

FCC TEST REPORT (15.247)

REPORT NO.: RF960418L24

MODEL NO.: WM821-M

RECEIVED: Apr. 18, 2007

TESTED: Apr. 25 ~ May 15, 2007

ISSUED: Jun. 04, 2007

APPLICANT: CyberTAN Technology, Inc.

ADDRESS: No. 99, Park Avenue III Science-based Industrial
Park, Hsinchu, Taiwan (R.O.C.)

ISSUED BY: Advance Data Technology Corporation

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

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

This test report consists of 175 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by CNLA, A2LA or any government agencies. The test results in the report only apply to the tested sample.



TABLE OF CONTENTS

1.	CERTIFICATION	5
2.	SUMMARY OF TEST RESULTS	6
2.1	MEASUREMENT UNCERTAINTY	6
3.	GENERAL INFORMATION	7
3.1	GENERAL DESCRIPTION OF EUT	7
3.2	DESCRIPTION OF TEST MODES	9
3.2.1	CONFIGURATION OF SYSTEM UNDER TEST	10
3.2.2	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	11
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS	16
3.4	DESCRIPTION OF SUPPORT UNITS	16
4.	TEST TYPES AND RESULTS (FOR 2400 ~ 2483.5MHz)	17
4.1	CONDUCTED EMISSION MEASUREMENT	17
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	17
4.1.2	TEST INSTRUMENTS	17
4.1.3	TEST PROCEDURES	18
4.1.4	DEVIATION FROM TEST STANDARD	18
4.1.5	TEST SETUP	19
4.1.6	EUT OPERATING CONDITIONS	19
4.1.7	TEST RESULTS	20
4.2	RADIATED EMISSION MEASUREMENT	38
4.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT	38
4.2.2	TEST INSTRUMENTS	39
4.2.3	TEST PROCEDURES	40
4.2.4	DEVIATION FROM TEST STANDARD	40
4.2.5	TEST SETUP	41
4.2.6	EUT OPERATING CONDITIONS	41
4.2.7	TEST RESULTS	42
4.3	6dB BANDWIDTH MEASUREMENT	57
4.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	57
4.3.2	TEST INSTRUMENTS	57
4.3.3	TEST PROCEDURE	57
4.3.4	DEVIATION FROM TEST STANDARD	57
4.3.5	TEST SETUP	58
4.3.6	EUT OPERATING CONDITIONS	58
4.3.7	TEST RESULTS	59
4.4	MAXIMUM PEAK OUTPUT POWER	71
4.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	71
4.4.2	INSTRUMENTS	71
4.4.3	TEST PROCEDURES	71
4.4.4	DEVIATION FROM TEST STANDARD	72
4.4.5	TEST SETUP	72
4.4.6	EUT OPERATING CONDITIONS	72

4.4.7	TEST RESULTS	73
4.5	POWER SPECTRAL DENSITY MEASUREMENT	75
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	75
4.5.2	TEST INSTRUMENTS	75
4.5.3	TEST PROCEDURE	75
4.5.4	DEVIATION FROM TEST STANDARD	76
4.5.5	TEST SETUP	76
4.5.6	EUT OPERATING CONDITION	76
4.5.7	TEST RESULTS	77
4.6	BAND EDGES MEASUREMENT	89
4.6.1	LIMITS OF BAND EDGES MEASUREMENT	89
4.6.2	TEST INSTRUMENTS	89
4.6.3	TEST PROCEDURE	90
4.6.4	DEVIATION FROM TEST STANDARD	91
4.6.5	EUT OPERATING CONDITION	91
4.6.6	TEST RESULTS	92
4.7	ANTENNA REQUIREMENT	108
4.7.1	STANDARD APPLICABLE	108
4.7.2	ANTENNA CONNECTED CONSTRUCTION	108
5.	TEST TYPES AND RESULTS (FOR 5725 ~ 5850MHz)	109
5.1	CONDUCTED EMISSION MEASUREMENT	109
5.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	109
5.1.2	TEST INSTRUMENTS	109
5.1.3	TEST PROCEDURES	110
5.1.4	DEVIATION FROM TEST STANDARD	110
5.1.5	TEST SETUP	111
5.1.6	EUT OPERATING CONDITIONS	111
5.1.7	TEST RESULTS	112
5.2	RADIATED EMISSION MEASUREMENT	118
5.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT	118
5.2.2	TEST INSTRUMENTS	119
5.2.3	TEST PROCEDURES	120
5.2.4	DEVIATION FROM TEST STANDARD	120
5.2.5	TEST SETUP	121
5.2.6	EUT OPERATING CONDITIONS	121
5.2.7	TEST RESULTS	122
5.3	6dB BANDWIDTH MEASUREMENT	134
5.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	134
5.3.2	TEST INSTRUMENTS	134
5.3.3	TEST PROCEDURE	134
5.3.4	DEVIATION FROM TEST STANDARD	135
5.3.5	TEST SETUP	135
5.3.6	EUT OPERATING CONDITIONS	135
5.3.7	TEST RESULTS	136
5.4	MAXIMUM PEAK OUTPUT POWER	145

5.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	145
5.4.2	INSTRUMENTS	145
5.4.3	TEST PROCEDURES	145
5.4.4	DEVIATION FROM TEST STANDARD	146
5.4.5	TEST SETUP	146
5.4.6	EUT OPERATING CONDITIONS	146
5.4.7	TEST RESULTS	147
5.5	POWER SPECTRAL DENSITY MEASUREMENT	149
5.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	149
5.5.2	TEST INSTRUMENTS	149
5.5.3	TEST PROCEDURE	149
5.5.4	DEVIATION FROM TEST STANDARD	150
5.5.5	TEST SETUP	150
5.5.6	EUT OPERATING CONDITION	150
5.5.7	TEST RESULTS	151
5.6	BAND EDGES MEASUREMENT	160
5.6.1	LIMITS OF BAND EDGES MEASUREMENT	160
5.6.2	TEST INSTRUMENTS	160
5.6.3	TEST PROCEDURE	161
5.6.4	DEVIATION FROM TEST STANDARD	162
5.6.5	EUT OPERATING CONDITION	162
5.6.6	TEST RESULTS	162
5.7	ANTENNA REQUIREMENT	172
5.7.1	STANDARD APPLICABLE	172
5.7.2	ANTENNA CONNECTED CONSTRUCTION	172
6.	PHOTOGRAPHS OF THE TEST CONFIGURATION	173
7.	INFORMATION ON THE TESTING LABORATORIES	174
	APPENDIX-A	A-1

1. CERTIFICATION

PRODUCT: Wireless 802.11N DUAL BAND MINI PCI MODULE

MODEL: WM821-M

BRAND: CyberTAN

APPLICANT: CyberTAN Technology, Inc.

TEST SAMPLE: ENGINEERING SAMPLE

TESTED: Apr. 25 ~ May 15, 2007

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

ANSI C63.4-2003

The above equipment (Model: WM821-M) 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 : Rennie Wang , **DATE:** Jun. 04, 2007
Rennie Wang / Senior Specialist

TECHNICAL
ACCEPTANCE : Long Chen , **DATE:** Jun. 04, 2007
Responsible for RF Long Chen / Senior Engineer

APPROVED BY : Gary Chang , **DATE:** Jun. 04, 2007
Gary Chang / Supervisor

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 -18.18dB at 0.154MHz
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 -1.24dB at 4824.00MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz ~ 30MHz	2.44dB
Radiated emissions	30MHz ~ 200MHz	3.34dB
	200MHz ~ 1000MHz	3.35dB
	1GHz ~ 18GHz	2.26dB
	18GHz ~ 40GHz	1.94dB

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Wireless 802.11N DUAL BAND MINI PCI MODULE
MODEL NO.	WM821-M
FCC ID	N89-WM821M
POWER SUPPLY	3.3Vdc from host equipment
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 (20MHz): 144.444/ 130.000/ 115.556/ 86.667/ 57.778/ 43.333/ 28.889/ 14.444/ 72.2/ 65.0/ 57.8/ 43.3/ 28.9/ 21.7/ 14.4/ 7.2Mbps Draft 802.11n (40MHz): 300/ 270/ 240/ 180/ 120/ 90/ 60/ 30/ 150/ 135/ 120/ 90/ 60/ 45/ 30/ 15Mbps
FREQUENCY RANGE	2.4GHz: 2400 ~ 2483.5MHz 5.0GHz: 5150 ~ 5250MHz, 5250 ~ 5350MHz, 5470 ~ 5725MHz, 5725 ~ 5850MHz
NUMBER OF CHANNEL	2.4GHz: 11 for 802.11b, 802.11g, draft 802.11n (20MHz) 7 for draft 802.11n (40MHz) 5.0GHz: 8 for 802.11a (5150 ~ 5350MHz) 11 for 802.11a (5470 ~ 5725MHz) 5 for 802.11a (5725 ~ 5850MHz) 4 for draft 802.11n (20MHz), 2 for draft 802.11n (40MHz) (5150 ~ 5250MHz) 5 for draft 802.11n (20MHz), 2 for draft 802.11n (40MHz) (5725 ~ 5850MHz)
OUTPUT POWER	128.094mW for 2400 ~ 2483.5MHz 45.345mW for 5150 ~ 5350MHz 40.272mW for 5470 ~ 5725MHz 90.582mW for 5725 ~ 5850MHz
ANTENNA TYPE	2.4GHz: PIFA antenna with -3.5dBi gain (with one core) 5.0GHz: PIFA antenna with -4.5dBi gain (with one core)
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. This report only covered frequency range: 2400 ~ 2483.5MHz and 5725 ~ 5850MHz. Frequency range: 5150 ~ 5350MHz, 5470 ~ 5725MHz showed in another report, which report no. is RF960418L24-1.
2. The frequency bands used in this EUT are listed as follows:

Frequency Band (MHz)	2400~2483.5	5150~5250	5250~5350	5740~5725	5725~5850
802.11b	√				
802.11g	√				
802.11a		√	√	√	√
Draft 11n(20MHz)	√	√			√
Draft 11n(40MHz)	√	√			√

3. The EUT incorporates a MIMO function. Physically, the card provides two completed transmitters and three receivers.
4. The EUT is 2 * 3 spatial MIMO (2Tx & 3Rx) without beam forming function that only operate dual chain configuration (both chain 0 and chain 1 transceivers are operational).
5. When the EUT operating in 802.11b, 802.11g, 802.11a, the software operation, which is defined by manufacturer, only set single Tx.
6. 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 dual Tx.
7. The EUT complies with draft 802.11n standards and backwards compatible with 802.11b, 802.11g, 802.11a products.
8. The EUT operates in the 2.4GHz frequency spectrum with throughput of up to 300Mbps.
9. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz

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

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

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

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

Operated in 5725 ~ 5850MHz

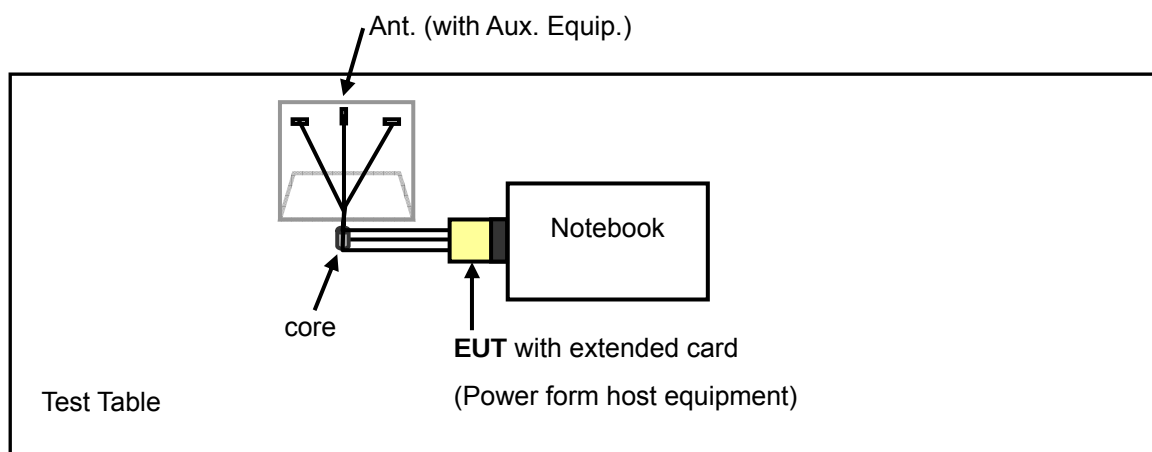
5 channels are provided for 802.11a, draft 802.11n (20MHz):

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 2400 ~ 2483.5MHz:

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

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

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)	TX CONDITION
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	Single
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	Dual
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	15.0	Dual

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)	TX CONDITION
802.11g	1 to 11	1	OFDM	BPSK	6.0	Single
Draft 802.11n (20MHz)	1 to 11	1	OFDM	BPSK	7.2	Dual
Draft 802.11n (40MHz)	1 to 7	1	OFDM	BPSK	15.0	Dual

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)	TX CONDITION
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Single
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	Single
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	Dual
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	15.0	Dual

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)	TX CONDITION
802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0	Single
802.11g	1 to 11	1, 11	OFDM	BPSK	6.0	Single
Draft 802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2	Dual
Draft 802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	15.0	Dual

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)	TX CONDITION
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Single
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	Single
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	Dual
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	15.0	Dual

FOR 5725 ~ 5850MHz:

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

Where **PLC**: Power Line Conducted Emission

RE<1G: Radiated Emission below 1GHz

RE≥1G: Radiated Emission above 1GHz

APCM: Antenna Port Conducted Measurement

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)	TX CONDITION
802.11a	1 to 5	1	OFDM	BPSK	6.0	Single
Draft 802.11n (20MHz)	1 to 5	1	OFDM	BPSK	7.2	Dual
Draft 802.11n (40MHz)	1 to 2	1	OFDM	BPSK	15.0	Dual

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)	TX CONDITION
802.11a	1 to 5	1	OFDM	BPSK	6.0	Single
Draft 802.11n (20MHz)	1 to 5	1	OFDM	BPSK	7.2	Dual
Draft 802.11n (40MHz)	1 to 2	1	OFDM	BPSK	15.0	Dual

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)	TX CONDITION
802.11a	1 to 5	1, 3, 5	OFDM	BPSK	6.0	Single
Draft 802.11n (20MHz)	1 to 5	1, 3, 5	OFDM	BPSK	7.2	Dual
Draft 802.11n (40MHz)	1 to 2	1, 2	OFDM	BPSK	15.0	Dual

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)	TX CONDITION
802.11a	1 to 5	1, 5	OFDM	BPSK	6.0	Single
Draft 802.11n (20MHz)	1 to 5	1, 5	OFDM	BPSK	7.2	Dual
Draft 802.11n (40MHz)	1 to 2	1, 2	OFDM	BPSK	15.0	Dual

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)	TX CONDITION
802.11a	1 to 5	1, 3, 5	OFDM	BPSK	6.0	Single
Draft 802.11n (20MHz)	1 to 5	1, 3, 5	OFDM	BPSK	7.2	Dual
Draft 802.11n (40MHz)	1 to 2	1, 2	OFDM	BPSK	15.0	Dual

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	9954115984	E2K24CLNS
2	AUXILIARY EQUIPMENT	NA	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	NA

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

4. TEST TYPES AND RESULTS (FOR 2400 ~ 2483.5MHz)

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 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.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Sep. 25, 2007
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.

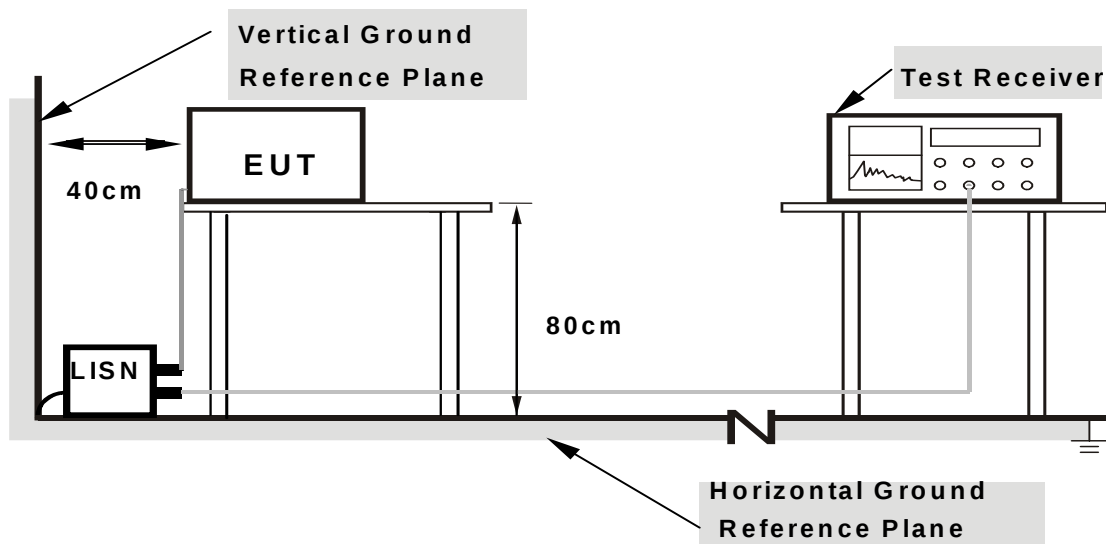
4.1.3 TEST PROCEDURES

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 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).

4.1.6 EUT OPERATING CONDITIONS

- a. Connected the EUT to notebook via extended card and placed on a testing table.
- b. The notebook ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- c. The necessary accessories enable the system in full functions.

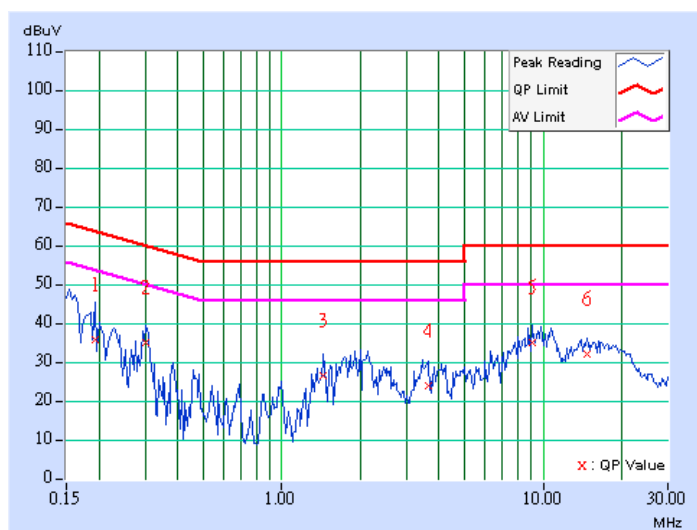
4.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA: 802.11g OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.193	0.10	35.43	-	35.53	-	63.91	53.91	-28.38	-
2	0.302	0.10	34.76	-	34.86	-	60.18	50.18	-25.32	-
3	1.445	0.16	26.22	-	26.38	-	56.00	46.00	-29.62	-
4	3.621	0.27	23.74	-	24.01	-	56.00	46.00	-31.99	-
5	9.090	0.32	34.76	-	35.08	-	60.00	50.00	-24.92	-
6	14.813	0.47	31.81	-	32.28	-	60.00	50.00	-27.72	-

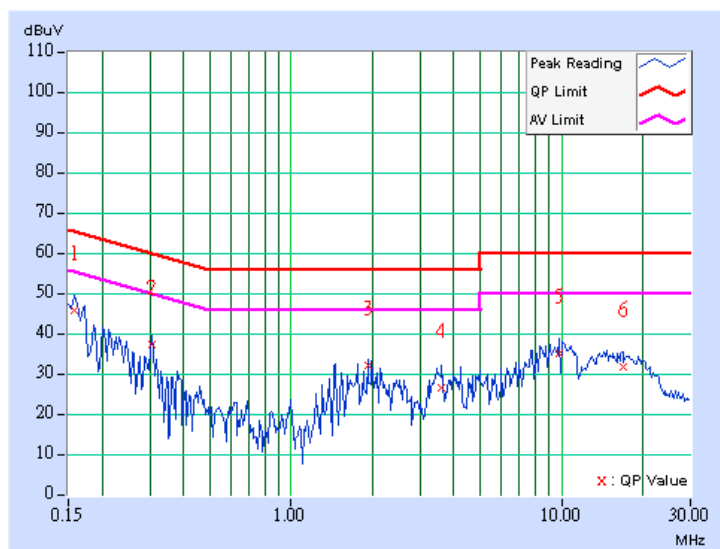
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.10	45.50	-	45.60	-	65.58	55.58	-19.98	-
2	0.306	0.10	36.82	-	36.92	-	60.07	50.07	-23.15	-
3	1.918	0.22	31.69	-	31.91	-	56.00	46.00	-24.09	-
4	3.613	0.27	26.29	-	26.56	-	56.00	46.00	-29.44	-
5	9.844	0.43	34.58	-	35.01	-	60.00	50.00	-24.99	-
6	16.879	0.51	31.16	-	31.67	-	60.00	50.00	-28.33	-

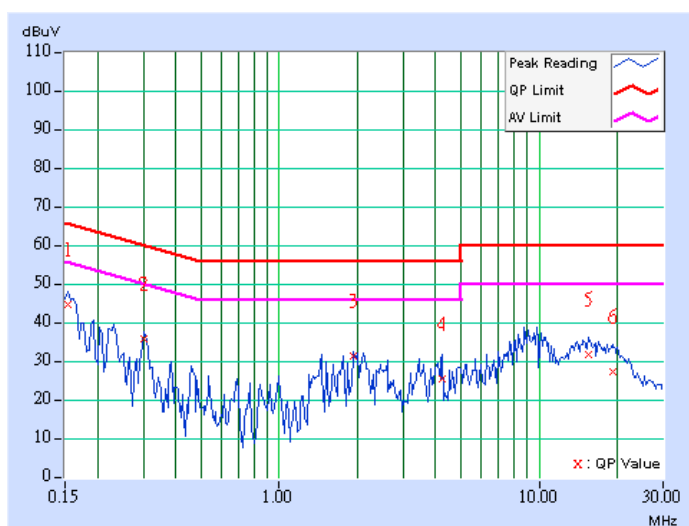
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.10	44.25	-	44.35	-	65.79	55.79	-21.44	-
2	0.302	0.10	35.54	-	35.64	-	60.18	50.18	-24.54	-
3	1.918	0.21	30.88	-	31.09	-	56.00	46.00	-24.91	-
4	4.227	0.28	24.86	-	25.14	-	56.00	46.00	-30.86	-
5	15.531	0.49	31.23	-	31.72	-	60.00	50.00	-28.28	-
6	19.109	0.55	26.80	-	27.35	-	60.00	50.00	-32.65	-

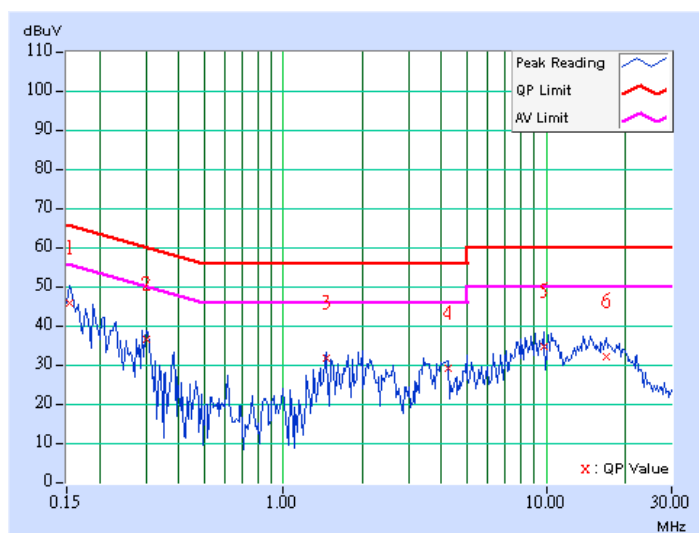
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.10	45.50	-	45.60	-	65.79	55.79	-20.19	-
2	0.302	0.10	36.17	-	36.27	-	60.18	50.18	-23.91	-
3	1.453	0.21	31.25	-	31.46	-	56.00	46.00	-24.54	-
4	4.219	0.29	28.76	-	29.05	-	56.00	46.00	-26.95	-
5	9.809	0.43	34.37	-	34.80	-	60.00	50.00	-25.20	-
6	16.848	0.51	31.76	-	32.27	-	60.00	50.00	-27.73	-

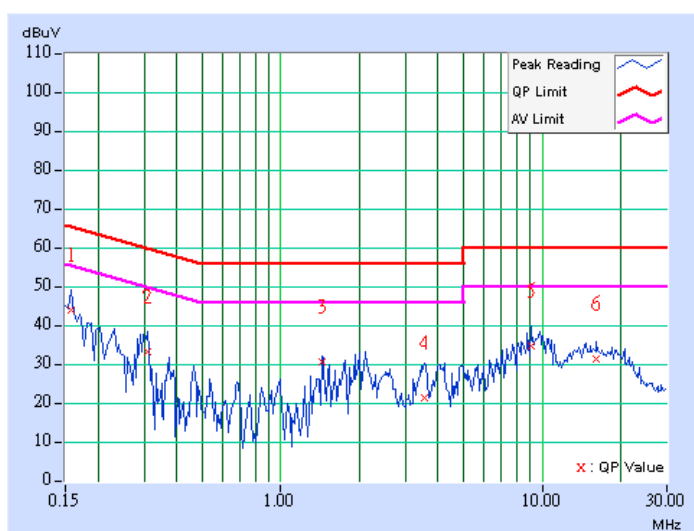
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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 11	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.10	43.50	-	43.60	-	65.58	55.58	-21.98	-
2	0.310	0.10	32.99	-	33.09	-	59.97	49.97	-26.88	-
3	1.441	0.16	30.11	-	30.27	-	56.00	46.00	-25.73	-
4	3.547	0.27	20.90	-	21.17	-	56.00	46.00	-34.83	-
5	9.105	0.32	34.14	-	34.46	-	60.00	50.00	-25.54	-
6	16.098	0.50	31.16	-	31.66	-	60.00	50.00	-28.34	-

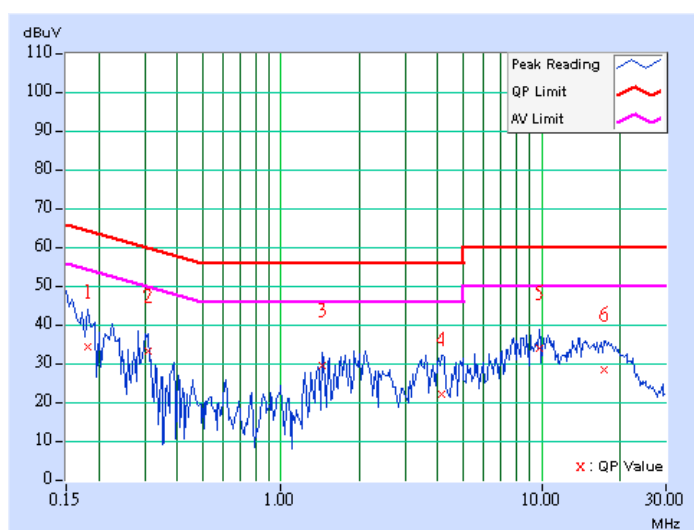
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.181	0.10	33.89	-	33.99	-	64.43	54.43	-30.44	-
2	0.310	0.10	32.81	-	32.91	-	59.97	49.97	-27.06	-
3	1.441	0.21	29.03	-	29.24	-	56.00	46.00	-26.76	-
4	4.129	0.28	21.60	-	21.88	-	56.00	46.00	-34.12	-
5	9.793	0.42	33.46	-	33.88	-	60.00	50.00	-26.12	-
6	17.414	0.52	28.11	-	28.63	-	60.00	50.00	-31.37	-

- 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.

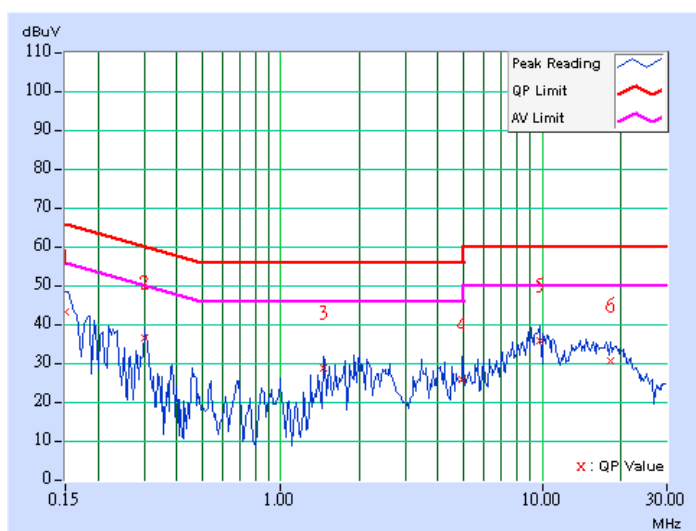


DRAFT 802.11n (20MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	7.2Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	42.84	-	42.94	-	66.00	56.00	-23.06	-
2	0.302	0.10	36.27	-	36.37	-	60.18	50.18	-23.81	-
3	1.461	0.16	28.51	-	28.67	-	56.00	46.00	-27.33	-
4	4.965	0.29	25.21	-	25.50	-	56.00	46.00	-30.50	-
5	9.824	0.33	35.48	-	35.81	-	60.00	50.00	-24.19	-
6	18.281	0.54	30.03	-	30.57	-	60.00	50.00	-29.43	-

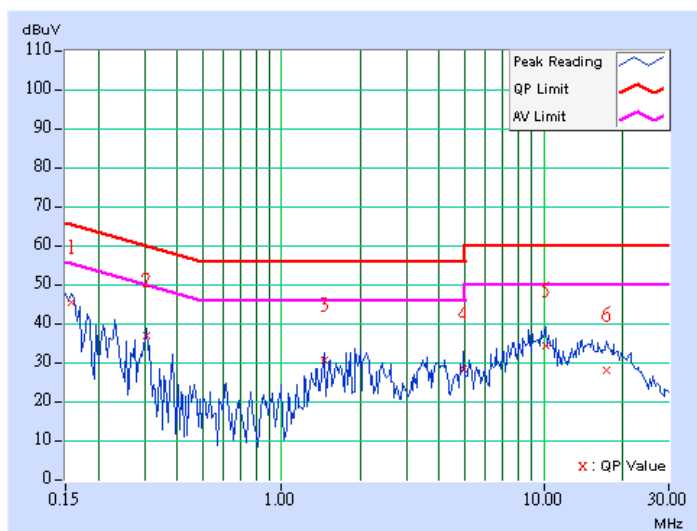
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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
TRANSFER RATE	7.2Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.10	45.21	-	45.31	-	65.58	55.58	-20.27	-
2	0.306	0.10	36.64	-	36.74	-	60.07	50.07	-23.33	-
3	1.461	0.21	30.19	-	30.40	-	56.00	46.00	-25.60	-
4	4.969	0.30	28.15	-	28.45	-	56.00	46.00	-27.55	-
5	10.164	0.43	33.99	-	34.42	-	60.00	50.00	-25.58	-
6	17.414	0.52	27.79	-	28.31	-	60.00	50.00	-31.69	-

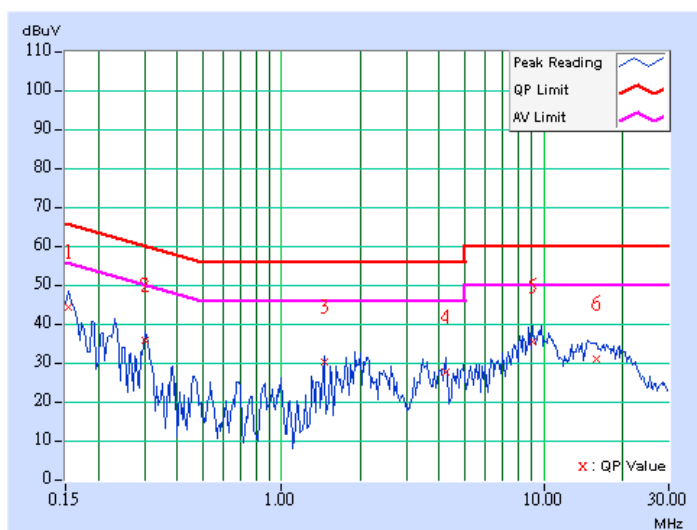
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	7.2Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.10	43.94	-	44.04	-	65.79	55.79	-21.75	-
2	0.302	0.10	35.54	-	35.64	-	60.18	50.18	-24.54	-
3	1.453	0.16	29.87	-	30.03	-	56.00	46.00	-25.97	-
4	4.223	0.28	27.35	-	27.63	-	56.00	46.00	-28.37	-
5	9.074	0.32	34.97	-	35.29	-	60.00	50.00	-24.71	-
6	15.813	0.49	30.54	-	31.03	-	60.00	50.00	-28.97	-

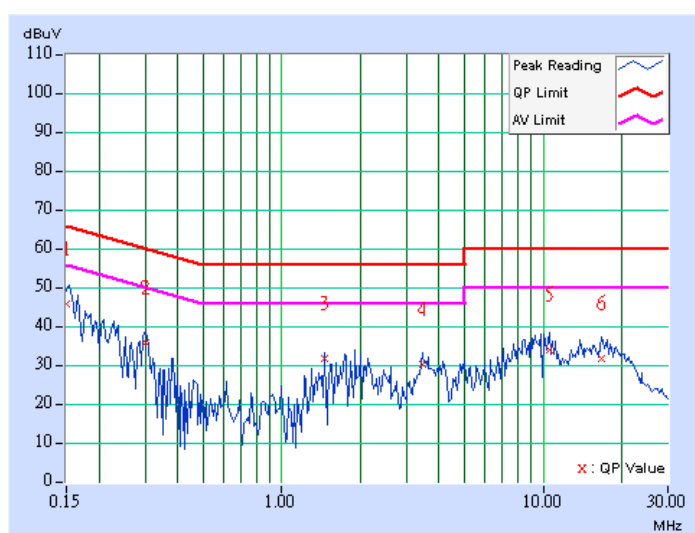
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	7.2Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	45.41	-	45.51	-	66.00	56.00	-20.49	-
2	0.302	0.10	35.34	-	35.44	-	60.18	50.18	-24.74	-
3	1.457	0.21	31.24	-	31.45	-	56.00	46.00	-24.55	-
4	3.453	0.26	30.00	-	30.26	-	56.00	46.00	-25.74	-
5	10.555	0.44	33.64	-	34.08	-	60.00	50.00	-25.92	-
6	16.816	0.51	31.36	-	31.87	-	60.00	50.00	-28.13	-

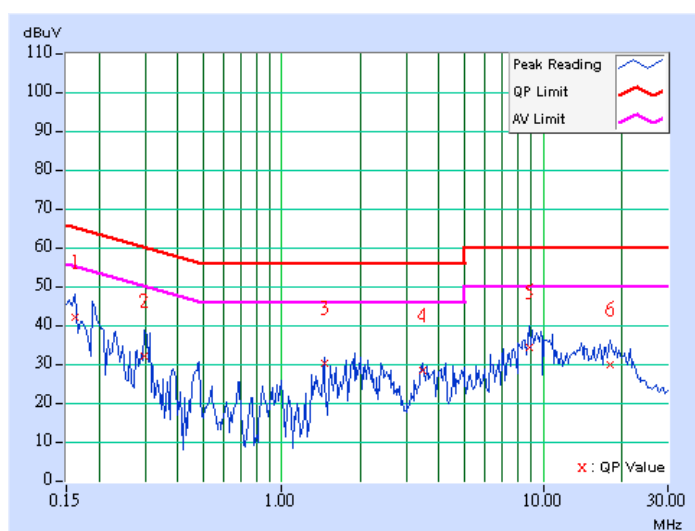
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	7.2Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.162	0.10	41.64	-	41.74	-	65.38	55.38	-23.64	-
2	0.298	0.10	31.82	-	31.92	-	60.29	50.29	-28.37	-
3	1.453	0.16	29.83	-	29.99	-	56.00	46.00	-26.01	-
4	3.457	0.26	27.82	-	28.08	-	56.00	46.00	-27.92	-
5	8.805	0.32	33.77	-	34.09	-	60.00	50.00	-25.91	-
6	18.043	0.53	29.55	-	30.08	-	60.00	50.00	-29.92	-

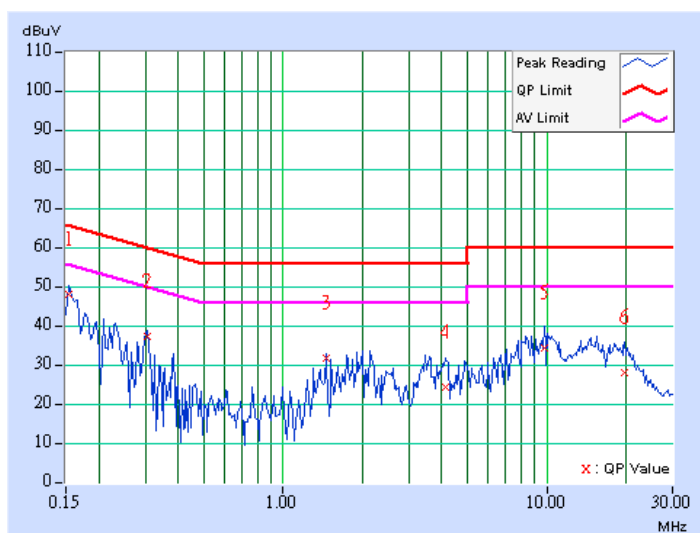
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	7.2Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.10	47.51	-	47.61	-	65.79	55.79	-18.18	-
2	0.306	0.10	36.84	-	36.94	-	60.07	50.07	-23.13	-
3	1.457	0.21	31.24	-	31.45	-	56.00	46.00	-24.55	-
4	4.125	0.28	24.05	-	24.33	-	56.00	46.00	-31.67	-
5	9.801	0.43	33.74	-	34.17	-	60.00	50.00	-25.83	-
6	19.801	0.57	27.73	-	28.30	-	60.00	50.00	-31.70	-

- 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.

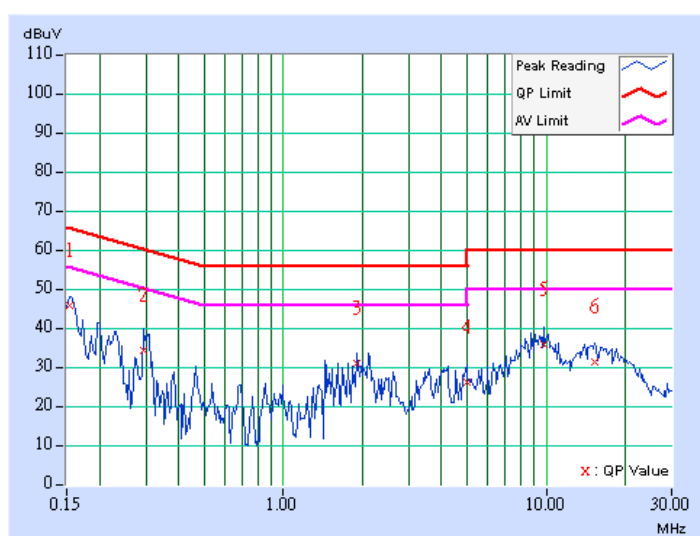


DRAFT 802.11n (40MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	15.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.10	45.46	-	45.56	-	65.79	55.79	-20.23	-
2	0.295	0.10	33.85	-	33.95	-	60.40	50.40	-26.45	-
3	1.914	0.21	30.58	-	30.79	-	56.00	46.00	-25.21	-
4	4.988	0.29	25.99	-	26.28	-	56.00	46.00	-29.72	-
5	9.816	0.33	35.56	-	35.89	-	60.00	50.00	-24.11	-
6	15.359	0.49	31.04	-	31.53	-	60.00	50.00	-28.47	-

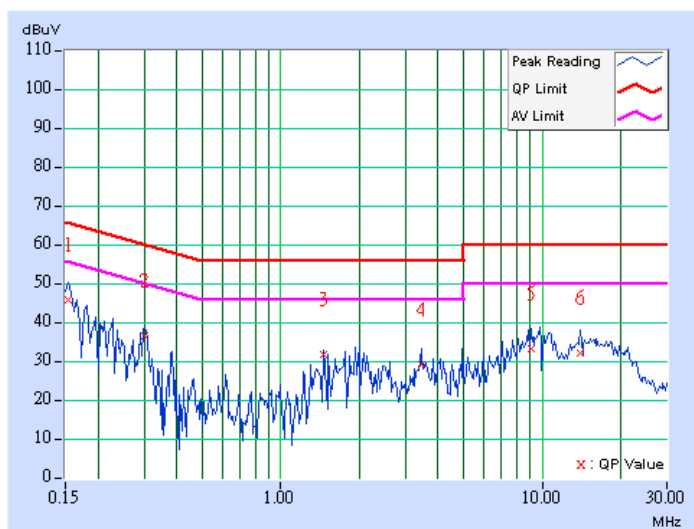
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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
TRANSFER RATE	15.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.10	45.38	-	45.48	-	65.79	55.79	-20.31	-
2	0.302	0.10	36.28	-	36.38	-	60.18	50.18	-23.80	-
3	1.453	0.21	31.31	-	31.52	-	56.00	46.00	-24.48	-
4	3.461	0.26	28.62	-	28.88	-	56.00	46.00	-27.12	-
5	9.074	0.41	32.90	-	33.31	-	60.00	50.00	-26.69	-
6	14.035	0.47	31.80	-	32.27	-	60.00	50.00	-27.73	-

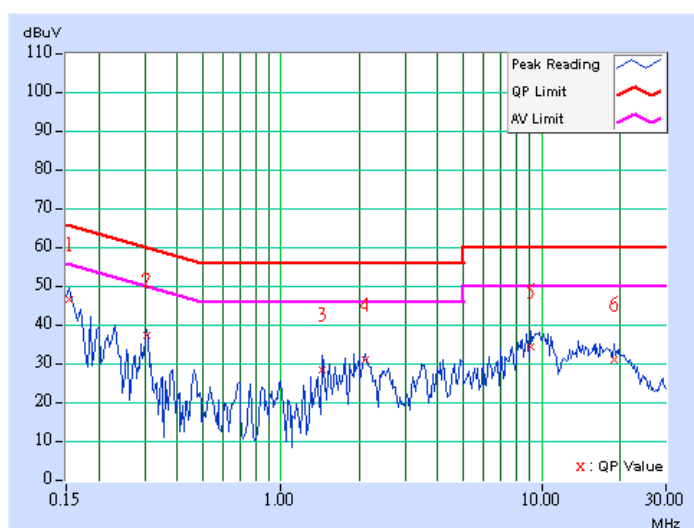
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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 4	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	15.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.10	46.23	-	46.33	-	65.79	55.79	-19.46	-
2	0.306	0.10	37.03	-	37.13	-	60.07	50.07	-22.94	-
3	1.441	0.16	28.03	-	28.19	-	56.00	46.00	-27.81	-
4	2.121	0.22	30.49	-	30.71	-	56.00	46.00	-25.29	-
5	9.059	0.32	34.01	-	34.33	-	60.00	50.00	-25.67	-
6	19.031	0.55	30.42	-	30.97	-	60.00	50.00	-29.03	-

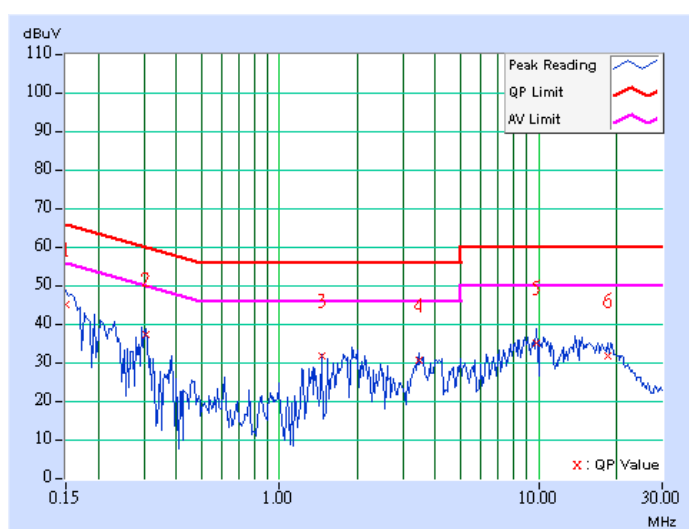
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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 4	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	15.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	44.50	-	44.60	-	66.00	56.00	-21.40	-
2	0.306	0.10	36.88	-	36.98	-	60.07	50.07	-23.09	-
3	1.457	0.21	31.25	-	31.46	-	56.00	46.00	-24.54	-
4	3.453	0.26	30.04	-	30.30	-	56.00	46.00	-25.70	-
5	9.816	0.43	34.82	-	35.25	-	60.00	50.00	-24.75	-
6	18.586	0.54	31.19	-	31.73	-	60.00	50.00	-28.27	-

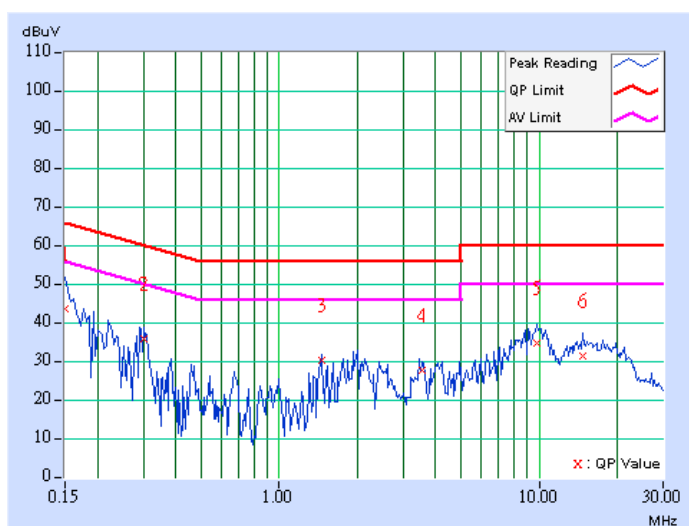
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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 7	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	15.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	43.12	-	43.22	-	66.00	56.00	-22.78	-
2	0.302	0.10	35.54	-	35.64	-	60.18	50.18	-24.54	-
3	1.453	0.16	29.83	-	29.99	-	56.00	46.00	-26.01	-
4	3.563	0.27	27.17	-	27.44	-	56.00	46.00	-28.56	-
5	9.809	0.33	34.51	-	34.84	-	60.00	50.00	-25.16	-
6	14.793	0.47	31.18	-	31.65	-	60.00	50.00	-28.35	-

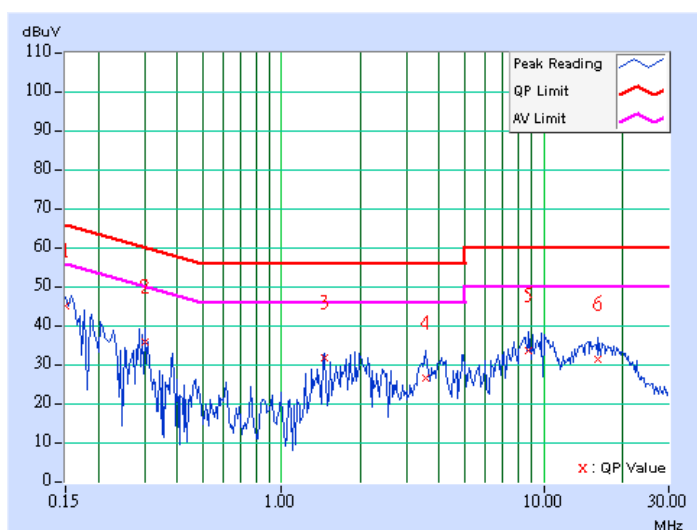
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	15.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	44.64	-	44.74	-	66.00	56.00	-21.26	-
2	0.302	0.10	35.44	-	35.54	-	60.18	50.18	-24.64	-
3	1.457	0.21	31.22	-	31.43	-	56.00	46.00	-24.57	-
4	3.570	0.27	26.15	-	26.42	-	56.00	46.00	-29.58	-
5	8.785	0.40	33.34	-	33.74	-	60.00	50.00	-26.26	-
6	16.098	0.50	31.02	-	31.52	-	60.00	50.00	-28.48	-

- 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.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 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.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Aug. 04, 2007
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100025	Oct. 05, 2007
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	May 31, 2008
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jun. 27, 2007
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 28, 2007
Preamplifier Agilent	8447D	2944A10633	Oct. 26, 2007
Preamplifier Agilent	8449B	3008A01964	Oct. 26, 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 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.

4.2.3 TEST PROCEDURES

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

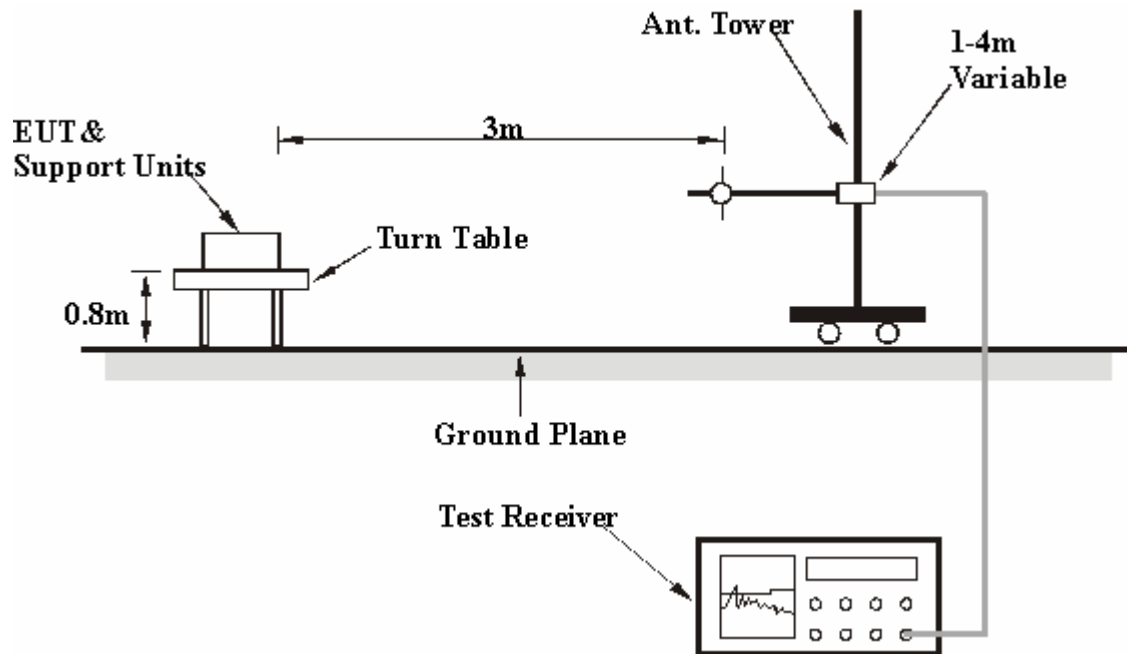
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	99.89	36.45 QP	43.50	-7.05	2.00 H	178	26.27	10.18
2	132.95	38.05 QP	43.50	-5.45	2.00 H	355	24.69	13.36
3	166.00	36.84 QP	43.50	-6.66	2.00 H	340	22.78	14.06
4	199.05	32.91 QP	43.50	-10.59	1.50 H	160	21.57	11.34
5	333.21	41.66 QP	46.00	-4.34	1.00 H	217	25.64	16.02
6	733.73	34.31 QP	46.00	-11.69	2.00 H	232	9.14	25.18

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	31.84	29.76 QP	40.00	-10.24	1.50 V	10	16.22	13.54
2	64.90	26.72 QP	40.00	-13.28	1.50 V	220	13.38	13.35
3	99.89	29.89 QP	43.50	-13.61	1.50 V	37	19.71	10.18
4	132.95	29.87 QP	43.50	-13.63	1.50 V	352	16.51	13.36
5	333.21	36.17 QP	46.00	-9.83	1.50 V	10	20.14	16.02
6	397.37	32.84 QP	46.00	-13.16	1.50 V	193	15.26	17.58

- 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.

DRAFT 802.11n (20MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	99.89	35.57 QP	43.50	-7.93	2.00 H	178	25.40	10.18
2	132.95	37.87 QP	43.50	-5.63	2.00 H	352	24.51	13.36
3	166.00	36.70 QP	43.50	-6.80	2.00 H	172	22.64	14.06
4	199.05	32.87 QP	43.50	-10.63	1.50 H	346	21.53	11.34
5	333.21	41.43 QP	46.00	-4.57	1.00 H	214	25.41	16.02
6	399.31	41.57 QP	46.00	-4.43	2.00 H	223	23.95	17.62
7	465.42	33.50 QP	46.00	-12.50	2.00 H	223	13.82	19.67
8	733.73	35.74 QP	46.00	-10.26	1.50 H	217	10.56	25.18
9	865.94	31.12 QP	46.00	-14.88	1.50 H	109	3.96	27.16

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	31.84	29.90 QP	40.00	-10.10	1.50 V	346	16.36	13.54
2	64.90	26.30 QP	40.00	-13.70	1.50 V	220	12.95	13.35
3	99.89	29.94 QP	43.50	-13.56	1.50 V	46	19.76	10.18
4	132.95	30.14 QP	43.50	-13.36	2.00 V	352	16.79	13.36
5	333.21	35.09 QP	46.00	-10.91	1.50 V	10	19.07	16.02
6	729.84	31.51 QP	46.00	-14.49	1.00 V	58	6.44	25.06

- 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.

DRAFT 802.11n (40MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	99.89	35.95 QP	43.50	-7.55	2.00 H	172	25.77	10.18
2	132.95	38.07 QP	43.50	-5.43	2.00 H	346	24.71	13.36
3	164.06	36.71 QP	43.50	-6.79	2.00 H	190	22.51	14.20
4	199.05	32.87 QP	43.50	-10.63	2.00 H	10	21.52	11.34
5	331.26	41.39 QP	46.00	-4.61	1.00 H	217	25.42	15.97
6	399.31	33.90 QP	46.00	-12.10	2.00 H	223	16.27	17.62
7	465.42	31.79 QP	46.00	-14.21	2.00 H	229	12.12	19.67
8	733.73	34.82 QP	46.00	-11.18	1.00 H	217	9.64	25.18
9	932.05	34.16 QP	46.00	-11.84	1.50 H	142	6.10	28.06

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	31.84	30.83 QP	40.00	-9.17	1.00 V	22	17.28	13.54
2	64.90	27.91 QP	40.00	-12.09	1.00 V	247	14.56	13.35
3	97.95	30.51 QP	43.50	-12.99	1.50 V	25	20.58	9.93
4	131.00	30.41 QP	43.50	-13.09	1.00 V	346	17.16	13.25
5	166.00	28.70 QP	43.50	-14.80	1.00 V	226	14.64	14.06
6	333.21	35.36 QP	46.00	-10.64	1.50 V	10	19.34	16.02
7	729.84	32.04 QP	46.00	-13.96	1.00 V	67	6.98	25.06

- 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	TRANSFER RATE	1.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	2360.00	61.14 PK	74.00	-12.86	1.08 H	32	29.89	31.25
2	2360.00	51.45 AV	54.00	-2.55	1.08 H	32	20.20	31.25
3	2390.00	58.20 PK	74.00	-15.80	1.05 H	21	26.98	31.22
4	2390.00	47.28 AV	54.00	-6.72	1.05 H	21	16.06	31.22
5	*2412.00	110.03 PK			1.05 H	32	78.82	31.21
6	*2412.00	105.43 AV			1.05 H	32	74.22	31.21
7	2720.00	60.26 PK	74.00	-13.74	1.12 H	6	28.55	31.71
8	2720.00	50.46 AV	54.00	-3.54	1.12 H	6	18.75	31.71
9	4824.00	55.74 PK	74.00	-18.26	1.00 H	54	19.26	36.48
10	4824.00	52.26 AV	54.00	-1.74	1.00 H	54	15.78	36.48

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.30 PK	74.00	-18.70	1.14 V	26	24.08	31.22
2	2390.00	45.46 AV	54.00	-8.54	1.14 V	26	14.24	31.22
3	*2412.00	105.28 PK			1.13 V	26	74.07	31.21
4	*2412.00	100.84 AV			1.13 V	26	69.63	31.21
5	4824.00	53.42 PK	74.00	-20.58	1.00 V	221	16.94	36.48
6	4824.00	46.65 AV	54.00	-7.35	1.00 V	221	10.17	36.48

- 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	TRANSFER RATE	1.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	2360.00	62.34 PK	74.00	-11.66	1.13 H	20	31.09	31.25
2	2360.00	51.39 AV	54.00	-2.61	1.13 H	20	20.14	31.25
3	*2437.00	109.06 PK			1.06 H	11	77.84	31.22
4	*2437.00	104.52 AV			1.06 H	11	73.30	31.22
5	2720.00	60.91 PK	74.00	-13.09	1.23 H	13	29.20	31.71
6	2720.00	50.65 AV	54.00	-3.35	1.23 H	13	18.94	31.71
7	4874.00	54.75 PK	74.00	-19.25	1.18 H	41	18.17	36.58
8	4874.00	52.05 AV	54.00	-1.95	1.18 H	41	15.47	36.58

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	2360.00	59.06 PK	74.00	-14.94	1.12 V	21	27.81	31.25
2	2360.00	48.28 AV	54.00	-5.72	1.12 V	21	17.03	31.25
3	*2437.00	104.89 PK			1.26 V	37	73.67	31.22
4	*2437.00	100.02 AV			1.26 V	37	68.80	31.22
5	4874.00	53.42 PK	74.00	-20.58	1.01 V	264	16.84	36.58
6	4874.00	46.38 AV	54.00	-7.62	1.01 V	264	9.80	36.58

- 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	TRANSFER RATE	1.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	2360.00	62.53 PK	74.00	-11.47	1.10 H	24	31.28	31.25
2	2360.00	51.81 AV	54.00	-2.19	1.10 H	24	20.56	31.25
3	*2462.00	110.13 PK			1.05 H	28	78.90	31.23
4	*2462.00	105.68 AV			1.05 H	28	74.45	31.23
5	2483.50	58.72 PK	74.00	-15.28	1.06 H	31	27.48	31.24
6	2483.50	47.78 AV	54.00	-6.22	1.06 H	31	16.54	31.24
7	2720.00	60.38 PK	74.00	-13.62	1.23 H	10	28.67	31.71
8	2720.00	50.92 AV	54.00	-3.08	1.23 H	10	19.21	31.71
9	4824.00	55.89 PK	74.00	-18.11	1.02 H	133	19.41	36.48
10	4824.00	52.76 AV	54.00	-1.24	1.02 H	133	16.28	36.48

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	105.67 PK			1.21 V	34	74.44	31.23
2	*2462.00	100.96 AV			1.21 V	34	69.73	31.23
3	2483.50	56.39 PK	74.00	-17.61	1.22 V	35	25.15	31.24
4	2483.50	46.00 AV	54.00	-8.00	1.22 V	35	14.76	31.24
5	4924.00	53.52 PK	74.00	-20.48	1.26 V	13	16.84	36.68
6	4924.00	46.78 AV	54.00	-7.22	1.26 V	13	10.10	36.68

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

802.11g OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	2360.00	62.28 PK	74.00	-11.72	1.09 H	33	31.03	31.25
2	2360.00	51.99 AV	54.00	-2.01	1.09 H	33	20.74	31.25
3	2390.00	71.28 PK	74.00	-2.72	1.07 H	22	40.06	31.22
4	2390.00	52.04 AV	54.00	-1.96	1.07 H	22	20.82	31.22
5	*2412.00	110.40 PK			1.05 H	36	79.19	31.21
6	*2412.00	99.92 AV			1.05 H	36	68.71	31.21
7	2720.00	61.36 PK	74.00	-12.64	1.13 H	6	29.65	31.71
8	2720.00	50.70 AV	54.00	-3.30	1.13 H	6	18.99	31.71
9	4824.00	55.12 PK	74.00	-18.88	1.14 H	350	18.64	36.48
10	4824.00	40.07 AV	54.00	-13.93	1.14 H	350	3.59	36.48

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.33 PK	74.00	-16.67	1.11 V	13	26.11	31.22
2	2390.00	46.46 AV	54.00	-7.54	1.11 V	13	15.24	31.22
3	*2412.00	104.24 PK			1.10 V	13	73.03	31.21
4	*2412.00	94.81 AV			1.10 V	13	63.60	31.21
5	4824.00	50.48 PK	74.00	-23.52	1.24 V	81	14.00	36.48
6	4824.00	36.17 AV	54.00	-17.83	1.24 V	81	-0.31	36.48

- 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	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	2360.00	62.70 PK	74.00	-11.30	1.09 H	32	31.45	31.25
2	2360.00	52.13 AV	54.00	-1.87	1.09 H	32	20.88	31.25
3	*2437.00	112.20 PK			1.05 H	9	80.98	31.22
4	*2437.00	101.80 AV			1.05 H	9	70.58	31.22
5	2720.00	62.39 PK	74.00	-11.61	1.10 H	10	30.68	31.71
6	2720.00	51.28 AV	54.00	-2.72	1.10 H	10	19.57	31.71
7	4874.00	58.26 PK	74.00	-15.74	1.17 H	268	21.68	36.58
8	4874.00	42.91 AV	54.00	-11.09	1.17 H	268	6.33	36.58

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	2360.00	55.90 PK	74.00	-18.10	1.16 V	192	24.65	31.25
2	2360.00	45.72 AV	54.00	-8.28	1.16 V	192	14.47	31.25
3	*2437.00	107.54 PK			1.23 V	17	76.32	31.22
4	*2437.00	97.38 AV			1.23 V	17	66.16	31.22
5	4874.00	52.11 PK	74.00	-21.89	1.05 V	273	15.53	36.58
6	4874.00	37.68 AV	54.00	-16.32	1.05 V	273	1.10	36.58

- 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	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	2360.00	62.60 PK	74.00	-11.40	1.07 H	25	31.35	31.25
2	2360.00	52.08 AV	54.00	-1.92	1.07 H	25	20.83	31.25
3	*2462.00	110.81 PK			1.04 H	7	79.58	31.23
4	*2462.00	99.94 AV			1.04 H	7	68.71	31.23
5	2483.50	71.08 PK	74.00	-2.92	1.02 H	9	39.84	31.24
6	2483.50	52.70 AV	54.00	-1.30	1.02 H	9	21.46	31.24
7	2720.00	61.95 PK	74.00	-12.05	1.11 H	10	30.24	31.71
8	2720.00	50.82 AV	54.00	-3.18	1.11 H	10	19.11	31.71
9	4924.00	55.41 PK	74.00	-18.59	1.16 H	356	18.73	36.68
10	4924.00	40.39 AV	54.00	-13.61	1.16 H	356	3.71	36.68

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	104.76 PK			1.10 V	21	73.53	31.23
2	*2462.00	95.01 AV			1.10 V	21	63.78	31.23
3	2483.50	57.61 PK	74.00	-16.39	1.12 V	22	26.37	31.24
4	2483.50	46.89 AV	54.00	-7.11	1.12 V	22	15.65	31.24
5	4924.00	51.26 PK	74.00	-22.74	1.32 V	342	14.58	36.68
6	4924.00	36.87 AV	54.00	-17.13	1.32 V	342	0.19	36.68

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

DRAFT 802.11n (20MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	2360.00	61.64 PK	74.00	-12.36	1.10 H	10	30.39	31.25
2	2360.00	50.42 AV	54.00	-3.58	1.10 H	10	19.17	31.25
3	2390.00	72.30 PK	74.00	-1.70	1.08 H	8	41.08	31.22
4	2390.00	52.15 AV	54.00	-1.85	1.08 H	8	20.93	31.22
5	*2412.00	110.80 PK			1.05 H	7	79.59	31.21
6	*2412.00	101.25 AV			1.05 H	7	70.04	31.21
7	2720.00	60.38 PK	74.00	-13.62	1.12 H	8	28.67	31.71
8	2720.00	50.29 AV	54.00	-3.71	1.12 H	8	18.58	31.71
9	4824.00	55.62 PK	74.00	-18.38	1.00 H	3	19.14	36.48
10	4824.00	37.58 AV	54.00	-16.42	1.00 H	3	1.10	36.48

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.02 PK	74.00	-16.98	1.25 V	115	25.80	31.22
2	2390.00	47.27 AV	54.00	-6.73	1.25 V	115	16.05	31.22
3	*2412.00	104.45 PK			1.23 V	115	73.24	31.21
4	*2412.00	93.56 AV			1.23 V	115	62.35	31.21
5	4824.00	53.78 PK	74.00	-20.22	1.00 V	358	17.30	36.48
6	4824.00	35.64 AV	54.00	-18.36	1.00 V	358	-0.84	36.48

- 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	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	2360.00	61.70 PK	74.00	-12.30	1.04 H	13	30.45	31.25
2	2360.00	50.91 AV	54.00	-3.09	1.04 H	13	19.66	31.25
3	*2437.00	111.01 PK			1.03 H	4	79.79	31.22
4	*2437.00	102.24 AV			1.03 H	4	71.02	31.22
5	2720.00	61.35 PK	74.00	-12.65	1.00 H	21	29.64	31.71
6	2720.00	50.46 AV	54.00	-3.54	1.00 H	21	18.75	31.71
7	4874.00	56.67 PK	74.00	-17.33	1.27 H	101	20.09	36.58
8	4874.00	38.92 AV	54.00	-15.08	1.27 H	101	2.34	36.58

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	2360.00	56.95 PK	74.00	-17.05	1.03 V	11	25.70	31.25
2	2360.00	46.46 AV	54.00	-7.54	1.03 V	11	15.21	31.25
3	*2437.00	105.11 PK			1.06 V	120	73.89	31.22
4	*2437.00	94.39 AV			1.06 V	120	63.17	31.22
5	4874.00	54.64 PK	74.00	-19.36	1.02 V	261	18.06	36.58
6	4874.00	36.89 AV	54.00	-17.11	1.02 V	261	0.31	36.58

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	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	2360.00	61.70 PK	74.00	-12.30	1.08 H	10	30.45	31.25
2	2360.00	50.57 AV	54.00	-3.43	1.08 H	10	19.32	31.25
3	*2462.00	110.54 PK			1.01 H	5	79.31	31.23
4	*2462.00	100.88 AV			1.01 H	5	69.65	31.23
5	2483.50	70.31 PK	74.00	-3.69	1.02 H	4	39.07	31.24
6	2483.50	52.57 AV	54.00	-1.43	1.02 H	4	21.33	31.24
7	2720.00	60.48 PK	74.00	-13.52	1.11 H	12	28.77	31.71
8	2720.00	50.11 AV	54.00	-3.89	1.11 H	12	18.40	31.71
9	4924.00	55.19 PK	74.00	-18.81	1.21 H	116	18.51	36.68
10	4924.00	37.41 AV	54.00	-16.59	1.21 H	116	0.73	36.68

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	104.29 PK			1.29 V	110	73.06	31.23
2	*2462.00	92.92 AV			1.29 V	110	61.69	31.23
3	2483.50	56.35 PK	74.00	-17.65	1.30 V	111	25.11	31.24
4	2483.50	47.00 AV	54.00	-7.00	1.30 V	111	15.76	31.24
5	4924.00	52.47 PK	74.00	-21.53	1.06 V	324	15.79	36.68
6	4924.00	34.64 AV	54.00	-19.36	1.06 V	324	-2.04	36.68

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

DRAFT 802.11n (40MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	2360.00	60.66 PK	74.00	-13.34	1.10 H	17	29.41	31.25
2	2360.00	49.76 AV	54.00	-4.24	1.10 H	17	18.51	31.25
3	2390.00	67.88 PK	74.00	-6.12	1.30 H	4	36.66	31.22
4	2390.00	52.17 AV	54.00	-1.83	1.30 H	4	20.95	31.22
5	*2422.00	106.23 PK			1.05 H	19	75.01	31.22
6	*2422.00	96.53 AV			1.05 H	19	65.31	31.22
7	2720.00	59.43 PK	74.00	-14.57	1.12 H	15	27.72	31.71
8	2720.00	47.65 AV	54.00	-6.35	1.12 H	15	15.94	31.71
9	4844.00	48.79 PK	74.00	-25.21	1.12 H	3	12.27	36.52
10	4844.00	35.15 AV	54.00	-18.85	1.12 H	3	-1.37	36.52

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.63 PK	74.00	-11.37	1.40 V	78	31.41	31.22
2	2390.00	48.48 AV	54.00	-5.52	1.40 V	78	17.26	31.22
3	*2422.00	100.10 PK			1.36 V	77	68.88	31.22
4	*2422.00	89.36 AV			1.36 V	77	58.14	31.22
5	4844.00	46.87 PK	74.00	-27.13	1.11 V	100	10.35	36.52
6	4844.00	32.80 AV	54.00	-21.20	1.11 V	100	-3.72	36.52

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	2360.00	61.45 PK	74.00	-12.55	1.11 H	5	30.20	31.25
2	2360.00	49.78 AV	54.00	-4.22	1.11 H	5	18.53	31.25
3	*2437.00	106.77 PK			1.04 H	4	75.55	31.22
4	*2437.00	97.21 AV			1.04 H	4	65.99	31.22
5	2483.50	67.03 PK	74.00	-6.97	1.00 H	3	35.79	31.24
6	2483.50	52.28 AV	54.00	-1.72	1.00 H	3	21.04	31.24
7	2720.00	60.61 PK	74.00	-13.39	1.11 H	10	28.90	31.71
8	2720.00	49.38 AV	54.00	-4.62	1.11 H	10	17.67	31.71
9	4874.00	48.59 PK	74.00	-25.41	1.00 H	123	12.01	36.58
10	4874.00	35.48 AV	54.00	-18.52	1.00 H	123	-1.10	36.58

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	100.31 PK			1.23 V	110	69.09	31.22
2	*2437.00	90.10 AV			1.23 V	110	58.88	31.22
3	2483.50	58.07 PK	74.00	-15.93	1.23 V	111	26.83	31.24
4	2483.50	47.69 AV	54.00	-6.31	1.23 V	111	16.45	31.24
5	4874.00	48.05 PK	74.00	-25.95	1.12 V	258	11.47	36.58
6	4874.00	34.67 AV	54.00	-19.33	1.12 V	258	-1.91	36.58

- 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	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	2360.00	59.37 PK	74.00	-14.63	1.04 H	243	28.12	31.25
2	2360.00	48.95 AV	54.00	-5.05	1.04 H	243	17.70	31.25
3	*2452.00	104.02 PK			1.04 H	10	72.79	31.23
4	*2452.00	94.45 AV			1.04 H	10	63.22	31.23
5	2484.00	65.06 PK	74.00	-8.94	1.03 H	3	33.82	31.24
6	2484.00	52.36 AV	54.00	-1.64	1.03 H	3	21.12	31.24
7	2720.00	59.60 PK	74.00	-14.40	1.00 H	12	27.89	31.71
8	2720.00	48.92 AV	54.00	-5.08	1.00 H	12	17.21	31.71
9	4904.00	48.89 PK	74.00	-25.11	1.03 H	111	12.25	36.64
10	4904.00	35.26 AV	54.00	-18.74	1.03 H	111	-1.38	36.64

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	98.03 PK			1.24 V	109	66.80	31.23
2	*2452.00	88.49 AV			1.24 V	109	57.26	31.23
3	2484.00	58.53 PK	74.00	-15.47	1.24 V	109	27.29	31.24
4	2484.00	47.97 AV	54.00	-6.03	1.24 V	109	16.73	31.24
5	4904.00	47.64 PK	74.00	-26.36	1.02 V	241	11.00	36.64
6	4904.00	34.97 AV	54.00	-19.03	1.02 V	241	-1.67	36.64

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

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	Apr. 11, 2008

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

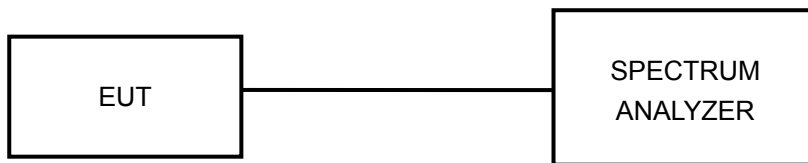
4.3.3 TEST PROCEDURE

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 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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

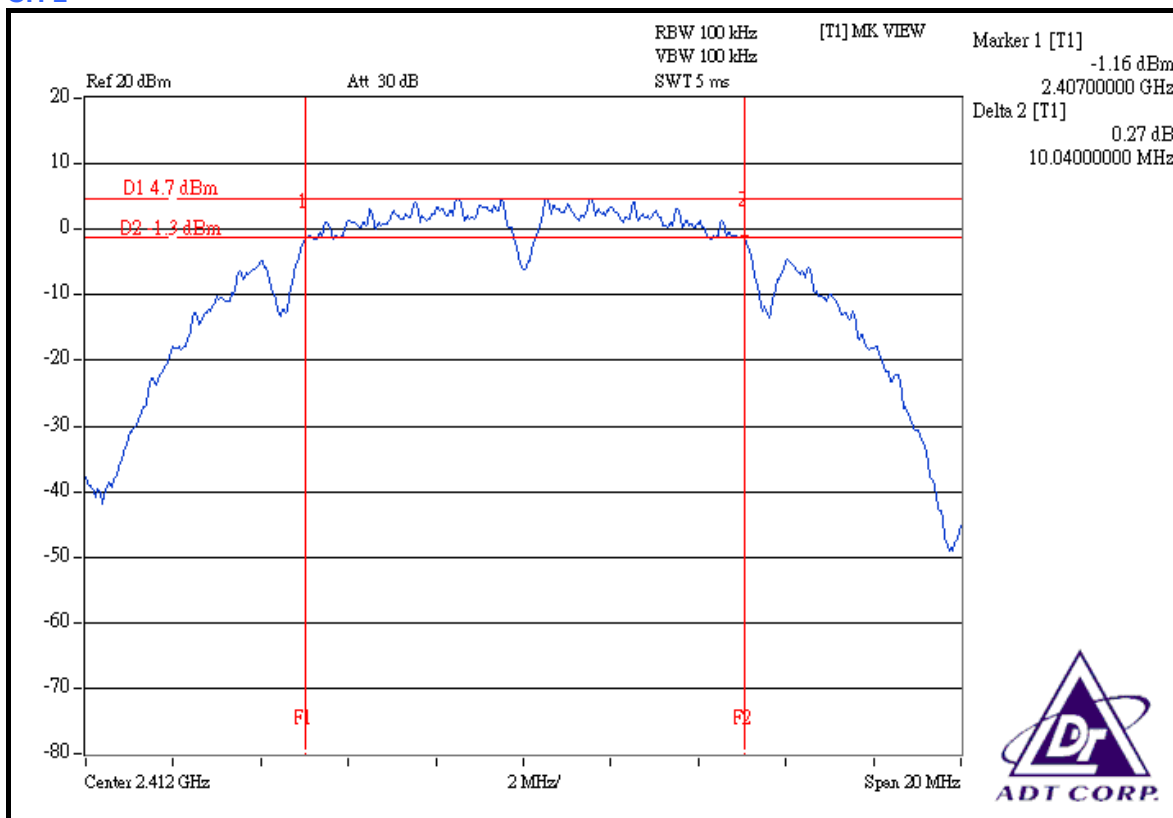
4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

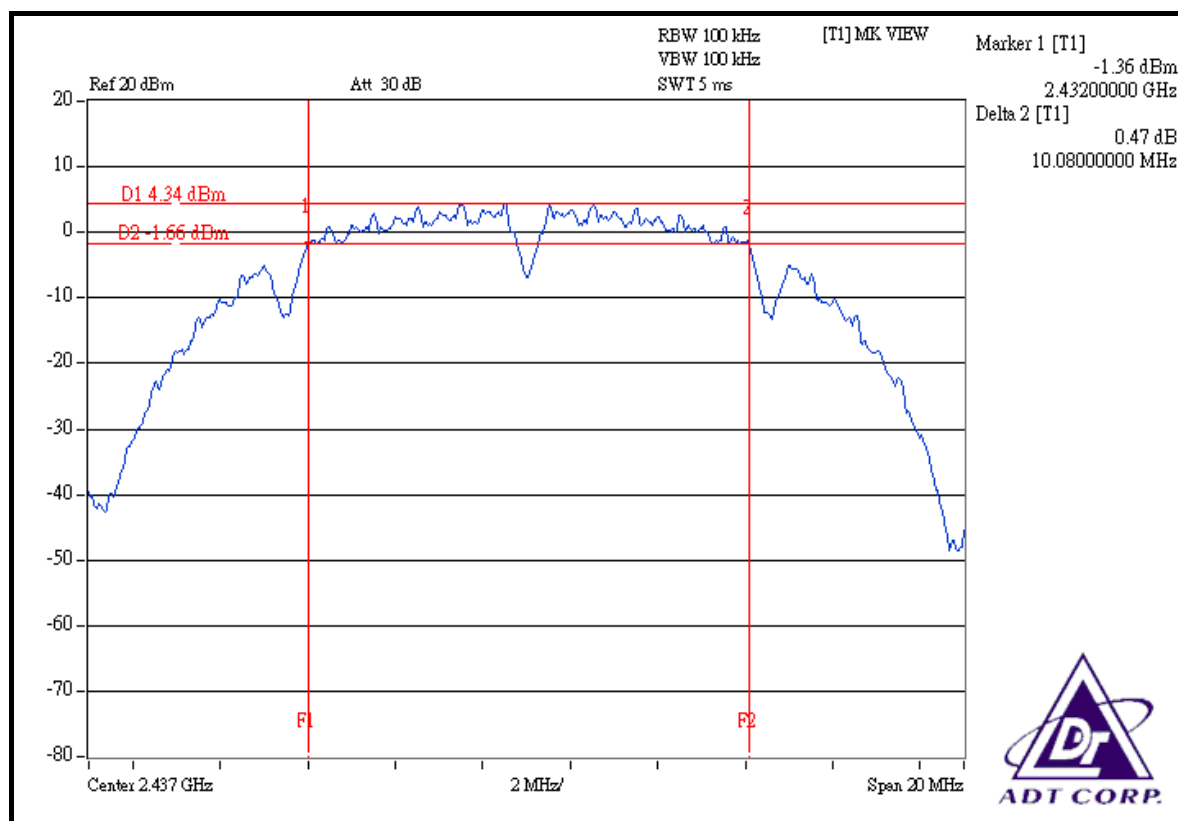
MODULATION TYPE	DBPSK	TRANSFER RATE	1.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.04	0.5	PASS
6	2437	10.08	0.5	PASS
11	2462	10.08	0.5	PASS

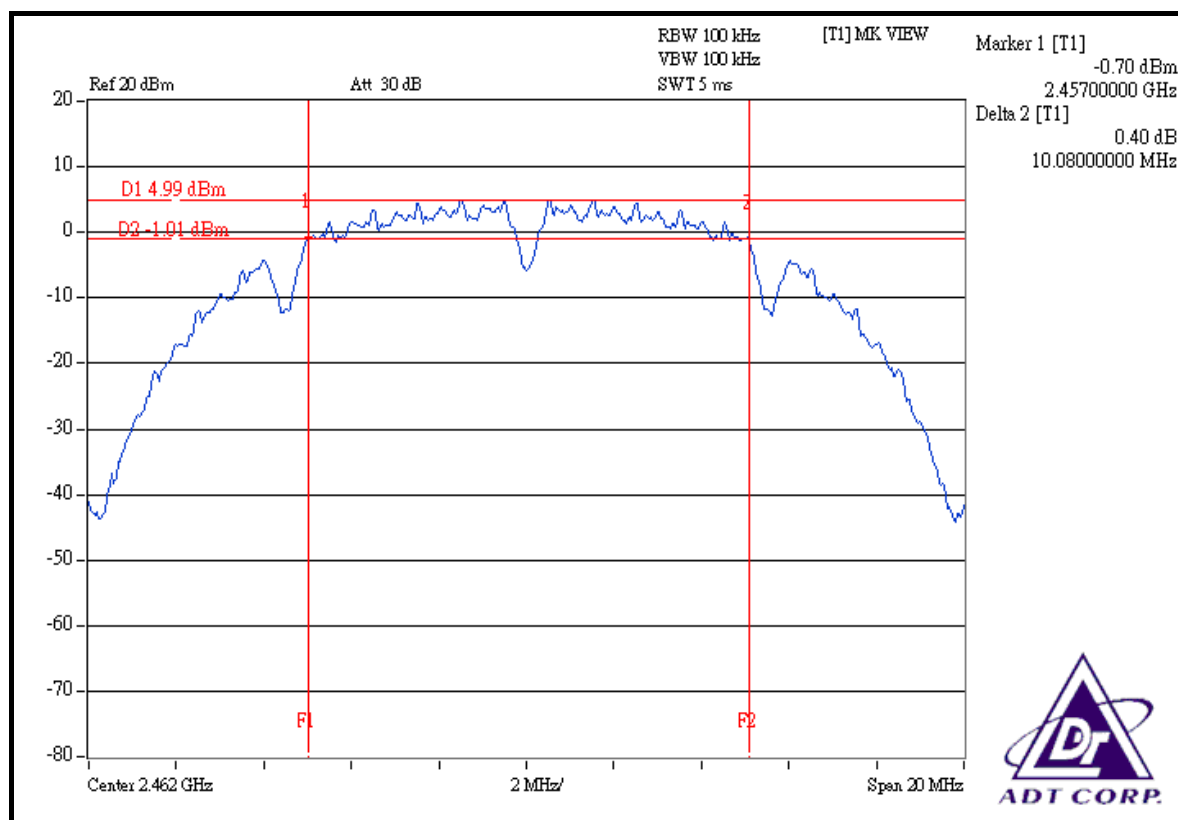
CH 1



CH 6



CH 11

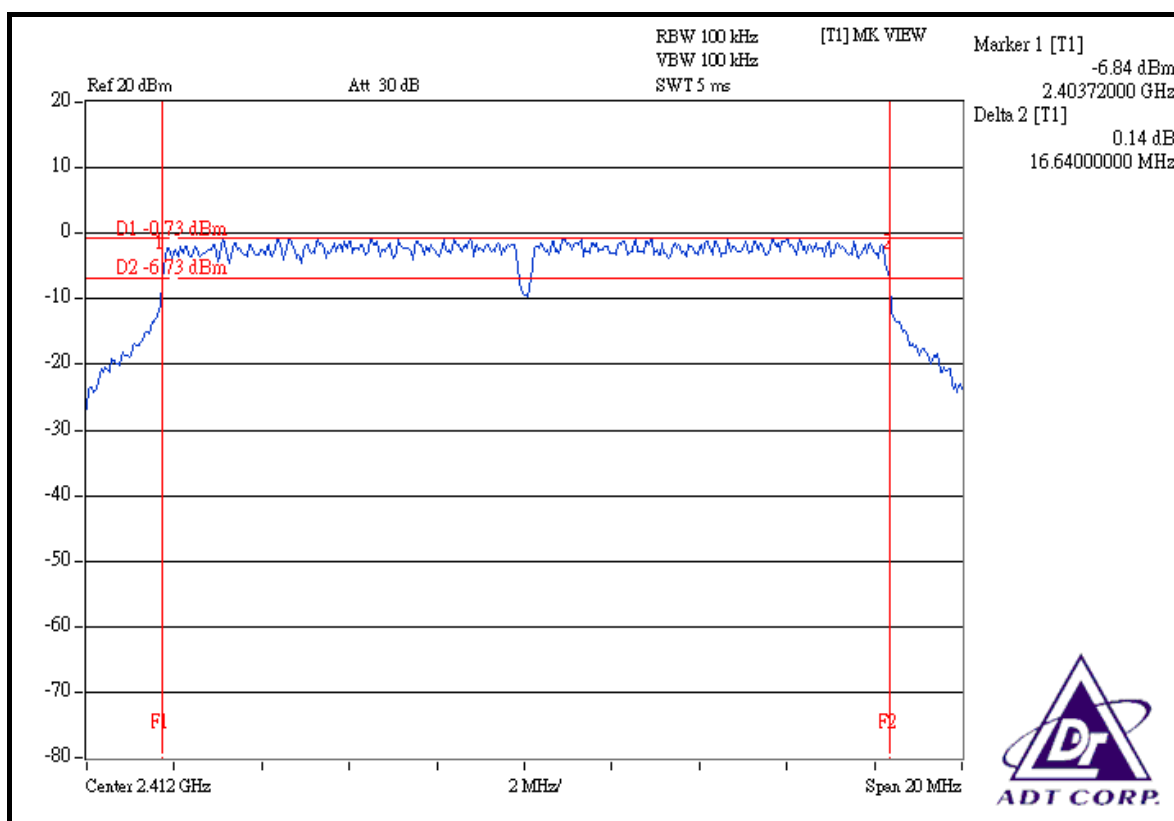


802.11g OFDM MODULATION:

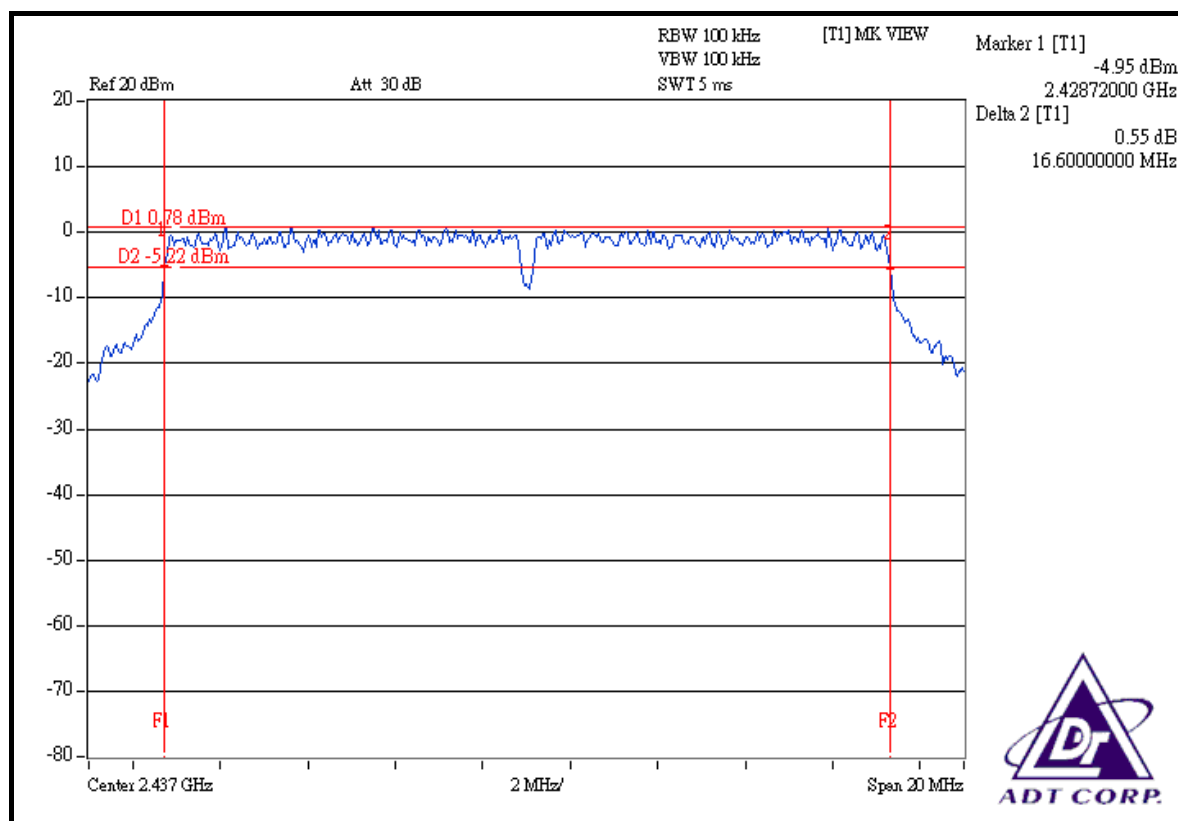
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.64	0.5	PASS
6	2437	16.60	0.5	PASS
11	2462	16.60	0.5	PASS

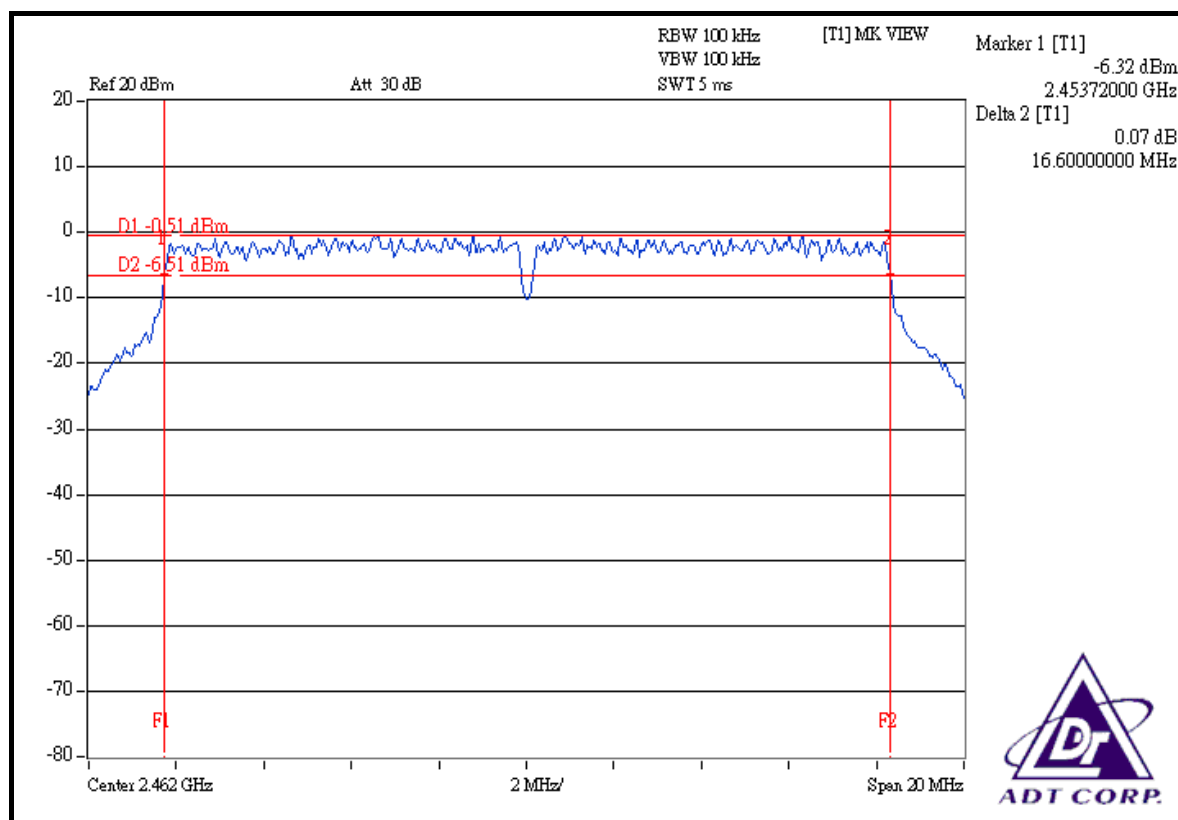
CH 1



CH 6



CH 11

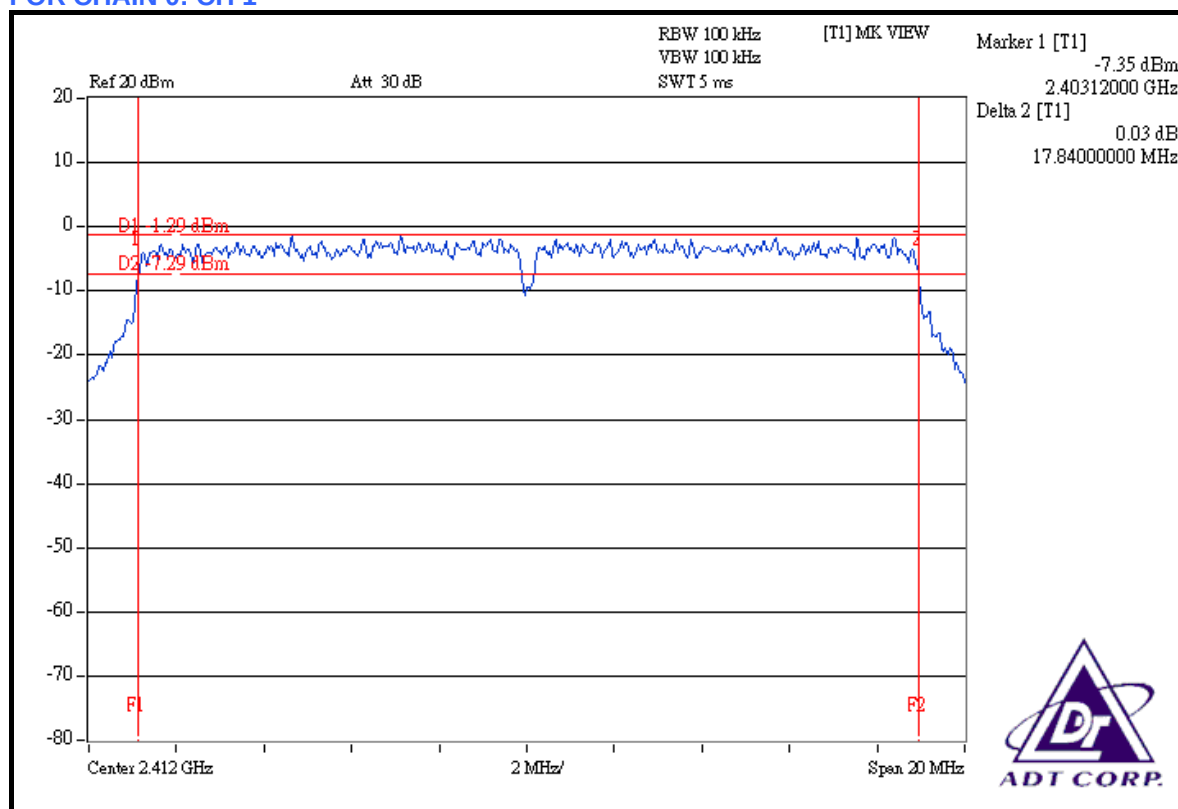


DRAFT 802.11n (20MHz) OFDM MODULATION:

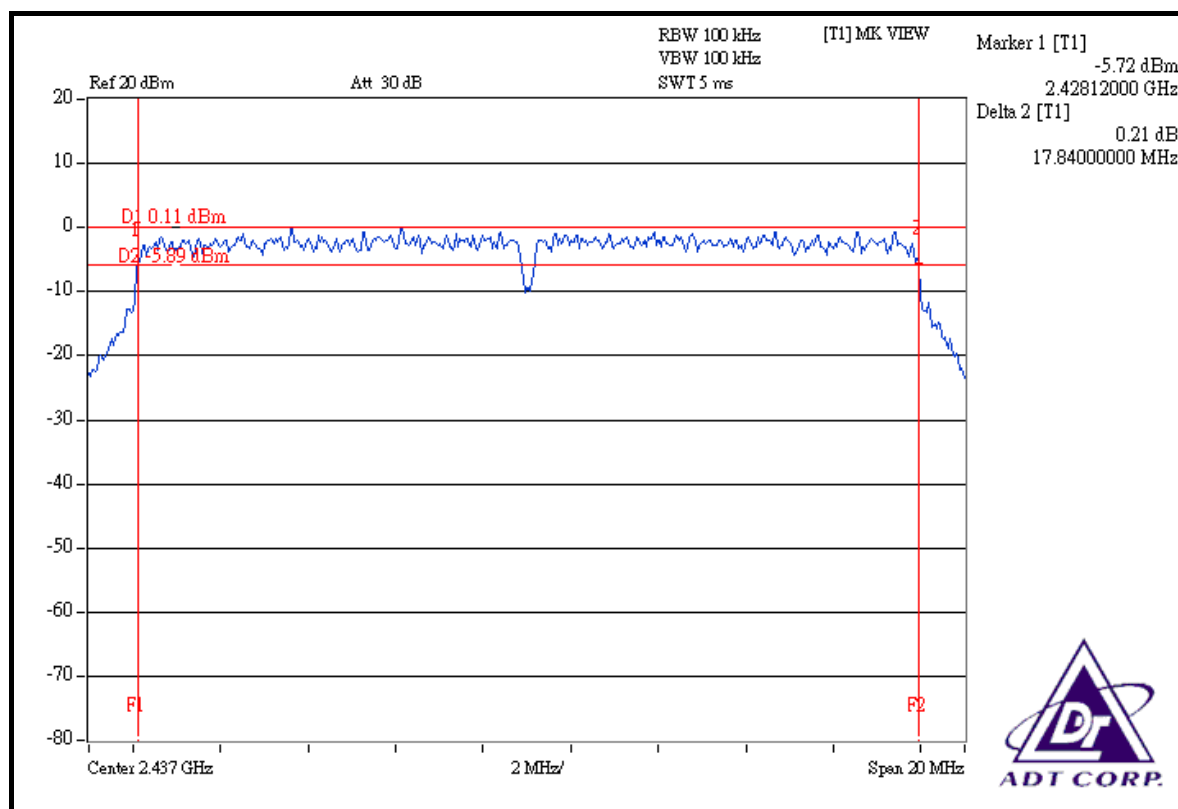
MODULATION TYPE	BPSK	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.84	17.72	0.5	PASS
6	2437	17.84	17.72	0.5	PASS
11	2462	17.84	17.72	0.5	PASS

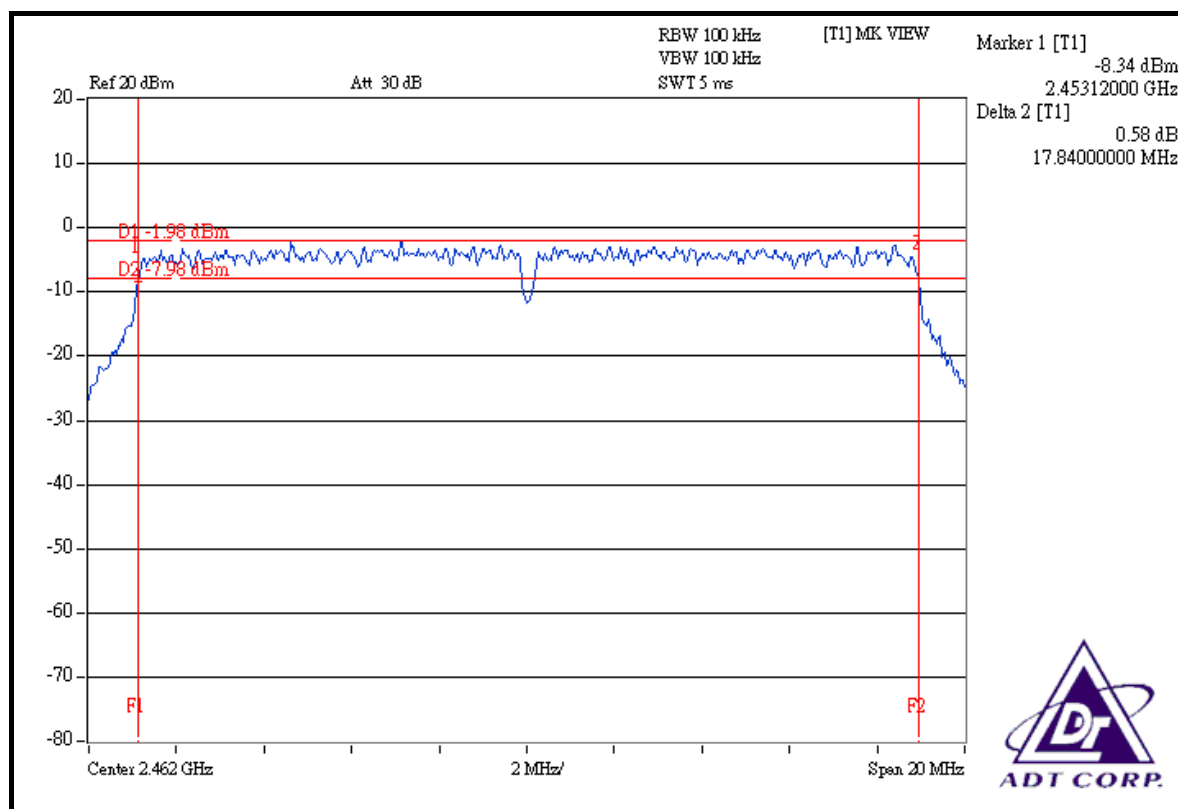
FOR CHAIN 0: CH 1



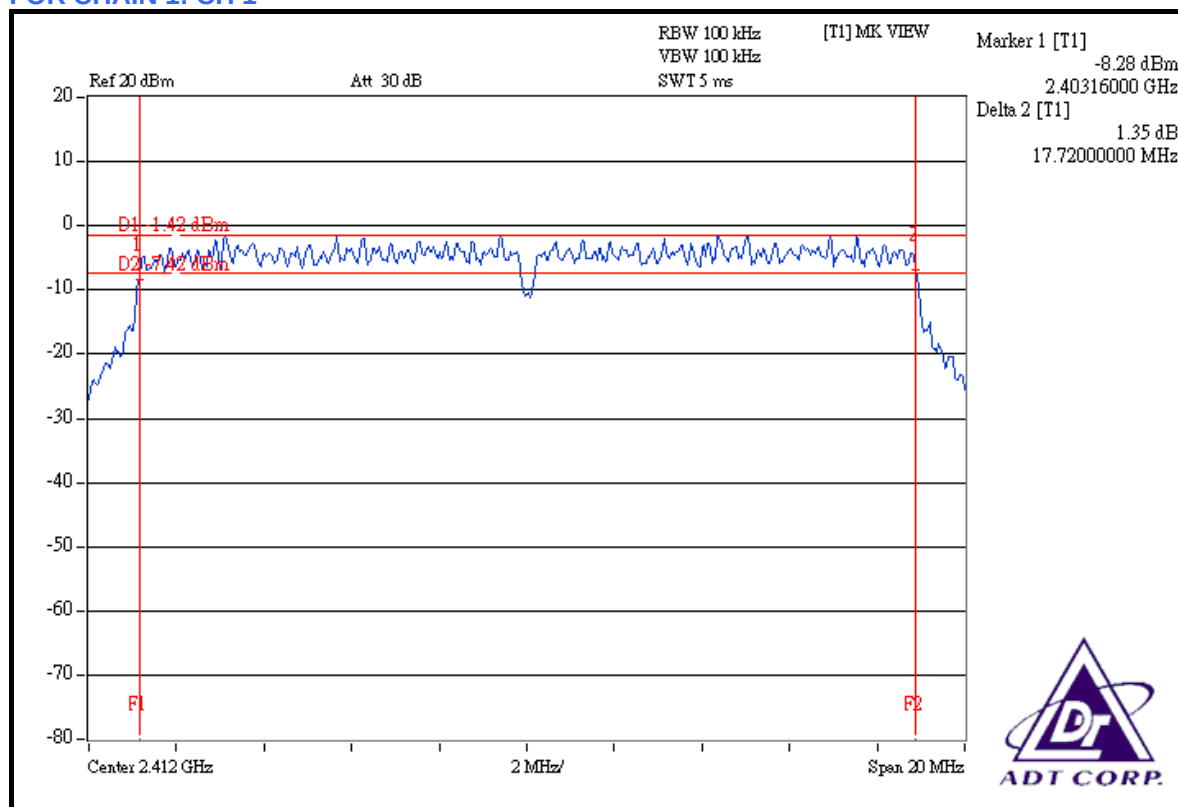
CH 6



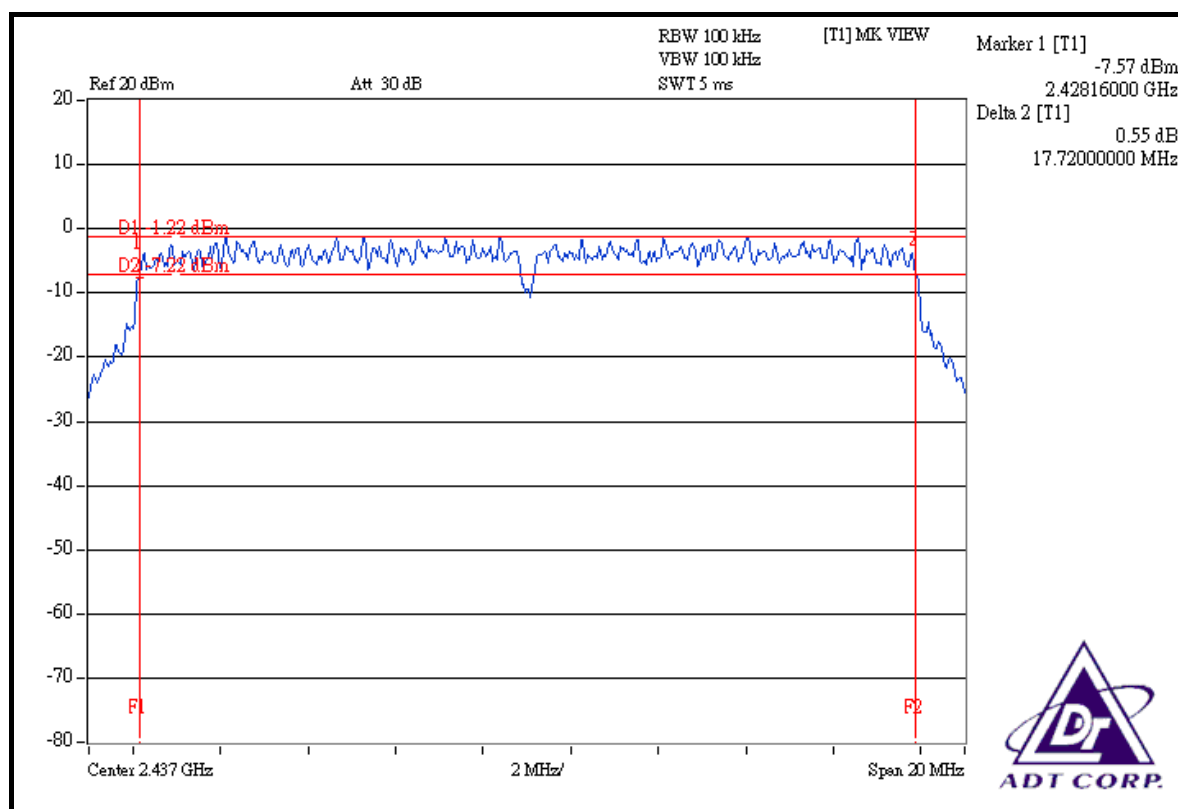
CH 11



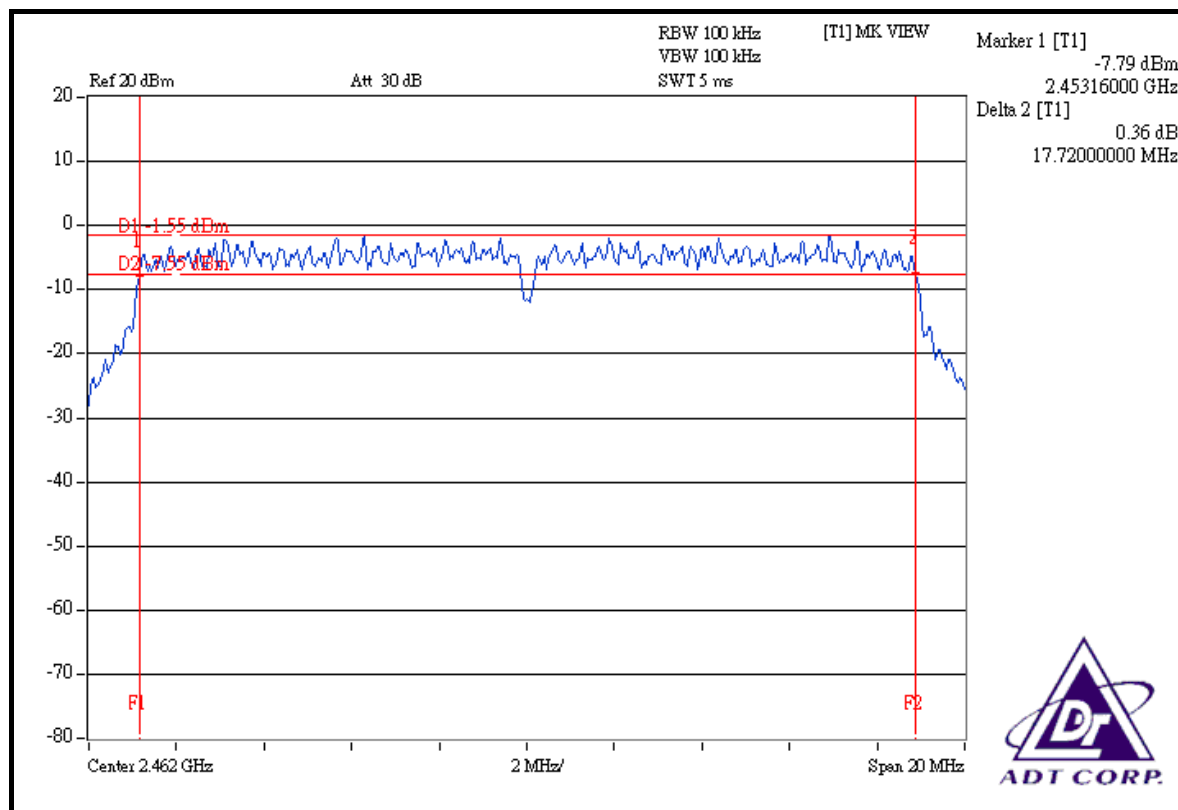
FOR CHAIN 1: CH 1



CH 6



CH 11

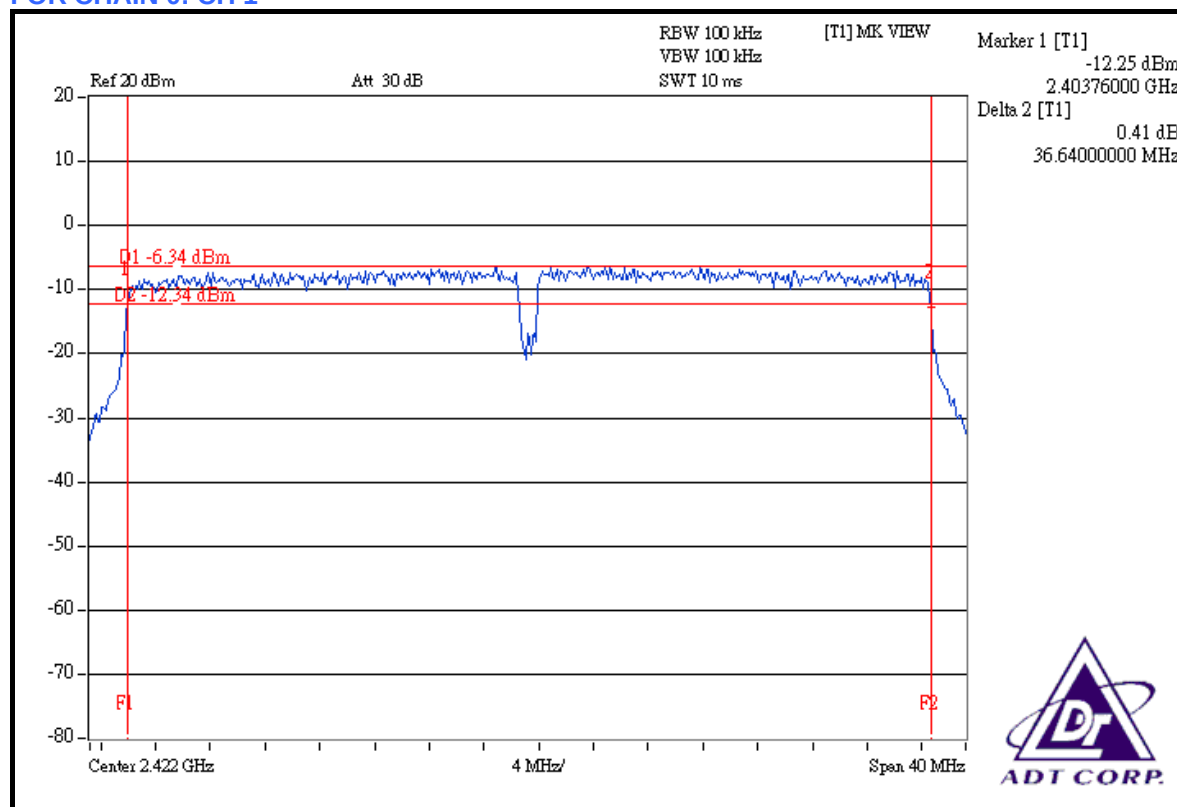


DRAFT 802.11n (40MHz) OFDM MODULATION:

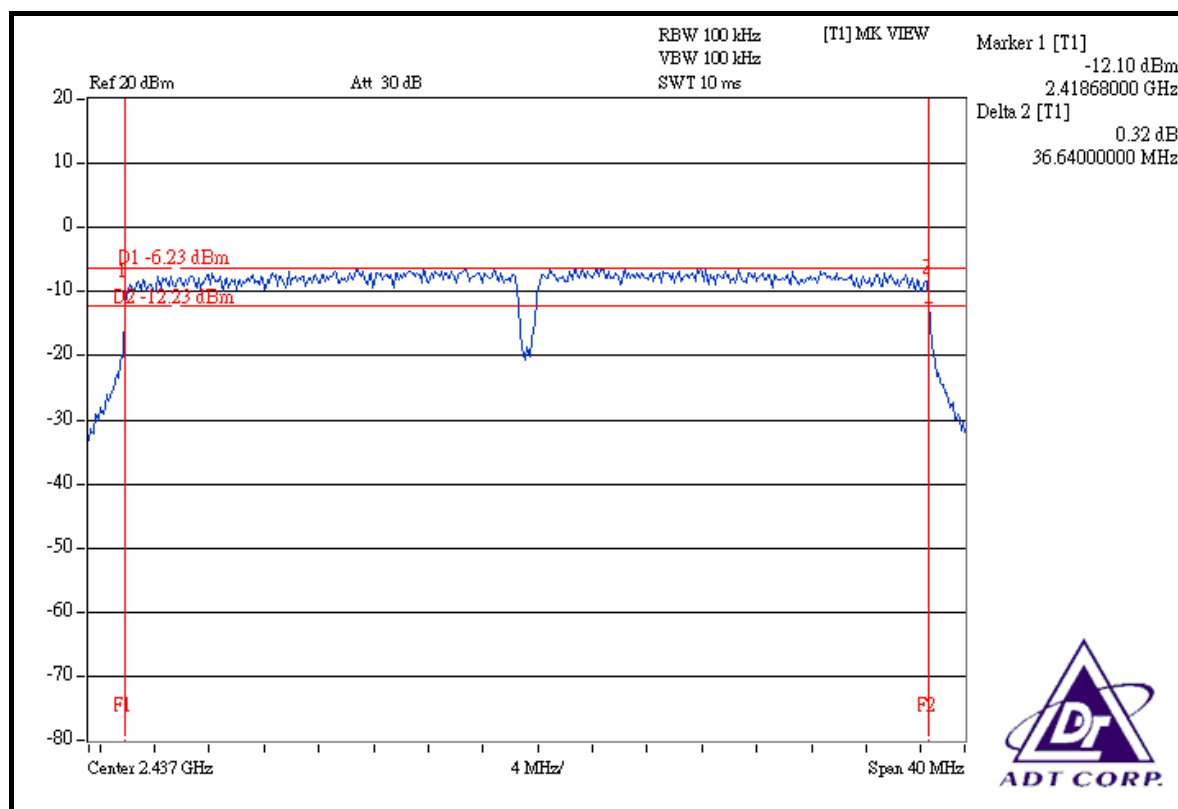
MODULATION TYPE	BPSK	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2422	36.64	36.64	0.5	PASS
4	2437	36.64	36.56	0.5	PASS
7	2452	36.56	36.56	0.5	PASS

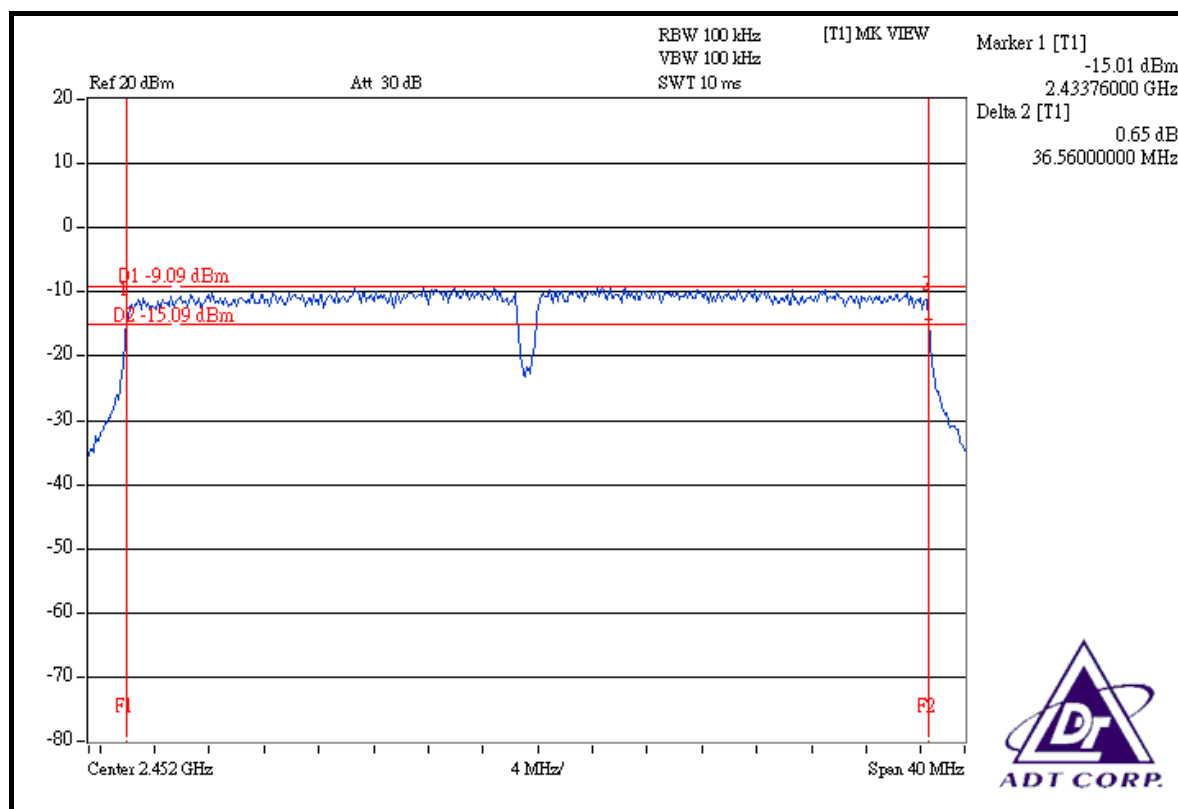
FOR CHAIN 0: CH 1



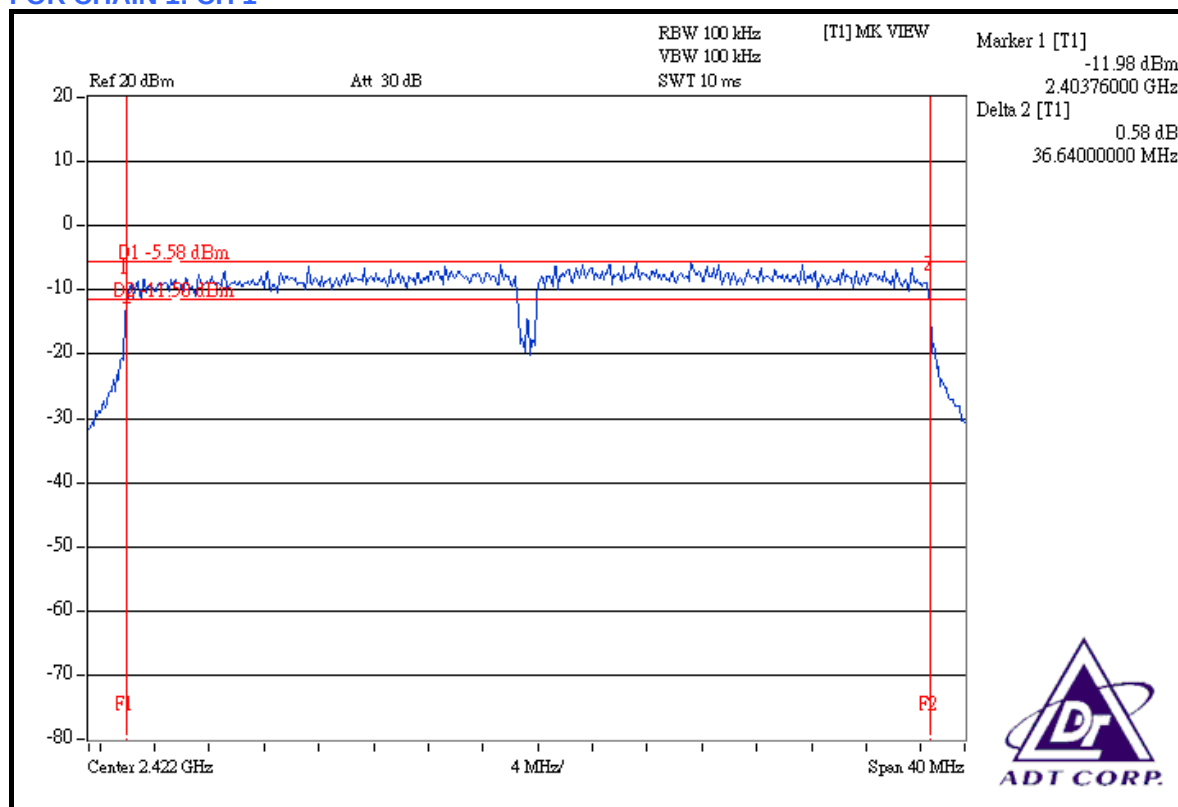
CH 4



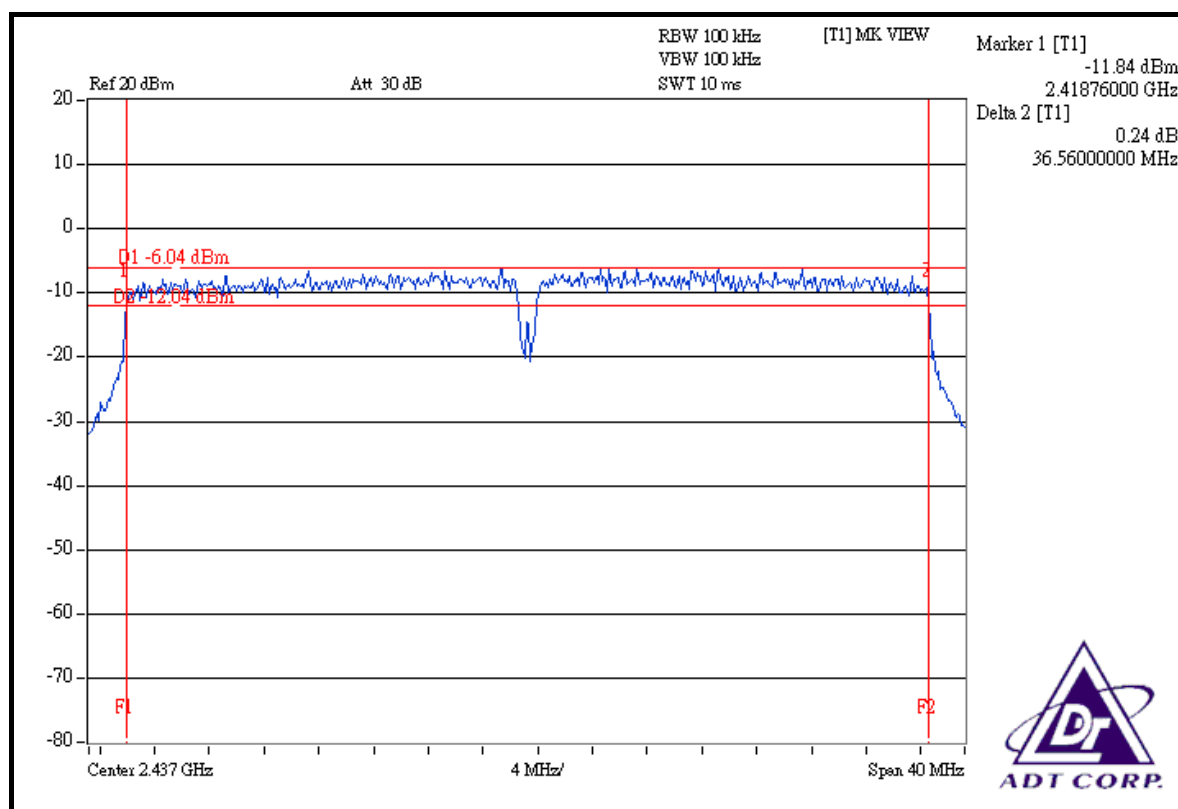
CH 7



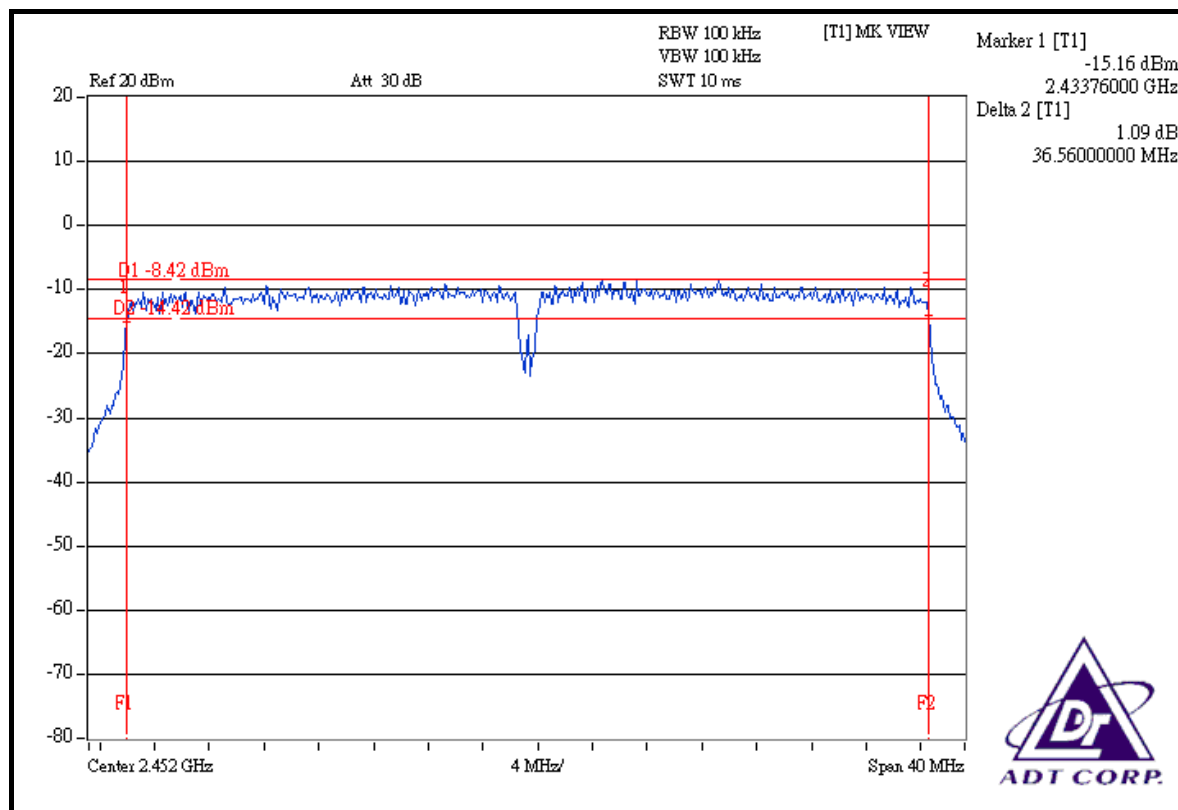
FOR CHAIN 1: CH 1



CH 4



CH 7



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	Apr. 11, 2008
R&S SIGNAL GENERATOR	SML03	102843	Aug. 31, 2007
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

- A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
- Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
- 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	TRANSFER RATE	1.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	71.121	18.52	30	PASS
6	2437	71.121	18.52	30	PASS
11	2462	71.779	18.56	30	PASS

802.11g OFDM MODULATION:

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

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	63.826	18.05	30	PASS
6	2437	89.125	19.50	30	PASS
11	2462	64.565	18.10	30	PASS

DRAFT 802.11n (20MHz) OFDM MODULATION:

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

CHAN.	CHAN. FREQ. (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	51.050	51.168	17.08	17.09	102.218	20.10	30	PASS
6	2437	63.973	64.121	18.06	18.07	128.094	21.08	30	PASS
11	2462	45.499	44.978	16.58	16.53	90.477	19.57	30	PASS

DRAFT 802.11n (40MHz) OFDM MODULATION:

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

CHAN.	CHAN. FREQ. (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	44.875	44.875	16.52	16.52	89.750	19.53	30	PASS
4	2437	45.082	44.771	16.54	16.51	89.853	19.54	30	PASS
7	2452	22.542	22.491	13.53	13.52	45.033	16.54	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	Apr. 11, 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

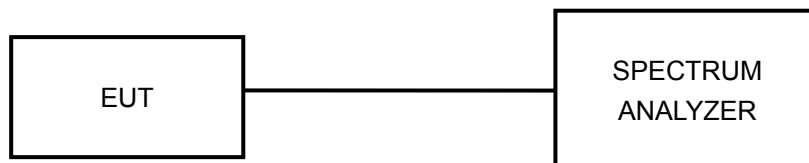
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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

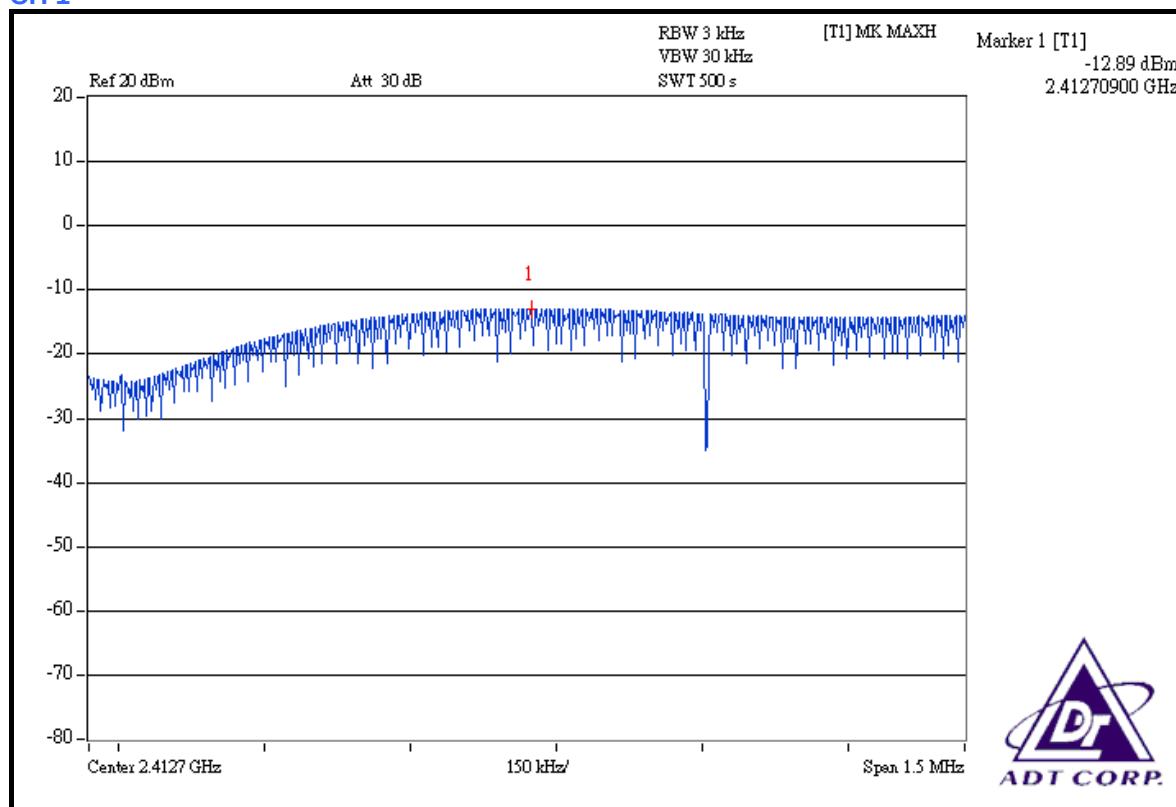
4.5.7 TEST RESULTS

802.11b DSSS MODULATION:

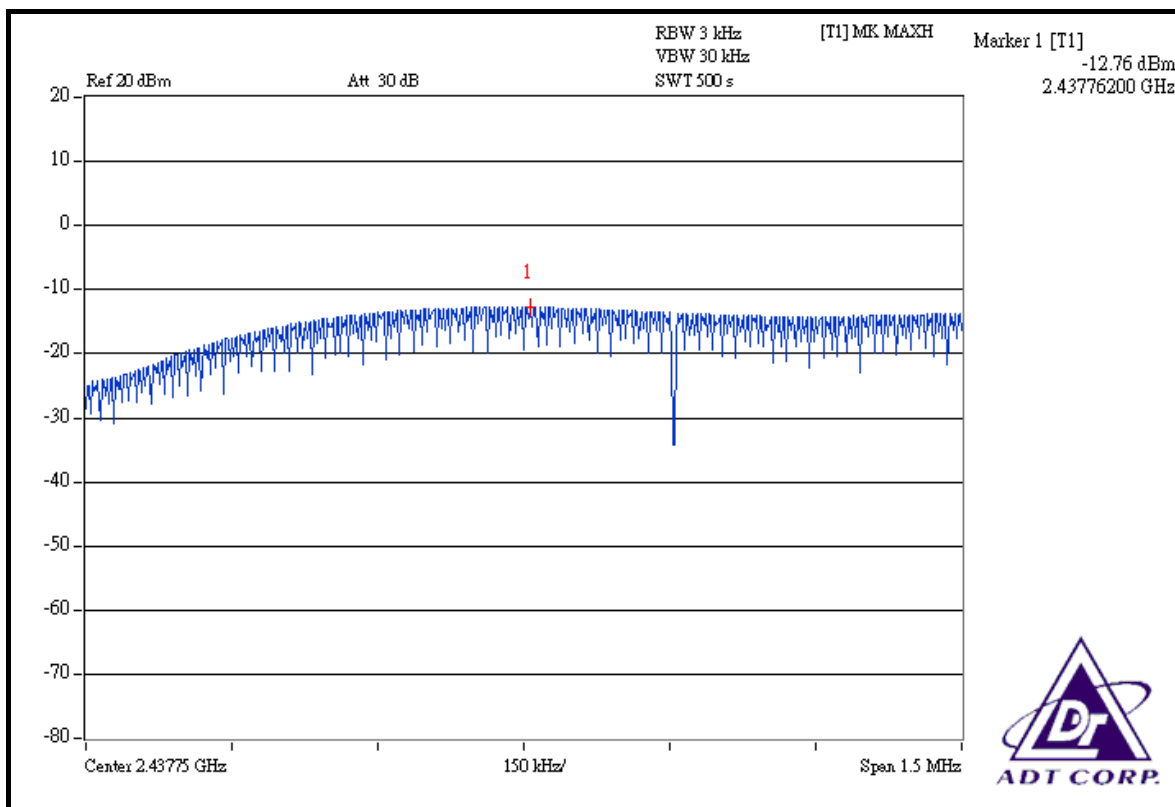
MODULATION TYPE	DBPSK	TRANSFER RATE	1.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-12.89	8	PASS
6	2437	-12.76	8	PASS
11	2462	-12.63	8	PASS

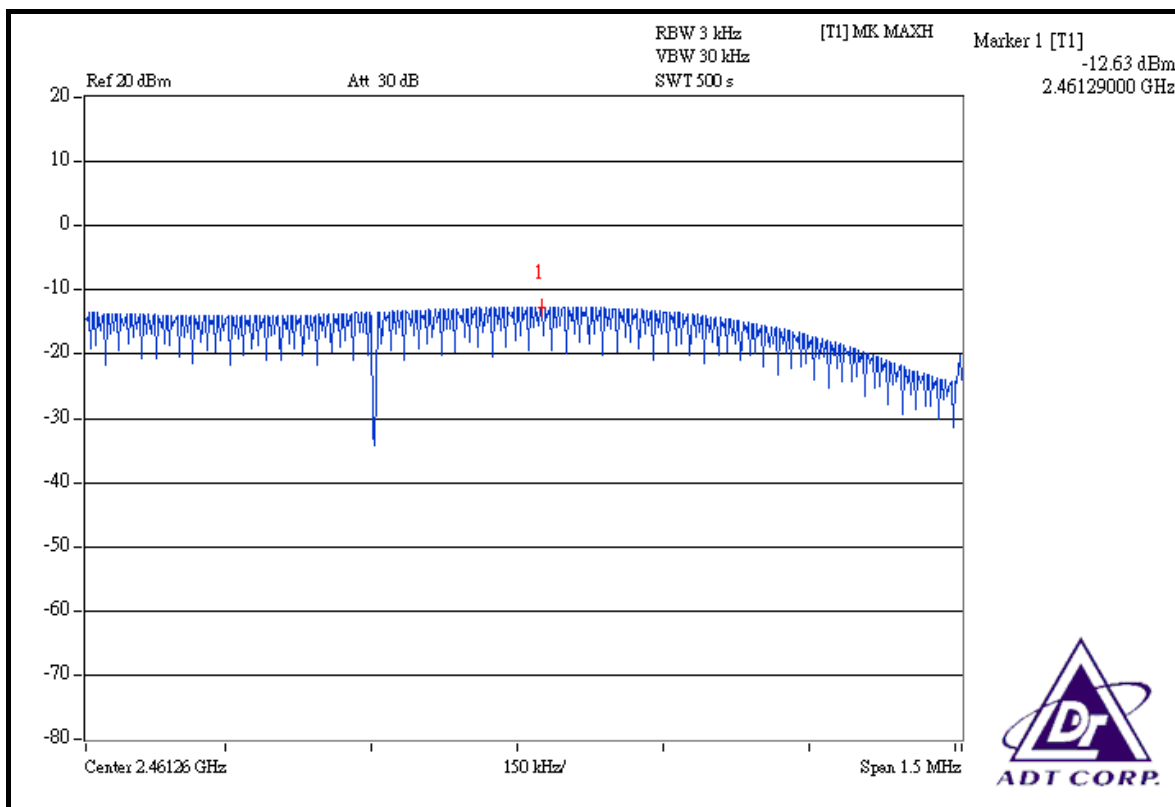
CH 1



CH 6



CH 11

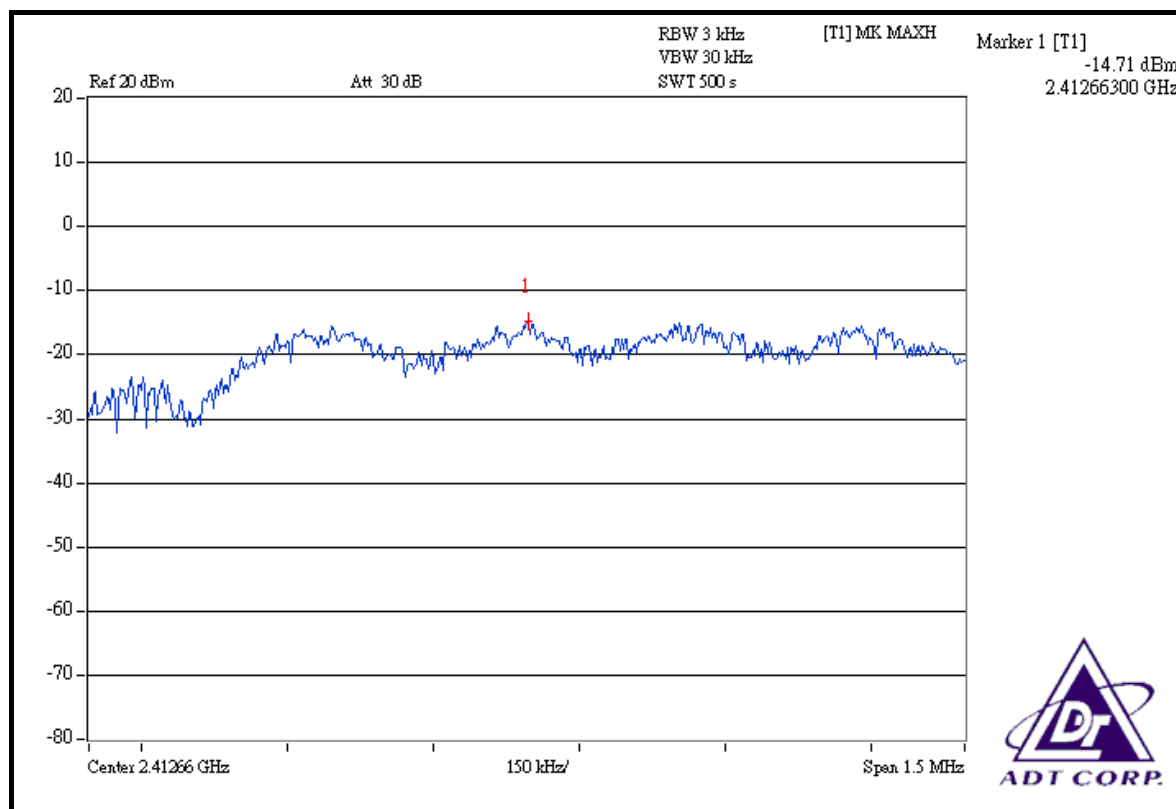


802.11g OFDM MODULATION:

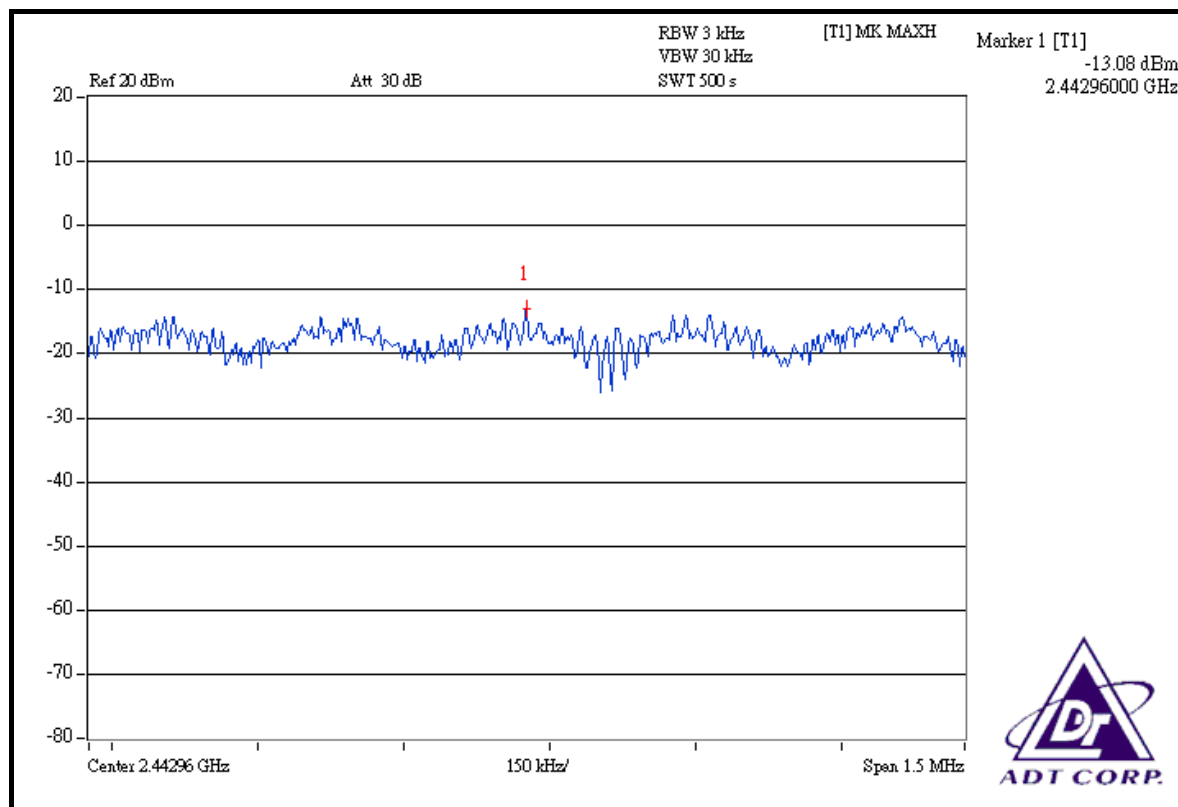
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-14.71	8	PASS
6	2437	-13.08	8	PASS
11	2462	-14.41	8	PASS

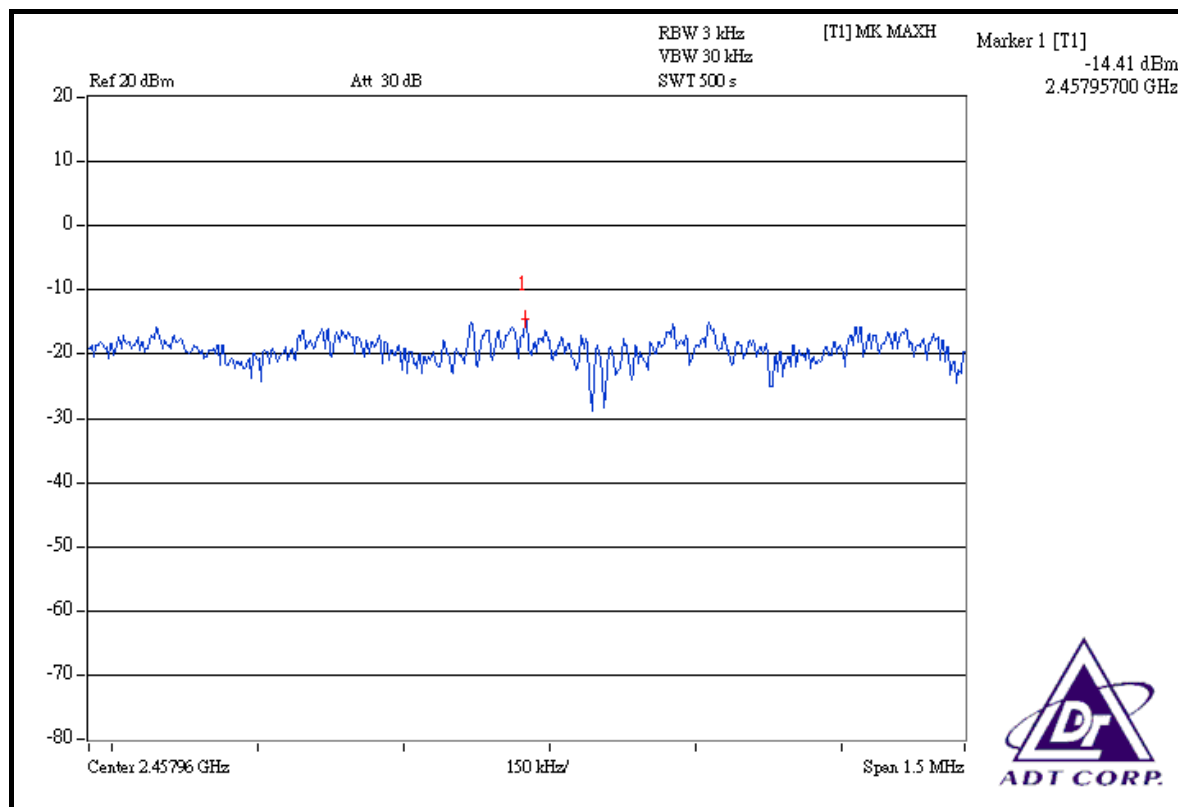
CH 1



CH 6



CH 11

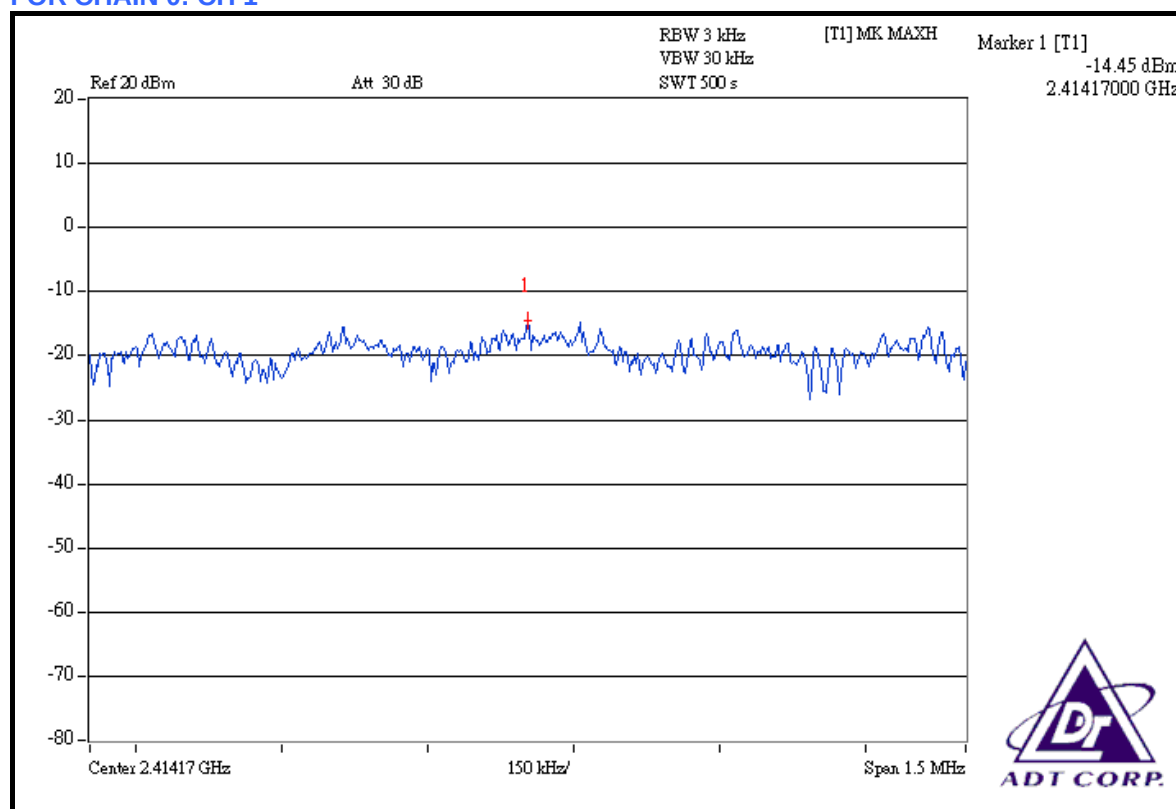


DRAFT 802.11n (20MHz) OFDM MODULATION:

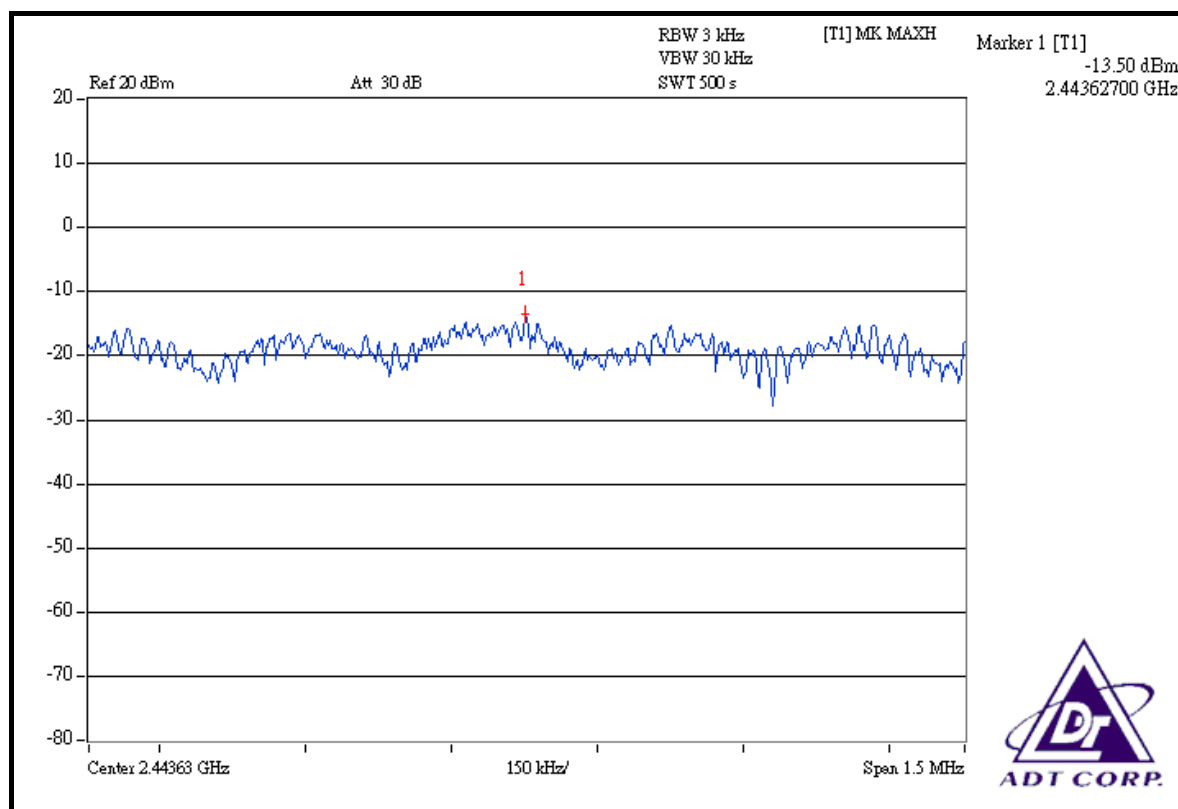
MODULATION TYPE	BPSK	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHAN.	CHAN. FREQ. (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	0.036	0.027	-14.45	-15.75	0.062	-12.04	8	PASS
6	2437	0.045	0.035	-13.50	-14.51	0.080	-10.97	8	PASS
11	2462	0.031	0.024	-15.06	-16.19	0.055	-12.58	8	PASS

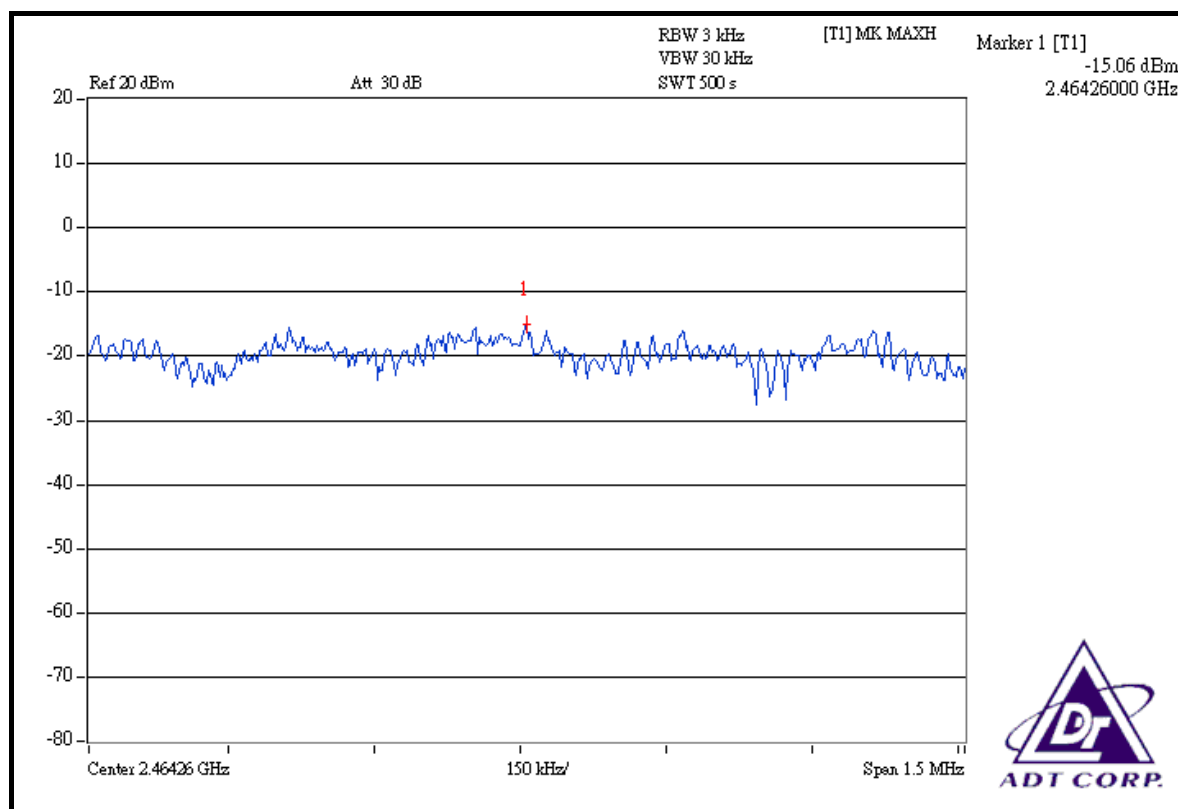
FOR CHAIN 0: CH 1



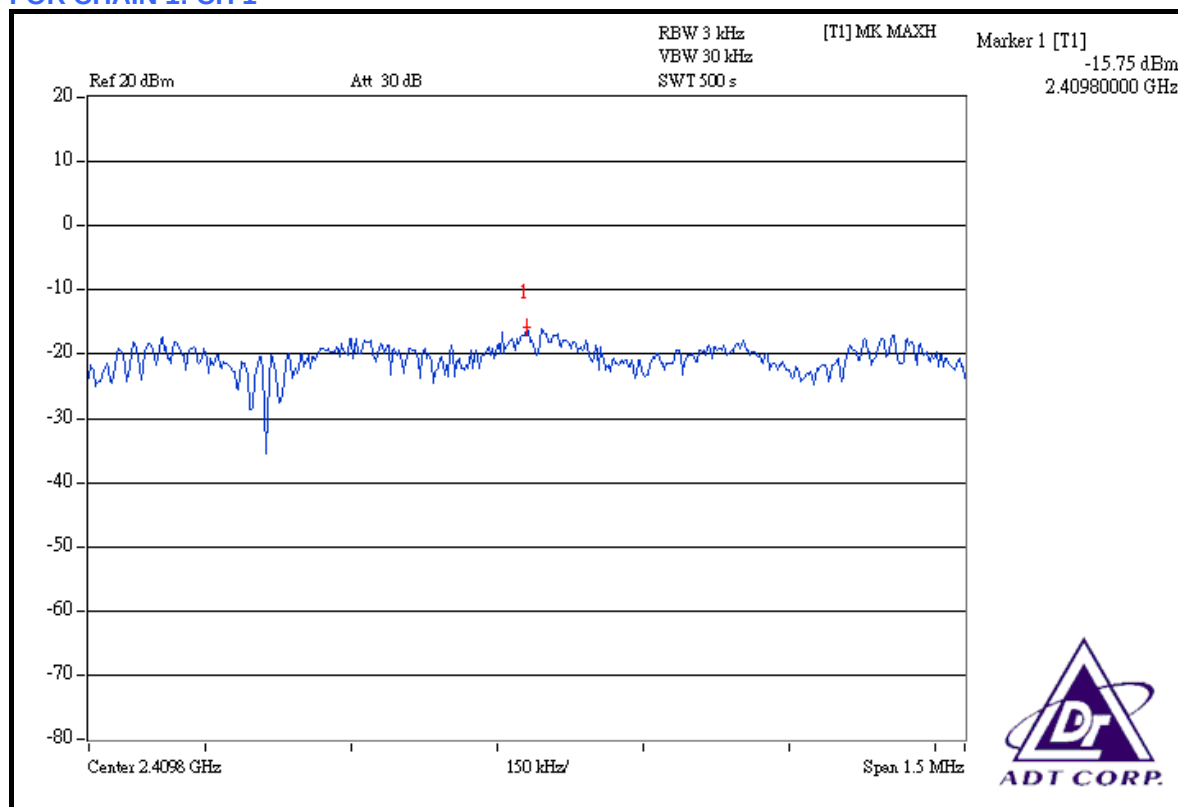
CH 6



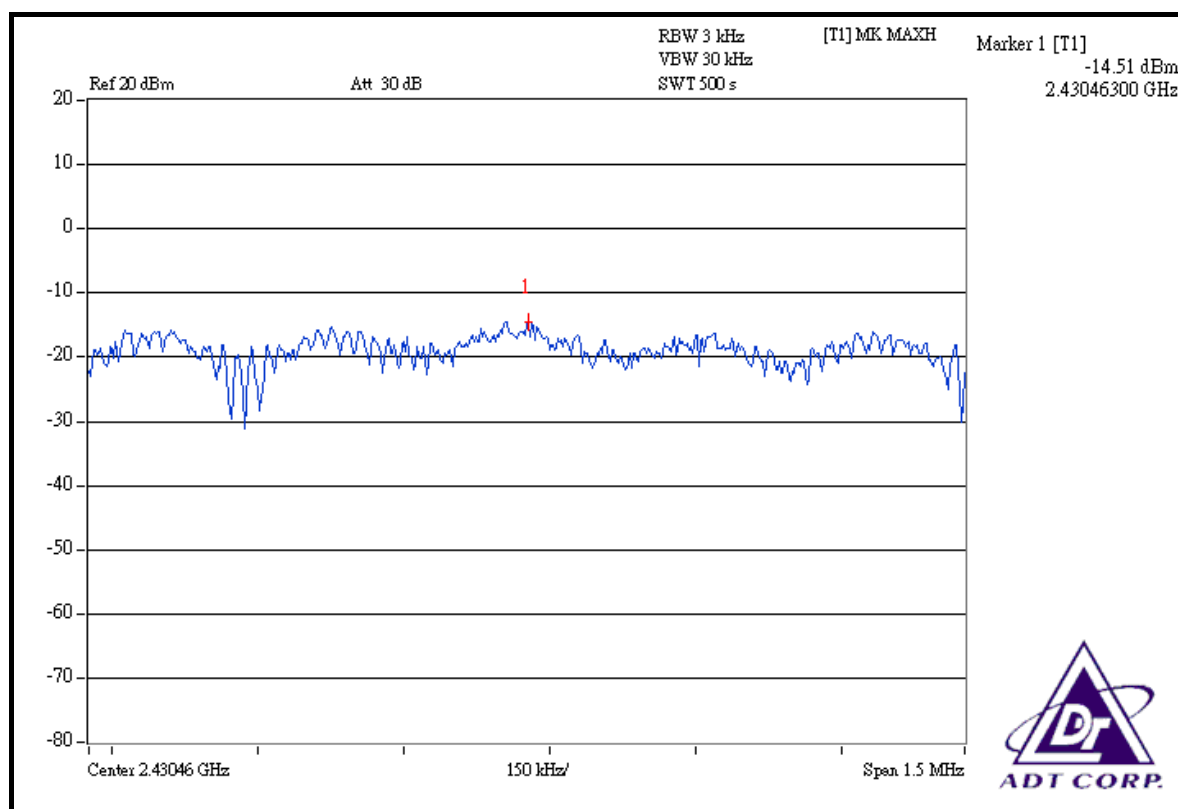
CH 11



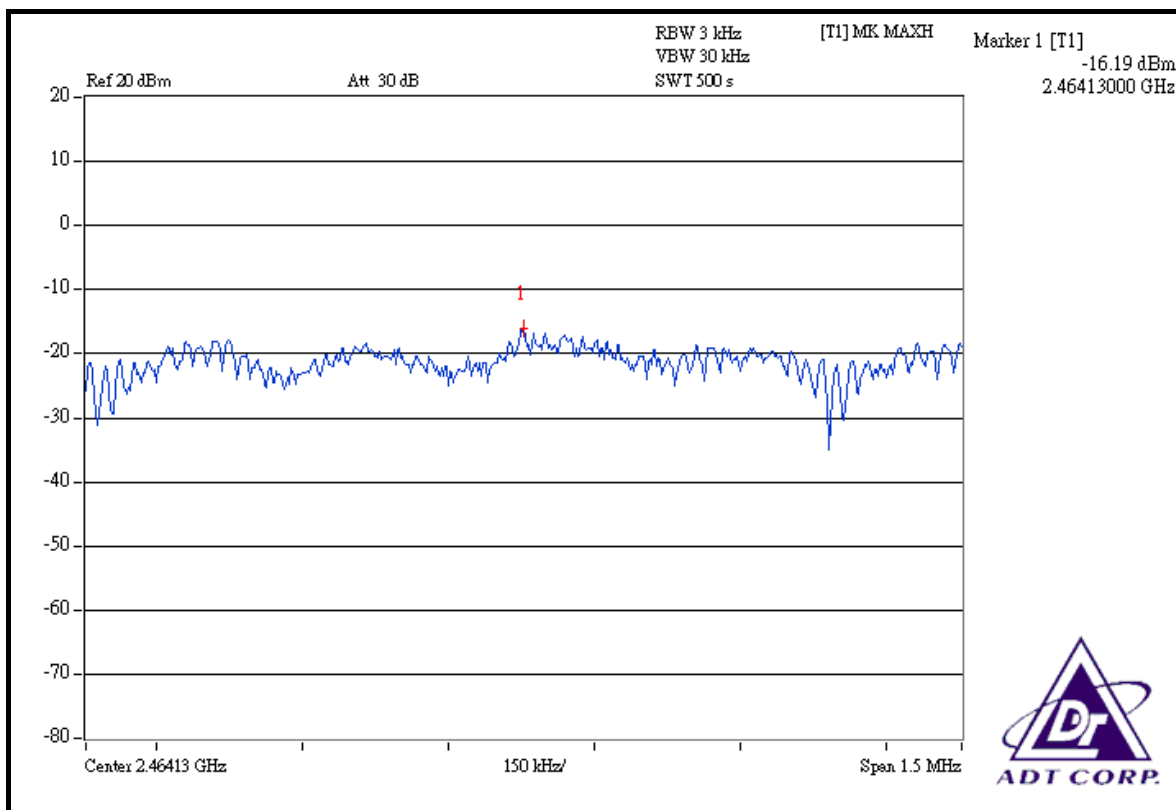
FOR CHAIN 1: CH 1



CH 6



CH 11

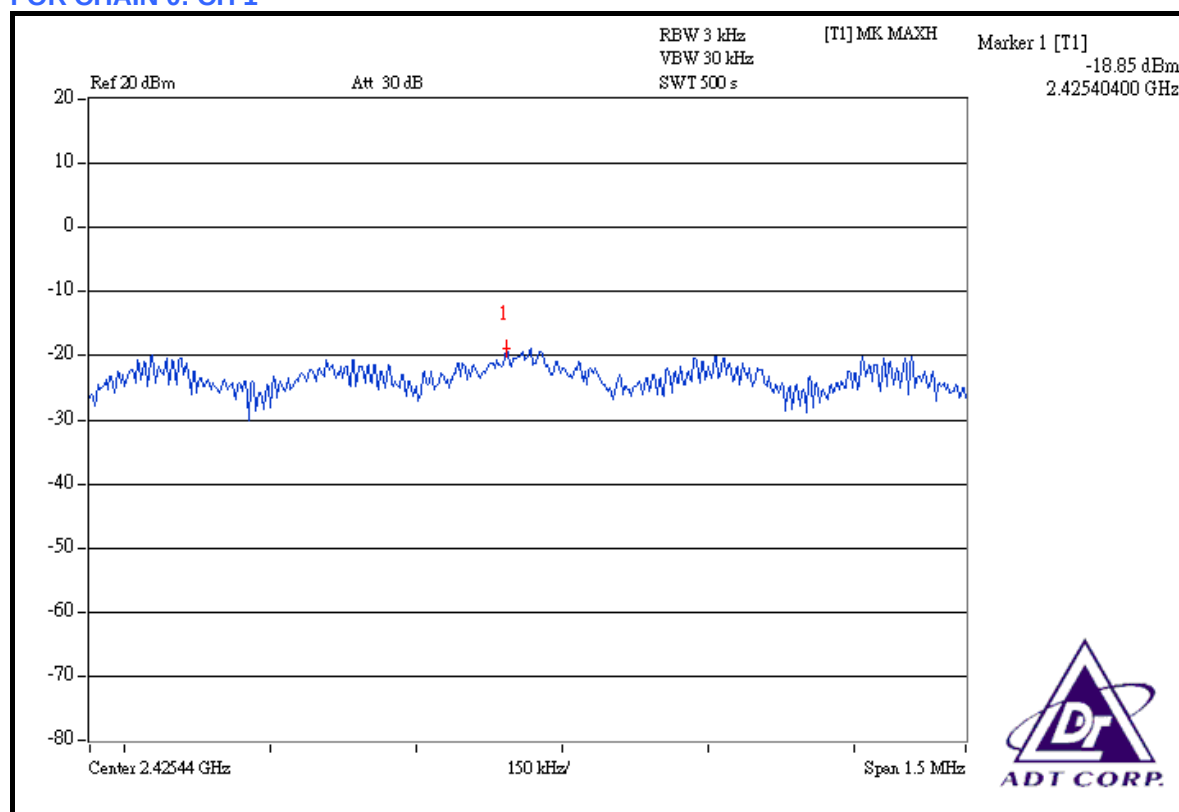


DRAFT 802.11n (40MHz) OFDM MODULATION:

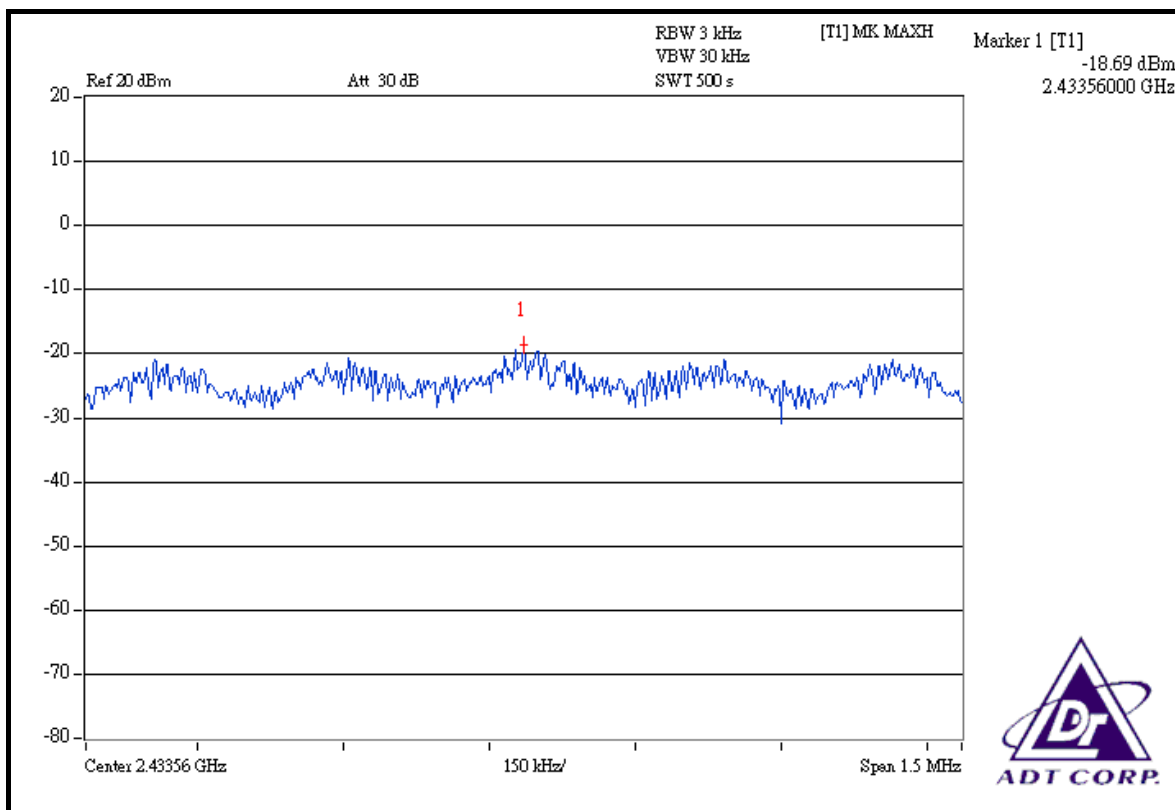
MODULATION TYPE	BPSK	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHAN.	CHAN. FREQ. (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	0.013	0.014	-18.85	-18.44	0.027	-15.63	8	PASS
4	2437	0.014	0.015	-18.69	-18.24	0.029	-15.45	8	PASS
7	2452	0.007	0.007	-21.69	-21.33	0.014	-18.50	8	PASS

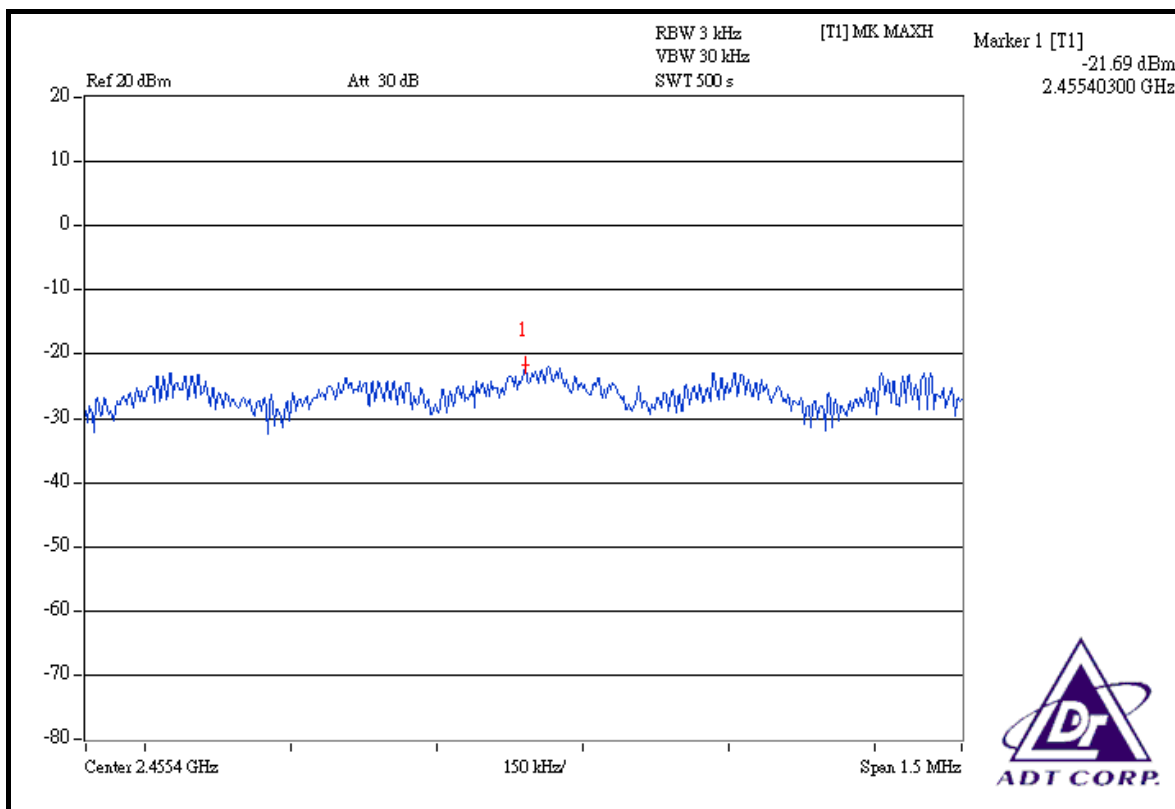
FOR CHAIN 0: CH 1



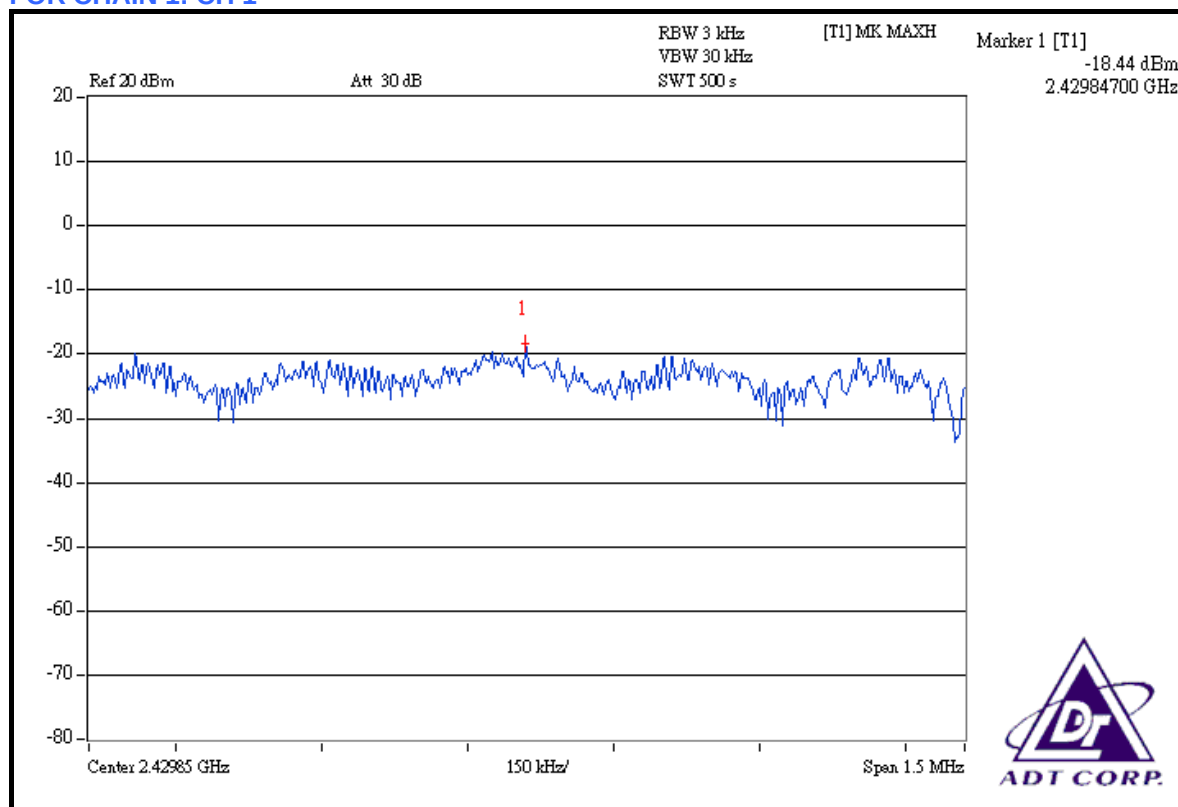
CH 4



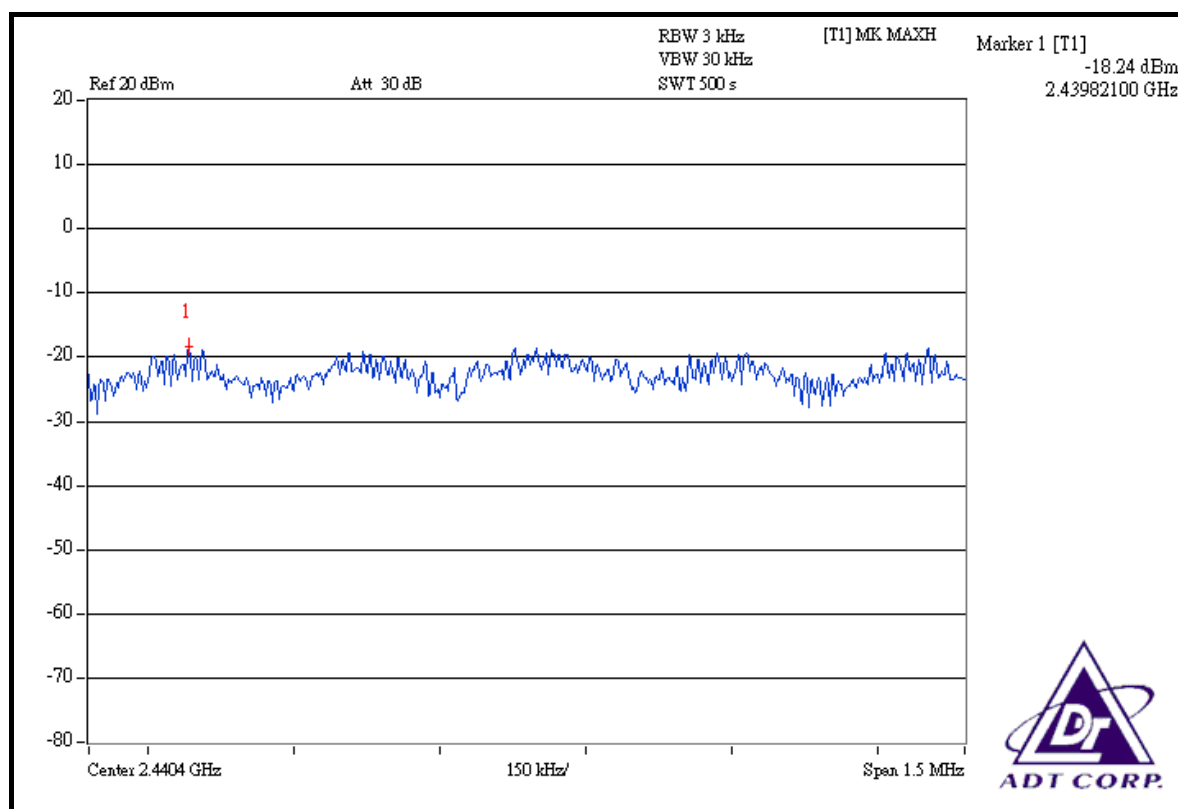
CH 7



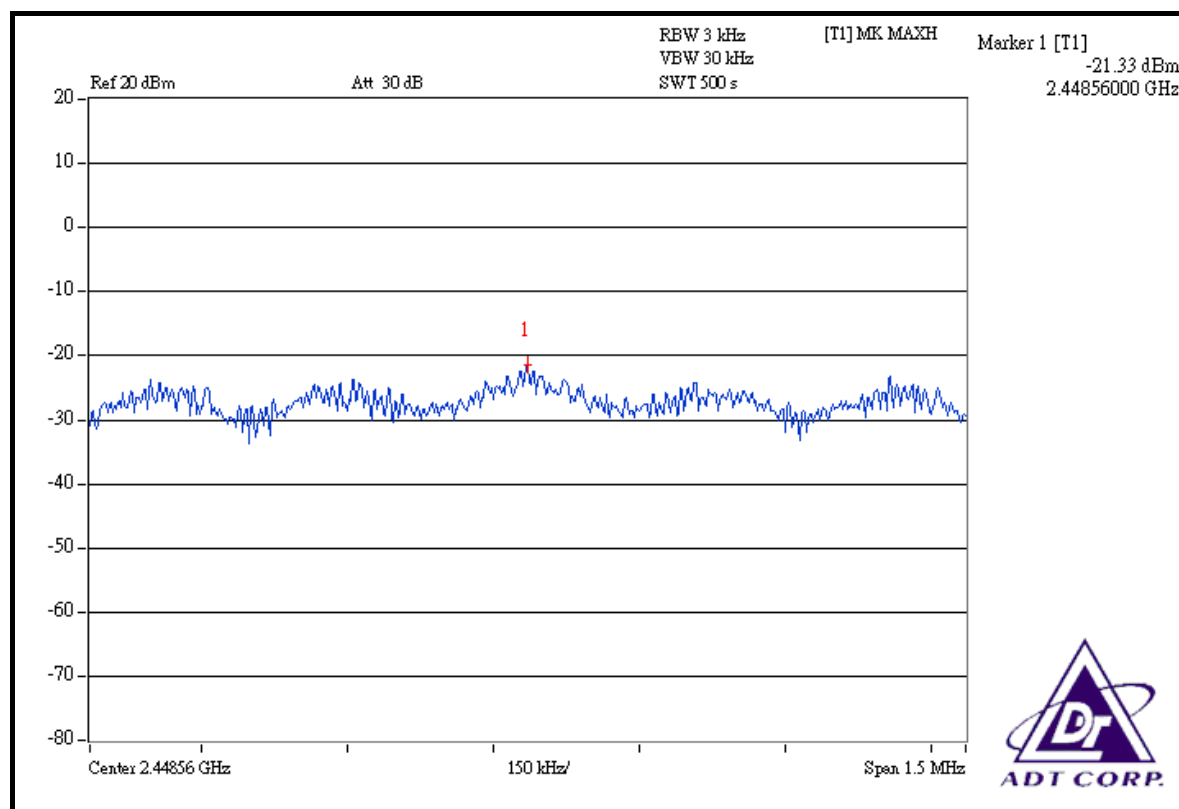
FOR CHAIN 1: CH 1



CH 4



CH 7



4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
802.11b, 802.11g:			
R&S SPECTRUM ANALYZER	FSP40	100040	Apr. 11, 2008
DRAFT 802.11n (20MHz), DRAFT 802.11n (40MHz):			
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Aug. 04, 2007
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100025	Oct. 05, 2007
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	May 31, 2008
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jun. 27, 2007
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 28, 2007
Preamplifier Agilent	8447D	2944A10633	Oct. 26, 2007
Preamplifier Agilent	8449B	3008A01964	Oct. 26, 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 inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	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 loss cable. 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.

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).

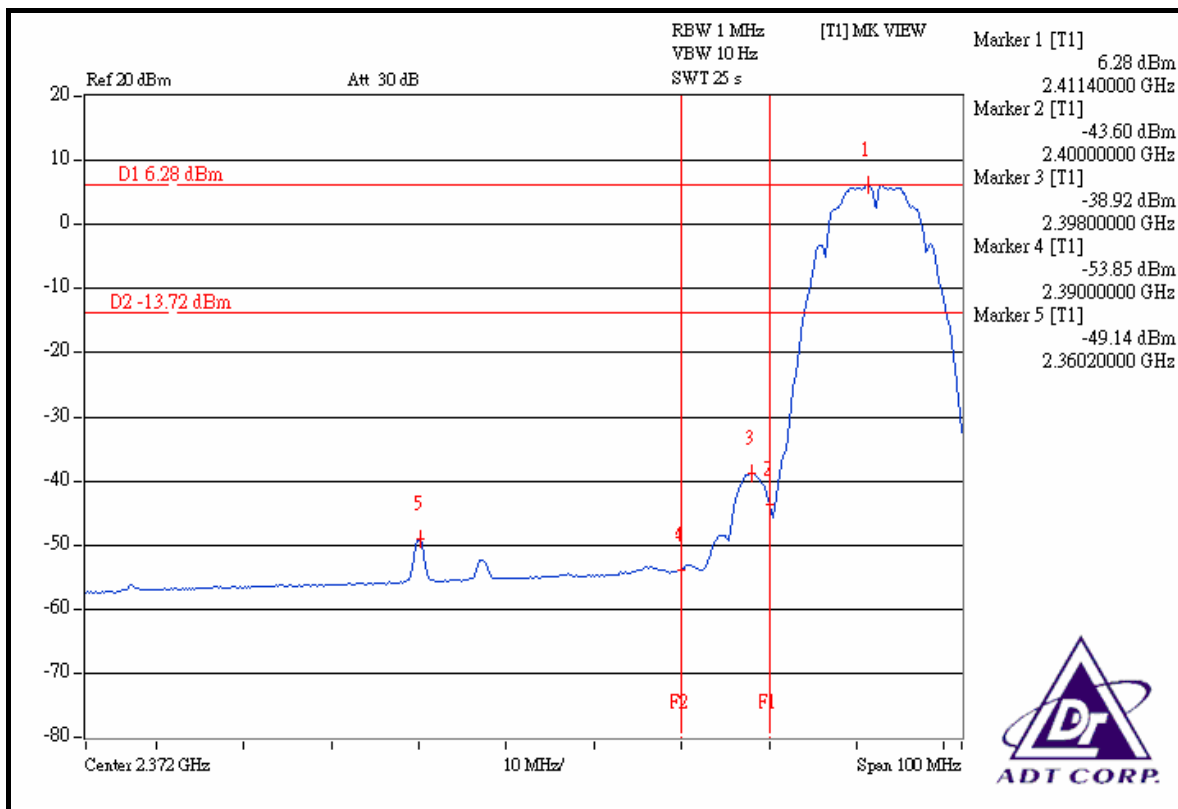
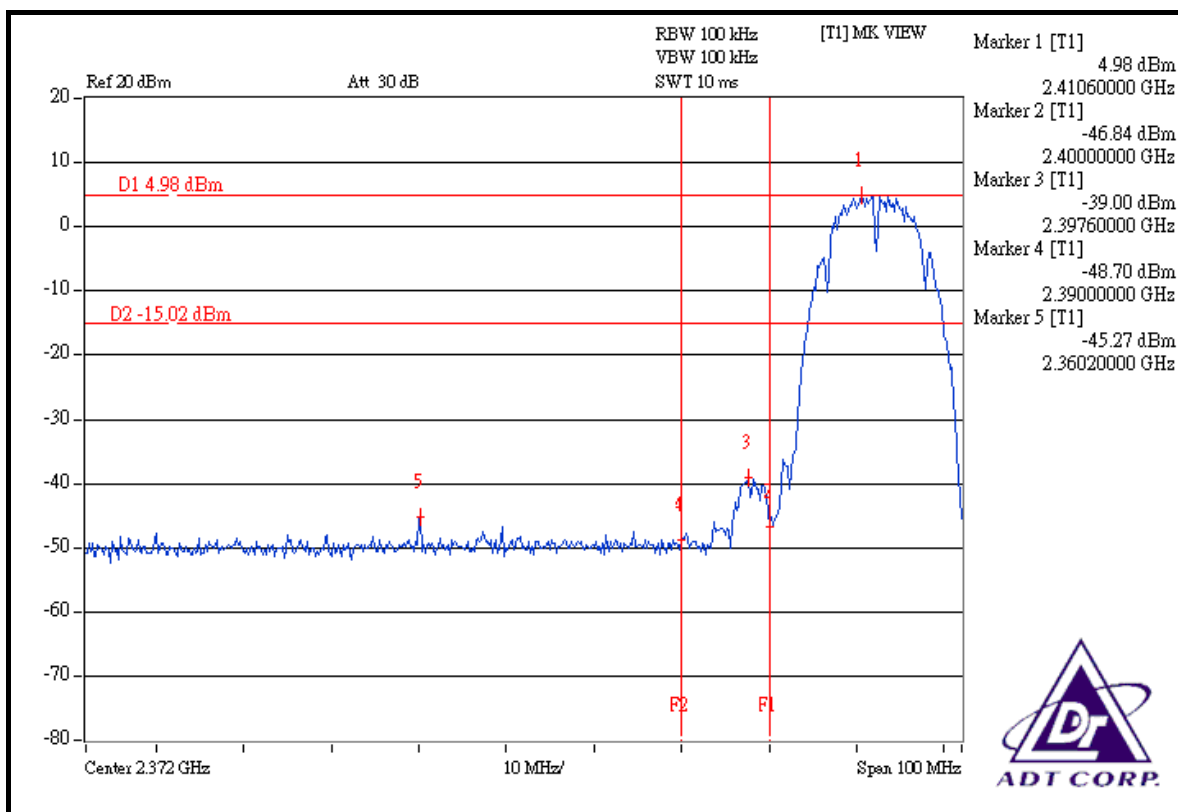
802.11b DSSS MODULATION:

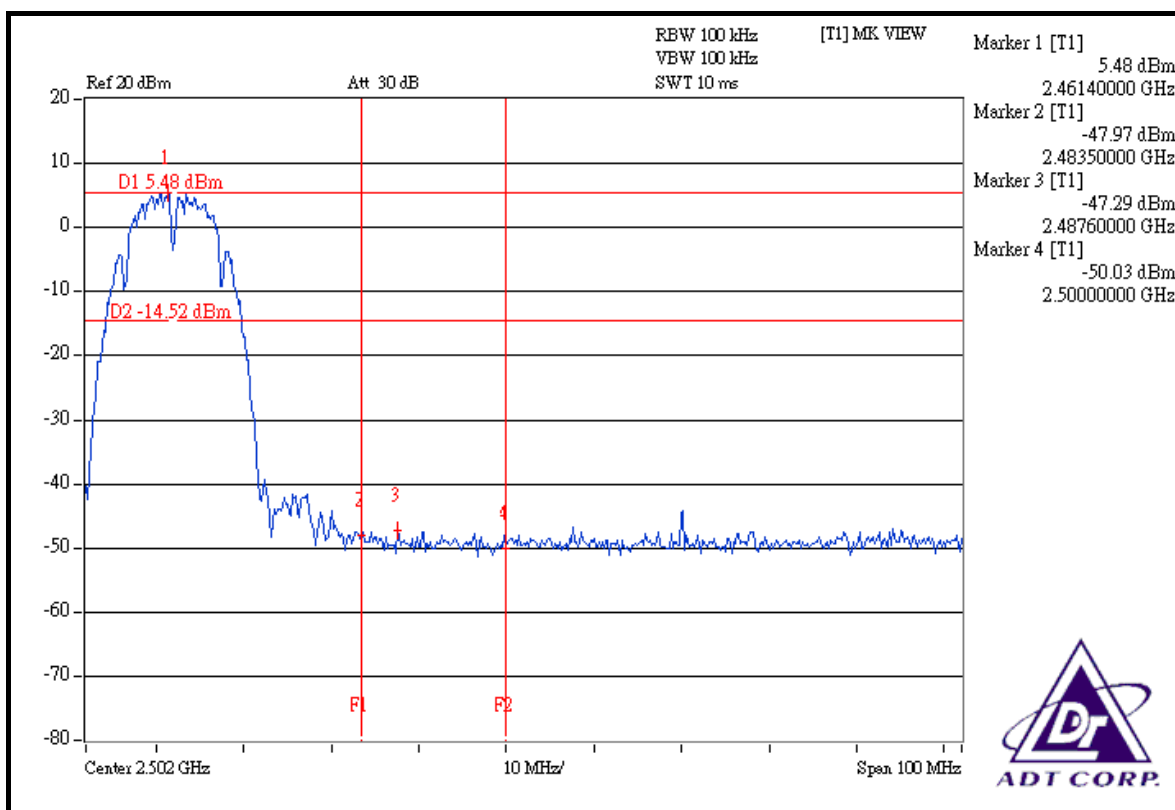
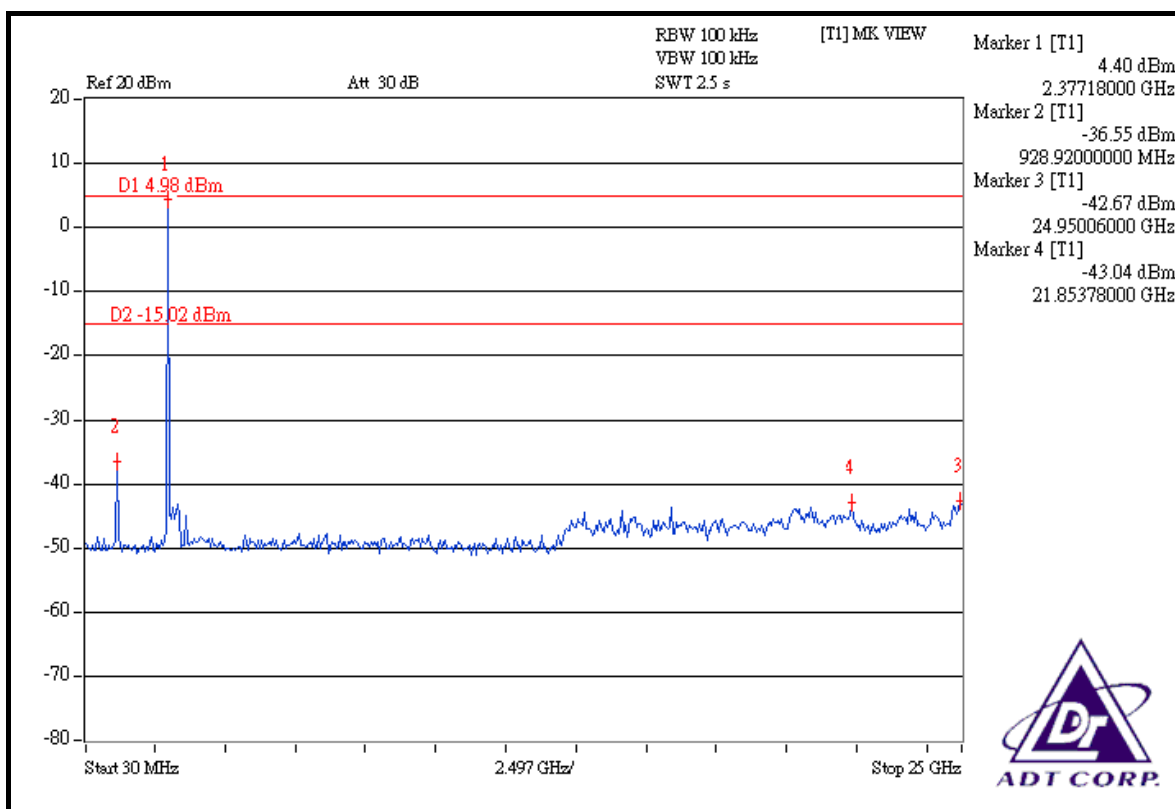
NOTE 1: The band edge emission plot on the next page shows 50.25dBc between carrier maximum power and local maximum emission in restrict band (2.36020GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 110.03dBuV/m (Peak), so the maximum field strength in restrict band is $110.03 - 50.25 = 59.78\text{dBuV/m}$ which is under 74dBuV/m limit.

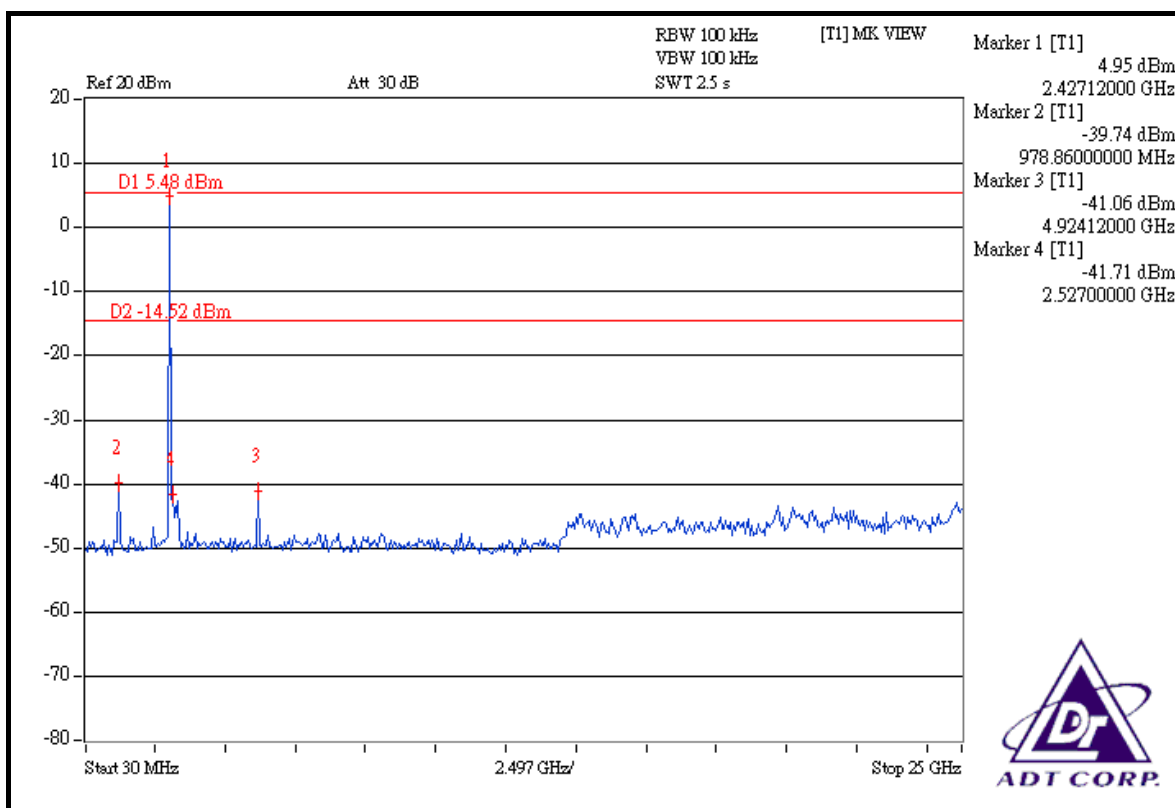
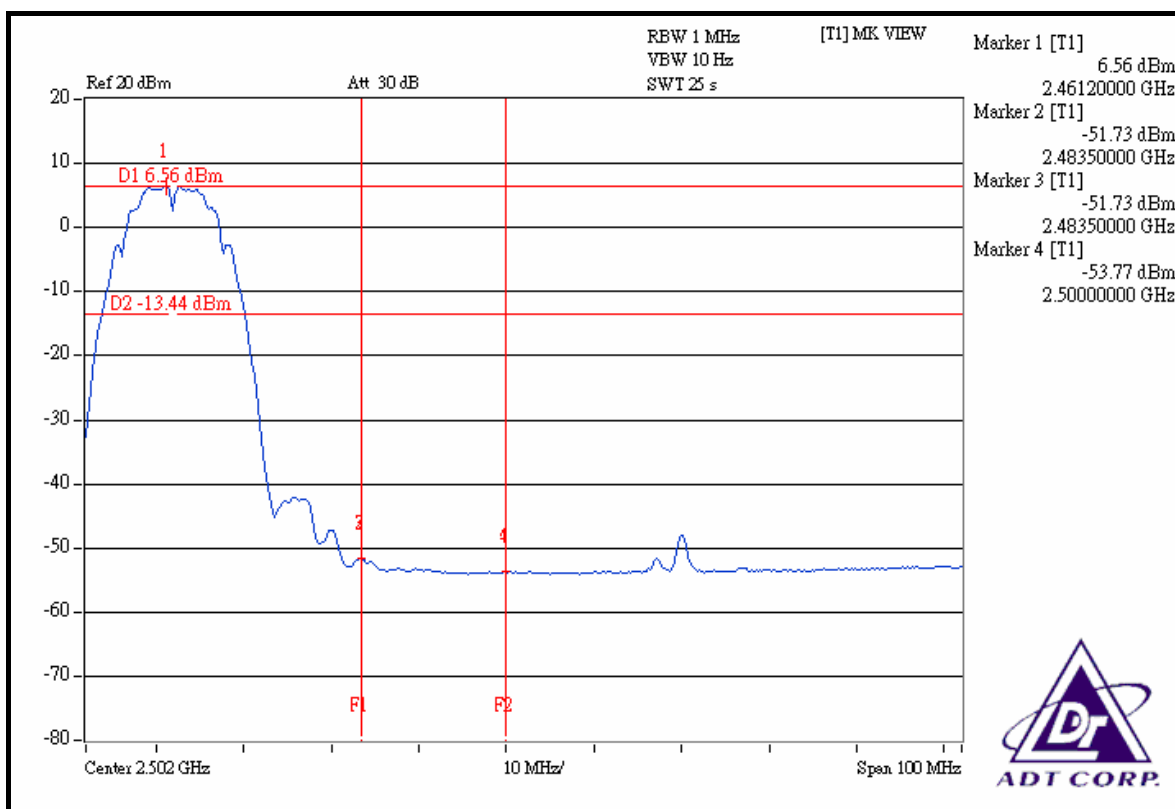
The band edge emission plot of on the next page shows 55.42dBc between carrier maximum power and local maximum emission in restrict band (2.36020GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 105.43dBuV/m (Average), so the maximum field strength in restrict band is $105.43 - 55.42 = 50.01\text{dBuV/m}$ which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on the next second page shows 52.77dBc between carrier maximum power and local maximum emission in restrict band (2.48760GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 110.13dBuV/m (Peak), so the maximum field strength in restrict band is $110.13 - 52.77 = 57.36\text{dBuV/m}$ which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 58.29dBc between carrier maximum power and local maximum emission in restrict band (2.48350GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 105.68dBuV/m (Average), so the maximum field strength in restrict band is $105.68 - 58.29 = 47.39\text{dBuV/m}$ which is under 54dBuV/m limit.







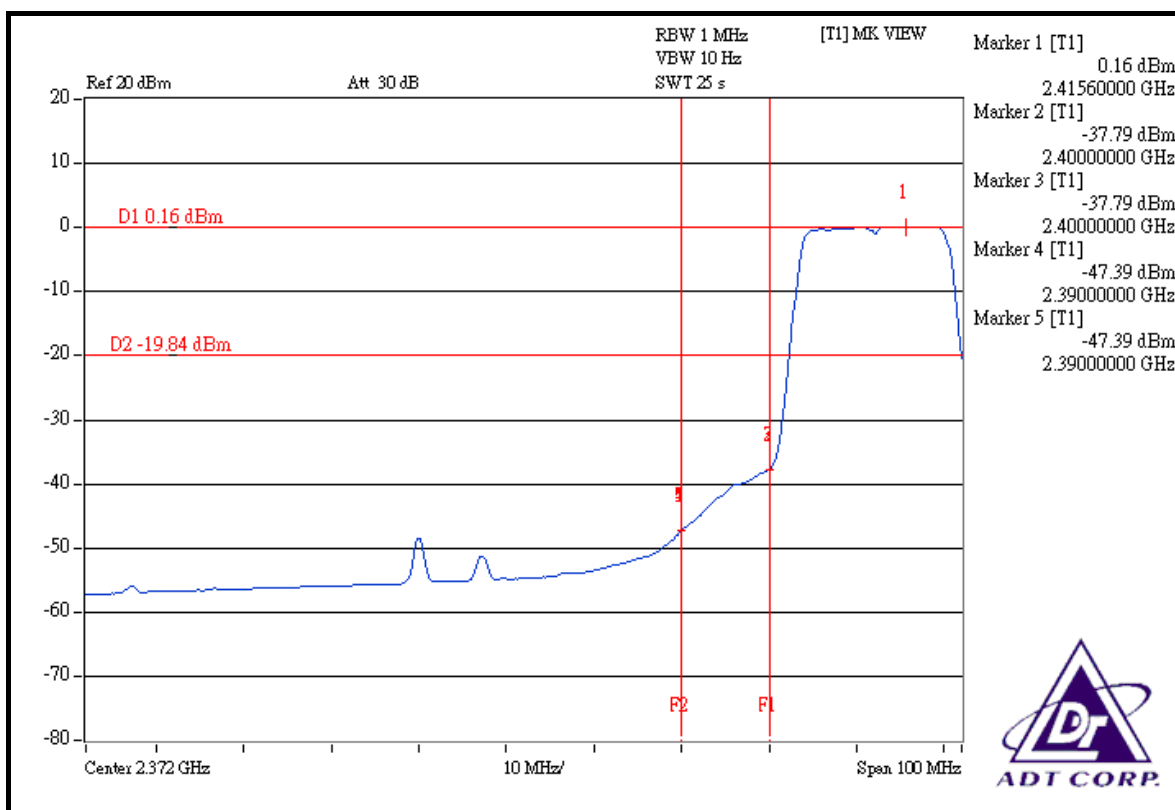
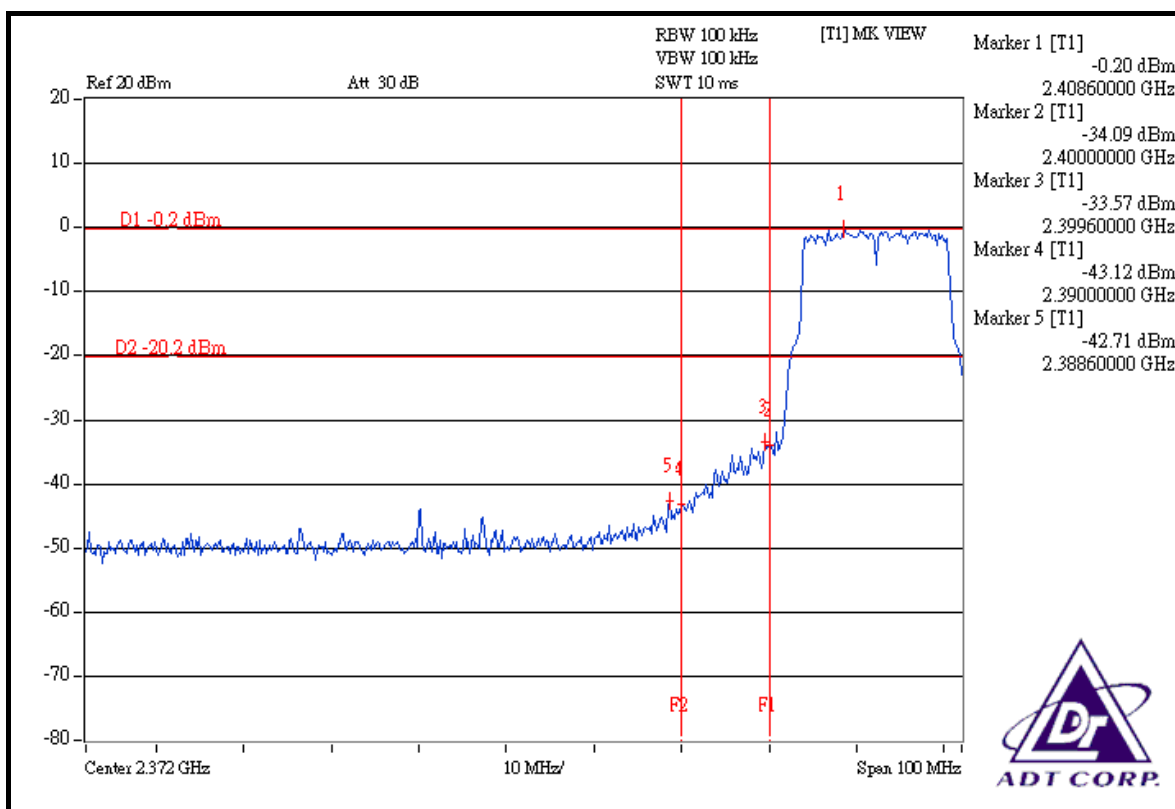
802.11g OFDM MODULATION:

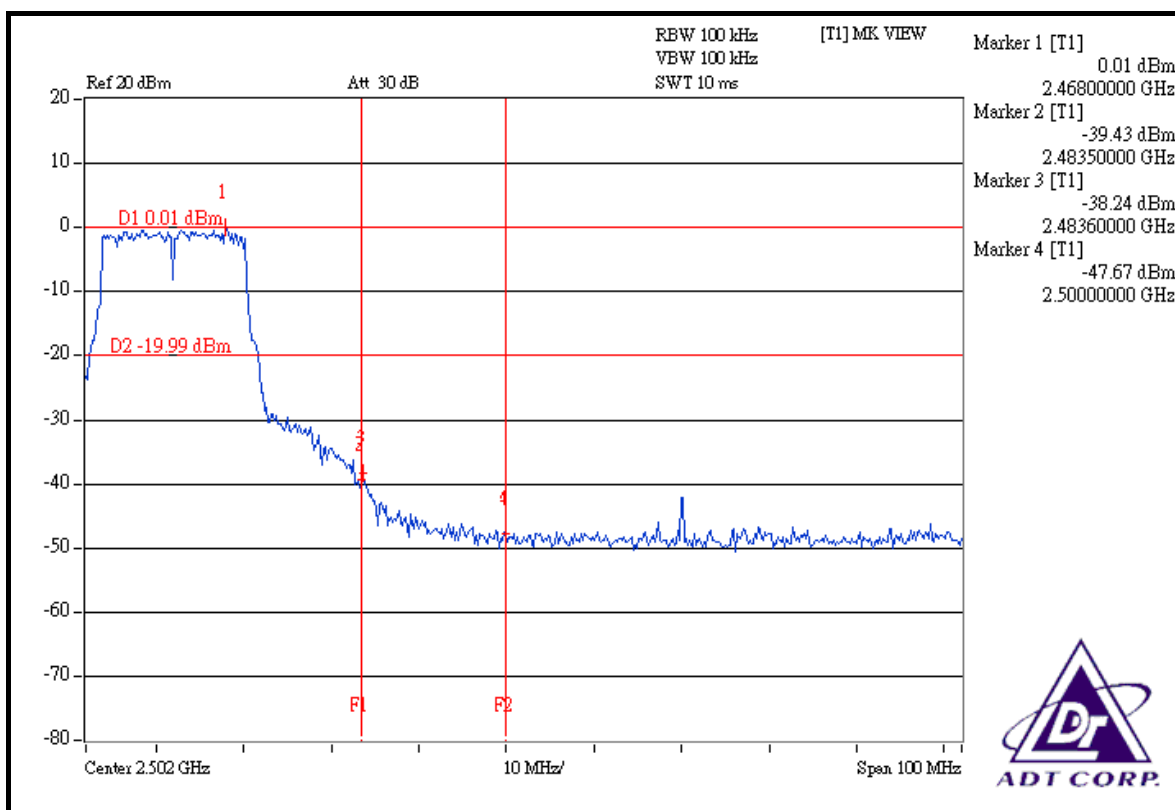
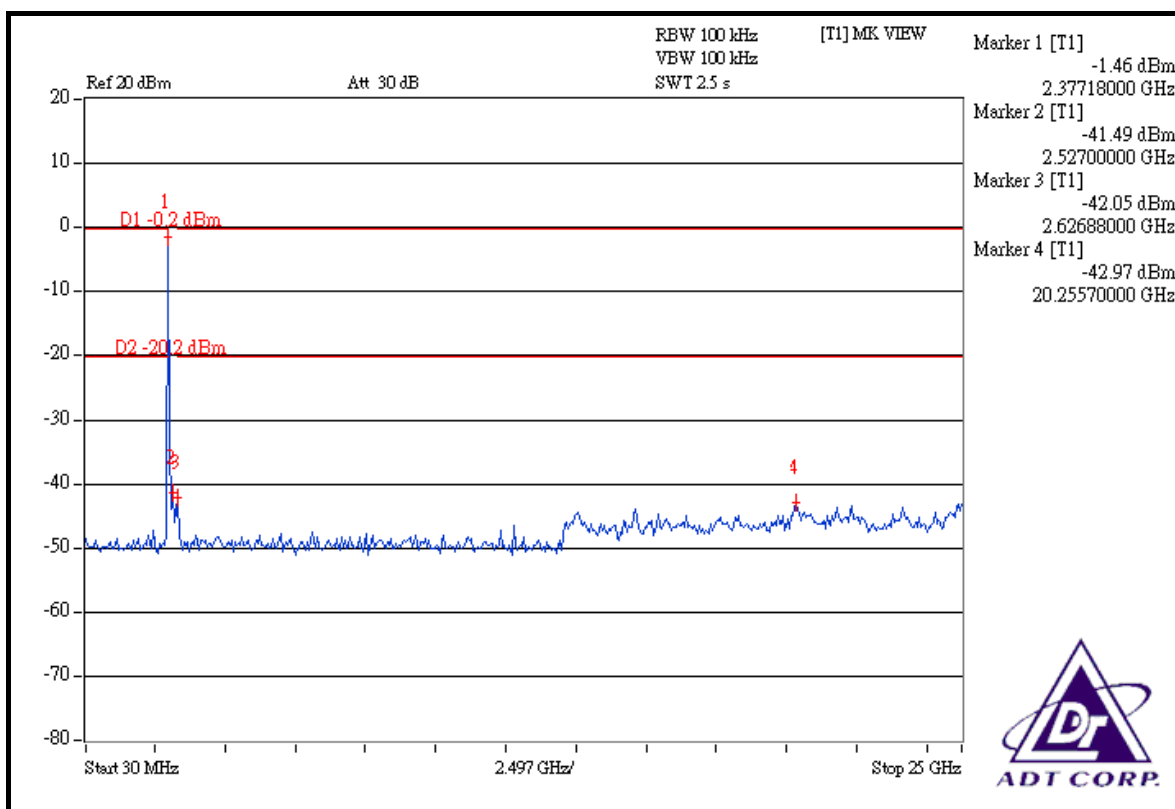
NOTE 1: The band edge emission plot on the next page shows 42.51dBc between carrier maximum power and local maximum emission in restrict band (2.38860GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 110.40dBuV/m (Peak), so the maximum field strength in restrict band is $110.40 - 42.51 = 67.89\text{dBuV/m}$ which is under 74dBuV/m limit.

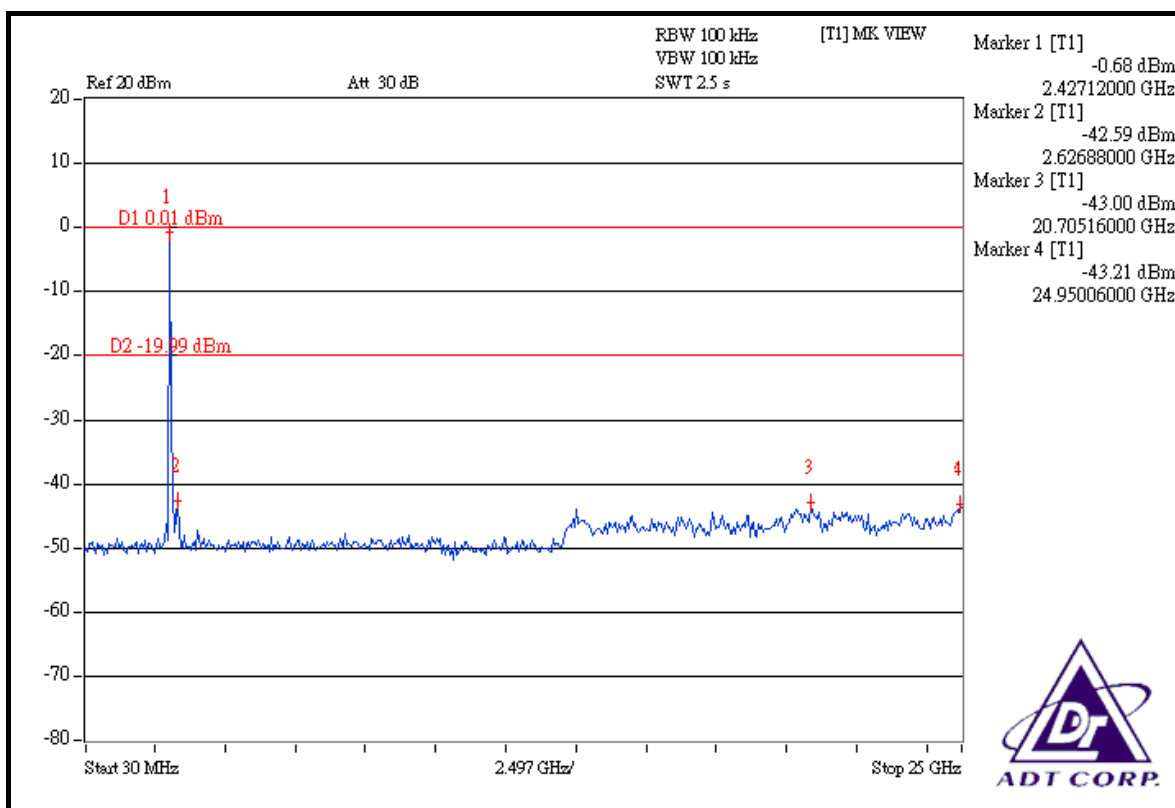
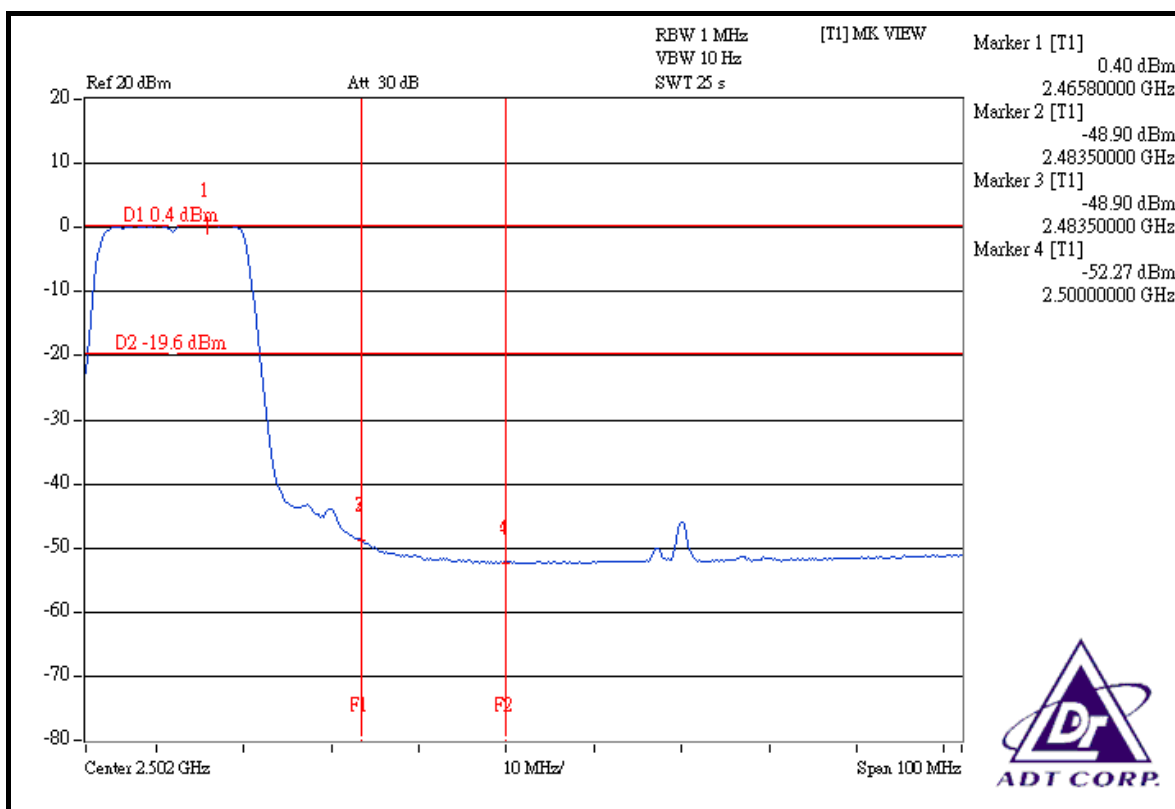
The band edge emission plot of on the next page shows 47.55dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 99.92dBuV/m (Average), so the maximum field strength in restrict band is $99.92 - 47.55 = 52.37\text{dBuV/m}$ which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on the next second page shows 38.25dBc between carrier maximum power and local maximum emission in restrict band (2.48360GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 110.81dBuV/m (Peak), so the maximum field strength in restrict band is $110.81 - 38.25 = 72.56\text{dBuV/m}$ which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 49.30dBc between carrier maximum power and local maximum emission in restrict band (2.48350GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 99.94dBuV/m (Average), so the maximum field strength in restrict band is $99.94 - 49.30 = 50.64\text{dBuV/m}$ which is under 54dBuV/m limit.







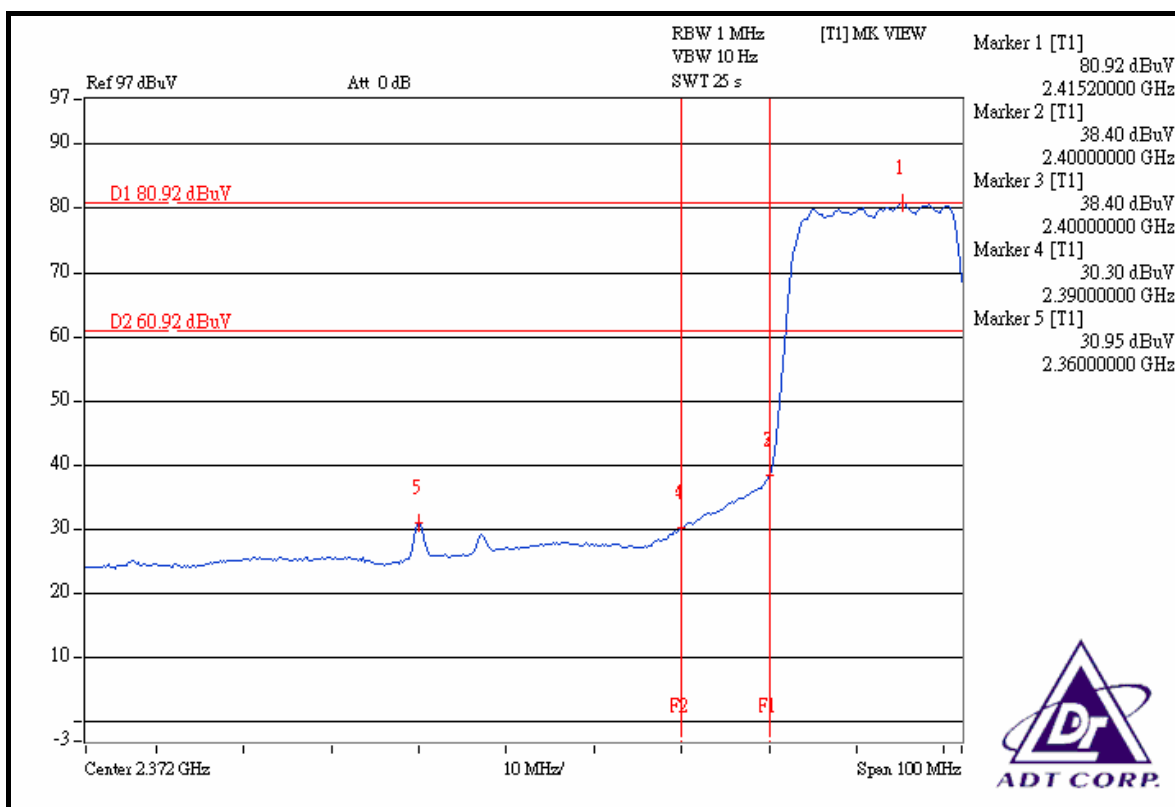
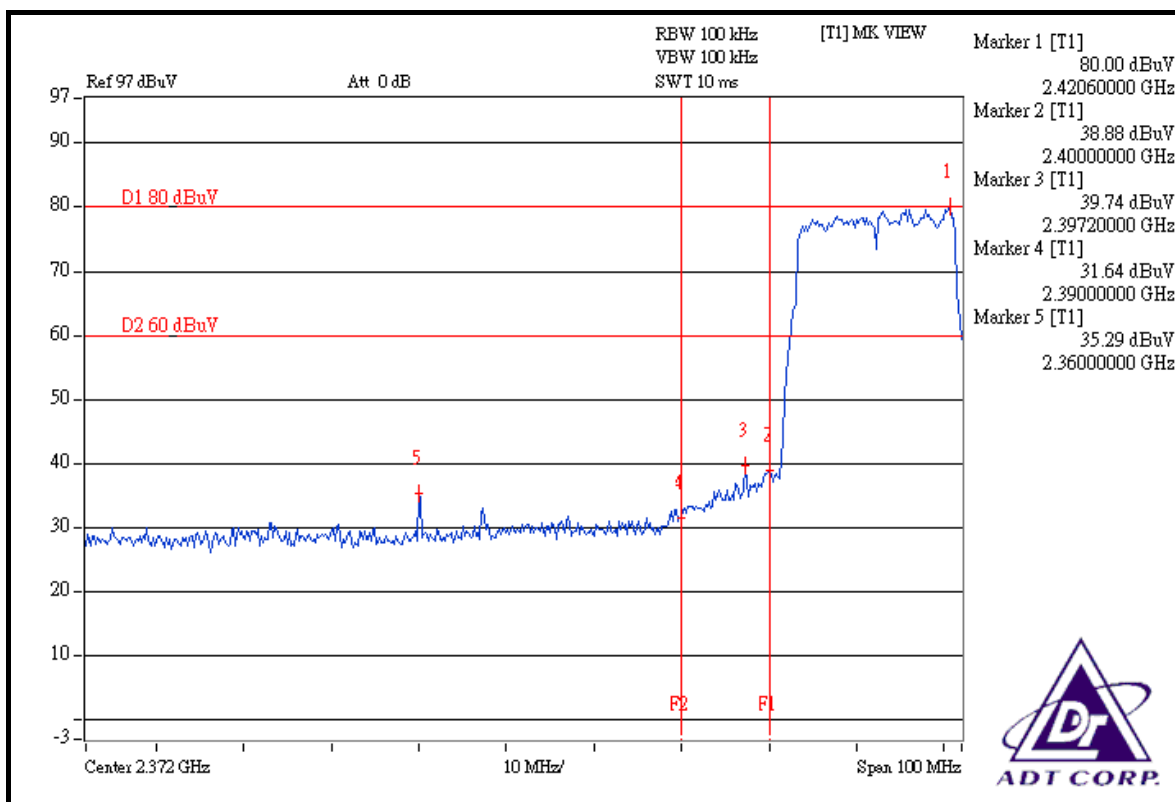
DRAFT 802.11n (20MHz) OFDM MODULATION:

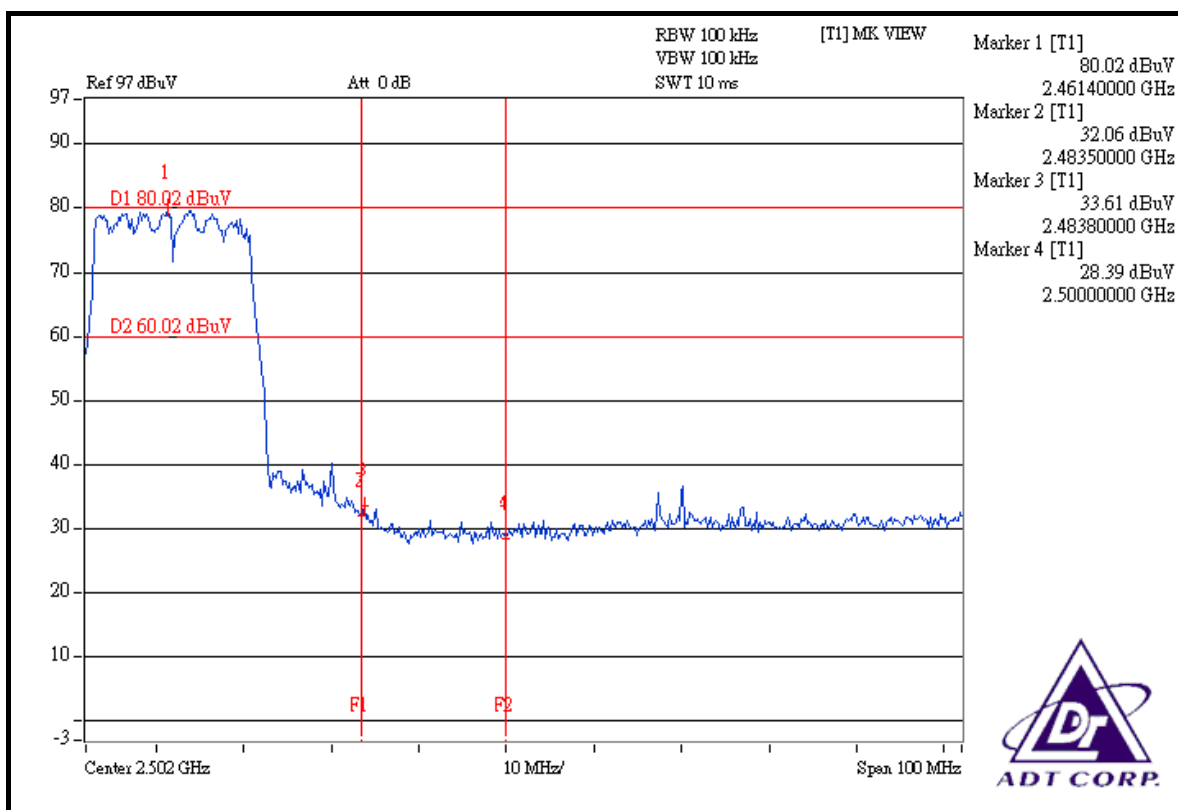
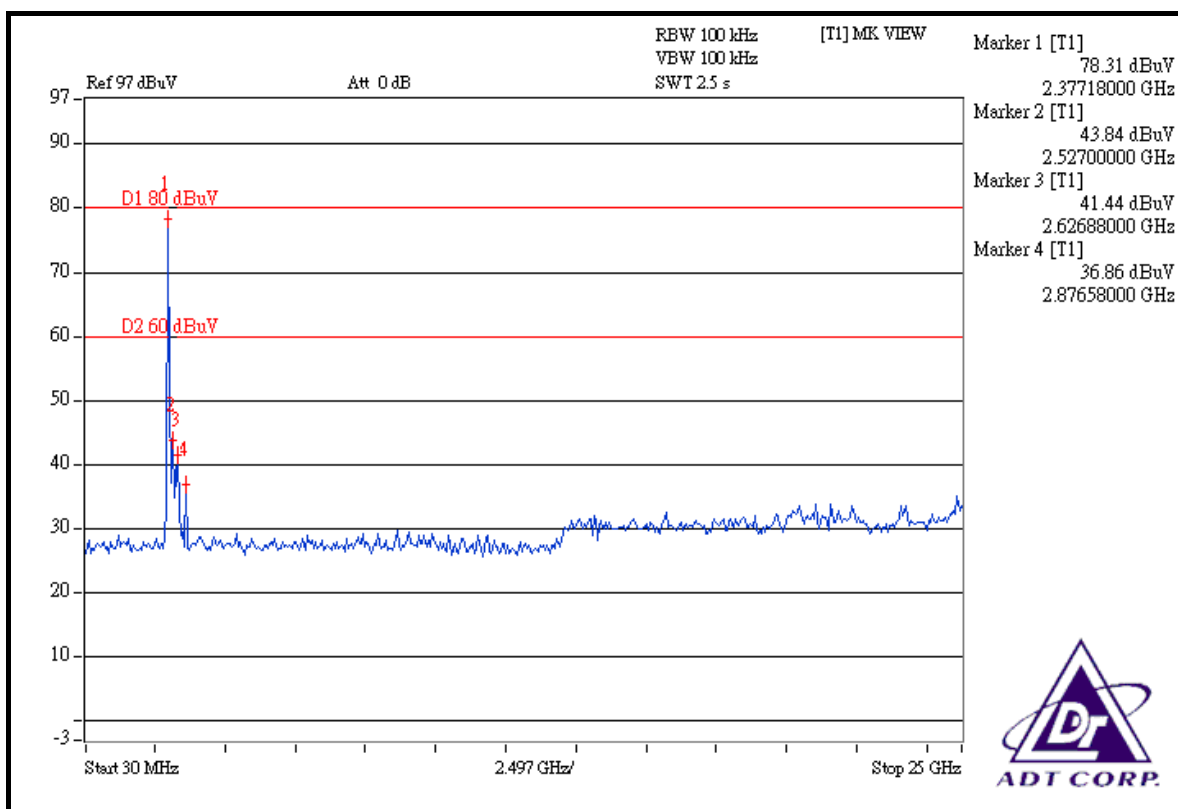
NOTE 1: The band edge emission plot on the next page shows 44.71dBc between carrier maximum power and local maximum emission in restrict band (2.36000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 110.80dBuV/m (Peak), so the maximum field strength in restrict band is $110.80 - 44.71 = 66.09\text{dBuV/m}$ which is under 74dBuV/m limit.

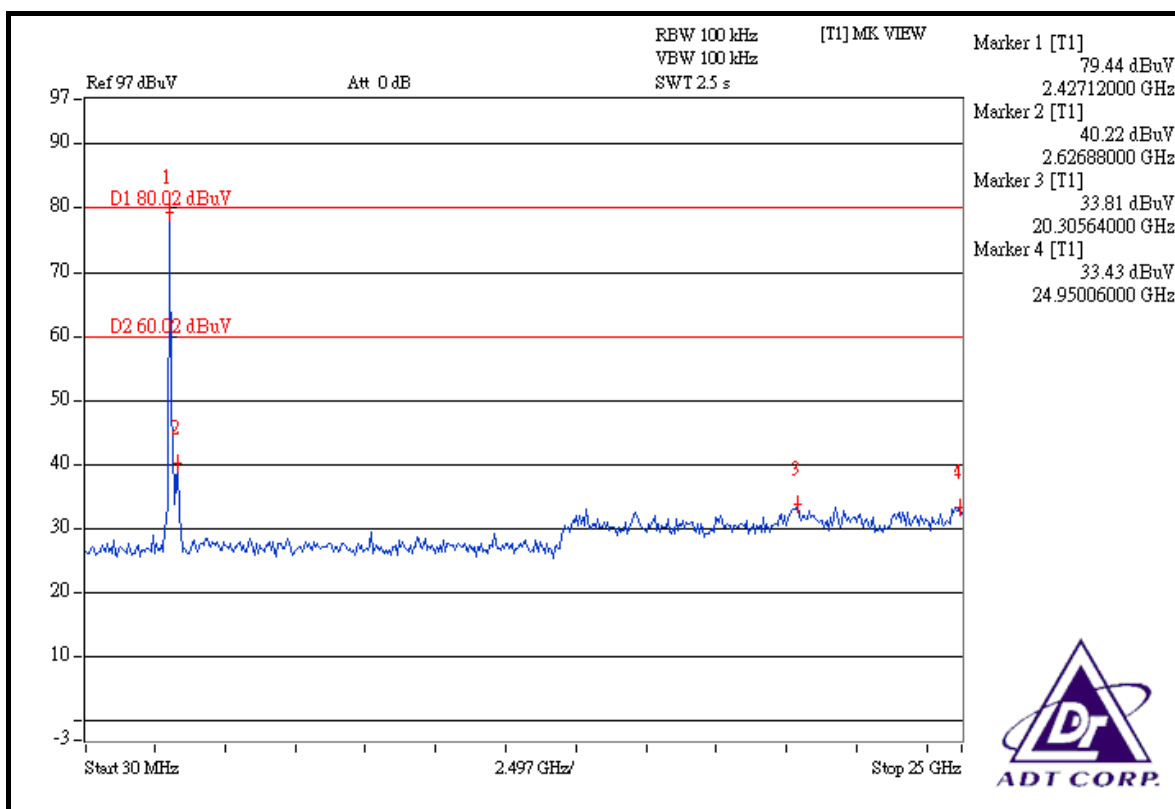
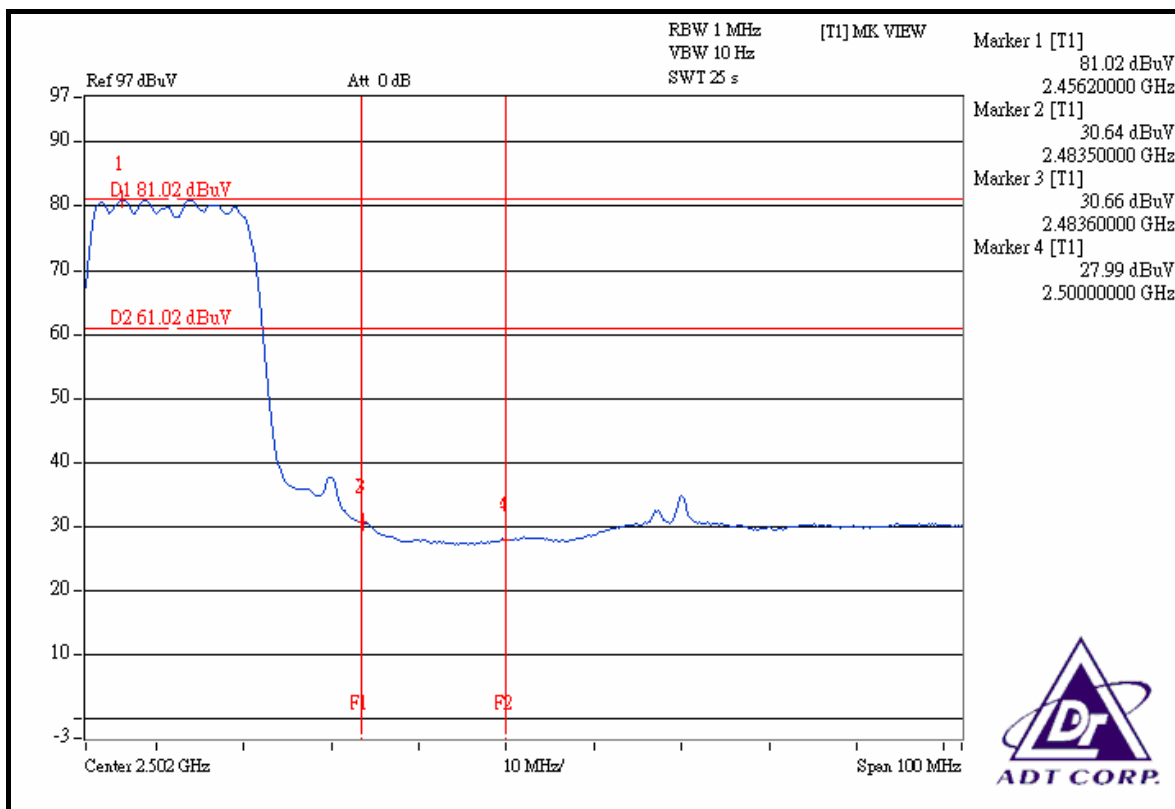
The band edge emission plot of on the next page shows 49.97dBc between carrier maximum power and local maximum emission in restrict band (2.36000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 101.25dBuV/m (Average), so the maximum field strength in restrict band is $101.25 - 49.97 = 51.28\text{dBuV/m}$ which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on the next second page shows 46.41dBc between carrier maximum power and local maximum emission in restrict band (2.48380GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 110.54dBuV/m (Peak), so the maximum field strength in restrict band is $110.54 - 46.41 = 64.13\text{dBuV/m}$ which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 50.36dBc between carrier maximum power and local maximum emission in restrict band (2.48360GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 100.88dBuV/m (Average), so the maximum field strength in restrict band is $100.88 - 50.36 = 50.52\text{dBuV/m}$ which is under 54dBuV/m limit.







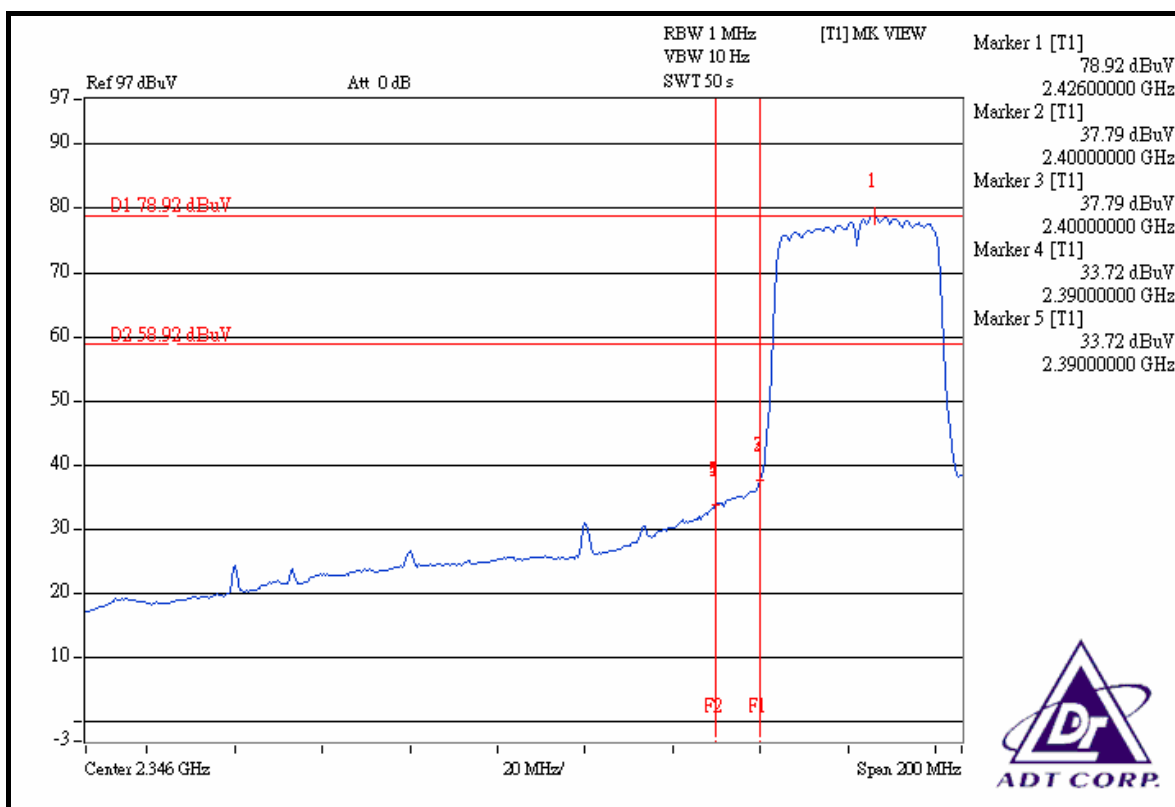
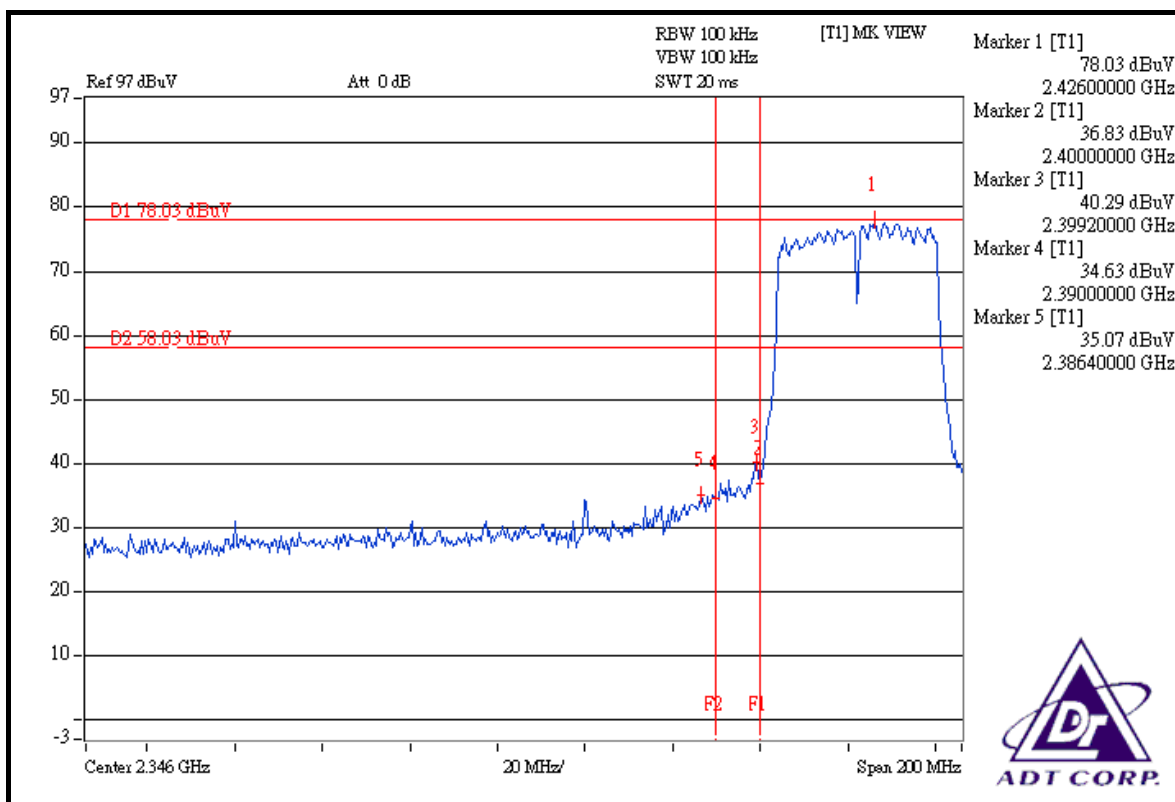
DRAFT 802.11n (40MHz) OFDM MODULATION:

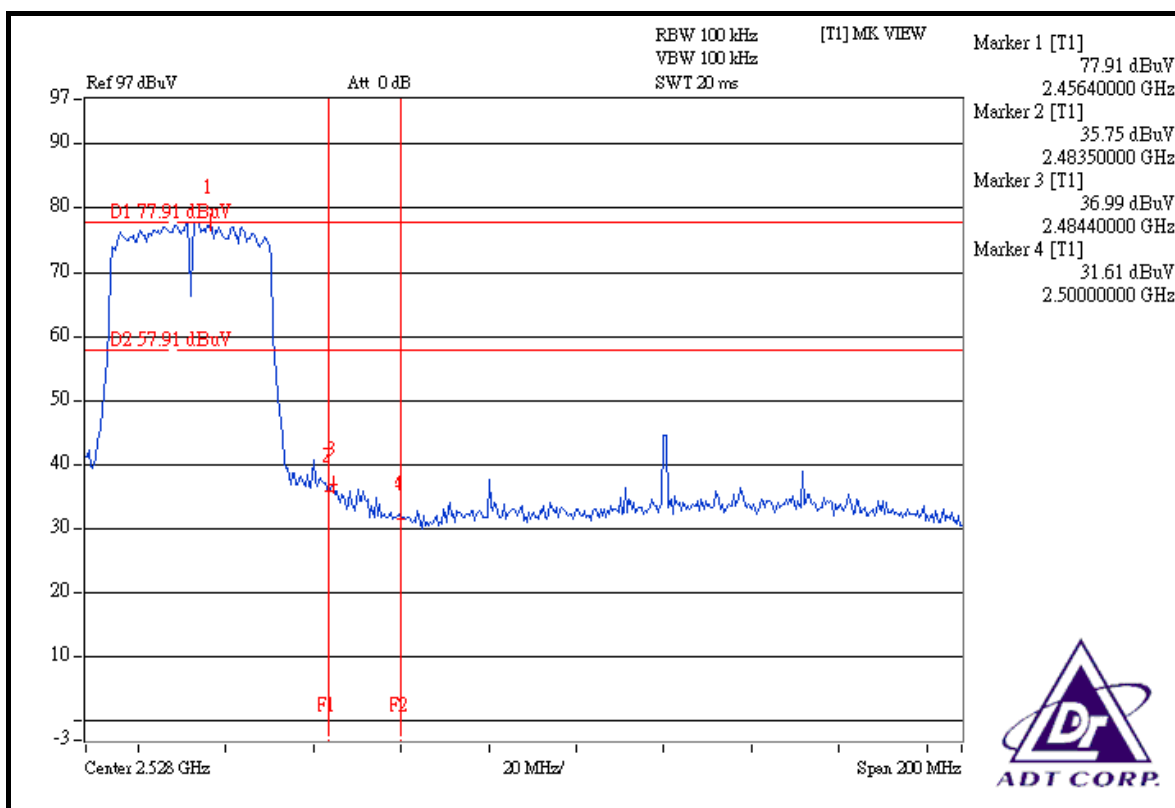
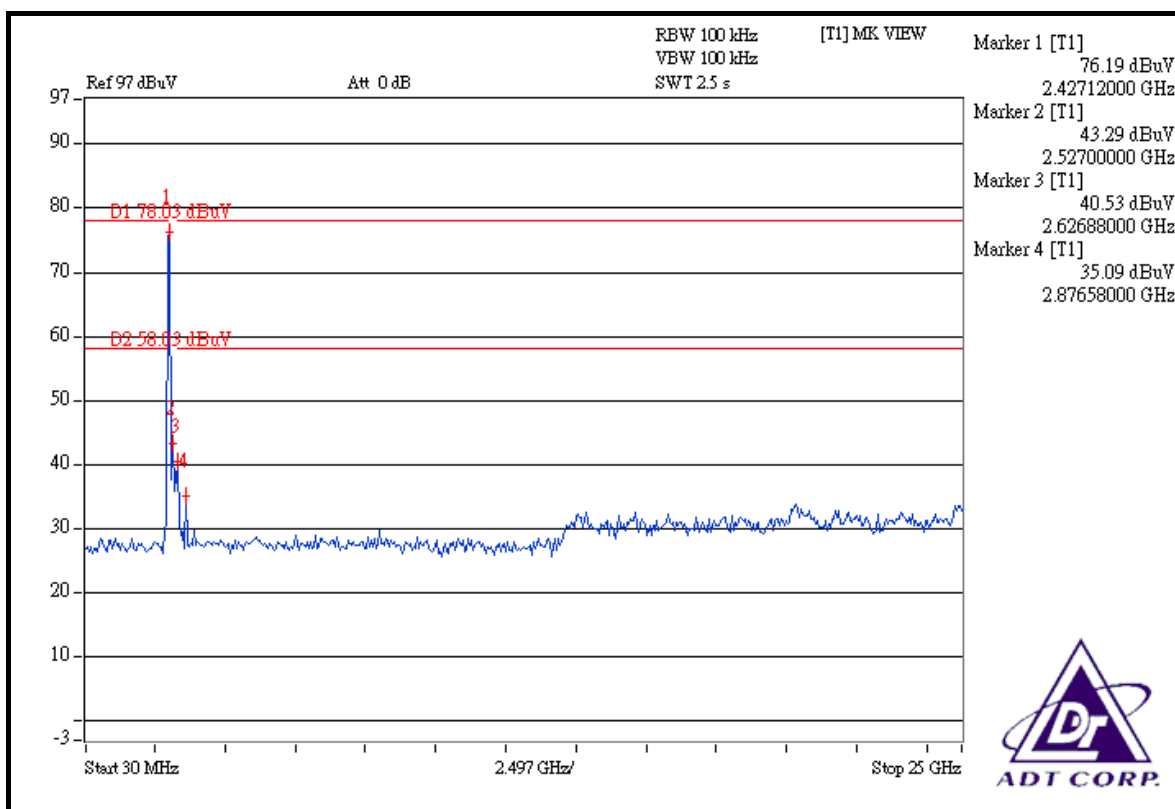
NOTE 1: The band edge emission plot on the next page shows 42.96dBc between carrier maximum power and local maximum emission in restrict band (2.38640GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 106.23dBuV/m (Peak), so the maximum field strength in restrict band is $106.23 - 42.96 = 63.27\text{dBuV/m}$ which is under 74dBuV/m limit.

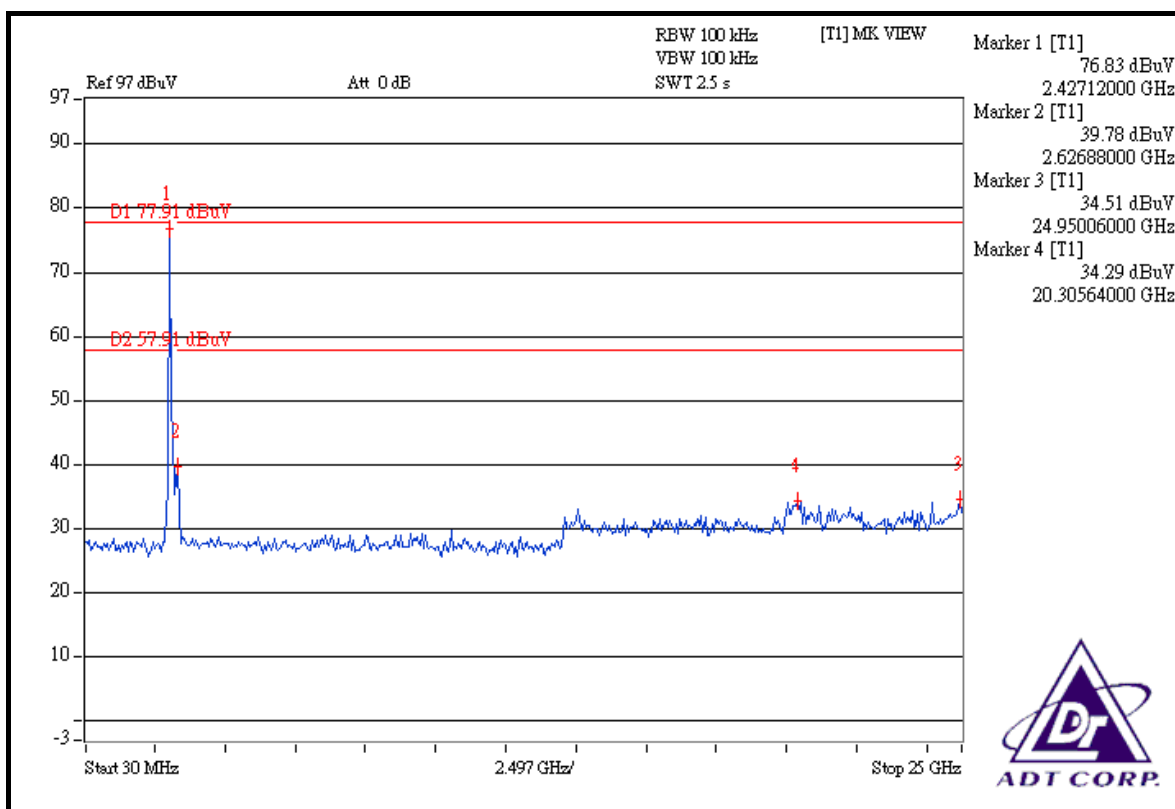
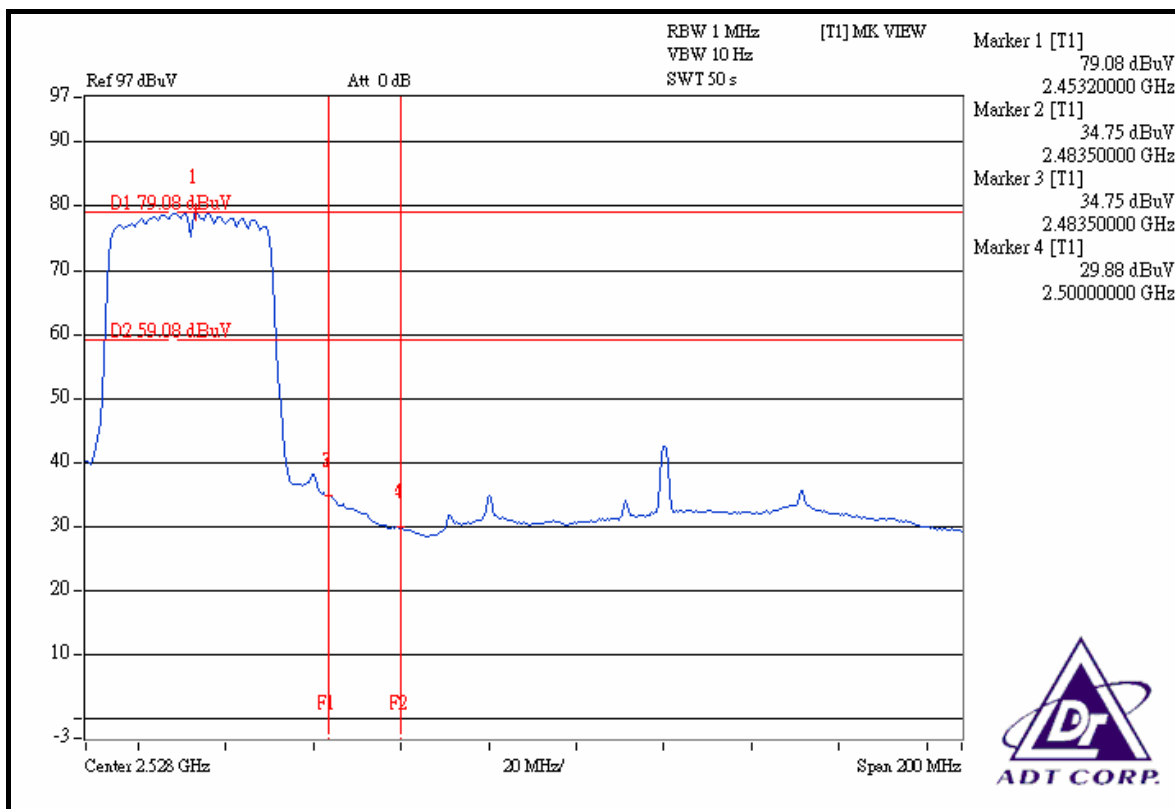
The band edge emission plot of on the next page shows 45.20dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 96.53dBuV/m (Average), so the maximum field strength in restrict band is $96.53 - 45.20 = 51.33\text{dBuV/m}$ which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on the next second page shows 40.92dBc between carrier maximum power and local maximum emission in restrict band (2.48440GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 104.02dBuV/m (Peak), so the maximum field strength in restrict band is $104.02 - 40.92 = 63.10\text{dBuV/m}$ which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 44.33dBc between carrier maximum power and local maximum emission in restrict band (2.48350GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 94.45dBuV/m (Average), so the maximum field strength in restrict band is $94.45 - 44.33 = 50.12\text{dBuV/m}$ which is under 54dBuV/m limit.







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 with Ipex connector. The maximum Gain of the antenna is -3.5dBi.

5. TEST TYPES AND RESULTS (FOR 5725 ~ 5850MHz)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 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.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Sep. 25, 2007
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.

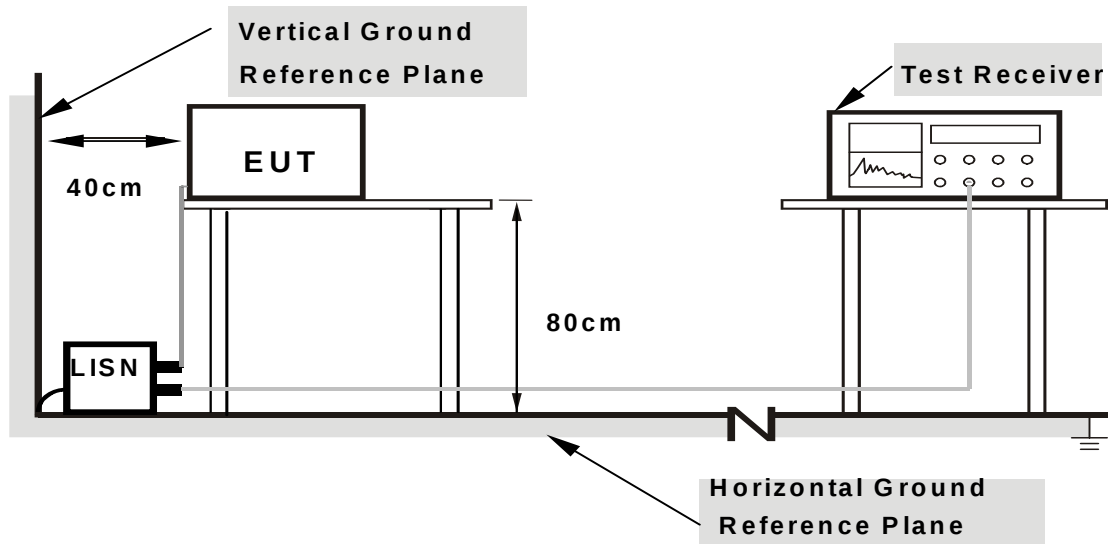
5.1.3 TEST PROCEDURES

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

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 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).

5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6

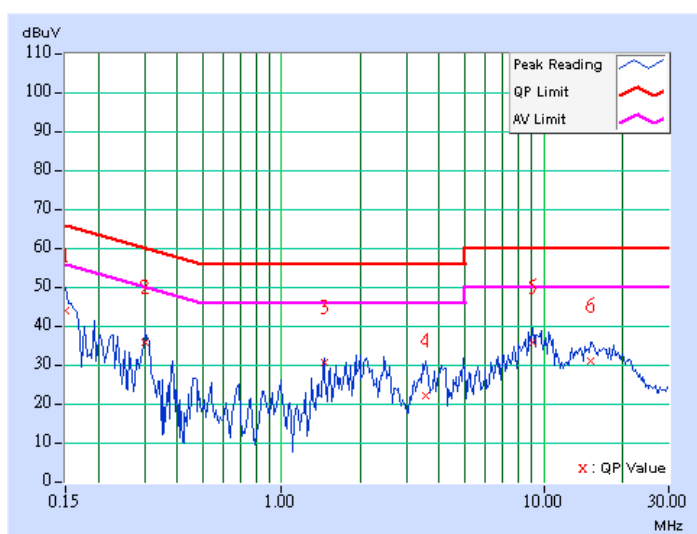
5.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA: 802.11a OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	43.53	-	43.63	-	66.00	56.00	-22.37	-
2	0.302	0.10	35.58	-	35.68	-	60.18	50.18	-24.50	-
3	1.453	0.16	30.25	-	30.41	-	56.00	46.00	-25.59	-
4	3.555	0.27	21.90	-	22.17	-	56.00	46.00	-33.83	-
5	9.094	0.32	35.59	-	35.91	-	60.00	50.00	-24.09	-
6	15.066	0.48	30.75	-	31.23	-	60.00	50.00	-28.77	-

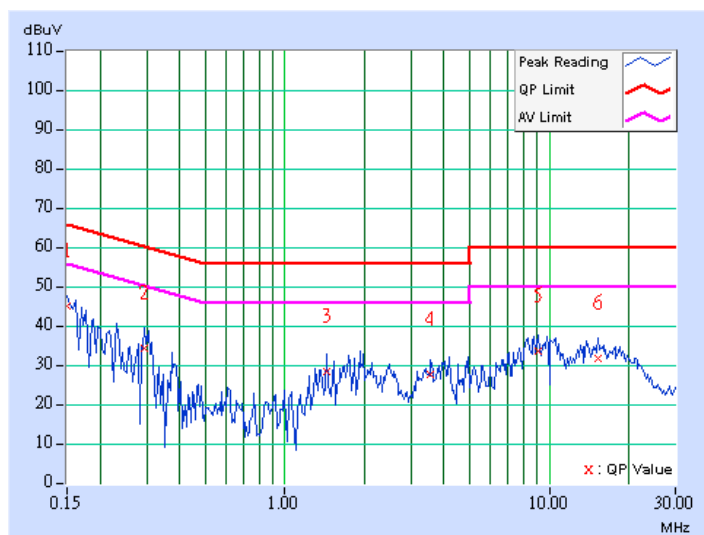
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	44.64	-	44.74	-	66.00	56.00	-21.26	-
2	0.295	0.10	34.03	-	34.13	-	60.40	50.40	-26.27	-
3	1.445	0.21	28.11	-	28.32	-	56.00	46.00	-27.68	-
4	3.566	0.27	27.16	-	27.43	-	56.00	46.00	-28.57	-
5	9.086	0.41	33.24	-	33.65	-	60.00	50.00	-26.35	-
6	15.359	0.49	31.30	-	31.79	-	60.00	50.00	-28.21	-

- 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.

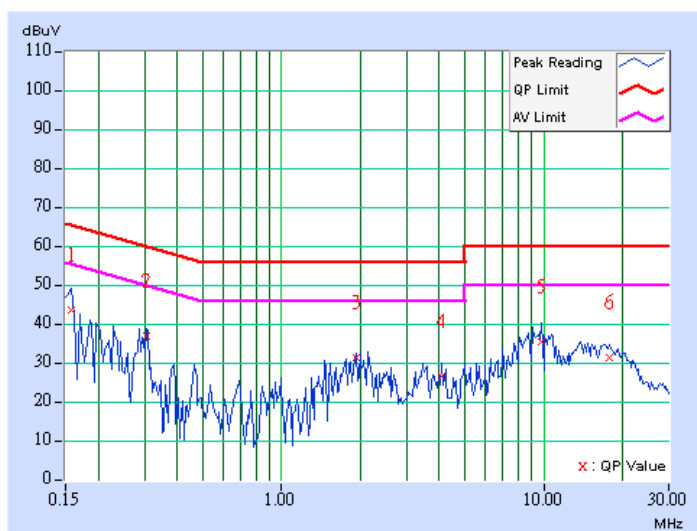


DRAFT 802.11n (20MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	7.2Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.10	43.32	-	43.42	-	65.58	55.58	-22.16	-
2	0.306	0.10	36.42	-	36.52	-	60.07	50.07	-23.55	-
3	1.918	0.21	31.00	-	31.21	-	56.00	46.00	-24.79	-
4	4.066	0.28	25.96	-	26.24	-	56.00	46.00	-29.76	-
5	9.836	0.33	35.19	-	35.52	-	60.00	50.00	-24.48	-
6	17.836	0.53	30.96	-	31.49	-	60.00	50.00	-28.51	-

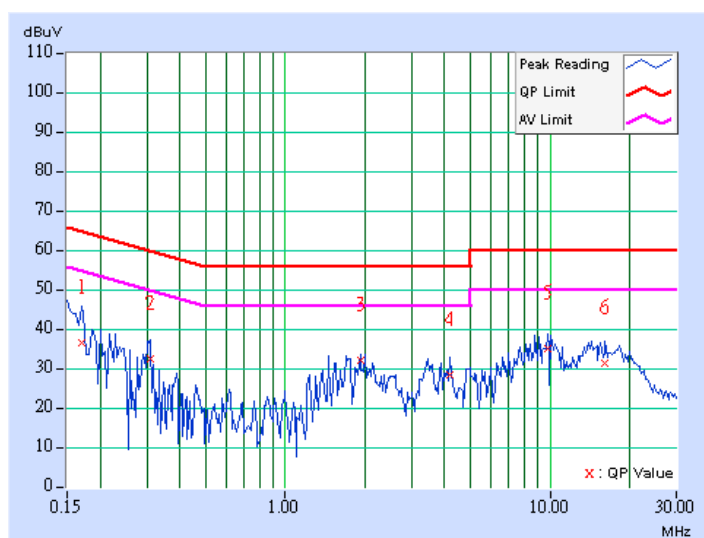
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	7.2Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.170	0.10	36.23	-	36.33	-	64.98	54.98	-28.65	-
2	0.310	0.10	32.10	-	32.20	-	59.97	49.97	-27.77	-
3	1.918	0.22	31.65	-	31.87	-	56.00	46.00	-24.13	-
4	4.211	0.29	27.90	-	28.19	-	56.00	46.00	-27.81	-
5	9.824	0.43	34.51	-	34.94	-	60.00	50.00	-25.06	-
6	16.113	0.50	31.06	-	31.56	-	60.00	50.00	-28.44	-

- 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.

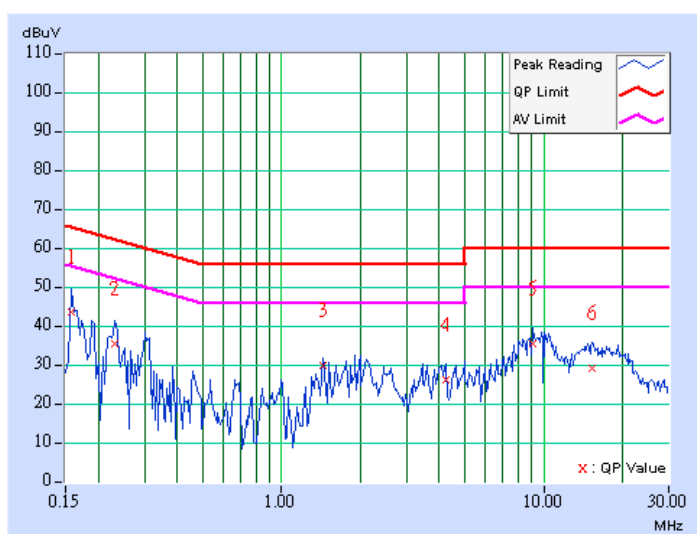


DRAFT 802.11n (40MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	15.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.10	43.27	-	43.37	-	65.58	55.58	-22.21	-
2	0.232	0.10	35.03	-	35.13	-	62.38	52.38	-27.25	-
3	1.441	0.16	29.33	-	29.49	-	56.00	46.00	-26.51	-
4	4.223	0.28	25.68	-	25.96	-	56.00	46.00	-30.04	-
5	9.059	0.32	34.97	-	35.29	-	60.00	50.00	-24.71	-
6	15.391	0.49	28.76	-	29.25	-	60.00	50.00	-30.75	-

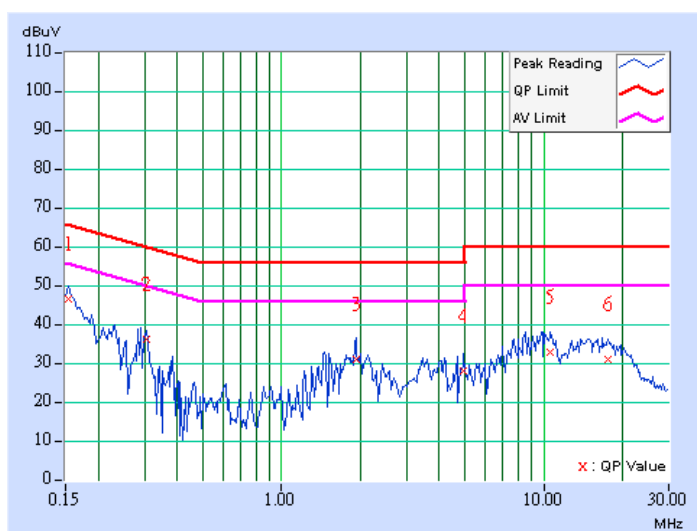
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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
TRANSFER RATE	15.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 985hPa	TESTED BY	Brad Wu

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.10	46.17	-	46.27	-	65.79	55.79	-19.52	-
2	0.306	0.10	35.93	-	36.03	-	60.07	50.07	-24.04	-
3	1.922	0.22	30.43	-	30.65	-	56.00	46.00	-25.35	-
4	4.969	0.30	27.73	-	28.03	-	56.00	46.00	-27.97	-
5	10.574	0.44	32.62	-	33.06	-	60.00	50.00	-26.94	-
6	17.582	0.53	30.48	-	31.01	-	60.00	50.00	-28.99	-

- 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.



5.2 RADIATED EMISSION MEASUREMENT

5.2.1 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.

5.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Aug. 04, 2007
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100025	Oct. 05, 2007
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	May 31, 2008
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jun. 27, 2007
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 28, 2007
Preamplifier Agilent	8447D	2944A10633	Oct. 26, 2007
Preamplifier Agilent	8449B	3008A01964	Oct. 26, 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 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.

5.2.3 TEST PROCEDURES

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

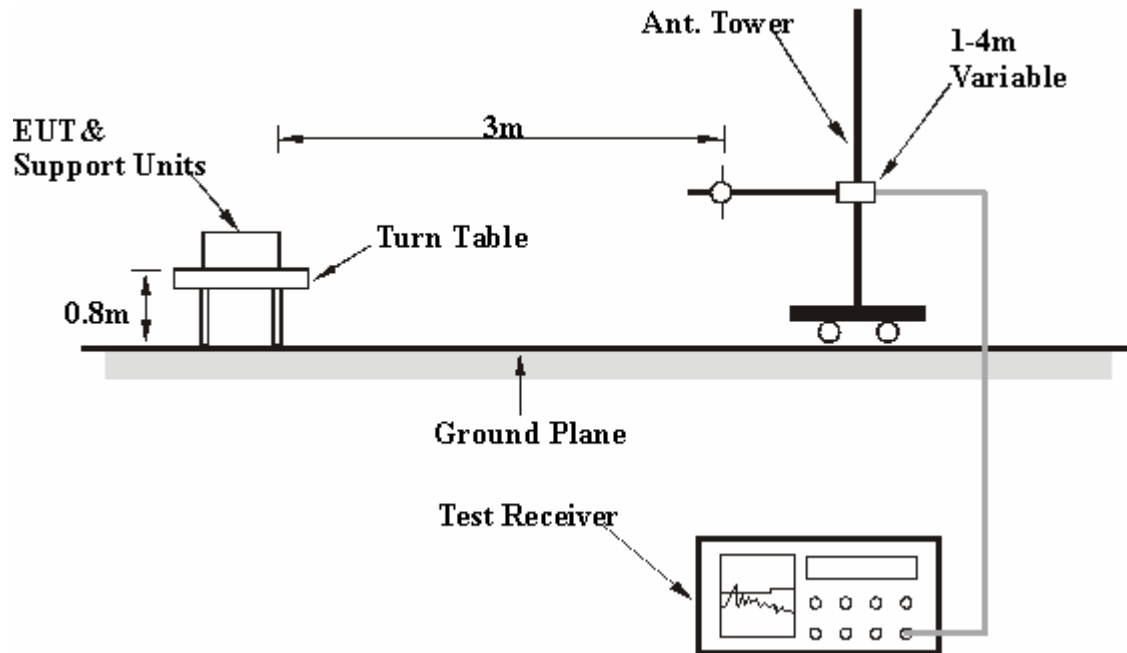
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation

5.2.5 TEST SETUP



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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	64.90	23.52 QP	40.00	-16.48	2.00 H	322	10.17	13.35
2	99.89	34.42 QP	43.50	-9.08	2.00 H	172	24.25	10.18
3	132.95	35.67 QP	43.50	-7.83	2.50 H	349	22.31	13.36
4	166.00	35.10 QP	43.50	-8.40	1.50 H	343	21.04	14.06
5	199.05	32.19 QP	43.50	-11.31	2.00 H	187	20.84	11.34
6	232.11	32.84 QP	46.00	-13.16	1.50 H	355	20.15	12.69
7	331.26	40.12 QP	46.00	-5.88	1.00 H	214	24.15	15.97
8	399.31	33.53 QP	46.00	-12.47	2.00 H	190	15.90	17.62
9	465.42	31.35 QP	46.00	-14.65	1.50 H	211	11.67	19.67
10	601.52	28.70 QP	46.00	-17.30	1.00 H	244	6.21	22.49
11	733.73	30.58 QP	46.00	-15.42	1.00 H	202	5.40	25.18
12	762.90	28.95 QP	46.00	-17.05	1.00 H	214	3.24	25.71
13	865.94	30.88 QP	46.00	-15.12	1.50 H	292	3.72	27.16
14	899.00	28.27 QP	46.00	-17.73	1.00 H	10	0.68	27.59
15	918.44	28.31 QP	46.00	-17.69	1.50 H	25	0.45	27.86

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	31.84	27.82 QP	40.00	-12.18	2.00 V	73	14.28	13.54
2	64.90	25.22 QP	40.00	-14.78	1.50 V	217	11.87	13.35
3	99.89	27.86 QP	43.50	-15.64	1.50 V	37	17.68	10.18
4	166.00	28.16 QP	43.50	-15.34	1.00 V	226	14.10	14.06
5	199.05	27.46 QP	43.50	-16.04	1.00 V	148	16.11	11.34
6	333.21	33.52 QP	46.00	-12.48	1.50 V	16	17.50	16.02
7	399.31	29.24 QP	46.00	-16.76	1.00 V	349	11.61	17.62
8	463.48	30.91 QP	46.00	-15.09	1.00 V	202	11.27	19.64
9	733.73	31.98 QP	46.00	-14.02	1.50 V	283	6.81	25.18
10	865.94	28.73 QP	46.00	-17.27	2.00 V	4	1.57	27.16
11	924.27	28.82 QP	46.00	-17.18	1.50 V	109	0.88	27.95

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

DRAFT 802.11n (20MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	99.89	33.82 QP	43.50	-9.68	2.00 H	190	23.65	10.18
2	132.95	30.92 QP	43.50	-12.58	2.00 H	157	17.56	13.36
3	166.00	36.04 QP	43.50	-7.46	1.50 H	355	21.98	14.06
4	199.05	34.31 QP	43.50	-9.19	2.00 H	1	22.97	11.34
5	232.11	33.74 QP	46.00	-12.26	2.00 H	340	21.04	12.69
6	265.16	30.28 QP	46.00	-15.72	1.00 H	328	16.26	14.01
7	333.21	41.59 QP	46.00	-4.41	1.00 H	214	25.57	16.02
8	399.31	33.31 QP	46.00	-12.69	2.00 H	211	15.68	17.62
9	465.42	30.91 QP	46.00	-15.09	2.00 H	229	11.23	19.67
10	599.58	30.61 QP	46.00	-15.39	1.00 H	259	8.17	22.45
11	741.51	31.34 QP	46.00	-14.66	1.50 H	358	5.93	25.40
12	865.94	32.08 QP	46.00	-13.92	1.50 H	292	4.92	27.16

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	31.84	30.45 QP	40.00	-9.55	1.50 V	28	16.91	13.54
2	64.90	27.75 QP	40.00	-12.25	1.00 V	265	14.40	13.35
3	125.17	29.94 QP	43.50	-13.56	1.50 V	310	17.01	12.93
4	177.67	29.20 QP	43.50	-14.30	1.00 V	235	16.02	13.18
5	333.21	35.18 QP	46.00	-10.82	2.00 V	10	19.16	16.02
6	397.37	30.06 QP	46.00	-15.94	1.00 V	328	12.48	17.58
7	733.73	30.46 QP	46.00	-15.54	1.50 V	280	5.28	25.18

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.

DRAFT 802.11n (40MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	99.89	28.36 QP	43.50	-15.14	2.00 H	175	18.19	10.18
2	166.00	32.47 QP	43.50	-11.03	2.00 H	178	18.41	14.06
3	199.05	33.11 QP	43.50	-10.39	2.00 H	178	21.77	11.34
4	232.11	33.99 QP	46.00	-12.01	1.50 H	352	21.30	12.69
5	333.21	41.06 QP	46.00	-4.94	1.00 H	226	25.04	16.02
6	397.37	33.57 QP	46.00	-12.43	2.00 H	205	15.99	17.58
7	465.42	31.37 QP	46.00	-14.63	2.00 H	223	11.70	19.67
8	601.52	33.29 QP	46.00	-12.71	1.00 H	235	10.79	22.49
9	741.51	31.57 QP	46.00	-14.43	1.00 H	226	6.17	25.40
10	862.06	32.60 QP	46.00	-13.40	1.50 H	283	5.49	27.11

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	31.84	29.89 QP	40.00	-10.11	1.50 V	10	16.35	13.54
2	64.90	27.36 QP	40.00	-12.64	1.00 V	247	14.01	13.35
3	125.17	29.12 QP	43.50	-14.38	1.50 V	346	16.20	12.93
4	177.67	28.78 QP	43.50	-14.72	1.00 V	199	15.61	13.18
5	333.21	34.63 QP	46.00	-11.37	1.50 V	10	18.61	16.02
6	733.73	30.96 QP	46.00	-15.04	1.50 V	244	5.78	25.18
7	862.06	30.17 QP	46.00	-15.83	1.50 V	205	3.06	27.11

- 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	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5725.00	78.84 PK	89.25	-10.41	1.20 H	41	38.21	40.64
2	5725.00	63.48 AV	78.46	-14.98	1.20 H	41	22.84	40.64
3	*5745.00	109.25 PK			1.22 H	42	68.56	40.69
4	*5745.00	98.46 AV			1.22 H	42	57.77	40.69
5	#11490.00	63.14 PK	74.00	-10.86	1.00 H	215	11.27	51.86
6	#11490.00	51.43 AV	54.00	-2.57	1.00 H	215	-0.43	51.86

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	76.45 PK	85.27	-8.82	1.03 V	35	35.81	40.64
2	5725.00	60.74 AV	74.60	-13.86	1.03 V	35	20.10	40.64
3	*5745.00	105.27 PK			1.00 V	20	64.58	40.69
4	*5745.00	94.60 AV			1.00 V	20	53.91	40.69
5	#11490.00	62.19 PK	74.00	-11.81	1.03 V	65	10.33	51.86
6	#11490.00	50.24 AV	54.00	-3.76	1.03 V	65	-1.62	51.86

- 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	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	109.82 PK			1.09 H	221	69.03	40.79
2	*5785.00	99.28 AV			1.09 H	221	58.49	40.79
3	#11570.00	63.58 PK	74.00	-10.42	1.03 H	226	11.98	51.60
4	#11570.00	51.63 AV	54.00	-2.37	1.03 H	226	0.03	51.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	105.14 PK			1.03 V	28	64.35	40.79
2	*5785.00	95.21 AV			1.03 V	28	54.42	40.79
3	#11570.00	61.28 PK	74.00	-12.72	1.02 V	226	9.68	51.60
4	#11570.00	49.59 AV	54.00	-4.41	1.02 V	226	-2.01	51.60

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.
6. “ # ”: The radiated frequency 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	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	108.76 PK			1.07 H	8	67.90	40.86
2	*5825.00	98.17 AV			1.07 H	8	57.31	40.86
3	5850.00	74.42 PK	88.76	-14.34	1.05 H	12	33.54	40.88
4	5850.00	61.44 AV	78.17	-16.73	1.05 H	12	20.56	40.88
5	#11650.00	63.34 PK	74.00	-10.66	1.00 H	125	11.60	51.74
6	#11650.00	51.58 AV	54.00	-2.42	1.00 H	125	-0.16	51.74

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	104.26 PK			1.12 V	35	63.40	40.86
2	*5825.00	94.12 AV			1.12 V	35	53.26	40.86
3	5850.00	70.21 PK	84.26	-14.05	1.03 V	265	29.33	40.88
4	5850.00	56.79 AV	74.12	-17.33	1.03 V	265	15.91	40.88
5	#11650.00	60.18 PK	74.00	-13.82	1.05 V	214	8.44	51.74
6	#11650.00	49.21 AV	54.00	-4.79	1.05 V	214	-2.53	51.74

- REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.
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	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	85.89 PK	89.81	-3.92	1.03 H	215	45.25	40.64
2	5725.00	66.25 AV	79.20	-12.95	1.03 H	215	25.61	40.64
3	*5745.00	109.81 PK			1.00 H	231	69.12	40.69
4	*5745.00	99.20 AV			1.00 H	231	58.51	40.69
5	#11490.00	62.72 PK	74.00	-11.28	1.02 H	321	10.86	51.86
6	#11490.00	51.08 AV	54.00	-2.92	1.02 H	321	-0.78	51.86

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	81.18 PK	86.21	-5.03	1.02 V	218	40.55	40.64
2	5725.00	60.12 AV	77.74	-17.62	1.02 V	218	19.48	40.64
3	*5745.00	106.21 PK			1.03 V	229	65.52	40.69
4	*5745.00	97.74 AV			1.03 V	229	57.05	40.69
5	#11490.00	59.72 PK	74.00	-14.28	1.00 V	216	7.86	51.86
6	#11490.00	49.08 AV	54.00	-4.92	1.00 V	216	-2.78	51.86

- 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	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	109.32 PK			1.02 H	332	68.53	40.79
2	*5785.00	98.52 AV			1.02 H	332	57.73	40.79
3	#11570.00	63.24 PK	74.00	-10.76	1.02 H	156	11.64	51.60
4	#11570.00	51.26 AV	54.00	-2.74	1.02 H	156	-0.34	51.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	105.10 PK			1.03 V	214	64.31	40.79
2	*5785.00	94.62 AV			1.03 V	214	53.83	40.79
3	#11570.00	60.28 PK	74.00	-13.72	1.02 V	341	8.68	51.60
4	#11570.00	49.13 AV	54.00	-4.87	1.02 V	341	-2.47	51.60

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.
6. “ # ”: The radiated frequency 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	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	109.40 PK			1.00 H	215	68.54	40.86
2	*5825.00	99.59 AV			1.00 H	215	58.73	40.86
3	5850.00	73.30 PK	89.40	-16.10	1.04 H	350	32.42	40.88
4	5850.00	55.63 AV	79.59	-23.96	1.04 H	350	14.75	40.88
5	#11650.00	63.85 PK	74.00	-10.15	1.02 H	312	12.11	51.74
6	#11650.00	51.42 AV	54.00	-2.58	1.02 H	312	-0.32	51.74

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	105.86 PK			1.03 V	212	65.00	40.86
2	*5825.00	94.75 AV			1.03 V	212	53.89	40.86
3	5850.00	69.21 PK	85.86	-16.65	1.02 V	93	28.33	40.88
4	5850.00	51.49 AV	74.75	-23.26	1.02 V	93	10.61	40.88
5	#11650.00	61.22 PK	74.00	-12.78	1.02 V	114	9.48	51.74
6	#11650.00	49.35 AV	54.00	-4.65	1.02 V	114	-2.39	51.74

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * ”: Fundamental frequency.
 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	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5725.00	79.40 PK	86.07	-6.67	1.16 H	351	38.76	40.64
2	5725.00	63.75 AV	76.16	-12.41	1.16 H	351	23.11	40.64
3	*5755.00	106.07 PK			1.16 H	351	65.36	40.71
4	*5755.00	96.16 AV			1.16 H	351	55.45	40.71
5	#11510.00	62.58 PK	74.00	-11.42	1.08 H	231	10.76	51.82
6	#11510.00	51.49 AV	54.00	-2.51	1.08 H	231	-0.33	51.82

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	75.89 PK	82.68	-6.79	1.04 V	341	35.25	40.64
2	5725.00	60.21 AV	72.96	-12.75	1.04 V	341	19.57	40.64
3	*5755.00	102.68 PK			1.04 V	341	61.97	40.71
4	*5755.00	92.96 AV			1.04 V	341	52.25	40.71
5	#11510.00	62.41 PK	74.00	-11.59	1.10 V	28	10.59	51.82
6	#11510.00	51.30 AV	54.00	-2.70	1.10 V	28	-0.52	51.82

- 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	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 1005hPa	TESTED BY	Match Tsui

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m								
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	106.23 PK			1.15 H	352	65.41	40.82
2	*5795.00	96.31 AV			1.15 H	352	55.49	40.82
3	5850.00	70.04 PK	86.23	-16.19	1.15 H	352	29.16	40.88
4	5850.00	58.33 AV	76.31	-17.98	1.15 H	352	17.45	40.88
5	#11590.00	62.84 PK	74.00	-11.16	1.16 H	58	11.31	51.53
6	#11590.00	51.76 AV	54.00	-2.24	1.16 H	58	0.23	51.53

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m								
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	102.81 PK			1.05 V	345	61.99	40.82
2	*5795.00	93.12 AV			1.05 V	345	52.30	40.82
3	5850.00	66.59 PK	82.81	-16.22	1.05 V	345	25.71	40.88
4	5850.00	54.86 AV	73.12	-18.26	1.05 V	345	13.98	40.88
5	#11590.00	62.56 PK	74.00	-11.44	1.10 V	54	11.03	51.53
6	#11590.00	51.48 AV	54.00	-2.52	1.10 V	54	-0.05	51.53

- 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.

5.3 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	Apr. 11, 2008

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

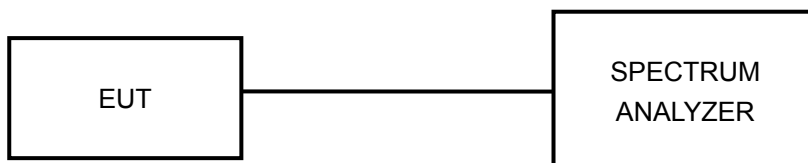
5.3.3 TEST PROCEDURE

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.

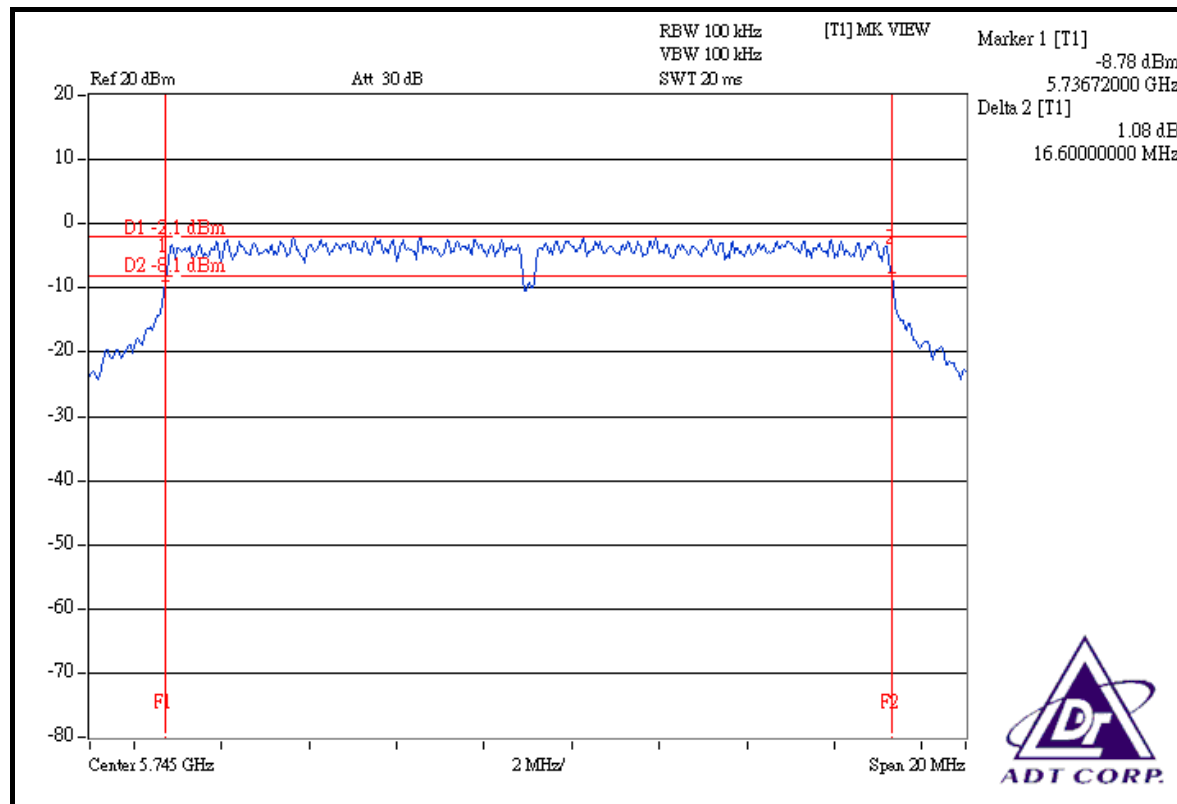
5.3.7 TEST RESULTS

802.11a OFDM MODULATION:

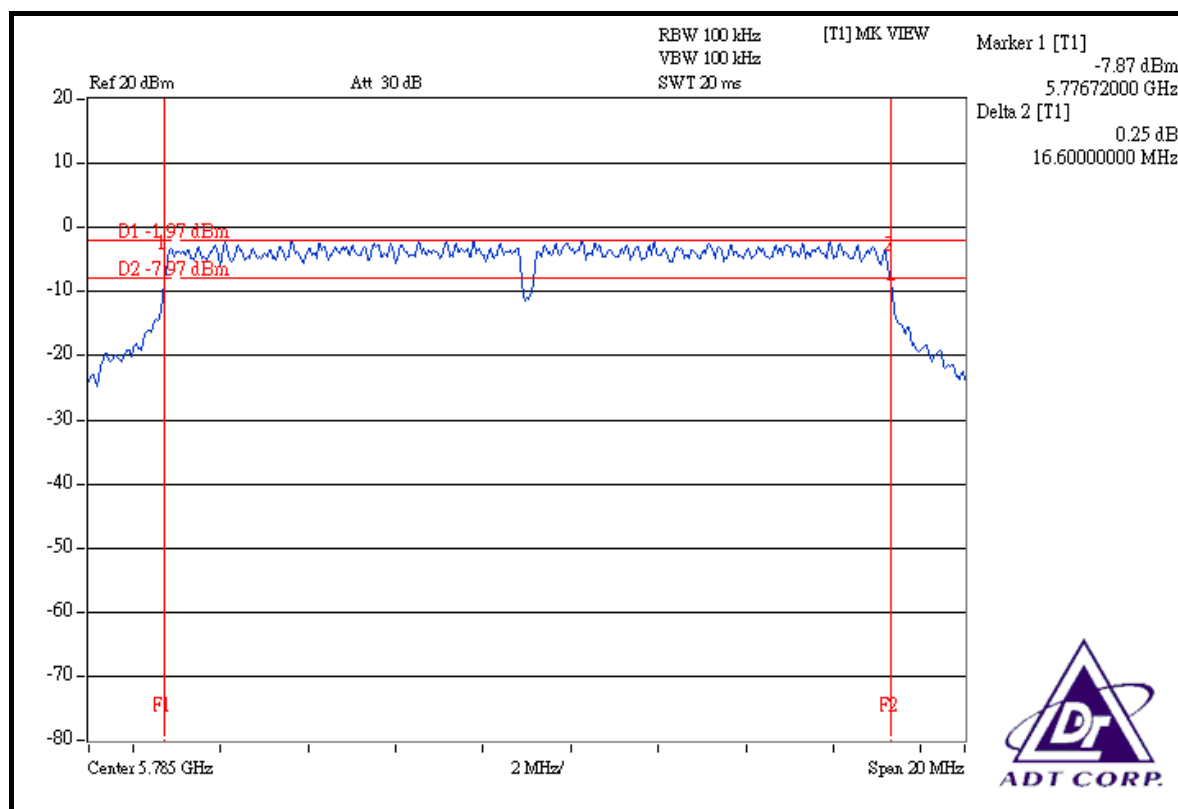
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	5745	16.60	0.5	PASS
3	5785	16.60	0.5	PASS
5	5825	16.60	0.5	PASS

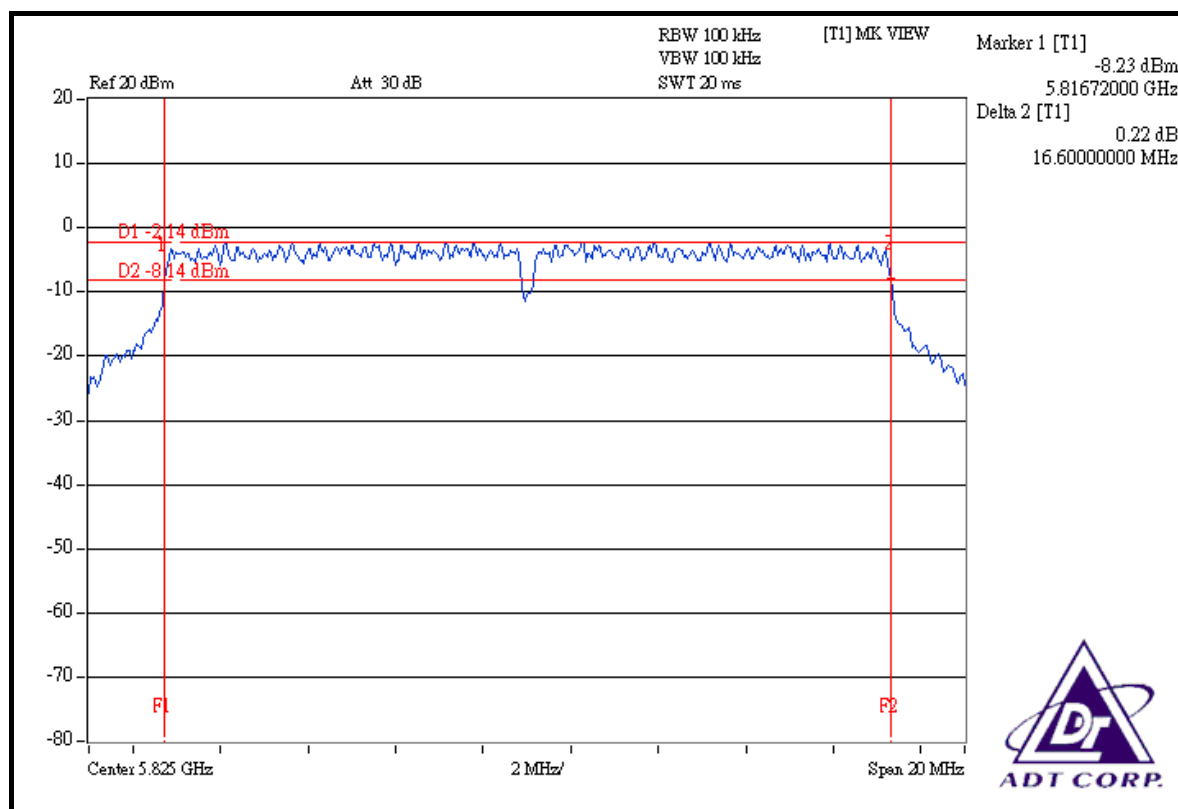
CH 1



CH 3



CH 5

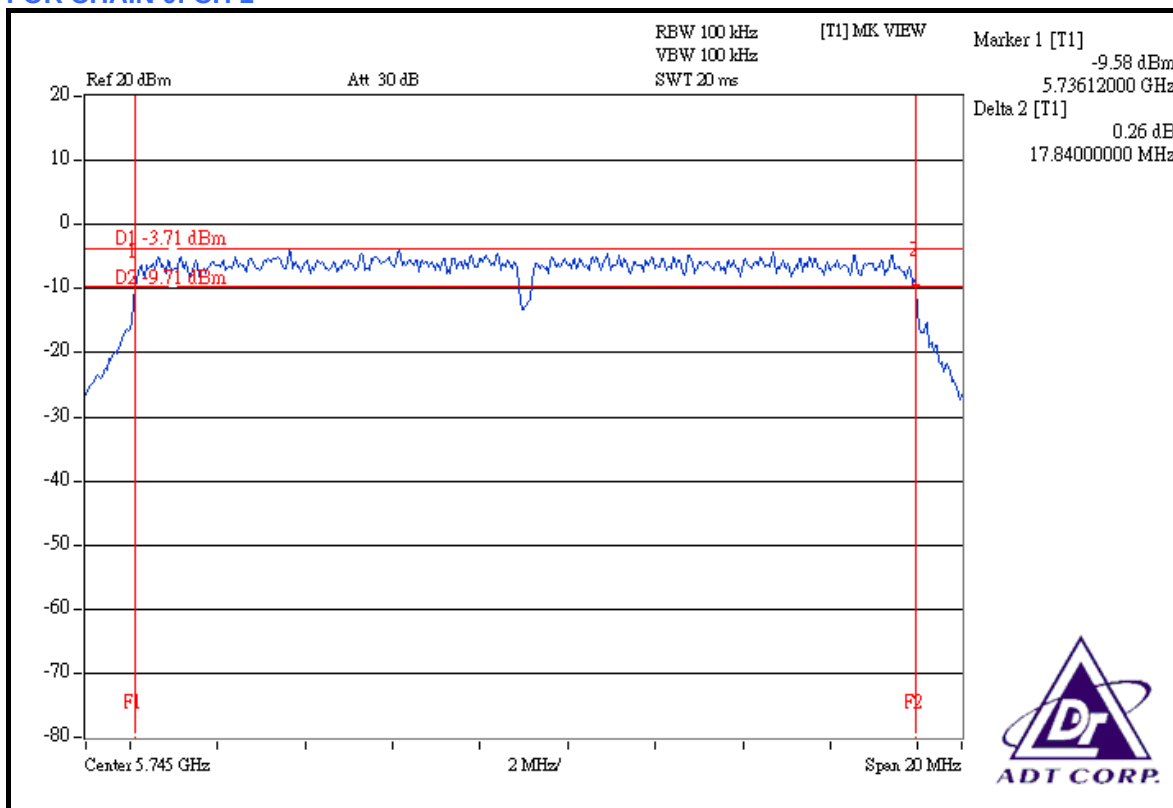


DRAFT 802.11n (20MHz) OFDM MODULATION:

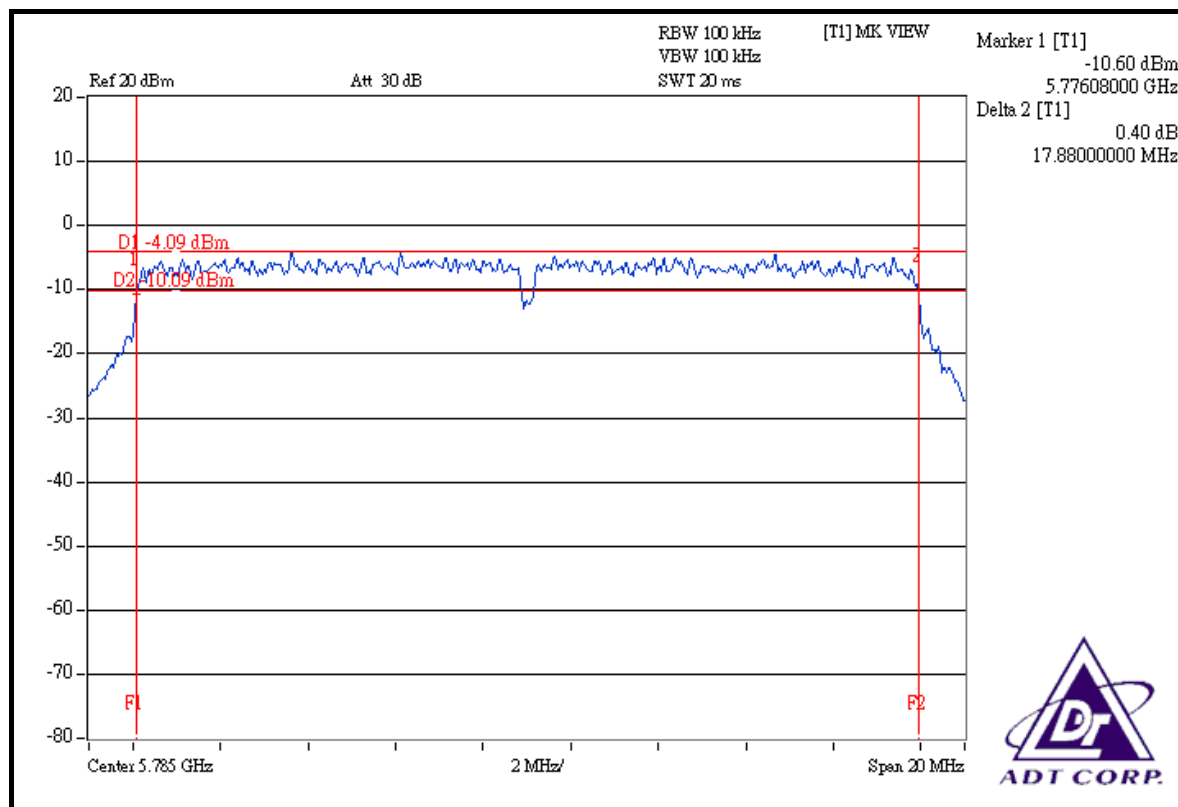
MODULATION TYPE	BPSK	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	5745	17.84	17.72	0.5	PASS
3	5785	17.88	17.72	0.5	PASS
5	5825	17.84	17.68	0.5	PASS

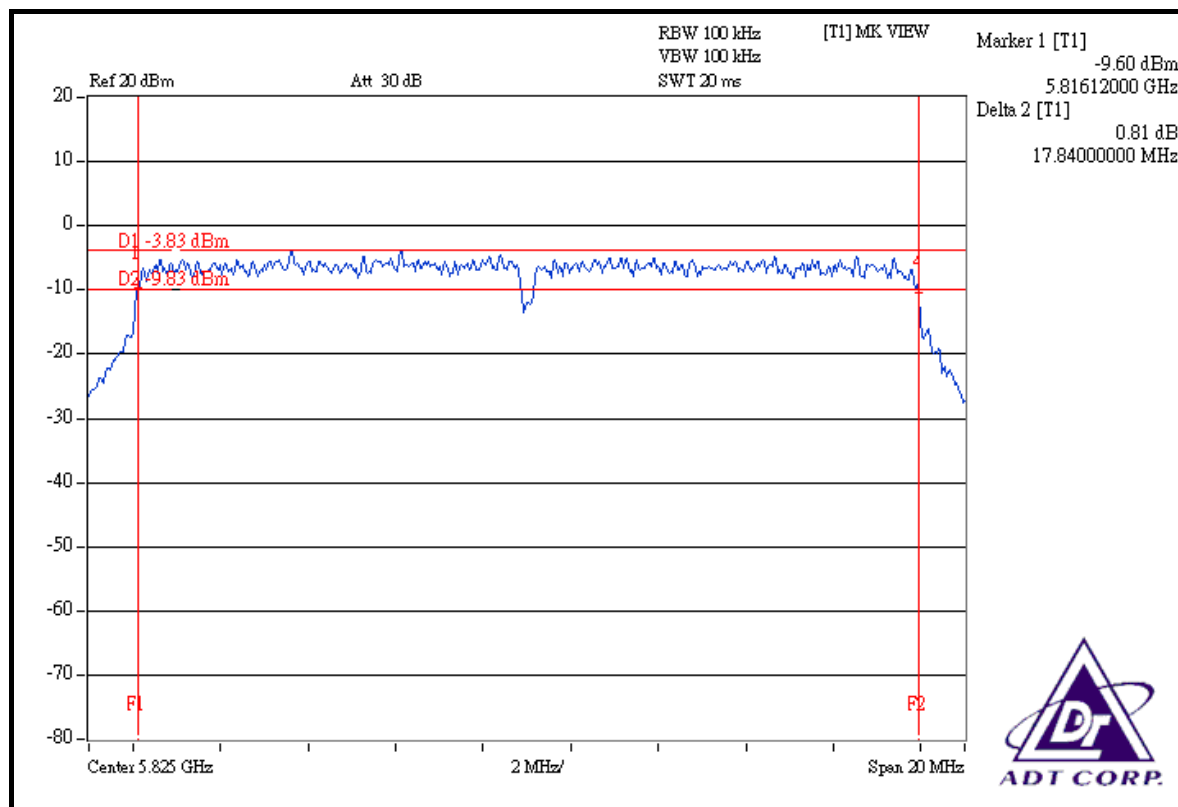
FOR CHAIN 0: CH 1



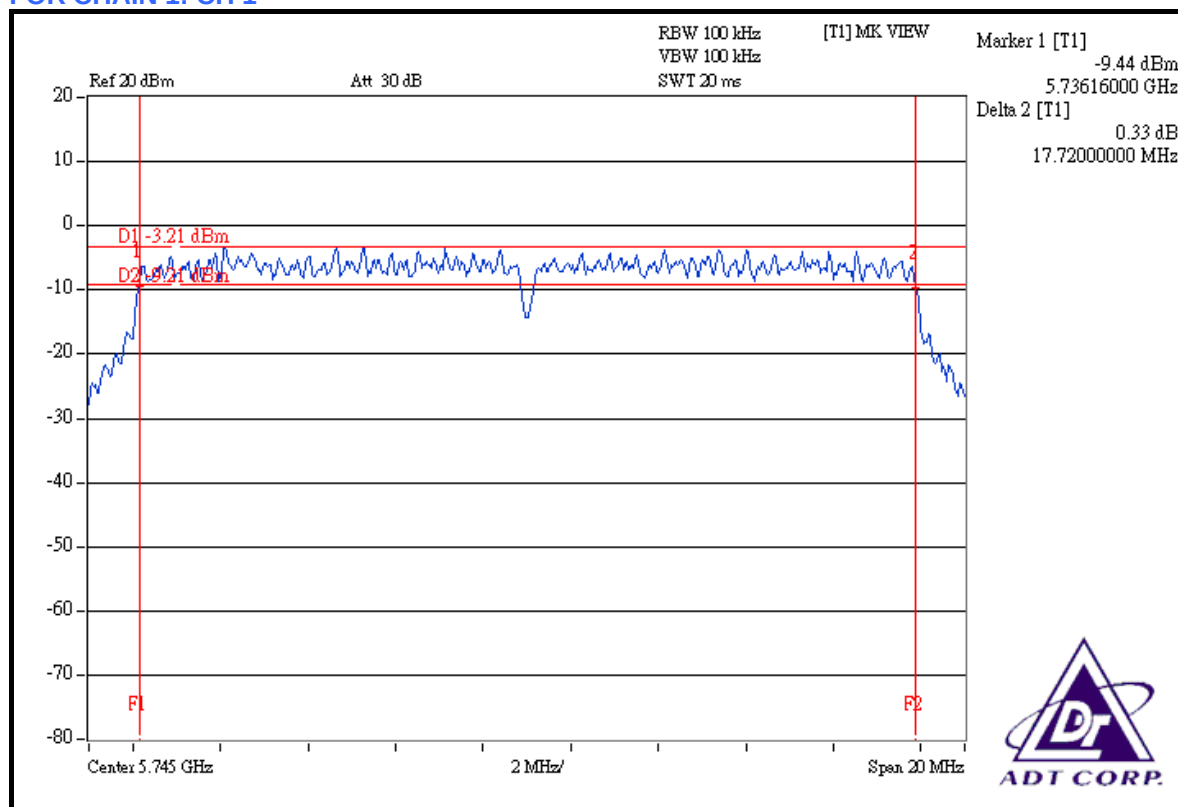
CH 3



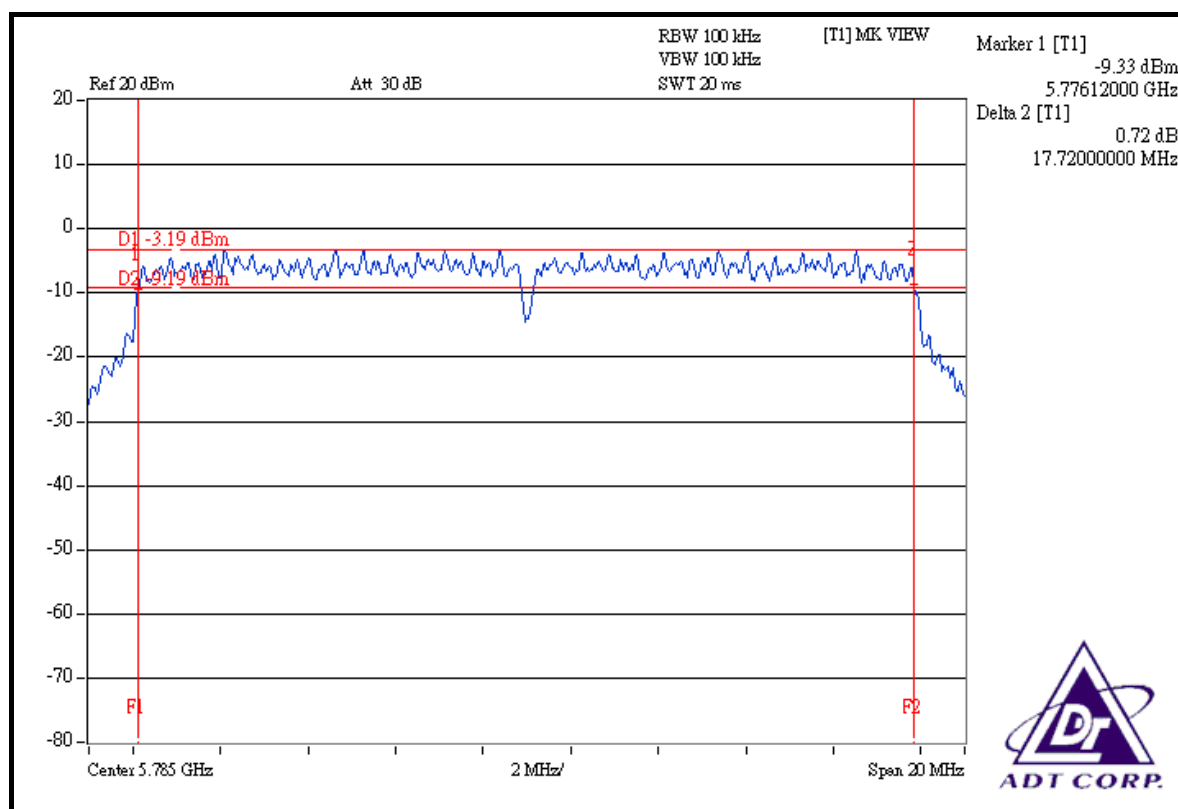
CH 5



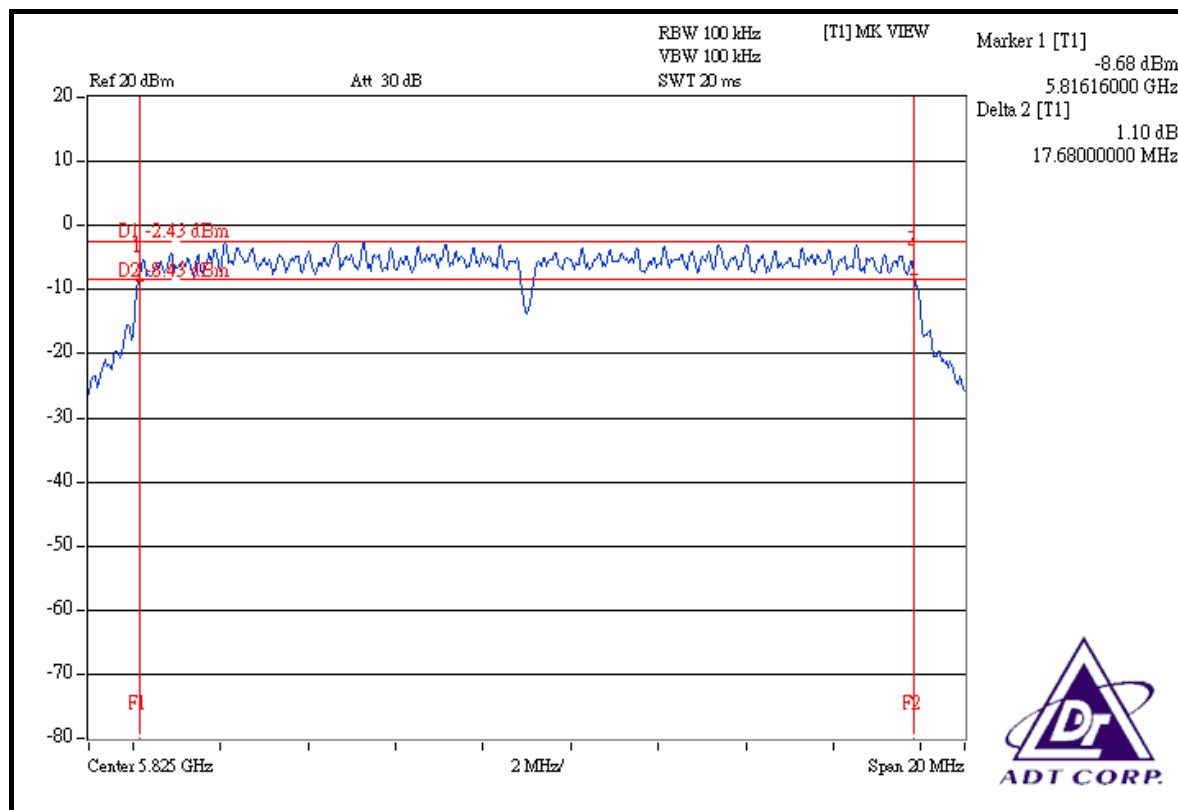
FOR CHAIN 1: CH 1



CH 3



CH 5

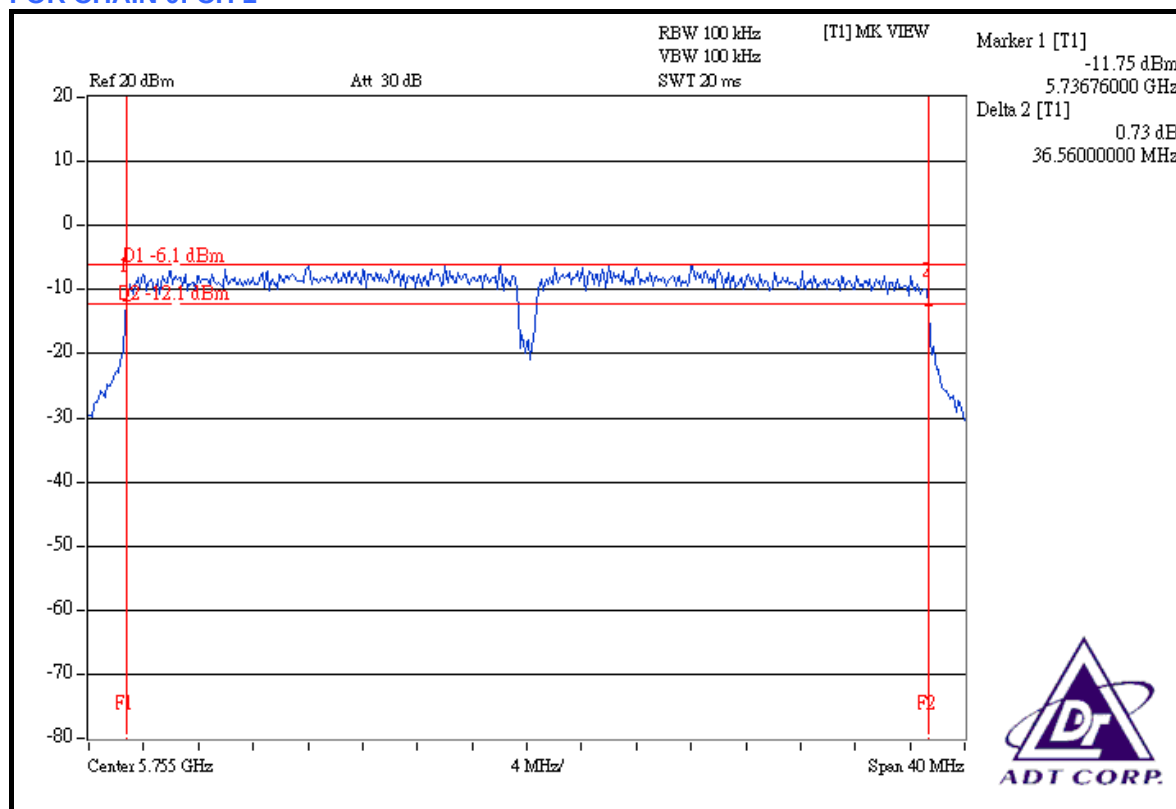


DRAFT 802.11n (40MHz) OFDM MODULATION:

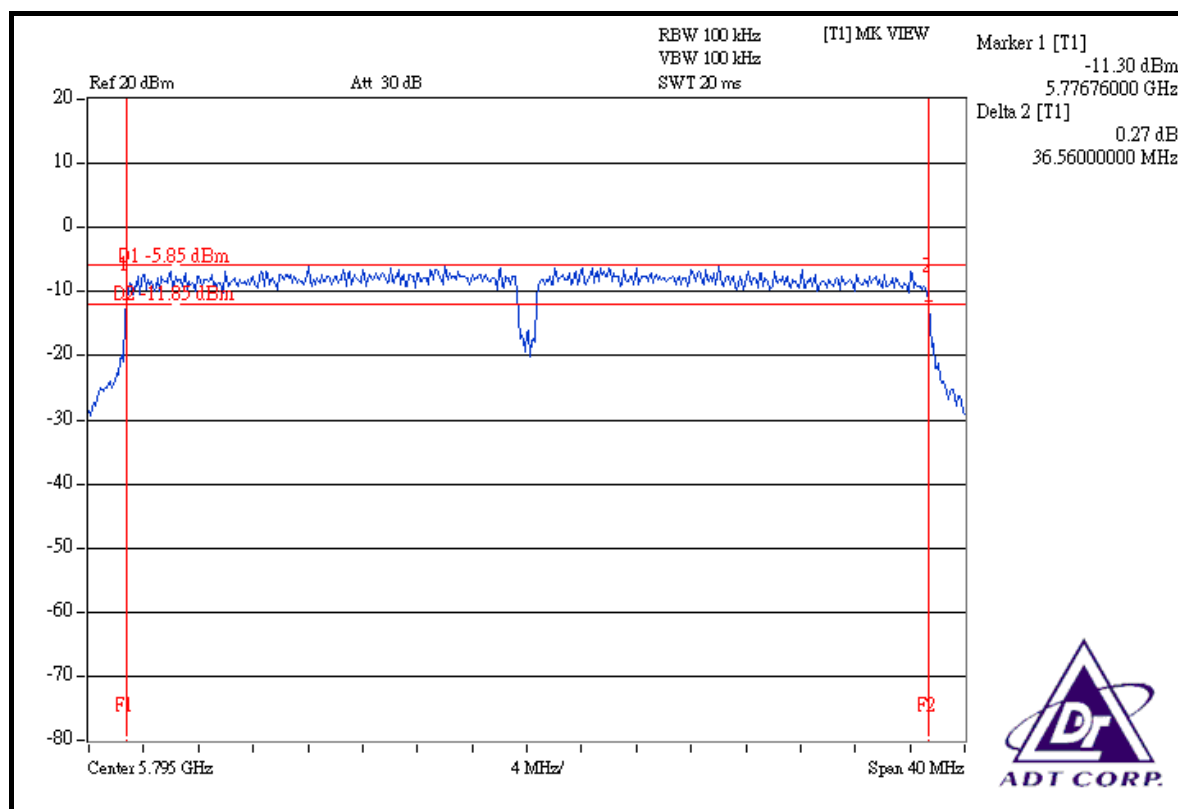
MODULATION TYPE	BPSK	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

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

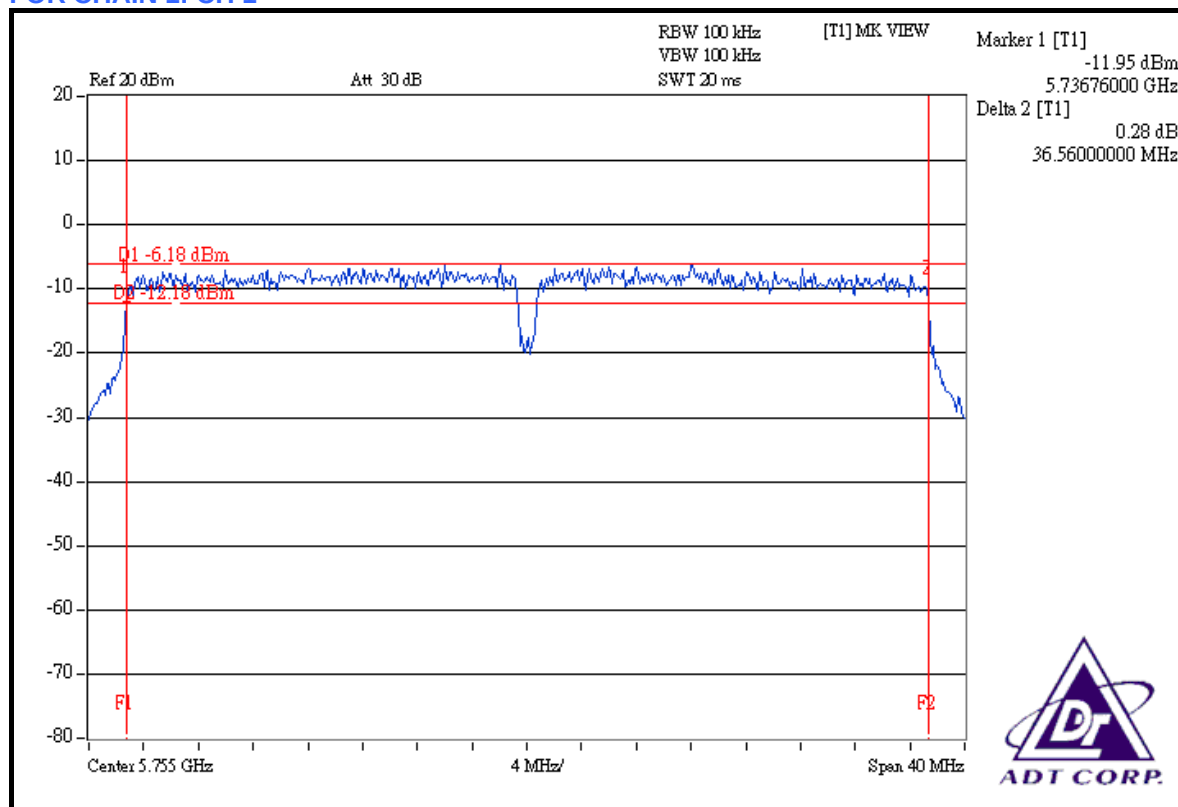
FOR CHAIN 0: CH 1



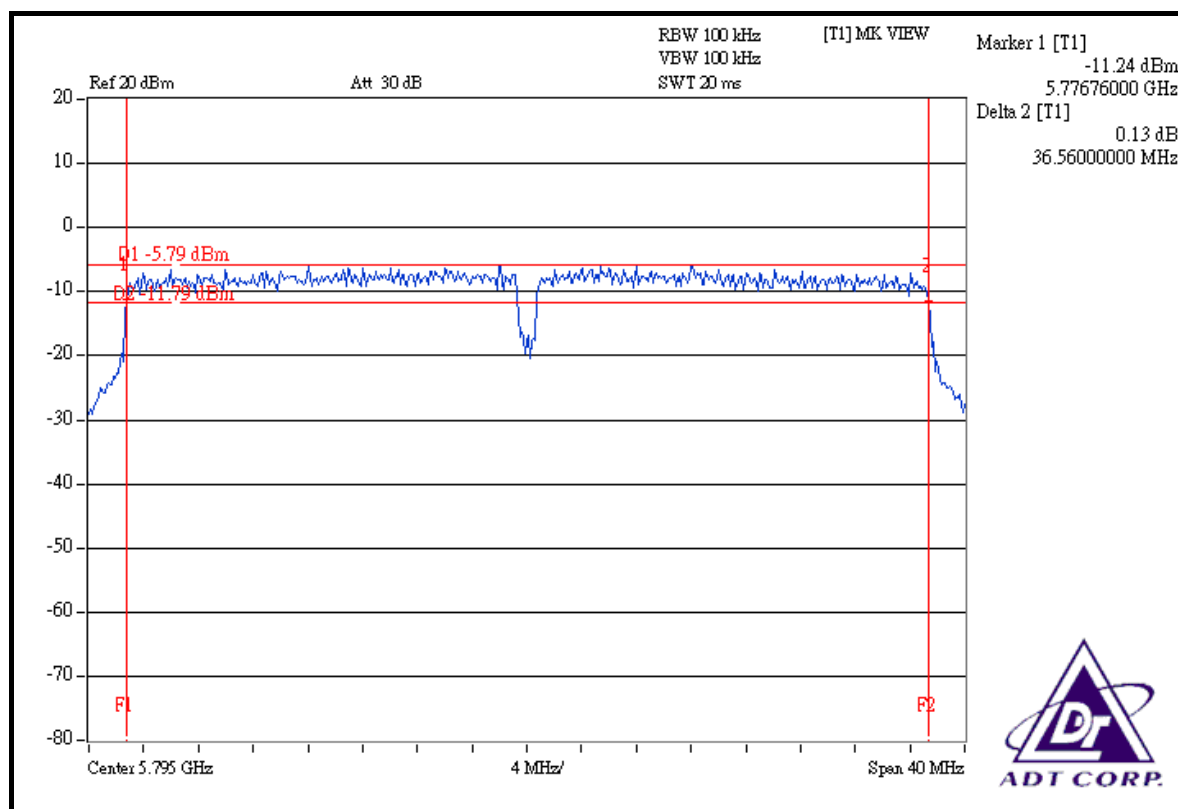
CH 2



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	Apr. 11, 2008
ANRITSU SYNTHESIZED SIGNAL GENERATOR	SML03	102843	Aug. 31, 2007
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

- A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
- Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
- 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	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	5745	40.551	16.08	30	PASS
3	5785	40.458	16.07	30	PASS
5	5825	39.994	16.02	30	PASS

DRAFT 802.11n (20MHz) OFDM MODULATION:

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

CHAN.	CHAN. FREQ. (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	44.668	44.978	16.50	16.53	89.646	19.53	30	PASS
3	5785	44.978	45.604	16.53	16.59	90.582	19.57	30	PASS
5	5825	45.186	44.668	16.55	16.50	89.854	19.54	30	PASS

DRAFT 802.11n (40MHz) OFDM MODULATION:

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

CHAN.	CHAN. FREQ. (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	45.290	44.875	16.56	16.52	90.165	19.55	30	PASS
2	5795	45.082	45.394	16.54	16.57	90.476	19.57	30	PASS

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100040	Apr. 11, 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

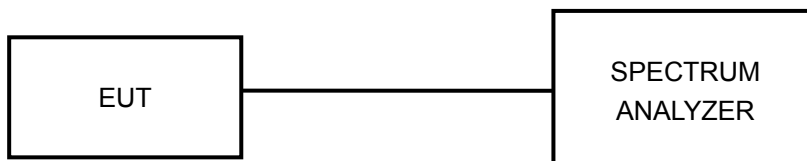
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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

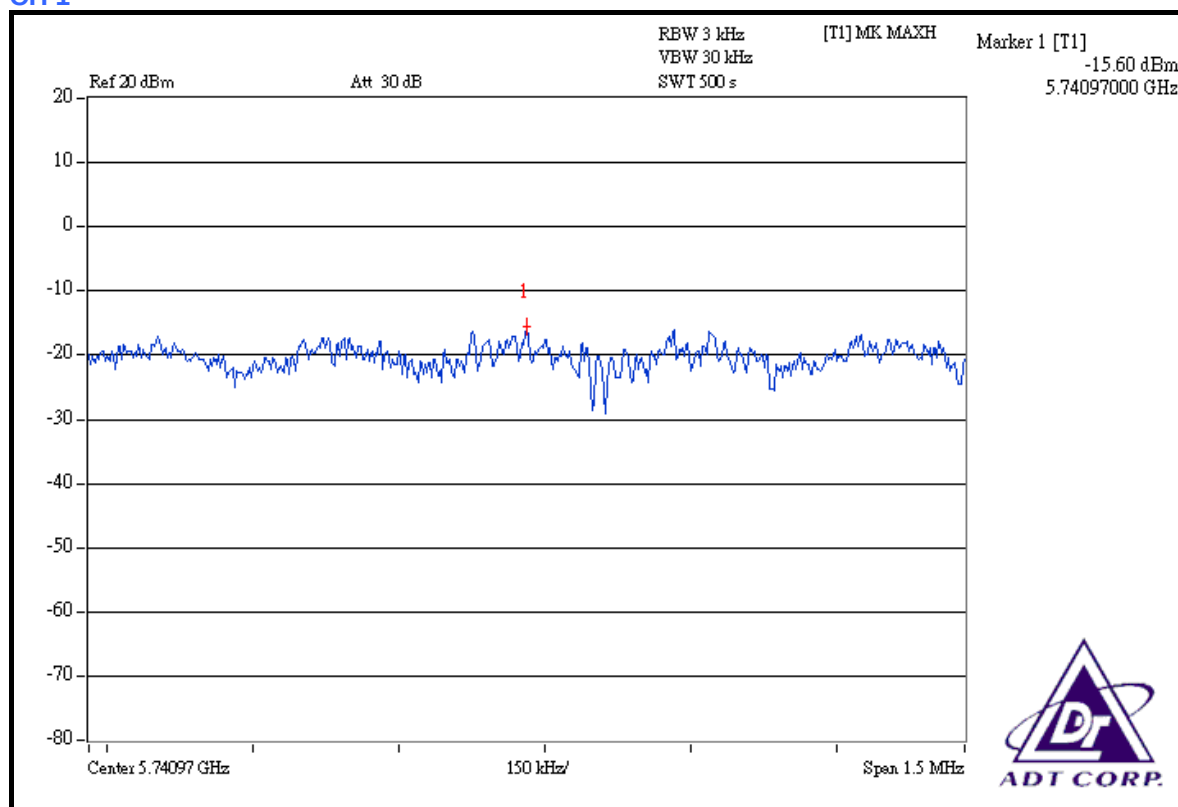
5.5.7 TEST RESULTS

802.11a OFDM MODULATION:

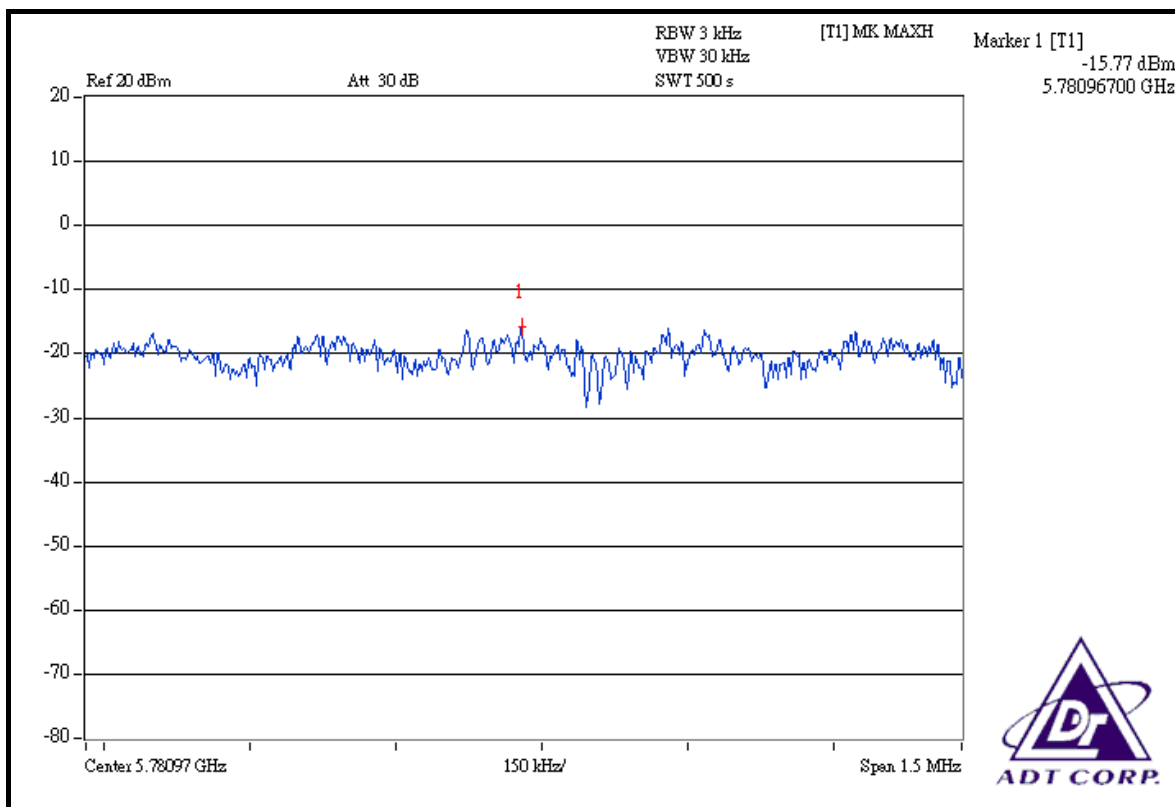
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	5745	-15.60	8	PASS
3	5785	-15.77	8	PASS
5	5825	-15.82	8	PASS

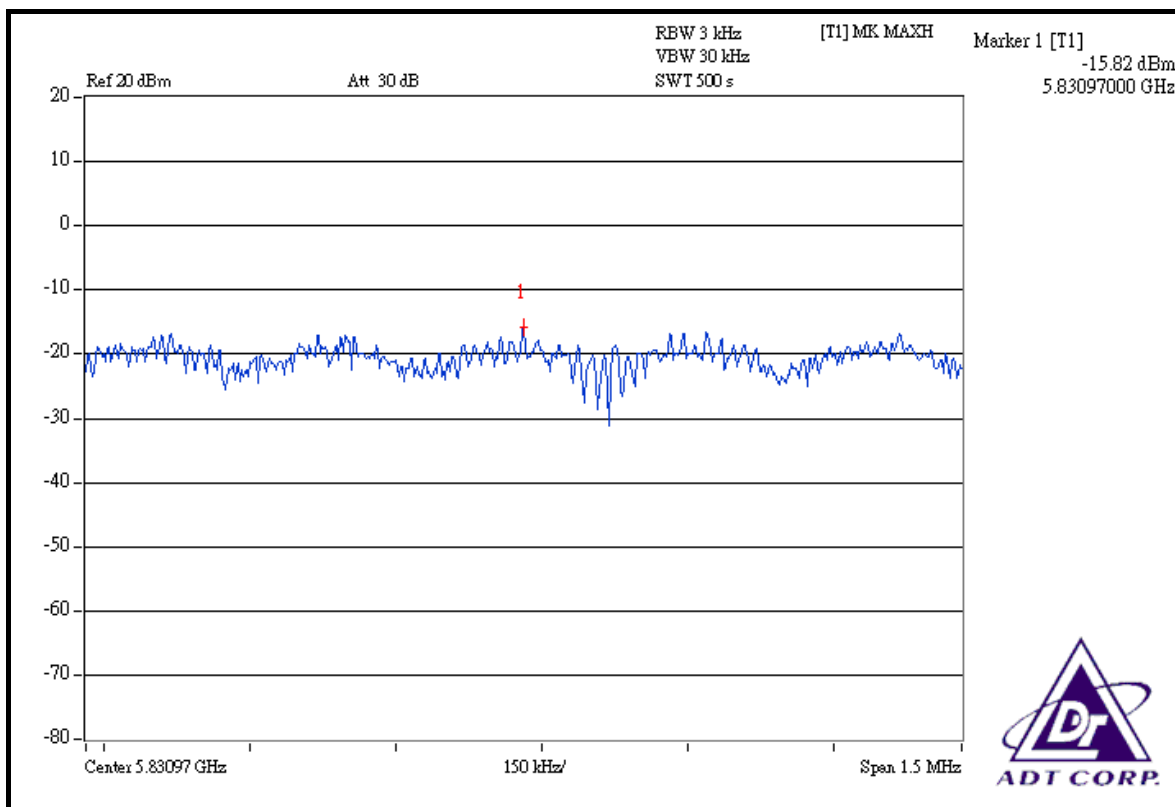
CH 1



CH 3



CH 5

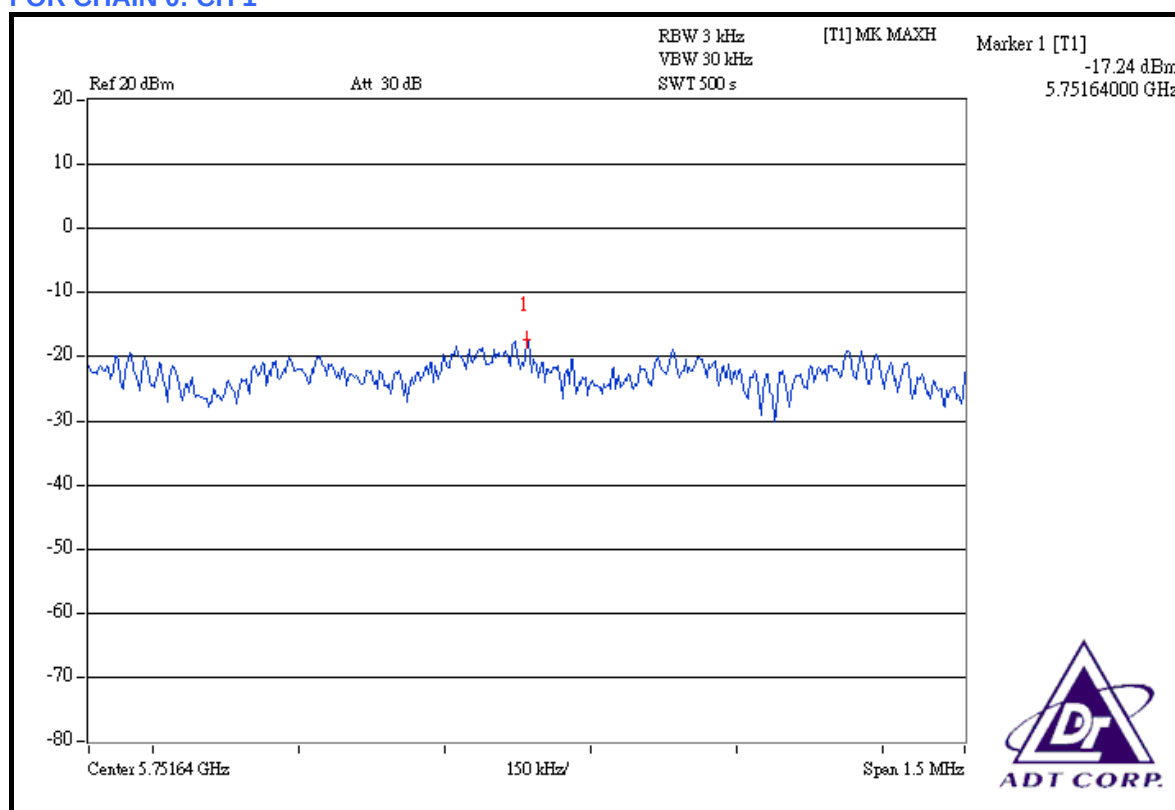


DRAFT 802.11n (20MHz) OFDM MODULATION:

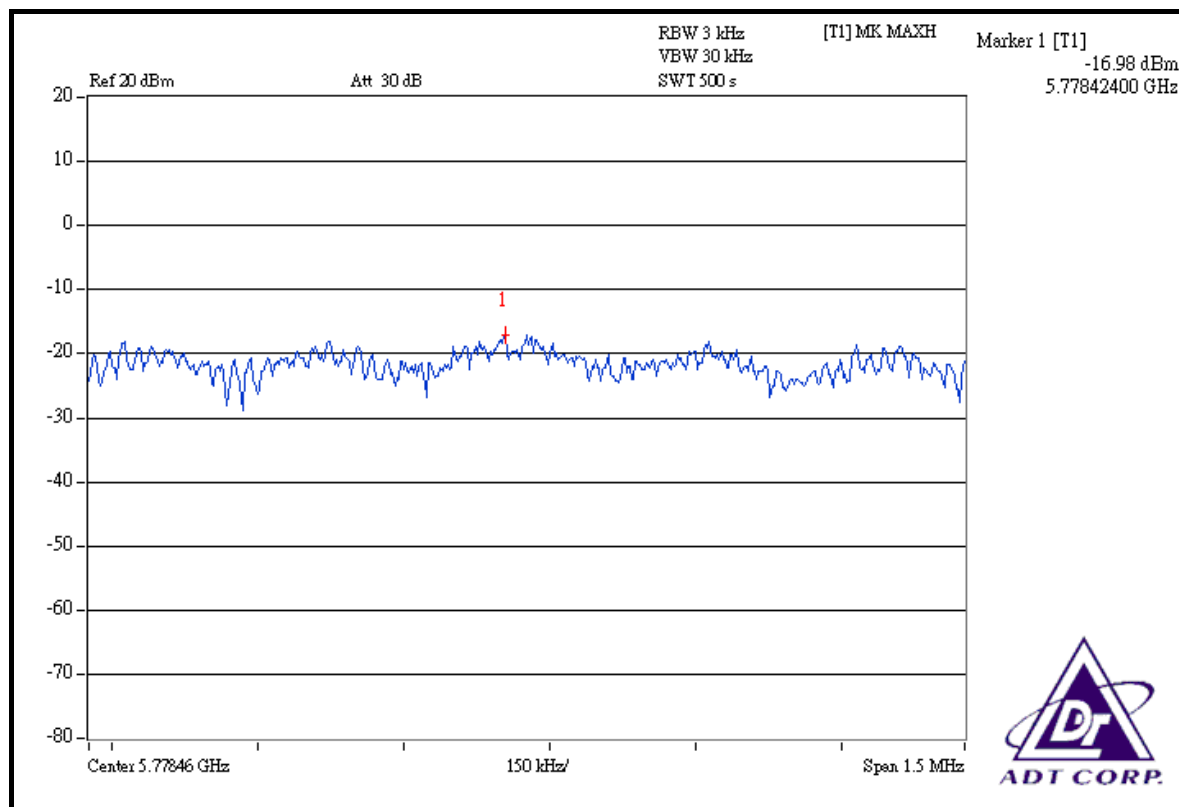
MODULATION TYPE	BPSK	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHAN.	CHAN. FREQ. (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	0.019	0.017	-17.24	-17.63	0.036	-14.42	8	PASS
3	5785	0.020	0.017	-16.98	-17.66	0.037	-14.30	8	PASS
5	5825	0.021	0.017	-16.78	-17.64	0.038	-14.18	8	PASS

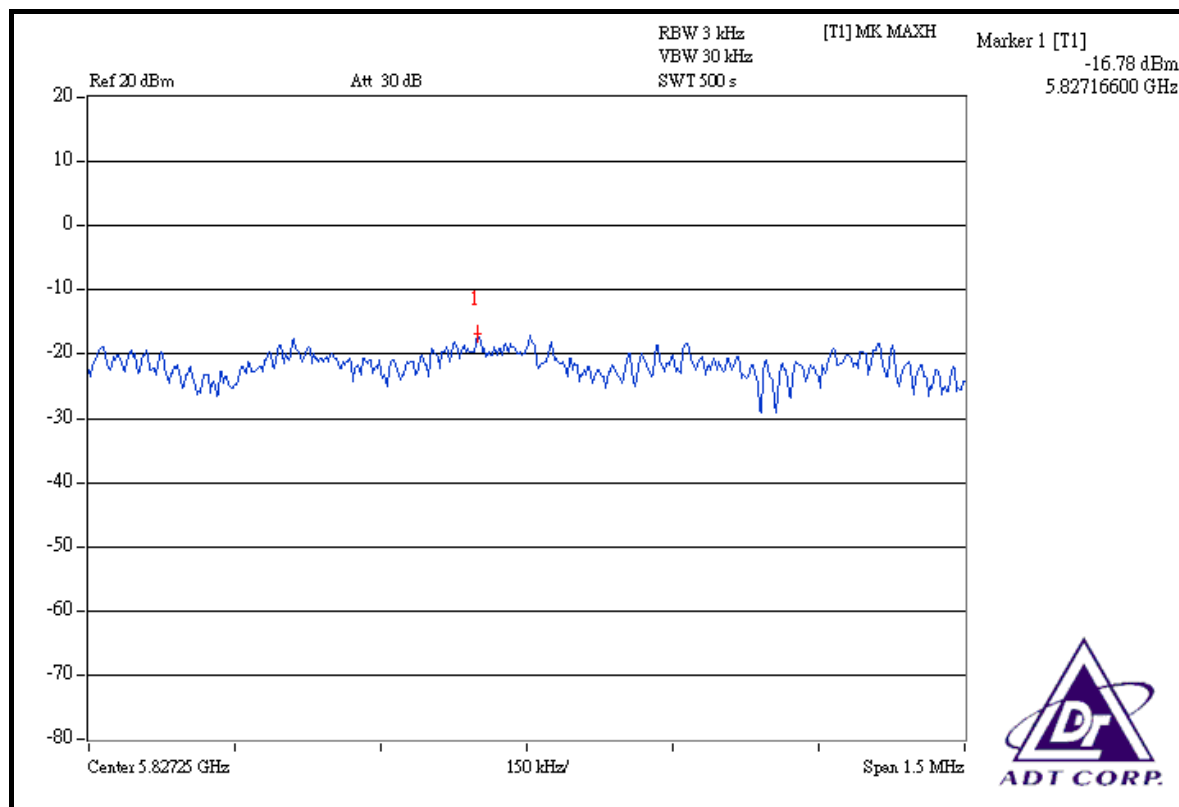
FOR CHAIN 0: CH 1



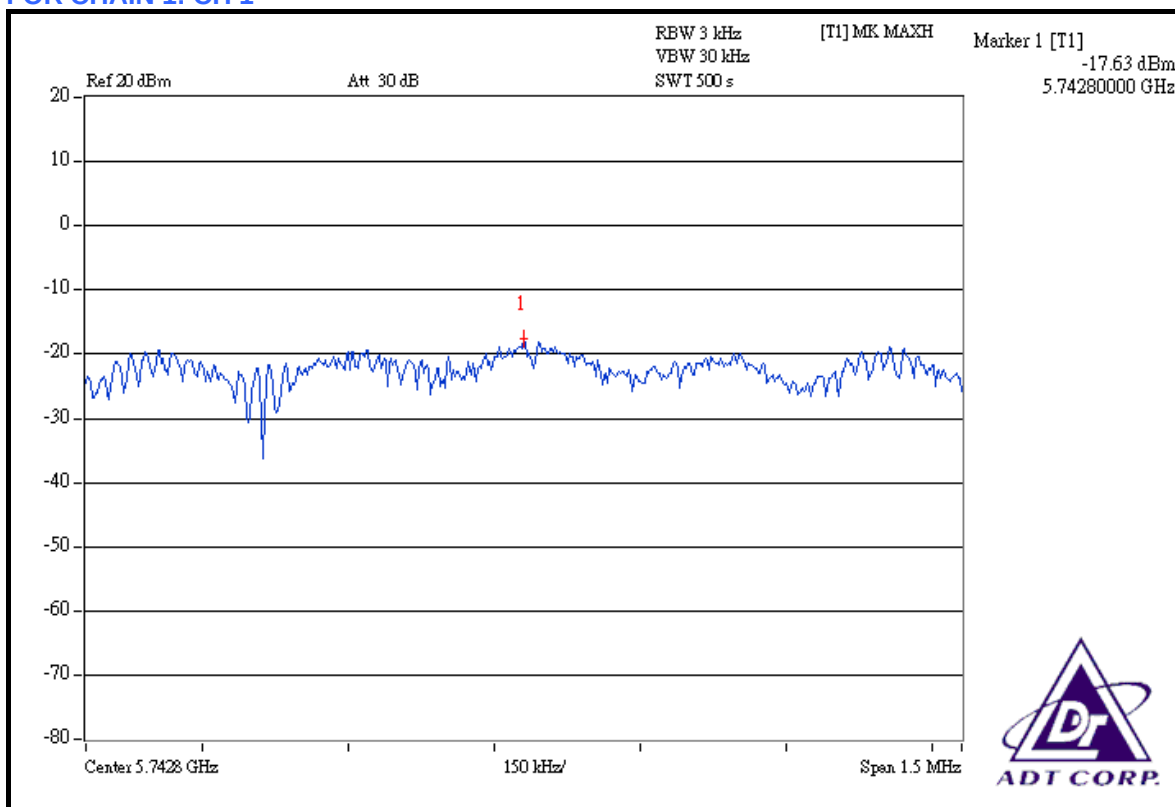
CH 3



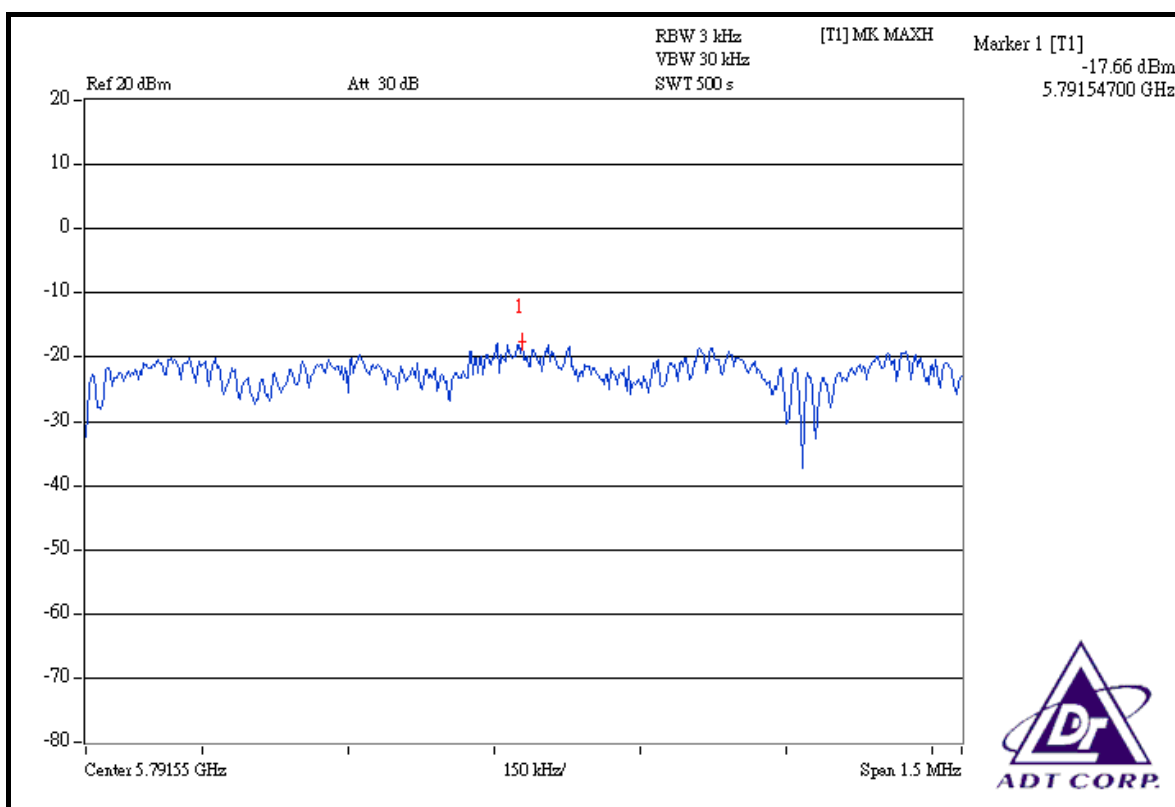
CH 5



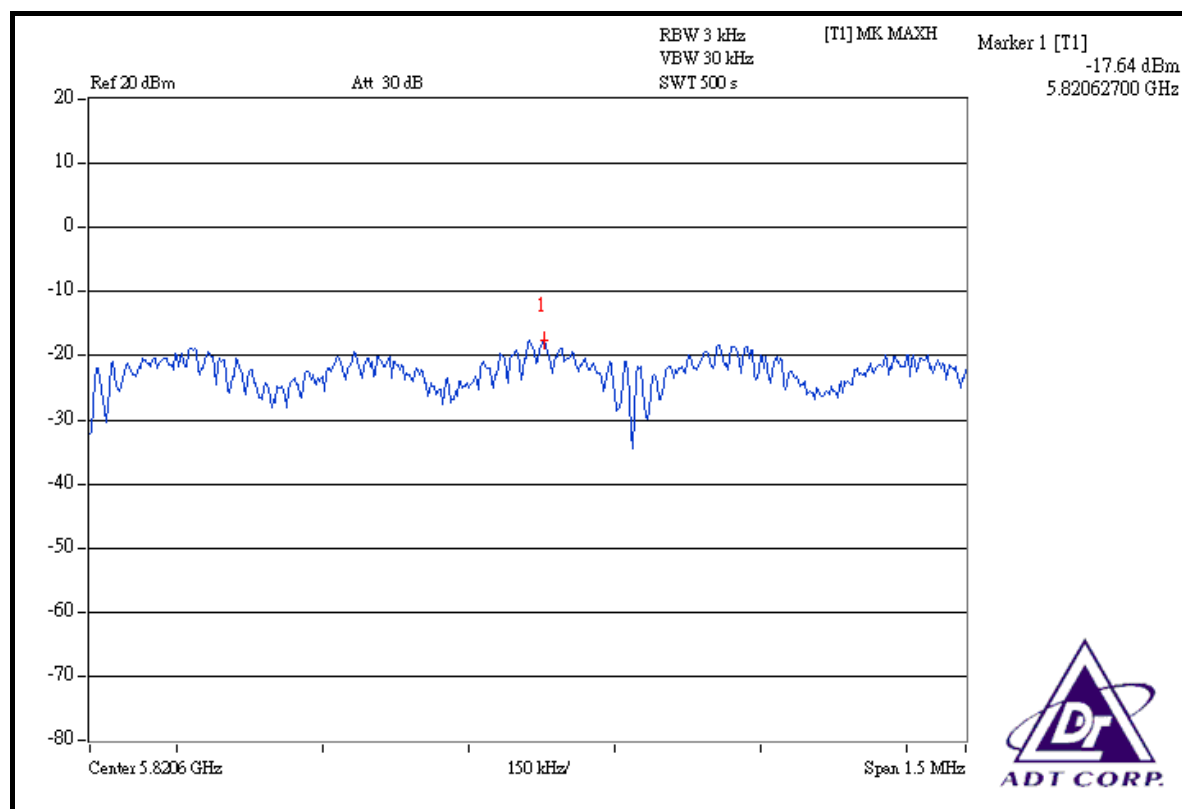
FOR CHAIN 1: CH 1



CH 3



CH 5

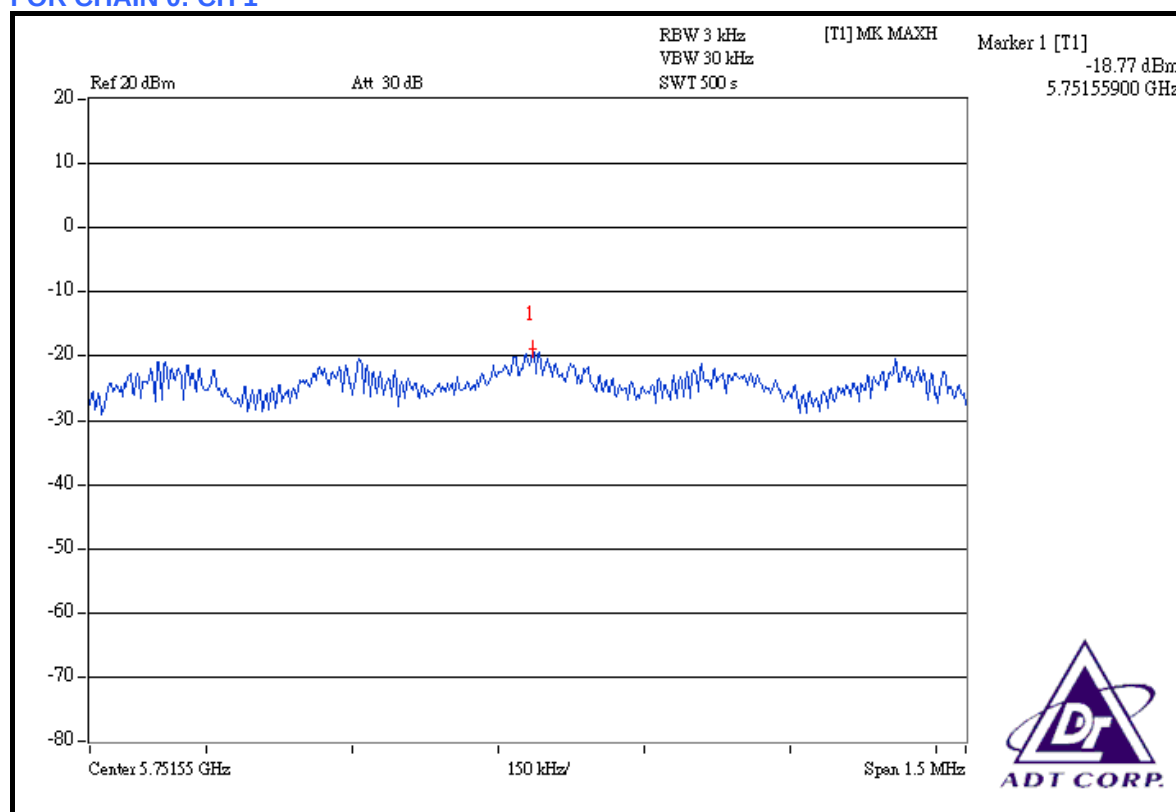


DRAFT 802.11n (40MHz) OFDM MODULATION:

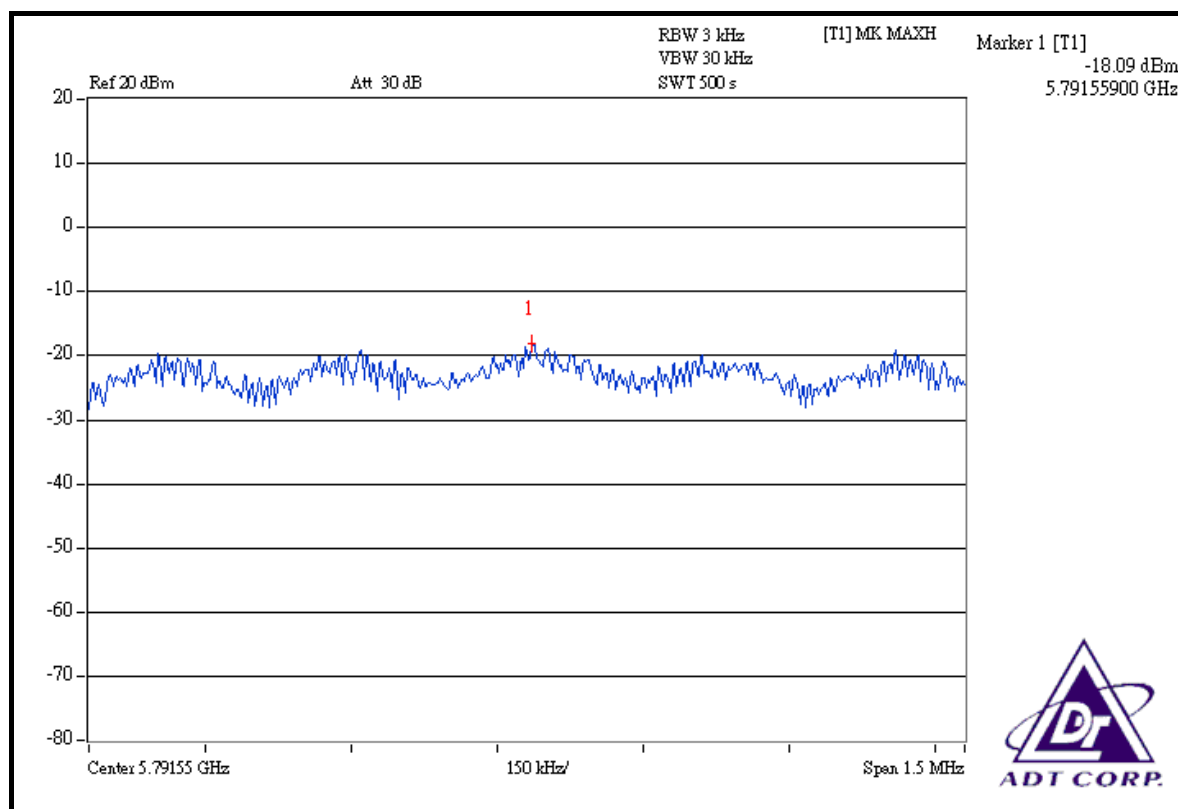
MODULATION TYPE	BPSK	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 65%RH, 991hPa
TESTED BY	Long Chen		

CHAN.	CHAN. FREQ. (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	0.013	0.013	-18.77	-18.81	0.026	-15.78	8	PASS
2	5795	0.016	0.015	-18.09	-18.20	0.031	-15.13	8	PASS

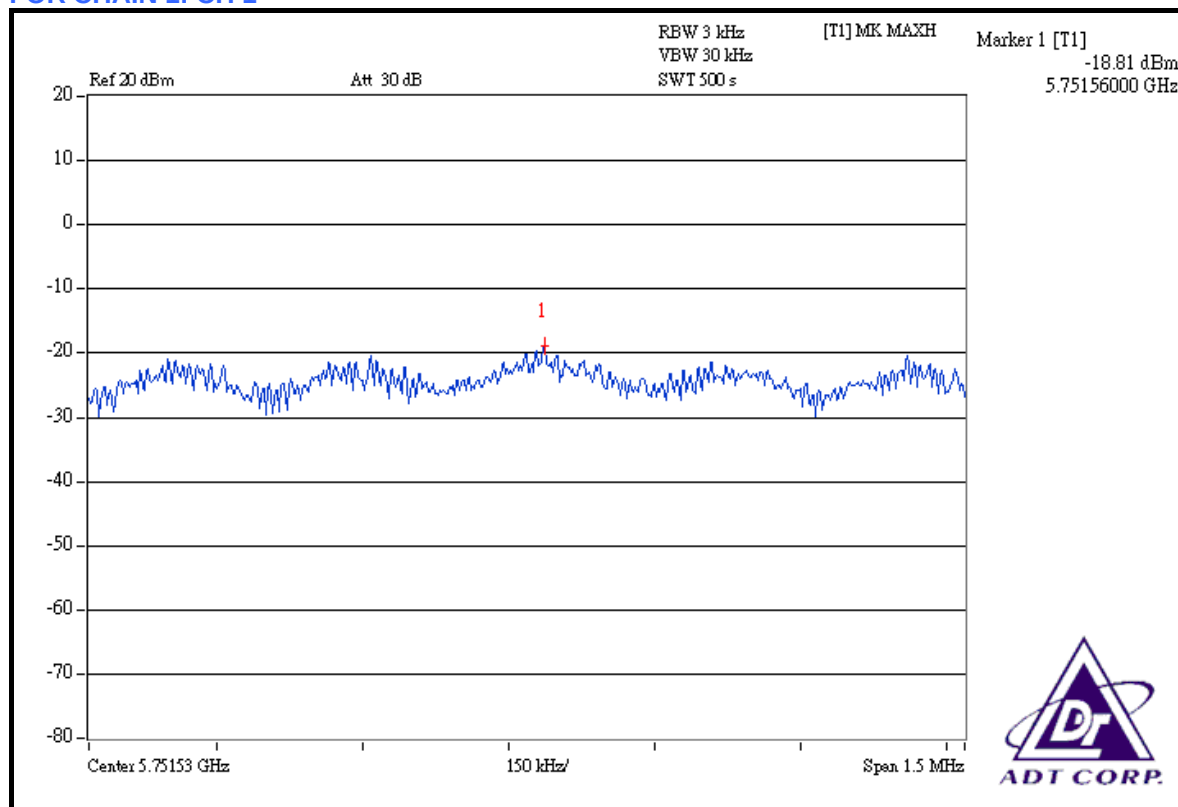
FOR CHAIN 0: CH 1



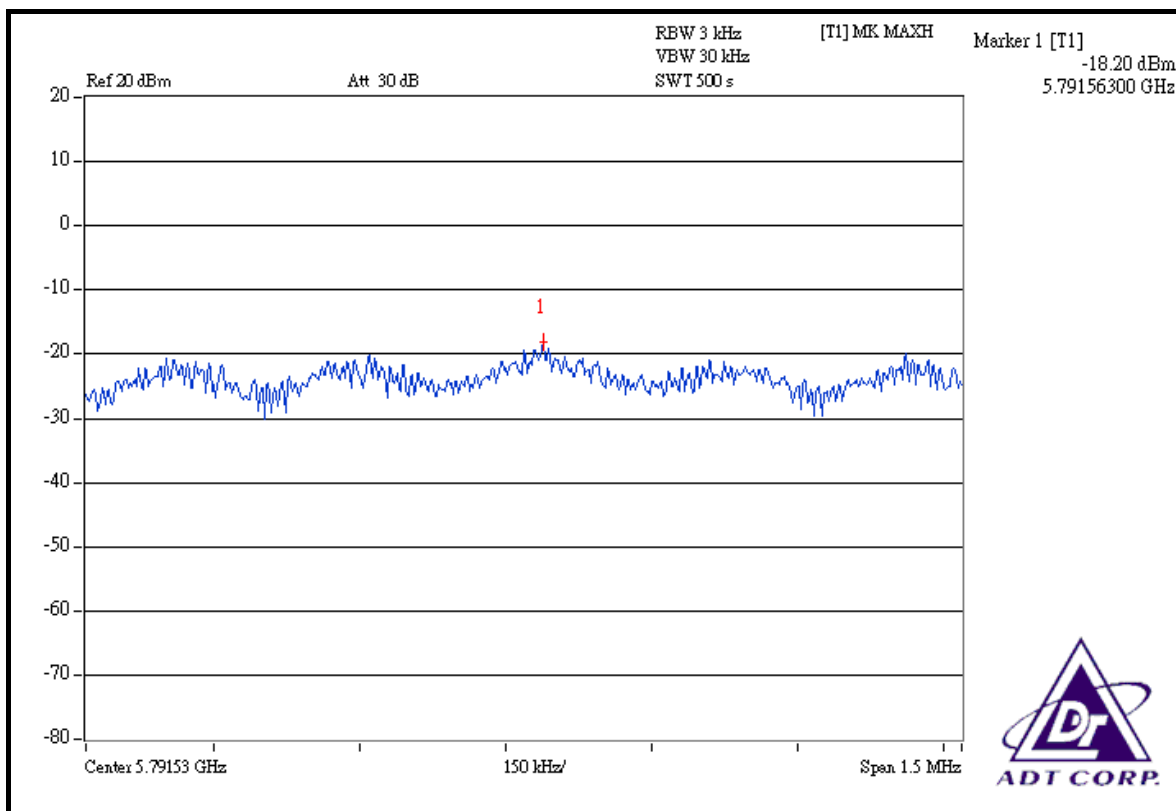
CH 2



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
802.11b, 802.11g:			
R&S SPECTRUM ANALYZER	FSP40	100040	Apr. 11, 2008
DRAFT 802.11n (20MHz), DRAFT 802.11n (40MHz):			
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Aug. 04, 2007
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100025	Oct. 05, 2007
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	May 31, 2008
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jun. 27, 2007
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 28, 2007
Preamplifier Agilent	8447D	2944A10633	Oct. 26, 2007
Preamplifier Agilent	8449B	3008A01964	Oct. 26, 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 inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	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 loss cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges were 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 were 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

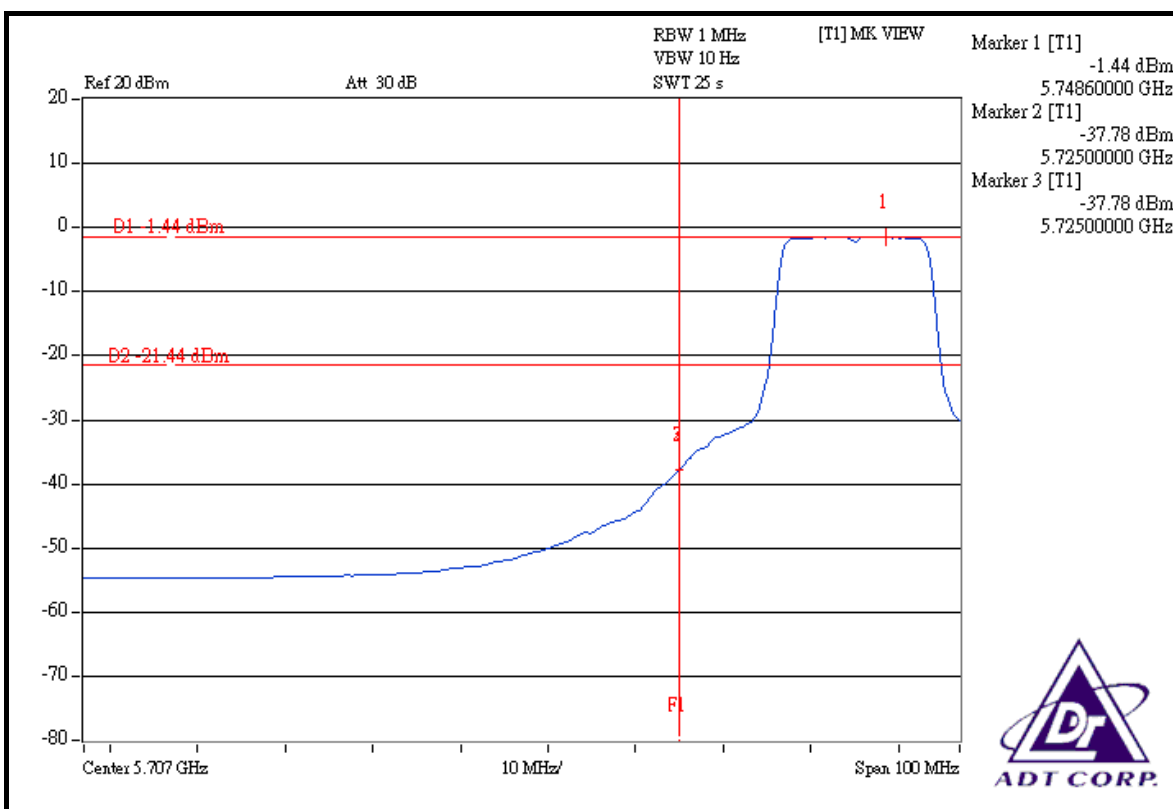
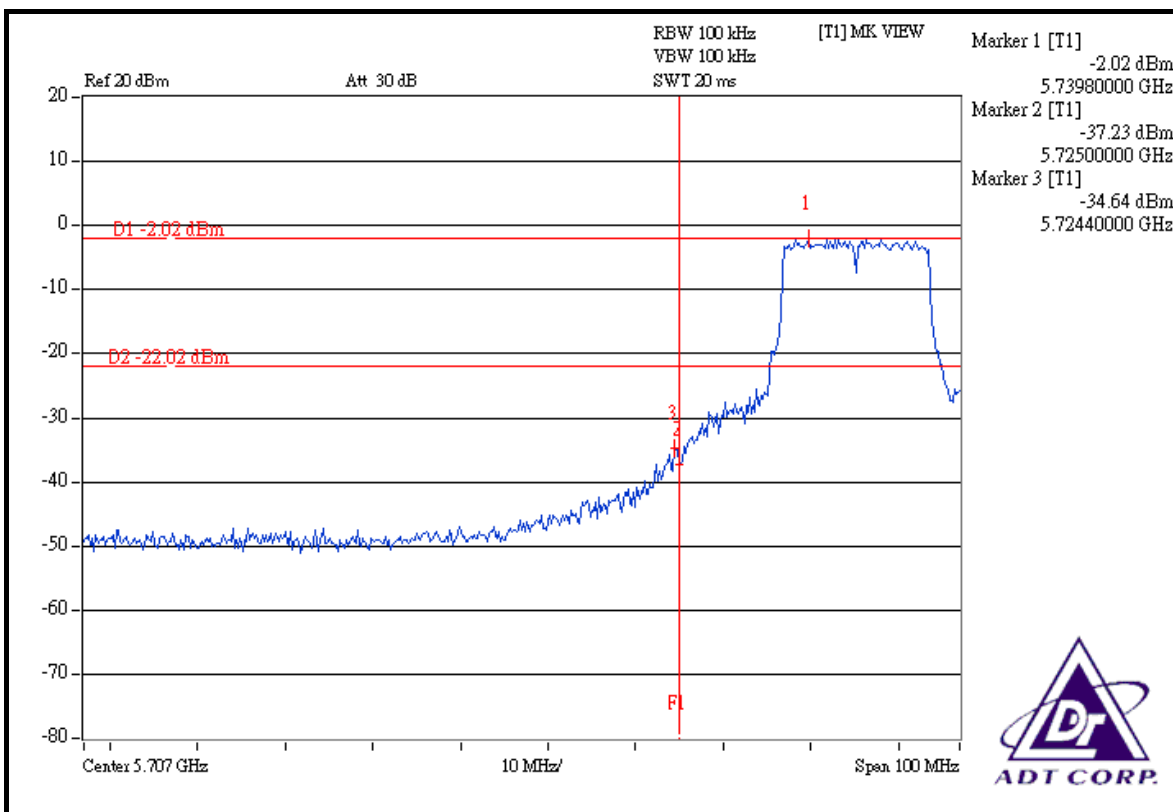
5.6.5 EUT OPERATING CONDITION

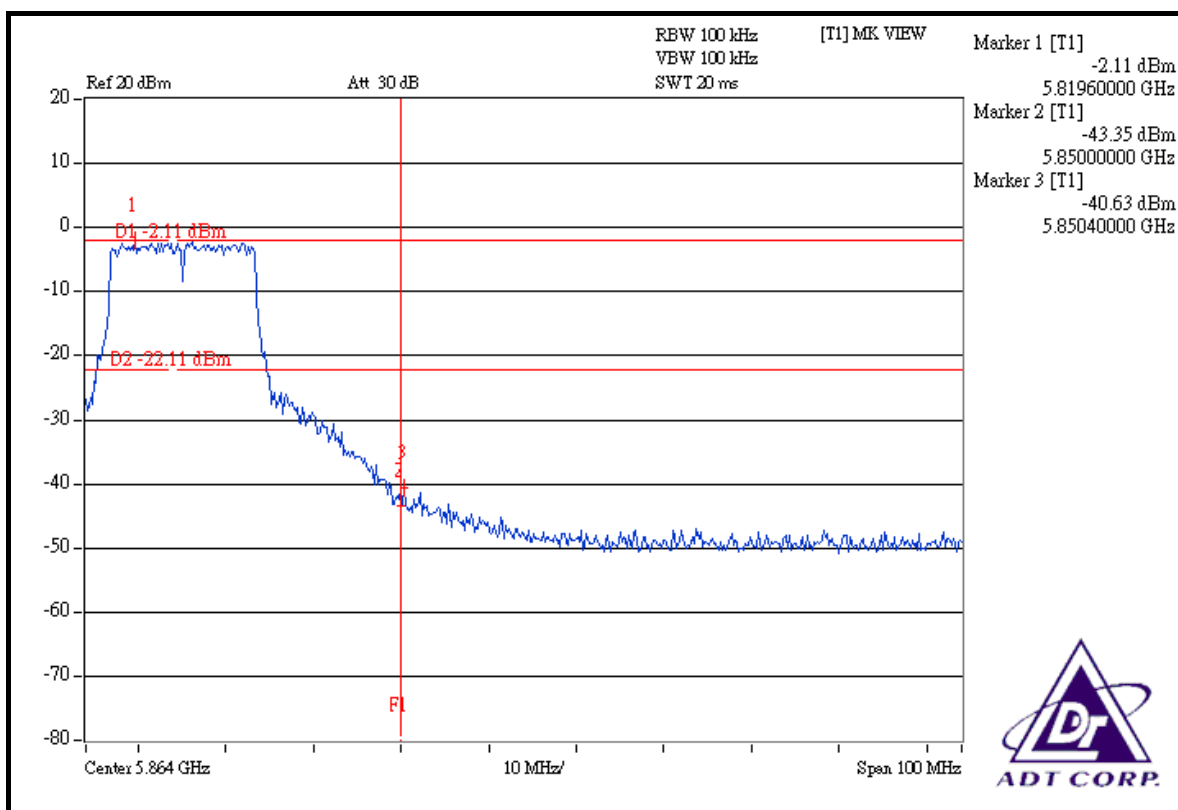
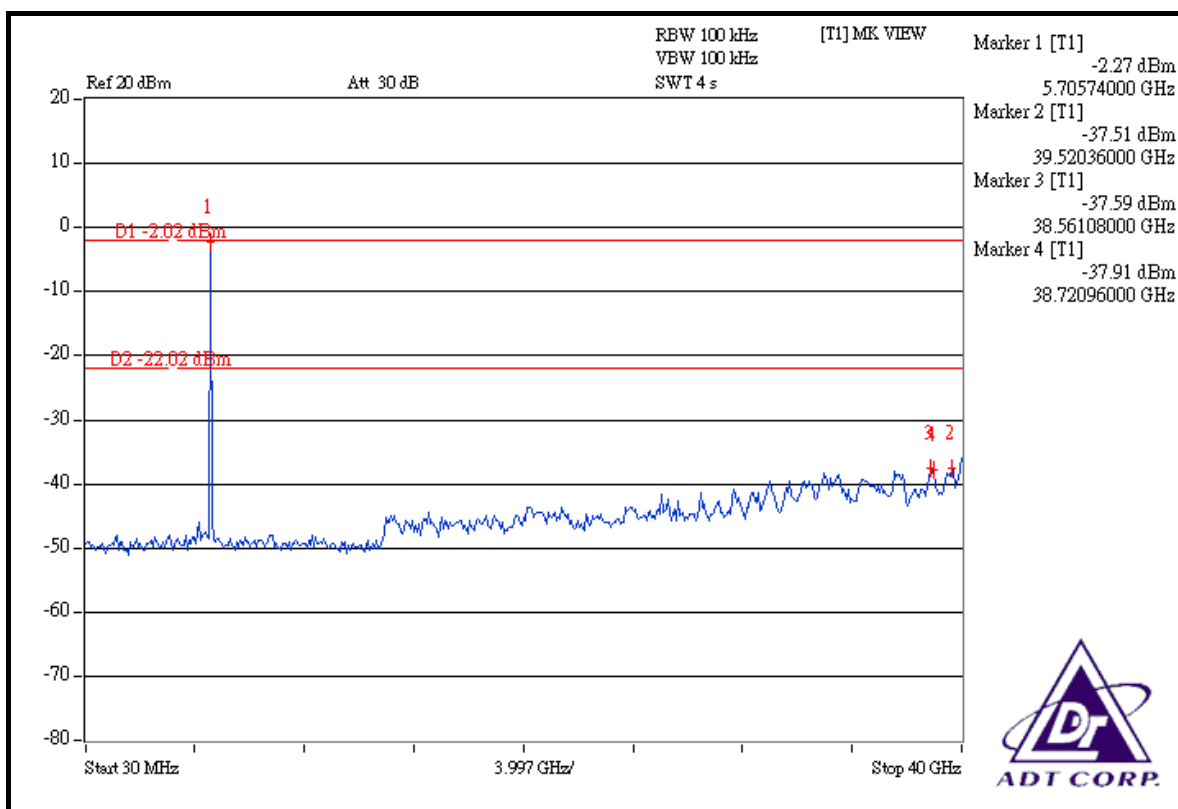
Same as Item 5.3.6

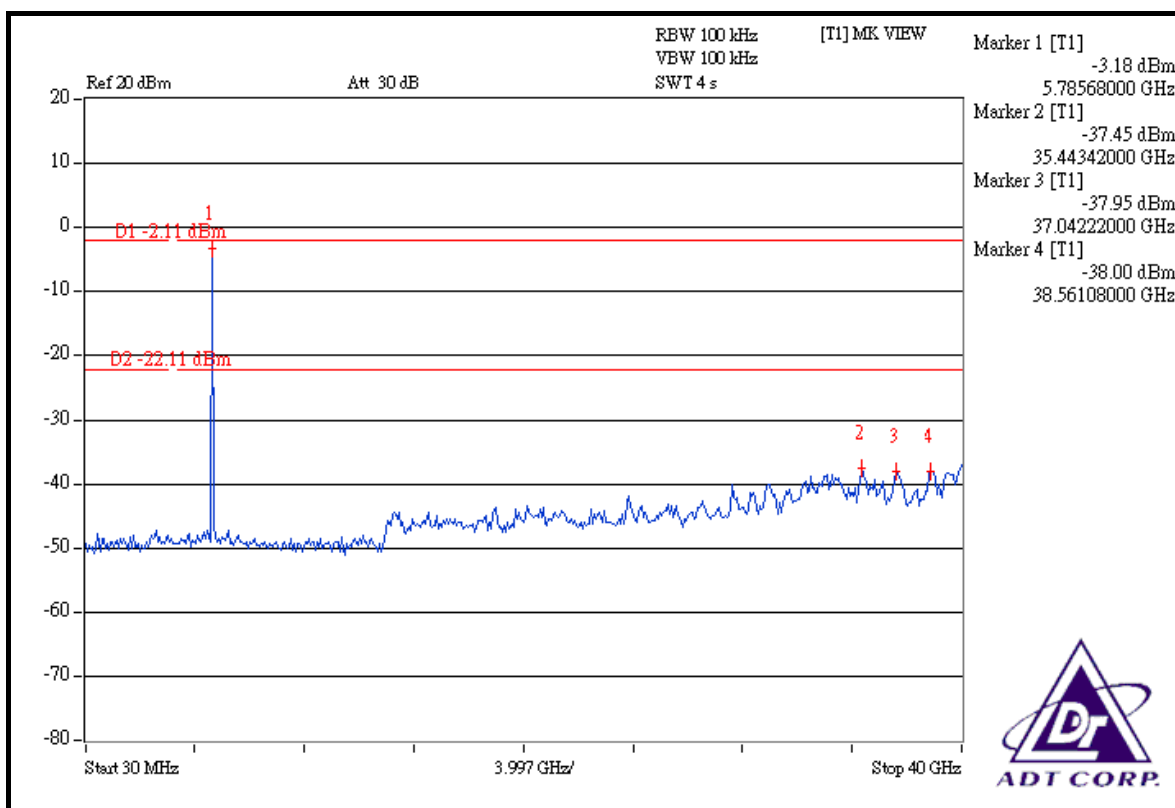
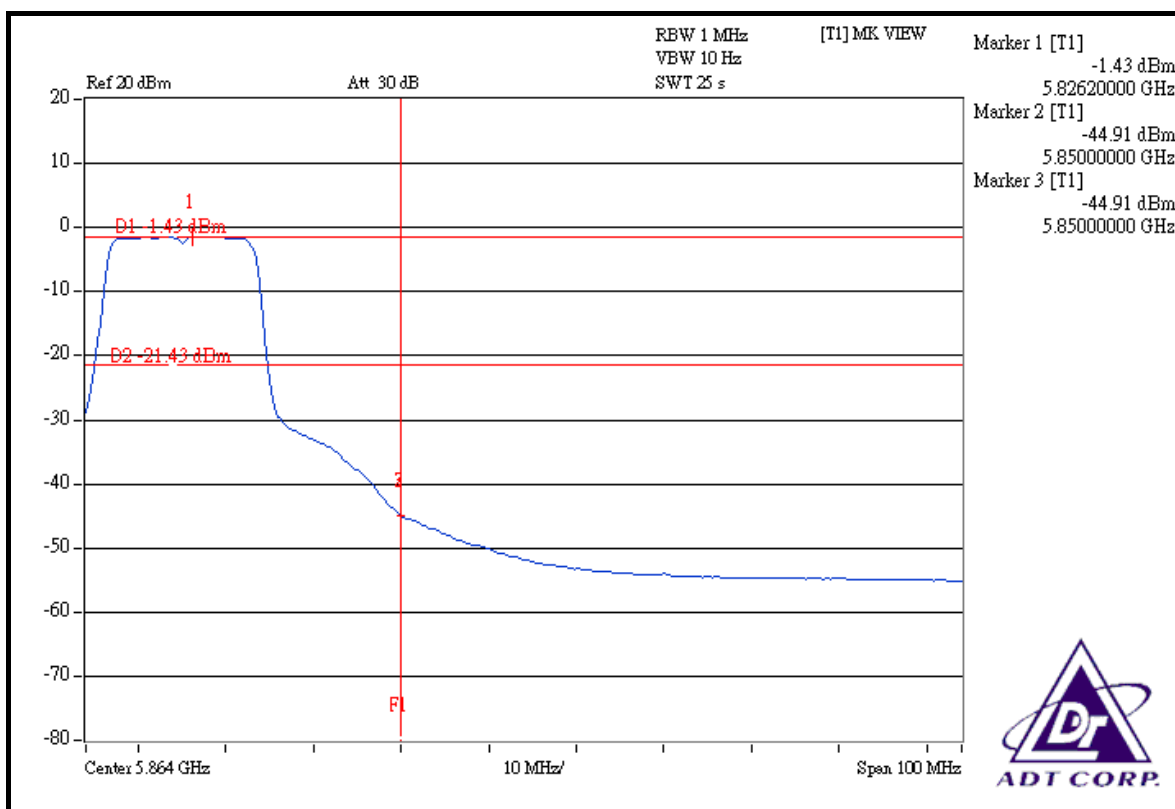
5.6.6 TEST RESULTS

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).

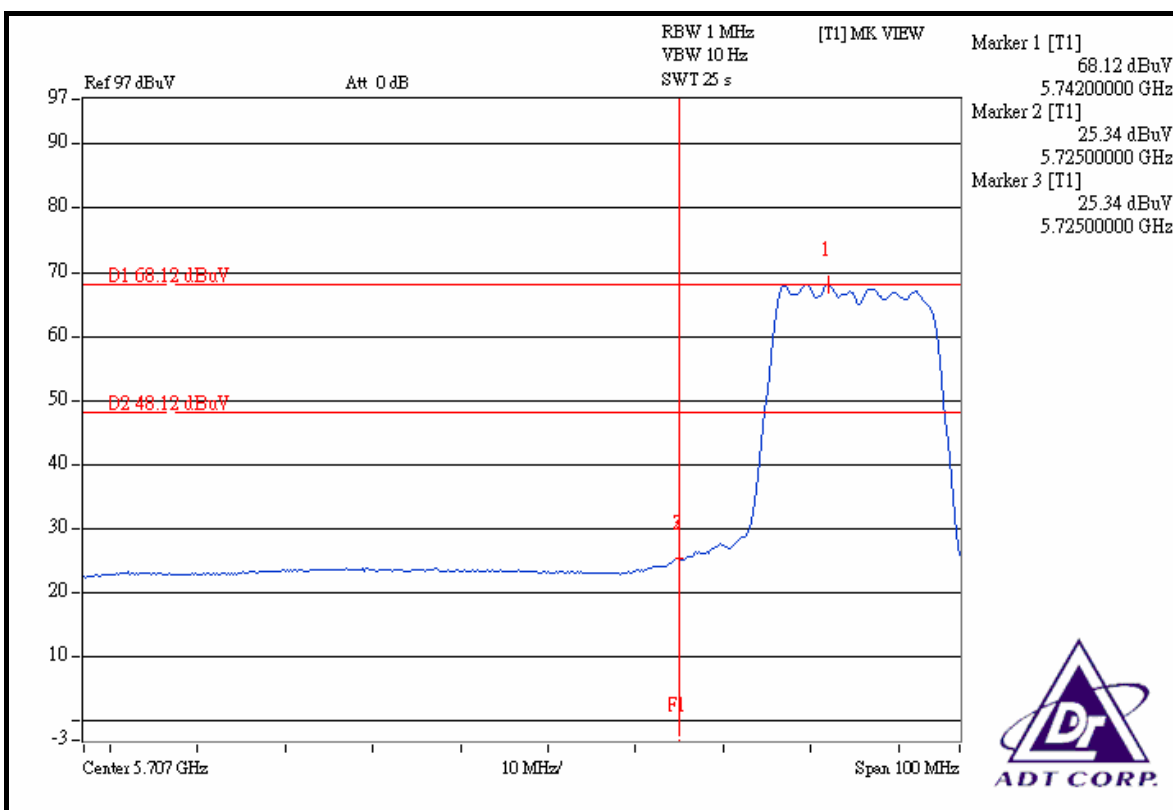
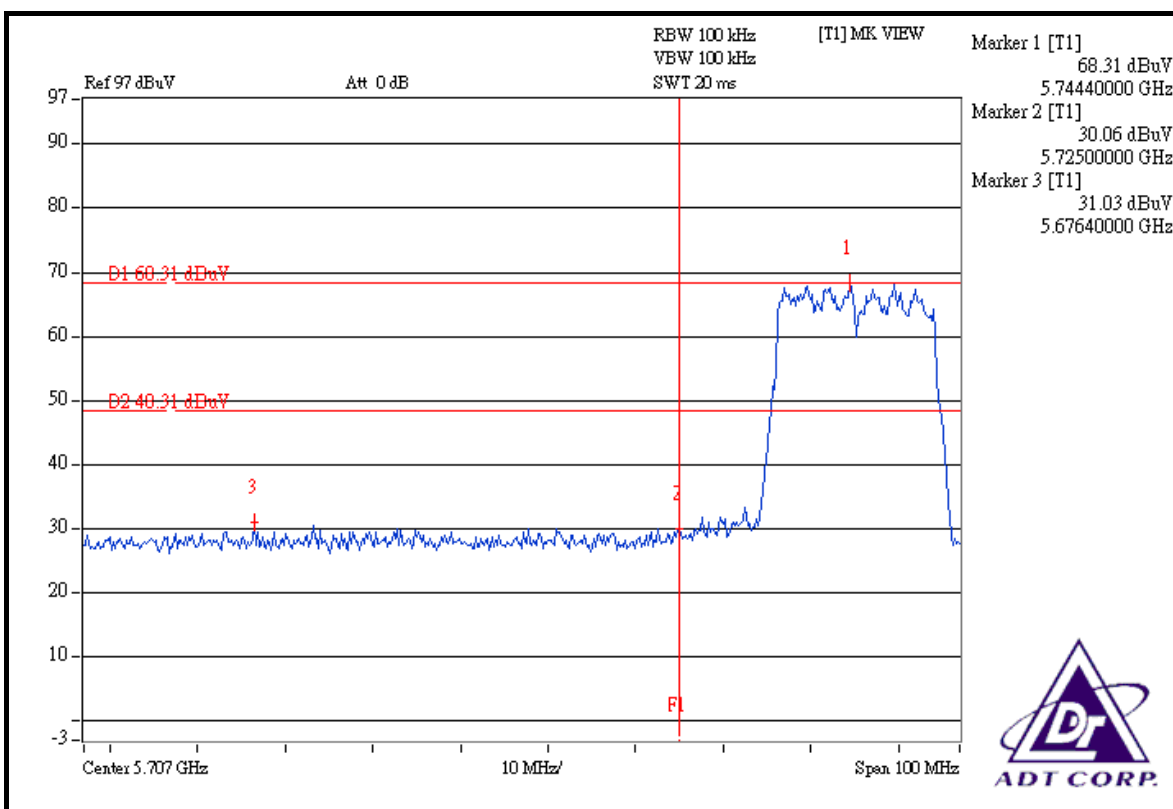
802.11a OFDM MODULATION:

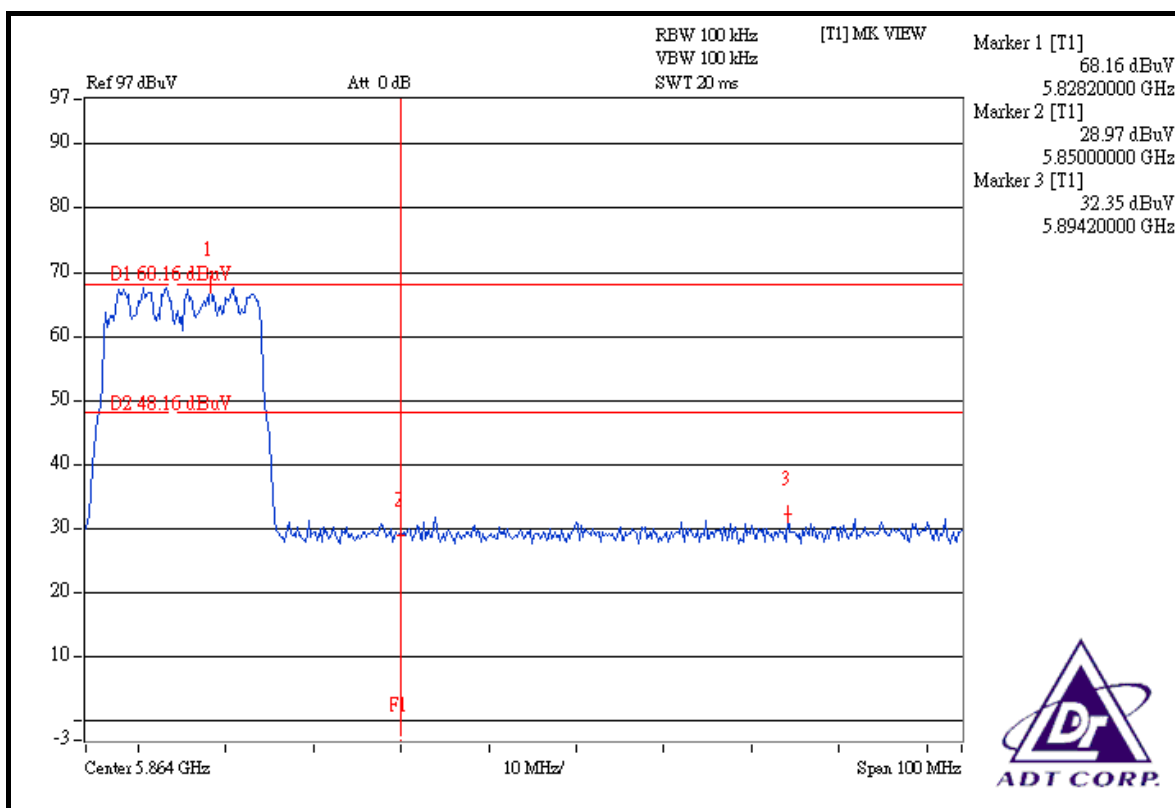
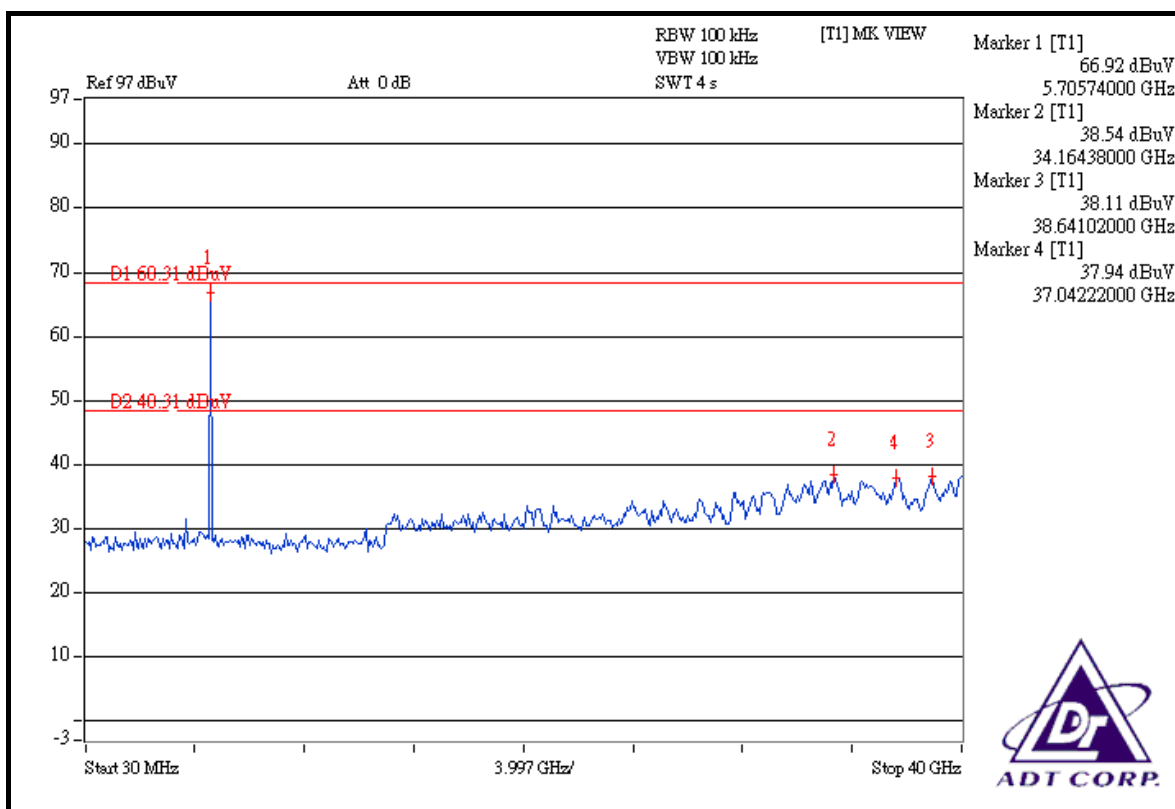


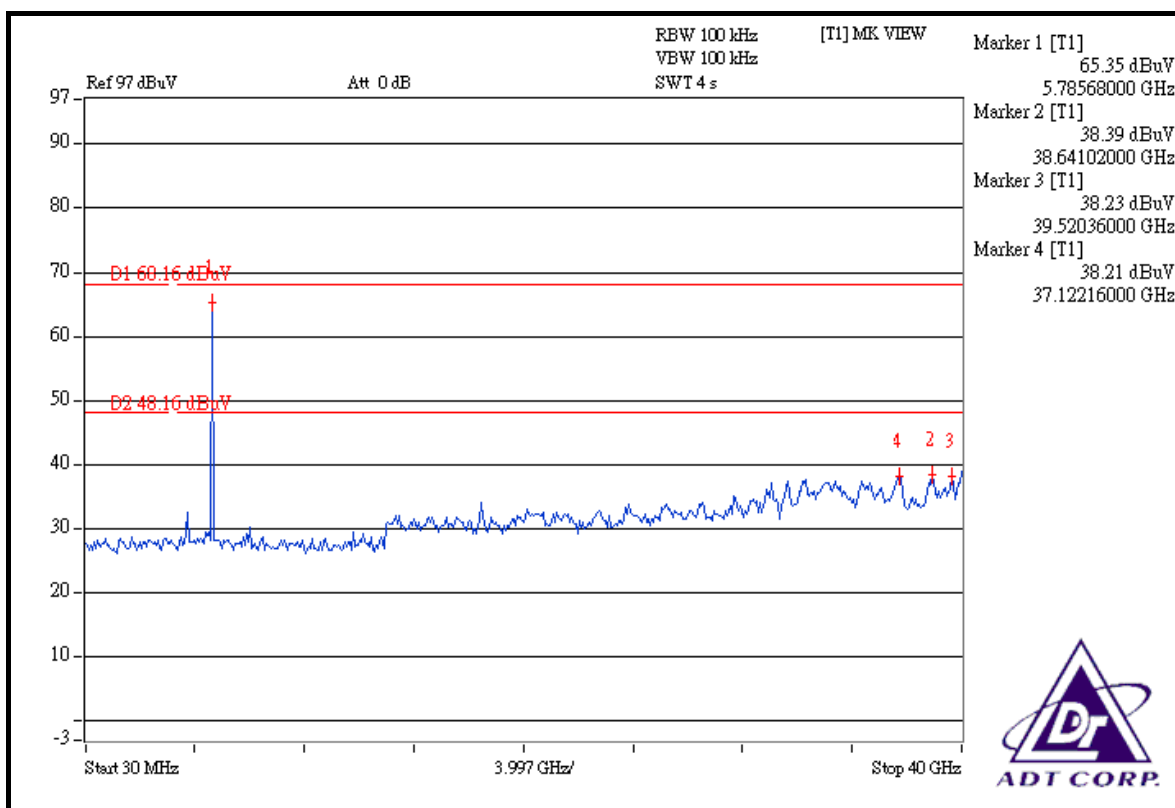
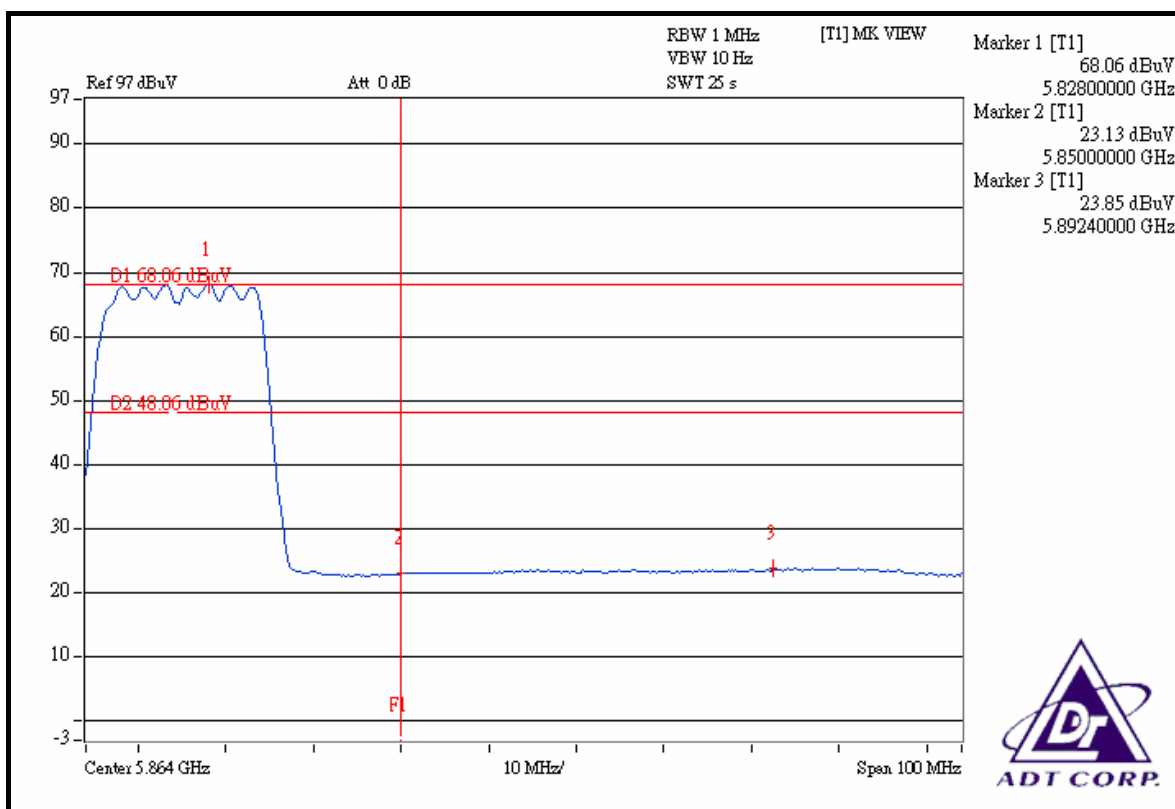




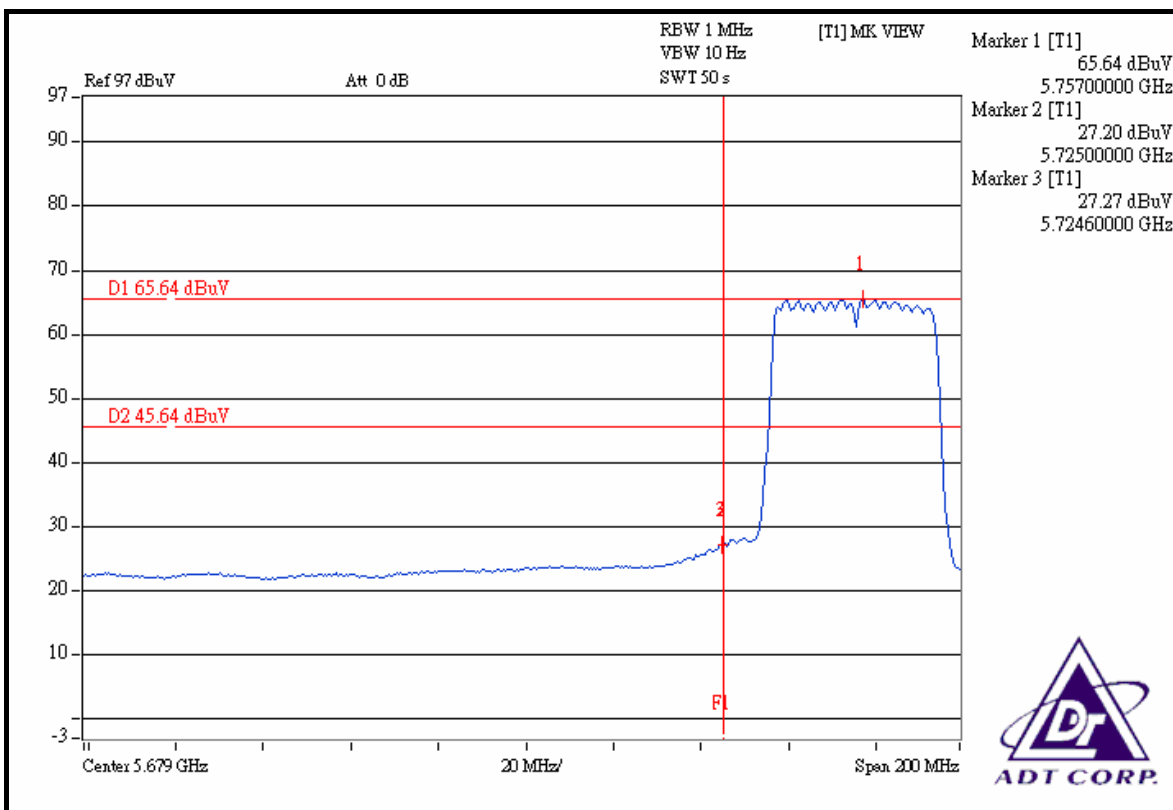
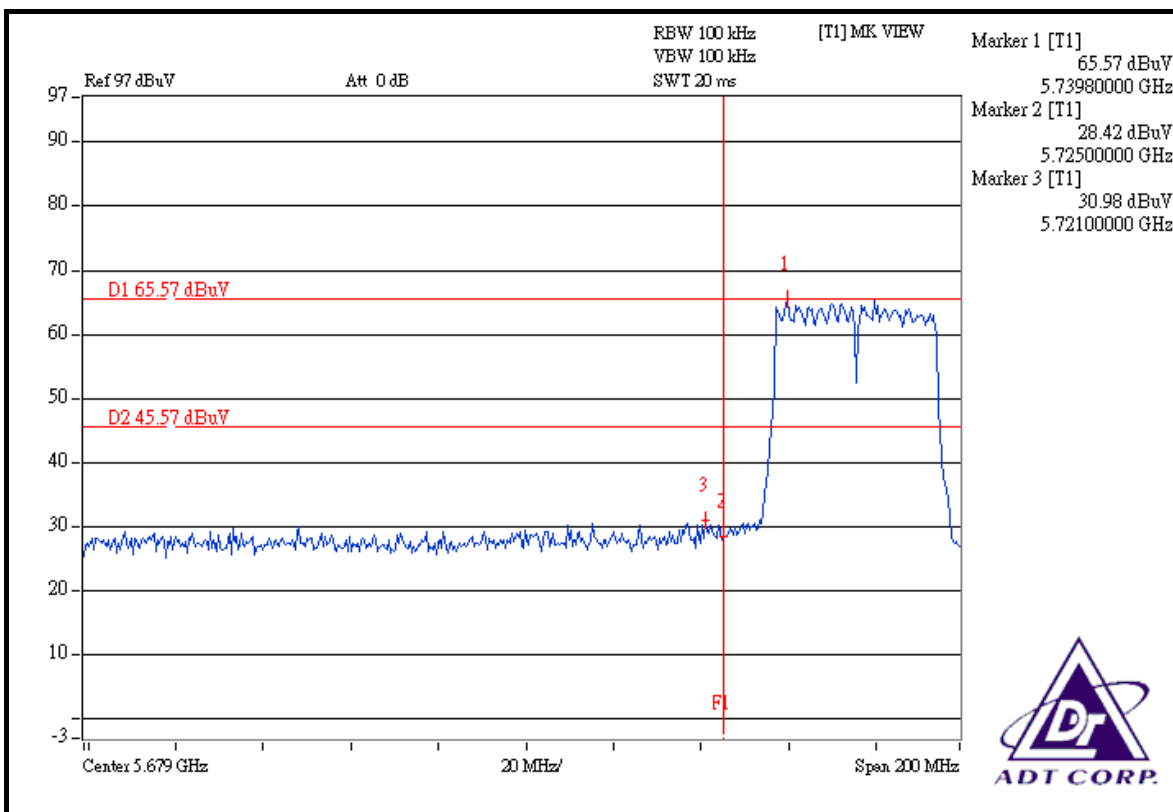
DRAFT 802.11n (20MHz) OFDM MODULATION:

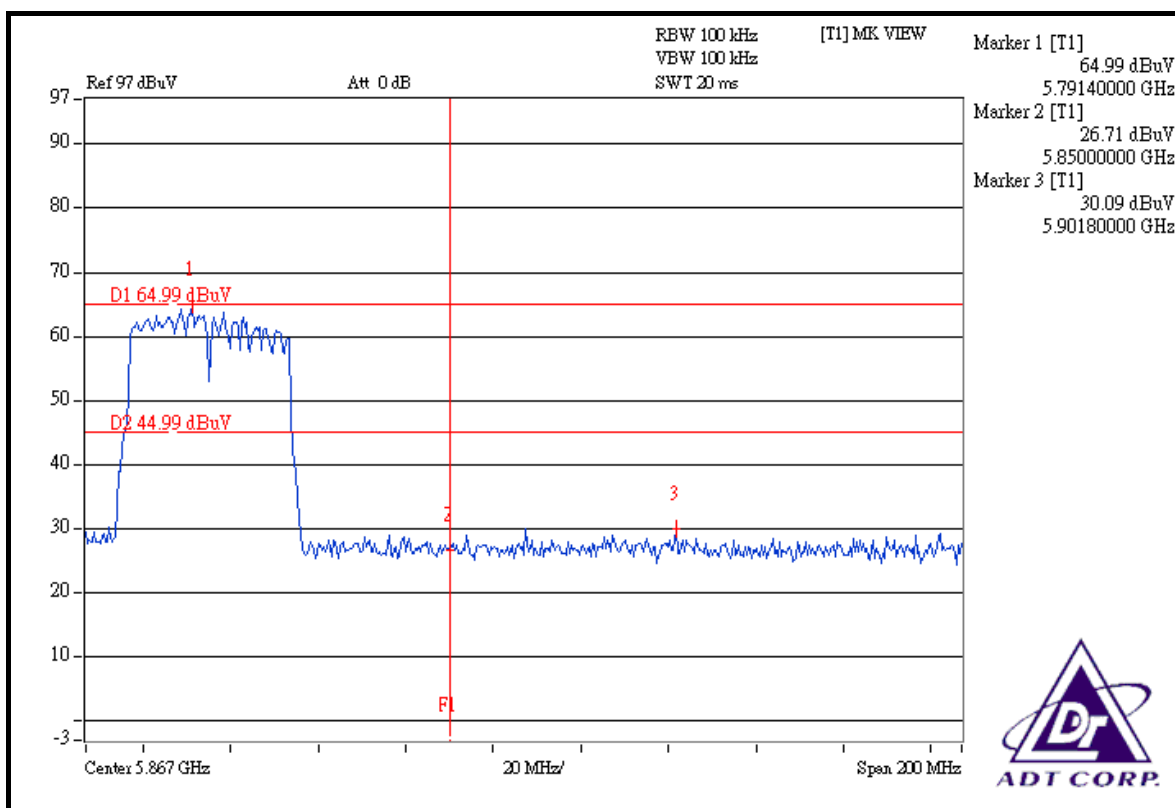
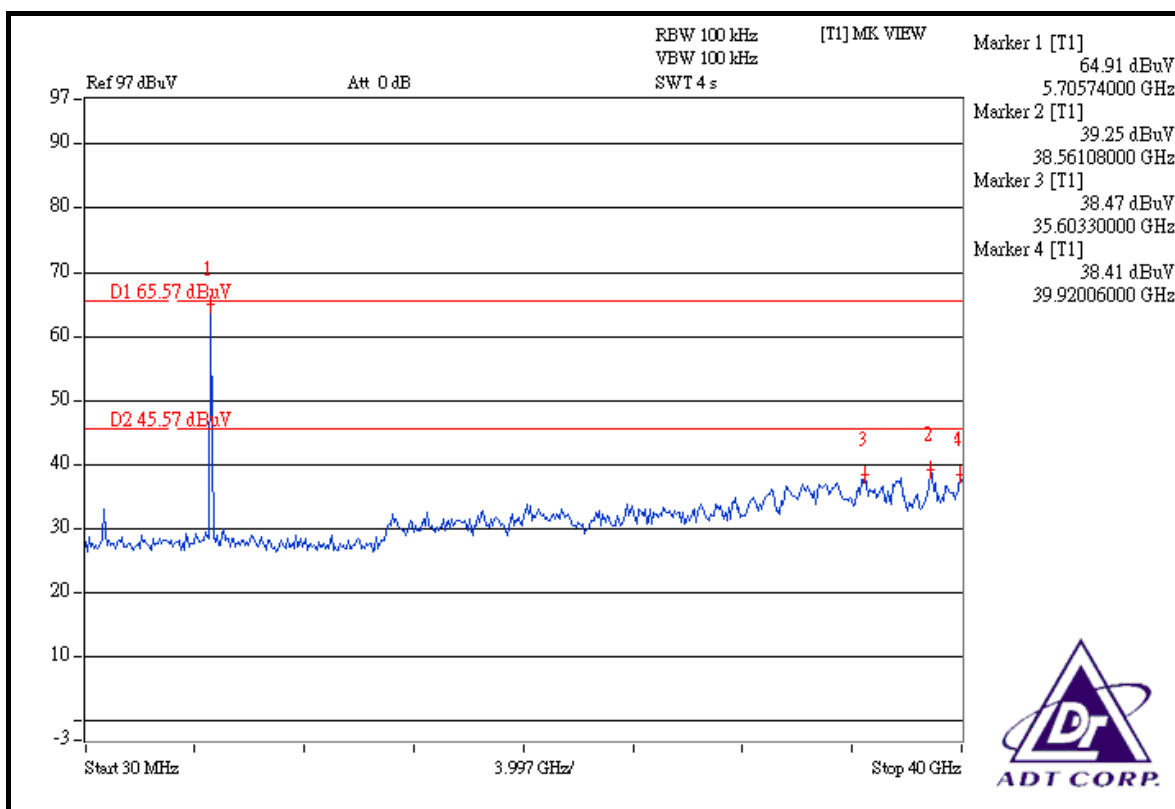


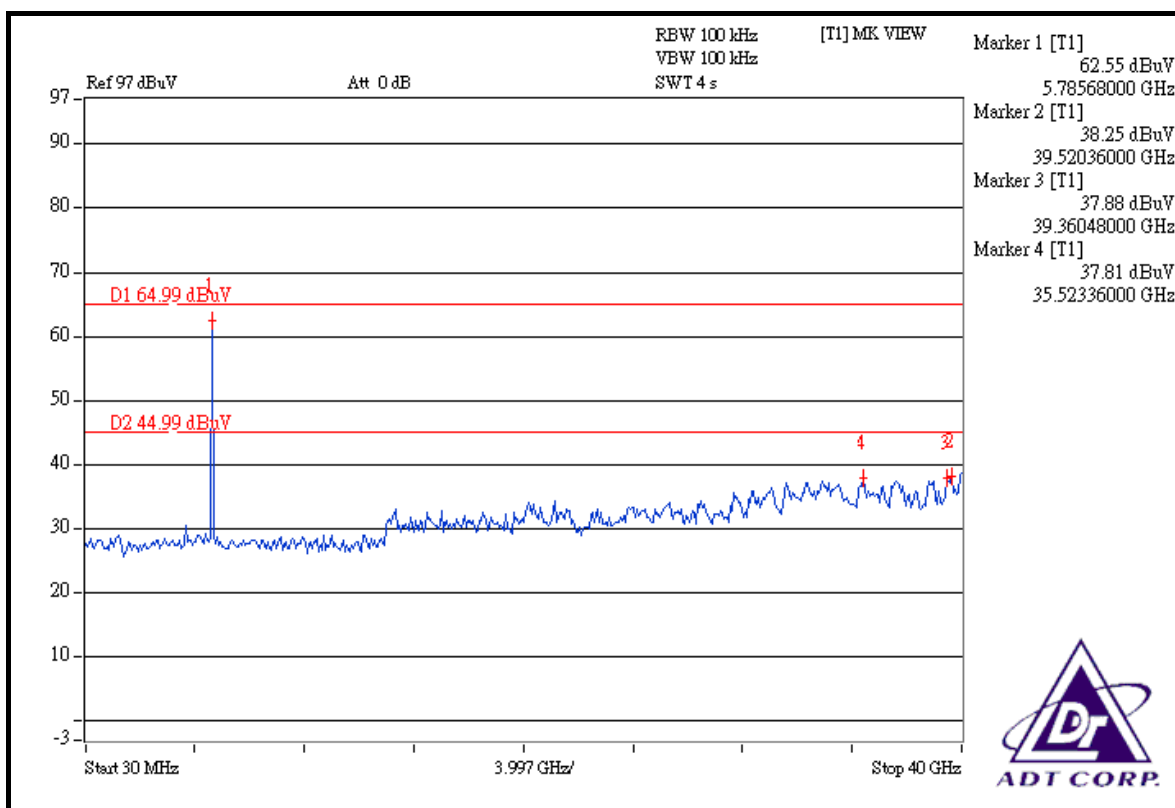
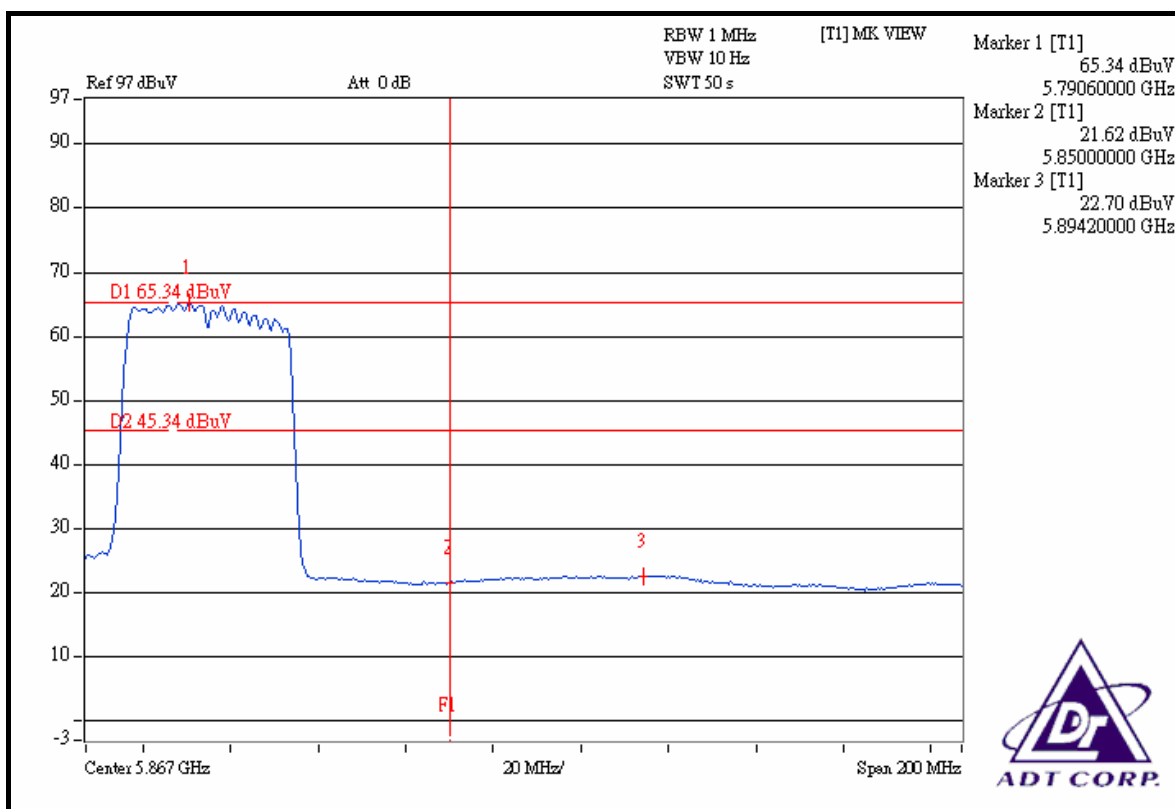




DRAFT 802.11n (40MHz) OFDM MODULATION:







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 with Ipex connector. The maximum Gain of the antenna is -4.5dBi.

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.	CNLA, BSMI, NCC
Netherlands	Telefication
Singapore	PSB , 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.

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.