SPORTON International Inc.
No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, TaoYuan Hsien, Taiwan, R.O.C.
Ph: 886-3-327-3456 / FAX: 886-3-327-0973 / www.sporton.com.tw

FCC RADIO TEST REPORT

Applicant's company	**Motorola Solutions, Inc.**
Applicant Address	One Motorola Plaza Holtsville, NY 11742 USA
FCC ID	**UZ7AP0622**
Manufacturer's company	**Joy Technology (ShenZhen) Corporation**
Manufacturer Address	HengKeng Ind., Shangpai, Shangwu,Aiqun Rd., Shiyan Town,Shenzhen 518108 China

Product Name	Wireless Dual Band AP
Brand Name	MOTOROLA
Model Name	AP-0622
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5250 ~ 5350MHz / 5470 ~ 5725MHz
Received Date	Sep. 22, 2011
Final Test Date	Jan. 09, 2013
Submission Type	Class II Change
Operating Mode	Master

Statement

Test result included is for the IEEE 802.11n and IEEE 802.11a (5150 ~ 5350MHz / 5470 ~ 5725MHz) 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**, **47 CFR FCC Part 15 Subpart E** and **KDB 789033 D01 v01r02**.

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

TAF
Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR192220-10	Rev. 01	Initial issue of report	Feb. 19, 2013
FR192220-10	Rev. 02	Modified the antenna information	Mar. 05, 2013

Certificate No.: CB10201054

1. CERTIFICATE OF COMPLIANCE

Product Name	:	Wireless Dual Band AP
Brand Name	:	MOTOROLA
Model Name	:	AP-0622
Applicant	:	Motorola Solutions, Inc.
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 Sep. 22, 2011 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.

Sam Chen

Sam Chen

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	10.20 dB
4.2	15.407(a)	26dB Spectrum Bandwidth	Complies	-
4.3	15.407(a)	Maximum Conducted Output Power	Complies	3.01 dB
4.4	15.407(a)	Power Spectral Density	Complies	1.7 dB
4.5	15.407(a)	Peak Excursion	Complies	2.13 dB
4.6	15.407(b)	Radiated Emissions	Complies	0.12 dB
4.7	15.407(b)	Band Edge Emissions	Complies	0.09 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	$\pm 8.5\times10^{-8}$	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℃	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	Please refer to section 3.3
Radio Type	Intentional Transceiver
Power Type	From 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 / 5470 ~ 5725MHz
Channel Number	11 for 20MHz bandwidth ; 4 for 40MHz bandwidth
Channel Band Width (99%)	**For Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna):** 1TX: MCS0 (20MHz): 18.56 MHz ; MCS0 (40MHz): 36.80 MHz 2TX: MCS0 (20MHz): 18.88 MHz ; MCS0 (40MHz): 37.12 MHz 2TX: MCS8 (20MHz): 18.24 MHz ; MCS8 (40MHz): 36.80 MHz **For Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna):** 2TX: MCS0 (20MHz): 19.36 MHz ; MCS0 (40MHz): 37.12 MHz **For Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna):** 1TX: MCS0 (20MHz): 18.56 MHz ; MCS0 (40MHz): 36.80 MHz **For Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna):** 1TX: MCS0 (20MHz): 18.56 MHz ; MCS0 (40MHz): 36.80 MHz **For Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna):** 2TX: MCS0 (20MHz): 19.20 MHz ; MCS0 (40MHz): 37.76 MHz
Maximum Conducted Output Power	**For Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna):** 1TX: MCS0 (20MHz): 17.98 dBm ; MCS0 (40MHz): 16.63 dBm 2TX: MCS0 (20MHz): 14.90 dBm ; MCS0 (40MHz): 14.98 dBm 2TX: MCS8 (20MHz): 17.82 dBm ; MCS8 (40MHz): 17.51 dBm **For Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna):** 2TX: MCS0 (20MHz): 19.30 dBm ; MCS0 (40MHz): 16.94 dBm **For Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna):** 1TX: MCS0 (20MHz): 14.39 dBm ; MCS0 (40MHz): 9.50 dBm **For Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna):** 1TX: MCS0 (20MHz): 15.86 dBm ; MCS0 (40MHz): 14.71 dBm **For Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna):**

	2TX (Band 2): MCS0 (20MHz): 17.14 dBm ; MCS0 (40MHz): 13.16 dBm 2TX (Band 3): MCS0 (20MHz): 17.02 dBm ; MCS0 (40MHz): 17.21 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

IEEE 802.11a

Items	Description
Product Type	Please refer to section 3.3
Radio Type	Intentional Transceiver
Power Type	From 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 / 5470 ~ 5725MHz
Channel Number	11
Channel Band Width (99%)	**For Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna):** 1TX: 17.60 MHz ; 2TX: 17.44 MHz **For Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna):** 2TX: 16.64 MHz **For Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna):** 1TX: 17.60 MHz **For Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna):** 1TX: 17.44 MHz **For Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna):** 2TX: 17.60 MHz
Maximum Conducted Output Power	**For Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna):** 1TX: 17.98 dBm ; 2TX: 14.98 dBm **For Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna):** 2TX: 19.38 dBm **For Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna):** 1TX: 14.35 dBm **For Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna):** 1TX: 15.99 dBm **For Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna):** 2TX (Band 2): 17.22 dBm ; 2TX (Band 3): 17.16 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Outdoor Version: The outdoor version of the MODEL: AP-0622 Access Point is sold under Part Number: AP-6562.

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

N/A

3.3. Table for Filed Antenna

Ant.	Model Name	Antenna Type	Chip/Radio	Gain (dBi)	
				2.4GHz	5GHz
1	ML-2499-FHPA9-01R	Dipole	Radio1/2-CH1/2	8.5	-
2	ML-2499-SD3-01R	Patch	Radio1/2-CH1/2	3.5	-
3	ML-2499-BPNA3-01R	Panel	Radio1/2-CH1/2	10.9	-
4	ML-2499-BYGA2-01R	Yagi	Radio1/2-CH1/2	11.1	-
5	ML-5299-FHPA10-01R	Dipole	Radio1/2-CH1/2	-	9
6	ML-5299-PTA1-01R	Patch	Radio1/2-CH1/2	-	4.6
7	ML-5299-WPNA1-01R	Panel	Radio1/2-CH1/2	-	12.5
8	ML-5299-BYGA15-012	Yagi	Radio1/2-CH1/2	-	11
9	ML-2499-5PNL-72-N	Panel	Radio1/2-CH1/2	5	-
10	ML-2499-APA2-01	Dipole	Radio1/2-CH1/2	2	-
11	ML-2499-HPA3-01R	Dipole	Radio1/2-CH1/2	4.7	-
12	ML-5299-APA1-01R	Dipole	Radio1/2-CH1/2	-	2
13	ML-5299-HPA1-01R	Dipole	Radio1/2-CH1/2	-	5
14	ML-2452-APA2-01	Dipole	Radio1/2-CH1/2	3	5
15	ML-2452-PNA5-01R	Panel	Radio1/2-CH1/2	4.5	5
16	ML-2452-PNA7-01R	Panel	Radio1/2-CH1/2	7	9
17	ML-2452-HPA5-036	Dipole	Radio1/2-CH1/2	3	5
18	120G00000038A	Embedded	Radio1-CH1	7.07	-
	120G00000038A	Embedded	Radio1-CH2	6.27	-
19	120G00000037A	Embedded	Radio2-CH1	5.72	7.15
	120G00000037A	Embedded	Radio2-CH2	6.84	6.34
20	ML-2499-HPA8-01	Dipole	Radio1/2-CH1/2	8	-
21	ML-2499-HPA4-01	Dipole	Radio1/2-CH1/2	4	-
22	RAN4054A	Dipole	Radio1/2-CH1/2	8	-
23	ML-5299-HPA5-01	Dipole	Radio1/2-CH1/2	-	5
24	ML-5299-FHPA6-01	Dipole	Radio1/2-CH1/2	-	8
25	ML-2452-HPAG5A8-01	Dipole	Radio1/2-CH1/2	7.5	8.0

Antenna	Antenna Gain		Cable loss		Test Antenna Gain	
	2.4GHz	5GHz	2.4GHz	5GHz	2.4GHz	5GHz
1	9	-	0.5	-	8.5	-
2	3.5	-	0.0	-	3.5	-
3	13.9	-	3.0	-	10.9	-
4	14.1	-	3.0	-	11.1	-
5	-	10	-	1	-	9
6	-	4.6	-	0.0	-	4.6
7	-	12.5	-	0.0	-	12.5
8	-	12	-	1	-	11
9	5	-	0.0	-	5	-
10	2	-	0.0	-	2	-
11	4.7	-	0.0	-	4.7	-
12	-	2	-	0.0	-	2
13	-	5	-	0.0	-	5
14	3	5	0.0	0.0	3	5
15	4.5	5	0.0	0.0	4.5	5
16	7	9	0.0	0.0	7	9
17	3	5	0.0	0.0	3	5
18	7.07	-	0.0	-	7.07	-
	6.27	-	0.0	-	6.27	-
19	5.72	7.15	0.0	0.0	5.72	7.15
	6.84	6.34	0.0	0.0	6.84	6.34
20	8	-	0.0	-	8	-
21	4	-	0.0	-	4	-
22	8	-	0.0	-	8	-
23	-	5	-	0.0	-	5
24	-	8	-	0.0	-	8
25	7.5	8	0.0	0.0	7.5	8

Note:

1. There are two types of EUT. One collocates with internal antenna only, and the other collocates with external antennas only.
2. There are two chips, Radio 1 and Radio 2 respectively. Radio 1 support Chain 2.4GHz function and Radio 2 support Chain 2.4GHz+5GHz function. Radio 1 is hardware configured as 2.4GHz only and Radio 2 is software restricted to 5GHz only.
3. Rx function is always 2Rx for 2Tx, but may be either 1Rx or 2Rx for 1Tx.
4. Ant. 1 ~ Ant. 17 are the original antennas, Ant. 18 ~ Ant. 25 are additional antennas.
   The gain of additional external antennas (Ant. 20 ~ Ant. 25) is lower than original antennas (Ant. 1 ~ Ant. 17), and the test result is recorded in original report (Sporton Report No.: FR192220).

Table of TX/RX Function in each antenna:

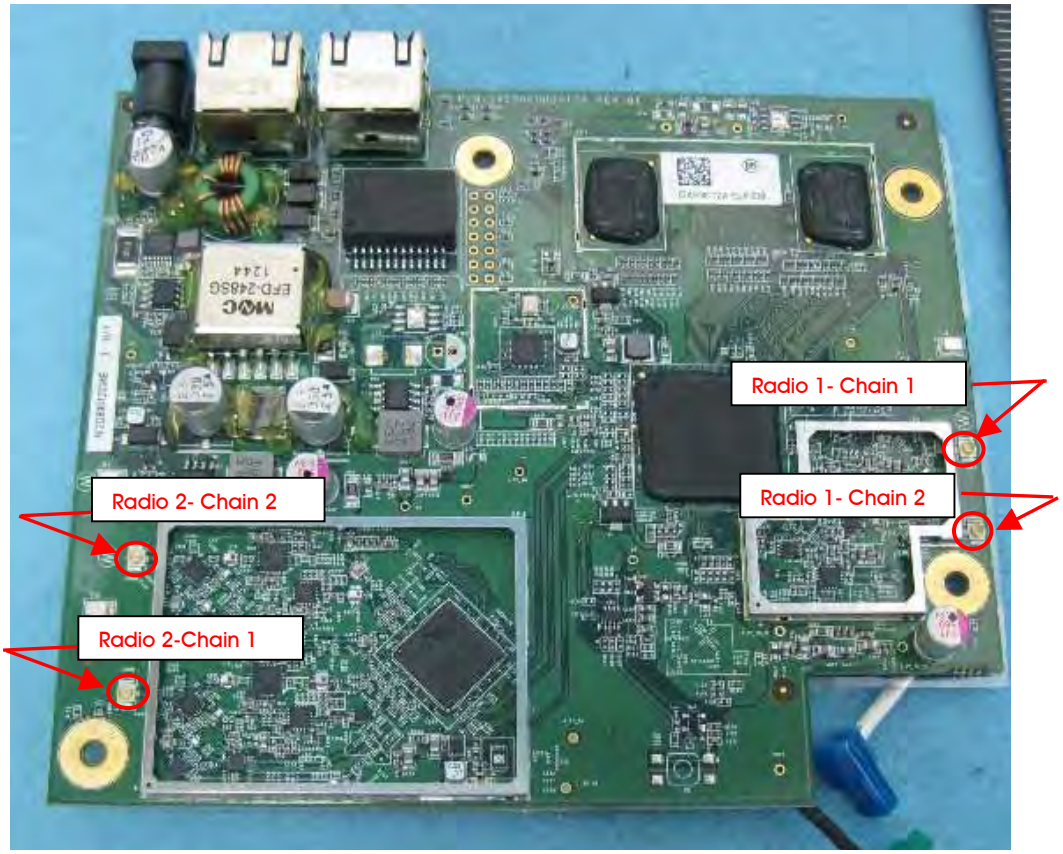
Item			Radio 1				Radio 2			
			Chain 1		Chain 2		Chain 1		Chain 2	
			TX	RX	TX	RX	TX	RX	TX	RX
Ant. 5	5GHz	*11a	-	V	V	V	V	V	-	V
		11a	V	V	V	V	V	V	V	V
		*11n	-	V	V	V	V	V	-	V
		11n	V	V	V	V	V	V	V	V
Ant. 6	5GHz	11a	V	V	V	V	V	V	V	V
		11n	V	V	V	V	V	V	V	V
Ant. 7	5GHz	*11a	-	V	V	V	V	V	-	V
		*11n	-	V	V	V	V	V	-	V
Ant. 8	5GHz	*11a	-	V	V	V	V	V	-	V
		*11n	-	V	V	V	V	V	-	V
Ant. 18	2.4GHz	*11b	-	V	V	V	-	-	-	-
		11g	V	V	V	V	-	-	-	-
		11n	V	V	V	V	-	-	-	-
Ant. 19	2.4GHz	*11b	-	-	-	-	V	V	-	V
		11g	-	-	-	-	V	V	V	V
		11n	-	-	-	-	V	V	V	V
	5GHz	11a	-	-	-	-	V	V	V	V
		11n	-	-	-	-	V	V	V	V

Note: Marked "-" on behalf of no function.

Marked "*" Rx function may be either 1Rx or 2Rx for 1Tx.

Radio 1 support Chain 2 and Radio 2 support Chain 1 when perform the 1TX function.

Chip/Radio	Required 1TX Port
Radio 1-2.4G	Chain 2
Radio 2-2.4G	Chain 1
Radio 2-5G	Chain 1



3.4. Table for Carrier Frequencies

For IEEE 802.11a, use Channel 56, 60, 64, 100, 104, 108, 112, 116, 132, 136, 140.

There are two bandwidth systems for IEEE 802.11n.

For both 20MHz bandwidth systems, use Channel 56, 60, 64, 100, 104, 108, 112, 116, 132, 136, 140.

For both 40MHz bandwidth systems, use Channel 62, 102, 110, 134.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5250~5350 MHz Band 2	56	5280 MHz	62	5310 MHz
	60	5300 MHz	64	5320 MHz
5470~5725 MHz Band 3	100	5500 MHz	116	5580 MHz
	102	5510 MHz	132	5660 MHz
	104	5520 MHz	134	5670 MHz
	108	5540 MHz	136	5680 MHz
	110	5550 MHz	140	5700 MHz
	112	5560 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 Dipole Antenna

For EUT 1 (with external antenna) + Ant. 5 (Dipole antenna):

Test Items	Mode		Data Rate	Channel	Chain
AC Power Conducted Emission	Normal Link		Auto	-	-
Max. Conducted Output Power	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1
	MCS0/40MHz	Band 2	13.5Mbps	62	1
	11a/BPSK	Band 2	13Mbps	56/60/64	1
	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1/2/1+2
	MCS0/40MHz	Band 2	13.5Mbps	62	1/2/1+2
	MCS8/20MHz	Band 2	13Mbps	56/60/64	1/2/1+2
	MCS8/40MHz	Band 2	27Mbps	62	1/2/1+2
	11a/BPSK	Band 2	13Mbps	56/60/64	1/2/1+2
Power Spectral Density	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1
	MCS0/40MHz	Band 2	13.5Mbps	62	1
	11a/BPSK	Band 2	13Mbps	56/60/64	1
	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1/2
	MCS0/40MHz	Band 2	13.5Mbps	62	1/2
	MCS8/20MHz	Band 2	13Mbps	56/60/64	1/2
	MCS8/40MHz	Band 2	27Mbps	62	1/2
	11a/BPSK	Band 2	13Mbps	56/60/64	1/2
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement Peak Excursion	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1
	MCS0/40MHz	Band 2	13.5Mbps	62	1
	11a/BPSK	Band 2	13Mbps	56/60/64	1
	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1+2
	MCS0/40MHz	Band 2	13.5Mbps	62	1+2
	MCS8/20MHz	Band 2	13Mbps	56/60/64	1+2
	MCS8/40MHz	Band 2	27Mbps	62	1+2
	11a/BPSK	Band 2	13Mbps	56/60/64	1+2
Radiated Emission Below 1GHz	Normal Link		Auto	-	-
Radiated Emission Above 1GHz	MCS0/20MHz	Band 2	6.5Mbps	56	1
	MCS0/20MHz	Band 2	6.5Mbps	56	1+2
	MCS8/20MHz	Band 2	13Mbps	56	1+2

	11a/BPSK	Band 2	13Mbps	56	1
	11a/BPSK	Band 2	13Mbps	56	1+2
Band Edge Emission	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1
	11a/BPSK	Band 2	13Mbps	56/60/64	1
	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1+2
	MCS8/20MHz	Band 2	13Mbps	56/60/64	1+2
	11a/BPSK	Band 2	13Mbps	56/60/64	1+2
Frequency Stability	Un-modulation		-	60	N/A

For EUT 1 (with external antenna) + Ant. 6 (Patch Antenna):

Test Items	Mode		Data Rate	Channel	Chain
AC Power Conducted Emission	Normal Link		Auto	-	-
Max. Conducted Output Power	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1/2/1+2
	MCS0/40MHz	Band 2	13.5Mbps	62	1/2/1+2
	11a/BPSK	Band 2	13Mbps	56/60/64	1/2/1+2
Power Spectral Density	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1/2
	MCS0/40MHz	Band 2	13.5Mbps	62	1/2
	11a/BPSK	Band 2	13Mbps	56/60/64	1/2
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement Peak Excursion	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1+2
	MCS0/40MHz	Band 2	13.5Mbps	62	1+2
	11a/BPSK	Band 2	13Mbps	56/60/64	1+2
Radiated Emission Below 1GHz	Normal Link		Auto	-	-
Radiated Emission Above 1GHz	MCS0/20MHz	Band 2	6.5Mbps	56	1+2
	11a/BPSK	Band 2	13Mbps	56	1+2
Band Edge Emission	MCS0/20MHz	Band 2	6.5Mbps	56	1+2
	11a/BPSK	Band 2	13Mbps	56	1+2
Frequency Stability	Un-modulation		-	60	N/A

For EUT 1 (with external antenna) + Ant. 7 (Panel Antenna) / EUT 1 (with external antenna) + Ant. 8 (Yagi Antenna)

Test Items	Mode		Data Rate	Channel	Chain
AC Power Conducted Emission	Normal Link		Auto	-	-
Max. Conducted Output Power	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1
	MCS0/40MHz	Band 2	13.5Mbps	62	1
	11a/BPSK	Band 2	13Mbps	56/60/64	1
Power Spectral Density	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1
	MCS0/40MHz	Band 2	13.5Mbps	62	1
	11a/BPSK	Band 2	13Mbps	56/60/64	1
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement Peak Excursion	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1
	MCS0/40MHz	Band 2	13.5Mbps	62	1
	11a/BPSK	Band 2	13Mbps	56/60/64	1
Radiated Emission Below 1GHz	Normal Link		Auto	-	-
Radiated Emission Above 1GHz	MCS0/20MHz	Band 2	6.5Mbps	56	1
	11a/BPSK	Band 2	13Mbps	56	1
Band Edge Emission	MCS0/20MHz	Band 2	6.5Mbps	56	1
	11a/BPSK	Band 2	13Mbps	56	1
Frequency Stability	Un-modulation		-	60	N/A

For EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)

Test Items	Mode		Data Rate	Channel	Chain
AC Power Conducted Emission	Normal Link		Auto	-	-
Max. Conducted Output Power	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1/2/1+2
		Band 3	6.5Mbps	100/116/140	1/2/1+2
	MCS0/40MHz	Band 2	13.5Mbps	62	1/2/1+2
		Band 3	13.5Mbps	102/110/134	1/2/1+2
	11a/BPSK	Band 2	13Mbps	56/60/64	1/2/1+2
		Band 3	13Mbps	100/116/140	1/2/1+2
Power Spectral Density	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1/2
		Band 3	6.5Mbps	100/116/140	1/2
	MCS0/40MHz	Band 2	13.5Mbps	62	1/2
		Band 3	13.5Mbps	102/110/134	1/2
	11a/BPSK	Band 2	13Mbps	56/60/64	1/2
		Band 3	13Mbps	100/116/140	1/2
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement Peak Excursion	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1+2
		Band 3	6.5Mbps	100/116/140	1+2
	MCS0/40MHz	Band 2	13.5Mbps	62	1+2
		Band 3	13.5Mbps	102/110/134	1+2
	11a/BPSK	Band 2	13Mbps	56/60/64	1+2
		Band 3	13Mbps	100/116/140	1+2
Radiated Emission Below 1GHz	Normal Link		Auto	-	-
Radiated Emission Above 1GHz	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1+2
		Band 3	6.5Mbps	100/116/140	1+2
	MCS0/40MHz	Band 2	13.5Mbps	62	1+2
		Band 3	13.5Mbps	102/110/134	1+2
	11a/BPSK	Band 2	13Mbps	56/60/64	1+2
		Band 3	13Mbps	100/116/140	1+2
Band Edge Emission	MCS0/20MHz	Band 2	6.5Mbps	56/60/64	1+2
		Band 3	6.5Mbps	100/140	1+2
	MCS0/40MHz	Band 2	13.5Mbps	62	1+2
		Band 3	13.5Mbps	102/110/134	1+2
	11a/BPSK	Band 2	13Mbps	56/60/64	1+2
		Band 3	13Mbps	100/140	1+2
Frequency Stability	Un-modulation		-	40/60	N/A

The following test modes were performed for all tests:

There are two types of EUT.

EUT 1 collocates with external antennas.

EUT 2 collocates with internal antennas.

For Conducted emission test:

Mode 1. EUT 1 (with external antenna) / Ant. 1 + Ant. 5 (Dipole antenna) + POE

Mode 2. EUT 2 (with internal antenna) / Ant. 18 + Ant. 19 (Embedded antenna) + POE

For Radiated emission below 1GHz test:

The EUT for Radiated emission test was performed at vertically and horizontally horizontally, and the worst-case was found at vertically. So the measurement will follow this same test configuration.

Mode 1. EUT 1 (with external antenna) + Dipole antenna / Ant. 1 (2.4GHz) and Ant. 5 (5GHz)

Mode 2. EUT 1 (with external antenna) + Patch antenna / Ant. 2 (2.4GHz) and Ant. 6 (5GHz)

Mode 3. EUT 1 (with external antenna) + Panel antenna / Ant. 3 (2.4GHz) and Ant. 7 (5GHz)

Mode 4. EUT 1 (with external antenna) + Yagi antenna / Ant. 4 (2.4GHz) + Ant. 8 (5GHz)

Mode 5. EUT 2 (with internal antenna) + Embedded antenna / Ant. 18 (2.4GHz) + Ant. 19 (5GHz)

Mode 2 and Mode 5 generated the worst test result, so both of them were recorded in the report.

For Radiated emission above 1GHz and other tests:

Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)

Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna)

Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna)

Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna)

Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)

Note: For HT20/40 2TX, MCS8 (2-stream) limit are higher than MCS0 (1-stream) limits due to no array gain reduction on conducted limits. MCS8 signals on 2TX are completely uncorrelated when the direct mapping is configured. If antenna gain is greater than 5 dBi, this mode should be included to realize higher conducted testing limits.

3.6. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D	-
CO01-CB	Conduction	Hsin Chu	262045	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC) ; Please refer section 6 for Test Site Address.

3.7. Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR192220-01

Below is the table for the change of the product with respect to the original one.

Description	Performance Checking
1. Change the housing of EUT. 2. Remove original embedded antennas as the list below: (1) 120G00000000A / 3.92dBi (2.4GHz) (2) 120G00000001A / 3.77dBi (2.4GHz) (3) 120G00000002A / 4.08dBi (2.4GHz), 7.5dBi (5GHz) (4) 120G00000003A / 4.44dBi (2.4GHz), 5.52dBi (5GHz) 3. Add two embedded antennas (Ant. 18 and Ant. 19). Please refer to section 3.3 for more detail information. 4. Add six dipole antennas. The gain of additional dipole antennas (Ant. 20 ~ Ant. 25) is lower than original antennas (Ant. 1 ~ Ant. 17). - No need for additional test. Please refer to section 3.3 for more detail information. 5. Change EUT from indoor use device to outdoor use device. The 5260MHz and 5270MHz are restricted in 20dB bandwidth. Therefore, it verified 5280MHz and 5310MHz to instead of it. The test results are recorded in the report. 6. No apply for the adaptor that recording in original report.	AC Power Line Conducted Emissions Maximum Conducted Output Power Power Spectral Density 26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement Peak Excursion Radiated Emissions Band Edge Emissions

3.8. Table for Supporting Units

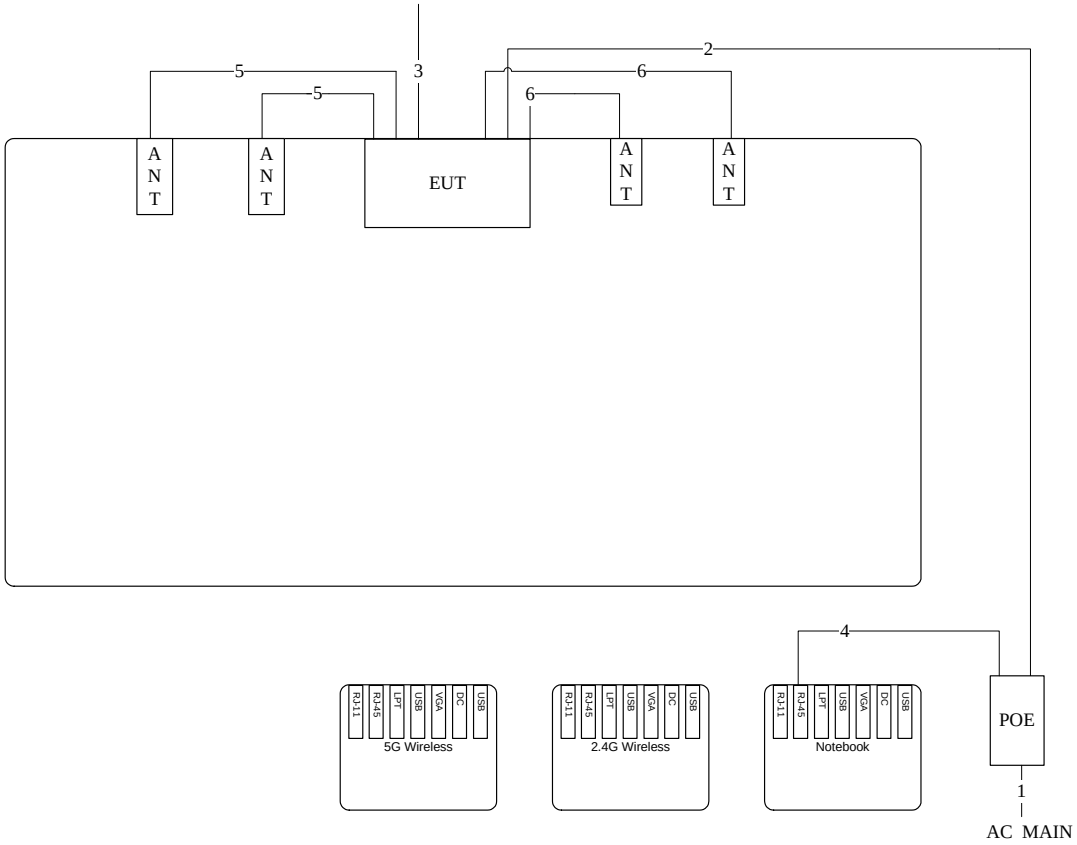
Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6250	E2K4965AGNM
Notebook	DELL	E6220	E2K4965AGNM
Notebook	DELL	E6220	E2K4965AGNM
PoE	POWERDsine	PD-3501G/AC	N/A

3.9. Test Configurations

3.9.1. Radiation Emissions Test Configuration

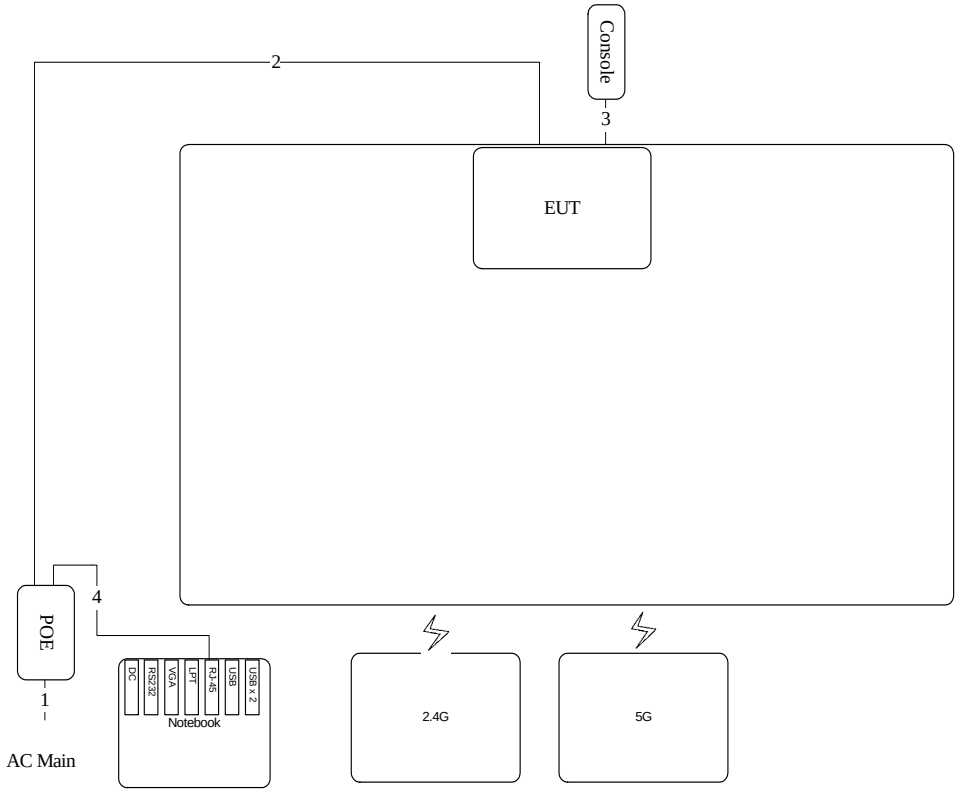
Test Configuration: 30MHz~1GHz

Test Mode: Mode 2



Item	Connection	Shield	Length	Remark
1	Power Cable	No	1.8m	-
2	RJ45 Cable	No	10m	-
3	RS232 Cable	Yes	1.8m	-
4	RJ45 Cable	No	1m	-
5	RF Cable	Yes	1.2m	-
6	RF Cable	Yes	0.9m	-

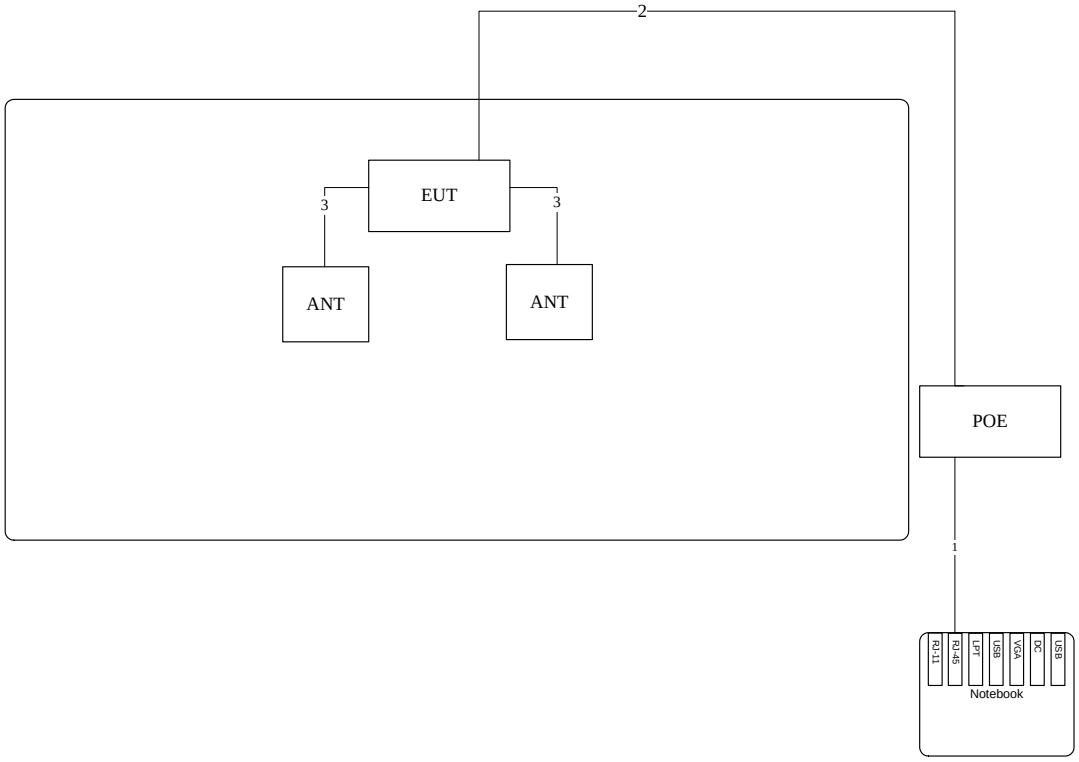
Test Mode: Mode 5



Item	Connection	Shield	Length	Remark
1	Power cable	No	1.8m	-
2	RJ-45 cable	No	10m	-
3	Console cable	No	1.5m	-
4	RJ-45 cable	No	1.5m	-

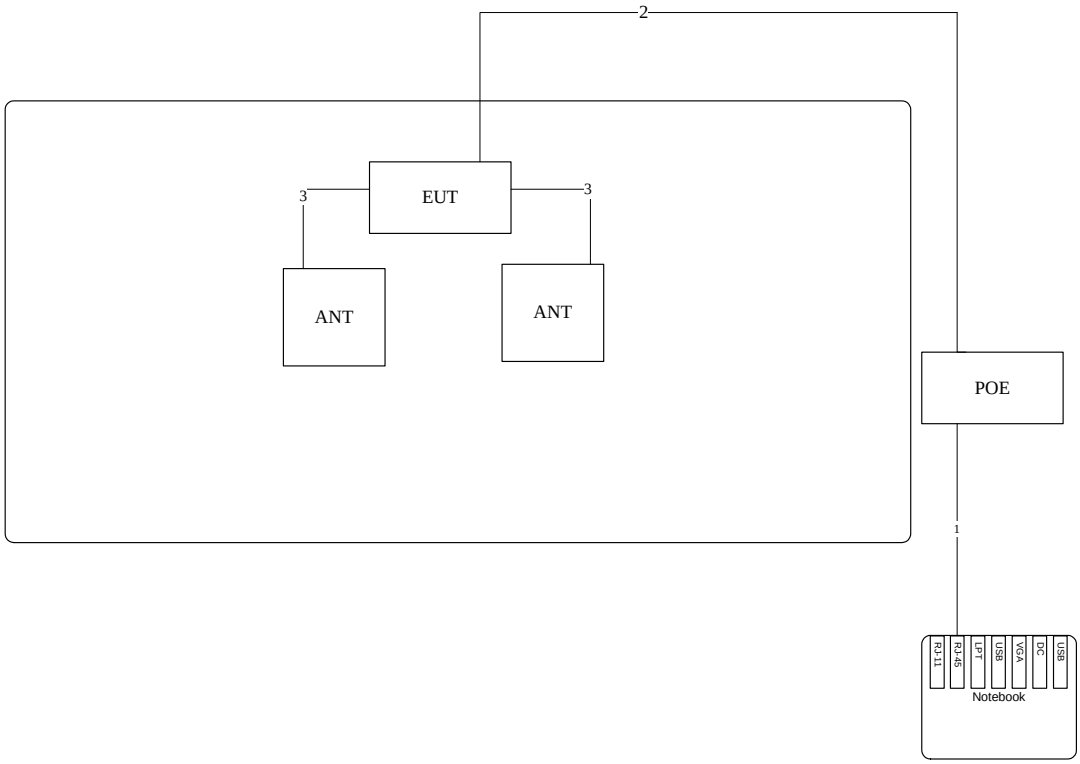
Test Configuration: above 1GHz

Test Mode: Mode 1



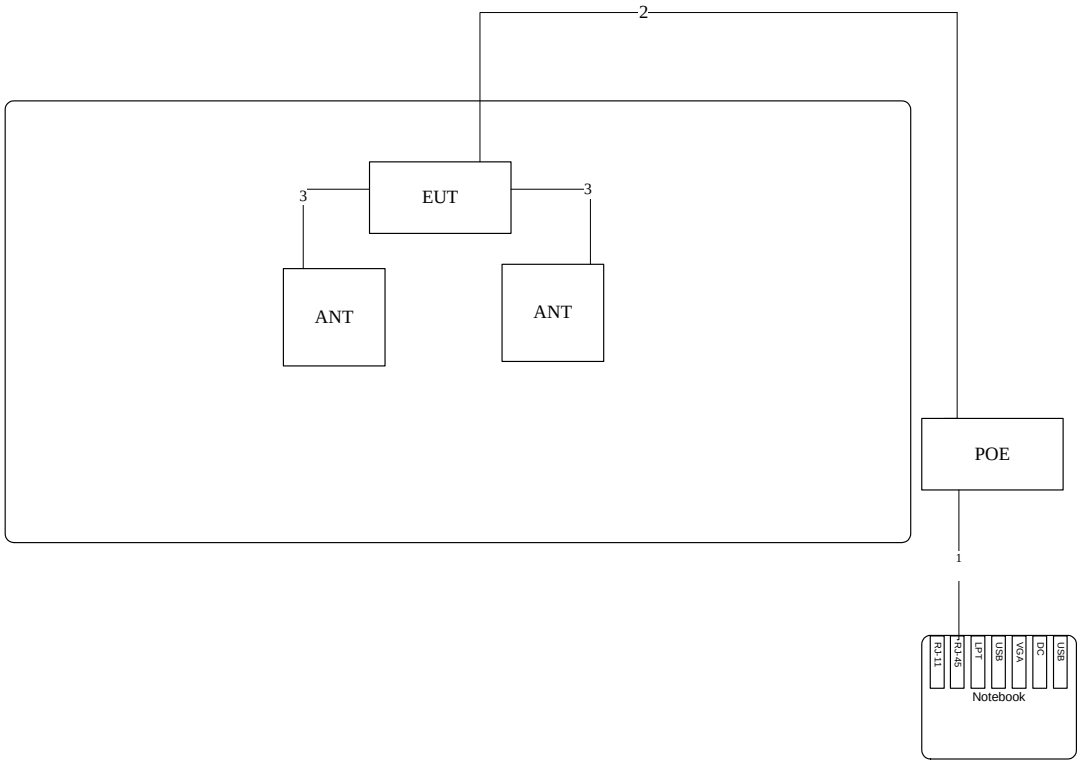
Item	Connection	Shield	Length	Remark
1	RJ45 Cable	No	1.5m	-
2	RJ45 Cable	No	10m	-
3	RF Cable	Yes	1m	-

Test Mode: Mode 2



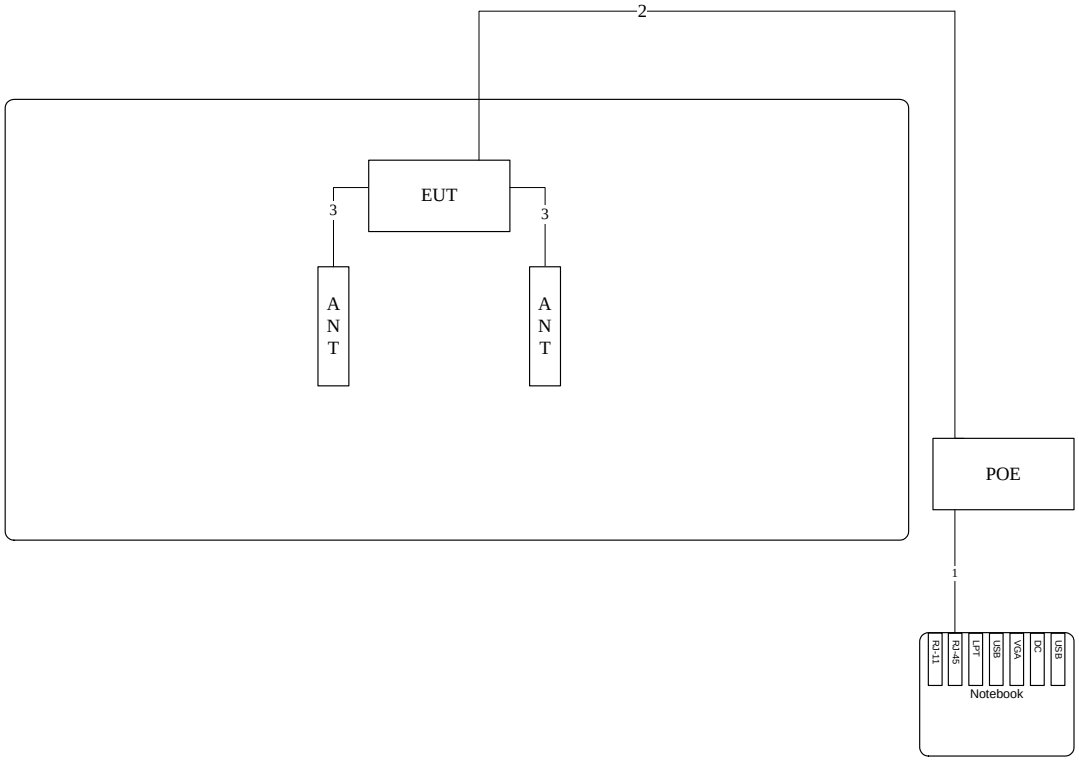
Item	Connection	Shield	Length	Remark
1	RJ45 Cable	No	1.5m	-
2	RJ45 Cable	No	10m	-
3	RF Cable	Yes	0.9m	-

Test Mode: Mode 3



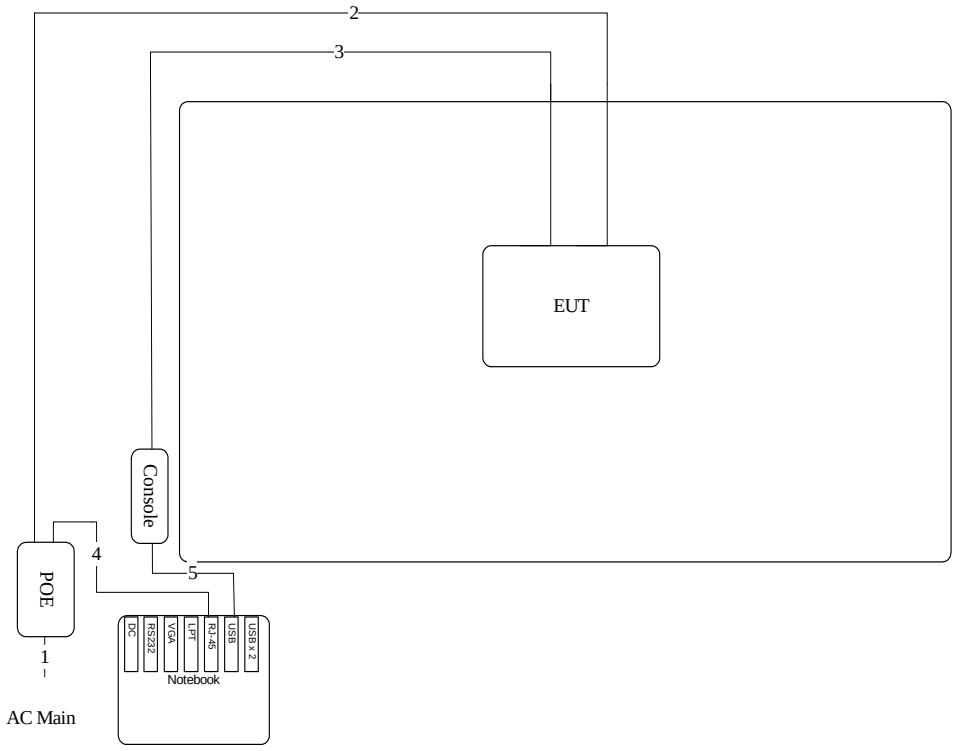
Item	Connection	Shield	Length	Remark
1	RJ45 Cable	No	1.5m	-
2	RJ45 Cable	No	10m	-
3	RF Cable	Yes	0.9m	-

Test Mode: Mode 4



Item	Connection	Shield	Length	Remark
1	RJ45 Cable	No	1.5m	-
2	RJ45 Cable	No	10m	-
3	RF Cable	Yes	1.9m	-

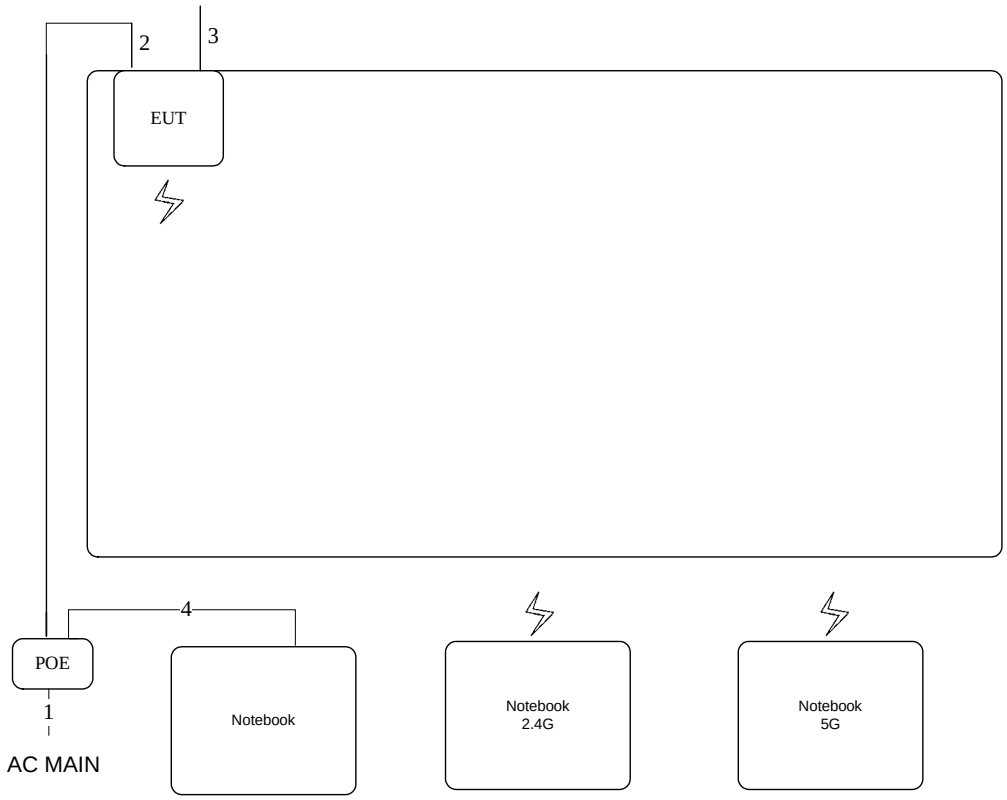
Test Mode: Mode 5



Item	Connection	Shield	Length	Remark
1	Power cable	No	1.8m	-
2	RJ-45 cable	No	10m	-
3	RJ-45 cable	No	10m	-
4	RJ-45 cable	No	1.5m	-
5	Console cable	No	1.5m	-

3.9.2. AC Power Line Conduction Emissions Test Configuration

Test Mode: Mode 2



Item	Connection	Shield	Length	Remark
1	Power Cable	No	1.8m	-
2	RJ45 Cable	No	10m	-
3	Console Cable	No	1.5m	-
4	RJ45 Cable	No	1.5m	-

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product that is designed to connect 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

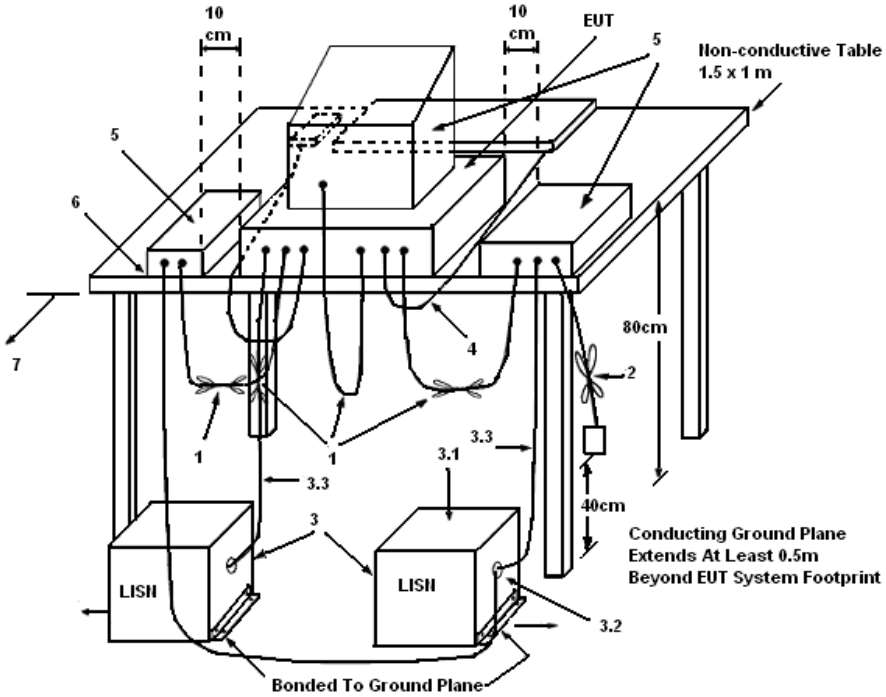
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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. Configure the EUT according to ANSI C63.10. 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

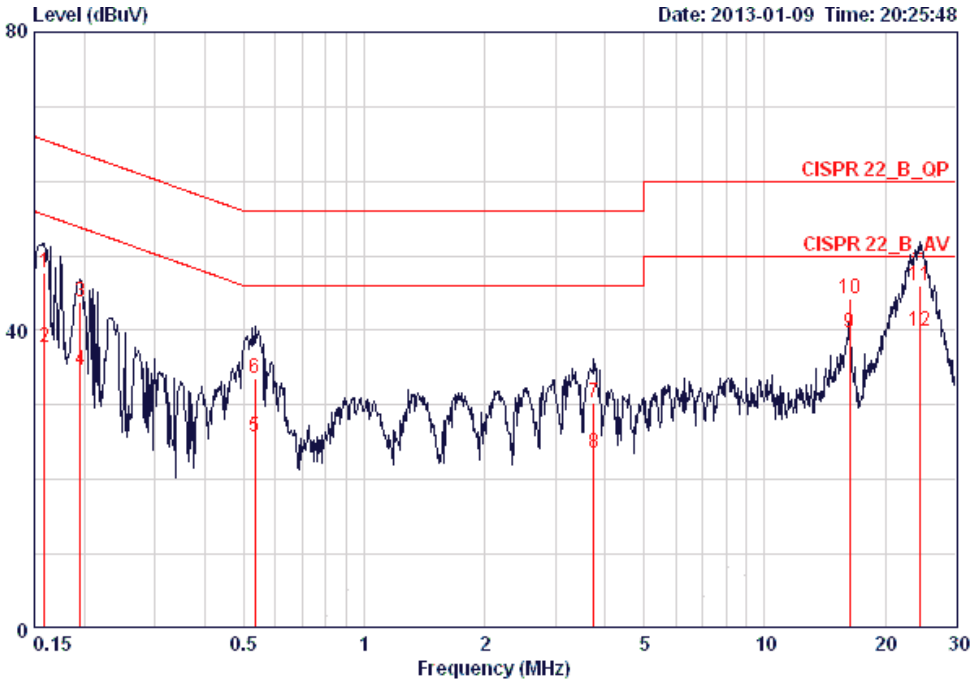
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

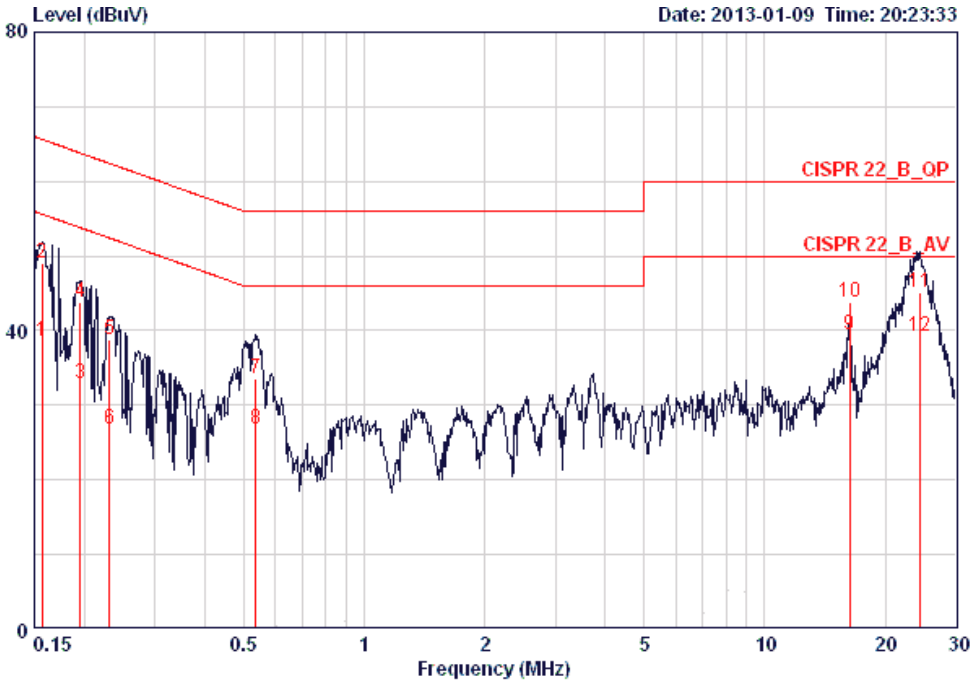
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24°C	Humidity	64%
Test Engineer	Sollo Luo	Phase	Line
Test Mode	Mode 1. EUT 1 (with external antenna) / Ant. 1 + Ant. 5 (Dipole antenna) + POE / Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15900	47.74	-17.77	65.52	47.40	0.16	0.18	QP
2	0.15900	37.79	-17.72	55.52	37.45	0.16	0.18	AVERAGE
3	0.19550	43.84	-19.96	63.80	43.49	0.15	0.20	QP
4	0.19550	34.57	-19.23	53.80	34.22	0.15	0.20	AVERAGE
5	0.53215	25.79	-20.21	46.00	25.44	0.15	0.20	AVERAGE
6	0.53215	33.48	-22.52	56.00	33.13	0.15	0.20	QP
7	3.740	30.36	-25.64	56.00	29.86	0.22	0.29	QP
8	3.740	23.47	-22.53	46.00	22.97	0.22	0.29	AVERAGE
9	16.312	39.65	-10.35	50.00	38.81	0.43	0.41	AVERAGE
10	16.312	44.15	-15.85	60.00	43.31	0.43	0.41	QP
11	24.529	46.07	-13.93	60.00	44.94	0.58	0.56	QP
12	24.529	39.79	-10.21	50.00	38.66	0.58	0.56	AVERAGE

Temperature	24°C	Humidity	64%
Test Engineer	Sollo Luo	Phase	Neutral
Test Mode	Mode 1. EUT 1 (with external antenna) / Ant. 1 + Ant. 5 (Dipole antenna) + POE / Normal Link		

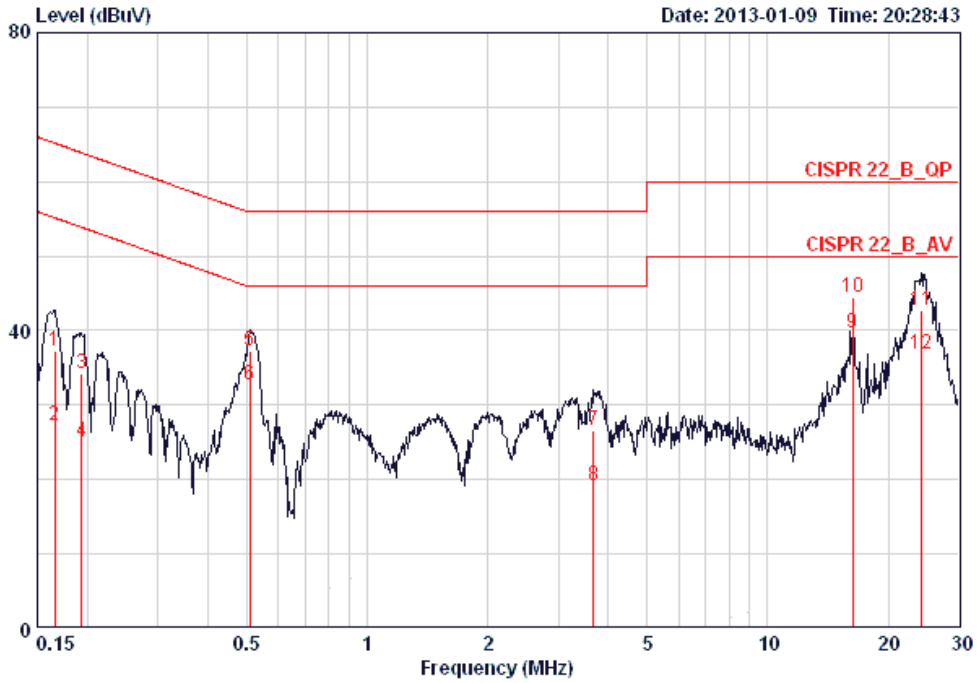


	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15650	38.51	-17.14	55.65	38.25	0.08	0.18	AVERAGE
2	0.15650	49.08	-16.57	65.65	48.82	0.08	0.18	QP
3	0.19550	32.96	-20.84	53.80	32.68	0.08	0.20	AVERAGE
4	0.19550	43.77	-20.03	63.80	43.49	0.08	0.20	QP
5	0.23162	38.73	-23.66	62.39	38.45	0.08	0.20	QP
6	0.23162	26.85	-25.54	52.39	26.57	0.08	0.20	AVERAGE
7	0.53498	33.49	-22.51	56.00	33.21	0.08	0.20	QP
8	0.53498	26.88	-19.12	46.00	26.60	0.08	0.20	AVERAGE
9	16.312	39.39	-10.61	50.00	38.65	0.33	0.41	AVERAGE
10	16.312	43.86	-16.14	60.00	43.12	0.33	0.41	QP
11	24.529	45.05	-14.95	60.00	44.01	0.48	0.56	QP
12	24.529	39.34	-10.66	50.00	38.30	0.48	0.56	AVERAGE

Note:

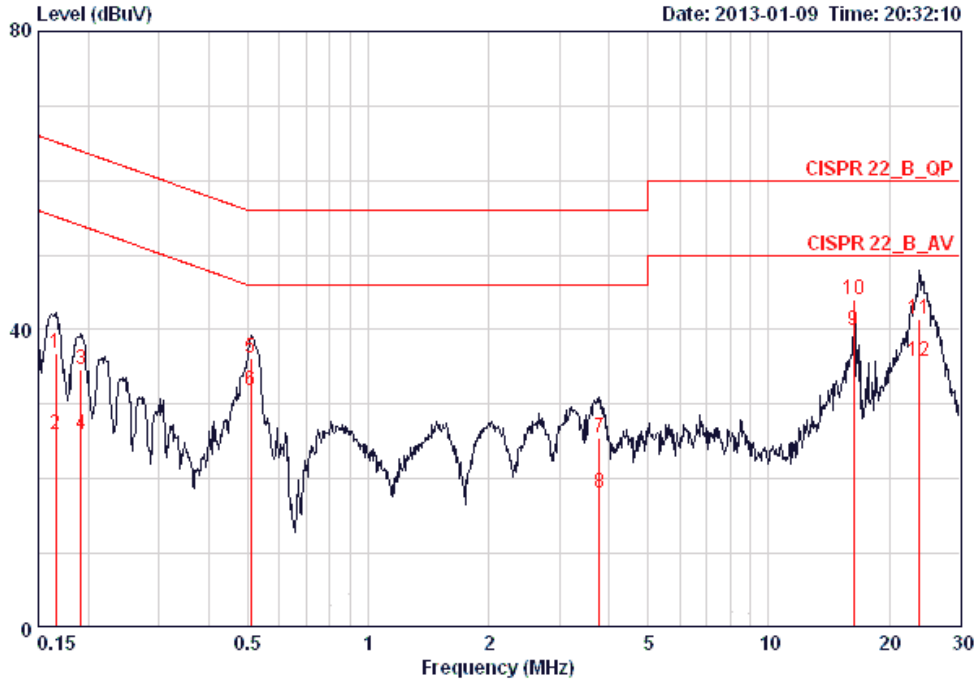
Level = Read Level + LISN Factor + Cable Loss

Temperature	24°C	Humidity	64%
Test Engineer	Sollo Luo	Phase	Line
Test Mode	Mode 2. EUT 2 (with internal antenna) / Ant. 18 + Ant. 19 (Embedded antenna) + POE / Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16589	37.37	-27.80	65.16	37.02	0.16	0.19	QP
2	0.16589	27.32	-27.85	55.16	26.97	0.16	0.19	AVERAGE
3	0.19344	34.29	-29.60	63.89	33.94	0.15	0.20	QP
4	0.19344	25.06	-28.83	53.89	24.71	0.15	0.20	AVERAGE
5	0.51007	37.19	-18.81	56.00	36.84	0.15	0.20	QP
6	0.51007	32.79	-13.21	46.00	32.44	0.15	0.20	AVERAGE
7	3.681	26.55	-29.45	56.00	26.05	0.22	0.29	QP
8	3.681	19.08	-26.92	46.00	18.58	0.22	0.29	AVERAGE
9	16.312	39.70	-10.30	50.00	38.86	0.43	0.41	AVERAGE
10	16.312	44.43	-15.57	60.00	43.59	0.43	0.41	QP
11	24.142	42.68	-17.32	60.00	41.56	0.57	0.55	QP
12	24.142	36.91	-13.09	50.00	35.79	0.57	0.55	AVERAGE

Temperature	24°C	Humidity	64%
Test Engineer	Sollo Luo	Phase	Neutral
Test Mode	Mode 2. EUT 2 (with internal antenna) / Ant. 18 + Ant. 19 (Embedded antenna) + POE / Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16589	36.86	-28.31	65.16	36.59	0.08	0.19	QP
2	0.16589	25.95	-29.22	55.16	25.68	0.08	0.19	AVERAGE
3	0.19140	34.77	-29.21	63.98	34.49	0.08	0.20	QP
4	0.19140	25.89	-28.09	53.98	25.61	0.08	0.20	AVERAGE
5	0.51007	36.21	-19.79	56.00	35.93	0.08	0.20	QP
6	0.51007	31.74	-14.26	46.00	31.46	0.08	0.20	AVERAGE
7	3.779	25.57	-30.43	56.00	25.15	0.13	0.29	QP
8	3.779	18.08	-27.92	46.00	17.66	0.13	0.29	AVERAGE
9	16.312	39.80	-10.20	50.00	39.06	0.33	0.41	AVERAGE
10	16.312	44.09	-15.91	60.00	43.35	0.33	0.41	QP
11	23.762	41.45	-18.55	60.00	40.44	0.47	0.55	QP
12	23.762	35.65	-14.35	50.00	34.64	0.47	0.55	AVERAGE

Note:

Level = Read Level + LISN Factor + Cable Loss

4.2. 99% Occupied 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

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.

4.2.4. 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 99% Occupied Bandwidth

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
56	5280 MHz	24.96	18.40
60	5300 MHz	25.44	18.56
64	5320 MHz	25.28	18.40

Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
62	5310 MHz	47.04	36.80

Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
56	5280 MHz	21.92	17.60
60	5300 MHz	21.28	15.84
64	5320 MHz	24.32	18.88

Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
62	5310 MHz	45.76	37.12

Configuration IEEE 802.11n MCS8 20MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
56	5280 MHz	24.48	18.24
60	5300 MHz	24.16	18.24
64	5320 MHz	24.00	18.24

Configuration IEEE 802.11n MCS8 40MHz / 2TX / Chain 1 + Chain 2

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

Temperature	24℃	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Configuration IEEE 802.11a / 1TX / Chain 1

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
56	5280 MHz	25.28	17.60
60	5300 MHz	23.84	17.44
64	5320 MHz	24.80	17.28

Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
56	5280 MHz	21.44	16.64
60	5300 MHz	21.28	16.32
64	5320 MHz	23.04	17.44

Temperature	24℃	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
56	5280 MHz	27.04	19.36
60	5300 MHz	21.28	15.84
64	5320 MHz	24.64	18.88

Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
62	5310 MHz	46.72	37.12

Temperature	24℃	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna)		

Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
56	5280 MHz	22.72	16.64
60	5300 MHz	21.44	16.64
64	5320 MHz	21.28	16.64

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
56	5280 MHz	25.28	18.56
60	5300 MHz	25.76	18.40
64	5320 MHz	25.60	18.56

Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
62	5310 MHz	48.00	36.80

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna)		

Configuration IEEE 802.11a / 1TX / Chain 1

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
56	5280 MHz	24.32	17.60
60	5300 MHz	24.96	17.44
64	5320 MHz	24.48	17.44

Temperature	24℃	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
56	5280 MHz	26.40	18.56
60	5300 MHz	25.76	18.40
64	5320 MHz	25.60	18.56

Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
62	5310 MHz	48.00	36.80

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna)		

Configuration IEEE 802.11a / 1TX / Chain 1

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
56	5280 MHz	24.96	17.44
60	5300 MHz	24.96	17.44
64	5320 MHz	24.48	17.44

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
56	5280 MHz	24.80	19.20
60	5300 MHz	24.96	19.20
64	5320 MHz	24.48	19.04
100	5500 MHz	22.40	17.92
116	5580 MHz	24.80	18.72
140	5700 MHz	24.00	18.72

Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
62	5310 MHz	46.08	37.76
102	5510 MHz	46.40	37.12
110	5550 MHz	45.76	37.12
134	5670 MHz	45.44	36.80

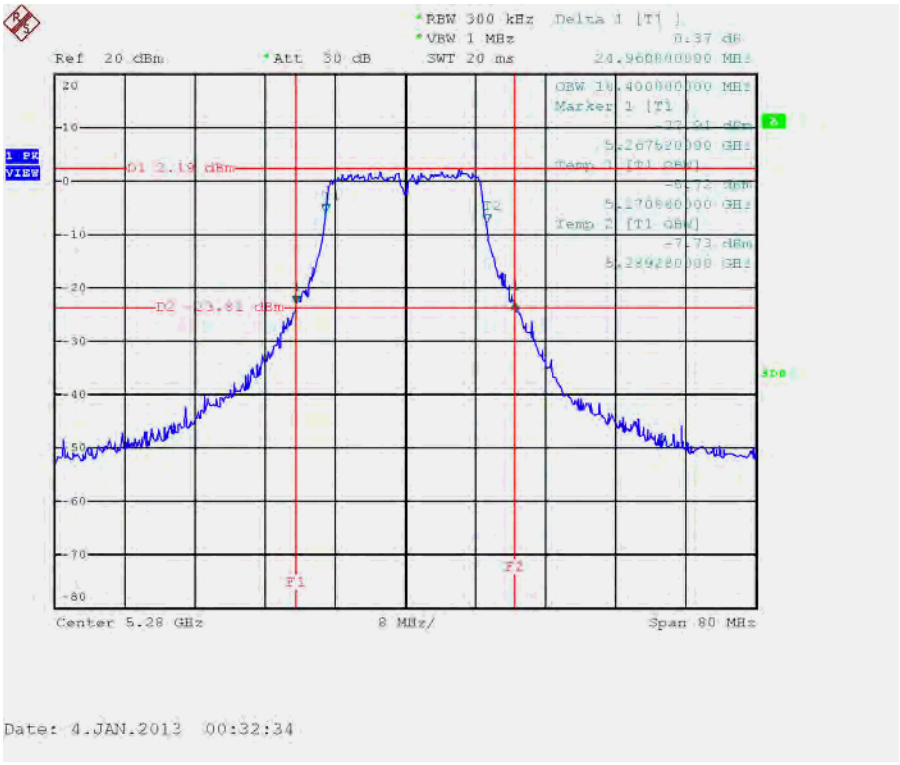
Temperature	24℃	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2

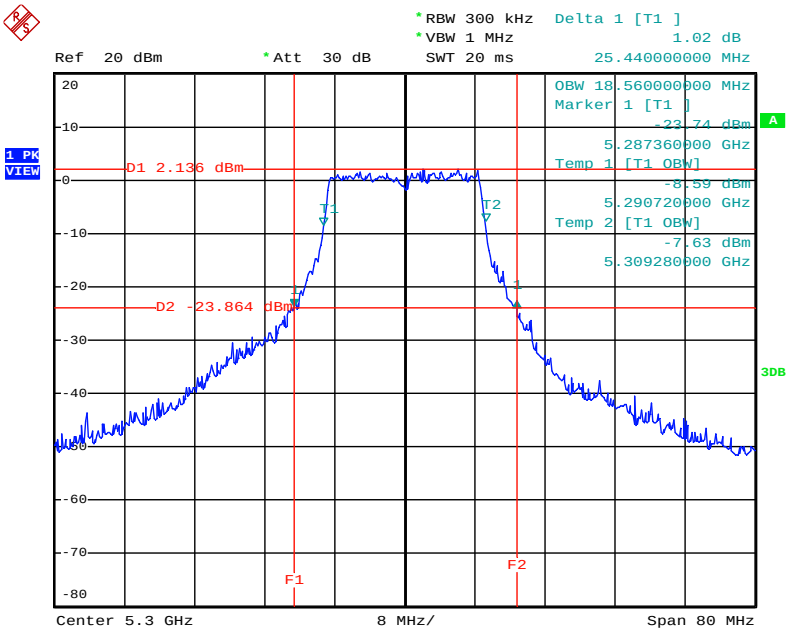
Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
56	5280 MHz	24.48	17.60
60	5300 MHz	24.32	17.60
64	5320 MHz	22.40	16.48
100	5500 MHz	23.68	17.44
116	5580 MHz	24.48	17.44
140	5700 MHz	23.20	17.12

For Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna):

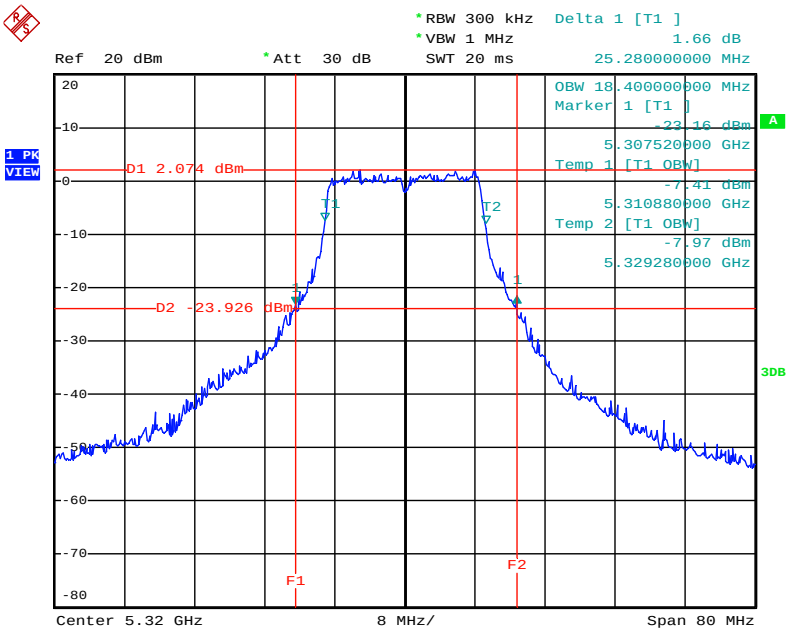
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1 / 5280 MHz



26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1 / 5300 MHz

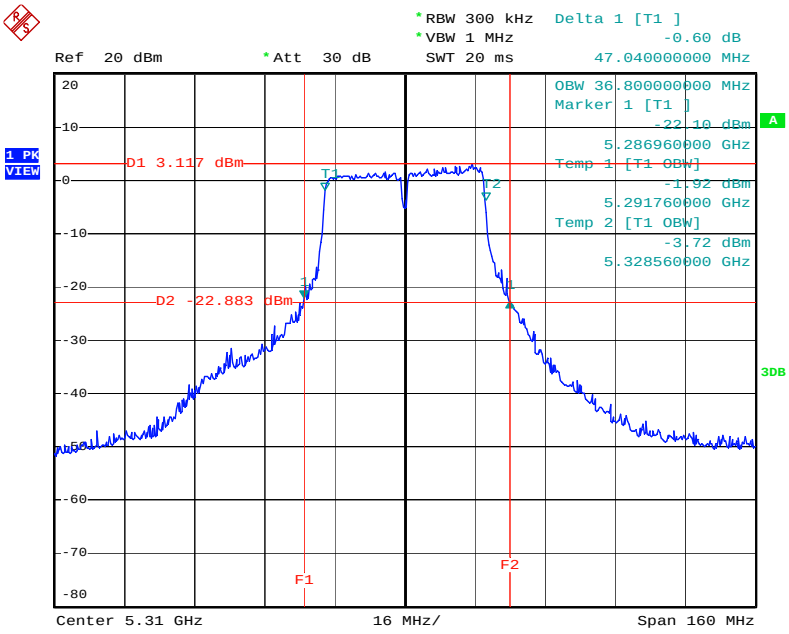


26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1 / 5320 MHz



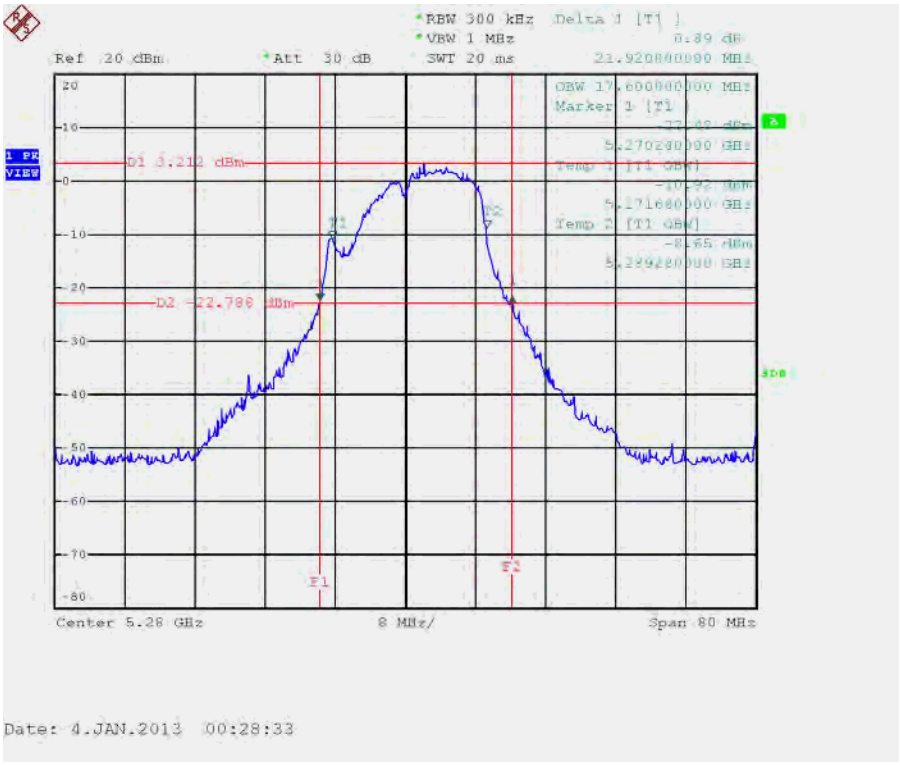
Date: 10.FEB.2012 17:46:14

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1 / 5310 MHz

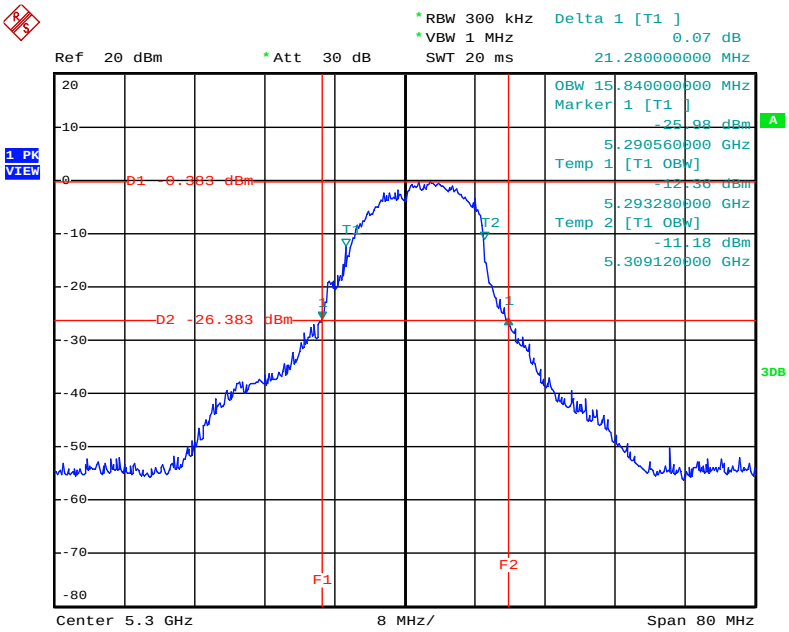


Date: 15.DEC.2011 17:44:17

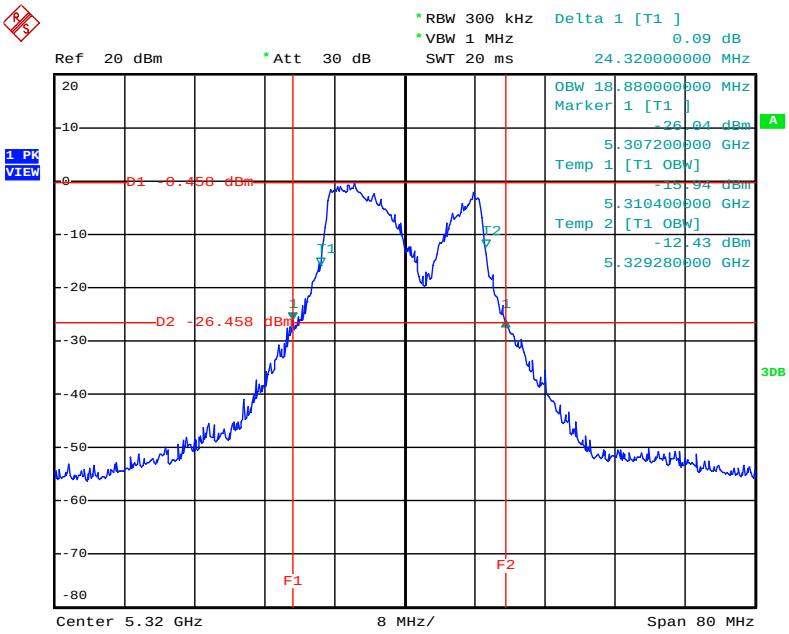
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5280 MHz



26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5300 MHz

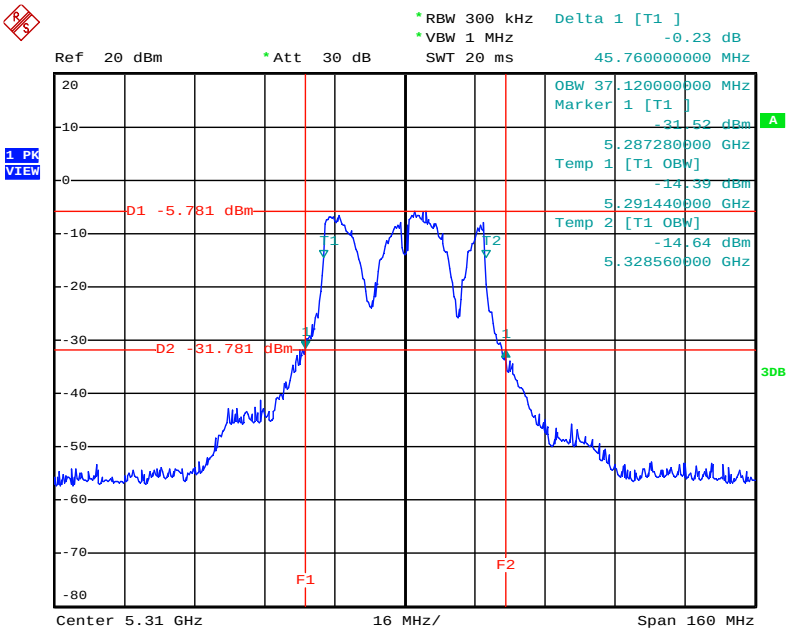


26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5320 MHz



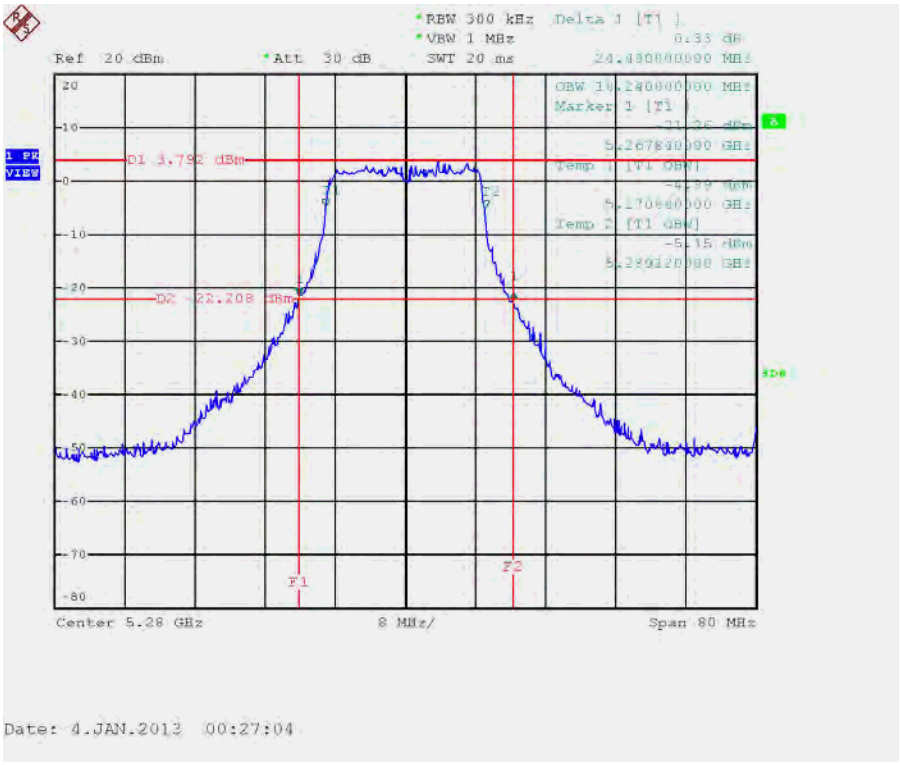
Date: 10.FEB.2012 14:43:50

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2 / 5310 MHz

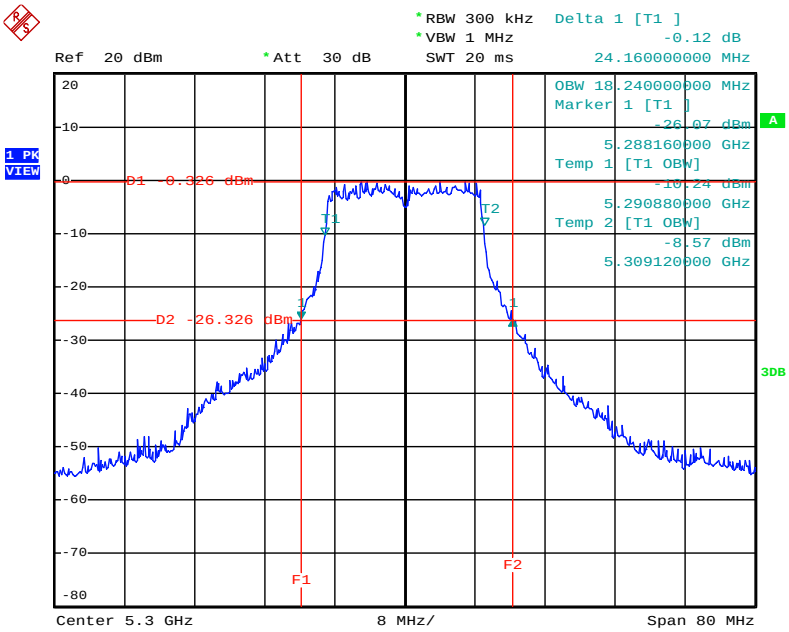


Date: 10.FEB.2012 14:50:05

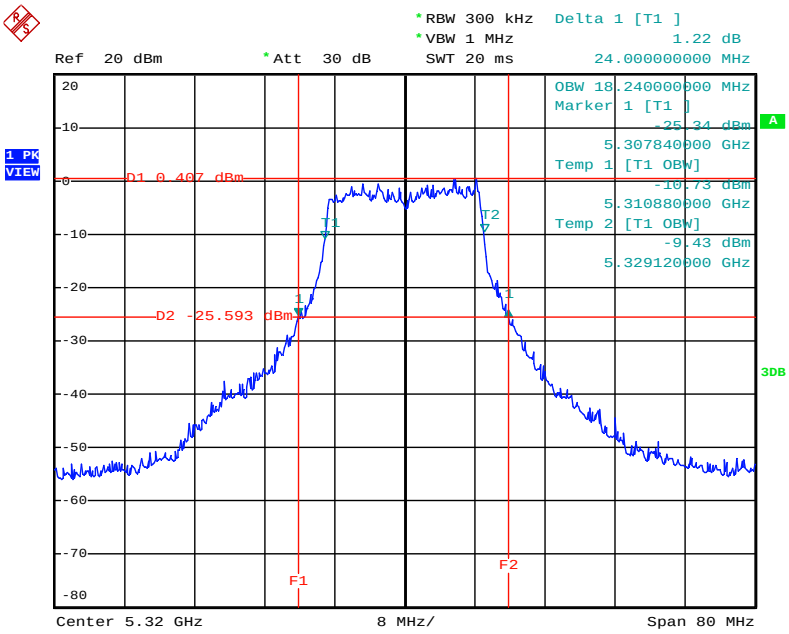
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 20MHz / 2TX / Chain 1 + Chain 2 / 5280 MHz



26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 20MHz / 2TX / Chain 1 + Chain 2 / 5300 MHz

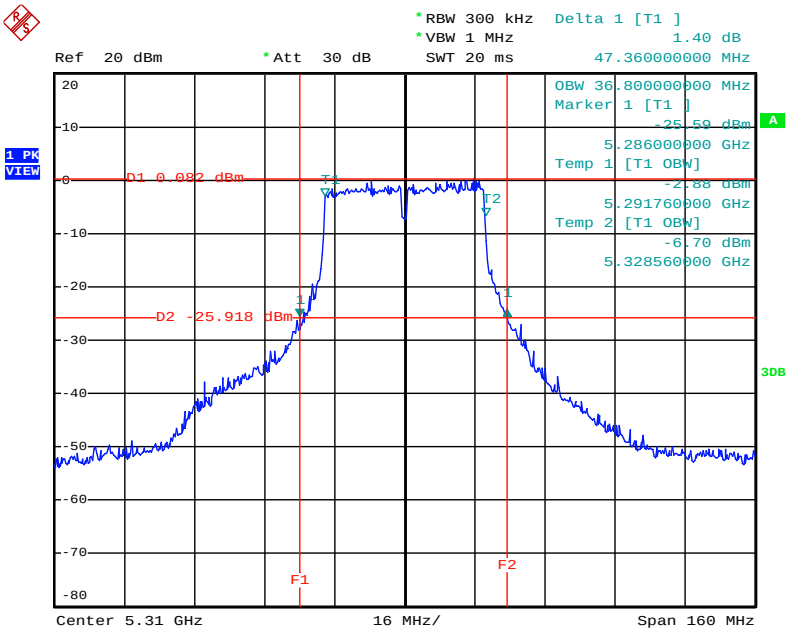


26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 20MHz / 2TX / Chain 1 + Chain 2 / 5320 MHz



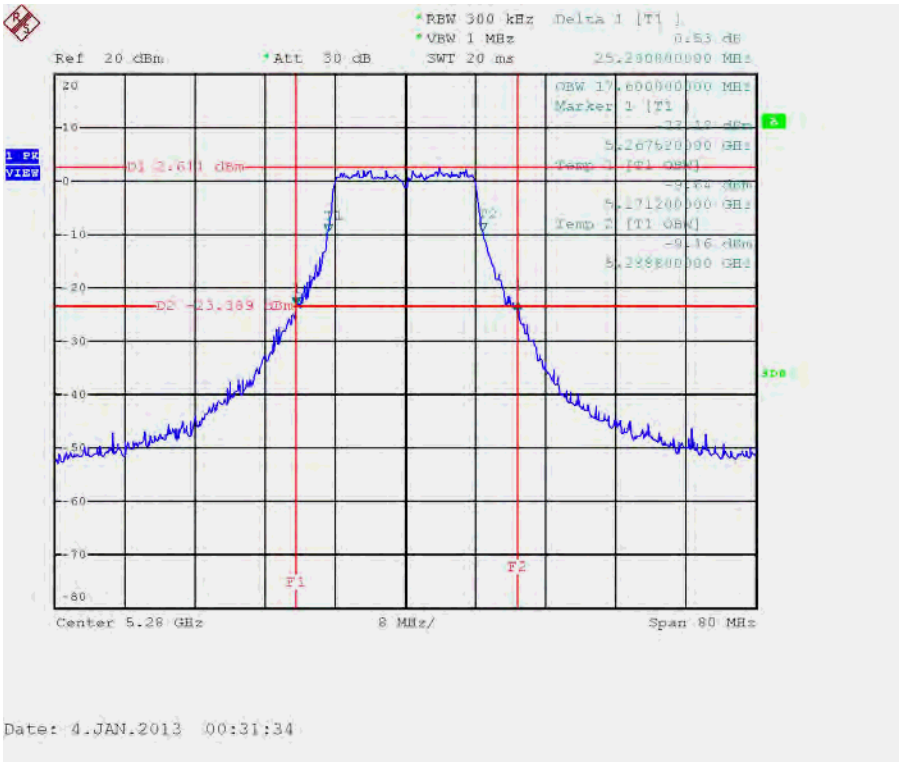
Date: 10.FEB.2012 15:15:42

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 40MHz / 2TX / Chain 1 + Chain 2 / 5310 MHz

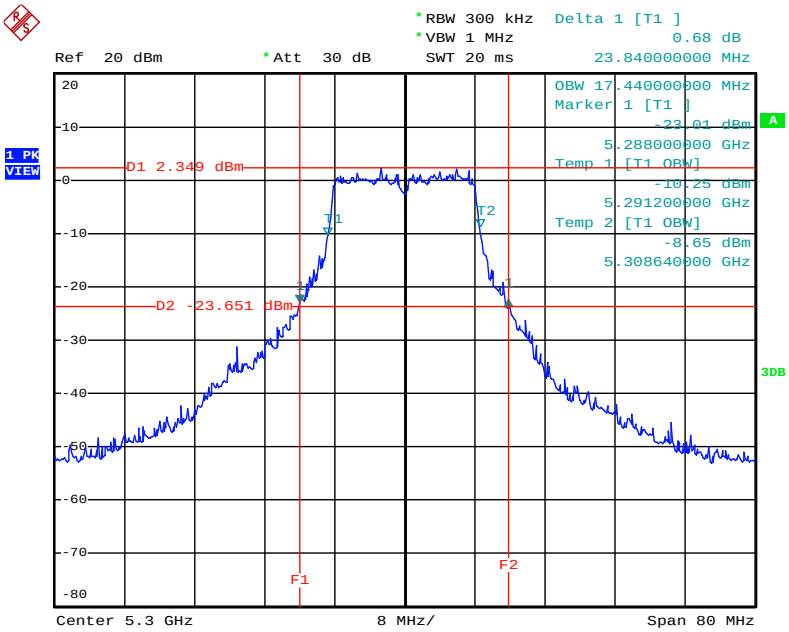


Date: 16.DEC.2011 15:48:00

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 1TX / Chain 1 / 5280 MHz

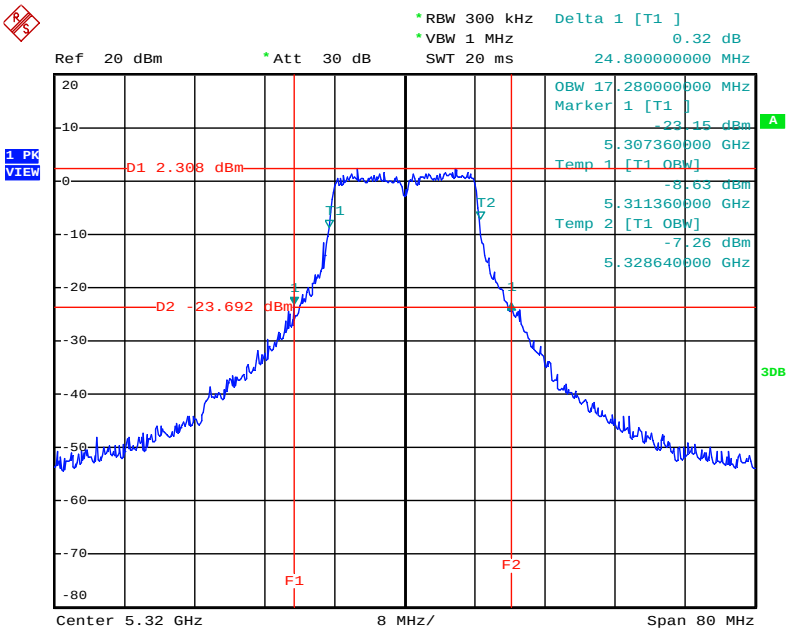


26 dB Bandwidth Plot on Configuration IEEE 802.11a / 1TX / Chain 1 / 5300 MHz



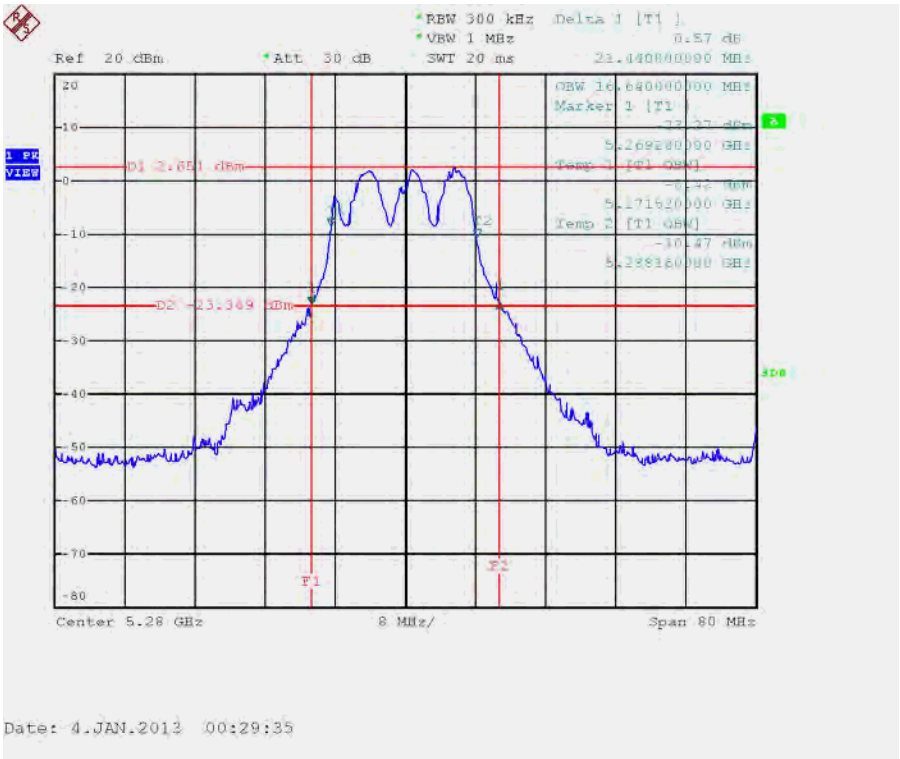
Date: 10.FEB.2012 17:36:27

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 1TX / Chain 1 / 5320 MHz



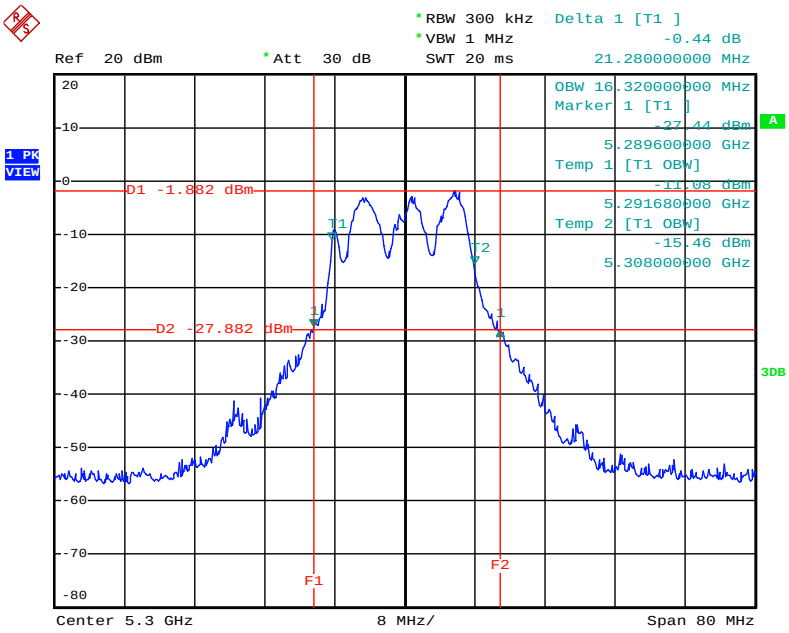
Date: 10.FEB.2012 17:36:54

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5280 MHz



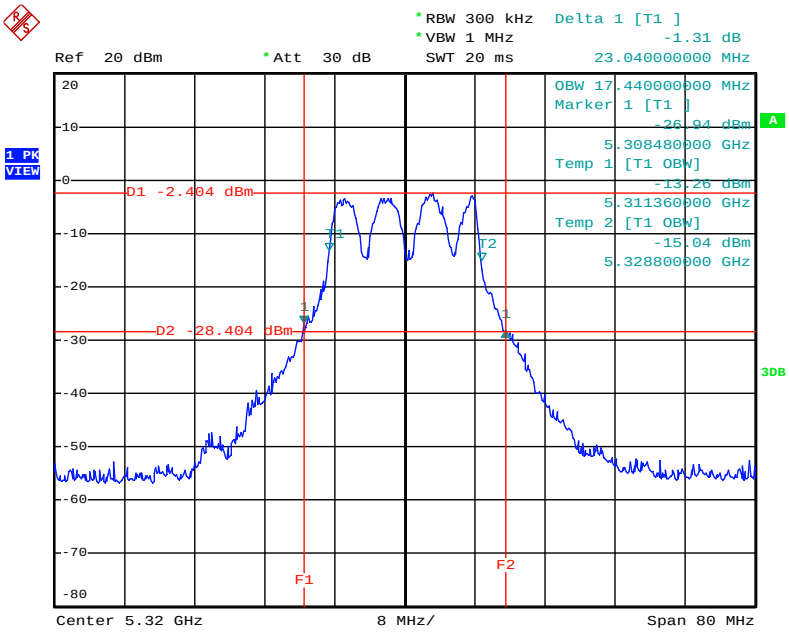
Date: 4.JAN.2013 00:29:35

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5300 MHz



Date: 10.FEB.2012 13:06:00

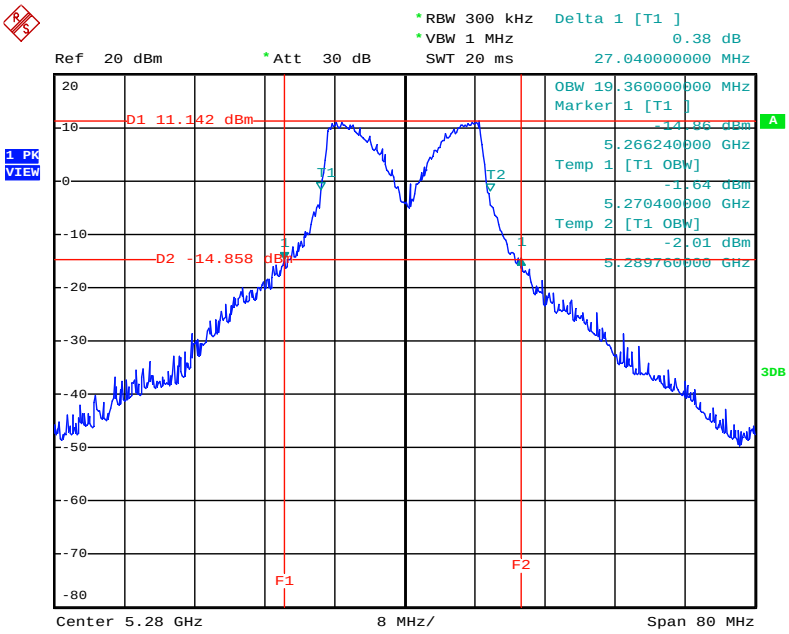
26 dB Bandwidth Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5320 MHz



Date: 10.FEB.2012 13:04:49

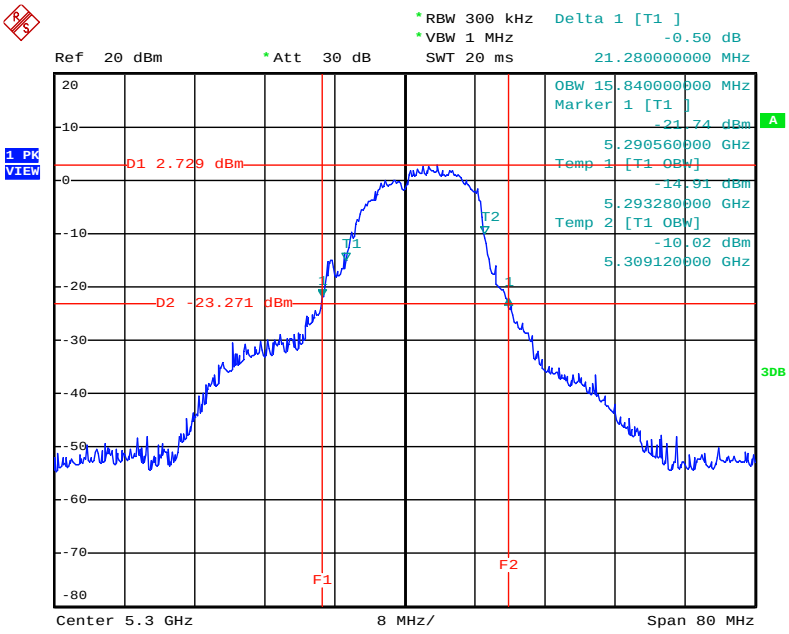
For Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna):

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5280 MHz



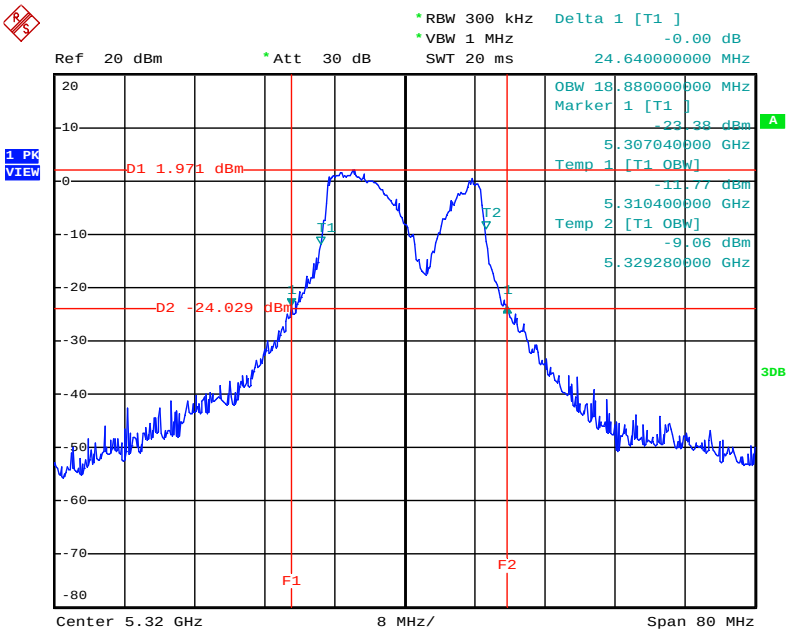
Date: 3.JAN.2013 14:19:12

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5300 MHz



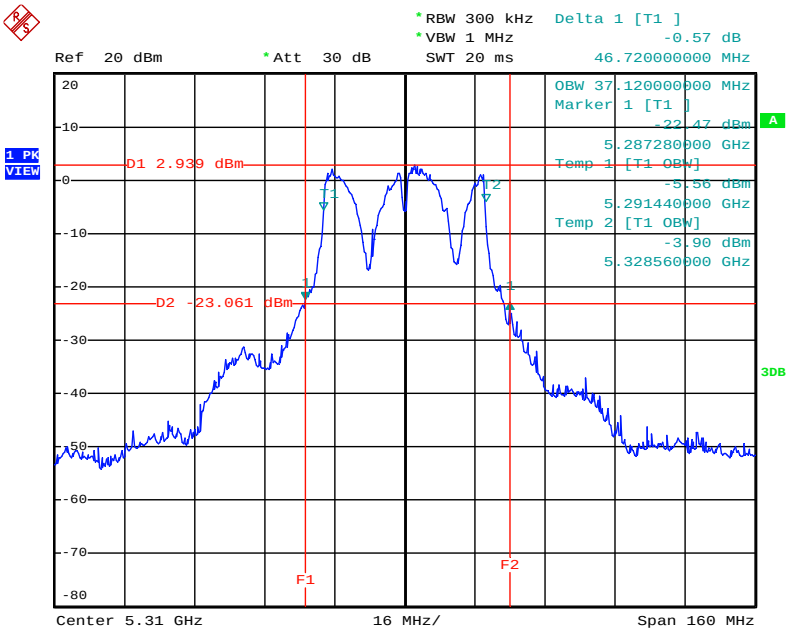
Date: 10.FEB.2012 12:29:26

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5320 MHz



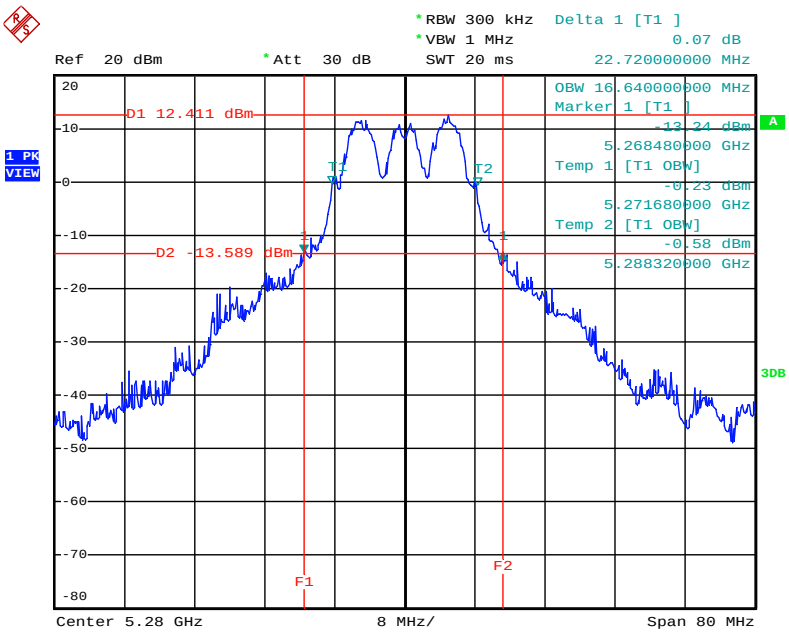
Date: 10.FEB.2012 12:29:56

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2 / 5310 MHz



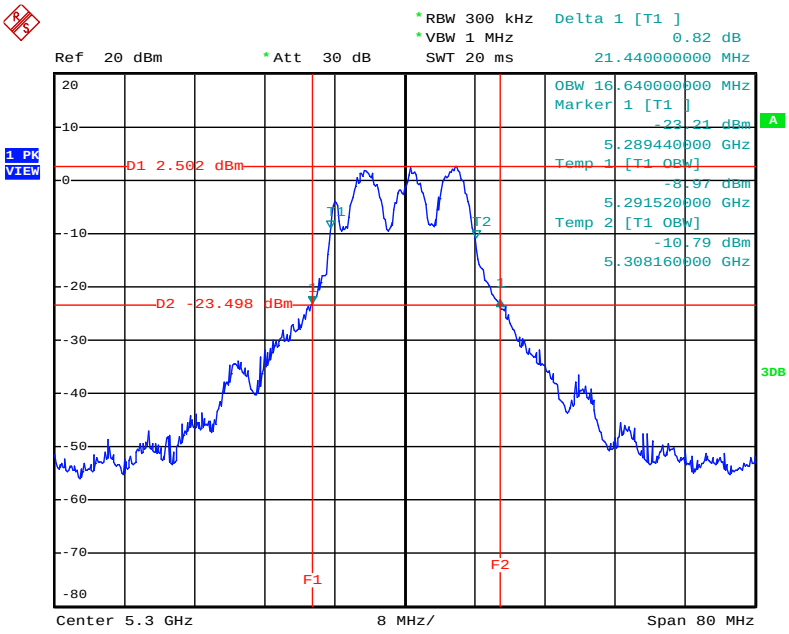
Date: 2.FEB.2012 11:58:44

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5280 MHz



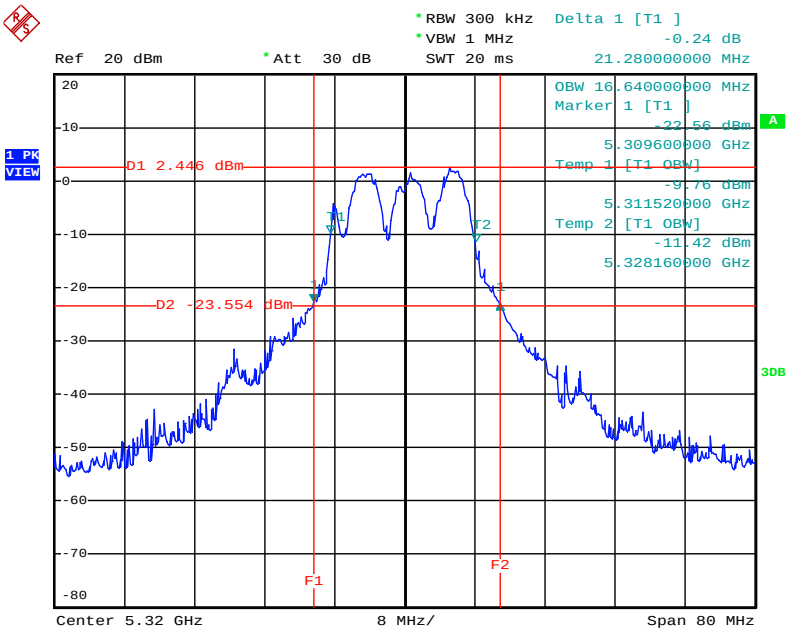
Date: 3.JAN.2013 14:18:02

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5300 MHz



Date: 10.FEB.2012 12:33:39

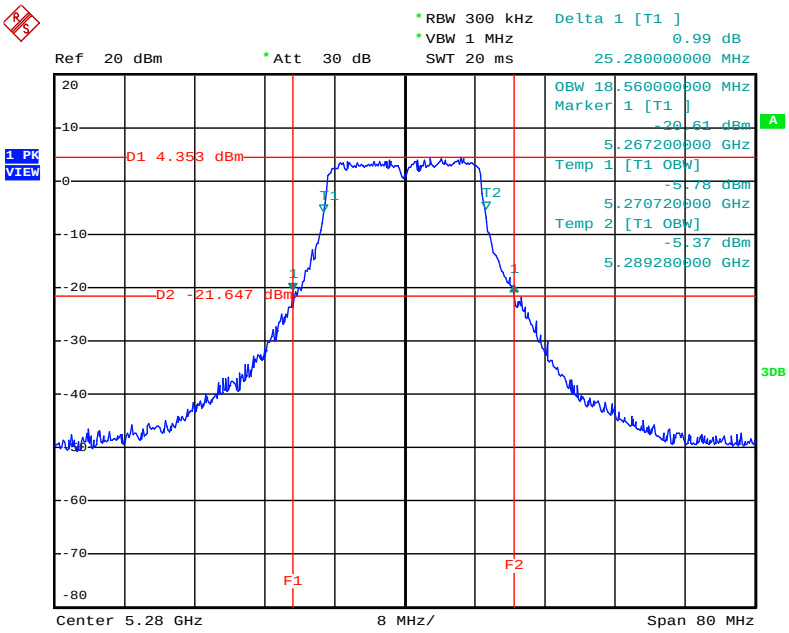
26 dB Bandwidth Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5320 MHz



Date: 10.FEB.2012 12:33:12

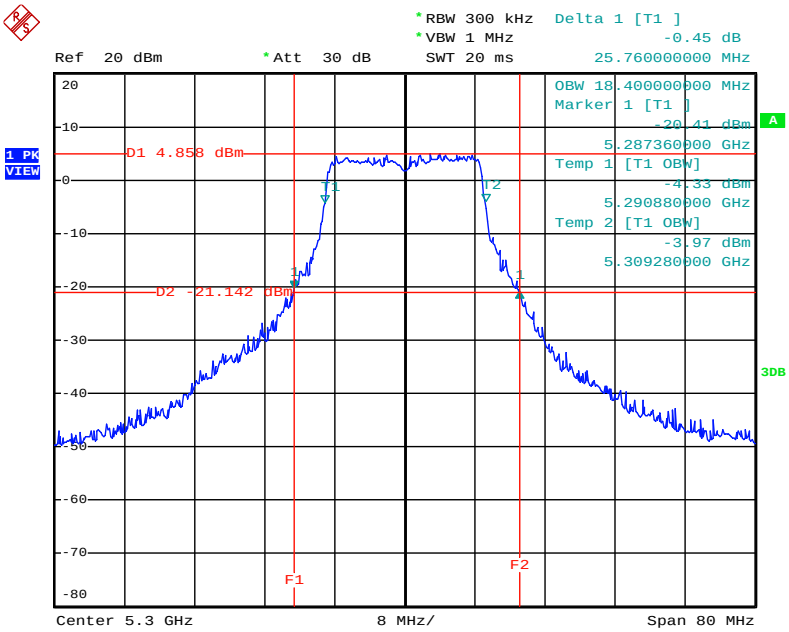
For Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna):

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1 / 5280 MHz



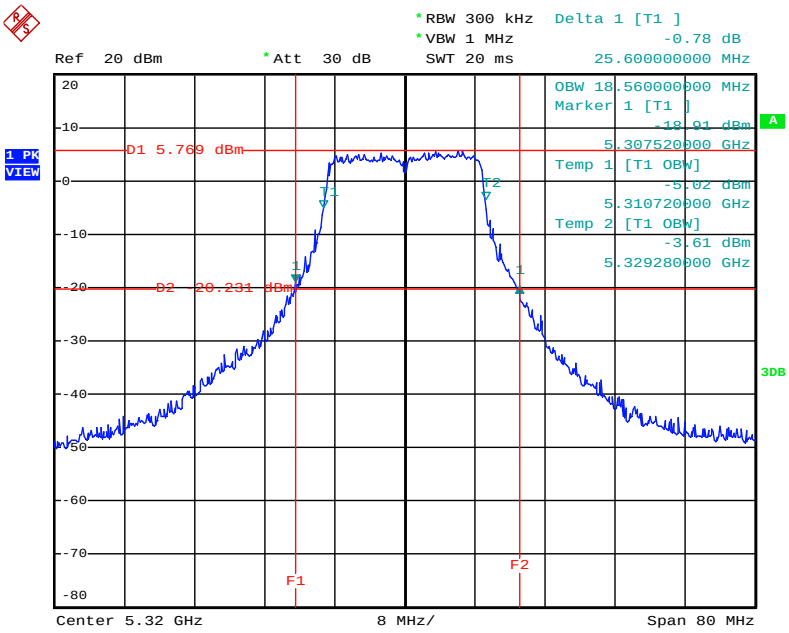
Date: 3.JAN.2013 12:54:27

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1 / 5300 MHz



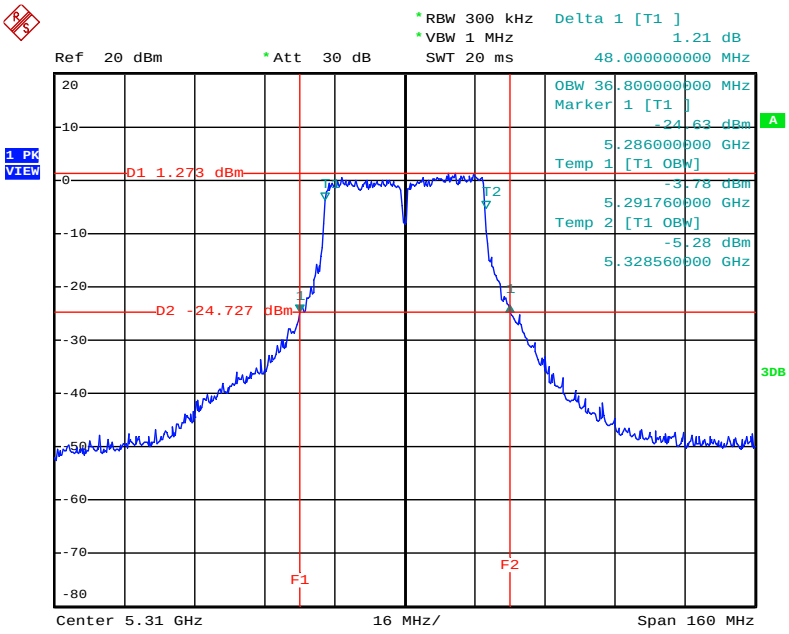
Date: 9.FEB.2012 22:23:36

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1 / 5320 MHz



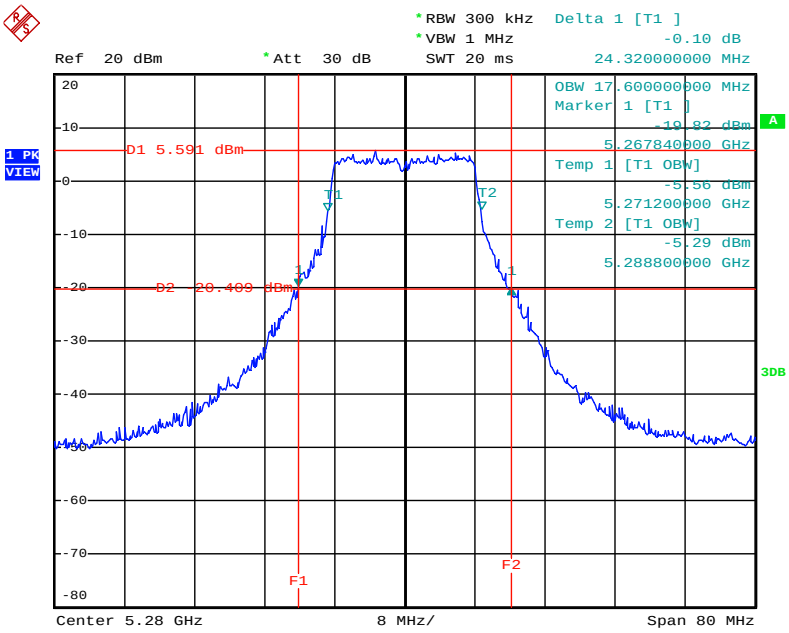
Date: 9.FEB.2012 22:24:04

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1 / 5310 MHz



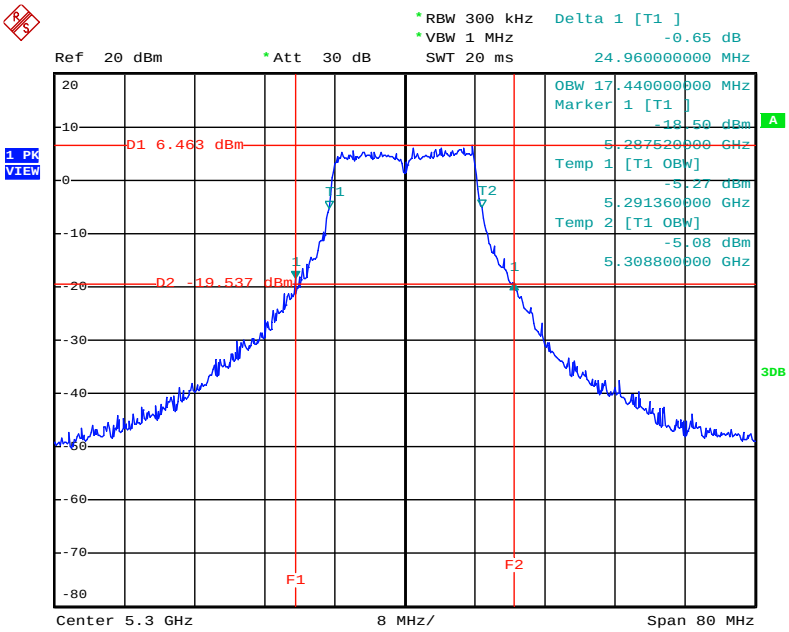
Date: 9.FEB.2012 22:27:38

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 1TX / Chain 1 / 5280 MHz



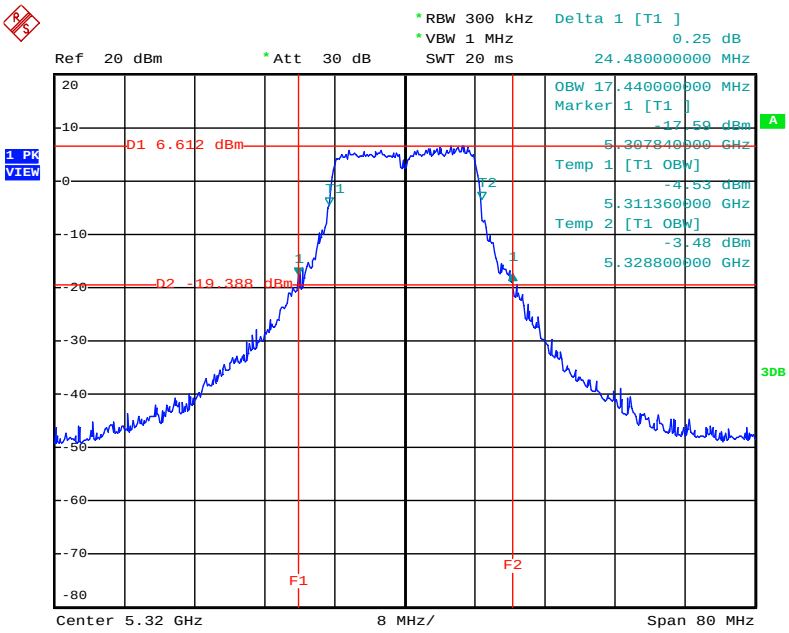
Date: 3.JAN.2013 12:52:49

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 1TX / Chain 1 / 5300 MHz



Date: 9.FEB.2012 22:19:42

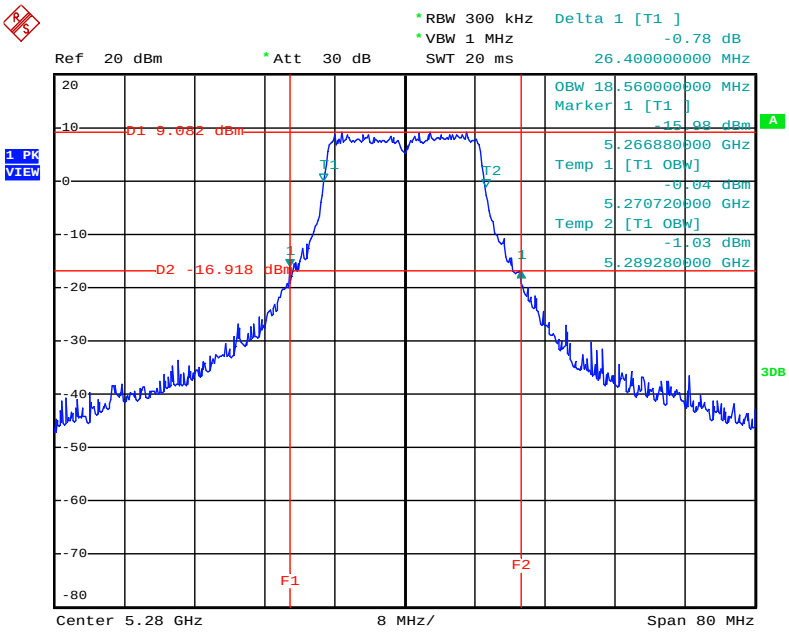
26 dB Bandwidth Plot on Configuration IEEE 802.11a / 1TX / Chain 1 / 5320 MHz



Date: 9.FEB.2012 22:20:11

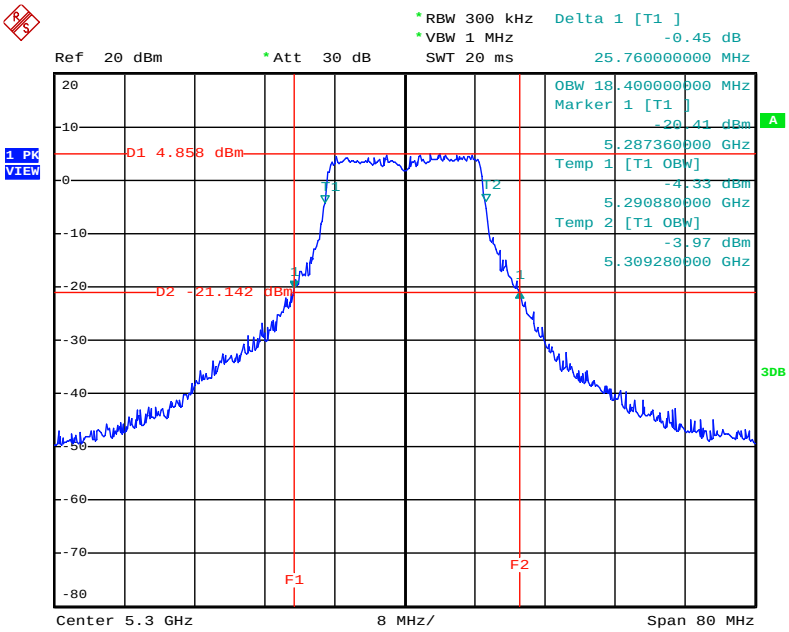
For Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna):

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1 / 5280 MHz



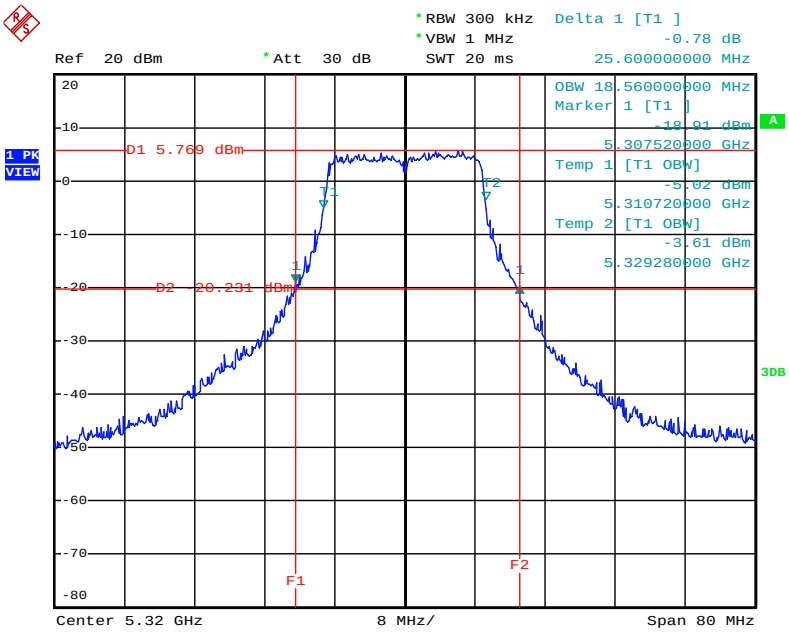
Date: 3.JAN.2013 12:55:04

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1 / 5300 MHz



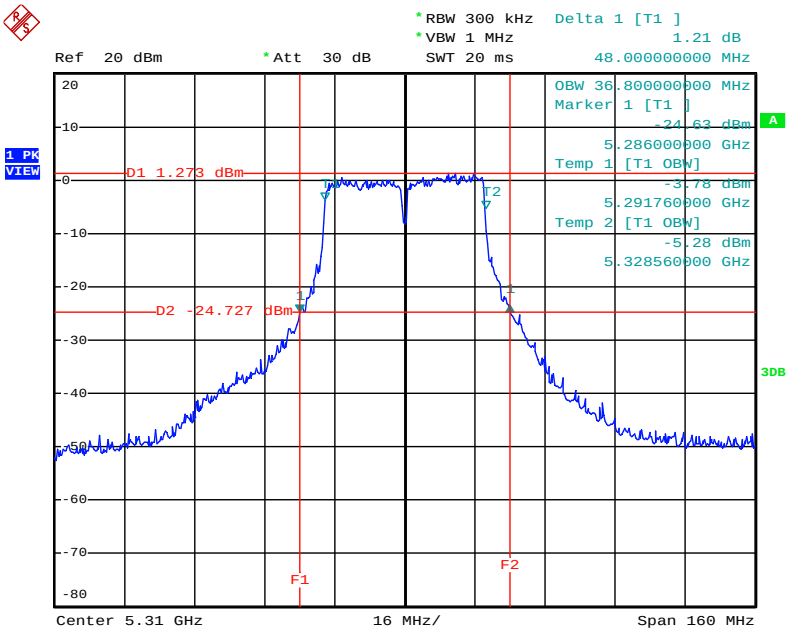
Date: 9.FEB.2012 22:23:36

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1 / 5320 MHz



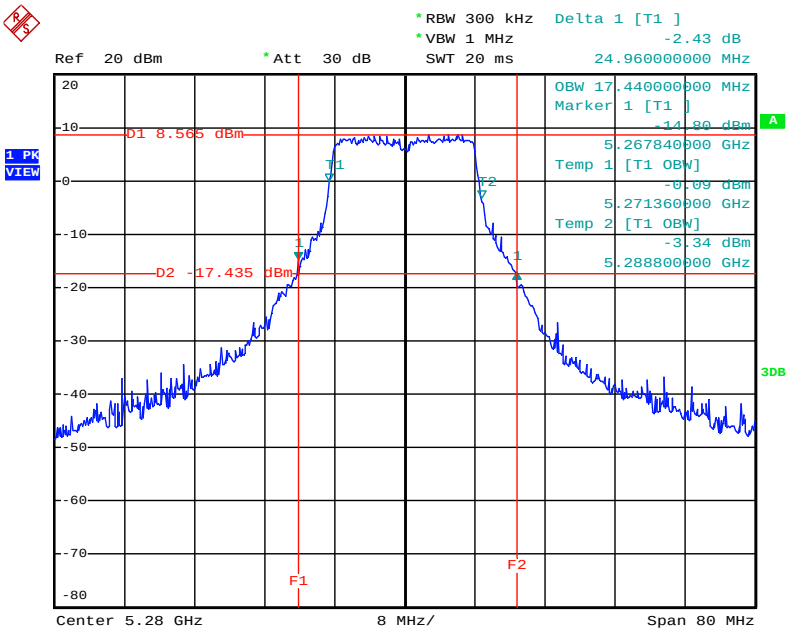
Date: 9.FEB.2012 22:24:04

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1 / 5310 MHz



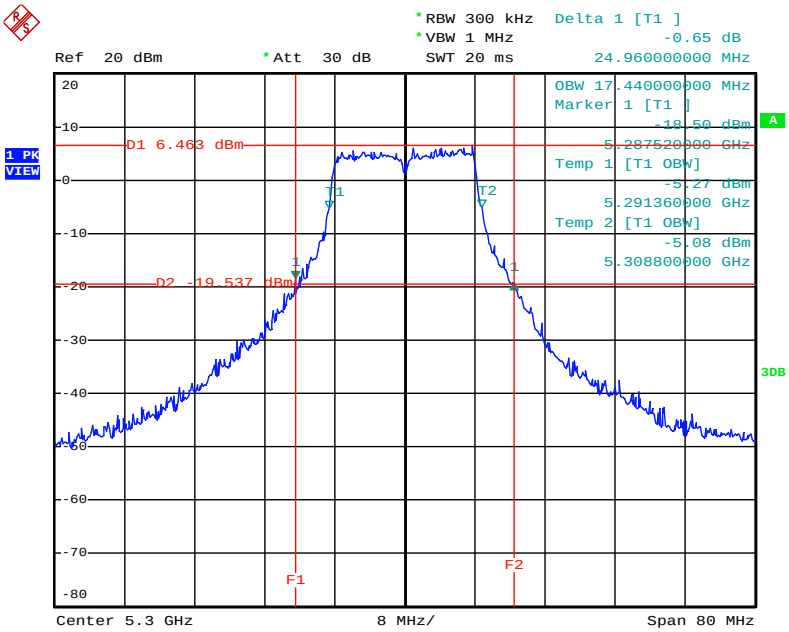
Date: 9.FEB.2012 22:27:38

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 1TX / Chain 1 / 5280 MHz



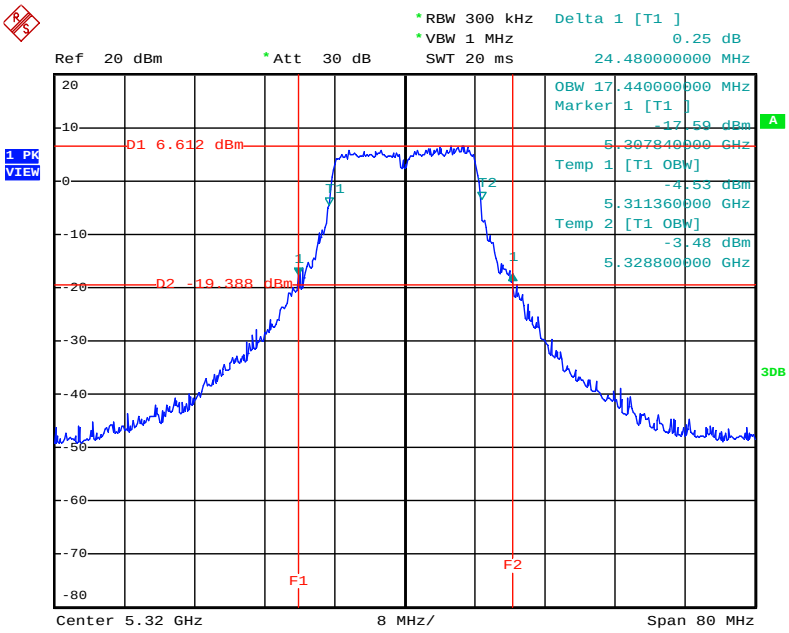
Date: 3.JAN.2013 12:55:35

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 1TX / Chain 1 / 5300 MHz



Date: 9.FEB.2012 22:19:42

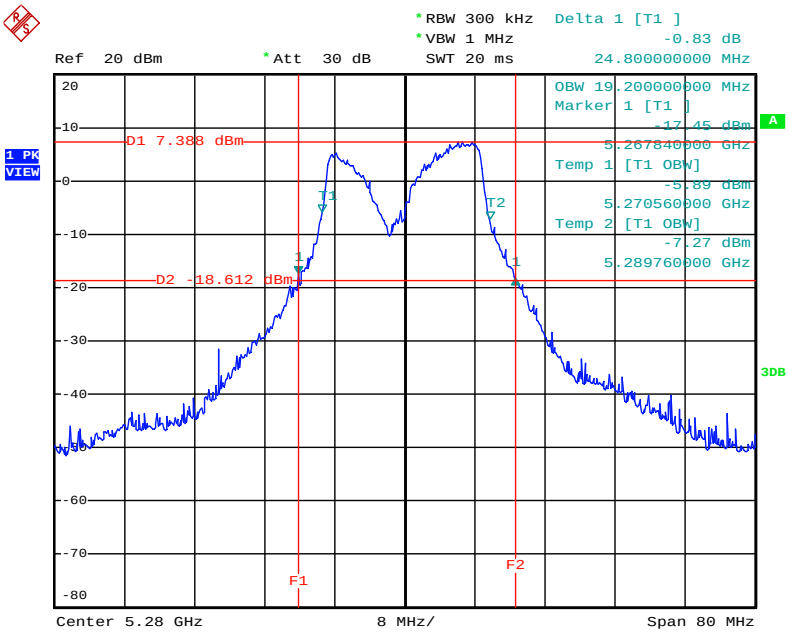
26 dB Bandwidth Plot on Configuration IEEE 802.11a / 1TX / Chain 1 / 5320 MHz



Date: 9.FEB.2012 22:20:11

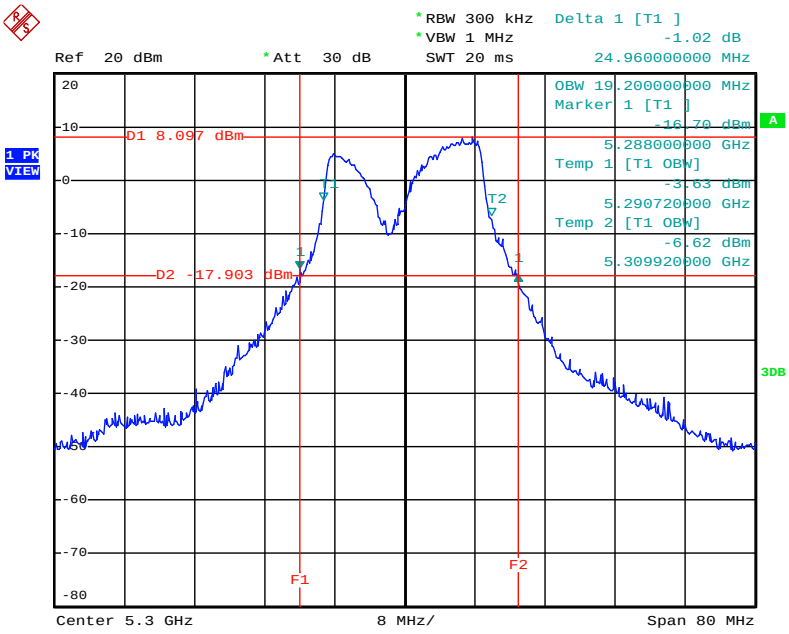
For Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna):

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5280 MHz



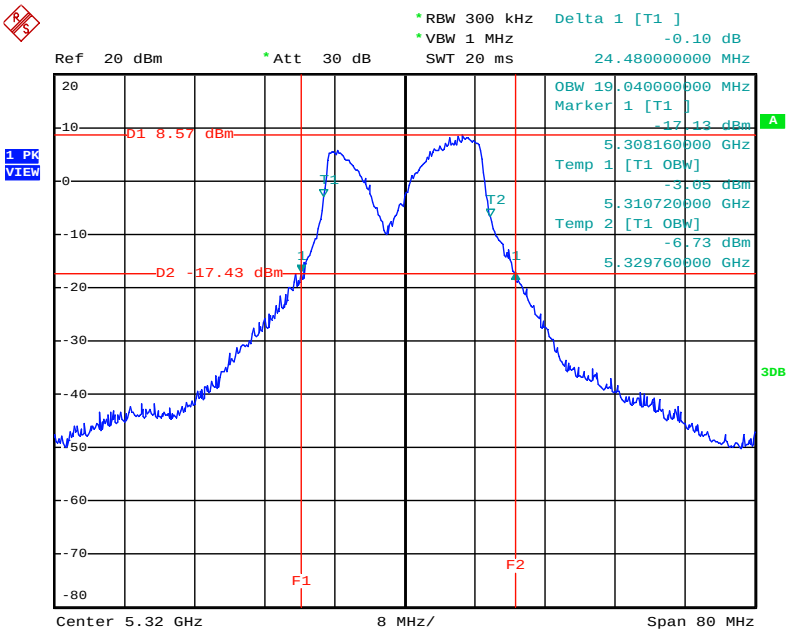
Date: 3.JAN.2013 03:11:41

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5300 MHz



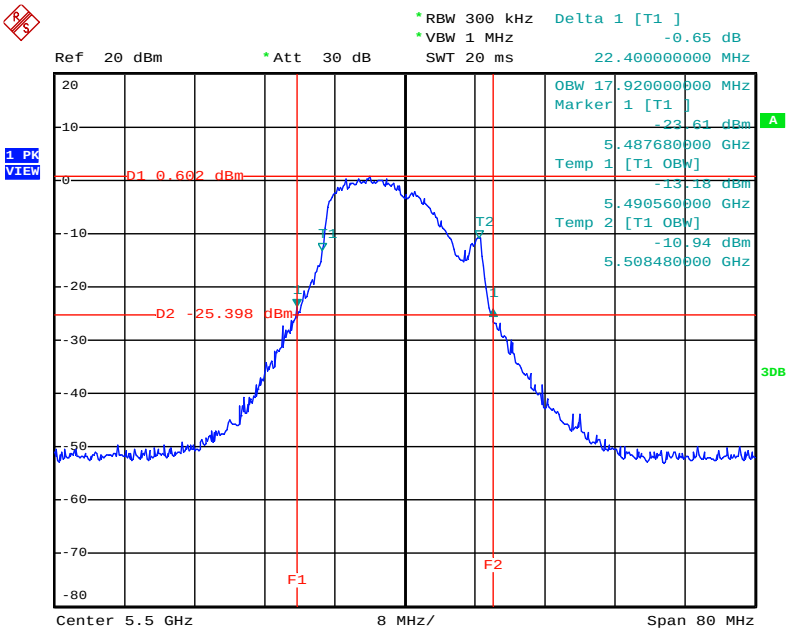
Date: 3.JAN.2013 03:11:10

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5320 MHz



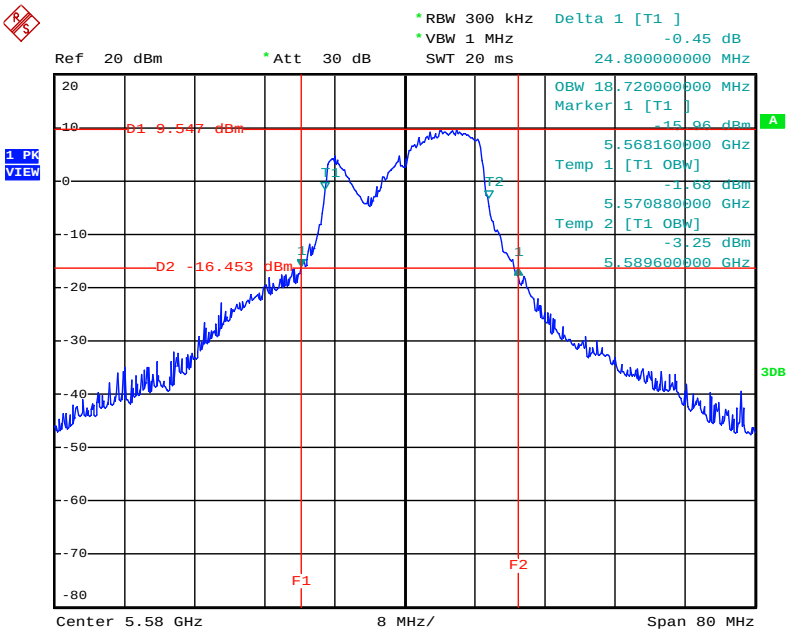
Date: 3.JAN.2013 03:10:06

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5500 MHz



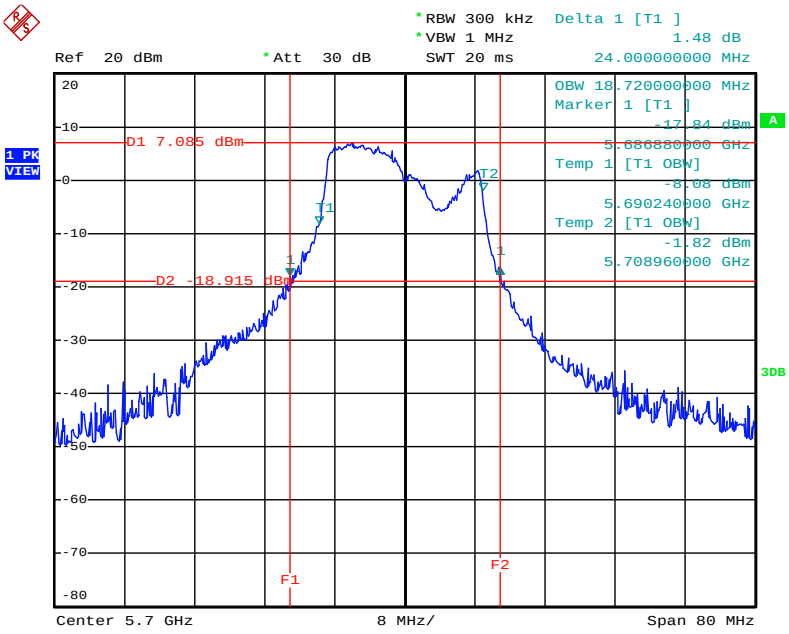
Date: 3.JAN.2013 03:09:28

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5580 MHz



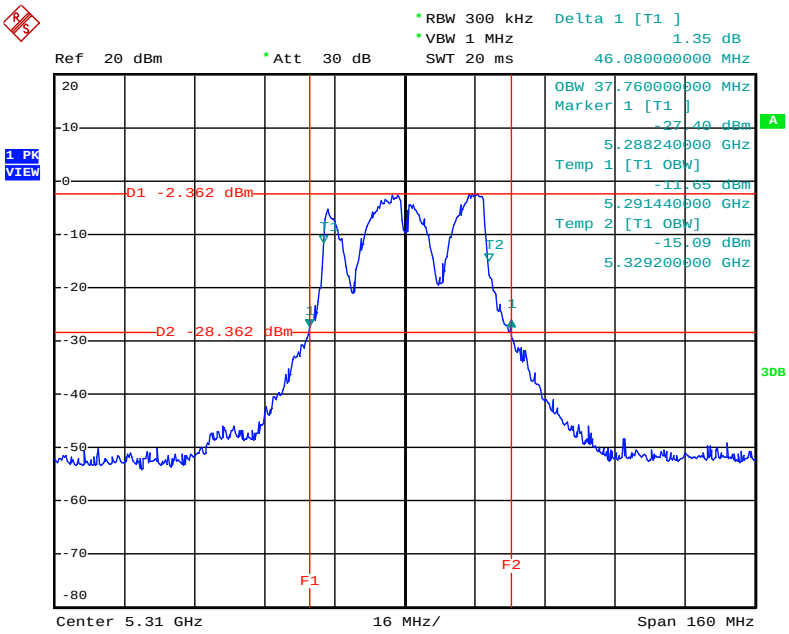
Date: 3.JAN.2013 03:08:42

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5700 MHz



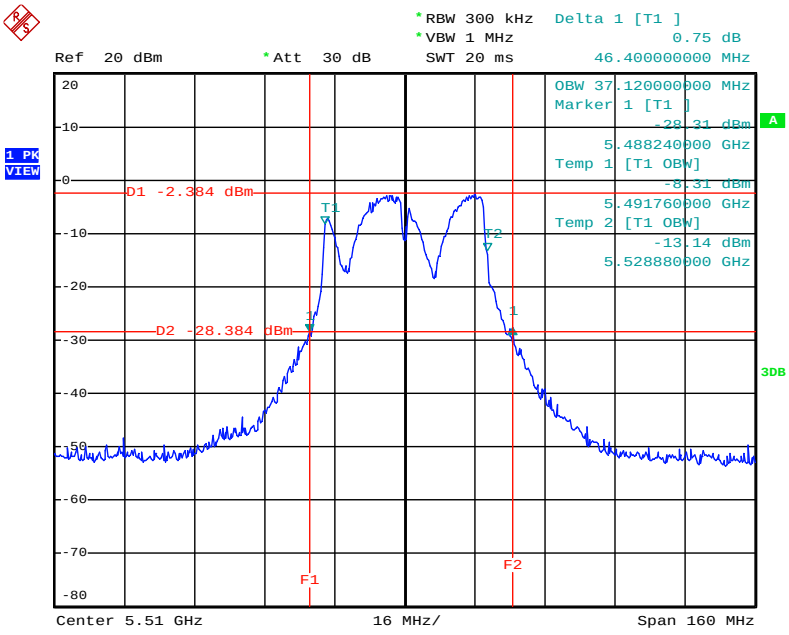
Date: 3.JAN.2013 03:08:06

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2 / 5310 MHz



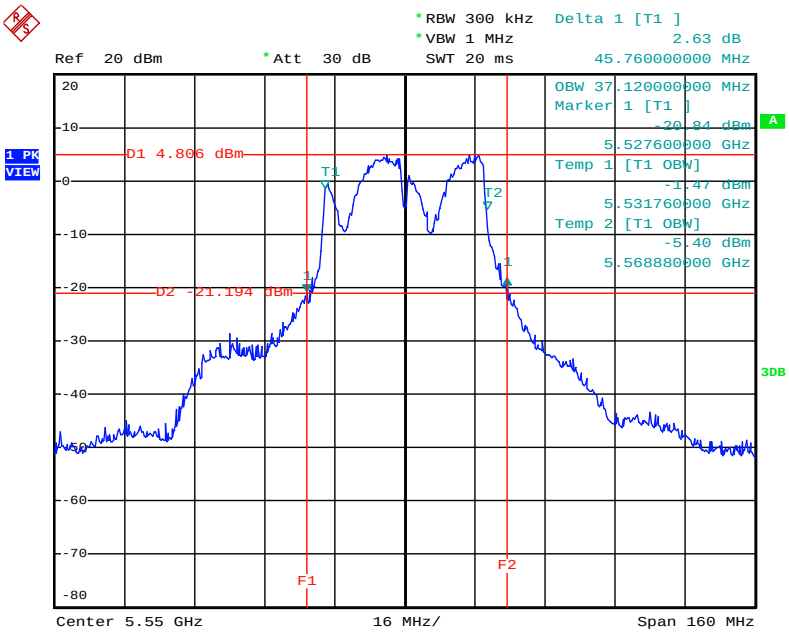
Date: 3.JAN.2013 03:12:32

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2 / 5510 MHz



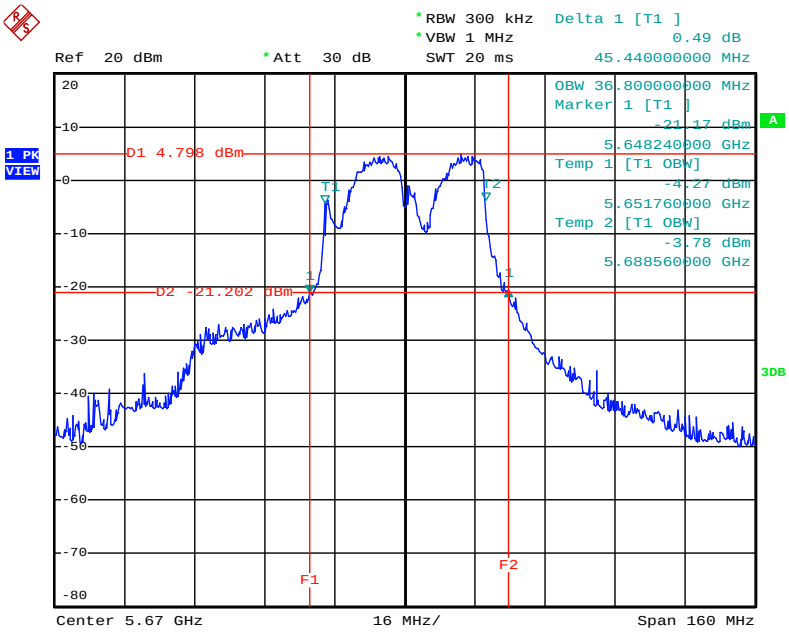
Date: 3.JAN.2013 03:13:11

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2 / 5550 MHz



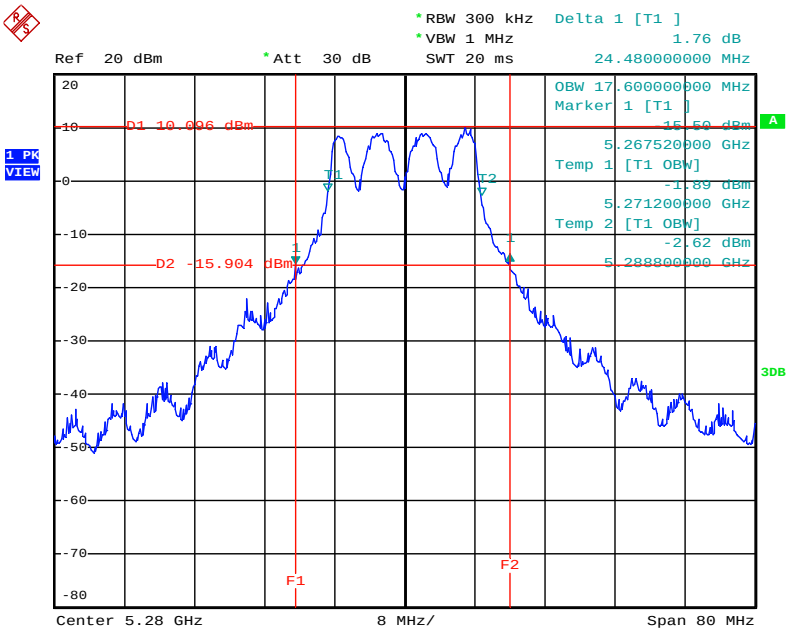
Date: 3.JAN.2013 03:13:52

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2 / 5670 MHz



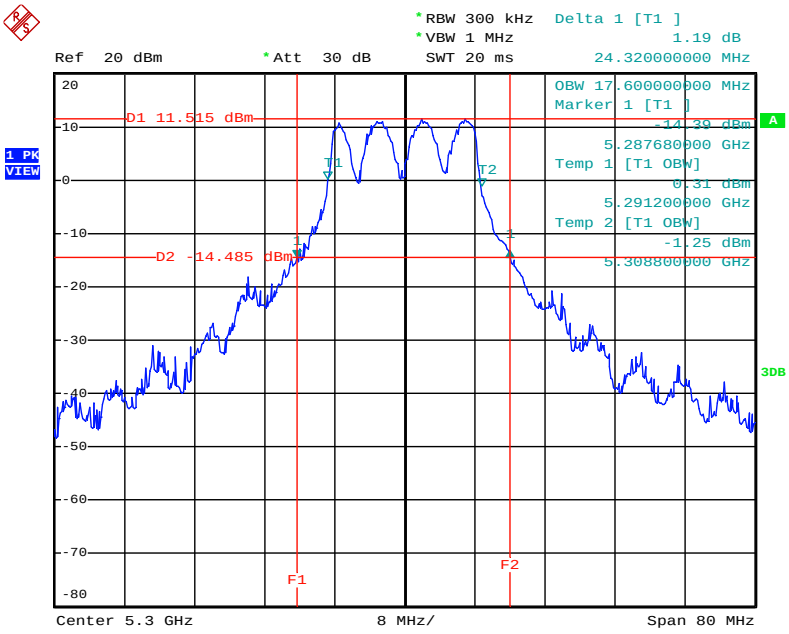
Date: 3.JAN.2013 03:14:28

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5280 MHz



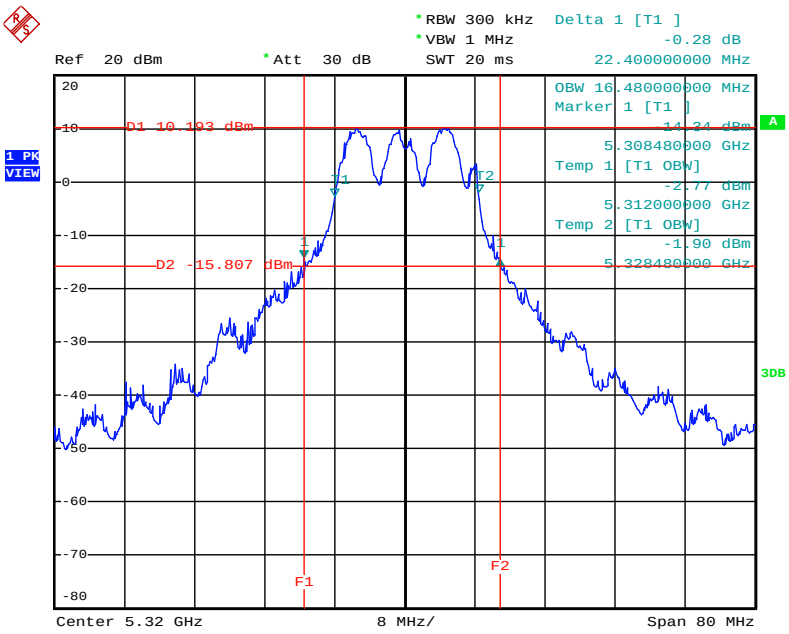
Date: 3.JAN.2013 03:03:05

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5300 MHz



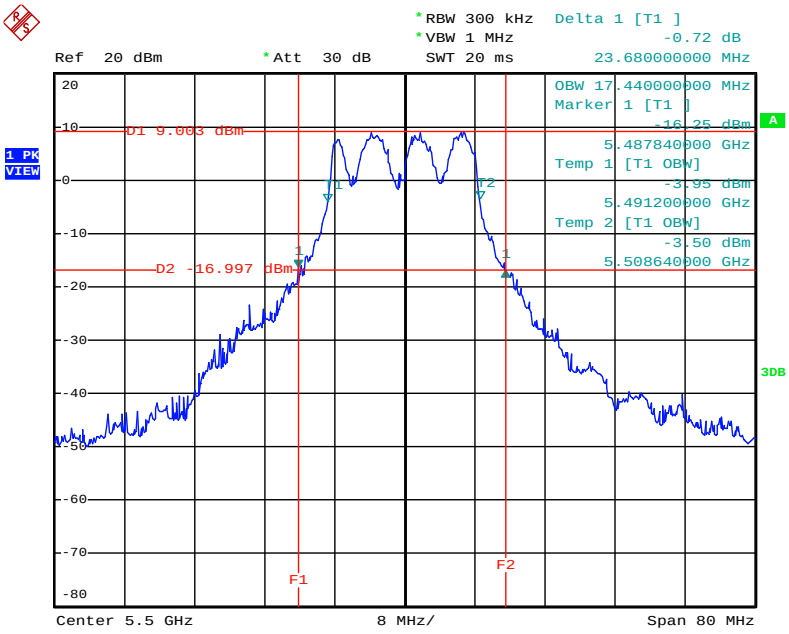
Date: 3.JAN.2013 03:03:56

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5320 MHz



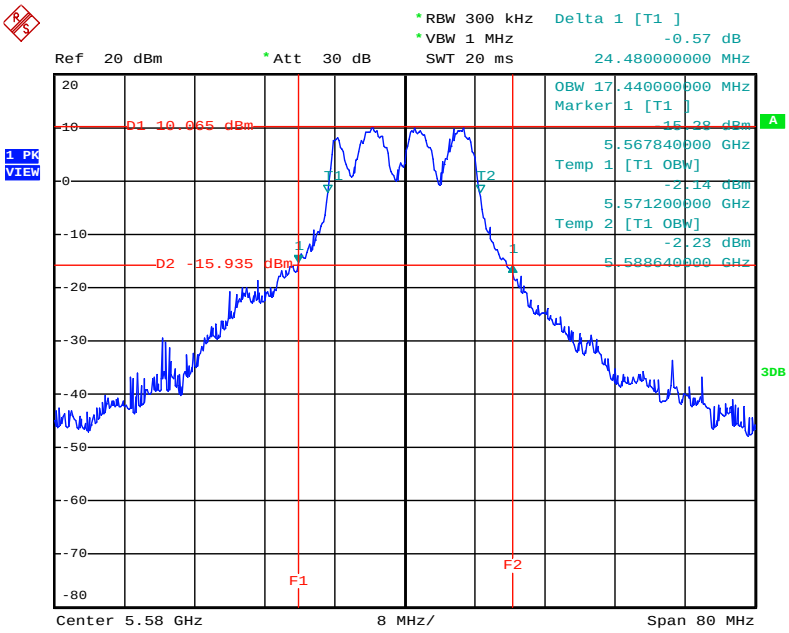
Date: 3.JAN.2013 03:04:49

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5500 MHz



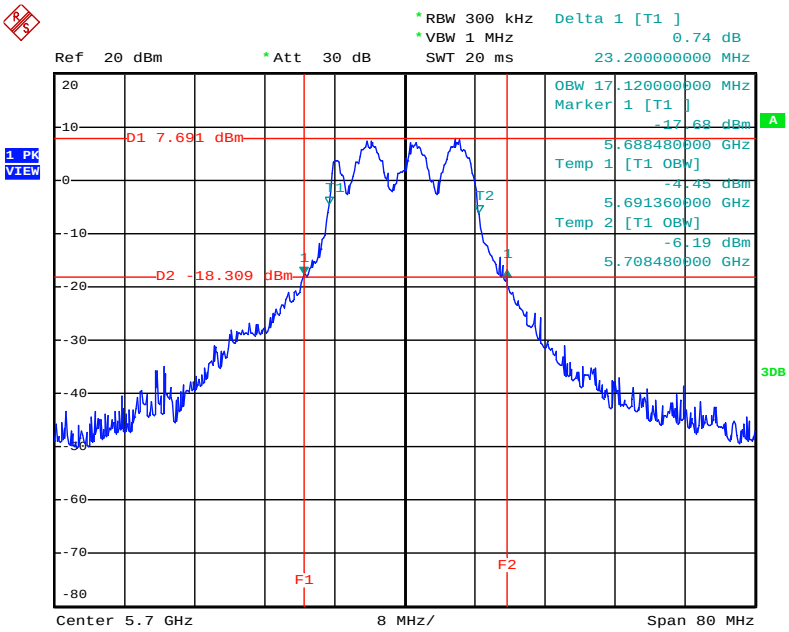
Date: 3.JAN.2013 03:05:50

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5580 MHz



Date: 3.JAN.2013 03:06:26

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5700 MHz



Date: 3.JAN.2013 03:07:16

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 dBm + 10log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725~5.825 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1 W or 17 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 17 dBm in any 1ŔMHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density 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 or 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

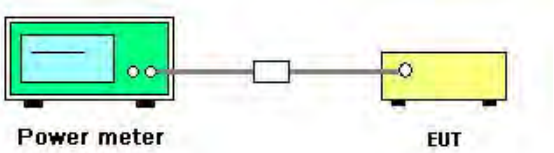
The following table is the setting of the peak power meter.

Power Meter Parameter	Setting
Bandwidth	50MHz bandwidth is greater than the EUT emission bandwidth
Detector	AVERAGE

4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB 789033 Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E,section (C) Maximum conducted output power =>(4) Method PM (Measurement using an RF average power meter) Multiple antenna systems was performed in accordance with KDB 662911 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
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

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		
Test Date	Jan. 06, 2013		

Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1

Channel	Frequency	Conducted Output Power (dBm)	Max. Limit (dBm)	Result
56	5280 MHz	17.98	21.00	Complies
60	5300 MHz	17.96	21.00	Complies
64	5320 MHz	17.73	21.00	Complies

Note: 9dBi >6dBi, so Band2 Limit =24-(9-6)=21dBm

Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1

Channel	Frequency	Conducted Output Power (dBm)	Max. Limit (dBm)	Result
62	5310 MHz	16.63	21.00	Complies

Note: 9dBi >6dBi, so Band2 Limit =24-(9-6)=21dBm

Configuration IEEE 802.11n MCS0 20MHz / 2TX

Channel	Frequency	Conducted Power (dBm)		Total Conducted Output Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
56	5280 MHz	11.07	12.58	14.90	21.00	Complies
60	5300 MHz	10.82	12.50	14.75	21.00	Complies
64	5320 MHz	10.96	12.38	14.74	21.00	Complies

Note: 9dBi >6dBi, so Band2 Limit =24-(9-6)=21dBm

Configuration IEEE 802.11n MCS0 40MHz / 2TX

Channel	Frequency	Conducted Power (dBm)		Total Conducted Output Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
62	5310 MHz	11.26	12.58	14.98	21.00	Complies

Note: 9dBi >6dBi, so Band2 Limit =24-(9-6)=21dBm

Configuration IEEE 802.11n MCS8 20MHz / 2TX

Channel	Frequency	Conducted Power (dBm)		Total Conducted Output Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
56	5280 MHz	13.41	15.68	17.70	21.00	Complies
60	5300 MHz	13.64	15.72	17.81	21.00	Complies
64	5320 MHz	13.76	15.66	17.82	21.00	Complies

Note: 9dBi >6dBi, so Band2 Limit =24-(9-6)=21dBm

Configuration IEEE 802.11n MCS8 40MHz / 2TX

Channel	Frequency	Conducted Power (dBm)		Total Conducted Output Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
62	5310 MHz	13.37	15.39	17.51	21.00	Complies

Note: 9dBi >6dBi, so Band2 Limit =24-(9-6)=21dBm

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		
Test Date	Jan. 06, 2013		

Configuration IEEE 802.11a / 1TX / Chain 1

Channel	Frequency	Conducted Output Power (dBm)	Max. Limit (dBm)	Result
56	5280 MHz	17.98	21.00	Complies
60	5300 MHz	17.76	21.00	Complies
64	5320 MHz	17.92	21.00	Complies

Note: 9dBi >6dBi, so Band2 Limit =24-(9-6)=21dBm

Configuration IEEE 802.11a / 2TX

Channel	Frequency	Conducted Power (dBm)		Total Conducted Output Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
56	5280 MHz	10.79	12.77	14.90	21.00	Complies
60	5300 MHz	10.87	12.85	14.98	21.00	Complies
64	5320 MHz	11.12	12.50	14.87	21.00	Complies

Note: 9dBi >6dBi, so Band2 Limit =24-(9-6)=21dBm

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna)		
Test Date	Jan. 06, 2013		

Configuration IEEE 802.11n MCS0 20MHz / 2TX

Channel	Frequency	Conducted Power (dBm)		Total Conducted Output Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
56	5280 MHz	14.84	17.38	19.30	24.00	Complies
60	5300 MHz	15.85	16.49	19.19	24.00	Complies
64	5320 MHz	16.10	16.12	19.12	24.00	Complies

Configuration IEEE 802.11n MCS0 40MHz / 2TX

Channel	Frequency	Conducted Power (dBm)		Total Conducted Output Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
62	5310 MHz	13.94	13.92	16.94	24.00	Complies

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna)		
Test Date	Jan. 06, 2013		

Configuration IEEE 802.11a / 2TX

Channel	Frequency	Conducted Power (dBm)		Total Conducted Output Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
56	5280 MHz	15.11	17.35	19.38	24.00	Complies
60	5300 MHz	16.09	16.60	19.36	24.00	Complies
64	5320 MHz	16.30	16.10	19.21	24.00	Complies

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna)		
Test Date	Jan. 06, 2013		

Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1

Channel	Frequency	Conducted Output Power (dBm)	Max. Limit (dBm)	Result
56	5280 MHz	13.66	17.50	Complies
60	5300 MHz	14.39	17.50	Complies
64	5320 MHz	14.20	17.50	Complies

Note: 12.5dBi >6dBi, so Band2 Limit =24-(12.5-6)=17.5dBm

Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1

Channel	Frequency	Conducted Output Power (dBm)	Max. Limit (dBm)	Result
62	5310 MHz	9.50	17.50	Complies

Note: 12.5dBi >6dBi, so Band2 Limit =24-(12.5-6)=17.5dBm

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna)		
Test Date	Jan. 06, 2013		

Configuration IEEE 802.11a / 1TX / Chain 1

Channel	Frequency	Conducted Output Power (dBm)	Max. Limit (dBm)	Result
56	5280 MHz	14.23	17.50	Complies
60	5300 MHz	14.13	17.50	Complies
64	5320 MHz	14.35	17.50	Complies

Note: 12.5dBi >6dBi, so Band2 Limit =24-(12.5-6)=17.5dBm

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna)		
Test Date	Jan. 06, 2013		

Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1

Channel	Frequency	Conducted Output Power (dBm)	Max. Limit (dBm)	Result
56	5280 MHz	15.86	19.00	Complies
60	5300 MHz	15.85	19.00	Complies
64	5320 MHz	15.71	19.00	Complies

Note: 11dBi >6dBi, so Band2 Limit =24-(11-6)=19dBm

Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1

Channel	Frequency	Conducted Output Power (dBm)	Max. Limit (dBm)	Result
62	5310 MHz	14.71	19.00	Complies

Note: 11dBi >6dBi, so Band2 Limit =24-(11-6)=19dBm

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna)		
Test Date	Jan. 06, 2013		

Configuration IEEE 802.11a / 1TX / Chain 1

Channel	Frequency	Conducted Output Power (dBm)	Max. Limit (dBm)	Result
56	5280 MHz	15.99	19.00	Complies
60	5300 MHz	15.77	19.00	Complies
64	5320 MHz	15.99	19.00	Complies

Note: 11dBi >6dBi, so Band2 Limit =24-(11-6)=19dBm

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		
Test Date	Jan. 06, 2013		

Configuration IEEE 802.11n MCS0 20MHz / 2TX

Channel	Frequency	Conducted Power (dBm)		Total Conducted Output Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
56	5280 MHz	13.41	14.72	17.12	22.85	Complies
60	5300 MHz	13.48	14.69	17.14	22.85	Complies
64	5320 MHz	13.32	14.63	17.03	22.85	Complies
100	5500 MHz	8.14	10.07	12.22	22.85	Complies
116	5580 MHz	12.42	15.13	16.99	22.85	Complies
140	5700 MHz	12.16	15.31	17.02	22.85	Complies

Note: 7.15dBi >6dBi, so Band3 Limit =24-(7.15-6)=22.85dBm

Configuration IEEE 802.11n MCS0 40MHz / 2TX

Channel	Frequency	Conducted Power (dBm)		Total Conducted Output Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
62	5310 MHz	9.76	10.51	13.16	22.85	Complies
102	5510 MHz	9.11	10.55	12.90	22.85	Complies
110	5550 MHz	12.66	15.33	17.21	22.85	Complies
134	5670 MHz	12.51	15.23	17.09	22.85	Complies

Note: 7.15dBi >6dBi, so Band3 Limit =24-(7.15-6)=22.85dBm

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		
Test Date	Jan. 06, 2013		

Configuration IEEE 802.11a / 2TX

Channel	Frequency	Conducted Power (dBm)		Total Conducted Output Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
56	5280 MHz	13.44	14.76	17.16	22.85	Complies
60	5300 MHz	13.39	14.72	17.12	22.85	Complies
64	5320 MHz	13.64	14.71	17.22	22.85	Complies
100	5500 MHz	12.89	14.76	16.94	22.85	Complies
116	5580 MHz	12.86	15.14	17.16	22.85	Complies
140	5700 MHz	12.45	14.85	16.82	22.85	Complies

Note: 7.15dBi >6dBi, so Band3 Limit =24-(7.15-6)=22.85dBm

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.

Frequency Range	Power Spectral Density limit (dBm/MHz)
5.25-5.35 GHz	11
5470-5725 GHz	11

4.4.2. Measuring Instruments and Setting

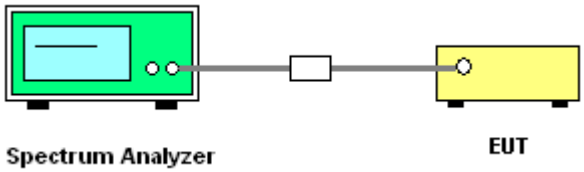
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz
VB	3000 kHz
Detector	RMS
Trace	AVERAGE
Sweep Time	Auto
Trace Average	100 times

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB 789033 Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E,section (C) Maximum conducted output power => (d) Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).
3. Multiple antenna systems was performed in accordance with KDB 662911 in-Band Power Spectral Density (PSD) Measurements (1) Measure and sum the spectra across the outputs.
4. When measuring first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3 and so on up to the Nth output to obtain the value for the first frequency bin of the summed spectrum. The summed spectrum value for each of the other frequency bins is computed in the same way.

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

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 1TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
56	5280 MHz	3.26	8.00	Complies
60	5300 MHz	3.68	8.00	Complies
64	5320 MHz	3.96	8.00	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =9dBi >6dBi,So Band2 Limit =11-(9-6)=8dBm/MHz

Configuration IEEE 802.11n MCS0 40MHz / 1TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
62	5310 MHz	1.02	8.00	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =9dBi >6dBi,So Band2 Limit =11-(9-6)=8dBm/MHz

Configuration IEEE 802.11n MCS0 20MHz / 2TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
56	5280 MHz	0.74	4.99	Complies
60	5300 MHz	1.11	4.99	Complies
64	5320 MHz	0.96	4.99	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =12.01dBi >6dBi,So Band2 Limit =11-(12.01-6)=4.99dBm/MHz

Configuration IEEE 802.11n MCS0 40MHz / 2TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
62	5310 MHz	-1.27	4.99	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =12.01dBi >6dBi,So Band2 Limit =11-(12.01-6)=4.99dBm/MHz

Configuration IEEE 802.11n MCS8 20MHz / 2TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
56	5280 MHz	3.11	8.00	Complies
60	5300 MHz	3.20	8.00	Complies
64	5320 MHz	3.19	8.00	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =9dBi >6dBi,So Band2 Limit =11-(9-6)=8dBm/MHz

Configuration IEEE 802.11n MCS8 40MHz / 2TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
62	5310 MHz	0.43	8.00	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =9dBi >6dBi,So Band2 Limit =11-(9-6)=8dBm/MHz

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Configuration IEEE 802.11a / 1TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
56	5280 MHz	3.23	8.00	Complies
60	5300 MHz	4.72	8.00	Complies
64	5320 MHz	4.97	8.00	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =9dBi >6dBi,So Band2 Limit =11-(9-6)=8dBm/MHz

Configuration IEEE 802.11a / 2TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
56	5280 MHz	1.24	8.00	Complies
60	5300 MHz	1.35	8.00	Complies
64	5320 MHz	1.45	8.00	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =9dBi >6dBi,So Band2 Limit =11-(9-6)=8dBm/MHz

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 2TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
56	5280 MHz	6.67	9.39	Complies
60	5300 MHz	6.37	9.39	Complies
64	5320 MHz	6.43	9.39	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =7.61dBi >6dBi,So Band2 Limit =11-(7.61-6)=9.39dBm/MHz

Configuration IEEE 802.11n MCS0 40MHz / 2TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
62	5310 MHz	2.24	9.39	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =7.61dBi >6dBi,So Band2 Limit =11-(7.61-6)=9.39dBm/MHz

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna)		

Configuration IEEE 802.11a / 2TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
56	5280 MHz	7.33	9.39	Complies
60	5300 MHz	7.48	9.39	Complies
64	5320 MHz	7.69	9.39	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =7.61dBi >6dBi,So Band2 Limit =11-(7.61-6)=9.39dBm/MHz

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 1TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
56	5280 MHz	2.09	4.50	Complies
60	5300 MHz	2.34	4.50	Complies
64	5320 MHz	1.53	4.50	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =12.5dBi >6dBi,So Band2 Limit =11-(12.5-6)=4.5dBm/MHz

Configuration IEEE 802.11n MCS0 40MHz / 1TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
62	5310 MHz	-5.85	4.50	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =12.5dBi >6dBi,So Band2 Limit =11-(12.5-6)=4.5dBm/MHz

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna)		

Configuration IEEE 802.11a / 1TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
56	5280 MHz	2.60	4.50	Complies
60	5300 MHz	1.66	4.50	Complies
64	5320 MHz	1.92	4.50	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =12.5dBi >6dBi,So Band2 Limit =11-(12.5-6)=4.5dBm/MHz

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 1TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
56	5280 MHz	3.31	6.00	Complies
60	5300 MHz	3.31	6.00	Complies
64	5320 MHz	2.82	6.00	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =11dBi >6dBi,So Band2 Limit =11-(11-6)=6dBm/MHz

Configuration IEEE 802.11n MCS0 40MHz / 1TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
62	5310 MHz	-0.18	6.00	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =11dBi >6dBi,So Band2 Limit =11-(11-6)=6dBm/MHz

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna)		

Configuration IEEE 802.11a / 1TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
56	5280 MHz	3.25	6.00	Complies
60	5300 MHz	3.50	6.00	Complies
64	5320 MHz	3.38	6.00	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =11dBi >6dBi,So Band2 Limit =11-(11-6)=6dBm/MHz

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 2TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
56	5280 MHz	1.62	7.23	Complies
60	5300 MHz	1.46	7.23	Complies
64	5320 MHz	1.46	7.23	Complies
100	5500 MHz	-2.49	7.23	Complies
116	5580 MHz	2.09	7.23	Complies
140	5700 MHz	1.69	7.23	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =9.77dBi >6dBi,So Band2 Limit =11-(9.77-6)=7.23dBm/MHz

Configuration IEEE 802.11n MCS0 40MHz / 2TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
62	5310 MHz	-4.27	7.23	Complies
102	5510 MHz	-4.28	7.23	Complies
110	5550 MHz	-0.48	7.23	Complies
134	5670 MHz	-1.08	7.23	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =9.77dBi >6dBi,So Band2 Limit =11-(9.77-6)=7.23dBm/MHz

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Configuration IEEE 802.11a / 2TX

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
56	5280 MHz	1.63	7.23	Complies
60	5300 MHz	1.81	7.23	Complies
64	5320 MHz	1.64	7.23	Complies
100	5500 MHz	1.43	7.23	Complies
116	5580 MHz	1.92	7.23	Complies
140	5700 MHz	1.24	7.23	Complies

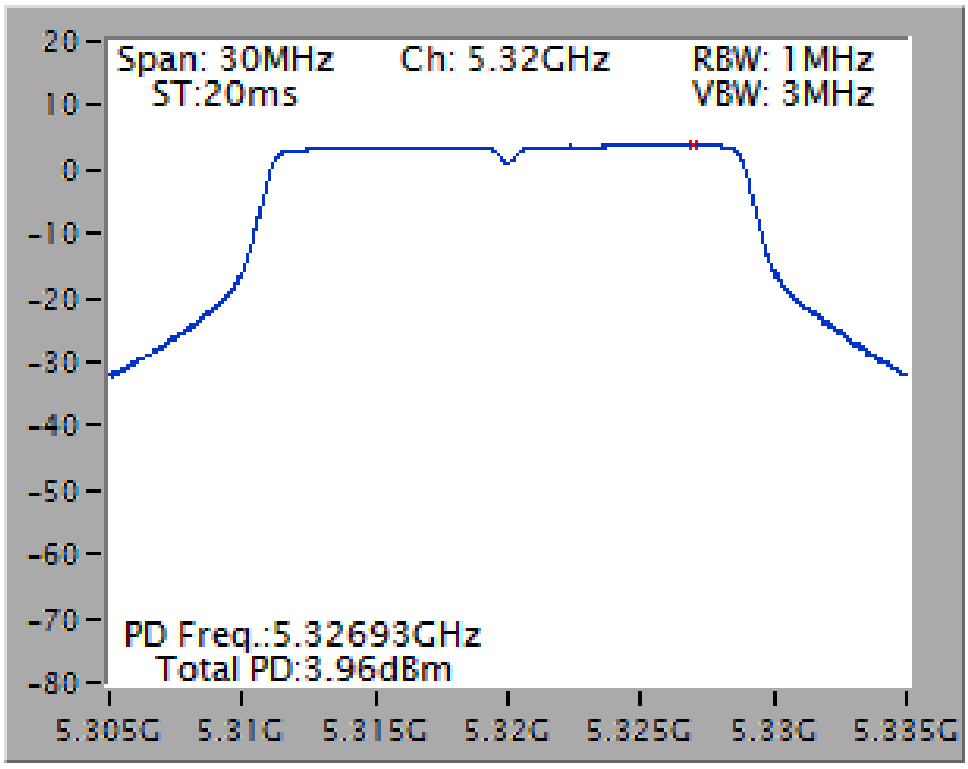
Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =9.77dBi >6dBi,So Band2 Limit =11-(9.77-6)=7.23dBm/MHz

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

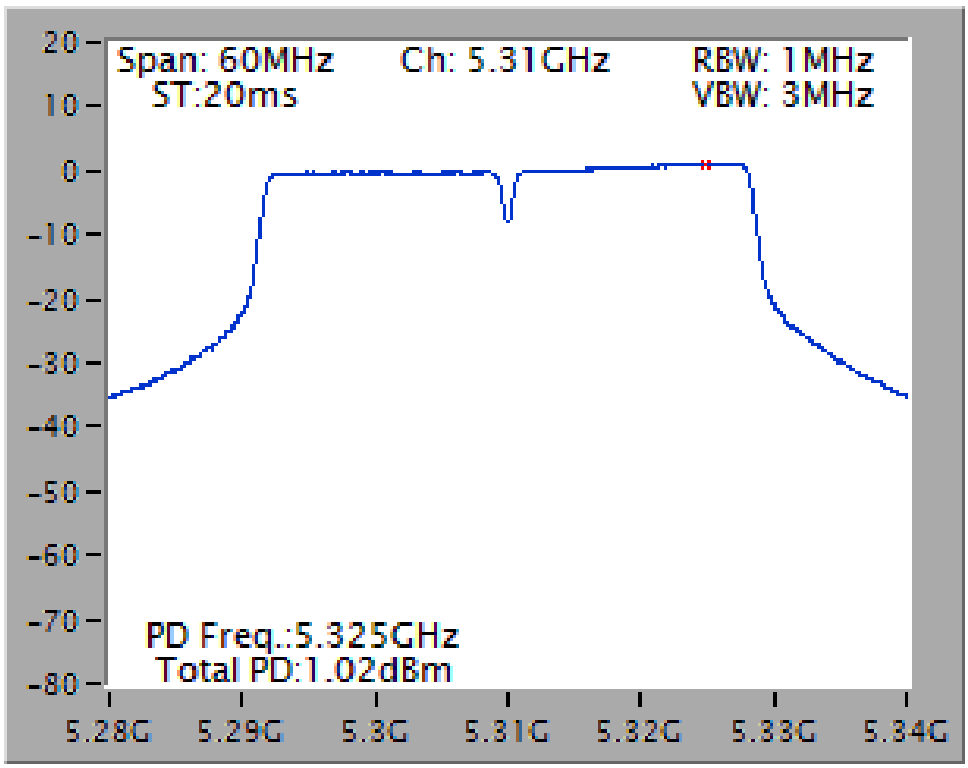
For plots, only the channel with maximum results was shown.

For Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna):

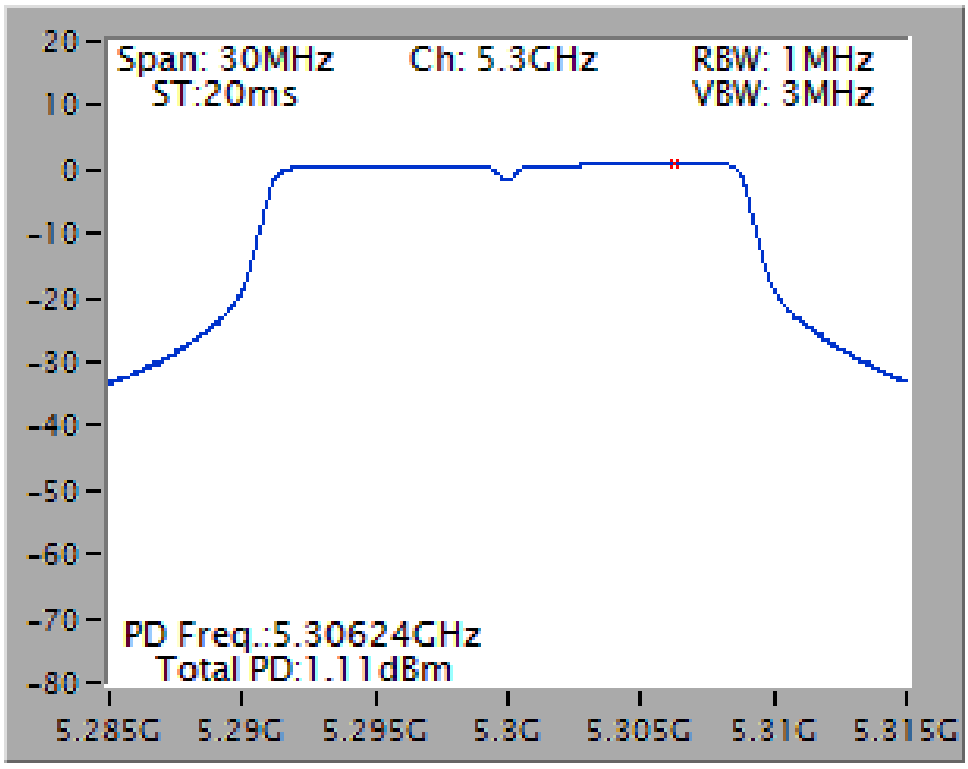
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / 5320 MHz



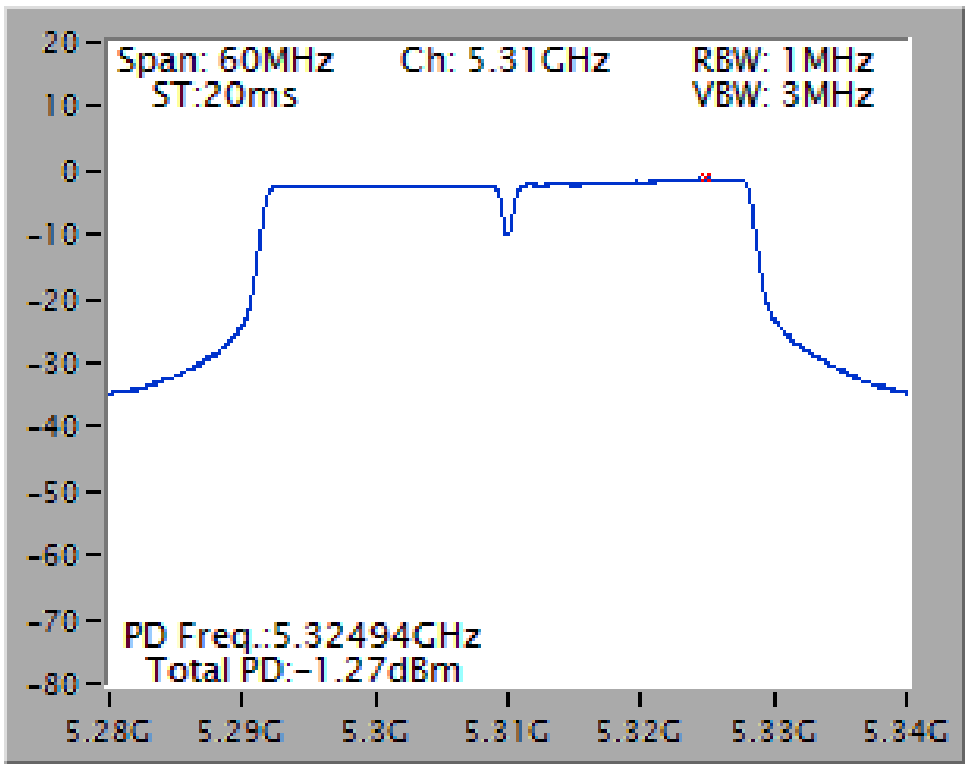
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / 1TX / 5310 MHz



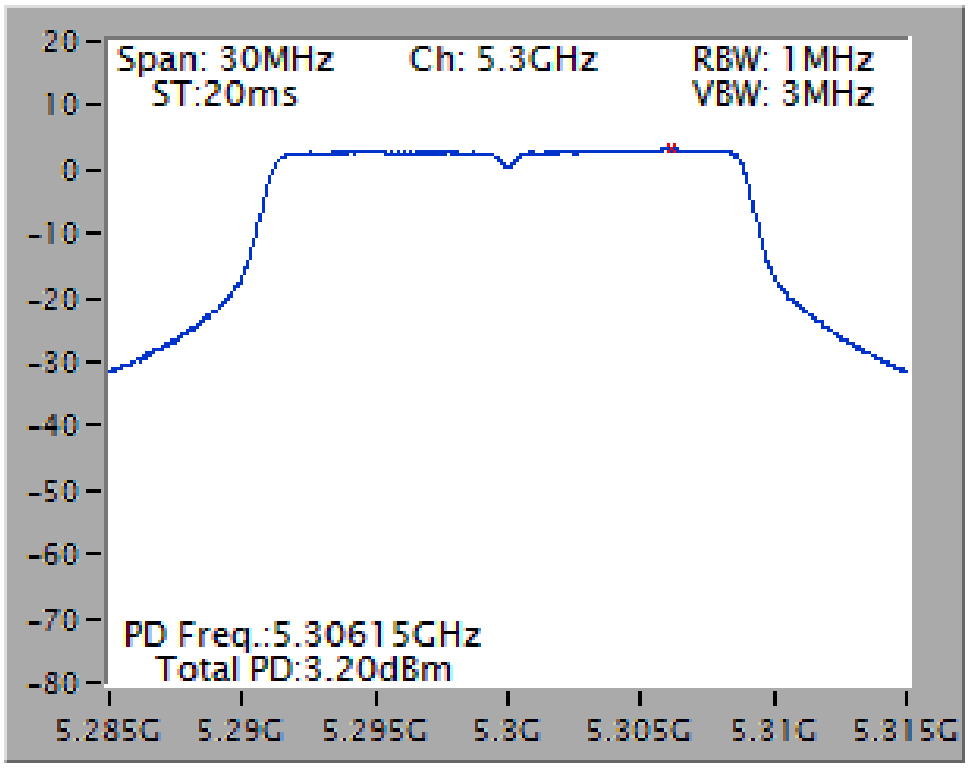
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / 5300 MHz



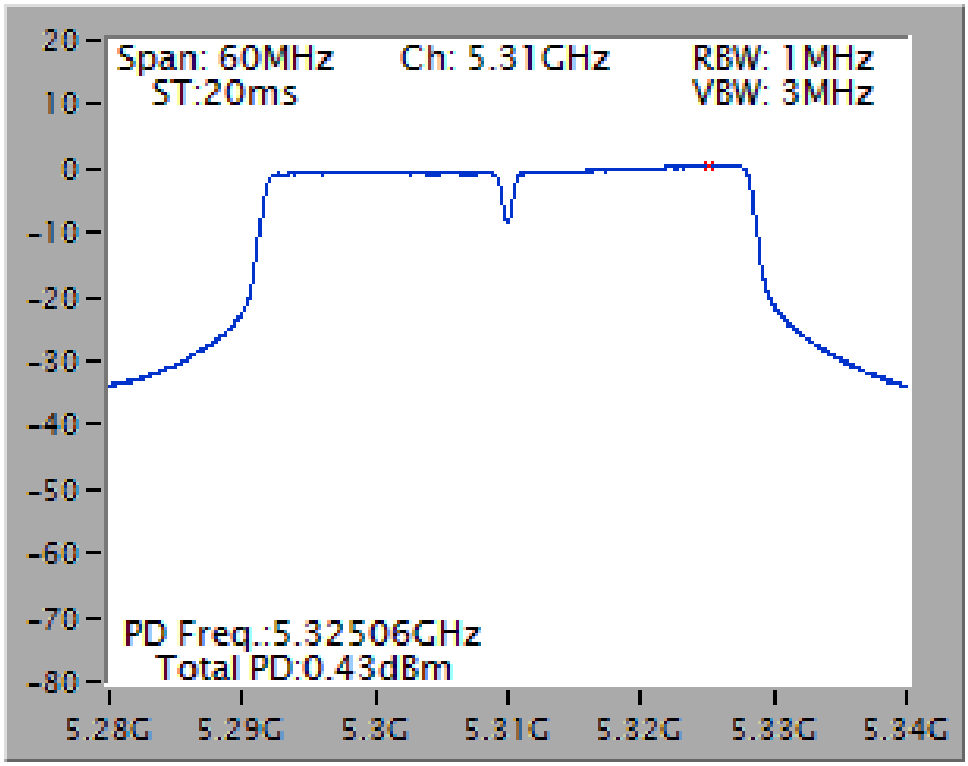
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / 2TX / 5310 MHz



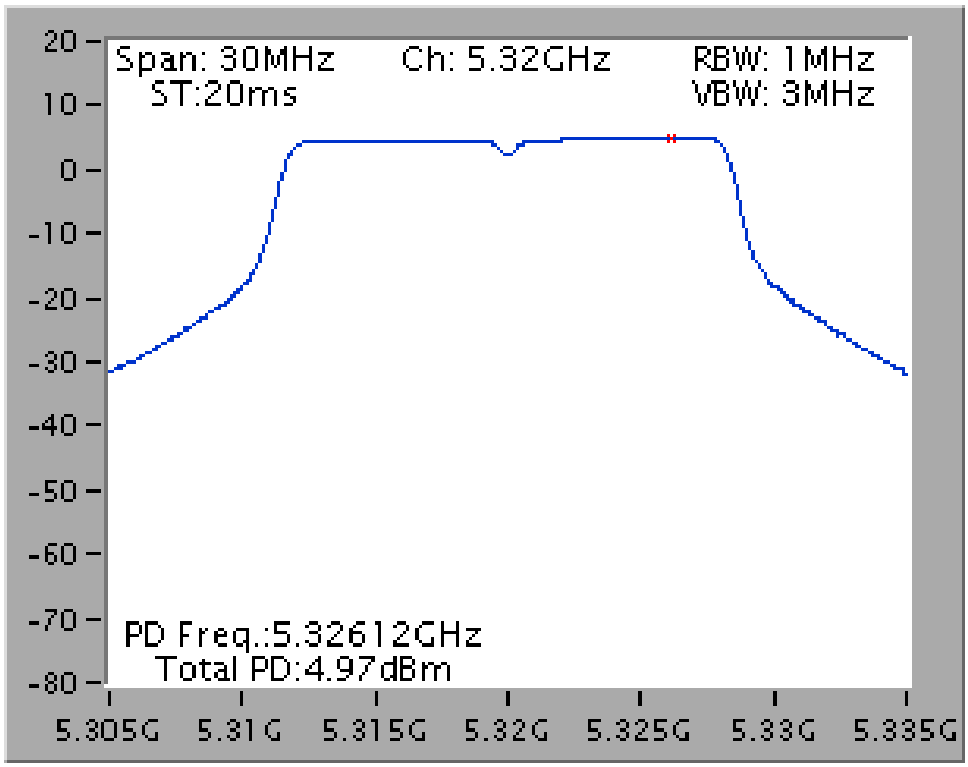
Power Density Plot on Configuration IEEE 802.11n MCS8 20MHz / 2TX / 5300 MHz



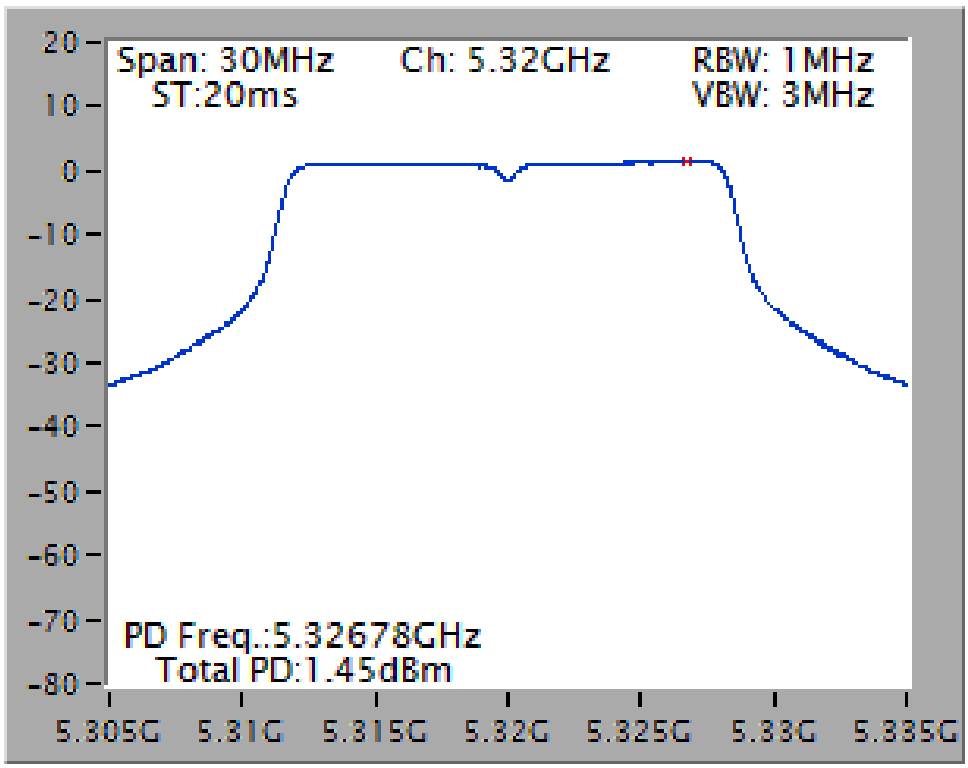
Power Density Plot on Configuration IEEE 802.11n MCS8 40MHz / 2TX / 5310 MHz



Power Density Plot on Configuration IEEE 802.11a / 1TX / 5320 MHz

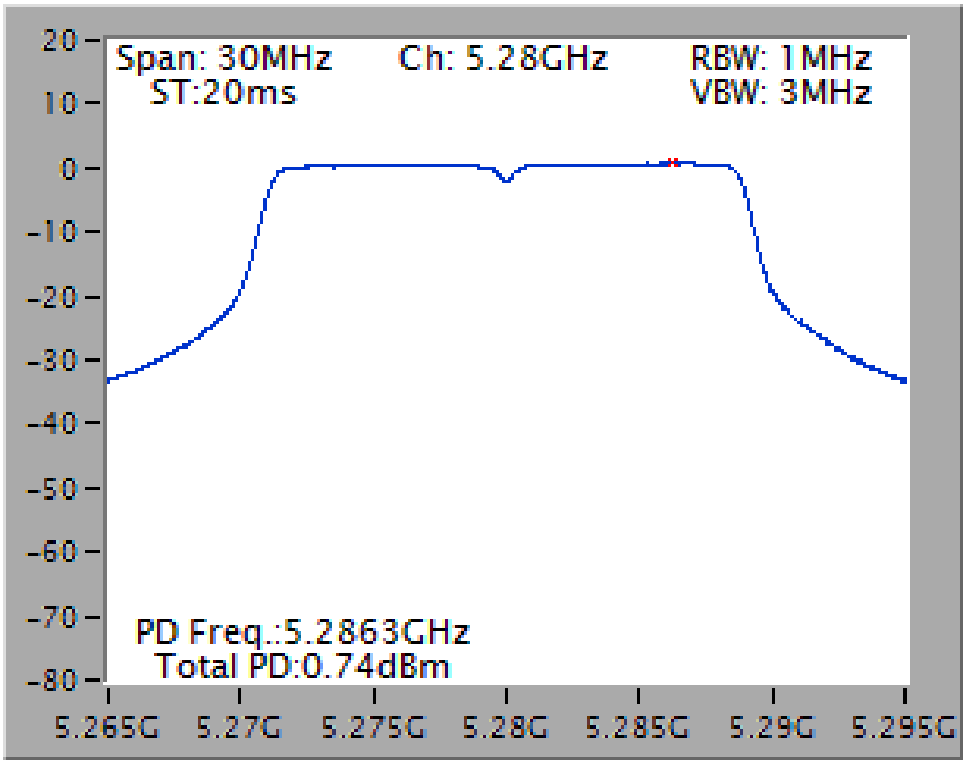


Power Density Plot on Configuration IEEE 802.11a / 2TX / 5320 MHz

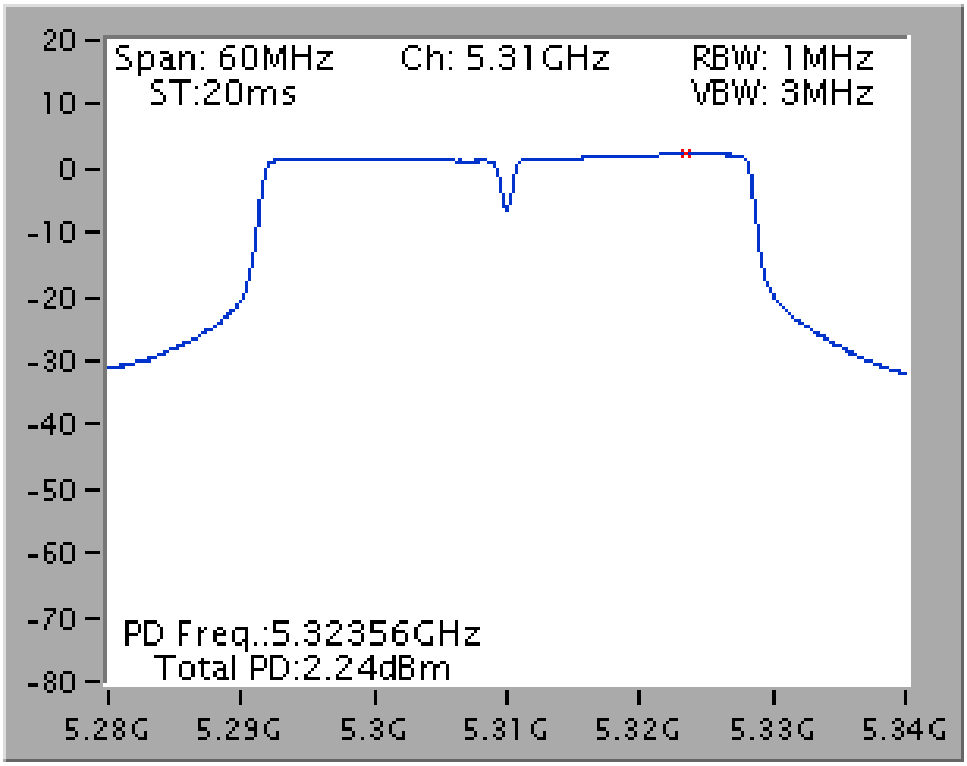


For Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna):

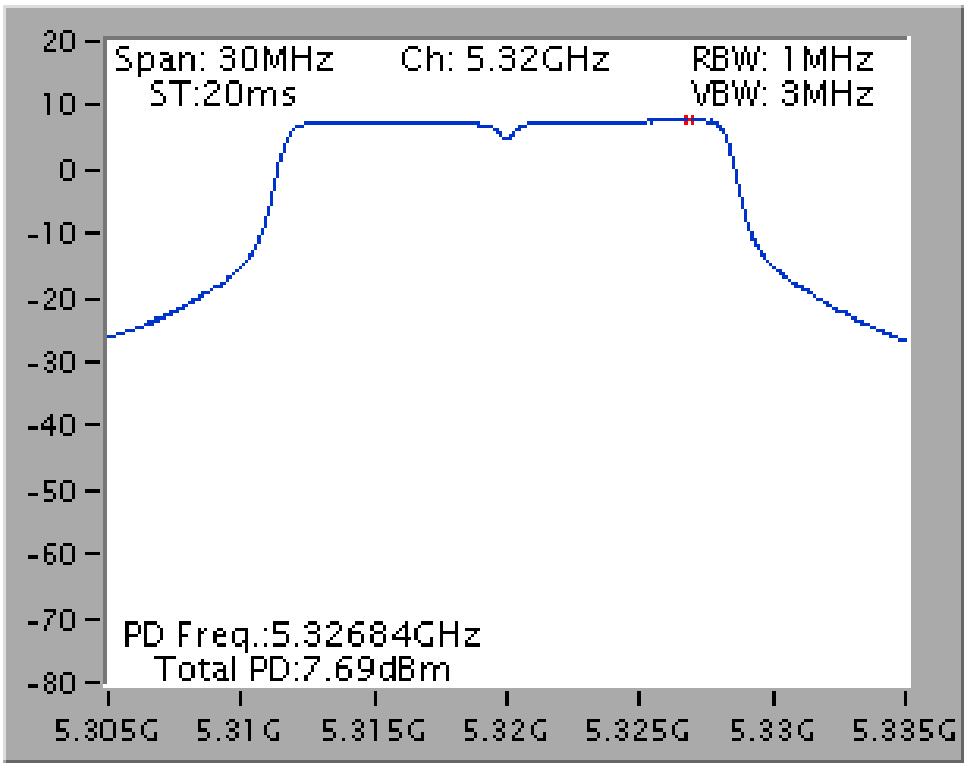
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / 5280 MHz



Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / 2TX / 5310 MHz

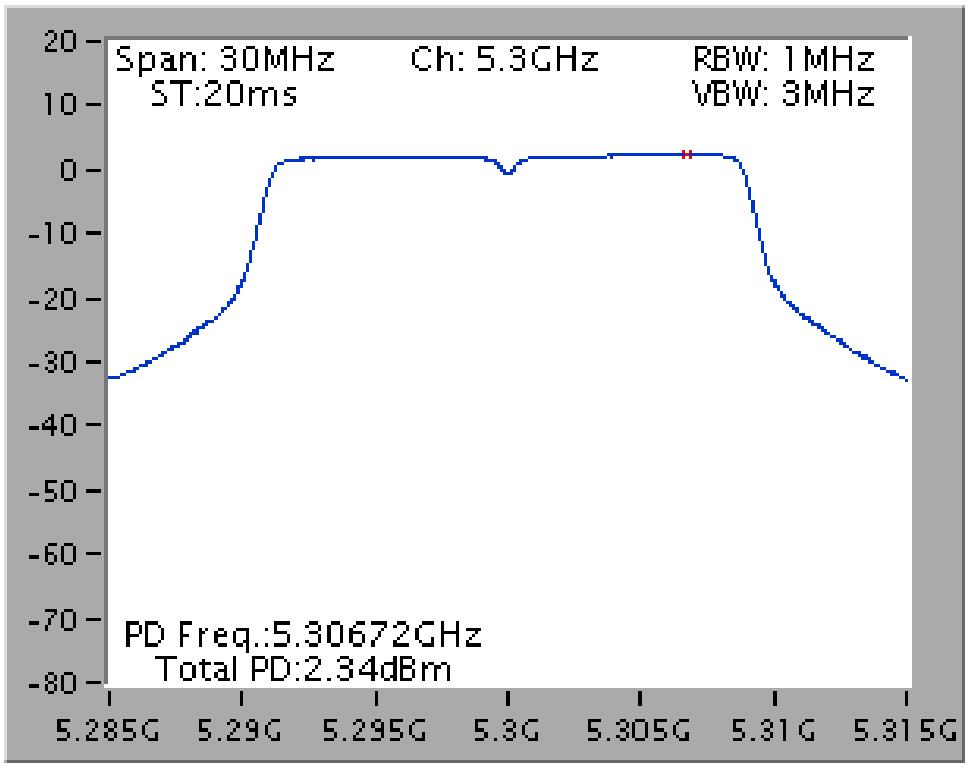


Power Density Plot on Configuration IEEE 802.11a / 2TX / 5320 MHz

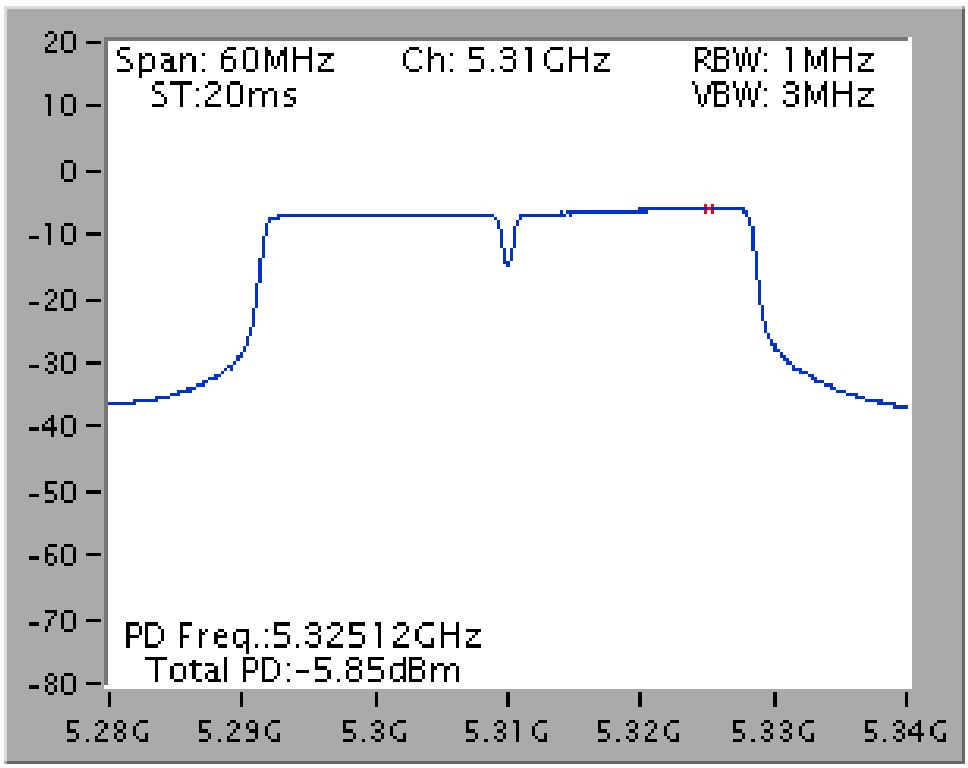


For Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna):

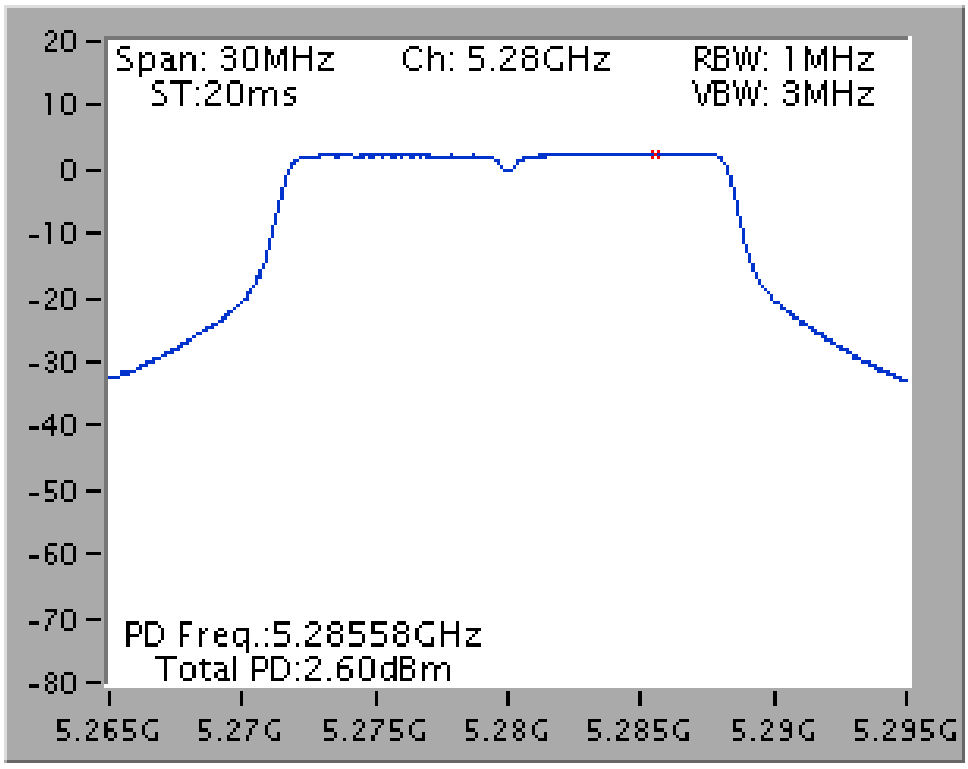
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / 5300 MHz



Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / 1TX / 5310 MHz

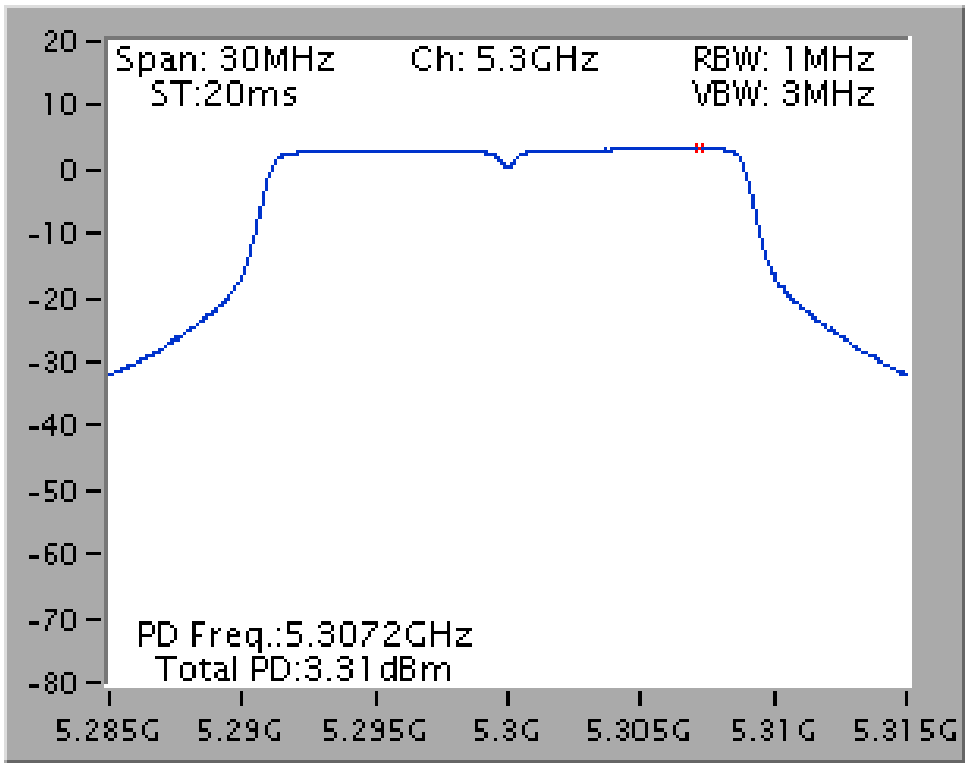


Power Density Plot on Configuration IEEE 802.11a / 1TX / 5280 MHz

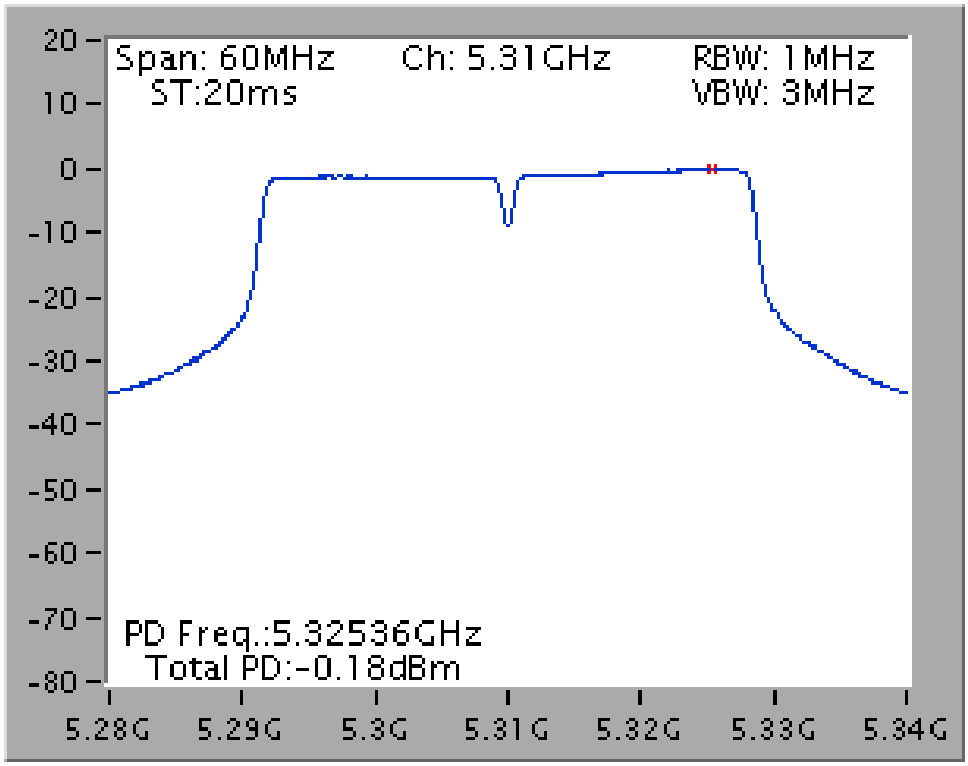


For Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna):

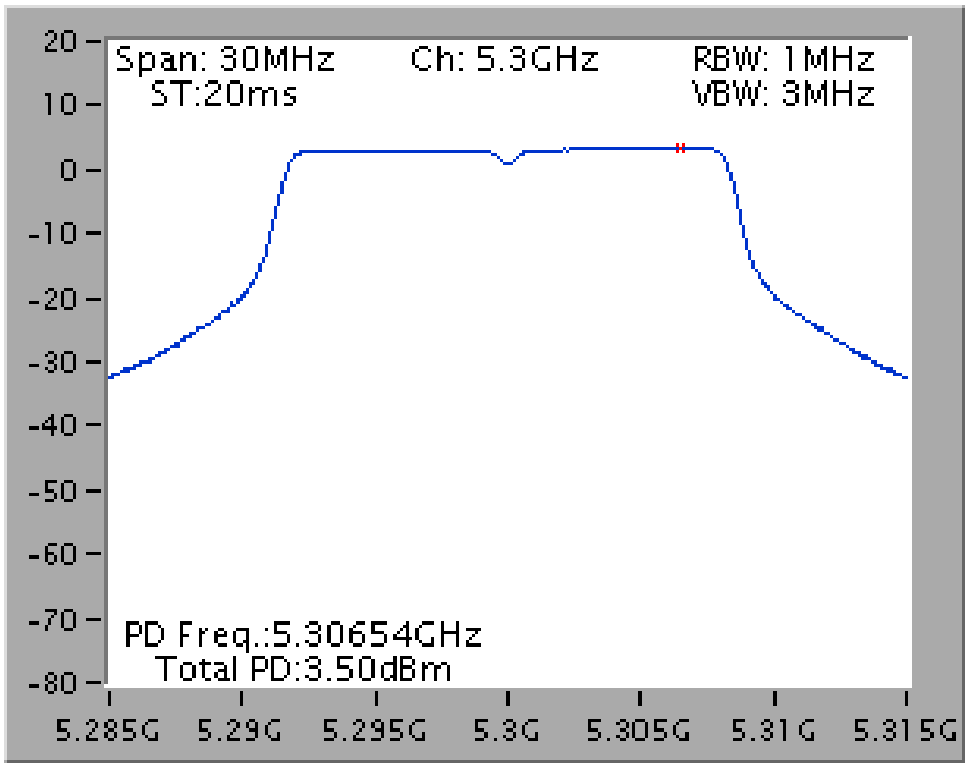
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / 5300 MHz



Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / 1TX / 5310 MHz

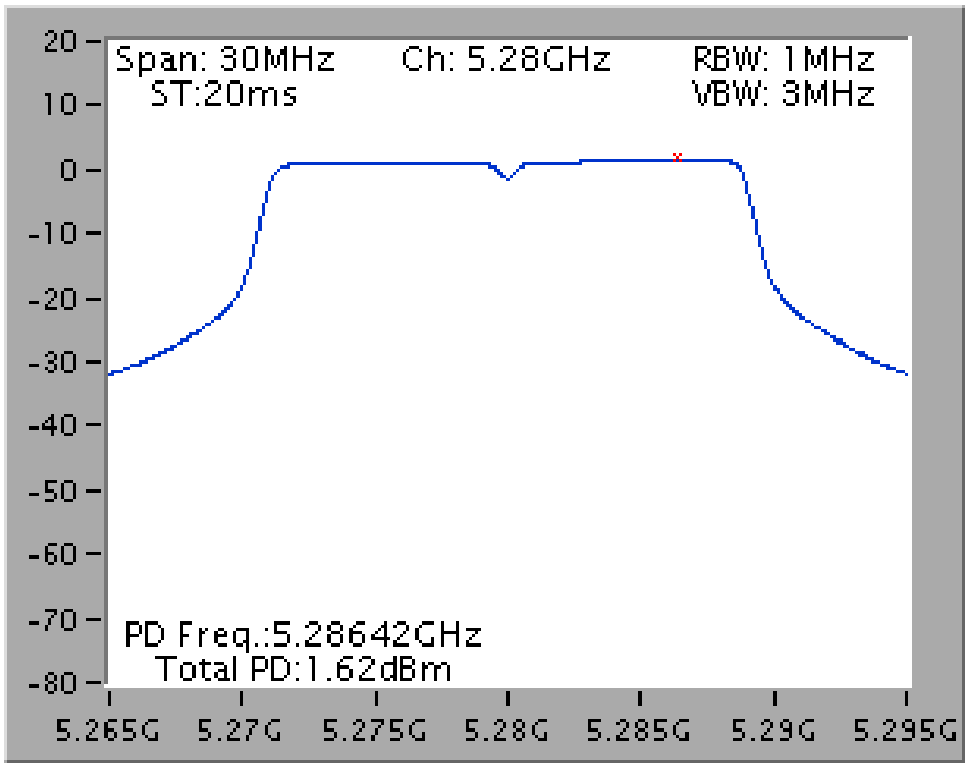


Power Density Plot on Configuration IEEE 802.11a / 1TX / 5300 MHz

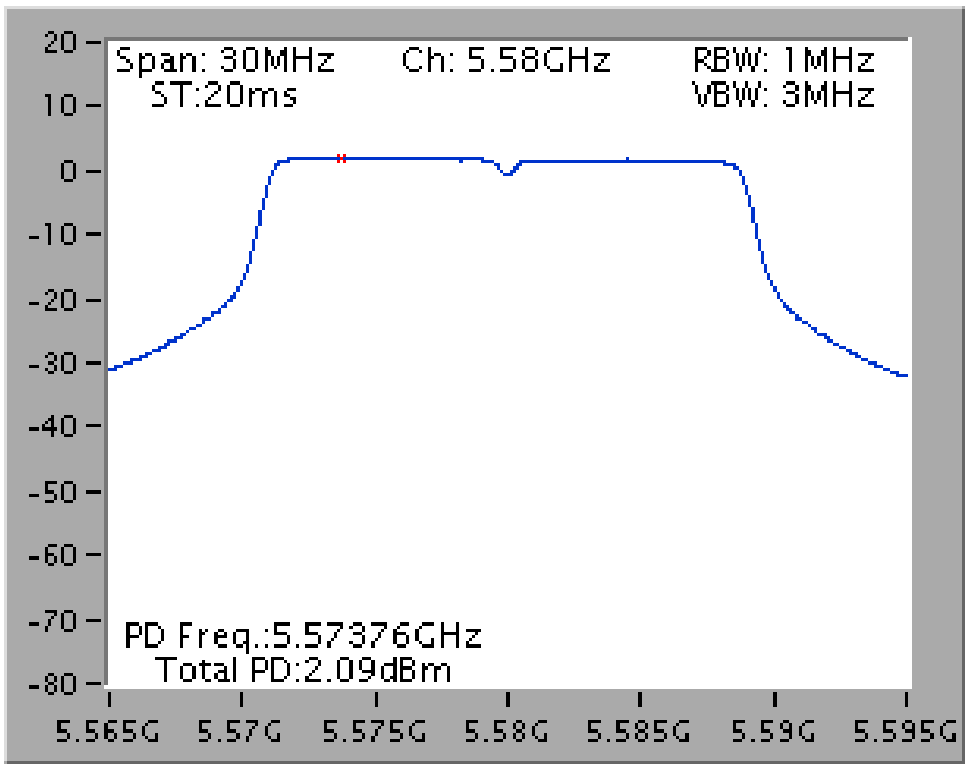


For Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna):

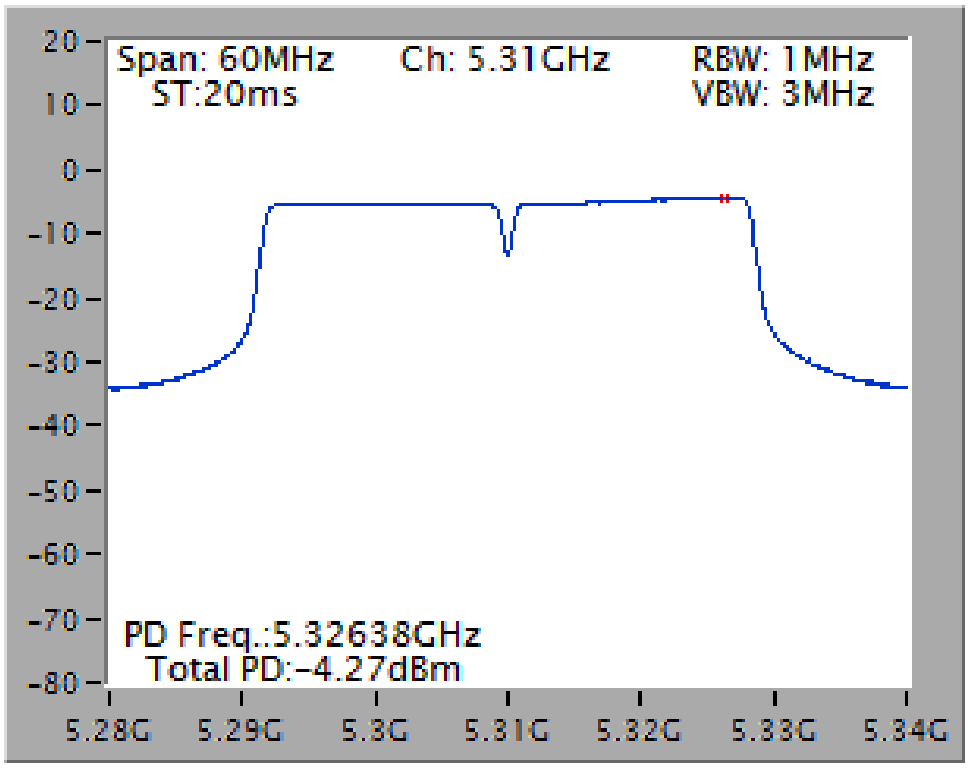
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / 5280 MHz



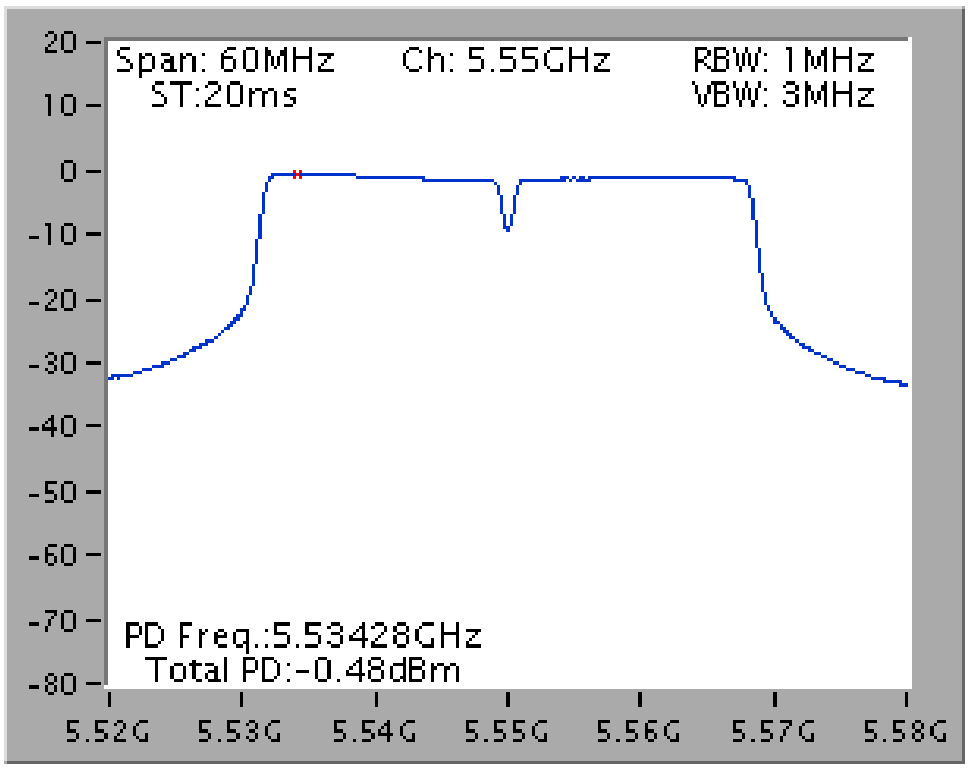
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / 5580 MHz



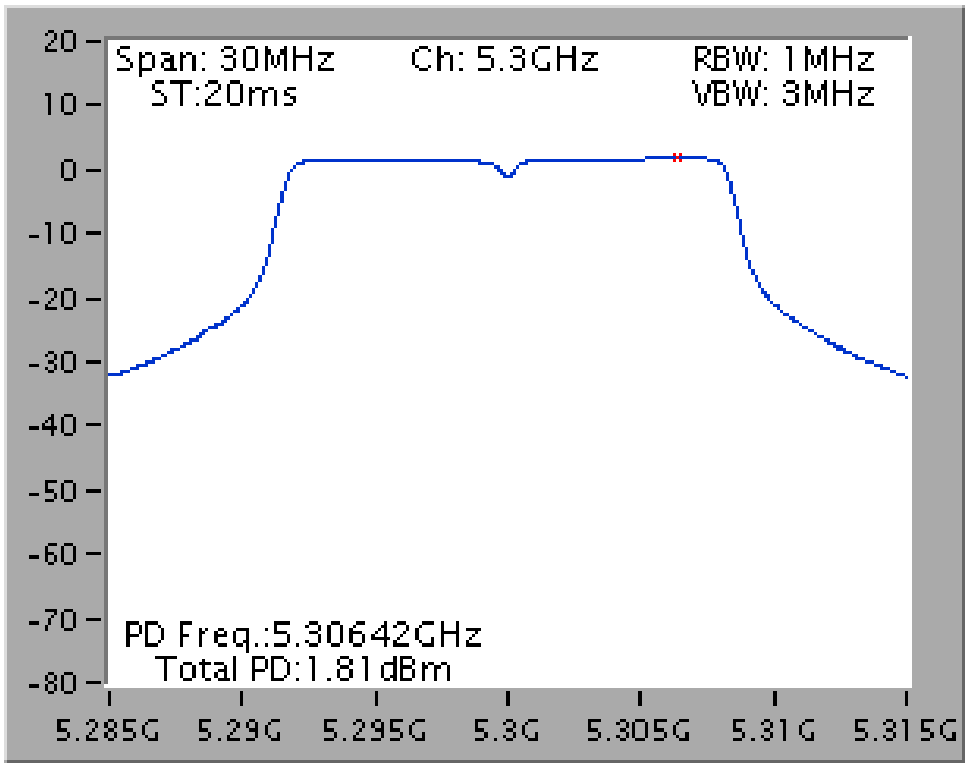
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / 2TX / 5310 MHz



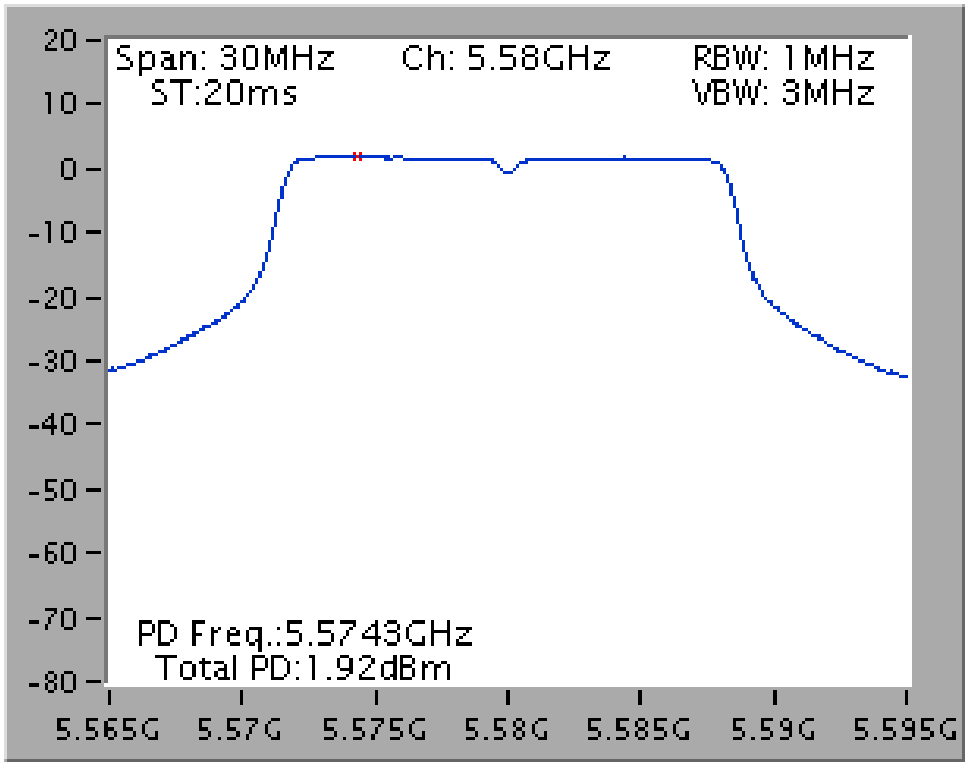
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / 2TX / 5550 MHz



Power Density Plot on Configuration IEEE 802.11a / 2TX / 5300 MHz



Power Density Plot on Configuration IEEE 802.11a / 2TX / 5580 MHz



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	1MHz (Peak Trace) / 1MHz (Average Trace)
VB	3MHz (Peak Trace) / 3MHz (Average Trace)
Detector	Peak (Peak Trace) / RMS
Trace	Peak : Trace :Max hold/Average: Trace Average Sweep Count 100
Sweep Time	AUTO

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.
5. Testing each modulation mode on a single channel is sufficient to demonstrate compliance with the peak excursion requirement.

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

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
56	5280 MHz	9.63	13	Complies

Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
62	5310 MHz	8.58	13	Complies

Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
56	5280 MHz	8.66	13	Complies

Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
62	5310 MHz	9.54	13	Complies

Configuration IEEE 802.11n MCS8 20MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
64	5320 MHz	10.87	13	Complies

Configuration IEEE 802.11n MCS8 40MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
62	5310 MHz	10.59	13	Complies

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Configuration IEEE 802.11a / 1TX / Chain 1

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
56	5280 MHz	10.02	13	Complies

Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
60	5300 MHz	9.00	13	Complies

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
56	5280 MHz	8.82	13	Complies

Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
62	5310 MHz	9.54	13	Complies

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna)		

Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
56	5280 MHz	8.79	13	Complies

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
60	5300 MHz	8.58	13	Complies

Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
62	5310 MHz	8.58	13	Complies

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna)		

Configuration IEEE 802.11a / 1TX / Chain 1

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
64	5320 MHz	9.26	13	Complies

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
56	5280 MHz	9.28	13	Complies

Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
62	5310 MHz	8.58	13	Complies

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna)		

Configuration IEEE 802.11a / 1TX / Chain 1

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
56	5280 MHz	9.25	13	Complies

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
64	5320 MHz	10.40	13	Complies
116	5580 MHz	8.70	13	Complies

Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
62	5310 MHz	9.08	13	Complies
134	5670 MHz	8.70	13	Complies

Temperature	24°C	Humidity	61%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2

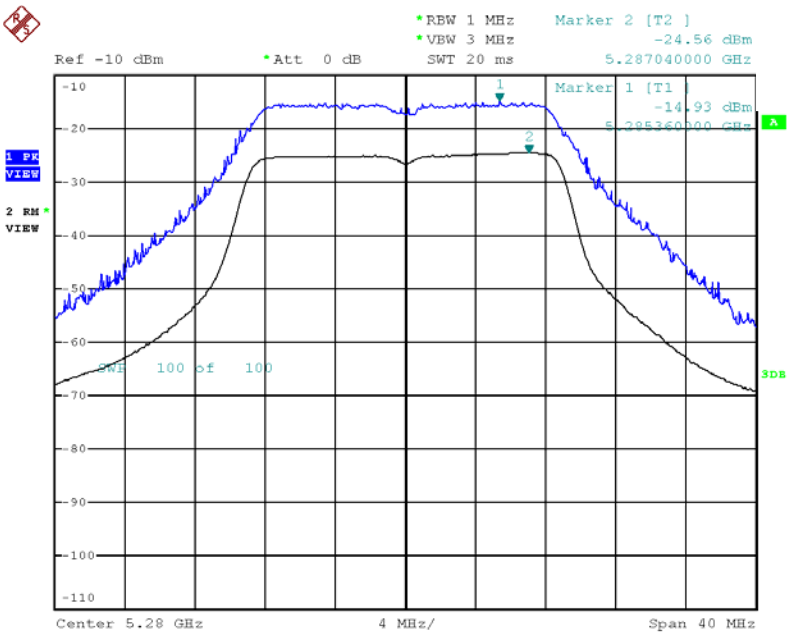
Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
60	5300 MHz	8.51	13	Complies
116	5580 MHz	8.69	13	Complies

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

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

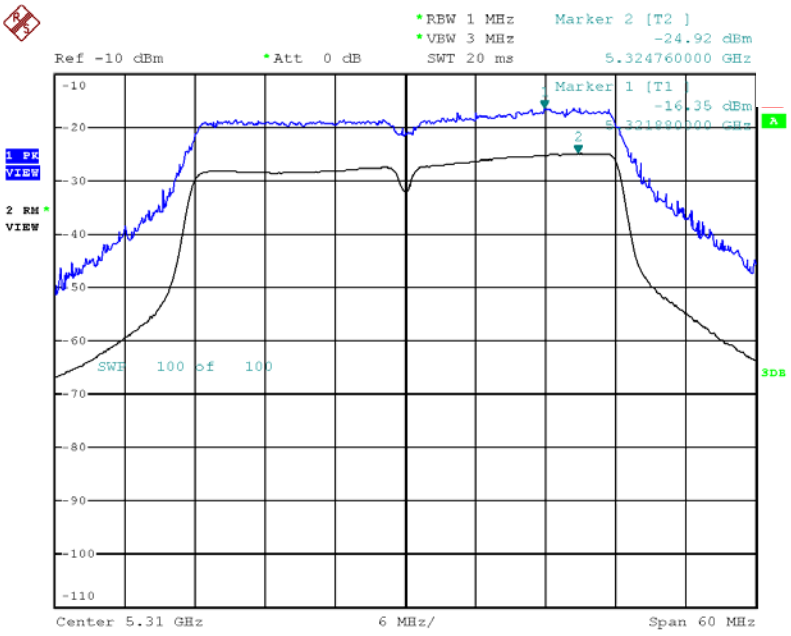
For Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna):

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1 / 5280 MHz



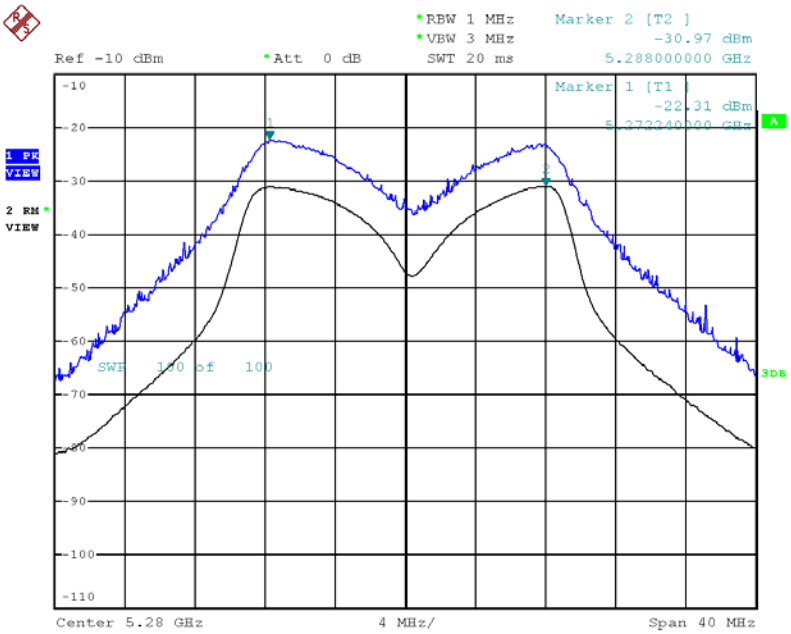
Date: 4.JAN.2013 01:11:36

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1 / 5310 MHz



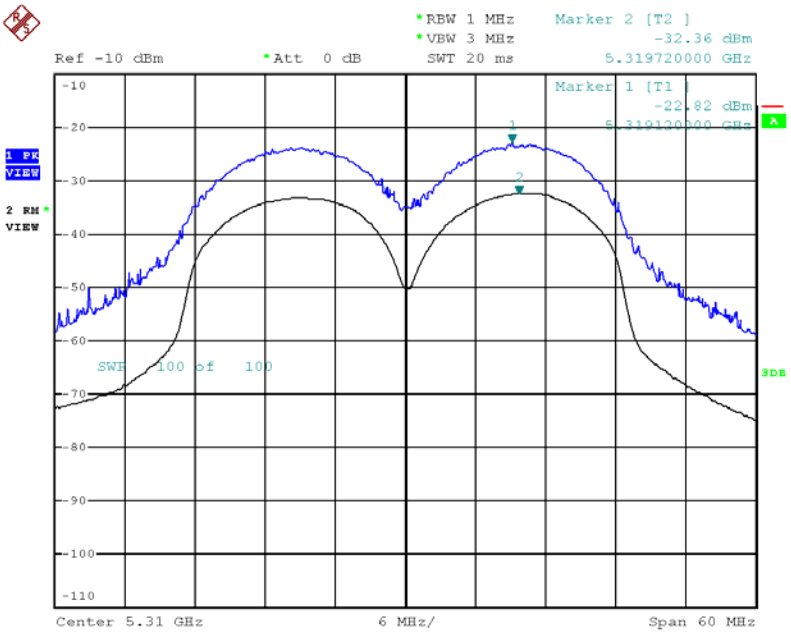
Date: 4.JAN.2013 01:12:40

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5280 MHz



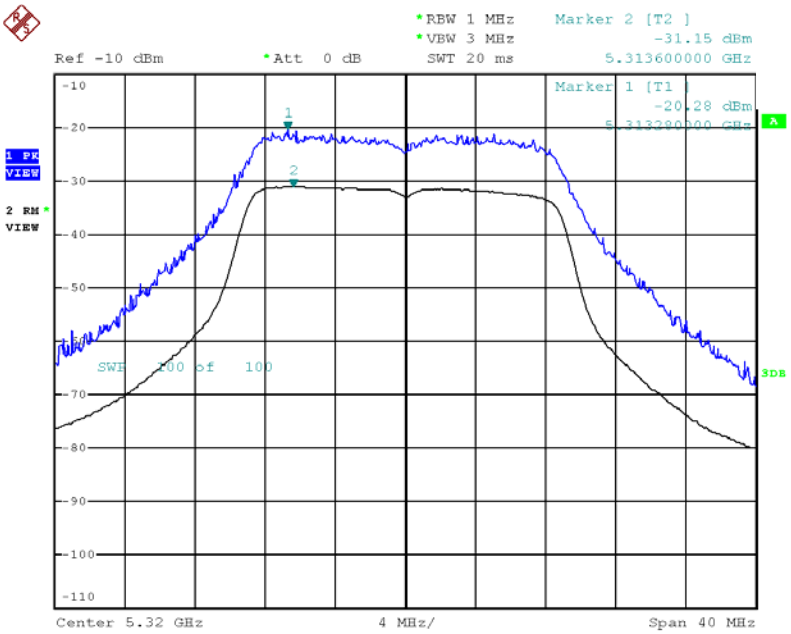
Date: 4.JAN.2013 01:17:19

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2 / 5310 MHz



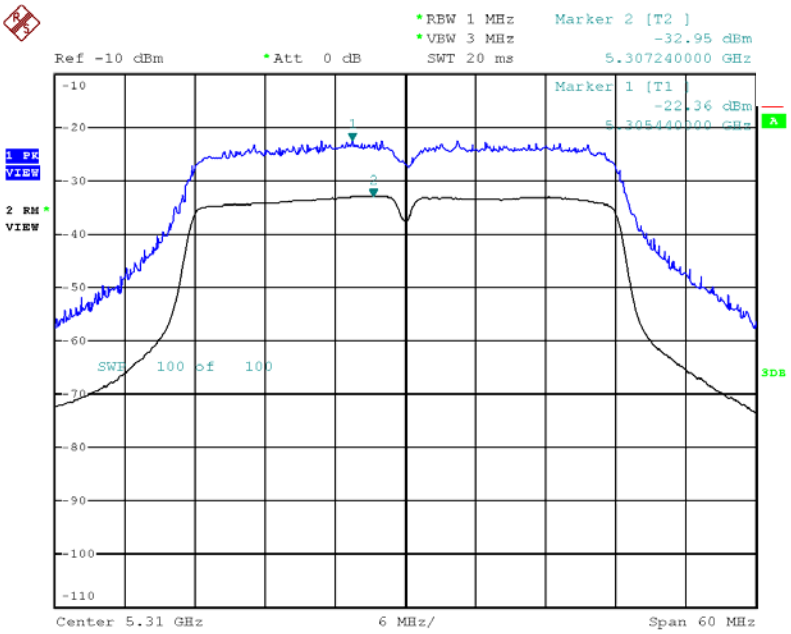
Date: 4.JAN.2013 01:18:13

Peak Excursion Plot on Configuration IEEE 802.11n MCS8 20MHz / 2TX / Chain 1 + Chain 2 / 5320 MHz



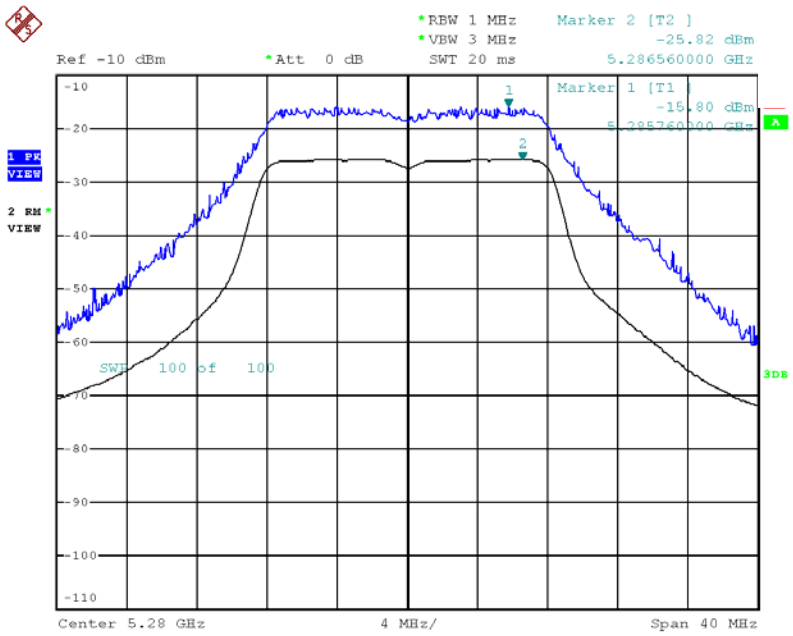
Date: 4.JAN.2013 01:20:45

Peak Excursion Plot on Configuration IEEE 802.11n MCS8 40MHz / 2TX / Chain 1 + Chain 2 / 5310 MHz



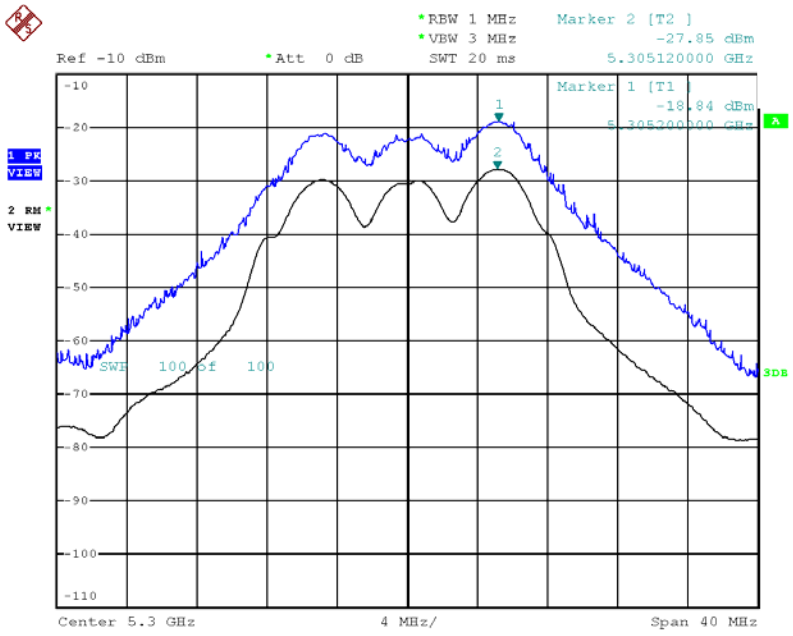
Date: 4.JAN.2013 01:19:41

Peak Excursion Plot on Configuration IEEE 802.11a / 1TX / Chain 1 / 5280 MHz



Date: 4.JAN.2013 01:10:02

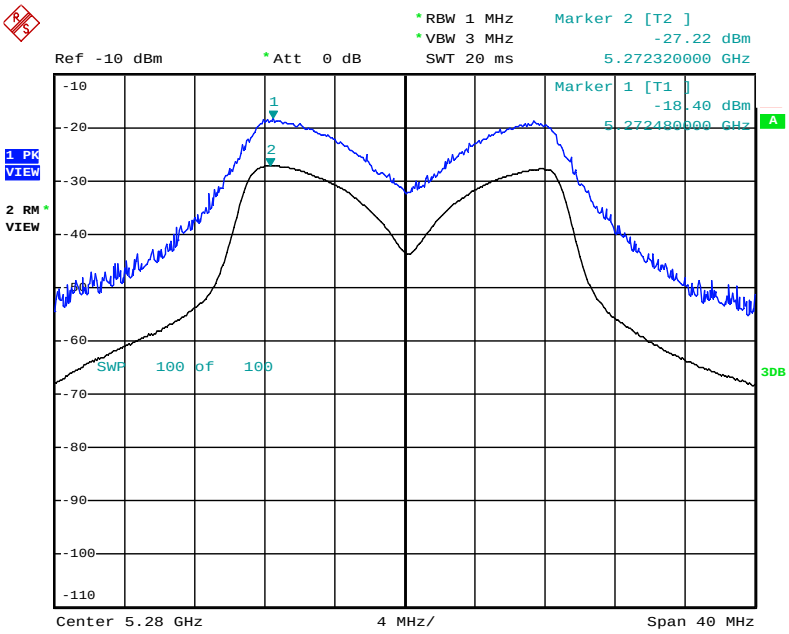
Peak Excursion Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5300 MHz



Date: 4.JAN.2013 01:15:25

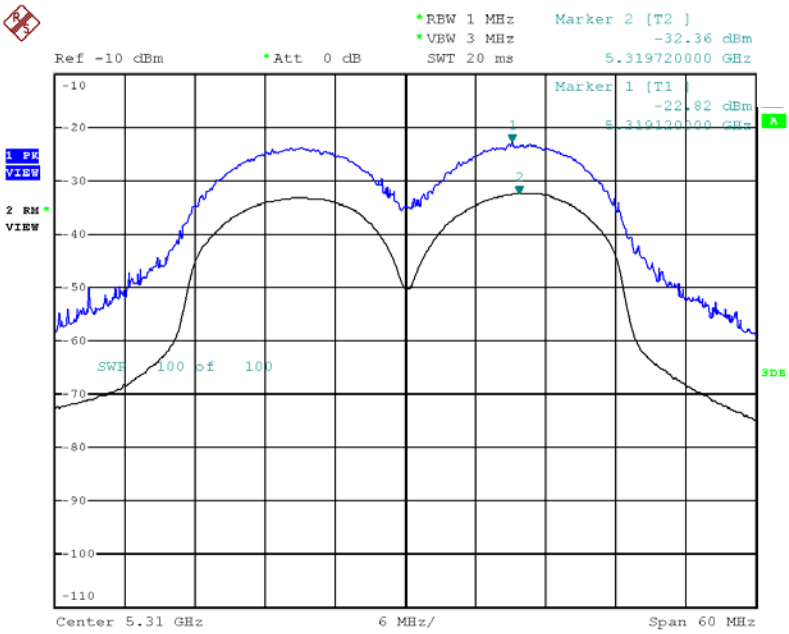
For Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna):

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5280 MHz



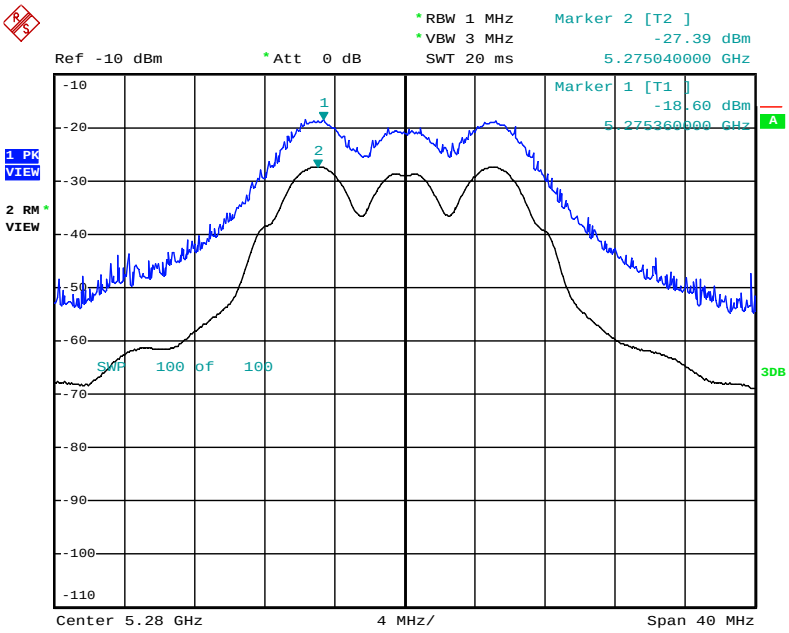
Date: 3.JAN.2013 14:20:11

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2 / 5310 MHz



Date: 4.JAN.2013 01:18:13

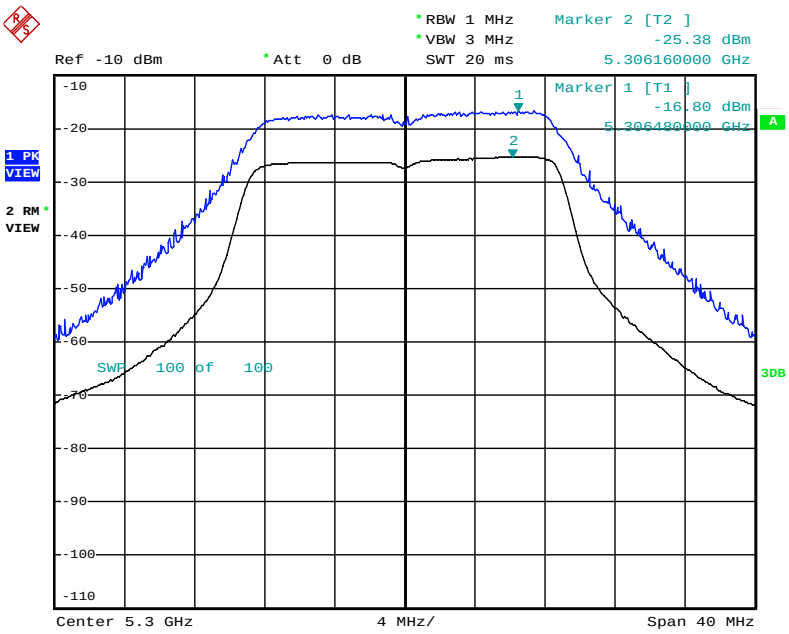
Peak Excursion Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5280 MHz



Date: 3.JAN.2013 14:20:48

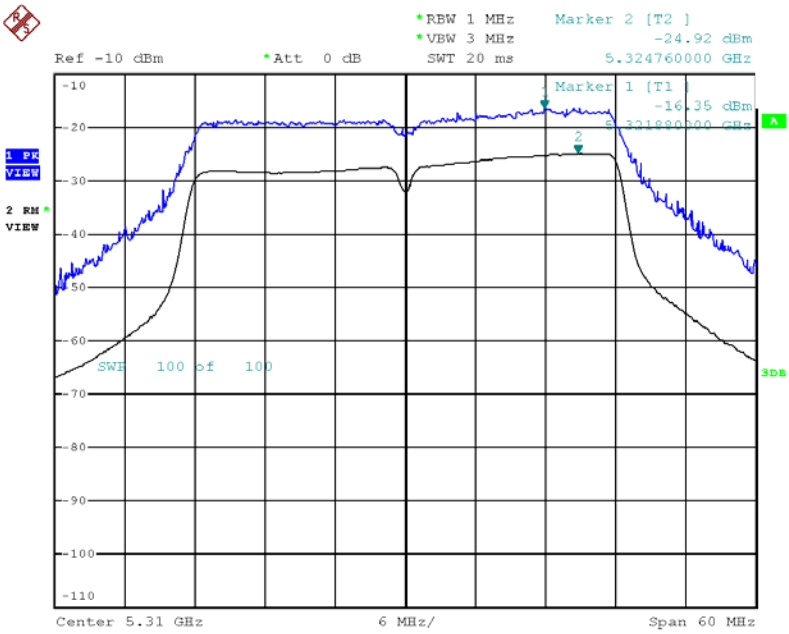
For Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna):

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1 / 5300 MHz



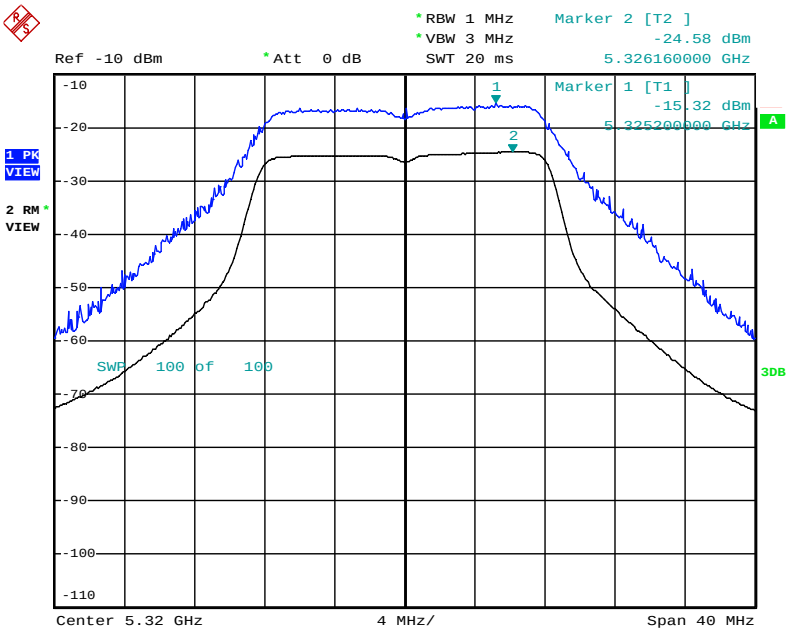
Date: 3.JAN.2013 13:03:57

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1 / 5310 MHz



Date: 4.JAN.2013 01:12:40

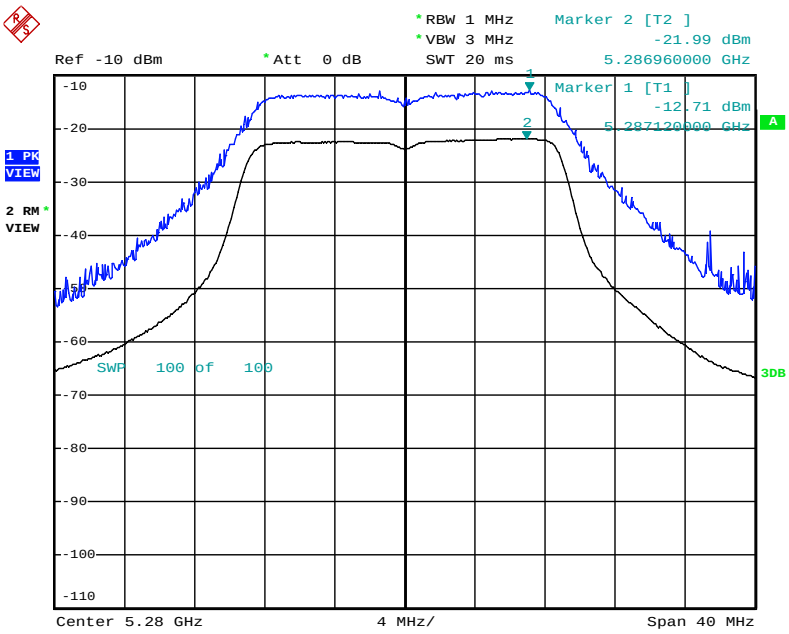
Peak Excursion Plot on Configuration IEEE 802.11a / 1TX / Chain 1 / 5320 MHz



Date: 3.JAN.2013 13:02:37

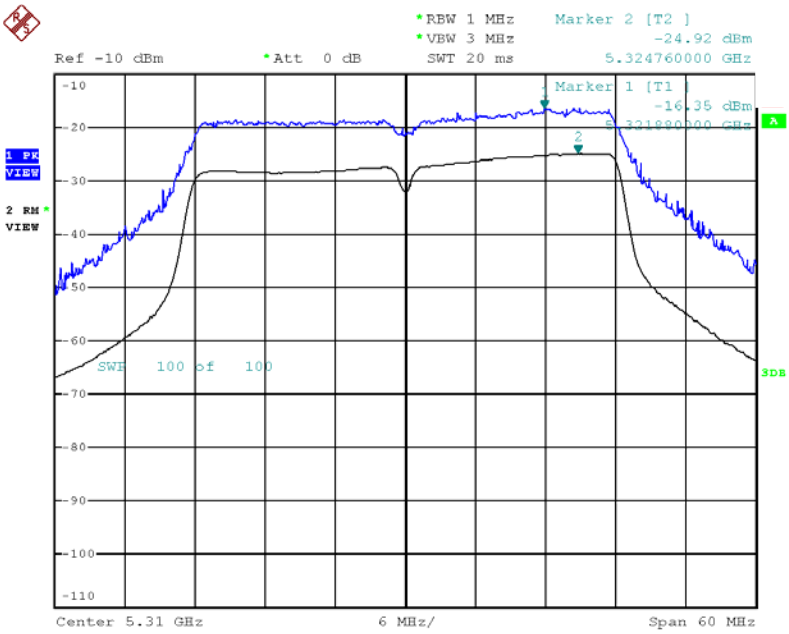
For Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna):

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 20MHz / 1TX / Chain 1 / 5280 MHz



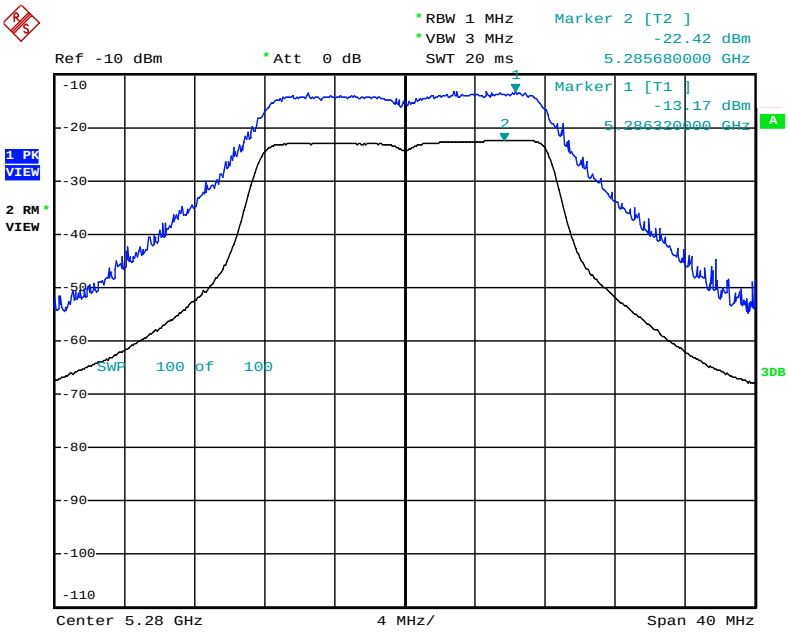
Date: 3.JAN.2013 13:06:48

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 40MHz / 1TX / Chain 1 / 5310 MHz



Date: 4.JAN.2013 01:12:40

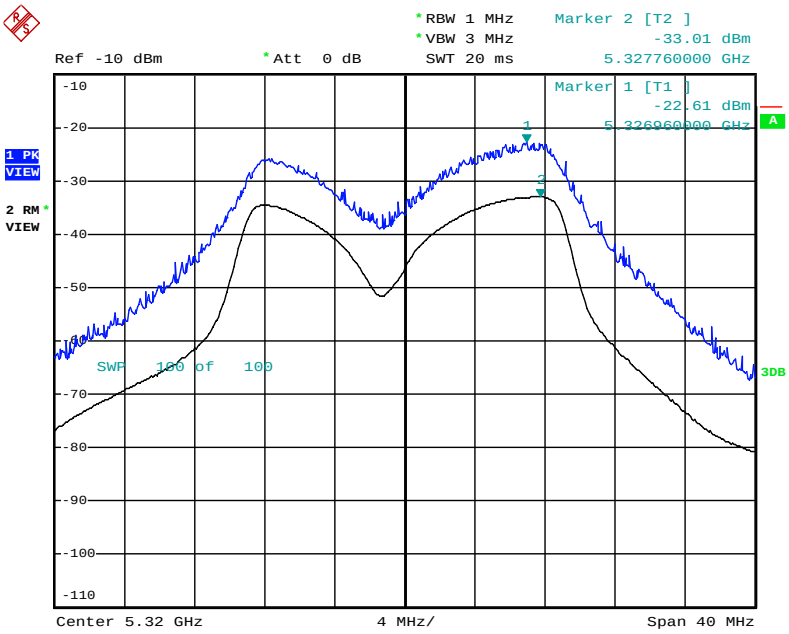
Peak Excursion Plot on Configuration IEEE 802.11a / 1TX / Chain 1 / 5280 MHz



Date: 3.JAN.2013 13:07:38

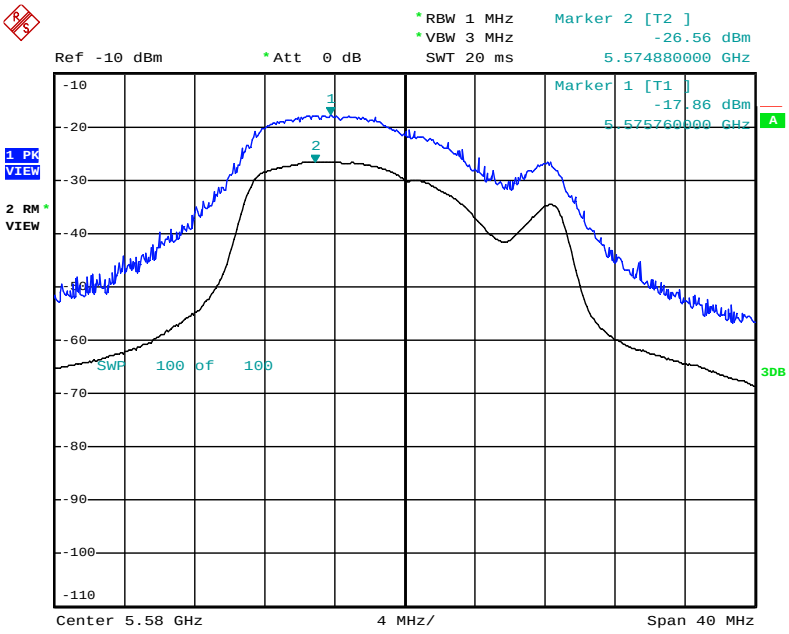
For Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna):

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5320 MHz



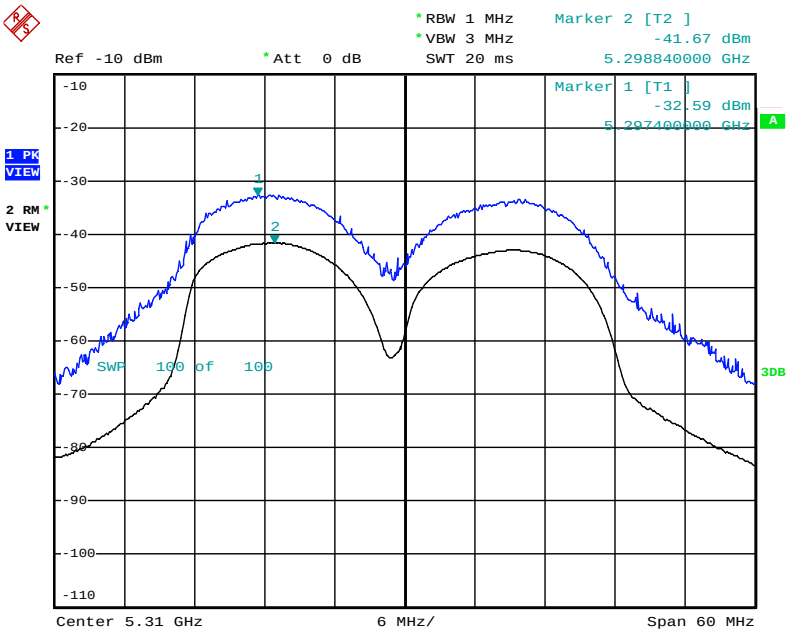
Date: 3.JAN.2013 03:32:09

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 20MHz / 2TX / Chain 1 + Chain 2 / 5580 MHz



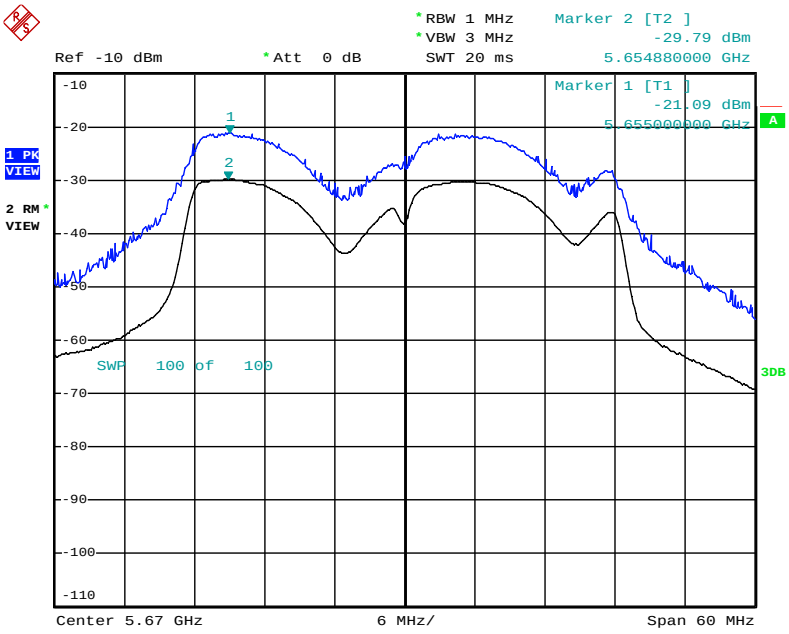
Date: 3.JAN.2013 03:30:42

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2 / 5310 MHz



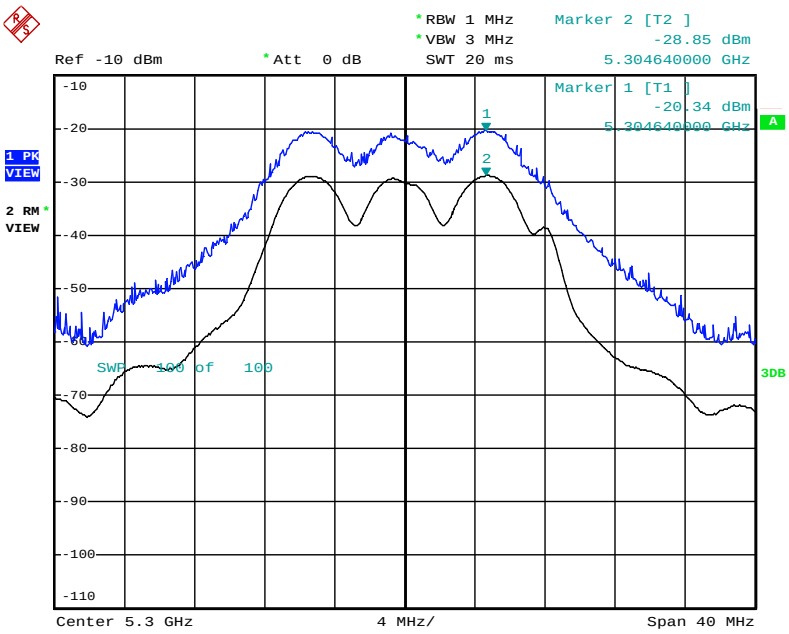
Date: 3.JAN.2013 03:33:11

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 40MHz / 2TX / Chain 1 + Chain 2 / 5670 MHz



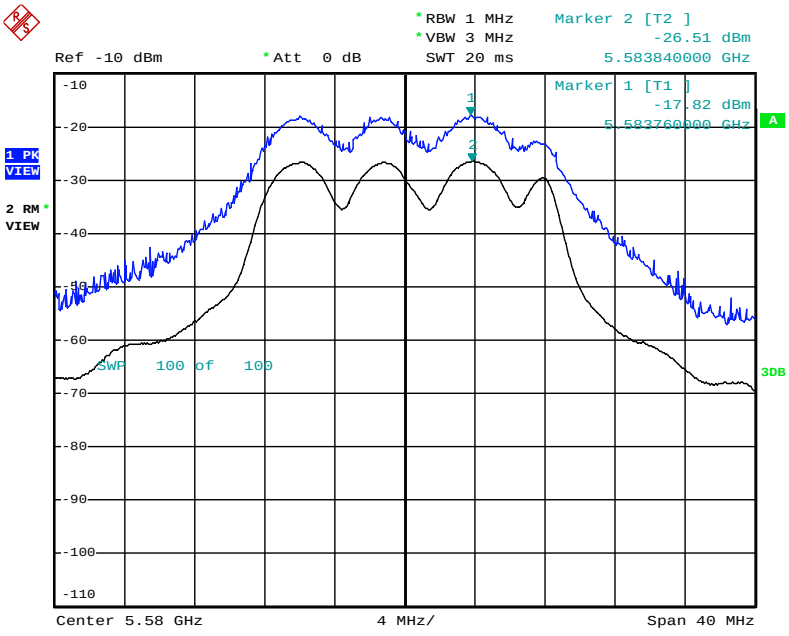
Date: 3.JAN.2013 03:34:05

Peak Excursion Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5300 MHz



Date: 3.JAN.2013 03:25:11

Peak Excursion Plot on Configuration IEEE 802.11a / 2TX / Chain 1 + Chain 2 / 5580 MHz



Date: 3.JAN.2013 03:26:40

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). For transmitters operating in the 5.470-5.725 GHz band: all emissions outside of the 5.470-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz (78.3dBuV/m at 3m); for frequencies 10 MHz or greater above or below the band edge, emissions 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

4.6.2. 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 / 3MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1MHz / 3MHz for peak

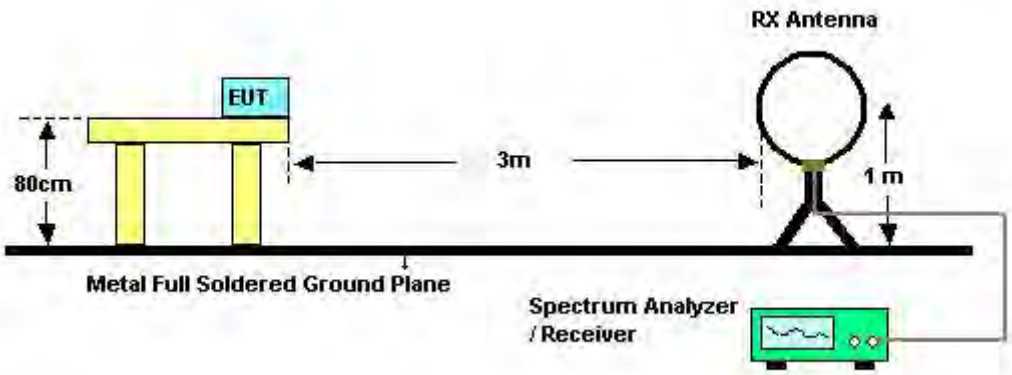
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.6.3. Test Procedures

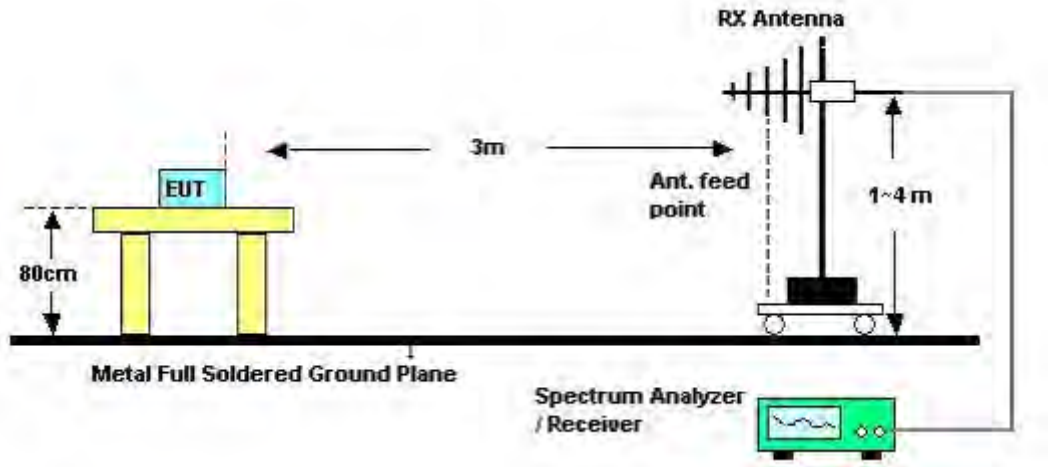
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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



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	Jim Huang	Test Date	Dec. 29, 2012
Test Mode	Mode 2 / Mode 5		

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.

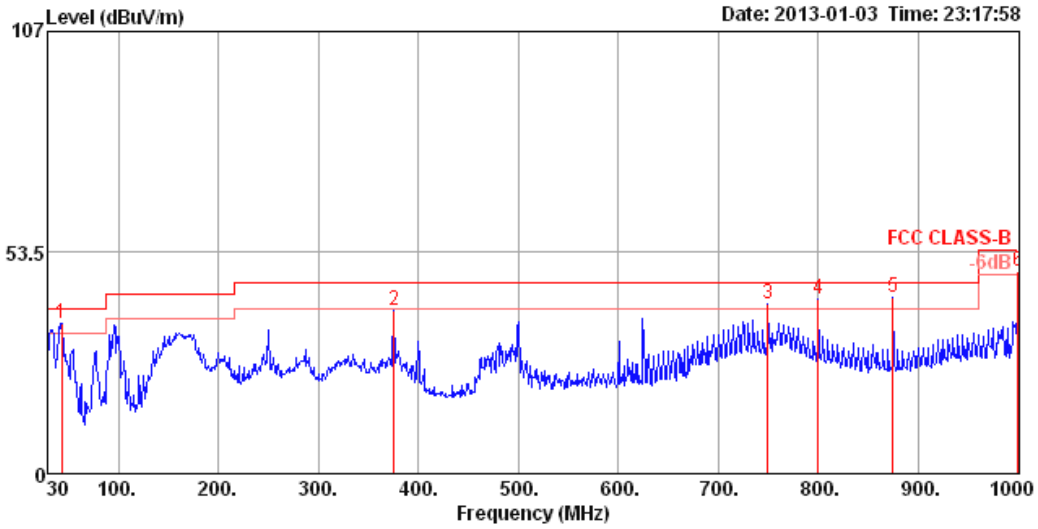
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

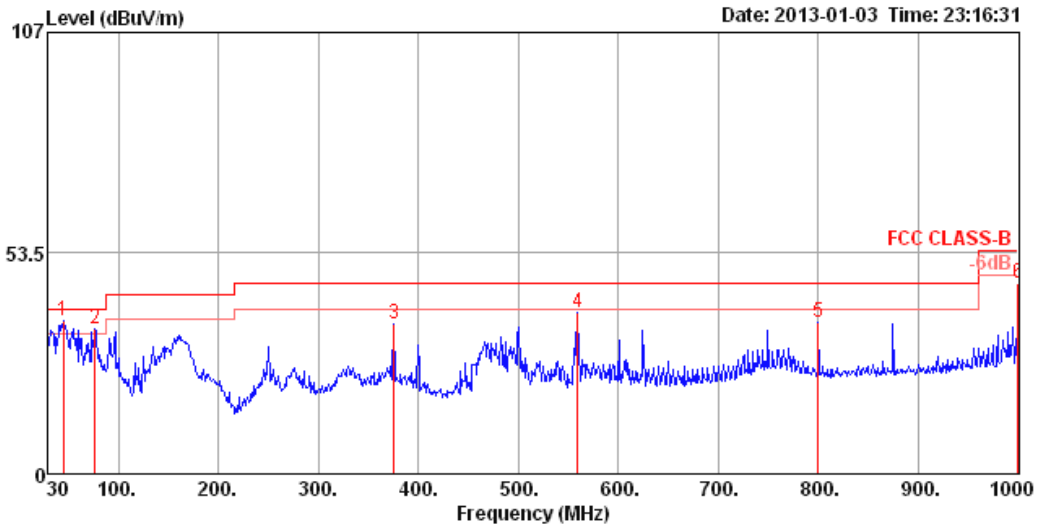
Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Configurations	Normal Link
Test Mode	Mode 2. EUT 1 (with external antenna) + Patch antenna / Ant. 2 (2.4GHz) and Ant. 6 (5GHz)		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1 !	43.58	36.26	40.00	-3.74	55.70	0.78	11.62	31.84	150	2	HORIZONTAL	Peak
2	375.32	39.56	46.00	-6.44	52.63	2.44	15.92	31.43	125	0	HORIZONTAL	Peak
3 !	749.74	40.88	46.00	-5.12	48.52	3.53	20.20	31.37	100	338	HORIZONTAL	Peak
4 !	800.18	42.42	46.00	-3.58	49.22	3.67	20.80	31.27	100	355	HORIZONTAL	Peak
5 pp	874.87	42.47	46.00	-3.53	48.38	3.89	21.35	31.15	150	326	HORIZONTAL	Peak
6 !	1000.00	49.12	54.00	-4.88	53.89	4.21	22.20	31.18	125	329	HORIZONTAL	Peak

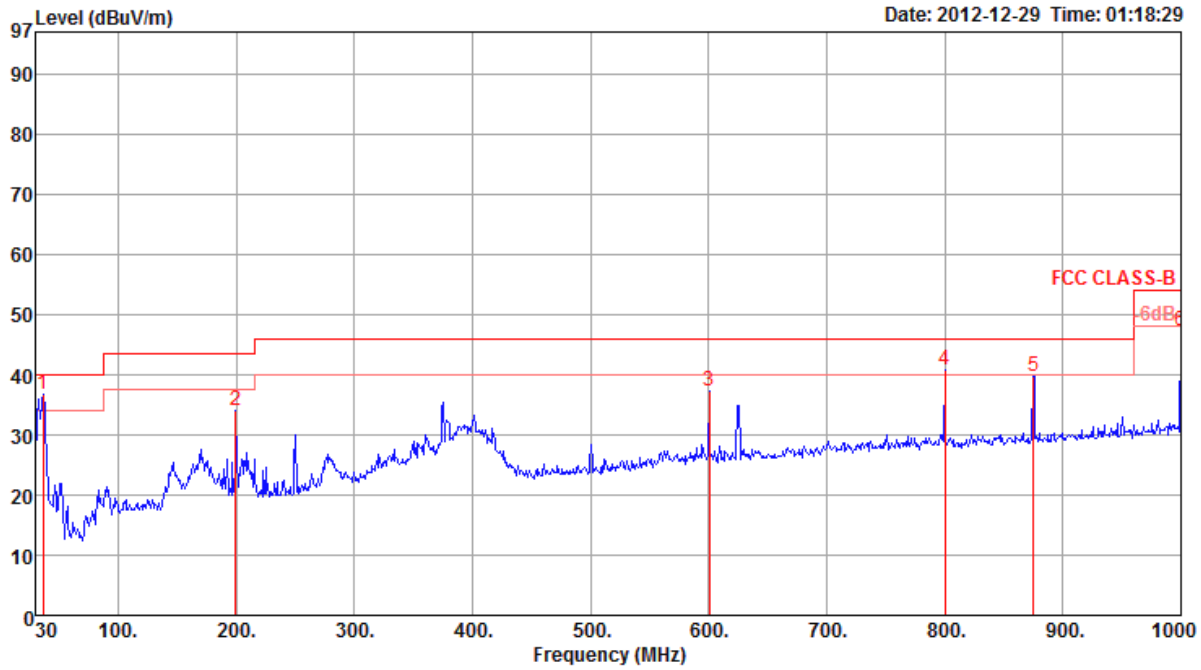
Vertical



		Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	pp	44.55	36.93	40.00	-3.07	56.91	0.79	11.06	31.83	100	80	VERTICAL	Peak
2	!	76.56	35.11	40.00	-4.89	58.55	1.03	7.22	31.69	150	249	VERTICAL	Peak
3		375.32	36.43	46.00	-9.57	49.50	2.44	15.92	31.43	150	360	VERTICAL	Peak
4		559.62	39.12	46.00	-6.88	48.51	2.96	18.90	31.25	100	0	VERTICAL	Peak
5		800.18	36.75	46.00	-9.25	43.55	3.67	20.80	31.27	125	50	VERTICAL	Peak
6		1000.00	46.26	54.00	-7.74	51.03	4.21	22.20	31.18	100	277	VERTICAL	Peak

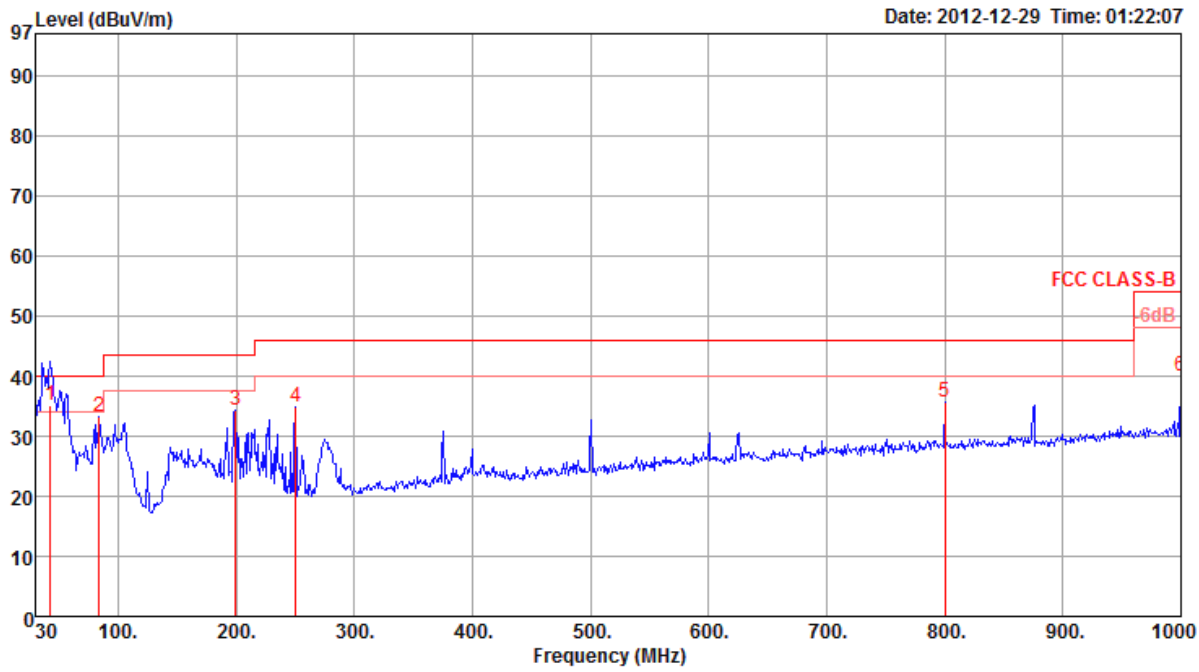
Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Configurations	Normal Link
Test Mode	Mode 5. EUT 2 (with internal antenna) + Embedded antenna / Ant. 18 (2.4GHz) + Ant. 19 (5GHz)		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 p	36.79	36.78	40.00	-3.22	48.21	0.95	28.00	15.62	Peak	0	400	HORIZONTAL
2	199.75	34.00	43.50	-9.50	48.76	2.09	27.25	10.40	Peak	0	400	HORIZONTAL
3	600.36	37.36	46.00	-8.64	41.93	3.73	27.60	19.30	Peak	0	400	HORIZONTAL
4 !	800.18	40.77	46.00	-5.23	42.50	4.36	26.89	20.80	Peak	0	400	HORIZONTAL
5	874.87	39.82	46.00	-6.18	40.82	4.51	26.86	21.35	Peak	0	400	HORIZONTAL
6	1000.00	47.33	54.00	-6.67	46.51	4.84	26.22	22.20	Peak	0	400	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 q	42.95	35.19	40.00	-4.81	50.19	1.00	27.96	11.96	QP	219	100	VERTICAL
2 p	84.32	33.19	40.00	-6.81	51.49	1.37	27.89	8.22	Peak	0	100	VERTICAL
3	199.75	34.32	43.50	-9.18	49.08	2.09	27.25	10.40	Peak	0	100	VERTICAL
4	250.19	34.89	46.00	-11.11	46.56	2.38	26.95	12.90	Peak	0	100	VERTICAL
5	800.18	35.71	46.00	-10.29	37.44	4.36	26.89	20.80	Peak	0	100	VERTICAL
6	1000.00	40.09	54.00	-13.91	39.27	4.84	26.22	22.20	Peak	0	100	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)

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 03, 2013
Configurations	IEEE 802.11n MCS0 20MHz Ch 56 / 1TX / Chain 1		
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15836.80	46.38	54.00	-7.62	38.32	6.14	37.36	35.44	Average	110	73	HORIZONTAL
2	15843.60	56.31	74.00	-17.69	48.26	6.14	37.36	35.45	Peak	110	73	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15836.40	44.45	54.00	-9.55	36.39	6.14	37.36	35.44	Average	100	182	VERTICAL
2	15876.60	56.82	74.00	-17.18	48.80	6.14	37.32	35.44	Peak	100	182	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 03, 2013
Configurations	IEEE 802.11n MCS0 20MHz Ch 56 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15838.00	60.36	74.00	-13.64	52.30	6.14	37.36	35.44	Peak	100	206	HORIZONTAL
2	15838.20	46.00	54.00	-8.00	37.94	6.14	37.36	35.44	Average	100	206	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15842.40	45.54	54.00	-8.46	37.48	6.14	37.36	35.44	Average	100	301	VERTICAL
2	15845.40	55.54	74.00	-18.46	47.51	6.14	37.34	35.45	Peak	100	301	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 03, 2013
Configurations	IEEE 802.11n MCS8 20MHz Ch 56 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15836.60	44.76	54.00	-9.24	36.70	6.14	37.36	35.44	Average	100	214	HORIZONTAL
2	15843.20	55.59	74.00	-18.41	47.53	6.14	37.36	35.44	Peak	100	214	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15839.60	47.43	54.00	-6.57	39.37	6.14	37.36	35.44	Average	100	293	VERTICAL
2	15863.80	58.03	74.00	-15.97	50.02	6.14	37.32	35.45	Peak	100	293	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.

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 03, 2013
Configurations	IEEE 802.11a Ch 56 / 1TX / Chain 1		
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15834.60	57.13	74.00	-16.87	49.07	6.14	37.36	35.44	Peak	100	174	HORIZONTAL
2	15837.20	45.79	54.00	-8.21	37.73	6.14	37.36	35.44	Average	100	174	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15837.40	43.57	54.00	-10.43	35.51	6.14	37.36	35.44	Average	100	115	VERTICAL
2	15848.20	57.55	74.00	-16.45	49.52	6.14	37.34	35.45	Peak	100	115	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 03, 2013
Configurations	IEEE 802.11a Ch 56 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15832.80	64.06	74.00	-9.94	56.00	6.14	37.36	35.44	Peak	103	183	HORIZONTAL
2	15839.20	47.17	54.00	-6.83	39.11	6.14	37.36	35.44	Average	103	183	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15821.60	58.57	74.00	-15.43	50.50	6.14	37.37	35.44	Peak	100	159	VERTICAL
2	15840.40	44.90	54.00	-9.10	36.84	6.14	37.36	35.44	Average	100	159	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.

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 02, 2013
Configurations	IEEE 802.11n MCS0 20MHz Ch 56 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15839.30	47.36	54.00	-6.64	39.30	6.14	37.36	35.44	Average	102	194	HORIZONTAL
2	15840.50	60.29	74.00	-13.71	52.23	6.14	37.36	35.44	Peak	102	194	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15842.50	56.38	74.00	-17.62	48.32	6.14	37.36	35.44	Peak	100	52	VERTICAL
2	15842.80	44.65	54.00	-9.35	36.59	6.14	37.36	35.44	Average	100	52	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.

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 02, 2013
Configurations	IEEE 802.11a Ch 56 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15839.70	47.27	54.00	-6.73	39.21	6.14	37.36	35.44	Average	112	193	HORIZONTAL
2	15840.10	58.76	74.00	-15.24	50.70	6.14	37.36	35.44	Peak	112	193	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15837.20	43.86	54.00	-10.14	35.80	6.14	37.36	35.44	Average	100	160	VERTICAL
2	15852.40	53.62	74.00	-20.38	45.59	6.14	37.34	35.45	Peak	100	160	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.

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 02, 2013
Configurations	IEEE 802.11n MCS0 20MHz Ch 56 / 1TX / Chain 1		
Test Mode	Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15837.24	40.13	54.00	-13.87	32.07	6.14	37.36	35.44	Average	102	149	HORIZONTAL
2	15841.28	52.85	74.00	-21.15	44.79	6.14	37.36	35.44	Peak	102	149	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15838.72	38.69	54.00	-15.31	30.63	6.14	37.36	35.44	Average	100	211	VERTICAL
2	15845.24	52.72	74.00	-21.28	44.69	6.14	37.34	35.45	Peak	100	211	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.

Temperature	26℃	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 02, 2013
Configurations	IEEE 802.11a Ch 56 / 1TX / Chain 1		
Test Mode	Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15830.04	53.44	74.00	-20.56	45.38	6.14	37.36	35.44	Peak	100	48	HORIZONTAL
2	15849.44	39.61	54.00	-14.39	31.58	6.14	37.34	35.45	Average	100	48	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15834.48	39.63	54.00	-14.37	31.57	6.14	37.36	35.44	Average	100	215	VERTICAL
2	15836.64	53.03	74.00	-20.97	44.97	6.14	37.36	35.44	Peak	100	215	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.

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 02, 2013
Configurations	IEEE 802.11n MCS0 20MHz Ch 56 / 2TX / Chain 1		
Test Mode	Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15838.68	50.50	74.00	-23.50	42.44	6.14	37.36	35.44	Peak	100	130	HORIZONTAL
2	15841.32	38.43	54.00	-15.57	30.37	6.14	37.36	35.44	Average	100	130	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15839.16	38.41	54.00	-15.59	30.35	6.14	37.36	35.44	Average	100	210	VERTICAL
2	15840.84	47.97	74.00	-26.03	39.91	6.14	37.36	35.44	Peak	100	210	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.

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 02, 2013
Configurations	IEEE 802.11a Ch 56 / 1TX / Chain 1		
Test Mode	Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15838.84	39.38	54.00	-14.62	31.32	6.14	37.36	35.44	Average	100	147	HORIZONTAL
2	15846.84	48.05	74.00	-25.95	40.02	6.14	37.34	35.45	Peak	100	147	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15843.08	38.64	54.00	-15.36	30.58	6.14	37.36	35.44	Average	100	96	VERTICAL
2	15843.08	47.74	74.00	-26.26	39.68	6.14	37.36	35.44	Peak	100	96	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.

Temperature	26℃	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11n MCS0 20MHz Ch 56 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5319.96	48.41	54.00	-5.59	42.65	6.60	34.36	35.20	Average	100	299	HORIZONTAL
2	5320.05	62.44	74.00	-11.56	56.68	6.60	34.36	35.20	Peak	100	299	HORIZONTAL
3	15840.96	55.62	74.00	-18.38	42.81	10.67	37.67	35.53	Peak	100	42	HORIZONTAL
4	15842.12	43.36	54.00	-10.64	30.55	10.67	37.67	35.53	Average	100	42	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5319.94	53.74	54.00	-0.26	47.98	6.60	34.36	35.20	Average	107	2	VERTICAL
2	5319.97	67.29	74.00	-6.71	61.53	6.60	34.36	35.20	Peak	107	2	VERTICAL
3	15847.76	55.94	74.00	-18.06	43.16	10.67	37.64	35.53	Peak	100	181	VERTICAL
4	15848.92	42.99	54.00	-11.01	30.21	10.67	37.64	35.53	Average	100	181	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11n MCS0 20MHz Ch 60 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5439.99	44.27	54.00	-9.73	38.19	6.68	34.60	35.20	Average	100	290	HORIZONTAL
2	5440.09	53.47	74.00	-20.53	47.39	6.68	34.60	35.20	Peak	100	290	HORIZONTAL
3	10595.76	61.47	74.00	-12.53	47.65	9.05	39.91	35.14	Peak	100	58	HORIZONTAL
4	10596.16	47.16	54.00	-6.84	33.35	9.05	39.90	35.14	Average	100	58	HORIZONTAL
5	15899.20	56.29	74.00	-17.71	43.57	10.68	37.56	35.52	Peak	100	93	HORIZONTAL
6	15906.80	43.77	54.00	-10.23	31.05	10.68	37.56	35.52	Average	100	93	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5439.94	59.44	74.00	-14.56	53.36	6.68	34.60	35.20	Peak	100	309	VERTICAL
2	5439.96	50.37	54.00	-3.63	44.29	6.68	34.60	35.20	Average	100	309	VERTICAL
3	10598.28	59.01	74.00	-14.99	45.20	9.05	39.90	35.14	Peak	100	298	VERTICAL
4	10598.40	46.56	54.00	-7.44	32.75	9.05	39.90	35.14	Average	100	298	VERTICAL
5	15907.48	43.68	54.00	-10.32	30.96	10.68	37.56	35.52	Average	100	214	VERTICAL
6	15909.80	56.10	74.00	-17.90	43.38	10.68	37.56	35.52	Peak	100	214	VERTICAL

Temperature	26℃	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11n MCS0 20MHz Ch 64 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5439.87	53.64	74.00	-20.36	47.56	6.68	34.60	35.20	Peak	100	289	HORIZONTAL
2	5439.97	44.94	54.00	-9.06	38.86	6.68	34.60	35.20	Average	100	289	HORIZONTAL
3	10637.44	47.69	54.00	-6.31	33.86	9.06	39.86	35.09	Average	100	57	HORIZONTAL
4	10640.28	60.96	74.00	-13.04	47.13	9.06	39.86	35.09	Peak	100	57	HORIZONTAL
5	15965.44	43.95	54.00	-10.05	31.31	10.70	37.45	35.51	Average	100	251	HORIZONTAL
6	15966.08	56.68	74.00	-17.32	44.04	10.70	37.45	35.51	Peak	100	251	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5439.88	60.18	74.00	-13.82	54.10	6.68	34.60	35.20	Peak	100	309	VERTICAL
2	5439.99	51.68	54.00	-2.32	45.60	6.68	34.60	35.20	Average	100	309	VERTICAL
3	10642.04	46.20	54.00	-7.80	32.37	9.06	39.86	35.09	Average	100	299	VERTICAL
4	10648.72	59.91	74.00	-14.09	46.10	9.06	39.84	35.09	Peak	100	299	VERTICAL
5	15957.28	56.86	74.00	-17.14	44.19	10.70	37.48	35.51	Peak	100	338	VERTICAL
6	15968.04	43.74	54.00	-10.26	31.10	10.70	37.45	35.51	Average	100	338	VERTICAL

Temperature	26℃	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11n MCS0 20MHz Ch 100 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5319.93	47.75	54.00	-6.25	41.99	6.60	34.36	35.20	Average	100	304	HORIZONTAL
2	5319.97	53.80	74.00	-20.20	48.04	6.60	34.36	35.20	Peak	100	304	HORIZONTAL
3	10992.28	53.25	74.00	-20.75	39.44	9.11	39.50	34.80	Peak	100	123	HORIZONTAL
4	11003.40	40.45	54.00	-13.55	26.64	9.11	39.50	34.80	Average	100	123	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5319.94	53.88	54.00	-0.12	48.12	6.60	34.36	35.20	Average	100	307	VERTICAL
2	5320.05	58.83	74.00	-15.17	53.07	6.60	34.36	35.20	Peak	100	307	VERTICAL
3	10996.76	53.09	74.00	-20.91	39.28	9.11	39.50	34.80	Peak	100	267	VERTICAL
4	11008.44	40.33	54.00	-13.67	26.52	9.11	39.50	34.80	Average	100	267	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11n MCS0 20MHz Ch 116 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11156.60	50.78	54.00	-3.22	36.88	9.29	39.50	34.89	Average	100	62	HORIZONTAL
2	11156.80	63.78	74.00	-10.22	49.88	9.29	39.50	34.89	Peak	100	62	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11156.10	57.76	74.00	-16.24	43.86	9.29	39.50	34.89	Peak	100	318	VERTICAL
2	11158.30	47.14	54.00	-6.86	33.24	9.29	39.50	34.89	Average	100	318	VERTICAL

Temperature	26℃	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11n MCS0 20MHz Ch 140 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5319.96	46.88	54.00	-7.12	41.12	6.60	34.36	35.20	Average	100	303	HORIZONTAL
2	5319.98	53.76	74.00	-20.24	48.00	6.60	34.36	35.20	Peak	100	303	HORIZONTAL
3	11396.76	52.62	74.00	-21.38	38.57	9.59	39.50	35.04	Peak	100	304	HORIZONTAL
4	11402.00	40.71	54.00	-13.29	26.66	9.59	39.50	35.04	Average	100	304	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5319.93	58.51	74.00	-15.49	52.75	6.60	34.36	35.20	Peak	100	306	VERTICAL
2	5319.96	52.98	54.00	-1.02	47.22	6.60	34.36	35.20	Average	100	306	VERTICAL
3	11393.72	53.33	74.00	-20.67	39.28	9.59	39.50	35.04	Peak	100	228	VERTICAL
4	11402.00	40.75	54.00	-13.25	26.70	9.59	39.50	35.04	Average	100	228	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11n MCS0 40MHz Ch 62 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5439.94	53.43	74.00	-20.57	47.35	6.68	34.60	35.20	Peak	100	289	HORIZONTAL
2	5439.96	45.75	54.00	-8.25	39.67	6.68	34.60	35.20	Average	100	289	HORIZONTAL
3	10611.16	41.80	54.00	-12.20	27.97	9.05	39.90	35.12	Average	45	214	HORIZONTAL
4	10612.88	54.46	74.00	-19.54	40.62	9.06	39.90	35.12	Peak	100	214	HORIZONTAL
5	15937.80	43.52	54.00	-10.48	30.82	10.70	37.51	35.51	Average	100	63	HORIZONTAL
6	15938.20	55.52	74.00	-18.48	42.82	10.70	37.51	35.51	Peak	100	63	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5439.92	59.37	74.00	-14.63	53.29	6.68	34.60	35.20	Peak	100	294	VERTICAL
2	5440.03	51.93	54.00	-2.07	45.85	6.68	34.60	35.20	Average	100	294	VERTICAL
3	10610.36	54.32	74.00	-19.68	40.49	9.05	39.90	35.12	Peak	100	244	VERTICAL
4	10629.48	42.18	54.00	-11.82	28.33	9.06	39.88	35.09	Average	100	244	VERTICAL
5	15953.60	55.60	74.00	-18.40	42.93	10.70	37.48	35.51	Peak	100	164	VERTICAL
6	15953.80	43.77	54.00	-10.23	31.10	10.70	37.48	35.51	Average	100	164	VERTICAL

Temperature	26℃	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11n MCS0 40MHz Ch 102 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5319.96	47.48	54.00	-6.52	41.72	6.60	34.36	35.20	Average	100	304	HORIZONTAL
2	5319.97	53.90	74.00	-20.10	48.14	6.60	34.36	35.20	Peak	100	304	HORIZONTAL
3	11010.56	52.76	74.00	-21.24	38.96	9.11	39.50	34.81	Peak	100	83	HORIZONTAL
4	11026.92	40.26	54.00	-13.74	26.43	9.14	39.50	34.81	Average	100	83	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5319.93	58.90	74.00	-15.10	53.14	6.60	34.36	35.20	Peak	100	307	VERTICAL
2	5319.94	53.56	54.00	-0.44	47.80	6.60	34.36	35.20	Average	100	307	VERTICAL
3	11023.72	40.42	54.00	-13.58	26.59	9.14	39.50	34.81	Average	100	160	VERTICAL
4	11026.56	52.65	74.00	-21.35	38.82	9.14	39.50	34.81	Peak	100	160	VERTICAL

Temperature	26℃	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11n MCS0 40MHz Ch 110 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11095.56	56.84	74.00	-17.16	42.97	9.23	39.50	34.86	Peak	100	121	HORIZONTAL
2	11109.24	44.79	54.00	-9.21	30.92	9.23	39.50	34.86	Average	100	121	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11095.56	56.84	74.00	-17.16	42.97	9.23	39.50	34.86	Peak	100	121	HORIZONTAL
2	11109.24	44.79	54.00	-9.21	30.92	9.23	39.50	34.86	Average	100	121	HORIZONTAL

Temperature	26℃	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11n MCS0 40MHz Ch 134 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11342.80	41.54	54.00	-12.46	27.52	9.53	39.50	35.01	Average	100	281	HORIZONTAL
2	11343.40	53.77	74.00	-20.23	39.75	9.53	39.50	35.01	Peak	100	281	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11329.30	53.34	74.00	-20.66	39.33	9.50	39.50	34.99	Peak	100	187	VERTICAL
2	11340.50	41.64	54.00	-12.36	27.60	9.53	39.50	34.99	Average	100	187	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.

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 27, 2012
Configurations	IEEE 802.11a Ch 56 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15840.00	43.97	54.00	-10.03	31.16	10.67	37.67	35.53	Average	100	166	HORIZONTAL
2	15879.80	57.18	74.00	-16.82	44.44	10.68	37.59	35.53	Peak	100	166	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15835.92	57.79	74.00	-16.21	44.99	10.66	37.67	35.53	Peak	100	360	VERTICAL
2	15838.08	44.19	54.00	-9.81	31.38	10.67	37.67	35.53	Average	100	360	VERTICAL

Temperature	26℃	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 27, 2012
Configurations	IEEE 802.11a Ch 60 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10597.64	66.00	74.00	-8.00	52.19	9.05	39.90	35.14	Peak	100	243	HORIZONTAL
2	10598.24	52.11	54.00	-1.89	38.30	9.05	39.90	35.14	Average	100	243	HORIZONTAL
3	15900.76	62.31	74.00	-11.69	49.59	10.68	37.56	35.52	Peak	100	239	HORIZONTAL
4	15900.80	48.59	54.00	-5.41	35.87	10.68	37.56	35.52	Average	100	239	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10601.20	67.47	74.00	-6.53	53.66	9.05	39.90	35.14	Peak	100	115	VERTICAL
2	10602.44	52.34	54.00	-1.66	38.51	9.05	39.90	35.12	Average	100	115	VERTICAL
3	15895.20	58.91	74.00	-15.09	46.16	10.68	37.59	35.52	Peak	100	230	VERTICAL
4	15903.32	46.51	54.00	-7.49	33.79	10.68	37.56	35.52	Average	100	230	VERTICAL

Temperature	26℃	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 27, 2012
Configurations	IEEE 802.11a Ch 64 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10638.40	47.56	54.00	-6.44	33.73	9.06	39.86	35.09	Average	100	239	HORIZONTAL
2	10638.80	60.08	74.00	-13.92	46.25	9.06	39.86	35.09	Peak	100	239	HORIZONTAL
3	15958.90	46.36	54.00	-7.64	33.69	10.70	37.48	35.51	Average	113	190	HORIZONTAL
4	15962.40	57.91	74.00	-16.09	45.24	10.70	37.48	35.51	Peak	100	190	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10640.60	46.26	54.00	-7.74	32.43	9.06	39.86	35.09	Average	100	115	VERTICAL
2	10643.40	59.56	74.00	-14.44	45.73	9.06	39.86	35.09	Peak	100	115	VERTICAL
3	15931.20	58.40	74.00	-15.60	45.71	10.69	37.51	35.51	Peak	100	297	VERTICAL
4	15955.20	45.81	54.00	-8.19	33.14	10.70	37.48	35.51	Average	100	297	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11a Ch 100 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10994.68	54.49	74.00	-19.51	40.68	9.11	39.50	34.80	Peak	100	53	HORIZONTAL
2	11000.88	42.75	54.00	-11.25	28.94	9.11	39.50	34.80	Average	100	53	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10997.00	53.39	74.00	-20.61	39.58	9.11	39.50	34.80	Peak	100	76	VERTICAL
2	11003.52	40.71	54.00	-13.29	26.90	9.11	39.50	34.80	Average	100	76	VERTICAL

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11a Ch 116 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11158.90	51.70	54.00	-2.30	37.80	9.29	39.50	34.89	Average	100	57	HORIZONTAL
2	11159.20	64.39	74.00	-9.61	50.49	9.29	39.50	34.89	Peak	100	57	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11158.30	49.52	54.00	-4.48	35.62	9.29	39.50	34.89	Average	100	25	VERTICAL
2	11158.90	61.70	74.00	-12.30	47.80	9.29	39.50	34.89	Peak	100	25	VERTICAL

Temperature	26℃	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11a Ch 140 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5319.90	52.92	74.00	-21.08	47.16	6.60	34.36	35.20	Peak	100	299	HORIZONTAL
2	5319.94	46.65	54.00	-7.35	40.89	6.60	34.36	35.20	Average	100	299	HORIZONTAL
3	11396.60	40.99	54.00	-13.01	26.94	9.59	39.50	35.04	Average	100	277	HORIZONTAL
4	11400.96	54.24	74.00	-19.76	40.19	9.59	39.50	35.04	Peak	100	277	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5319.94	52.54	54.00	-1.46	46.78	6.60	34.36	35.20	Average	100	306	VERTICAL
2	5319.95	57.86	74.00	-16.14	52.10	6.60	34.36	35.20	Peak	100	306	VERTICAL
3	11396.28	41.52	54.00	-12.48	27.47	9.59	39.50	35.04	Average	100	163	VERTICAL
4	11405.24	53.39	74.00	-20.61	39.34	9.59	39.50	35.04	Peak	100	163	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.

4.7. Band Edge Emissions Measurement

4.7.1. Limit

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.25-5.35 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)	1MHz / 3MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1MHz / 3MHz for Peak

4.7.3. Test Procedures

1. The test procedure is the same as section 4.6.3, only the frequency range investigated is limited to 100MHz around bandedges.

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 03, 2013
Configurations	IEEE 802.11n MCS0 20MHz Ch 56 / 1TX / Chain 1		
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Channel 56

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5247.40	72.92	74.00	-1.08	35.61	3.46	33.85	0.00	Peak	100	261	VERTICAL
2	5250.00	53.72	54.00	-0.28	16.41	3.46	33.85	0.00	Average	100	261	VERTICAL
3	5272.80	115.13			77.78	3.47	33.88	0.00	Peak	100	261	VERTICAL
4	5273.00	103.57			66.22	3.47	33.88	0.00	Average	100	261	VERTICAL

Item 3, 4 are the fundamental frequency at 5280 MHz.

Note:

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

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 03, 2013
Configurations	IEEE 802.11n MCS0 20MHz Ch 56 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Channel 56

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5247.40	70.76	74.00	-3.24	33.45	3.46	33.85	0.00	Peak	102	117	VERTICAL
2	5250.00	53.74	54.00	-0.26	16.43	3.46	33.85	0.00	Average	102	117	VERTICAL
3	5283.20	120.47			83.09	3.47	33.91	0.00	Peak	102	117	VERTICAL
4	5286.60	110.24			72.86	3.47	33.91	0.00	Average	102	117	VERTICAL

Item 3, 4 are the fundamental frequency at 5280 MHz.

Note:

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

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 03, 2013
Configurations	IEEE 802.11n MCS8 20MHz Ch 56 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Channel 56

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5249.80	73.05	74.00	-0.95	35.74	3.46	33.85	0.00	Peak	100	101	VERTICAL
2	5250.00	53.91	54.00	-0.09	16.60	3.46	33.85	0.00	Average	100	101	VERTICAL
3	5285.00	120.63			83.25	3.47	33.91	0.00	Peak	100	101	VERTICAL
4	5286.60	108.28			70.90	3.47	33.91	0.00	Average	100	101	VERTICAL

Item 3, 4 are the fundamental frequency at 5280 MHz.

Note:

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

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11a Ch 56 / 1TX / Chain 1		
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Channel 56

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5248.60	71.93	74.00	-2.07	34.62	3.46	33.85	0.00	Peak	100	93	VERTICAL
2	5250.00	53.55	54.00	-0.45	16.24	3.46	33.85	0.00	Average	100	93	VERTICAL
3	5286.80	106.91			69.53	3.47	33.91	0.00	Average	100	93	VERTICAL
4	5286.80	116.73			79.35	3.47	33.91	0.00	Peak	100	93	VERTICAL

Item 3, 4 are the fundamental frequency at 5280 MHz.

Note:

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

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 03, 2013
Configurations	IEEE 802.11a Ch 56 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 1. EUT 1 (with external antenna) + Ant. 5 (Dipole antenna)		

Channel 56

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5249.00	53.73	54.00	-0.27	16.42	3.46	33.85	0.00	Average	100	112	VERTICAL
2	5249.20	70.86	74.00	-3.14	33.55	3.46	33.85	0.00	Peak	100	112	VERTICAL
3	5283.80	110.46			73.08	3.47	33.91	0.00	Average	100	112	VERTICAL
4	5284.00	120.98			83.60	3.47	33.91	0.00	Peak	100	112	VERTICAL

Item 3, 4 are the fundamental frequency at 5280 MHz.

Note:

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

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 02, 2013
Configurations	IEEE 802.11n MCS0 20MHz Ch 56 / 1TX / Chain 1		
Test Mode	Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna)		

Channel 56

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5249.20	73.84	74.00	-0.16	36.53	3.46	33.85	0.00	Peak	170	310	HORIZONTAL
2	5250.00	52.94	54.00	-1.06	15.63	3.46	33.85	0.00	Average	170	310	HORIZONTAL
3	5285.80	114.60			77.22	3.47	33.91	0.00	Peak	170	310	HORIZONTAL
4	5287.60	104.00			66.62	3.47	33.91	0.00	Average	170	310	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5280 MHz.

Note:

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

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 02, 2013
Configurations	IEEE 802.11a Ch 56 / 1TX / Chain 1		
Test Mode	Mode 2. EUT 1 (with external antenna) + Ant. 6 (Patch antenna)		

Channel 56

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5249.20	73.13	74.00	-0.87	35.82	3.46	33.85	0.00	Peak	104	328	VERTICAL
2	5250.00	50.88	54.00	-3.12	13.57	3.46	33.85	0.00	Average	104	328	VERTICAL
3	5285.60	114.32			76.94	3.47	33.91	0.00	Peak	104	328	VERTICAL
4	5285.80	104.00			66.62	3.47	33.91	0.00	Average	104	328	VERTICAL

Item 3, 4 are the fundamental frequency at 5280 MHz.

Note:

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

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 02, 2013
Configurations	IEEE 802.11n MCS0 20MHz Ch 56 / 1TX / Chain 1		
Test Mode	Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna)		

Channel 56

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5249.00	71.12	74.00	-2.88	33.81	3.46	33.85	0.00	Peak	110	350	VERTICAL
2	5250.00	53.84	54.00	-0.16	16.53	3.46	33.85	0.00	Average	110	350	VERTICAL
3	5284.00	119.14			81.76	3.47	33.91	0.00	Peak	110	350	VERTICAL
4	5286.40	107.57			70.19	3.47	33.91	0.00	Average	110	350	VERTICAL

Item 3, 4 are the fundamental frequency at 5280 MHz.

Note:

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

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 02, 2013
Configurations	IEEE 802.11a Ch 56 / 1TX / Chain 1		
Test Mode	Mode 3. EUT 1 (with external antenna) + Ant. 7 (Panel antenna)		

Channel 56

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5249.00	69.41	74.00	-4.59	32.10	3.46	33.85	0.00	Peak	112	333	VERTICAL
2	5250.00	53.47	54.00	-0.53	16.16	3.46	33.85	0.00	Average	112	333	VERTICAL
3	5286.40	108.91			71.53	3.47	33.91	0.00	Average	112	333	VERTICAL
4	5287.00	119.88			82.50	3.47	33.91	0.00	Peak	112	333	VERTICAL

Item 3, 4 are the fundamental frequency at 5280 MHz.

Note:

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

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 02, 2013
Configurations	IEEE 802.11n MCS0 20MHz Ch 56 / 1TX / Chain 1		
Test Mode	Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna)		

Channel 56

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5249.20	69.09	74.00	-4.91	31.78	3.46	33.85	0.00	Peak	146	336	HORIZONTAL
2	5250.00	53.78	54.00	-0.22	16.47	3.46	33.85	0.00	Average	146	336	HORIZONTAL
3	5287.00	106.42			69.04	3.47	33.91	0.00	Average	146	336	HORIZONTAL
4	5287.00	117.51			80.13	3.47	33.91	0.00	Peak	146	336	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5280 MHz.

Note:

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

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Jan. 02, 2013
Configurations	IEEE 802.11a Ch 56 / 1TX / Chain 1		
Test Mode	Mode 4. EUT 1 (with external antenna) + Ant. 8 (Yagi antenna)		

Channel 56

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5250.00	53.63	54.00	-0.37	16.32	3.46	33.85	0.00	Average	142	349	HORIZONTAL
2	5250.00	72.14	74.00	-1.86	34.83	3.46	33.85	0.00	Peak	142	349	HORIZONTAL
3	5285.60	118.26			80.88	3.47	33.91	0.00	Peak	142	349	HORIZONTAL
4	5286.60	107.41			70.03	3.47	33.91	0.00	Average	142	349	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5280 MHz.

Note:

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

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 27, 2012
Configurations	IEEE 802.11n MCS0 20MHz Ch 56, 60, 64 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Channel 56

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5249.00	71.20	74.00	-2.80	30.42	6.56	34.22	0.00	Peak	108	2	VERTICAL
2	5250.00	53.49	54.00	-0.51	12.71	6.56	34.22	0.00	Average	108	2	VERTICAL
3	5272.80	108.62			67.80	6.57	34.25	0.00	Average	108	2	VERTICAL
4	5274.80	118.77			77.95	6.57	34.25	0.00	Peak	108	2	VERTICAL

Item 3, 4 are the fundamental frequency at 5280 MHz.

Channel 60

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5301.20	119.55			78.64	6.59	34.32	0.00	Peak	107	2	VERTICAL
2	5302.40	109.83			68.92	6.59	34.32	0.00	Average	107	2	VERTICAL
3	5382.40	65.48	74.00	-8.52	24.36	6.63	34.49	0.00	Peak	107	2	VERTICAL
4	5382.80	53.58	54.00	-0.42	12.46	6.63	34.49	0.00	Average	107	2	VERTICAL

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

Channel 64

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5312.40	109.76			68.85	6.59	34.32	0.00	Average	108	2	VERTICAL
2	5312.80	119.40			78.48	6.60	34.32	0.00	Peak	108	2	VERTICAL
3	5350.00	53.56	54.00	-0.44	12.52	6.62	34.42	0.00	Average	108	2	VERTICAL
4	5350.00	71.34	74.00	-2.66	30.30	6.62	34.42	0.00	Peak	108	2	VERTICAL

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11n MCS0 20MHz Ch 100, 140 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Channel 100

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5439.60	52.89	54.00	-1.11	11.61	6.68	34.60	0.00	Average	103	344	VERTICAL
2	5439.60	60.82	74.00	-13.18	19.54	6.68	34.60	0.00	Peak	103	344	VERTICAL
3	5463.60	59.87	74.00	-14.13	18.55	6.69	34.63	0.00	Peak	103	344	VERTICAL
4	5464.80	47.70	54.00	-6.30	6.38	6.69	34.63	0.00	Average	103	344	VERTICAL
5	5496.40	102.55			61.14	6.71	34.70	0.00	Average	103	344	VERTICAL
6	5497.20	112.72			71.31	6.71	34.70	0.00	Peak	103	344	VERTICAL

Item 4, 5 are the fundamental frequency at 5500 MHz.

Channel 140

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5692.00	108.58			66.99	6.73	34.86	0.00	Average	100	344	VERTICAL
2	5694.00	118.34			76.75	6.73	34.86	0.00	Peak	100	344	VERTICAL
3	5725.00	52.87	54.00	-1.13	11.24	6.74	34.89	0.00	Average	100	344	VERTICAL
4	5726.60	73.54	74.00	-0.46	31.91	6.74	34.89	0.00	Peak	100	344	VERTICAL

Item 1, 2 are the fundamental frequency at 5700 MHz.

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11n MCS0 40MHz Ch 62 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Channel 62

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5323.60	112.74			71.78	6.60	34.36	0.00	Peak	107	357	VERTICAL
2	5325.20	101.54			60.58	6.60	34.36	0.00	Average	107	357	VERTICAL
3	5350.00	53.59	54.00	-0.41	12.55	6.62	34.42	0.00	Average	107	357	VERTICAL
4	5350.00	66.19	74.00	-7.81	25.15	6.62	34.42	0.00	Peak	107	357	VERTICAL

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 28, 2012
Configurations	IEEE 802.11n MCS0 40MHz Ch 102, 110, 134 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Channel 102

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5440.00	53.64	54.00	-0.36	12.36	6.68	34.60	0.00	Average	104	343	VERTICAL
2	5440.00	62.88	74.00	-11.12	21.60	6.68	34.60	0.00	Peak	104	343	VERTICAL
3	5468.40	66.45	74.00	-7.55	25.09	6.69	34.67	0.00	Peak	104	343	VERTICAL
4	5470.00	53.03	54.00	-0.97	11.67	6.69	34.67	0.00	Average	104	343	VERTICAL
5	5524.40	100.29			58.85	6.71	34.73	0.00	Average	104	343	VERTICAL
6	5524.80	110.66			69.22	6.71	34.73	0.00	Peak	104	343	VERTICAL

Item 4, 5 are the fundamental frequency at 5510 MHz.

Channel 110

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5452.80	62.56	74.00	-11.44	21.25	6.68	34.63	0.00	Peak	104	2	VERTICAL
2	5453.20	50.69	54.00	-3.31	9.38	6.68	34.63	0.00	Average	104	2	VERTICAL
3	5467.20	52.34	54.00	-1.66	10.98	6.69	34.67	0.00	Average	104	2	VERTICAL
4	5468.40	65.16	74.00	-8.84	23.80	6.69	34.67	0.00	Peak	104	2	VERTICAL
5	5545.60	107.77			66.31	6.72	34.74	0.00	Average	104	2	VERTICAL
6	5545.60	117.70			76.24	6.72	34.74	0.00	Peak	104	2	VERTICAL

Item 4, 5 are the fundamental frequency at 5550 MHz.

Channel 134

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5680.80	118.30			76.72	6.73	34.85	0.00	Peak	100	345	VERTICAL
2	5681.60	108.08			66.50	6.73	34.85	0.00	Average	100	345	VERTICAL
3	5725.00	52.18	54.00	-1.82	10.55	6.74	34.89	0.00	Average	100	345	VERTICAL
4	5726.20	71.69	74.00	-2.31	30.06	6.74	34.89	0.00	Peak	100	345	VERTICAL

Item 1, 2 are the fundamental frequency at 5670 MHz.

Note:

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

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

Temperature	26℃	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 27, 2012
Configurations	IEEE 802.11a Ch 56, 60, 64 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Channel 56

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5248.20	52.22	54.00	-1.78	11.44	6.56	34.22	0.00	Average	124	179	VERTICAL
2	5248.80	68.88	74.00	-5.12	28.10	6.56	34.22	0.00	Peak	124	179	VERTICAL
3	5277.80	119.95			79.13	6.57	34.25	0.00	Peak	124	179	VERTICAL
4	5287.40	110.11			69.25	6.57	34.29	0.00	Average	124	179	VERTICAL

Item 3, 4 are the fundamental frequency at 5280 MHz.

Channel 60

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5304.00	113.38			72.47	6.59	34.32	0.00	Average	100	216	VERTICAL
2	5304.00	123.29			82.38	6.59	34.32	0.00	Peak	100	216	VERTICAL
3	5355.20	70.21	74.00	-3.79	29.17	6.62	34.42	0.00	Peak	100	216	VERTICAL
4	5360.40	53.39	54.00	-0.61	12.35	6.62	34.42	0.00	Average	100	216	VERTICAL

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

Channel 64

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5325.60	111.58			70.62	6.60	34.36	0.00	Average	100	178	VERTICAL
2	5325.60	121.54			80.58	6.60	34.36	0.00	Peak	100	178	VERTICAL
3	5350.00	71.14	74.00	-2.86	30.10	6.62	34.42	0.00	Peak	100	178	VERTICAL
4	5350.40	53.29	54.00	-0.71	12.25	6.62	34.42	0.00	Average	100	178	VERTICAL

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

Temperature	26°C	Humidity	60%
Test Engineer	Jim Huang	Test Date	Dec. 27, 2012
Configurations	IEEE 802.11a Ch 100, 140 / 2TX / Chain 1 + Chain 2		
Test Mode	Mode 5. EUT 2 (with internal antenna) + Ant. 19 (Embedded antenna)		

Channel 100

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5414.80	64.57	74.00	-9.43	23.38	6.66	34.53	0.00	Peak	100	313	VERTICAL
2	5415.20	52.96	54.00	-1.04	11.77	6.66	34.53	0.00	Average	100	313	VERTICAL
3	5469.60	66.30	74.00	-7.70	24.94	6.69	34.67	0.00	Peak	100	313	VERTICAL
4	5470.00	52.33	54.00	-1.67	10.97	6.69	34.67	0.00	Average	100	313	VERTICAL
5	5494.40	110.03			68.62	6.71	34.70	0.00	Average	100	313	VERTICAL
6	5495.20	119.92			78.51	6.71	34.70	0.00	Peak	100	313	VERTICAL

Item 4, 5 are the fundamental frequency at 5500 MHz.

Channel 140

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5705.20	108.75			67.16	6.73	34.86	0.00	Average	100	344	VERTICAL
2	5705.20	118.54			76.95	6.73	34.86	0.00	Peak	100	344	VERTICAL
3	5725.00	52.93	54.00	-1.07	11.30	6.74	34.89	0.00	Average	100	344	VERTICAL
4	5731.00	73.30	74.00	-0.70	31.67	6.74	34.89	0.00	Peak	100	344	VERTICAL

Item 1, 2 are the fundamental frequency at 5700 MHz.

Note:

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

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

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 ±20ppm (IEEE 802.11nspecification).

4.8.2. Measuring Instruments and Setting

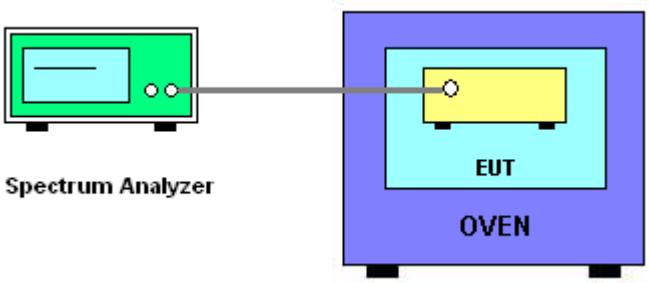
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 10^6 ppm and the limit is less than ±20ppm (IEEE 802.11nspecification).
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°C~50°C.

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

For EUT 1 (with external antenna):

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)	5299.9528
Max. Deviation (ppm)	0.048400

For EUT 2 (with internal antenna):

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)	
(V)	5300	5500
126.50	5300.0022	5500.0094
110.00	5300.0038	5500.0090
93.50	5300.0062	5500.0082
Max. Deviation (MHz)	0.006200	0.009400
Max. Deviation (ppm)	1.17	1.71

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)	
(°C)	5300	5500
-30	5300.0072	5500.0068
-20	5300.0068	5500.0078
-10	5300.0062	5500.0056
0	5300.0064	5500.0038
10	5300.0054	5500.0042
20	5300.0060	5500.0068
30	5300.0048	5500.0072
40	5300.0024	5500.0064
50	5300.0068	5500.0024
Max. Deviation (MHz)	5300.0060	5500.0020
Max. Deviation (ppm)	0.007200	0.007800

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
EMI Test Receiver	R&S	ESCS 30	100377	9kHz ~ 2.75GHz	Oct. 23, 2012	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Nov. 26, 2012	Conduction (CO01-CB)
V- LISN	Schwarzbeck	NSLK 8127	8127-478	9kHz ~ 30MHz	Jun. 22, 2012	Conduction (CO01-CB)
Impulsbegrenzer Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz~30MHz	Feb. 03, 2012	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	0.15MHz~30MHz	Dec. 04, 2012	Conduction (CO01-CB)
Software	Audix	E3	5.410e	-	-	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Jan. 11, 2012	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 27, 2012	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBEAK	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Nov. 23, 2012	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 27, 2012	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 23, 2012	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26.5GHz ~ 40GHz	Jul. 31, 2012	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100056	9KHz~40GHz	Nov. 16, 2012	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESCS 30	100355	9KHz ~ 2.75GHz	Mar. 20, 2012	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N.C.R	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
Signal analyzer	R&S	FSV40	100979	9KHz~40GHz	Oct. 08, 2012	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 05, 2012	Conducted (TH01-CB)
RF Power Divider	Woken	2 Way	0120A02056002D	2GHz ~ 18GHz	Nov. 18, 2012	Conducted (TH01-CB)
RF Power Divider	Woken	3 Way	MDC2366	2GHz ~ 18GHz	Nov. 18, 2012	Conducted (TH01-CB)
RF Power Divider	Woken	4 Way	0120A04056002D	2GHz ~ 18GHz	Nov. 18, 2012	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Horn Antenna	COM-POWER	AH-118	071187	1GHz – 18GHz	May 09, 2012	Conducted (TH01-CB)
Horn Antenna	COM-POWER	AH-118	071042	1GHz – 18GHz	Dec. 06, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Nov. 28, 2012	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Nov. 27, 2012	Conducted (TH01-CB)

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

NCR means Non-Calibration required.

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 2nd 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