4.3 BAND EDGES MEASUREMENT

4.3.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100KHz Resolution Bandwidth).

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 15, 2007

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.

4.3.3 TEST PROCEDURE

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

The spectrum plots (RBW = VBW = 100kHz) are attached on the following pages.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 EUT OPERATING CONDITION

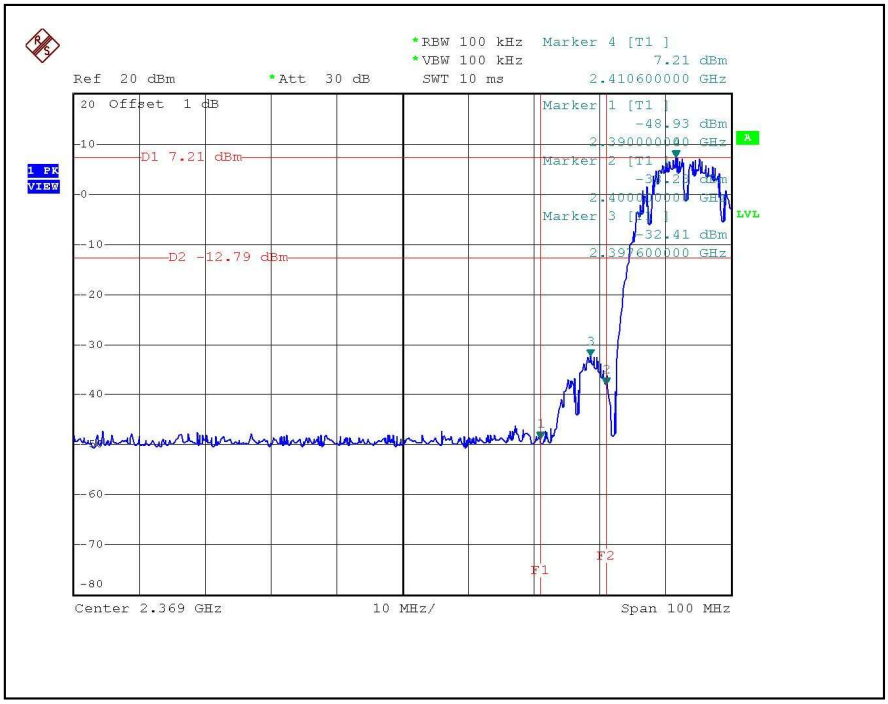
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.6 TEST RESULTS

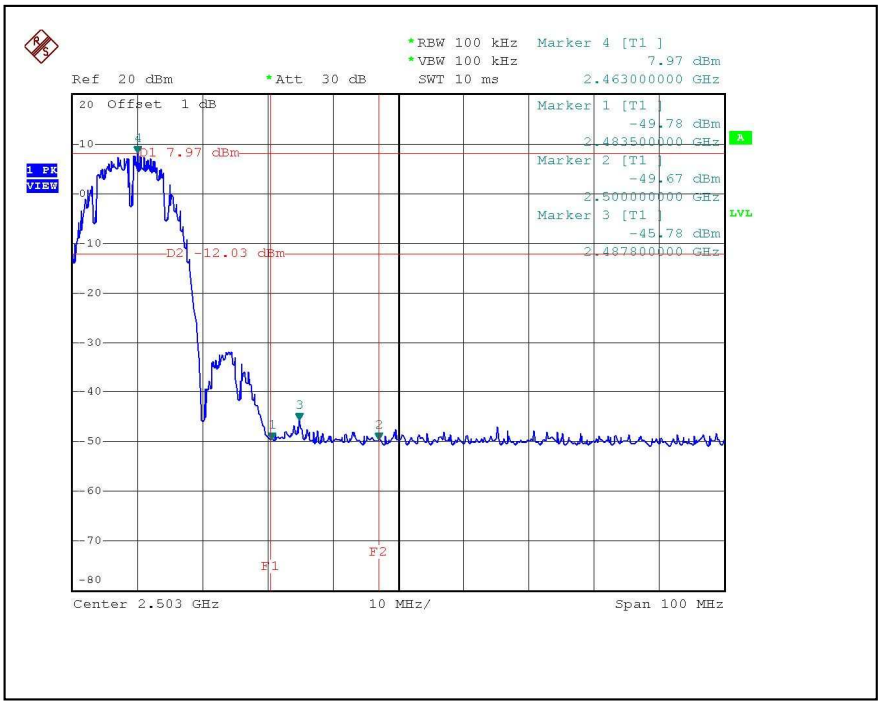
The spectrum plots are attached on the following 12 images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS MODULATION:

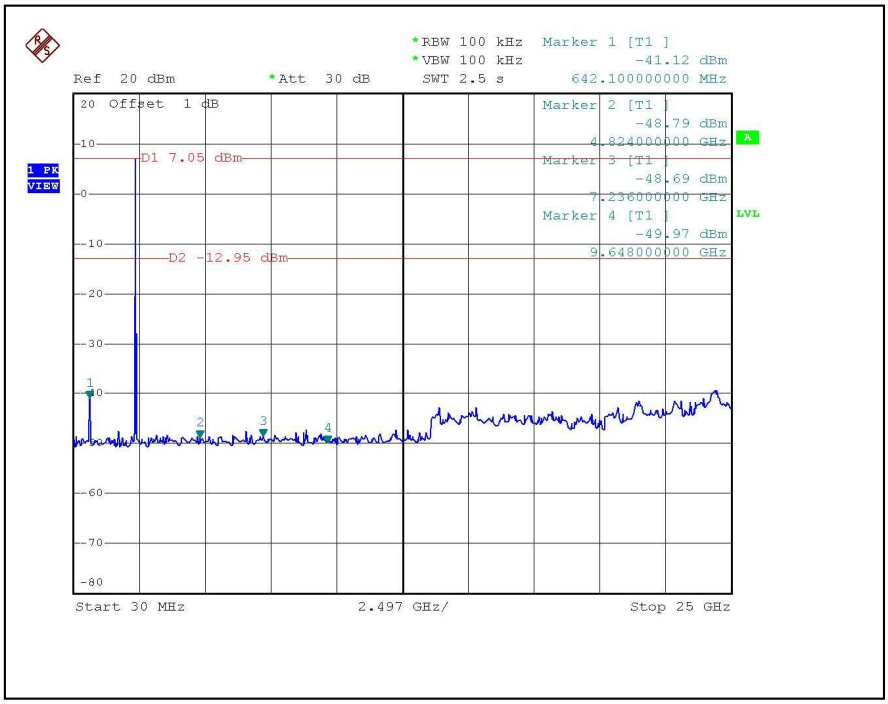
CH1



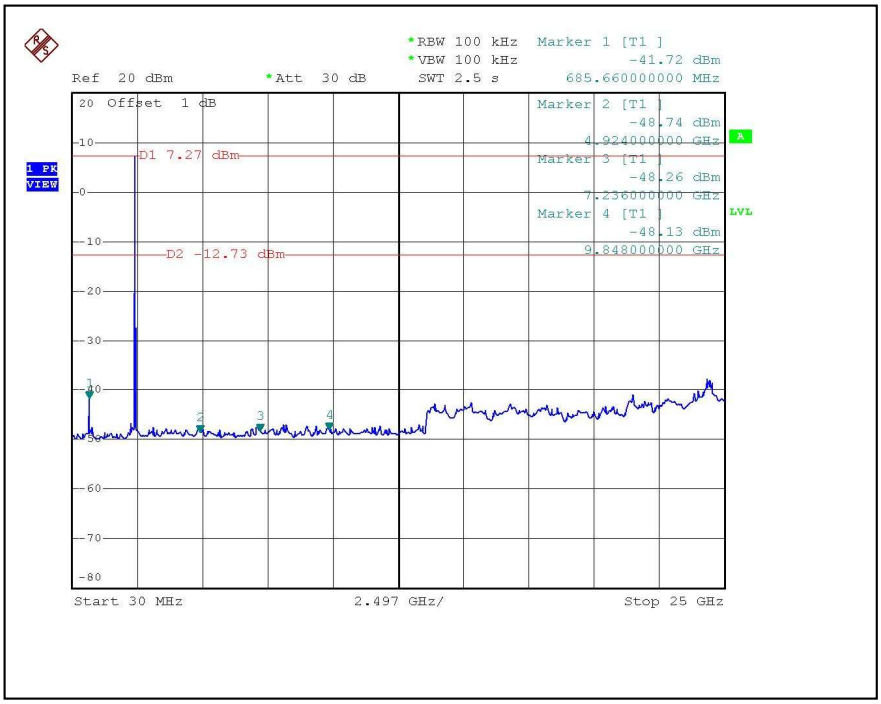
CH11



CH1

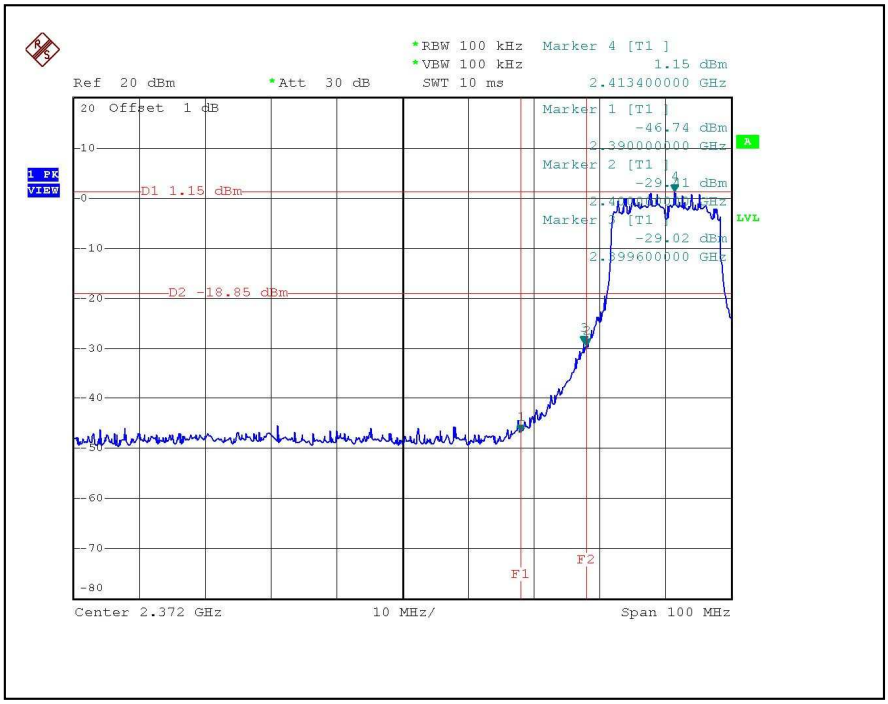

*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 2.5 s
Marker 1 [T1]
-41.12 dBm
642.100000000 MHz
20 Offset 1 dB
D1 7.05 dBm
D2 -12.95 dBm
Marker 2 [T1]
-48.79 dBm
4.824000000 GHz
Marker 3 [T1]
-48.69 dBm
7.236000000 GHz
Marker 4 [T1]
-49.97 dBm
9.648000000 GHz
1 PK VIEW
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH11

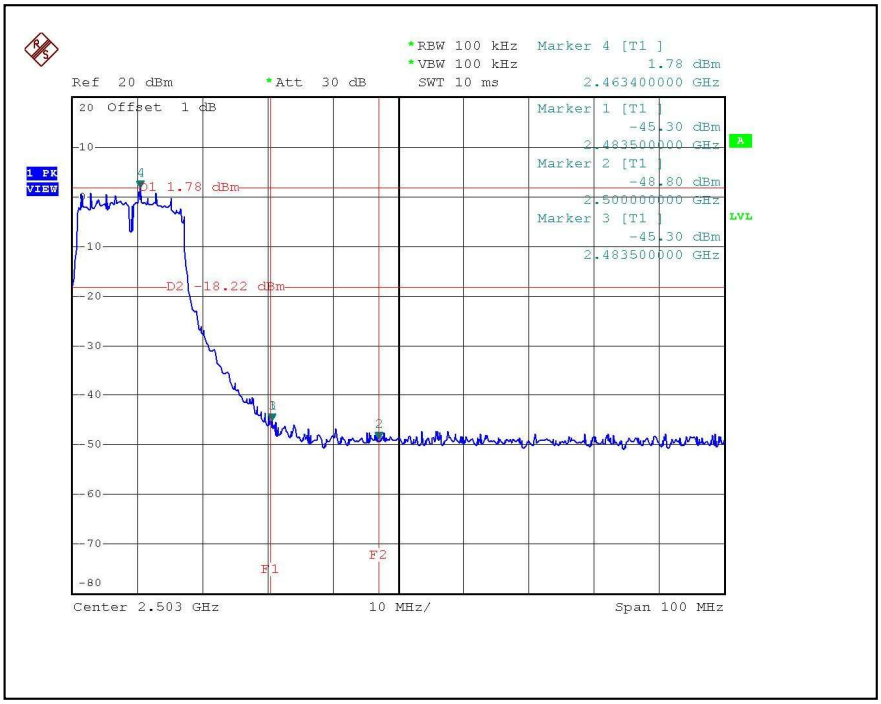

*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 2.5 s
Marker 1 [T1]
-41.72 dBm
685.660000000 MHz
20 Offset 1 dB
D1 7.27 dBm
D2 -12.73 dBm
Marker 2 [T1]
-48.74 dBm
4.924000000 GHz
Marker 3 [T1]
-48.26 dBm
7.236000000 GHz
Marker 4 [T1]
-48.13 dBm
9.848000000 GHz
1 PK VIEW
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11g OFDM MODULATION:

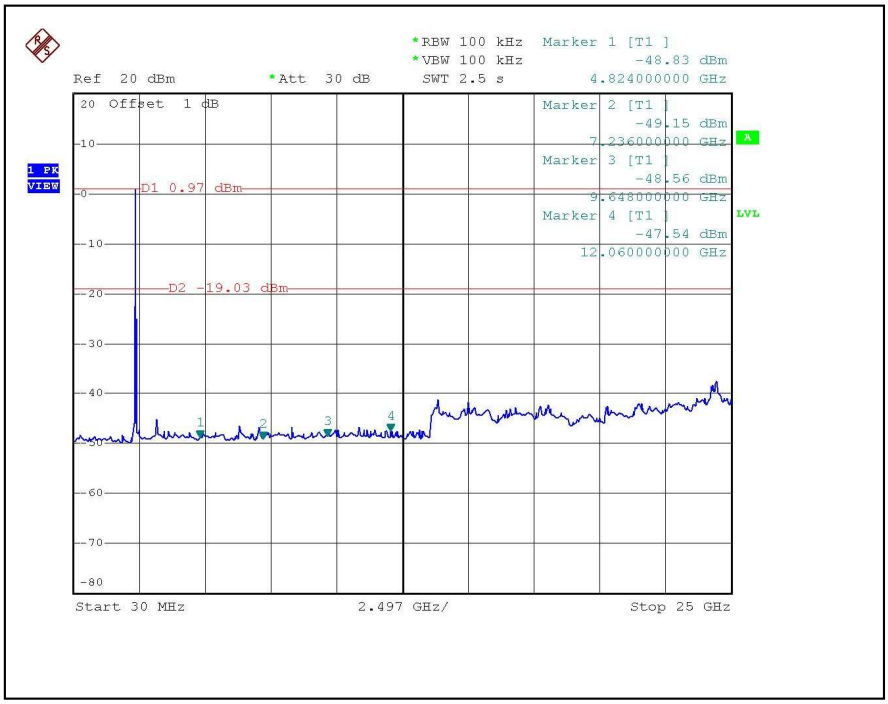
CH 1



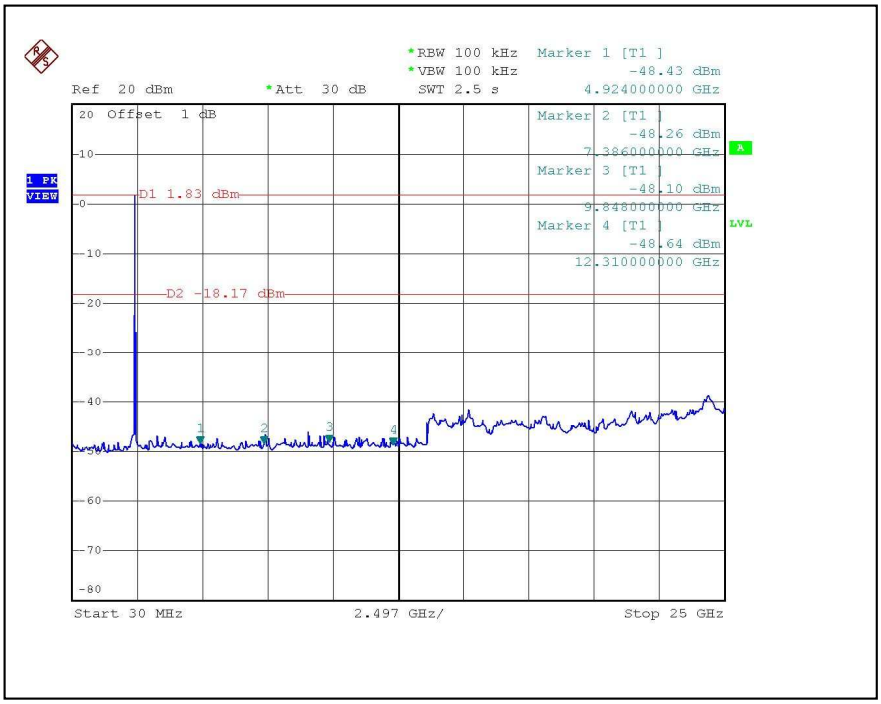
CH11



CH1

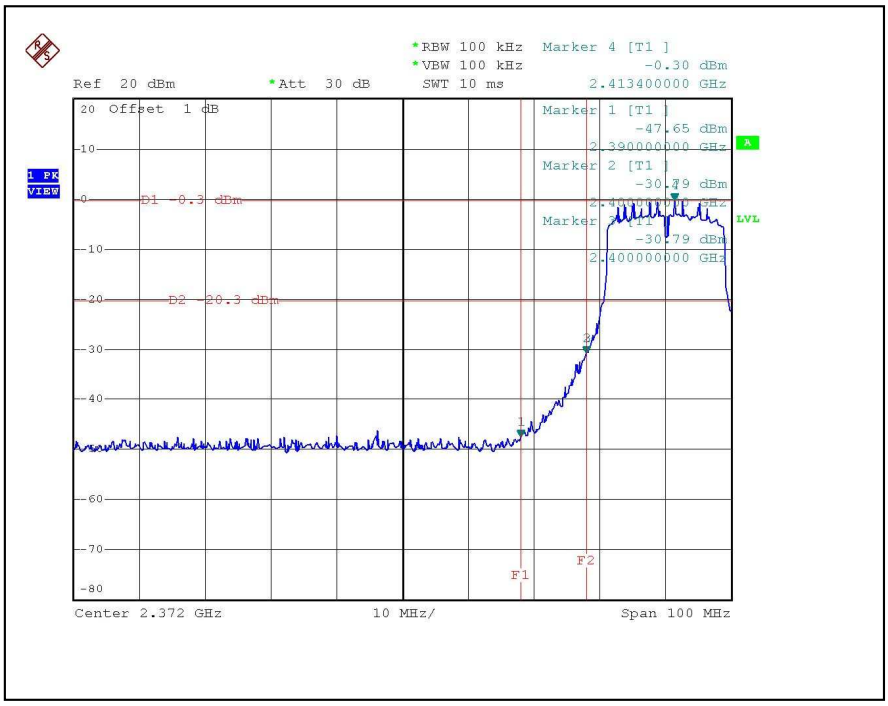

*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
-48.83 dBm
4.824000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 2 [T1]
-49.15 dBm
7.236000000 GHz
Marker 3 [T1]
-48.56 dBm
9.648000000 GHz
Marker 4 [T1]
-47.54 dBm
12.060000000 GHz
1 PK
VIEW
D1 0.97 dBm
D2 -19.03 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH11

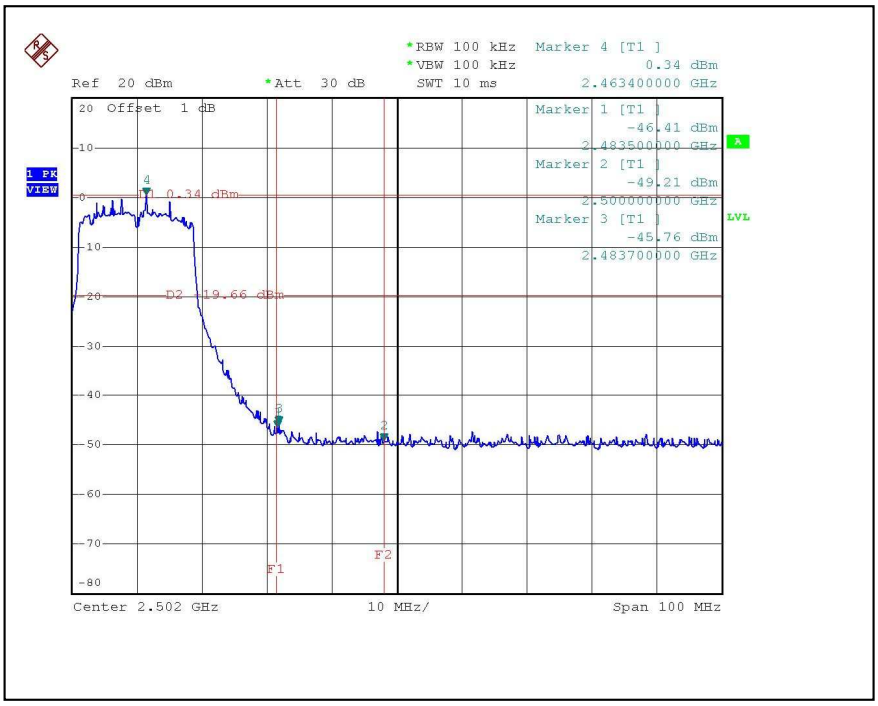

*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
-48.43 dBm
4.924000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 2 [T1]
-48.26 dBm
7.386000000 GHz
Marker 3 [T1]
-48.10 dBm
9.848000000 GHz
Marker 4 [T1]
-48.64 dBm
12.310000000 GHz
1 PK
VIEW
D1 1.83 dBm
D2 -18.17 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

DRAFT 802.11n (20MHz) OFDM MODULATION:

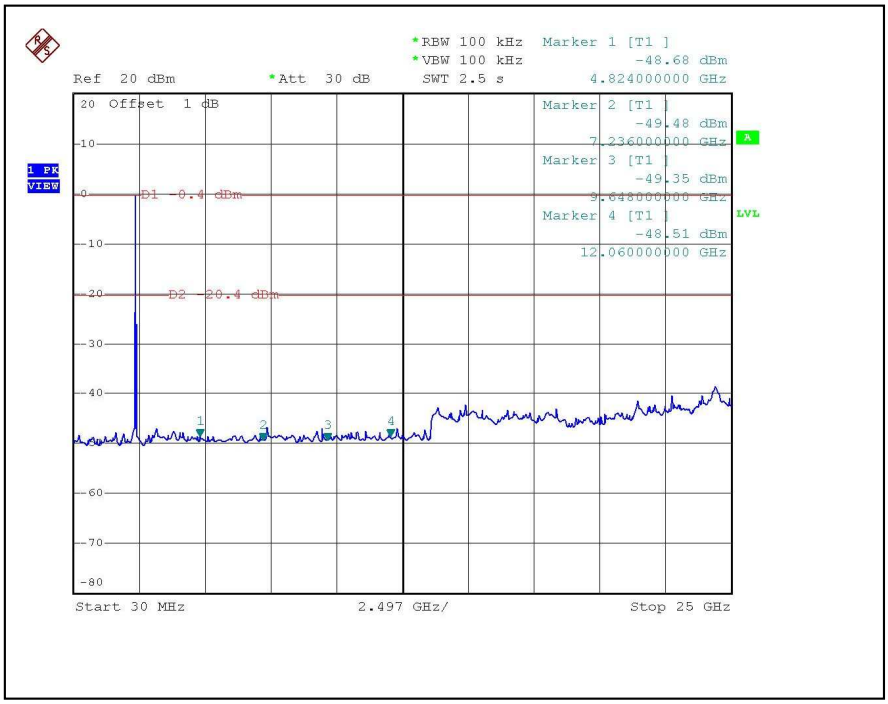
For Chain (0):CH1



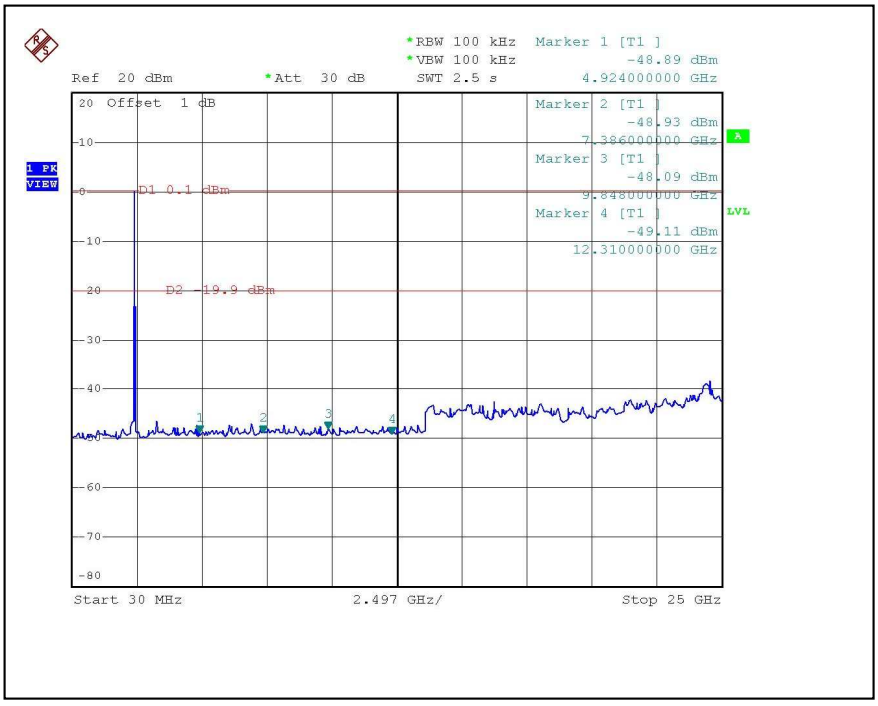
CH11



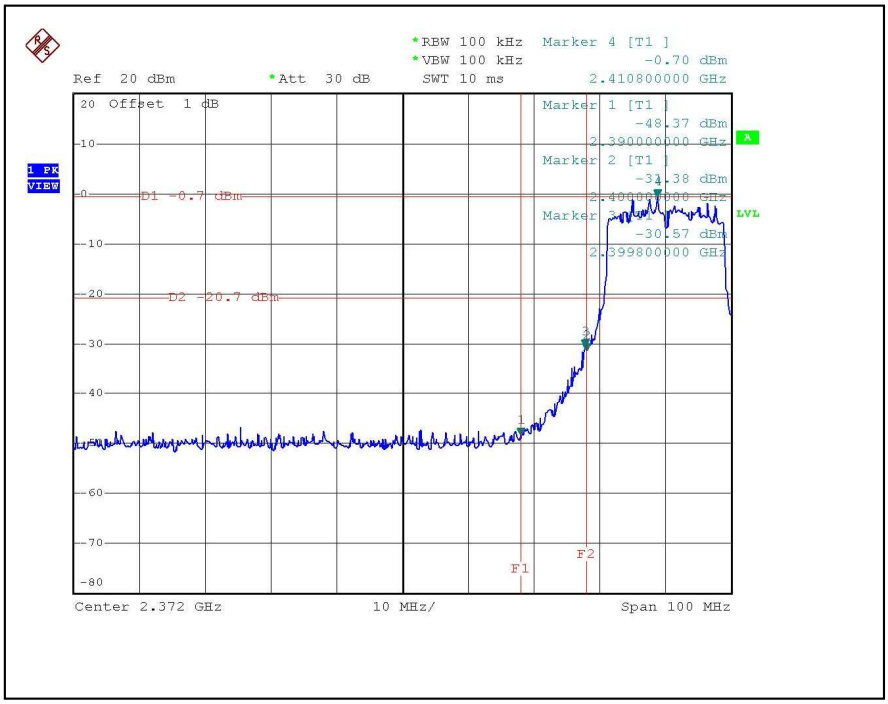
CH1


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
-48.68 dBm
4.824000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 2 [T1]
-49.48 dBm
7.236000000 GHz
Marker 3 [T1]
-49.35 dBm
9.648000000 GHz
Marker 4 [T1]
-48.51 dBm
12.060000000 GHz
1 PK
VIEW
D1 -0.4 dBm
D2 -20.4 dBm
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

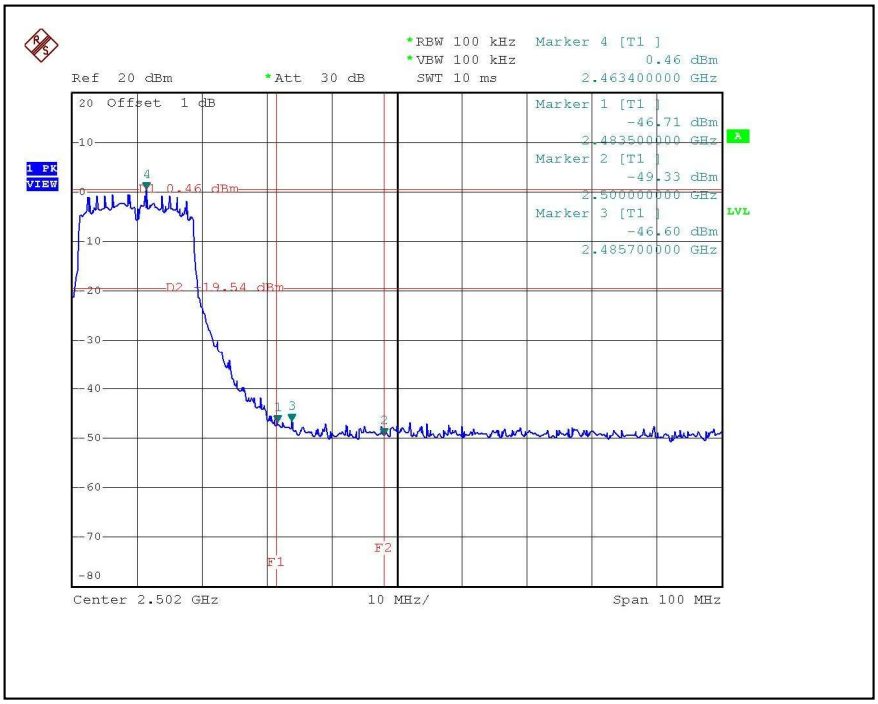
CH11


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
-48.89 dBm
4.924000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 2 [T1]
-48.93 dBm
7.386000000 GHz
Marker 3 [T1]
-48.09 dBm
9.848000000 GHz
Marker 4 [T1]
-49.11 dBm
12.310000000 GHz
1 PK
VIEW
D1 0.1 dBm
D2 -19.9 dBm
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

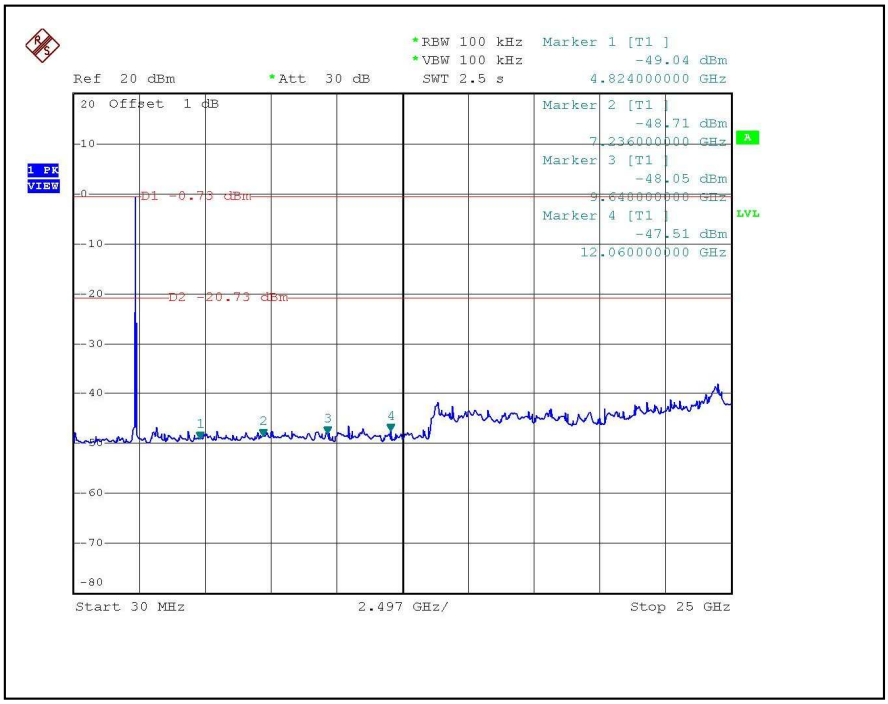
For Chain (2):CH1



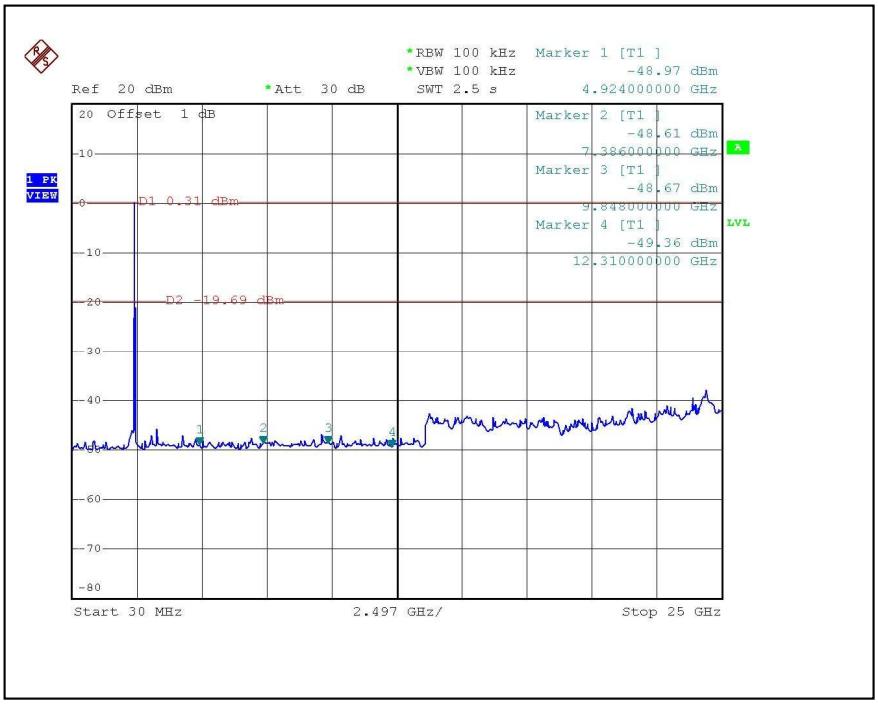
CH11



CH1

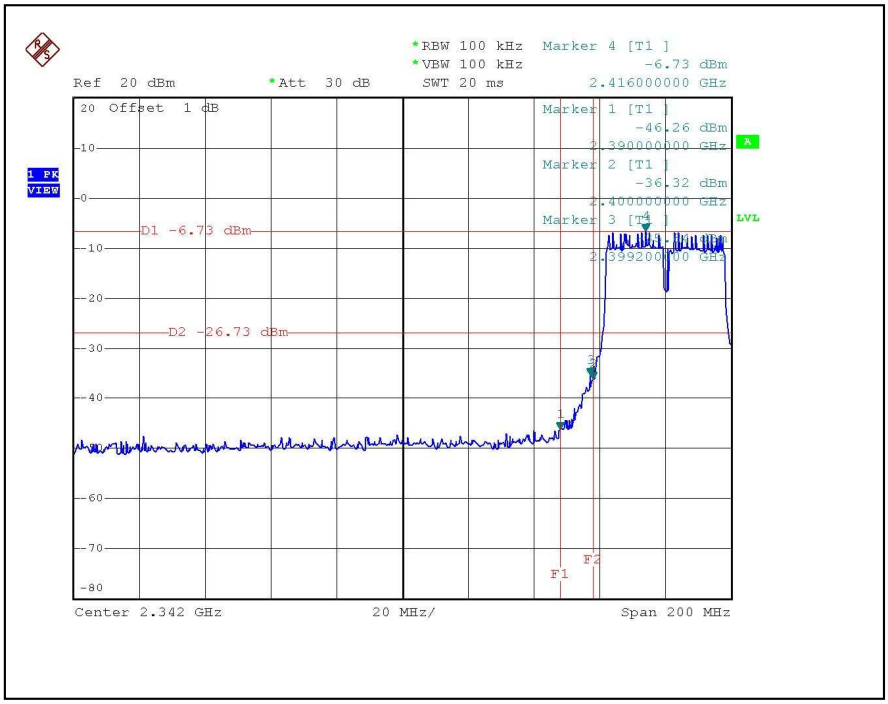

*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
-49.04 dBm
4.824000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 2 [T1]
-48.71 dBm
7.236000000 GHz
Marker 3 [T1]
-48.05 dBm
9.648000000 GHz
Marker 4 [T1]
-47.51 dBm
12.060000000 GHz
1 PK
VIEW
D1 -0.73 dBm
D2 -20.73 dBm
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH11

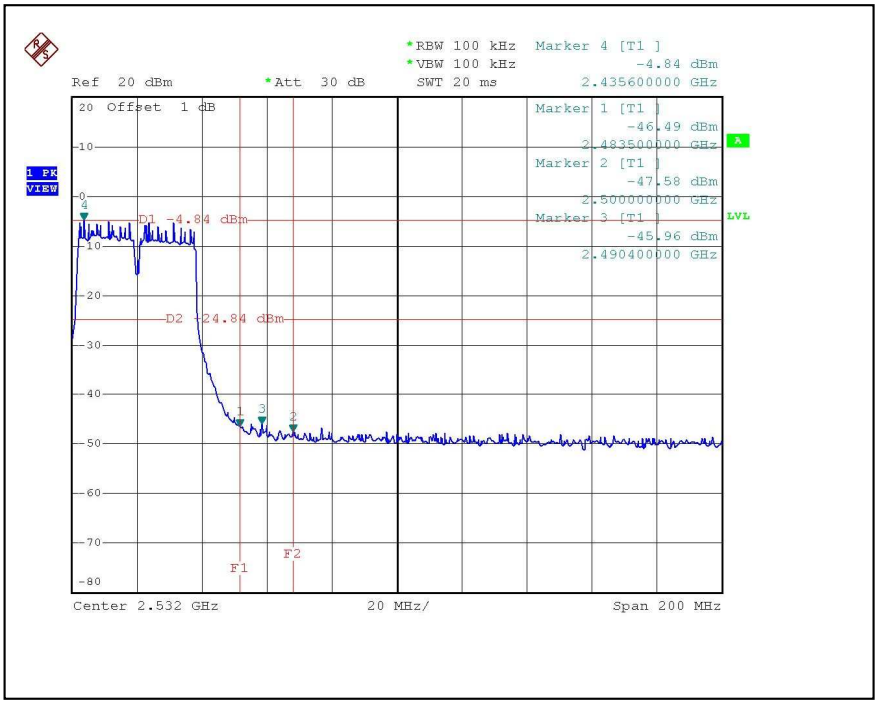

*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
-48.97 dBm
4.924000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 2 [T1]
-48.61 dBm
7.386000000 GHz
Marker 3 [T1]
-48.67 dBm
9.848000000 GHz
Marker 4 [T1]
-49.36 dBm
12.310000000 GHz
1 PK
VIEW
D1 0.31 dBm
D2 -19.69 dBm
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

DRAFT 802.11n (40MHz) OFDM MODULATION:

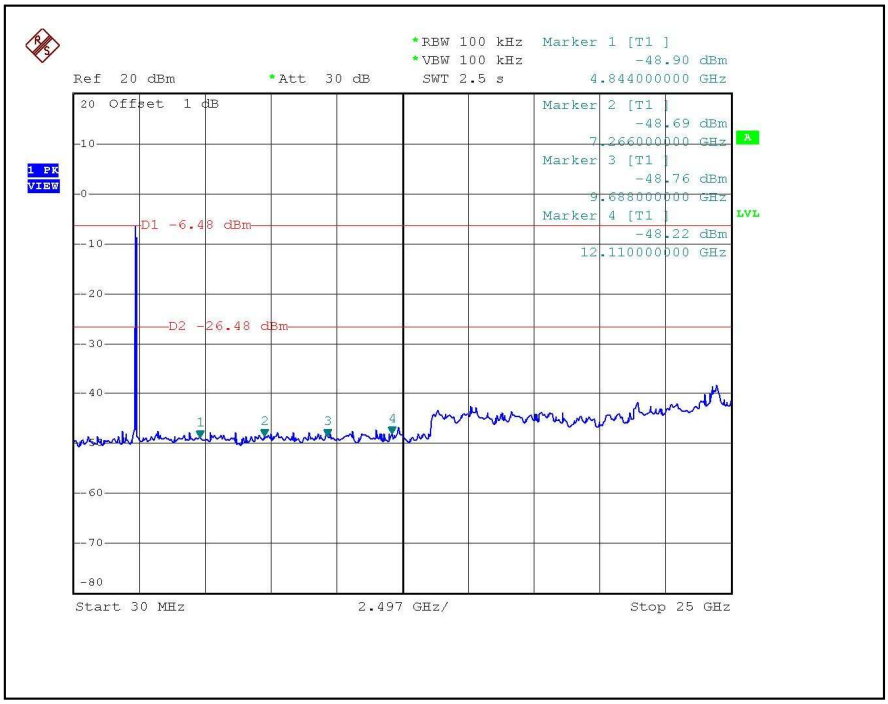
For Chain (0):CH1



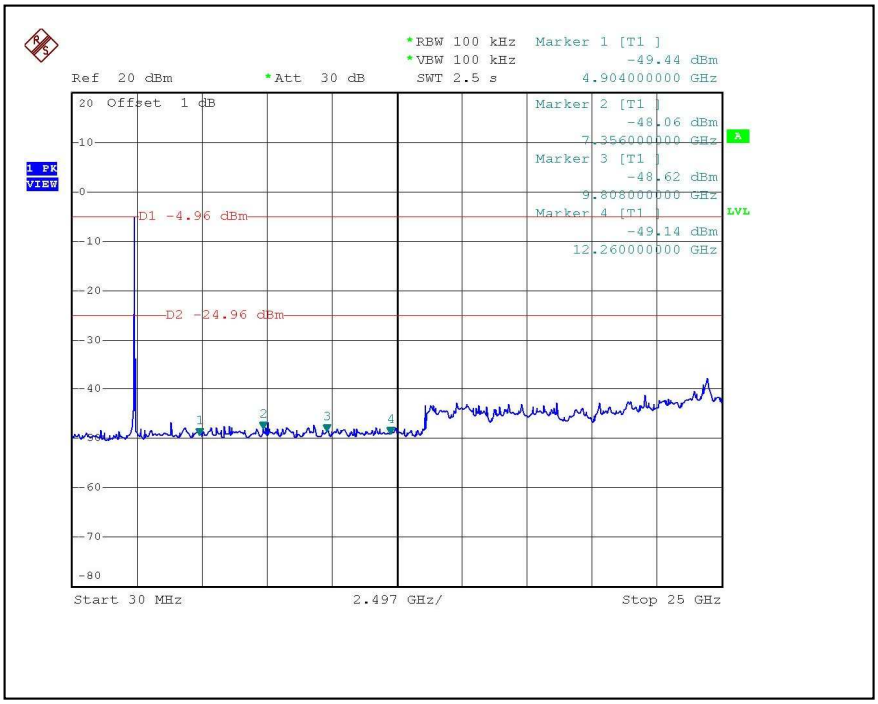
CH7



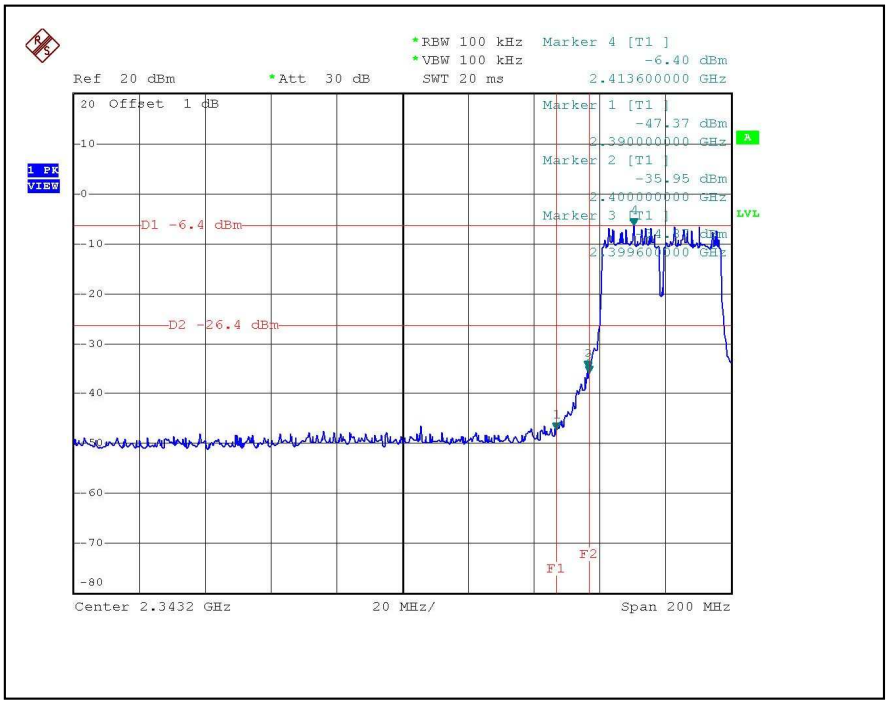
CH1


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
-48.90 dBm
4.844000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 2 [T1]
-48.69 dBm
7.266000000 GHz
Marker 3 [T1]
-48.76 dBm
9.688000000 GHz
Marker 4 [T1]
-48.22 dBm
12.110000000 GHz
1 PK
VIEW
D1 -6.48 dBm
D2 -26.48 dBm
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

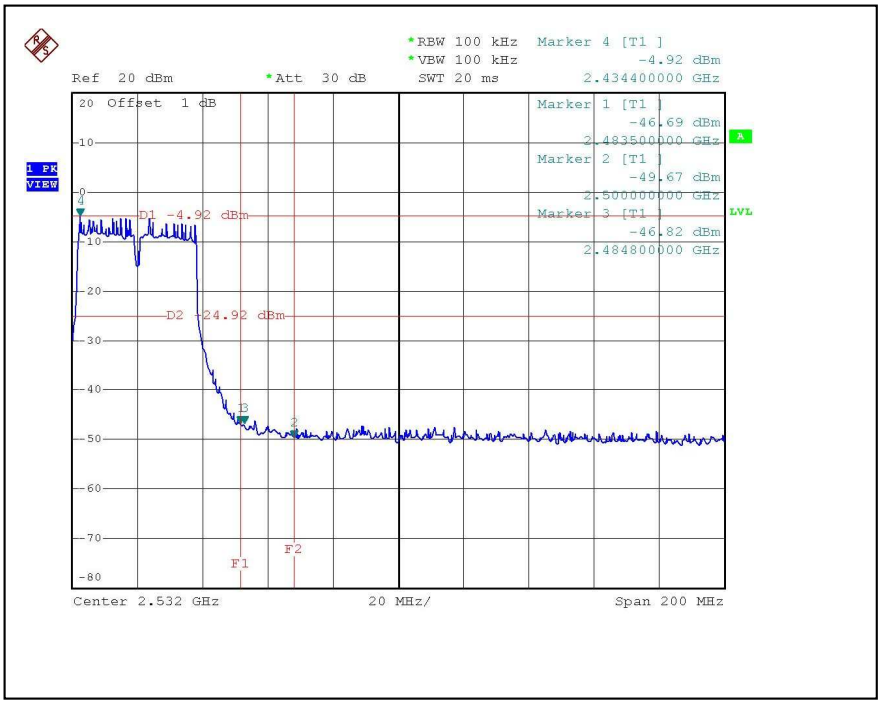
CH7


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
-49.44 dBm
4.904000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 2 [T1]
-48.06 dBm
7.356000000 GHz
Marker 3 [T1]
-48.62 dBm
9.808000000 GHz
Marker 4 [T1]
-49.14 dBm
12.260000000 GHz
1 PK
VIEW
D1 -4.96 dBm
D2 -24.96 dBm
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

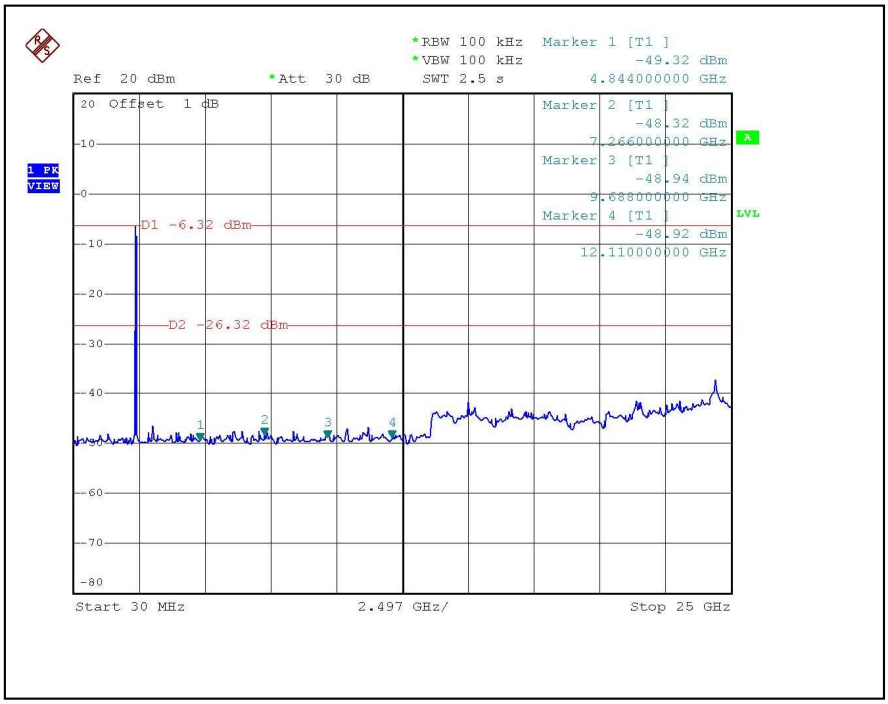
For Chain (2):CH1



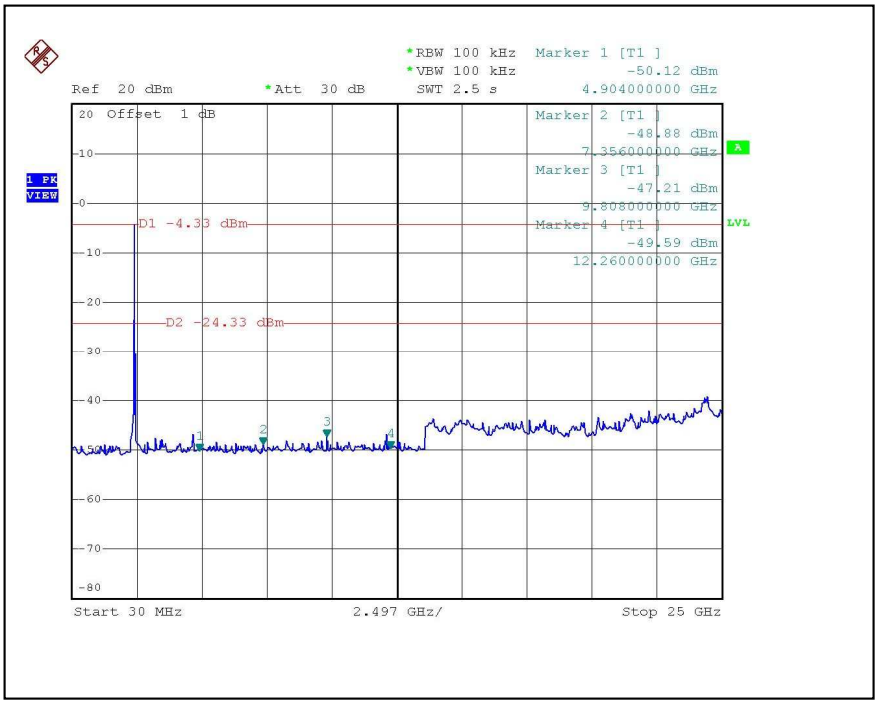
CH7



CH1


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
-49.32 dBm
4.844000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 2 [T1]
-48.32 dBm
7.266000000 GHz
Marker 3 [T1]
-48.94 dBm
9.688000000 GHz
Marker 4 [T1]
-48.92 dBm
12.110000000 GHz
1 PK
VIEW
D1 -6.32 dBm
D2 -26.32 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH7


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
-50.12 dBm
4.904000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 2 [T1]
-48.88 dBm
7.356000000 GHz
Marker 3 [T1]
-47.21 dBm
9.808000000 GHz
Marker 4 [T1]
-49.59 dBm
12.260000000 GHz
1 PK
VIEW
D1 -4.33 dBm
D2 -24.33 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

4.4 ANTENNA REQUIREMENT

4.4.1 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 15.247 (b), 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.

4.4.2 ANTENNA CONNECTED CONSTRUCTION

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

Transmitter Circuit	Antenna Type	Antenna Connector	Gain(dBi)		
			2412~2462 (MHz)	5150~5250 (MHz)	5725~5850 (MHz)
Chain(0)	Printed	UFL	2.4	3.12	1.91
Chain(1)			0.46	3.72	2.32
Chain(2)			3.67	1.86	1.44

5. TEST TYPES AND RESULTS (802.11a, 5725~5850MHz Band)

5.1 RADIATED EMISSION MEASUREMENT

5.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

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

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 03, 2007
HP Pre_Amplifier	8449B	3008A01922	Sep. 18, 2007
ROHDE & SCHWARZ Test Receiver	ESCS30	100375	Sep. 20, 2007
CHASE Broadband Antenna	VULB 9168	138	July 17, 2007
Schwarzbeck Horn_Antenna	BBHA9120	D124	Jan. 01, 2008
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 05, 2008
SCHWARZBECK Biconical Antenna	VHBA9123	459	Jun. 08, 2009
SCHWARZBECK Periodic Antenna	UPA6108	1148	Jun. 08, 2009
RF Switches (ARNITSU)	CS-201	1565157	NA
RF CABLE (Chaintek)	SF102	22054-2	Nov. 14. 2007
RF Cable(RICHTEC)	9913-30M N-N Cable	STCCAB-30M-1 GHz	Jul. 15, 2007
Software	ADT_Radiated_V 7.6.15.7	NA	NA
CHANCE MOST Antenna Tower	AT-100	0203	NA
CHANCE MOST Turn Table	TT-100	0203	NA

Note: 1. The calibration interval of the above test instruments is 12 months (36 months for Biconical and Periodic Antenna)and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: R3271A) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in ADT Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 4824A-3.

5.1.3 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.

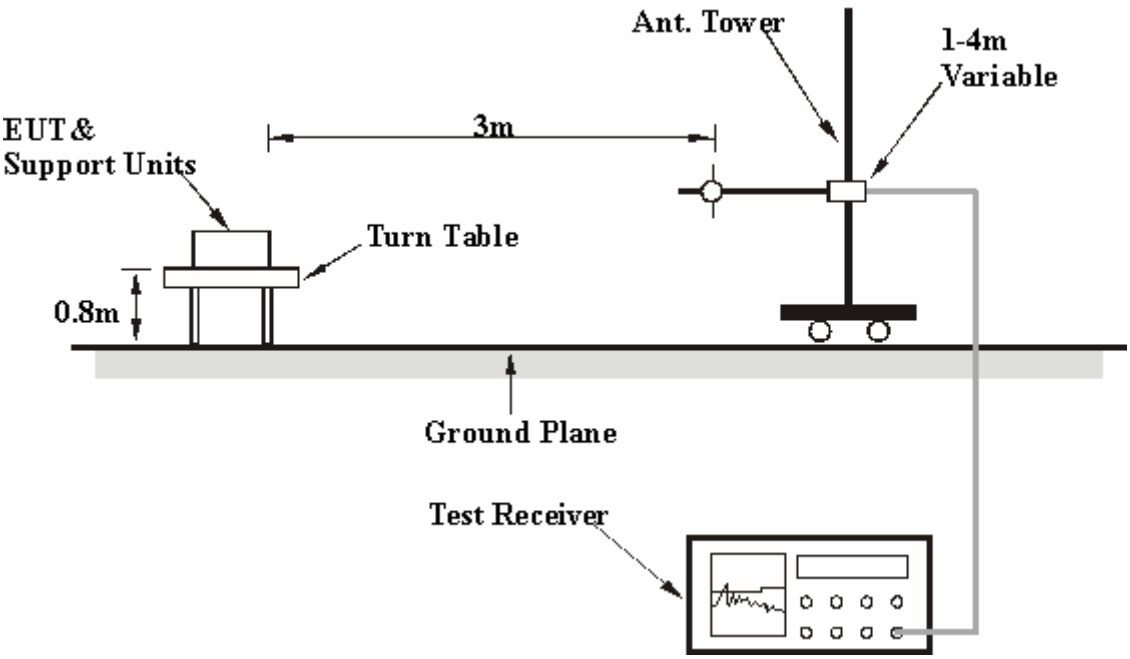
NOTE:

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 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 TEST SETUP



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

5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6

Below 1GHz Test Data

5.1.7 TEST RESULTS

802.11n (20MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK for draft 802.11n (20MHz)	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6.5Mbps	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	31deg. C, 59%RH, 971hPa	TESTED BY	Rex Huang

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	48.94	22.10 QP	40.00	-17.90	1.43 H	138	7.10	15.00
2	266.67	26.32 QP	46.00	-19.68	1.21 H	240	11.43	14.89
3	399.82	28.71 QP	46.00	-17.29	1.01 H	234	9.70	19.01
4	500.02	36.90 QP	46.00	-9.10	1.06 H	78	15.14	21.76
5	528.01	32.04 QP	46.00	-13.96	1.18 H	313	9.45	22.59
6	666.69	33.43 QP	46.00	-12.57	1.48 H	256	8.14	25.29
7	800.02	36.10 QP	46.00	-9.90	1.24 H	27	8.54	27.56

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	48.74	22.74 QP	40.00	-17.26	1.00 V	38	7.76	14.98
2	266.68	26.13 QP	46.00	-19.87	1.00 V	321	11.24	14.89
3	400.01	28.86 QP	46.00	-17.14	1.00 V	132	9.84	19.02
4	500.04	33.90 QP	46.00	-12.10	1.00 V	7	12.14	21.76
5	528.01	38.16 QP	46.00	-7.84	1.00 V	360	15.57	22.59
6	666.69	33.47 QP	46.00	-12.53	1.43 V	302	8.18	25.29
7	799.86	34.81 QP	46.00	-11.19	1.29 V	257	7.25	27.56

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 Test Data

5.1.8 TEST RESULTS

802.11a OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	**FREQUENCY RANGE**	1 ~ 40 GHz
MODULATION TYPE	BPSK	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TRANSFER RATE	6Mbps	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 62%RH, 972hPa	**TESTED BY**	Wen Yu

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	*5745.00	109.28 PK			1.09 H	348	72.02	37.26
2	*5745.00	97.26 AV			1.09 H	348	60.00	37.26
3	#7660.00	56.29 PK	74.00	-17.71	1.11 H	23	12.70	43.59
4	#7660.00	47.27 AV	54.00	-6.73	1.11 H	23	3.68	43.59
5	#11490.00	57.50 PK	74.00	-16.50	1.06 H	14	10.48	47.02
6	#11490.00	44.13 AV	54.00	-9.87	1.06 H	14	-2.89	47.02

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5745.00	116.34 PK			1.08 V	2	79.08	37.26
2	*5745.00	103.99 AV			1.08 V	2	66.73	37.26
3	#7660.00	57.52 PK	74.00	-16.48	1.00 V	340	13.93	43.59
4	#7660.00	50.11 AV	54.00	-3.89	1.00 V	340	6.52	43.59
5	#11490.00	59.51 PK	74.00	-14.49	1.43 V	0	12.49	47.02
6	#11490.00	44.94 AV	54.00	-9.06	1.43 V	0	-2.08	47.02

NOTE: 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.
7. The limit value is defined as per 15.247

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 62%RH, 972hPa	TESTED BY	Wen Yu

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	*5785.00	109.09 PK			1.10 H	348	71.73	37.36
2	*5785.00	98.07 AV			1.10 H	348	60.71	37.36
3	#7713.30	56.47 PK	74.00	-17.53	1.57 H	54	12.76	43.71
4	#7713.30	47.80 AV	54.00	-6.20	1.57 H	54	4.09	43.71
5	#11570.00	58.34 PK	74.00	-15.66	1.33 H	203	11.39	46.95
6	#11570.00	44.15 AV	54.00	-9.85	1.33 H	203	-2.80	46.95

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	116.54 PK			1.03 V	358	79.18	37.36
2	*5785.00	103.87 AV			1.03 V	358	66.51	37.36
3	#7713.30	57.55 PK	74.00	-16.45	1.04 V	58	13.84	43.71
4	#7713.30	50.02 AV	54.00	-3.98	1.04 V	58	6.31	43.71
5	#11570.00	58.79 PK	74.00	-15.21	1.25 V	356	11.84	46.95
6	#11570.00	45.13 AV	54.00	-8.87	1.25 V	356	-1.82	46.95

NOTE: 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.
7. The limit value is defined as per 15.247

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 62%RH, 972hPa	TESTED BY	Wen Yu

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	*5825.00	106.41 PK			1.27 H	350	68.96	37.45
2	*5825.00	95.69 AV			1.27 H	350	58.24	37.45
3	#7766.60	56.22 PK	74.00	-17.78	1.27 H	57	12.39	43.83
4	#7766.60	47.21 AV	54.00	-6.79	1.27 H	57	3.38	43.83
5	#11650.00	57.94 PK	74.00	-16.06	1.00 H	56	11.07	46.87
6	#11650.00	44.22 AV	54.00	-9.78	1.00 H	56	-2.65	46.87

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	*5825.00	112.91 PK			1.09 V	0	75.46	37.45
2	*5825.00	100.49 AV			1.09 V	0	63.04	37.45
3	#7766.60	57.98 PK	74.00	-16.02	1.04 V	57	14.15	43.83
4	**#7766.60**	**50.22 AV**	**54.00**	**-3.78**	**1.04 V**	**57**	**6.39**	**43.83**
5	#11650.00	60.54 PK	74.00	-13.46	1.08 V	358	13.67	46.87
6	#11650.00	46.58 AV	54.00	-7.42	1.08 V	358	-0.29	46.87

NOTE: 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.
7. The limit value is defined as per 15.247

DRAFT 802.11n (20MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 62%RH, 972hPa	TESTED BY	Wen Yu

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	*5745.00	114.27 PK			1.08 H	358	77.01	37.26
2	*5745.00	103.17 AV			1.08 H	358	65.91	37.26
3	#7660.00	55.27 PK	74.00	-18.73	1.05 H	325	11.68	43.59
4	#7660.00	43.15 AV	54.00	-10.85	1.05 H	325	-0.44	43.59
5	#11490.00	60.23 PK	74.00	-13.77	1.66 H	349	13.21	47.02
6	#11490.00	46.52 AV	54.00	-7.48	1.66 H	349	-0.50	47.02

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	120.26 PK			1.01 V	359	83.00	37.26
2	*5745.00	109.36 AV			1.01 V	359	72.10	37.26
3	#7660.00	56.16 PK	74.00	-17.84	1.06 V	339	12.57	43.59
4	#7660.00	44.36 AV	54.00	-9.64	1.06 V	339	0.77	43.59
5	#11490.00	60.01 PK	74.00	-13.99	1.62 V	339	12.99	47.02
6	#11490.00	46.33 AV	54.00	-7.67	1.62 V	339	-0.69	47.02

NOTE:
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.
7. The limit value is defined as per 15.247

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 62%RH, 972hPa	TESTED BY	Wen Yu

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	*5785.00	113.58 PK			1.17 H	0	76.22	37.36
2	*5785.00	102.88 AV			1.17 H	0	65.52	37.36
3	#7713.30	55.48 PK	74.00	-18.52	1.05 H	21	11.77	43.71
4	#7713.30	43.67 AV	54.00	-10.33	1.05 H	21	-0.04	43.71
5	#11570.00	59.73 PK	74.00	-14.27	1.60 H	358	12.78	46.95
6	#11570.00	47.56 AV	54.00	-6.44	1.60 H	358	0.61	46.95

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	120.00 PK			1.02 V	358	82.64	37.36
2	*5785.00	108.72 AV			1.02 V	358	71.36	37.36
3	#7713.30	56.31 PK	74.00	-17.69	1.13 V	337	12.60	43.71
4	#7713.30	44.65 AV	54.00	-9.35	1.13 V	337	0.94	43.71
5	#11570.00	59.57 PK	74.00	-14.43	1.47 V	337	12.62	46.95
6	#11570.00	47.44 AV	54.00	-6.56	1.47 V	337	0.49	46.95

NOTE: 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.
7. The limit value is defined as per 15.247

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 62%RH, 972hPa	TESTED BY	Wen Yu

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	*5825.00	111.08 PK			1.04 H	0	73.63	37.45
2	*5825.00	100.49 AV			1.04 H	0	63.04	37.45
3	#7766.60	54.80 PK	74.00	-19.20	1.00 H	22	10.97	43.83
4	#7766.60	41.28 AV	54.00	-12.72	1.00 H	22	-2.55	43.83
5	#11650.00	60.73 PK	74.00	-13.27	1.57 H	146	13.86	46.87
6	#11650.00	46.42 AV	54.00	-7.58	1.57 H	146	-0.45	46.87

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	*5825.00	116.72 PK			1.00 V	357	79.27	37.45
2	*5825.00	105.78 AV			1.00 V	357	68.33	37.45
3	#7766.60	55.87 PK	74.00	-18.13	1.12 V	337	12.04	43.83
4	#7766.60	42.46 AV	54.00	-11.54	1.12 V	337	-1.37	43.83
5	#11650.00	60.04 PK	74.00	-13.96	1.40 V	336	13.17	46.87
6	#11650.00	46.28 AV	54.00	-7.72	1.40 V	336	-0.59	46.87

NOTE: 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.
7. The limit value is defined as per 15.247

DRAFT 802.11n (40MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	13.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 62%RH, 972hPa	TESTED BY	Wen Yu

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	*5755.00	111.19 PK			1.02 H	238	73.91	37.28
2	*5755.00	99.95 AV			1.02 H	238	62.67	37.28
3	#7673.30	57.00 PK	74.00	-17.00	1.18 H	305	13.38	43.62
4	#7673.30	46.80 AV	54.00	-7.20	1.18 H	305	3.18	43.62
5	#11510.00	58.47 PK	74.00	-15.53	1.19 H	320	11.45	47.02
6	#11510.00	45.18 AV	54.00	-8.82	1.19 H	320	-1.84	47.02

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5755.00	114.17 PK			1.07 V	0	76.89	37.28
2	*5755.00	102.78 AV			1.07 V	0	65.50	37.28
3	#7673.30	57.30 PK	74.00	-16.70	1.00 V	340	13.68	43.62
4	#7673.30	47.80 AV	54.00	-6.20	1.00 V	340	4.18	43.62
5	#11510.00	58.46 PK	74.00	-15.54	1.07 V	19	11.44	47.02
6	#11510.00	45.31 AV	54.00	-8.69	1.07 V	19	-1.71	47.02

NOTE: 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.
7. The limit value is defined as per 15.247

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	13.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 62%RH, 972hPa	TESTED BY	Wen Yu

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	*5795.00	109.10 PK			1.10 H	351	71.72	37.38
2	*5795.00	97.20 AV			1.10 H	351	59.82	37.38
3	7726.60	56.10 PK	74.00	-17.90	1.20 H	305	12.36	43.74
4	7726.60	44.20 AV	54.00	-9.80	1.20 H	305	0.46	43.74
5	11590.00	58.10 PK	74.00	-15.90	1.17 H	325	11.17	46.93
6	11590.00	45.00 AV	54.00	-9.00	1.17 H	325	-1.93	46.93

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	*5795.00	118.70 PK			1.08 V	3	81.32	37.38
2	*5795.00	100.40 AV			1.08 V	3	63.02	37.38
3	#7726.60	54.80 PK	74.00	-19.20	1.15 V	337	11.06	43.74
4	#7726.60	44.90 AV	54.00	-9.10	1.15 V	337	1.16	43.74
5	#11590.00	58.40 PK	74.00	-15.60	1.22 V	15	11.47	46.93
6	#11590.00	45.10 AV	54.00	-8.90	1.22 V	15	-1.83	46.93

NOTE: 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.
7. The limit value is defined as per 15.247