



FCC TEST REPORT (15.407)

REPORT NO.: RF970312L01A

MODEL NO.: WMIA-199N

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TESTED: Jun. 11 ~ Jun. 24, 2008

ISSUED: Jun. 24, 2008

APPLICANT: SparkLAN Communications, Inc.

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TABLE OF CONTENTS

1.	CERTIFICATION.....	4
2.	SUMMARY OF TEST RESULTS	5
2.1	MEASUREMENT UNCERTAINTY.....	5
3.	GENERAL INFORMATION.....	6
3.1	GENERAL DESCRIPTION OF EUT.....	6
3.2	DESCRIPTION OF TEST MODES.....	7
3.2.1	CONFIGURATION OF SYSTEM UNDER TEST	7
3.2.2	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	8
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS	10
3.4	DESCRIPTION OF SUPPORT UNITS	10
4.	TEST TYPES AND RESULTS	11
4.1	RADIATED EMISSION MEASUREMENT	11
4.1.1	LIMITS OF RADIATED EMISSION MEASUREMENT	11
4.1.2	LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS	11
4.1.3	TEST INSTRUMENTS.....	12
4.1.4	TEST PROCEDURES	13
4.1.5	DEVIATION FROM TEST STANDARD	13
4.1.6	TEST SETUP.....	14
4.1.7	EUT OPERATING CONDITION.....	14
4.1.8	TEST RESULTS	15
4.2	CONDUCTED EMISSION MEASUREMENT	34
4.2.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	34
4.2.2	TEST INSTRUMENTS.....	34
4.2.3	TEST PROCEDURES	35
4.2.4	DEVIATION FROM TEST STANDARD	35
4.2.5	TEST SETUP.....	36
4.2.6	EUT OPERATING CONDITIONS	36
4.2.7	TEST RESULTS	37
4.3	PEAK TRANSMIT POWER MEASUREMENT	41
4.3.1	LIMITS OF PEAK TRANSMIT POWER MEASUREMENT	41
4.3.2	TEST INSTRUMENTS.....	41
4.3.3	TEST PROCEDURE.....	41
4.3.4	DEVIATION FROM TEST STANDARD	42
4.3.5	TEST SETUP.....	42
4.3.6	EUT OPERATING CONDITIONS	42
4.3.7	TEST RESULTS	43
4.4	PEAK POWER EXCURSION MEASUREMENT	77
4.4.1	LIMITS OF PEAK POWER EXCURSION MEASUREMENT	77
4.4.2	TEST INSTRUMENTS.....	77



4.4.3	TEST PROCEDURE.....	77
4.4.4	DEVIATION FROM TEST STANDARD	78
4.4.5	TEST SETUP.....	78
4.4.6	EUT OPERATING CONDITIONS	78
4.4.7	TEST RESULTS	79
4.5	PEAK POWER SPECTRAL DENSITY MEASUREMENT	96
4.5.1	LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT	96
4.5.2	TEST INSTRUMENTS.....	96
4.5.3	TEST PROCEDURES	96
4.5.4	DEVIATION FROM TEST STANDARD	97
4.5.5	TEST SETUP.....	97
4.5.6	EUT OPERATING CONDITIONS	97
4.5.7	TEST RESULTS	98
4.6	BAND EDGES MEASUREMENT	115
4.6.1	TEST INSTRUMENTS.....	115
4.6.2	TEST PROCEDURE.....	116
4.6.3	EUT OPERATING CONDITION.....	116
4.6.4	TEST RESULTS	117
4.7	DYNAMIC FREQUENCY SELECTION	141
4.7.1	OPERATING FREQUENCY BANDS AND MODE OF EUT	141
4.7.2	EUT SOFTWARE AND FIRMWARE VERSION	141
4.7.3	DESCRIPTION OF AVAILABLE ANTENNAS TO THE EUT.....	141
4.7.4	EUT MAXIMUM AND MINIMUM CONDUCTED POWER.....	142
4.7.5	STATEMENT OF MAUNFACTURER.....	143
4.7.6	U-NII DFS RULE REQUIREMENTS.....	144
4.7.7	TEST LIMITS AND RADAR SIGNAL PARAMETERS	145
4.7.8	TEST & SUPPORT EQUIPMENT LIST	147
4.7.9	TEST PROCEDURE.....	148
4.7.10	CALIBRATION OF DFS DETECTION THRESHOLD LEVEL:	149
4.7.11	DEVIATION FROM TEST STANDARD	150
4.7.12	CONDUCTED TEST SETUP CONFIGURATION.....	150
4.7.13	TEST RESULTS	151
4.7.14	DETELED TEST RESULTS.....	152
4.7.15	CHANNEL CLOSING TRANSMISSION AND CHANNEL MOVE TIME	154
4.8	ANTENNA REQUIREMENT	162
4.8.1	STANDARD APPLICABLE.....	162
4.8.2	ANTENNA CONNECTED CONSTRUCTION.....	162
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	163
6.	INFORMATION ON THE TESTING LABORATORIES.....	164
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	165



1. CERTIFICATION

PRODUCT: Wireless 11a/b/g/n Mini PCI module

MODEL: WMIA-199N

BRAND: SparkLAN

APPLICANT: SparkLAN Communications, Inc.

TEST SAMPLE: ENGINEERING SAMPLE

TESTED: Jun. 11 ~ Jun. 24, 2008

STANDARDS: FCC Part 15, Subpart E (Section 15.407)
ANSI C63.4-2003

The above equipment (Model: WMIA-199N) has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Andrea Hsia , **DATE:** Jun. 24, 2008
Andrea Hsia / Specialist

TECHNICAL ACCEPTANCE : Long Chen , **DATE:** Jun. 24, 2008
Responsible for RF Long Chen / Senior Engineer

APPROVED BY : Gary Chang , **DATE:** Jun. 24, 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 -18.13dB at 0.210MHz
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 -3.15dB at 265.94MHz
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	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.19 dB
	200MHz ~1000MHz	3.21 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	Wireless 11a/b/g/n Mini PCI module
MODEL NO.	WMIA-199N
FCC ID	RYK-WMIA199N
POWER SUPPLY	3.3Vdc from host equipment
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11a: 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	5250 ~ 5350MHz, 5470 ~ 5725MHz
NUMBER OF CHANNEL	5250 ~ 5350MHz: 4 for 802.11a, draft 802.11n (20MHz) 2 for draft 802.11n (40MHz) 5470 ~ 5725MHz: 11 for 802.11a, draft 802.11n (20MHz) 5 for draft 802.11n (40MHz)
OUTPUT POWER	15.786mW for 5250.0 ~ 5350.0MHz 15.935mW for 5470.0 ~ 5725.0MHz
ANTENNA TYPE	PCB antenna with 4.6dBi gain
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. This report is prepared for FCC class II permissive change. The difference compared with the original report is adding frequency band from 5.25 to 5.35GHz and 5.47 to 5.725GHz by software.
2. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

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

3. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 DESCRIPTION OF TEST MODES

Operated in 5250 ~ 5350MHz:

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

CHANNEL	FREQUENCY
52	5260MHz
56	5280MHz
60	5300MHz
64	5320MHz

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

CHANNEL	FREQUENCY
54	5270MHz
62	5310MHz

Operated in 5470 ~ 5725MHz:

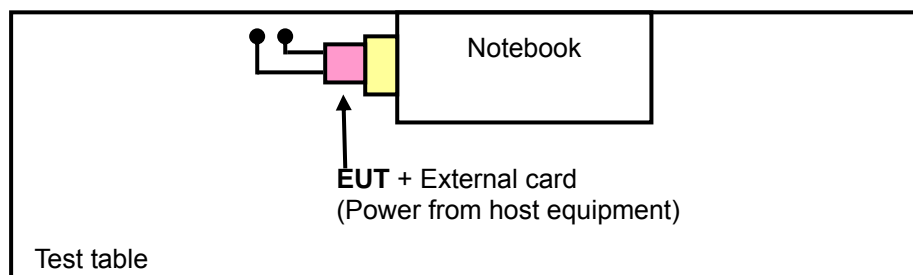
11 channels are provided to this EUT.

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
100	5500MHz	124	5620MHz
104	5520MHz	128	5640MHz
108	5540MHz	132	5660MHz
112	5560MHz	136	5680MHz
116	5580MHz	140	5700MHz
120	5600MHz		

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
102	5510MHz	126	5630MHz
110	5550MHz	134	5670MHz
118	5590MHz		

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 \geq 1G	RE $<$ 1G	PLC	APCM	
-	√	√	√	√	-

Where **RE \geq 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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	ANTENNA AXIS
802.11a	5250-5350	52 to 64	52, 60, 64	OFDM	BPSK	6.0	Y
Draft 802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	7.2	Y
Draft 802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	15.0	Y
802.11a	5470-5725	100 to 140	100, 120, 140	OFDM	BPSK	6.0	Y
Draft 802.11n (20MHz)		100 to 140	100, 120, 140	OFDM	BPSK	7.2	Y
Draft 802.11n (40MHz)		102 to 134	102, 118, 134	OFDM	BPSK	15.0	Y

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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	ANTENNA AXIS
Draft 802.11n (40MHz)	5250-5350	54 to 62	54	OFDM	BPSK	15.0	Y
Draft 802.11n (40MHz)	5470-5725	102 to 134	118	OFDM	BPSK	15.0	Y



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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
Draft 802.11n (40MHz)	5250-5350	54 to 62	54	OFDM	BPSK	15.0
Draft 802.11n (40MHz)	5470-5725	102 to 134	118	OFDM	BPSK	15.0

BANDEDGE MEASUREMENT:

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5250-5350	52 to 64	52, 64	OFDM	BPSK	6.0
Draft 802.11n (20MHz)		52 to 64	52, 64	OFDM	BPSK	7.2
Draft 802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	15.0
802.11a	5470-5725	100 to 140	100, 140	OFDM	BPSK	6.0
Draft 802.11n (20MHz)		100 to 140	100, 140	OFDM	BPSK	7.2
Draft 802.11n (40MHz)		102 to 134	102, 134	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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5250-5350	52 to 64	52, 60, 64	OFDM	BPSK	6.0
Draft 802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	7.2
Draft 802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	15.0
802.11a	5470-5725	100 to 140	100, 120, 140	OFDM	BPSK	6.0
Draft 802.11n (20MHz)		100 to 140	100, 120, 140	OFDM	BPSK	7.2
Draft 802.11n (40MHz)		102 to 134	102, 118, 134	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	IBM	X23	2662-K1T	NA

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

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

NOTE 2: Item 1 was supplied from client.

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
5250 ~ 5350	-7	-27	88.3	68.3
5470 ~ 5725	-7	-27	88.3	68.3

NOTE:

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

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



4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Dec. 25, 2008
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Dec. 02, 2008
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Jan. 03, 2009
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-405	Dec. 17, 2008
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 06, 2009
Preamplifier Agilent	8449B	3008A01910	Sep. 19, 2008
Preamplifier Agilent	8447D	2944A10634	Dec. 12, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274397/4	Nov. 07, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283401/4	Nov. 07, 2008
Software ADT.	ADT_Radiated_V7.6	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA
Turn Table ADT.	TT100.	TT93021704	NA
Turn Table Controller ADT.	SC100.	SC93021704	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	May 05, 2009

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 4.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FC Site Registration No. is 460141.
5. The IC Site Registration No. is IC3789B-4.

4.1.4 TEST PROCEDURES

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

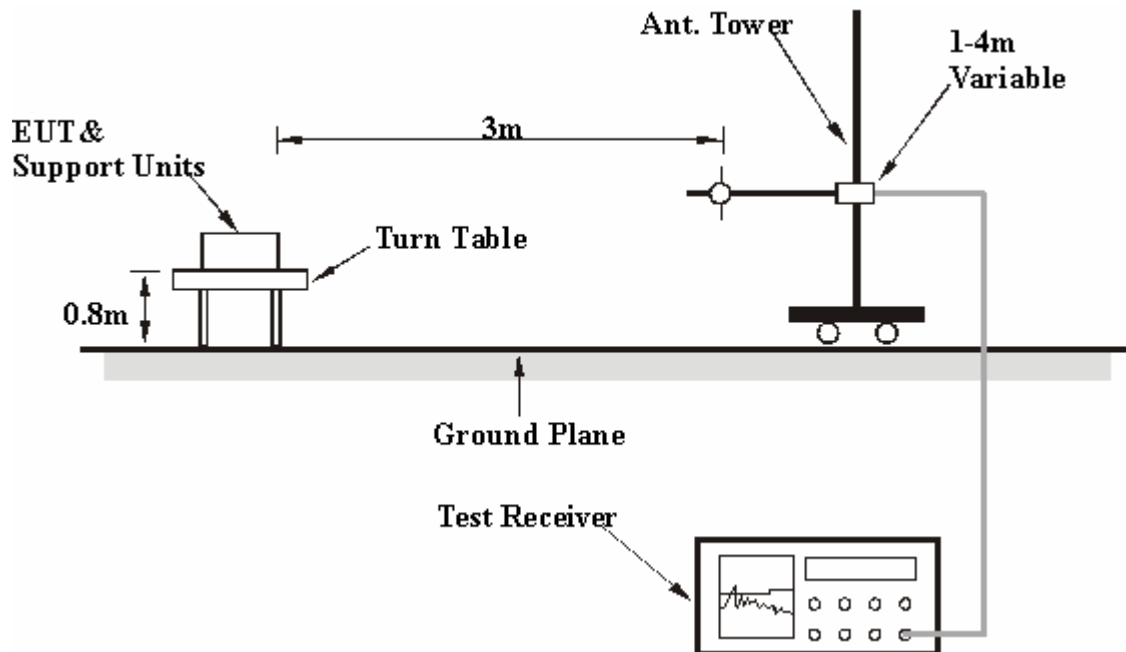
NOTE:

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

4.1.5 DEVIATION FROM TEST STANDARD

No deviation

4.1.6 TEST SETUP



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

4.1.7 EUT OPERATING CONDITION

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

4.1.8 TEST RESULTS

802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	5150.00	54.46 PK	74.00	-19.54	1.06 H	42	15.78	38.68
2	5150.00	41.77 AV	54.00	-12.23	1.06 H	42	3.09	38.68
3	*5260.00	100.35 PK			1.42 H	228	61.58	38.77
4	*5260.00	90.42 AV			1.42 H	228	51.65	38.77
5	#10520.00	58.67 PK	88.30	-29.63	1.27 H	160	8.86	49.81
6	#10520.00	46.77 AV	68.30	-21.53	1.27 H	160	-3.04	49.81
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	54.48 PK	74.00	-19.52	1.21 V	55	15.80	38.68
2	5150.00	41.76 AV	54.00	-12.24	1.21 V	55	3.08	38.68
3	*5260.00	106.99 PK			1.50 V	341	68.22	38.77
4	*5260.00	96.59 AV			1.50 V	341	57.82	38.77
5	#10520.00	58.68 PK	88.30	-29.62	1.02 V	236	8.87	49.81
6	#10520.00	46.54 AV	68.30	-21.76	1.02 V	236	-3.27	49.81

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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	*5300.00	99.01 PK			1.16 H	213	60.20	38.81
2	*5300.00	88.75 AV			1.16 H	213	49.94	38.81
3	10600.00	57.41 PK	74.00	-16.59	1.21 H	99	7.46	49.95
4	10600.00	45.58 AV	54.00	-8.42	1.21 H	99	-4.37	49.95
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	107.44 PK			1.02 V	193	68.63	38.81
2	*5300.00	97.51 AV			1.02 V	193	58.70	38.81
3	10600.00	57.81 PK	74.00	-16.19	1.10 V	154	7.86	49.95
4	10600.00	46.70 AV	54.00	-7.30	1.10 V	154	-3.25	49.95

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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	*5320.00	99.45 PK			1.08 H	206	60.62	38.83
2	*5320.00	89.37 AV			1.08 H	206	50.54	38.83
3	5350.00	48.66 PK	74.00	-25.34	1.23 H	186	9.81	38.85
4	5350.00	36.70 AV	54.00	-17.30	1.23 H	186	-2.16	38.85
5	10640.00	58.89 PK	74.00	-15.11	1.25 H	106	8.88	50.02
6	10640.00	46.91 AV	54.00	-7.09	1.25 H	106	-3.10	50.02
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	*5320.00	107.76 PK			1.12 V	196	68.93	38.83
2	*5320.00	97.06 AV			1.12 V	196	58.23	38.83
3	5350.00	49.98 PK	74.00	-24.02	1.48 V	277	11.12	38.85
4	5350.00	37.99 AV	54.00	-16.01	1.48 V	277	-0.86	38.85
5	10640.00	59.76 PK	74.00	-14.24	1.31 V	55	9.74	50.02
6	10640.00	48.76 AV	54.00	-5.24	1.31 V	55	-1.26	50.02

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	5460.00	47.62 PK	74.00	-26.38	1.12 H	175	8.67	38.95
2	5460.00	35.55 AV	54.00	-18.45	1.12 H	175	-3.40	38.95
3	#5470.00	47.62 PK	88.30	-40.68	1.12 H	175	8.66	38.96
4	#5470.00	36.73 AV	68.30	-31.57	1.12 H	175	-2.23	38.96
5	*5500.00	101.16 PK			1.06 H	193	62.18	38.98
6	*5500.00	91.18 AV			1.06 H	193	52.20	38.98
7	11000.00	58.66 PK	74.00	-15.34	1.08 H	142	8.00	50.66
8	11000.00	46.34 AV	54.00	-7.66	1.08 H	142	-4.32	50.66
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	5460.00	50.11 PK	74.00	-23.89	1.59 V	198	11.16	38.95
2	5460.00	37.67 AV	54.00	-16.33	1.59 V	198	-1.28	38.95
3	#5470.00	50.54 PK	88.30	-37.76	1.59 V	198	11.58	38.96
4	#5470.00	37.63 AV	68.30	-30.67	1.59 V	198	-1.33	38.96
5	*5500.00	107.35 PK			1.09 V	200	68.37	38.98
6	*5500.00	97.16 AV			1.09 V	200	58.18	38.98
7	11000.00	60.64 PK	74.00	-13.36	1.22 V	152	9.98	50.66
8	11000.00	48.26 AV	54.00	-5.74	1.22 V	152	-2.40	50.66

- 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 120	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	*5600.00	103.13 PK			1.14 H	202	63.91	39.22
2	*5600.00	92.88 AV			1.14 H	202	53.66	39.22
3	11200.00	58.32 PK	74.00	-15.68	1.16 H	152	7.65	50.67
4	11200.00	46.85 AV	54.00	-7.15	1.16 H	152	-3.82	50.67
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5600.00	108.40 PK			1.40 V	278	69.18	39.22
2	*5600.00	98.27 AV			1.40 V	278	59.05	39.22
3	11200.00	59.85 PK	74.00	-14.15	1.30 V	142	9.18	50.67
4	11200.00	47.17 AV	54.00	-6.83	1.30 V	142	-3.50	50.67

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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	*5700.00	102.70 PK			1.50 H	204	63.24	39.46
2	*5700.00	92.65 AV			1.50 H	204	53.19	39.46
3	#5725.00	53.68 PK	88.30	-34.62	1.54 H	201	14.16	39.52
4	#5725.00	37.30 AV	68.30	-31.00	1.54 H	201	-2.22	39.52
5	11400.00	59.68 PK	74.00	-14.32	1.14 H	172	8.96	50.72
6	11400.00	47.29 AV	54.00	-6.71	1.14 H	172	-3.43	50.72
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	*5700.00	107.41 PK			1.53 V	183	67.95	39.46
2	*5700.00	96.77 AV			1.53 V	183	57.31	39.46
3	#5725.00	53.58 PK	88.30	-34.72	1.53 V	181	14.06	39.52
4	#5725.00	37.69 AV	68.30	-30.61	1.53 V	181	-1.83	39.52
5	11400.00	60.71 PK	74.00	-13.29	1.38 V	114	9.99	50.72
6	11400.00	48.28 AV	54.00	-5.72	1.38 V	114	-2.44	50.72

- 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 52	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	5150.00	58.04 PK	74.00	-15.96	1.32 H	16	19.36	38.68
2	5150.00	46.24 AV	54.00	-7.76	1.32 H	16	7.56	38.68
3	*5260.00	100.64 PK			1.47 H	145	61.87	38.77
4	*5260.00	90.80 AV			1.47 H	145	52.03	38.77
5	#10520.00	58.50 PK	88.30	-29.80	1.08 H	184	8.69	49.81
6	#10520.00	45.57 AV	68.30	-22.73	1.08 H	184	-4.24	49.81
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.12 PK	74.00	-15.88	1.21 V	75	19.44	38.68
2	5150.00	46.28 AV	54.00	-7.72	1.21 V	75	7.60	38.68
3	*5260.00	108.67 PK			1.35 V	275	69.90	38.77
4	*5260.00	98.34 AV			1.35 V	275	59.57	38.77
5	11520.00	60.13 PK	74.00	-13.87	1.20 V	164	9.42	50.71
6	11520.00	48.31 AV	54.00	-5.69	1.20 V	164	-2.40	50.71

- 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 60	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	*5300.00	100.16 PK			1.00 H	204	61.35	38.81
2	*5300.00	89.44 AV			1.00 H	204	50.63	38.81
3	10600.00	57.79 PK	74.00	-16.21	1.15 H	86	7.84	49.95
4	10600.00	45.90 AV	54.00	-8.10	1.15 H	86	-4.05	49.95
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	108.86 PK			1.00 V	16	70.05	38.81
2	*5300.00	98.87 AV			1.00 V	16	60.06	38.81
3	10600.00	59.24 PK	74.00	-14.76	1.15 V	196	9.29	49.95
4	10600.00	46.80 AV	54.00	-7.20	1.15 V	196	-3.15	49.95

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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	*5320.00	98.64 PK			1.21 H	211	59.81	38.83
2	*5320.00	88.26 AV			1.21 H	211	49.43	38.83
3	5350.00	49.30 PK	74.00	-24.70	1.11 H	189	10.45	38.85
4	5350.00	36.42 AV	54.00	-17.58	1.11 H	189	-2.43	38.85
5	10640.00	58.54 PK	74.00	-15.46	1.14 H	78	8.53	50.02
6	10640.00	45.72 AV	54.00	-8.28	1.14 H	78	-4.29	50.02
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	*5320.00	109.25 PK			1.00 V	359	70.42	38.83
2	*5320.00	98.93 AV			1.00 V	359	60.10	38.83
3	5350.00	52.43 PK	74.00	-21.57	1.00 V	19	13.58	38.85
4	5350.00	38.45 AV	54.00	-15.55	1.00 V	19	-0.41	38.85
5	10640.00	60.27 PK	74.00	-13.73	1.08 V	45	10.25	50.02
6	10640.00	47.85 AV	54.00	-6.15	1.08 V	45	-2.17	50.02

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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	5460.00	49.99 PK	74.00	-24.01	1.16 H	193	11.04	38.95
2	5460.00	36.59 AV	54.00	-17.41	1.16 H	193	-2.36	38.95
3	#5470.00	49.03 PK	88.30	-39.27	1.16 H	193	10.07	38.96
4	#5470.00	36.53 AV	68.30	-31.77	1.16 H	193	-2.43	38.96
5	*5500.00	98.99 PK			1.02 H	197	60.01	38.98
6	*5500.00	88.68 AV			1.02 H	197	49.70	38.98
7	11000.00	58.68 PK	74.00	-15.32	1.02 H	155	8.02	50.66
8	11000.00	46.30 AV	54.00	-7.70	1.02 H	155	-4.36	50.66
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	5460.00	51.11 PK	74.00	-22.89	1.07 V	6	12.16	38.95
2	5460.00	37.26 AV	54.00	-16.74	1.07 V	6	-1.69	38.95
3	#5470.00	49.18 PK	88.30	-39.12	1.07 V	6	10.22	38.96
4	#5470.00	37.24 AV	68.30	-31.06	1.07 V	6	-1.72	38.96
5	*5500.00	108.43 PK			1.08 V	26	69.45	38.98
6	*5500.00	97.79 AV			1.08 V	26	58.81	38.98
7	11000.00	60.17 PK	74.00	-13.83	1.15 V	105	9.51	50.66
8	11000.00	47.48 AV	54.00	-6.52	1.15 V	105	-3.18	50.66

- 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 120	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	*5600.00	100.71 PK			1.14 H	167	61.49	39.22
2	*5600.00	90.45 AV			1.14 H	167	51.23	39.22
3	11200.00	59.23 PK	74.00	-14.77	1.09 H	112	8.56	50.67
4	11200.00	46.46 AV	54.00	-7.54	1.09 H	112	-4.21	50.67
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5600.00	106.79 PK			1.03 V	58	67.57	39.22
2	*5600.00	95.96 AV			1.03 V	58	56.74	39.22
3	11200.00	59.46 PK	74.00	-14.54	1.13 V	142	8.79	50.67
4	11200.00	47.35 AV	54.00	-6.65	1.13 V	142	-3.32	50.67

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	*5700.00	100.89 PK			1.42 H	192	61.43	39.46
2	*5700.00	90.46 AV			1.42 H	192	51.00	39.46
3	#5725.00	49.52 PK	88.30	-38.78	1.15 H	223	10.00	39.52
4	#5725.00	37.15 AV	68.30	-31.15	1.15 H	223	-2.37	39.52
5	#14000.00	64.23 PK	88.30	-24.07	1.15 H	45	10.60	53.63
6	#14000.00	52.05 AV	68.30	-16.25	1.15 H	45	-1.58	53.63
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	*5700.00	106.45 PK			1.22 V	262	66.99	39.46
2	*5700.00	96.47 AV			1.22 V	262	57.01	39.46
3	#5725.00	51.97 PK	88.30	-36.33	1.22 V	259	12.45	39.52
4	#5725.00	38.30 AV	68.30	-30.00	1.22 V	259	-1.22	39.52
5	#14000.00	65.11 PK	88.30	-23.19	1.16 V	107	11.48	53.63
6	#14000.00	53.02 AV	68.30	-15.28	1.16 V	107	-0.61	53.63

- 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 54	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	5150.00	58.35 PK	74.00	-15.65	1.21 H	49	19.67	38.68
2	5150.00	46.60 AV	54.00	-7.40	1.21 H	49	7.92	38.68
3	*5270.00	97.66 PK			1.00 H	202	58.88	38.78
4	*5270.00	85.42 AV			1.00 H	202	46.64	38.78
5	#10540.00	58.37 PK	88.30	-29.93	1.10 H	142	8.53	49.85
6	#10540.00	46.02 AV	68.30	-22.28	1.10 H	142	-3.82	49.85
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.39 PK	74.00	-15.61	1.27 V	57	19.71	38.68
2	5150.00	46.66 AV	54.00	-7.34	1.27 V	57	7.98	38.68
3	*5270.00	106.10 PK			1.02 V	9	67.32	38.78
4	*5270.00	95.63 AV			1.02 V	9	56.85	38.78
5	#10540.00	59.50 PK	88.30	-28.80	1.06 V	142	9.66	49.85
6	#10540.00	46.65 AV	68.30	-21.65	1.06 V	142	-3.19	49.85

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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 62	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	*5310.00	97.02 PK			1.00 H	7	58.20	38.82
2	*5310.00	87.37 AV			1.00 H	7	48.55	38.82
3	5350.00	49.57 PK	74.00	-24.43	1.12 H	20	10.72	38.85
4	5350.00	37.87 AV	54.00	-16.12	1.12 H	20	-0.98	38.85
5	10620.00	56.54 PK	74.00	-17.46	1.21 H	142	6.56	49.98
6	10620.00	44.85 AV	54.00	-9.15	1.21 H	142	-5.13	49.98
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	104.27 PK			1.23 V	172	65.45	38.82
2	*5310.00	93.94 AV			1.23 V	172	55.12	38.82
3	5350.00	59.07 PK	74.00	-14.93	1.22 V	175	20.22	38.85
4	5350.00	43.03 AV	54.00	-10.97	1.22 V	175	4.18	38.85
5	10620.00	57.85 PK	74.00	-16.15	1.08 V	142	7.87	49.98
6	10620.00	45.57 AV	54.00	-8.43	1.08 V	142	-4.41	49.98

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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 102	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	5460.00	58.17 PK	74.00	-15.83	1.16 H	43	19.22	38.95
2	5460.00	45.96 AV	54.00	-8.04	1.16 H	43	7.01	38.95
3	#5470.00	65.66 PK	88.30	-22.64	1.18 H	39	26.70	38.96
4	#5470.00	47.55 AV	68.30	-20.75	1.18 H	39	8.59	38.96
5	*5510.00	96.62 PK			1.04 H	195	57.62	39.00
6	*5510.00	86.69 AV			1.04 H	195	47.69	39.00
7	11020.00	59.76 PK	74.00	-14.24	1.11 H	142	9.10	50.66
8	11020.00	46.69 AV	54.00	-7.31	1.11 H	142	-3.97	50.66
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	5460.00	58.21 PK	74.00	-15.79	1.11 V	42	19.26	38.95
2	5460.00	45.99 AV	54.00	-8.01	1.11 V	42	7.04	38.95
3	#5470.00	65.71 PK	88.30	-22.59	1.12 V	56	26.75	38.96
4	#5470.00	47.59 AV	68.30	-20.71	1.12 V	56	8.63	38.96
5	*5510.00	103.45 PK			1.09 V	28	64.45	39.00
6	*5510.00	93.47 AV			1.09 V	28	54.47	39.00
7	11020.00	60.46 PK	74.00	-13.54	1.03 V	124	9.80	50.66
8	11020.00	47.72 AV	54.00	-6.28	1.03 V	124	-2.94	50.66

- 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 118	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	*5590.00	98.48 PK			1.14 H	201	59.28	39.20
2	*5590.00	88.24 AV			1.14 H	201	49.04	39.20
3	11180.00	58.58 PK	74.00	-15.42	1.11 H	120	7.92	50.67
4	11180.00	46.19 AV	54.00	-7.81	1.11 H	120	-4.47	50.67
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5590.00	104.34 PK			1.39 V	113	65.14	39.20
2	*5590.00	94.12 AV			1.39 V	113	54.92	39.20
3	11180.00	59.50 PK	74.00	-14.50	1.21 V	95	8.84	50.67
4	11180.00	47.21 AV	54.00	-6.79	1.21 V	95	-3.45	50.67

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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 134	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH 999hPa	TESTED BY	Mitch 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	*5670.00	97.16 PK			1.31 H	148	57.77	39.39
2	*5670.00	86.86 AV			1.31 H	148	47.47	39.39
3	#5725.00	58.84 PK	88.30	-29.46	1.24 H	41	19.32	39.52
4	#5725.00	46.11 AV	68.30	-22.19	1.24 H	41	6.59	39.52
5	11340.00	59.56 PK	74.00	-14.44	1.21 H	85	8.86	50.70
6	11340.00	46.88 AV	54.00	-7.12	1.21 H	85	-3.82	50.70
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	*5670.00	103.80 PK			1.16 V	195	64.41	39.39
2	*5670.00	93.39 AV			1.16 V	195	54.00	39.39
3	#5725.00	55.89 PK	88.30	-32.41	1.32 V	61	16.37	39.52
4	#5725.00	46.16 AV	68.30	-22.14	1.32 V	61	6.64	39.52
5	11340.00	60.63 PK	74.00	-13.37	1.08 V	124	9.93	50.70
6	11340.00	47.92 AV	54.00	-6.08	1.08 V	124	-2.78	50.70

- 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 (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 54	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 999hPa	TESTED BY	Mitch 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	233.01	39.55 QP	46.00	-6.45	1.25 H	350	26.67	12.88
2	265.55	42.41 QP	46.00	-3.59	1.00 H	312	28.39	14.02
3	299.98	37.99 QP	46.00	-8.01	1.00 H	215	23.21	14.78
4	398.86	35.98 QP	46.00	-10.02	1.00 H	201	18.70	17.28
5	499.89	36.10 QP	46.00	-9.90	2.00 H	322	15.61	20.49
6	827.94	38.95 QP	46.00	-7.05	2.00 H	351	12.05	26.90
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	167.10	26.95 QP	43.50	-16.55	1.50 V	60	13.07	13.88
2	266.95	32.86 QP	46.00	-13.14	1.50 V	222	18.81	14.05
3	400.01	32.01 QP	46.00	-13.99	2.00 V	252	14.70	17.31
4	500.86	30.94 QP	46.00	-15.06	2.00 V	282	10.43	20.51
5	662.86	25.81 QP	46.00	-20.19	1.50 V	259	1.37	24.44
6	932.82	30.14 QP	46.00	-15.86	1.50 V	240	1.67	28.47

- 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.



BELOW 1GHz WORST-CASE DATA : DRAFT 802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 118	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 999hPa	TESTED BY	Mitch 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	233.85	40.12 QP	46.00	-5.88	1.25 H	348	27.20	12.92
2	265.94	42.85 QP	46.00	-3.15	1.00 H	315	28.82	14.03
3	300.12	38.11 QP	46.00	-7.89	1.00 H	218	23.33	14.78
4	398.16	36.18 QP	46.00	-9.82	1.00 H	206	18.92	17.26
5	500.13	36.55 QP	46.00	-9.45	2.00 H	329	16.06	20.49
6	828.22	38.23 QP	46.00	-7.77	2.00 H	354	11.33	26.90
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	167.95	27.22 QP	43.50	-16.28	1.50 V	68	13.39	13.83
2	267.22	32.55 QP	46.00	-13.45	1.50 V	226	18.50	14.05
3	399.89	32.22 QP	46.00	-13.78	2.00 V	245	14.92	17.30
4	500.11	31.24 QP	46.00	-14.76	2.00 V	274	10.75	20.49
5	662.15	26.05 QP	46.00	-19.95	1.50 V	252	1.62	24.43
6	932.11	30.56 QP	46.00	-15.44	1.50 V	243	2.10	28.46

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

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

4.2.2 TEST INSTRUMENTS

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

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

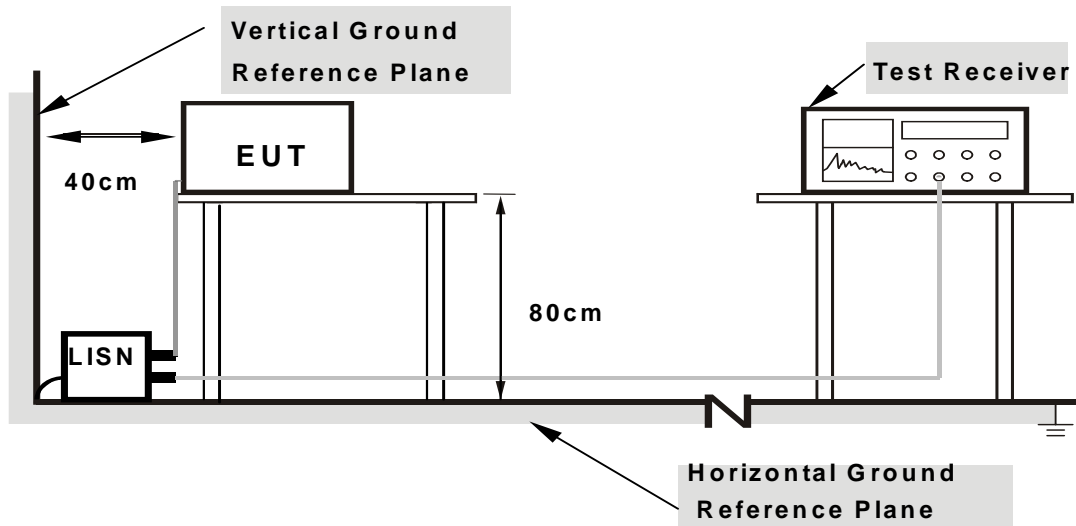
4.2.3 TEST PROCEDURES

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

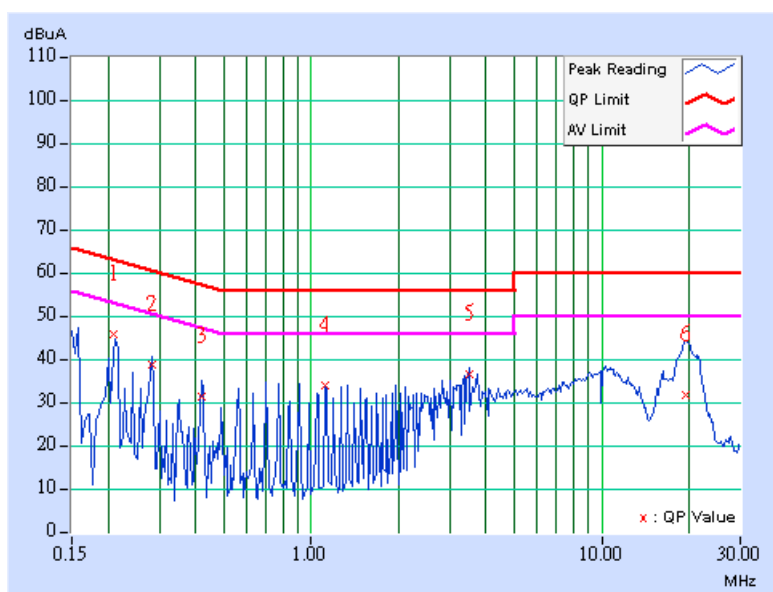
4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA : DRAFT 802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 54	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	15Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 69%RH, 982hPa	TESTED BY	Lori Chiu

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.210	0.13	44.61	-	44.74	-	63.21	53.21	-18.47	-
2	0.282	0.13	37.50	-	37.63	-	60.77	50.77	-23.14	-
3	0.420	0.14	30.32	-	30.46	-	57.46	47.46	-27.00	-
4	1.121	0.18	32.99	-	33.17	-	56.00	46.00	-22.83	-
5	3.510	0.40	35.56	-	35.96	-	56.00	46.00	-20.04	-
6	19.453	1.26	30.68	-	31.94	-	60.00	50.00	-28.06	-

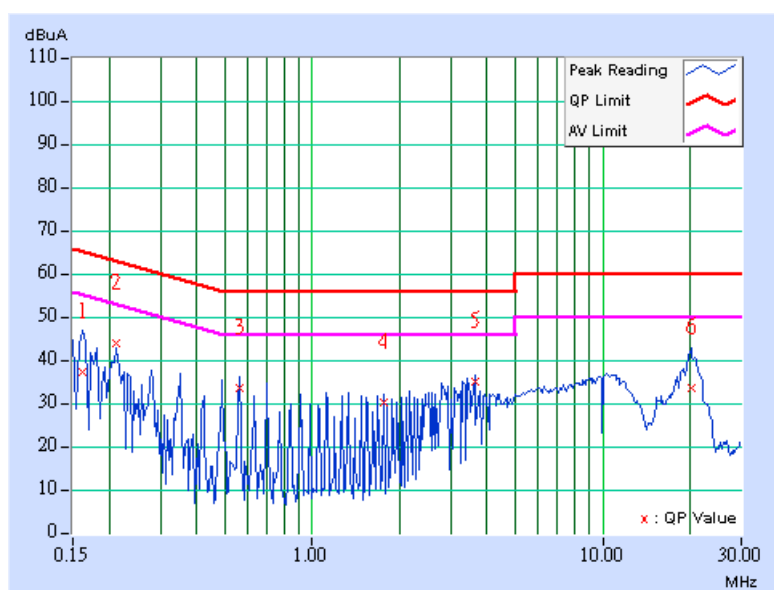
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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 54	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	15Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 69%RH, 982hPa	TESTED BY	Lori Chiu

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.162	0.14	36.45	-	36.59	-	65.38	55.38	-28.79	-
2	0.213	0.14	43.14	-	43.28	-	63.11	53.11	-19.83	-
3	0.560	0.16	32.62	-	32.78	-	56.00	46.00	-23.22	-
4	1.754	0.24	29.35	-	29.59	-	56.00	46.00	-26.41	-
5	3.648	0.40	34.24	-	34.64	-	56.00	46.00	-21.36	-
6	20.113	0.96	32.76	-	33.72	-	60.00	50.00	-26.28	-

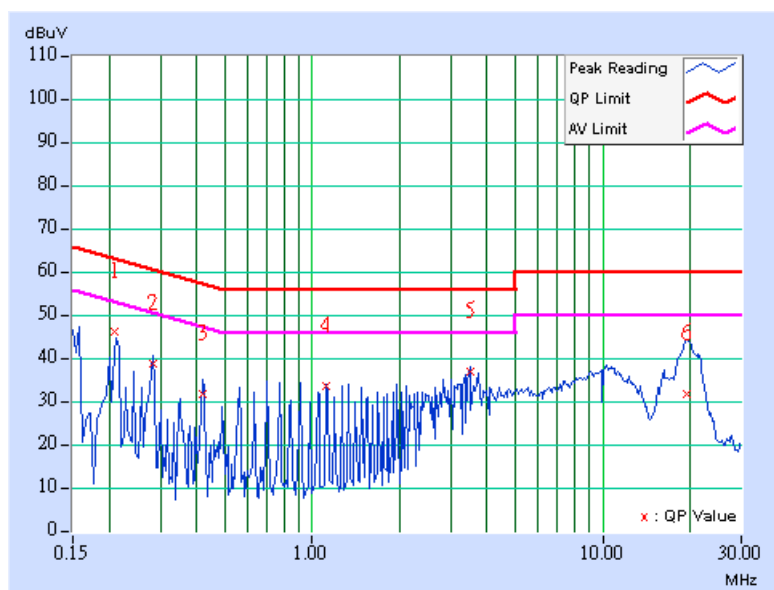
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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 118	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	15Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 982hPa	TESTED BY	Lori Chiu

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.210	0.13	44.95	-	45.08	-	63.21	53.21	-18.13	-
2	0.281	0.13	37.63	-	37.76	-	60.77	50.77	-23.01	-
3	0.420	0.14	30.54	-	30.68	-	57.45	47.45	-26.77	-
4	1.121	0.18	32.55	-	32.73	-	56.00	46.00	-23.27	-
5	3.510	0.40	35.72	-	36.12	-	56.00	46.00	-19.88	-
6	19.453	1.26	30.52	-	31.78	-	60.00	50.00	-28.22	-

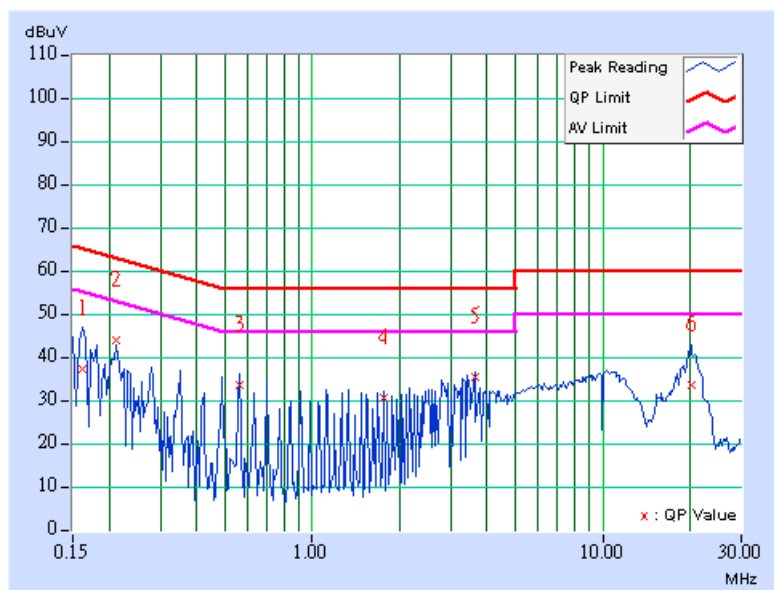
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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 118	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60Hz
TRANSFER RATE	15Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 982hPa	TESTED BY	Lori Chiu

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.162	0.14	36.63	-	36.77	-	65.37	55.37	-28.60	-
2	0.212	0.14	43.23	-	43.37	-	63.11	53.11	-19.74	-
3	0.560	0.16	32.92	-	33.08	-	56.00	46.00	-22.92	-
4	1.754	0.24	29.72	-	29.96	-	56.00	46.00	-26.04	-
5	3.649	0.40	34.54	-	34.94	-	56.00	46.00	-21.06	-
6	20.114	0.96	32.81	-	33.77	-	60.00	50.00	-26.23	-

- 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.





4.3 PEAK TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

FREQUENCY BAND	LIMIT
5.250 ~ 5.350GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.470 ~ 5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB

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

4.3.2 TEST INSTRUMENTS

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

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

4.3.3 TEST PROCEDURE

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

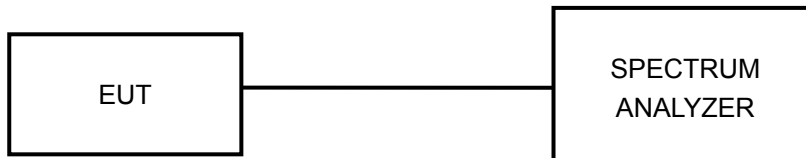
NOTE: The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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



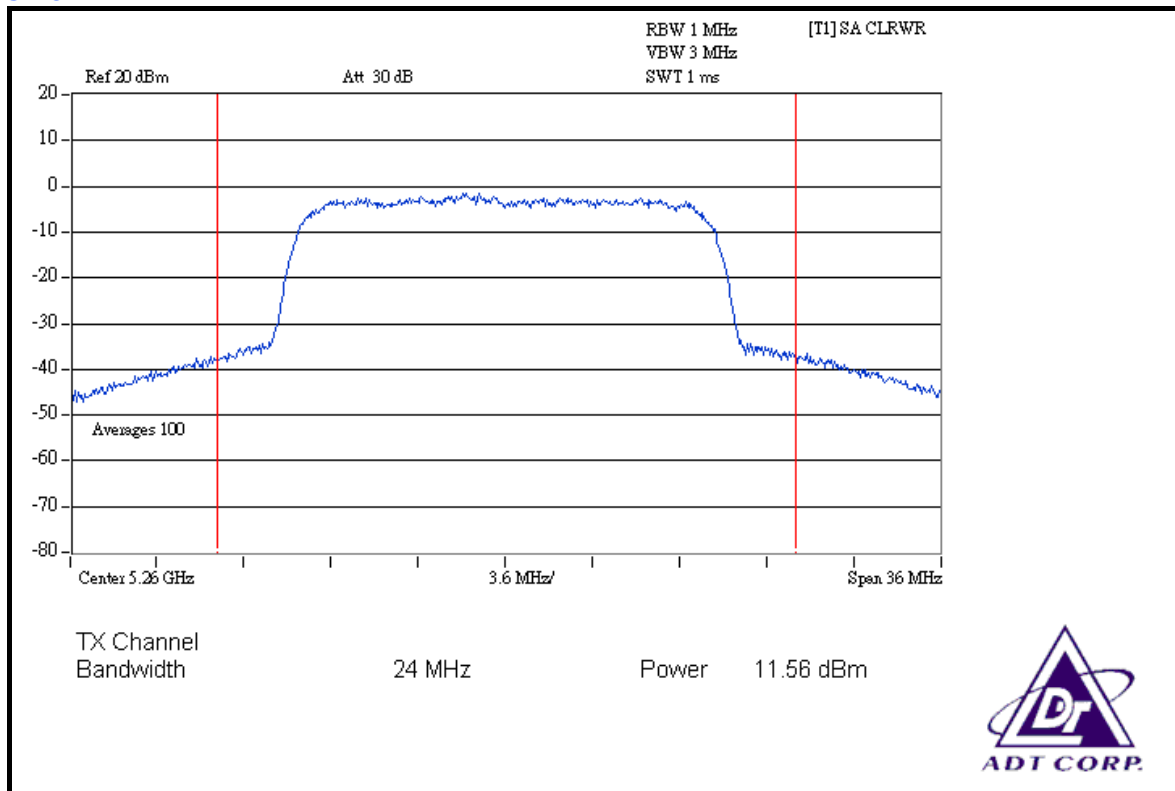
4.3.7 TEST RESULTS

PEAK POWER OUTPUT: 802.11a OFDM MODULATION

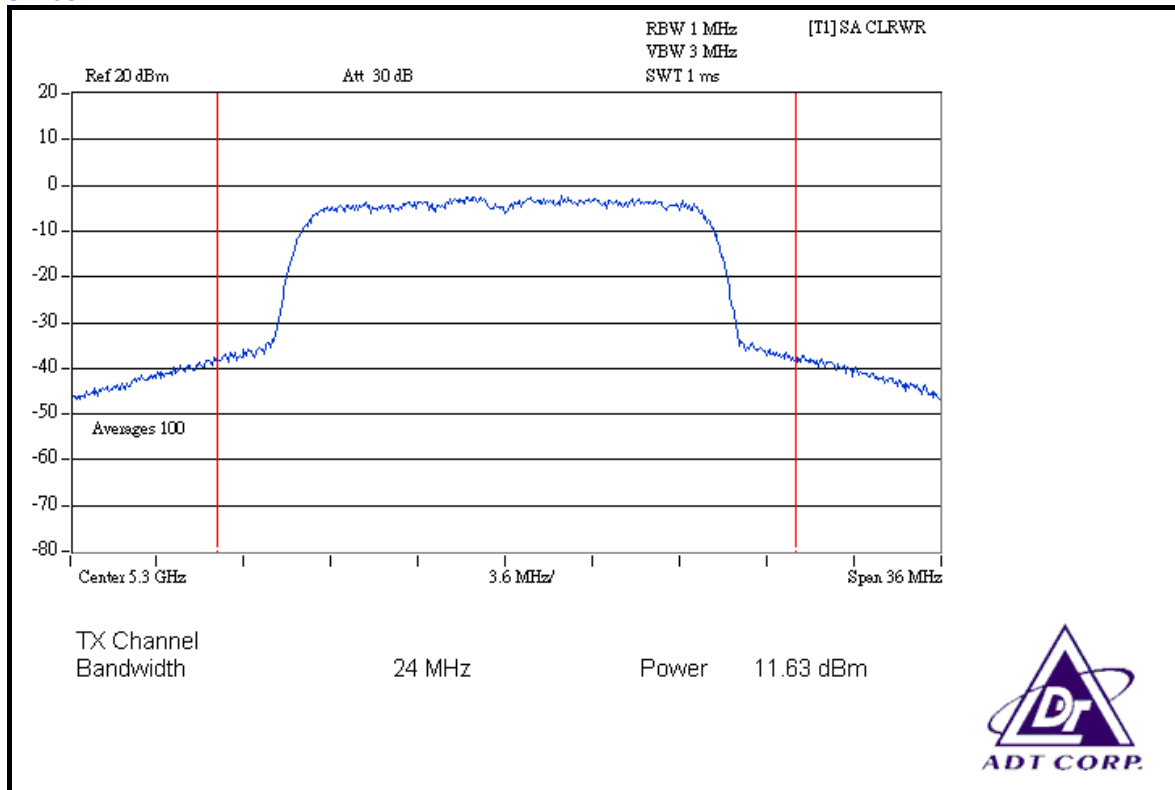
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Dean Wang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
52	5260	14.322	11.56	24.00	PASS
60	5300	14.555	11.63	24.00	PASS
64	5320	14.388	11.58	24.00	PASS
100	5500	14.223	11.53	24.00	PASS
120	5600	14.388	11.58	24.00	PASS
140	5700	14.454	11.60	24.00	PASS

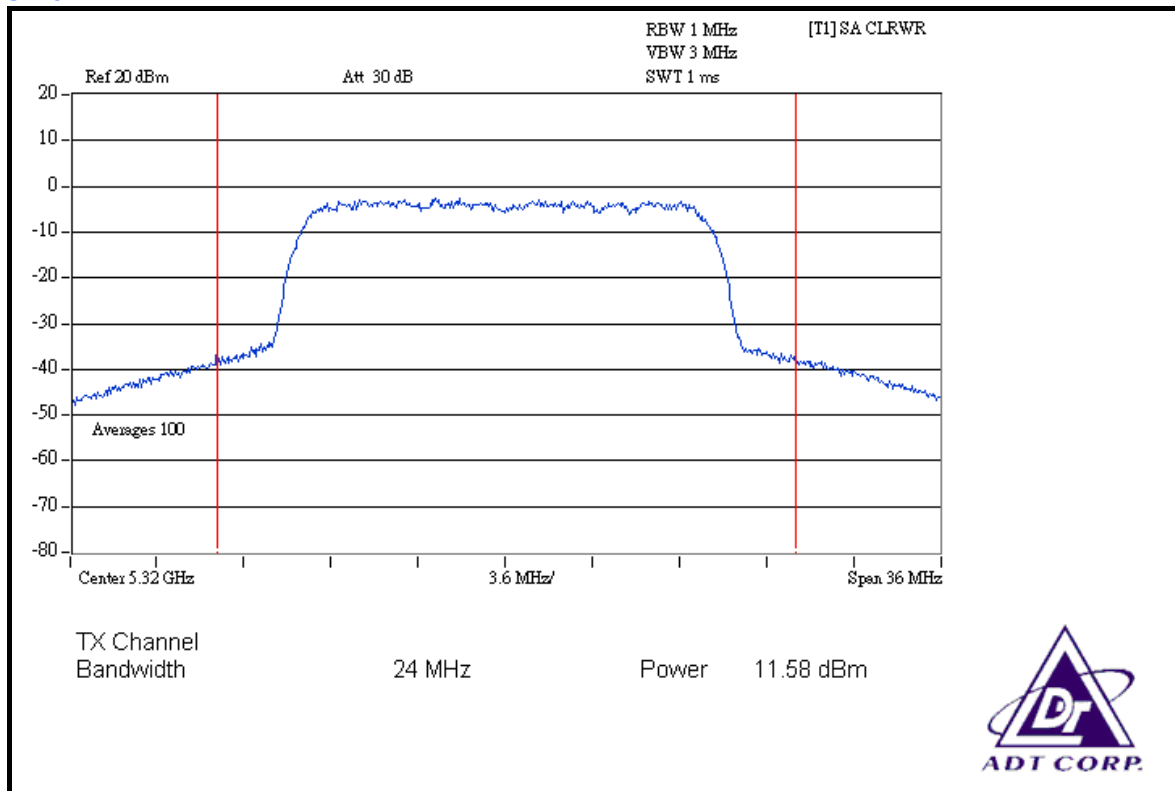
CH 52



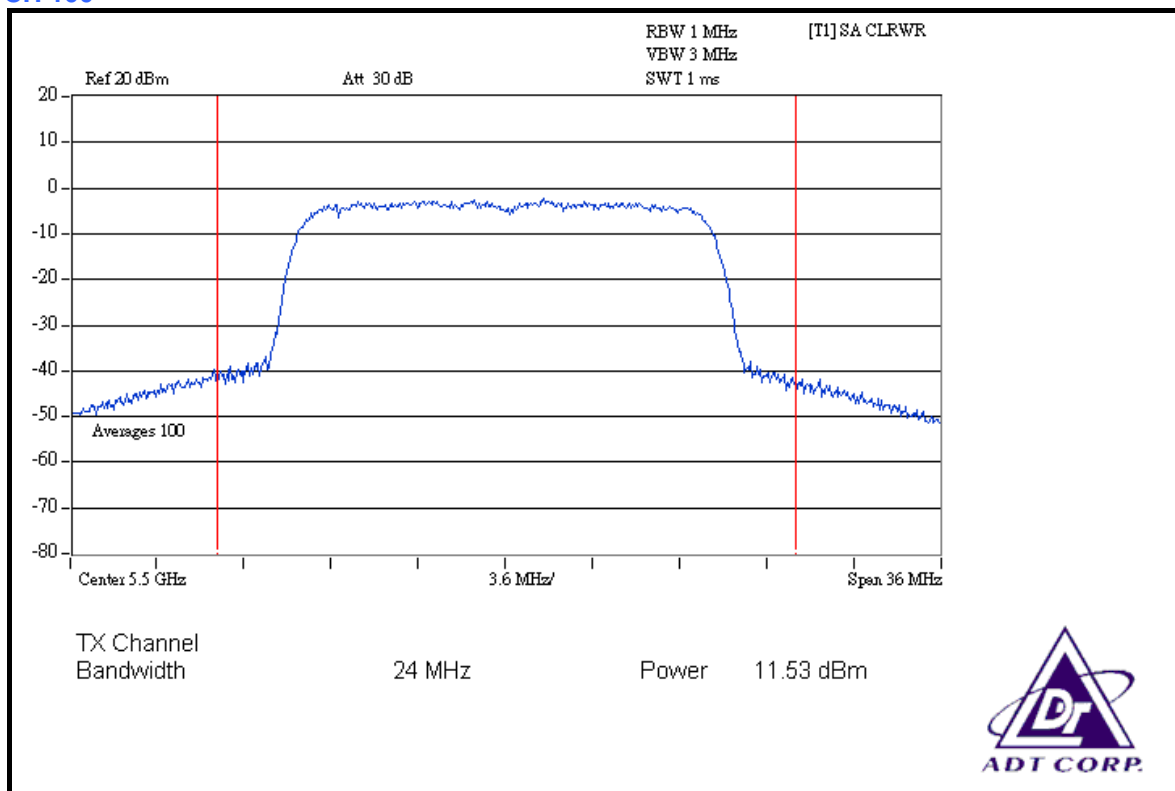
CH 60



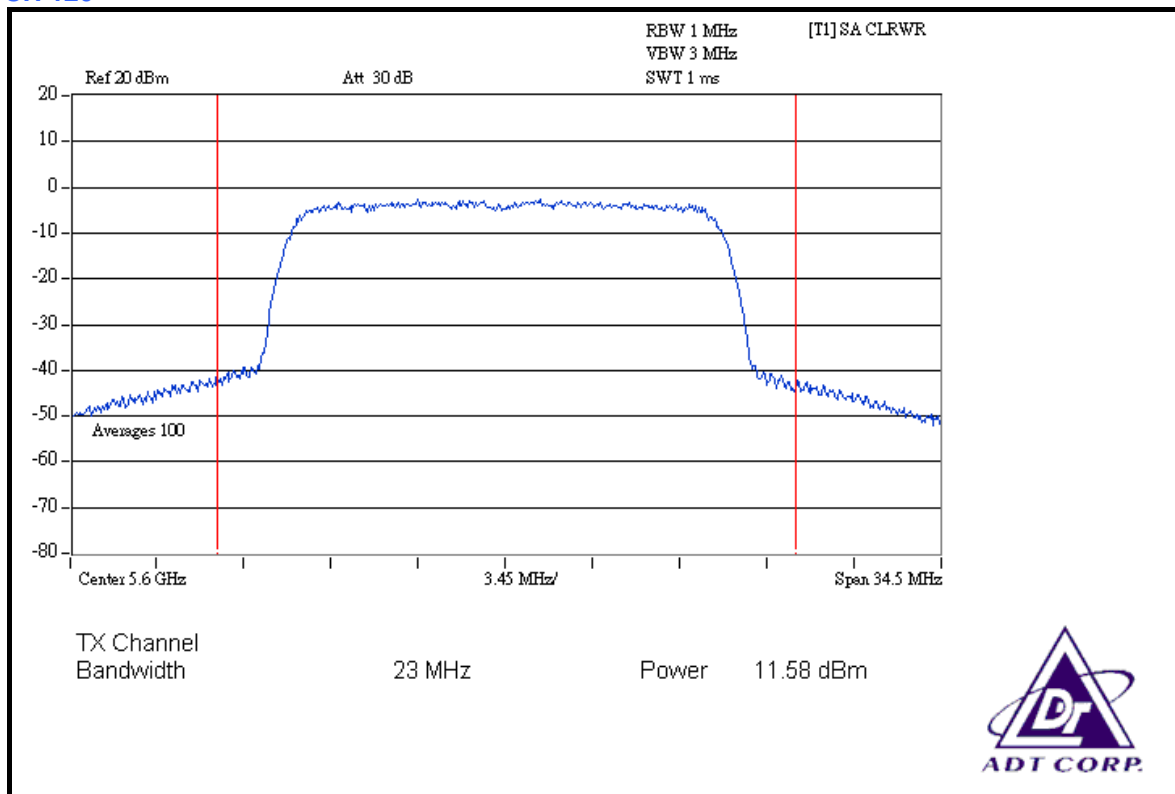
CH 64



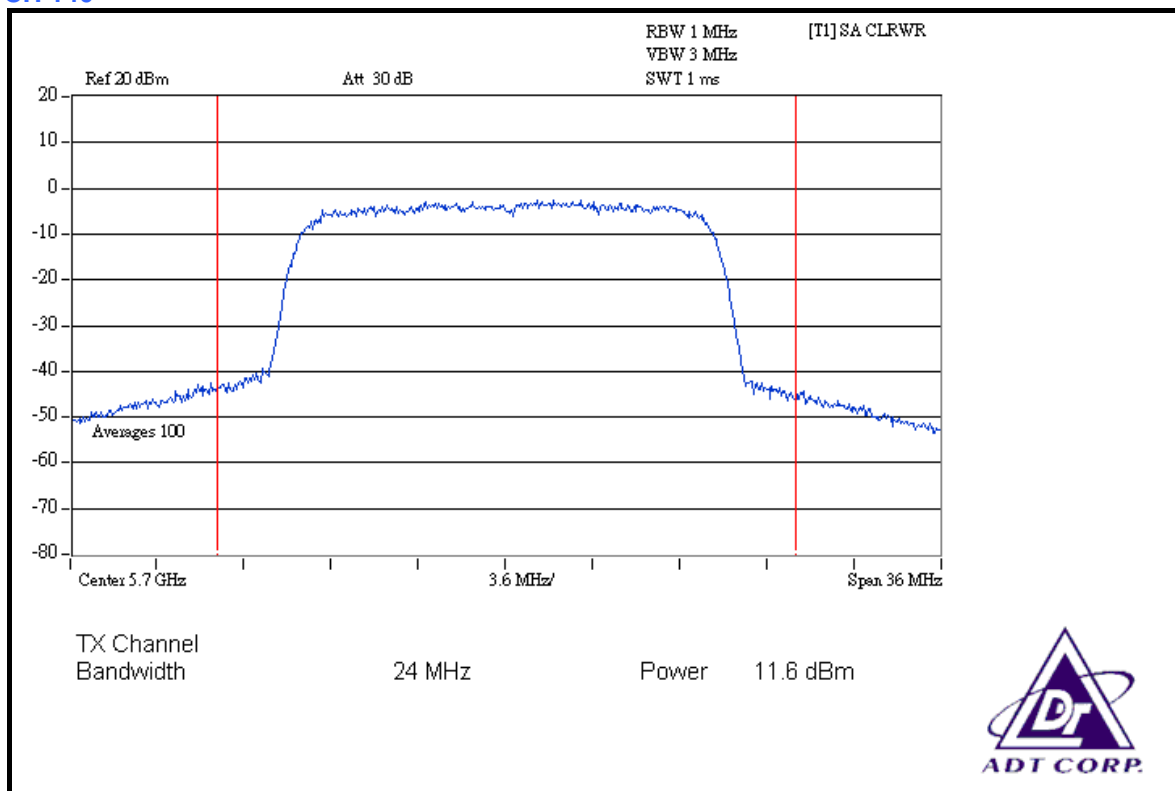
CH 100



CH 120



CH 140





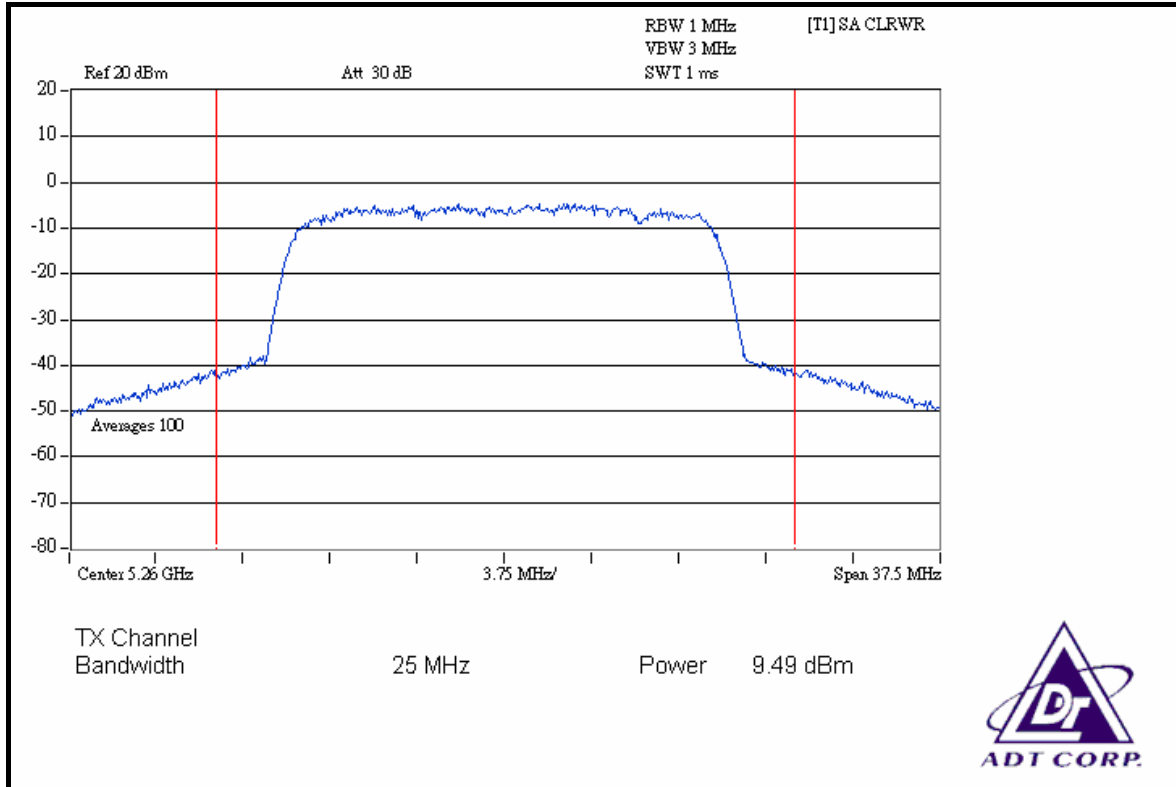
DRAFT 802.11n (20MHz) OFDM MODULATION

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

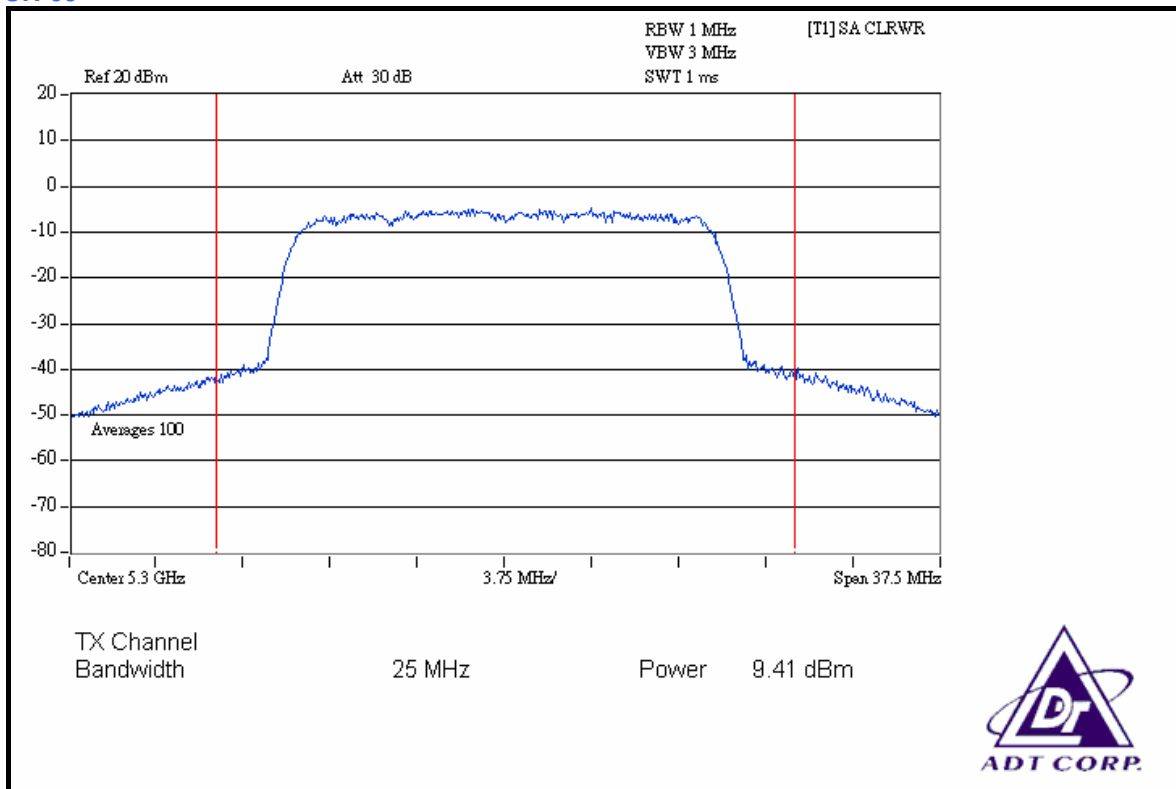
CHAN.	CHAN. FREQ. (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
52	5260	9.49	8.34	15.715	11.96	24	PASS
60	5300	9.41	8.33	15.537	11.91	24	PASS
64	5320	9.48	8.27	15.586	11.93	24	PASS
100	5500	9.44	8.19	15.382	11.87	24	PASS
120	5600	9.34	8.42	15.540	11.91	24	PASS
140	5700	9.37	8.43	15.616	11.94	24	PASS



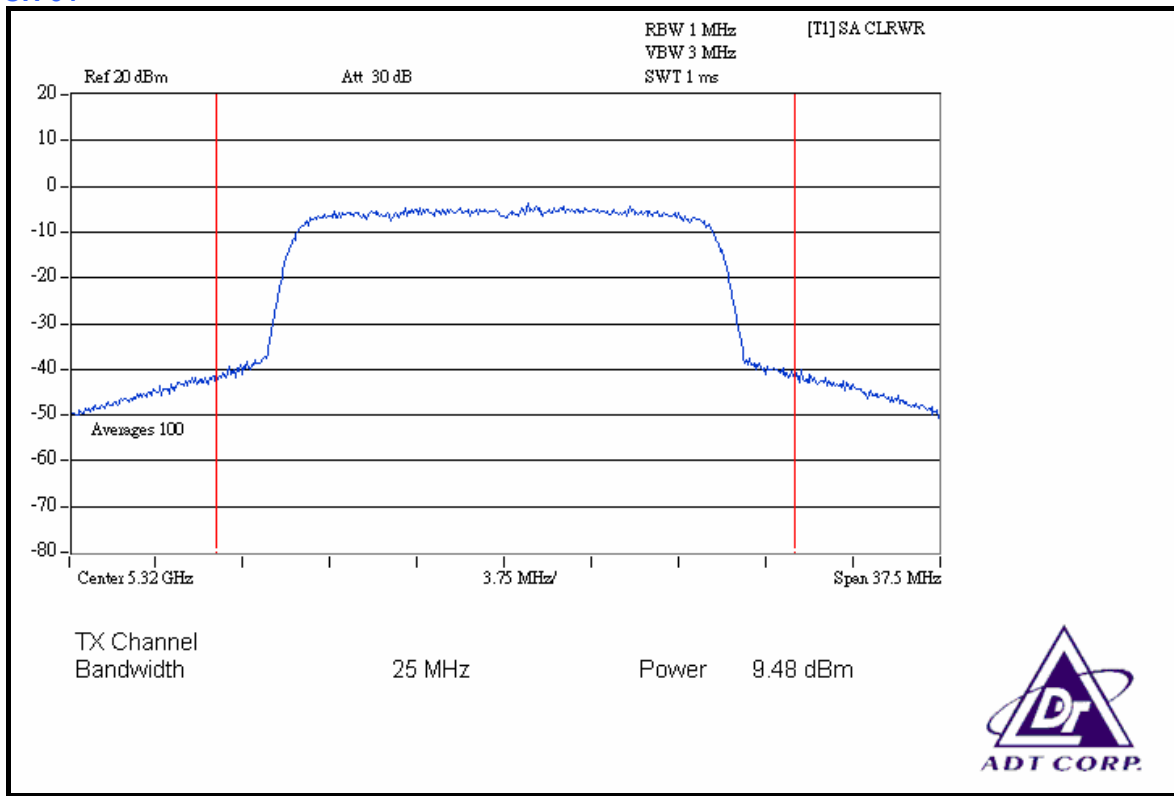
CHAIN 0: CH 52



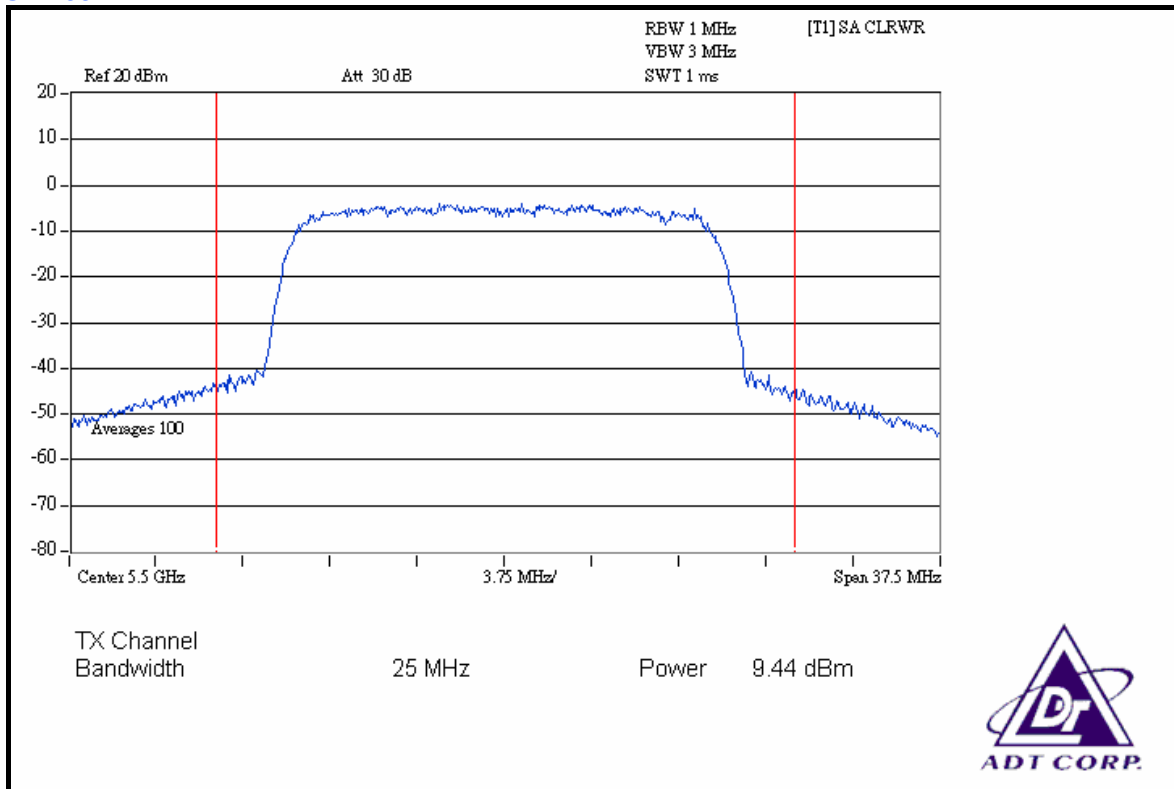
CH 60



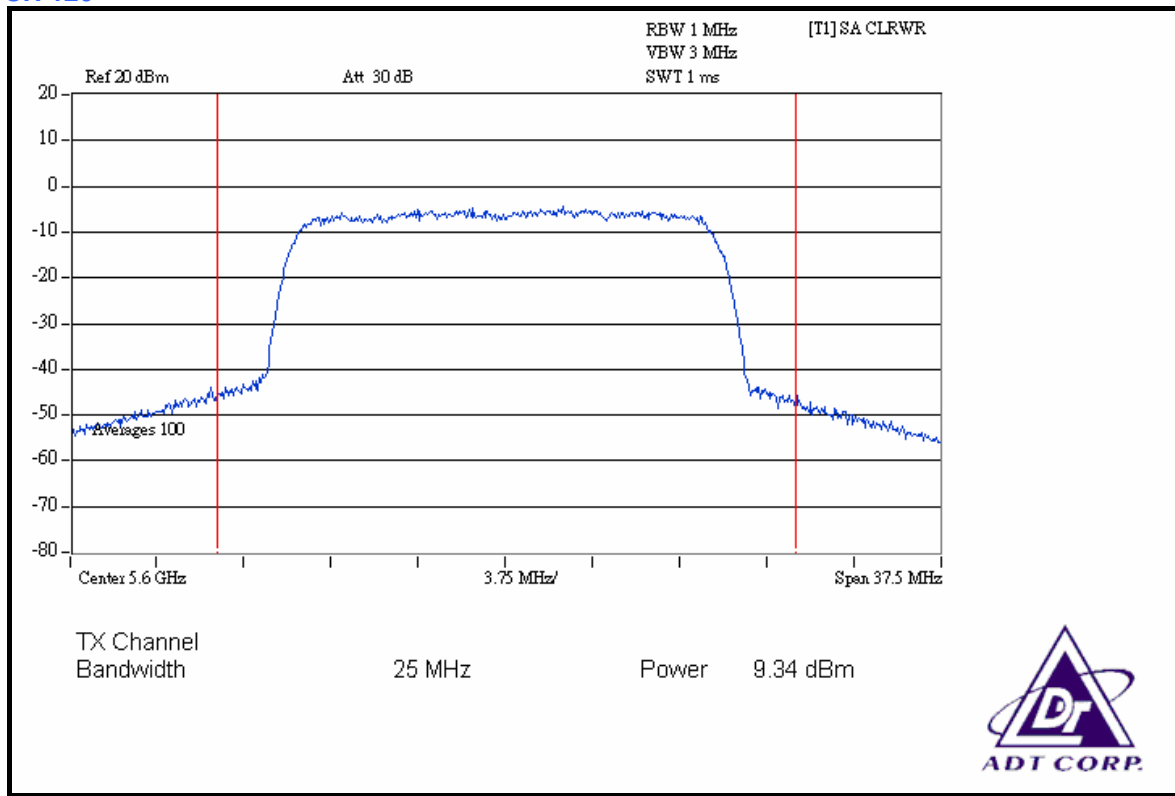
CH 64



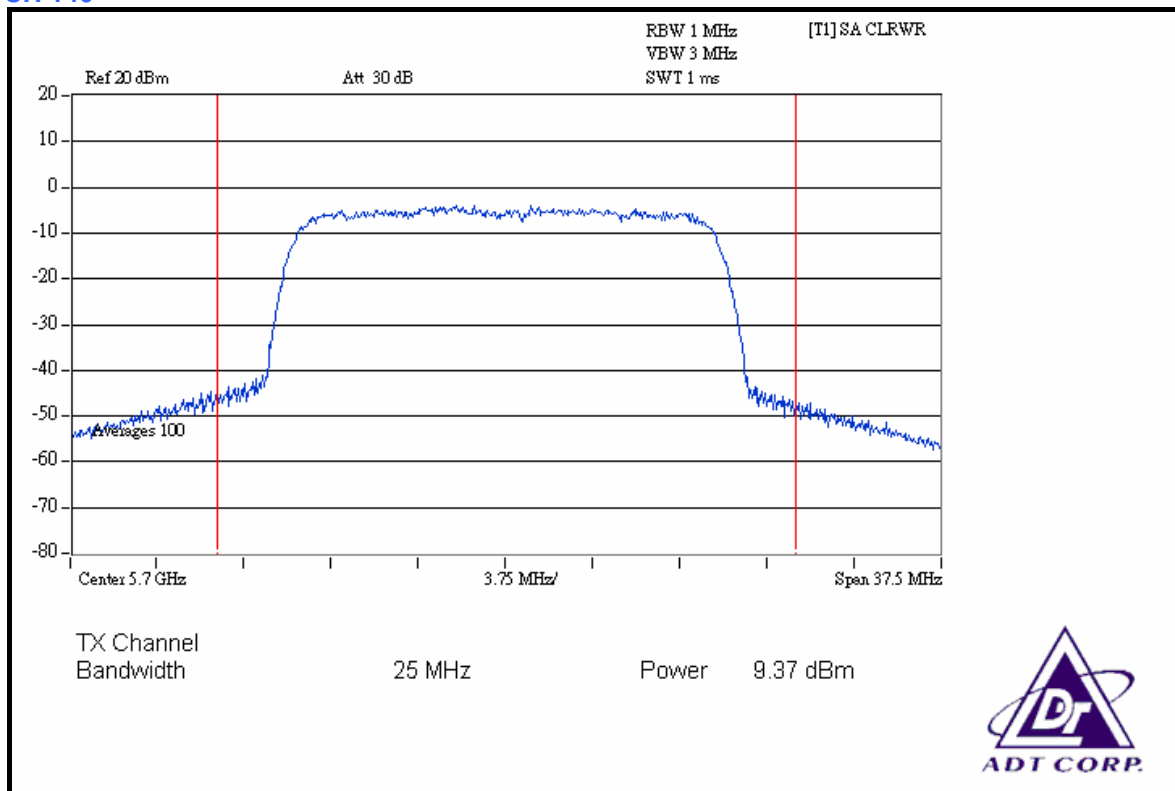
CH 100



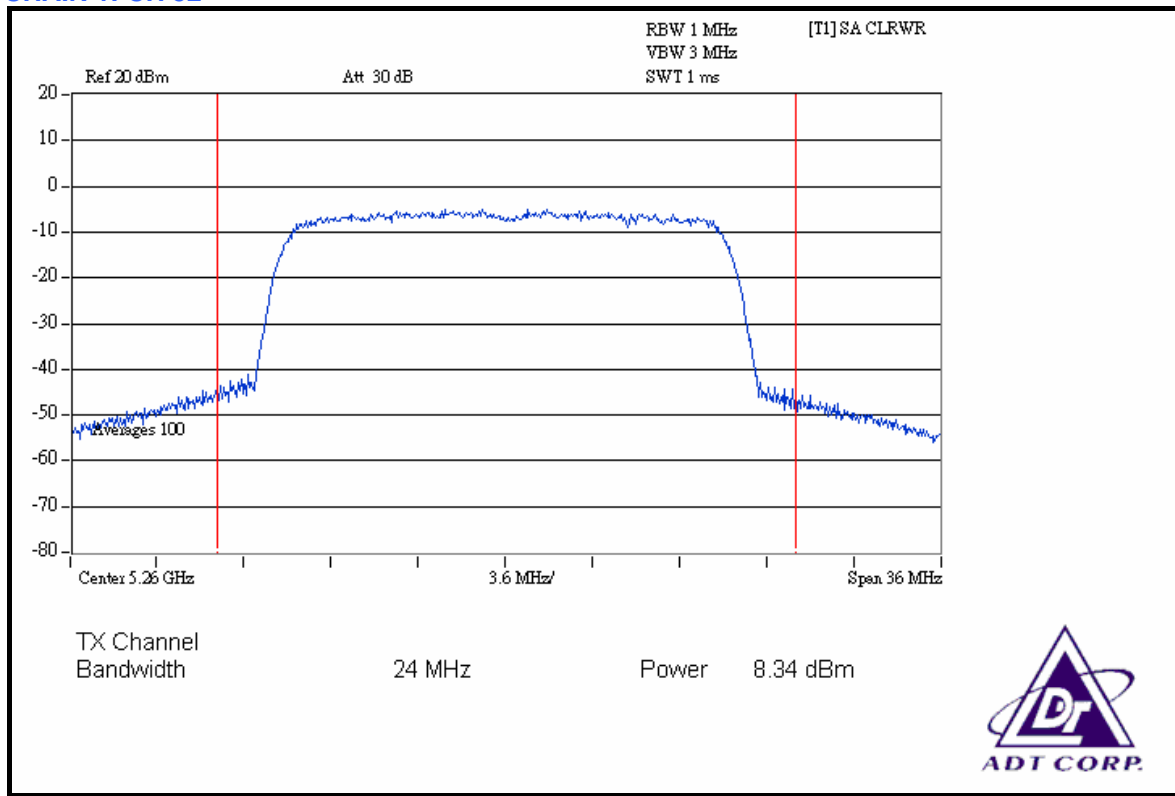
CH 120



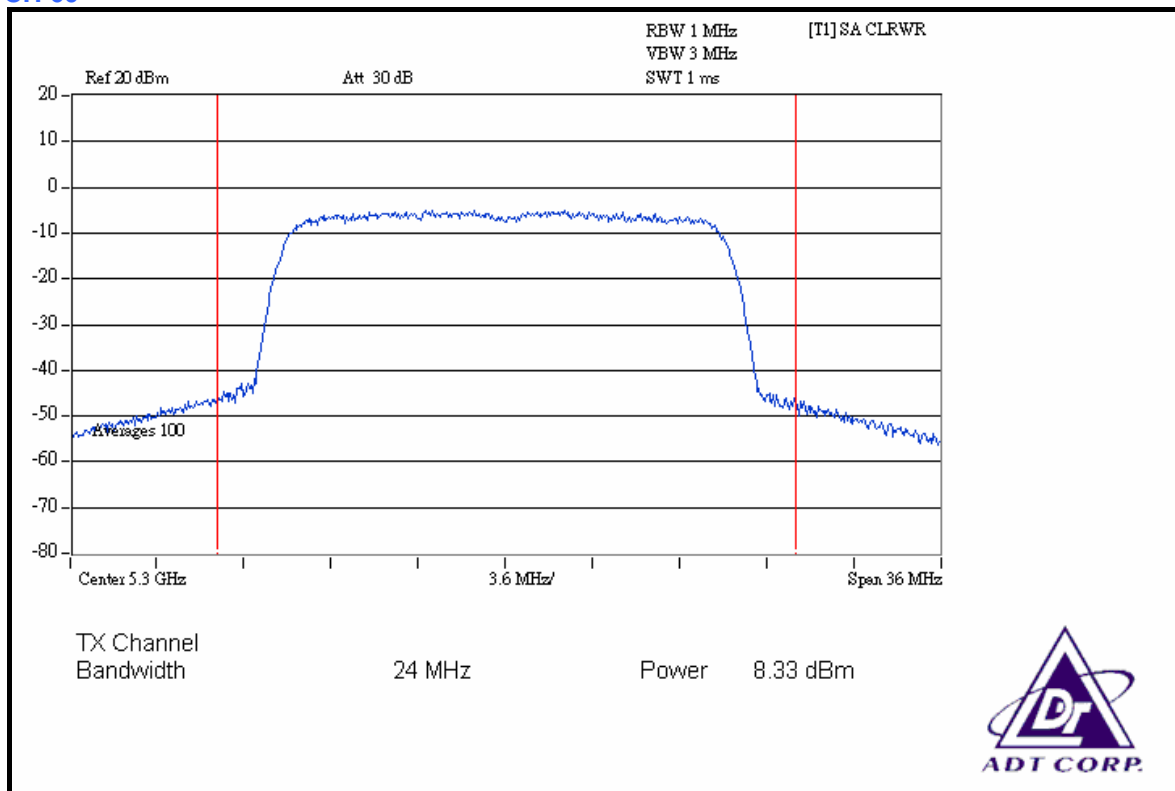
CH 140



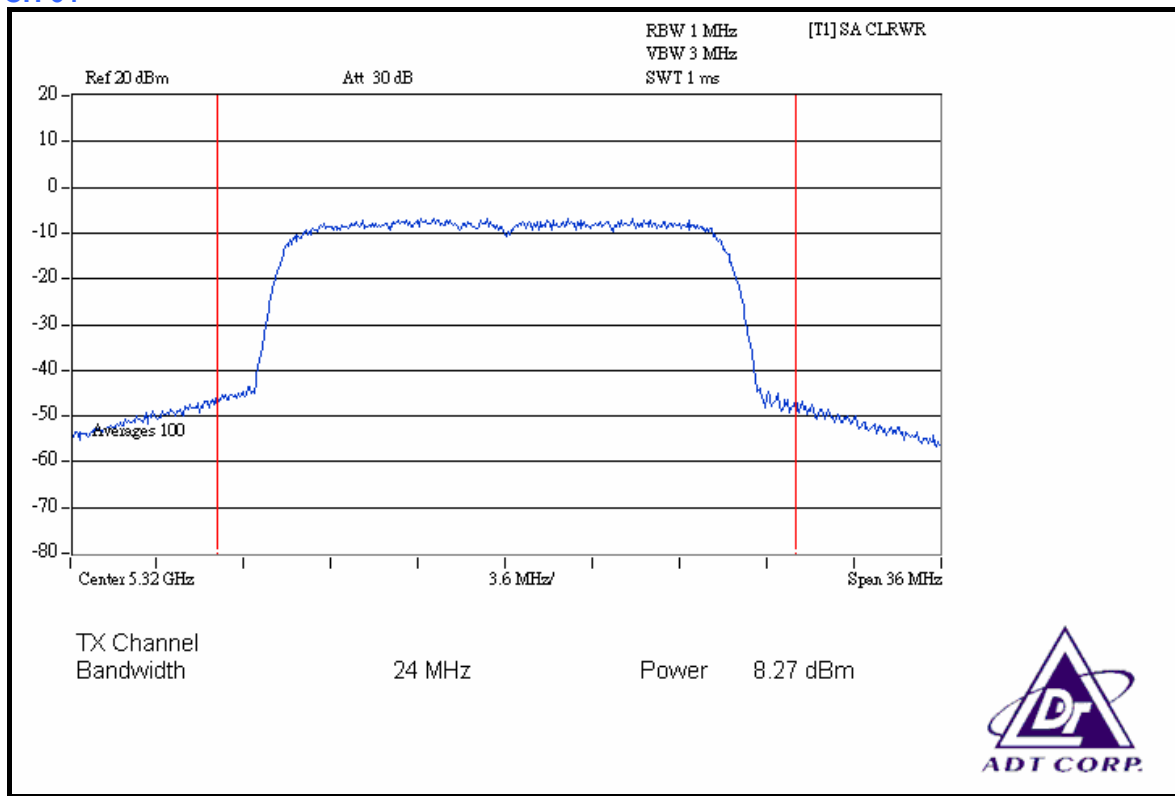
CHAIN 1: CH 52



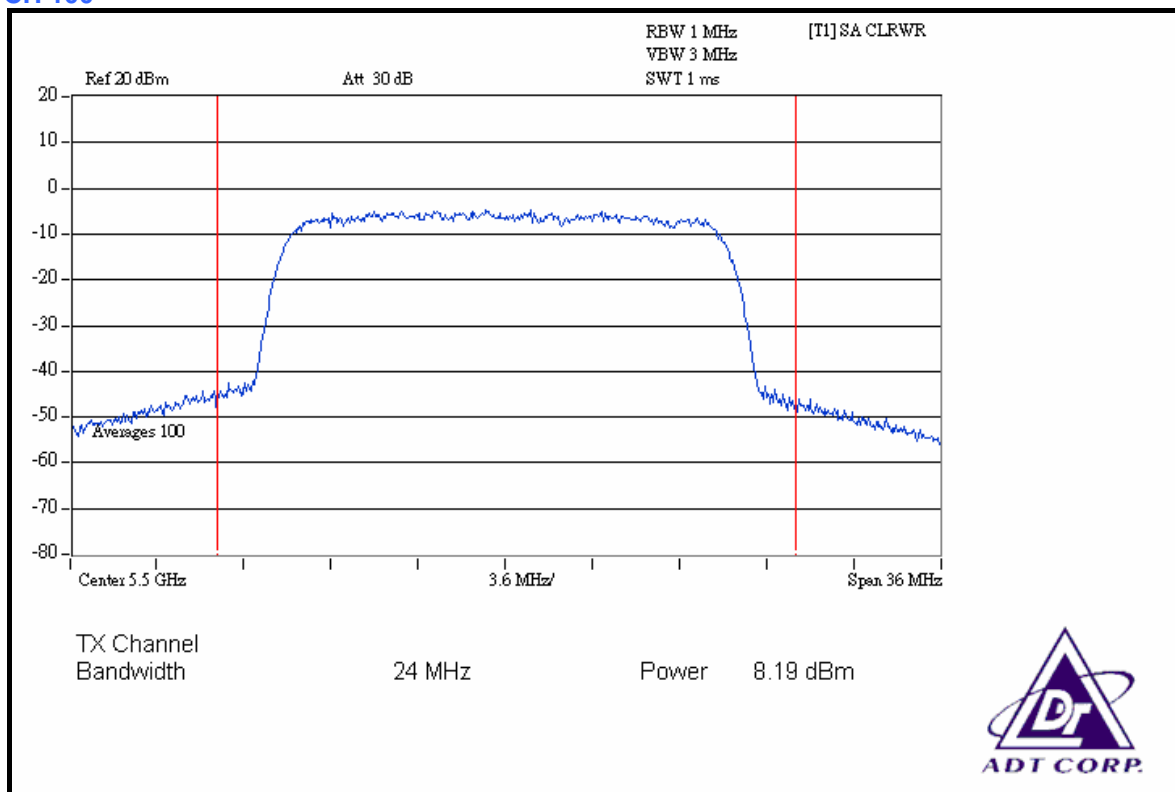
CH 60



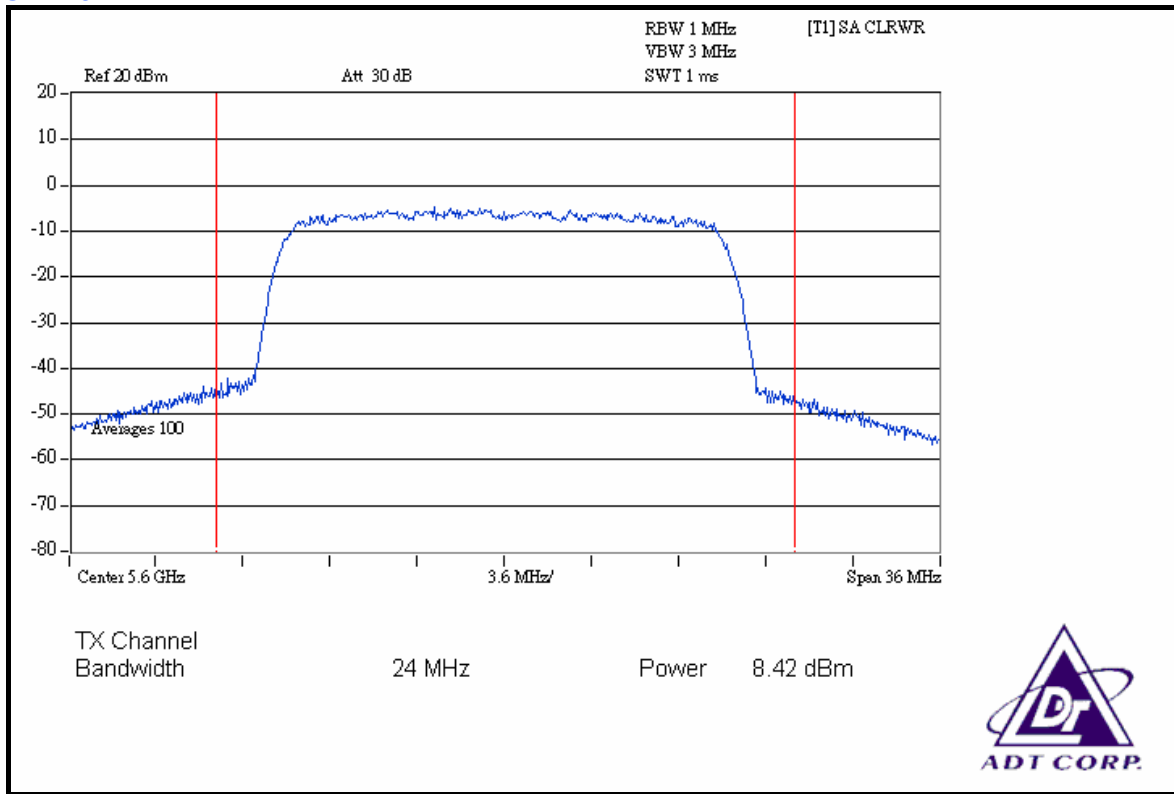
CH 64



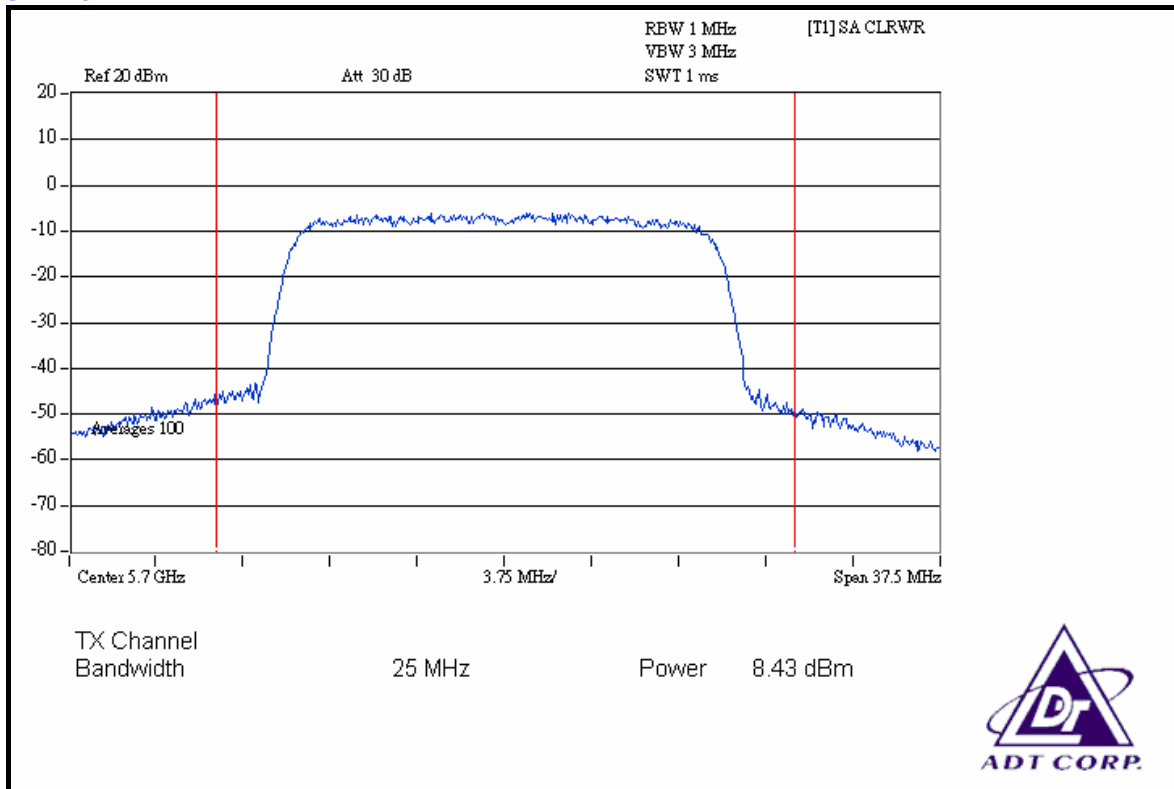
CH 100



CH 120



CH 140



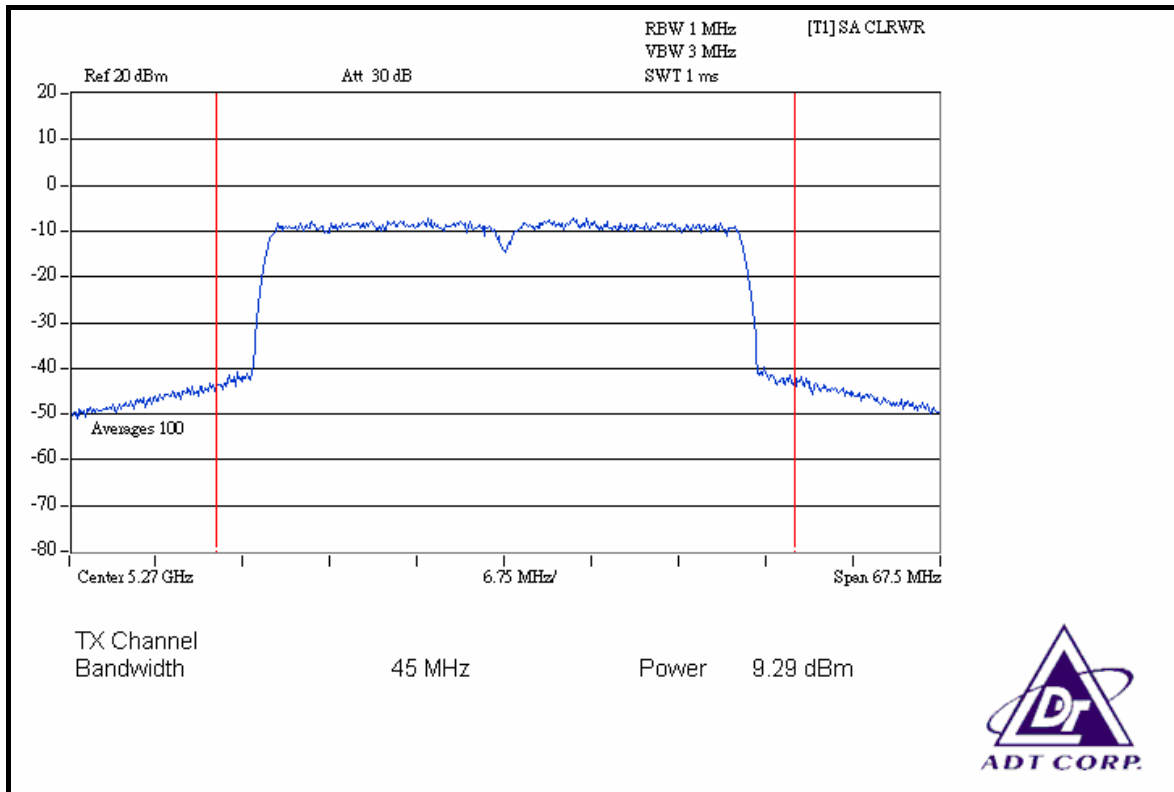


DRAFT 802.11n (40MHz) OFDM MODULATION

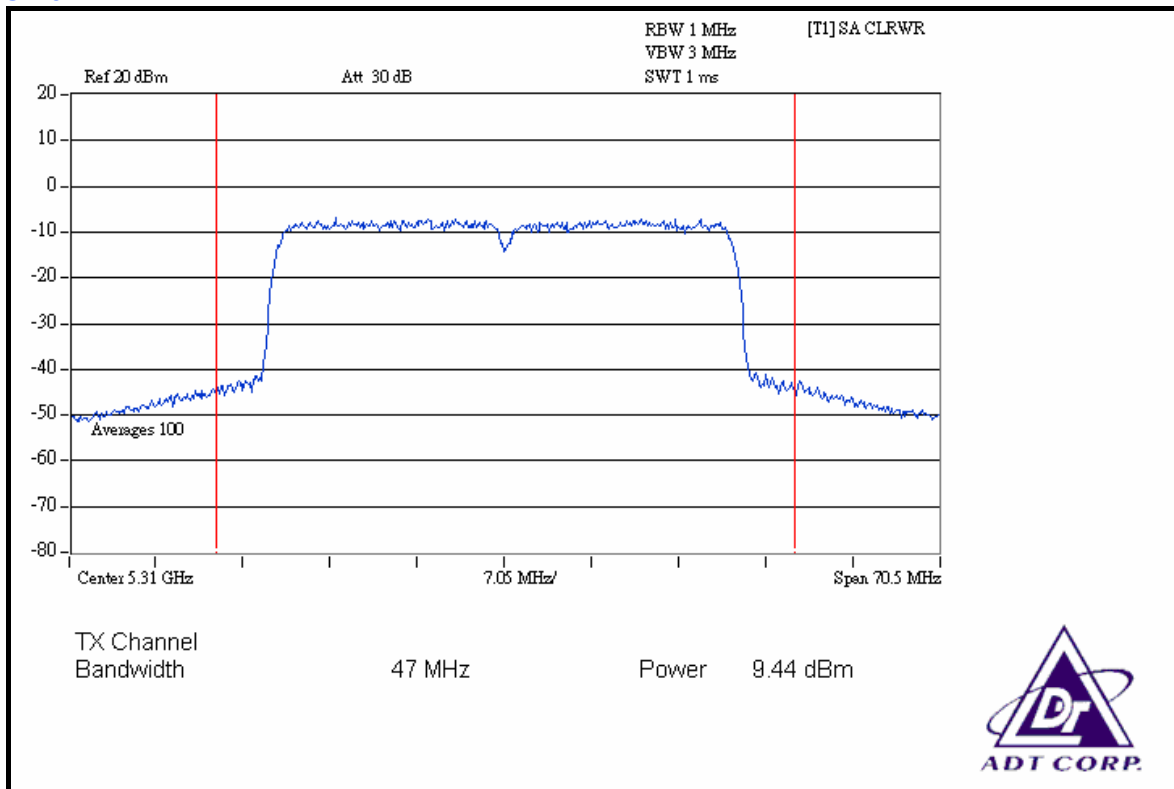
MODULATION TYPE	BPSK	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Dean Wang		

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				
54	5270	9.29	8.63	15.786	11.98	24	PASS
62	5310	9.44	8.36	15.645	11.94	24	PASS
102	5510	9.45	8.16	15.357	11.86	24	PASS
118	5590	9.48	8.49	15.935	12.02	24	PASS
134	5670	9.49	8.25	15.576	11.92	24	PASS

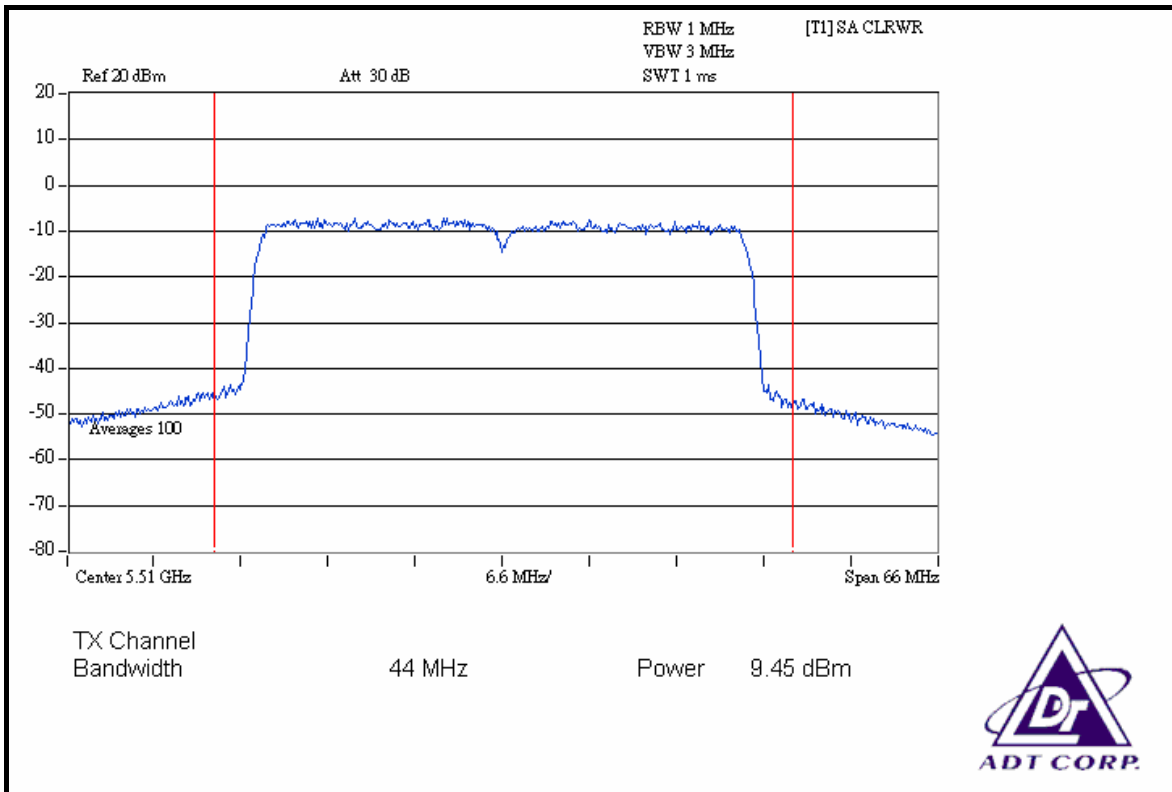
CHAIN 0: CH 54



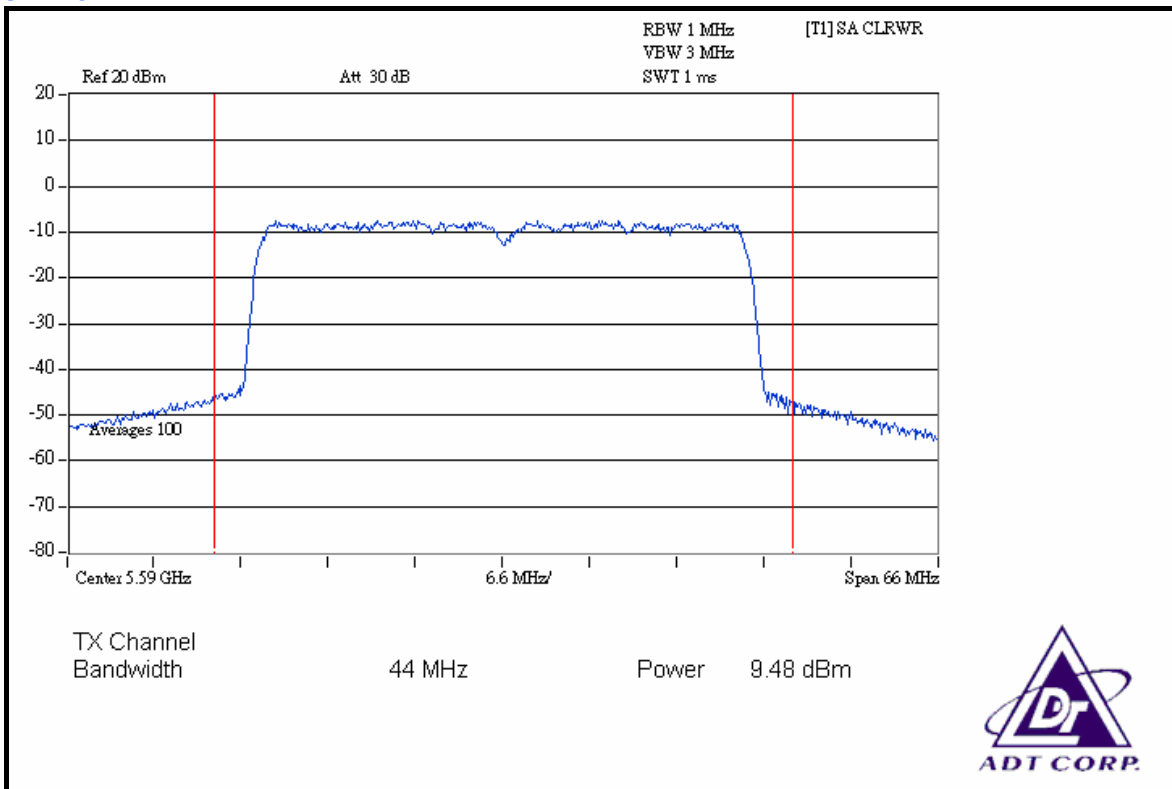
CH 62



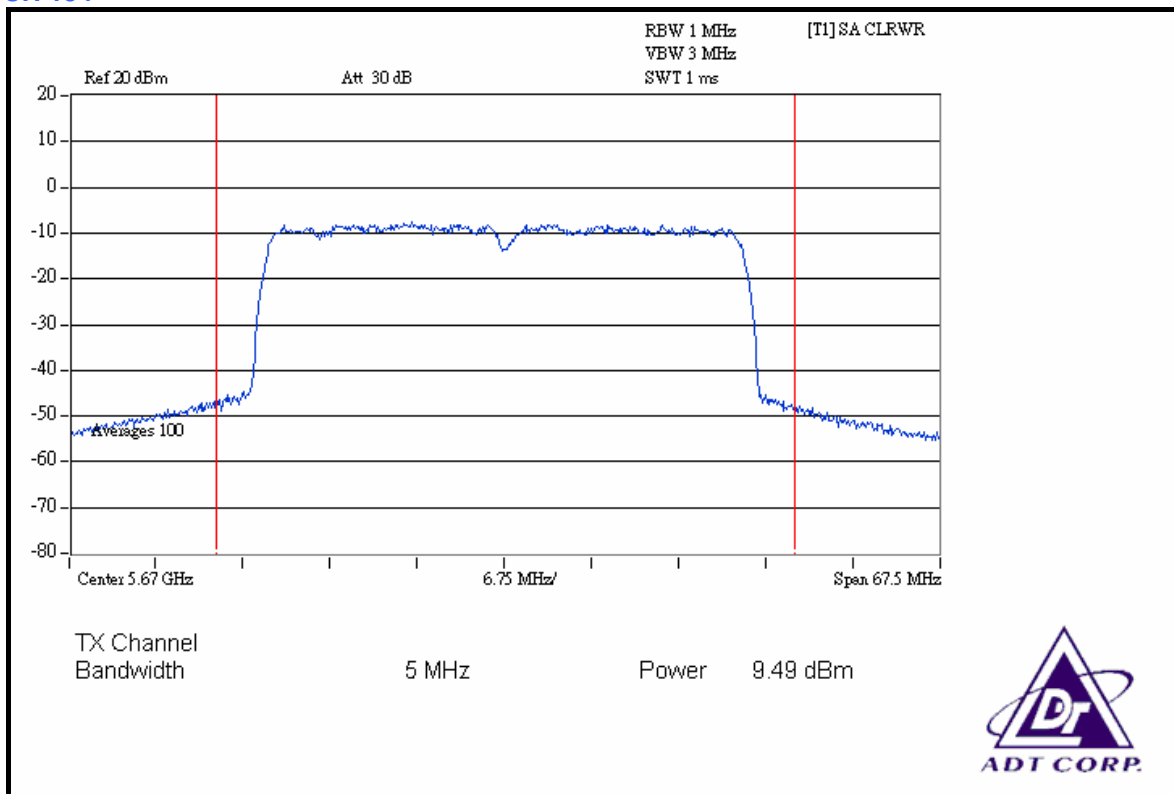
CH 102



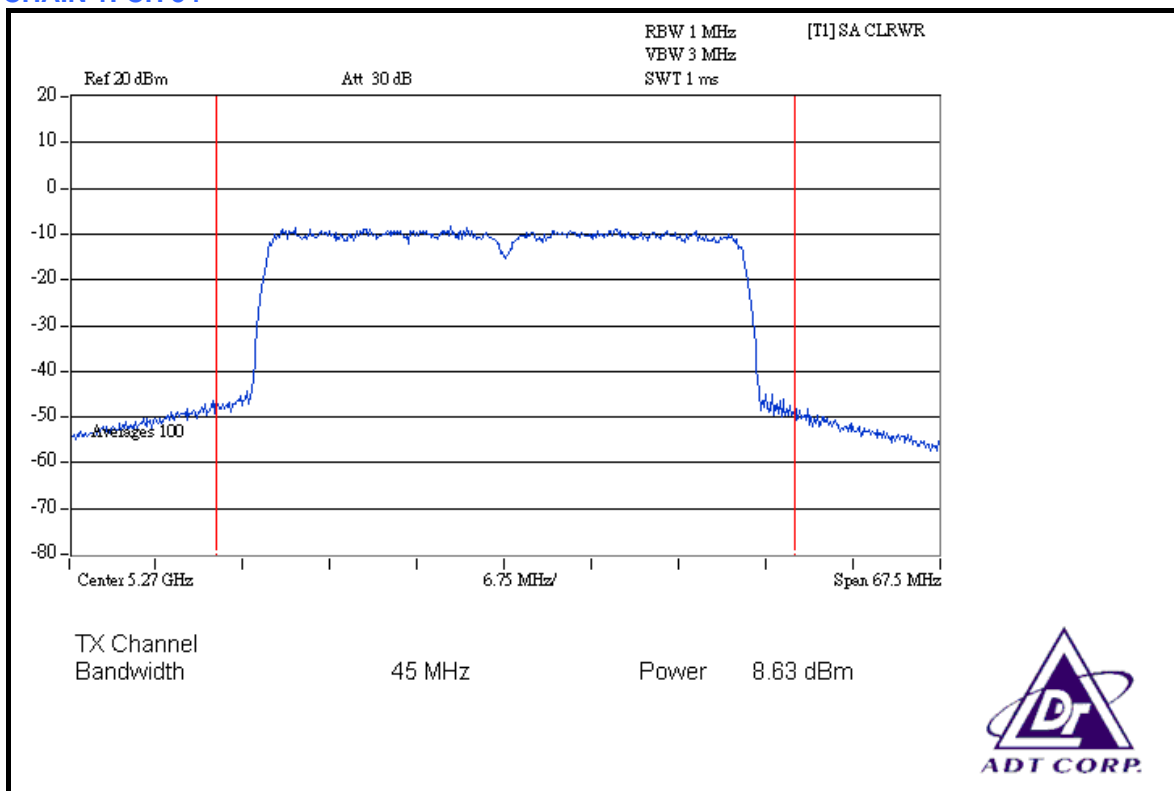
CH 118



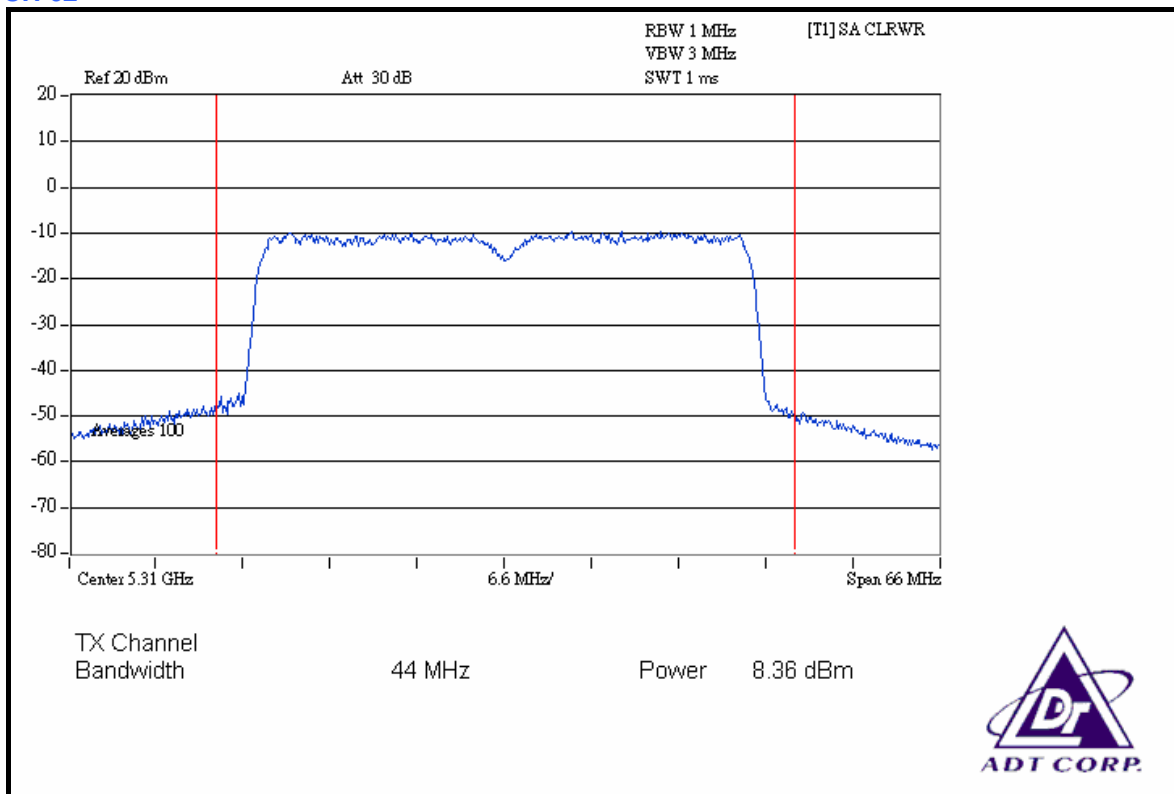
CH 134



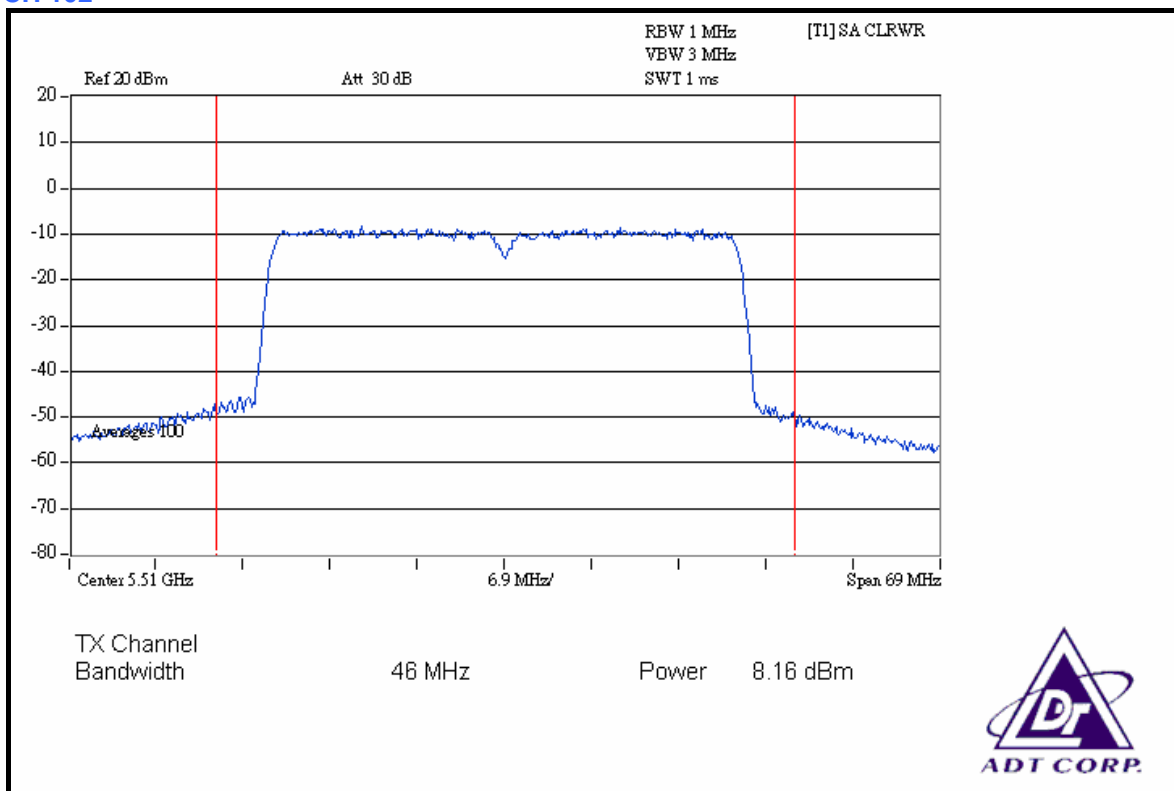
CHAIN 1: CH 54



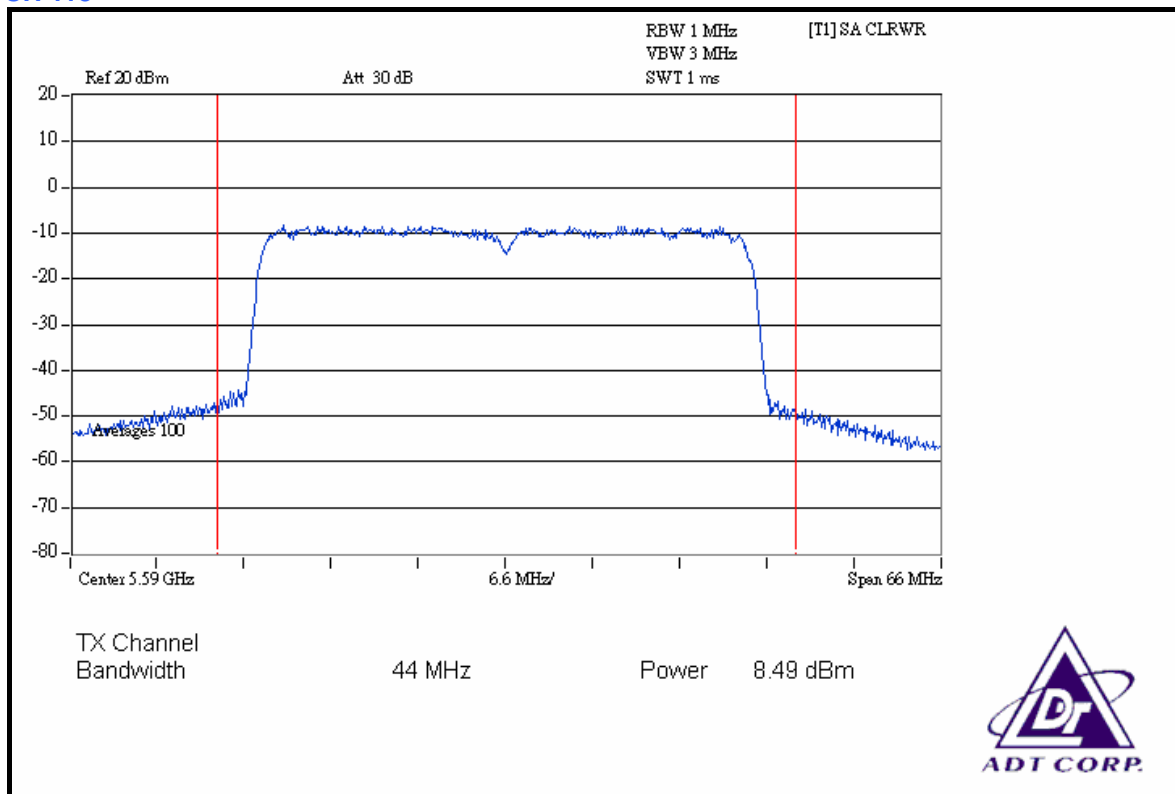
CH 62



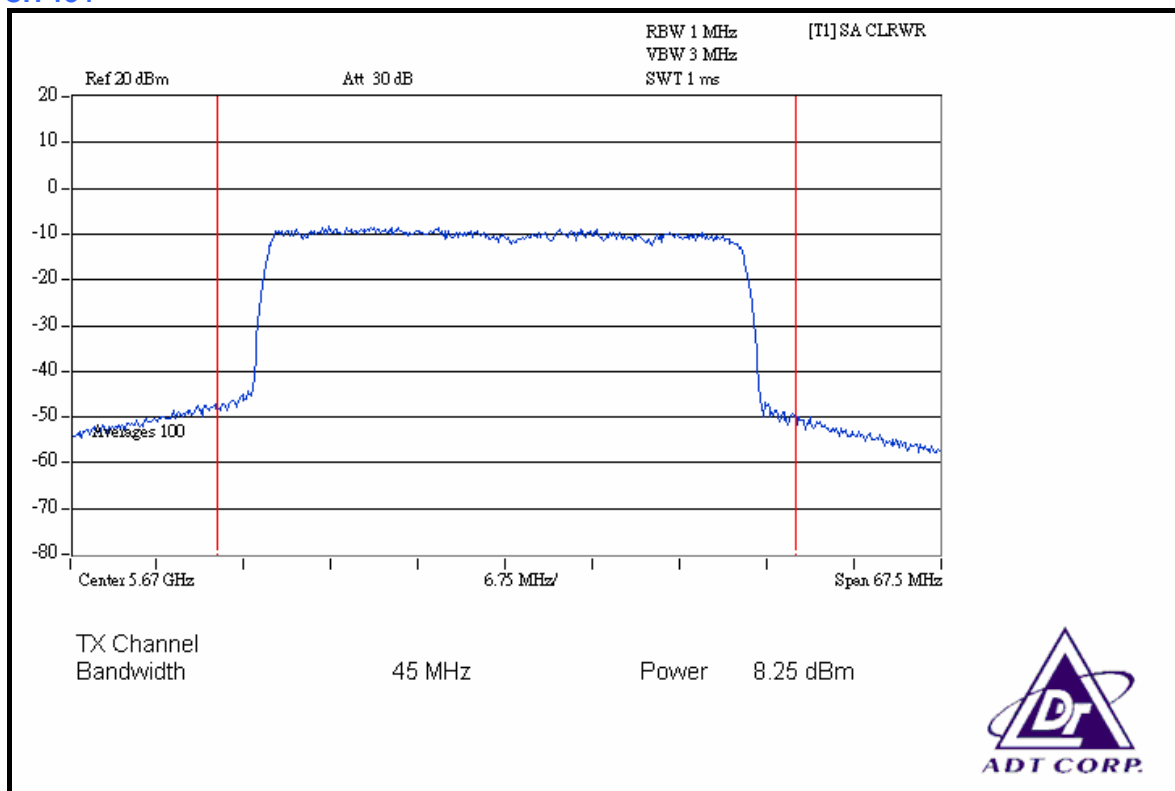
CH 102



CH 118



CH 134



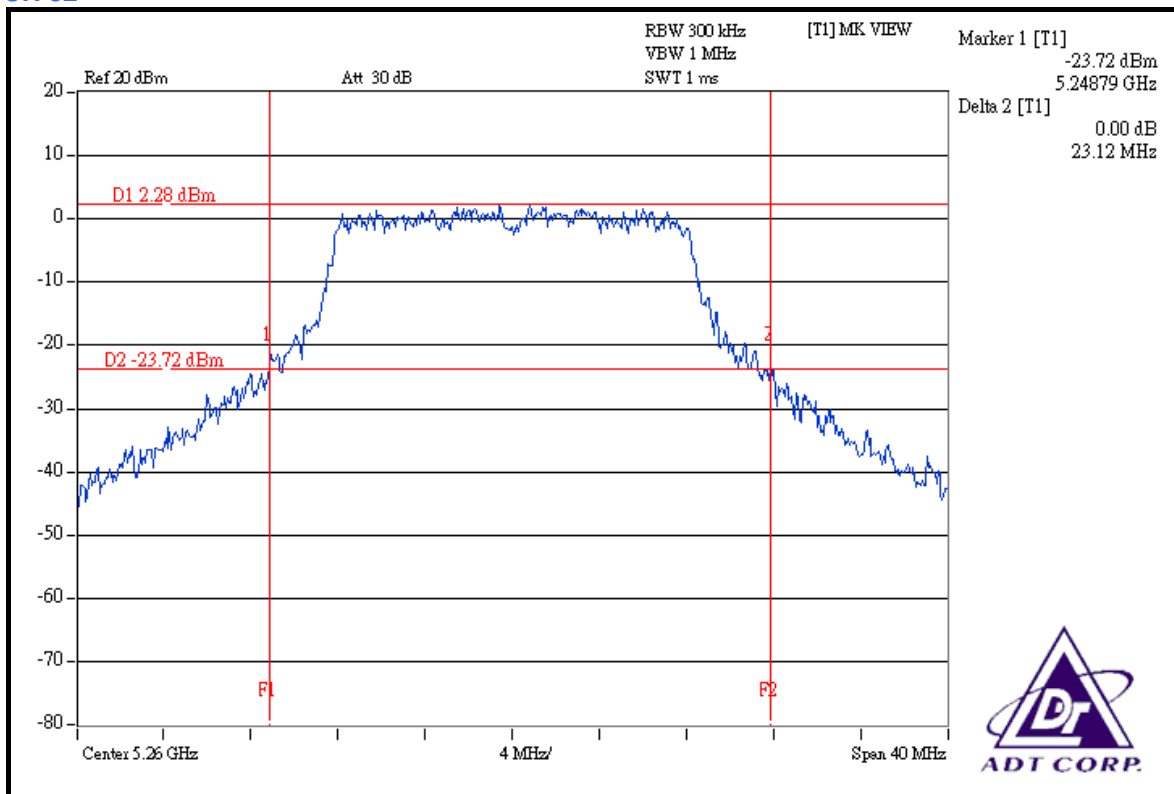


26dB OCCUPIED BANDWIDTH: 802.11a OFDM MODULATION

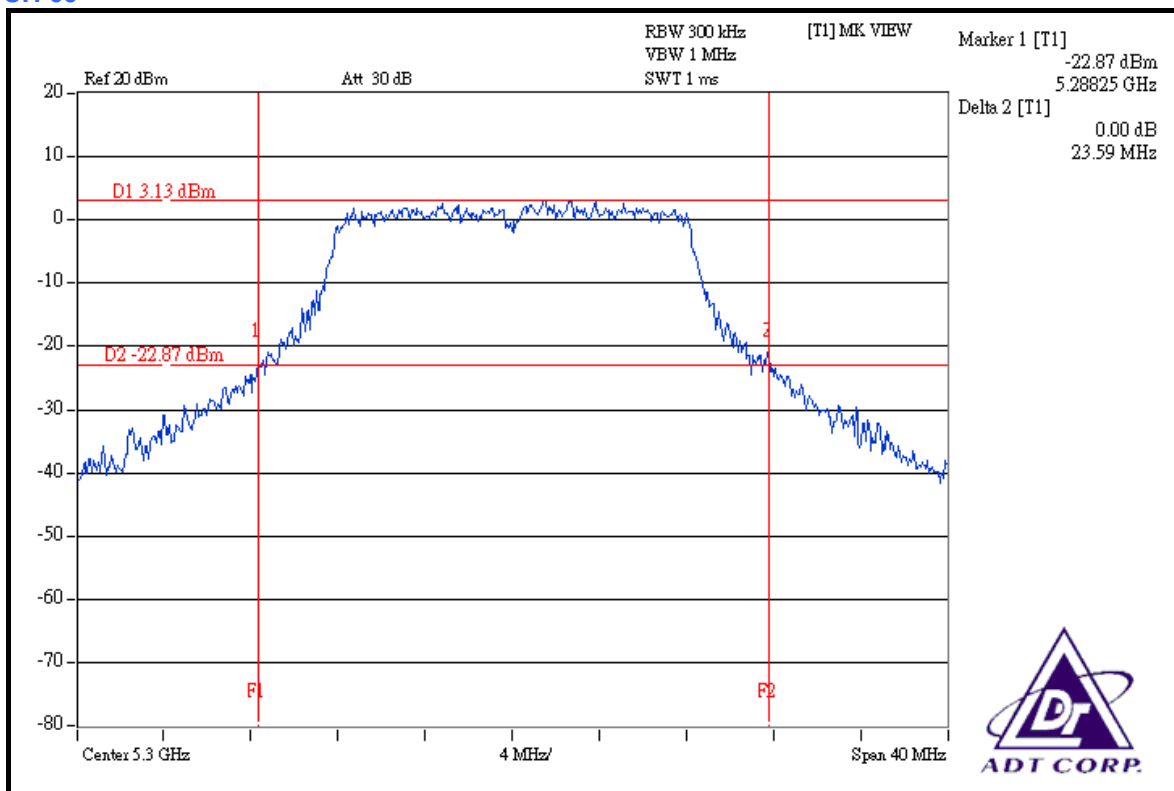
MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Dean Wang		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)	PASS / FAIL
52	5260	23.12	PASS
60	5300	23.59	PASS
64	5320	23.35	PASS
100	5500	23.64	PASS
120	5600	22.77	PASS
140	5700	23.67	PASS

CH 52

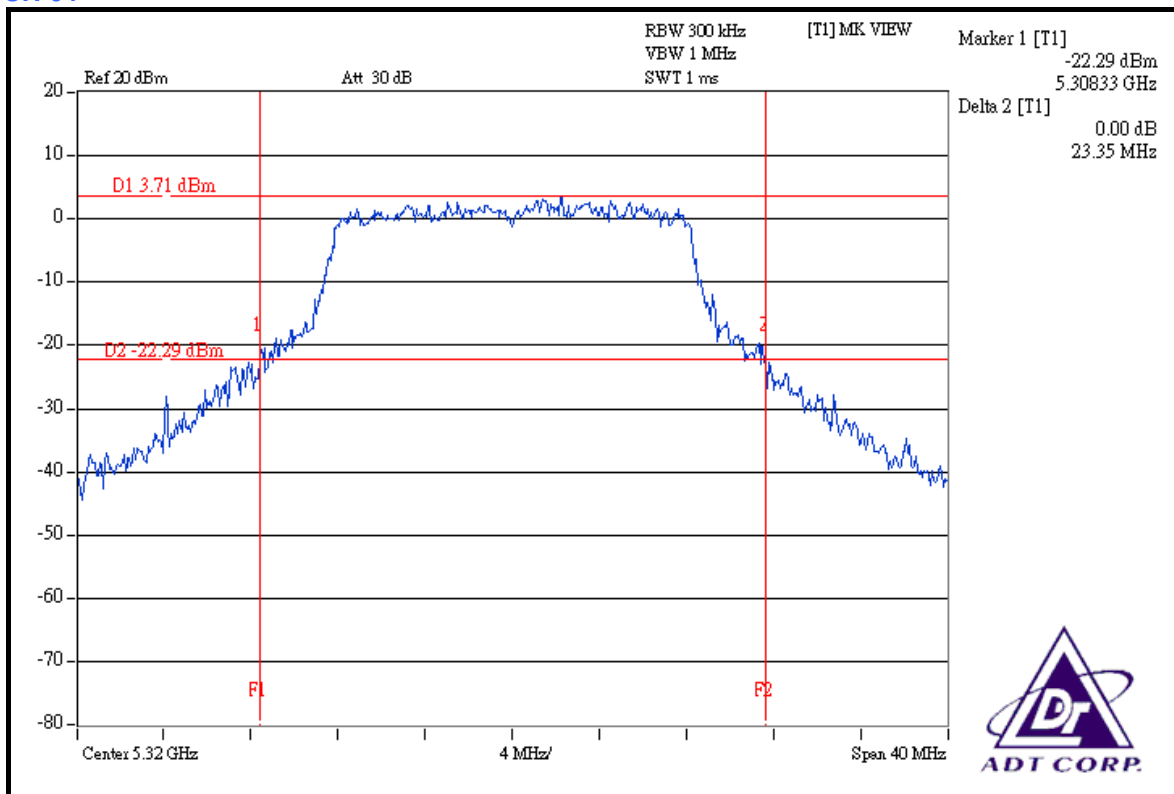


CH 60

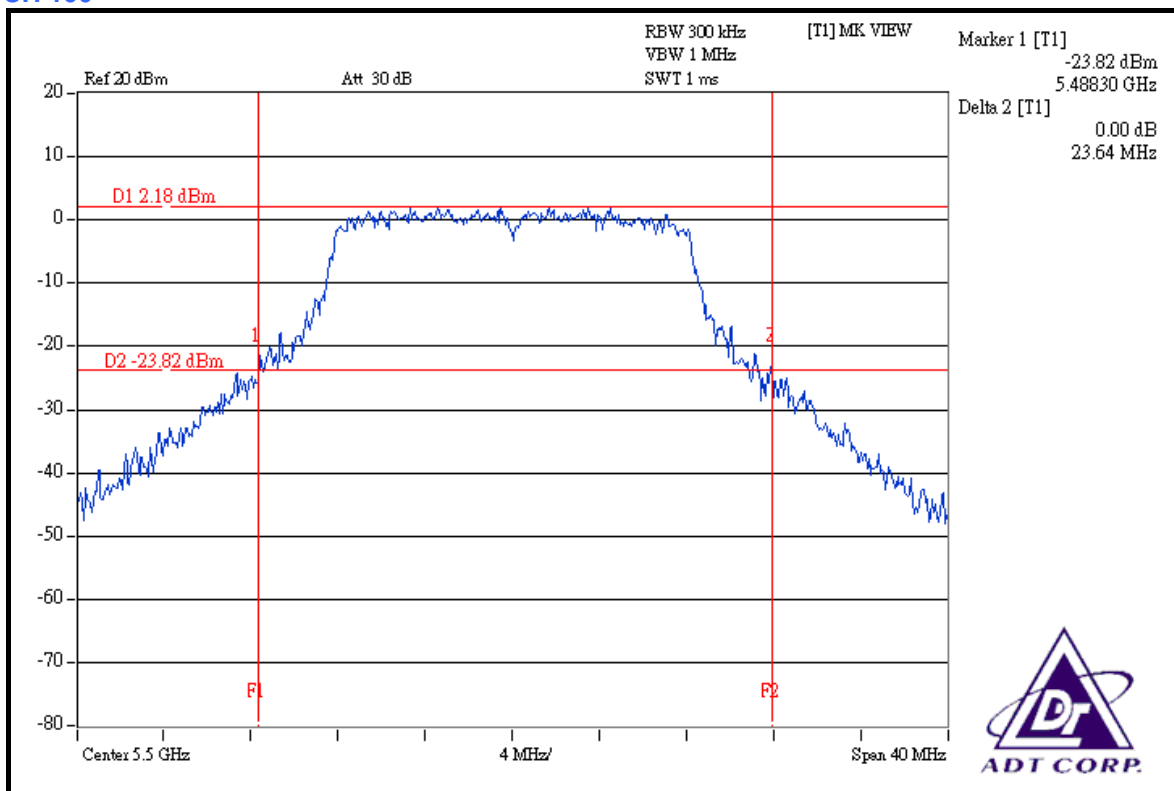




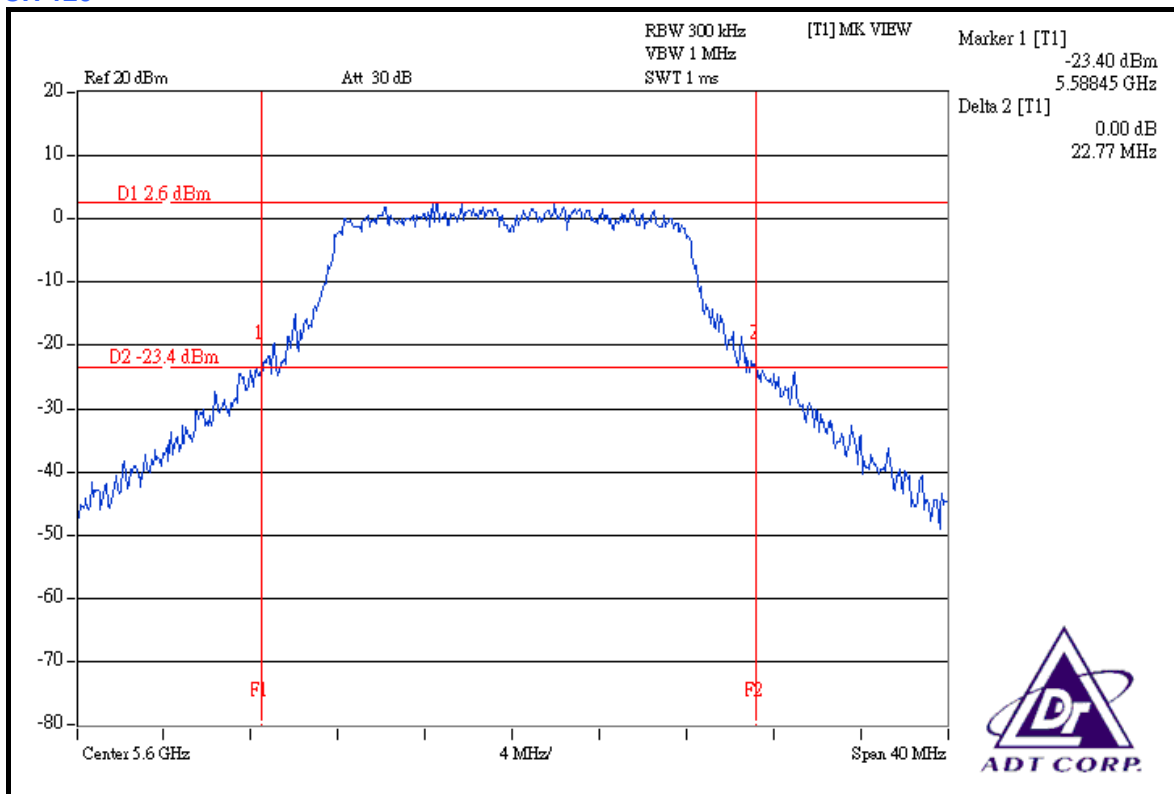
CH 64



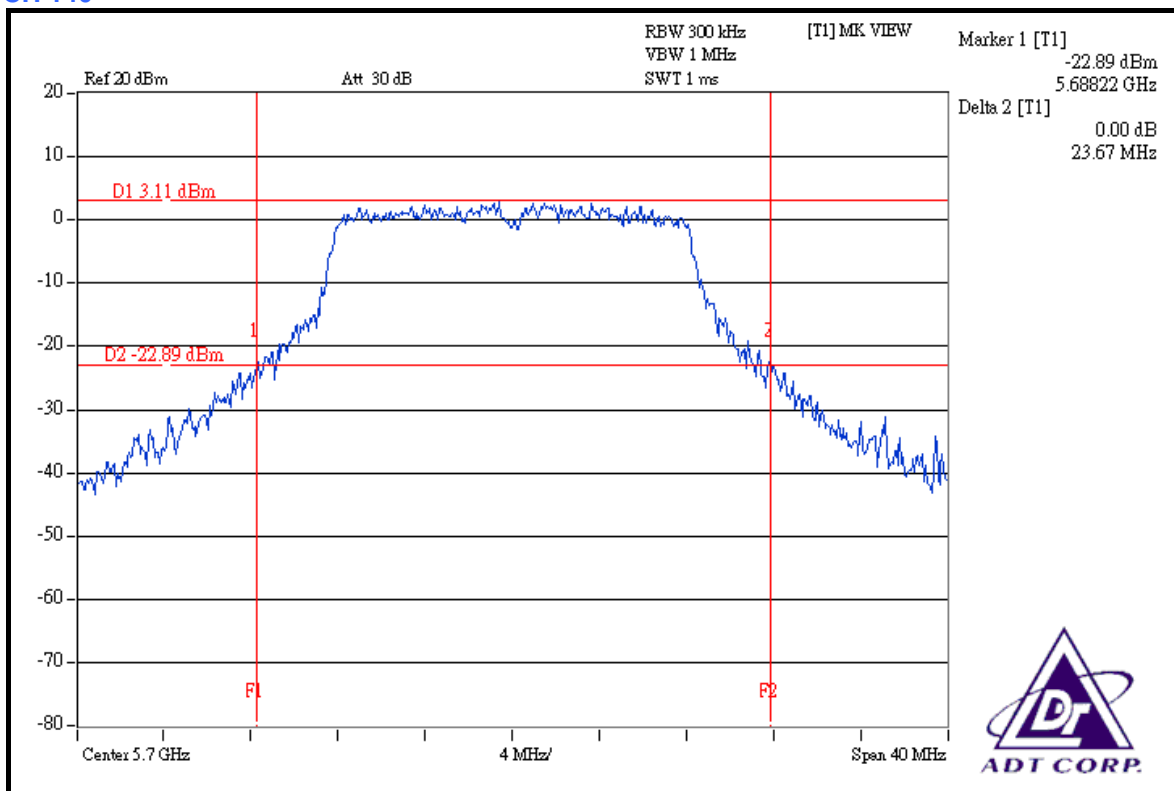
CH 100



CH 120



CH 140



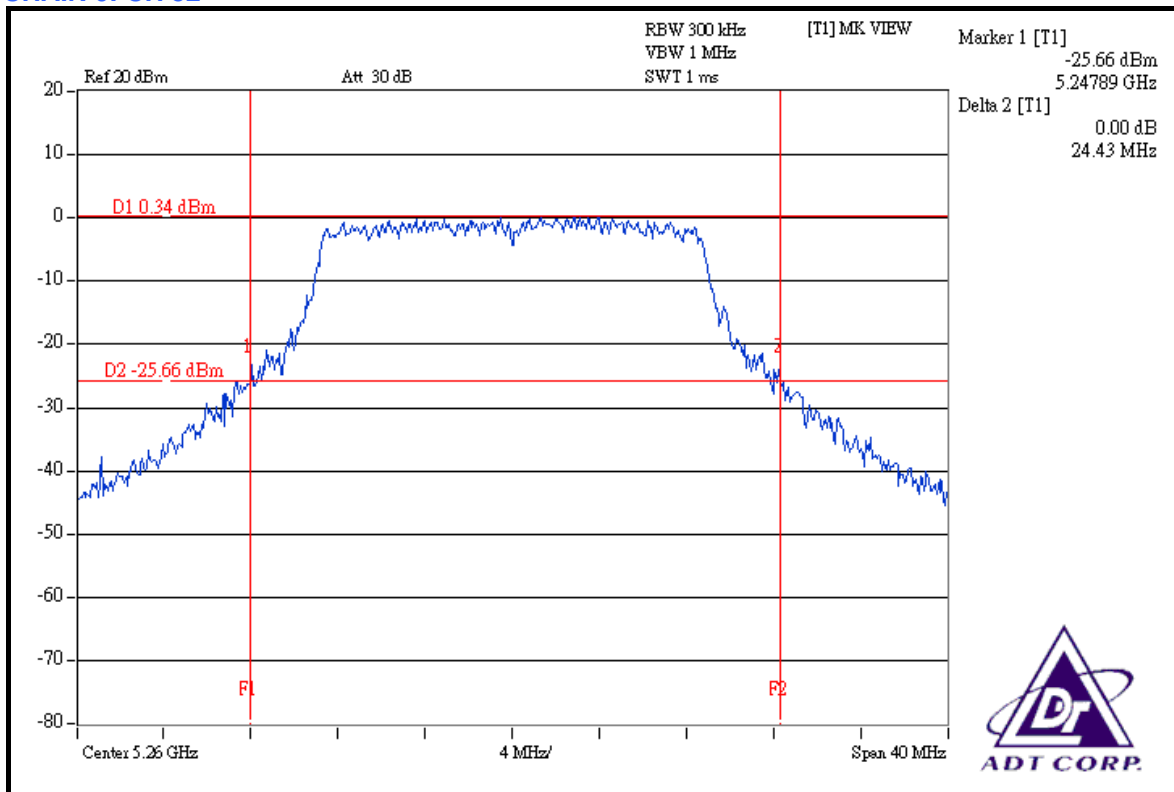


DRAFT 802.11n (20MHz) OFDM MODULATION

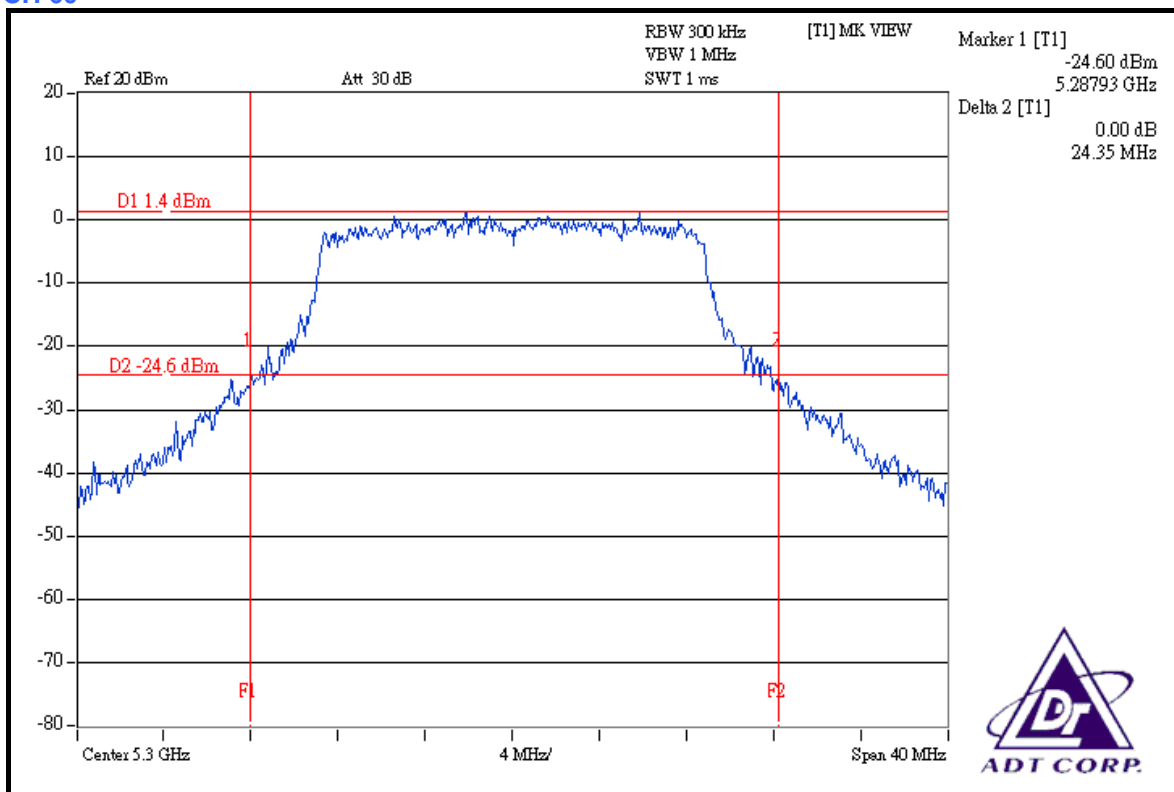
MODULATION TYPE	BPSK	TRANSFER RATE	7.2Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Dean Wang		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
52	5260	24.43	23.53	PASS
60	5300	24.35	23.75	PASS
64	5320	24.37	23.65	PASS
100	5500	24.06	23.89	PASS
120	5600	24.85	23.53	PASS
140	5700	24.23	24.23	PASS

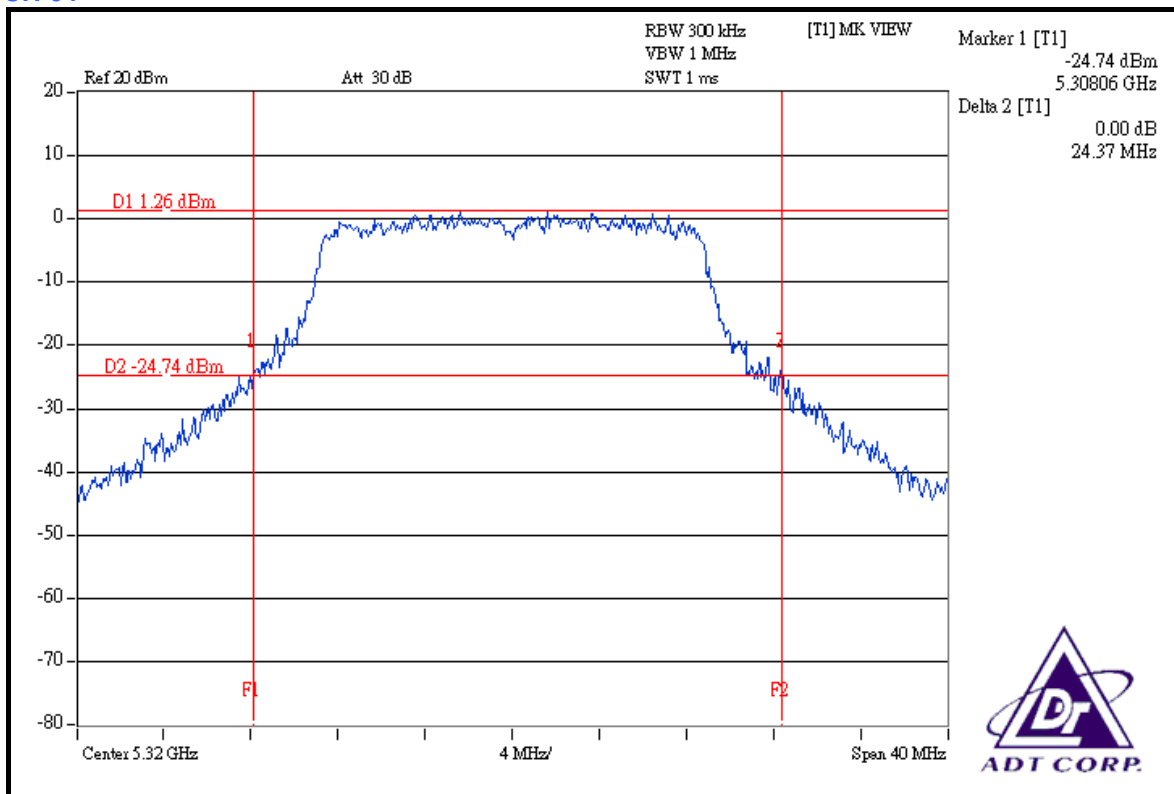
CHAIN 0: CH 52



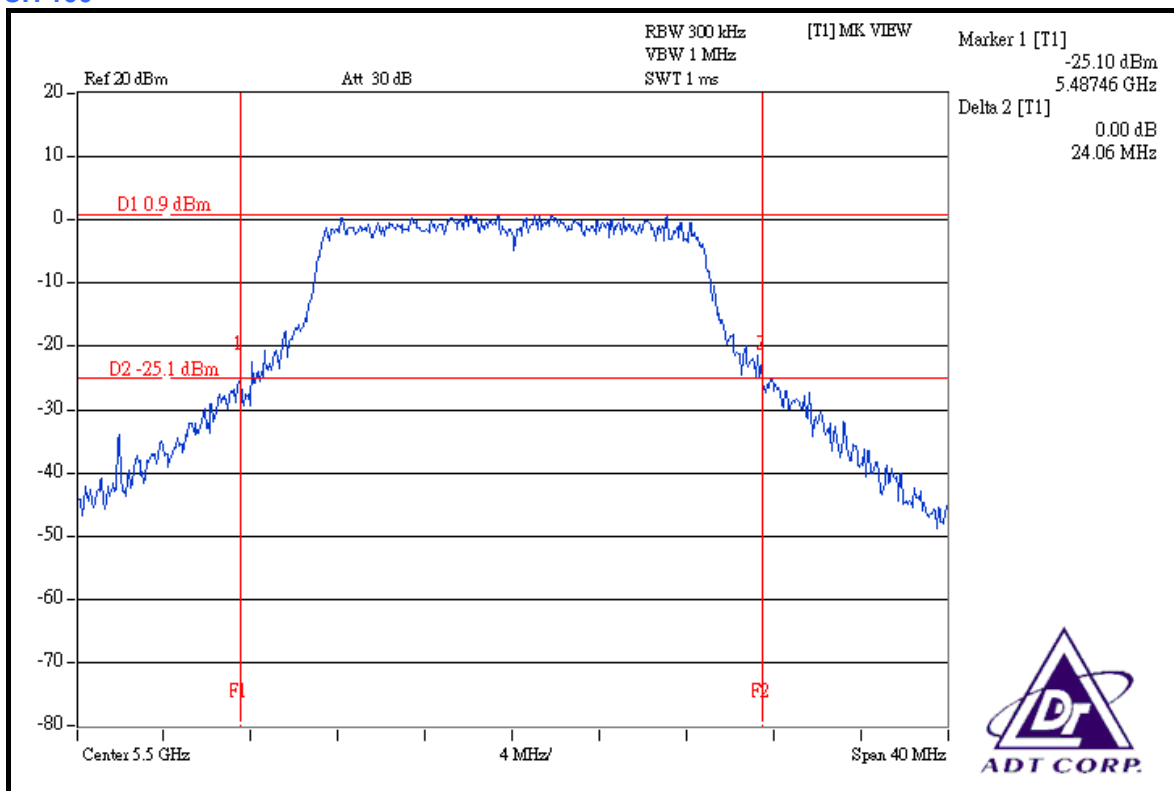
CH 60



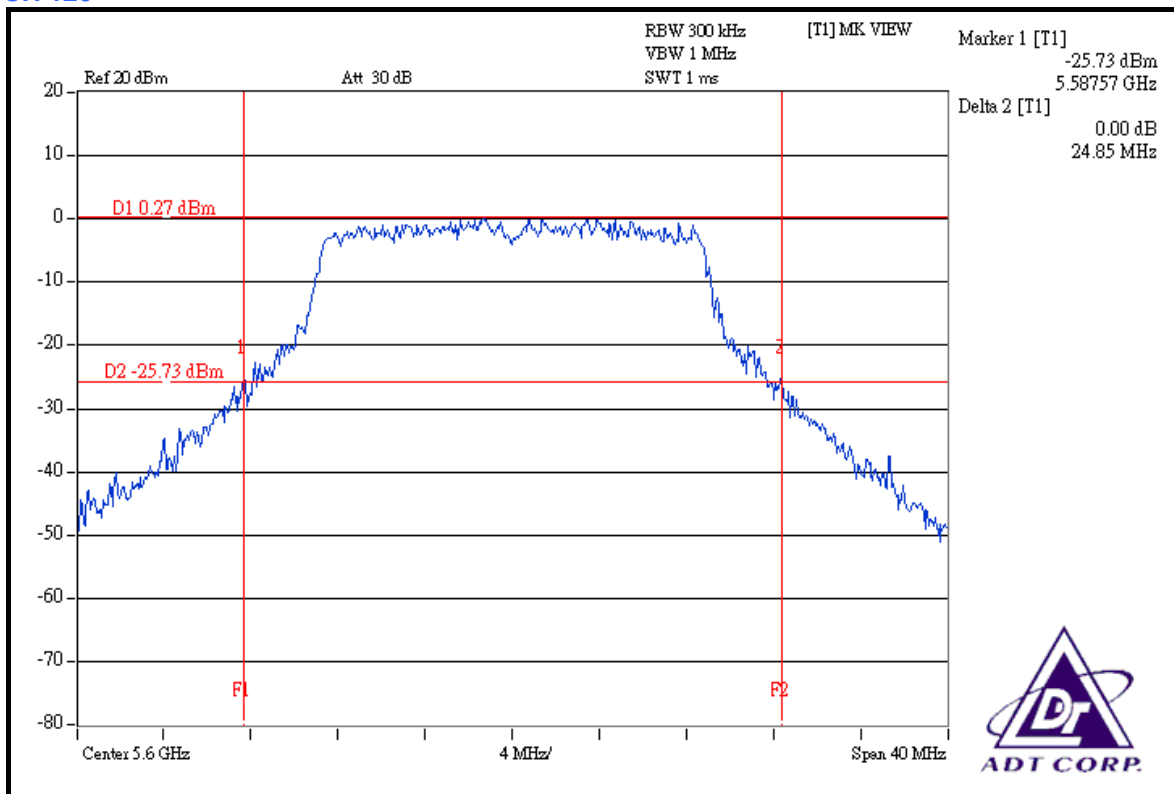
CH 64



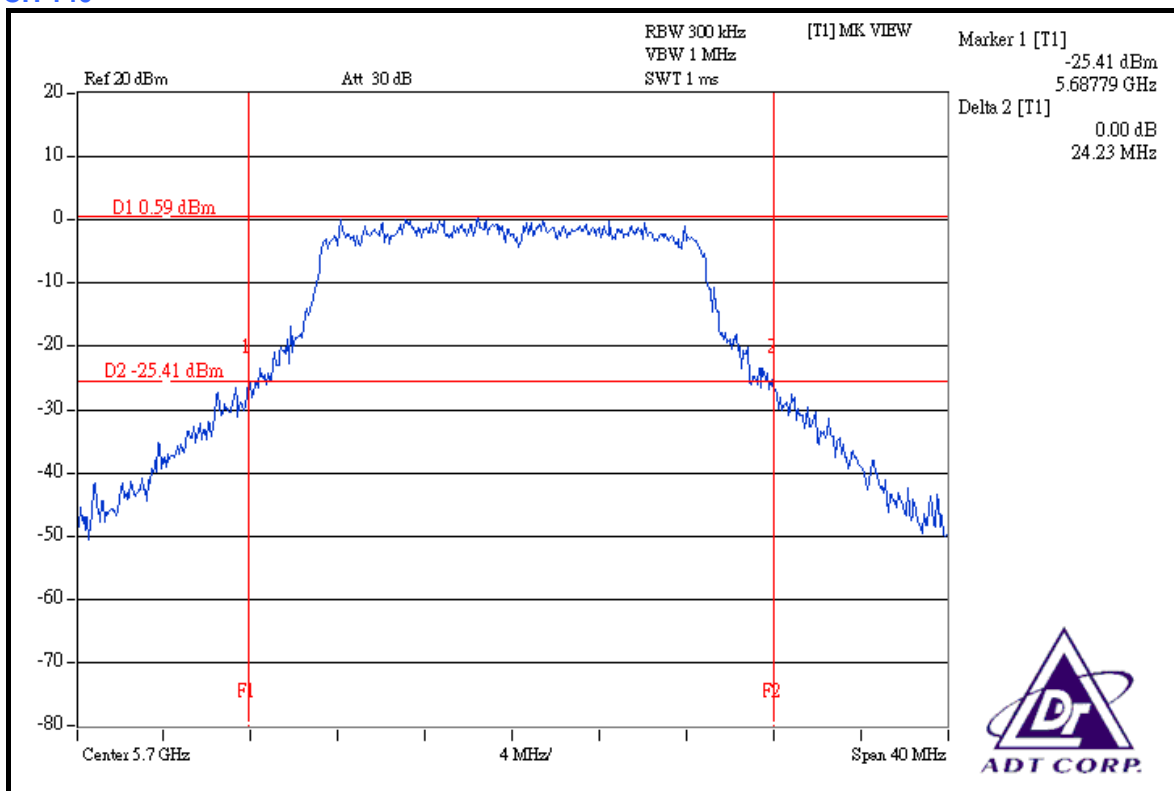
CH 100



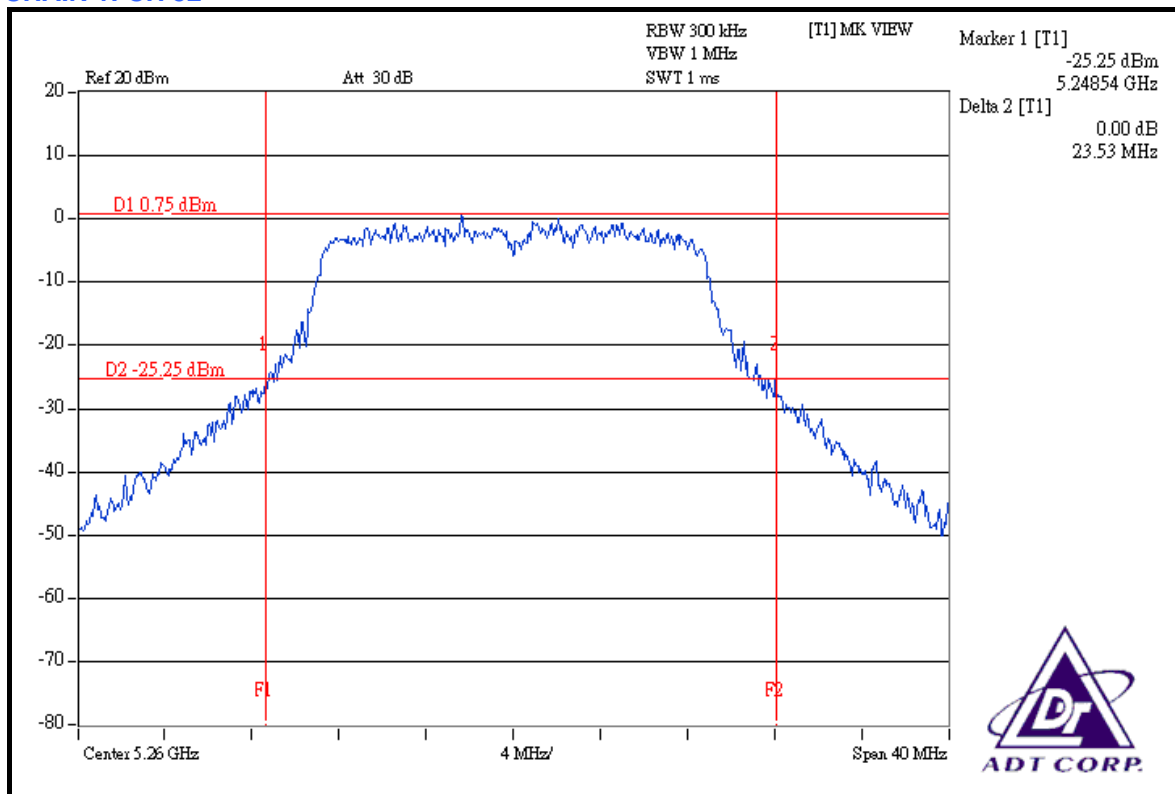
CH 120



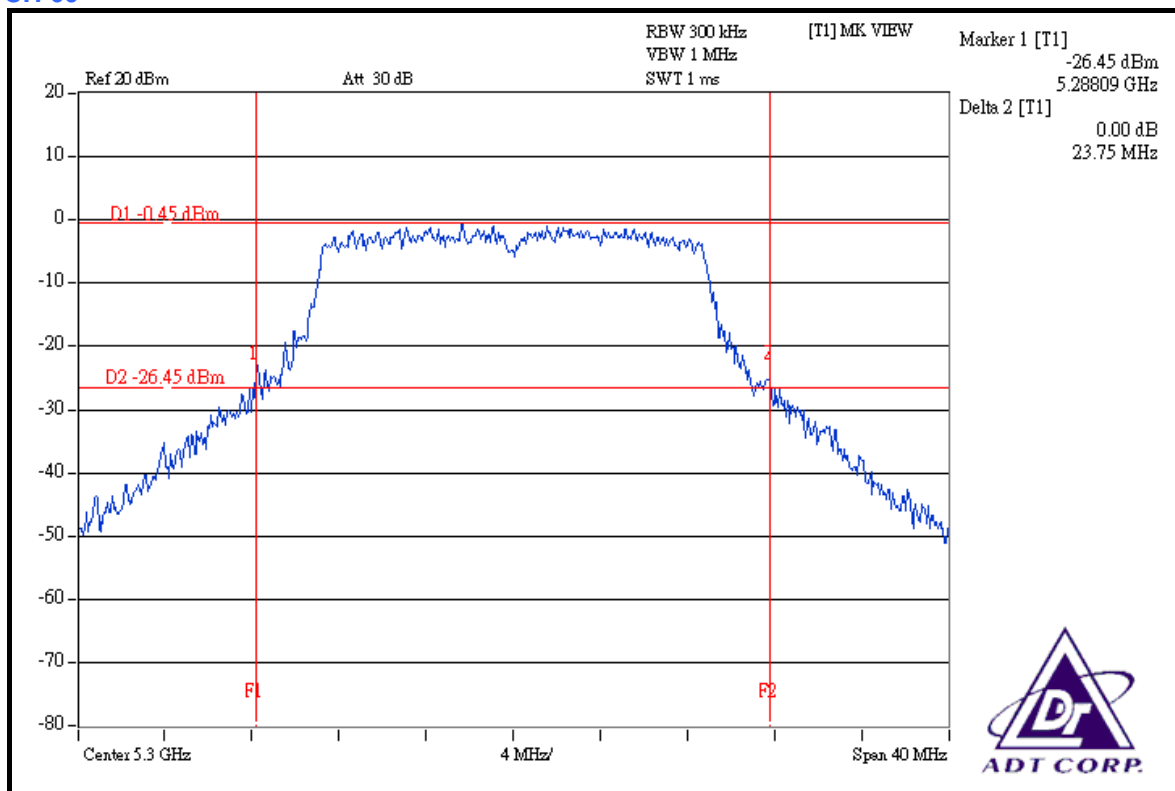
CH 140



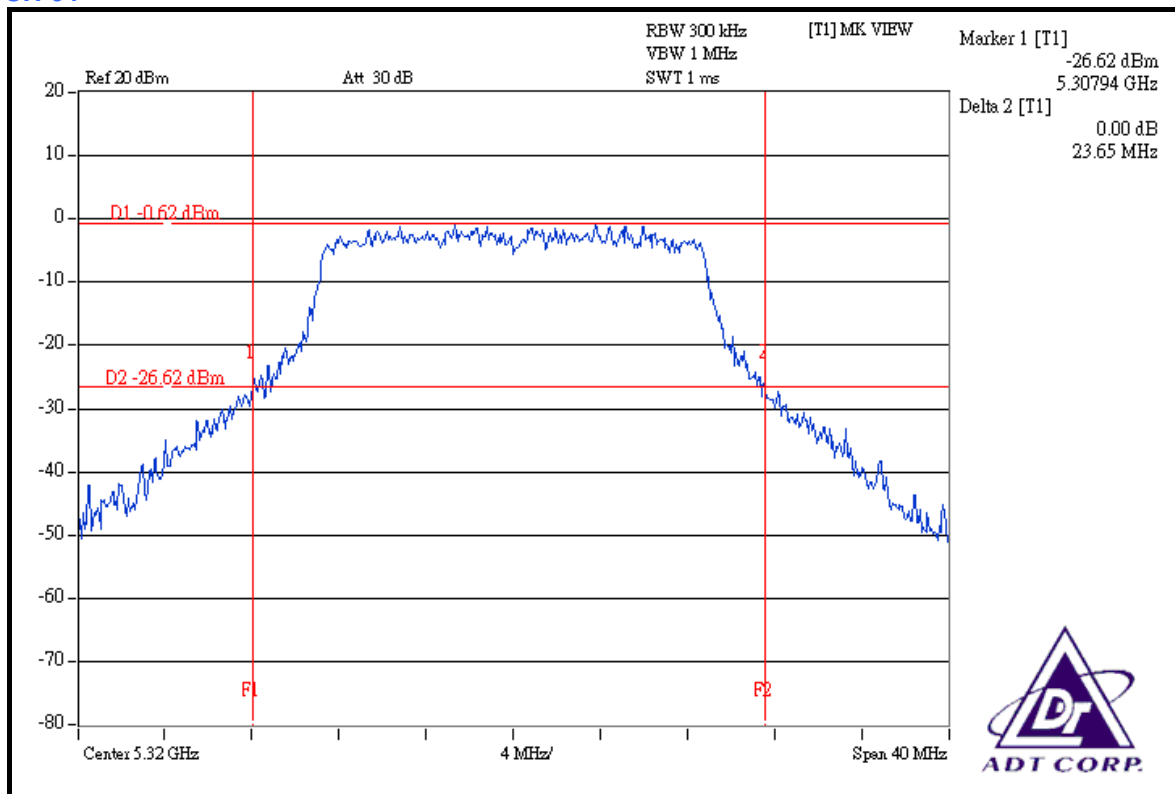
CHAIN 1: CH 52



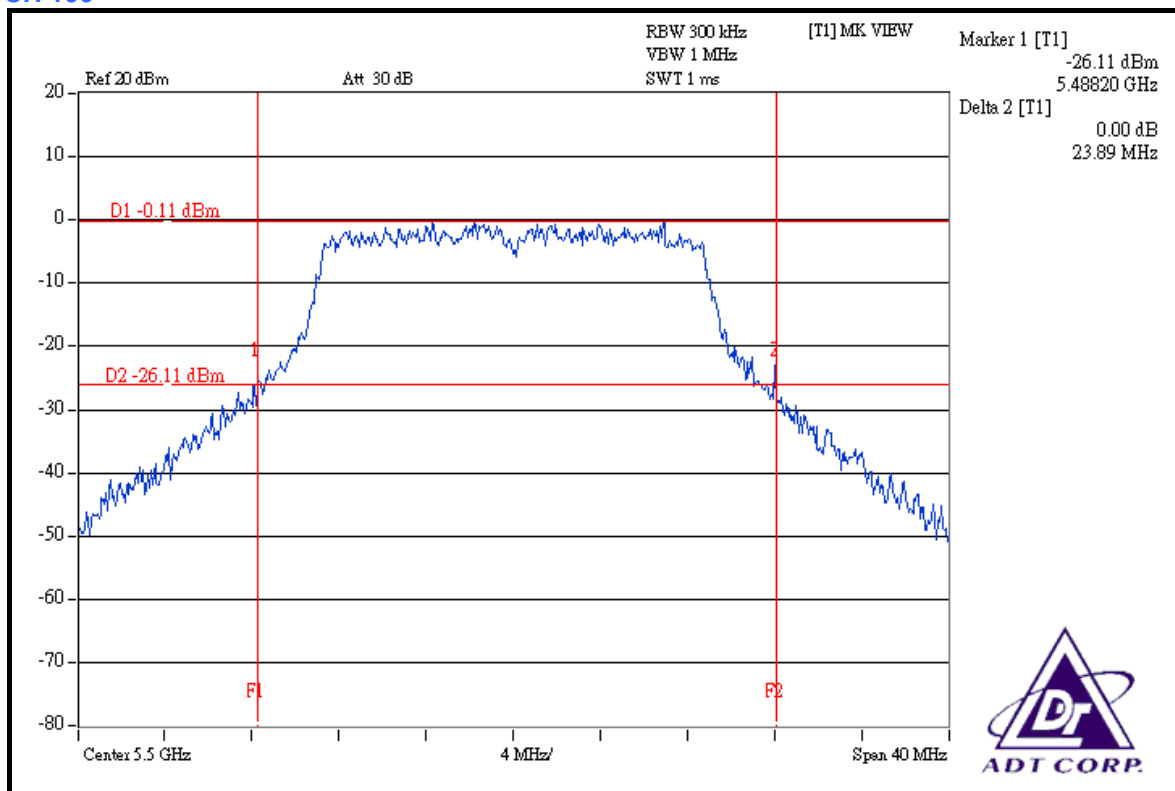
CH 60



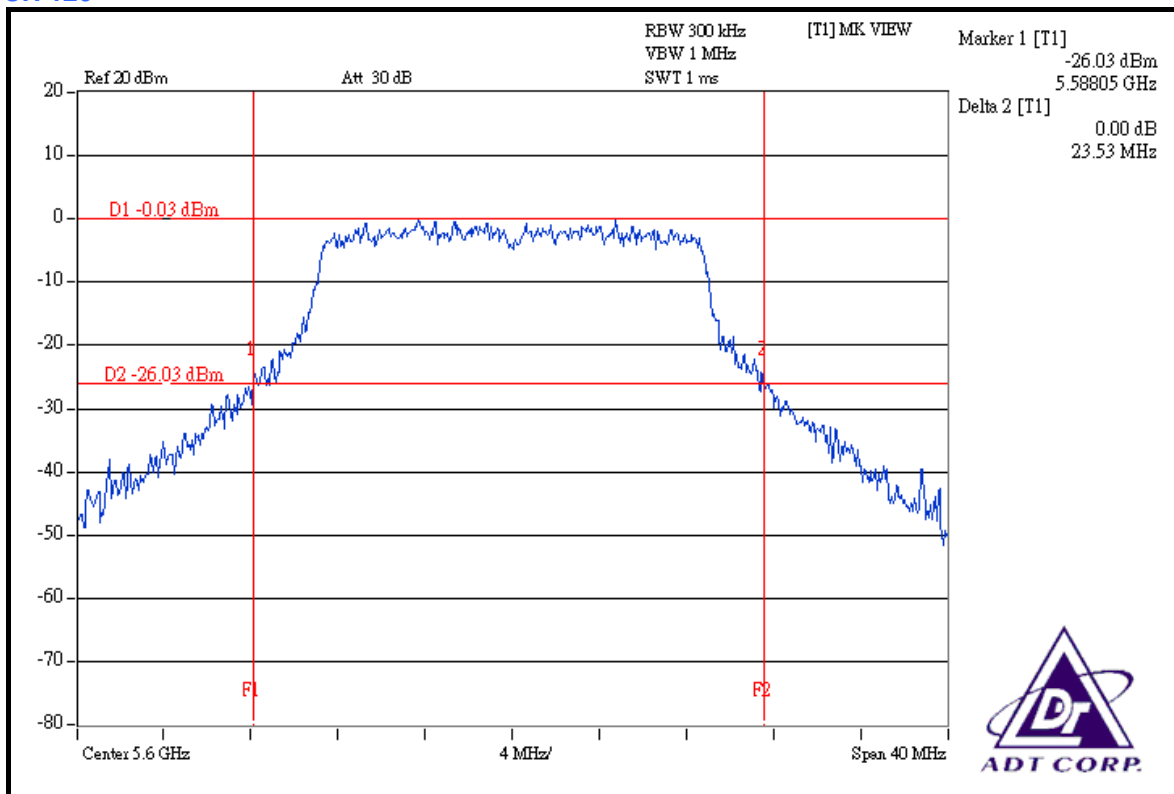
CH 64



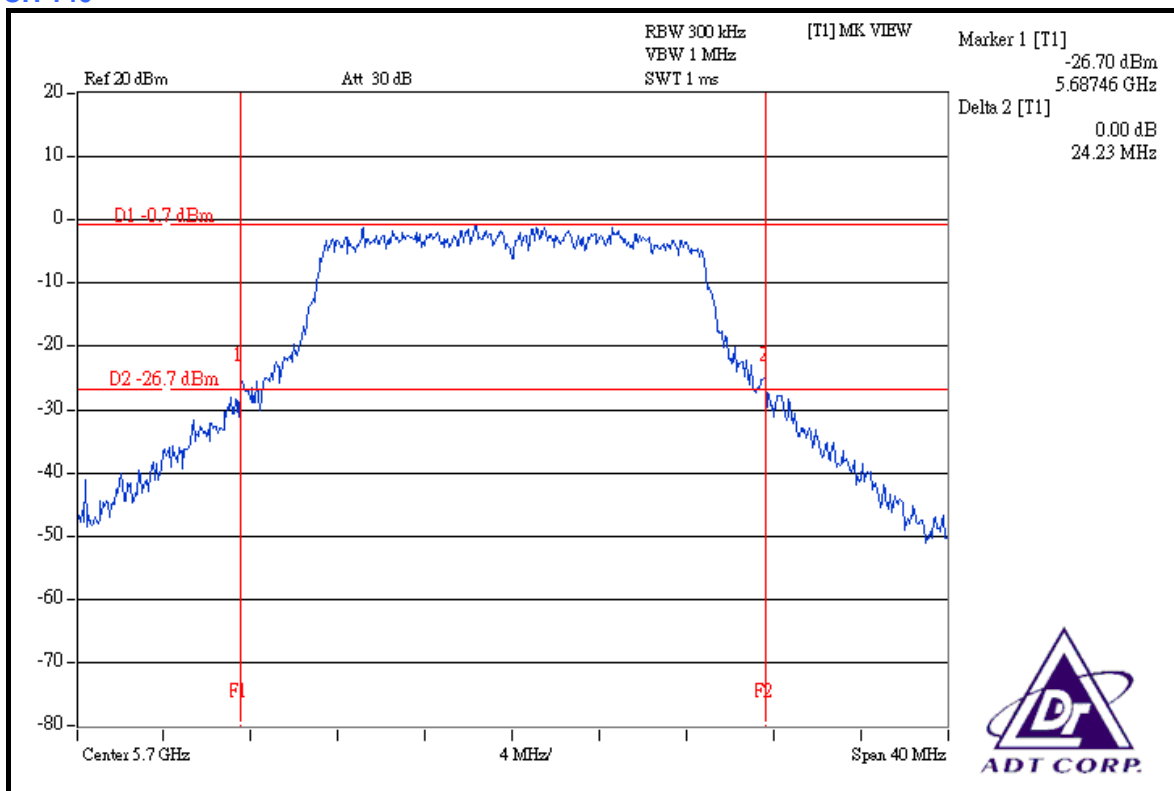
CH 100



CH 120



CH 140



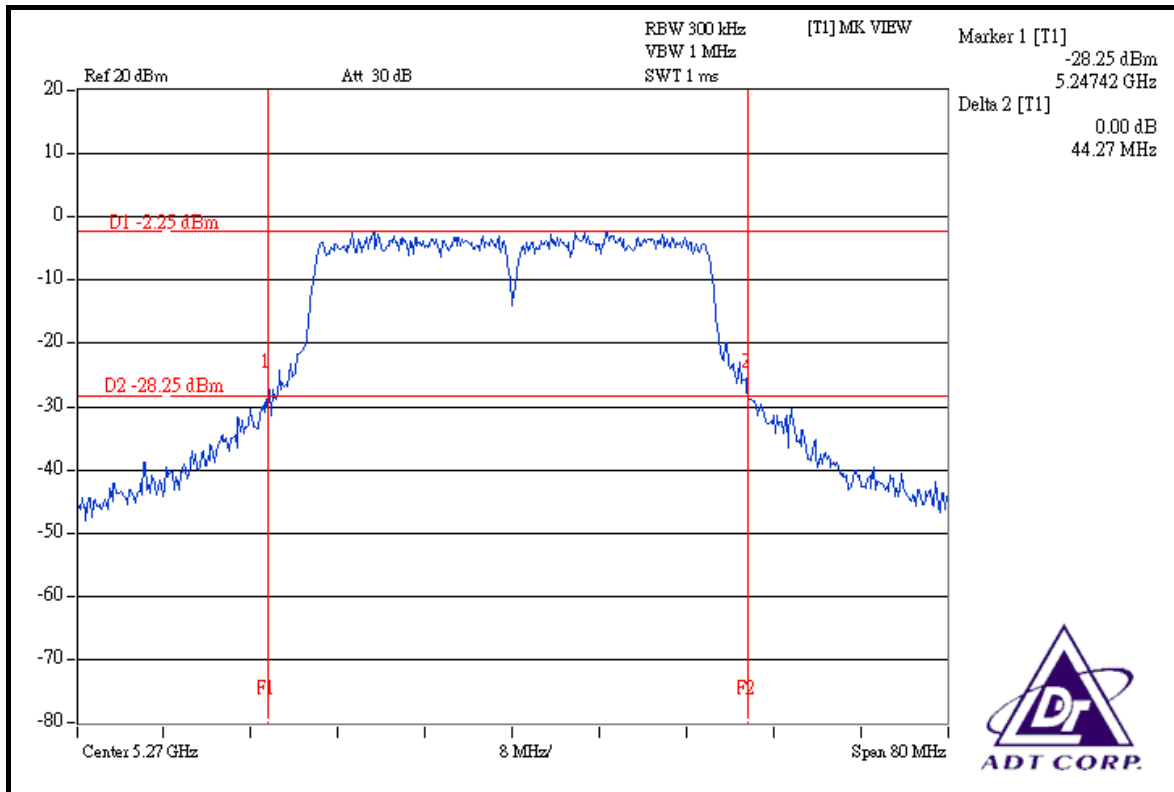


DRAFT 802.11n (40MHz) OFDM MODULATION

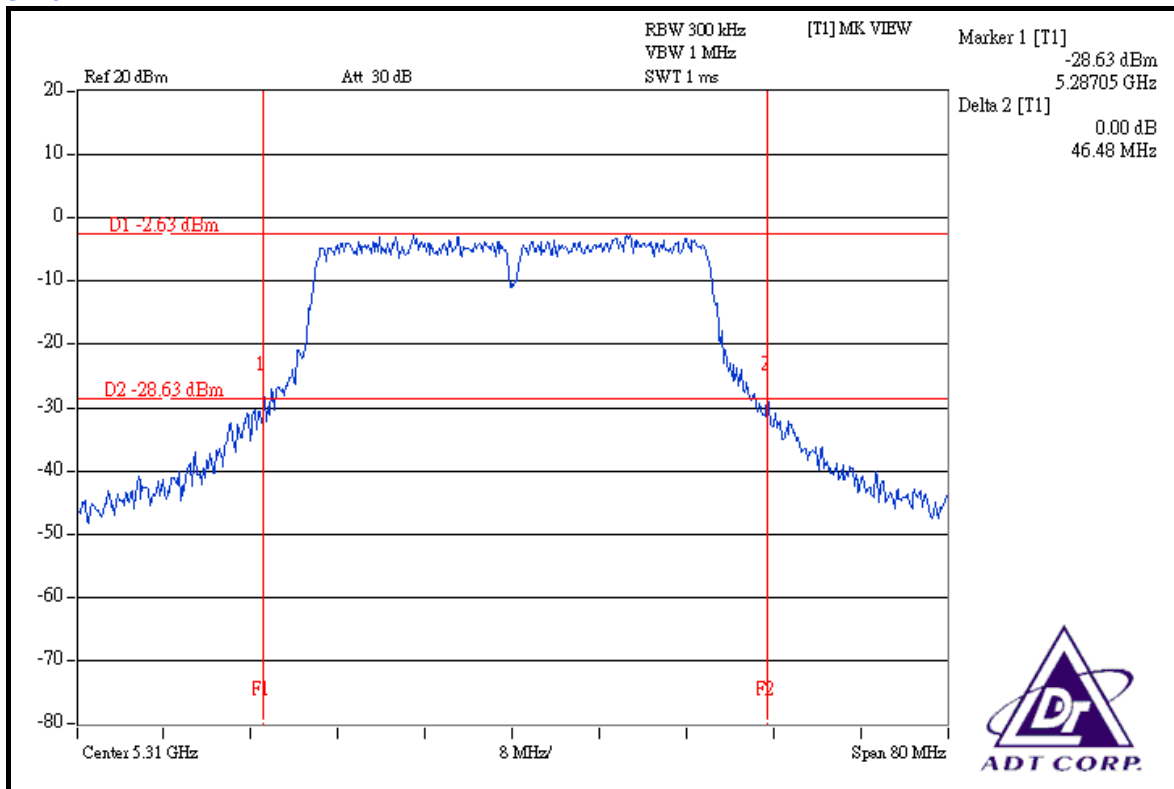
MODULATION TYPE	BPSK	TRANSFER RATE	15.0Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 65 %RH, 991hPa
TESTED BY	Dean Wang		

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
54	5270	44.27	44.38	PASS
62	5310	46.48	43.79	PASS
102	5510	43.72	45.23	PASS
118	5590	43.92	43.58	PASS
134	5670	44.61	44.40	PASS

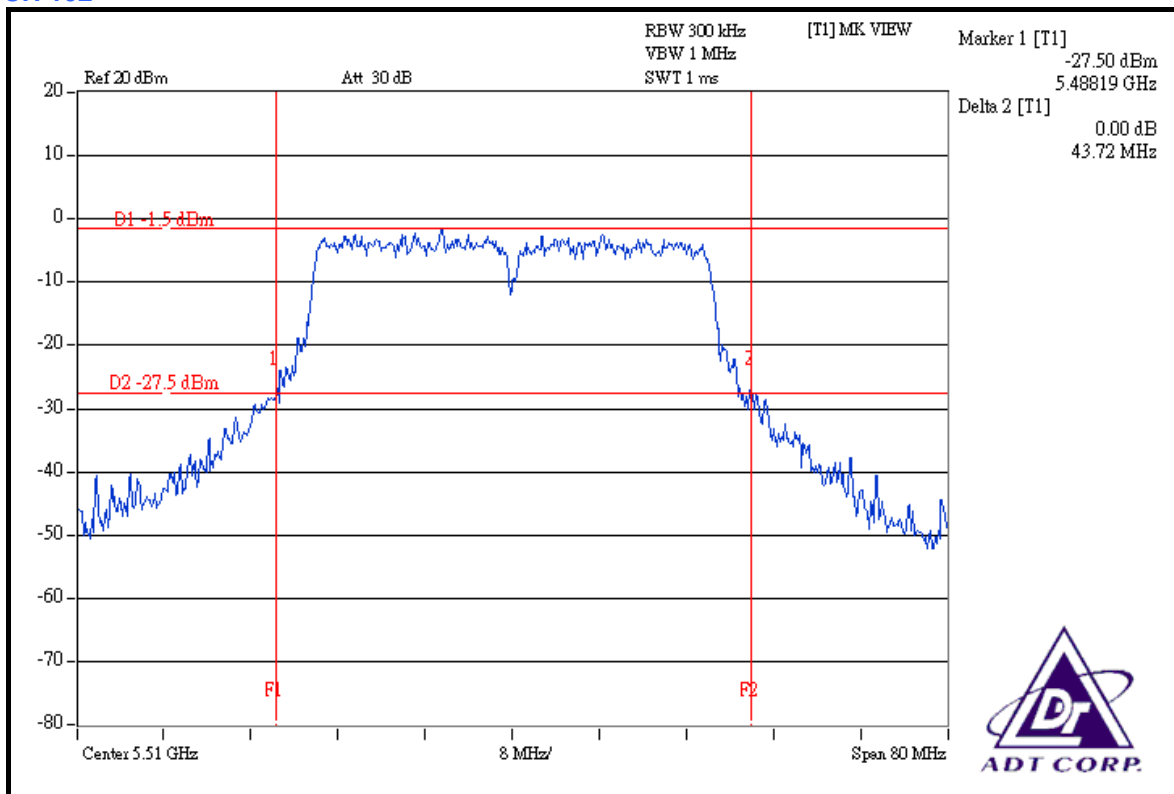
CHAIN 0: CH 54



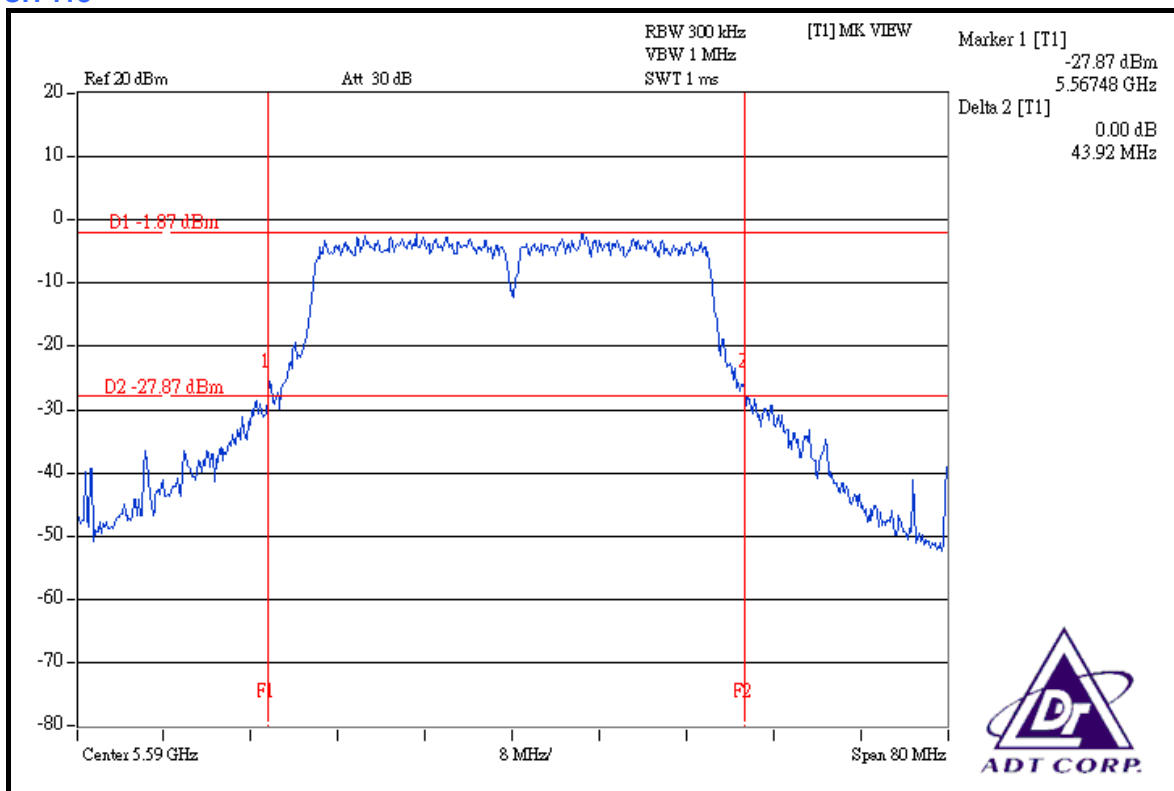
CH 62



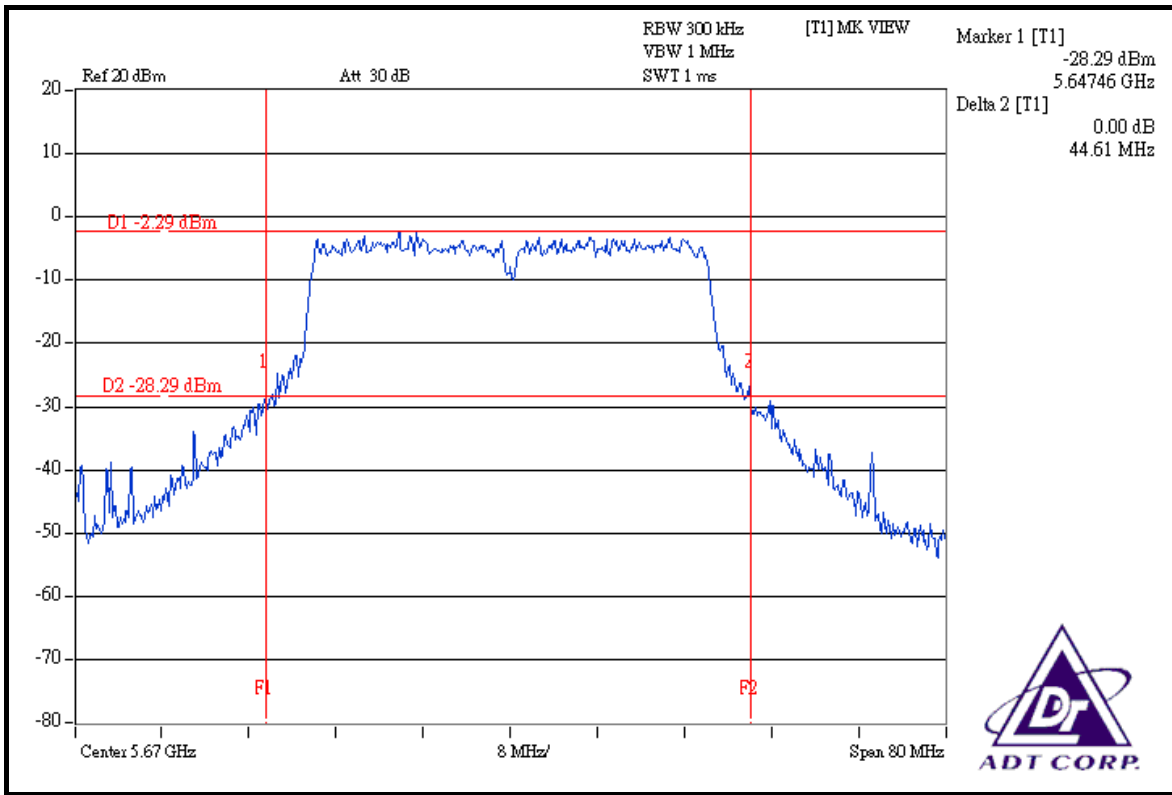
CH 102



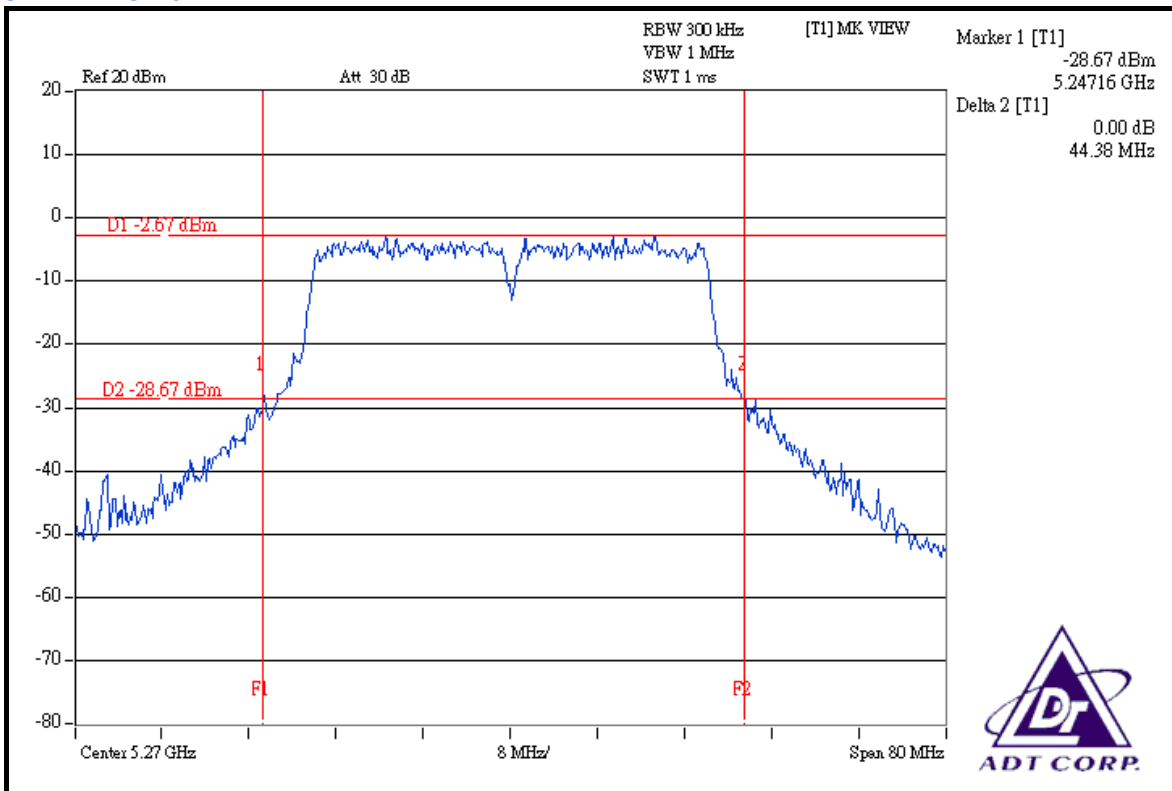
CH 118



CH 134

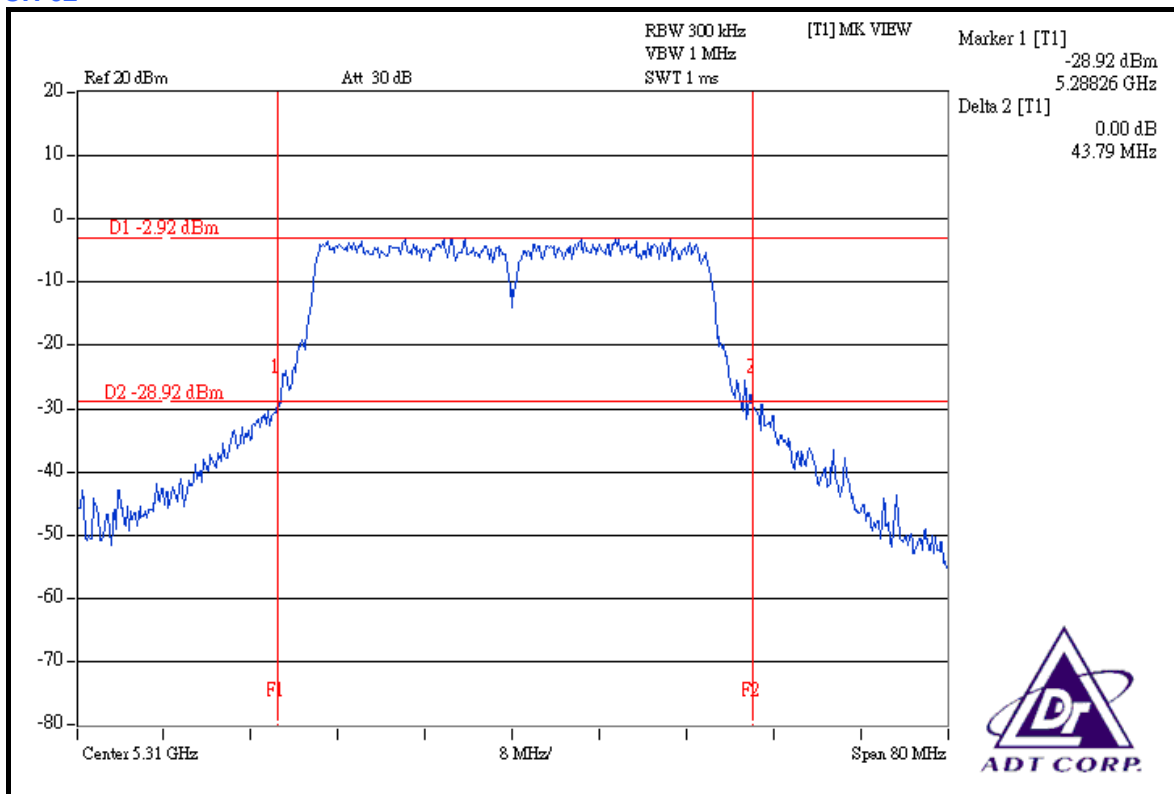


CHAIN 1: CH 54

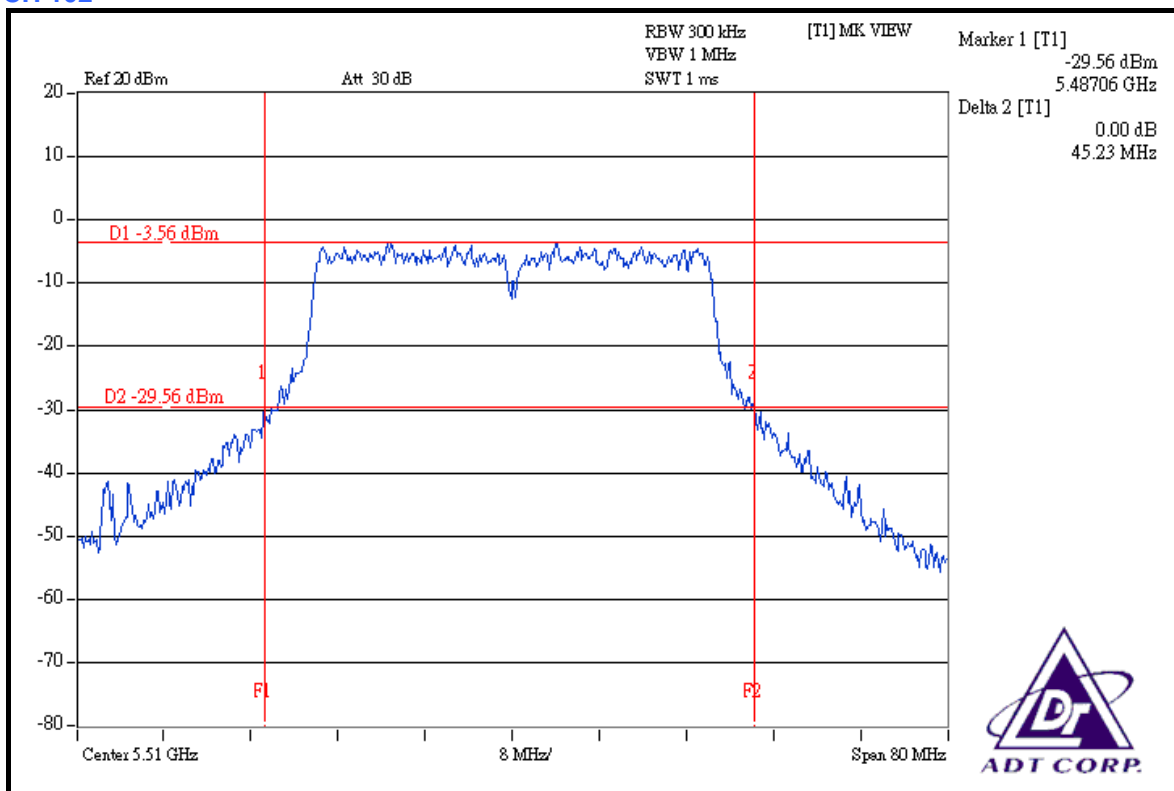




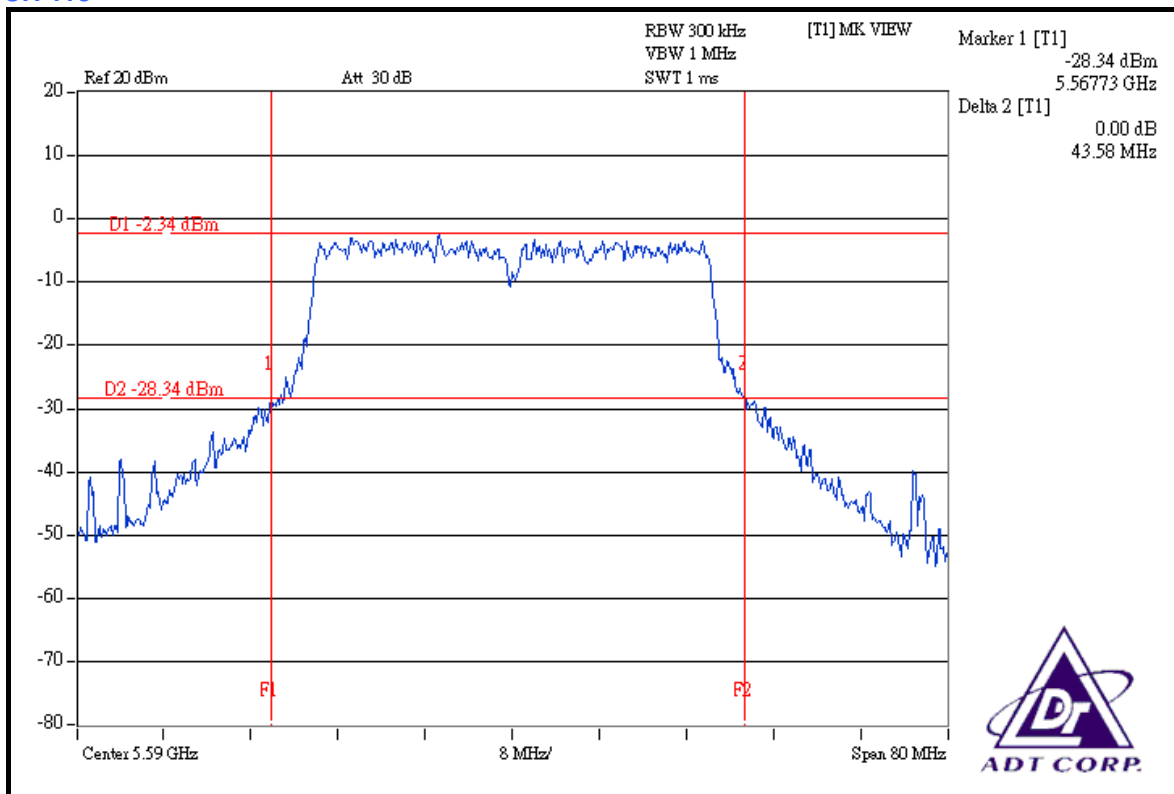
CH 62



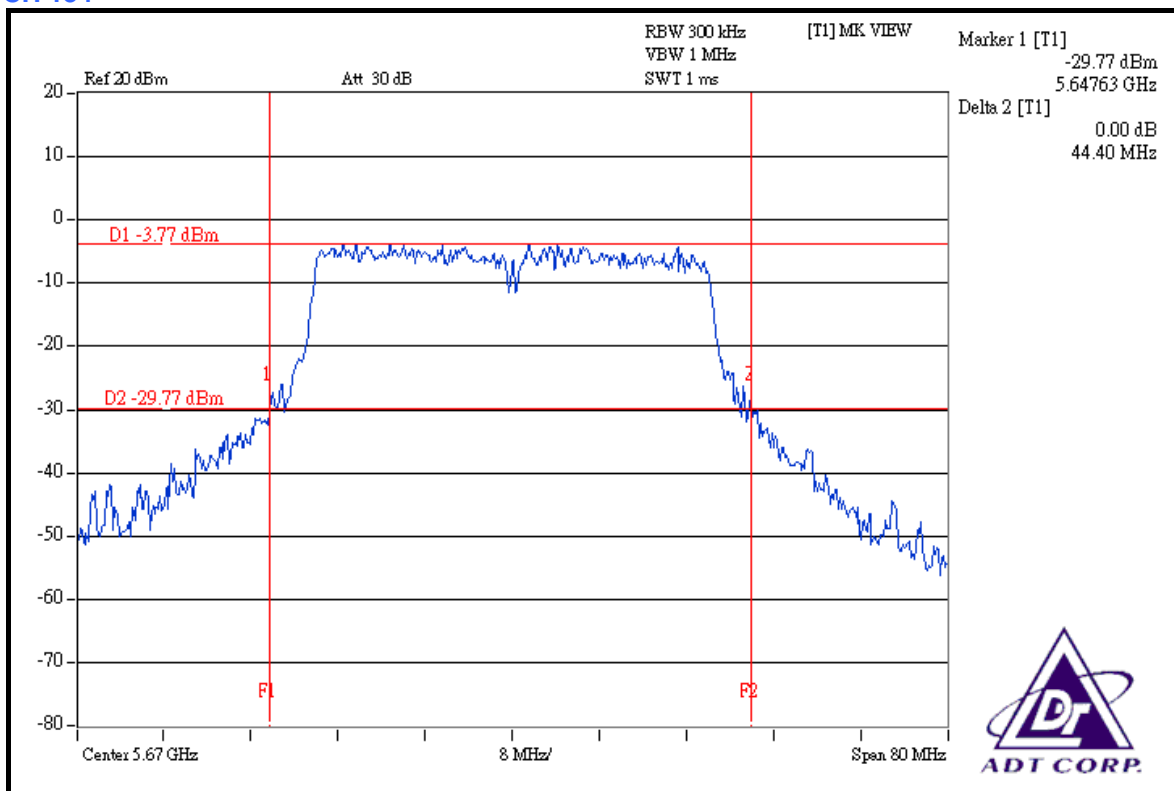
CH 102



CH 118



CH 134





4.4 PEAK POWER EXCURSION MEASUREMENT

4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

FREQUENCY BAND	LIMIT
5.250 ~ 5.350GHz	13dB
5.470 ~ 5.725GHz	13dB

4.4.2 TEST INSTRUMENTS

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

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

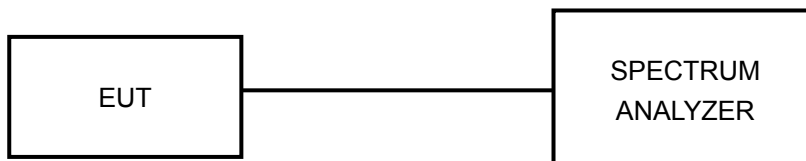
4.4.3 TEST PROCEDURE

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

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

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



4.4.7 TEST RESULTS

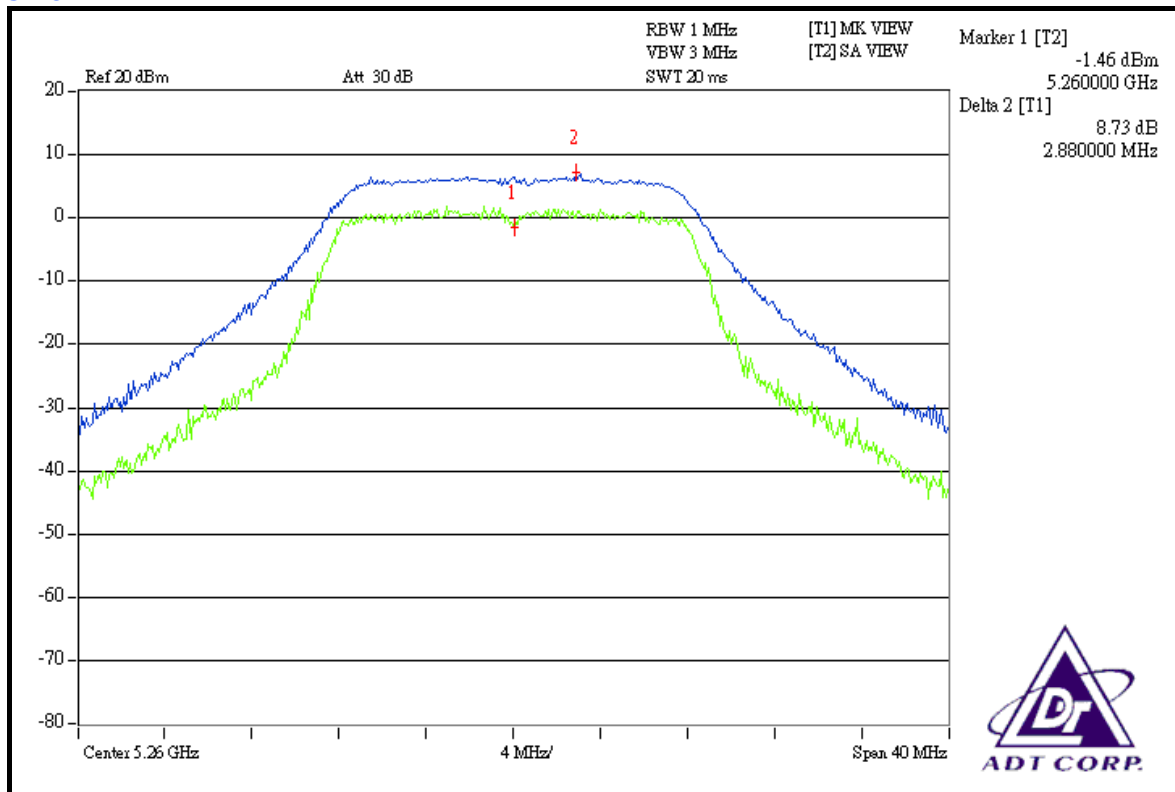
802.11a OFDM MODULATION

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

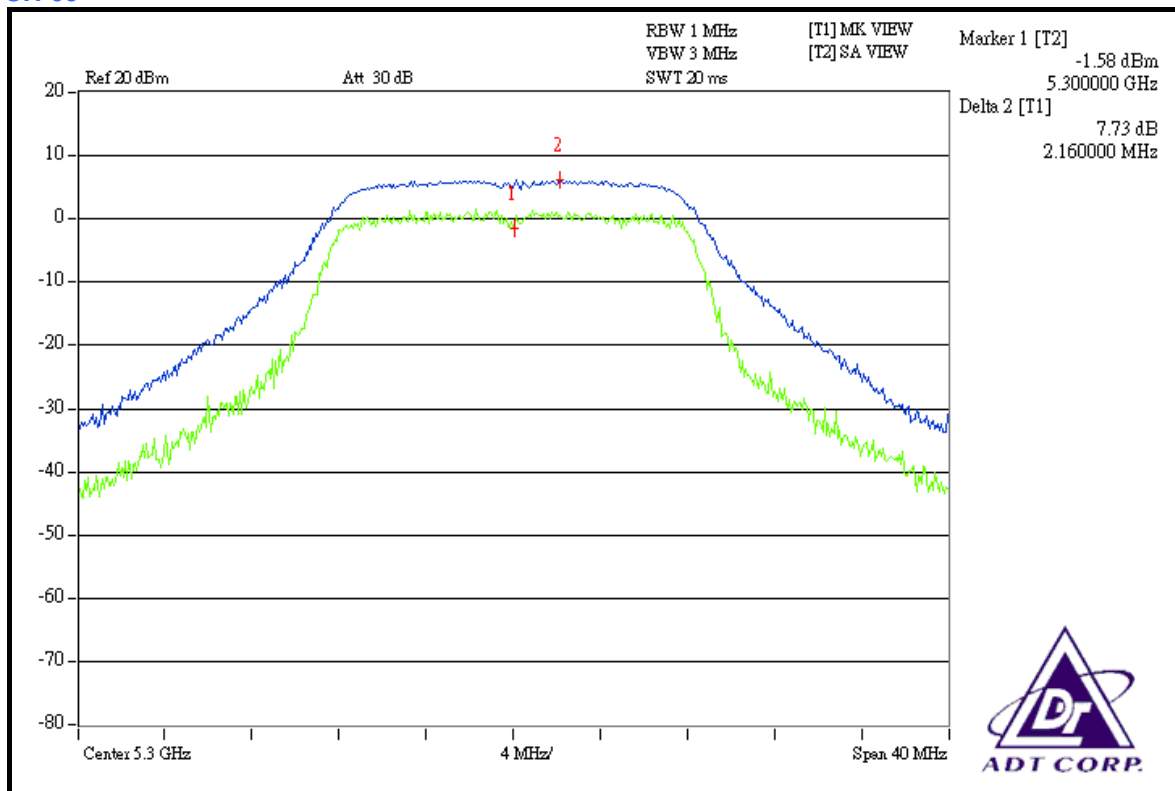
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK TO AVERAGE EXCURSION LIMIT (dB)	PASS / FAIL
52	5260	8.73	13	PASS
60	5300	7.73	13	PASS
64	5320	8.23	13	PASS
100	5500	8.46	13	PASS
120	5600	8.08	13	PASS
140	5700	8.95	13	PASS



CH 52

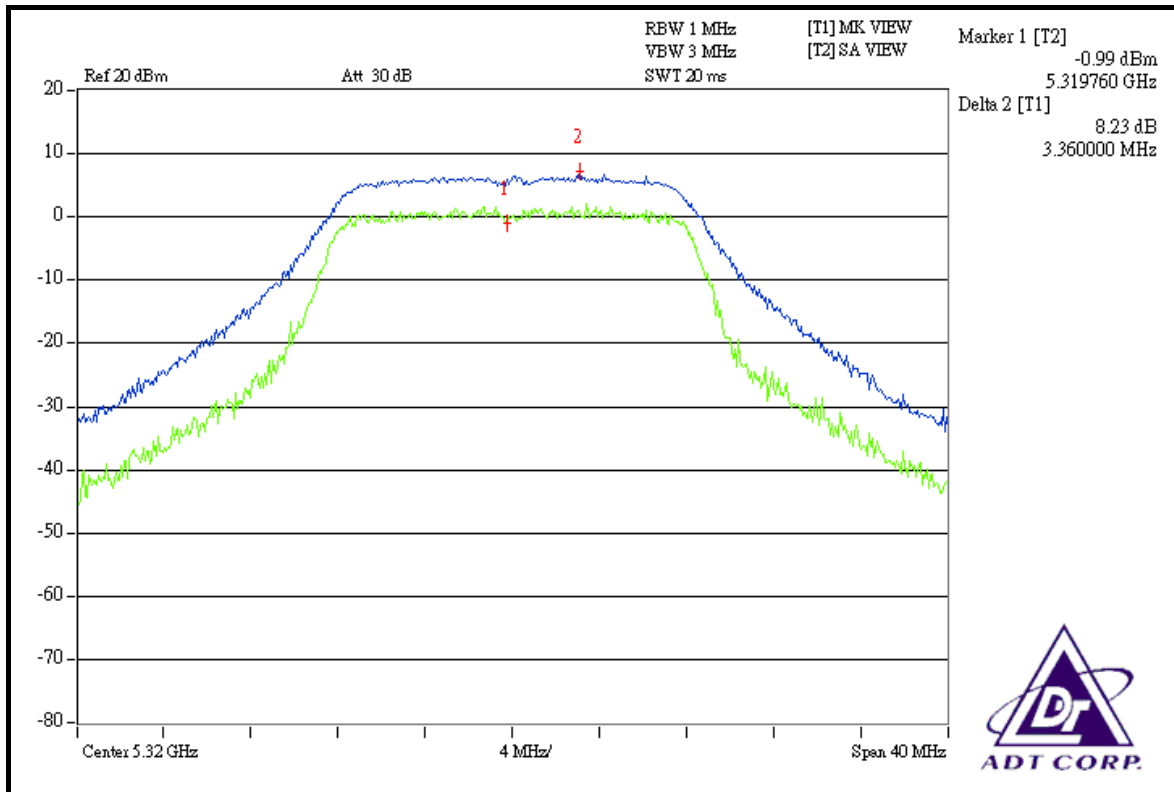


CH 60

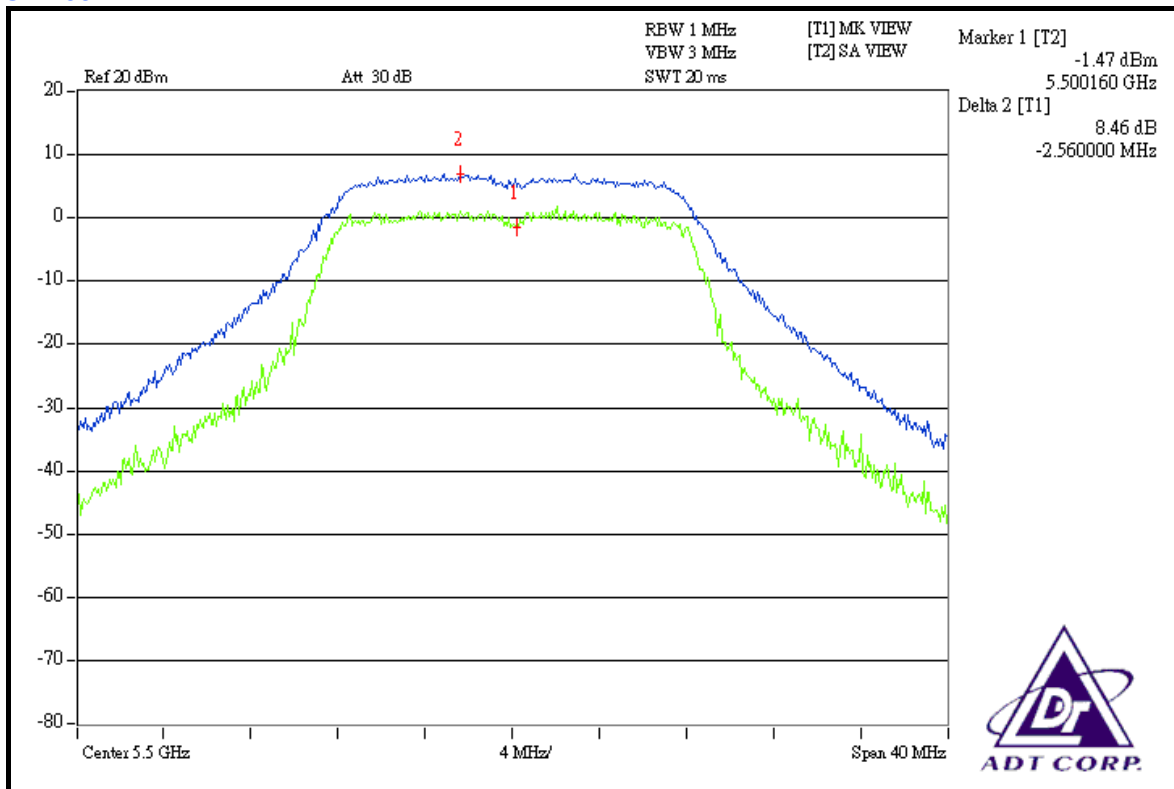




CH 64

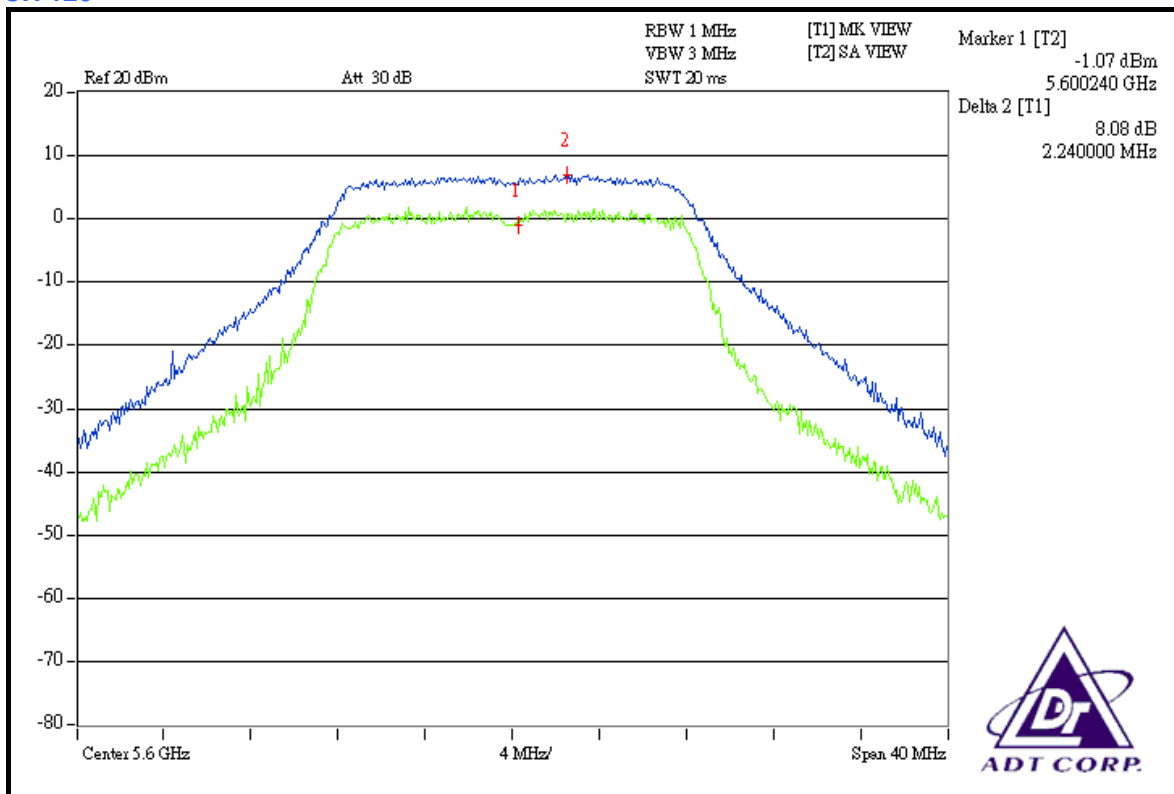


CH 100

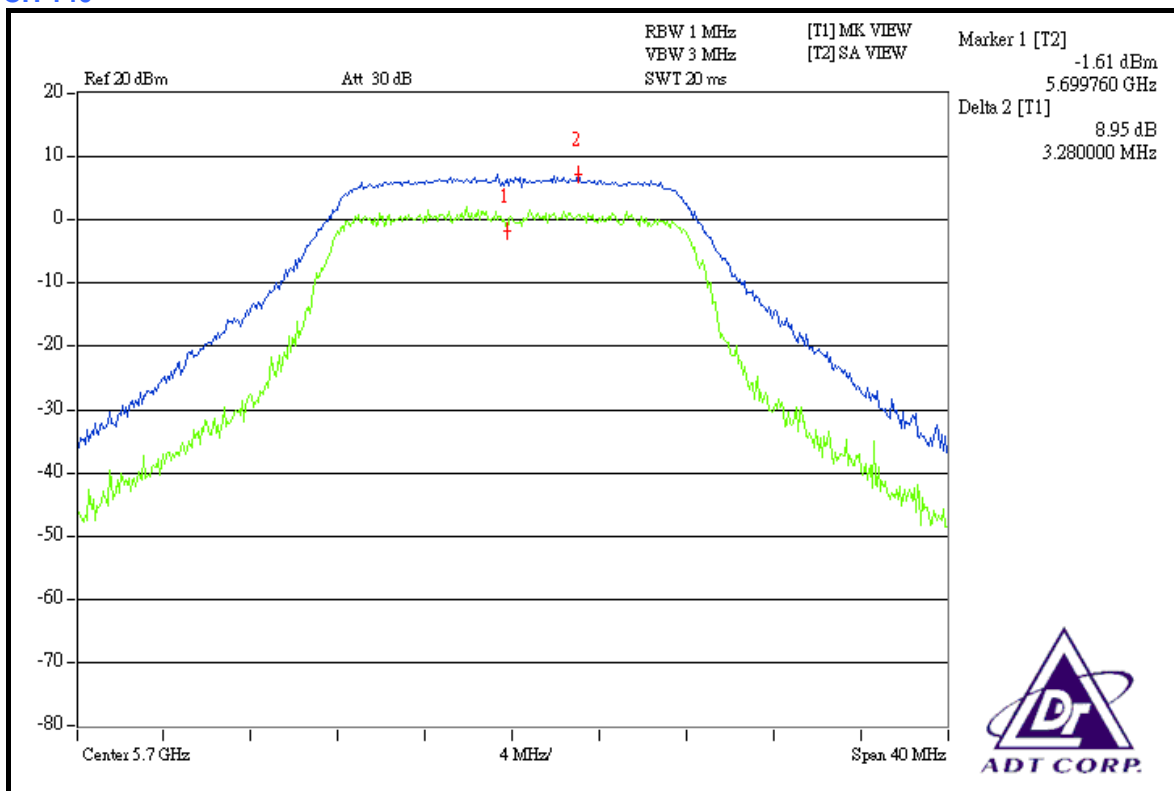




CH 120



CH 140





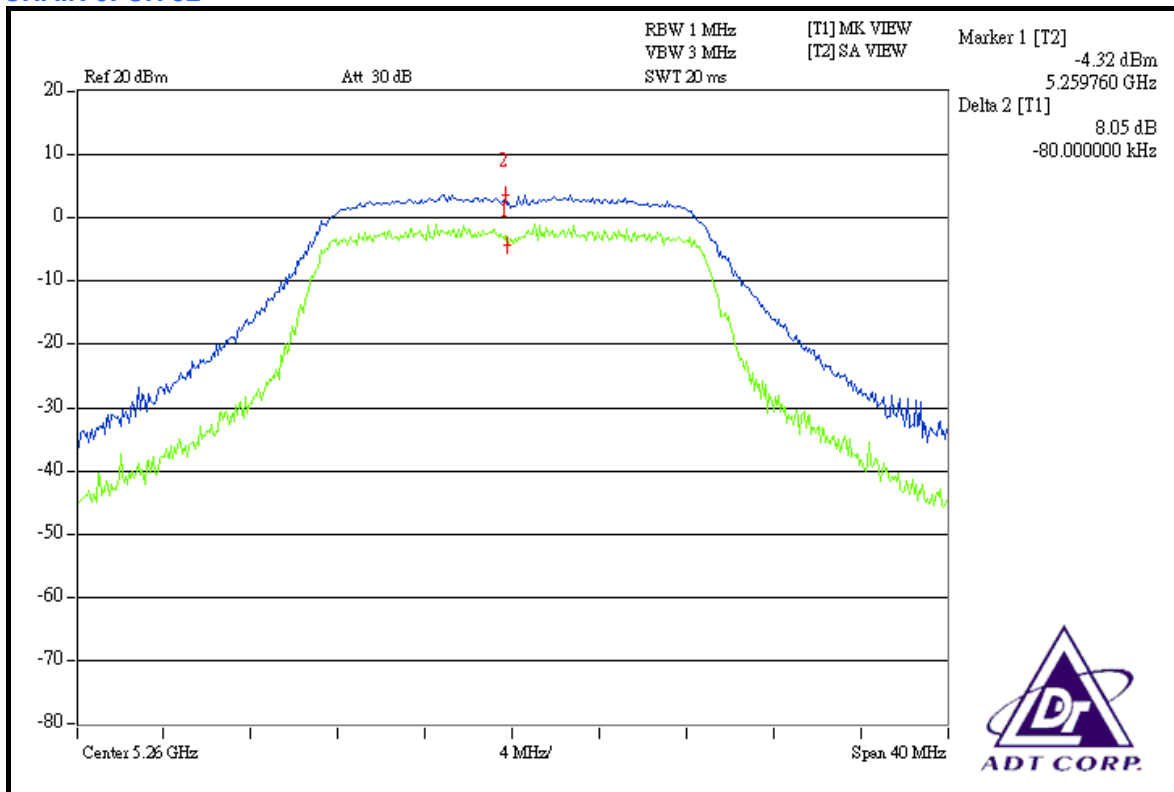
DRAFT 802.11n (20MHz) OFDM MODULATION

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

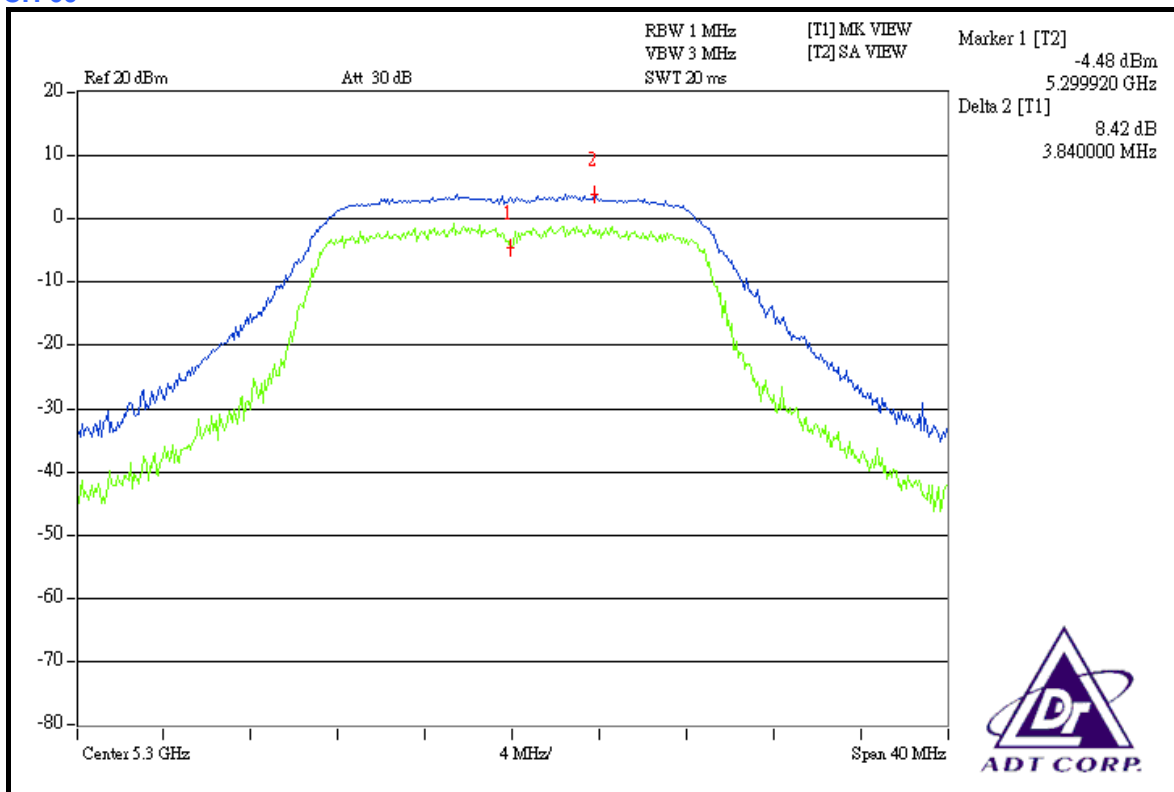
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)		PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1		
52	5260	8.05	8.56	13	PASS
60	5300	8.42	8.24	13	PASS
64	5320	8.98	8.56	13	PASS
100	5500	8.37	9.05	13	PASS
120	5600	8.39	8.55	13	PASS
140	5700	8.72	8.55	13	PASS



CHAIN 0: CH 52

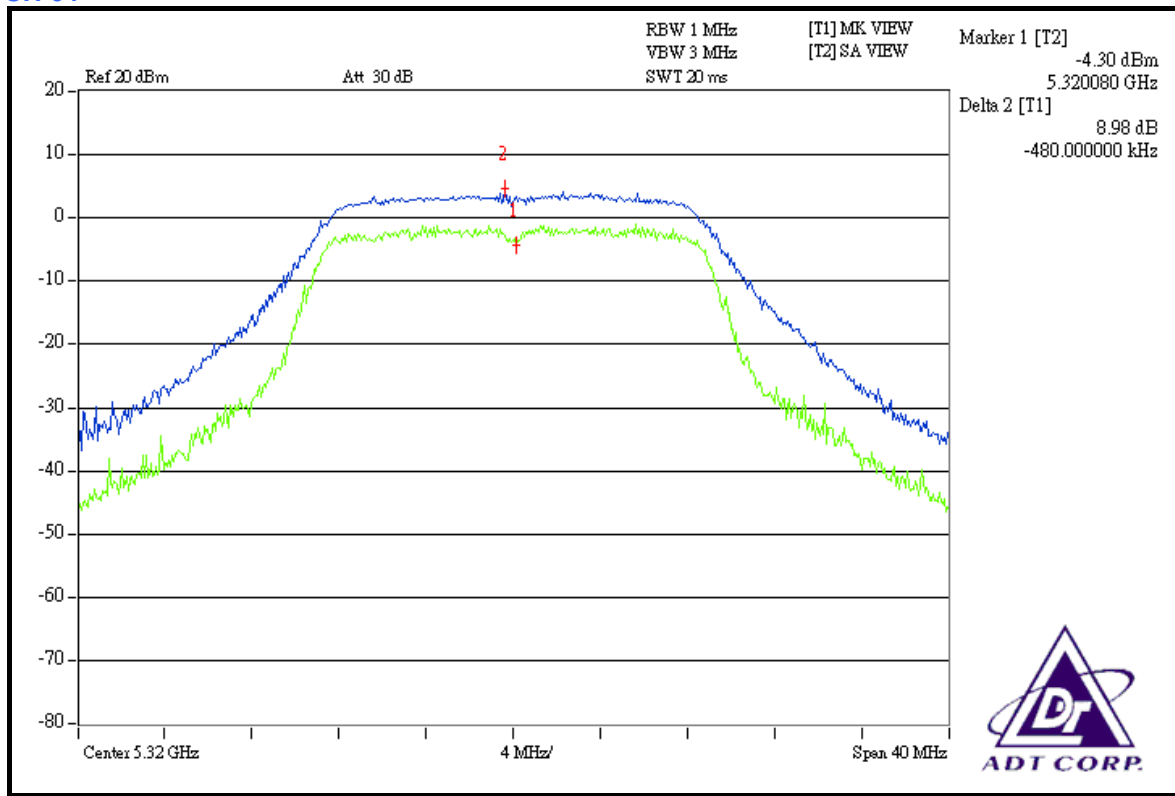


CH 60

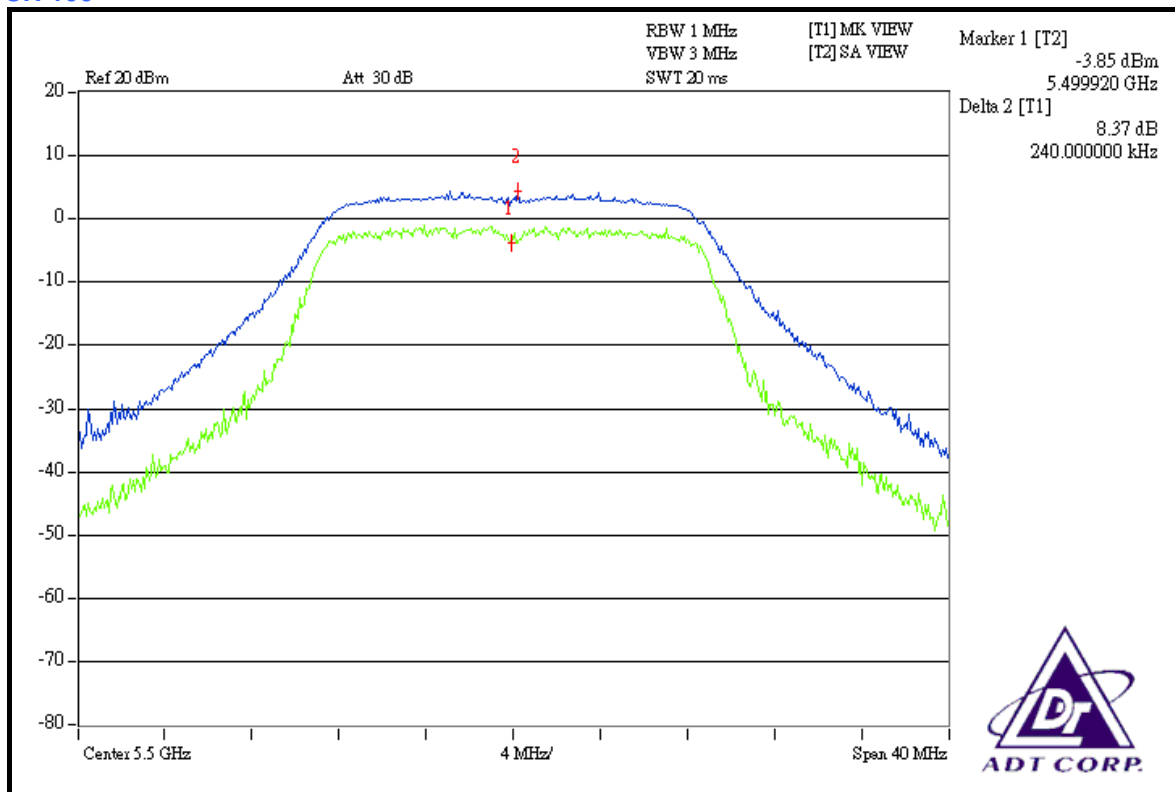




CH 64

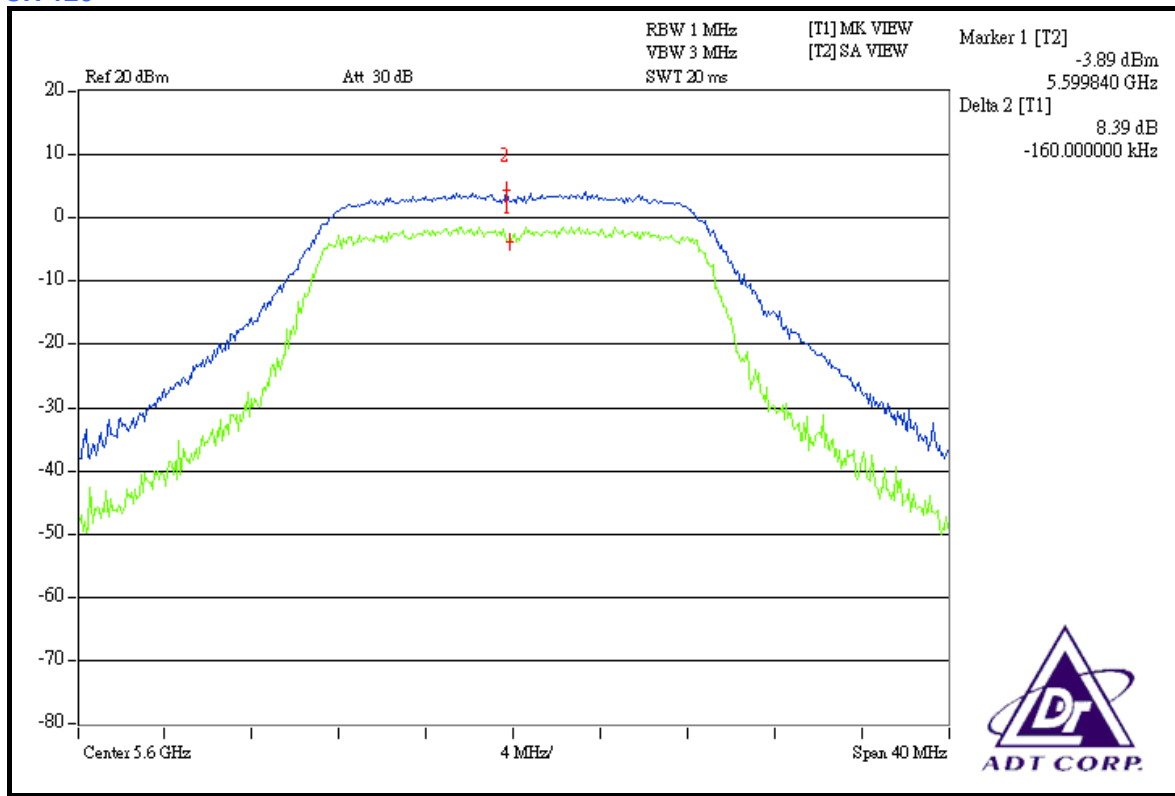


CH 100

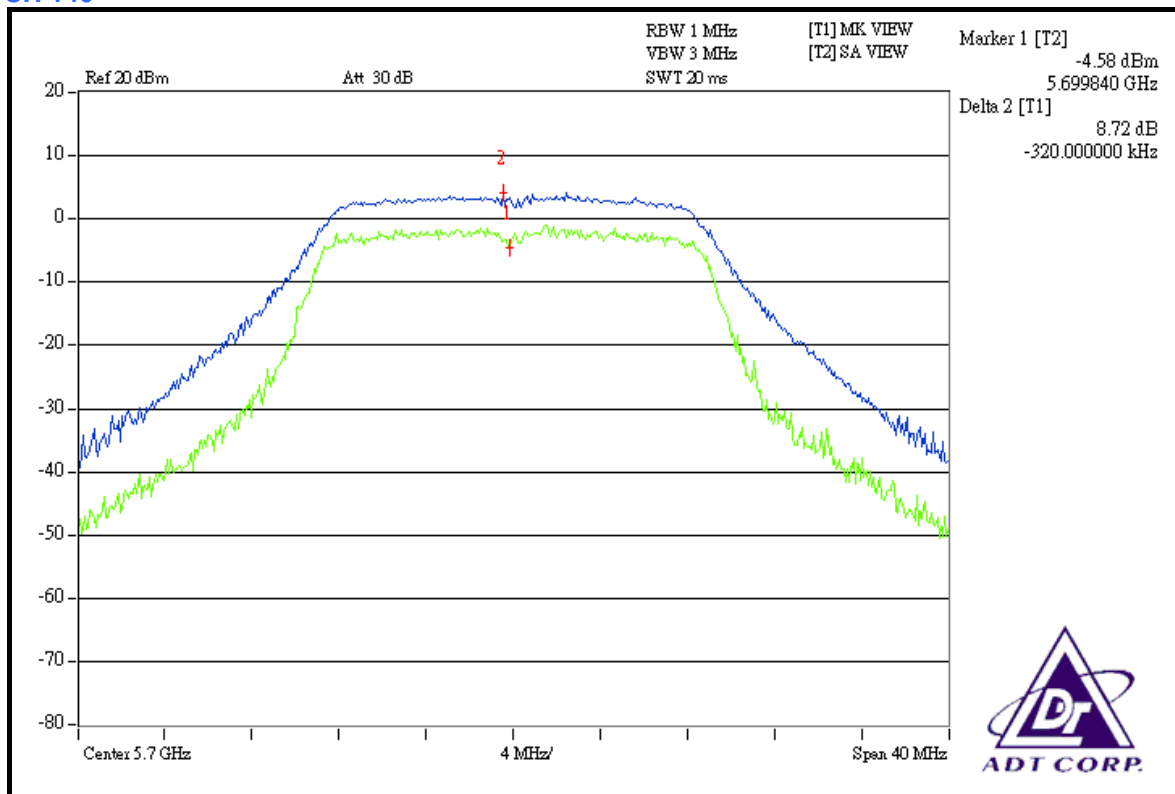




CH 120

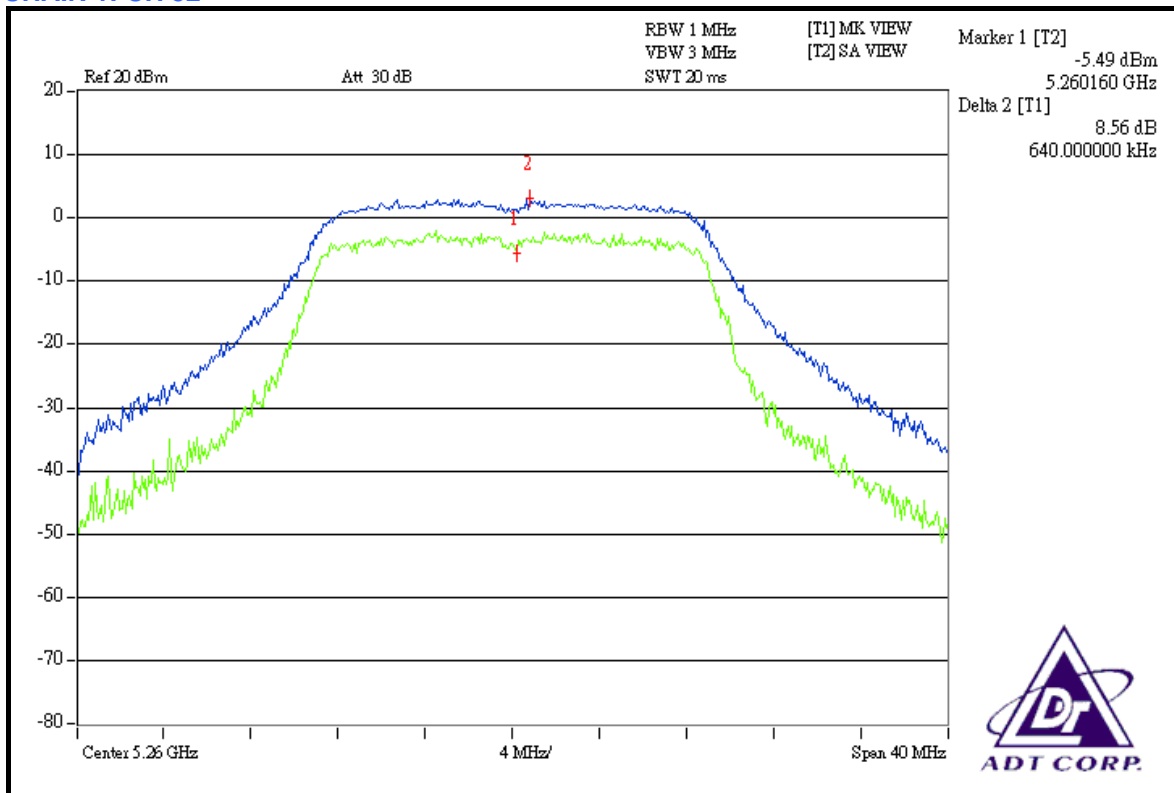


CH 140

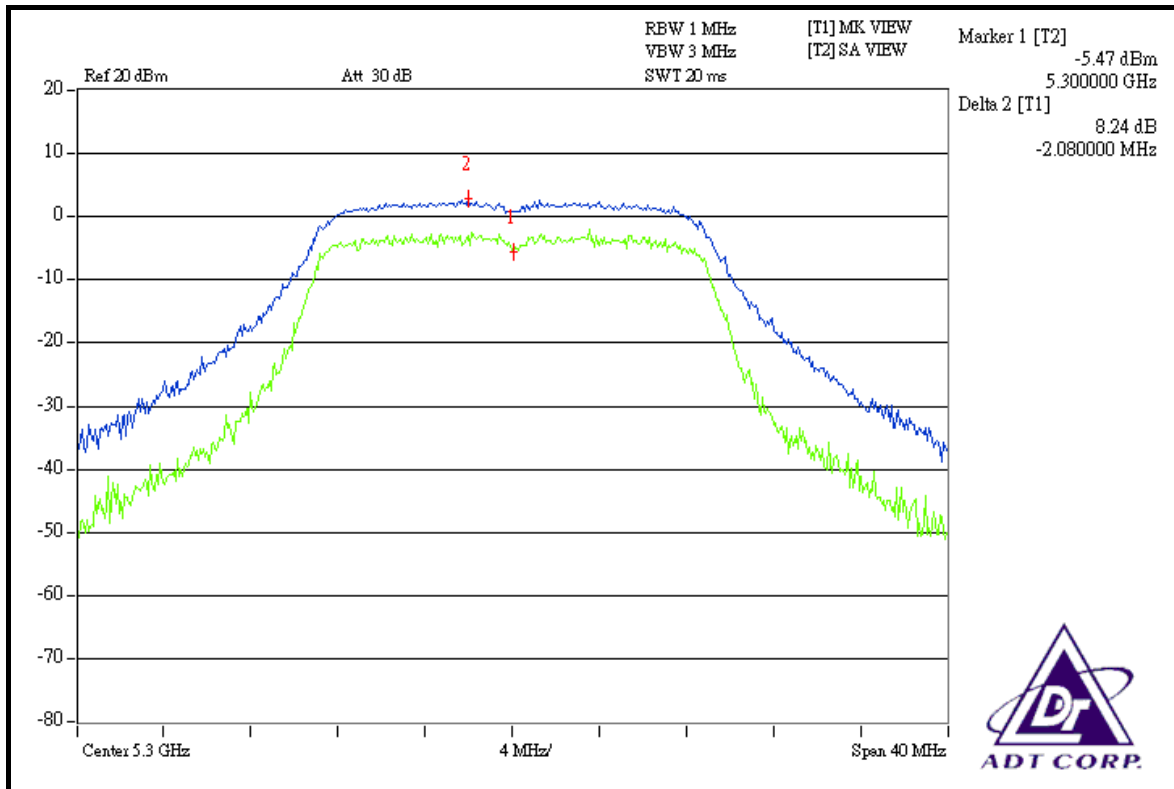




CHAIN 1: CH 52

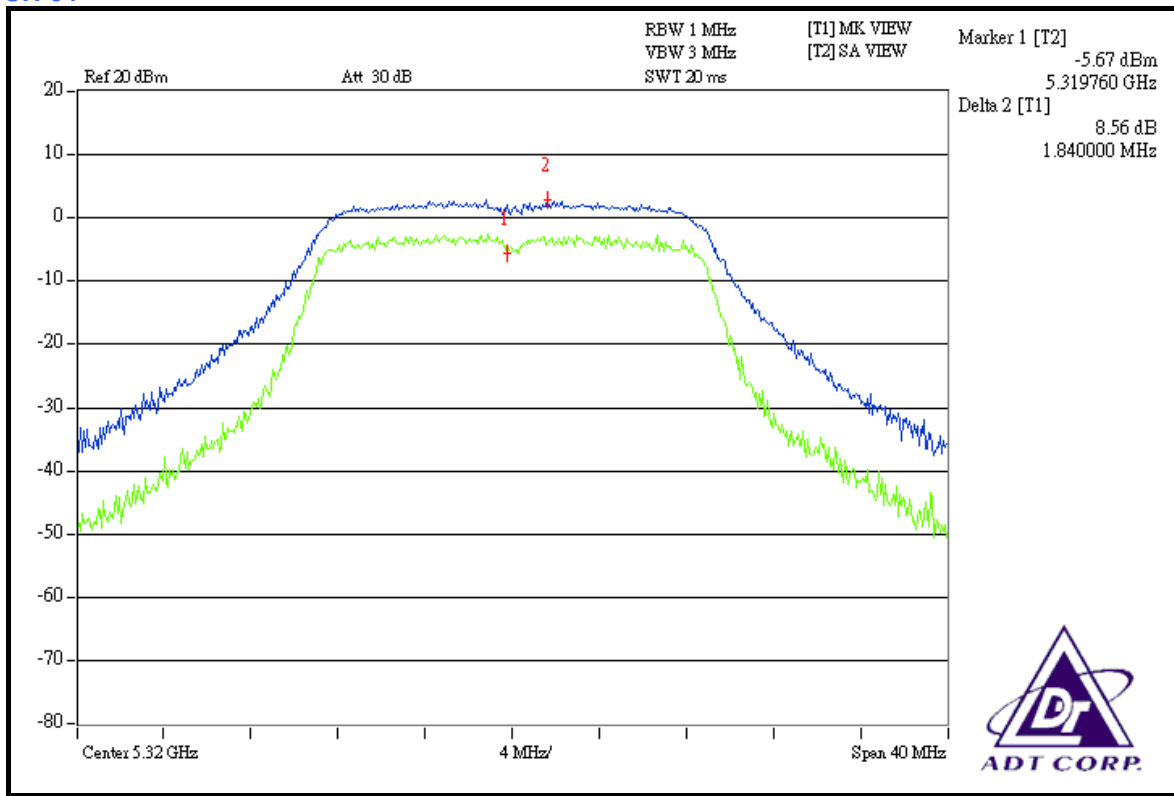


CH 60

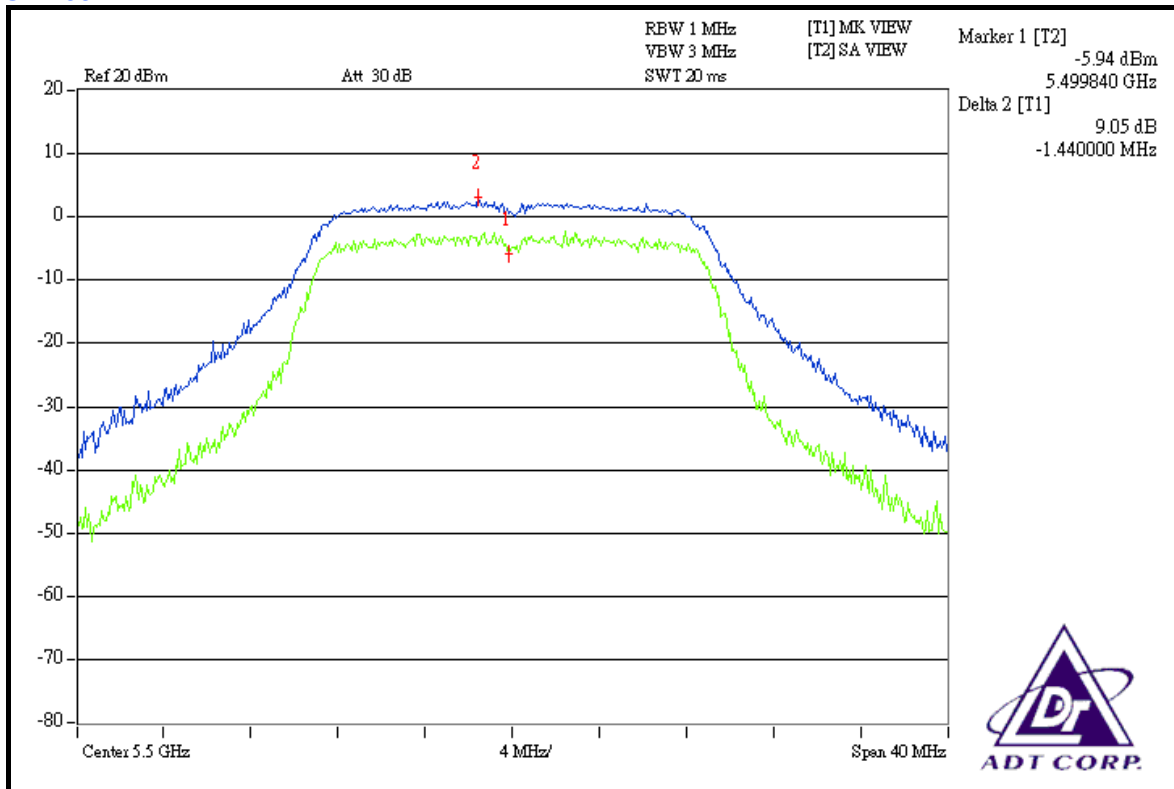




CH 64

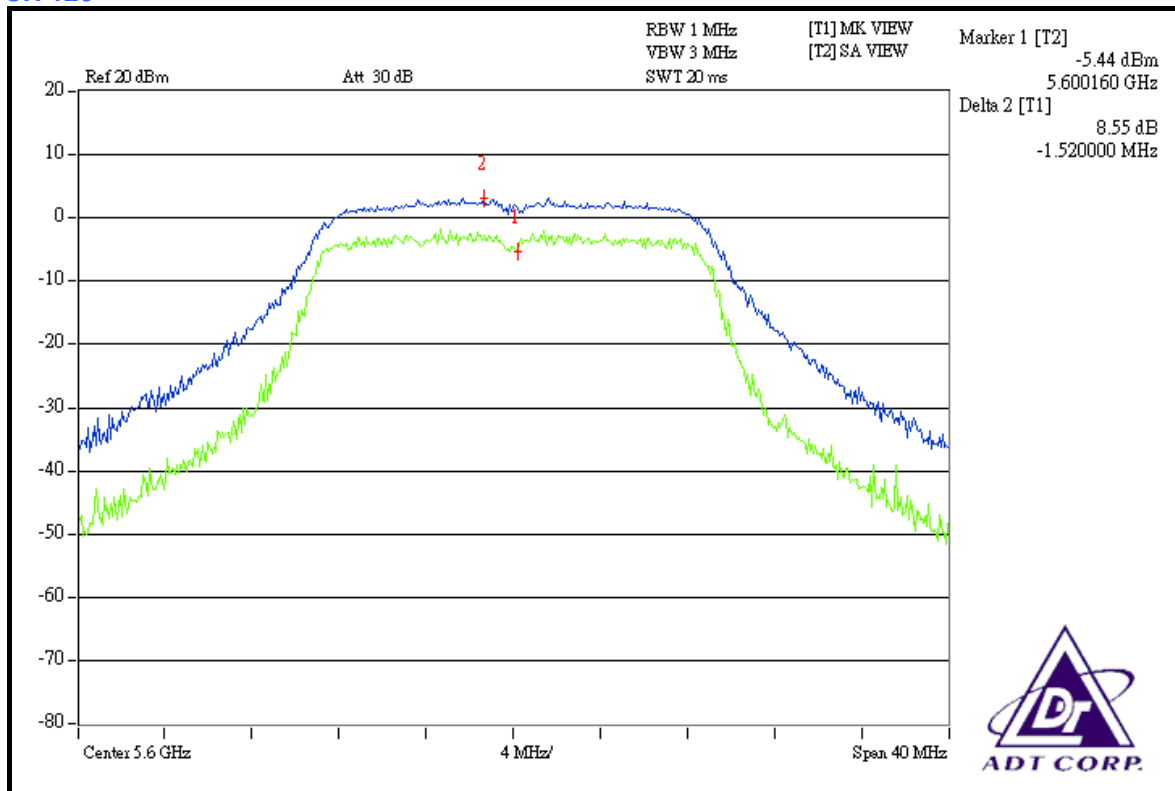


CH 100

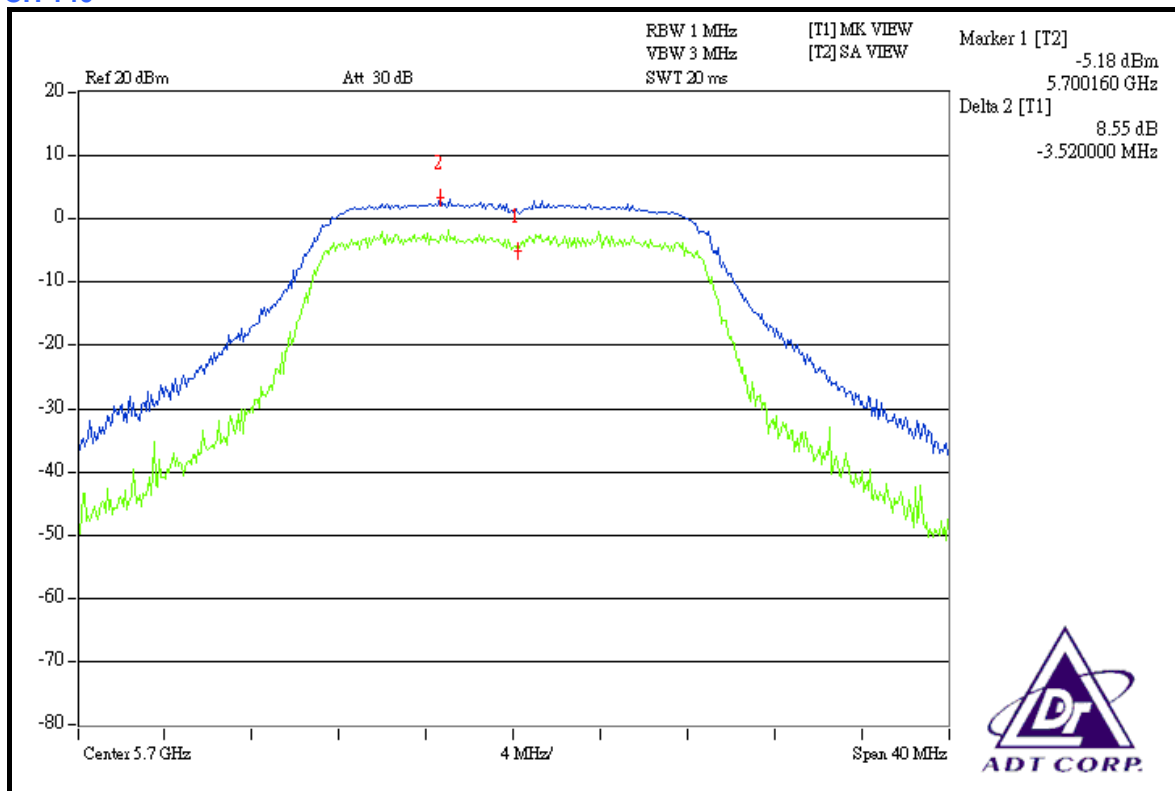




CH 120



CH 140





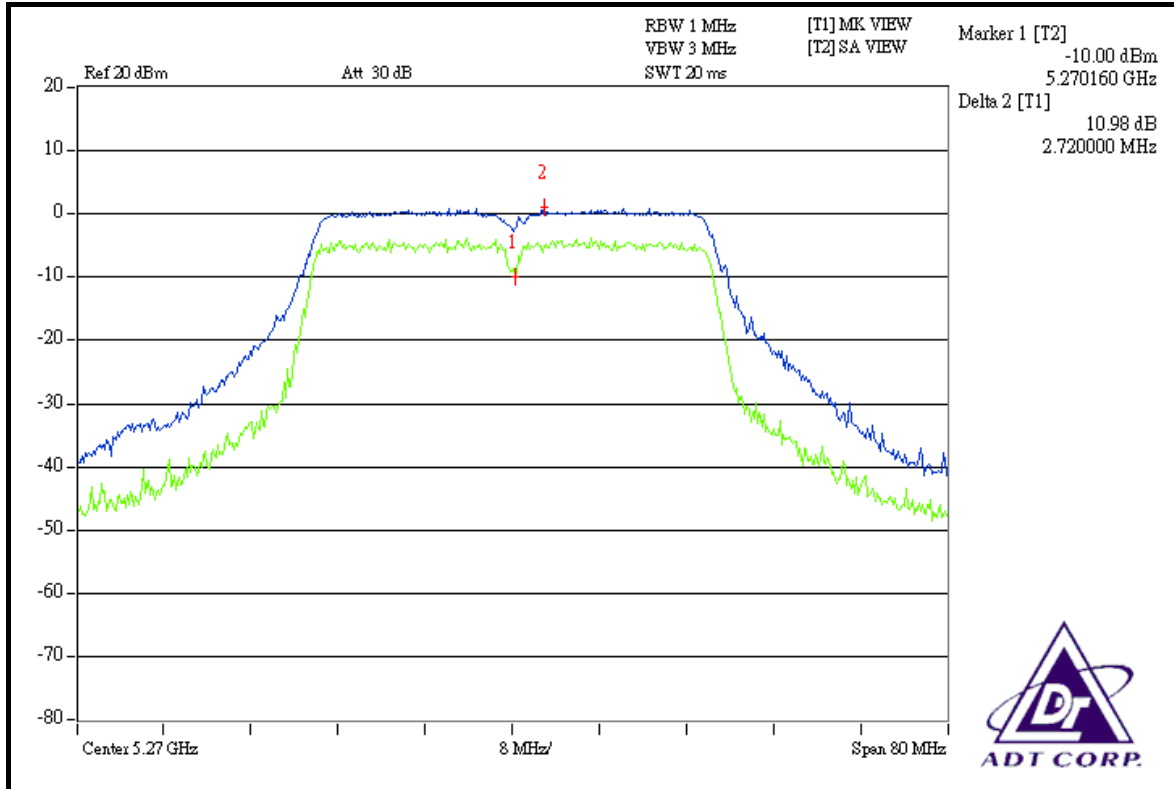
DRAFT 802.11n (40MHz) OFDM MODULATION

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

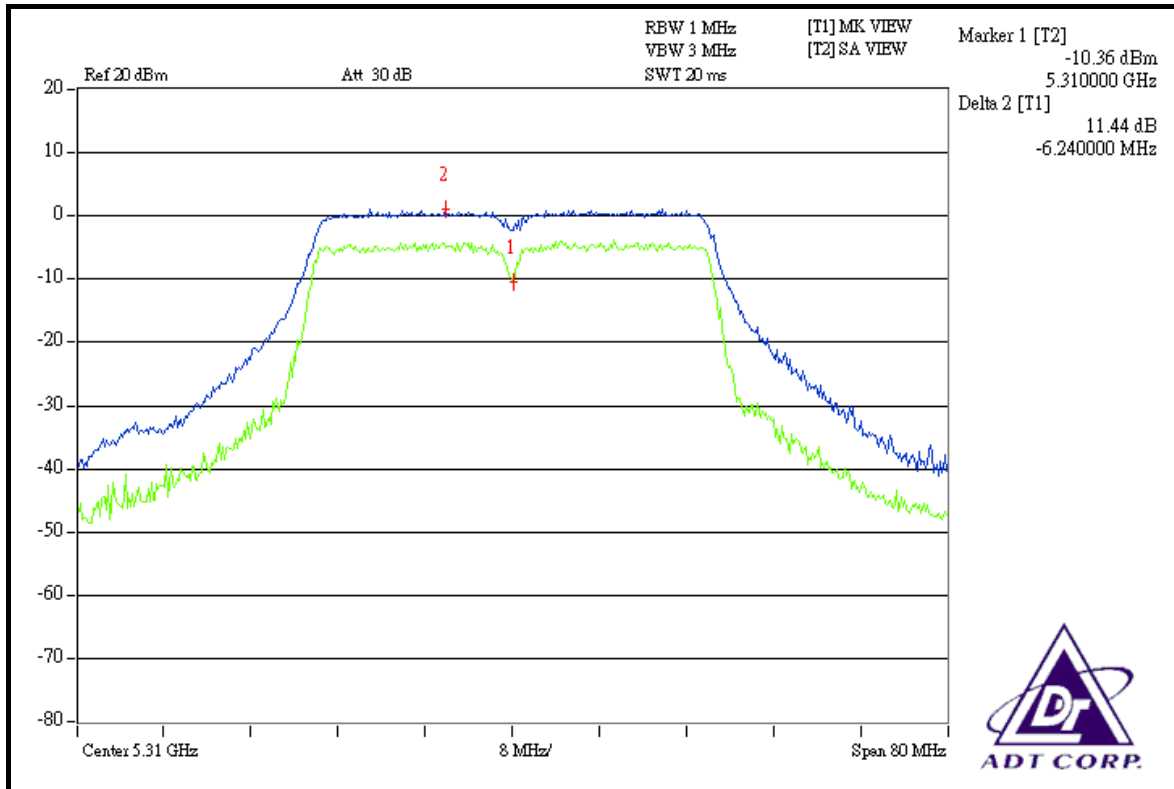
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)		PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1		
54	5270	10.98	11.75	13	PASS
62	5310	11.44	12.01	13	PASS
102	5510	10.68	11.51	13	PASS
118	5590	11.24	10.78	13	PASS
134	5670	8.14	11.59	13	PASS



CHAIN 0: CH 54

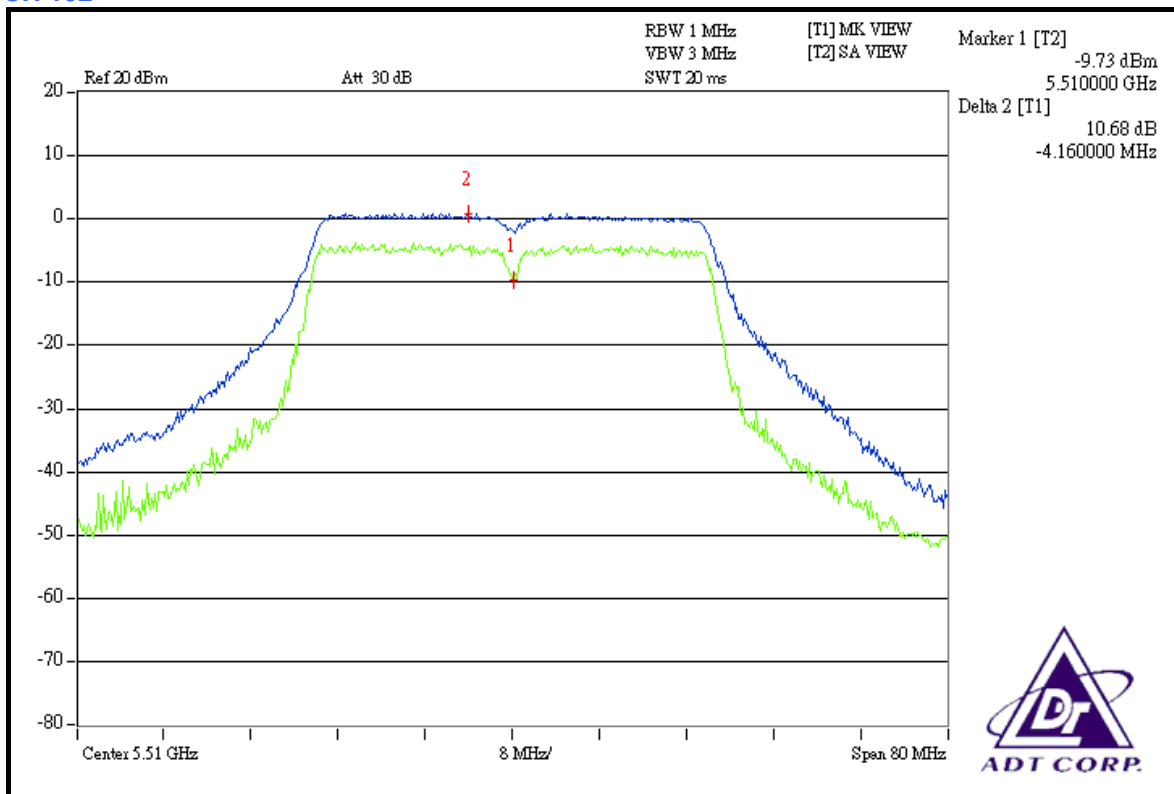


CH 62

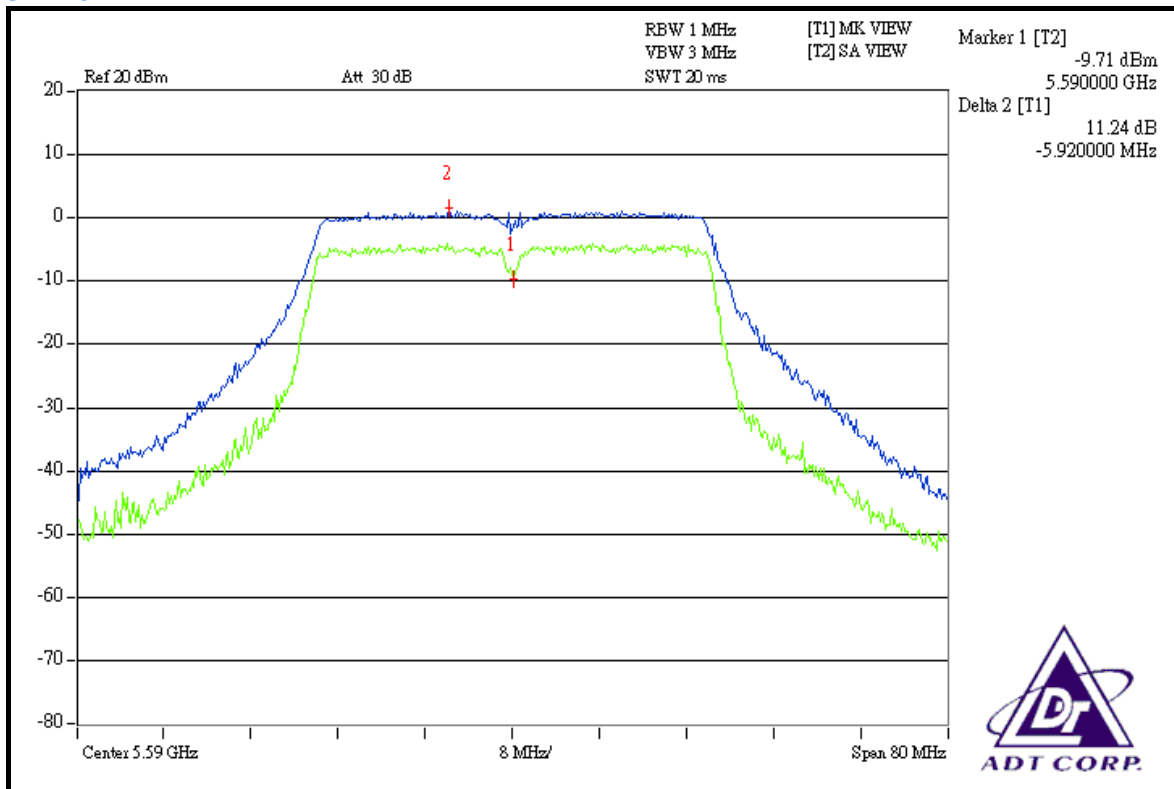




CH 102

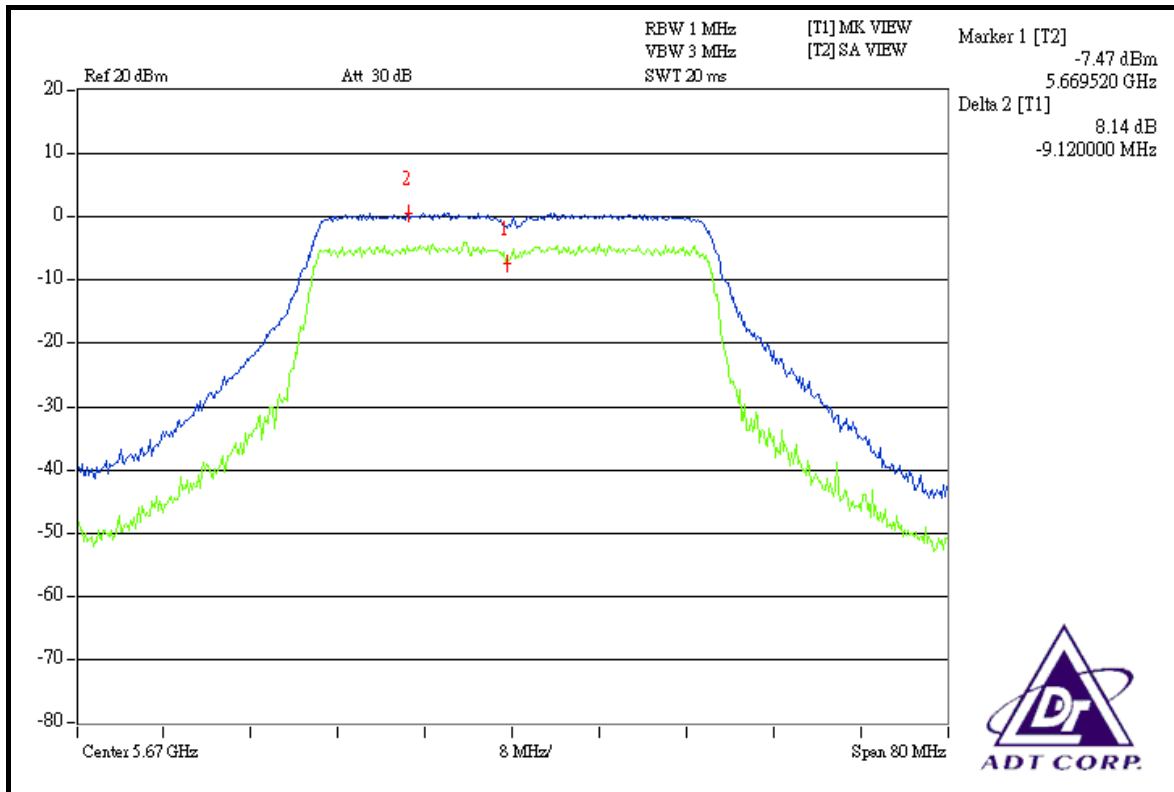


CH 118

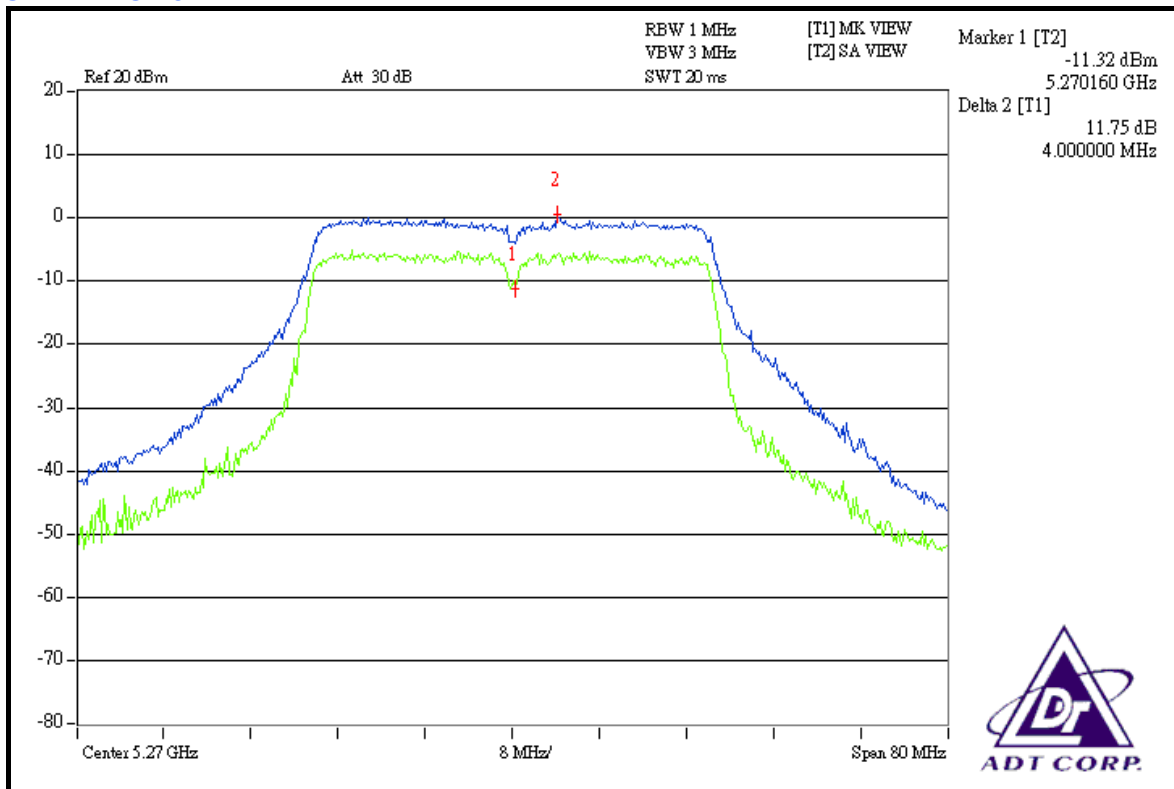




CH 134

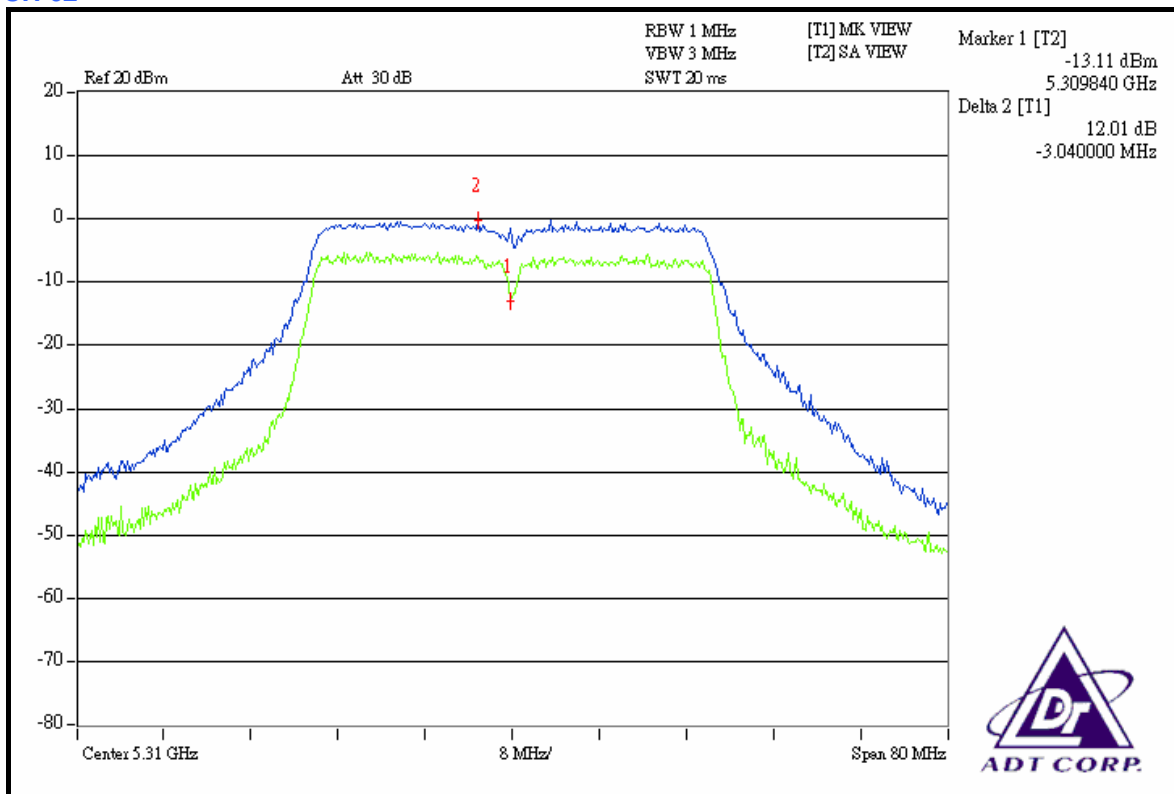


CHAIN 1: CH 54

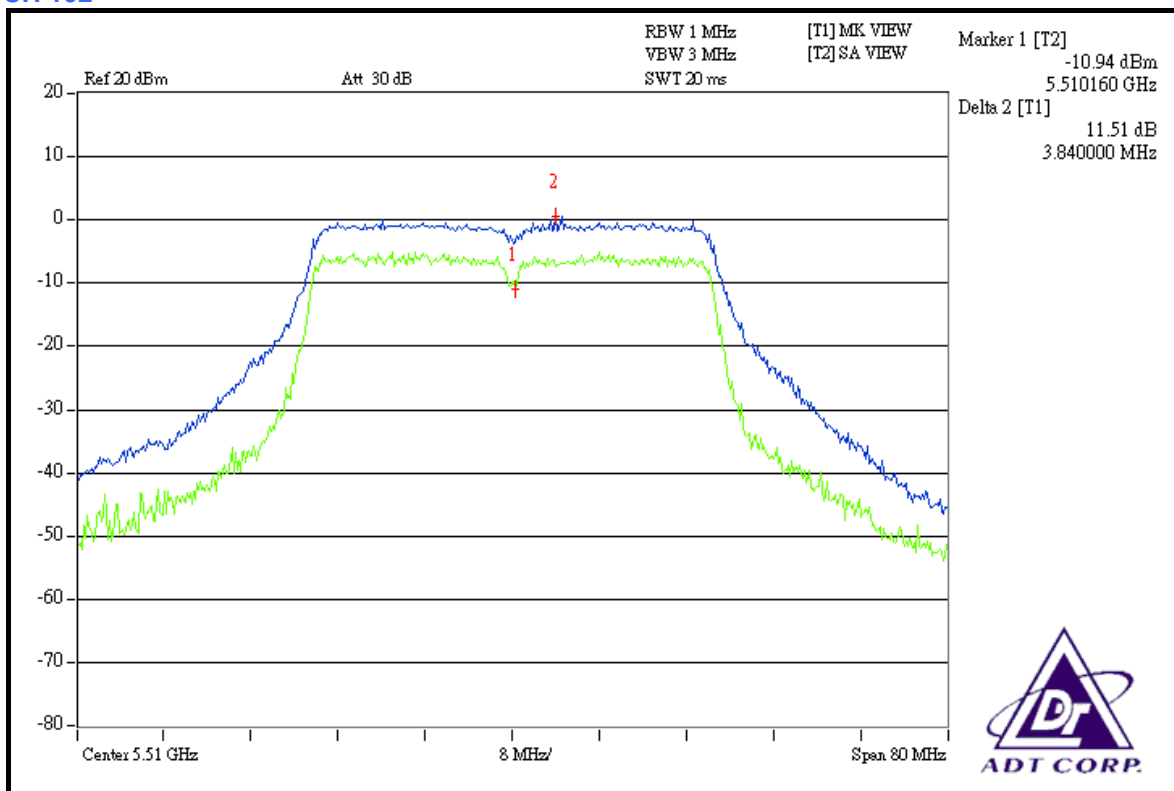




CH 62

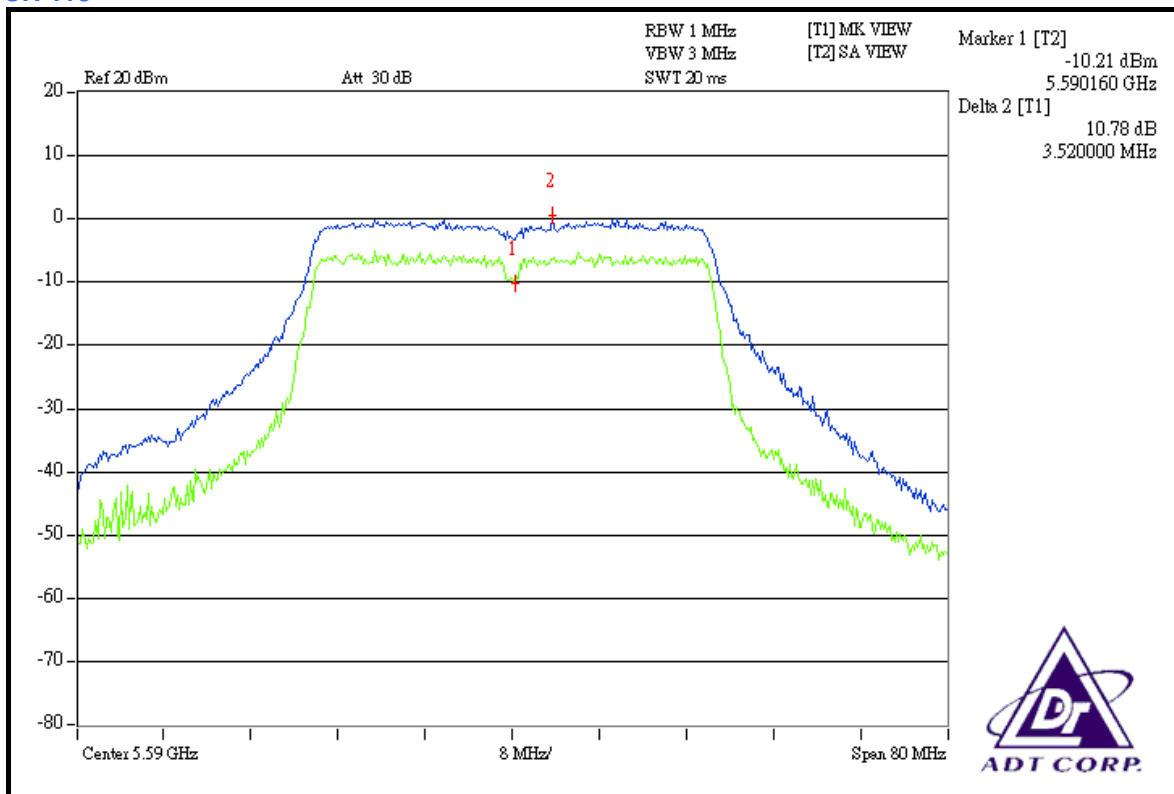


CH 102

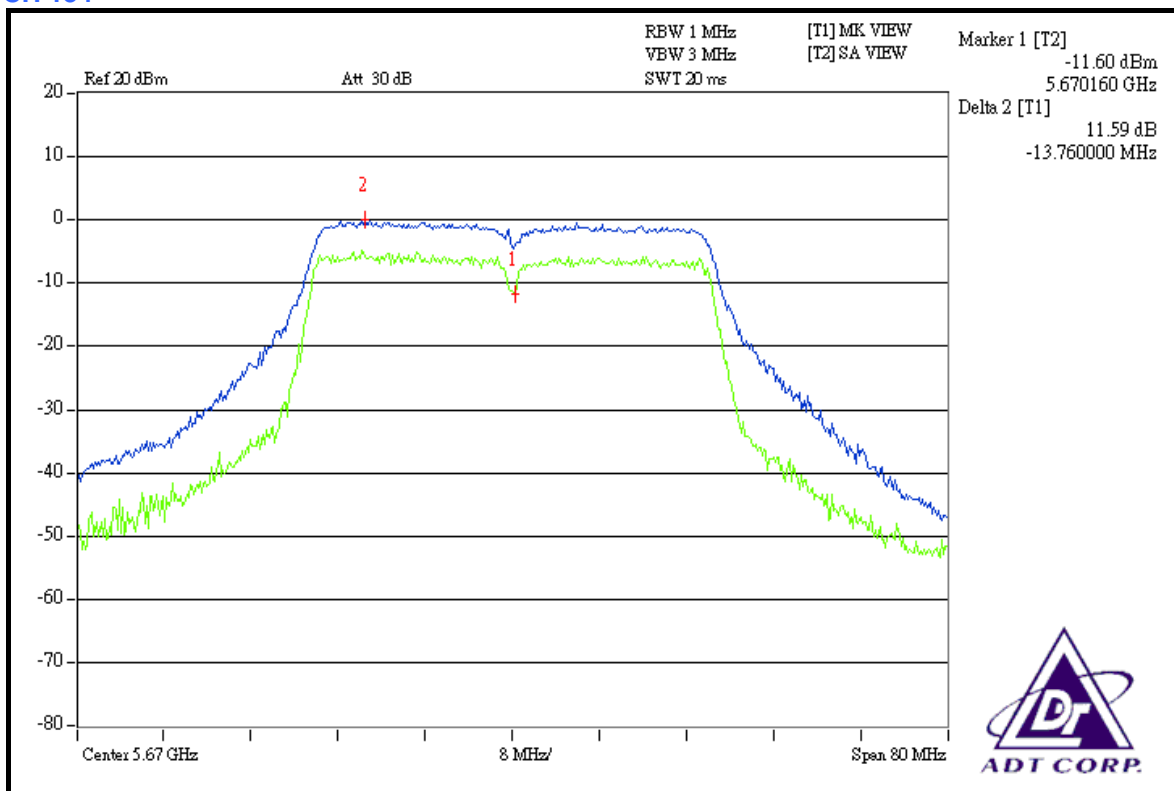




CH 118



CH 134





4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

FREQUENCY BAND	LIMIT
5.250 ~ 5.350GHz	11dBm
5.470 ~ 5.725GHz	11dBm

4.5.2 TEST INSTRUMENTS

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

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

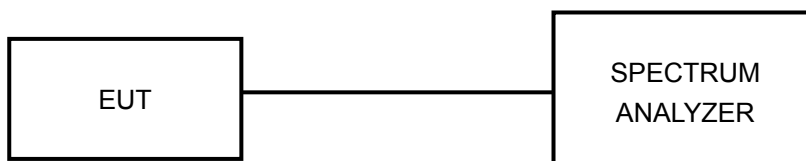
4.5.3 TEST PROCEDURES

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITIONS

Same as 5.3.6



4.5.7 TEST RESULTS

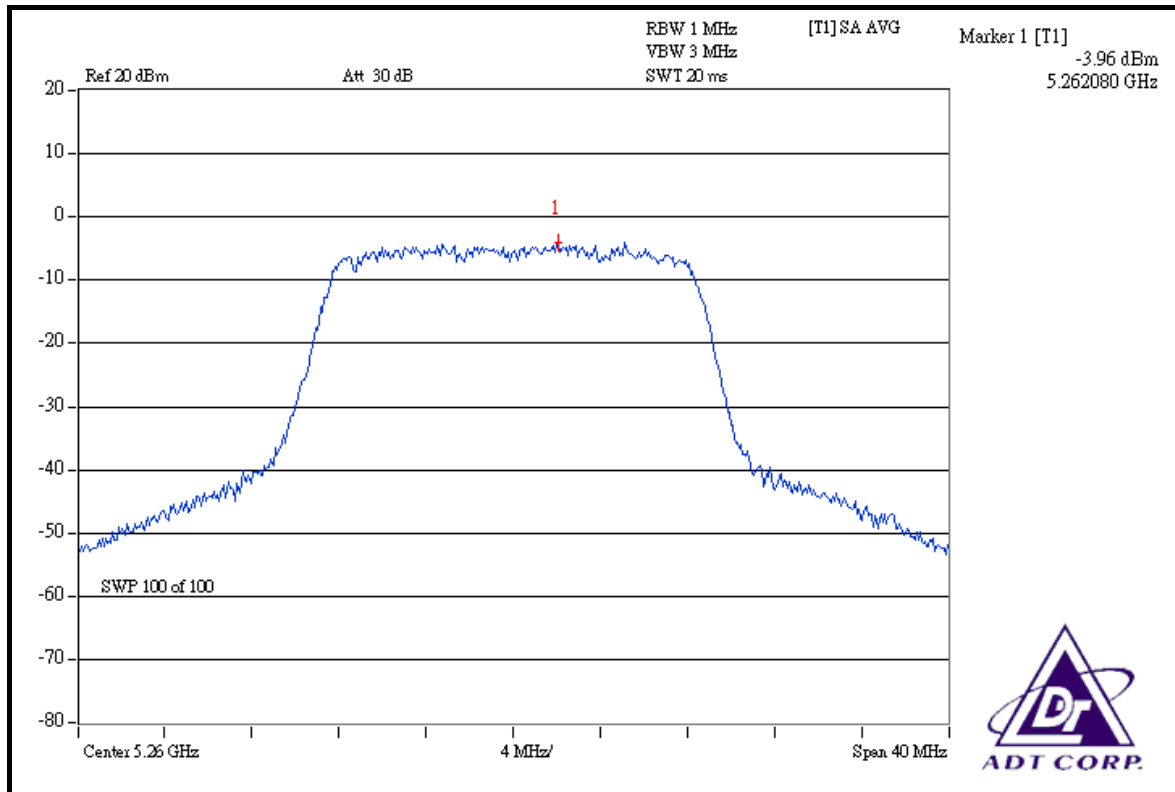
802.11a OFDM MODULATION

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

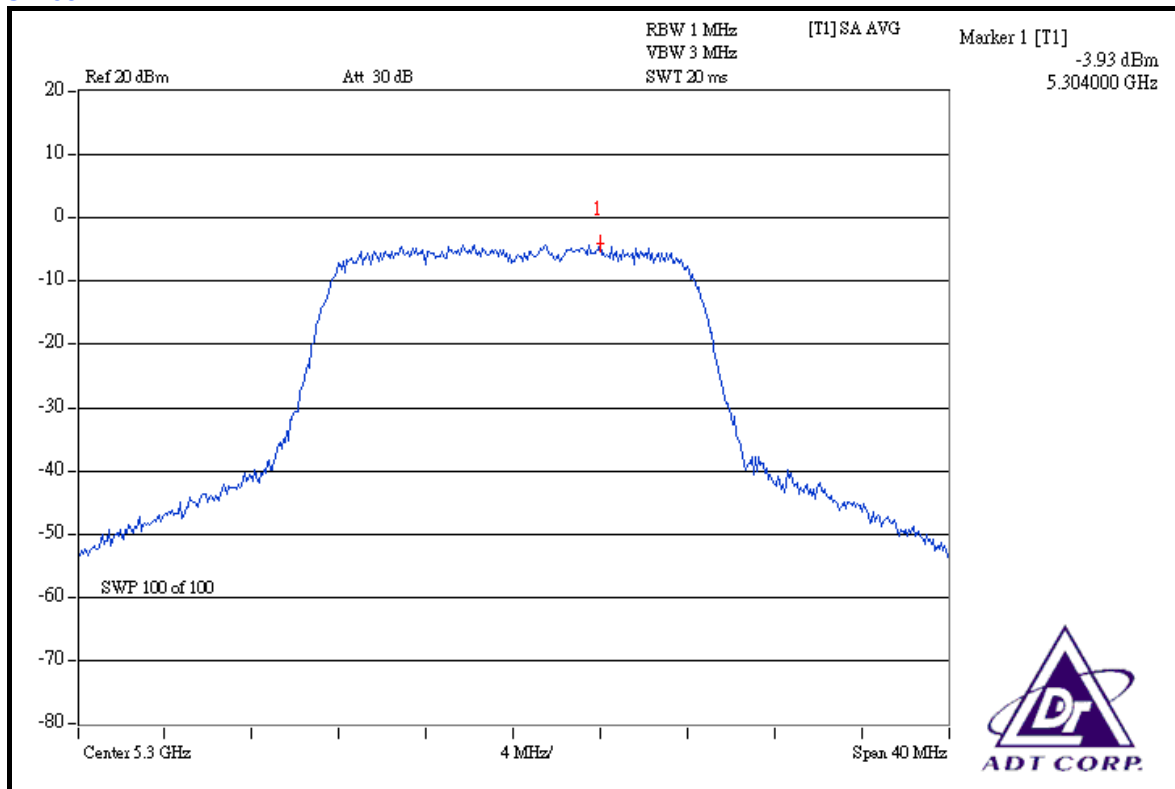
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
52	5260	-3.96	11	PASS
60	5300	-3.93	11	PASS
64	5320	-4.05	11	PASS
100	5500	-4.01	11	PASS
120	5600	-3.91	11	PASS
140	5700	-4.06	11	PASS



CH 52

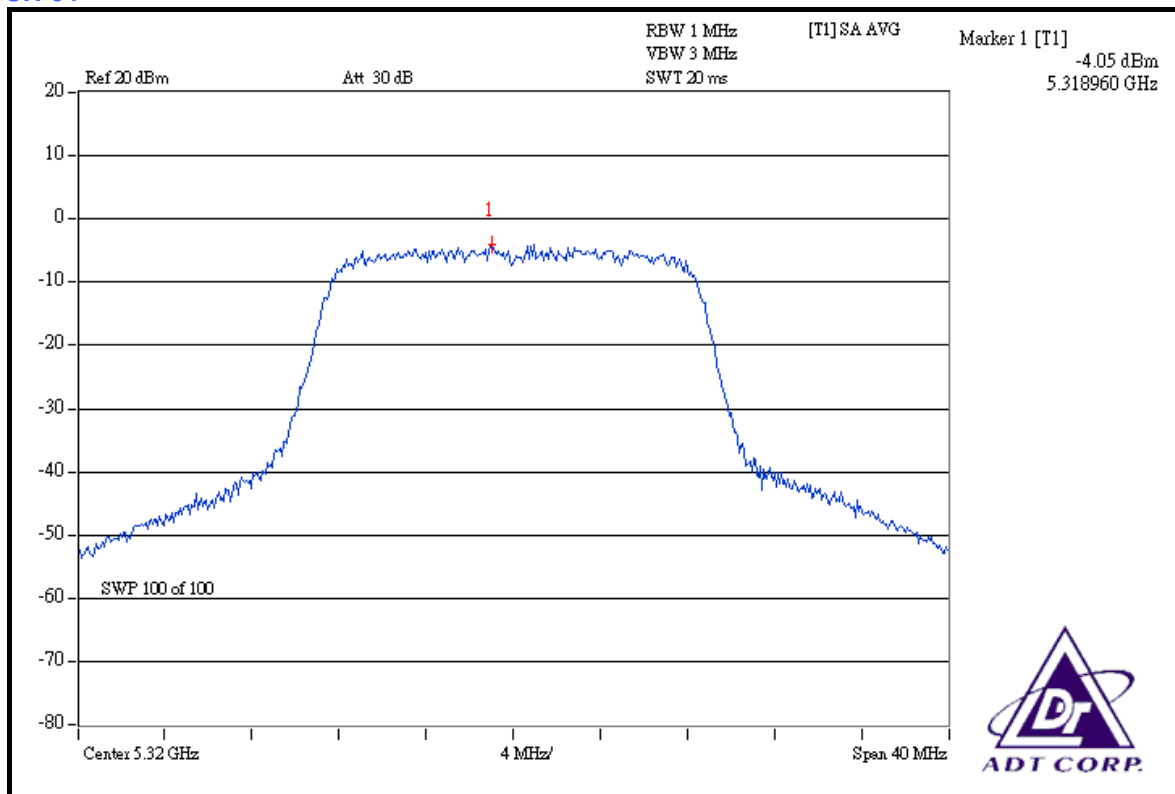


CH 60

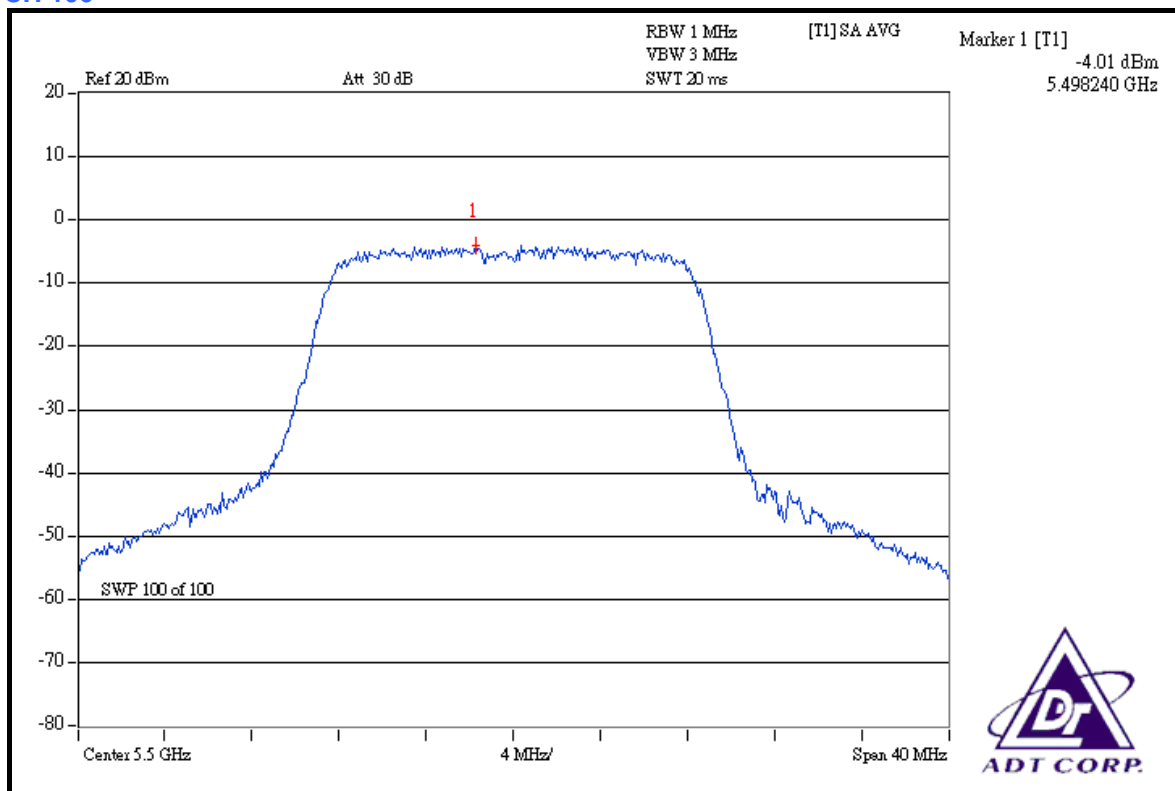




CH 64

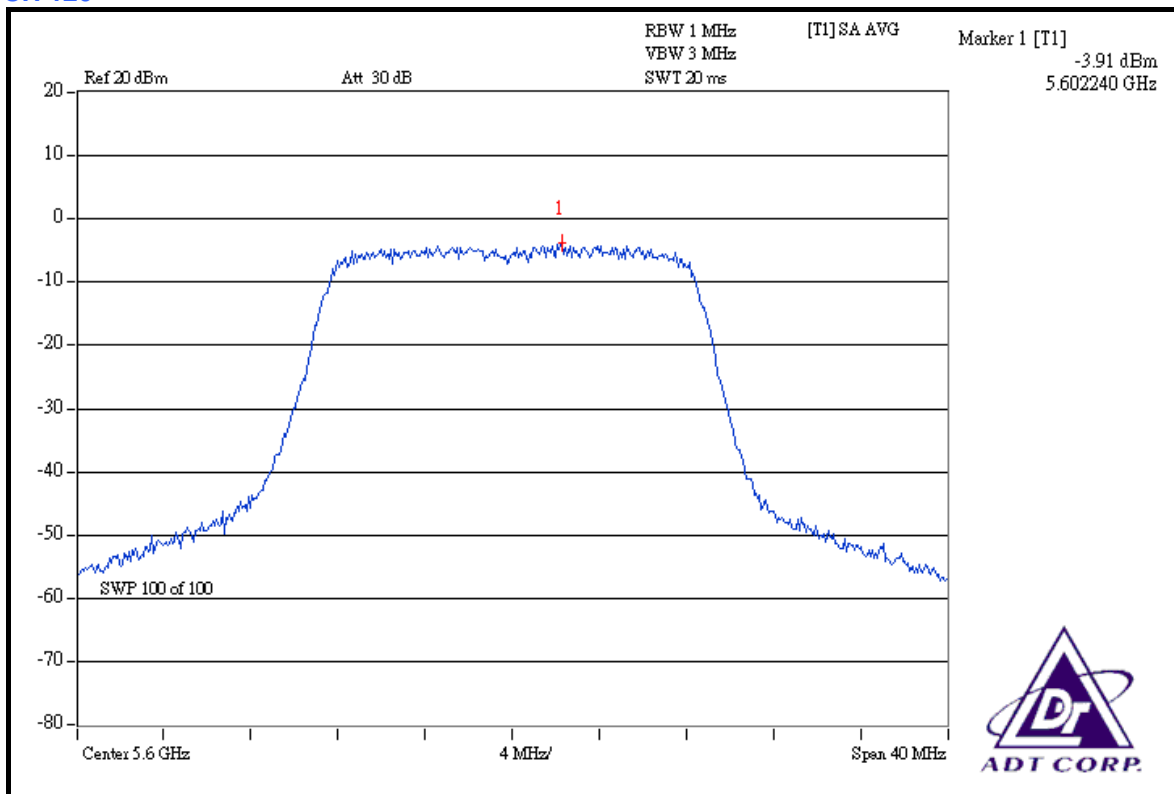


CH 100

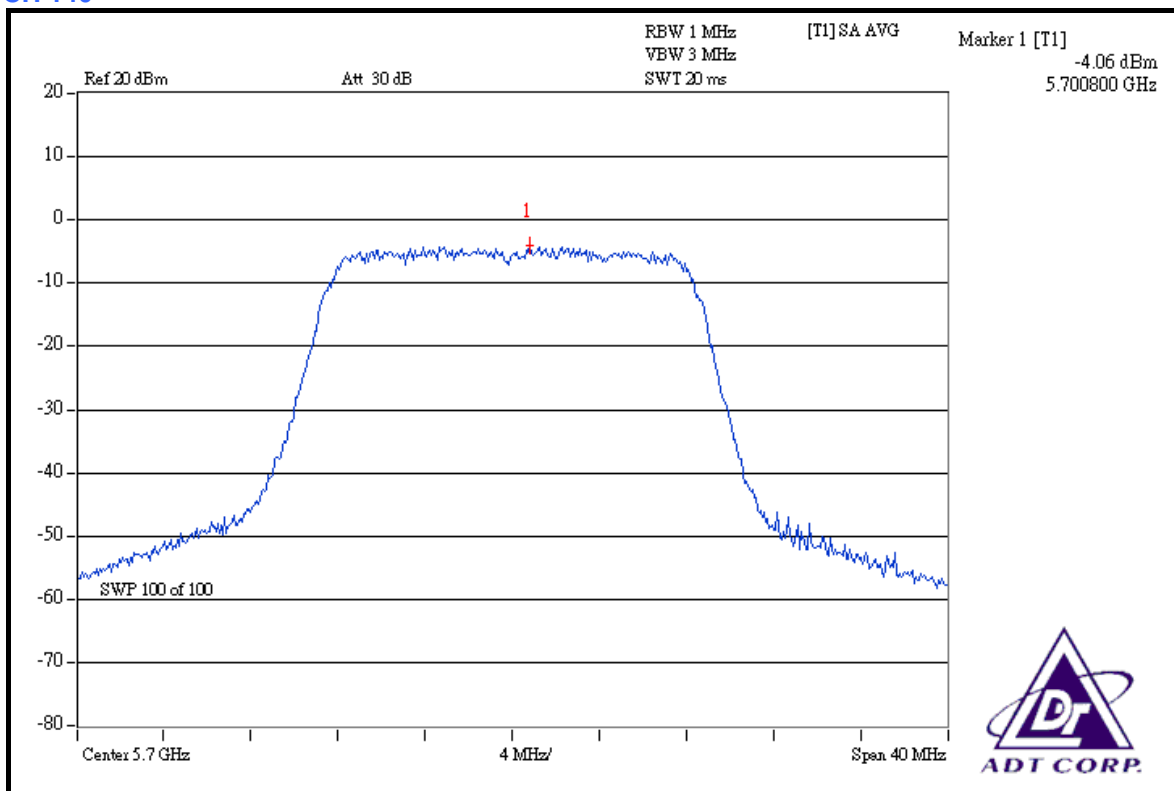




CH 120



CH 140





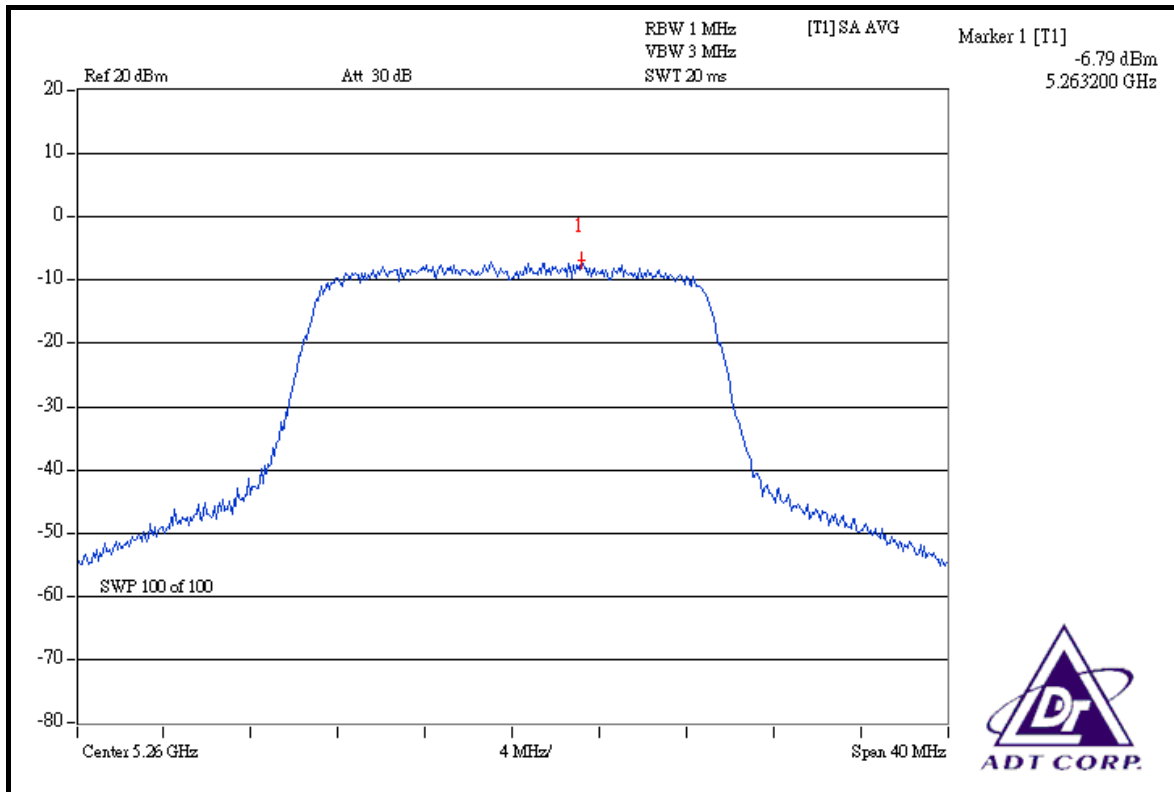
DRAFT 802.11n (20MHz) OFDM MODULATION

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

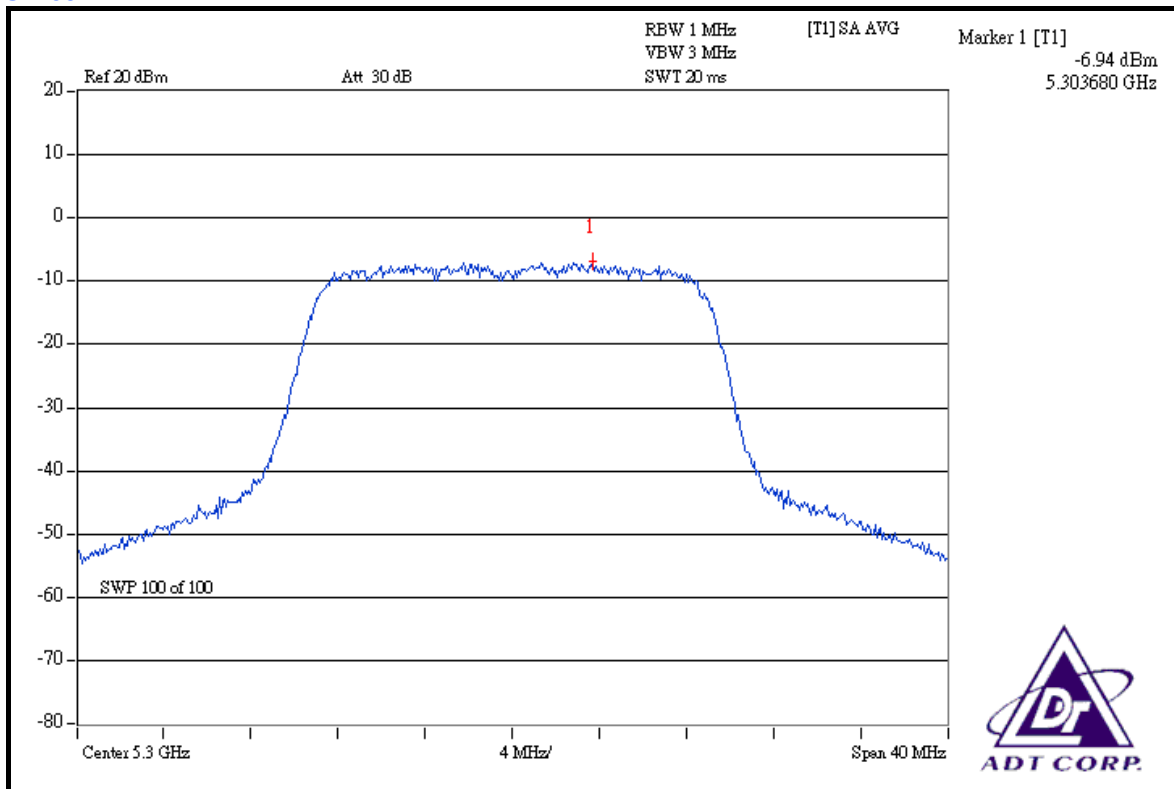
CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
52	5260	-6.79	-7.88	0.372	-4.29	11	PASS
60	5300	-6.94	-7.83	0.367	-4.35	11	PASS
64	5320	-6.92	-7.94	0.364	-4.39	11	PASS
100	5500	-6.65	-7.73	0.385	-4.15	11	PASS
120	5600	-6.58	-7.65	0.392	-4.07	11	PASS
140	5700	-6.94	-7.81	0.368	-4.34	11	PASS



CHAIN 0: CH 52

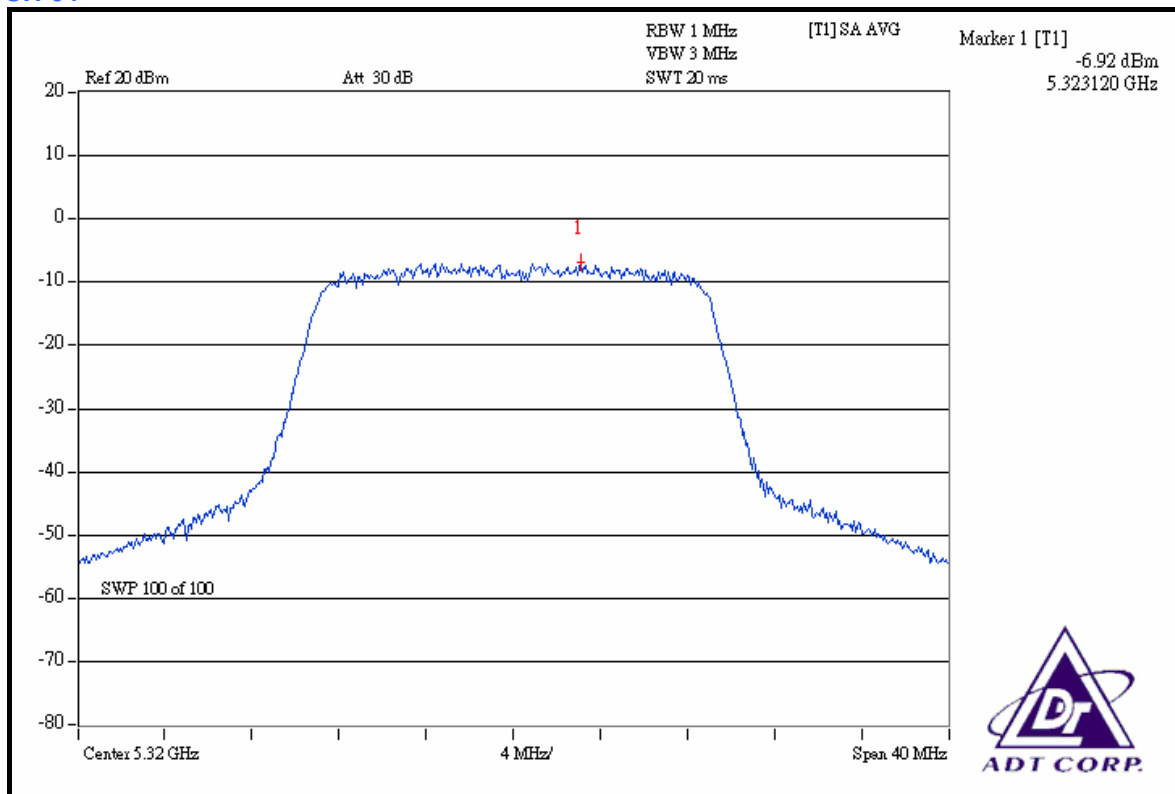


CH 60

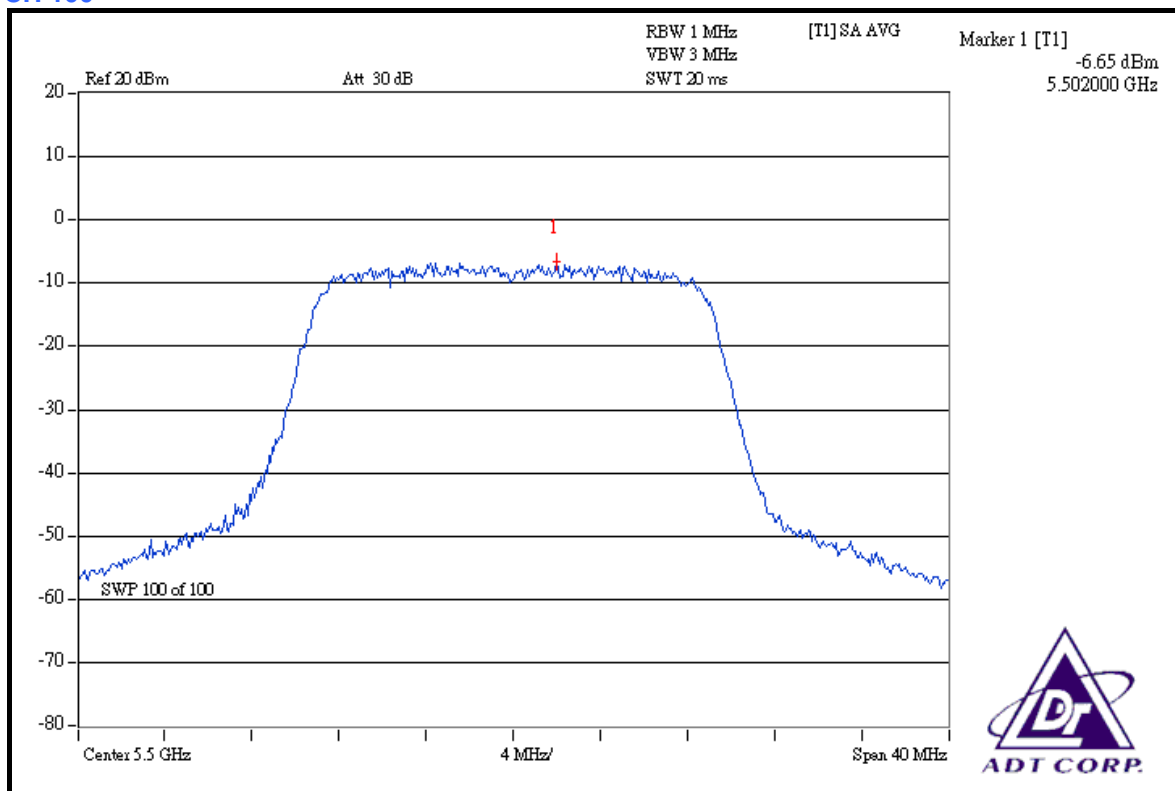




CH 64

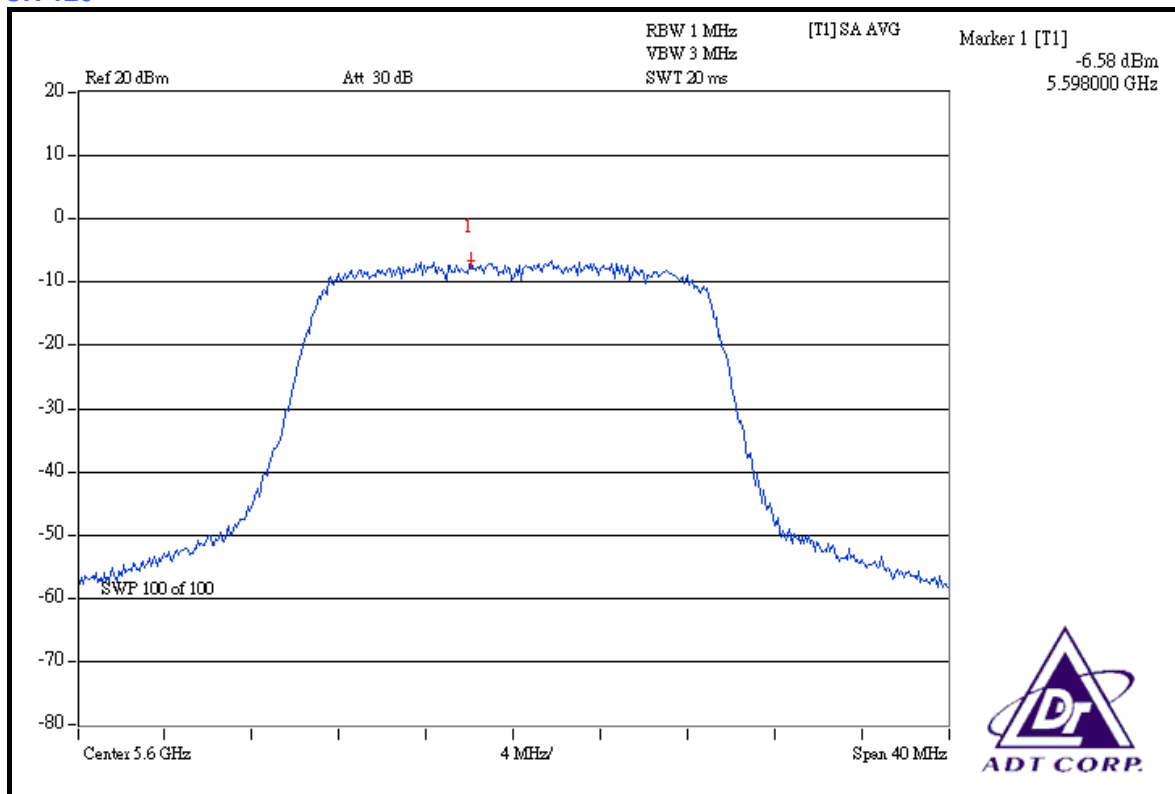


CH 100

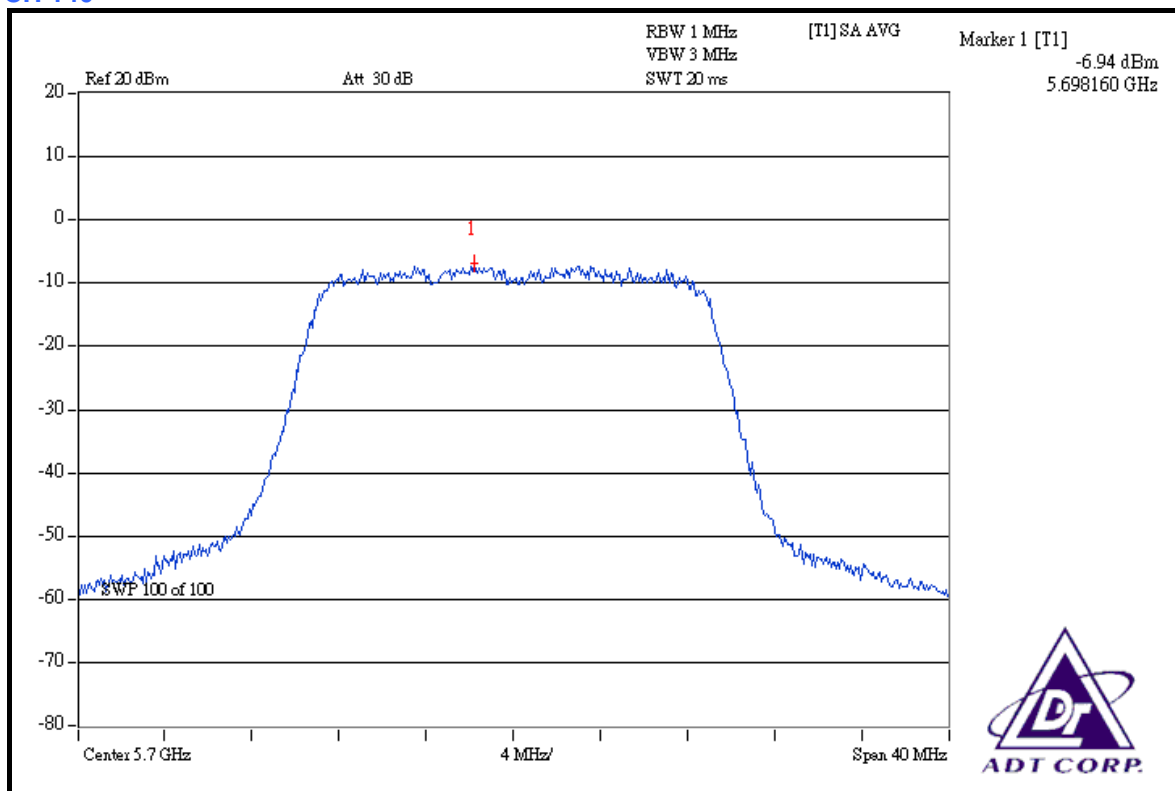




CH 120

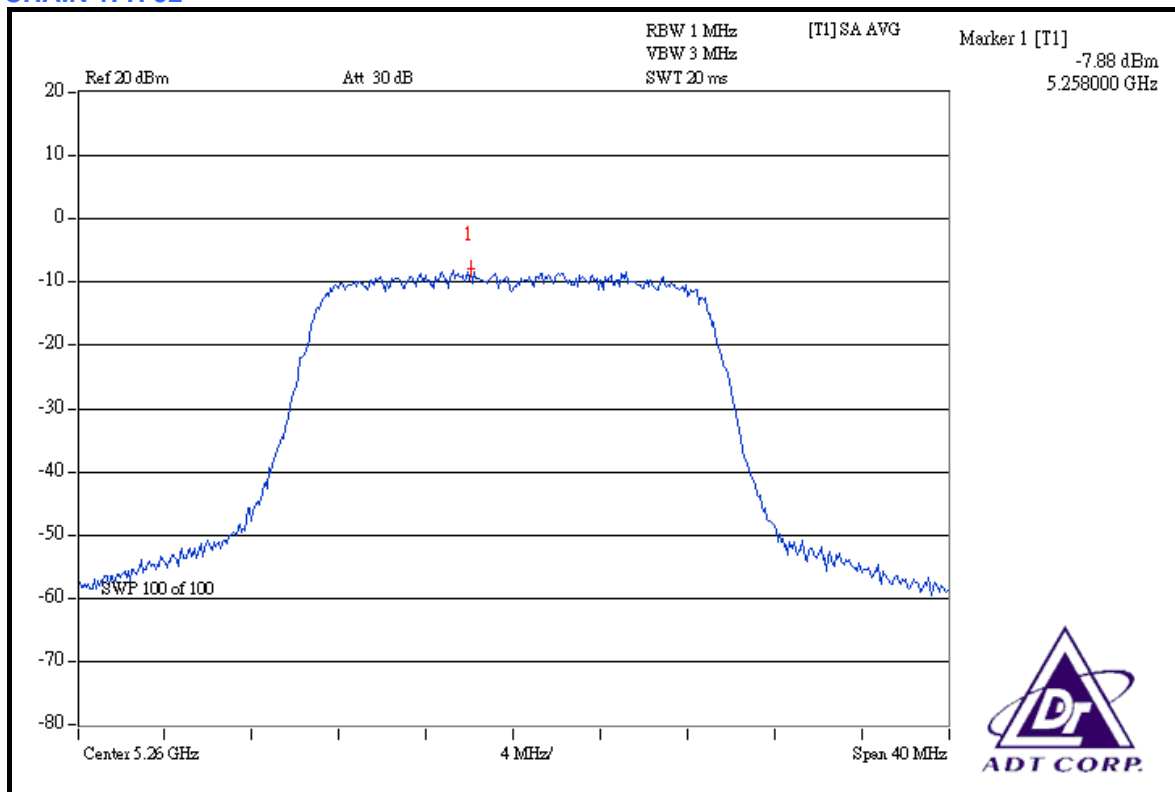


CH 140

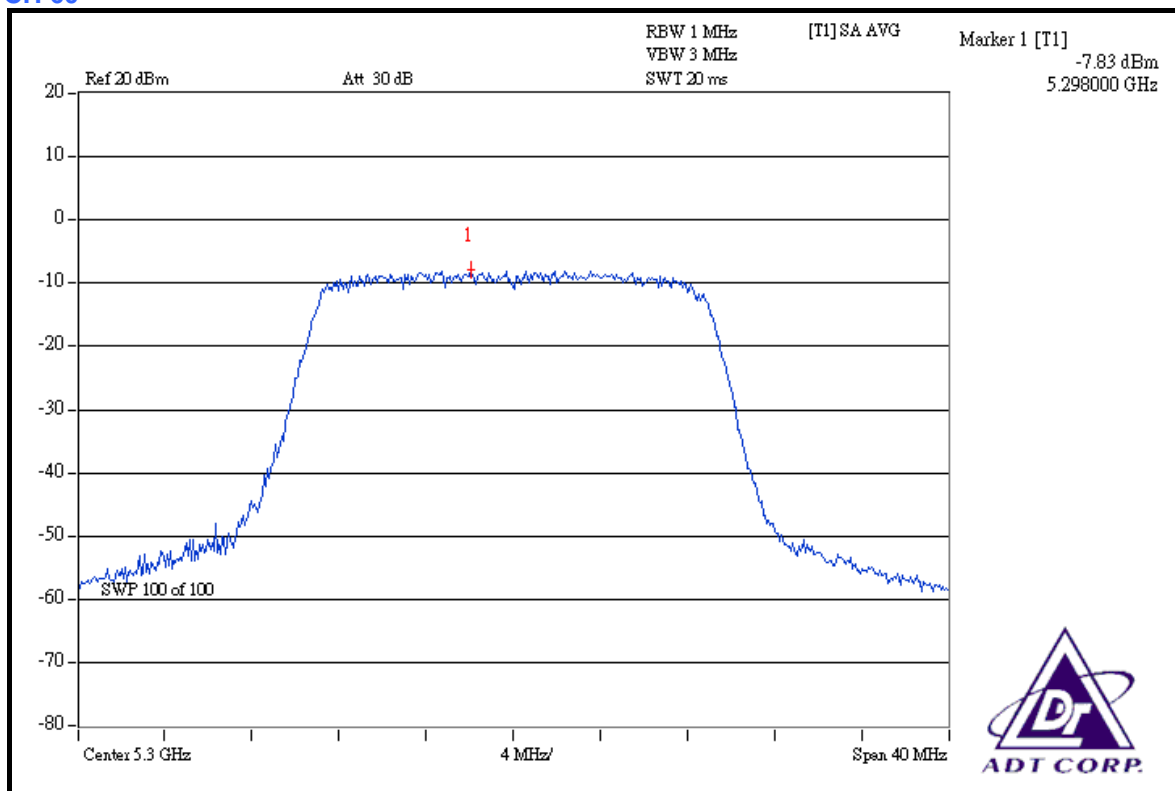




CHAIN 1: H 52

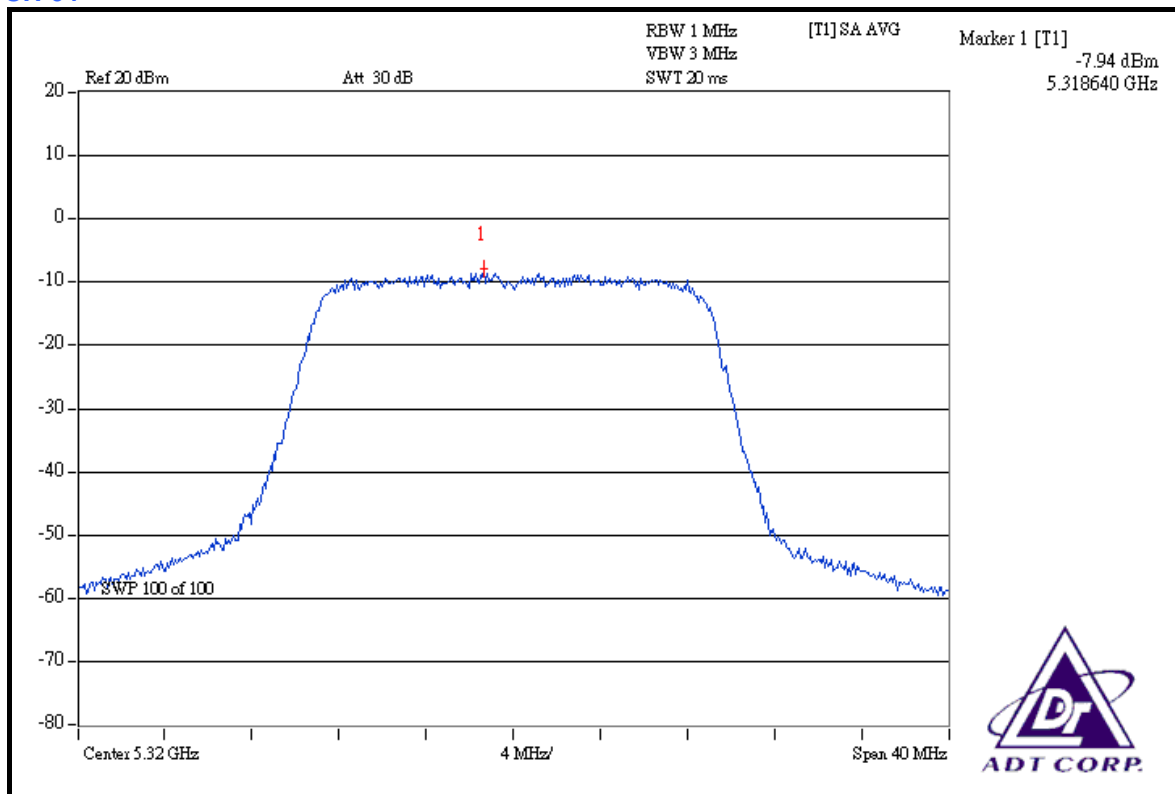


CH 60

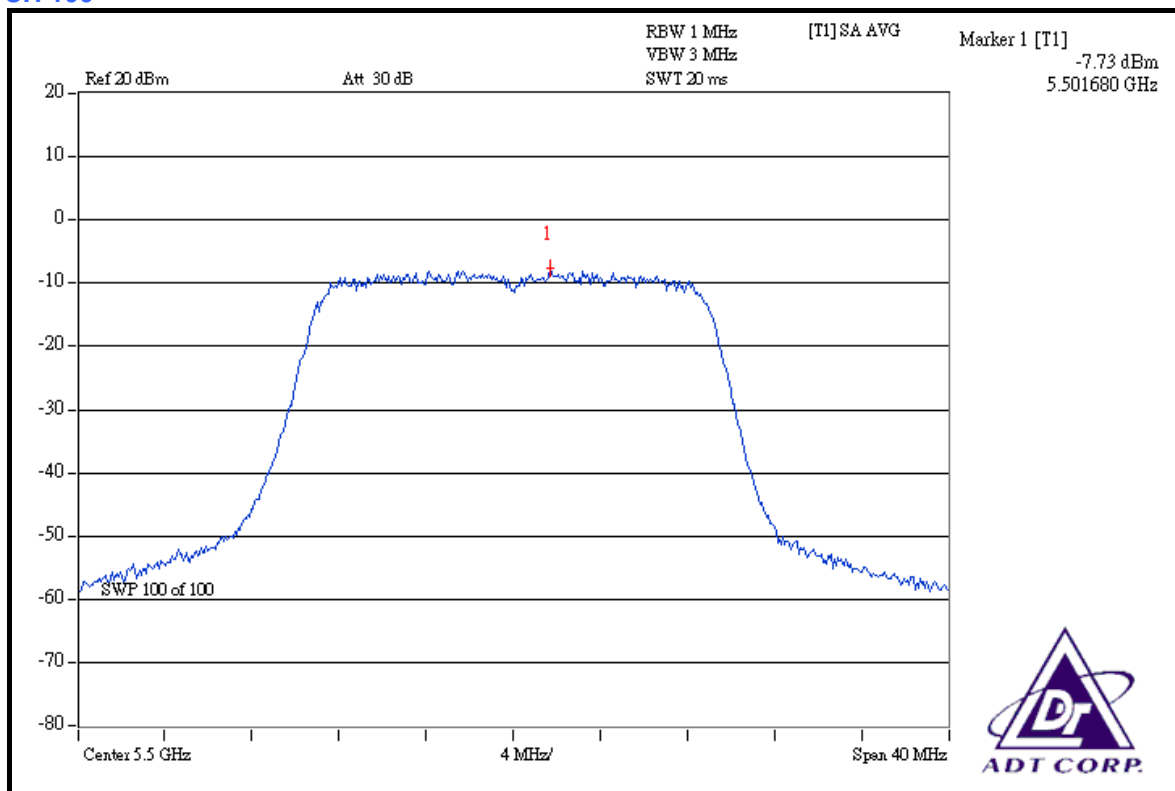




CH 64

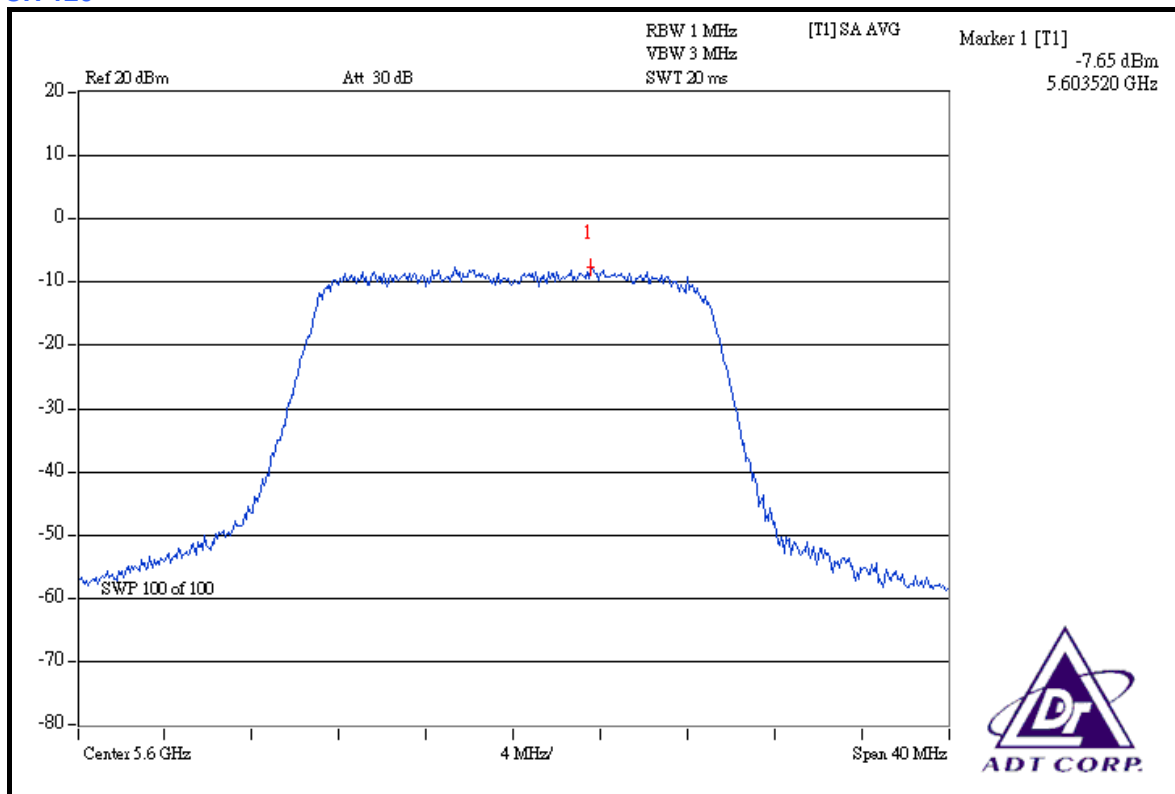


CH 100

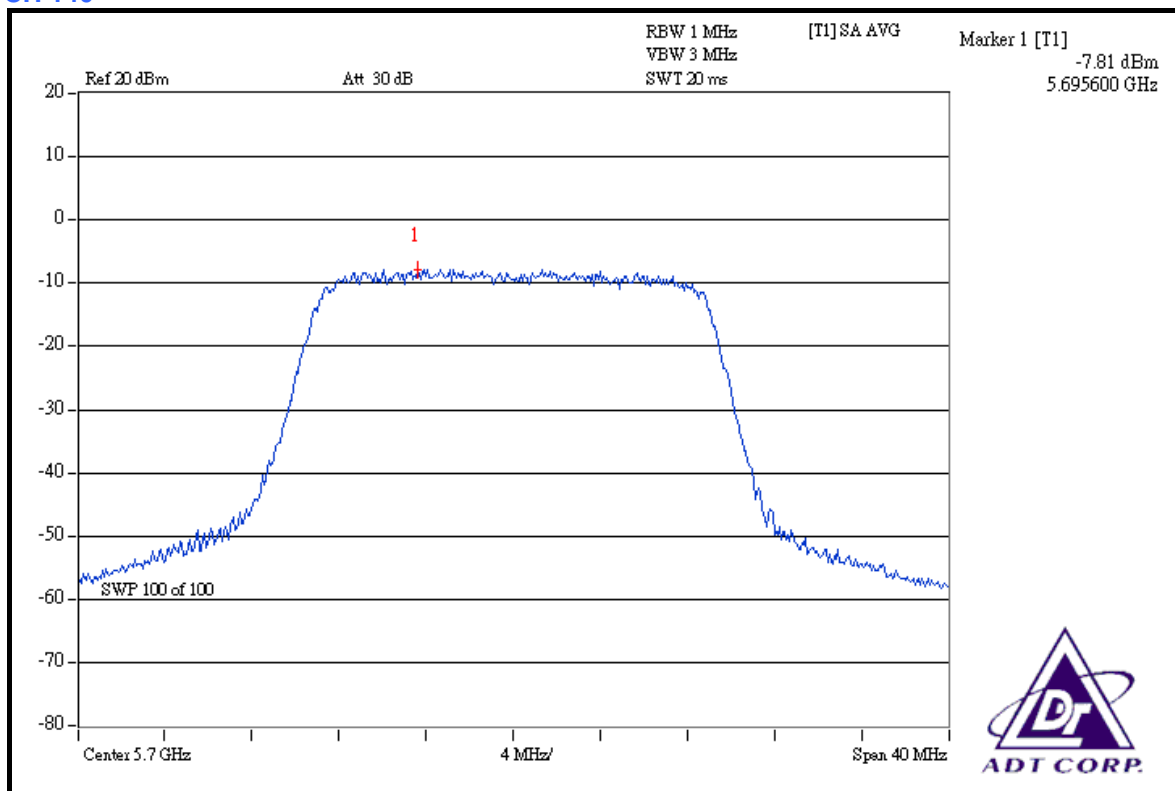




CH 120



CH 140





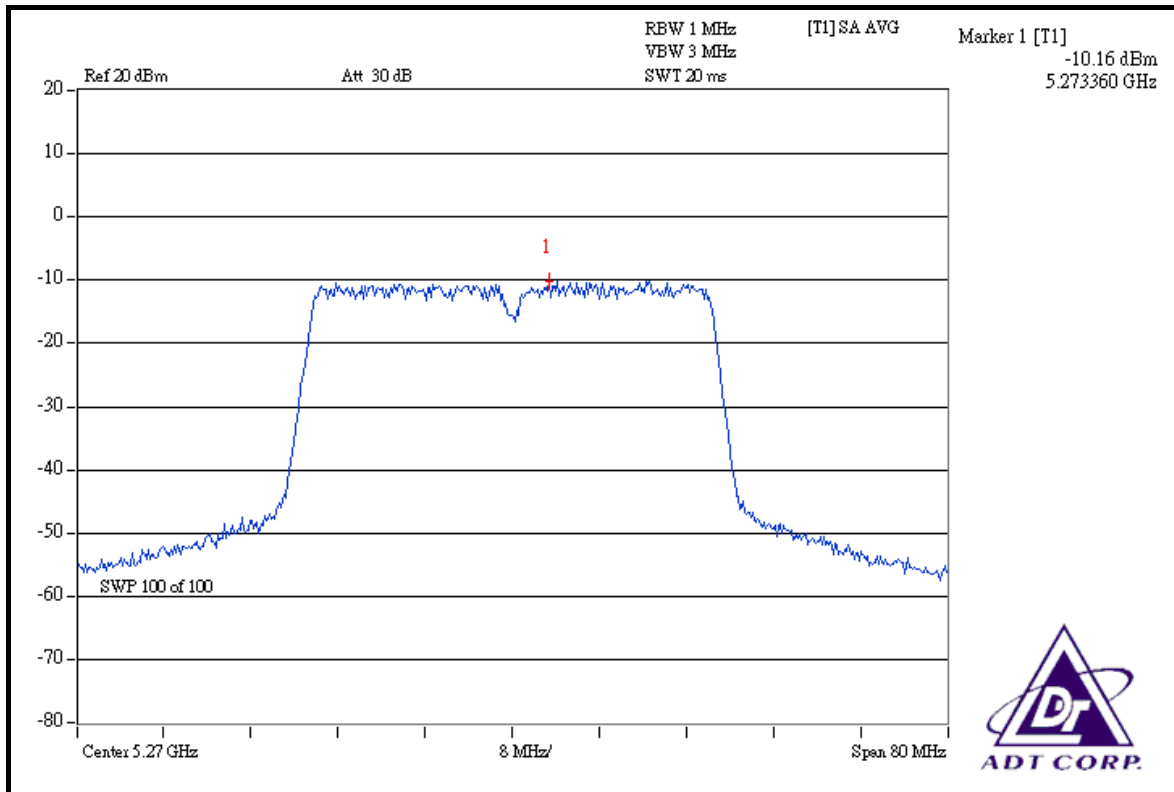
DRAFT 802.11n (40MHz) OFDM MODULATION

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

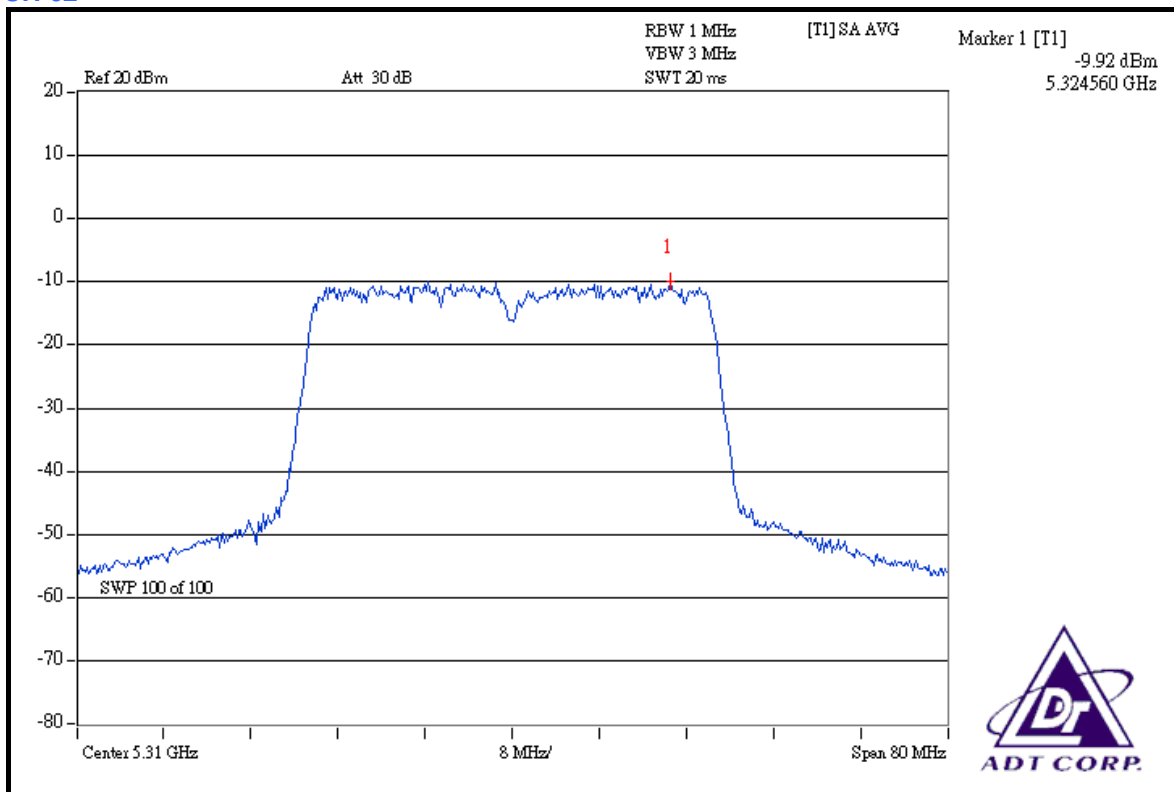
CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
54	5270	-10.16	-11.61	0.165	-7.81	11	PASS
62	5310	-9.92	-11.52	0.172	-7.64	11	PASS
102	5510	-10.03	-11.36	0.172	-7.63	11	PASS
118	5590	-9.94	-11.43	0.173	-7.61	11	PASS
134	5670	-10.18	-11.69	0.164	-7.86	11	PASS



CHAIN 0: CH 54

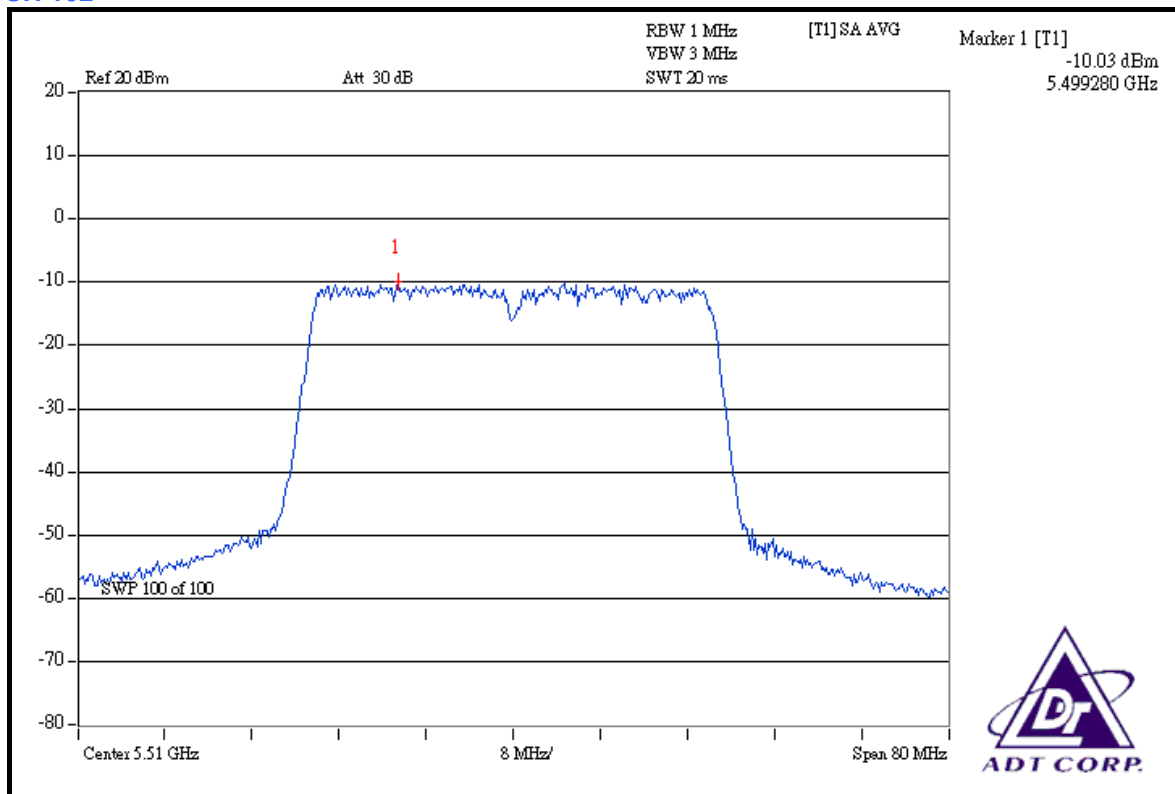


CH 62

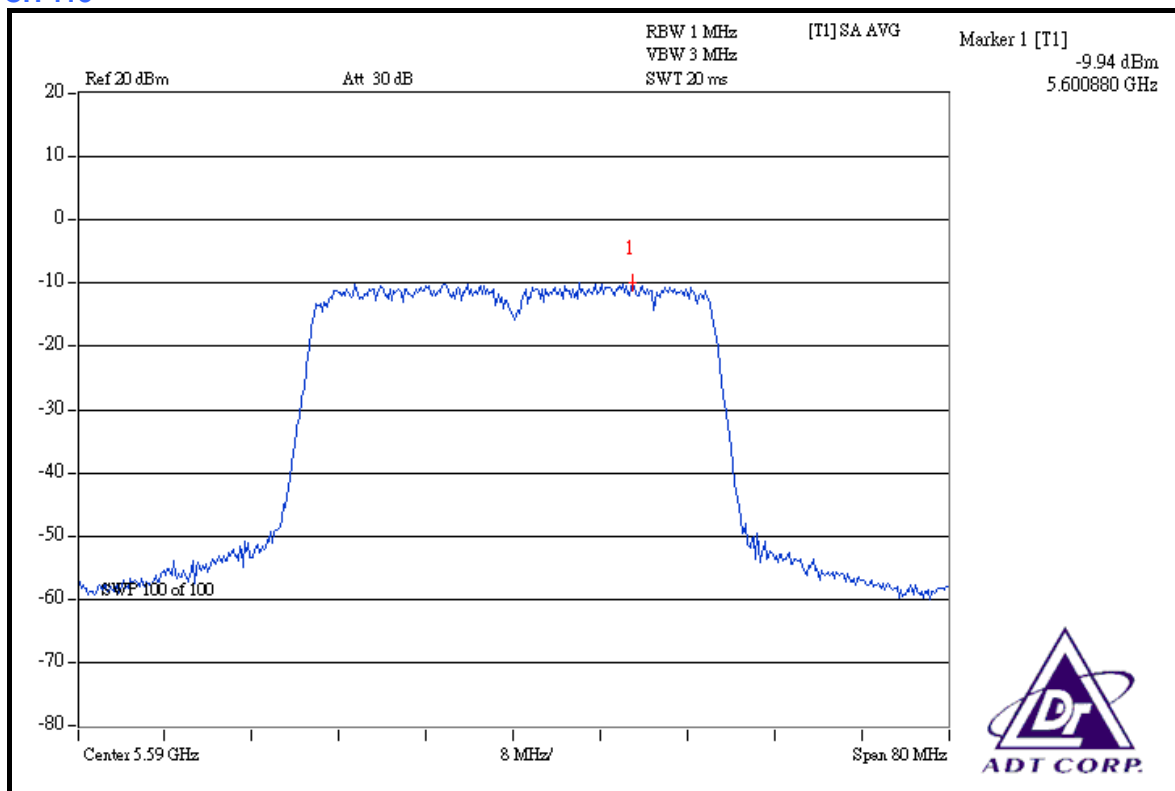




CH 102

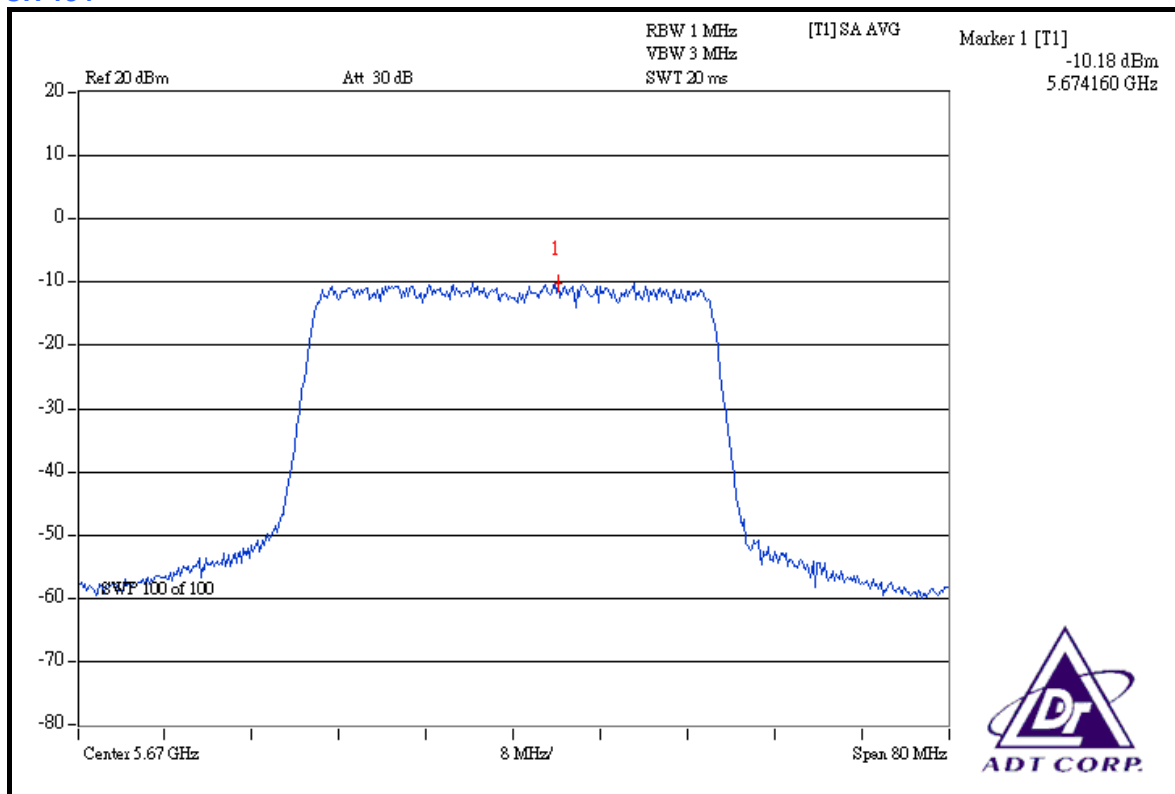


CH 118

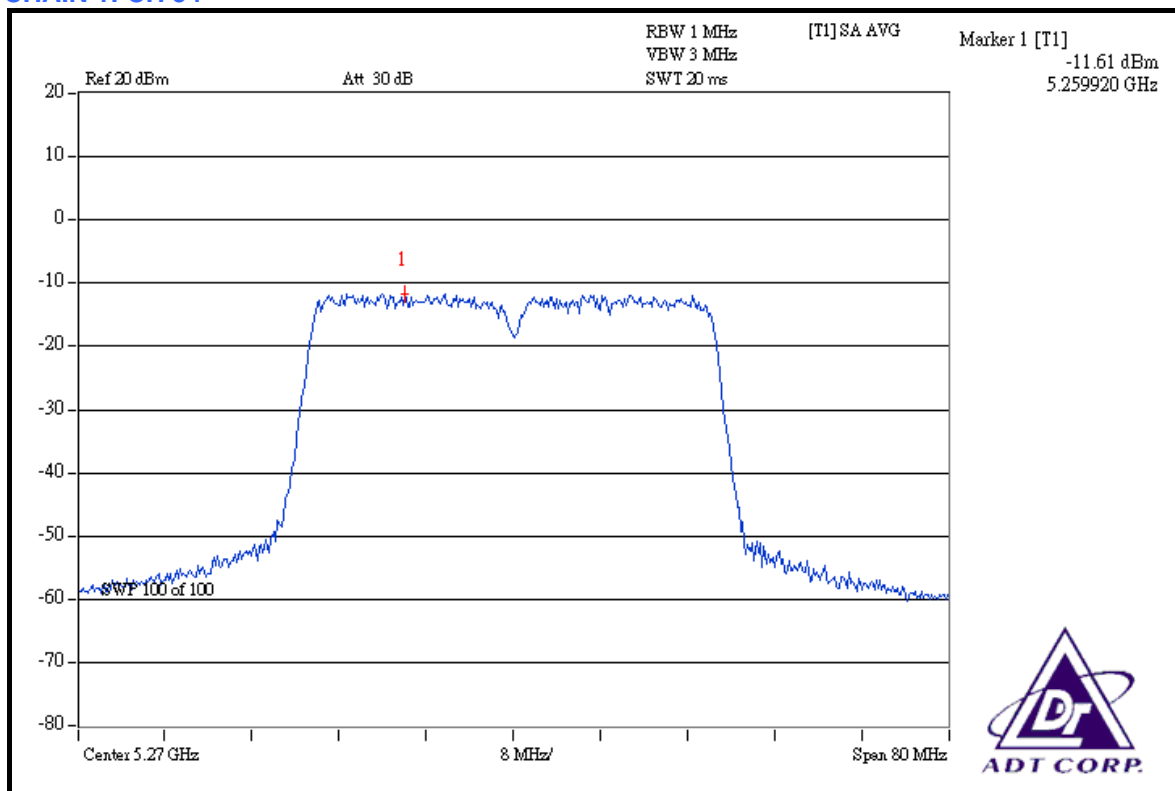




CH 134

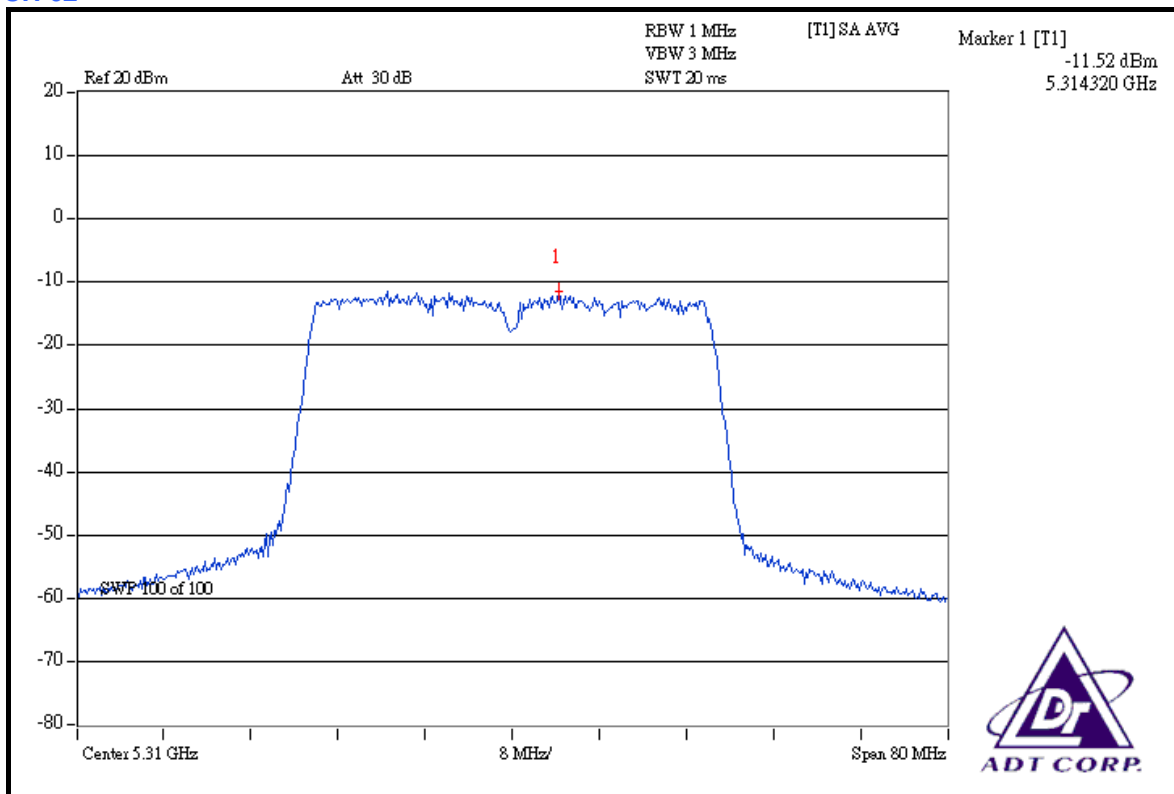


CHAIN 1: CH 54

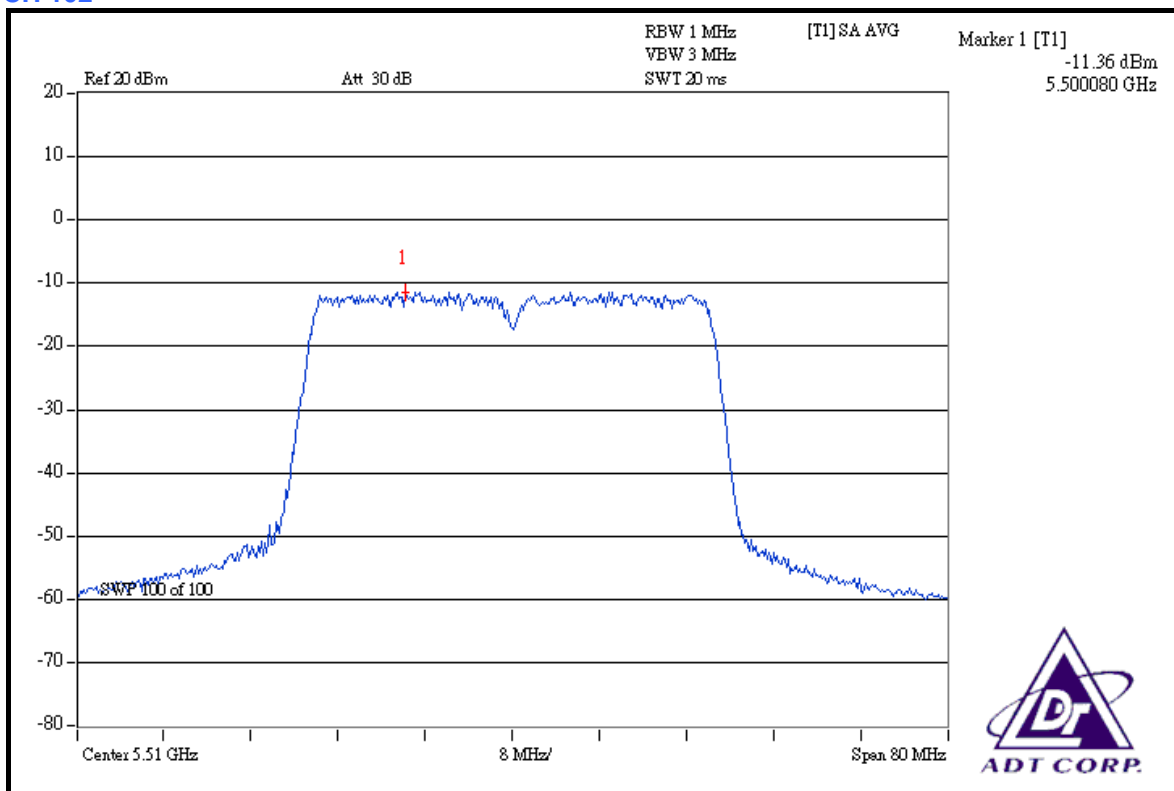




CH 62

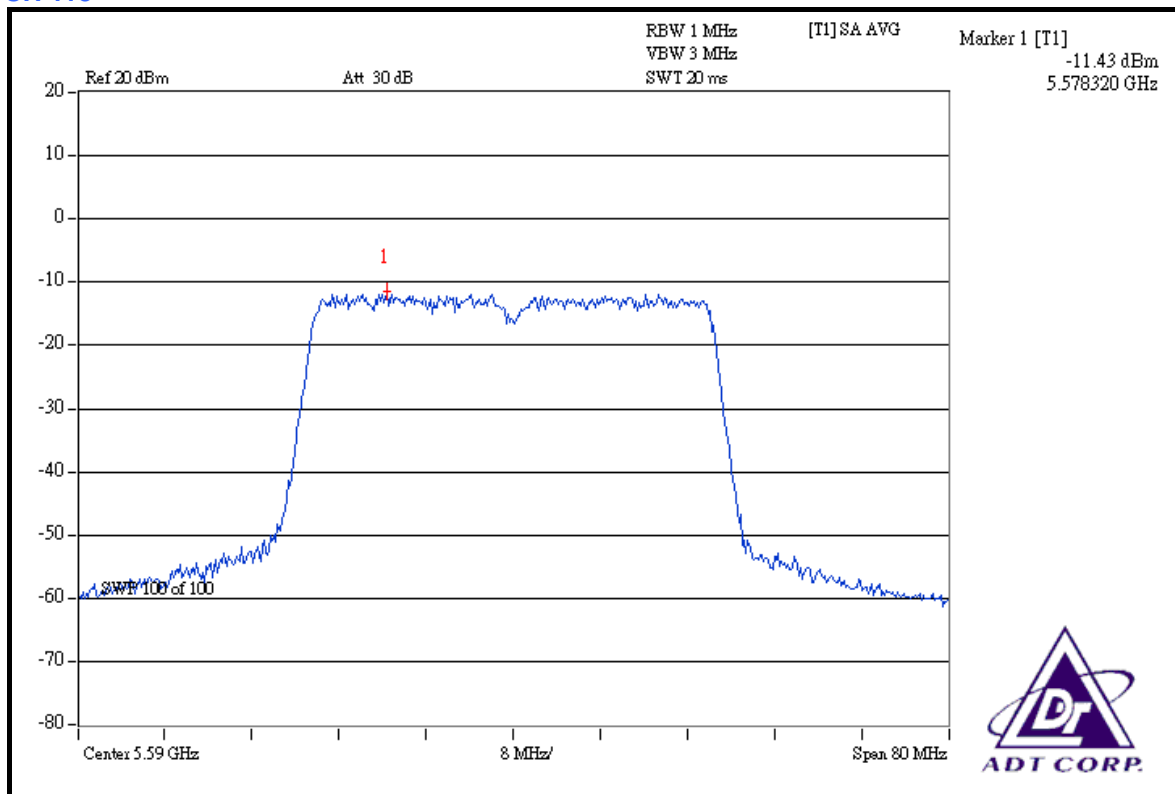


CH 102

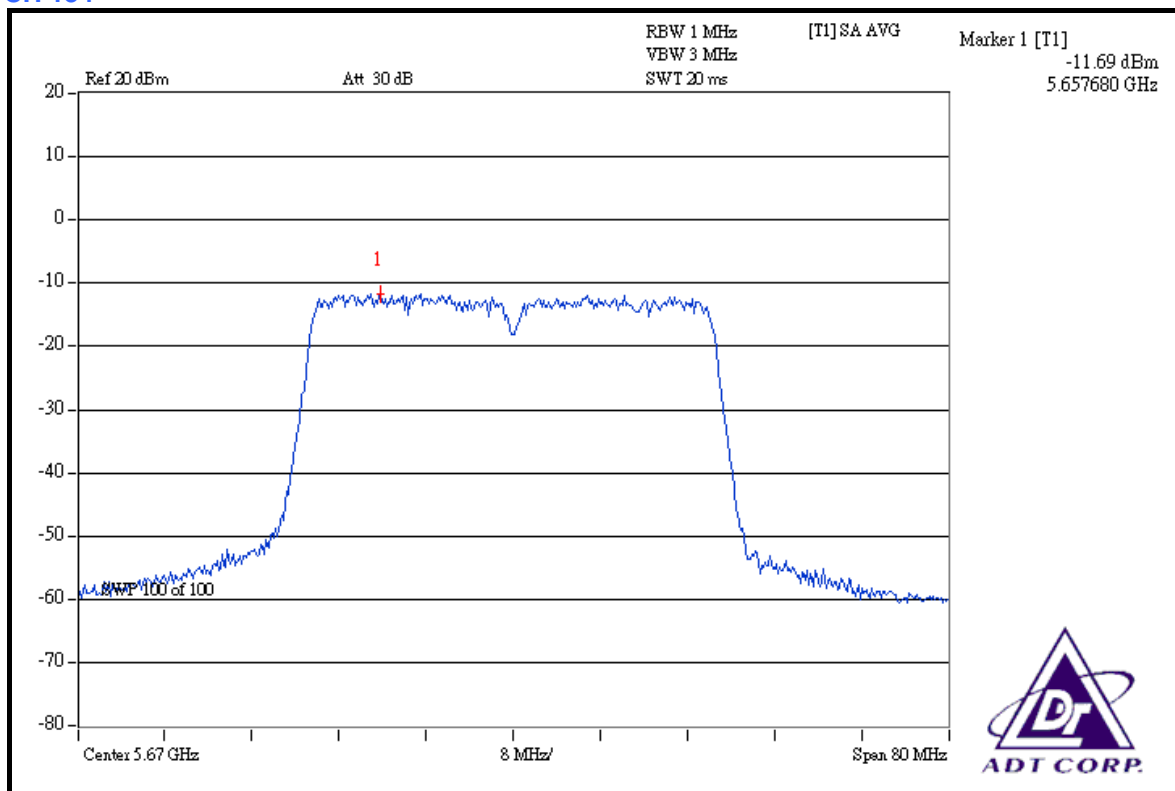




CH 118



CH 134





4.6 BAND EDGES MEASUREMENT

4.6.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
FOR CONDUCTED MEASUREMENT:			
R&S SPECTRUM ANALYZER	FSP40	100040	Jun. 28, 2008
FOR RADIATED MEASUREMENT:			
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Dec. 25, 2008
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Dec. 02, 2008
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Jan. 03, 2009
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-405	Dec. 17, 2008
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 06, 2009
Preamplifier Agilent	8449B	3008A01910	Sep. 19, 2008
Preamplifier Agilent	8447D	2944A10634	Dec. 12, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274397/4	Nov. 07, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283401/4	Nov. 07, 2008
Software ADT.	ADT_Radiated_V7.6	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA
Turn Table ADT.	TT100.	TT93021704	NA
Turn Table Controller ADT.	SC100.	SC93021704	NA
26GHz ~ 40GHz Amplifier	EM26400	07026401	May 05, 2009

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

4.6.2 TEST PROCEDURE

FOR CONDUCTED MEASUREMENT:

The transmitter output was connected to the spectrum analyzer via a low loss 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

4.6.3 EUT OPERATING CONDITION

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

4.6.4 TEST RESULTS

For signals in the restricted bands above and below the 5.25 to 5.35GHz and 5.47 to 5.725GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak field strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

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

FOR 5250-5350MHz BAND: 802.11a OFDM MODULATION

Channel 52 (5260MHz)

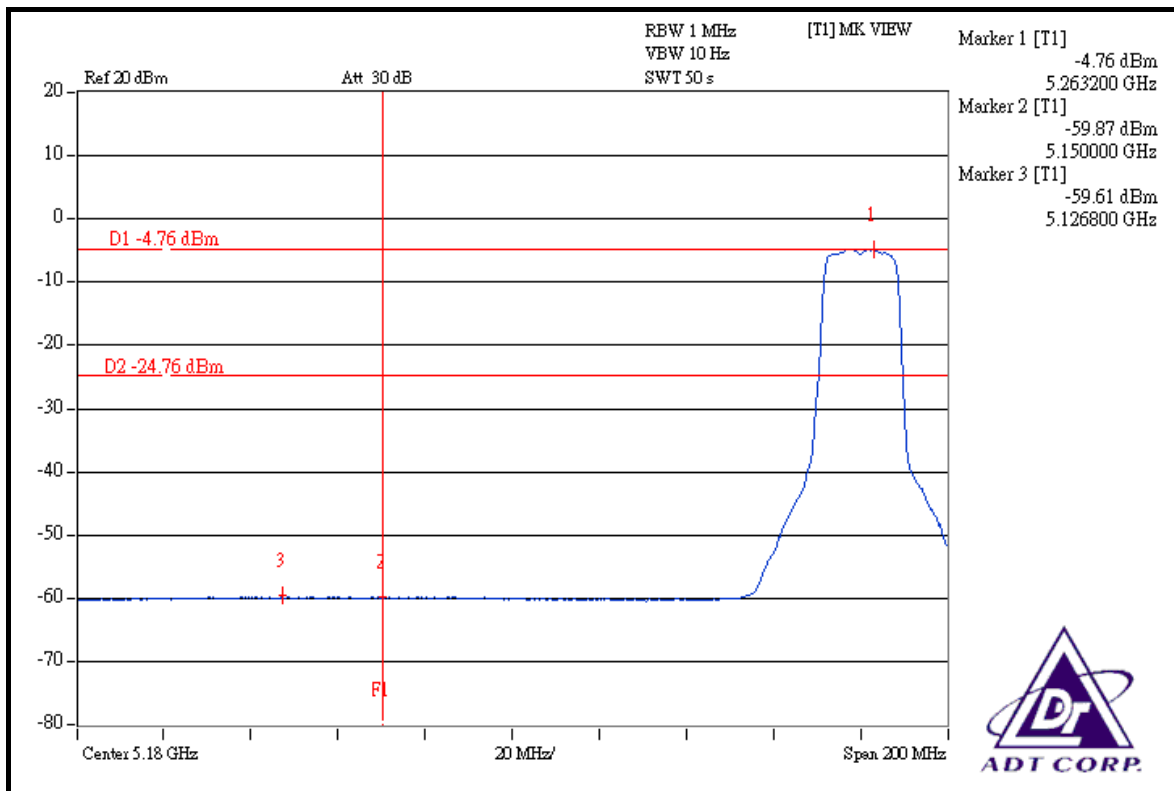
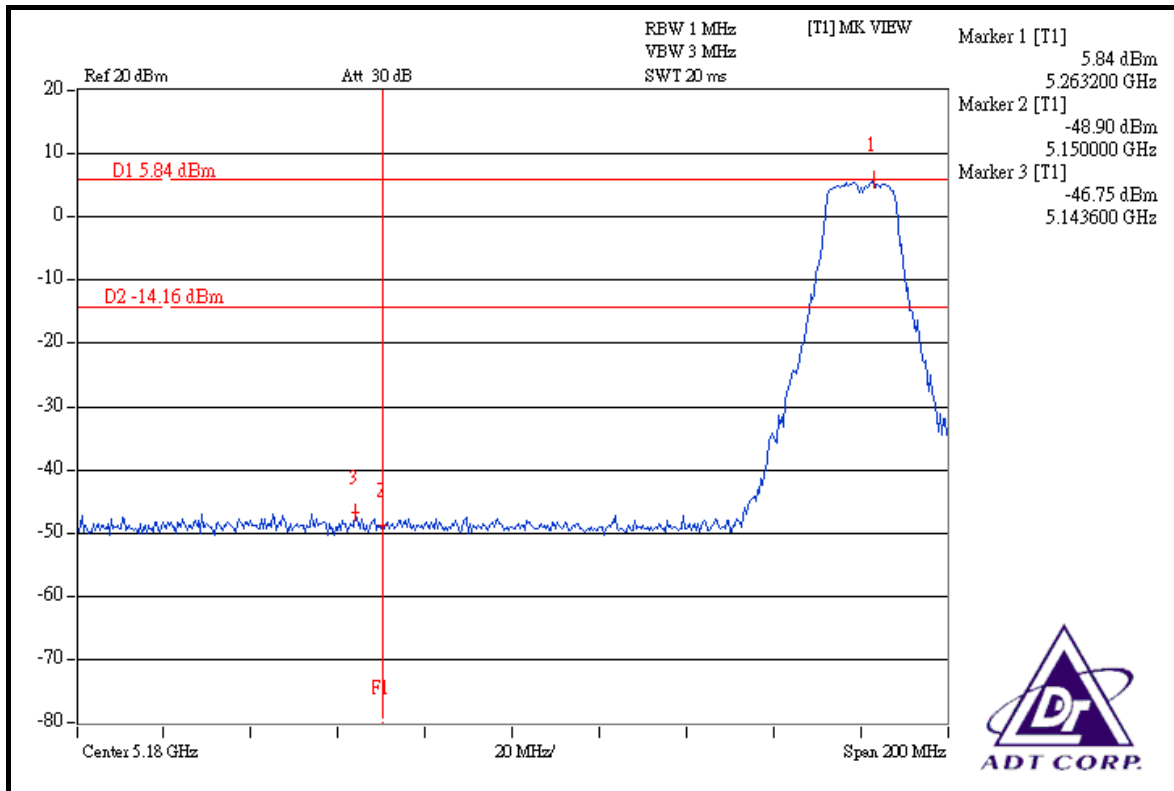
The band edge emission plot on the next page shows 52.59dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 52 is 106.99dBuV/m (Peak), so the maximum field strength in restrict band is $106.99 - 52.59 = 54.40$ dBuV/m which is under 74dBuV/m limit.

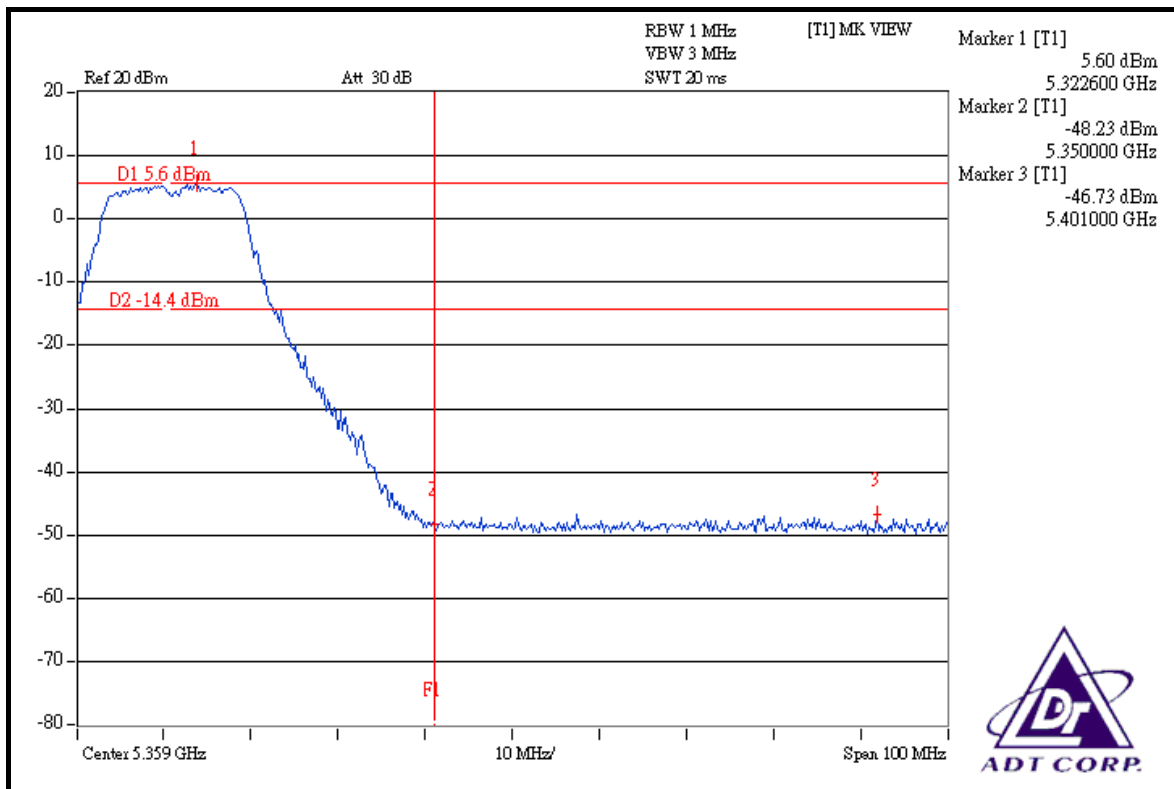
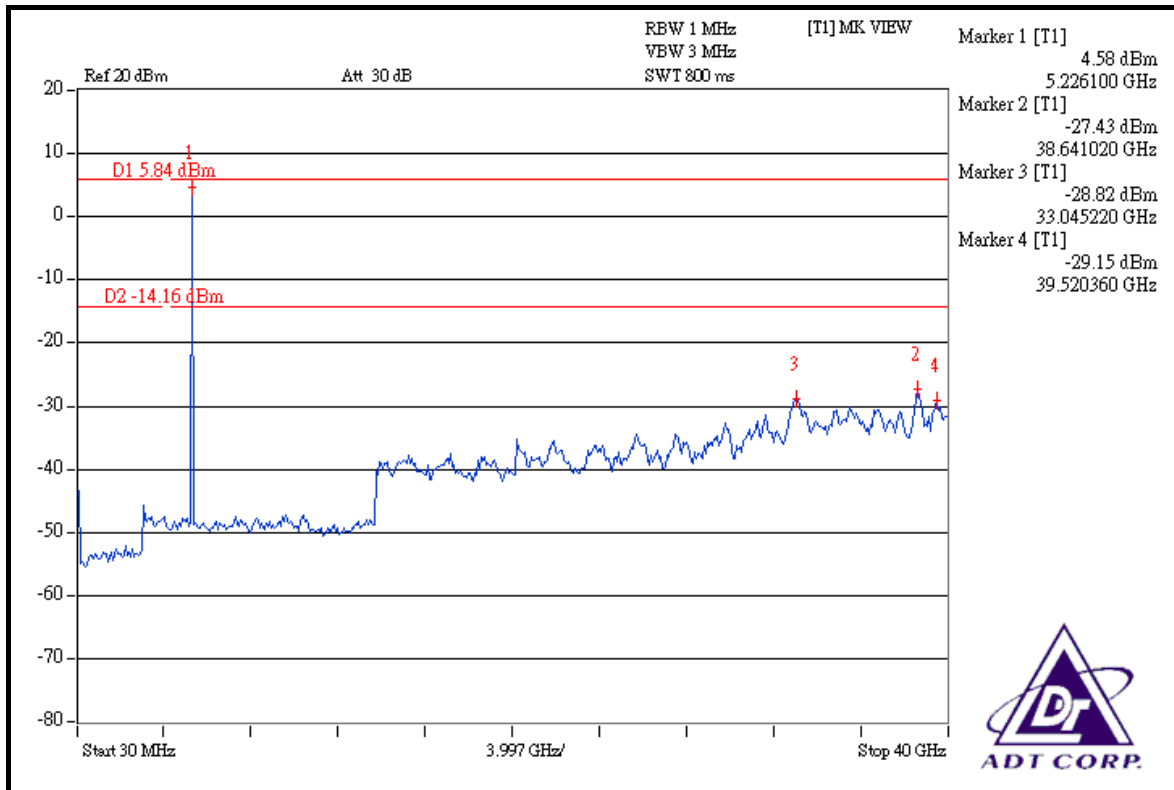
The band edge emission plot on the next page shows 54.85dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 52 is 96.59dBuV/m (Average), so the maximum field strength in restrict band is $96.59 - 54.85 = 41.74$ dBuV/m which is under 54dBuV/m limit.

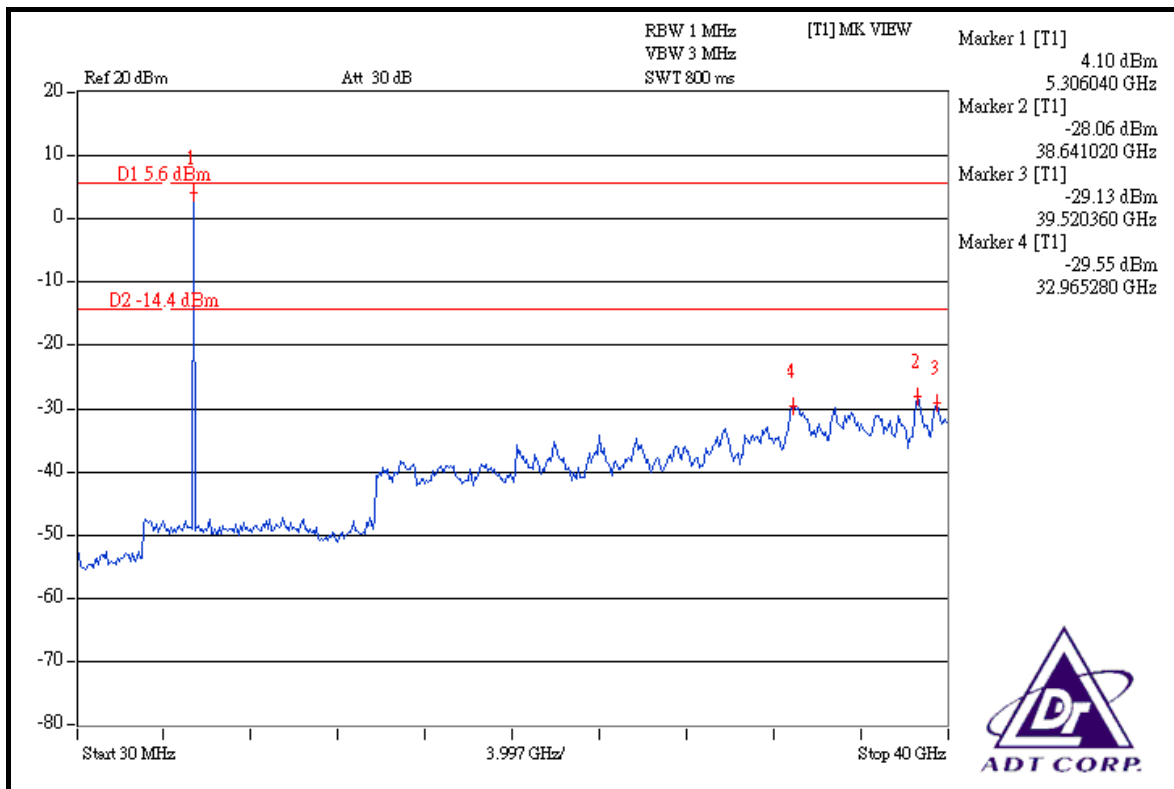
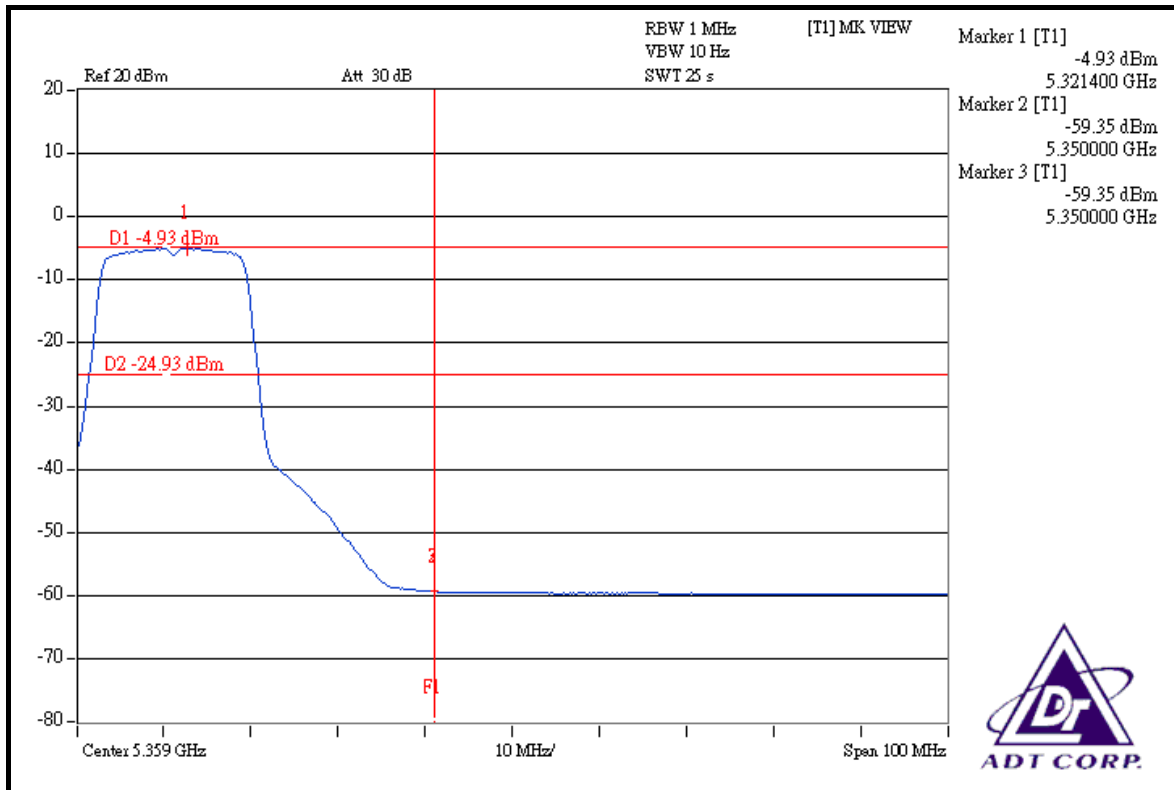
Channel 64 (5320MHz)

The band edge emission plot on the next second page shows 52.33dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 64 is 107.76dBuV/m (Peak), so the maximum field strength in restrict band is $107.76 - 52.33 = 55.43$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 54.42dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 64 is 97.06dBuV/m (Average), so the maximum field strength in restrict band is $97.06 - 54.42 = 42.64$ dBuV/m which is under 54dBuV/m limit.







FOR 5470-5725MHz BAND: 802.11a OFDM MODULATION

Channel 100 (5500MHz)

The band edge emission plot (5.460GHz) on the next page shows 52.86dBc between carrier maximum power and local maximum emission out of band emission. The emission of carrier strength list in the test result of channel 100 is 107.35dBuV/m (Peak), so the maximum field strength out of band emission is $107.35 - 52.86 = 54.49$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot (5.460GHz) on the next page shows 54.78dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 100 is 97.16dBuV/m (Average), so the maximum field strength in restrict band is $97.16 - 54.78 = 42.38$ dBuV/m which is under 54dBuV/m limit.

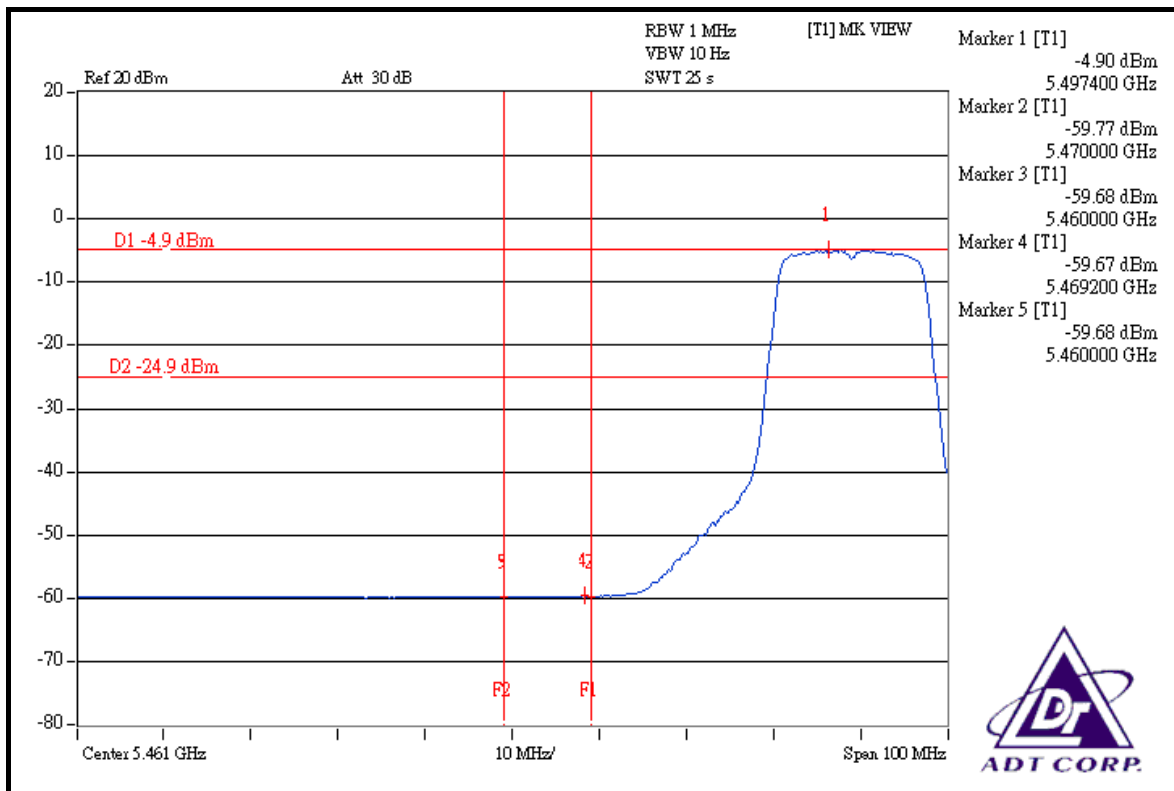
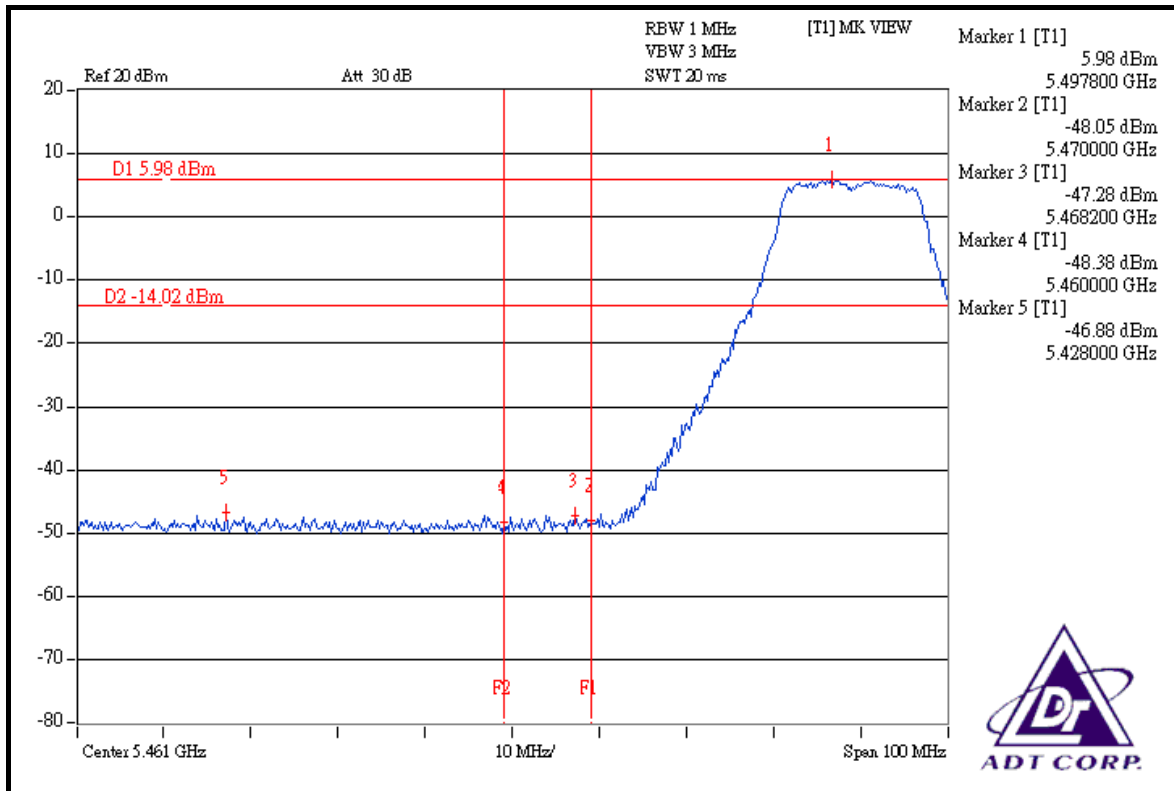
The band edge emission plot (5.470GHz) on the next page shows 53.26dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 100 is 107.35dBuV/m (Peak), so the maximum field strength in restrict band is $107.35 - 53.26 = 54.09$ dBuV/m which is under 88.3dBuV/m limit.

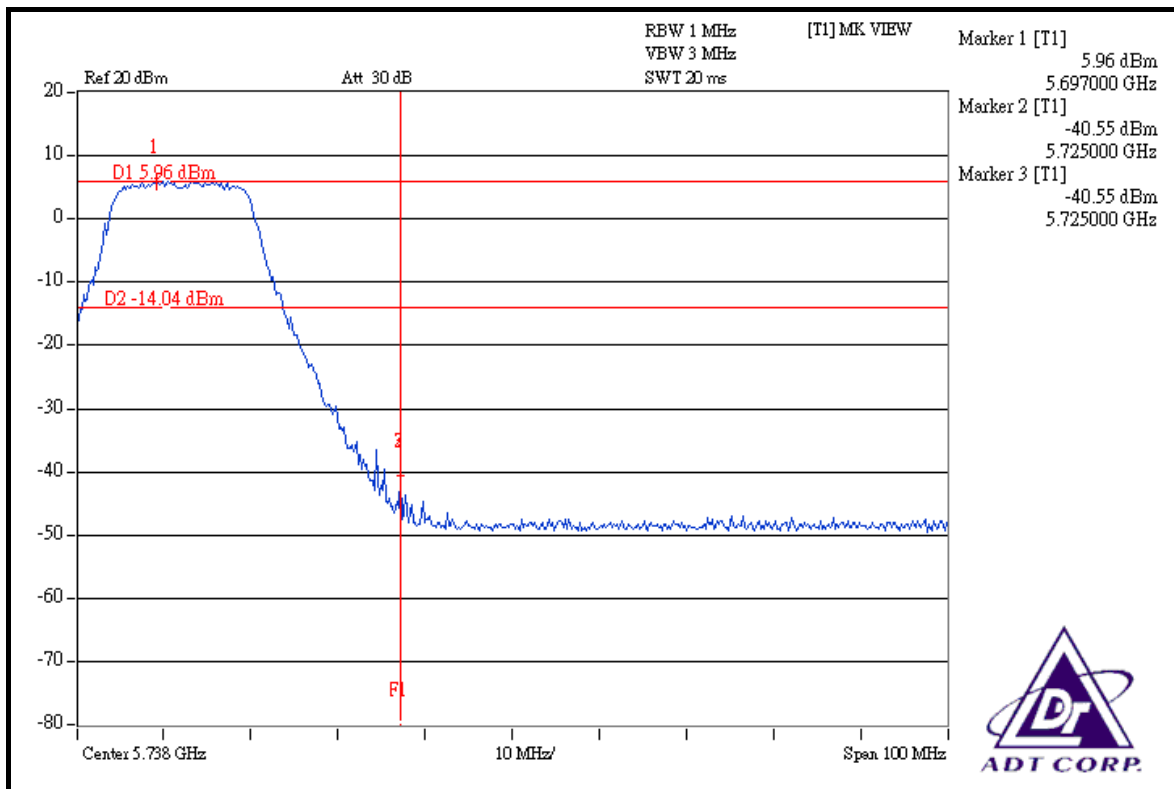
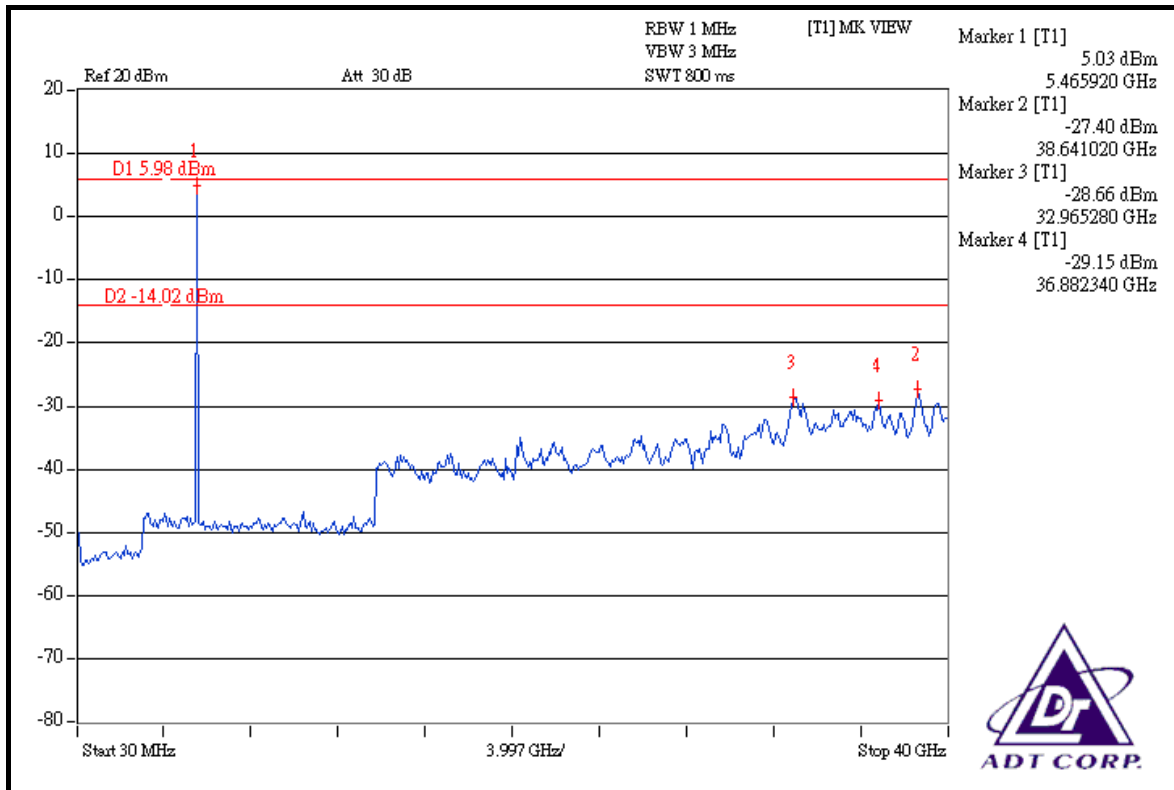
The band edge emission plot (5.470GHz) on the next page shows 54.77dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 100 is 97.16dBuV/m (Average), so the maximum field strength in restrict band is $97.16 - 54.77 = 42.39$ dBuV/m which is under 68.3dBuV/m limit.

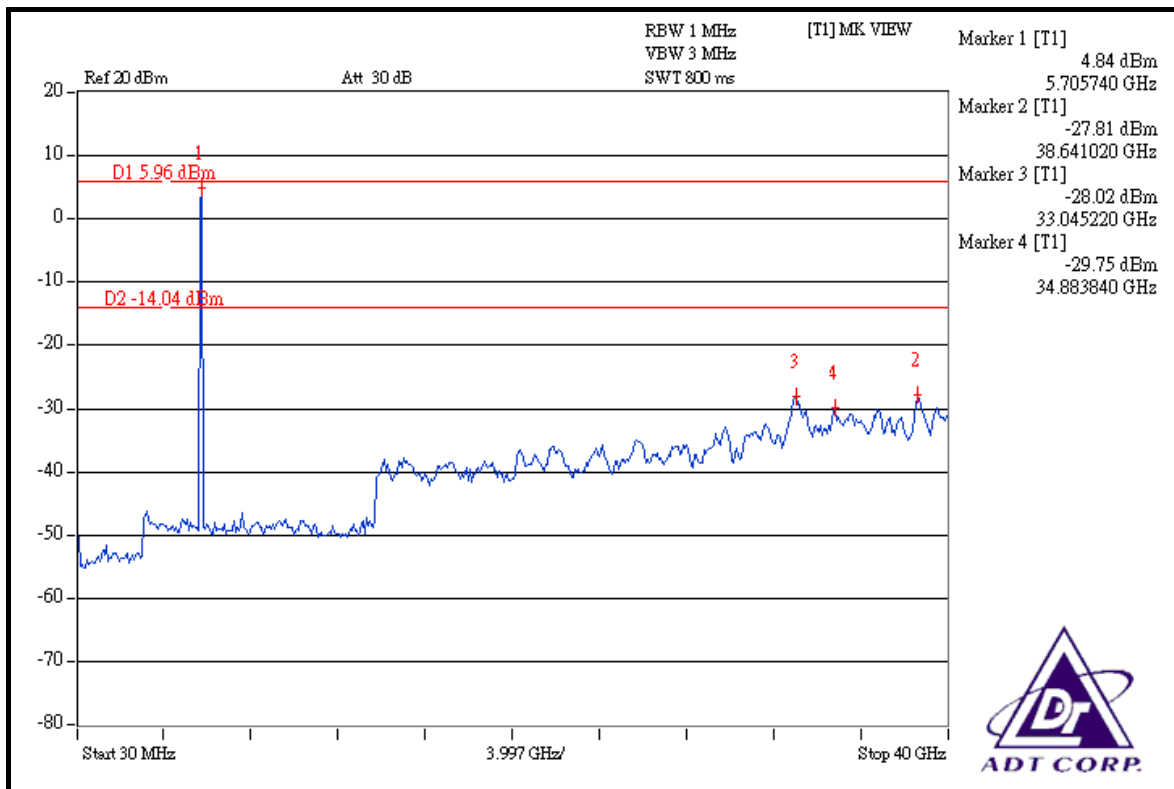
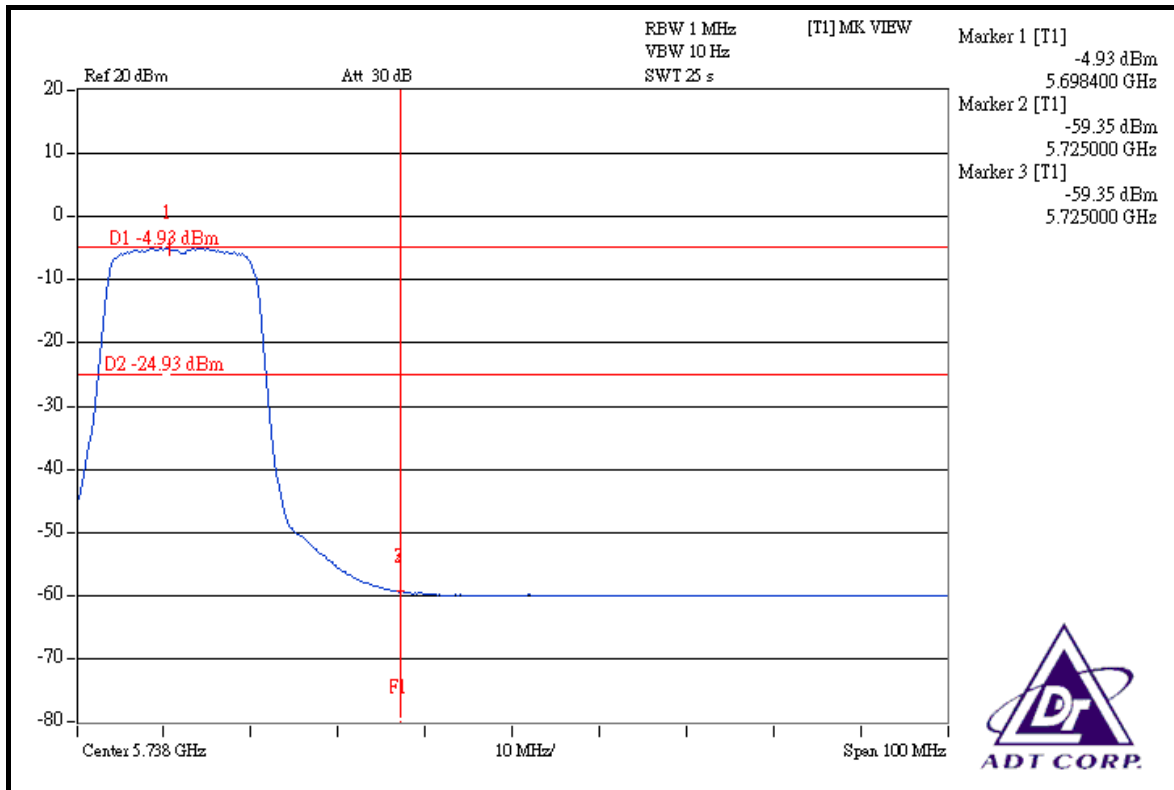
Channel 140 (5700MHz)

The band edge emission plot on the next second page shows 46.51dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 140 is 107.41dBuV/m (Peak), so the maximum field strength in restrict band is $107.41 - 46.51 = 60.90$ dBuV/m which is under 88.3dBuV/m limit.

The band edge emission plot on the next third page shows 54.42dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 140 is 96.77dBuV/m (Average), so the maximum field strength in restrict band is $96.77 - 54.42 = 42.35$ dBuV/m which is under 68.3dBuV/m limit.







FOR 5250-5350MHz BAND: DRAFT 802.11n (20MHz) OFDM MODULATION

Channel 52 (5260MHz)

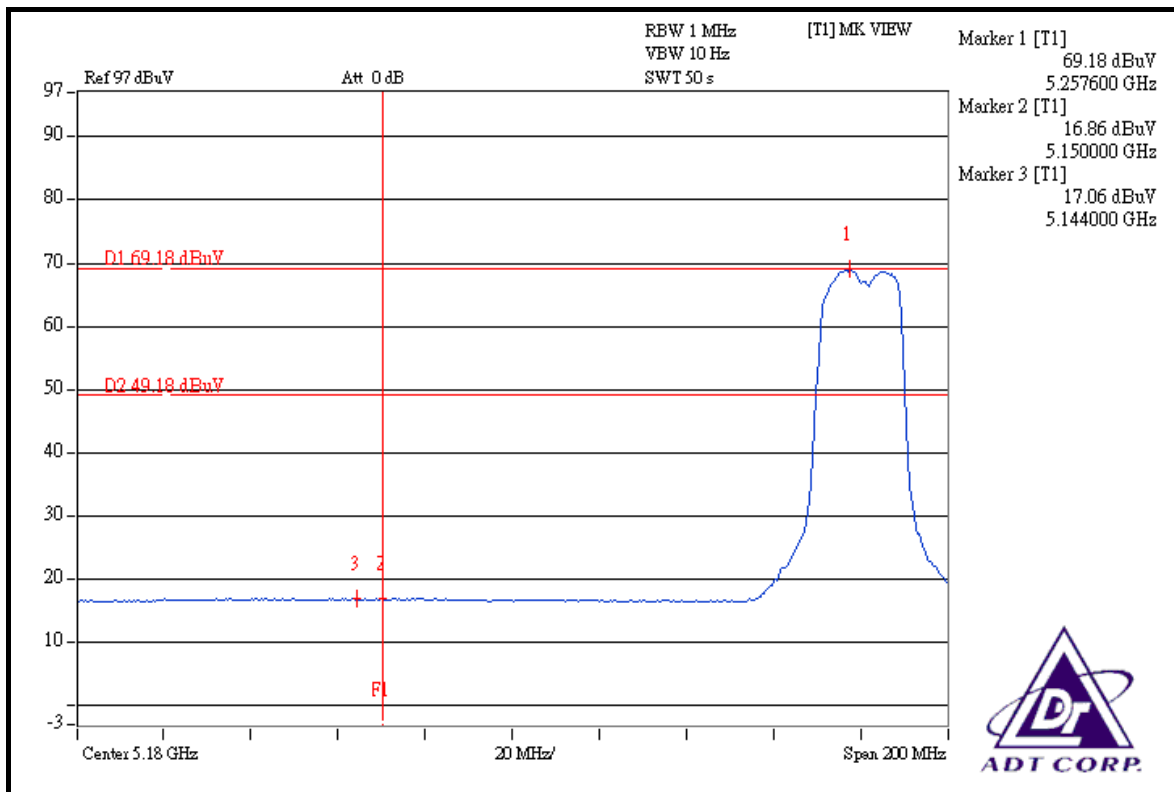
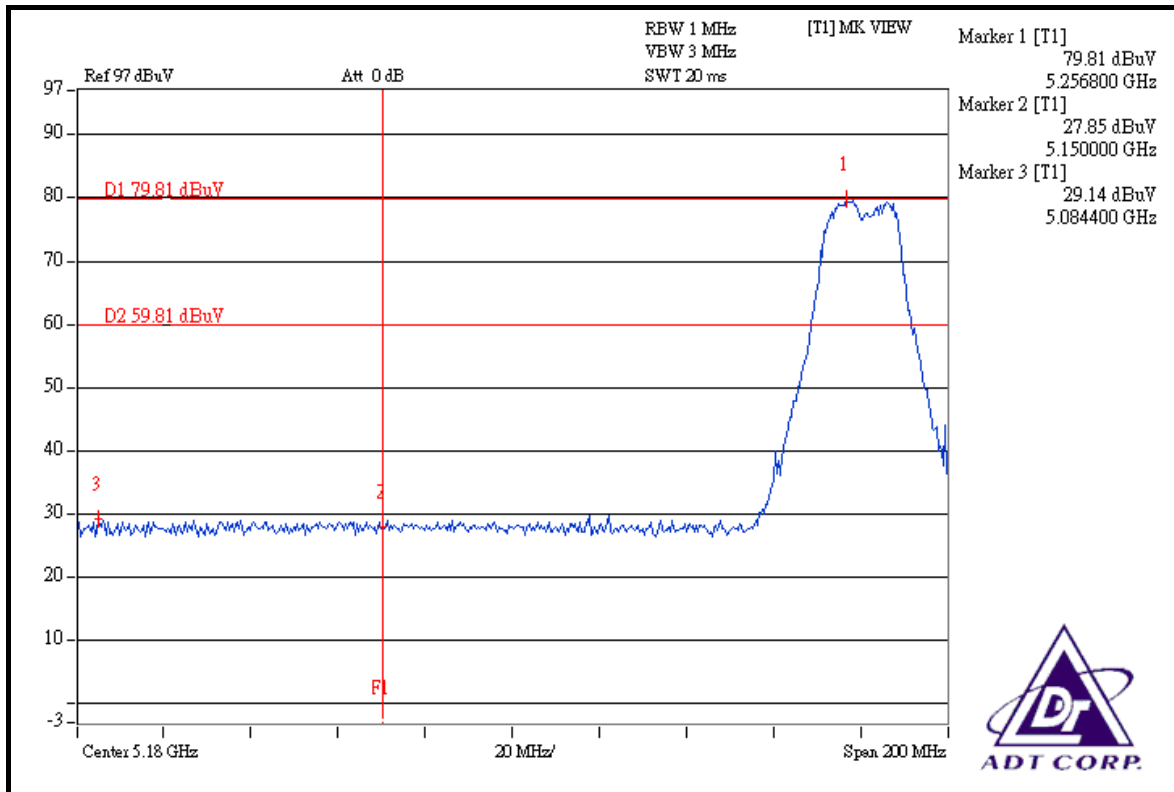
The band edge emission plot on the next page shows 50.67dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 52 is 108.67dBuV/m (Peak), so the maximum field strength in restrict band is $108.67 - 50.67 = 58.00$ dBuV/m which is under 74dBuV/m limit.

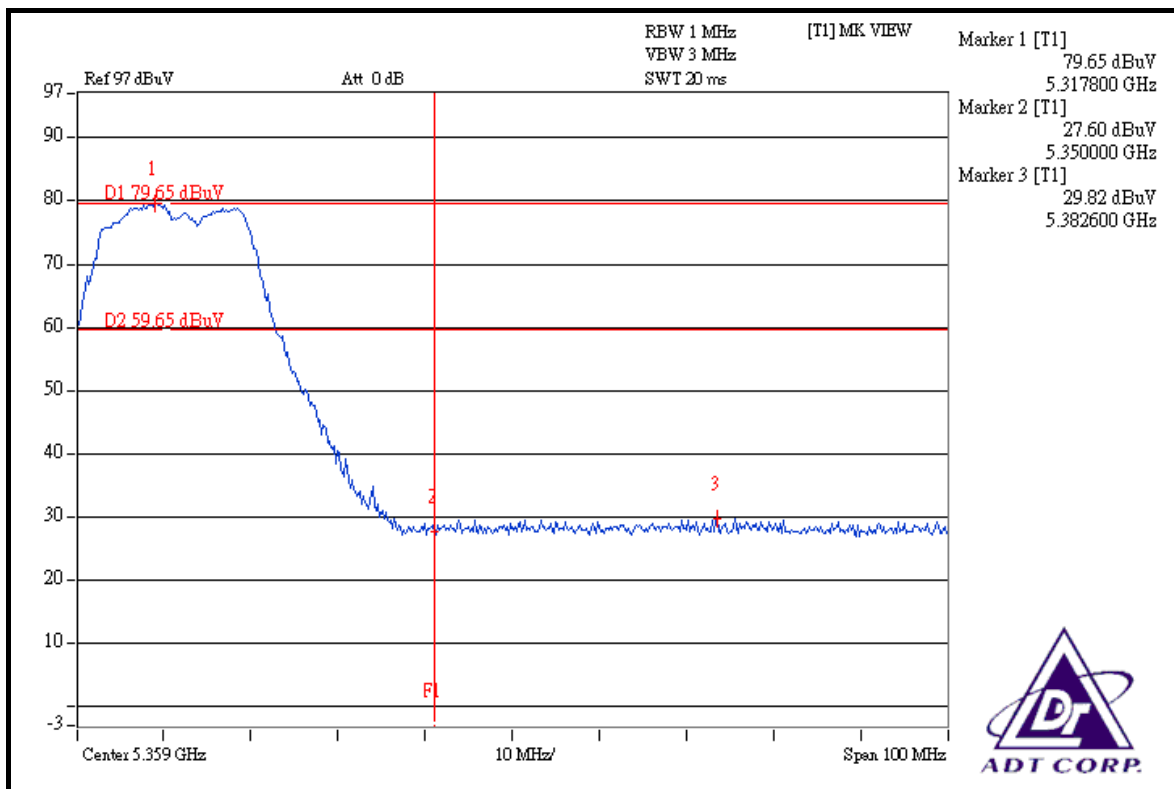
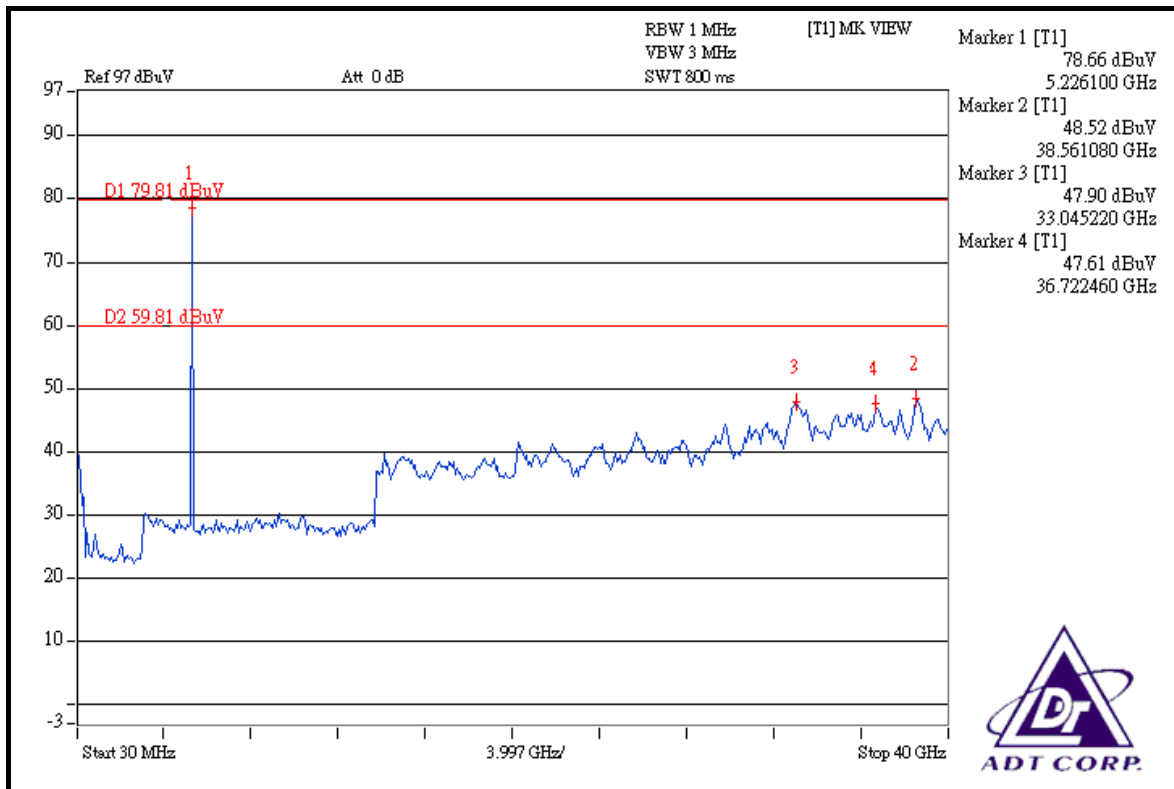
The band edge emission plot on the next page shows 52.12dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 52 is 98.34dBuV/m (Average), so the maximum field strength in restrict band is $98.34 - 52.12 = 46.22$ dBuV/m which is under 54dBuV/m limit.

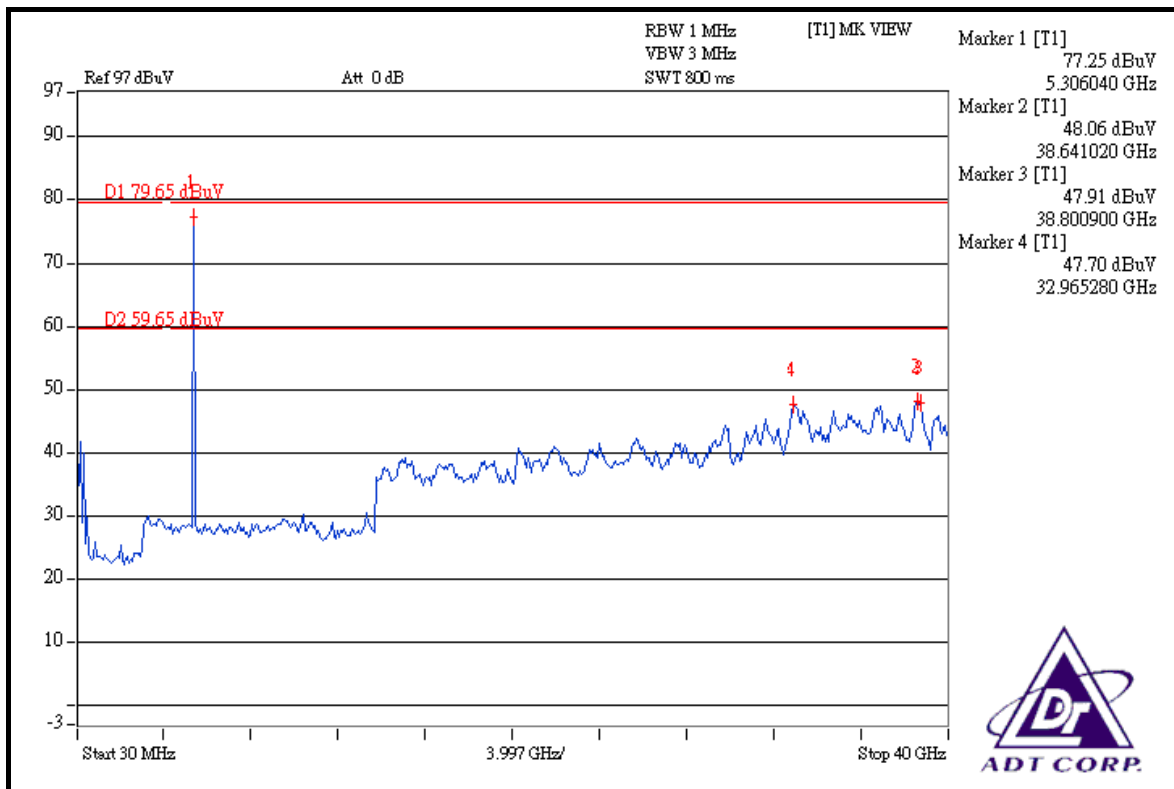
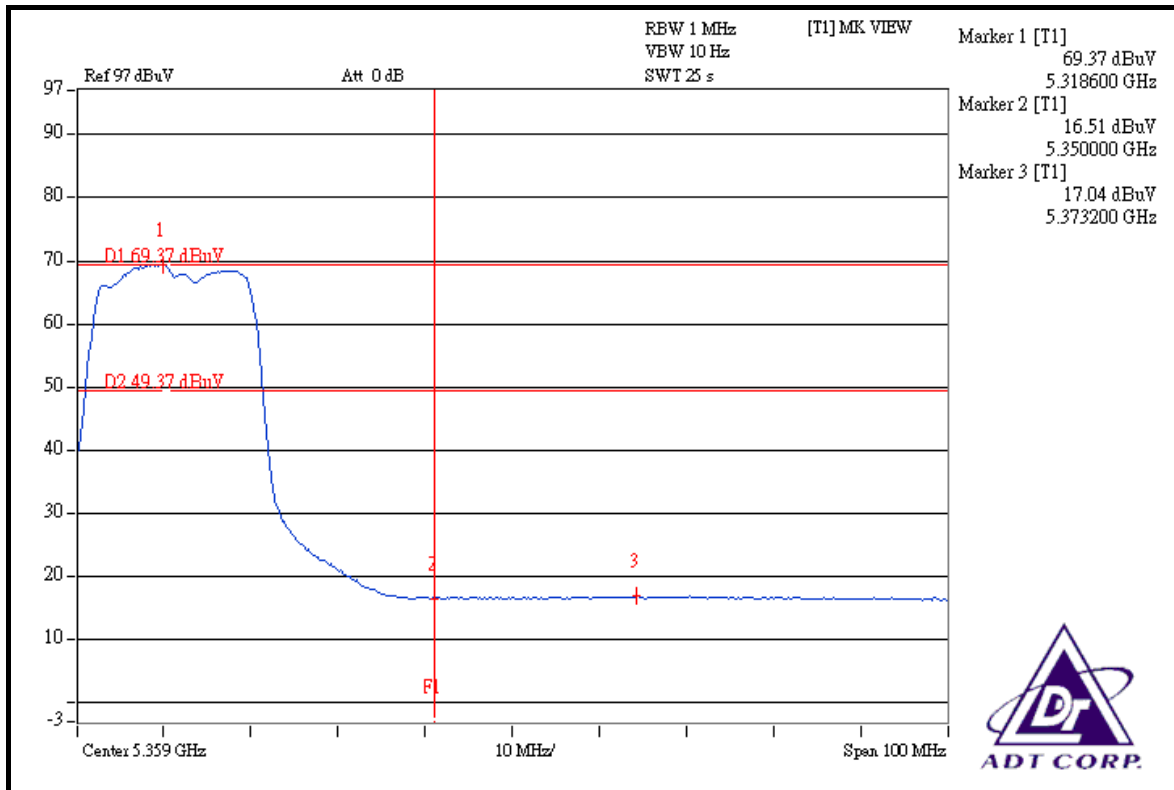
Channel 64 (5320MHz)

The band edge emission plot on the next second page shows 49.83dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 64 is 109.25dBuV/m (Peak), so the maximum field strength in restrict band is $109.25 - 49.83 = 59.42$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 52.33dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 64 is 98.93dBuV/m (Average), so the maximum field strength in restrict band is $98.93 - 52.33 = 46.60$ dBuV/m which is under 54dBuV/m limit.







FOR 5470-5725MHz BAND: DRAFT 802.11n (20MHz) OFDM MODULATION

Channel 100 (5500MHz)

The band edge emission plot (5.460GHz) on the next page shows 50.35dBc between carrier maximum power and local maximum emission out of band emission. The emission of carrier strength list in the test result of channel 100 is 108.43dBuV/m (Peak), so the maximum field strength out of band emission is $108.43 - 50.35 = 58.08$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot (5.460GHz) on the next page shows 52.48dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 100 is 97.79dBuV/m (Average), so the maximum field strength in restrict band is $97.79 - 52.48 = 45.31$ dBuV/m which is under 54dBuV/m limit.

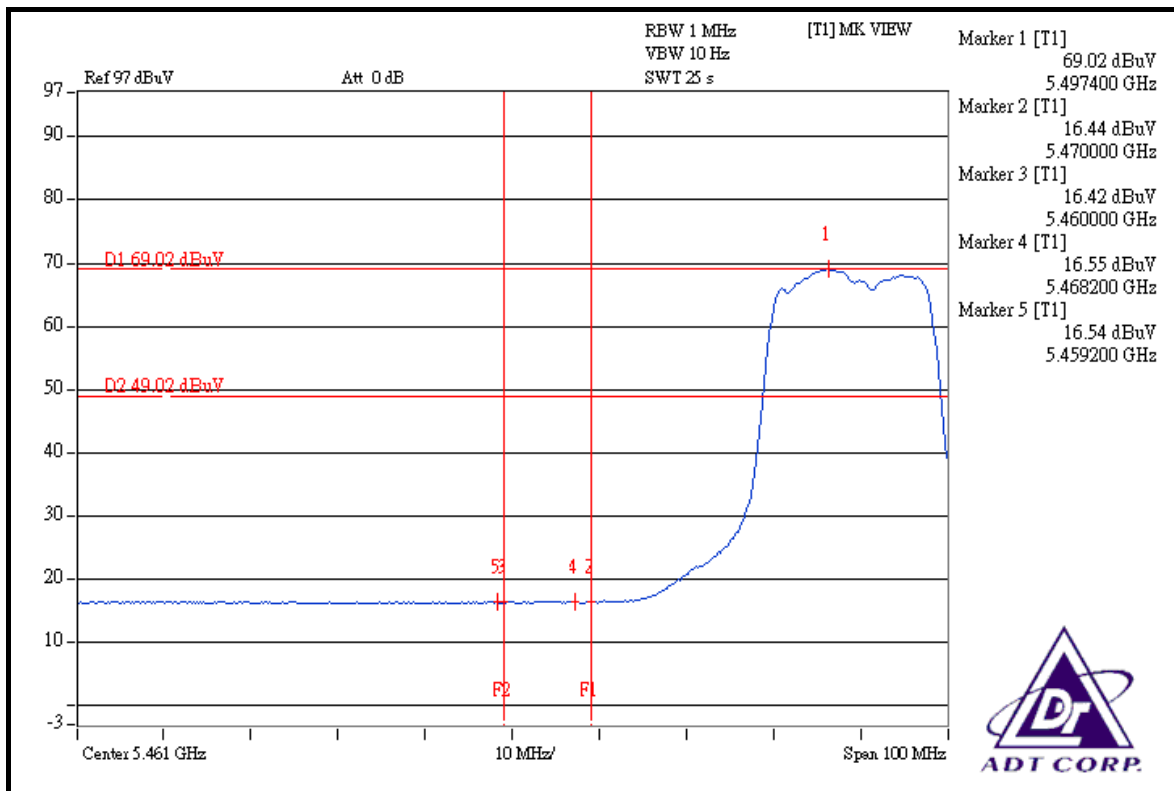
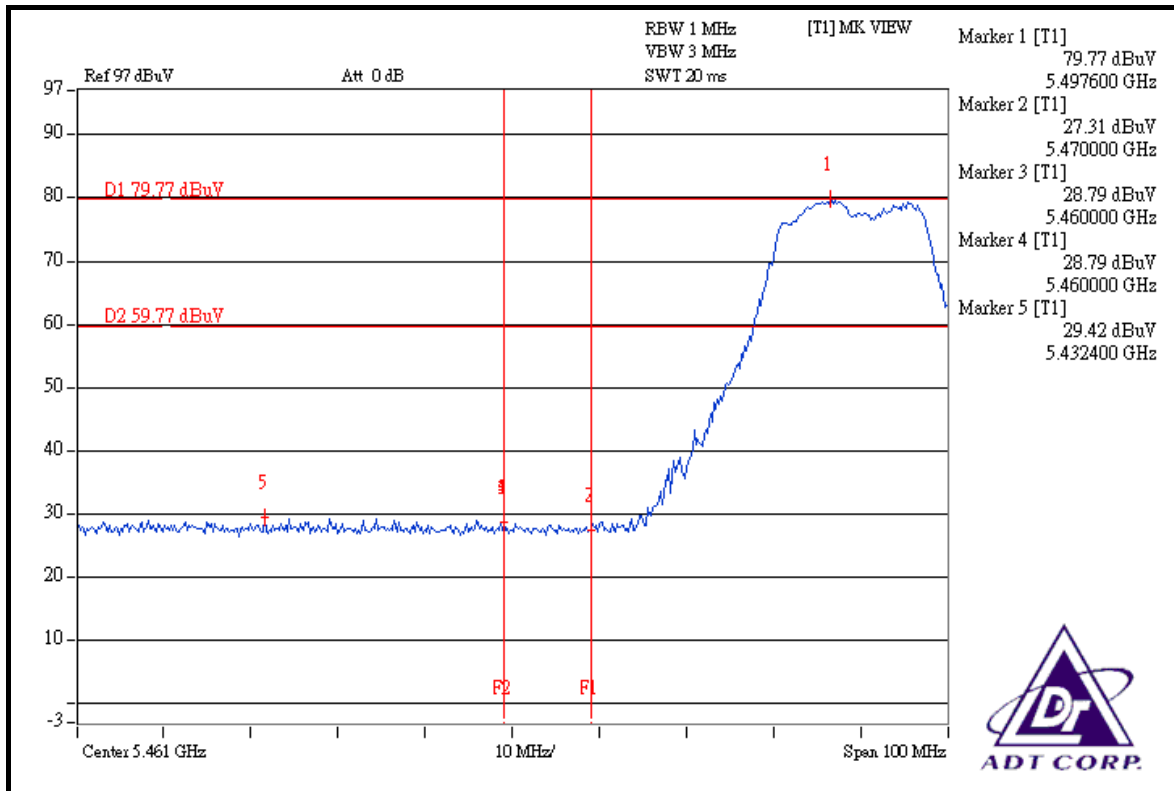
The band edge emission plot (5.470GHz) on the next page shows 50.98dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 100 is 108.43dBuV/m (Peak), so the maximum field strength in restrict band is $108.43 - 50.98 = 57.45$ dBuV/m which is under 88.3dBuV/m limit.

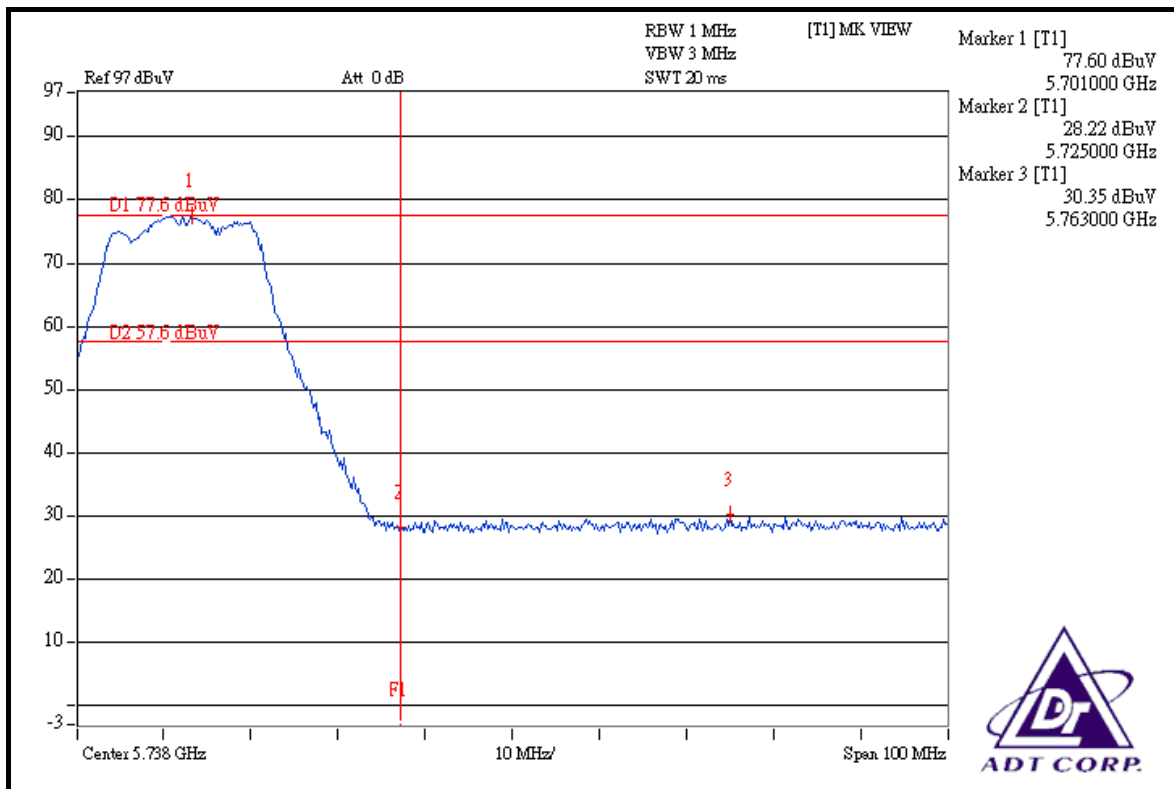
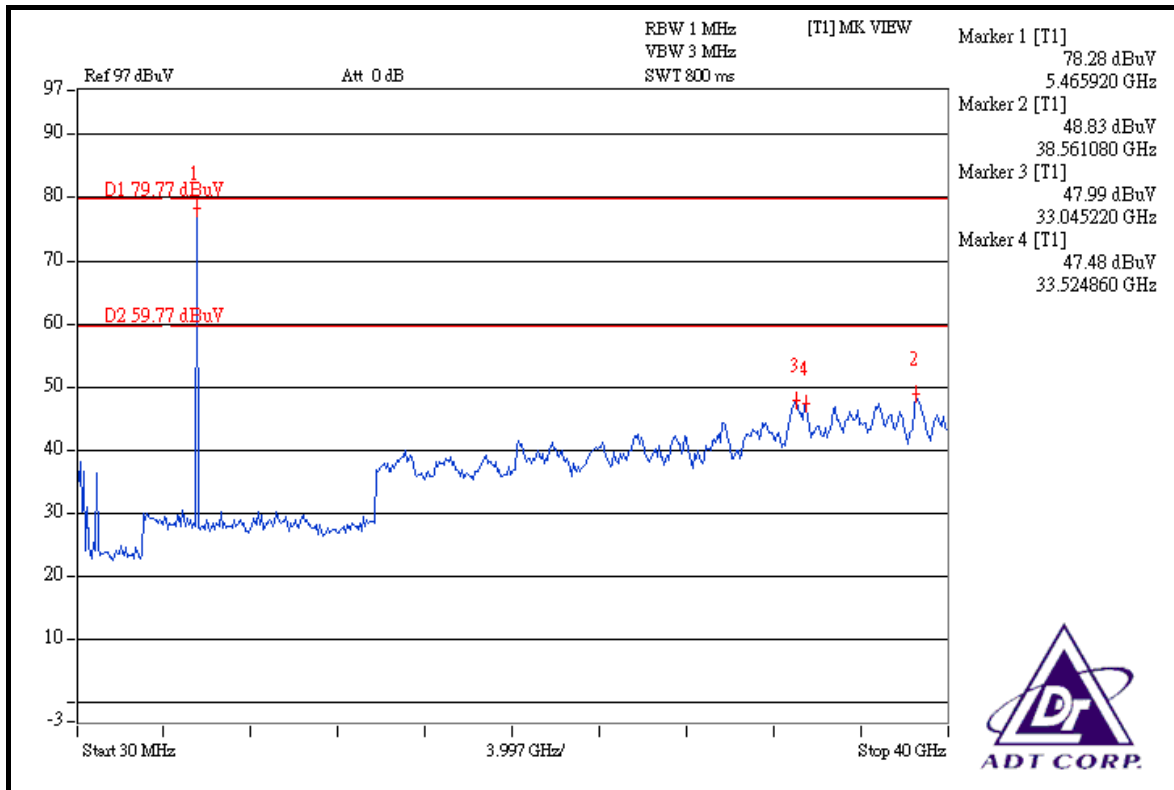
The band edge emission plot (5.470GHz) on the next page shows 52.47dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 100 is 97.79dBuV/m (Average), so the maximum field strength in restrict band is $97.79 - 52.47 = 45.32$ dBuV/m which is under 68.3dBuV/m limit.

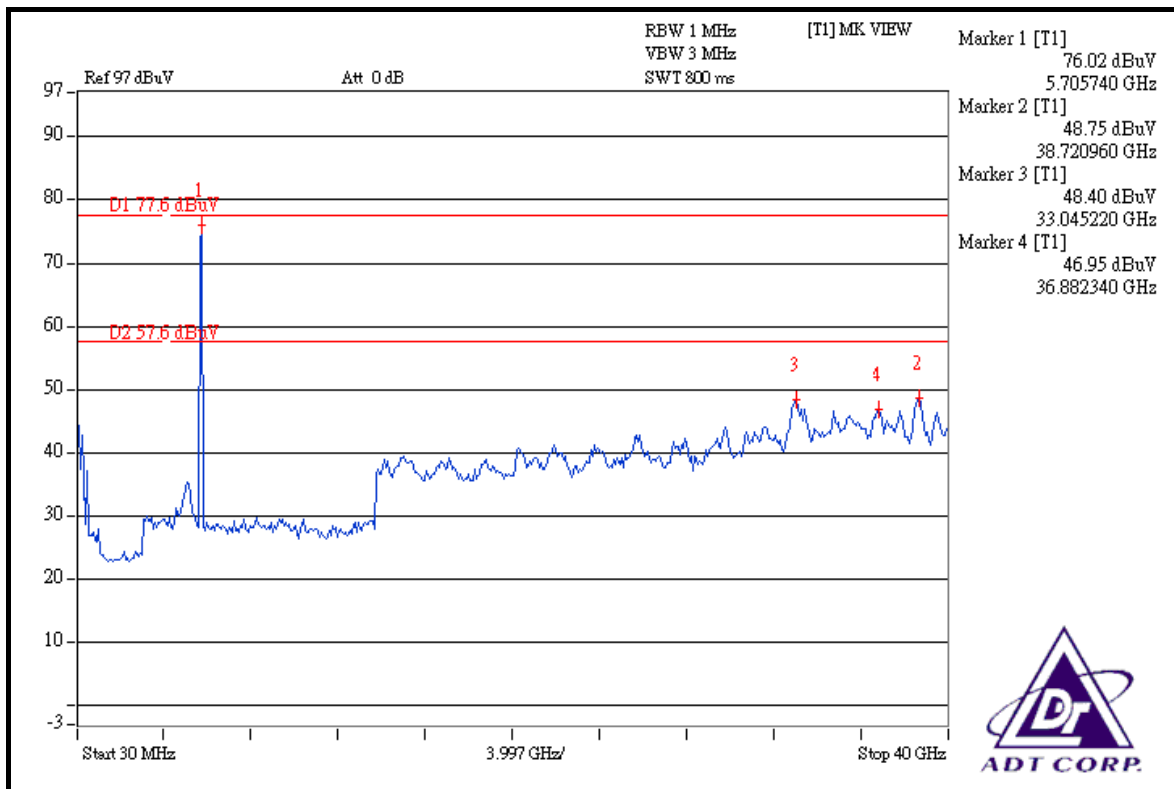
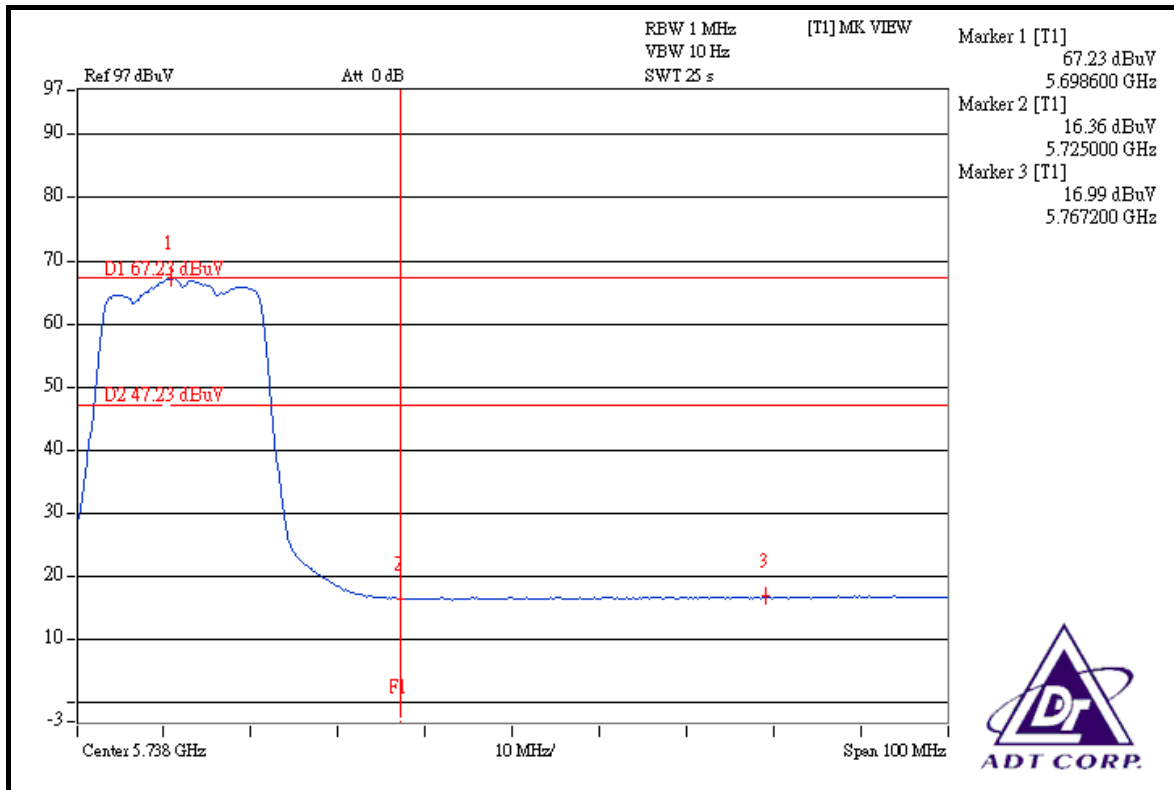
Channel 140 (5700MHz)

The band edge emission plot on the next second page shows 47.25dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 140 is 106.45dBuV/m (Peak), so the maximum field strength in restrict band is $106.45 - 47.25 = 59.20$ dBuV/m which is under 88.3dBuV/m limit.

The band edge emission plot on the next third page shows 50.24dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 140 is 96.47dBuV/m (Average), so the maximum field strength in restrict band is $96.47 - 50.24 = 46.23$ dBuV/m which is under 68.3dBuV/m limit.







FOR 5250-5350MHz BAND: DRAFT 802.11n (40MHz) OFDM MODULATION

Channel 54 (5270MHz)

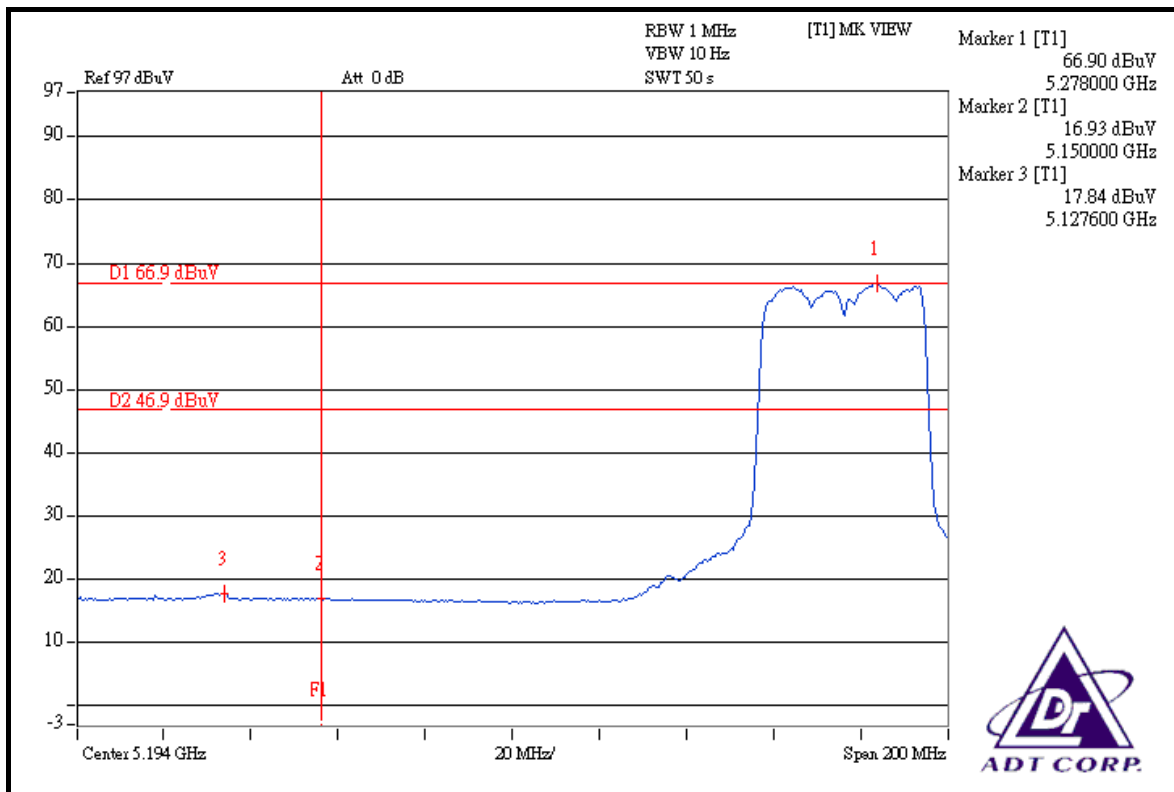
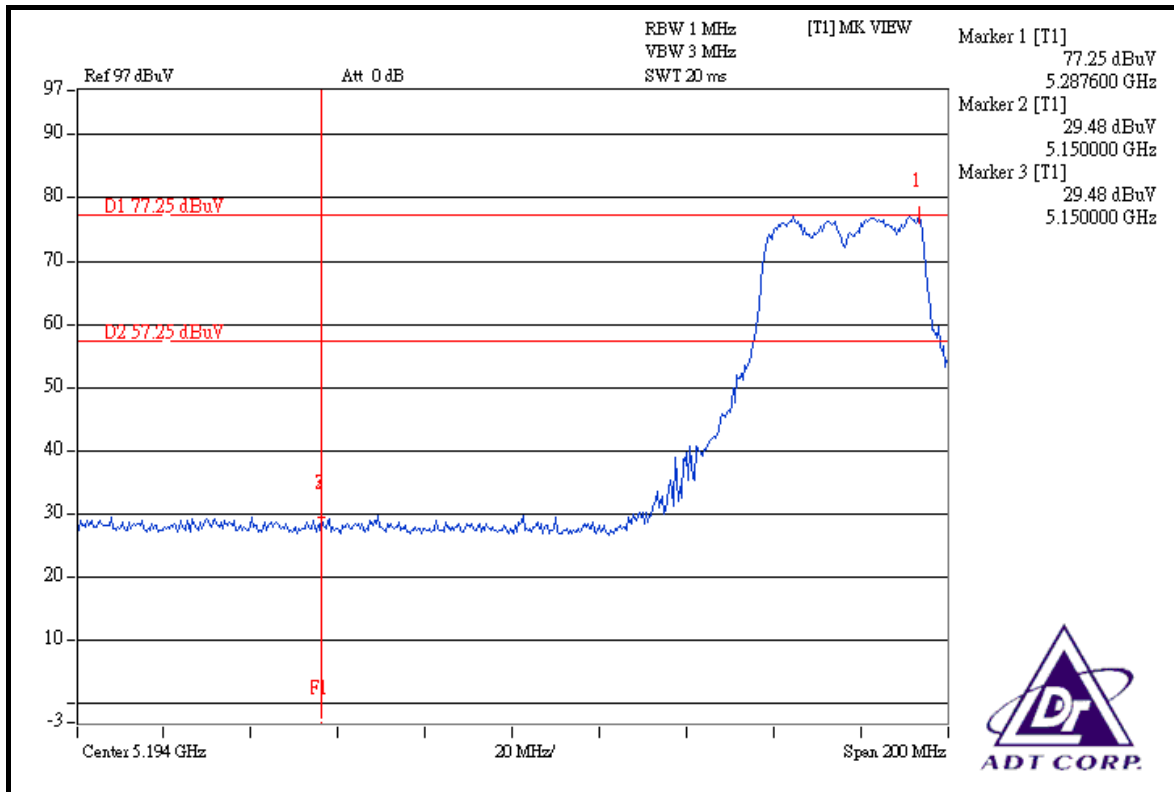
The band edge emission plot on the next page shows 47.77dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 54 is 106.10dBuV/m (Peak), so the maximum field strength in restrict band is $106.10 - 47.77 = 58.33$ dBuV/m which is under 74dBuV/m limit.

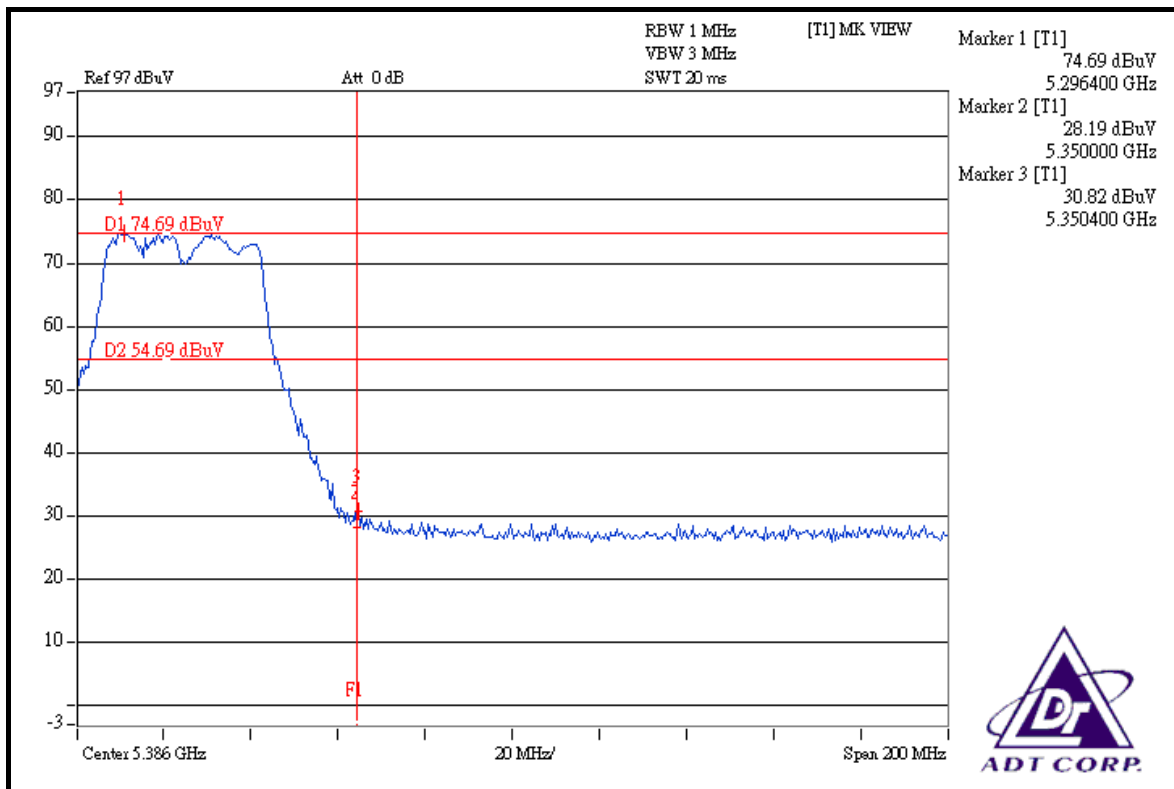
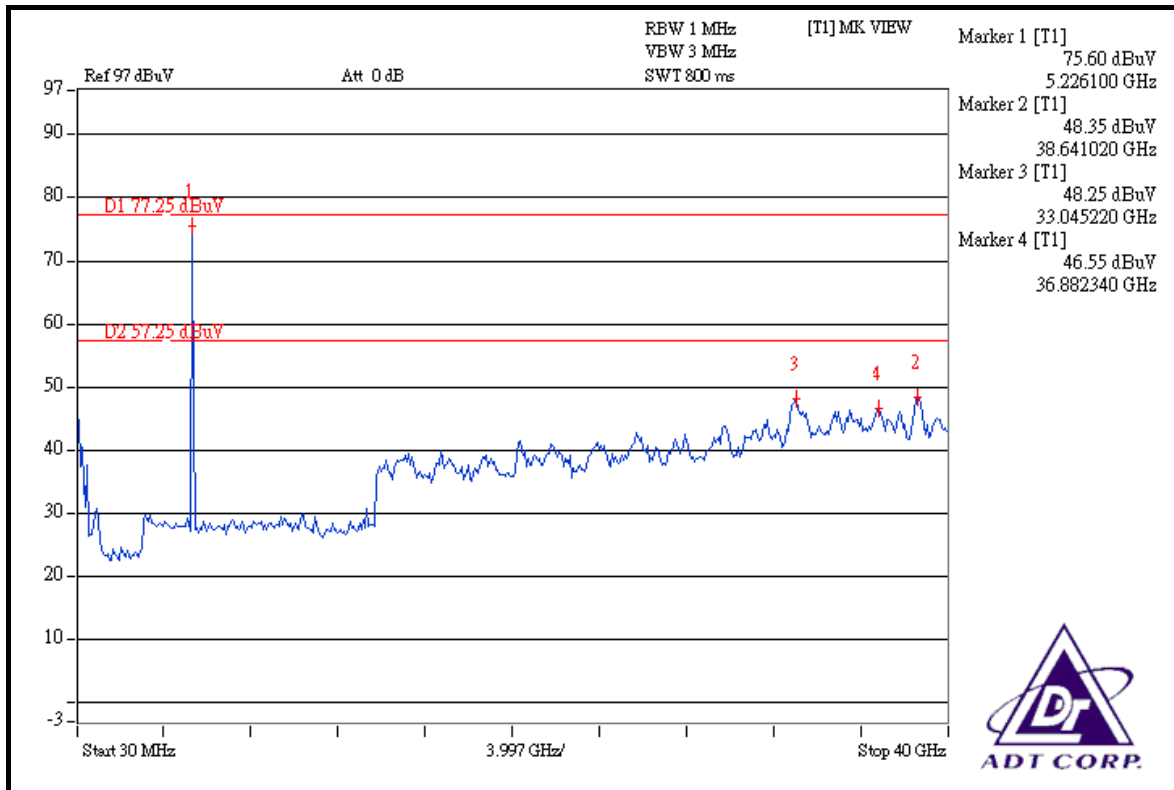
The band edge emission plot on the next page shows 49.09dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 54 is 95.63dBuV/m (Average), so the maximum field strength in restrict band is $95.63 - 49.06 = 46.57$ dBuV/m which is under 54dBuV/m limit.

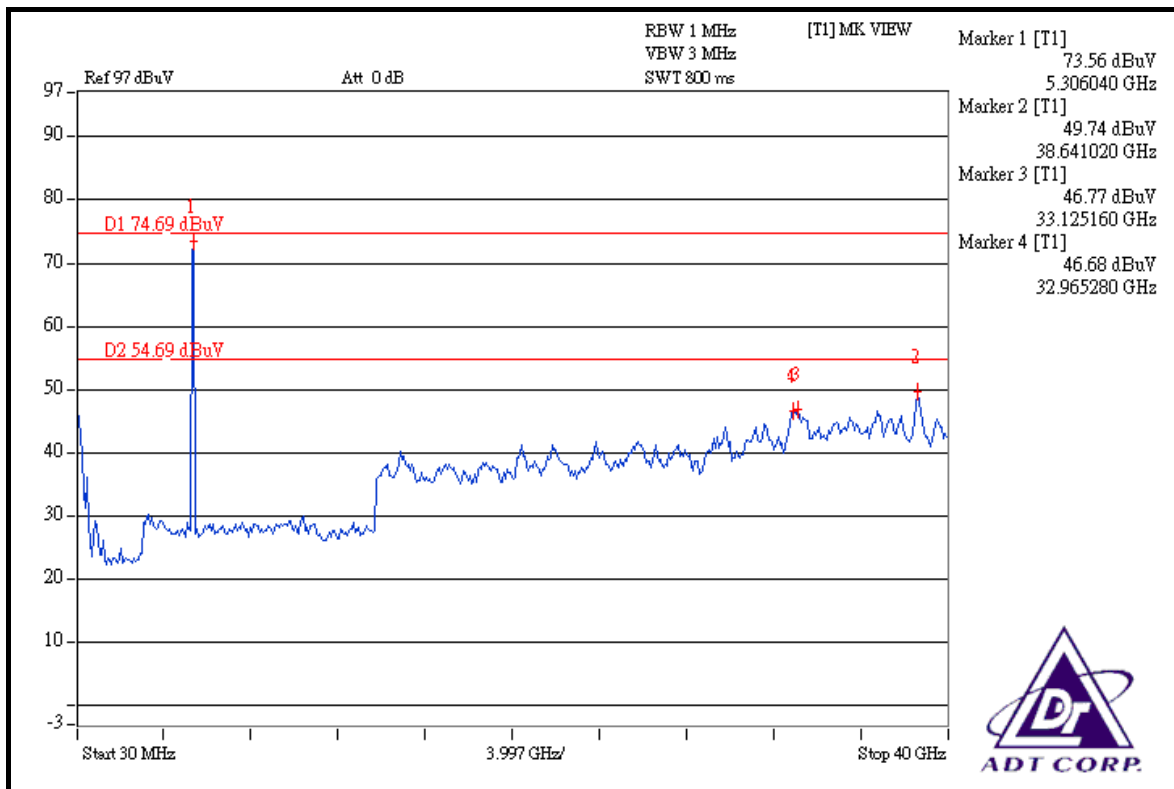
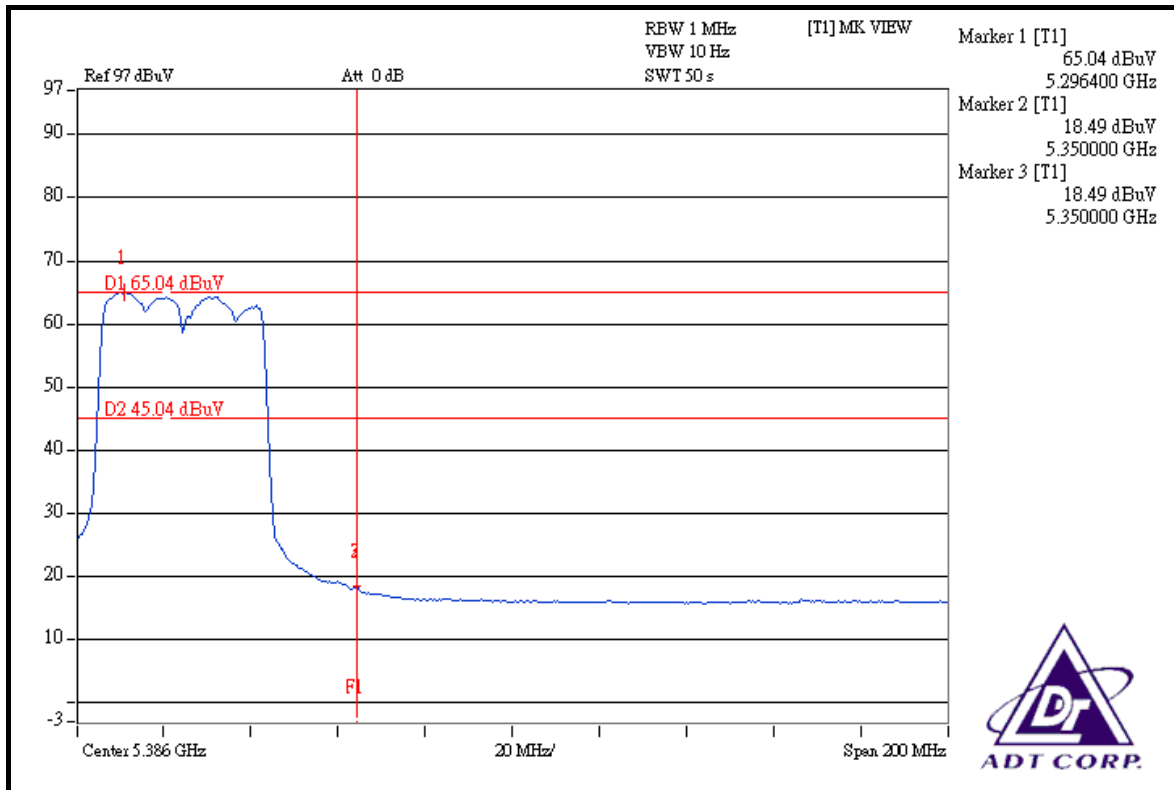
Channel 62 (5310MHz)

The band edge emission plot on the next second page shows 43.87dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 62 is 104.27dBuV/m (Peak), so the maximum field strength in restrict band is $104.27 - 43.87 = 60.40$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 46.55dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 62 is 93.94dBuV/m (Average), so the maximum field strength in restrict band is $93.94 - 46.55 = 47.39$ dBuV/m which is under 54dBuV/m limit.







FOR 5470-5725MHz BAND: DRAFT 802.11n (40MHz) OFDM MODULATION

Channel 102 (5510MHz)

The band edge emission plot (5.460GHz) on the next page shows 45.30dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 102 is 103.45dBuV/m (Peak), so the maximum field strength in restrict band is $103.45 - 45.30 = 58.15$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot (5.460GHz) on the next page shows 47.54dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 102 is 93.47dBuV/m (Average), so the maximum field strength in restrict band is $93.47 - 47.54 = 45.93$ dBuV/m which is under 54dBuV/m limit.

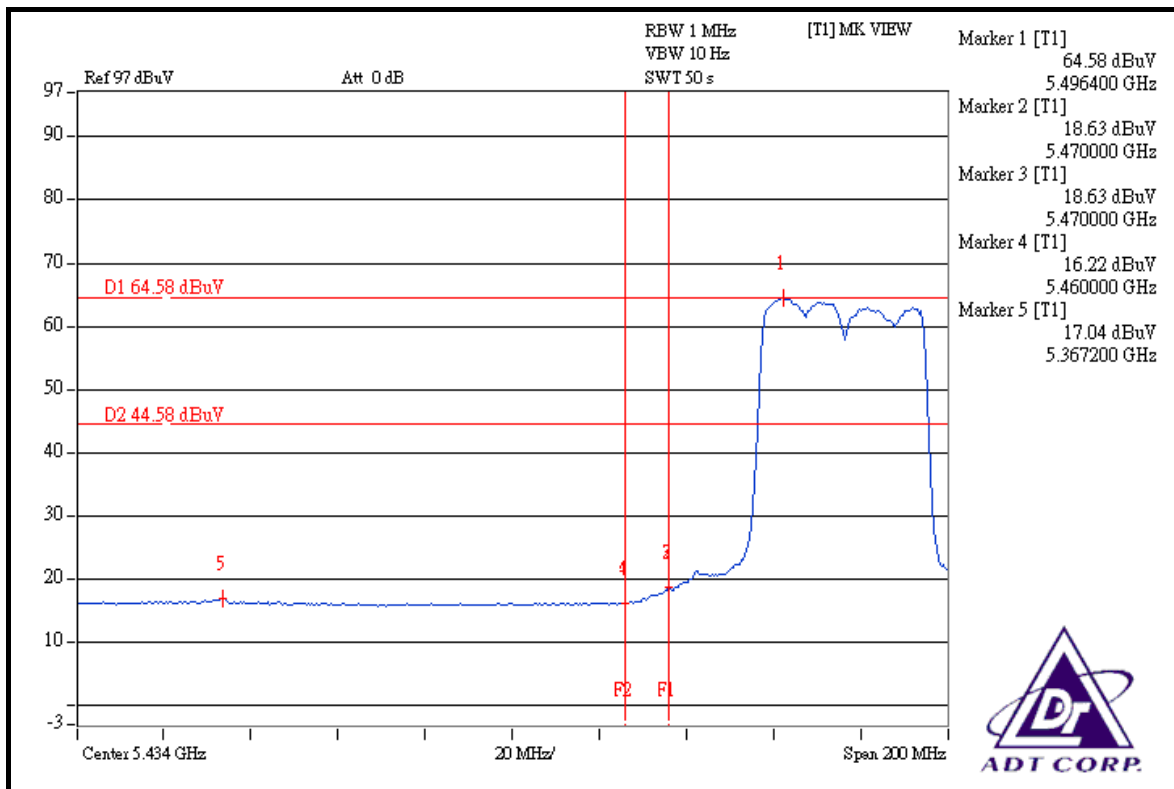
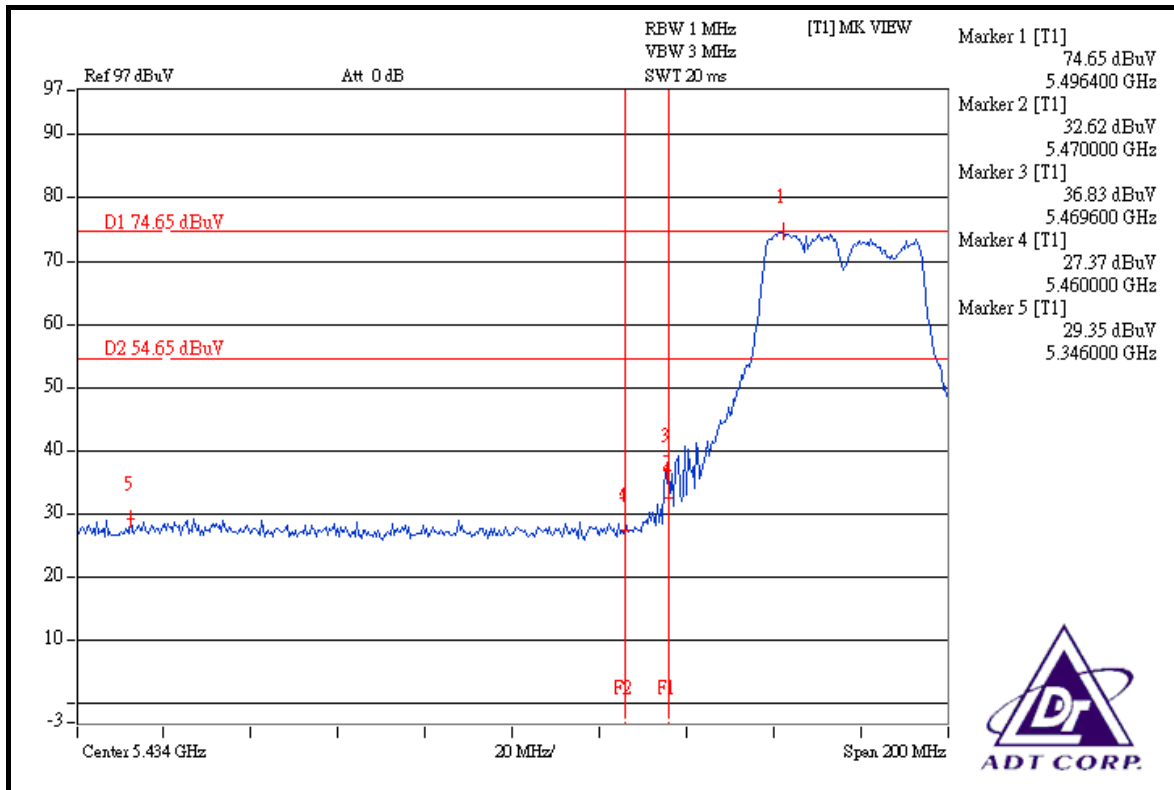
The band edge emission plot (5.470GHz) on the next page shows 37.82dBc between carrier maximum power and local maximum emission out of band emission. The emission of carrier strength list in the test result of channel 102 is 103.45dBuV/m (Peak), so the maximum field strength out of band emission is $103.45 - 37.82 = 65.63$ dBuV/m which is under 88.3dBuV/m limit.

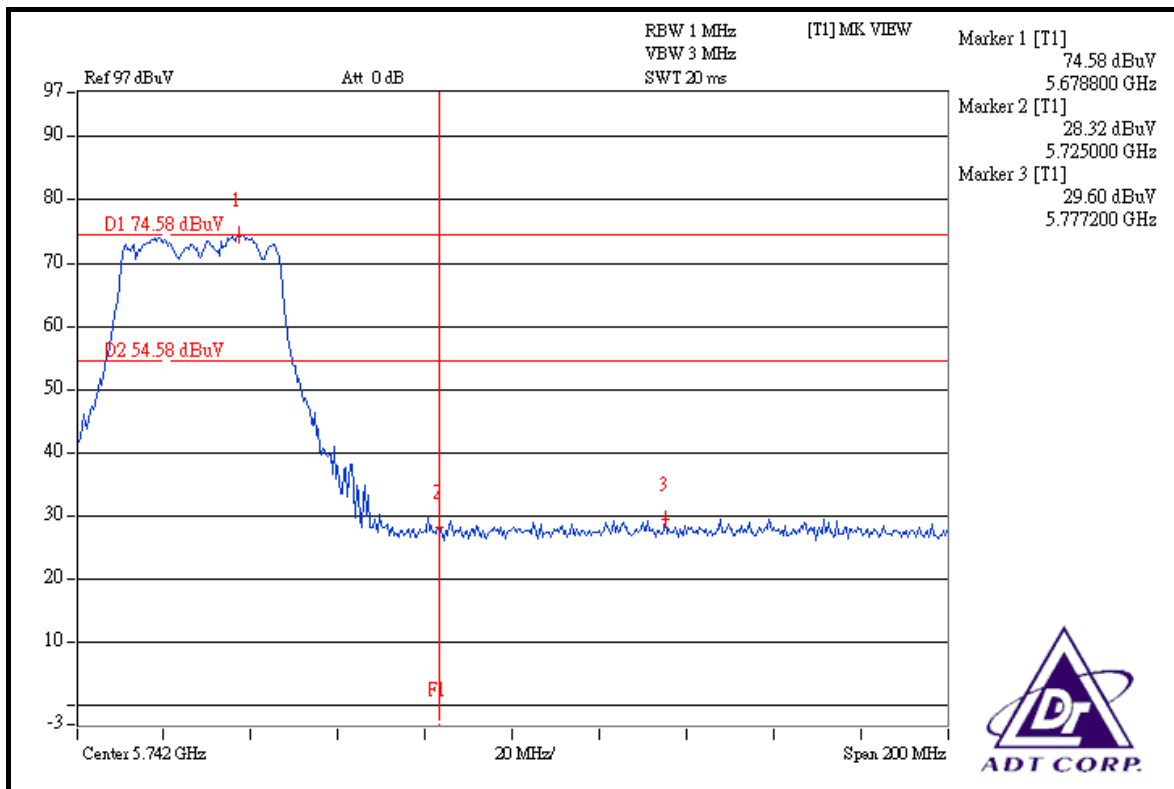
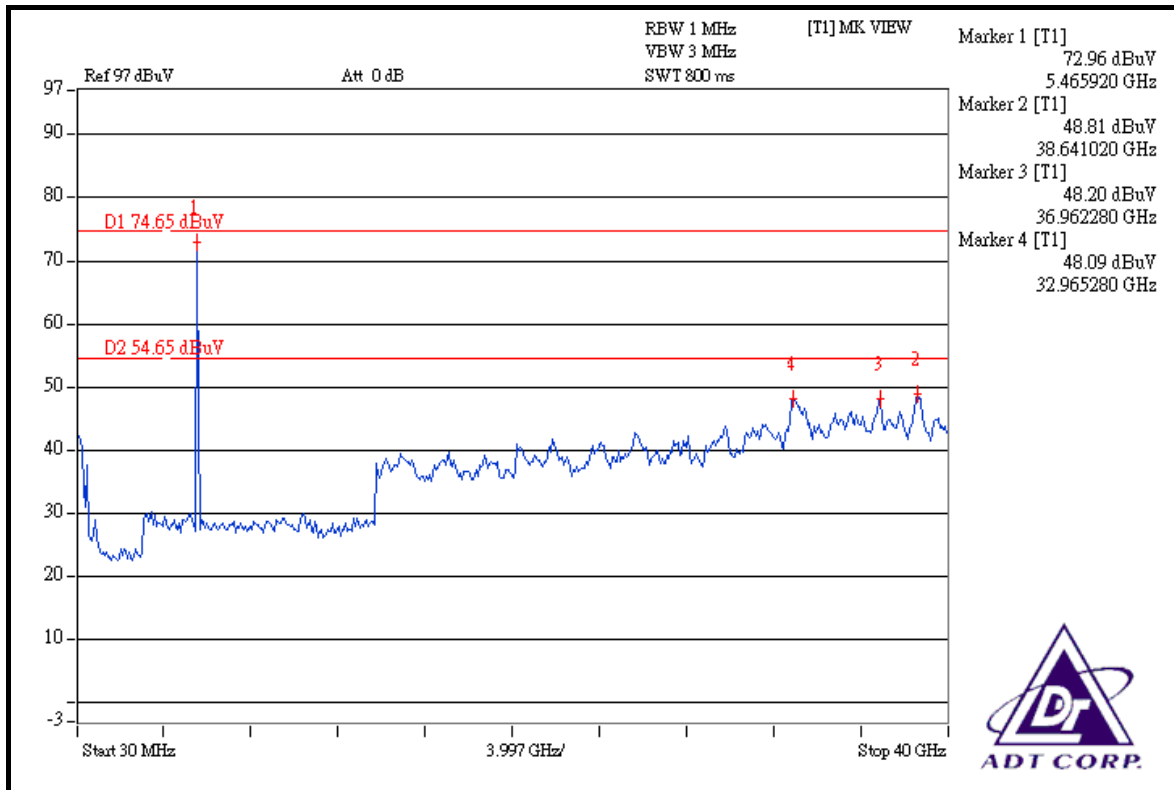
The band edge emission plot (5.470GHz) on the next page shows 45.95dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 102 is 93.47dBuV/m (Average), so the maximum field strength in restrict band is $93.47 - 45.95 = 47.52$ dBuV/m which is under 68.3dBuV/m limit.

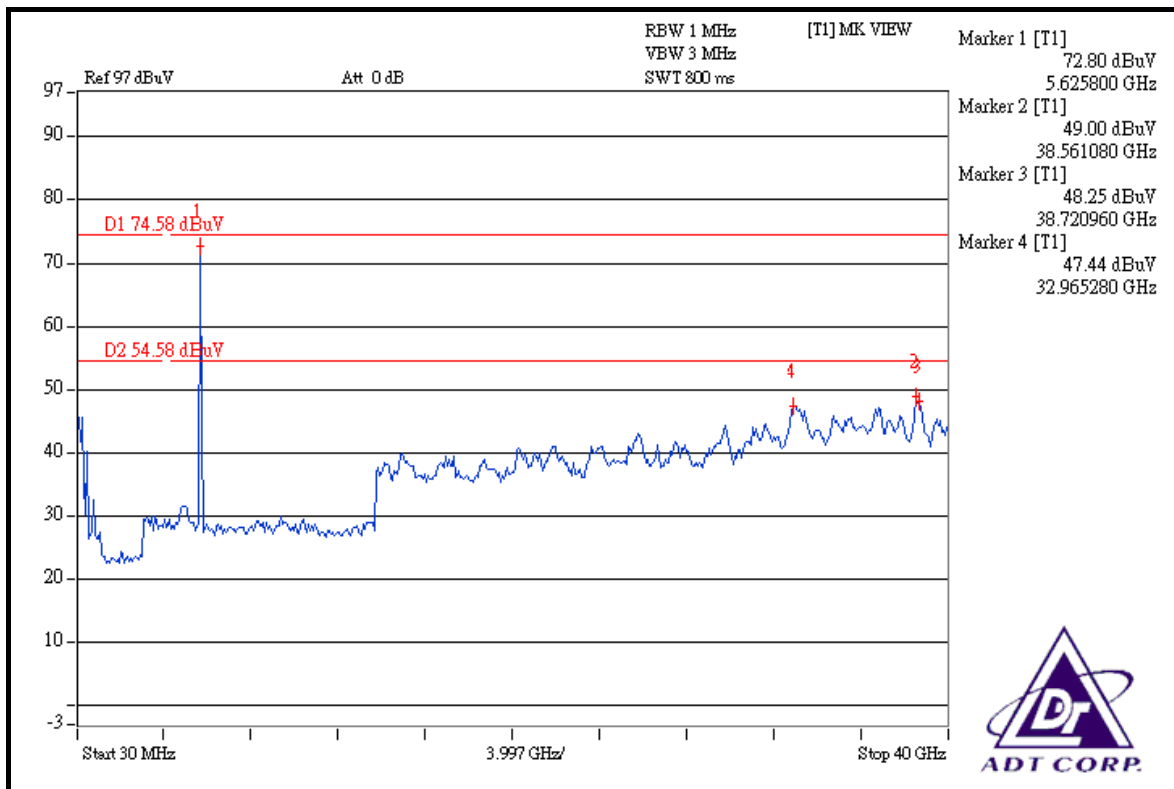
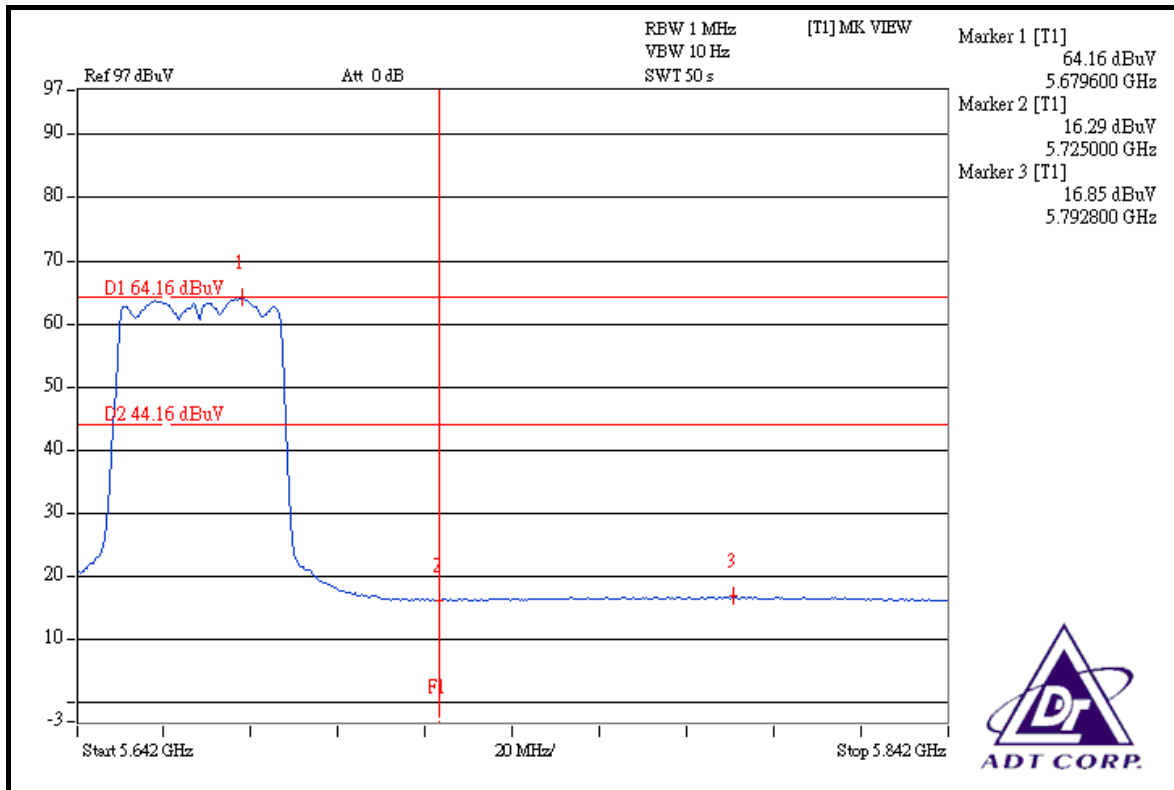
Channel 134 (5670MHz)

The band edge emission plot on the next second page shows 44.98dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 134 is 103.80dBuV/m (Peak), so the maximum field strength in restrict band is $103.80 - 44.98 = 58.82$ dBuV/m which is under 88.3dBuV/m limit.

The band edge emission plot on the next third page shows 47.31dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 134 is 93.39dBuV/m (Average), so the maximum field strength in restrict band is $93.39 - 47.31 = 46.08$ dBuV/m which is under 68.3dBuV/m limit.







4.7 DYNAMIC FREQUENCY SELECTION

4.7.1 OPERATING FREQUENCY BANDS AND MODE OF EUT

Table 1: Operating frequency bands and mode of EUT.

Operational Mode	Operating Frequency Range	
	5250~5350MHz	5470~5725MHz
Client without radar detection and ad hoc function	✓	✓

4.7.2 EUT SOFTWARE AND FIRMWARE VERSION

Table 2: The EUT software/firmware version.

No.	Product	Model No.	Software/Firmware Version
1	Wireless 11a/b/g/n Mini PCI module	WMIA-199N	Driver Version: 3.0.0.84

4.7.3 DESCRIPTION OF AVAILABLE ANTENNAS TO THE EUT

Table 3: Antenna list.

Ant NO.	Antenna	Type	Operation Frequency Range	Max. Gain(dBi)
1	PCB	PCB	5GHz band	4.6

4.7.4 EUT MAXIMUM AND MINIMUM CONDUCTED POWER

Table 4: The measured conducted output power.

IEEE 802.11a

Ant NO.	Frequency Band(MHz)	MAX. Power		MIN. Power	
		Output Power(dBm)	Output Power(mW)	Output Power(dBm)	Output Power(mW)
1	5250~5350MHz	11.63	14.555	11	12.589
1	5470~5725MHz	11.60	14.454	11	12.589

Draft 802.11n(20MHz)

Ant NO.	Frequency Band(MHz)	MAX. Power		MIN. Power	
		Output Power(dBm)	Output Power(mW)	Output Power(dBm)	Output Power(mW)
1	5250~5350MHz	11.96	15.715	11	12.589
1	5470~5725MHz	11.94	15.631	11	12.589

Draft 802.11n(40MHz)

Ant NO.	Frequency Band(MHz)	MAX. Power		MIN. Power	
		Output Power(dBm)	Output Power(mW)	Output Power(dBm)	Output Power(mW)
1	5250~5350MHz	11.98	15.776	11	12.589
1	5470~5725MHz	12.02	15.922	11	12.589

Table 5: The E.I.R.P output power list.

IEEE 802.11a

Ant NO.	Frequency Band(MHz)	MAX. Power		MIN. Power	
		Output Power(dBm)	Output Power(mW)	Output Power(dBm)	Output Power(mW)
1	5250~5350MHz	16.23	41.976	15.6	36.308
1	5470~5725MHz	16.20	41.687	15.6	36.308

Draft 802.11n(20MHz)

Ant NO.	Frequency Band(MHz)	MAX. Power		MIN. Power	
		Output Power(dBm)	Output Power(mW)	Output Power(dBm)	Output Power(mW)
1	5250~5350MHz	16.56	45.290	15.6	36.308
1	5470~5725MHz	16.54	45.082	15.6	36.308

Draft 802.11n(40MHz)

Ant NO.	Frequency Band(MHz)	MAX. Power		MIN. Power	
		Output Power(dBm)	Output Power(mW)	Output Power(dBm)	Output Power(mW)
1	5250~5350MHz	16.58	45.499	15.6	36.308
1	5470~5725MHz	16.62	45.920	15.6	36.308

4.7.5 STATEMENT OF MAUNFACTURER

Manufacturer statement confirming that information regarding the parameters of the detected Radar Waveforms is not available to the end user. **And the device doesn't have Ad Hoc mode on DFS frequency band.**

4.7.6 U-NII DFS RULE REQUIREMENTS

WORKING MODES AND REQUIRED TEST ITEMS

The manufacturer shall state whether the UUT is capable of operating as a Master and/or a Client. If the UUT is capable of operating in more than one operating mode then each operating mode shall be tested separately. See tables 1 and 2 for the applicability of DFS requirements for each of the operational modes.

Table 6: Applicability of DFS requirements prior to use a channel

Requirement	Operational Mode		
	Master	Client without radar detection	Client with radar detection
Non-Occupancy Period	✓	Not required	✓
DFS Detection Threshold	✓	Not required	✓
Channel Availability Check Time	✓	Not required	Not required
Uniform Spreading	✓	Not required	Not required
U-NII Detection Bandwidth	✓	Not required	✓

Table 7: Applicability of DFS requirements during normal operation.

Requirement	Operational Mode		
	Master	Client without radar detection	Client with radar detection
DFS Detection Threshold	✓	Not required	✓
Channel Closing Transmission Time	✓	✓	✓
Channel Move Time	✓	✓	✓
U-NII Detection Bandwidth	✓	Not required	✓

4.7.7 TEST LIMITS AND RADAR SIGNAL PARAMETERS

DETECTION THRESHOLD VALUES

Table 8: DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection.

Maximum Transmit Power	Value (See Notes 1 and 2)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.
 Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Table 9: DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 80% of the UNII 99% transmission power bandwidth. See Note 3.

Note 1: The instant that the Channel Move Time and the Channel Closing Transmission Time begins is as follows:
 • For the Short Pulse Radar Test Signals this instant is the end of the Burst.
 • For the Frequency Hopping radar Test Signal, this instant is the end of the last radar Burst generated.
 • For the Long Pulse Radar Test Signal this instant is the end of the 12 second period defining the Radar Waveform.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 1 is used and for each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

PARAMETERS OF DFS TEST SIGNALS

Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

Table 10: Short Pulse Radar Test Waveforms.

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
1	1	1428	18	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Table 11: Long Pulse Radar Test Waveform

Radar Type	Pulse Width (μsec)	Chirp Width (MHz)	PRI (μsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 12: Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (μsec)	PRI (μsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

4.7.8 TEST & SUPPORT EQUIPMENT LIST

TEST INSTRUMENTS

Table 1: Test instruments list.

DESCRIPTION & MANUFACTURER	MODEL NO.	BRAND	CALIBRATED UNTIL
R&S Spectrum analyzer	FSP40	R&S	May. 26, 2009
Signal generator	8645A	Agilent	Jun. 09, 2009
Oscilloscope	TDS 5104	Tektronix	Aug. 30. 2008

DESCRIPTION OF SUPPORT UNITS

Table 2: Support Unit information.

No.	Product	Brand	Model No.	ID	Spec.
1	802.11a/b/g/n Access Point	Cisco	AIR-AP1252AG-A-K9	LDK102061	

Note: This device was functioned as a Master Slave device during the DFS test.

Table 3: Software/Firmware information.

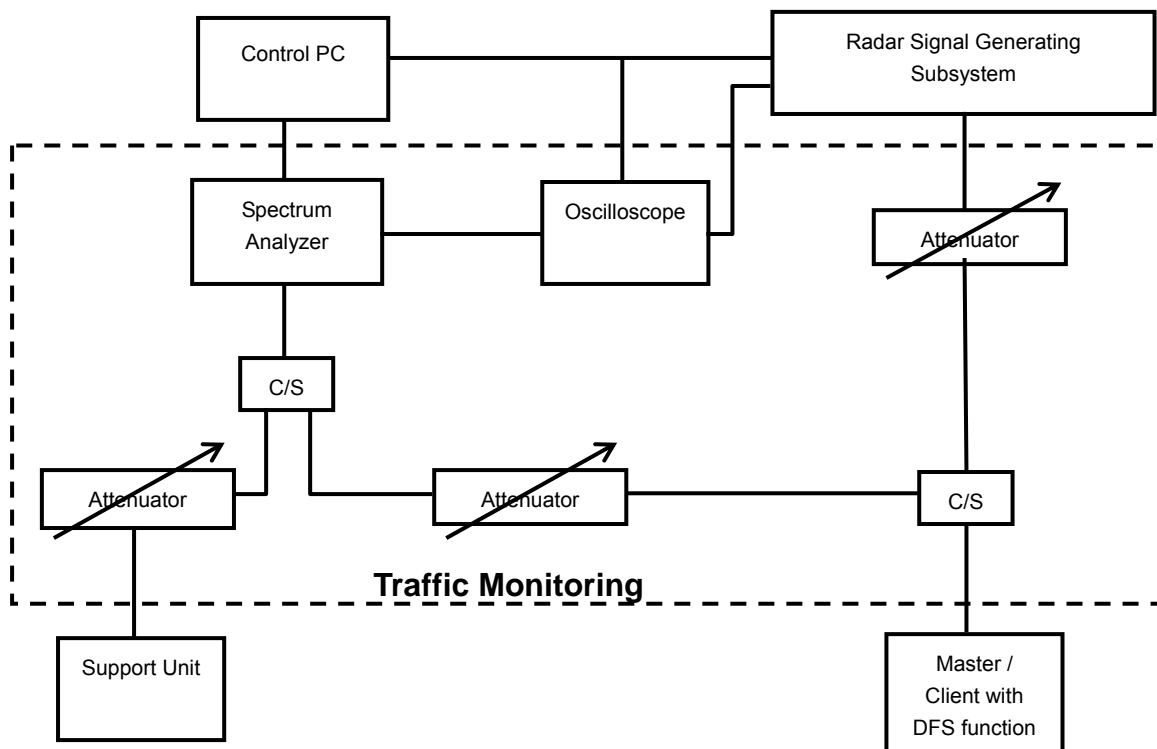
No.	Product	Model No.	Software/Firmware Version
1.	802.11a/b/g/n Access Point	AIR-AP1252AG-A-K9	12.4(10b)JA1

4.7.9 TEST PROCEDURE

ADT DFS MEASUREMENT SYSTEM:

A complete ADT DFS Measurement System consists of two subsystems: (1) the Radar Signal Generating Subsystem and (2) the Traffic Monitoring Subsystem. The control PC is necessary for generating the Radar waveforms in Table 6, 7 and 8. The traffic monitoring subsystem is specified to the type of unit under test (UUT).

Conducted setup configuration of ADT DFS Measurement System



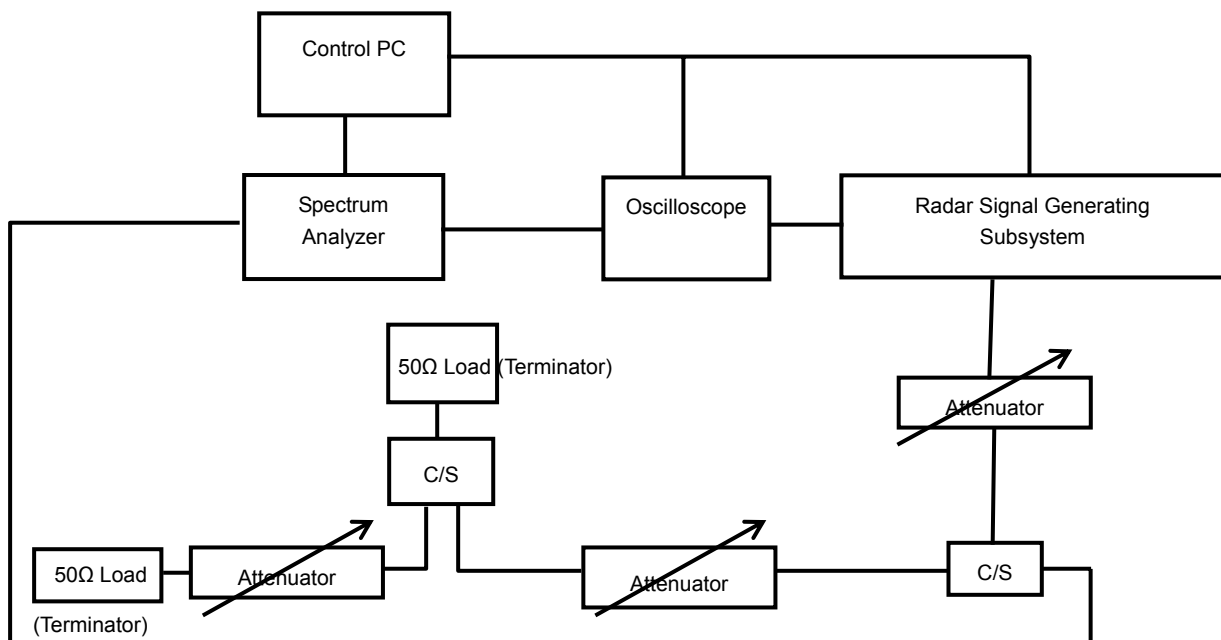
The test transmission will always be from the Master Device to the Client Device. While the Client device is set up to associate with the Master device and play the MPEG file (6 $\frac{1}{2}$ Magic Hours) from Master device, the designated MPEG test file and instructions are located at:

<http://ntiacsd.ntia.doc.gov/dfs/>.

4.7.10 CALIBRATION OF DFS DETECTION THRESHOLD LEVEL:

The measured channel is 5320 MHz and 5500MHz. The radar signal was the same as transmitted channels, and injected into the antenna port of AP (master) or Client Device with Radar Detection, measured the channel closing transmission time and channel move time. The Master antenna gain is 3dBi and required detection threshold is -58dBm (= -62 +1+3)dBm. The calibrated conducted detection threshold level is set to -59dBm. The tested level is lower than required level hence it provides margin to the limit.

Conducted setup configuration of Calibration of DFS Detection Threshold Level

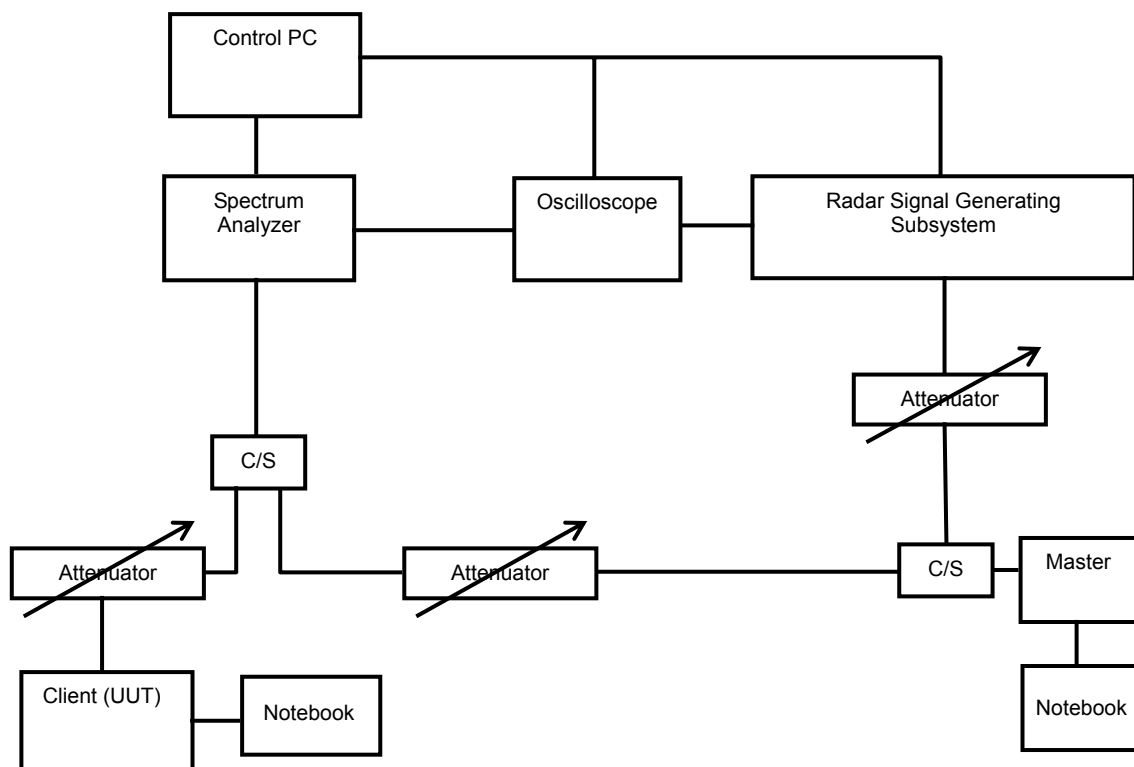


4.7.11 DEVIATION FROM TEST STANDARD

No deviation.

4.7.12 CONDUCTED TEST SETUP CONFIGURATION

CLIENT WITHOUT RADAR DETECTION MODE



The UUT is a U-NII Device operating in Client mode without radar detection. The radar test signals are injected into the Master Device.

4.7.13 TEST RESULTS

SUMMARY OF TEST RESULT

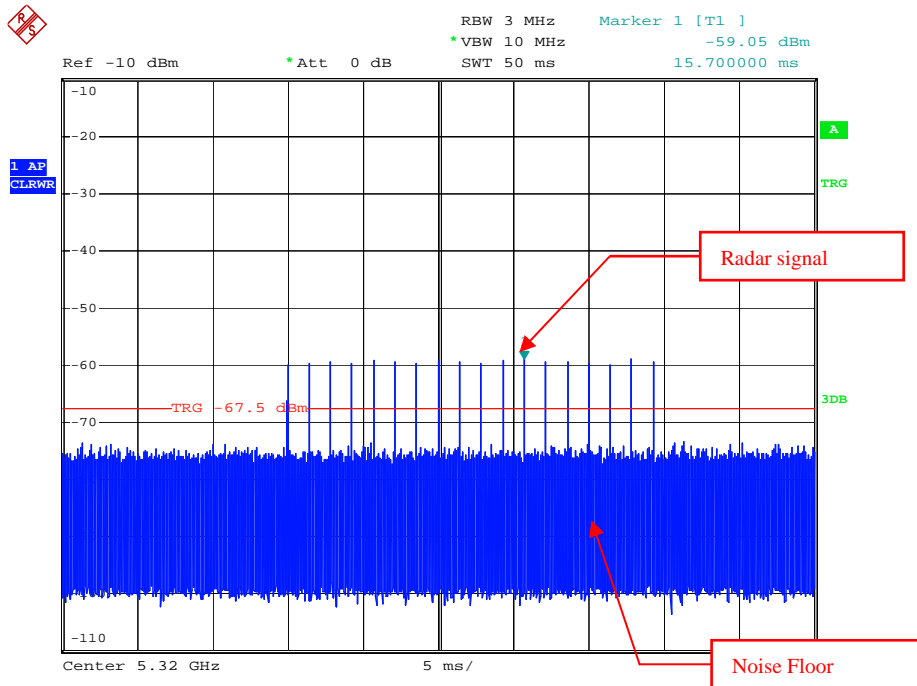
Clause	Test Parameter	Remarks	Pass/Fail
15.407	DFS Detection Threshold	Not Applicable	NA
15.407	Channel Availability Check Time	Not Applicable	NA
15.407	Channel Move Time	Applicable	Pass
15.407	Channel Closing Transmission Time	Applicable	Pass
15.407	Non- Occupancy Period	Applicable	Pass
15.407	Uniform Spreading	Not Applicable	NA
15.407	U-NII Detection Bandwidth	Not Applicable	NA
15.407	Non-associated test	Applicable	Pass

4.7.14 DETELED TEST RESULTS

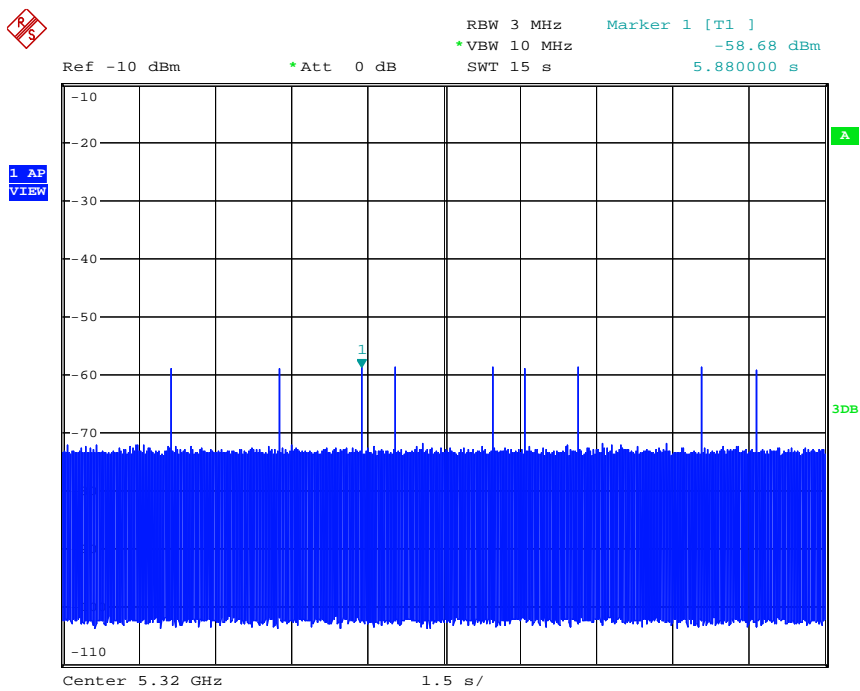
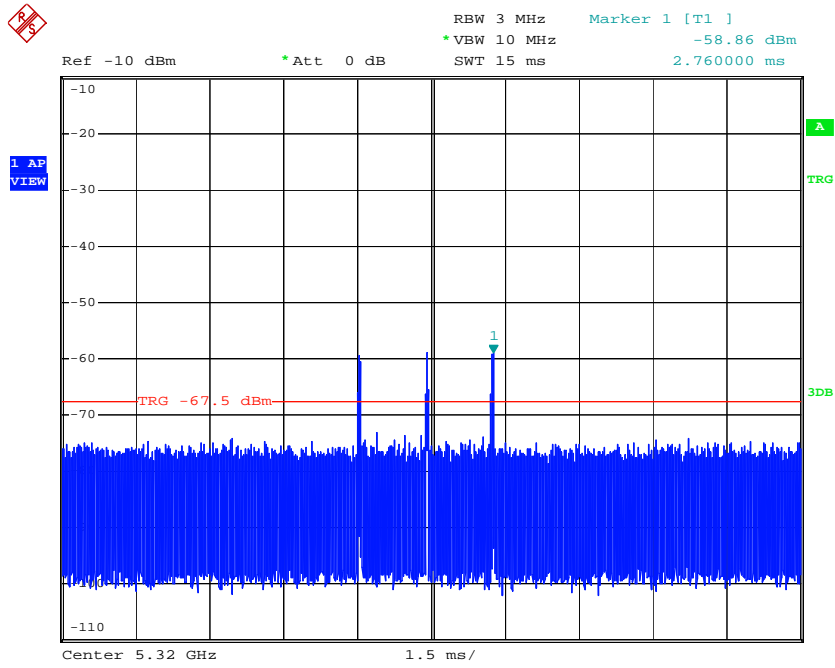
Test Mode: Device operating in Client without Radar Detection mode.
 Client with injection at the Master. (The radar test signals are injected into the Master Device.)

DFS DETECTION THRESHOLD

For a detection threshold level of -62dBm and the Master antenna gain is 3dBi . The Required detection threshold is -58dBm ($= -62 + 1 + 3\text{dBm}$). The conducted radar burst level is set to -59dBm . The tested level is lower than required level hence it provides margin to the limit.



Radar Signal 1

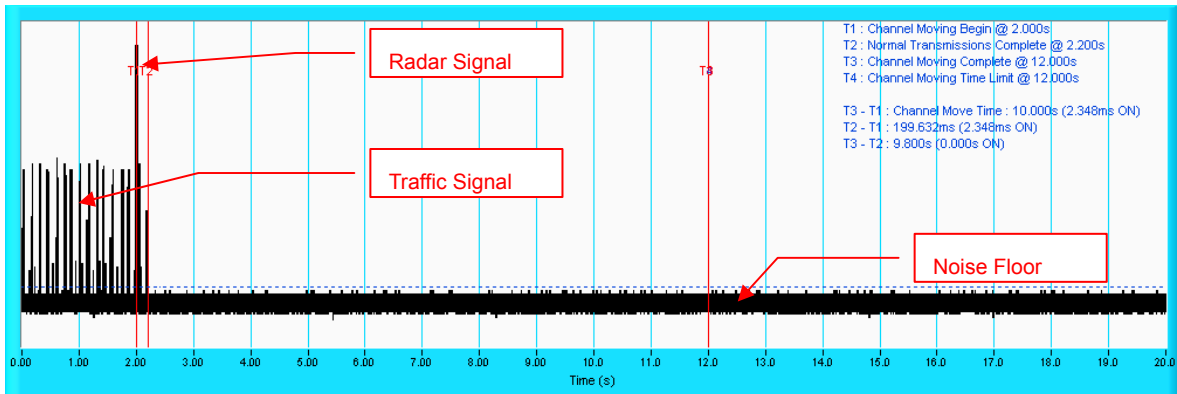


Radar Signal 5

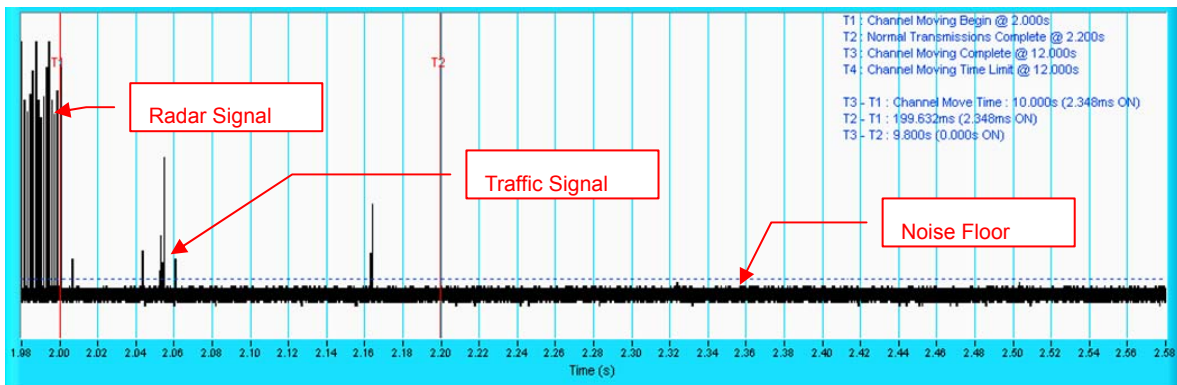
4.7.15 CHANNEL CLOSING TRANSMISSION AND CHANNEL MOVE TIME

Radar signal 1

IEEE 802.11a

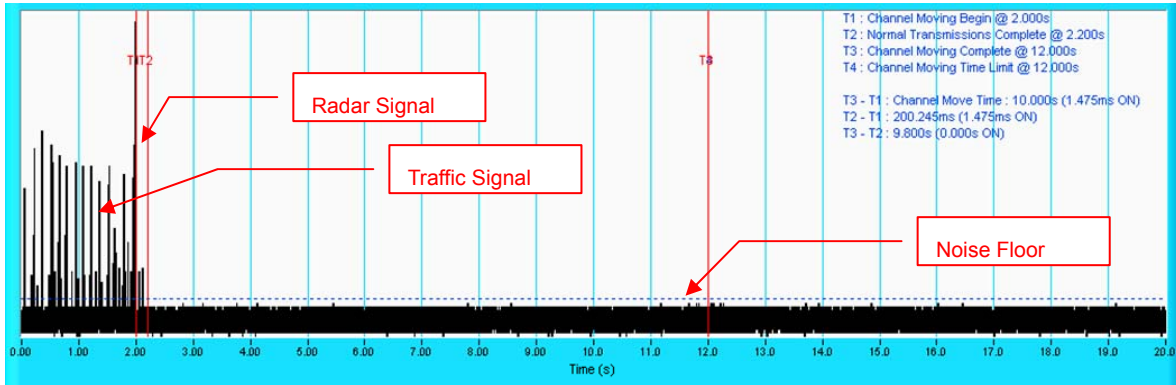


NOTE: T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200ms from T1. T3 denotes the 10 second from T1 to observe the aggregate duration of transmissions.

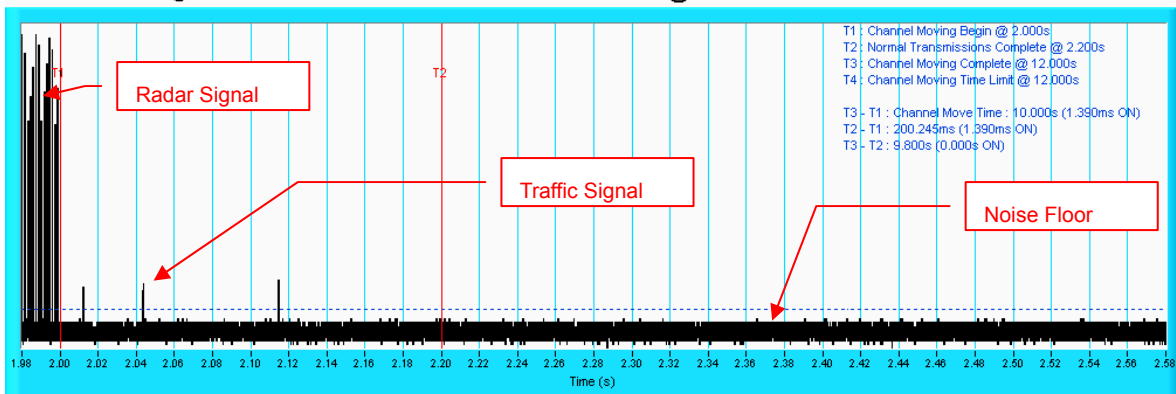


NOTE: An expanded plot for the device vacates the channel in the required 200ms.

Draft 802.11n (20MHz)

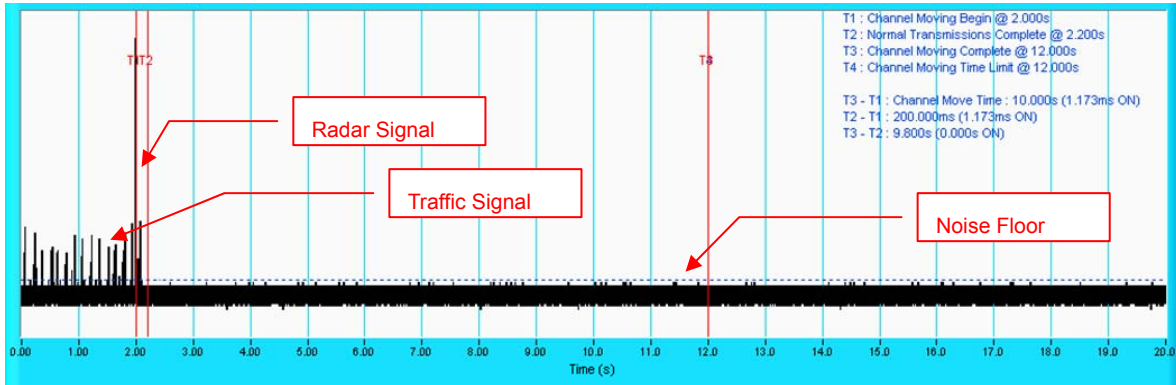


NOTE: T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200ms from T1. T3 denotes the 10 second from T1 to observe the aggregate duration of transmissions.

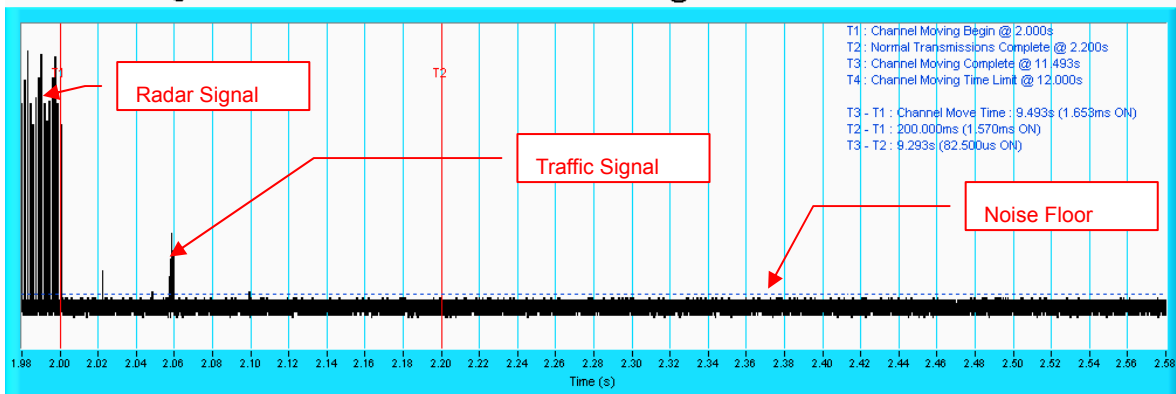


NOTE: An expanded plot for the device vacates the channel in the required 200ms.

Draft 802.11n(40MHz)



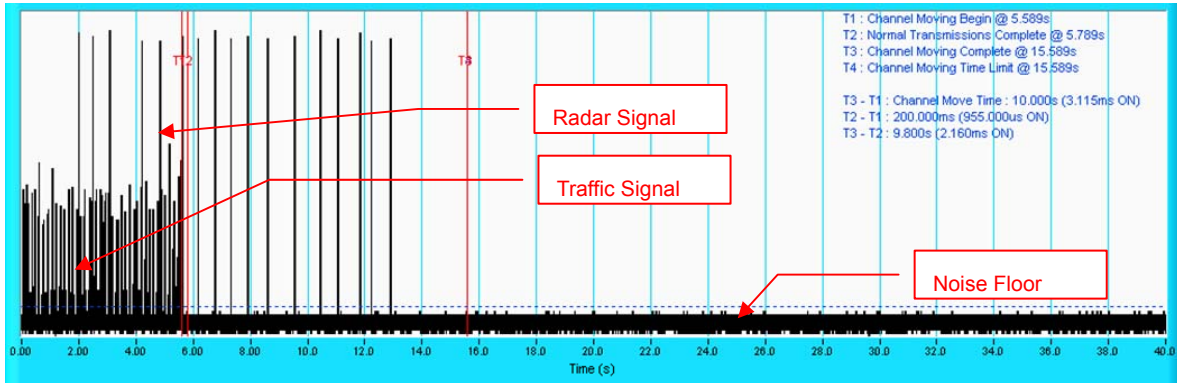
NOTE: T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200ms from T1. T3 denotes the 10 second from T1 to observe the aggregate duration of transmissions.



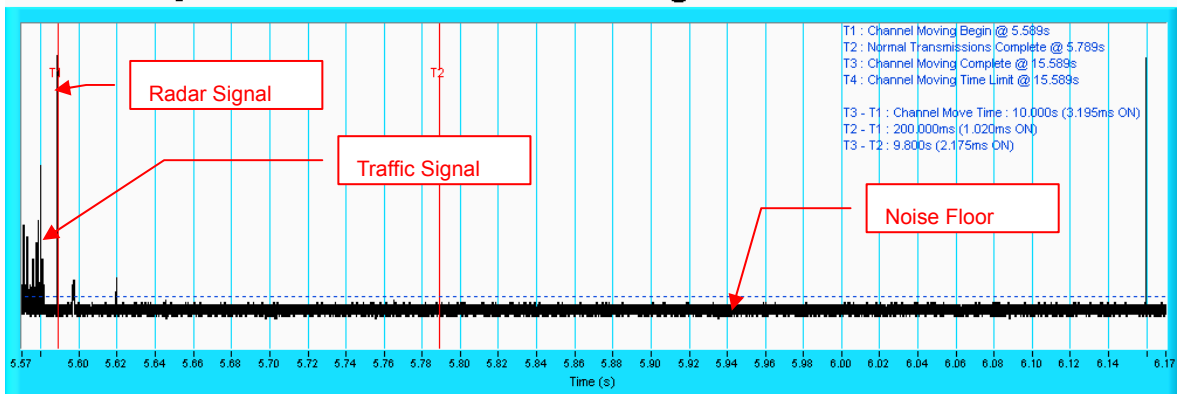
NOTE: An expanded plot for the device vacates the channel in the required 200ms.

Radar signal 5

IEEE 802.11a

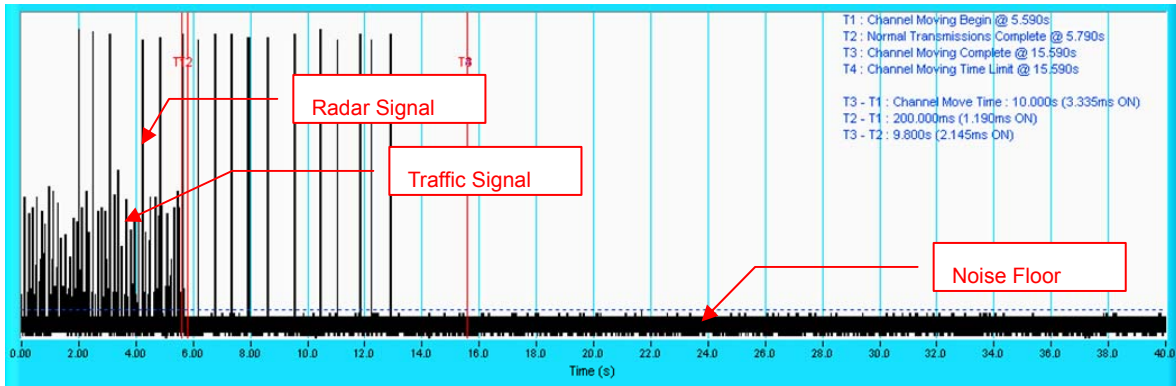


NOTE: T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200ms from T1. T3 denotes the 10 second from T1 to observe the aggregate duration of transmissions.

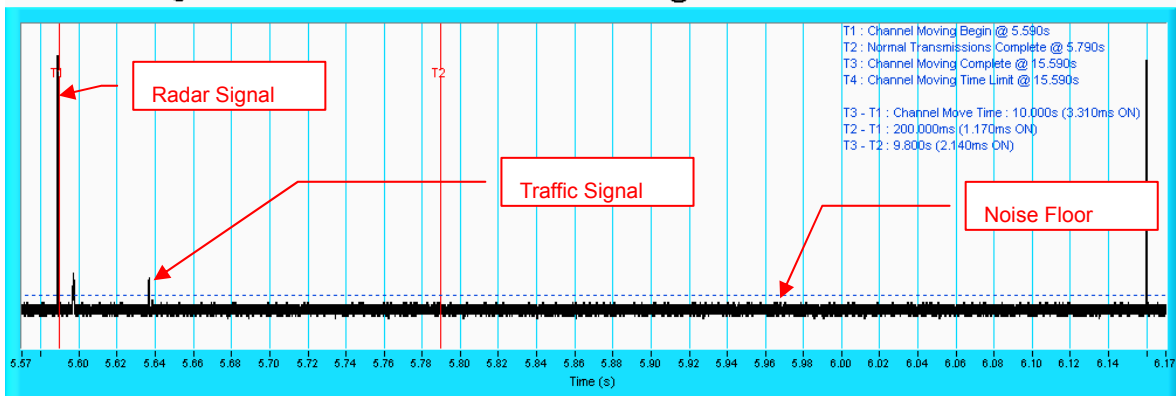


NOTE: An expanded plot for the device vacates the channel in the required 200ms.

Draft 802.11n (20MHz)

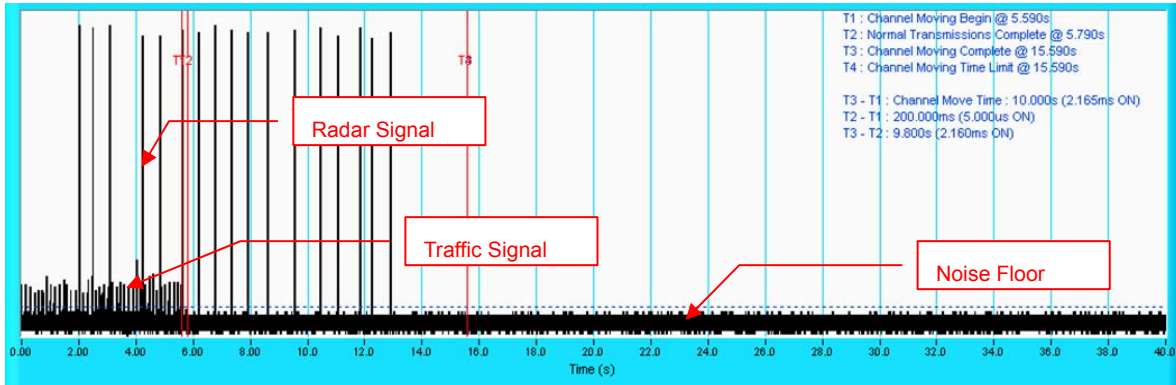


NOTE: T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200ms from T1. T3 denotes the 10 second from T1 to observe the aggregate duration of transmissions.

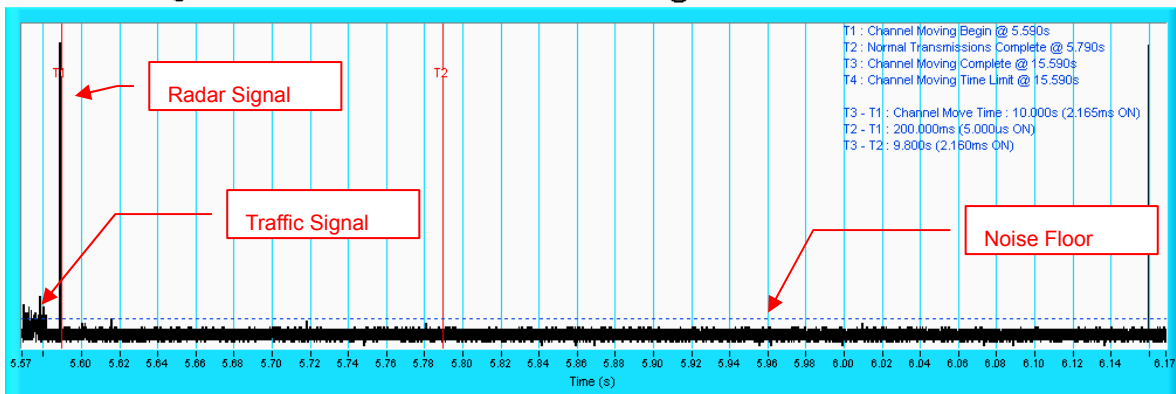


NOTE: An expanded plot for the device vacates the channel in the required 200ms.

Draft 802.11n (40MHz)



NOTE: T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200ms from T1. T3 denotes the 10 second from T1 to observe the aggregate duration of transmissions.

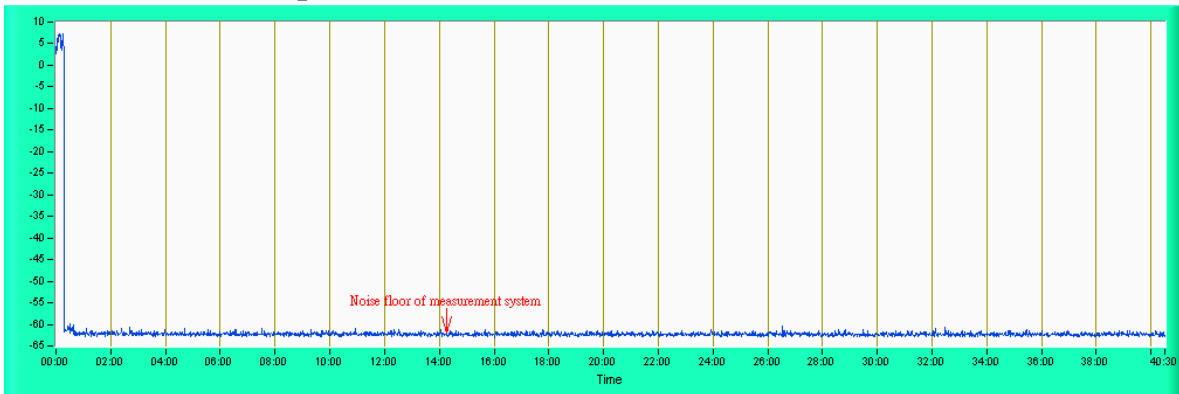


NOTE: An expanded plot for the device vacates the channel in the required 200ms.

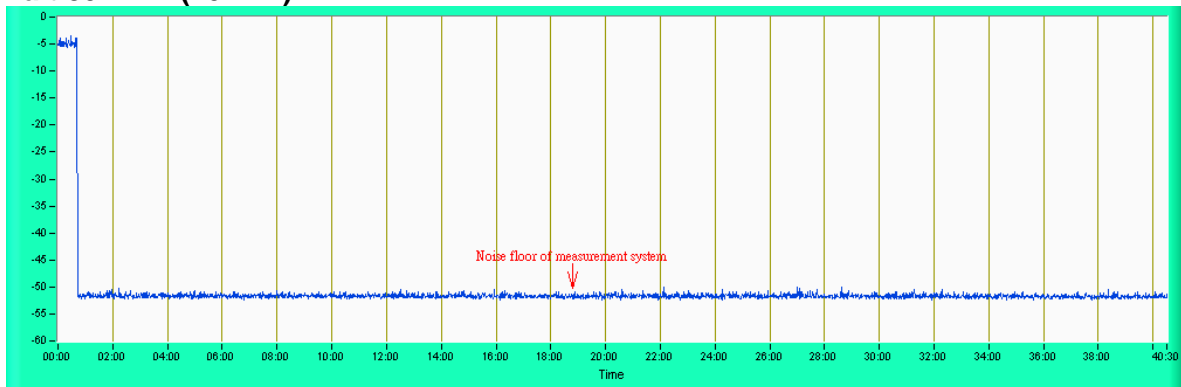
Non-Occupancy Period

During the 30 minutes observation time, UUT did not make any transmissions on a channel after a radar signal was detected on that channel by either the Channel Availability Check or the In-Service Monitoring.

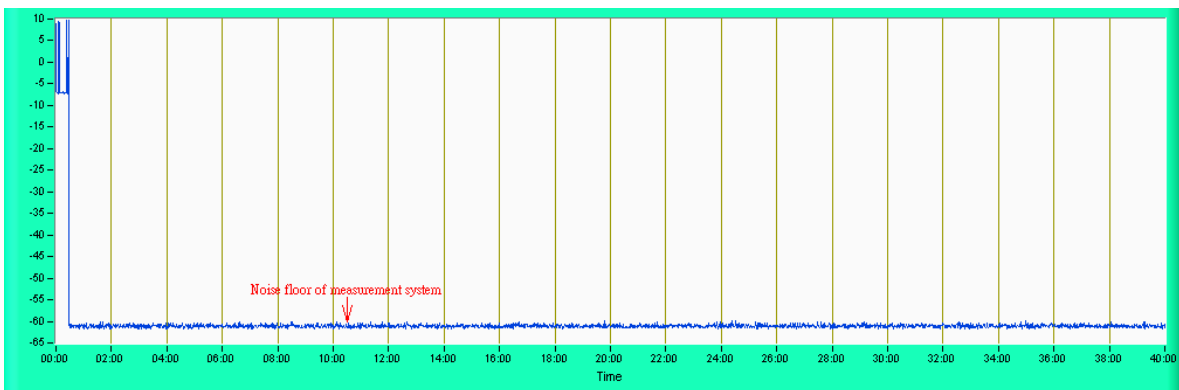
802.11a



Draft 802.11n (20MHz)



Draft 802.11n (40MHz)

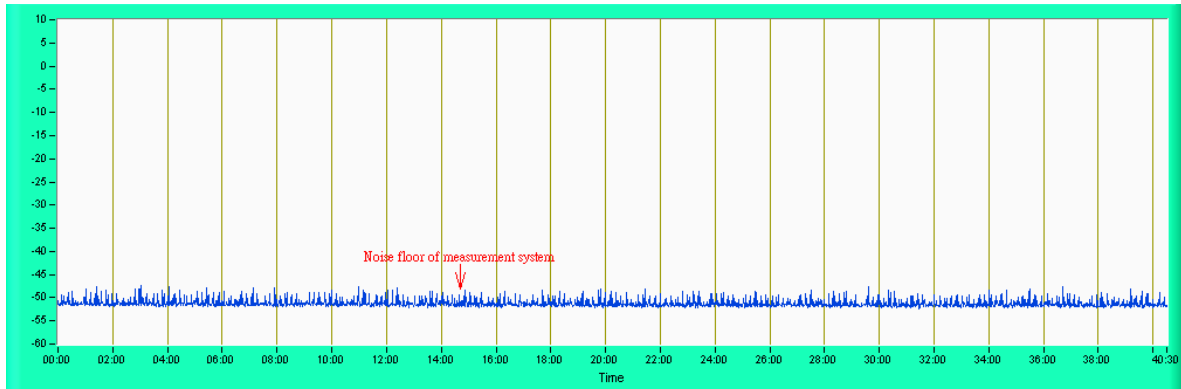


Non-associated test

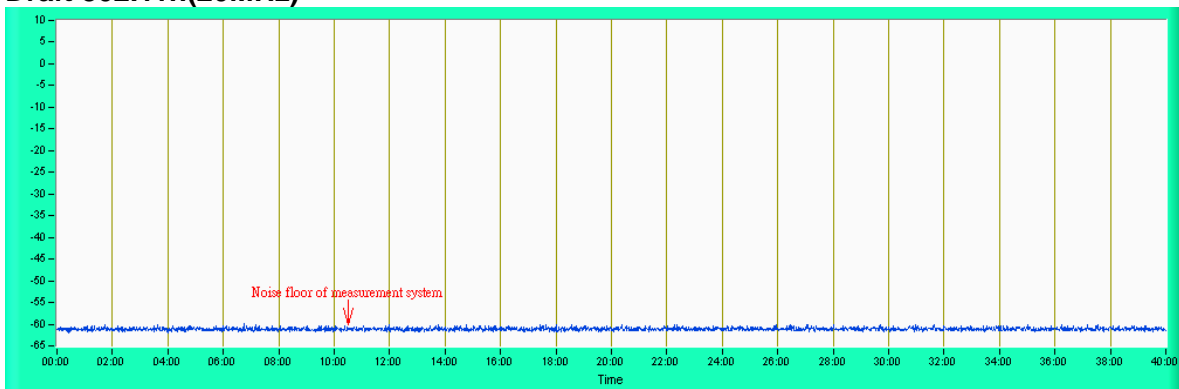
Master was off.

During the 30 minutes observation time, The UUT did not make any transmissions in the DFS band after UUT power up.

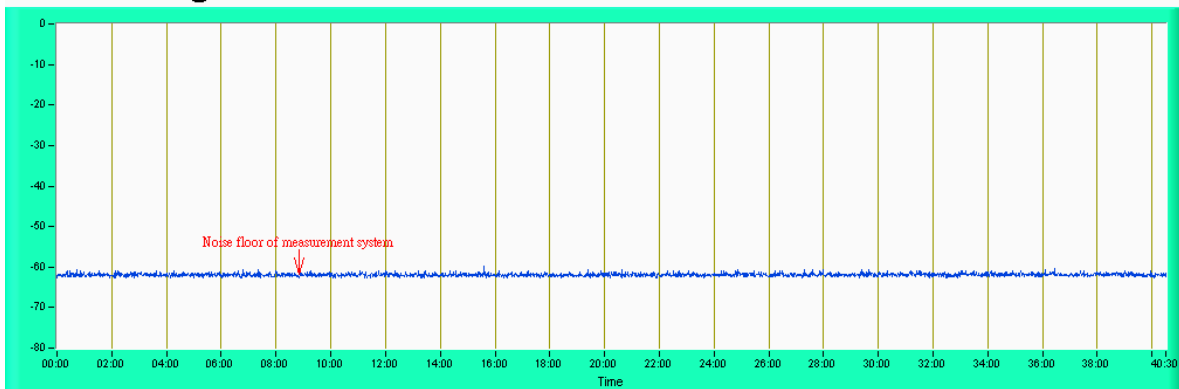
802.11a



Draft 802.11n(20MHz)



Draft 802.11n(40MHz)





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 PCB antenna with UFL connector. The maximum Gain of the antenna is 4.6Bi.



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.