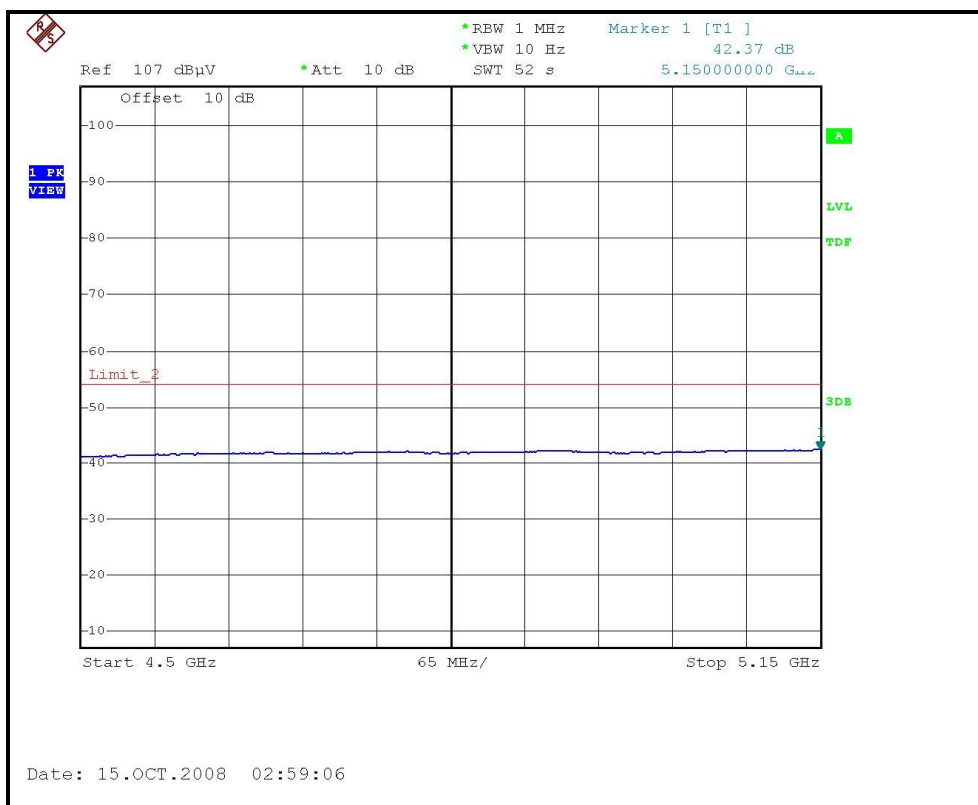
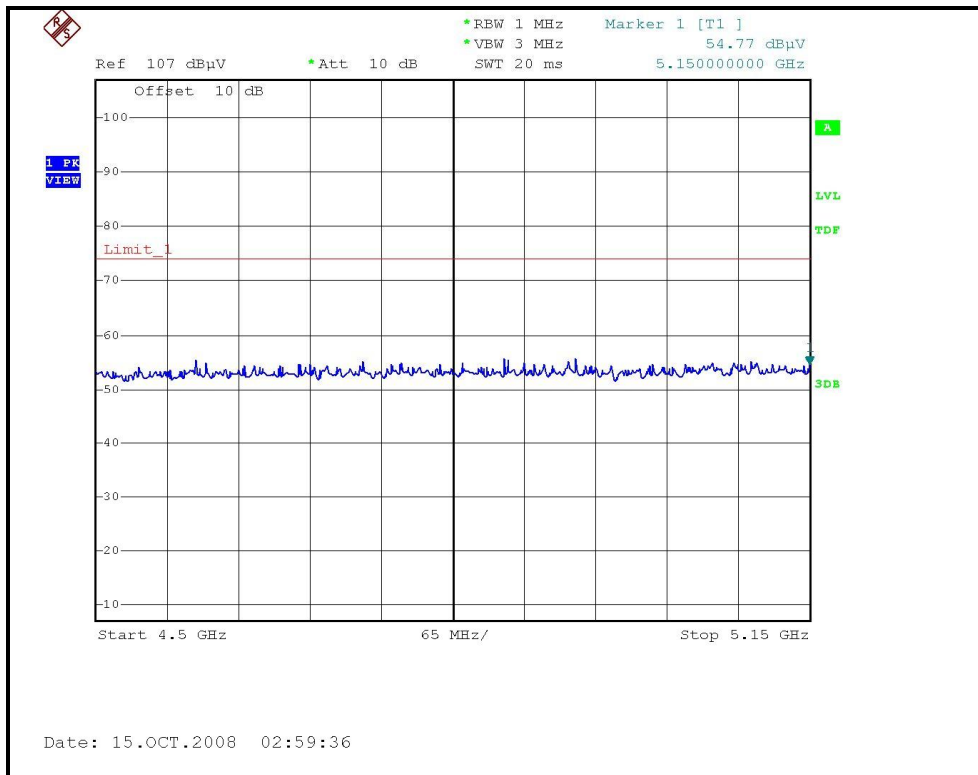




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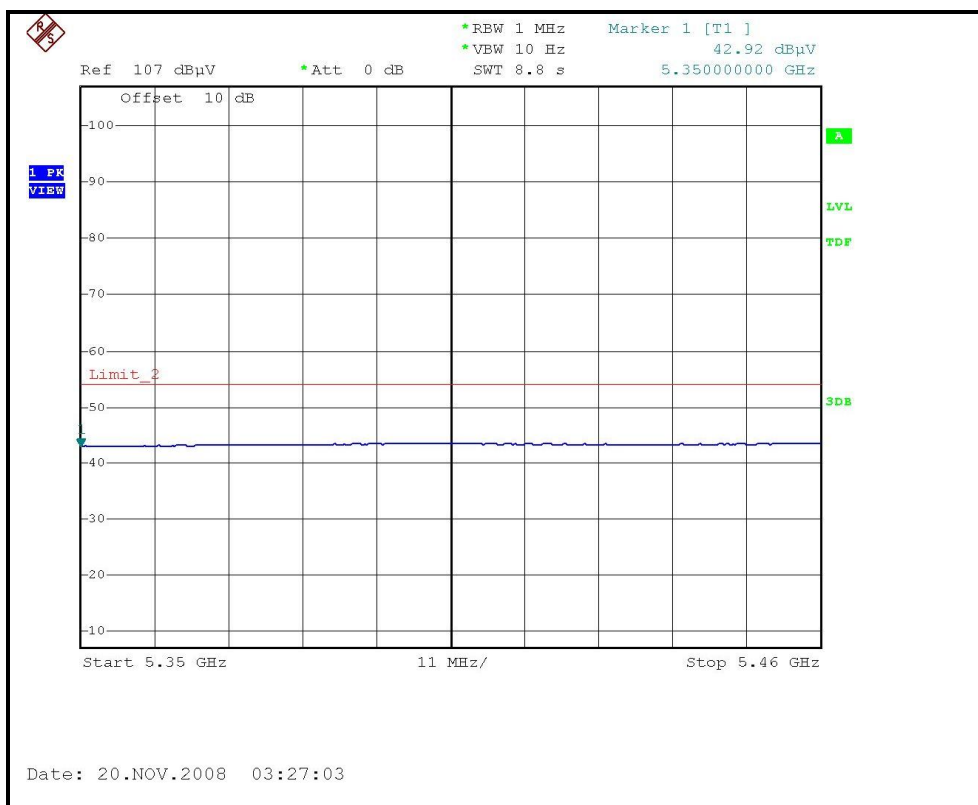
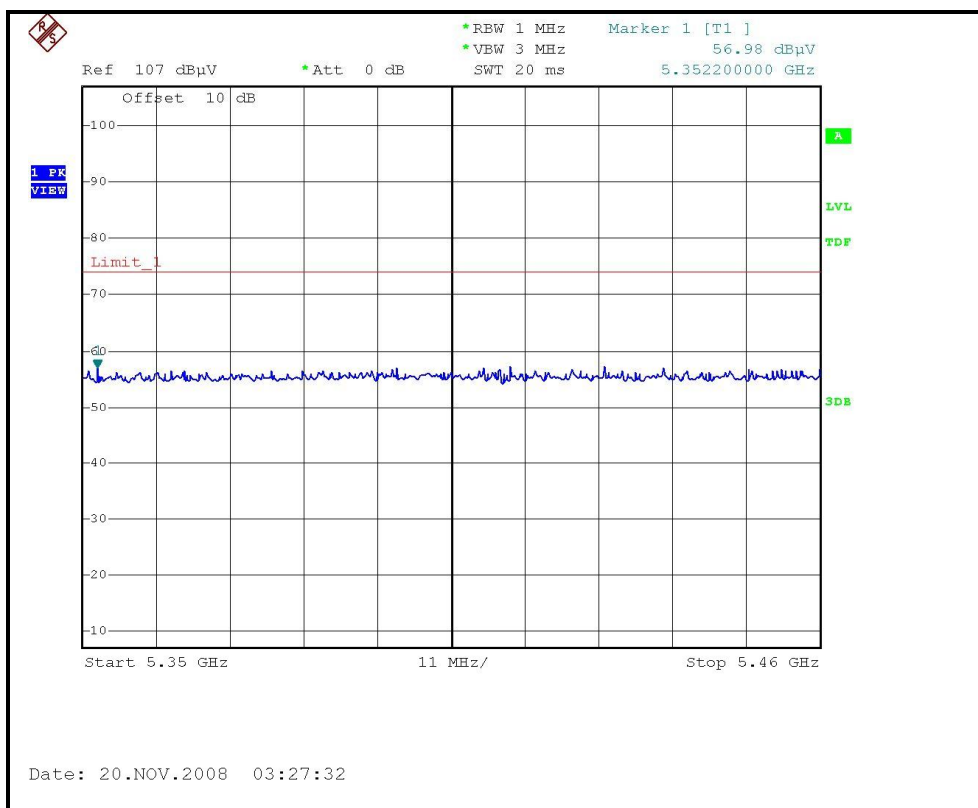
RESTRICTED BANDEDGE (802.11a MODE, CH1, VERTICAL)





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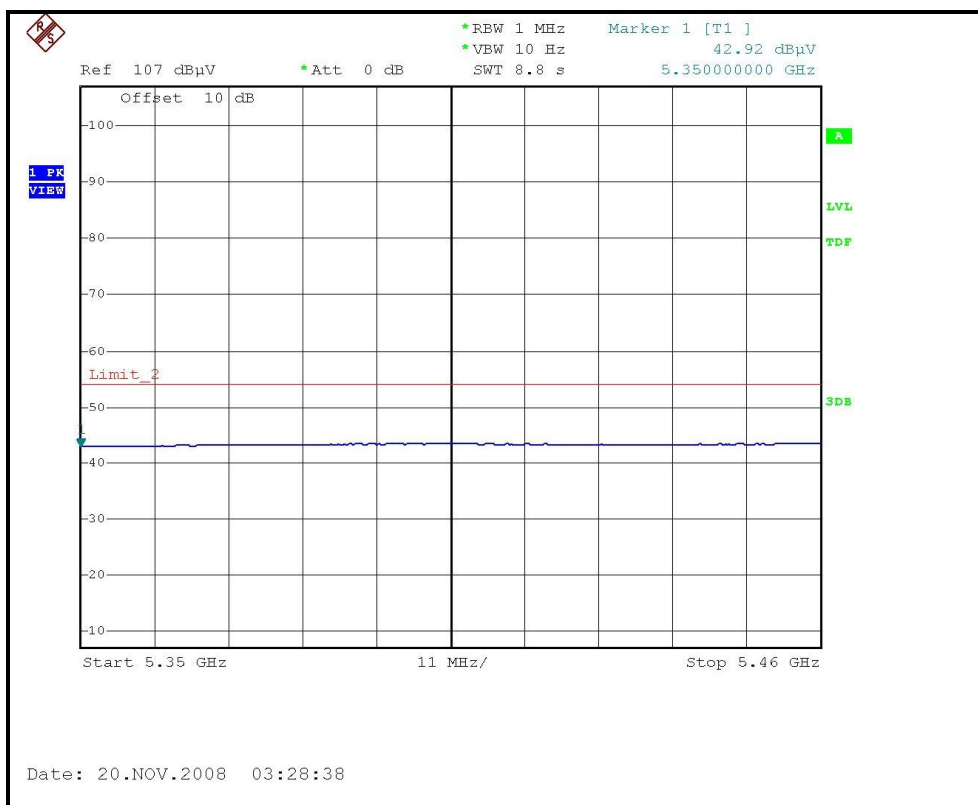
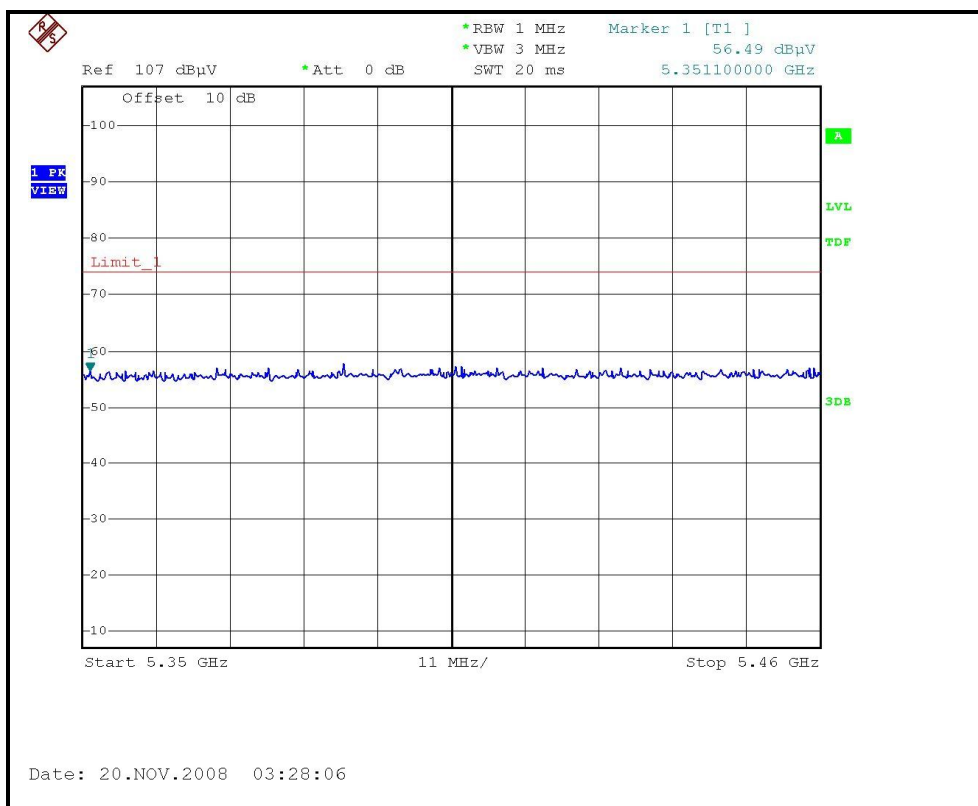
RESTRICTED BANDEDGE (802.11a MODE, CH4, HORIZONTAL)





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RESTRICTED BANDEDGE (802.11a MODE, CH4, VERTICAL)



**DRAFT 802.11n (20MHz) OFDM MODULATION**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 55%RH 965hPa	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	61.11 PK	74.00	-12.89	1.53 H	159	25.11	36.00
2	5150.00	43.91 AV	54.00	-10.09	1.53 H	159	7.91	36.00
3	*5180.00	109.66 PK			1.57 H	58	73.61	36.05
4	*5180.00	97.45 AV			1.57 H	58	61.40	36.05
5	#6906.00	48.65 PK	68.30	-19.65	1.64 H	5	7.57	41.08
7	#10360.00	53.49 PK	68.30	-14.81	1.70 H	84	7.57	45.92

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	48.53 PK	74.00	-25.47	1.36 V	64	12.53	36.00
2	5150.00	45.80 AV	54.00	-8.20	1.36 V	64	9.80	36.00
3	*5180.00	113.40 PK			1.21 V	64	77.35	36.05
4	*5180.00	99.40 AV			1.21 V	64	63.35	36.05
5	#6906.00	53.60 PK	68.30	-14.70	1.54 V	68	12.52	41.08
7	#10360.00	54.60 PK	68.30	-13.70	1.62 V	253	8.68	45.92

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 2	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 55%RH 965hPa	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	109.93 PK			1.60 H	54	73.85	36.08
2	*5200.00	98.11 AV			1.60 H	54	62.03	36.08
3	#6933.00	49.65 PK	68.30	-18.65	1.70 H	83	8.52	41.13
5	#10400.00	53.72 PK	68.30	-14.58	1.48 H	100	7.73	45.99
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	113.20 PK			1.24 V	53	77.12	36.08
2	*5200.00	99.60 AV			1.24 V	53	63.52	36.08
3	#6933.00	54.70 PK	68.30	-13.60	1.58 V	78	13.57	41.13
5	#10400.00	55.30 PK	68.30	-13.00	1.32 V	254	9.31	45.99

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 55%RH 965hPa	TESTED BY	Frank Liu

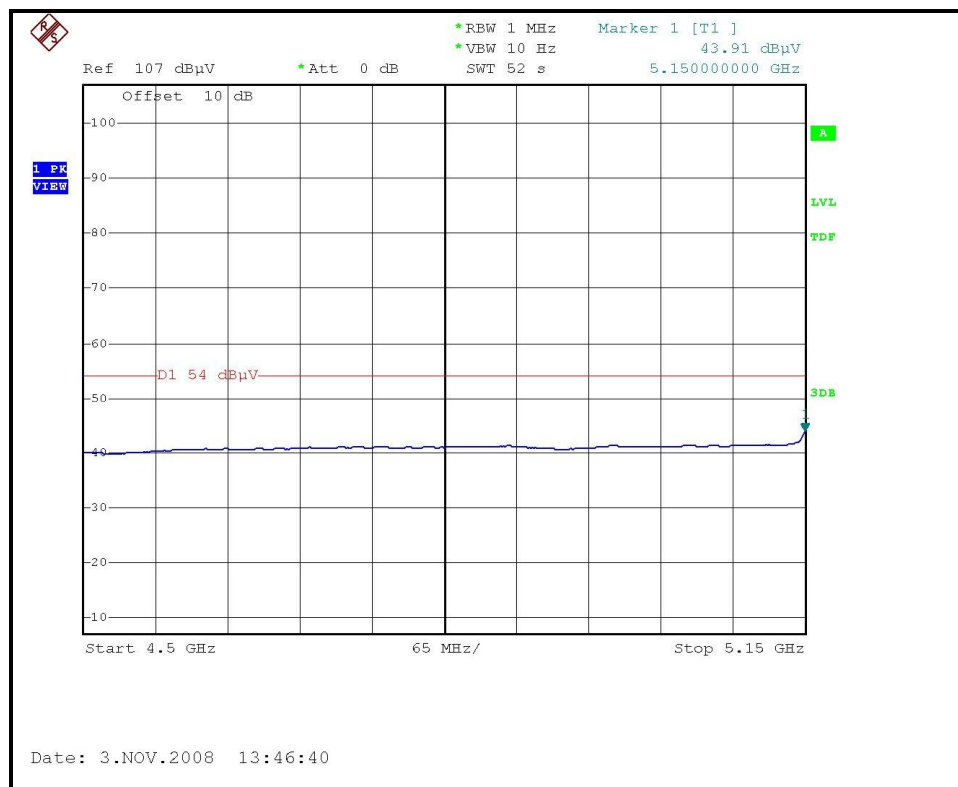
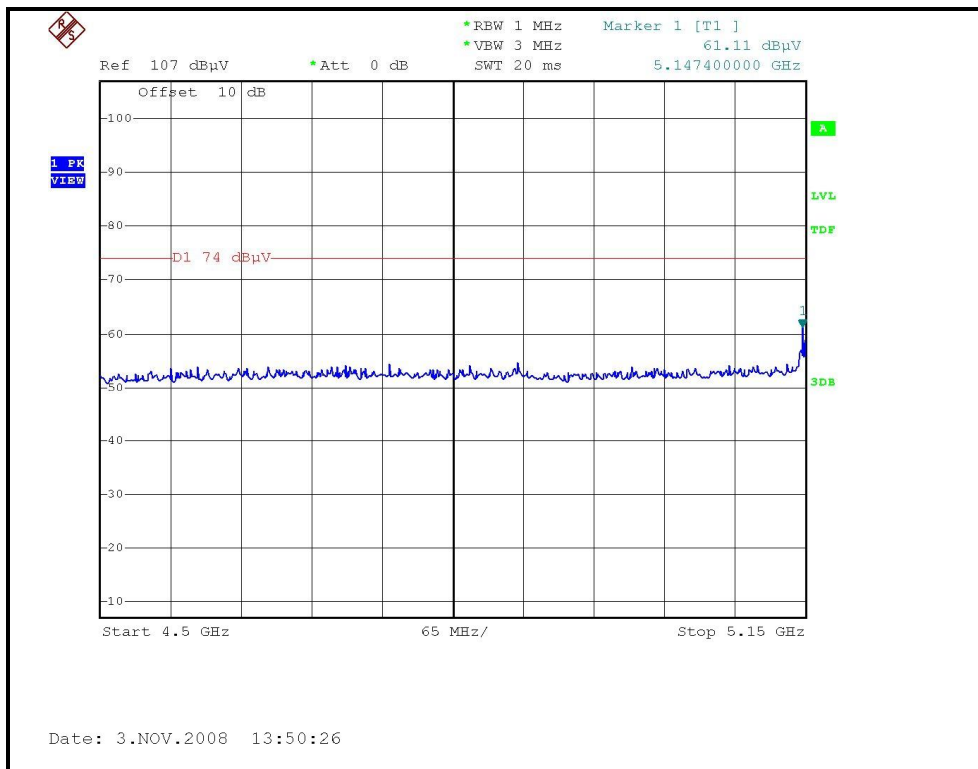
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NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	110.40 PK			1.63 H	85	74.26	36.14
2	*5240.00	98.23 AV			1.63 H	85	62.09	36.14
3	5350.00	56.53 PK	74.00	-17.47	1.63 H	85	20.21	36.32
4	5350.00	42.94 AV	54.00	-11.06	1.63 H	85	6.62	36.32
5	#6986.00	49.45 PK	68.30	-18.85	1.65 H	94	8.22	41.23
7	#10480.00	54.04 PK	68.30	-14.26	1.58 H	77	7.92	46.12
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	114.10 PK			1.25 V	59	77.96	36.14
2	*5240.00	100.10 AV			1.25 V	59	63.96	36.14
3	5350.00	56.50 PK	74.00	-17.50	1.25 V	59	20.18	36.32
4	5350.00	42.97 AV	54.00	-11.03	1.25 V	59	6.65	36.32
5	#6986.00	56.80 PK	68.30	-11.50	1.56 V	70	15.57	41.23
7	#10480.00	56.20 PK	68.30	-12.10	1.32 V	63	10.08	46.12

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



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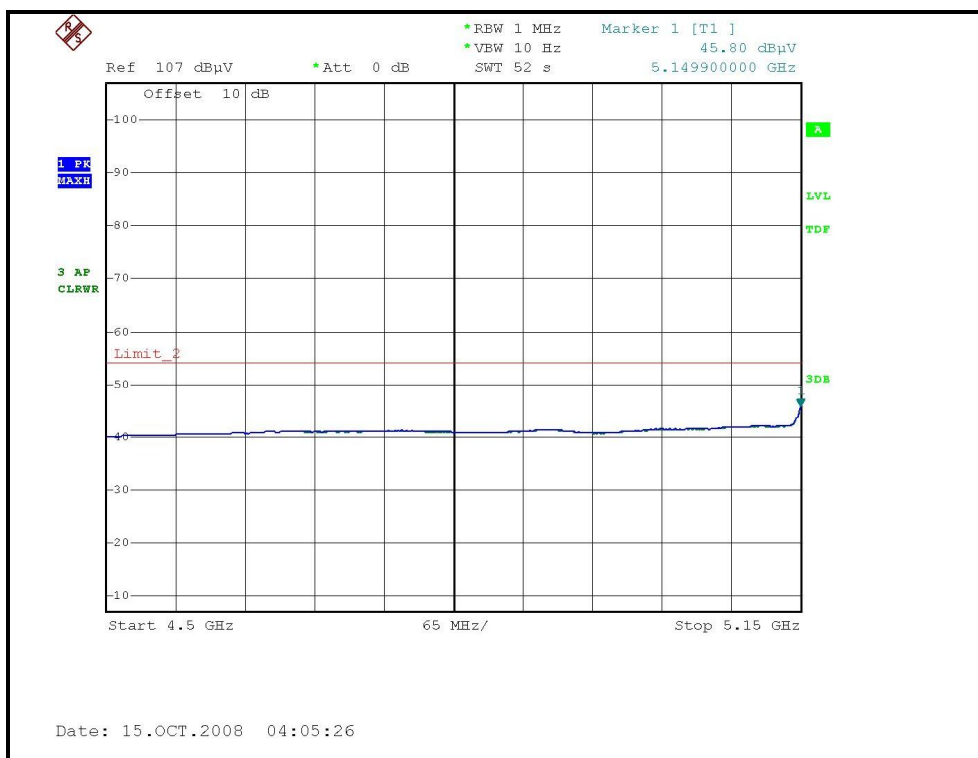
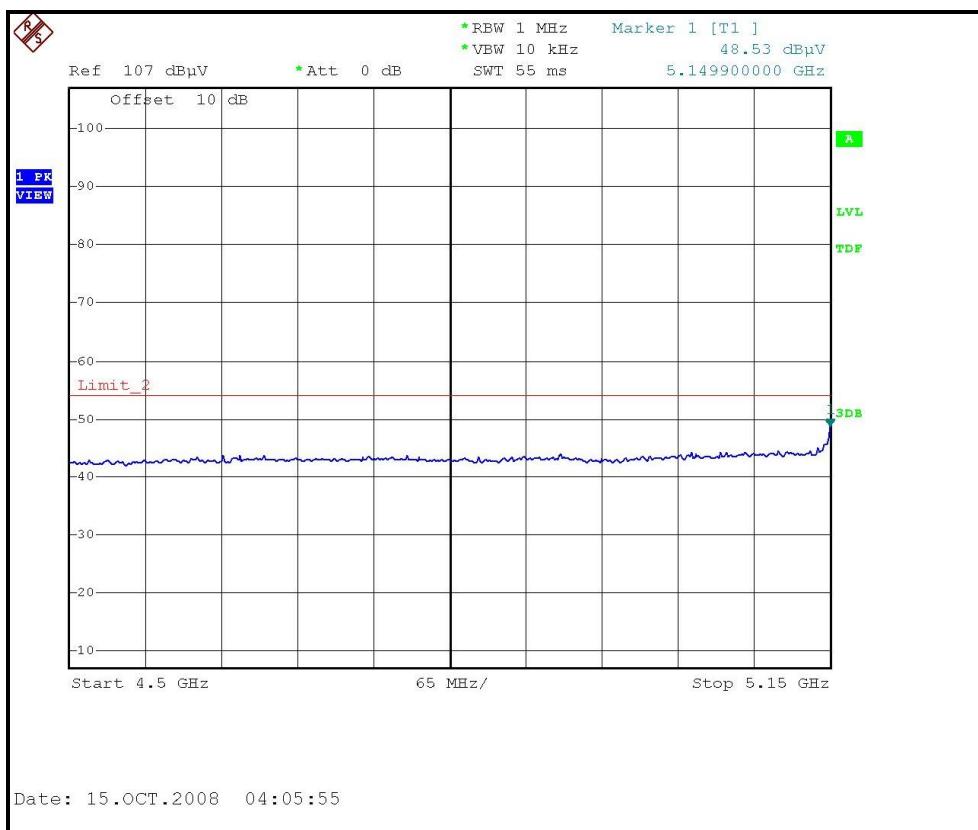
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH1, HORIZONTAL)





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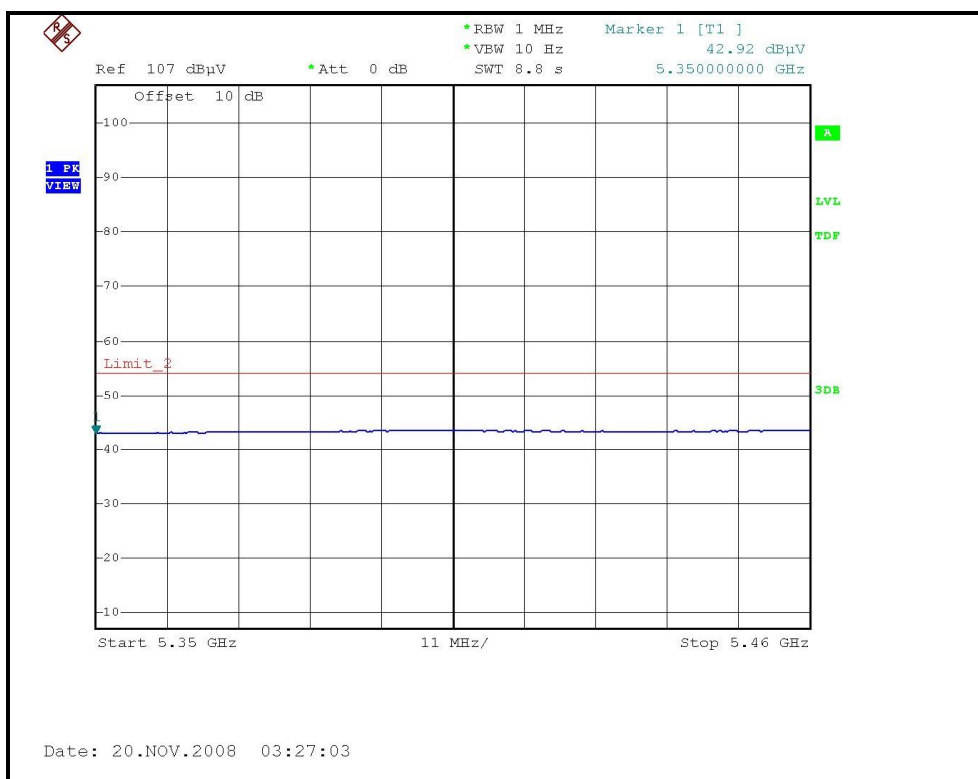
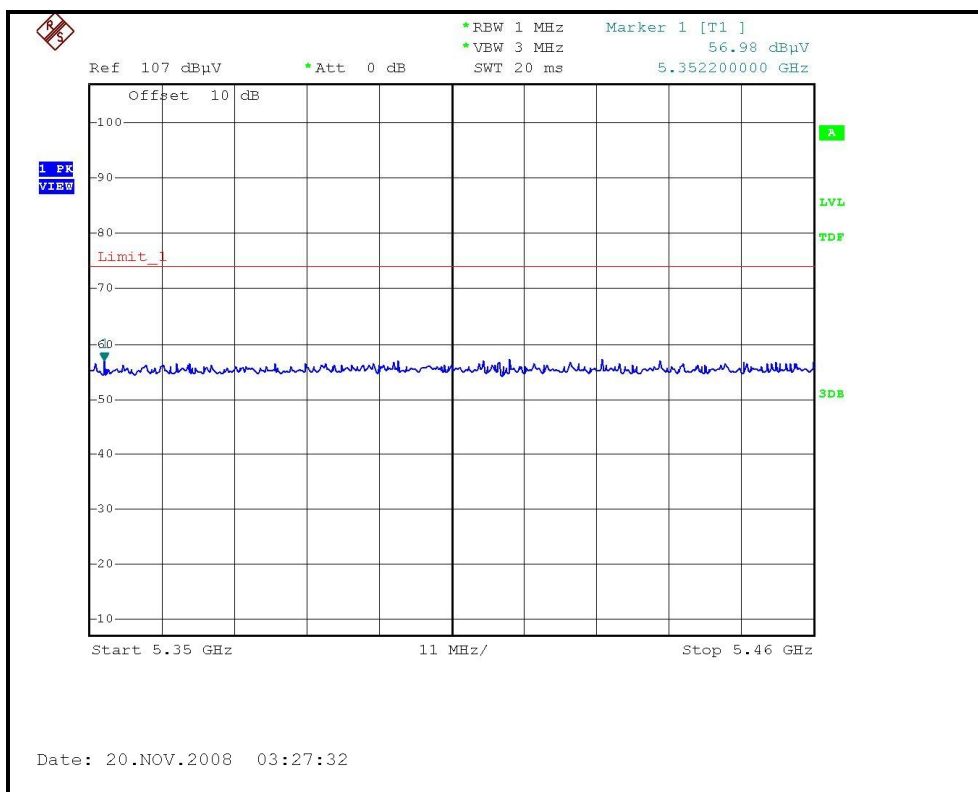
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH1, VERTICAL)





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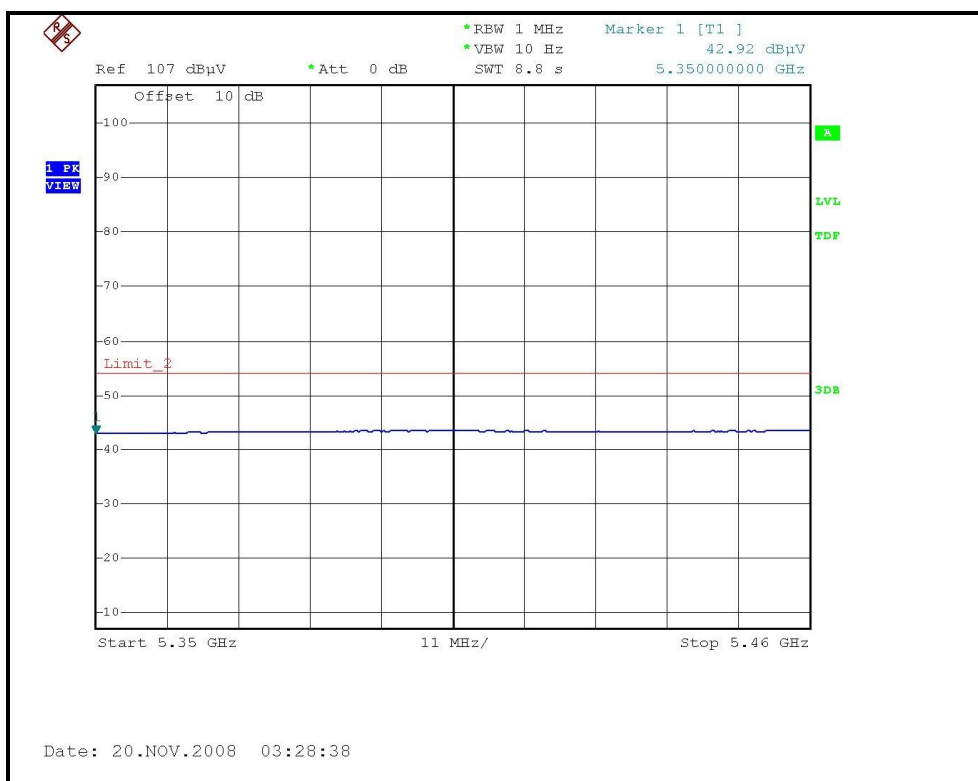
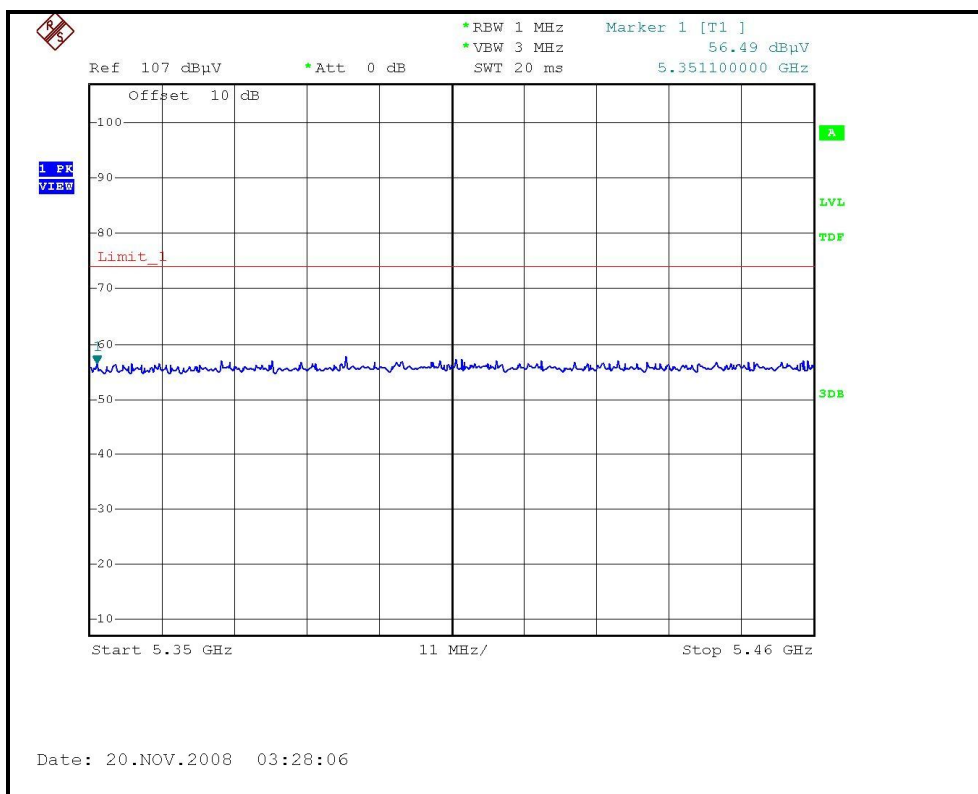
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH4, HORIZONTAL)





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RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH4, VERTICAL)





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DRAFT 802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 55%RH 965hPa	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.22 PK	74.00	-7.78	1.48 H	60	30.22	36.00
2	5150.00	47.80 AV	54.00	-6.20	1.48 H	60	11.80	36.00
3	*5190.00	104.48 PK			1.67 H	51	68.42	36.06
4	*5190.00	90.49 AV			1.67 H	51	54.43	36.06
5	#6920.00	47.45 PK	68.30	-20.85	1.48 H	2	6.35	41.10
7	#10380.00	53.89 PK	68.30	-14.41	1.50 H	62	7.93	45.96
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	73.20 PK	74.00	-0.80	1.51 V	165	37.20	36.00
2	5150.00	51.85 AV	54.00	-2.15	1.51 V	165	15.85	36.00
3	*5190.00	107.70 PK			1.50 V	117	71.64	36.06
4	*5190.00	93.50 AV			1.50 V	117	57.44	36.06
5	#6920.00	55.80 PK	68.30	-12.50	1.26 V	66	14.70	41.10
7	#10380.00	55.60 PK	68.30	-12.70	1.34 V	262	9.64	45.96

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 2	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 55%RH 965hPa	TESTED BY	Frank Liu

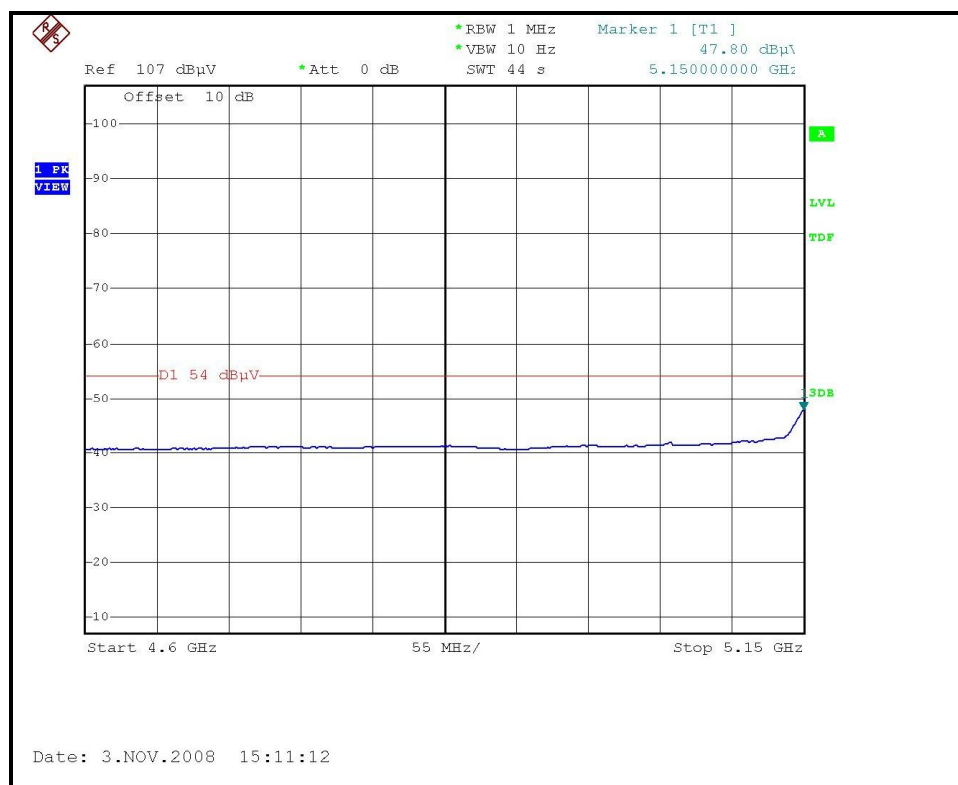
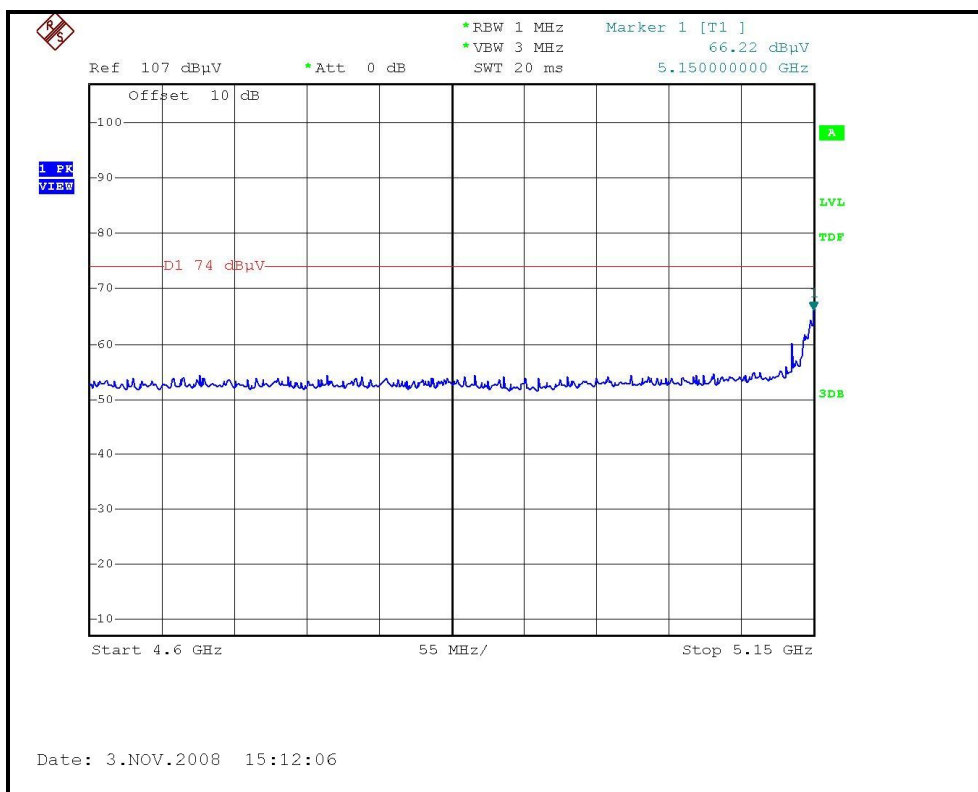
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	107.62 PK			1.58 H	69	71.49	36.13
2	*5230.00	93.81 AV			1.58 H	69	57.68	36.13
3	5350.00	56.39 PK	74.00	-17.61	1.58 H	69	20.07	36.32
4	5350.00	42.95 AV	54.00	-11.05	1.58 H	69	6.63	36.32
5	#6973.00	48.67 PK	68.30	-19.63	1.30 H	332	7.46	41.21
7	#10460.00	54.72 PK	68.30	-13.58	1.42 H	178	8.63	46.09
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	109.80 PK			1.51 V	129	73.67	36.13
2	*5230.00	95.70 AV			1.51 V	129	59.57	36.13
3	5350.00	56.36 PK	74.00	-17.64	1.51 V	129	20.04	36.32
4	5350.00	42.95 AV	54.00	-11.05	1.51 V	129	6.63	36.32
5	#6973.00	55.90 PK	68.30	-12.40	1.50 V	68	14.69	41.21
7	#10460.00	55.90 PK	68.30	-12.40	1.34 V	262	9.81	46.09

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



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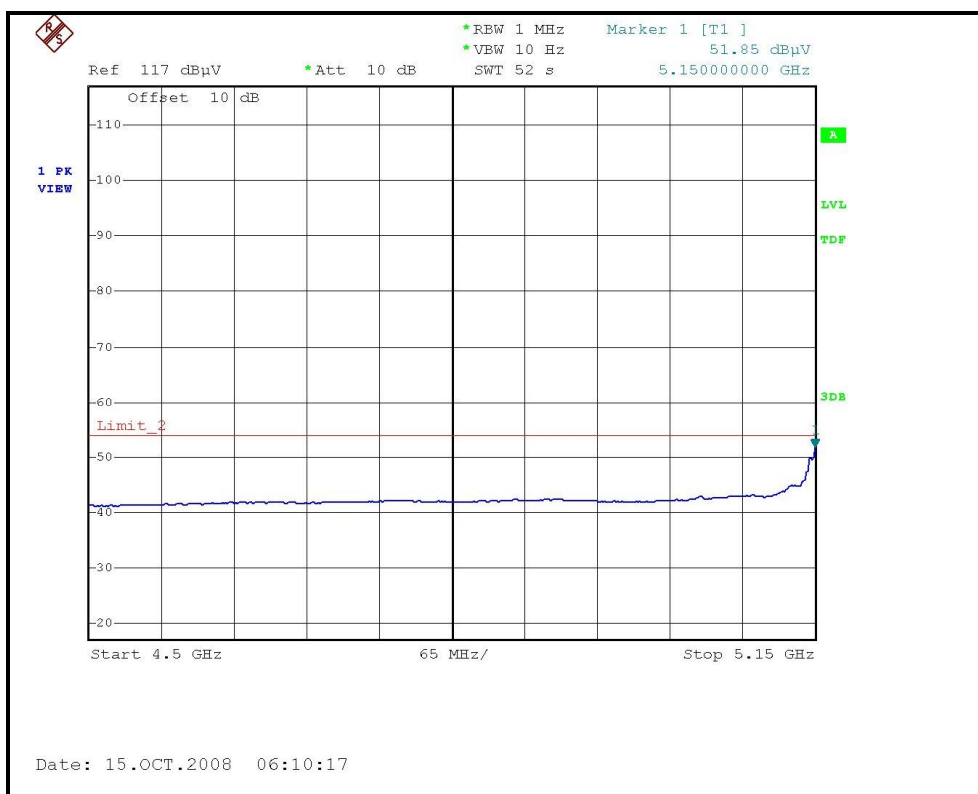
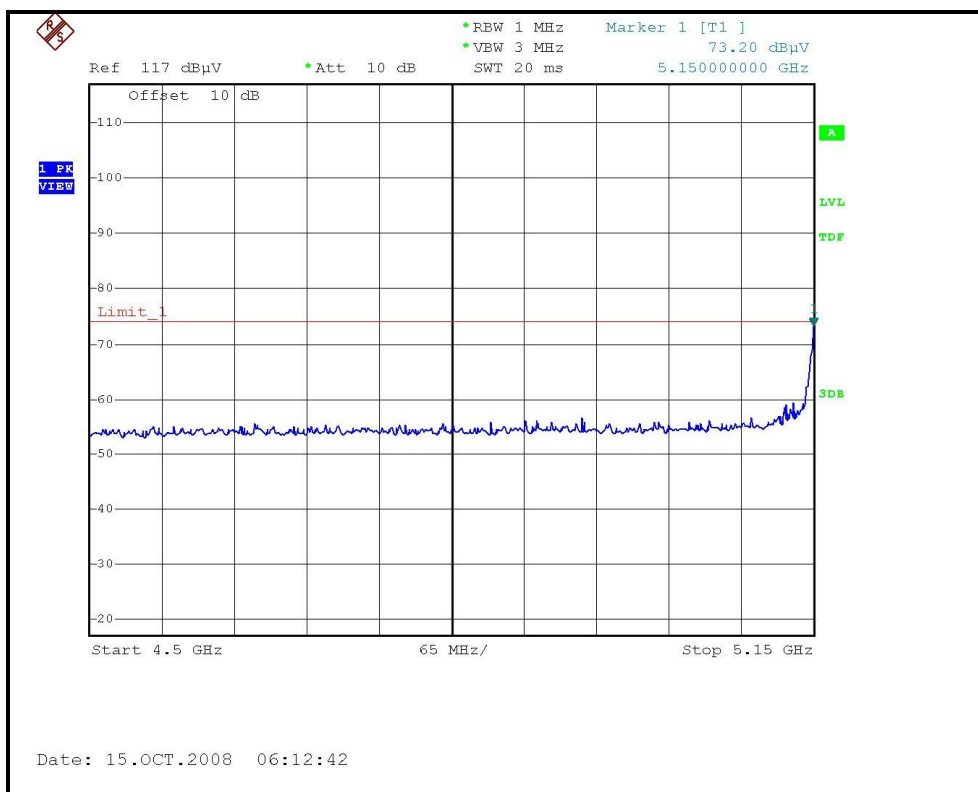
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE, CH1, HORIZONTAL)





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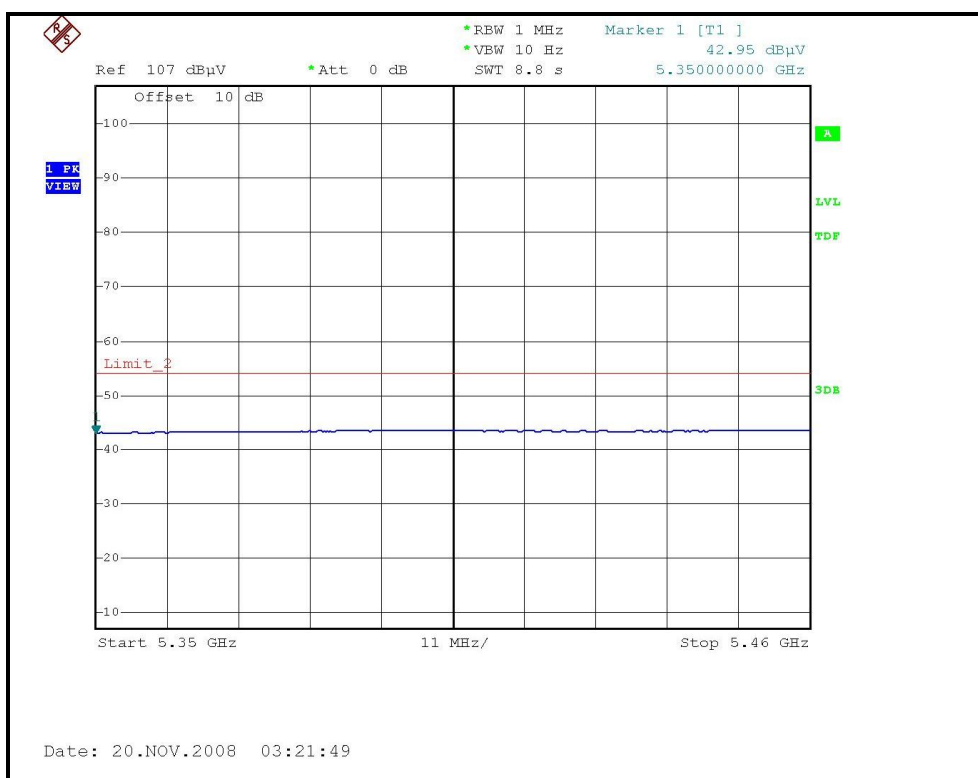
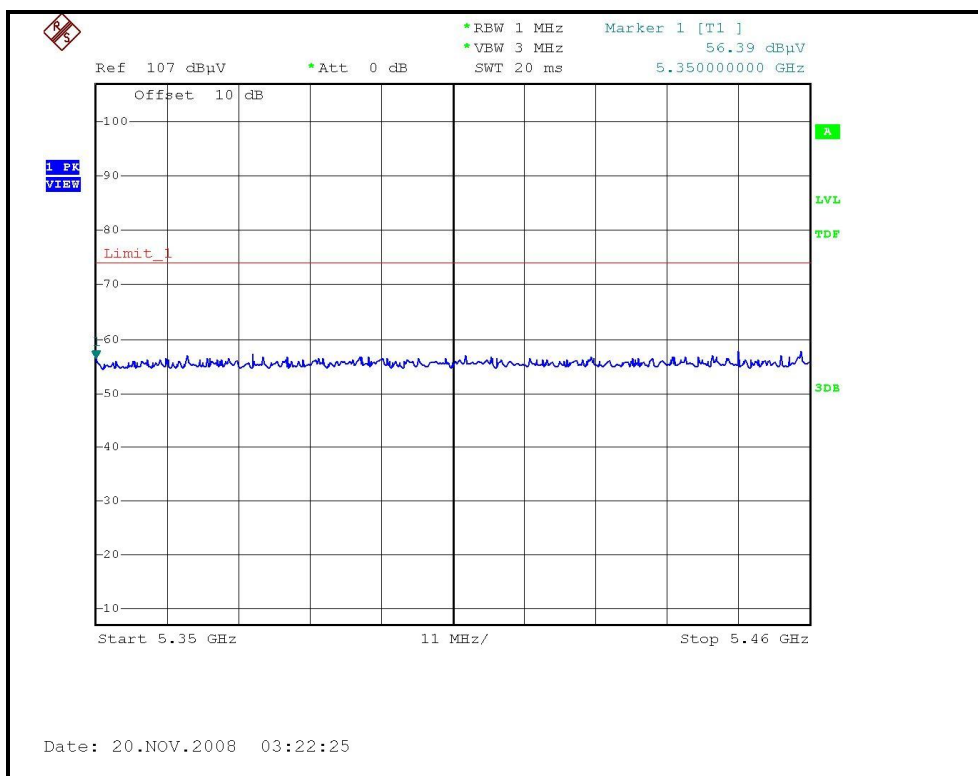
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH1, VERTICAL)





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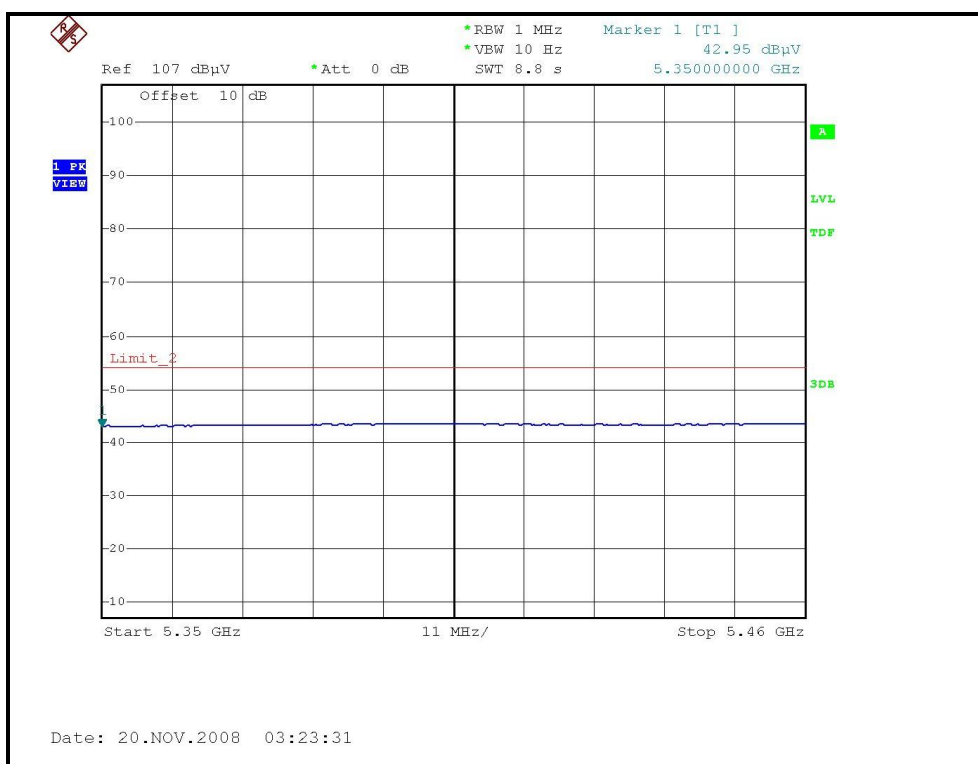
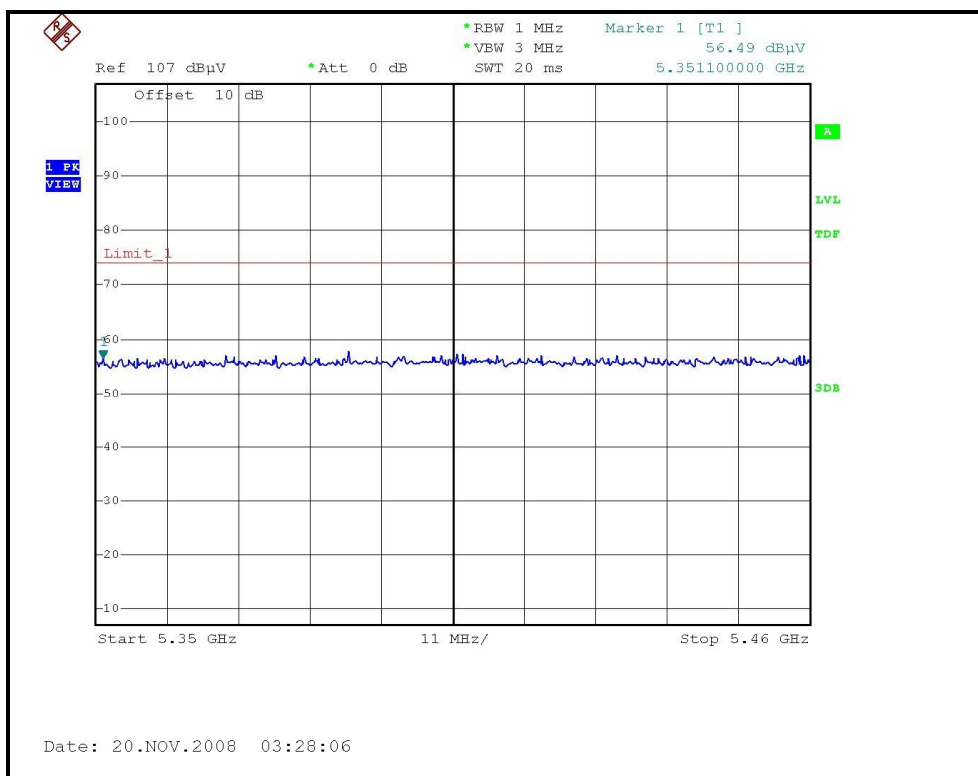
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE, CH2, HORIZONTAL)





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RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE, CH2, VERTICAL)



4.3 PEAK TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

Frequency Band	Limit
5.15 – 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.47 – 5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

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

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ADVANTEST SPECTRUM ANALYZER	U3772	160100280	July 26, 2008	July 25, 2009

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
- 2.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 300kHz.
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

802.11a OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

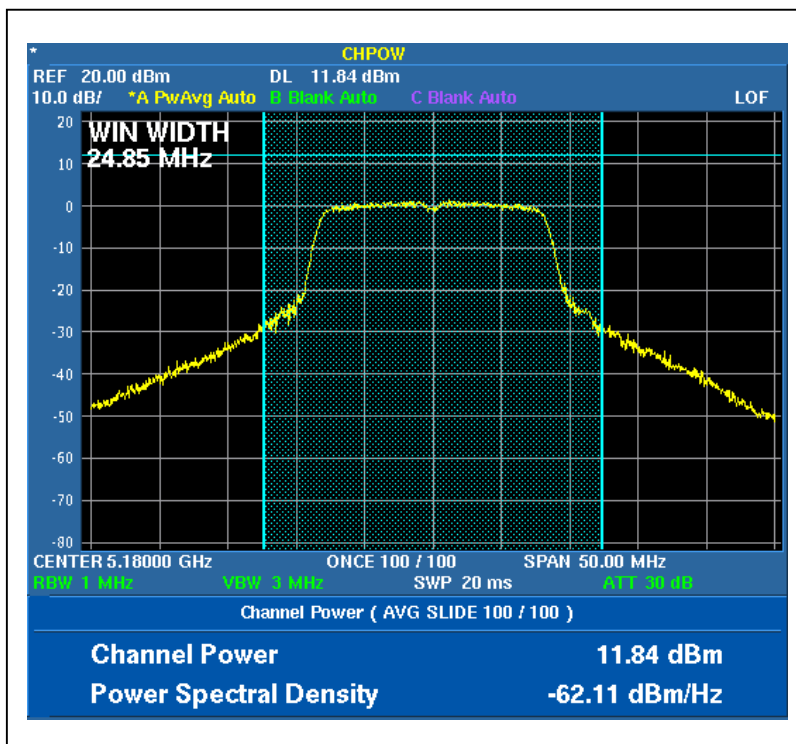
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	11.84	15.276	17	24.85	PASS
2	5200	12.04	15.996	17	24.55	PASS
4	5240	12.11	16.255	17	24.10	PASS

NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

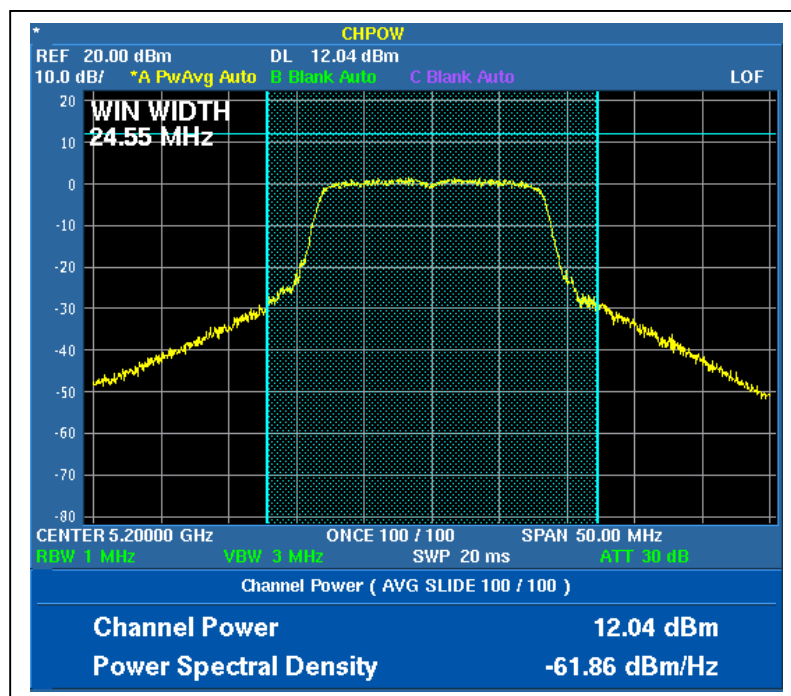


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Peak Power Output: CH1



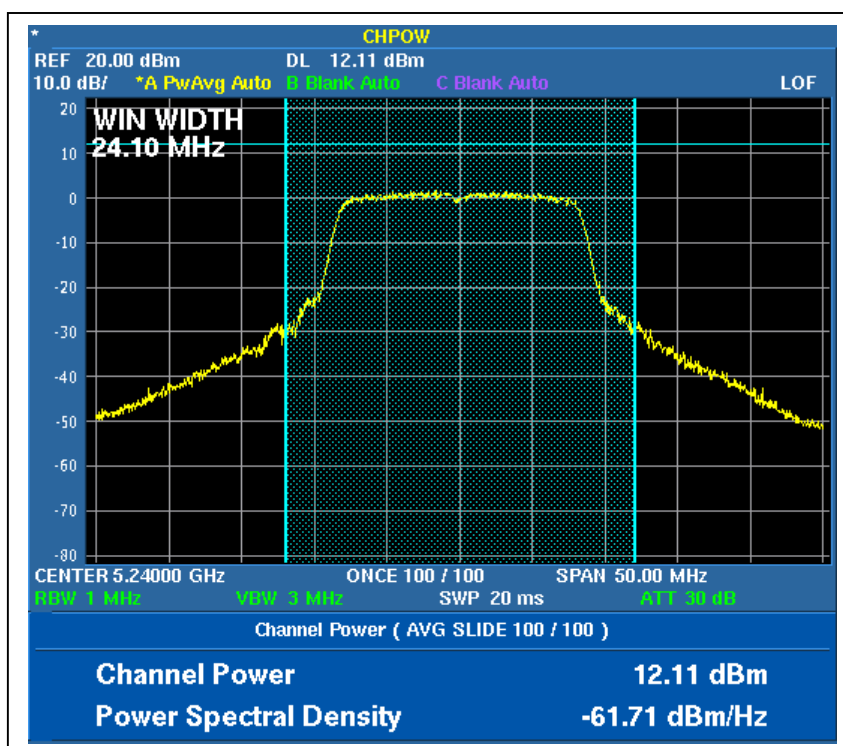
CH2





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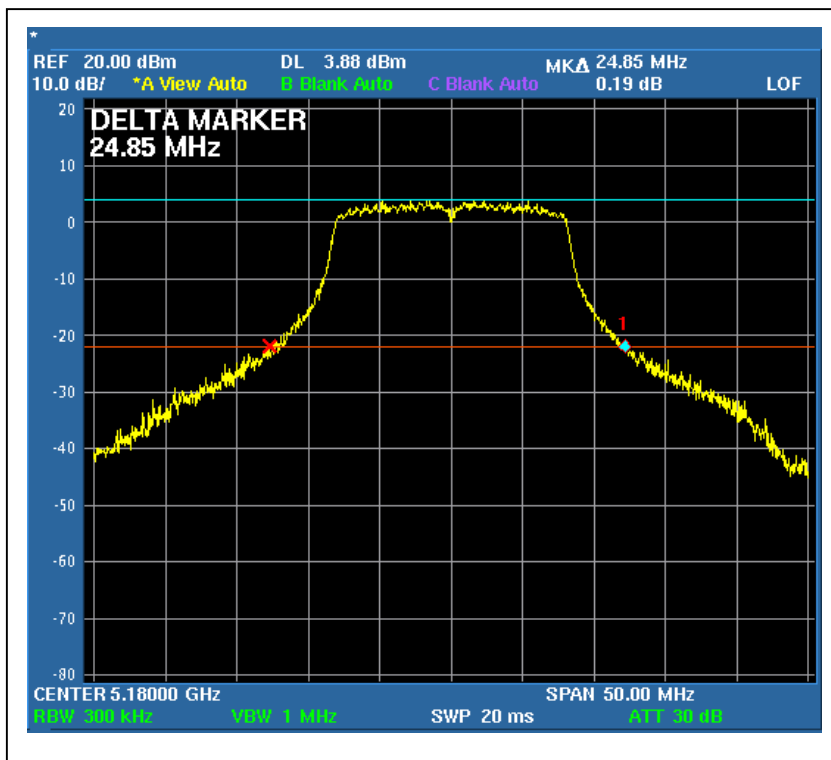
CH4



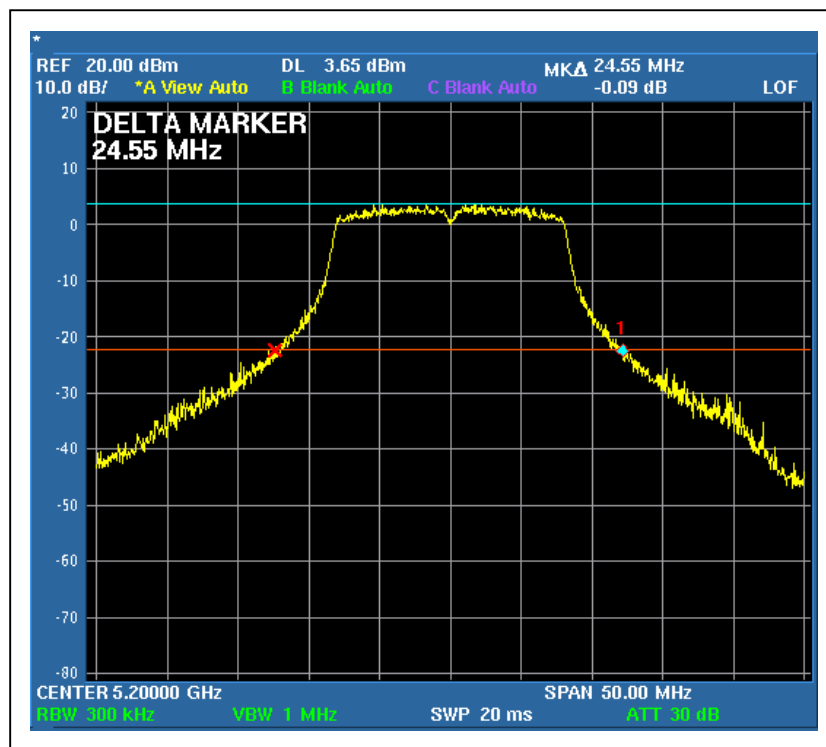


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26dB Occupied Bandwidth: CH1



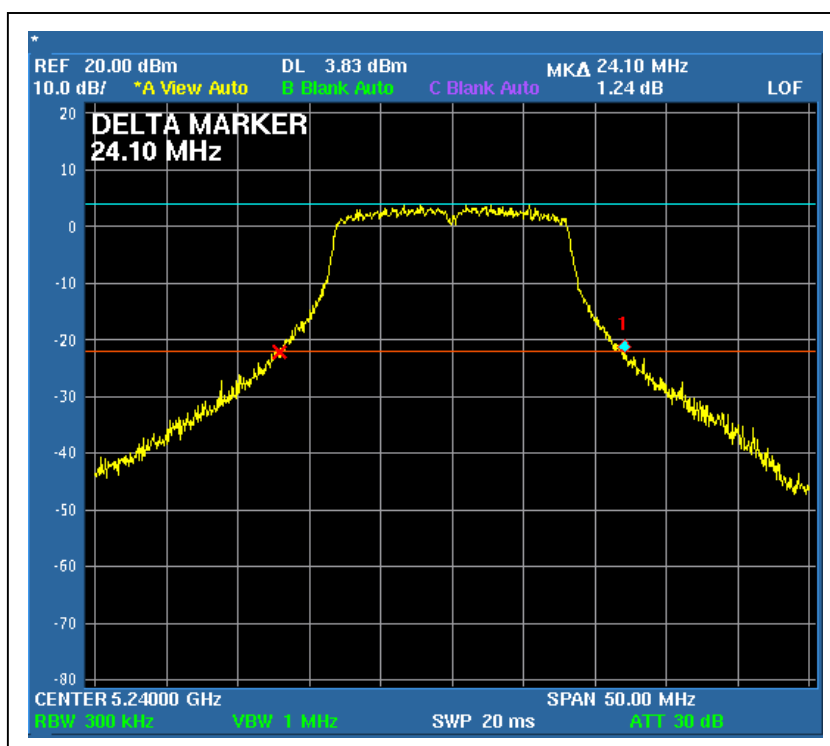
CH2





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CH4





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DRAFT 802.11n (20MHz) OFDM modulation:

MODULATION TYPE	BPSK	TRANSFER RATE	14.444Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)			PEAK POWER OUTPUT (mW)			TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2				
1	5180	7.850	9.410	11.270	6.095	8.710	13.397	28.202	14.503	17	PASS
2	5200	7.920	8.450	10.820	6.194	6.998	12.078	25.270	14.026	17	PASS
4	5240	8.420	8.230	10.940	6.950	6.653	12.417	26.020	14.153	17	PASS

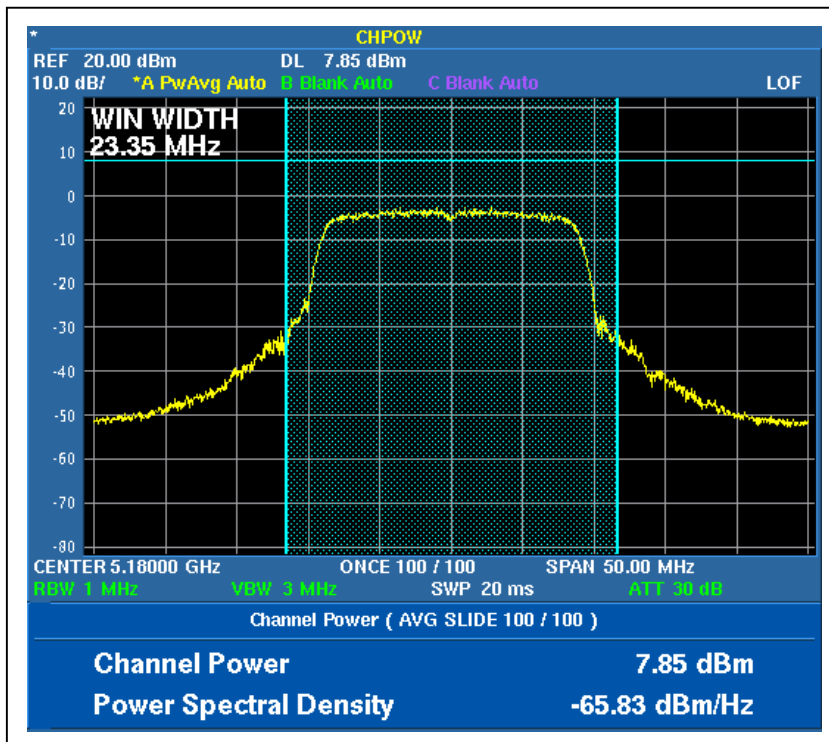
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc Occupied Bandwidth (MHz)			MINIMUM LIMIT (dBm)	PASS / FAIL
		Chain 0	Chain 1	Chain 2		
1	5180	23.35	23.10	23.10	0.5	PASS
2	5200	23.40	23.45	23.20	0.5	PASS
4	5240	23.40	22.90	23.45	0.5	PASS

NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

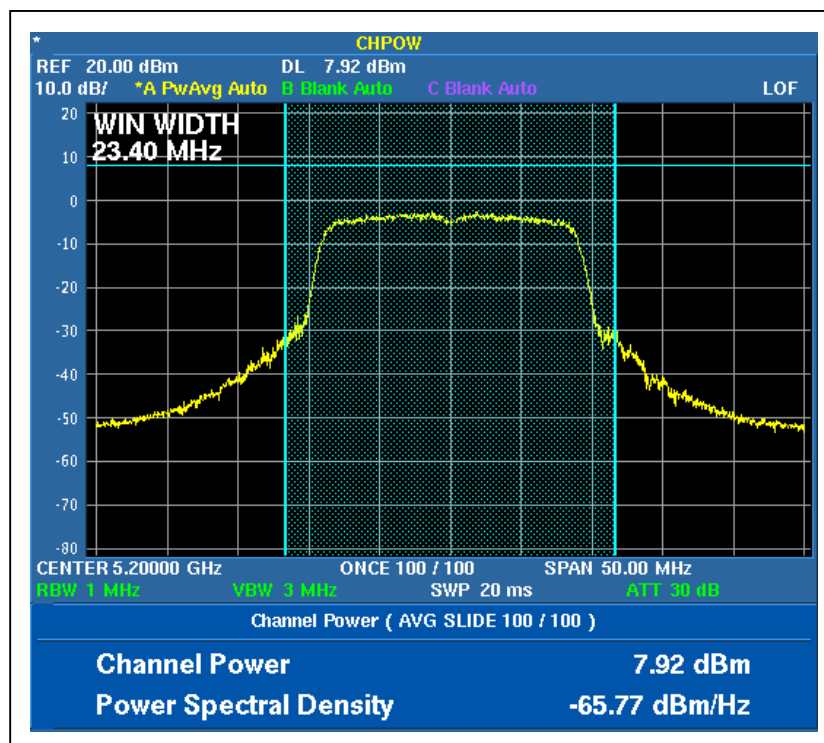


A D T

Peak Power Output:
For Chain (0) :CH1



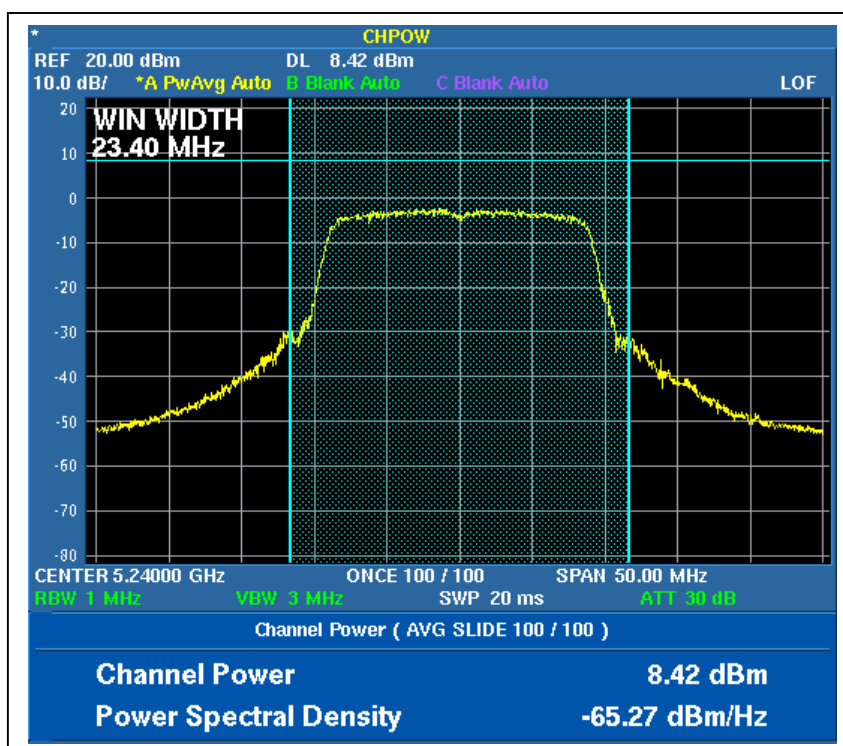
CH2





A D T

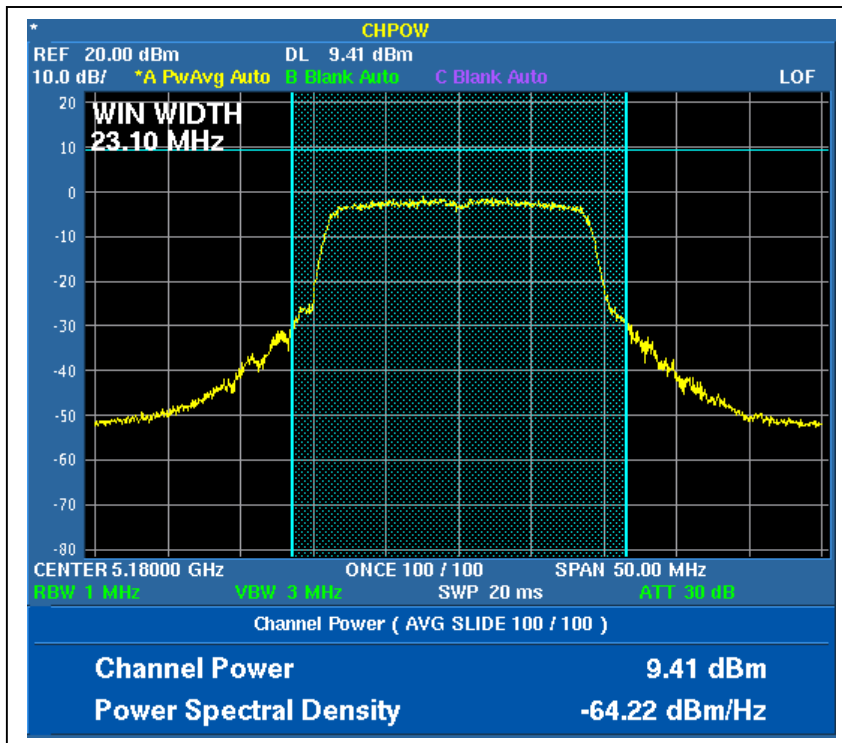
CH4



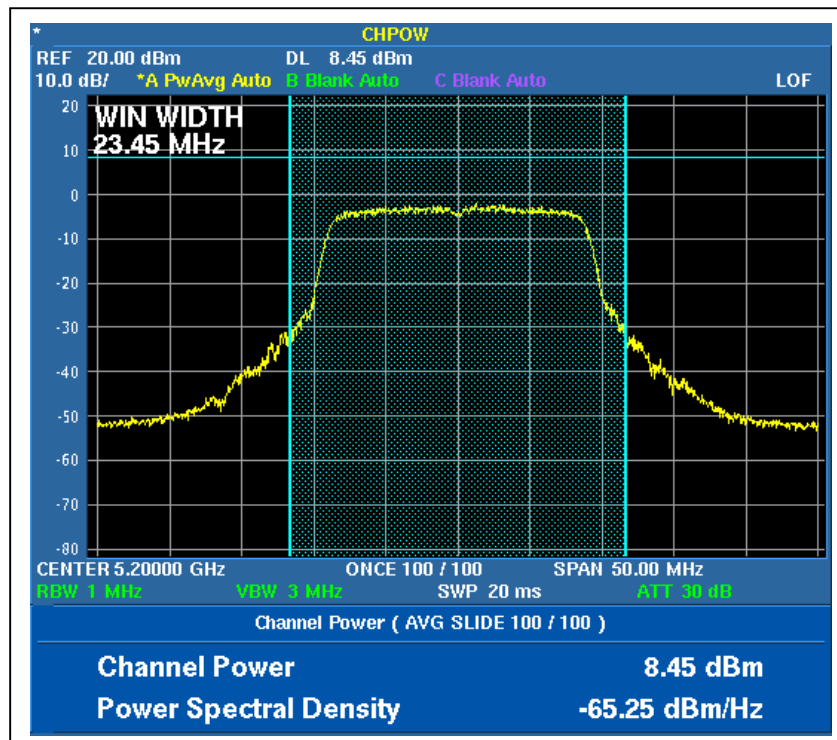


A D T

For Chain (1) :CH1



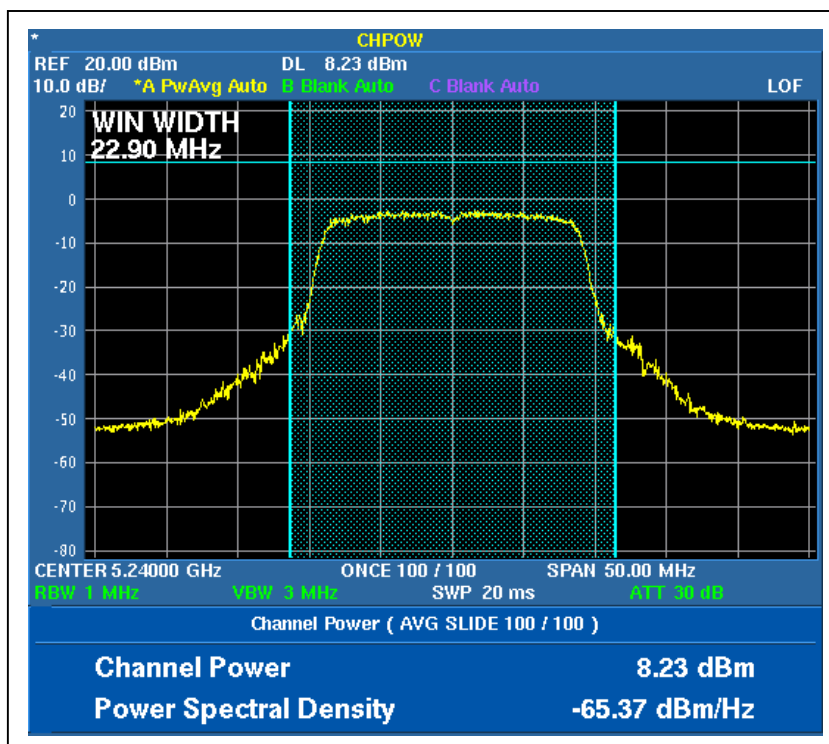
CH2





A D T

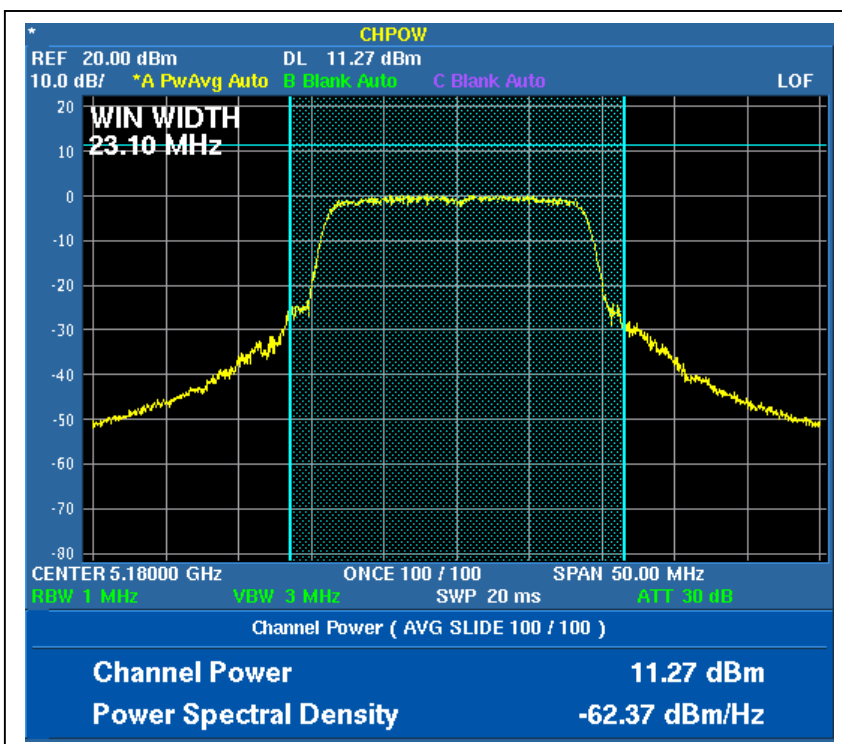
CH4



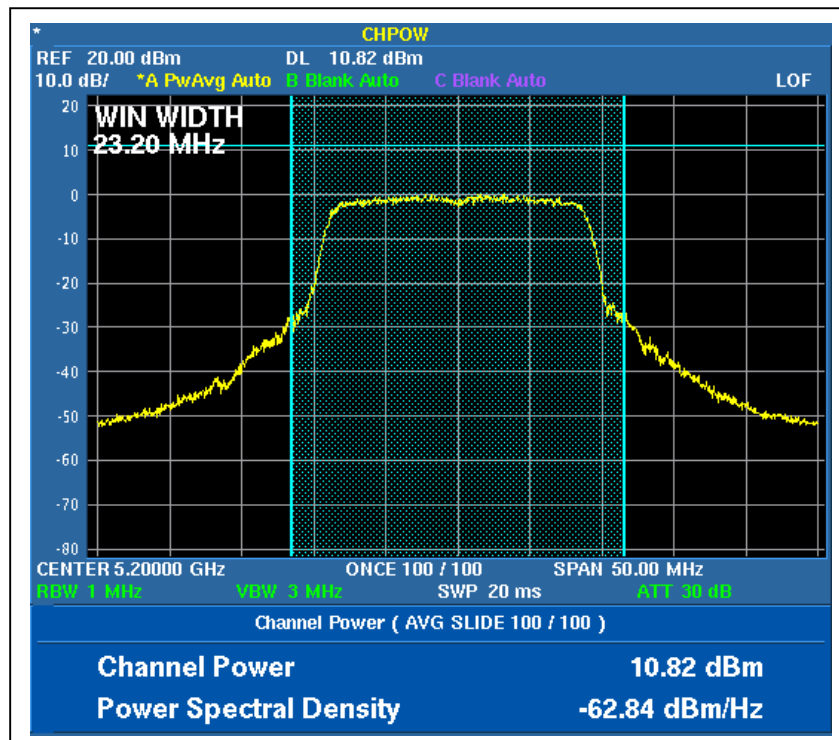


A D T

For Chain (2) :CH1



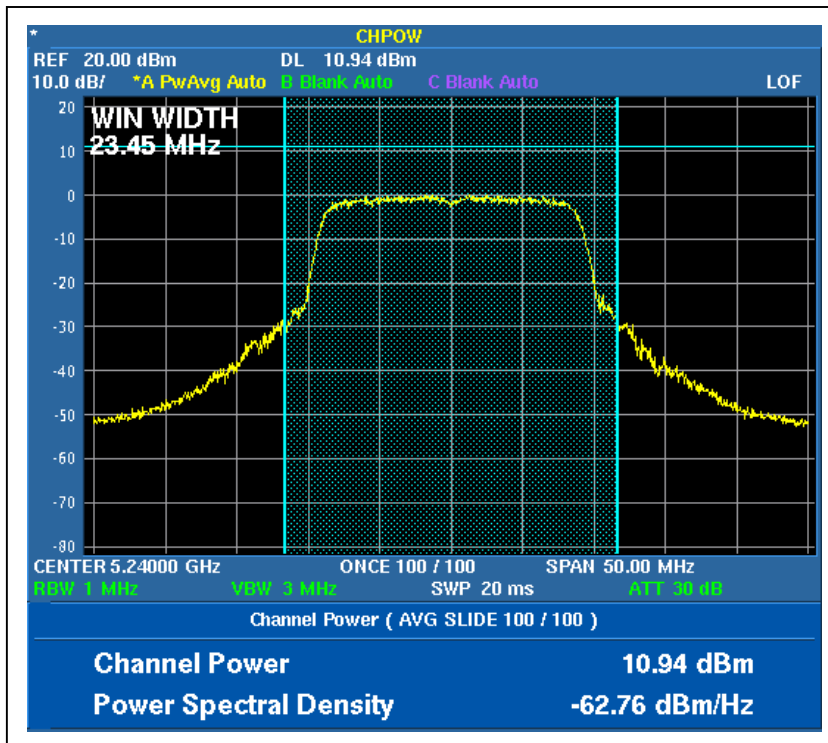
CH2





A D T

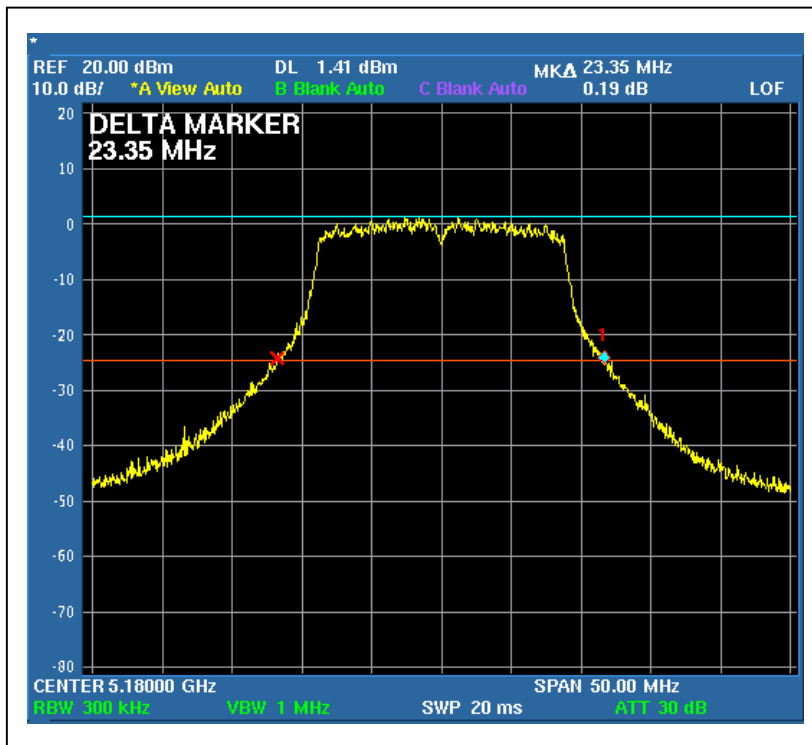
CH4



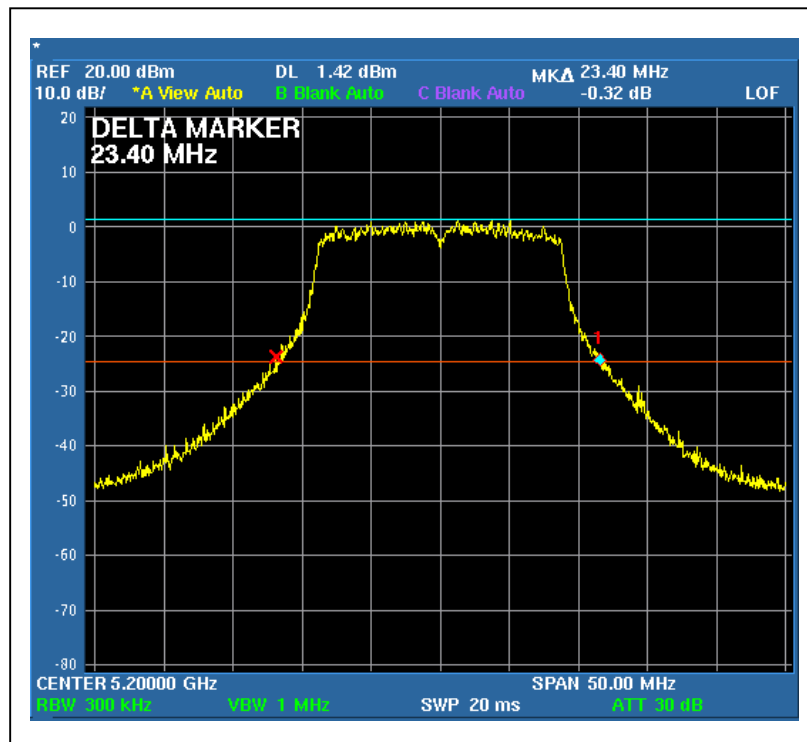


A D T

26dB Occupied Bandwidth:
For Chain (0) :CH1



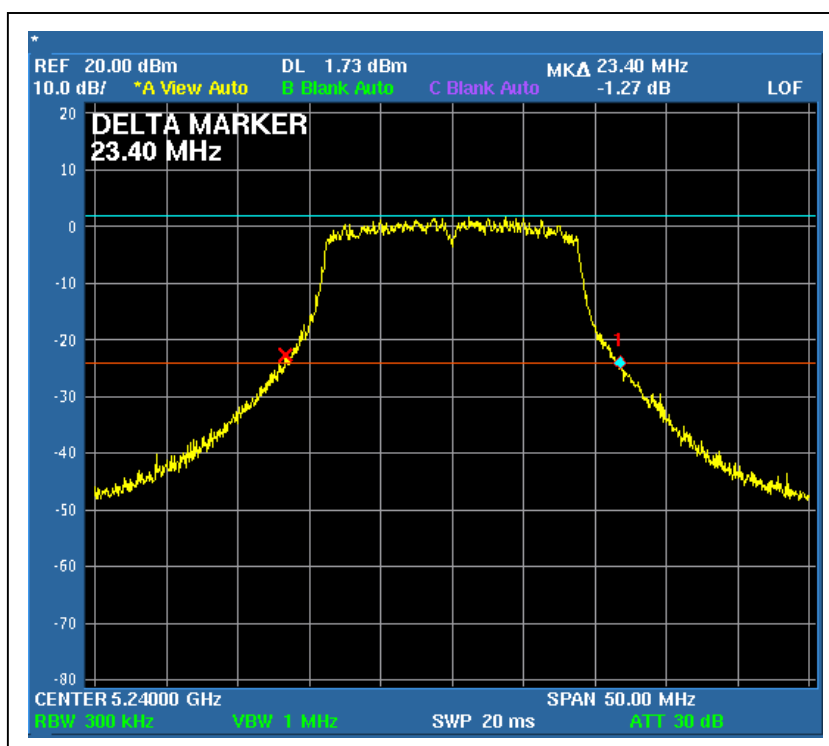
CH2





A D T

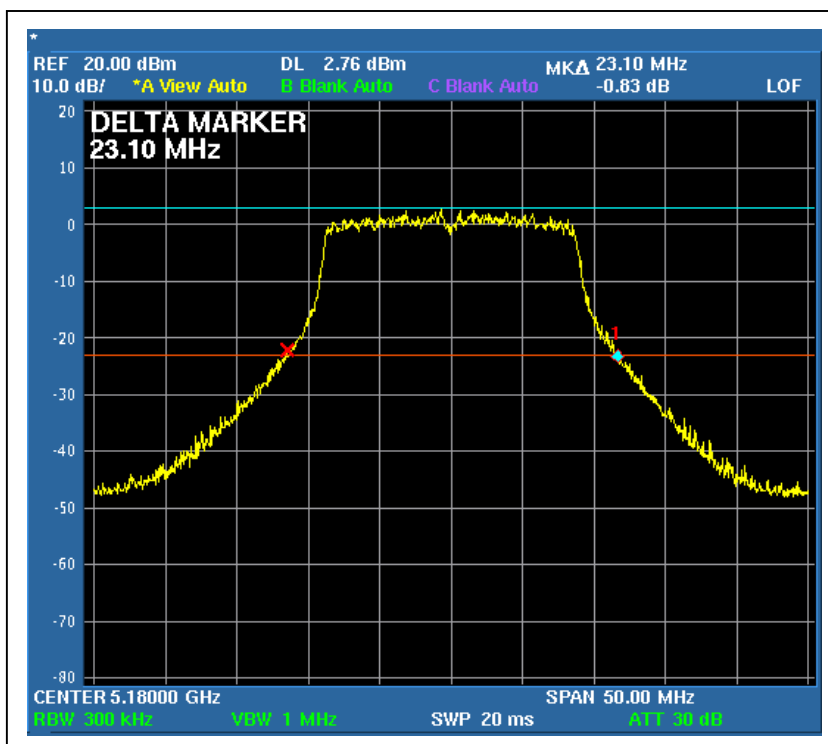
CH4



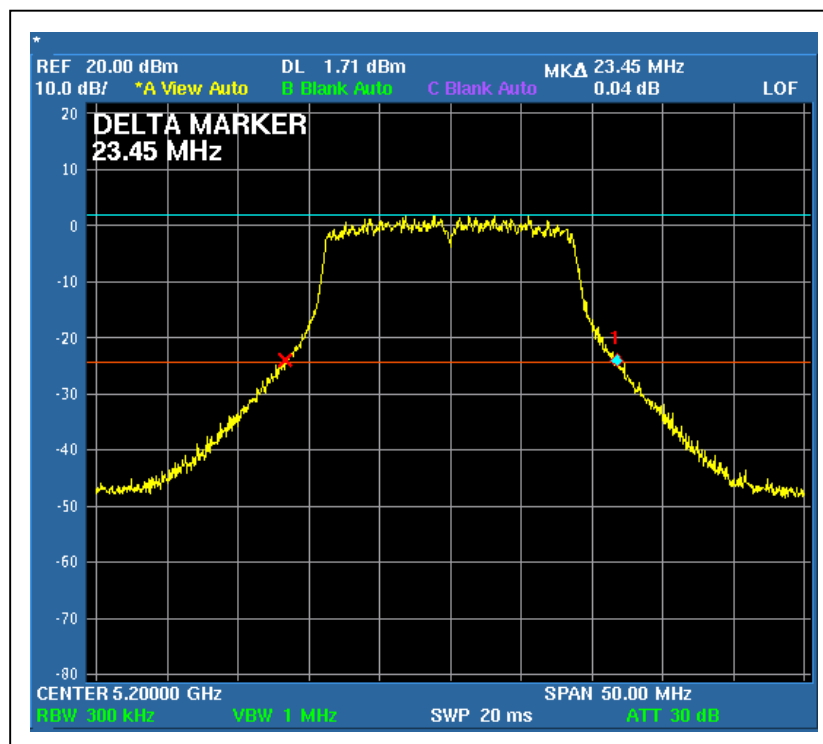


A D T

For Chain (1) :CH1



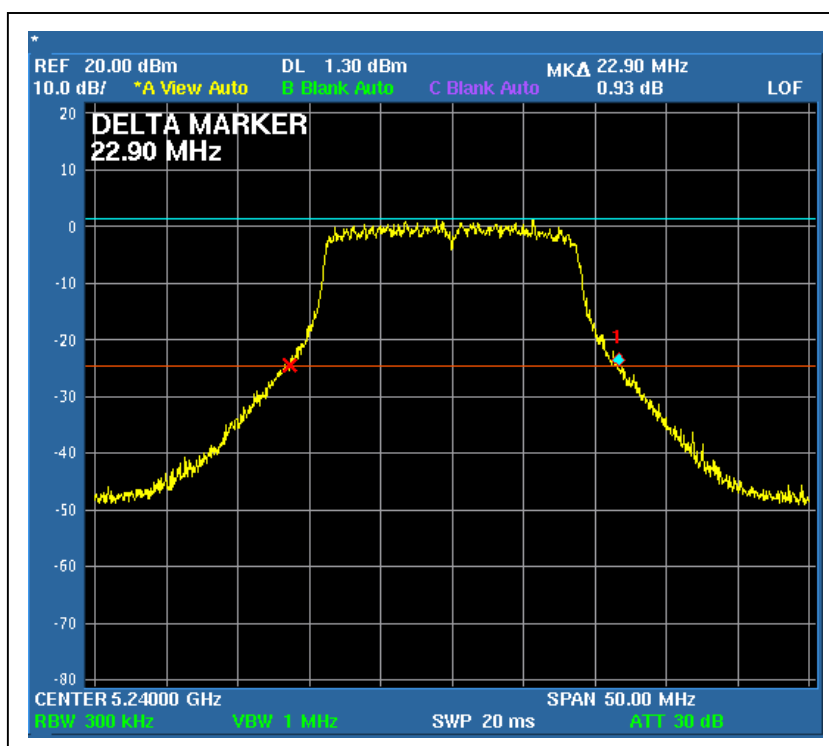
CH2





A D T

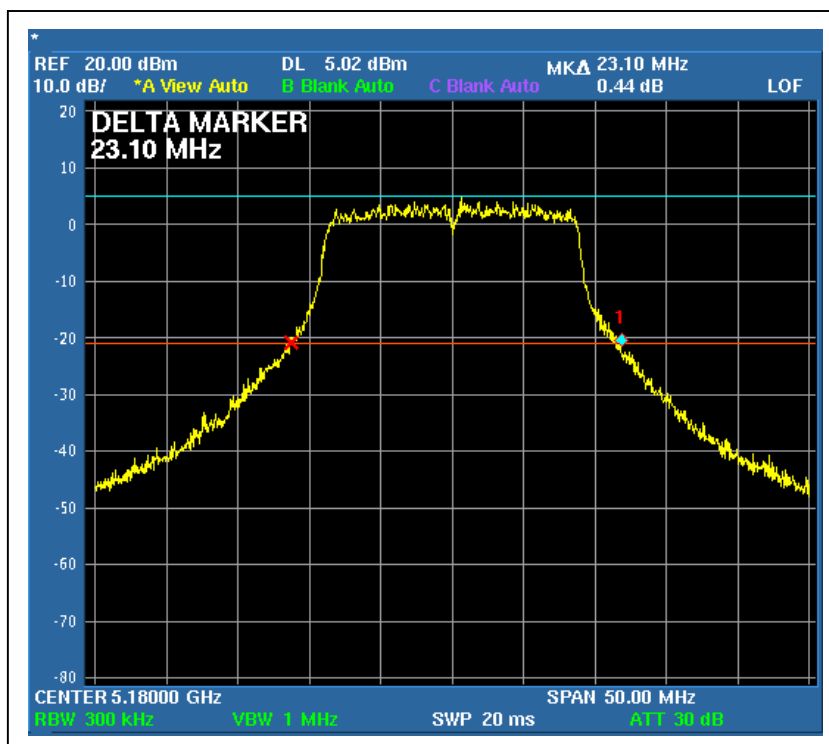
CH4



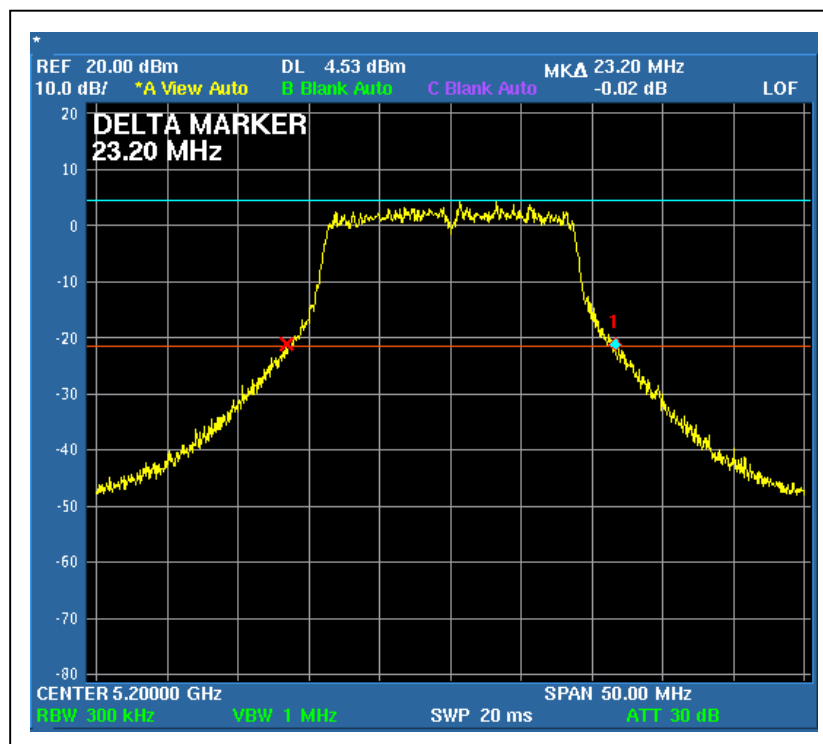


A D T

For Chain (2) :CH1



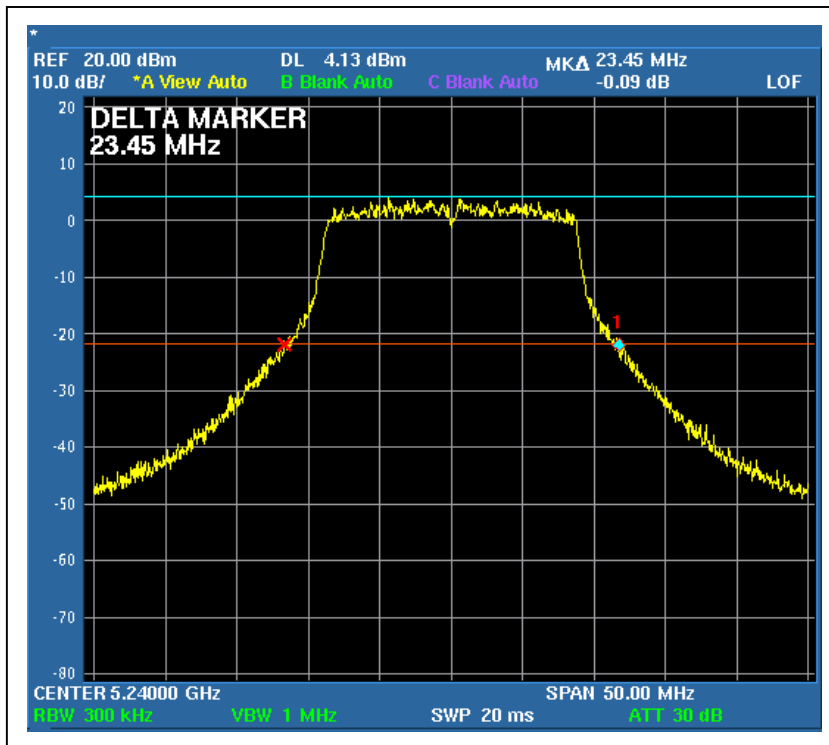
CH2





A D T

CH4





A D T

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	30Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)			PEAK POWER OUTPUT (mW)			TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2				
1	5190	7.390	8.770	10.060	5.483	7.534	10.139	23.156	13.647	17	PASS
2	5230	10.460	11.180	13.360	11.117	13.122	21.677	45.916	16.620	17	PASS

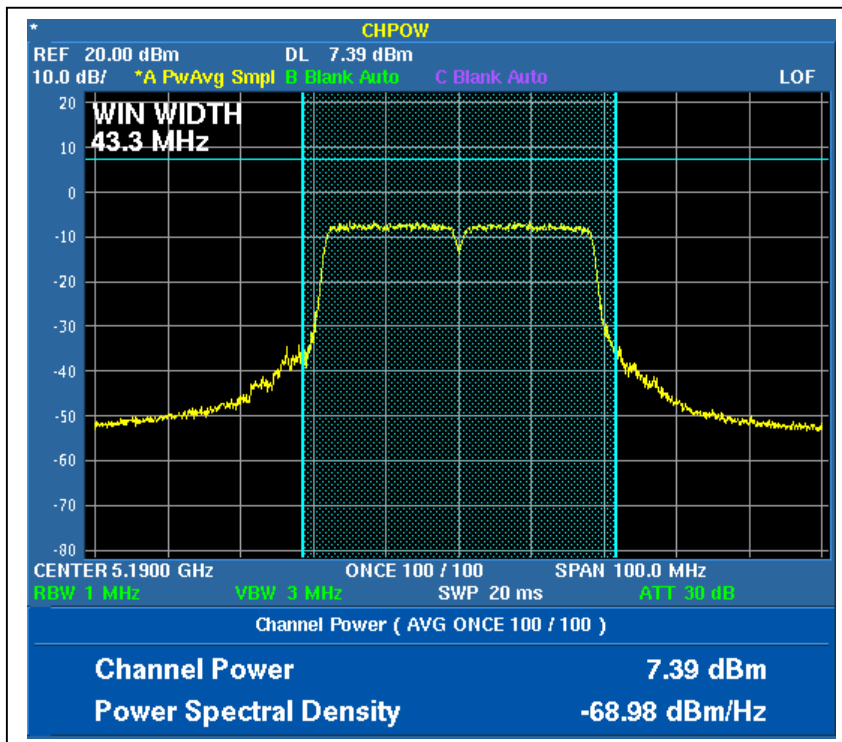
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc Occupied Bandwidth (MHz)			MINIMUM LIMIT (dBm)	PASS / FAIL
		Chain 0	Chain 1	Chain 2		
1	5190	43.30	44.10	43.80	0.5	PASS
2	5230	44.00	44.40	44.10	0.5	PASS

NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

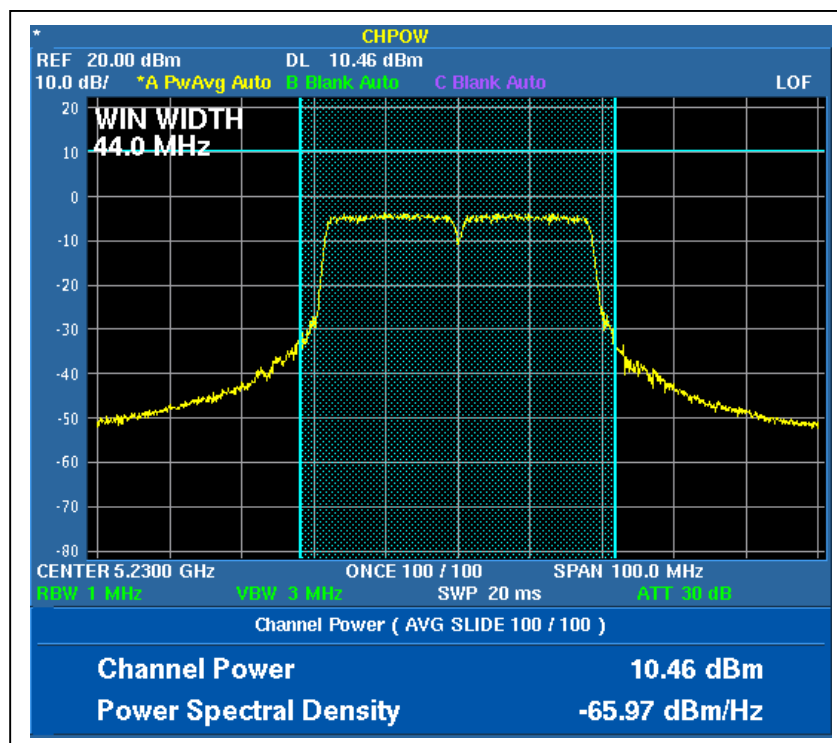


A D T

Peak Power Output:
For Chain (0) :CH1



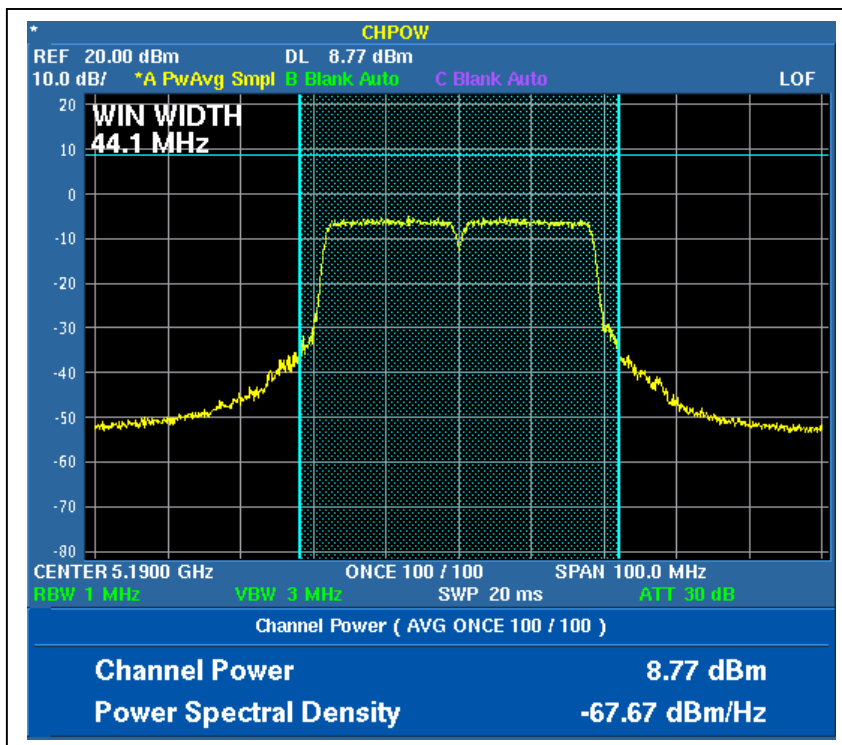
CH2



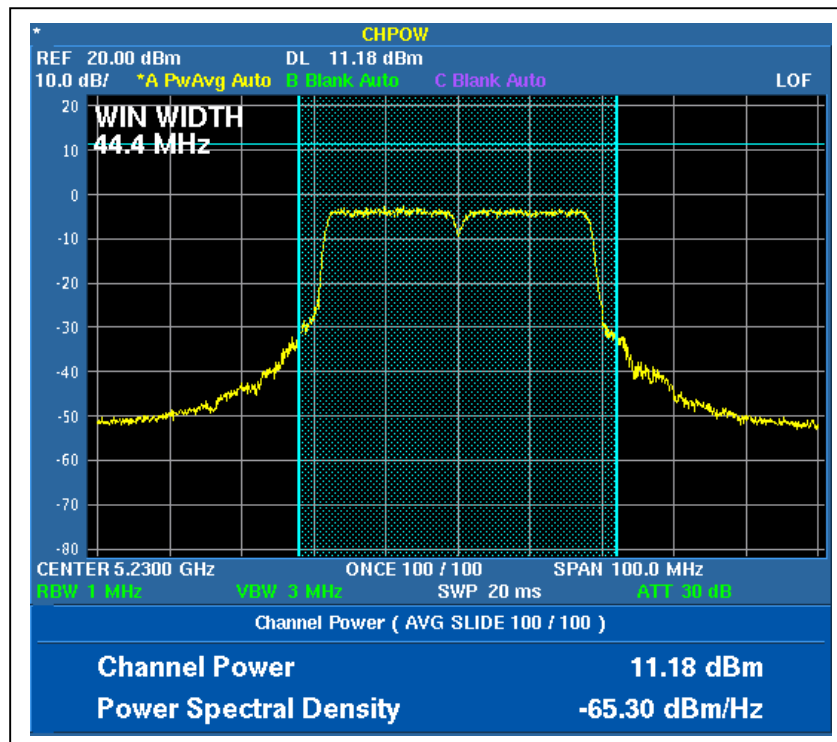


A D T

For Chain (1) :CH1



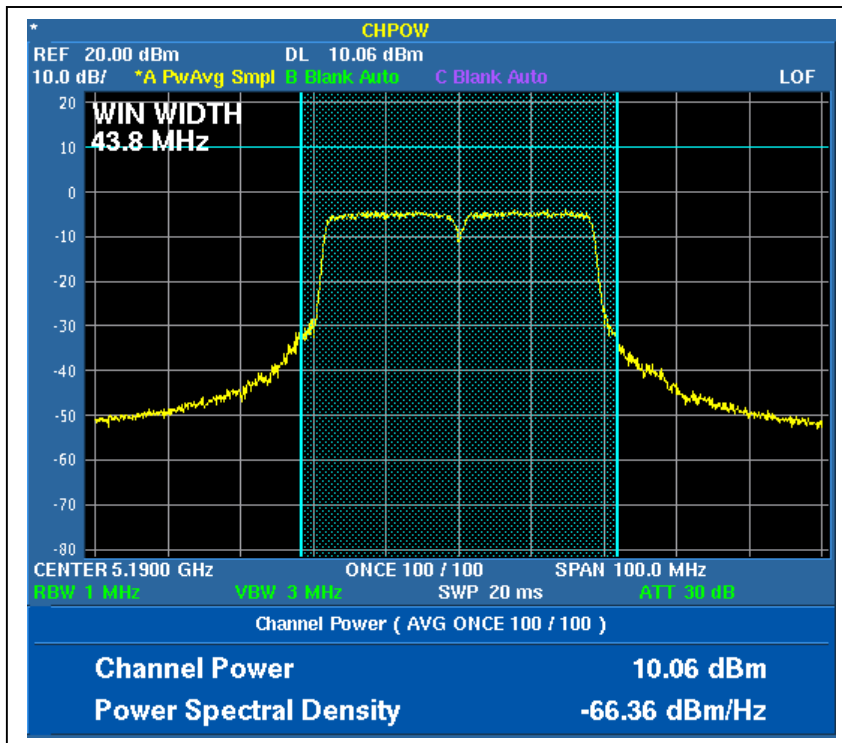
CH2



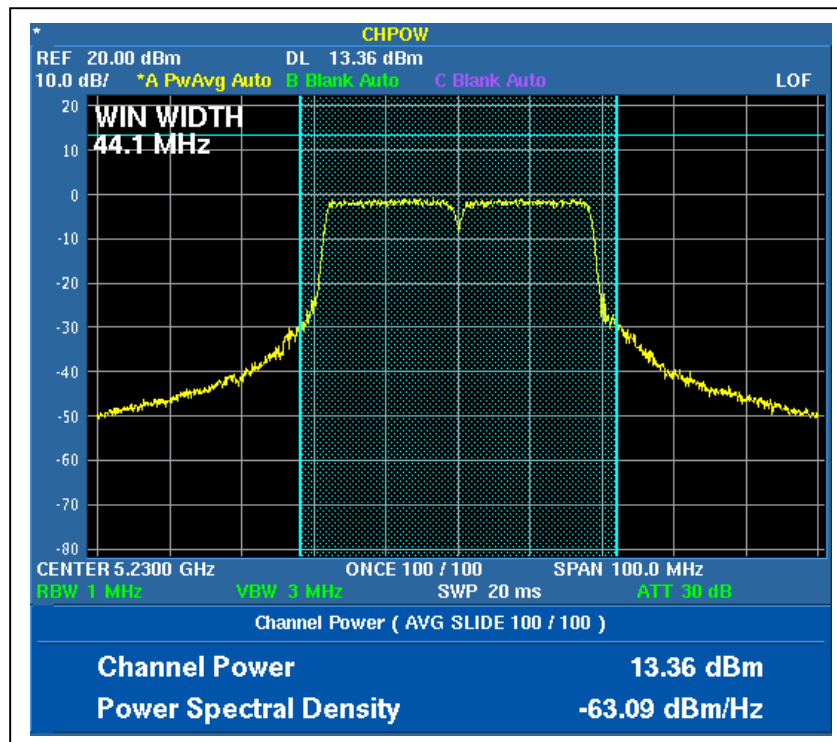


A D T

For Chain (2) :CH1



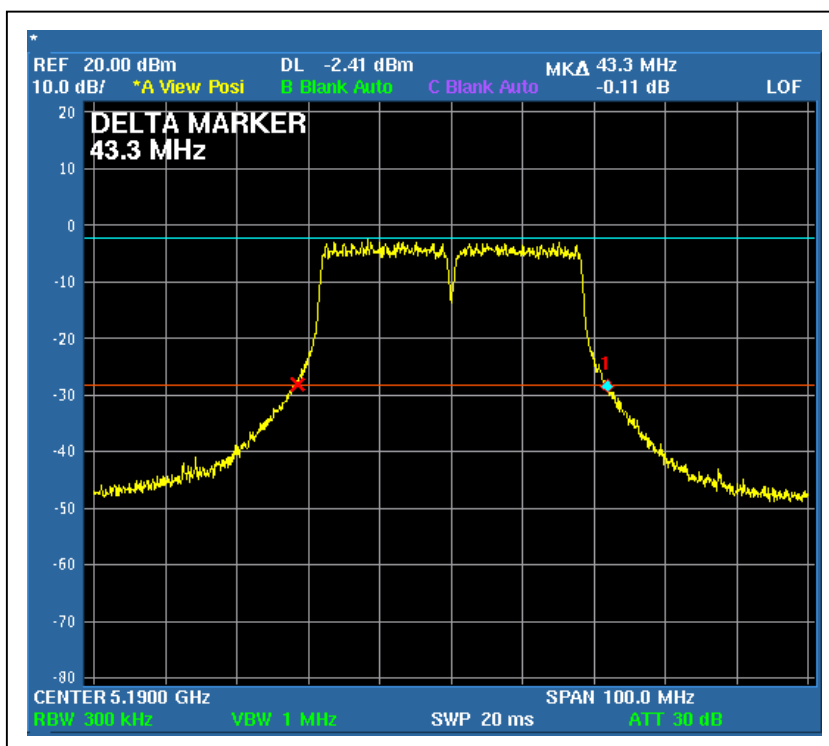
CH2



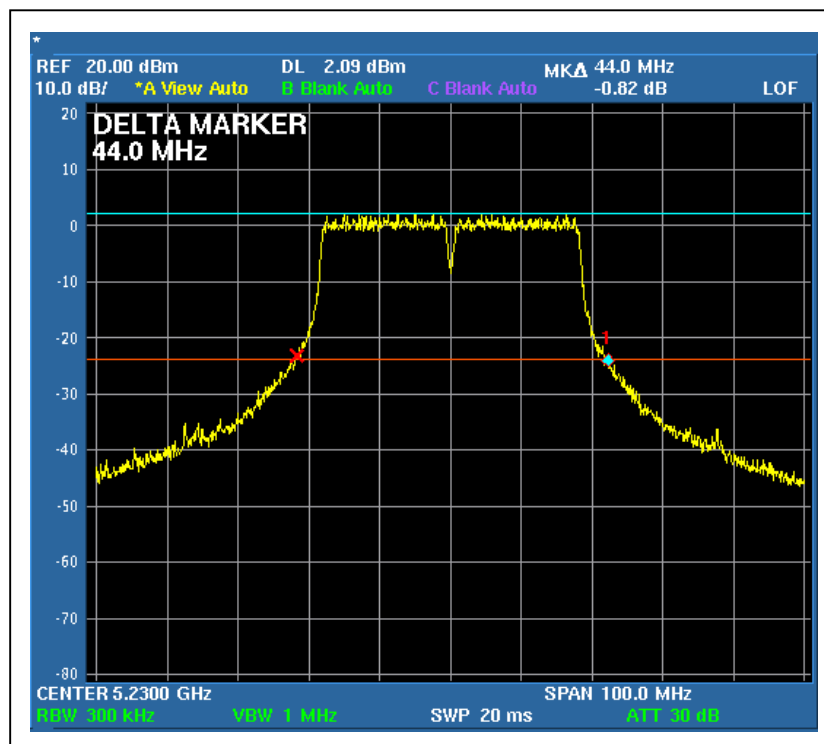


A D T

26dB Occupied Bandwidth:
For Chain (0) :CH1



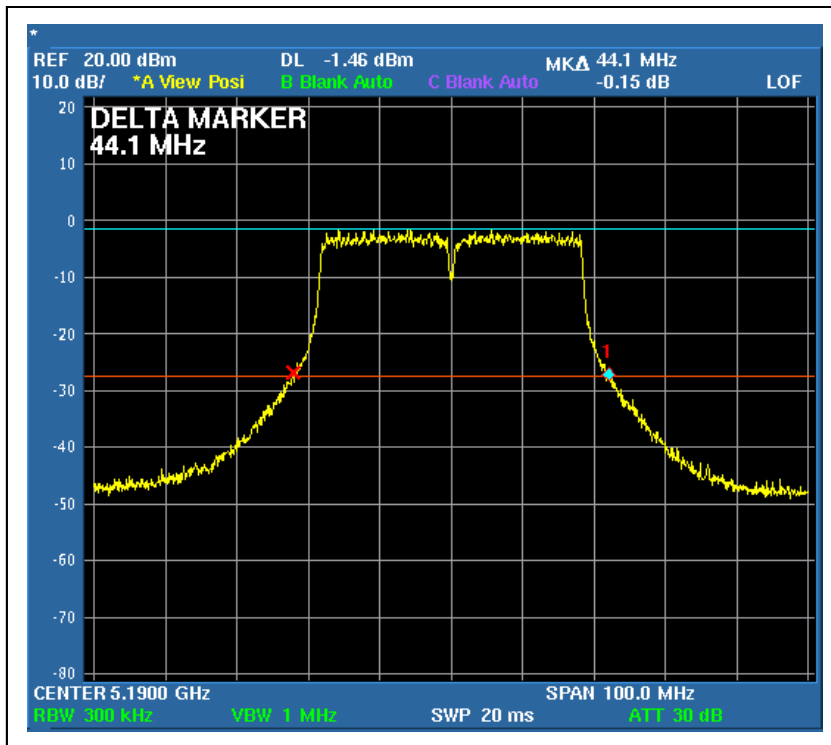
CH2



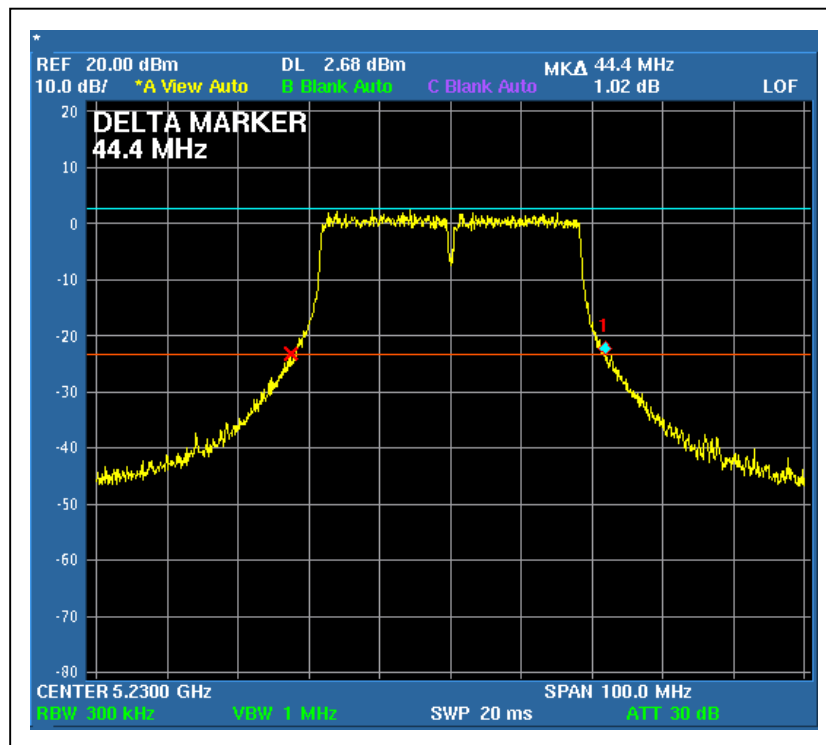


A D T

For Chain (1) :CH1



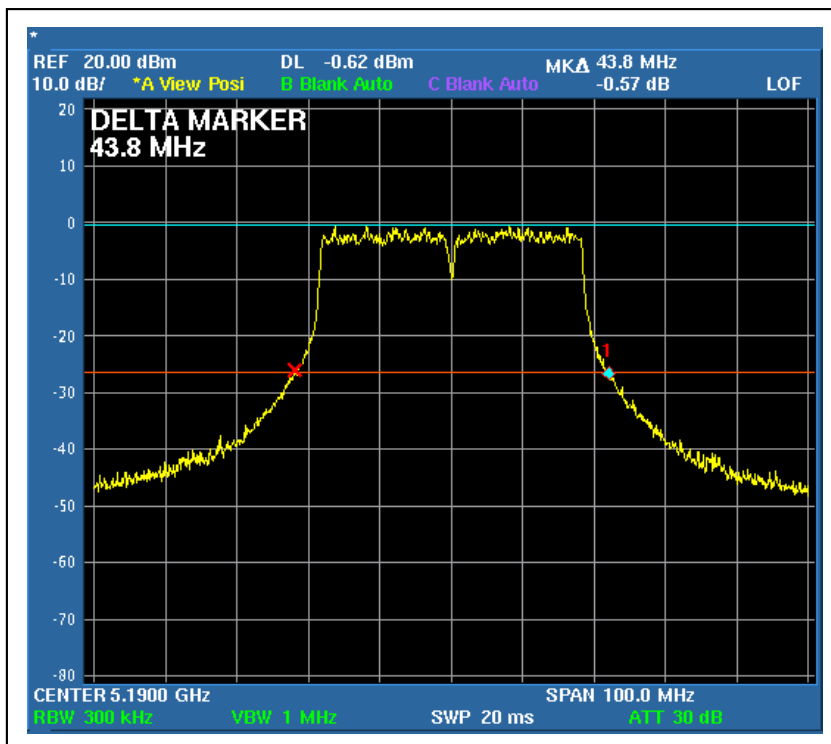
CH2



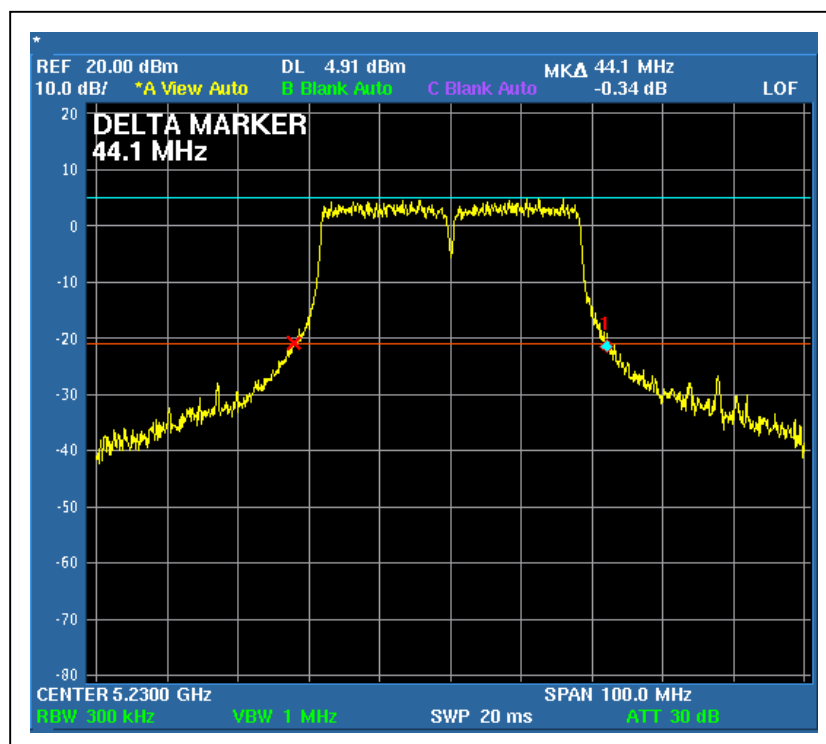


A D T

For Chain (2) :CH1



CH2





4.4 PEAK POWER EXCURSION MEASUREMENT

4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Frequency Band	Limit
5.15 – 5.25 GHz	13dB
5.25 – 5.35 GHz	13dB
5.47 – 5.725GHz	13dB
5.725 – 5.825 GHz	13dB

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 09, 2008	Aug. 08, 2009

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

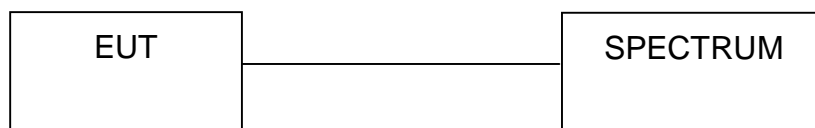
4.4.3 TEST PROCEDURE

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.



A D T

4.4.7 TEST RESULTS

802.11a OFDM modulation

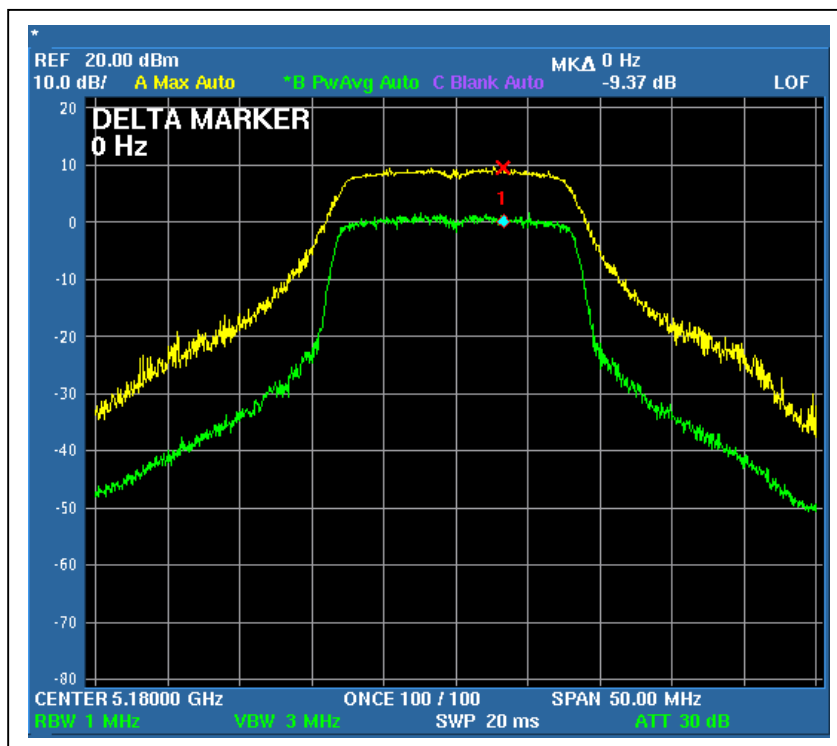
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5180	9.37	13	PASS
2	5200	10.70	13	PASS
4	5240	9.10	13	PASS

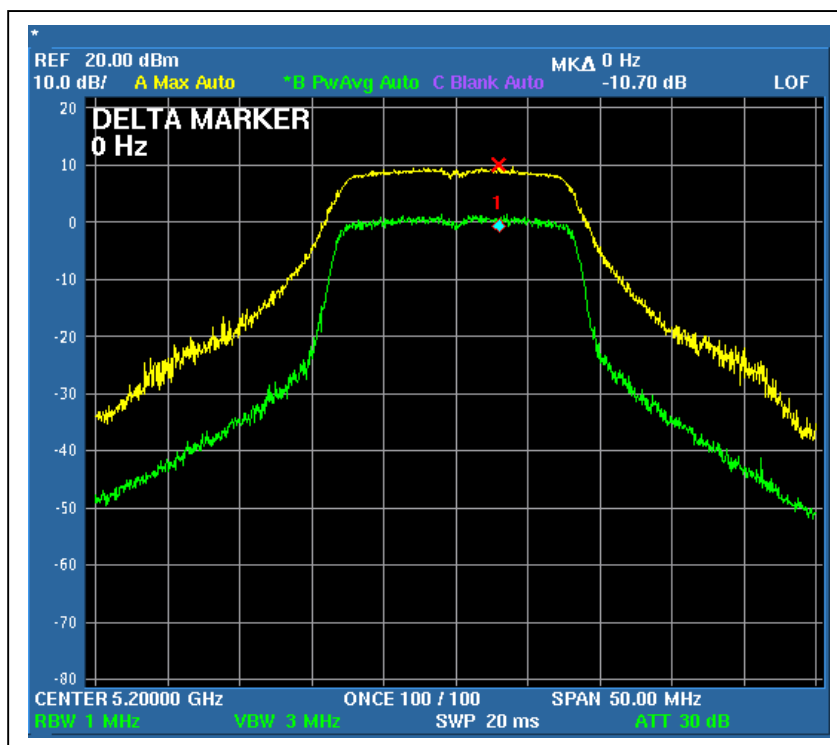


A D T

CH1



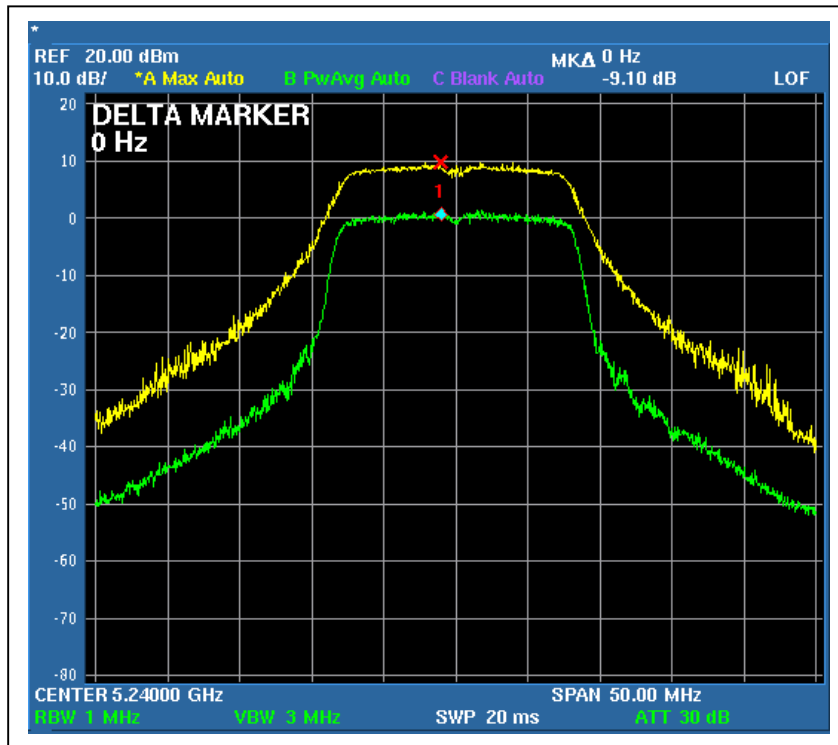
CH2





A D T

CH4





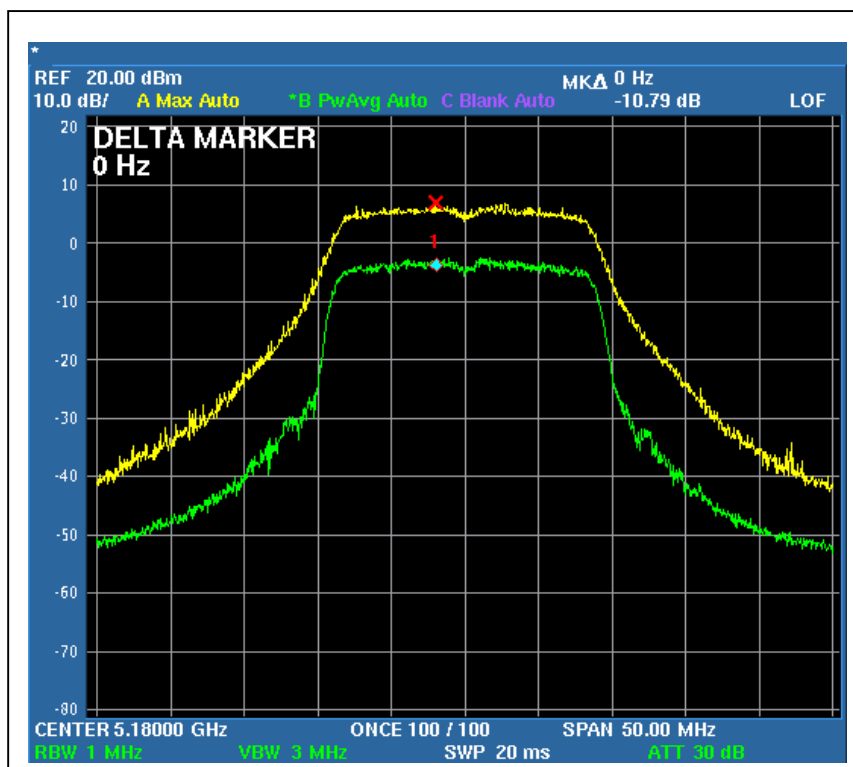
A D T

DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	14.444Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)			PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		Chain 0	Chain 1	Chain 2		
1	5180	10.79	10.49	11.26	13	PASS
2	5200	10.27	8.98	10.30	13	PASS
4	5240	10.76	10.23	11.11	13	PASS

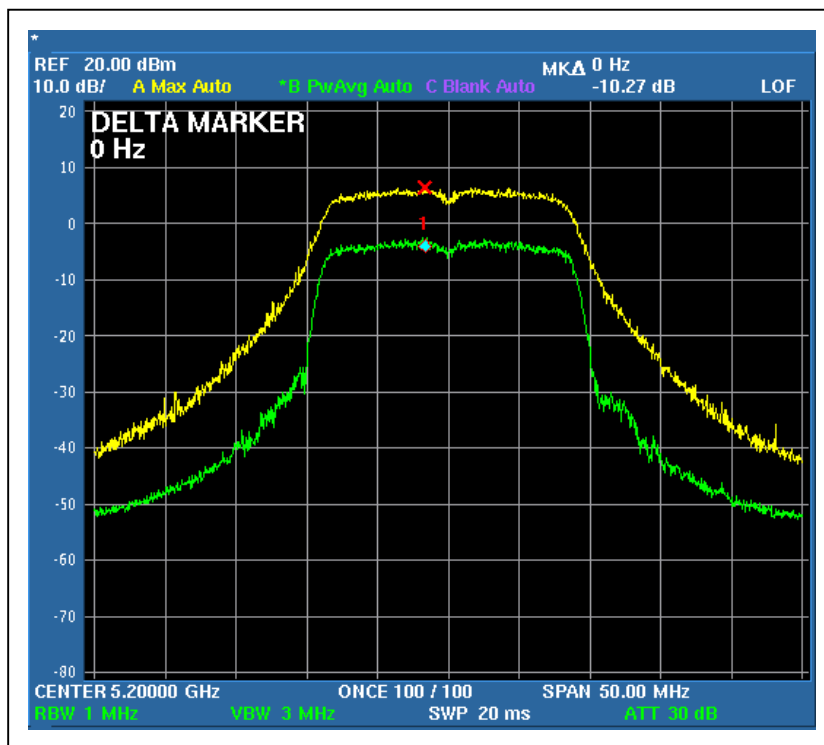
Chain 0
CH1



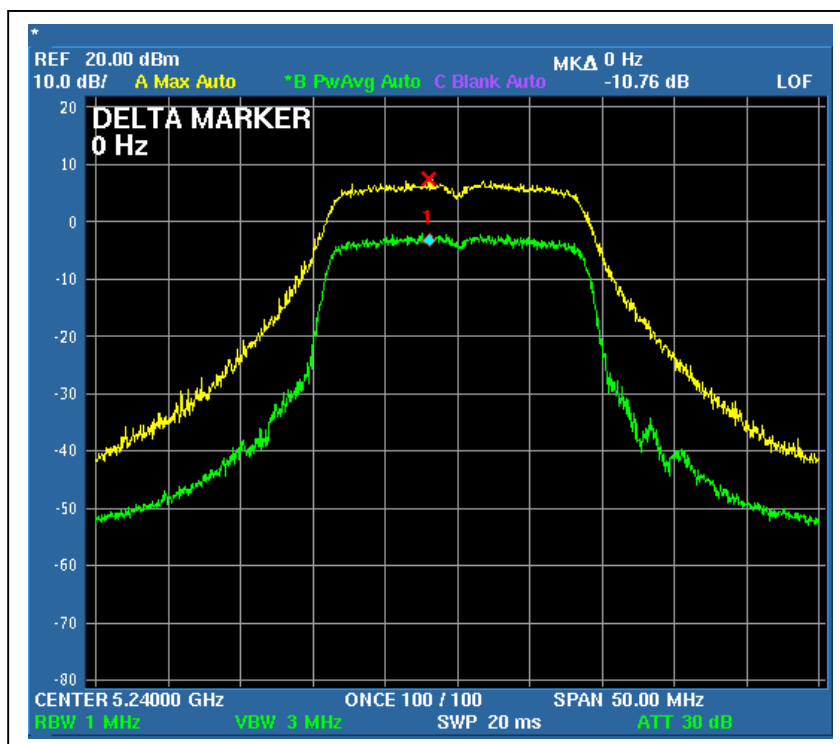


A D T

CH2



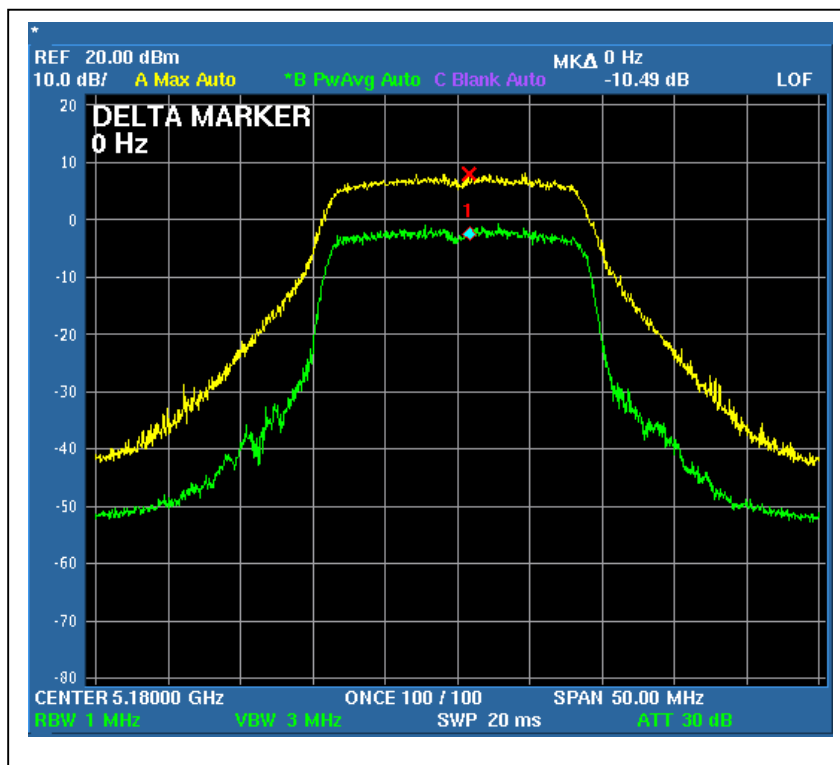
CH4



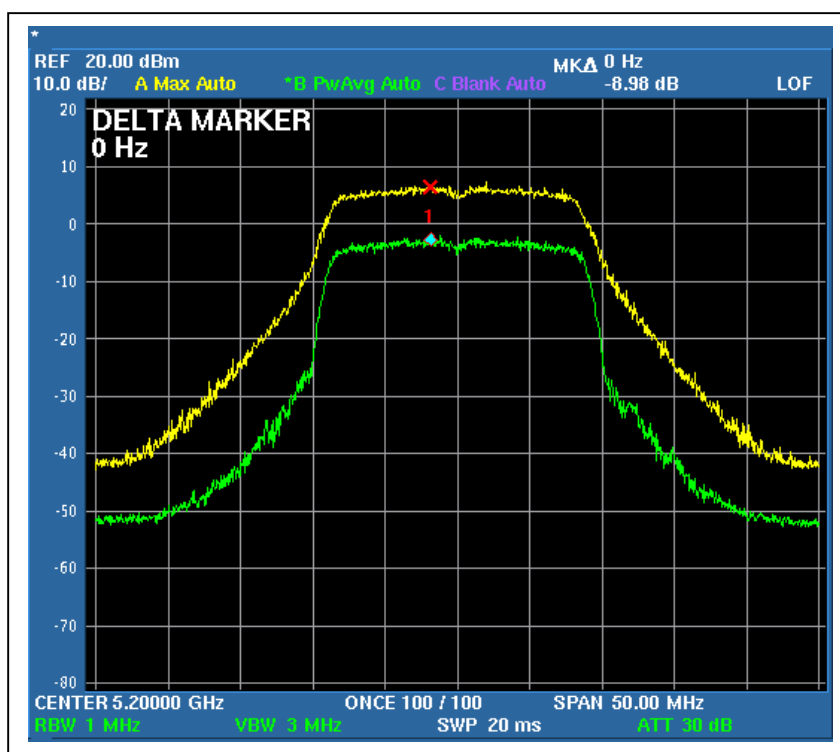


A D T

Chain 1
CH1



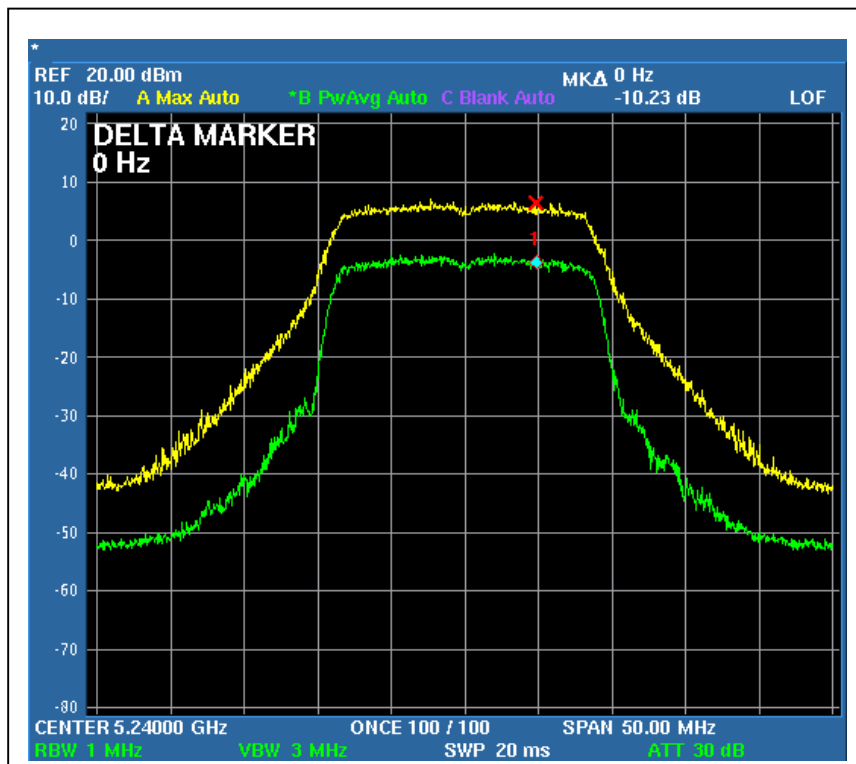
CH2





A D T

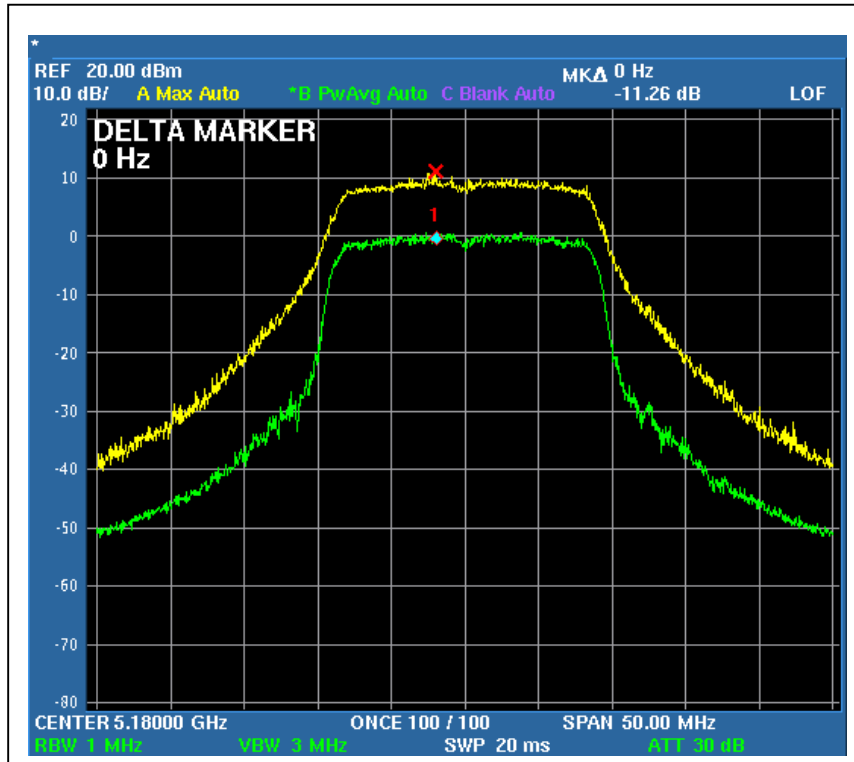
CH4



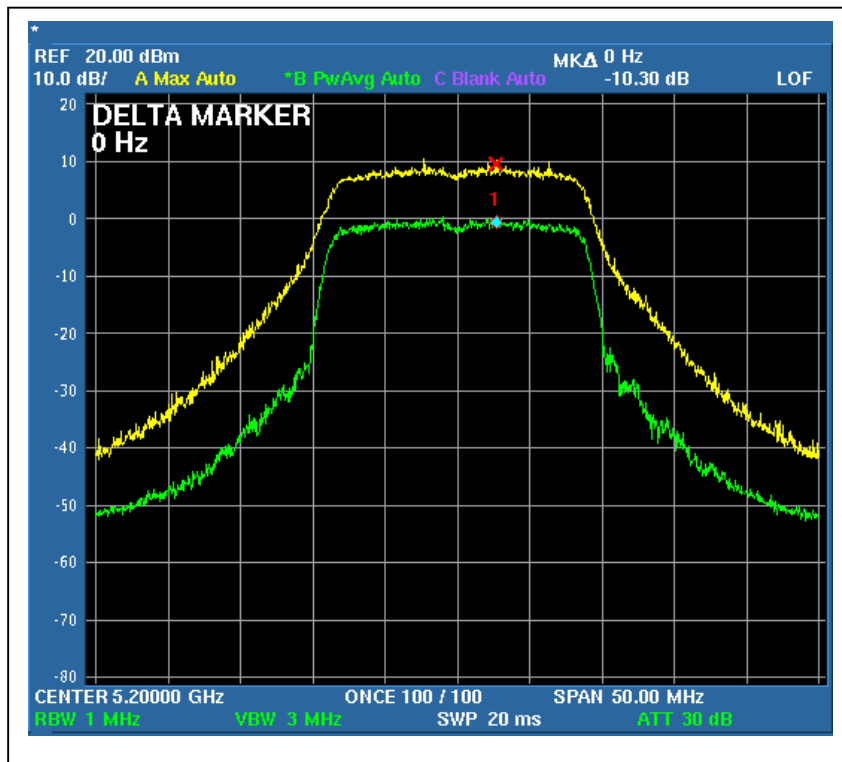


A D T

Chain 2
CH1



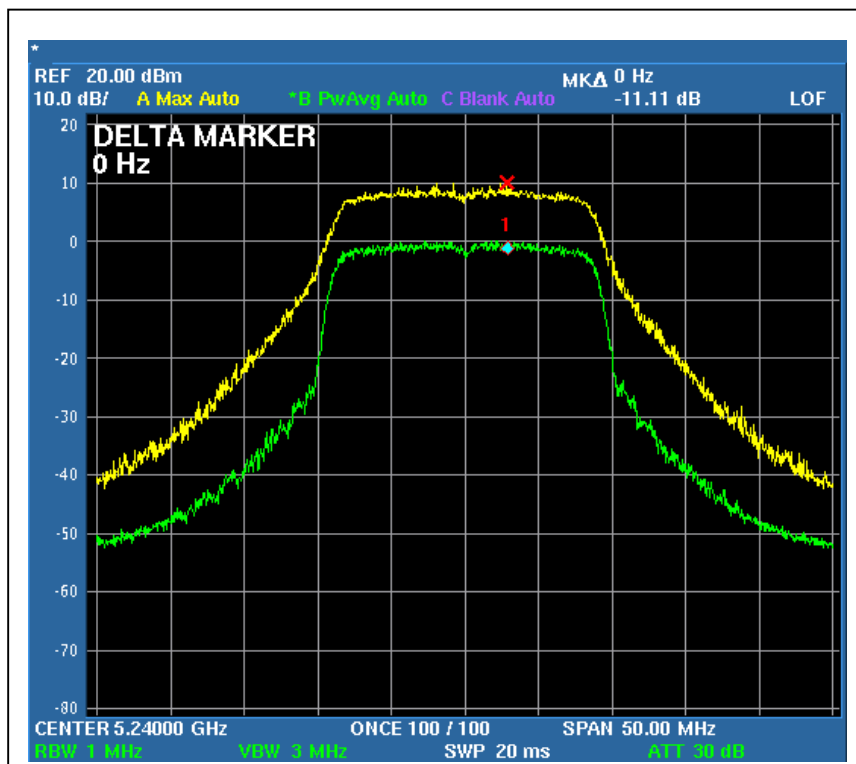
CH2





A D T

CH4





A D T

DRAFT 802.11n (40MHz) OFDM MODULATION:

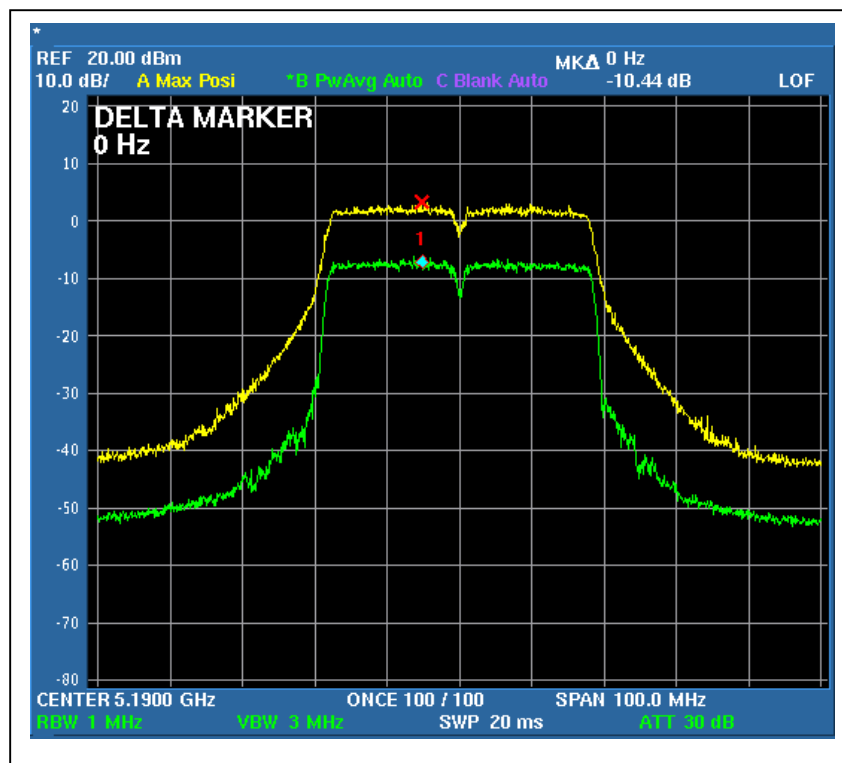
MODULATION TYPE	BPSK	TRANSFER RATE	30Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)			PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		Chain 0	Chain 1	Chain 2		
1	5190	10.44	10.87	9.46	13	PASS
2	5230	11.69	10.84	11.29	13	PASS

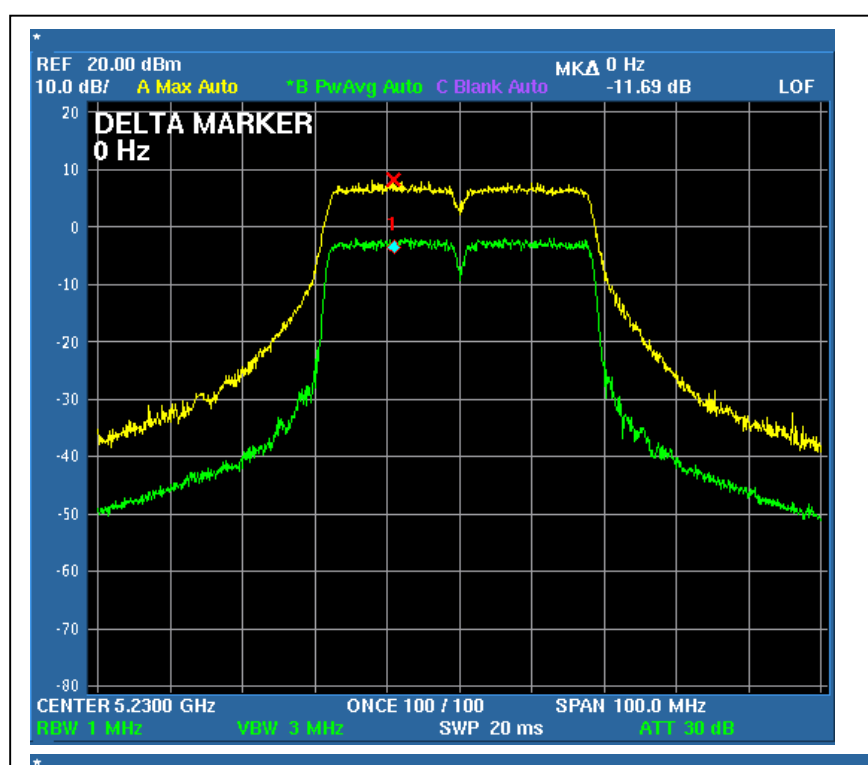


A D T

Chain 0
CH1



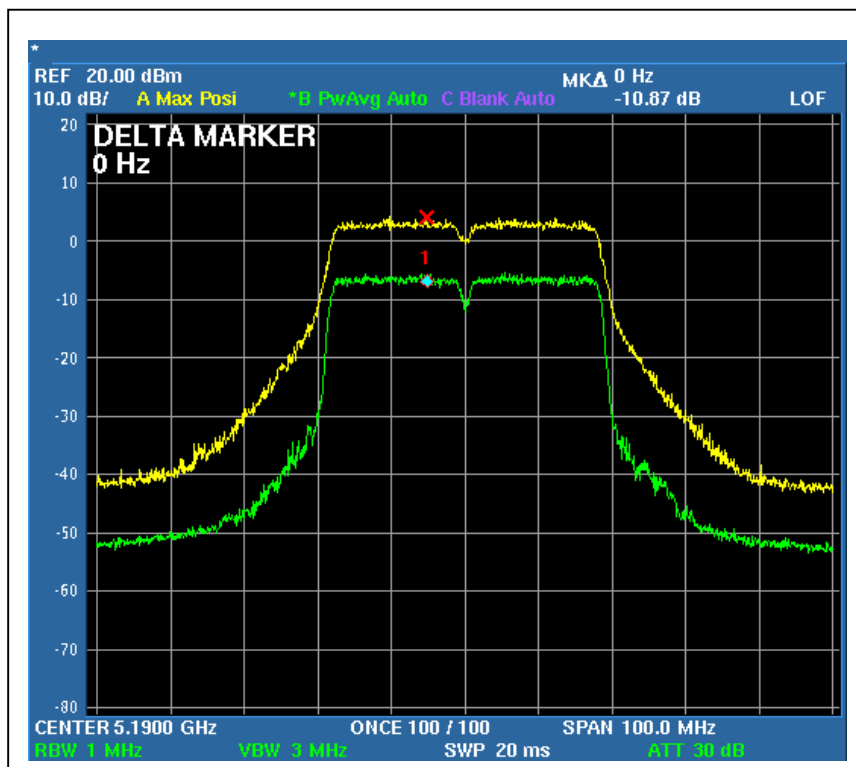
CH2



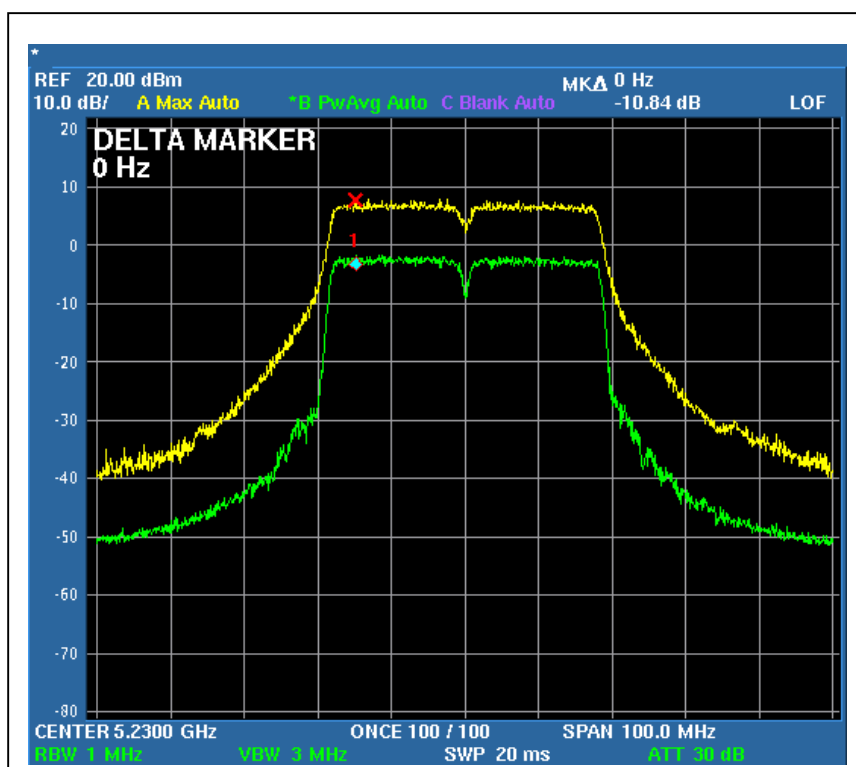


A D T

Chain 1
CH1



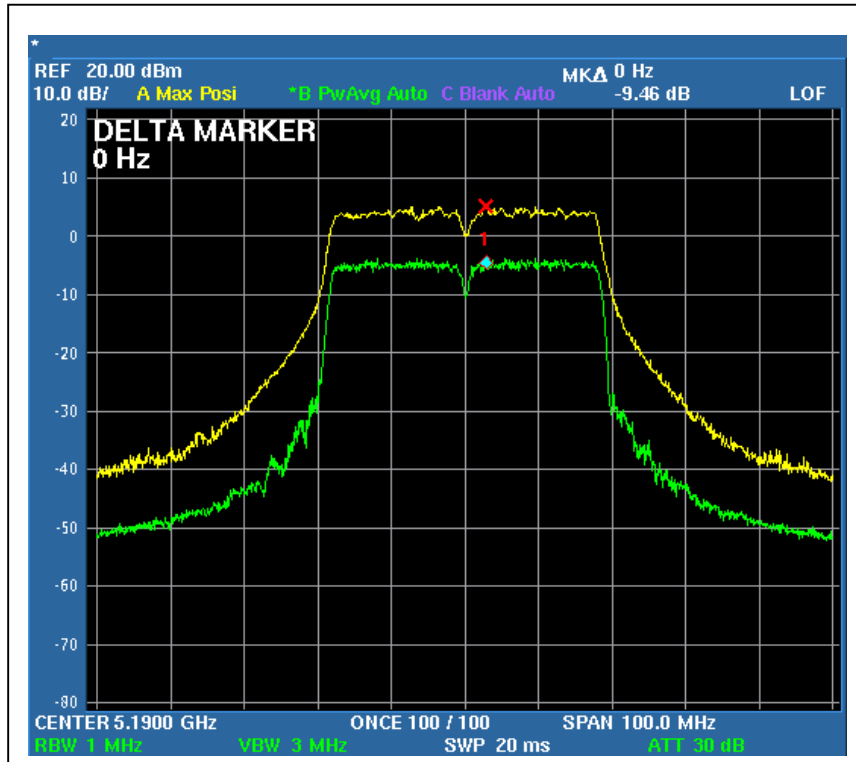
CH2



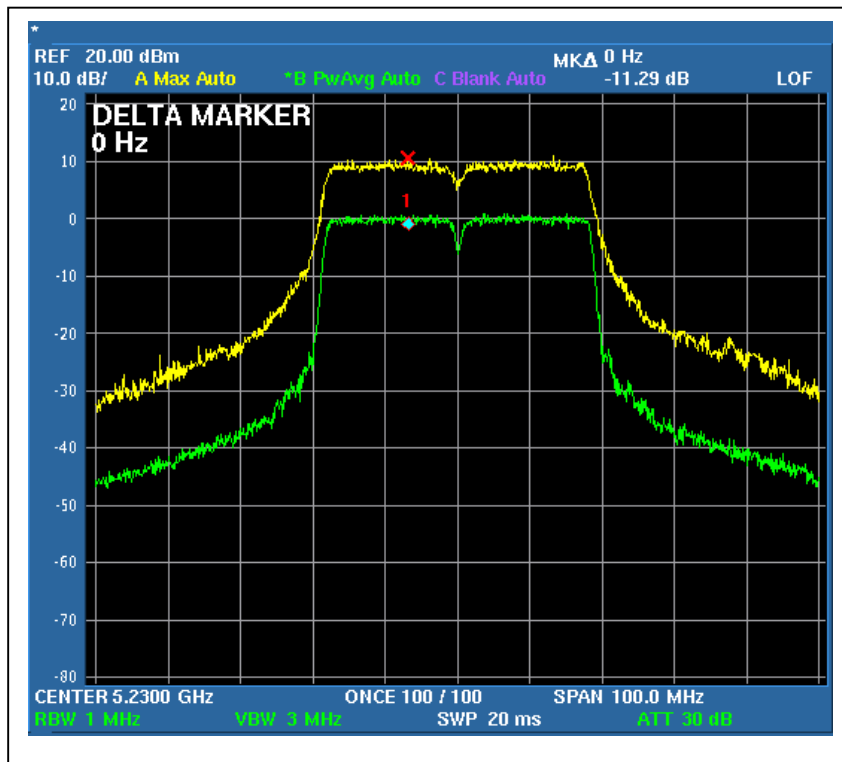


A D T

Chain 2
CH1



CH2





4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Frequency Band	Limit
5.15 ~ 5.25GHz	4dBm
5.25 ~ 5.35GHz	11dBm
5.47 ~ 5.725GHz	11dBm
5.725 ~ 5.825GHz	17dBm

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 09, 2008	Aug. 08, 2009

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2.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

1. The transmitter output was connected to the spectrum analyzer.
2. 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 4.3.6



4.5.7 TEST RESULTS

802.11a OFDM modulation

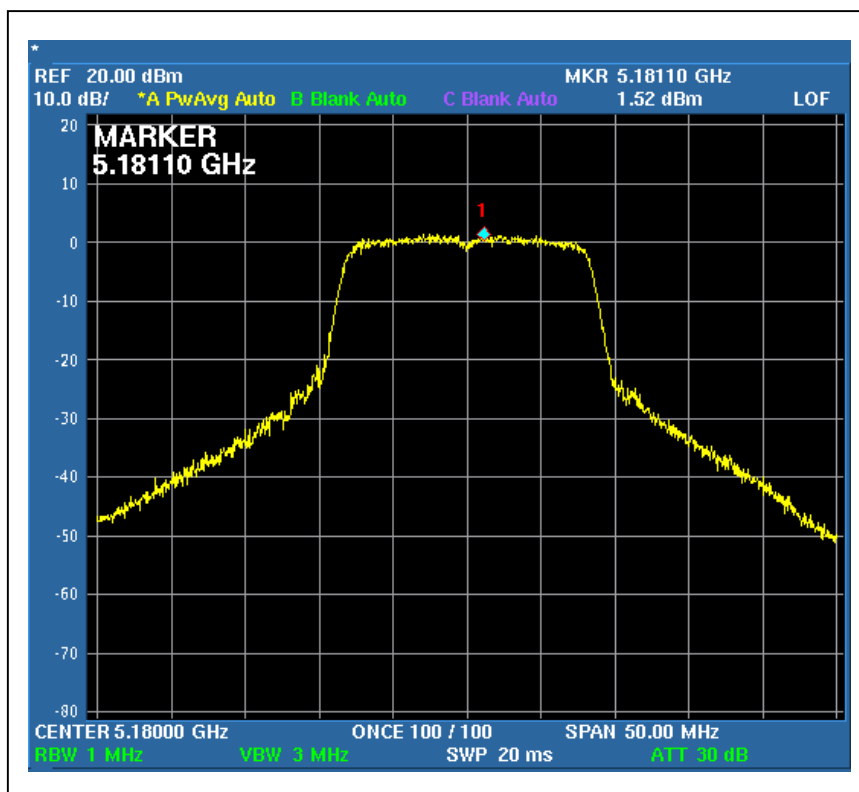
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	1.52	4	PASS
2	5200	1.41	4	PASS
4	5240	1.42	4	PASS

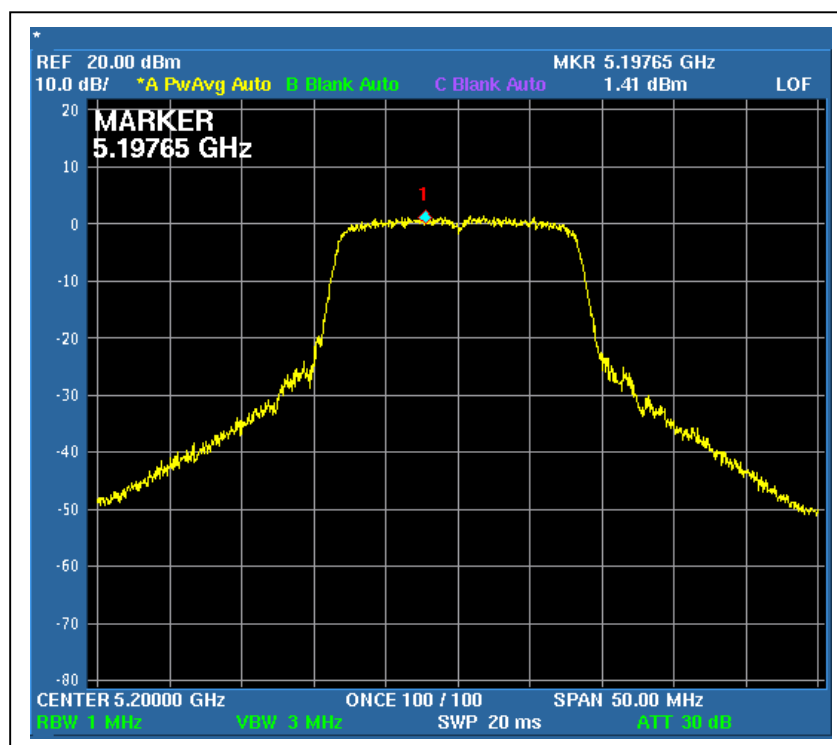


A D T

CH1



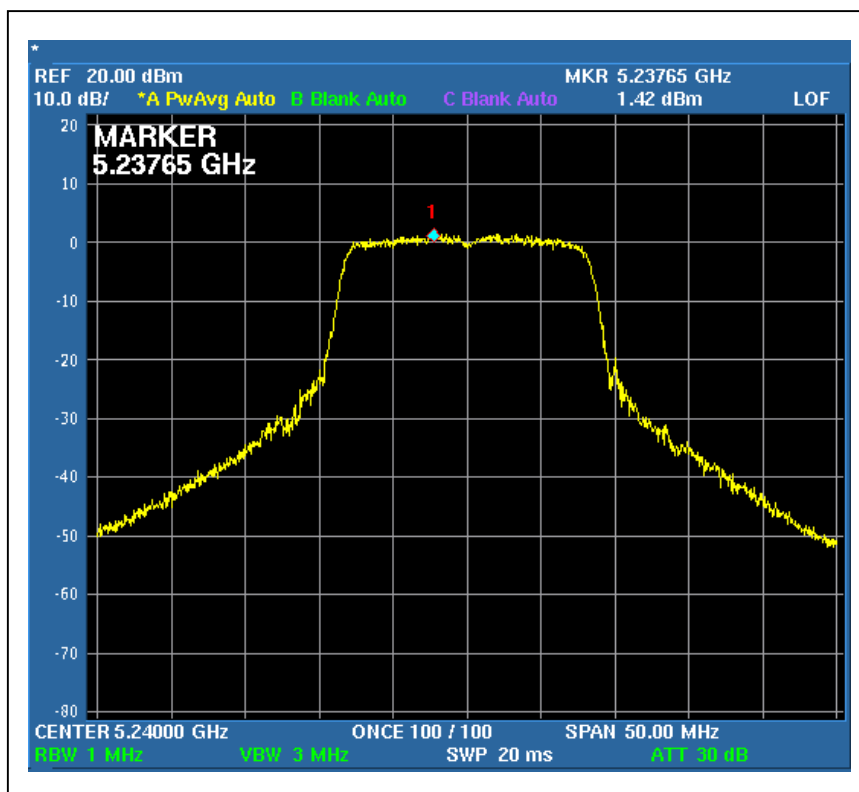
CH2





A D T

CH4





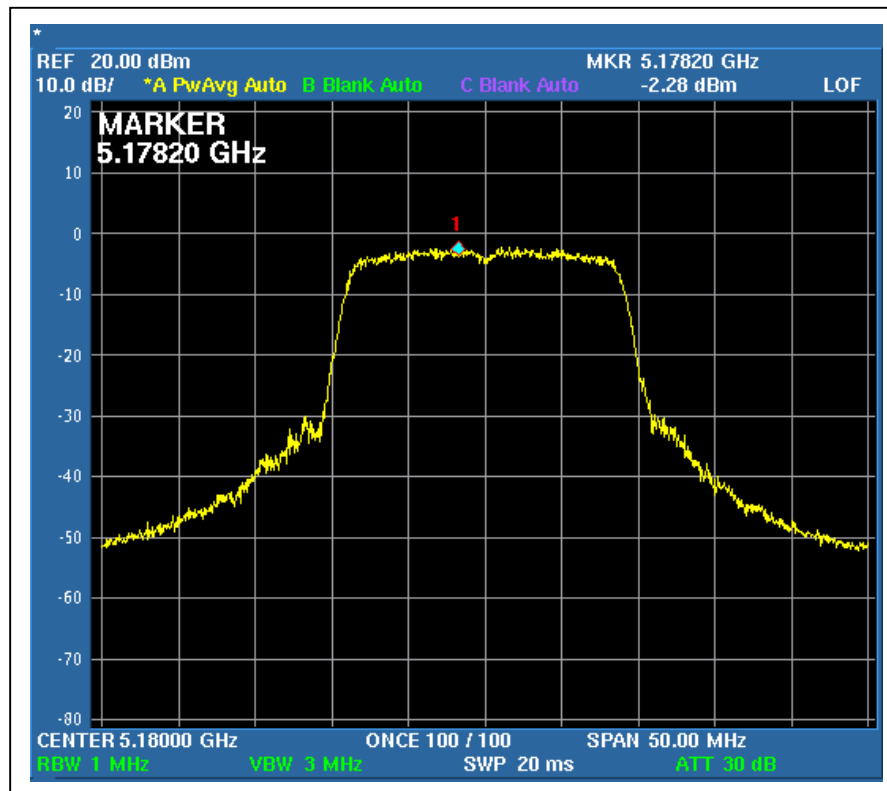
A D T

DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	14.444Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER DENSITY (mW)			RF POWER LEVEL IN 3kHz BW (dBm)			TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2				
1	5180	0.592	0.783	1.096	-2.28	-1.06	0.40	2.471	3.929	4	PASS
2	5200	0.601	0.607	1.054	-2.21	-2.17	0.23	2.262	3.545	4	PASS
4	5240	0.646	0.611	1.189	-1.90	-2.14	0.75	2.446	3.885	4	PASS

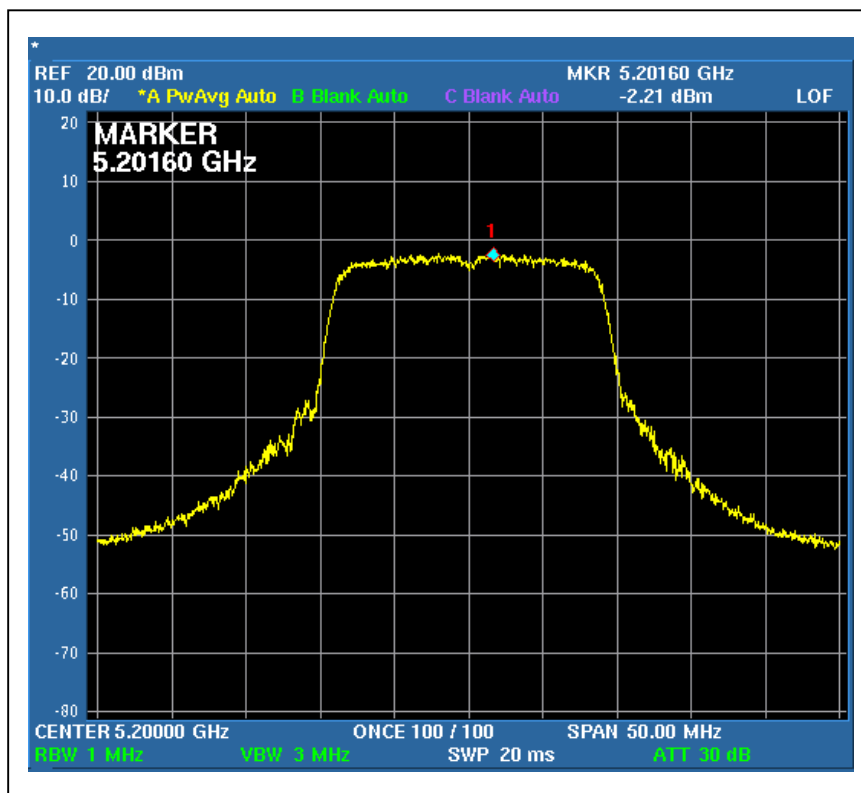
Chain 0
CH1



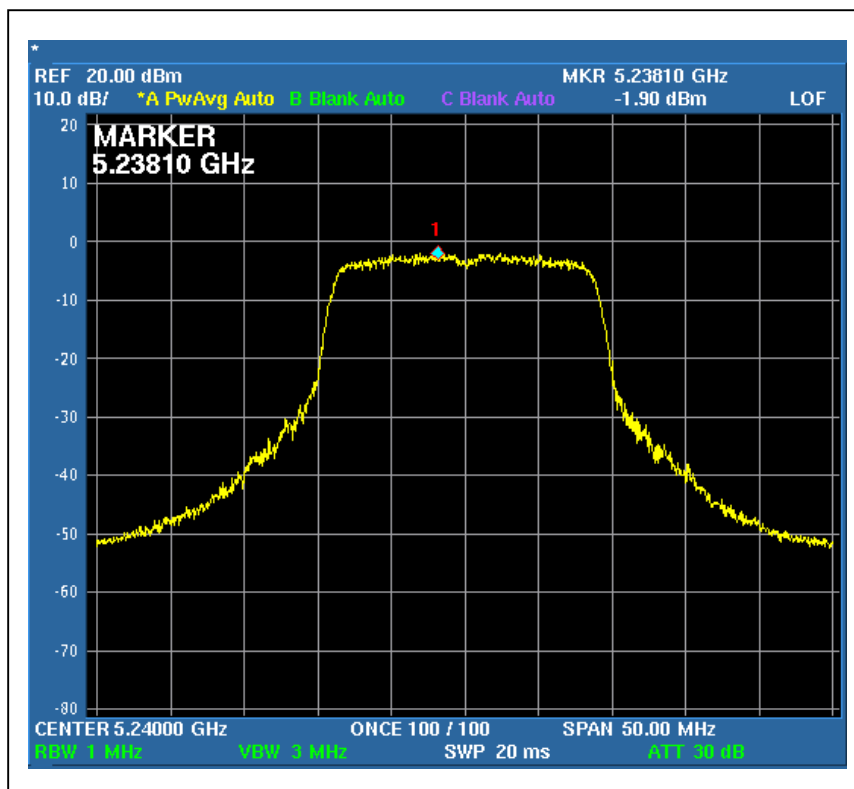


A D T

CH2



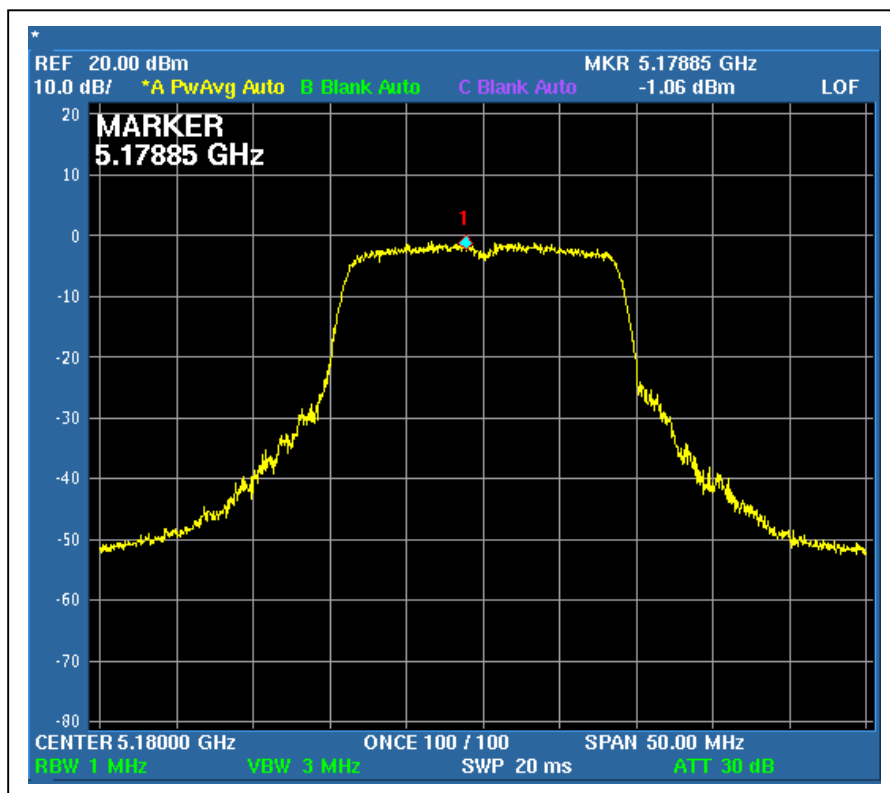
CH4



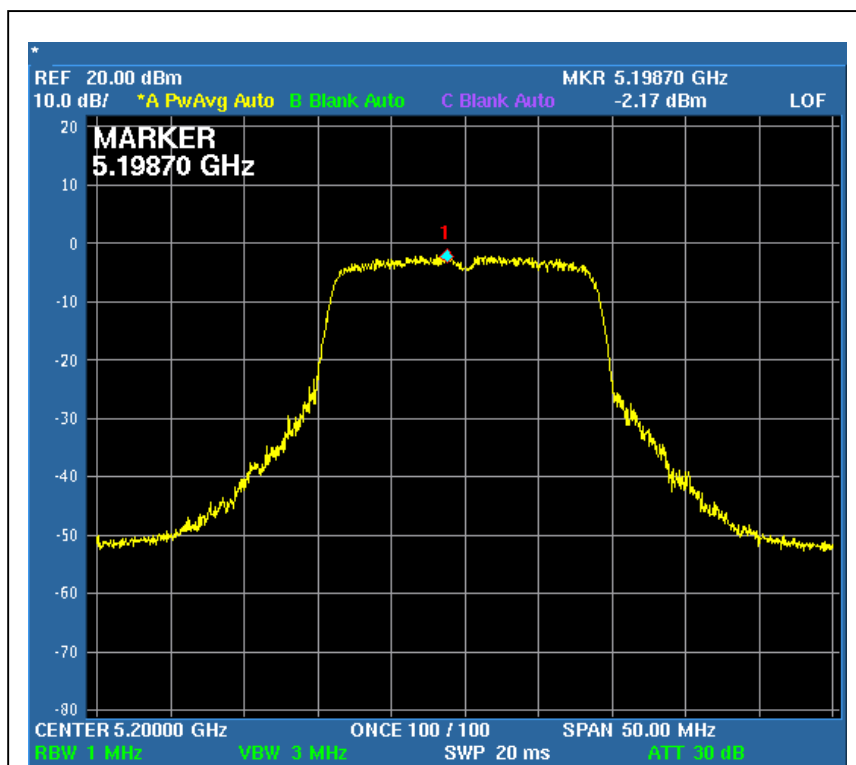


A D T

Chain 1
CH1



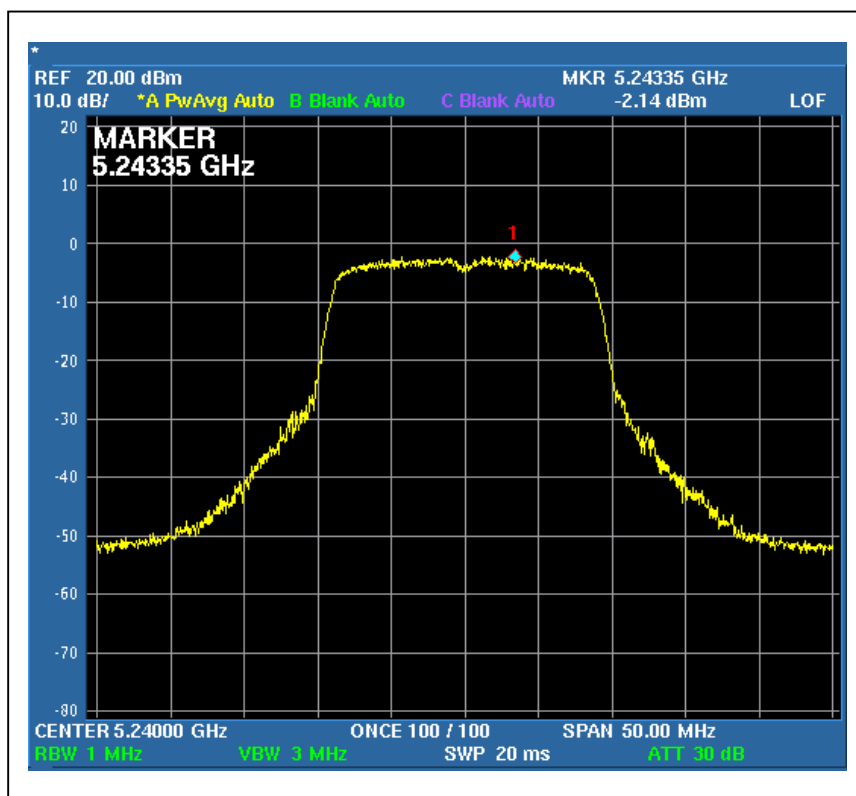
CH2





A D T

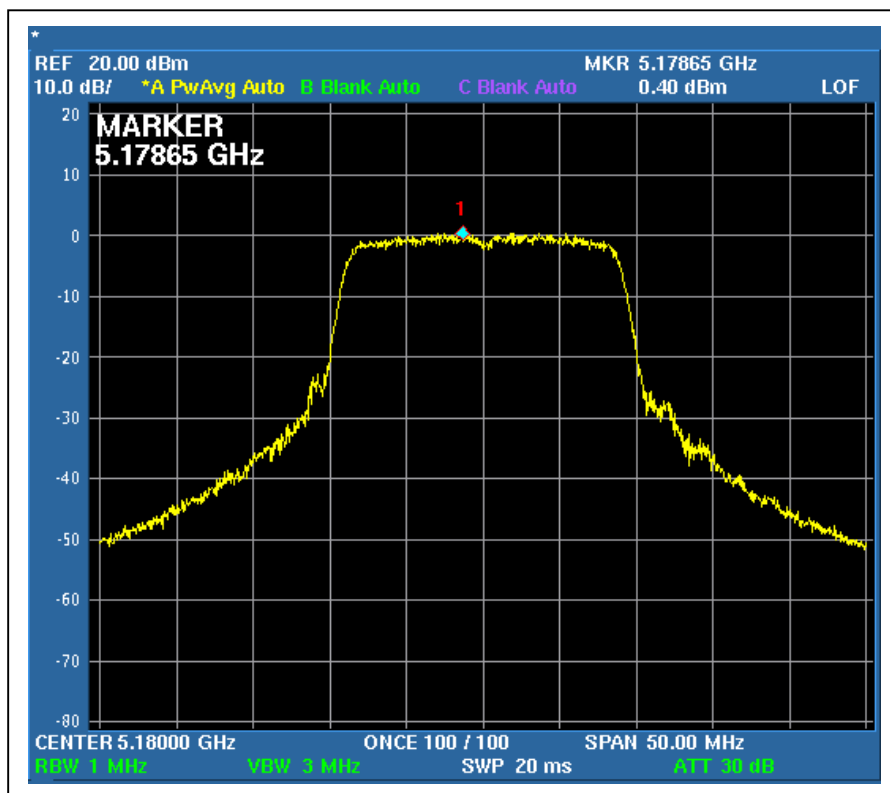
CH4



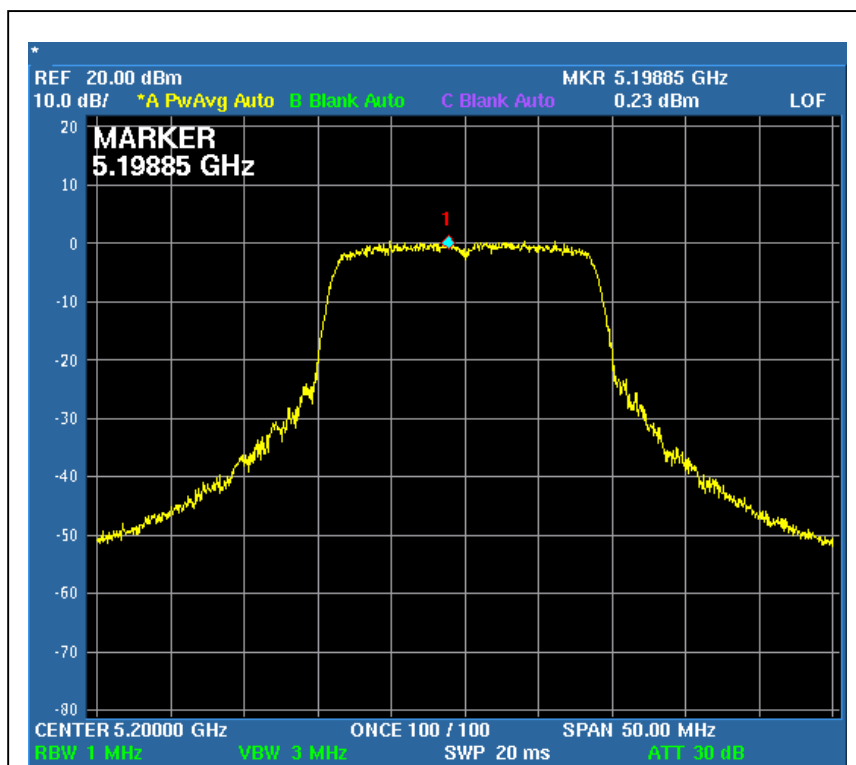


A D T

Chain 2
CH1



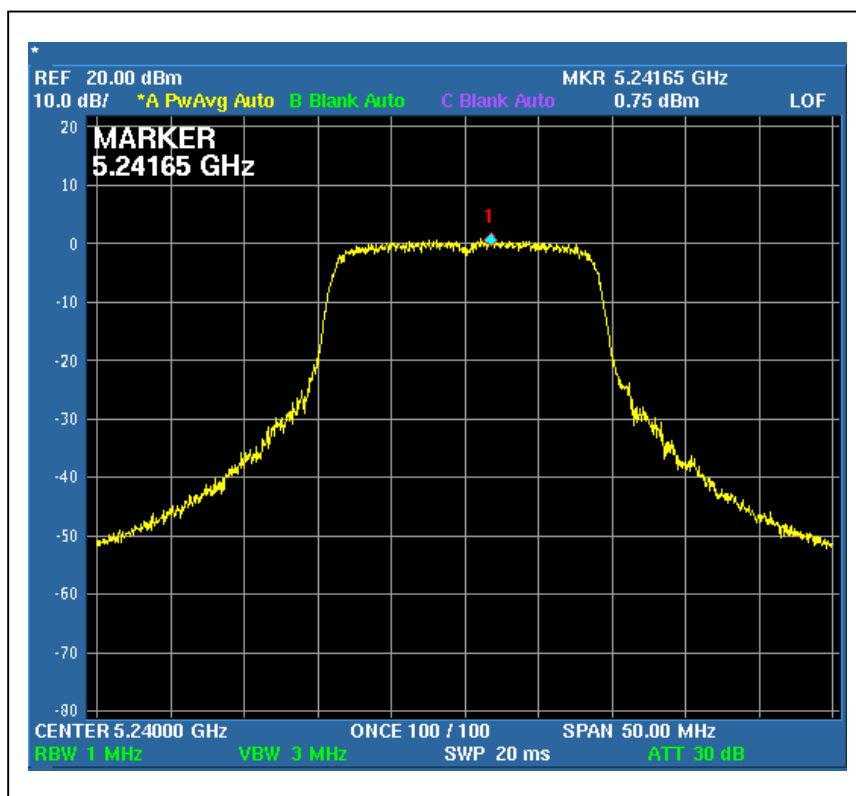
CH2





A D T

CH4





A D T

DRAFT 802.11n (40MHz) OFDM MODULATION:

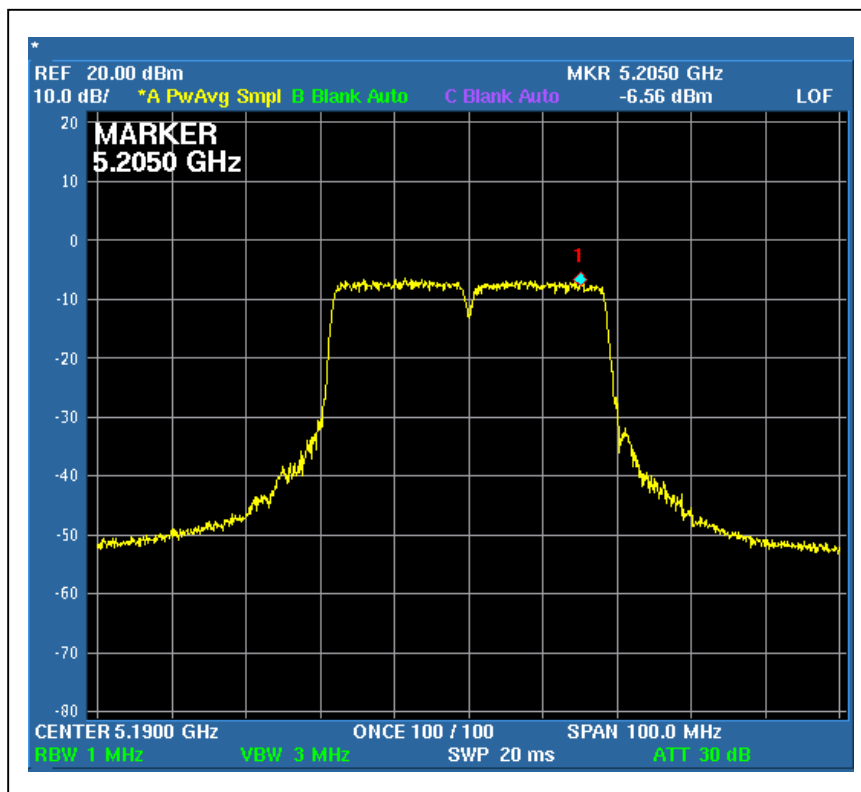
MODULATION TYPE	BPSK	TRANSFER RATE	30Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER DENSITY (mW)			RF POWER LEVEL IN 3kHz BW (dBm)			TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2				
1	5190	0.216	0.310	0.404	-6.65	-5.08	-3.94	0.930	-0.315	4	PASS
2	5230	0.451	0.497	0.871	-3.46	-3.04	-0.60	1.819	2.598	4	PASS

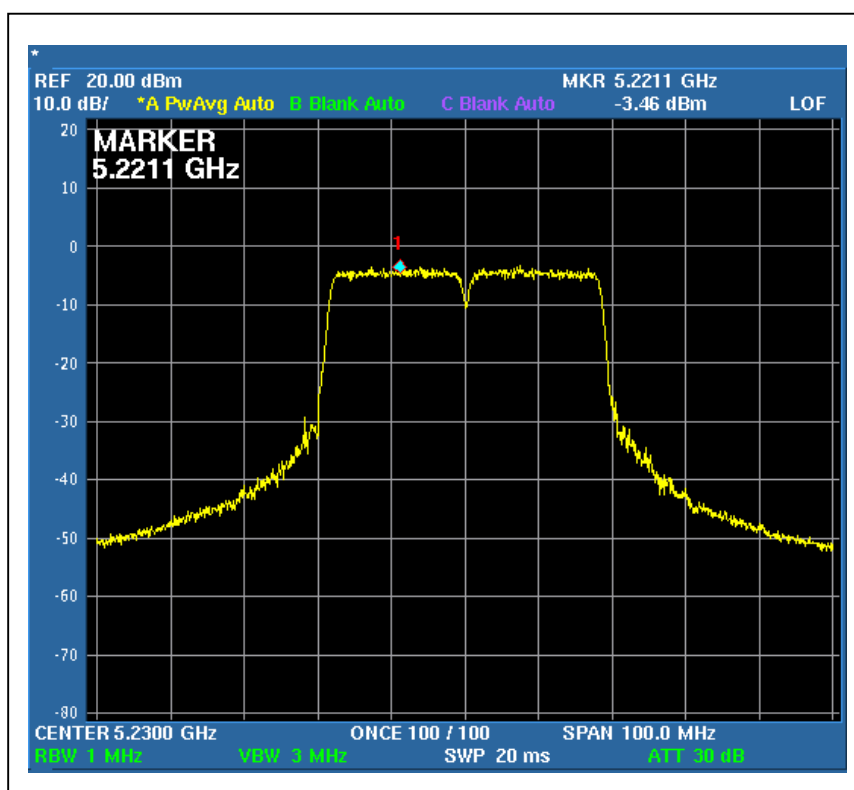


A D T

Chain 0
CH1



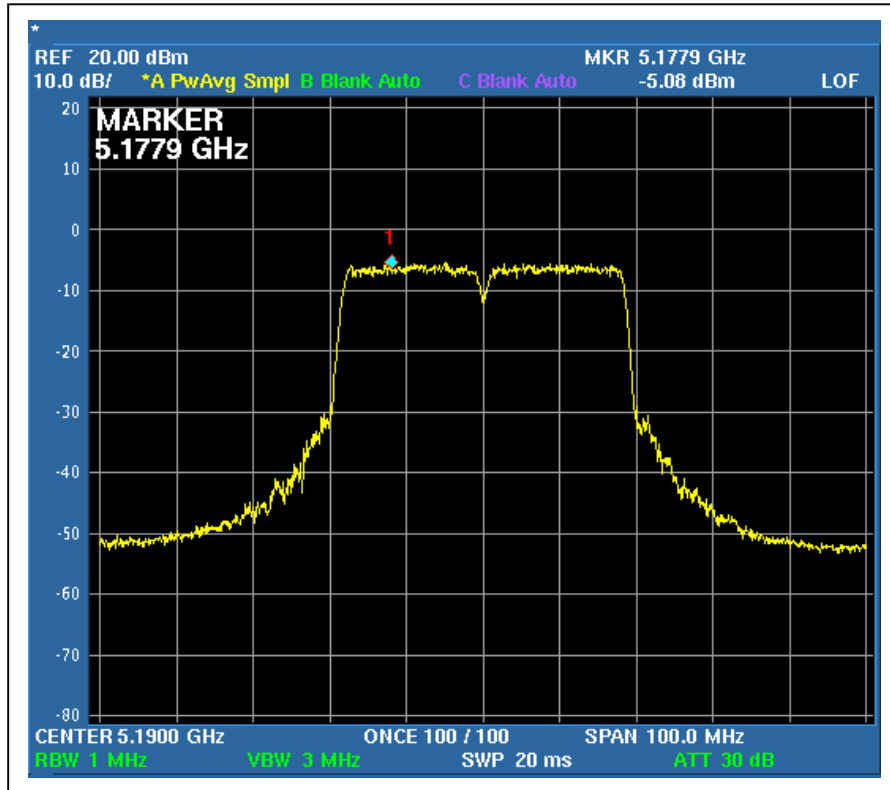
CH2



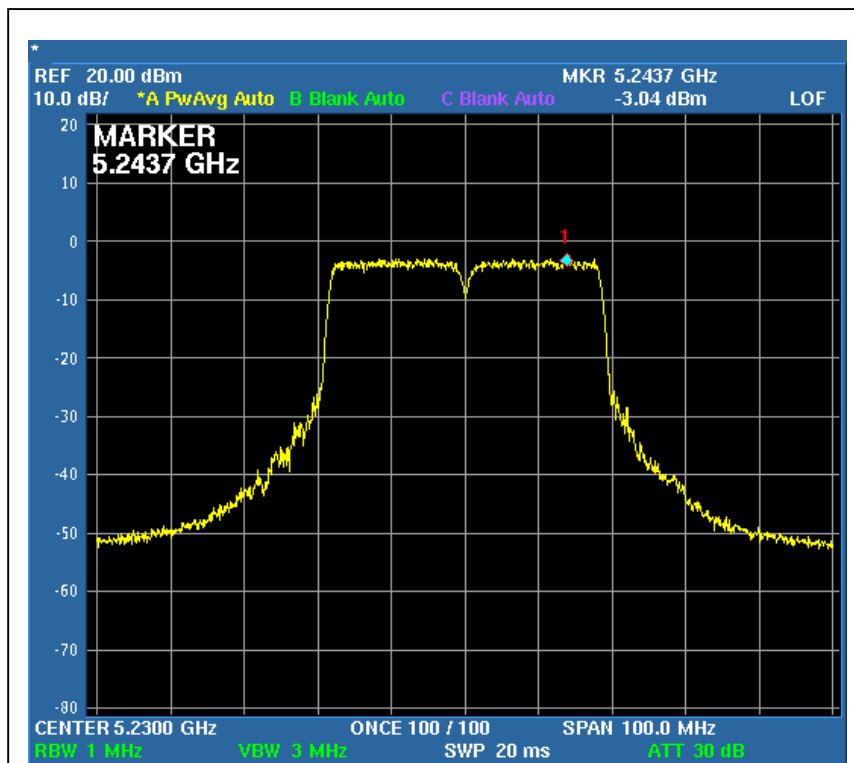


A D T

Chain 1
CH1



CH2

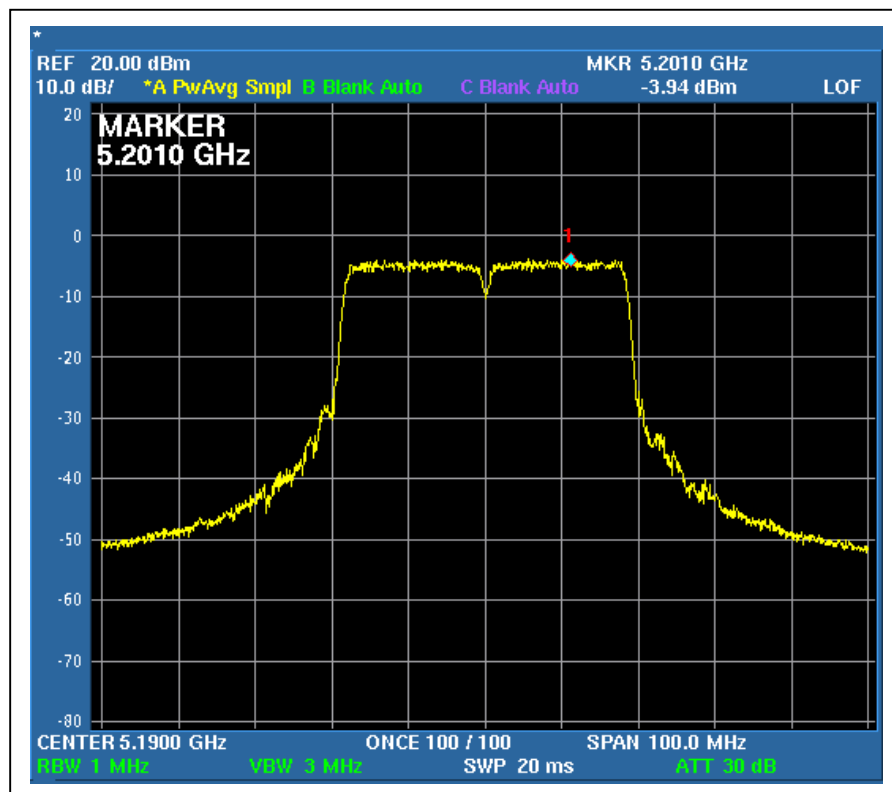




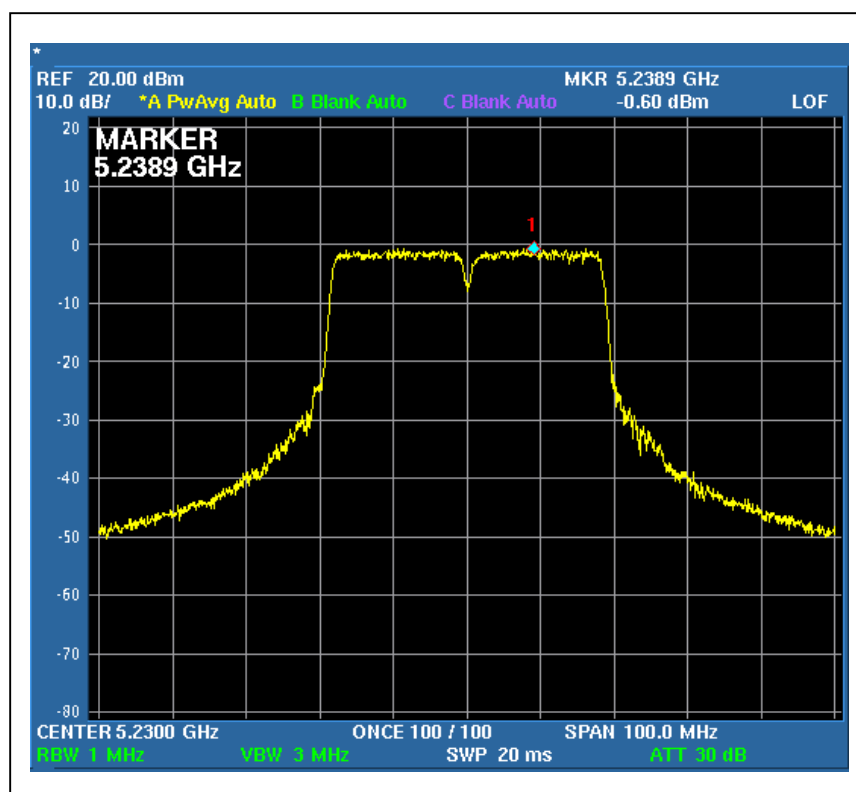
A D T

Chain 2

CH1



CH2





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 DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 09, 2008	Aug. 08, 2009

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

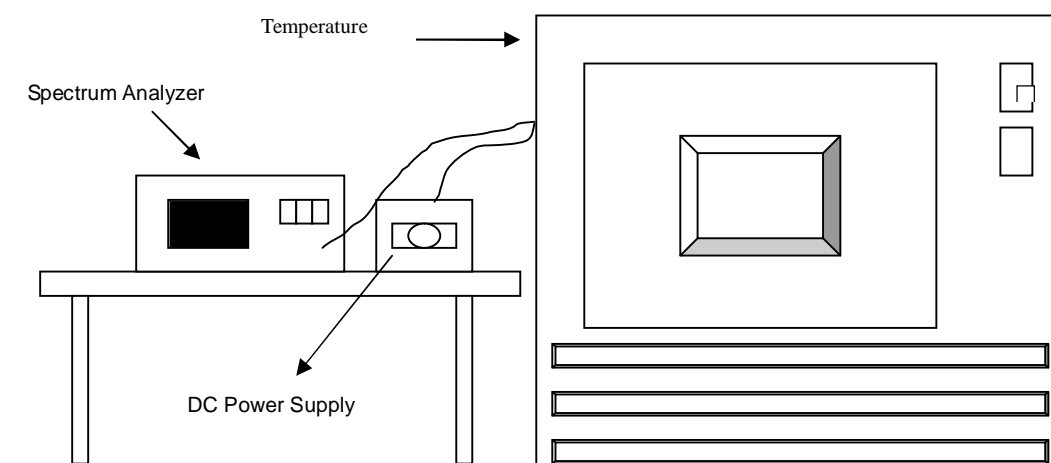
4.6.3 TEST PROCEDURE

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

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



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4.6.7 TEST RESULTS

		Operating frequency: 5180MHz				Limit : ± 0.02%	
Temp. (°C)	Power supply (VAC)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5240.0276	0.000527	5240.0279	0.000532	5240.0280	0.000534
	110	5240.0276	0.000527	5240.0278	0.000531	5240.0280	0.000534
	93.5	5240.0278	0.000531	5240.0276	0.000527	5240.0280	0.000534
40	126.5	5240.0218	0.000416	5240.0202	0.000385	5240.0182	0.000347
	110	5240.0216	0.000412	5240.0222	0.000424	5240.0202	0.000385
	93.5	5240.0216	0.000412	5240.0192	0.000366	5240.0182	0.000347
30	126.5	5239.9793	0.000395	5239.9888	0.000214	5239.9885	0.000219
	110	5239.9794	0.000393	5239.9888	0.000214	5239.9887	0.000216
	93.5	5239.9893	0.000204	5239.9891	0.000208	5239.9884	0.000221
20	126.5	5239.9834	0.000317	5239.9831	0.000323	5239.9829	0.000326
	110	5239.9834	0.000317	5239.9833	0.000319	5239.9830	0.000324
	93.5	5239.9834	0.000317	5239.9831	0.000323	5239.9828	0.000328
10	126.5	5240.0036	0.000069	5240.0034	0.000065	5240.0031	0.000059
	110	5240.0036	0.000069	5240.0034	0.000065	5240.0033	0.000063
	93.5	5240.0036	0.000069	5240.0033	0.000063	5240.0030	0.000057
0	126.5	5239.9983	0.000032	5239.998	0.000038	5239.9977	0.000044
	110	5239.9984	0.000031	5239.9984	0.000031	5239.9981	0.000036
	93.5	5239.9983	0.000032	5239.998	0.000038	5239.9977	0.000044
-10	126.5	5240.0212	0.000405	5240.0162	0.000309	5240.0122	0.000233
	110	5240.0212	0.000405	5240.0192	0.000366	5240.0152	0.000290
	93.5	5240.0212	0.000405	5240.0152	0.000290	5240.0132	0.000252
-20	126.5	5240.0028	0.000053	5240.0023	0.000044	5240.0020	0.000038
	110	5240.0028	0.000053	5240.0025	0.000048	5240.0023	0.000044
	93.5	5240.0028	0.000053	5240.0023	0.000044	5240.0020	0.000038
-30	126.5	5240.0142	0.000271	5240.0092	0.000176	5240.0092	0.000176
	110	5240.0142	0.000271	5240.0122	0.000233	5240.0102	0.000195
	93.5	5240.0122	0.000233	5240.0092	0.000176	5240.0092	0.000176



4.7 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.7.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 09, 2008	Aug. 08, 2009

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2.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

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

4.7.3 EUT OPERATING CONDITION

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

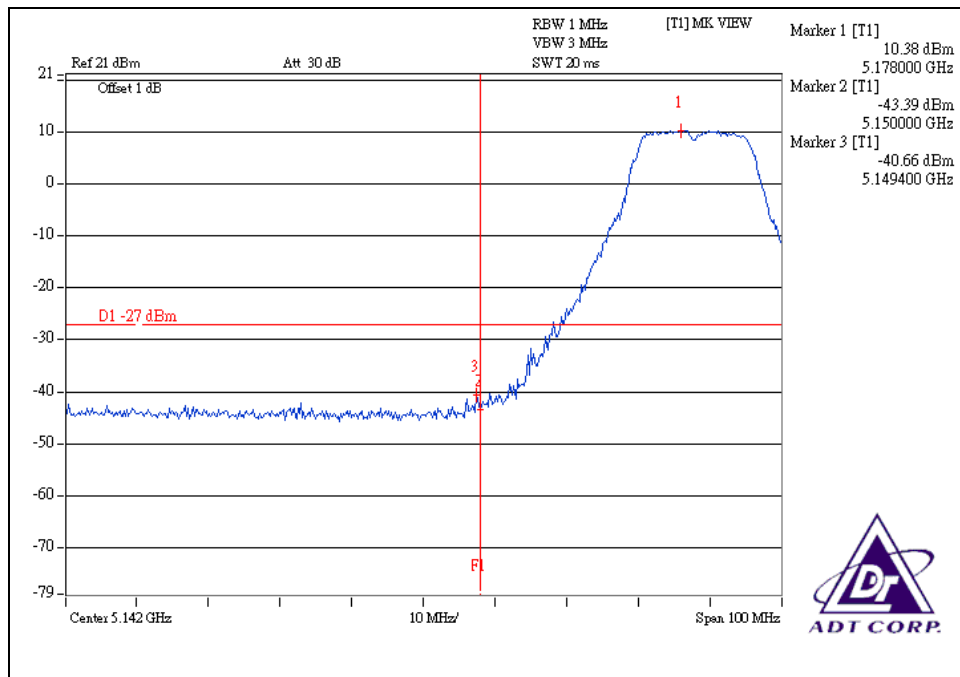
4.7.4 TEST RESULTS

For 5.15 to 5.25GHz band:

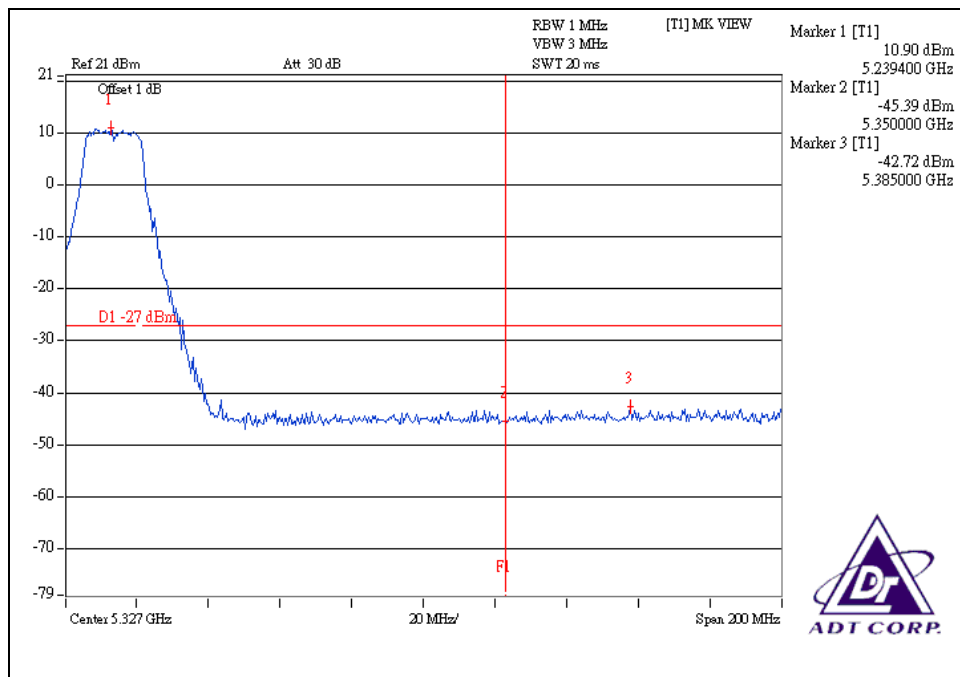
The spectrum plots (Peak RBW=1MHz, VBW=3MHz) are attached on the following pages.

802.11a OFDM modulation

CH 1



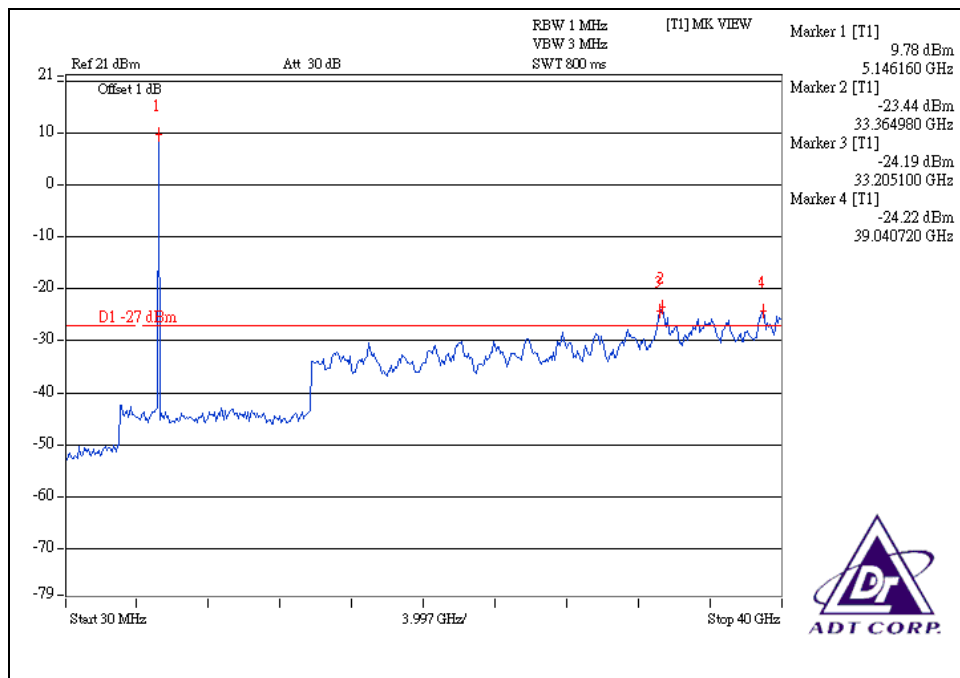
CH 4



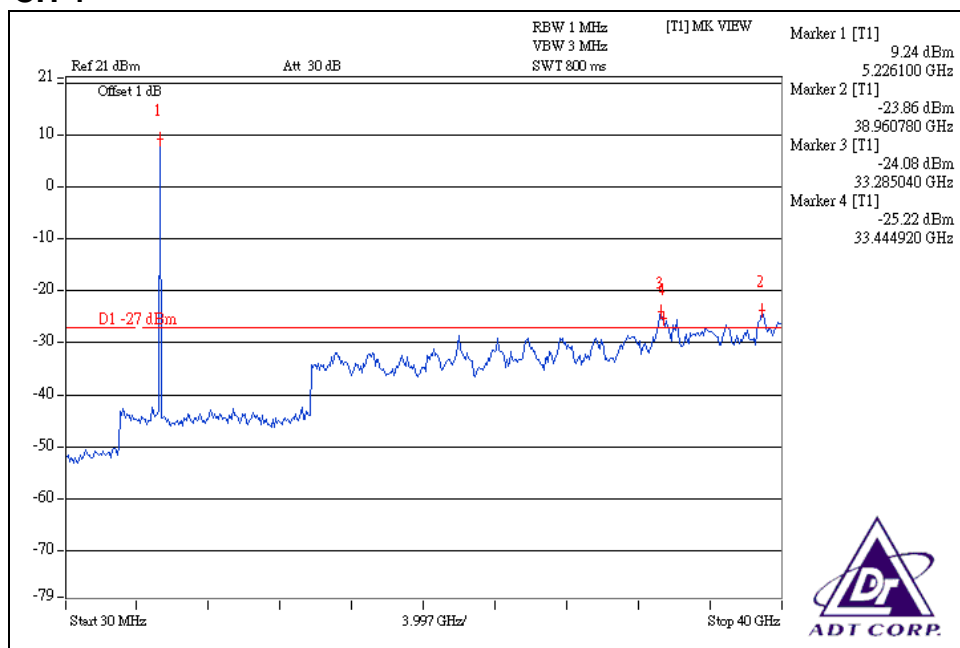


A D T

CH 1



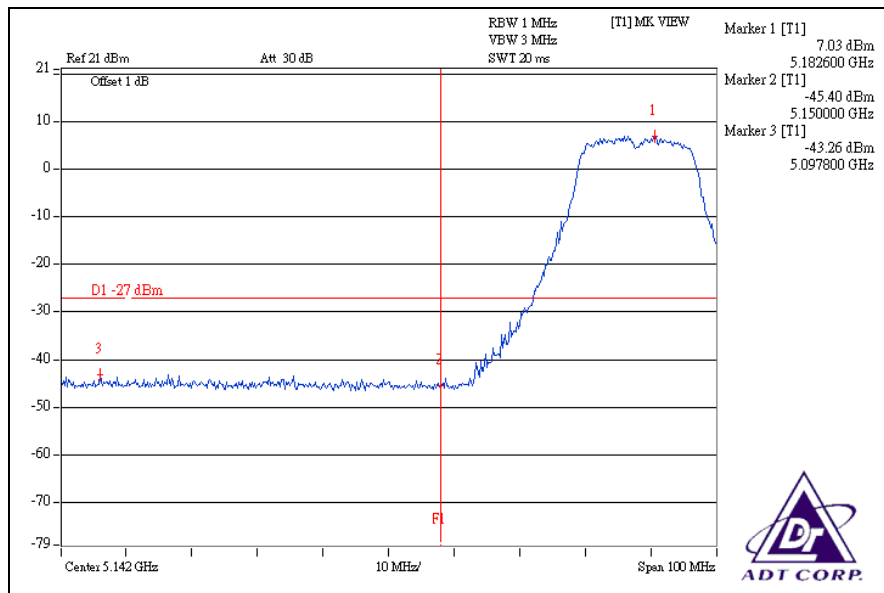
CH 4



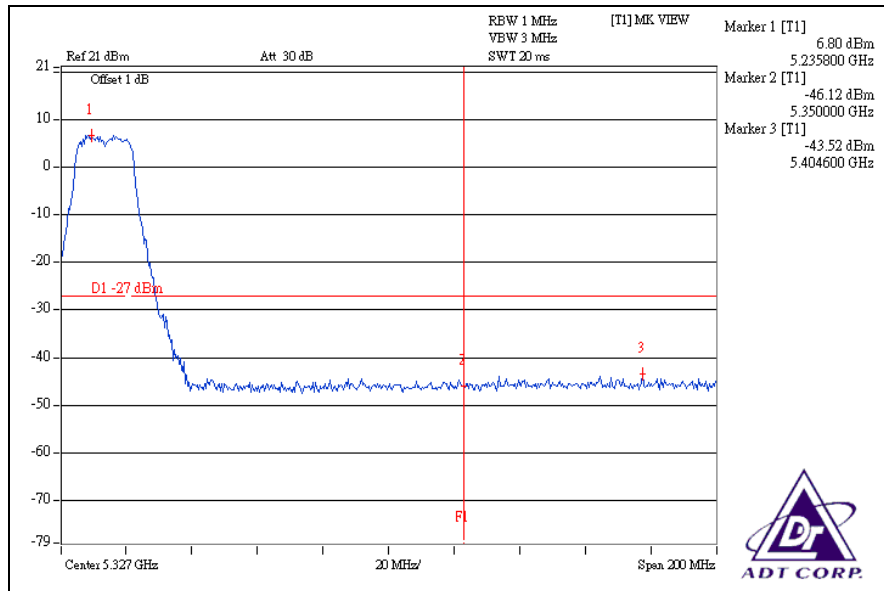
DRAFT 802.11n (20MHz) OFDM MODULATION:

For chain (0):

CH1



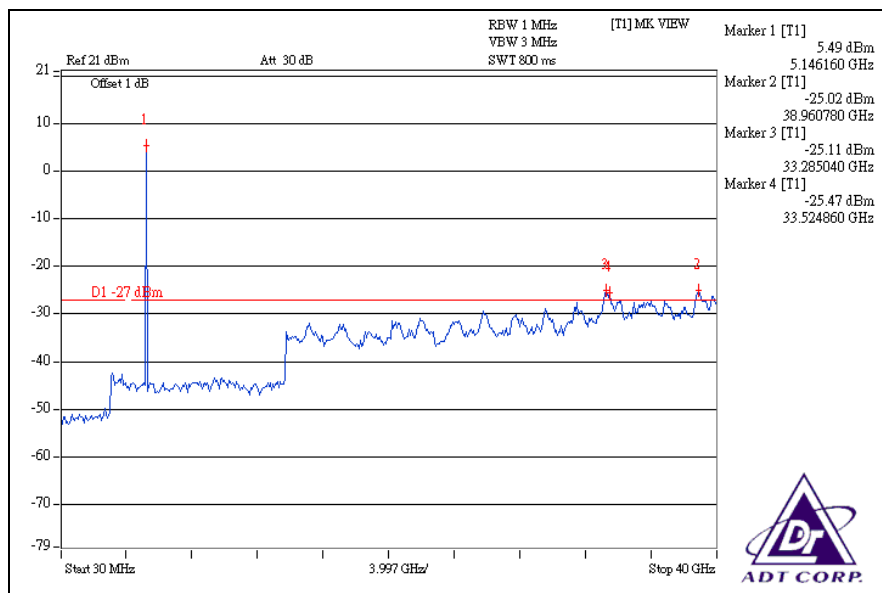
CH4



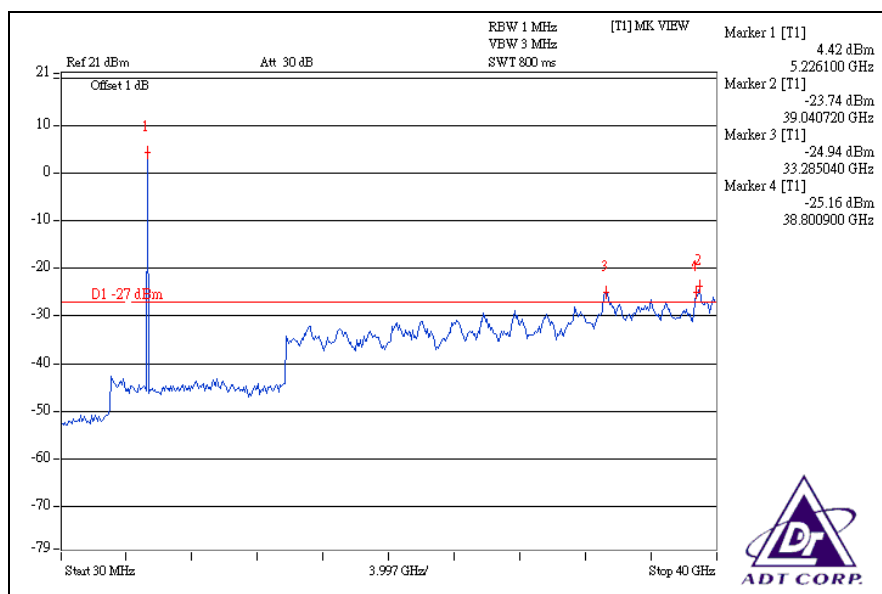


A D T

CH1



CH4

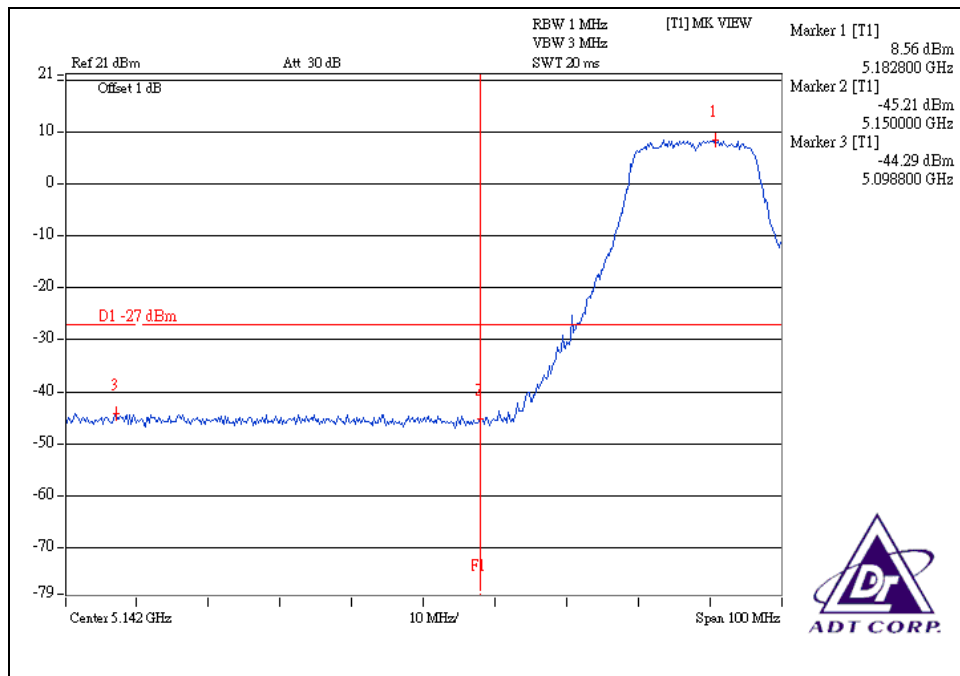




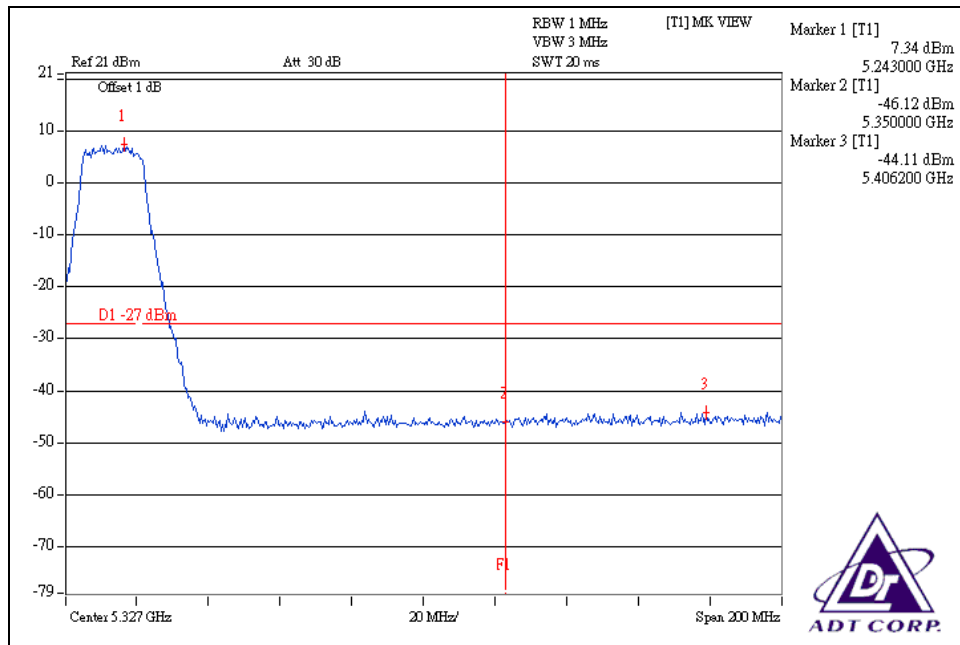
A D T

For chain (1):

CH1



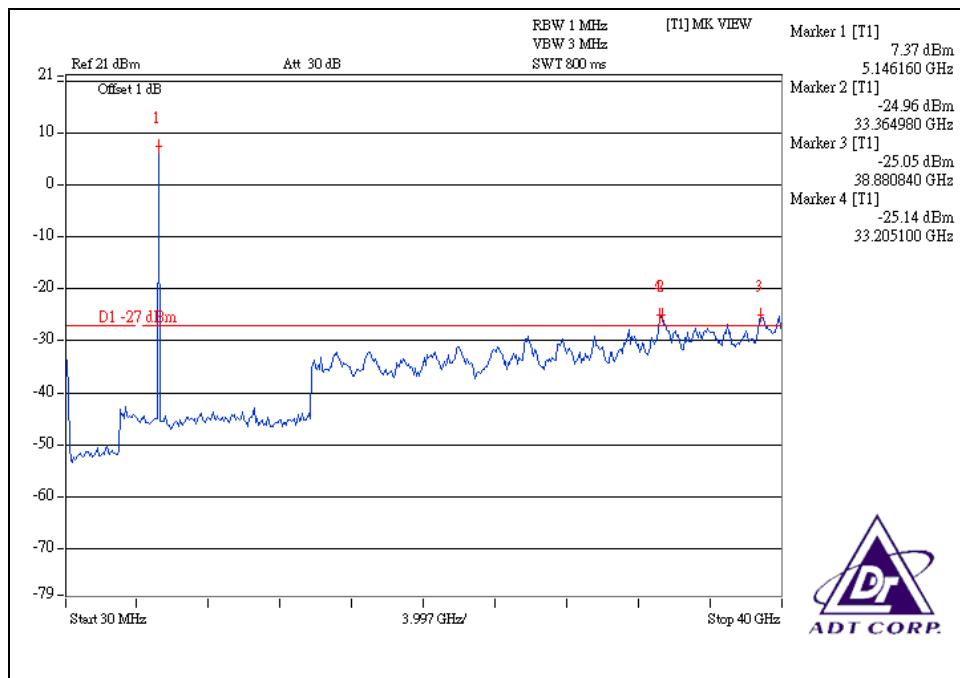
CH4



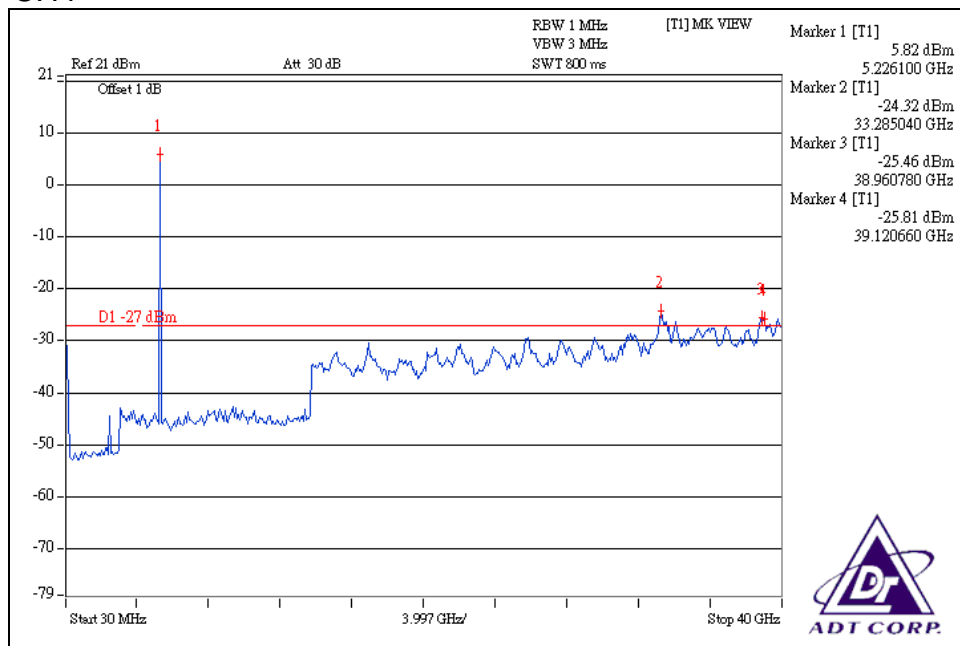


A D T

CH1



CH4

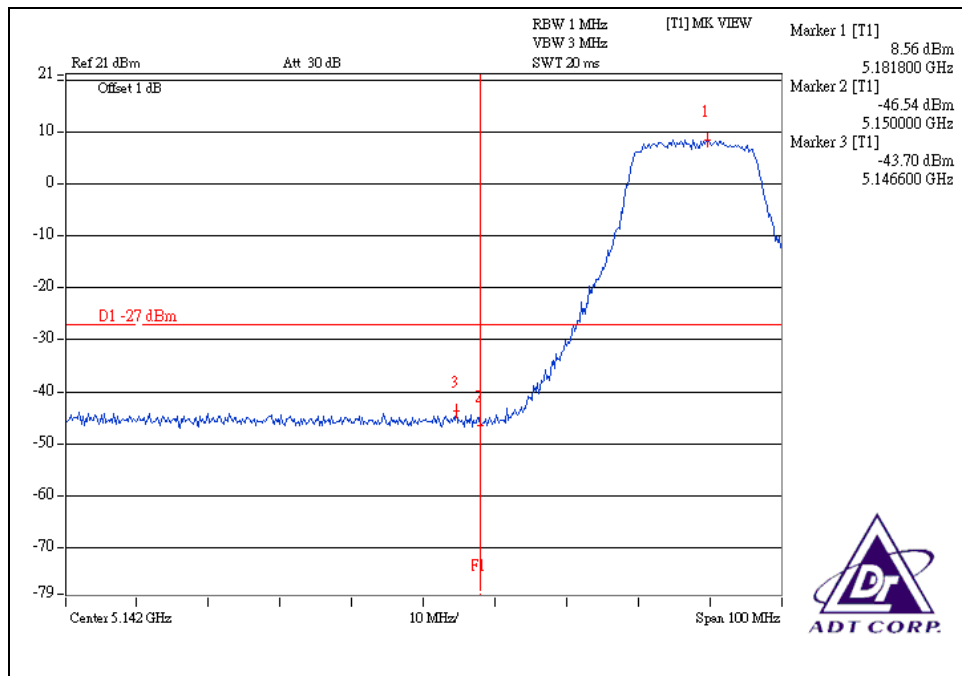




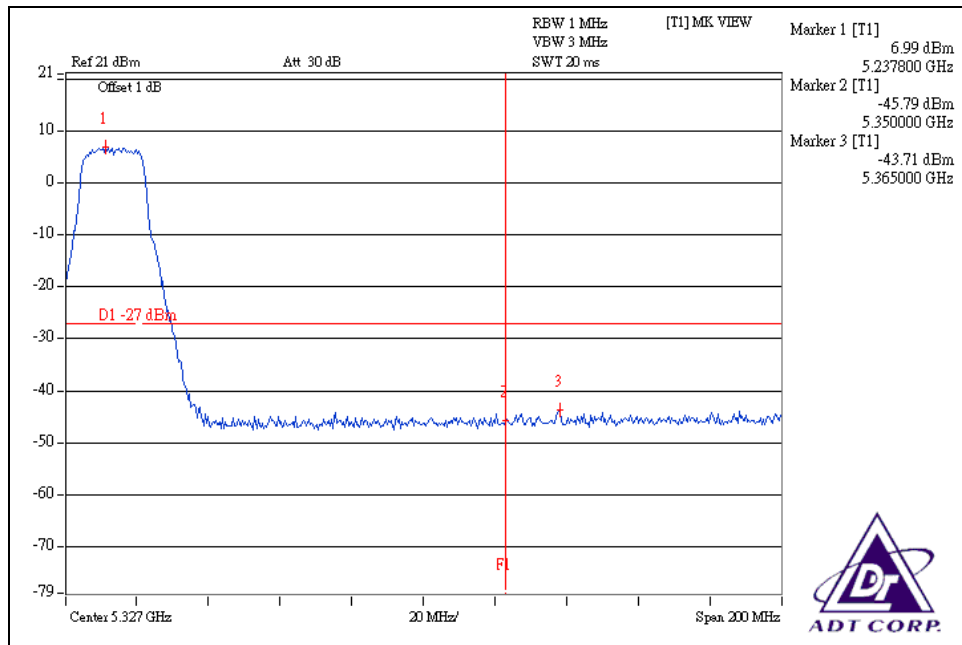
A D T

For chain (2):

CH1



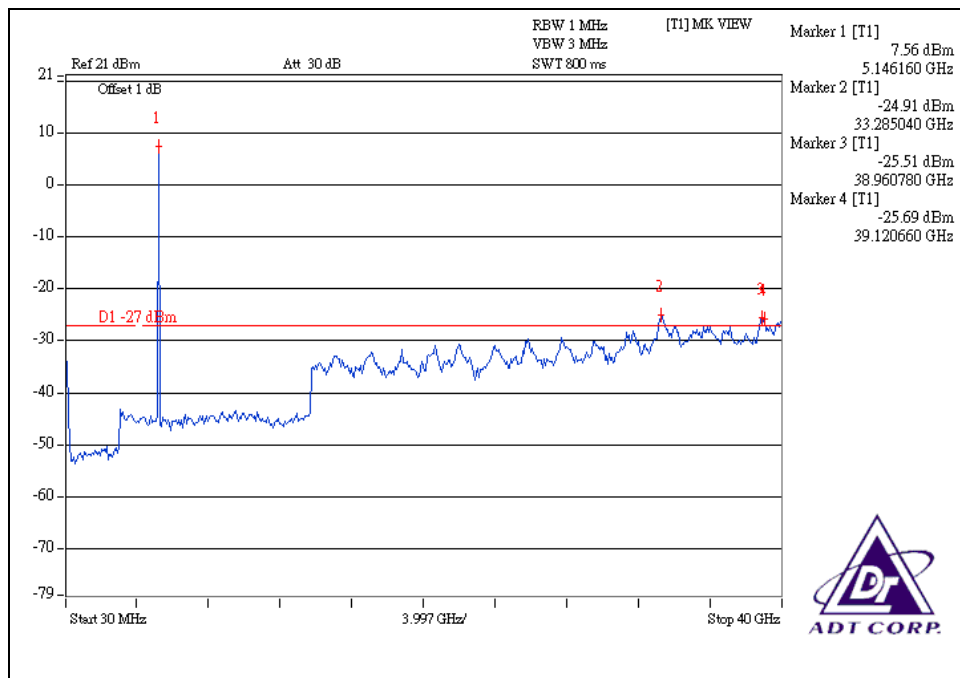
CH4



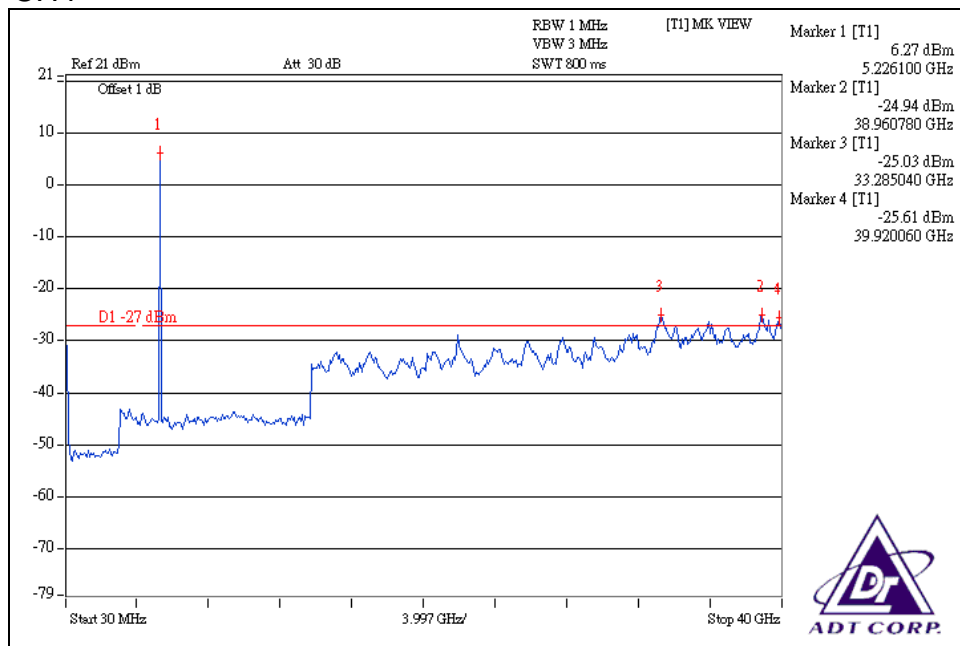


A D T

CH1



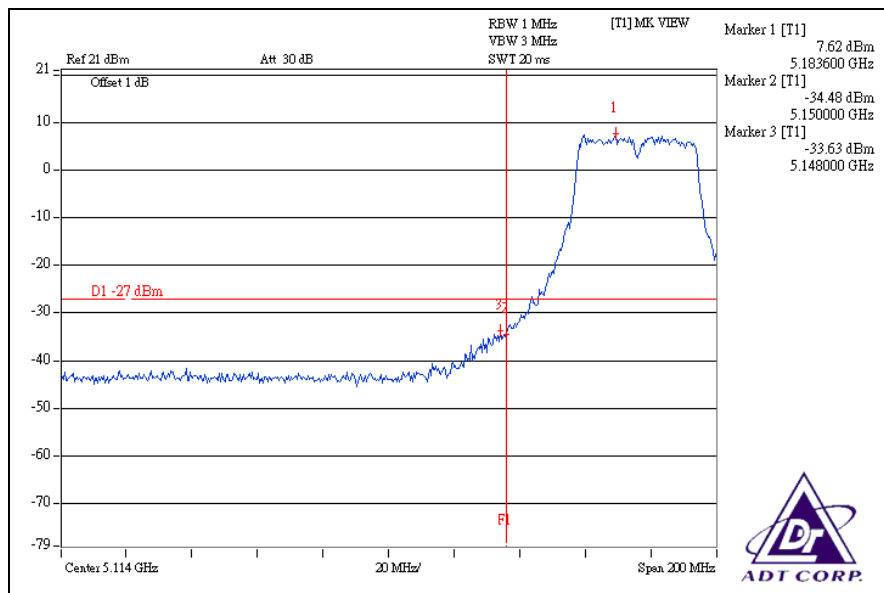
CH4



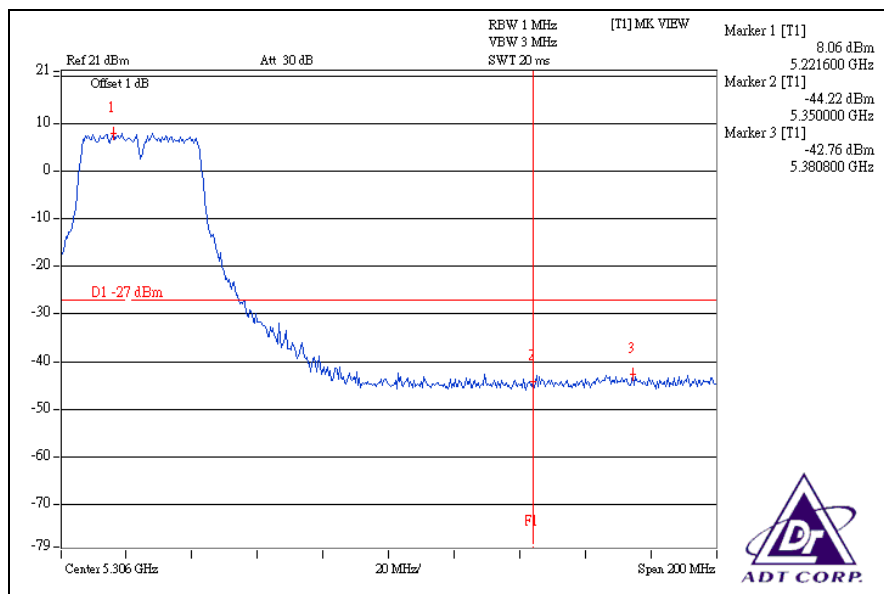
DRAFT 802.11n (40MHz) OFDM MODULATION:

For chain (0):

CH1



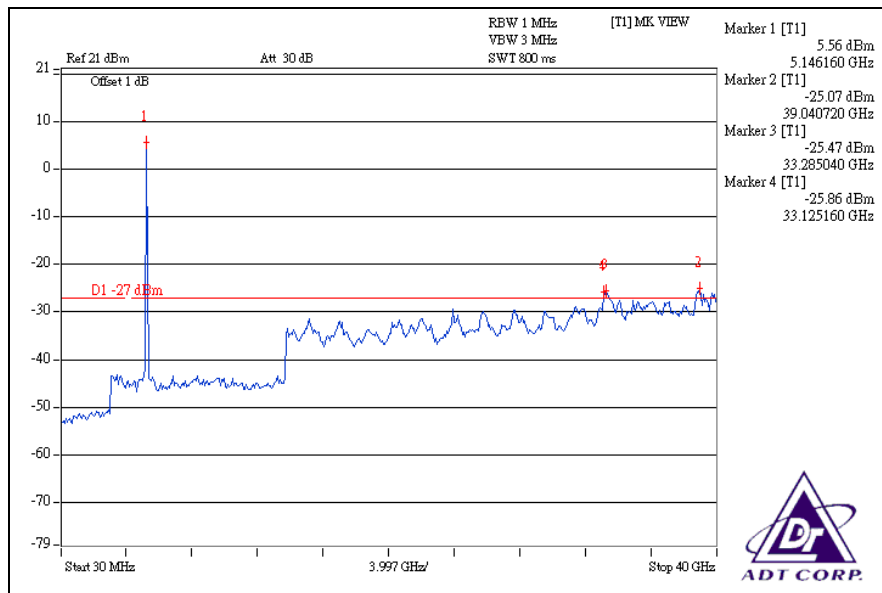
CH2



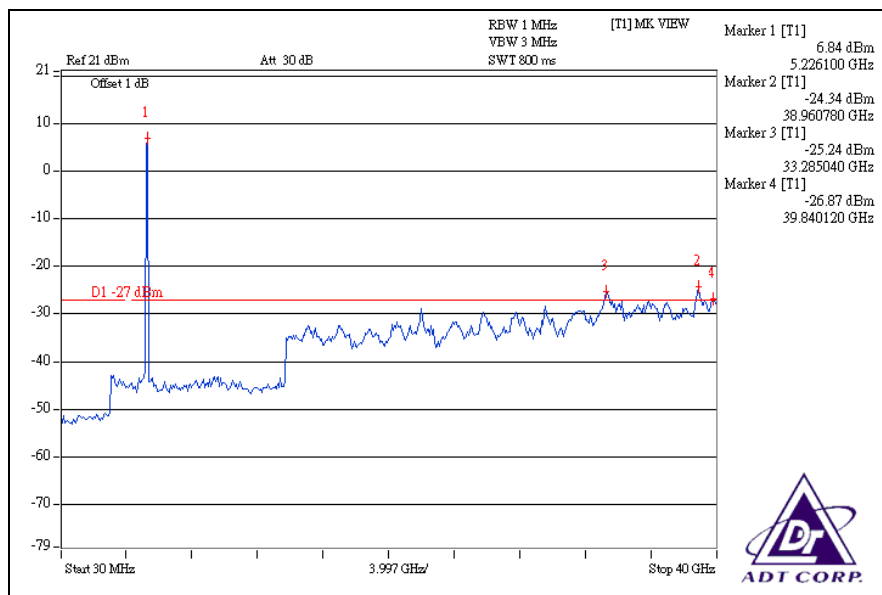


A D T

CH1



CH2

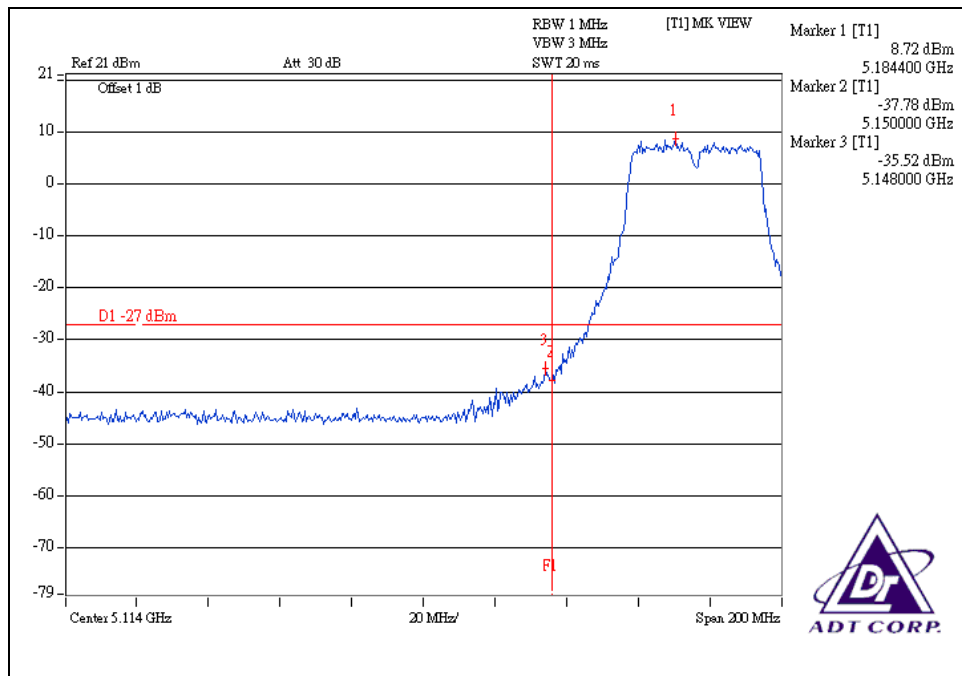




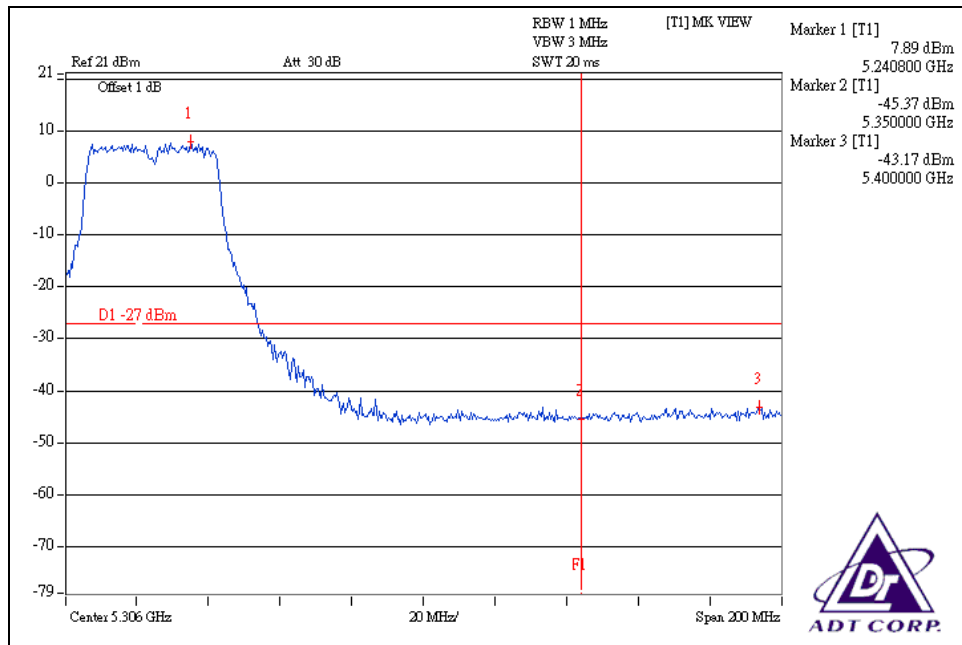
A D T

For chain (1):

CH1



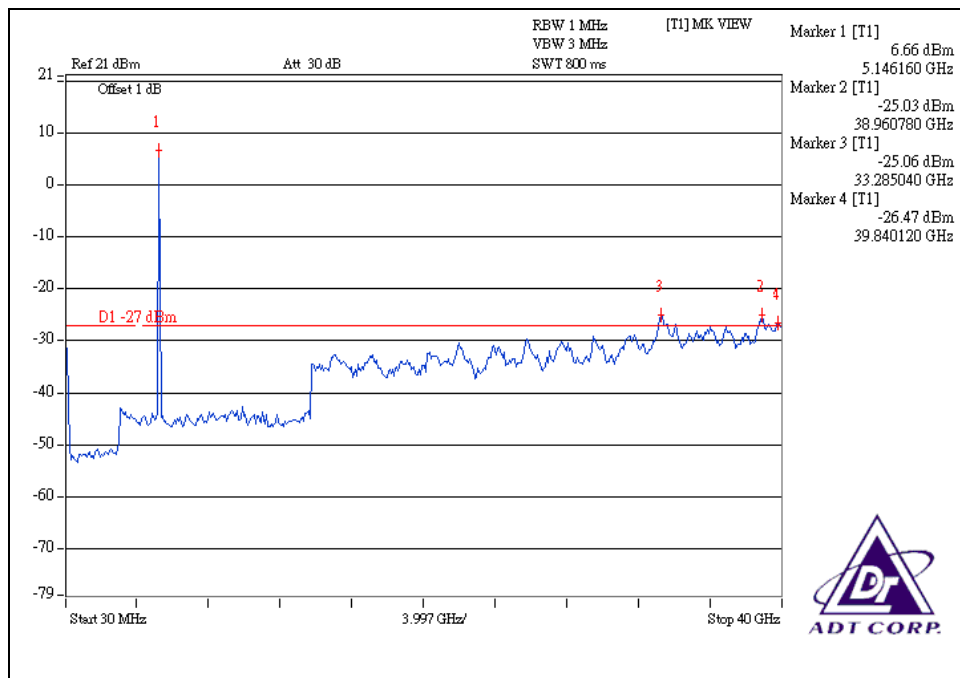
CH2



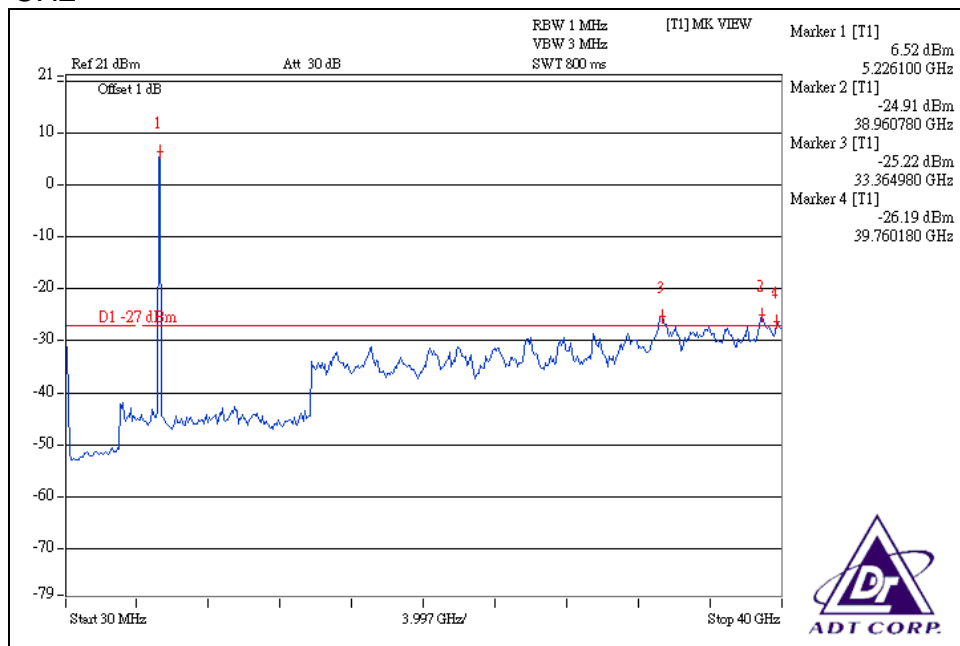


A D T

CH1



CH2

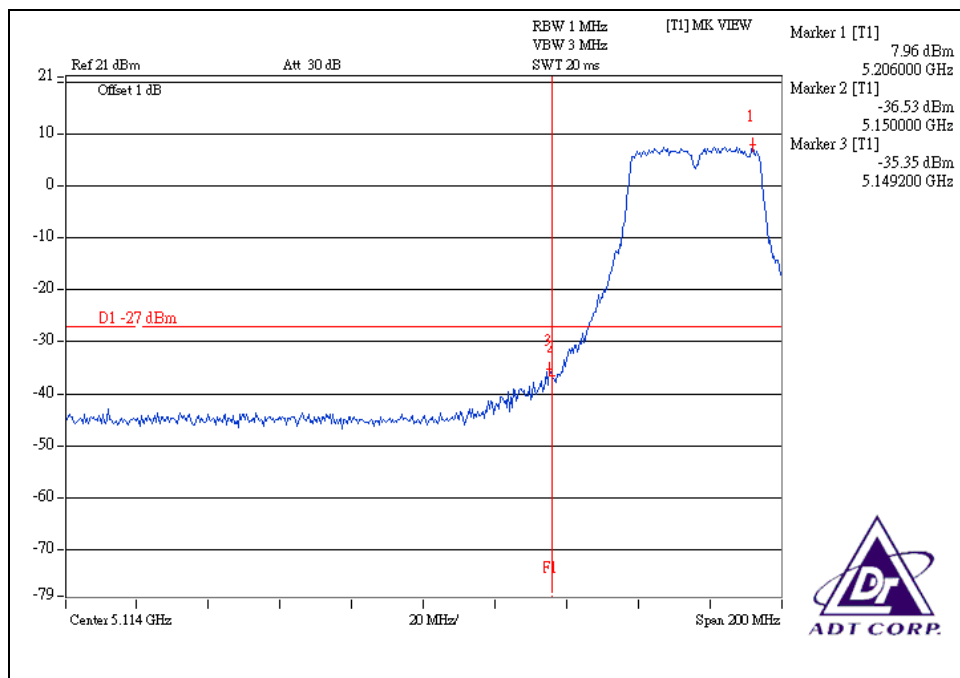




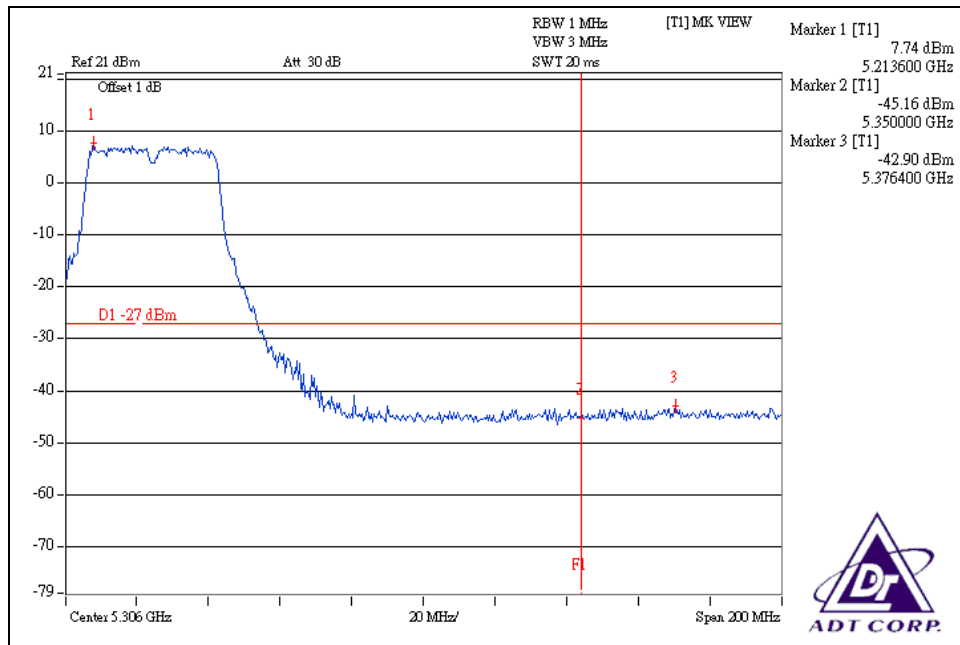
A D T

For chain (2):

CH1



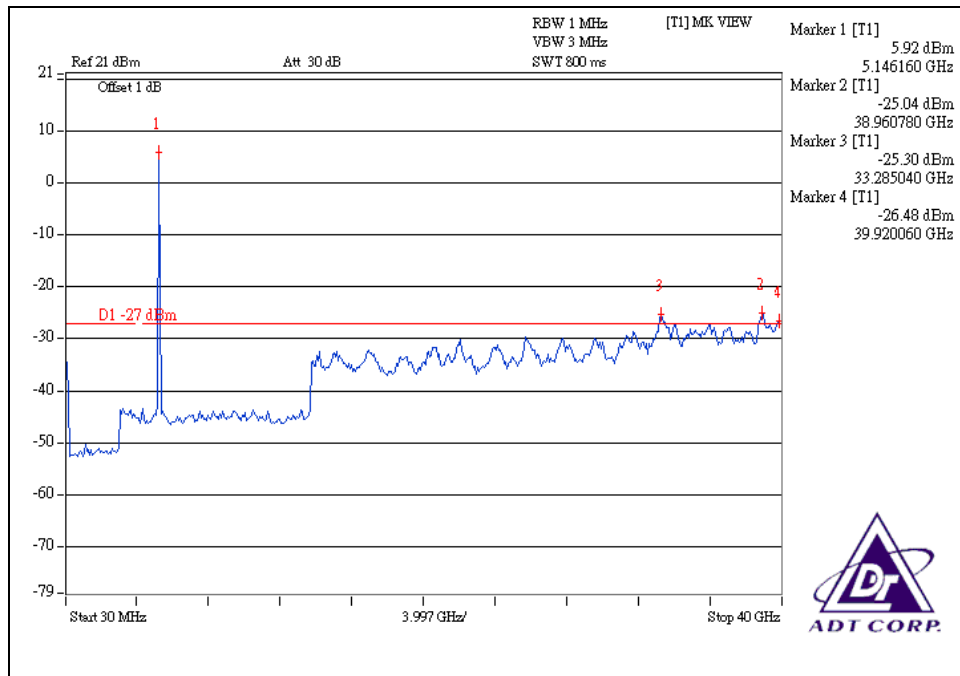
CH2



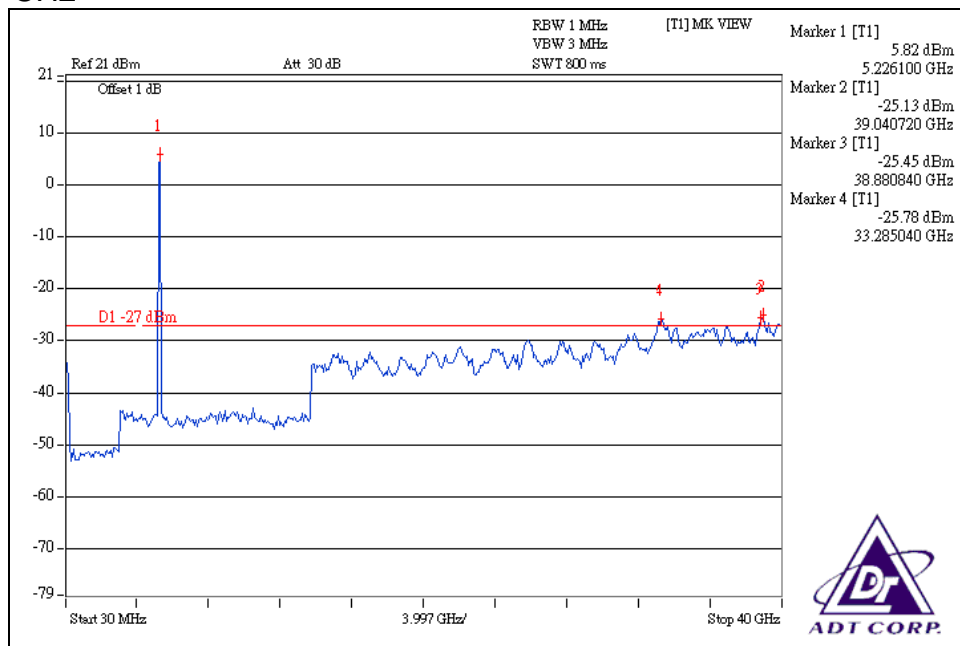


A D T

CH1



CH2





4.8 ANTENNA REQUIREMENT

4.8.1 STANDARD APPLICABLE

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

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

4.8.2 ANTENNA CONNECTED CONSTRUCTION

There are two antennas provided to this EUT, please refer to the following table:

No	Model No.	Antenna Gain	For 2.4GHz Gain (dBi)	For 5.15~5.25GHz Gain (dBi)	For 5.725~5.850GHz Gain (dBi)	Antenna Type	Connector
1	C034-510656-A (SSR-72241)	Gain (dBi)	3.66	2.61	2.91	Dipole	SMA Plug Reverse
		Cable Loss (dB)	1.18	2.06	2.56		
		Net Gain (dB)	2.48	0.55	0.35		
2	N2480-100C	Gain (dBi)	6.00	5.10	8.00	Monopoles with reflectors	I-PEX
		Cable Loss (dB)	1.00	1.00	1.00		
		Net Gain (dB)	5.00	4.10	7.00		



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5. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, 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
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: 886-2-26052943

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



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6.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.

--- END ---