

FCC RADIO TEST REPORT

Applicant's company	Enterasys Networks
Applicant Address	50 Minuteman Road Andover MA 01810
FCC ID	QXO-OAP36C
Manufacturer's company	Accton Technology Corporation
Manufacturer Address	No. 1 Creation Rd., III, Science-based Industrial Park, Hsinchu 300, Taiwan, R.O.C.

Product Name	HiPath Wireless Outdoor Access Point
Brand Name	Enterasys
Model Name	WS-AP3660
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5250 ~ 5350MHz
Received Date	Jul. 20, 2010
Final Test Date	Jul. 13, 2011
Submission Type	Original Equipment
Operating Mode	Master



Statement

Test result included is for the IEEE 802.11n and IEEE 802.11a (5250 ~ 5350MHz) of the product.

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in ANSI C63.10-2009 and 47 CFR FCC Part 15 Subpart E.

The test equipment used to perform the test is calibrated and traceable to NML/ROC.

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History of This Test Report

☒ No additional attachment.

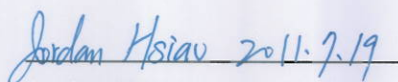
☐ Additional attachment were issued as following record:

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR072010-02AA	Rev. 01	Initial issue of report	Jul. 19, 2011

1. CERTIFICATE OF COMPLIANCE

Product Name : HiPath Wireless Outdoor Access Point
Brand Name : Enterasys
Model Name : WS-AP3660
Applicant : Enterasys Networks
Test Rule Part(s) : 47 CFR FCC Part 15 Subpart E § 15.407

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Jul. 20, 2010 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.



Jordan Hsiao

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E				
Part	Rule Section	Description of Test	Result	Under Limit
4.1	15.207	AC Power Line Conducted Emissions	Complies	5.84 dB
4.2	15.407(a)	26dB Spectrum Bandwidth	Complies	-
4.3	15.407(a)	Maximum Conducted Output Power	Complies	0.03 dB
4.4	15.407(a)	Power Spectral Density	Complies	1.12 dB
4.5	15.407(a)	Peak Excursion	Complies	6.55 dB
4.6	15.407(b)	Radiated Emissions Below 1GHz	Complies	3.09 dB
4.6	15.407(b)	Radiated Emissions Above 1GHz	Complies	6.17 dB
4.7	15.407(b)	Band Edge Emissions	Complies	0.25 dB
4.8	15.407(g)	Frequency Stability	Complies	-
4.9	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Maximum Conducted Output Power	±0.5dB	Confidence levels of 95%
Power Spectral Density	±0.5dB	Confidence levels of 95%
Peak Excursion	±0.5dB	Confidence levels of 95%
26dB Spectrum Bandwidth / Frequency Stability	±8.5×10 ⁻⁸	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	±1.9dB	Confidence levels of 95%
Radiated / Band Edge Emissions (1GHz~18GHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (18GHz~40GHz)	±1.9dB	Confidence levels of 95%
Temperature	±0.7°C	Confidence levels of 95%
Humidity	±3.2%	Confidence levels of 95%
DC / AC Power Source	±1.4%	Confidence levels of 95%

3. GENERAL INFORMATION

3.1. Product Details

IEEE 802.11n

Items	Description
Product Type	For Ant. 1: WLAN (2TX, 2RX) For Ant. 4, Ant. 7, Ant. 8: WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From Power Adapter & POE
Modulation	see the below table for IEEE 802.11n
Data Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	see the below table for IEEE 802.11n
Frequency Range	5250 ~ 5350MHz
Channel Number	4 for 20MHz bandwidth ; 2 for 40MHz bandwidth
Channel Band Width (99%)	<For Mode 1 (Ant. 1)>: MSC8 (20MHz): 18.08 MHz ; MSC8 (40MHz): 36.48 MHz <For Mode 2 (Ant. 4)>: MSC8 (20MHz): 18.24 MHz ; MSC8 (40MHz): 36.80 MHz <For Mode 3 (Ant. 7)>: MSC8 (20MHz): 18.24 MHz ; MSC8 (40MHz): 36.80 MHz <For Mode 4 (Ant. 8)>: MSC8 (20MHz): 18.24 MHz ; MSC8 (40MHz): 36.80 MHz
Conducted Output Power	<For Mode 1 (Ant. 1)>: Band 2: MSC8 (20MHz): 14.92 dBm ; MSC8 (40MHz): 14.18 dBm <For Mode 2 (Ant. 4)>: Band 2: MSC8 (20MHz): 23.66 dBm ; MSC8 (40MHz): 23.57 dBm <For Mode 3 (Ant. 7)>: Band 2: MSC8 (20MHz): 23.97 dBm ; MSC8 (40MHz): 23.57 dBm <For Mode 4 (Ant. 8)>: Band 2: MSC8 (20MHz): 23.66 dBm ; MSC8 (40MHz): 23.57 dBm

IEEE 802.11a

Items	Description
Product Type	For Ant. 1: WLAN (2TX, 2RX) For Ant. 4, Ant. 7, Ant. 8: WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From Power Adapter & POE
Modulation	OFDM for IEEE 802.11a
Data Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	OFDM (6/9/12/18/24/36/48/54)
Frequency Range	5250 ~ 5350MHz
Channel Number	4
Channel Band Width (99%)	<For Mode 1 (Ant. 1)>: 17.28 MHz <For Mode 2 (Ant. 4)>: 17.12 MHz <For Mode 3 (Ant. 7)>: 17.12 MHz <For Mode 4 (Ant. 8)>: 17.12 MHz
Conducted Output Power	<For Mode 1 (Ant. 1)>: 11.80 dBm <For Mode 2 (Ant. 4)>: 19.11 dBm <For Mode 3 (Ant. 7)>: 21.18 dBm <For Mode 4 (Ant. 8)>: 21.18 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3
Note: Due to the system cannot execute RF program, so only use module to test in this report.	

<For Ant. 1>: Antenna & Band width

Antenna	Single (TX)		Two (TX)	
Band width Mode	20 MHz	40 MHz	20 MHz	40 MHz
IEEE 802.11a	X	X	V	X
IEEE 802.11n	X	X	V	V

<For Ant. 4, Ant. 7, Ant. 8>: Antenna & Band width

Antenna	Single (TX)		Three (TX)	
Band width Mode	20 MHz	40 MHz	20 MHz	40 MHz
IEEE 802.11a	X	X	V	X
IEEE 802.11n	X	X	V	V

IEEE 802.11n spec

MCS Index	Nss	Modulation	R	NBPSC	NCBPS		NDBPS		Datarate(Mbps)			
									800nsGI		400nsGI	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5	7.200	15
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0	14.400	30
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5	21.700	45
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0	28.900	60
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0	43.300	90
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0	57.800	120
6	1	64-QAM	3/4	6	312	648	234	486	58.5	121.5	65.000	135
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0	72.200	150
8	2	BPSK	1/2	1	104	216	52	108	13.0	27.0	14.444	30
9	2	QPSK	1/2	2	208	432	104	216	26.0	54.0	28.889	60
10	2	QPSK	3/4	2	208	432	156	324	39.0	81.0	43.333	90
11	2	16-QAM	1/2	4	416	864	208	432	52.0	108.0	57.778	120
12	2	16-QAM	3/4	4	416	864	312	648	78.0	162.0	86.667	180
13	2	64-QAM	2/3	6	624	1296	416	864	104.0	216.0	115.556	240
14	2	64-QAM	3/4	6	624	1296	468	972	117.0	243.0	130.000	270
15	2	64-QAM	5/6	6	624	1296	520	1080	130.0	270.0	144.444	300

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	guard interval

3.2. Accessories

Power	Brand	Model	Rating
Adapter	UMEC	UP0601C-1273	Input: 100-240VAC, 50-60Hz, 1A Output: 12VDC, 3.33A

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Antenna gain		Cable Loss		Test Antenna gain	
					2.4GHz Band	5GHz Band	2.4GHz Band	5GHz Band	2.4GHz Band	5GHz Band
1	MTI	MT-484026/NVH/B	Sector Antenna	Reverse N-Type	-	16	-	1	-	15
2	MTI	MT-485025/NVH	Panel Antenna	Reverse N-Type	-	23	-	1	-	22
3	PCTEL	WISP24018PTNF	Panel Antenna	Reverse N-Type	18	-	0.5	-	17.5	-
4	MARS	MA-WE2458-3H2	Sector Antenna	Reverse N-Type	5	5	0.5	1	4.5	4
5	PCTEL	MFB24010	Omni Antenna	Reverse N-Type	10	-	0.5	-	9.5	-
6	PCTEL	MFB58010	Omni Antenna	Reverse N-Type	-	10	-	1	-	9
7	Laird	S24493BPX	Omni Antenna	Reverse N-Type	5	5	0.5	1	4.5	4
8	MARS	MA-DBO2458-6N	Omni Antenna	Reverse N-Type	5	7	0.5	1.0	4.5	6

Note: <For Ant. 1, Ant. 2 (2TX/2RX)>:

The EUT has three antenna connectors that can be used for transmitting and receiving simultaneously as 2TX and 2RX.

Connector J2 and J4 can both receive/transmit simultaneously.

Ant. 1: 5GHz Antenna (Band 2, Band 4)

Ant. 2: 5GHz Antenna (Band 4), Ant. 2 supports point-to-point function.

<For Ant. 3, Ant. 4, Ant. 5, Ant. 6, Ant. 7, Ant. 8 (3TX/3RX)>:

The EUT has three antenna connectors that can be used for transmitting and receiving simultaneously as 3TX and 3RX.

Connector J2, J3 and J4 can both receive/transmit simultaneously.

Ant. 3: 2.4GHz Antenna, Ant. 3 supports point-to-point function.

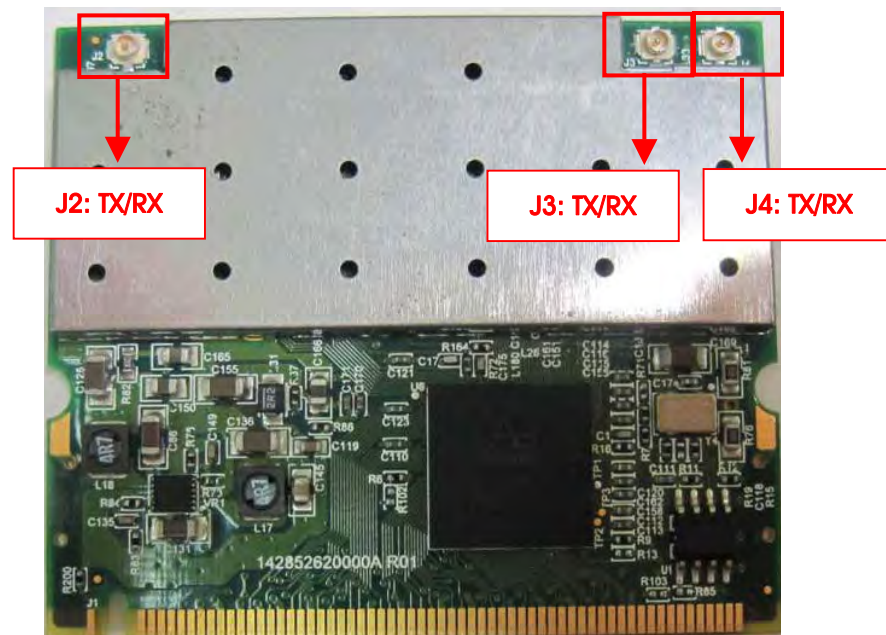
Ant. 4: 2.4GHz / 5GHz Antenna (Band 2, Band 4)

Ant. 5: 2.4GHz Antenna

Ant. 6: 5GHz Antenna (Band 4)

Ant. 7: 2.4GHz / 5GHz Antenna (Band 2, Band 4)

Ant. 8: 2.4GHz / 5GHz Antenna (Band 2, Band 4)



3.4. Table for Carrier Frequencies

For IEEE 802.11a, use Channel 52, 56, 60, 64.

There are two bandwidth systems for IEEE 802.11n.

For both 20MHz bandwidth systems, use Channel 52, 56, 60, 64.

For both 40MHz bandwidth systems, use Channel 54, 62.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5250~5350 MHz Band 2	52	5260 MHz	60	5300 MHz
	54	5270 MHz	62	5310 MHz
	56	5280 MHz	64	5320 MHz

3.5. Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

<For Ant. 1>:

Test Items	Mode		Data Rate	Channel	Connector
AC Power Line Conducted Emissions	TX Mode		6Mbps	-	-
Max. Conducted Output Power	MSC8/20MHz	Band 2	13Mbps	52/60/64	J2/J4/J2+J4
Power Spectral Density	MSC8/40MHz	Band 2	27Mbps	54/62	J2/J4/J2+J4
	11a/BPSK	Band 2	6Mbps	52/60/64	J2/J4/J2+J4
26dB Spectrum Bandwidth	MSC8/20MHz	Band 2	13Mbps	52/60/64	J2+J4
99% Occupied Bandwidth	MSC8/40MHz	Band 2	27Mbps	54/62	J2+J4
Measurement	11a/BPSK	Band 2	6Mbps	52/60/64	J2+J4
Peak Excursion					
Radiated Emission Below 1GHz	TX Mode		6Mbps	-	-
Radiated Emission Above 1GHz	MSC8/20MHz	Band 2	13Mbps	52/60/64	J2+J4
	MSC8/40MHz	Band 2	27Mbps	54/62	J2+J4
	11a/BPSK	Band 2	6Mbps	52/60/64	J2+J4
Band Edge Emission	MSC8/20MHz	Band 2	13Mbps	52/60/64	J2+J4
	MSC8/40MHz	Band 2	27Mbps	54/62	J2+J4
	11a/BPSK	Band 2	6Mbps	52/60/64	J2+J4
Frequency Stability	Un-modulation		-	60	N/A

<For Ant. 4, Ant. 7, Ant. 8>:

Test Items	Mode		Data Rate	Channel	Connector
AC Power Line Conducted Emissions	TX Mode		6Mbps	-	-
Max. Conducted Output Power Power Spectral Density	MSC8/20MHz	Band 2	13Mbps	52/60/64	J2/J3/J4/ J2 + J3 + J4
	MSC8/40MHz	Band 2	27Mbps	54/62	J2/J3/J4/ J2 + J3 + J4
	11a/BPSK	Band 2	6Mbps	52/60/64	J2/J3/J4/ J2 + J3 + J4
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement Peak Excursion	MSC8/20MHz	Band 2	13Mbps	52/60/64	J2 + J3 + J4
	MSC8/40MHz	Band 2	27Mbps	54/62	J2 + J3 + J4
	11a/BPSK	Band 2	6Mbps	52/60/64	J2 + J3 + J4
Radiated Emission Below 1GHz	TX Mode		6Mbps	-	-
Radiated Emission Above 1GHz	MSC8/20MHz	Band 2	13Mbps	52/60/64	J2 + J3 + J4
	MSC8/40MHz	Band 2	27Mbps	54/62	J2 + J3 + J4
	11a/BPSK	Band 2	6Mbps	52/60/64	J2 + J3 + J4
Band Edge Emission	MSC8/20MHz	Band 2	13Mbps	52/60/64	J2 + J3 + J4
	MSC8/40MHz	Band 2	27Mbps	54/62	J2 + J3 + J4
	11a/BPSK	Band 2	6Mbps	52/60/64	J2 + J3 + J4
Frequency Stability	Un-modulation		-	60	N/A

Note: All the test modes were listed as below:

Mode 1. EUT + Ant. 1 (5GHz Antenna)

Mode 2. EUT + Ant. 4 (2.4GHz / 5GHz Antenna)

Mode 3. EUT + Ant. 7 (2.4GHz / 5GHz Antenna)

Mode 4. EUT + Ant. 8 (2.4GHz / 5GHz Antenna)

<For Conducted Emission test>:

After evaluating, Mode 1 were selected as worse case and recorded the test data in the report.

<For Radiated Emissions Test Below 1GHz>:

After evaluating, Mode 1 were selected as worse case and recorded the test data in the report.

<For Radiated Emissions Test Above 1GHz>:

All the test modes were tested and recorded in the report.

3.6. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
CO04-HY	Conduction	Hsin Chu	879474	IC 4086	-
03CH03-HY	SAC	Hsin Chu	879474	IC 4086	-
TH01-HY	OVEN Room	Hsin Chu	-	-	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC); Fully Anechoic Chamber (FAC).

Please refer section 6 for Test Site Address.

3.7. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	D400	E2K24GBRL
Wireless AP	Planex	GW-AP54SGX	N/A

3.8. Table for Parameters of Test Software Setting

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

<For Mode 1 (Ant. 1)>:

Power Parameters of IEEE 802.11n MSC8 20MHz

Test Software Version	0.9 BUILD #21 ART 11_n		
Frequency	5260 MHz	5300 MHz	5320 MHz
IEEE 802.11n MSC8 20MHz	9.00	9.00	9.00

Power Parameters of IEEE 802.11n MSC8 40MHz

Test Software Version	0.9 BUILD #21 ART 11_n	
Frequency	5270 MHz	5310 MHz
IEEE 802.11n MSC8 40MHz	9.00	5.00

Power Parameters of IEEE 802.11a

Test Software Version	0.9 BUILD #21 ART 11_n		
Frequency	5260 MHz	5300 MHz	5320 MHz
IEEE 802.11a	7.50	7.00	7.00

<For Mode 2 (Ant. 4)>:

Power Parameters of IEEE 802.11n MSC8 20MHz

Test Software Version	0.9 BUILD #21 ART 11_n		
Frequency	5260 MHz	5300 MHz	5320 MHz
IEEE 802.11n MSC8 20MHz	16.00	16.00	15.50

Power Parameters of IEEE 802.11n MSC8 40MHz

Test Software Version	0.9 BUILD #21 ART 11_n	
Frequency	5270 MHz	5310 MHz
IEEE 802.11n MSC8 40MHz	16.50	12.50

Power Parameters of IEEE 802.11a

Test Software Version	0.9 BUILD #21 ART 11_n		
Frequency	5260 MHz	5300 MHz	5320 MHz
IEEE 802.11a	13.50	13.50	13.50

<For Mode 3 (Ant. 7)>:

Power Parameters of IEEE 802.11n MSC8 20MHz

Test Software Version	0.9 BUILD #21 ART 11_n		
Frequency	5260 MHz	5300 MHz	5320 MHz
IEEE 802.11n MSC8 20MHz	16	16	17

Power Parameters of IEEE 802.11n MSC8 40MHz

Test Software Version	0.9 BUILD #21 ART 11_n	
Frequency	5270 MHz	5310 MHz
IEEE 802.11n MSC8 40MHz	16.5	13.5

Power Parameters of IEEE 802.11a

Test Software Version	0.9 BUILD #21 ART 11_n		
Frequency	5260 MHz	5300 MHz	5320 MHz
IEEE 802.11a	15.50	15.00	14.50

<For Mode 4 (Ant. 8)>:

Power Parameters of IEEE 802.11n MSC8 20MHz

Test Software Version	0.9 BUILD #21 ART 11_n		
Frequency	5260 MHz	5300 MHz	5320 MHz
IEEE 802.11n MSC8 20MHz	16	16	14

Power Parameters of IEEE 802.11n MSC8 40MHz

Test Software Version	0.9 BUILD #21 ART 11_n	
Frequency	5270 MHz	5310 MHz
IEEE 802.11n MSC8 40MHz	16.5	10.5

Power Parameters of IEEE 802.11a

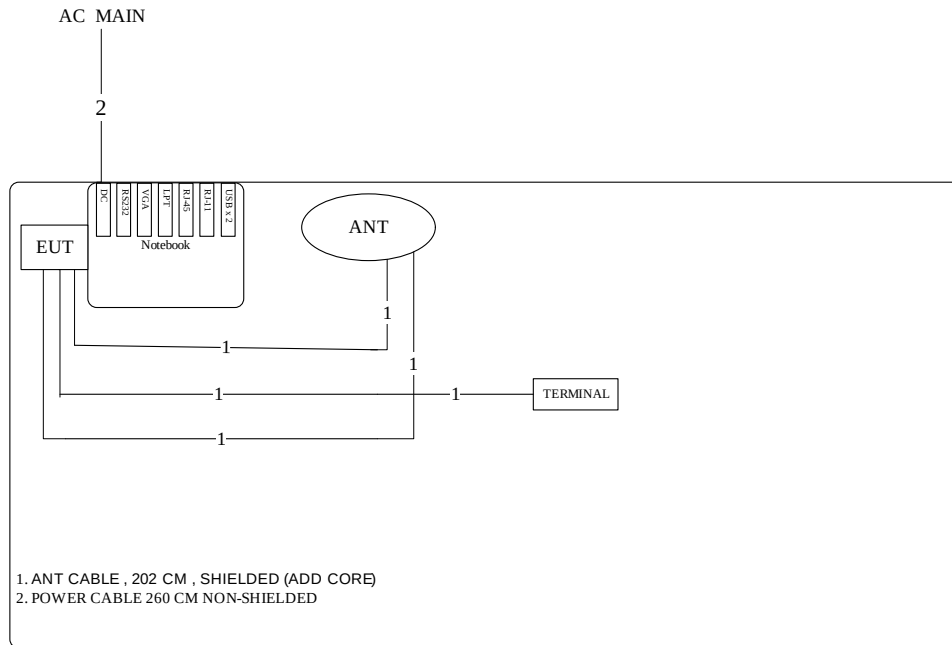
Test Software Version	0.9 BUILD #21 ART 11_n		
Frequency	5260 MHz	5300 MHz	5320 MHz
IEEE 802.11a	15.50	15.00	14.50

During the test, "0.9 BUILD #21 ART 11_n" under WIN XP was executed to control the EUT continuously transmit RF signal.

3.9. Test Configurations

3.9.1. AC Power Line Conducted Emissions Test Configuration

<For Mode 1 (Ant. 1)>:



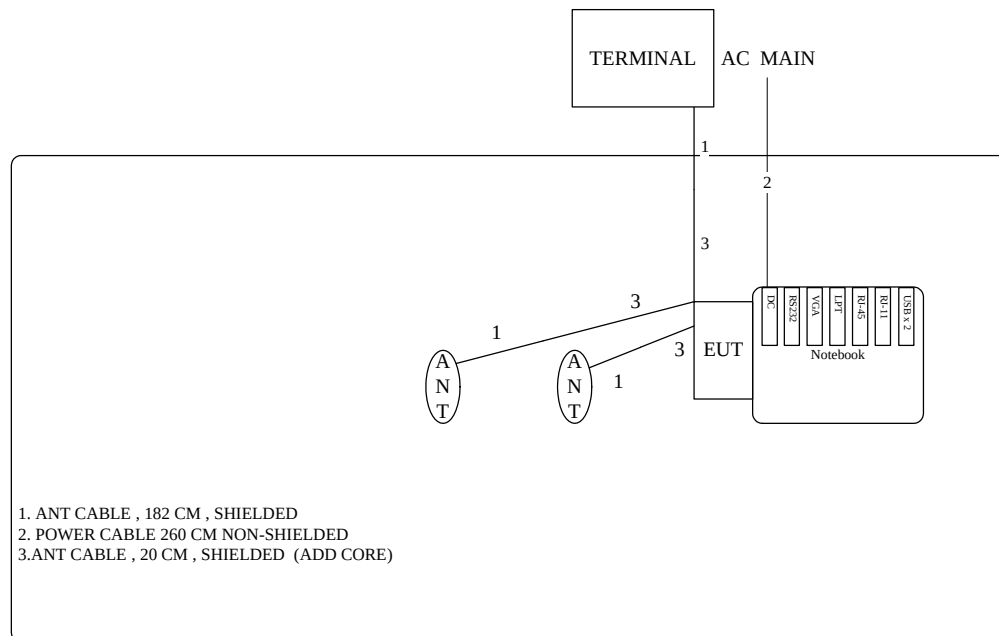
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3.9.2. Radiation Emissions Test Configuration

<For Mode 1 (Ant. 1)>:

< For WLAN Function >

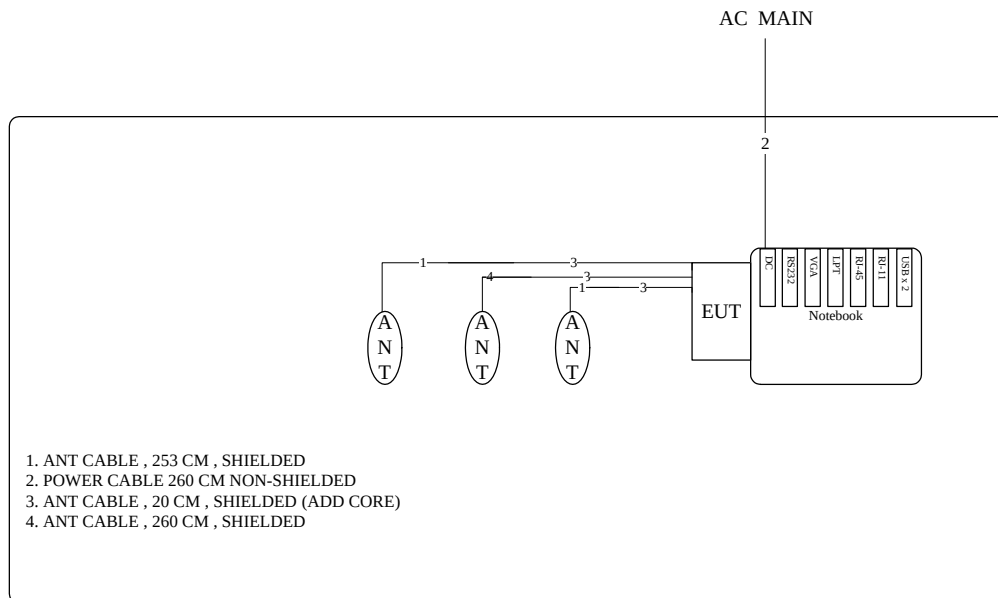
Test Configuration: above 1GHz



<For Mode 2 (Ant. 4)>:

< For WLAN Function >

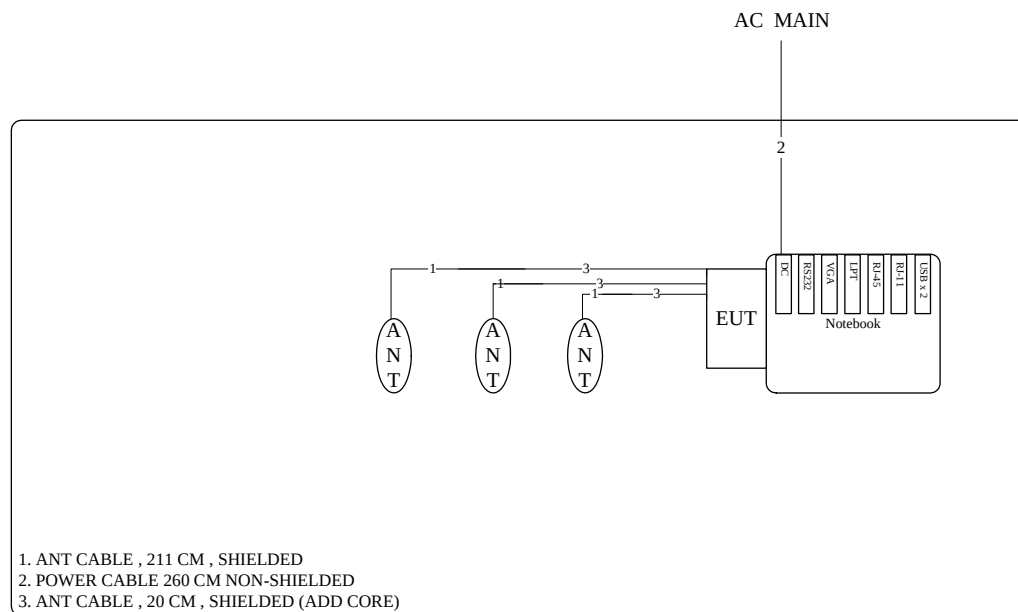
Test Configuration: above 1GHz



< For Mode 3 (Ant. 7) >

< For WLAN Function >

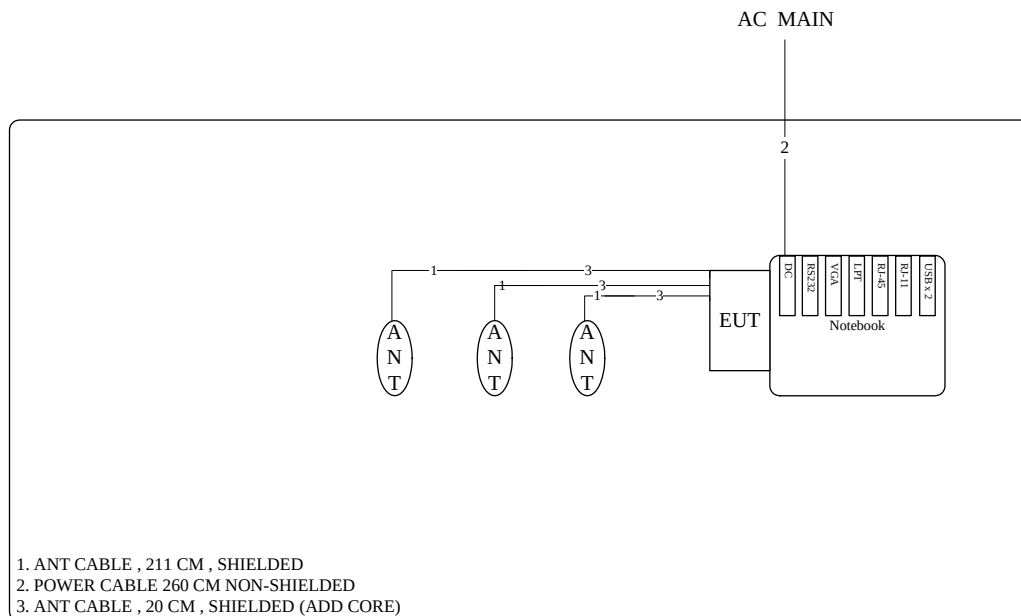
Test Configuration: above 1GHz



< For Mode 4 (Ant. 8) >

< For WLAN Function >

Test Configuration: above 1GHz



4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product which is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

4.1.2. Measuring Instruments and Setting

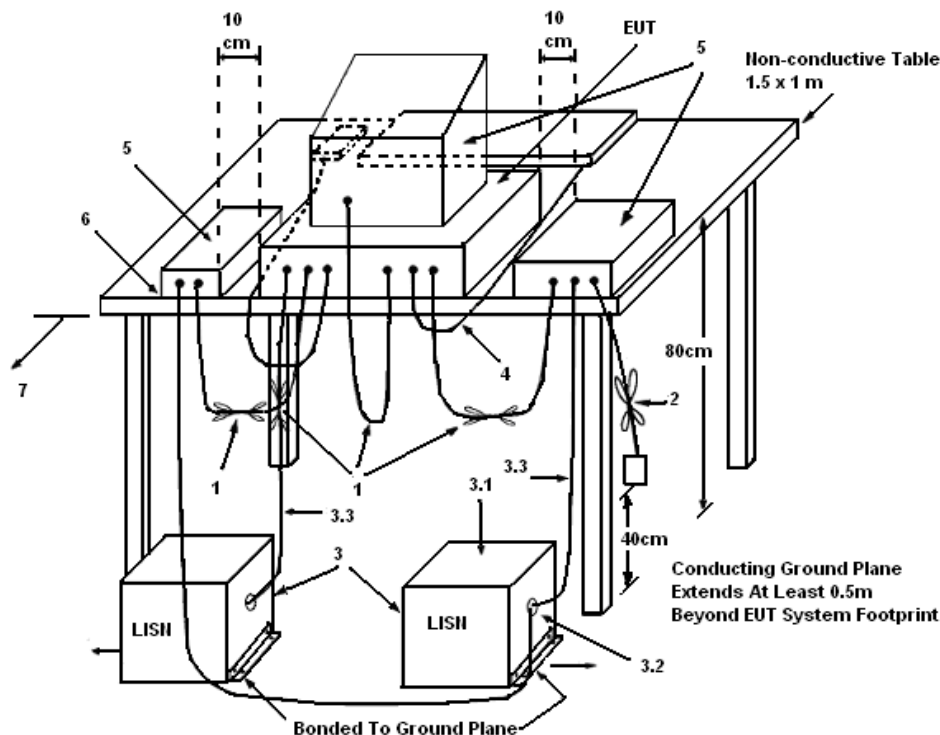
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

4.1.3. Test Procedures

1. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 KHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. Test Setup Layout



LEGEND:

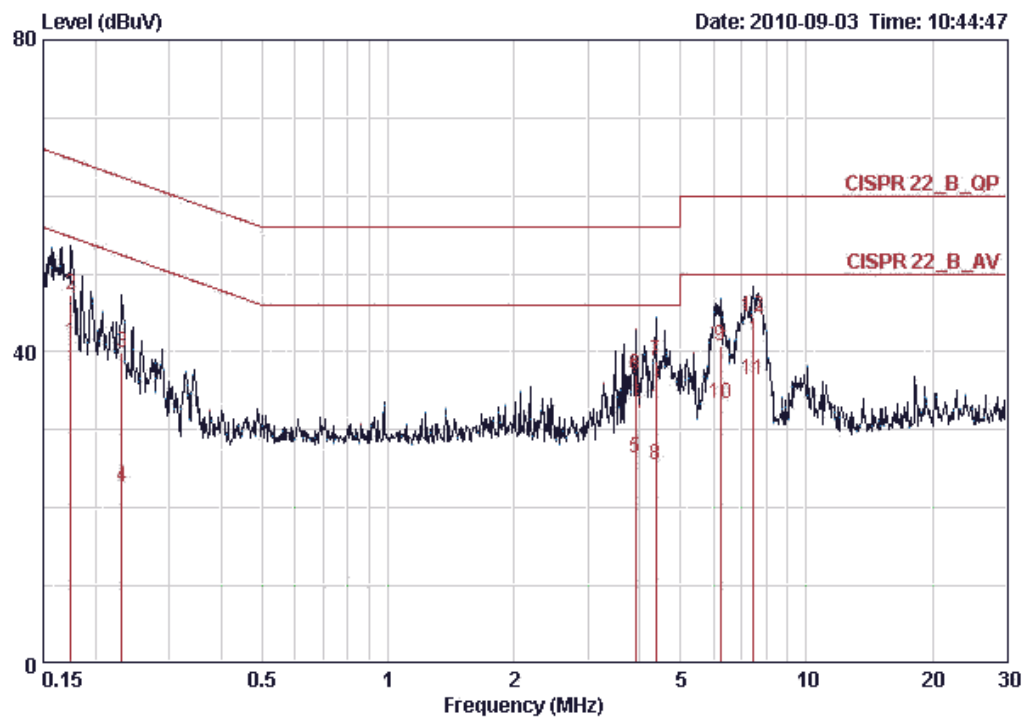
- (1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- (2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- (3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω . LISN can be placed on top of, or immediately beneath, reference ground plane.
- (3.1) All other equipment powered from additional LISN(s).
- (3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
- (3.3) LISN at least 80 cm from nearest part of EUT chassis.
- (4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.
- (5) Non-EUT components of EUT system being tested.
- (6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.
- (7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

There is no deviation with the original standard.

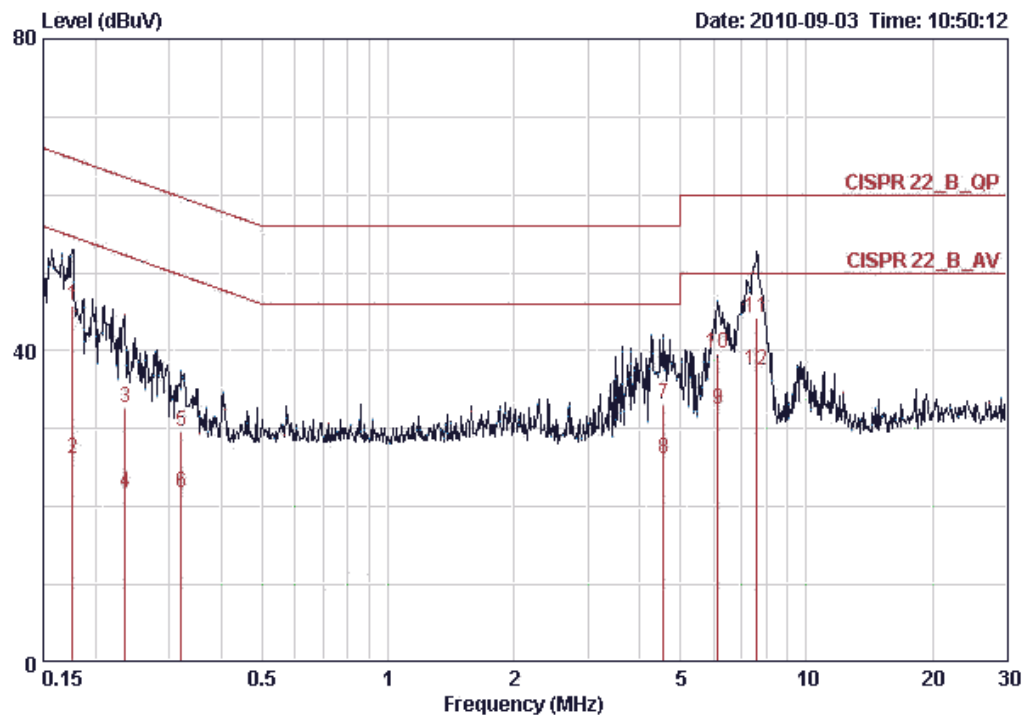
4.1.6. Results of AC Power Line Conducted Emissions Measurement

Temperature	26°C	Humidity	55%
Test Engineer	Beck Wu	Phase	Line
Configuration	TX Mode / Mode 1 (Ant. 1)		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17491	41.12	-13.60	54.72	40.86	0.06	0.20	AVERAGE
2	0.17491	47.22	-17.50	64.72	46.96	0.06	0.20	QP
3	0.23162	39.94	-22.46	62.39	39.69	0.05	0.20	QP
4	0.23162	22.72	-29.68	52.39	22.47	0.05	0.20	AVERAGE
5	3.901	26.34	-19.66	46.00	25.94	0.10	0.30	AVERAGE
6	3.901	37.15	-18.85	56.00	36.75	0.10	0.30	QP
7	4.361	38.84	-17.16	56.00	38.42	0.12	0.30	QP
8	4.361	25.47	-20.53	46.00	25.05	0.12	0.30	AVERAGE
9	6.219	40.76	-19.24	60.00	40.20	0.22	0.34	QP
10	6.219	33.39	-16.61	50.00	32.83	0.22	0.34	AVERAGE
11	7.486	36.48	-13.52	50.00	35.81	0.27	0.39	AVERAGE
12	7.486	44.50	-15.50	60.00	43.83	0.27	0.39	QP

Temperature	26°C	Humidity	55%
Test Engineer	Beck Wu	Phase	Neutral
Configuration	TX Mode / Mode 1 (Ant. 1)		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17584	45.79	-18.89	64.68	45.50	0.09	0.20	QP
2	0.17584	26.23	-28.45	54.68	25.94	0.09	0.20	AVERAGE
3	0.23533	32.77	-29.49	62.26	32.49	0.08	0.20	QP
4	0.23533	21.73	-30.53	52.26	21.45	0.08	0.20	AVERAGE
5	0.31999	29.66	-30.04	59.71	29.39	0.07	0.20	QP
6	0.31999	21.76	-27.94	49.71	21.49	0.07	0.20	AVERAGE
7	4.549	33.13	-22.87	56.00	32.66	0.17	0.30	QP
8	4.549	26.15	-19.85	46.00	25.68	0.17	0.30	AVERAGE
9	6.153	32.47	-17.53	50.00	31.88	0.26	0.34	AVERAGE
10	6.153	39.73	-20.27	60.00	39.14	0.26	0.34	QP
11	7.606	44.28	-15.72	60.00	43.57	0.32	0.40	QP
12	7.606	37.41	-12.59	50.00	36.70	0.32	0.40	AVERAGE

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. 26dB Bandwidth Measurement

4.2.1. Limit

No restriction limits. But resolution bandwidth within band edge measurement is 1% of the 99% occupied bandwidth.

4.2.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

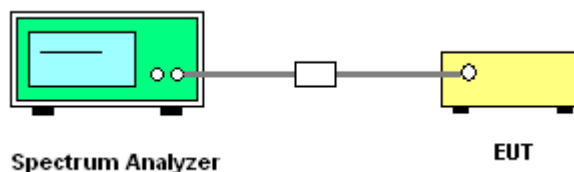
Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 26dB Bandwidth
RB	300 kHz
VB	1000 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

Cable Loss		Combiner Loss	
2.4GHz Band	5GHz Band	2.4GHz Band	5GHz Band
0.8	1.5	5.15	5.38

4.2.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The resolution bandwidth of 300 kHz and the video bandwidth of 1000 kHz were used.
3. Measured the spectrum width with power higher than 26dB below carrier.
4. Measuring multiple antennas, the connector is required to link with spectrum analyzer through a combiner.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of 26dB Bandwidth

<For Mode 1 (Ant. 1)>

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n / Mode 1 (Ant. 1)

Configuration IEEE 802.11n MSC8 20MHz J2+J4

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
52	5260 MHz	22.40	18.08
60	5300 MHz	22.24	18.08
64	5320 MHz	22.56	17.92

Configuration IEEE 802.11n MSC8 40MHz J2+J4

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
54	5270 MHz	42.88	36.32
62	5310 MHz	42.56	36.48

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a / Mode 1 (Ant. 1)

Configuration IEEE 802.11a J2+J4

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
52	5260 MHz	20.80	16.48
60	5300 MHz	22.88	17.28
64	5320 MHz	21.44	16.48

< For Mode 2 (Ant. 4)>

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n / Mode 2 (Ant. 4)

Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
52	5260 MHz	24.48	18.24
60	5300 MHz	24.48	18.24
64	5320 MHz	24.48	18.08

Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
54	5270 MHz	46.72	36.80
62	5310 MHz	46.72	36.80

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a / Mode 2 (Ant. 4)

Configuration IEEE 802.11a J2+J3+J4

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
52	5260 MHz	23.84	17.12
60	5300 MHz	23.52	17.12
64	5320 MHz	23.68	17.12

<For Mode 3 (Ant. 7)>:

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n / Mode 3 (Ant. 7)

Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
52	5260 MHz	24.48	18.24
60	5300 MHz	24.48	18.24
64	5320 MHz	24.32	18.24

Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
54	5270 MHz	46.72	36.80
62	5310 MHz	47.36	36.80

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a / Mode 3 (Ant. 7)

Configuration IEEE 802.11a J2+J3+J4

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
52	5260 MHz	23.84	17.12
60	5300 MHz	23.52	17.12
64	5320 MHz	23.68	17.12

<For Mode 4 (Ant. 8)>:

Temperature	24°C	Humidity	56%
Test Engineer	Jacky Ho	Configurations	IEEE 802.11n / Mode 4 (Ant. 8)

Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
52	5260 MHz	24.48	18.24
60	5300 MHz	24.48	18.24
64	5320 MHz	24.32	18.24

Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
54	5270 MHz	45.44	36.80
62	5310 MHz	48.96	36.80

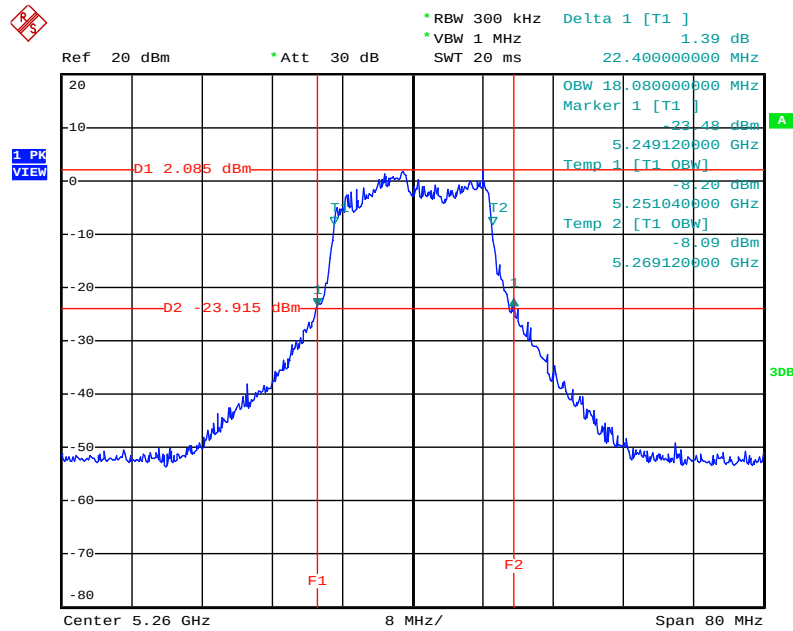
Temperature	24°C	Humidity	56%
Test Engineer	Jacky Ho	Configurations	IEEE 802.11a / Mode 4 (Ant. 8)

Configuration IEEE 802.11a J2+J3+J4

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
52	5260 MHz	23.84	17.12
60	5300 MHz	23.52	17.12
64	5320 MHz	23.68	17.12

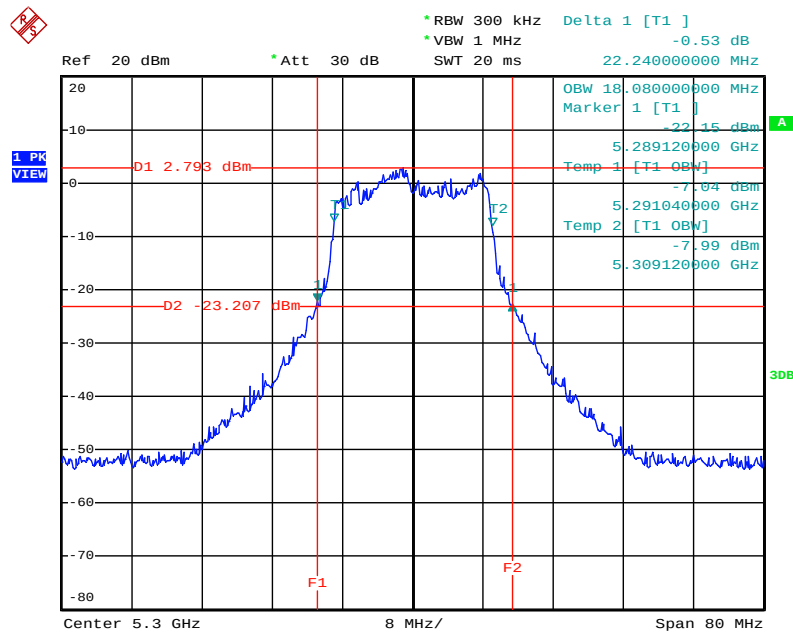
< For Mode 1 (Ant. 1)>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J4 / 5260 MHz



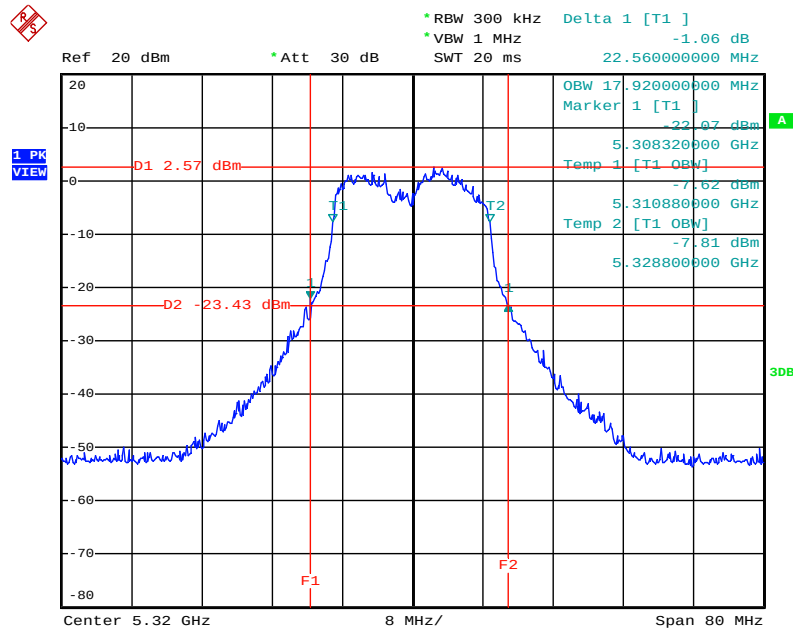
Date: 12.AUG.2010 15:24:59

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J4 / 5300 MHz



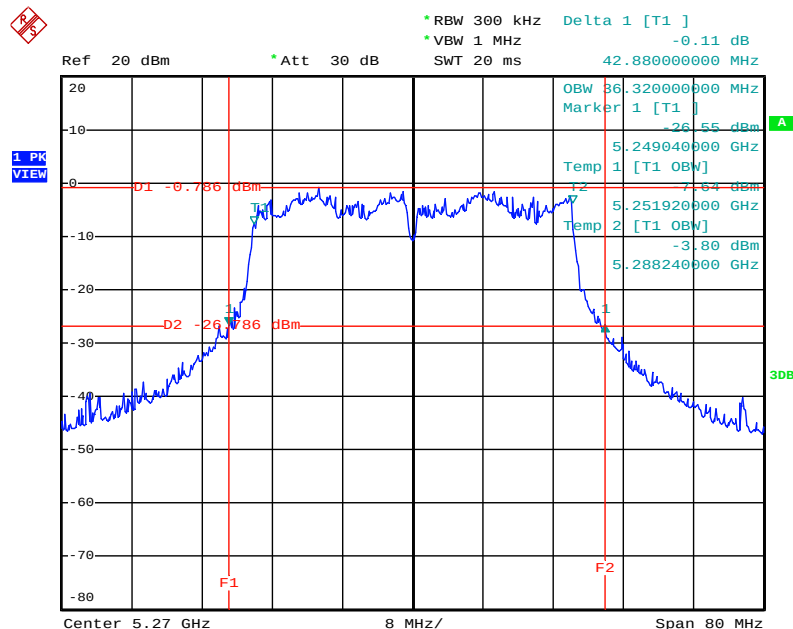
Date: 12.AUG.2010 15:23:46

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J4 / 5320 MHz



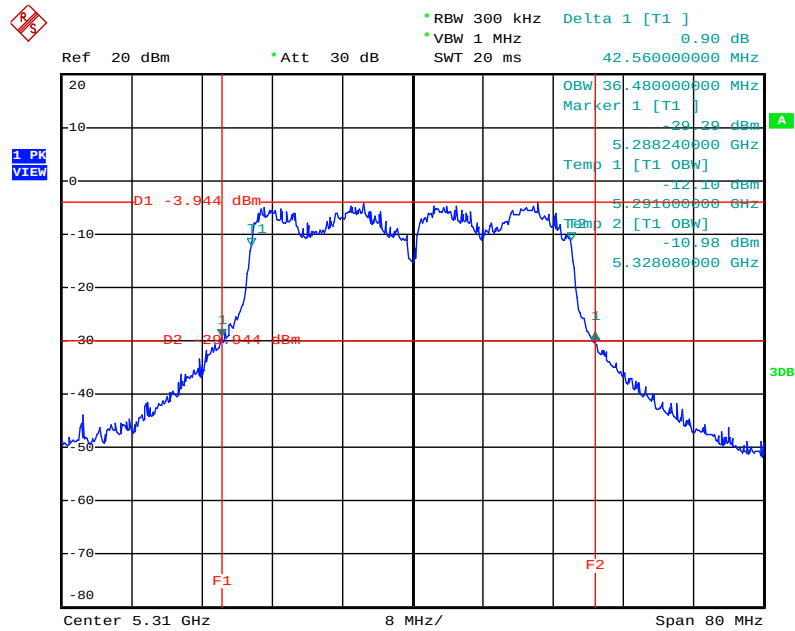
Date: 12.AUG.2010 15:22:38

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 40MHz J2+J4 / 5270 MHz



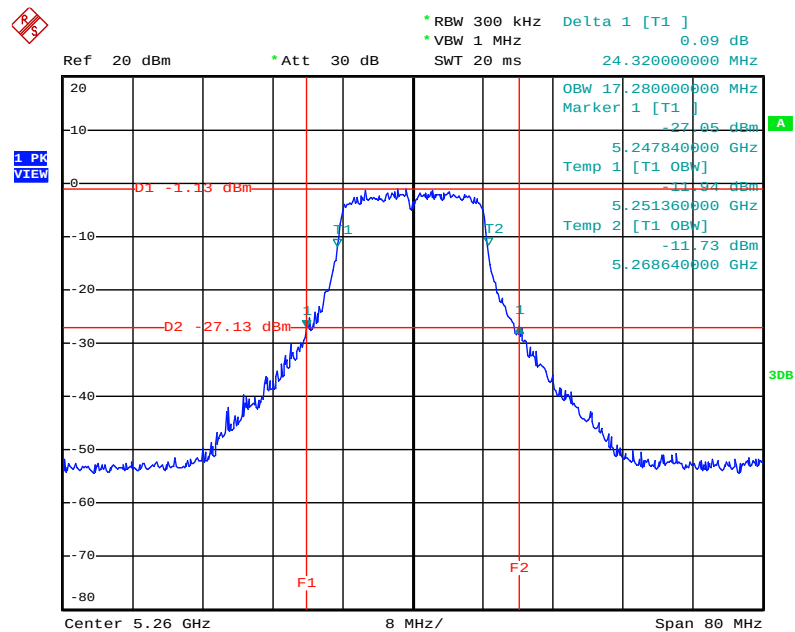
Date: 12.AUG.2010 15:38:30

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 40MHz J2+J4 / 5310 MHz



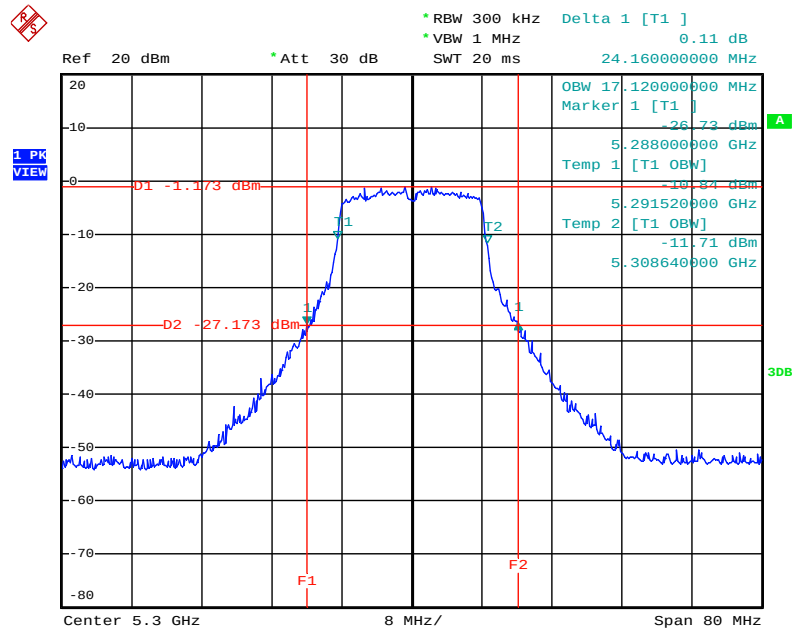
Date: 12.AUG.2010 15:39:44

26 dB Bandwidth Plot on Configuration IEEE 802.11a J2+J4 / 5260 MHz



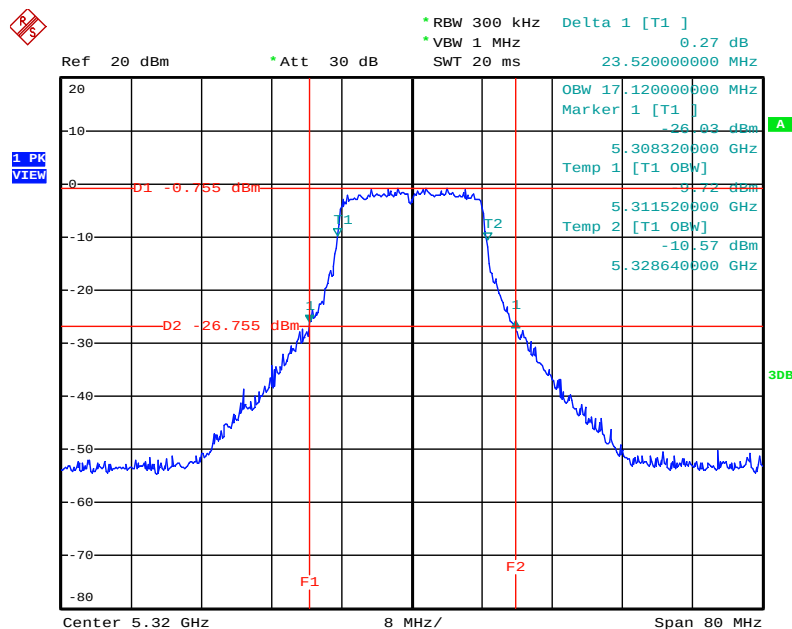
Date: 12.JUL.2011 04:34:08

26 dB Bandwidth Plot on Configuration IEEE 802.11a J2+J4 / 5300 MHz



Date: 12.JUL.2011 04:33:22

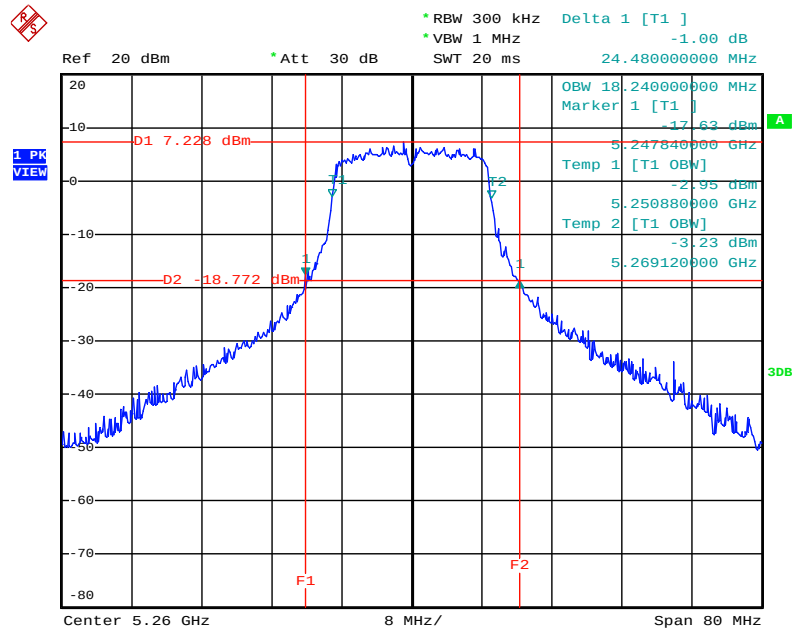
26 dB Bandwidth Plot on Configuration IEEE 802.11a J2+J4 / 5320 MHz



Date: 12.JUL.2011 04:32:28

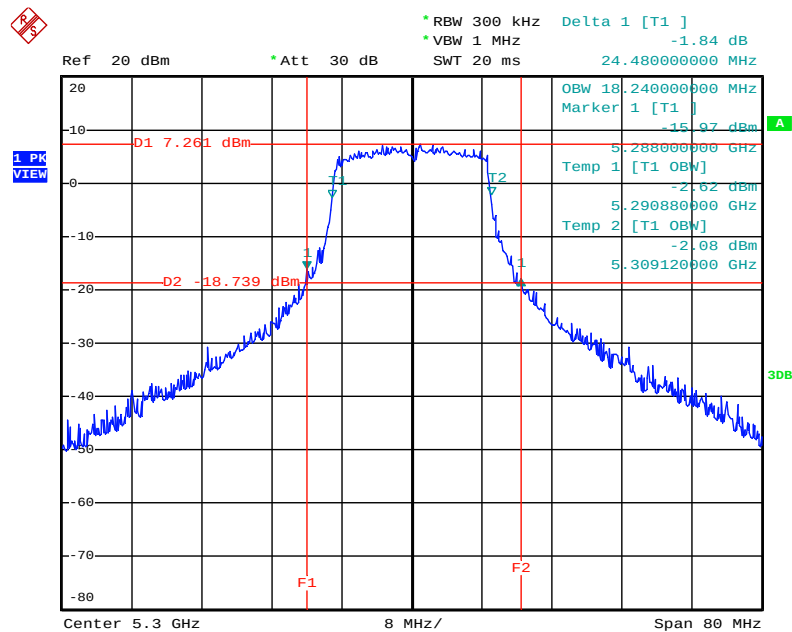
<For Mode 2 (Ant. 4)>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4 / 5260 MHz



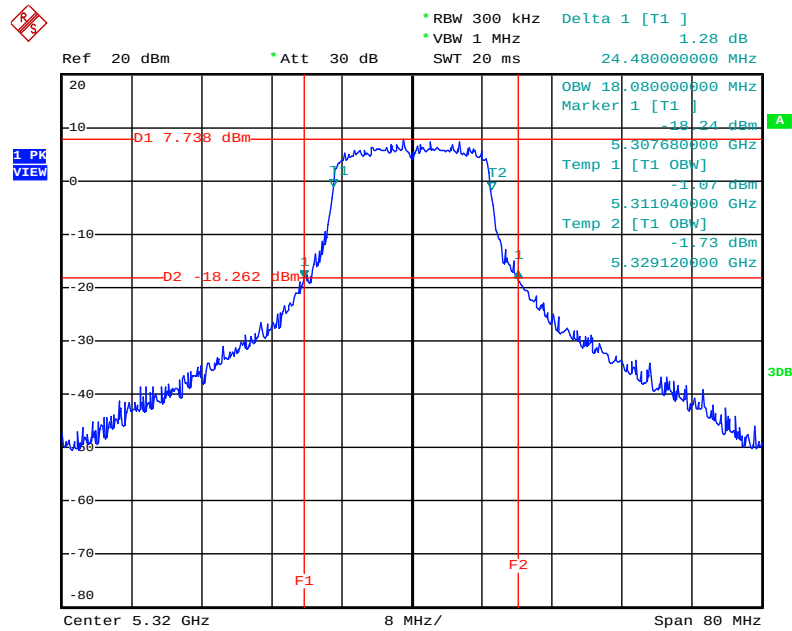
Date: 12.JUL.2011 00:48:00

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4 / 5300 MHz



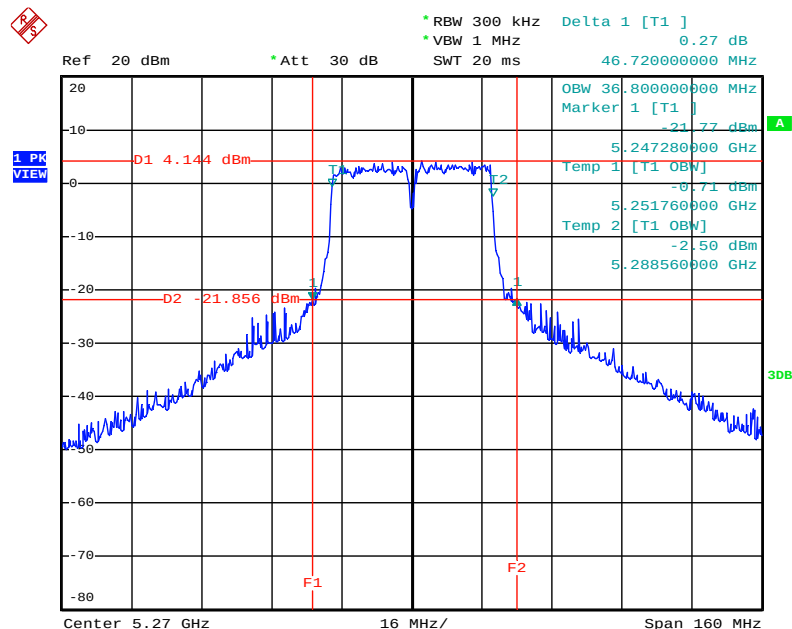
Date: 12.JUL.2011 00:48:56

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4 / 5320 MHz



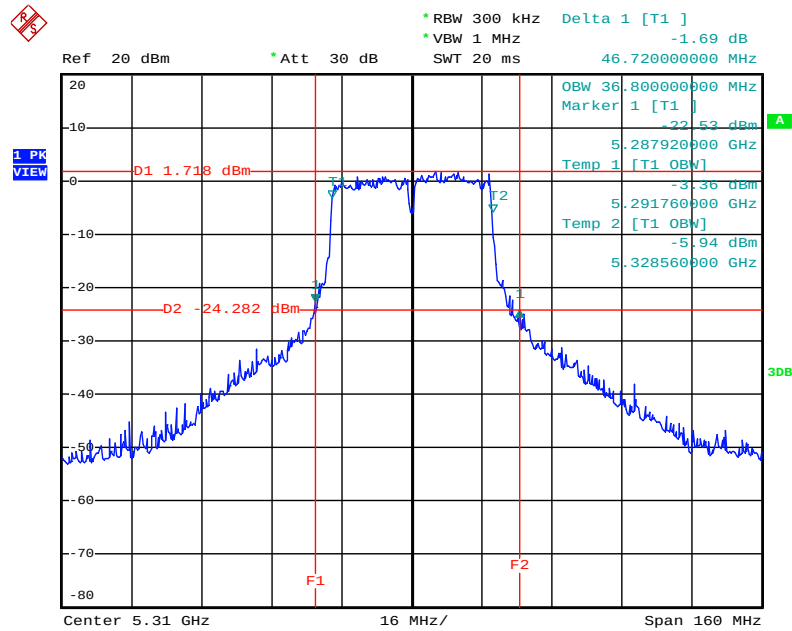
Date: 12.JUL.2011 03:21:12

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4 / 5270 MHz



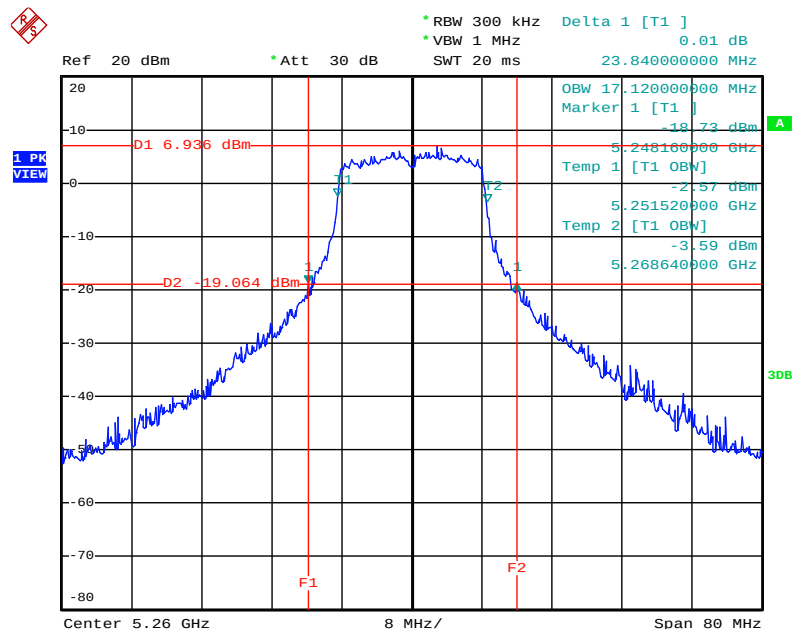
Date: 12.JUL.2011 03:03:04

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4 / 5310 MHz



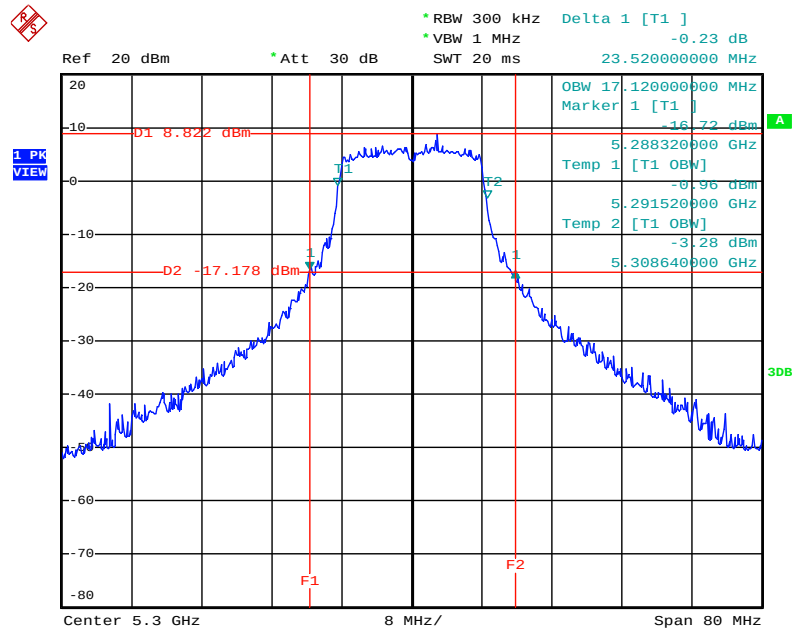
Date: 12.JUL.2011 03:19:49

26 dB Bandwidth Plot on Configuration IEEE 802.11a J2+J3+J4 / 5260 MHz



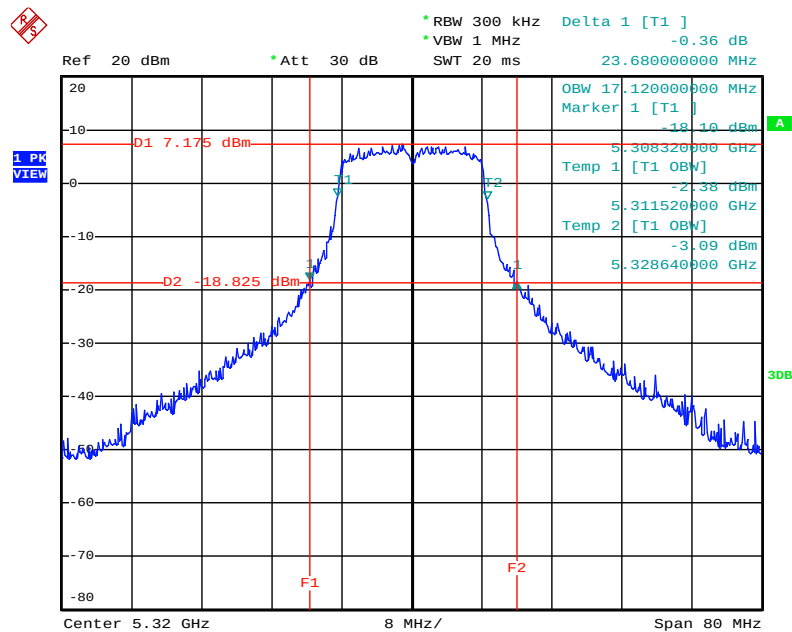
Date: 12.JUL.2011 00:18:34

26 dB Bandwidth Plot on Configuration IEEE 802.11a J2+J3+J4 / 5300 MHz



Date: 12.JUL.2011 00:21:09

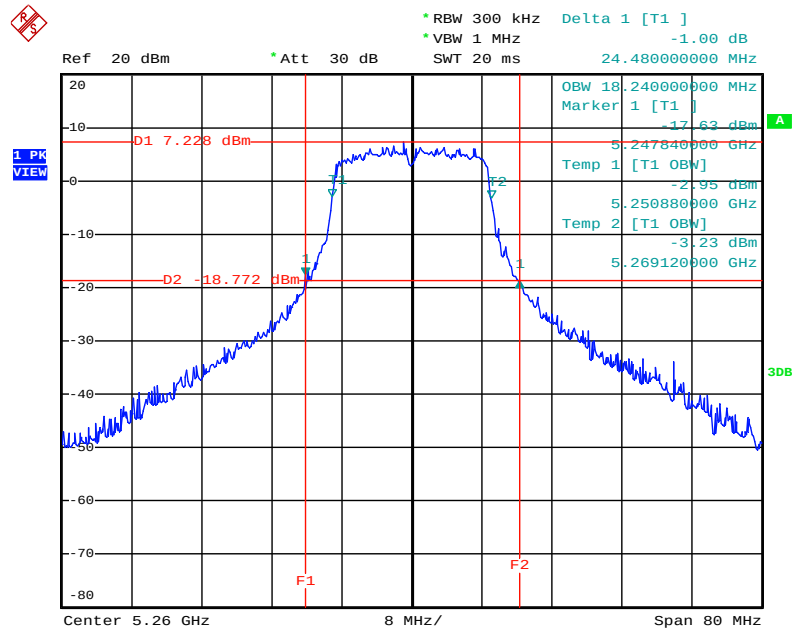
26 dB Bandwidth Plot on Configuration IEEE 802.11a J2+J3+J4 / 5320 MHz



Date: 12.JUL.2011 00:21:55

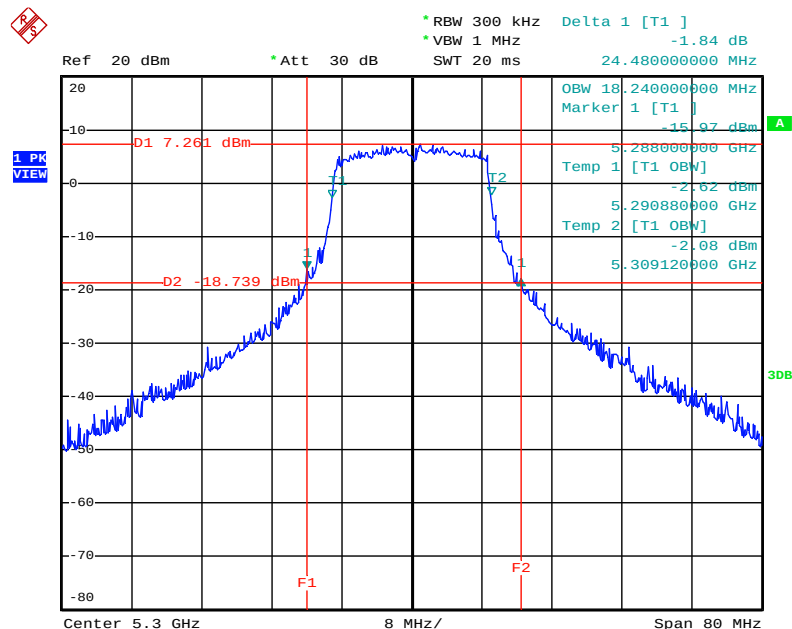
<For Mode 3 (Ant. 7)>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4 / 5260 MHz



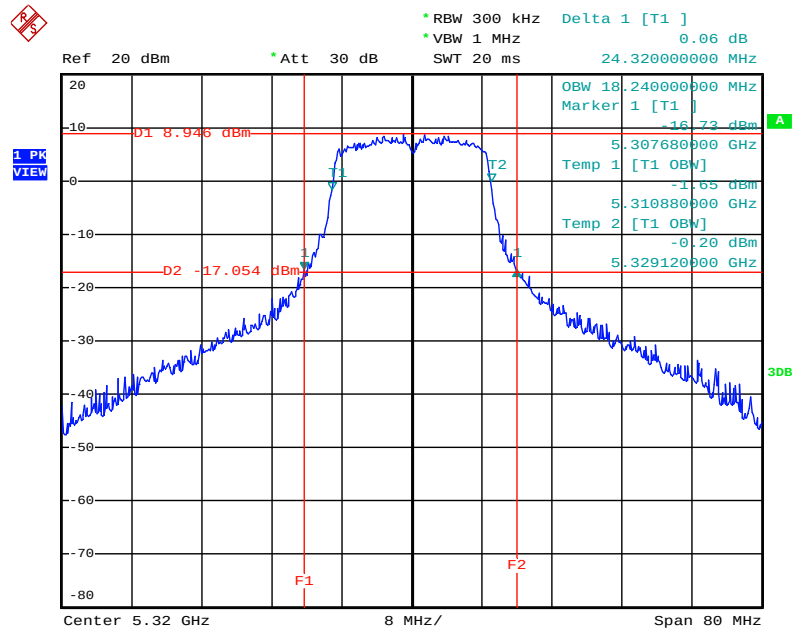
Date: 12.JUL.2011 00:48:00

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4 / 5300 MHz



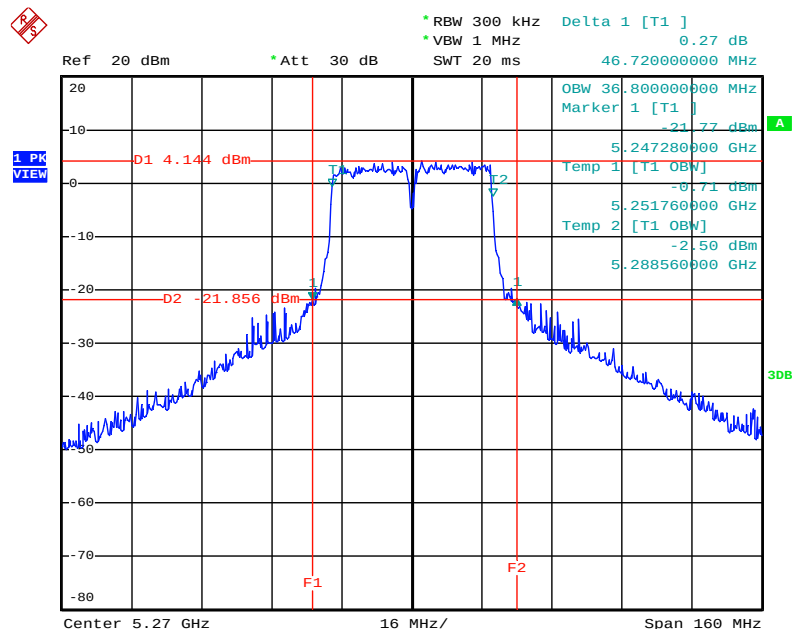
Date: 12.JUL.2011 00:48:56

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4 / 5320 MHz



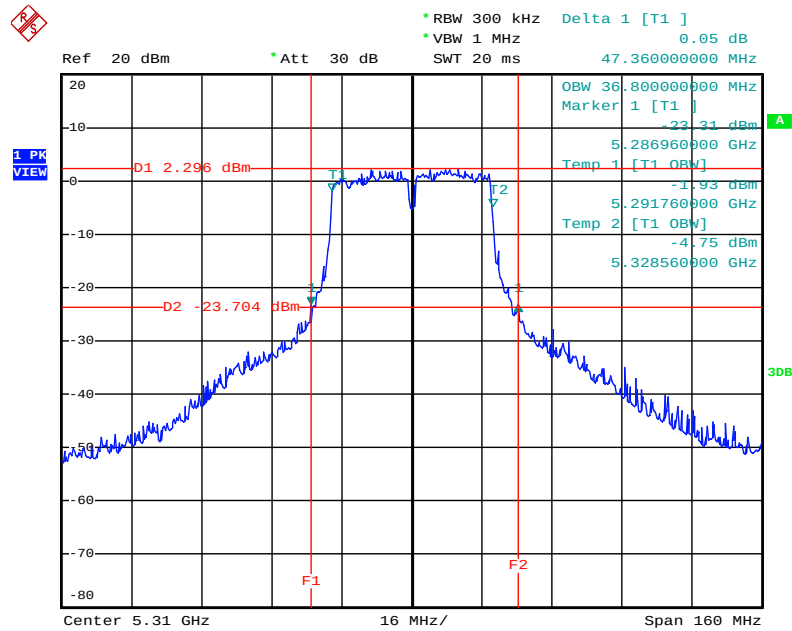
Date: 12.JUL.2011 00:49:49

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4 / 5270 MHz



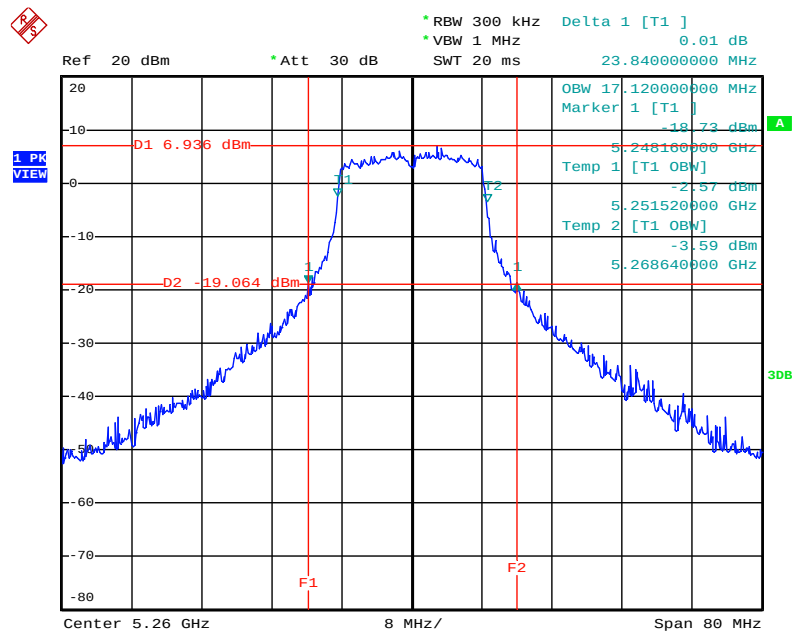
Date: 12.JUL.2011 03:03:04

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4 / 5310 MHz



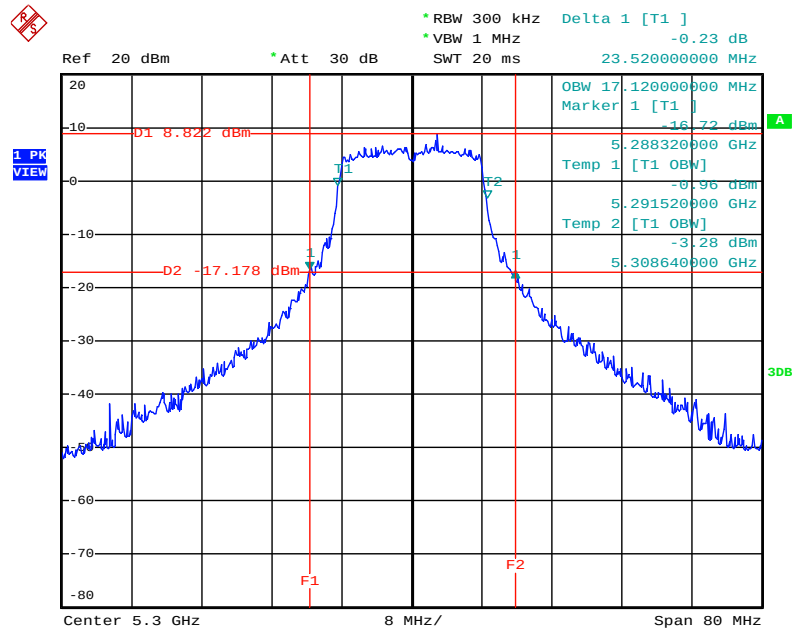
Date: 12.JUL.2011 03:00:39

26 dB Bandwidth Plot on Configuration IEEE 802.11a J2+J3+J4 / 5260 MHz



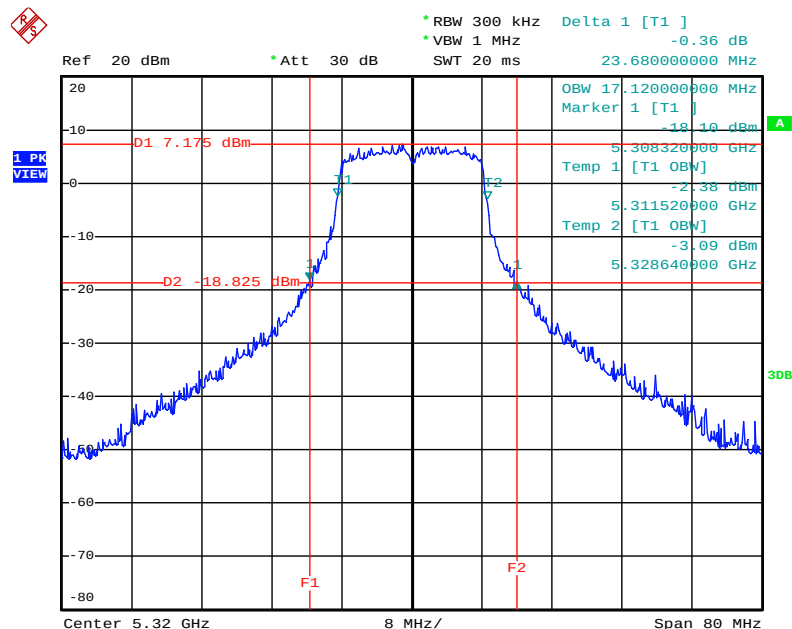
Date: 12.JUL.2011 00:18:34

26 dB Bandwidth Plot on Configuration IEEE 802.11a J2+J3+J4 / 5300 MHz



Date: 12.JUL.2011 00:21:09

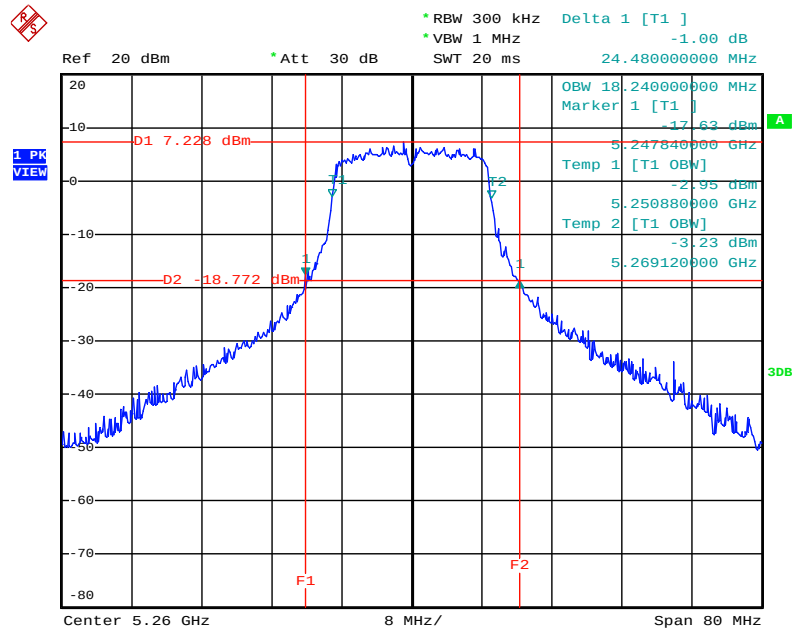
26 dB Bandwidth Plot on Configuration IEEE 802.11a J2+J3+J4 / 5320 MHz



Date: 12.JUL.2011 00:21:55

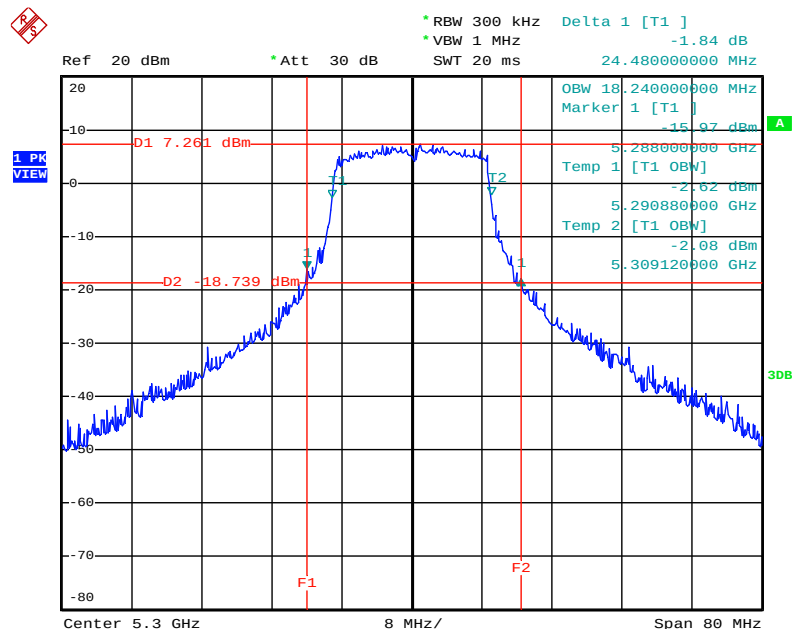
<For Mode 4 (Ant. 8)>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4 / 5260 MHz



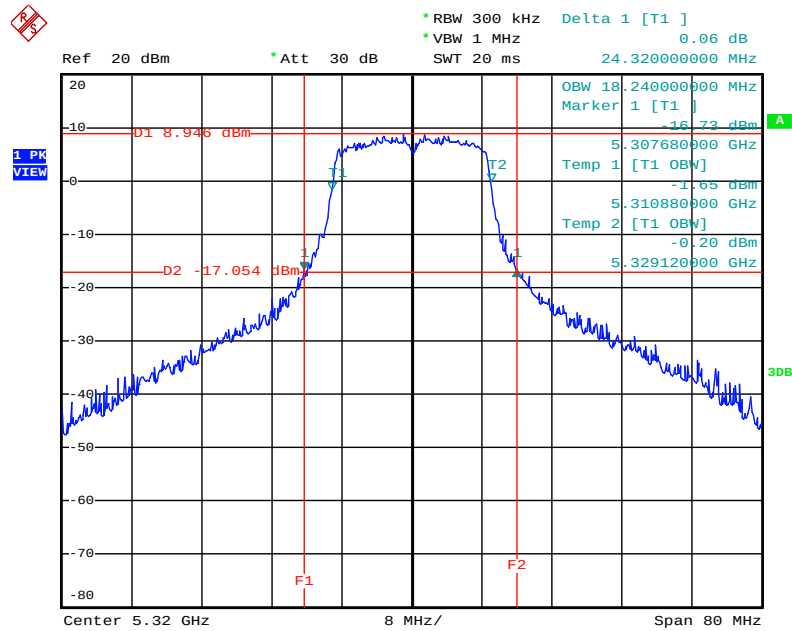
Date: 12.JUL.2011 00:48:00

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4 / 5300 MHz



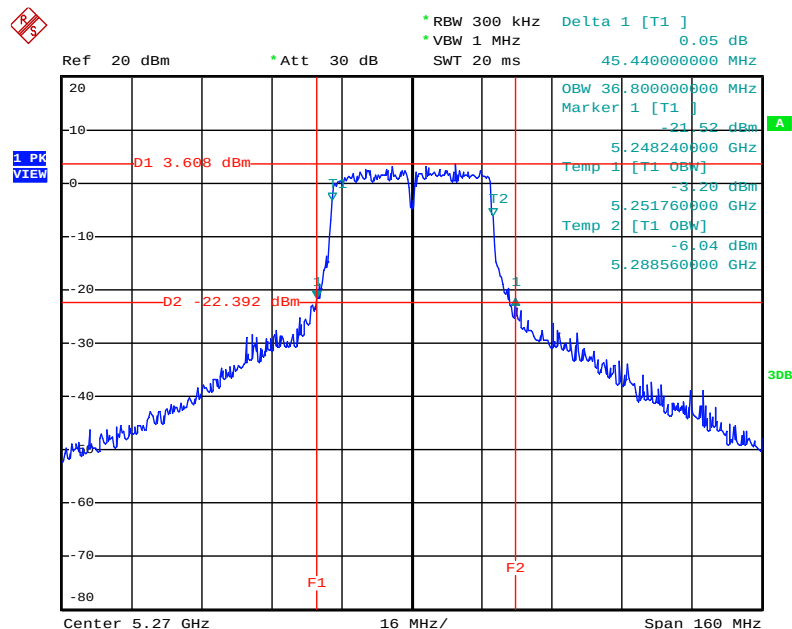
Date: 12.JUL.2011 00:48:56

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4 / 5320 MHz



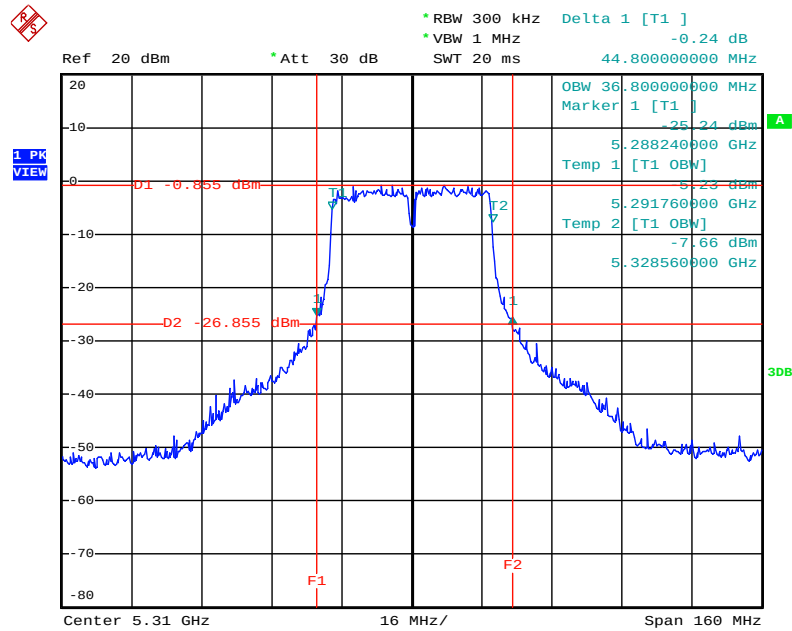
Date: 12.JUL.2011 00:49:49

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4 / 5270 MHz



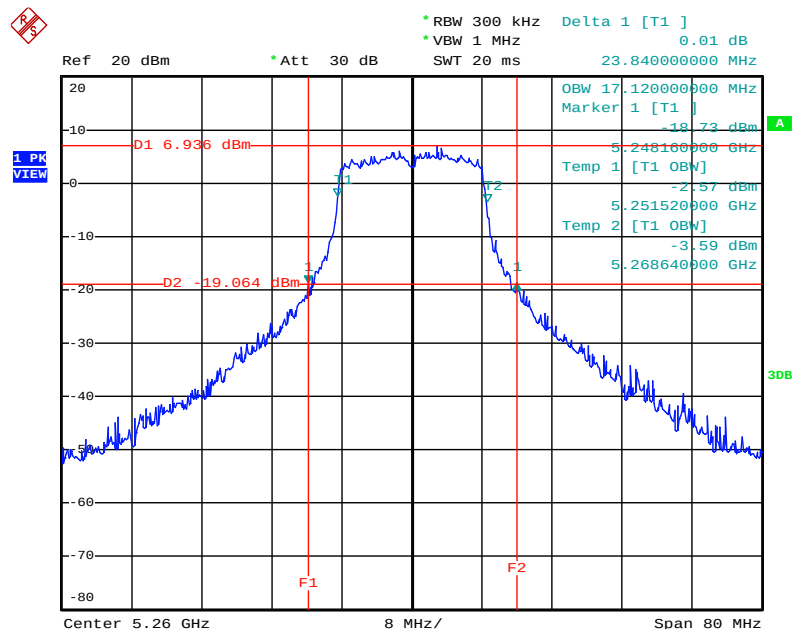
Date: 12.JUL.2011 00:59:54

26 dB Bandwidth Plot on Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4 / 5310 MHz



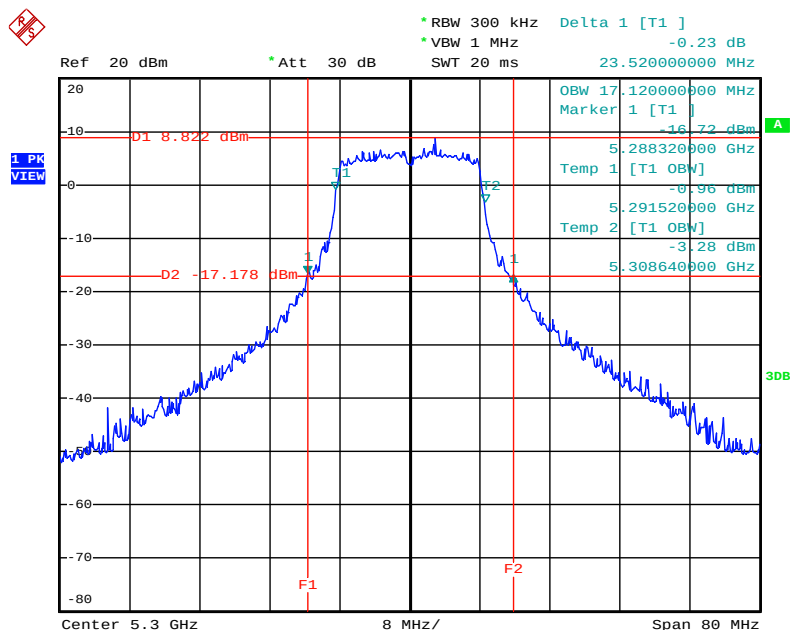
Date: 12.JUL.2011 03:01:33

26 dB Bandwidth Plot on Configuration IEEE 802.11a J2+J3+J4 / 5260 MHz



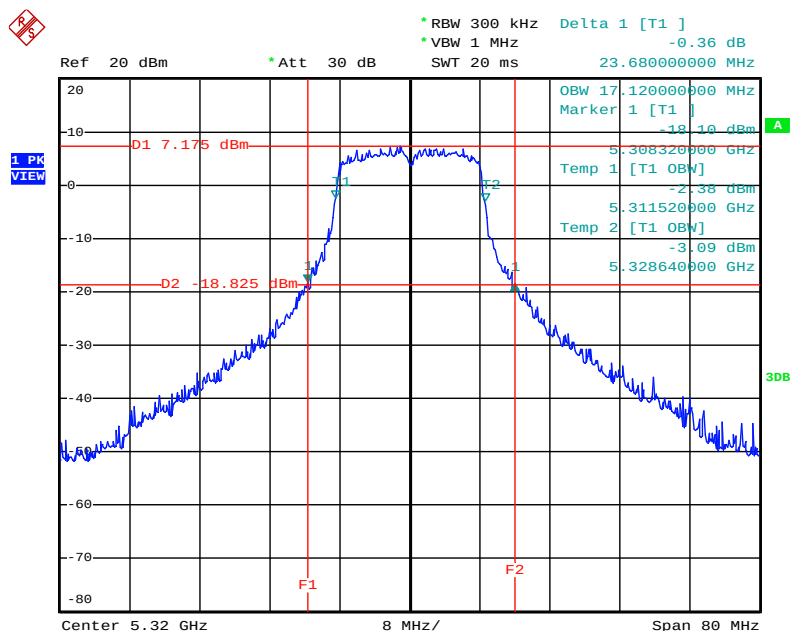
Date: 12.JUL.2011 00:18:34

26 dB Bandwidth Plot on Configuration IEEE 802.11a J2+J3+J4 / 5300 MHz



Date: 12.JUL.2011 00:21:09

26 dB Bandwidth Plot on Configuration IEEE 802.11a J2+J3+J4 / 5320 MHz



Date: 12.JUL.2011 00:21:55

4.3. Maximum Conducted Output Power Measurement

4.3.1. Limit

For the 5.25-5.35 GHz band, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or $11 \text{ dBm} + 10\log B$. If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power and power density from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain up to 23 dBi without any corresponding reduction in the transmitter peak output power and peak power spectral density. For fixed, point-to-point U-NII transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in peak transmitter power and peak power spectral density for each 1 dB of antenna gain in excess of 23 dBi would be required.

4.3.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

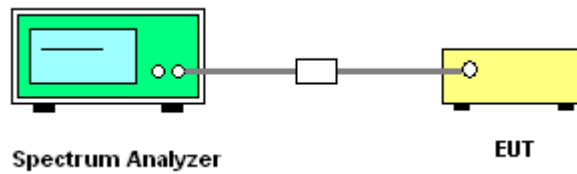
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz
VB	3000 kHz
Detector	RMS
Trace	MAX HOLD
Sweep Time	Auto

Cable Loss		Combiner Loss	
2.4GHz Band	5GHz Band	2.4GHz Band	5GHz Band
0.8	1.5	5.15	5.38

4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Test was performed in accordance with FCC Public Notice DA 02-2138, August 30, 2002.
3. When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of Maximum Conducted Output Power

<For Mode 1 (Ant. 1)>:

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n / Mode 1 (Ant. 1)

Configuration IEEE 802.11n MSC8 20MHz

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		J2	J4			
52	5260 MHz	11.66	11.53	14.61	15.00	Complies
60	5300 MHz	12.03	11.76	14.91	15.00	Complies
64	5320 MHz	11.95	11.86	14.92	15.00	Complies

Configuration IEEE 802.11n MSC8 40MHz

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		J2	J4			
54	5270 MHz	11.99	10.15	14.18	15.00	Complies
62	5310 MHz	7.45	6.71	10.11	15.00	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a / Mode 1 (Ant. 1)

Configuration IEEE 802.11a J2

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		J2	J4			
52	5260 MHz	8.83	8.44	11.65	11.99	Complies
60	5300 MHz	9.01	8.15	11.61	11.99	Complies
64	5320 MHz	9.09	8.46	11.80	11.99	Complies

Note: All the test values were listed in the report.

For plots, only the channel with maximum results was shown.

<For Mode 2 (Ant. 4)>

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n / Mode 2 (Ant. 4)

Configuration IEEE 802.11n MSC8 20MHz

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		J2	J3	J4			
52	5260 MHz	18.60	18.92	18.58	23.47	24.00	Complies
60	5300 MHz	18.94	19.01	18.71	23.66	24.00	Complies
64	5320 MHz	18.32	18.26	17.55	22.83	24.00	Complies

Configuration IEEE 802.11n MSC8 40MHz

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		J2	J3	J4			
54	5270 MHz	18.46	19.09	18.82	23.57	24.00	Complies
62	5310 MHz	15.15	14.93	15.18	19.86	24.00	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a / Mode 2 (Ant. 4)

Configuration IEEE 802.11a

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		J2	J3	J4			
52	5260 MHz	14.11	14.05	14.51	19.00	19.23	Complies
60	5300 MHz	14.57	13.73	14.55	19.07	19.23	Complies
64	5320 MHz	14.82	13.33	14.71	19.11	19.23	Complies

Note: All the test values were listed in the report.

For plots, only the channel with maximum results was shown.

<For Mode 3 (Ant. 7)>:

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n / Mode 3 (Ant. 7)

Configuration IEEE 802.11n MSC8 20MHz

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		J2	J3	J4			
52	5260 MHz	18.60	18.92	18.58	23.47	24.00	Complies
60	5300 MHz	18.94	19.01	18.71	23.66	24.00	Complies
64	5320 MHz	17.84	21.02	17.95	23.97	24.00	Complies

Configuration IEEE 802.11n MSC8 40MHz

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		J2	J3	J4			
54	5270 MHz	18.46	19.09	18.82	23.57	24.00	Complies
62	5310 MHz	14.79	16.94	15.31	20.55	24.00	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a / Mode 3 (Ant. 7)

Configuration IEEE 802.11a

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		J2	J3	J4			
52	5260 MHz	16.77	15.80	16.61	21.18	21.23	Complies
60	5300 MHz	16.51	15.39	16.66	20.99	21.23	Complies
64	5320 MHz	16.68	15.49	16.71	21.10	21.23	Complies

Note: All the test values were listed in the report.

For plots, only the channel with maximum results was shown.

<For Mode 4 (Ant. 8)>:

Temperature	24°C	Humidity	56%
Test Engineer	Jacky Ho	Configurations	IEEE 802.11n / Mode 4 (Ant. 8)

Configuration IEEE 802.11n MSC8 20MHz

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		J2	J3	J4			
52	5260 MHz	18.60	18.92	18.58	23.47	24.00	Complies
60	5300 MHz	18.94	19.01	18.71	23.66	24.00	Complies
64	5320 MHz	16.52	16.78	16.52	21.38	24.00	Complies

Configuration IEEE 802.11n MSC8 40MHz J2

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		J2	J3	J4			
54	5270 MHz	18.46	19.09	18.82	23.57	24.00	Complies
62	5310 MHz	12.00	13.70	13.22	17.80	24.00	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Jacky Ho	Configurations	IEEE 802.11a / Mode 4 (Ant. 8)

Configuration IEEE 802.11a

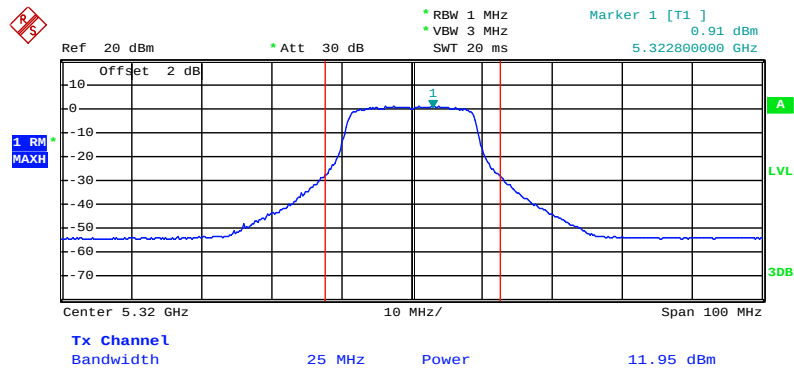
Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		J2	J3	J4			
52	5260 MHz	16.77	15.80	16.61	21.18	21.23	Complies
60	5300 MHz	16.51	15.39	16.66	20.99	21.23	Complies
64	5320 MHz	16.68	15.49	16.71	21.10	21.23	Complies

Note: All the test values were listed in the report.

For plots, only the channel with maximum results was shown.

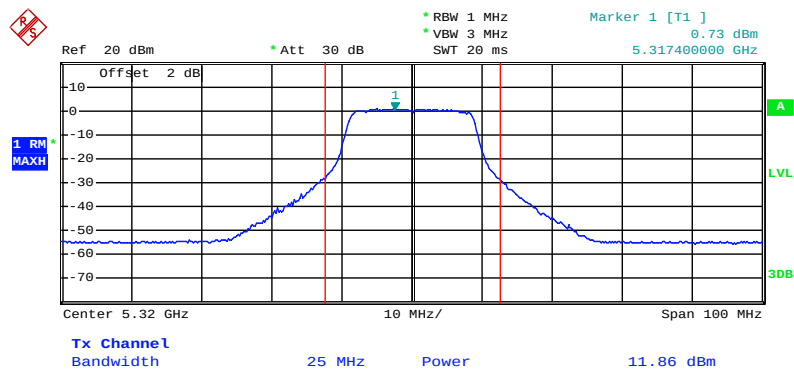
<For Mode 1 (Ant. 1)>:

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 20MHz J2 / 5320 MHz



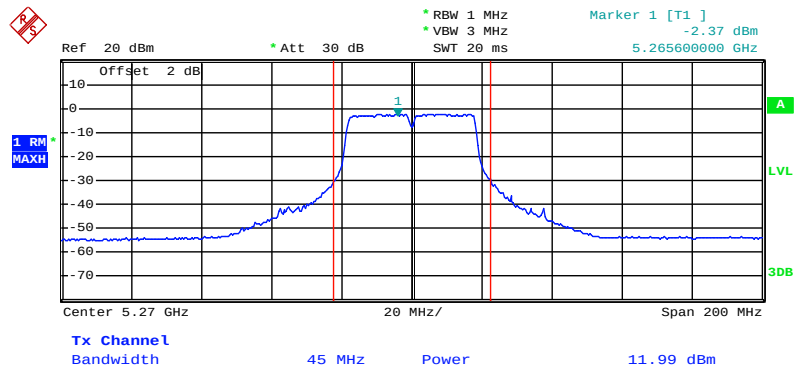
Date: 11.AUG.2010 23:00:45

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 20MHz J4 / 5320 MHz



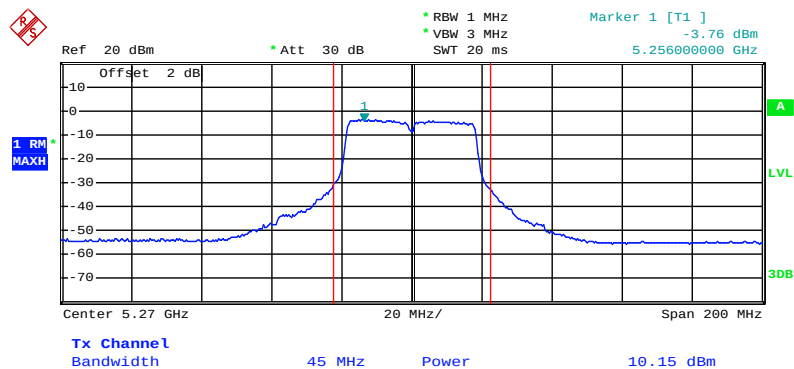
Date: 11.AUG.2010 23:00:12

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 40MHz J2 / 5270 MHz



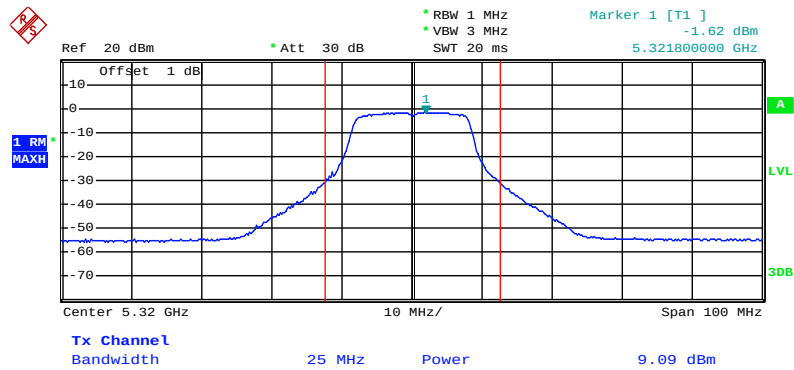
Date: 11.AUG.2010 23:04:45

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 40MHz J4 / 5270 MHz



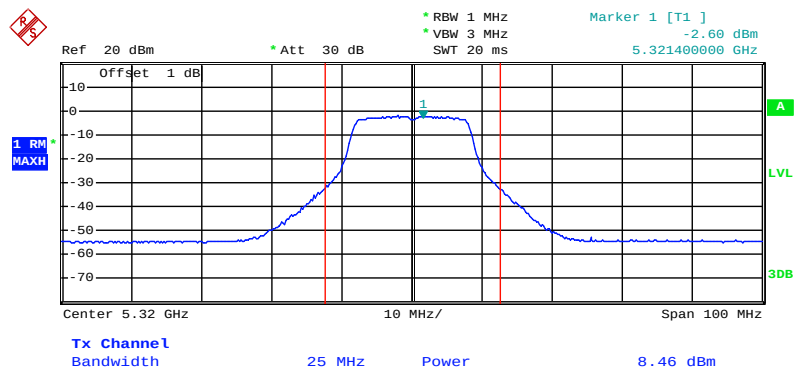
Date: 11.AUG.2010 23:04:15

Conducted Output Power Plot on Configuration IEEE 802.11a J2 / 5320 MHz



Date: 12.JUL.2011 04:28:44

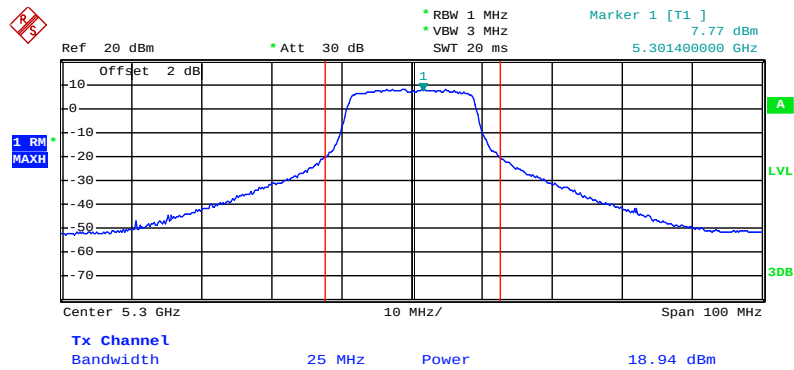
Conducted Output Power Plot on Configuration IEEE 802.11a J4 / 5320 MHz



Date: 12.JUL.2011 04:25:58

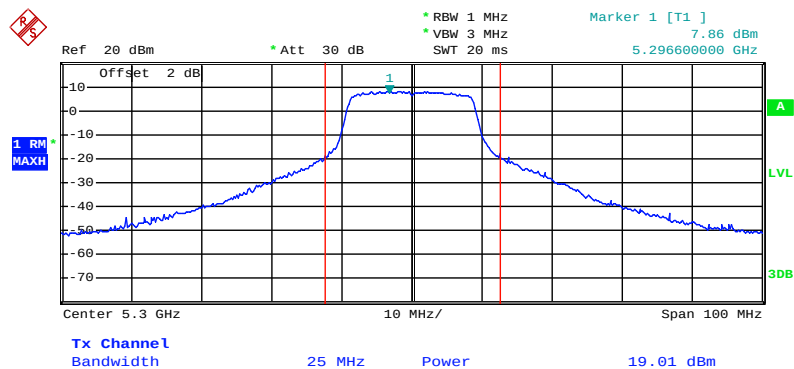
<For Mode 2 (Ant. 4)>:

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 20MHz J2 / 5300 MHz



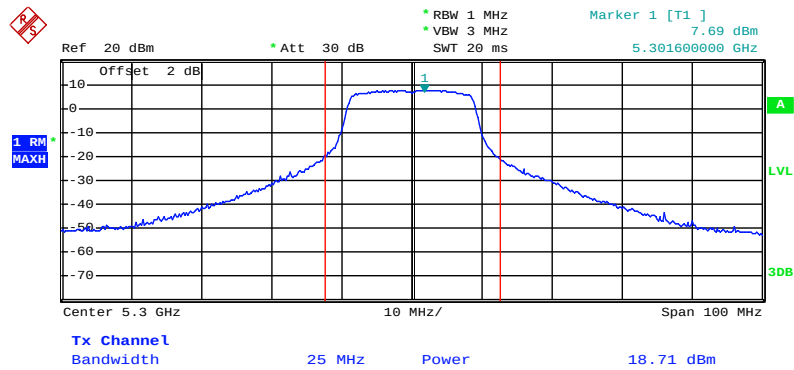
Date: 11.AUG.2010 22:34:42

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 20MHz J3 / 5300 MHz



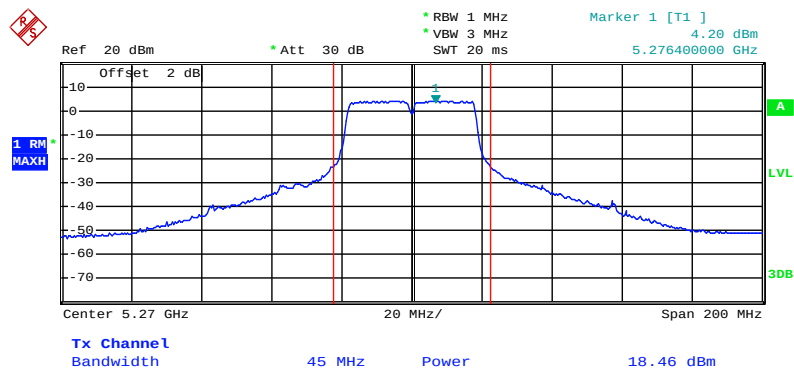
Date: 11.AUG.2010 22:35:07

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 20MHz J4 / 5300 MHz



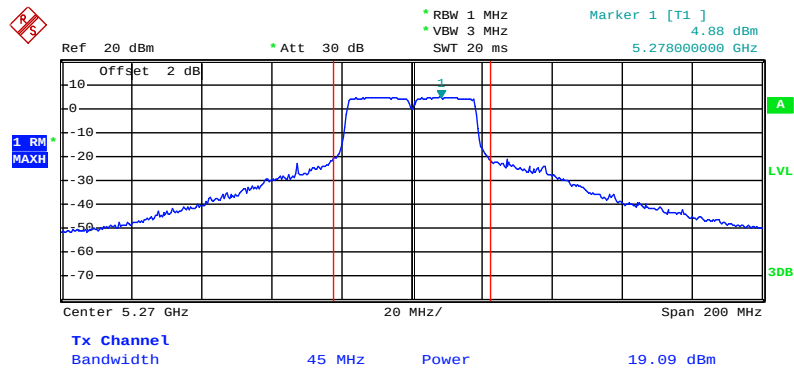
Date: 11.AUG.2010 22:35:52

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 40MHz J2 / 5270 MHz



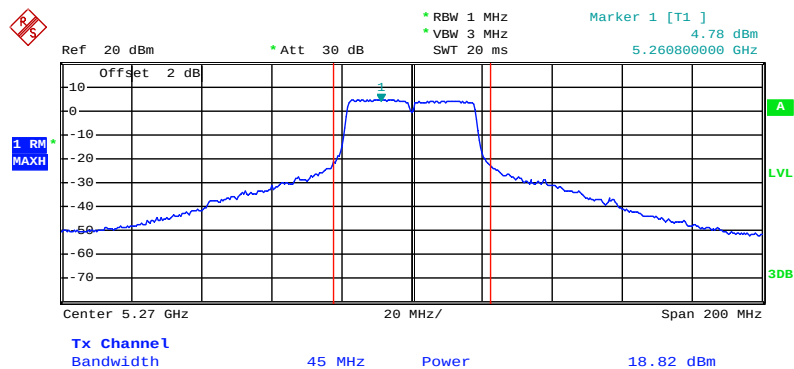
Date: 11.AUG.2010 22:24:58

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 40MHz J3 / 5270 MHz



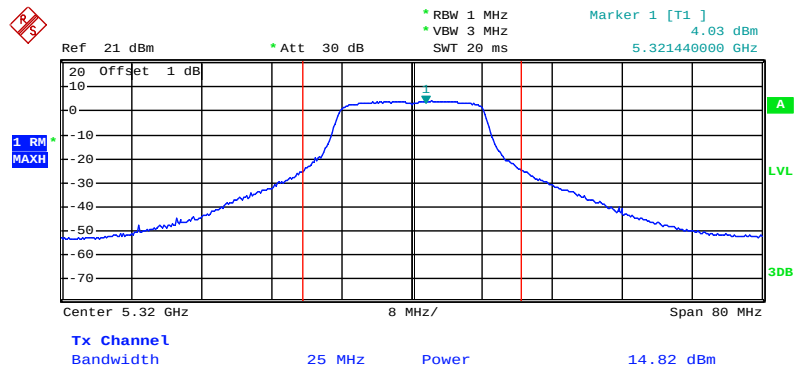
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Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 40MHz J4 / 5270 MHz



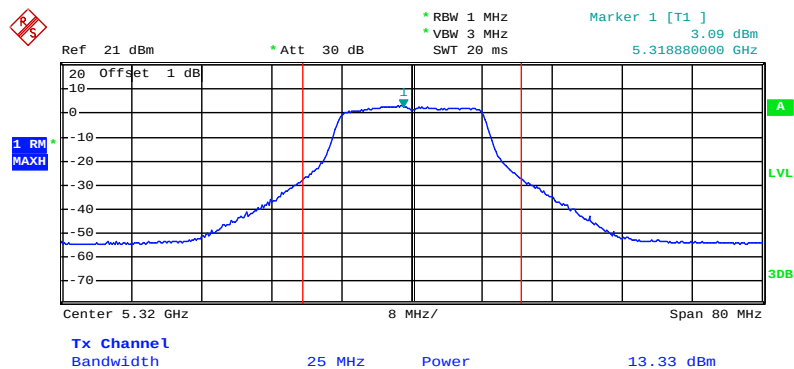
Date: 11.AUG.2010 22:26:12

Conducted Output Power Plot on Configuration IEEE 802.11a J2 / 5320 MHz



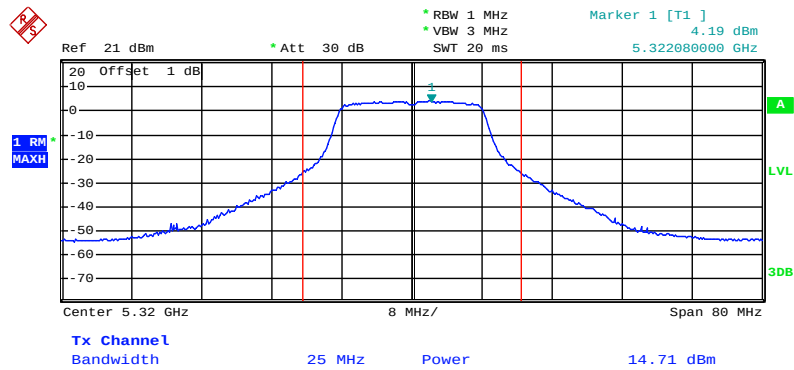
Date: 12.JUL.2011 04:50:16

Conducted Output Power Plot on Configuration IEEE 802.11a J3 / 5320 MHz



Date: 12.JUL.2011 04:50:58

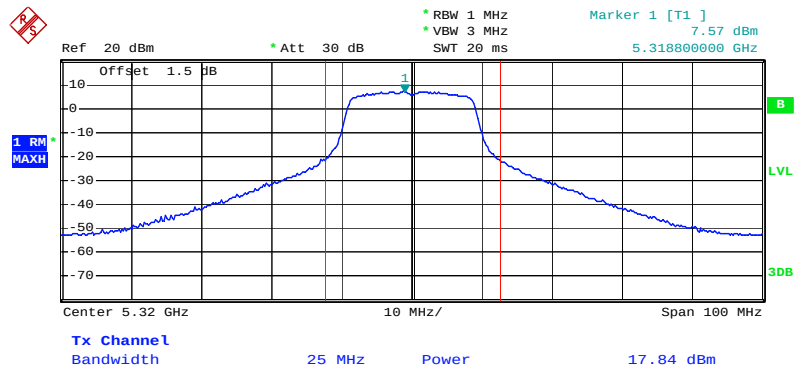
Conducted Output Power Plot on Configuration IEEE 802.11a J4 / 5320 MHz



Date: 12.JUL.2011 04:51:25

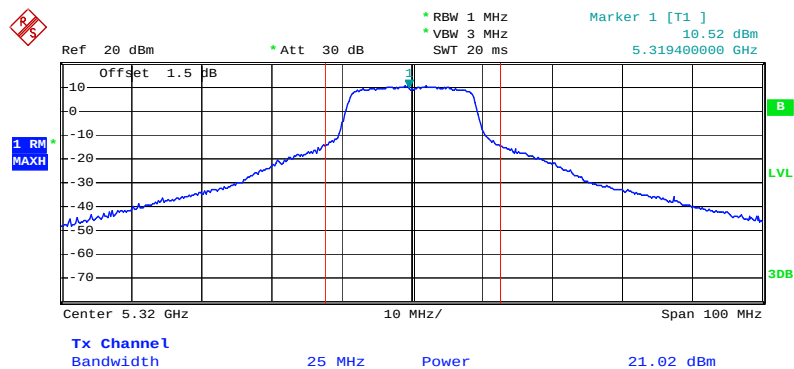
<For Mode 3 (Ant. 7)>:

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 20MHz J2 / 5320 MHz



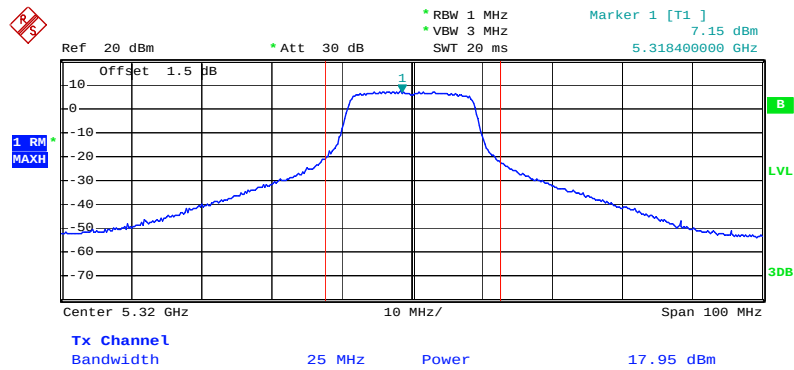
Date: 2.SEP.2010 15:03:41

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 20MHz J3 / 5320 MHz



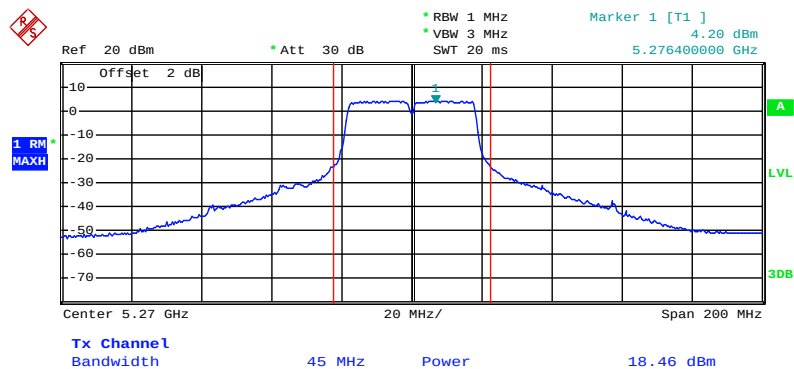
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Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 20MHz J4 / 5320 MHz



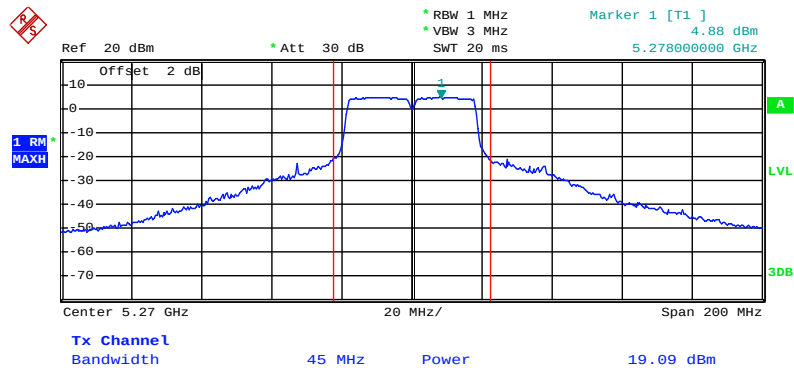
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Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 40MHz J2 / 5270 MHz



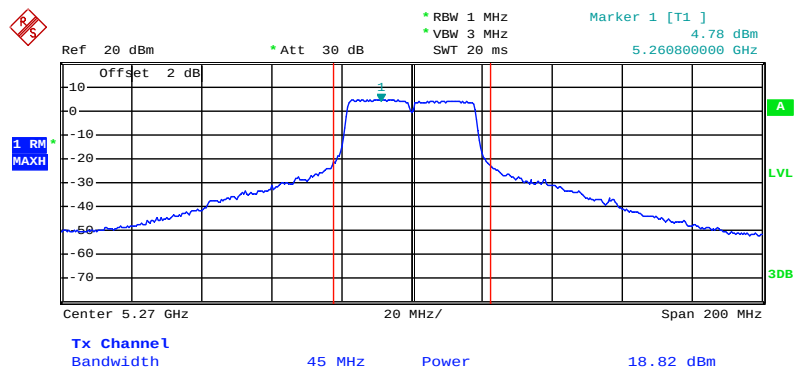
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Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 40MHz J3 / 5270 MHz



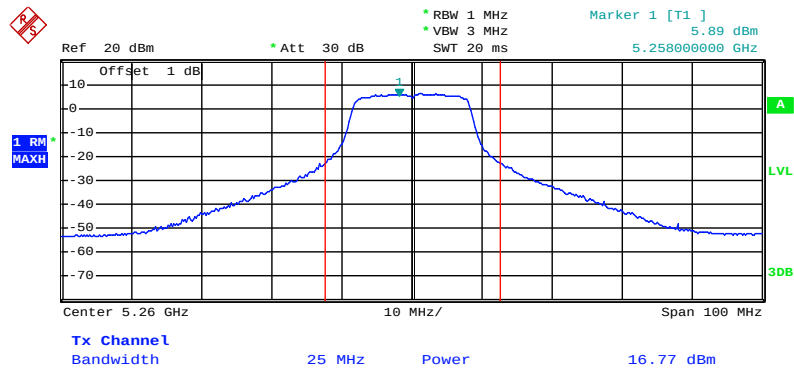
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Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 40MHz J4 / 5270 MHz



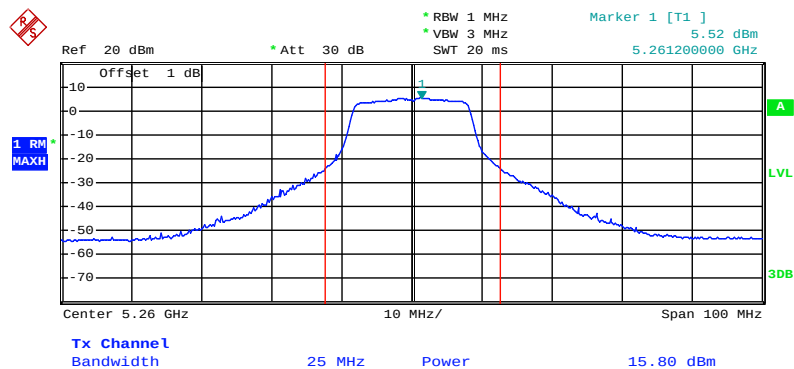
Date: 11.AUG.2010 22:26:12

Conducted Output Power Plot on Configuration IEEE 802.11a J2 / 5260 MHz



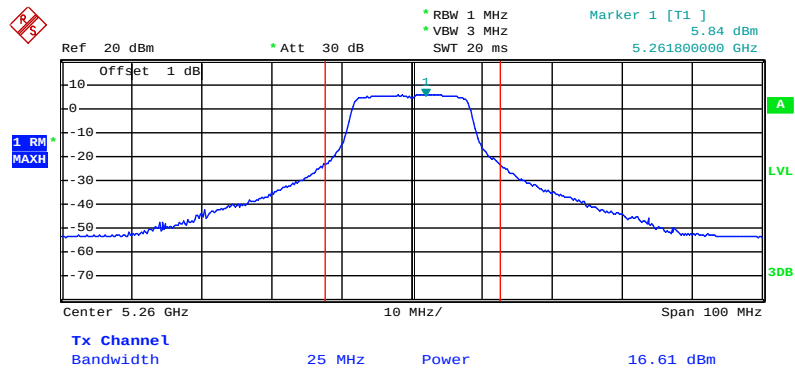
Date: 12.JUL.2011 00:44:33

Conducted Output Power Plot on Configuration IEEE 802.11a J3 / 5260 MHz



Date: 12.JUL.2011 00:43:29

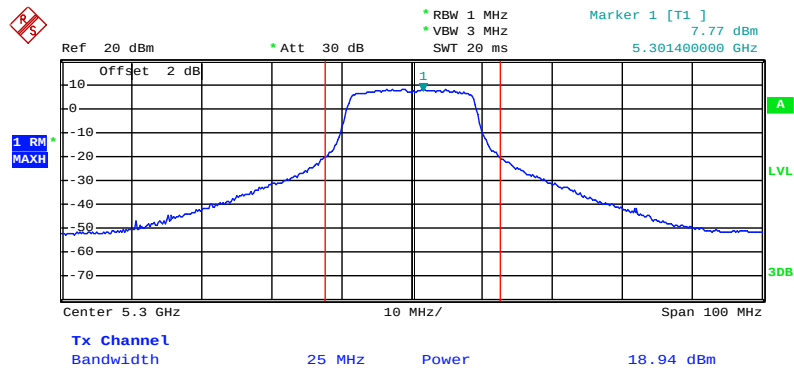
Conducted Output Power Plot on Configuration IEEE 802.11a J4 / 5260 MHz



Date: 12.JUL.2011 00:42:36

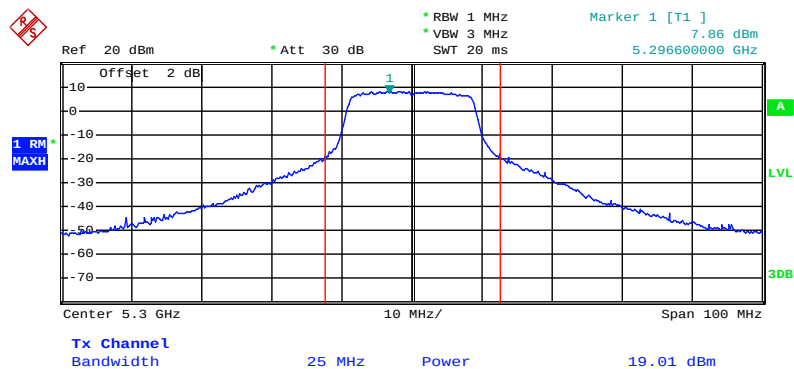
<For Mode 4 (Ant. 8)>:

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 20MHz J2 / 5300 MHz



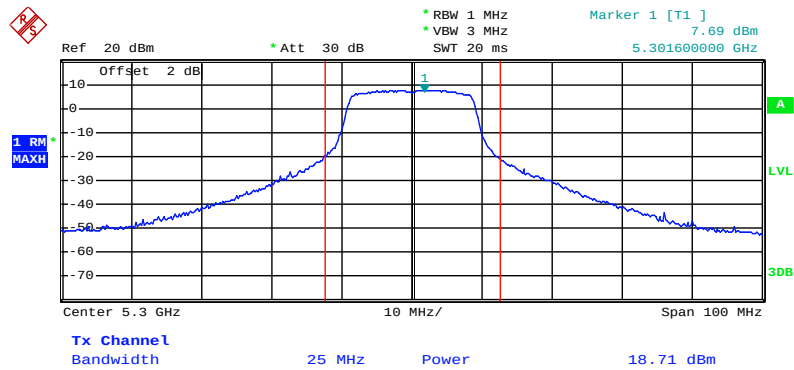
Date: 11.AUG.2010 22:34:42

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 20MHz J3 / 5300 MHz



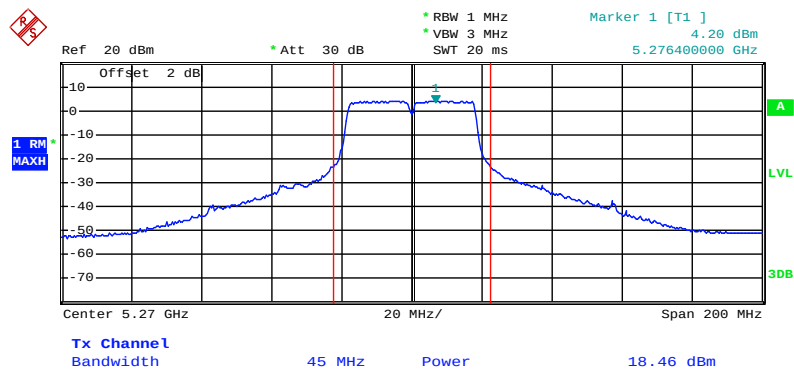
Date: 11.AUG.2010 22:35:07

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 20MHz J4 / 5300 MHz



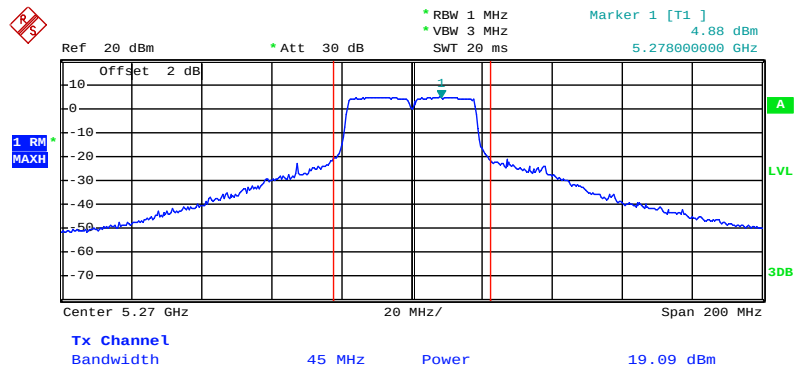
Date: 11.AUG.2010 22:35:52

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 40MHz J2 / 5270 MHz



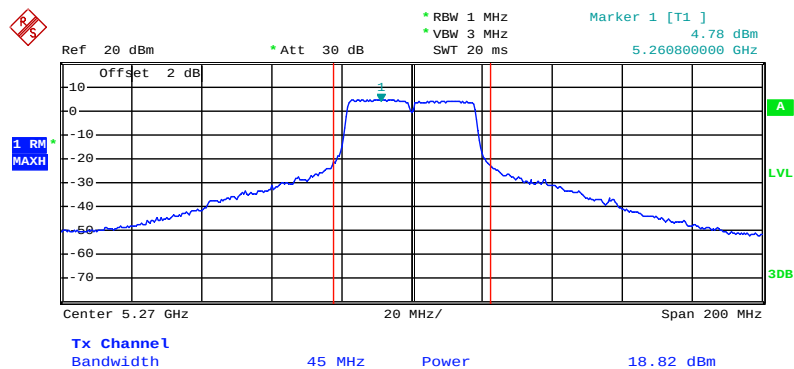
Date: 11.AUG.2010 22:24:58

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 40MHz J3 / 5270 MHz



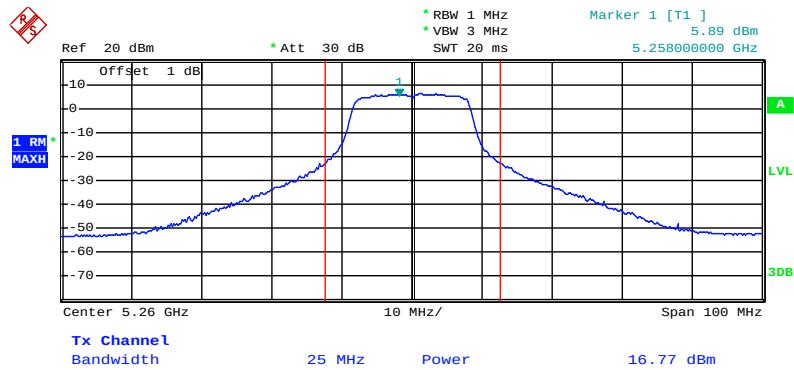
Date: 11.AUG.2010 22:25:40

Conducted Output Power Plot on Configuration IEEE 802.11n MSC8 40MHz J4 / 5270 MHz



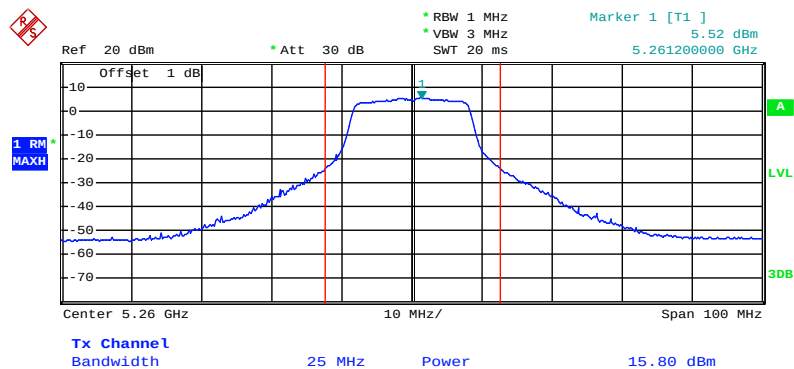
Date: 11.AUG.2010 22:26:12

Conducted Output Power Plot on Configuration IEEE 802.11a J2 / 5260 MHz



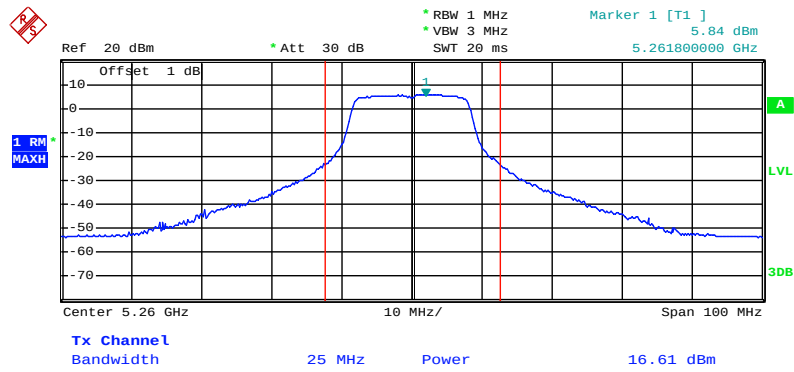
Date: 12.JUL.2011 00:44:33

Conducted Output Power Plot on Configuration IEEE 802.11a J3 / 5260 MHz



Date: 12.JUL.2011 00:43:29

Conducted Output Power Plot on Configuration IEEE 802.11a J4 / 5260 MHz



Date: 12.JUL.2011 00:42:36

4.4. Power Spectral Density Measurement

4.4.1. Limit

The power spectral density is defined as the highest level of power in dBm per MHz generated by the transmitter within the power envelope. The following table is power spectral density limits and decrease power density limit rule refer to section 4.3.1.

<For Mode 1 (Ant. 1)>:

Frequency Range	Power Spectral Density limit (dBm/MHz)
5.25-5.35 GHz	2.00

<For Mode 2 (Ant. 4), Mode 3 (Ant. 7), Mode 4 (Ant. 8)>:

Frequency Range	Power Spectral Density limit (dBm/MHz)
5.25-5.35 GHz	11.00

4.4.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

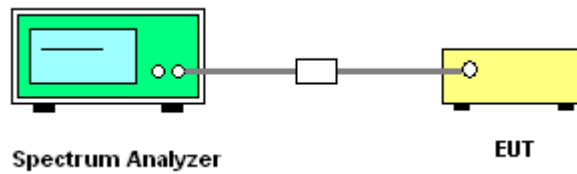
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz
VB	3000 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

Cable Loss		Combiner Loss	
2.4GHz Band	5GHz Band	2.4GHz Band	5GHz Band
0.8	1.5	5.15	5.38

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set RBW of spectrum analyzer to 1000kHz and VBW to 3000kHz. Set Detector to Peak, Trace to Max Hold. Mark the frequency with maximum peak power as the center of the display of the spectrum.
3. Measuring multiple antennas, the connector is required to link with spectrum analyzer through a combiner.

4.4.4. Test Setup Layout



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of Power Spectral Density

<For Mode 1 (Ant. 1)>:

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n / Mode 1 (Ant. 1)

Configuration IEEE 802.11n MSC8 20MHz

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		J2	J4			
52	5260 MHz	-5.24	-6.38	-2.76	2.00	Complies
60	5300 MHz	-4.70	-5.50	-2.07	2.00	Complies
64	5320 MHz	-4.29	-5.18	-1.70	2.00	Complies

Configuration IEEE 802.11n MSC8 40MHz

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		J2	J4			
54	5270 MHz	-9.51	-10.43	-6.94	2.00	Complies
62	5310 MHz	-11.43	-13.02	-9.14	2.00	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a / Mode 1 (Ant. 1)

Configuration IEEE 802.11a

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		J2	J4			
52	5260 MHz	-6.53	-6.99	-3.74	-1.01	Complies
60	5300 MHz	-6.24	-7.23	-3.70	-1.01	Complies
64	5320 MHz	-5.90	-7.12	-3.46	-1.01	Complies

Note: All the test values were listed in the report.

For plots, only the channel with maximum results was shown.

<For Mode 2 (Ant. 4)>:

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n / Mode 2 (Ant. 4)

Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4

Channel	Frequency	Power Density (dBm/3kHz)			Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		J2	J3	J4			
52	5260 MHz	1.02	0.93	1.25	5.84	11.00	Complies
60	5300 MHz	2.23	1.12	2.21	6.65	11.00	Complies
64	5320 MHz	1.26	0.12	1.63	5.82	11.00	Complies

Configuration IEEE 802.11n MSC8 40MHz

Channel	Frequency	Power Density (dBm/3kHz)			Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		J2	J3	J4			
54	5270 MHz	-1.22	-1.27	-1.18	3.55	11.00	Complies
62	5310 MHz	-4.86	-5.94	-5.38	-0.60	11.00	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a / Mode 2 (Ant. 4)

Configuration IEEE 802.11a

Channel	Frequency	Power Density (dBm/3kHz)			Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		J2	J3	J4			
52	5260 MHz	0.67	-0.13	0.43	5.11	6.23	Complies
60	5300 MHz	0.78	-0.69	0.18	4.90	6.23	Complies
64	5320 MHz	0.31	-1.38	-0.62	4.26	6.23	Complies

Note: All the test values were listed in the report.

For plots, only the channel with maximum results was shown.

<For Mode 3 (Ant. 7)>:

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n / Mode 3 (Ant. 7)

Configuration IEEE 802.11n MSC8 20MHz

Channel	Frequency	Power Density (dBm/3kHz)			Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		J2	J3	J4			
52	5260 MHz	1.02	0.93	1.25	5.84	11.00	Complies
60	5300 MHz	2.23	1.12	2.21	6.65	11.00	Complies
64	5320 MHz	3.13	1.30	3.06	7.35	11.00	Complies

Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4

Channel	Frequency	Power Density (dBm/3kHz)			Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		J2	J3	J4			
54	5270 MHz	-1.22	-1.27	-1.18	3.55	11.00	Complies
62	5310 MHz	-3.72	-4.88	-4.29	0.50	11.00	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a / Mode 3 (Ant. 7)

Configuration IEEE 802.11a

Channel	Frequency	Power Density (dBm/3kHz)			Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		J2	J3	J4			
52	5260 MHz	0.85	0.37	1.23	5.60	8.23	Complies
60	5300 MHz	0.87	0.47	0.78	5.48	8.23	Complies
64	5320 MHz	1.27	-0.20	0.58	5.36	8.23	Complies

Note: All the test values were listed in the report.

For plots, only the channel with maximum results was shown.

<For Mode 4 (Ant. 8)>:

Temperature	24°C	Humidity	56%
Test Engineer	Jacky Ho	Configurations	IEEE 802.11n / Mode 4 (Ant. 8)

Configuration IEEE 802.11n MSC8 20MHz

Channel	Frequency	Power Density (dBm/3kHz)			Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		J2	J3	J4			
52	5260 MHz	1.02	0.93	1.25	5.84	11.00	Complies
60	5300 MHz	2.23	1.12	2.21	6.65	11.00	Complies
64	5320 MHz	0.23	-1.47	-0.34	4.30	11.00	Complies

Configuration IEEE 802.11n MSC8 40MHz

Channel	Frequency	Power Density (dBm/3kHz)			Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		J2	J3	J4			
54	5270 MHz	-1.22	-1.27	-1.18	3.55	11.00	Complies
62	5310 MHz	-6.43	-7.71	-7.13	-2.29	11.00	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Jacky Ho	Configurations	IEEE 802.11a / Mode 4 (Ant. 8)

Configuration IEEE 802.11a

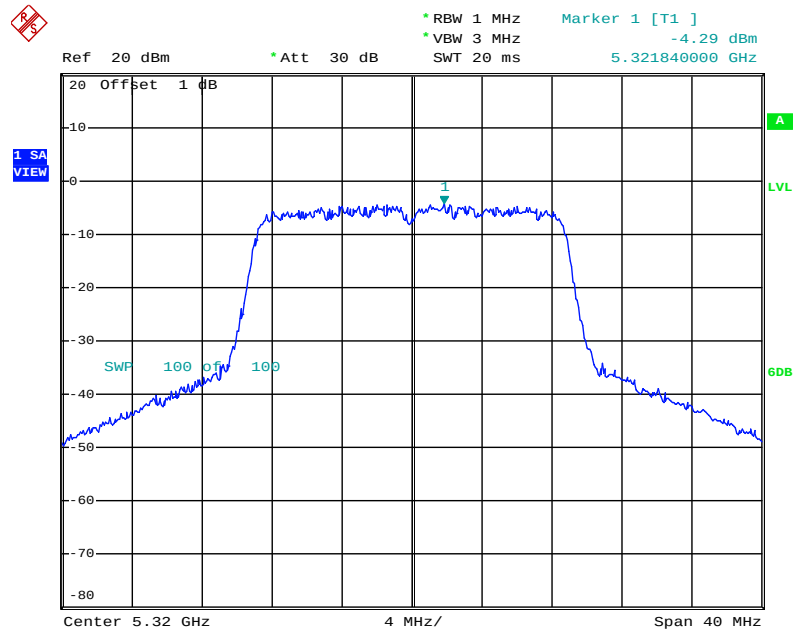
Channel	Frequency	Power Density (dBm/3kHz)			Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		J2	J3	J4			
52	5260 MHz	0.85	0.37	1.23	5.60	8.23	Complies
60	5300 MHz	0.87	0.47	0.78	5.48	8.23	Complies
64	5320 MHz	1.27	-0.20	0.58	5.36	8.23	Complies

Note: All the test values were listed in the report.

For plots, only the channel with maximum results was shown.

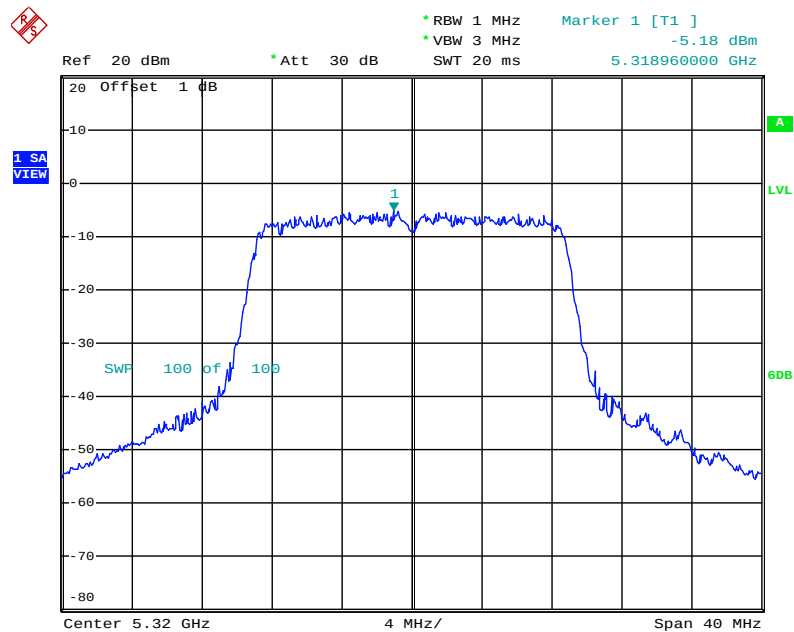
<For Mode 1 (Ant. 1)>

Power Density Plot on Configuration IEEE 802.11n MSC8 20MHz J2 / 5320 MHz



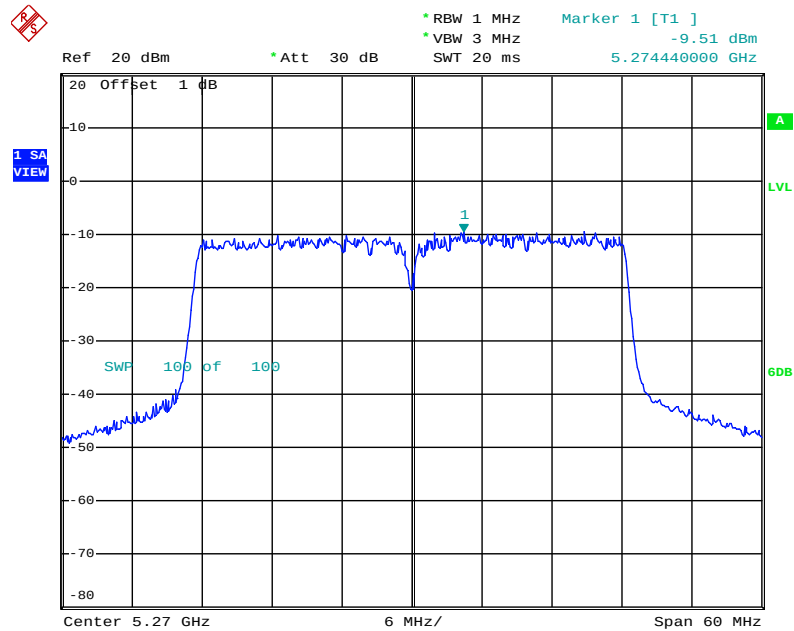
Date: 13.JUL.2011 02:58:56

Power Density Plot on Configuration IEEE 802.11n MSC8 20MHz J4 / 5320 MHz



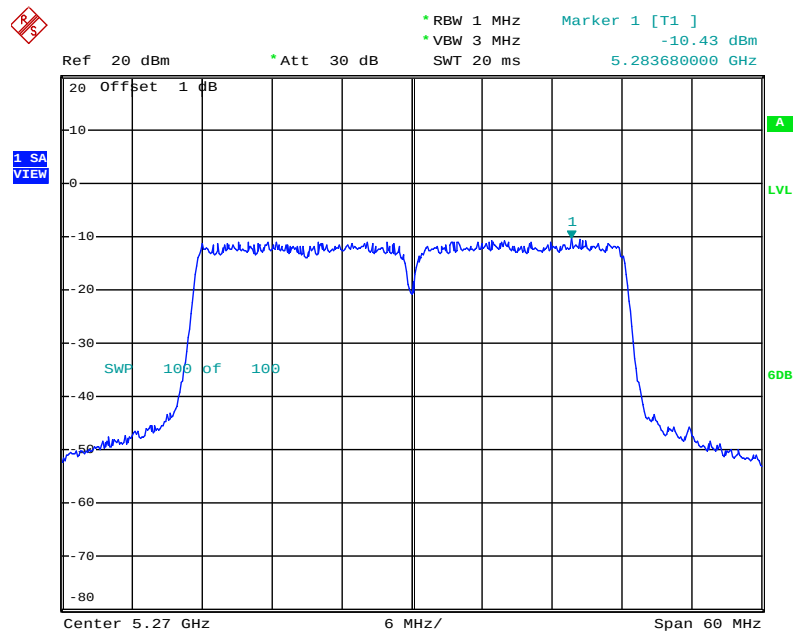
Date: 13.JUL.2011 02:59:52

Power Density Plot on Configuration IEEE 802.11n MSC8 40MHz J2 / 5270 MHz



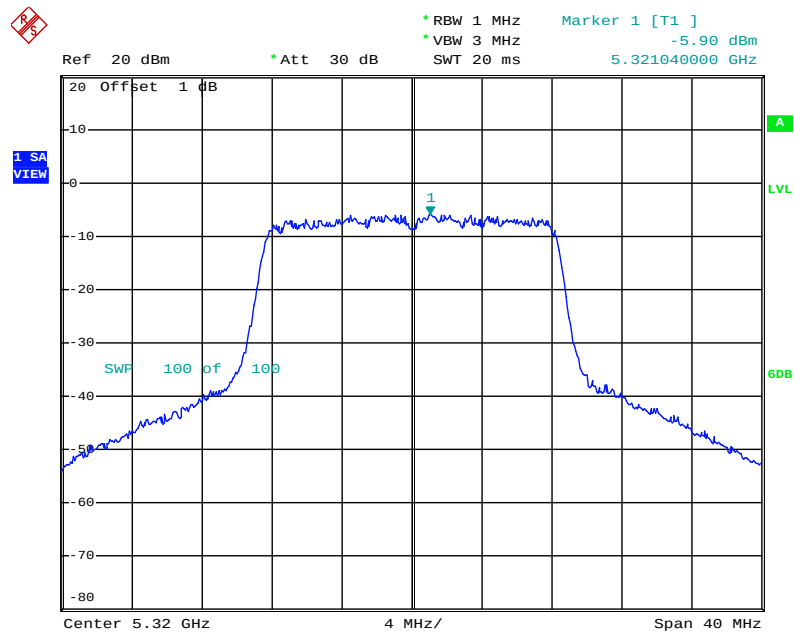
Date: 13.JUL.2011 03:08:06

Power Density Plot on Configuration IEEE 802.11n MSC8 40MHz J4 / 5270 MHz



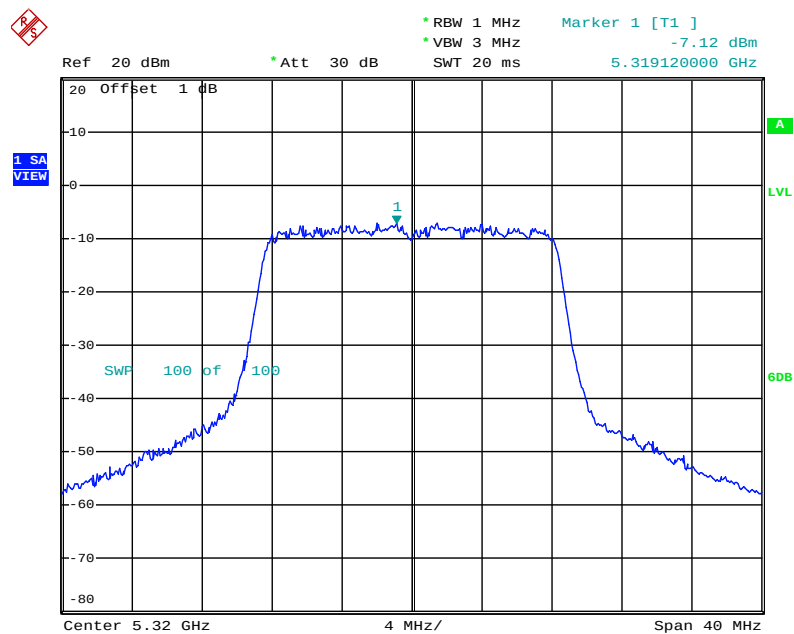
Date: 13.JUL.2011 03:06:50

Power Density Plot on Configuration IEEE 802.11a J2 / 5320 MHz



Date: 13.JUL.2011 02:56:52

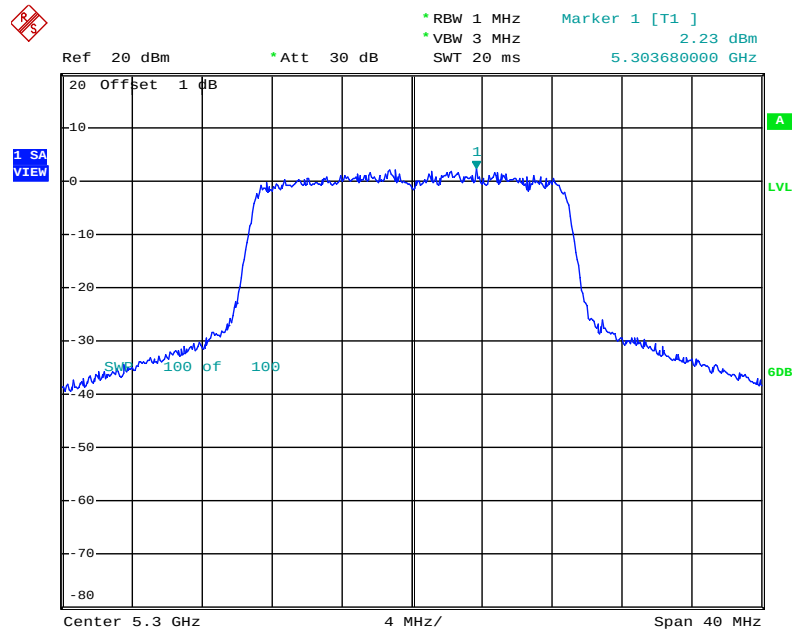
Power Density Plot on Configuration IEEE 802.11a J4 / 5320 MHz



Date: 13.JUL.2011 02:55:41

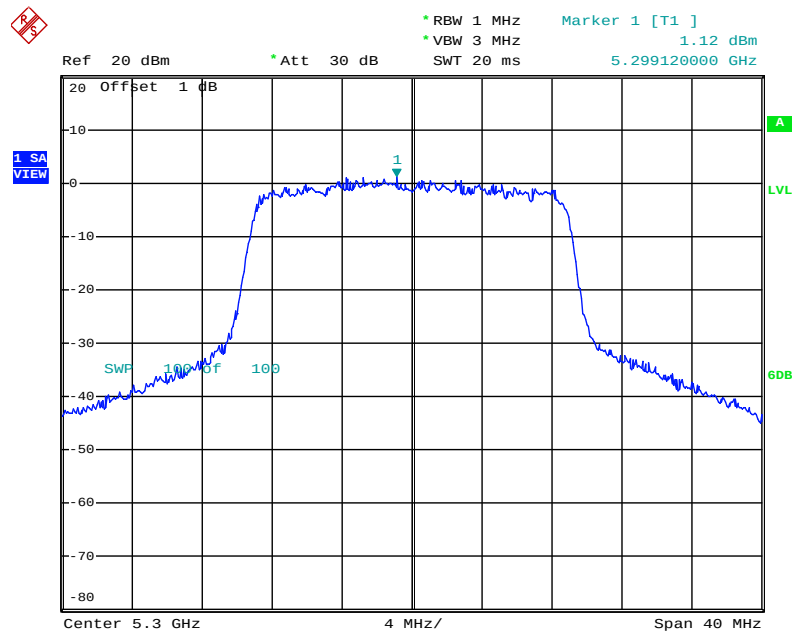
<For Mode 2 (Ant. 4)>:

Power Density Plot on Configuration IEEE 802.11n MSC8 20MHz J2 / 5300 MHz



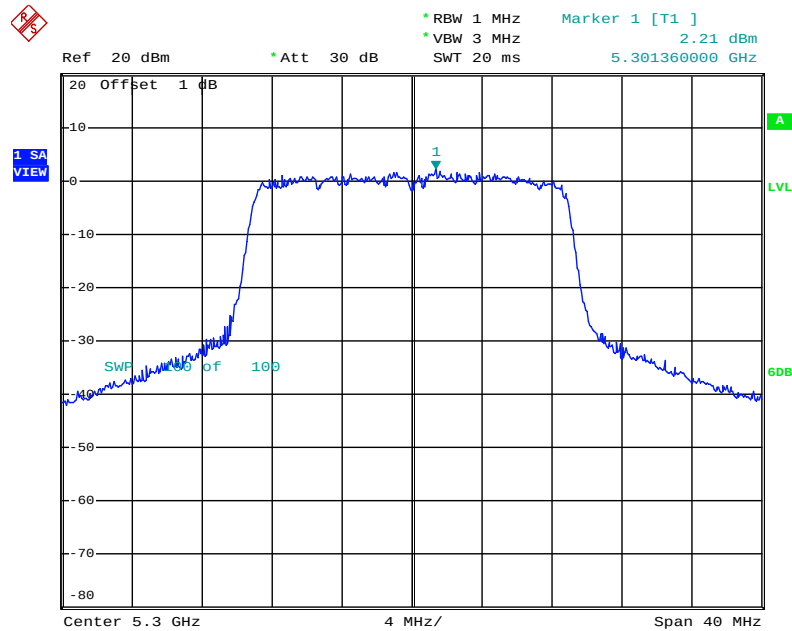
Date: 12.JUL.2011 01:54:37

Power Density Plot on Configuration IEEE 802.11n MSC8 20MHz J3 / 5300 MHz



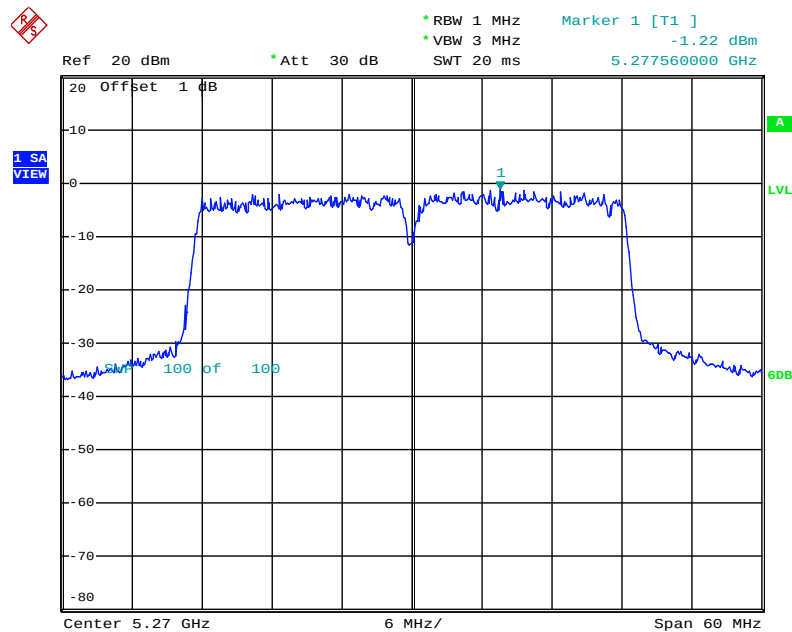
Date: 12.JUL.2011 01:52:40

Power Density Plot on Configuration IEEE 802.11n MSC8 20MHz J4 / 5300 MHz



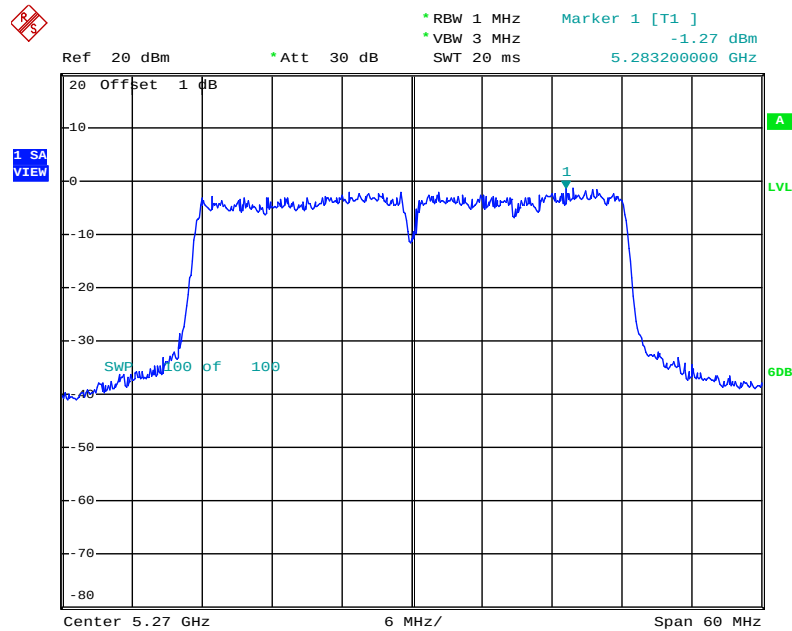
Date: 12.JUL.2011 01:50:48

Power Density Plot on Configuration IEEE 802.11n MSC8 40MHz J2 / 5270 MHz



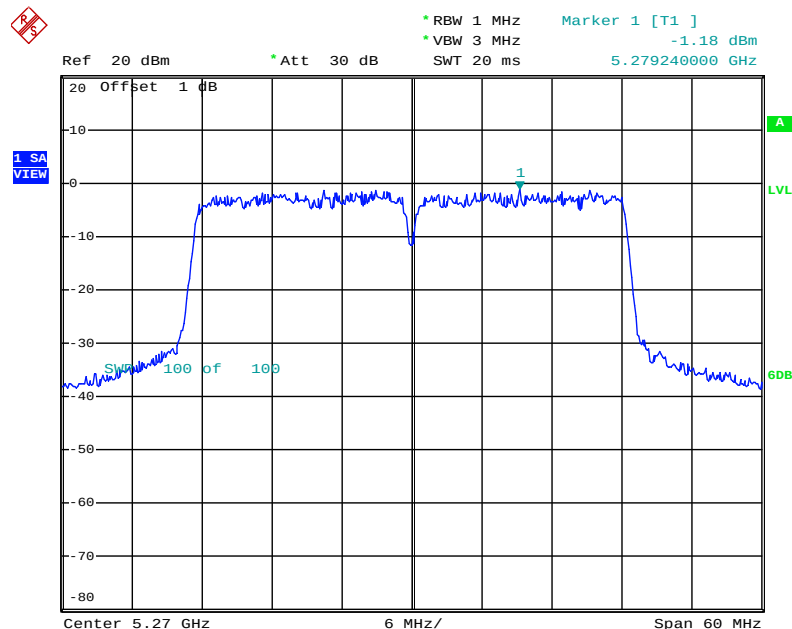
Date: 12.JUL.2011 01:29:41

Power Density Plot on Configuration IEEE 802.11n MSC8 40MHz J3 / 5270 MHz



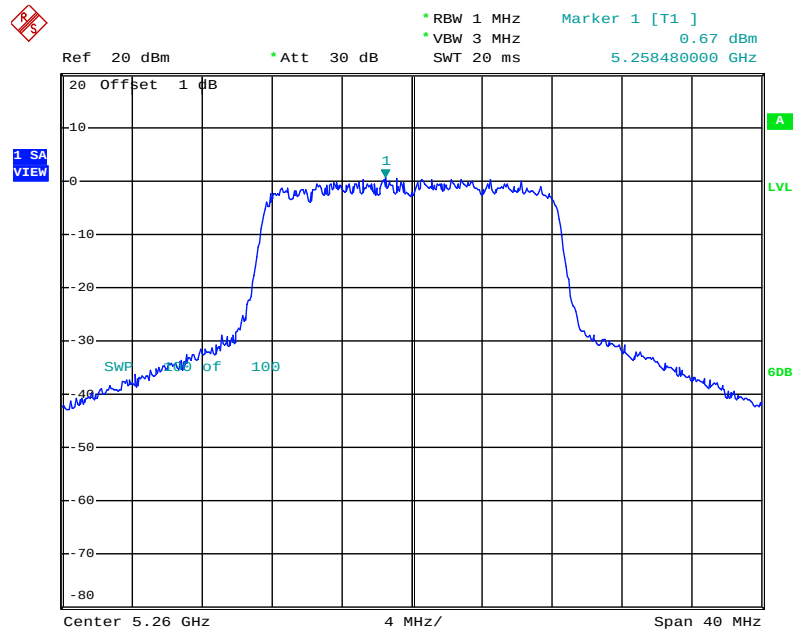
Date: 12.JUL.2011 01:34:53

Power Density Plot on Configuration IEEE 802.11n MSC8 40MHz J4 / 5270 MHz



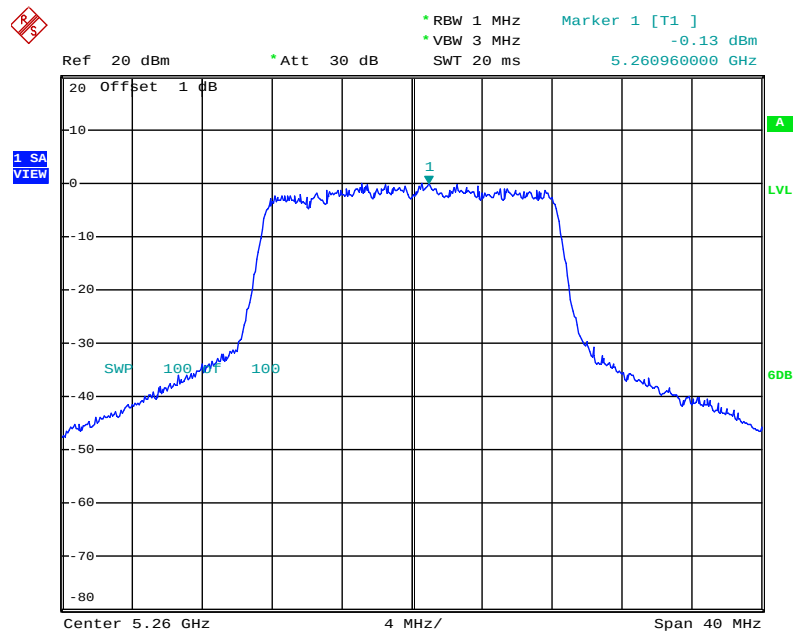
Date: 12.JUL.2011 01:36:49

Power Density Plot on Configuration IEEE 802.11a J2 / 5260 MHz



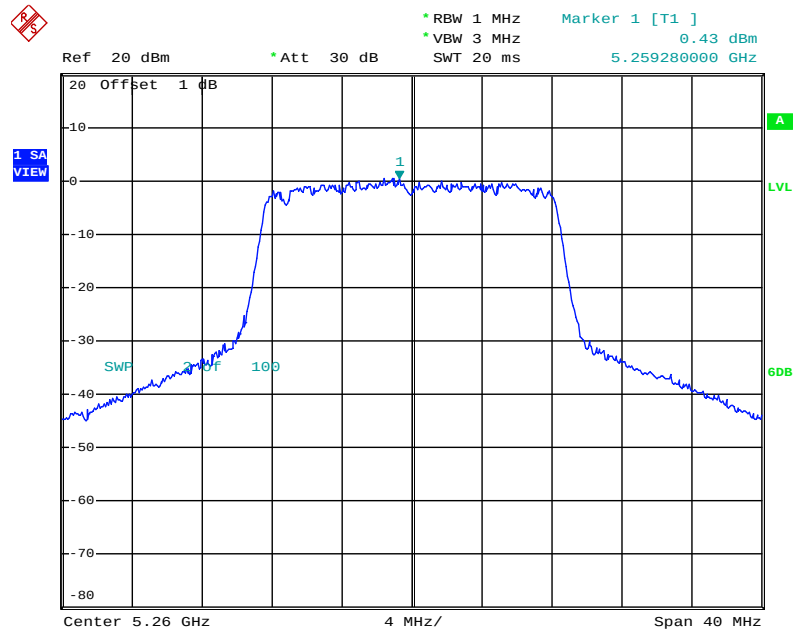
Date: 12.JUL.2011 03:54:38

Power Density Plot on Configuration IEEE 802.11a J3 / 5260 MHz



Date: 12.JUL.2011 03:53:57

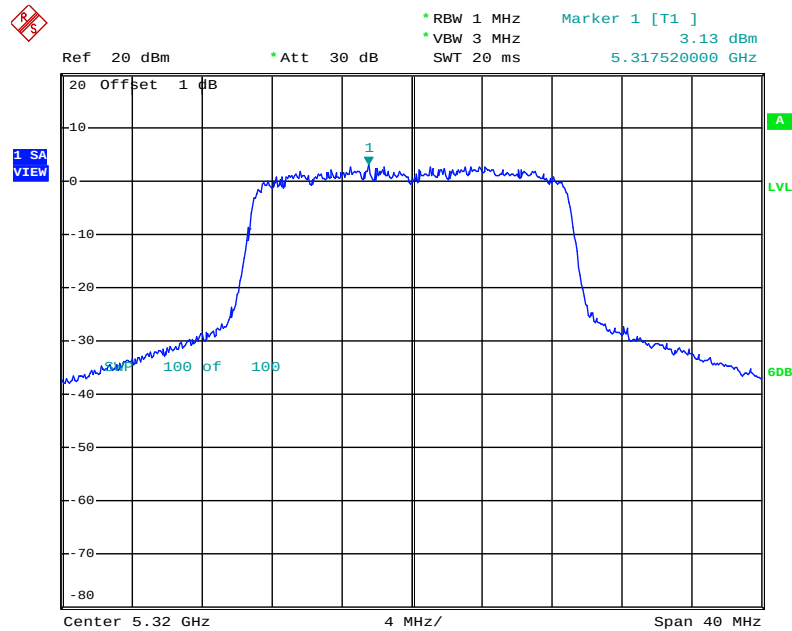
Power Density Plot on Configuration IEEE 802.11a J4 / 5260 MHz



Date: 12.JUL.2011 03:53:00

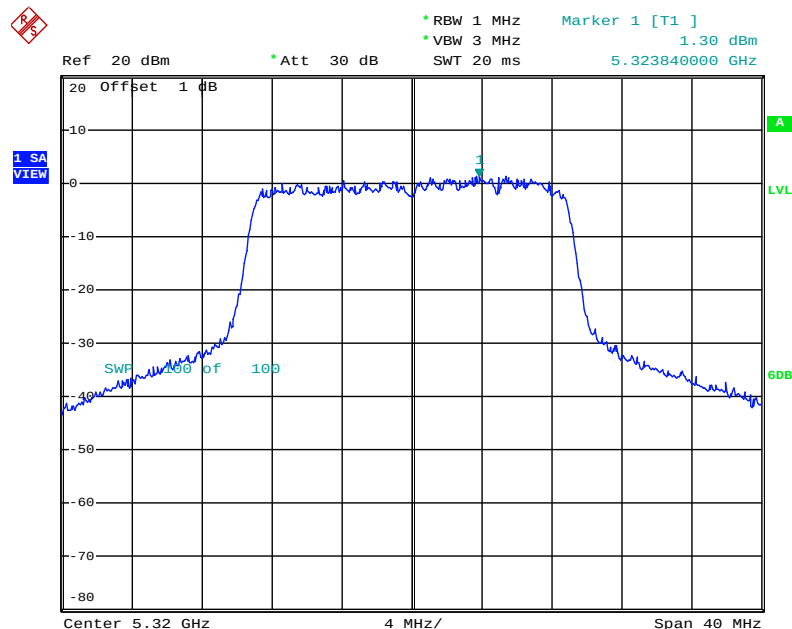
<For Mode 3 (Ant. 7)>:

Power Density Plot on Configuration IEEE 802.11n MSC8 20MHz J2 / 5320 MHz



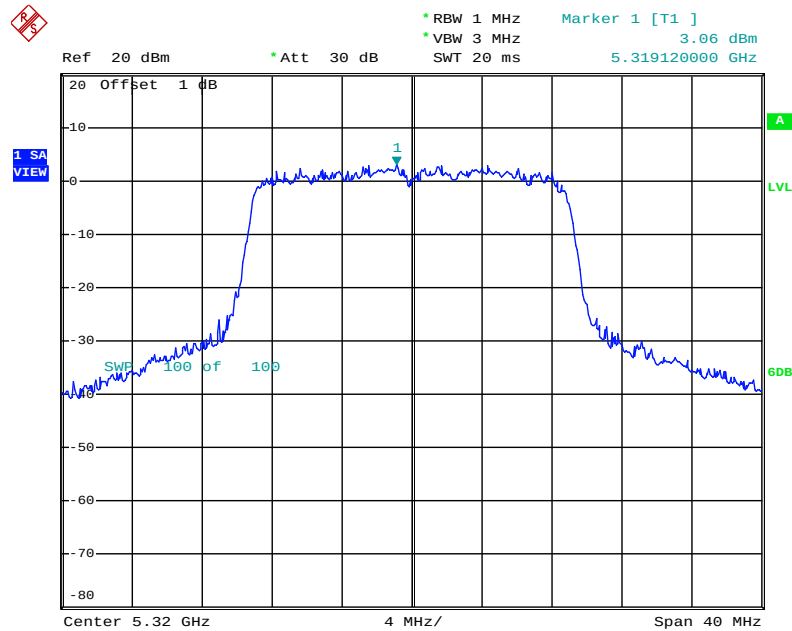
Date: 12.JUL.2011 02:50:42

Power Density Plot on Configuration IEEE 802.11n MSC8 20MHz J3 / 5320 MHz



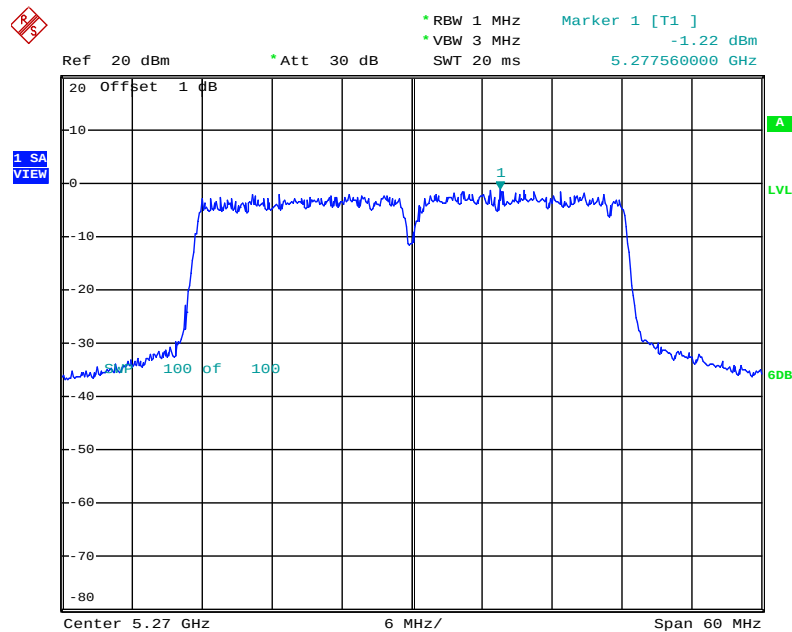
Date: 12.JUL.2011 02:53:36

Power Density Plot on Configuration IEEE 802.11n MSC8 20MHz J4 / 5320 MHz



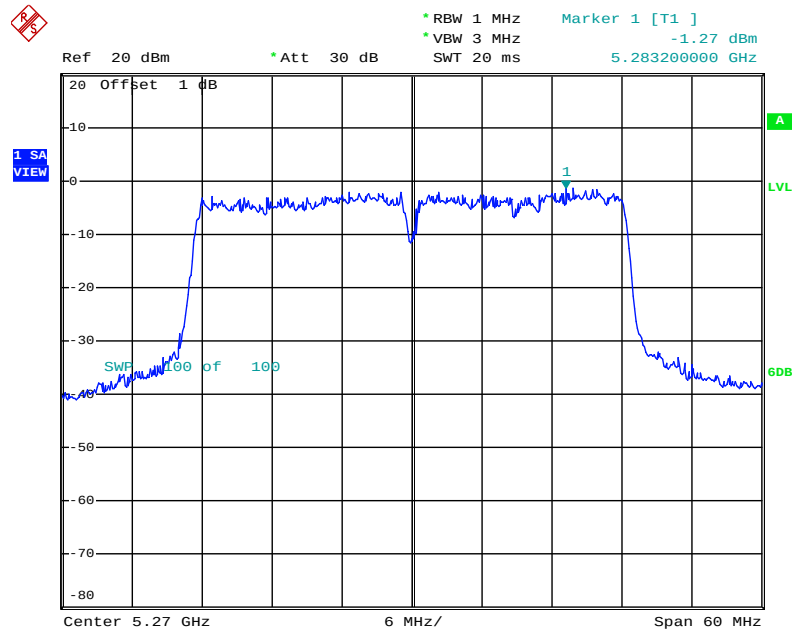
Date: 12.JUL.2011 02:54:48

Power Density Plot on Configuration IEEE 802.11n MSC8 40MHz J2 / 5270 MHz



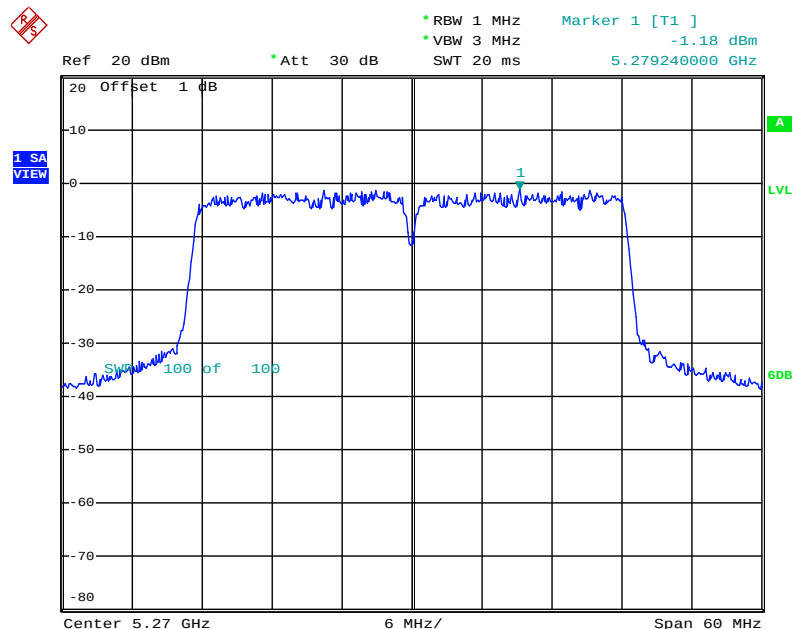
Date: 12.JUL.2011 01:29:41

Power Density Plot on Configuration IEEE 802.11n MSC8 40MHz J3 / 5270 MHz



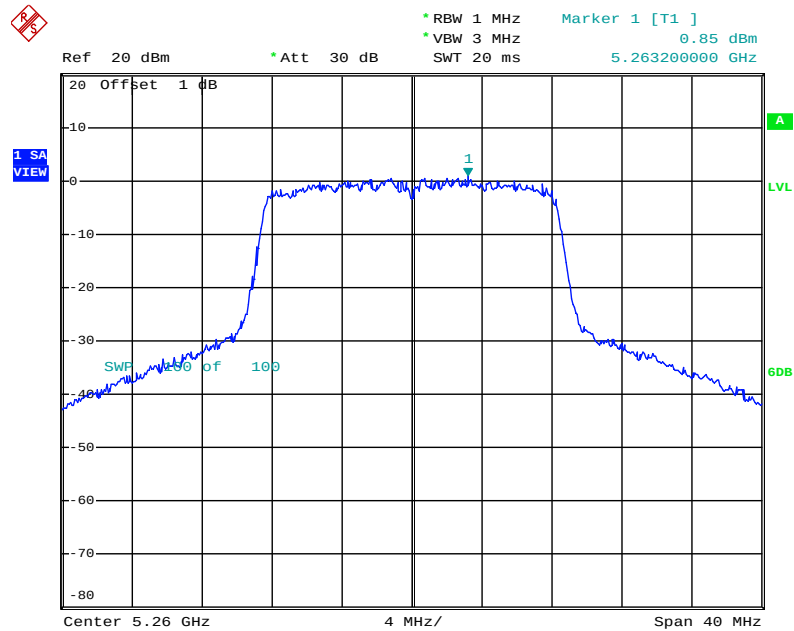
Date: 12.JUL.2011 01:34:53

Power Density Plot on Configuration IEEE 802.11n MSC8 40MHz J4 / 5270 MHz



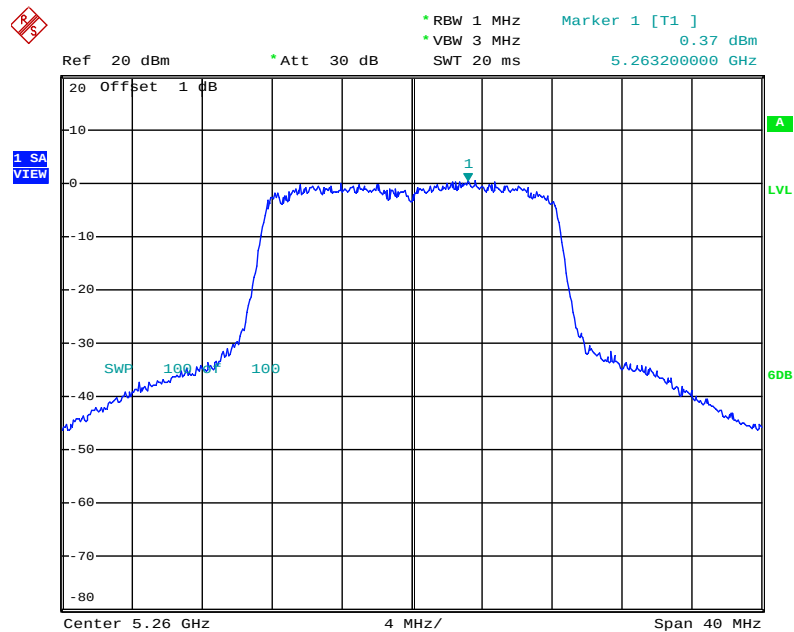
Date: 12.JUL.2011 01:36:49

Power Density Plot on Configuration IEEE 802.11a J2 / 5260 MHz



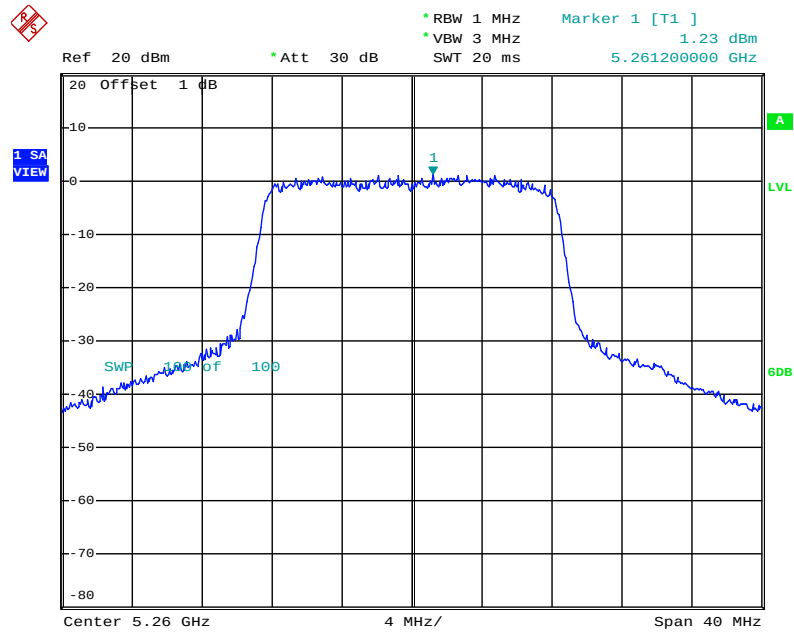
Date: 12.JUL.2011 02:12:58

Power Density Plot on Configuration IEEE 802.11a J3 / 5260 MHz



Date: 12.JUL.2011 02:10:25

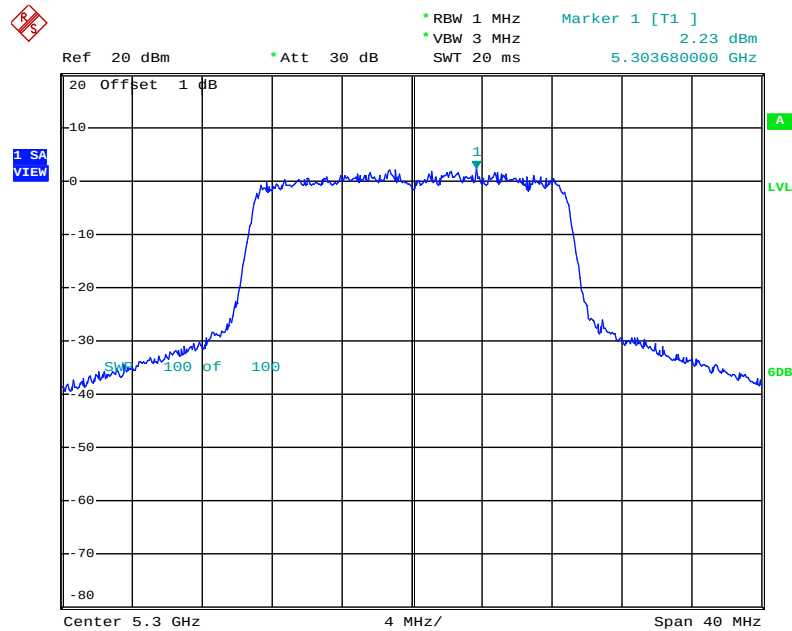
Power Density Plot on Configuration IEEE 802.11a J4 / 5260 MHz



Date: 12.JUL.2011 02:07:32

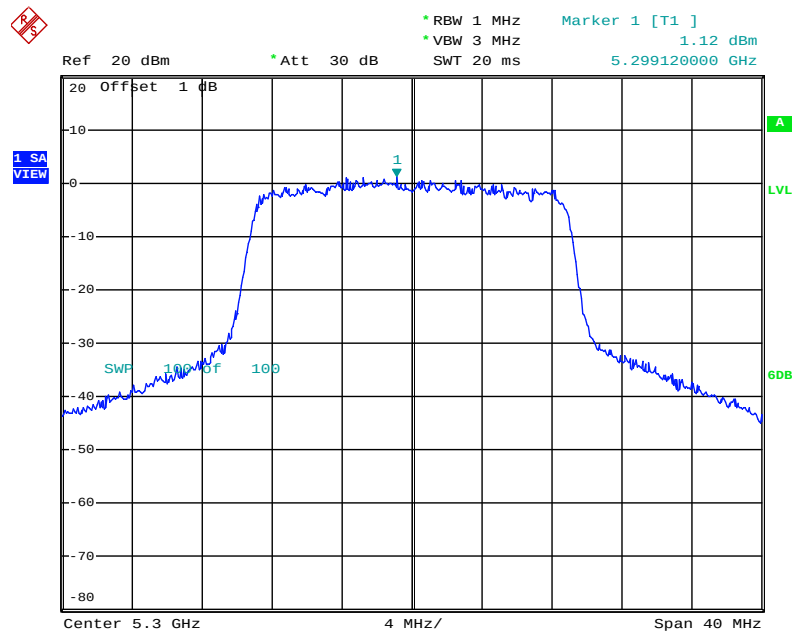
<For Mode 4 (Ant. 8)>:

Power Density Plot on Configuration IEEE 802.11n MSC8 20MHz J2 / 5300 MHz



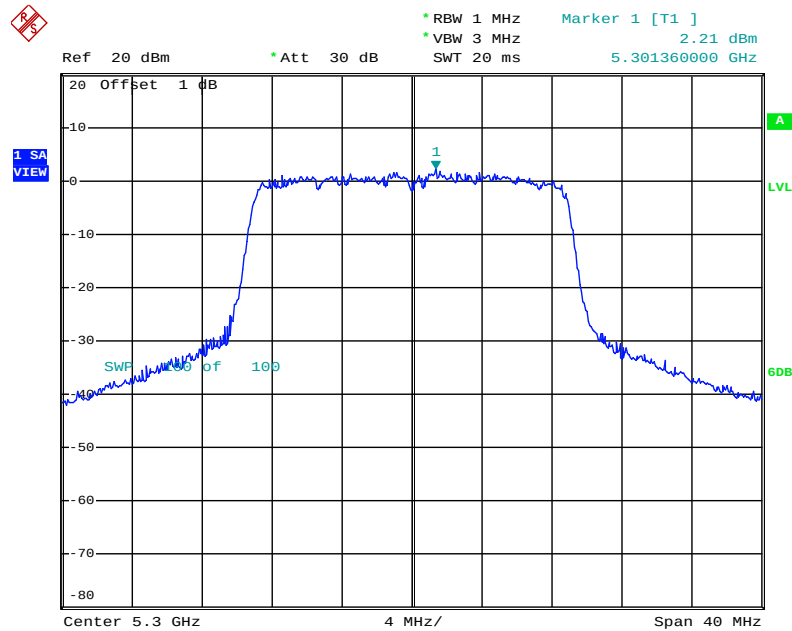
Date: 12.JUL.2011 01:54:37

Power Density Plot on Configuration IEEE 802.11n MSC8 20MHz J3 / 5300 MHz



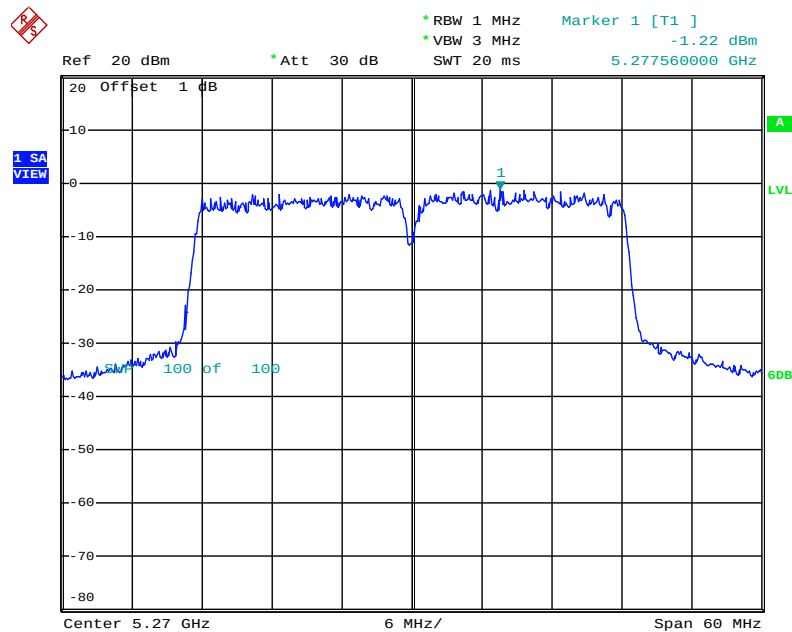
Date: 12.JUL.2011 01:52:40

Power Density Plot on Configuration IEEE 802.11n MSC8 20MHz J4 / 5300 MHz



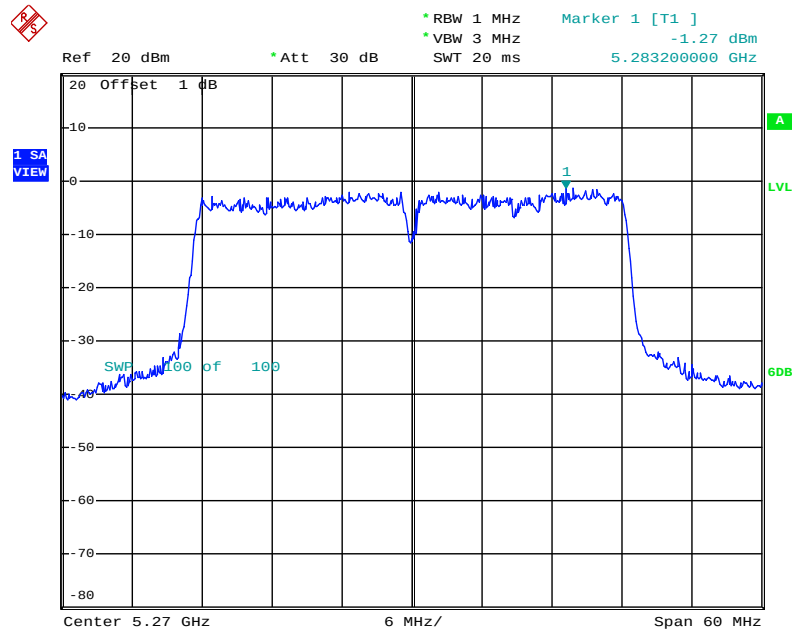
Date: 12.JUL.2011 01:50:48

Power Density Plot on Configuration IEEE 802.11n MSC8 40MHz J2 / 5270 MHz



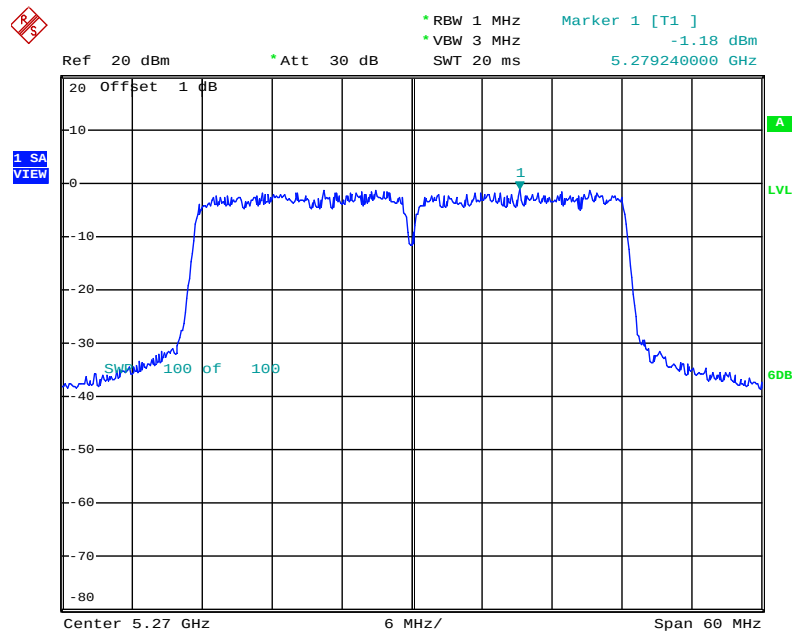
Date: 12.JUL.2011 01:29:41

Power Density Plot on Configuration IEEE 802.11n MSC8 40MHz J3 / 5270 MHz



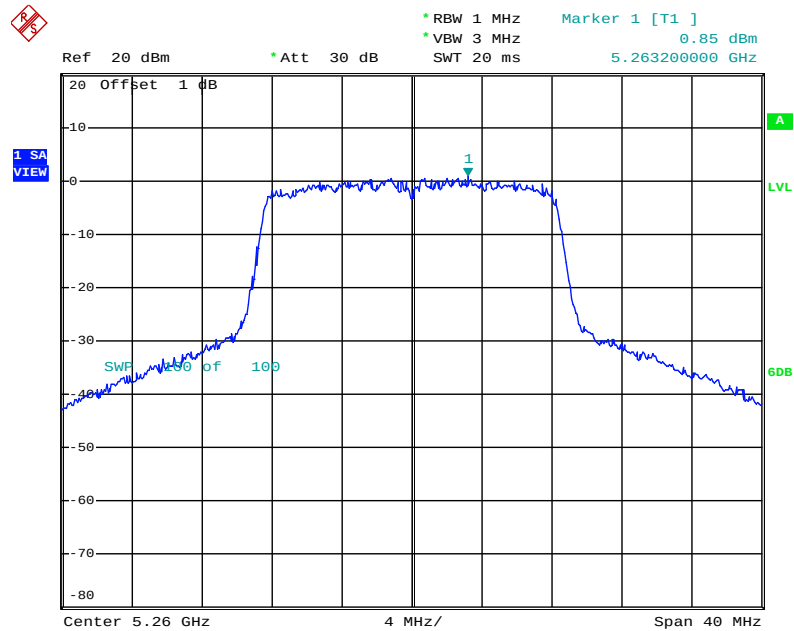
Date: 12.JUL.2011 01:34:53

Power Density Plot on Configuration IEEE 802.11n MSC8 40MHz J4 / 5270 MHz



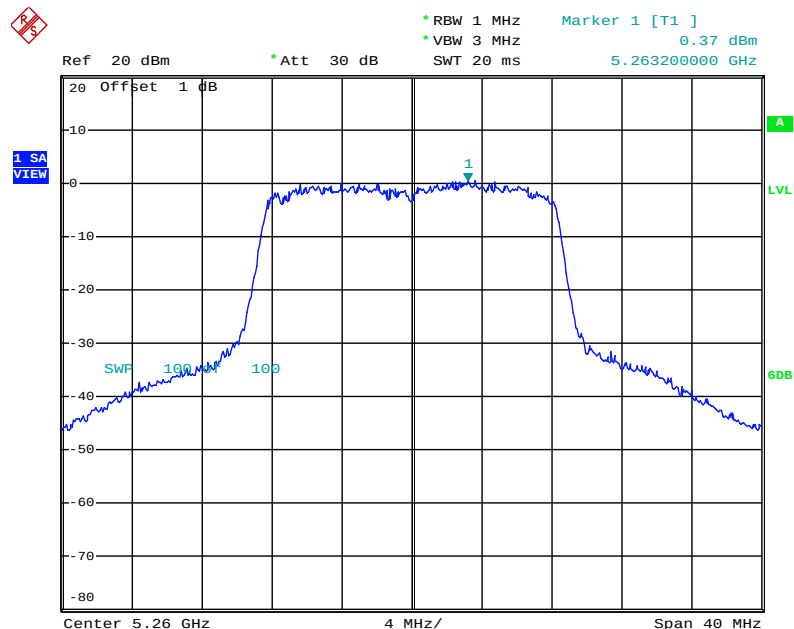
Date: 12.JUL.2011 01:36:49

Power Density Plot on Configuration IEEE 802.11a J2 / 5260 MHz



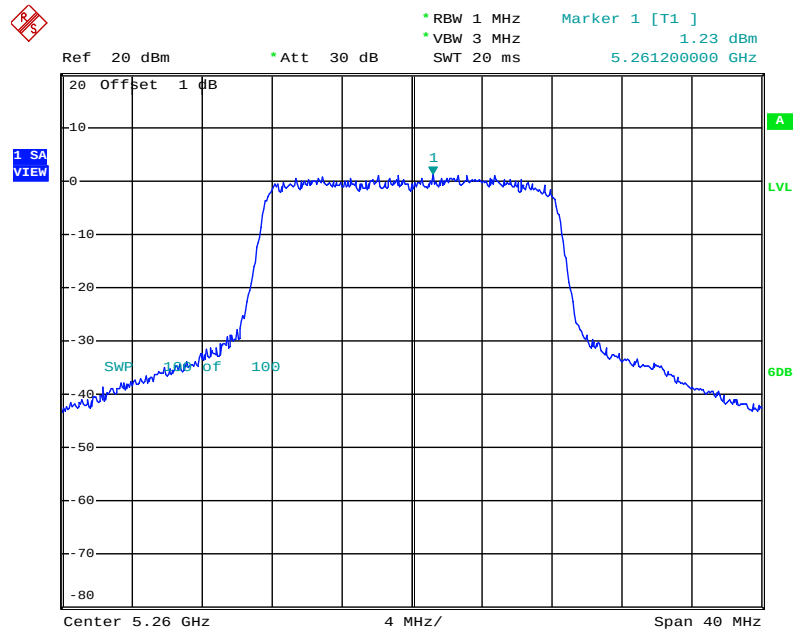
Date: 12.JUL.2011 02:12:58

Power Density Plot on Configuration IEEE 802.11a J3 / 5260 MHz



Date: 12.JUL.2011 02:10:25

Power Density Plot on Configuration IEEE 802.11a J4 / 5260 MHz



Date: 12.JUL.2011 02:07:32

4.5. Peak Excursion Measurement

4.5.1. Limit

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emissions bandwidth whichever is less.

4.5.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz (Peak Trace) / 1000 kHz (Average Trace)
VB	3000 kHz (Peak Trace) / 300 kHz (Average Trace)
Detector	Peak (Peak Trace) / Sample (Average Trace)
Trace	Max Hold
Sweep Time	60s

Cable Loss		Combiner Loss	
2.4GHz Band	5GHz Band	2.4GHz Band	5GHz Band
0.8	1.5	5.15	5.38

4.5.3. Test Procedures

1. The test procedure is the same as section 4.6.3.
2. Trace A, Set RBW = 1MHz, VBW = 3MHz, Span >26dB bandwidth, Max. hold.
3. Delta Mark trace A Maximum frequency and trace B same frequency.
4. Repeat the above procedure until measurements for all frequencies were complete.

4.5.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.6.4.

4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Test Result of Peak Excursion

<For Mode 1 (Ant. 1)>:

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n / Mode 1 (Ant. 1)

Configuration IEEE 802.11n MSC8 20MHz J2+J4

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
52	5260 MHz	6.37	13	Complies
60	5300 MHz	5.40	13	Complies
64	5320 MHz	4.81	13	Complies

Configuration IEEE 802.11n MSC8 40MHz J2+J4

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
54	5270 MHz	5.63	13	Complies
62	5310 MHz	4.35	13	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a / Mode 1 (Ant. 1)

Configuration IEEE 802.11a J2+J4

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
52	5260 MHz	5.36	13	Complies
60	5300 MHz	4.96	13	Complies
64	5320 MHz	5.72	13	Complies

Note: All the test values were listed in the report.

For plots, only the channel with maximum results was shown.

<For Mode 2 (Ant. 4)>:

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n / Mode 2 (Ant. 4)

Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
52	5260 MHz	6.45	13	Complies
60	5300 MHz	6.14	13	Complies
64	5320 MHz	5.01	13	Complies

Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
54	5270 MHz	4.31	13	Complies
62	5310 MHz	6.11	13	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a / Mode 2 (Ant. 4)

Configuration IEEE 802.11a J2+J3+J4

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
52	5260 MHz	4.45	13	Complies
60	5300 MHz	5.02	13	Complies
64	5320 MHz	4.64	13	Complies

Note: All the test values were listed in the report.

For plots, only the channel with maximum results was shown.

<For Mode 3 (Ant. 7)>:

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n / Mode 3 (Ant. 7)

Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
52	5260 MHz	6.45	13	Complies
60	5300 MHz	6.14	13	Complies
64	5320 MHz	6.06	13	Complies

Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
54	5270 MHz	4.31	13	Complies
62	5310 MHz	5.23	13	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a / Mode 3 (Ant. 7)

Configuration IEEE 802.11a J2+J3+J4

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
52	5260 MHz	4.45	13	Complies
60	5300 MHz	5.02	13	Complies
64	5320 MHz	5.19	13	Complies

Note: All the test values were listed in the report.

For plots, only the channel with maximum results was shown.

<For Mode 4 (Ant. 8)>:

Temperature	24°C	Humidity	56%
Test Engineer	Jacky Ho	Configurations	IEEE 802.11n / Mode 4 (Ant. 8)

Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
52	5260 MHz	6.45	13	Complies
60	5300 MHz	6.14	13	Complies
64	5320 MHz	5.26	13	Complies

Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
54	5270 MHz	4.31	13	Complies
62	5310 MHz	4.65	13	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Jacky Ho	Configurations	IEEE 802.11a / Mode 4 (Ant. 8)

Configuration IEEE 802.11a J2+J3+J4

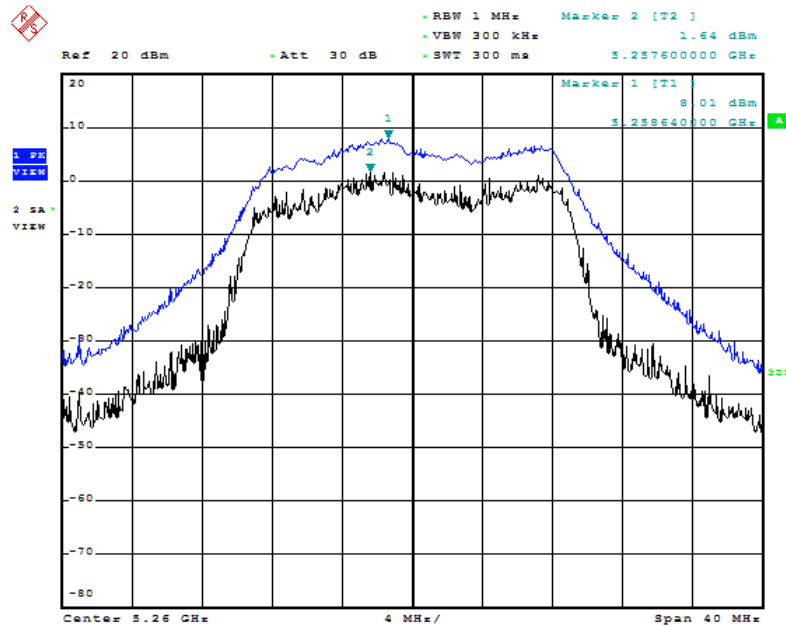
Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
52	5260 MHz	4.45	13	Complies
60	5300 MHz	5.02	13	Complies
64	5320 MHz	5.99	13	Complies

Note: All the test values were listed in the report.

For plots, only the channel with maximum results was shown.

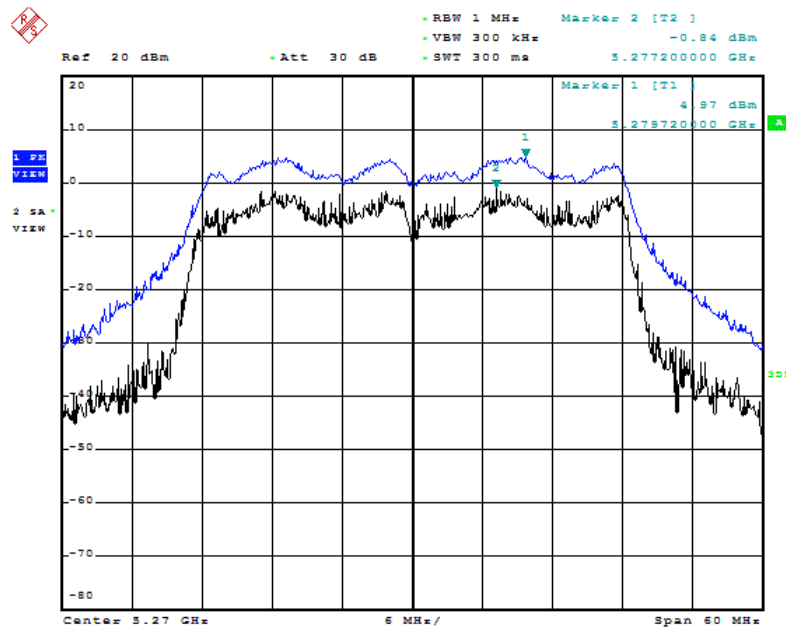
<For Mode 1 (Ant. 1)>:

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 20MHz J2+J4 / 5260 MHz



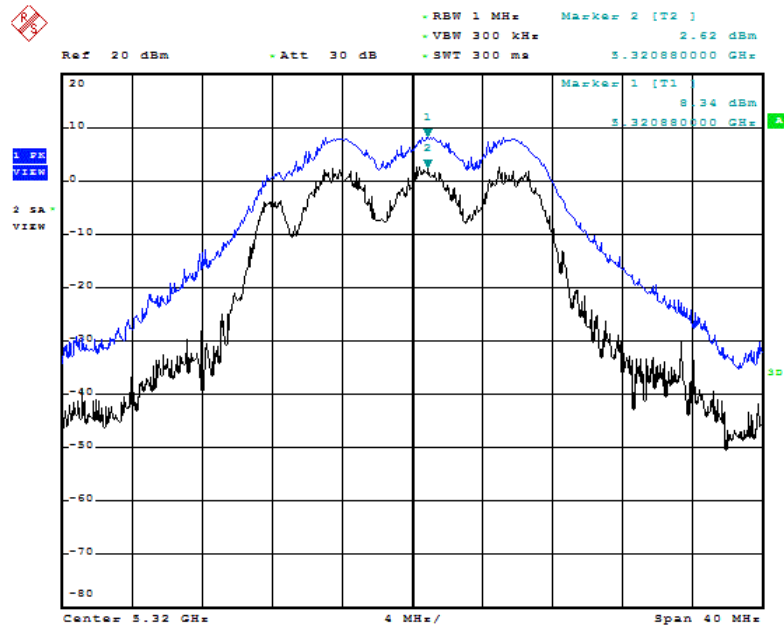
Date: 12.AUG.2010 15:25:11

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 40MHz J2+J4 / 5270 MHz



Date: 12.AUG.2010 15:38:42

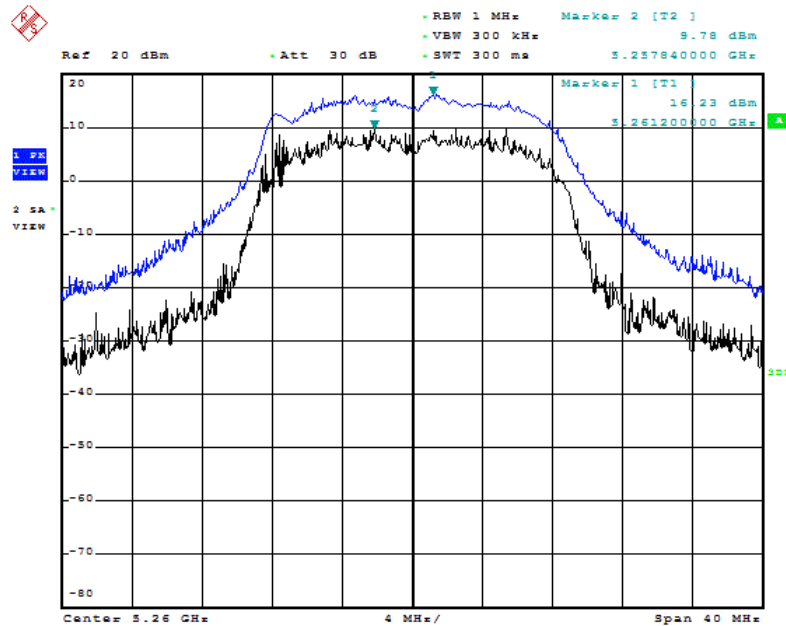
Peak Excursion Plot on Configuration IEEE 802.11a J2+J4 / 5320 MHz



Date: 12.AUG.2010 15:21:52

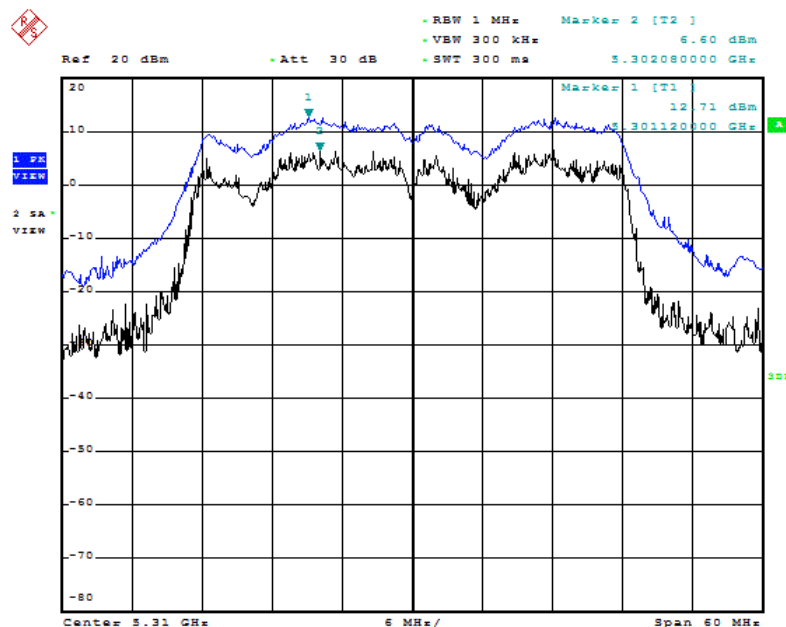
<For Mode 2 (Ant. 4)>:

Peak Excursion Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4 / 5260 MHz



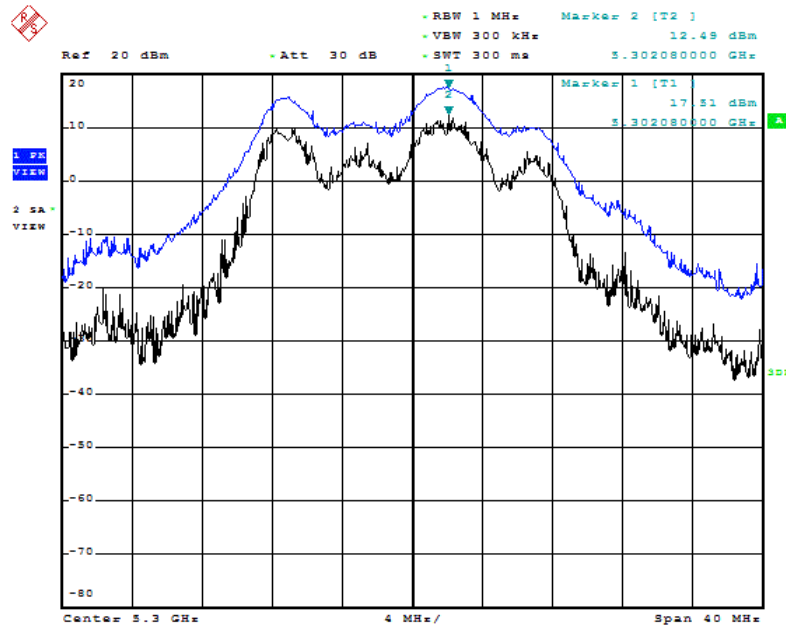
Date: 12.AUG.2010 23:42:25

Peak Excursion Plot on Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4 / 5310 MHz



Date: 12.AUG.2010 23:37:33

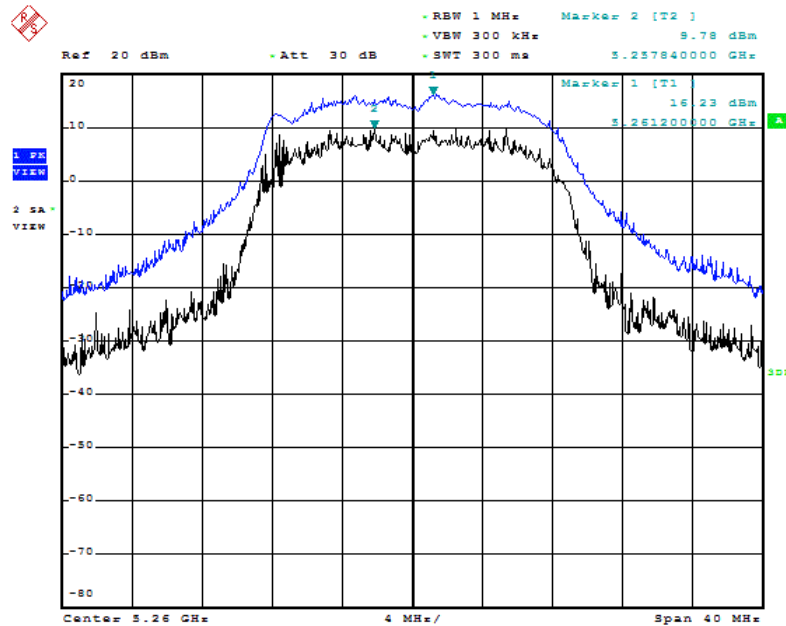
Peak Excursion Plot on Configuration IEEE 802.11a J2+J3+J4 / 5300 MHz



Date: 12.AUG.2010 23:44:40

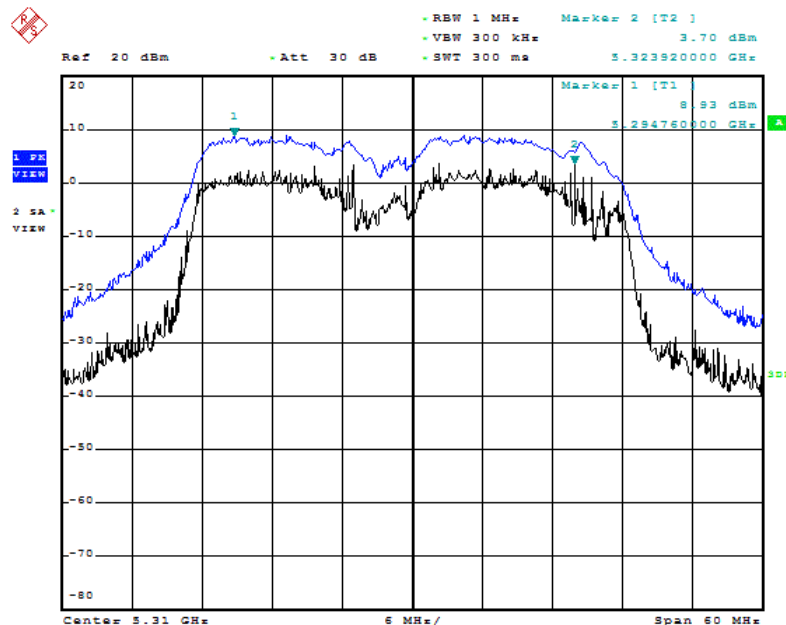
<For Mode 3 (Ant. 7)>:

Peak Excursion Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4 / 5260 MHz



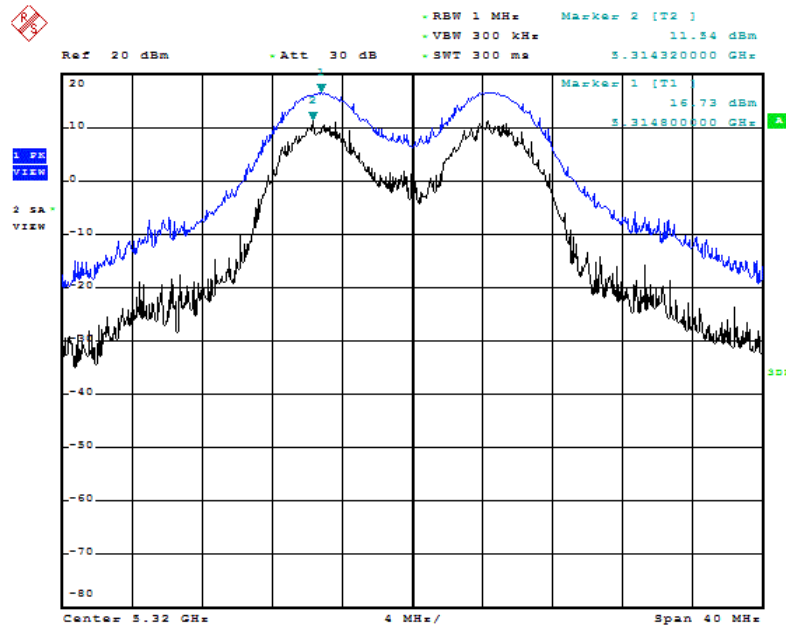
Date: 12.AUG.2010 23:42:25

Peak Excursion Plot on Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4 / 5310 MHz



Date: 2.SEP.2010 18:53:43

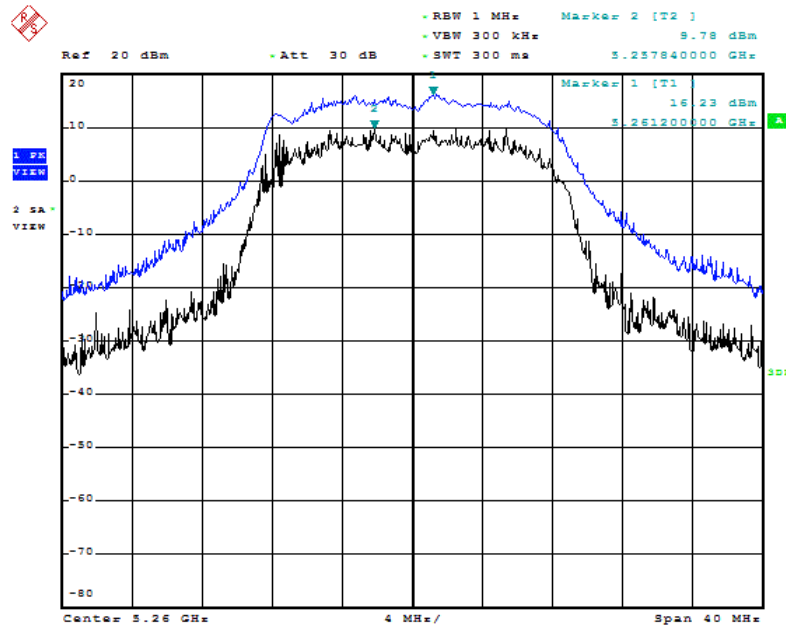
Peak Excursion Plot on Configuration IEEE 802.11a J2+J3+J4 / 5320 MHz



Date: 2.SEP.2010 18:57:36

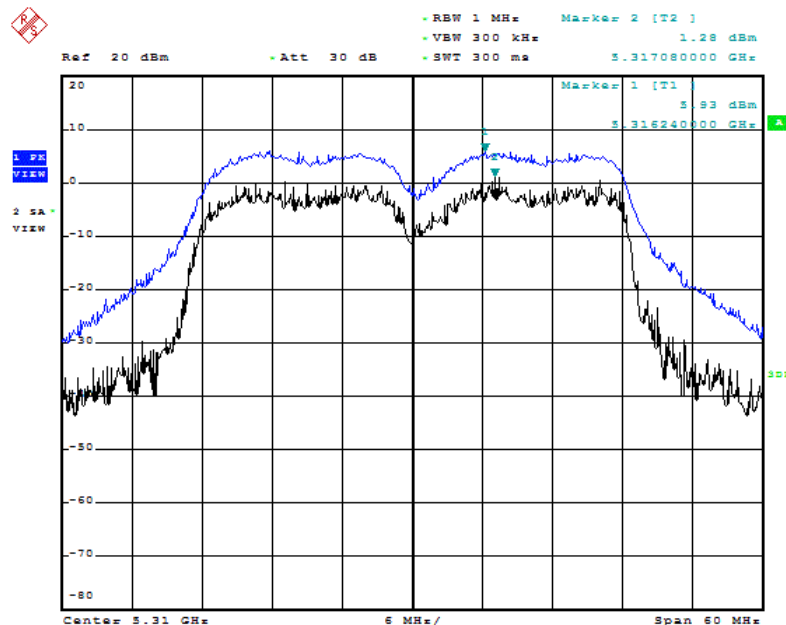
<For Mode 4 (Ant. 8)>:

Peak Excursion Plot on Configuration IEEE 802.11n MSC8 20MHz J2+J3+J4 / 5260 MHz



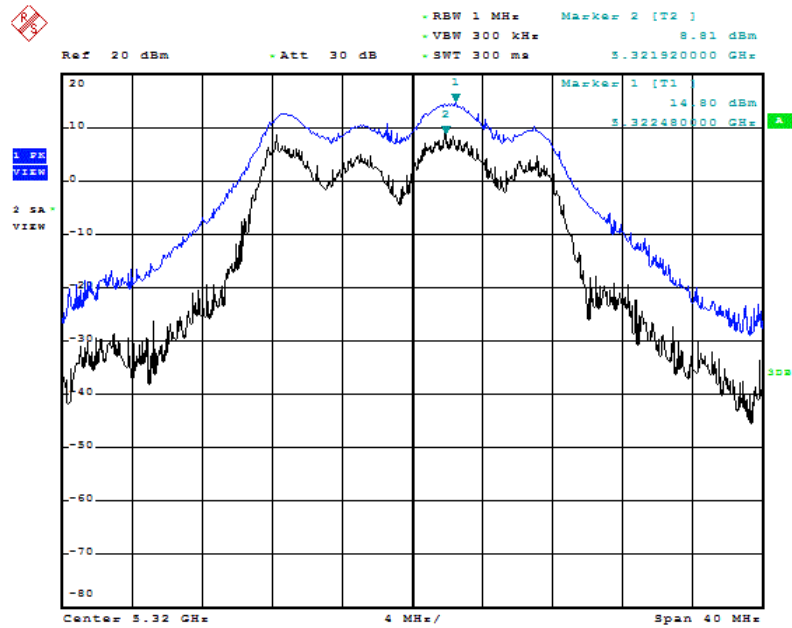
Date: 12.AUG.2010 23:42:25

Peak Excursion Plot on Configuration IEEE 802.11n MSC8 40MHz J2+J3+J4 / 5310 MHz



Date: 28.JAN.2011 15:54:13

Peak Excursion Plot on Configuration IEEE 802.11a J2+J3+J4 / 5320 MHz



Date: 28.JAN.2011 15:50:17

4.6. Radiated Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

4.6.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40 GHz
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1000KHz / 1000KHz for peak

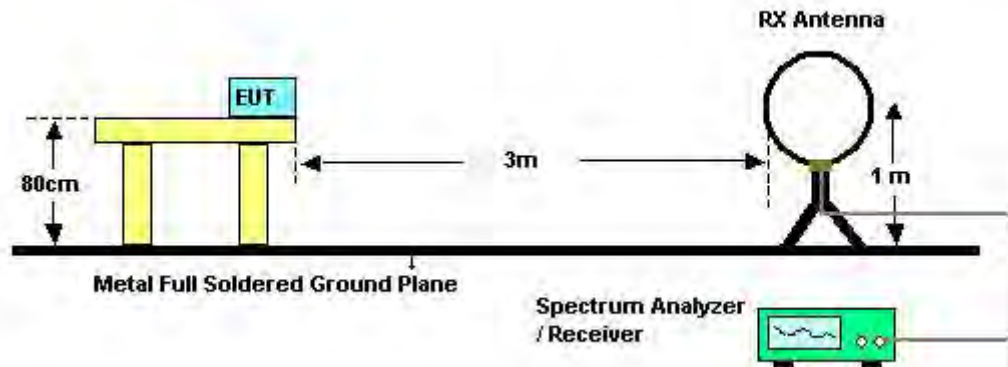
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.6.3. Test Procedures

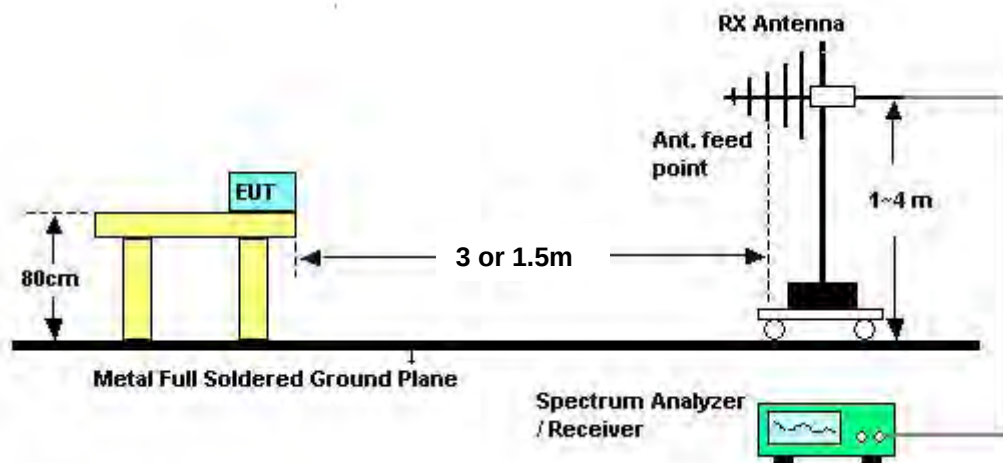
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.6.4. Test Setup Layout

For radiated emissions below 1GHz



For radiated emissions above 1GHz



Above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = $20 \log (\text{specific distance [3m]} / \text{test distance [1.5m]})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.6.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	Normal Link
Test Date	Aug. 13, 2010		

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

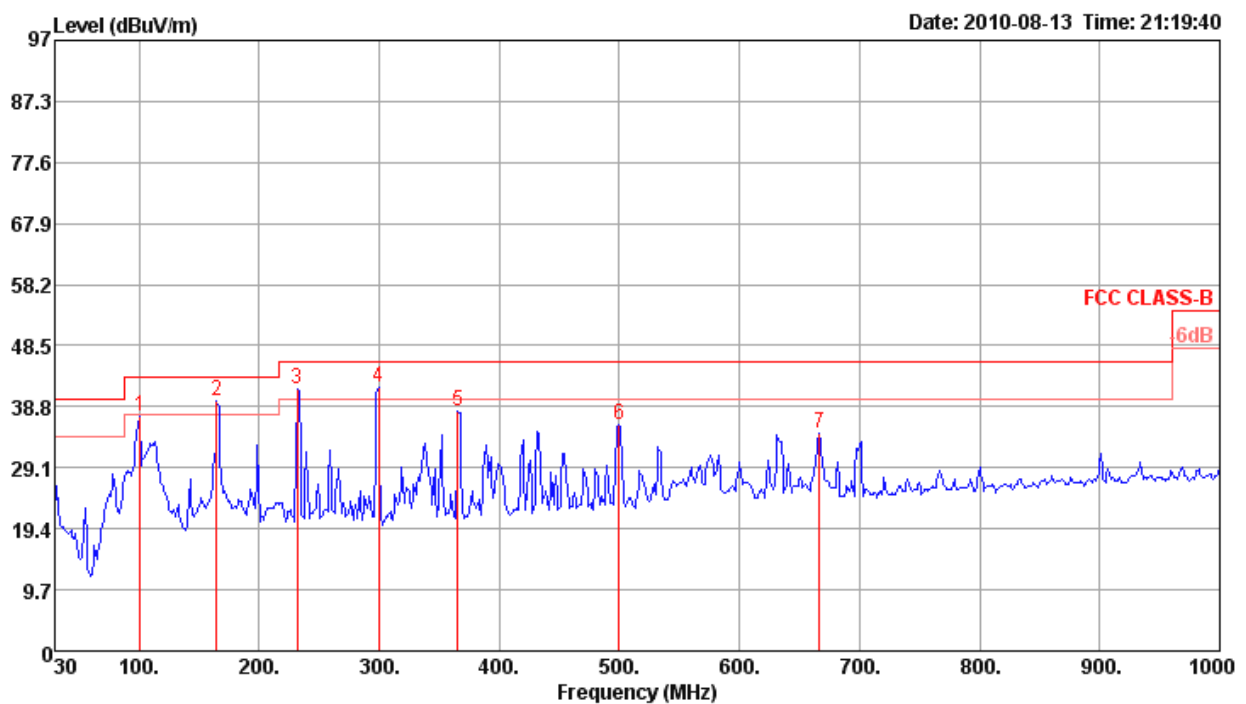
Limit line = specific limits (dBuV) + distance extrapolation factor.

4.6.8. Results of Radiated Emissions (30MHz~1GHz)

<For Mode 1 (Ant. 1)>

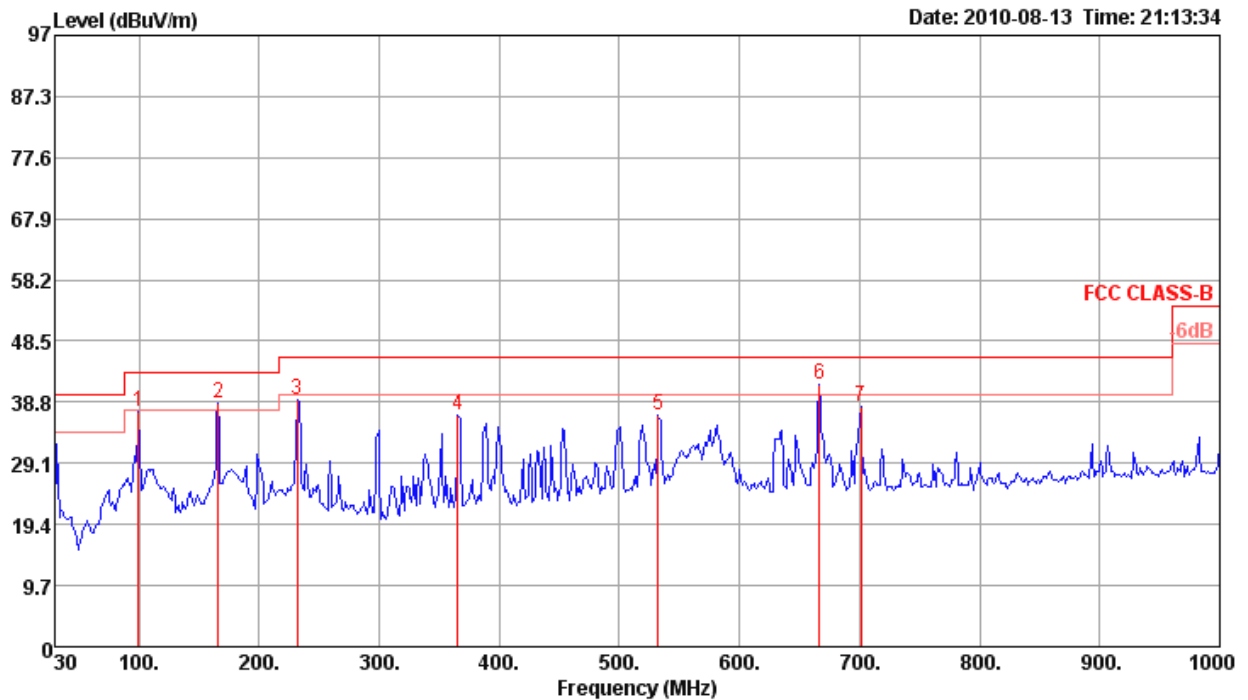
Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	TX Mode / Mode 1 (Ant. 1)

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	100.81	37.22	43.50	-6.28	52.56	1.20	27.60	11.06	0	100	Peak	HORIZONTAL
2	164.83	39.66	43.50	-3.84	53.02	1.52	27.27	12.39	0	100	Peak	HORIZONTAL
3	231.76	41.49	46.00	-4.51	55.29	1.83	27.04	11.41	0	100	Peak	HORIZONTAL
4	299.66	41.81	46.00	-4.19	53.25	2.10	26.90	13.36	0	100	Peak	HORIZONTAL
5	365.62	38.18	46.00	-7.82	48.17	2.23	27.36	15.14	0	100	Peak	HORIZONTAL
6	499.48	36.04	46.00	-9.96	43.82	2.70	28.09	17.61	0	100	Peak	HORIZONTAL
7	666.32	34.61	46.00	-11.39	40.23	3.43	28.03	18.98	0	100	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	99.84	37.19	43.50	-6.31	52.60	1.20	27.60	10.99	0	400	Peak	VERTICAL
2	165.80	38.65	43.50	-4.85	51.92	1.53	27.27	12.47	0	400	Peak	VERTICAL
3	231.76	39.21	46.00	-6.79	53.01	1.83	27.04	11.41	0	400	Peak	VERTICAL
4	365.62	36.65	46.00	-9.35	46.64	2.23	27.36	15.14	0	400	Peak	VERTICAL
5	532.46	36.64	46.00	-9.36	43.98	2.76	28.10	18.00	0	400	Peak	VERTICAL
6	666.32	41.60	46.00	-4.40	47.22	3.43	28.03	18.98	0	400	Peak	VERTICAL
7	701.24	38.19	46.00	-7.81	43.78	3.30	27.99	19.10	0	400	Peak	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.6.9. Results for Radiated Emissions (1GHz~40GHz)

<For Mode 1 (Ant. 1)>:

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 20MHz Ch 52 / J2+J4, Mode 1 (Ant. 1)
Test Date	Aug. 06, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10519.92	64.01	94.00	-29.99	55.82	4.78	35.18	38.59	272	102	Peak	HORIZONTAL
2	10520.44	49.49	74.00	-24.51	41.30	4.78	35.18	38.59	272	102	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10520.01	61.46	94.00	-32.54	53.27	4.78	35.18	38.59	275	102	Peak	VERTICAL
2	10520.27	50.66	74.00	-23.34	42.47	4.78	35.18	38.59	275	102	Average	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 20MHz Ch 60 / J2+J4, Mode 1 (Ant. 1)
Test Date	Aug. 06, 2010		

Horizontal

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10600.00	47.78	60.00	-12.22	39.59	4.73	35.10	38.56	274	100	Average	HORIZONTAL
2	10600.00	61.83	80.00	-18.17	53.64	4.73	35.10	38.56	274	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10600.00	51.62	60.00	-8.38	43.43	4.73	35.10	38.56	276	110	Average	VERTICAL
2	10600.00	65.02	80.00	-14.98	56.83	4.73	35.10	38.56	276	110	Peak	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 20MHz Ch 64 / J2+J4, Mode 1 (Ant. 1)
Test Date	Aug. 06, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10640.09	58.00	80.00	-22.00	49.81	4.70	35.05	38.54	274	105	Peak	HORIZONTAL
2	10640.17	42.77	60.00	-17.23	34.58	4.70	35.05	38.54	274	105	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10639.78	61.38	80.00	-18.62	53.19	4.70	35.05	38.54	277	100	Peak	VERTICAL
2	10639.97	45.67	60.00	-14.33	37.48	4.70	35.05	38.54	277	100	Average	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 40MHz Ch 54 / J2+J4, Mode 1 (Ant. 1)
Test Date	Aug. 06, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10539.93	40.80	74.00	-33.20	32.60	4.76	35.15	38.59	274	100	Average	HORIZONTAL
2	10539.93	57.21	94.00	-36.79	49.01	4.76	35.15	38.59	274	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10539.78	59.53	94.00	-34.47	51.33	4.76	35.15	38.59	277	100	Peak	VERTICAL
2	10540.13	42.91	74.00	-31.09	34.71	4.76	35.15	38.59	277	100	Average	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 40MHz Ch 62 / J2+J4, Mode 1 (Ant. 1)
Test Date	Aug. 06, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10619.84	52.06	80.00	-27.94	43.88	4.71	35.08	38.55	260	100	Peak	HORIZONTAL
2	10620.48	38.36	60.00	-21.64	30.18	4.71	35.08	38.55	260	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10619.70	39.23	60.00	-20.77	31.05	4.71	35.08	38.55	276	100	Average	VERTICAL
2	10619.90	54.67	80.00	-25.33	46.49	4.71	35.08	38.55	276	100	Peak	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a Ch 52 / J2+J4, Mode 1 (Ant. 1)
Test Date	Aug. 06, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10519.50	49.71	74.00	-24.29	41.52	4.78	35.18	38.59	272	101	Average	HORIZONTAL
2	10519.93	63.43	94.00	-30.57	55.24	4.78	35.18	38.59	272	101	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10519.50	52.83	74.00	-21.17	44.64	4.78	35.18	38.59	272	100	Average	VERTICAL
2	10520.33	65.70	94.00	-28.30	57.51	4.78	35.18	38.59	272	100	Peak	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a Ch 60 / J2+J4, Mode 1 (Ant. 1)
Test Date	Aug. 06, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10600.00	47.44	60.00	-12.56	39.25	4.73	35.10	38.56	274	100	Average	HORIZONTAL
2	10600.00	60.56	80.00	-19.44	52.37	4.73	35.10	38.56	274	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10600.00	52.90	60.00	-7.10	44.71	4.73	35.10	38.56	276	101	Average	VERTICAL
2	10600.00	66.69	80.00	-13.31	58.50	4.73	35.10	38.56	276	101	Peak	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a Ch 64 / J2+J4, Mode 1 (Ant. 1)
Test Date	Aug. 06, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10640.03	53.82	80.00	-26.18	45.63	4.70	35.05	38.54	273	100	Peak	HORIZONTAL
2	10640.46	39.58	60.00	-20.42	31.39	4.70	35.05	38.54	273	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10639.51	41.87	60.00	-18.13	33.68	4.70	35.05	38.54	275	112	Average	VERTICAL
2	10639.86	55.75	80.00	-24.25	47.56	4.70	35.05	38.54	275	112	Peak	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

<For Mode 2 (Ant. 4)>:

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 20MHz Ch 52 / J2+J3+J4, Mode 2 (Ant. 4)
Test Date	Jul. 31, 2010		

Horizontal

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	10520.00	54.53	94.00	-39.47	42.92	6.83	35.20	39.98	17	100	Peak	HORIZONTAL
2 a	10520.00	46.53	74.00	-27.47	34.92	6.83	35.20	39.98	17	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	10519.98	54.63	94.00	-39.37	43.02	6.83	35.20	39.98	219	100	Peak	VERTICAL
2 a	10519.98	45.63	74.00	-28.37	34.02	6.83	35.20	39.98	219	100	Average	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 20MHz Ch 60 / J2+J3+J4, Mode 2 (Ant. 4)
Test Date	Jul. 26, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1	10600.40	39.67	60.00	-20.33	31.60	5.11	38.38	35.42	298	100 Average	HORIZONTAL
2	10600.44	52.07	80.00	-27.93	44.00	5.11	38.38	35.42	298	100 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1	10600.00	40.66	60.00	-19.34	32.59	5.11	38.38	35.42	50	100 Average	VERTICAL
2	10600.41	52.76	80.00	-27.24	44.69	5.11	38.38	35.42	50	100 Peak	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 20MHz Ch 64 / J2+J3+J4, Mode 2 (Ant. 4)
Test Date	Jul. 26, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1	10639.42	38.05	60.00	-21.95	29.95	5.12	38.37	35.39	318	100 Average	HORIZONTAL
2	10639.57	49.95	80.00	-30.05	41.85	5.12	38.37	35.39	318	100 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1	10640.78	50.78	80.00	-29.22	42.68	5.12	38.37	35.39	260	100 Peak	VERTICAL
2	10640.86	36.66	60.00	-23.34	28.56	5.12	38.37	35.39	260	100 Average	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 40MHz Ch 54 / J2+J3+J4, Mode 2 (Ant. 4)
Test Date	Jul. 26, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10539.42	37.77	74.00	-36.23	29.77	5.09	38.39	35.48	132	100	Average	HORIZONTAL
2	10539.46	50.40	94.00	-43.60	42.40	5.09	38.39	35.48	132	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10539.10	36.04	74.00	-37.96	28.04	5.09	38.39	35.48	136	100	Average	VERTICAL
2	10540.61	49.87	94.00	-44.13	41.87	5.09	38.39	35.48	136	100	Peak	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 40MHz Ch 62 / J2+J3+J4, Mode 2 (Ant. 4)
Test Date	Jul. 26, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1	10620.13	50.00	80.00	-30.00	41.93	5.11	38.38	35.42	49	116 Peak	HORIZONTAL
2	10620.15	37.72	60.00	-22.28	29.65	5.11	38.38	35.42	49	116 Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1	10619.87	50.65	80.00	-29.35	42.58	5.11	38.38	35.42	118	137 Peak	VERTICAL
2	10620.81	37.80	60.00	-22.20	29.73	5.11	38.38	35.42	118	137 Average	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a Ch 52 / J2+J3+J4, Mode 2 (Ant. 4)
Test Date	Jul. 31, 2010		

Horizontal

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	10520.00	54.80	94.00	-39.20	43.19	6.83	35.20	39.98	48	100	Peak	HORIZONTAL
2 a	10520.00	46.80	74.00	-27.20	35.19	6.83	35.20	39.98	48	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	10519.99	53.89	94.00	-40.11	42.28	6.83	35.20	39.98	190	100	Peak	VERTICAL
2 a	10519.99	45.89	74.00	-28.11	34.28	6.83	35.20	39.98	190	100	Average	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a Ch 60 / J2+J3+J4, Mode 2 (Ant. 4)
Test Date	Jul. 31, 2010		

Horizontal

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10600.00	38.03	60.00	-21.97	29.84	4.73	35.10	38.56	218	106	Average	HORIZONTAL
2	10600.00	48.77	80.00	-31.23	40.58	4.73	35.10	38.56	218	106	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10600.00	38.51	60.00	-21.49	30.32	4.73	35.10	38.56	164	102	Average	VERTICAL
2	10600.00	50.18	80.00	-29.82	41.99	4.73	35.10	38.56	164	102	Peak	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a Ch 64 / J2+J3+J4, Mode 2 (Ant. 4)
Test Date	Jul. 31, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10640.22	51.82	80.00	-28.18	43.63	4.70	35.05	38.54	199	113	Peak	HORIZONTAL
2	10640.49	38.75	60.00	-21.25	30.56	4.70	35.05	38.54	199	113	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10639.82	52.23	80.00	-27.77	44.04	4.70	35.05	38.54	205	126	Peak	VERTICAL
2	10640.50	38.47	60.00	-21.53	30.28	4.70	35.05	38.54	205	126	Average	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

<For Mode 3 (Ant. 7)>:

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 20MHz Ch 52 / J2+J3+J4, Mode 3 (Ant. 7)
Test Date	Sep. 01, 2010		

Horizontal

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10518.37	57.42	94.00	-36.58	49.23	4.78	35.18	38.59	304	100	Peak	HORIZONTAL
2	10518.89	43.95	74.00	-30.05	35.76	4.78	35.18	38.59	304	100	Average	HORIZONTAL
3	15780.36	46.58	60.00	-13.42	36.93	6.11	34.94	38.48	286	100	Average	HORIZONTAL
4	15780.44	63.61	80.00	-16.39	53.96	6.11	34.94	38.48	286	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10519.94	45.77	74.00	-28.23	37.58	4.78	35.18	38.59	304	100	Average	VERTICAL
2	10519.95	61.39	94.00	-32.61	53.20	4.78	35.18	38.59	304	100	Peak	VERTICAL
3	15779.87	45.34	60.00	-14.66	35.69	6.11	34.94	38.48	300	100	Average	VERTICAL
4	15779.96	61.85	80.00	-18.15	52.20	6.11	34.94	38.48	300	100	Peak	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 20MHz Ch 60 / J2+J3+J4, Mode 3 (Ant. 7)
Test Date	Sep. 01, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10600.00	42.75	60.00	-17.25	34.56	4.73	35.10	38.56	305	100	Average	HORIZONTAL
2	10600.00	56.35	80.00	-23.65	48.16	4.73	35.10	38.56	305	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10600.00	43.74	60.00	-16.26	35.55	4.73	35.10	38.56	289	100	Average	VERTICAL
2	10600.00	58.73	80.00	-21.27	50.54	4.73	35.10	38.56	289	100	Peak	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 20MHz Ch 64 / J2+J3+J4, Mode 3 (Ant. 7)
Test Date	Sep. 01, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10639.63	39.09	60.00	-20.91	30.90	4.70	35.05	38.54	285	100	Average	HORIZONTAL
2	10640.05	55.21	80.00	-24.79	47.02	4.70	35.05	38.54	285	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10639.50	40.51	60.00	-19.49	32.32	4.70	35.05	38.54	290	100	Average	VERTICAL
2	10639.99	57.32	80.00	-22.68	49.13	4.70	35.05	38.54	290	100	Peak	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 40MHz Ch 54 / J2+J3+J4, Mode 3 (Ant. 7)
Test Date	Sep. 01, 2010		

Horizontal

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10539.60	39.04	74.00	-34.96	30.84	4.76	35.15	38.59	312	100	Average	HORIZONTAL
2	10540.16	52.97	94.00	-41.03	44.77	4.76	35.15	38.59	312	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10547.35	56.33	94.00	-37.67	48.14	4.76	35.15	38.58	290	100	Peak	VERTICAL
2	10547.59	41.47	74.00	-32.53	33.28	4.76	35.15	38.58	290	100	Average	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 40MHz Ch 62 / J2+J3+J4, Mode 3 (Ant. 7)
Test Date	Sep. 01, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10619.57	50.34	80.00	-29.66	42.16	4.71	35.08	38.55	314	100	Peak	HORIZONTAL
2	10619.57	36.16	60.00	-23.84	27.98	4.71	35.08	38.55	314	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10619.59	37.48	60.00	-22.52	29.30	4.71	35.08	38.55	288	100	Average	VERTICAL
2	10619.91	53.10	80.00	-26.90	44.92	4.71	35.08	38.55	288	100	Peak	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a Ch 52 / J2+J3+J4, Mode 3 (Ant. 7)
Test Date	Sep. 01, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10517.91	46.00	74.00	-28.00	37.81	4.78	35.18	38.59	285	100	Average	HORIZONTAL
2	10518.33	60.35	94.00	-33.65	52.16	4.78	35.18	38.59	285	100	Peak	HORIZONTAL
3	15780.25	59.98	80.00	-20.02	50.33	6.11	34.94	38.48	295	100	Peak	HORIZONTAL
4	15780.50	43.47	60.00	-16.53	33.82	6.11	34.94	38.48	295	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10519.50	46.96	74.00	-27.04	38.77	4.78	35.18	38.59	305	100	Average	VERTICAL
2	10519.54	60.72	94.00	-33.28	52.53	4.78	35.18	38.59	305	100	Peak	VERTICAL
3	15780.35	60.45	80.00	-19.55	50.80	6.11	34.94	38.48	295	100	Peak	VERTICAL
4	15780.50	44.77	60.00	-15.23	35.12	6.11	34.94	38.48	295	100	Average	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a Ch 60 / J2+J3+J4, Mode 3 (Ant. 7)
Test Date	Sep. 01, 2010		

Horizontal

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10607.16	59.84	80.00	-20.16	51.65	4.71	35.08	38.56	293	100	Peak	HORIZONTAL
2	10607.20	44.58	60.00	-15.42	36.39	4.71	35.08	38.56	293	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10607.32	60.38	80.00	-19.62	52.19	4.71	35.08	38.56	290	100	Peak	VERTICAL
2	10607.46	45.88	60.00	-14.12	37.69	4.71	35.08	38.56	290	100	Average	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a Ch 64 / J2+J3+J4, Mode 3 (Ant. 7)
Test Date	Sep. 01, 2010		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10641.46	40.26	60.00	-19.74	32.07	4.70	35.05	38.54	298	100	Average	HORIZONTAL
2	10641.92	54.54	80.00	-25.46	46.35	4.70	35.05	38.54	298	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	10643.52	54.59	80.00	-25.41	46.40	4.70	35.05	38.54	302	100	Peak	VERTICAL
2	10643.88	40.33	60.00	-19.67	32.14	4.70	35.05	38.54	302	100	Average	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

<For Mode 4 (Ant. 8)>:

Temperature	26°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MSC8 20MHz Ch 52 / J2+J3+J4, Mode 4 (Ant. 8)
Test Date	Jan. 26, 2011		

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1	15778.80	49.32	60.00	-10.68	40.70	6.63	37.41	35.42	259	104 Average	HORIZONTAL
2	15778.95	66.80	80.00	-13.20	58.18	6.63	37.41	35.42	259	104 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1	15777.32	66.89	80.00	-13.11	58.27	6.63	37.41	35.42	267	100 Peak	VERTICAL
2	15777.57	48.38	60.00	-11.62	39.76	6.63	37.41	35.42	267	100 Average	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MSC8 20MHz Ch 60 / J2+J3+J4, Mode 4 (Ant. 8)
Test Date	Jan. 26, 2011		

Horizontal

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	deg	cm		
1	10604.55	40.85	60.00	-19.15	32.78	5.11	38.38	35.42	243	116	Average	HORIZONTAL
2	10604.55	52.47	80.00	-27.53	44.40	5.11	38.38	35.42	243	116	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	deg	cm		
1	10604.53	40.46	60.00	-19.54	32.39	5.11	38.38	35.42	288	100	Average	VERTICAL
2	10604.55	54.16	80.00	-25.84	46.09	5.11	38.38	35.42	288	100	Peak	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MSC8 20MHz Ch 64 / J2+J3+J4, Mode 4 (Ant. 8)
Test Date	Jan. 26, 2011		

Horizontal

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor				
						dB	dB/m	dB	deg	cm		
1	10639.92	38.17	60.00	-21.83	30.07	5.12	38.37	35.39	88	100	Average	HORIZONTAL
2	10640.32	50.15	80.00	-29.85	42.05	5.12	38.37	35.39	88	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor				
						dB	dB/m	dB	deg	cm		
1	10637.69	51.78	80.00	-28.22	43.68	5.12	38.37	35.39	269	100	Peak	VERTICAL
2	10638.00	39.75	60.00	-20.25	31.65	5.12	38.37	35.39	269	100	Average	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MSC8 40MHz Ch 54 / J2+J3+J4, Mode 4 (Ant. 8)
Test Date	Jan. 26, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15809.87	41.21	60.00	-18.79	32.60	6.65	37.39	35.43	105	100	Average	HORIZONTAL
2	15810.38	53.55	80.00	-26.45	44.96	6.65	37.37	35.43	0	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15809.86	54.35	80.00	-25.65	45.74	6.65	37.39	35.43	215	100	Peak	VERTICAL
2	15810.09	40.70	60.00	-19.30	32.09	6.65	37.39	35.43	215	100	Average	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MSC8 40MHz Ch 62 / J2+J3+J4, Mode 4 (Ant. 8)
Test Date	Jan. 26, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10619.97	37.01	60.00	-22.99	28.94	5.11	38.38	35.42	78	100	Average	HORIZONTAL
2	10620.41	49.51	80.00	-30.49	41.44	5.11	38.38	35.42	20	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10619.97	37.27	60.00	-22.73	29.20	5.11	38.38	35.42	188	100	Average	VERTICAL
2	10620.26	49.83	80.00	-30.17	41.76	5.11	38.38	35.42	188	100	Peak	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

Temperature	26°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11a Ch 52 / J2+J3+J4, Mode 4 (Ant. 8)
Test Date	Jan. 26, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1	15779.09	53.83	60.00	-6.17	45.21	6.63	37.41	35.42	259	106 Average	HORIZONTAL
2	15779.46	73.38	80.00	-6.62	64.76	6.63	37.41	35.42	259	106 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1	15779.50	52.13	60.00	-7.87	43.51	6.63	37.41	35.42	268	100 Average	VERTICAL
2	15779.59	71.72	80.00	-8.28	63.10	6.63	37.41	35.42	268	100 Peak	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11a Ch 60 / J2+J3+J4, Mode 4 (Ant. 8)
Test Date	Jan. 26, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10606.34	42.38	60.00	-17.62	34.31	5.11	38.38	35.42	289	113	Average	HORIZONTAL
2	10606.41	56.74	80.00	-23.26	48.67	5.11	38.38	35.42	289	113	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10606.50	43.68	60.00	-16.32	35.61	5.11	38.38	35.42	82	100	Average	VERTICAL
2	10606.50	55.66	80.00	-24.34	47.59	5.11	38.38	35.42	82	100	Peak	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11a Ch 64 / J2+J3+J4, Mode 4 (Ant. 8)
Test Date	Jan. 26, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10640.01	39.21	60.00	-20.79	31.11	5.12	38.37	35.39	103	100	Average	HORIZONTAL
2	10640.25	50.35	80.00	-29.65	42.25	5.12	38.37	35.39	103	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10635.89	53.43	80.00	-26.57	45.33	5.12	38.37	35.39	267	100	Peak	VERTICAL
2	10636.10	41.24	60.00	-18.76	33.14	5.12	38.37	35.39	267	100	Average	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

4.7. Band Edge Emissions Measurement

4.7.1. Limit

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

4.7.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (Emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1 MHz / 1 MHz for Peak

4.7.3. Test Procedures

- The test procedure is the same as section 4.6.3, only the frequency range investigated is limited to 100MHz around bandedges.
- In case the emission is fail due to the used RB/VB is too wide, marker-delta method of FCC Public Notice DA00-705 will be followed.

4.7.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.6.4.

4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

<For Mode 1 (Ant. 1)>:

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 20MHz Ch 60, 64 / J2+J4, Mode 1 (Ant. 1)
Test Date	Aug. 06, 2010		

Channel 60

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	deg	cm		
1	5302.00	130.84				3.14	0.00	33.34	0	100	Peak	VERTICAL
2	5303.20	119.15				3.14	0.00	33.34	0	100	Average	VERTICAL
3	5350.00	59.01	60.00	-0.99	22.42	3.16	0.00	33.43	0	100	Average	VERTICAL
4	5350.00	75.59	80.00	-4.41	39.00	3.16	0.00	33.43	0	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	deg	cm		
1	5322.00	126.48				3.14	0.00	33.37	0	100	Peak	VERTICAL
2	5324.60	114.92				3.15	0.00	33.37	0	100	Average	VERTICAL
3	5350.00	59.37	60.00	-0.63	22.78	3.16	0.00	33.43	0	100	Average	VERTICAL
4	5350.20	77.37	80.00	-2.63	40.78	3.16	0.00	33.43	0	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 40MHz Ch 54, 62 / J2+J4, Mode 1 (Ant. 1)
Test Date	Aug. 06, 2010		

Channel 54

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	5264.80	125.20				3.12	0.00	33.28	0	100	Peak	VERTICAL
2	5282.80	113.01				3.13	0.00	33.31	0	100	Average	VERTICAL
3	5350.00	59.05	60.00	-0.95	22.46	3.16	0.00	33.43	0	100	Average	VERTICAL
4	5350.40	71.28	80.00	-8.72	34.69	3.16	0.00	33.43	0	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5270 MHz.

Channel 62

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	5322.00	116.48				3.14	0.00	33.37	0	100	Peak	VERTICAL
2	5324.80	104.76				3.15	0.00	33.37	0	100	Average	VERTICAL
3	5350.00	59.51	60.00	-0.49	22.92	3.16	0.00	33.43	0	100	Average	VERTICAL
4	5350.00	71.72	80.00	-8.28	35.13	3.16	0.00	33.43	0	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5310 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a Ch 60, 64 / J2+J4, Mode 1 (Ant. 1)
Test Date	Aug. 06, 2010		

Channel 60

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	5303.60	119.86				3.14	0.00	33.34	360	100	Average	VERTICAL
2	5304.40	129.31				3.14	0.00	33.34	360	100	Peak	VERTICAL
3	5350.00	59.42	60.00	-0.58	22.83	3.16	0.00	33.43	360	100	Average	VERTICAL
4	5351.60	78.21	80.00	-1.79	41.62	3.16	0.00	33.43	360	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	5323.40	125.05				3.15	0.00	33.37	360	100	Peak	VERTICAL
2	5323.60	115.85				3.15	0.00	33.37	360	100	Average	VERTICAL
3	5350.00	59.40	60.00	-0.60	22.81	3.16	0.00	33.43	360	100	Average	VERTICAL
4	5351.00	77.88	80.00	-2.12	41.29	3.16	0.00	33.43	360	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

<For Mode 2 (Ant. 4)>:

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 20MHz Ch 60, 64 / J2+J3+J4, Mode 2 (Ant. 4)
Test Date	Jul. 26, 2010		

Channel 60

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5296.80	111.81				2.64	33.94	0.00	10	100	Average	VERTICAL
2	5298.40	123.52				2.64	33.94	0.00	10	100	Peak	VERTICAL
3	5350.00	59.57	60.00	-0.43	22.87	2.67	34.03	0.00	10	100	Average	VERTICAL
4	5351.60	74.52	80.00	-5.48	37.82	2.67	34.03	0.00	10	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5316.60	120.78				2.66	33.97	0.00	21	100	Peak	VERTICAL
2	5317.40	109.18				2.66	33.97	0.00	21	100	Average	VERTICAL
3	5350.00	59.70	60.00	-0.30	23.00	2.67	34.03	0.00	21	100	Average	VERTICAL
4	5350.40	77.02	80.00	-2.98	40.32	2.67	34.03	0.00	21	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 40MHz Ch 54, 62 / J2+J3+J4, Mode 2 (Ant. 4)
Test Date	Jul. 26, 2010		

Channel 54

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1	5258.00	120.95				2.62	33.85	0.00	12	100 Peak	VERTICAL
2	5277.60	107.78				2.63	33.88	0.00	12	100 Average	VERTICAL
3	5350.00	59.13	60.00	-0.87	22.43	2.67	34.03	0.00	12	100 Average	VERTICAL
4	5350.40	77.55	80.00	-2.45	40.85	2.67	34.03	0.00	12	100 Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5270 MHz.

Channel 62

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1	5314.80	102.27				2.66	33.97	0.00	12	100 Average	VERTICAL
2	5317.60	114.63				2.66	33.97	0.00	12	100 Peak	VERTICAL
3	5350.00	59.09	60.00	-0.91	22.39	2.67	34.03	0.00	12	100 Average	VERTICAL
4	5351.60	78.13	80.00	-1.87	41.43	2.67	34.03	0.00	12	100 Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5310 MHz.

Note: Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a Ch 60, 64 / J2+J3+J4, Mode 2 (Ant. 4)
Test Date	Jul. 26, 2010		

Channel 60

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	5301.20	115.55				3.14	0.00	33.34	172	102	Average	VERTICAL
2	5301.20	125.97				3.14	0.00	33.34	172	102	Peak	VERTICAL
3	5350.00	59.13	60.00	-0.87	22.54	3.16	0.00	33.43	172	102	Average	VERTICAL
4	5351.20	78.58	80.00	-1.42	41.99	3.16	0.00	33.43	172	102	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	5322.00	113.20				3.14	0.00	33.37	153	100	Average	VERTICAL
2	5322.60	123.43				3.15	0.00	33.37	153	100	Peak	VERTICAL
3	5350.00	58.99	60.00	-1.01	22.40	3.16	0.00	33.43	153	100	Average	VERTICAL
4	5351.80	78.01	80.00	-1.99	41.42	3.16	0.00	33.43	153	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

<For Mode 3 (Ant. 7)>:

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 20MHz Ch 60, 64 / J2+J3+J4, Mode 3 (Ant. 7)
Test Date	Sep. 01, 2010		

Channel 60

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	deg	cm		
1	5304.40	117.68				3.14	0.00	33.34	306	100	Peak	VERTICAL
2	5305.20	106.14				3.14	0.00	33.34	306	100	Average	VERTICAL
3	5350.00	58.19	60.00	-1.81	21.60	3.16	0.00	33.43	306	100	Average	VERTICAL
4	5350.00	71.46	80.00	-8.54	34.87	3.16	0.00	33.43	306	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	deg	cm		
1	5317.20	106.40				3.14	0.00	33.37	63	100	Average	VERTICAL
2	5318.80	116.77				3.14	0.00	33.37	63	100	Peak	VERTICAL
3	5350.00	59.44	60.00	-0.56	22.85	3.16	0.00	33.43	63	100	Average	VERTICAL
4	5350.40	73.51	80.00	-6.49	36.92	3.16	0.00	33.43	63	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n MSC8 40MHz Ch 54, 62 / J2+J3+J4, Mode 3 (Ant. 7)
Test Date	Sep. 01, 2010		

Channel 54

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	5263.20	116.55				3.12	0.00	33.28	150	100	Peak	VERTICAL
2	5267.60	103.62				3.12	0.00	33.28	150	100	Average	VERTICAL
3	5350.00	59.65	60.00	-0.35	23.06	3.16	0.00	33.43	150	100	Average	VERTICAL
4	5351.60	73.94	80.00	-6.06	37.35	3.16	0.00	33.43	150	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5270 MHz.

Channel 62

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	5294.80	98.02				3.13	0.00	33.34	308	100	Average	VERTICAL
2	5297.60	109.32				3.14	0.00	33.34	308	100	Peak	VERTICAL
3	5350.00	59.75	60.00	-0.25	23.16	3.16	0.00	33.43	308	100	Average	VERTICAL
4	5352.00	76.78	80.00	-3.22	40.19	3.16	0.00	33.43	308	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5310 MHz.

Note: Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

Temperature	26°C	Humidity	60%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11a Ch 60, 64 / J2+J3+J4, Mode 3 (Ant. 7)
Test Date	Sep. 01, 2010		

Channel 60

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	5296.00	106.78				3.13	0.00	33.34	317	100	Average	VERTICAL
2	5304.00	116.33				3.14	0.00	33.34	317	100	Peak	VERTICAL
3	5350.00	58.59	60.00	-1.41	22.00	3.16	0.00	33.43	317	100	Average	VERTICAL
4	5350.40	74.80	80.00	-5.20	38.21	3.16	0.00	33.43	317	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	5317.00	120.09				3.14	0.00	33.37	150	100	Peak	VERTICAL
2	5325.80	110.43				3.15	0.00	33.37	150	100	Average	VERTICAL
3	5350.80	58.32	60.00	-1.68	21.73	3.16	0.00	33.43	150	100	Average	VERTICAL
4	5354.20	76.20	80.00	-3.80	39.61	3.16	0.00	33.43	150	100	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

<For Mode 4 (Ant. 8)>:

Temperature	26°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MSC8 20MHz Ch 60, 64 / J2+J3+J4, Mode 4 (Ant. 8)
Test Date	Jan. 26, 2011		

Channel 60

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor			
						dB	dB/m	dB	deg	cm	
1	5304.00	112.31				2.64	33.94	0.00	352	100 Average	VERTICAL
2	5304.80	125.63				2.64	33.94	0.00	352	100 Peak	VERTICAL
3	5350.00	58.21	60.00	-1.79	21.51	2.67	34.03	0.00	352	100 Average	VERTICAL
4	5350.00	72.59	80.00	-7.41	35.89	2.67	34.03	0.00	352	100 Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor			
						dB	dB/m	dB	deg	cm	
1	5319.40	109.24				2.66	33.97	0.00	286	100 Average	VERTICAL
2	5321.20	121.81				2.66	33.97	0.00	286	100 Peak	VERTICAL
3	5350.00	58.66	60.00	-1.34	21.96	2.67	34.03	0.00	286	100 Average	VERTICAL
4	5350.40	74.95	80.00	-5.05	38.25	2.67	34.03	0.00	286	100 Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

Temperature	26°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MSC8 40MHz Ch 54, 62 / J2+J3+J4, Mode 4 (Ant. 8)
Test Date	Jan. 26, 2011		

Channel 54

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1	5280.40	105.75				2.63	33.91	0.00	357	100 Average	VERTICAL
2	5284.80	119.63				2.63	33.91	0.00	357	100 Peak	VERTICAL
3	5350.00	59.09	60.00	-0.91	22.39	2.67	34.03	0.00	357	100 Average	VERTICAL
4	5350.40	75.71	80.00	-4.29	39.01	2.67	34.03	0.00	357	100 Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5270 MHz.

Channel 62

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm	
1	5315.60	114.19				2.66	33.97	0.00	284	100 Peak	VERTICAL
2	5322.40	100.38				2.66	33.97	0.00	284	100 Average	VERTICAL
3	5350.00	58.94	60.00	-1.06	22.24	2.67	34.03	0.00	284	100 Average	VERTICAL
4	5354.80	71.82	80.00	-8.18	35.12	2.67	34.03	0.00	284	100 Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5310 MHz.

Note: Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

Temperature	26°C	Humidity	60%
Test Engineer	Magic Lai	Configurations	IEEE 802.11a Ch 60, 64 / J2+J3+J4, Mode 4 (Ant. 8)
Test Date	Jan. 26, 2011		

Channel 60

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor			
						dB	dB/m	dB	deg	cm	
1	5301.20	114.38				2.64	33.94	0.00	110	100 Average	VERTICAL
2	5301.60	124.48				2.64	33.94	0.00	110	100 Peak	VERTICAL
3	5350.40	58.76	60.00	-1.24	22.06	2.67	34.03	0.00	110	100 Average	VERTICAL
4	5351.20	77.01	80.00	-2.99	40.31	2.67	34.03	0.00	110	100 Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor			
						dB	dB/m	dB	deg	cm	
1	5322.00	121.88				2.66	33.97	0.00	297	100 Peak	VERTICAL
2	5322.60	111.10				2.66	33.97	0.00	297	100 Average	VERTICAL
3	5350.00	58.09	60.00	-1.91	21.39	2.67	34.03	0.00	297	100 Average	VERTICAL
4	5353.60	79.34	80.00	-0.66	42.64	2.67	34.03	0.00	297	100 Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

4.8. Frequency Stability Measurement

4.8.1. Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emissions is maintained within the band of operation under all conditions of normal operation as specified in the user's manual or $\pm 20\text{ppm}$ (IEEE 802.11 specification).

4.8.2. Measuring Instruments and Setting

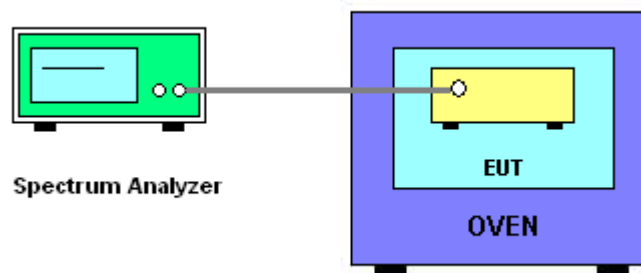
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissions bandwidth
RB	10 kHz
VB	10 kHz
Sweep Time	Auto

4.8.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f)/f_c \times 10^6$ ppm and the limit is less than $\pm 20\text{ppm}$ (IEEE 802.11 specification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature rule is $-30^\circ\text{C} \sim 50^\circ\text{C}$.
8. Measuring multiple antennas, the connector is required to link with spectrum analyzer through a combiner.

4.8.4. Test Setup Layout



4.8.5. Test Deviation

There is no deviation with the original standard.

4.8.6. EUT Operation during Test

The EUT was programmed to be in continuously un-modulation transmitting mode.

4.8.7. Test Result of Frequency Stability

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	5300
126.50	5300.0139
110.00	5300.0238
93.50	5300.0264
Max. Deviation (MHz)	0.026350
Max. Deviation (ppm)	4.97

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(°C)	5300
-30	5299.9839
-20	5299.9662
-10	5299.9541
0	5299.9516
10	5299.9544
20	5299.9584
30	5299.9580
40	5299.9528
50	5299.9528
Max. Deviation (MHz)	0.048400
Max. Deviation (ppm)	9.1321

4.9. Antenna Requirements

4.9.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.9.2. Antenna Connector Construction

Please refer to section 3.3 in this test report; antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Apr. 06, 2010	Conduction (CO04-HY)
LISN	MessTec	NNB-2/16Z	99041	9kHz – 30MHz	Mar. 23, 2010	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9kHz – 30MHz	Apr. 29, 2010	Conduction (CO04-HY)
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9kHz – 30MHz	Apr. 20, 2010	Conduction (CO04-HY)
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30 MHz - 1 GHz 3m	Jun. 07, 2010	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	COA9231A	18667	9 kHz - 2 GHz	Jan. 24, 2010	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	COA9231A	18667	9 kHz - 2 GHz	Jan. 24, 2011	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1 GHz - 26.5 GHz	Jul. 21, 2010	Radiation (03CH03-HY)
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5 GHz - 40 GHz	Apr. 06, 2009*	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP40	100004	9 kHz - 40 GHz	Oct. 03, 2009	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP40	100004	9 kHz - 40 GHz	Oct. 03, 2010	Radiation (03CH03-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	Jul. 29, 2010*	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30 MHz – 1 GHz	Sep. 26, 2009	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30 MHz – 1 GHz	Oct. 16, 2010	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6741	1GHz ~ 18GHz	Apr. 28, 2010	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15 GHz - 40 GHz	Jan. 11, 2010	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15 GHz - 40 GHz	Jan. 11, 2011	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz - 1 GHz	Jan. 05, 2010	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz - 1 GHz	Jan. 05, 2011	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1 GHz - 40 GHz	Jan. 05, 2010	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1 GHz - 40 GHz	Jan. 05, 2011	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 – 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSU26.5	100015	20Hz ~ 26.5GHz	Oct. 29, 2009	Conducted (TH01-HY)
Spectrum Analyzer	R&S	FSU26.5	100015	20Hz ~ 26.5GHz	Oct. 29, 2010	Conducted (TH01-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Power Meter	R&S	NRVS	100444	DC ~ 40GHz	Jul. 28, 2010	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z51	100666	DC ~ 30GHz	Jul. 04, 2010	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z51	100666	DC ~ 30GHz	Jul. 04, 2011	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z32	100057	30MHz ~ 6GHz	Jul. 31, 2010	Conducted (TH01-HY)
AC Power Source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	Jul. 12, 2009*	Conducted (TH01-HY)
AC Power Source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	Jul. 12, 2010*	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Mar. 13, 2010	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Mar. 13, 2011	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-S	MAB0103-001	N/A	Aug. 06, 2010	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 02, 2009	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 02, 2010	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 02, 2009	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 02, 2010	Conducted (TH01-HY)
Vector Signal Generator	R&S	SMU200A	102098	100kHz ~ 6GHz	Feb. 13, 2010	Conducted (TH01-HY)
Vector Signal Generator	R&S	SMU200A	102098	100kHz ~ 6GHz	Feb. 13, 2011	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Mar. 25, 2010	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Mar. 25, 2011	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	0917017	300MHz~40GHz	Dec. 03, 2009	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	0917017	300MHz~40GHz	Dec. 03, 2010	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	0949003	300MHz~40GHz	Dec. 03, 2009	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	0949003	300MHz~40GHz	Dec. 03, 2010	Conducted (TH01-HY)

Note: Calibration Interval of instruments listed above is one year.

Note: For "*" Calibration Interval of instruments listed above is two years.

6. TEST LOCATION

SHIJR	ADD : 6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C. TEL : 886-2-2696-2468 FAX : 886-2-2696-2255
HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-318-0055
LINKOU	ADD : No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C TEL : 886-2-2601-1640 FAX : 886-2-2601-1695
DUNGHU	ADD : No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C. TEL : 886-2-2631-4739 FAX : 886-2-2631-9740
JUNGHE	ADD : 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C. TEL : 886-2-8227-2020 FAX : 886-2-8227-2626
NEIHU	ADD : 4Fl., No. 339, Hsin Hu 2 nd Rd., Taipei 114, Taiwan, R.O.C. TEL : 886-2-2794-8886 FAX : 886-2-2794-9777
JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

7. TAF CERTIFICATE OF ACCREDITATION



Certificate No. : L1190-091230

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien,
Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	: ISO/IEC 17025:2005
Accreditation Number	: 1190
Originally Accredited	: December 15, 2003
Effective Period	: January 10, 2010 to January 09, 2013
Accredited Scope	: Testing Field, see described in the Appendix
Specific Accreditation Program	: Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangement with Foreign Authorities



Jay-San Chen
President, Taiwan Accreditation Foundation
Date : December 30, 2009

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The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix