FCC TEST REPORT (15.247)

REPORT NO.: RF960926L01

MODEL NO.: WGA-600N

RECEIVED: Sep. 26, 2007

TESTED: Sep. 26 ~ Dec. 04, 2007

ISSUED: Dec. 11, 2007

APPLICANT: Cisco-Linksys LLC

ADDRESS: 121 Theory Drive Irvine, CA 92617 (USA)

ISSUED BY: Advance Data Technology Corporation

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

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

TABLE OF CONTENTS

1. CERTIFICATION

PRODUCT: Dual-Band Wireless-N Gaming Adapter
MODEL: WGA-600N
BRAND: Linksys
APPLICANT: Cisco-Linksys LLC
TEST SAMPLE: ENGINEERING SAMPLE
TESTED: Sep. 26 ~ Dec. 04, 2007
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.4-2003

The above equipment (Model: WGA-600N) has been tested by **Advance Data Technology Corporation,** and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Andrea Hsia , **DATE:** Dec. 11, 2007
Andrea Hsia / Specialist

TECHNICAL ACCEPTANCE : Long Chen , **DATE:** Dec. 11, 2007
Responsible for RF Long Chen / Senior Engineer

APPROVED BY : Gary Chang , **DATE:** Dec. 11, 2007
Gary Chang / Assistant Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart 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 –3.10dB at 0.397MHz
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 –1.06dB at 2390.00MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 30dB 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	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Dual-Band Wireless-N Gaming Adapter
MODEL NO.	WGA-600N
FCC ID	Q87-WGA600N
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 300Mbps
FREQUENCY RANGE	802.11b & 802.11g: 2.412 ~ 2.462GHz 802.11a: 5.150 ~ 5.350GHz , 5.470 ~ 5.725GHz, 5.745 ~ 5.825GHz
NUMBER OF CHANNEL	**2.4GHz:** 11 for 802.11b, 802.11g, draft 802.11n (20MHz) 7 for draft 802.11n (40MHz) **5.0GHz:** 5150 ~ 5350MHz: 8 for 802.11a, draft 802.11n (20MHz) 4 for draft 802.11n (40MHz) 5470 ~ 5725MHz: 11 for 802.11a, draft 802.11n (20MHz) 3 for draft 802.11n (40MHz) 5725 ~ 5850MHz: 5 for 802.11a, draft 802.11n (20MHz) 2 for draft 802.11n (40MHz)
OUTPUT POWER	64.714mW for 2400 ~ 2483.5MHz 47.058mW for 5150 ~ 5350MHz 48.135mW for 5470 ~ 5725MHz 54.059mW for 5725 ~ 5850MHz
ANTENNA TYPE	PIFA antenna with 2.37dBi gain (for 2.4GHz) PIFA antenna with 1.00dBi gain (for 5.0GHz)
DATA CABLE	NA
I/O PORTS	RJ45
ASSOCIATED DEVICES	Adapter

NOTE:

1. The EUT was operated with following adapter.

BRAND:	Linksys
MODEL:	AD12V/1A-SW
INPUT:	100-240Vac, 50-60Hz, 0.5A
OUTPUT:	12Vdc, 1A MAX
POWER LINE:	1.8m non-shielded cable without core

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

3. For the 802.11n, the EUT is 2 * 2 spatial MIMO (2Tx & 2Rx) without beam forming function.
4. When the EUT operating in 802.11b, 802.11g, 802.11a, the software operation, which is defined by manufacturer, only set single Tx.
5. When the EUT operating in draft 802.11n, the software operation, which is defined by manufacturer, only set 0 ~ 15 of “MCS” (MCS: Modulation and Coding Schemes) for two Tx.
6. The EUT complies with draft 802.11n standards and backwards compatible with 802.11b, 802.11g, 802.11a products.
7. The EUT operates in the 2.4GHz frequency spectrum with throughput of up to 300Mbps.
8. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 DESCRIPTION OF TEST MODES

FOR 2.4GHz:

11 channels are provided for 802.11b, 802.11g, 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 (5725 ~ 5850MHz):

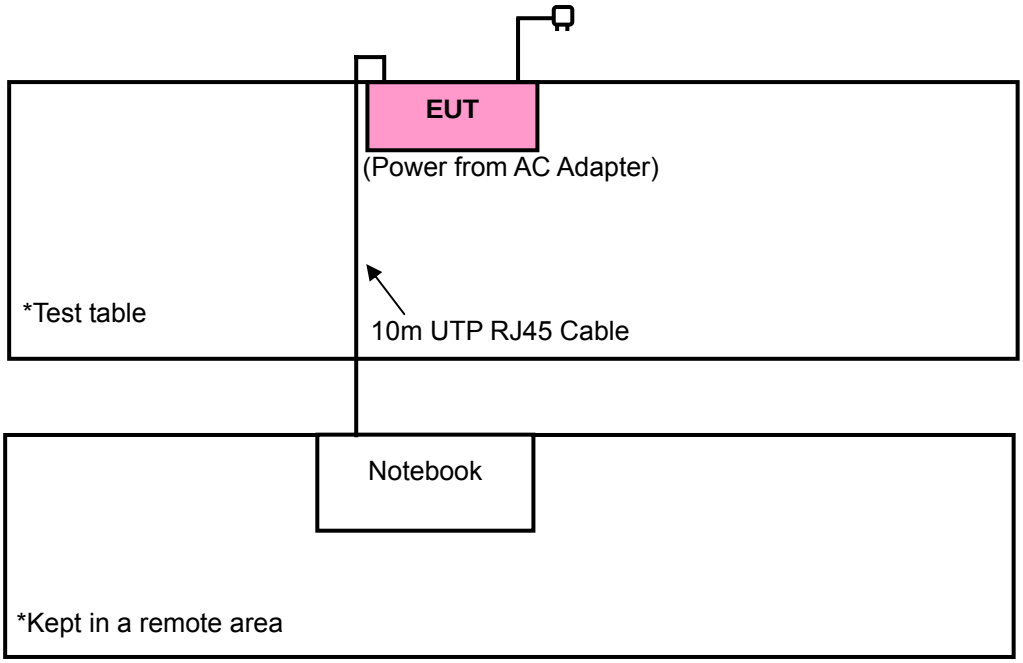
5 channels are provided for 802.11a, draft 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	5745MHz	4	5805MHz
2	5765MHz	5	5825MHz
3	5785MHz		

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	5755MHz	2	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	
-	√	√	√	√	-

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

RADIATED EMISSION TEST (BELOW 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
Draft 802.11n (20MHz)	1 to 11	1	OFDM	BPSK	6

RADIATED EMISSION TEST (ABOVE 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	13
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	27

POWER LINE CONDUCTED EMISSION TEST:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
Draft 802.11n (20MHz)	1 to 11	1	OFDM	BPSK	6

BANDEDGE MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 11	OFDM	BPSK	6
Draft 802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	13
Draft 802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	27

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	13
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	27

FOR 5.0GHz:

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

Where **RE<1G:** Radiated Emission below 1GHz **RE≥1G:** Radiated Emission above 1GHz

PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

RADIATED EMISSION TEST (BELOW 1GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	1 to 5	1	OFDM	BPSK	6

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	1 to 5	1, 3, 5	OFDM	BPSK	6
Draft 802.11n (20MHz)	1 to 5	1, 3, 5	OFDM	BPSK	13
Draft 802.11n (40MHz)	1 to 2	1, 2	OFDM	BPSK	27

POWER LINE CONDUCTED EMISSION TEST:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	1 to 5	1	OFDM	BPSK	13

BANDEDGE MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	1 to 5	1, 5	OFDM	BPSK	6
Draft 802.11n (20MHz)	1 to 5	1, 5	OFDM	BPSK	13
Draft 802.11n (40MHz)	1 to 2	1, 2	OFDM	BPSK	27

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	1 to 5	1, 3, 5	OFDM	BPSK	6
Draft 802.11n (20MHz)	1 to 5	1, 3, 5	OFDM	BPSK	13
Draft 802.11n (40MHz)	1 to 2	1, 2	OFDM	BPSK	27

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)
ANSI C63.4-2003

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

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

3.4 DESCRIPTION OF SUPPORT UNITS

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

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

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

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

4. TEST TYPES AND RESULTS (FOR 2.4GHz)

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Jul. 27, 2008
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Feb. 26, 2008
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	May 31, 2008
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jun. 28, 2008
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 28, 2007
Preamplifier Agilent	8447D	2944A10633	Oct. 28, 2008
Preamplifier Agilent	8449B	3008A01964	Oct. 23, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283402/4	Dec. 06, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	251644/4	Dec. 06, 2008
Software ADT.	ADT_Radiated_V7.6	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA

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

2. The test was performed in HwaYa Chamber 3.

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

4. The VCCI Site Registration No. is R-237.

5. The IC Site Registration No. is IC3789B-3.

4.1.3 TEST PROCEDURES

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

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

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

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

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

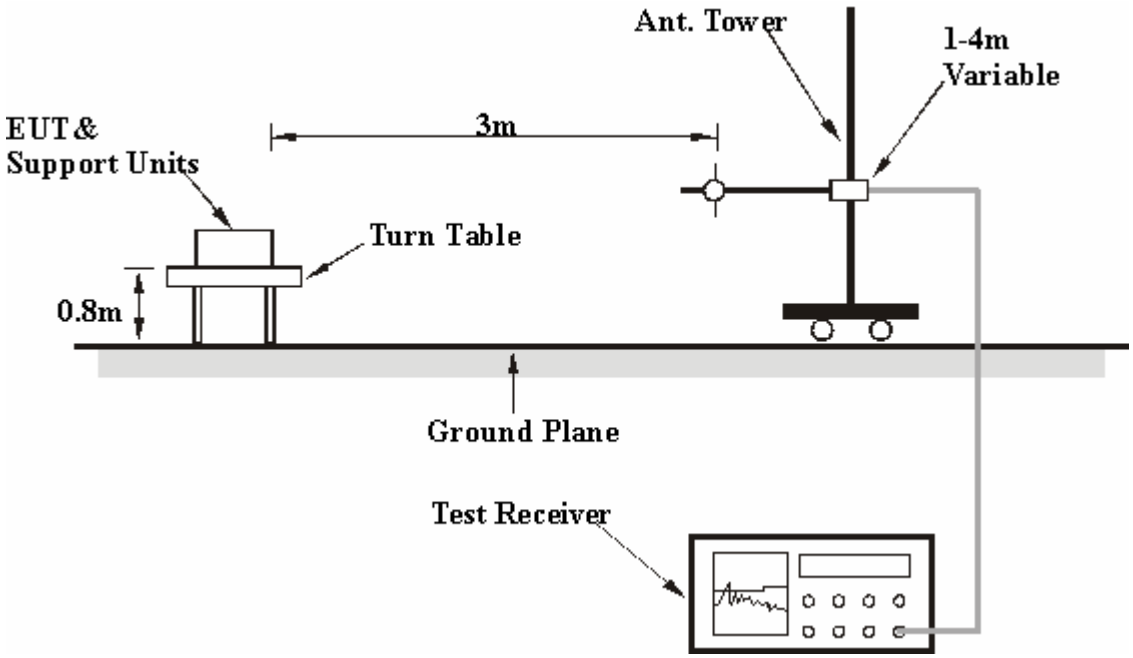
NOTE:

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

4.1.4 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 a testing table.
b. Prepared notebook computer and placed it outside of testing area to act as communication partner for EUT.
c. The EUT ran a test program (provided by manufacturer) to enable all functions under transmission condition continuously at specific channel frequency.
d. The necessary accessories enable the EUT in full functions.

4.1.7 TEST RESULTS

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Morgan Chen		

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	125.17	33.58 QP	43.50	-9.92	2.00 H	37	20.66	12.93
2	150.45	37.70 QP	43.50	-5.80	2.00 H	43	23.55	14.15
3	249.60	40.88 QP	46.00	-5.12	1.00 H	259	27.41	13.47
4	500.42	39.36 QP	46.00	-6.64	1.50 H	148	19.07	20.29
5	531.53	38.48 QP	46.00	-7.52	1.50 H	127	17.58	20.90
6	599.58	37.34 QP	46.00	-8.66	2.00 H	358	14.89	22.45
7	650.13	38.86 QP	46.00	-7.14	1.50 H	25	15.27	23.59
8	675.40	36.51 QP	46.00	-9.49	1.50 H	106	12.61	23.90
9	700.68	39.49 QP	46.00	-6.51	1.00 H	190	15.28	24.22
10	751.23	41.16 QP	46.00	-4.84	1.00 H	178	15.51	25.65
11	776.51	43.83 QP	46.00	-2.17	1.00 H	166	18.06	25.77
12	799.84	43.88 QP	46.00	-2.12	1.50 H	349	17.99	25.88
13	825.11	41.57 QP	46.00	-4.43	1.00 H	28	15.15	26.42
14	850.39	37.90 QP	46.00	-8.10	1.50 H	31	10.94	26.96

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	59.06	36.00 QP	40.00	-4.00	1.00 V	196	21.94	14.06
2	449.87	36.29 QP	46.00	-9.71	1.00 V	331	16.89	19.40
3	500.42	39.24 QP	46.00	-6.76	1.00 V	349	18.94	20.29
4	531.53	37.88 QP	46.00	-8.12	1.00 V	10	16.99	20.90
5	725.96	38.13 QP	46.00	-7.87	1.00 V	241	13.17	24.95
6	776.51	40.37 QP	46.00	-5.63	1.50 V	232	14.60	25.77
7	799.84	39.25 QP	46.00	-6.75	1.50 V	16	13.37	25.88
8	825.11	39.27 QP	46.00	-6.73	1.50 V	262	12.84	26.42
9	875.67	36.96 QP	46.00	-9.04	1.00 V	337	9.67	27.29
10	932.05	38.18 QP	46.00	-7.82	1.50 V	13	10.12	28.06

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.

ABOVE 1GHz DATA: 802.11b DSSS MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	DBPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Morgan Chen		

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	59.09 PK	74.00	-14.91	1.33 H	209	26.85	32.24
2	2390.00	48.67 AV	54.00	-5.33	1.33 H	209	16.43	32.24
3	*2412.00	111.58 PK			1.33 H	209	79.26	32.32
4	*2412.00	107.00 AV			1.33 H	209	74.68	32.32
5	3216.00	48.63 PK	74.00	-25.37	1.00 H	21	14.15	34.49
6	3216.00	41.03 AV	54.00	-12.97	1.00 H	21	6.55	34.49
7	4824.00	51.71 PK	74.00	-22.29	1.04 H	8	13.58	38.13
8	4824.00	40.74 AV	54.00	-13.26	1.04 H	8	2.61	38.13

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	2390.00	56.85 PK	74.00	-17.15	1.03 V	211	24.61	32.24
2	2390.00	45.69 AV	54.00	-8.31	1.03 V	211	13.45	32.24
3	*2412.00	105.69 PK			1.03 V	211	73.37	32.32
4	*2412.00	101.04 AV			1.03 V	211	68.72	32.32
5	3216.00	47.46 PK	74.00	-26.54	1.00 V	275	12.97	34.49
6	3216.00	40.16 AV	54.00	-13.84	1.00 V	275	5.67	34.49
7	4824.00	50.56 PK	74.00	-23.44	1.08 V	6	12.43	38.13
8	4824.00	39.43 AV	54.00	-14.57	1.08 V	6	1.30	38.13

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	DBPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Morgan Chen		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	111.61 PK			1.35 H	216	79.21	32.40
2	*2437.00	107.05 AV			1.35 H	216	74.65	32.40
3	3249.00	48.72 PK	74.00	-25.28	1.00 H	32	14.22	34.50
4	3249.00	41.20 AV	54.00	-12.80	1.00 H	32	6.70	34.50
5	4874.00	51.82 PK	74.00	-22.18	1.08 H	6	13.50	38.32
6	4874.00	40.76 AV	54.00	-13.24	1.08 H	6	2.44	38.32

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	105.85 PK			1.06 V	215	73.45	32.40
2	*2437.00	101.26 AV			1.06 V	215	68.86	32.40
3	3249.00	47.49 PK	74.00	-26.51	1.00 V	265	12.99	34.50
4	3249.00	40.17 AV	54.00	-13.83	1.00 V	265	5.67	34.50
5	4874.00	50.53 PK	74.00	-23.47	1.11 V	5	12.21	38.32
6	4874.00	39.46 AV	54.00	-14.54	1.11 V	5	1.14	38.32

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
MODULATION TYPE	DBPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Morgan Chen		

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	111.96 PK			1.35 H	212	79.48	32.48
2	*2462.00	107.35 AV			1.35 H	212	74.87	32.48
3	2483.50	59.54 PK	74.00	-14.46	1.35 H	212	26.98	32.56
4	2483.50	49.08 AV	54.00	-4.92	1.35 H	212	16.52	32.56
5	3282.00	48.72 PK	74.00	-25.28	1.00 H	32	14.20	34.52
6	3282.00	41.13 AV	54.00	-12.87	1.00 H	32	6.61	34.52
7	4924.00	51.85 PK	74.00	-22.15	1.05 H	6	13.39	38.46
8	4924.00	40.79 AV	54.00	-13.21	1.05 H	6	2.33	38.46

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	105.98 PK			1.05 V	205	73.50	32.48
2	*2462.00	101.34 AV			1.05 V	205	68.86	32.48
3	2483.50	56.98 PK	74.00	-17.02	1.05 V	205	24.42	32.56
4	2483.50	45.75 AV	54.00	-8.25	1.05 V	205	13.19	32.56
5	3282.00	47.56 PK	74.00	-26.44	1.00 V	286	13.04	34.52
6	3282.00	40.23 AV	54.00	-13.77	1.00 V	286	5.71	34.52
7	4924.00	50.63 PK	74.00	-23.37	1.09 V	9	12.17	38.46
8	4924.00	39.52 AV	54.00	-14.48	1.09 V	9	1.06	38.46

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
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Lori Chiu		

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	59.16 PK	74.00	-14.84	1.37 H	229	26.92	32.24
2	2390.00	48.21 AV	54.00	-5.79	1.37 H	229	15.97	32.24
3	*2412.00	109.43 PK			1.37 H	229	77.11	32.32
4	*2412.00	99.12 AV			1.37 H	229	66.80	32.32
5	3216.00	48.56 PK	74.00	-25.44	1.00 H	12	14.07	34.49
6	3216.00	41.11 AV	54.00	-12.89	1.00 H	12	6.62	34.49
7	4824.00	49.25 PK	74.00	-24.75	1.05 H	26	11.12	38.13
8	4824.00	35.91 AV	54.00	-18.09	1.05 H	26	-2.22	38.13

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	2390.00	56.11 PK	74.00	-17.89	1.00 V	196	23.87	32.24
2	2390.00	46.23 AV	54.00	-7.77	1.00 V	196	13.99	32.24
3	*2412.00	102.62 PK			1.00 V	196	70.30	32.32
4	*2412.00	92.10 AV			1.00 V	196	59.78	32.32
5	3216.00	47.43 PK	74.00	-26.57	1.00 V	256	12.94	34.49
6	3216.00	40.21 AV	54.00	-13.79	1.00 V	256	5.72	34.49
7	4824.00	48.76 PK	74.00	-25.24	1.00 V	354	10.63	38.13
8	4824.00	35.36 AV	54.00	-18.64	1.00 V	354	-2.77	38.13

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Lori Chiu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	109.52 PK			1.35 H	208	77.12	32.40
2	*2437.00	99.23 AV			1.35 H	208	66.83	32.40
3	3249.00	48.65 PK	74.00	-25.35	1.00 H	25	14.15	34.50
4	3249.00	41.25 AV	54.00	-12.75	1.00 H	25	6.75	34.50
5	4874.00	49.35 PK	74.00	-24.65	1.00 H	25	11.03	38.32
6	4874.00	35.96 AV	54.00	-18.04	1.00 H	25	-2.36	38.32

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	102.75 PK			1.00 V	185	70.67	32.08
2	*2437.00	92.23 AV			1.00 V	185	60.15	32.08
3	3249.00	47.53 PK	74.00	-26.47	1.00 V	263	13.03	34.50
4	3249.00	40.56 AV	54.00	-13.44	1.00 V	263	6.06	34.50
5	4874.00	48.82 PK	74.00	-25.18	1.00 V	346	10.50	38.32
6	4874.00	35.40 AV	54.00	-18.60	1.00 V	346	-2.92	38.32

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
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Lori Chiu		

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	109.95 PK			1.33 H	215	77.47	32.48
2	*2462.00	99.60 AV			1.33 H	215	67.12	32.48
3	2483.50	60.25 PK	74.00	-13.75	1.45 H	236	27.69	32.56
4	2483.50	49.36 AV	54.00	-4.64	1.45 H	236	16.80	32.56
5	3282.00	48.63 PK	74.00	-25.37	1.00 H	23	14.11	34.52
6	3282.00	41.23 AV	54.00	-12.77	1.00 H	23	6.71	34.52
7	4924.00	49.30 PK	74.00	-24.70	1.08 H	21	10.84	38.46
8	4924.00	35.89 AV	54.00	-18.11	1.08 H	21	-2.57	38.46

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	102.98 PK			1.00 V	199	70.50	32.48
2	*2462.00	92.45 AV			1.00 V	199	59.97	32.48
3	2483.50	57.25 PK	74.00	-16.75	1.00 V	199	24.69	32.56
4	2483.50	46.50 AV	54.00	-7.50	1.00 V	199	13.94	32.56
5	3282.00	47.56 PK	74.00	-26.44	1.00 V	236	13.04	34.52
6	3282.00	40.35 AV	54.00	-13.65	1.00 V	236	5.83	34.52
7	4924.00	48.85 PK	74.00	-25.15	1.00 V	346	10.39	38.46
8	4924.00	35.47 AV	54.00	-18.53	1.00 V	346	-2.99	38.46

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
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Morgan Chen		

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	66.51 PK	74.00	-7.49	1.35 H	40	34.27	32.24
2	2390.00	51.69 AV	54.00	-2.31	1.35 H	40	19.45	32.24
3	*2412.00	112.04 PK			1.33 H	40	79.72	32.32
4	*2412.00	101.97 AV			1.33 H	40	69.65	32.32
5	3216.00	50.38 PK	74.00	-23.62	1.05 H	312	15.89	34.49
6	3216.00	46.99 AV	54.00	-7.01	1.05 H	312	12.50	34.49
7	4824.00	49.23 PK	74.00	-24.77	1.05 H	23	11.10	38.13
8	4824.00	35.92 AV	54.00	-18.08	1.05 H	23	-2.21	38.13

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	2390.00	58.22 PK	74.00	-15.78	1.08 V	23	25.98	32.24
2	2390.00	46.72 AV	54.00	-7.28	1.08 V	23	14.48	32.24
3	*2412.00	103.03 PK			1.08 V	23	70.71	32.32
4	*2412.00	92.95 AV			1.08 V	23	60.63	32.32
5	3216.00	48.69 PK	74.00	-25.31	1.00 V	293	14.20	34.49
6	3216.00	39.85 AV	54.00	-14.15	1.00 V	293	5.36	34.49
7	4824.00	49.05 PK	74.00	-24.95	1.05 V	23	10.92	38.13
8	4824.00	35.72 AV	54.00	-18.28	1.05 V	23	-2.41	38.13

REMARKS: 1. Ession 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
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Morgan Chen		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	112.21 PK			1.36 H	38	79.81	32.40
2	*2437.00	102.03 AV			1.36 H	38	69.63	32.40
3	3249.00	50.43 PK	74.00	-23.57	1.08 H	325	15.93	34.50
4	3249.00	47.11 AV	54.00	-6.89	1.08 H	325	12.61	34.50
5	4874.00	49.32 PK	74.00	-24.68	1.08 H	26	11.00	38.32
6	4874.00	36.01 AV	54.00	-17.99	1.08 H	26	-2.31	38.32

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	103.23 PK			1.09 V	35	70.83	32.40
2	*2437.00	93.04 AV			1.09 V	35	60.64	32.40
3	3249.00	48.76 PK	74.00	-25.24	1.00 V	299	14.26	34.50
4	3249.00	39.97 AV	54.00	-14.03	1.00 V	299	5.47	34.50
5	4874.00	49.25 PK	74.00	-24.75	1.08 V	16	10.93	38.32
6	4874.00	35.93 AV	54.00	-18.07	1.08 V	16	-2.39	38.32

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
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Lori Chiu		

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	110.84 PK			1.30 H	32	78.36	32.48
2	*2462.00	100.74 AV			1.30 H	32	68.26	32.48
3	2483.50	68.39 PK	74.00	-5.61	1.30 H	32	35.83	32.56
4	2483.50	52.24 AV	54.00	-1.76	1.30 H	32	19.68	32.56
5	3282.00	50.19 PK	74.00	-23.81	1.03 H	322	15.67	34.52
6	3282.00	46.75 AV	54.00	-7.25	1.03 H	322	12.23	34.52
7	4924.00	49.11 PK	74.00	-24.89	1.08 H	43	10.65	38.46
8	4924.00	35.79 AV	54.00	-18.21	1.08 H	43	-2.67	38.46

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	102.11 PK			1.06 V	16	69.63	32.48
2	*2462.00	91.89 AV			1.06 V	16	59.41	32.48
3	2483.50	58.89 PK	74.00	-15.11	1.06 V	16	26.33	32.56
4	2483.50	47.15 AV	54.00	-6.85	1.06 V	16	14.59	32.56
5	3282.00	48.51 PK	74.00	-25.49	1.00 V	301	13.99	34.52
6	3282.00	39.71 AV	54.00	-14.29	1.00 V	301	5.19	34.52
7	4924.00	49.19 PK	74.00	-24.81	1.08 V	45	10.73	38.46
8	4924.00	35.83 AV	54.00	-18.17	1.08 V	45	-2.63	38.46

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

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DRAFT 802.11n (40MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Lori Chiu		

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	66.26 PK	74.00	-7.74	1.31 H	307	34.02	32.24
2	**2390.00**	**52.94 AV**	**54.00**	**-1.06**	**1.31 H**	**307**	**20.70**	**32.24**
3	*2422.00	105.75 PK			1.31 H	307	73.40	32.35
4	*2422.00	95.24 AV			1.31 H	307	62.89	32.35
5	3229.00	50.50 PK	74.00	-23.50	1.02 H	39	16.00	34.49
6	3229.00	46.97 AV	54.00	-7.03	1.02 H	39	12.47	34.49
7	4844.00	49.12 PK	74.00	-24.88	1.02 H	18	10.91	38.21
8	4844.00	35.85 AV	54.00	-18.15	1.02 H	18	-2.36	38.21

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	58.01 PK	74.00	-15.99	1.08 V	20	25.77	32.24
2	2390.00	46.60 AV	54.00	-7.40	1.08 V	20	14.36	32.24
3	*2422.00	97.56 PK			1.06 V	19	65.21	32.35
4	*2422.00	86.77 AV			1.06 V	19	54.42	32.35
5	3229.00	48.57 PK	74.00	-25.43	1.00 V	289	14.07	34.49
6	3229.00	39.70 AV	54.00	-14.30	1.00 V	289	5.20	34.49
7	4844.00	49.00 PK	74.00	-25.00	1.02 V	19	10.80	38.21
8	4844.00	35.69 AV	54.00	-18.31	1.02 V	19	-2.51	38.21

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

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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Lori Chiu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	108.60 PK			1.33 H	34	76.20	32.40
2	*2437.00	97.53 AV			1.33 H	34	65.13	32.40
3	3249.00	51.35 PK	74.00	-22.65	1.08 H	46	16.85	34.50
4	3249.00	47.43 AV	54.00	-6.57	1.08 H	46	12.93	34.50
5	4874.00	49.89 PK	74.00	-24.11	1.05 H	16	11.57	38.32
6	4874.00	36.23 AV	54.00	-17.77	1.05 H	16	-2.09	38.32

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	99.45 PK			1.08 V	36	67.05	32.40
2	*2437.00	88.63 AV			1.08 V	36	56.23	32.40
3	3249.00	49.56 PK	74.00	-24.44	1.00 V	296	15.06	34.50
4	3249.00	40.25 AV	54.00	-13.75	1.00 V	296	5.75	34.50
5	4874.00	49.65 PK	74.00	-24.35	1.03 V	25	11.33	38.32
6	4874.00	36.01 AV	54.00	-17.99	1.03 V	25	-2.31	38.32

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
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Lori Chiu		

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	107.01 PK			1.32 H	35	74.56	32.45
2	*2452.00	95.90 AV			1.32 H	35	63.45	32.45
3	2483.50	67.37 PK	74.00	-6.63	1.32 H	35	34.81	32.56
4	2483.50	52.68 AV	54.00	-1.32	1.32 H	35	20.12	32.56
5	3269.00	50.63 PK	74.00	-23.37	1.05 H	43	16.12	34.51
6	3269.00	47.08 AV	54.00	-6.92	1.05 H	43	12.57	34.51
7	4904.00	49.35 PK	74.00	-24.65	1.02 H	23	10.92	38.43
8	4904.00	35.94 AV	54.00	-18.06	1.02 H	23	-2.49	38.43

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	98.49 PK			1.07 V	25	66.04	32.45
2	*2452.00	87.56 AV			1.07 V	25	55.11	32.45
3	2483.50	57.86 PK	74.00	-16.14	1.07 V	25	25.30	32.56
4	2483.50	46.46 AV	54.00	-7.54	1.07 V	25	13.90	32.56
5	3269.00	48.69 PK	74.00	-25.31	1.00 V	296	14.18	34.51
6	3269.00	39.81 AV	54.00	-14.19	1.00 V	296	5.30	34.51
7	4904.00	49.11 PK	74.00	-24.89	1.02 V	15	10.68	38.43
8	4904.00	35.73 AV	54.00	-18.27	1.02 V	15	-2.70	38.43

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.

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.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Sep. 21, 2008
RF signal cable Woken	5D-FB	Cable-HYCO3-01	Jan. 06, 2008
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 08, 2008
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jan. 16, 2008
Software ADT	ADT_Cond_V3	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.

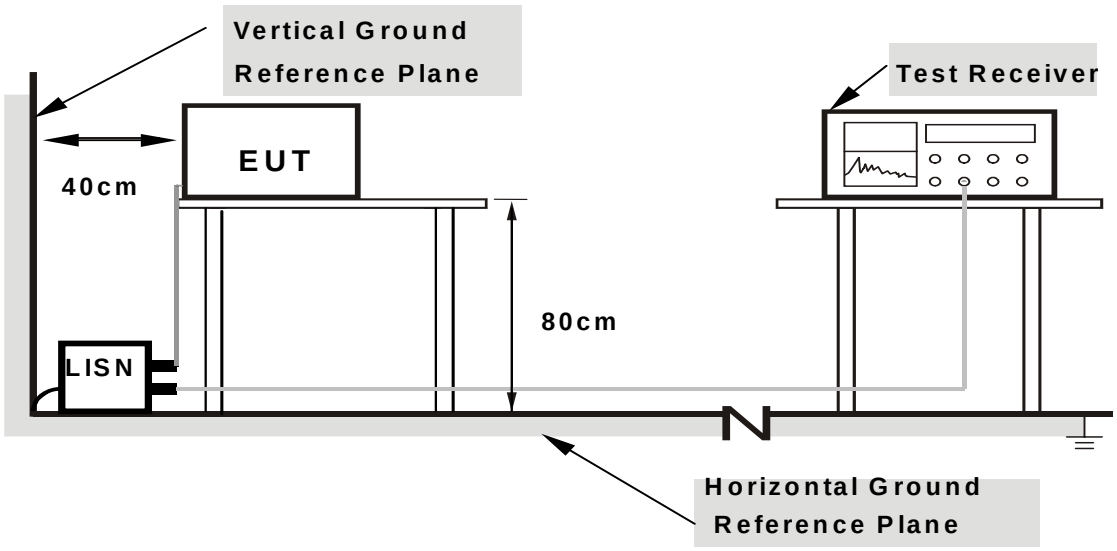
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

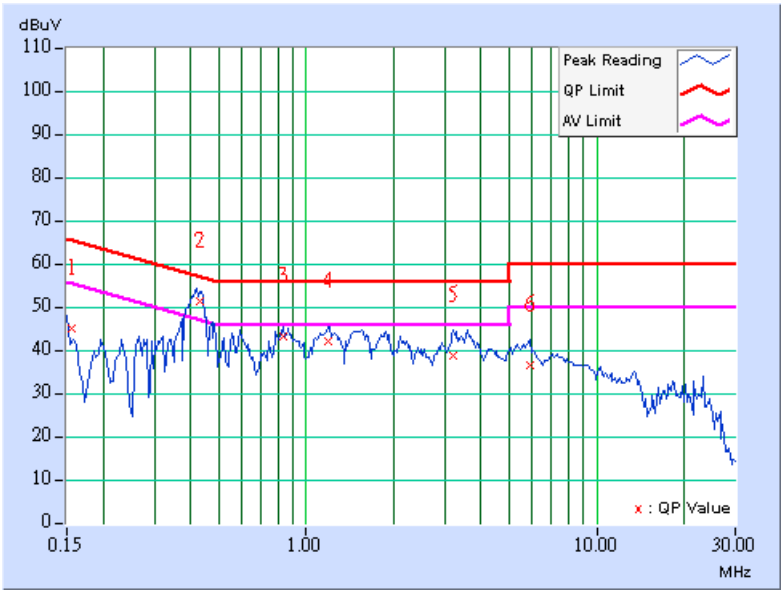
4.2.7 TEST RESULTS

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	**PHASE**	Line 1
MODULATION TYPE	BPSK	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 991hPa	**6dB BANDWIDTH**	9kHz
TESTED BY	Dean Wang		

	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	0.155	0.10	45.01	-	45.11	-	65.71	55.71	-20.60	-
2	0.429	0.10	51.28	42.35	51.38	42.45	57.27	47.27	-5.89	-4.82
3	0.838	0.11	42.94	-	43.05	-	56.00	46.00	-12.95	-
4	1.195	0.13	42.07	-	42.20	-	56.00	46.00	-13.80	-
5	3.203	0.26	38.68	-	38.94	-	56.00	46.00	-17.06	-
6	5.883	0.30	36.25	-	36.55	-	60.00	50.00	-23.45	-

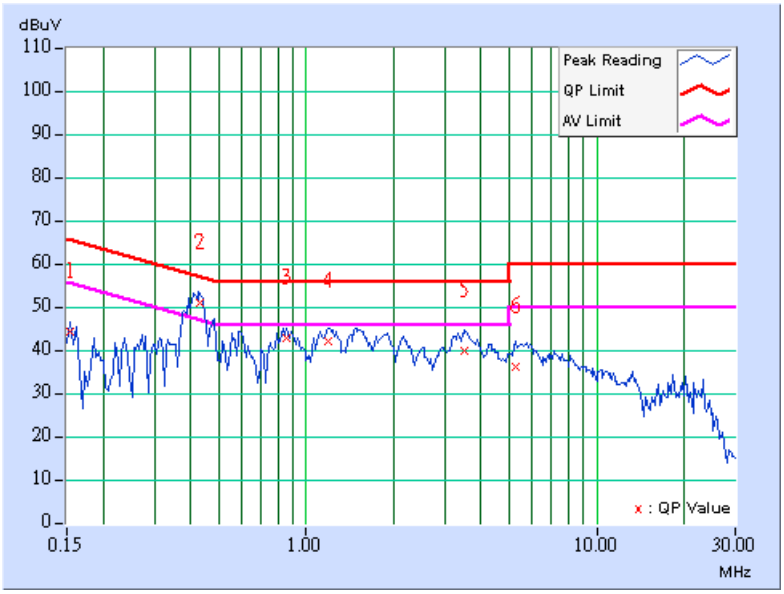
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 991hPa	6dB BANDWIDTH	9kHz
TESTED BY	Dean Wang		

	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	0.155	0.10	44.01	-	44.11	-	65.74	55.74	-21.63	-
2	0.432	0.11	50.90	42.46	51.01	42.57	57.21	47.21	-6.20	-4.64
3	0.853	0.18	42.47	-	42.65	-	56.00	46.00	-13.35	-
4	1.188	0.21	41.75	-	41.96	-	56.00	46.00	-14.04	-
5	3.523	0.27	39.51	-	39.78	-	56.00	46.00	-16.22	-
6	5.238	0.31	36.02	-	36.33	-	60.00	50.00	-23.67	-

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.	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100040	Jun. 28, 2008

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

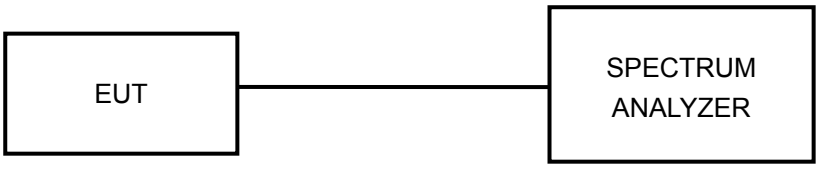
4.3.3 TEST PROCEDURE

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.

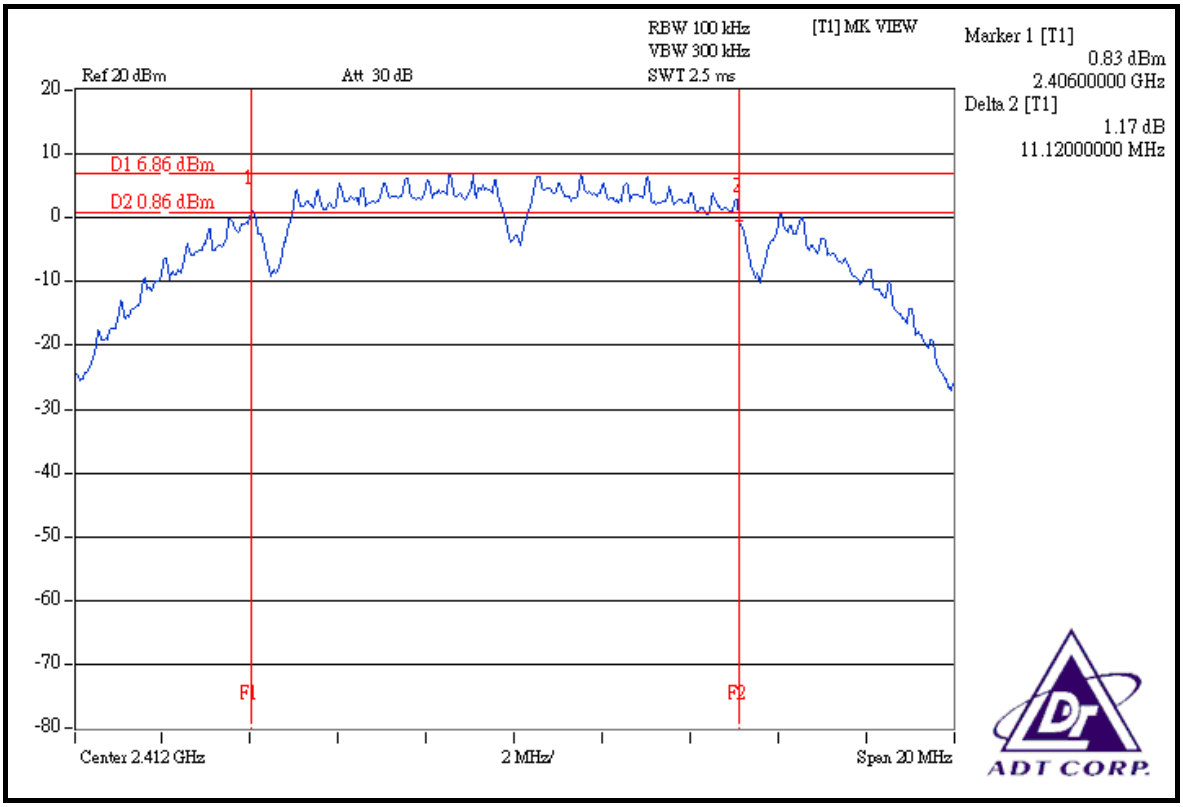
4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

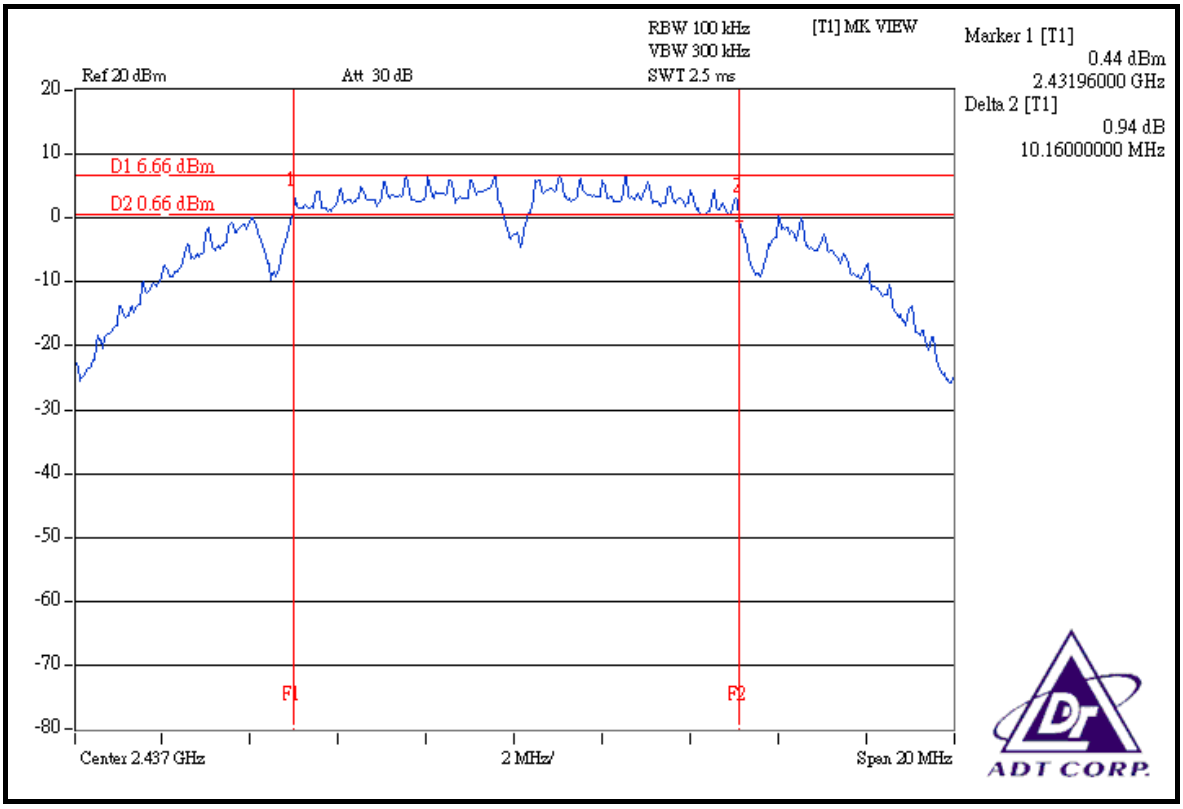
MODULATION TYPE	DBPSK	ENVIRONMENTAL CONDITIONS	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	TESTED BY	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	11.12	0.5	PASS
6	2437	10.16	0.5	PASS
11	2462	11.16	0.5	PASS

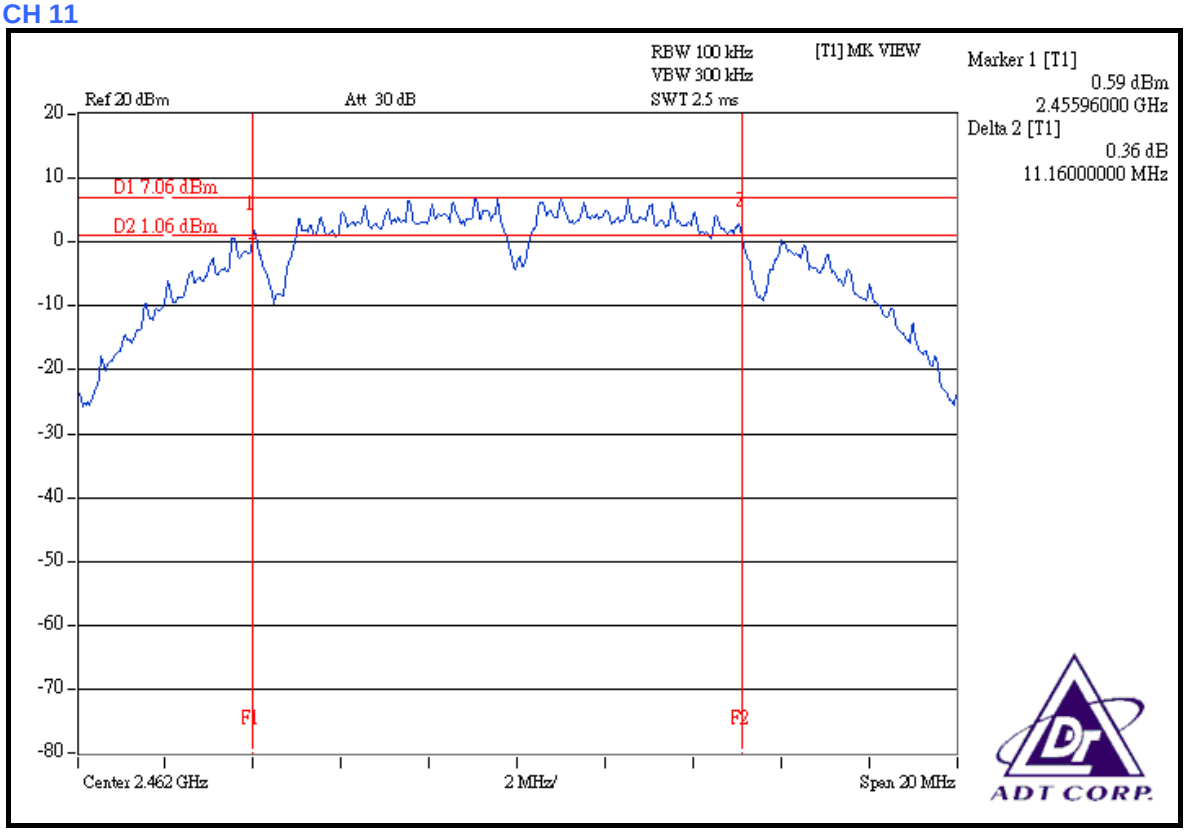
CH 1



CH 6


RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
Marker 1 [T1]
0.44 dBm
2.43196000 GHz
Delta 2 [T1]
0.94 dB
10.16000000 MHz
Ref 20 dBm
Att 30 dB
D1 6.66 dBm
D2 0.66 dBm
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz

CH 11

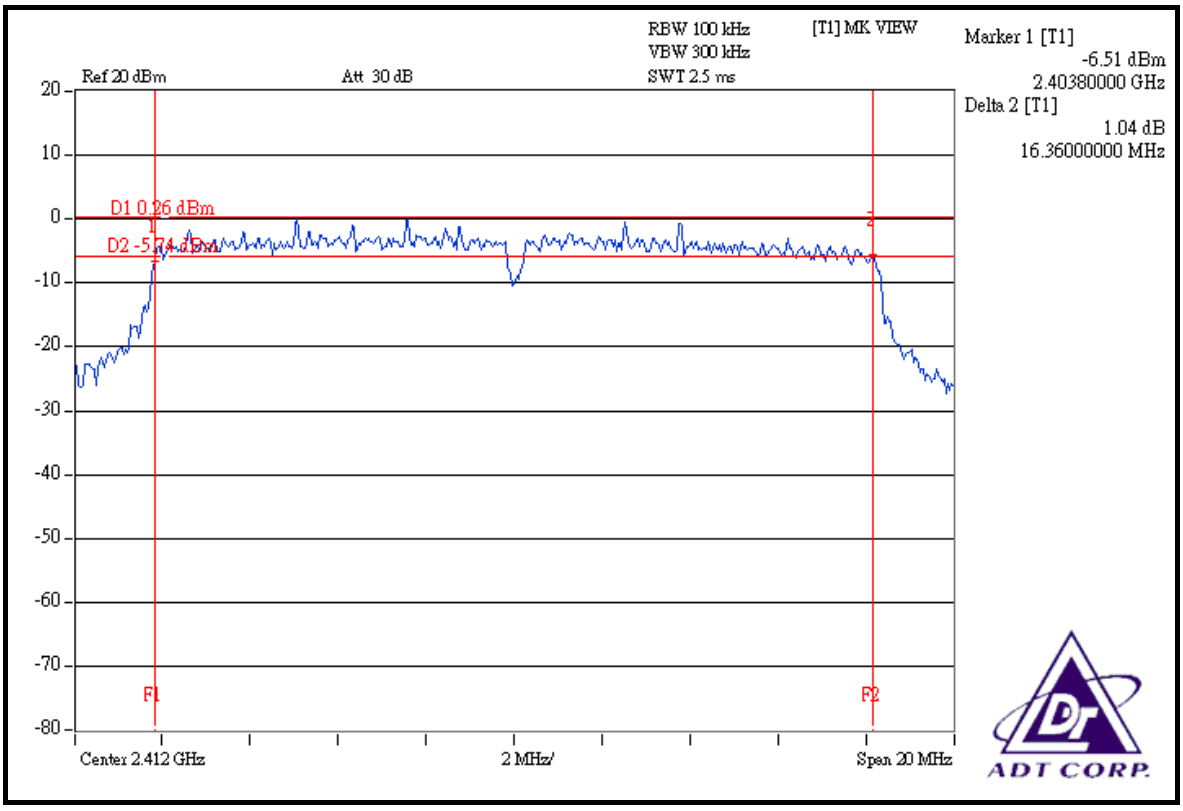

RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
Marker 1 [T1]
0.59 dBm
2.45596000 GHz
Delta 2 [T1]
0.36 dB
11.16000000 MHz
Ref 20 dBm
Att 30 dB
D1 7.06 dBm
D2 1.06 dBm
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz

802.11g OFDM MODULATION:

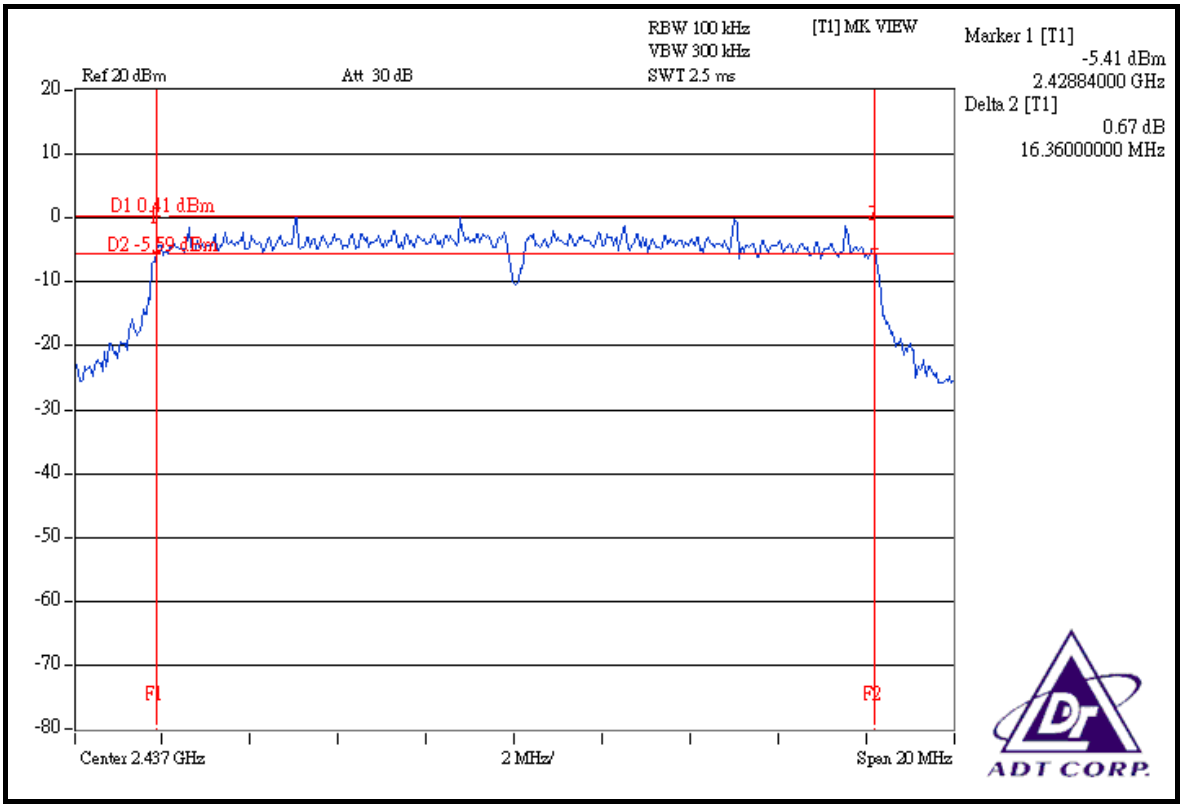
MODULATION TYPE	BPSK	**ENVIRONMENTAL CONDITIONS**	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	**TESTED BY**	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.36	0.5	PASS
6	2437	16.36	0.5	PASS
11	2462	16.40	0.5	PASS

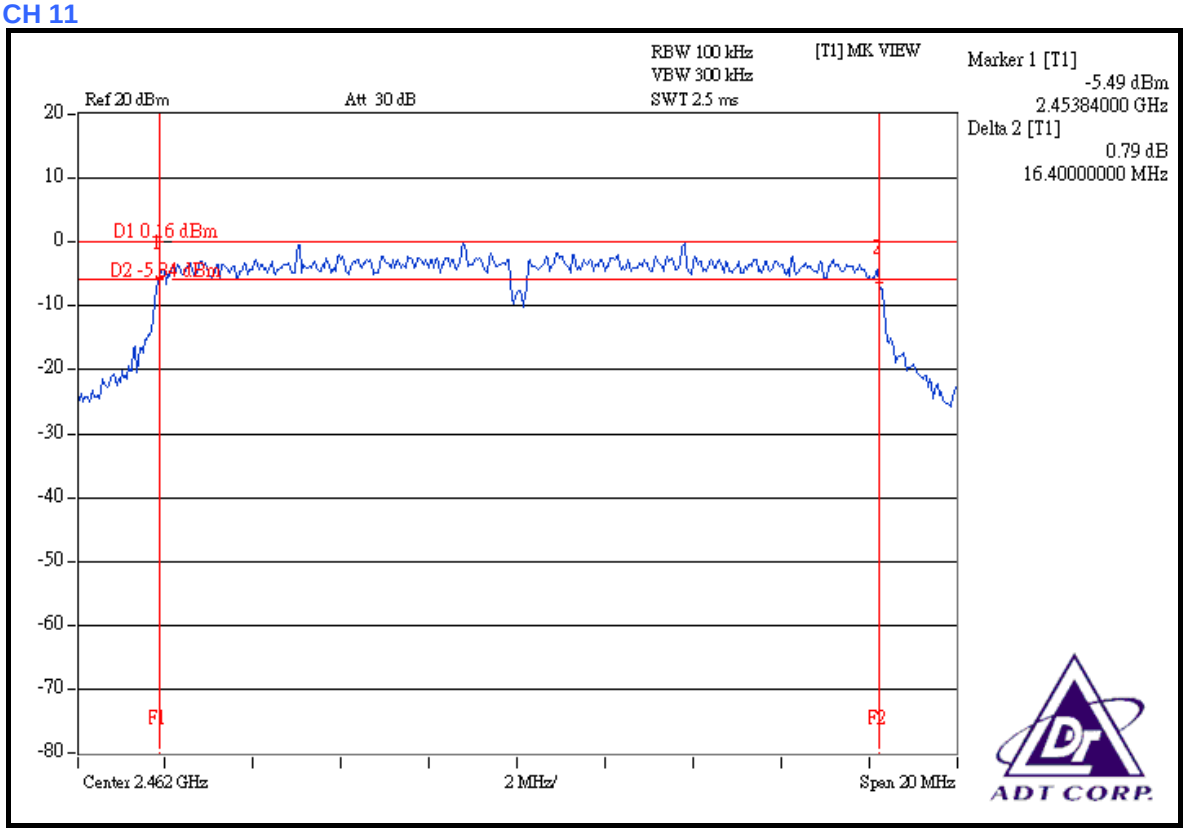
CH 1



CH 6


RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
Marker 1 [T1]
-5.41 dBm
2.42884000 GHz
Delta 2 [T1]
0.67 dB
16.36000000 MHz
Ref 20 dBm
Att 30 dB
D1 0.41 dBm
D2 -5.59 dBm
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz
ADT CORP.

CH 11

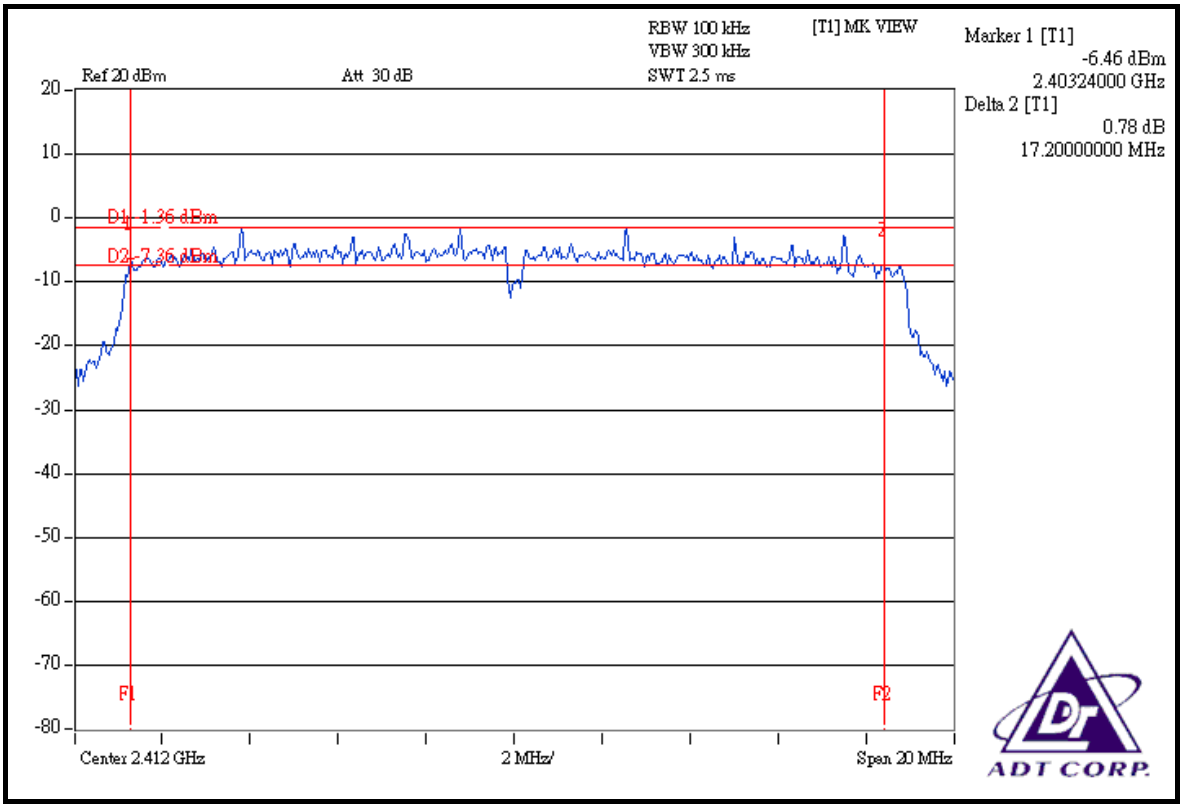

RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
Marker 1 [T1]
-5.49 dBm
2.45384000 GHz
Delta 2 [T1]
0.79 dB
16.40000000 MHz
Ref 20 dBm
Att 30 dB
D1 0.16 dBm
D2 -5.84 dBm
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
ADT CORP.

DRAFT 802.11n (20MHz) OFDM MODULATION:

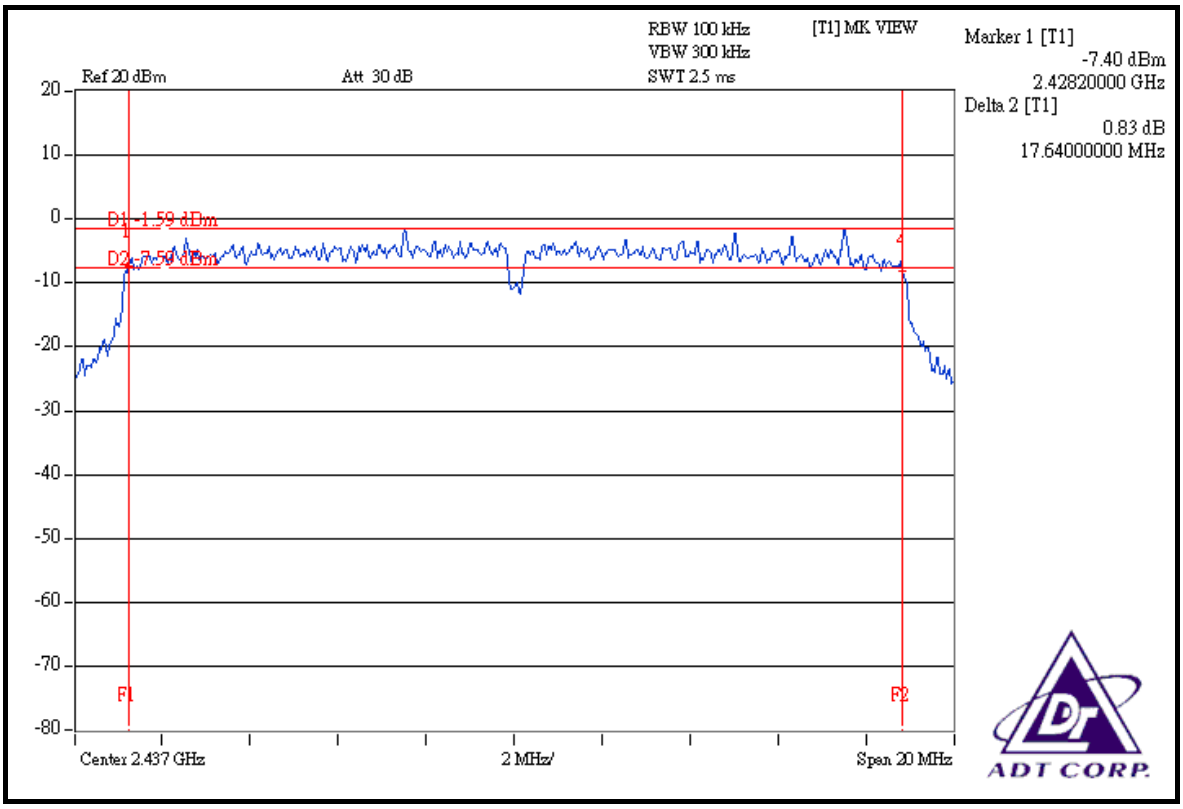
MODULATION TYPE	BPSK	**ENVIRONMENTAL CONDITIONS**	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	**TESTED BY**	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.20	17.64	0.5	PASS
6	2437	17.64	17.36	0.5	PASS
11	2462	17.60	17.68	0.5	PASS

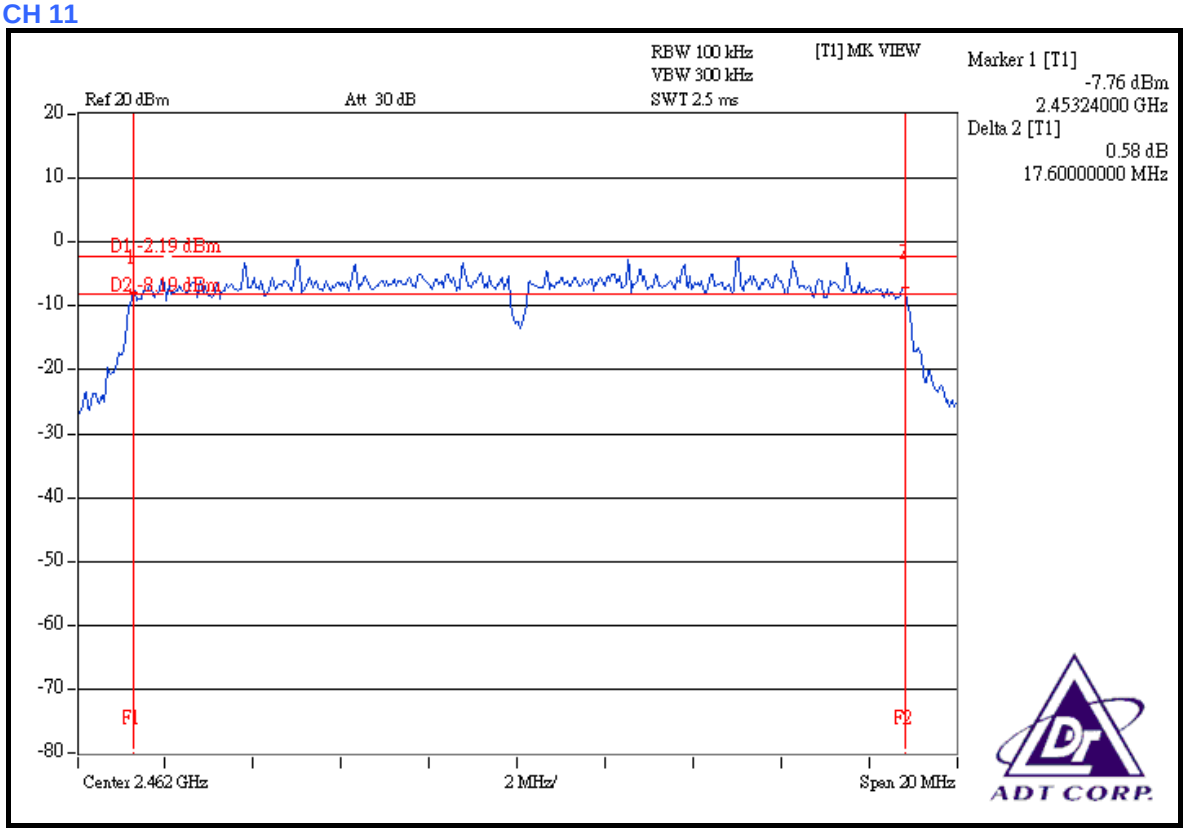
FOR CHAIN 0: CH 1



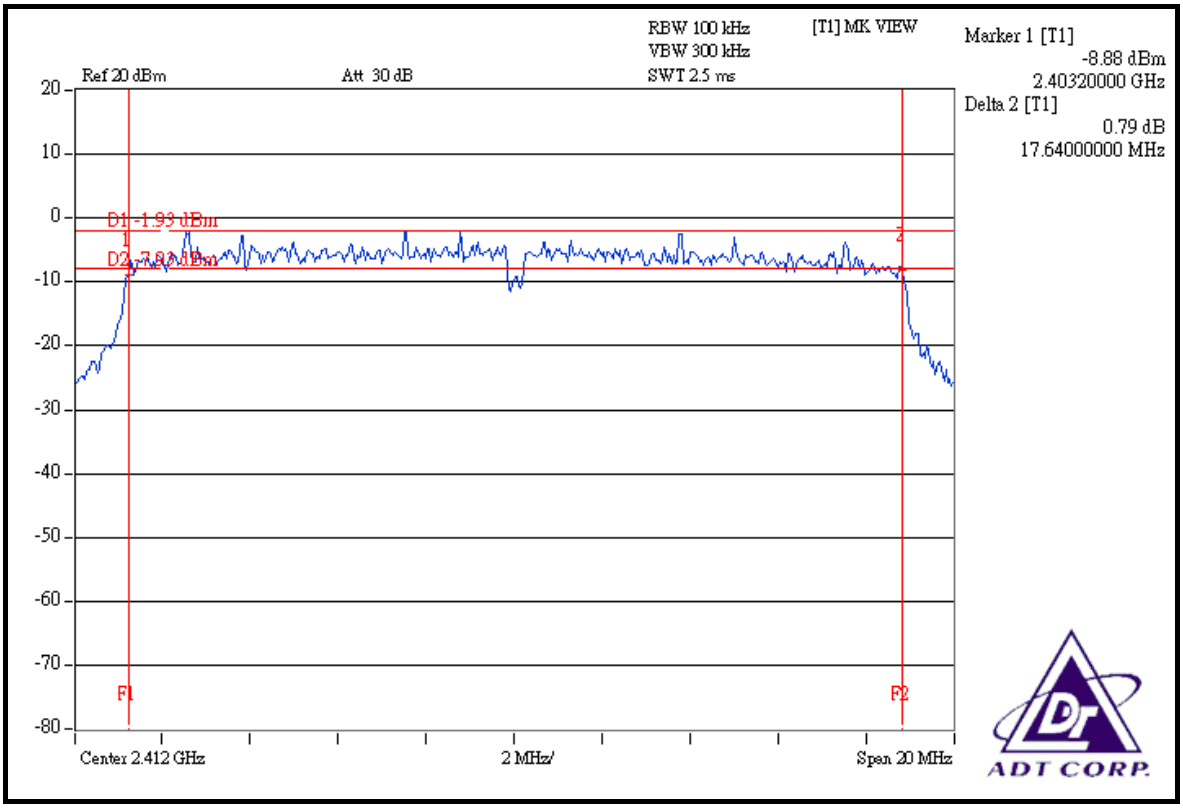
CH 6



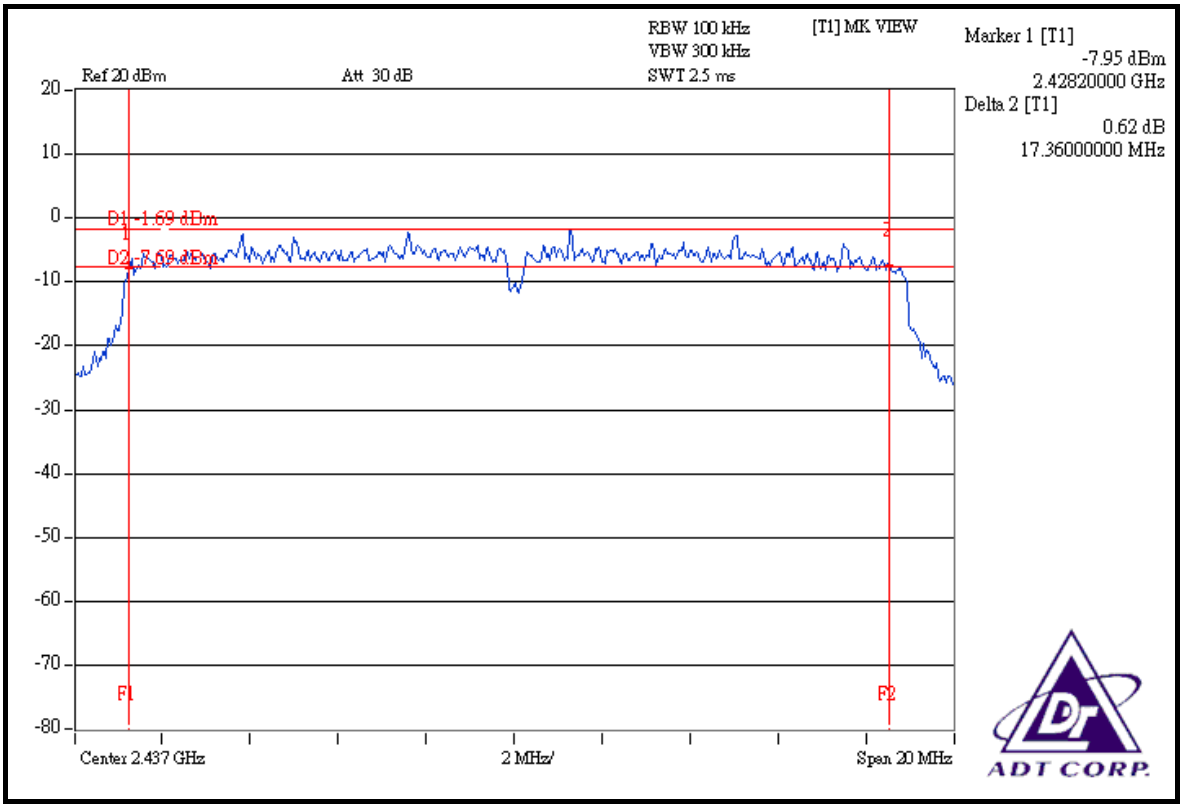
CH 11



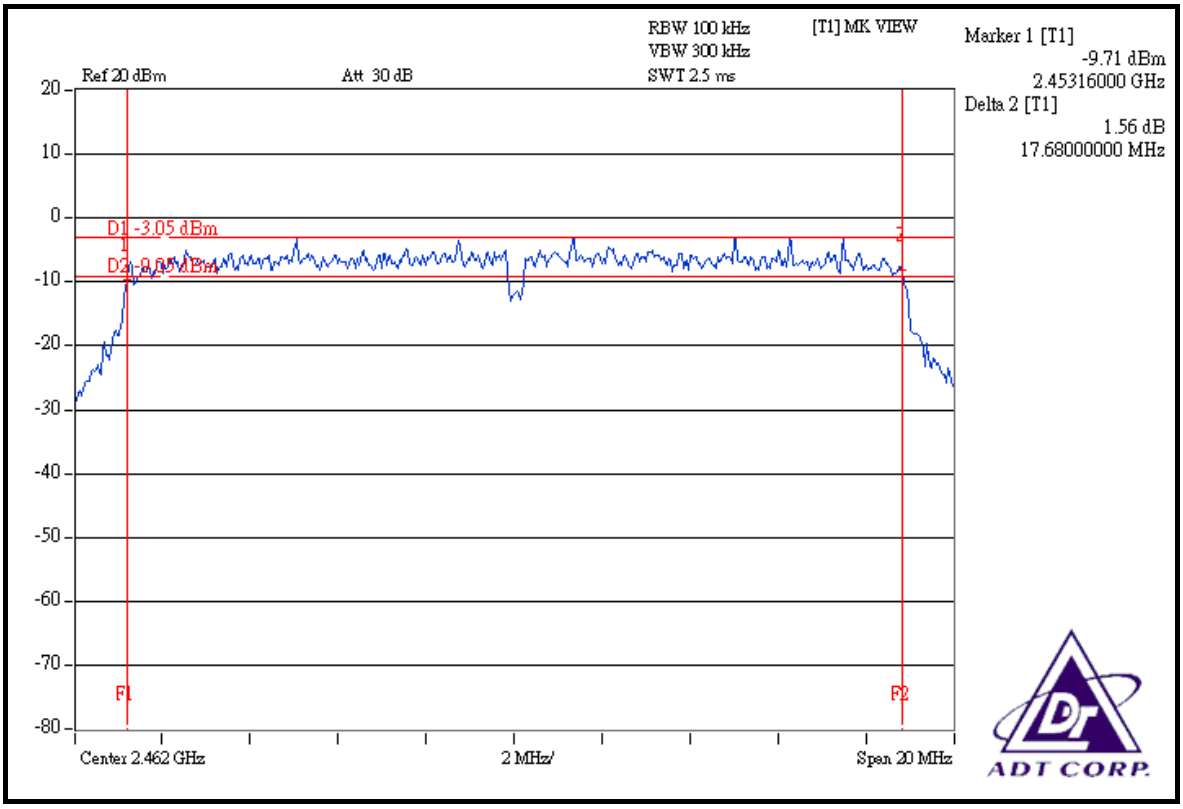
FOR CHAIN 1: CH 1



CH 6


RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
Marker 1 [T1]
-7.95 dBm
2.42820000 GHz
Delta 2 [T1]
0.62 dB
17.36000000 MHz
Ref 20 dBm
Att 30 dB
D1 -1.69 dBm
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz
ADT CORP.

CH 11

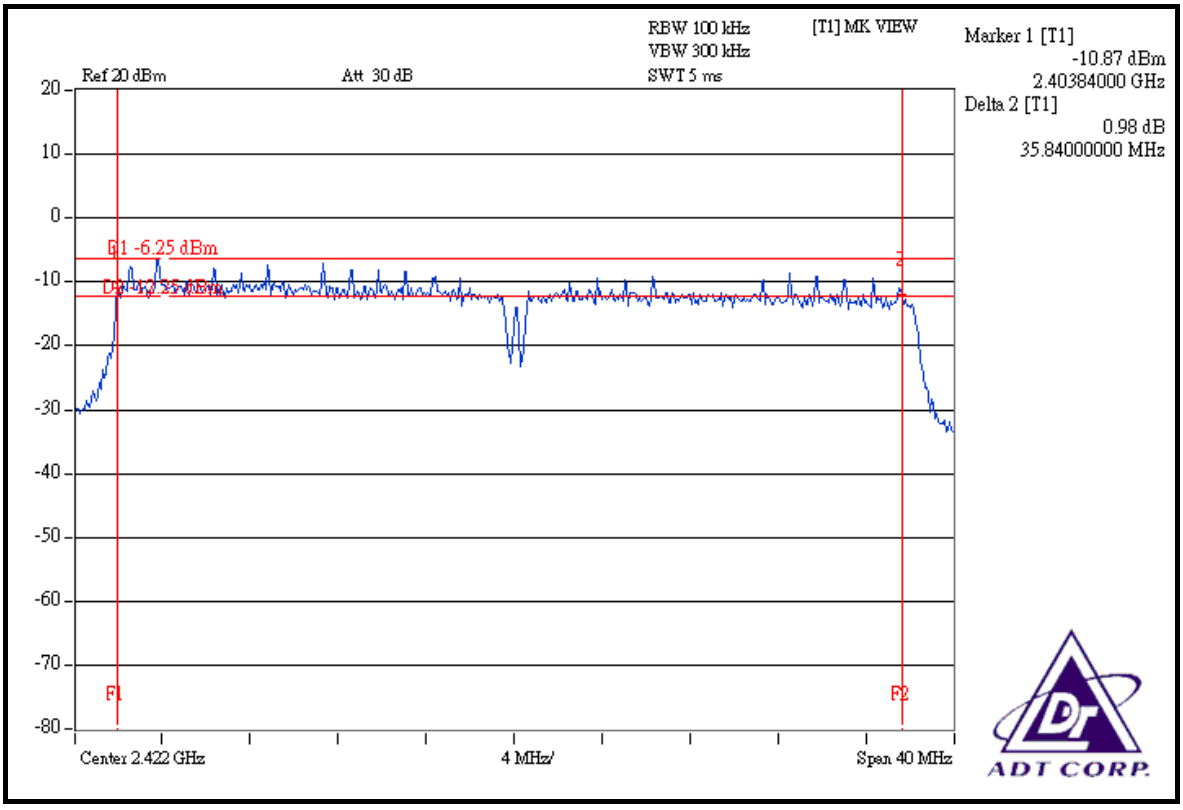

RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
Marker 1 [T1]
-9.71 dBm
2.45316000 GHz
Delta 2 [T1]
1.56 dB
17.68000000 MHz
Ref 20 dBm
Att 30 dB
D1 -3.05 dBm
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION:

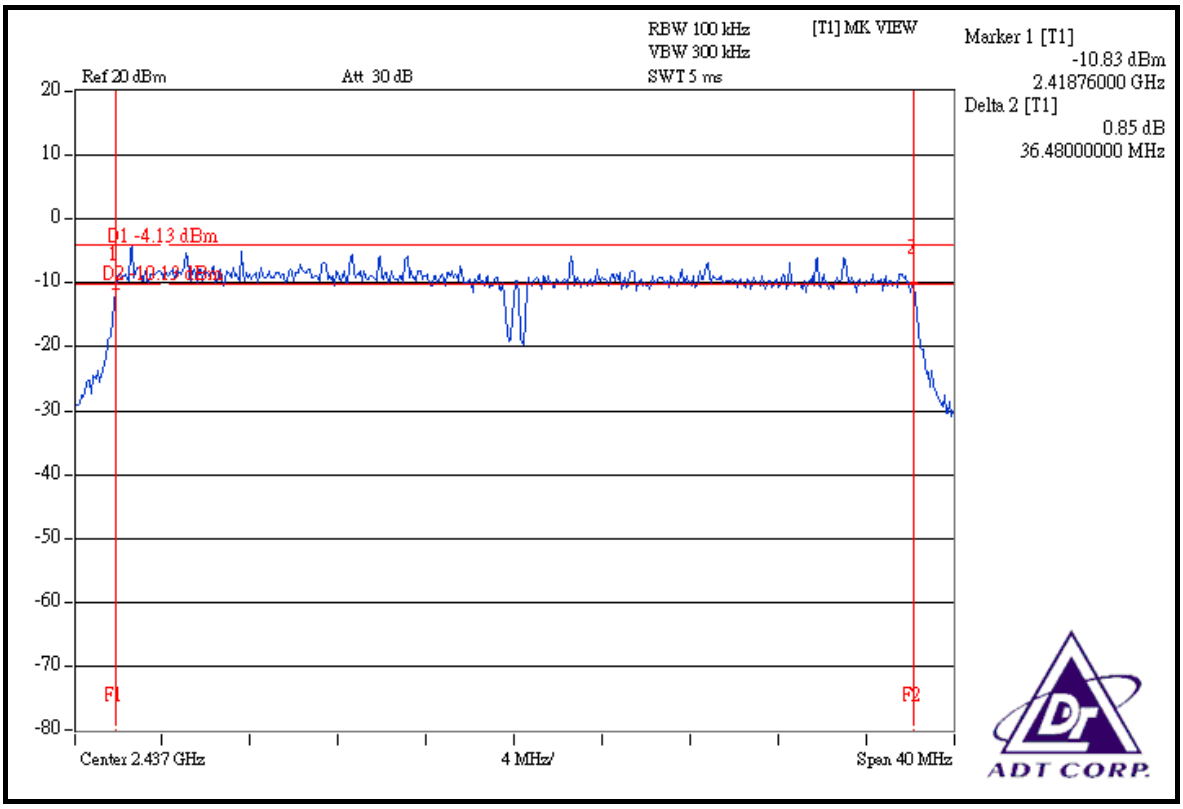
MODULATION TYPE	BPSK	**ENVIRONMENTAL CONDITIONS**	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	**TESTED BY**	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2422	35.84	35.92	0.5	PASS
4	2437	36.48	36.48	0.5	PASS
7	2452	36.56	36.56	0.5	PASS

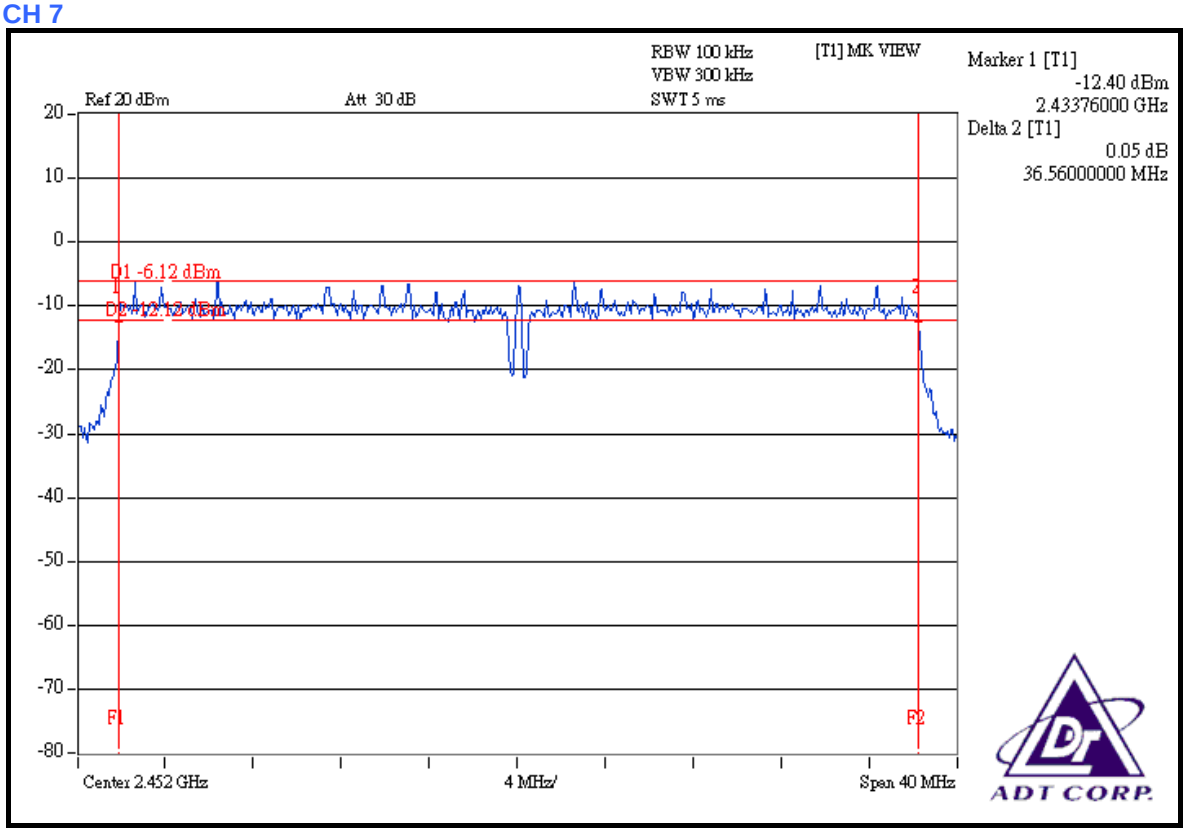
FOR CHAIN 0: CH 1



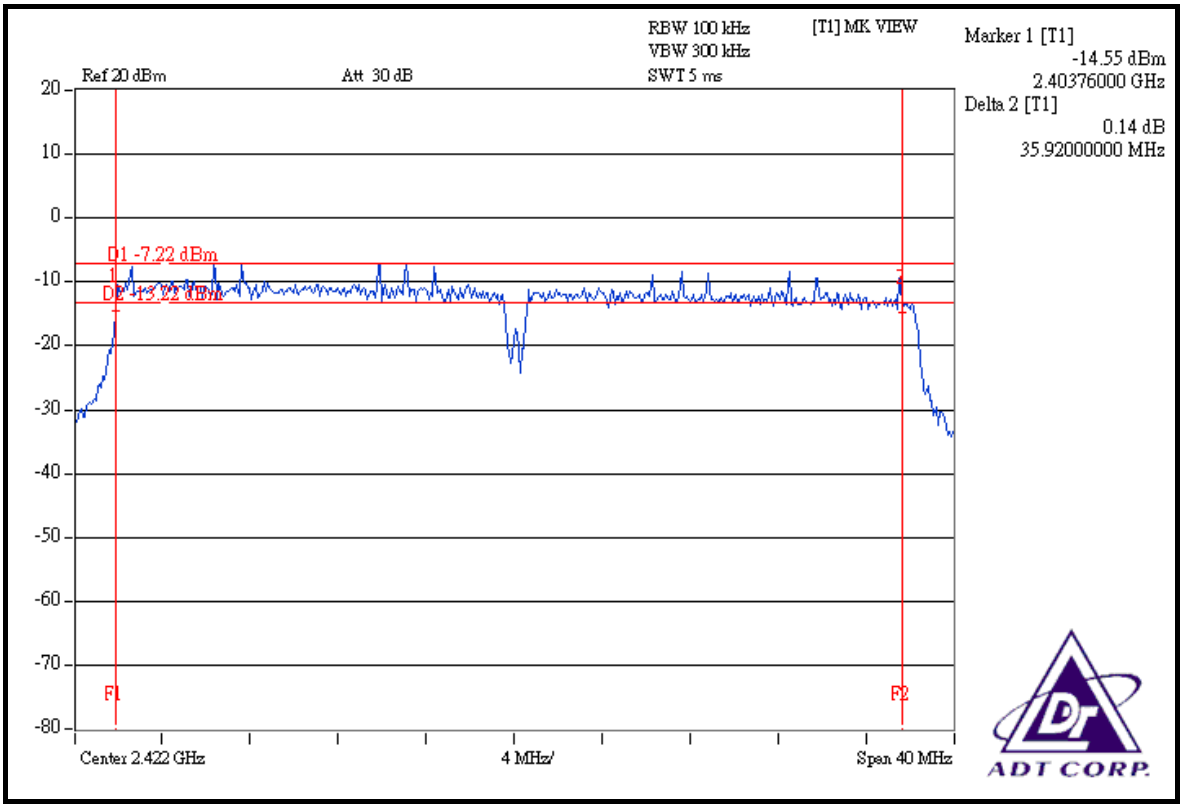
CH 4



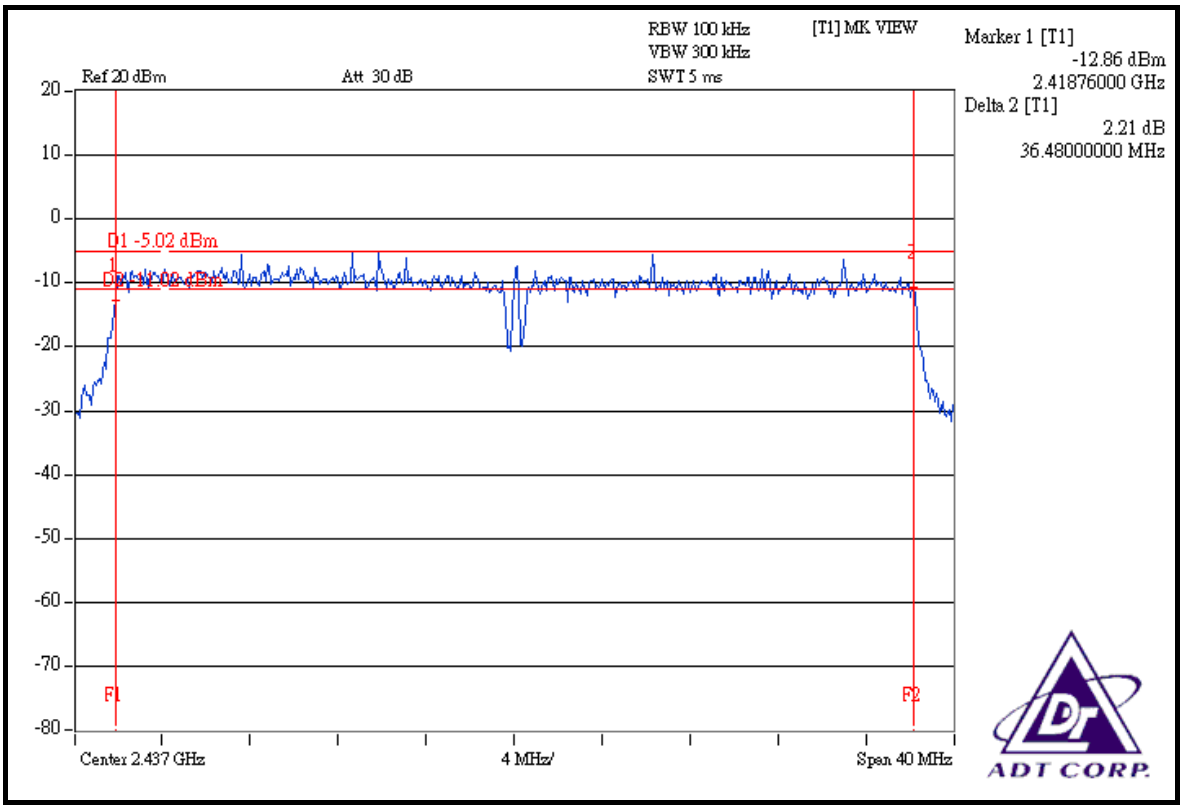
CH 7



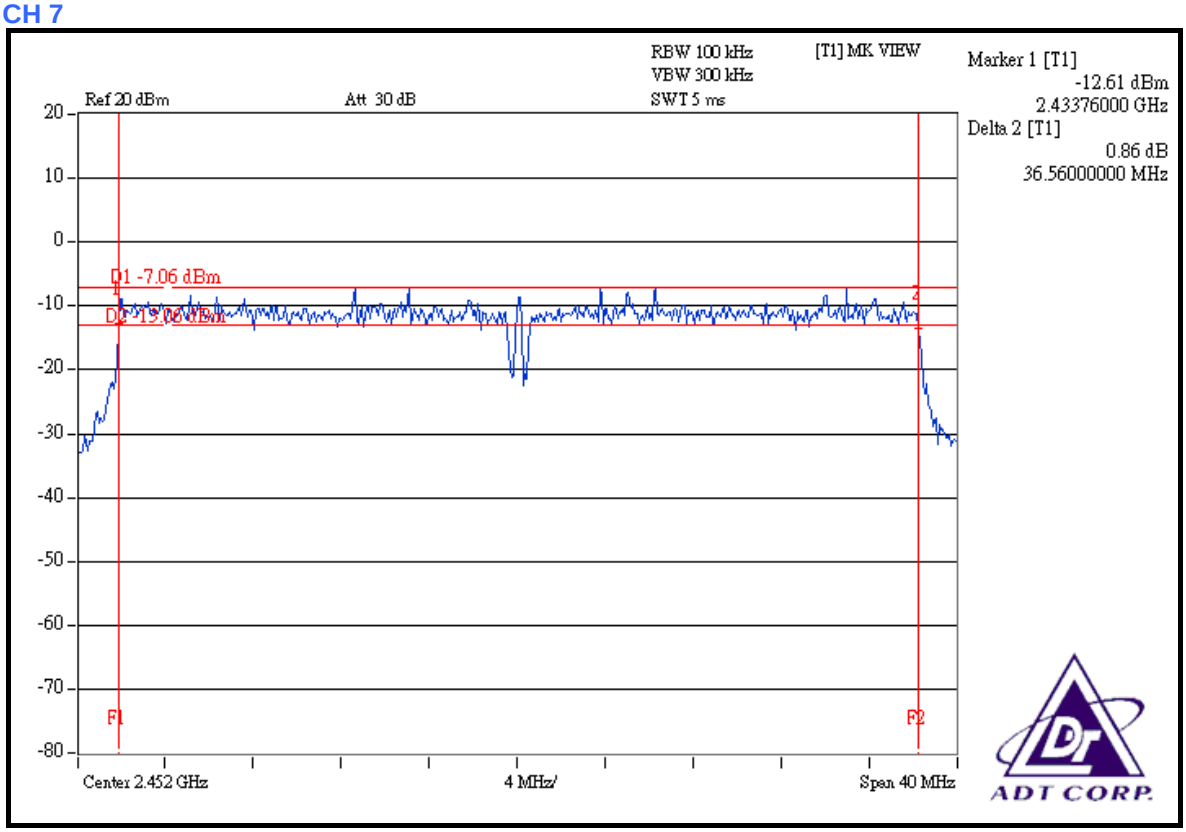
FOR CHAIN 1: CH 1



CH 4


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-12.86 dBm
2.41876000 GHz
Delta 2 [T1]
2.21 dB
36.48000000 MHz
Ref 20 dBm
Att 30 dB
D1 -5.02 dBm
F1
F2
Center 2.437 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 7


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-12.61 dBm
2.43376000 GHz
Delta 2 [T1]
0.86 dB
36.56000000 MHz
Ref 20 dBm
Att 30 dB
D1 -7.06 dBm
F1
F2
Center 2.452 GHz
4 MHz/
Span 40 MHz
ADT CORP.

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.	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100040	Jun. 28, 2008
ANRITSU SYNTHESIZED SIGNAL GENERATOR	68247B	984703	May 18, 2008
DIGITAL RT OSCILLOSCOPE	TDS1012	C037299	Nov. 27, 2007
NARDA DETECTOR	4503A	FSCM99899	NA

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

4.4.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. 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	ENVIRONMENTAL CONDITIONS	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	TESTED BY	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	64.121	18.07	30	PASS
6	2437	64.714	18.11	30	PASS
11	2462	64.417	18.09	30	PASS

802.11g OFDM MODULATION:

MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	TESTED BY	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	40.087	16.03	30	PASS
6	2437	40.551	16.08	30	PASS
11	2462	40.272	16.05	30	PASS

DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	**ENVIRONMENTAL CONDITIONS**	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	**TESTED BY**	Long Chen

CHAN.	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1				
1	2412	25.468	25.527	14.06	14.07	50.995	17.075	30	PASS
6	2437	25.468	25.410	14.06	14.05	50.878	17.065	30	PASS
11	2462	20.324	19.999	13.08	13.01	40.323	16.056	30	PASS

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	**ENVIRONMENTAL CONDITIONS**	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	**TESTED BY**	Long Chen

CHAN.	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1				
1	2422	16.144	16.106	12.08	12.07	32.250	15.085	30	PASS
4	2437	25.177	25.177	14.01	14.01	50.354	17.020	30	PASS
7	2452	16.181	16.069	12.09	12.06	32.205	15.079	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100040	Jun. 28, 2008

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

4.5.3 TEST PROCEDURE

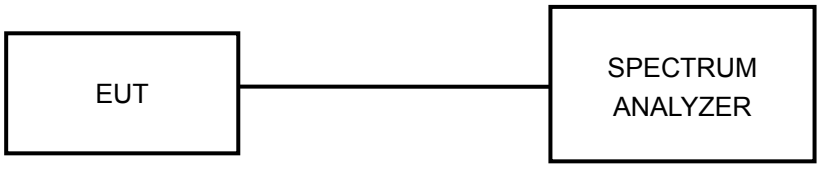
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

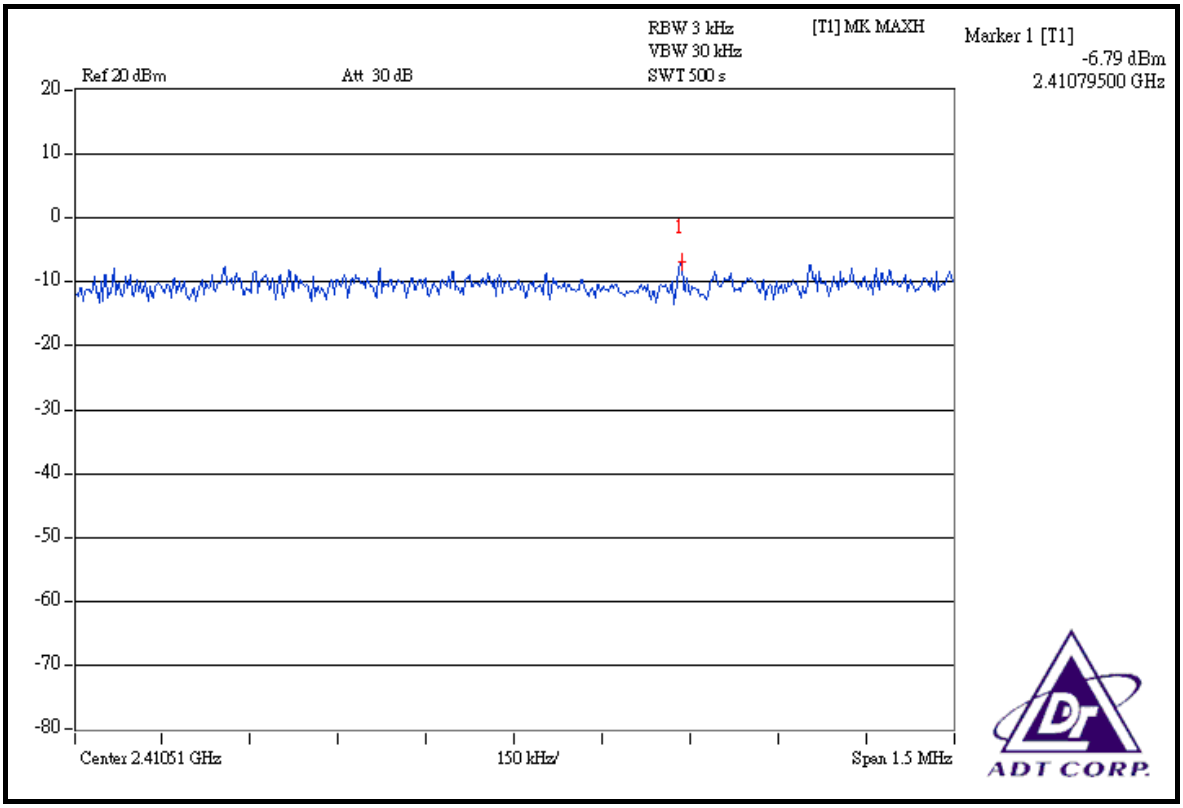
4.5.7 TEST RESULTS

802.11b DSSS MODULATION:

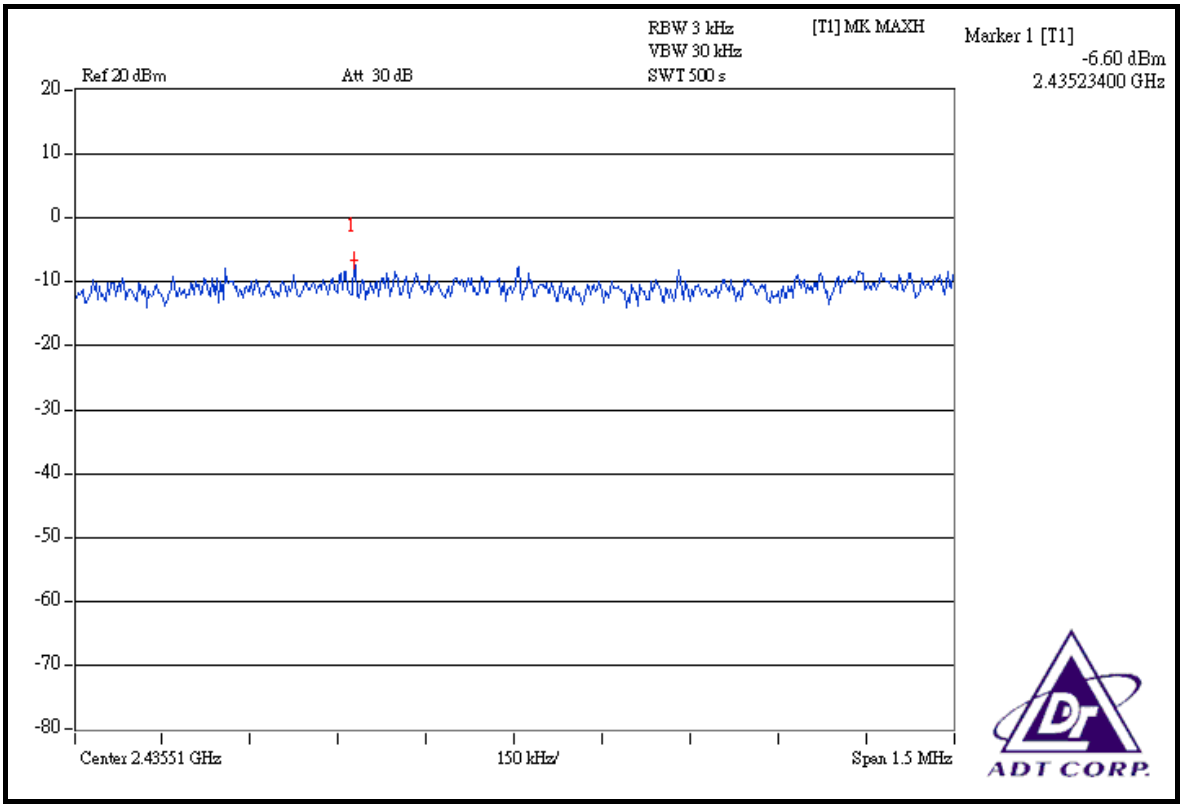
MODULATION TYPE	DBPSK	ENVIRONMENTAL CONDITIONS	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	TESTED BY	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-6.79	8	PASS
6	2437	-6.60	8	PASS
11	2462	-6.99	8	PASS

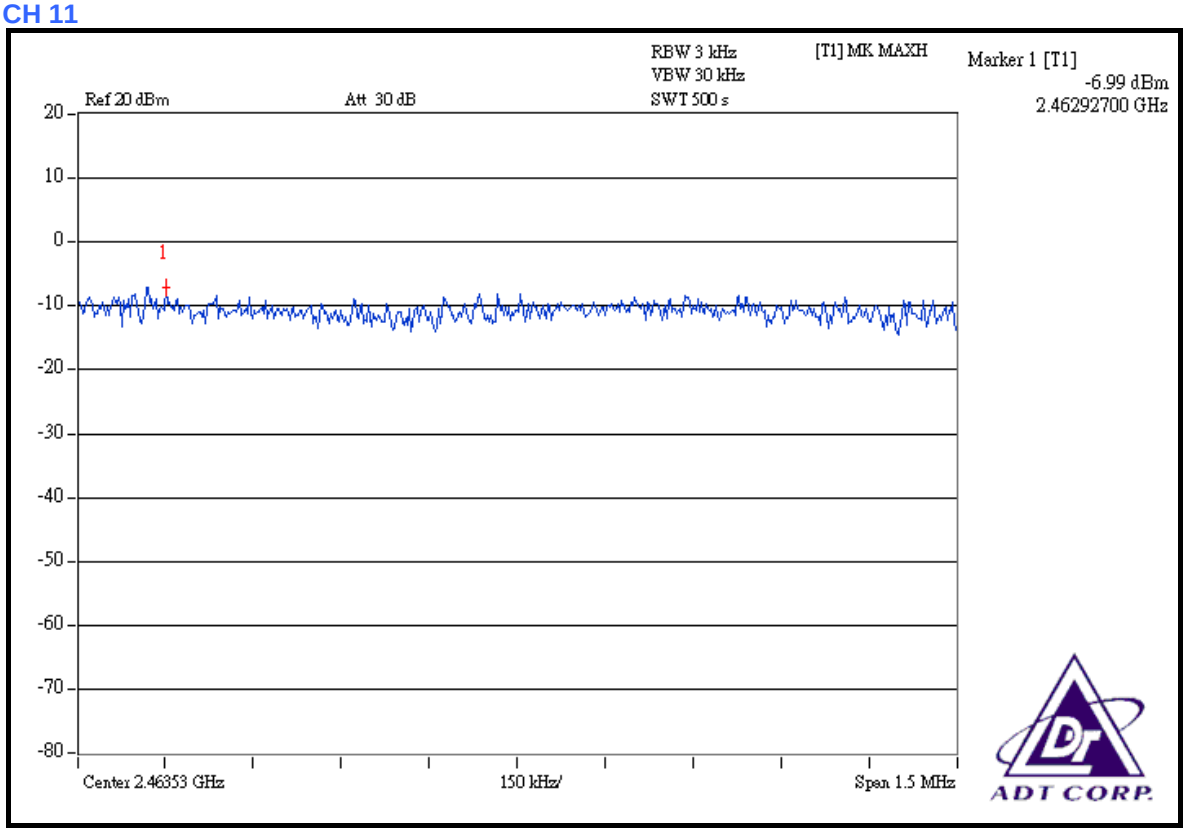
CH 1



CH 6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-6.60 dBm
2.43523400 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.43551 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

CH 11

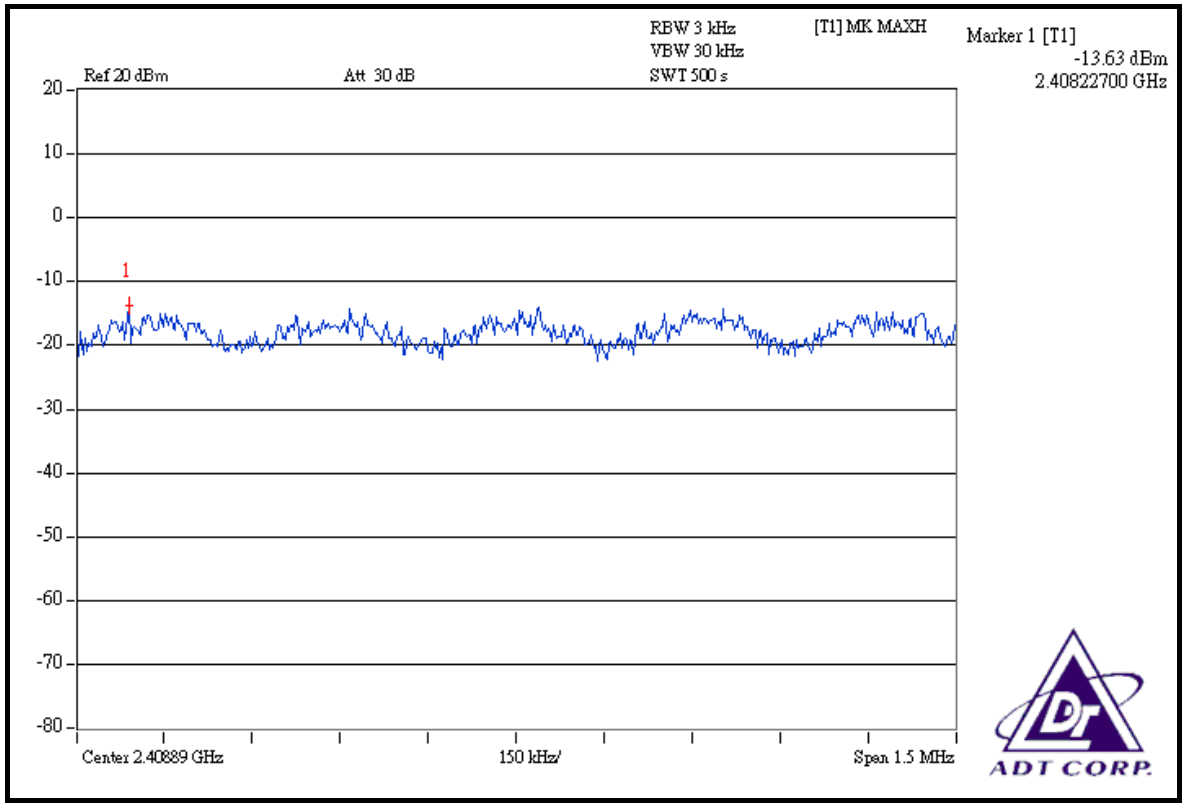

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-6.99 dBm
2.46292700 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.46353 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

802.11g OFDM MODULATION:

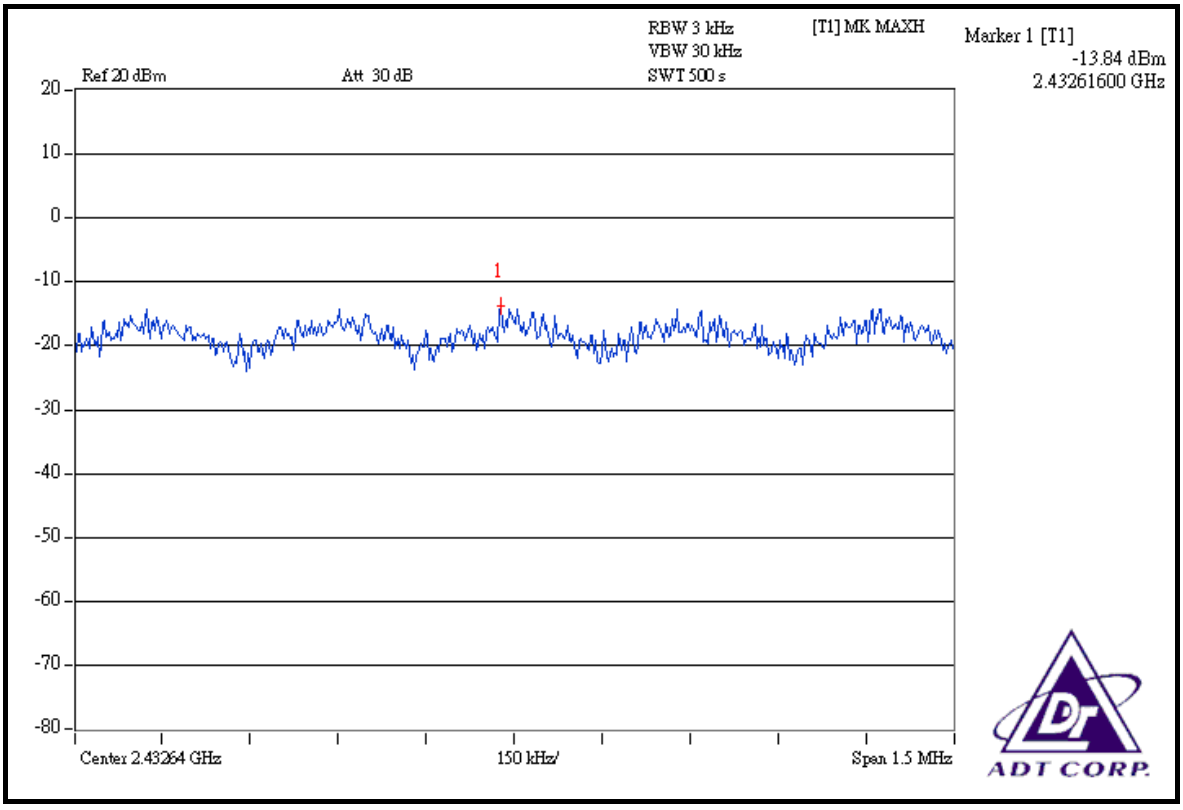
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	TESTED BY	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-13.63	8	PASS
6	2437	-13.84	8	PASS
11	2462	-13.40	8	PASS

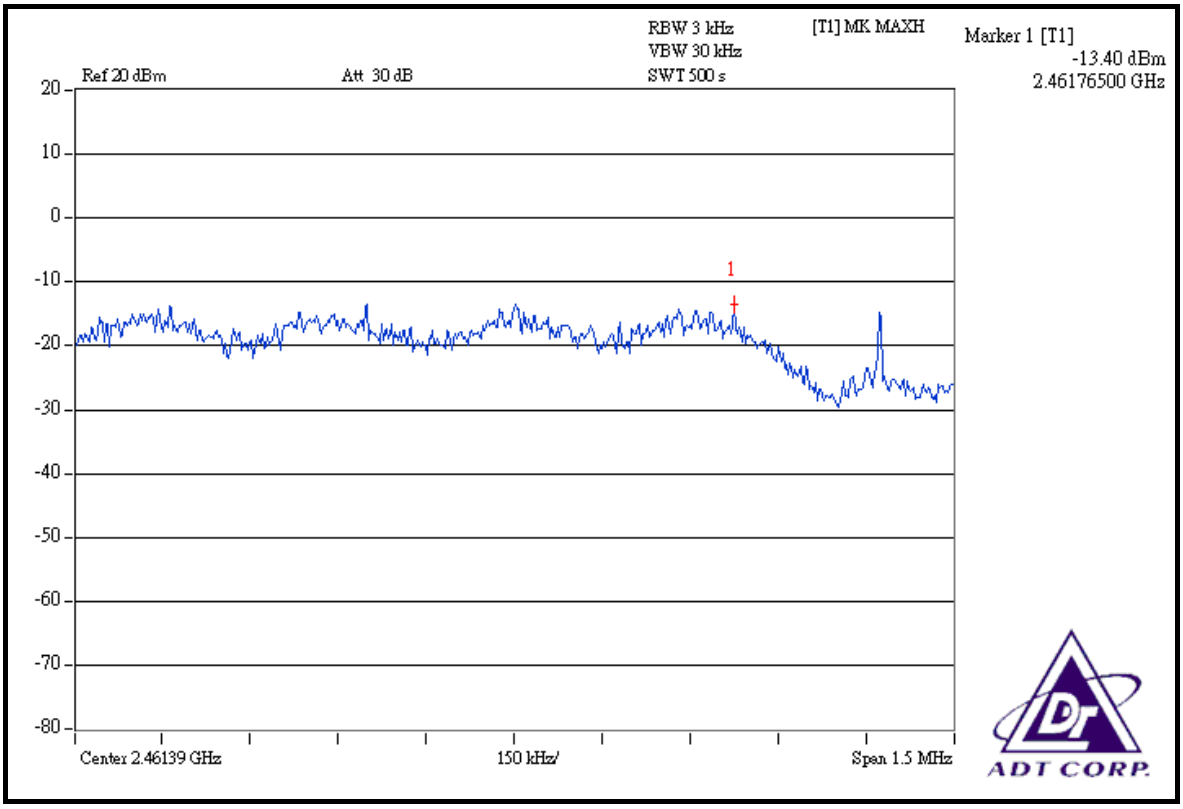
CH 1



CH 6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-13.84 dBm
2.43261600 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.43264 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

CH 11

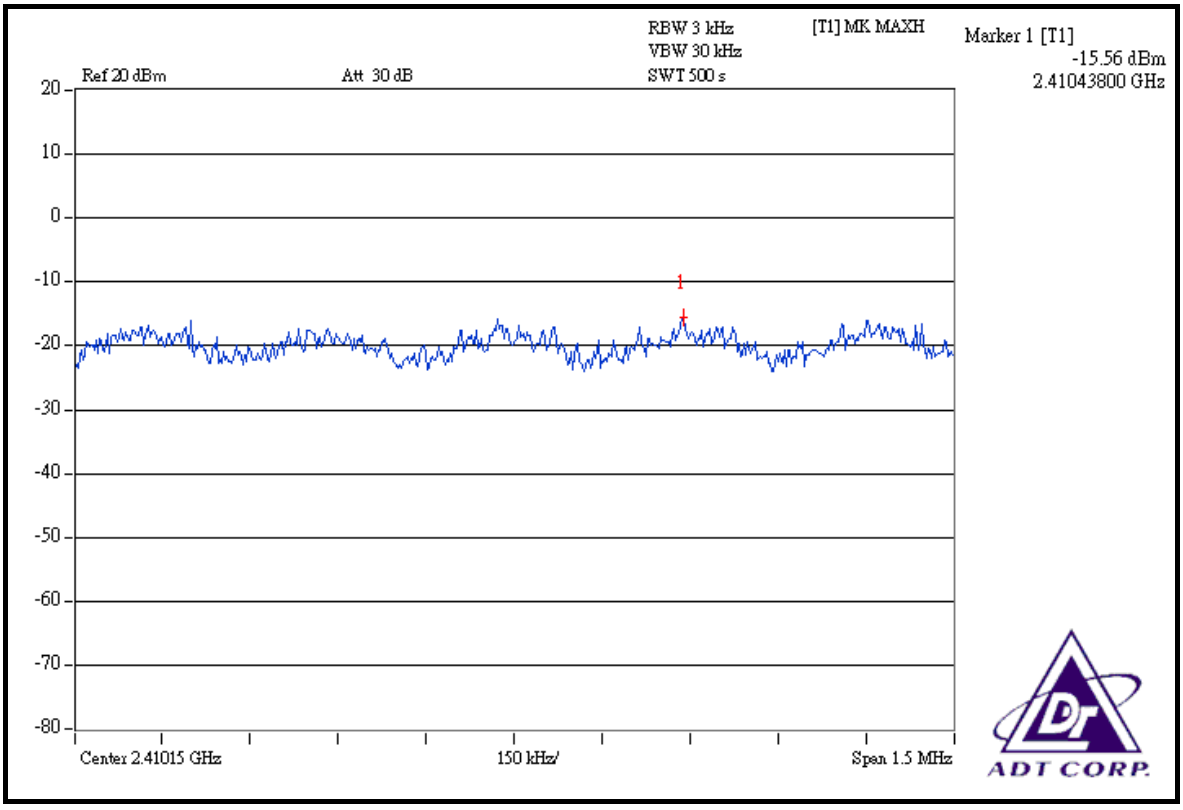

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-13.40 dBm
2.46176500 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.46139 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

DRAFT 802.11n (20MHz) OFDM MODULATION:

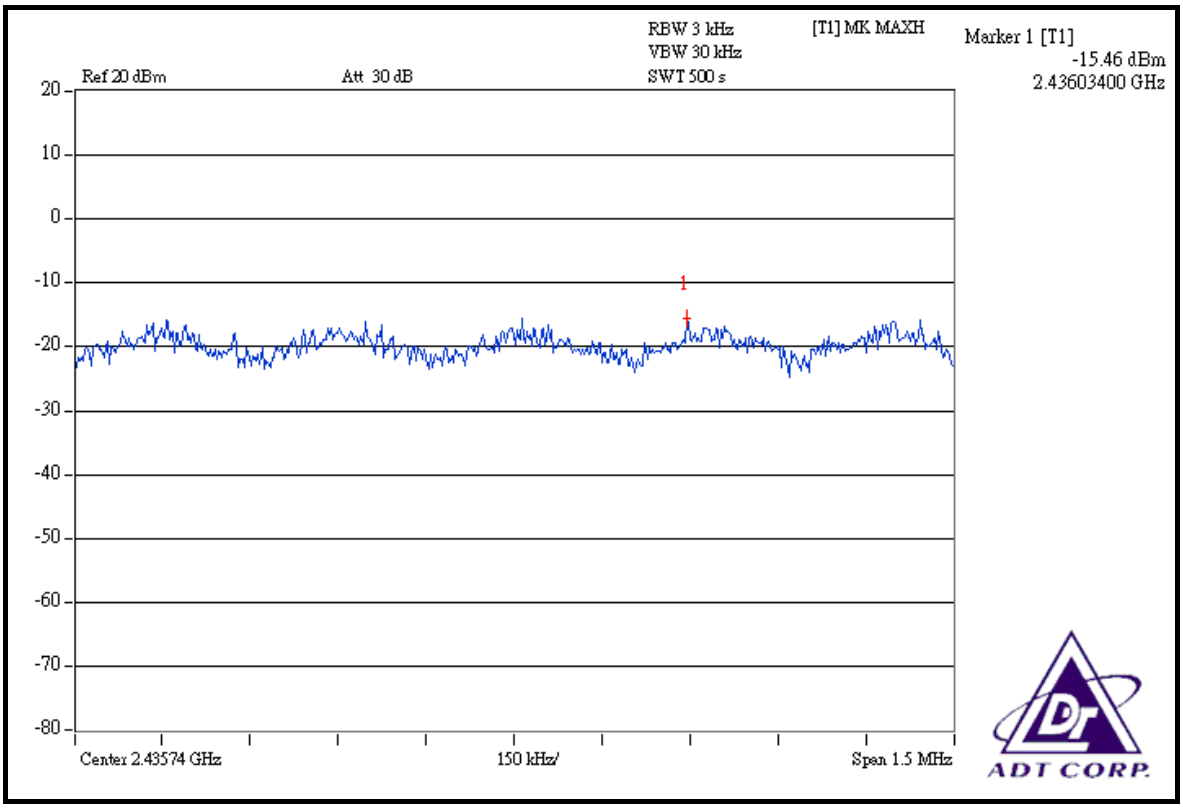
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	TESTED BY	Long Chen

CHAN.	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (mW)		RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1				
1	2412	0.028	0.027	-15.56	-15.66	0.055	-12.596	8	PASS
6	2437	0.028	0.027	-15.46	-15.62	0.055	-12.596	8	PASS
11	2462	0.021	0.021	-16.71	-16.71	0.042	-13.768	8	PASS

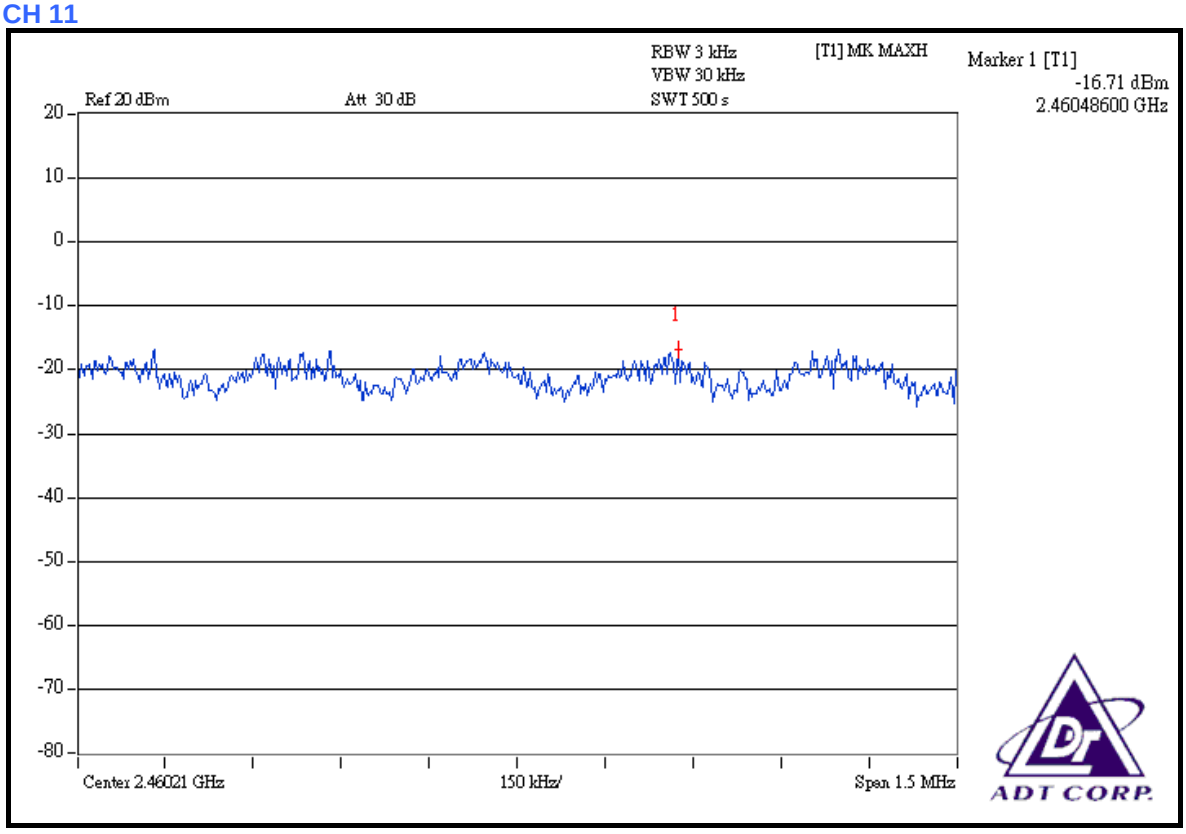
FOR CHAIN 0: CH 1



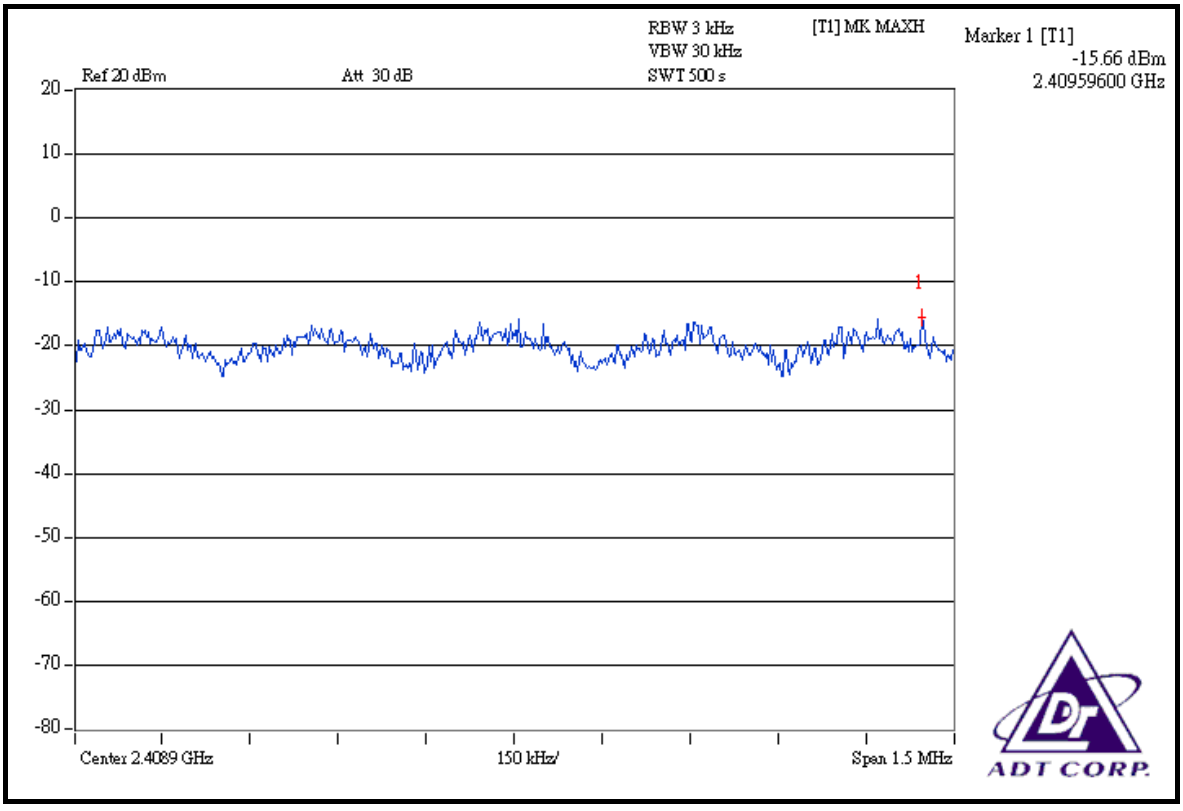
CH 6



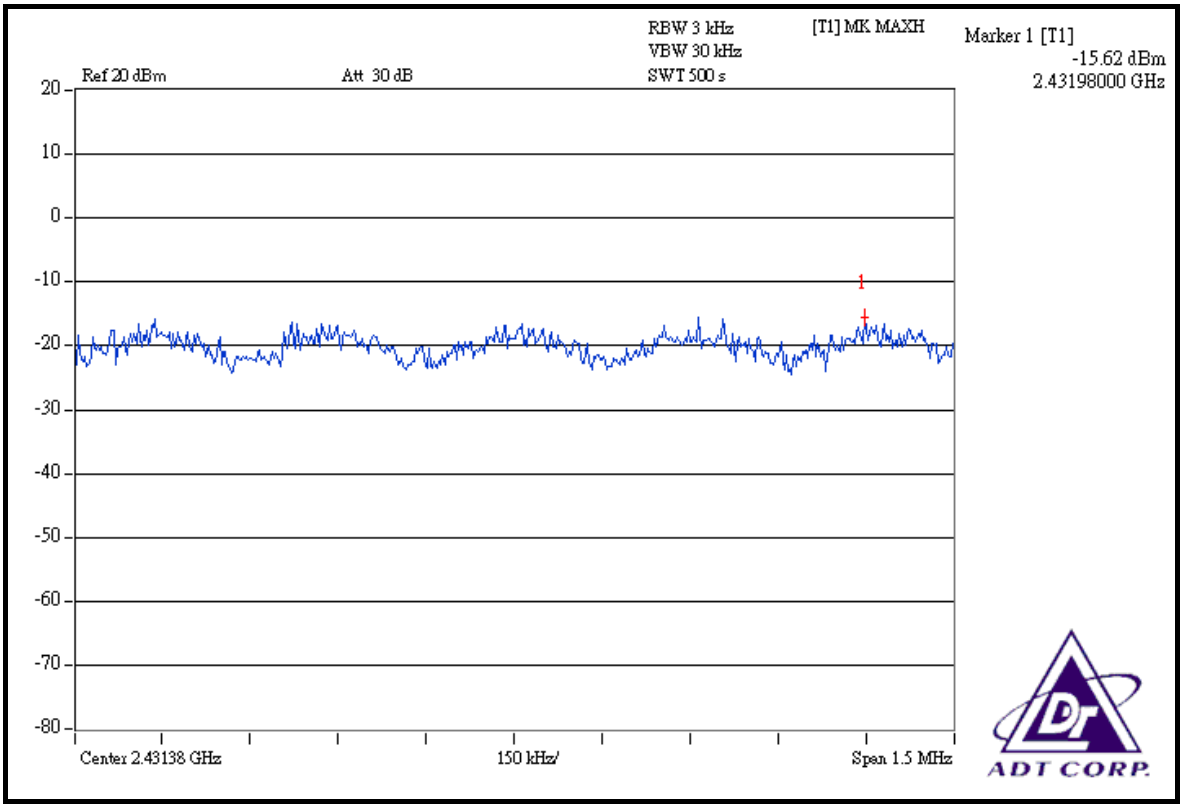
CH 11



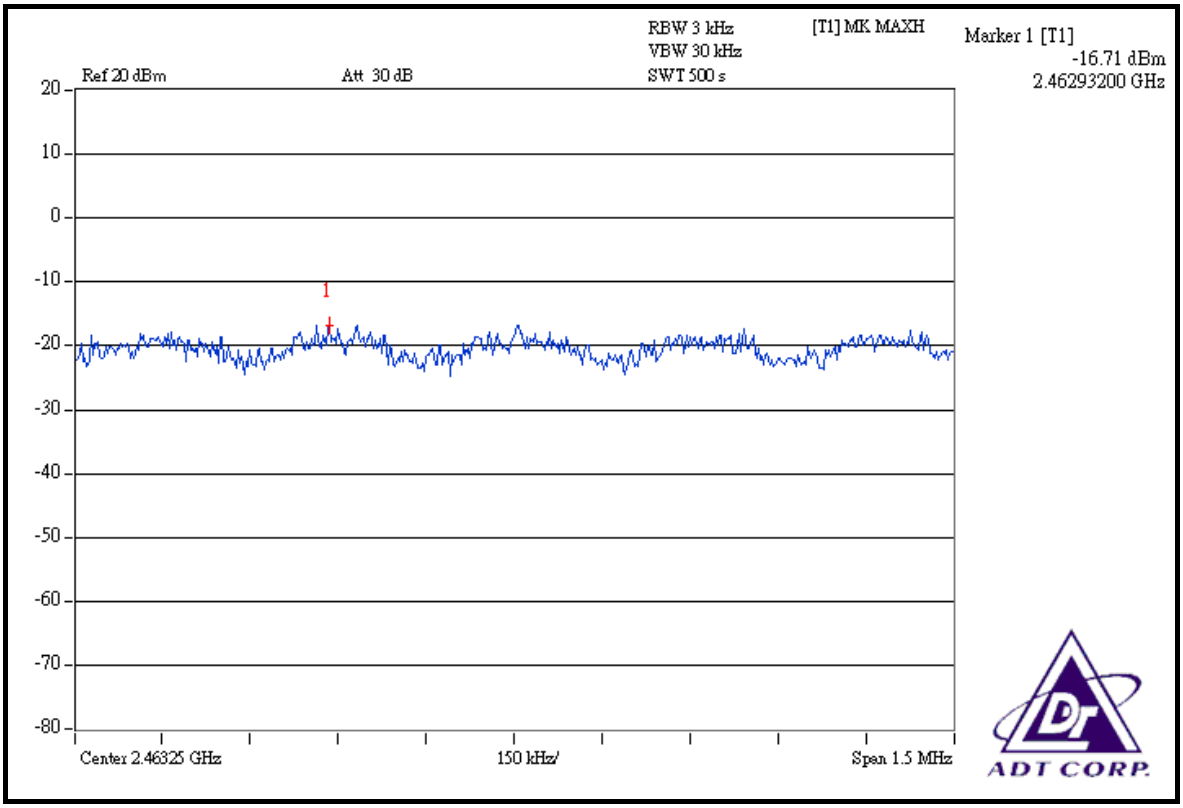
FOR CHAIN 1: CH 1



CH 6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-15.62 dBm
2.43198000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.43138 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

CH 11

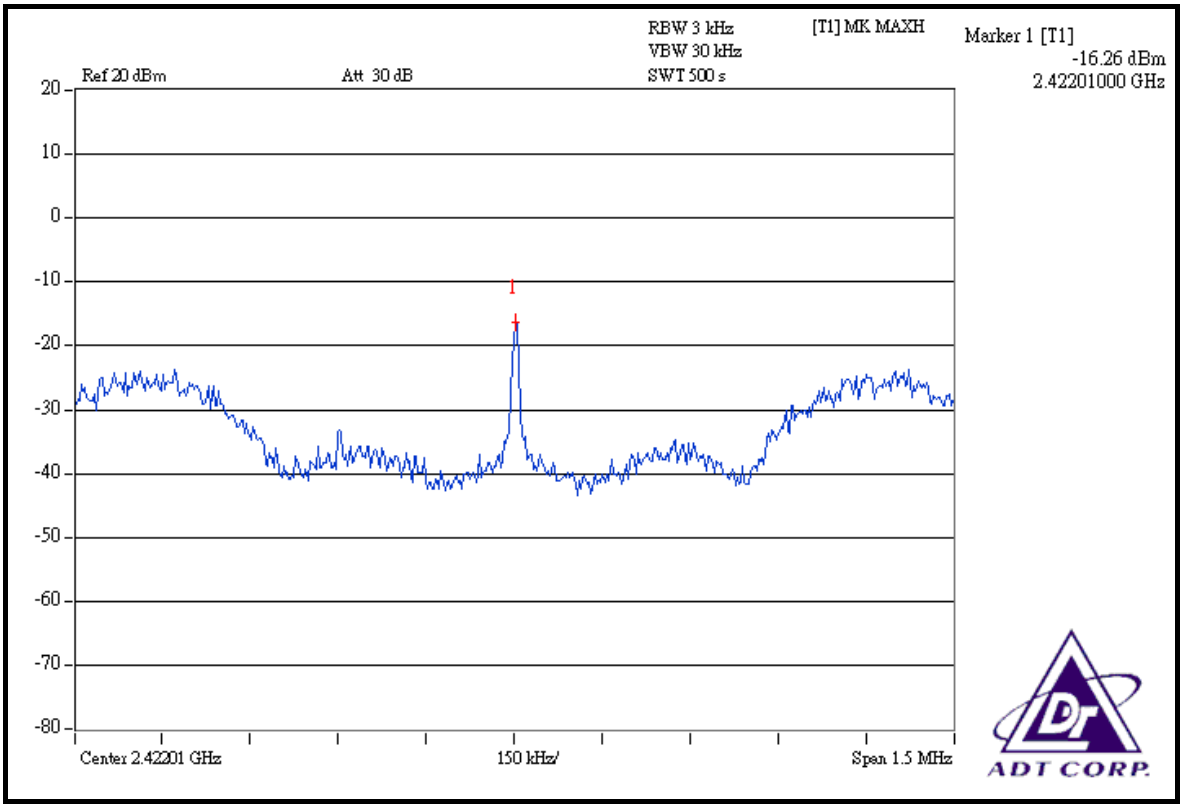

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-16.71 dBm
2.46293200 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.46325 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION:

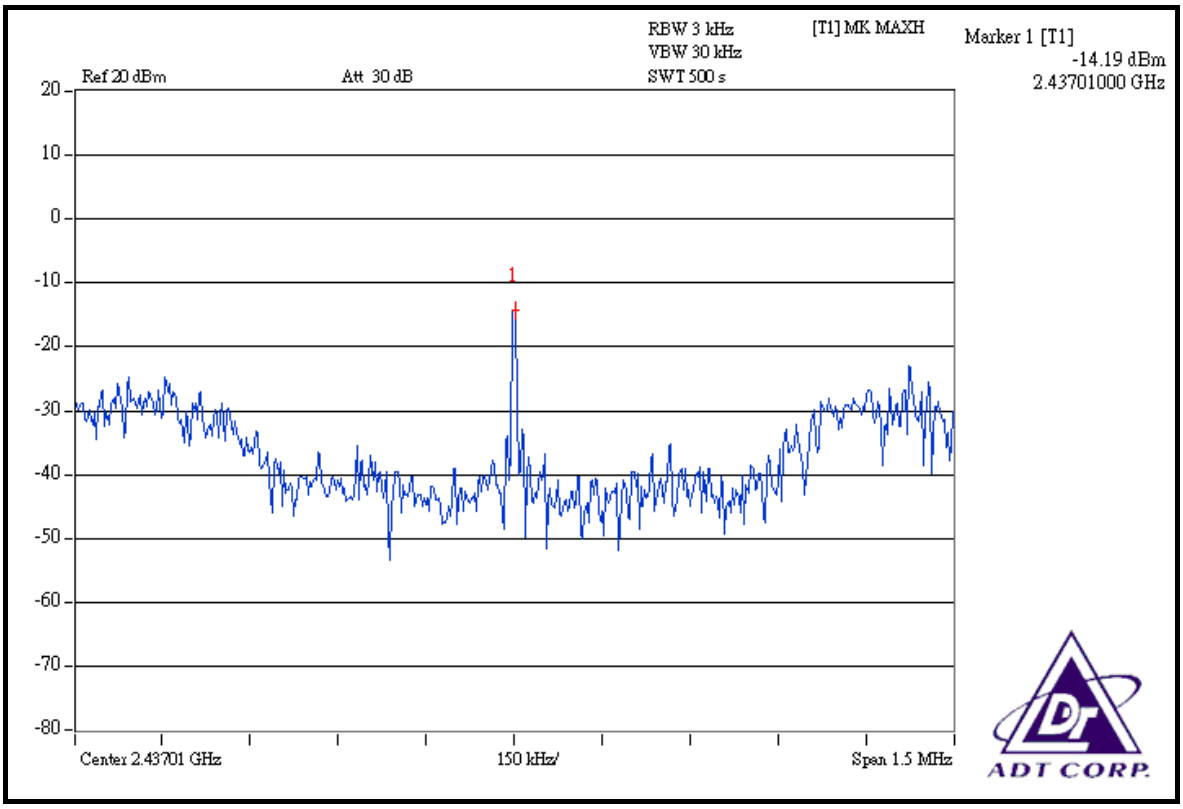
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	TESTED BY	Long Chen

CHAN.	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (mW)		RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1				
1	2422	0.024	0.010	-16.26	-20.16	0.034	-14.685	8	PASS
4	2437	0.038	0.015	-14.19	-18.11	0.053	-12.757	8	PASS
7	2452	0.024	0.010	-16.20	-19.93	0.034	-14.685	8	PASS

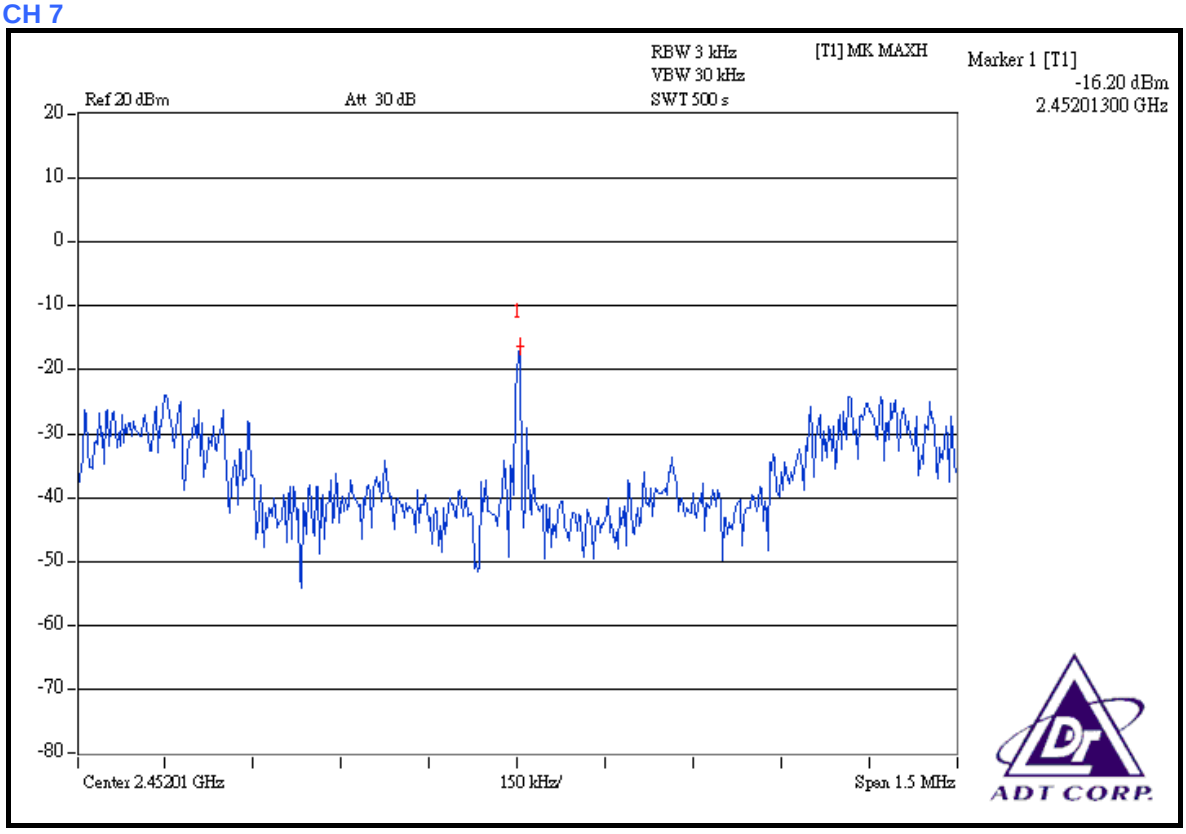
FOR CHAIN 0: CH 1



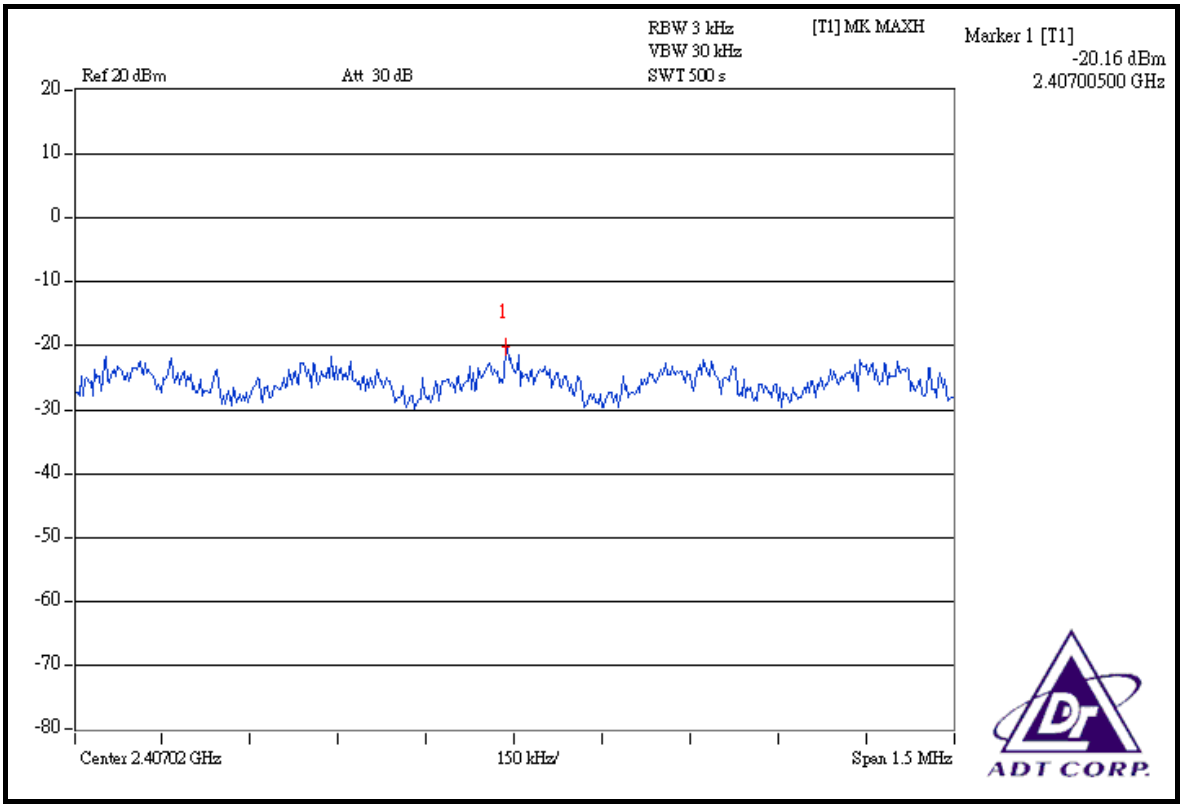
CH 4



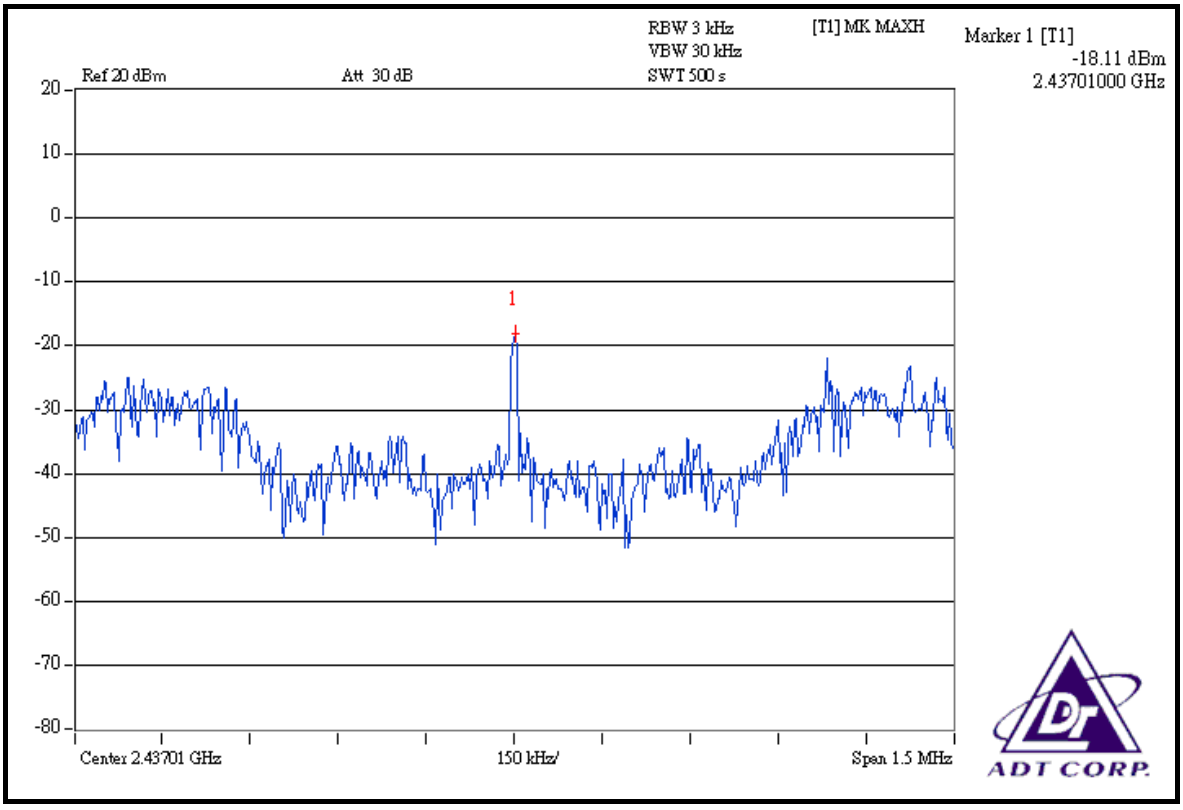
CH 7



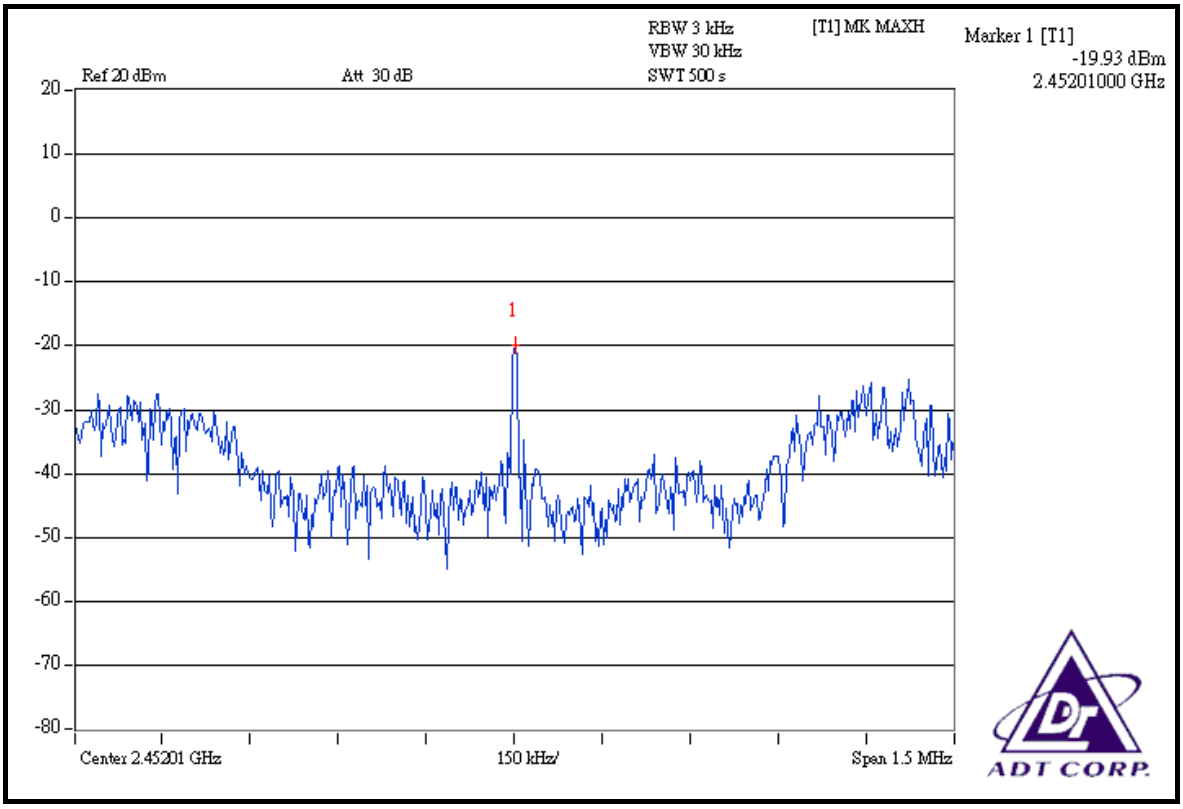
FOR CHAIN 1: CH 1



CH 4


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-18.11 dBm
2.43701000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 2.43701 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

CH 7


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-19.93 dBm
2.45201000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 2.45201 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
802.11b, 802.11g:			
R&S SPECTRUM ANALYZER	FSP40	100040	Jun. 28, 2008
DRAFT 802.11n (20MHz), DRAFT 802.11n (40MHz):			
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Feb. 26, 2008
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	May 31, 2008
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jun. 28, 2008
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 28, 2007
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	238137/4	Dec. 11, 2007
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	233233/4	Nov. 14, 2007
Software ADT.	ADT_Radiated_V7.6	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	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

802.11b, 802.11g:

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 300kMHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW =100kHz, VBW = 300kHz; Average RBW = 1MHz, VBW = 10Hz) are attached on the following pages.

DRAFT 802.11n (20MHz), DRAFT 802.11n (40MHz):

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 with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW = VBW = 100kHz) 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).

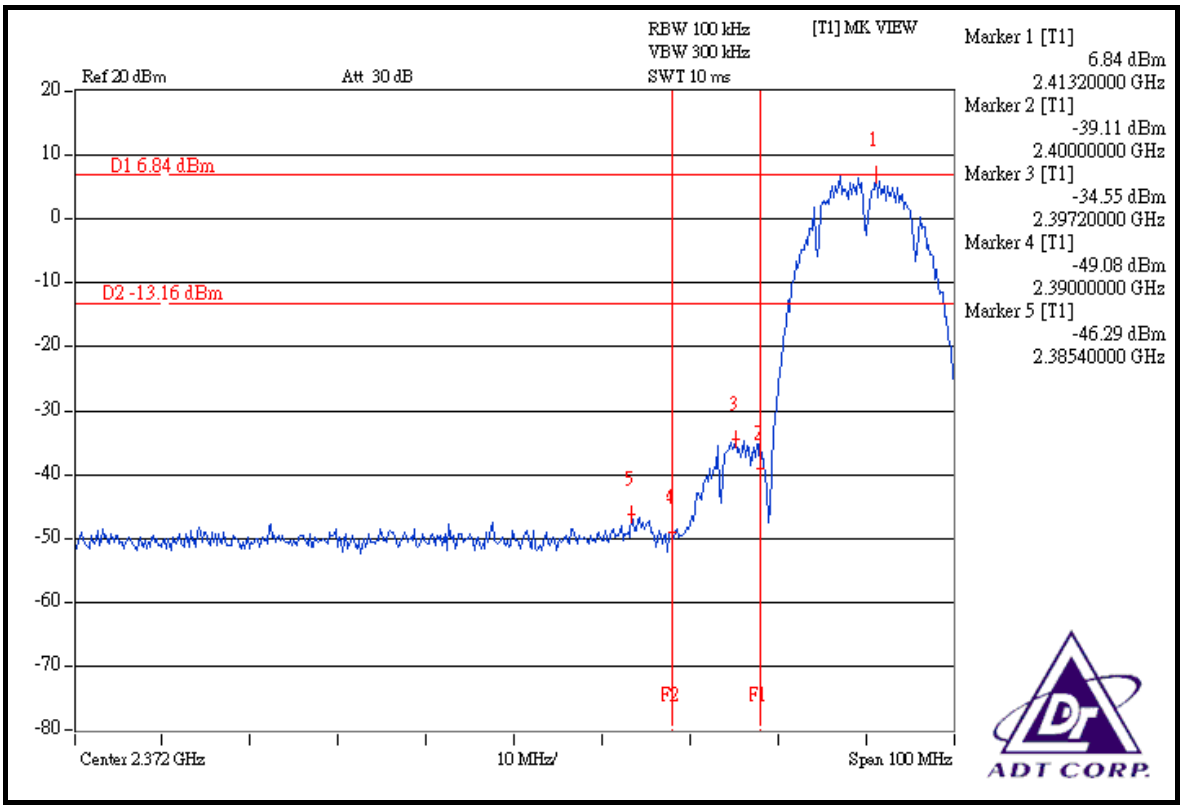
802.11b DSSS MODULATION

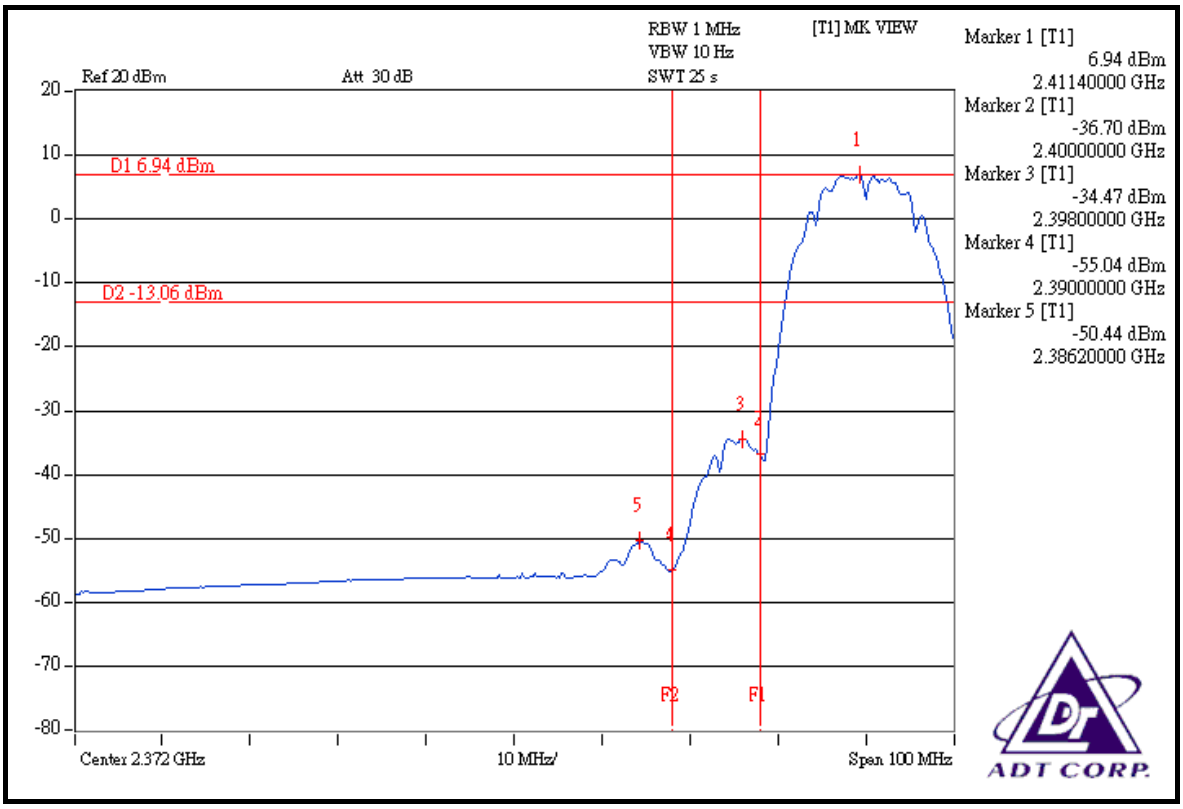
NOTE 1:
The band edge emission plot on the next page shows 53.13dBc between carrier maximum power and local maximum emission in restrict band (2.3854GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 111.58dBuV/m (Peak), so the maximum field strength in restrict band is 111.58 – 53.13 = 58.45dBuV/m which is under 74dBuV/m limit.

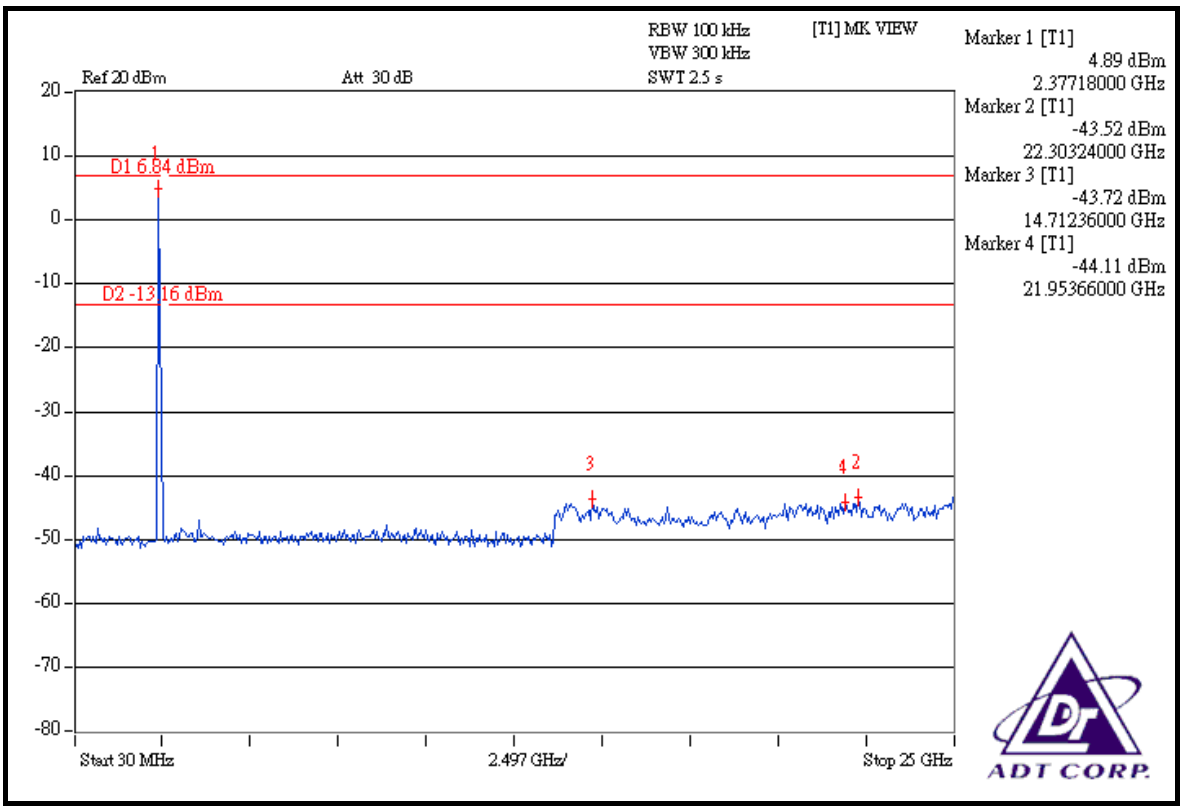
The band edge emission plot on the next page shows 57.38dBc between carrier maximum power and local maximum emission in restrict band (2.3862GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 107.00dBuV/m (Average), so the maximum field strength in restrict band is 107.00 – 57.38 = 49.62dBuV/m which is under 54dBuV/m limit.

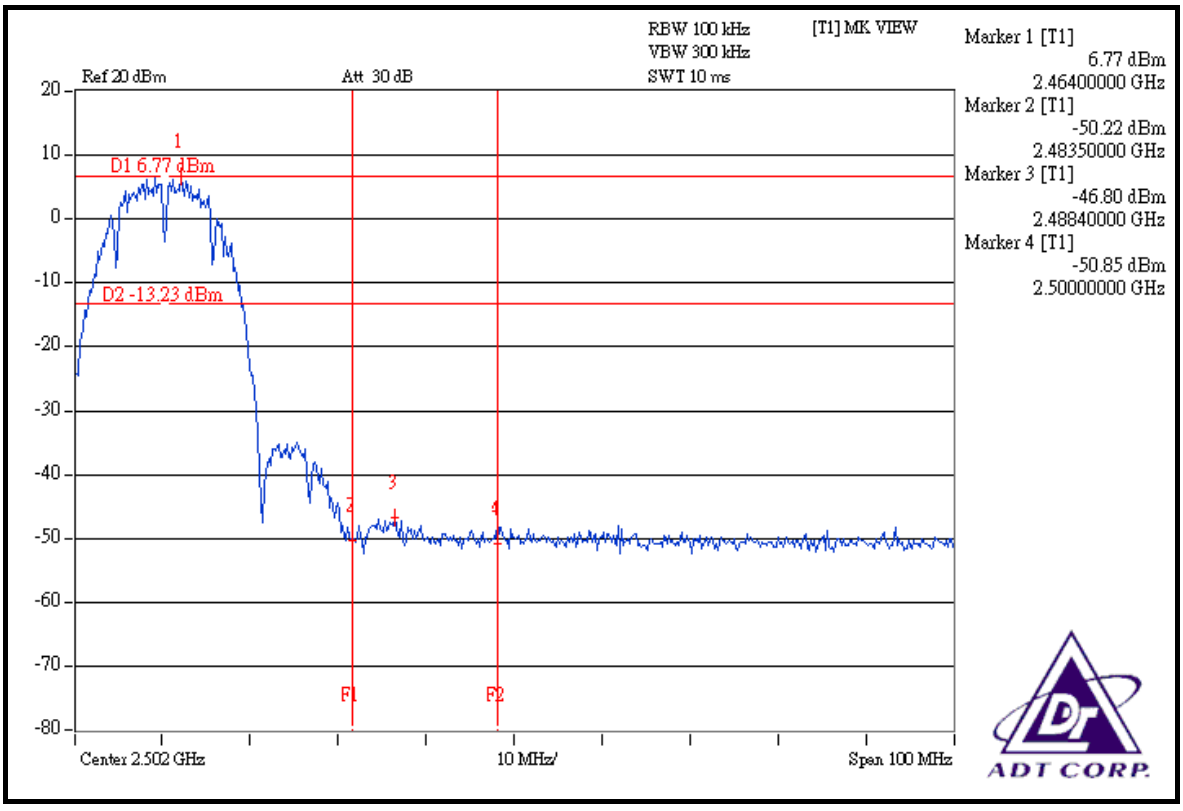
NOTE 2:
The band edge emission plot on the next second page shows 53.57dBc between carrier maximum power and local maximum emission in restrict band (2.4884GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 111.96dBuV/m (Peak), so the maximum field strength in restrict band is 111.96 – 53.57 = 58.39dBuV/m which is under 74dBuV/m limit.

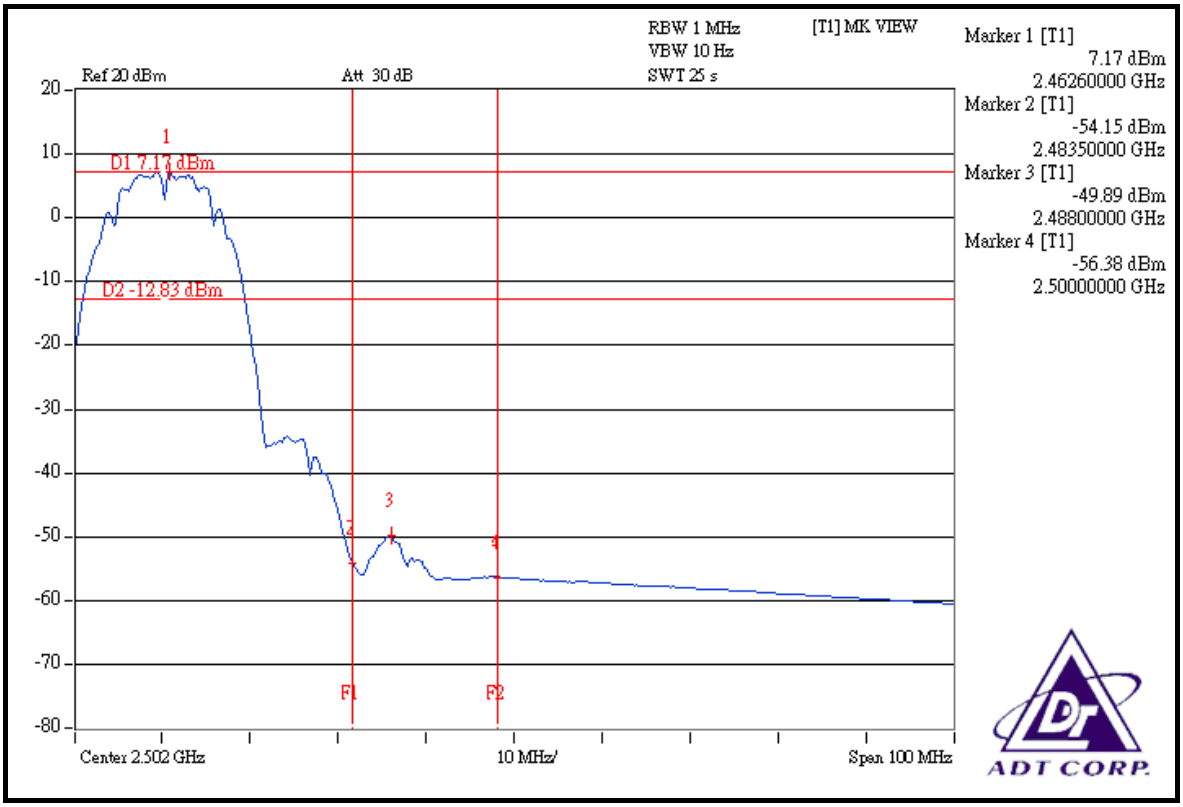
The band edge emission plot on the next third page shows 57.06dBc between carrier maximum power and local maximum emission in restrict band (2.4880GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 107.35dBuV/m (Average), so the maximum field strength in restrict band is 107.35 – 57.06 = 50.29dBuV/m which is under 54dBuV/m limit.

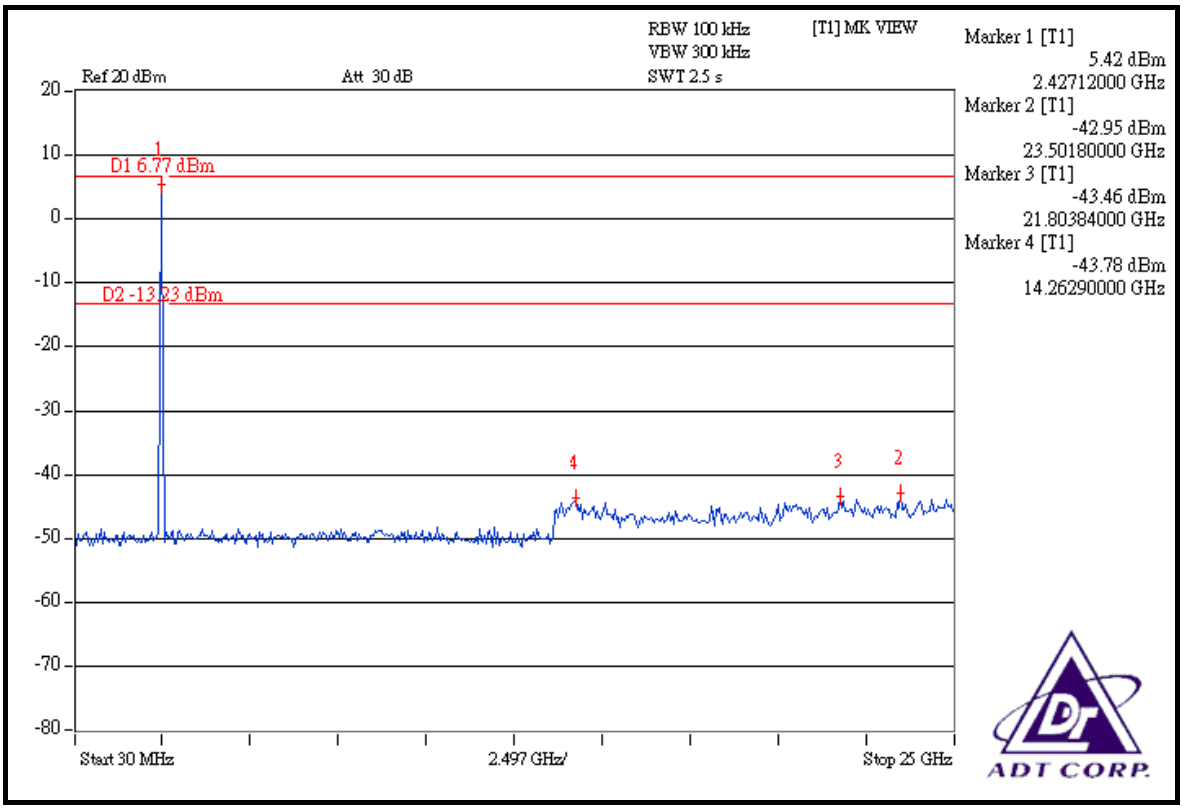

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 6.84 dBm
D2 -13.16 dBm
Center 2.372 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
6.84 dBm
2.41320000 GHz
Marker 2 [T1]
-39.11 dBm
2.40000000 GHz
Marker 3 [T1]
-34.55 dBm
2.39720000 GHz
Marker 4 [T1]
-49.08 dBm
2.39000000 GHz
Marker 5 [T1]
-46.29 dBm
2.38540000 GHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 6.94 dBm
D2 -13.06 dBm
Center 2.372 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
6.94 dBm
2.41140000 GHz
Marker 2 [T1]
-36.70 dBm
2.40000000 GHz
Marker 3 [T1]
-34.47 dBm
2.39800000 GHz
Marker 4 [T1]
-55.04 dBm
2.39000000 GHz
Marker 5 [T1]
-50.44 dBm
2.38620000 GHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 6.84 dBm
D2 -13.16 dBm
Marker 1 [T1]
4.89 dBm
2.37718000 GHz
Marker 2 [T1]
-43.52 dBm
22.30324000 GHz
Marker 3 [T1]
-43.72 dBm
14.71236000 GHz
Marker 4 [T1]
-44.11 dBm
21.95366000 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 6.77 dBm
D2 -13.23 dBm
Marker 1 [T1]
6.77 dBm
2.46400000 GHz
Marker 2 [T1]
-50.22 dBm
2.48350000 GHz
Marker 3 [T1]
-46.80 dBm
2.48840000 GHz
Marker 4 [T1]
-50.85 dBm
2.50000000 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 20 dBm
Att 30 dB
D1 7.17 dBm
D2 -12.83 dBm
Marker 1 [T1]
7.17 dBm
2.46260000 GHz
Marker 2 [T1]
-54.15 dBm
2.48350000 GHz
Marker 3 [T1]
-49.89 dBm
2.48800000 GHz
Marker 4 [T1]
-56.38 dBm
2.50000000 GHz
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 6.77 dBm
D2 -13.23 dBm
Marker 1 [T1]
5.42 dBm
2.42712000 GHz
Marker 2 [T1]
-42.95 dBm
23.50180000 GHz
Marker 3 [T1]
-43.46 dBm
21.80384000 GHz
Marker 4 [T1]
-43.78 dBm
14.26290000 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11g OFDM MODULATION

NOTE 1:

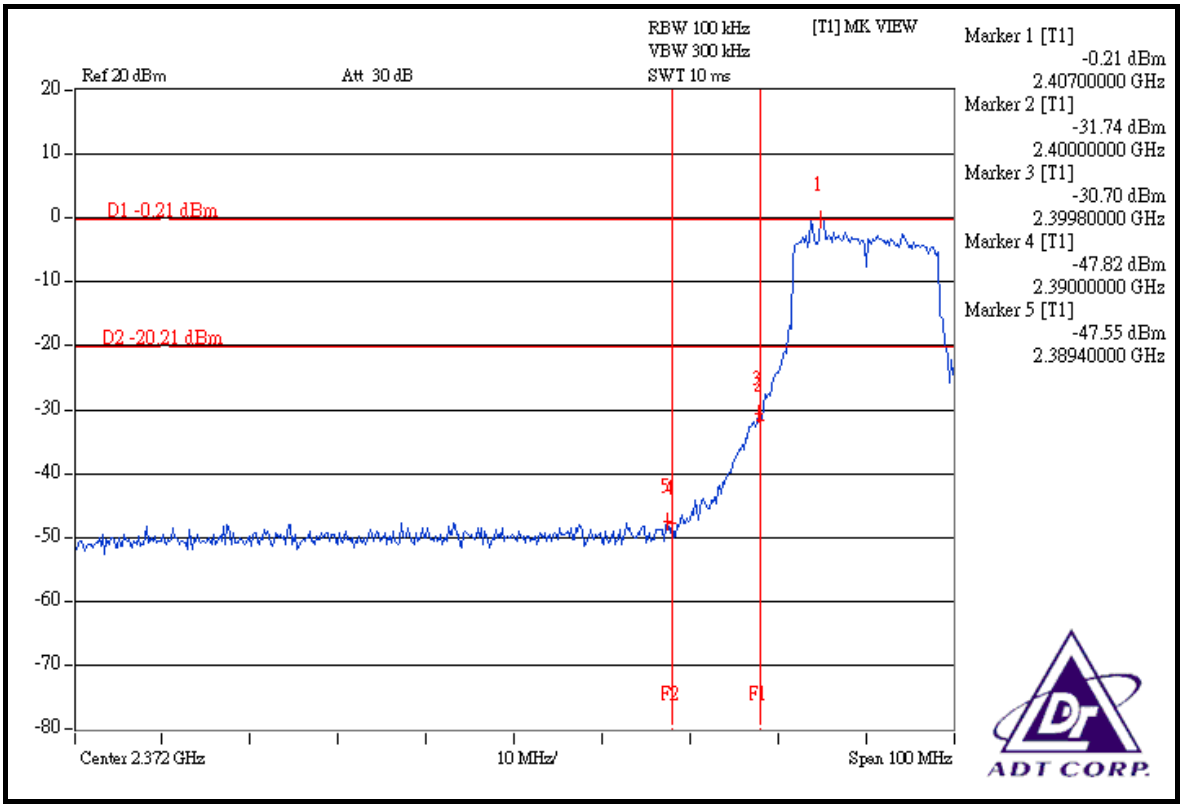
The band edge emission plot on the next page shows 47.34dBc between carrier maximum power and local maximum emission in restrict band (2.3894GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 109.43dBuV/m (Peak), so the maximum field strength in restrict band is 109.43 – 47.34 = 62.09dBuV/m which is under 74dBuV/m limit.

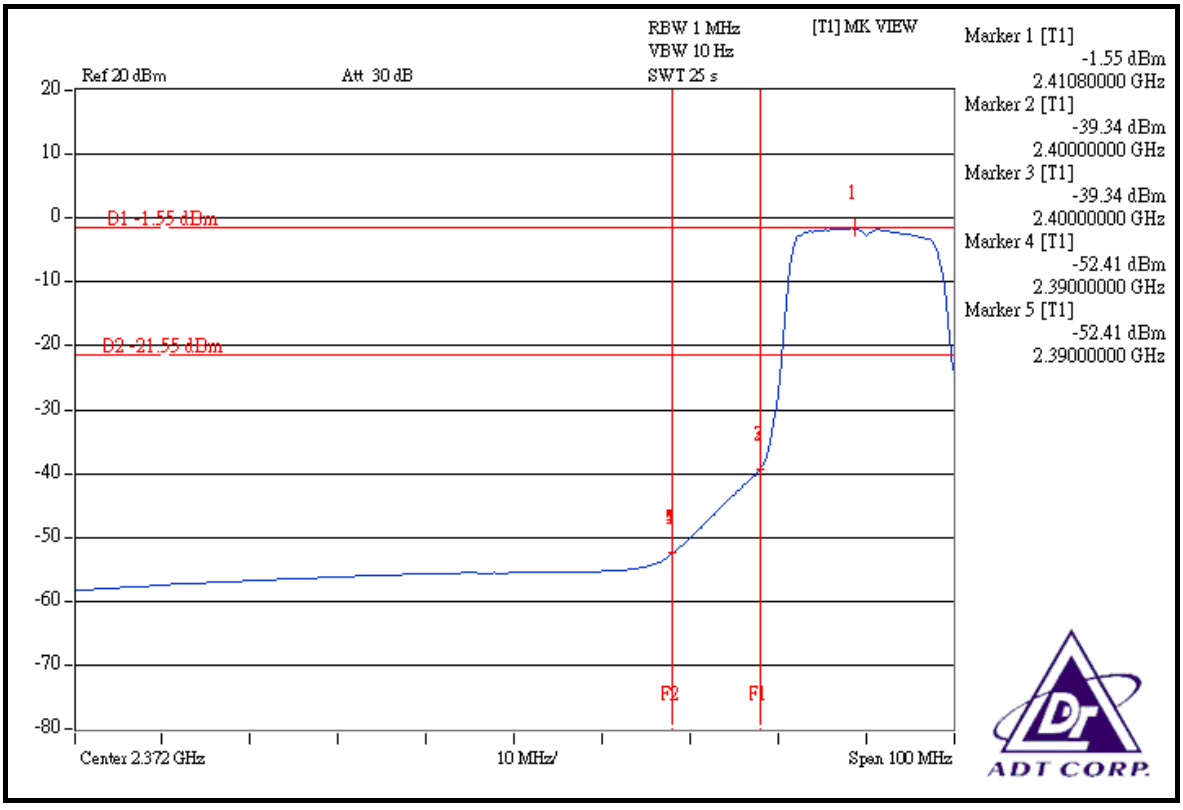
The band edge emission plot on the next page shows 50.86dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 99.12dBuV/m (Average), so the maximum field strength in restrict band is 99.12 – 50.86 = 48.26dBuV/m which is under 54dBuV/m limit.

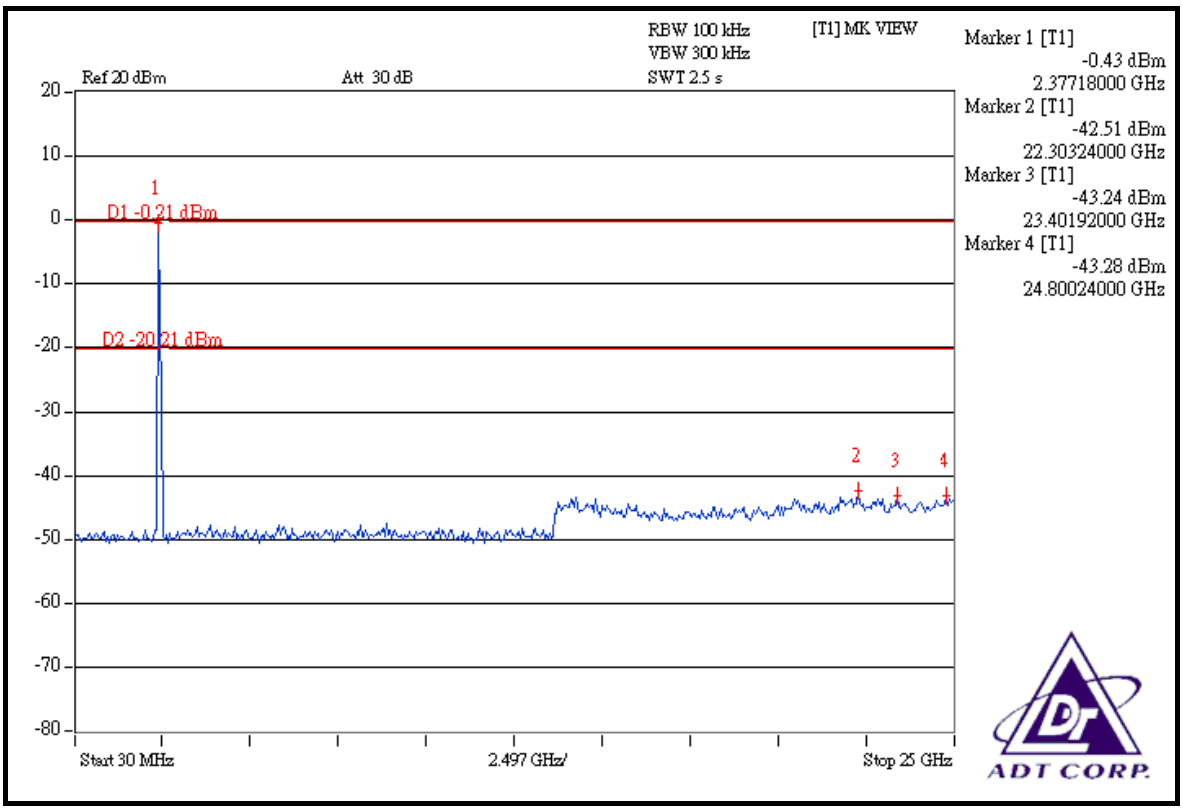
NOTE 2:

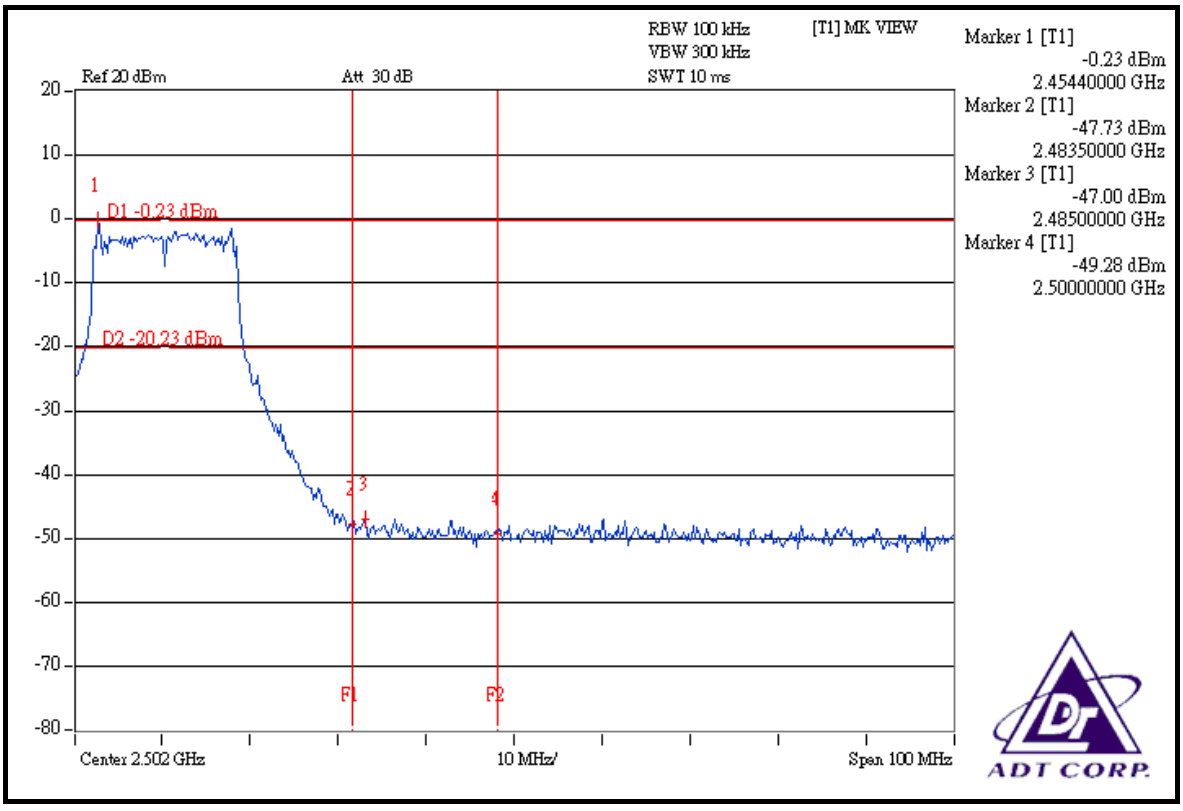
The band edge emission plot on the next second page shows 46.77dBc between carrier maximum power and local maximum emission in restrict band (2.4850GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 109.95dBuV/m (Peak), so the maximum field strength in restrict band is 109.95 – 46.77 = 63.18dBuV/m which is under 74dBuV/m limit.

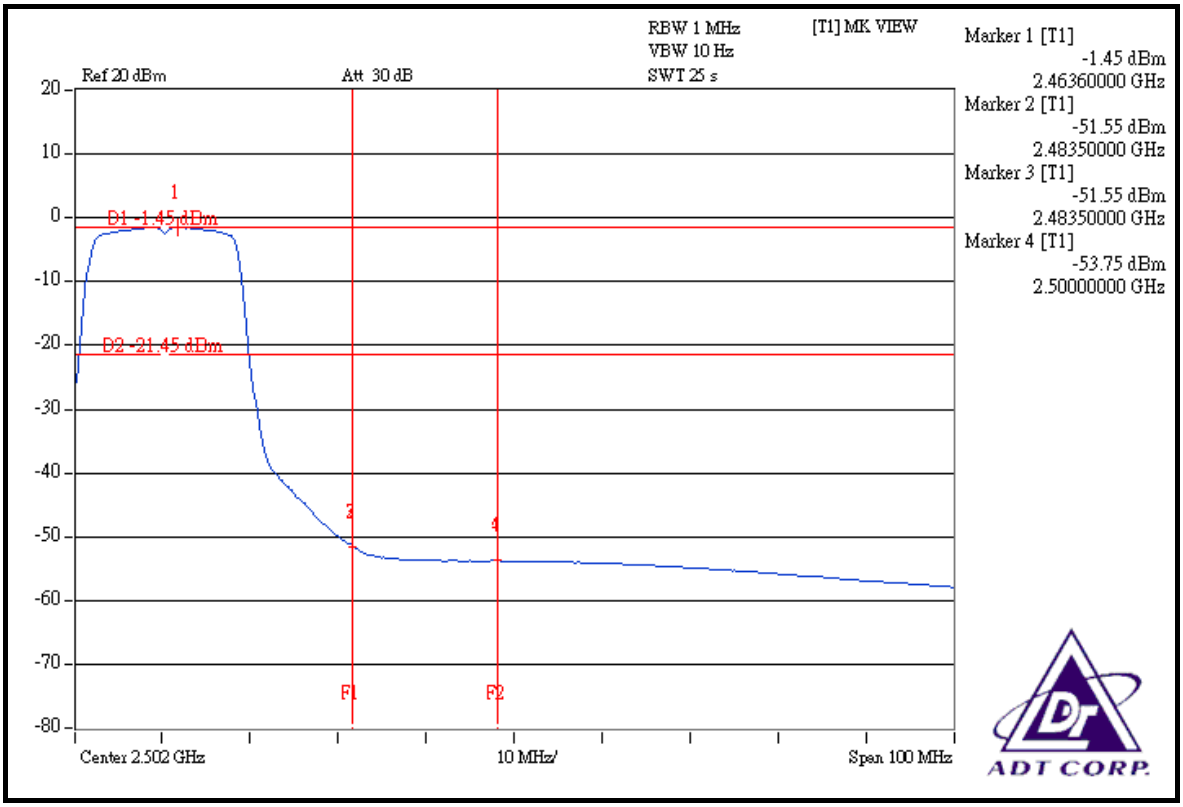
The band edge emission plot on the next third page shows 50.10dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 99.60dBuV/m (Average), so the maximum field strength in restrict band is 99.60 – 50.10 = 49.50dBuV/m which is under 54dBuV/m limit.

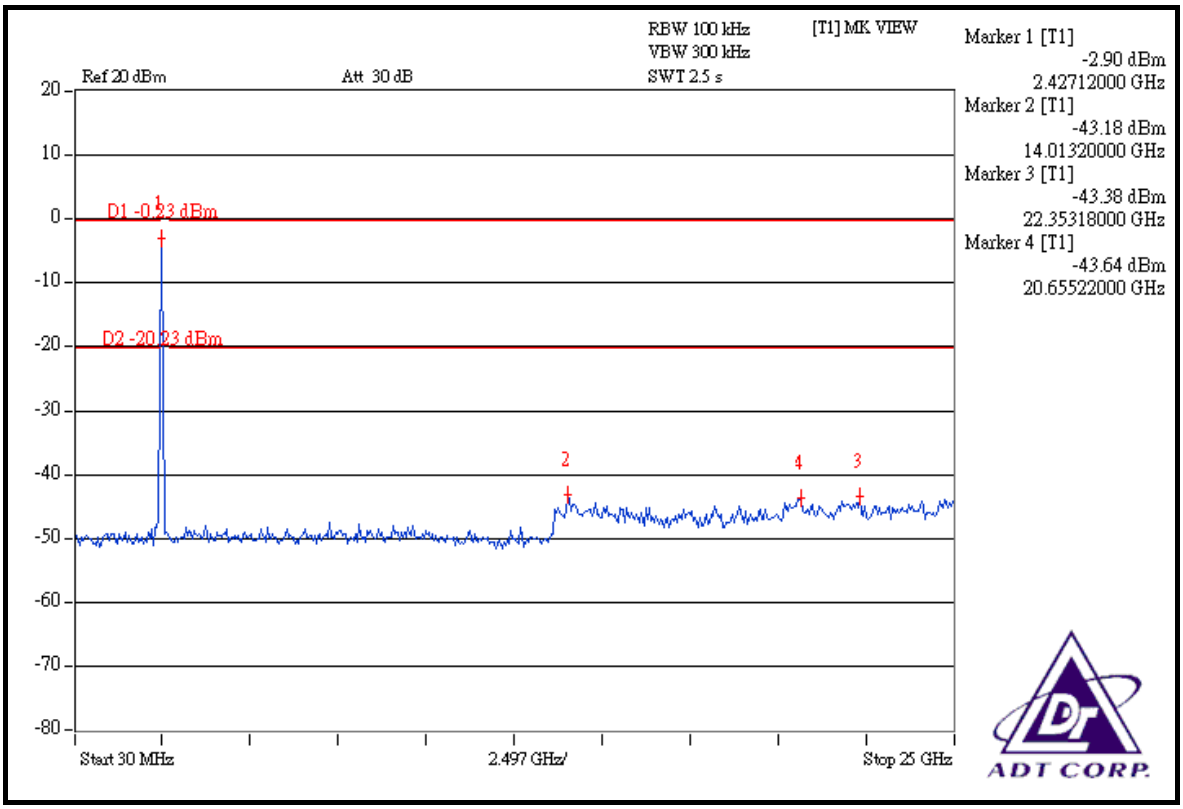

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -0.21 dBm
D2 -20.21 dBm
Marker 1 [T1]
-0.21 dBm
2.40700000 GHz
Marker 2 [T1]
-31.74 dBm
2.40000000 GHz
Marker 3 [T1]
-30.70 dBm
2.39980000 GHz
Marker 4 [T1]
-47.82 dBm
2.39000000 GHz
Marker 5 [T1]
-47.55 dBm
2.38940000 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -1.55 dBm
D2 -21.55 dBm
Marker 1 [T1]
-1.55 dBm
2.41080000 GHz
Marker 2 [T1]
-39.34 dBm
2.40000000 GHz
Marker 3 [T1]
-39.34 dBm
2.40000000 GHz
Marker 4 [T1]
-52.41 dBm
2.39000000 GHz
Marker 5 [T1]
-52.41 dBm
2.39000000 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-0.43 dBm
2.37718000 GHz
Marker 2 [T1]
-42.51 dBm
22.30324000 GHz
Marker 3 [T1]
-43.24 dBm
23.40192000 GHz
Marker 4 [T1]
-43.28 dBm
24.80024000 GHz
D1 -0.21 dBm
D2 -20.21 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-0.23 dBm
2.45440000 GHz
Marker 2 [T1]
-47.73 dBm
2.48350000 GHz
Marker 3 [T1]
-47.00 dBm
2.48500000 GHz
Marker 4 [T1]
-49.28 dBm
2.50000000 GHz
D1 -0.23 dBm
D2 -20.23 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -1.45 dBm
D2 -21.45 dBm
Marker 1 [T1]
-1.45 dBm
2.46360000 GHz
Marker 2 [T1]
-51.55 dBm
2.48350000 GHz
Marker 3 [T1]
-51.55 dBm
2.48350000 GHz
Marker 4 [T1]
-53.75 dBm
2.50000000 GHz
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -0.23 dBm
D2 -20.23 dBm
Marker 1 [T1]
-2.90 dBm
2.42712000 GHz
Marker 2 [T1]
-43.18 dBm
14.01320000 GHz
Marker 3 [T1]
-43.38 dBm
22.35318000 GHz
Marker 4 [T1]
-43.64 dBm
20.65522000 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz

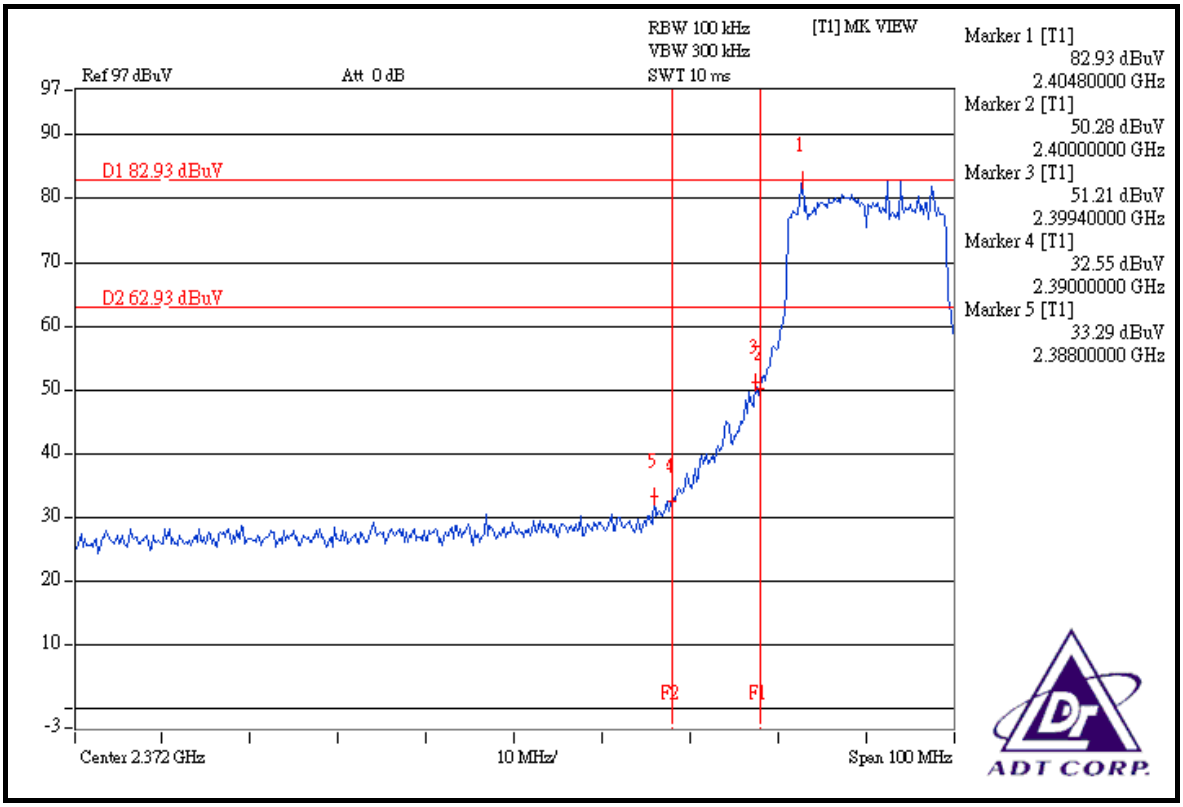
DRAFT 802.11n (20MHz) OFDM MODULATION:

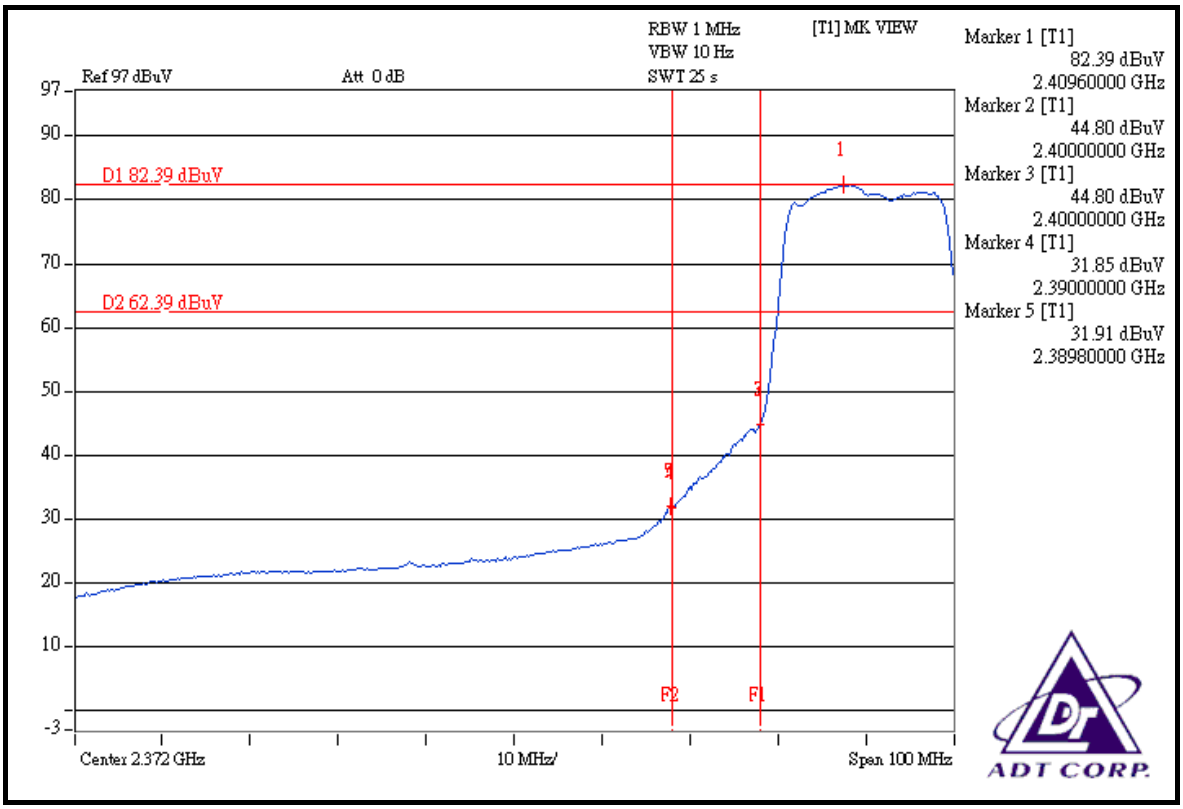
NOTE 1:
The band edge emission plot on the next page shows 49.64dBc between carrier maximum power and local maximum emission in restrict band (2.3880GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 112.04dBuV/m (Peak), so the maximum field strength in restrict band is 112.04 – 49.64 = 62.40dBuV/m which is under 74dBuV/m limit.

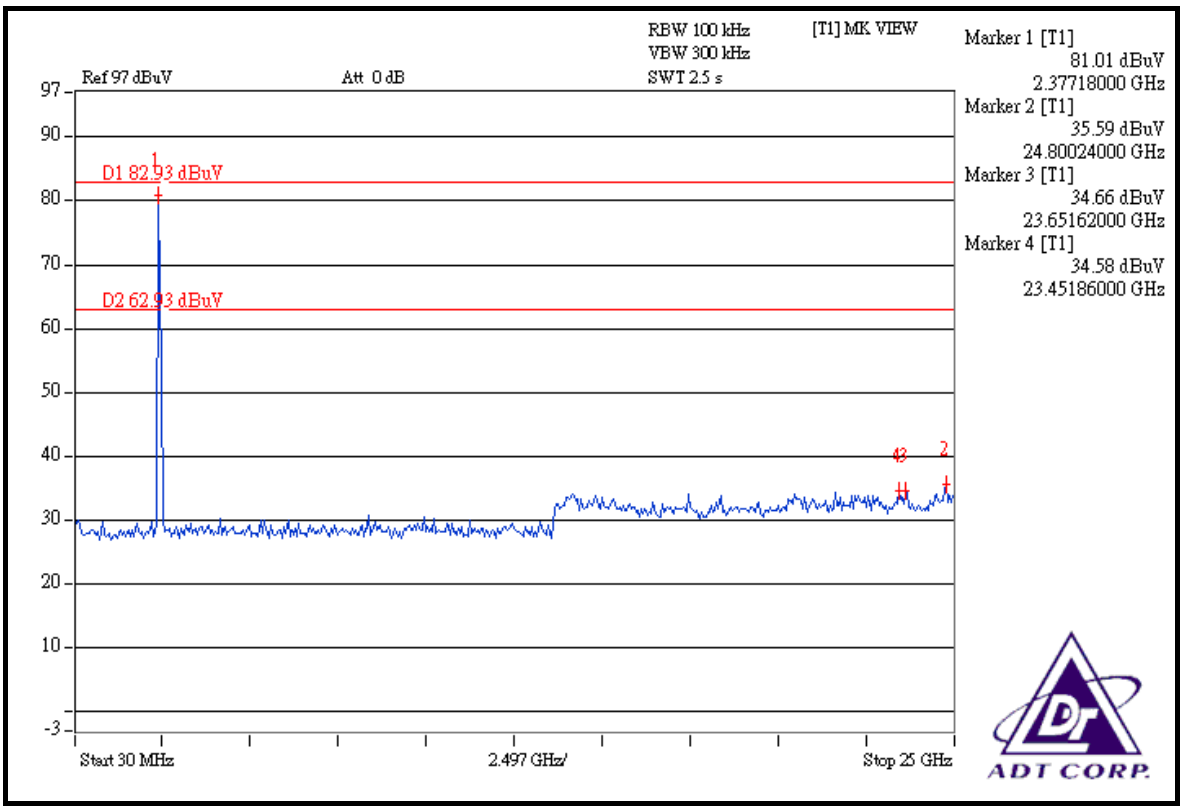
The band edge emission plot on the next page shows 50.48dBc between carrier maximum power and local maximum emission in restrict band (2.3898GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 101.97dBuV/m (Average), so the maximum field strength in restrict band is 101.97 – 50.48 = 51.49dBuV/m which is under 54dBuV/m limit.

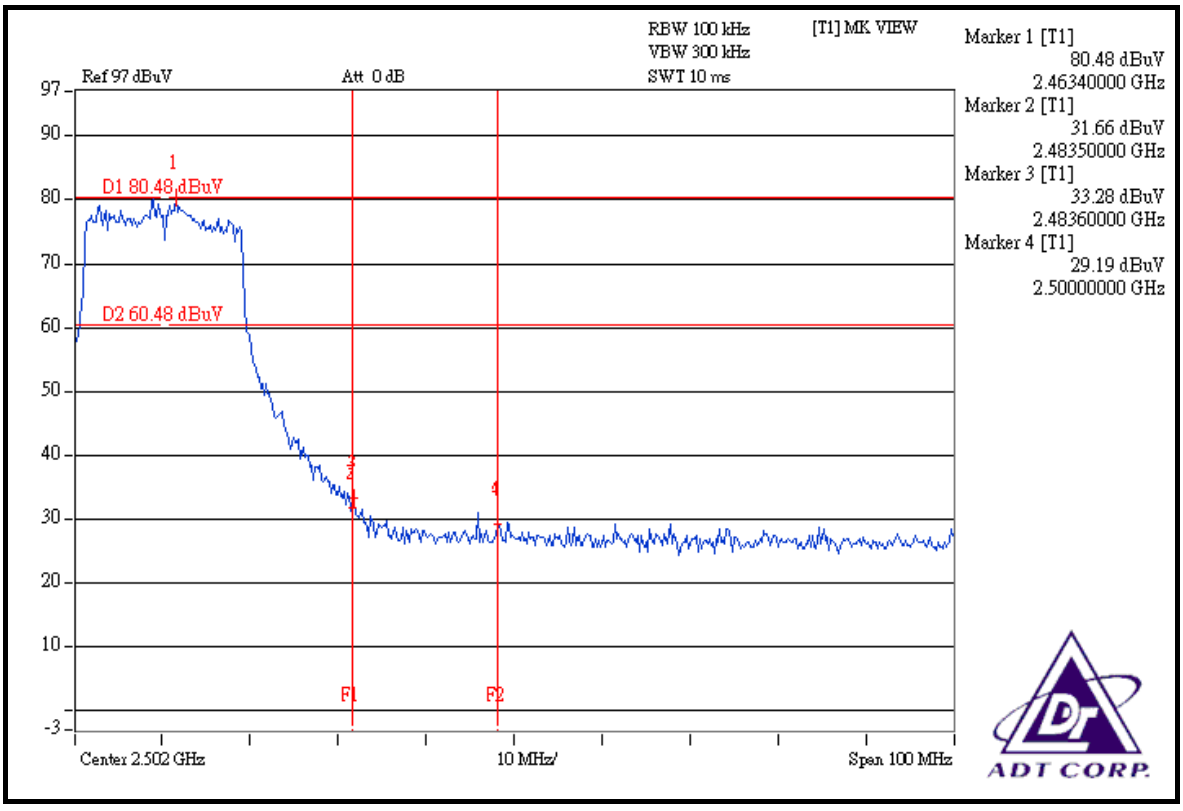
NOTE 2:
The band edge emission plot on the next second page shows 47.20dBc between carrier maximum power and local maximum emission in restrict band (2.4836GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 110.84dBuV/m (Peak), so the maximum field strength in restrict band is 110.84 – 47.20 = 63.64dBuV/m which is under 74dBuV/m limit.

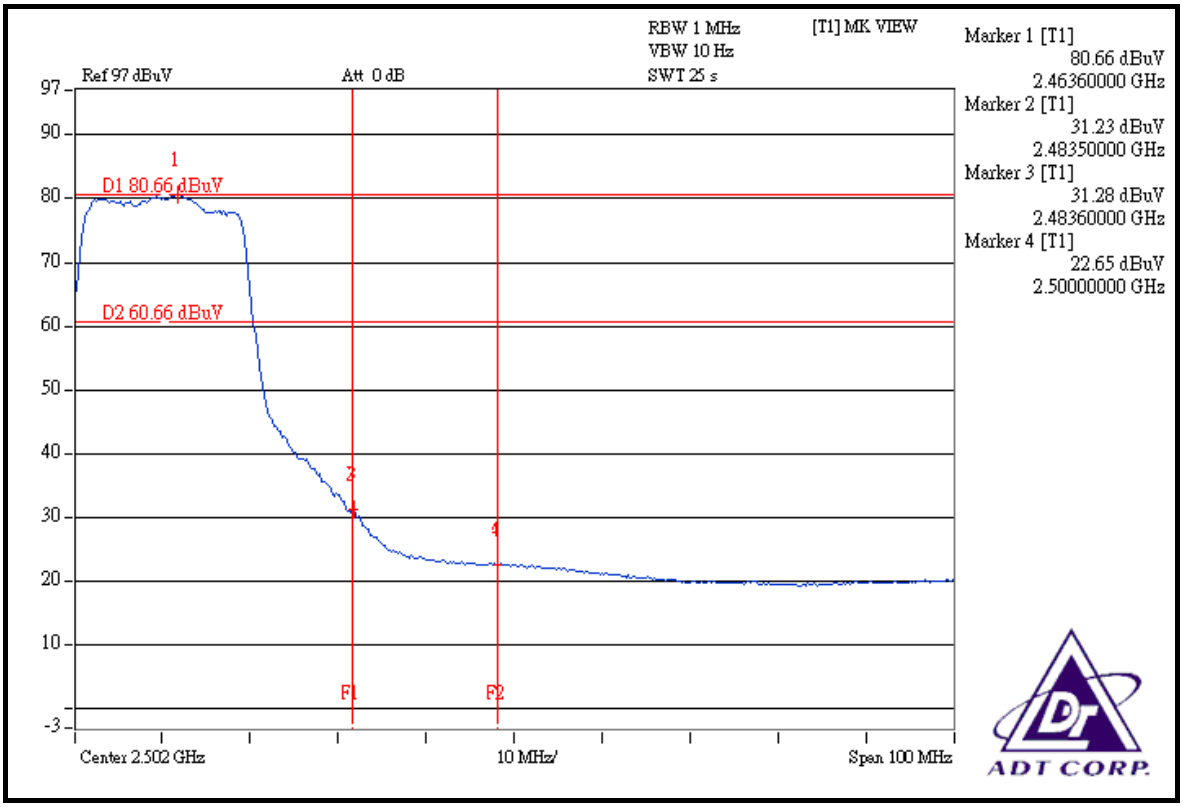
The band edge emission plot on the next third page shows 49.38dBc between carrier maximum power and local maximum emission in restrict band (2.4836GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 100.74dBuV/m (Average), so the maximum field strength in restrict band is 100.74 – 49.38 = 51.36dBuV/m which is under 54dBuV/m limit.

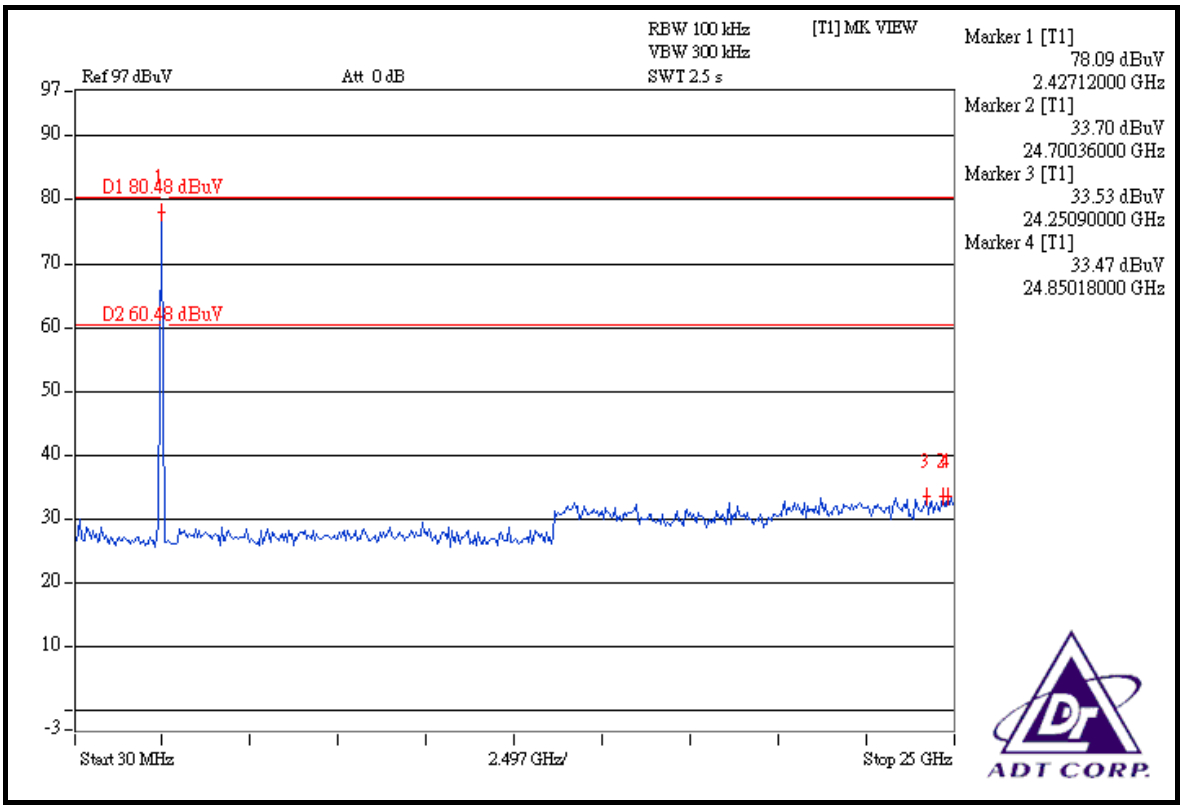

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 82.93 dBuV
D2 62.93 dBuV
Center 2.372 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
82.93 dBuV
2.40480000 GHz
Marker 2 [T1]
50.28 dBuV
2.40000000 GHz
Marker 3 [T1]
51.21 dBuV
2.39940000 GHz
Marker 4 [T1]
32.55 dBuV
2.39000000 GHz
Marker 5 [T1]
33.29 dBuV
2.38800000 GHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 82.39 dBuV
D2 62.39 dBuV
Center 2.372 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
82.39 dBuV
2.40960000 GHz
Marker 2 [T1]
44.80 dBuV
2.40000000 GHz
Marker 3 [T1]
44.80 dBuV
2.40000000 GHz
Marker 4 [T1]
31.85 dBuV
2.39000000 GHz
Marker 5 [T1]
31.91 dBuV
2.38980000 GHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 82.93 dBuV
D2 62.93 dBuV
Marker 1 [T1]
81.01 dBuV
2.37718000 GHz
Marker 2 [T1]
35.59 dBuV
24.80024000 GHz
Marker 3 [T1]
34.66 dBuV
23.65162000 GHz
Marker 4 [T1]
34.58 dBuV
23.45186000 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 80.48 dBuV
D2 60.48 dBuV
Marker 1 [T1]
80.48 dBuV
2.46340000 GHz
Marker 2 [T1]
31.66 dBuV
2.48350000 GHz
Marker 3 [T1]
33.28 dBuV
2.48360000 GHz
Marker 4 [T1]
29.19 dBuV
2.50000000 GHz
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 80.66 dBuV
D2 60.66 dBuV
Marker 1 [T1]
80.66 dBuV
2.46360000 GHz
Marker 2 [T1]
31.23 dBuV
2.48350000 GHz
Marker 3 [T1]
31.28 dBuV
2.48360000 GHz
Marker 4 [T1]
22.65 dBuV
2.50000000 GHz
Center 2.502 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 80.48 dBuV
D2 60.48 dBuV
Marker 1 [T1]
78.09 dBuV
2.42712000 GHz
Marker 2 [T1]
33.70 dBuV
24.70036000 GHz
Marker 3 [T1]
33.53 dBuV
24.25090000 GHz
Marker 4 [T1]
33.47 dBuV
24.85018000 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION:

NOTE 1:

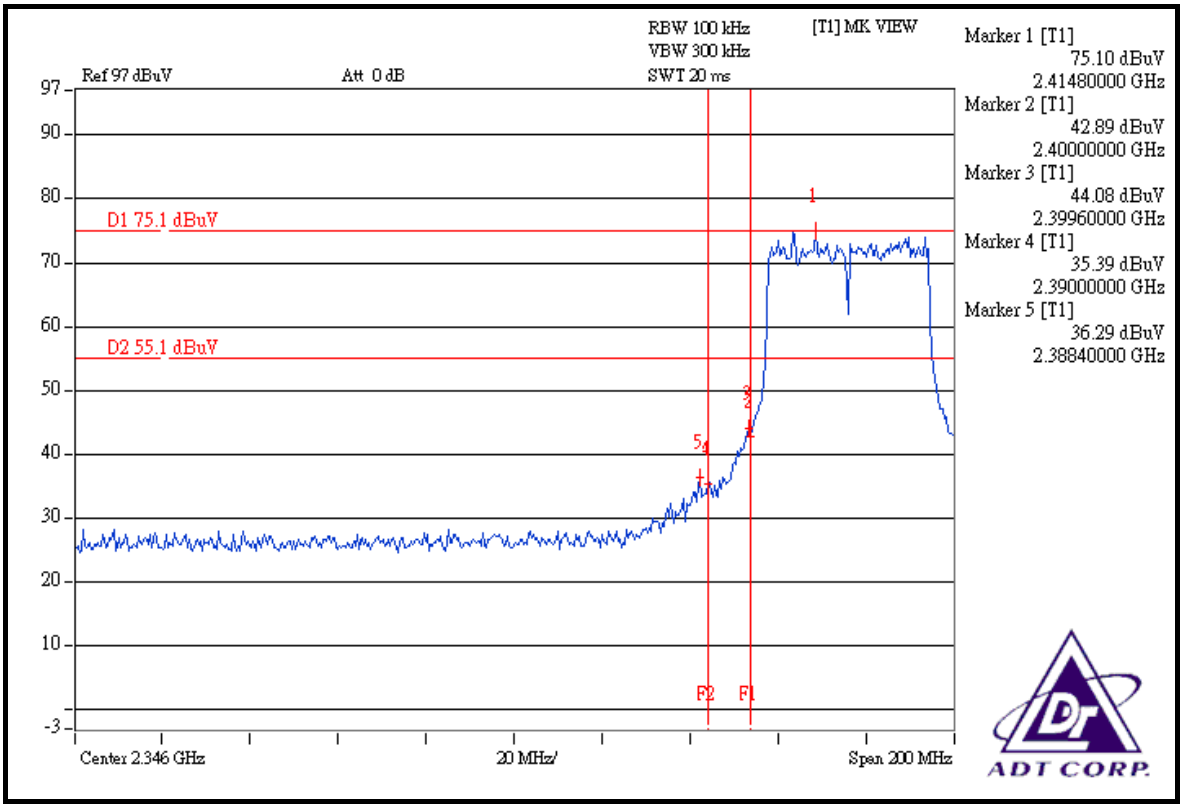
The band edge emission plot on the next page shows 38.81dBc between carrier maximum power and local maximum emission in restrict band (2.3884GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 105.75dBuV/m (Peak), so the maximum field strength in restrict band is 105.75 – 38.81 = 66.94dBuV/m which is under 74dBuV/m limit.

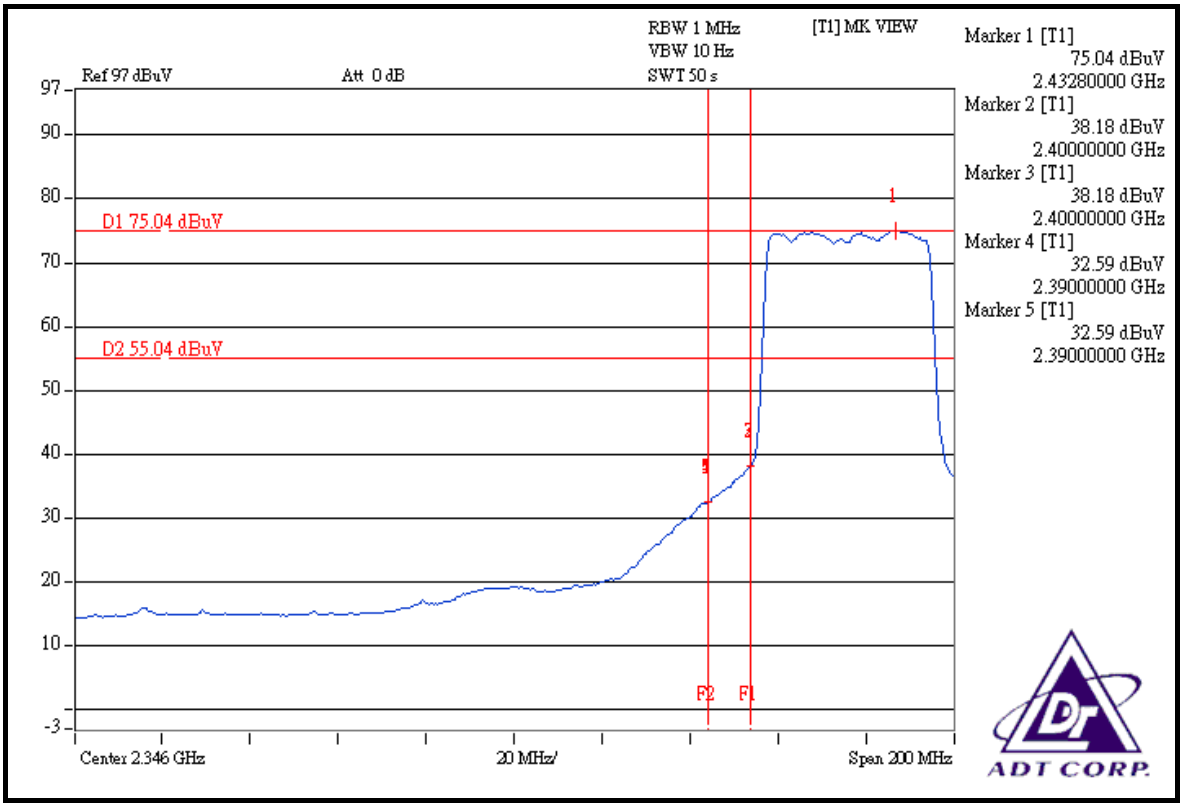
The band edge emission plot on the next page shows 42.45dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 95.24dBuV/m (Average), so the maximum field strength in restrict band is 95.24 – 42.45 = 52.79dBuV/m which is under 54dBuV/m limit.

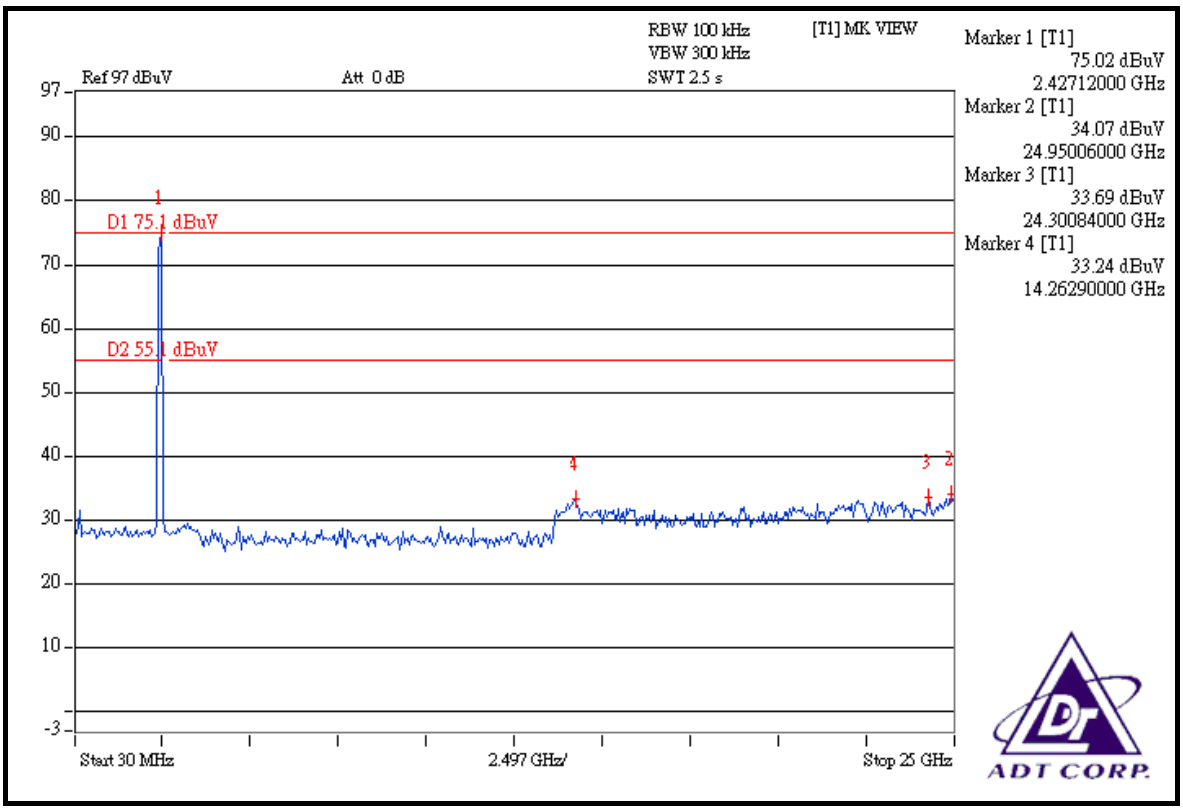
NOTE 2:

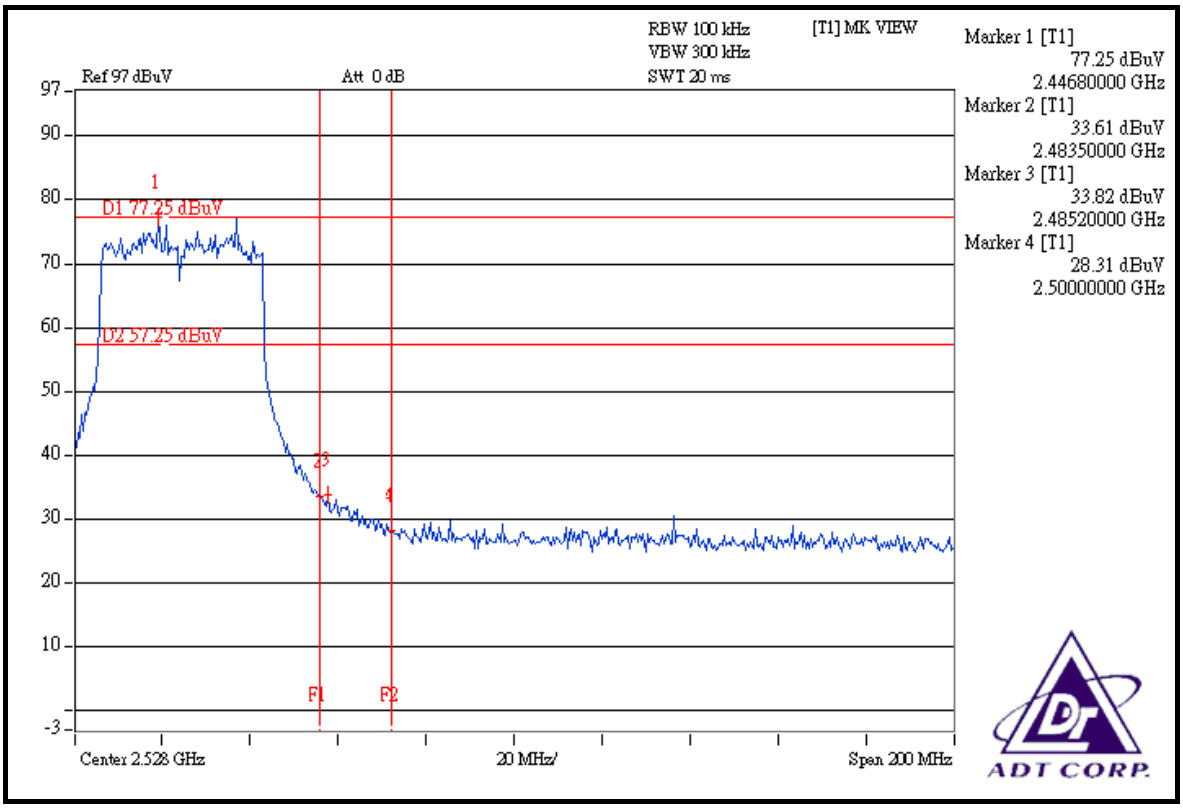
The band edge emission plot on the next second page shows 43.43dBc between carrier maximum power and local maximum emission in restrict band (2.4852GHz). The emission of carrier strength list in the test result of channel 7 at the item 4.2.7 is 107.01dBuV/m (Peak), so the maximum field strength in restrict band is 107.01 – 43.43 = 63.58dBuV/m which is under 74dBuV/m limit.

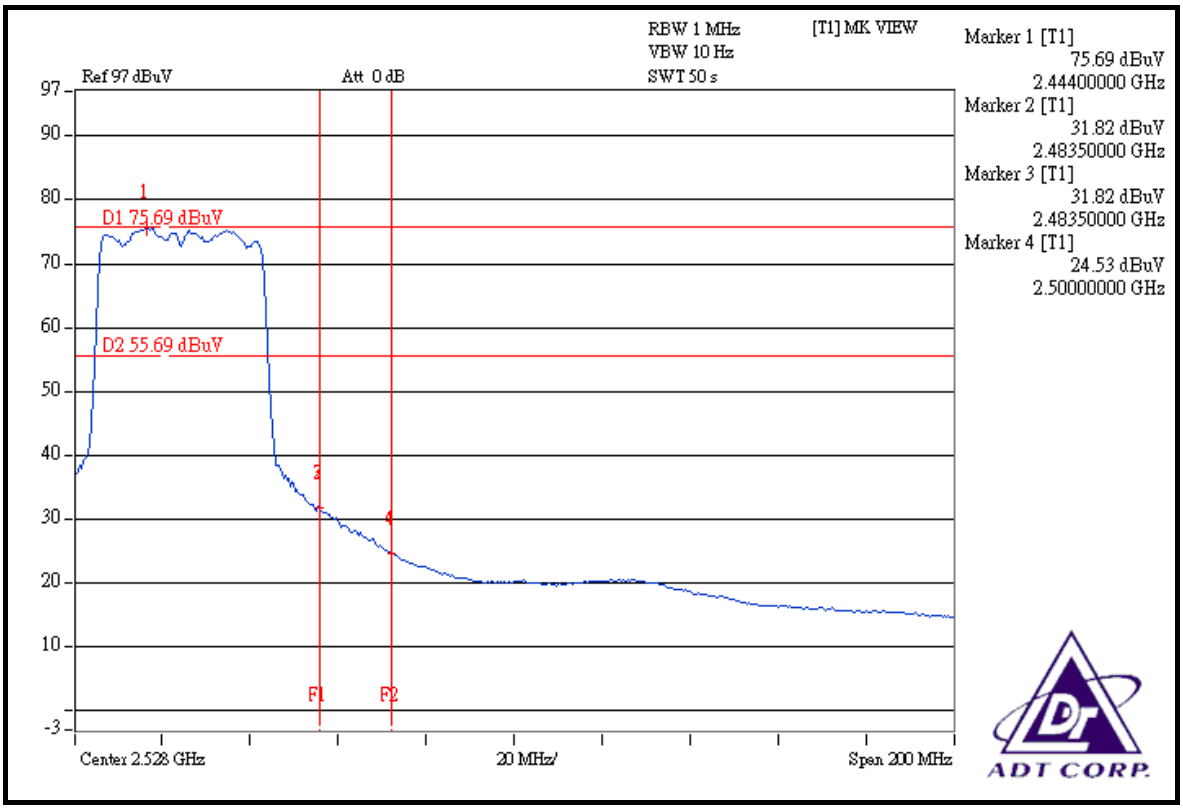
The band edge emission plot on the next third page shows 43.87dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 7 at the item 4.2.7 is 95.90dBuV/m (Average), so the maximum field strength in restrict band is 95.90 – 43.87 = 52.03dBuV/m which is under 54dBuV/m limit.

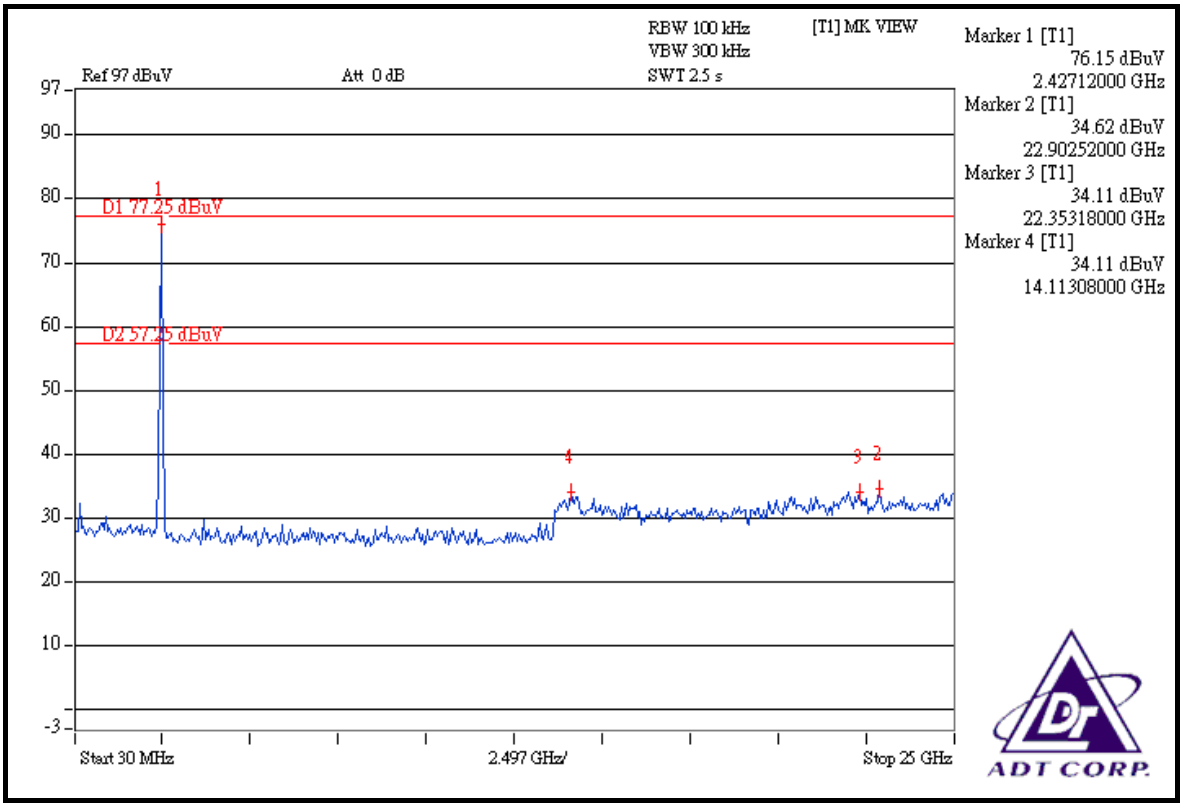

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 75.1 dBuV
D2 55.1 dBuV
Marker 1 [T1]
75.10 dBuV
2.41480000 GHz
Marker 2 [T1]
42.89 dBuV
2.40000000 GHz
Marker 3 [T1]
44.08 dBuV
2.39960000 GHz
Marker 4 [T1]
35.39 dBuV
2.39000000 GHz
Marker 5 [T1]
36.29 dBuV
2.38840000 GHz
F2
F1
Center 2.346 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 75.04 dBuV
D2 55.04 dBuV
Marker 1 [T1]
75.04 dBuV
2.43280000 GHz
Marker 2 [T1]
38.18 dBuV
2.40000000 GHz
Marker 3 [T1]
38.18 dBuV
2.40000000 GHz
Marker 4 [T1]
32.59 dBuV
2.39000000 GHz
Marker 5 [T1]
32.59 dBuV
2.39000000 GHz
F2
F1
Center 2.346 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
75.02 dBuV
2.42712000 GHz
Marker 2 [T1]
34.07 dBuV
24.95006000 GHz
Marker 3 [T1]
33.69 dBuV
24.30084000 GHz
Marker 4 [T1]
33.24 dBuV
14.26290000 GHz
D1 75.1 dBuV
D2 55.1 dBuV
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
77.25 dBuV
2.44680000 GHz
Marker 2 [T1]
33.61 dBuV
2.48350000 GHz
Marker 3 [T1]
33.82 dBuV
2.48520000 GHz
Marker 4 [T1]
28.31 dBuV
2.50000000 GHz
D1 77.25 dBuV
D2 57.25 dBuV
F1
F2
Center 2.528 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 75.69 dBuV
D2 55.69 dBuV
F1
F2
Center 2.528 GHz
20 MHz/
Span 200 MHz
Marker 1 [T1]
75.69 dBuV
2.44400000 GHz
Marker 2 [T1]
31.82 dBuV
2.48350000 GHz
Marker 3 [T1]
31.82 dBuV
2.48350000 GHz
Marker 4 [T1]
24.53 dBuV
2.50000000 GHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 77.25 dBuV
D2 57.25 dBuV
Start 30 MHz
2.497 GHz/
Stop 25 GHz
Marker 1 [T1]
76.15 dBuV
2.42712000 GHz
Marker 2 [T1]
34.62 dBuV
22.90252000 GHz
Marker 3 [T1]
34.11 dBuV
22.35318000 GHz
Marker 4 [T1]
34.11 dBuV
14.11308000 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 PIFA antenna without connector. The maximum Gain of the antenna is 2.37dBi.

5. TEST TYPES AND RESULTS (FOR 5.0GHz)

5.1 RADIATED EMISSION MEASUREMENT

5.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Jul. 27, 2008
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Feb. 26, 2008
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	May 31, 2008
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jun. 28, 2008
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 28, 2007
Preamplifier Agilent	8447D	2944A10633	Oct. 28, 2008
Preamplifier Agilent	8449B	3008A01964	Oct. 23, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283402/4	Dec. 06, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	251644/4	Dec. 06, 2008
Software ADT.	ADT_Radiated_V7.6	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA

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

2. The test was performed in HwaYa Chamber 3.

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

4. The VCCI Site Registration No. is R-237.

5. The IC Site Registration No. is IC3789B-3.

5.1.3 TEST PROCEDURES

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

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

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

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

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

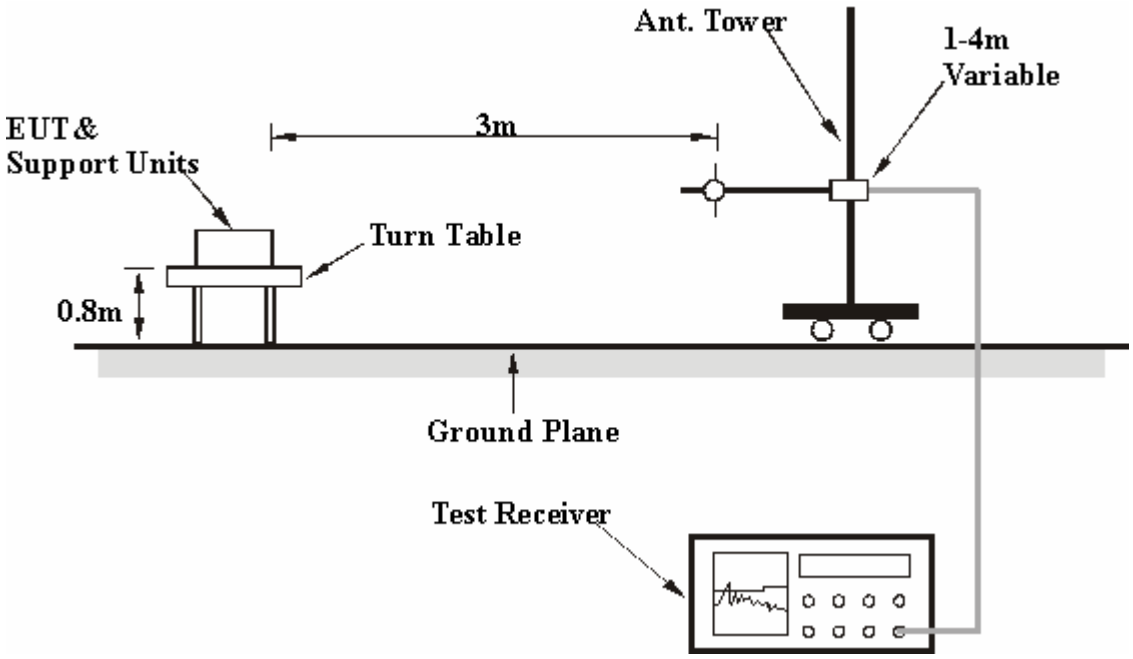
NOTE:

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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	**FREQUENCY RANGE**	Below 1000MHz
MODULATION TYPE	BPSK	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Morgan Chen		

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	150.45	39.03 QP	43.50	-4.47	1.50 H	67	24.88	14.15
2	500.42	40.67 QP	46.00	-5.33	2.00 H	37	20.38	20.29
3	531.53	40.38 QP	46.00	-5.62	1.50 H	34	19.49	20.90
4	700.68	41.70 QP	46.00	-4.30	1.00 H	139	17.48	24.22
5	725.96	42.10 QP	46.00	-3.90	1.00 H	130	17.15	24.95
6	776.51	41.01 QP	46.00	-4.99	1.00 H	115	15.23	25.77
7	799.84	42.84 QP	46.00	-3.16	1.00 H	10	16.96	25.88
8	825.11	42.54 QP	46.00	-3.46	1.50 H	64	16.12	26.42
9	875.67	39.45 QP	46.00	-6.55	1.50 H	10	12.17	27.29

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	57.12	36.12 QP	40.00	-3.88	1.50 V	157	21.88	14.24
2	70.73	32.45 QP	40.00	-7.55	1.00 V	10	19.91	12.54
3	500.42	35.04 QP	46.00	-10.96	1.00 V	154	14.75	20.29
4	531.53	36.54 QP	46.00	-9.46	1.50 V	190	15.65	20.90
5	650.13	35.14 QP	46.00	-10.86	2.00 V	1	11.55	23.59
6	700.68	35.68 QP	46.00	-10.32	1.50 V	331	11.47	24.22
7	725.96	35.65 QP	46.00	-10.35	1.50 V	340	10.70	24.95
8	776.51	36.99 QP	46.00	-9.01	1.50 V	166	11.22	25.77
9	799.84	39.01 QP	46.00	-6.99	2.00 V	358	13.13	25.88
10	825.11	39.97 QP	46.00	-6.03	1.00 V	10	13.55	26.42
11	875.67	38.81 QP	46.00	-7.19	1.00 V	322	11.52	27.29
12	908.72	38.90 QP	46.00	-7.10	1.00 V	334	11.18	27.72
13	951.49	35.77 QP	46.00	-10.23	1.00 V	355	7.44	28.33

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.

ABOVE 1GHz DATA: 802.11a OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 40GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TESTED BY	Morgan Chen		

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	66.65 PK	85.96	-19.31	1.00 H	325	27.01	39.64
2	5725.00	55.49 AV	75.48	-19.99	1.00 H	325	15.85	39.64
3	*5745.00	105.96 PK			1.00 H	325	66.29	39.67
4	*5745.00	95.48 AV			1.00 H	325	55.81	39.67
5	#11490.00	59.76 PK	74.00	-14.24	1.00 H	15	9.76	50.00
6	#11490.00	46.89 AV	54.00	-7.11	1.00 H	15	-3.11	50.00

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5725.00	66.15 PK	83.76	-17.61	1.00 V	35	26.51	39.64
2	5725.00	54.35 AV	73.81	-19.46	1.00 V	35	14.71	39.64
3	*5745.00	103.76 PK			1.00 V	35	64.09	39.67
4	*5745.00	93.81 AV			1.00 V	35	54.14	39.67
5	#11490.00	59.56 PK	74.00	-14.44	1.00 V	354	9.56	50.00
6	#11490.00	46.65 AV	54.00	-7.35	1.00 V	354	-3.35	50.00

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 40GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TESTED BY	Morgan Chen		

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	106.11 PK			1.00 H	319	66.38	39.73
2	*5785.00	95.52 AV			1.00 H	319	55.79	39.73
3	#11570.00	59.81 PK	74.00	-14.19	1.00 H	18	9.93	49.88
4	#11570.00	46.95 AV	54.00	-7.05	1.00 H	18	-2.93	49.88

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5785.00	103.85 PK			1.00 V	28	64.12	39.73
2	*5785.00	93.77 AV			1.00 V	28	54.04	39.73
3	#11570.00	59.63 PK	74.00	-14.37	1.00 V	349	9.75	49.88
4	#11570.00	46.71 AV	54.00	-7.29	1.00 V	349	-3.17	49.88

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	FREQUENCY RANGE	1 ~ 40GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TESTED BY	Morgan Chen		

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	106.23 PK			1.03 H	315	66.41	39.83
2	*5825.00	96.19 AV			1.03 H	315	56.36	39.83
3	5850.00	68.22 PK	86.23	-18.01	1.03 H	315	28.32	39.90
4	5850.00	55.35 AV	76.19	-20.84	1.03 H	315	15.45	39.90
5	#11650.00	60.05 PK	74.00	-13.95	1.00 H	12	10.24	49.81
6	#11650.00	47.03 AV	54.00	-6.97	1.00 H	12	-2.78	49.81

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	103.89 PK			1.00 V	35	64.06	39.83
2	*5825.00	93.79 AV			1.00 V	35	53.97	39.83
3	5850.00	67.11 PK	83.89	-16.78	1.00 V	35	27.21	39.90
4	5850.00	54.23 AV	73.79	-19.56	1.00 V	35	14.33	39.90
5	#11650.00	59.71 PK	74.00	-14.29	1.00 V	158	9.90	49.81
6	#11650.00	46.68 AV	54.00	-7.32	1.00 V	158	-3.13	49.81

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

DRAFT 802.11n (20MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 40GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa
TESTED BY	Dean Wang		

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	69.76 PK	88.62	-18.86	1.00 H	311	30.12	39.64
2	5725.00	58.56 AV	78.34	-19.78	1.00 H	311	18.92	39.64
3	5745.00	108.62 PK			1.00 H	310	68.95	39.67
4	5745.00	98.34 AV			1.00 H	310	58.67	39.67
5	#11490.00	60.69 PK	74.00	-13.31	1.00 H	21	10.68	50.00
6	#11490.00	47.93 AV	54.00	-6.07	1.00 H	21	-2.08	50.00

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5725.00	69.05 PK	86.62	-17.57	1.00 V	42	29.41	39.64
2	5725.00	57.96 AV	75.98	-18.02	1.00 V	42	18.32	39.64
3	*5745.00	106.62 PK			1.02 V	41	66.95	39.67
4	*5745.00	95.98 AV			1.02 V	41	56.31	39.67
5	#11490.00	61.23 PK	74.00	-12.77	1.00 V	225	11.23	50.00
6	#11490.00	48.36 AV	54.00	-5.64	1.00 V	225	-1.64	50.00

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 40GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa
TESTED BY	Dean Wang		

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	109.24 PK			1.01 H	298	69.51	39.73
2	*5785.00	98.93 AV			1.01 H	298	59.20	39.73
3	#11570.00	60.82 PK	74.00	-13.18	1.00 H	116	10.94	49.88
4	#11570.00	48.13 AV	54.00	-5.87	1.00 H	116	-1.75	49.88

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5785.00	107.13 PK			1.00 V	37	67.40	39.73
2	*5785.00	96.42 AV			1.00 V	37	56.69	39.73
3	#11570.00	61.33 PK	74.00	-12.67	1.00 V	169	11.45	49.88
4	#11570.00	48.32 AV	54.00	-5.68	1.00 V	169	-1.56	49.88

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	FREQUENCY RANGE	1 ~ 40GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa
TESTED BY	Dean Wang		

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	108.97 PK			1.02 H	319	69.14	39.83
2	*5825.00	98.62 AV			1.02 H	319	58.80	39.83
3	5850.00	71.16 PK	88.97	-17.81	1.02 H	318	31.26	39.90
4	5850.00	58.59 AV	78.62	-20.03	1.02 H	318	18.69	39.90
5	#11650.00	61.68 PK	74.00	-12.32	1.00 H	121	11.87	49.81
6	#11650.00	47.33 AV	54.00	-6.67	1.00 H	121	-2.48	49.81

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	106.89 PK			1.00 V	46	67.06	39.83
2	*5825.00	96.27 AV			1.00 V	46	56.44	39.83
3	5850.00	70.09 PK	86.89	-16.80	1.00 V	46	30.19	39.90
4	5850.00	57.38 AV	76.27	-18.89	1.00 V	46	17.48	39.90
5	#11650.00	62.37 PK	74.00	-11.63	1.00 V	166	12.56	49.81
6	#11650.00	47.92 AV	54.00	-6.08	1.00 V	166	-1.89	49.81

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

DRAFT 802.11n (40MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 40GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TESTED BY	Morgan Chen		

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	77.24 PK	87.64	-10.40	1.00 H	322	37.60	39.64
2	5725.00	59.49 AV	77.91	-18.42	1.00 H	322	19.85	39.64
3	*5755.00	107.64 PK			1.00 H	321	67.96	39.68
4	*5755.00	97.91 AV			1.00 H	321	58.23	39.68
5	#11510.00	61.11 PK	74.00	-12.89	1.00 H	201	11.13	49.98
6	#11510.00	48.63 AV	54.00	-5.37	1.00 H	201	-1.35	49.98

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5725.00	72.81 PK	82.28	-9.47	1.00 V	43	33.17	39.64
2	5725.00	58.56 AV	72.60	-14.04	1.00 V	43	18.92	39.64
3	*5755.00	102.28 PK			1.00 V	43	62.60	39.68
4	*5755.00	92.60 AV			1.00 V	43	52.92	39.68
5	#11510.00	61.53 PK	74.00	-12.47	1.00 V	114	11.55	49.98
6	#11510.00	48.97 AV	54.00	-5.03	1.00 V	114	-1.01	49.98

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 2	FREQUENCY RANGE	1 ~ 40GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TESTED BY	Morgan Chen		

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	107.04 PK			1.00 H	295	67.30	39.74
2	*5795.00	97.70 AV			1.00 H	295	57.96	39.74
3	5850.00	71.09 PK	87.04	-15.95	1.00 H	296	31.19	39.90
4	5850.00	58.14 AV	77.70	-19.56	1.00 H	296	18.24	39.90
5	#11590.00	62.08 PK	74.00	-11.92	1.00 H	110	12.23	49.85
6	#11590.00	47.83 AV	54.00	-6.17	1.00 H	110	-2.02	49.85

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5795.00	102.02 PK			1.01 V	113	62.28	39.74
2	*5795.00	92.13 AV			1.01 V	113	52.39	39.74
3	5850.00	69.87 PK	82.02	-12.15	1.00 V	112	29.97	39.90
4	5850.00	57.26 AV	72.13	-14.87	1.00 V	112	17.36	39.90
5	#11590.00	62.59 PK	74.00	-11.41	1.03 V	257	12.74	49.85
6	#11590.00	48.36 AV	54.00	-5.64	1.03 V	257	-1.49	49.85

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

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.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Sep. 21, 2008
RF signal cable Woken	5D-FB	Cable-HYCO3-01	Jan. 06, 2008
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 08, 2008
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jan. 16, 2008
Software ADT	ADT_Cond_V3	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.

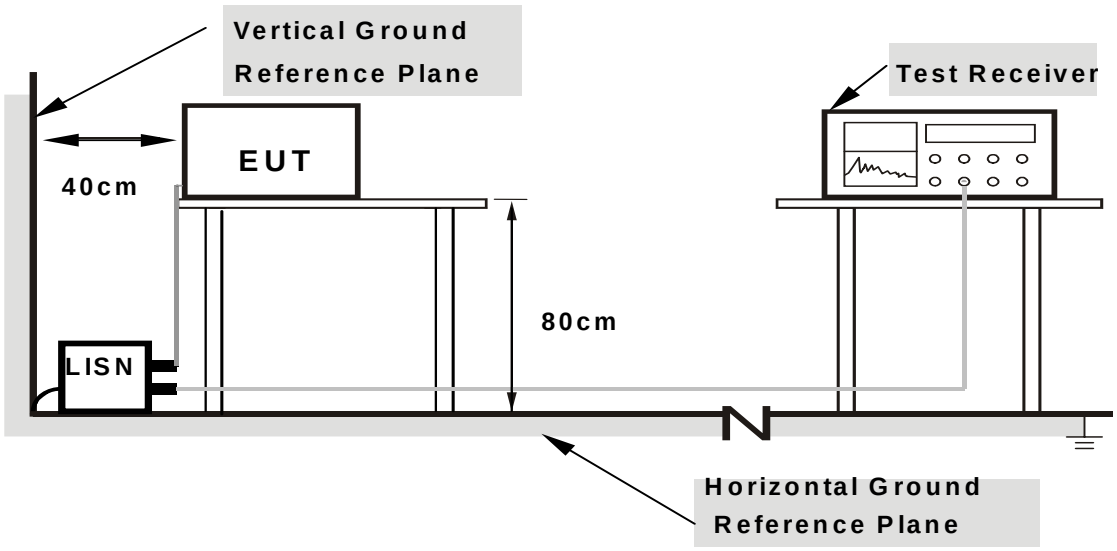
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

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

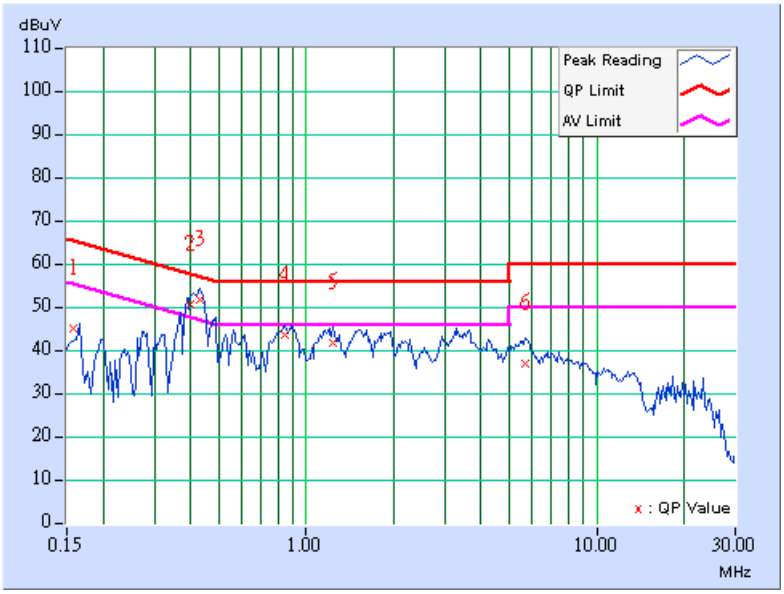
5.2.7 TEST RESULTS

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	6dB BANDWIDTH	9kHz
TESTED BY	Morgan Chen		

	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	0.159	0.10	44.81	-	44.91	-	65.53	55.53	-20.62	-
2	**0.397**	**0.10**	**50.60**	**44.71**	**50.70**	**44.81**	**57.91**	**47.91**	**-7.21**	**-3.10**
3	0.431	0.10	51.58	43.82	51.68	43.92	57.23	47.23	-5.55	-3.31
4	0.849	0.11	43.33	-	43.44	-	56.00	46.00	-12.56	-
5	1.242	0.14	41.65	-	41.79	-	56.00	46.00	-14.21	-
6	5.676	0.29	36.75	-	37.04	-	60.00	50.00	-22.96	-

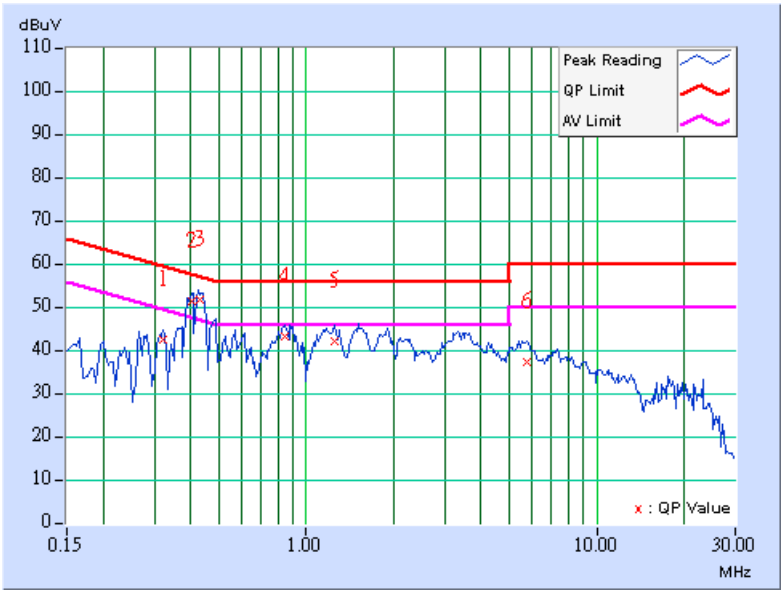
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 67%RH, 991hPa	6dB BANDWIDTH	9kHz
TESTED BY	Morgan Chen		

	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	0.322	0.10	42.20	-	42.30	-	59.66	49.66	-17.36	-
2	0.404	0.10	51.20	43.97	51.30	44.07	57.77	47.77	-6.47	-3.70
3	0.432	0.11	51.38	43.71	51.49	43.82	57.22	47.22	-5.74	-3.41
4	0.841	0.18	42.94	-	43.12	-	56.00	46.00	-12.88	-
5	1.258	0.21	41.89	-	42.10	-	56.00	46.00	-13.90	-
6	5.762	0.32	36.90	-	37.22	-	60.00	50.00	-22.78	-

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.	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100040	Jun. 28, 2008

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

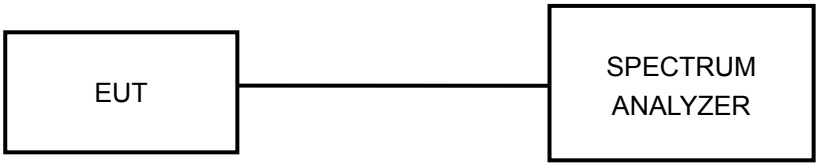
5.3.3 TEST PROCEDURE

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 100kHz 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.

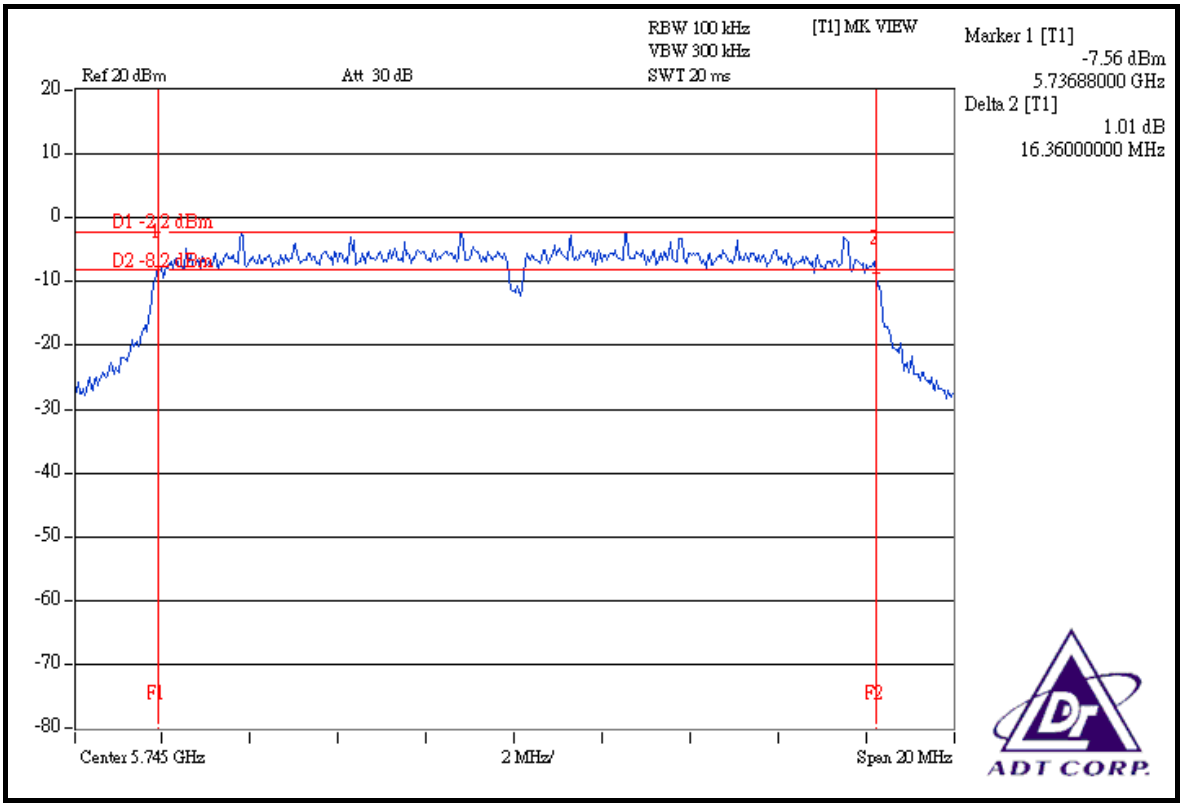
5.3.7 TEST RESULTS

802.11a OFDM MODULATION:

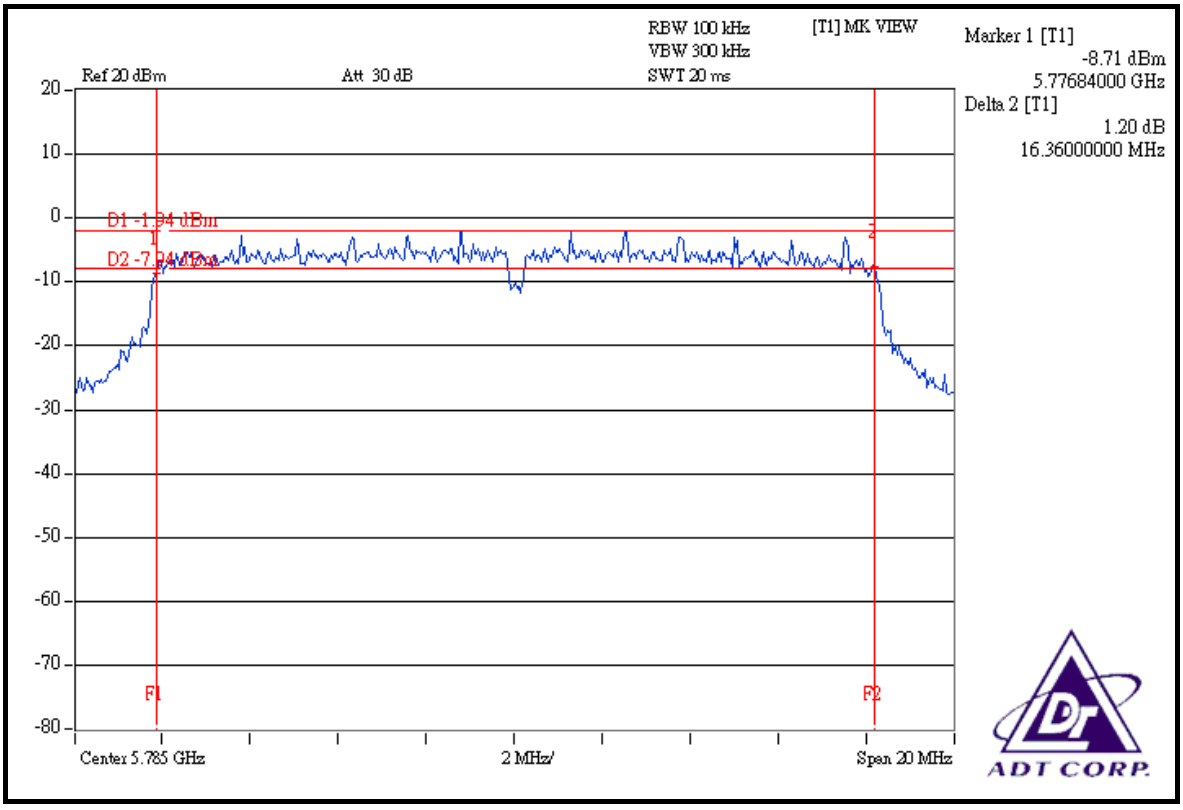
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	26deg.C, 67%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	TESTED BY	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	5745	16.36	0.5	PASS
3	5785	16.36	0.5	PASS
5	5825	16.12	0.5	PASS

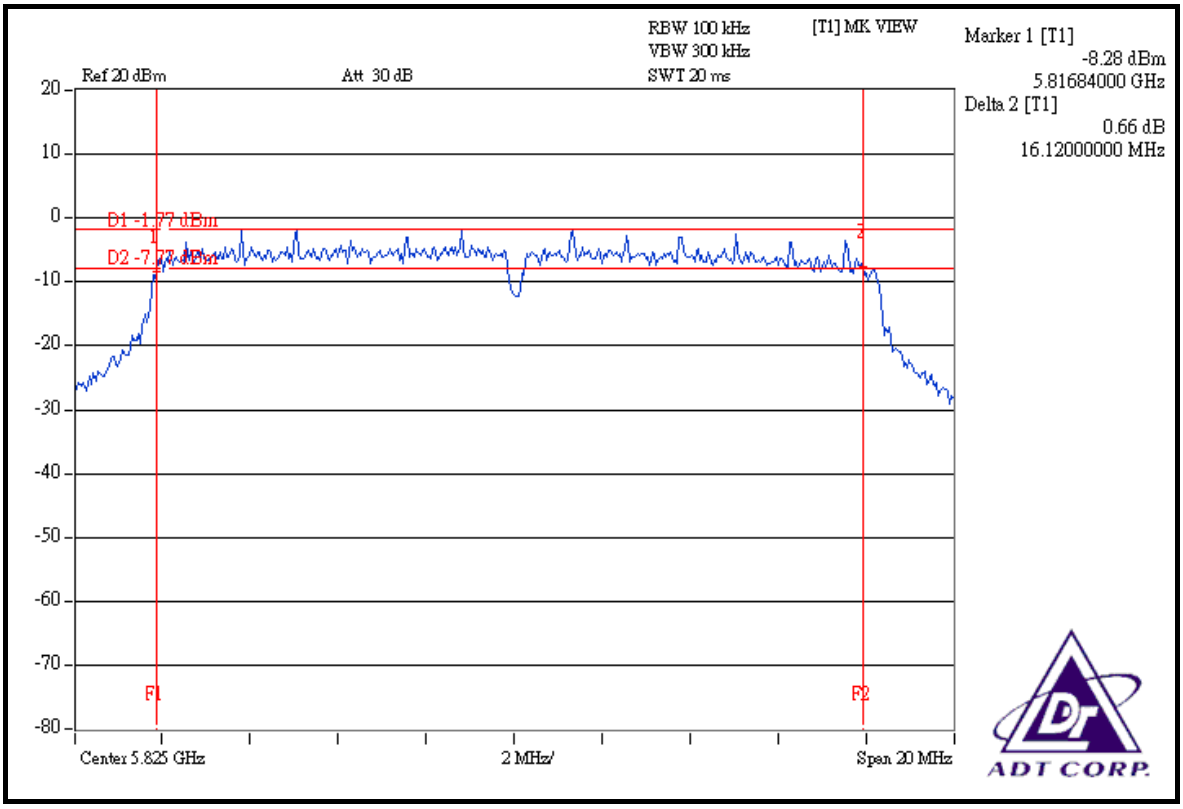
CH 1



CH 3


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-8.71 dBm
5.77684000 GHz
Delta 2 [T1]
1.20 dB
16.36000000 MHz
Ref 20 dBm
Att 30 dB
D1 -1.94 dBm
D2 -7.94 dBm
F1
F2
Center 5.785 GHz
2 MHz/
Span 20 MHz
ADT CORP.

CH 5

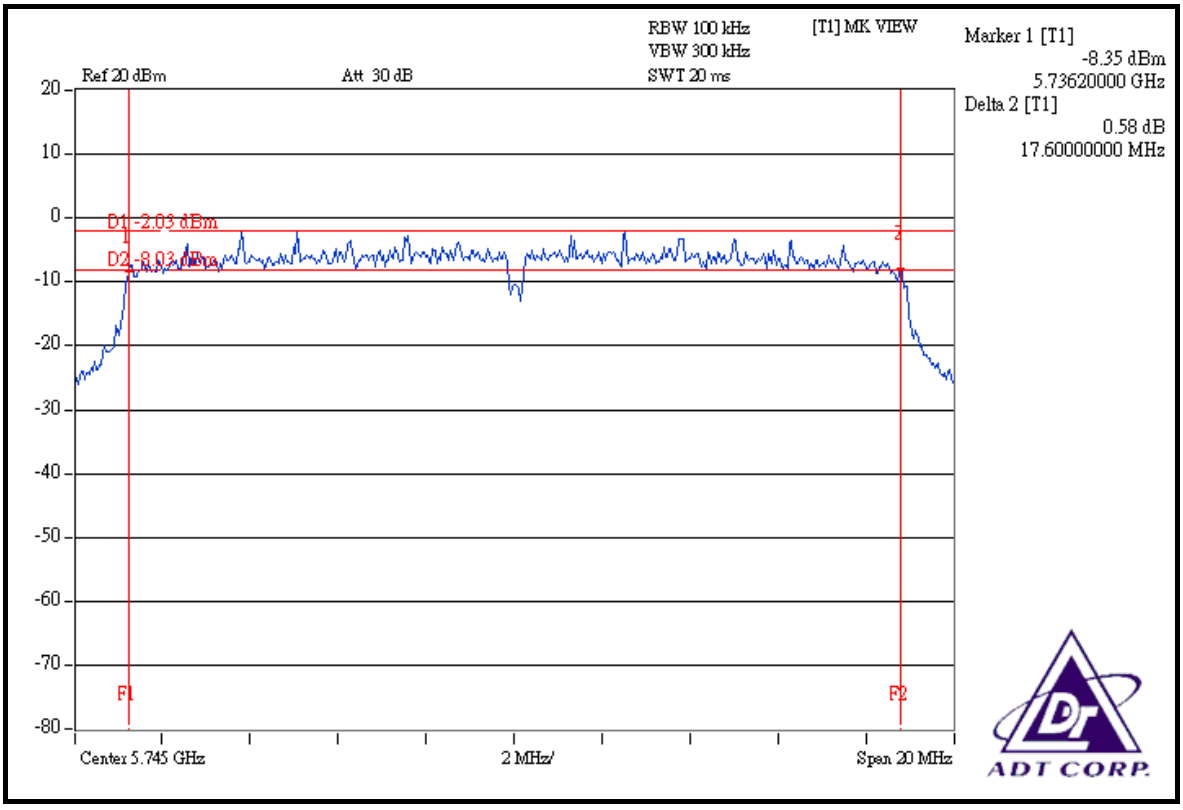

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-8.28 dBm
5.81684000 GHz
Delta 2 [T1]
0.66 dB
16.12000000 MHz
Ref 20 dBm
Att 30 dB
D1 -1.77 dBm
D2 -7.77 dBm
F1
F2
Center 5.825 GHz
2 MHz/
Span 20 MHz
ADT CORP.

DRAFT 802.11n (20MHz) OFDM MODULATION:

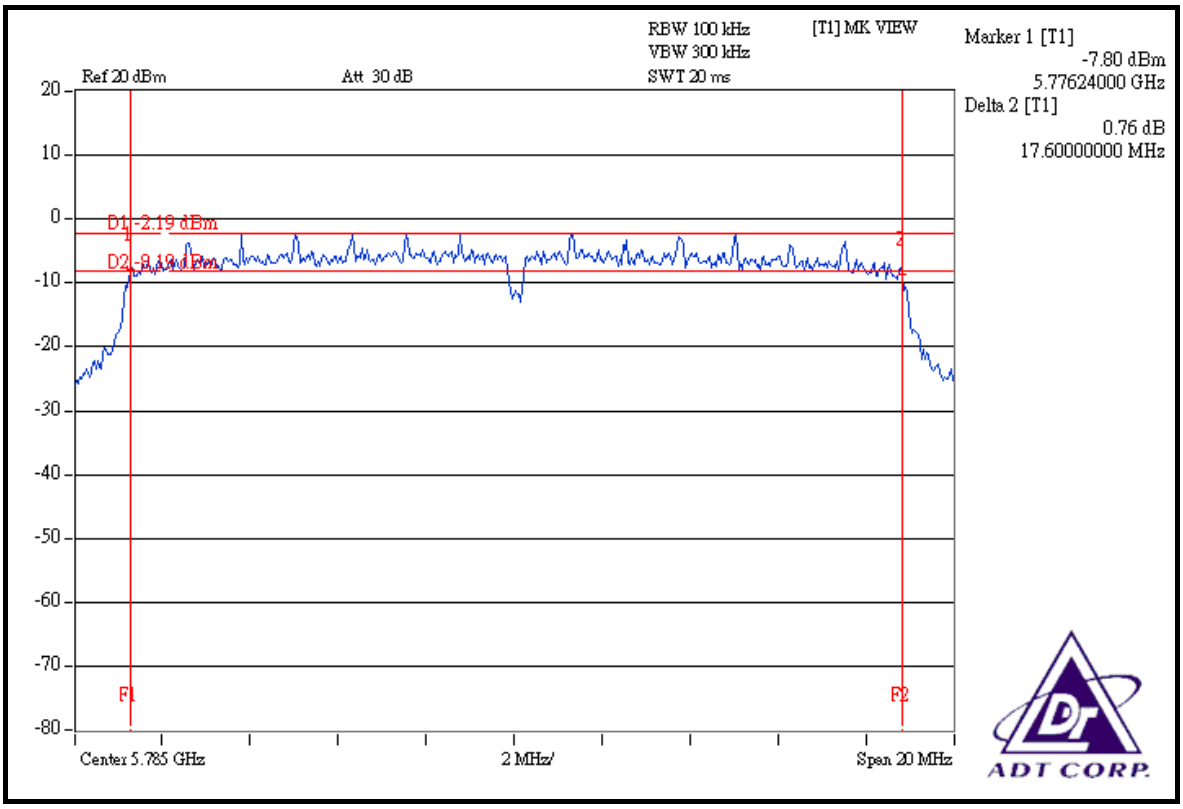
MODULATION TYPE	BPSK	**ENVIRONMENTAL CONDITIONS**	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	**TESTED BY**	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	5745	17.60	17.64	0.5	PASS
3	5785	17.60	17.44	0.5	PASS
5	5825	17.16	17.00	0.5	PASS

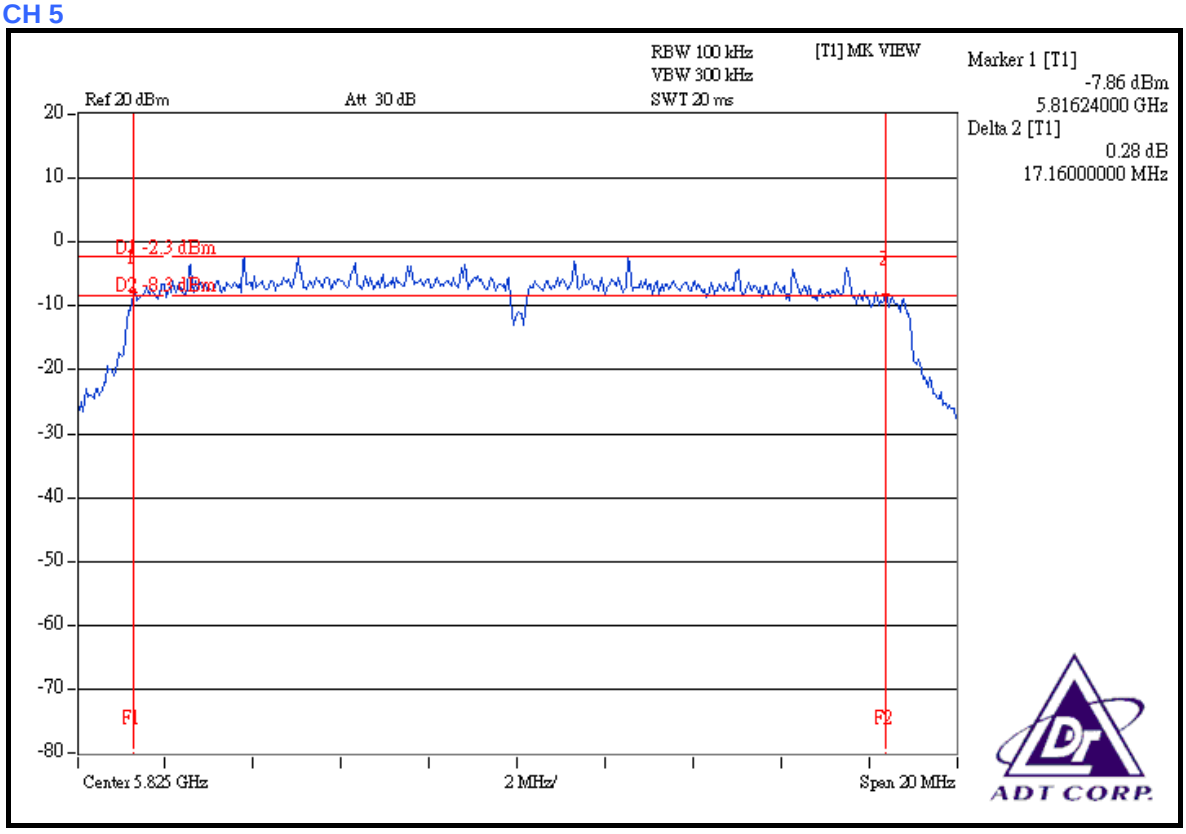
FOR CHAIN 0: CH 1



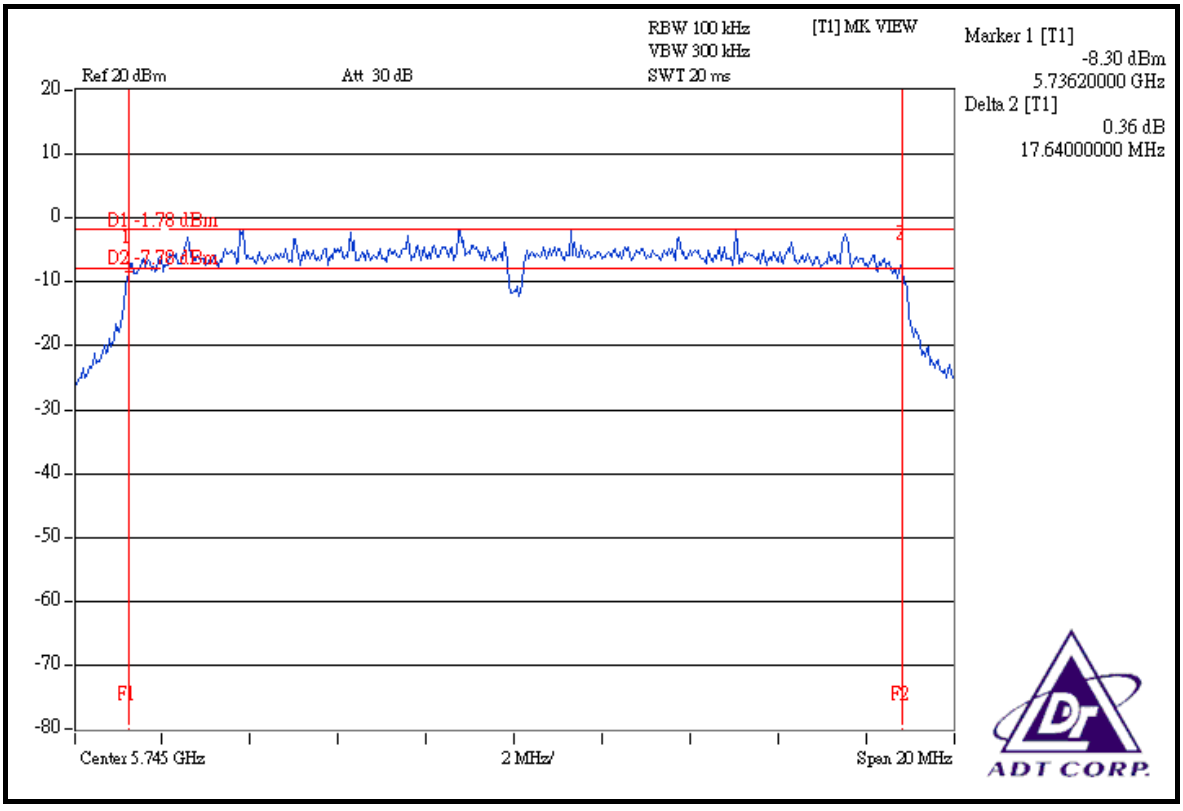
CH 3



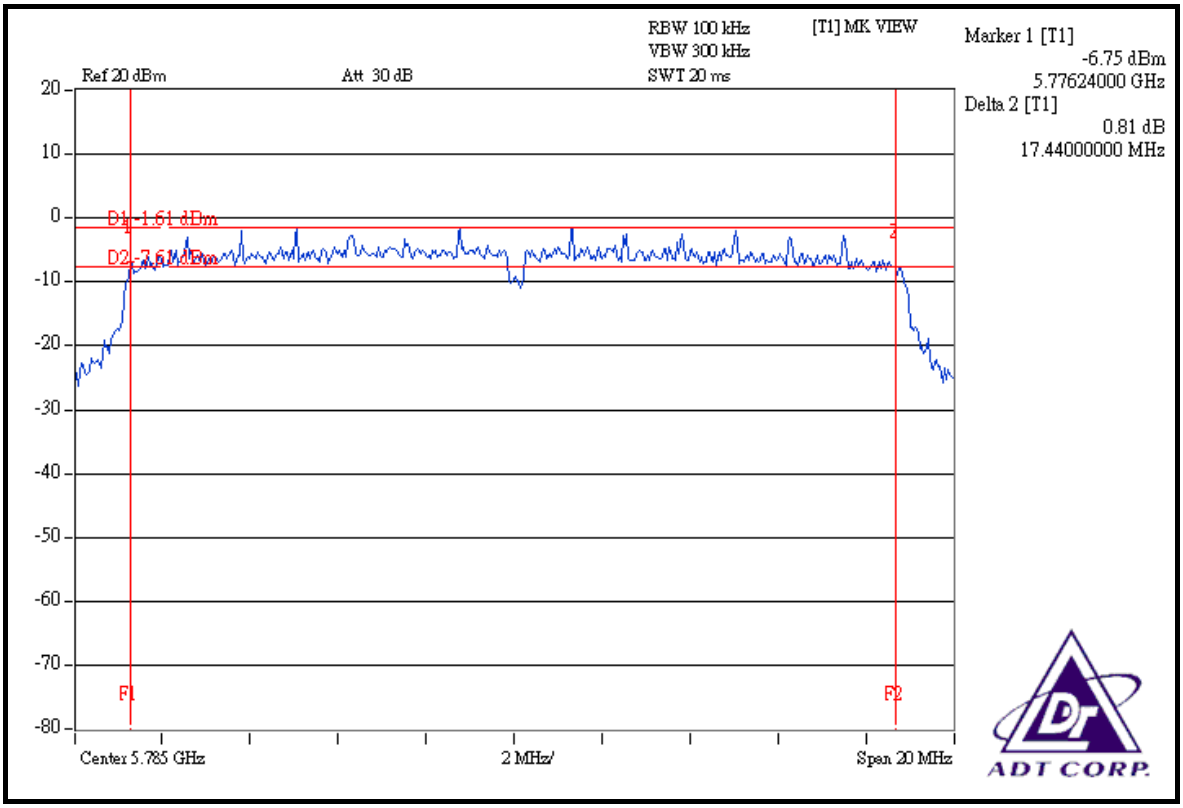
CH 5



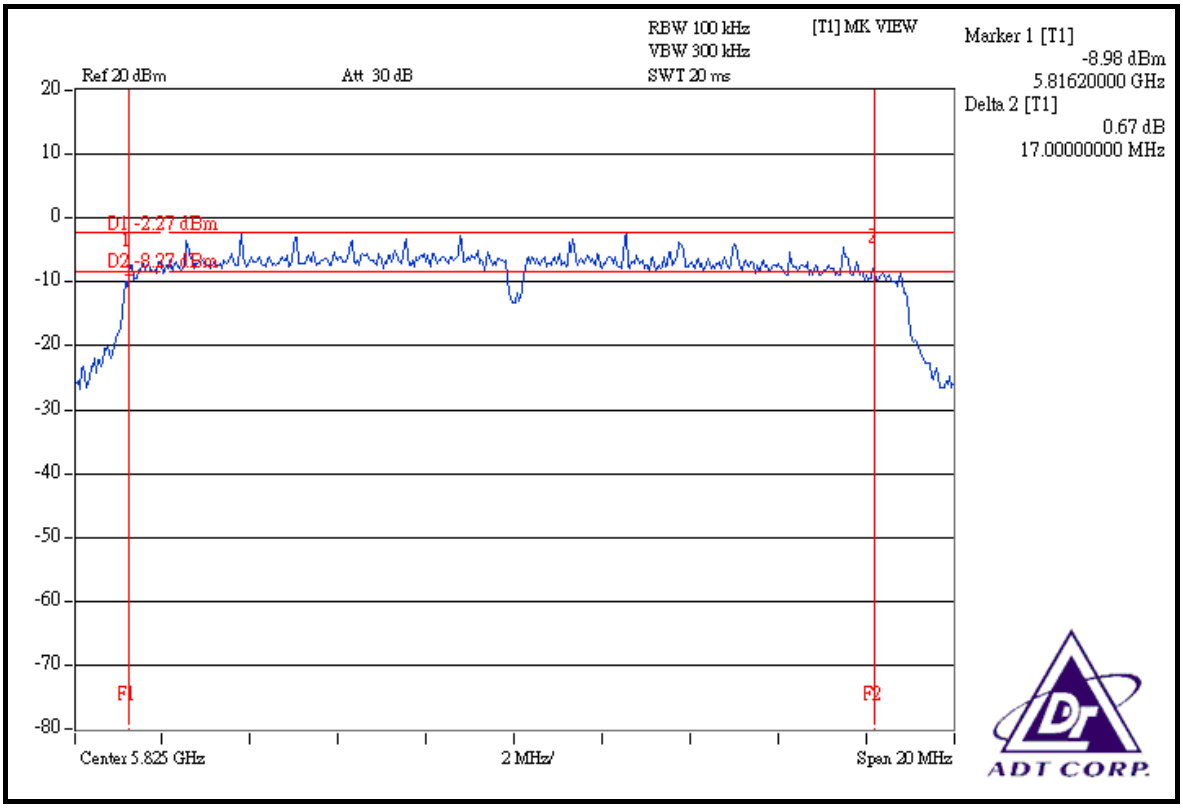
FOR CHAIN 1: CH 1



CH 3


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-6.75 dBm
5.77624000 GHz
Delta 2 [T1]
0.81 dB
17.44000000 MHz
Ref 20 dBm
Att 30 dB
D1 -1.61 dBm
D2 -3.61 dBm
F1
F2
Center 5.785 GHz
2 MHz/
Span 20 MHz
ADT CORP.

CH 5

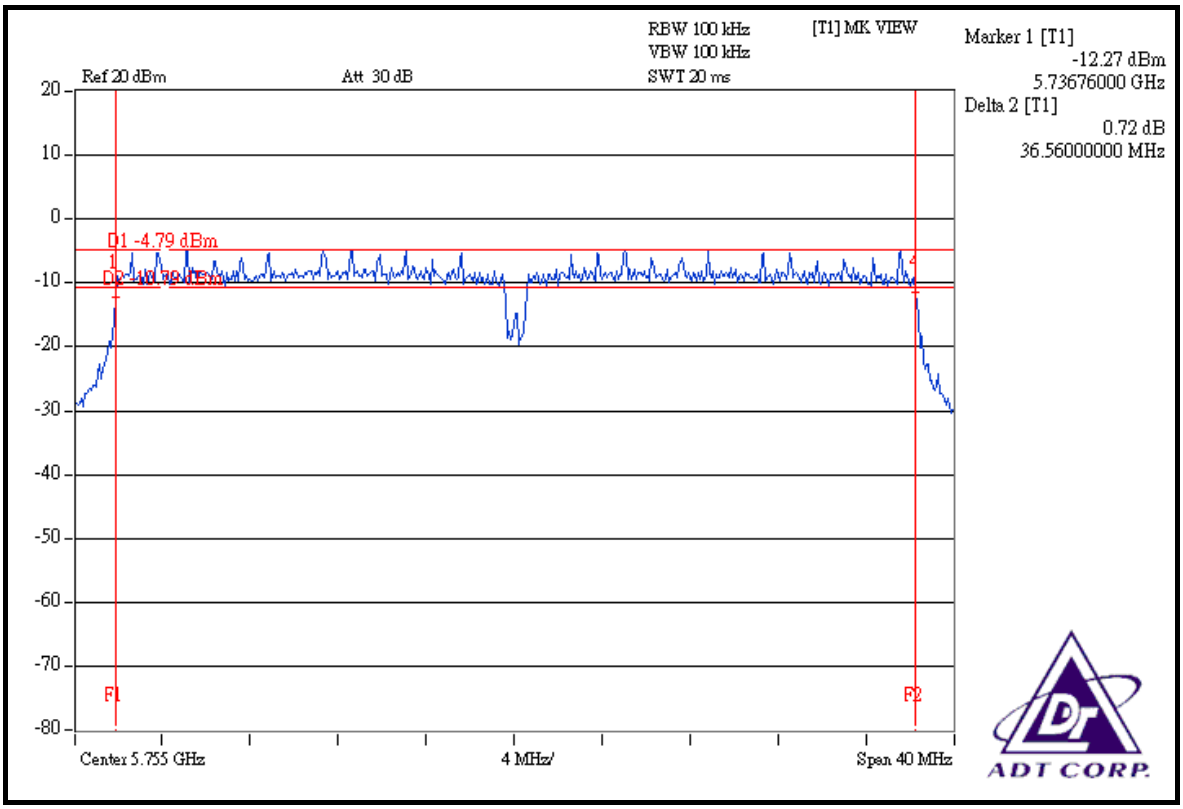

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-8.98 dBm
5.81620000 GHz
Delta 2 [T1]
0.67 dB
17.00000000 MHz
Ref 20 dBm
Att 30 dB
D1 -2.27 dBm
D2 -8.27 dBm
F1
F2
Center 5.825 GHz
2 MHz/
Span 20 MHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION:

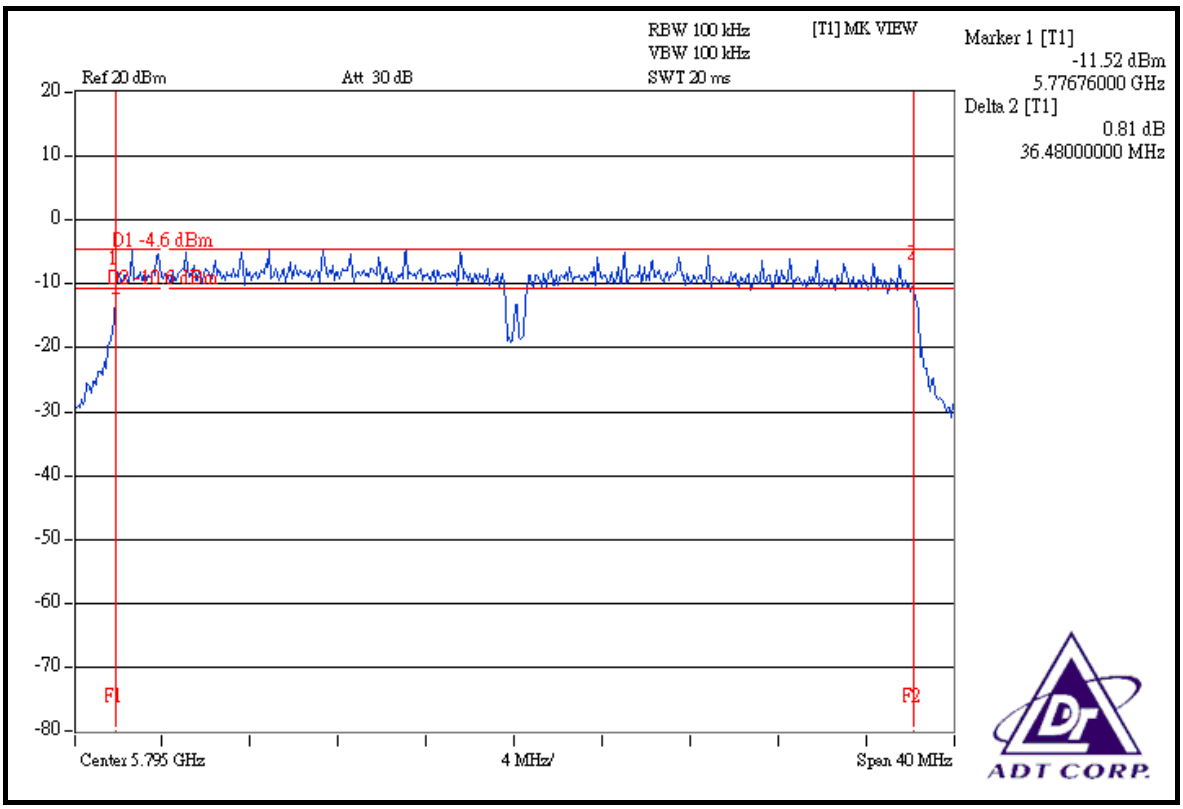
MODULATION TYPE	BPSK	**ENVIRONMENTAL CONDITIONS**	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	**TESTED BY**	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	5755	36.56	36.40	0.5	PASS
2	5795	36.48	36.48	0.5	PASS

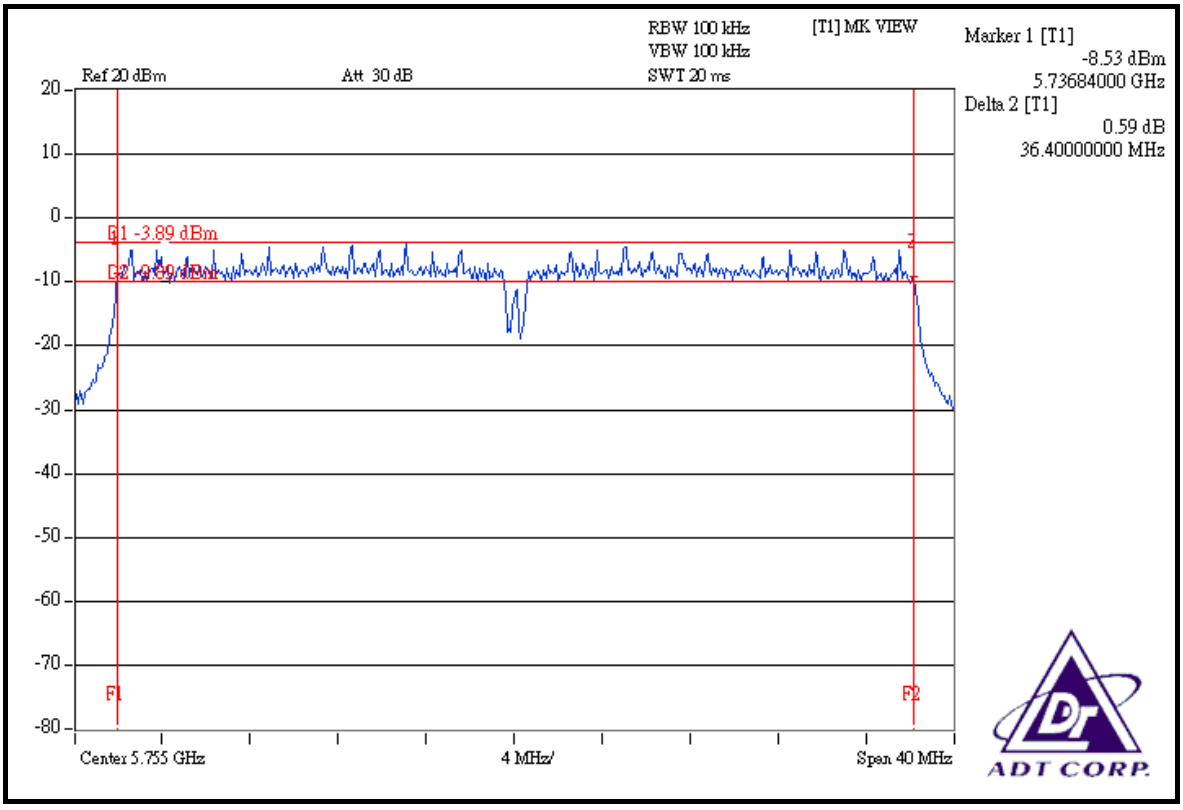
FOR CHAIN 0: CH 1



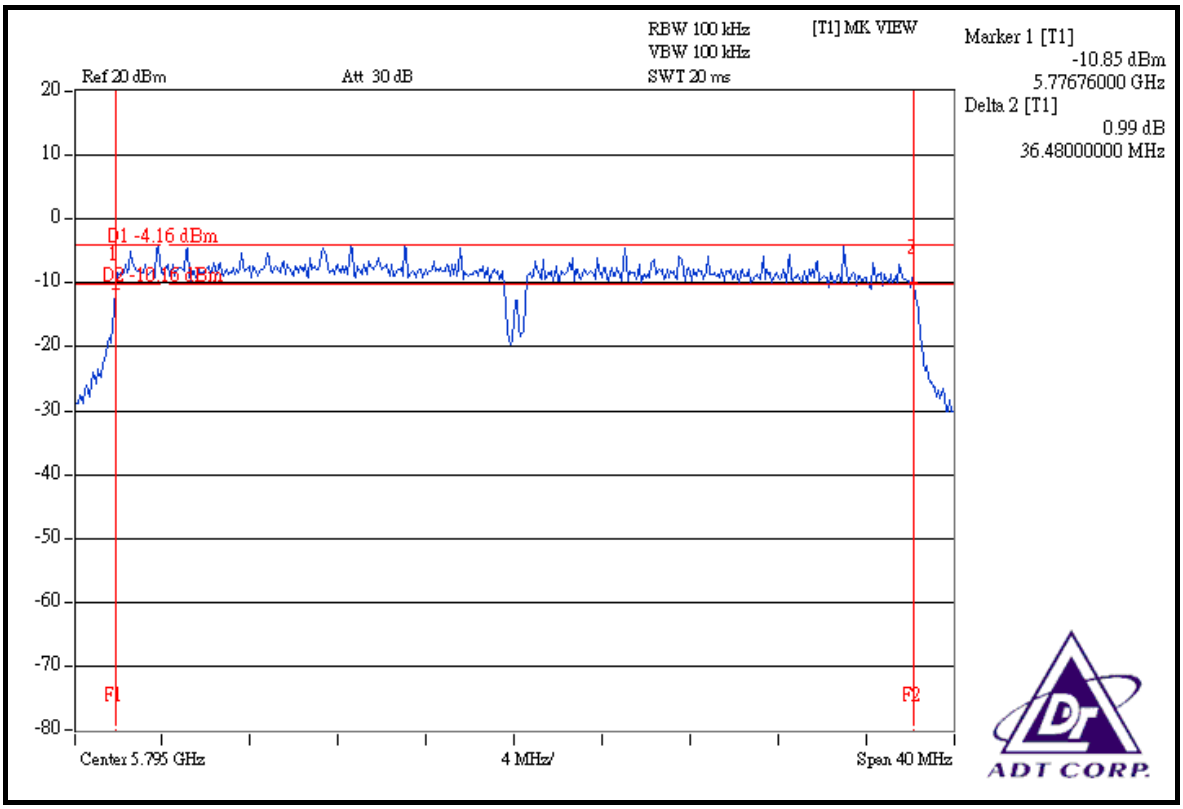
CH 2



FOR CHAIN 1: CH 1



CH 2



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.	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100040	Jun. 28, 2008
ANRITSU SYNTHESIZED SIGNAL GENERATOR	68247B	984703	May 18, 2008
DIGITAL RT OSCILLOSCOPE	TDS1012	C037299	Nov. 27, 2007
NARDA DETECTOR	4503A	FSCM99899	NA

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 PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. 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	ENVIRONMENTAL CONDITIONS	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	TESTED BY	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	5745	25.527	14.07	30	PASS
3	5785	25.645	14.09	30	PASS
5	5825	25.351	14.04	30	PASS

DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	TESTED BY	Long Chen

CHAN.	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1				
1	5745	25.351	28.708	14.04	14.58	54.059	17.329	30	PASS
3	5785	25.468	28.510	14.06	14.55	53.978	17.322	30	PASS
5	5825	25.293	25.468	14.03	14.06	50.761	17.055	30	PASS

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	**ENVIRONMENTAL CONDITIONS**	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	**TESTED BY**	Long Chen

CHAN.	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1				
1	5755	25.235	28.249	14.02	14.51	53.484	17.282	30	PASS
2	5795	25.586	28.249	14.08	14.51	53.835	17.311	30	PASS

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100040	Jun. 28, 2008

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

5.5.3 TEST PROCEDURE

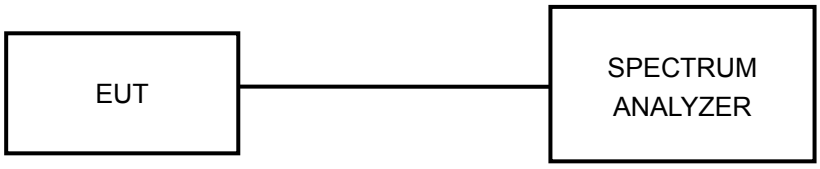
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITION

Same as Item 5.3.6

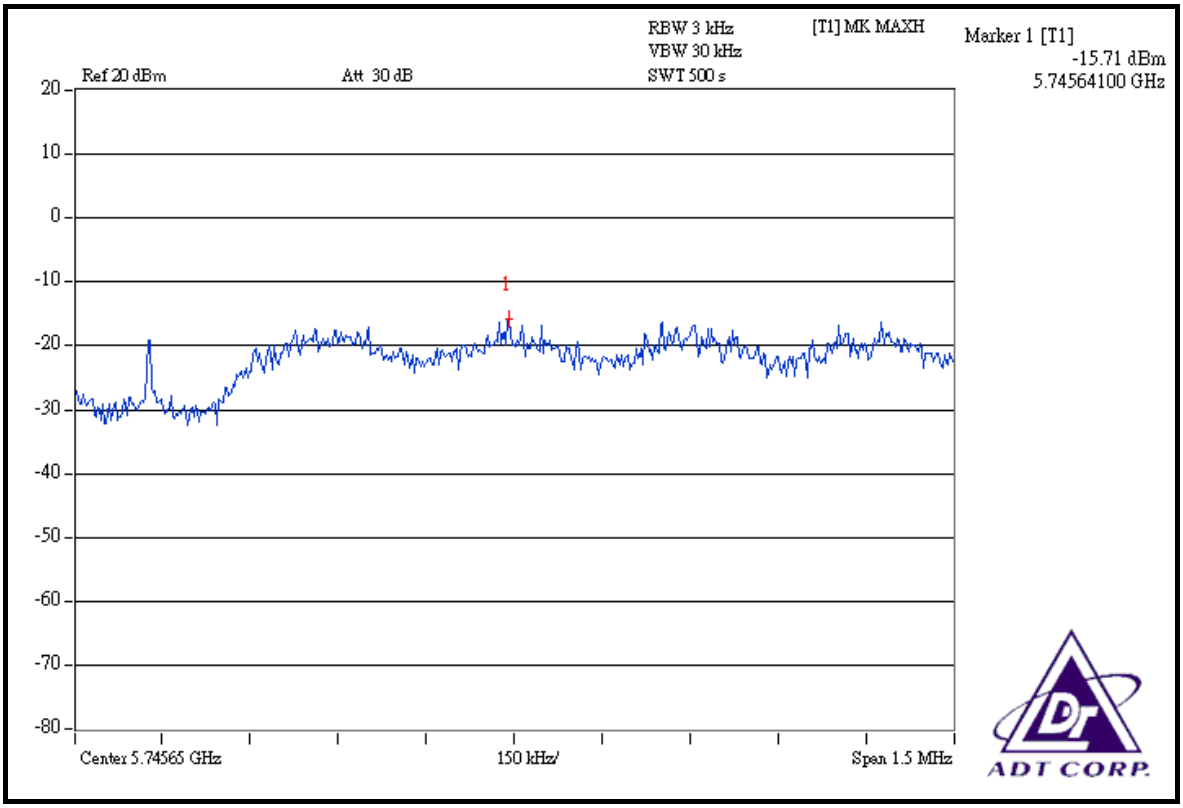
5.5.7 TEST RESULTS

802.11a OFDM MODULATION:

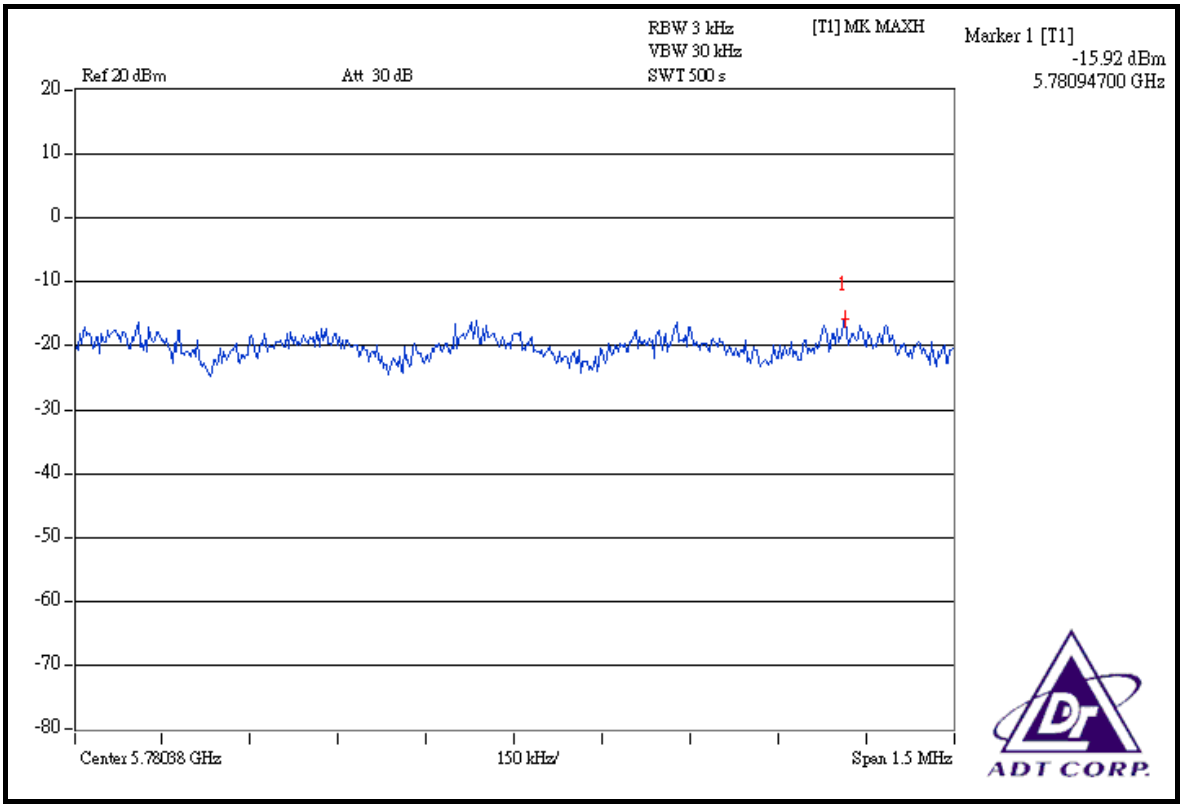
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	TESTED BY	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	5745	-15.71	8	PASS
3	5785	-15.92	8	PASS
5	5825	-15.61	8	PASS

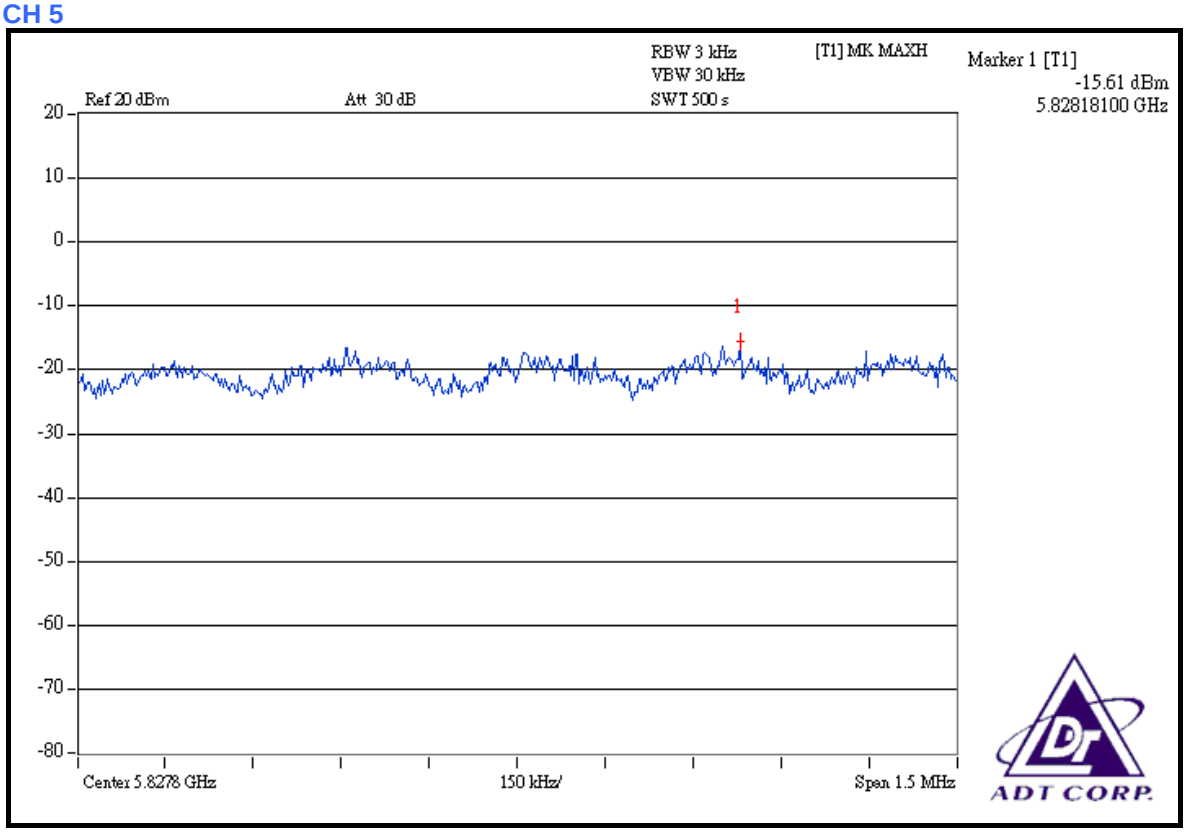
CH 1



CH 3


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-15.92 dBm
5.78094700 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.78038 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

CH 5

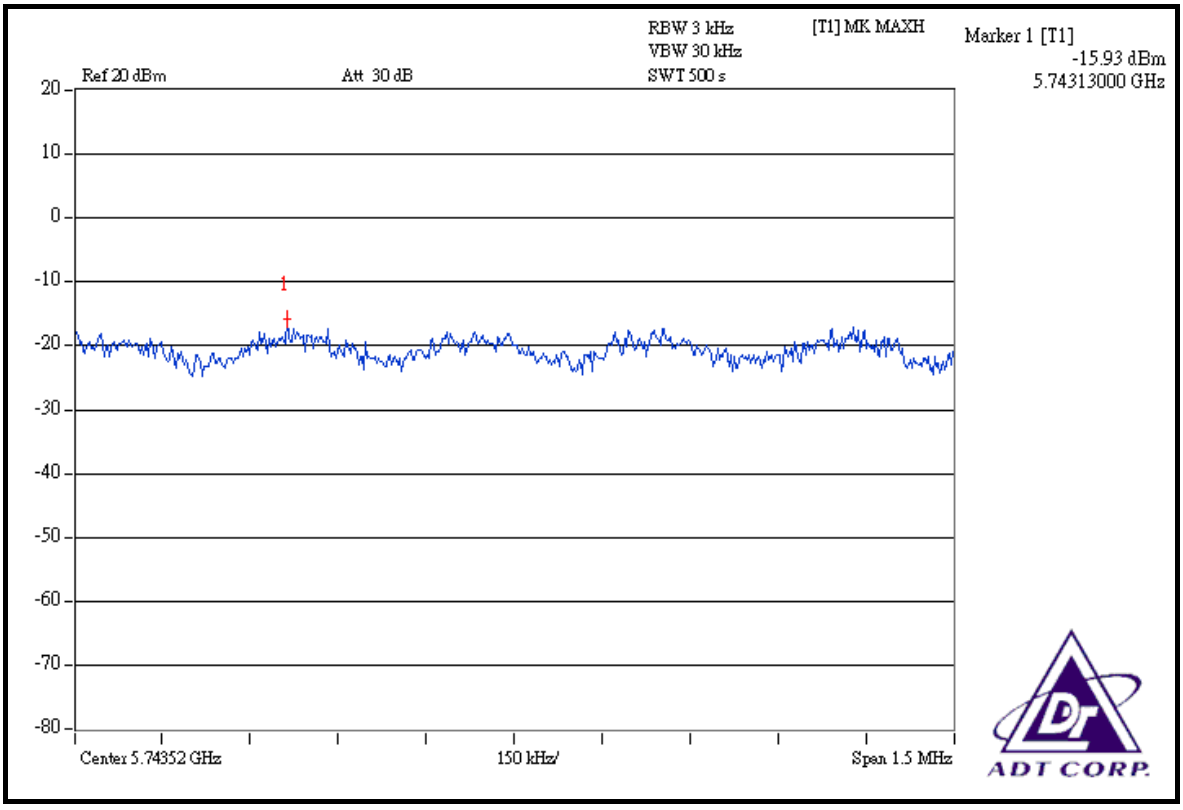

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-15.61 dBm
5.82818100 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.8278 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

DRAFT 802.11n (20MHz) OFDM MODULATION:

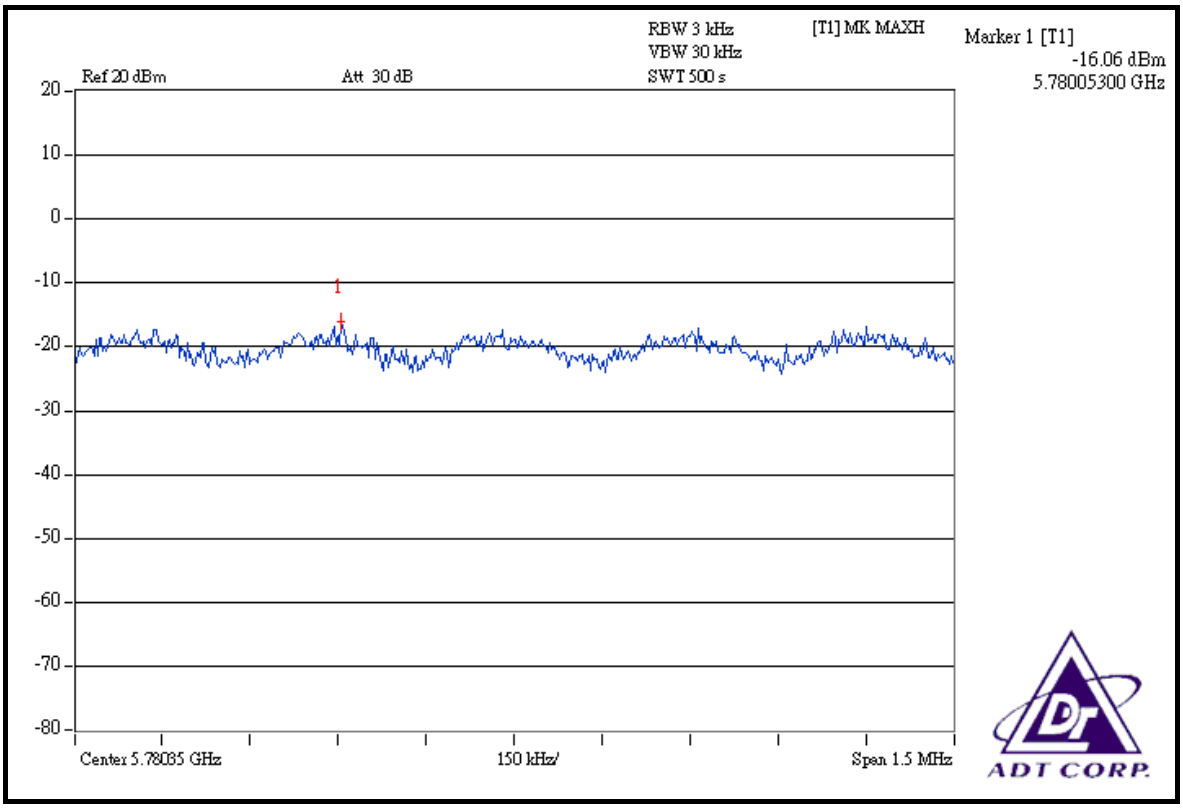
MODULATION TYPE	BPSK	**ENVIRONMENTAL CONDITIONS**	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	**TESTED BY**	Long Chen

CHAN.	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (mW)		RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1				
1	5745	0.026	0.027	-15.93	-15.76	0.053	-12.757	8	PASS
3	5785	0.025	0.027	-16.06	-15.61	0.052	-12.840	8	PASS
5	5825	0.024	0.023	-16.25	-16.40	0.047	-13.279	8	PASS

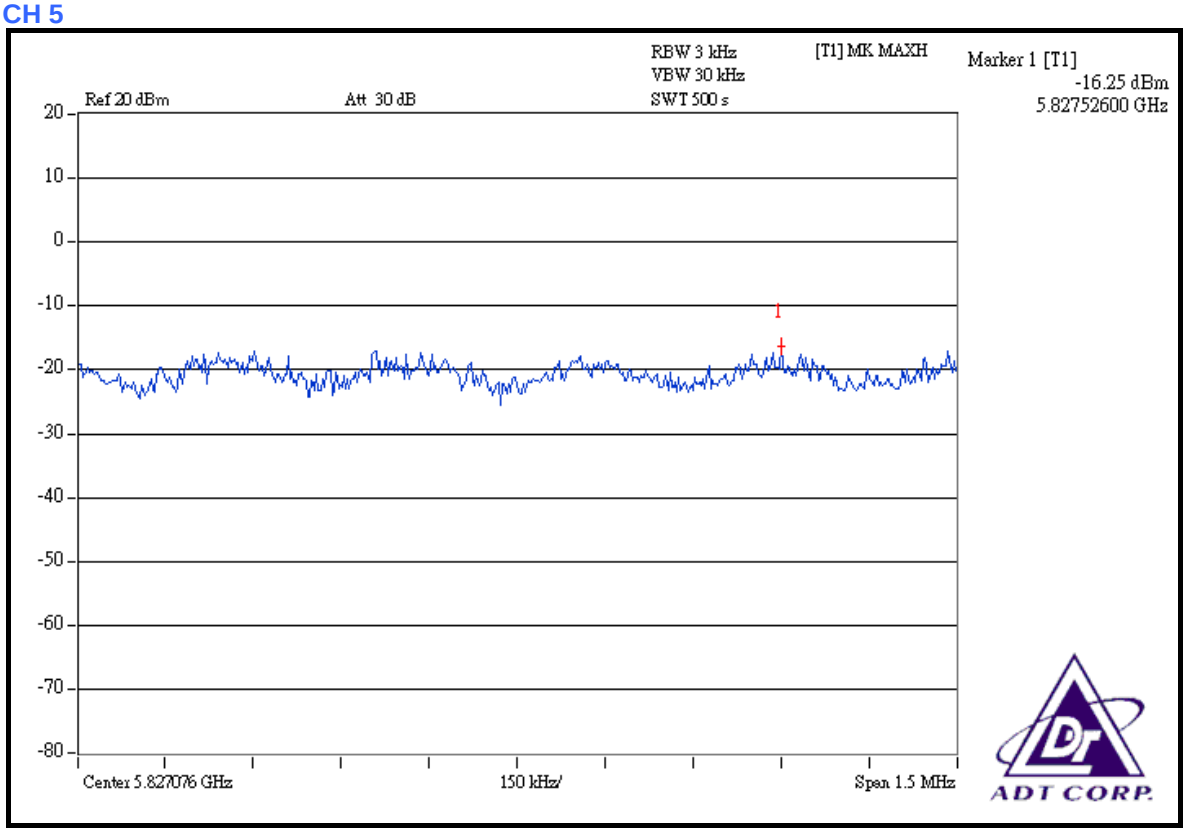
FOR CHAIN 0: CH 1



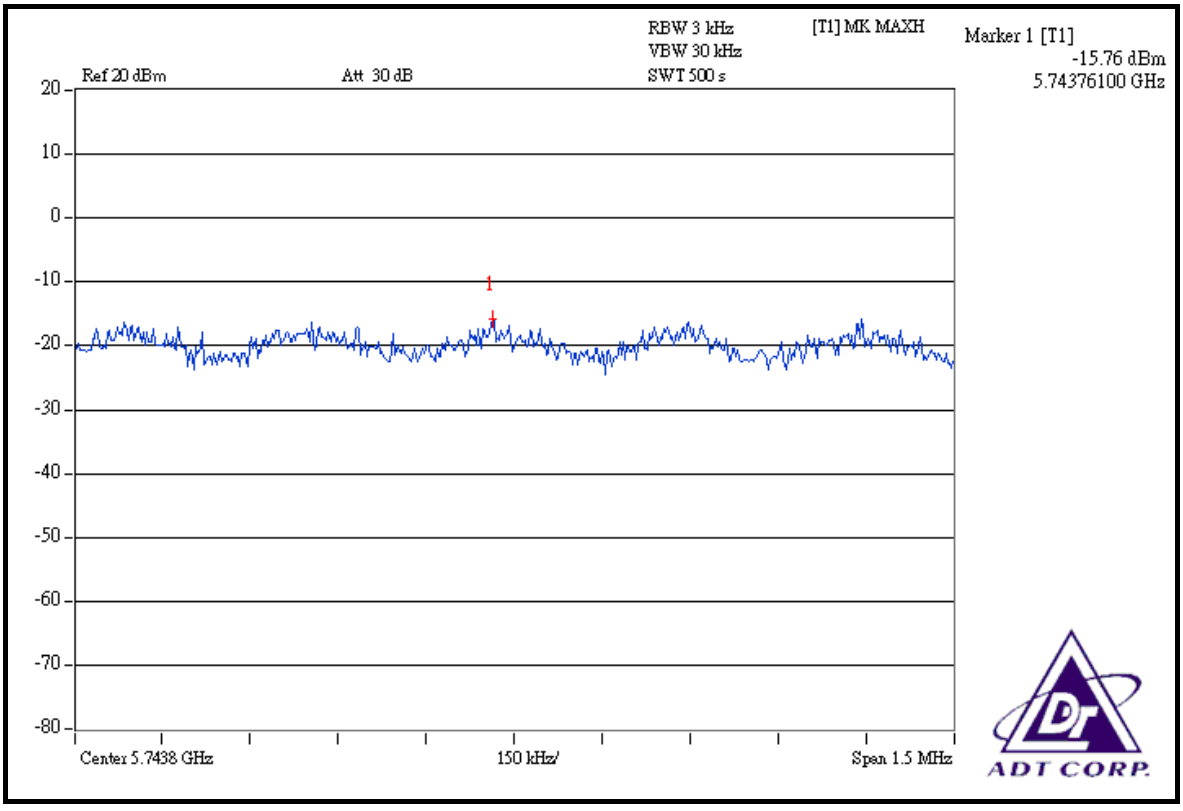
CH 3



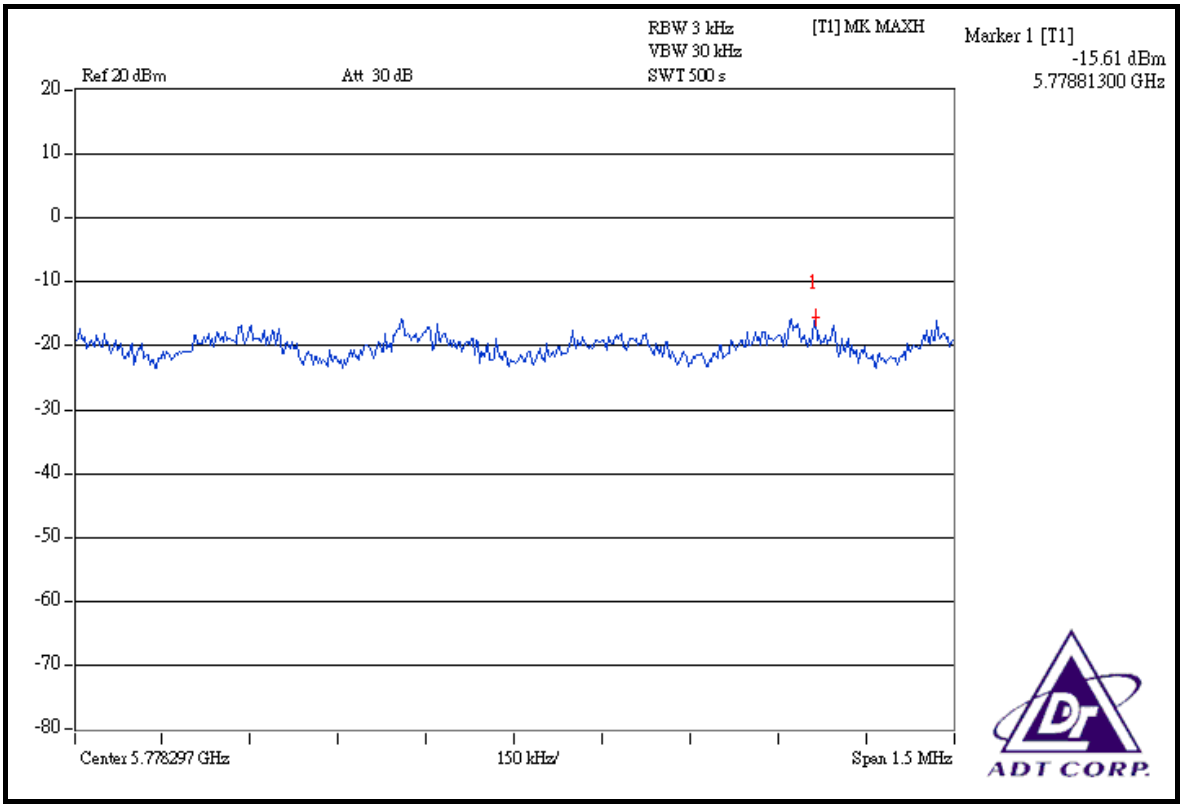
CH 5



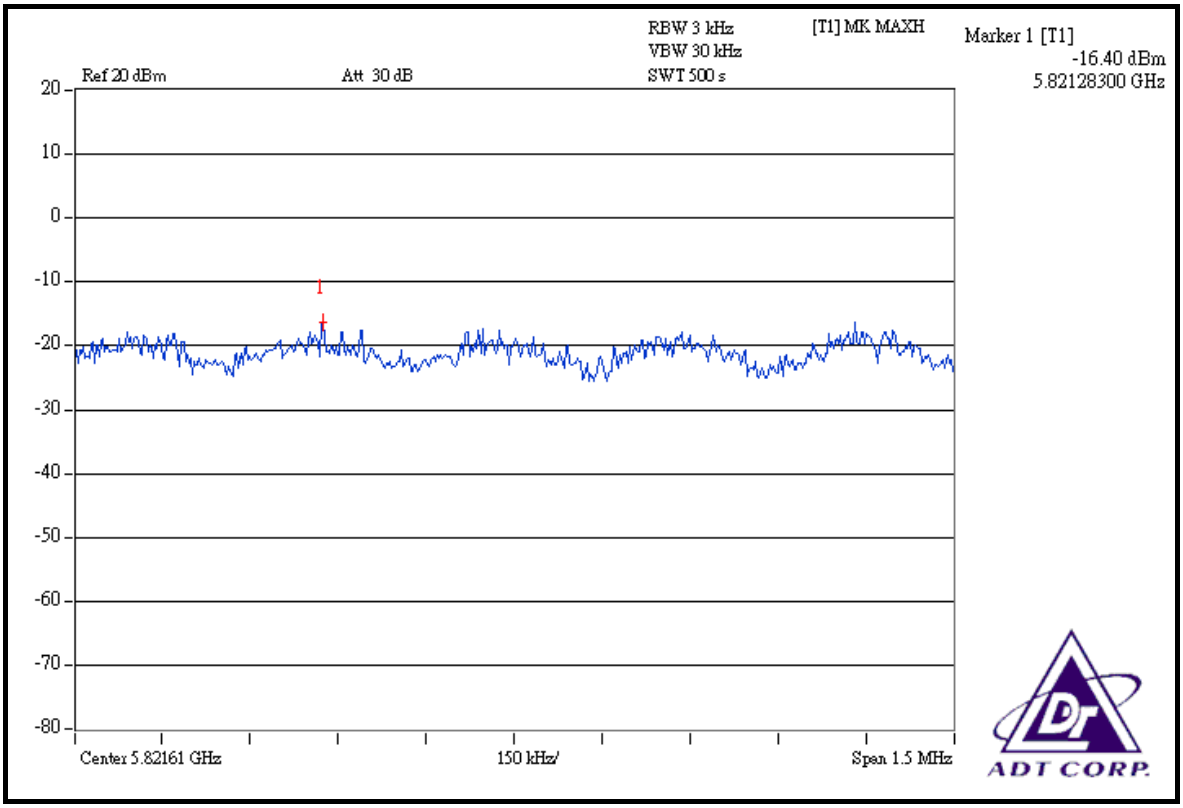
FOR CHAIN 1: CH 1



CH 3


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-15.61 dBm
5.77881300 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.778297 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

CH 5

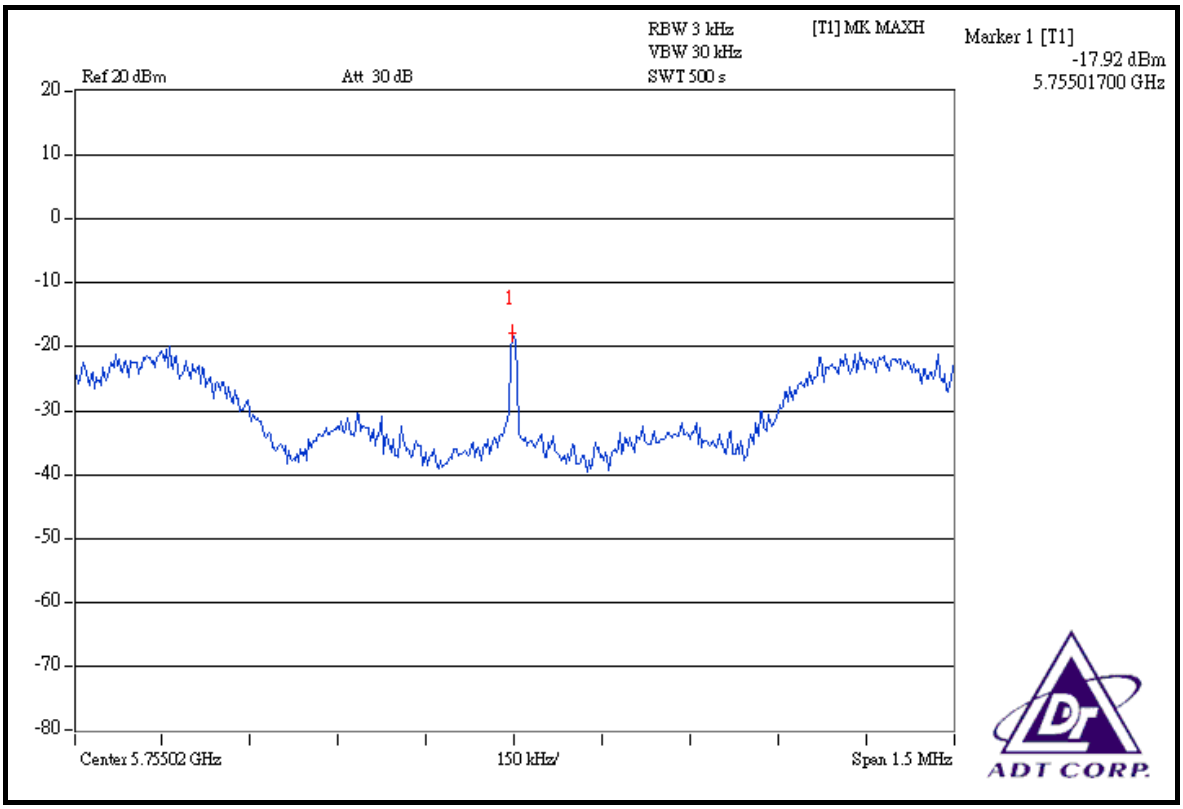

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-16.40 dBm
5.82128300 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.82161 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION:

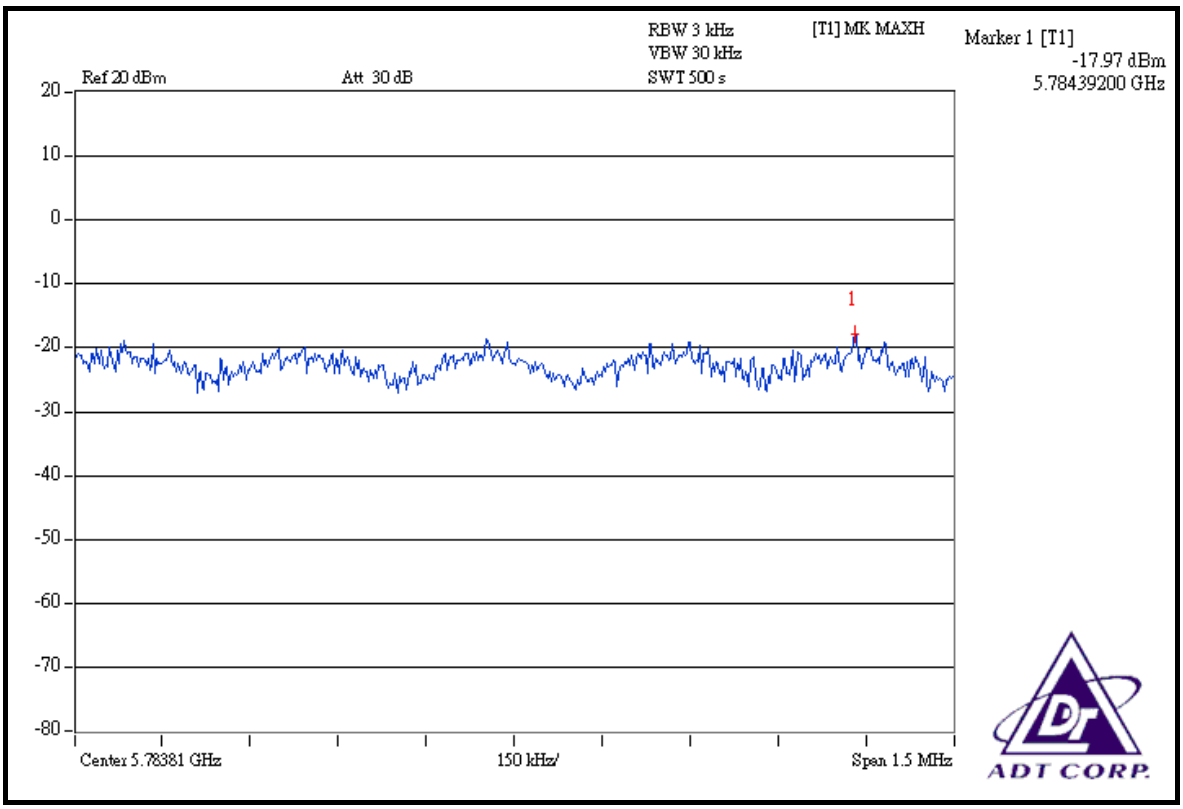
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	26deg.C, 65%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60Hz	TESTED BY	Long Chen

CHAN.	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (mW)		RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1				
1	5755	0.016	0.019	-17.92	-17.32	0.035	-14.559	8	PASS
2	5795	0.016	0.019	-17.97	-17.26	0.035	-14.559	8	PASS

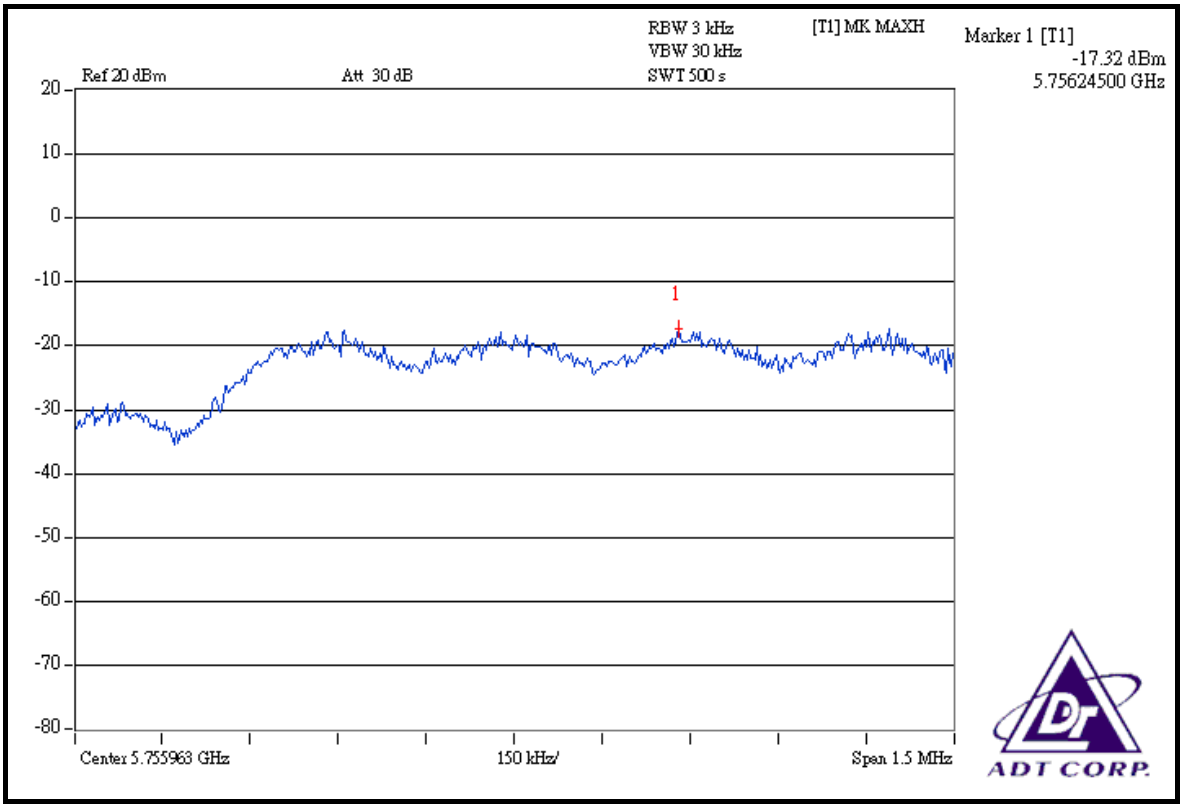
FOR CHAIN 0: CH 1



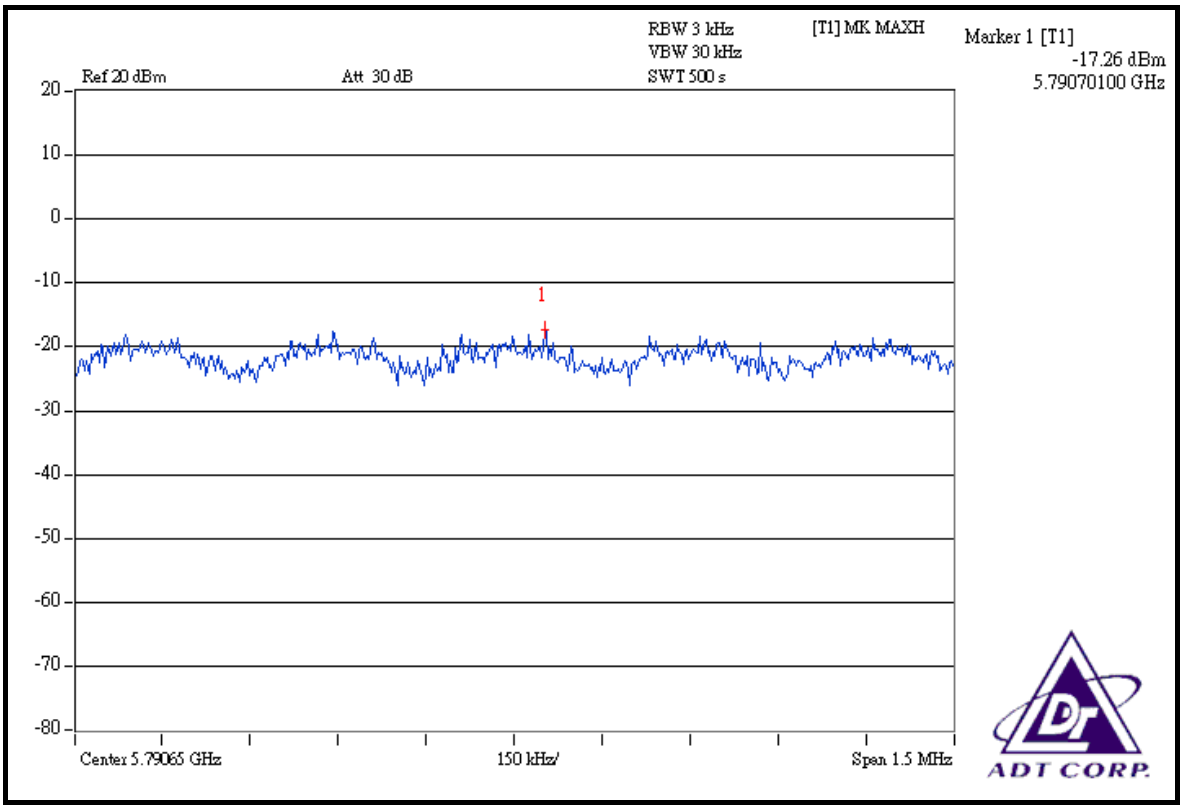
CH 2



FOR CHAIN 1: CH 1



CH 2



5.6 BAND EDGES MEASUREMENT

5.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

5.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
802.11a:			
R&S SPECTRUM ANALYZER	FSP40	100040	Jun. 28, 2008
DRAFT 802.11n (20MHz), DRAFT 802.11n (40MHz):			
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Feb. 26, 2008
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	May 31, 2008
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jun. 28, 2008
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 28, 2007
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	238137/4	Dec. 11, 2007
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	233233/4	Nov. 14, 2007
Software ADT.	ADT_Radiated_V7.6	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA

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

802.11a:

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 300kHz bandwidth from band edge. The band edges was measured and recorded.

DRAFT 802.11n (20MHz), DRAFT 802.11n (40MHz):

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 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

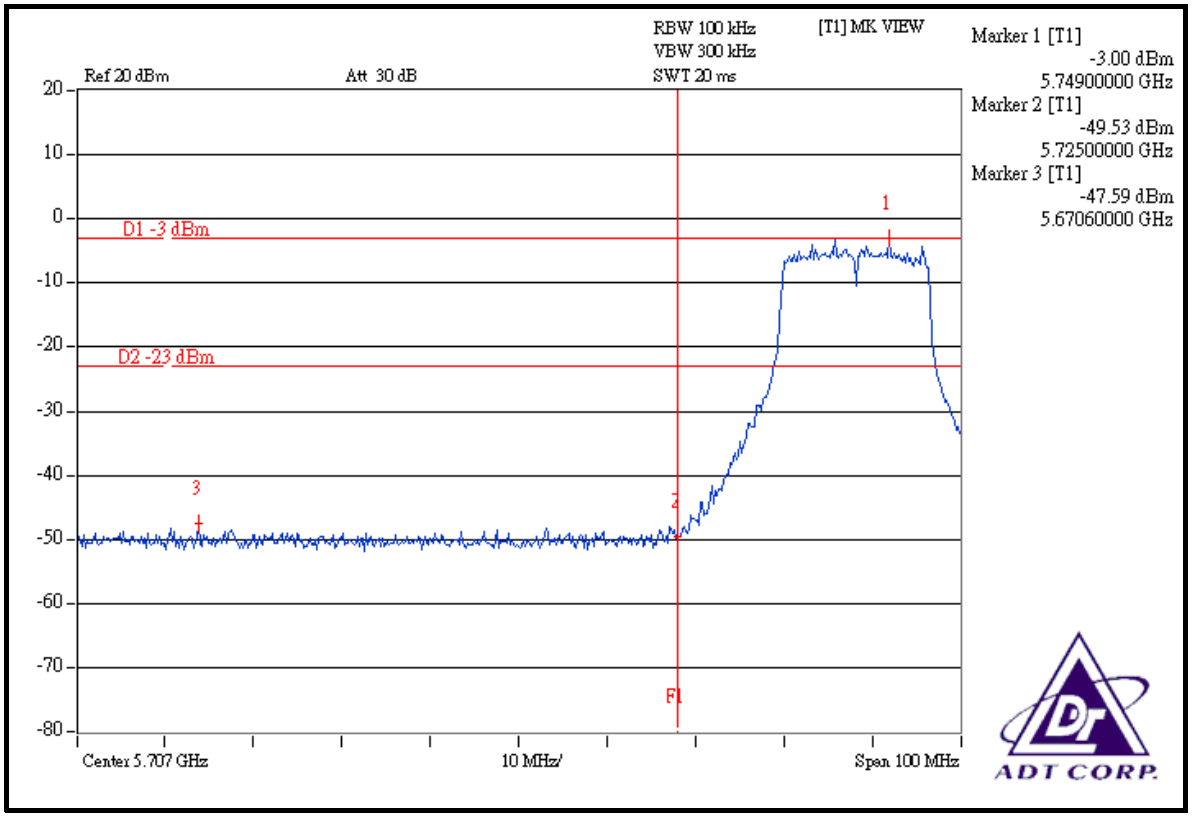
5.6.5 EUT OPERATING CONDITION

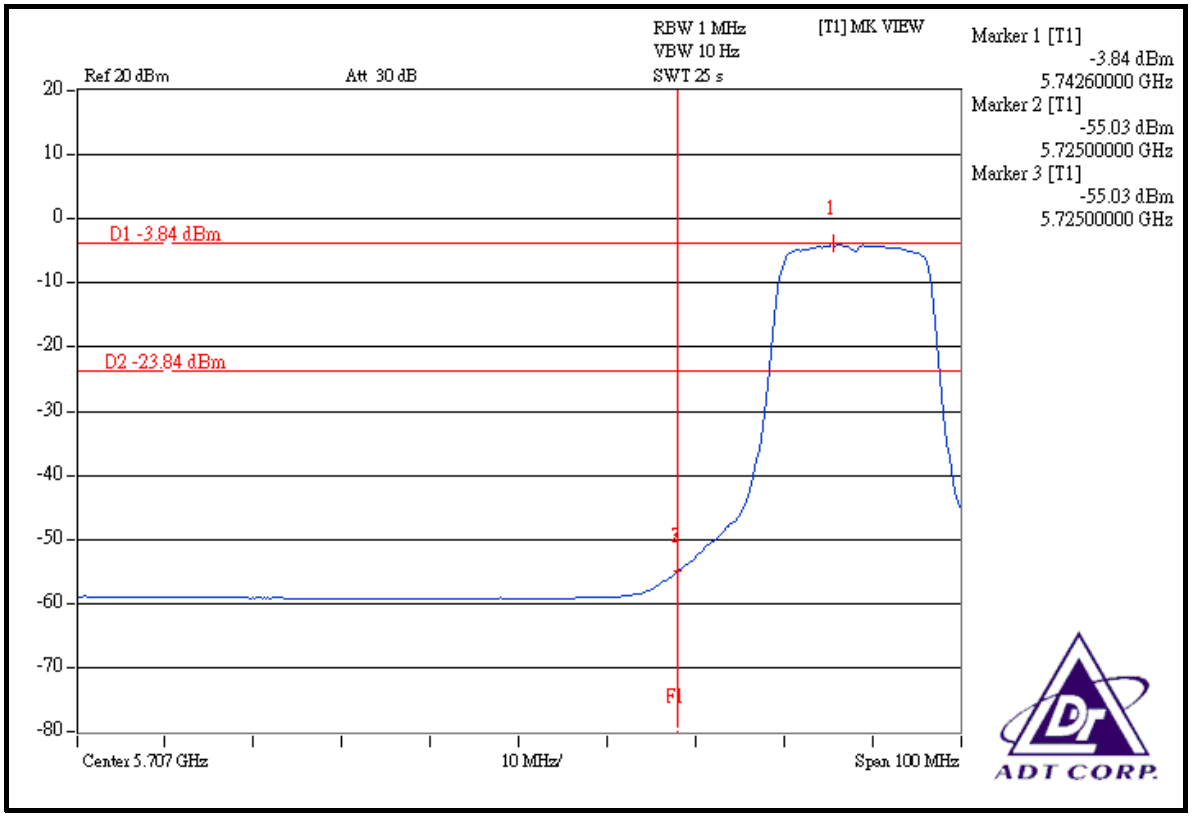
Same as Item 5.3.6

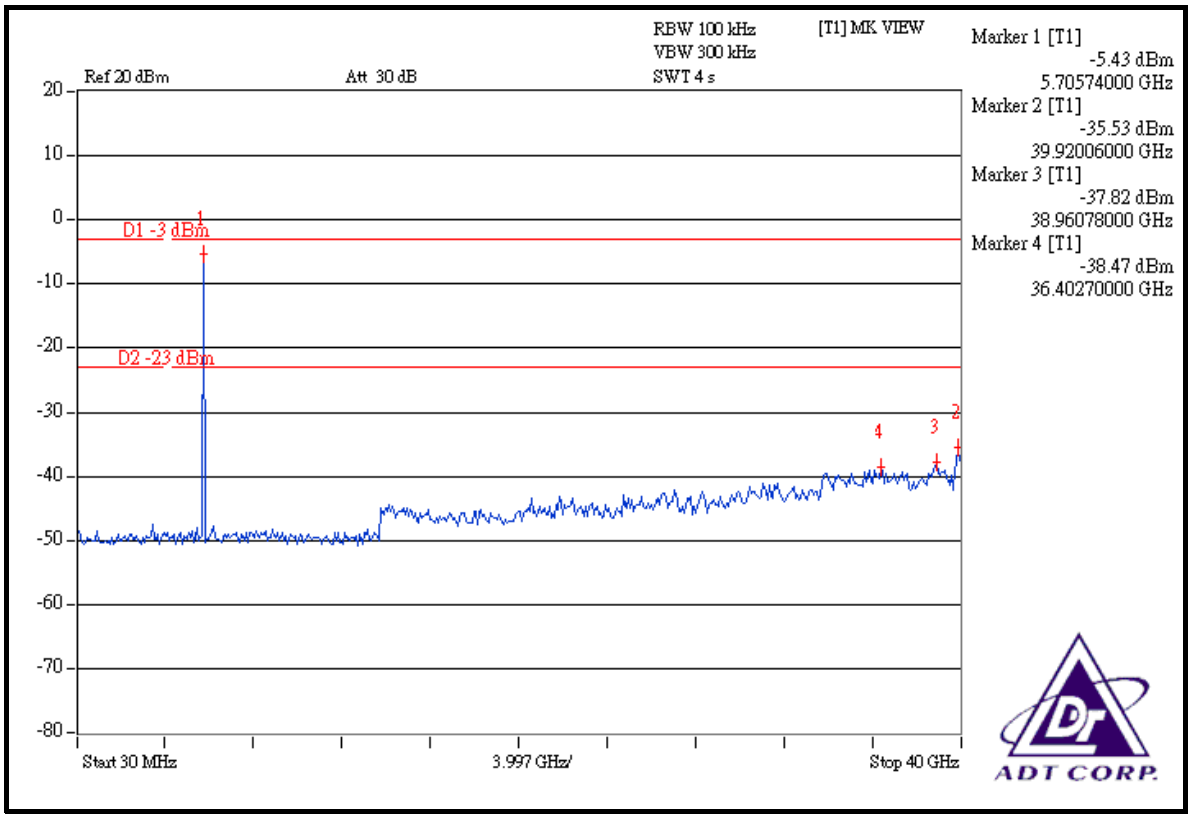
5.6.6 TEST RESULTS

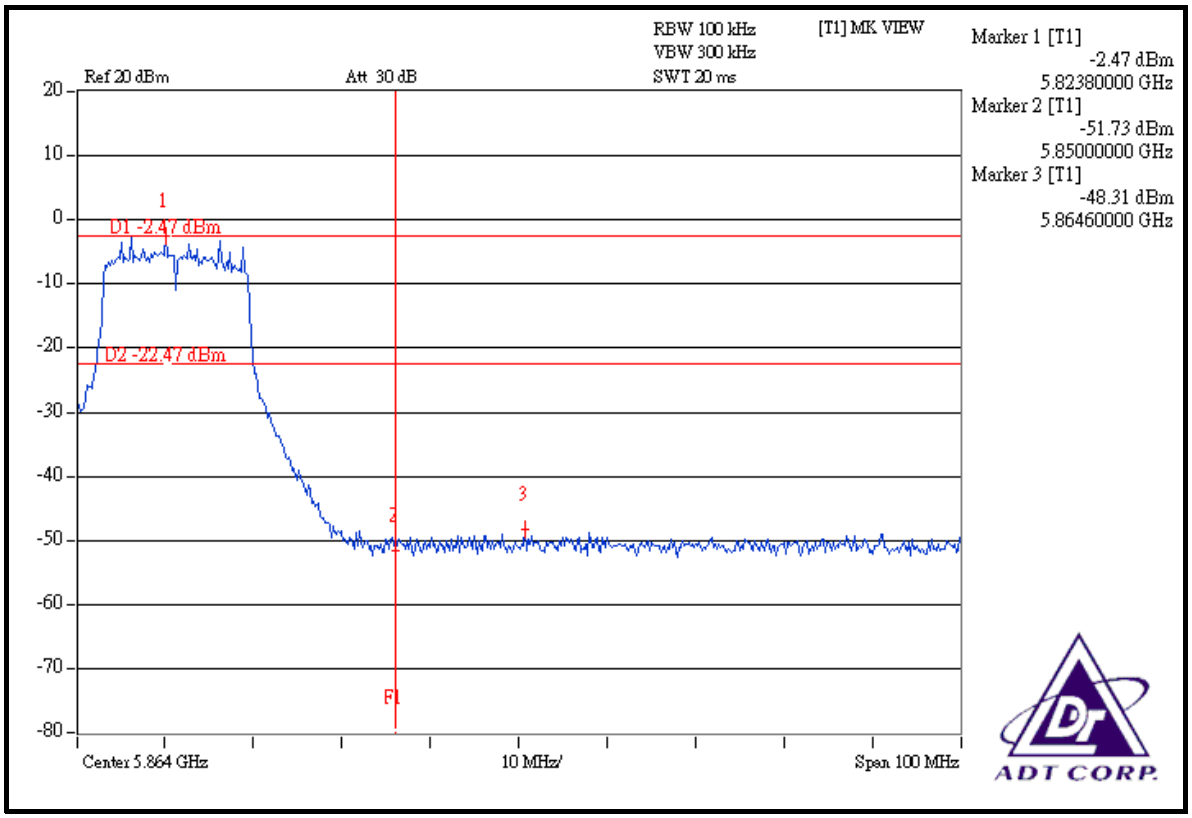
The spectrum plots are attached on the following pages. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

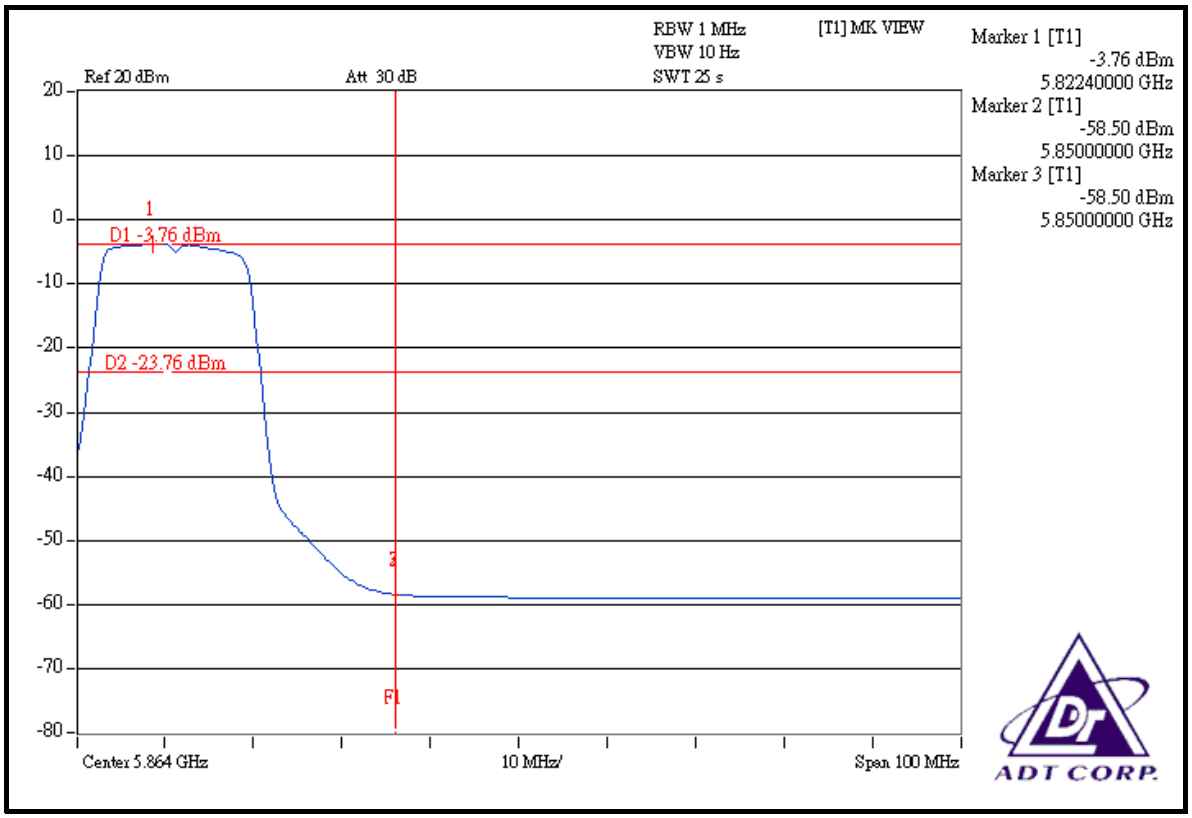
802.11a OFDM MODULATION:

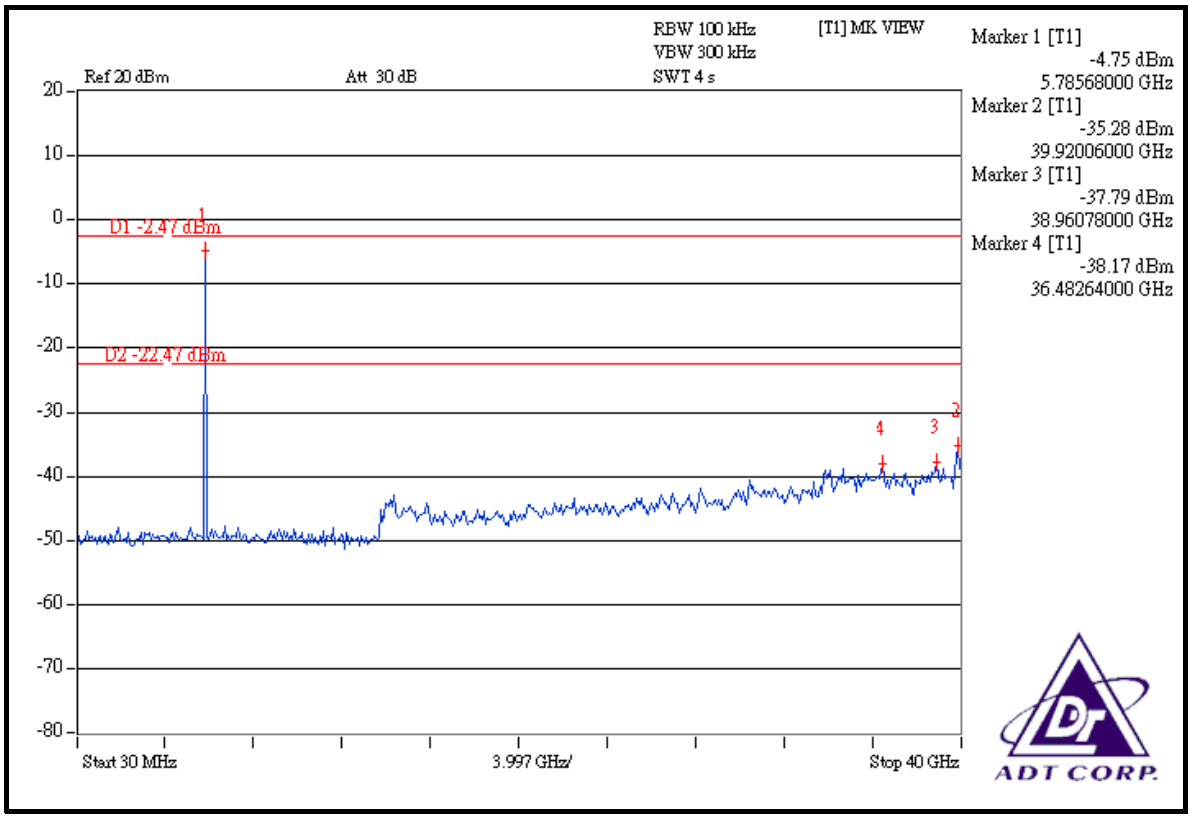




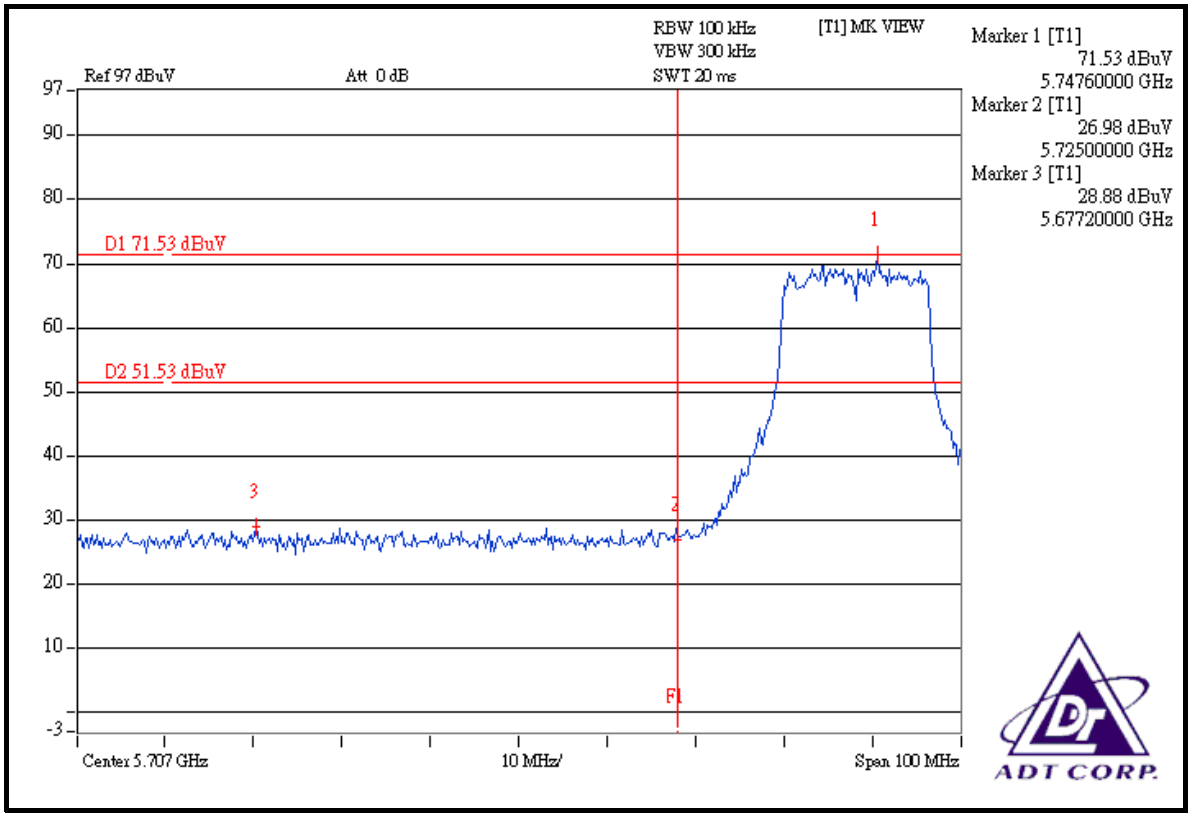

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -3 dBm
D2 -23 dBm
Marker 1 [T1]
-5.43 dBm
5.70574000 GHz
Marker 2 [T1]
-35.53 dBm
39.92006000 GHz
Marker 3 [T1]
-37.82 dBm
38.96078000 GHz
Marker 4 [T1]
-38.47 dBm
36.40270000 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.

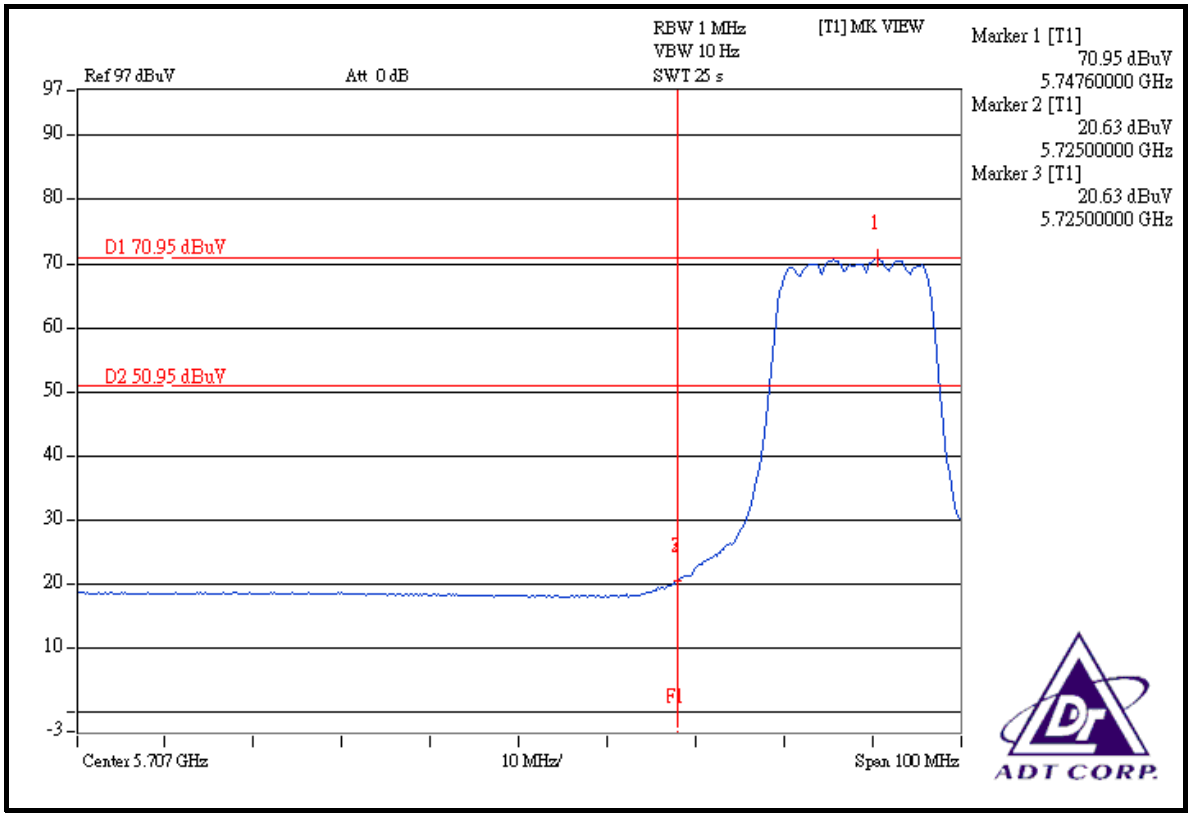

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -2.47 dBm
D2 -22.47 dBm
Marker 1 [T1]
-2.47 dBm
5.82380000 GHz
Marker 2 [T1]
-51.73 dBm
5.85000000 GHz
Marker 3 [T1]
-48.31 dBm
5.86460000 GHz
Center 5.864 GHz
10 MHz/
Span 100 MHz
ADT CORP.

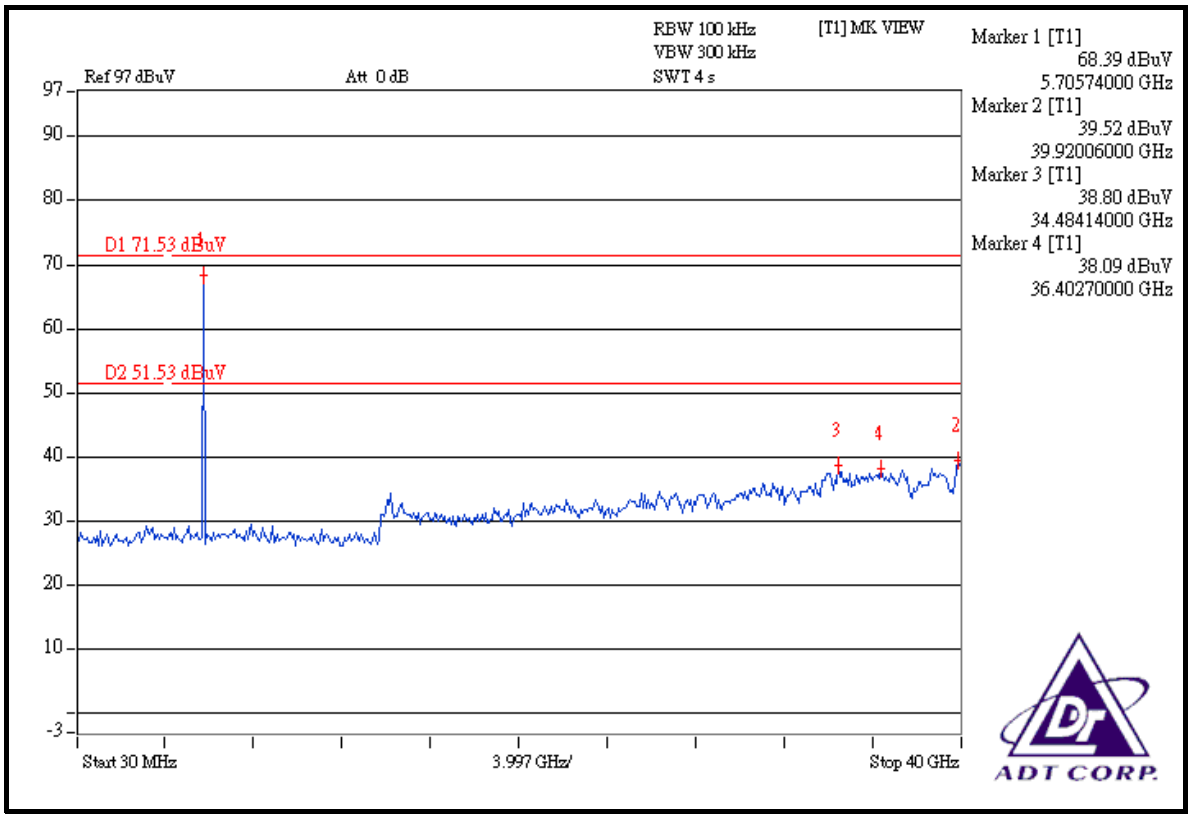

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -3.76 dBm
D2 -23.76 dBm
Marker 1 [T1]
-3.76 dBm
5.82240000 GHz
Marker 2 [T1]
-58.50 dBm
5.85000000 GHz
Marker 3 [T1]
-58.50 dBm
5.85000000 GHz
Center 5.864 GHz
10 MHz/
Span 100 MHz

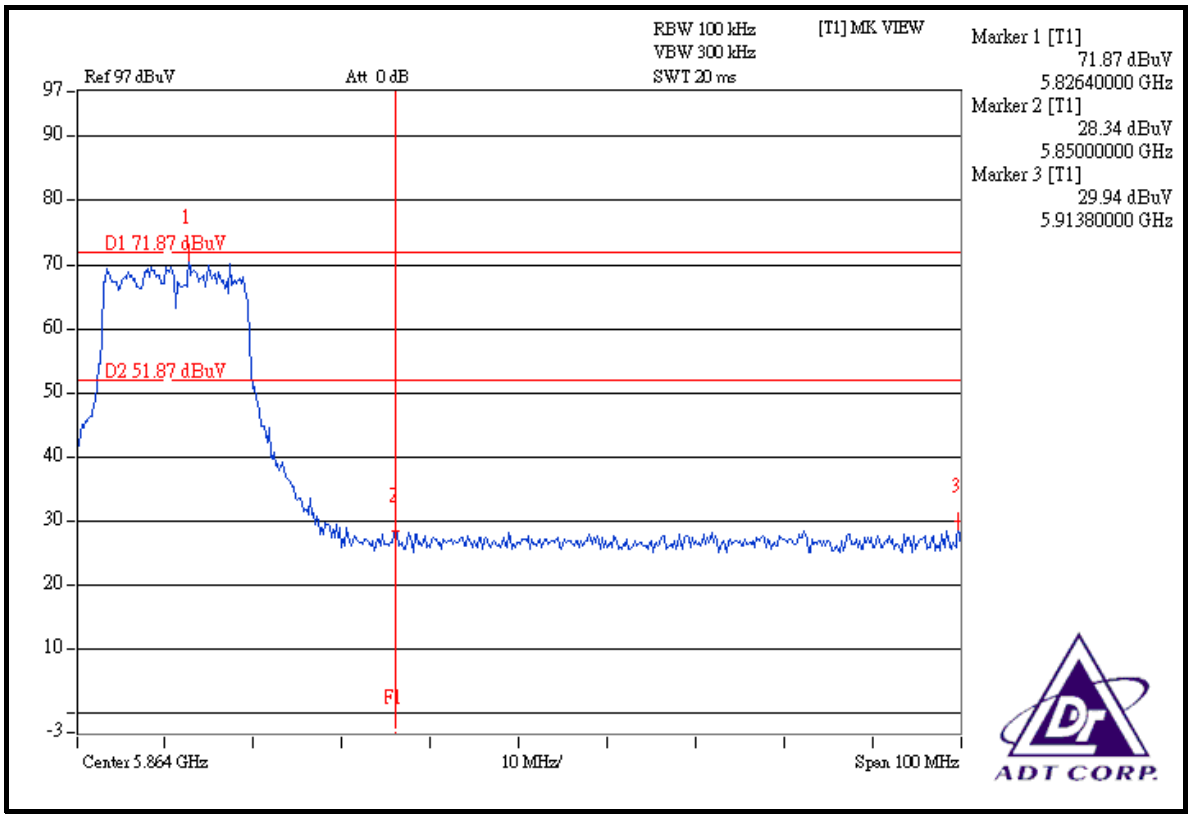

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -2.47 dBm
D2 -22.47 dBm
Marker 1 [T1]
-4.75 dBm
5.78568000 GHz
Marker 2 [T1]
-35.28 dBm
39.92006000 GHz
Marker 3 [T1]
-37.79 dBm
38.96078000 GHz
Marker 4 [T1]
-38.17 dBm
36.48264000 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

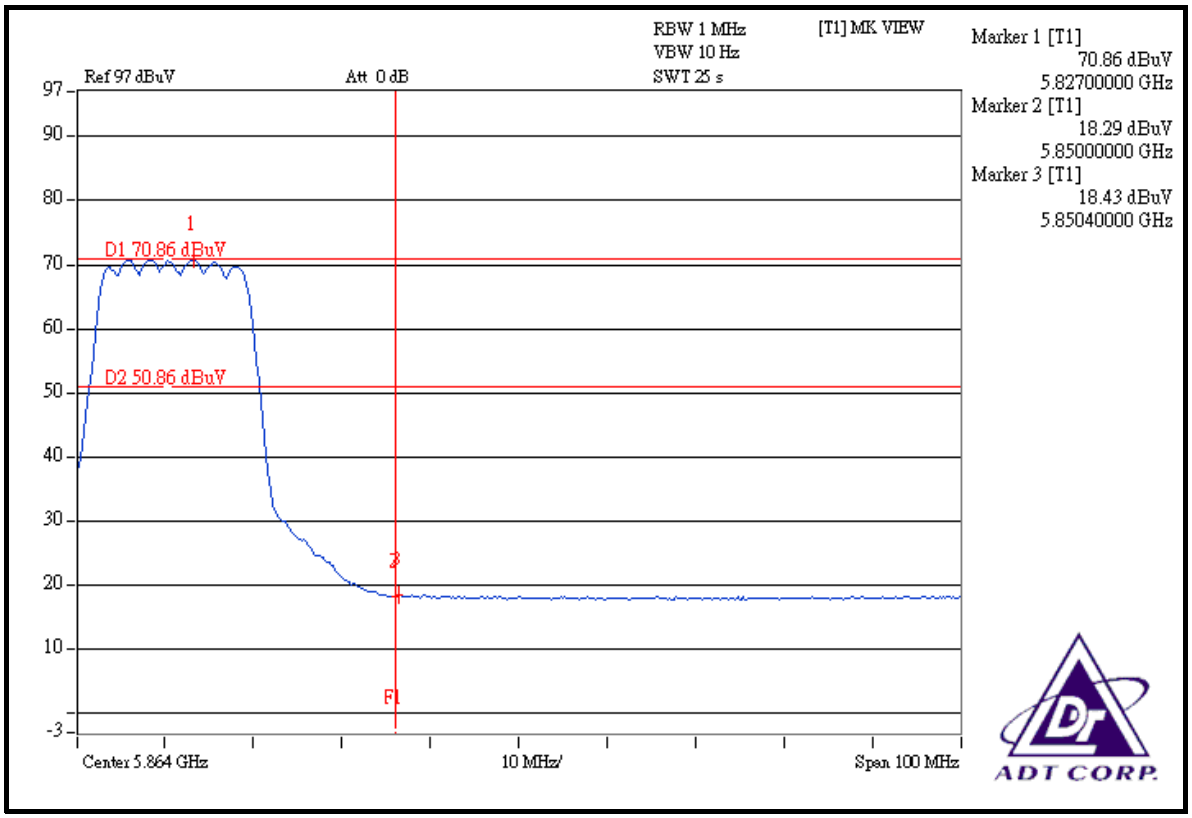
DRAFT 802.11n (20MHz) OFDM MODULATION:

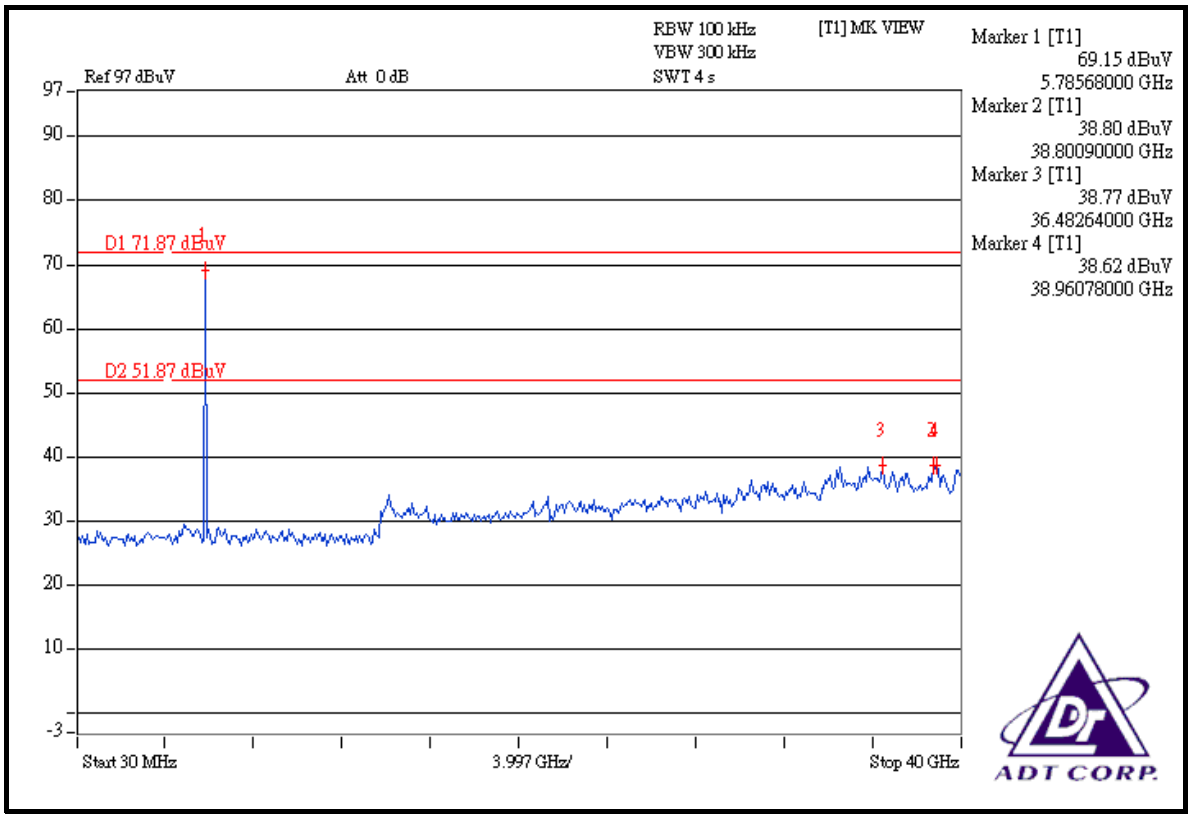




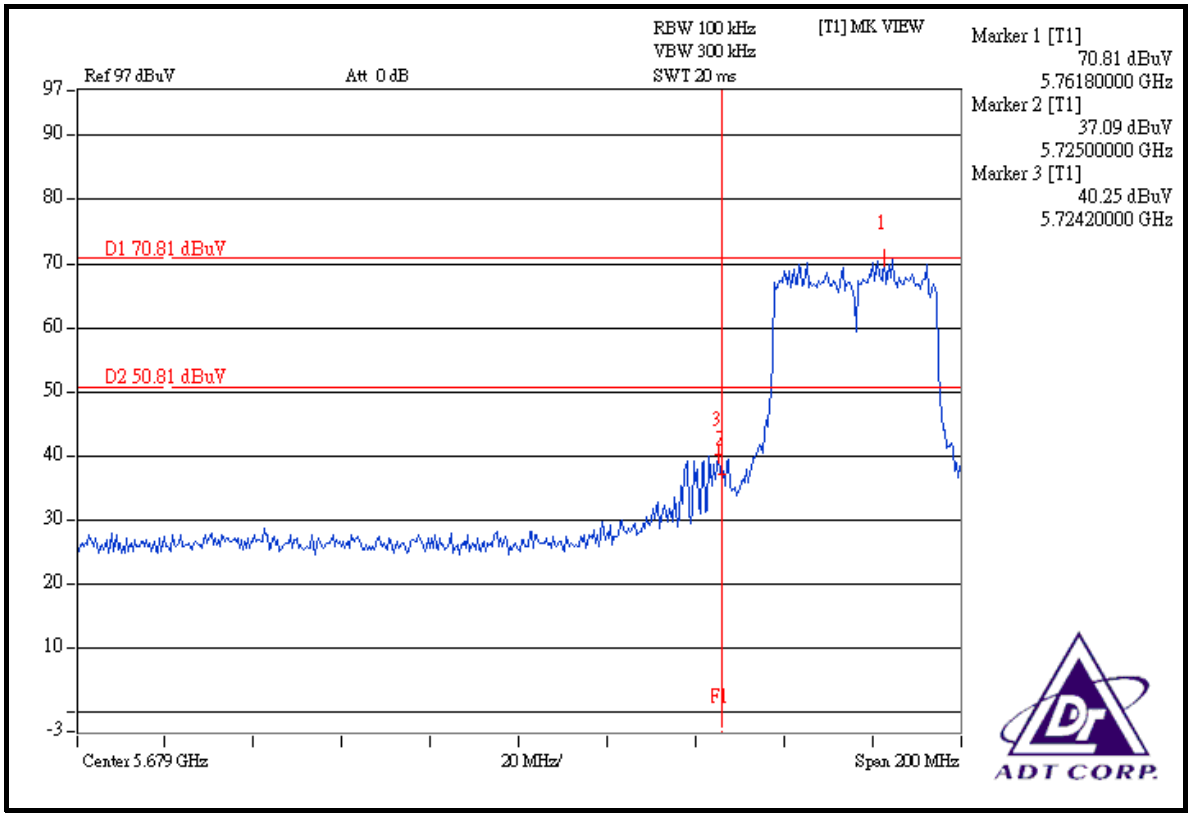

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 71.53 dBuV
D2 51.53 dBuV
Marker 1 [T1]
68.39 dBuV
5.70574000 GHz
Marker 2 [T1]
39.52 dBuV
39.92006000 GHz
Marker 3 [T1]
38.80 dBuV
34.48414000 GHz
Marker 4 [T1]
38.09 dBuV
36.40270000 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.

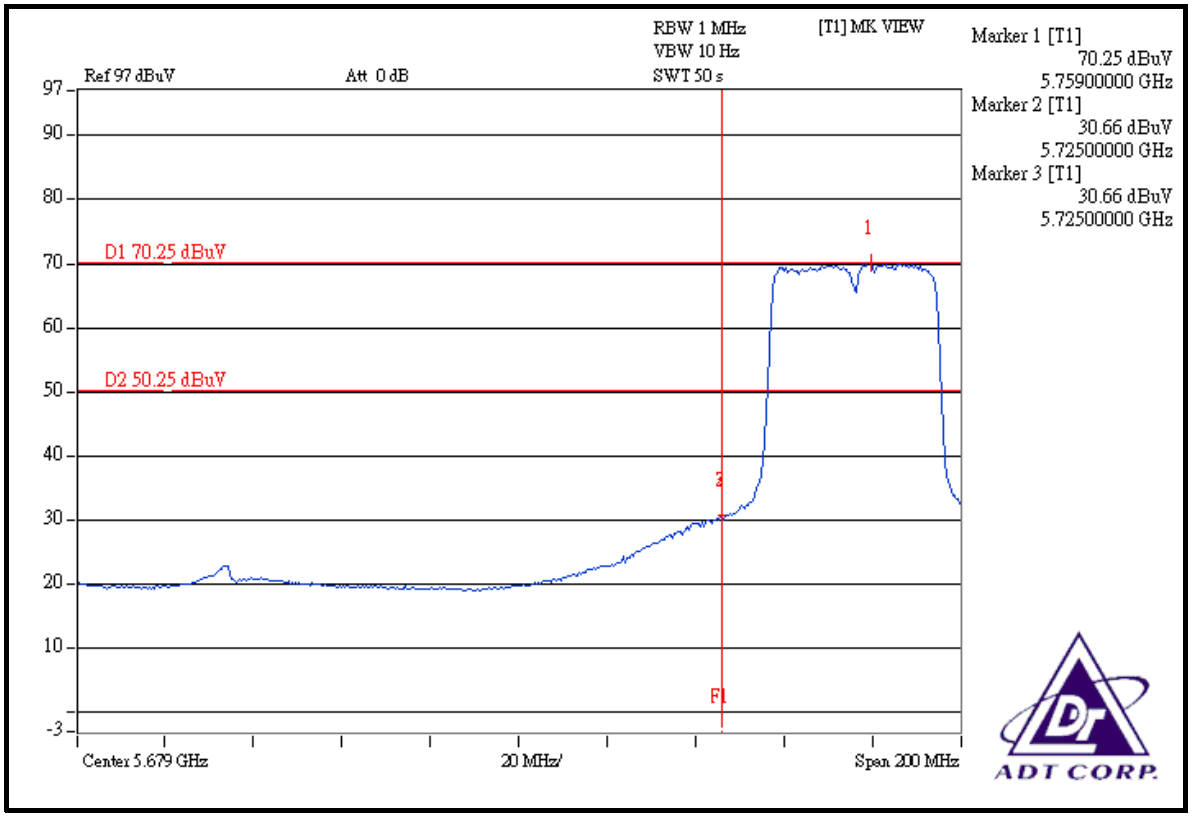

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 71.87 dBuV
D2 51.87 dBuV
Marker 1 [T1]
71.87 dBuV
5.82640000 GHz
Marker 2 [T1]
28.34 dBuV
5.85000000 GHz
Marker 3 [T1]
29.94 dBuV
5.91380000 GHz
Center 5.864 GHz
10 MHz/
Span 100 MHz
ADT CORP.

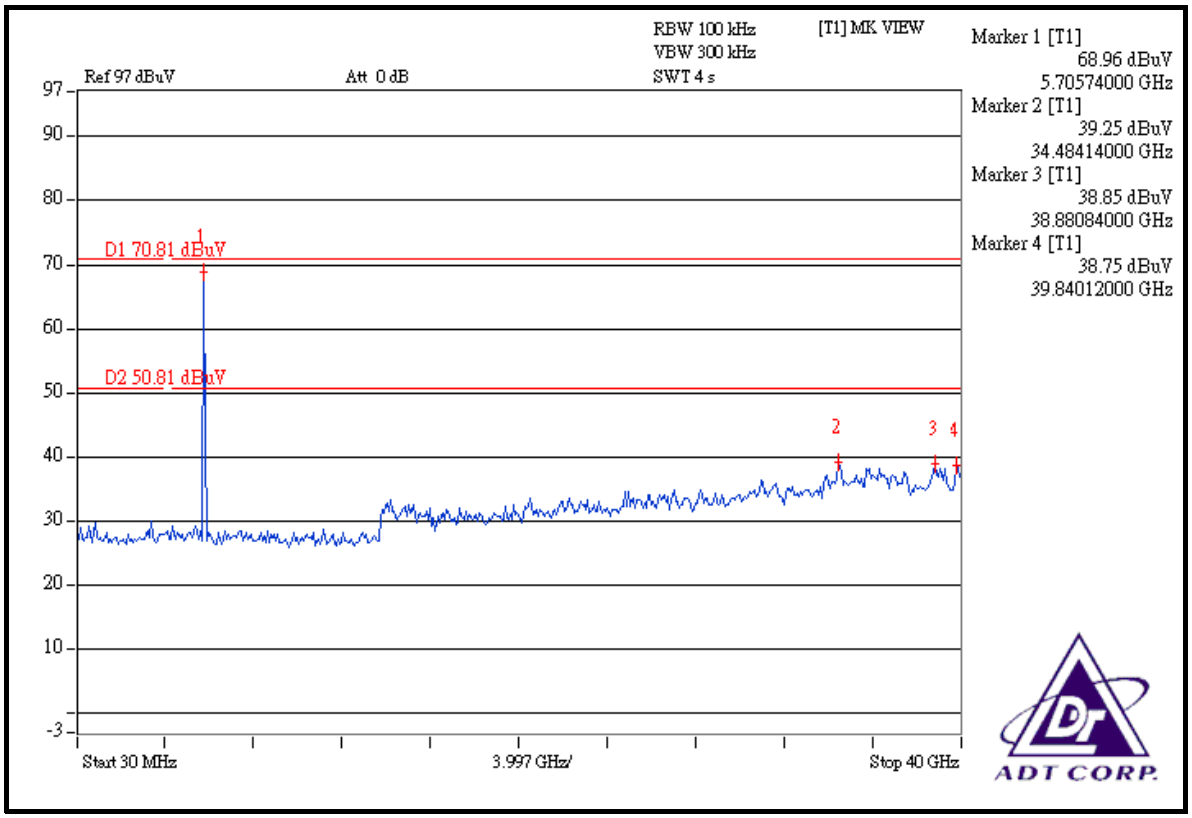

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Marker 1 [T1]
70.86 dBuV
5.82700000 GHz
Marker 2 [T1]
18.29 dBuV
5.85000000 GHz
Marker 3 [T1]
18.43 dBuV
5.85040000 GHz
Ref 97 dBuV
Att 0 dB
D1 70.86 dBuV
D2 50.86 dBuV
Center 5.864 GHz
10 MHz/
Span 100 MHz
ADT CORP.

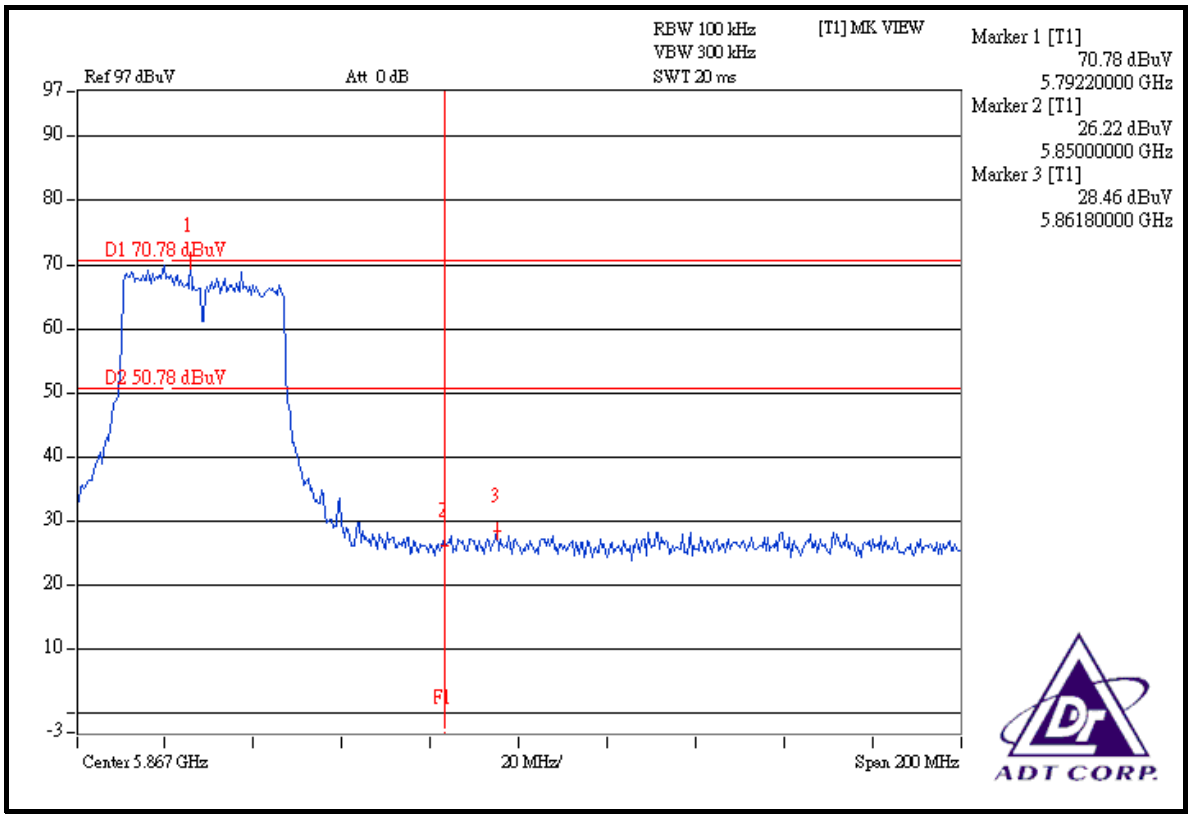

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Marker 1 [T1]
69.15 dBuV
5.78568000 GHz
Marker 2 [T1]
38.80 dBuV
38.80090000 GHz
Marker 3 [T1]
38.77 dBuV
36.48264000 GHz
Marker 4 [T1]
38.62 dBuV
38.96078000 GHz
Ref 97 dBuV
Att 0 dB
D1 71.87 dBuV
D2 51.87 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.

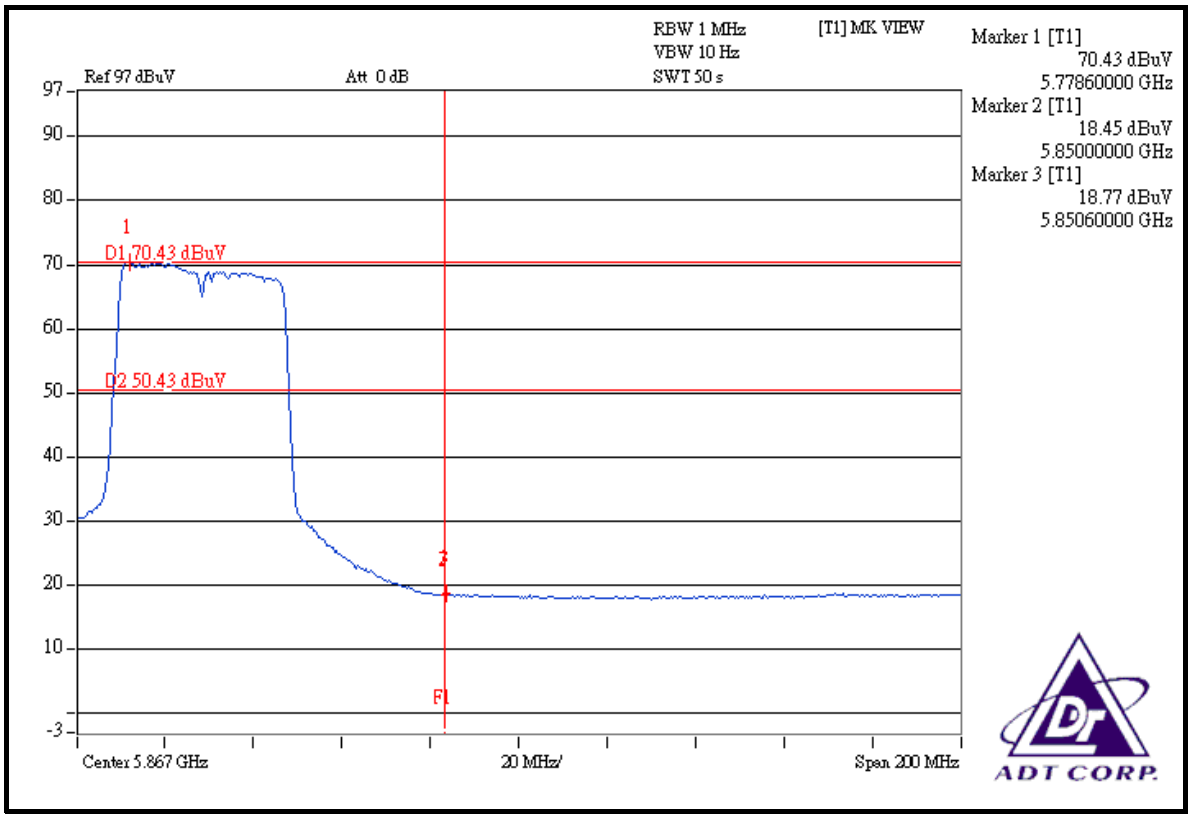
DRAFT 802.11n (40MHz) OFDM MODULATION:

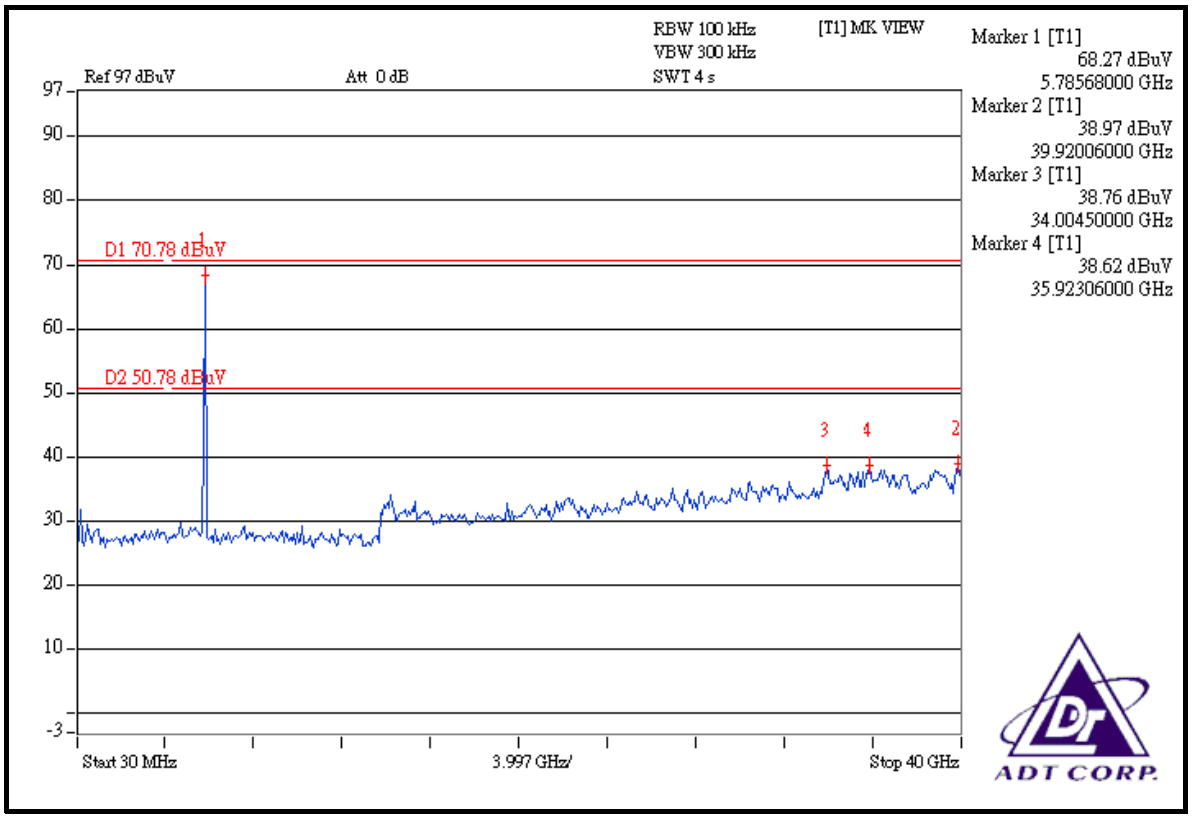





RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 70.81 dBuV
D2 50.81 dBuV
Marker 1 [T1]
68.96 dBuV
5.70574000 GHz
Marker 2 [T1]
39.25 dBuV
34.48414000 GHz
Marker 3 [T1]
38.85 dBuV
38.88084000 GHz
Marker 4 [T1]
38.75 dBuV
39.84012000 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 70.78 dBuV
D2 50.78 dBuV
Marker 1 [T1]
70.78 dBuV
5.79220000 GHz
Marker 2 [T1]
26.22 dBuV
5.85000000 GHz
Marker 3 [T1]
28.46 dBuV
5.86180000 GHz
Center 5.867 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
70.43 dBuV
5.77860000 GHz
Marker 2 [T1]
18.45 dBuV
5.85000000 GHz
Marker 3 [T1]
18.77 dBuV
5.85060000 GHz
D1 70.43 dBuV
D2 50.43 dBuV
Center 5.867 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
68.27 dBuV
5.78568000 GHz
Marker 2 [T1]
38.97 dBuV
39.92006000 GHz
Marker 3 [T1]
38.76 dBuV
34.00450000 GHz
Marker 4 [T1]
38.62 dBuV
35.92306000 GHz
D1 70.78 dBuV
D2 50.78 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.

5.7 ANTENNA REQUIREMENT

5.7.1 STANDARD APPLICABLE

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

And according to FCC 47 CFR Section 15.247(a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

5.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is PIFA antenna without connector. The maximum Gain of the antenna is 1.0dBi.

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

7. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., 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, UL, A2LA
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.