FCC TEST REPORT (15.407)

REPORT NO.: RF960822A05-1

MODEL NO.: MTG

MODEL NAME: XPS A2010, XPS A2010n

RECEIVED: Aug. 22, 2007

TESTED: Aug. 29 ~Sep. 20, 2007

ISSUED: Oct. 1, 2007

APPLICANT: ASUSTeK COMPUTER INC.

ADDRESS: NO. 15, LI-TE RD., PEITOU, TAIPEI, TAIWAN, R.O.C.

ISSUED BY: Advance Data Technology Corporation

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

Testing Laboratory
0528

ACCREDITED
No.: 2177-01

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1. CERTIFICATION

PRODUCT: Personal Computer
BRAND NAME: Dell
MODEL NO.: MTG
MODEL NAME: XPS A2010, XPS A2010n
APPLICANT: ASUSTeK COMPUTER INC.
TEST SAMPLE: ENGINEERING SAMPLE
TESTED: Aug. 29 ~Sep. 20, 2007
STANDARDS: FCC Part 15, Subpart E (Section 15.407)
FCC 06-96
ANSI C63.4-2003

The above equipment (Model: MTG) 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 : Annie Chang , **DATE:** Oct. 1, 2007
(Annie Chang / Senior Specialist)

TECHNICAL ACCEPTANCE : Jamison Chan , **DATE:** Oct. 1, 2007
Responsible for RF
(Jamison Chan / Senior Engineer)

APPROVED BY : Ken Liu , **DATE:** Oct. 1, 2007
(Ken Liu / Deputy 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 -14.70dB at 0.185MHz.
15.407(b/1/2/3)(b)(5)	Electric Field Strength Spurious Emissions, 30MHz ~ 40000MHz	PASS	Meet the requirement of limit. Minimum passing margin is -1.13dB at 5470.000MHz.
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.
15.407(h)	Dynamic Frequency Selection	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:

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

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz ~ 30MHz	2.44 dB
Radiated emissions	30MHz ~ 1GHz	3.75 dB
	1GHz ~ 40GHz	2.89 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Personal Computer
MODEL NO.	MTG
MODEL NAME	XPS A2010, XPS A2010n
FCC ID	MSQ-MTG20
POWER SUPPLY	AC I/P: 100-240V, 3A, 50-60Hz
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b:11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps Draft 802.11n (20MHz): 130.0/ 117.0/ 104.0/ 78.0/ 52.0/ 39.0/ 26.0/ 13.0/ 65.0/ 58.5/ 52.0/ 29.0/ 26.0/ 19.5/ 13.0/ 6.5Mbps Draft 802.11n (40MHz): 270.0/ 243.0/ 216.0/ 162.0/ 108.0/ 81.0/ 54.0/ 27.0 /135.0/ 121.5/ 108.0/ 81.0/ 54.0/ 40.5/ 27.0/ 13.5Mbps
FREQUENCY RANGE	2.4GHz: 2400 ~ 2483.5MHz 5.0GHz: 5150 ~ 5350MHz, 5725 ~ 5850MHz
NUMBER OF CHANNEL	**2.4GHz:** 11 for 802.11b, 802.11g, draft 802.11n (20MHz) 7 for draft 802.11n (40MHz) **5.0GHz:** 5150 ~ 5350MHz: 8 for 802.11a, draft 802.11n (20MHz) 4 for draft 802.11n (40MHz) 5725 ~ 5850MHz: 5 for 802.11a, draft 802.11n (20MHz) 2 for draft 802.11n (40MHz)
OUTPUT POWER	46.559mW for 2400 ~ 2483.5MHz 38.743mW for 5150 ~ 5350MHz 61.522mW for 5725 ~ 5850MHz
ANTENNA TYPE	2.4GHz: PIFA antenna (I-PEX & UFL connector) with -0.62dBi gain 5.0GHz: PIFA antenna (I-PEX & UFL connector) with 4.26dBi gain
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT is a PC with built-in a WLAN IEEE802.11a/b/g/n card.

2. This report covered frequency range: 5150~5350MHz. Frequency range 2400~2483.5MHz and 5725~5850MHz showed in anther report, which report no. is RF960822A05.

3. The EUT has series models as follows:

Brand Name	Model Name	Differentiation
Dell	MTG	Model no.
	XPS A2010	Marketing Model no.
	XPS A2010n	Marketing Model no.

From the above models, model: **MTG** was selected as representative model for the test and its data was recorded in this report.

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

5. For the 802.11n, the EUT is 2 * 3 spatial MIMO (2Tx & 3Rx) without beam forming function.

6. When the EUT operating in 802.11b, 802.11g, 802.11a, the software operation, which is defined by manufacturer, only set single Tx.

7. The EUT complies with draft 802.11n standards and backwards compatible with 802.11b, 802.11g, 802.11a products.

8. The EUT operates in the 2.4GHz frequency spectrum with throughput of up to 270Mbps.

9. The co-located operation of this product with Bluetooth module and 2.4GHz module have been investigated in this application and the product continues comply with the relevant rules.

10. 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 5150 ~ 5350MHz.

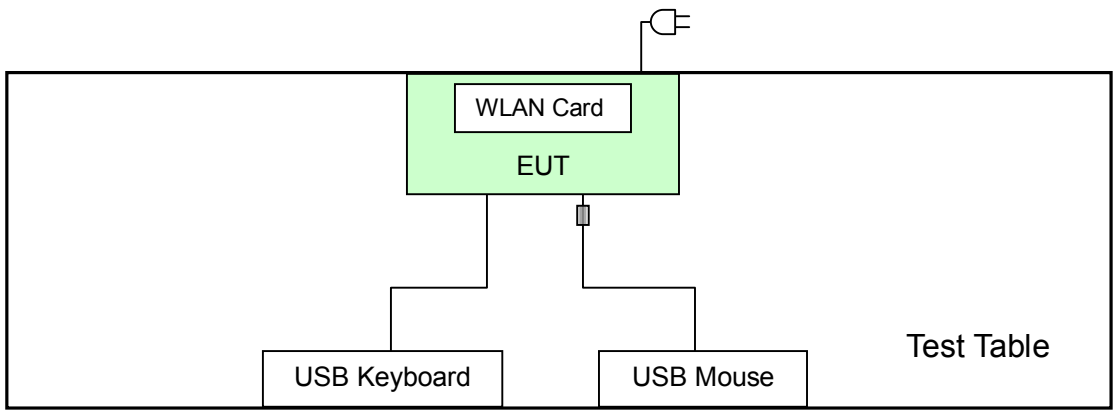
8 channels are provided for 802.11a, draft 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	5180 MHz	5	5260 MHz
2	5200 MHz	6	5280 MHz
3	5220 MHz	7	5300 MHz
4	5240 MHz	8	5320 MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	5190 MHz	3	5270 MHz
2	5230 MHz	4	5310 MHz

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

Where **PLC:** Power Line Conducted Emission **RE<1G:** Radiated Emission below 1GHz

RE≥1G: Radiated Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

POWER LINE CONDUCTED EMISSION TEST:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	1 to 8	1	OFDM	BPSK	6.0
Draft 802.11n (20MHz)	1 to 8	1	OFDM	BPSK	6.5
Draft 802.11n (40MHz)	1 to 4	1	OFDM	BPSK	13.5

RADIATED EMISSION TEST (BELOW 1GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	1 to 8	1	OFDM	BPSK	6.0
Draft 802.11n (20MHz)	1 to 8	1	OFDM	BPSK	6.5
Draft 802.11n (40MHz)	1 to 4	1	OFDM	BPSK	13.5

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	1 to 8	1, 4, 5, 8	OFDM	BPSK	6.0
Draft 802.11n (20MHz)	1 to 8	1, 4, 5, 8	OFDM	BPSK	6.5
Draft 802.11n (40MHz)	1 to 4	1, 2, 3, 4	OFDM	BPSK	13.5

BANDEDGE MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	1 to 8	1, 8	OFDM	BPSK	6.0
Draft 802.11n (20MHz)	1 to 8	1, 8	OFDM	BPSK	6.5
Draft 802.11n (40MHz)	1 to 4	1, 4	OFDM	BPSK	13.5

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	1 to 8	1, 4, 5, 8	OFDM	BPSK	6.0
Draft 802.11n (20MHz)	1 to 8	1, 4, 5, 8	OFDM	BPSK	6.5
Draft 802.11n (40MHz)	1 to 4	1, 2, 3, 4	OFDM	BPSK	13.5

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)
FCC 06-96
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	USB KEYBOARD	BTC	5200U	G09302046659	E5XKB5122U
2	USB MOUSE	MICROSOFT	X800898	9241804-30608	FCC DoC Approved

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.5 m braid shielded wire, terminated with USB connector via drain wire, w/o core.
2	1.8 m foil shielded wire, terminated with USB connector via drain wire, with 1 core.

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

4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

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

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	838251/021	Nov. 23, 2007
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	100218	Nov. 21, 2007
LISN With Adapter (for EUT)	AD10	C10Ada-001	Nov. 21, 2007
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100219	Nov. 07, 2007
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100220	Oct. 26, 2007
Software	ADT_Cond_V7.3.2	NA	NA
Software	ADT_ISN_V7.3.2	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C10.01	Mar. 01, 2008
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010773	Feb. 11, 2008

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

2. The test was performed in ADT Shielded Room No. 10.

3. The VCCI Site Registration No. C-1852.

4.1.3 TEST PROCEDURES

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

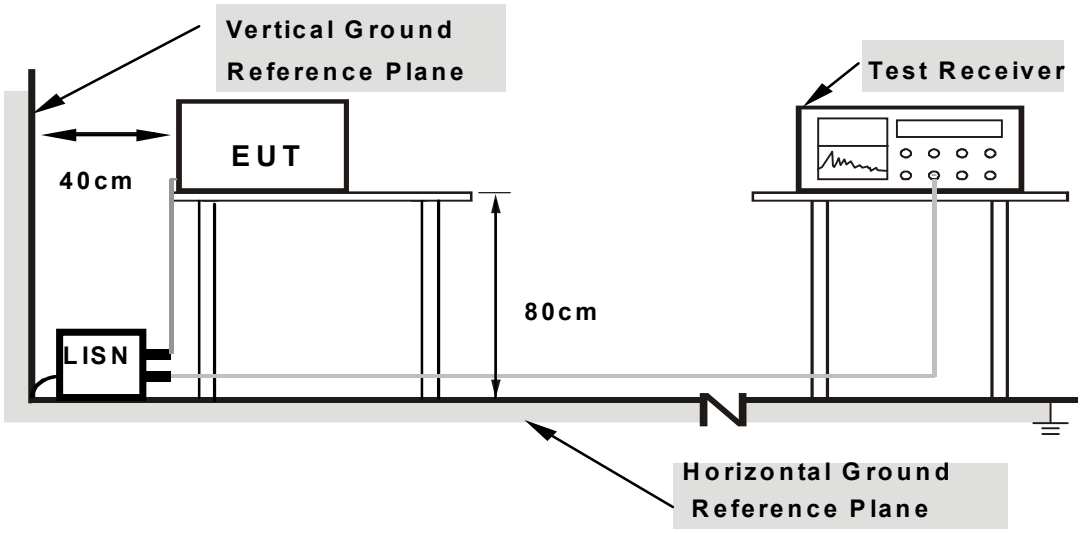
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITIONS

a. Turned on the power of all equipment.
b. Personal Computer (EUT) ran a test program (provided by manufacturer) to enable WLAN card (EUT) under transmission/receiving condition continuously at specific channel frequency.
c. Personal Computer (EUT) sent messages to its screen.
d. Repeated c-d.

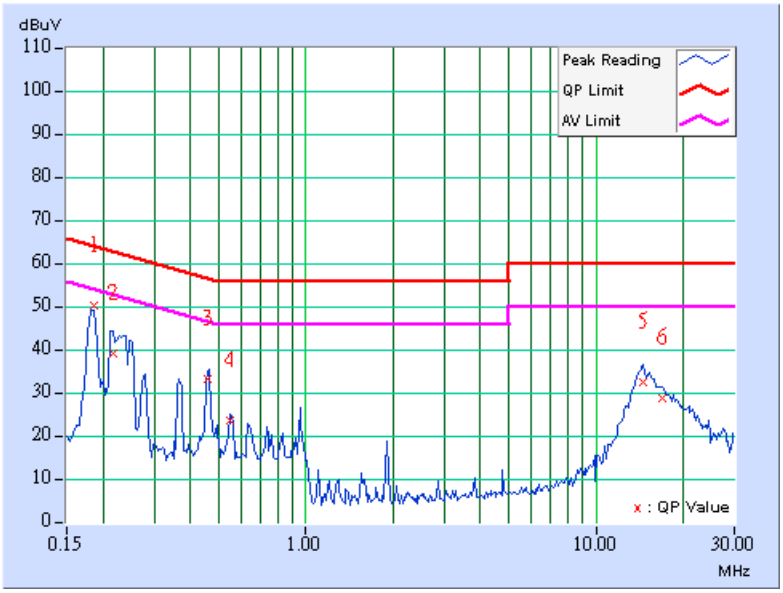
4.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA: 802.11a OFDM MODULATION:

MODULATION TYPE	BPSK	**CHANNEL**	1
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
TRANSFER RATE	6.0Mbps	**PHASE**	Line 1
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 998hPa	**TESTED BY**	Jun Wu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.185	0.20	49.29	-	49.49	-	64.25	54.25	-14.76	-
2	0.216	0.20	37.94	-	38.14	-	62.96	52.96	-24.82	-
3	0.461	0.22	31.99	-	32.21	-	56.67	46.67	-24.46	-
4	0.550	0.25	22.47	-	22.72	-	56.00	46.00	-33.28	-
5	14.520	1.06	31.53	-	32.59	-	60.00	50.00	-27.41	-
6	16.862	1.21	27.85	-	29.06	-	60.00	50.00	-30.94	-

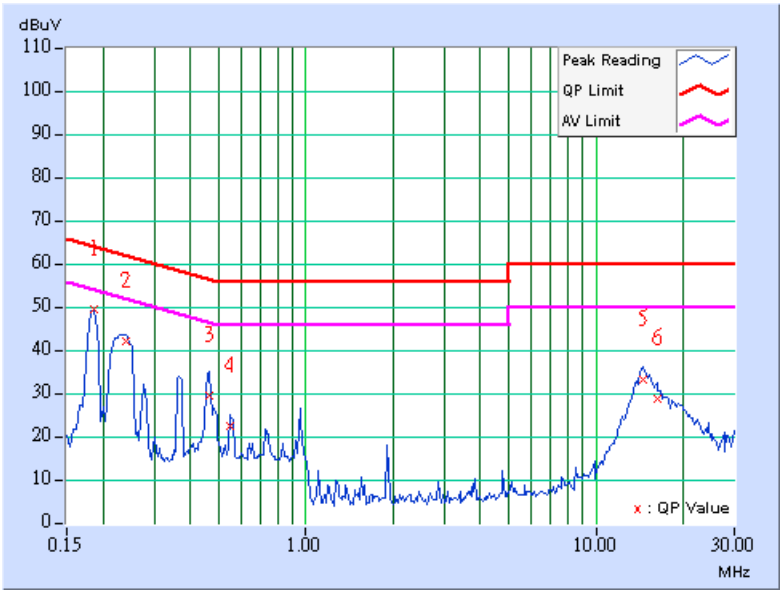
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



MODULATION TYPE	BPSK	**CHANNEL**	1
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
TRANSFER RATE	6.0Mbps	**PHASE**	Line 2
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 998hPa	**TESTED BY**	Jun Wu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.185	0.20	48.96	-	49.16	-	64.25	54.25	-15.09	-
2	0.240	0.20	41.54	-	41.74	-	62.10	52.10	-20.36	-
3	0.466	0.21	28.72	-	28.93	-	56.58	46.58	-27.65	-
4	0.548	0.22	21.68	-	21.90	-	56.00	46.00	-34.10	-
5	14.492	0.77	32.46	-	33.23	-	60.00	50.00	-26.77	-
6	16.309	0.85	27.95	-	28.80	-	60.00	50.00	-31.20	-

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

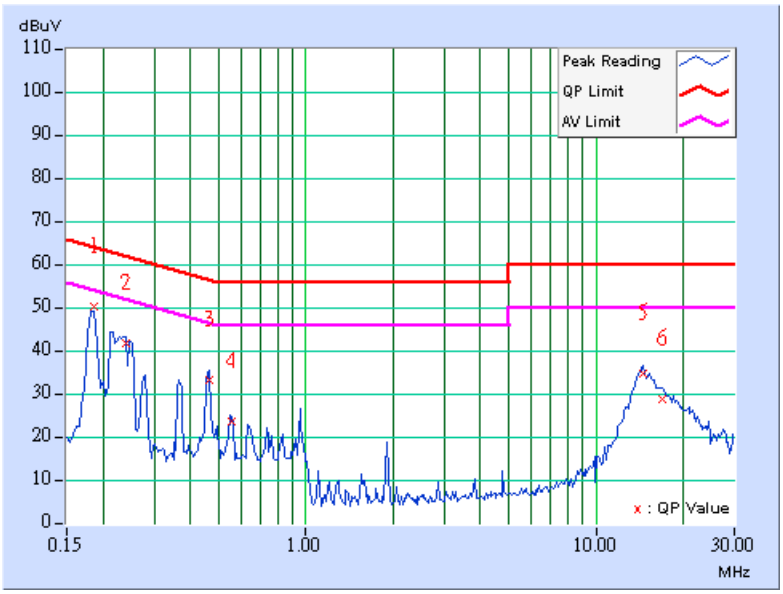


DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	**CHANNEL**	1
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
TRANSFER RATE	6.5Mbps	**PHASE**	Line 1
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 998hPa	**TESTED BY**	Jun Wu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.185	0.20	49.27	-	49.47	-	64.25	54.25	-14.78	-
2	0.240	0.20	40.67	-	40.87	-	62.10	52.10	-21.23	-
3	0.463	0.22	32.03	-	32.25	-	56.65	46.65	-24.40	-
4	0.552	0.25	22.48	-	22.73	-	56.00	46.00	-33.27	-
5	14.523	1.06	33.53	-	34.59	-	60.00	50.00	-25.41	-
6	16.863	1.21	27.73	-	28.94	-	60.00	50.00	-31.06	-

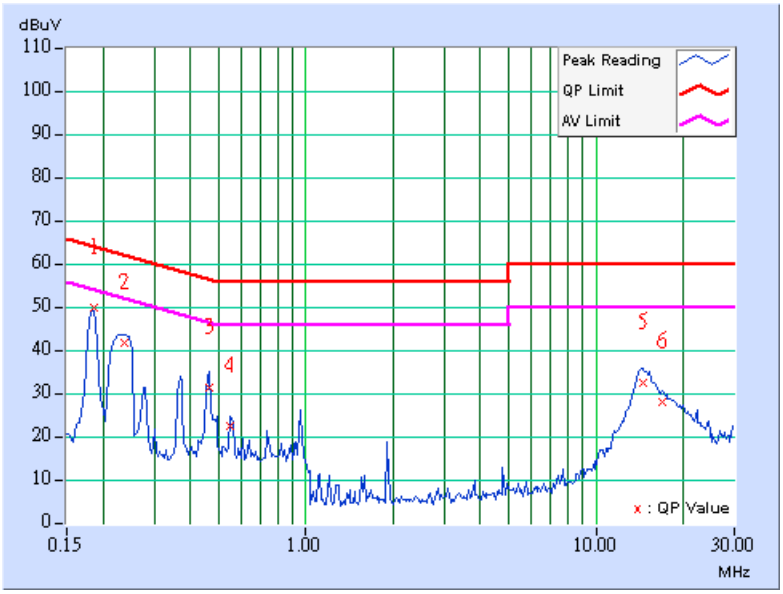
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



MODULATION TYPE	BPSK	**CHANNEL**	1
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
TRANSFER RATE	6.5Mbps	**PHASE**	Line 2
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 998hPa	**TESTED BY**	Jun Wu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.185	0.20	49.00	-	49.20	-	64.25	54.25	-15.05	-
2	0.236	0.20	41.10	-	41.30	-	62.24	52.24	-20.94	-
3	0.463	0.21	30.69	-	30.90	-	56.65	46.65	-25.75	-
4	0.550	0.22	21.77	-	21.99	-	56.00	46.00	-34.01	-
5	14.468	0.77	31.57	-	32.34	-	60.00	50.00	-27.66	-
6	17.002	0.88	27.11	-	27.99	-	60.00	50.00	-32.01	-

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

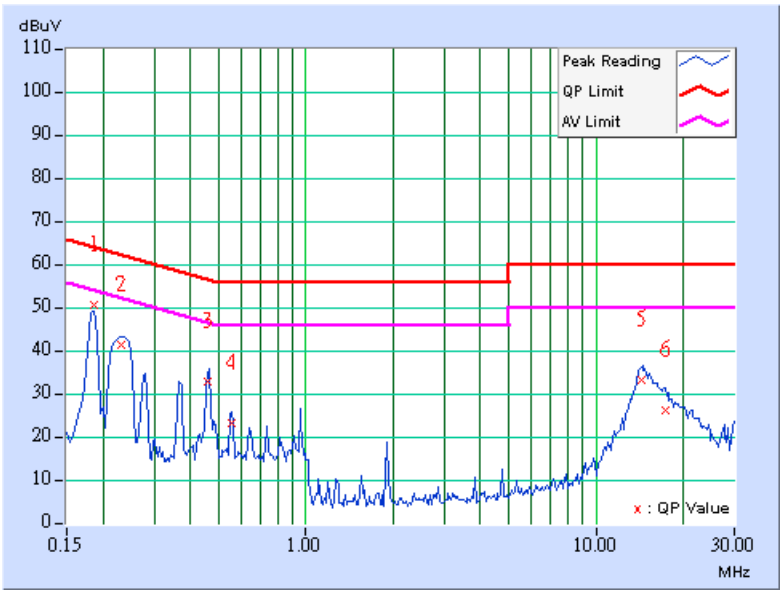


DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	**CHANNEL**	1
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
TRANSFER RATE	13.5Mbps	**PHASE**	Line 1
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 998hPa	**TESTED BY**	Jun Wu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.185**	**0.20**	**49.36**	**-**	**49.56**	**-**	**64.26**	**54.26**	**-14.70**	**-**
2	0.232	0.20	40.30	-	40.50	-	62.38	52.38	-21.88	-
3	0.461	0.22	31.65	-	31.87	-	56.67	46.67	-24.80	-
4	0.555	0.25	22.21	-	22.46	-	56.00	46.00	-33.54	-
5	14.445	1.06	31.95	-	33.01	-	60.00	50.00	-26.99	-
6	17.424	1.25	24.89	-	26.14	-	60.00	50.00	-33.86	-

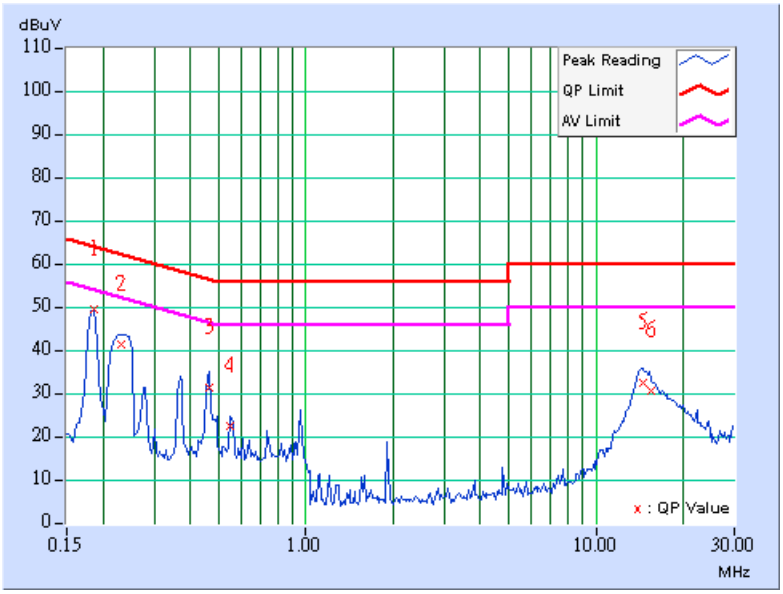
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



MODULATION TYPE	BPSK	**CHANNEL**	1
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
TRANSFER RATE	13.5Mbps	**PHASE**	Line 2
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 998hPa	**TESTED BY**	Jun Wu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.185	0.20	48.69	-	48.89	-	64.25	54.25	-15.36	-
2	0.232	0.20	40.76	-	40.96	-	62.38	52.38	-21.42	-
3	0.463	0.21	30.75	-	30.96	-	56.65	46.65	-25.69	-
4	0.548	0.22	21.59	-	21.81	-	56.00	46.00	-34.19	-
5	14.473	0.77	31.81	-	32.58	-	60.00	50.00	-27.42	-
6	15.563	0.82	30.02	-	30.84	-	60.00	50.00	-29.16	-

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



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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

4.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

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

NOTE:

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

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

4.2.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	May 09, 2008
HP Preamplifier	8449B	3008A01201	Oct. 10, 2007
HP Preamplifier	8449B	3008A01292	Aug. 05, 2008
ROHDE & SCHWARZ TEST RECEIVER	ESI7	836697/012	Oct. 24, 2007
Schwarzbeck Antenna	VULB 9168	137	Oct. 01, 2007
Schwarzbeck Antenna	VHBA 9123	480	Apr. 18, 2008
EMCO Horn Antenna	3115	6714	Oct. 24, 2007
EMCO Horn Antenna	3115	9312-4192	Apr. 19, 2008
ADT. Turn Table	TT100	0306	NA
ADT. Tower	AT100	0306	NA
Software	ADT_Radiated_V7.6.15	NA	NA
SUHNER RF cable	SF104-26.5	CABLE-CH6-17m-01	Dec. 11, 2007
ROHDE & SCHWARZ Spectrum Analyzer	FSP 40	100036	Mar. 13, 2008

NOTE: 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in ADT Chamber No. 6.
4. The Industry Canada Reference No. IC 3789-6.

4.2.4 TEST PROCEDURES

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

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

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

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

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

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

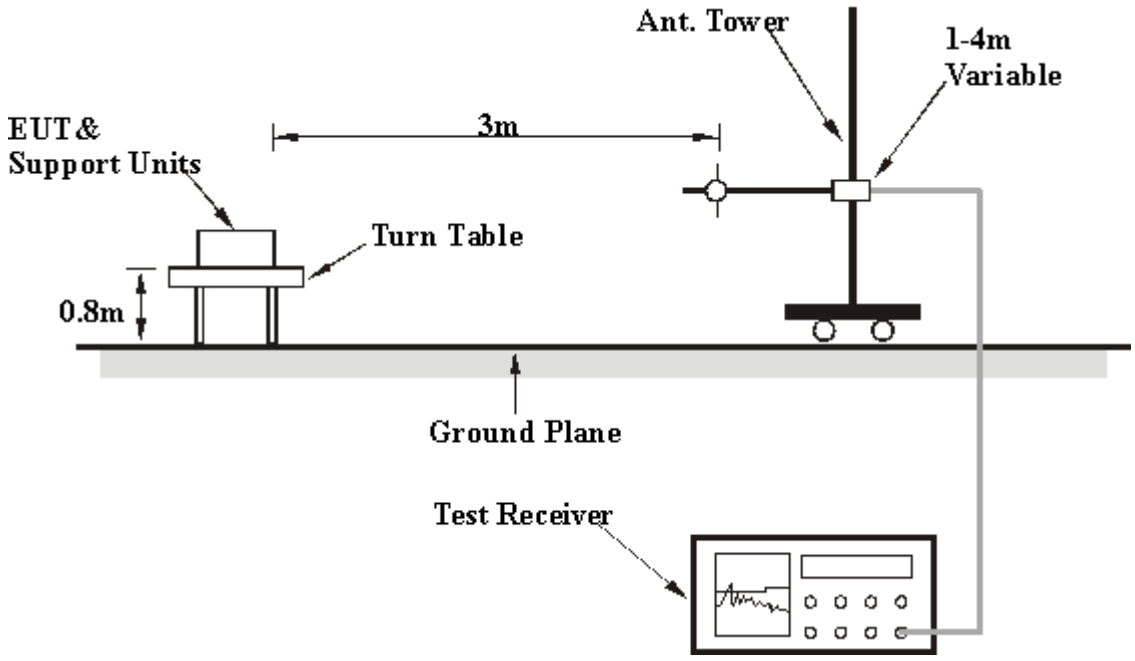
NOTE:

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

4.2.5 DEVIATION FROM TEST STANDARD

No deviation

4.2.6 TEST SETUP



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

4.2.7 EUT OPERATING CONDITION

Same as 4.1.6

4.2.8 TEST RESULTS

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

MODULATION TYPE	BPSK	**CHANNEL**	1
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	Below 1000MHz
TRANSFER RATE	6.0Mbps	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 998hPa	**TESTED BY**	Jun Wu

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	203.006	28.70 QP	43.50	-14.80	1.36 H	163	16.87	11.83
2	593.727	39.50 QP	46.00	-6.50	1.31 H	325	15.12	24.38
3	667.595	30.03 QP	46.00	-15.97	1.22 H	46	4.78	25.25
4	712.305	37.35 QP	46.00	-8.65	1.14 H	163	11.04	26.31
5	813.387	39.12 QP	46.00	-6.88	1.18 H	142	10.79	28.33
6	914.469	40.61 QP	46.00	-5.39	1.02 H	310	10.91	29.70

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	31.944	28.99 QP	40.00	-11.01	1.00 V	157	16.01	12.98
2	271.042	30.22 QP	46.00	-15.78	1.00 V	142	14.88	15.34
3	300.200	30.75 QP	46.00	-15.25	1.00 V	133	14.08	16.67
4	432.385	32.67 QP	46.00	-13.33	1.00 V	13	12.62	20.05
5	593.727	44.01 QP	46.00	-1.99	1.05 V	307	19.63	24.38
6	667.595	34.94 QP	46.00	-11.06	1.14 V	184	9.69	25.25
7	712.305	35.03 QP	46.00	-10.97	1.18 V	355	8.72	26.31
8	813.387	37.22 QP	46.00	-8.78	1.25 V	187	8.89	28.33

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

DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	**CHANNEL**	1
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	Below 1000MHz
TRANSFER RATE	6.5Mbps	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 998hPa	**TESTED BY**	Jun Wu

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	45.551	32.90 QP	40.00	-7.10	1.35 H	13	17.33	15.57
2	203.006	28.72 QP	43.50	-14.78	1.31 H	193	16.89	11.83
3	449.880	30.25 QP	46.00	-15.75	1.29 H	151	9.76	20.49
4	593.727	39.32 QP	46.00	-6.68	1.26 H	319	14.94	24.38
5	667.595	30.19 QP	46.00	-15.81	1.21 H	46	4.94	25.25
6	712.305	37.68 QP	46.00	-8.32	1.17 H	172	11.37	26.31
7	813.387	39.10 QP	46.00	-6.90	1.12 H	187	10.77	28.33
8	914.469	39.78 QP	46.00	-6.22	1.05 H	307	10.08	29.70

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	31.944	27.81 QP	40.00	-12.19	1.00 V	307	14.83	12.98
2	274.930	31.62 QP	46.00	-14.38	1.00 V	157	16.10	15.52
3	304.088	30.60 QP	46.00	-15.40	1.00 V	139	13.85	16.75
4	432.385	32.56 QP	46.00	-13.44	1.00 V	10	12.51	20.05
5	593.727	44.09 QP	46.00	-1.91	1.03 V	310	19.71	24.38
6	667.595	33.06 QP	46.00	-12.94	1.14 V	172	7.81	25.25
7	712.305	35.58 QP	46.00	-10.42	1.19 V	301	9.27	26.31
8	813.387	36.75 QP	46.00	-9.25	1.24 V	193	8.42	28.33
9	914.469	38.46 QP	46.00	-7.54	1.32 V	292	8.76	29.70

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.

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	**CHANNEL**	1
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	Below 1000MHz
TRANSFER RATE	13.5Mbps	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 998hPa	**TESTED BY**	Jun Wu

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	203.006	28.40 QP	43.50	-15.10	1.35 H	187	16.57	11.83
2	449.880	29.95 QP	46.00	-16.05	1.24 H	151	9.46	20.49
3	593.727	39.42 QP	46.00	-6.58	1.21 H	316	15.04	24.38
4	712.305	37.63 QP	46.00	-8.37	1.17 H	163	11.32	26.31
5	813.387	39.42 QP	46.00	-6.58	1.10 H	139	11.09	28.33
6	914.469	40.09 QP	46.00	-5.91	1.04 H	304	10.39	29.70

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	31.944	30.45 QP	40.00	-9.55	1.00 V	46	17.47	12.98
2	271.042	30.65 QP	46.00	-15.35	1.00 V	157	15.31	15.34
3	298.257	30.80 QP	46.00	-15.20	1.00 V	121	14.21	16.59
4	432.385	32.43 QP	46.00	-13.57	1.00 V	1	12.38	20.05
5	500.421	32.21 QP	46.00	-13.79	1.02 V	58	9.92	22.29
6	593.727	44.50 QP	46.00	-1.50	1.04 V	313	20.12	24.38
7	667.595	33.42 QP	46.00	-12.58	1.12 V	169	8.17	25.25
8	712.305	35.76 QP	46.00	-10.24	1.24 V	298	9.45	26.31
9	813.387	36.88 QP	46.00	-9.12	1.32 V	196	8.55	28.33

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

ABOVE 1GHz DATA: 802.11a OFDM MODULATION:

MODULATION TYPE	BPSK	**CHANNEL**	1
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~ 40GHz
TRANSFER RATE	6.0Mbps	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 54%RH, 997hPa	**TESTED BY**	Jun Wu

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	#5150.000	59.54 PK	74.00	-14.46	1.41 H	23	17.25	42.29
2	#5150.000	43.61 AV	54.00	-10.39	1.41 H	23	1.32	42.29
3	*5180.000	106.42 PK			1.41 H	23	64.05	42.37
4	*5180.000	93.85 AV			1.41 H	23	51.48	42.37
5	10360.000	63.09 PK	88.30	-25.21	1.03 H	235	11.76	51.33
6	10360.000	49.62 AV	68.30	-18.68	1.03 H	235	-1.71	51.33

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	#5150.000	58.20 PK	74.00	-15.80	1.08 V	160	15.91	42.29
2	#5150.000	43.88 AV	54.00	-10.12	1.08 V	160	1.59	42.29
3	*5180.000	106.28 PK			1.08 V	160	63.91	42.37
4	*5180.000	94.11 AV			1.08 V	160	51.74	42.37
5	10360.000	63.32 PK	88.30	-24.98	1.08 V	124	11.99	51.33
6	10360.000	49.55 AV	68.30	-18.75	1.08 V	124	-1.78	51.33

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

MODULATION TYPE	BPSK	**CHANNEL**	4
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~ 40GHz
TRANSFER RATE	6.0Mbps	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 54%RH, 997hPa	**TESTED BY**	Jun Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.000	106.29 PK			1.02 H	318	63.77	42.52
2	*5240.000	94.10 AV			1.02 H	318	51.58	42.52
3	10480.000	62.18 PK	88.30	-26.12	1.15 H	217	10.76	51.42
4	10480.000	48.69 AV	68.30	-19.61	1.15 H	217	-2.73	51.42

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.000	105.49 PK			1.25 V	159	62.97	42.52
2	*5240.000	93.77 AV			1.25 V	159	51.25	42.52
3	10480.000	61.91 PK	88.30	-26.39	1.02 V	57	10.49	51.42
4	10480.000	48.93 AV	68.30	-19.37	1.02 V	57	-2.49	51.42

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

MODULATION TYPE	BPSK	**CHANNEL**	5
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~ 40GHz
TRANSFER RATE	6.0Mbps	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 54%RH, 997hPa	**TESTED BY**	Jun Wu

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	*5260.000	105.56 PK			1.06 H	239	62.98	42.58
2	*5260.000	92.76 AV			1.06 H	239	50.18	42.58
3	10520.000	63.09 PK	88.30	-25.21	1.07 H	214	11.62	51.46
4	10520.000	49.34 AV	68.30	-18.96	1.07 H	214	-2.13	51.46

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5260.000	104.55 PK			1.25 V	155	61.97	42.58
2	*5260.000	92.32 AV			1.25 V	155	49.74	42.58
3	10520.000	61.64 PK	88.30	-26.66	1.12 V	63	10.17	51.46
4	10520.000	48.34 AV	68.30	-19.96	1.12 V	63	-3.13	51.46

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

MODULATION TYPE	BPSK	**CHANNEL**	8
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~ 40GHz
TRANSFER RATE	6.0Mbps	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 54%RH, 997hPa	**TESTED BY**	Jun Wu

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	*5320.000	105.40 PK			1.06 H	235	62.67	42.73
2	*5320.000	93.46 AV			1.06 H	235	50.73	42.73
3	#5350.000	60.22 PK	74.00	-13.78	1.06 H	235	17.41	42.81
4	#5350.000	43.01 AV	54.00	-10.99	1.06 H	235	0.20	42.81
5	#10640.000	63.99 PK	74.00	-10.01	1.12 H	198	12.38	51.61
6	#10640.000	50.13 AV	54.00	-3.87	1.12 H	198	-1.48	51.61

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	*5320.000	105.00 PK			1.14 V	151	62.27	42.73
2	*5320.000	92.80 AV			1.14 V	151	50.07	42.73
3	#5350.000	59.83 PK	74.00	-14.17	1.14 V	151	17.02	42.81
4	#5350.000	42.38 AV	54.00	-11.62	1.14 V	151	-0.43	42.81
5	#10640.000	62.88 PK	74.00	-11.12	1.02 V	114	11.27	51.61
6	#10640.000	49.32 AV	54.00	-4.68	1.02 V	114	-2.29	51.61

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

DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	**CHANNEL**	1
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~ 40GHz
TRANSFER RATE	6.5Mbps	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 54%RH, 997hPa	**TESTED BY**	Jun Wu

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	#5150.000	56.78 PK	74.00	-17.22	1.00 H	36	14.49	42.29
2	#5150.000	42.83 AV	54.00	-11.17	1.00 H	36	0.54	42.29
3	*5180.000	106.18 PK			1.00 H	36	63.81	42.37
4	*5180.000	93.31 AV			1.00 H	36	50.94	42.37
5	10360.000	61.00 PK	88.30	-27.30	1.21 H	156	9.67	51.33
6	10360.000	48.57 AV	68.30	-19.73	1.21 H	156	-2.76	51.33

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	#5150.000	55.31 PK	74.00	-18.69	1.00 V	159	13.02	42.29
2	#5150.000	42.58 AV	54.00	-11.42	1.00 V	159	0.29	42.29
3	*5180.000	104.44 PK			1.00 V	153	62.07	42.37
4	*5180.000	93.02 AV			1.00 V	153	50.65	42.37
5	10360.000	60.41 PK	88.30	-27.89	1.12 V	257	9.08	51.33
6	10360.000	48.45 AV	68.30	-19.85	1.12 V	257	-2.88	51.33

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

MODULATION TYPE	BPSK	**CHANNEL**	4
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~ 40GHz
TRANSFER RATE	6.5Mbps	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 54%RH, 997hPa	**TESTED BY**	Jun Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.000	106.44 PK			1.14 H	22	63.92	42.52
2	*5240.000	93.50 AV			1.14 H	22	50.98	42.52
3	10480.000	61.34 PK	88.30	-26.96	1.07 H	116	9.92	51.42
4	10480.000	49.07 AV	68.30	-19.23	1.07 H	116	-2.35	51.42

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.000	103.85 PK			1.34 V	248	61.33	42.52
2	*5240.000	91.94 AV			1.34 V	248	49.42	42.52
3	10480.000	61.20 PK	88.30	-27.10	1.22 V	231	9.78	51.42
4	10480.000	49.19 AV	68.30	-19.11	1.22 V	231	-2.23	51.42

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

MODULATION TYPE	BPSK	**CHANNEL**	5
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~ 40GHz
TRANSFER RATE	6.5Mbps	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 54%RH, 997hPa	**TESTED BY**	Jun Wu

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	*5260.000	105.15 PK			1.08 H	236	62.57	42.58
2	*5260.000	93.19 AV			1.08 H	236	50.61	42.58
3	10520.000	61.90 PK	88.30	-26.40	1.38 H	118	10.43	51.46
4	10520.000	49.51 AV	68.30	-18.79	1.38 H	118	-1.96	51.46

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5260.000	103.86 PK			1.24 V	248	61.28	42.58
2	*5260.000	91.94 AV			1.24 V	248	49.36	42.58
3	10520.000	62.80 PK	88.30	-25.50	1.14 V	188	11.33	51.46
4	10520.000	50.04 AV	68.30	-18.26	1.14 V	188	-1.43	51.46

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

MODULATION TYPE	BPSK	**CHANNEL**	8
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~ 40GHz
TRANSFER RATE	6.5Mbps	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 54%RH, 997hPa	**TESTED BY**	Jun Wu

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	*5320.000	105.05 PK			1.05 H	235	62.32	42.73
2	*5320.000	93.24 AV			1.05 H	235	50.51	42.73
3	#5350.000	58.13 PK	74.00	-15.87	1.05 H	235	15.32	42.81
4	#5350.000	42.52 AV	54.00	-11.48	1.05 H	235	-0.29	42.81
5	#10640.000	61.59 PK	74.00	-12.41	1.12 H	162	9.98	51.61
6	#10640.000	49.51 AV	54.00	-4.49	1.12 H	162	-2.10	51.61

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	*5320.000	105.78 PK			1.07 V	150	63.05	42.73
2	*5320.000	92.80 AV			1.07 V	150	50.07	42.73
3	#5350.000	56.20 PK	74.00	-17.80	1.07 V	150	13.39	42.81
4	#5350.000	42.24 AV	54.00	-11.76	1.07 V	150	-0.57	42.81
5	#10640.000	62.12 PK	74.00	-11.88	1.22 V	263	10.51	51.61
6	#10640.000	49.55 AV	54.00	-4.45	1.22 V	263	-2.06	51.61

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	**CHANNEL**	1
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~ 40GHz
TRANSFER RATE	13.5Mbps	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 54%RH, 997hPa	**TESTED BY**	Jun Wu

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	#5150.000	59.05 PK	74.00	-14.95	1.34 H	22	16.76	42.29
2	#5150.000	43.93 AV	54.00	-10.07	1.34 H	22	1.64	42.29
3	*5190.000	102.81 PK			1.34 H	22	60.42	42.39
4	*5190.000	80.69 AV			1.34 H	22	38.30	42.39
5	10380.000	60.67 PK	88.30	-27.63	1.10 H	124	9.33	51.35
6	10380.000	48.58 AV	68.30	-19.72	1.10 H	124	-2.76	51.35

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	#5150.000	58.65 PK	74.00	-15.35	1.15 V	188	16.36	42.29
2	#5150.000	43.55 AV	54.00	-10.45	1.15 V	188	1.26	42.29
3	*5190.000	101.97 PK			1.15 V	188	59.58	42.39
4	*5190.000	79.63 AV			1.15 V	188	37.24	42.39
5	10380.000	60.61 PK	88.30	-27.69	1.22 V	284	9.27	51.35
6	10380.000	48.34 AV	68.30	-19.96	1.22 V	284	-3.00	51.35

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

MODULATION TYPE	BPSK	**CHANNEL**	2
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~ 40GHz
TRANSFER RATE	13.5Mbps	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 54%RH, 997hPa	**TESTED BY**	Jun Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.000	102.21 PK			1.22 H	21	59.71	42.50
2	*5230.000	80.19 AV			1.22 H	21	37.69	42.50
3	10460.000	62.05 PK	88.30	-26.25	1.09 H	115	10.64	51.41
4	10460.000	48.88 AV	68.30	-19.42	1.09 H	115	-2.53	51.41

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.000	102.35 PK			1.10 V	153	59.85	42.50
2	*5230.000	79.75 AV			1.10 V	153	37.25	42.50
3	10460.000	64.45 PK	88.30	-23.85	1.22 V	314	11.44	53.02
4	10460.000	51.12 AV	68.30	-17.18	1.22 V	314	-1.89	53.02

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.
6. " # ": The radiated frequency falling in the restricted band.

MODULATION TYPE	BPSK	**CHANNEL**	3
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~ 40GHz
TRANSFER RATE	13.5Mbps	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 54%RH, 997hPa	**TESTED BY**	Jun Wu

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	*5270.000	102.47 PK			1.15 H	28	59.87	42.60
2	*5270.000	80.08 AV			1.15 H	28	37.48	42.60
3	10540.000	62.08 PK	88.30	-26.22	1.02 H	74	10.59	51.49
4	10540.000	49.49 AV	68.30	-18.81	1.02 H	74	-2.00	51.49

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	*5270.000	103.65 PK			1.08 V	151	61.05	42.60
2	*5270.000	80.05 AV			1.08 V	151	37.45	42.60
3	10540.000	61.34 PK	88.30	-26.96	1.18 V	235	9.85	51.49
4	10540.000	49.29 AV	68.30	-19.01	1.18 V	235	-2.20	51.49

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

MODULATION TYPE	BPSK	**CHANNEL**	4
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~ 40GHz
TRANSFER RATE	13.5Mbps	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 54%RH, 997hPa	**TESTED BY**	Jun Wu

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	*5310.000	103.91 PK			1.10 H	329	61.20	42.71
2	*5310.000	82.10 AV			1.10 H	329	39.39	42.71
3	#5350.000	58.18 PK	74.00	-15.82	1.10 H	329	15.37	42.81
4	#5350.000	43.07 AV	54.00	-10.93	1.10 H	329	0.26	42.81
5	#10620.000	61.96 PK	74.00	-12.04	1.19 H	241	10.37	51.58
6	#10620.000	49.92 AV	54.00	-4.08	1.19 H	241	-1.67	51.58

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	*5310.000	101.86 PK			1.51 V	346	59.15	42.71
2	*5310.000	80.25 AV			1.51 V	346	37.54	42.71
3	#5350.000	55.59 PK	74.00	-18.41	1.51 V	346	12.78	42.81
4	#5350.000	41.73 AV	54.00	-12.27	1.51 V	346	-1.08	42.81
5	#10620.000	62.32 PK	74.00	-11.68	1.30 V	296	10.73	51.58
6	#10620.000	49.97 AV	54.00	-4.03	1.30 V	296	-1.62	51.58

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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

4.3 PEAK TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
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
SPECTRUM ANALYZER	FSP 40	100036	Mar. 13, 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

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

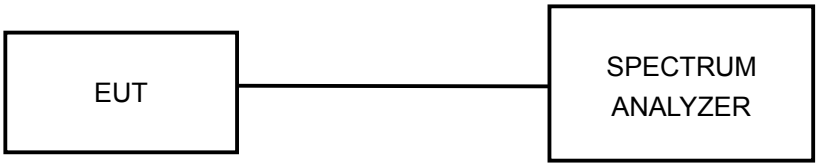
NOTE: The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

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.

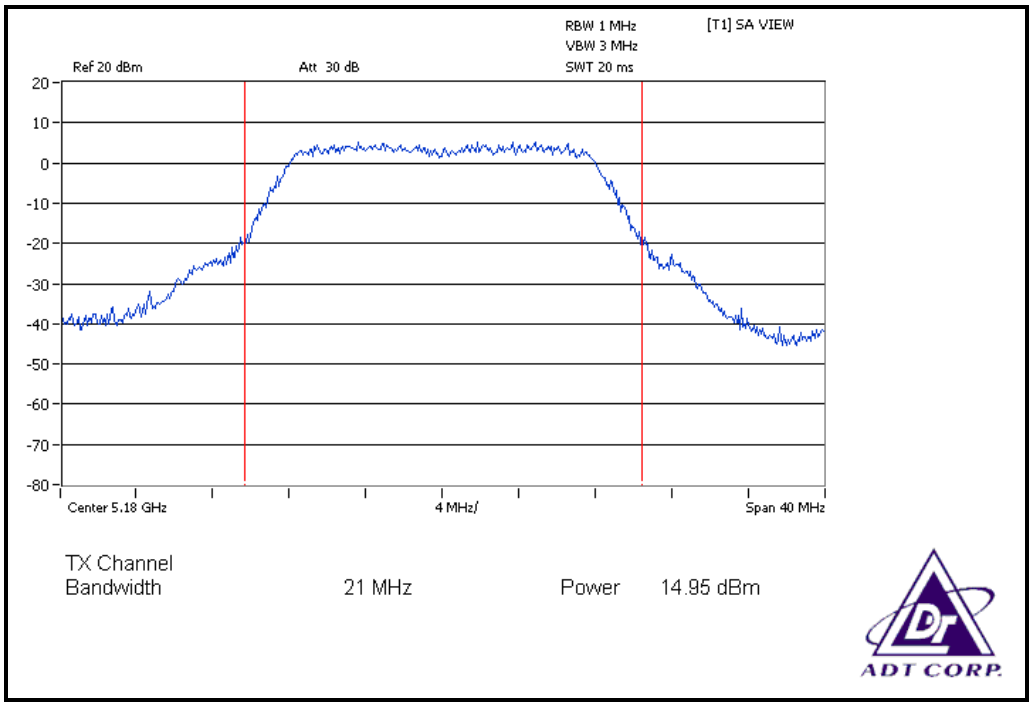
4.3.7 TEST RESULTS

PEAK POWER OUTPUT: 802.11a OFDM MODULATION:

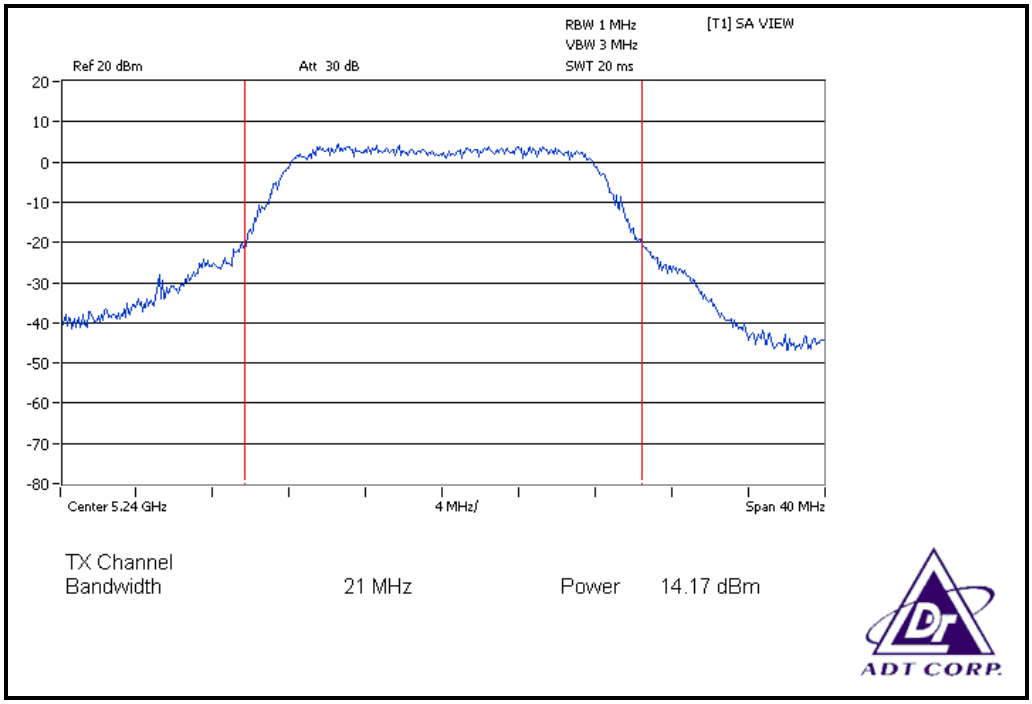
MODULATION TYPE	BPSK	**CHANNEL**	1, 4, 5, 8
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6.0Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH, 994hPa	**TESTED BY**	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	5180	31.261	14.95	17.00	PASS
4	5240	26.122	14.17	17.00	PASS
5	5260	24.378	13.87	24.00	PASS
8	5320	27.040	14.32	24.00	PASS

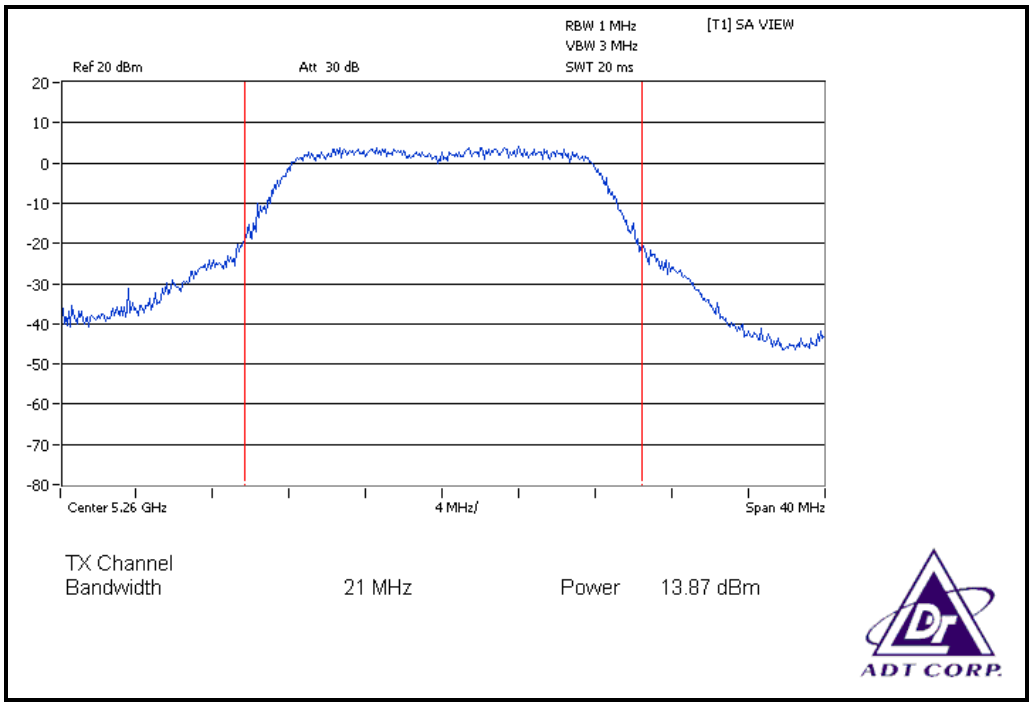
CH 1


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.18 GHz
4 MHz/
Span 40 MHz
TX Channel Bandwidth
21 MHz
Power
14.95 dBm

CH 4

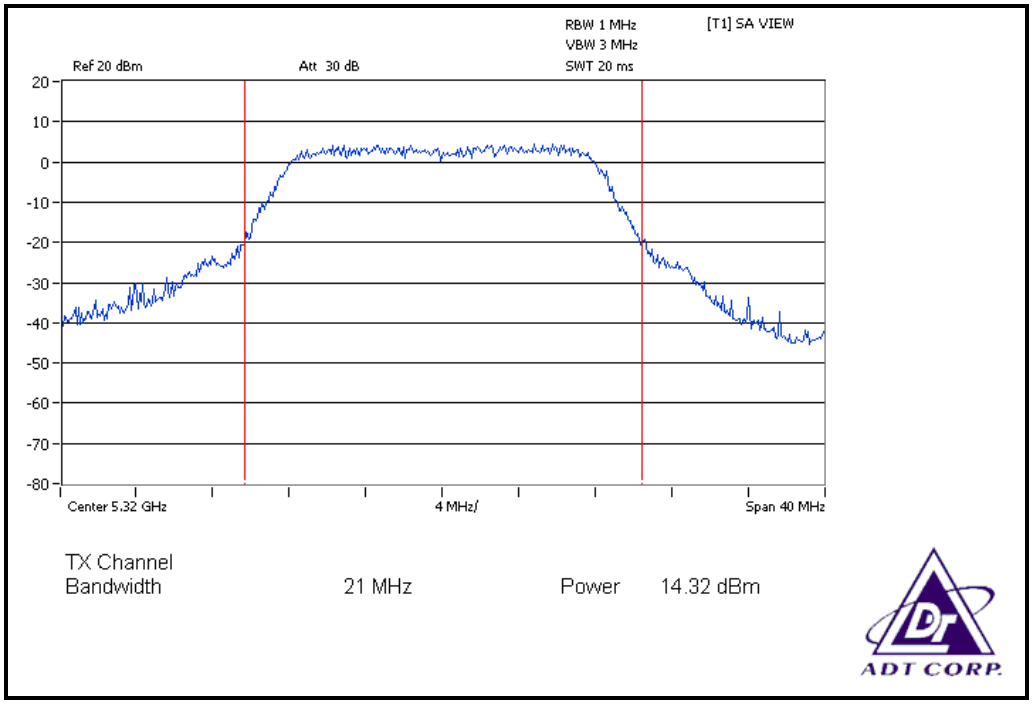

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.24 GHz
4 MHz/
Span 40 MHz
TX Channel Bandwidth
21 MHz
Power
14.17 dBm

CH 5



TX Channel Bandwidth 21 MHz Power 13.87 dBm

CH 8



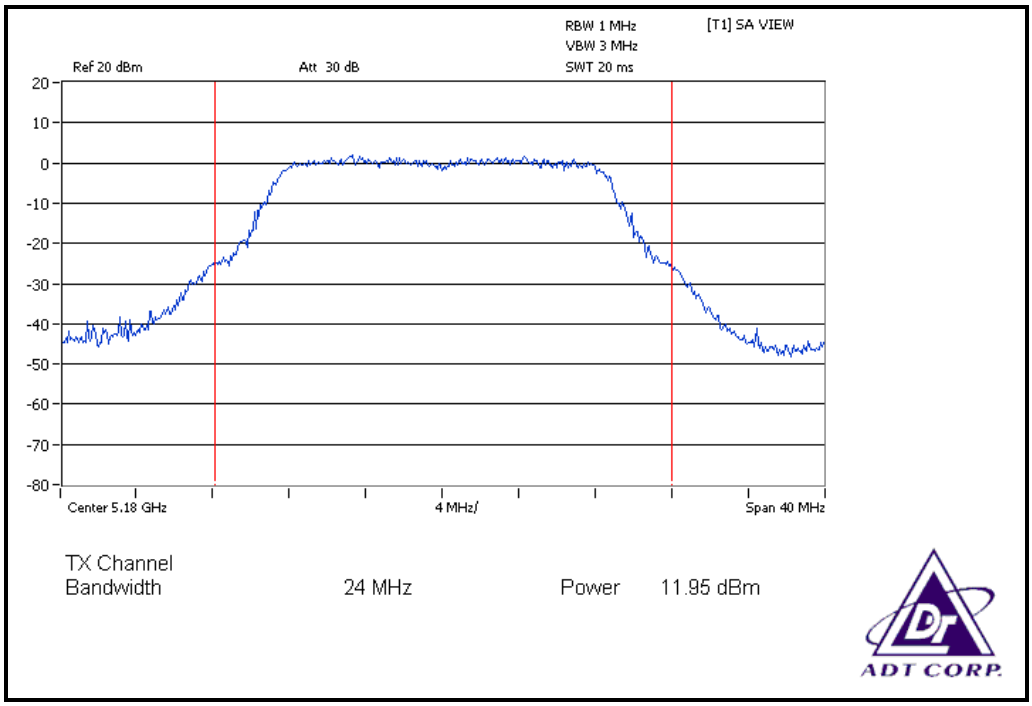
TX Channel Bandwidth 21 MHz Power 14.32 dBm

DRAFT 802.11n (20MHz) OFDM MODULATION:

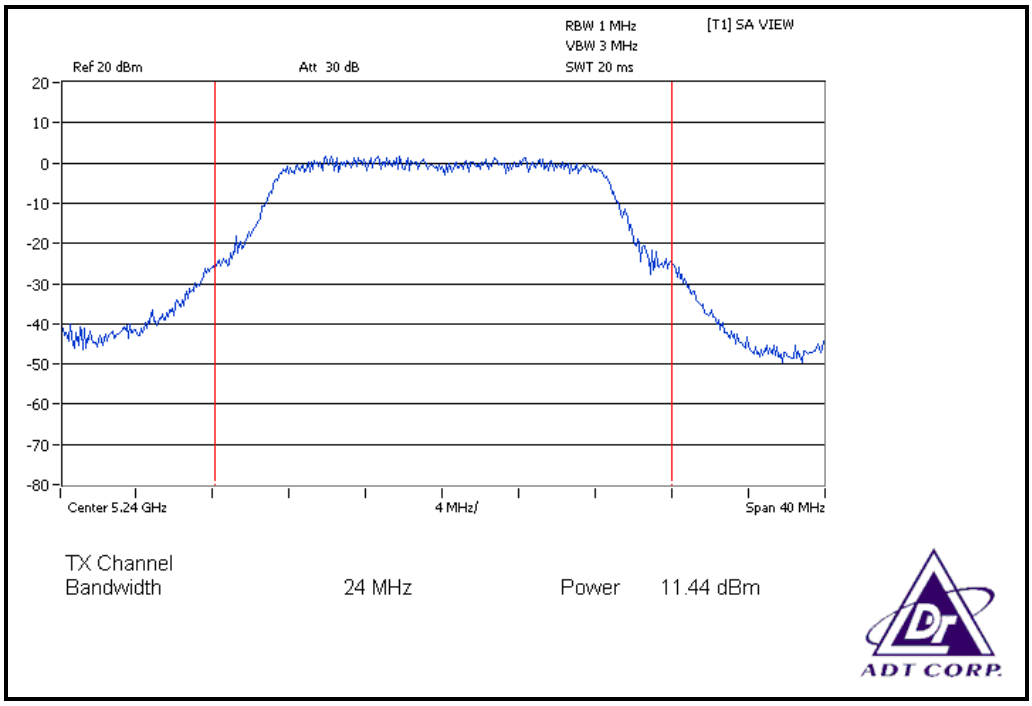
MODULATION TYPE	BPSK	**CHANNEL**	1, 4, 5, 8
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6.5Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH, 994hPa	**TESTED BY**	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1				
1	5180	15.668	15.241	11.95	11.83	30.908	14.90	17.00	PASS
4	5240	13.932	12.972	11.44	11.13	26.903	14.30	17.00	PASS
5	5260	12.218	11.508	10.87	10.61	23.726	13.75	24.00	PASS
8	5320	12.794	12.503	11.07	10.97	25.296	14.03	24.00	PASS

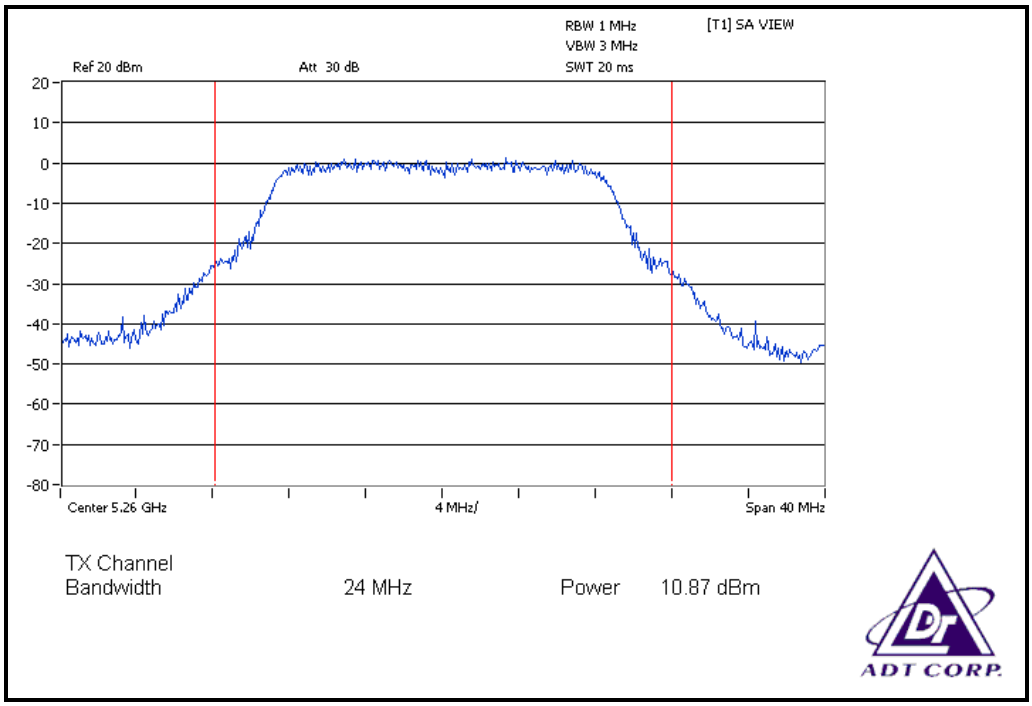
FOR CHAIN 0: CH 1



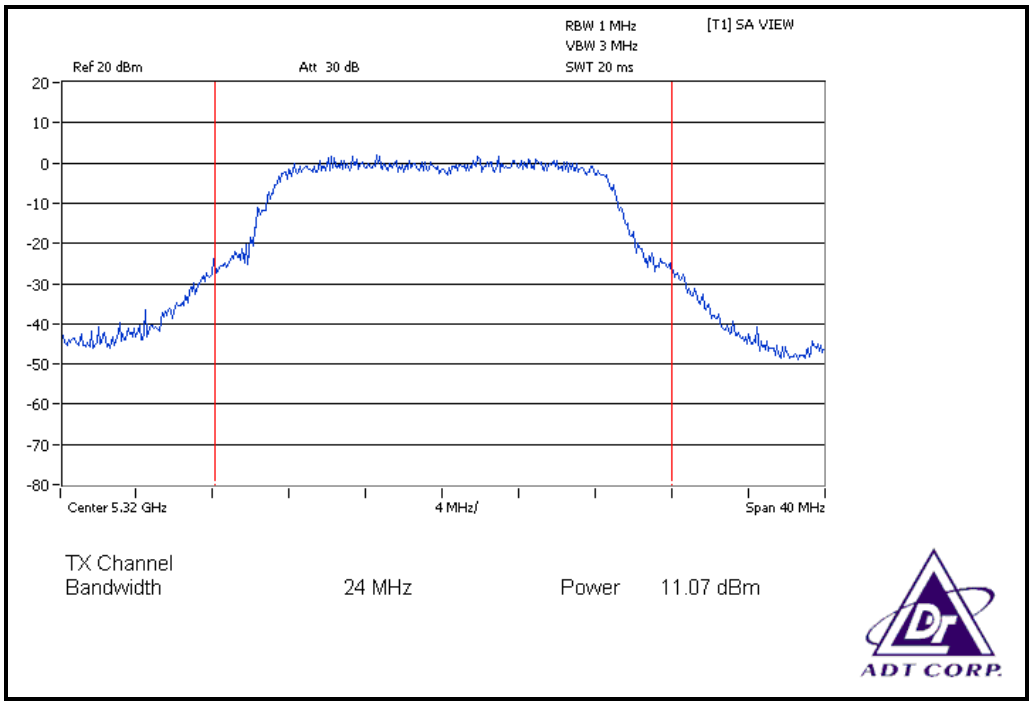
CH 4



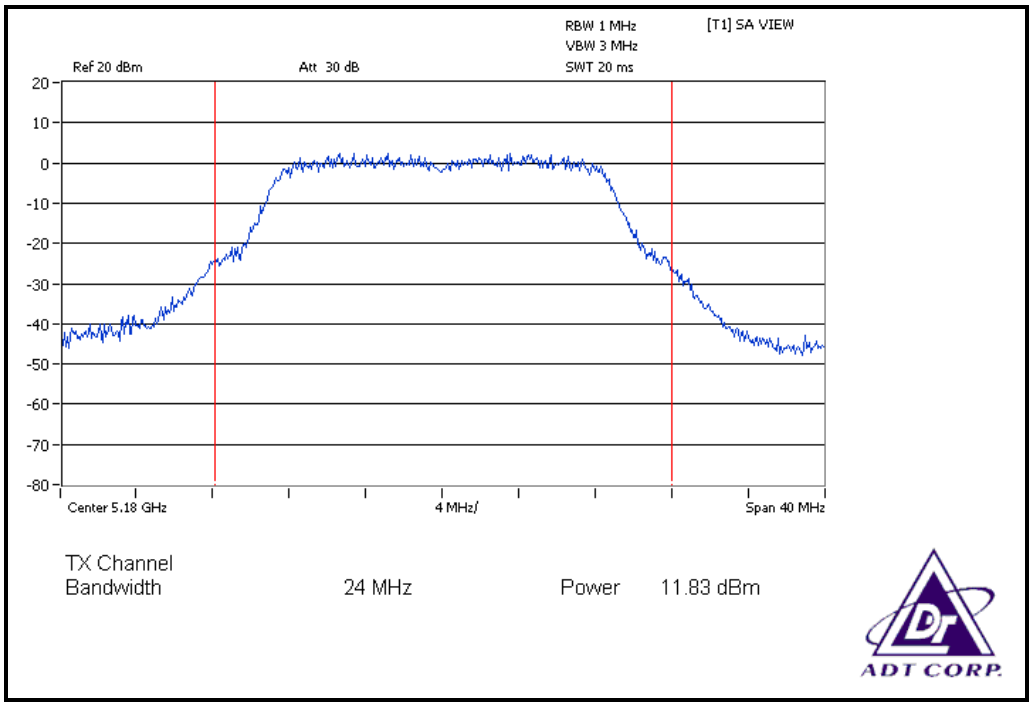
CH 5


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.26 GHz
4 MHz/
Span 40 MHz
TX Channel Bandwidth
24 MHz
Power
10.87 dBm

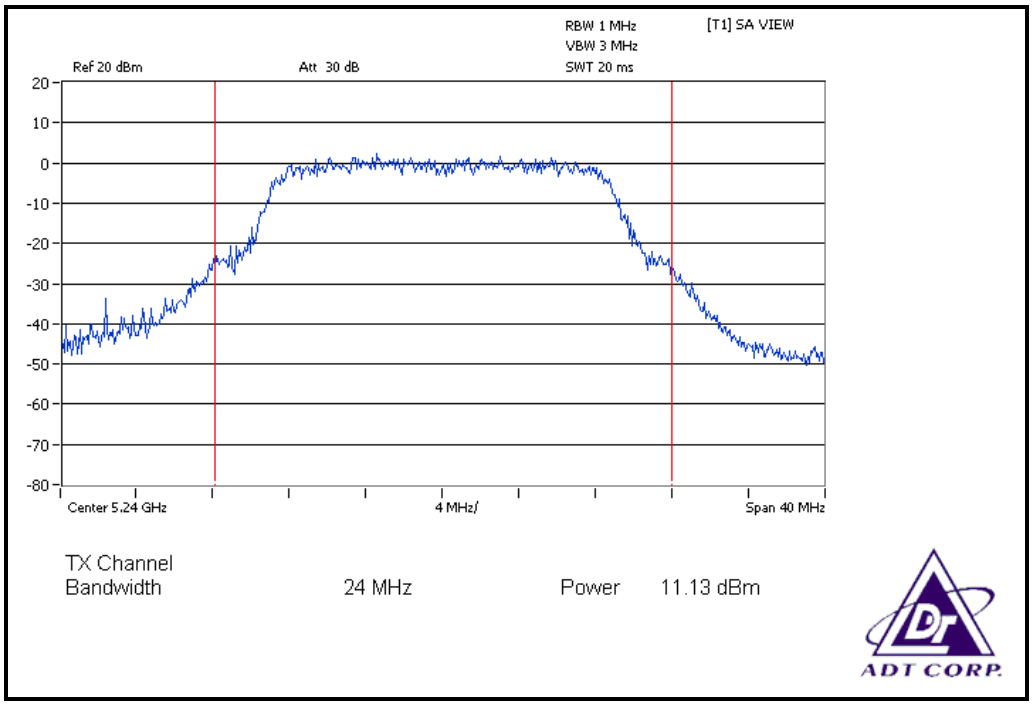
CH 8


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.32 GHz
4 MHz/
Span 40 MHz
TX Channel Bandwidth
24 MHz
Power
11.07 dBm

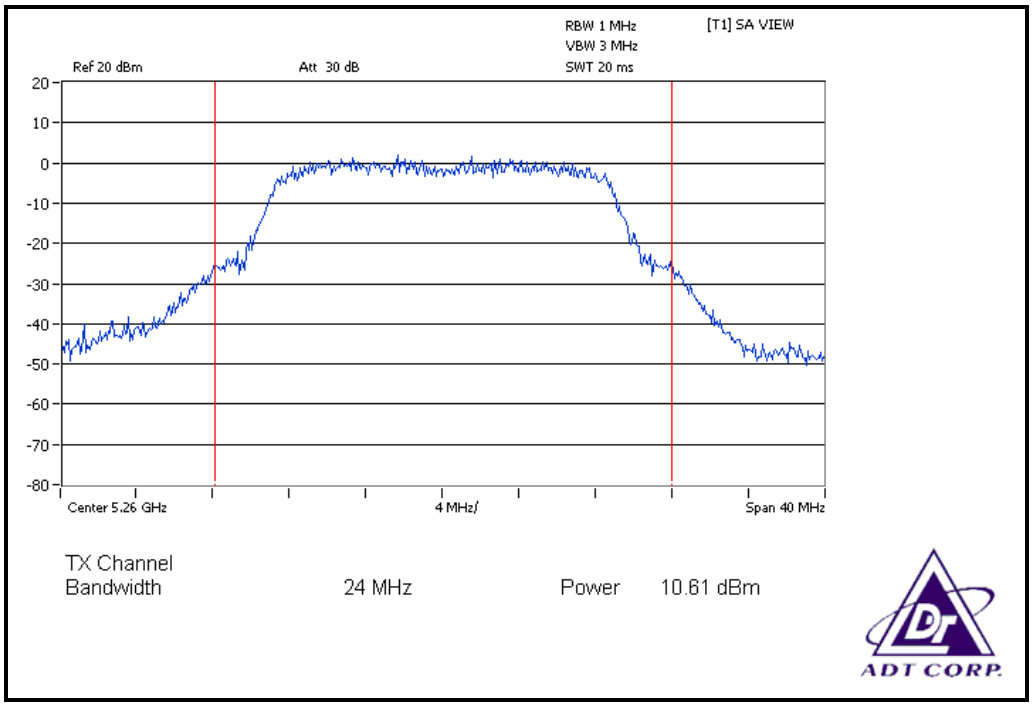
FOR CHAIN 1: CH 1



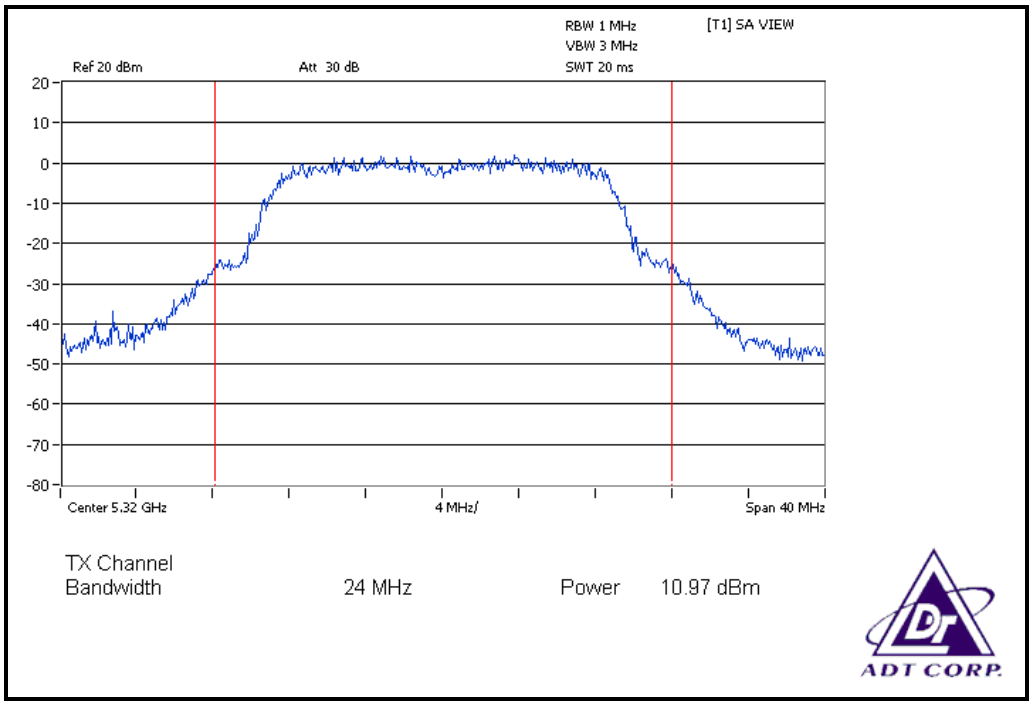
CH 4



CH 5


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.26 GHz
4 MHz/
Span 40 MHz
TX Channel Bandwidth
24 MHz
Power
10.61 dBm
ADT CORP.

CH 8

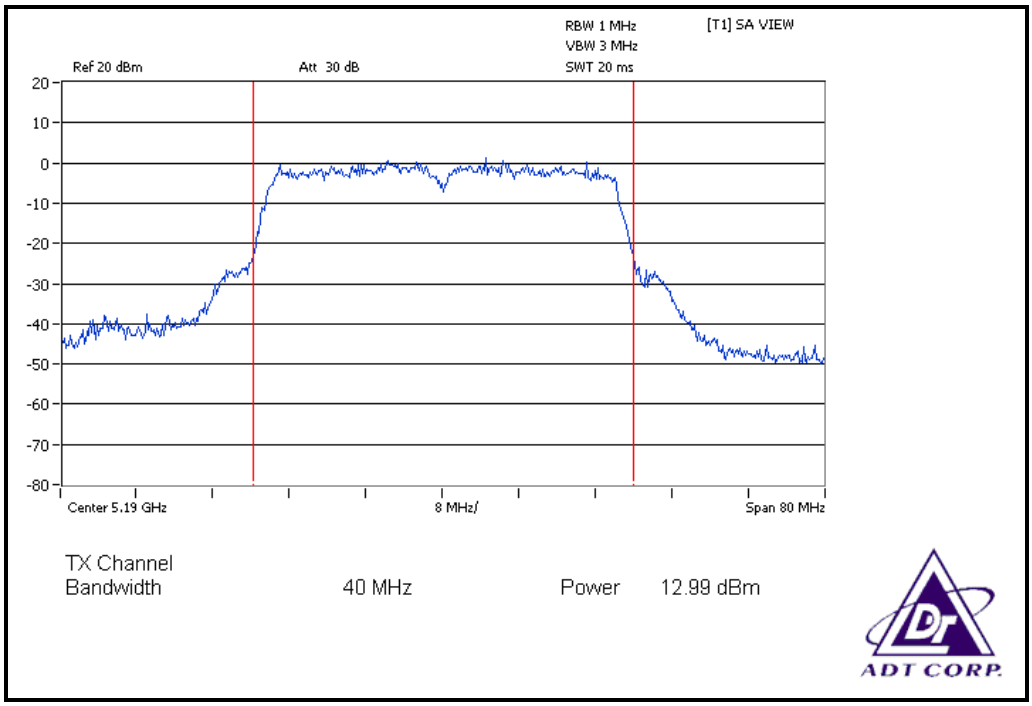

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.32 GHz
4 MHz/
Span 40 MHz
TX Channel Bandwidth
24 MHz
Power
10.97 dBm
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION:

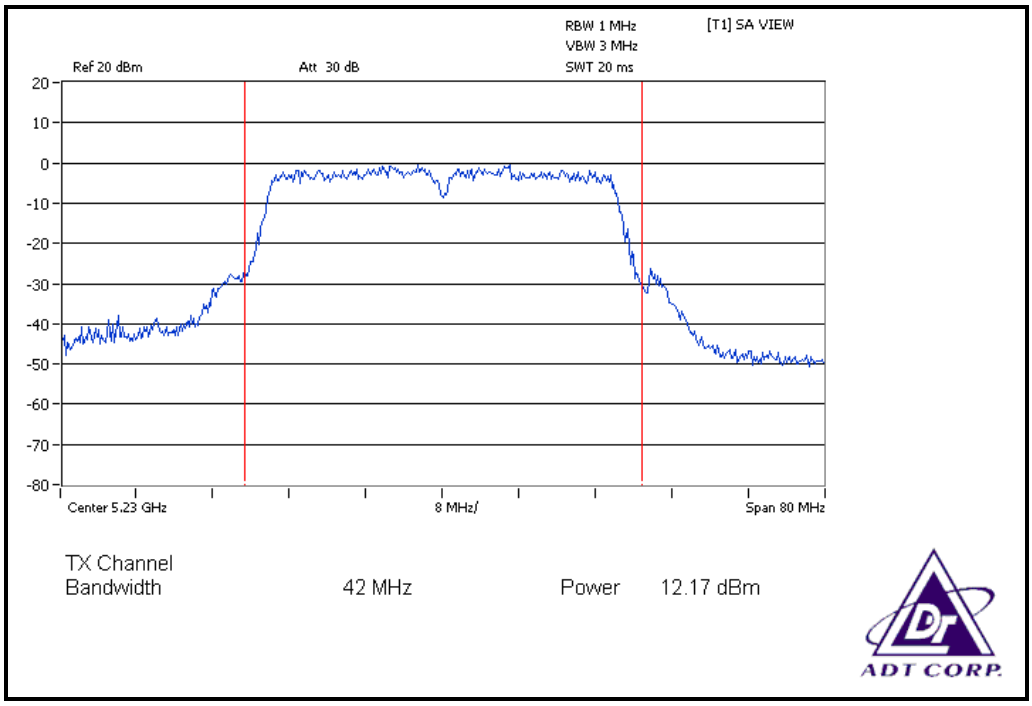
MODULATION TYPE	BPSK	**CHANNEL**	1, 2, 3, 4
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	13.5Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH, 994hPa	**TESTED BY**	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1				
1	5190	19.907	18.836	12.99	12.75	38.743	15.88	17.00	PASS
2	5230	16.482	16.255	12.17	12.11	32.737	15.15	17.00	PASS
3	5270	15.311	14.588	11.85	11.64	29.899	14.76	24.00	PASS
4	5310	15.740	15.740	11.97	11.97	31.480	14.98	24.00	PASS

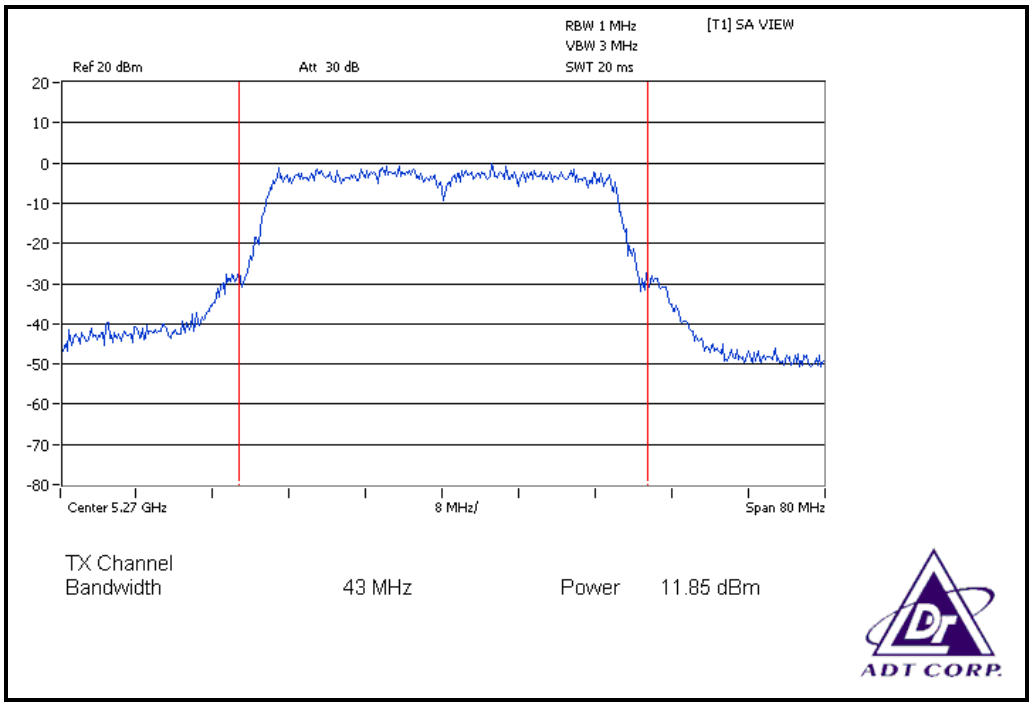
FOR CHAIN 0: CH 1



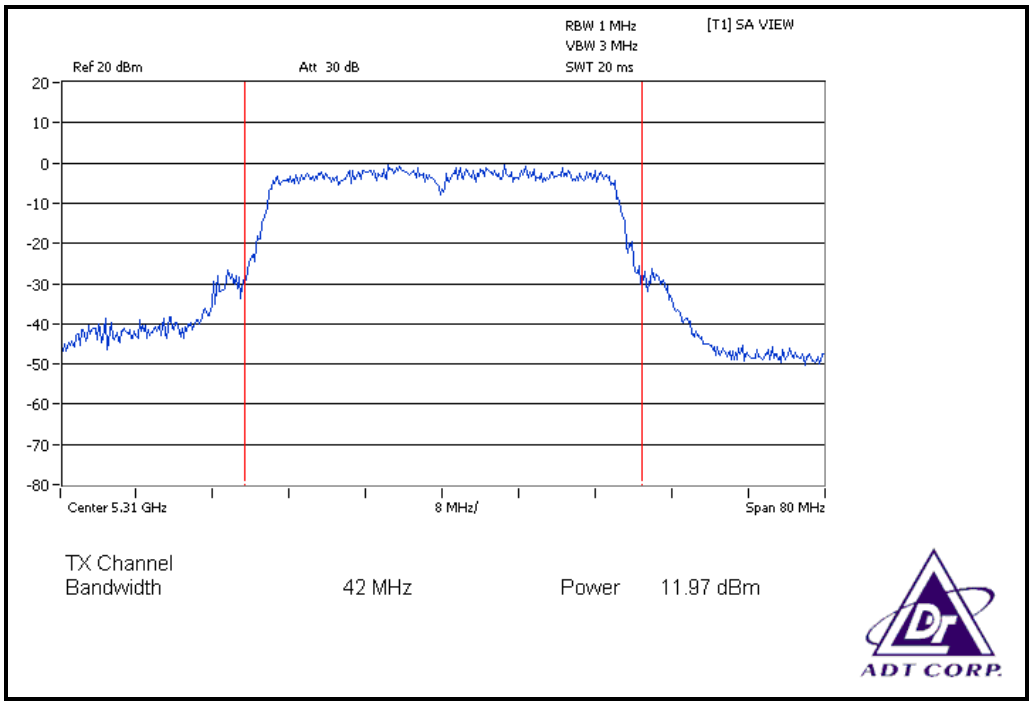
CH 2



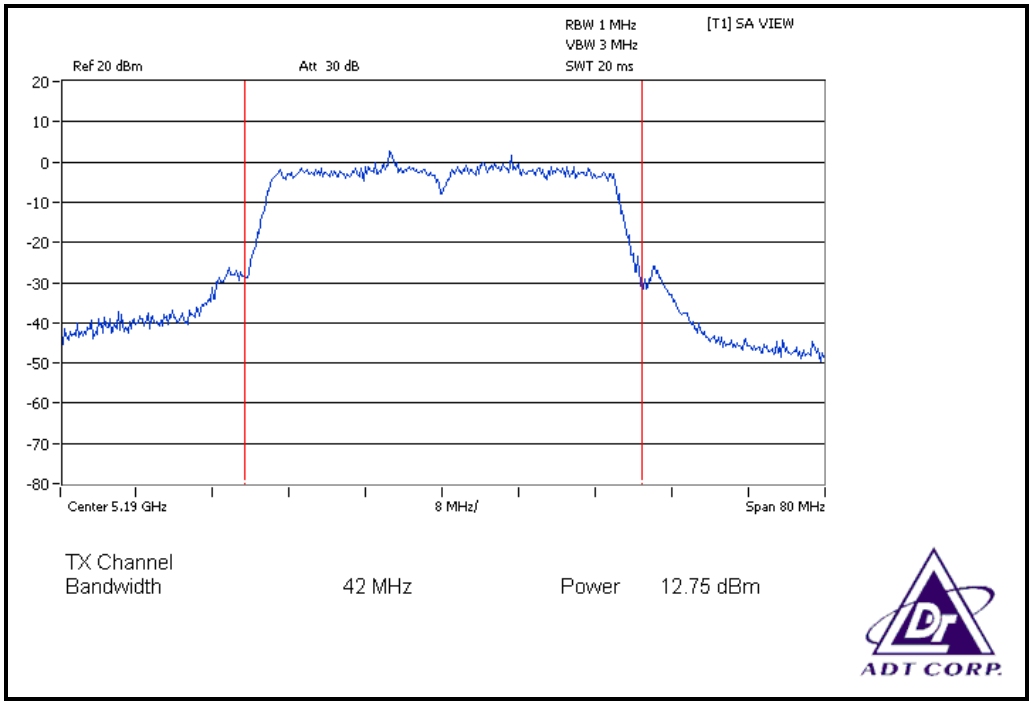
CH 3


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.27 GHz
8 MHz/
Span 80 MHz
TX Channel Bandwidth
43 MHz
Power
11.85 dBm

CH 4

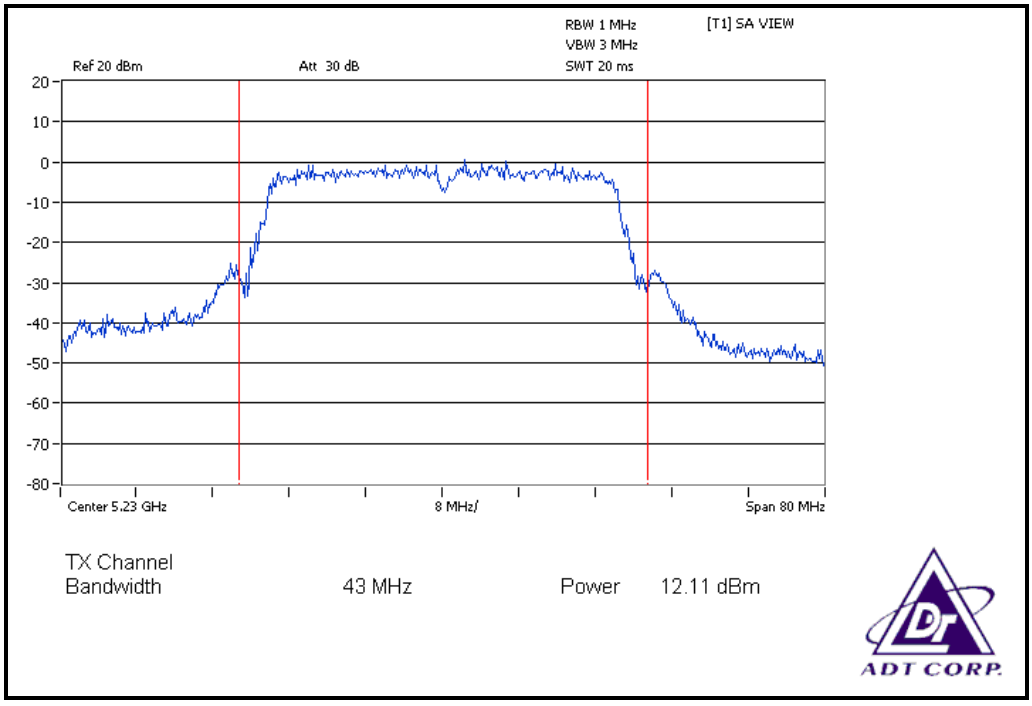

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.31 GHz
8 MHz/
Span 80 MHz
TX Channel Bandwidth
42 MHz
Power
11.97 dBm

FOR CHAIN 1: CH 1



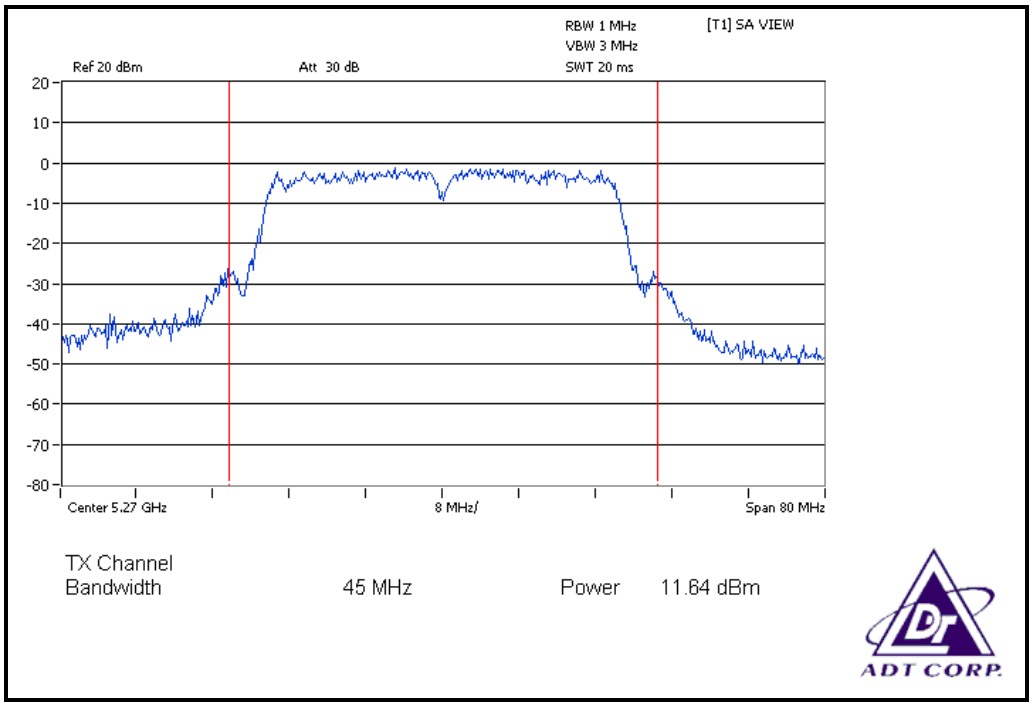
TX Channel Bandwidth 42 MHz Power 12.75 dBm

CH 2

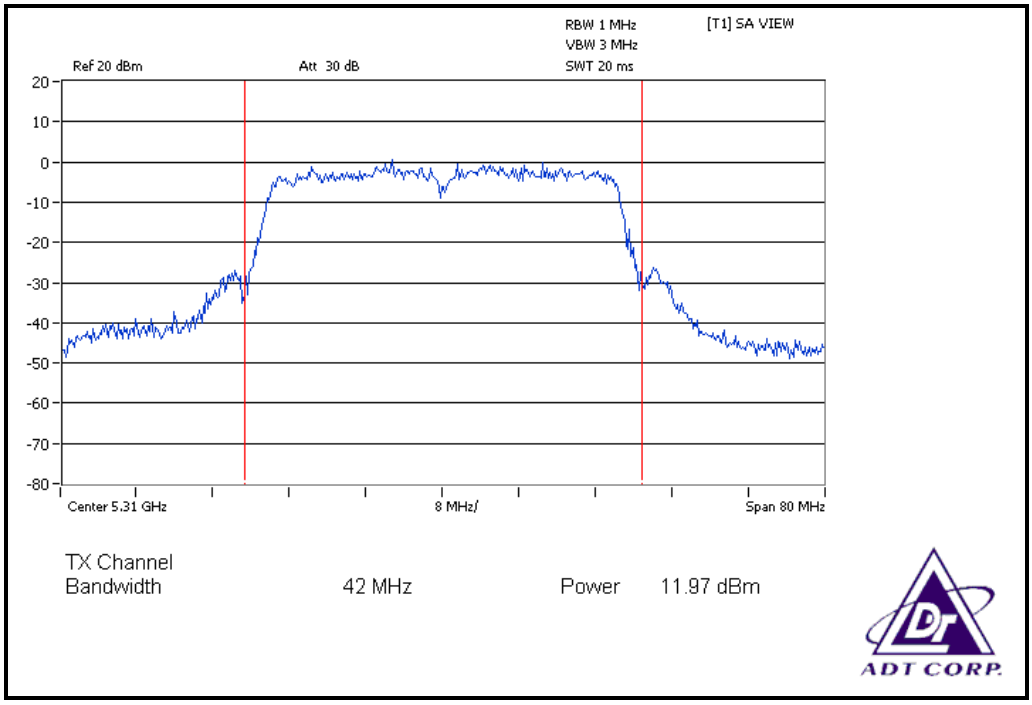


TX Channel Bandwidth 43 MHz Power 12.11 dBm

CH 3


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.27 GHz
8 MHz/
Span 80 MHz
TX Channel Bandwidth
45 MHz
Power
11.64 dBm

CH 4

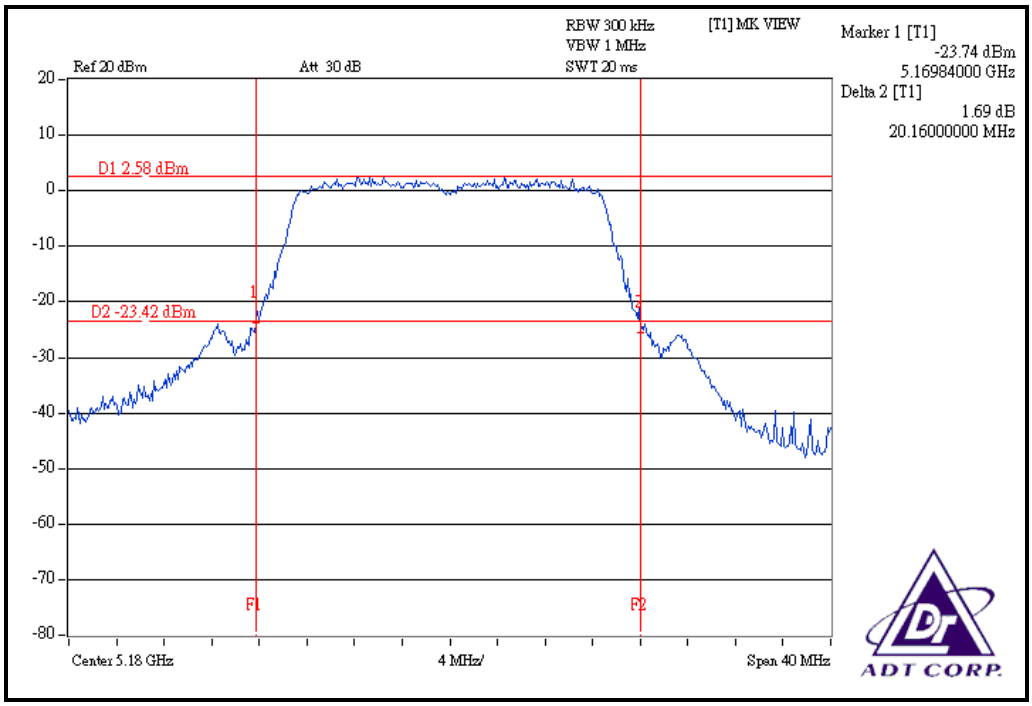

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA VIEW
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.31 GHz
8 MHz/
Span 80 MHz
TX Channel Bandwidth
42 MHz
Power
11.97 dBm

26dB OCCUPIED BANDWIDTH: 802.11a OFDM MODULATION:

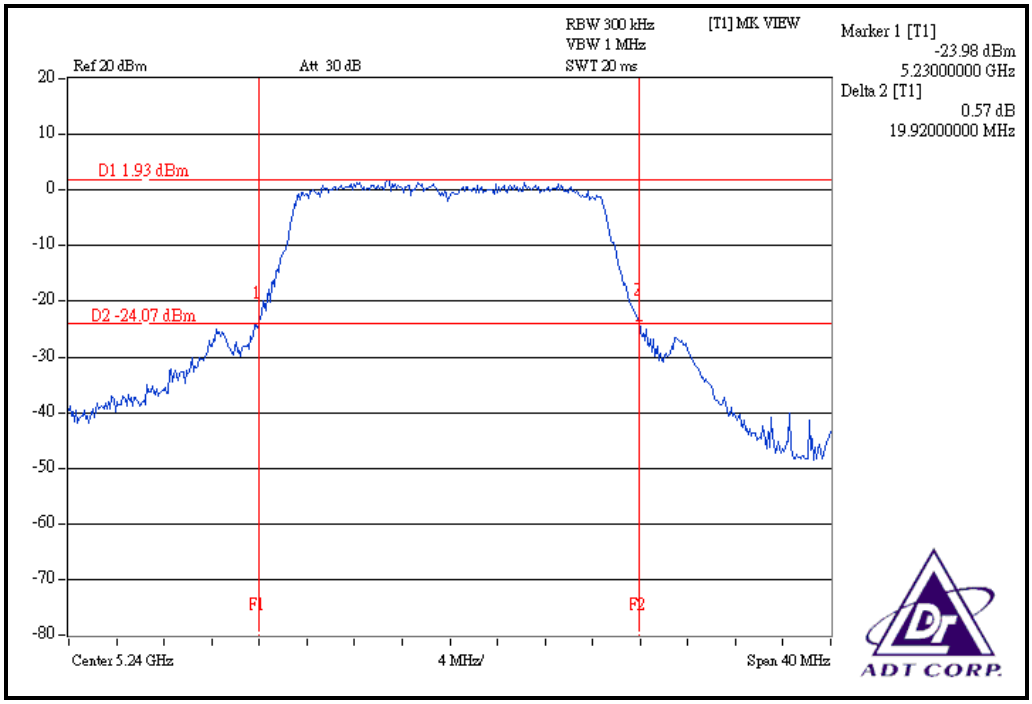
MODULATION TYPE	BPSK	**CHANNEL**	1, 4, 5, 8
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6.0Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH, 994hPa	**TESTED BY**	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)	PASS / FAIL
1	5180	20.16	PASS
4	5240	19.92	PASS
5	5260	20.00	PASS
8	5320	22.56	PASS

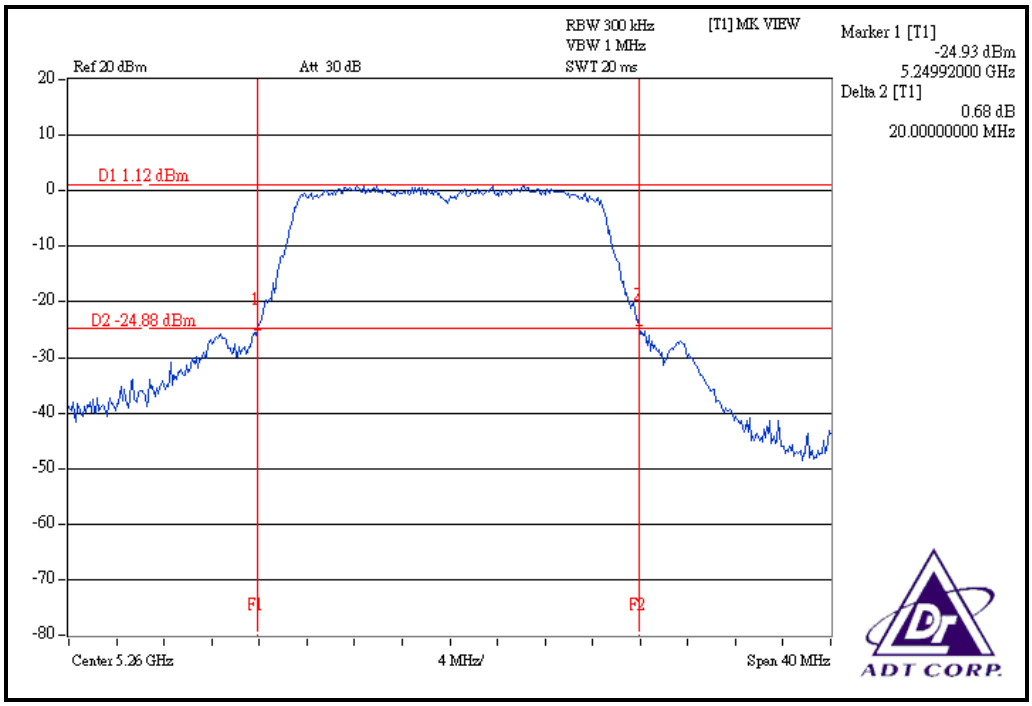
CH 1


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-23.74 dBm
5.16984000 GHz
Delta 2 [T1]
1.69 dB
20.16000000 MHz
Ref 20 dBm
Att 30 dB
D1 2.58 dBm
D2 -23.42 dBm
F1
F2
Center 5.18 GHz
4 MHz/
Span 40 MHz
ADT CORP.

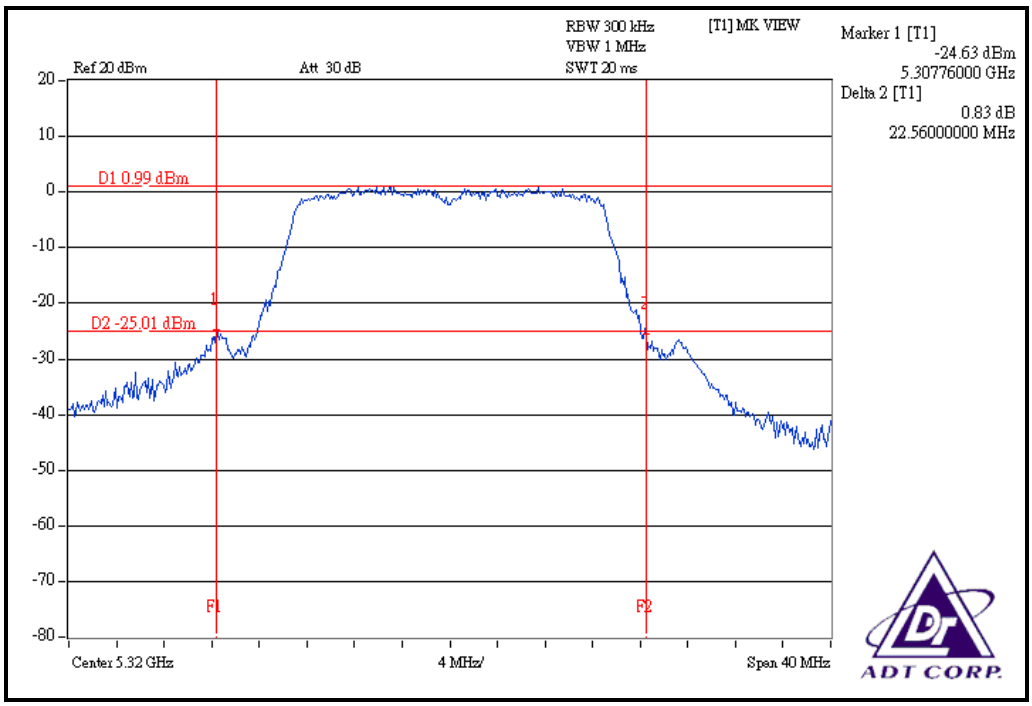
CH 4


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-23.98 dBm
5.23000000 GHz
Delta 2 [T1]
0.57 dB
19.92000000 MHz
Ref 20 dBm
Att 30 dB
D1 1.93 dBm
D2 -24.07 dBm
F1
F2
Center 5.24 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 5


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-24.93 dBm
5.24992000 GHz
Delta 2 [T1]
0.68 dB
20.00000000 MHz
Ref 20 dBm
Att 30 dB
D1 1.12 dBm
D2 -24.88 dBm
F1
F2
Center 5.26 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 8

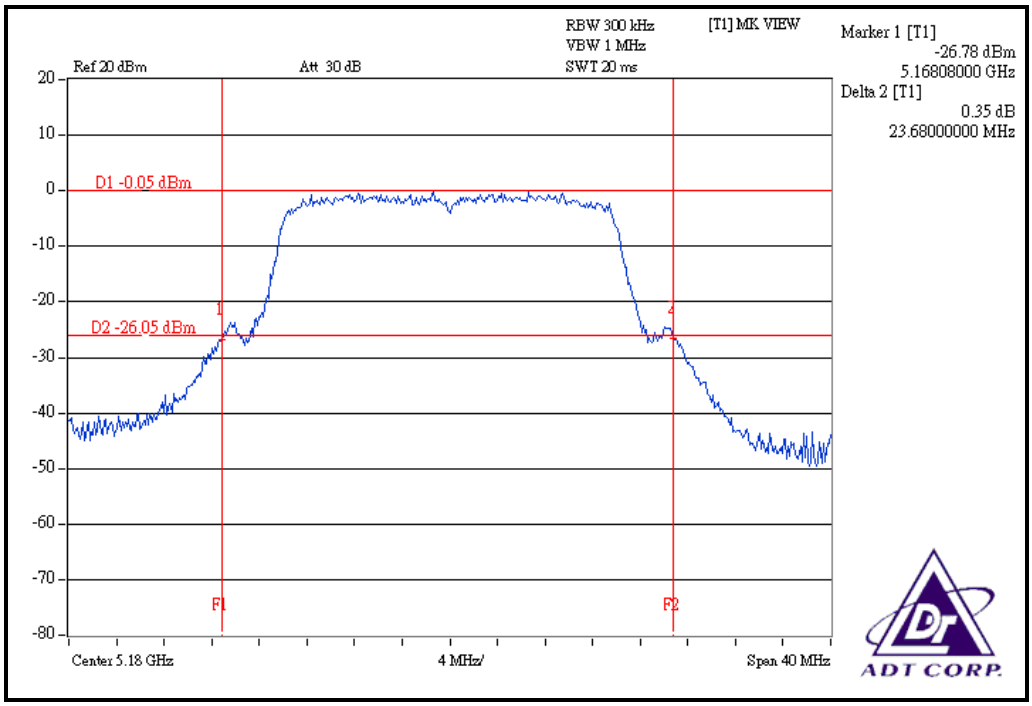

RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-24.63 dBm
5.30776000 GHz
Delta 2 [T1]
0.83 dB
22.56000000 MHz
Ref 20 dBm
Att 30 dB
D1 0.99 dBm
D2 -25.01 dBm
F1
F2
Center 5.32 GHz
4 MHz/
Span 40 MHz
ADT CORP.

DRAFT 802.11n (20MHz) OFDM MODULATION:

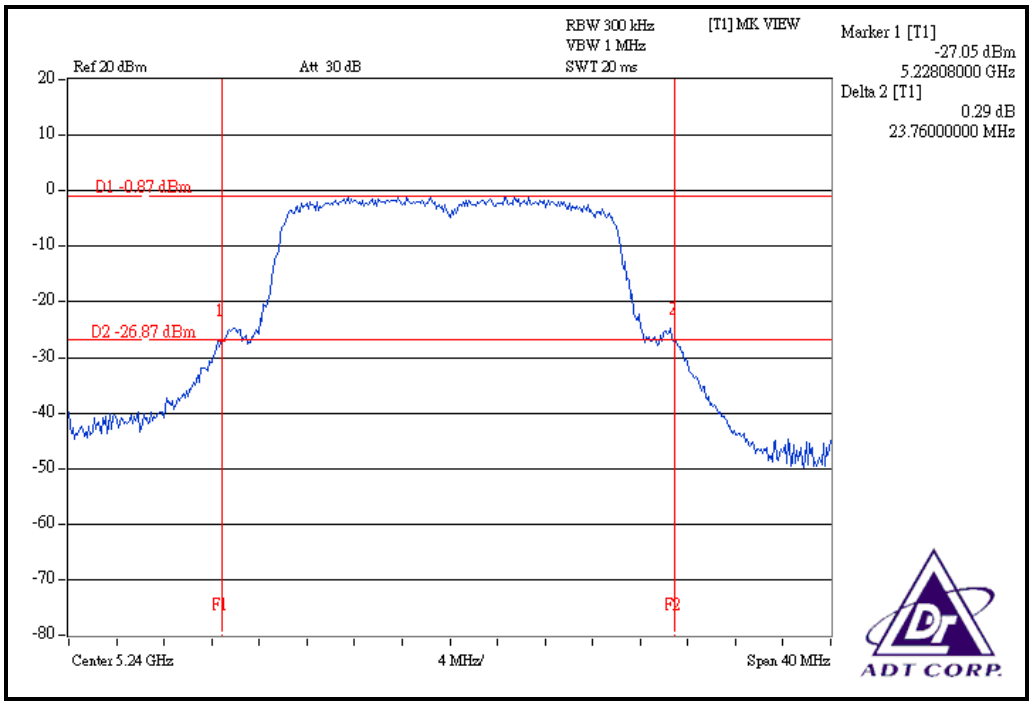
MODULATION TYPE	BPSK	**CHANNEL**	1, 4, 5, 8
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6.5Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH, 994hPa	**TESTED BY**	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
1	5180	23.68	23.92	PASS
4	5240	23.76	23.84	PASS
5	5260	23.60	23.28	PASS
8	5320	23.76	23.52	PASS

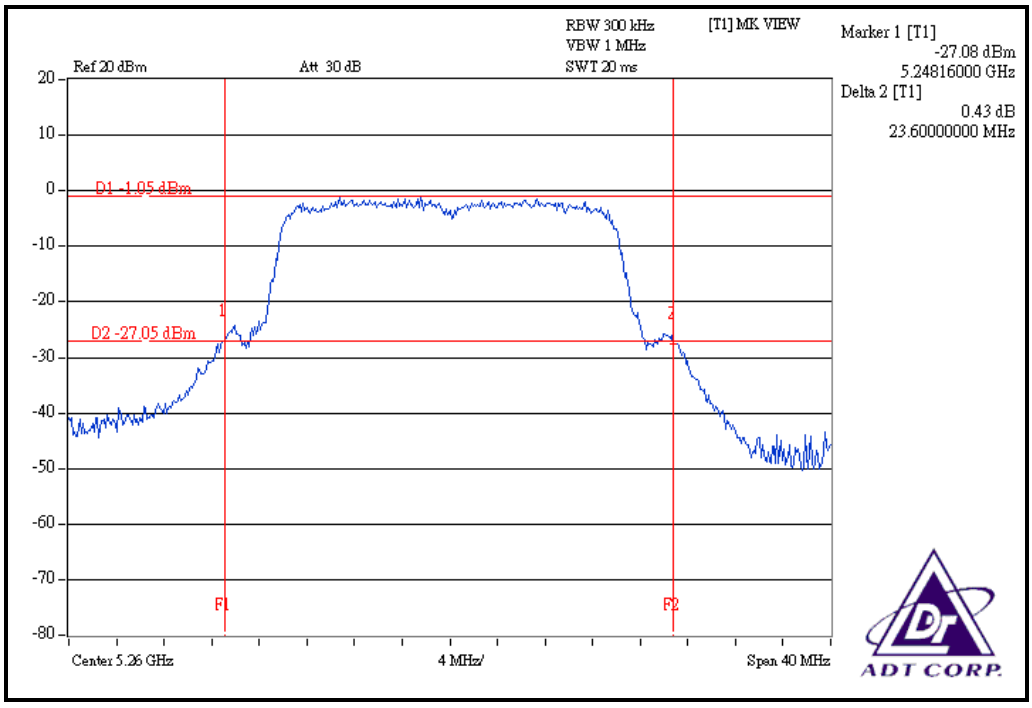
FOR CHAIN 0: CH 1



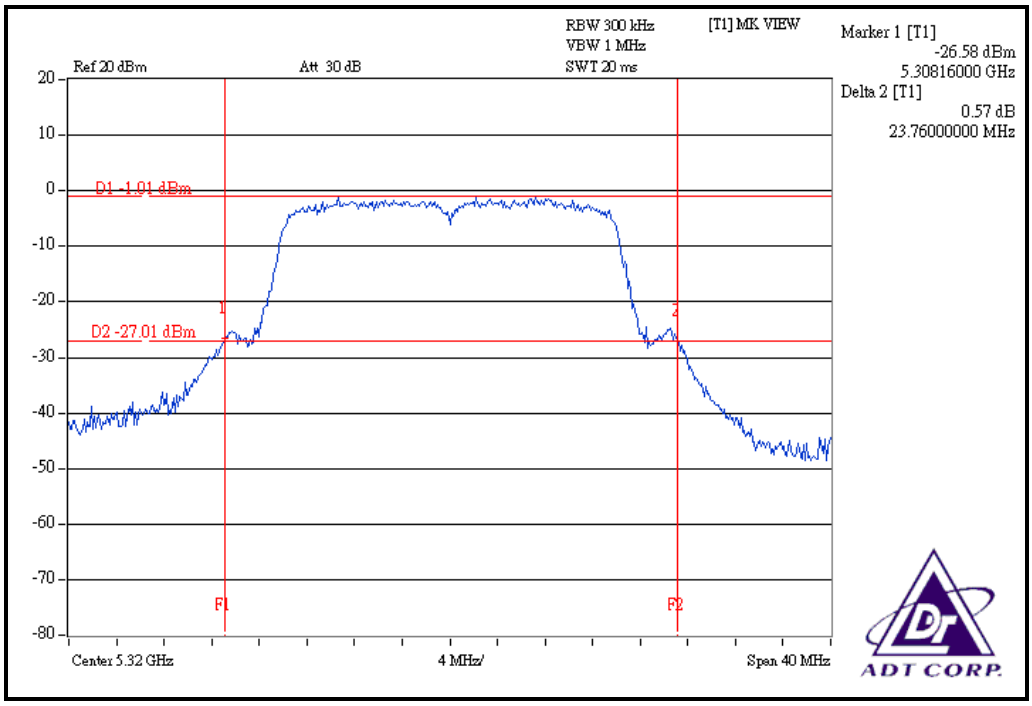
CH 4



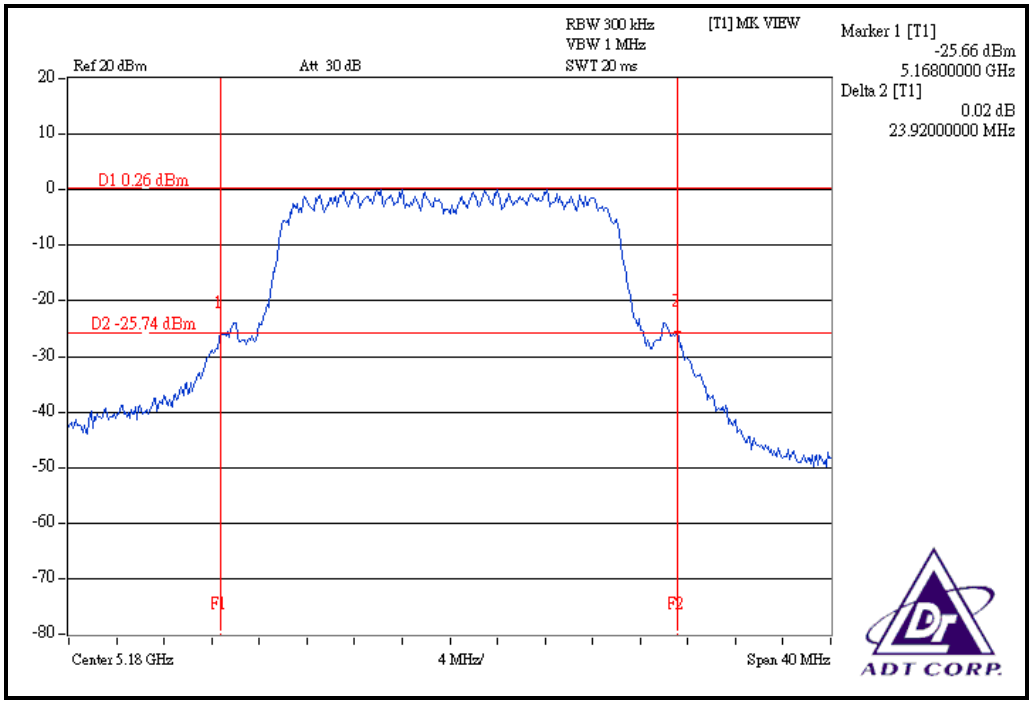
CH 5


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-27.08 dBm
5.24816000 GHz
Delta 2 [T1]
0.43 dB
23.60000000 MHz
Ref 20 dBm
Att 30 dB
D1 -1.05 dBm
D2 -27.05 dBm
F1
F2
Center 5.26 GHz
4 MHz/
Span 40 MHz
ADT CORP.

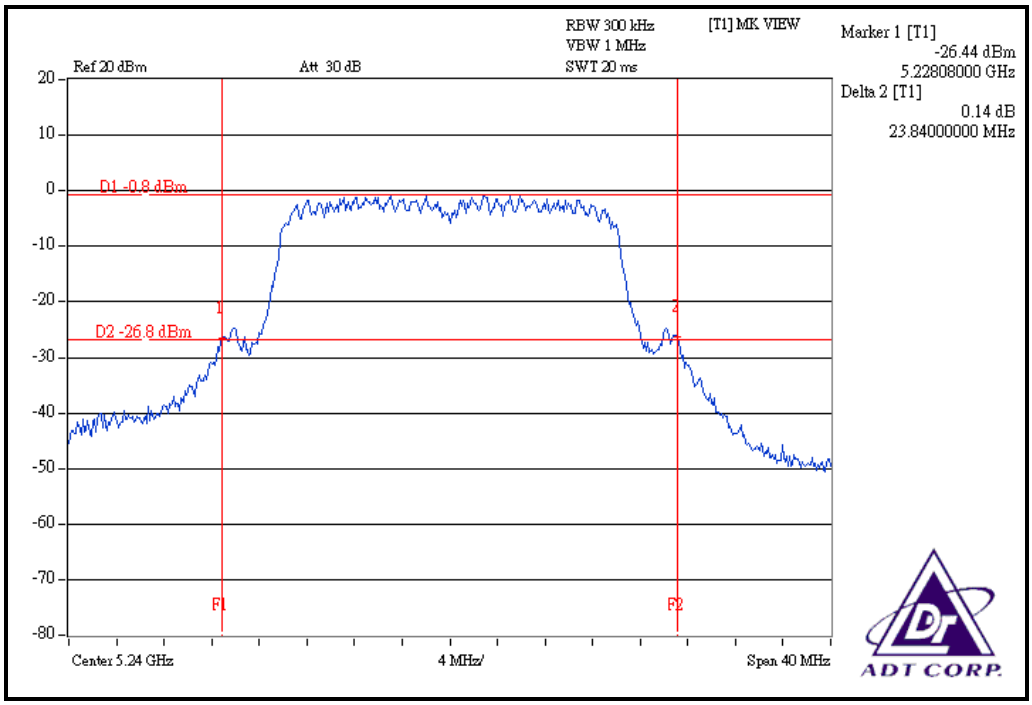
CH 8


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-26.58 dBm
5.30816000 GHz
Delta 2 [T1]
0.57 dB
23.76000000 MHz
Ref 20 dBm
Att 30 dB
D1 -1.01 dBm
D2 -27.01 dBm
F1
F2
Center 5.32 GHz
4 MHz/
Span 40 MHz
ADT CORP.

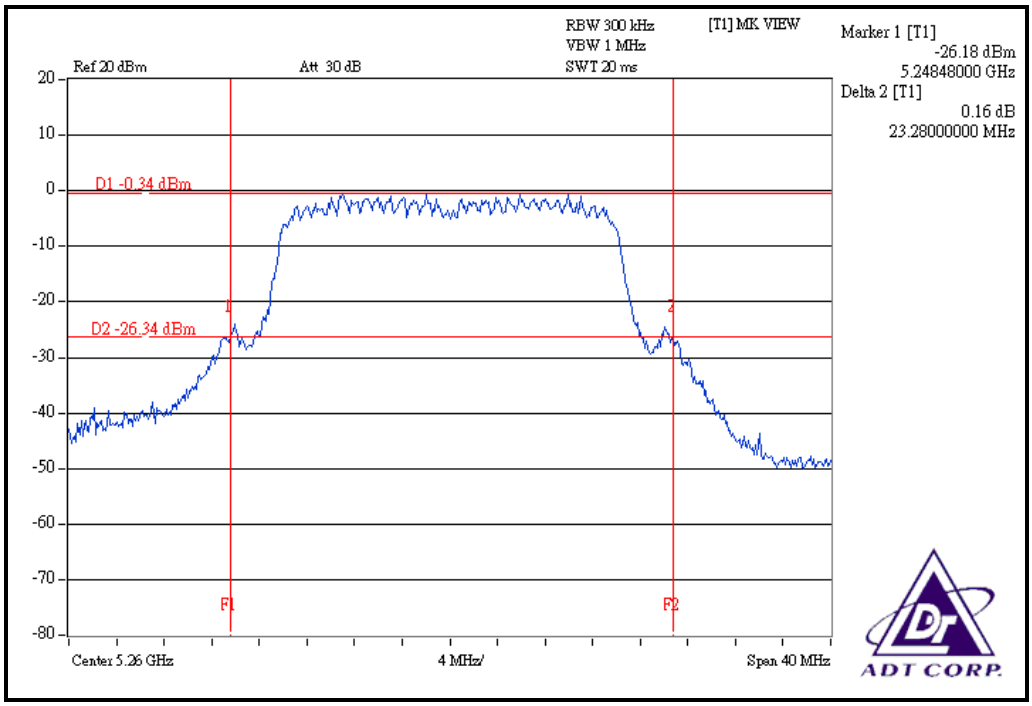
FOR CHAIN 1: CH 1



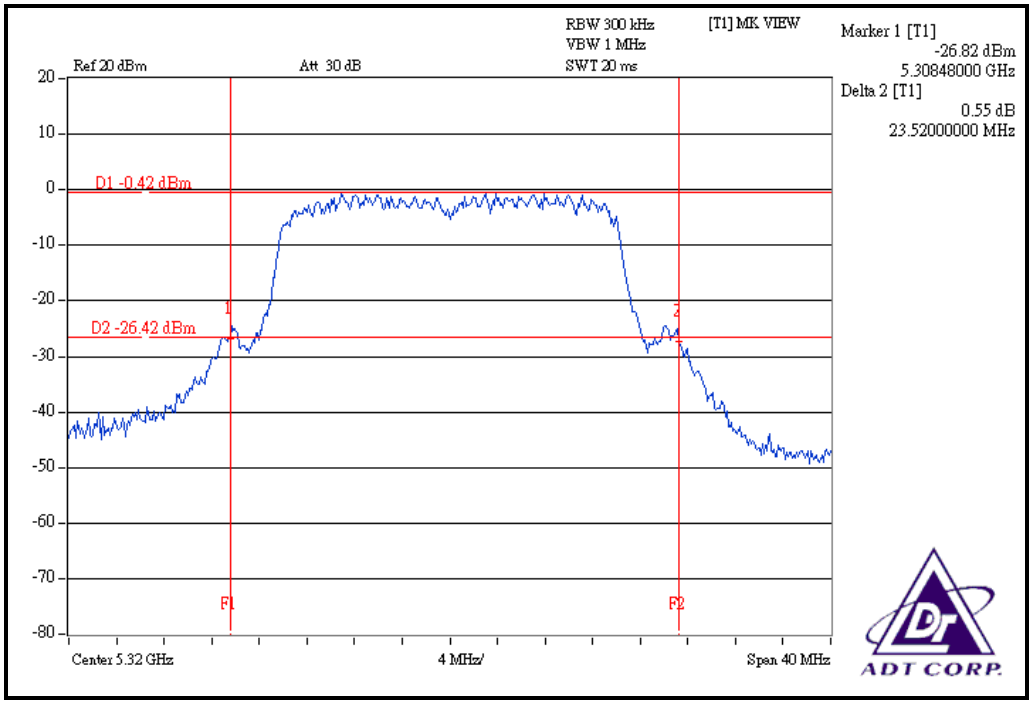
CH 4



CH 5


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-26.18 dBm
5.24848000 GHz
Delta 2 [T1]
0.16 dB
23.28000000 MHz
Ref 20 dBm
Att 30 dB
D1 -0.34 dBm
D2 -26.34 dBm
F1
F2
Center 5.26 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 8

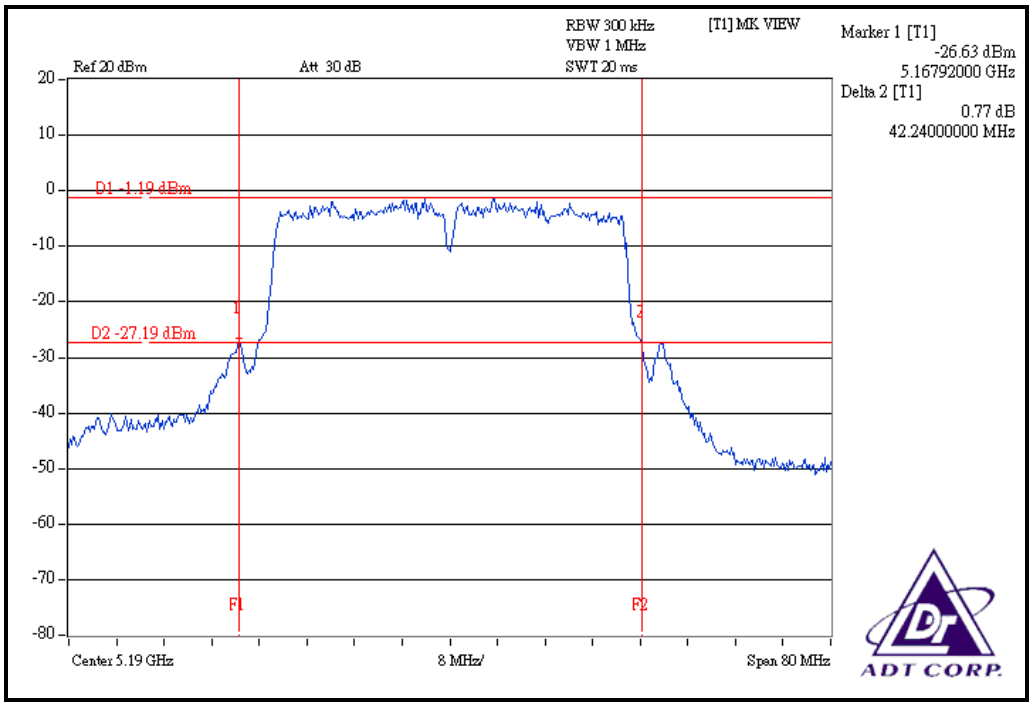

RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-26.82 dBm
5.30848000 GHz
Delta 2 [T1]
0.55 dB
23.52000000 MHz
Ref 20 dBm
Att 30 dB
D1 -0.42 dBm
D2 -26.42 dBm
F1
F2
Center 5.32 GHz
4 MHz/
Span 40 MHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION:

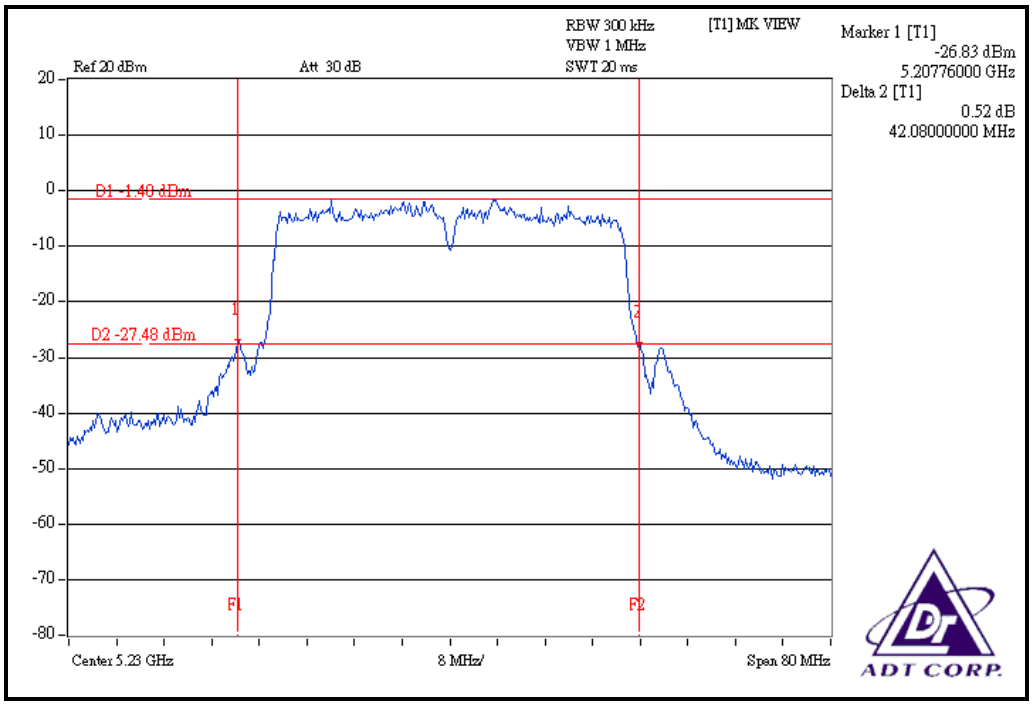
MODULATION TYPE	BPSK	**CHANNEL**	1, 2, 3, 4
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	13.5Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH, 994hPa	**TESTED BY**	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
1	5190	42.24	44.32	PASS
2	5230	42.08	42.24	PASS
3	5270	39.84	41.92	PASS
4	5310	42.24	44.96	PASS

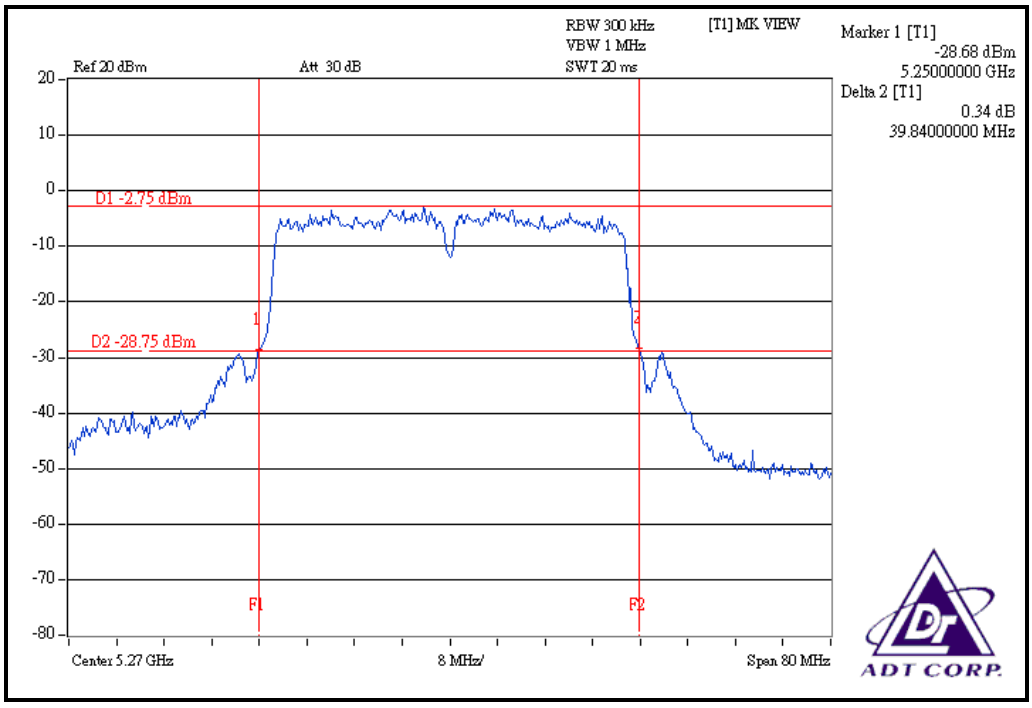
FOR CHAIN 0: CH 1



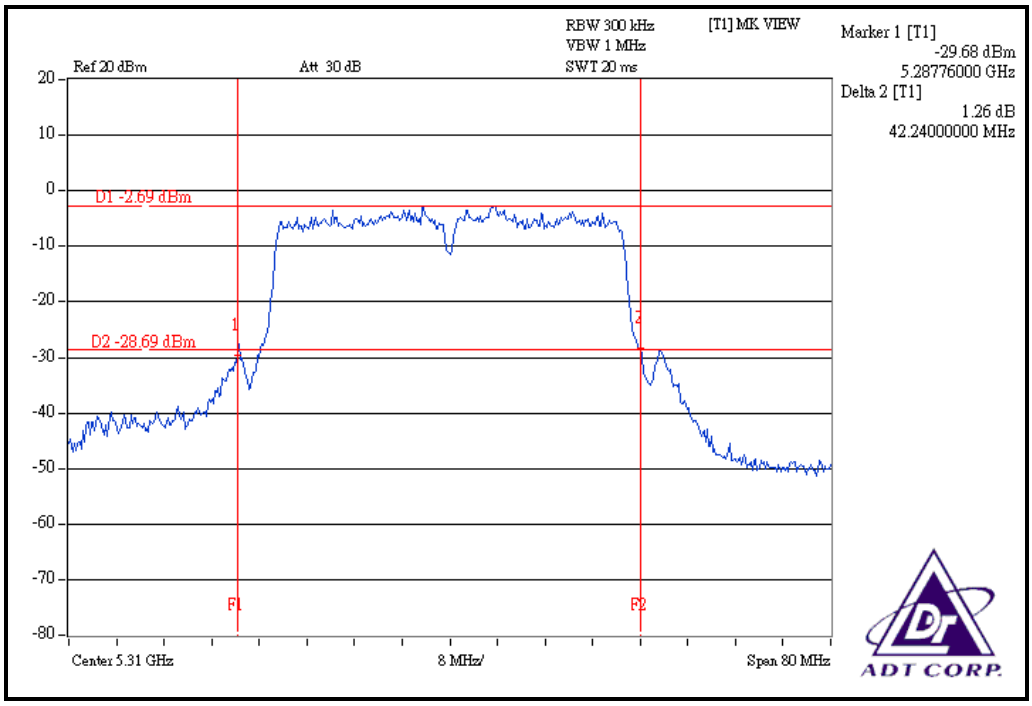
CH 2



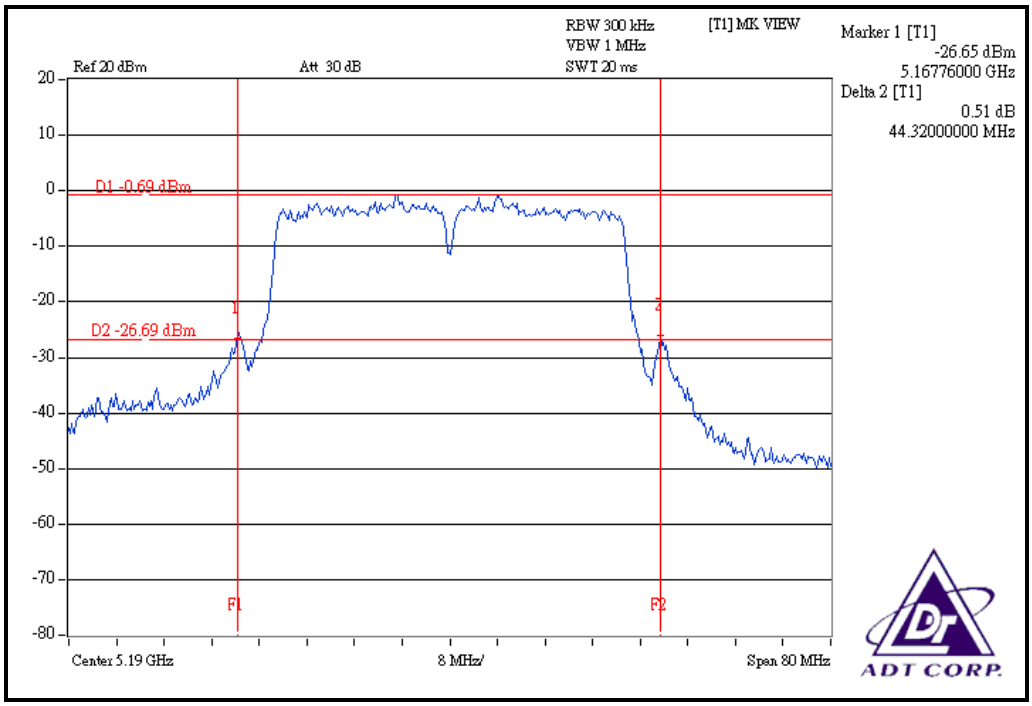
CH 3


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-28.68 dBm
5.25000000 GHz
Delta 2 [T1]
0.34 dB
39.84000000 MHz
Ref 20 dBm
Att 30 dB
D1 -2.75 dBm
D2 -28.75 dBm
F1
F2
Center 5.27 GHz
8 MHz/
Span 80 MHz
ADT CORP.

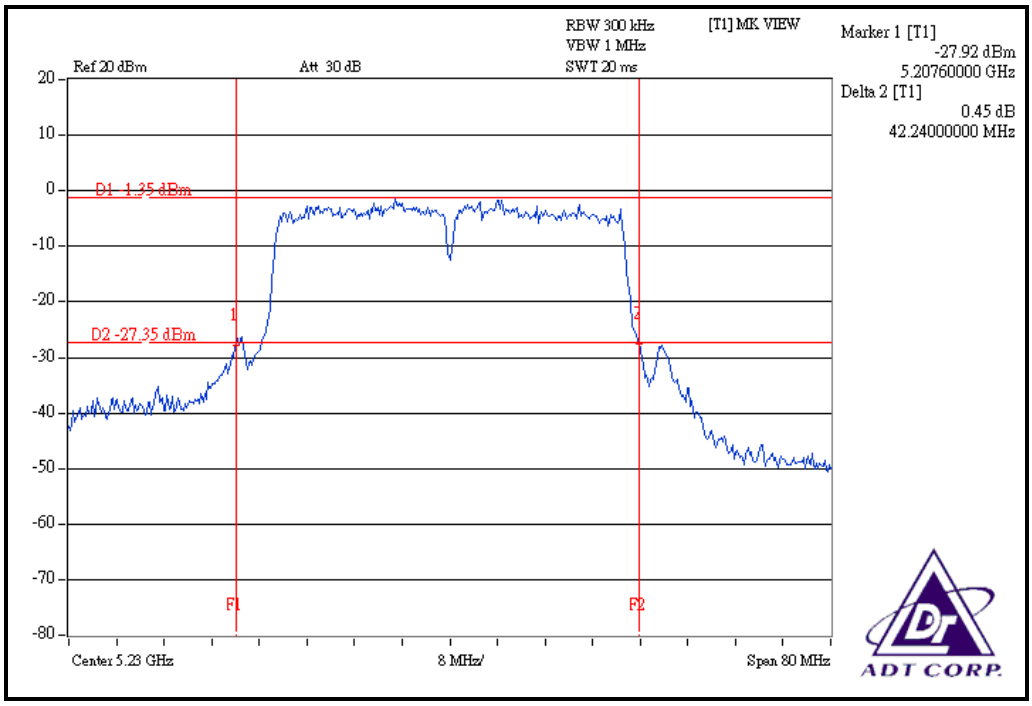
CH 4


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-29.68 dBm
5.28776000 GHz
Delta 2 [T1]
1.26 dB
42.24000000 MHz
Ref 20 dBm
Att 30 dB
D1 -2.69 dBm
D2 -28.69 dBm
F1
F2
Center 5.31 GHz
8 MHz/
Span 80 MHz
ADT CORP.

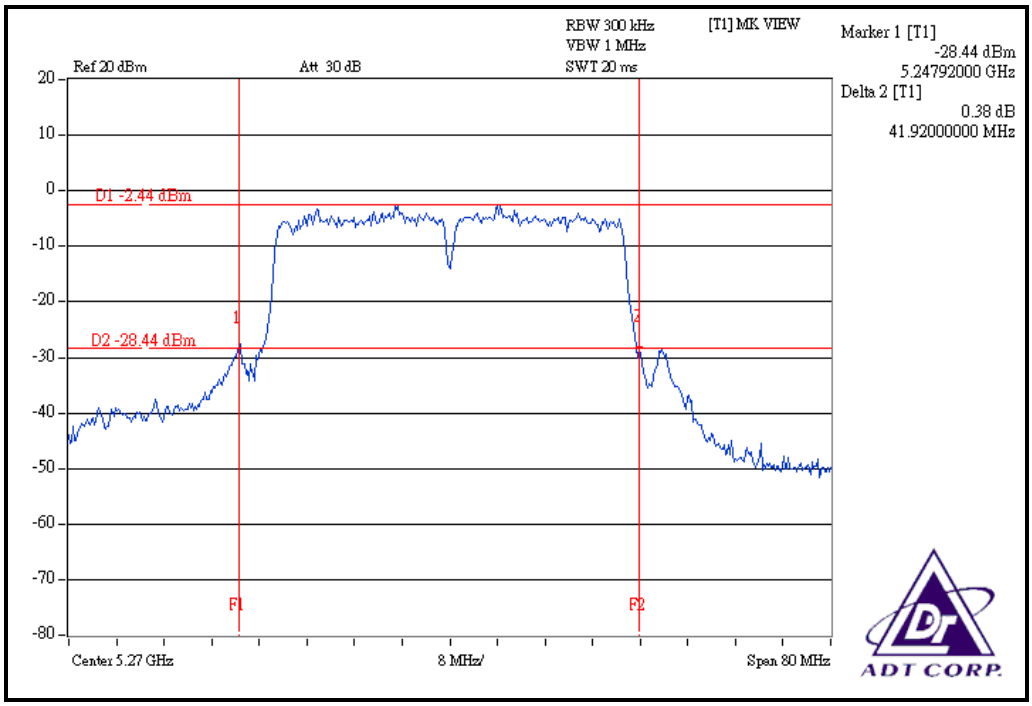
FOR CHAIN 1: CH 1



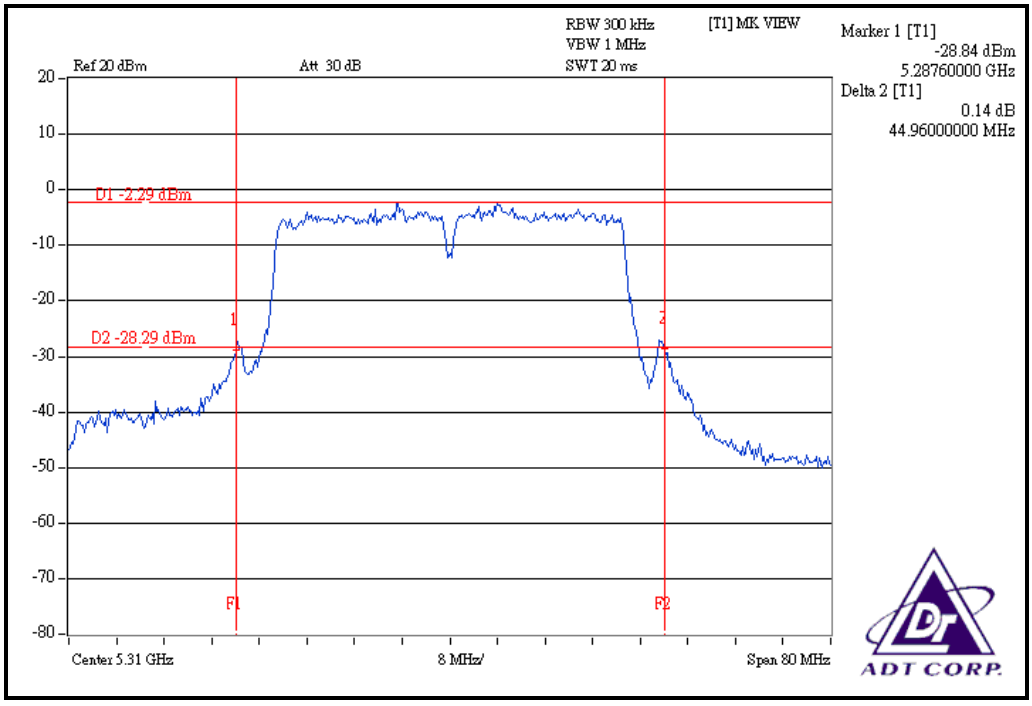
CH 2



CH 3


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-28.44 dBm
5.24792000 GHz
Delta 2 [T1]
0.38 dB
41.92000000 MHz
Ref 20 dBm
Att 30 dB
D1 -2.44 dBm
D2 -28.44 dBm
F1
F2
Center 5.27 GHz
8 MHz/
Span 80 MHz
ADT CORP.

CH 4


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-28.84 dBm
5.28760000 GHz
Delta 2 [T1]
0.14 dB
44.96000000 MHz
Ref 20 dBm
Att 30 dB
D1 -2.29 dBm
D2 -28.29 dBm
F1
F2
Center 5.31 GHz
8 MHz/
Span 80 MHz
ADT CORP.

4.4 PEAK POWER EXCURSION MEASUREMENT

4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	13dB
5.250 ~ 5.350GHz	13dB
5.470 ~ 5.725GHz	13dB

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSP 40	100036	Mar. 13, 2008

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

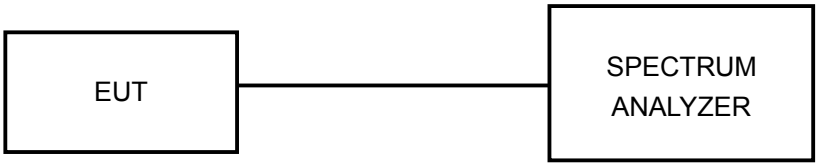
4.4.3 TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer.
2. Set the spectrum bandwidth span to view the entire spectrum.
3. Using peak detector and Max-hold function for Trace 1 (RB = 1MHz, VB = 3MHz) and 2 (RB = 1MHz, VB = 300kHz).
4. 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.

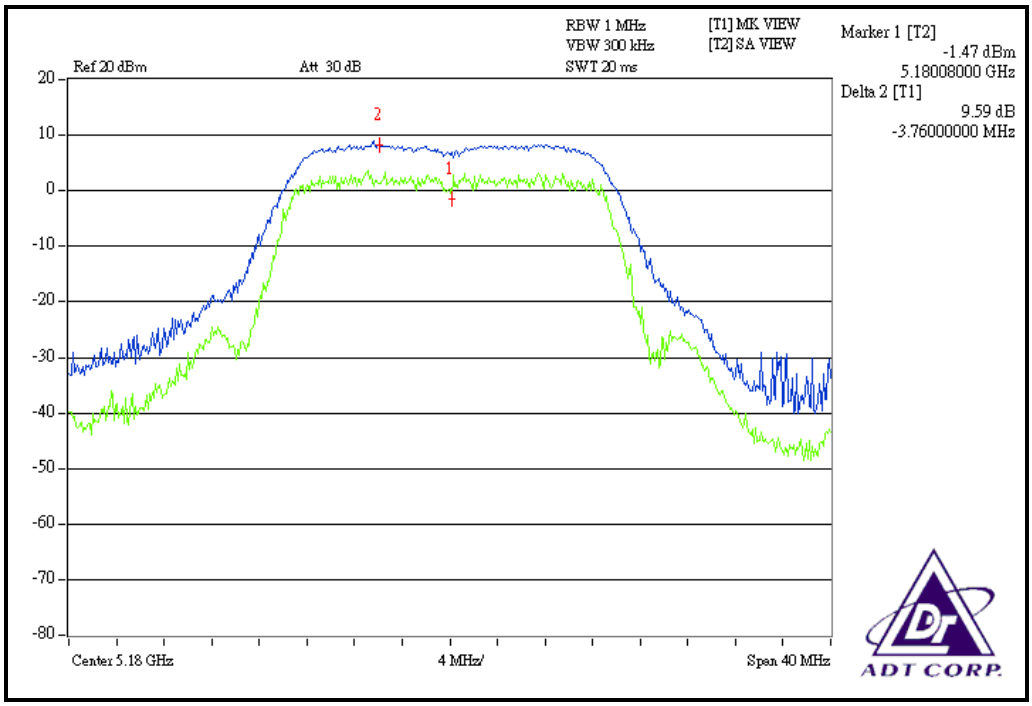
4.4.7 TEST RESULTS

802.11a OFDM MODULATION:

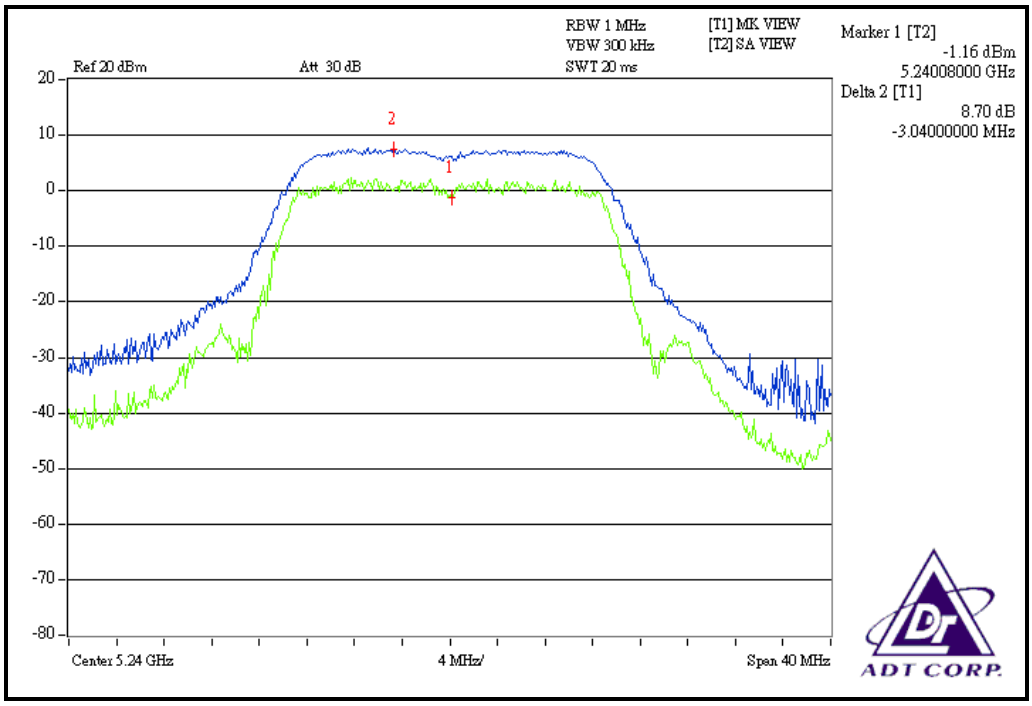
MODULATION TYPE	BPSK	**CHANNEL**	1, 4, 5, 8
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6.0Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH, 994hPa	**TESTED BY**	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK TO AVERAGE EXCURSION LIMIT (dB)	PASS / FAIL
1	5180	9.59	13	PASS
4	5240	8.70	13	PASS
5	5260	8.76	13	PASS
8	5320	8.86	13	PASS

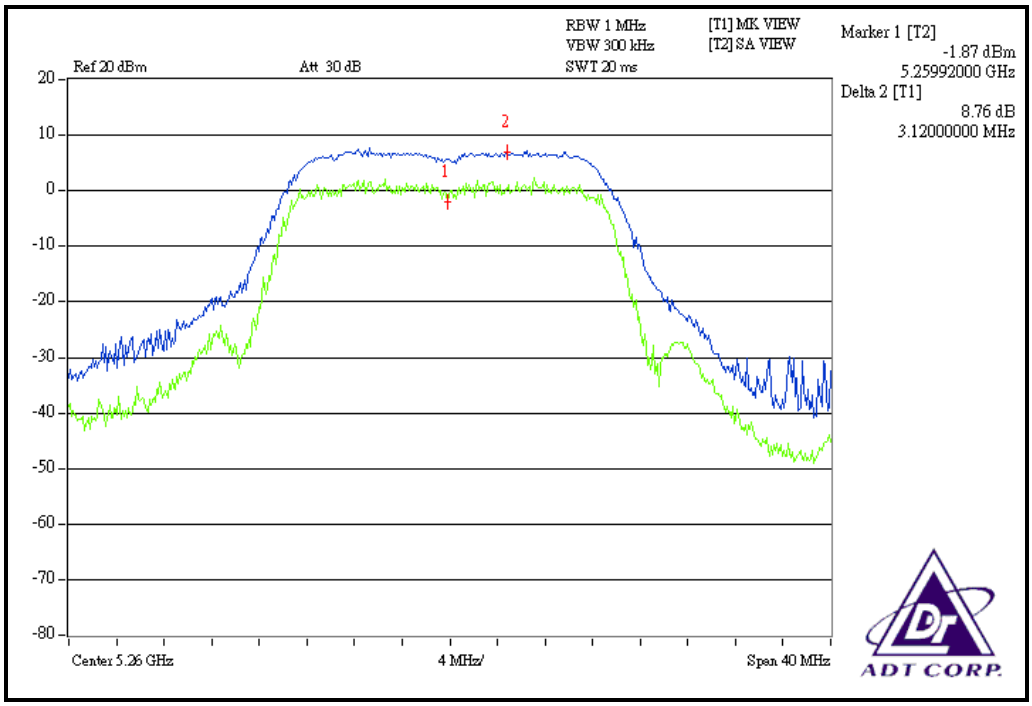
CH 1


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Marker 1 [T2]
-1.47 dBm
5.18008000 GHz
Delta 2 [T1]
9.59 dB
-3.76000000 MHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.18 GHz
4 MHz/
Span 40 MHz
ADT CORP.

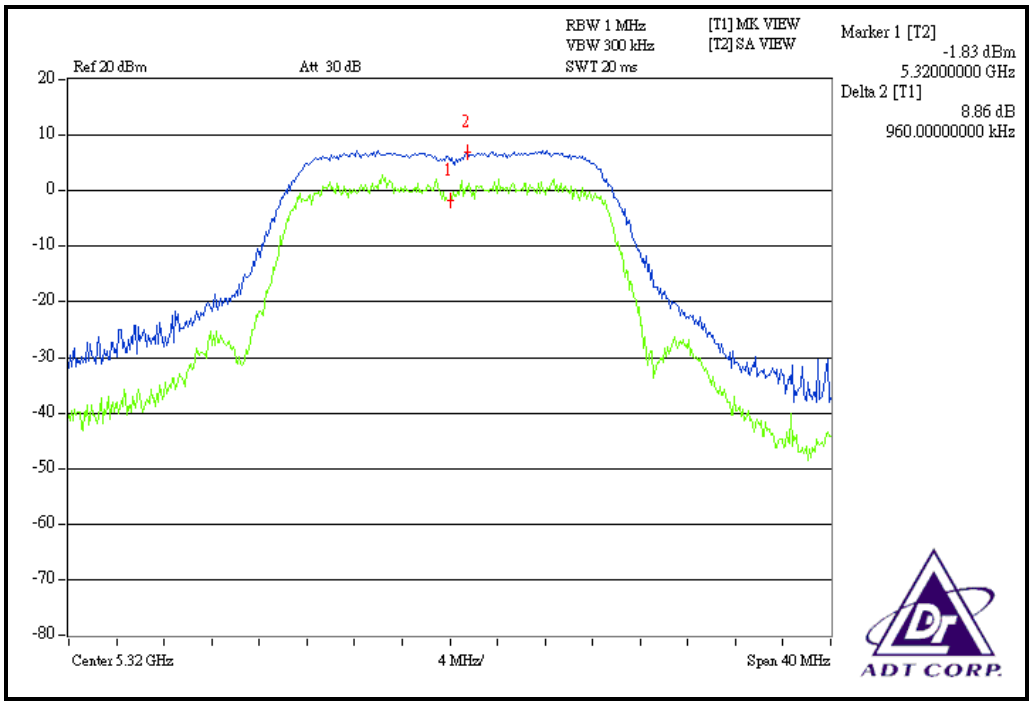
CH 4


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Marker 1 [T2]
-1.16 dBm
5.24008000 GHz
Delta 2 [T1]
8.70 dB
-3.04000000 MHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.24 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 5


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Marker 1 [T2]
-1.87 dBm
5.25992000 GHz
Delta 2 [T1]
8.76 dB
3.12000000 MHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.26 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 8

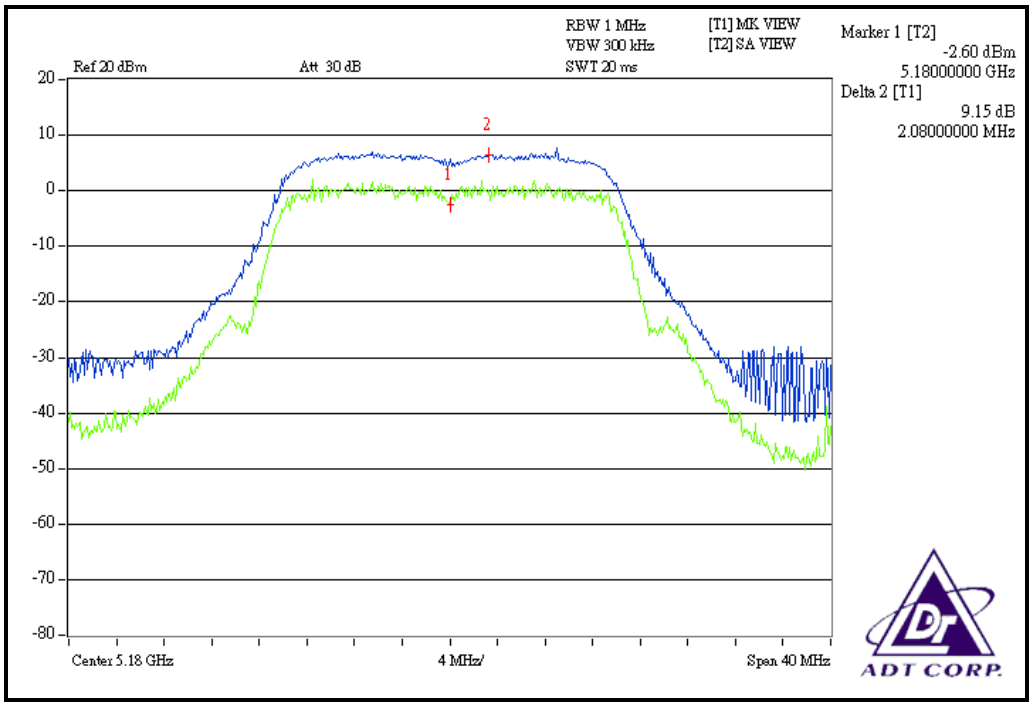

RBW 1 MHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Marker 1 [T2]
-1.83 dBm
5.32000000 GHz
Delta 2 [T1]
8.86 dB
960.00000000 kHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.32 GHz
4 MHz/
Span 40 MHz
ADT CORP.

DRAFT 802.11n (20MHz) OFDM MODULATION:

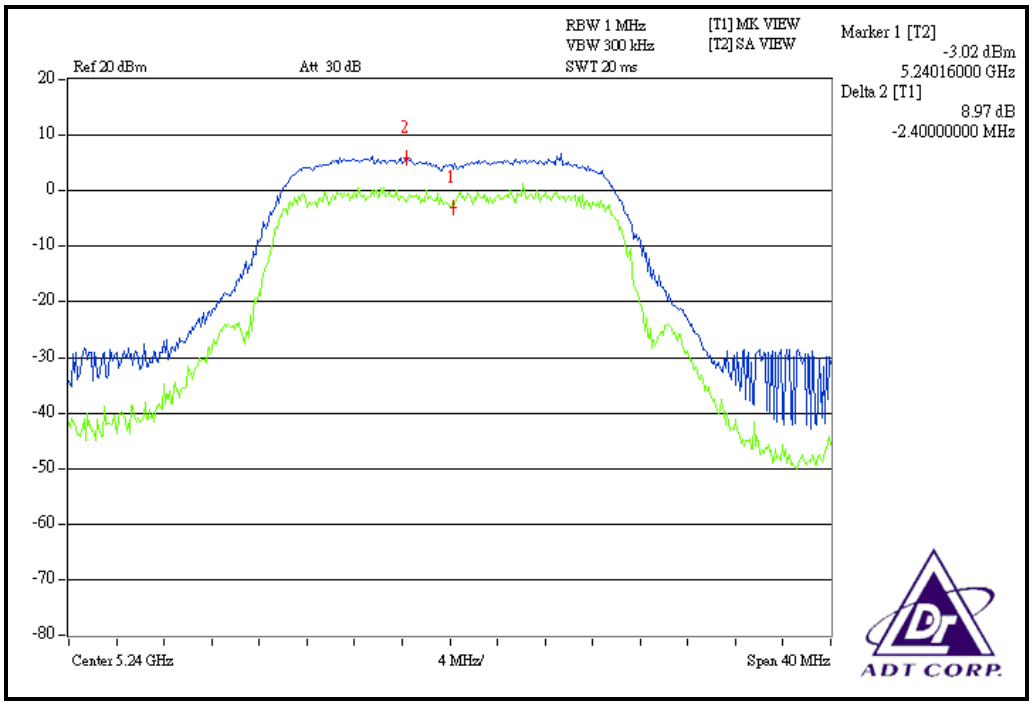
MODULATION TYPE	BPSK	**CHANNEL**	1, 4, 5, 8
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6.5Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH, 994hPa	**TESTED BY**	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)		PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1		
1	5180	9.15	10.14	13	PASS
4	5240	8.97	9.69	13	PASS
5	5260	9.37	10.34	13	PASS
8	5320	8.37	10.58	13	PASS

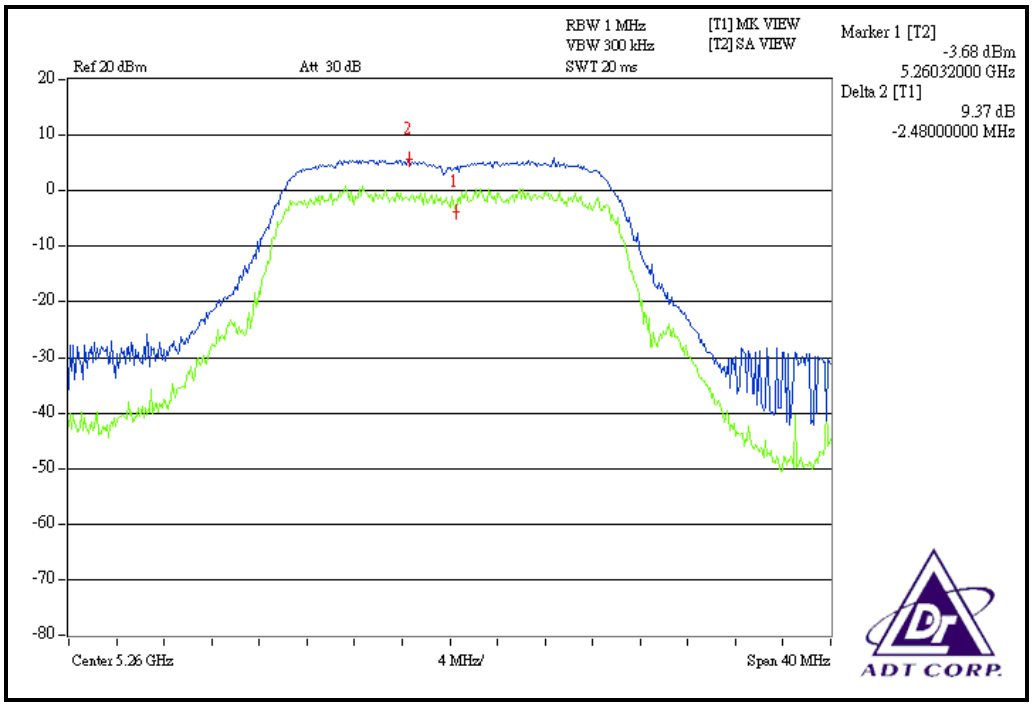
FOR CHAIN 0: CH 1



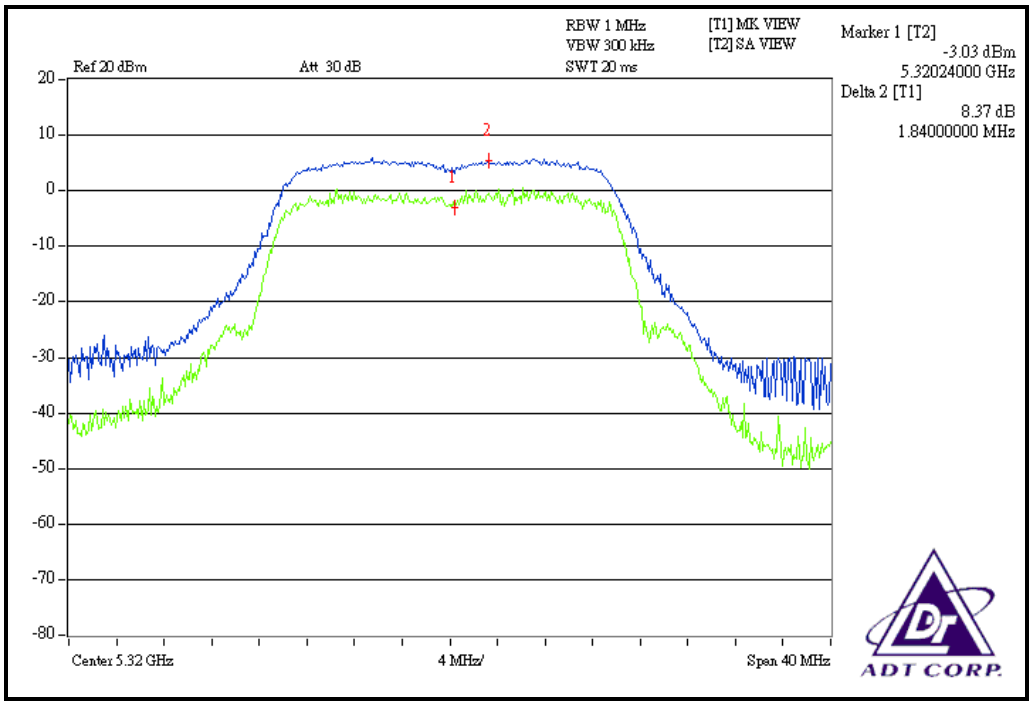
CH 4



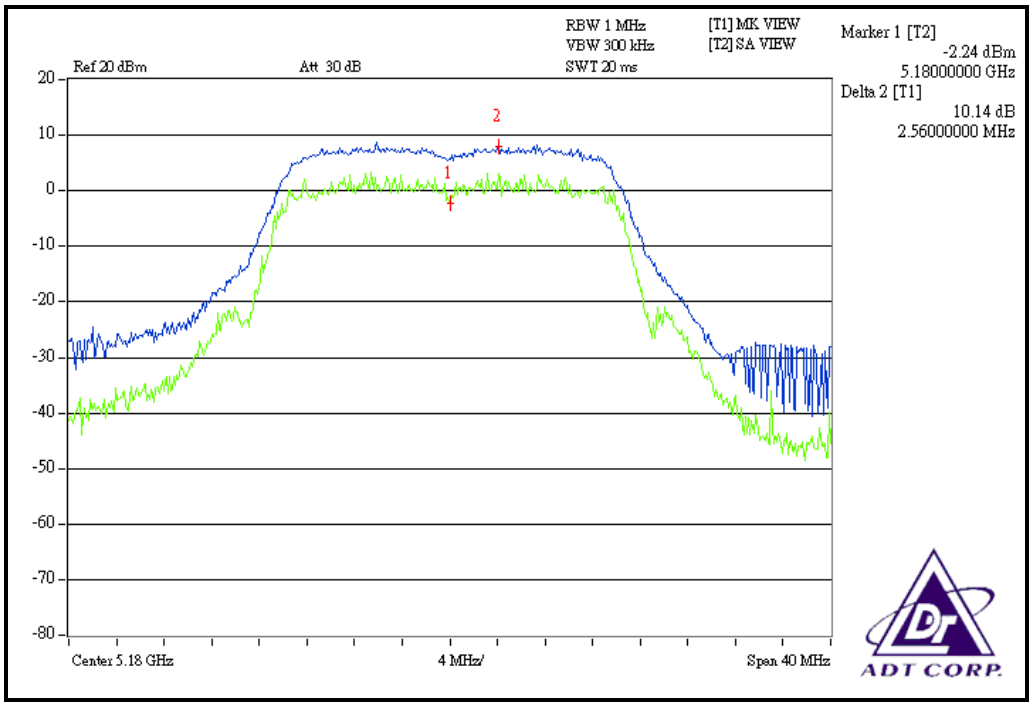
CH 5


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Marker 1 [T2]
-3.68 dBm
5.26032000 GHz
Delta 2 [T1]
9.37 dB
-2.48000000 MHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.26 GHz
4 MHz/
Span 40 MHz
ADT CORP.

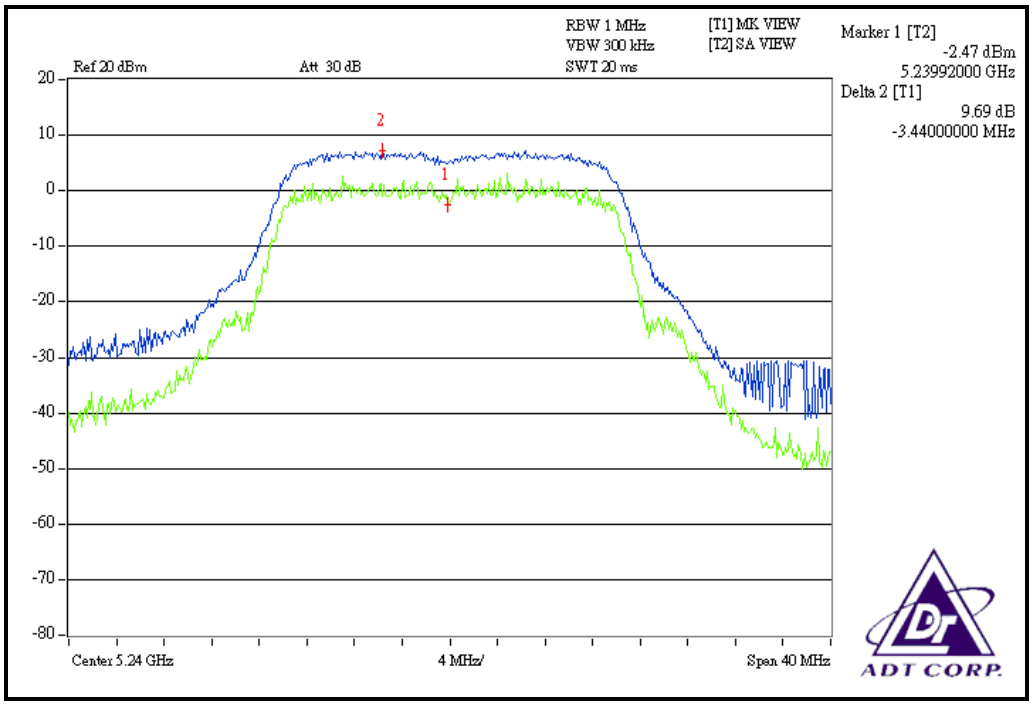
CH 8


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Marker 1 [T2]
-3.03 dBm
5.32024000 GHz
Delta 2 [T1]
8.37 dB
1.84000000 MHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.32 GHz
4 MHz/
Span 40 MHz
ADT CORP.

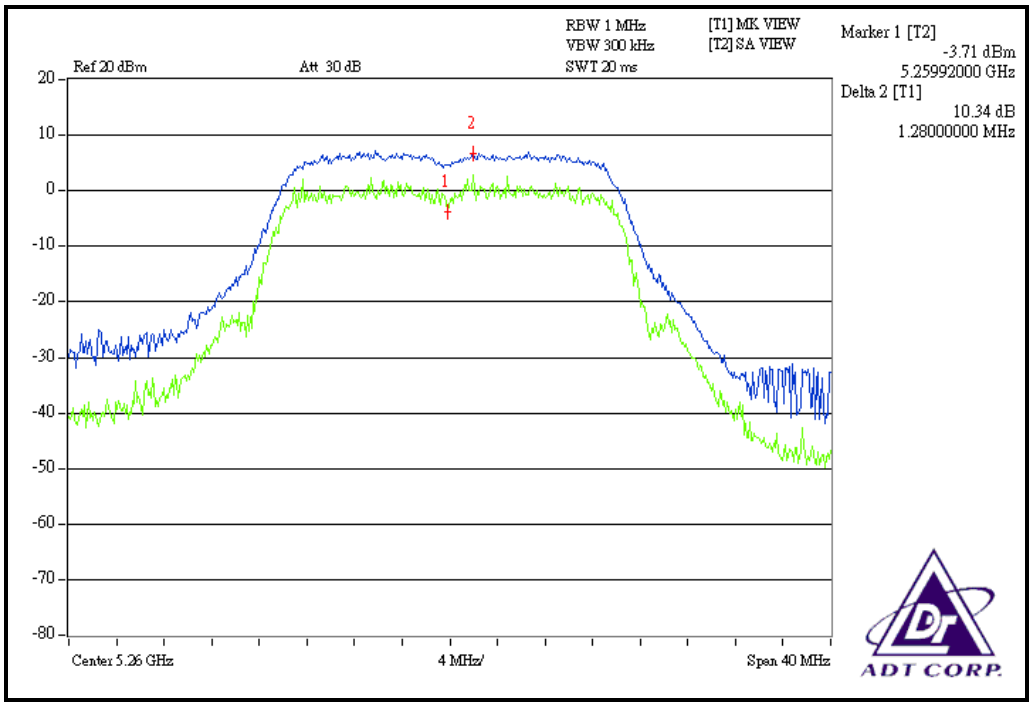
FOR CHAIN 1: CH 1



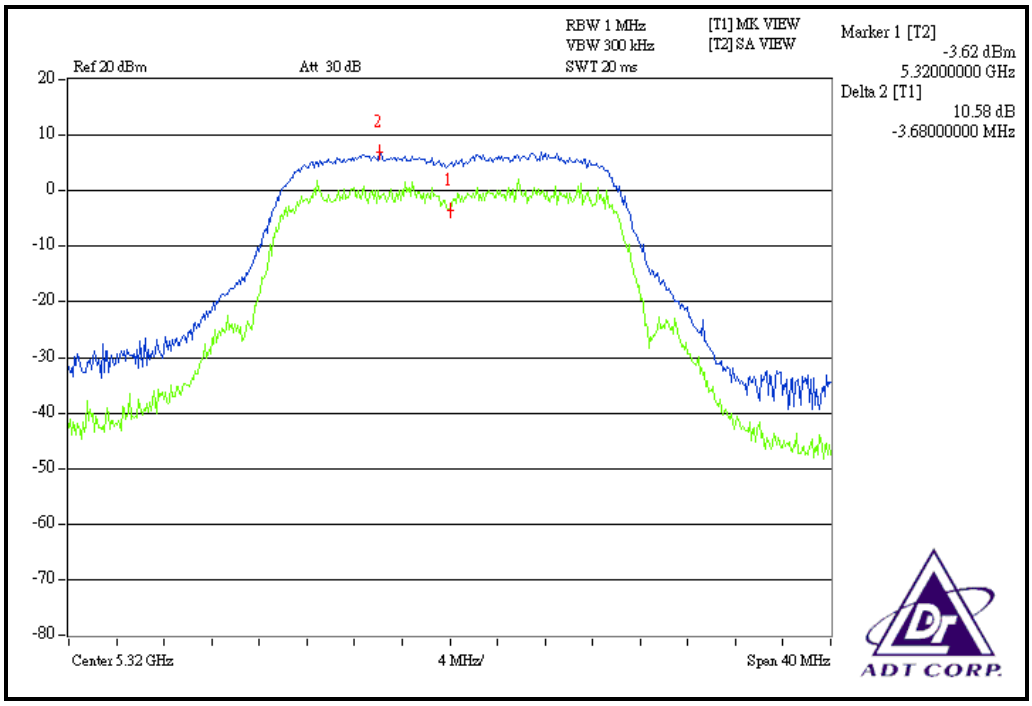
CH 4



CH 5


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Marker 1 [T2]
-3.71 dBm
5.25992000 GHz
Delta 2 [T1]
10.34 dB
1.28000000 MHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.26 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 8

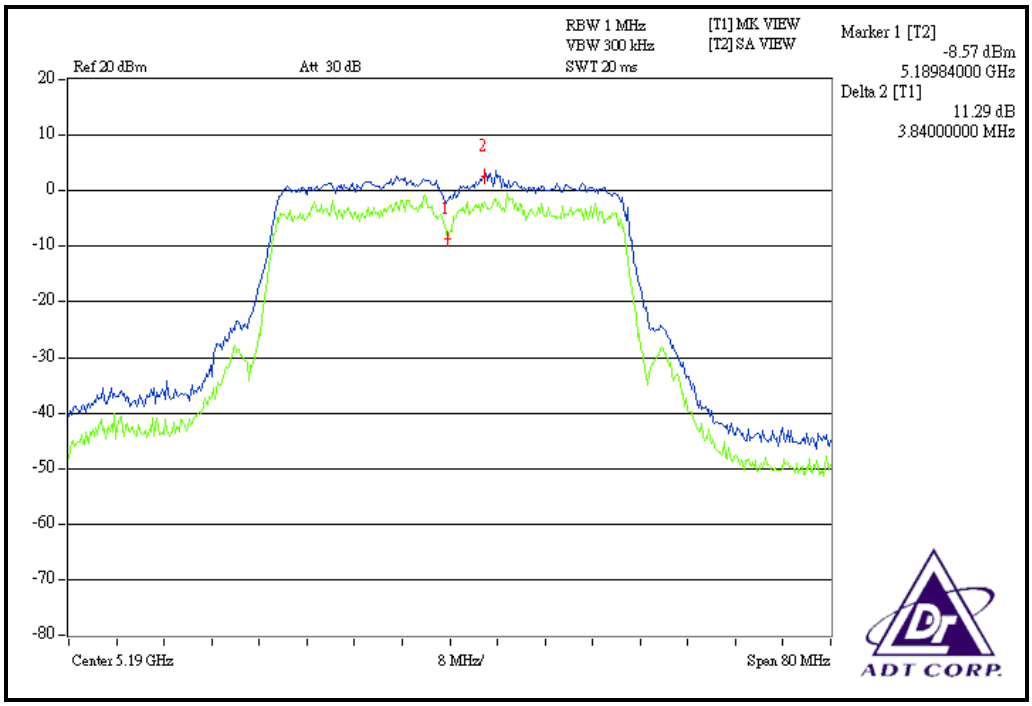

RBW 1 MHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Marker 1 [T2]
-3.62 dBm
5.32000000 GHz
Delta 2 [T1]
10.58 dB
-3.68000000 MHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.32 GHz
4 MHz/
Span 40 MHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION:

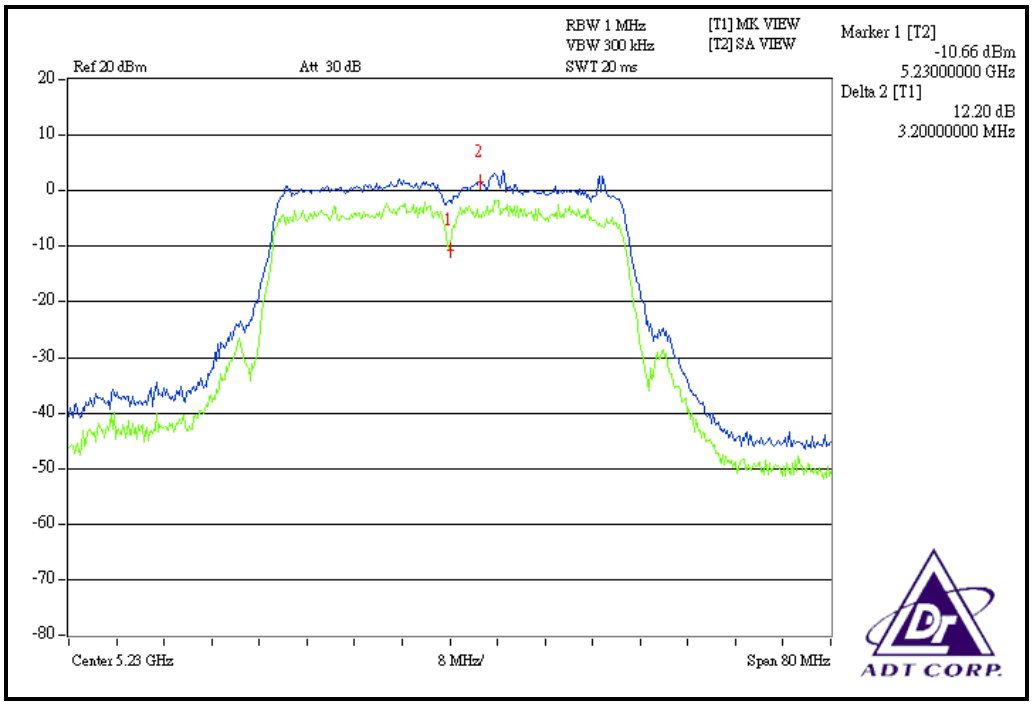
MODULATION TYPE	BPSK	**CHANNEL**	1, 2, 3, 4
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	13.5Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH, 994hPa	**TESTED BY**	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)		PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN 0	CHAIN 1		
1	5190	11.29	11.82	13	PASS
2	5230	12.20	12.18	13	PASS
3	5270	11.92	11.73	13	PASS
4	5310	11.02	11.70	13	PASS

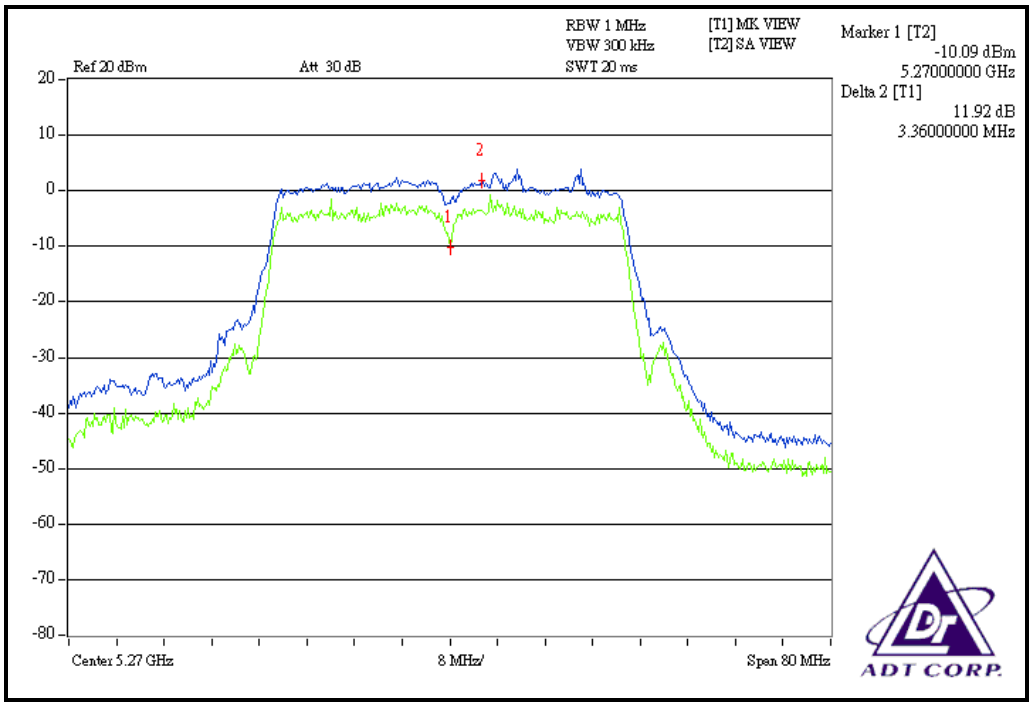
FOR CHAIN 0: CH 1



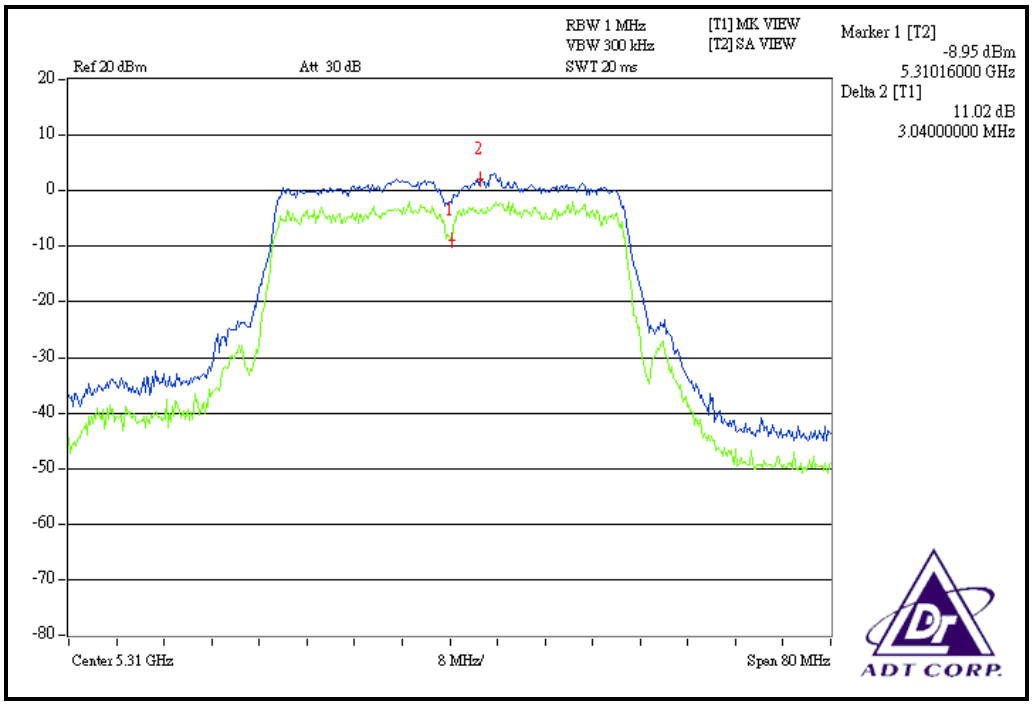
CH 2



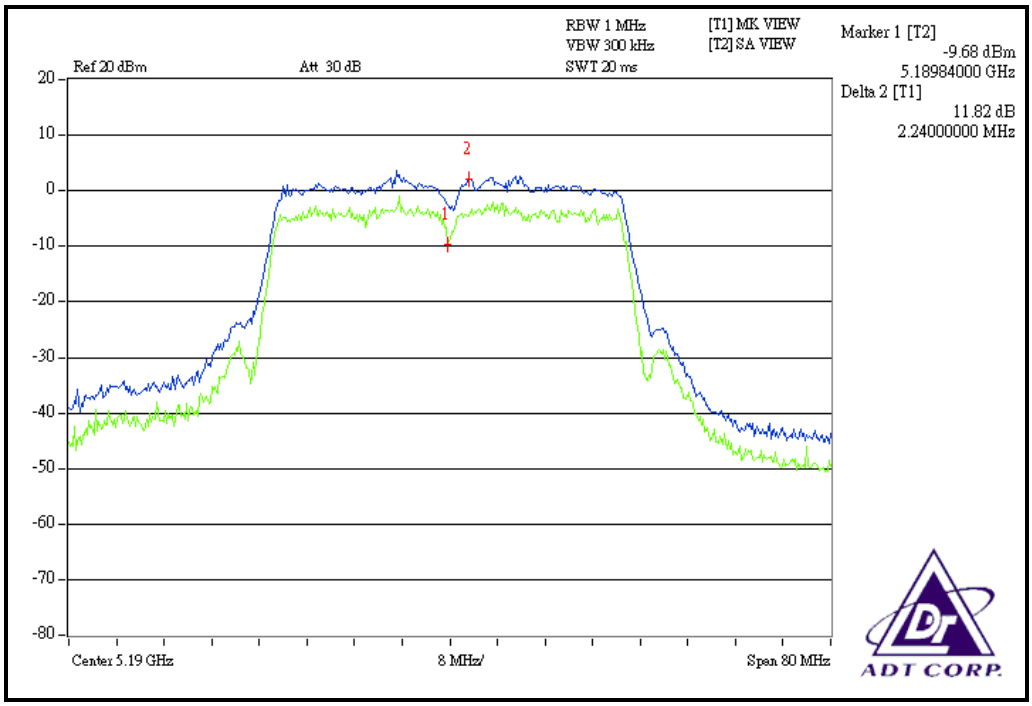
CH 3


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Marker 1 [T2]
-10.09 dBm
5.27000000 GHz
Delta 2 [T1]
11.92 dB
3.36000000 MHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.27 GHz
8 MHz/
Span 80 MHz
ADT CORP.

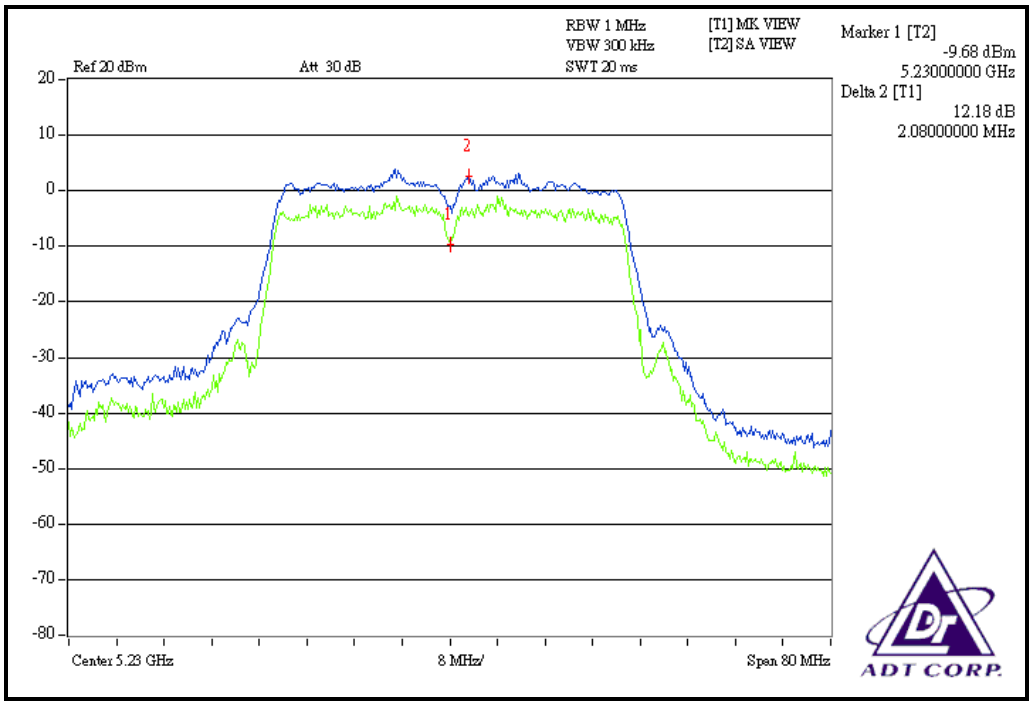
CH 4


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Marker 1 [T2]
-8.95 dBm
5.31016000 GHz
Delta 2 [T1]
11.02 dB
3.04000000 MHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.31 GHz
8 MHz/
Span 80 MHz
ADT CORP.

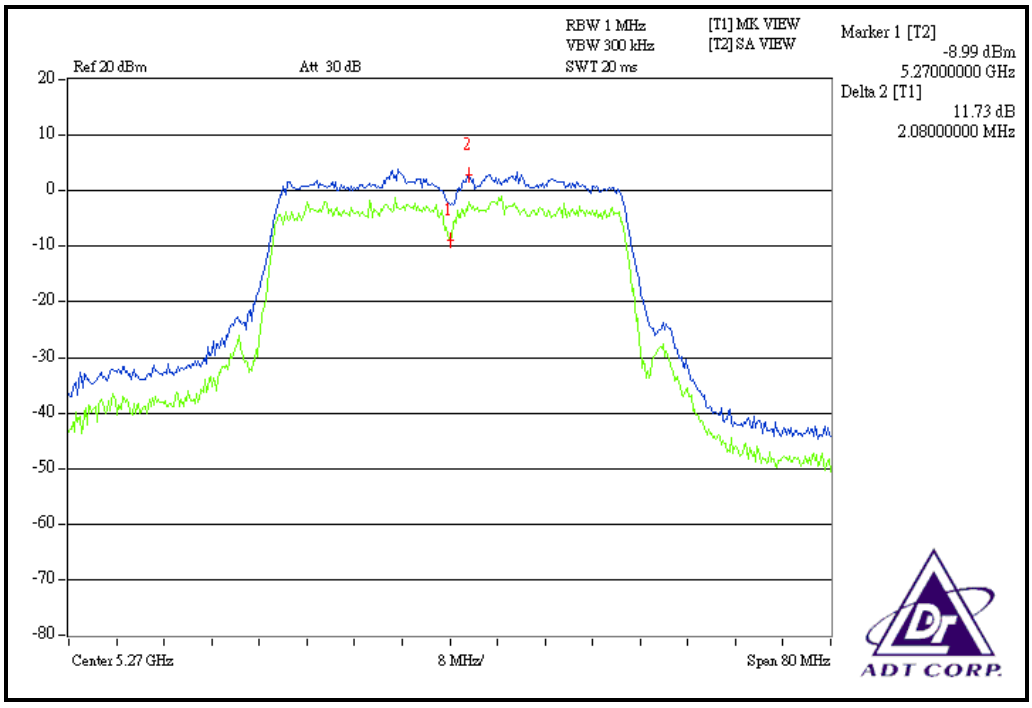
FOR CHAIN 1: CH 1



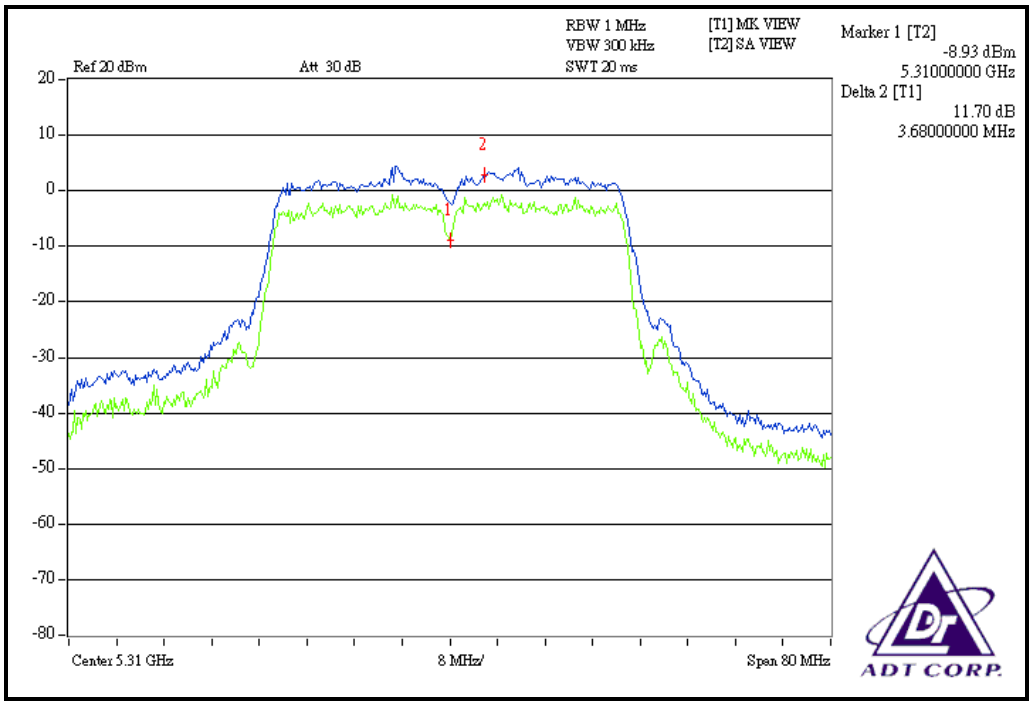
CH 2



CH 3


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Marker 1 [T2]
-8.99 dBm
5.27000000 GHz
Delta 2 [T1]
11.73 dB
2.08000000 MHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.27 GHz
8 MHz/
Span 80 MHz
ADT CORP.

CH 4


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
[T2] SA VIEW
Marker 1 [T2]
-8.93 dBm
5.31000000 GHz
Delta 2 [T1]
11.70 dB
3.68000000 MHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.31 GHz
8 MHz/
Span 80 MHz
ADT CORP.

4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	4dBm
5.250 ~ 5.350GHz	11dBm
5.470 ~ 5.725GHz	11dBm

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSP 40	100036	Mar. 13, 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

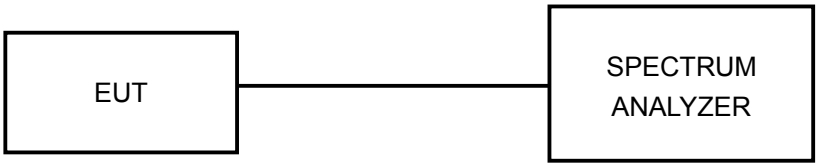
a. The transmitter output was connected to the spectrum analyzer.

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

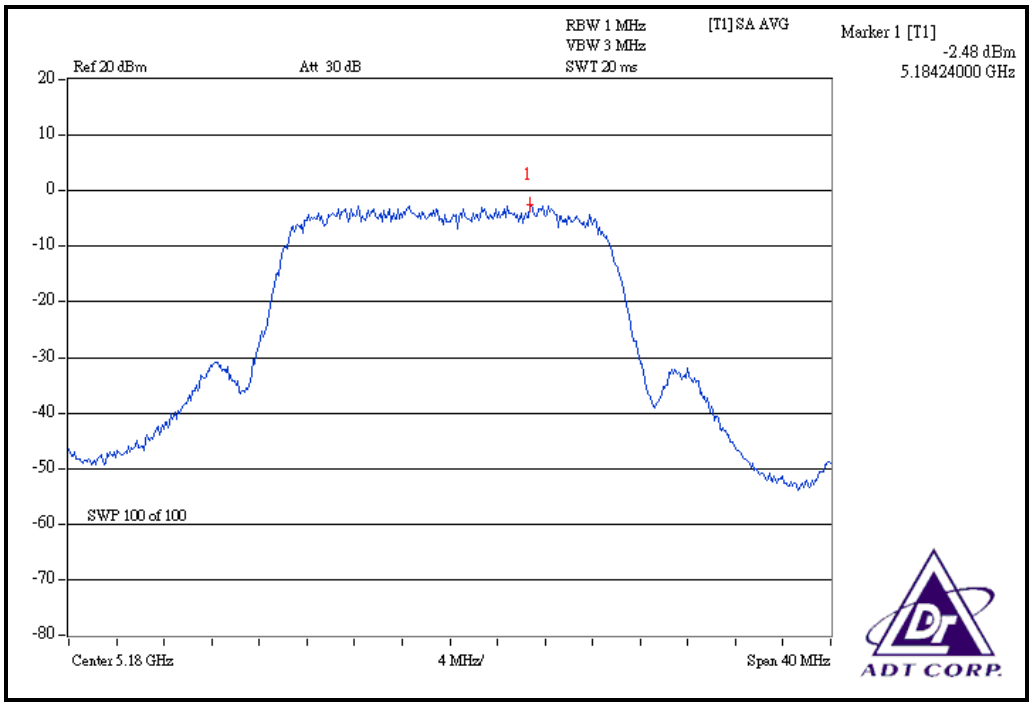
4.5.7 TEST RESULTS

802.11a OFDM MODULATION:

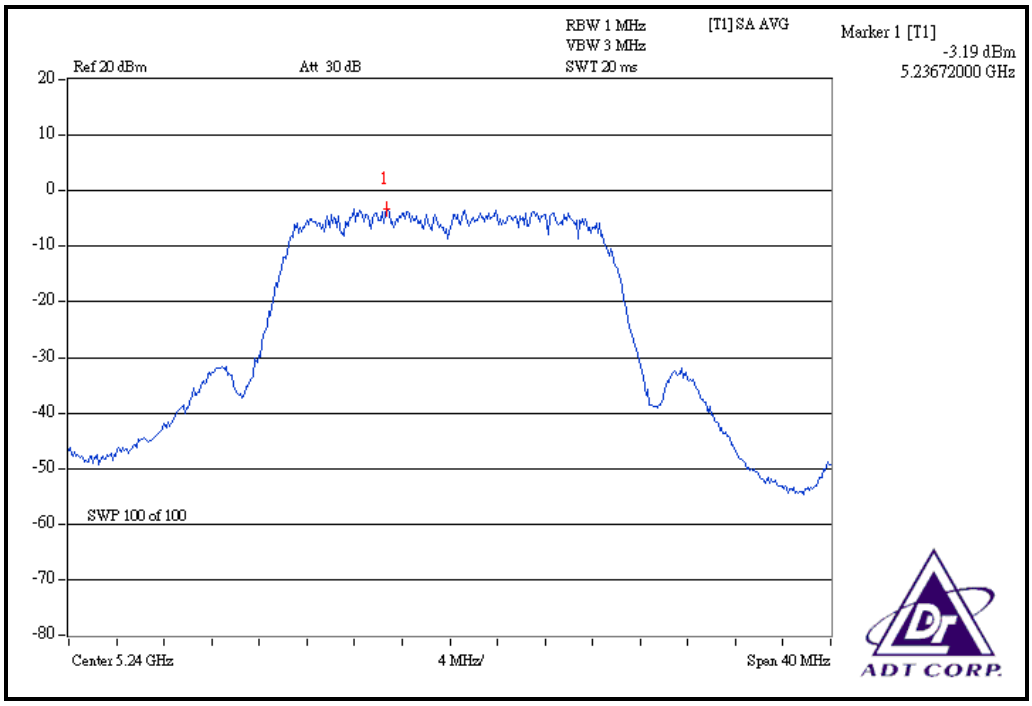
MODULATION TYPE	BPSK	**CHANNEL**	1, 4, 5, 8
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6.0Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH, 994hPa	**TESTED BY**	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	5180	-2.48	4	PASS
4	5240	-3.19	4	PASS
5	5260	-3.71	11	PASS
8	5320	-3.98	11	PASS

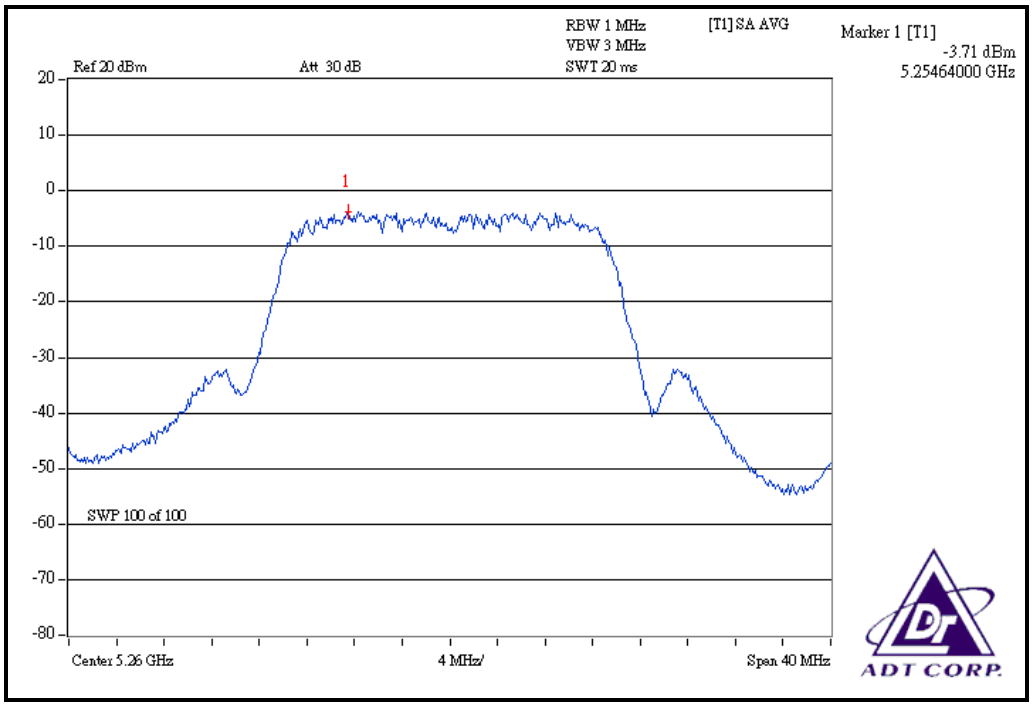
CH 1


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-2.48 dBm
5.18424000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
SWP 100 of 100
Center 5.18 GHz
4 MHz/
Span 40 MHz
ADT CORP.

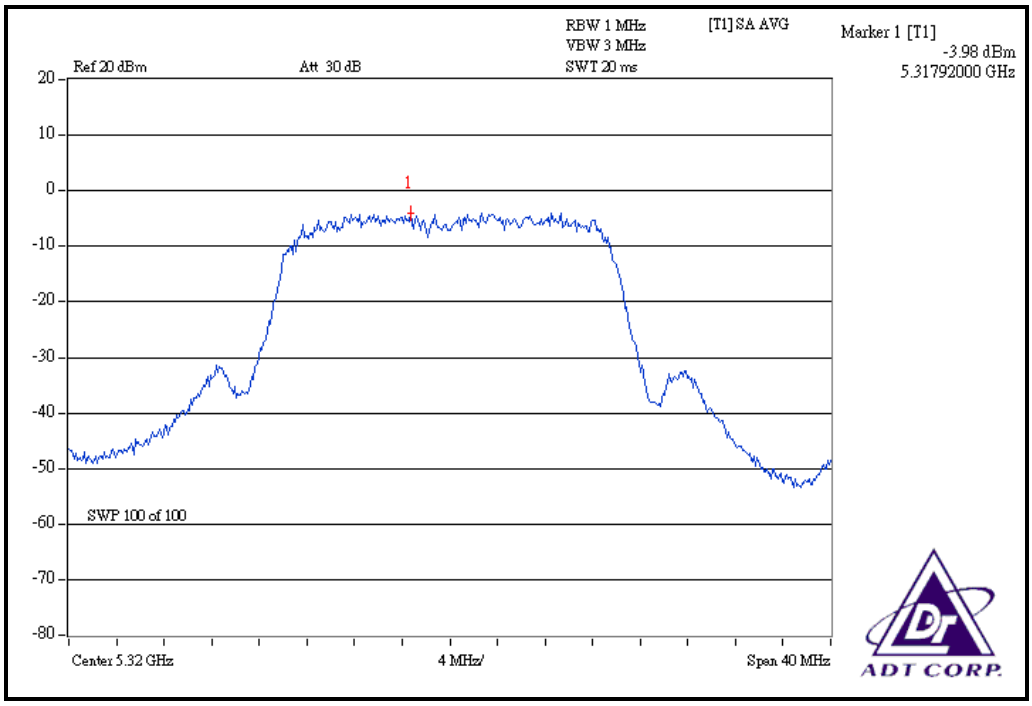
CH 4


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-3.19 dBm
5.23672000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
SWP 100 of 100
Center 5.24 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 5


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-3.71 dBm
5.25464000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
SWP 100 of 100
Center 5.26 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 8

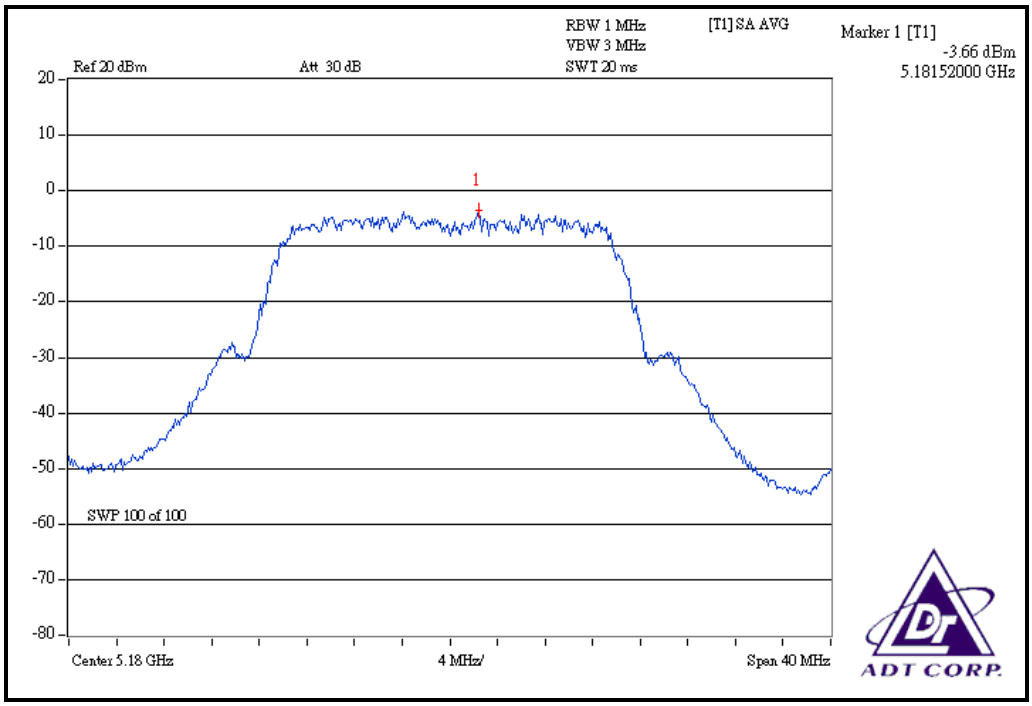

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-3.98 dBm
5.31792000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
SWP 100 of 100
Center 5.32 GHz
4 MHz/
Span 40 MHz
ADT CORP.

DRAFT 802.11n (20MHz) OFDM MODULATION:

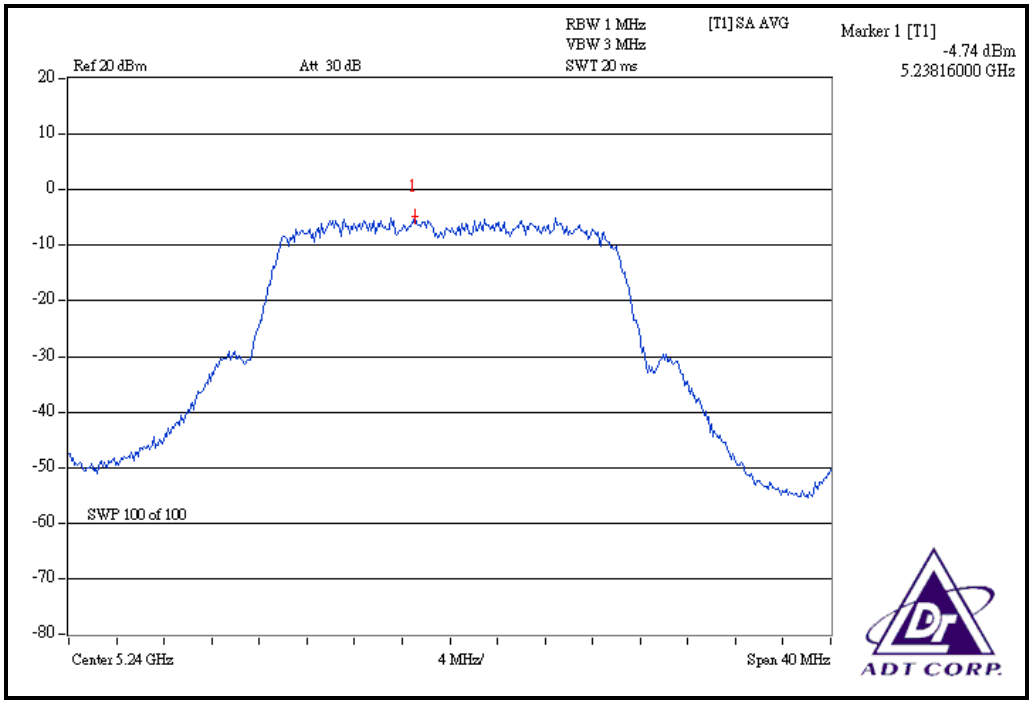
MODULATION TYPE	BPSK	**CHANNEL**	1, 4, 5, 8
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6.5Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH, 994hPa	**TESTED BY**	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (mW)		RF POWER LEVEL IN 1MHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1				
1	5180	0.431	0.400	-3.66	-3.98	0.830	-0.81	4	PASS
4	5240	0.336	0.340	-4.74	-4.69	0.675	-1.70	4	PASS
5	5260	0.291	0.333	-5.36	-4.77	0.624	-2.04	11	PASS
8	5320	0.311	0.356	-5.07	-4.49	0.667	-1.76	11	PASS

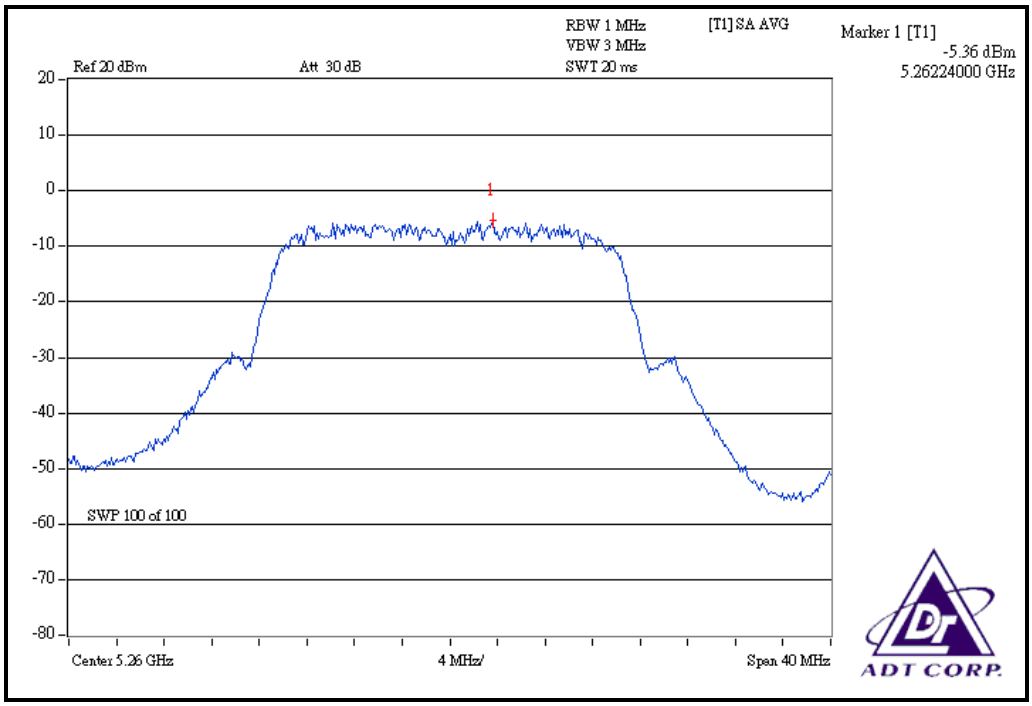
FOR CHAIN 0: CH 1



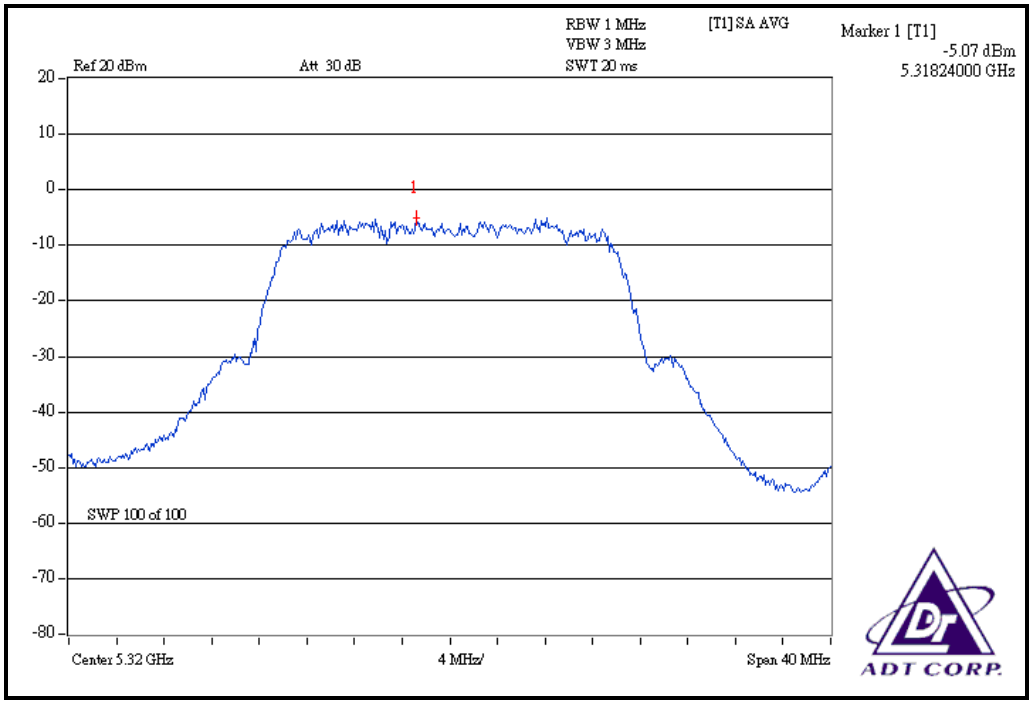
CH 4



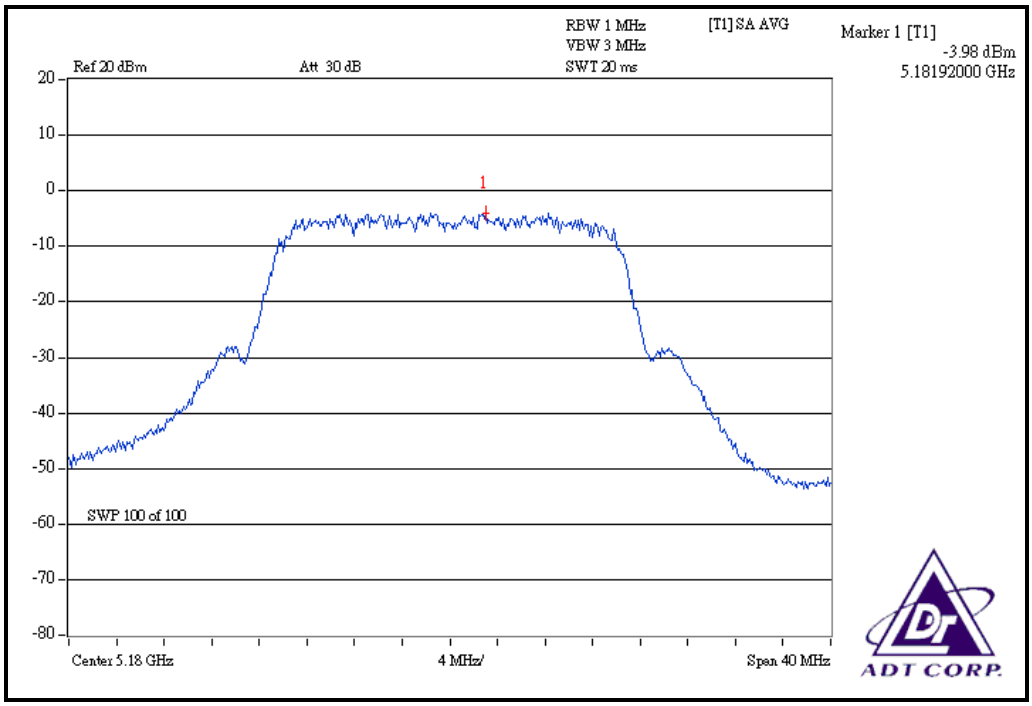
CH 5


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-5.36 dBm
5.26224000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
SWP 100 of 100
Center 5.26 GHz
4 MHz/
Span 40 MHz
ADT CORP.

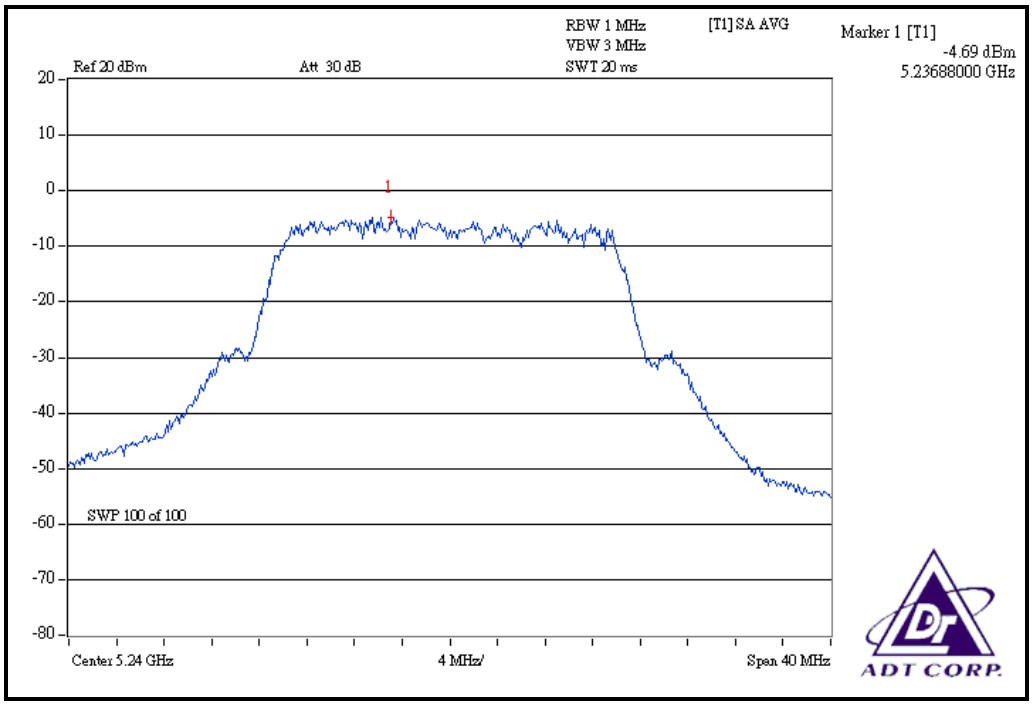
CH 8


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-5.07 dBm
5.31824000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
SWP 100 of 100
Center 5.32 GHz
4 MHz/
Span 40 MHz
ADT CORP.

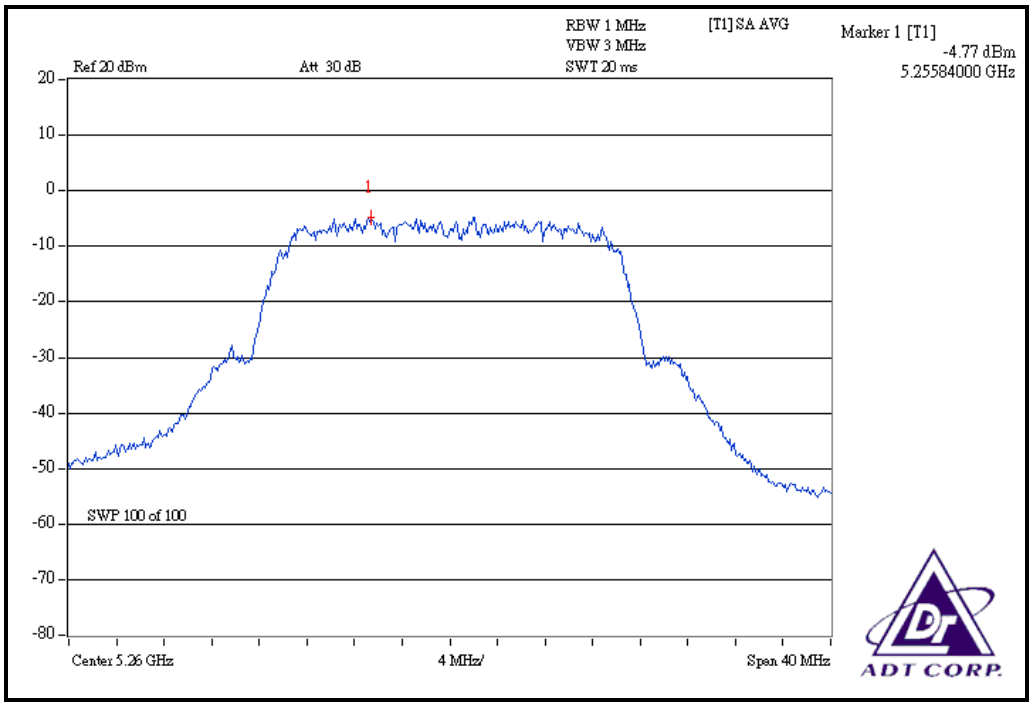
FOR CHAIN 1: CH 1



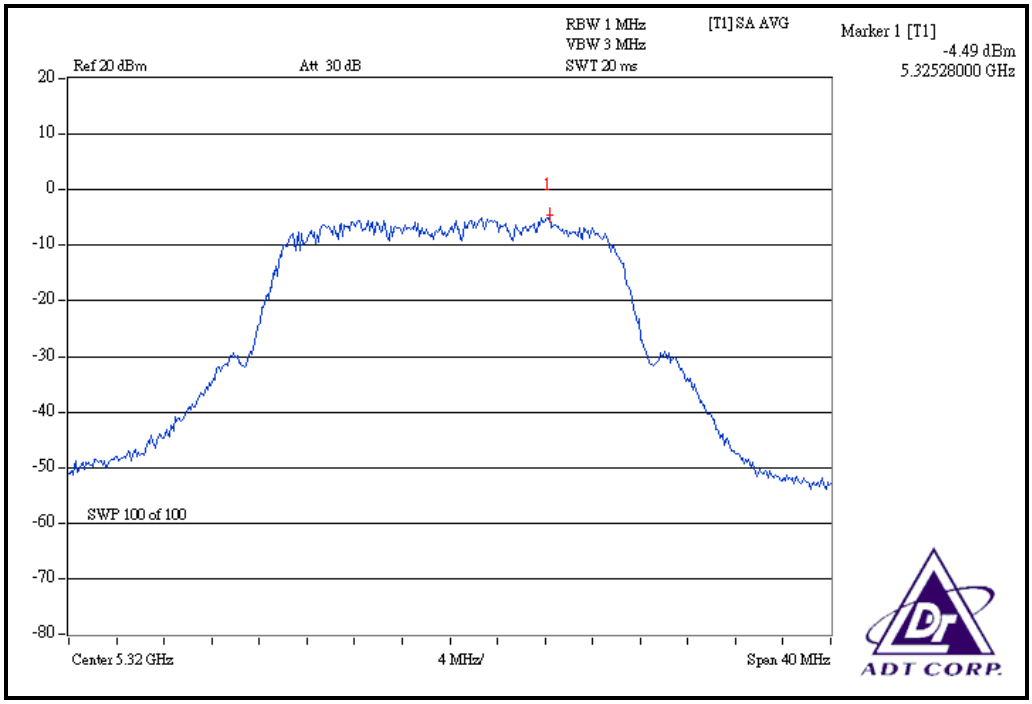
CH 4



CH 5


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-4.77 dBm
5.25584000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
SWP 100 of 100
Center 5.26 GHz
4 MHz/
Span 40 MHz
ADT CORP.

CH 8

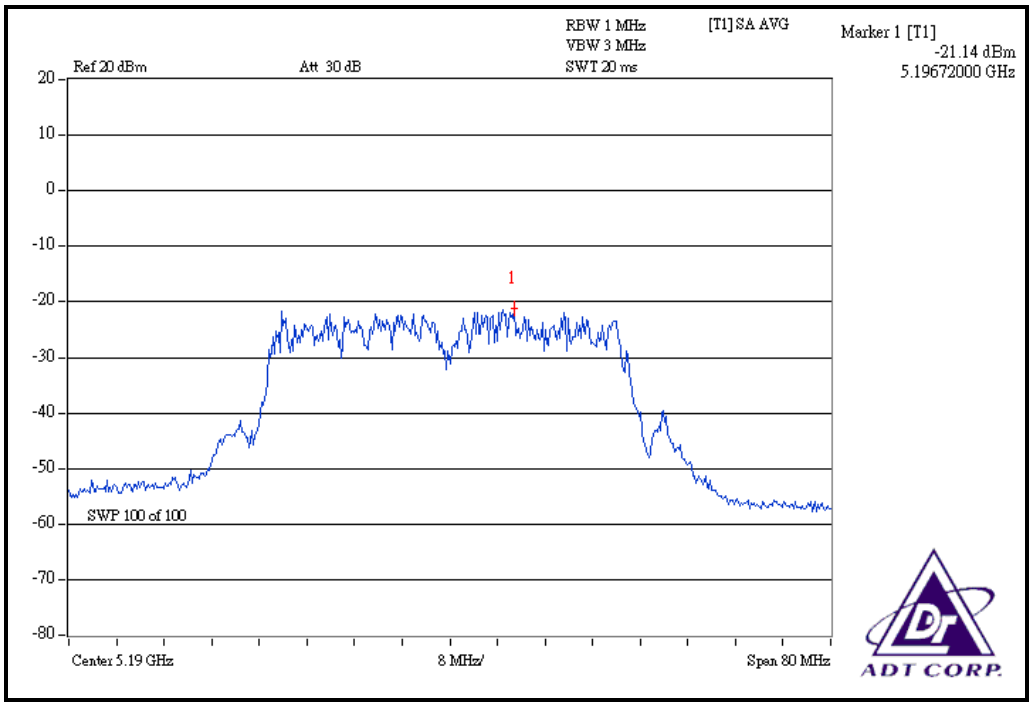

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-4.49 dBm
5.32528000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
SWP 100 of 100
Center 5.32 GHz
4 MHz/
Span 40 MHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION:

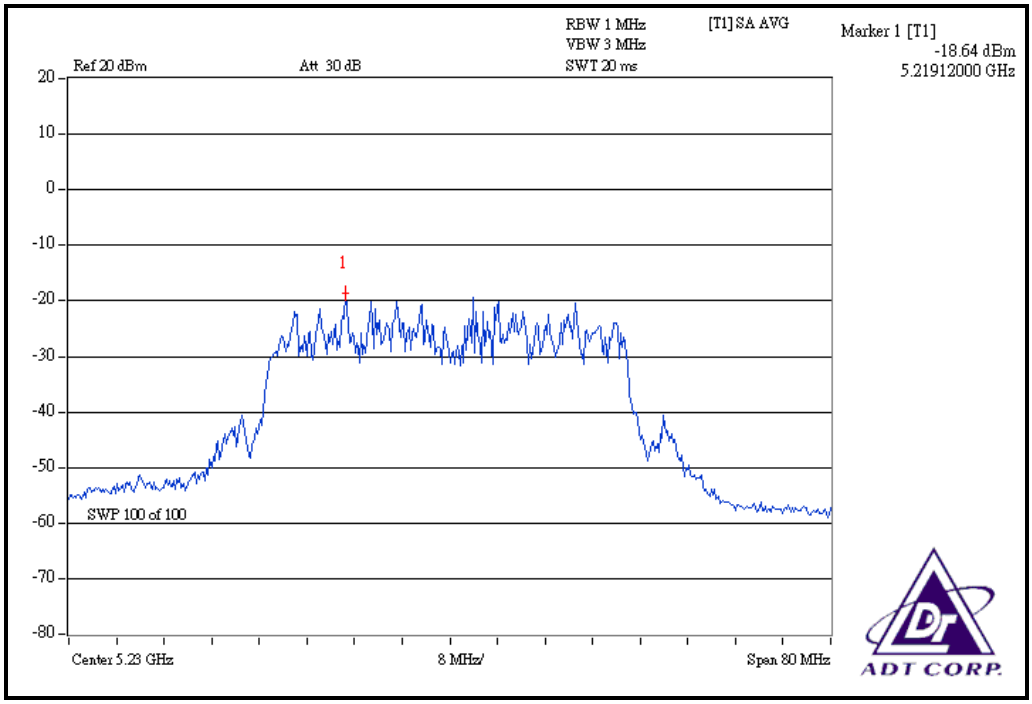
MODULATION TYPE	BPSK	**CHANNEL**	1, 2, 3, 4
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	13.5Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH, 994hPa	**TESTED BY**	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (mW)		RF POWER LEVEL IN 1MHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1				
1	5190	0.008	0.010	-21.14	-20.09	0.017	-17.57	4	PASS
2	5230	0.014	0.008	-18.64	-20.78	0.022	-16.57	4	PASS
3	5270	0.007	0.013	-21.29	-18.95	0.020	-16.95	11	PASS
4	5310	0.009	0.013	-20.39	-18.90	0.022	-16.57	11	PASS

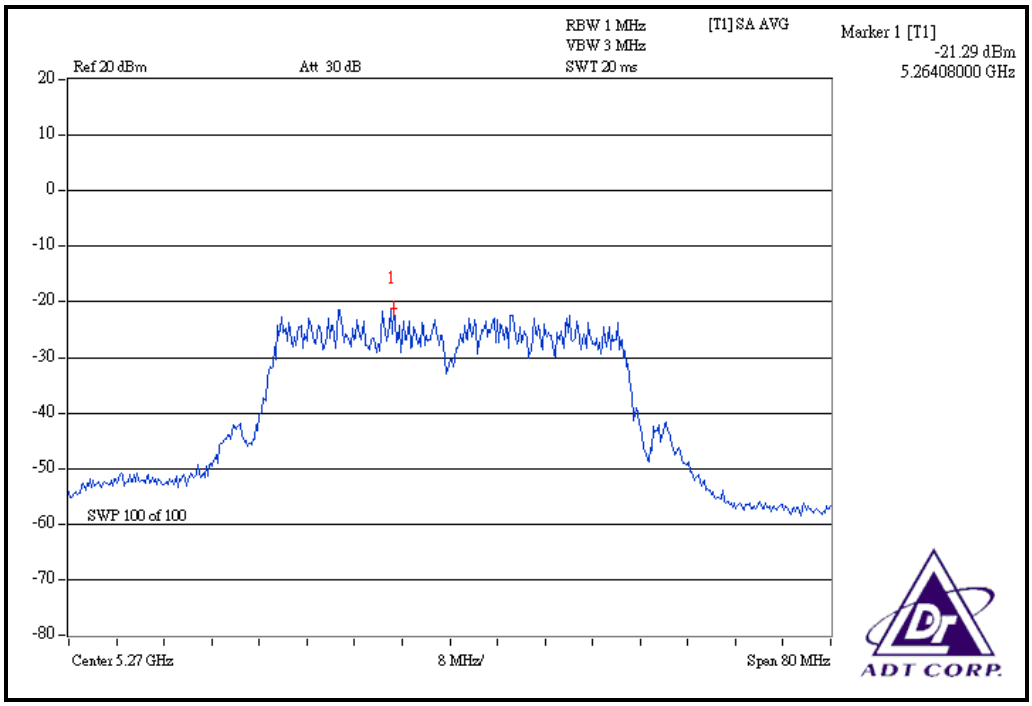
FOR CHAIN 0: CH 1



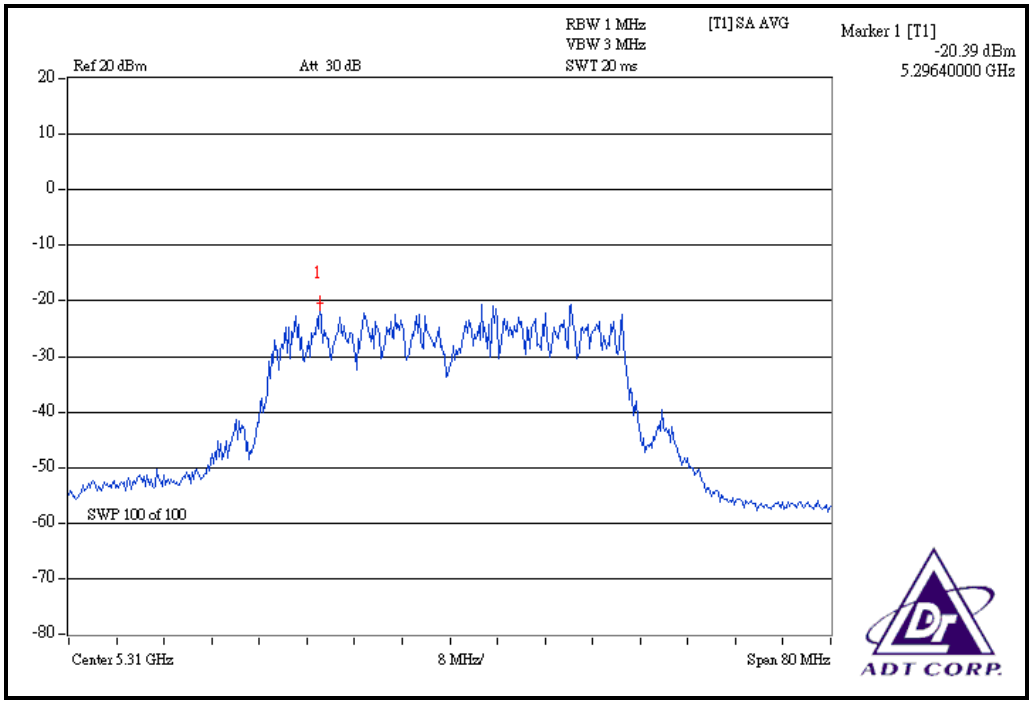
CH 2



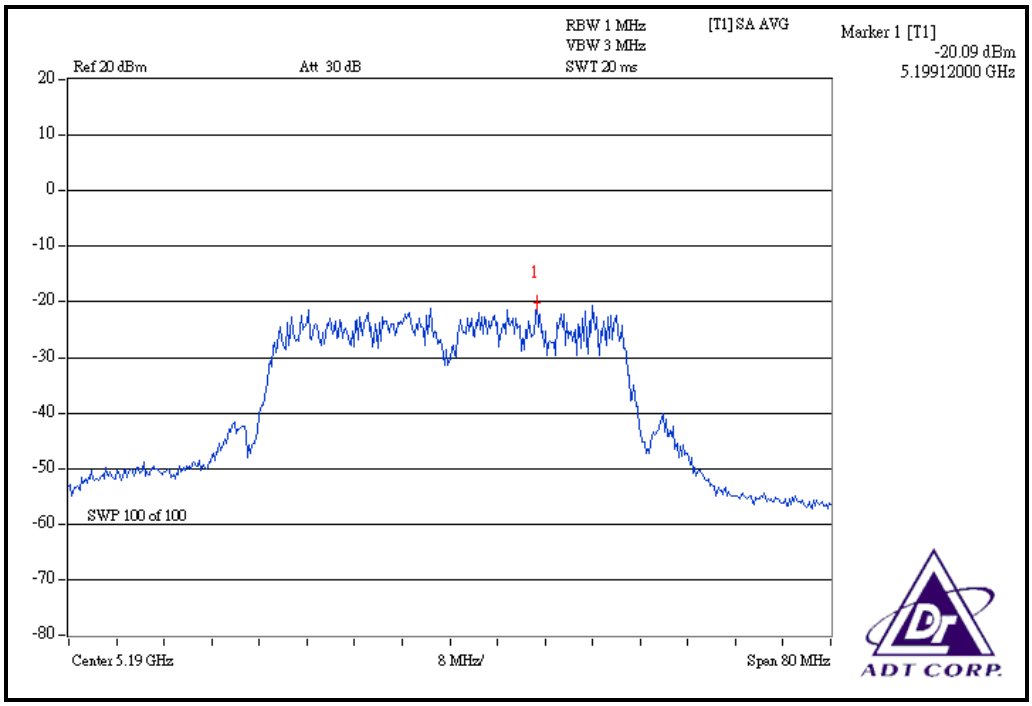
CH 3


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-21.29 dBm
5.26408000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
SWP 100 of 100
Center 5.27 GHz
8 MHz/
Span 80 MHz
ADT CORP.

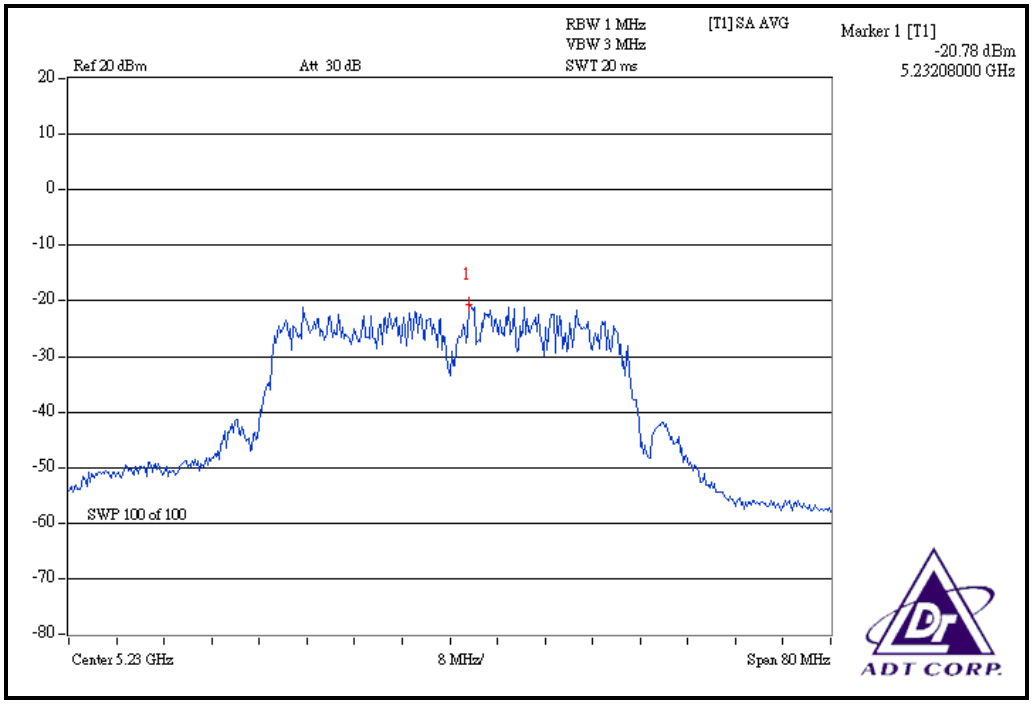
CH 4


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-20.39 dBm
5.29640000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
SWP 100 of 100
Center 5.31 GHz
8 MHz/
Span 80 MHz
ADT CORP.

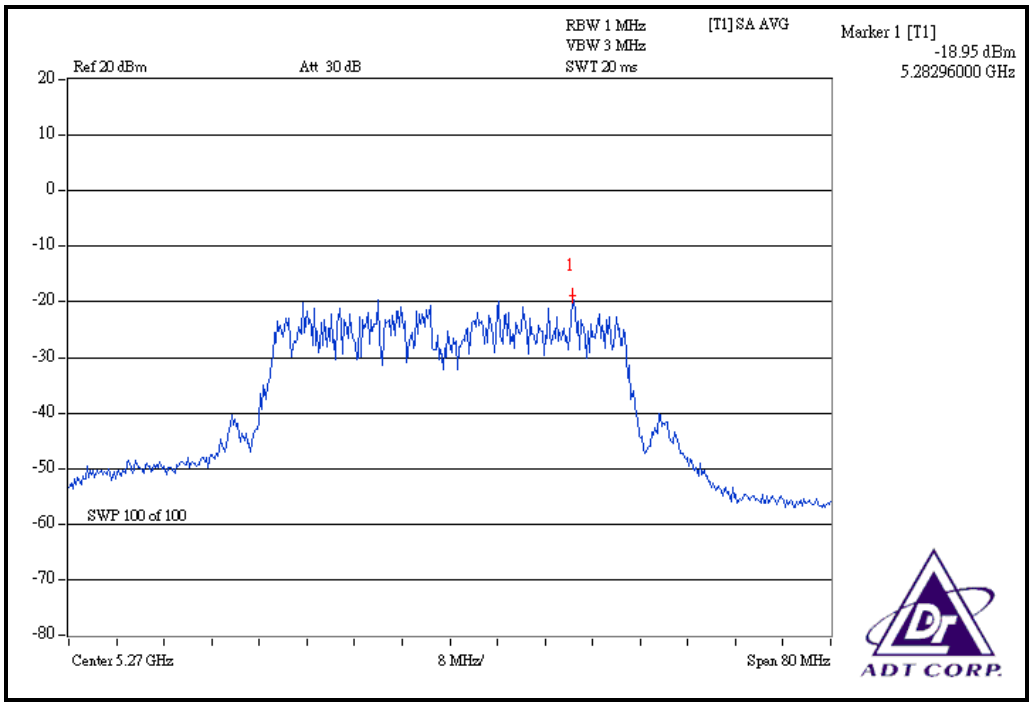
FOR CHAIN 1: CH 1



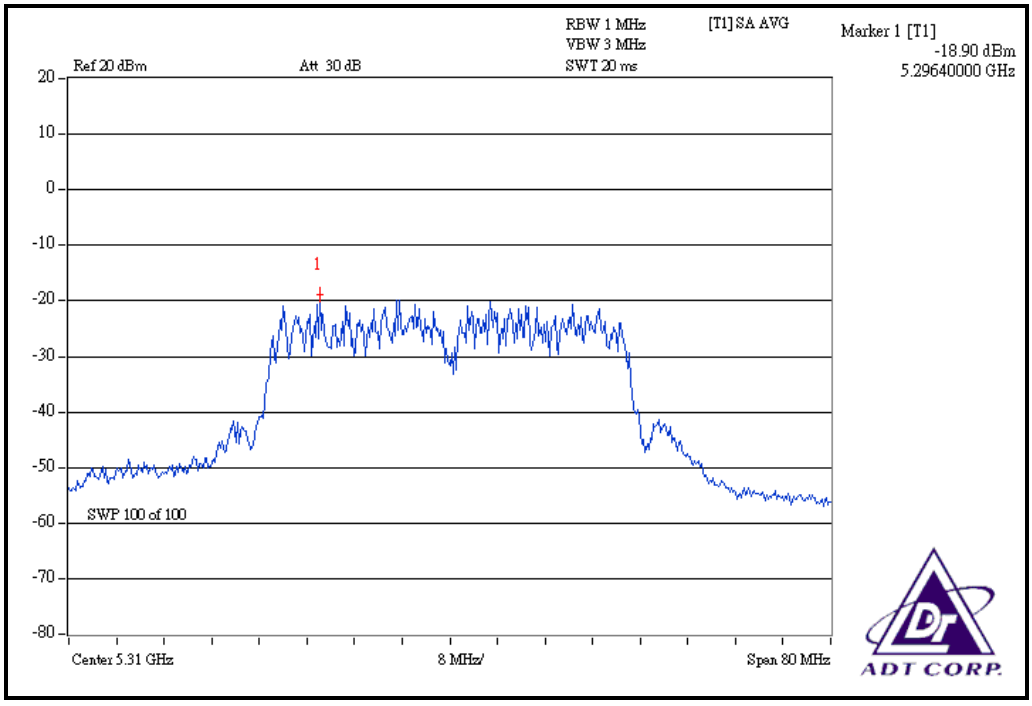
CH 2



CH 3


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-18.95 dBm
5.28296000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
SWP 100 of 100
Center 5.27 GHz
8 MHz/
Span 80 MHz
ADT CORP.

CH 4


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] SA AVG
Marker 1 [T1]
-18.90 dBm
5.29640000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
SWP 100 of 100
Center 5.31 GHz
8 MHz/
Span 80 MHz
ADT CORP.

4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ANRITSU SPECTRUM ANALYZER	MS2667C	M10281	Mar. 07, 2008
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W981030	Jun. 28, 2008

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

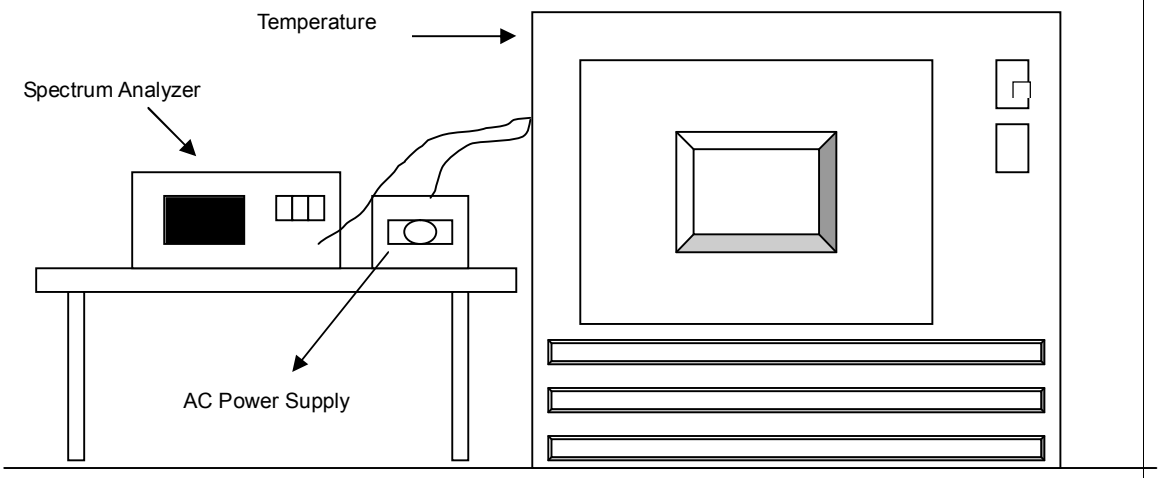
4.6.3 TEST PROCEDURE

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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Same as Item 4.1.6

4.6.7 TEST RESULTS

OPERATING FREQUENCY: 5320MHz						LIMIT: ± 0.01%			
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5319.9602	-0.0007477	5319.9629	-0.0006968	5319.9609	-0.0007355	5319.9662	-0.0006363
	110.0	5319.9662	-0.0006350	5319.9679	-0.0006028	5319.9644	-0.0006697	5319.9722	-0.0005235
	93.5	5319.9690	-0.0005823	5319.9723	-0.0005201	5319.9685	-0.0005927	5319.9748	-0.0004746
40	126.5	5319.9713	-0.0005391	5319.9731	-0.0005051	5319.9690	-0.0005833	5319.9744	-0.0004821
	110.0	5319.9775	-0.0004226	5319.9795	-0.0003848	5319.9764	-0.0004442	5319.9836	-0.0003092
	93.5	5319.9791	-0.0003925	5319.9815	-0.0003472	5319.9778	-0.0004179	5319.9837	-0.0003073
30	126.5	5319.9836	-0.0003075	5319.9858	-0.0002677	5319.9820	-0.0003389	5319.9879	-0.0002275
	110.0	5319.9874	-0.0002373	5319.9894	-0.0001987	5319.9853	-0.0002771	5319.9914	-0.0001624
	93.5	5319.9911	-0.0001671	5319.9931	-0.0001296	5319.9888	-0.0002114	5319.9948	-0.0000972
20	126.5	5319.9948	-0.0000969	5319.9968	-0.0000605	5319.9923	-0.0001456	5319.9983	-0.0000321
	110.0	5319.9986	-0.0000267	5320.0005	0.0000085	5319.9958	-0.0000798	5320.0018	0.0000331
	93.5	5320.0023	0.0000434	5320.0041	0.0000776	5319.9993	-0.0000140	5320.0052	0.0000982
10	126.5	5320.0060	0.0001136	5320.0078	0.0001467	5320.0028	0.0000518	5320.0087	0.0001634
	110.0	5320.0098	0.0001838	5320.0115	0.0002157	5320.0063	0.0001176	5320.0122	0.0002285
	93.5	5320.0135	0.0002540	5320.0152	0.0002848	5320.0098	0.0001834	5320.0156	0.0002937
0	126.5	5320.0172	0.0003242	5320.0188	0.0003539	5320.0133	0.0002492	5320.0191	0.0003588
	110.0	5320.0210	0.0003944	5320.0225	0.0004229	5320.0168	0.0003150	5320.0226	0.0004239
	93.5	5320.0247	0.0004646	5320.0262	0.0004920	5320.0203	0.0003807	5320.0260	0.0004891
-10	126.5	5320.0285	0.0005348	5320.0298	0.0005611	5320.0238	0.0004465	5320.0295	0.0005542
	110.0	5320.0322	0.0006050	5320.0335	0.0006301	5320.0273	0.0005123	5320.0330	0.0006194
	93.5	5320.0359	0.0006752	5320.0372	0.0006992	5320.0308	0.0005781	5320.0364	0.0006845
-20	126.5	5320.0397	0.0007454	5320.0409	0.0007683	5320.0343	0.0006439	5320.0399	0.0007497
	110.0	5320.0434	0.0008156	5320.0445	0.0008373	5320.0378	0.0007097	5320.0433	0.0008148
	93.5	5320.0471	0.0008858	5320.0482	0.0009064	5320.0413	0.0007755	5320.0468	0.0008800
-30	126.5	5320.0509	0.0009560	5320.0519	0.0009754	5320.0448	0.0008413	5320.0503	0.0009451
	110.0	5320.0546	0.0010262	5320.0556	0.0010445	5320.0483	0.0009071	5320.0537	0.0010102
	93.5	5320.0583	0.0010963	5320.0592	0.0011136	5320.0518	0.0009729	5320.0572	0.0010754

4.7 BAND EDGES MEASUREMENT

4.7.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
802.11a:			
SPECTRUM ANALYZER	FSP 40	100036	Mar. 13, 2008
DRAFT 802.11n (20MHz), DRAFT 802.11n (40MHz):			
HP Preamplifier	8447D	2432A03504	May 09, 2008
HP Preamplifier	8449B	3008A01201	Oct. 10, 2007
HP Preamplifier	8449B	3008A01292	Aug. 05, 2008
Schwarzbeck Antenna	VULB 9168	137	Oct. 01, 2007
Schwarzbeck Antenna	VHBA 9123	480	Apr. 18, 2008
EMCO Horn Antenna	3115	6714	Oct. 24, 2007
EMCO Horn Antenna	3115	9312-4192	Apr. 19, 2008
ADT. Turn Table	TT100	0306	NA
ADT. Tower	AT100	0306	NA
Software	ADT_Radiated_V7.6.15	NA	NA
SUHNER RF cable	SF104-26.5	CABLE-CH6-17m-01	Dec. 11, 2007
ROHDE & SCHWARZ Spectrum Analyzer	FSP 40	100036	Mar. 13, 2008

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

4.7.2 TEST PROCEDURE

802.11a:

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

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

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

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

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

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

e. Set both RBW and VBW of spectrum analyzer to 1MHz / 3MHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

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

4.7.3 EUT OPERATING CONDITION

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

4.7.4 TEST RESULTS

For signals in the restricted bands above and below the 5.15 to 5.35GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

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

802.11a OFDM MODULATION:

FOR FREQUENCY BAND: 5.150 ~ 5.350GHz

Channel 1 (5180MHz)

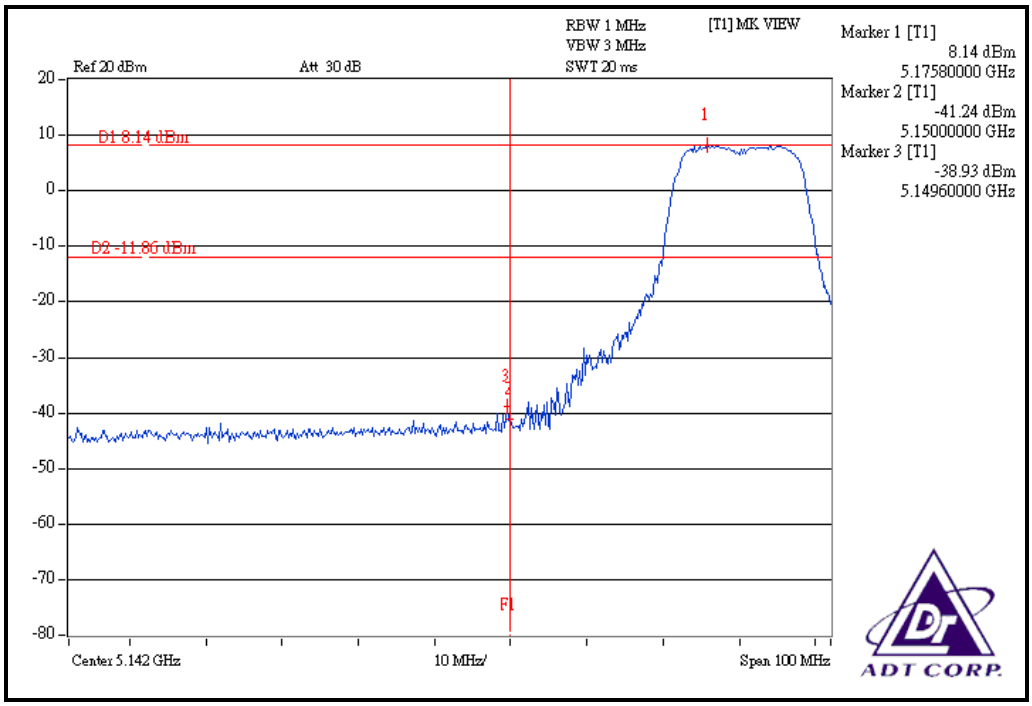
The band edge emission plot on the next page shows 47.07dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 106.42dBuV/m (Peak), so the maximum field strength in restrict band is 106.42 – 47.07 = 59.35dBuV/m which is under 74dBuV/m limit.

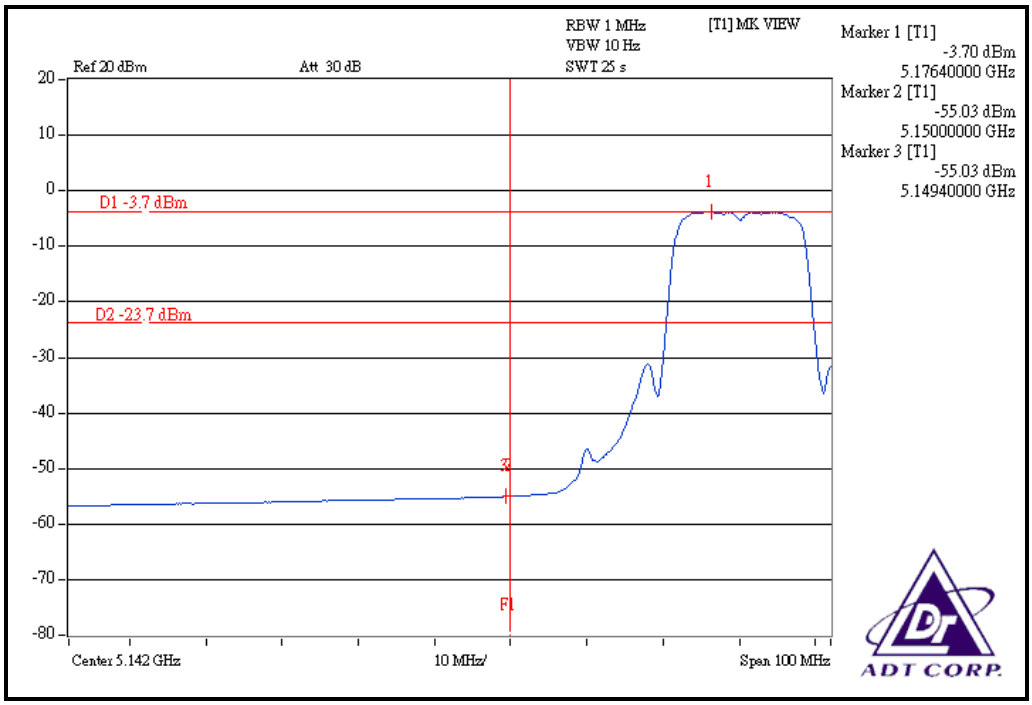
The band edge emission plot on the next page shows 51.33dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 94.11dBuV/m (Average), so the maximum field strength in restrict band is 94.11 – 51.33 = 42.78dBuV/m which is under 54dBuV/m limit.

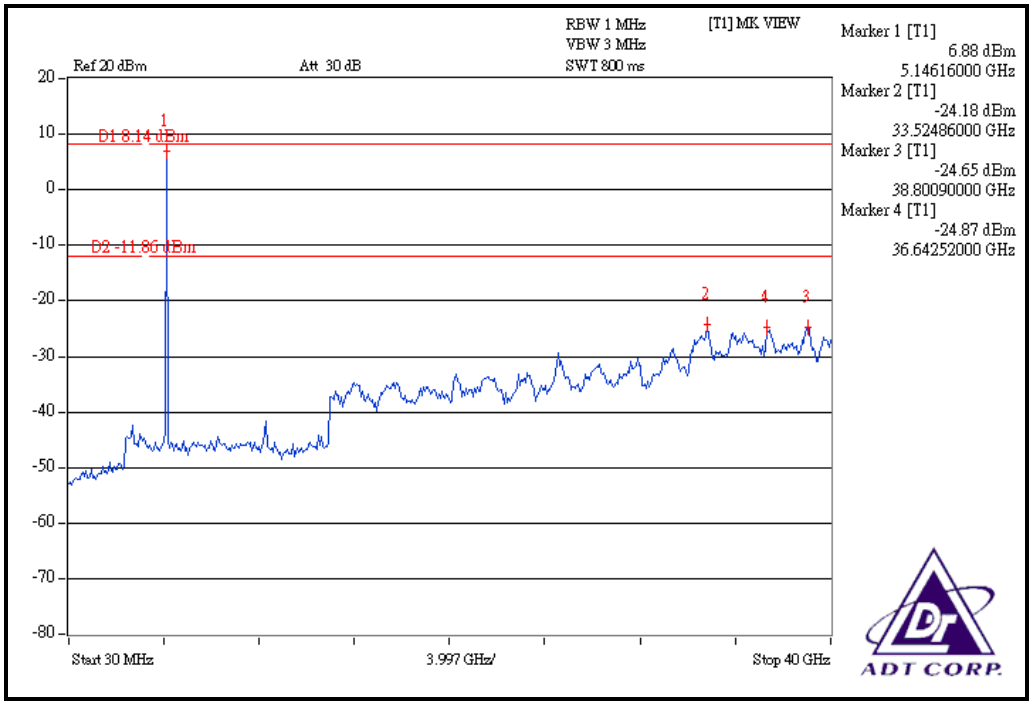
Channel 8 (5320MHz)

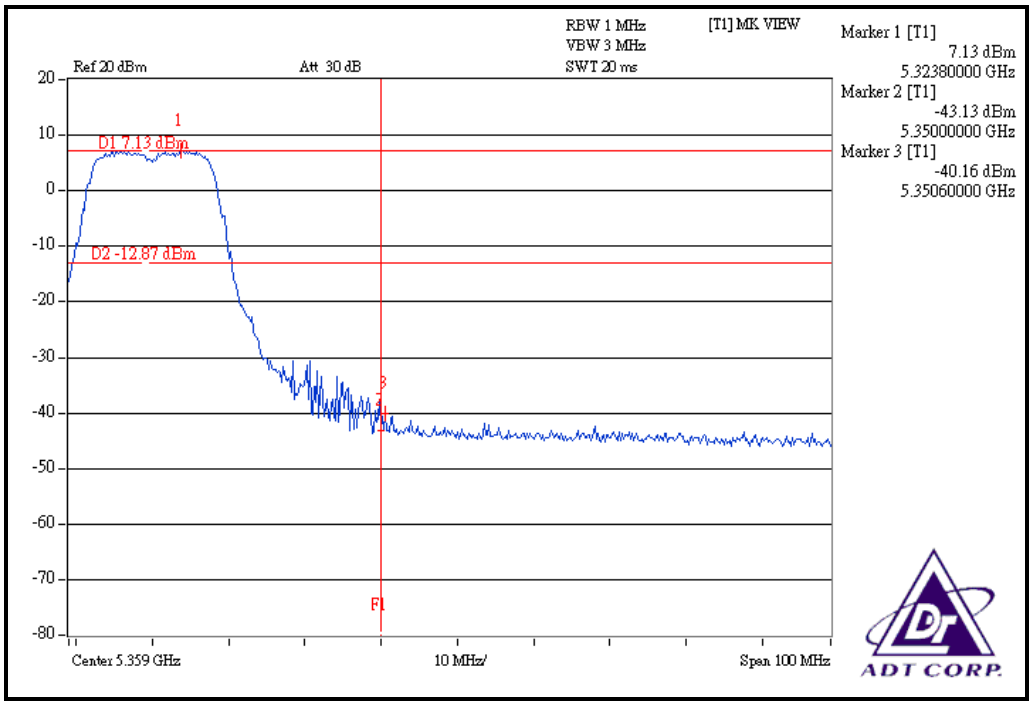
The band edge emission plot on the next second page shows 47.29dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 105.40dBuV/m (Peak), so the maximum field strength in restrict band is 105.40 – 47.29 = 58.11dBuV/m which is under 74dBuV/m limit.

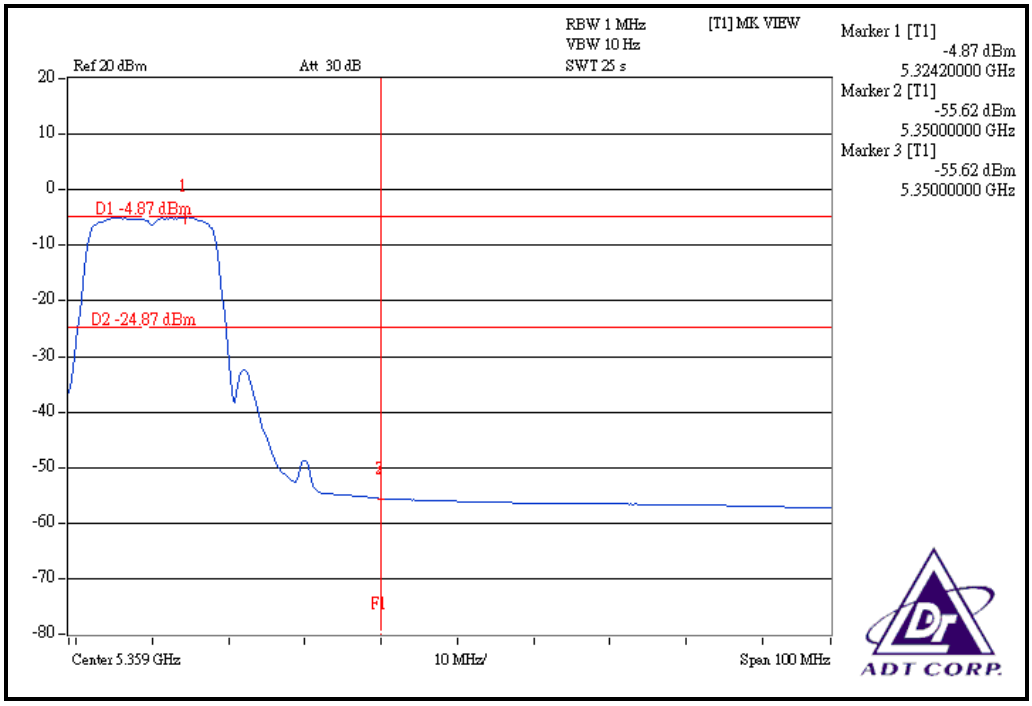
The band edge emission plot on the next third page shows 50.75dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 93.46dBuV/m (Average), so the maximum field strength in restrict band is 93.46 – 50.75 = 42.71dBuV/m which is under 54dBuV/m limit.

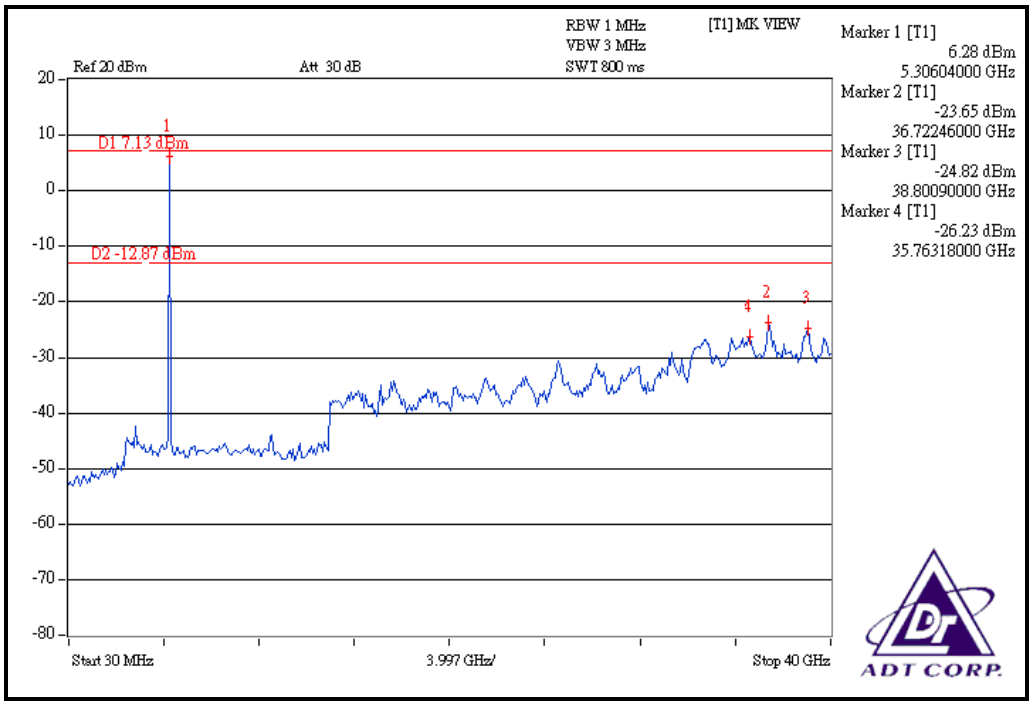

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
8.14 dBm
5.17580000 GHz
Marker 2 [T1]
-41.24 dBm
5.15000000 GHz
Marker 3 [T1]
-38.93 dBm
5.14960000 GHz
D1 8.14 dBm
D2 -11.86 dBm
Center 5.142 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-3.70 dBm
5.17640000 GHz
Marker 2 [T1]
-55.03 dBm
5.15000000 GHz
Marker 3 [T1]
-55.03 dBm
5.14940000 GHz
D1 -3.7 dBm
D2 -23.7 dBm
Center 5.142 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 8.14 dBm
D2 -11.86 dBm
Marker 1 [T1]
6.88 dBm
5.14616000 GHz
Marker 2 [T1]
-24.18 dBm
33.52486000 GHz
Marker 3 [T1]
-24.65 dBm
38.80090000 GHz
Marker 4 [T1]
-24.87 dBm
36.64252000 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 7.13 dBm
D2 -12.87 dBm
Marker 1 [T1]
7.13 dBm
5.32380000 GHz
Marker 2 [T1]
-43.13 dBm
5.35000000 GHz
Marker 3 [T1]
-40.16 dBm
5.35060000 GHz
Center 5.359 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-4.87 dBm
5.32420000 GHz
Marker 2 [T1]
-55.62 dBm
5.35000000 GHz
Marker 3 [T1]
-55.62 dBm
5.35000000 GHz
D1 -4.87 dBm
D2 -24.87 dBm
Center 5.359 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
6.28 dBm
5.30604000 GHz
Marker 2 [T1]
-23.65 dBm
36.72246000 GHz
Marker 3 [T1]
-24.82 dBm
38.80090000 GHz
Marker 4 [T1]
-26.23 dBm
35.76318000 GHz
D1 7.13 dBm
D2 -12.87 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

DRAFT 802.11n (20MHz) OFDM MODULATION:

FOR FREQUENCY BAND: 5.150 ~ 5.350GHz

Channel 1 (5180MHz)

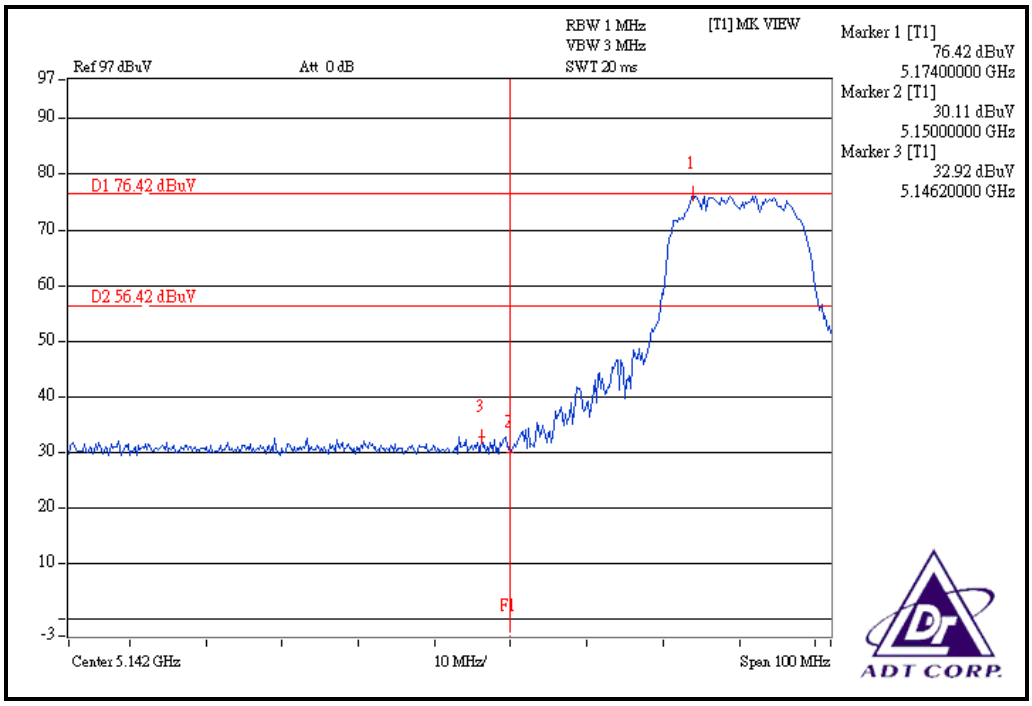
The band edge emission plot on the next page shows 43.50dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 106.18dBuV/m (Peak), so the maximum field strength in restrict band is 106.18 – 43.50 = 62.68dBuV/m which is under 74dBuV/m limit.

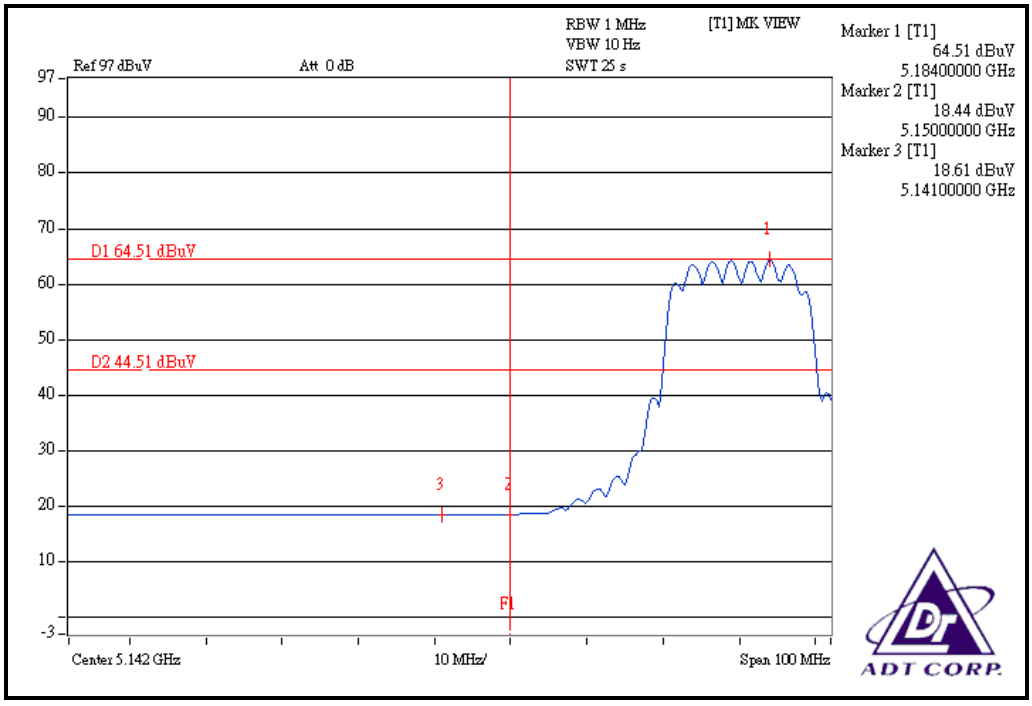
The band edge emission plot on the next page shows 45.90dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 93.31dBuV/m (Average), so the maximum field strength in restrict band is 93.31 – 45.90 = 47.41dBuV/m which is under 54dBuV/m limit.

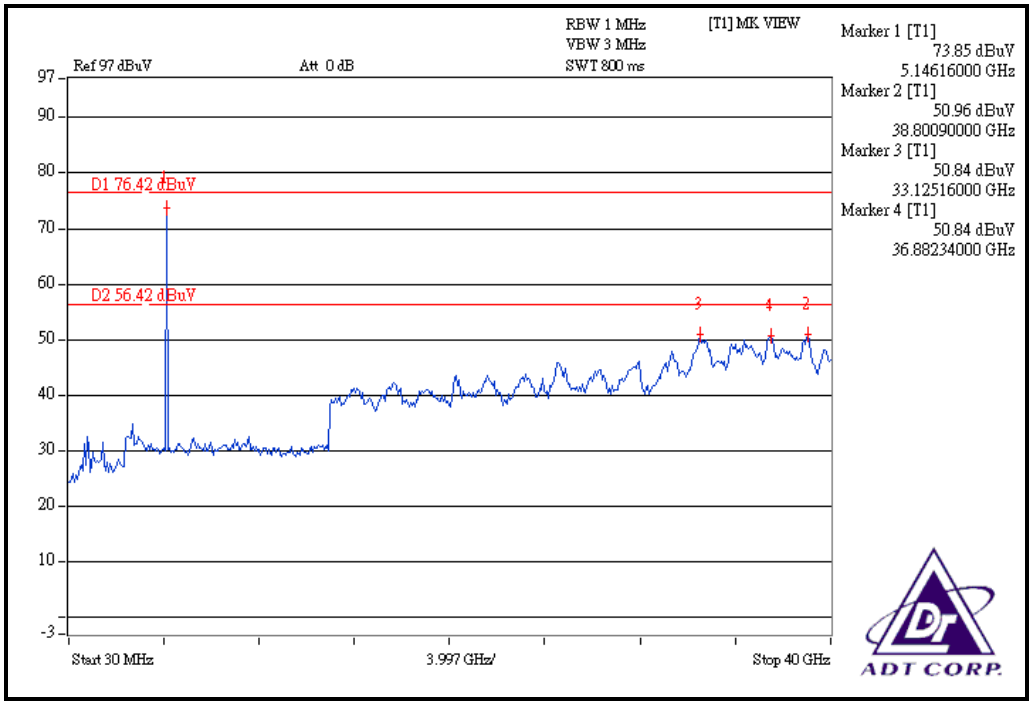
Channel 8 (5320MHz)

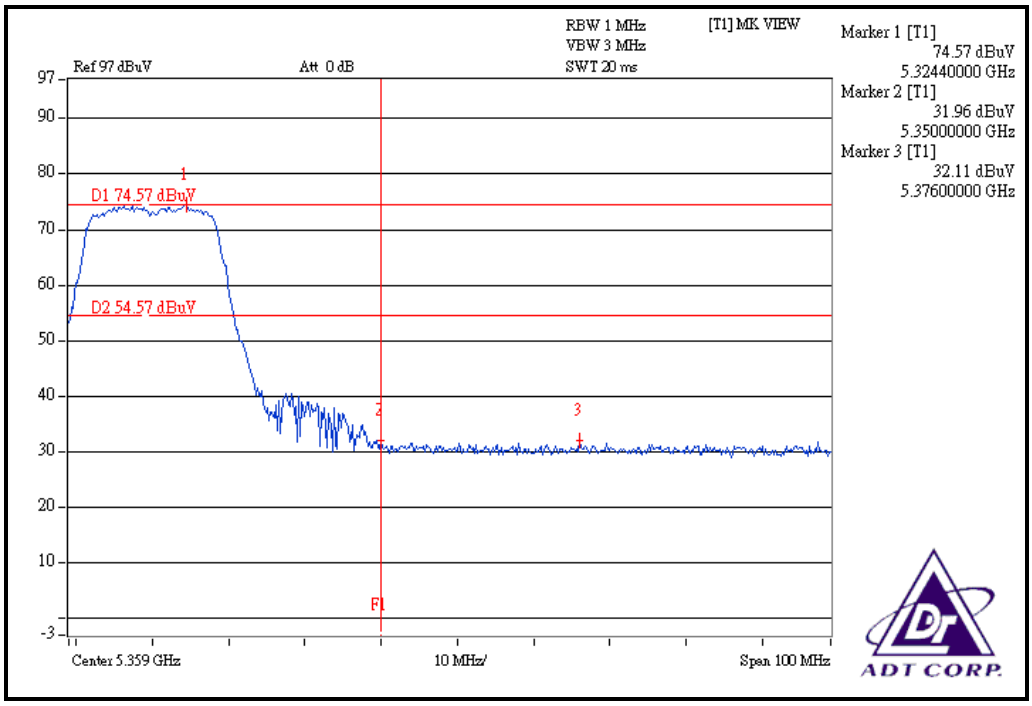
The band edge emission plot on the next second page shows 42.46dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 105.78dBuV/m (Peak), so the maximum field strength in restrict band is 105.78 – 42.46 = 63.32dBuV/m which is under 74dBuV/m limit.

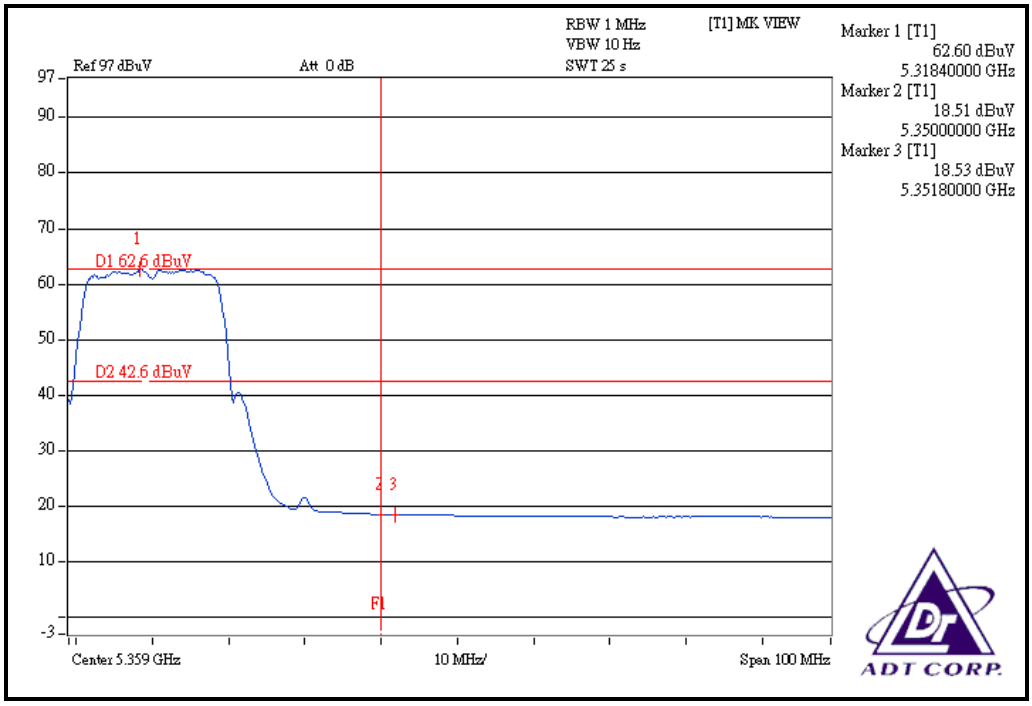
The band edge emission plot on the next third page shows 44.07dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 93.24dBuV/m (Average), so the maximum field strength in restrict band is 93.24 – 44.07 = 49.17dBuV/m which is under 54dBuV/m limit.

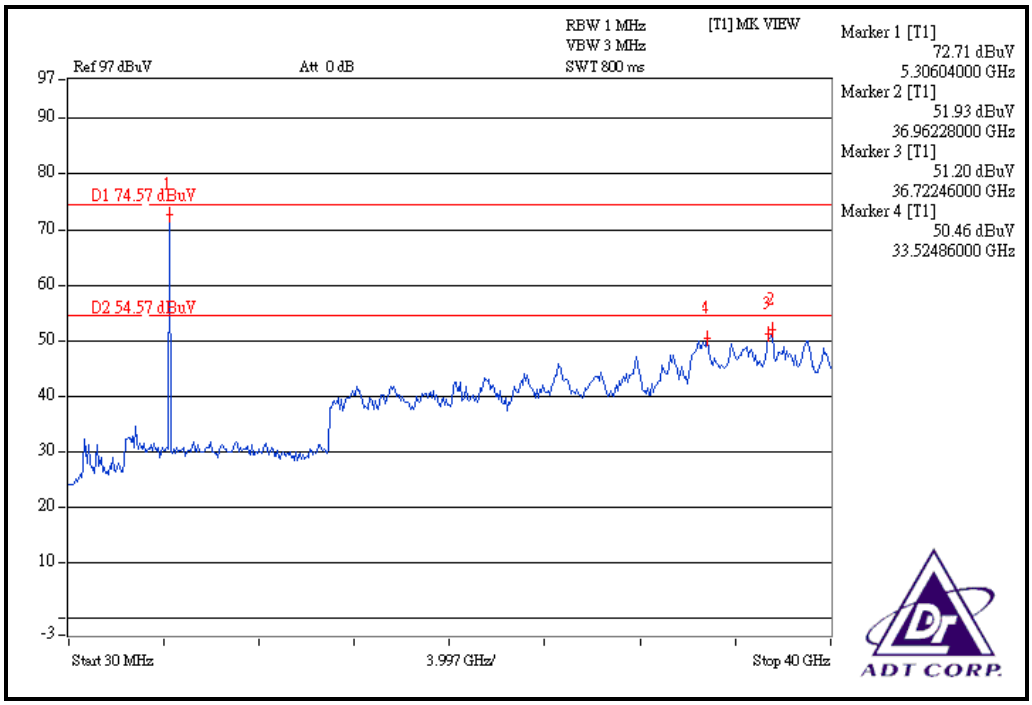

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
76.42 dBuV
5.17400000 GHz
Marker 2 [T1]
30.11 dBuV
5.15000000 GHz
Marker 3 [T1]
32.92 dBuV
5.14620000 GHz
D1 76.42 dBuV
D2 56.42 dBuV
Center 5.142 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
64.51 dBuV
5.18400000 GHz
Marker 2 [T1]
18.44 dBuV
5.15000000 GHz
Marker 3 [T1]
18.61 dBuV
5.14100000 GHz
D1 64.51 dBuV
D2 44.51 dBuV
Center 5.142 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 76.42 dBuV
D2 56.42 dBuV
Marker 1 [T1]
73.85 dBuV
5.14616000 GHz
Marker 2 [T1]
50.96 dBuV
38.80090000 GHz
Marker 3 [T1]
50.84 dBuV
33.12516000 GHz
Marker 4 [T1]
50.84 dBuV
36.88234000 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 74.57 dBuV
D2 54.57 dBuV
Marker 1 [T1]
74.57 dBuV
5.32440000 GHz
Marker 2 [T1]
31.96 dBuV
5.35000000 GHz
Marker 3 [T1]
32.11 dBuV
5.37600000 GHz
Center 5.359 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
62.60 dBuV
5.31840000 GHz
Marker 2 [T1]
18.51 dBuV
5.35000000 GHz
Marker 3 [T1]
18.53 dBuV
5.35180000 GHz
D1 62.6 dBuV
D2 42.6 dBuV
Center 5.359 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
72.71 dBuV
5.30604000 GHz
Marker 2 [T1]
51.93 dBuV
36.96228000 GHz
Marker 3 [T1]
51.20 dBuV
36.72246000 GHz
Marker 4 [T1]
50.46 dBuV
33.52486000 GHz
D1 74.57 dBuV
D2 54.57 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION:

FOR FREQUENCY BAND: 5.150 ~ 5.350GHz

Channel 1 (5190MHz)

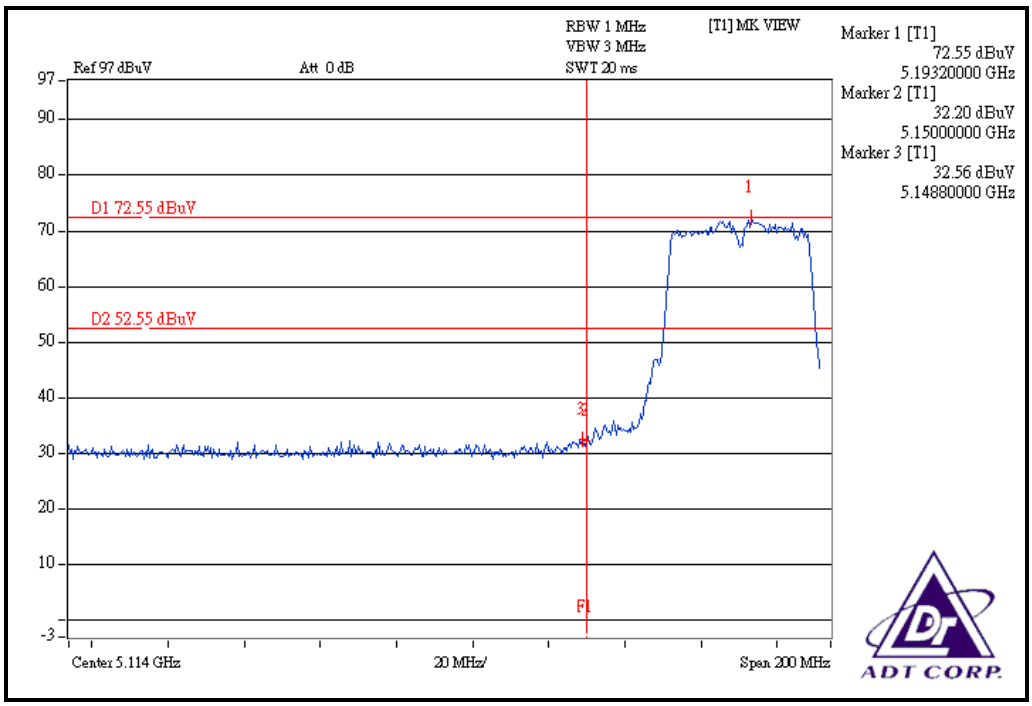
The band edge emission plot on the next page shows 39.99dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 102.81dBuV/m (Peak), so the maximum field strength in restrict band is 102.81 – 39.99 = 62.82dBuV/m which is under 74dBuV/m limit.

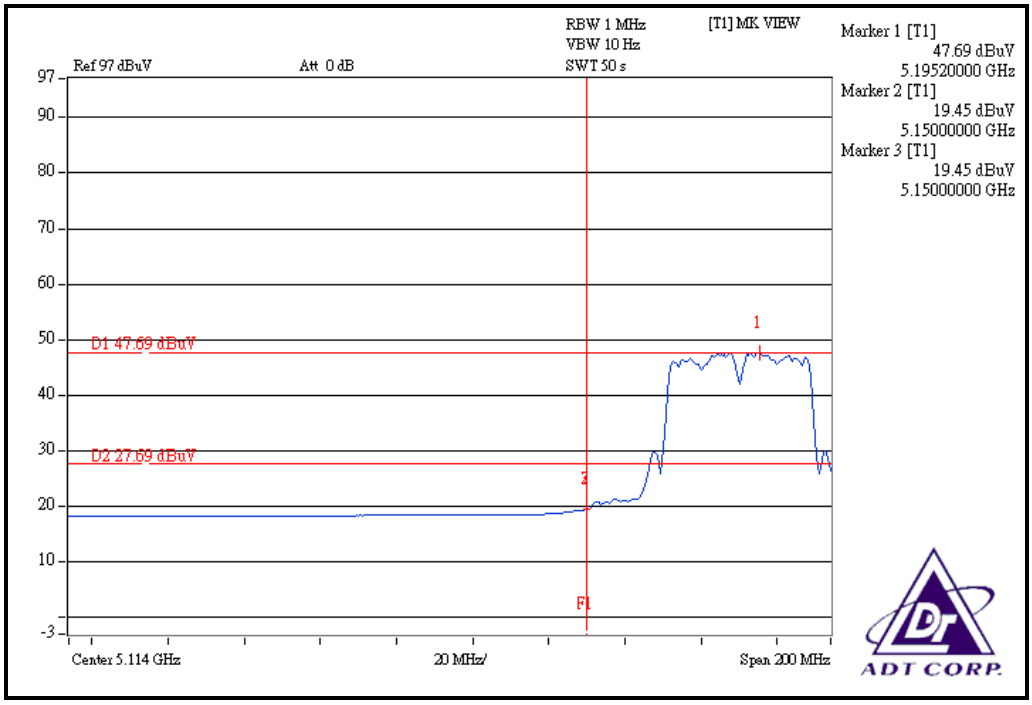
The band edge emission plot on the next page shows 28.24dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 80.69dBuV/m (Average), so the maximum field strength in restrict band is 80.69 – 28.24 = 52.45dBuV/m which is under 54dBuV/m limit.

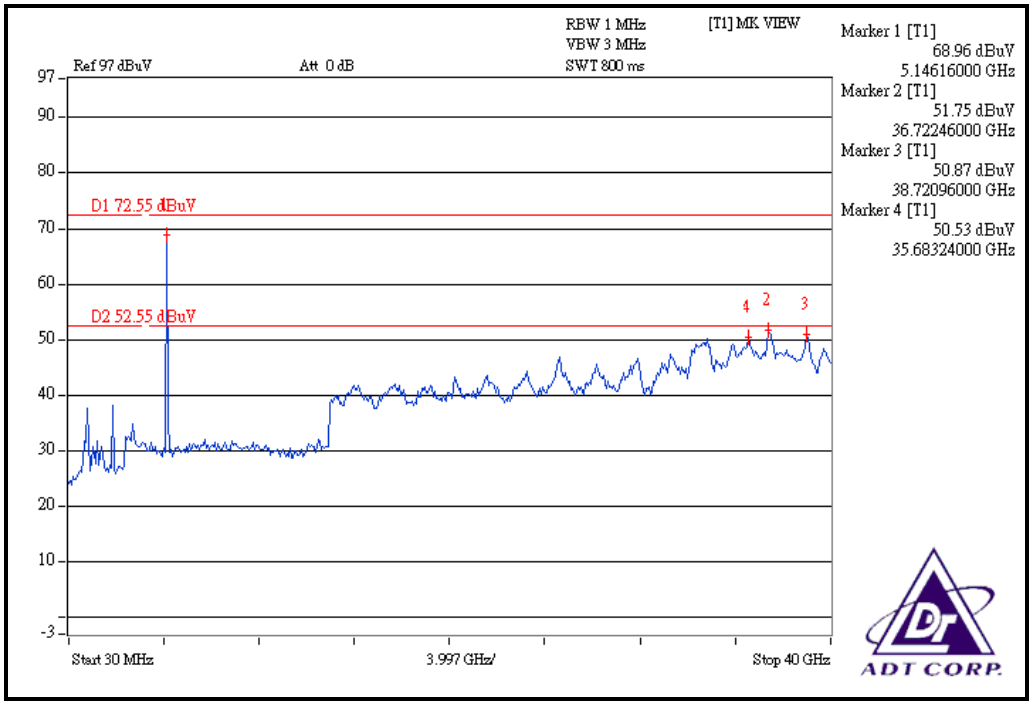
Channel 4 (5310MHz)

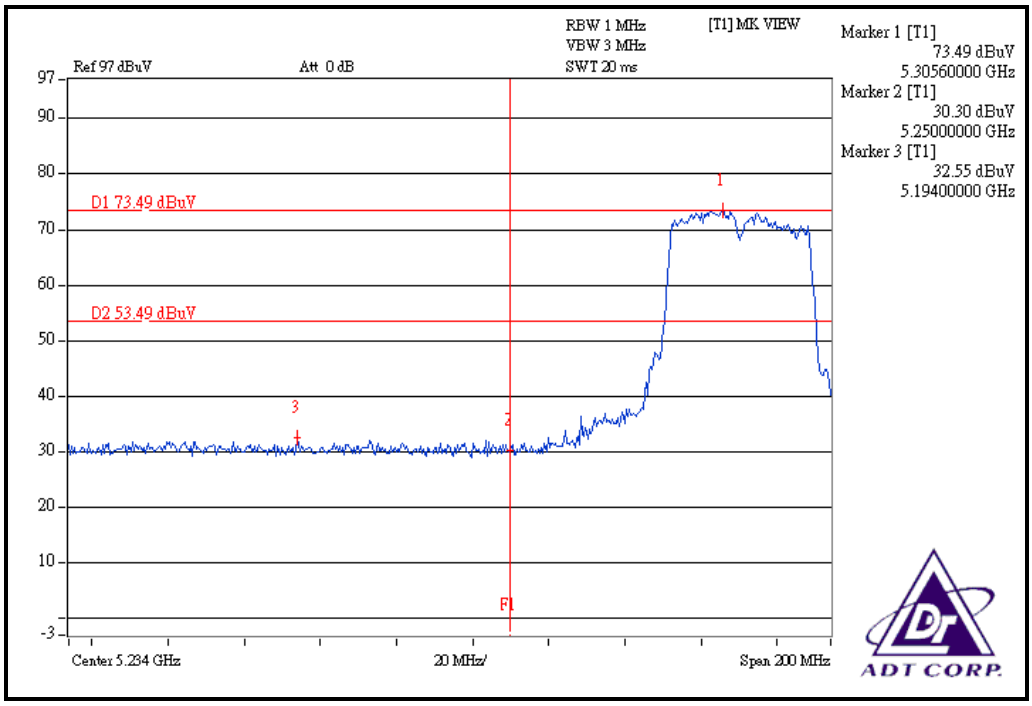
The band edge emission plot on the next second page shows 40.94dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 4 is 103.91dBuV/m (Peak), so the maximum field strength in restrict band is 103.91 – 40.94 = 62.97dBuV/m which is under 74dBuV/m limit.

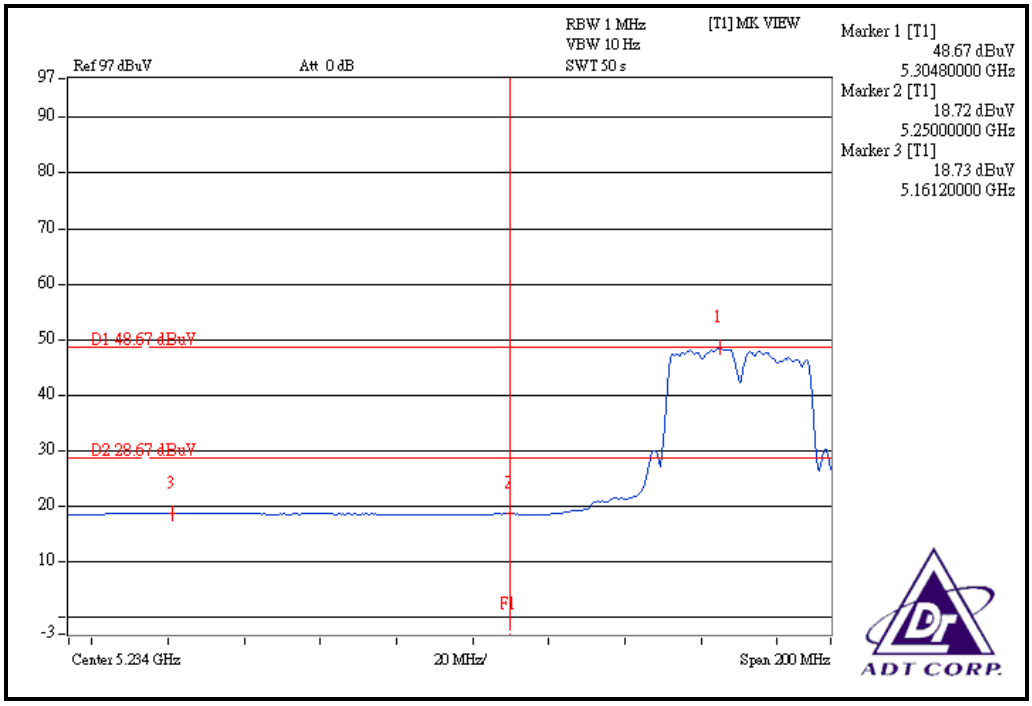
The band edge emission plot on the next third page shows 29.94dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 4 is 82.10dBuV/m (Average), so the maximum field strength in restrict band is 82.10 – 29.94 = 52.16dBuV/m which is under 54dBuV/m limit.

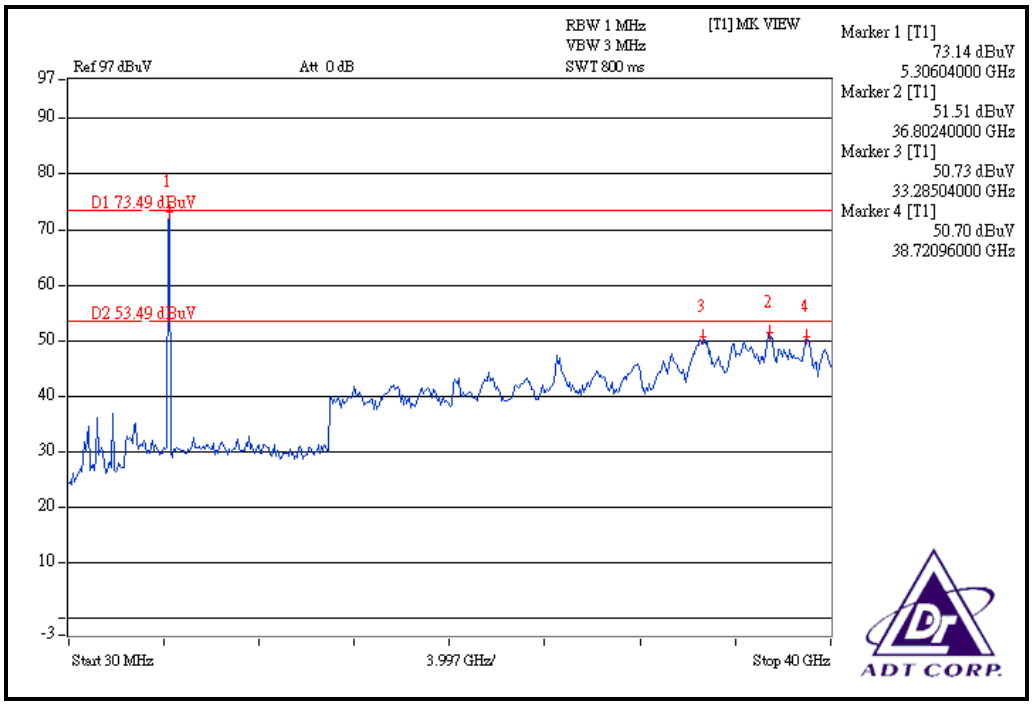

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
72.55 dBuV
5.19320000 GHz
Marker 2 [T1]
32.20 dBuV
5.15000000 GHz
Marker 3 [T1]
32.56 dBuV
5.14880000 GHz
D1 72.55 dBuV
D2 52.55 dBuV
Center 5.114 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
47.69 dBuV
5.19520000 GHz
Marker 2 [T1]
19.45 dBuV
5.15000000 GHz
Marker 3 [T1]
19.45 dBuV
5.15000000 GHz
D1 47.69 dBuV
D2 27.69 dBuV
Center 5.114 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 72.55 dBuV
D2 52.55 dBuV
Marker 1 [T1]
68.96 dBuV
5.14616000 GHz
Marker 2 [T1]
51.75 dBuV
36.72246000 GHz
Marker 3 [T1]
50.87 dBuV
38.72096000 GHz
Marker 4 [T1]
50.53 dBuV
35.68324000 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 73.49 dBuV
D2 53.49 dBuV
Marker 1 [T1]
73.49 dBuV
5.30560000 GHz
Marker 2 [T1]
30.30 dBuV
5.25000000 GHz
Marker 3 [T1]
32.55 dBuV
5.19400000 GHz
Center 5.234 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
48.67 dBuV
5.30480000 GHz
Marker 2 [T1]
18.72 dBuV
5.25000000 GHz
Marker 3 [T1]
18.73 dBuV
5.16120000 GHz
D1 48.67 dBuV
D2 28.67 dBuV
Center 5.234 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
73.14 dBuV
5.30604000 GHz
Marker 2 [T1]
51.51 dBuV
36.80240000 GHz
Marker 3 [T1]
50.73 dBuV
33.28504000 GHz
Marker 4 [T1]
50.70 dBuV
38.72096000 GHz
D1 73.49 dBuV
D2 53.49 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.

4.8 DYNAMIC FREQUENCY SELECTION

4.8.1 EUT INFORMATION

OPERATING FREQUENCY BANDS AND MODE OF EUT

Table 1: Operating frequency bands and mode of EUT.

Operational Mode	Operating Frequency Range
	5250~5350MHz
Client without radar detection	✓

EUT SOFTWARE AND FIRMWARE VERSION

Table 2: The EUT software/firmware version.

No.	Product	Model No.	Software/Firmware Version
1	Personal Computer	MTG	Driver Version: 4.100.27.0

DESCRIPTION OF AVAILABLE ANTENNAS TO THE EUT

Table 3: Antenna list.

Ant NO.	Antenna	Type	Operation Frequency Range	Max. Gain(dBi)
1	MAIN	PIFA	5.15 – 5.85 GHz	0.55
2	AUX	PIFA	5.15 – 5.85 GHz	1.70
3	MIMO	PIFA	5.15 – 5.85 GHz	1.11

EUT MAXIMUM AND MINIMUM CONDUCTED POWER

Table 4: The measured conducted output power.

IEEE 802.11a:

Antenna No.	Frequency Band (MHz)	MAX. Power		MIN. Power	
		Output Power(dBm)	Output Power(mW)	Output Power(dBm)	Output Power(mW)
1	5250~5350MHz	14.32	27.040	8.95	7.852

Draft 802.11n (20MHz):

Antenna No.	Frequency Band (MHz)	MAX. Power		MIN. Power	
		Output Power(dBm)	Output Power(mW)	Output Power(dBm)	Output Power(mW)
1	5250~5350MHz	14.03	25.296	8.95	7.852

Draft 802.11n (40MHz):

Antenna No.	Frequency Band (MHz)	MAX. Power		MIN. Power	
		Output Power(dBm)	Output Power(mW)	Output Power(dBm)	Output Power(mW)
1	5250~5350MHz	14.98	31.480	8.95	7.852

EUT MAXIMUM AND MINIMUM E.I.R.P. POWER

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

IEEE 802.11a

Antenna No.	Frequency Band (MHz)	MAX. Power		MIN. Power	
		Output Power(dBm)	Output Power(mW)	Output Power(dBm)	Output Power(mW)
1	5250~5350MHz	18.58	72.111	9.5	8.913

Draft 802.11n (20MHz)

Antenna No.	Frequency Band (MHz)	MAX. Power		MIN. Power	
		Output Power(dBm)	Output Power(mW)	Output Power(dBm)	Output Power(mW)
1	5250~5350MHz	18.29	67.453	9.5	8.913

Draft 802.11n (40MHz)

Antenna No.	Frequency Band (MHz)	MAX. Power		MIN. Power	
		Output Power(dBm)	Output Power(mW)	Output Power(dBm)	Output Power(mW)
1	5250~5350MHz	19.24	83.946	9.5	8.913

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.**

4.8.2 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	✓

4.8.3 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

4.8.4 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	Apr. 11, 2008
Signal generator	8645A	Agilent	May. 27, 2008
Oscilloscope	TDS 5104	Tektronix	Aug. 28. 2007

DESCRIPTION OF SUPPORT UNITS

Table 2: Support Unit information.

The following test and measurement equipment was utilized for the 20MHz bandwidth DFS tests documented in this report:

No.	Product	Brand	Model No.	ID
1	802.11a/b/g Access Point	Cisco	AIR-AP1242AG-A-K9	LDK102056

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

The following test and measurement equipment was utilized for the 40MHz bandwidth DFS tests documented in this report:

No.	Product	Brand	Model No.	ID
1	802.11a/b/g/n Access Point	Broadcom	BCM94705LMP	QDS-BRCM1025

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

Table 3: Software/Firmware information.

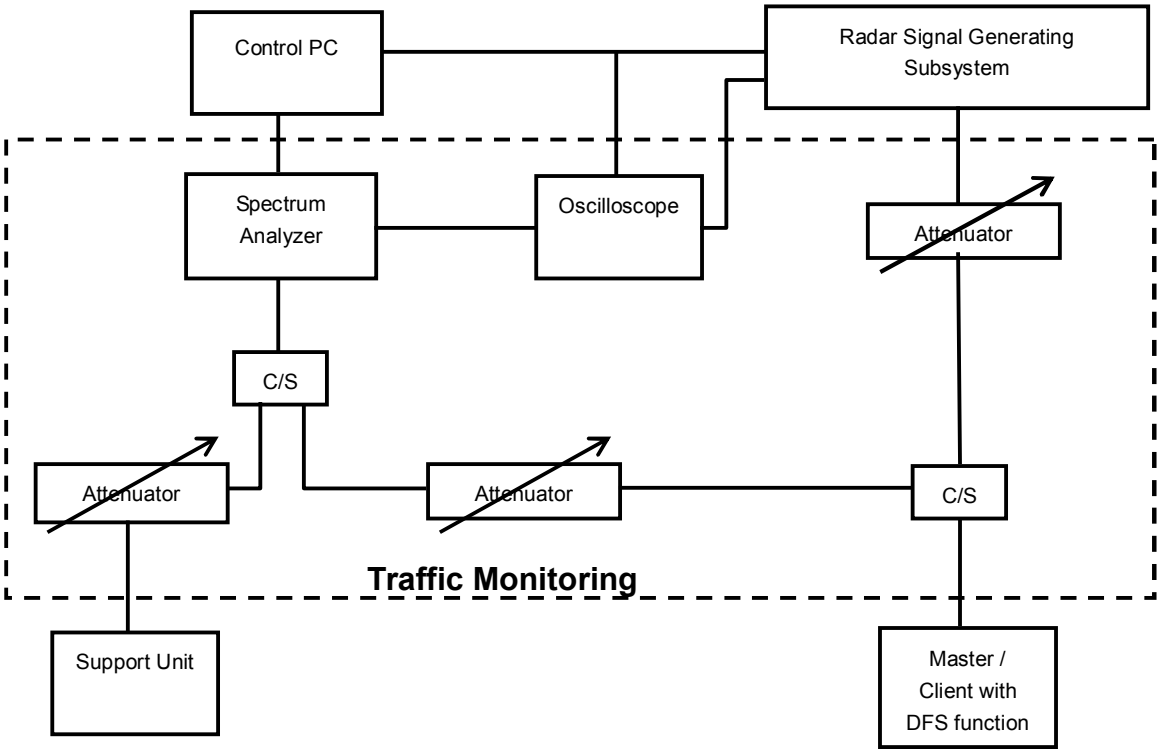
No.	Product	Model No.	Software/Firmware Version
1.	Personal Computer	MTG	Driver Version: 4.100.27.0

4.8.5 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

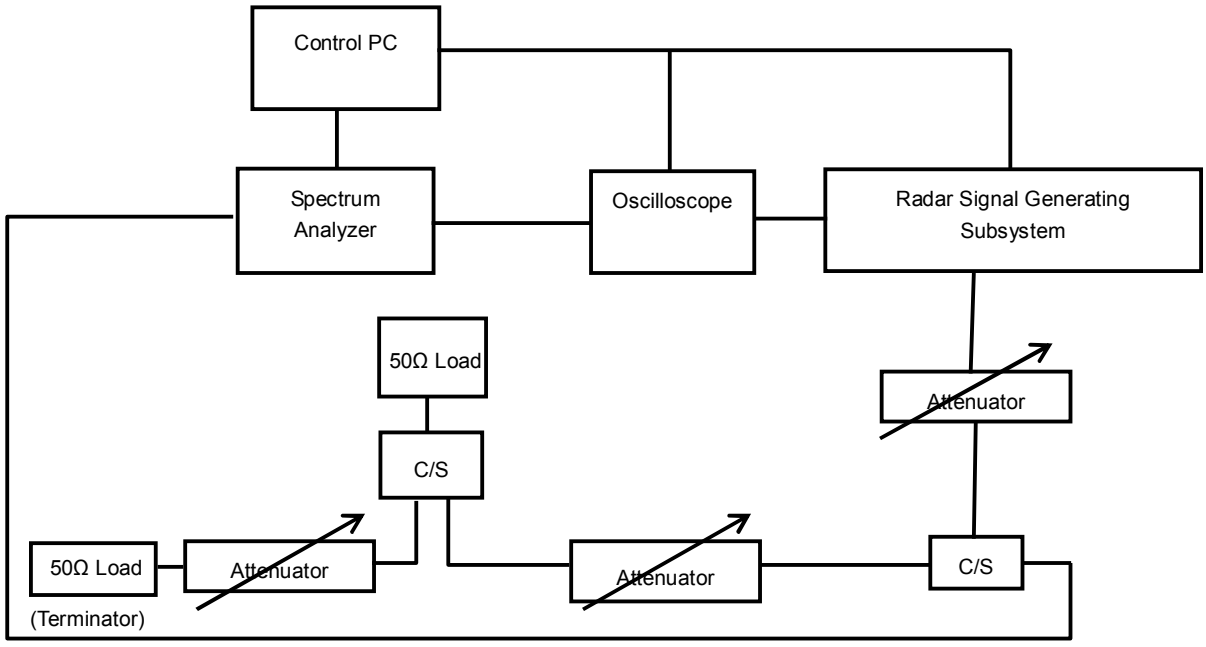


The test transmission will always be from the Master Device to the Client Device. While the Client device is set up to associate with the Master device and play the MPEG file (6 $\frac{1}{2}$ Magic Hours) from Master device, the designated MPEG test file and instructions are located at: http://ntiacsd.ntia.doc.gov/dfs/.

CALIBRATION OF DFS DETECTION THRESHOLD LEVEL:

The measured channel is 5320MHz. In Draft 802.11n 40Mhz the measured channel is 5310MHz. 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 Cisco 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 Broadcom 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

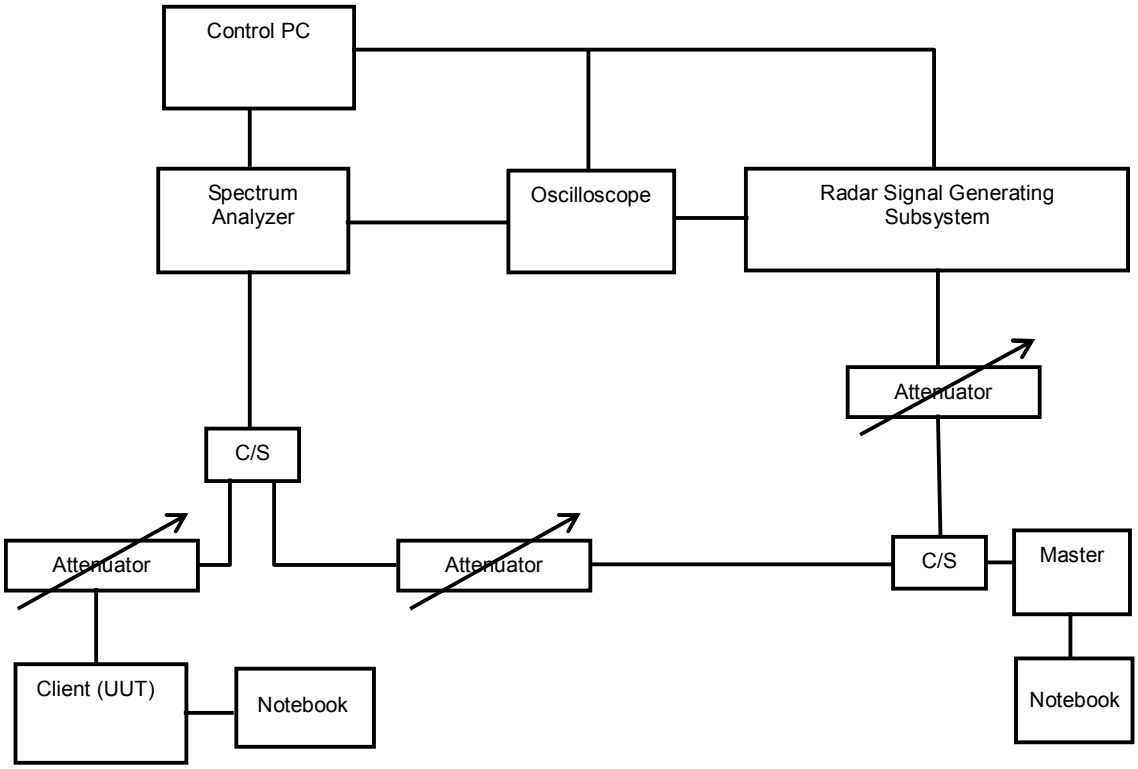


4.8.6 DEVIATION FROM TEST STANDARD

No deviation.

4.8.7 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.

4.8.8 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	Not Applicable	NA
15.407	Uniform Spreading	Not Applicable	NA
15.407	U-NII Detection Bandwidth	Not Applicable	NA

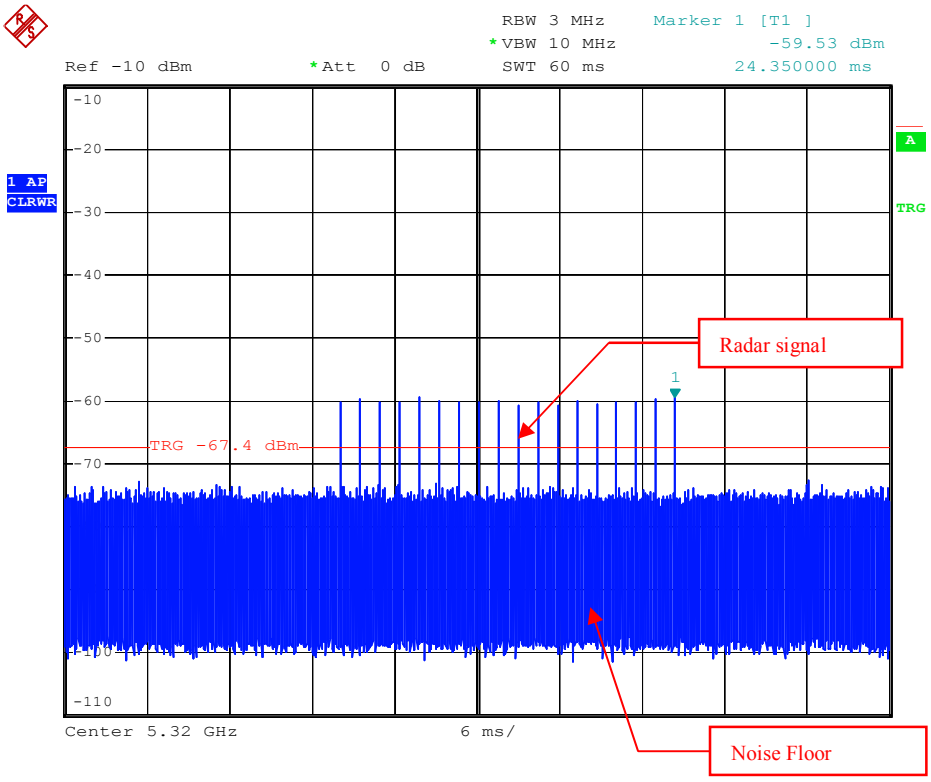
DETELED TEST RESULTS

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.

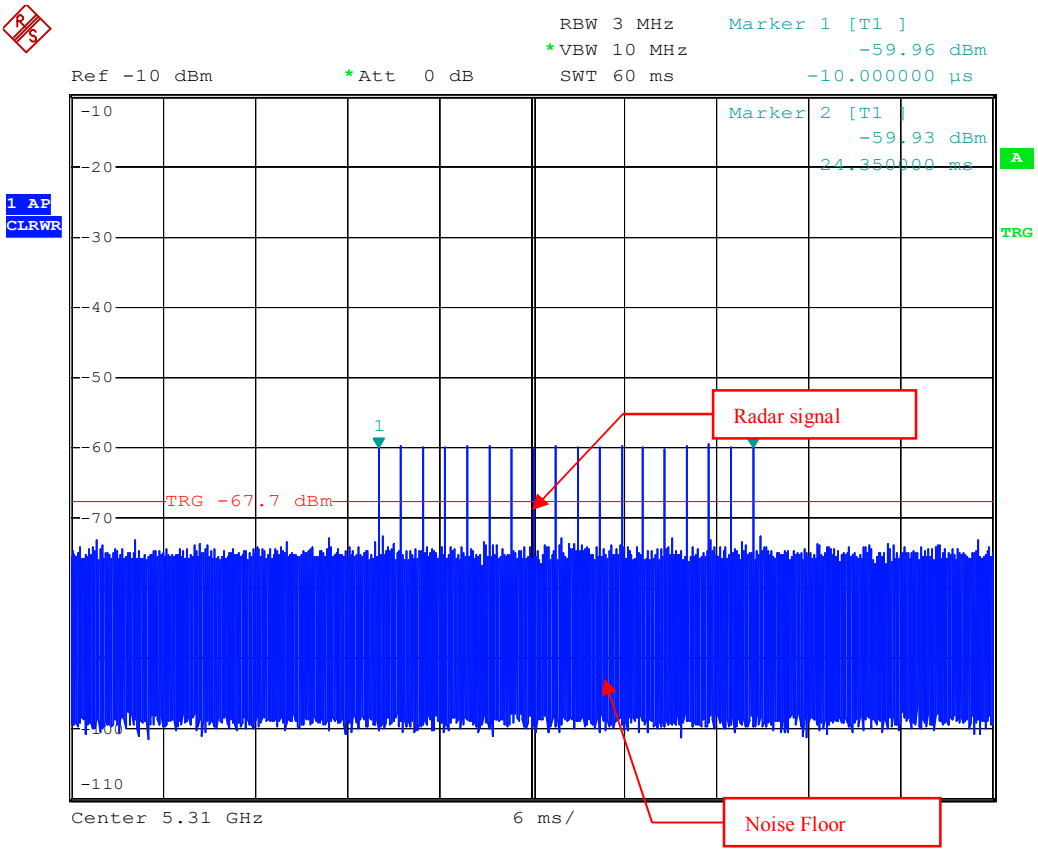
DFS DETECTION THRESHOLD

For a detection threshold level of –62dBm and the Cisco Master antenna gain is 3dBi. The Required detection threshold is -58dBm (= -62 +1+3)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

For a detection threshold level of –62dBm and the Broadcom Master antenna gain is 3dBi. The Required detection threshold is -58dBm (= -62 +1+3)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.

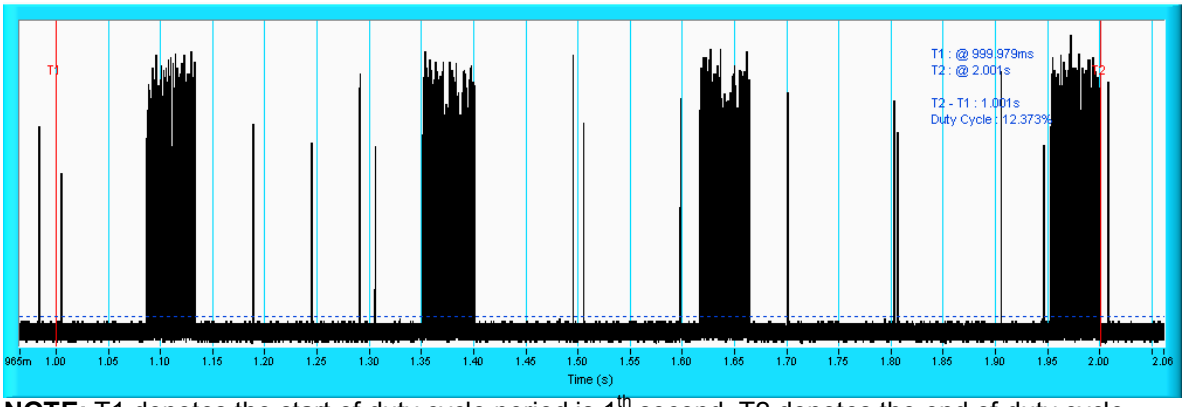


Radar Signal 1

CHANNEL CLOSING TRANSMISSION AND CHANNEL MOVE TIME

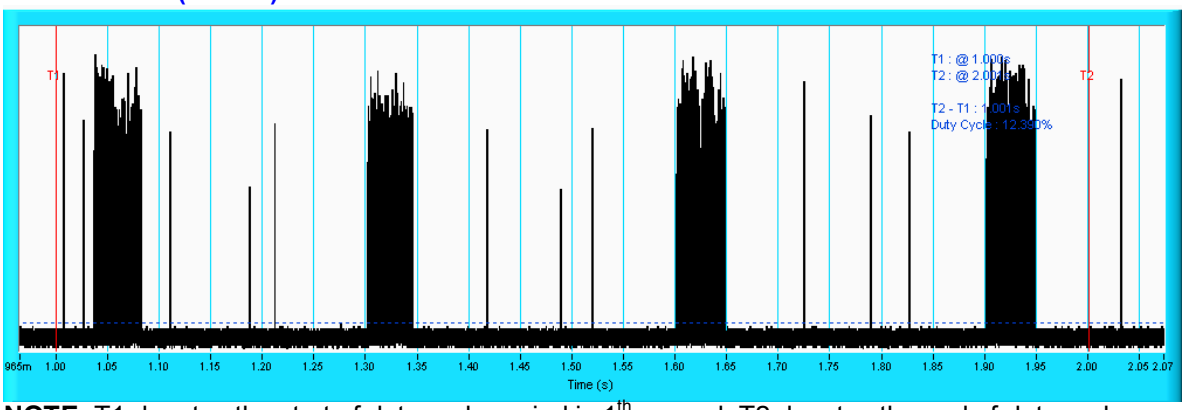
WLAN Traffic

IEEE 802.11a



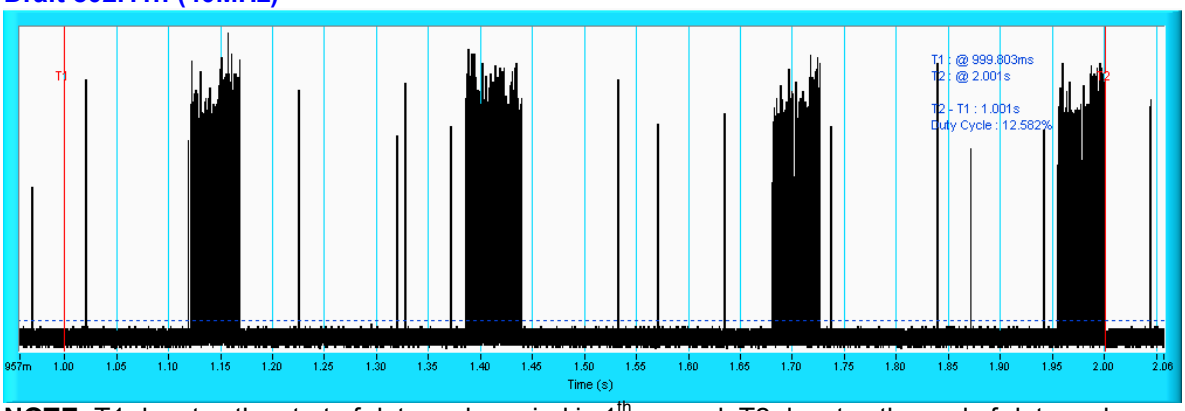
NOTE: T1 denotes the start of duty cycle period is 1th second. T2 denotes the end of duty cycle period is 2th second. T2 – T1= 1 seconds. Duty Cycle = 12.373%

Draft 802.11n (20MHz)



NOTE: T1 denotes the start of duty cycle period is 1th second. T2 denotes the end of duty cycle period is 2th second. T2 – T1= 1 seconds. Duty Cycle = 12.39%

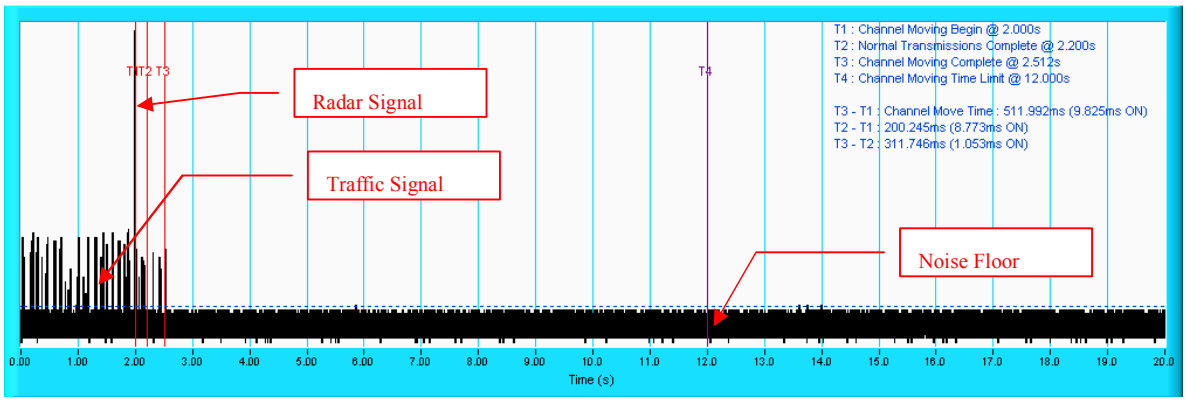
Draft 802.11n (40MHz)



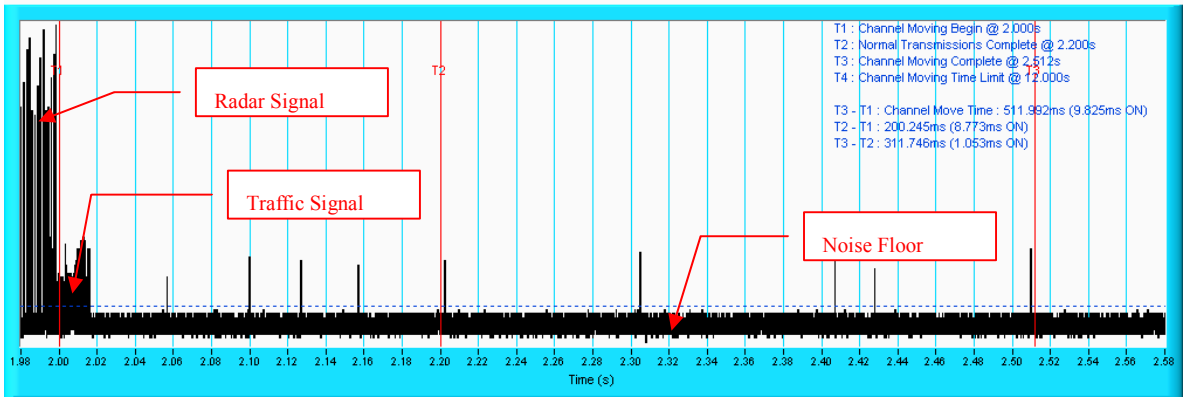
NOTE: T1 denotes the start of duty cycle period is 1th second. T2 denotes the end of duty cycle period is 2th second. T2 – T1= 1 seconds. Duty Cycle = 12.582%

Radar signal 1

IEEE 802.11a

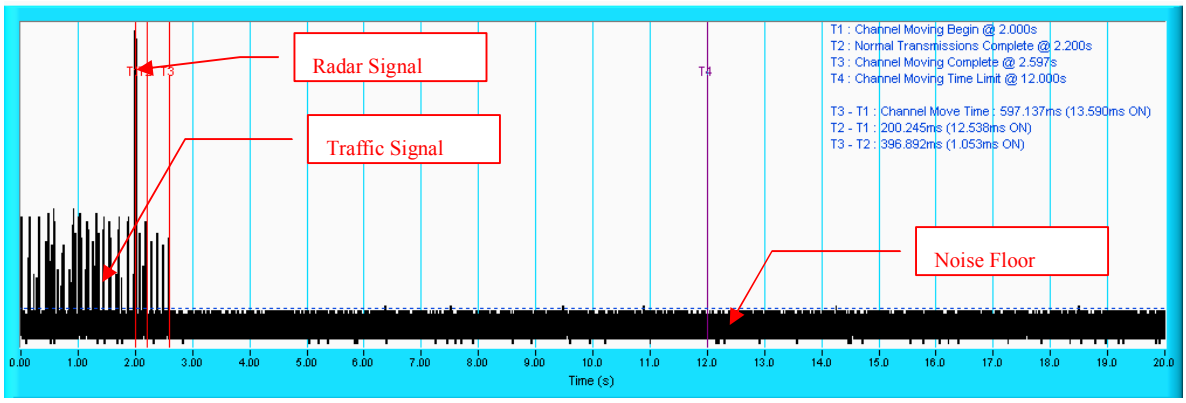


NOTE: T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200ms from T1. T4 denotes the 10 second from T1 to observe the aggregate duration of transmissions.

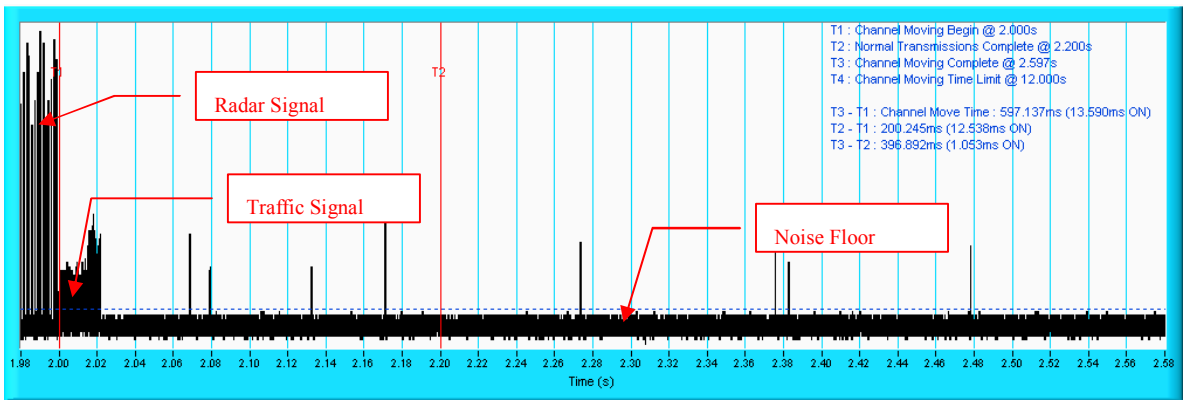


NOTE: An expanded plot for the device vacates the channel in the required 200ms.

Draft 802.11n (20MHz)

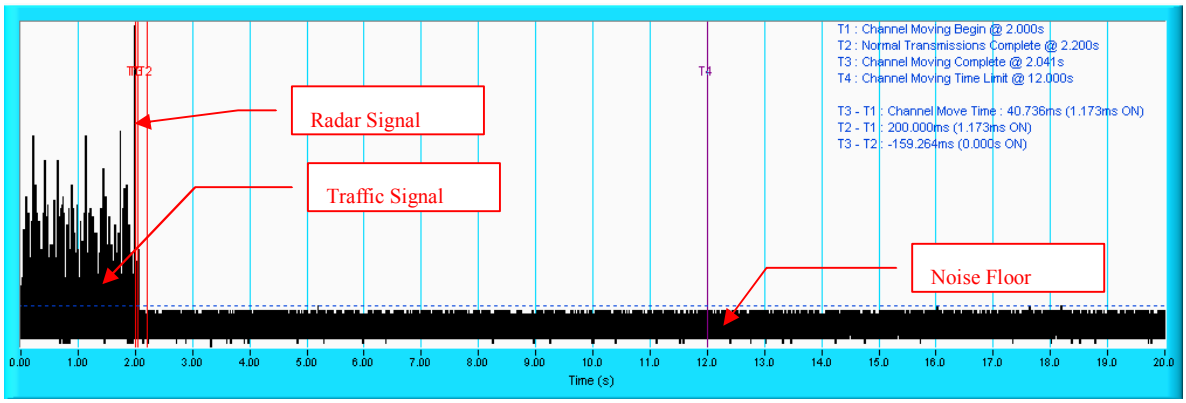


NOTE: T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200ms from T1. T4 denotes the 10 second from T1 to observe the aggregate duration of transmissions.

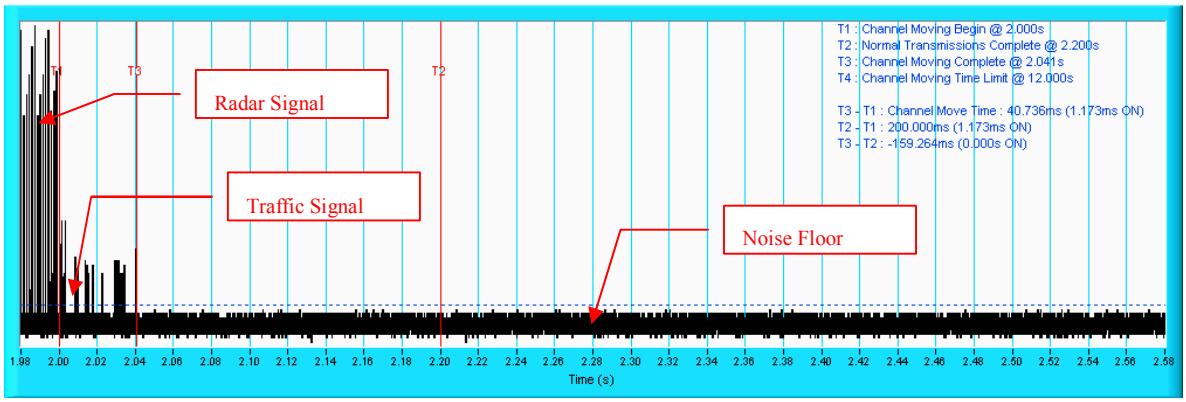


NOTE: An expanded plot for the device vacates the channel in the required 200ms.

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. T4 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.

IEEE 802.11a

Type 1 Radar Statistical Performances				
Trial #	**Pulses per Burst**	**Pulse Width (s)**	**PRI (s)**	**Detection**
1	18	1.0u	1.428m	Yes
2	18	1.0u	1.428m	Yes
3	18	1.0u	1.428m	Yes
4	18	1.0u	1.428m	No
5	18	1.0u	1.428m	Yes
6	18	1.0u	1.428m	Yes
7	18	1.0u	1.428m	Yes
8	18	1.0u	1.428m	Yes
9	18	1.0u	1.428m	Yes
10	18	1.0u	1.428m	Yes
11	18	1.0u	1.428m	No
12	18	1.0u	1.428m	No
13	18	1.0u	1.428m	Yes
14	18	1.0u	1.428m	Yes
15	18	1.0u	1.428m	Yes
16	18	1.0u	1.428m	Yes
17	18	1.0u	1.428m	Yes
18	18	1.0u	1.428m	Yes
19	18	1.0u	1.428m	Yes
20	18	1.0u	1.428m	Yes
21	18	1.0u	1.428m	Yes
22	18	1.0u	1.428m	Yes
23	18	1.0u	1.428m	No
24	18	1.0u	1.428m	Yes
25	18	1.0u	1.428m	Yes
26	18	1.0u	1.428m	Yes
27	18	1.0u	1.428m	No
28	18	1.0u	1.428m	Yes
29	18	1.0u	1.428m	Yes
30	18	1.0u	1.428m	Yes
				Detection Rate: 83.33 %

Draft 802.11n (20MHz)

Type 1 Radar Statistical Performances				
Trial #	**Pulses per Burst**	**Pulse Width (s)**	**PRI (s)**	**Detection**
1	18	1.0u	1.428m	Yes
2	18	1.0u	1.428m	No
3	18	1.0u	1.428m	Yes
4	18	1.0u	1.428m	Yes
5	18	1.0u	1.428m	Yes
6	18	1.0u	1.428m	Yes
7	18	1.0u	1.428m	Yes
8	18	1.0u	1.428m	Yes
9	18	1.0u	1.428m	Yes
10	18	1.0u	1.428m	No
11	18	1.0u	1.428m	No
12	18	1.0u	1.428m	Yes
13	18	1.0u	1.428m	Yes
14	18	1.0u	1.428m	Yes
15	18	1.0u	1.428m	Yes
16	18	1.0u	1.428m	Yes
17	18	1.0u	1.428m	No
18	18	1.0u	1.428m	Yes
19	18	1.0u	1.428m	Yes
20	18	1.0u	1.428m	Yes
21	18	1.0u	1.428m	No
22	18	1.0u	1.428m	Yes
23	18	1.0u	1.428m	Yes
24	18	1.0u	1.428m	Yes
25	18	1.0u	1.428m	Yes
26	18	1.0u	1.428m	Yes
27	18	1.0u	1.428m	Yes
28	18	1.0u	1.428m	Yes
29	18	1.0u	1.428m	No
30	18	1.0u	1.428m	Yes
				Detection Rate: 80 %

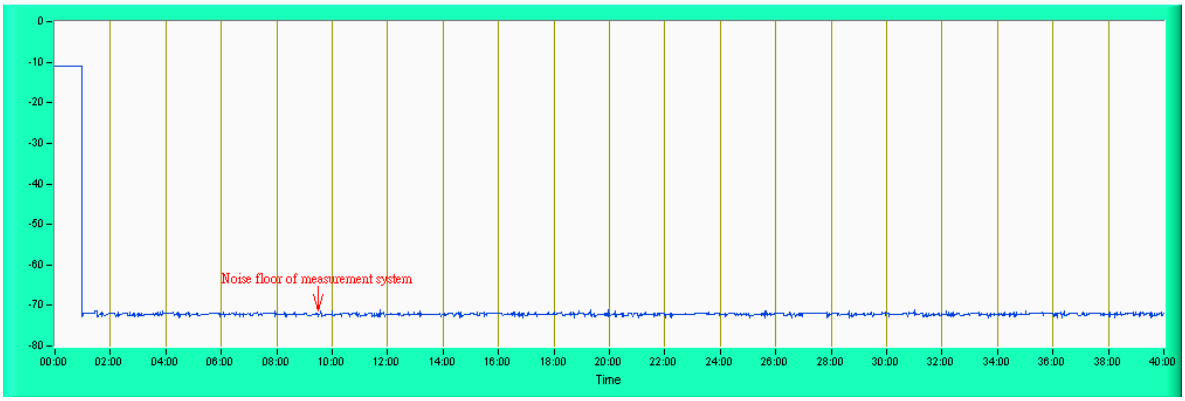
Draft 802.11n (40MHz)

Type 1 Radar Statistical Performances				
Trial #	**Pulses per Burst**	**Pulse Width (s)**	**PRI (s)**	**Detection**
1	18	1.0u	1.428m	No
2	18	1.0u	1.428m	Yes
3	18	1.0u	1.428m	Yes
4	18	1.0u	1.428m	Yes
5	18	1.0u	1.428m	Yes
6	18	1.0u	1.428m	No
7	18	1.0u	1.428m	No
8	18	1.0u	1.428m	Yes
9	18	1.0u	1.428m	Yes
10	18	1.0u	1.428m	Yes
11	18	1.0u	1.428m	Yes
12	18	1.0u	1.428m	Yes
13	18	1.0u	1.428m	Yes
14	18	1.0u	1.428m	Yes
15	18	1.0u	1.428m	Yes
16	18	1.0u	1.428m	Yes
17	18	1.0u	1.428m	Yes
18	18	1.0u	1.428m	Yes
19	18	1.0u	1.428m	Yes
20	18	1.0u	1.428m	Yes
21	18	1.0u	1.428m	Yes
22	18	1.0u	1.428m	Yes
23	18	1.0u	1.428m	No
24	18	1.0u	1.428m	Yes
25	18	1.0u	1.428m	Yes
26	18	1.0u	1.428m	Yes
27	18	1.0u	1.428m	Yes
28	18	1.0u	1.428m	No
29	18	1.0u	1.428m	No
30	18	1.0u	1.428m	Yes
				Detection Rate: 80 %

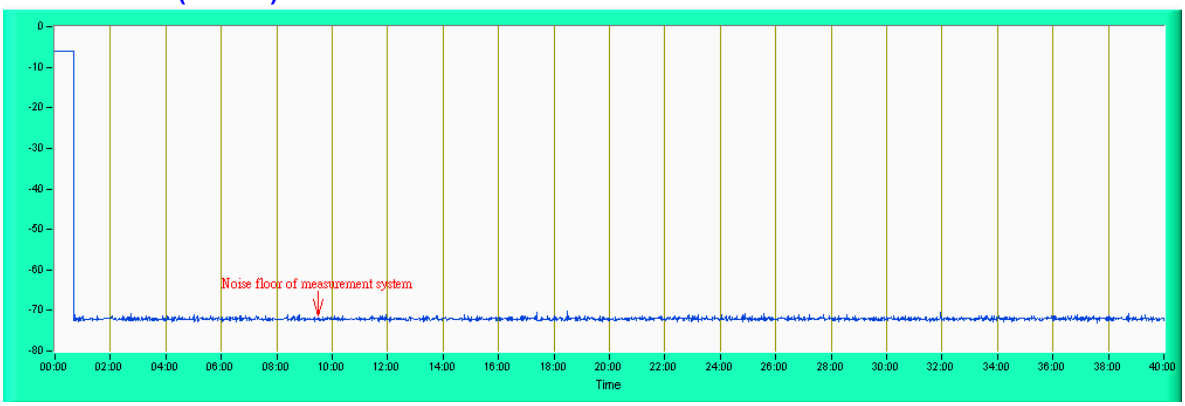
Non- Occupancy Period

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.

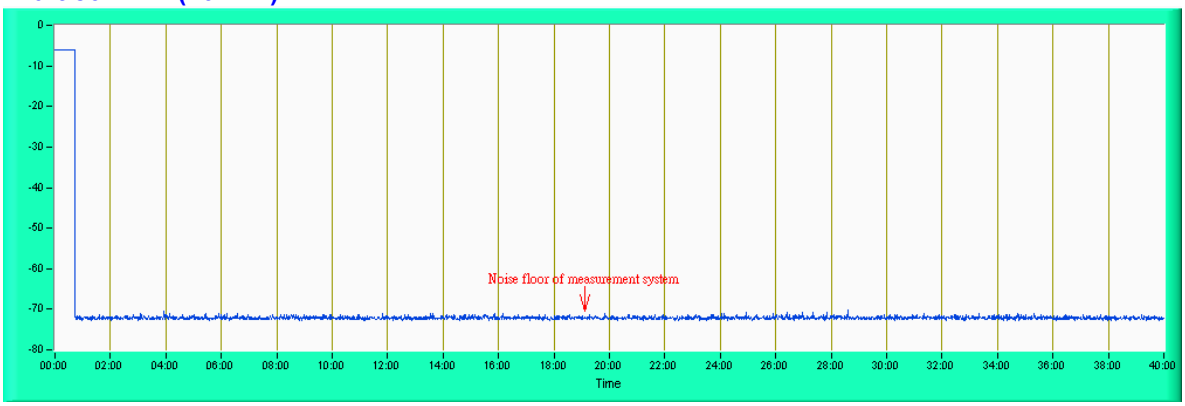
IEEE 802.11a



Draft 802.11n (20MHz)



Draft 802.11n (40MHz)



4.9 ANTENNA REQUIREMENT

4.9.1 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.

4.9.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is PIFA antenna with I-PEX & UFL connectors. The maximum Gain of the antenna is 4.26dBi.

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.