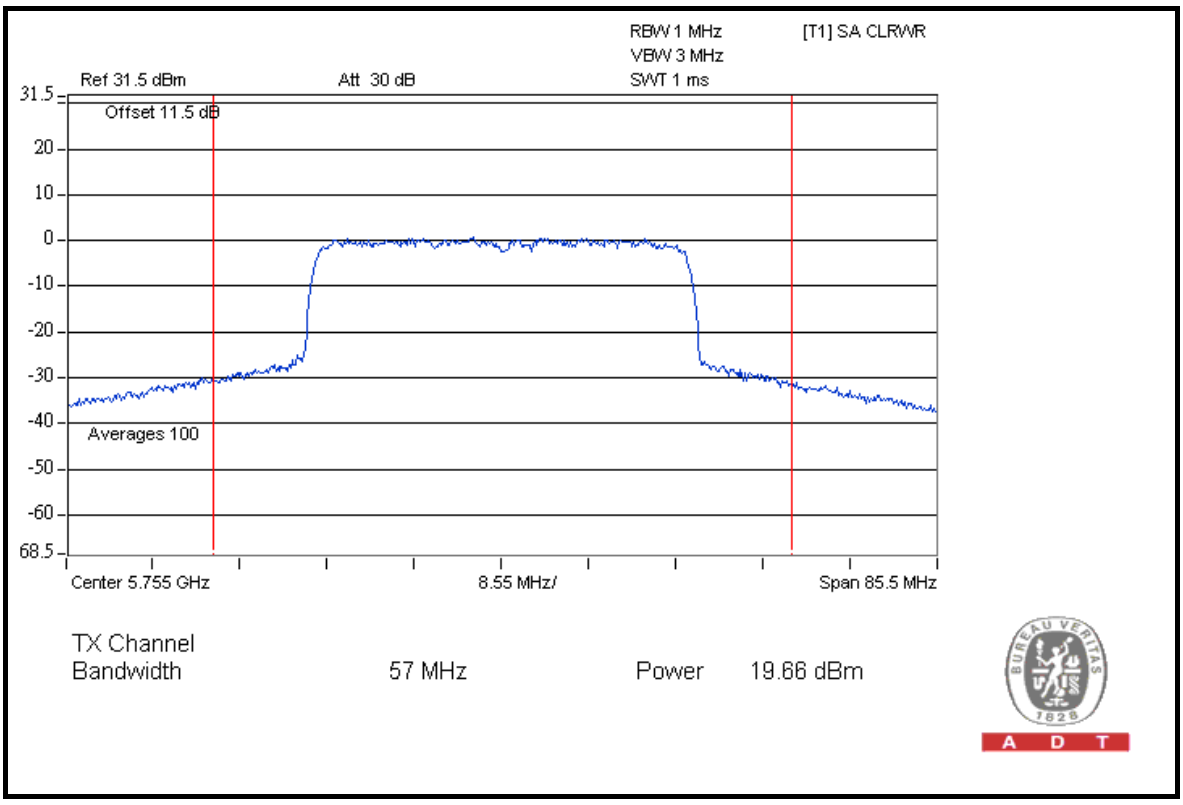
FOR CHAIN 0: CH 151



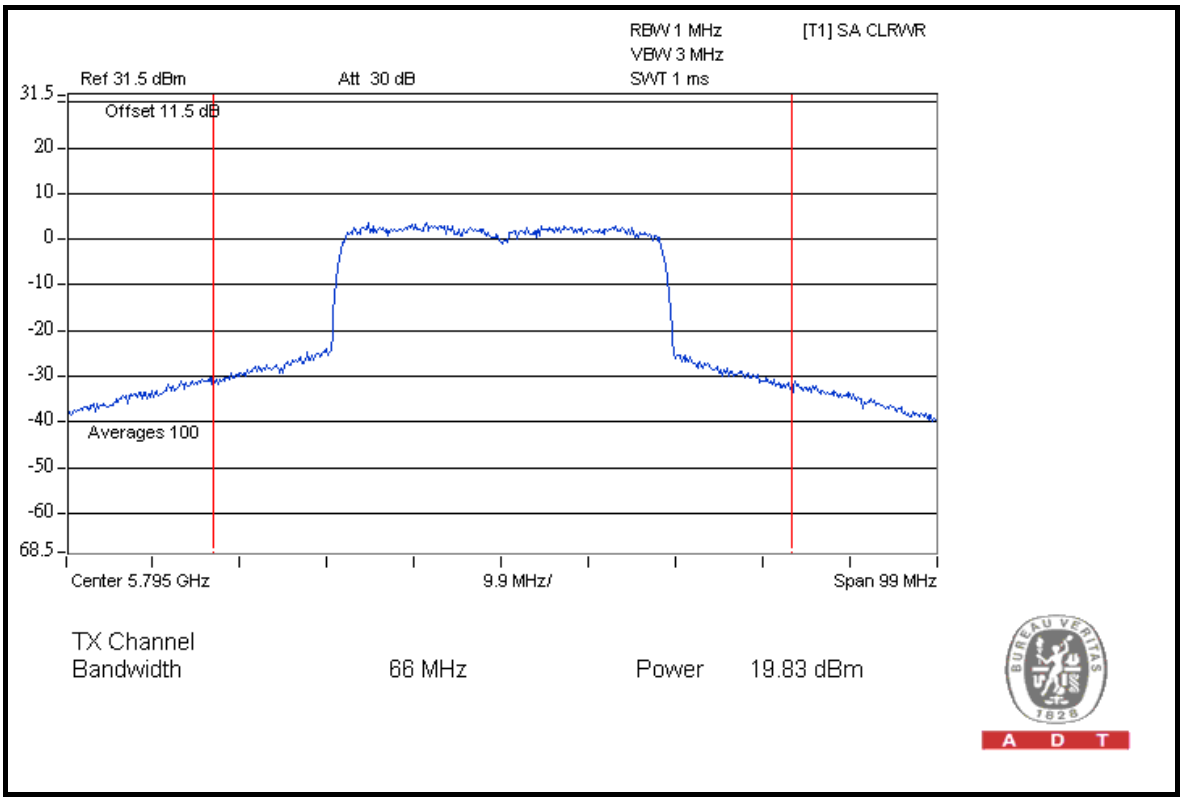
CH 159



FOR CHAIN 1: CH 151



CH 159

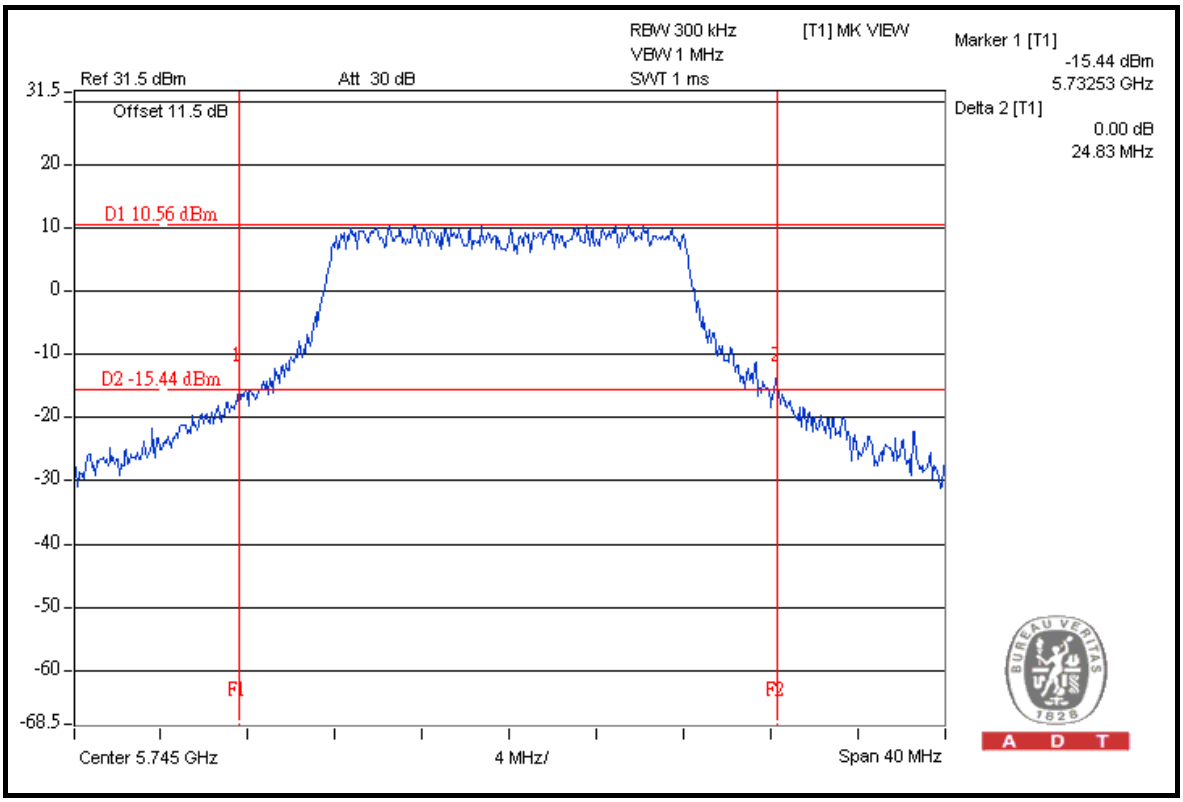


26dB OCCUPIED BANDWIDTH: 802.11a OFDM MODULATION

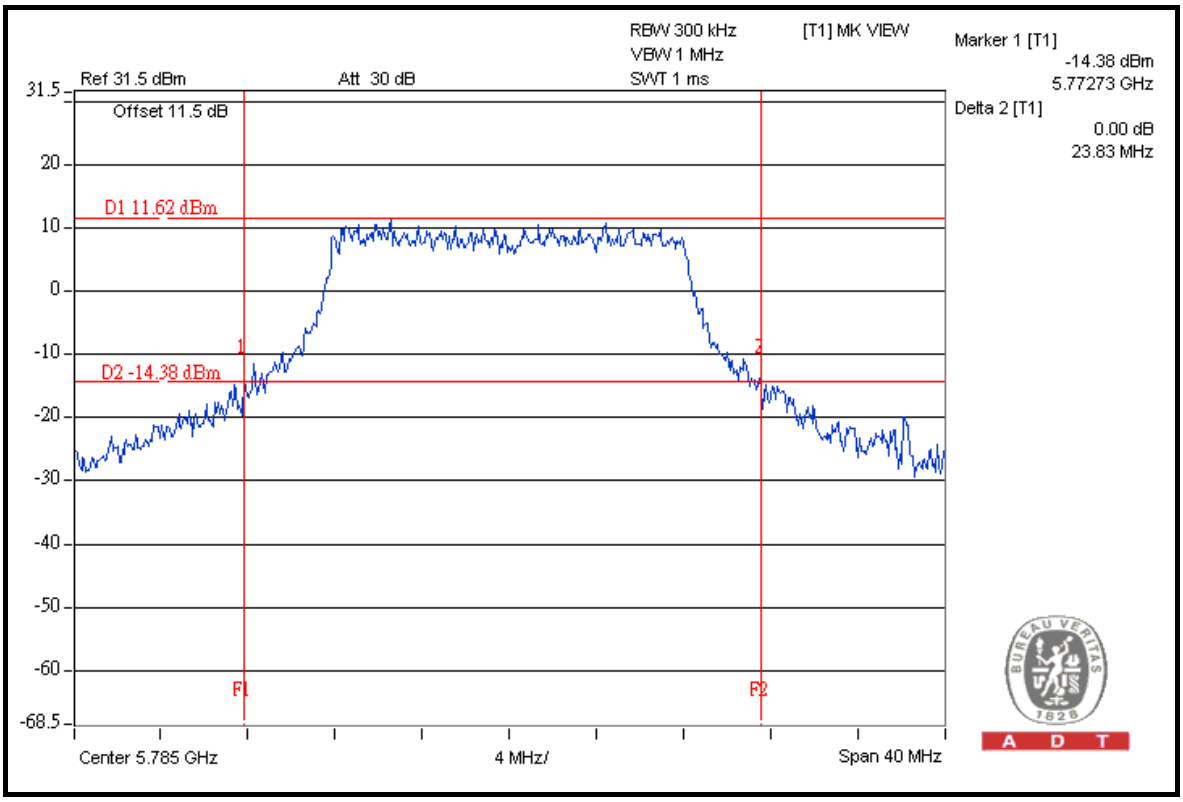
MODULATION TYPE	OFDM	**TRANSFER RATE**	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 991hPa
TESTED BY	Mark Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
149	5745	24.83	28.79	PASS
157	5785	23.83	33.01	PASS
165	5825	25.10	29.08	PASS

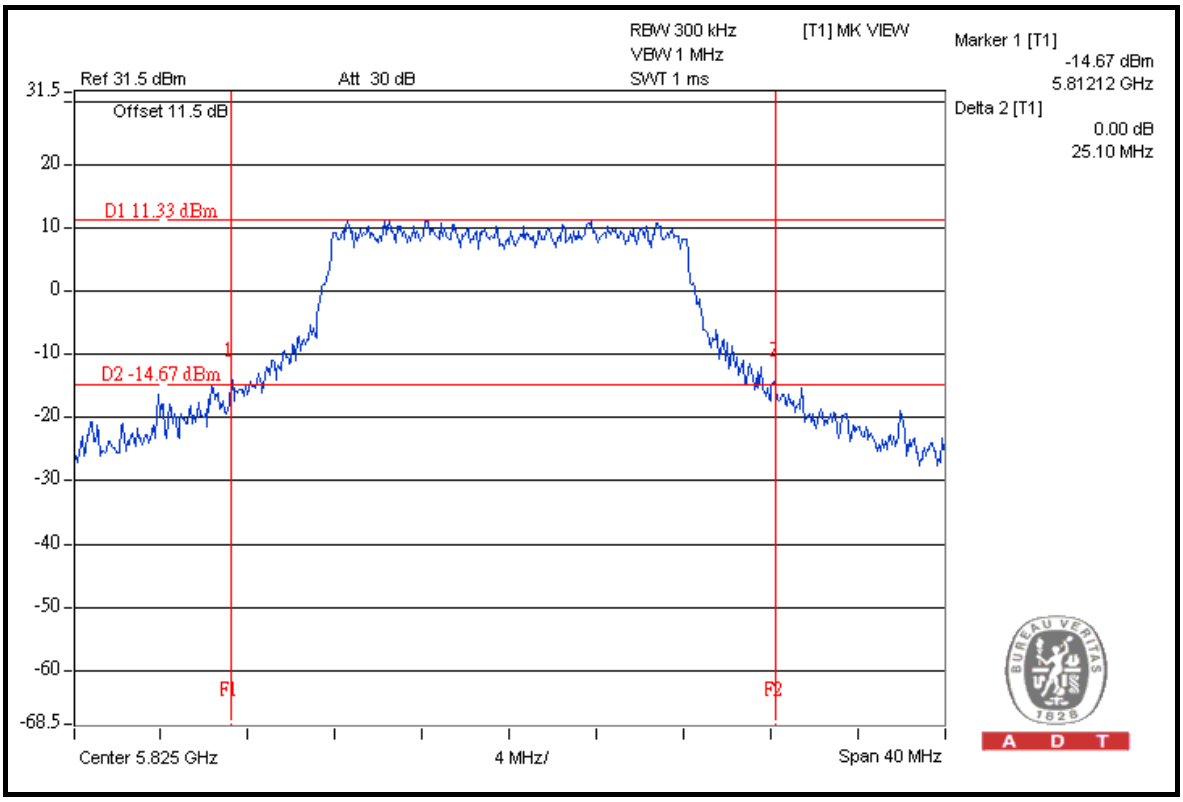
FOR CHAIN 0: CH 149



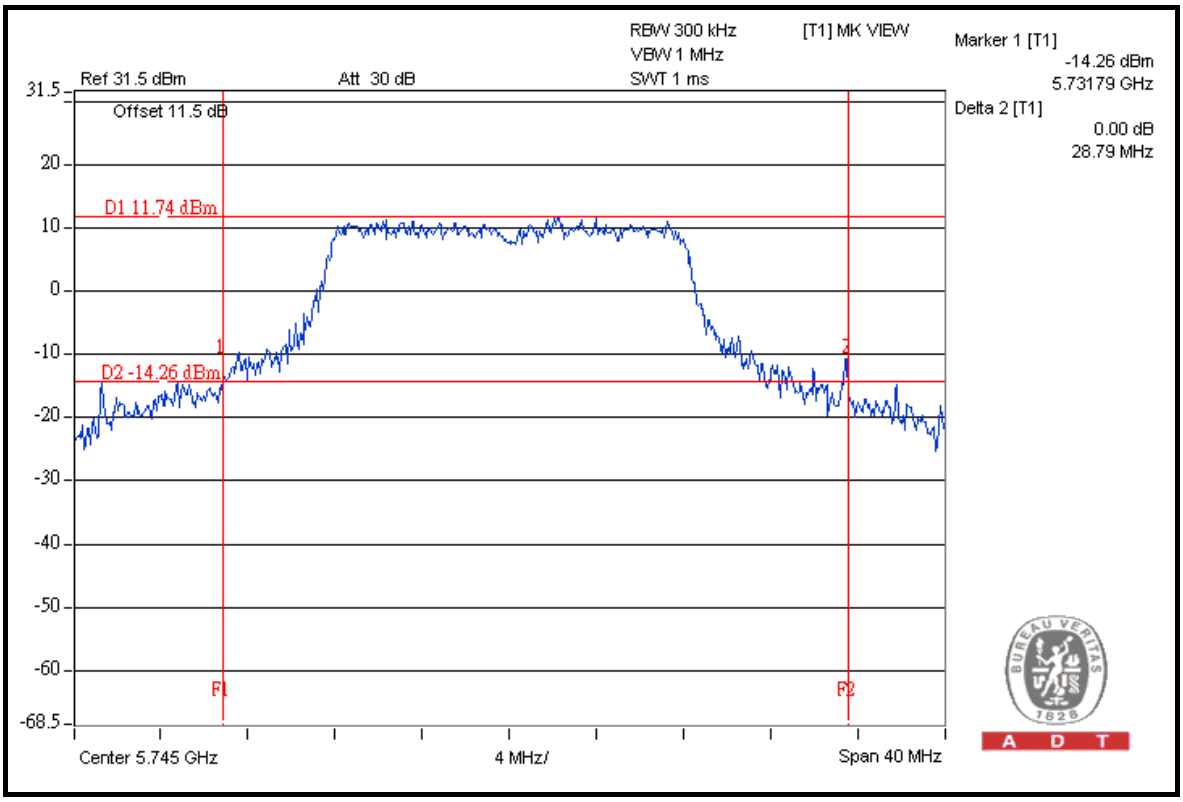
CH 157



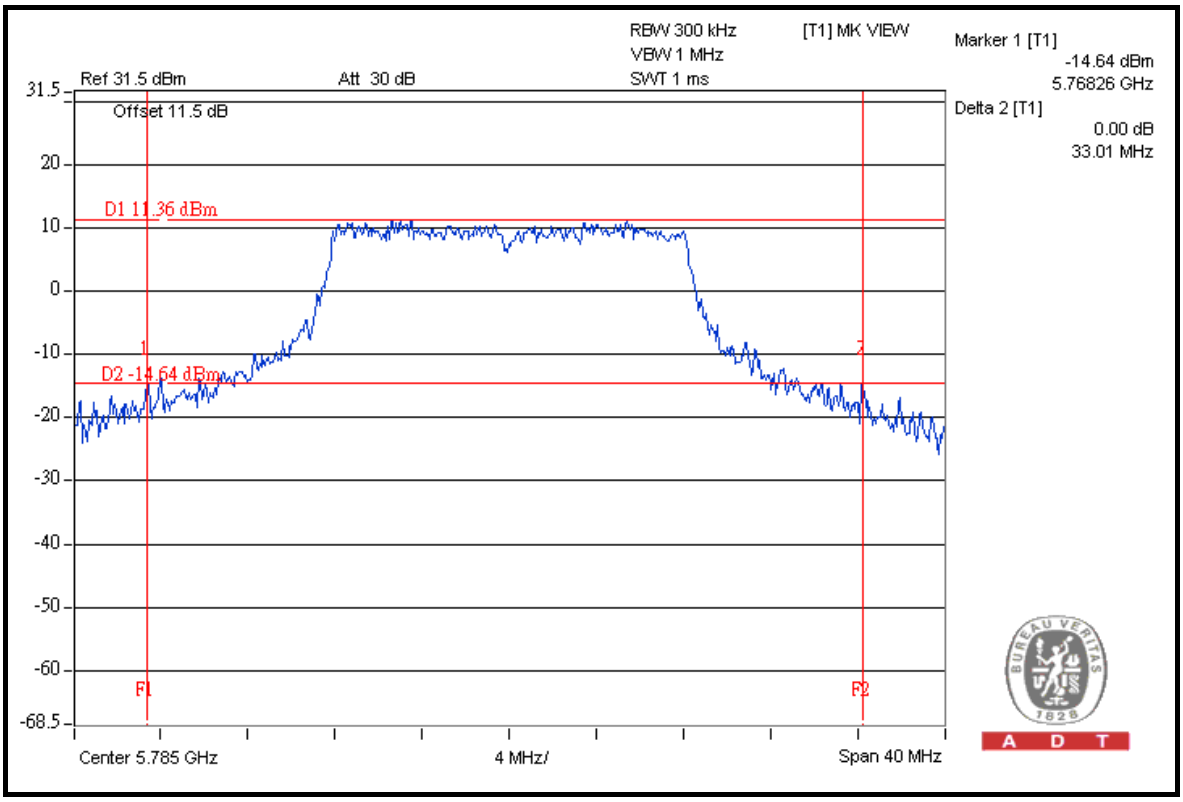
CH 165



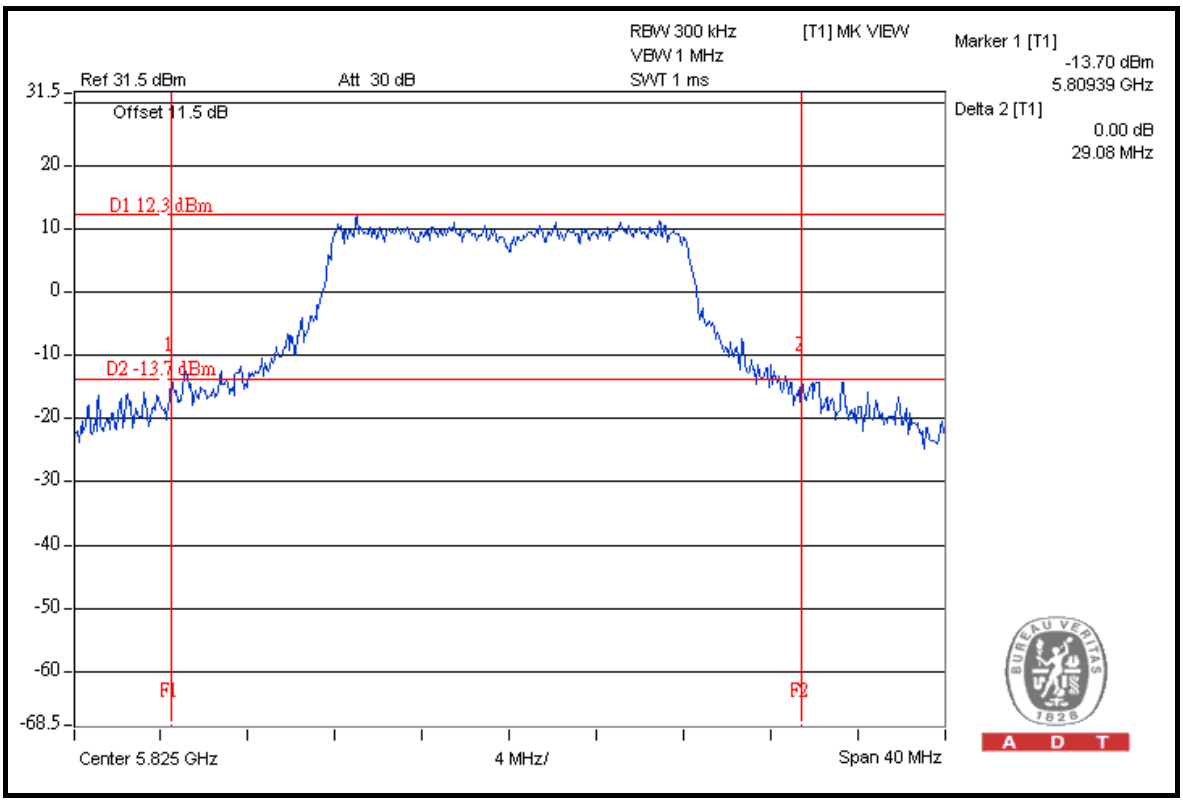
FOR CHAIN 1: CH 149



CH 157


RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-14.64 dBm
5.76826 GHz
Delta 2 [T1]
0.00 dB
33.01 MHz
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
D1 11.36 dBm
D2 -14.64 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
F1
F2
Center 5.785 GHz
4 MHz/
Span 40 MHz

CH 165

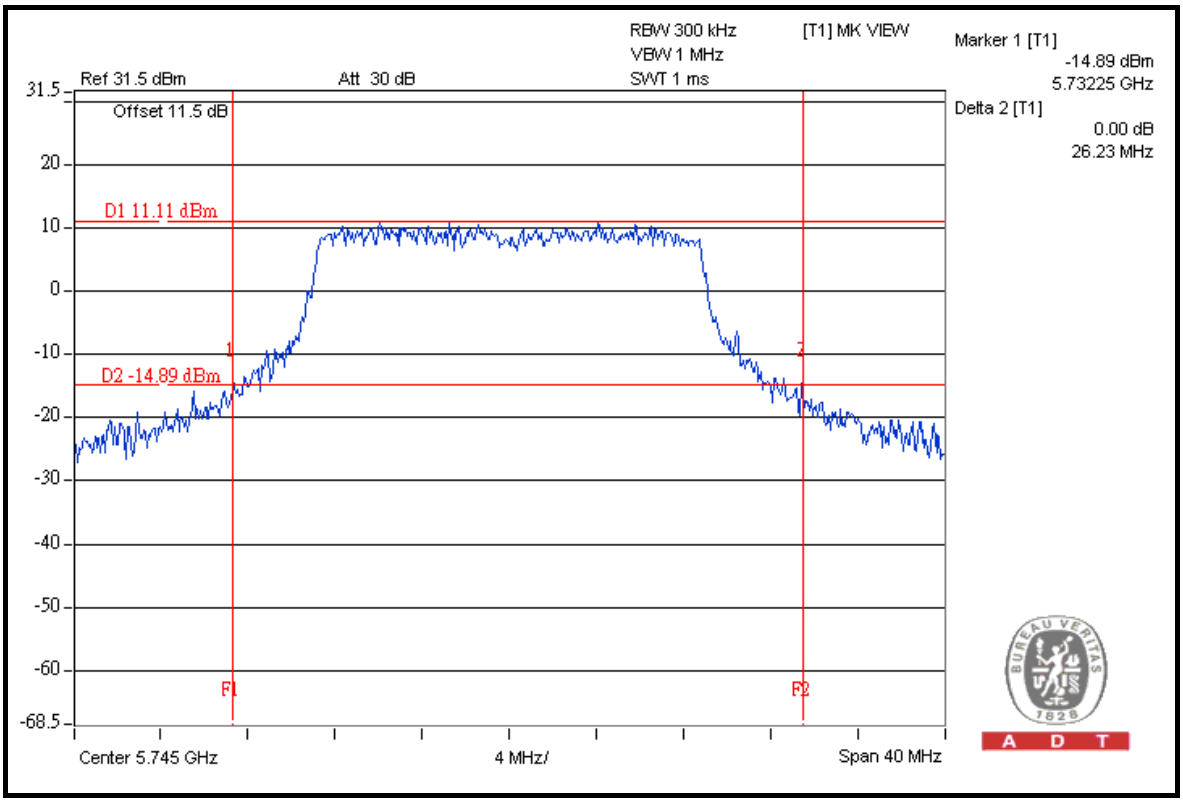

RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-13.70 dBm
5.80939 GHz
Delta 2 [T1]
0.00 dB
29.08 MHz
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
D1 12.3 dBm
D2 -13.7 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
F1
F2
Center 5.825 GHz
4 MHz/
Span 40 MHz

DRAFT 802.11n (20MHz) OFDM MODULATION

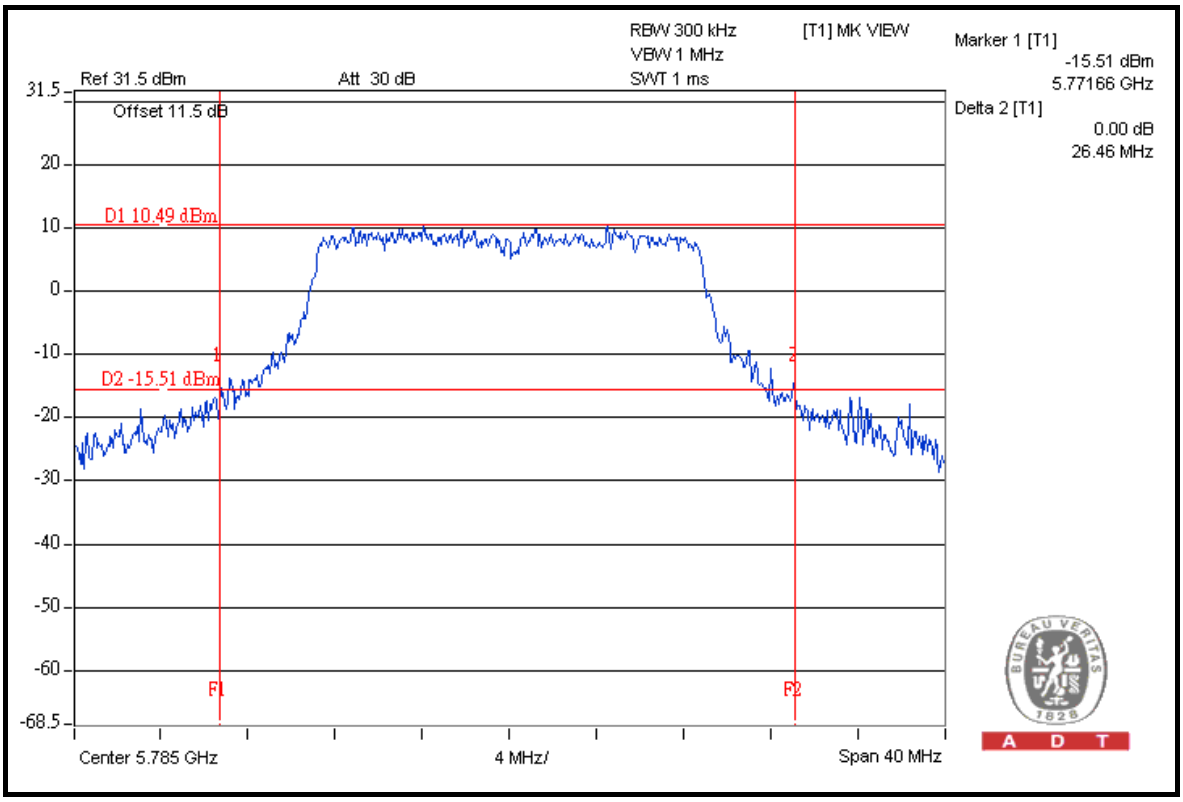
MODULATION TYPE	OFDM	**TRANSFER RATE**	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 991hPa
TESTED BY	Mark Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
149	5745	26.23	31.88	PASS
157	5785	26.46	29.17	PASS
165	5825	25.14	25.51	PASS

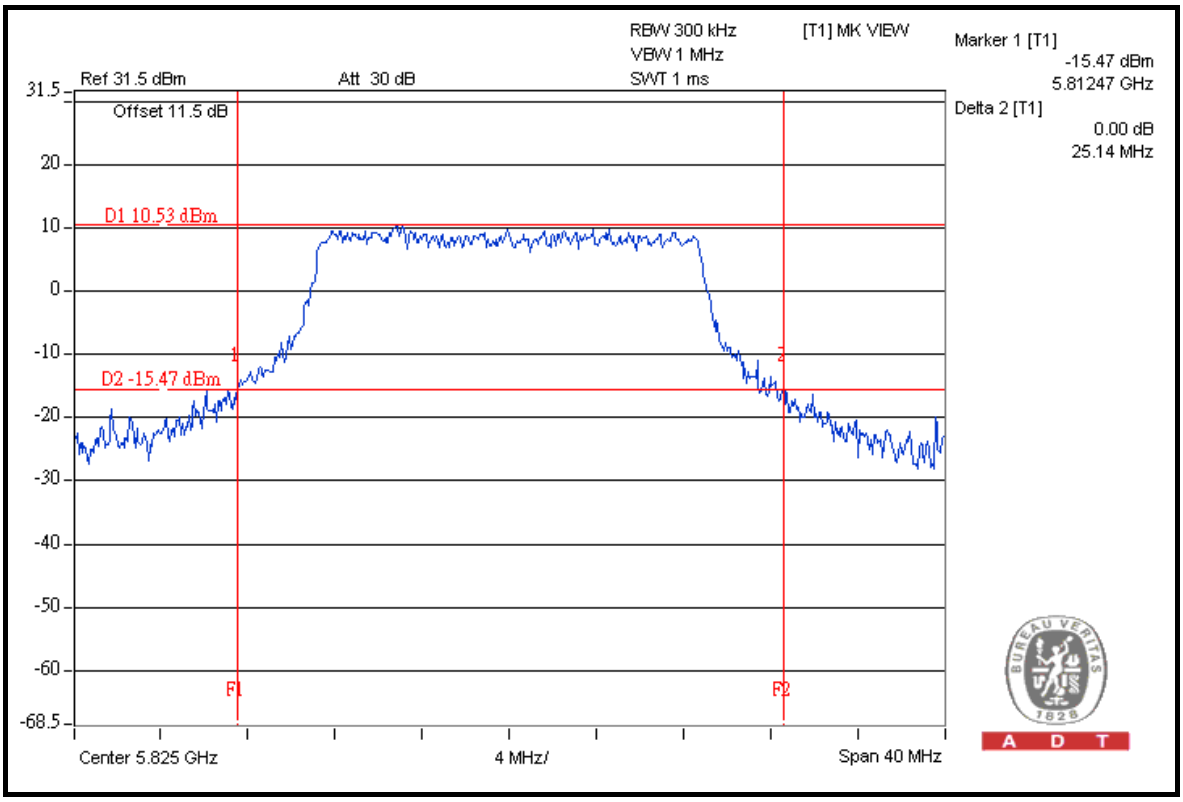
FOR CHAIN 0: CH 149



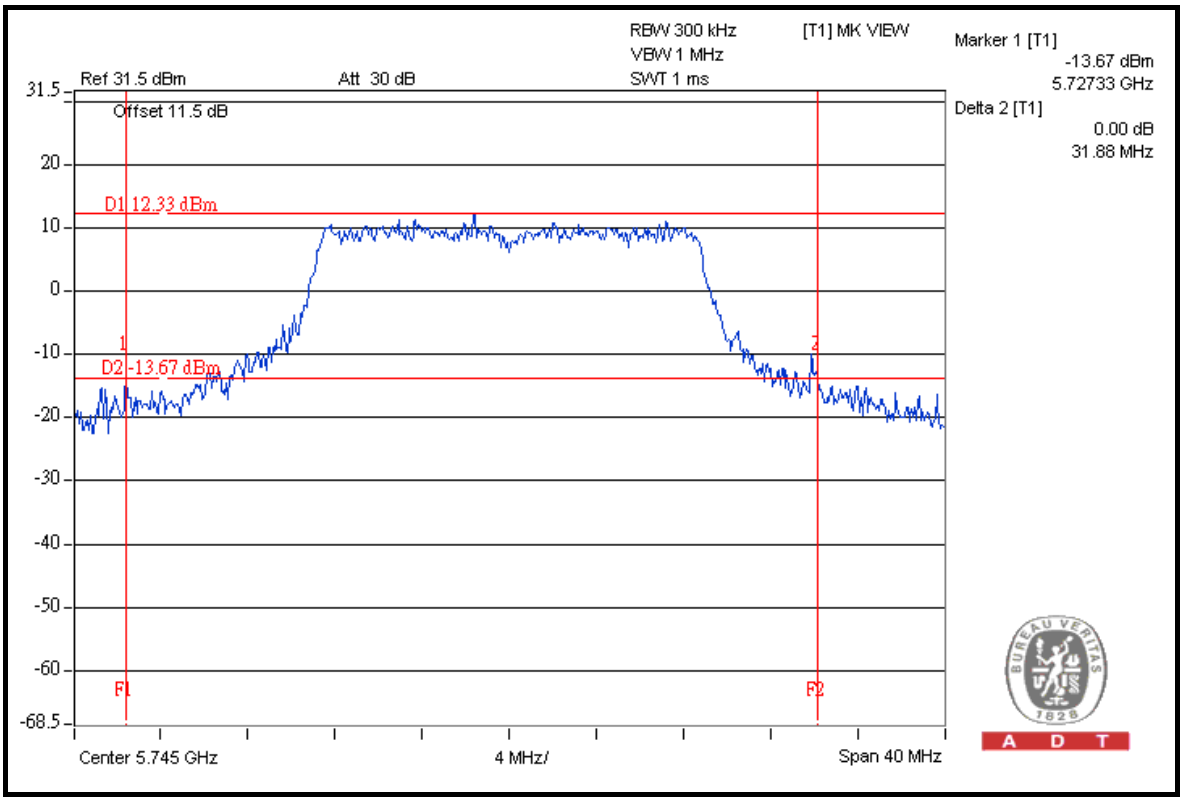
CH 157



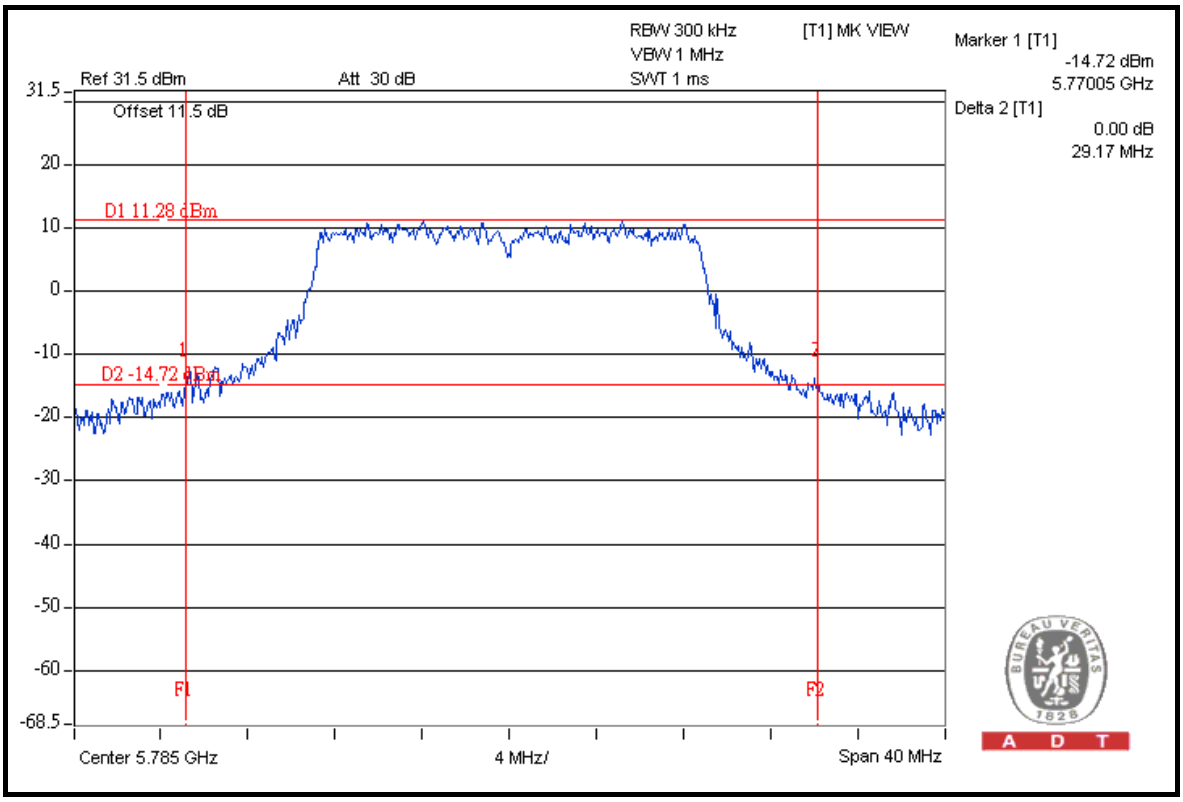
CH 165



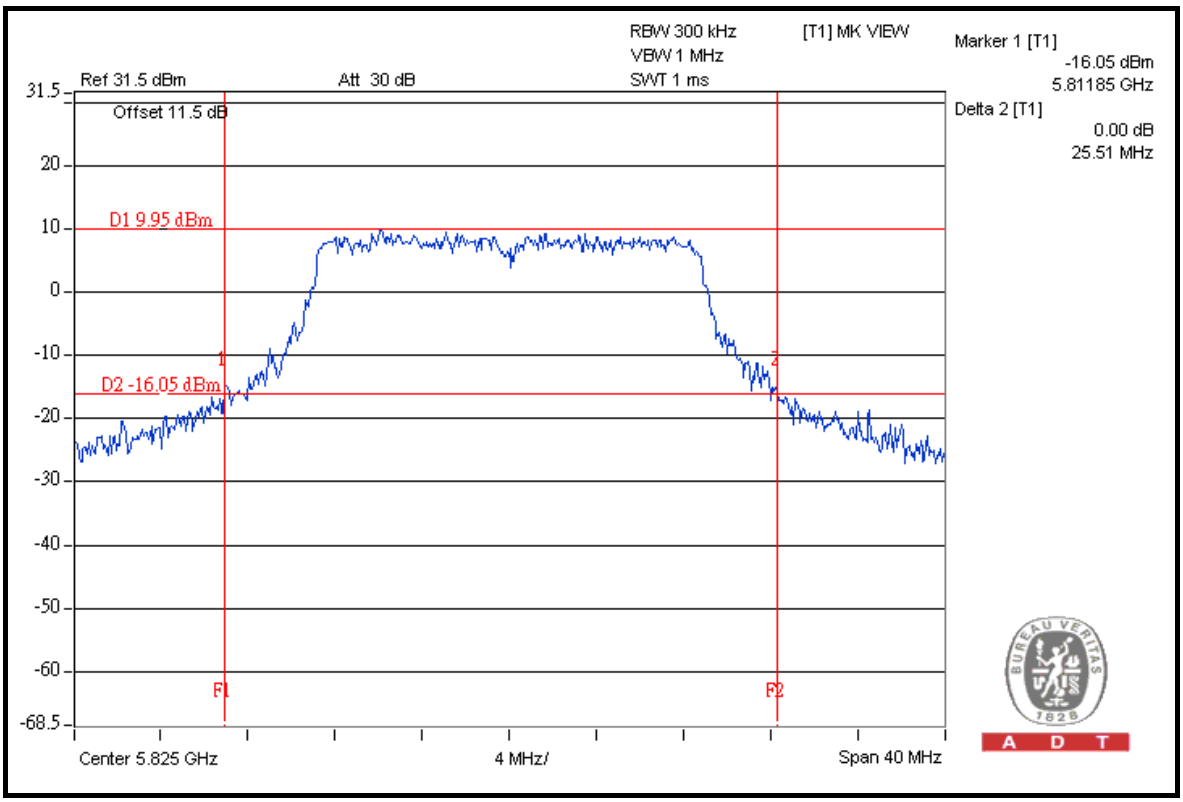
FOR CHAIN 1: CH 149



CH 157


RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-14.72 dBm
5.77005 GHz
Delta 2 [T1]
0.00 dB
29.17 MHz
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
D1 11.28 dBm
D2 -14.72 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
F1
F2
Center 5.785 GHz
4 MHz/
Span 40 MHz

CH 165

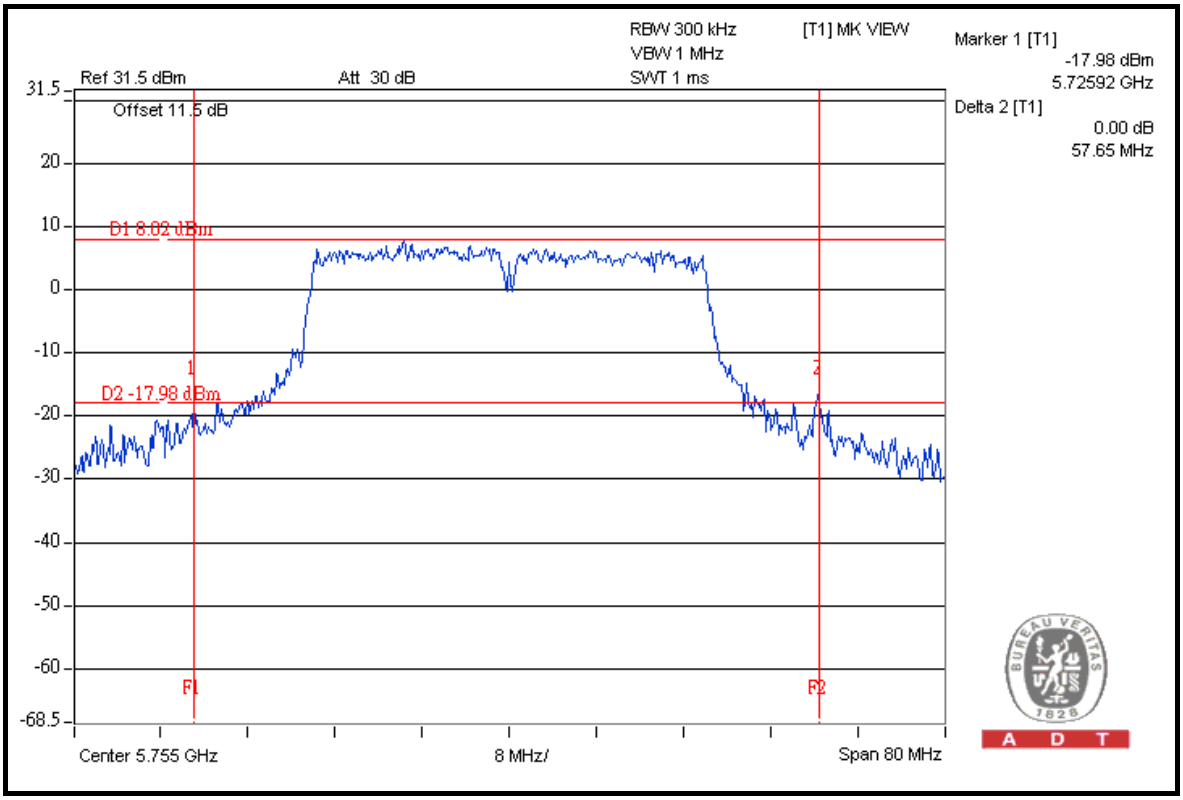

RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-16.05 dBm
5.81185 GHz
Delta 2 [T1]
0.00 dB
25.51 MHz
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
D1 9.95 dBm
D2 -16.05 dBm
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
F1
F2
Center 5.825 GHz
4 MHz/
Span 40 MHz

DRAFT 802.11n (40MHz) OFDM MODULATION

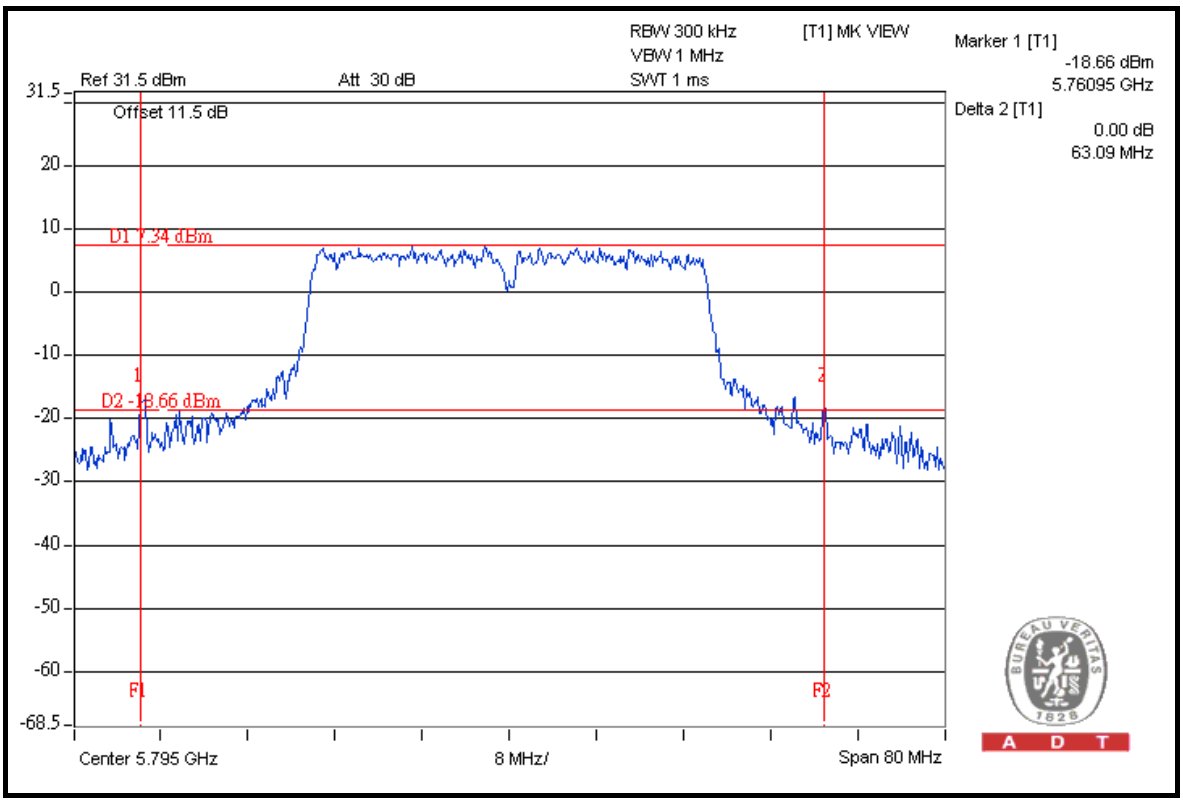
MODULATION TYPE	OFDM	**TRANSFER RATE**	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 991hPa
TESTED BY	Mark Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
151	5755	57.65	56.01	PASS
159	5795	63.09	65.60	PASS

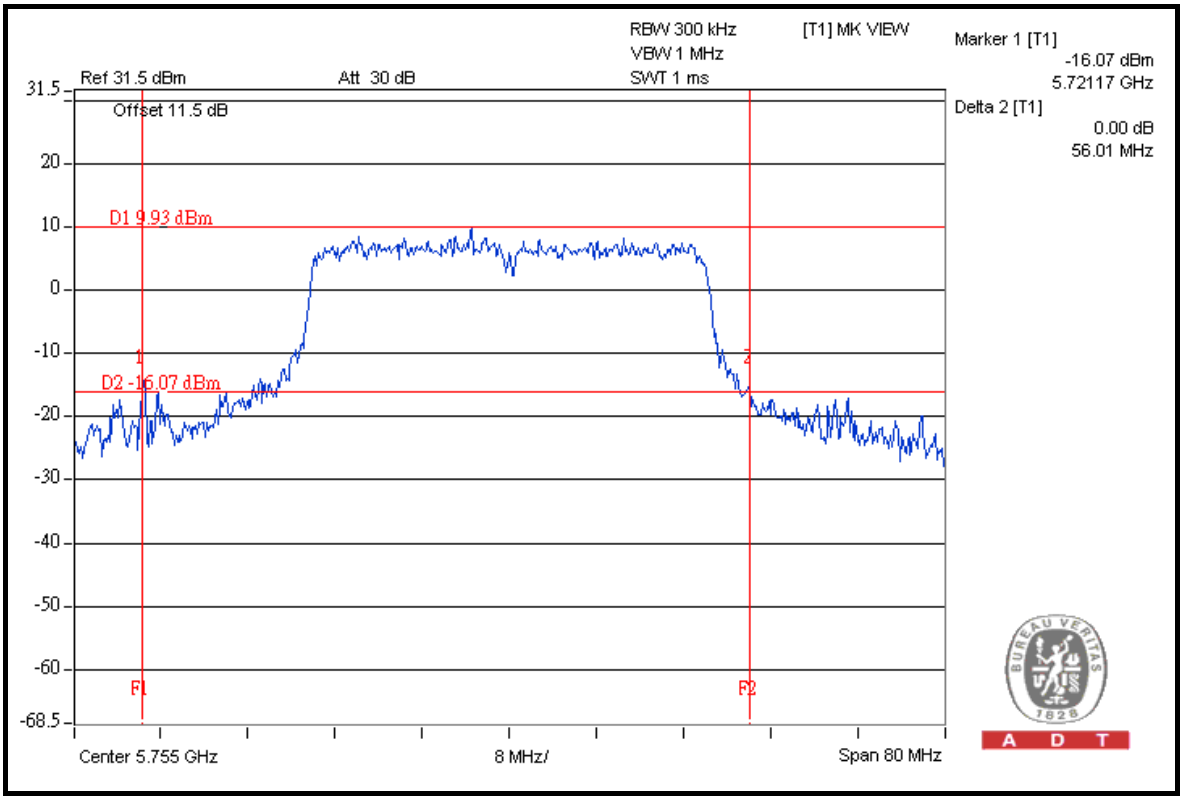
FOR CHAIN 0: CH 151



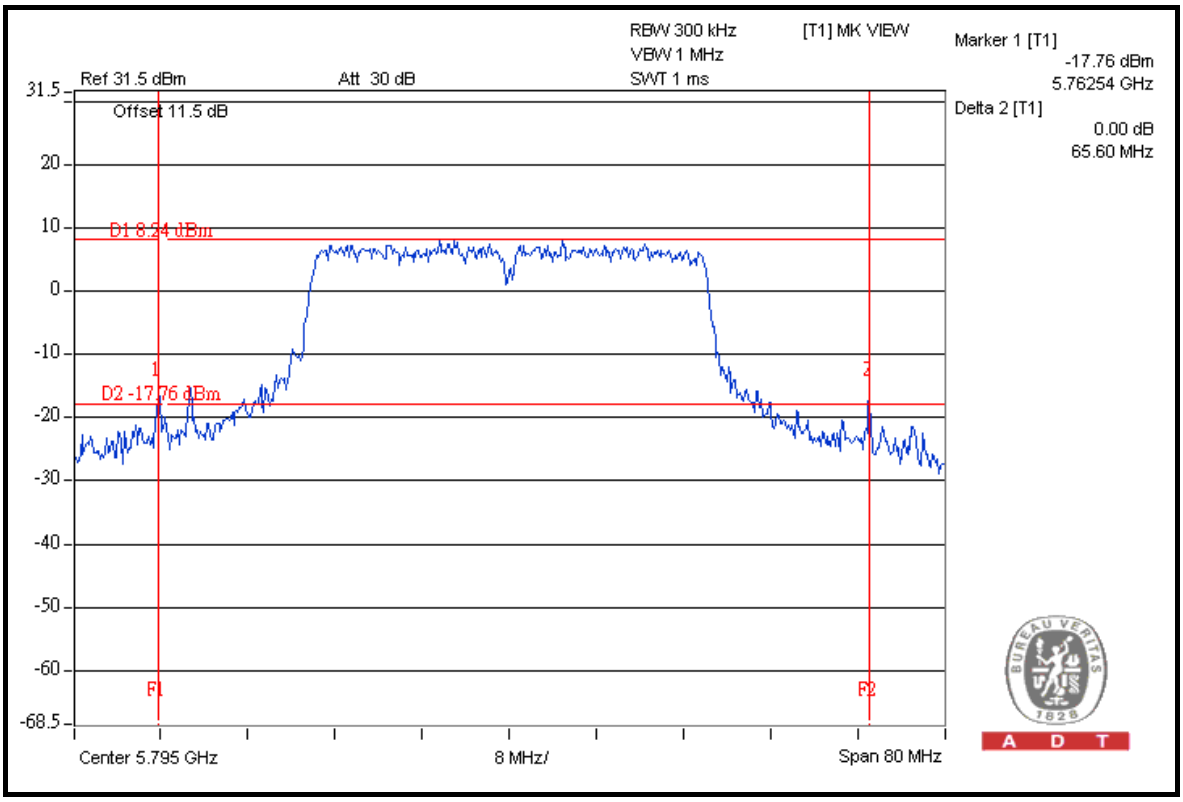
CH 159



FOR CHAIN 1: CH 151



CH 159



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. 07, 2009	Jul. 06, 2010

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

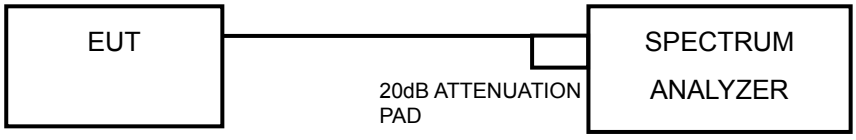
5.5.3 TEST PROCEDURE

1. Follow DTS measurement (PSD Option 2), the transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer. Locate and zoom in on emission peak(s) within the pass band.
2. Set RBW = 3 kHz /VBW > 9 kHz and sweep time to Automatic.
3. Detector use peak mode and a video trigger with the trigger level set to enable triggering only on full power pulses.
4. Trace average 100 traces in power averaging mode. The power spectral density was measured and recorded.

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.

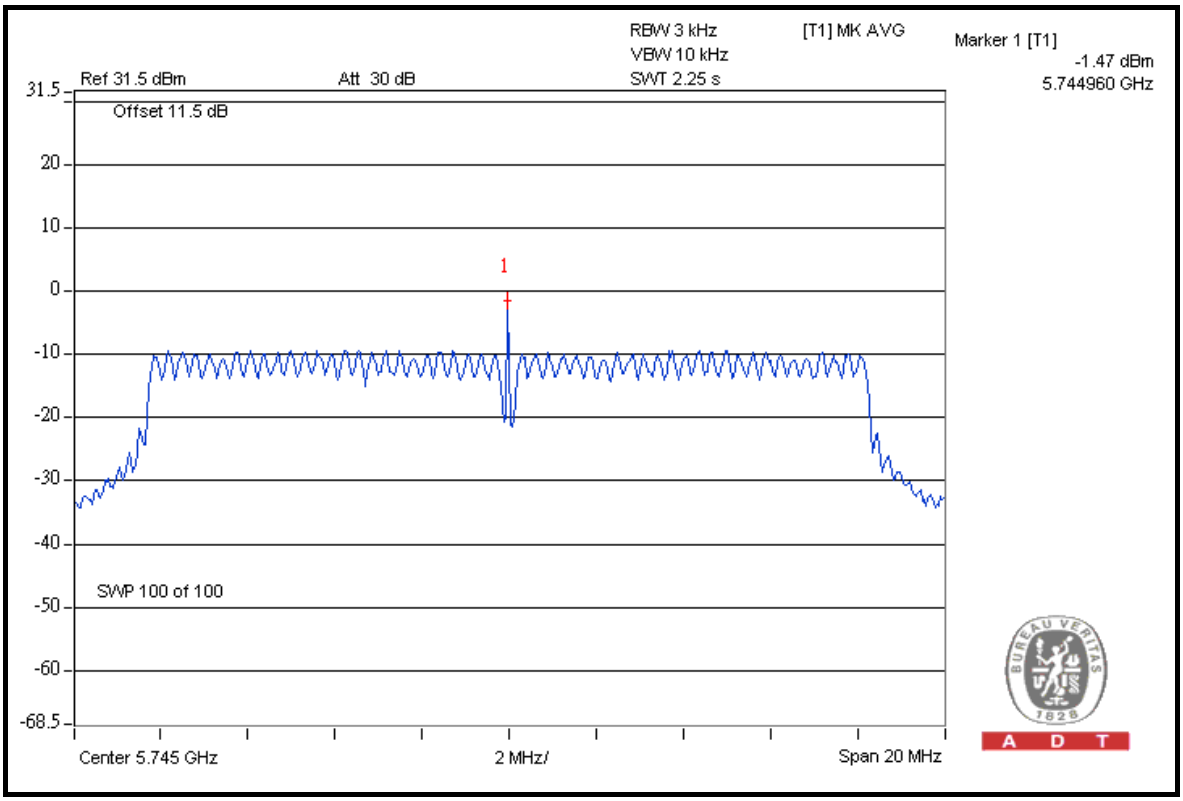
5.5.7 TEST RESULTS

802.11a OFDM MODULATION

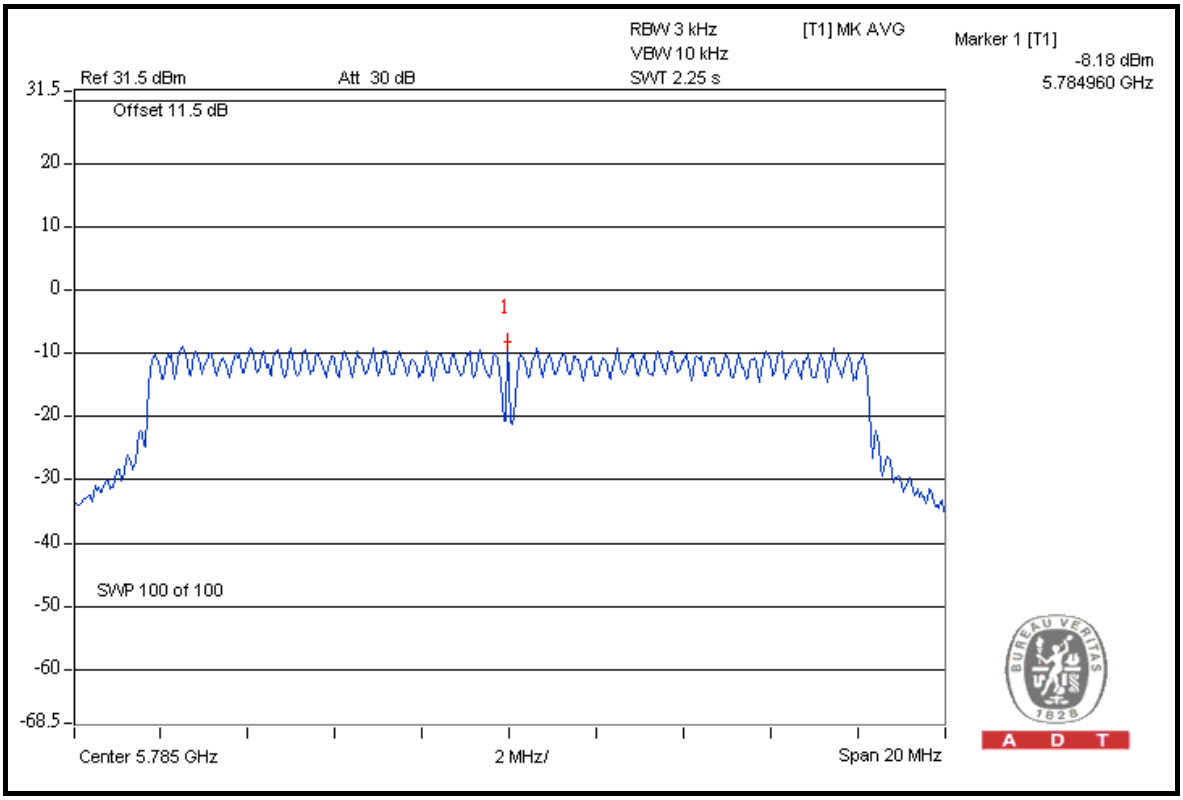
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

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	-1.47	-1.90	1.359	1.33	8	PASS
157	5785	-8.18	-8.92	0.280	-5.53	8	PASS
165	5825	-0.36	-5.92	1.176	0.70	8	PASS

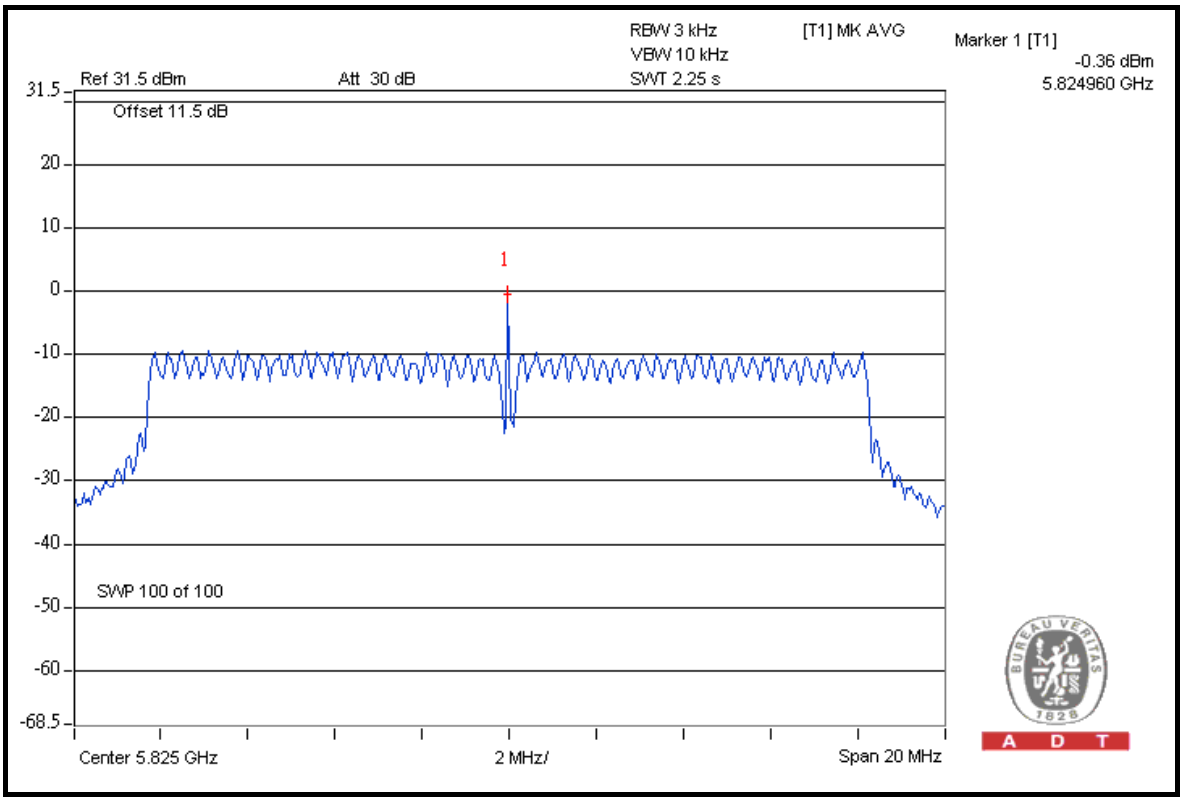
FOR CHAIN 0: CH 149



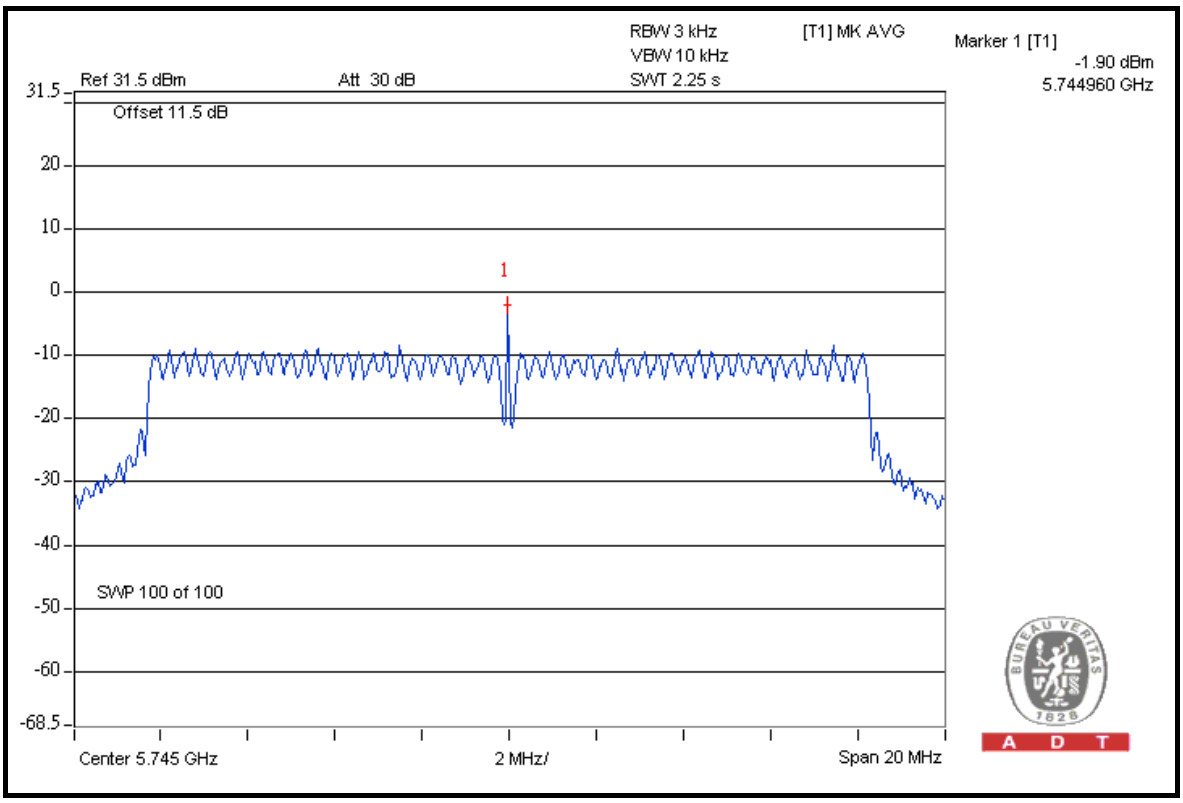
CH 157



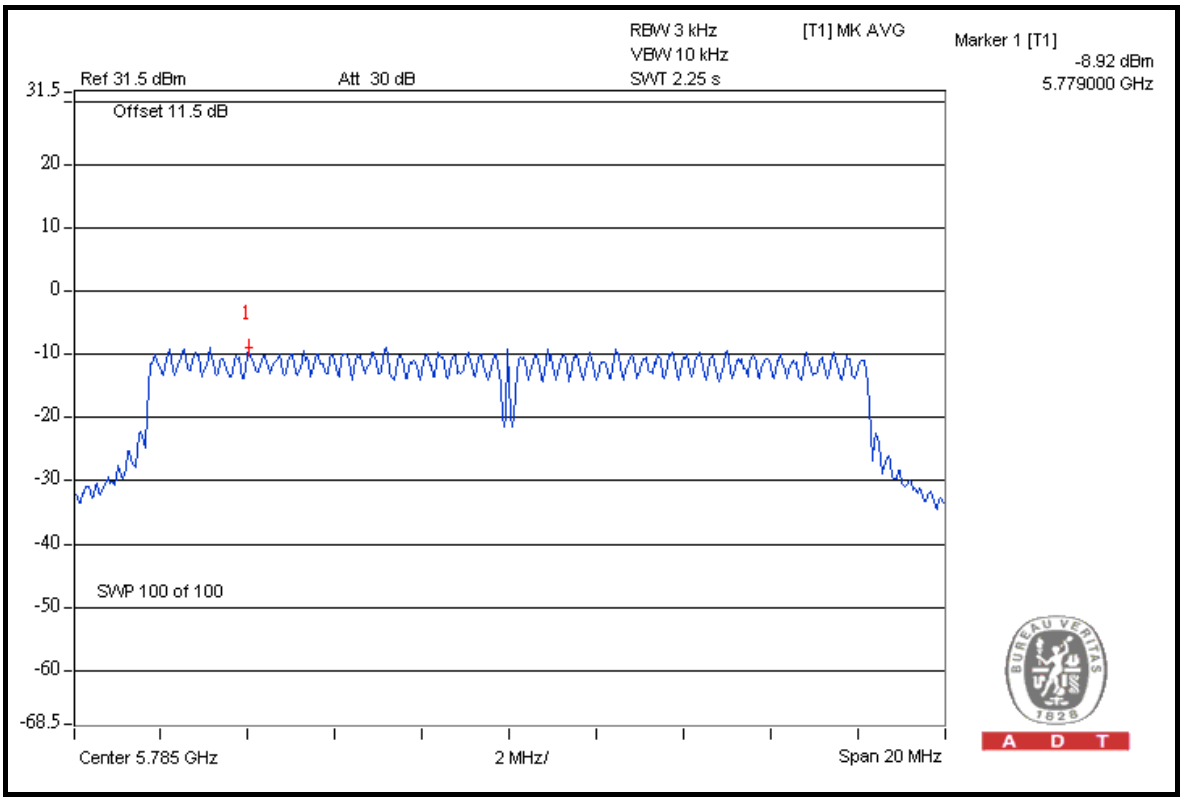
CH 165



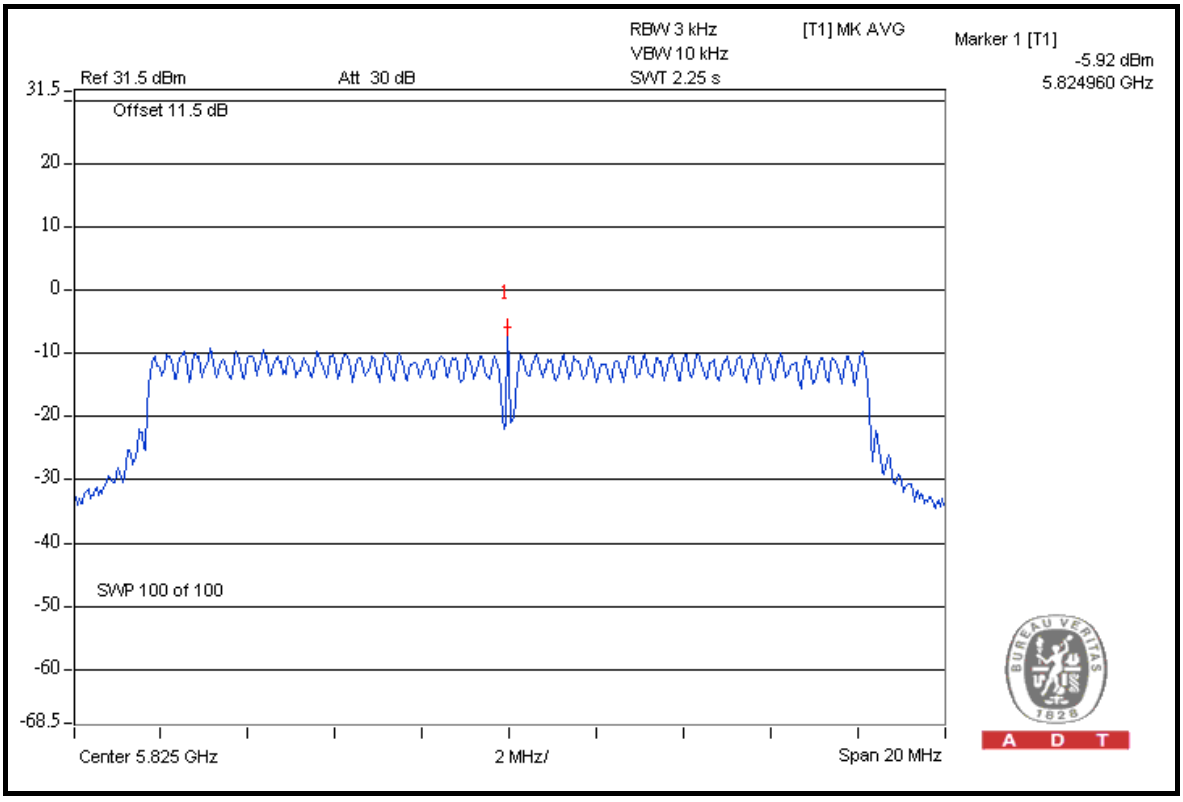
FOR CHAIN 1: CH 149



CH 157


RBW 3 kHz
VBW 10 kHz
SWT 2.25 s
[T1] MK AVG
Marker 1 [T1]
-8.92 dBm
5.779000 GHz
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
SWP 100 of 100
Center 5.785 GHz
2 MHz/
Span 20 MHz

CH 165

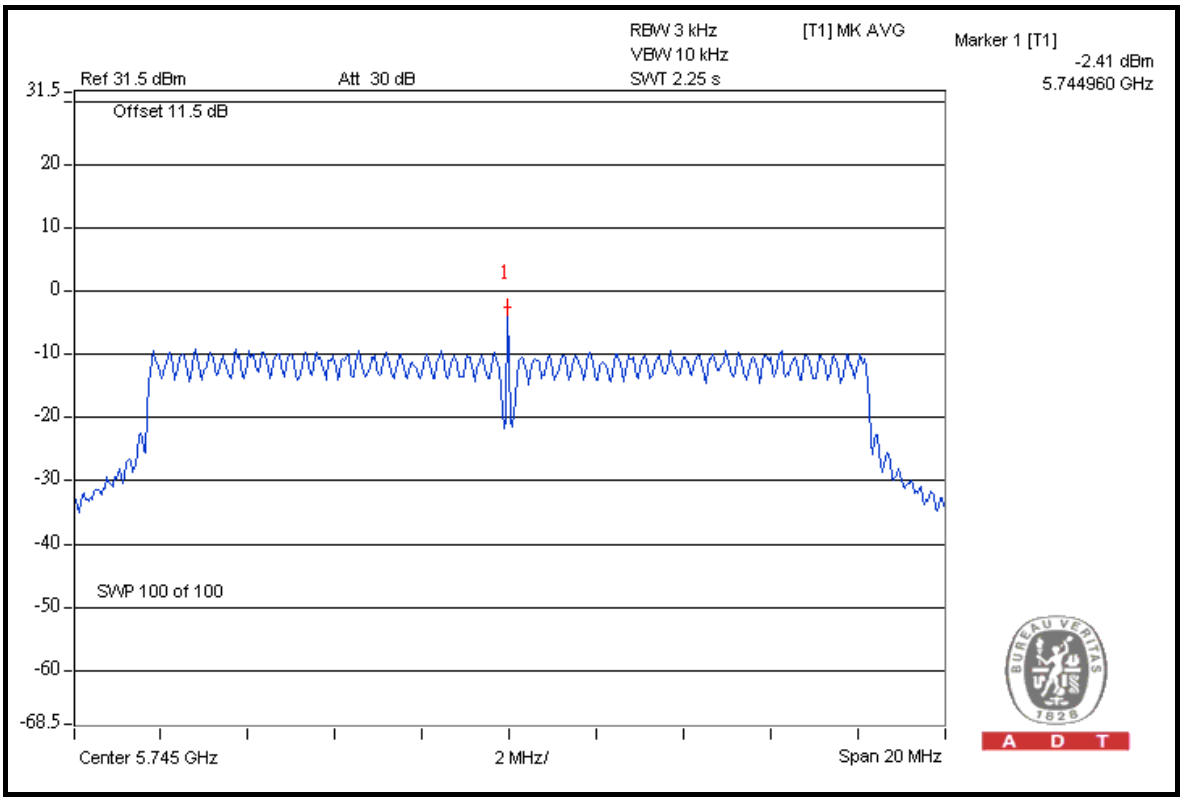

RBW 3 kHz
VBW 10 kHz
SWT 2.25 s
[T1] MK AVG
Marker 1 [T1]
-5.92 dBm
5.824960 GHz
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
SWP 100 of 100
Center 5.825 GHz
2 MHz/
Span 20 MHz

DRAFT 802.11n (20MHz) OFDM MODULATION

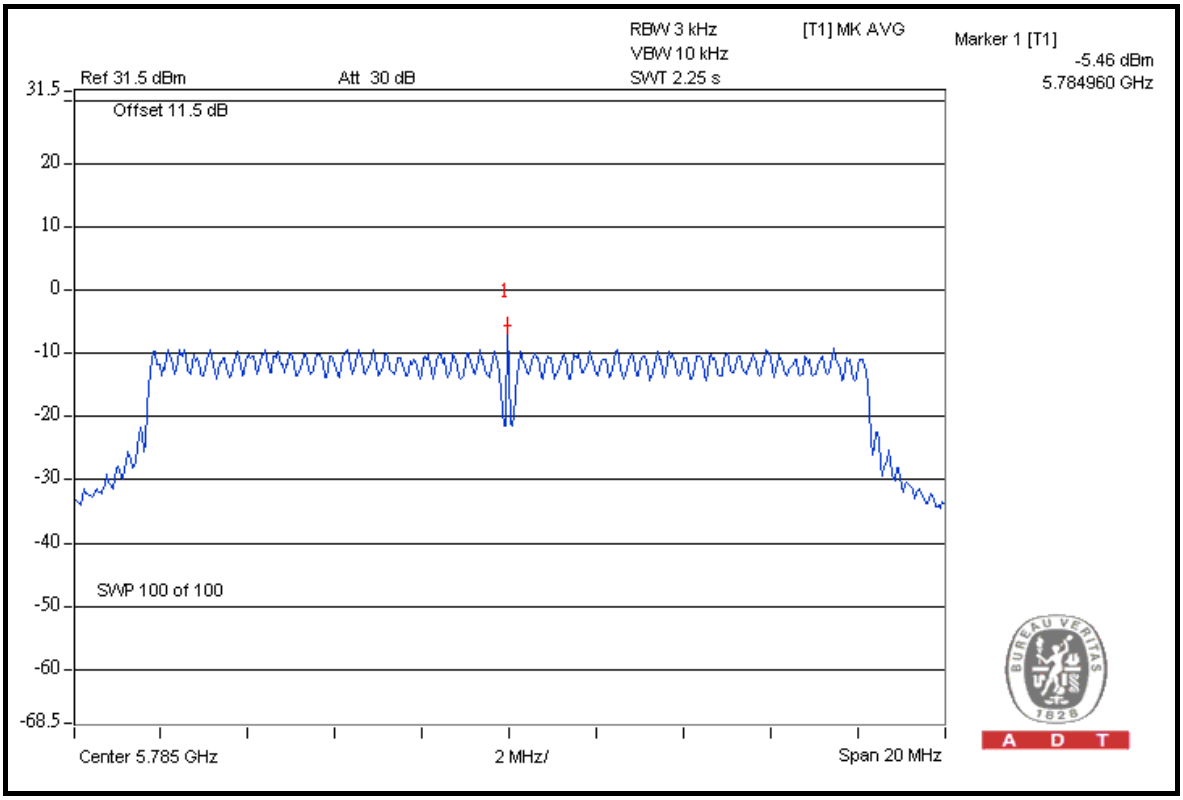
MODULATION TYPE	BPSK	**TRANSFER RATE**	7.2Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 991hPa
TESTED BY	Mark Liao		

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	-2.41	-1.47	1.287	1.10	8	PASS
157	5785	-5.46	-7.10	0.479	-3.20	8	PASS
165	5825	0.03	-3.34	1.470	1.67	8	PASS

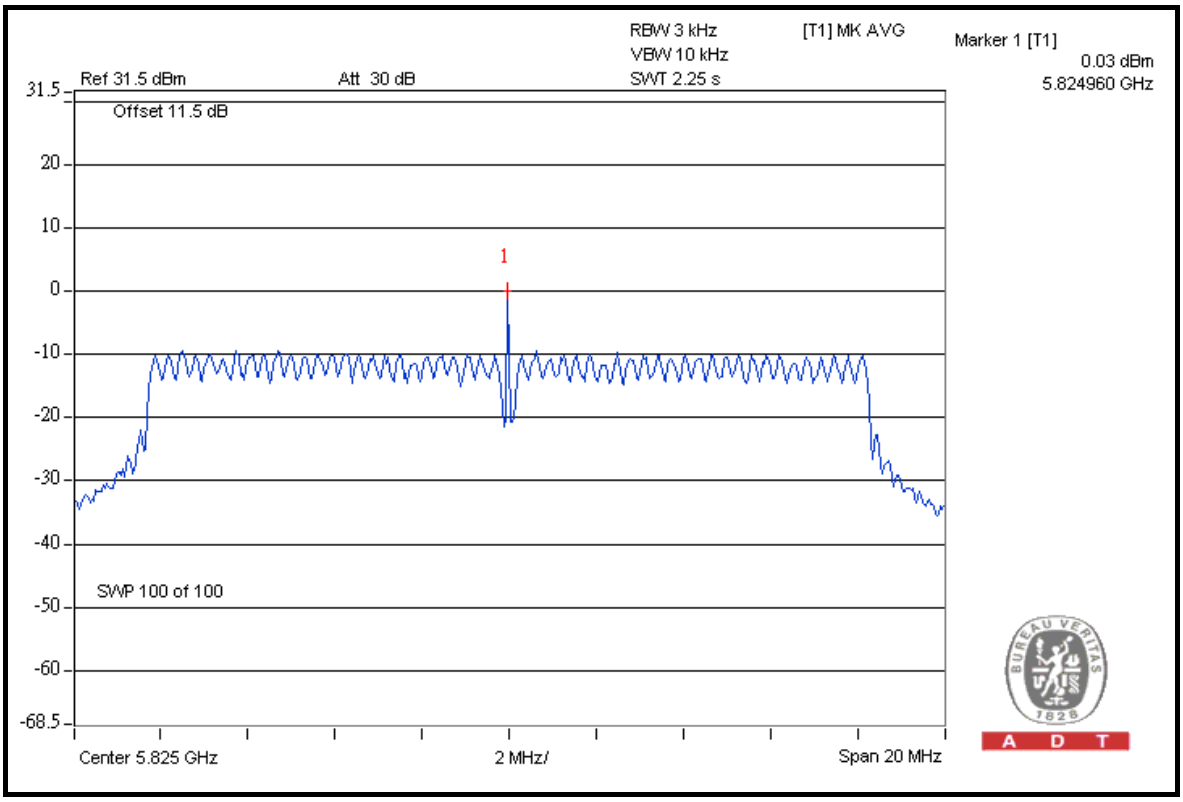
FOR CHAIN 0: CH 149



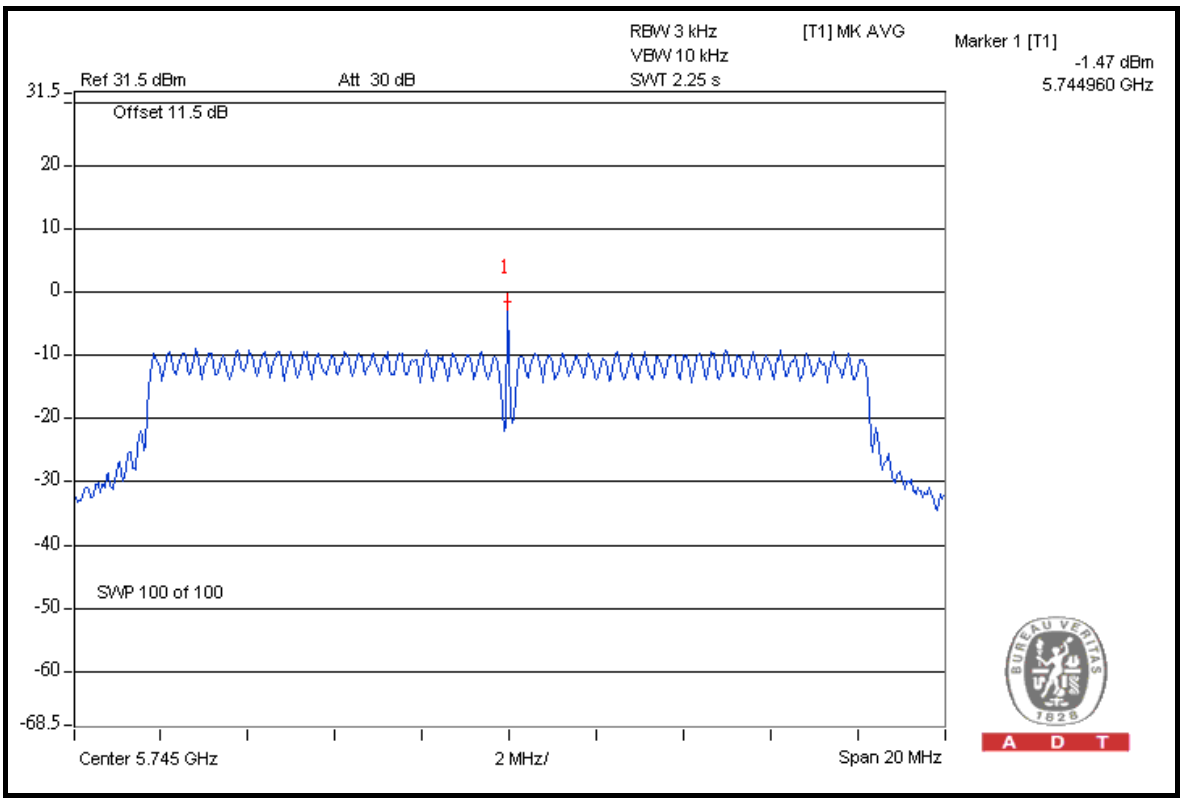
CH 157



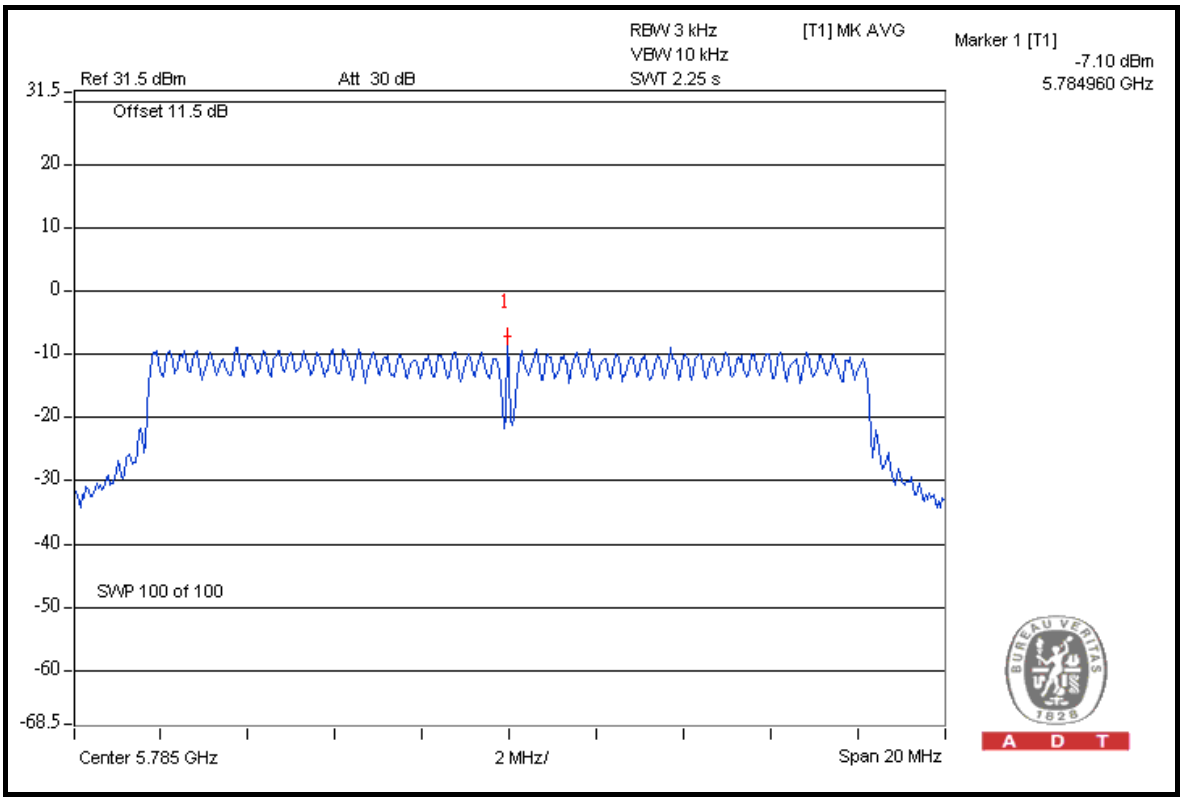
CH 165



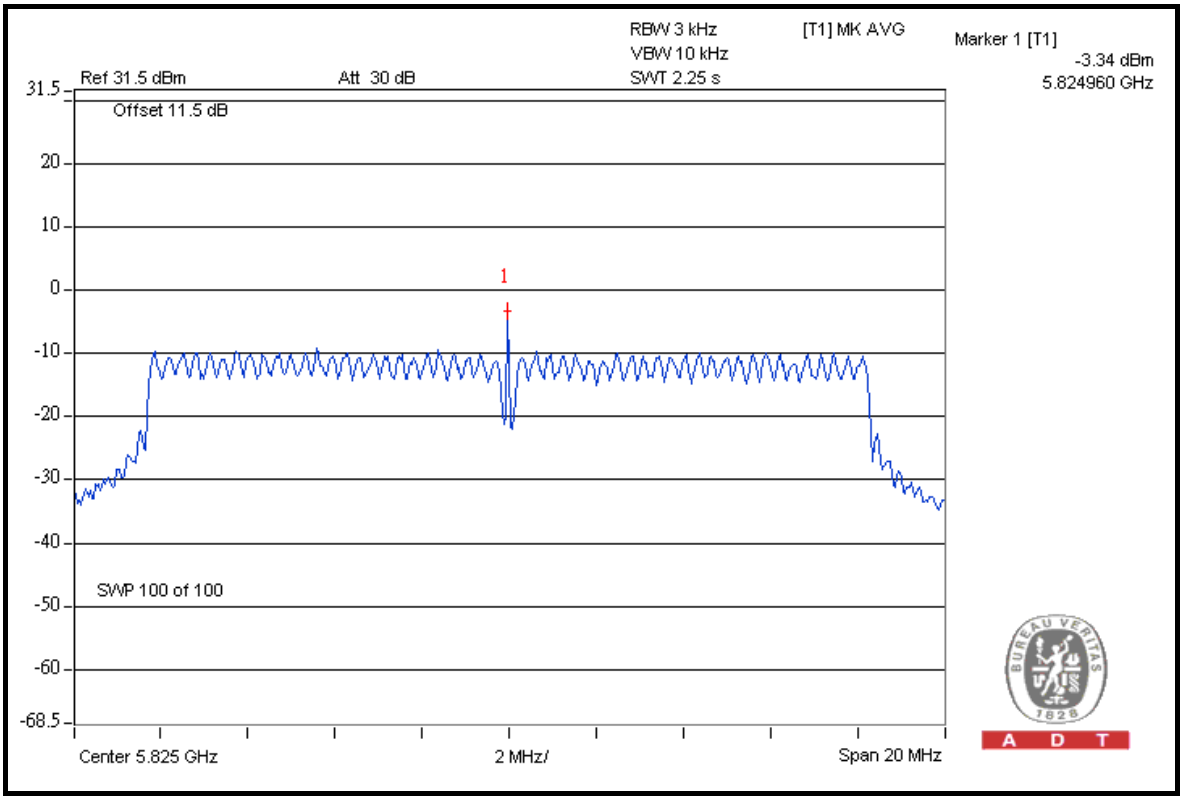
FOR CHAIN 1: CH 149



CH 157


RBW 3 kHz
VBW 10 kHz
SWT 2.25 s
[T1] MK AVG
Marker 1 [T1]
-7.10 dBm
5.784960 GHz
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
SWP 100 of 100
Center 5.785 GHz
2 MHz/
Span 20 MHz

CH 165

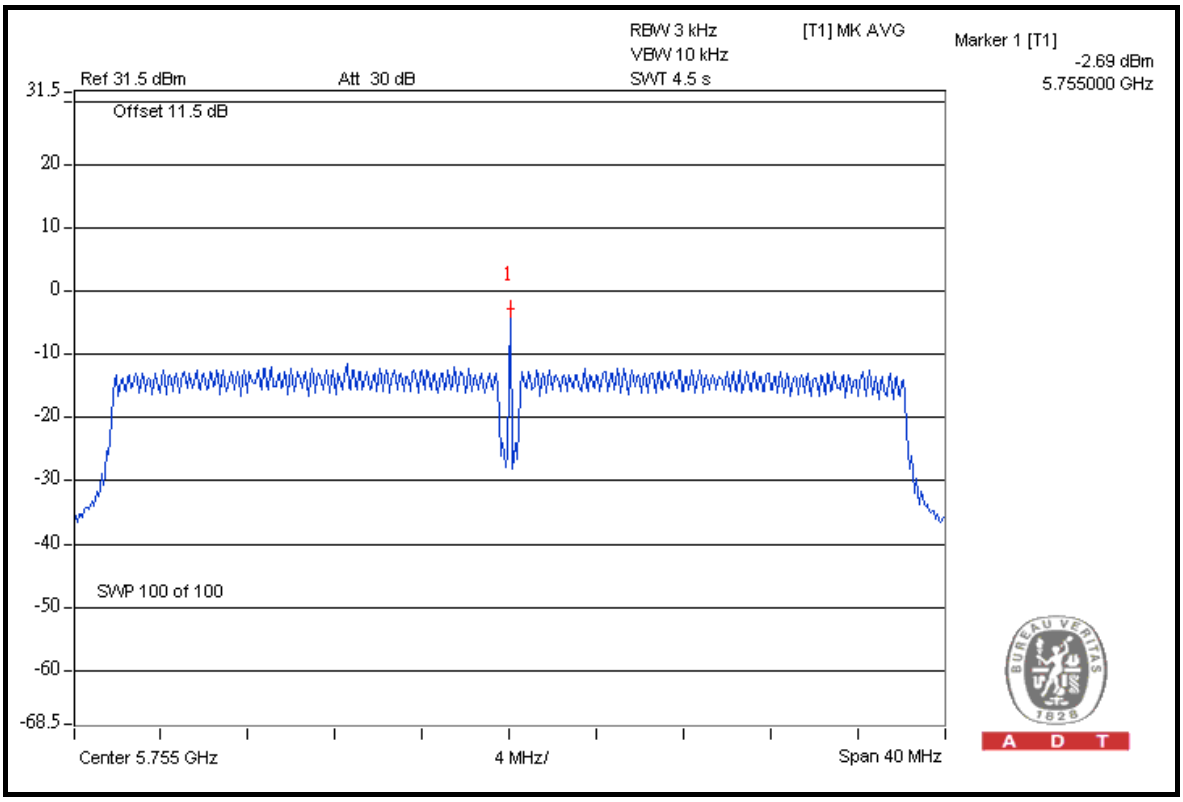

RBW 3 kHz
VBW 10 kHz
SWT 2.25 s
[T1] MK AVG
Marker 1 [T1]
-3.34 dBm
5.824960 GHz
Ref 31.5 dBm
Att 30 dB
Offset 11.5 dB
31.5
20
10
0
-10
-20
-30
-40
-50
-60
-68.5
SWP 100 of 100
Center 5.825 GHz
2 MHz/
Span 20 MHz

DRAFT 802.11n (40MHz) OFDM MODULATION

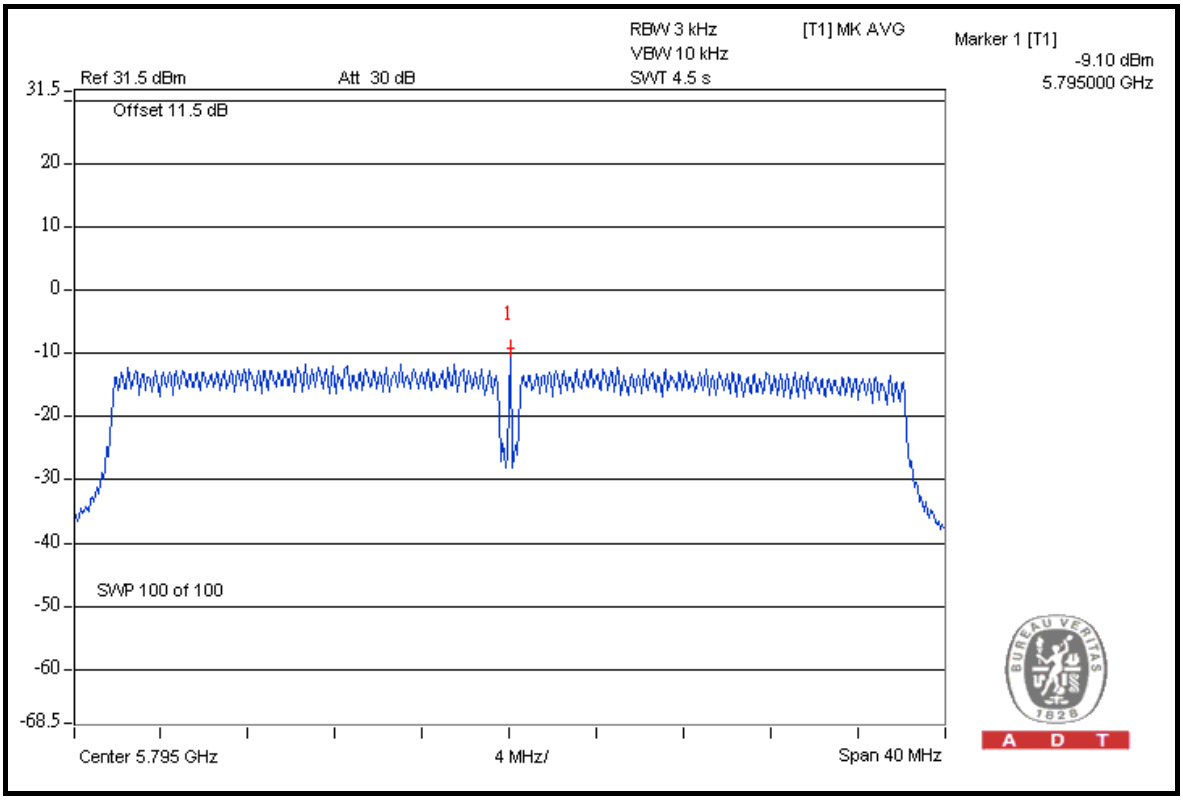
MODULATION TYPE	BPSK	**TRANSFER RATE**	15.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 65%RH, 1021hPa
TESTED BY	Mark Liao		

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	-2.69	-3.30	1.006	0.03	8	PASS
159	5795	-9.10	-11.13	0.200	-6.99	8	PASS

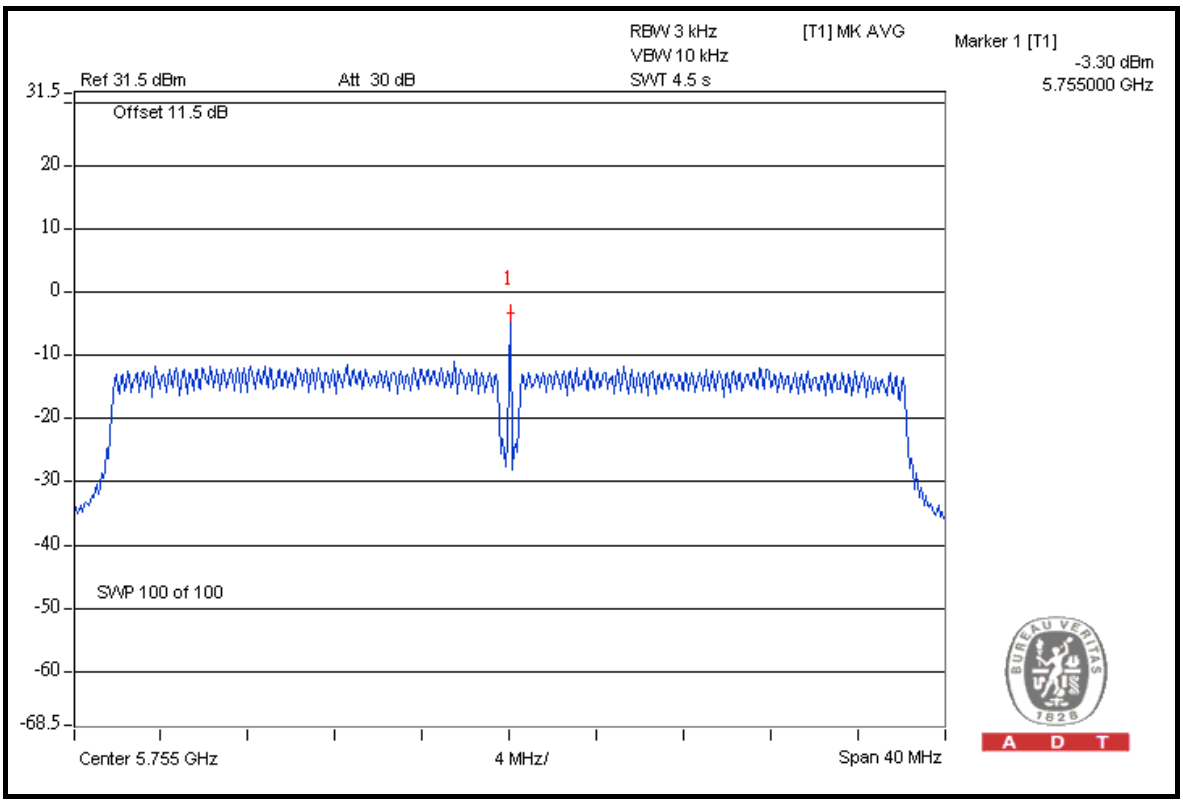
FOR CHAIN 0: CH 151



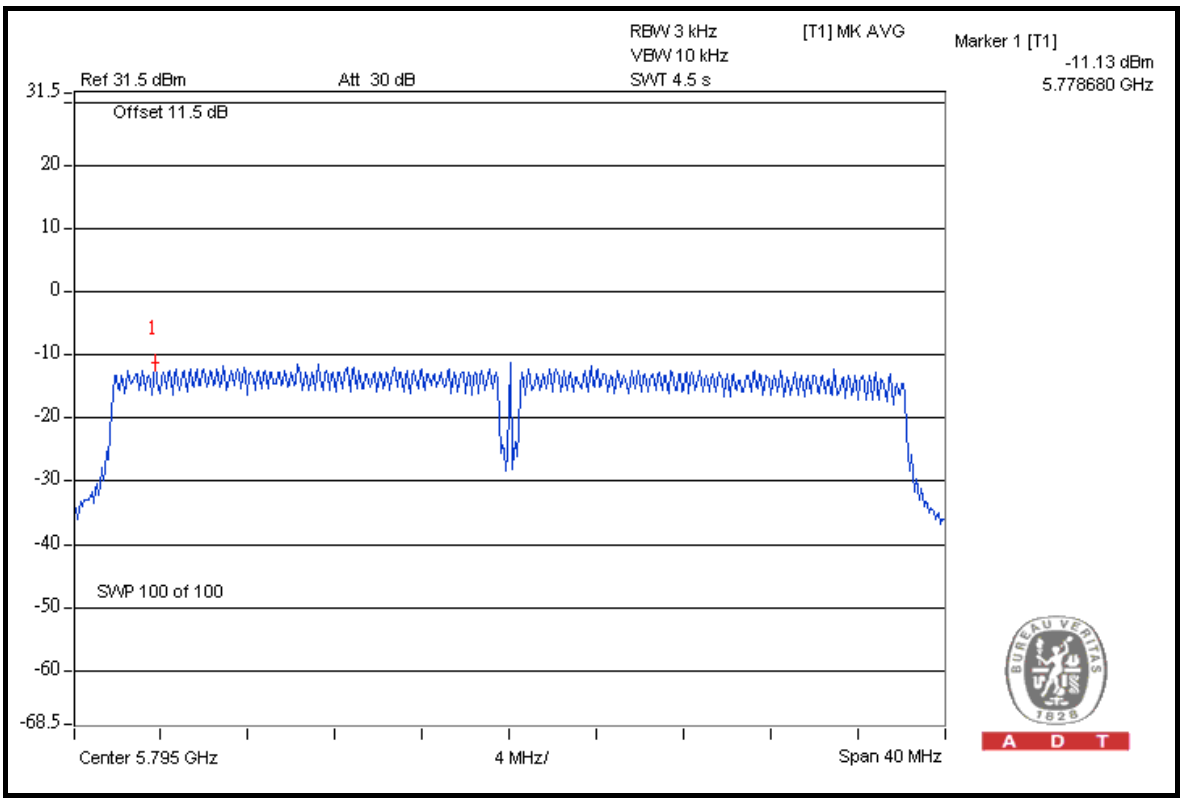
CH 159



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).

Note: Follow DTS measurement, If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.

5.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Dec. 29, 2008	Dec. 28, 2009
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Dec. 08, 2008	Dec. 07, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 30, 2009	Apr. 28, 2010
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-408	Dec. 29, 2008	Dec. 28, 2009
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 06, 2009	Jan. 05, 2010
Preamplifier Agilent	8449B	3008A01960	Nov. 03, 2008	Nov. 02, 2009
Preamplifier Agilent	8447D	2944A10631	Nov. 03, 2008	Nov. 02, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274041/4	Aug. 21, 2008	Aug. 20, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283397/4	Aug. 21, 2008	Aug. 20, 2009
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT.	TT100.	TT93021704	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	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.

5.6.4 DEVIATION FROM TEST STANDARD

No deviation.

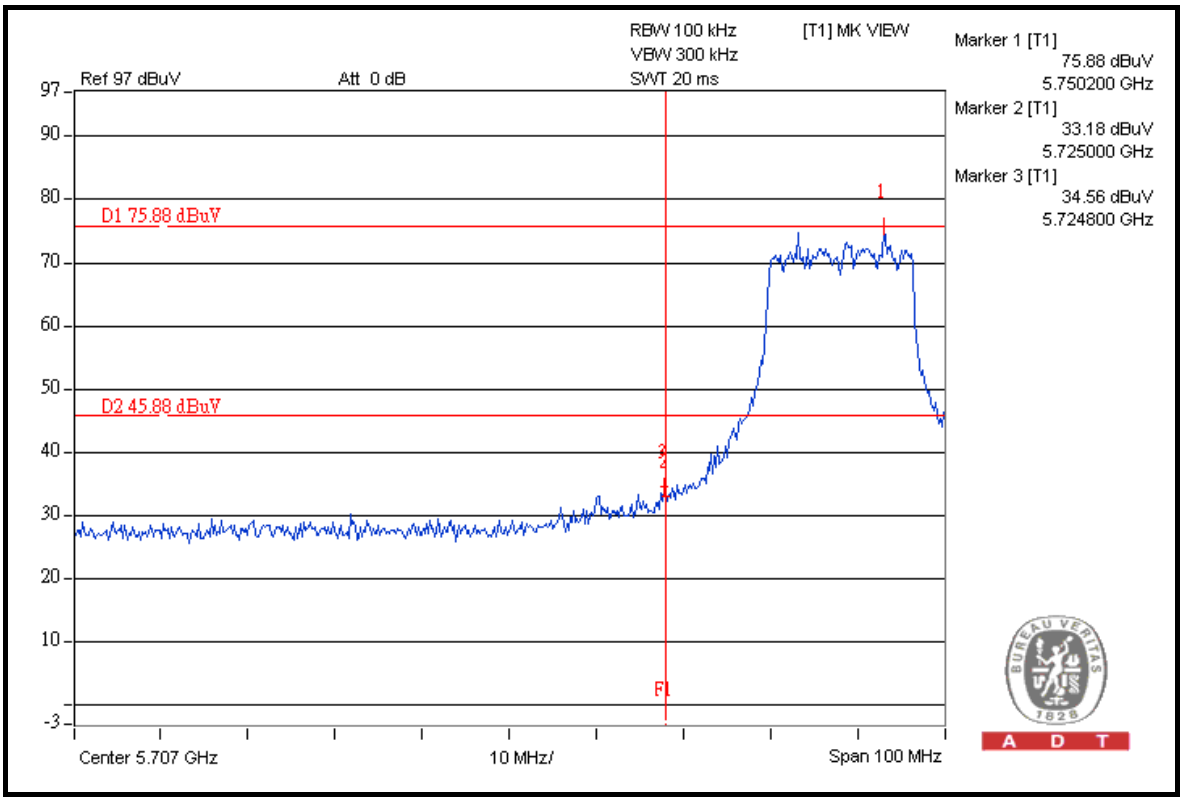
5.6.5 EUT OPERATING CONDITION

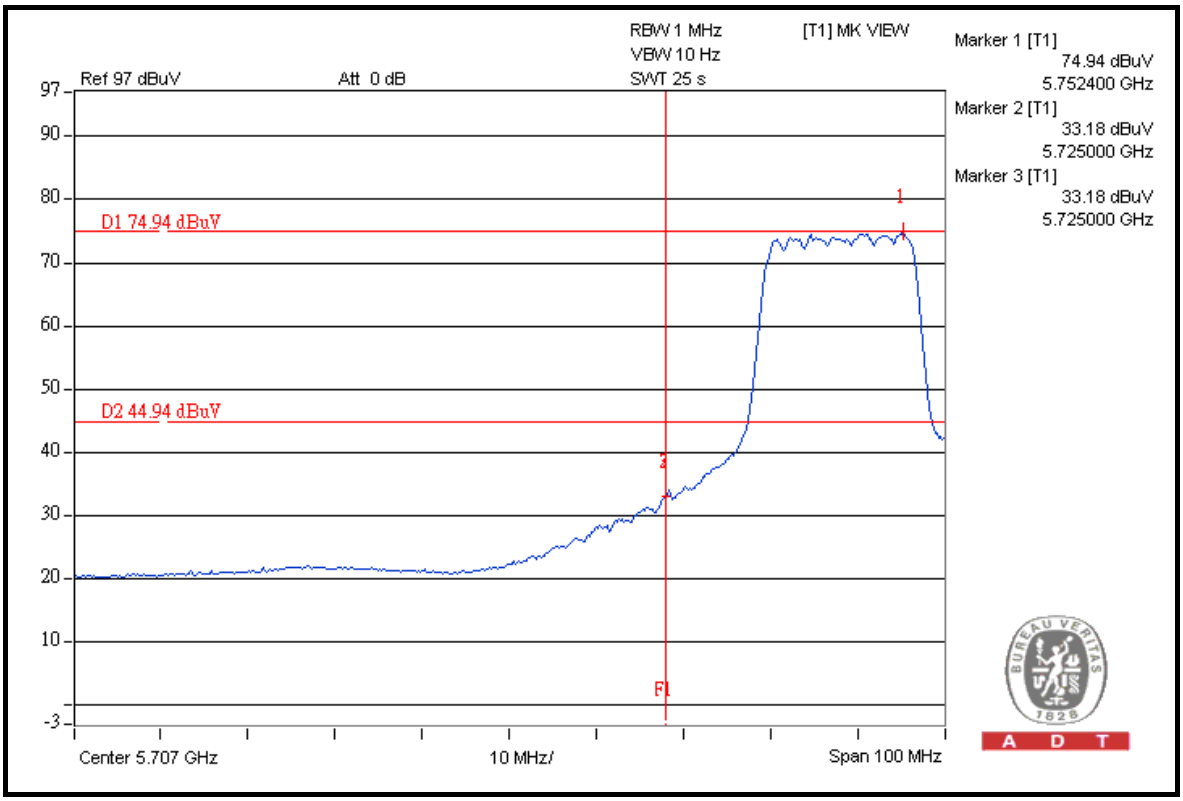
Same as Item 5.3.6.

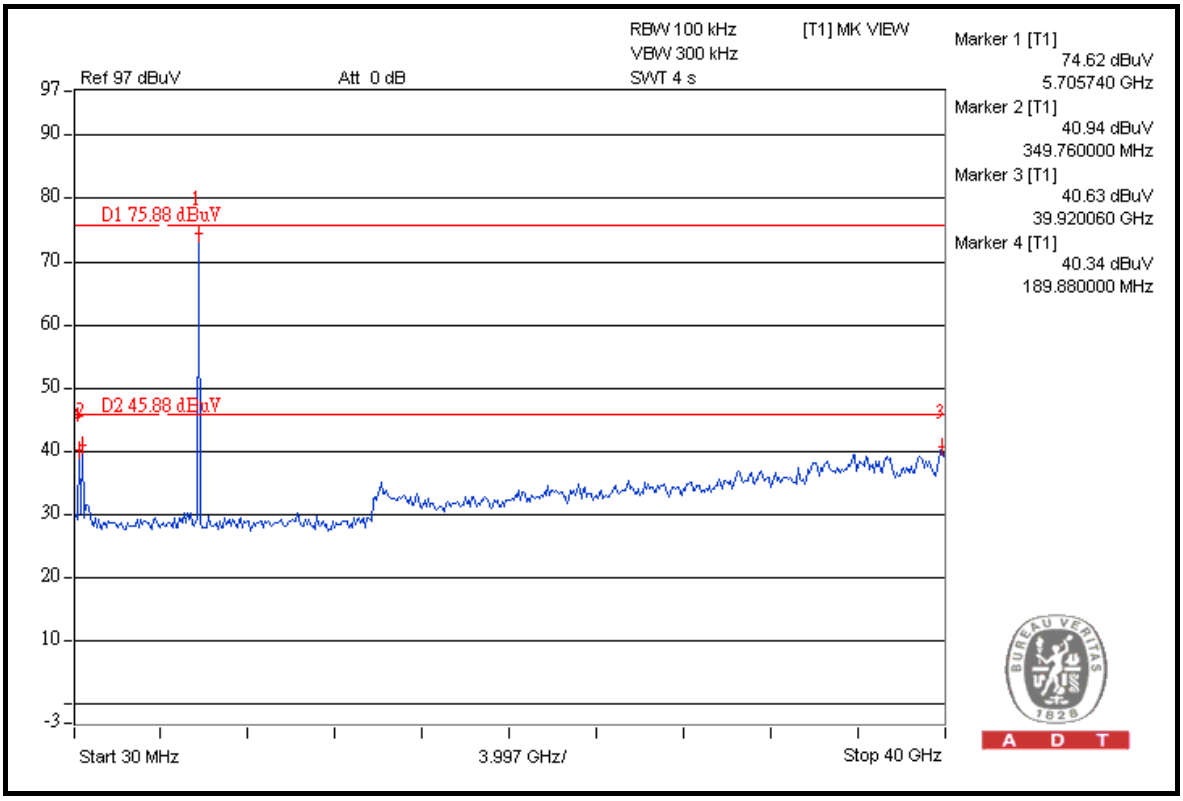
5.6.6 TEST RESULTS

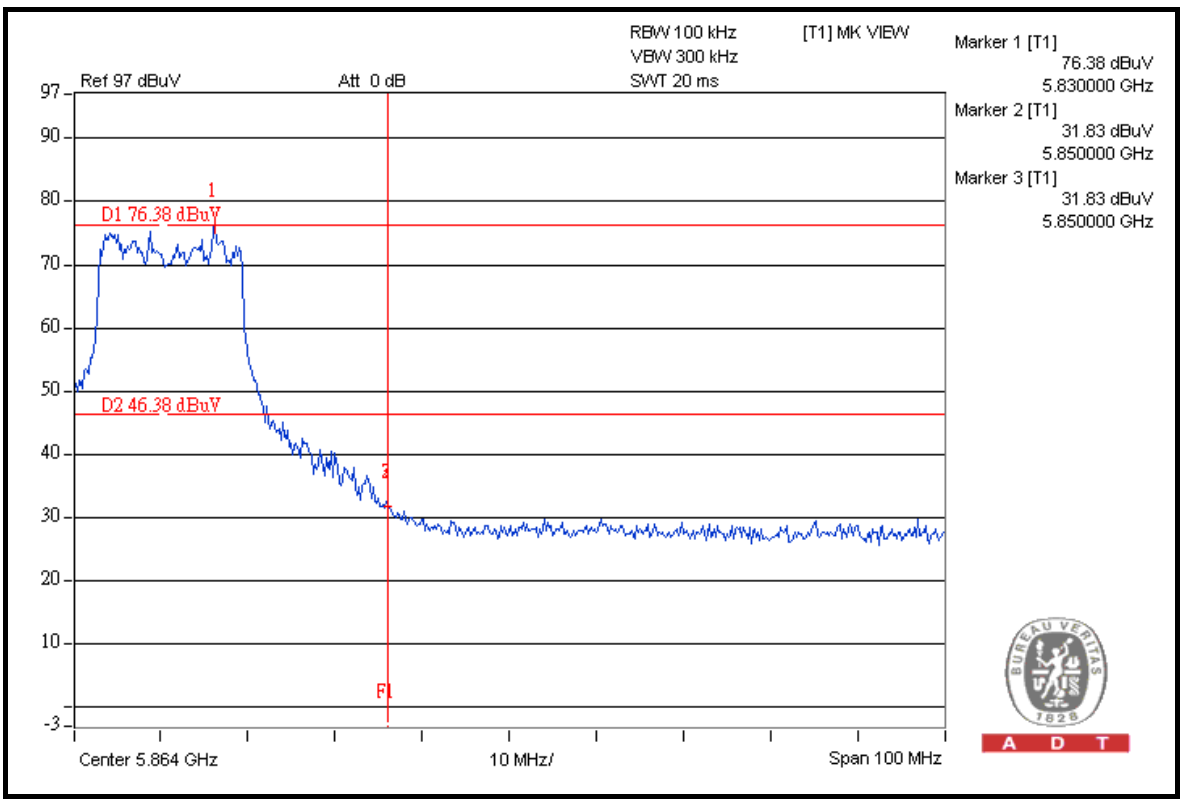
The spectrum plots are attached on the following pages. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

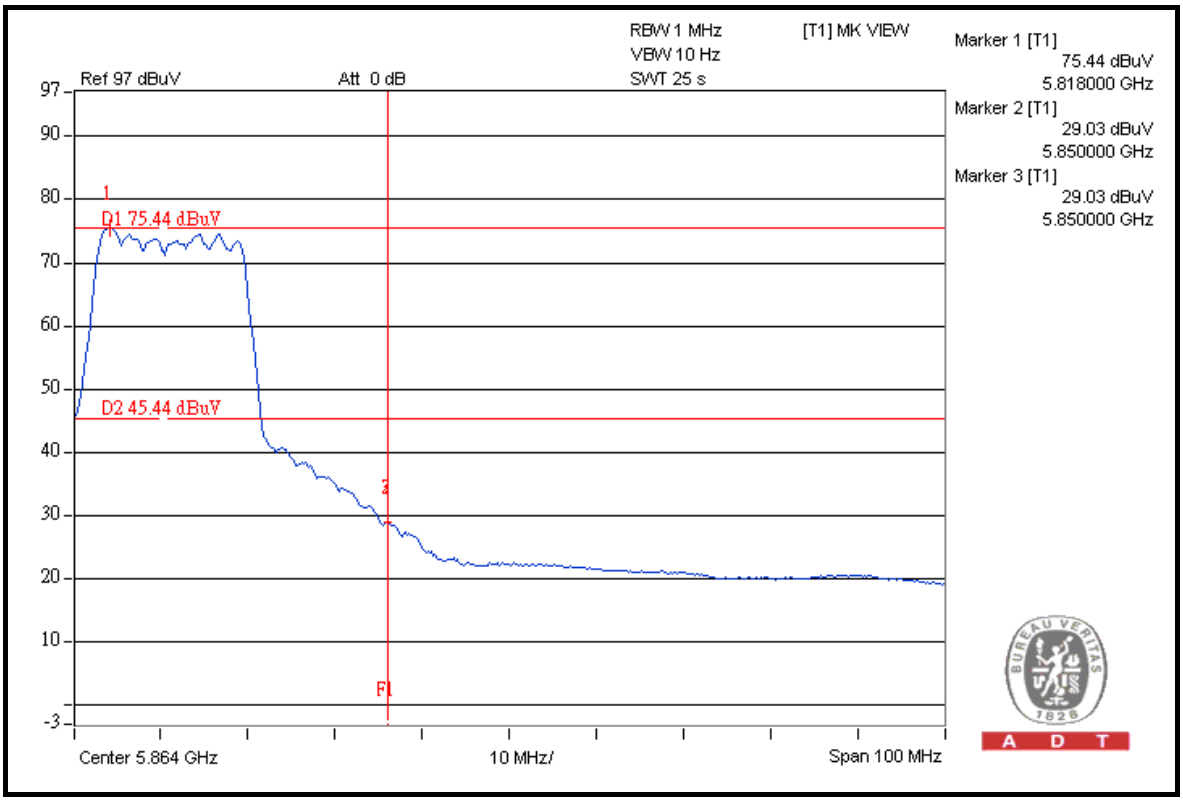
802.11a OFDM MODULATION

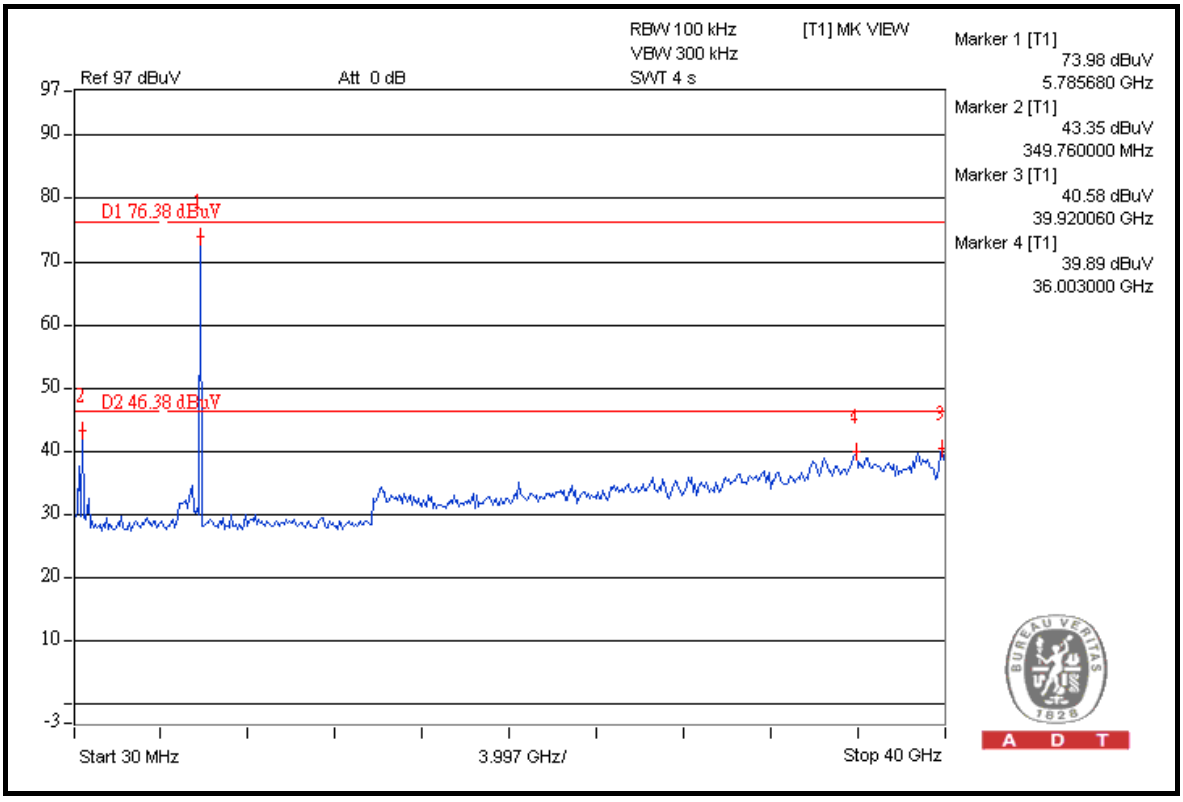




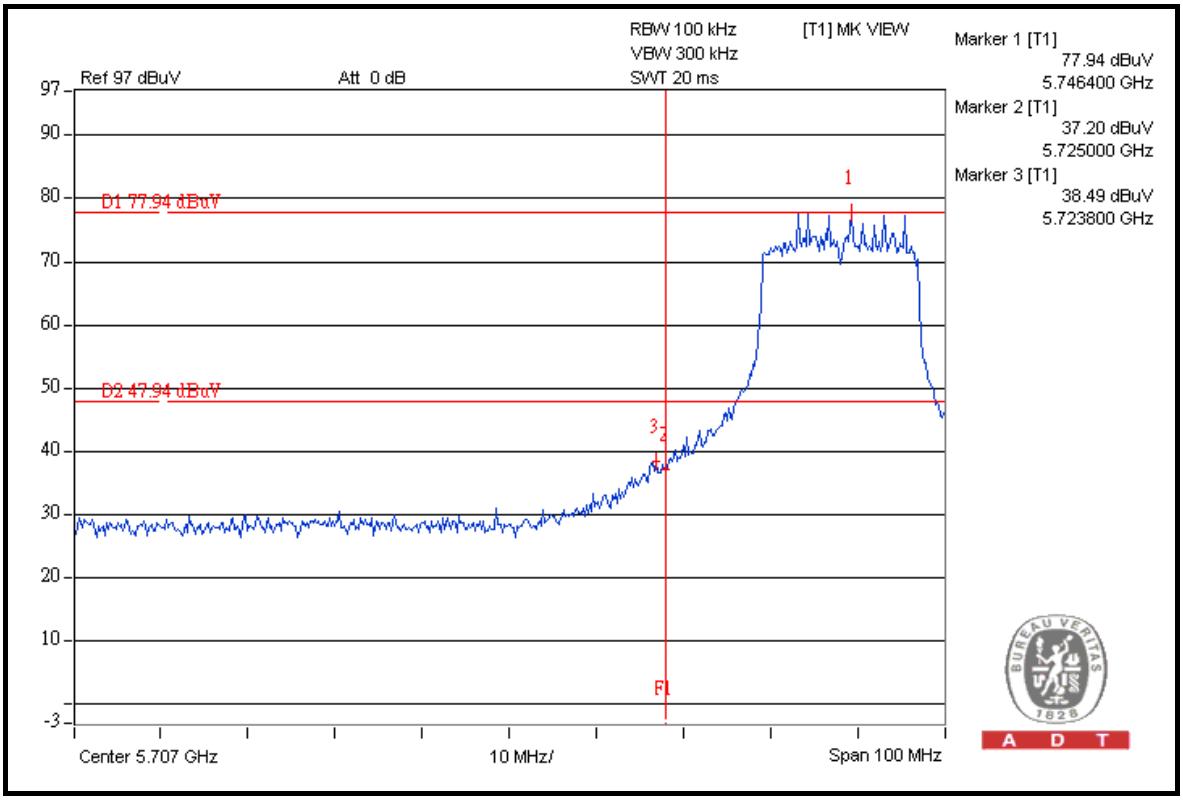

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
74.62 dBuV
5.705740 GHz
Marker 2 [T1]
40.94 dBuV
349.760000 MHz
Marker 3 [T1]
40.63 dBuV
39.920060 GHz
Marker 4 [T1]
40.34 dBuV
189.880000 MHz
D1 75.88 dBuV
D2 45.88 dBuV
97
90
80
70
60
50
40
30
20
10
-3
Start 30 MHz
3.997 GHz/
Stop 40 GHz

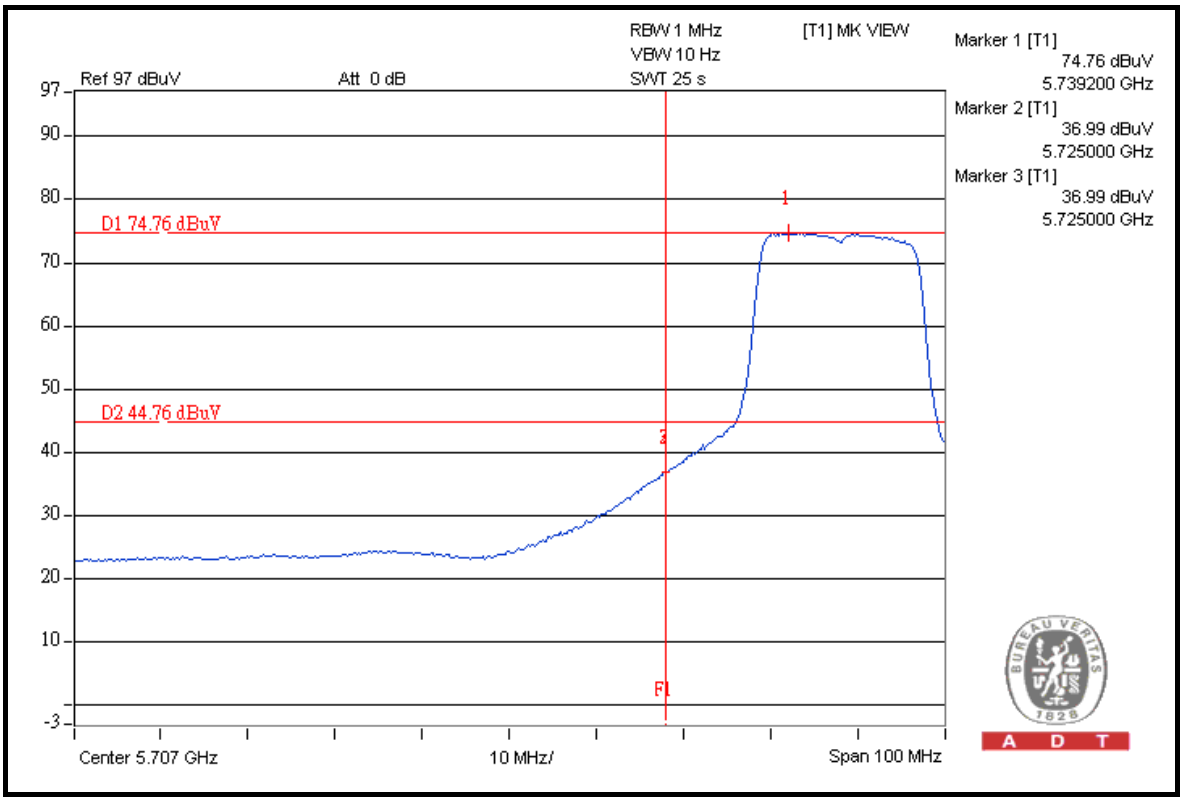

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
76.38 dBuV
5.830000 GHz
Marker 2 [T1]
31.83 dBuV
5.850000 GHz
Marker 3 [T1]
31.83 dBuV
5.850000 GHz
D1 76.38 dBuV
D2 46.38 dBuV
97
90
80
70
60
50
40
30
20
10
-3
Center 5.864 GHz
10 MHz/
Span 100 MHz

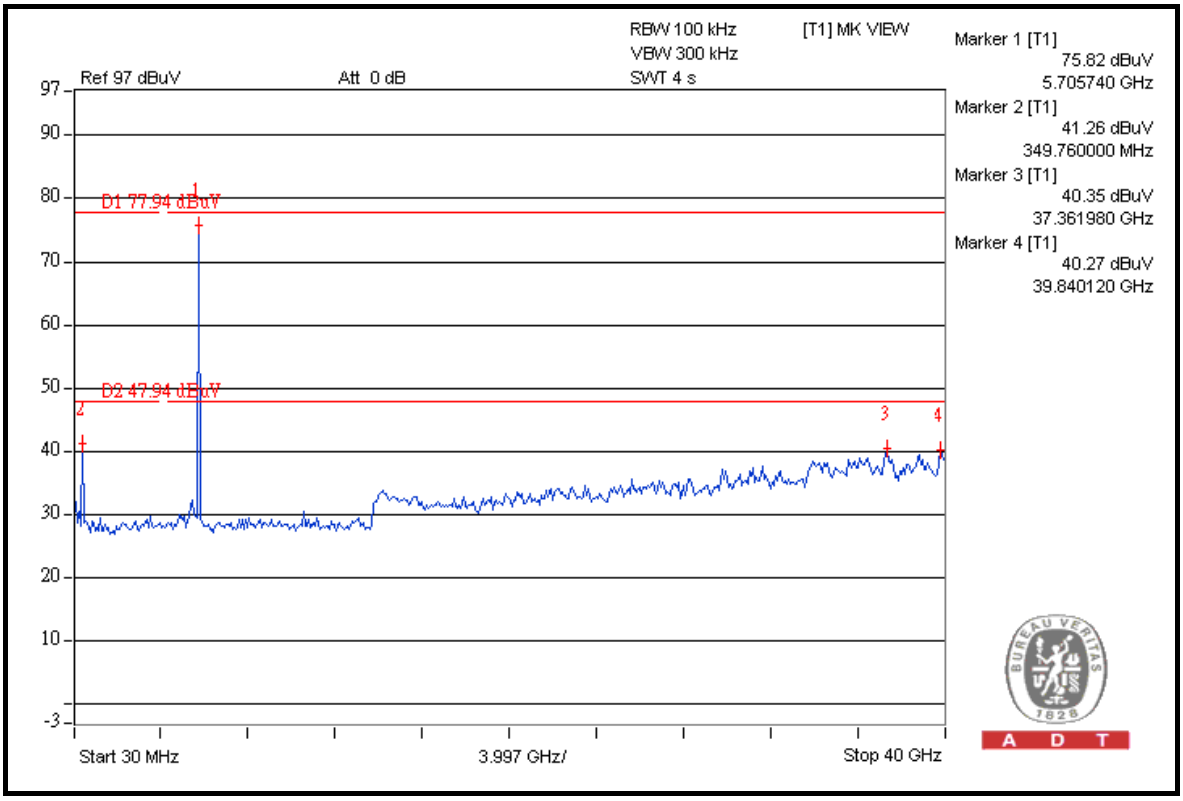

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
75.44 dBuV
5.818000 GHz
Marker 2 [T1]
29.03 dBuV
5.850000 GHz
Marker 3 [T1]
29.03 dBuV
5.850000 GHz
D1 75.44 dBuV
D2 45.44 dBuV
Center 5.864 GHz
10 MHz/
Span 100 MHz

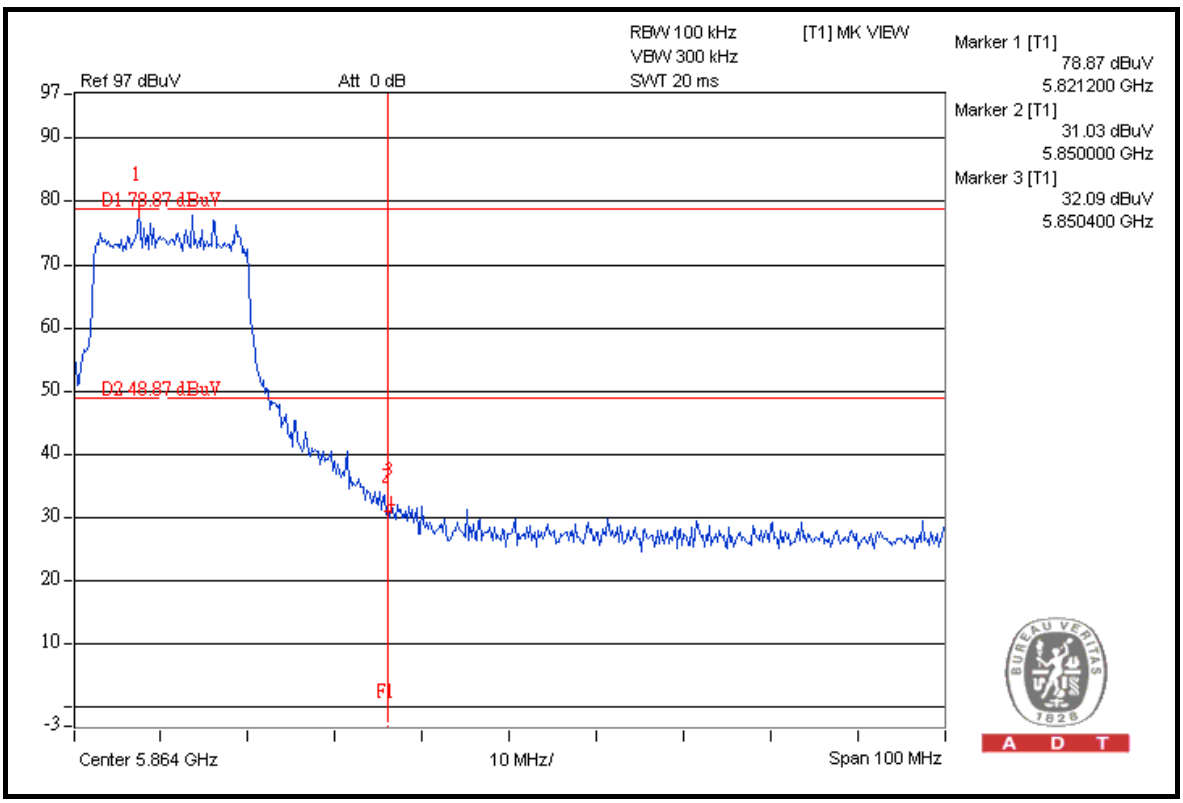

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
73.98 dBuV
5.785680 GHz
Marker 2 [T1]
43.35 dBuV
349.760000 MHz
Marker 3 [T1]
40.58 dBuV
39.920060 GHz
Marker 4 [T1]
39.89 dBuV
36.003000 GHz
D1 76.38 dBuV
D2 46.38 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz

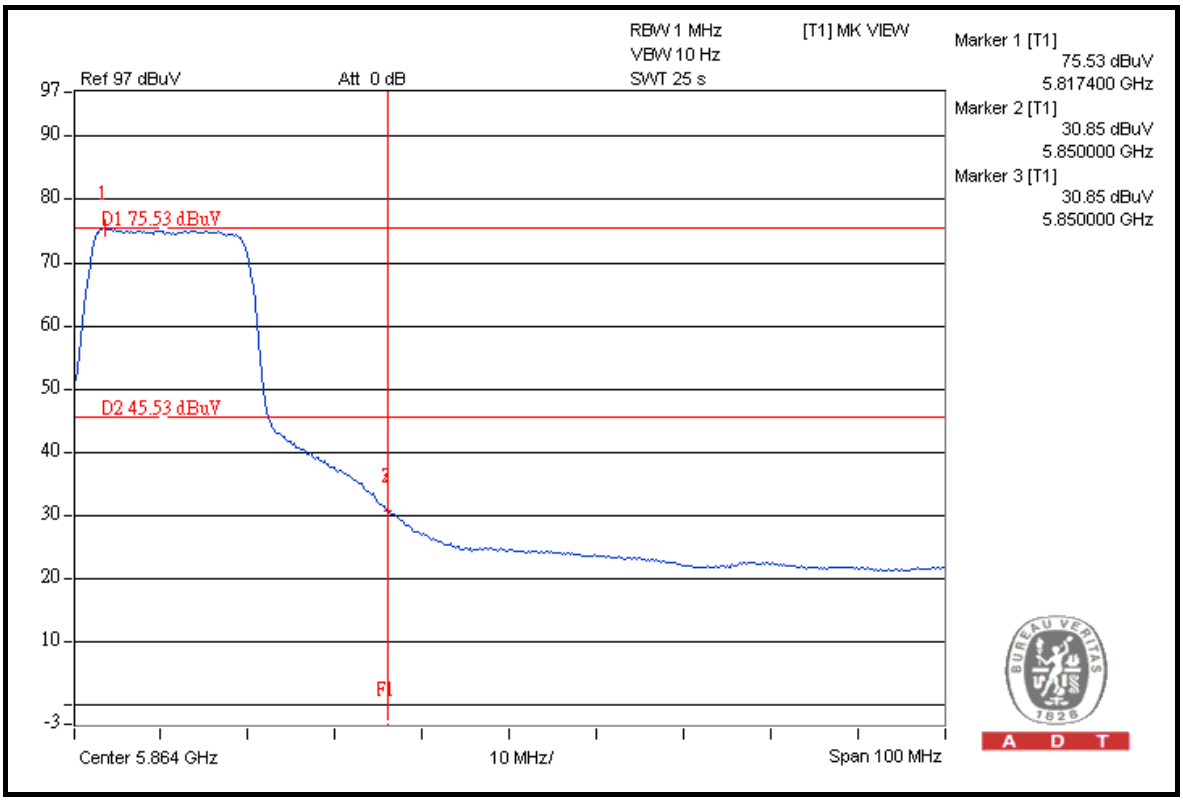
DRAFT 802.11n (20MHz) OFDM MODULATION

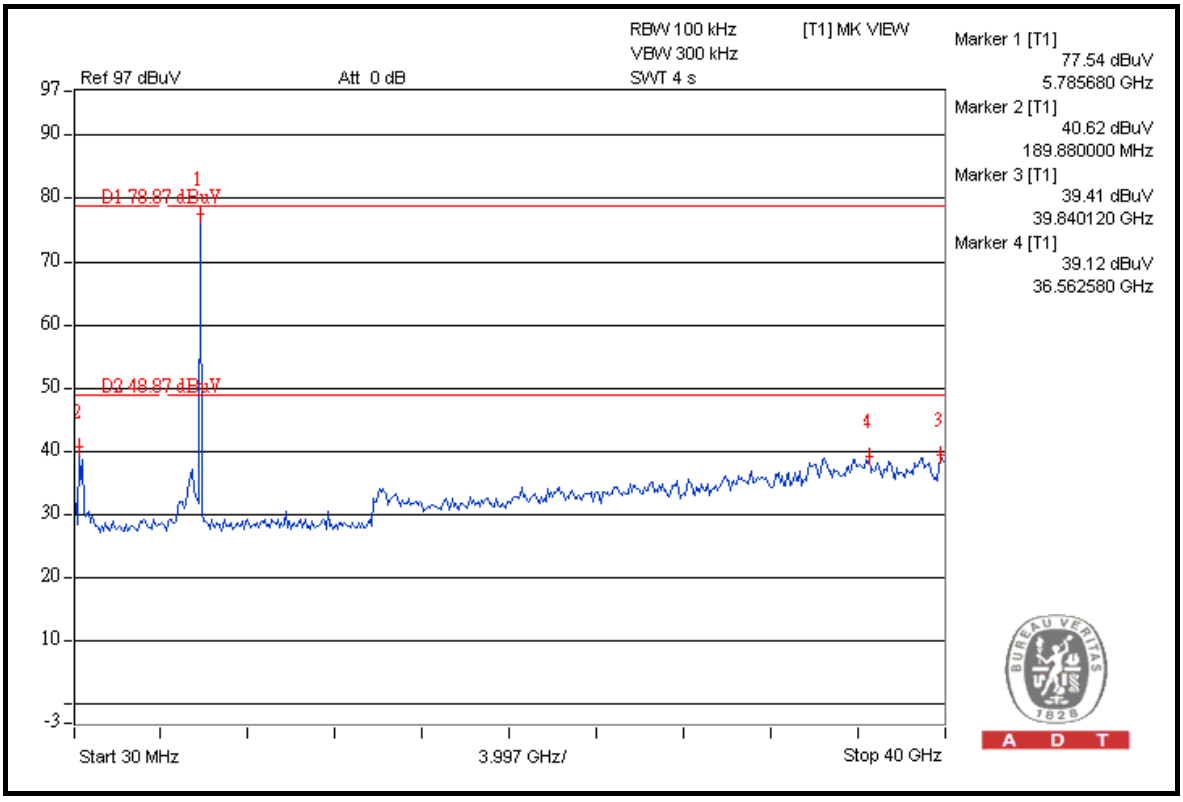




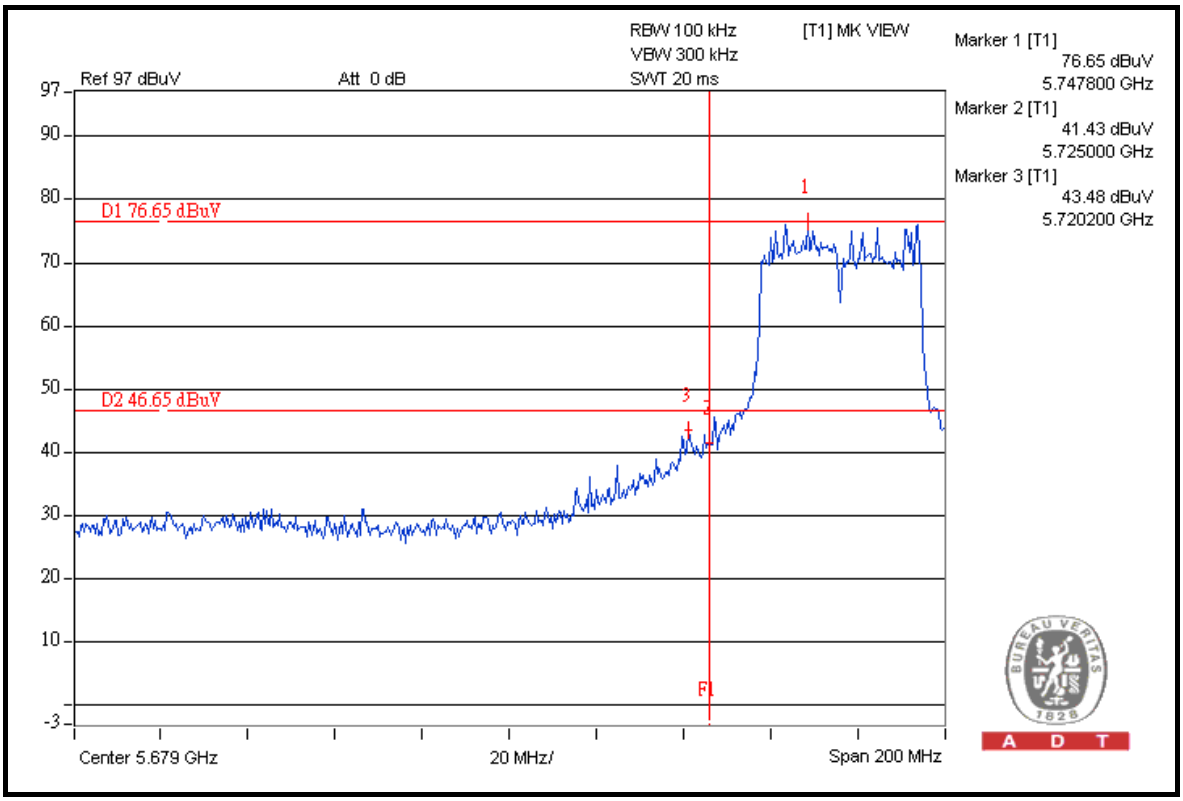

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 77.94 dBuV
D2 47.94 dBuV
Marker 1 [T1]
75.82 dBuV
5.705740 GHz
Marker 2 [T1]
41.26 dBuV
349.760000 MHz
Marker 3 [T1]
40.35 dBuV
37.361980 GHz
Marker 4 [T1]
40.27 dBuV
39.840120 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

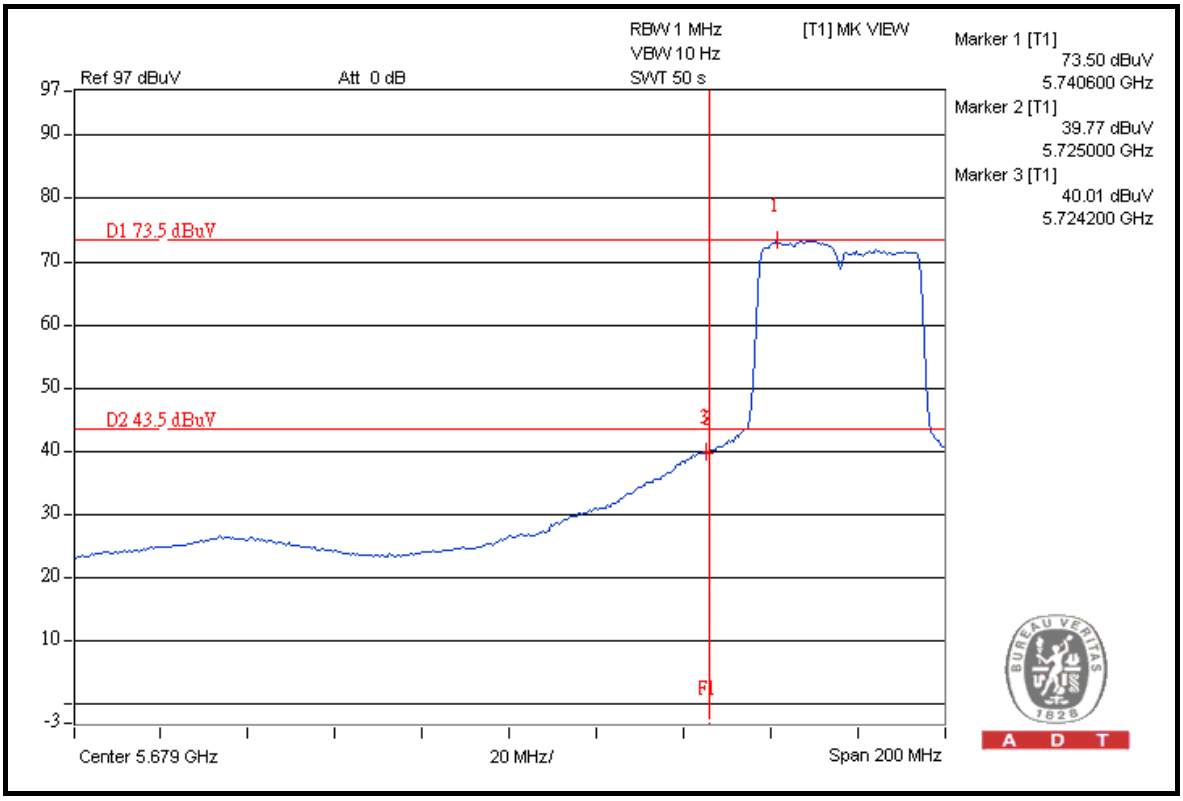

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 78.87 dBuV
D2 48.87 dBuV
Marker 1 [T1]
78.87 dBuV
5.821200 GHz
Marker 2 [T1]
31.03 dBuV
5.850000 GHz
Marker 3 [T1]
32.09 dBuV
5.850400 GHz
Center 5.864 GHz
10 MHz/
Span 100 MHz

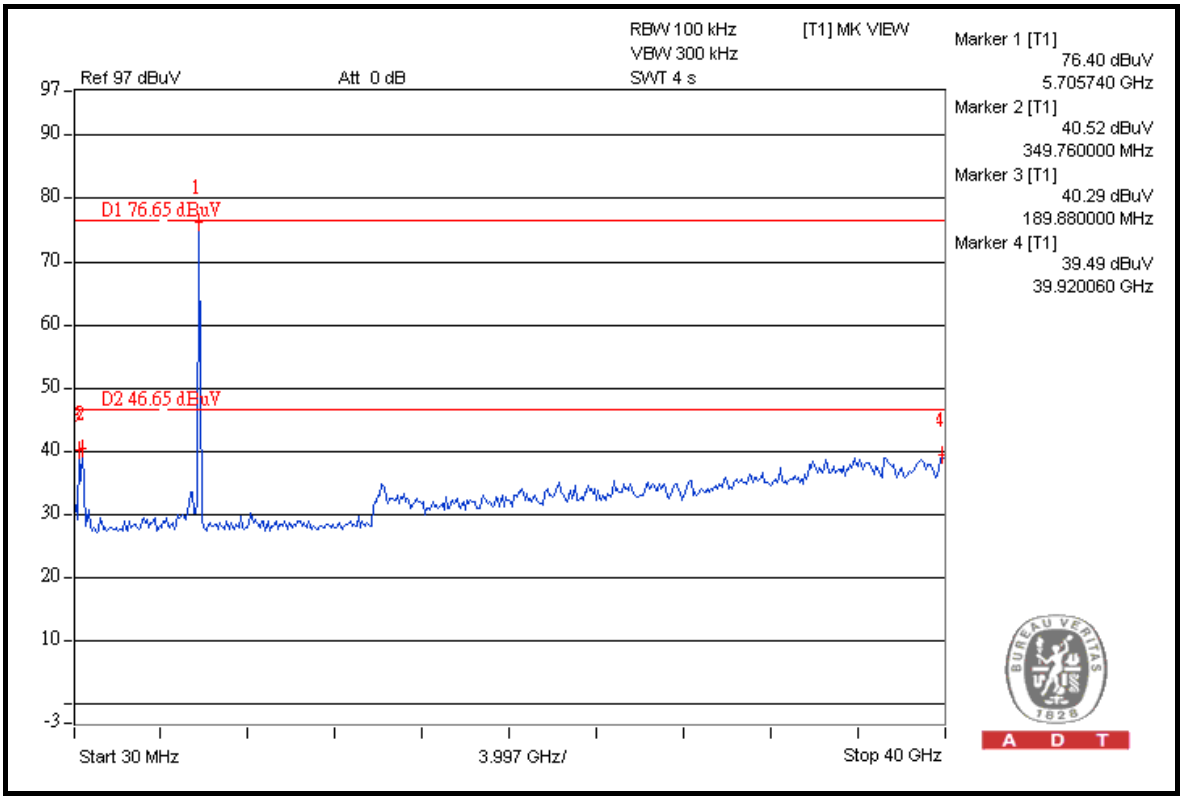

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
75.53 dBuV
5.817400 GHz
Marker 2 [T1]
30.85 dBuV
5.850000 GHz
Marker 3 [T1]
30.85 dBuV
5.850000 GHz
D1 75.53 dBuV
D2 45.53 dBuV
97
90
80
70
60
50
40
30
20
10
-3
Center 5.864 GHz
10 MHz/
Span 100 MHz

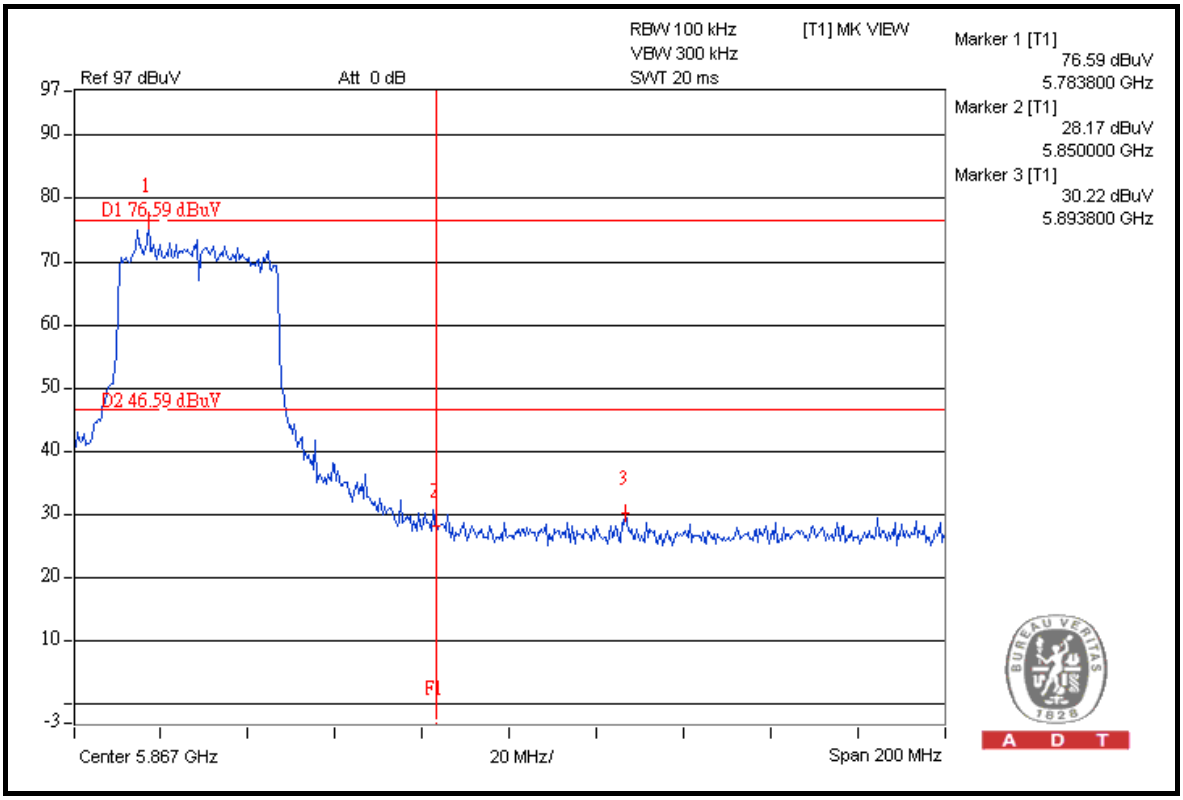

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
77.54 dBuV
5.785680 GHz
Marker 2 [T1]
40.62 dBuV
189.880000 MHz
Marker 3 [T1]
39.41 dBuV
39.840120 GHz
Marker 4 [T1]
39.12 dBuV
36.562580 GHz
D1 78.87 dBuV
D2 48.87 dBuV
97
90
80
70
60
50
40
30
20
10
-3
Start 30 MHz
3.997 GHz/
Stop 40 GHz

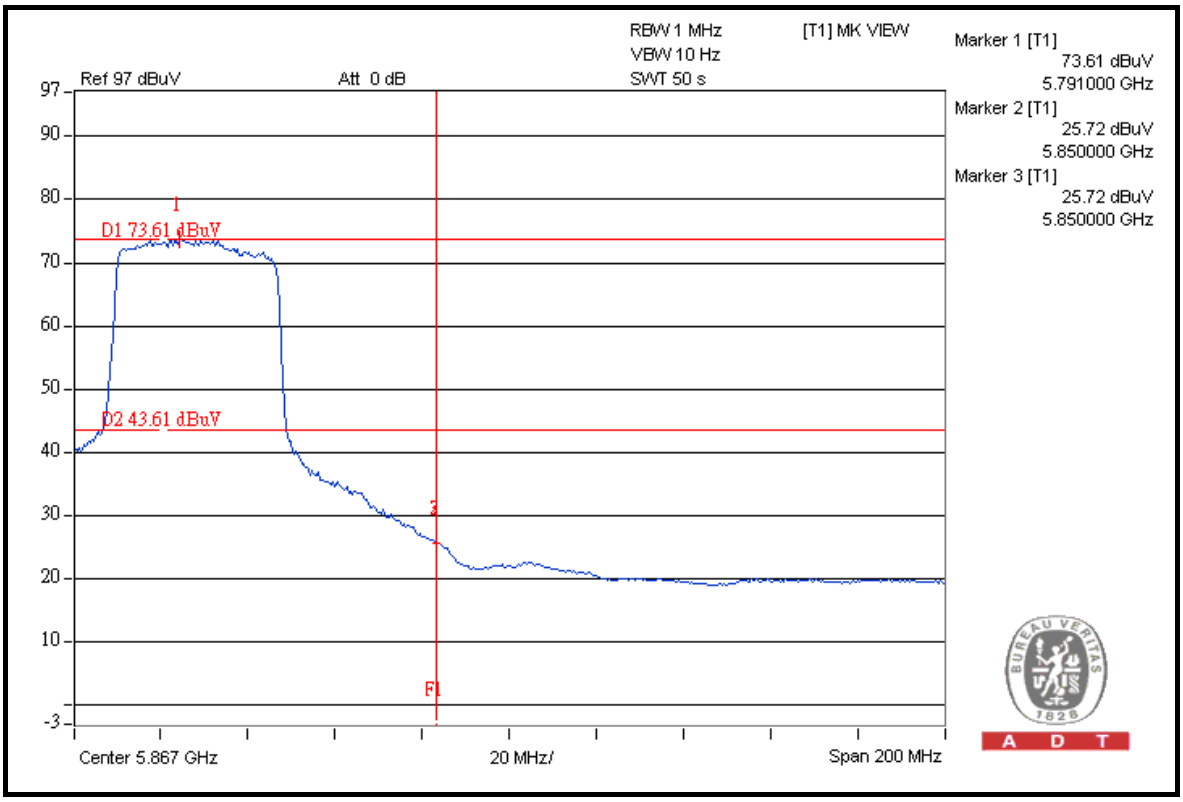
DRAFT 802.11n (40MHz) OFDM MODULATION

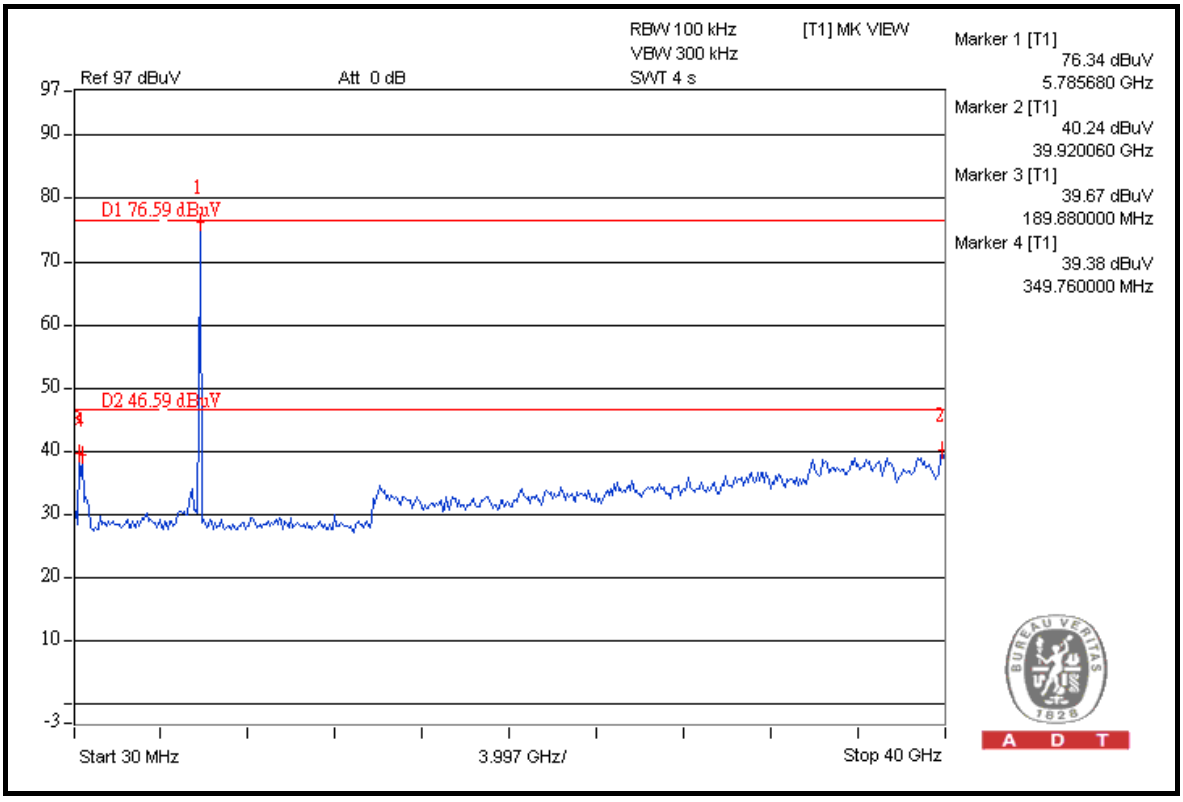





RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
76.40 dBuV
5.705740 GHz
Marker 2 [T1]
40.52 dBuV
349.760000 MHz
Marker 3 [T1]
40.29 dBuV
189.880000 MHz
Marker 4 [T1]
39.49 dBuV
39.920060 GHz
D1 76.65 dBuV
D2 46.65 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
76.59 dBuV
5.783800 GHz
Marker 2 [T1]
28.17 dBuV
5.850000 GHz
Marker 3 [T1]
30.22 dBuV
5.893800 GHz
D1 76.59 dBuV
D2 46.59 dBuV
Center 5.867 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
73.61 dBuV
5.791000 GHz
Marker 2 [T1]
25.72 dBuV
5.850000 GHz
Marker 3 [T1]
25.72 dBuV
5.850000 GHz
D1 73.61 dBuV
D2 43.61 dBuV
Center 5.867 GHz
20 MHz/
Span 200 MHz


RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
76.34 dBuV
5.785680 GHz
Marker 2 [T1]
40.24 dBuV
39.920060 GHz
Marker 3 [T1]
39.67 dBuV
189.880000 MHz
Marker 4 [T1]
39.38 dBuV
349.760000 MHz
D1 76.59 dBuV
D2 46.59 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz

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 Printed antenna without connector. The maximum gain of the antenna is 3.9dBi.

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

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.

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

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

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

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Web Site: www.adt.com.tw

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

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---