FCC TEST REPORT (15.407)

REPORT NO.: RF970630L13-1

MODEL NO.: DIR-825

RECEIVED: Jun. 03, 2008

TESTED: Jul. 03 ~ Jul. 15, 2008

ISSUED: Jul. 21, 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.

Testing Laboratory 0528

TESTING CERT # 2177-01

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1. CERTIFICATION

PRODUCT:	Xtreme N Dual Band Router
MODEL:	DIR-825
BRAND:	D-Link
APPLICANT:	D-Link Corporation
TEST SAMPLE:	ENGINEERING SAMPLE
TESTED:	Jul. 03 ~ Jul. 15, 2008
STANDARDS:	**FCC Part 15, Subpart E (Section 15.407)** ANSI C63.4-2003

The above equipment (Model: DIR-825) 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 : _____ **, DATE :** Jul. 21, 2008
Joanna Wang / Senior Specialist

TECHNICAL ACCEPTANCE : _____ **, DATE :** Jul. 21, 2008
Responsible for RF Long Chen / Senior Engineer

APPROVED BY : _____ **, DATE :** Jul. 21, 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 -10.51dB at 0.390MHz.
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 -1.30dB at 500.420MHz.
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	3.34 dB
	200MHz ~1000MHz	3.35 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Xtreme N Dual Band Router
MODEL NO.	DIR-825
FCC ID	KA2DIR825A1
POWER SUPPLY	12Vdc from AC adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b:11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps Draft 802.11n: up to 300.0Mbps
FREQUENCY RANGE	2.4GHz: 2400.0 ~ 2483.5MHz 5.0GHz: 5150.0 ~ 5250.0MHz, 5725.0 ~ 5825.0MHz
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	113.778mW for 2400.0 ~ 2483.5MHz 32.399mW for 5150.0 ~ 5250.0MHz 87.046mW for 5725.0 ~ 5825.0MHz
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:

1. The EUT is a Xtreme 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)	RF970630L13
WLAN 802.11a, draft 802.11n (5725~5825 MHz)		
WLAN 802.11a, draft 802.11n (5150~ 5250MHz)	FCC Part 15, Subpart E (Section 15.407)	RF970630L13-1

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

Frequency Band (MHz)	2400~2483.5	5150~5250	5725~5825
802.11b	√		
802.11g	√		
802.11a		√	√
Draft 802.11n (20MHz)	√	√	√
Draft 802.11n (40MHz)	√	√	√

3. The EUT was powered by the following adapter:

BRAND:	D-Link
MODEL:	AG2412-B
INPUT:	100-240Vac, 50-60Hz, 0.5A
OUTPUT:	12Vdc, 2A
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.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11a	1TX
Draft 802.11n (20MHz)	2TX
Draft 802.11n (40MHz)	2TX

5. The EUT with following module cards:

ITEM	MODULE CARDS
A	With 802.11b, 802.11g, and 802.11n function
B	With 802.11a, 802.11b, 802.11g and 802.11n function

**For the module cards B, all the function of 2.4GHz will be closed by software.

6. 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

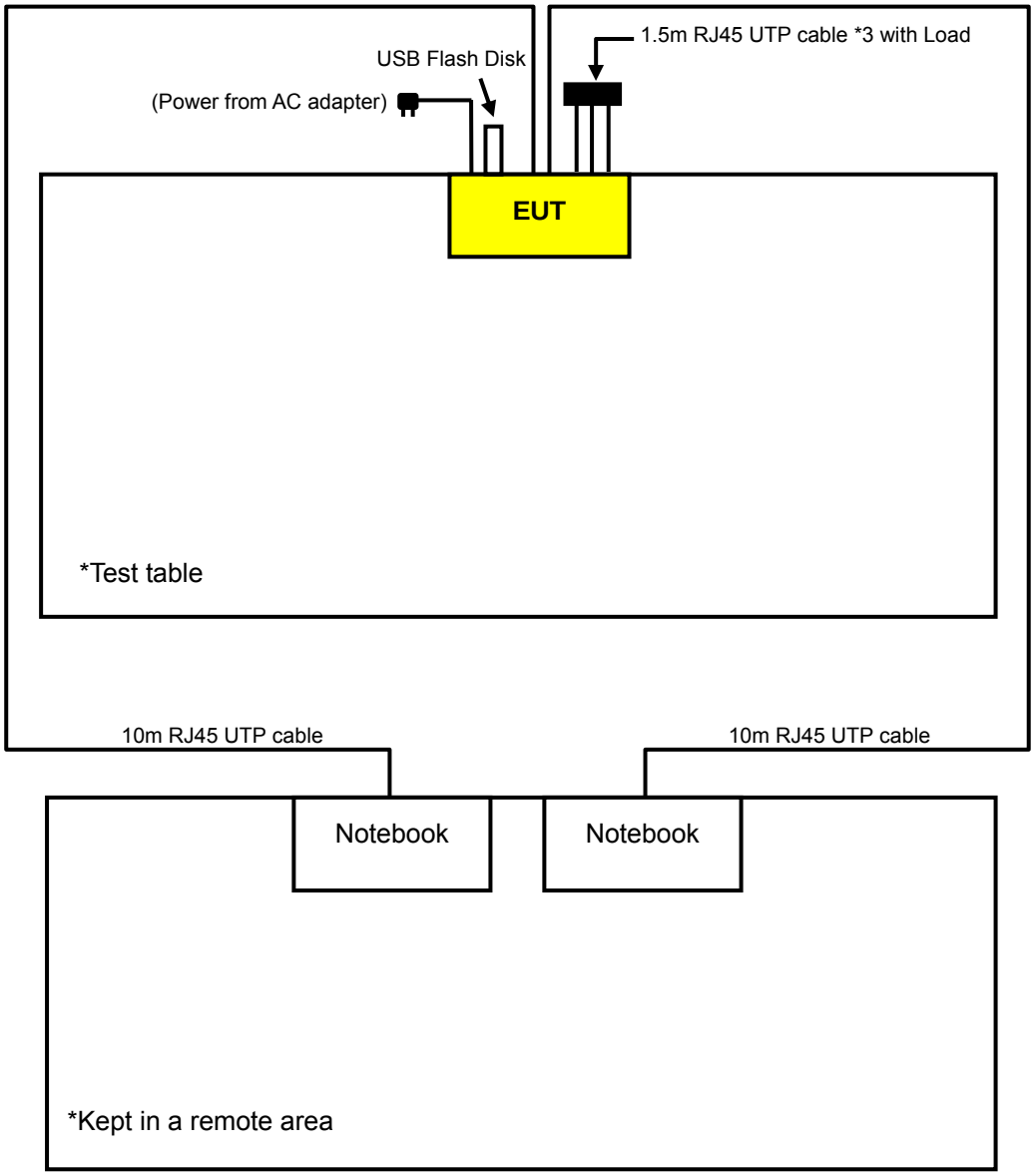
4 channels are provided for 802.11a, draft 802.11n (20MHz):

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
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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

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

RADIATED EMISSION TEST (ABOVE 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, 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)
Draft 802.11n (20MHz)	36 to 48	40	OFDM	BPSK	7.2

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	TESTED	MODULATIO	MODULATIO	DATA RATE

	CHANNEL	CHANNEL	N TECHNOLOGY	N TYPE	(Mbps)
Draft 802.11n (20MHz)	36 to 48	40	OFDM	BPSK	7.2

BANDEDGE MEASUREMENT:

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

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

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	12130898320	E2K24CLNS
2	NOTEBOOK COMPUTER	DELL	D600	CN-0G5152-48643-47H-7666	FCC DoC Approved
3	USB FLASH DISK	NA	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m RJ45 UTP cable
2	10m RJ45 UTP cable
3	NA

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

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:

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

4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESI7	100033	Jun. 29, 2009
Spectrum Analyzer Agilent	FSP	100041	Apr. 21, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	May 01, 2009
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jun. 23, 2009
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 24, 2008
Preamplifier Agilent	8447D	2944A10633	Oct. 28, 2008
Preamplifier Agilent	8449B	3008A01964	Oct. 23, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283402/4	Dec. 06, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	251644/4	Dec. 06, 2008
Software ADT.	ADT_Radiated_V7.6	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA

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

2. The test was performed in HwaYa Chamber 3.

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

4. The FCC Site Registration No. is 988962.

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

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 camber. 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.

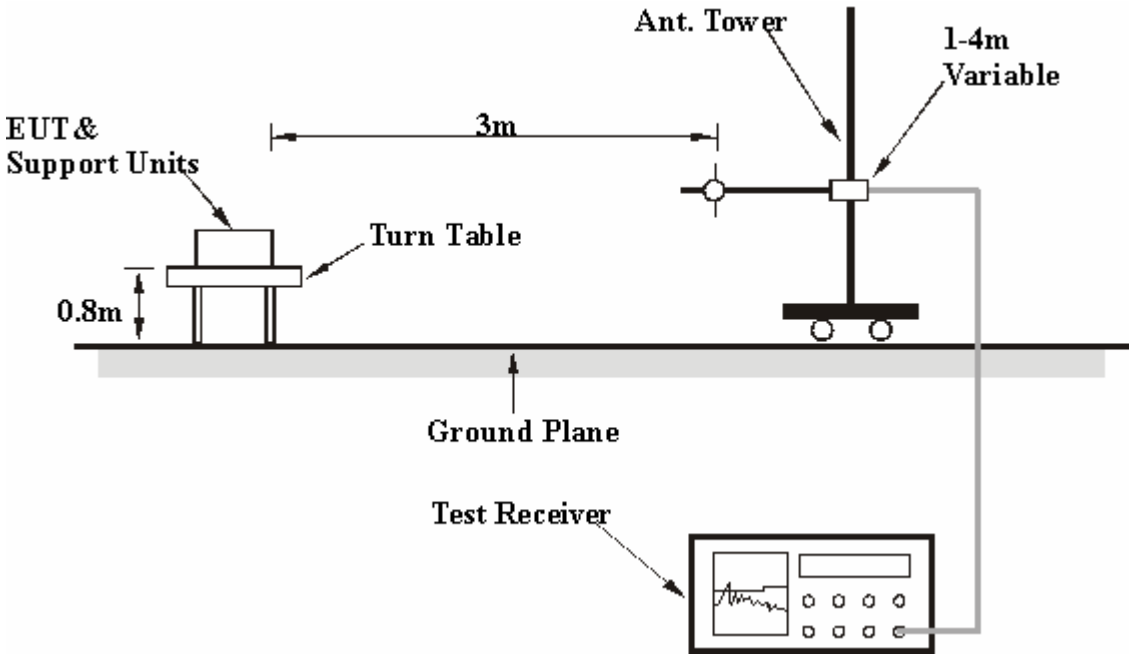
NOTE:

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

4.1.8 TEST RESULTS

802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH 1010hPa	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	1125.00	53.78 PK	74.00	-20.22	1.38 H	307	24.28	29.50
2	1125.00	49.01 AV	54.00	-4.99	1.38 H	307	19.51	29.50
3	5150.00	48.24 PK	74.00	-25.76	1.22 H	199	9.15	39.09
4	5150.00	38.06 AV	54.00	-15.94	1.22 H	199	-1.03	39.09
5	*5180.00	99.56 PK			1.22 H	199	60.38	39.18
6	*5180.00	88.62 AV			1.22 H	199	49.44	39.18
7	#10360.00	59.52 PK	88.30	-28.78	1.10 H	360	10.05	49.47
8	#10360.00	46.19 AV	68.30	-22.11	1.10 H	360	-3.28	49.47
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	1125.00	56.65 PK	74.00	-17.35	1.04 V	192	27.15	29.50
2	1125.00	50.97 AV	54.00	-3.03	1.04 V	192	21.47	29.50
3	5150.00	49.04 PK	74.00	-24.96	1.09 V	122	9.95	39.09
4	5150.00	38.19 AV	54.00	-15.81	1.09 V	122	-0.90	39.09
5	*5180.00	108.46 PK			1.09 V	122	69.28	39.18
6	*5180.00	97.20 AV			1.09 V	122	58.02	39.18
7	#10360.00	59.95 PK	88.30	-28.35	1.08 V	1	10.48	49.47
8	#10360.00	46.49 AV	68.30	-21.81	1.08 V	1	-2.98	49.47

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 is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH 1010hPa	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	1125.00	53.52 PK	74.00	-20.48	1.42 H	325	24.02	29.50
2	1125.00	47.71 AV	54.00	-6.29	1.42 H	325	18.21	29.50
3	*5200.00	98.81 PK			1.26 H	207	59.57	39.24
4	*5200.00	88.12 AV			1.26 H	207	48.88	39.24
5	#10400.00	59.82 PK	88.30	-28.48	1.29 H	360	10.22	49.60
6	#10400.00	46.37 AV	68.30	-21.93	1.29 H	360	-3.23	49.60
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	1125.00	57.42 PK	74.00	-16.58	1.54 V	148	27.92	29.50
2	1125.00	50.98 AV	54.00	-3.02	1.54 V	148	21.48	29.50
3	*5200.00	107.83 PK			1.02 V	149	68.59	39.24
4	*5200.00	96.87 AV			1.02 V	149	57.63	39.24
5	#10400.00	59.86 PK	88.30	-28.44	1.02 V	360	10.26	49.60
6	#10400.00	46.84 AV	68.30	-21.46	1.02 V	360	-2.76	49.60

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 is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH 1010hPa	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	1125.00	53.40 PK	74.00	-20.60	1.41 H	328	23.90	29.50
2	1125.00	47.46 AV	54.00	-6.54	1.41 H	328	17.96	29.50
3	*5240.00	100.90 PK			1.01 H	211	61.59	39.31
4	*5240.00	89.51 AV			1.01 H	211	50.20	39.31
5	#10480.00	59.40 PK	88.30	-28.90	1.01 H	1	9.67	49.73
6	#10480.00	46.62 AV	68.30	-21.68	1.01 H	1	-3.11	49.73
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	1125.00	57.29 PK	74.00	-16.71	1.55 V	146	27.79	29.50
2	1125.00	51.06 AV	54.00	-2.94	1.55 V	146	21.56	29.50
3	*5240.00	108.66 PK			1.24 V	152	69.35	39.31
4	*5240.00	97.58 AV			1.24 V	152	58.27	39.31
5	5350.00	50.76 PK	74.00	-23.24	1.24 V	152	11.34	39.42
6	5350.00	37.91 AV	54.00	-16.09	1.24 V	152	-1.51	39.42
7	#10480.00	60.70 PK	88.30	-27.60	1.24 V	360	10.97	49.73
8	#10480.00	46.82 AV	68.30	-21.48	1.24 V	360	-2.91	49.73

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 is out the restricted band.

DRAFT 802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH 1010hPa	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	1125.00	52.47 PK	74.00	-21.53	1.00 H	110	22.97	29.50
2	1125.00	45.80 AV	54.00	-8.20	1.00 H	110	16.30	29.50
3	5150.00	48.78 PK	74.00	-25.22	1.20 H	209	9.69	39.09
4	5150.00	38.53 AV	54.00	-15.47	1.20 H	209	-0.56	39.09
5	*5180.00	99.53 PK			1.20 H	209	60.35	39.18
6	*5180.00	88.74 AV			1.20 H	209	49.56	39.18
7	#10360.00	59.65 PK	88.30	-28.65	1.33 H	1	10.18	49.47
8	#10360.00	45.88 AV	68.30	-22.42	1.33 H	1	-3.59	49.47
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	1125.00	56.62 PK	74.00	-17.38	1.00 V	193	27.12	29.50
2	1125.00	50.97 AV	54.00	-3.03	1.00 V	193	21.47	29.50
3	5150.00	49.44 PK	74.00	-24.56	1.02 V	152	10.35	39.09
4	5150.00	38.96 AV	54.00	-15.04	1.02 V	152	-0.13	39.09
5	*5180.00	109.88 PK			1.02 V	152	70.70	39.18
6	*5180.00	99.21 AV			1.02 V	152	60.03	39.18
7	#10360.00	59.66 PK	88.30	-28.64	1.02 V	1	10.19	49.47
8	#10360.00	46.60 AV	68.30	-21.70	1.02 V	1	-2.87	49.47

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 is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH 1010hPa	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	1125.00	55.77 PK	74.00	-18.23	1.29 H	83	26.27	29.50
2	1125.00	48.14 AV	54.00	-5.86	1.29 H	83	18.64	29.50
3	*5200.00	100.71 PK			1.29 H	227	61.47	39.24
4	*5200.00	89.99 AV			1.29 H	227	50.75	39.24
5	#10400.00	59.53 PK	88.30	-28.77	1.29 H	360	9.93	49.60
6	#10400.00	45.87 AV	68.30	-22.43	1.29 H	360	-3.73	49.60
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	1125.00	57.45 PK	74.00	-16.55	1.52 V	143	27.95	29.50
2	1125.00	50.83 AV	54.00	-3.17	1.52 V	143	21.33	29.50
3	*5200.00	111.51 PK			1.06 V	217	72.27	39.24
4	*5200.00	100.76 AV			1.06 V	217	61.52	39.24
5	#10400.00	59.82 PK	88.30	-28.48	1.06 V	360	10.22	49.60
6	#10400.00	46.61 AV	68.30	-21.69	1.06 V	360	-2.99	49.60

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 is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH 1010hPa	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	1125.00	53.93 PK	74.00	-20.07	1.35 H	305	24.43	29.50
2	1125.00	48.71 AV	54.00	-5.29	1.35 H	305	19.21	29.50
3	*5240.00	102.87 PK			1.00 H	211	63.56	39.31
4	*5240.00	91.98 AV			1.00 H	211	52.67	39.31
5	5350.00	50.48 PK	74.00	-23.52	1.10 H	300	11.06	39.42
6	5350.00	38.61 AV	54.00	-15.39	1.10 H	300	-0.81	39.42
7	#10480.00	60.87 PK	88.30	-27.43	1.35 H	1	11.14	49.73
8	#10480.00	47.17 AV	68.30	-21.13	1.35 H	1	-2.56	49.73
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	1125.00	55.61 PK	74.00	-18.39	1.26 V	13	26.11	29.50
2	1125.00	49.83 AV	54.00	-4.17	1.26 V	13	20.33	29.50
3	*5240.00	111.26 PK			1.08 V	226	71.95	39.31
4	*5240.00	101.00 AV			1.08 V	226	61.69	39.31
5	5350.00	50.25 PK	74.00	-23.75	1.08 V	226	10.83	39.42
6	5350.00	38.26 AV	54.00	-15.74	1.08 V	226	-1.16	39.42
7	#10480.00	60.60 PK	88.30	-27.70	1.08 V	360	10.87	49.73
8	#10480.00	46.98 AV	68.30	-21.32	1.08 V	360	-2.75	49.73

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 is out the restricted band.

DRAFT 802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH 1010hPa	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	1125.00	54.28 PK	74.00	-19.72	1.32 H	292	24.78	29.50
2	1125.00	49.58 AV	54.00	-4.42	1.32 H	292	20.08	29.50
3	5150.00	50.71 PK	74.00	-23.29	1.23 H	196	11.62	39.09
4	5150.00	39.02 AV	54.00	-14.98	1.23 H	196	-0.07	39.09
5	*5190.00	92.84 PK			1.23 H	196	53.63	39.21
6	*5190.00	82.51 AV			1.23 H	196	43.30	39.21
7	#10380.00	59.17 PK	88.30	-29.13	1.23 H	360	9.64	49.53
8	#10380.00	47.36 AV	68.30	-20.94	1.23 H	360	-2.17	49.53
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	1125.00	57.81 PK	74.00	-16.19	1.11 V	1	28.31	29.50
2	1125.00	51.01 AV	54.00	-2.99	1.11 V	1	21.51	29.50
3	5150.00	57.93 PK	74.00	-16.07	1.41 V	18	18.84	39.09
4	5150.00	42.61 AV	54.00	-11.39	1.41 V	18	3.52	39.09
5	*5190.00	105.04 PK			1.41 V	18	65.83	39.21
6	*5190.00	94.52 AV			1.41 V	18	55.31	39.21
7	#10380.00	59.50 PK	88.30	-28.80	1.04 V	360	9.97	49.53
8	#10380.00	47.21 AV	68.30	-21.09	1.04 V	360	-2.32	49.53

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 is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH 1010hPa	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	1125.00	52.71 PK	74.00	-21.29	1.34 H	279	23.21	29.50
2	1125.00	48.71 AV	54.00	-5.29	1.34 H	279	19.21	29.50
3	*5230.00	95.99 PK			1.57 H	284	56.70	39.29
4	*5230.00	85.11 AV			1.57 H	284	45.82	39.29
5	5350.00	60.81 PK	74.00	-13.19	1.11 H	1	21.39	39.42
6	5350.00	46.43 AV	54.00	-7.57	1.11 H	1	7.01	39.42
7	#10460.00	60.55 PK	88.30	-27.75	1.34 H	279	10.85	49.70
8	#10460.00	46.63 AV	68.30	-21.67	1.34 H	279	-3.07	49.70
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	1125.00	57.56 PK	74.00	-16.44	1.16 V	360	28.06	29.50
2	1125.00	50.08 AV	54.00	-3.92	1.16 V	360	20.58	29.50
3	*5230.00	107.38 PK			1.00 V	195	68.09	39.29
4	*5230.00	97.36 AV			1.00 V	195	58.07	39.29
5	5350.00	50.47 PK	74.00	-23.53	1.00 V	195	11.05	39.42
6	5350.00	39.28 AV	54.00	-14.72	1.00 V	195	-0.14	39.42
7	#10460.00	60.52 PK	88.30	-27.78	1.00 V	1	10.82	49.70
8	#10460.00	46.93 AV	68.30	-21.37	1.00 V	1	-2.77	49.70

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 is out the restricted band.

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 1010hPa	TESTED BY	Mark Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	125.17	38.05 QP	43.50	-5.45	2.00 H	271	25.65	12.40
2	249.60	44.50 QP	46.00	-1.50	1.27 H	298	30.82	13.68
3	**500.42**	**44.70 QP**	**46.00**	**-1.30**	**1.52 H**	**301**	**24.20**	**20.50**
4	700.68	40.96 QP	46.00	-5.04	1.25 H	193	15.72	25.24
5	751.23	40.54 QP	46.00	-5.46	1.50 H	169	14.66	25.87
6	799.84	40.11 QP	46.00	-5.89	1.00 H	43	13.73	26.38
7	875.67	43.26 QP	46.00	-2.74	1.00 H	109	15.55	27.71
8	900.94	40.75 QP	46.00	-5.25	1.00 H	193	12.65	28.10
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	43.10	36.35 QP	40.00	-3.65	1.02 V	180	23.56	12.79
2	249.60	44.60 QP	46.00	-1.40	1.25 V	10	30.92	13.68
3	500.42	42.59 QP	46.00	-3.41	1.00 V	265	22.08	20.50
4	875.67	40.89 QP	46.00	-5.11	1.50 V	112	13.19	27.71
5	900.94	41.25 QP	46.00	-4.75	1.25 V	271	13.15	28.10
6	1000.00	43.20 QP	54.00	-10.80	1.00 V	325	13.68	29.52

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.

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

NOTE: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Nov. 21, 2008
RF signal cable Woken	5D-FB	Cable-HYC01-01	Jan. 03, 2009
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jun. 12, 2009
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Sep. 11, 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 1.

3. The VCCI Site Registration No. is C-2040.

4.2.3 TEST PROCEDURES

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

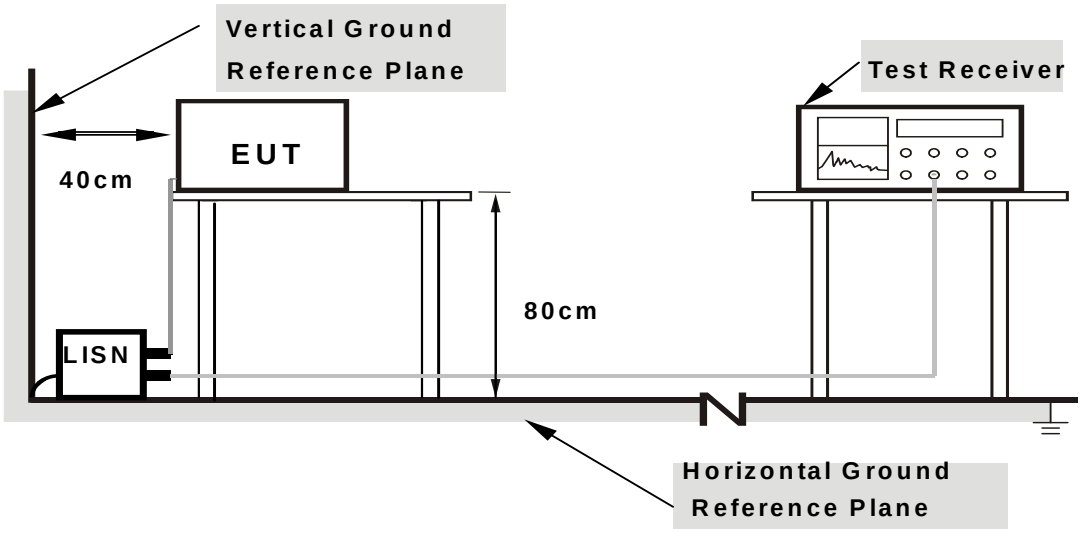
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

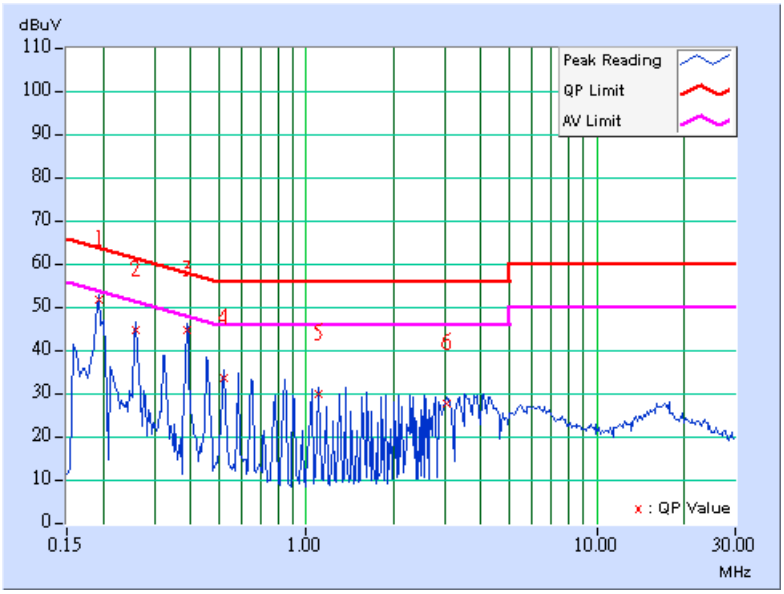
4.2.7 TEST RESULTS

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	7.2Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	26deg. C, 62%RH, 1010hPa	TESTED BY	Kevin Liang

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.194	0.20	51.67	-	51.87	-	63.85	53.85	-11.98	-
2	0.259	0.20	44.49	-	44.69	-	61.45	51.45	-16.76	-
3	0.390	0.20	44.50	-	44.70	-	58.07	48.07	-13.37	-
4	0.521	0.20	33.22	-	33.42	-	56.00	46.00	-22.58	-
5	1.105	0.20	29.86	-	30.06	-	56.00	46.00	-25.94	-
6	3.059	0.31	27.47	-	27.78	-	56.00	46.00	-28.22	-

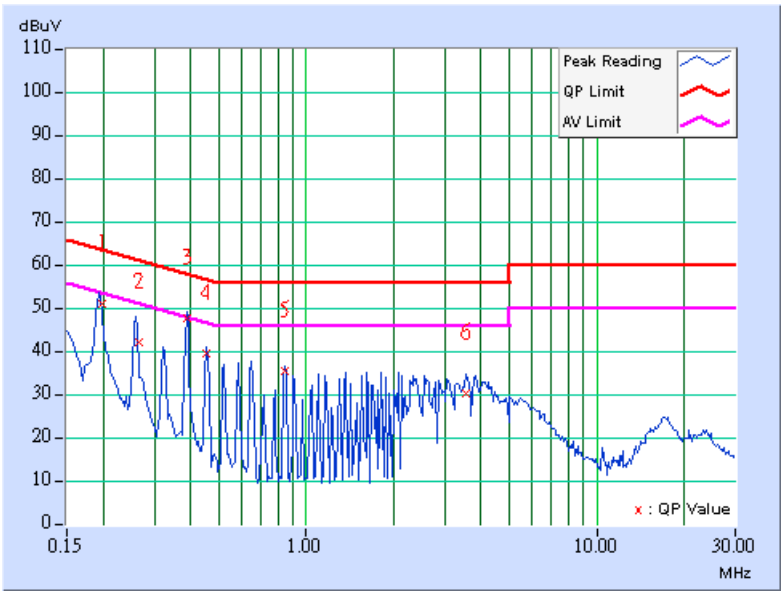
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	7.2Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	26deg. C, 62%RH, 1010hPa	TESTED BY	Kevin Liang

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.20	50.61	-	50.81	-	63.72	53.72	-12.91	-
2	0.265	0.20	41.80	-	42.00	-	61.28	51.28	-19.28	-
3	**0.390**	**0.20**	**47.36**	**-**	**47.56**	**-**	**58.07**	**48.07**	**-10.51**	**-**
4	0.455	0.20	39.29	-	39.49	-	56.79	46.79	-17.30	-
5	0.845	0.20	35.23	-	35.43	-	56.00	46.00	-20.57	-
6	3.570	0.36	30.00	-	30.36	-	56.00	46.00	-25.64	-

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	100041	Apr. 21, 2009

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

4.3.3 TEST PROCEDURE

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.

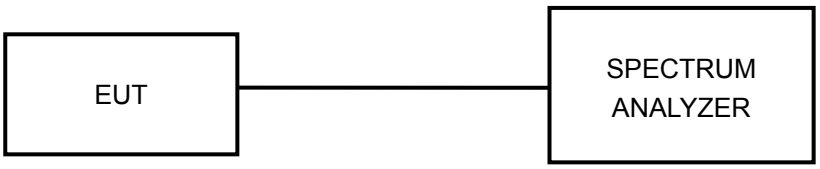
NOTE: The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

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.

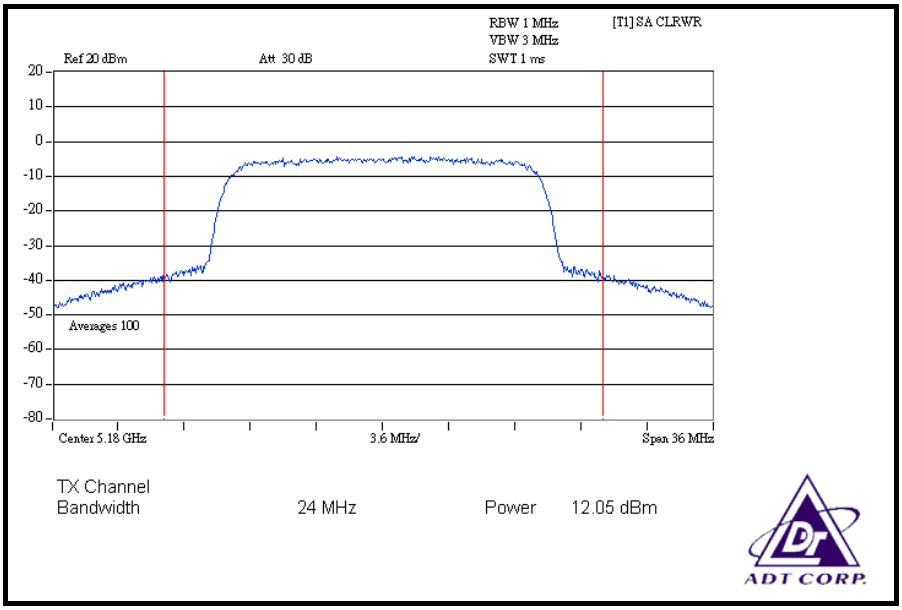
4.3.7 TEST RESULTS

PEAK POWER OUTPUT: 802.11a OFDM MODULATION

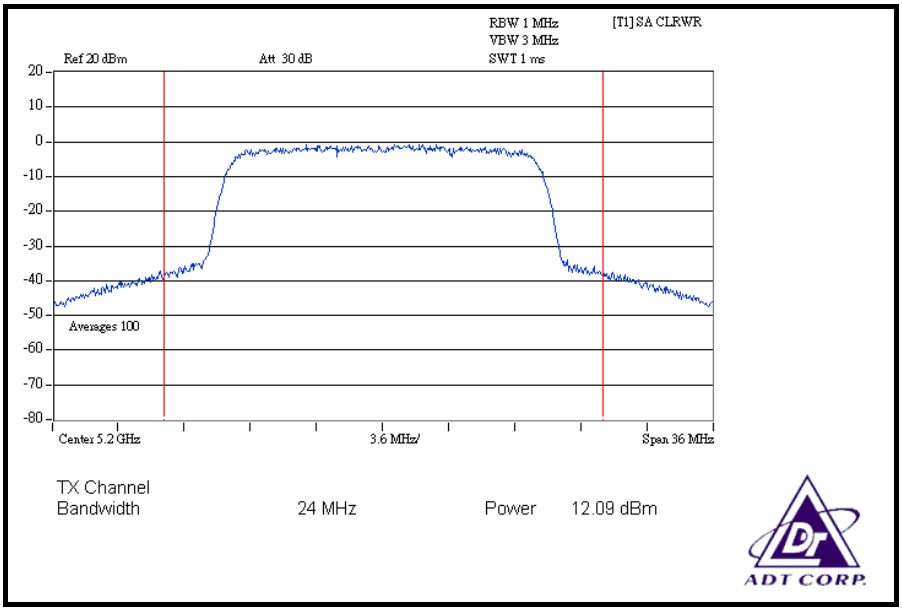
MODULATION TYPE	BPSK	**TRANSFER RATE**	6.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
36	5180	16.032	12.05	17.00	PASS
40	5200	16.181	12.09	17.00	PASS
48	5240	15.996	12.04	17.00	PASS

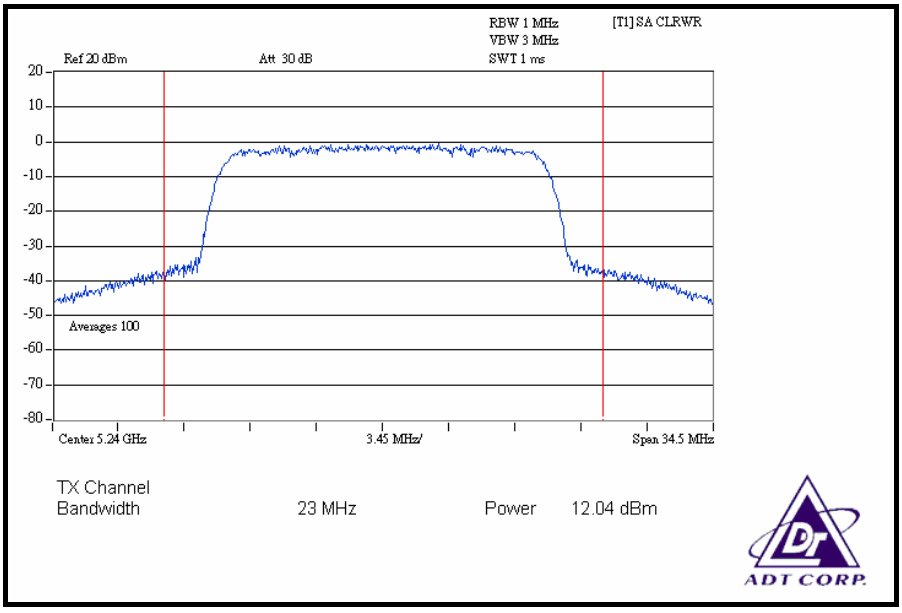
CH 36



CH 40


RBW 1 MHz
VBW 3 MHz
SWT 1 ms
[T1] SA CLRWR
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Averages 100
Center 5.2 GHz
3.6 MHz/
Span 36 MHz
TX Channel Bandwidth
24 MHz
Power
12.09 dBm
ADT CORP.

CH 48

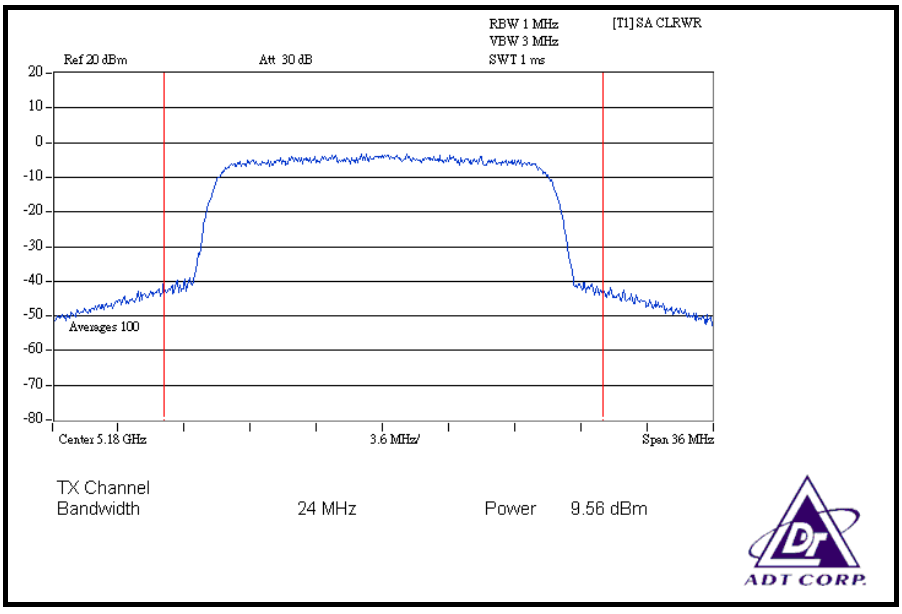

RBW 1 MHz
VBW 3 MHz
SWT 1 ms
[T1] SA CLRWR
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Averages 100
Center 5.24 GHz
3.45 MHz/
Span 34.5 MHz
TX Channel Bandwidth
23 MHz
Power
12.04 dBm
ADT CORP.

DRAFT 802.11n (20MHz) OFDM MODULATION

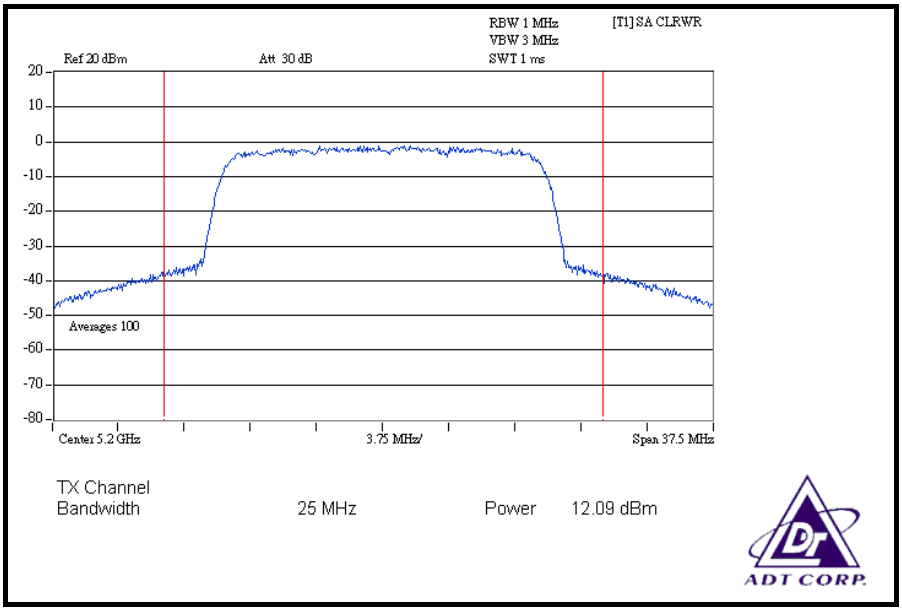
MODULATION TYPE	BPSK	**TRANSFER RATE**	7.2Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

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	9.56	8.53	16.165	12.09	30	PASS
40	5200	12.09	12.10	32.399	15.11	30	PASS
48	5240	12.04	12.02	31.918	15.04	30	PASS

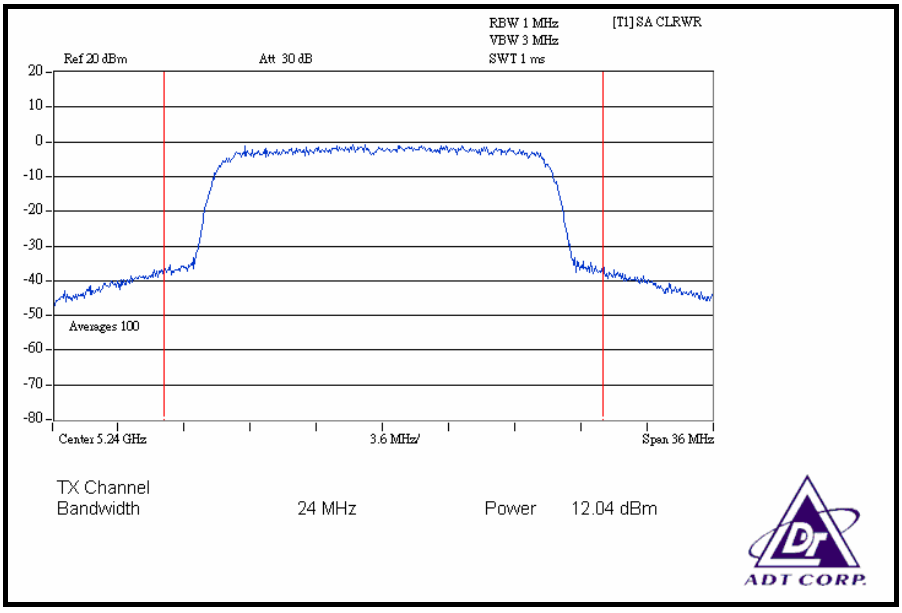
FOR CHAIN 0: CH 36



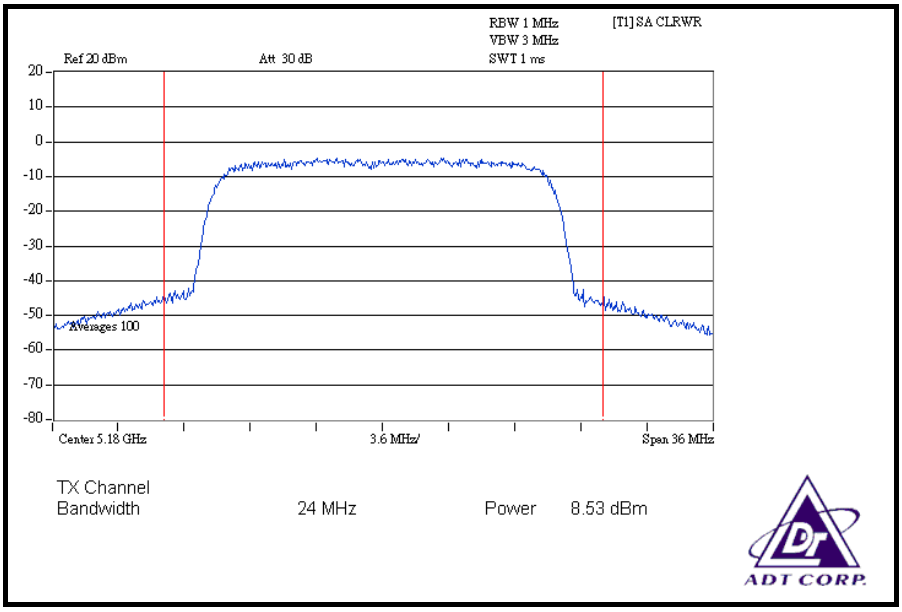
CH 40


RBW 1 MHz
VBW 3 MHz
SWT 1 ms
[T1] SA CLRWR
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Averages 100
Center 5.2 GHz
3.75 MHz/
Span 37.5 MHz
TX Channel Bandwidth
25 MHz
Power
12.09 dBm

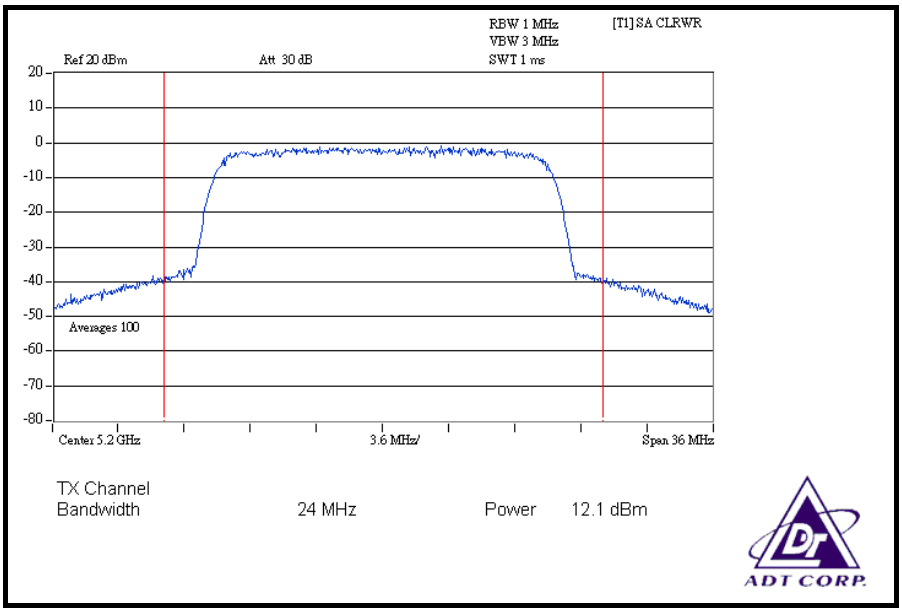
CH 48


RBW 1 MHz
VBW 3 MHz
SWT 1 ms
[T1] SA CLRWR
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Averages 100
Center 5.24 GHz
3.6 MHz/
Span 36 MHz
TX Channel Bandwidth
24 MHz
Power
12.04 dBm

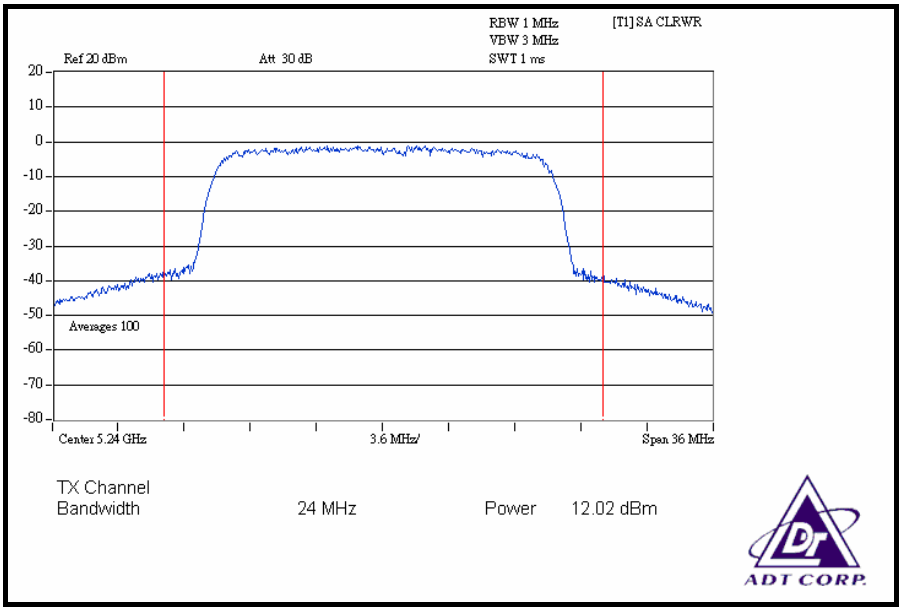
FOR CHAIN 1: CH 36



CH 40



CH 48

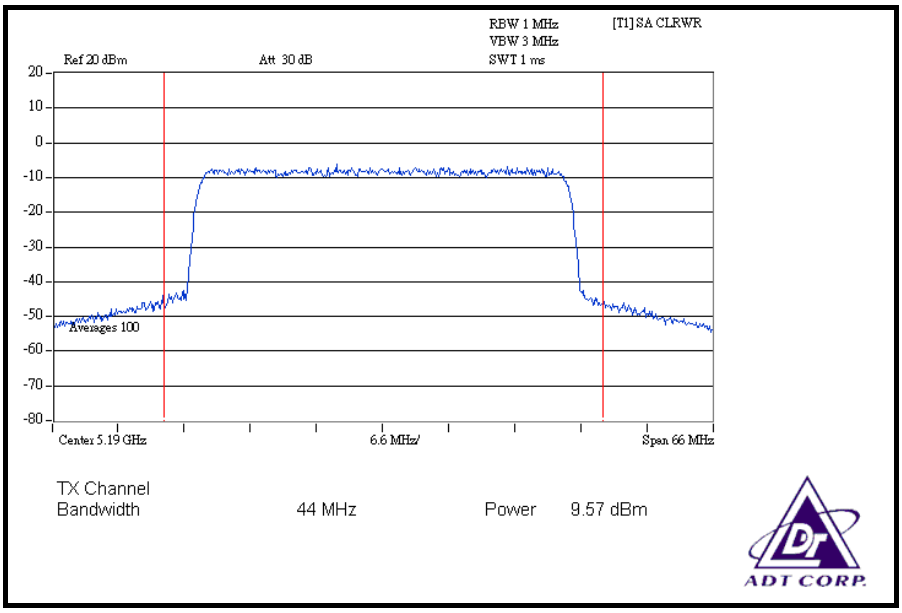

RBW 1 MHz
VBW 3 MHz
SWT 1 ms
[T1] SA CLRWR
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Averages 100
Center 5.24 GHz
3.6 MHz/
Span 36 MHz
TX Channel
Bandwidth
24 MHz
Power
12.02 dBm
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION

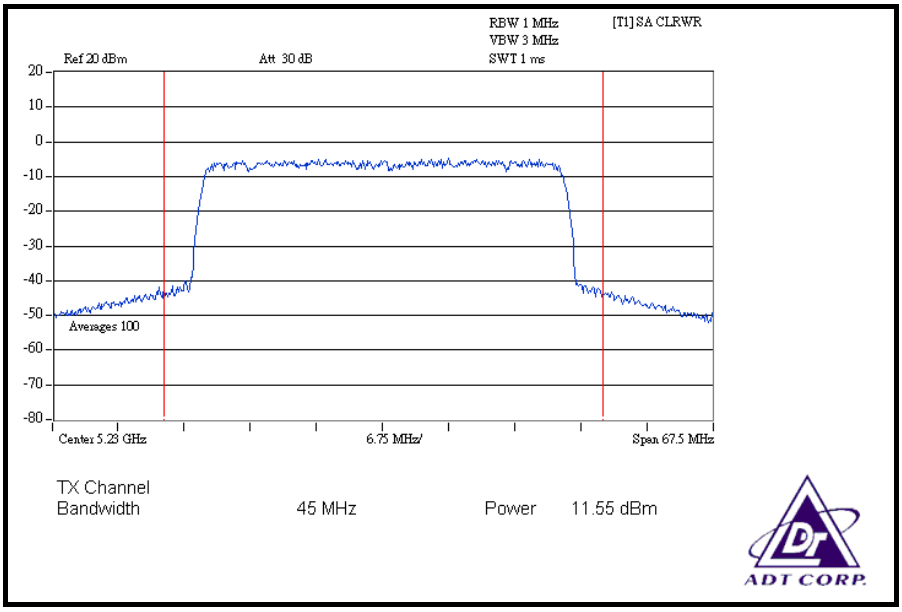
MODULATION TYPE	BPSK	**TRANSFER RATE**	15.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

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	9.57	9.64	18.262	12.62	30	PASS
46	5230	11.55	11.61	28.777	14.59	30	PASS

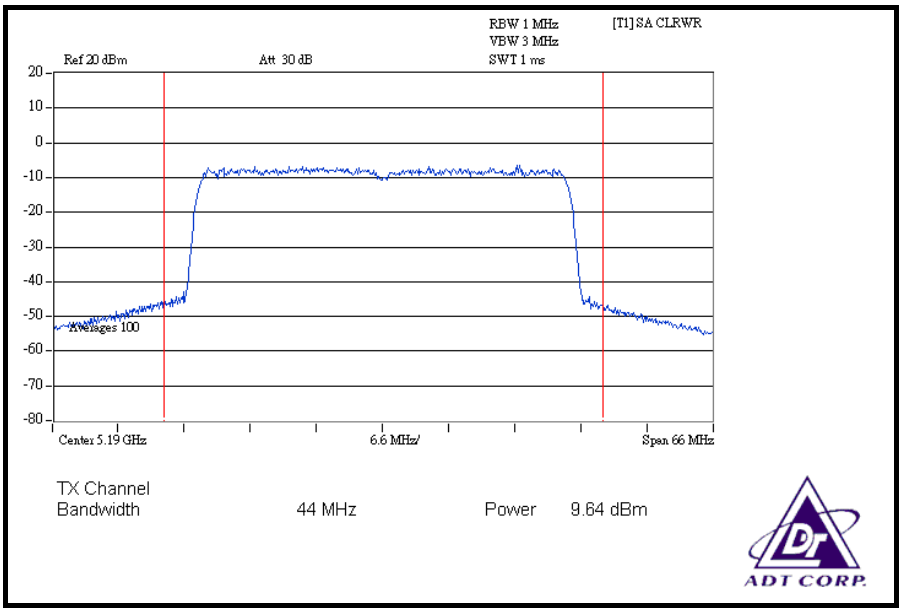
FOR CHAIN 0: CH 38



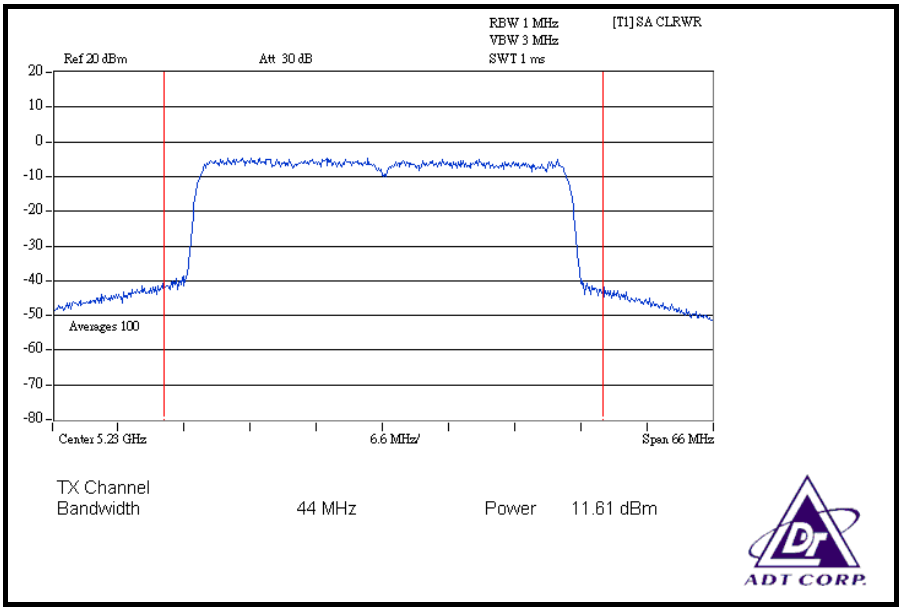
CH 46



FOR CHAIN 1: CH 38



CH 46

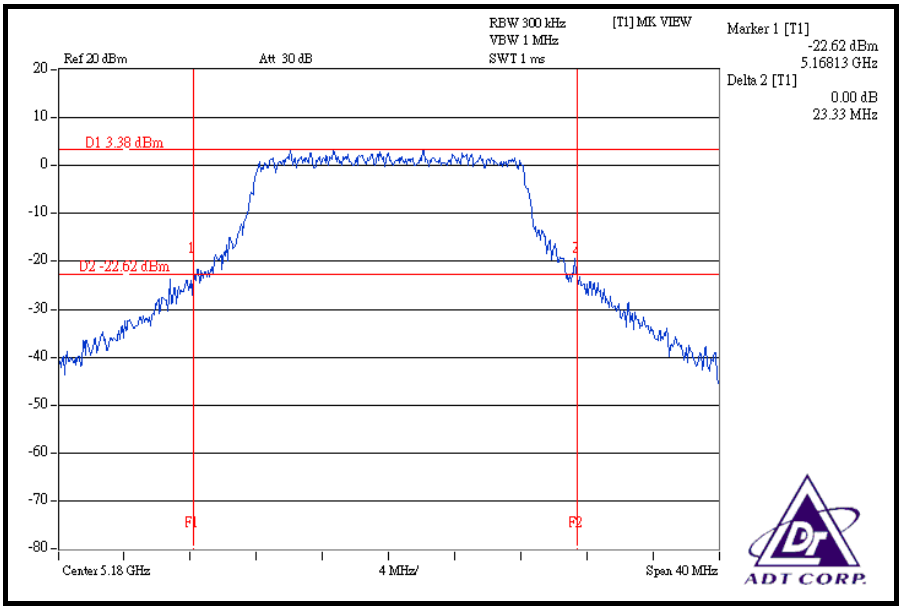

RBW 1 MHz
VBW 3 MHz
SWT 1 ms
[T1] SA CLRWR
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Averages 100
Center 5.23 GHz
6.6 MHz/
Span 66 MHz
TX Channel
Bandwidth
44 MHz
Power
11.61 dBm
ADT CORP.

26dB OCCUPIED BANDWIDTH: 802.11a OFDM MODULATION

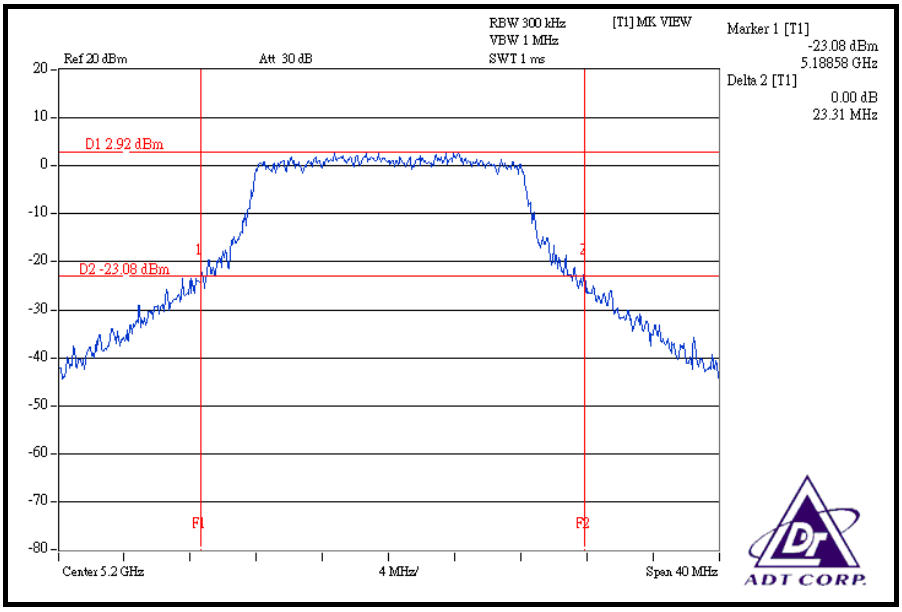
MODULATION TYPE	BPSK	**TRANSFER RATE**	6.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)	PASS / FAIL
36	5180	23.33	PASS
40	5200	23.31	PASS
48	5240	22.88	PASS

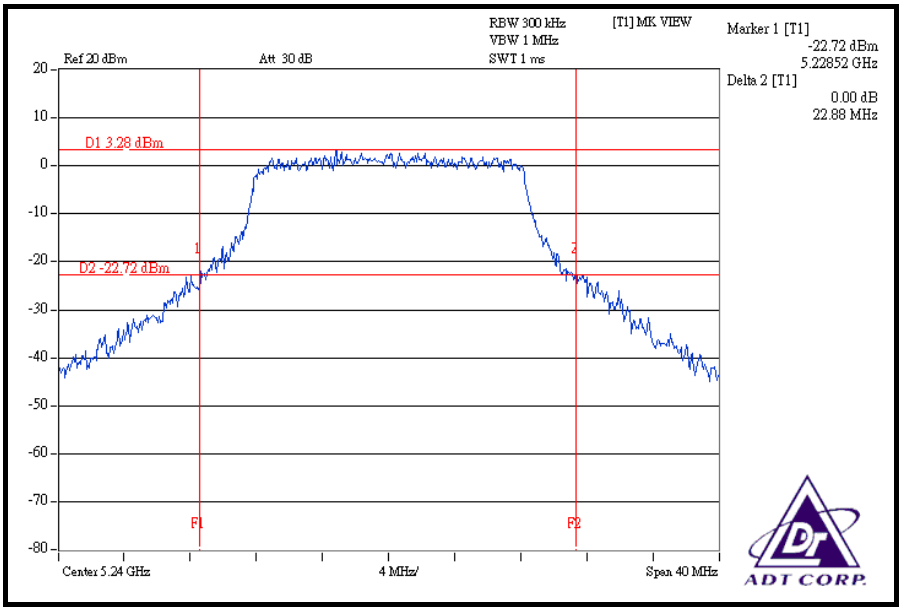
CH 36



CH 40


RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-23.08 dBm
5.18858 GHz
Delta 2 [T1]
0.00 dB
23.31 MHz
Ref 20 dBm
Att 30 dB
D1 2.92 dBm
D2 -23.08 dBm
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.2 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 48

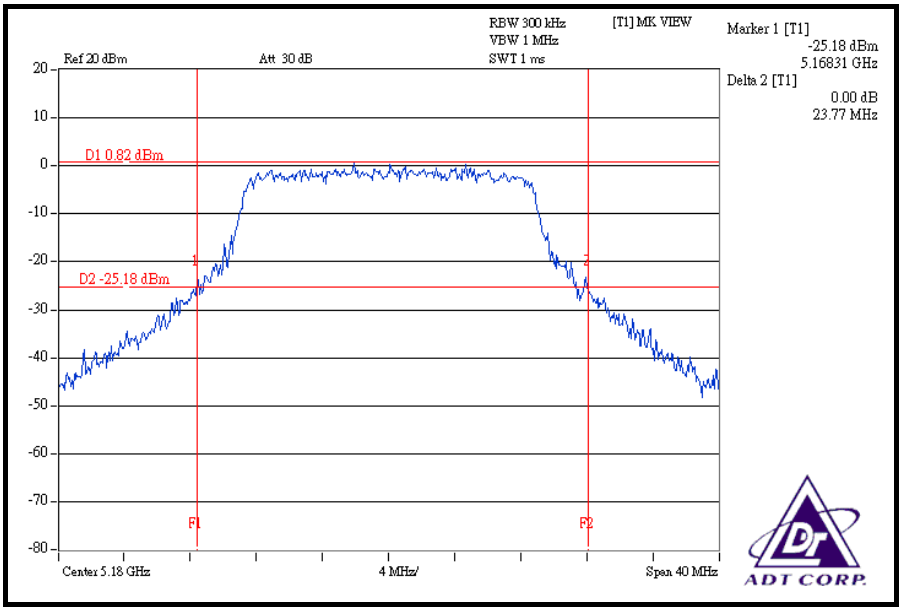

RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-22.72 dBm
5.22852 GHz
Delta 2 [T1]
0.00 dB
22.88 MHz
Ref 20 dBm
Att 30 dB
D1 3.28 dBm
D2 -22.72 dBm
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.24 GHz
4 MHz/
Span 40 MHz
ADT CORP.

DRAFT 802.11n (20MHz) OFDM MODULATION

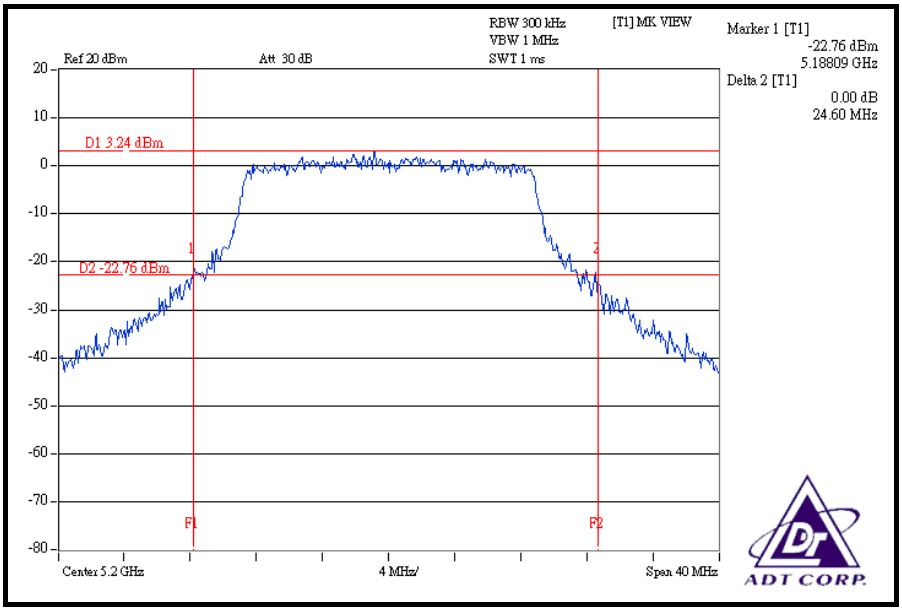
MODULATION TYPE	BPSK	**TRANSFER RATE**	7.2Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
36	5180	23.77	23.11	PASS
40	5200	24.60	23.34	PASS
48	5240	23.60	23.78	PASS

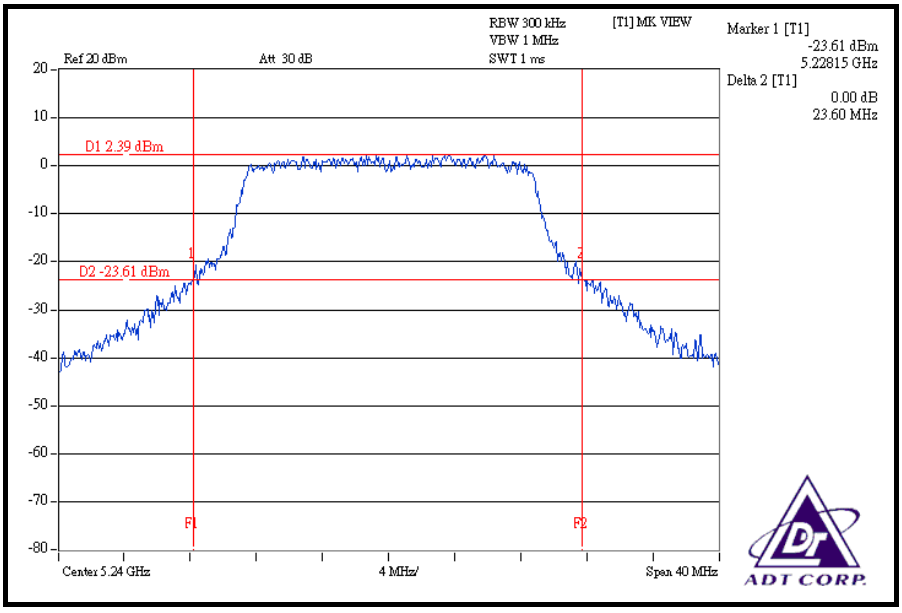
FOR CHAIN 0: CH 36



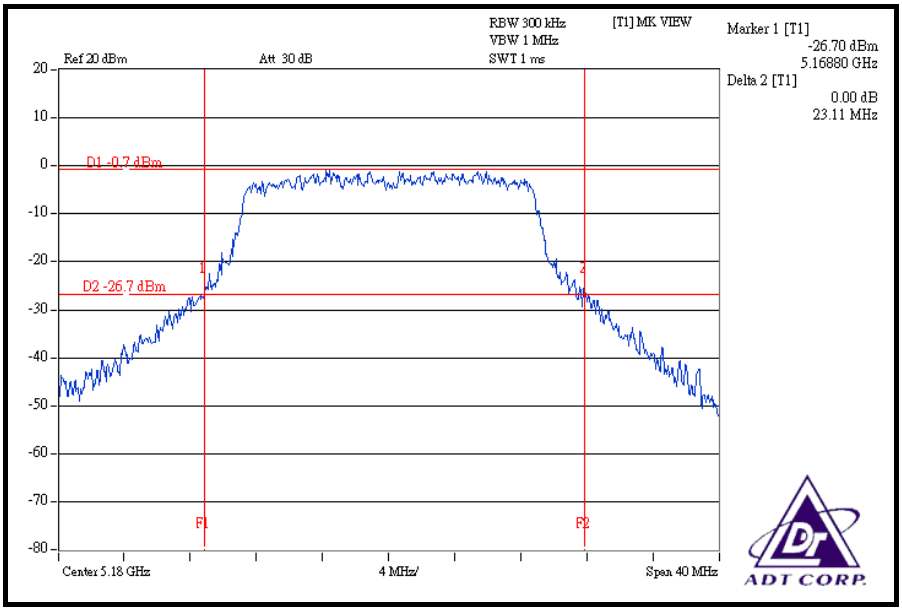
CH 40


RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-22.76 dBm
5.18809 GHz
Delta 2 [T1]
0.00 dB
24.60 MHz
Ref 20 dBm
Att 30 dB
D1 3.24 dBm
D2 -22.76 dBm
Center 5.2 GHz
4 MHz/
Span 40 MHz
ADT CORP.

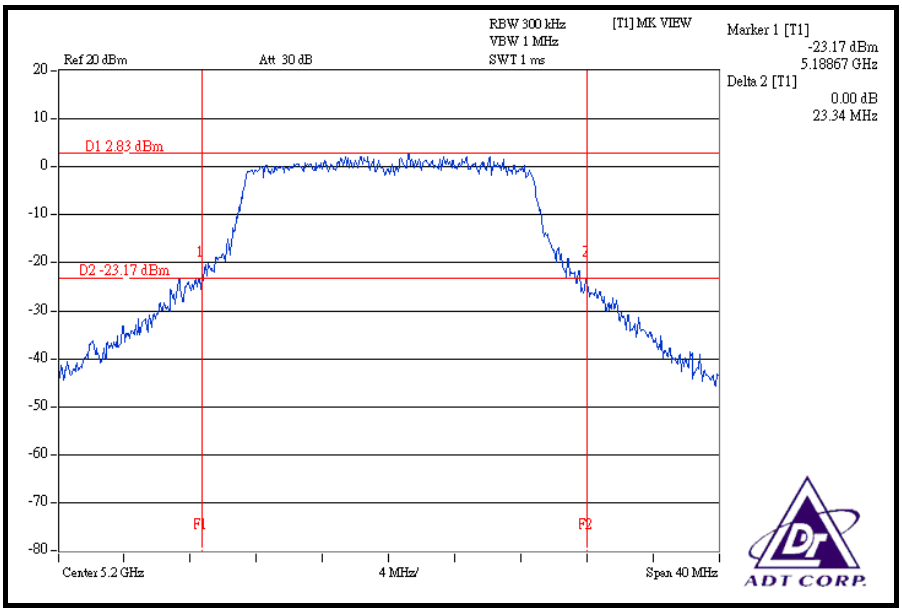
CH 48


RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-23.61 dBm
5.22815 GHz
Delta 2 [T1]
0.00 dB
23.60 MHz
Ref 20 dBm
Att 30 dB
D1 2.39 dBm
D2 -23.61 dBm
Center 5.24 GHz
4 MHz/
Span 40 MHz
ADT CORP.

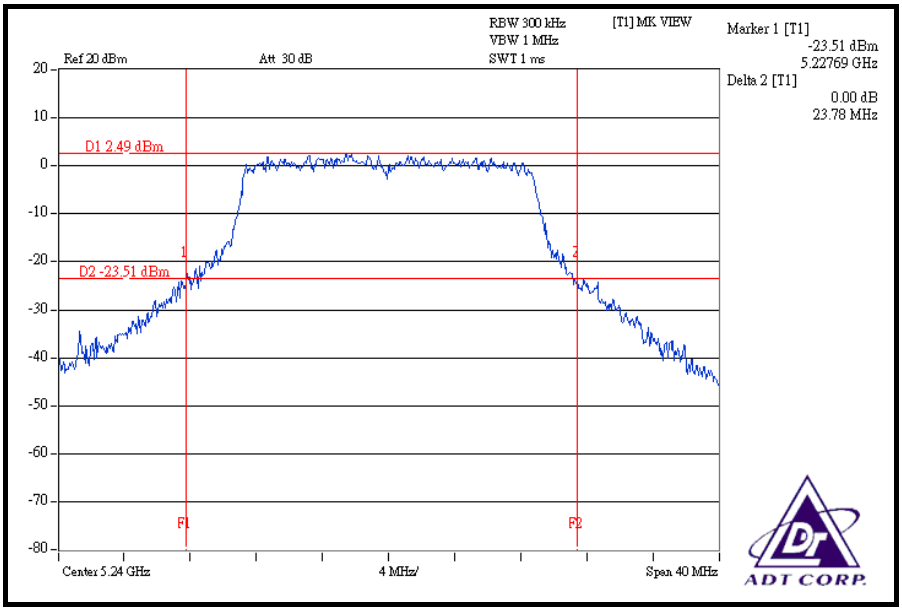
FOR CHAIN 1: CH 36



CH 40



CH 48

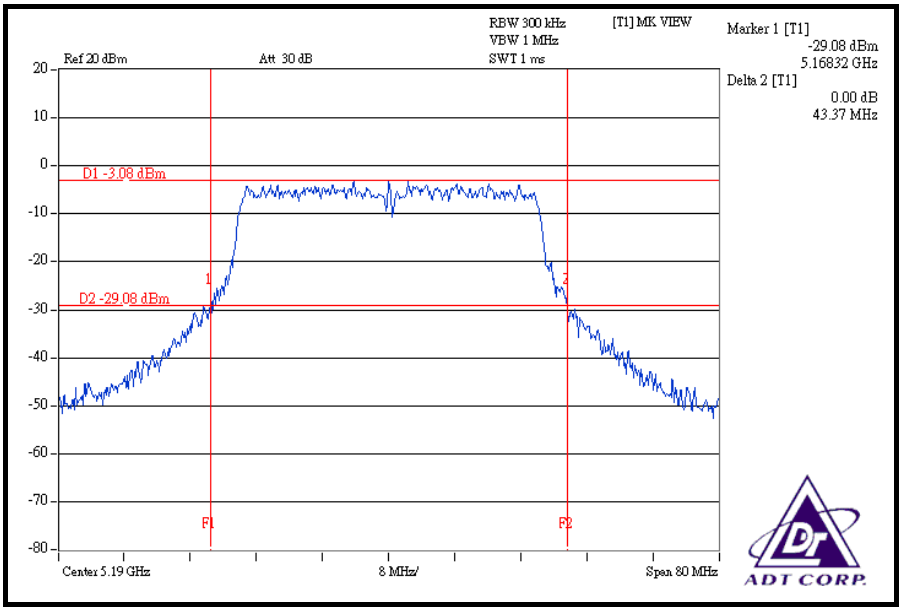

RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-23.51 dBm
5.22769 GHz
Delta 2 [T1]
0.00 dB
23.78 MHz
Ref 20 dBm
Att 30 dB
D1 2.49 dBm
D2 -23.51 dBm
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.24 GHz
4 MHz/
Span 40 MHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION

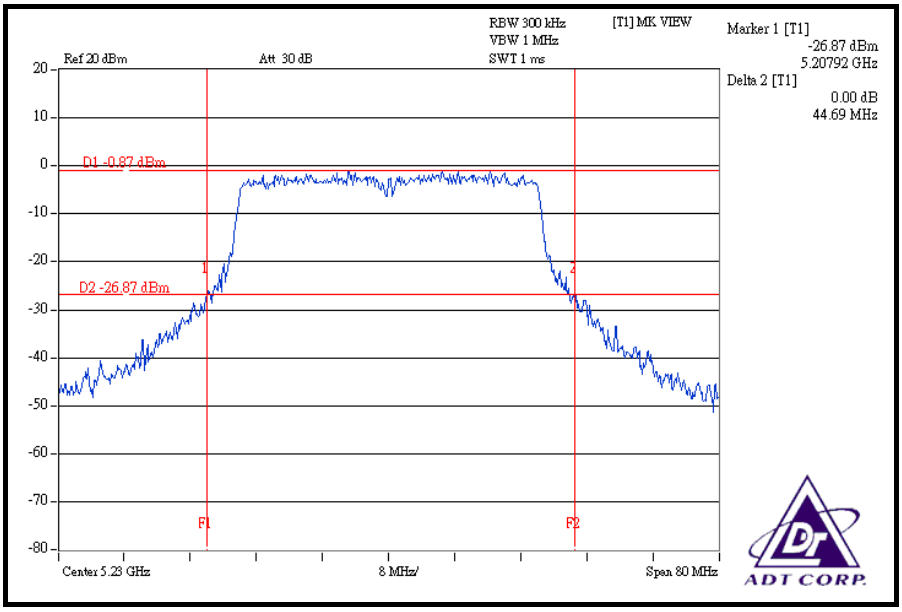
MODULATION TYPE	BPSK	**TRANSFER RATE**	15.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
38	5190	43.37	43.39	PASS
46	5230	44.69	43.23	PASS

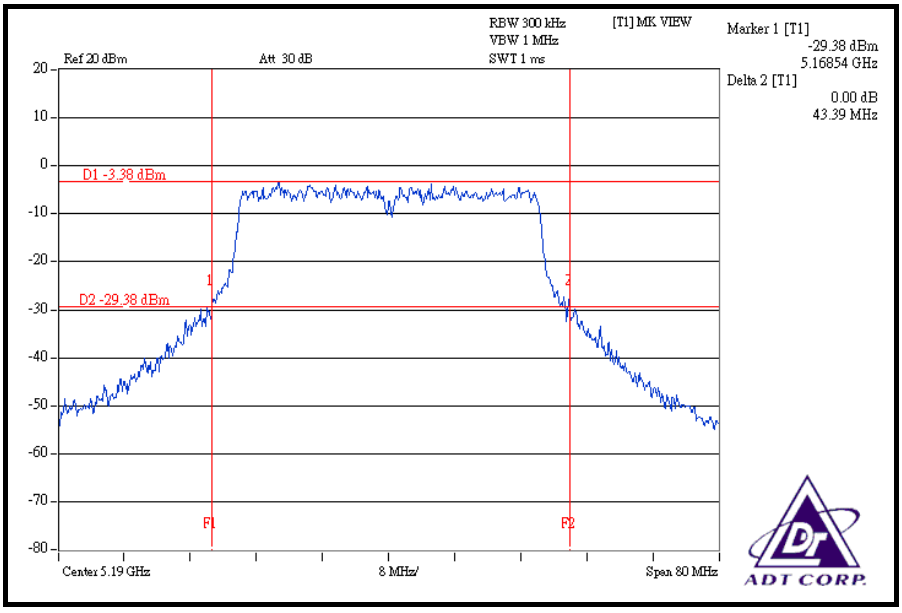
FOR CHAIN 0: CH 38



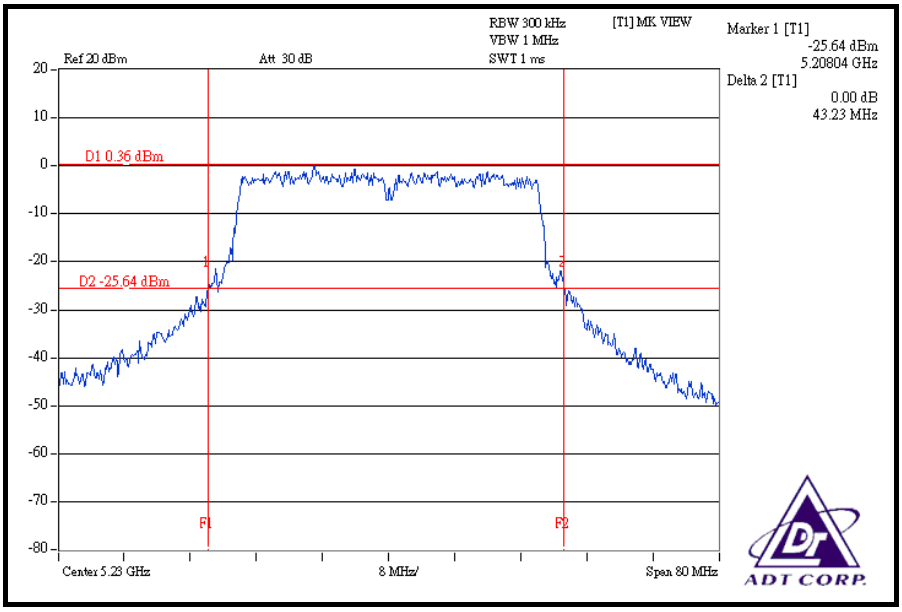
CH 46



FOR CHAIN 1: CH 38



CH 46


RBW 300 kHz
VBW 1 MHz
SWT 1 ms
[T1] MK VIEW
Marker 1 [T1]
-25.64 dBm
5.20804 GHz
Delta 2 [T1]
0.00 dB
43.23 MHz
Ref 20 dBm
Att 30 dB
D1 0.36 dBm
D2 -25.64 dBm
F1
F2
Center 5.23 GHz
8 MHz/
Span 80 MHz
ADT CORP.

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	100041	Apr. 21, 2009

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

4.4.3 TEST PROCEDURE

a. The transmitter output was connected to the spectrum analyzer.

b. Set the spectrum bandwidth span to view the entire spectrum.

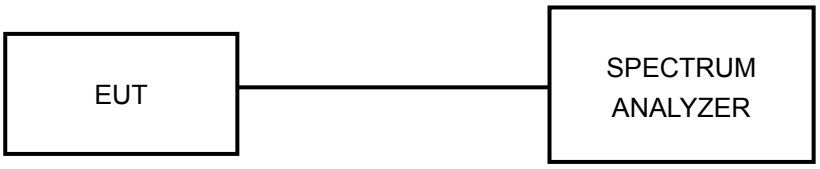
c. Using peak detector and Max-hold function for Trace 1 (RB = 1MHz, VB = 3MHz) and 2 (RB = 1MHz, VB = 300kHz).

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.

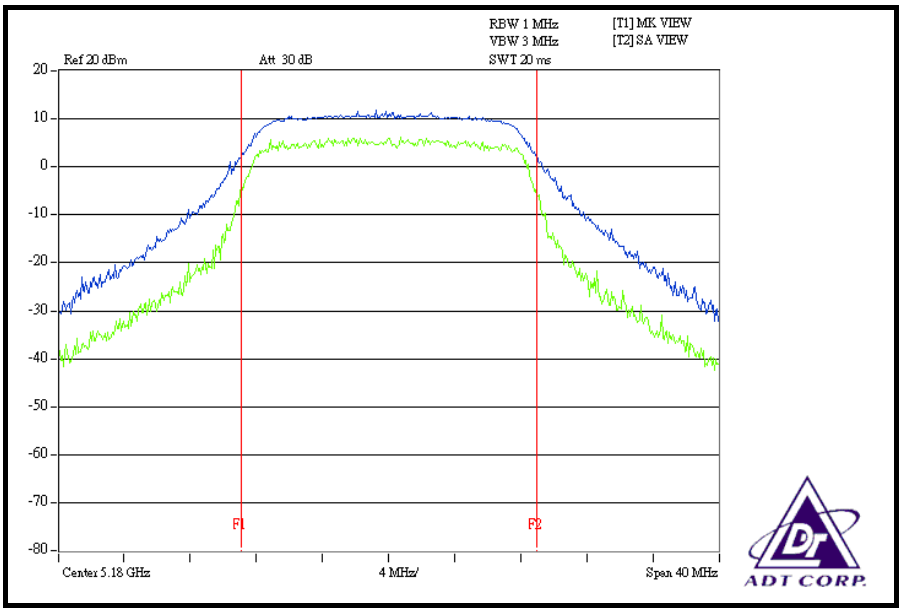
4.4.7 TEST RESULTS

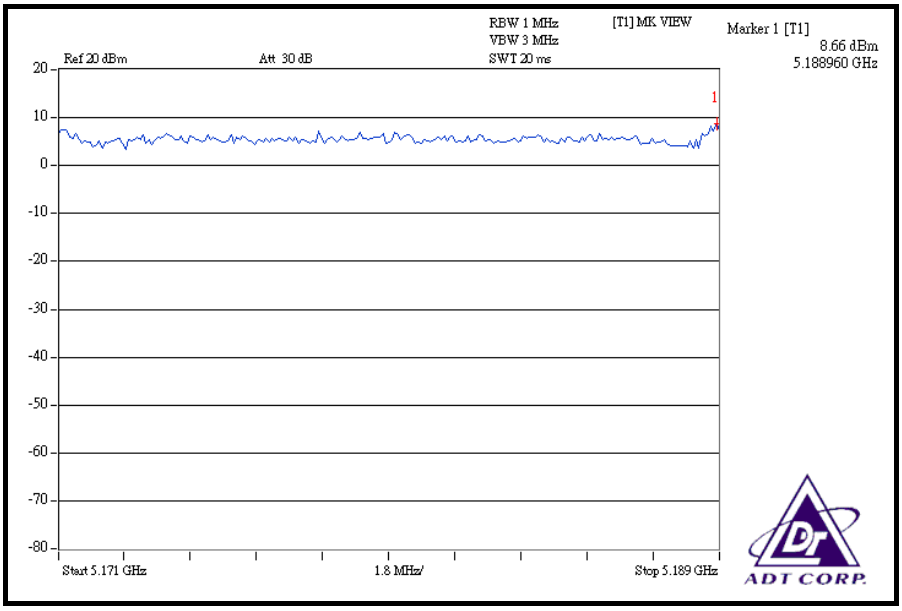
802.11a OFDM MODULATION

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

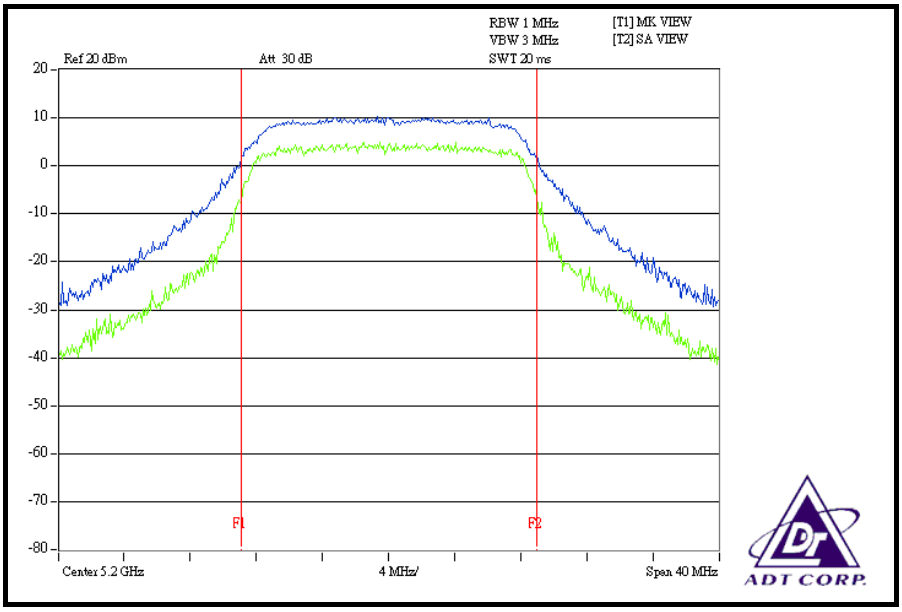
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK TO AVERAGE EXCURSION LIMIT (dB)	PASS / FAIL
36	5180	8.66	13	PASS
40	5200	9.61	13	PASS
48	5240	8.19	13	PASS

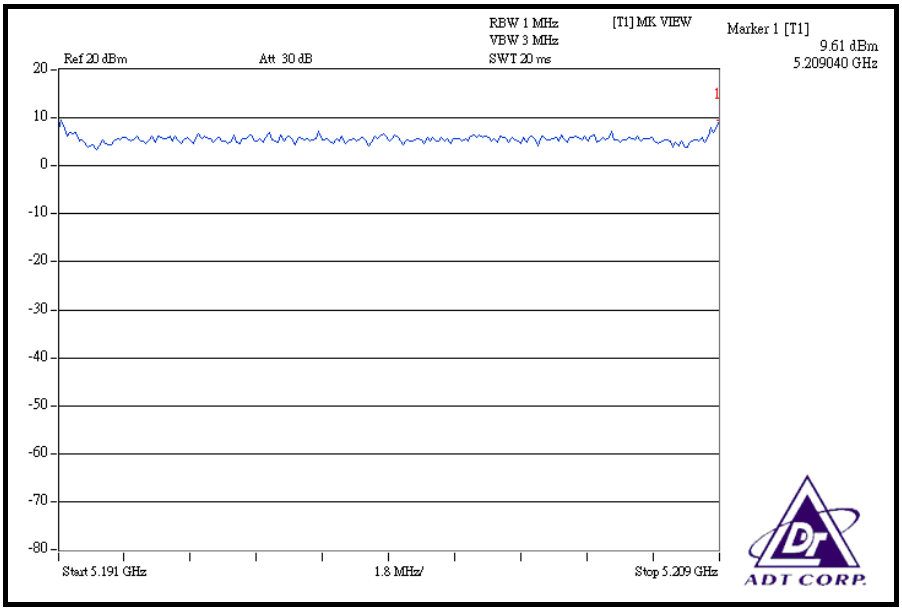
CH 36


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.18 GHz
4 MHz/
Span 40 MHz
ADT CORP.

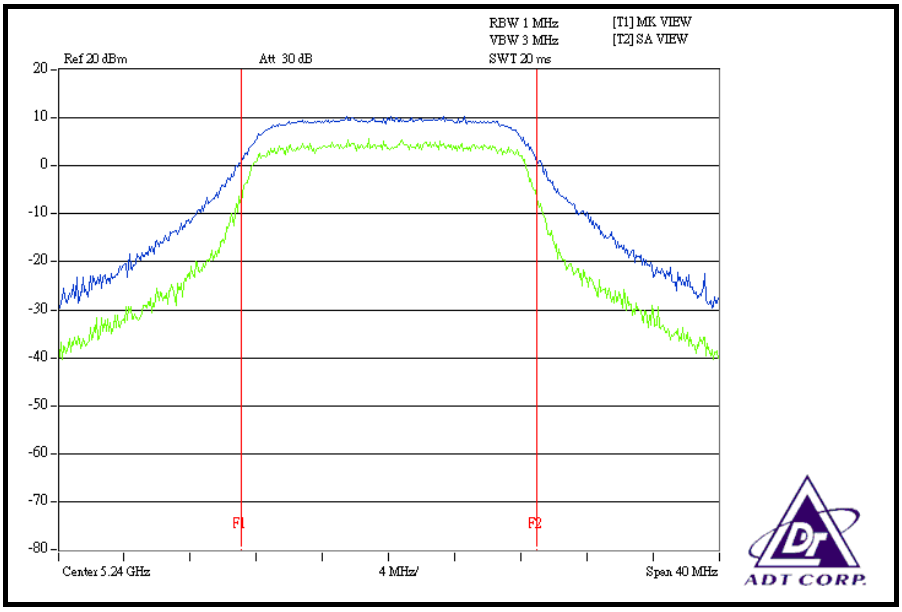

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
8.66 dBm
5.188960 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.171 GHz
1.8 MHz/
Stop 5.189 GHz
ADT CORP.

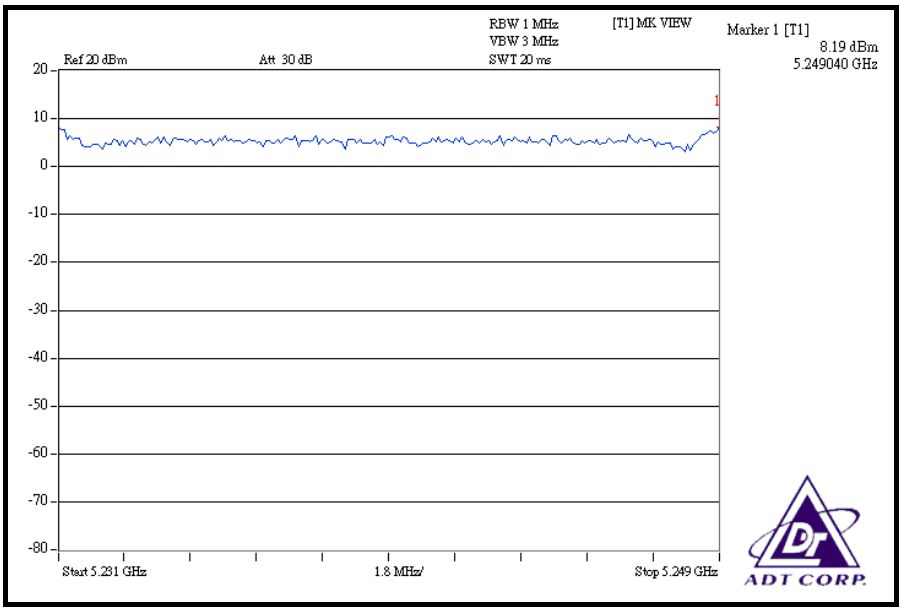
CH 40


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.2 GHz
4 MHz/
Span 40 MHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
9.61 dBm
5.209040 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.191 GHz
1.8 MHz/
Stop 5.209 GHz
ADT CORP.

CH 48


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.24 GHz
4 MHz/
Span 40 MHz
ADT CORP.

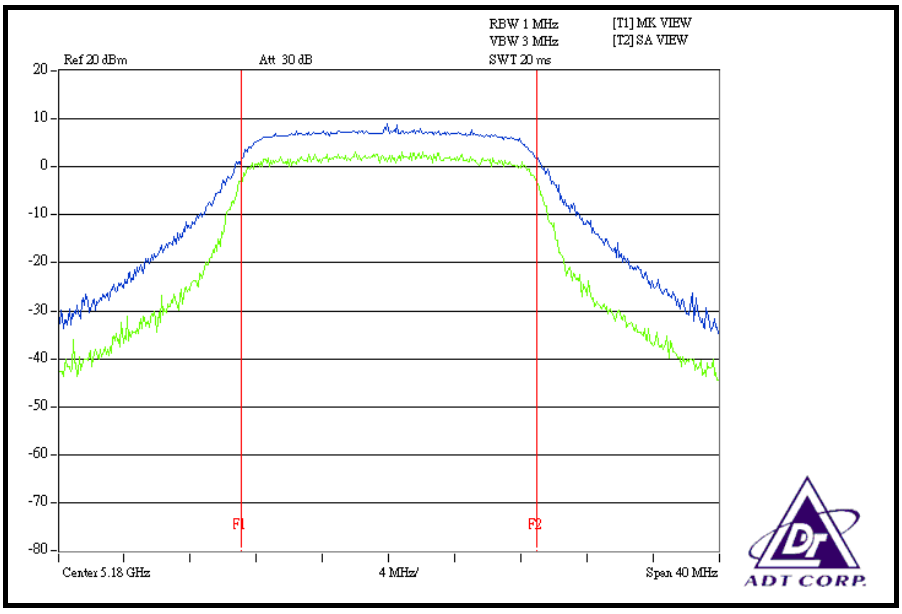

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
8.19 dBm
5.249040 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.231 GHz
1.8 MHz/
Stop 5.249 GHz
ADT CORP.

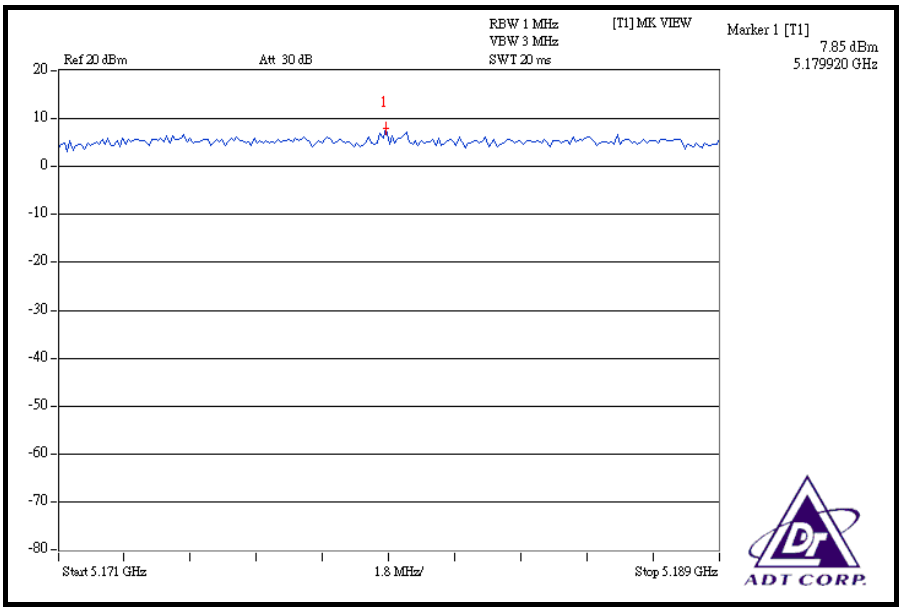
DRAFT 802.11n (20MHz) OFDM MODULATION

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

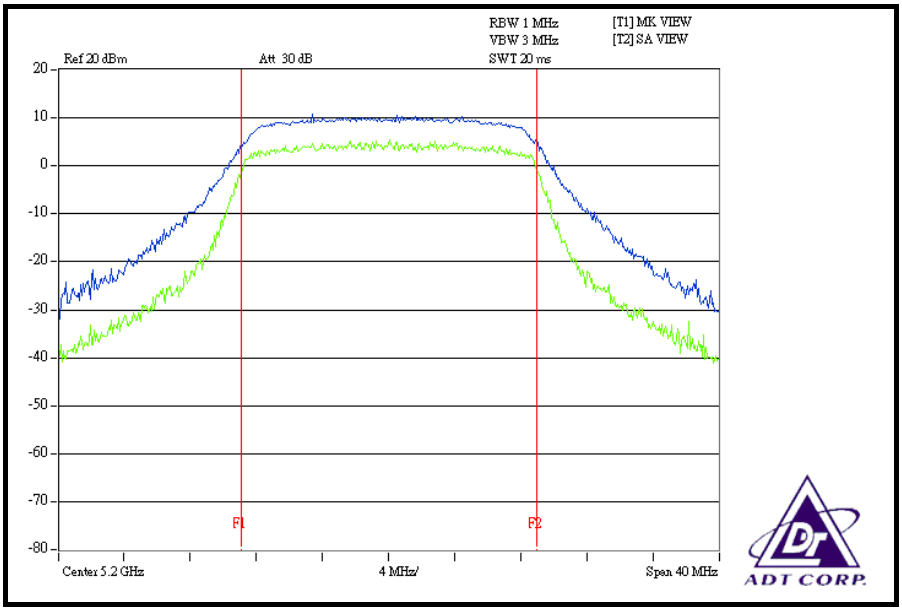
CHANNEL	**CHANNEL FREQUENCY (MHz)**	**PEAK POWER EXCURSION (dB)**		**PEAK to AVERAGE EXCURSION LIMIT (dB)**	**PASS/FAIL**
		CHAIN 0	**CHAIN 1**		
36	5180	7.85	7.64	13	PASS
40	5200	6.62	7.42	13	PASS
48	5240	7.15	7.05	13	PASS

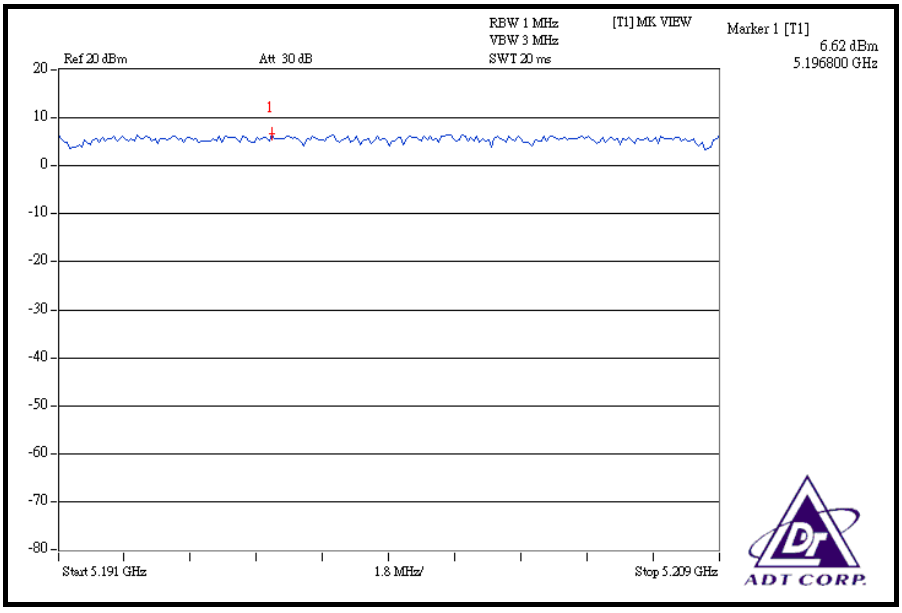
FOR CHAIN 0: CH 36



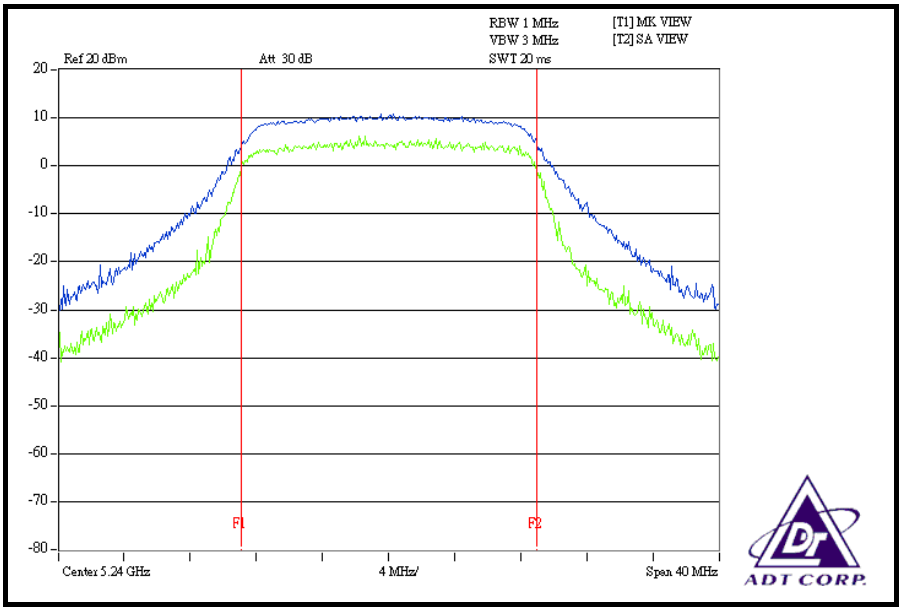


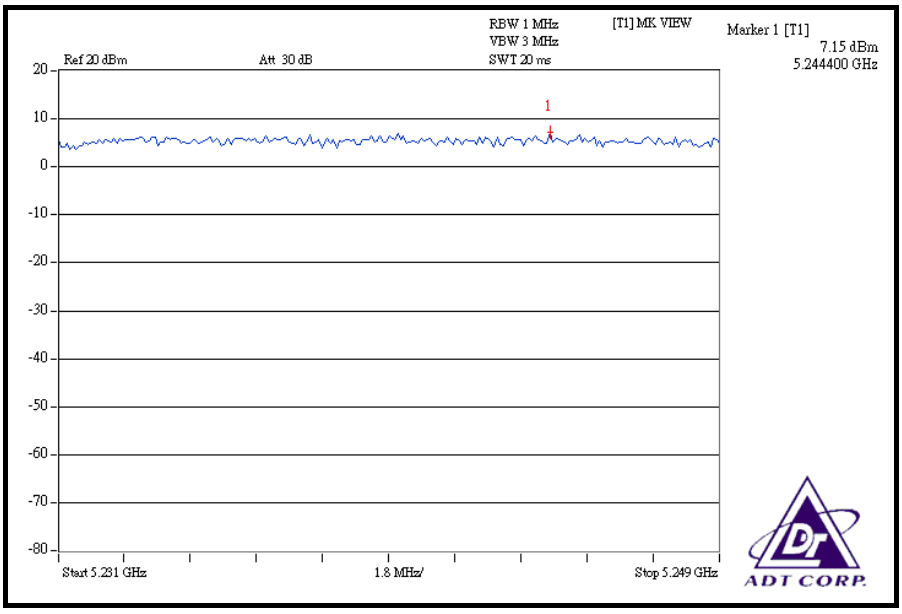
CH 40


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.2 GHz
4 MHz/
Span 40 MHz
ADT CORP.

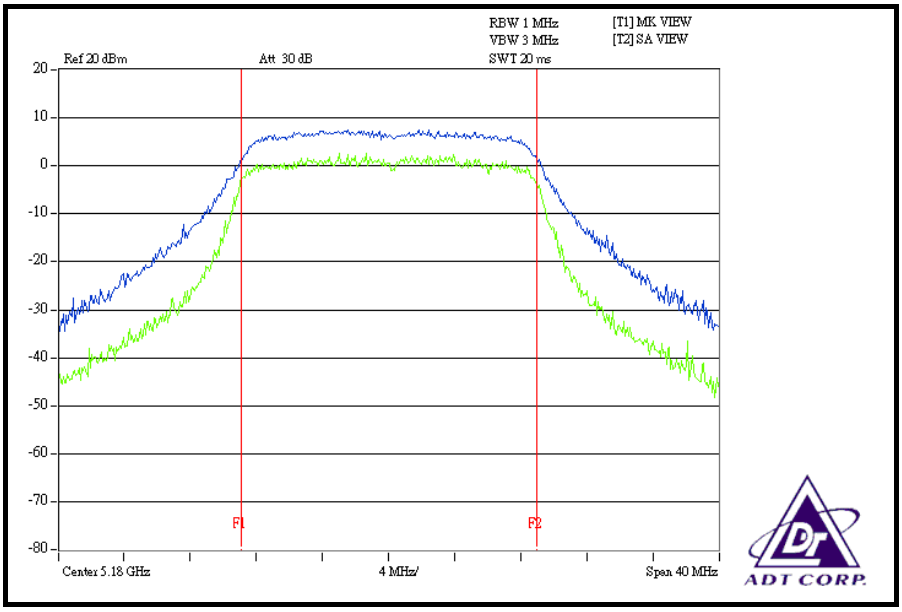

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
6.62 dBm
5.196800 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.191 GHz
1.8 MHz/
Stop 5.209 GHz
ADT CORP.

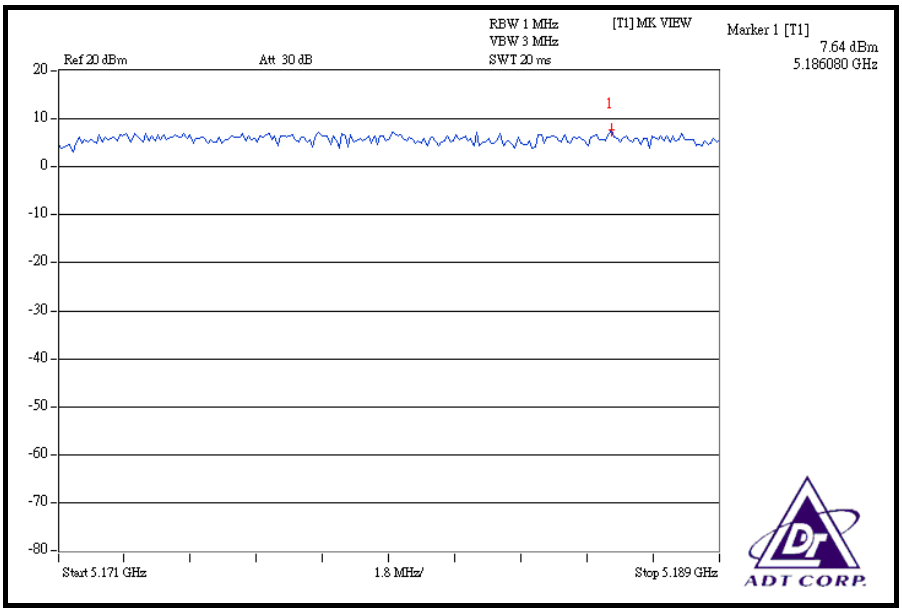
CH 48


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.24 GHz
4 MHz/
Span 40 MHz
ADT CORP.

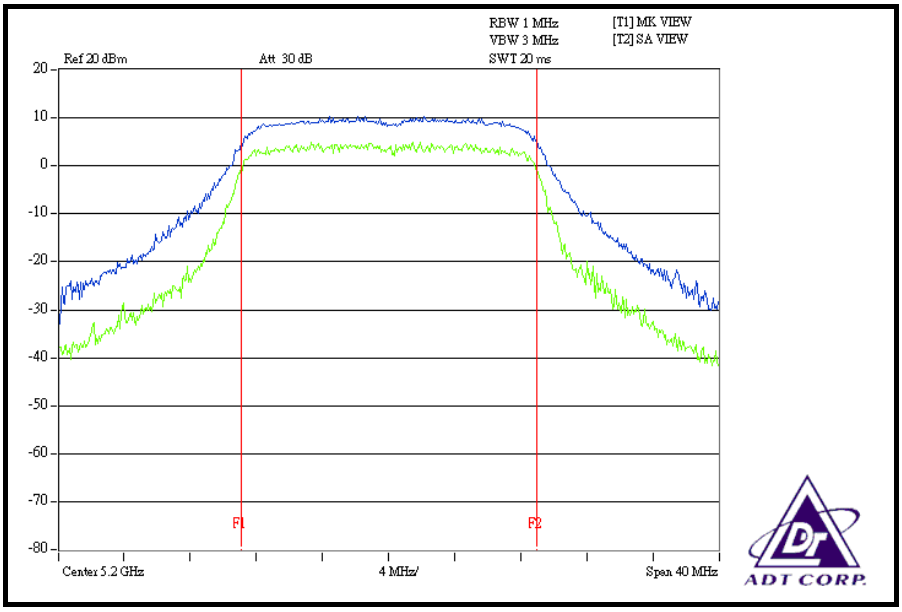

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
7.15 dBm
5.244400 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.231 GHz
1.8 MHz/
Stop 5.249 GHz
ADT CORP.

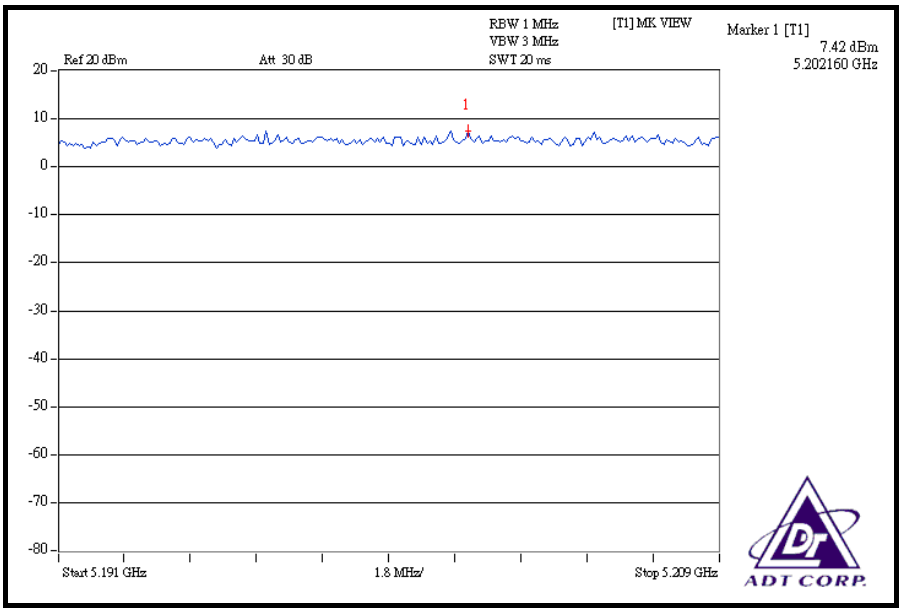
FOR CHAIN 1: CH 36



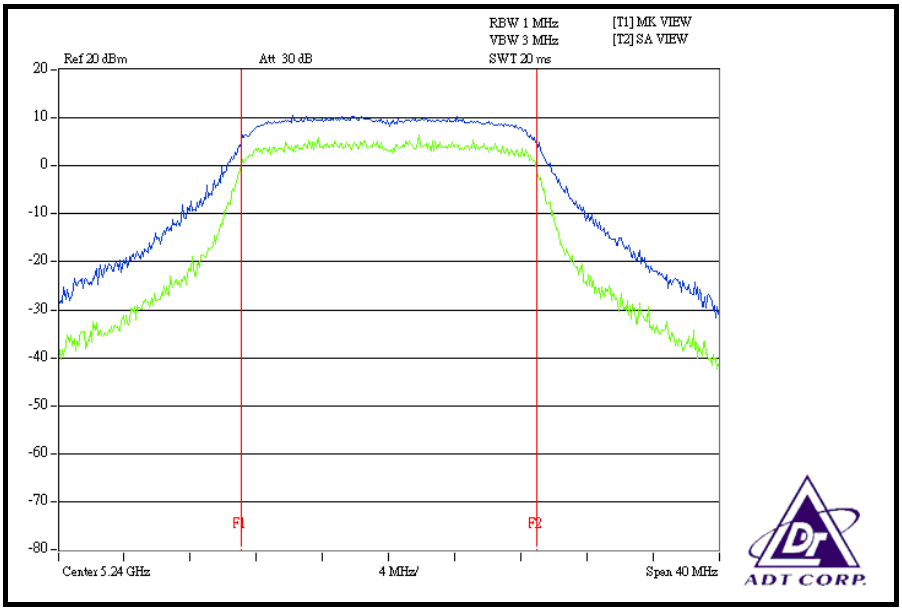


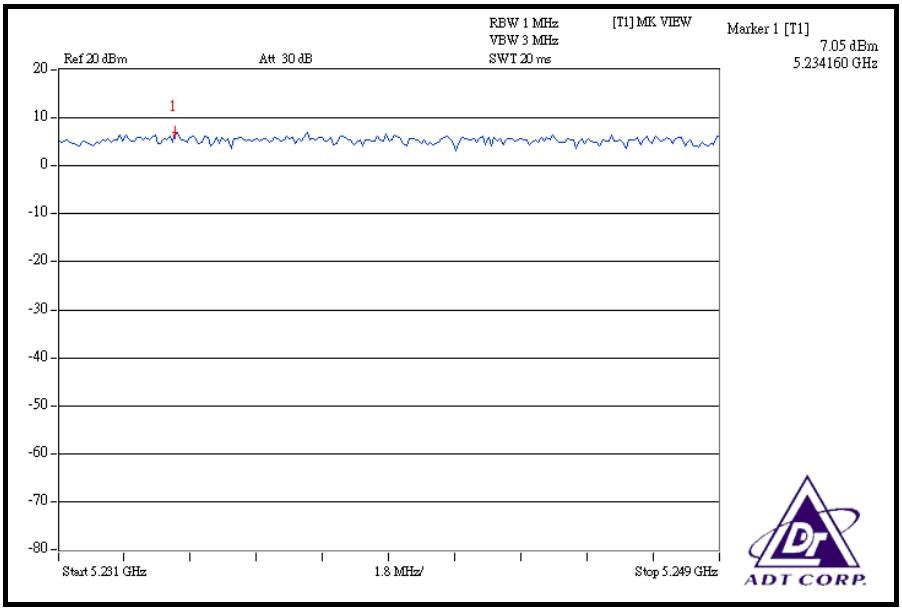
CH 40


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.2 GHz
4 MHz/
Span 40 MHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
7.42 dBm
5.202160 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.191 GHz
1.8 MHz/
Stop 5.209 GHz
ADT CORP.

CH 48


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.24 GHz
4 MHz/
Span 40 MHz
ADT CORP.

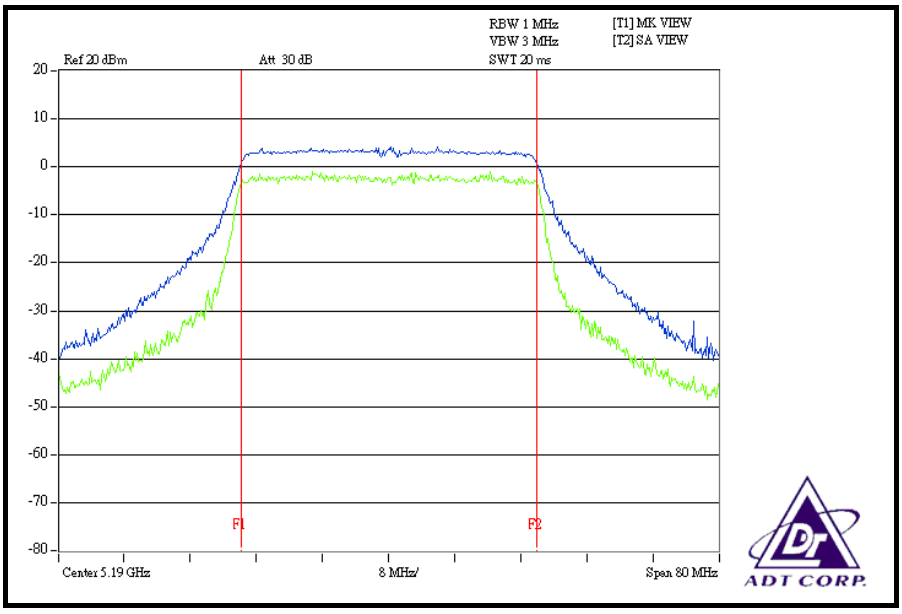

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
7.05 dBm
5.234160 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.231 GHz
1.8 MHz/
Stop 5.249 GHz
ADT CORP.

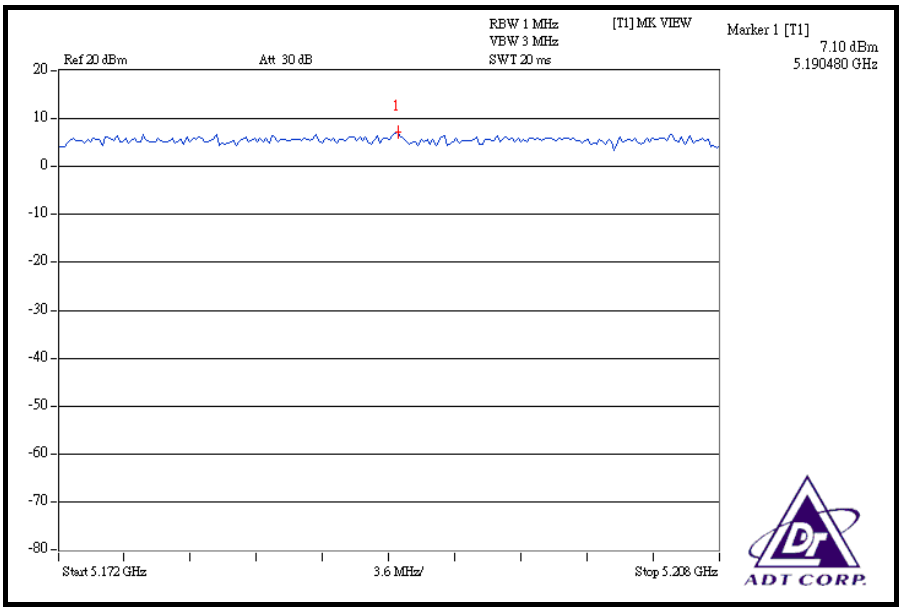
DRAFT 802.11n (40MHz) OFDM MODULATION

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

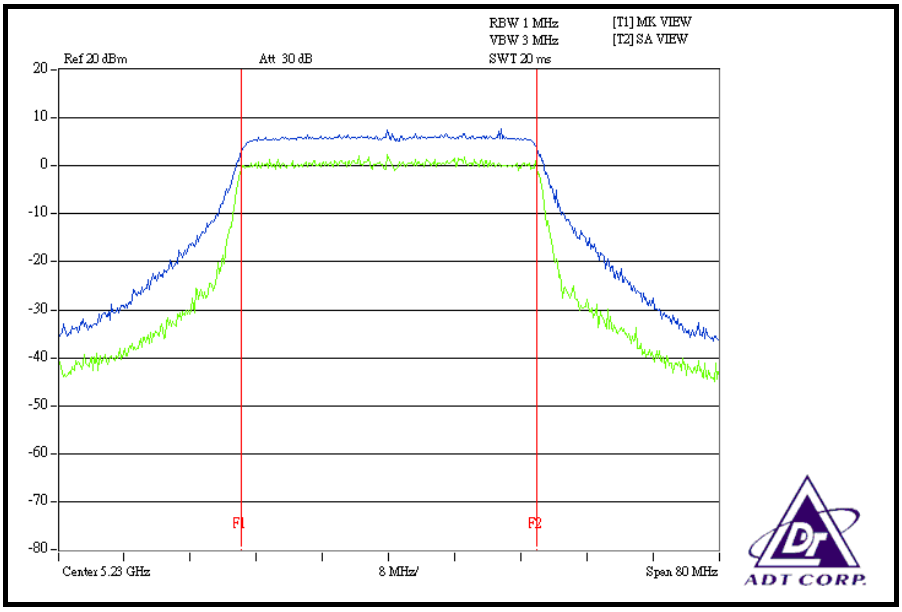
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)		PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1		
38	5190	7.10	7.23	13	PASS
46	5230	7.91	7.32	13	PASS

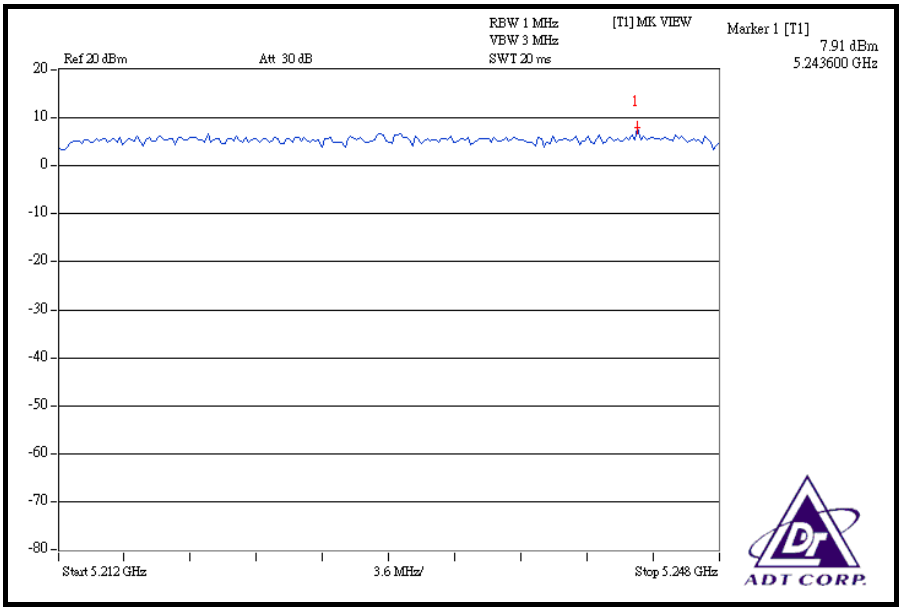
FOR CHAIN 0: CH 38



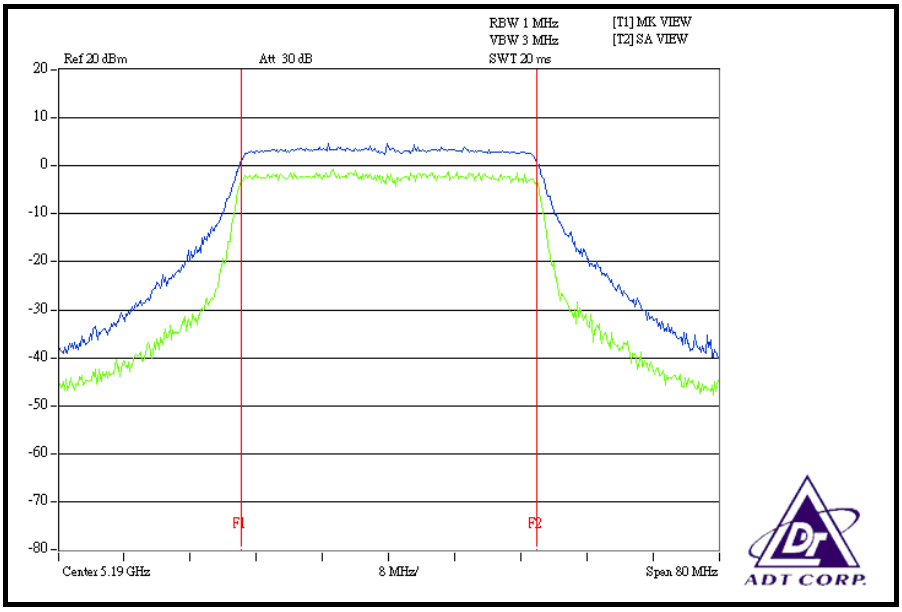


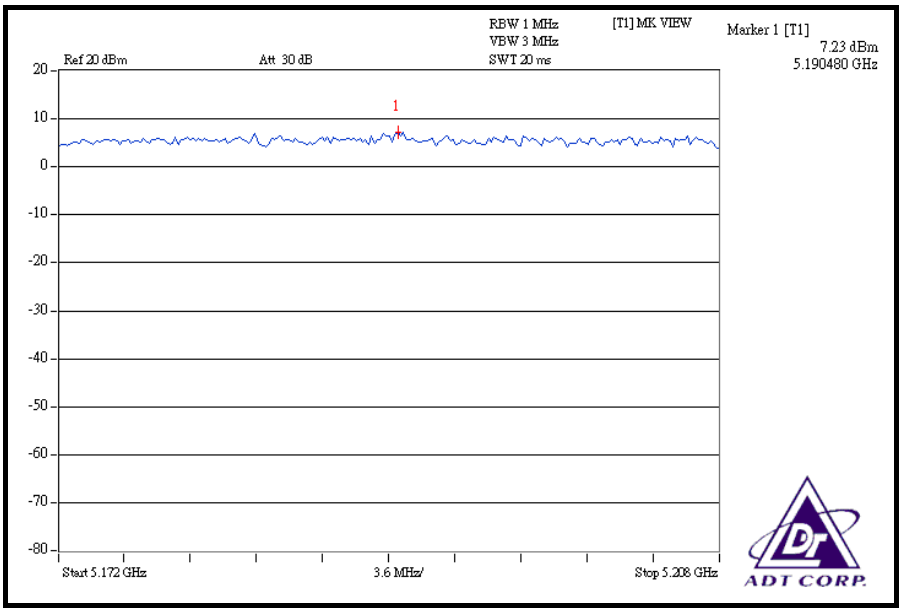
CH 46


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.23 GHz
8 MHz/
Span 80 MHz
ADT CORP.

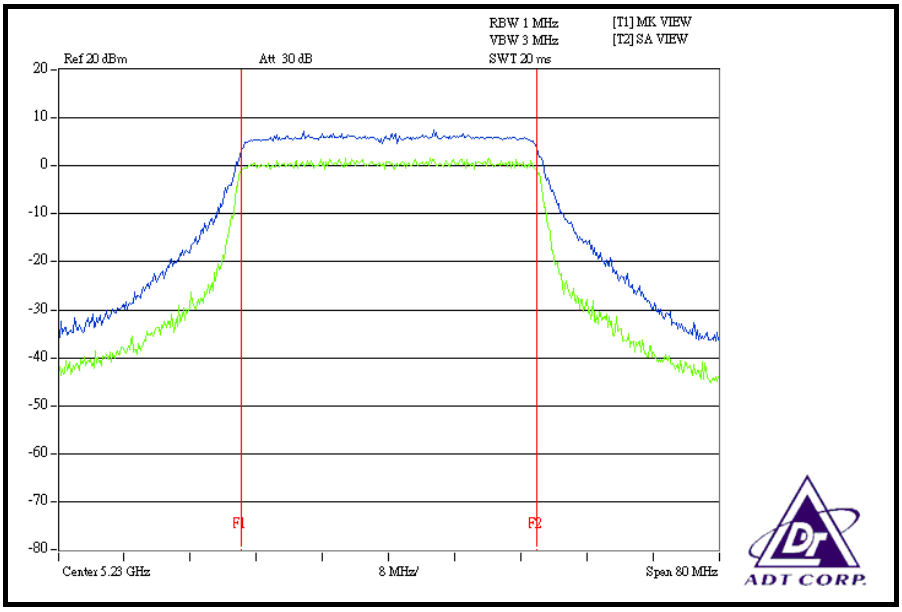

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
7.91 dBm
5.243600 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.212 GHz
3.6 MHz/
Stop 5.248 GHz
ADT CORP.

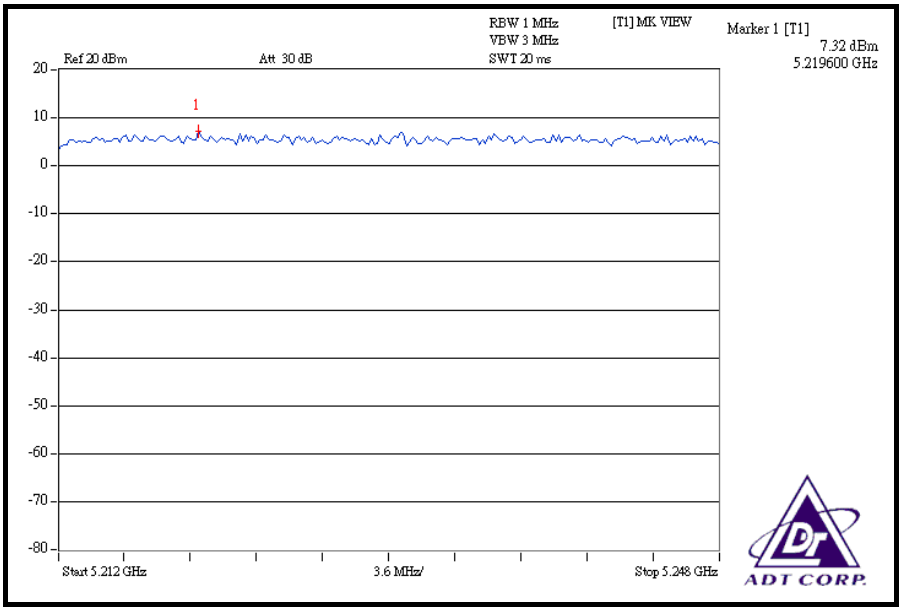
FOR CHAIN 1: CH 38





CH 46


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 5.23 GHz
8 MHz/
Span 80 MHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
7.32 dBm
5.219600 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Start 5.212 GHz
3.6 MHz/
Stop 5.248 GHz
ADT CORP.

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	100041	Apr. 21, 2009

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

4.5.3 TEST PROCEDURES

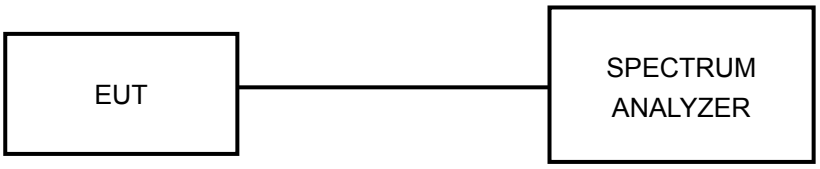
a. The transmitter output was connected to the spectrum analyzer.

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.

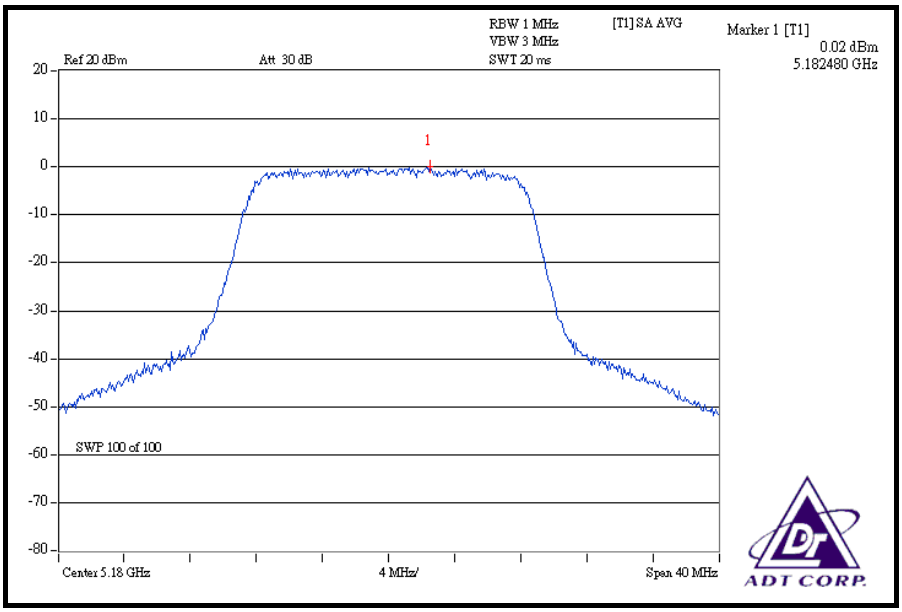
4.5.7 TEST RESULTS

802.11a OFDM MODULATION

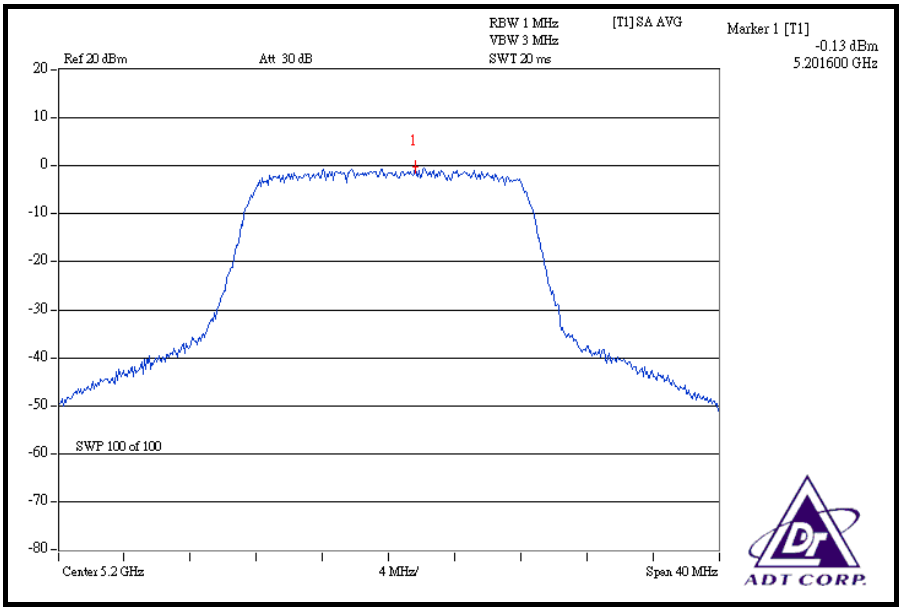
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
36	5180	0.02	4	PASS
40	5200	-0.13	4	PASS
48	5240	-0.22	4	PASS

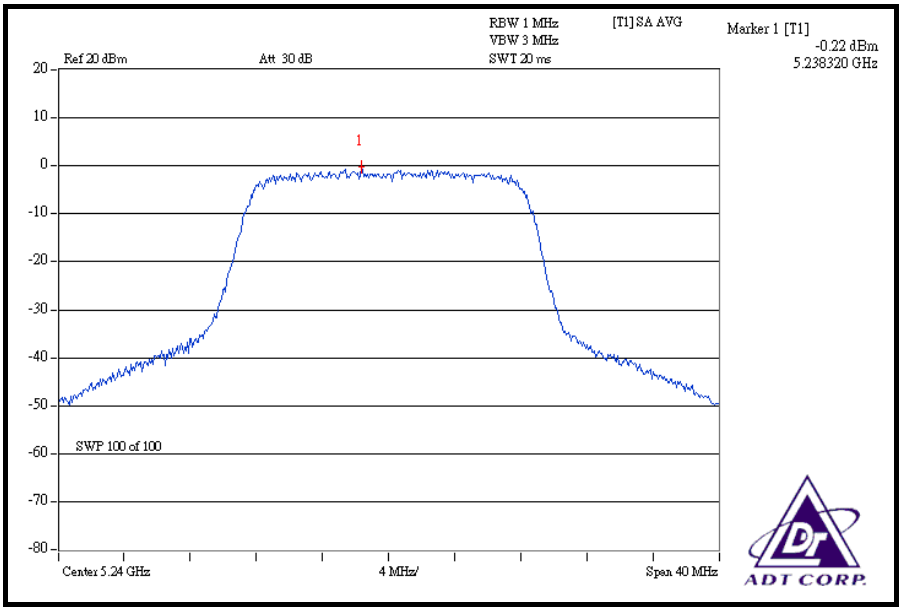
CH 36



CH 40


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-0.13 dBm
5.201600 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
SWP 100 of 100
Center 5.2 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 48

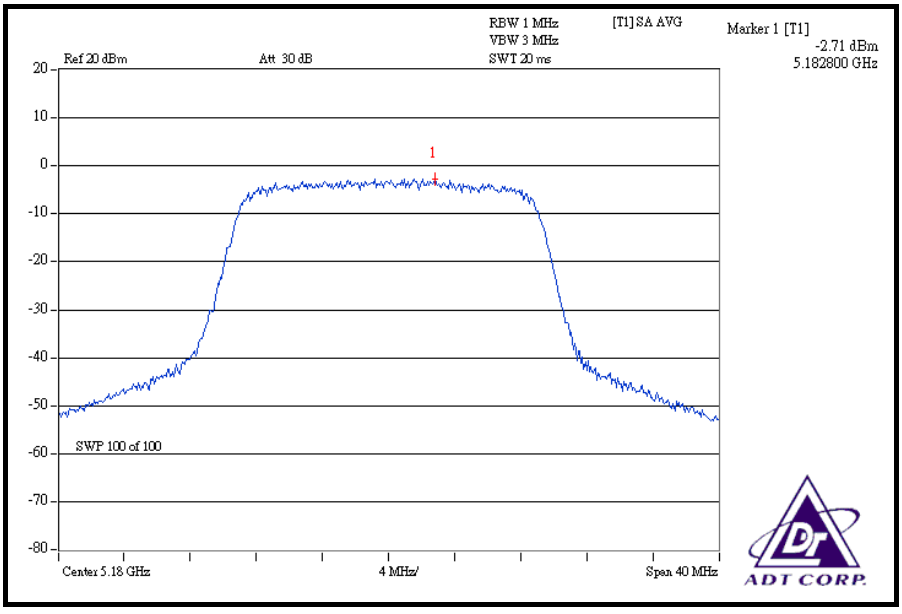

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-0.22 dBm
5.238320 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
SWP 100 of 100
Center 5.24 GHz
4 MHz/
Span 40 MHz
ADT CORP.

DRAFT 802.11n (20MHz) OFDM MODULATION

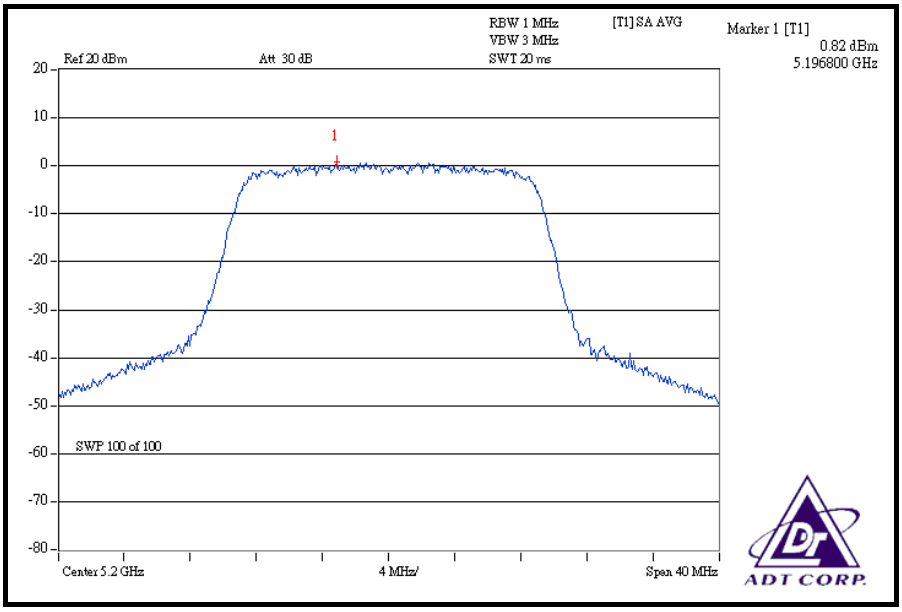
MODULATION TYPE	BPSK	**TRANSFER RATE**	7.2Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

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	-2.71	-4.55	0.887	-0.52	4	PASS
40	5200	0.82	-1.05	1.993	3.00	4	PASS
48	5240	0.68	-0.96	1.971	2.95	4	PASS

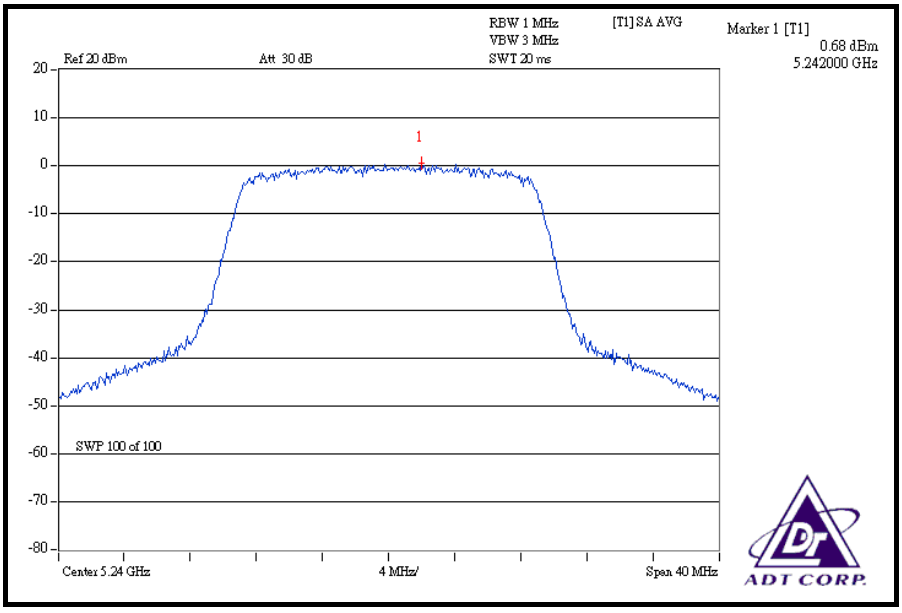
FOR CHAIN 0: CH 36



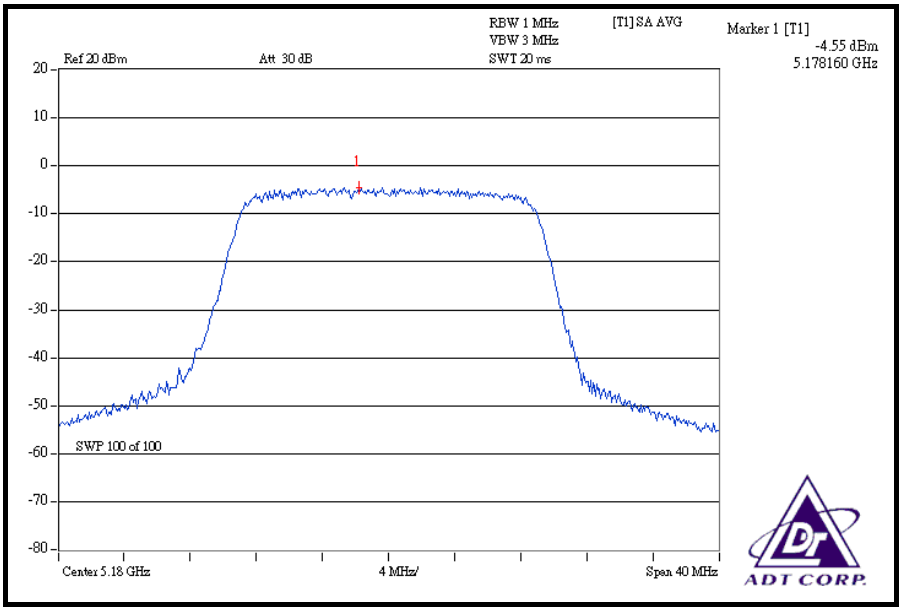
CH 40


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
0.82 dBm
5.196800 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
SWP 100 of 100
Center 5.2 GHz
4 MHz/
Span 40 MHz
ADT CORP.

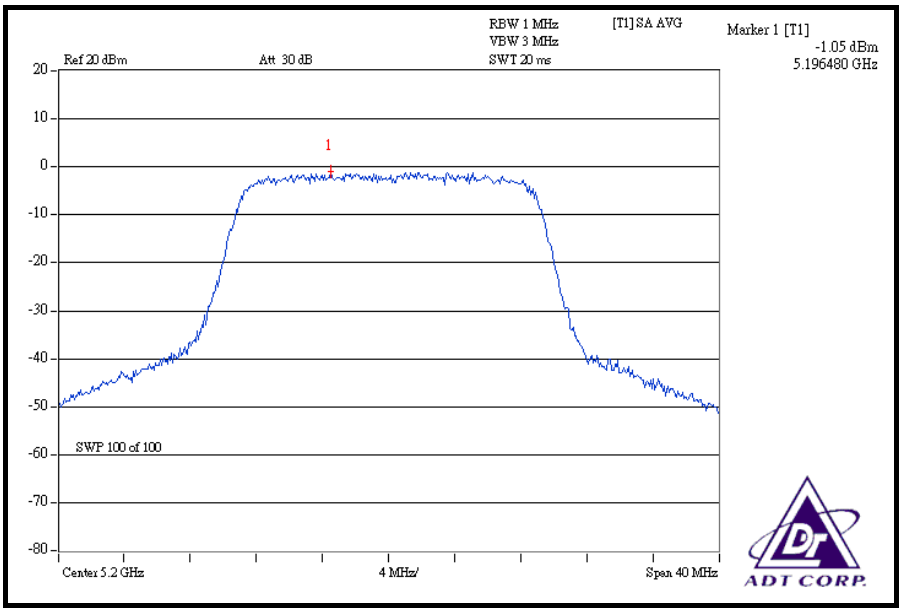
CH 48


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
0.68 dBm
5.242000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
SWP 100 of 100
Center 5.24 GHz
4 MHz/
Span 40 MHz
ADT CORP.

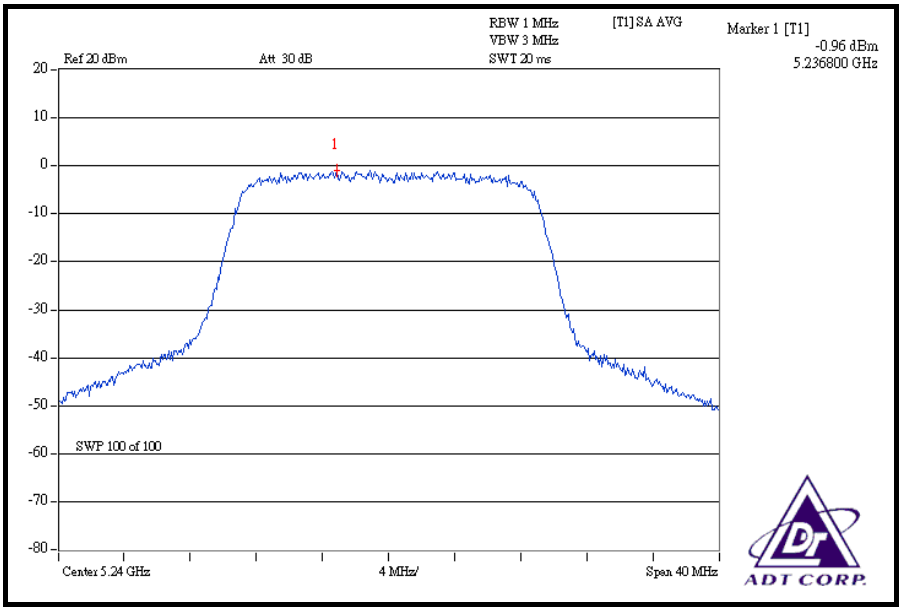
FOR CHAIN 1: CH 36



CH 40



CH 48

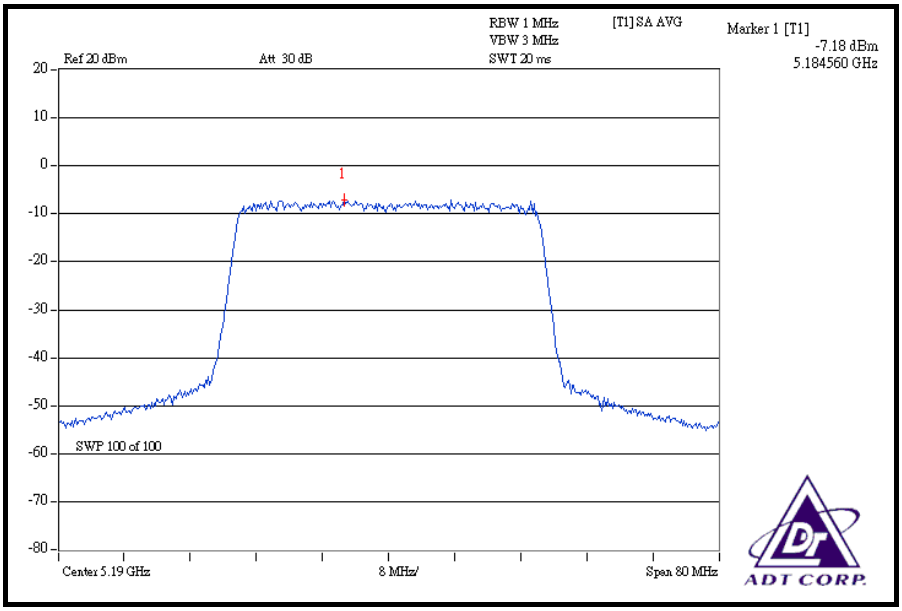

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-0.96 dBm
5.236800 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
SWP 100 of 100
Center 5.24 GHz
4 MHz/
Span 40 MHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION

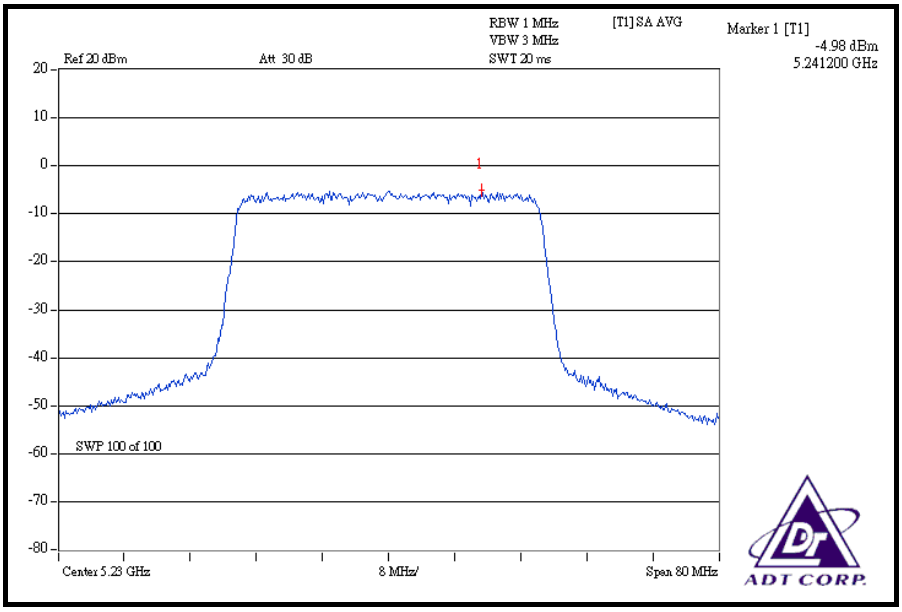
MODULATION TYPE	BPSK	**TRANSFER RATE**	15.0Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25 deg.C, 65 %RH, 991hPa
TESTED BY	Brad Wu		

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	-7.18	-6.46	0.417	-3.79	4	PASS
46	5230	-4.98	-4.46	0.676	-1.70	4	PASS

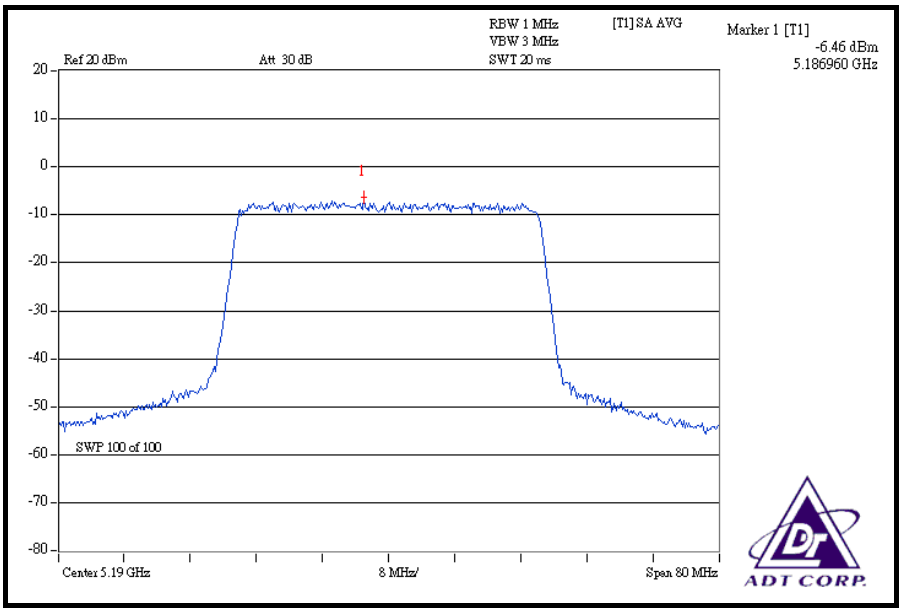
FOR CHAIN 0: CH 38



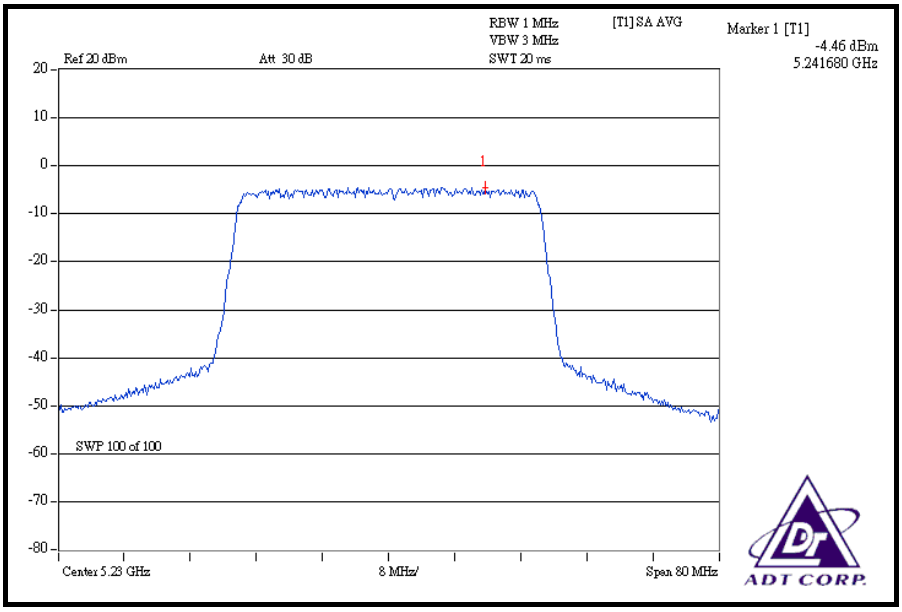
CH 46



FOR CHAIN 1: CH 38



CH 46


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-4.46 dBm
5.241680 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
SWP 100 of 100
Center 5.23 GHz
8 MHz/
Span 80 MHz
ADT CORP.

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. 25, 2009

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

4.6.3 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.

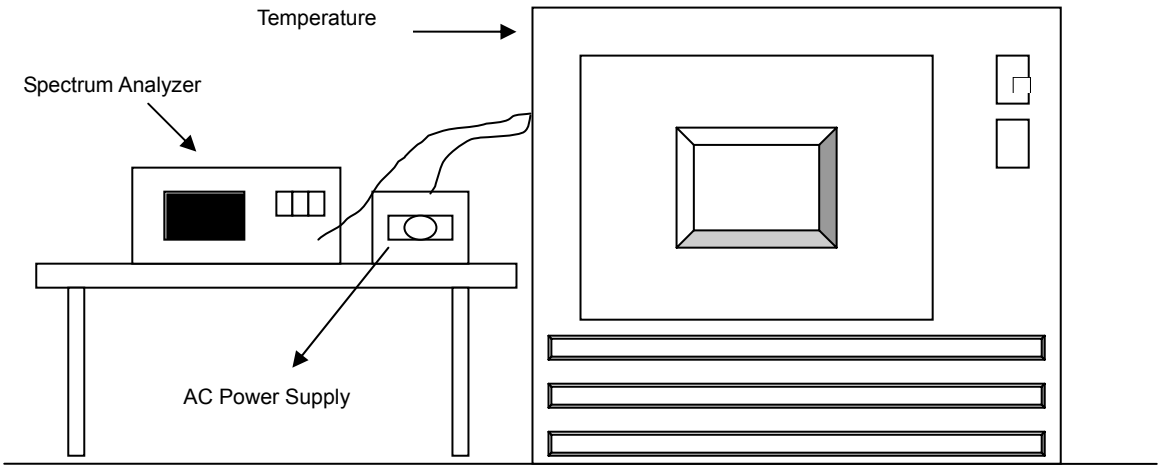
e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.

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. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5199.999496	-0.0000097	5199.997960	-0.0000392	5200.001007	0.0000194	5199.999144	-0.0000165
	110.0	5199.983547	-0.0003164	5200.003638	0.0000700	5199.983859	-0.0003104	5199.983321	-0.0003207
	93.5	5199.986934	-0.0002513	5200.006550	0.0001260	5199.986873	-0.0002524	5199.98681	-0.0002537
40	126.5	5199.978635	-0.0004109	5199.998790	-0.0000233	5199.978948	-0.0004048	5199.979318	-0.0003977
	110.0	5199.985343	-0.0002819	5200.004847	0.0000932	5199.984907	-0.0002902	5199.984913	-0.0002901
	93.5	5199.996827	-0.0000610	5200.016914	0.0003253	5199.996817	-0.0000612	5199.996928	-0.0000591
30	126.5	5199.98008	-0.0003831	5200.000244	0.0000047	5199.980221	-0.0003804	5199.979997	-0.0003847
	110.0	5199.985717	-0.0002747	5200.006098	0.0001173	5199.986037	-0.0002685	5199.986134	-0.0002667
	93.5	5200.004082	0.0000785	5200.023861	0.0004589	5200.003832	0.0000737	5200.004207	0.0000809
20	126.5	5199.987049	-0.0002491	5200.006623	0.0001274	5199.986797	-0.0002539	5199.987169	-0.0002468
	110.0	5199.987526	-0.0002399	5200.007324	0.0001408	5199.987938	-0.0002320	5199.987318	-0.0002439
	93.5	5200.011761	0.0002262	5200.031959	0.0006146	5200.011653	0.0002241	5200.011432	0.0002198
10	126.5	5199.993737	-0.0001204	5200.014001	0.0002693	5199.994272	-0.0001102	5199.994624	-0.0001034
	110.0	5200.002700	0.0000519	5200.022832	0.0004391	5200.002499	0.0000481	5200.002621	0.0000504
	93.5	5200.018164	0.0003493	5200.037842	0.0007277	5200.017553	0.0003376	5200.017885	0.0003439
0	126.5	5199.998070	-0.0000371	5200.017754	0.0003414	5199.997814	-0.0000420	5199.997775	-0.0000428
	110.0	5200.010210	0.0001963	5200.02976	0.0005723	5200.010003	0.0001924	5200.010036	0.0001930
	93.5	5200.023601	0.0004539	5200.044205	0.0008501	5200.023876	0.0004592	5200.024066	0.0004628
-10	126.5	5200.009846	0.0001893	5200.029608	0.0005694	5200.010053	0.0001933	5200.010015	0.0001926
	110.0	5200.016848	0.0003240	5200.037159	0.0007146	5200.016653	0.0003203	5200.016745	0.0003220
	93.5	5200.031319	0.0006023	5200.051166	0.0009840	5200.031067	0.0005974	5200.030975	0.0005957
-20	126.5	5200.014986	0.0002882	5200.035399	0.0006808	5200.014999	0.0002884	5200.015319	0.0002946
	110.0	5200.020332	0.0003910	5200.039822	0.0007658	5200.020352	0.0003914	5200.020573	0.0003956
	93.5	5200.035259	0.0006781	5200.055254	0.0010626	5200.034813	0.0006695	5200.034964	0.0006724
-30	126.5	5200.020753	0.0003991	5200.040442	0.0007777	5200.020398	0.0003923	5200.020757	0.0003992
	110.0	5200.034544	0.0006643	5200.054886	0.0010555	5200.034841	0.0006700	5200.034676	0.0006668
	93.5	5200.037489	0.0007209	5200.057485	0.0011055	5200.037881	0.0007285	5200.037679	0.0007246

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	100041	Apr. 21, 2009
FOR RADIATED MEASUREMENT:			
Spectrum Analyzer Agilent	FSP	100041	Apr. 21, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	May 01, 2009
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jun. 23, 2009
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 24, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283402/4	Dec. 06, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	251644/4	Dec. 06, 2008
Software ADT.	ADT_Radiated_V7.6	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA

NOTE: 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 filed 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)

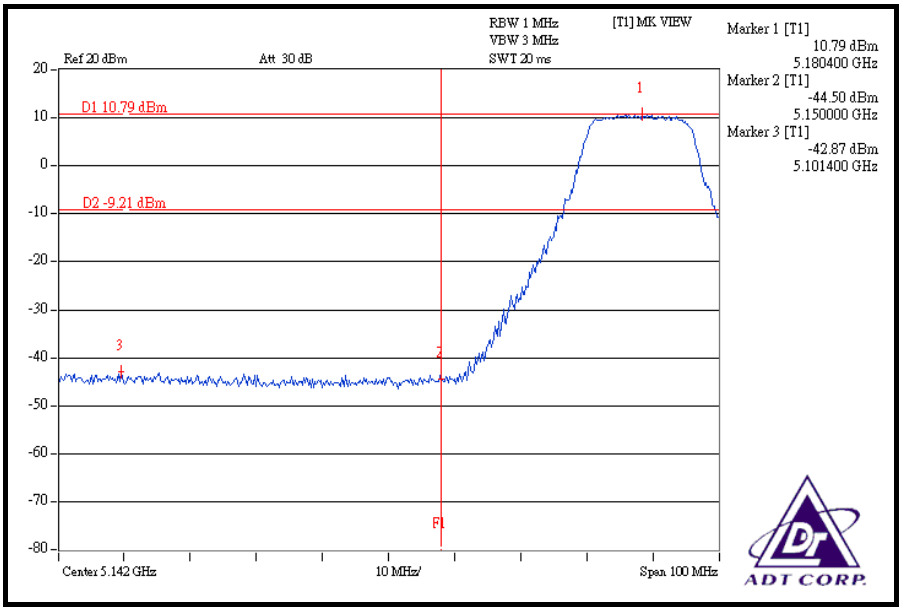
The band edge emission plot on the next page shows 53.66dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 108.46dBuV/m (Peak), so the maximum field strength in restrict band is 108.46 – 53.66 = 54.80dBuV/m which is under 74dBuV/m limit.

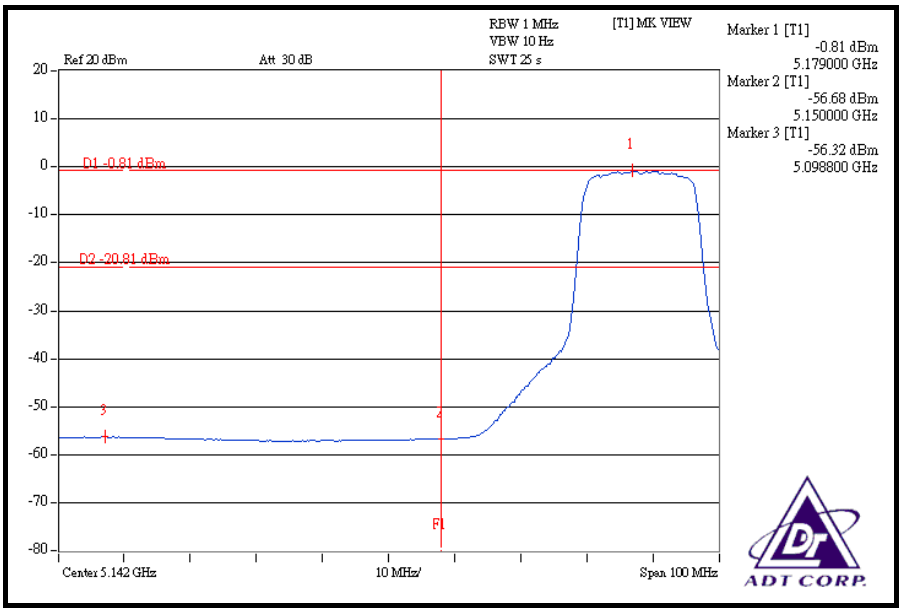
The band edge emission plot on the next page shows 55.51dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 97.20dBuV/m (Average), so the maximum field strength in restrict band is 97.20 – 55.51 = 41.69dBuV/m which is under 54dBuV/m limit.

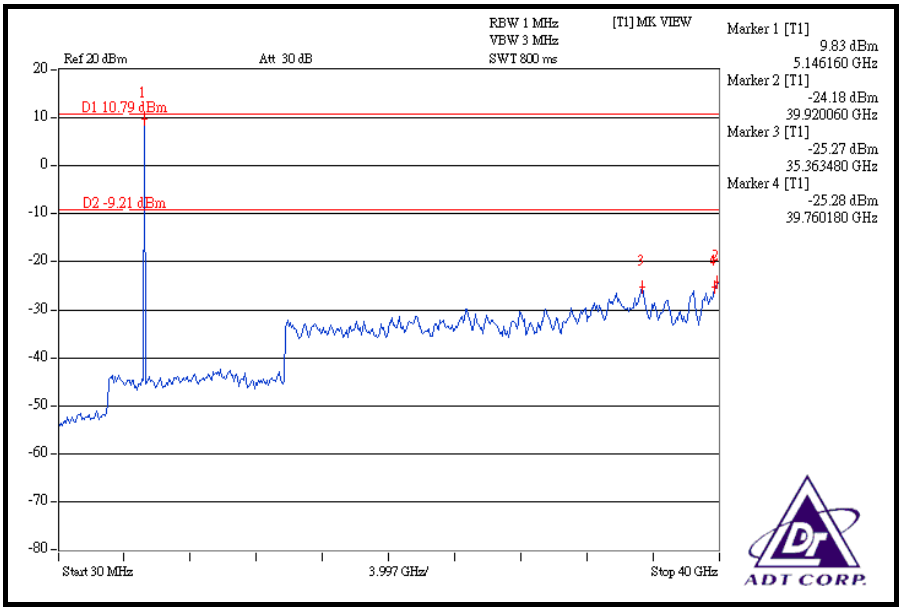
Channel 48 (5240MHz)

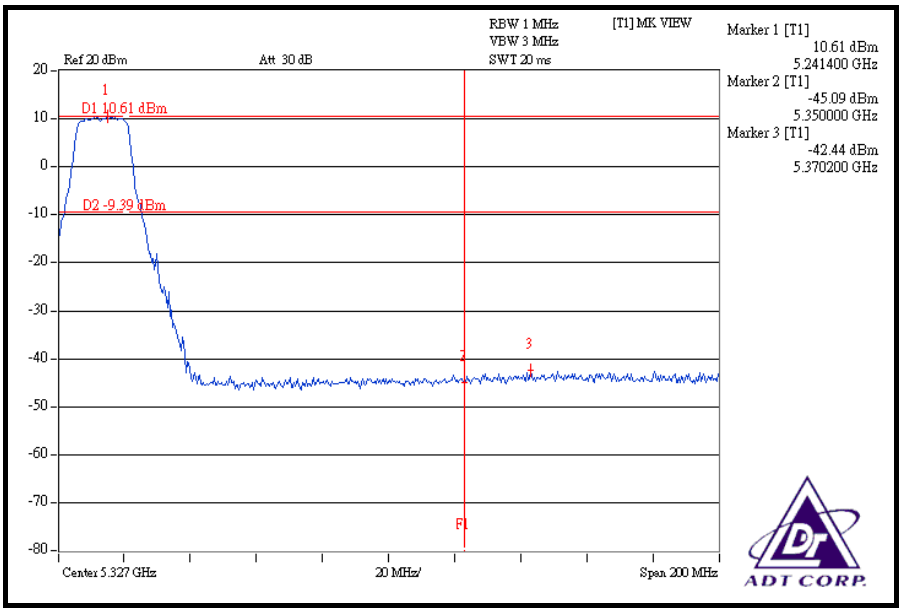
The band edge emission plot on the next second page shows 53.05dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 108.66dBuV/m (Peak), so the maximum field strength in restrict band is 108.66 – 53.05 = 55.61dBuV/m which is under 74dBuV/m limit.

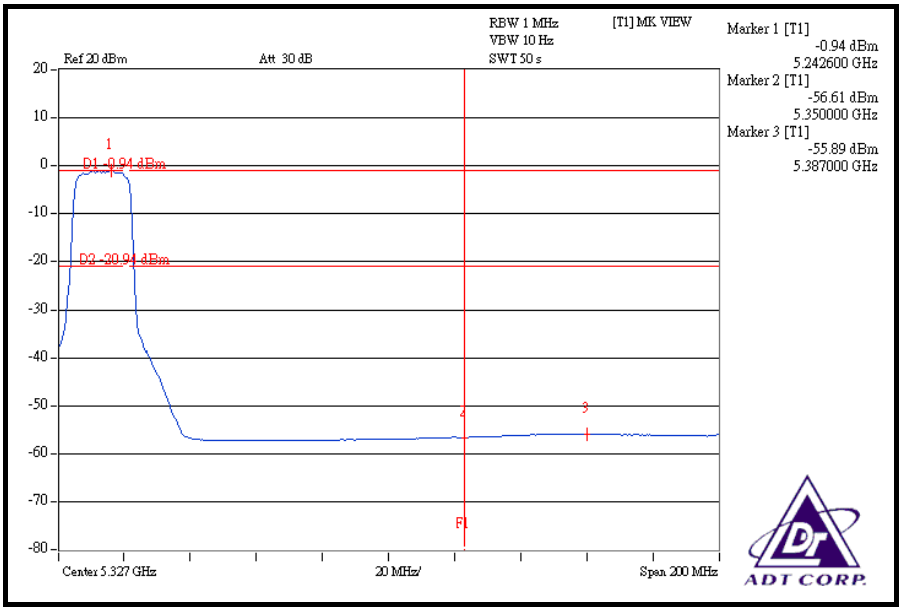
The band edge emission plot on the next third page shows 54.95dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 97.58dBuV/m (Average), so the maximum field strength in restrict band is 97.58 – 54.95 = 42.63dBuV/m which is under 54dBuV/m limit.

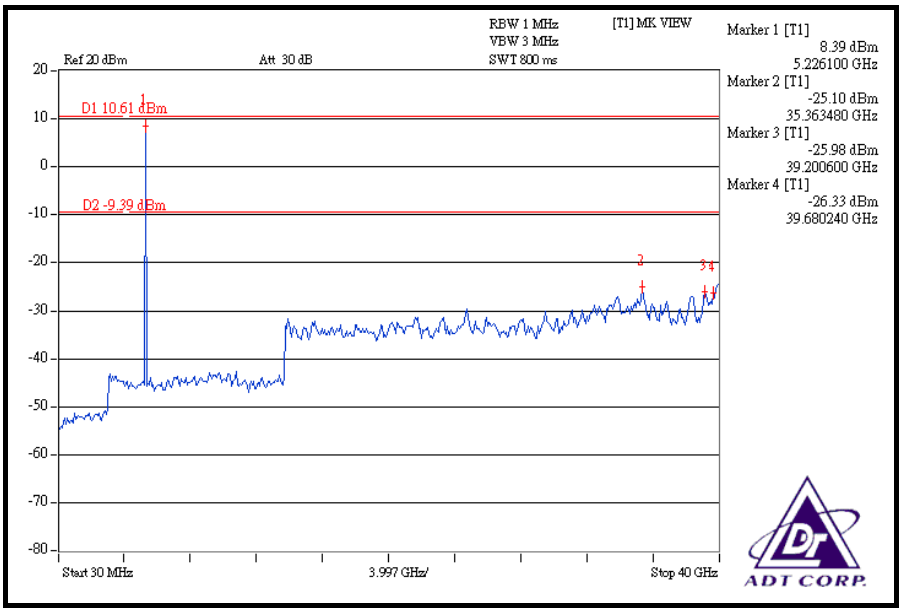

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 10.79 dBm
D2 -9.21 dBm
Marker 1 [T1]
10.79 dBm
5.180400 GHz
Marker 2 [T1]
-44.50 dBm
5.150000 GHz
Marker 3 [T1]
-42.87 dBm
5.101400 GHz
Center 5.142 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -0.81 dBm
D2 -20.81 dBm
Marker 1 [T1]
-0.81 dBm
5.179000 GHz
Marker 2 [T1]
-56.68 dBm
5.150000 GHz
Marker 3 [T1]
-56.32 dBm
5.098800 GHz
Center 5.142 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 10.79 dBm
D2 -9.21 dBm
Marker 1 [T1]
9.83 dBm
5.146160 GHz
Marker 2 [T1]
-24.18 dBm
39.920060 GHz
Marker 3 [T1]
-25.27 dBm
35.363480 GHz
Marker 4 [T1]
-25.28 dBm
39.760180 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 10.61 dBm
D2 -9.39 dBm
Marker 1 [T1]
10.61 dBm
5.241400 GHz
Marker 2 [T1]
-45.09 dBm
5.350000 GHz
Marker 3 [T1]
-42.44 dBm
5.370200 GHz
Center 5.327 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-0.94 dBm
5.242600 GHz
Marker 2 [T1]
-56.61 dBm
5.350000 GHz
Marker 3 [T1]
-55.89 dBm
5.387000 GHz
D1 -0.94 dBm
D2 -20.94 dBm
Center 5.327 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
8.39 dBm
5.226100 GHz
Marker 2 [T1]
-25.10 dBm
35.363480 GHz
Marker 3 [T1]
-25.98 dBm
39.200600 GHz
Marker 4 [T1]
-26.33 dBm
39.680240 GHz
D1 10.61 dBm
D2 -9.39 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.

DRAFT 802.11n (20MHz) OFDM MODULATION

Channel 36 (5180MHz)

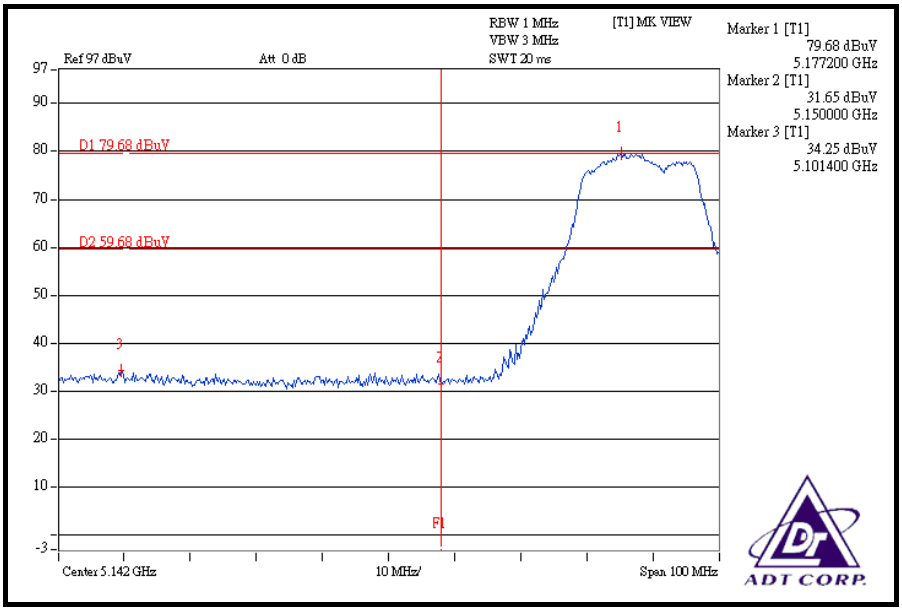
The band edge emission plot on the next page shows 45.43dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 109.88dBuV/m (Peak), so the maximum field strength in restrict band is 109.88 – 45.43 = 64.45dBuV/m which is under 74dBuV/m limit.

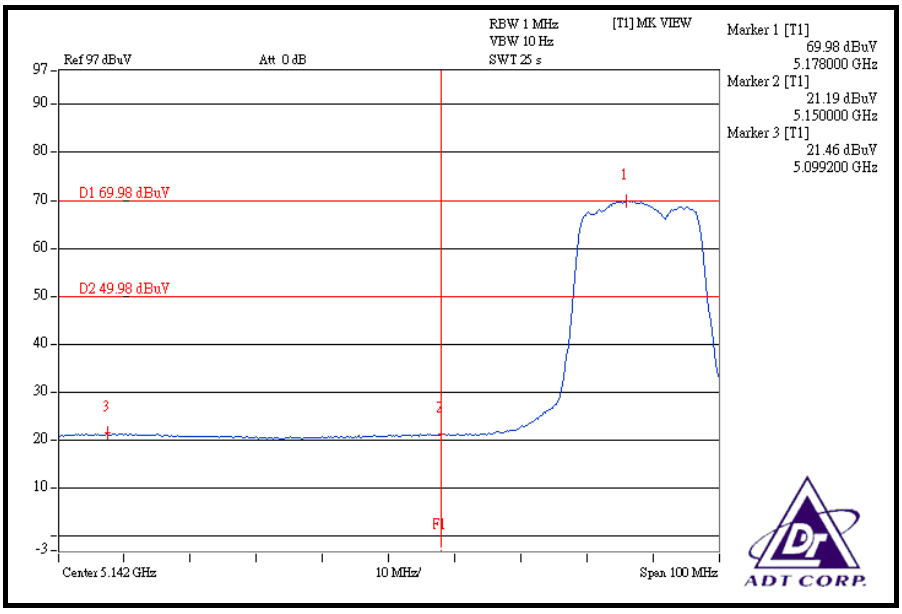
The band edge emission plot on the next page shows 48.52dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 36 is 99.21dBuV/m (Average), so the maximum field strength in restrict band is 99.21 – 48.52 = 50.69dBuV/m which is under 54dBuV/m limit.

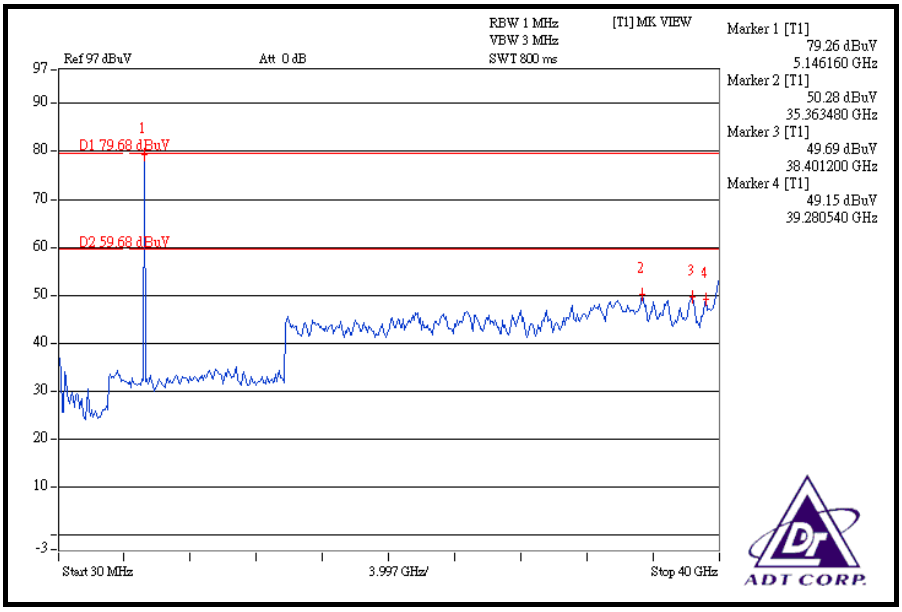
Channel 48 (5240MHz)

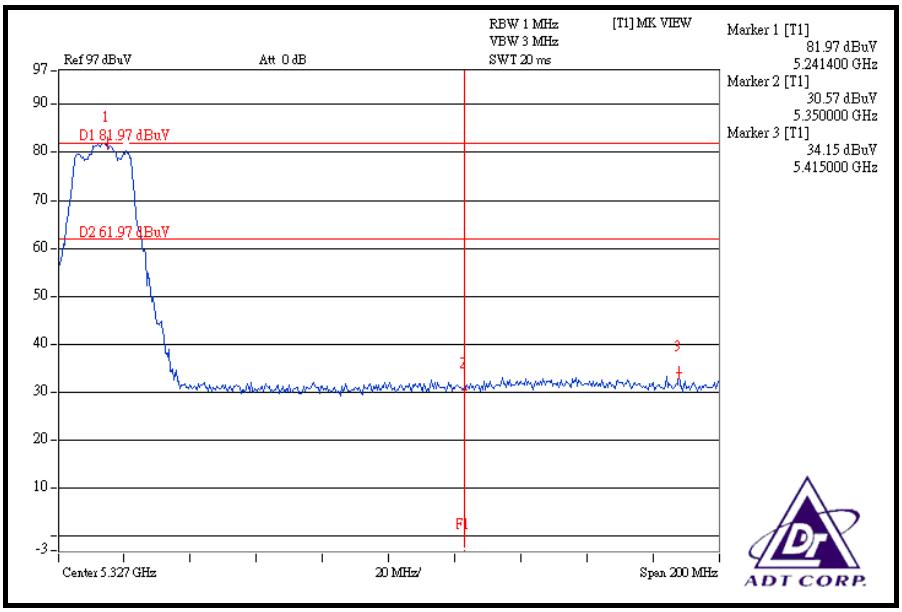
The band edge emission plot on the next second page shows 47.82dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 111.26dBuV/m (Peak), so the maximum field strength in restrict band is 111.26– 47.82 = 63.44dBuV/m which is under 74dBuV/m limit.

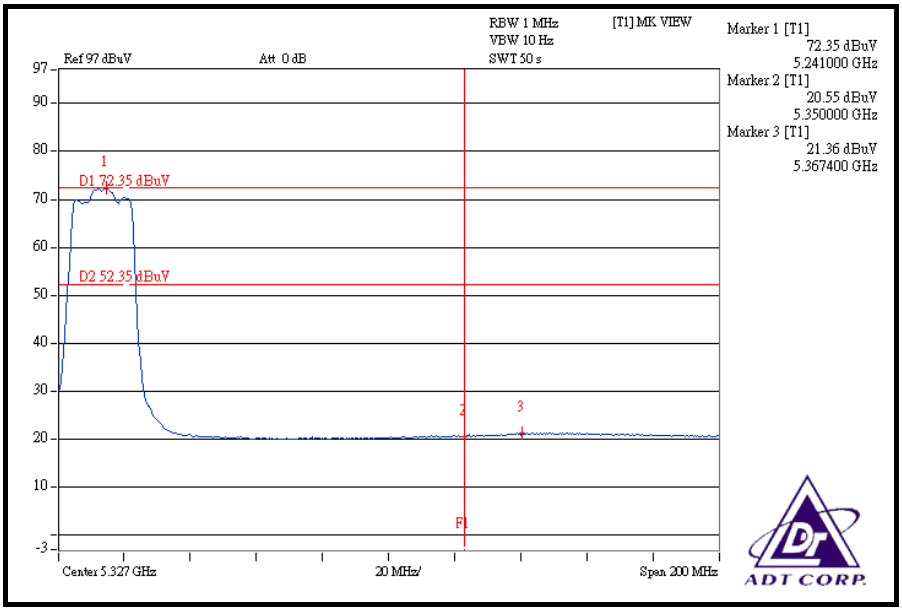
The band edge emission plot on the next third page shows 50.99dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 48 is 101.00dBuV/m (Average), so the maximum field strength in restrict band is 101.00 – 50.99 = 50.01dBuV/m which is under 54dBuV/m limit.

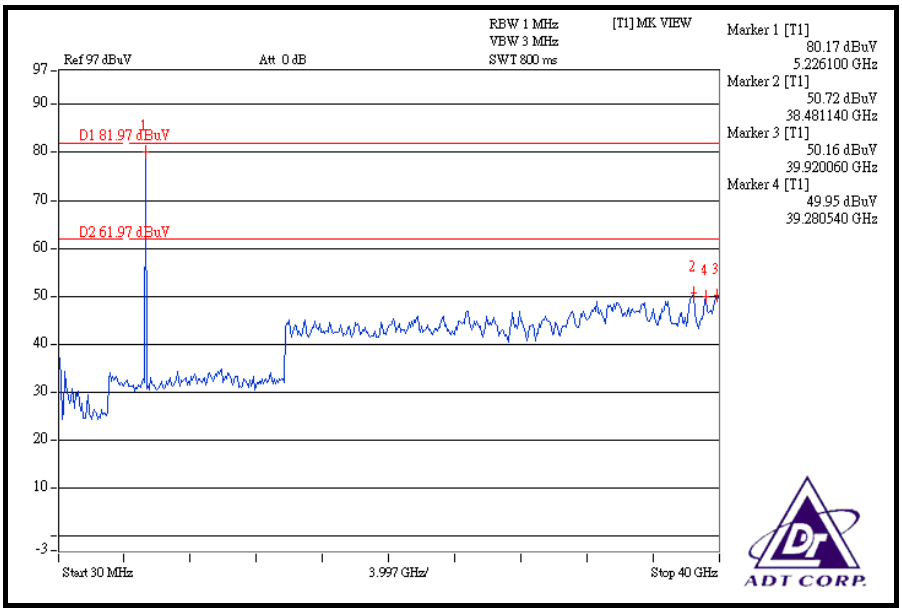

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
79.68 dBuV
5.177200 GHz
Marker 2 [T1]
31.65 dBuV
5.150000 GHz
Marker 3 [T1]
34.25 dBuV
5.101400 GHz
D1 79.68 dBuV
D2 59.68 dBuV
Center 5.142 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
69.98 dBuV
5.178000 GHz
Marker 2 [T1]
21.19 dBuV
5.150000 GHz
Marker 3 [T1]
21.46 dBuV
5.099200 GHz
D1 69.98 dBuV
D2 49.98 dBuV
Center 5.142 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 79.68 dBuV
D2 59.68 dBuV
Marker 1 [T1]
79.26 dBuV
5.146160 GHz
Marker 2 [T1]
50.28 dBuV
35.363480 GHz
Marker 3 [T1]
49.69 dBuV
38.401200 GHz
Marker 4 [T1]
49.15 dBuV
39.280540 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 81.97 dBuV
D2 61.97 dBuV
Marker 1 [T1]
81.97 dBuV
5.241400 GHz
Marker 2 [T1]
30.57 dBuV
5.350000 GHz
Marker 3 [T1]
34.15 dBuV
5.415000 GHz
Center 5.327 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
72.35 dBuV
5.241000 GHz
Marker 2 [T1]
20.55 dBuV
5.350000 GHz
Marker 3 [T1]
21.36 dBuV
5.367400 GHz
D1 72.35 dBuV
D2 52.35 dBuV
Center 5.327 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
80.17 dBuV
5.226100 GHz
Marker 2 [T1]
50.72 dBuV
38.481140 GHz
Marker 3 [T1]
50.16 dBuV
39.920060 GHz
Marker 4 [T1]
49.95 dBuV
39.280540 GHz
D1 81.97 dBuV
D2 61.97 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION

Channel 38 (5190MHz)

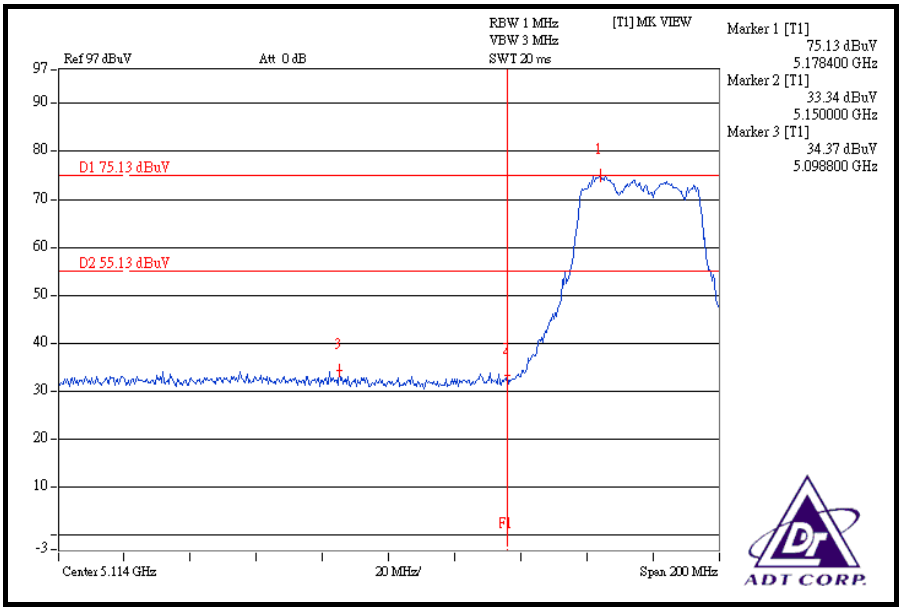
The band edge emission plot on the next page shows 40.76dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 38 is 105.04dBuV/m (Peak), so the maximum field strength in restrict band is 105.04 – 40.76 = 64.28dBuV/m which is under 74dBuV/m limit.

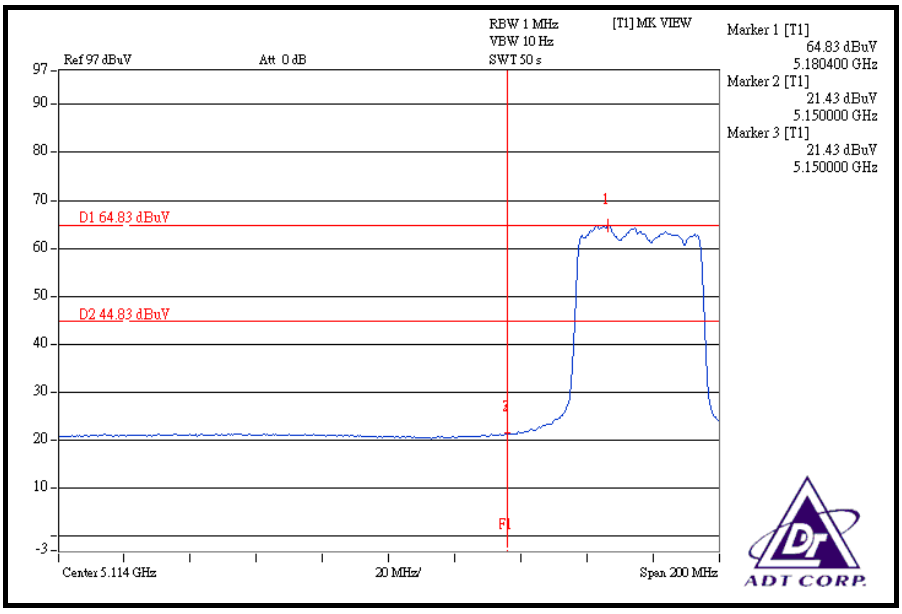
The band edge emission plot on the next page shows 43.40dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 38 is 94.52dBuV/m (Average), so the maximum field strength in restrict band is 94.52 – 43.40 = 51.12dBuV/m which is under 54dBuV/m limit.

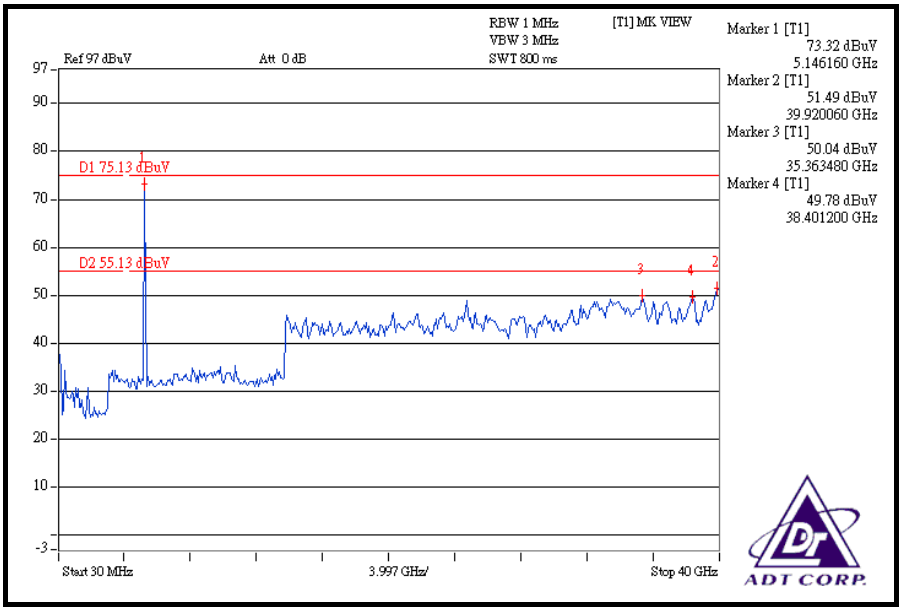
Channel 46 (5230MHz)

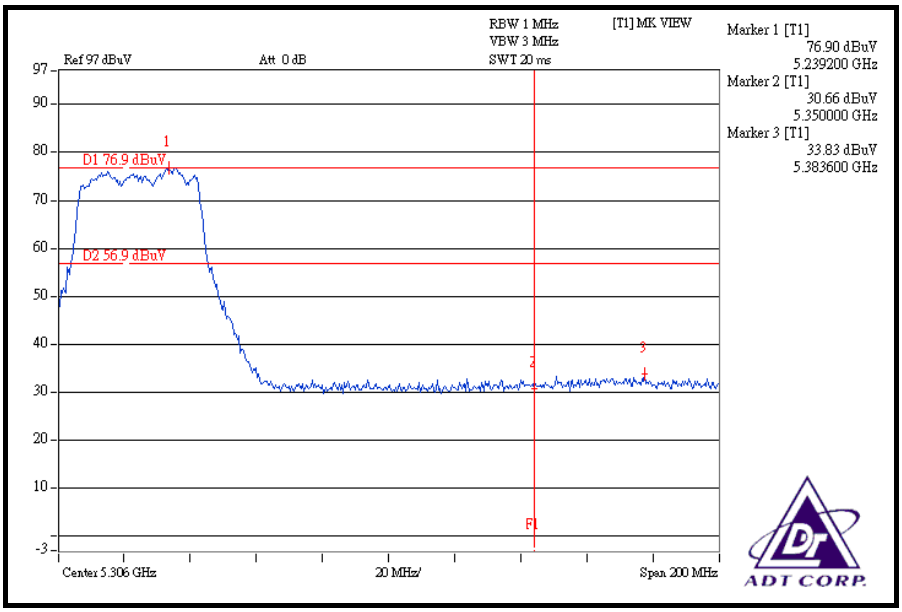
The band edge emission plot on the next second page shows 43.07dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 46 is 107.38dBuV/m (Peak), so the maximum field strength in restrict band is 107.38 – 43.07 = 64.31dBuV/m which is under 74dBuV/m limit.

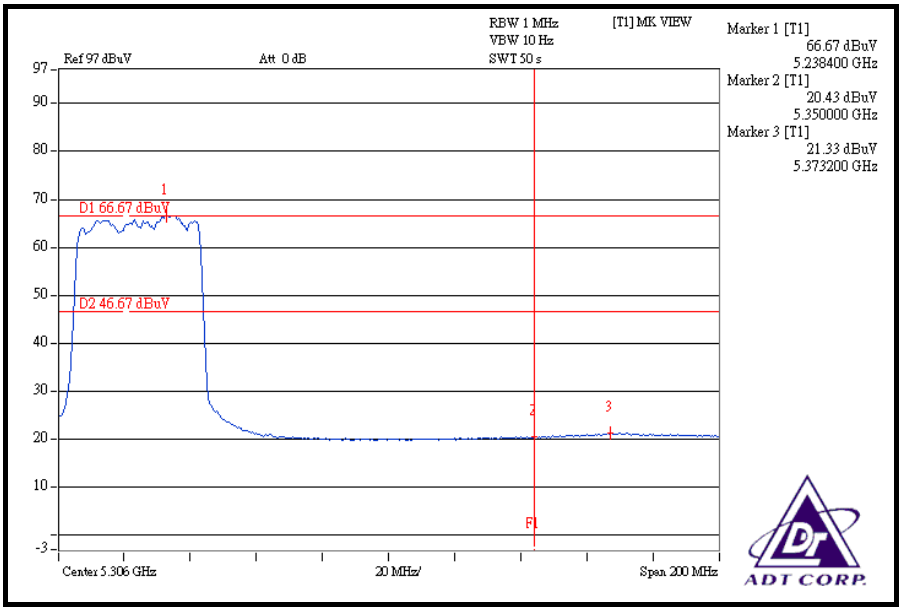
The band edge emission plot on the next third page shows 45.34dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 46 is 97.36dBuV/m (Average), so the maximum field strength in restrict band is 97.36 – 45.34 = 52.02dBuV/m which is under 54dBuV/m limit.

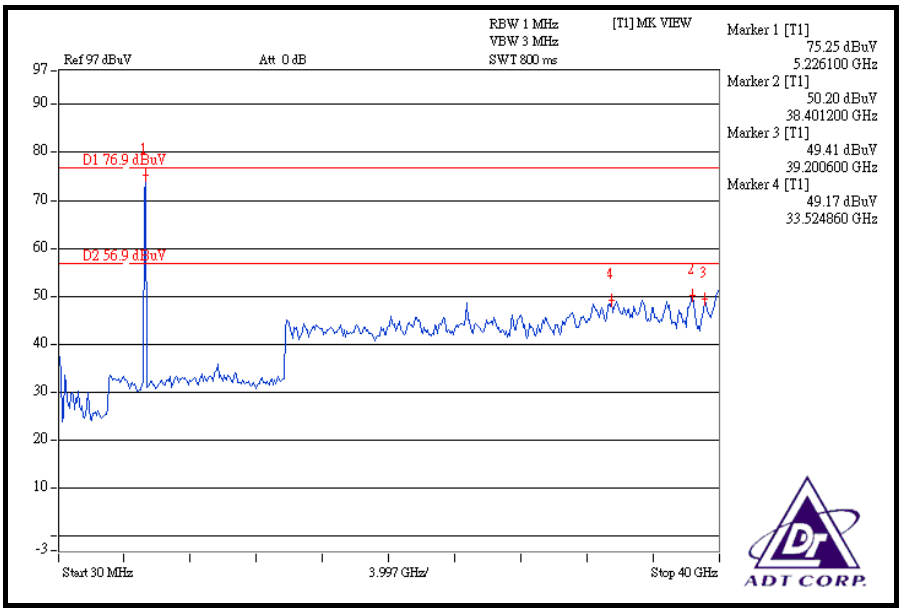

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
75.13 dBuV
5.178400 GHz
Marker 2 [T1]
33.34 dBuV
5.150000 GHz
Marker 3 [T1]
34.37 dBuV
5.098800 GHz
D1 75.13 dBuV
D2 55.13 dBuV
Center 5.114 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
64.83 dBuV
5.180400 GHz
Marker 2 [T1]
21.43 dBuV
5.150000 GHz
Marker 3 [T1]
21.43 dBuV
5.150000 GHz
D1 64.83 dBuV
D2 44.83 dBuV
Center 5.114 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
73.32 dBuV
5.146160 GHz
Marker 2 [T1]
51.49 dBuV
39.920060 GHz
Marker 3 [T1]
50.04 dBuV
35.363480 GHz
Marker 4 [T1]
49.78 dBuV
38.401200 GHz
D1 75.13 dBuV
D2 55.13 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
76.90 dBuV
5.239200 GHz
Marker 2 [T1]
30.66 dBuV
5.350000 GHz
Marker 3 [T1]
33.83 dBuV
5.383600 GHz
D1 76.9 dBuV
D2 56.9 dBuV
Center 5.306 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
66.67 dBuV
5.238400 GHz
Marker 2 [T1]
20.43 dBuV
5.350000 GHz
Marker 3 [T1]
21.33 dBuV
5.373200 GHz
D1 66.67 dBuV
D2 46.67 dBuV
Center 5.306 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
75.25 dBuV
5.226100 GHz
Marker 2 [T1]
50.20 dBuV
38.401200 GHz
Marker 3 [T1]
49.41 dBuV
39.200600 GHz
Marker 4 [T1]
49.17 dBuV
33.524860 GHz
D1 76.9 dBuV
D2 56.9 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.

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.

8. APPENDIX B - CO-LOCATED

8.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	OBE	
A	√	√	√	√	802.11g CH6 + 802.11a CH40
B	√	√	√	√	802.11g CH6 + 802.11a Draft 802.11n (20MHz) CH40
C	√	√	√	√	Draft 802.11n (20MHz) CH6 + 802.11a CH40
D	√	√	√	√	Draft 802.11n (20MHz) CH6 + 802.11a Draft 802.11n (20MHz) CH40

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

PLC: Power Line Conducted Emission **OBE:** Out Band Emission

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11g & 802.11a	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	6.0
B	802.11g & 802.11a Draft 802.11n (20MHz)	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	6.0 & 7.2
C	Draft 802.11n (20MHz) & 802.11a	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	7.2 & 6.0
D	Draft 802.11n (20MHz) & 802.11a Draft 802.11n (20MHz)	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	7.2

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11g & 802.11a	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	6.0
B	802.11g & 802.11a Draft 802.11n (20MHz)	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	6.0 & 7.2
C	Draft 802.11n (20MHz) & 802.11a	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	7.2 & 6.0
D	Draft 802.11n (20MHz) & 802.11a Draft 802.11n (20MHz)	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	7.2

POWER LINE CONDUCTED EMISSION TEST:

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11g & 802.11a	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	6.0
B	802.11g & 802.11a Draft 802.11n (20MHz)	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	6.0 & 7.2
C	Draft 802.11n (20MHz) & 802.11a	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	7.2 & 6.0
D	Draft 802.11n (20MHz) & 802.11a Draft 802.11n (20MHz)	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	7.2

OUT BAND EMISSION:

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11g & 802.11a	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	6.0
B	802.11g & 802.11a Draft 802.11n (20MHz)	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	6.0 & 7.2
C	Draft 802.11n (20MHz) & 802.11a	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	7.2 & 6.0
D	Draft 802.11n (20MHz) & 802.11a Draft 802.11n (20MHz)	1 to 11 & 36 to 48	6 & 40	OFDM	BPSK	7.2

8.2 TEST RESULTS

8.2.1 RADIATED EMISSION MEASUREMENT (ABOVE 1GHz)

TEST MODE A: 802.11g CH6 + 802.11a CH40

EUT TEST CONDITION		MEASUREMENT DETAIL	
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	1 ~ 25GHz
ENVIRONMENTAL CONDITIONS	25deg. C, 67%RH 1010hPa	DETECTOR FUNCTION	Peak (PK) Average (AV)
TESTED BY	Antony Lee		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1125.00	52.86 PK	74.00	-21.14	1.35 H	65	24.75	28.11
2	1125.00	46.95 AV	54.00	-7.05	1.35 H	65	18.84	28.11
3	*2437.00	100.28 PK			1.25 H	320	66.81	33.47
4	*2437.00	89.52 AV			1.25 H	320	56.05	33.47
5	4874.00	45.84 PK	74.00	-28.16	1.00 H	165	6.39	39.45
6	4874.00	32.96 AV	54.00	-21.04	1.00 H	165	-6.49	39.45
7	*5200.00	99.48 PK			1.20 H	268	59.36	40.12
8	*5200.00	89.15 AV			1.20 H	268	49.03	40.12
9	10400.00	57.15 PK	74.00	-16.85	1.20 H	321	5.56	51.59
10	10400.00	42.88 AV	54.00	-11.12	1.20 H	321	-8.71	51.59
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	1125.00	56.48 PK	74.00	-17.52	1.02 V	62	28.37	28.11
2	1125.00	49.95 AV	54.00	-4.05	1.02 V	62	21.84	28.11
3	*2437.00	110.28 PK			1.08 V	217	76.81	33.47
4	*2437.00	99.62 AV			1.08 V	217	66.15	33.47
5	4874.00	43.15 PK	74.00	-30.85	1.32 V	236	3.70	39.45
6	4874.00	31.48 AV	54.00	-22.52	1.32 V	236	-7.97	39.45
7	*5200.00	107.26 PK			1.05 V	230	67.14	40.12
8	*5200.00	96.48 AV			1.05 V	230	56.36	40.12
9	10400.00	57.48 PK	74.00	-16.52	1.05 V	323	5.89	51.59
10	10400.00	44.34 AV	54.00	-9.66	1.05 V	323	-7.25	51.59

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.

TEST MODE B: 802.11g CH6 + 802.11a Draft 802.11n (20MHz) CH40

EUT TEST CONDITION		MEASUREMENT DETAIL	
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	1 ~ 25GHz
ENVIRONMENTAL CONDITIONS	25deg. C, 67%RH 1010hPa	DETECTOR FUNCTION	Peak (PK) Average (AV)
TESTED BY	Antony Lee		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1125.00	54.86 PK	74.00	-19.14	1.25 H	36	26.75	28.11
2	1125.00	47.59 AV	54.00	-6.41	1.25 H	36	19.48	28.11
3	*2437.00	100.72 PK			1.00 H	284	67.25	33.47
4	*2437.00	90.64 AV			1.00 H	284	57.17	33.47
5	4874.00	47.25 PK	74.00	-26.75	1.00 H	182	7.80	39.45
6	4874.00	34.87 AV	54.00	-19.13	1.00 H	182	-4.58	39.45
7	*5200.00	98.79 PK			1.00 H	133	58.67	40.12
8	*5200.00	89.00 AV			1.00 H	133	48.88	40.12
9	10400.00	56.18 PK	74.00	-17.82	1.14 H	302	4.59	51.59
10	10400.00	42.74 AV	54.00	-11.26	1.14 H	302	-8.85	51.59
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	1125.00	56.88 PK	74.00	-17.12	1.45 V	234	28.77	28.11
2	1125.00	49.62 AV	54.00	-4.38	1.45 V	234	21.51	28.11
3	*2437.00	110.23 PK			1.10 V	236	76.76	33.47
4	*2437.00	99.75 AV			1.10 V	236	66.28	33.47
5	4874.00	42.88 PK	74.00	-31.12	1.36 V	208	3.43	39.45
6	4874.00	30.69 AV	54.00	-23.31	1.36 V	208	-8.76	39.45
7	*5200.00	111.36 PK			1.26 V	221	71.24	40.12
8	*5200.00	99.52 AV			1.26 V	221	59.40	40.12
9	10400.00	56.95 PK	74.00	-17.05	1.23 V	325	5.36	51.59
10	10400.00	42.84 AV	54.00	-11.16	1.23 V	325	-8.75	51.59

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.

TEST MODE C: Draft 802.11n (20MHz) CH6 + 802.11a CH40

EUT TEST CONDITION		MEASUREMENT DETAIL	
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	1 ~ 25GHz
ENVIRONMENTAL CONDITIONS	25deg. C, 67%RH 1010hPa	DETECTOR FUNCTION	Peak (PK) Average (AV)
TESTED BY	Antony Lee		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1125.00	53.86 PK	74.00	-20.14	1.23 H	269	25.75	28.11
2	1125.00	49.20 AV	54.00	-4.80	1.23 H	269	21.09	28.11
3	*2437.00	103.85 PK			1.54 H	302	70.38	33.47
4	*2437.00	93.89 AV			1.54 H	302	60.42	33.47
5	4874.00	51.26 PK	74.00	-22.74	1.26 H	96	11.81	39.45
6	4874.00	39.48 AV	54.00	-14.52	1.26 H	96	0.03	39.45
7	*5200.00	97.62 PK			1.20 H	252	57.50	40.12
8	*5200.00	87.45 AV			1.20 H	252	47.33	40.12
9	10400.00	58.62 PK	74.00	-15.38	1.02 H	325	7.03	51.59
10	10400.00	45.16 AV	54.00	-8.84	1.02 H	325	-6.43	51.59
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	1125.00	56.82 PK	74.00	-17.18	1.55 V	69	28.71	28.11
2	1125.00	49.87 AV	54.00	-4.13	1.55 V	69	21.76	28.11
3	*2437.00	114.62 PK			1.12 V	162	81.15	33.47
4	*2437.00	103.58 AV			1.12 V	162	70.11	33.47
5	4874.00	53.88 PK	74.00	-20.12	1.33 V	95	14.43	39.45
6	4874.00	40.65 AV	54.00	-13.35	1.33 V	95	1.20	39.45
7	*5200.00	106.59 PK			1.10 V	231	66.47	40.12
8	*5200.00	95.86 AV			1.10 V	231	55.74	40.12
9	10400.00	58.49 PK	74.00	-15.51	1.10 V	302	6.90	51.59
10	10400.00	45.95 AV	54.00	-8.05	1.10 V	302	-5.64	51.59

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.

TEST MODE D: Draft 802.11n (20MHz) CH6 + 802.11a Draft 802.11n (20MHz) CH40

EUT TEST CONDITION		MEASUREMENT DETAIL	
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	1 ~ 25GHz
ENVIRONMENTAL CONDITIONS	25deg. C, 67%RH 1010hPa	DETECTOR FUNCTION	Peak (PK) Average (AV)
TESTED BY	Antony Lee		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1125.00	54.36 PK	74.00	-19.64	1.00 H	263	26.25	28.11
2	1125.00	49.12 AV	54.00	-4.88	1.00 H	263	21.01	28.11
3	*2437.00	103.59 PK			1.33 H	302	70.12	33.47
4	*2437.00	93.48 AV			1.33 H	302	60.01	33.47
5	4874.00	51.85 PK	74.00	-22.15	1.21 H	266	12.40	39.45
6	4874.00	39.59 AV	54.00	-14.41	1.21 H	266	0.14	39.45
7	*5200.00	99.59 PK			1.26 H	320	59.47	40.12
8	*5200.00	89.23 AV			1.26 H	320	49.11	40.12
9	10400.00	58.49 PK	74.00	-15.51	1.25 H	332	6.90	51.59
10	10400.00	44.59 AV	54.00	-9.41	1.25 H	332	-7.00	51.59
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	1125.00	54.83 PK	74.00	-19.17	1.23 V	202	26.72	28.11
2	1125.00	49.56 AV	54.00	-4.44	1.23 V	202	21.45	28.11
3	*2437.00	114.26 PK			1.05 V	162	80.79	33.47
4	*2437.00	103.56 AV			1.05 V	162	70.09	33.47
5	4874.00	54.12 PK	74.00	-19.88	1.52 V	26	14.67	39.45
6	4874.00	40.59 AV	54.00	-13.41	1.52 V	26	1.14	39.45
7	*5200.00	110.89 PK			1.02 V	236	70.77	40.12
8	*5200.00	99.84 AV			1.02 V	236	59.72	40.12
9	10400.00	58.56 PK	74.00	-15.44	1.02 V	336	6.97	51.59
10	10400.00	45.95 AV	54.00	-8.05	1.02 V	336	-5.64	51.59

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.

8.2.2 RADIATED EMISSION MEASUREMENT (BELOW 1GHz)

TEST MODE A: 802.11g CH6 + 802.11a CH40

EUT TEST CONDITION		MEASUREMENT DETAIL	
INPUT POWER	120Vac, 60 Hz	**FREQUENCY RANGE**	Below 1000MHz
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 1010hPa	**DETECTOR FUNCTION**	Quasi-Peak
TESTED BY	Mark Liao		

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	126.16	37.66 QP	43.50	-5.84	1.50 H	321	25.20	12.46
2	250.16	43.79 QP	46.00	-2.21	1.26 H	100	30.09	13.70
3	499.68	44.06 QP	46.00	-1.94	1.85 H	326	23.58	20.48
4	751.48	39.78 QP	46.00	-6.22	1.50 H	261	13.90	25.88
5	800.79	39.78 QP	46.00	-6.22	1.25 H	65	13.38	26.40
6	875.26	41.56 QP	46.00	-4.44	1.48 H	36	13.86	27.70
7	900.26	41.59 QP	46.00	-4.41	1.25 H	328	13.50	28.09
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	42.15	35.62 QP	40.00	-4.38	1.25 V	265	22.92	12.70
2	250.84	43.15 QP	46.00	-2.85	1.50 V	266	29.43	13.72
3	500.60	42.84 QP	46.00	-3.16	1.45 V	270	22.33	20.51
4	875.36	39.45 QP	46.00	-6.55	1.84 V	233	11.75	27.70
5	900.26	40.89 QP	46.00	-5.11	1.25 V	152	12.80	28.09
6	1000.00	42.01 QP	54.00	-11.99	1.25 V	147	12.49	29.52

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.

TEST MODE B: 802.11g CH6 + 802.11a Draft 802.11n (20MHz) CH40

EUT TEST CONDITION		MEASUREMENT DETAIL	
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 1010hPa	DETECTOR FUNCTION	Quasi-Peak
TESTED BY	Mark Liao		

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	126.16	37.66 QP	43.50	-5.84	1.00 H	262	25.20	12.46
2	250.16	43.89 QP	46.00	-2.11	1.50 H	263	30.19	13.70
3	500.63	43.88 QP	46.00	-2.12	1.50 H	214	23.37	20.51
4	750.89	39.78 QP	46.00	-6.22	1.45 H	265	13.91	25.87
5	800.48	39.78 QP	46.00	-6.22	1.25 H	62	13.39	26.39
6	875.78	40.48 QP	46.00	-5.52	1.45 H	320	12.77	27.71
7	900.45	41.56 QP	46.00	-4.44	1.54 H	144	13.47	28.09
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	42.35	35.26 QP	40.00	-4.74	1.55 V	265	22.54	12.72
2	250.48	43.88 QP	46.00	-2.12	1.47 V	200	30.17	13.71
3	500.11	42.79 QP	46.00	-3.21	1.50 V	320	22.30	20.49
4	875.63	39.81 QP	46.00	-6.19	1.24 V	269	12.11	27.70
5	900.64	40.97 QP	46.00	-5.03	1.54 V	360	12.87	28.10
6	1000.00	41.75 QP	54.00	-12.25	1.57 V	352	12.23	29.52

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.

TEST MODE C: Draft 802.11n (20MHz) CH6 + 802.11a CH40

EUT TEST CONDITION		MEASUREMENT DETAIL	
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 1010hPa	DETECTOR FUNCTION	Quasi-Peak
TESTED BY	Mark Liao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	125.26	37.45 QP	43.50	-6.05	1.90 H	262	25.04	12.41
2	250.15	44.16 QP	46.00	-1.84	1.25 H	162	30.46	13.70
3	500.62	43.96 QP	46.00	-2.04	2.03 H	254	23.45	20.51
4	751.26	39.48 QP	46.00	-6.52	1.50 H	328	13.60	25.88
5	800.48	39.26 QP	46.00	-6.74	1.45 H	327	12.87	26.39
6	875.69	40.48 QP	46.00	-5.52	1.75 H	348	12.77	27.71
7	900.63	41.79 QP	46.00	-4.21	1.02 H	265	13.69	28.10
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	42.83	34.79 QP	40.00	-5.21	1.25 V	162	22.02	12.77
2	250.16	43.65 QP	46.00	-2.35	1.52 V	221	29.95	13.70
3	500.36	42.98 QP	46.00	-3.02	1.54 V	200	22.48	20.50
4	876.59	39.78 QP	46.00	-6.22	1.26 V	350	12.06	27.72
5	900.48	40.89 QP	46.00	-5.11	1.66 V	263	12.80	28.09
6	1000.00	41.96 QP	54.00	-12.04	1.20 V	233	12.44	29.52

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.

TEST MODE D: Draft 802.11n (20MHz) CH6 + 802.11a Draft 802.11n (20MHz) CH40

EUT TEST CONDITION		MEASUREMENT DETAIL	
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 1010hPa	DETECTOR FUNCTION	Quasi-Peak
TESTED BY	Mark Liao		

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	126.84	37.66 QP	43.50	-5.84	1.95 H	325	25.16	12.50
2	250.16	43.64 QP	46.00	-2.36	1.25 H	260	29.94	13.70
3	500.45	43.95 QP	46.00	-2.05	1.88 H	306	23.45	20.50
4	751.48	39.78 QP	46.00	-6.22	1.84 H	152	13.90	25.88
5	800.54	39.65 QP	46.00	-6.35	1.48 H	360	13.26	26.39
6	875.62	41.26 QP	46.00	-4.74	2.00 H	152	13.56	27.70
7	900.63	41.59 QP	46.00	-4.41	1.54 H	326	13.49	28.10
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	43.88	34.45 QP	40.00	-5.55	1.25 V	230	21.58	12.87
2	250.66	42.98 QP	46.00	-3.02	1.50 V	266	29.27	13.71
3	500.48	42.46 QP	46.00	-3.54	1.57 V	221	21.96	20.50
4	874.89	39.46 QP	46.00	-6.54	1.00 V	325	11.77	27.69
5	900.15	41.16 QP	46.00	-4.84	1.66 V	233	13.07	28.09
6	1000.00	41.89 QP	54.00	-12.11	1.40 V	320	12.37	29.52

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.

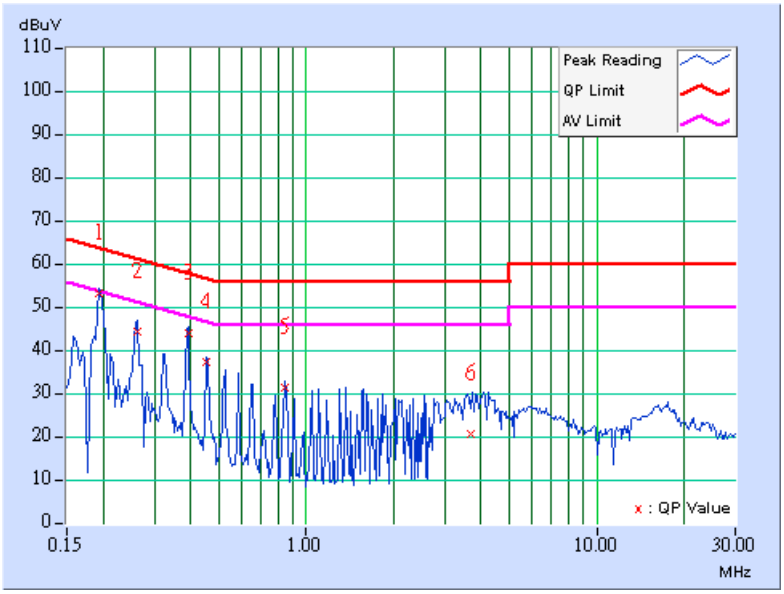
8.2.3 CONDUCTED EMISSION MEASUREMENT

TEST MODE A: 802.11g CH6 + 802.11a CH40

EUT TEST CONDITION		MEASUREMENT DETAIL	
MODULATION TYPE	BPSK	PHASE	Line 1
TRANSFER RATE	6.0Mbps	INPUT POWER	120Vac, 60Hz
ENVIRONMENTAL CONDITIONS	27deg. C, 64%RH, 1010hPa	6dB BANDWIDTH	9kHz
TESTED BY	Kevin Liang		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.194	0.20	53.10	-	53.30	-	63.85	53.85	-10.55	-
2	0.263	0.20	44.03	-	44.23	-	61.33	51.33	-17.10	-
3	0.392	0.20	43.53	-	43.73	-	58.02	48.02	-14.29	-
4	0.455	0.20	37.02	-	37.22	-	56.79	46.79	-19.57	-
5	0.849	0.20	31.06	-	31.26	-	56.00	46.00	-24.74	-
6	3.707	0.37	20.40	-	20.77	-	56.00	46.00	-35.23	-

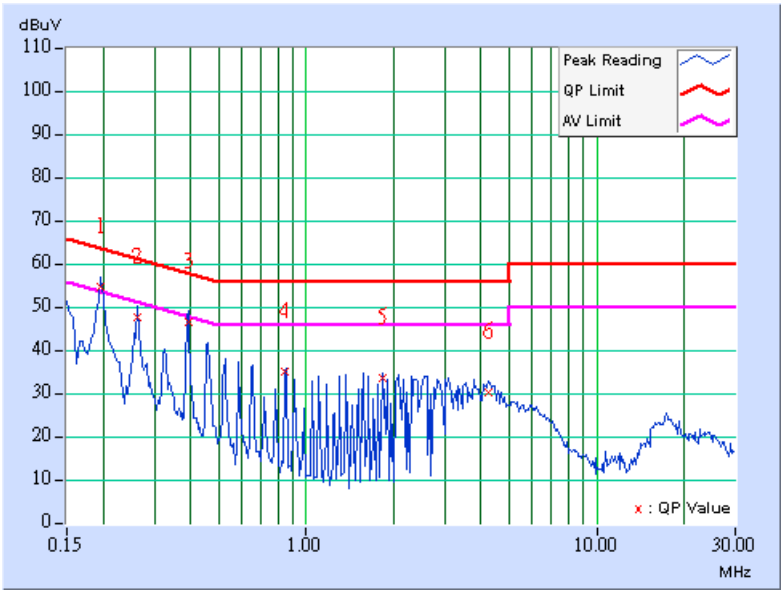
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
MODULATION TYPE	BPSK	PHASE	Line 2
TRANSFER RATE	6.0Mbps	INPUT POWER	120Vac, 60Hz
ENVIRONMENTAL CONDITIONS	27deg. C, 64%RH, 1010hPa	6dB BANDWIDTH	9kHz
TESTED BY	Kevin Liang		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.196	0.20	54.26	44.91	54.46	45.11	63.79	53.79	-9.33	-8.68
2	0.261	0.20	47.30	-	47.50	-	61.41	51.41	-13.91	-
3	0.392	0.20	46.27	-	46.47	-	58.02	48.02	-11.55	-
4	0.848	0.20	34.86	-	35.06	-	56.00	46.00	-20.94	-
5	1.826	0.20	33.37	-	33.57	-	56.00	46.00	-22.43	-
6	4.241	0.41	30.03	-	30.44	-	56.00	46.00	-25.56	-

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

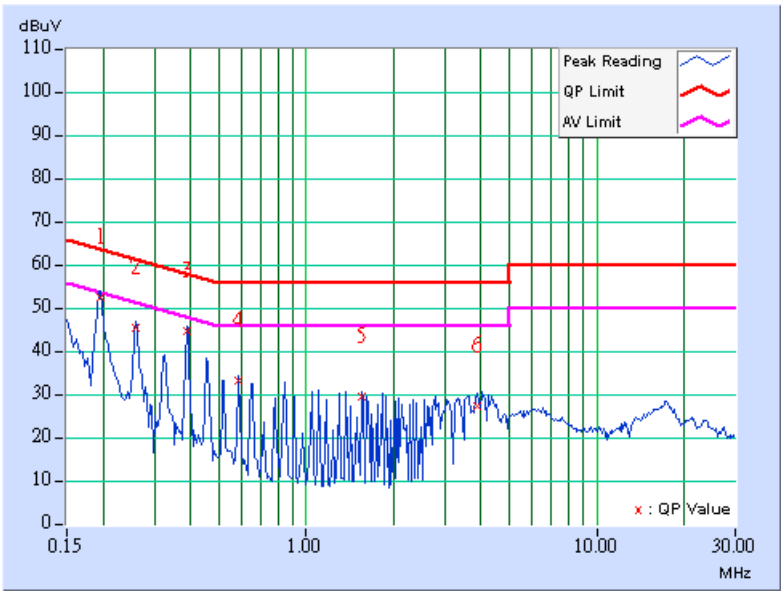


TEST MODE B: 802.11g CH6 + 802.11a Draft 802.11n (20MHz) CH40

EUT TEST CONDITION		MEASUREMENT DETAIL	
MODULATION TYPE	BPSK	PHASE	Line 1
TRANSFER RATE	6.0Mbps & 7.2Mbps	INPUT POWER	120Vac, 60Hz
ENVIRONMENTAL CONDITIONS	27deg. C, 64%RH, 1010hPa	6dB BANDWIDTH	9kHz
TESTED BY	Kevin Liang		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.20	52.09	-	52.29	-	63.74	53.74	-11.45	-
2	0.259	0.20	45.00	-	45.20	-	61.45	51.45	-16.25	-
3	0.390	0.20	44.32	-	44.52	-	58.07	48.07	-13.55	-
4	0.588	0.20	32.88	-	33.08	-	56.00	46.00	-22.92	-
5	1.563	0.20	29.13	-	29.33	-	56.00	46.00	-26.67	-
6	3.895	0.39	27.20	-	27.59	-	56.00	46.00	-28.41	-

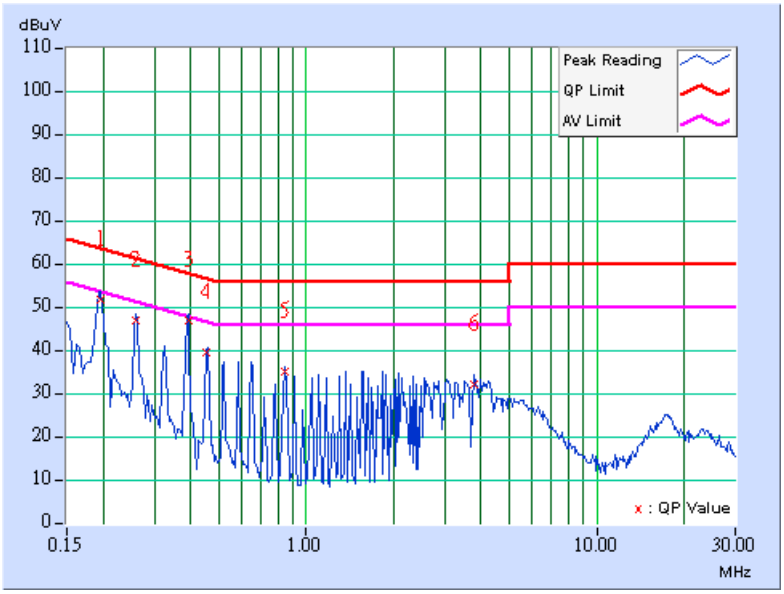
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
MODULATION TYPE	BPSK	PHASE	Line 2
TRANSFER RATE	6.0Mbps & 7.2Mbps	INPUT POWER	120Vac, 60Hz
ENVIRONMENTAL CONDITIONS	27deg. C, 64%RH, 1010hPa	6dB BANDWIDTH	9kHz
TESTED BY	Kevin Liang		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.196	0.20	51.45	-	51.65	-	63.80	53.80	-12.15	-
2	0.259	0.20	46.76	-	46.96	-	61.45	51.45	-14.49	-
3	0.392	0.20	46.81	-	47.01	-	58.02	48.02	-11.01	-
4	0.455	0.20	39.38	-	39.58	-	56.79	46.79	-17.21	-
5	0.845	0.20	34.86	-	35.06	-	56.00	46.00	-20.94	-
6	3.770	0.38	31.76	-	32.14	-	56.00	46.00	-23.86	-

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

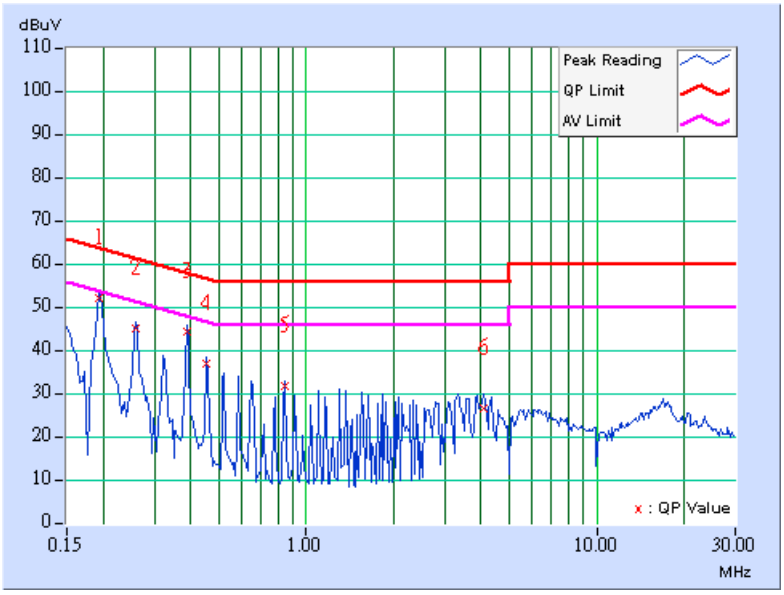


TEST MODE C: Draft 802.11n (20MHz) CH6 + 802.11a CH40

EUT TEST CONDITION		MEASUREMENT DETAIL	
MODULATION TYPE	BPSK	PHASE	Line 1
TRANSFER RATE	7.2Mbps & 6.0Mbps	INPUT POWER	120Vac, 60Hz
ENVIRONMENTAL CONDITIONS	26deg. C, 62%RH, 1010hPa	6dB BANDWIDTH	9kHz
TESTED BY	Kevin Liang		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.194	0.20	51.89	-	52.09	-	63.85	53.85	-11.76	-
2	0.259	0.20	44.64	-	44.84	-	61.45	51.45	-16.61	-
3	0.388	0.20	44.06	-	44.26	-	58.10	48.10	-13.84	-
4	0.455	0.20	36.74	-	36.94	-	56.79	46.79	-19.85	-
5	0.845	0.20	31.28	-	31.48	-	56.00	46.00	-24.52	-
6	4.094	0.40	26.40	-	26.80	-	56.00	46.00	-29.20	-

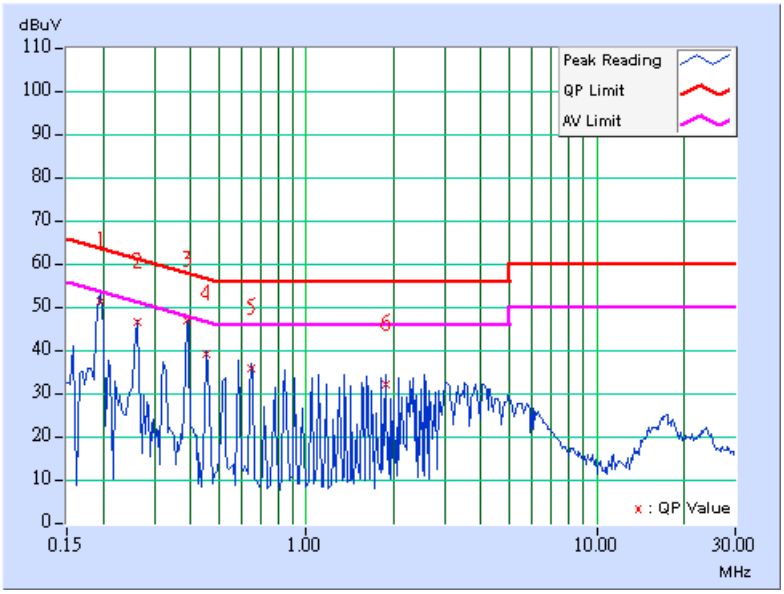
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
MODULATION TYPE	BPSK	PHASE	Line 2
TRANSFER RATE	7.2Mbps & 6.0Mbps	INPUT POWER	120Vac, 60Hz
ENVIRONMENTAL CONDITIONS	26deg. C, 62%RH, 1010hPa	6dB BANDWIDTH	9kHz
TESTED BY	Kevin Liang		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.20	51.21	-	51.41	-	63.74	53.74	-12.33	-
2	0.261	0.20	46.39	-	46.59	-	61.41	51.41	-14.82	-
3	0.391	0.20	46.97	-	47.17	-	58.04	48.04	-10.87	-
4	0.455	0.20	39.20	-	39.40	-	56.79	46.79	-17.39	-
5	0.649	0.20	35.66	-	35.86	-	56.00	46.00	-20.14	-
6	1.883	0.20	31.91	-	32.11	-	56.00	46.00	-23.89	-

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.

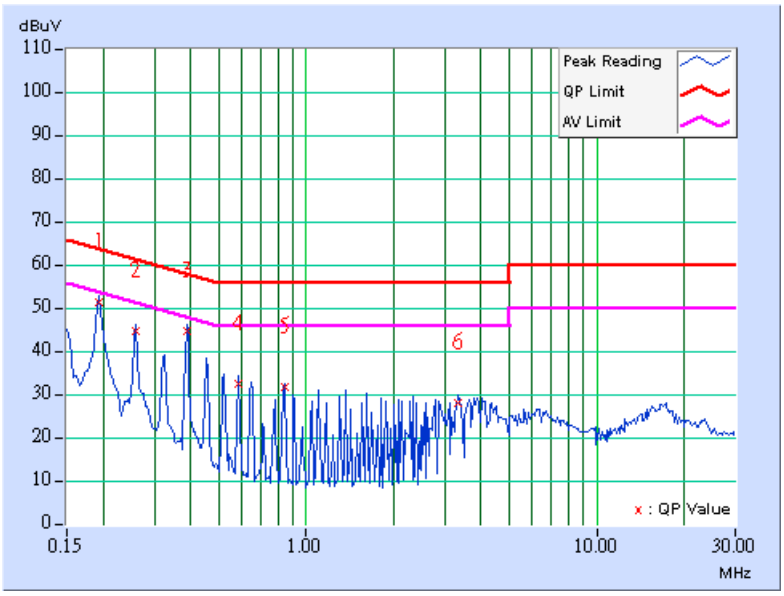


TEST MODE D: Draft 802.11n (20MHz) CH6 + 802.11a Draft 802.11n (20MHz) CH40

EUT TEST CONDITION		MEASUREMENT DETAIL	
MODULATION TYPE	BPSK	PHASE	Line 1
TRANSFER RATE	7.2Mbps	INPUT POWER	120Vac, 60Hz
ENVIRONMENTAL CONDITIONS	26deg. C, 62%RH, 1010hPa	6dB BANDWIDTH	9kHz
TESTED BY	Kevin Liang		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.193	0.20	51.27	-	51.47	-	63.91	53.91	-12.44	-
2	0.259	0.20	44.41	-	44.61	-	61.45	51.45	-16.84	-
3	0.388	0.20	44.30	-	44.50	-	58.10	48.10	-13.60	-
4	0.588	0.20	32.44	-	32.64	-	56.00	46.00	-23.36	-
5	0.845	0.20	31.48	-	31.68	-	56.00	46.00	-24.32	-
6	3.313	0.33	27.88	-	28.21	-	56.00	46.00	-27.79	-

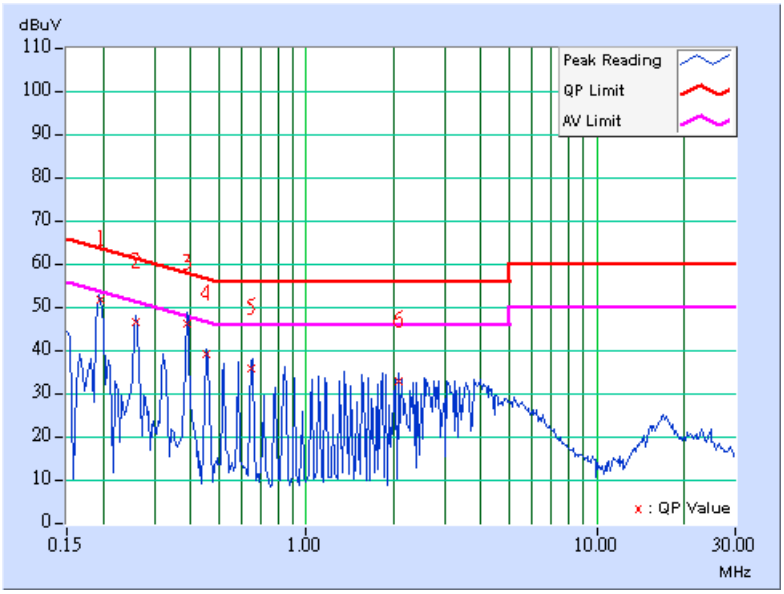
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
MODULATION TYPE	BPSK	PHASE	Line 2
TRANSFER RATE	7.2Mbps	INPUT POWER	120Vac, 60Hz
ENVIRONMENTAL CONDITIONS	26deg. C, 62%RH, 1010hPa	6dB BANDWIDTH	9kHz
TESTED BY	Kevin Liang		

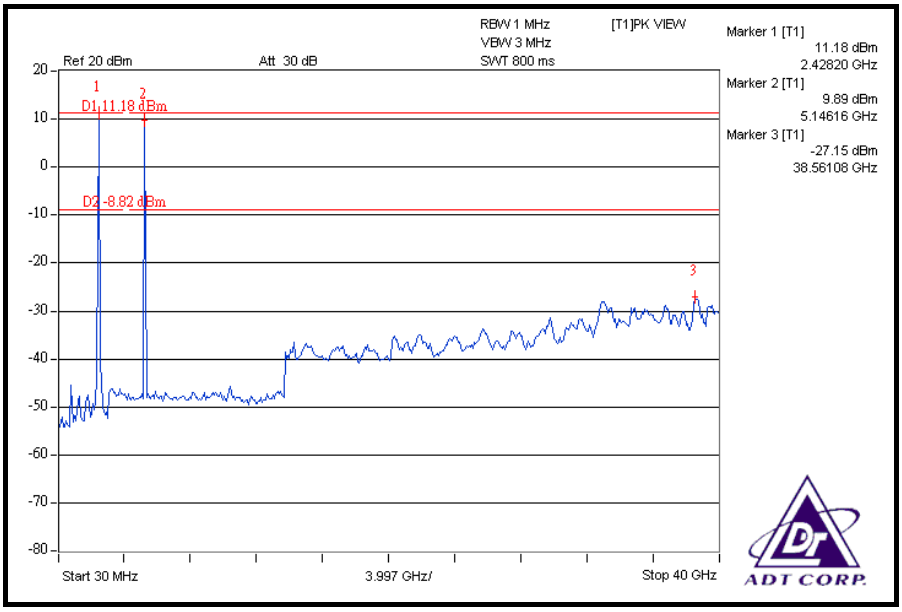
	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.196	0.20	51.49	-	51.69	-	63.80	53.80	-12.11	-
2	0.259	0.20	46.33	-	46.53	-	61.45	51.45	-14.92	-
3	0.388	0.20	46.25	-	46.45	-	58.10	48.10	-11.65	-
4	0.455	0.20	39.18	-	39.38	-	56.79	46.79	-17.41	-
5	0.649	0.20	35.78	-	35.98	-	56.00	46.00	-20.02	-
6	2.078	0.21	32.92	-	33.13	-	56.00	46.00	-22.87	-

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.

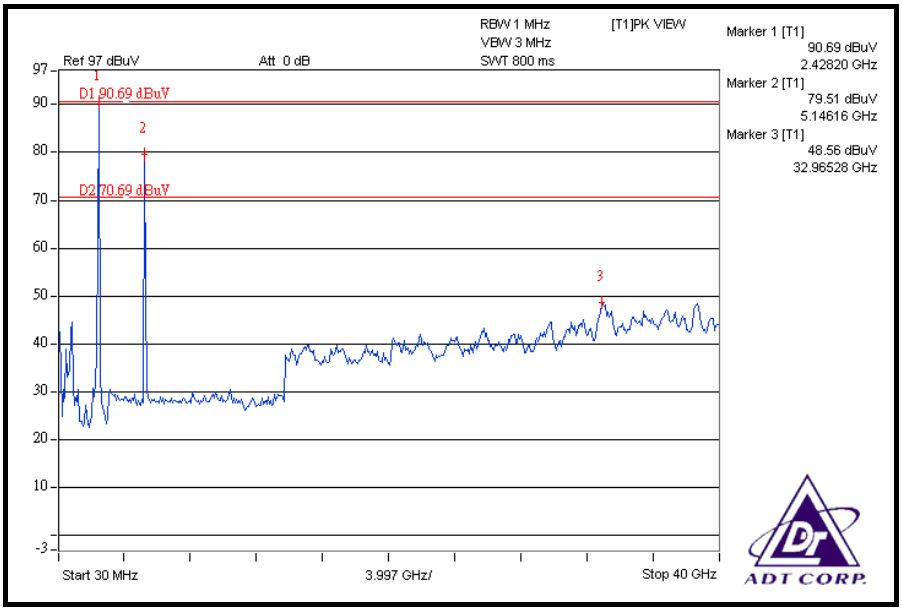


8.2.4 OUT BAND EMISSION

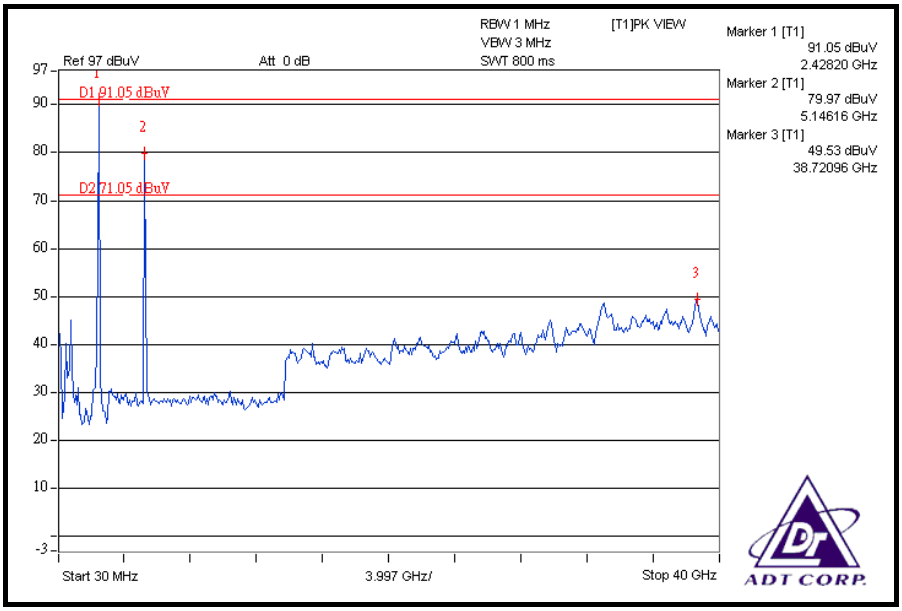
TEST MODE A: 802.11g CH6 + 802.11a CH40



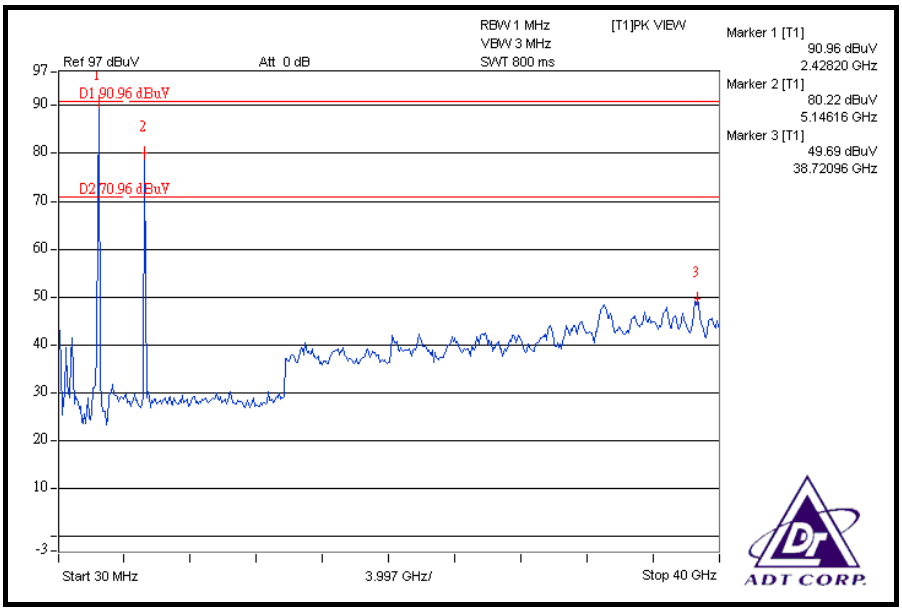
TEST MODE B: 802.11g CH6 + 802.11a Draft 802.11n (20MHz) CH40



TEST MODE C: Draft 802.11n (20MHz) CH6 + 802.11a CH40



TEST MODE D: Draft 802.11n (20MHz) CH6 + 802.11a Draft 802.11n (20MHz) CH40



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