



FCC TEST REPORT (15.407)

REPORT NO.: RF970227L09-1

MODEL NO.: DIR-628

RECEIVED: Feb. 27, 2008

TESTED: Feb. 28 ~ Mar. 04, 2008

ISSUED: Mar. 17, 2008

APPLICANT: D-Link Corporation

ADDRESS: 17595 Mt. Herrmann, Fountain Valley, CA
92708, U.S.A.

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 94 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 TAF, A2LA or any government agencies. The test results in the report only apply to the tested sample.





TABLE OF CONTENTS

1.	CERTIFICATION.....	4
2.	SUMMARY OF TEST RESULTS	5
2.1	MEASUREMENT UNCERTAINTY.....	5
3.	GENERAL INFORMATION.....	6
3.1	GENERAL DESCRIPTION OF EUT	6
3.2	DESCRIPTION OF TEST MODES.....	8
3.2.1	CONFIGURATION OF SYSTEM UNDER TEST	9
3.2.2	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	10
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS	12
3.4	DESCRIPTION OF SUPPORT UNITS	12
4.	TEST TYPES AND RESULTS	13
4.1	RADIATED EMISSION MEASUREMENT	13
4.1.1	LIMITS OF RADIATED EMISSION MEASUREMENT.....	13
4.1.2	LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS.....	14
4.1.3	TEST INSTRUMENTS.....	15
4.1.4	TEST PROCEDURES	16
4.1.5	DEVIATION FROM TEST STANDARD.....	16
4.1.6	TEST SETUP.....	17
4.1.7	EUT OPERATING CONDITION.....	17
4.1.8	TEST RESULTS	18
4.2	CONDUCTED EMISSION MEASUREMENT	27
4.2.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	27
4.2.2	TEST INSTRUMENTS.....	27
4.2.3	TEST PROCEDURES	28
4.2.4	DEVIATION FROM TEST STANDARD.....	28
4.2.5	TEST SETUP.....	29
4.2.6	EUT OPERATING CONDITIONS	29
4.2.7	TEST RESULTS	30
4.3	PEAK TRANSMIT POWER MEASUREMENT	32
4.3.1	LIMITS OF PEAK TRANSMIT POWER MEASUREMENT	32
4.3.2	TEST INSTRUMENTS.....	32
4.3.3	TEST PROCEDURE.....	32
4.3.4	DEVIATION FROM TEST STANDARD.....	33
4.3.5	TEST SETUP.....	33
4.3.6	EUT OPERATING CONDITIONS	33
4.3.7	TEST RESULTS	34
4.4	PEAK POWER EXCURSION MEASUREMENT	52
4.4.1	LIMITS OF PEAK POWER EXCURSION MEASUREMENT.....	52
4.4.2	TEST INSTRUMENTS.....	52
4.4.3	TEST PROCEDURE.....	52
4.4.4	DEVIATION FROM TEST STANDARD.....	53
4.4.5	TEST SETUP.....	53



4.4.6	EUT OPERATING CONDITIONS	53
4.4.7	TEST RESULTS	54
4.5	PEAK POWER SPECTRAL DENSITY MEASUREMENT	63
4.5.1	LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT	63
4.5.2	TEST INSTRUMENTS.....	63
4.5.3	TEST PROCEDURES	63
4.5.4	DEVIATION FROM TEST STANDARD.....	64
4.5.5	TEST SETUP	64
4.5.6	EUT OPERATING CONDITIONS	64
4.5.7	TEST RESULTS	65
4.6	FREQUENCY STABILITY.....	74
4.6.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT	74
4.6.2	TEST INSTRUMENTS.....	74
4.6.3	TEST PROCEDURE.....	74
4.6.4	DEVIATION FROM TEST STANDARD.....	75
4.6.5	TEST SETUP	75
4.6.6	EUT OPERATING CONDITION.....	75
4.6.7	TEST RESULTS	76
4.7	BAND EDGES MEASUREMENT	77
4.7.1	TEST INSTRUMENTS.....	77
4.7.2	TEST PROCEDURE.....	78
4.7.3	EUT OPERATING CONDITION.....	78
4.7.4	TEST RESULTS	79
4.8	ANTENNA REQUIREMENT	91
4.8.1	STANDARD APPLICABLE	91
4.8.2	ANTENNA CONNECTED CONSTRUCTION	91
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	92
6.	INFORMATION ON THE TESTING LABORATORIES	93
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	94



1. CERTIFICATION

PRODUCT: RangeBooster N Dual Band Router

MODEL: DIR-628

BRAND: D-Link

APPLICANT: D-Link Corporation

TEST SAMPLE: ENGINEERING SAMPLE

TESTED: Feb. 28 ~ Mar. 04, 2008

STANDARDS: FCC Part 15, Subpart E (Section 15.407)

ANSI C63.4-2003

The above equipment (Model: DIR-628) 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:** Mar. 17, 2008
Rennie Wang / Senior Specialist

TECHNICAL ACCEPTANCE : Long Chen , **DATE:** Mar. 17, 2008
Responsible for RF Long Chen / Senior Engineer

APPROVED BY : Gary Chang , **DATE:** Mar. 17, 2008
Gary Chang / Assistant Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -7.97dB at 0.201MHz
15.407(b/1/2/3) (b)(5)	Electric Field Strength Spurious Emissions, 30MHz ~ 40000MHz	PASS	Meet the requirement of limit. Minimum passing margin is -1.19dB at 5150.00MHz
15.407(a/1/2/3)	Peak Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz ~ 30MHz	2.44dB
Radiated emissions	30MHz ~ 200MHz	2.93dB
	200MHz ~1000MHz	2.95dB
	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	RangeBooster N Dual Band Router
MODEL NO.	DIR-628
FCC ID	KA2DIR628A1
POWER SUPPLY	5Vdc from AC adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b:11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps Draft 802.11n: up to 300.0Mbps
FREQUENCY RANGE	2.4GHz: 2400 ~ 2483.5MHz 5.0GHz: 5150 ~ 5250MHz, 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: 9 for 802.11a, draft 802.11n (20MHz) 4 for draft 802.11n (40MHz)
OUTPUT POWER	108.525mW for 2400.0 ~ 2483.5MHz 46.989mW for 5150.0 ~ 5250.0MHz 102.489mW for 5725.0 ~ 5850.0MHz
ANTENNA TYPE	2.4GHz: Dipole antenna with 2.0dBi gain 5.0GHz: Dipole antenna with 2.0dBi gain
DATA CABLE	NA
I/O PORTS	RJ45, USB
ASSOCIATED DEVICES	Adapter

NOTE:

- The EUT is a RangeBooster N Dual Band Router. The functions of EUT listed as below:

	TEST STANDARD	REFERENCE REPORT
WLAN 802.11b/g, draft 802.11n	FCC Part 15, Subpart C (Section 15.247)	RF970227L09
WLAN 802.11a, draft 802.11n (5725~5850 MHz)		
WLAN 802.11a, draft 802.11n (5150~ 5250MHz)	FCC Part 15, Subpart E (Section 15.407)	RF970227L09-1

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

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

3. The EUT was powered by the following adapter:

BRAND:	JENTEC TECHNOLOGY CO., LTD.
MODEL:	AF1805-A
INPUT:	100-120Vac, 50-60Hz, 0.4A
OUTPUT:	5Vdc, 2.5A
POWER LINE:	1.8m non-shielded cable without core

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

	1TX	2TX
802.11b	√	-
802.11g	√	-
802.11a	√	-
Draft 802.11n (20MHz)	-	√
Draft 802.11n (40MHz)	-	√

5. 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

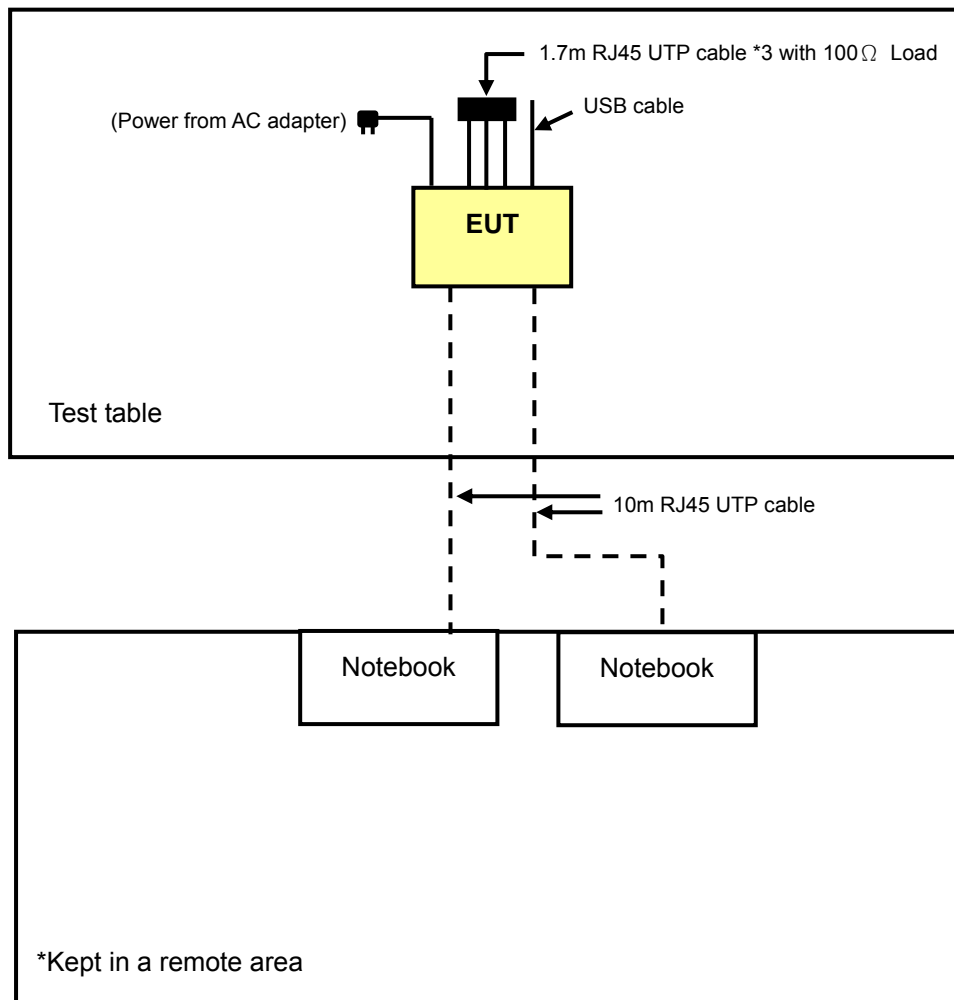
4 channels are provided for 802.11a, draft 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180MHz	44	5220MHz
40	5200MHz	48	5240MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190MHz	46	5230MHz

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

RADIATED EMISSION TEST (ABOVE 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
Draft 802.11n (20MHz)	36 to 48	36, 40, 48	OFDM	BPSK	7.2
Draft 802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	15.0

RADIATED EMISSION TEST (BELOW 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48	36	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48	36	OFDM	BPSK	6.0

BANDEDGE MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48	36, 48	OFDM	BPSK	6.0
Draft 802.11n (20MHz)	36 to 48	36, 48	OFDM	BPSK	7.2
Draft 802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	15.0

ANTENNA PORT CONDUCTED MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
Draft 802.11n (20MHz)	36 to 48	36, 40, 48	OFDM	BPSK	7.2
Draft 802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	15.0



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart E (15.407)

ANSI C63.4-2003

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

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

3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP05L	16484462992	E2K24CLNS
2	NOTEBOOK COMPUTER	DELL	PP05L	12130898320	E2K24CLNS

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m UTP RJ 45 cable
2	10m UTP RJ 45 cable

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

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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

4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

FREQUENCIES (MHz)	EIRP LIMIT (dBm)		EQUIVALENT FIELD STRENGTH AT 3m (dBμV/m) *NOTE 3	
	PK	AV	PK	AV
5150 ~ 5250	-7	-27	88.3	68.3
5250 ~ 5350	-7	-27	88.3	68.3
5470 ~ 5725	-7	-27	88.3	68.3

NOTE:

1. For frequencies 10MHz or greater above or below the band edge.
2. All emissions within the frequency range from the band edge to 10MHz above or below the band edge.
3. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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

4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Jul. 27, 2008
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Aug. 05, 2008
BILOG Antenna SCHWARZBECK	VULB9168	9168-153	Jan. 03, 2009
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-563	Jul. 30, 2008
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 06, 2009
Preamplifier Agilent	8449B	3008A01910	Sep. 19, 2008
Preamplifier Agilent	8447D	2944A10638	Dec. 19, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274039/223650	Nov. 07, 2008
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 09, 2008
Software	ADT_Radiated_V7.6	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA
Turn Table EMCO	2087-2.03	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	Apr. 23, 2008

- 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 9.
 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 4. The IC Site Registration No. is IC3789B-9.

4.1.4 TEST PROCEDURES

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

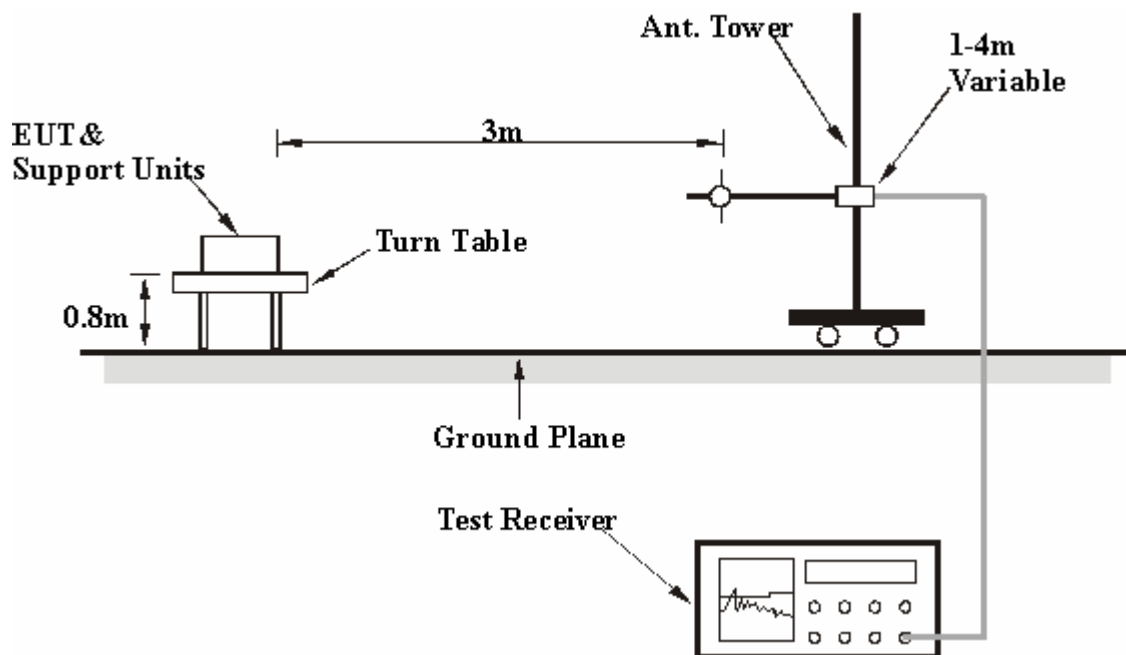
NOTE:

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

4.1.5 DEVIATION FROM TEST STANDARD

No deviation

4.1.6 TEST SETUP



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

4.1.7 EUT OPERATING CONDITION

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

4.1.8 TEST RESULTS

802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 993hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	54.92 PK	74.00	-19.08	1.31 H	325	16.33	38.59
2	#5150.00	36.56 AV	54.00	-17.44	1.31 H	325	-2.03	38.59
3	*5180.00	96.66 PK			1.31 H	325	58.02	38.64
4	*5180.00	86.06 AV			1.31 H	325	47.43	38.64
5	6908.00	52.26 PK	88.30	-36.04	1.03 H	18	9.07	43.19
6	6908.00	39.76 AV	68.30	-28.54	1.03 H	18	-3.43	43.19
7	10360.00	56.55 PK	88.30	-31.75	1.00 H	192	7.85	48.70
8	10360.00	44.27 AV	68.30	-24.03	1.00 H	192	-4.43	48.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	59.85 PK	74.00	-14.15	1.00 V	9	21.26	38.59
2	#5150.00	42.42 AV	54.00	-11.58	1.00 V	9	3.83	38.59
3	*5180.00	107.08 PK			1.00 V	9	68.45	38.64
4	*5180.00	96.56 AV			1.00 V	9	57.93	38.64
5	6908.00	54.18 PK	88.30	-34.12	1.16 V	348	10.99	43.19
6	6908.00	45.02 AV	68.30	-23.28	1.16 V	348	1.83	43.19
7	10360.00	58.26 PK	88.30	-30.04	1.06 V	92	9.56	48.70
8	10360.00	44.68 AV	68.30	-23.62	1.06 V	92	-4.02	48.70

- 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.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 993hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	96.78 PK			1.10 H	228	58.11	38.67
2	*5200.00	86.59 AV			1.10 H	228	47.92	38.67
3	10400.00	57.13 PK	88.30	-31.17	1.01 H	326	8.36	48.77
4	10400.00	44.52 AV	68.30	-23.78	1.01 H	326	-4.25	48.77
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	108.01 PK			1.00 V	255	69.34	38.67
2	*5200.00	97.24 AV			1.00 V	255	58.57	38.67
3	6933.00	54.19 PK	88.30	-34.11	1.01 V	189	10.87	43.32
4	6933.00	45.27 AV	68.30	-23.03	1.01 V	189	1.95	43.32
5	10400.00	57.32 PK	88.30	-30.98	1.02 V	273	8.55	48.77
6	10400.00	44.67 AV	68.30	-23.63	1.02 V	273	-4.10	48.77

- 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 993hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	96.21 PK			1.00 H	143	57.50	38.71
2	*5240.00	86.65 AV			1.00 H	143	47.94	38.71
3	#5350.00	48.72 PK	74.00	-25.28	1.00 H	143	9.91	38.81
4	#5350.00	35.65 AV	54.00	-18.35	1.00 H	143	-3.16	38.81
5	10480.00	57.52 PK	88.30	-30.78	1.10 H	138	8.51	49.01
6	10480.00	45.07 AV	68.30	-23.23	1.10 H	138	-3.94	49.01
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	108.09 PK			1.02 V	223	69.38	38.71
2	*5240.00	97.69 AV			1.02 V	223	58.98	38.71
3	#5350.00	48.85 PK	74.00	-25.15	1.02 V	223	10.04	38.81
4	#5350.00	35.78 AV	54.00	-18.22	1.02 V	223	-3.03	38.81
5	6986.00	54.23 PK	88.30	-34.07	1.00 V	308	10.63	43.60
6	6986.00	45.19 AV	68.30	-23.11	1.00 V	308	1.59	43.60
7	10480.00	57.97 PK	88.30	-30.33	1.14 V	254	8.96	49.01
8	10480.00	45.15 AV	68.30	-23.15	1.14 V	254	-3.86	49.01

- 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.

DRAFT 802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 993hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	50.25 PK	74.00	-23.75	1.00 H	25	11.66	38.59
2	#5150.00	38.93 AV	54.00	-15.07	1.00 H	25	0.34	38.59
3	*5180.00	97.74 PK			1.00 H	25	59.10	38.64
4	*5180.00	87.77 AV			1.00 H	25	49.13	38.64
5	10360.00	61.25 PK	88.30	-27.05	1.00 H	211	12.55	48.70
6	10360.00	47.82 AV	68.30	-20.48	1.00 H	211	-0.88	48.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	61.12 PK	74.00	-12.88	1.00 V	359	22.53	38.59
2	#5150.00	42.62 AV	54.00	-11.38	1.00 V	359	4.03	38.59
3	*5180.00	110.78 PK			1.00 V	359	72.15	38.64
4	*5180.00	99.94 AV			1.00 V	359	61.31	38.64
5	6908.00	54.22 PK	88.30	-34.08	1.05 V	68	11.03	43.19
6	6908.00	45.37 AV	68.30	-22.93	1.05 V	68	2.18	43.19
7	10360.00	61.57 PK	88.30	-26.73	1.00 V	24	12.87	48.70
8	10360.00	48.39 AV	68.30	-19.91	1.00 V	24	-0.31	48.70

- 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 993hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	97.62 PK			1.09 H	110	58.95	38.67
2	*5200.00	87.54 AV			1.09 H	110	48.87	38.67
3	10360.00	56.87 PK	88.30	-31.43	1.02 H	220	8.17	48.70
4	10360.00	45.65 AV	68.30	-22.65	1.02 H	220	-3.05	48.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	110.66 PK			1.01 V	12	71.99	38.67
2	*5200.00	99.75 AV			1.01 V	12	61.08	38.67
3	6933.00	55.06 PK	88.30	-33.24	1.24 V	160	11.74	43.32
4	6933.00	45.59 AV	68.30	-22.71	1.24 V	160	2.27	43.32
5	10400.00	57.69 PK	88.30	-30.61	1.35 V	210	8.92	48.77
6	10400.00	45.21 AV	68.30	-23.09	1.35 V	210	-3.56	48.77

- 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 993hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	97.86 PK			1.00 H	137	59.15	38.71
2	*5240.00	87.92 AV			1.00 H	137	49.21	38.71
3	#5350.00	45.70 PK	74.00	-28.30	1.00 H	137	6.89	38.81
4	#5350.00	35.58 AV	54.00	-18.42	1.00 H	137	-3.23	38.81
5	10480.00	58.06 PK	88.30	-30.24	1.00 H	215	9.05	49.01
6	10480.00	45.18 AV	68.30	-23.12	1.00 H	215	-3.83	49.01
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	110.80 PK			1.02 V	187	72.09	38.71
2	*5240.00	99.98 AV			1.02 V	187	61.27	38.71
3	#5350.00	45.89 PK	74.00	-28.11	1.02 V	187	7.08	38.81
4	#5350.00	35.62 AV	54.00	-18.38	1.02 V	187	-3.19	38.81
5	6986.00	54.33 PK	88.30	-33.97	1.00 V	6	10.73	43.60
6	6986.00	45.27 AV	68.30	-23.03	1.00 V	6	1.67	43.60
7	10480.00	58.28 PK	88.30	-30.02	1.35 V	318	9.27	49.01
8	10480.00	45.33 AV	68.30	-22.97	1.35 V	318	-3.68	49.01

- 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.

DRAFT 802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 993hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	57.15 PK	74.00	-16.85	1.09 H	352	18.56	38.59
2	#5150.00	39.89 AV	54.00	-14.11	1.09 H	352	1.30	38.59
3	*5190.00	96.79 PK			1.09 H	352	58.14	38.65
4	*5190.00	85.60 AV			1.09 H	352	46.95	38.65
5	10380.00	57.34 PK	88.30	-30.96	1.10 H	246	8.60	48.74
6	10380.00	44.34 AV	68.30	-23.96	1.10 H	246	-4.40	48.74
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	67.05 PK	74.00	-6.95	1.33 V	120	28.46	38.59
2	#5150.00	52.81 AV	54.00	-1.19	1.33 V	120	14.22	38.59
3	*5190.00	107.23 PK			1.33 V	120	68.58	38.65
4	*5190.00	96.93 AV			1.33 V	120	58.28	38.65
5	6920.00	53.69 PK	88.30	-34.61	1.56 V	149	10.44	43.25
6	6920.00	44.92 AV	68.30	-23.38	1.56 V	149	1.67	43.25
7	10380.00	57.52 PK	88.30	-30.78	1.03 V	12	8.78	48.74
8	10380.00	44.45 AV	68.30	-23.85	1.03 V	12	-4.29	48.74

- 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 993hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	97.20 PK			1.11 H	267	58.50	38.70
2	*5230.00	86.37 AV			1.11 H	267	47.67	38.70
3	#5350.00	53.71 PK	74.00	-20.29	1.11 H	267	14.90	38.81
4	#5350.00	39.26 AV	54.00	-14.74	1.11 H	267	0.45	38.81
5	10460.00	57.72 PK	88.30	-30.58	1.02 H	55	8.77	48.95
6	10460.00	44.25 AV	68.30	-24.05	1.02 H	55	-4.70	48.95
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	*5230.00	108.01 PK			1.22 V	107	69.32	38.70
2	*5230.00	97.95 AV			1.22 V	107	59.26	38.70
3	#5350.00	53.82 PK	74.00	-20.18	1.22 V	107	15.01	38.81
4	#5350.00	39.30 AV	54.00	-14.70	1.22 V	107	0.49	38.81
5	6973.00	53.76 PK	88.30	-34.54	1.17 V	309	10.23	43.53
6	6973.00	44.97 AV	68.30	-23.33	1.17 V	309	1.44	43.53
7	10460.00	57.89 PK	88.30	-30.41	1.06 V	267	8.94	48.95
8	10460.00	44.50 AV	68.30	-23.80	1.06 V	267	-4.45	48.95

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



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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 993hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	500.42	42.85 QP	46.00	-3.15	1.50 H	199	23.73	19.12
2	566.52	43.14 QP	46.00	-2.86	1.50 H	217	22.43	20.71
3	599.58	38.64 QP	46.00	-7.36	1.50 H	214	17.14	21.50
4	700.68	38.37 QP	46.00	-7.63	1.00 H	217	15.87	22.50
5	811.50	38.95 QP	46.00	-7.05	1.00 H	175	13.92	25.03
6	933.99	37.35 QP	46.00	-8.65	1.50 H	73	11.17	26.17

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	59.06	31.91 QP	40.00	-8.09	1.00 V	202	18.52	13.39
2	111.56	41.60 QP	43.50	-1.90	1.00 V	208	30.88	10.72
3	166.00	34.58 QP	43.50	-8.92	1.00 V	190	21.34	13.24
4	500.42	37.43 QP	46.00	-8.57	1.00 V	169	18.31	19.12
5	566.52	39.56 QP	46.00	-6.44	1.00 V	106	18.85	20.71
6	766.79	38.21 QP	46.00	-7.79	1.50 V	37	14.09	24.13
7	799.84	37.64 QP	46.00	-8.36	1.50 V	31	12.71	24.92
8	933.99	41.92 QP	46.00	-4.08	1.00 V	190	15.74	26.17

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

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Sep. 21, 2008
RF signal cable Woken	5D-FB	Cable-HYCO3-01	Jan. 06, 2009
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 09, 2009
LISN SCHWARZBECK	NNBL 8226-2	8226-142	May 07, 2008
Software ADT	ADT_Cond_V3	NA	NA

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

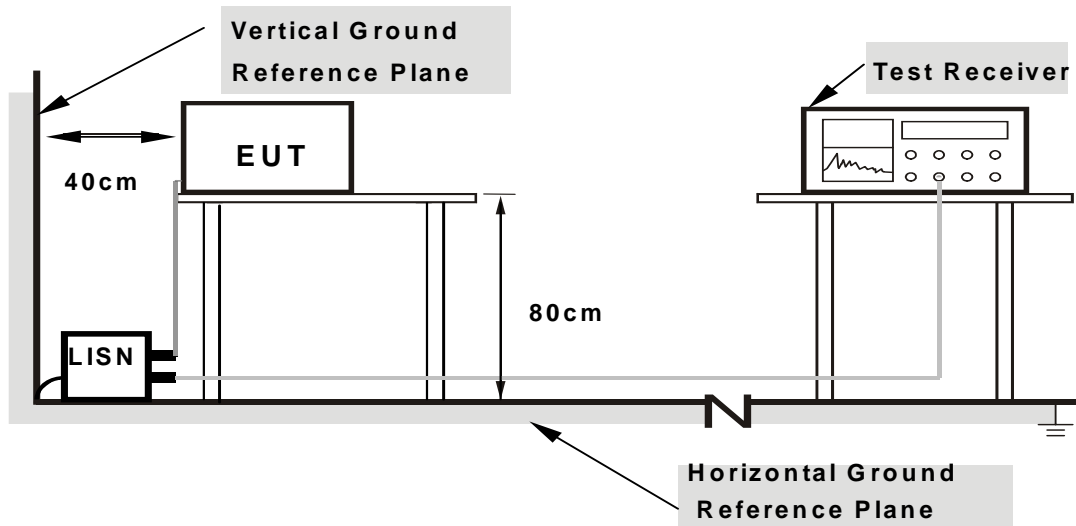
4.2.3 TEST PROCEDURES

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

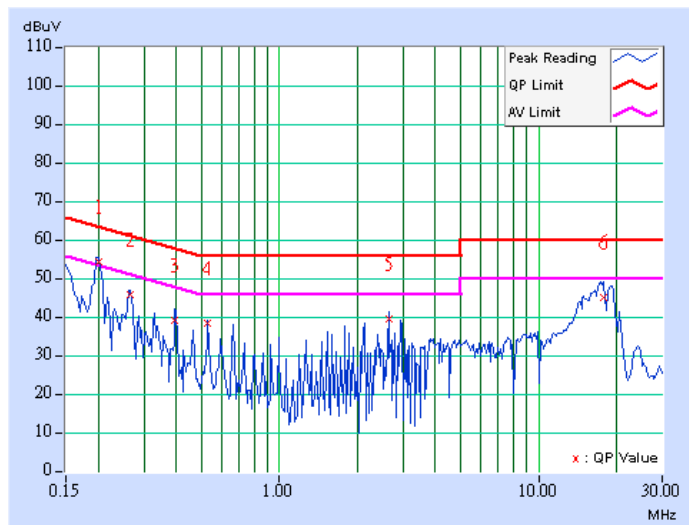
4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA : 802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 982hPa	TESTED BY	Match Tsui

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.201	0.10	54.03	45.51	54.13	45.61	63.58	53.58	-9.45	-7.97
2	0.267	0.10	45.26	-	45.36	-	61.20	51.20	-15.84	-
3	0.396	0.10	38.88	-	38.98	-	57.93	47.93	-18.95	-
4	0.529	0.10	38.01	-	38.11	-	56.00	46.00	-17.89	-
5	2.652	0.24	39.21	-	39.45	-	56.00	46.00	-16.55	-
6	17.730	0.53	44.49	-	45.02	-	60.00	50.00	-14.98	-

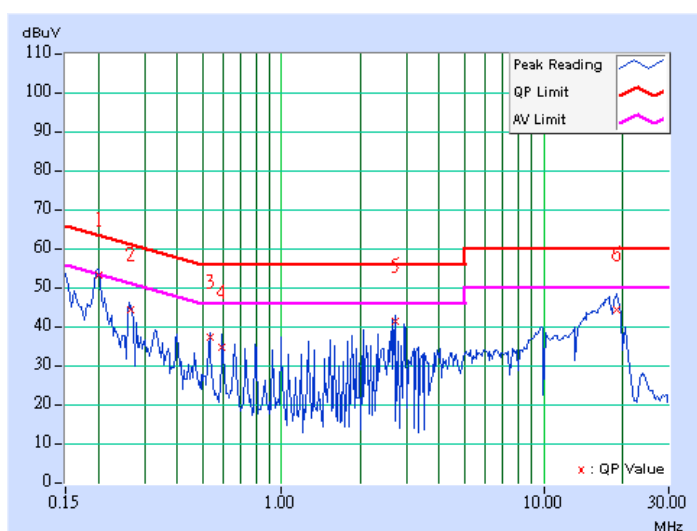
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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 36	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 982hPa	TESTED BY	Match Tsui

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	0.201	0.10	52.70	-	52.80	-	63.58	53.58	-10.78	-
2	0.265	0.10	44.04	-	44.14	-	61.29	51.29	-17.15	-
3	0.533	0.12	36.82	-	36.94	-	56.00	46.00	-19.06	-
4	0.595	0.14	34.15	-	34.29	-	56.00	46.00	-21.71	-
5	2.719	0.24	40.85	-	41.09	-	56.00	46.00	-14.91	-
6	18.918	0.55	43.79	-	44.34	-	60.00	50.00	-15.66	-

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



4.3 PEAK TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

FREQUENCY BAND	LIMIT
5.15 ~ 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB

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

4.3.2 TEST INSTRUMENTS

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

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

4.3.3 TEST PROCEDURE

- a. The transmitter output was connected to the spectrum analyzer.
- b. Set span to encompass the entire emission bandwidth of the signal.
- c. Set RBW to 1MHz, VBW to 3MHz.
- d. Using the spectrum analyzer's channel power measurement function to measure the output power.

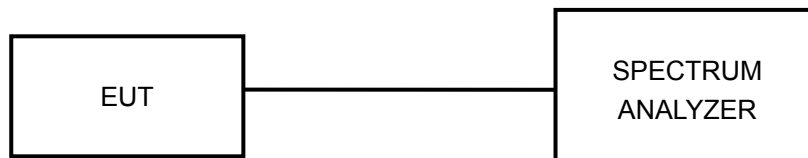
NOTE: The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

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 specific channel frequencies individually.

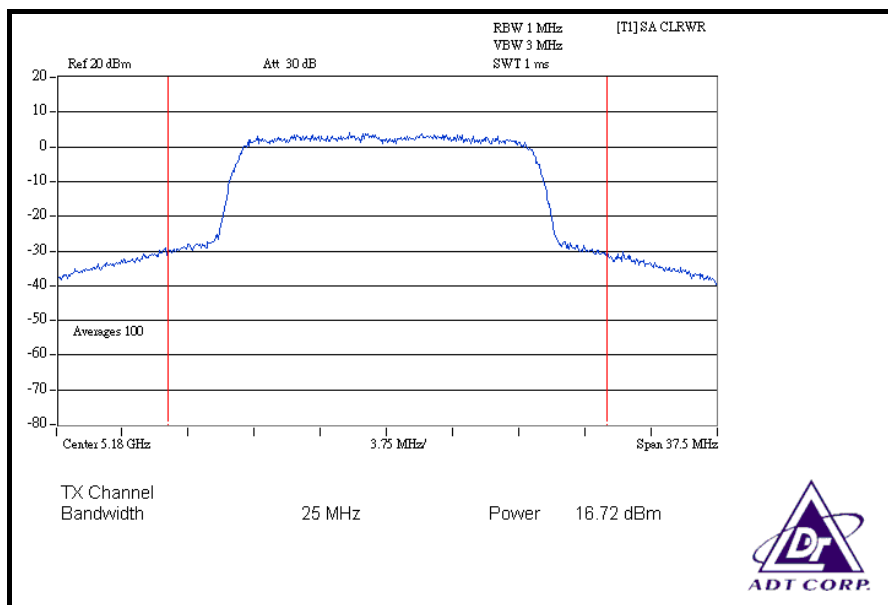
4.3.7 TEST RESULTS

PEAK POWER OUTPUT: 802.11a OFDM MODULATION

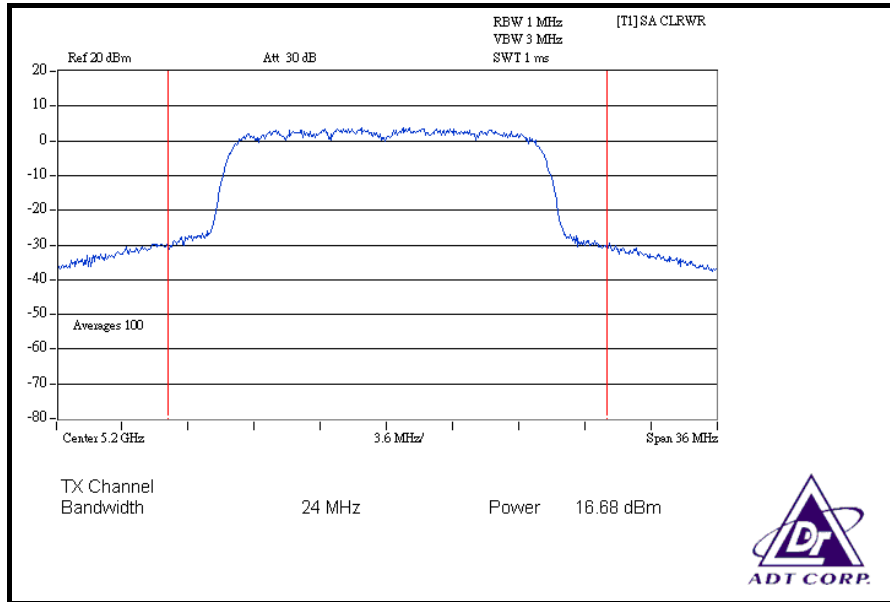
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
36	5180	46.989	16.72	17.00	PASS
40	5200	46.559	16.68	17.00	PASS
48	5240	46.559	16.68	17.00	PASS

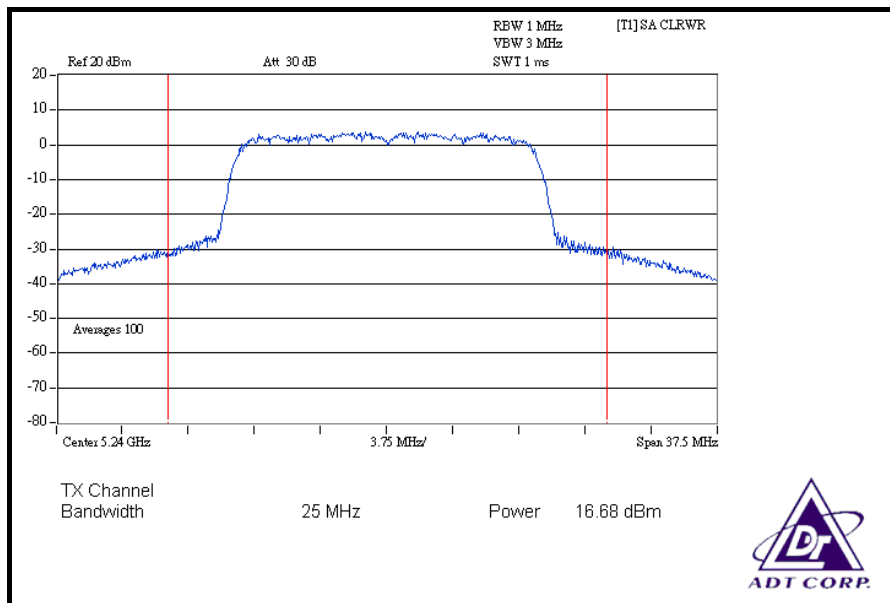
CH 36



CH 40



CH 48



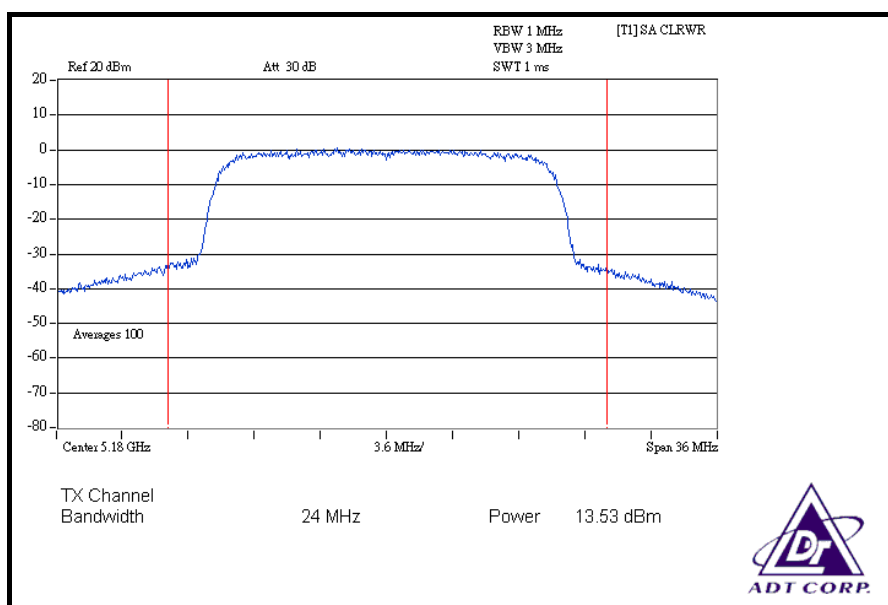


DRAFT 802.11n (20MHz) OFDM MODULATION

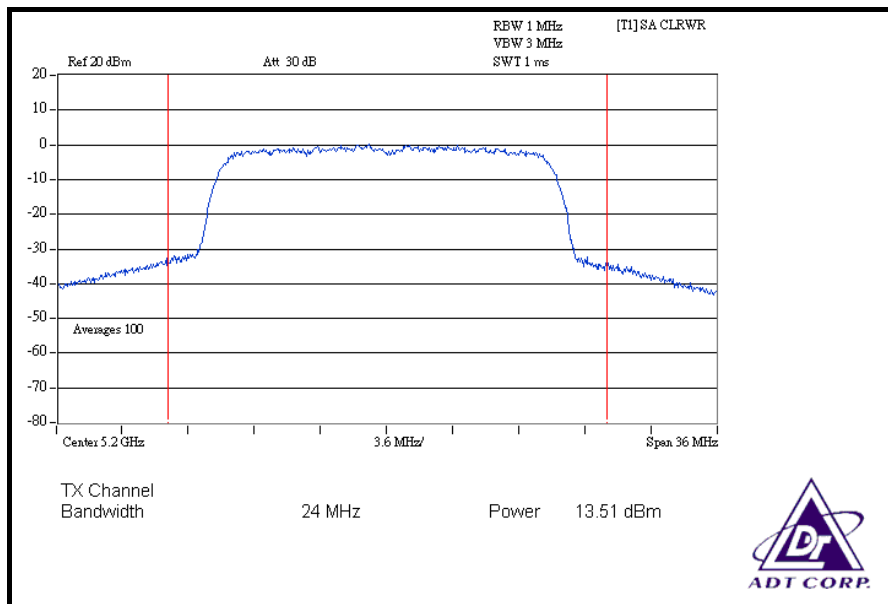
MODULATION TYPE	BPSK	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	13.53	13.51	44.981	16.53	30	PASS
40	5200	13.51	13.51	44.878	16.52	30	PASS
48	5240	14.06	13.03	45.559	16.59	30	PASS

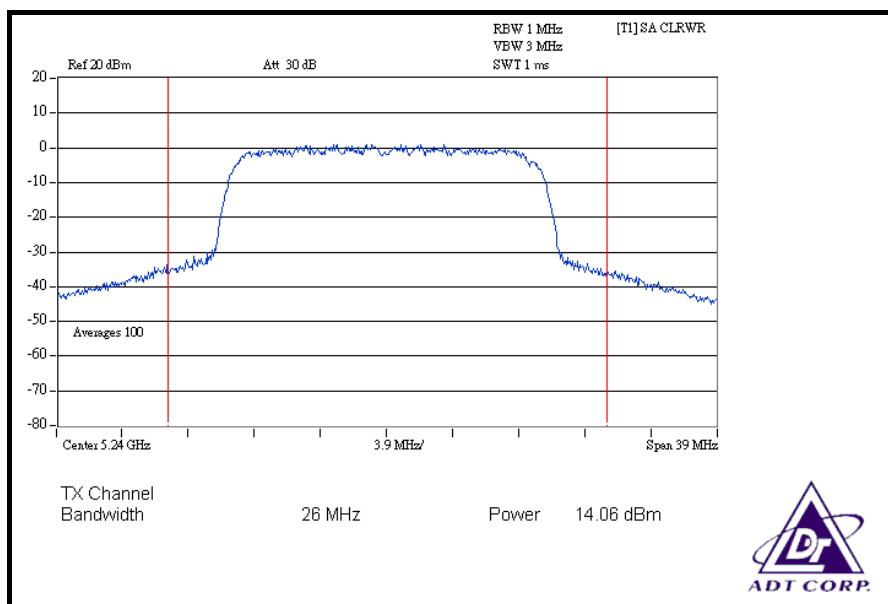
FOR CHAIN 0: CH 36



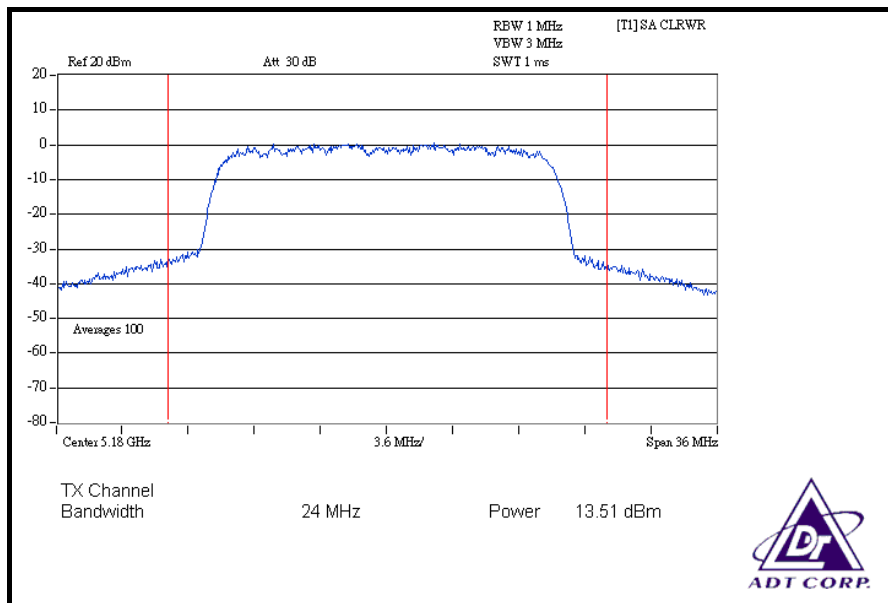
CH 40



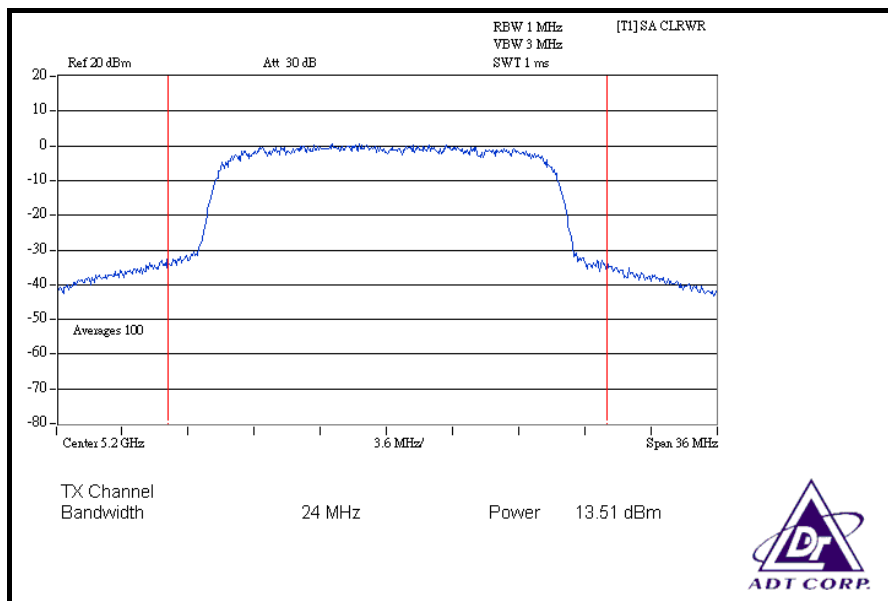
CH 48



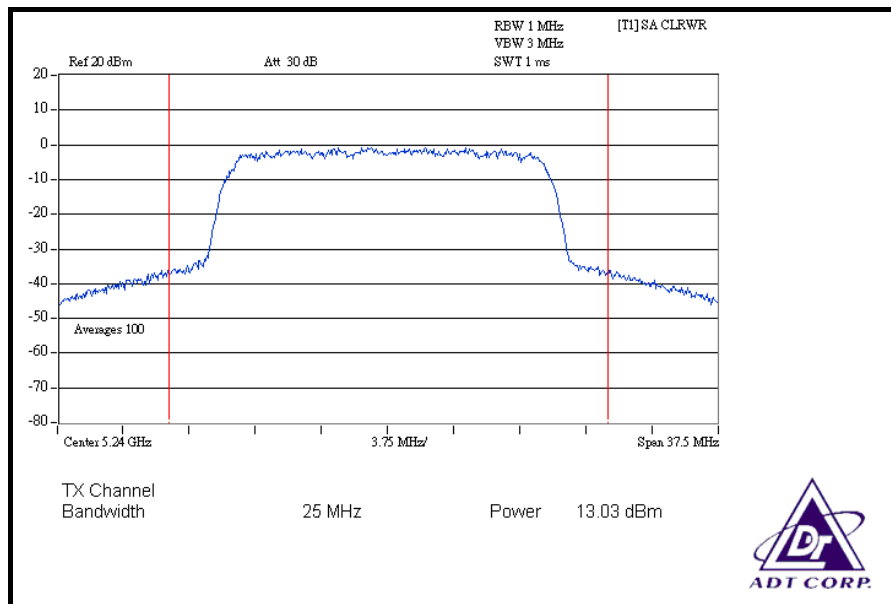
FOR CHAIN 1: CH 36



CH 40



CH 48



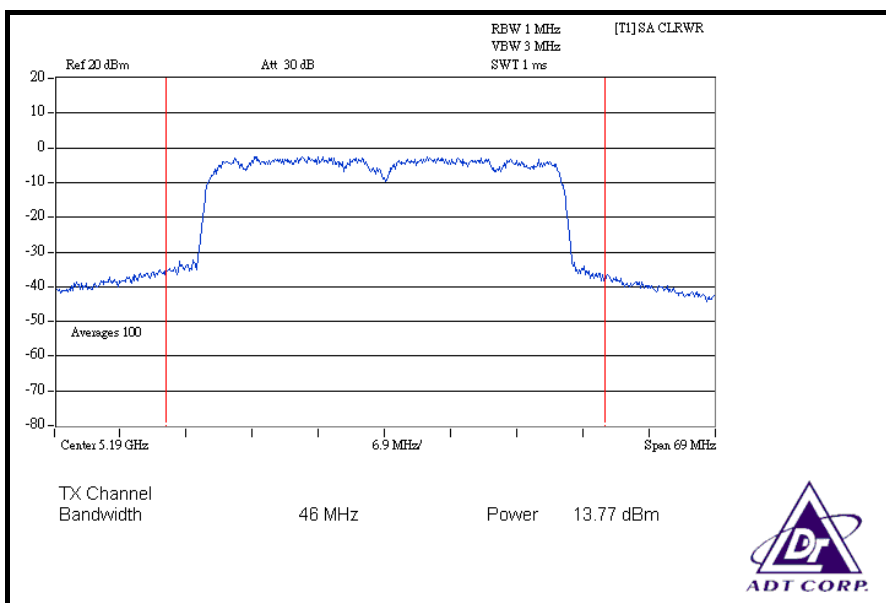


DRAFT 802.11n (40MHz) OFDM MODULATION

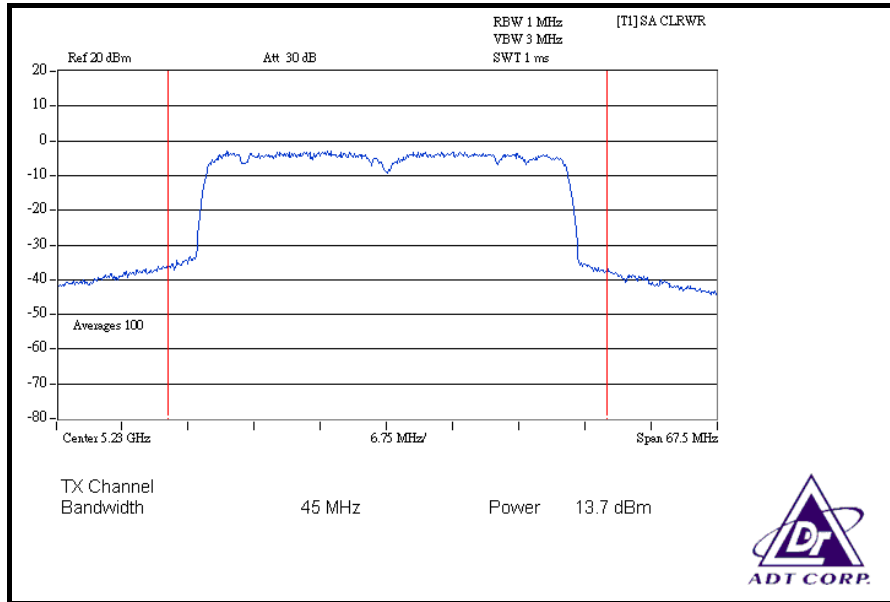
MODULATION TYPE	BPSK	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	13.77	13.30	45.203	16.55	30	PASS
46	5230	13.70	13.37	45.169	16.55	30	PASS

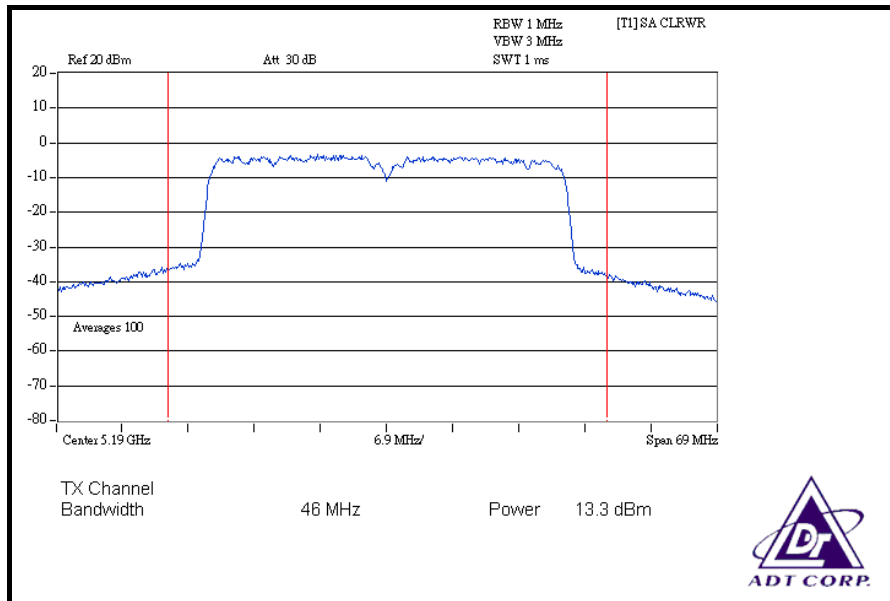
FOR CHAIN 0: CH 38



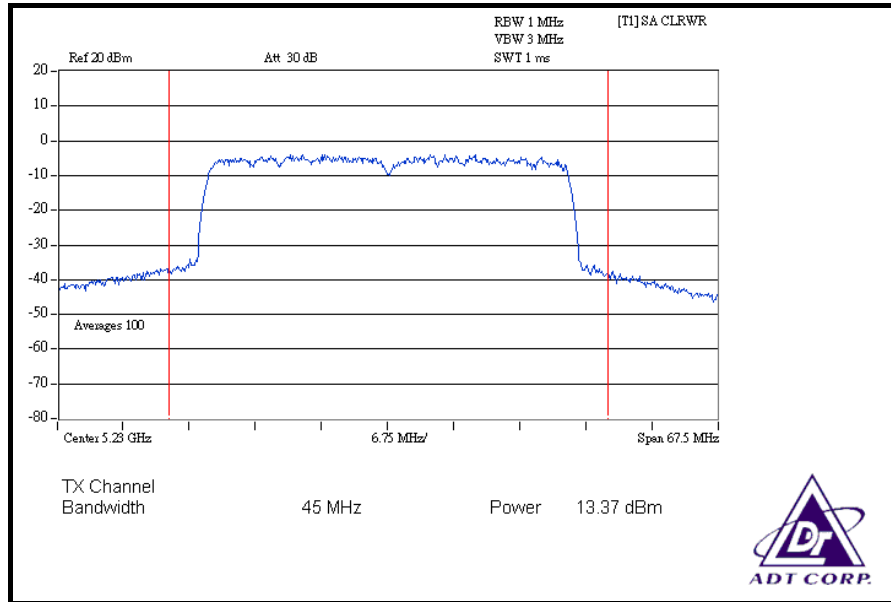
CH 46



FOR CHAIN 1: CH 38



CH 46



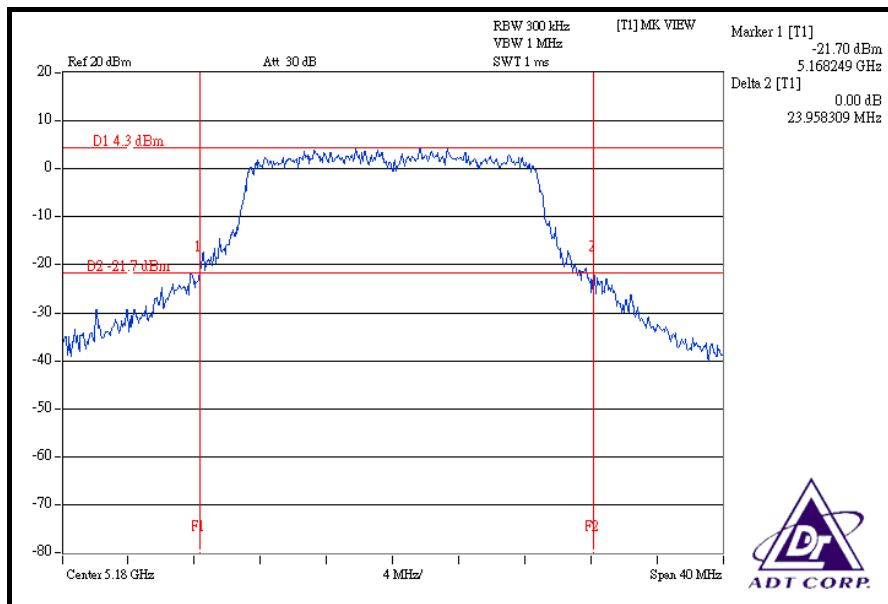


DRAFT 802.11n (20MHz) OFDM MODULATION

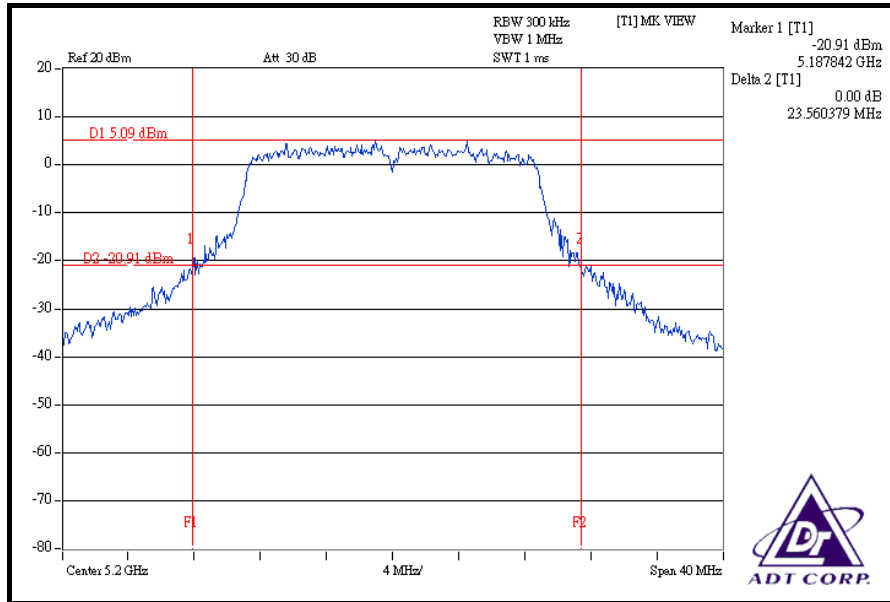
MODULATION TYPE	BPSK	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
36	5180	23.95	23.75	PASS
40	5200	23.56	23.94	PASS
48	5240	25.08	24.09	PASS

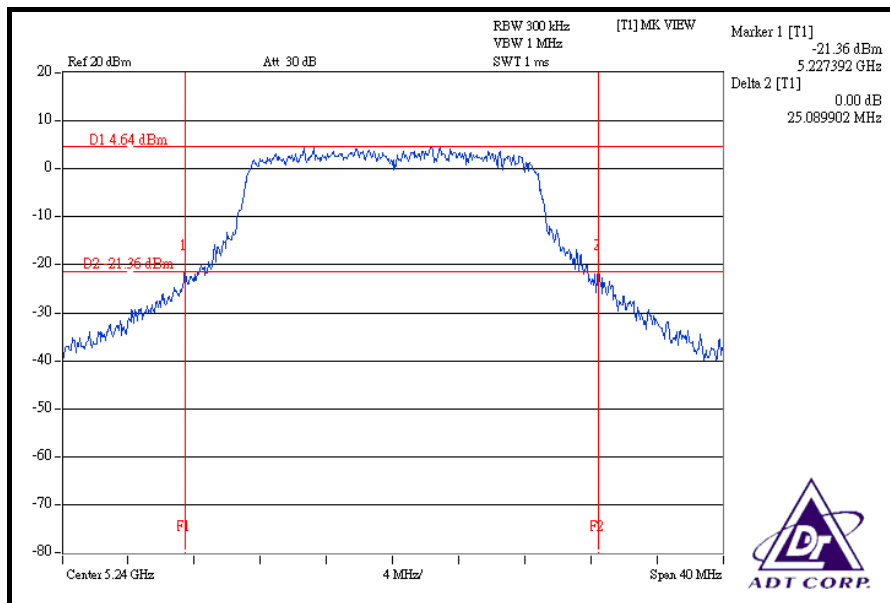
FOR CHAIN 0: CH 36



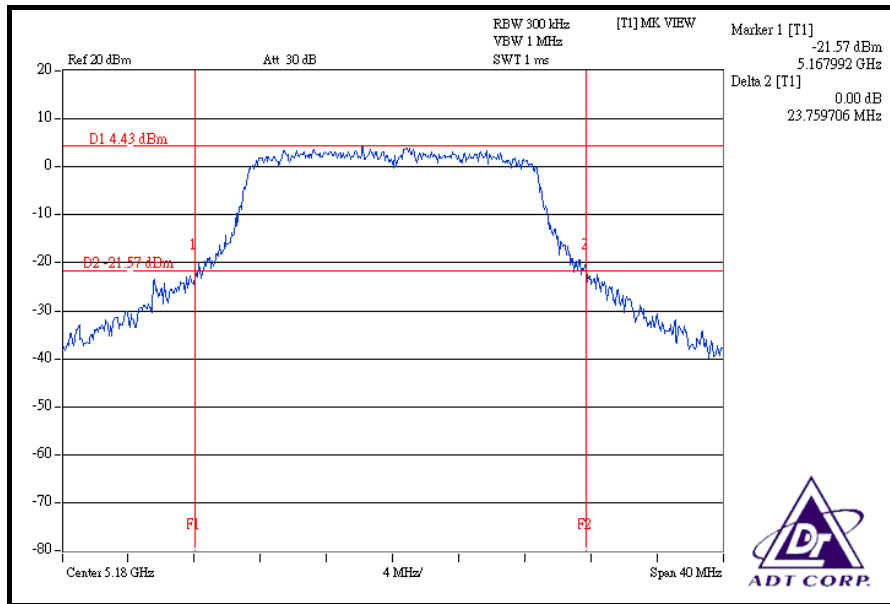
CH 40



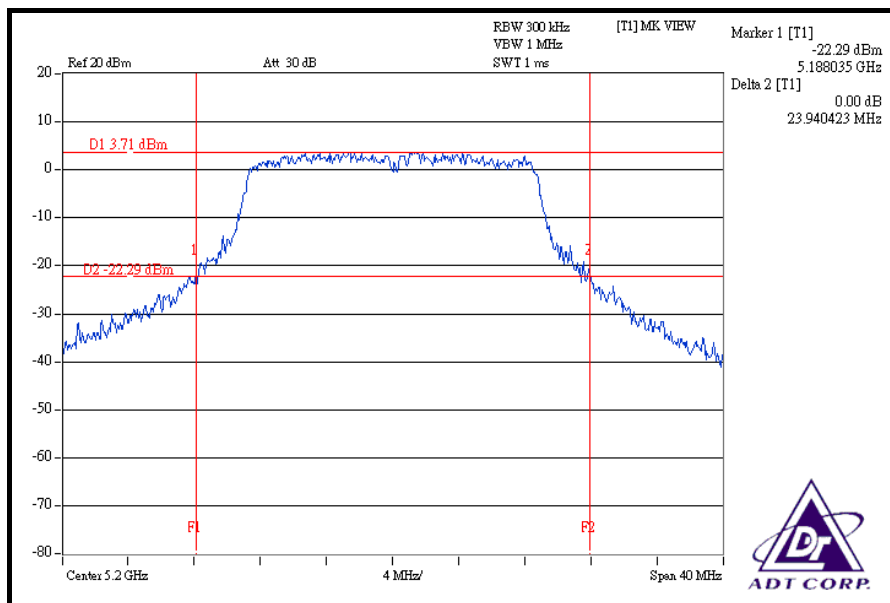
CH 48



FOR CHAIN 1: CH 36



CH 40



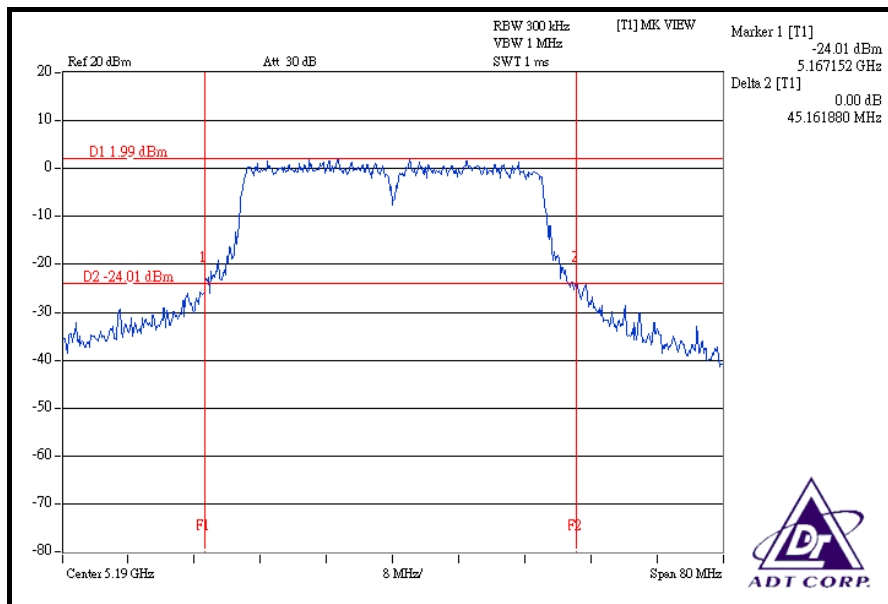


DRAFT 802.11n (40MHz) OFDM MODULATION

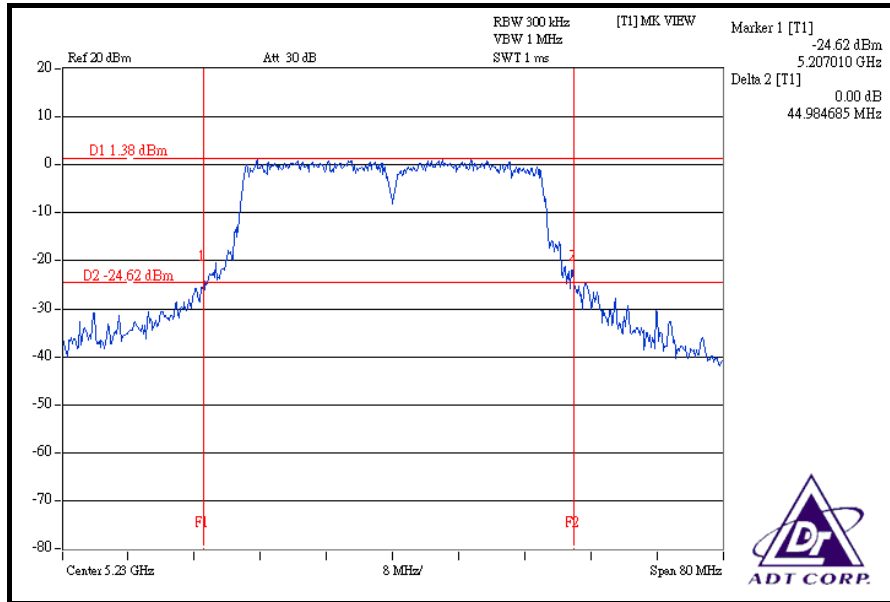
MODULATION TYPE	BPSK	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
38	5190	45.16	45.03	PASS
46	5230	44.35	44.98	PASS

FOR CHAIN 0: CH 38



CH 46





4.4 PEAK POWER EXCURSION MEASUREMENT

4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

FREQUENCY BAND	LIMIT
5.15 ~ 5.25GHz	13dB

4.4.2 TEST INSTRUMENTS

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

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

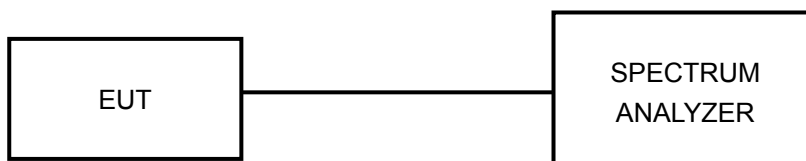
4.4.3 TEST PROCEDURE

- a. The transmitter output was connected to the spectrum analyzer.
- b. Set the spectrum bandwidth span to view the entire spectrum.
- c. Using peak detector and Max-hold function for Trace 1 (RB = 1MHz, VB = 3MHz) and 2 (RB = 1MHz, VB = 300kHz).
- d. The largest difference between Trace 1 and Trace 2 in any 1MHz band on any frequency was recorded.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

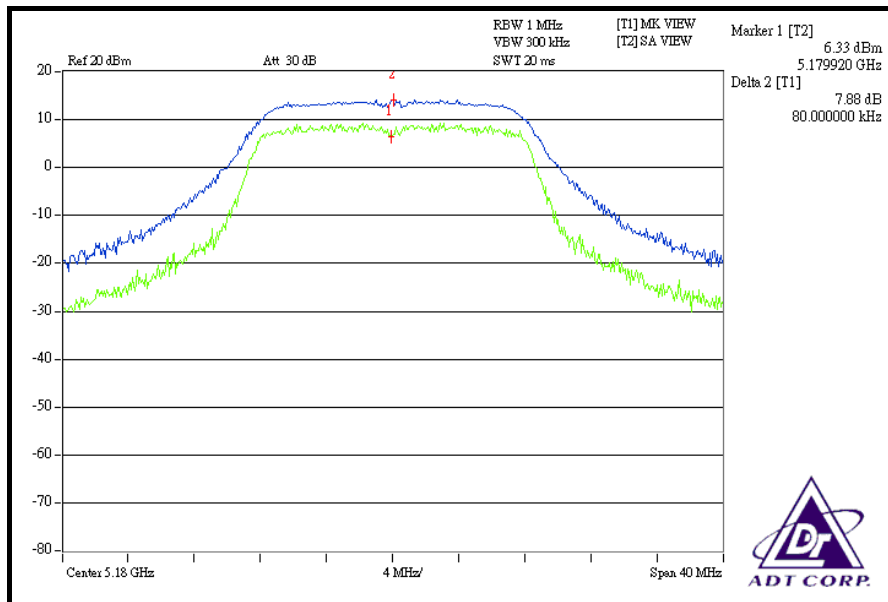
4.4.7 TEST RESULTS

802.11a OFDM MODULATION

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

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK TO AVERAGE EXCURSION LIMIT (dB)	PASS / FAIL
36	5180	7.88	13	PASS
40	5200	7.92	13	PASS
48	5240	8.33	13	PASS

CH 36



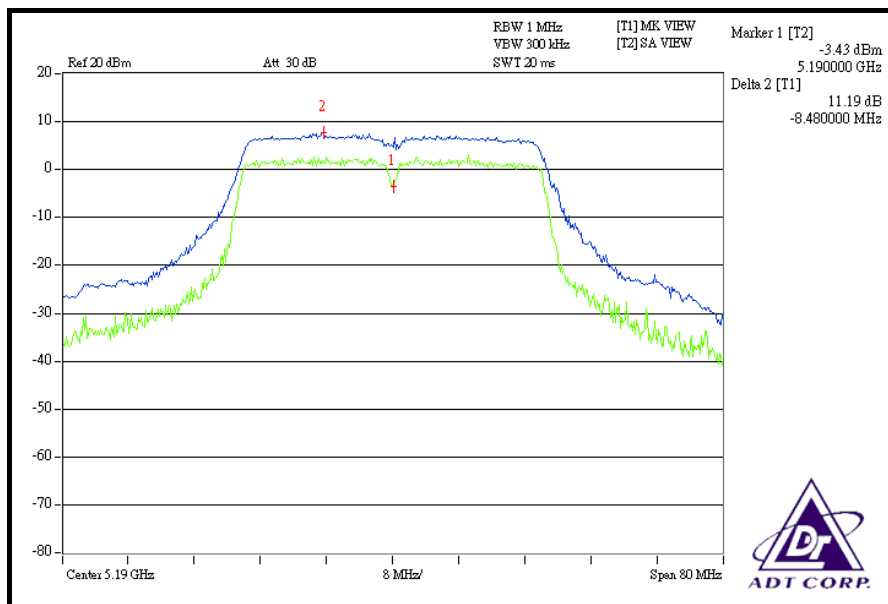


DRAFT 802.11n (40MHz) OFDM MODULATION

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

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)		PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1		
38	5190	11.19	11.44	13	PASS
46	5230	11.00	11.06	13	PASS

FOR CHAIN 0: CH 38





4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

FREQUENCY BAND	LIMIT
5.15 ~ 5.25GHz	4dBm

4.5.2 TEST INSTRUMENTS

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

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

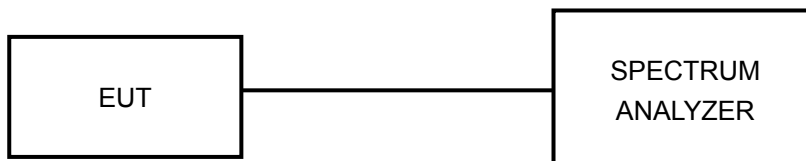
4.5.3 TEST PROCEDURES

- a. The transmitter output was connected to the spectrum analyzer.
- b. Set RBW = 1MHz, VBW = 3MHz. The PPSD is the highest level found across the emission in any 1MHz band.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITIONS

Same as 5.3.6

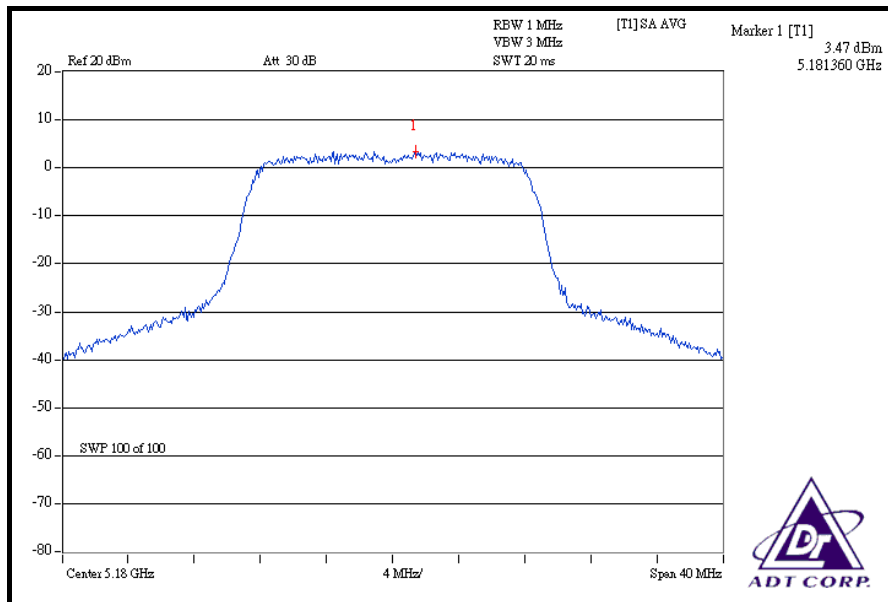
4.5.7 TEST RESULTS

802.11a OFDM MODULATION

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

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
36	5180	3.47	4	PASS
40	5200	3.25	4	PASS
48	5240	3.48	4	PASS

CH 36



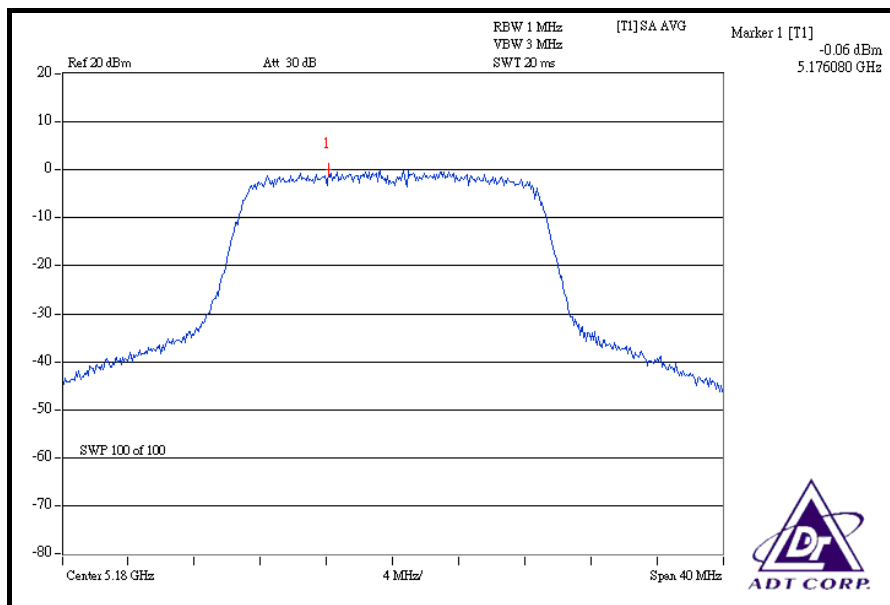


DRAFT 802.11n (20MHz) OFDM MODULATION

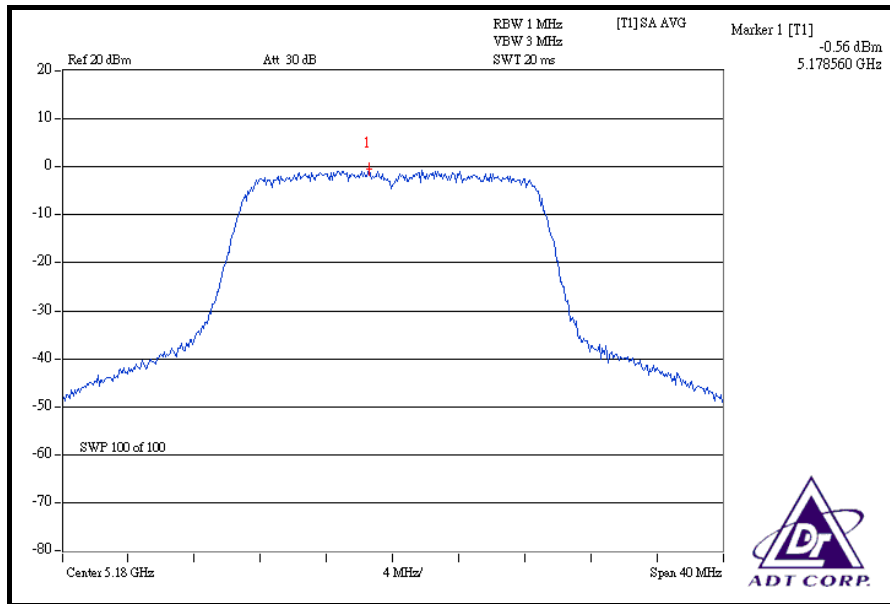
MODULATION TYPE	BPSK	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	-0.06	-0.56	1.865	2.71	4	PASS
40	5200	-0.26	-0.63	1.807	2.57	4	PASS
48	5240	-0.47	-0.94	1.703	2.31	4	PASS

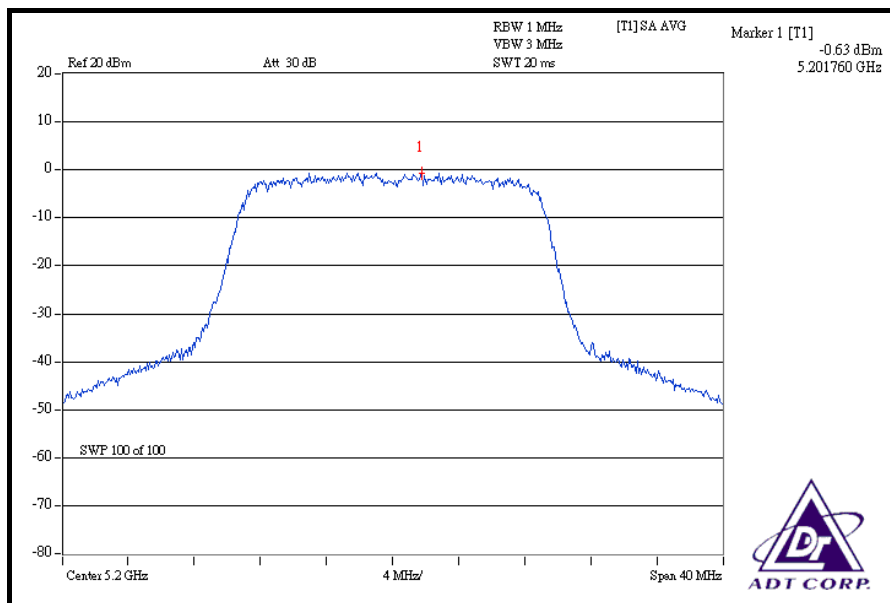
FOR CHAIN 0: CH 36



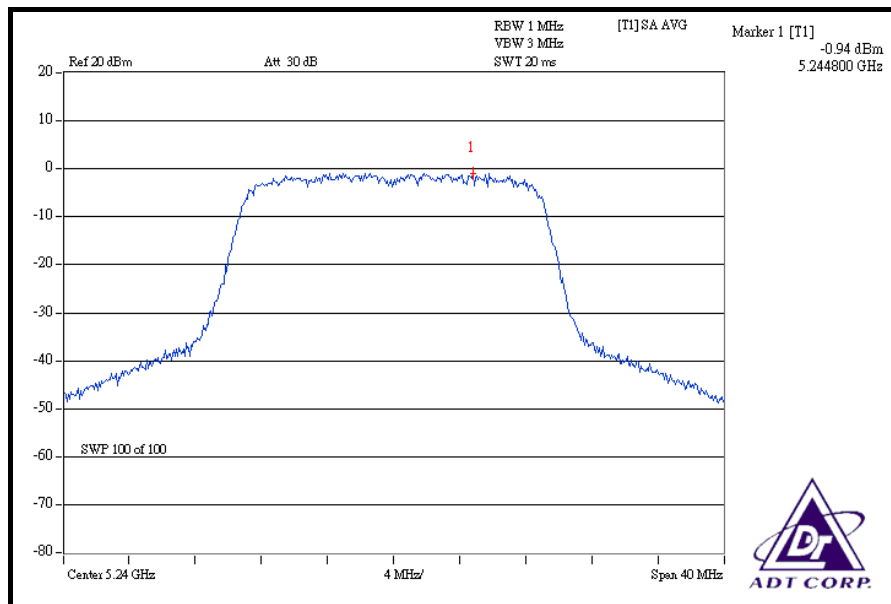
FOR CHAIN 1: CH 36



CH 40



CH 48



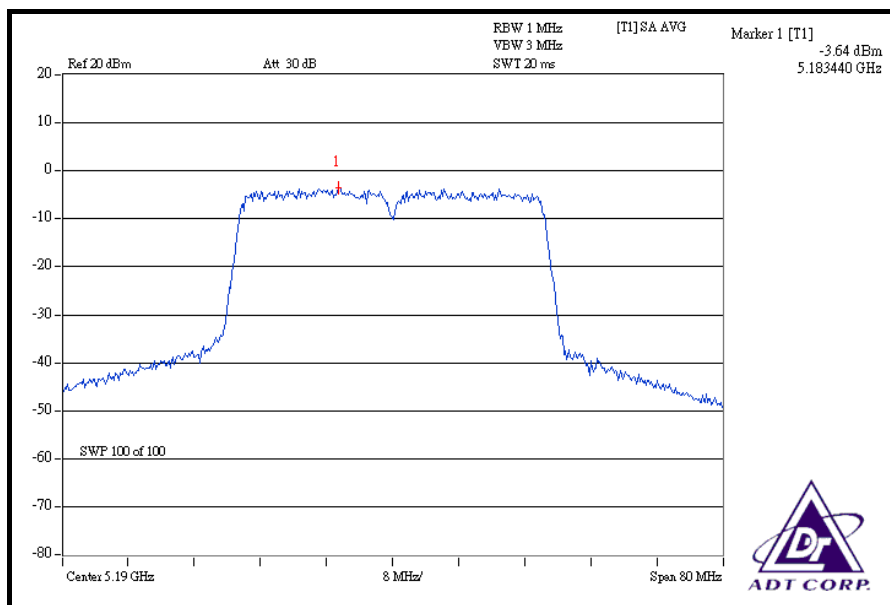


DRAFT 802.11n (40MHz) OFDM MODULATION

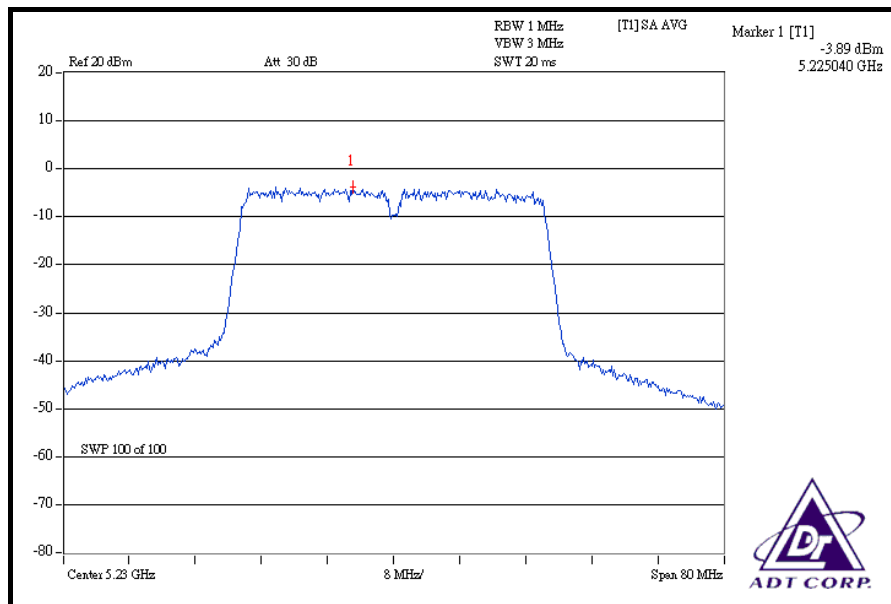
MODULATION TYPE	BPSK	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	-3.64	-3.55	0.874	-0.58	4	PASS
46	5230	-3.66	-3.89	0.839	-0.76	4	PASS

FOR CHAIN 0: CH 38



CH 46





4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within +/- 0.02% of the operating frequency over a temperature variation of -30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ANRITSU SPECTRUM ANALYZER	MS2667C	M10281	Nov. 21, 2008
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W981030	Jun. 28, 2008

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

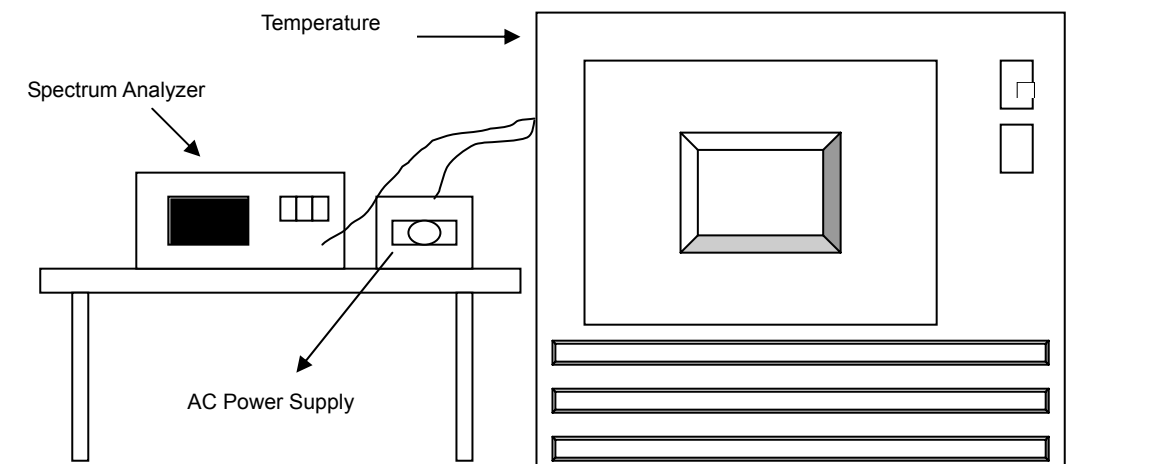
4.6.3 TEST PROCEDURE

- a. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Same as Item 4.1.6



4.6.7 TEST RESULTS

OPERATING FREQUENCY: 5200MHz						LIMIT: ± 0.01%			
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5200.002474	0.0000476	5200.017650	0.0003394	5200.017280	0.0003323	5200.017020	0.0003273
	110.0	5200.017510	0.0003367	5200.017570	0.0003379	5200.017310	0.0003329	5200.017190	0.0003306
	93.5	5200.017630	0.0003390	5200.017320	0.0003331	5200.017640	0.0003392	5200.017160	0.0003300
40	126.5	5200.008620	0.0001658	5200.008450	0.0001625	5200.008250	0.0001587	5200.008250	0.0001587
	110.0	5200.008530	0.0001640	5200.008750	0.0001683	5200.008360	0.0001608	5200.008240	0.0001585
	93.5	5200.008490	0.0001633	5200.008220	0.0001581	5200.008450	0.0001625	5200.008100	0.0001558
30	126.5	5200.004810	0.0000925	5200.004606	0.0000886	5200.004655	0.0000895	5200.004780	0.0000919
	110.0	5200.002770	0.0000533	5200.002231	0.0000429	5200.002336	0.0000449	5200.002257	0.0000434
	93.5	5200.000110	0.0000021	5199.999855	-0.0000028	5200.000014	0.0000003	5199.999955	-0.0000009
20	126.5	5199.997710	-0.0000440	5199.997471	-0.0000486	5199.997785	-0.0000426	5199.997651	-0.0000452
	110.0	5199.995409	-0.0000883	5199.995101	-0.0000942	5199.995378	-0.0000889	5199.995347	-0.0000895
	93.5	5199.993054	-0.0001336	5199.992630	-0.0001417	5199.994120	-0.0001131	5199.993047	-0.0001337
10	126.5	5199.990700	-0.0001788	5199.990354	-0.0001855	5199.990740	-0.0001781	5199.990743	-0.0001780
	110.0	5199.988345	-0.0002241	5199.988177	-0.0002274	5199.988421	-0.0002227	5199.988440	-0.0002223
	93.5	5199.985991	-0.0002694	5199.985603	-0.0002769	5199.986102	-0.0002673	5199.986137	-0.0002666
0	126.5	5199.983631	-0.0003148	5199.983228	-0.0003225	5199.983747	-0.0003126	5199.983835	-0.0003109
	110.0	5199.981140	-0.0003627	5199.981152	-0.0003625	5199.981467	-0.0003564	5199.981532	-0.0003552
	93.5	5199.978900	-0.0004058	5199.978476	-0.0004139	5199.979144	-0.0004011	5199.979229	-0.0003995
-10	126.5	5199.976572	-0.0004505	5199.976101	-0.0004596	5199.976825	-0.0004457	5199.976921	-0.0004438
	110.0	5199.974210	-0.0004960	5199.974325	-0.0004937	5199.974506	-0.0004903	5199.974624	-0.0004880
	93.5	5199.971863	-0.0005411	5199.971341	-0.0005511	5199.971187	-0.0005541	5199.972670	-0.0005256
-20	126.5	5199.969509	-0.0005864	5199.968975	-0.0005966	5199.969868	-0.0005795	5199.970017	-0.0005766
	110.0	5199.967154	-0.0006317	5199.967599	-0.0006231	5199.967548	-0.0006241	5199.967760	-0.0006200
	93.5	5199.964799	-0.0006769	5199.964224	-0.0006880	5199.964229	-0.0006879	5199.964412	-0.0006844
-30	126.5	5199.962446	-0.0007222	5199.962848	-0.0007145	5199.962911	-0.0007132	5199.962350	-0.0007240
	110.0	5199.960451	-0.0007606	5199.960484	-0.0007599	5199.960539	-0.0007589	5199.960817	-0.0007535
	93.5	5199.957741	-0.0008127	5199.957124	-0.0008245	5199.957272	-0.0008217	5199.957637	-0.0008147



4.7 BAND EDGES MEASUREMENT

4.7.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
FOR CONDUCTED MEASUREMENT:			
R&S SPECTRUM ANALYZER	FSP40	100040	Jun. 28, 2008
FOR RADIATED MEASUREMENT:			
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Jul. 27, 2008
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Aug. 05, 2008
BILOG Antenna SCHWARZBECK	VULB9168	9168-153	Jan. 03, 2009
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-563	Jul. 30, 2008
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 06, 2009
Preamplifier Agilent	8449B	3008A01910	Sep. 19, 2008
Preamplifier Agilent	8447D	2944A10638	Dec. 19, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274039/223650	Nov. 07, 2008
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 09, 2008
Software	ADT_Radiated_V7.6	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA
Turn Table EMCO	2087-2.03	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	Apr. 23, 2008

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

4.7.2 TEST PROCEDURE

FOR CONDUCTED MEASUREMENT:

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 1MHz and 3MHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

FOR RADIATED MEASUREMENT:

- 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 1MHz and 3MHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

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

4.7.3 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.7.4 TEST RESULTS

For signals in the restricted bands above and below the 5.15 to 5.25GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak field strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

The spectrum plots (Peak RBW = 1MHz, VBW = 3MHz) are attached on the following pages.

802.11a OFDM MODULATION

Channel 36 (5180MHz)

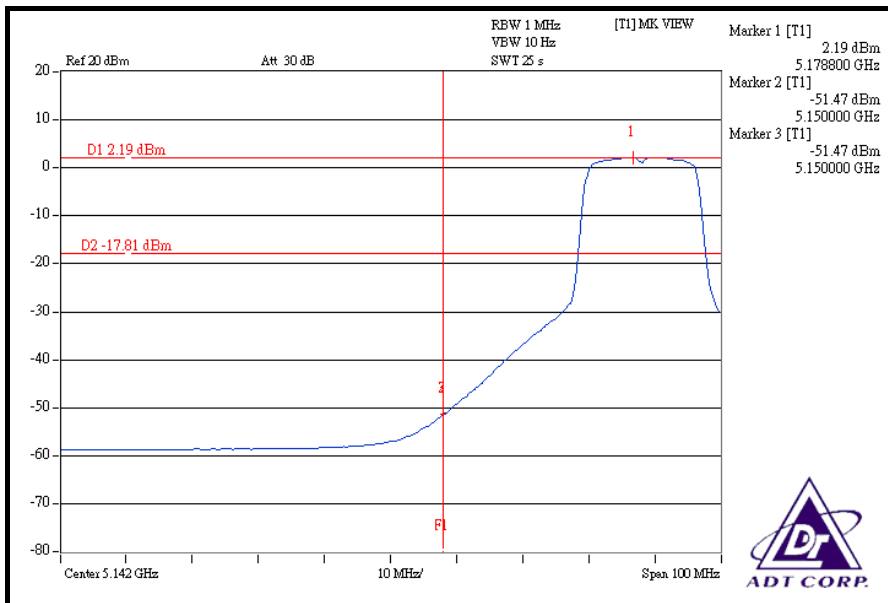
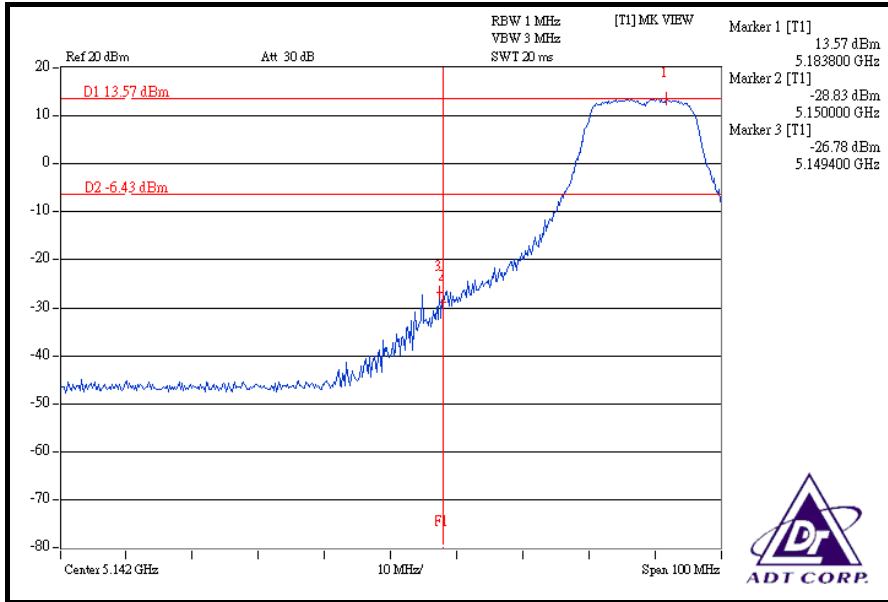
The band edge emission plot on the next page shows 40.35dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 107.08dBuV/m (Peak), so the maximum field strength in restrict band is $107.08 - 40.35 = 66.73$ dBuV/m which is under 74dBuV/m limit.

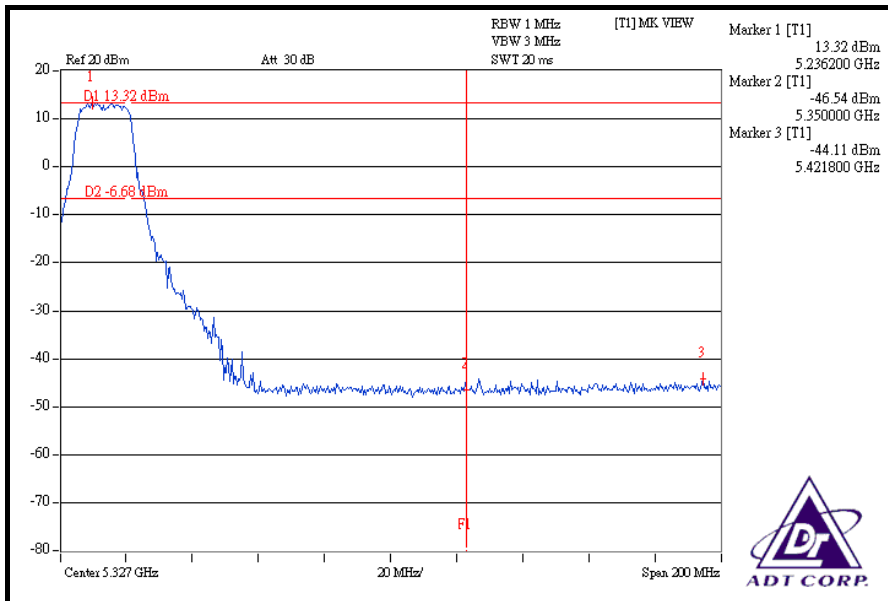
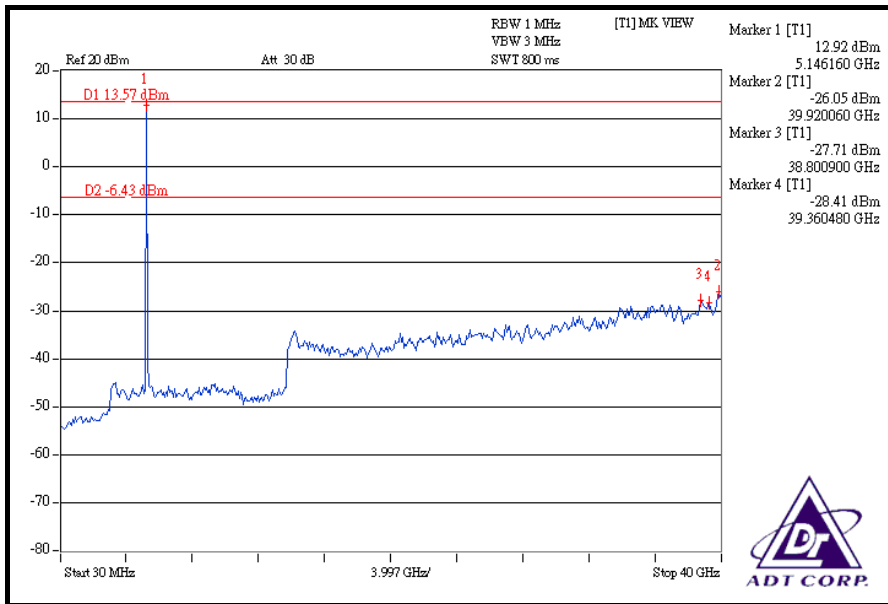
The band edge emission plot on the next page shows 53.66dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 96.56dBuV/m (Average), so the maximum field strength in restrict band is $96.56 - 53.66 = 42.90$ dBuV/m which is under 54dBuV/m limit.

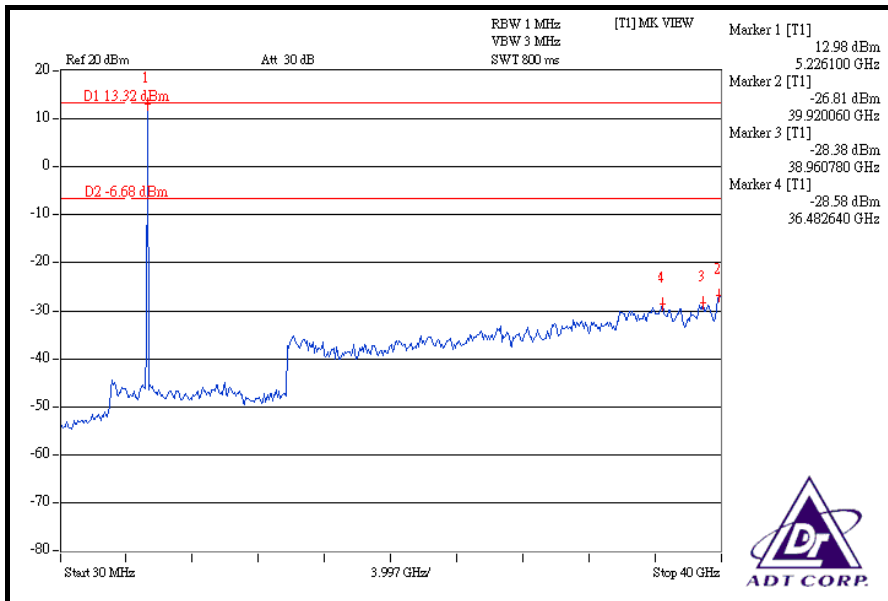
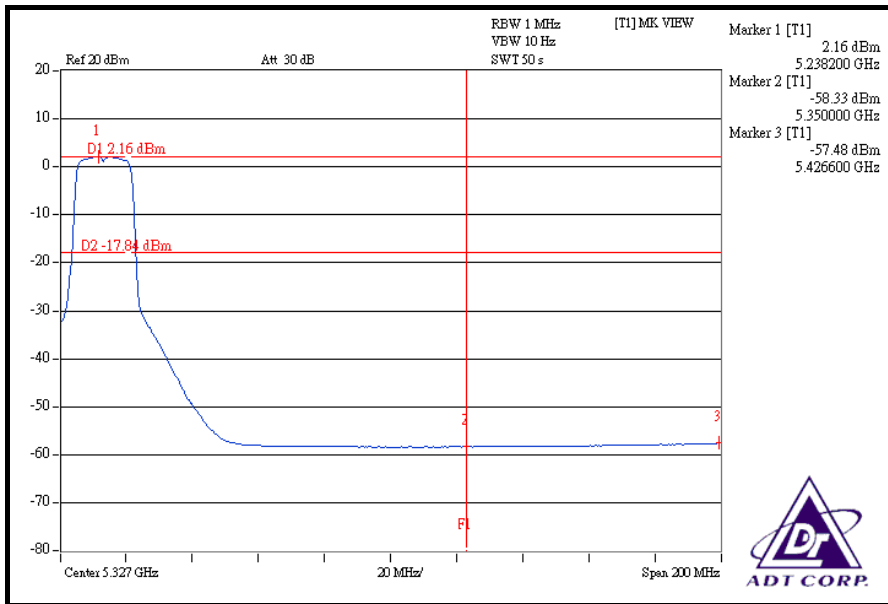
Channel 48 (5240MHz)

The band edge emission plot on the next second page shows 57.43dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 108.09dBuV/m (Peak), so the maximum field strength in restrict band is $108.09 - 57.43 = 50.66$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 59.64dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 97.69dBuV/m (Average), so the maximum field strength in restrict band is $97.69 - 59.64 = 38.05$ dBuV/m which is under 54dBuV/m limit.







DRAFT 802.11n (20MHz) OFDM MODULATION

Channel 36 (5180MHz)

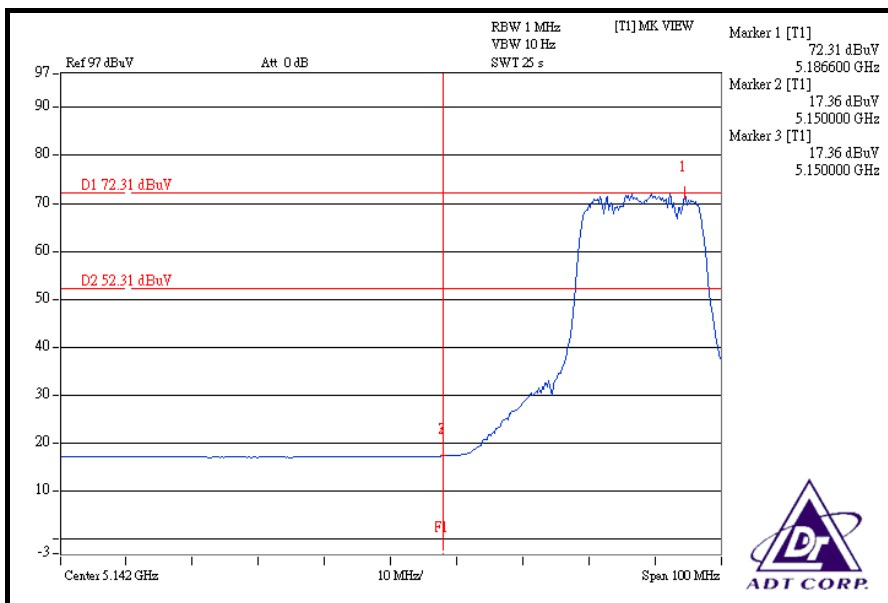
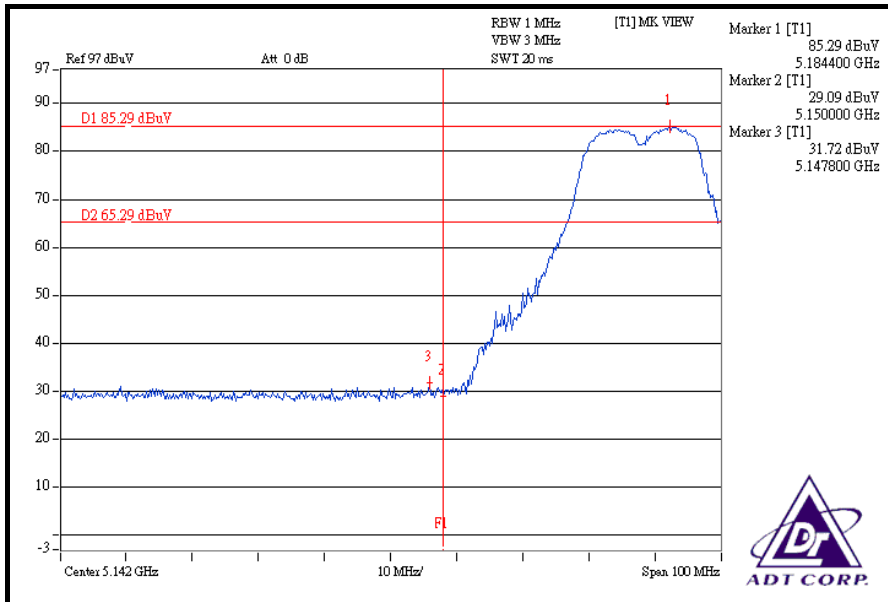
The band edge emission plot on the next page shows 53.57dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 110.78dBuV/m (Peak), so the maximum field strength in restrict band is $110.78 - 53.57 = 57.21$ dBuV/m which is under 74dBuV/m limit.

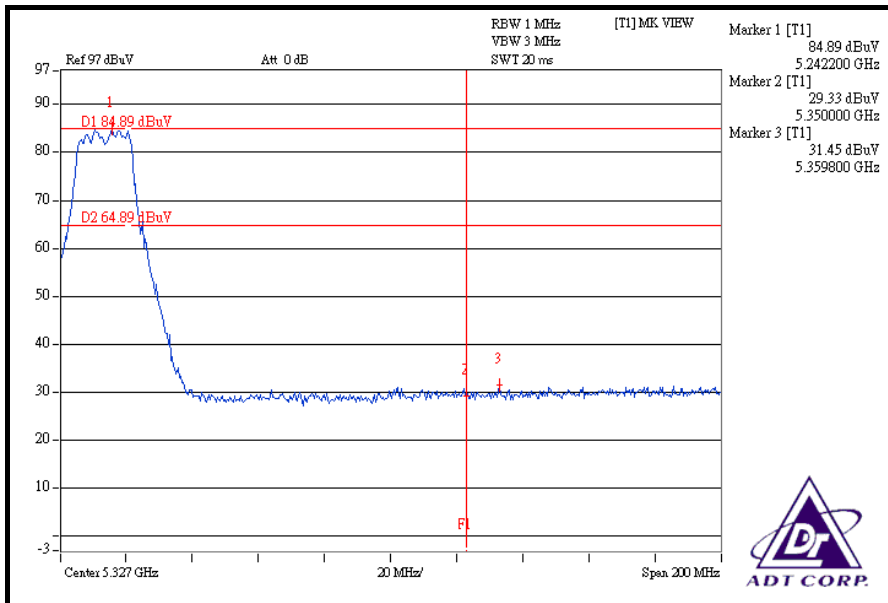
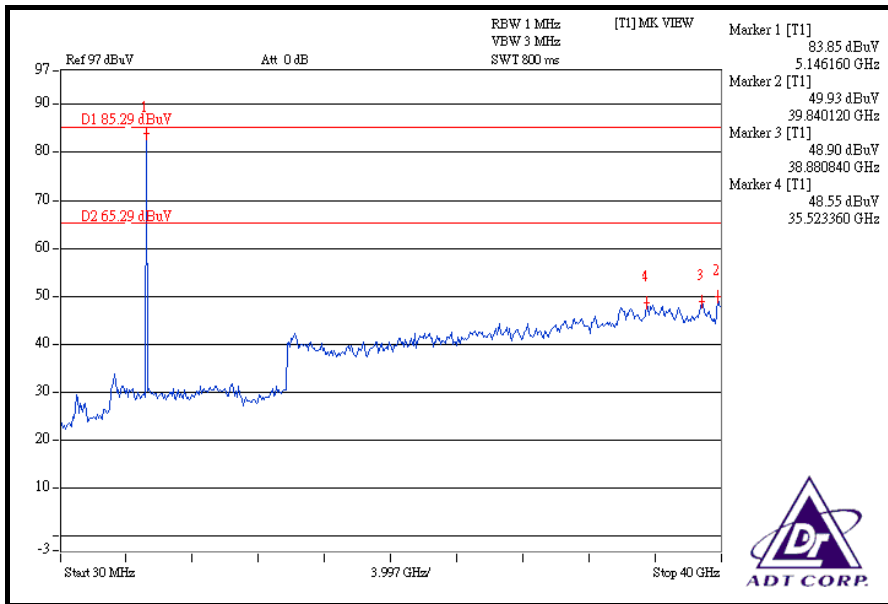
The band edge emission plot on the next page shows 54.95dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 99.94dBuV/m (Average), so the maximum field strength in restrict band is $99.94 - 54.95 = 44.99$ dBuV/m which is under 54dBuV/m limit.

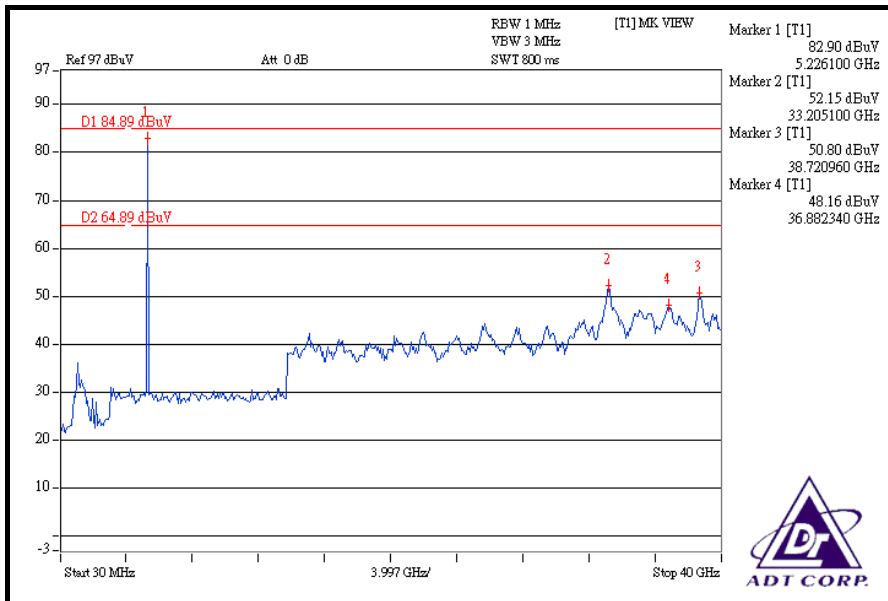
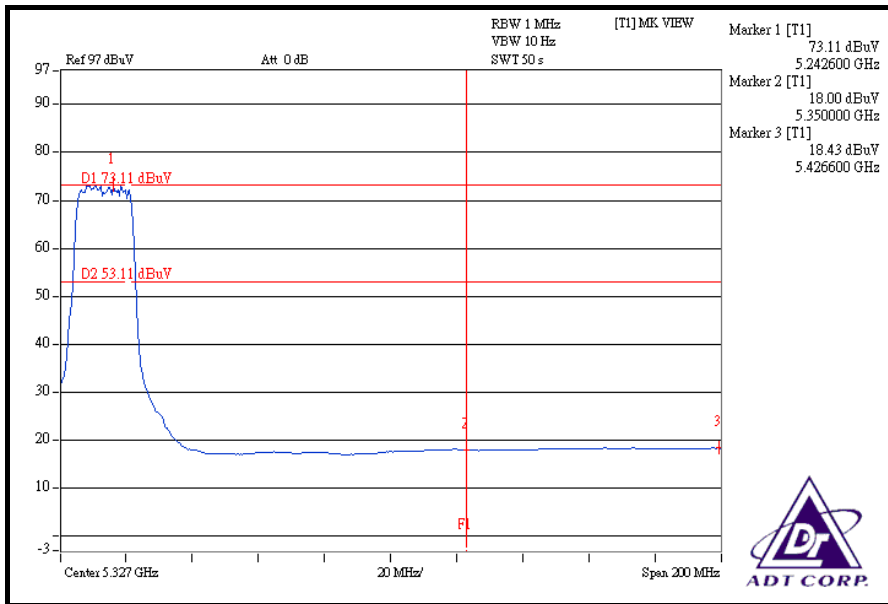
Channel 48 (5240MHz)

The band edge emission plot on the next second page shows 53.44dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 110.80dBuV/m (Peak), so the maximum field strength in restrict band is $110.80 - 53.44 = 57.36$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 54.68dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 99.98dBuV/m (Average), so the maximum field strength in restrict band is $99.98 - 54.68 = 45.30$ dBuV/m which is under 54dBuV/m limit.







DRAFT 802.11n (40MHz) OFDM MODULATION

Channel 38 (5190MHz)

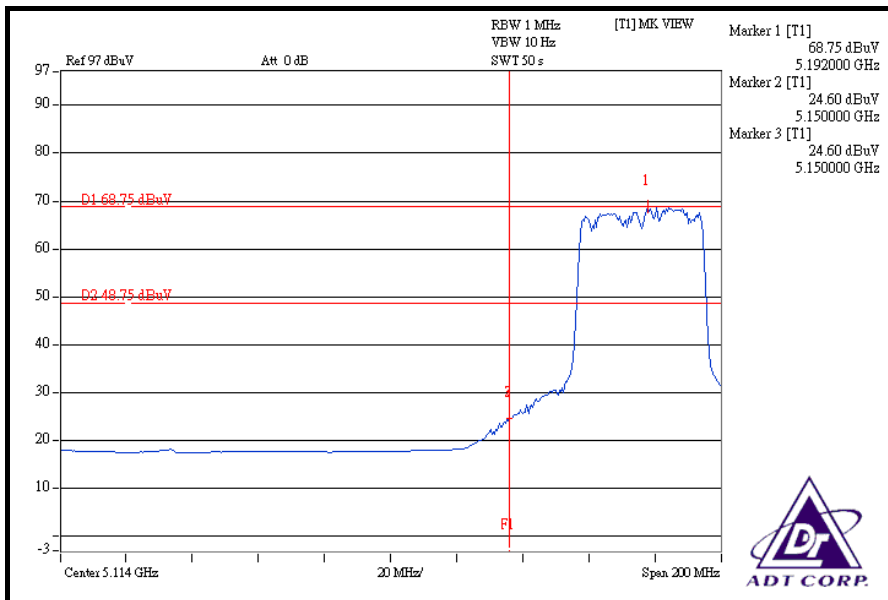
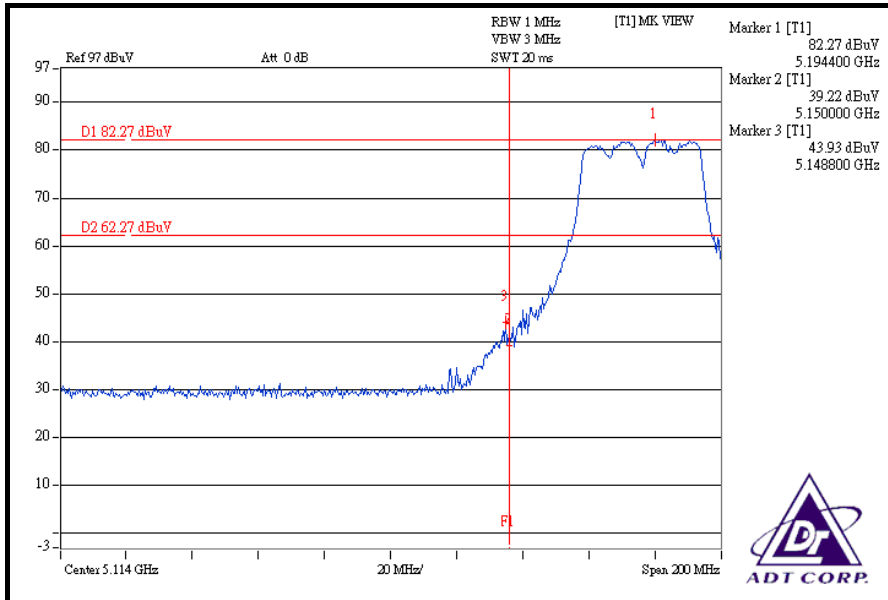
The band edge emission plot on the next page shows 38.34dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 38 is 107.23dBuV/m (Peak), so the maximum field strength in restrict band is $107.23 - 38.34 = 68.89$ dBuV/m which is under 74dBuV/m limit.

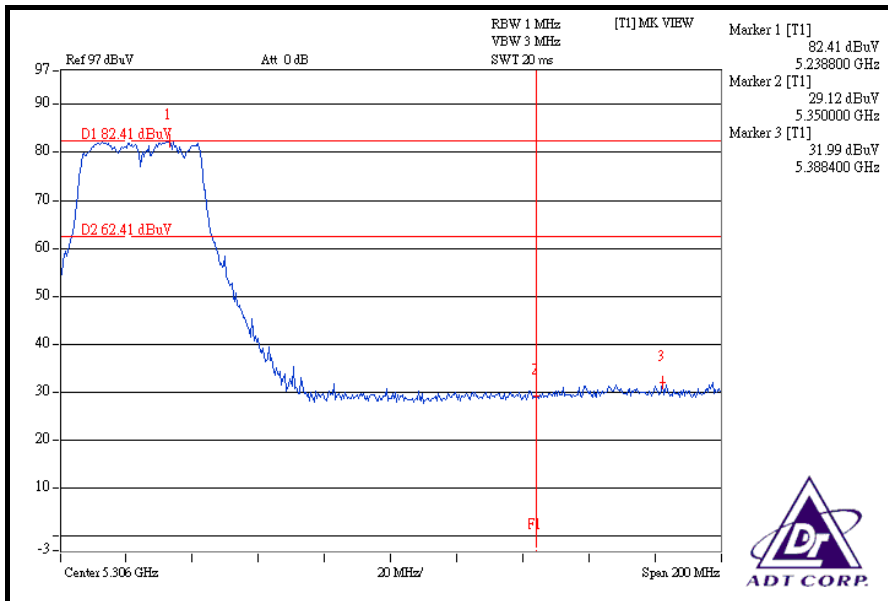
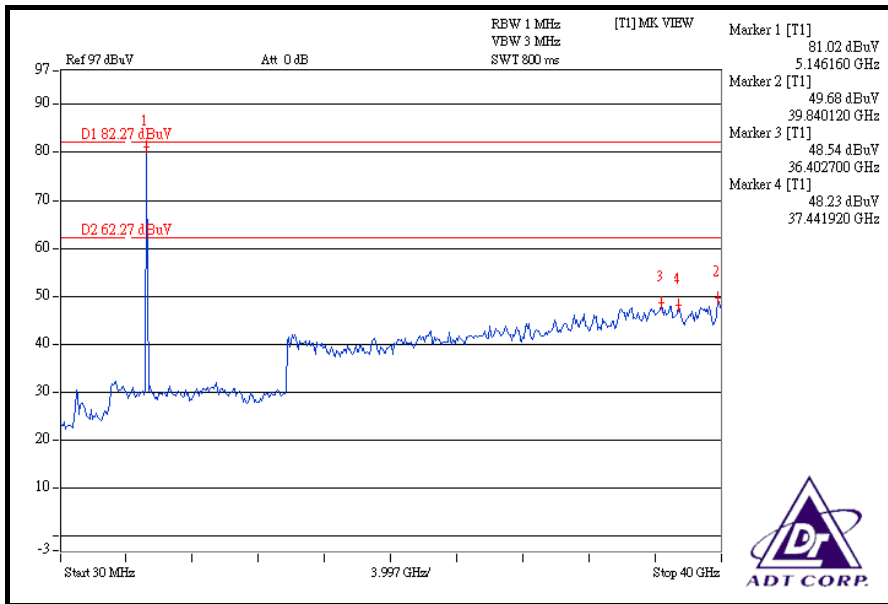
The band edge emission plot on the next page shows 44.15dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 38 is 96.93dBuV/m (Average), so the maximum field strength in restrict band is $96.93 - 44.15 = 52.78$ dBuV/m which is under 54dBuV/m limit.

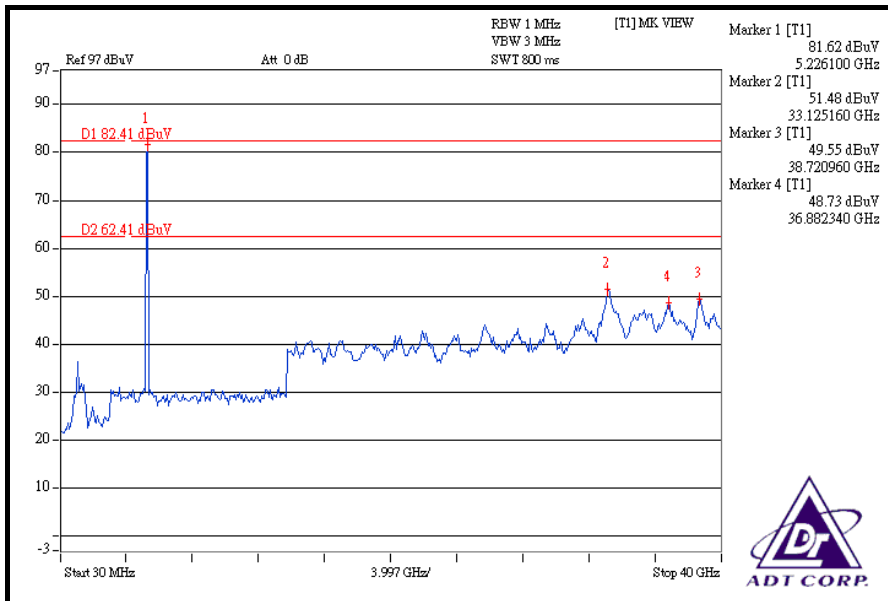
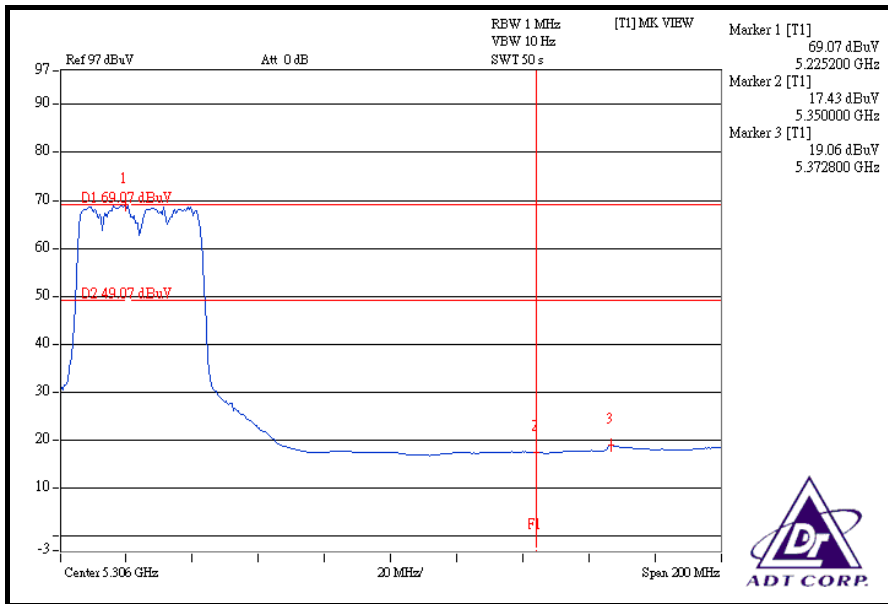
Channel 46 (5230MHz)

The band edge emission plot on the next second page shows 50.42dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 46 is 108.01dBuV/m (Peak), so the maximum field strength in restrict band is $108.01 - 50.42 = 57.59$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 50.01dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 46 is 97.95dBuV/m (Average), so the maximum field strength in restrict band is $97.95 - 50.01 = 47.94$ dBuV/m which is under 54dBuV/m limit.









4.8 ANTENNA REQUIREMENT

4.8.1 STANDARD APPLICABLE

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

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

4.8.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Dipole antenna with R-SMA connector. The maximum Gain of the antenna is 2dBi.



5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



6. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	TAF, BSMI, NCC
Netherlands	Telefication
Singapore	GOST-ASIA(MOU)
Russia	CERTIS(MOU)

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

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

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

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

Web Site: www.adt.com.tw

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

7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

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