FCC RADIO TEST REPORT

according to

47 CFR FCC Part 15 Subpart C § 15.247

Model Name	:	**Wi-Fi 5GHz Access Point**
Model No.	:	**TG233**
Filing Type	:	**New Application**
FCC ID	:	**RSE-TG233**
Trade Name	:	**technicolor**
Applicant	:	**Technicolor Delivery Technologies Belgium** Prins Boudewijnlaan 47 B-2650 Edegem Belgium

Statement

Test result included is only for the IEEE 802.11n part and IEEE 802.11a (5725 ~ 5850MHz) 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 C**, **KDB 558074 D01 v03r01** and **KDB 662911 D01 v02**.

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

Testing Laboratory
1190

SPORTON International Inc.

No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR3N0114AA	Rev.01	Initial issue of report	Jan. 29, 2014

Certificate No.: CB10212043

CERTIFICATE OF COMPLIANCE

according to

47 CFR FCC Part 15 Subpart C § 15.247

Model Name : Wi-Fi 5GHz Access Point
Model No. : TG233
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Prins Boudewijnlaan 47 B-2650 Edegem Belgium

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Oct. 30, 2013 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

SPORTON International Inc.

No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

1 SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
3.1	15.207	AC Power Line Conducted Emissions	Complies	11.59 dB
3.2	15.247(b)(3)	Conducted Output Power	Complies	4.71 dB
3.3	15.247(e)	Power Spectral Density	Complies	12.1 dB
3.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
3.5	15.247(d)	Radiated Emissions	Complies	4.38 dB
3.6	15.247(d)	Band Edge Emissions	Complies	-
3.7	15.203	Antenna Requirements	Complies	-

1.1 Information provided by the manufacturer

Model Name: Wi-Fi 5GHz Access Point

Model No.: TG233

Trade Name: technicolor

Power Supply: Switching-Type, 12Vdc, 1A, Manufacturer: Huntkey, Model: HKA01212010-2G
DSL37094480

AC Power Cord: Wall-mount, 2pin

Hardware Version: PEM2

Interface Availability

Interface / Model Name	DC 12Vdc 1A	Ethernet 10/100/ 1000 Mbps	WLAN IEEE 802.11n 5G (20MHz / 40MHz)
TG233	●	●	●

● : Equipped

○ : Not Equipped

1.2 Application of harmonized standard

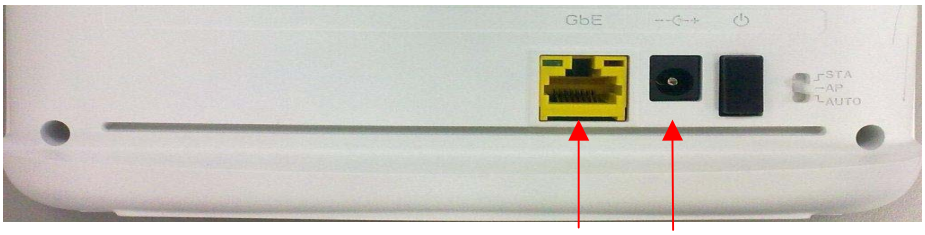
US Standard: 47 CFR FCC Part 15 Subpart C § 15.247
ANSI C63.10-2009
KDB662911 D01 Multiple Transmitter Output v02, 05/28/2013
KDB558074 D01 DTS Meas Guidance v03r01, 04/09/2013

1.3 Cabling Attached to the Equipment

Table 1- Cable and Interconnection

Interface	Cable type	Cable length delivered with the modem	"Real life" Cable length that can be attached to this type of interface	Cable length to be used for testing	Internal / external connection
Eth1	UTP Cat 5	2 meter	> 10 meter	Two 10 meter cables	Internal
AC power	-	-	-	-	External

1.4 Panel Drawing



Eth1 **Power**

2 GENERAL INFORMATION

2.1 Product Details

Items	Description			
Product	Stand alone			
Model No.	TG233			
FCC ID	RSE- TG233			
Power Type	From power adapter			
EUT Stage	■	Product Unit	□	Pre-Sample
Antenna Type	Please see Section 2.3			
Product Type	IEEE 802.11a: WLAN (4TX, 4RX) IEEE 802.11n (20MHz): WLAN(4TX, 4RX) IEEE 802.11n (40MHz): WLAN(4TX, 4RX)			
Nominal Chennel Bandwidth	20MHz / 40MHz			
Modulation	802.11a: OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11n: See the below table.			
Data Rate (Mbps)	11a mode:OFDM (6/9/12/18/24/36/48/54) 11n(20MHz) mode:(MCS0~MCS31); 11n(40MHz)mode:(MCS0~MCS31)			
Operating Band, Maximum Conducted Output Power	5725~5850MHz		■	IEEE 802.11a: 25.29 dBm
			■	IEEE 802.11n (20MHz): 25.29 dBm
			■	IEEE 802.11n (40MHz): 25.13 dBm
TPC Function	■	With TPC	□	Without TPC
Beam forming Function	□	With Beam forming	■	Without Beam forming, but it has Total Max Composition Gain
DFS Operating Mode(s)	■	Master	■	Slave without radar detection
DFS Function	■	5250~5350MHz		
	■	5470~5725MHz		
	□	5600~5650MHz		
User Access Restrictions	■	DFS controls (hardware or software) related to radar detection are NOT accessible to the user.		
Software Version	v35.1.0.30			
Associated Devices	Power supply x 1			

2.2 Accessories

Power	Brand	Model	Rating
Switching-Type Power Adapter	Huntkey	HKA01212010-2G	Input:100-240V~0.5A 50/60Hz Output: 12.0V, 1.0A

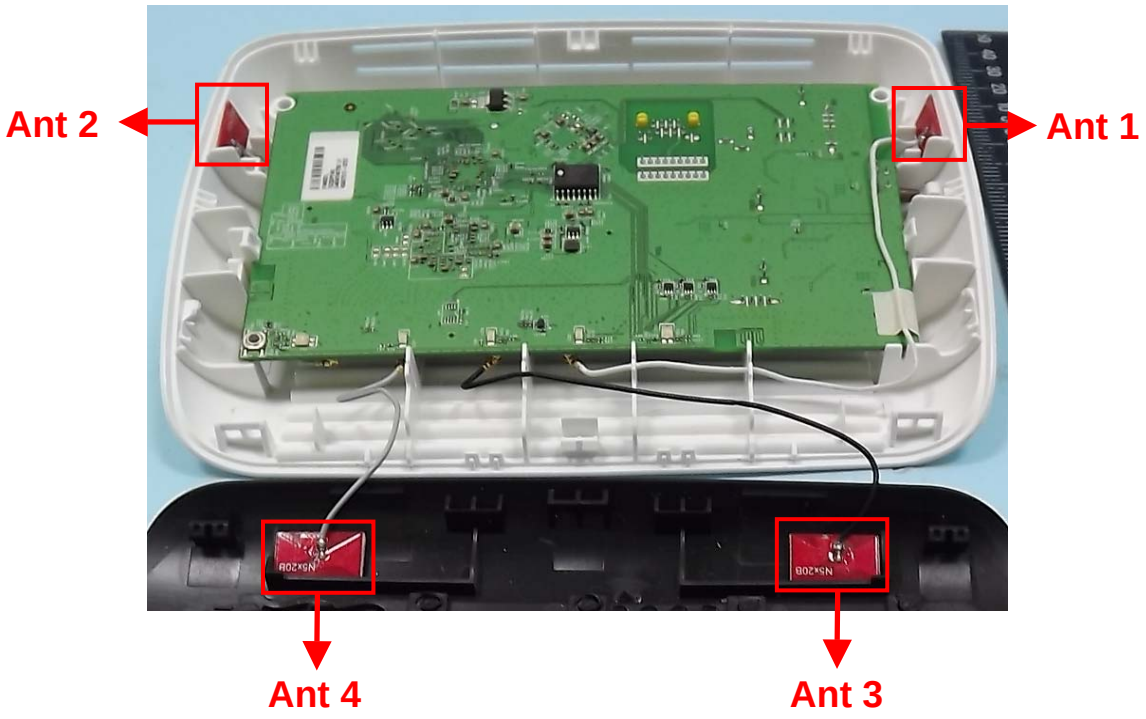
2.3 Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector
1	Airgain	N5X20B-T-PK1-W170UR2	PCB Antenna	I-PEX
2	Airgain	N5X20B-T-PK1-G85UR2	PCB Antenna	I-PEX
3	Airgain	N5X20B-T-PK1-G85UR2	PCB Antenna	I-PEX
4	Airgain	N5X20B-T-PK1-B130UR2	PCB Antenna	I-PEX

Antenna & Bandwidth

Antenna	4 steam (TX)	
Bandwidth Mode	20 MHz	40 MHz
802.11a	V	X
802.11n	V	V

Bandwidth	Total Max Composition Gain (dBi) for Band4 (5725MHz~5850MHz)					
	Ant. 1 + 2 + 3 + 4					
	5745MHz	5755MHz	5785MHz	5795MHz	5805MHz	5825MHz
20MHz	1.07	-	1.22	-	1.27	0.48
40MHz	-	0.89	-	1.27	-	-



IEEE 802.11n Data Rate spec

Standard	INDEX	Data Rate (Mbps)		Standard	INDEX	Data Rate (Mbps)	
		LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)
11n 20MHz 1 stream on 4 antennas	MCS0	6.5	7.2	11n 40MHz 1 stream on 4 antennas	MCS0	13.5	15
	MCS1	13	14.4		MCS1	27	30
	MCS2	19.5	21.7		MCS2	40.5	45
	MCS3	26	28.9		MCS3	54	60
	MCS4	39	43.3		MCS4	81	90
	MCS5	52	57.8		MCS5	108	120
	MCS6	58.5	65		MCS6	121.5	135
	MCS7	65	72.2		MCS7	135	150
11n 20MHz 2 stream on 4 antennas	MCS8	13	14.4	11n 40MHz 2 stream on 4 antennas	MCS8	27	30
	MCS9	26	28.9		MCS9	54	60
	MCS10	39	43.3		MCS10	81	90
	MCS11	52	57.8		MCS11	108	120
	MCS12	78	86.7		MCS12	162	180
	MCS13	104	115.6		MCS13	216	240
	MCS14	117	130		MCS14	243	270
	MCS15	130	144.4		MCS15	270	300
11n 20MHz 3 stream on 4 antennas	MCS16	19.5	21.7	11n 40MHz 3 stream on 4 antennas	MCS16	40.5	45
	MCS17	39	43.3		MCS17	81	90
	MCS18	58.5	65		MCS18	121.5	135
	MCS19	78	86.7		MCS19	162	180
	MCS20	117	130		MCS20	243	270
	MCS21	156	173.3		MCS21	324	360
	MCS22	175.5	195		MCS22	364.5	405
	MCS23	195	216.7		MCS23	405	450
11n 20MHz 4 stream on 4 antennas	MCS24	26	28.9	11n 40MHz 4 stream on 4 antennas	MCS24	54	60
	MCS25	52	57.8		MCS25	108	120
	MCS26	78	86.7		MCS26	162	180
	MCS27	104	115.6		MCS27	216	240
	MCS28	156	173.3		MCS28	324	360
	MCS29	208	231.1		MCS29	432	480
	MCS30	234	260		MCS30	486	540
	MCS31	260	288.9		MCS31	540	600

2.4 Transmit Operating Modes

Transmit Operating Mode			Transmit Muitiple Antennas	
■	802.11a	Operating mode (multiple antenna, without beam forming, with Total Max Composition Gain, with TPC for Band2 & Band 3)	■	4TX only
	802.11n 20MHz			
	802.11n 40MHz			

Note1: For IEEE802.11n, MCS0~MCS31: 4TX only

2.5 Table for Carrier Frequencies

5 channels are provided for 802.11a, 802.11n Band4 (20MHz):

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5725MHz ~ 5850 MHz	149	5745MHz	161	5805MHz
	153	5765MHz	165	5825MHz
	157	5785MHz	-	-

Note: Master mode doesn't support 5825MHz, slave without radar detection mode supports 5825MHz.

2 channels are provided for 802.11n Band4 (40MHz):

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5725MHz ~ 5850 MHz	151	5755MHz	159	5795MHz

2.6 Table for Test Modes

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.

Test Items	Mode	Note	Channel	Data Rate	Antenna
AC Power Line Conducted Emissions	CTX	-	-	-	-
Maximum Conducted Output Power (Average)	11a	OFDM/BPSK	149/157/161/165	6Mbps	1+2+3+4
	11n(20MHz)		149/157/161/165	MCS0	1+2+3+4
	11n(40MHz)		151/159	MCS0	1+2+3+4
Power Spectral Density	11a	OFDM/BPSK	149/157/161/165	6Mbps	1+2+3+4
	11n(20MHz)		149/157/161/165	MCS0	1+2+3+4
	11n(40MHz)		151/159	MCS0	1+2+3+4
6dB Spectrum Bandwidth	11a	OFDM/BPSK	149/157/161/165	6Mbps	1+2+3+4
	11n(20MHz)		149/157/161/165	MCS0	1+2+3+4
	11n(40MHz)		151/159	MCS0	1+2+3+4
Band Edge Emissions (Radiated)	11a	OFDM/BPSK	149/165	6Mbps	1+2+3+4
	11n(20MHz)		149/165	MCS0	1+2+3+4
	11n(40MHz)		151/159	MCS0	1+2+3+4
Radiated Emissions Above 1GHz (Radiated)	11a	OFDM/BPSK	149/157/161/165	6Mbps	1+2+3+4
	11n(20MHz)		149/157/161/165	MCS0	1+2+3+4
	11n(40MHz)		151/159	MCS0	1+2+3+4
Radiated Emissions Below 1GHz(Radiated)	CTX	-	-	-	-

2.7 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).

2.8 Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6430	DoC

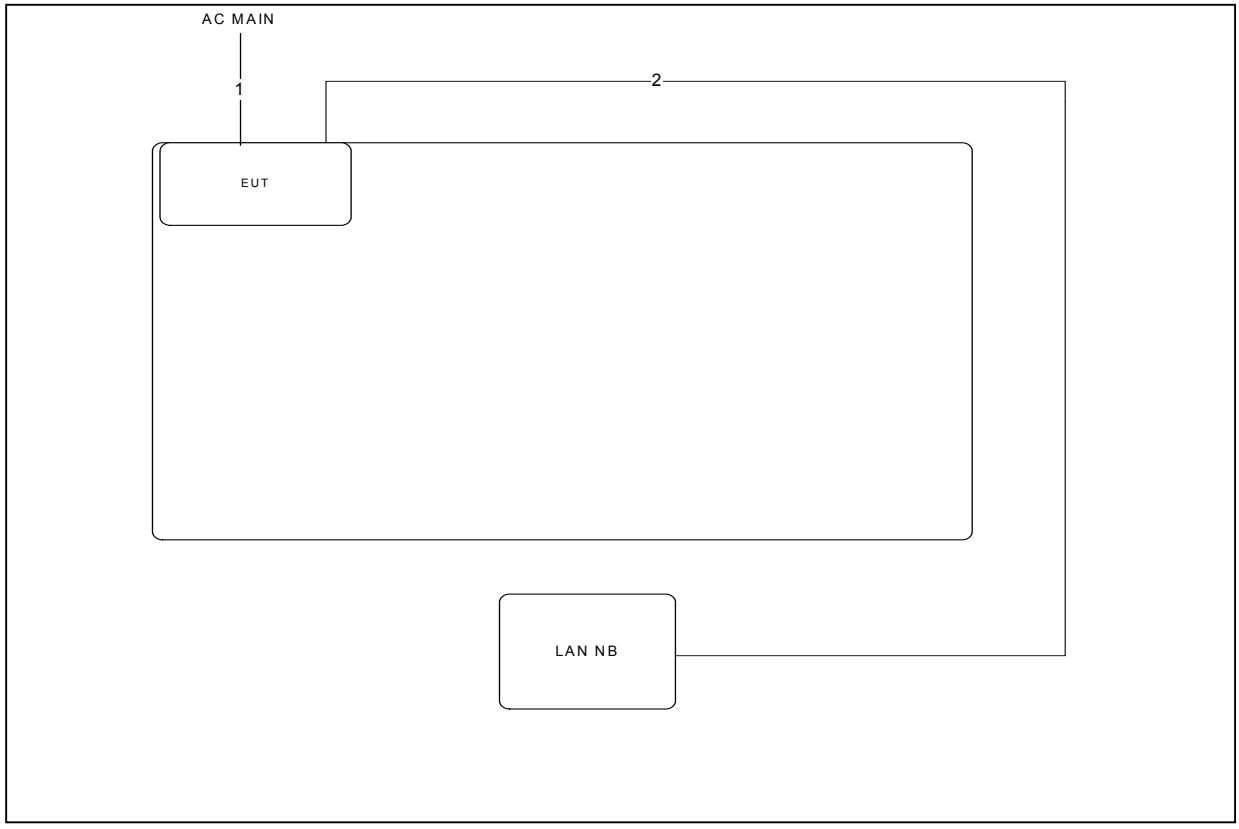
2.9 Table for the 5G Band 4 (5725~5850MHz) Parameters of Test Software Setting

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

The Power Setting Parameter					
Power Level		1			
Test Software Version		DOS			
Worst Modulation Mode		**Number of Transmit Chains (NTX)**	**Frequency (MHz)**	**Power Setting**	**Data Rate / MCS**
Ant. 1+2+3+4	802.11a	4	5745	19	6Mbps
Ant. 1+2+3+4	802.11a	4	5785	19	6Mbps
Ant. 1+2+3+4	802.11a	4	5805	19	6Mbps
Ant. 1+2+3+4	802.11a	4	5825	19	6Mbps
Ant. 1+2+3+4	802.11n 20MHz	4	5745	19	MCS0
Ant. 1+2+3+4	802.11n 20MHz	4	5785	19	MCS0
Ant. 1+2+3+4	802.11n 20MHz	4	5805	19	MCS0
Ant. 1+2+3+4	802.11n 20MHz	4	5825	19	MCS0
Ant. 1+2+3+4	802.11n 40MHz	4	5755	19	MCS0
Ant. 1+2+3+4	802.11n 40MHz	4	5795	19	MCS0

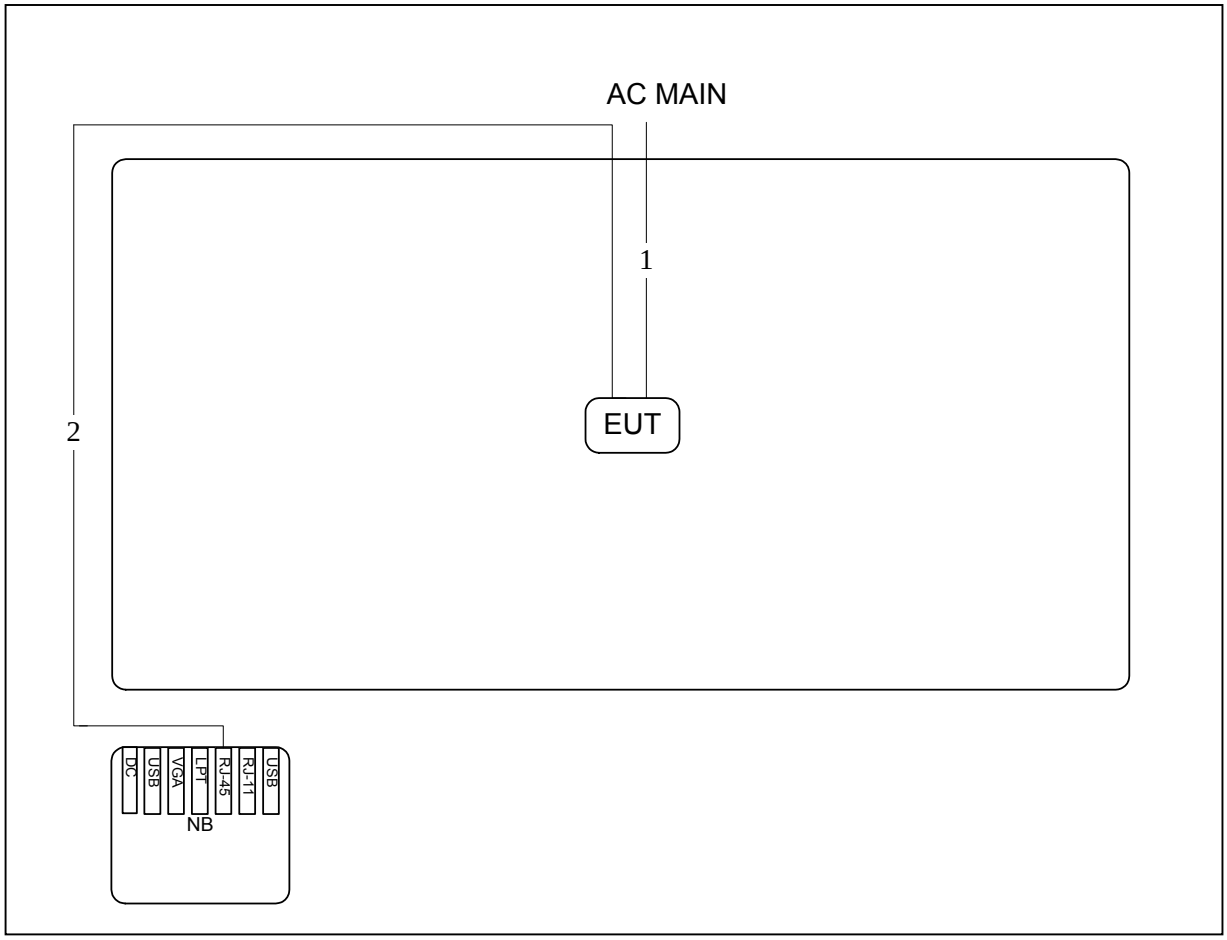
2.10 Test Configuration

2.10.1 AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	1.5M
2	RJ-45 cable	No	10M

2.10.2 Radiation Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	1.5M
2	RJ-45 cable	No	10M

3 THE 5G BAND 4 (5725~5850MHZ) TEST RESULT

3.1 AC Power Line Conducted Emissions Measurement

3.1.1 Limit

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

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

3.1.2 Measuring Instruments and Setting

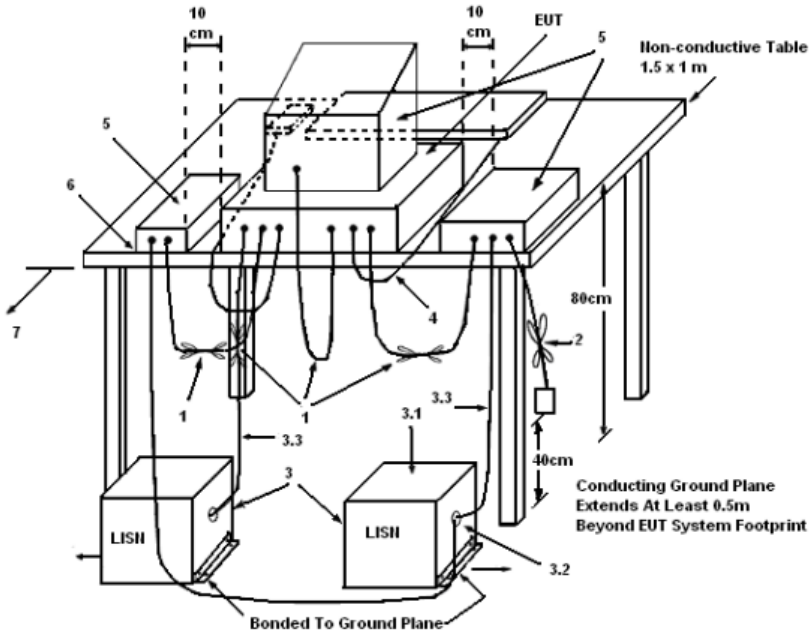
Please refer to section 6 of equipments list in this report. The following table is the setting of the receiver.

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

3.1.3 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.

3.1.4 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.
4. All other equipment powered from additional LISN(s).
5. Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
6. LISN at least 80 cm from nearest part of EUT chassis.
7. Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.
8. Non-EUT components of EUT system being tested.
9. Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.
10. Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

3.1.5 Test Deviation

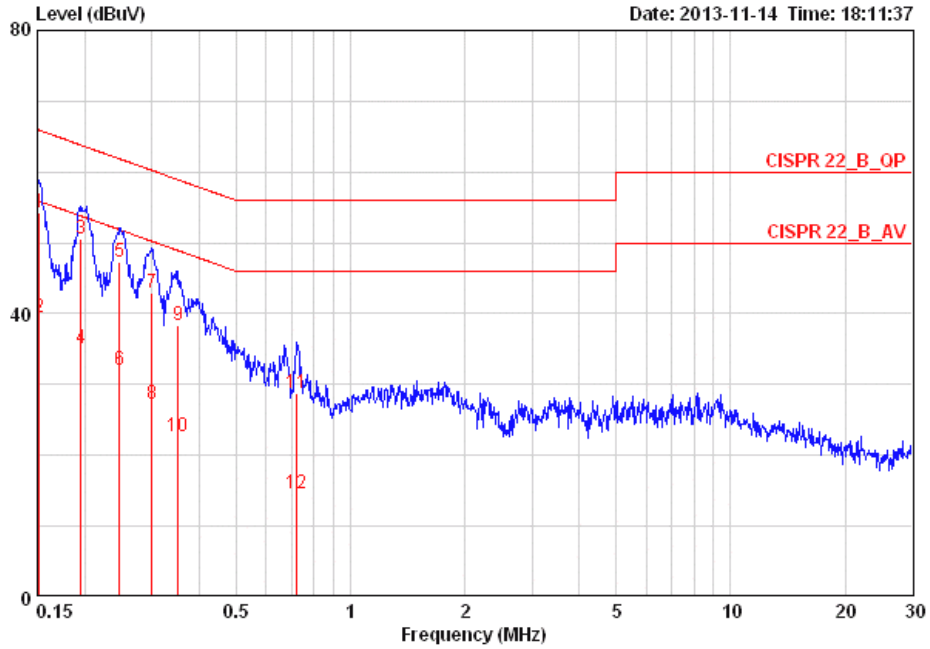
There is no deviation with the original standard.

3.1.6 EUT Operation during Test

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

3.1.7 Results of AC Power Line Conducted Emissions Measurement

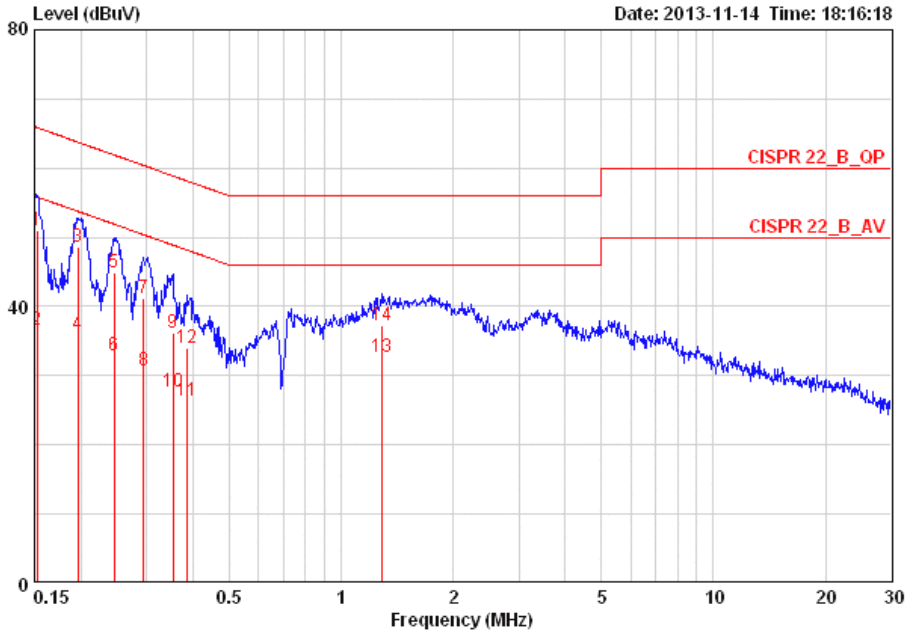
Temperature	25℃	**Humidity**	58%
Test Engineer	Da Deng	**Phase**	Line
Configuration	CTX		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1 @	0.15160	54.32	-11.59	65.91	53.98	0.16	0.18	LINE	QP
2	0.15160	39.54	-16.37	55.91	39.20	0.16	0.18	LINE	AVERAGE
3 @	0.19550	50.64	-13.16	63.80	50.29	0.15	0.20	LINE	QP
4	0.19550	35.00	-18.80	53.80	34.65	0.15	0.20	LINE	AVERAGE
5	0.24682	47.24	-14.62	61.86	46.89	0.15	0.20	LINE	QP
6	0.24682	32.12	-19.74	51.86	31.77	0.15	0.20	LINE	AVERAGE
7	0.30028	42.87	-17.37	60.24	42.52	0.15	0.20	LINE	QP
8	0.30028	27.14	-23.10	50.24	26.79	0.15	0.20	LINE	AVERAGE
9	0.35201	38.35	-20.56	58.91	38.00	0.15	0.20	LINE	QP
10	0.35201	22.70	-26.21	48.91	22.35	0.15	0.20	LINE	AVERAGE
11	0.72360	28.78	-27.22	56.00	28.42	0.16	0.20	LINE	QP
12	0.72360	14.55	-31.45	46.00	14.19	0.16	0.20	LINE	AVERAGE

Note 1: The test was passed at the minimum margin that marked by the frame in the following data
Note 2: The emission levels of other frequencies were very low against the limit.
Note 3: Q.P. and AV. are abbreviations of quasi-peak and average individually.
Note 4: Corrected Reading (dBμV) = LISN Factor + Cable Loss + Read Level = Level
Note 5: Over Limit value = level - Limit value

Temperature	25℃	**Humidity**	58%
Test Engineer	Da Deng	**Phase**	Neutral
Configuration	CTX		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.15240	50.97	-14.90	65.87	50.71	0.08	0.18	NEUTRAL	QP
2	0.15240	36.52	-19.35	55.87	36.26	0.08	0.18	NEUTRAL	AVERAGE
3	0.19654	48.71	-15.05	63.76	48.43	0.08	0.20	NEUTRAL	QP
4	0.19654	35.91	-17.85	53.76	35.63	0.08	0.20	NEUTRAL	AVERAGE
5	0.24552	44.90	-17.01	61.91	44.62	0.08	0.20	NEUTRAL	QP
6	0.24552	32.95	-18.96	51.91	32.67	0.08	0.20	NEUTRAL	AVERAGE
7	0.29398	41.19	-19.22	60.41	40.91	0.08	0.20	NEUTRAL	QP
8	0.29398	30.69	-19.72	50.41	30.41	0.08	0.20	NEUTRAL	AVERAGE
9	0.35388	36.29	-22.58	58.87	36.01	0.08	0.20	NEUTRAL	QP
10	0.35388	27.65	-21.22	48.87	27.37	0.08	0.20	NEUTRAL	AVERAGE
11	0.38724	26.45	-21.67	48.12	26.17	0.08	0.20	NEUTRAL	AVERAGE
12	0.38724	34.03	-24.09	58.12	33.75	0.08	0.20	NEUTRAL	QP
13 @	1.282	32.65	-13.35	46.00	32.34	0.10	0.21	NEUTRAL	AVERAGE
14	1.282	37.31	-18.69	56.00	37.00	0.10	0.21	NEUTRAL	QP

Note 1: The test was passed at the minimum margin that marked by the frame in the following data
Note 2: The emission levels of other frequencies were very low against the limit.
Note 3: Q.P. and AV. are abbreviations of quasi-peak and average individually.
Note 4: Corrected Reading (dBμV) = LISN Factor + Cable Loss + Read Level = Level
Note 5: Over Limit value = level - Limit value

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit

For systems using digital modulation in the 5725~5850MHz, the limit for peak output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

3.2.2 Measuring Instruments and Setting

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

Power Meter Parameter	Setting
Filter No.	Auto
Measurement time	0.135 s ~ 26 s
Power Sensor	MA2411B

3.2.3 Test Procedures

1. Test was performed in accordance with Measurement of Digital Transmission Systems Operating under KDB558074 D01 v03r01 04/09/2013.
2. The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor and enable the trigger function to get the all on time transmission . Record the average power level.
3. When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.

3.2.4 Test Setup Layout

Maximum Conducted Output Power

3.2.5 Test Deviation

There are no deviation with the original standard.

3.2.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.2.7 Test Result for Maximum Conducted Output Power

Test date	Nov. 05, 2013	**Test Site No.**	TH01-CB
Temperature	26℃	**Humidity**	63%
Test Engineer	Wen Chao	**Configuration**	802.11a
Duty Cycle	99.26%	**Duty Factor**	0.032

Configuration IEEE 802.11a

<6Mbps, Ant. 1+2+3+4>

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Total Conducted Power (dBm)	Result
		Ant. 1	Ant. 2	Ant. 3	Ant. 4			
149	5745 MHz	18.06	18.52	20.67	18.78	30.00	25.18	Complies
157	5785 MHz	18.35	18.05	20.8	19.02	30.00	25.25	Complies
161	5805 MHz	18.21	18.64	20.51	18.89	30.00	25.21	Complies
165	5825 MHz	18.44	18.41	20.75	18.91	30.00	25.29	Complies

Note: 5745MHz Total conducted power

=(10*LOG((10^(Ant 1/10))+(10^(Ant 2/10))+(10^(Ant 3/10))+(10^(Ant 4/10))))+duty factor

=(10*LOG((10^(18.06dBm/10))+(10^(18.52dBm/10))+(10^(20.67dBm/10))+(10^(18.78dBm/10))))+0.032dB

=(10*LOG((63.97mW)+(71.12mW)+(116.68mW)+(75.51mW)))+0.032dB

=(10*LOG(327.28mW))+0.032dB

=25.15dBm+0.032dB

=25.18dBm

Test date	Nov. 05, 2013	**Test Site No.**	TH01-CB
Temperature	26℃	**Humidity**	63%
Test Engineer	Wen Chao	**Configuration**	802.11n 20MHz
Duty Cycle	99.20%	**Duty Factor**	0.035

Configuration IEEE 802.11n 20MHz

<MCS0, Ant. 1+2+3+4>

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Total Conducted Power (dBm)	Result
		Ant. 1	Ant. 2	Ant. 3	Ant. 4			
149	5745 MHz	18.24	18.35	20.66	18.67	30.00	25.16	Complies
157	5785 MHz	18.11	18.34	20.77	18.71	30.00	25.18	Complies
161	5805 MHz	18.45	18.47	20.43	18.94	30.00	25.21	Complies
165	5825 MHz	18.53	18.32	20.67	19.02	30.00	25.29	Complies

Note: 5745MHz Total conducted power

=(10*LOG((10^(Ant 1/10))+(10^(Ant 2/10))+(10^(Ant 3/10))+(10^(Ant 4/10))))+duty factor

=(10*LOG((10^(18.24dBm/10))+(10^(18.35dBm/10))+(10^(20.66dBm/10))+(10^(18.67dBm/10))))+0.035dB

=(10*LOG((66.68mW)+(68.39mW)+(116.41mW)+(73.62mW)))+0.035dB

=(10*LOG(327.28mW))+0.035dB

=25.12dBm+0.035dB

=25.16dBm

Test date	Nov. 05, 2013	**Test Site No.**	TH01-CB
Temperature	26℃	**Humidity**	63%
Test Engineer	Wen Chao	**Configuration**	802.11n 40MHz
Duty Cycle	97.97%	**Duty Factor**	0.09

Configuration IEEE 802.11n 40MHz

<MCS0, Ant. 1+2+3+4>

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Total Conducted Power (dBm)	Result
		Ant. 1	Ant. 2	Ant. 3	Ant. 4			
151	5755 MHz	18.09	18.15	20.74	18.52	30.00	25.13	Complies
159	5795 MHz	17.91	18.22	20.66	18.56	30.00	25.09	Complies

Note: 5755MHz Total conducted power

=(10*LOG((10^(Ant 1/10))+(10^(Ant 2/10))+(10^(Ant 3/10))+(10^(Ant 4/10))))+duty factor

=(10*LOG((10^(18.09dBm/10))+(10^(18.15dBm/10))+(10^(20.74dBm/10))+(10^(18.52dBm/10))))+0.09dB

=(10*LOG((64.42mW)+(65.31mW)+(118.58mW)+(71.12mW)))+0.09dB

=(10*LOG(319.43mW))+0.09dB

=25.04dBm+0.09dB

=25.13dBm

3.3 Power Spectral Density Measurement

3.3.1 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

3.3.2 Measuring Instruments and Setting

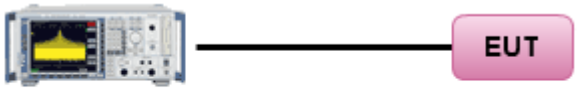
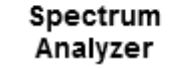
Please refer to section 5 of equipments list in this report. The following table is the setting of Spectrum Analyzer.

Power Meter Parameter	Setting
Attenuation	Auto
Span Frequency	Set span to at least 1.5 times the DTS channel bandwidth.
RBW	3 kHz ≤ RBW ≤ 100kHz
VBW	≥3 x RBW.
Detector	RMS
Trace	Max Hold
Sweep Time	100 traces

3.3.3 Test Procedures

1. Test procedures refer KDB 558074 D01 v03r01 section 10.3 Method Method AVGPSD-1 (trace averaging with EUT transmitting at full power throughout each sweep) and KDB 662911 D01 v02 section In-Band Power Spectral Density (PSD) Measurements option (b) Measure and sum spectral maximal across the outputs.
2. Use this procedure when the maximum conducted output power in the fundamental emission is used to demonstrate compliance. The EUT must be configured to transmit continuously at full power over the measurement duration.
3. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW (use of a greater number of measurement points than this minimum requirement is recommended).
4. Use the peak marker function to determine the maximum level in any 3 kHz band segment within the fundamental EBW.
5. The resulting PSD level must be ≤ 8 dBm.

3.3.4 Test Setup Layout

Power Spectral Density
  Spectrum Analyzer

3.3.5 Test Deviation

There are no deviation with the original standard.

3.3.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.3.7 Test Result of Power Spectral Density

Test date	Nov. 05, 2013	**Test Site No.**	TH01-CB
Temperature	26℃	**Humidity**	63%
Test Engineer	Wen Chao	**Configuration**	802.11a
Duty Cycle	99.26%	**Duty Factor**	0.032

Configuration IEEE 802.11a

<6Mbps, Ant. 1+2+3+4>

Channel	Frequency	Power Density (dBm/3kHz)				Total Power Density (dBm/3kHz)	Power Density Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2	Ant. 3	Ant. 4			
149	5745 MHz	-16.76	-9.85	-13.95	-17.07	-7.31	6.91	Complies
157	5785 MHz	-16.90	-6.75	-14.46	-16.85	-5.37	6.76	Complies
161	5805 MHz	-17.27	-7.28	-15.16	-17.19	-5.90	6.71	Complies
165	5825 MHz	-16.79	-7.32	-14.88	-17.24	-5.86	7.50	Complies

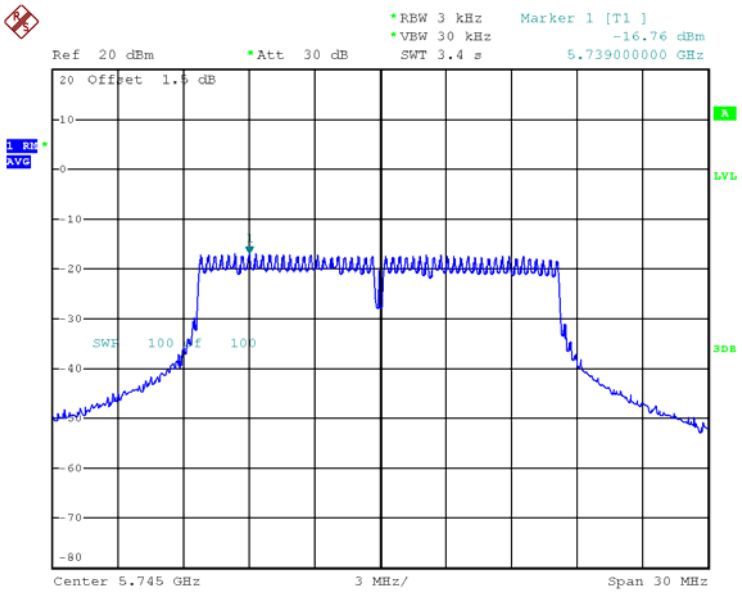
Note: Directional gain=G_{ANT}+10log(N_{ANT}/Nss)=7.09dBi >6dBi,So 5745MHz Limit =8-(7.09-6)=6.91dBm/MHz

Note: Directional gain=G_{ANT}+10log(N_{ANT}/Nss)=7.24dBi >6dBi,So 5785MHz Limit =8-(7.24-6)=6.76dBm/MHz

Note: Directional gain=G_{ANT}+10log(N_{ANT}/Nss)=7.29dBi >6dBi,So 5805MHz Limit =8-(7.29-6)=6.71dBm/MHz

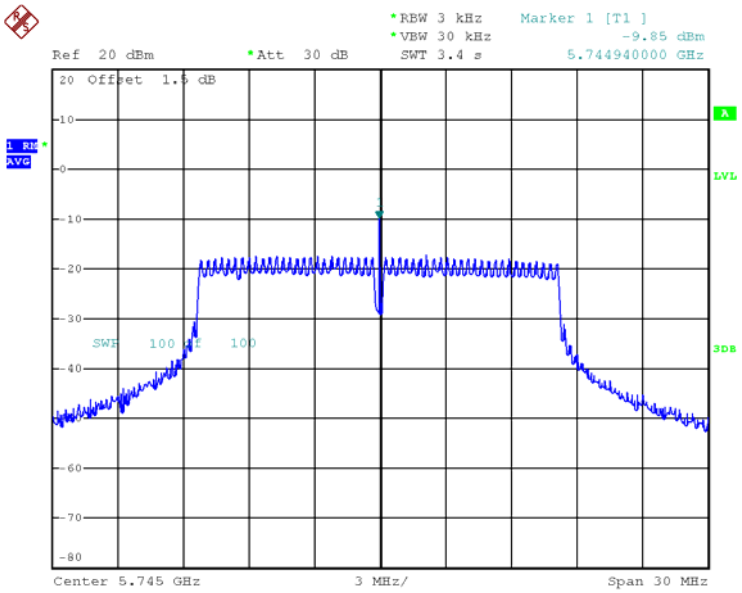
Note: Directional gain=G_{ANT}+10log(N_{ANT}/Nss)=6.50dBi >6dBi,So 5825MHz Limit =8-(6.50-6)=7.50dBm/MHz

Power Density Plot on Configuration IEEE 802.11a / Ant. 1 / 5745 MHz



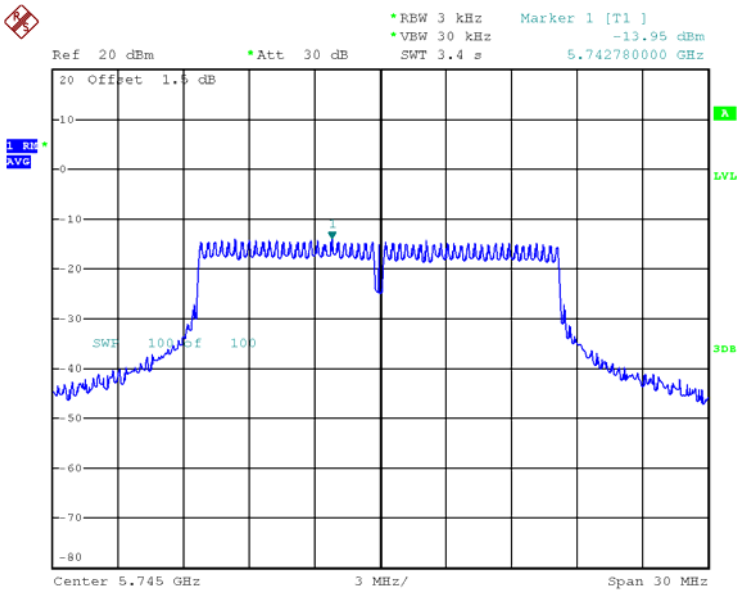
Date: 5.NOV.2013 17:07:11

Power Density Plot on Configuration IEEE 802.11a / Ant. 2 / 5745 MHz



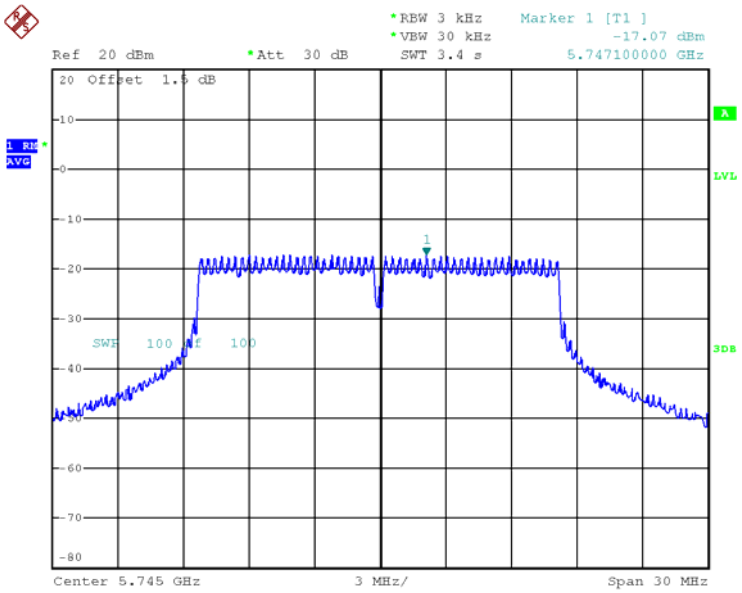
Date: 5.NOV.2013 17:09:58

Power Density Plot on Configuration IEEE 802.11a / Ant. 3 / 5745 MHz



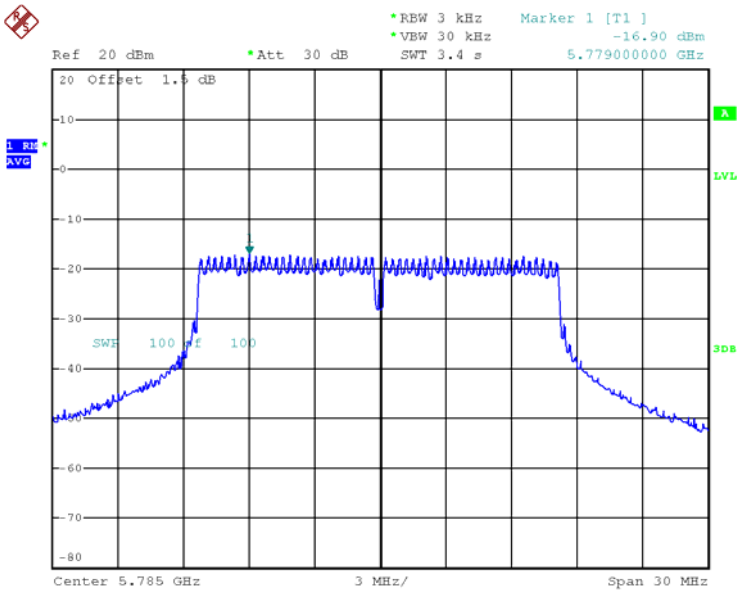
Date: 5.NOV.2013 17:16:22

Power Density Plot on Configuration IEEE 802.11a / Ant. 4 / 5745 MHz



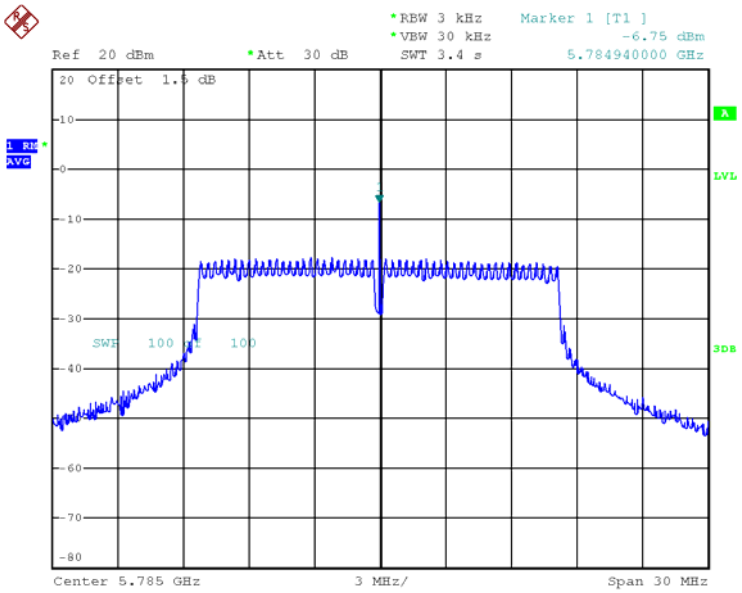
Date: 5.NOV.2013 17:17:22

Power Density Plot on Configuration IEEE 802.11a / Ant. 1 / 5785 MHz



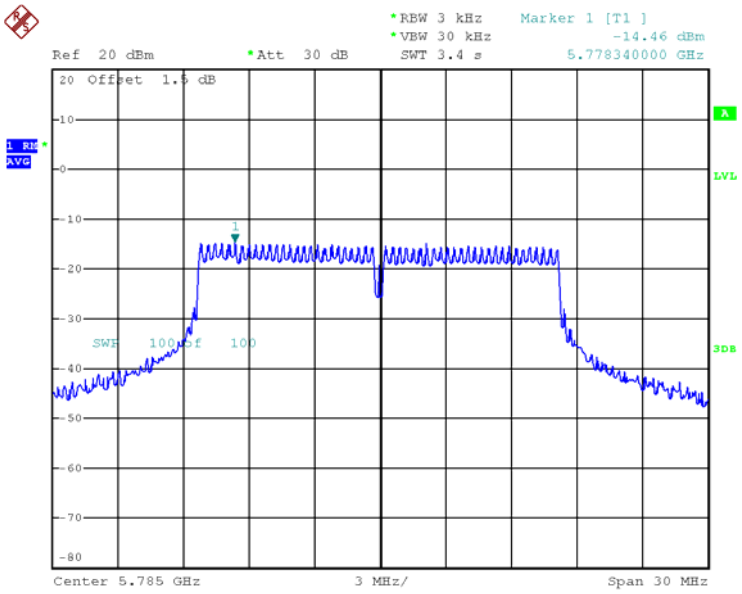
Date: 5.NOV.2013 17:20:32

Power Density Plot on Configuration IEEE 802.11a / Ant. 2 / 5785 MHz



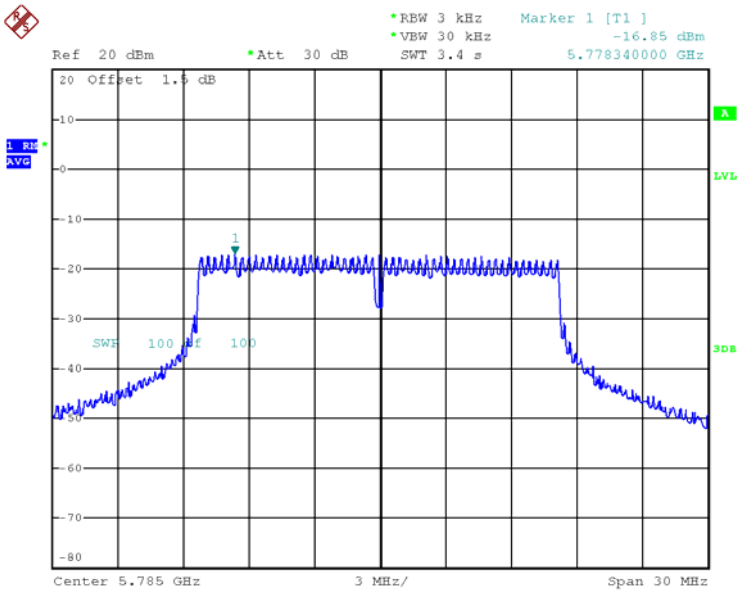
Date: 5.NOV.2013 17:19:23

Power Density Plot on Configuration IEEE 802.11a / Ant. 3 / 5785 MHz



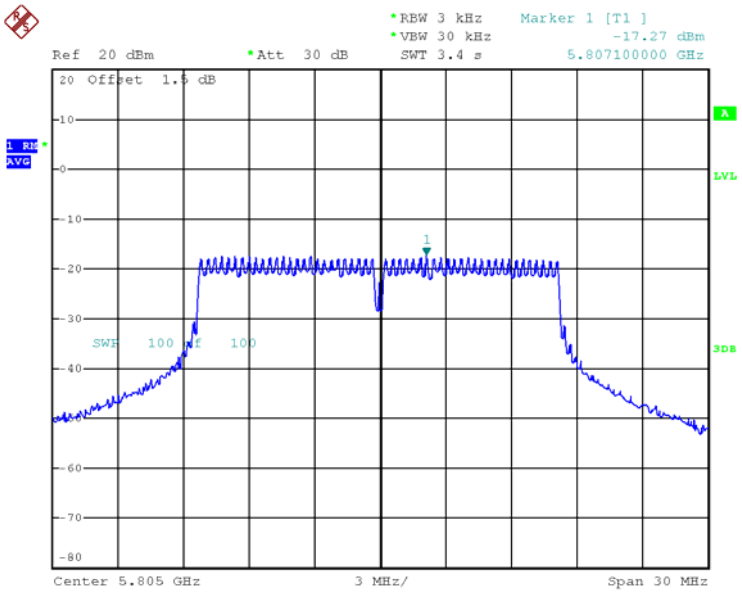
Date: 5.NOV.2013 17:23:41

Power Density Plot on Configuration IEEE 802.11a / Ant. 4 / 5785 MHz



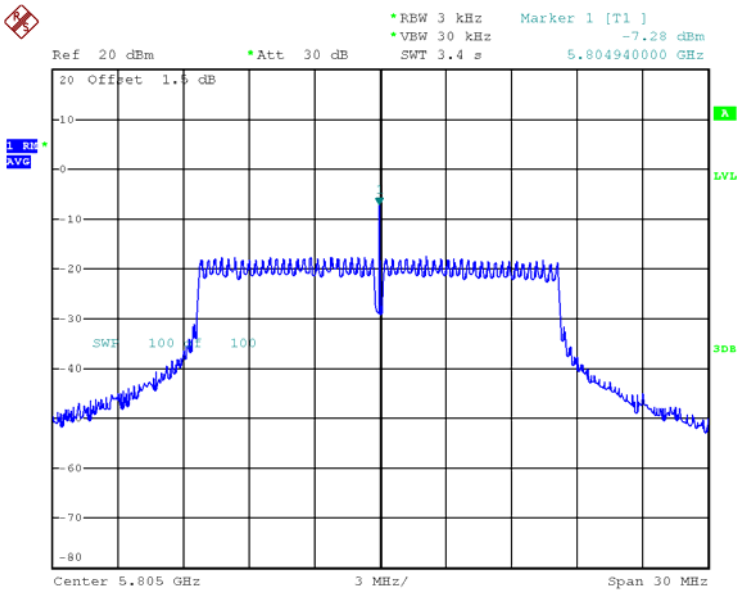
Date: 5.NOV.2013 17:18:16

Power Density Plot on Configuration IEEE 802.11a / Ant. 1 / 5805 MHz



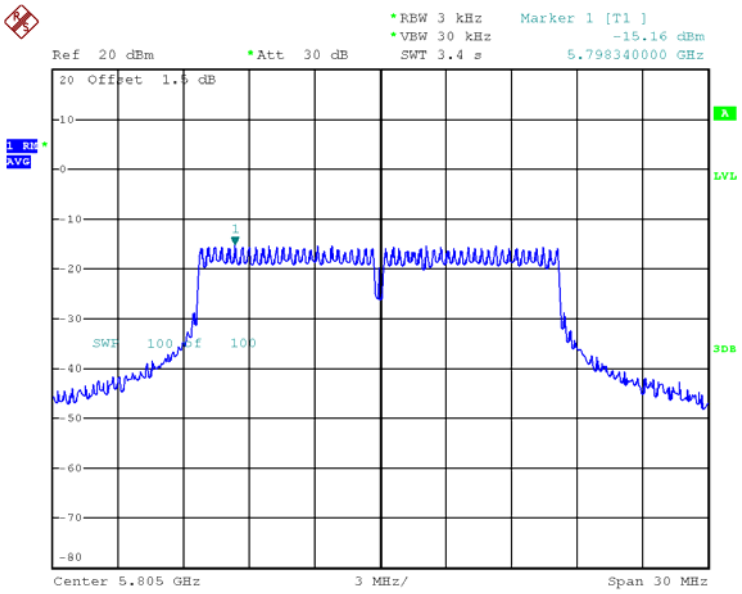
Date: 5.NOV.2013 17:31:50

Power Density Plot on Configuration IEEE 802.11a / Ant. 2 / 5805 MHz



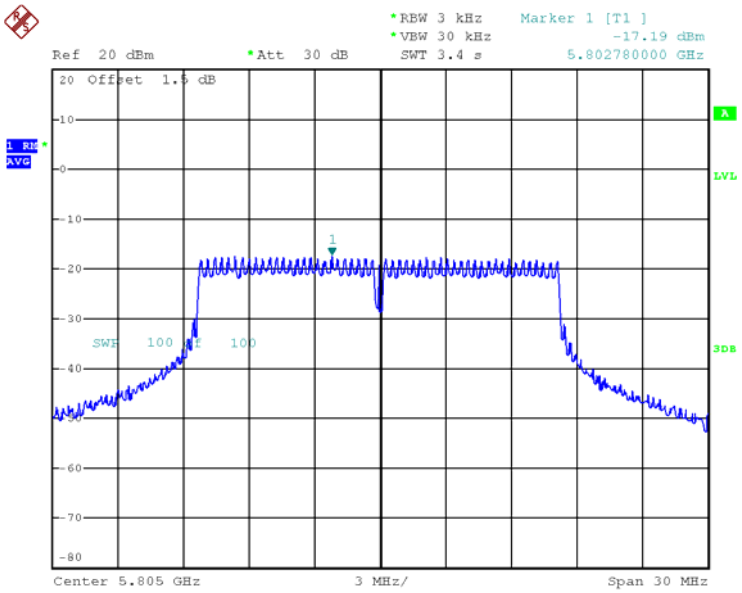
Date: 5.NOV.2013 17:32:43

Power Density Plot on Configuration IEEE 802.11a / Ant. 3 / 5805 MHz



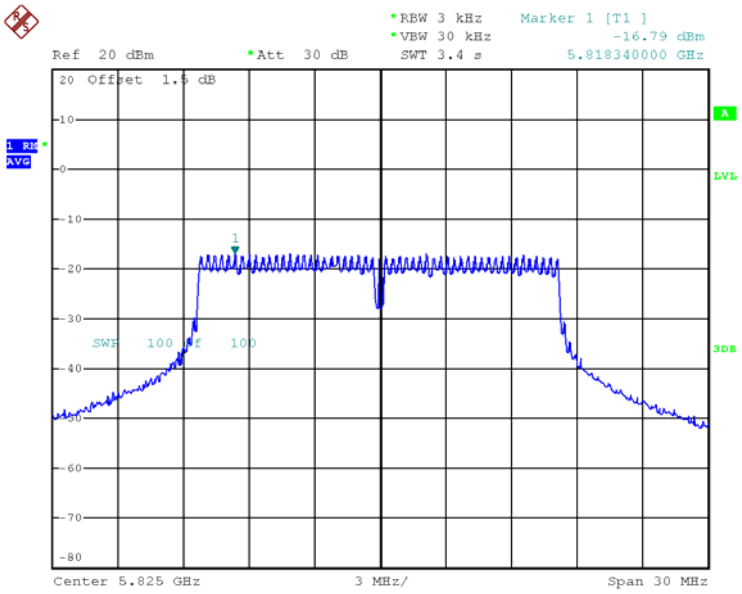
Date: 5.NOV.2013 17:33:29

Power Density Plot on Configuration IEEE 802.11a / Ant. 4 / 5805 MHz



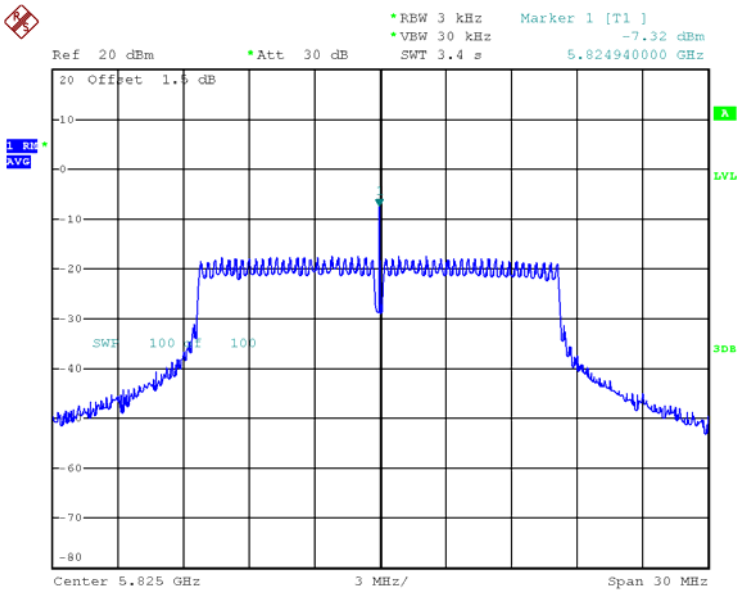
Date: 5.NOV.2013 17:34:12

Power Density Plot on Configuration IEEE 802.11a / Ant. 1 / 5825 MHz



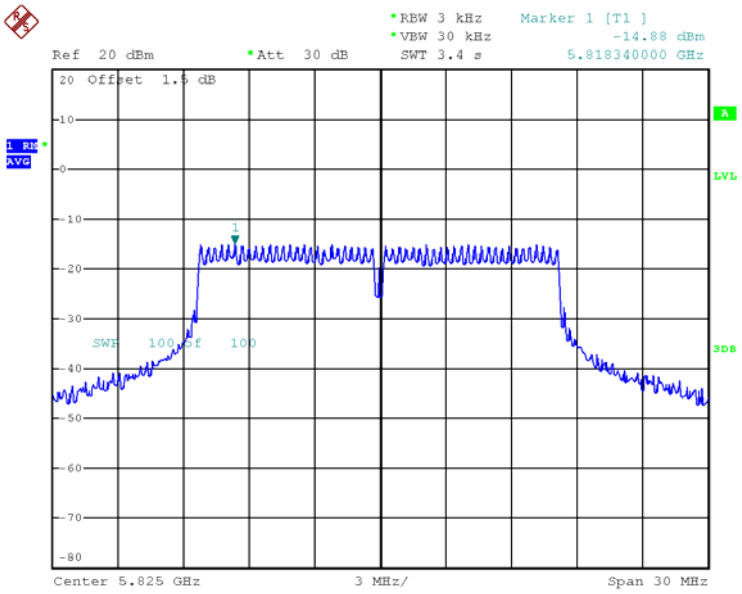
Date: 5.NOV.2013 17:28:13

Power Density Plot on Configuration IEEE 802.11a / Ant. 2 / 5825 MHz



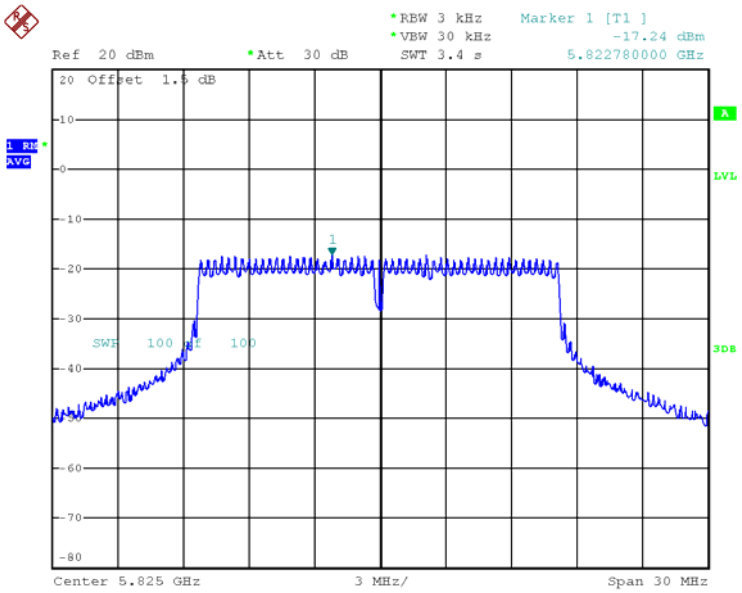
Date: 5.NOV.2013 17:27:11

Power Density Plot on Configuration IEEE 802.11a / Ant. 3 / 5825 MHz



Date: 5.NOV.2013 17:25:16

Power Density Plot on Configuration IEEE 802.11a / Ant. 4 / 5825 MHz



Date: 5.NOV.2013 17:26:14

Test date	Nov. 05, 2013	**Test Site No.**	TH01-CB
Temperature	26℃	**Humidity**	63%
Test Engineer	Wen Chao	**Configuration**	802.11n 20MHz
Duty Cycle	99.20%	**Duty Factor**	0.035

Configuration IEEE 802.11n 20MHz

<MCS0, Ant. 1+2+3+4>

Channel	Frequency	Power Density (dBm/3kHz)				Total Power Density (dBm/3kHz)	Power Density Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2	Ant. 3	Ant. 4			
149	5745 MHz	-16.21	-11.70	-14.42	-17.00	-8.27	6.91	Complies
157	5785 MHz	-17.21	-6.66	-14.84	-16.50	-5.34	6.76	Complies
161	5805 MHz	-17.15	-6.80	-15.73	-17.63	-5.65	6.71	Complies
165	5825 MHz	-16.92	-7.47	-15.42	-17.15	-6.03	7.50	Complies

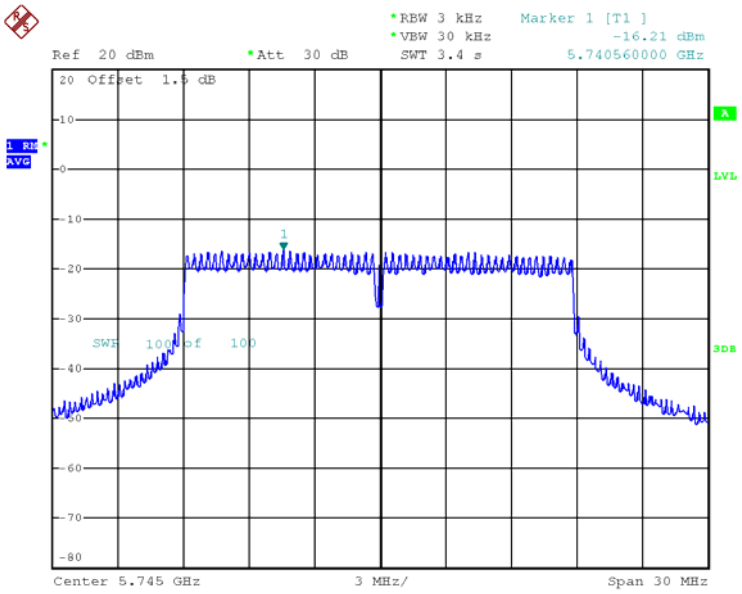
Note: Directional gain=G_{ANT}+10log(N_{ANT}/Nss)=7.09dBi >6dBi,So 5745MHz Limit =8-(7.09-6)=6.91dBm/MHz

Note: Directional gain=G_{ANT}+10log(N_{ANT}/Nss)=7.24dBi >6dBi,So 5785MHz Limit =8-(7.24-6)=6.76dBm/MHz

Note: Directional gain=G_{ANT}+10log(N_{ANT}/Nss)=7.29dBi >6dBi,So 5805MHz Limit =8-(7.29-6)=6.71dBm/MHz

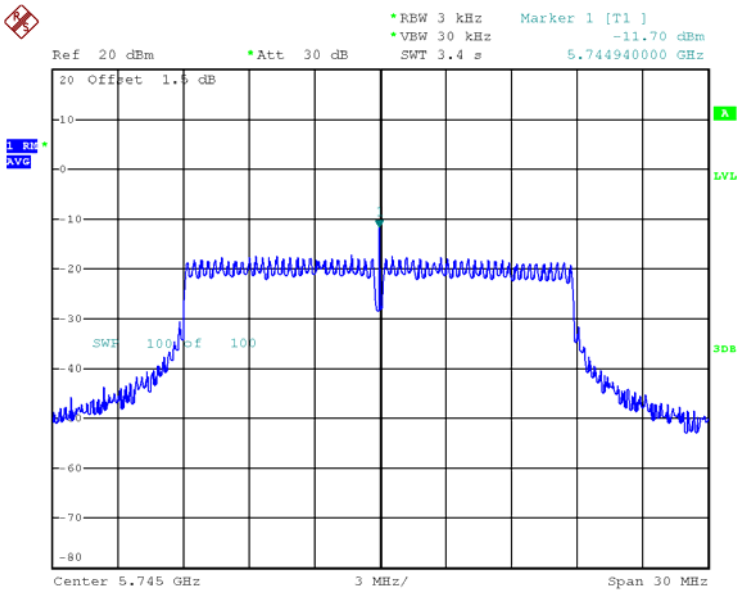
Note: Directional gain=G_{ANT}+10log(N_{ANT}/Nss)=6.50dBi >6dBi,So 5825MHz Limit =8-(6.50-6)=7.50dBm/MHz

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 1 / 5745 MHz



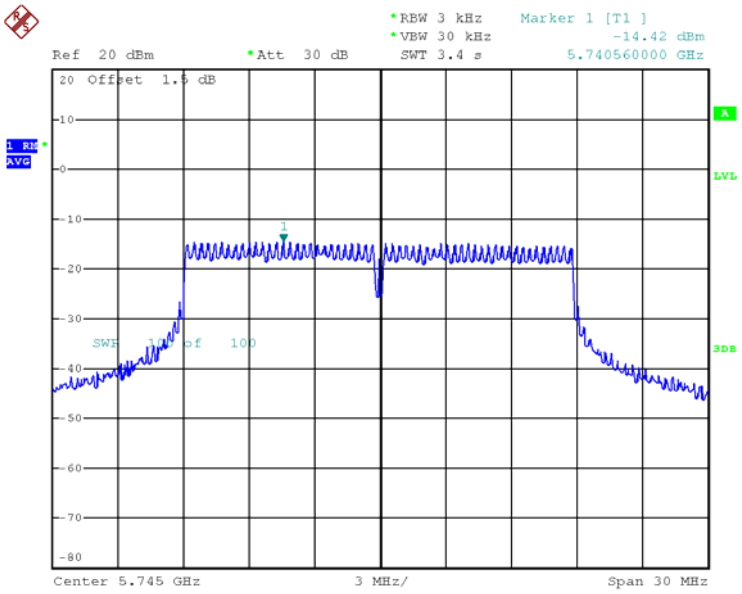
Date: 5.NOV.2013 17:50:09

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 2 / 5745 MHz



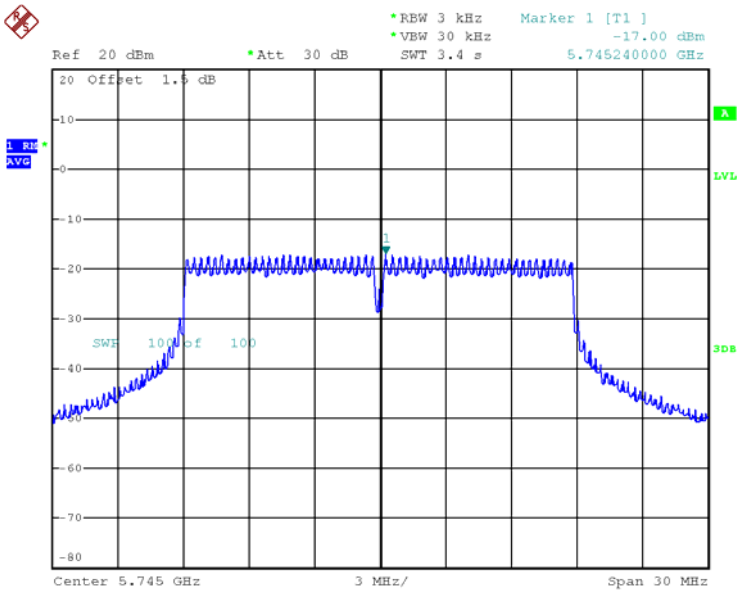
Date: 5.NOV.2013 17:48:16

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 3 / 5745 MHz



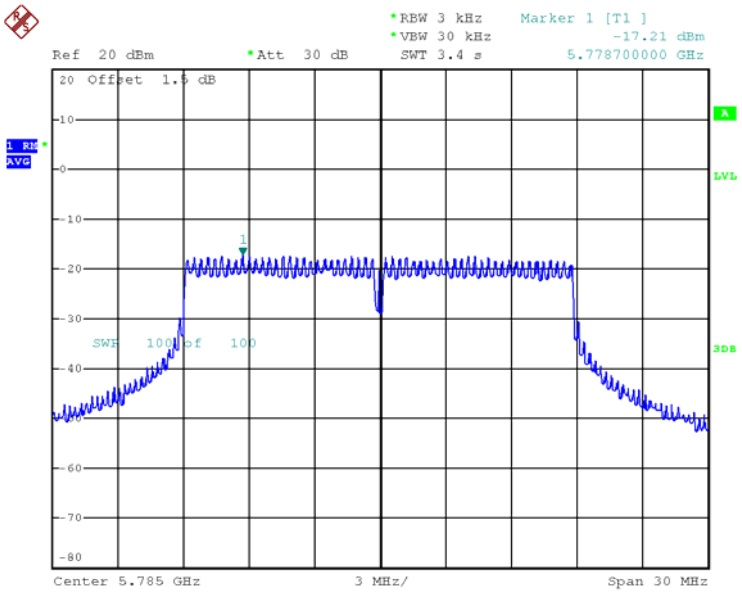
Date: 5.NOV.2013 17:47:34

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 4 / 5745 MHz



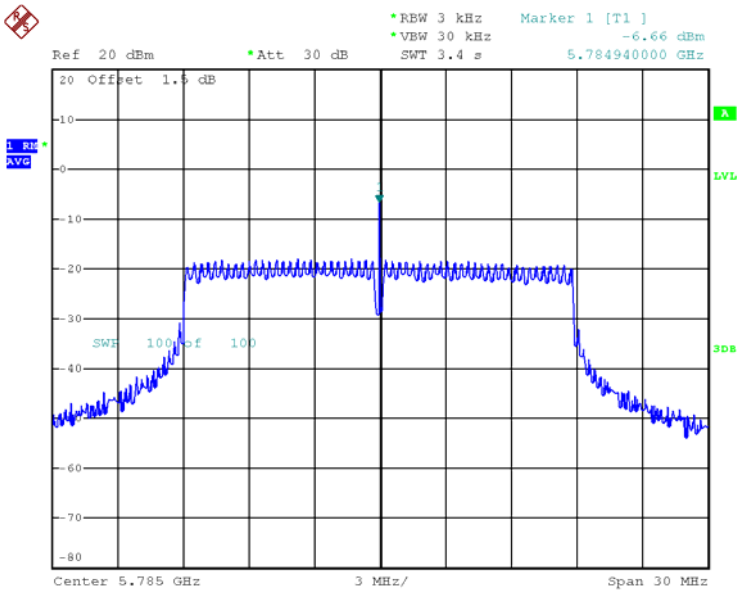
Date: 5.NOV.2013 17:40:37

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 1 / 5785 MHz



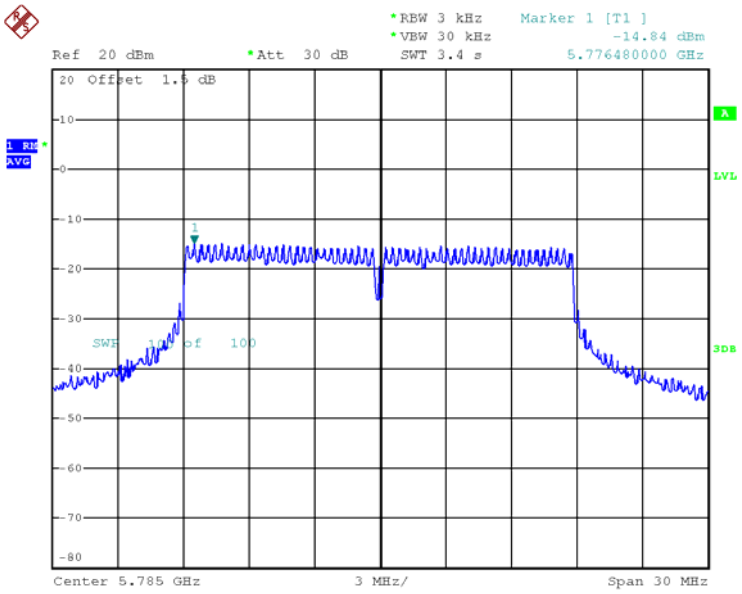
Date: 5.NOV.2013 17:52:42

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 2 / 5785 MHz



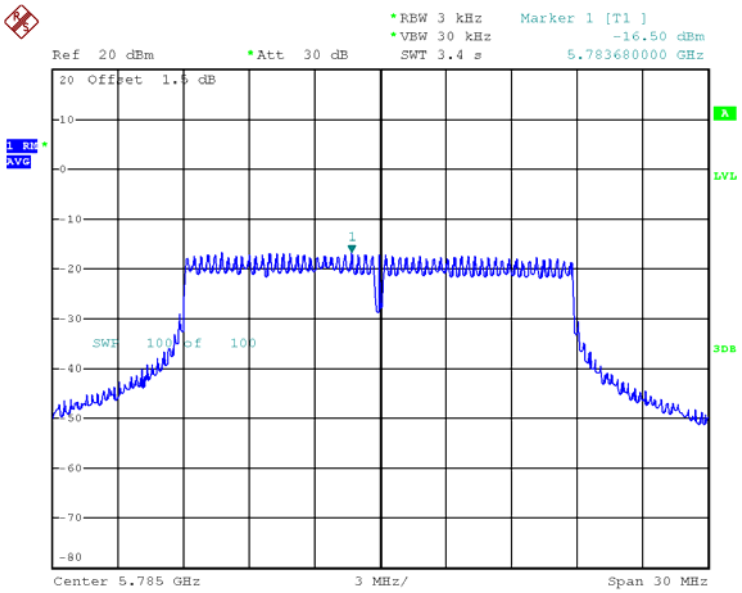
Date: 5.NOV.2013 17:53:55

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 3 / 5785 MHz



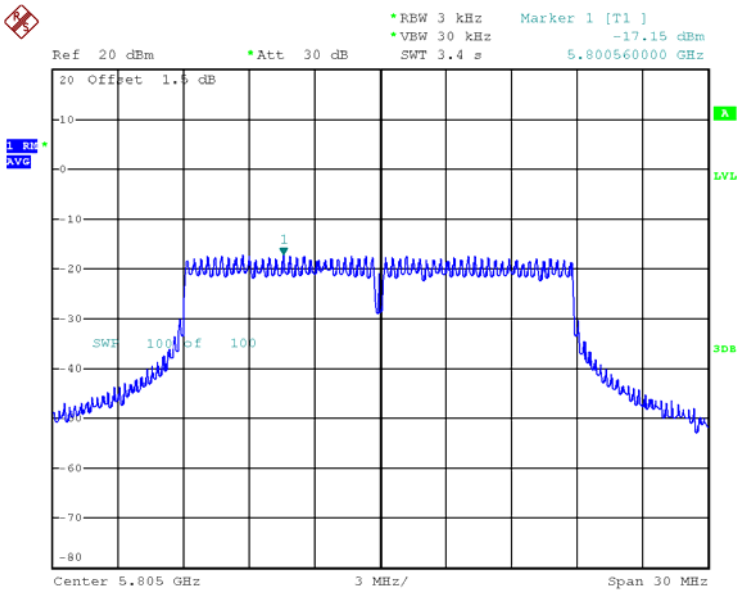
Date: 5.NOV.2013 17:55:54

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 4 / 5785 MHz



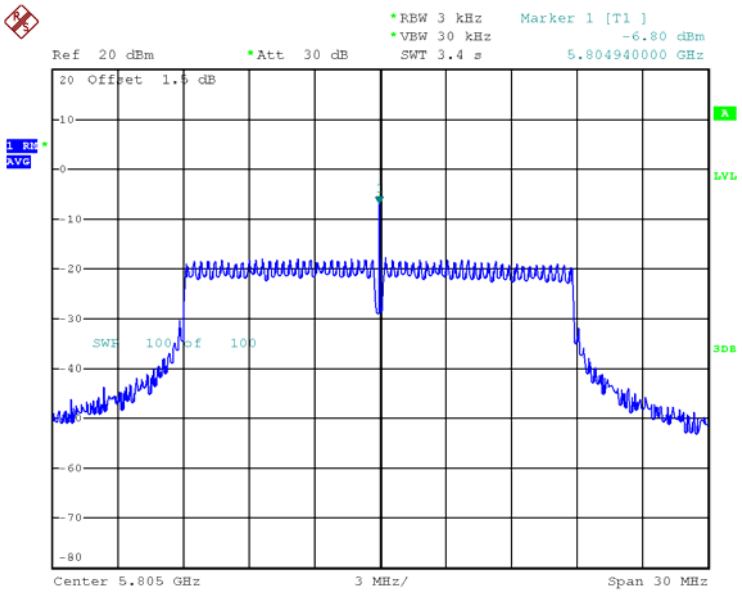
Date: 5.NOV.2013 17:57:56

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 1 / 5805 MHz



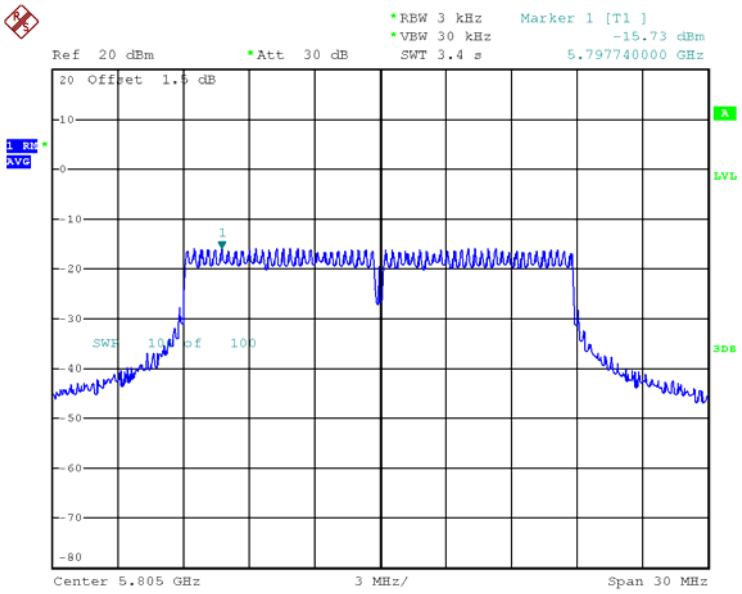
Date: 5.NOV.2013 18:08:32

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 2 / 5805 MHz



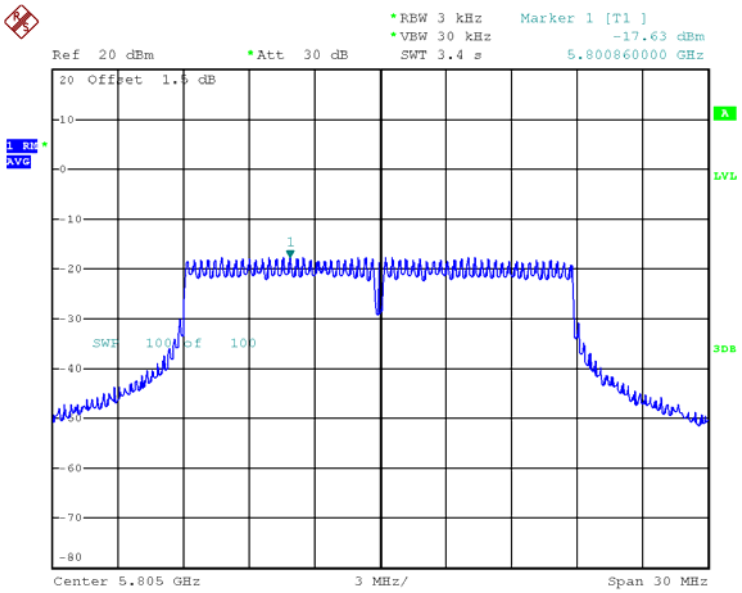
Date: 5.NOV.2013 18:07:37

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 3 / 5805 MHz



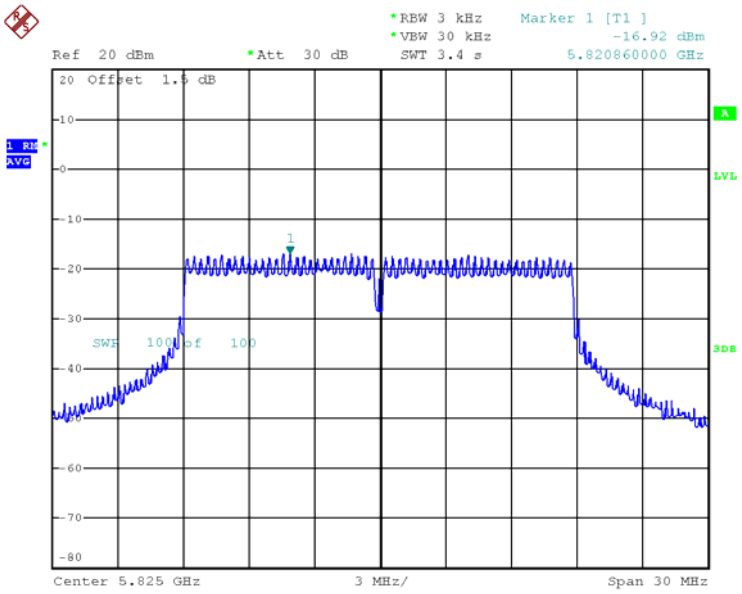
Date: 5.NOV.2013 18:06:49

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 4 / 5805 MHz



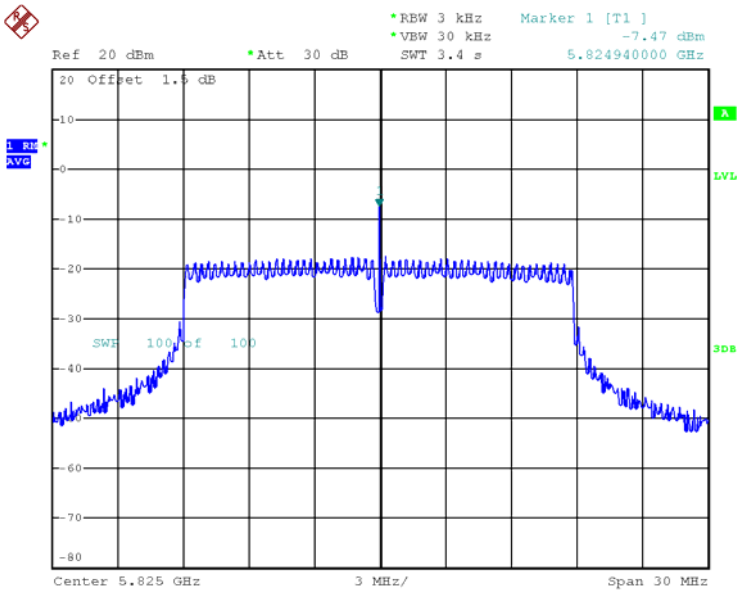
Date: 5.NOV.2013 18:00:05

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 1 / 5825 MHz



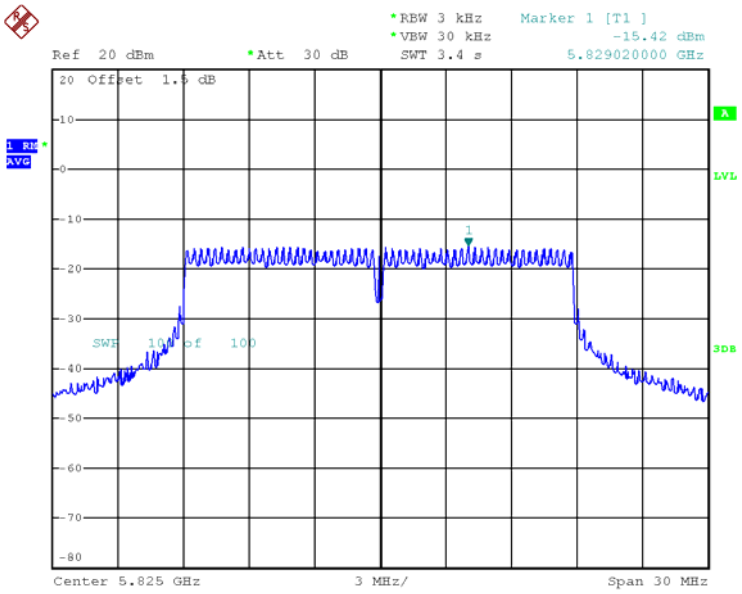
Date: 5.NOV.2013 18:09:27

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 2 / 5825 MHz



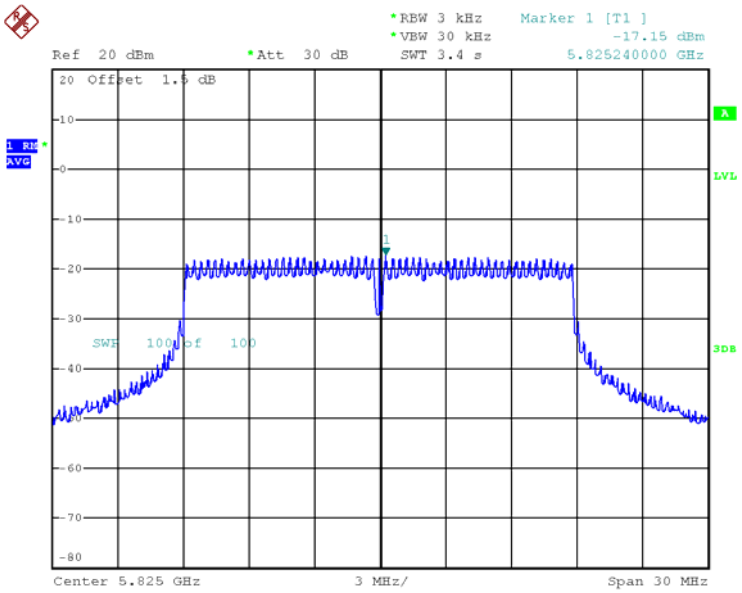
Date: 5.NOV.2013 18:10:24

Power Density Plot on Configuration IEEE 802.11n 20MHz MCS0 / Ant. 3 / 5825 MHz



Date: 5.NOV.2013 18:16:36

Power Density Plot on Configuration IEEE 802.11n 20MHz / Ant. 4 / 5825 MHz



Date: 5.NOV.2013 18:17:32

Test date	Nov. 05, 2013	**Test Site No.**	TH01-CB
Temperature	26℃	**Humidity**	63%
Test Engineer	Wen Chao	**Configuration**	802.11n 40MHz
Duty Cycle	97.97%	**Duty Factor**	0.09

Configuration IEEE 802.11n 40MHz

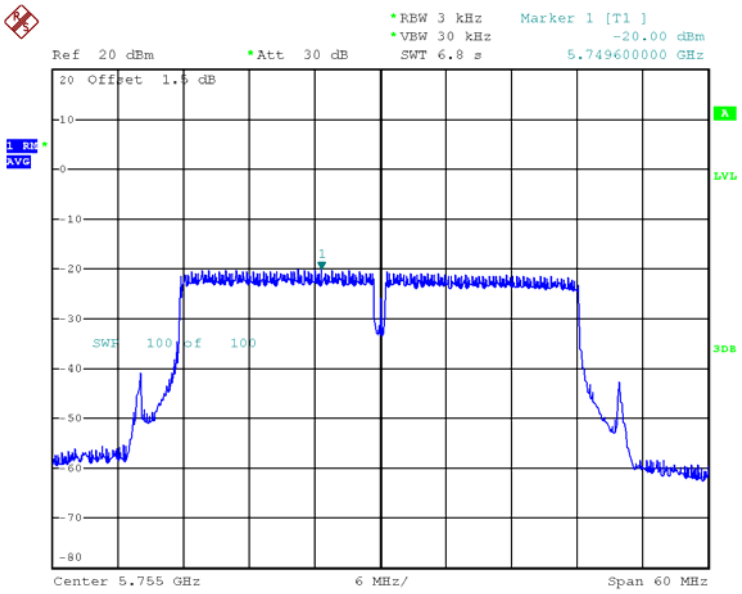
<MCS0, Ant. 1+2+3+4>

Channel	Frequency	Power Density (dBm/3kHz)				Total Power Density (dBm/3kHz)	Power Density Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2	Ant. 3	Ant. 4			
151	5755 MHz	-20.00	-13.99	-17.47	-20.44	-11.05	7.09	Complies
159	5795 MHz	-21.10	-12.21	-18.46	-20.59	-10.33	6.71	Complies

Note: Directional gain=G_{ANT}+10log(N_{ANT}/Nss)=6.91dBi >6dBi,So 5755MHz Limit =8-(6.91-6)=7.09dBm/MHz

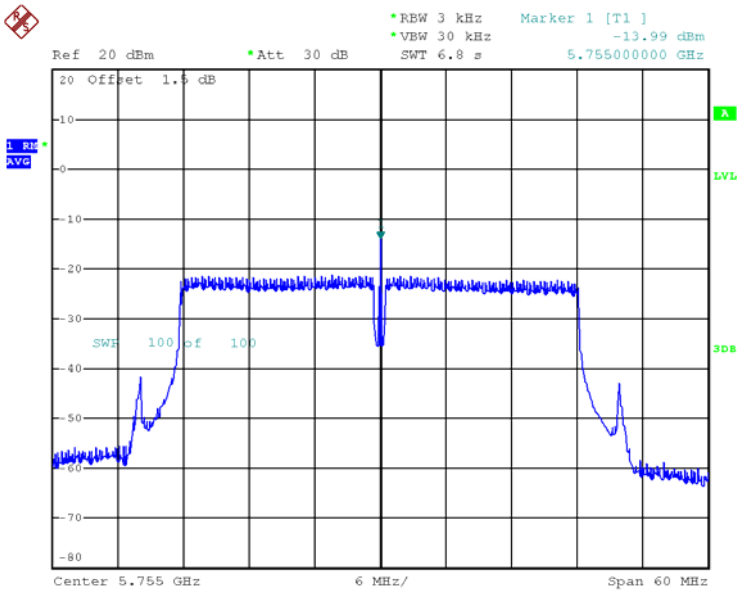
Note: Directional gain=G_{ANT}+10log(N_{ANT}/Nss)=7.29dBi >6dBi,So 5795MHz Limit =8-(7.29-6)=6.71dBm/MHz

Power Density Plot on Configuration IEEE 802.11n 40MHz MCS0 / Ant. 1 / 5755 MHz



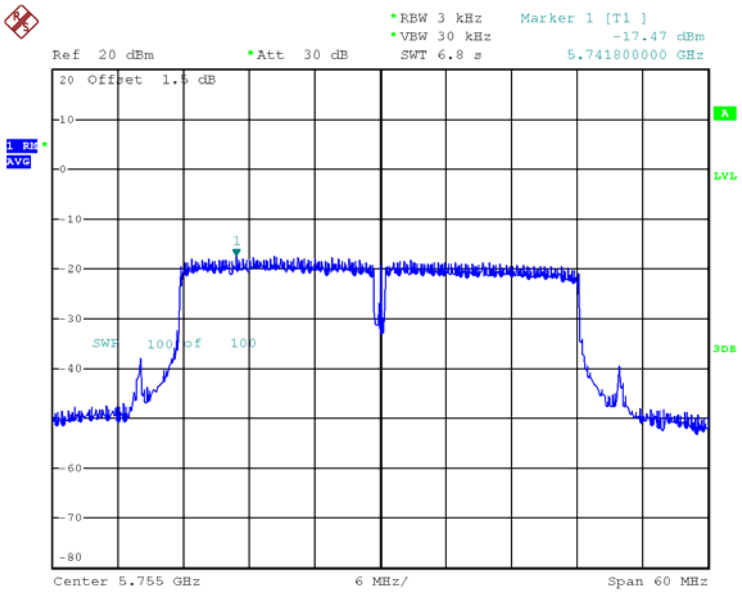
Date: 5.NOV.2013 18:21:38

Power Density Plot on Configuration IEEE 802.11n 40MHz MCS0 / Ant. 2 / 5755 MHz



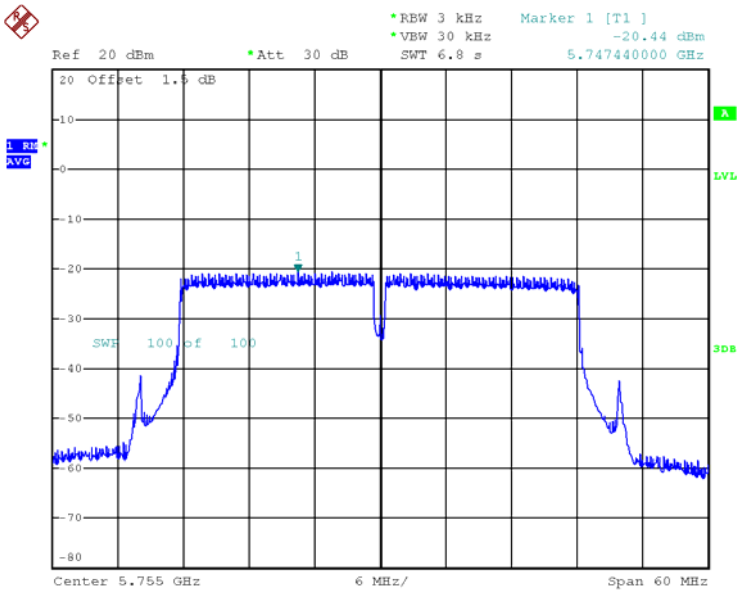
Date: 5.NOV.2013 18:20:28

Power Density Plot on Configuration IEEE 802.11n 40MHz MCS0 / Ant. 3 / 5755 MHz



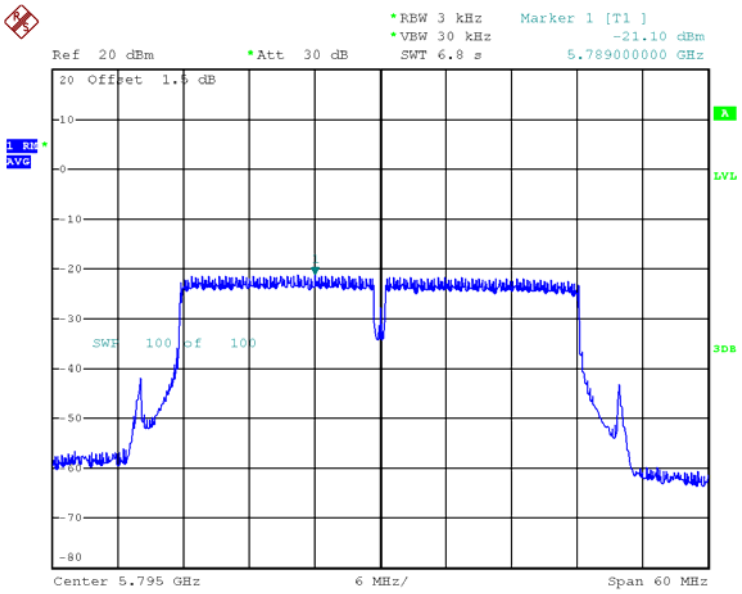
Date: 5.NOV.2013 18:22:27

Power Density Plot on Configuration IEEE 802.11n 40MHz MCS0 / Ant. 4 / 5755 MHz



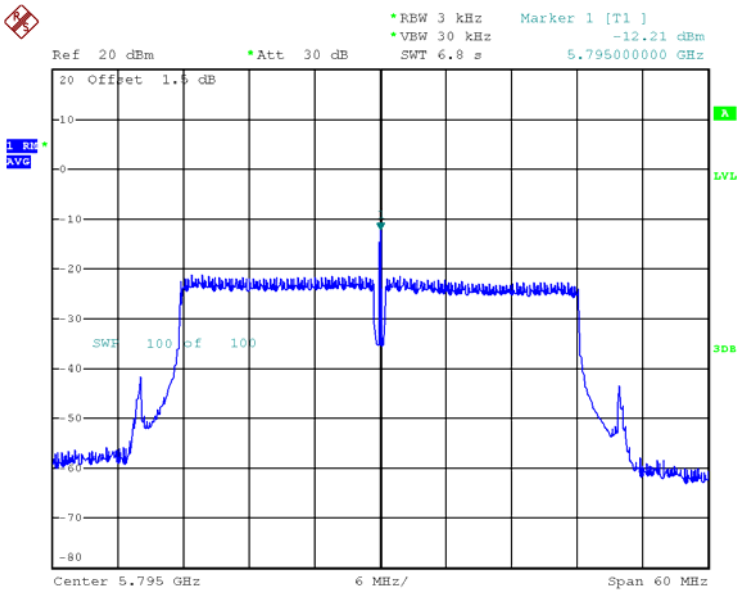
Date: 5.NOV.2013 18:19:23

Power Density Plot on Configuration IEEE 802.11n 40MHz MCS0 / Ant. 1 / 5795 MHz



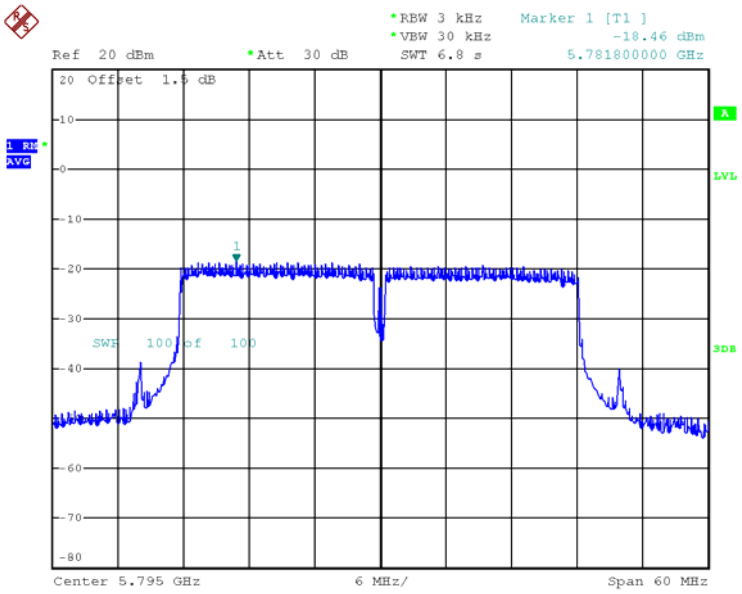
Date: 5.NOV.2013 18:27:11

Power Density Plot on Configuration IEEE 802.11n 40MHz MCS0 / Ant. 2 / 5795 MHz



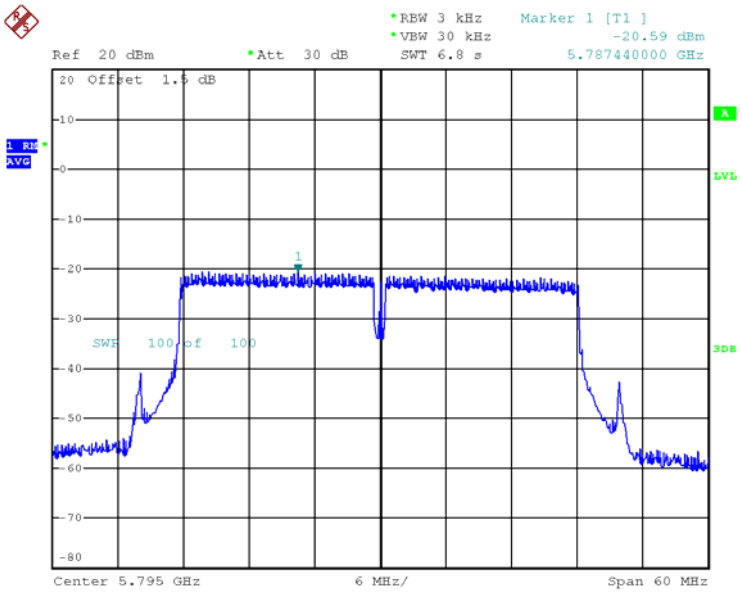
Date: 5.NOV.2013 18:25:57

Power Density Plot on Configuration IEEE 802.11n 40MHz MCS0 / Ant. 3 / 5795 MHz



Date: 5.NOV.2013 18:24:54

Power Density Plot on Configuration IEEE 802.11n 40MHz MCS0 / Ant. 4 / 5795 MHz



Date: 5.NOV.2013 18:28:16

3.4 6dB Spectrum Bandwidth Measurement

3.4.1 Limit

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz.

3.4.2 Measuring Instruments and Setting

The following table is the setting of the spectrum analyzer.

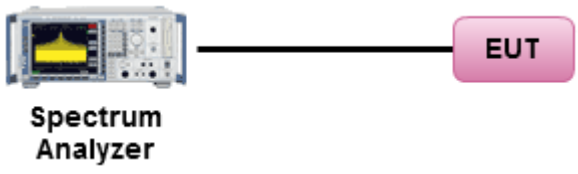
Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100 kHz.
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

3.4.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB 558074 v03r01 Guidance for Performing Compliance Measurements on Digital Transmission Systems(DTS) Operating under §15.247 section 7.1 DTS channel bandwidth
3. Multiple antennas system was performed in accordance with KDB 662911 D01 v02 Emission Testing of Transmitters with Multiple Outputs in the Same Band
4. Measured the spectrum width with power higher than 6d account by this measurement.

3.4.4 Test Setup Layout

6dB Spectrum Bandwidth



3.4.5 Test Deviation

There are no deviation with the original standard.

3.4.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.4.7 Test Result of 6dB Spectrum Bandwidth

Test date	Dec. 12, 2013	**Test Site No.**	TH01-CB
Temperature	26℃	**Humidity**	63%
Test Engineer	Wen Chao	**Configuration**	802.11a
Duty Cycle	99.26%	**Duty Factor**	0.032

Configuration IEEE 802.11a

<6Mbps, Ant 1>

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Data Rate / MCS
149	5745 MHz	16.40	16.64	6Mbps
157	5785 MHz	16.40	16.64	6Mbps
161	5805 MHz	16.40	16.64	6Mbps
165	5825 MHz	16.32	16.64	6Mbps

<6Mbps, Ant 2>

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Data Rate / MCS
149	5745 MHz	16.40	16.64	6Mbps
157	5785 MHz	16.40	16.64	6Mbps
161	5805 MHz	16.40	16.64	6Mbps
165	5825 MHz	16.32	16.64	6Mbps

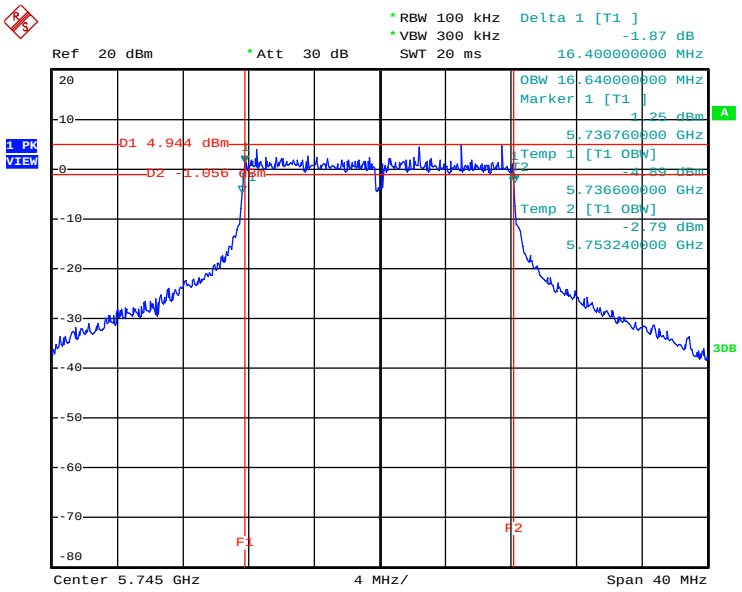
<6Mbps, Ant 3>

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Data Rate / MCS
149	5745 MHz	16.32	16.64	6Mbps
157	5785 MHz	16.40	16.64	6Mbps
161	5805 MHz	16.40	16.64	6Mbps
165	5825 MHz	16.40	16.64	6Mbps

<6Mbps, Ant 4>

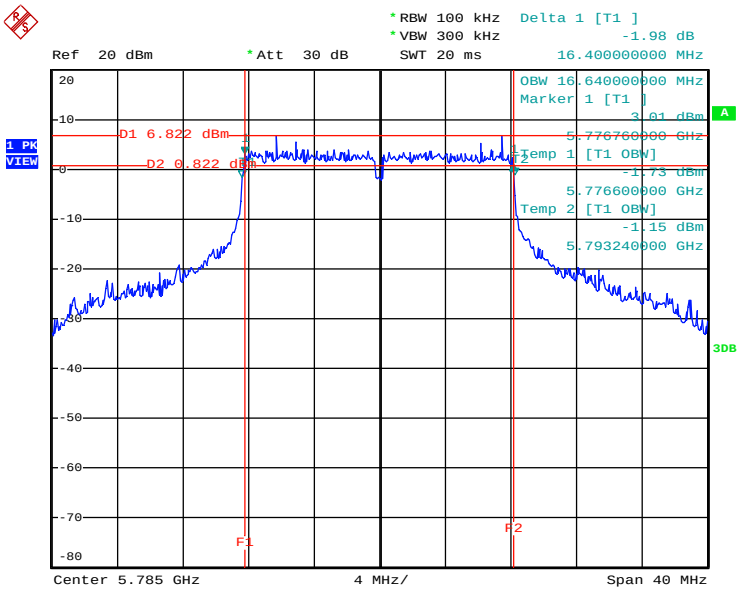
Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Data Rate / MCS
149	5745 MHz	16.40	16.64	6Mbps
157	5785 MHz	16.32	16.64	6Mbps
161	5805 MHz	16.40	16.64	6Mbps
165	5825 MHz	16.32	16.64	6Mbps

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5745 MHz / Ant. 1



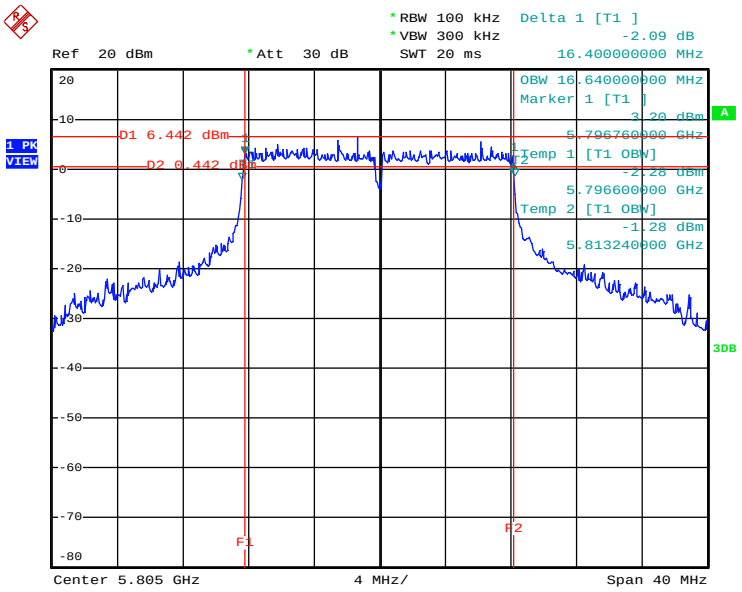
Date: 12.DEC.2013 01:18:50

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5785 MHz / Ant. 1



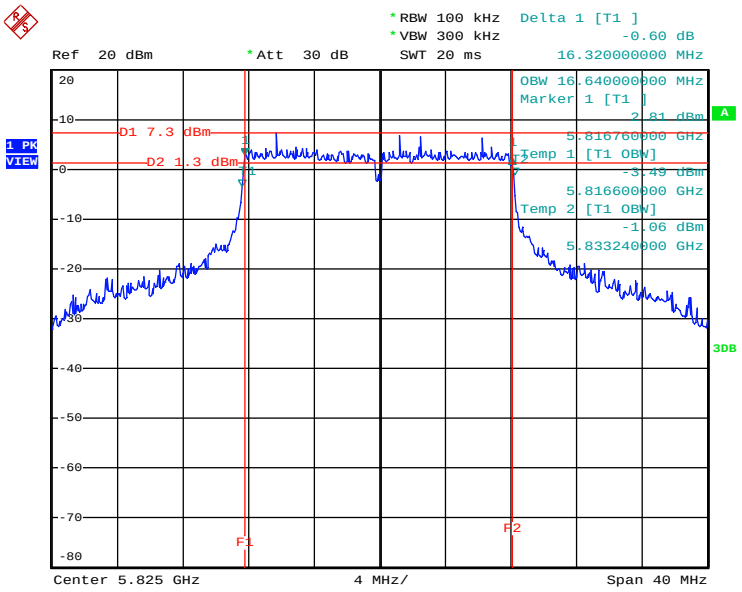
Date: 12.DEC.2013 01:22:32

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5805 MHz / Ant. 1



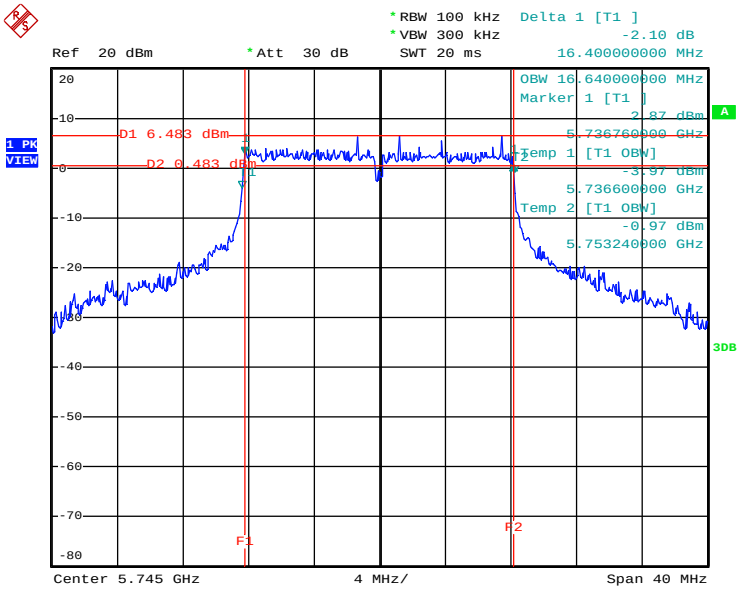
Date: 12.DEC.2013 01:23:10

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5825 MHz / Ant. 1



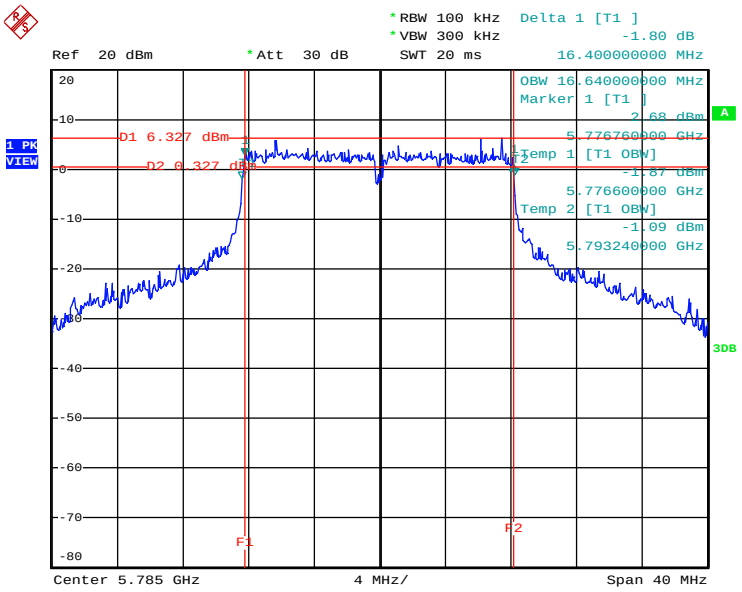
Date: 12.DEC.2013 01:25:01

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5745 MHz / Ant. 2



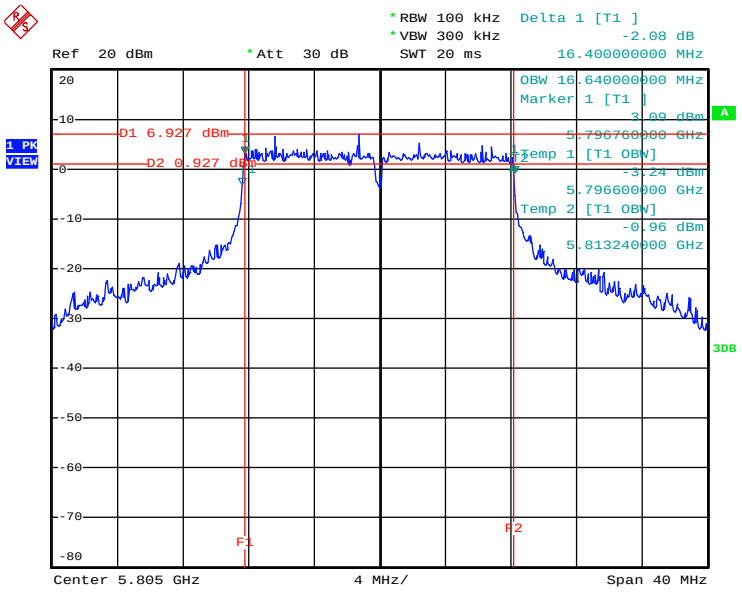
Date: 12.DEC.2013 01:19:32

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5785 MHz / Ant. 2



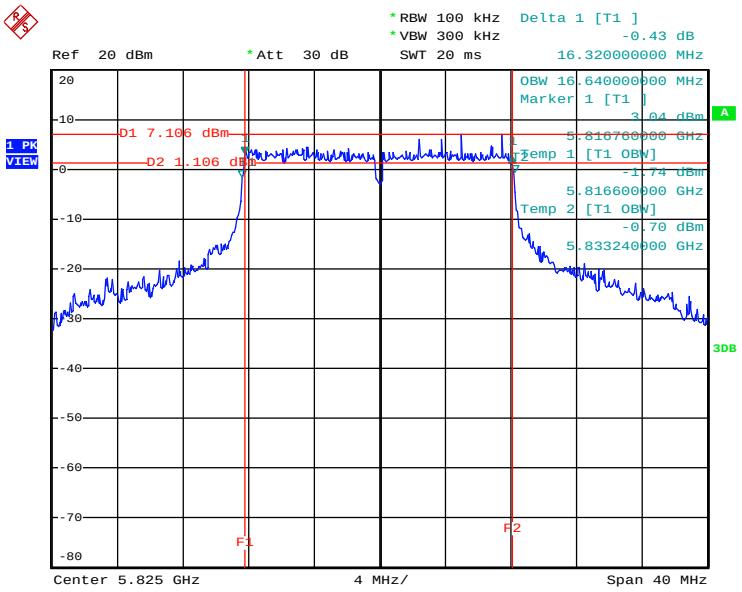
Date: 12.DEC.2013 01:22:17

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5805 MHz / Ant. 2



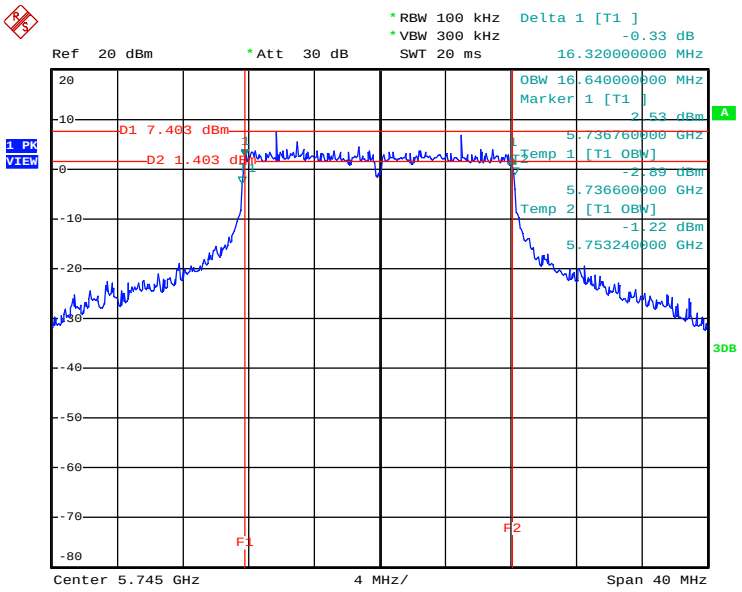
Date: 12.DEC.2013 01:23:22

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5825 MHz / Ant. 2



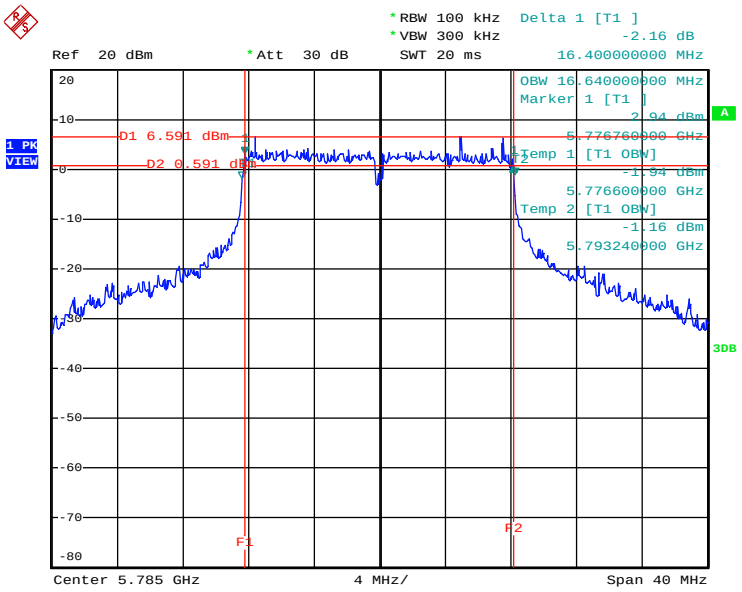
Date: 12.DEC.2013 01:24:46

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5745 MHz / Ant. 3



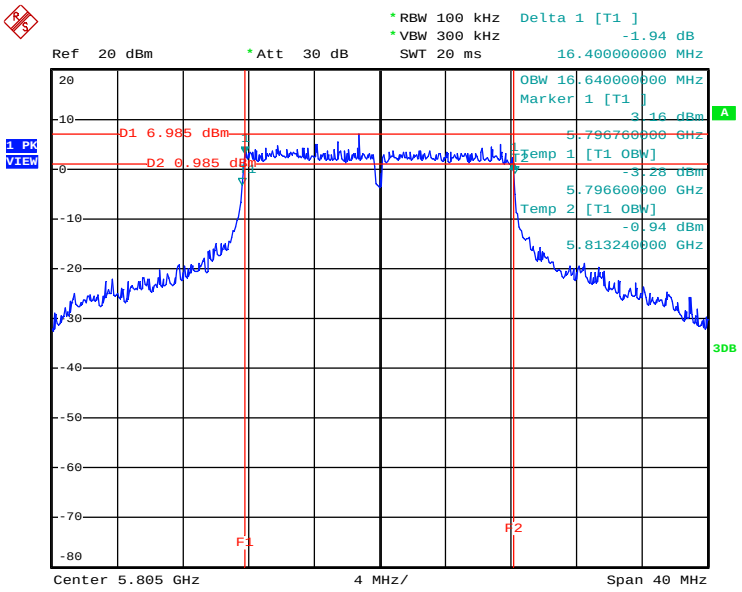
Date: 12.DEC.2013 01:19:47

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5785 MHz / Ant. 3



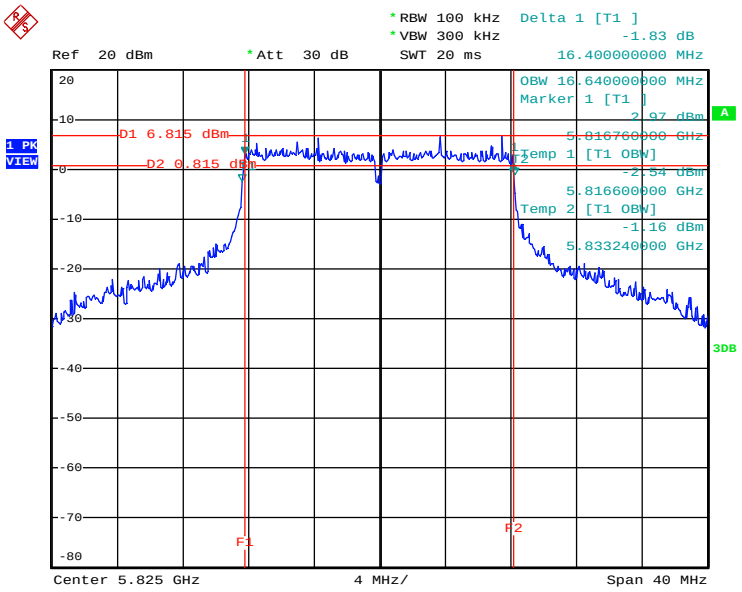
Date: 12.DEC.2013 01:22:04

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5805 MHz / Ant. 3



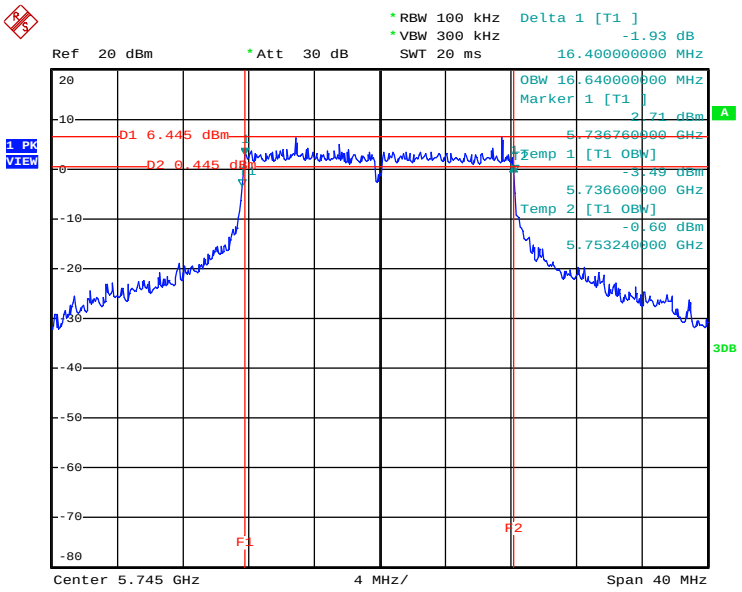
Date: 12.DEC.2013 01:23:37

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5825 MHz / Ant. 3



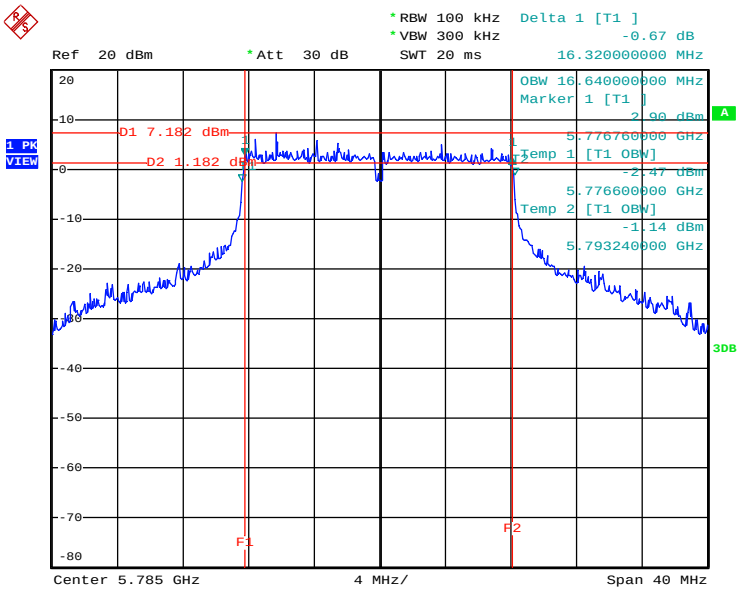
Date: 12.DEC.2013 01:24:32

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5745 MHz / Ant. 4



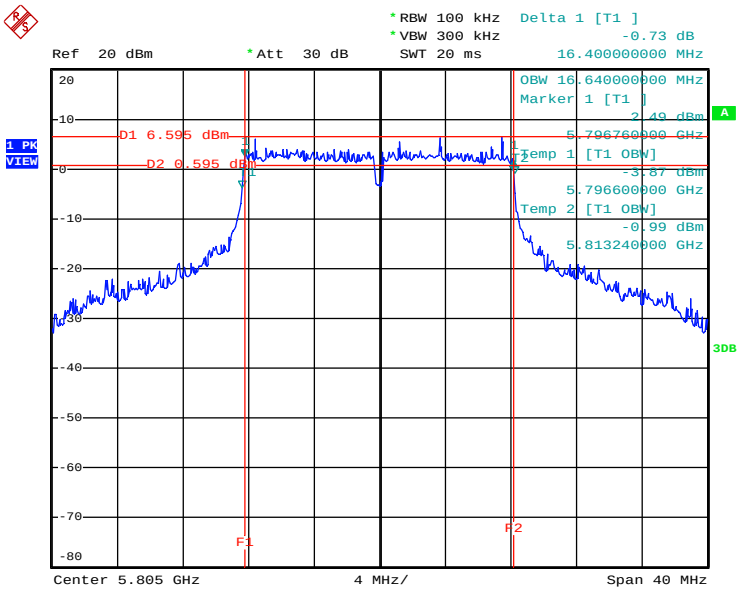
Date: 12.DEC.2013 01:20:06

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5785 MHz / Ant. 4



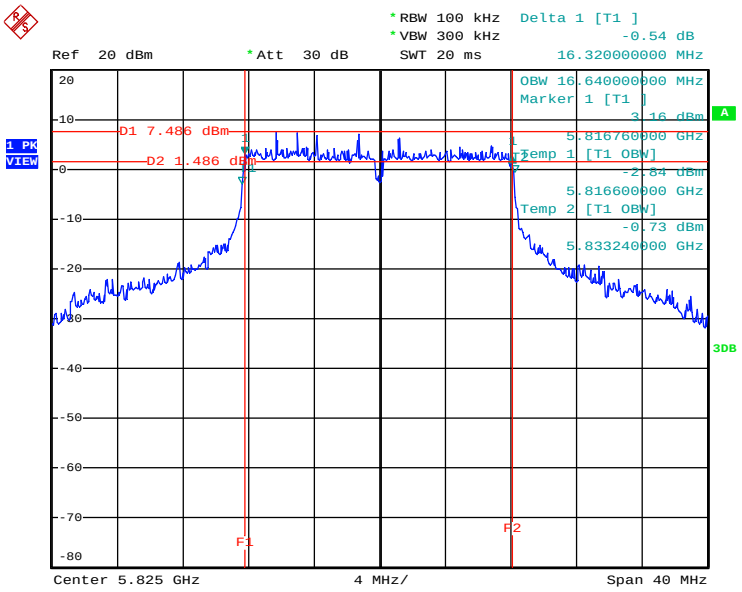
Date: 12.DEC.2013 01:21:50

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5805 MHz / Ant. 4



Date: 12.DEC.2013 01:23:51

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5825 MHz / Ant. 4



Date: 12.DEC.2013 01:24:17

Test date	Dec. 12, 2013	**Test Site No.**	TH01-CB
Temperature	26℃	**Humidity**	63%
Test Engineer	Wen Chao	**Configuration**	802.11n 20MHz
Duty Cycle	99.20%	**Duty Factor**	0.035

Configuration IEEE 802.11n 20MHz

<MCS0, Ant 1>

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Data Rate / MCS
149	5745 MHz	17.68	17.92	MCS0
157	5785 MHz	17.60	17.92	MCS0
161	5805 MHz	17.60	17.92	MCS0
165	5825 MHz	17.68	17.92	MCS0

<MCS0, Ant 2>

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Data Rate / MCS
149	5745 MHz	17.60	17.92	MCS0
157	5785 MHz	17.60	17.92	MCS0
161	5805 MHz	17.84	17.92	MCS0
165	5825 MHz	17.60	17.92	MCS0

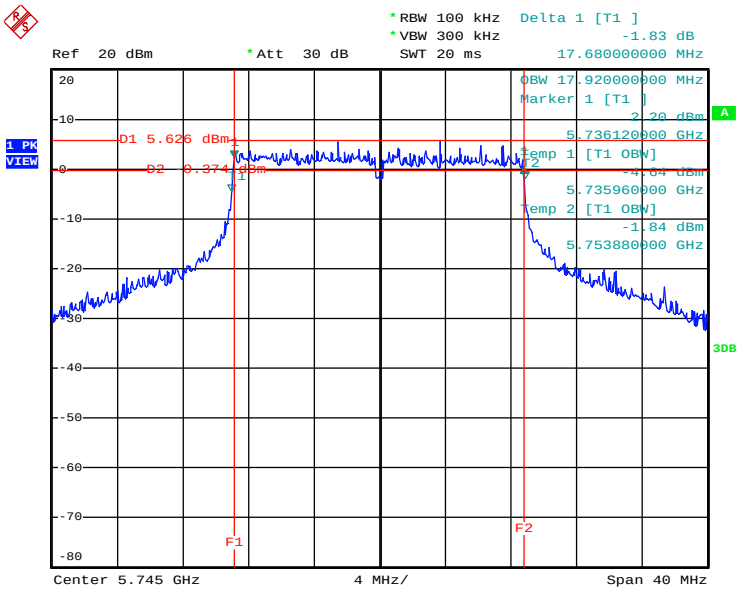
<MCS0, Ant 3>

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Data Rate / MCS
149	5745 MHz	17.68	17.92	MCS0
157	5785 MHz	17.60	17.92	MCS0
161	5805 MHz	17.60	17.92	MCS0
165	5825 MHz	17.60	17.92	MCS0

<MCS0, Ant 4>

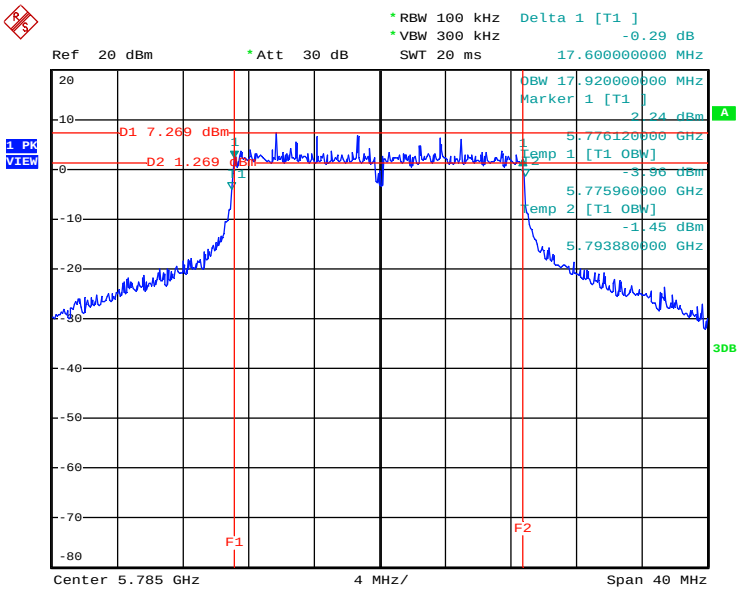
Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Data Rate / MCS
149	5745 MHz	17.60	17.92	MCS0
157	5785 MHz	17.76	17.92	MCS0
161	5805 MHz	17.68	17.92	MCS0
165	5825 MHz	17.60	17.92	MCS0

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5745 MHz / Ant. 1



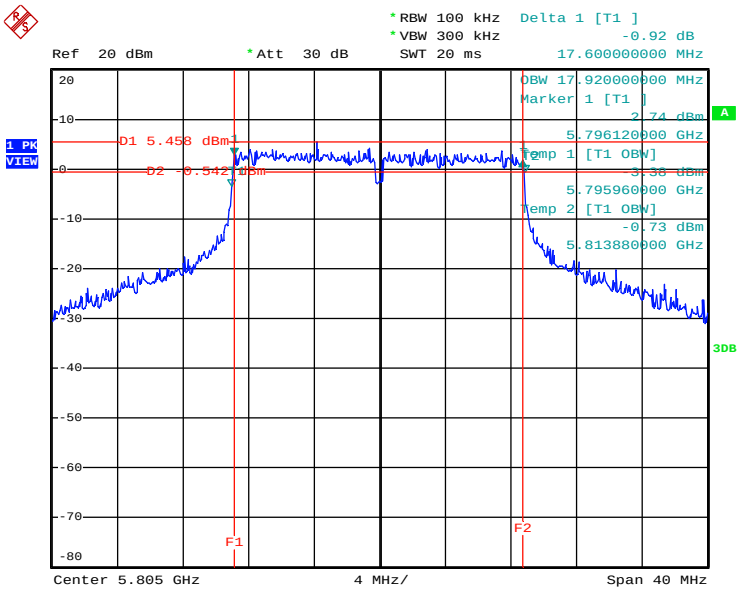
Date: 12.DEC.2013 01:29:43

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5785 MHz / Ant. 1



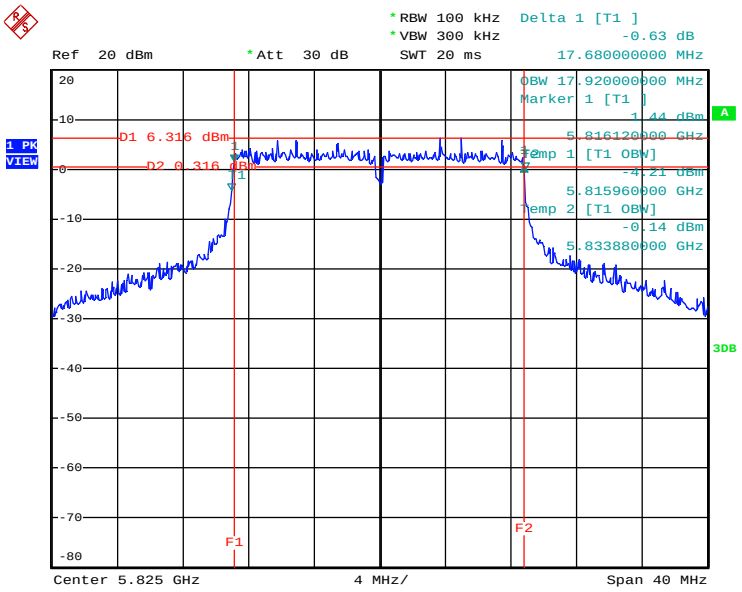
Date: 12.DEC.2013 01:28:07

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5805 MHz / Ant. 1



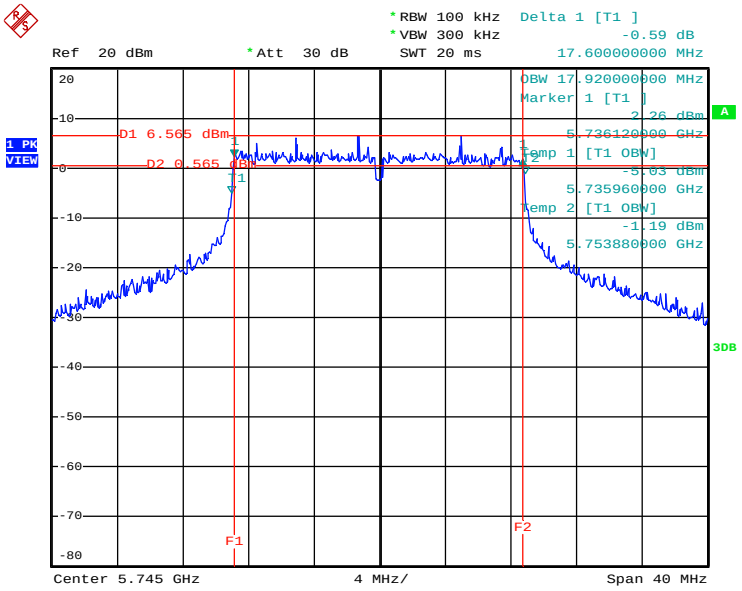
Date: 12.DEC.2013 01:27:42

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5825 MHz / Ant. 1



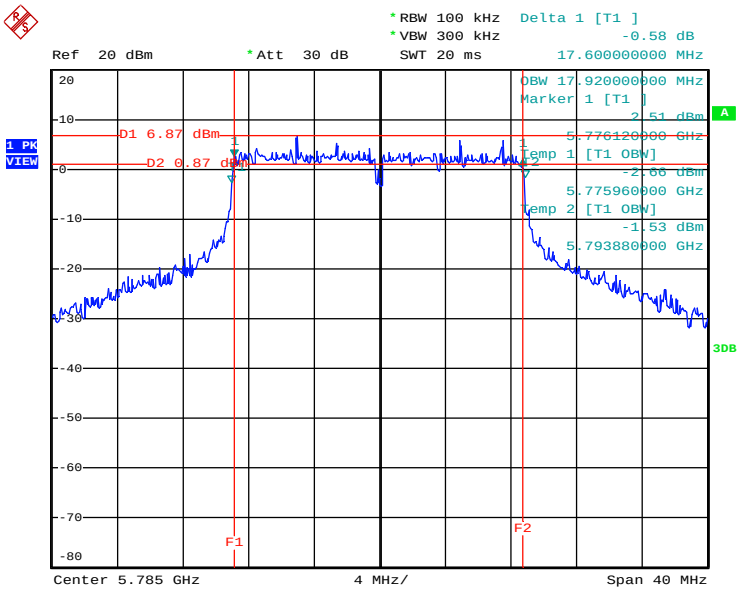
Date: 12.DEC.2013 01:25:30

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5745 MHz / Ant. 2



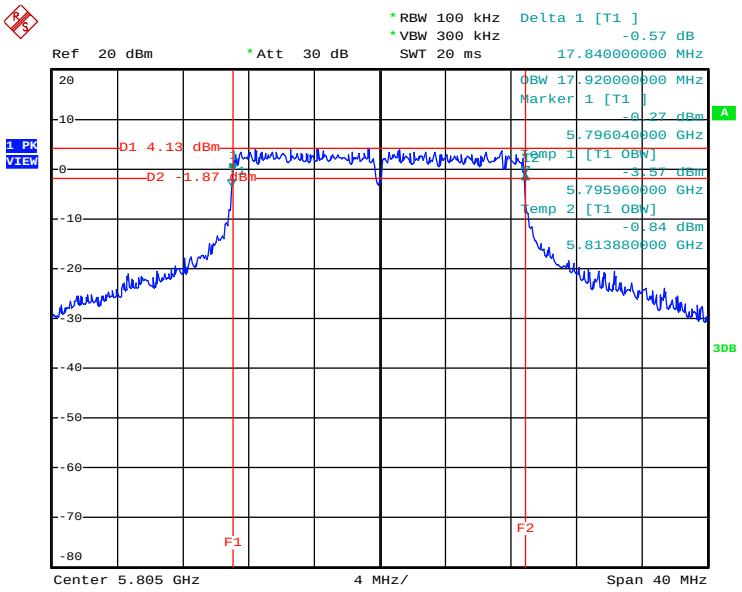
Date: 12.DEC.2013 01:29:31

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5785 MHz / Ant. 2



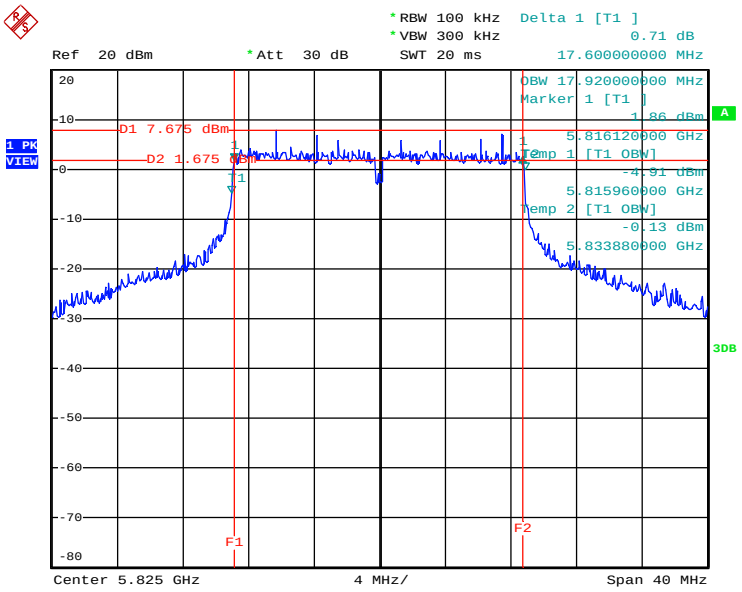
Date: 12.DEC.2013 01:28:19

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5805 MHz / Ant. 2



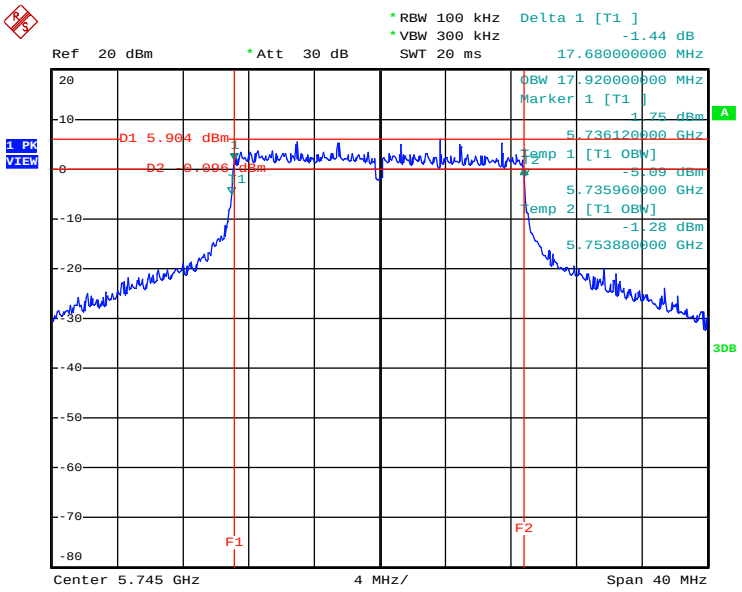
Date: 12.DEC.2013 01:27:30

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5825 MHz / Ant. 2



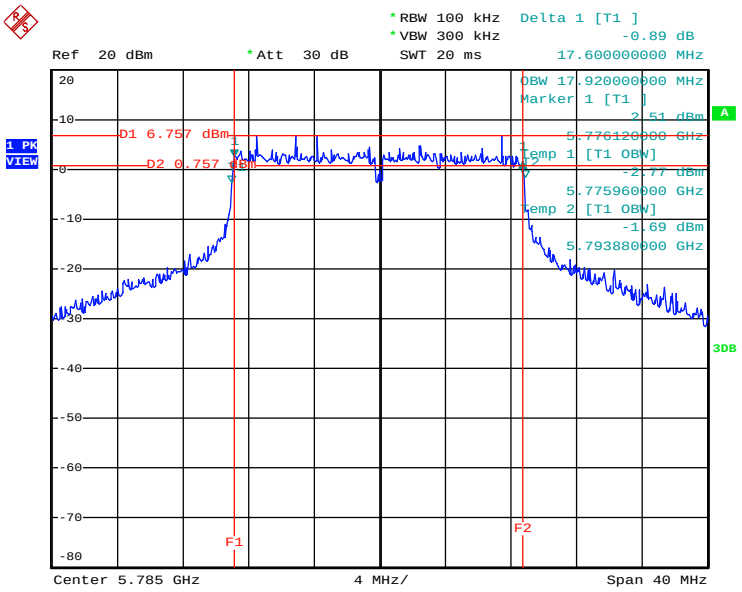
Date: 12.DEC.2013 01:25:46

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5745 MHz / Ant. 3



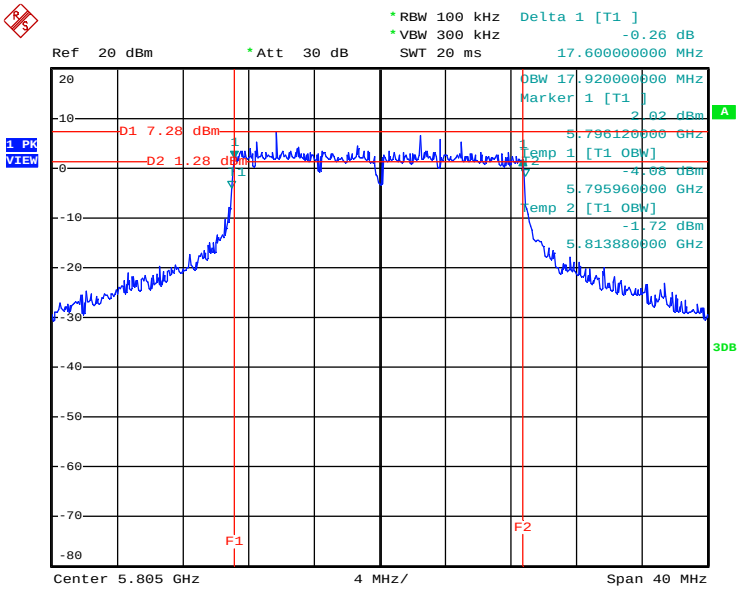
Date: 12.DEC.2013 01:29:20

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5785 MHz / Ant. 3



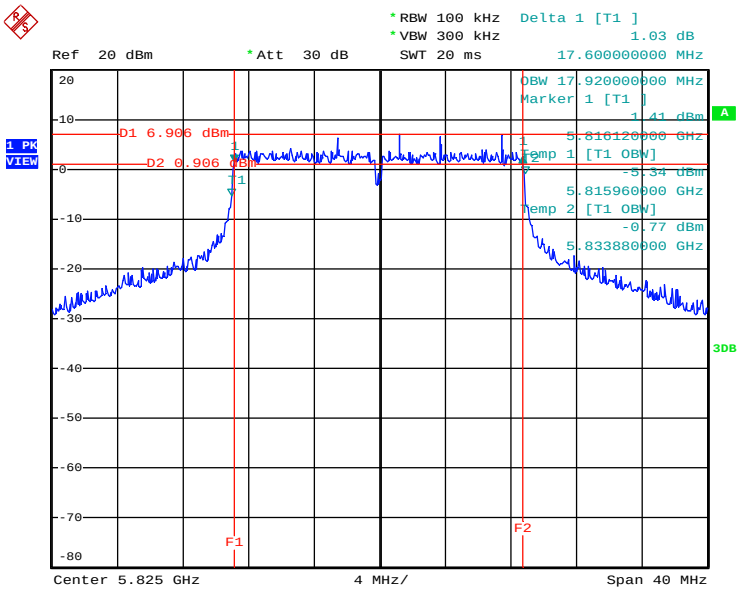
Date: 12.DEC.2013 01:28:31

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5805 MHz / Ant. 3



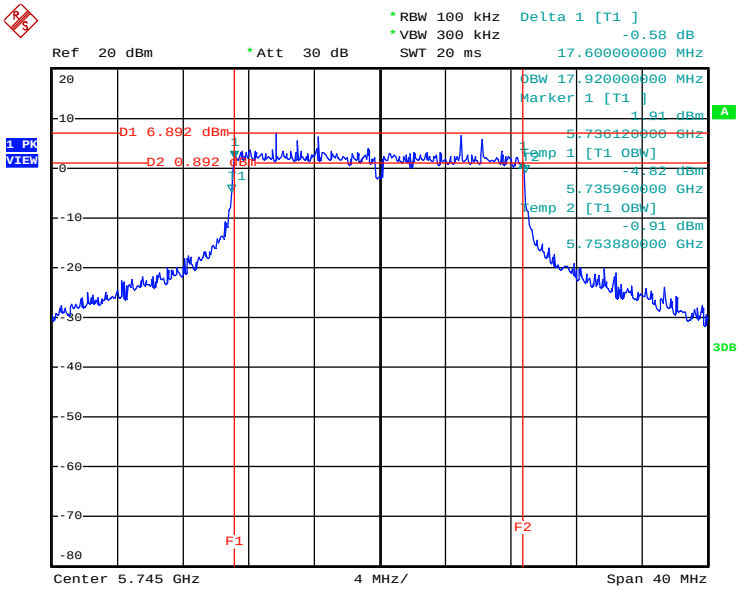
Date: 12.DEC.2013 01:27:10

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5825 MHz / Ant. 3



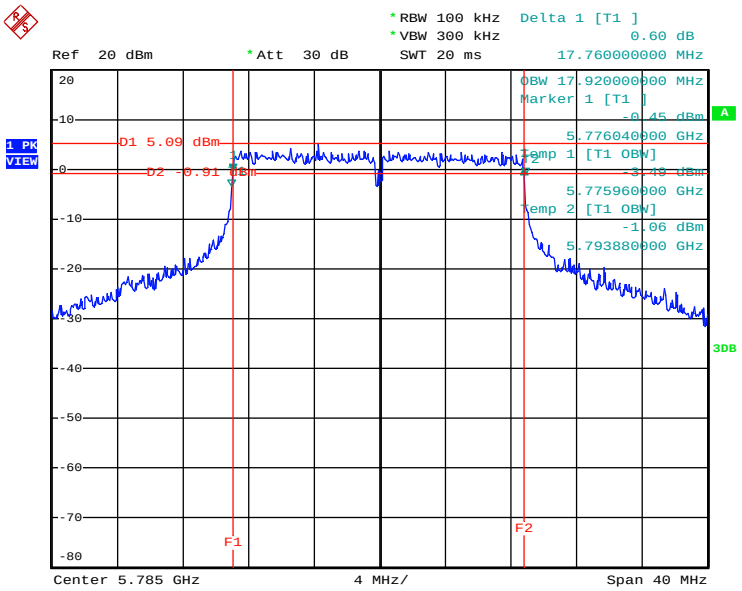
Date: 12.DEC.2013 01:26:00

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5745 MHz / Ant. 4



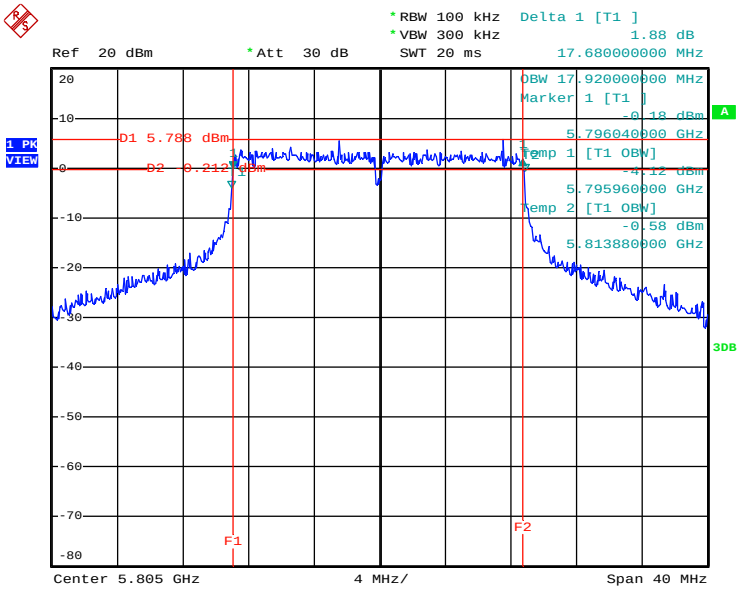
Date: 12.DEC.2013 01:29:08

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5785 MHz / Ant. 4



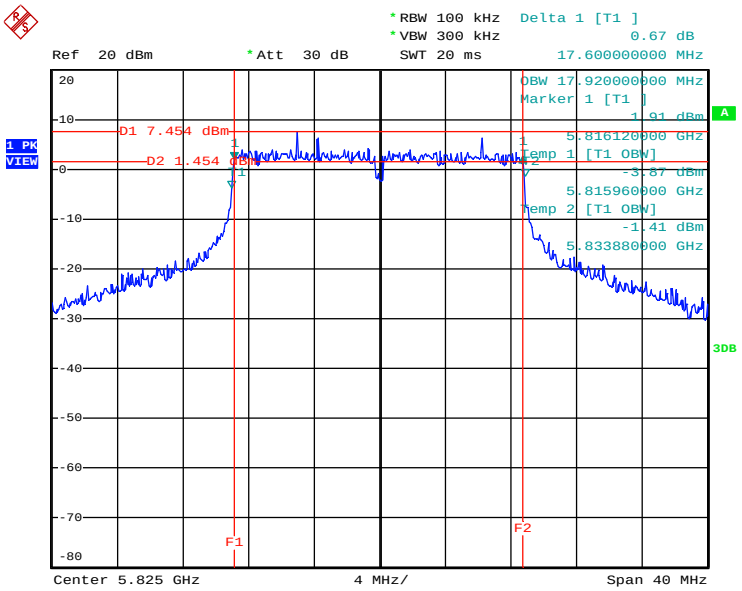
Date: 12.DEC.2013 01:28:45

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5805 MHz / Ant. 4



Date: 12.DEC.2013 01:26:39

6 dB Bandwidth Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5825 MHz / Ant. 4



Date: 12.DEC.2013 01:26:13

Test date	Dec. 12, 2013	**Test Site No.**	TH01-CB
Temperature	26℃	**Humidity**	63%
Test Engineer	Wen Chao	**Configuration**	802.11n 40MHz
Duty Cycle	97.97%	**Duty Factor**	0.09

Configuration IEEE 802.11n 40MHz

<MCS0, Ant 1>

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Data Rate / MCS
151	5755 MHz	36.16	36.32	MCS0
159	5795 MHz	35.84	36.32	MCS0

<MCS0, Ant 2>

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Data Rate / MCS
151	5755 MHz	36.00	36.32	MCS0
159	5795 MHz	36.32	36.32	MCS0

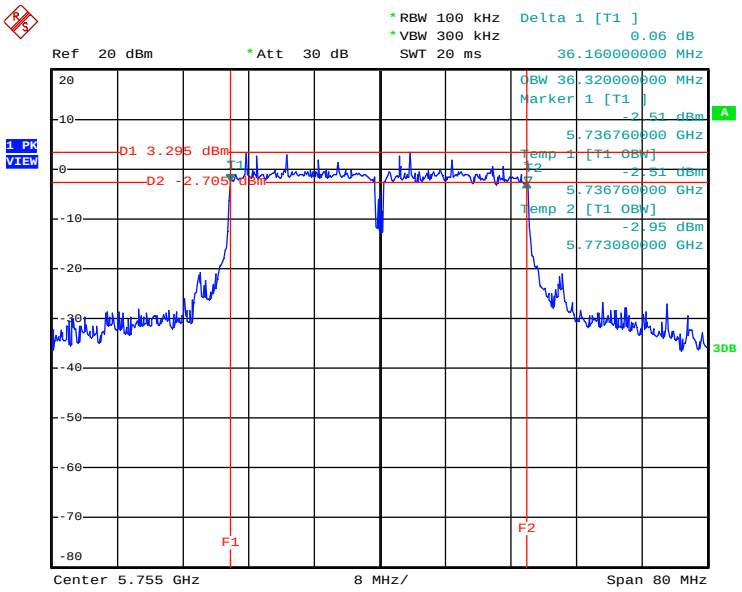
<MCS0, Ant 3>

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Data Rate / MCS
151	5755 MHz	36.16	36.32	MCS0
159	5795 MHz	36.16	36.32	MCS0

<MCS0, Ant 4>

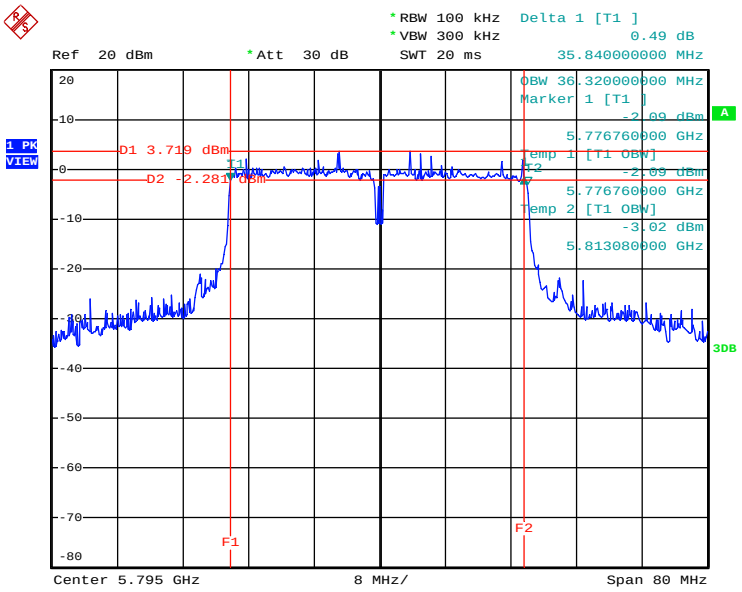
Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Data Rate / MCS
151	5755 MHz	36.16	36.32	MCS0
159	5795 MHz	35.36	36.32	MCS0

6 dB Bandwidth Plot on Configuration IEEE 802.11n 40MHz MCS0 / 5755 MHz / Ant. 1



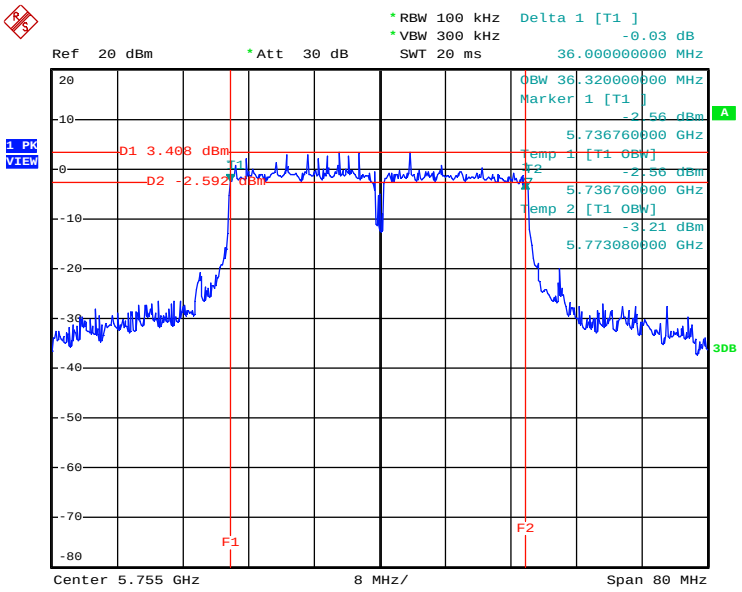
Date: 12.DEC.2013 01:30:10

6 dB Bandwidth Plot on Configuration IEEE 802.11n 40MHz MCS0 / 5795 MHz / Ant. 1



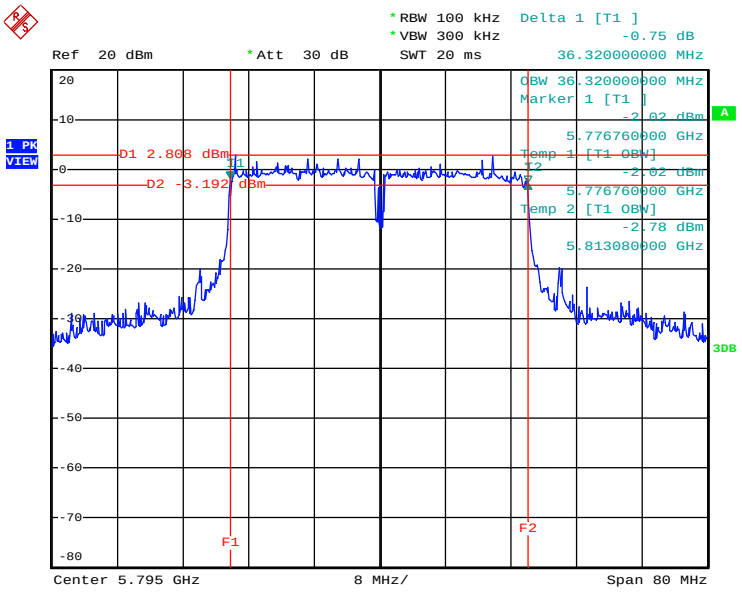
Date: 12.DEC.2013 01:32:04

6 dB Bandwidth Plot on Configuration IEEE 802.11n 40MHz MCS0 / 5755 MHz / Ant. 2



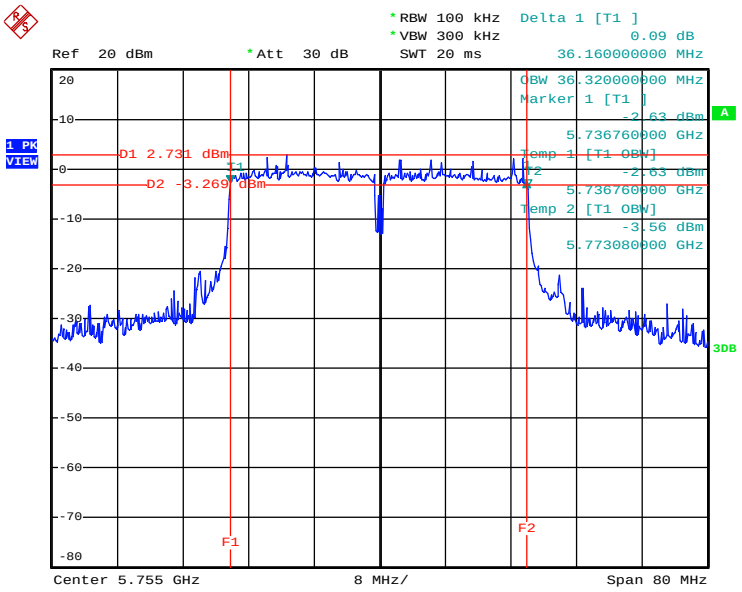
Date: 12.DEC.2013 01:30:26

6 dB Bandwidth Plot on Configuration IEEE 802.11n 40MHz MCS0 / 5795 MHz / Ant. 2



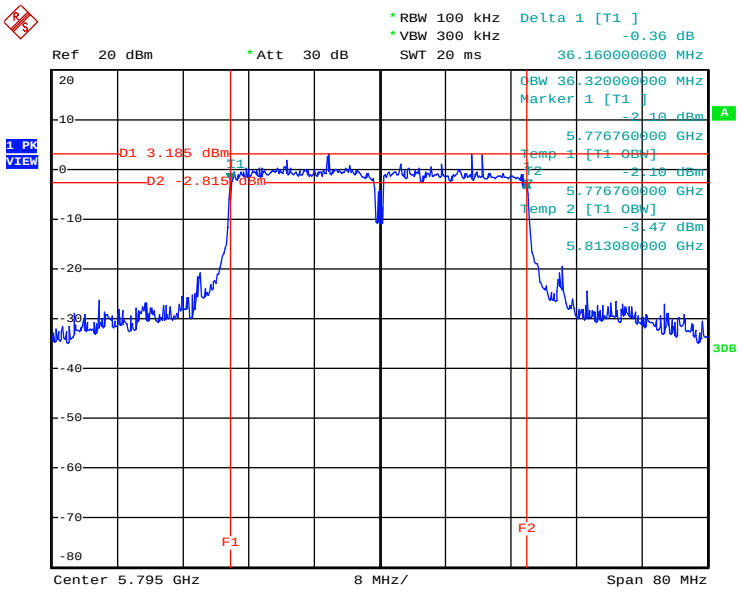
Date: 12.DEC.2013 01:31:52

6 dB Bandwidth Plot on Configuration IEEE 802.11n 40MHz MCS0 / 5755 MHz / Ant. 3



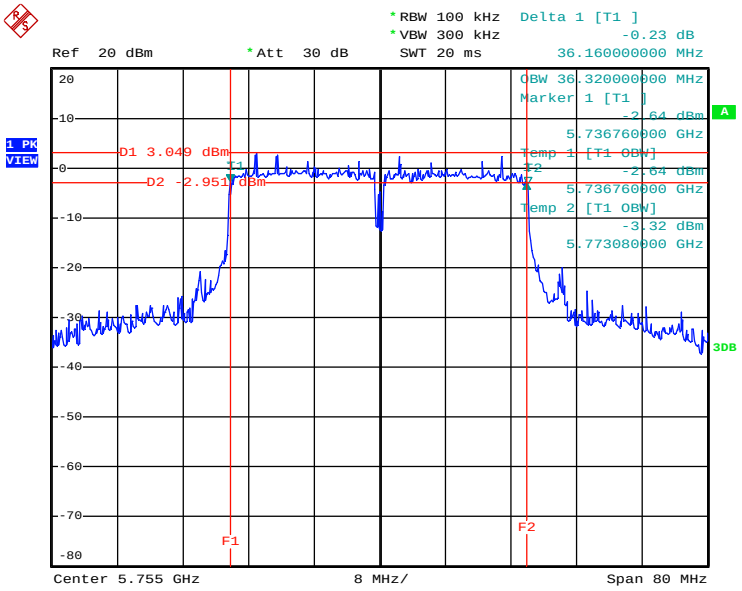
Date: 12.DEC.2013 01:30:38

6 dB Bandwidth Plot on Configuration IEEE 802.11n 40MHz MCS0 / 5795 MHz / Ant. 3



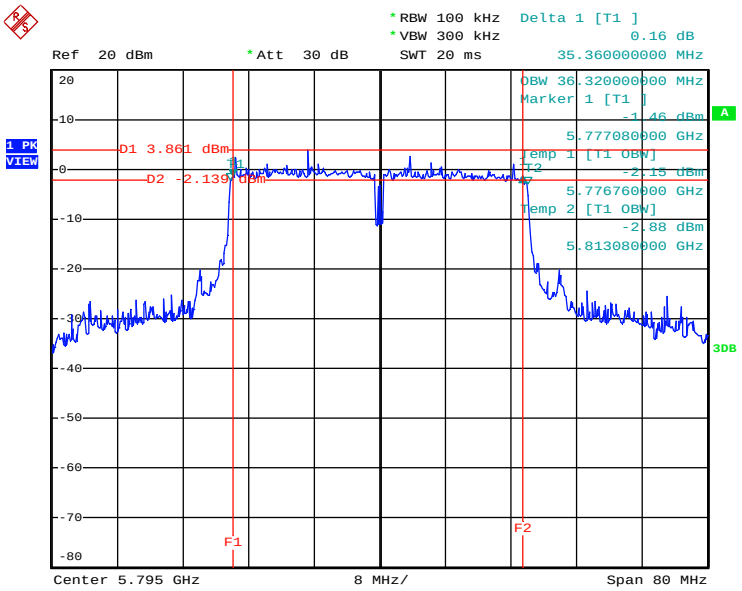
Date: 12.DEC.2013 01:31:39

6 dB Bandwidth Plot on Configuration IEEE 802.11n 40MHz MCS0 / 5755 MHz / Ant. 4



Date: 12.DEC.2013 01:30:51

6 dB Bandwidth Plot on Configuration IEEE 802.11n 40MHz MCS0 / 5795 MHz / Ant. 4



Date: 12.DEC.2013 01:31:22

3.5 Radiated Emissions Measurement

3.5.1 Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. 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 (microvolt/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

3.5.2 Measuring Instruments and Setting

Please refer to section 6 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1GHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 10Hz for Average
RBW / VBW (Emission in non-restricted band)	100kHz / 300kHz for peak

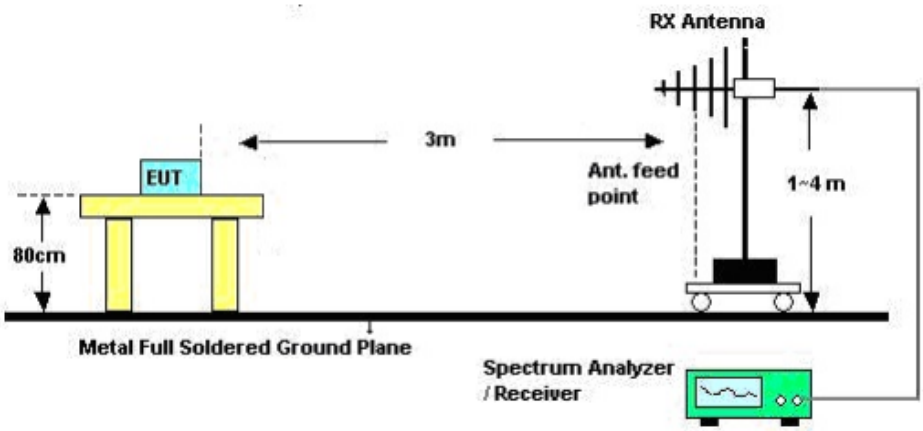
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1GHz / RBW 120kHz for QP

3.5.3 Test Procedures

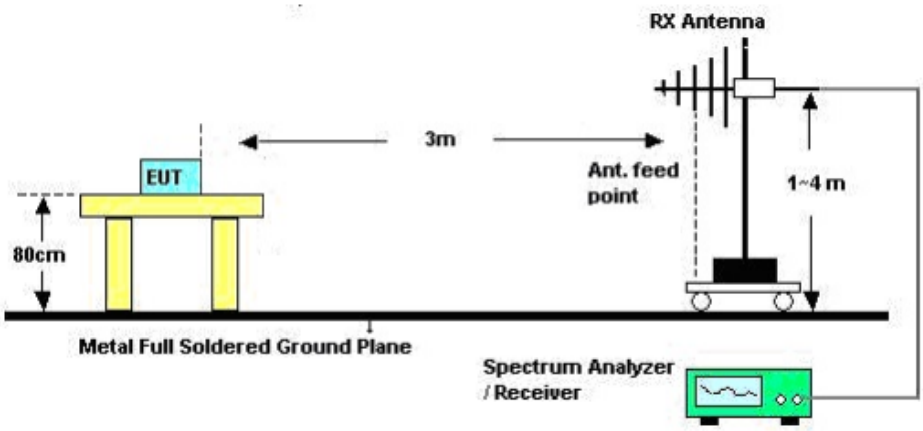
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

3.5.4 Test Setup Layout

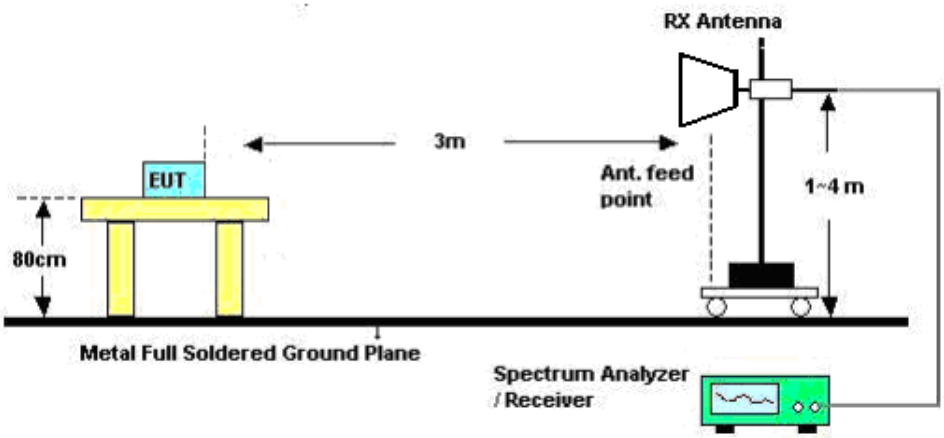
For Radiated Emissions below 1GHz (9kHz~30MHz)



For Radiated Emissions below 1GHz (30MHz~1GHz)



For Radiated Emissions above 1GHz



3.5.5 Test Deviation

There are no deviations with the original standard.

3.5.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.5.7 Results of Radiated Emissions (9kHz~30MHz)

Frequency Range	9kHz~30MHz	**Test Site No.**	03CH01-CB
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Configurations**	CTX
Test Date	Nov. 12, 2013		

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 20 dB below the permissible value has no need to be reported.

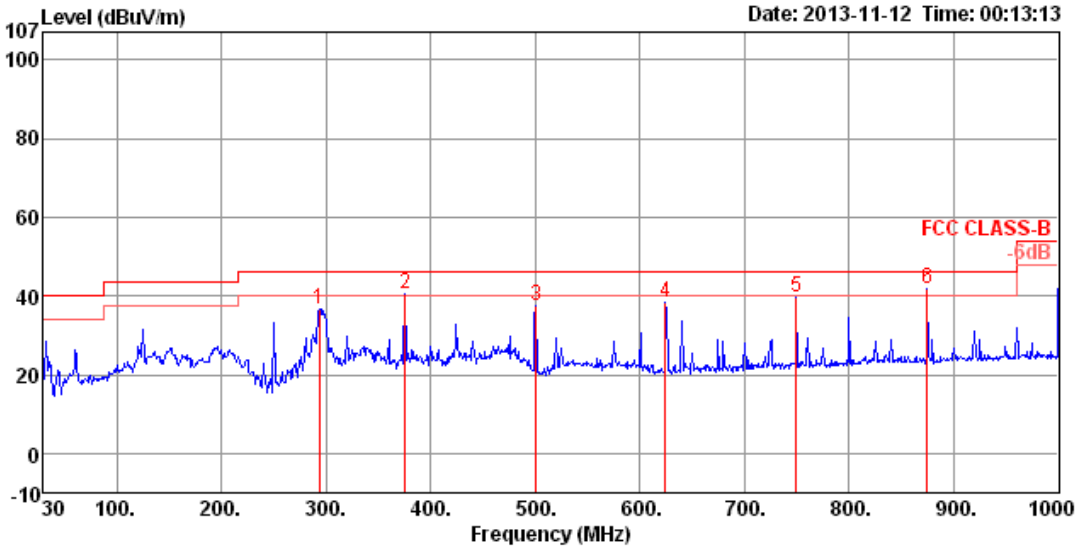
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

3.5.8 Results of Radiated Emissions (30MHz~1GHz)

Frequency Range	30MHz~1GHz	**Test Site No.**	03CH01-CB
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Configurations**	CTX

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	293.84	36.60	46.00	-9.40	53.20	2.10	12.79	31.49	100	127	HORIZONTAL	Peak
2	375.32	40.71	46.00	-5.29	54.77	2.44	14.93	31.43	100	151	HORIZONTAL	QP
3	500.45	37.37	46.00	-8.63	49.04	2.82	16.92	31.41	200	135	HORIZONTAL	Peak
4	624.61	38.51	46.00	-7.49	48.12	3.18	18.61	31.40	150	177	HORIZONTAL	Peak
5	749.74	39.50	46.00	-6.50	47.65	3.53	19.69	31.37	125	217	HORIZONTAL	Peak
6	874.87	41.62	46.00	-4.38	48.64	3.89	20.24	31.15	100	163	HORIZONTAL	QP

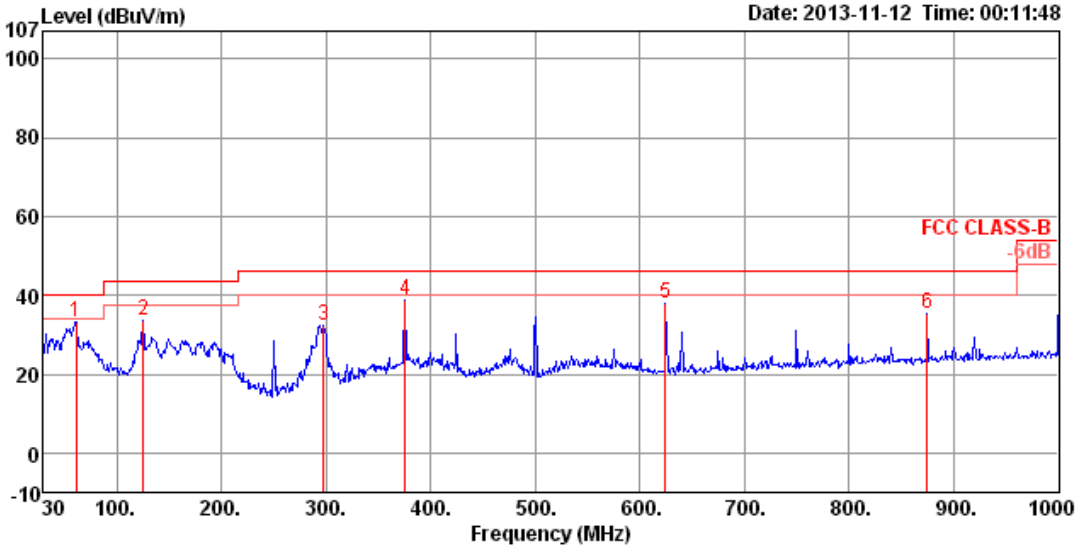
Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB 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.

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	61.04	33.24	40.00	-6.76	59.26	0.90	4.87	31.79	100	122	VERTICAL	Peak
2	125.06	33.41	43.50	-10.09	51.92	1.33	11.73	31.57	100	182	VERTICAL	Peak
3	297.72	32.35	46.00	-13.65	48.74	2.12	12.94	31.45	100	284	VERTICAL	Peak
4	375.32	38.86	46.00	-7.14	52.92	2.44	14.93	31.43	100	182	VERTICAL	Peak
5	624.61	37.76	46.00	-8.24	47.37	3.18	18.61	31.40	100	122	VERTICAL	Peak
6	874.87	35.32	46.00	-10.68	42.34	3.89	20.24	31.15	100	89	VERTICAL	Peak

Note:

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

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

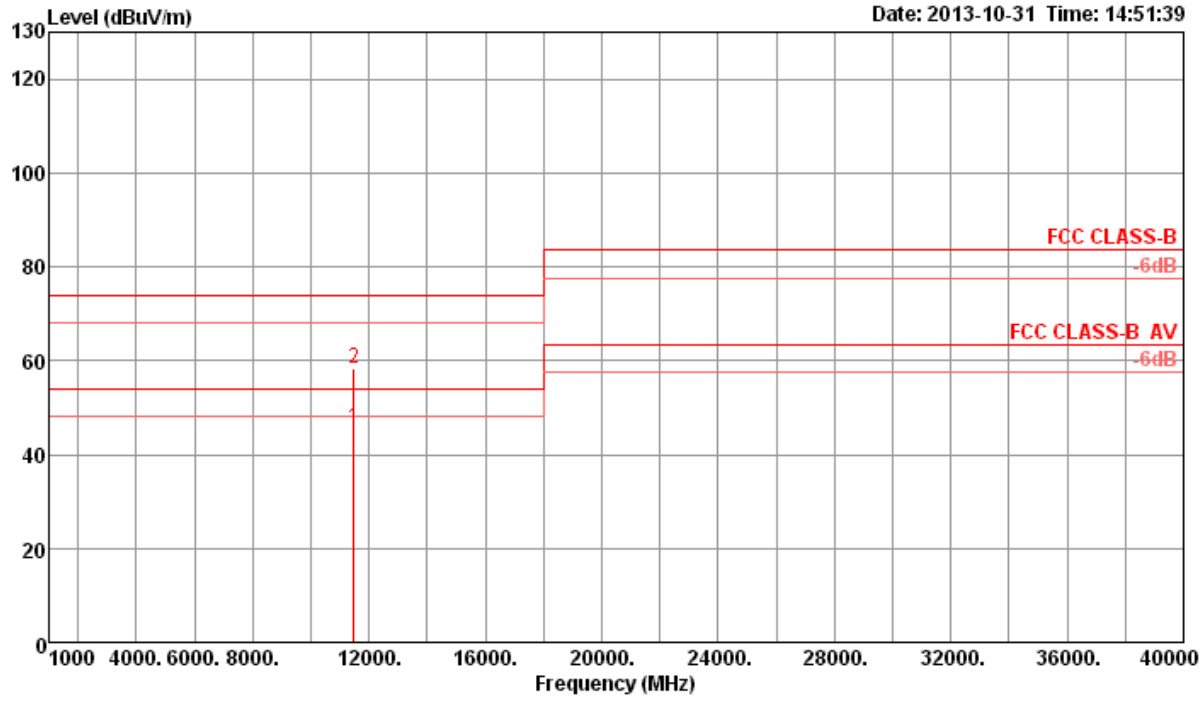
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

3.5.9 Results for Radiated Emissions (1GHz~10th Harmonic)

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

Mode	TX Chain	Test Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	Ant.1+2+3+4	149, 157, 161, 165	OFDM	BPSK	6
802.11n 20MHz	Ant.1+2+3+4	149, 157, 161, 165	OFDM	BPSK	MCS0
802.11n 40MHz	Ant.1+2+3+4	151, 159	OFDM	BPSK	MCS0

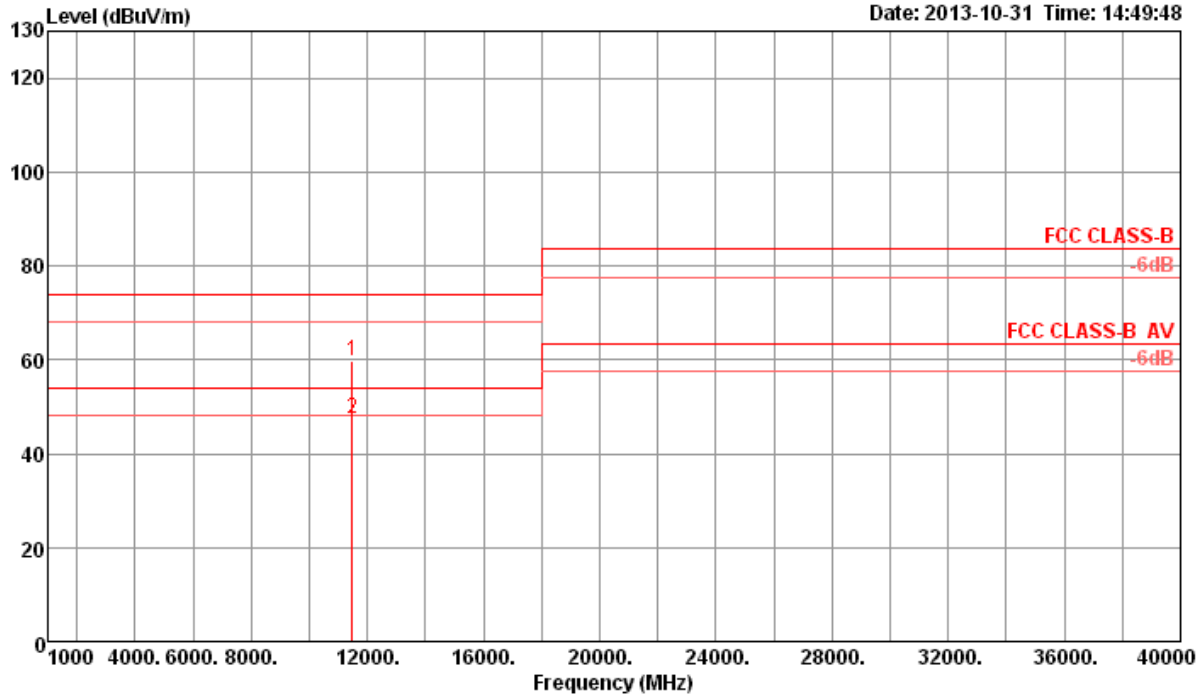
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11a 20MHz 6Mbps / CH149 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	H



	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	11490.00	45.59	54.00	-8.41	36.98	5.11	38.78	35.28	Average	100	130	HORIZONTAL
2	11490.48	58.25	74.00	-15.75	49.64	5.11	38.78	35.28	Peak	100	130	HORIZONTAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

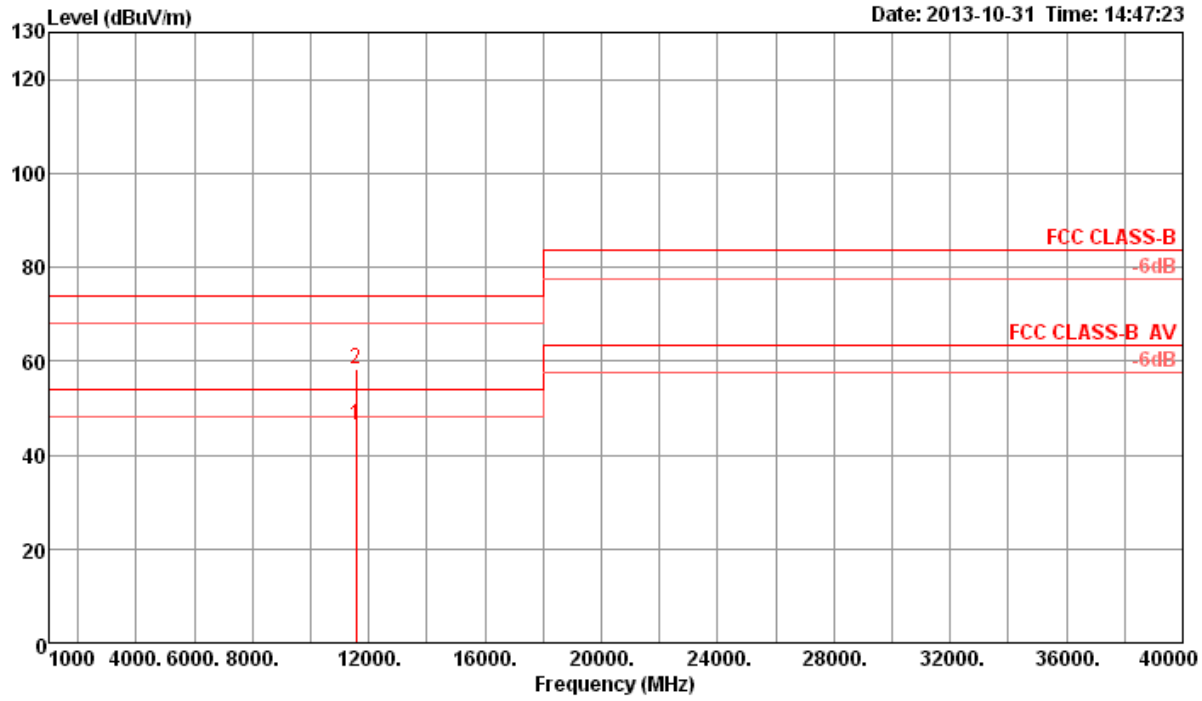
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11a 20MHz 6Mbps / CH149 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	V



	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	11491.60	59.78	74.00	-14.22	51.17	5.11	38.78	35.28	Peak	100	154	VERTICAL
2	11492.08	47.45	54.00	-6.55	38.84	5.11	38.78	35.28	Average	100	154	VERTICAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

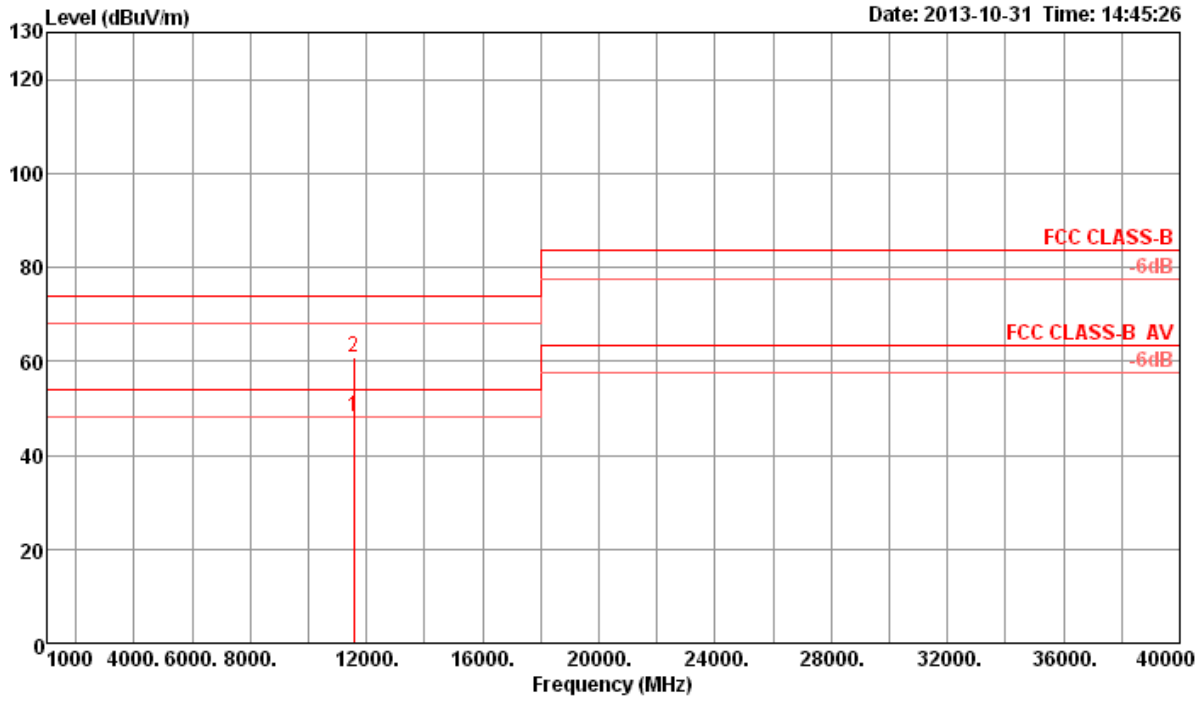
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11a 20MHz 6Mbps / CH157 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	H



	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	11569.84	46.52	54.00	-7.48	37.85	5.14	38.83	35.30	Average	100	130	HORIZONTAL
2	11570.48	58.31	74.00	-15.69	49.64	5.14	38.83	35.30	Peak	100	130	HORIZONTAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

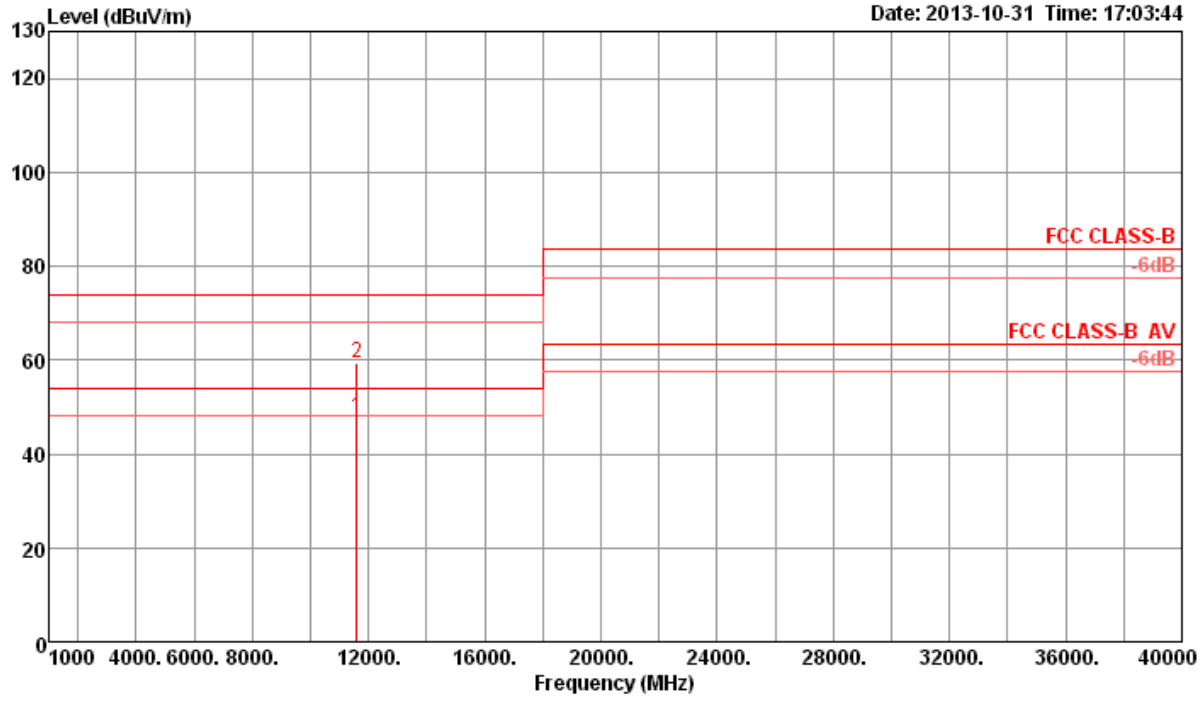
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11a 20MHz 6Mbps / CH157 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	V



	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	11563.43	48.18	54.00	-5.82	39.53	5.13	38.82	35.30	Average	100	167	VERTICAL
2	11563.59	60.87	74.00	-13.13	52.22	5.13	38.82	35.30	Peak	100	167	VERTICAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

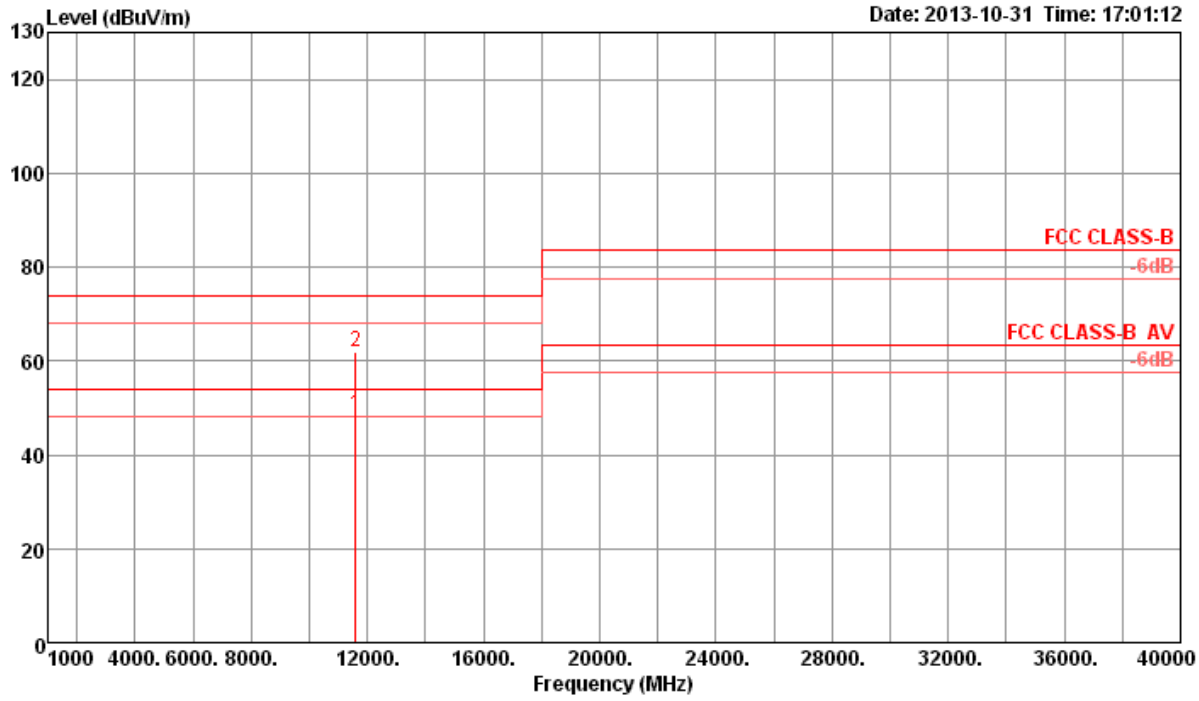
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11a 20MHz 6Mbps / CH161 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	H



	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	11610.00	47.82	54.00	-6.18	39.13	5.15	38.84	35.30	Average	100	128	HORIZONTAL
2	11610.60	59.46	74.00	-14.54	50.77	5.15	38.84	35.30	Peak	100	128	HORIZONTAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

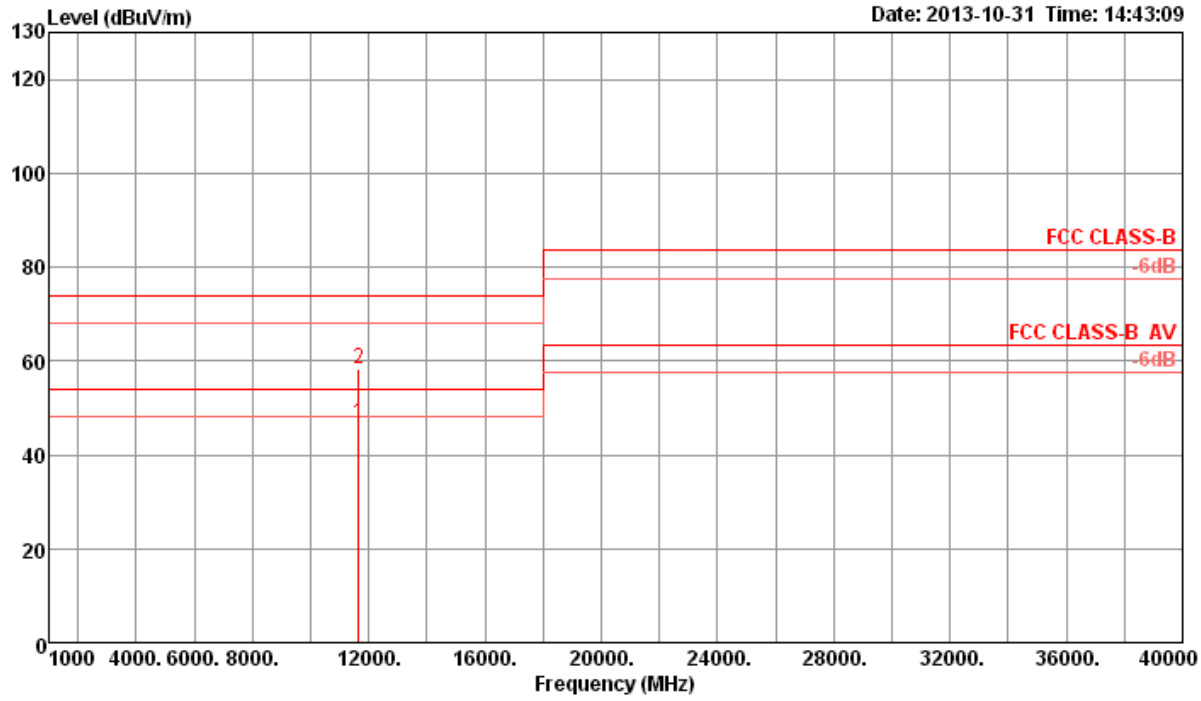
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11a 20MHz 6Mbps / CH161 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	V



	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	11603.40	48.65	54.00	-5.35	39.96	5.15	38.84	35.30	Average	100	166	VERTICAL
2	11604.20	61.77	74.00	-12.23	53.08	5.15	38.84	35.30	Peak	100	166	VERTICAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

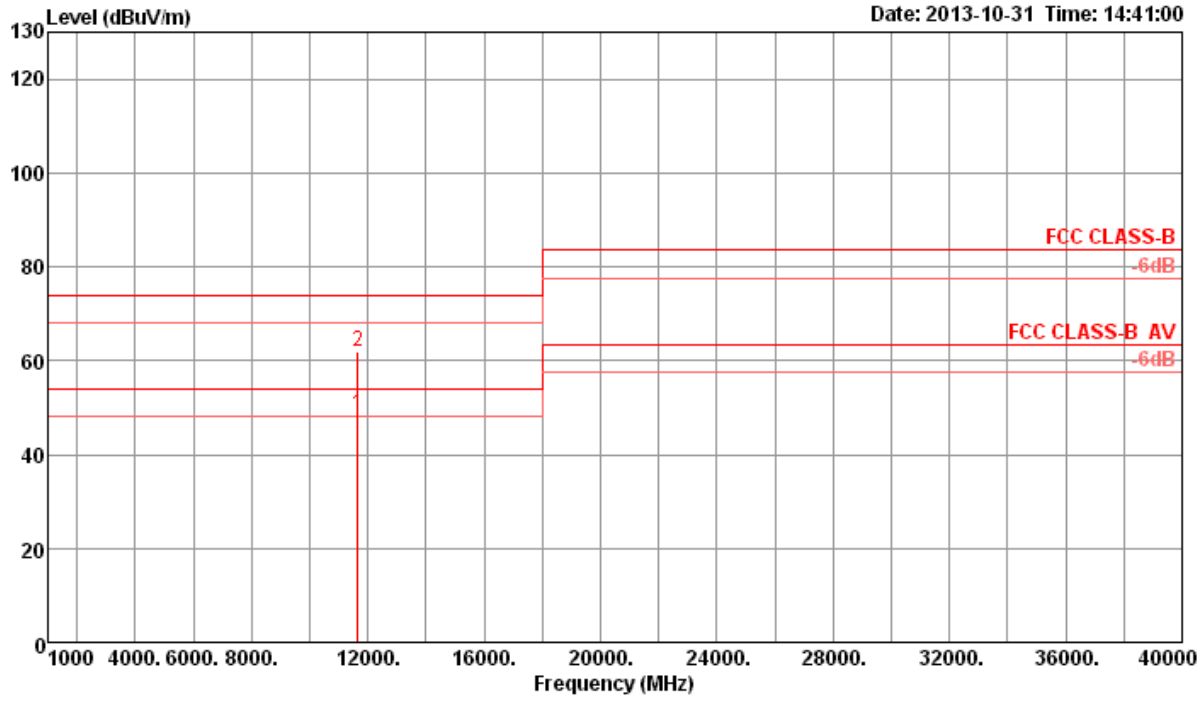
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11a 20MHz 6Mbps / CH165 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	H



	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	11649.92	46.78	54.00	-7.22	38.06	5.16	38.86	35.30	Average	100	135	HORIZONTAL
2	11650.48	58.20	74.00	-15.80	49.48	5.16	38.86	35.30	Peak	100	135	HORIZONTAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

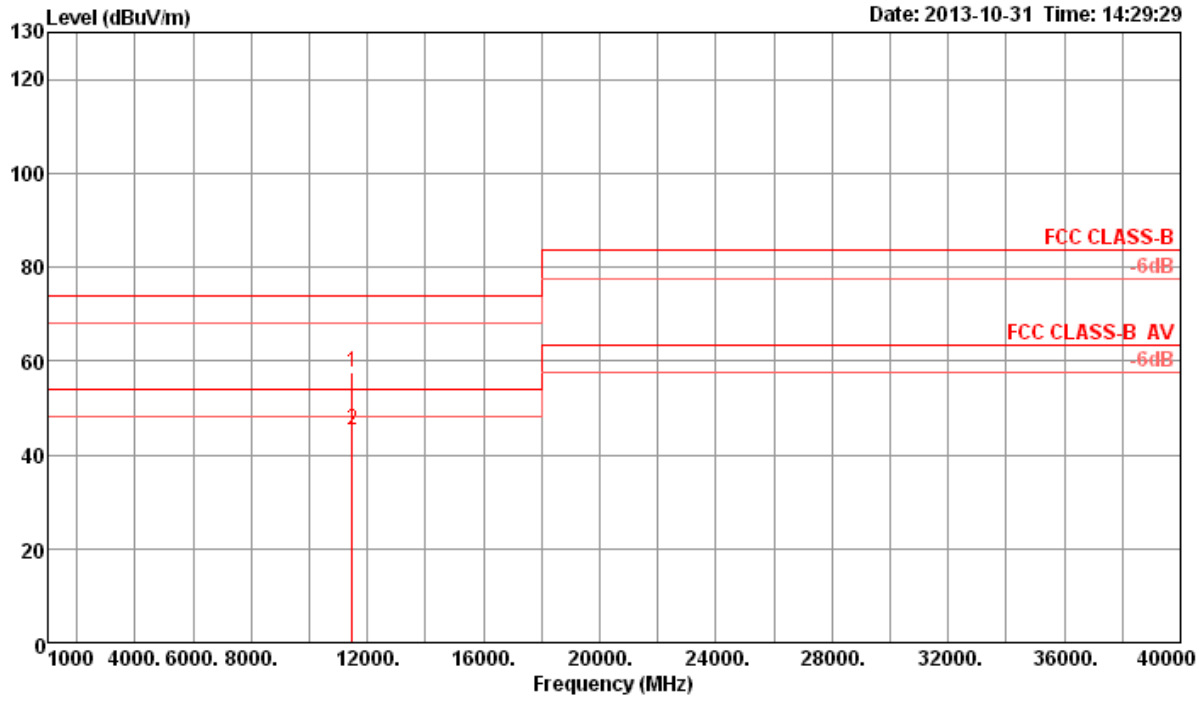
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11a 20MHz 6Mbps / CH165 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	V



	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	11643.43	48.60	54.00	-5.40	39.88	5.16	38.86	35.30	Average	100	167	VERTICAL
2	11644.31	61.89	74.00	-12.11	53.17	5.16	38.86	35.30	Peak	100	167	VERTICAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

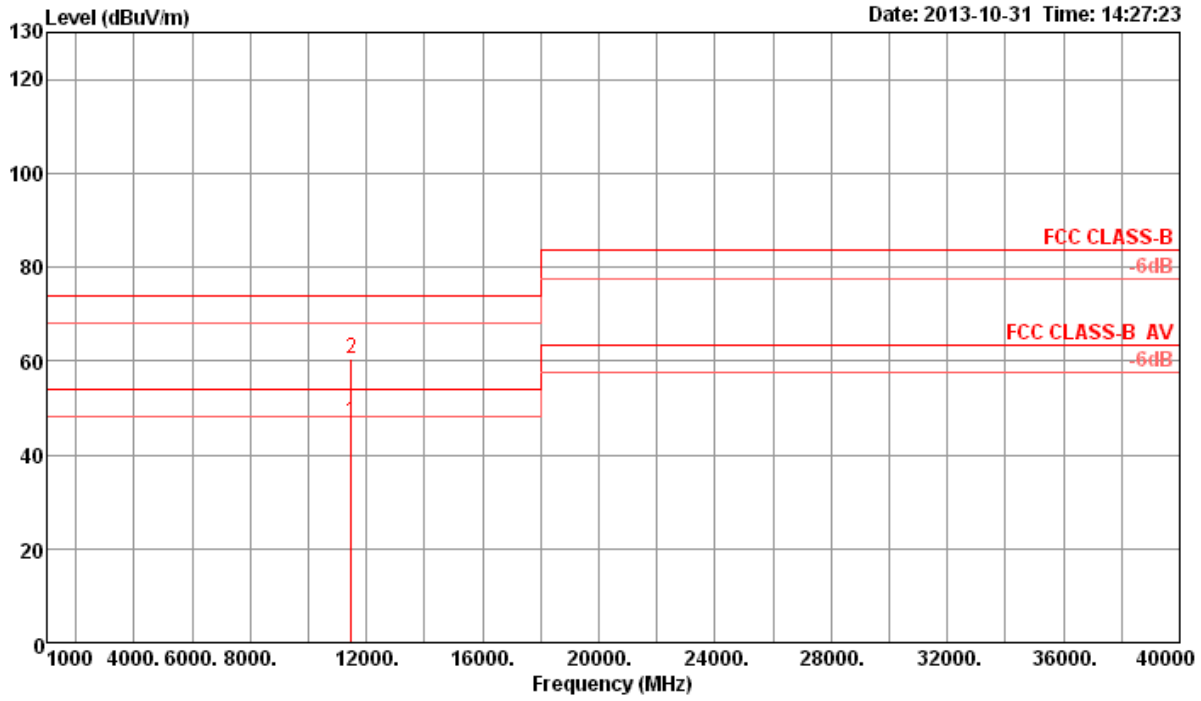
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11n 20MHz MCS0 / CH 149 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	H



	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	11489.04	57.64	74.00	-16.36	49.03	5.11	38.78	35.28	Peak	100	130	HORIZONTAL
2	11489.84	45.19	54.00	-8.81	36.58	5.11	38.78	35.28	Average	100	130	HORIZONTAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

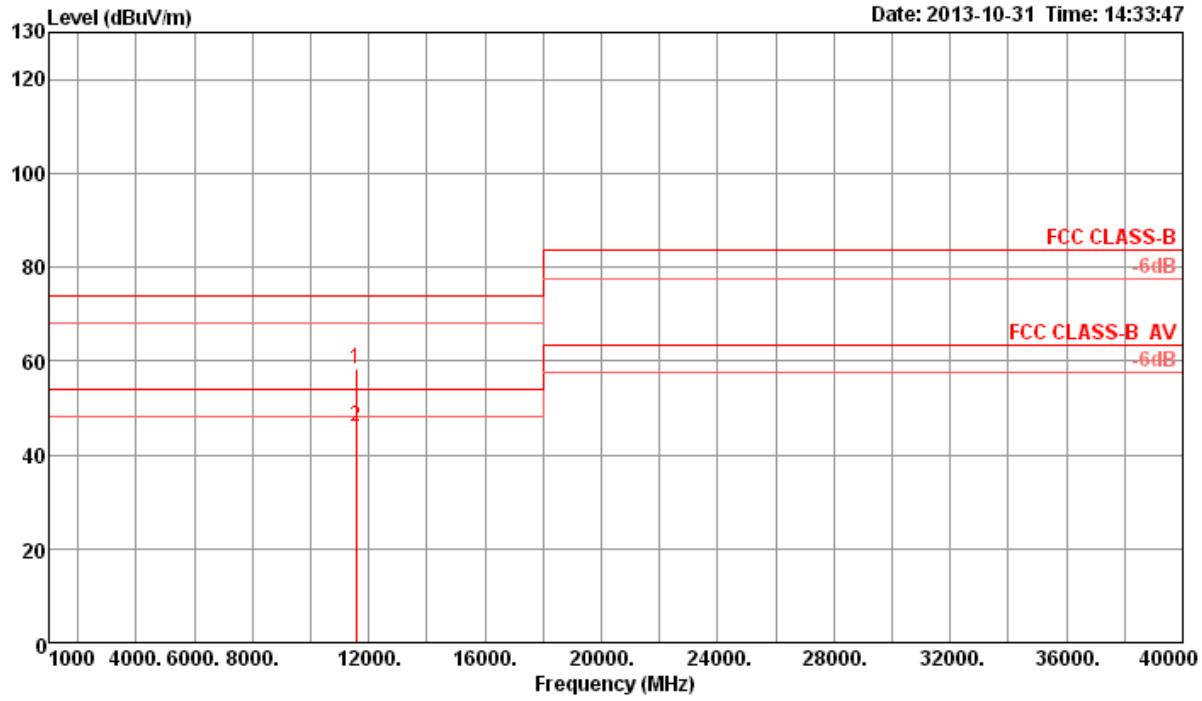
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11n 20MHz MCS0 / CH 149 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	V



	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	11492.64	47.07	54.00	-6.93	38.46	5.11	38.78	35.28	Average	106	151	VERTICAL
2	11492.72	60.29	74.00	-13.71	51.68	5.11	38.78	35.28	Peak	106	151	VERTICAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

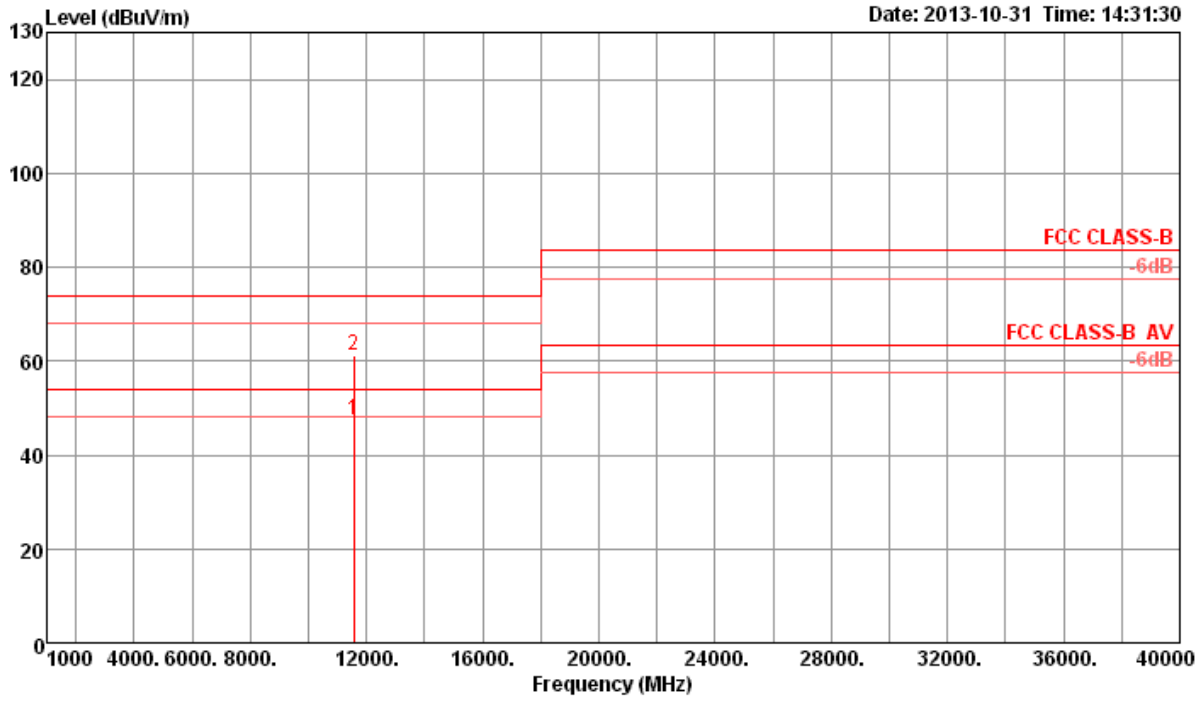
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11n 20MHz MCS0 / CH 157 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	H



	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	11569.68	58.21	74.00	-15.79	49.55	5.13	38.83	35.30	Peak	100	130	HORIZONTAL
2	11569.84	45.89	54.00	-8.11	37.22	5.14	38.83	35.30	Average	100	130	HORIZONTAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

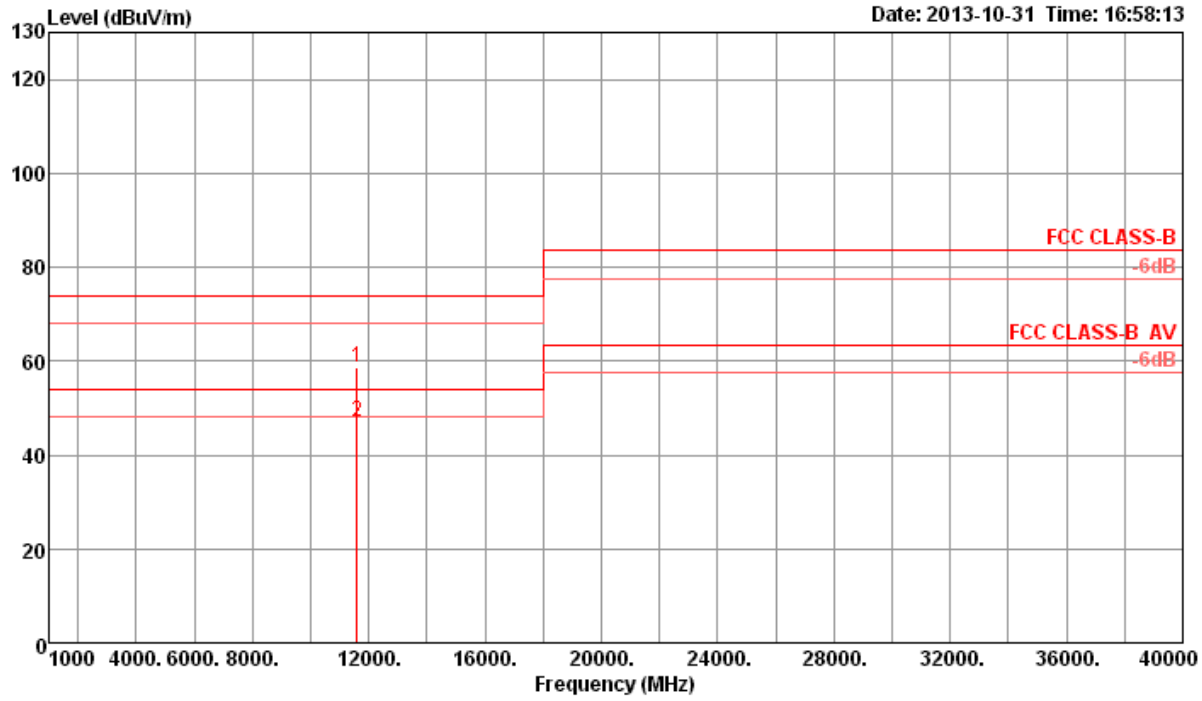
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11n 20MHz MCS0 / CH 157 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	V



	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	11562.95	47.39	54.00	-6.61	38.74	5.13	38.82	35.30	Average	100	165	VERTICAL
2	11563.27	61.23	74.00	-12.77	52.58	5.13	38.82	35.30	Peak	100	165	VERTICAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

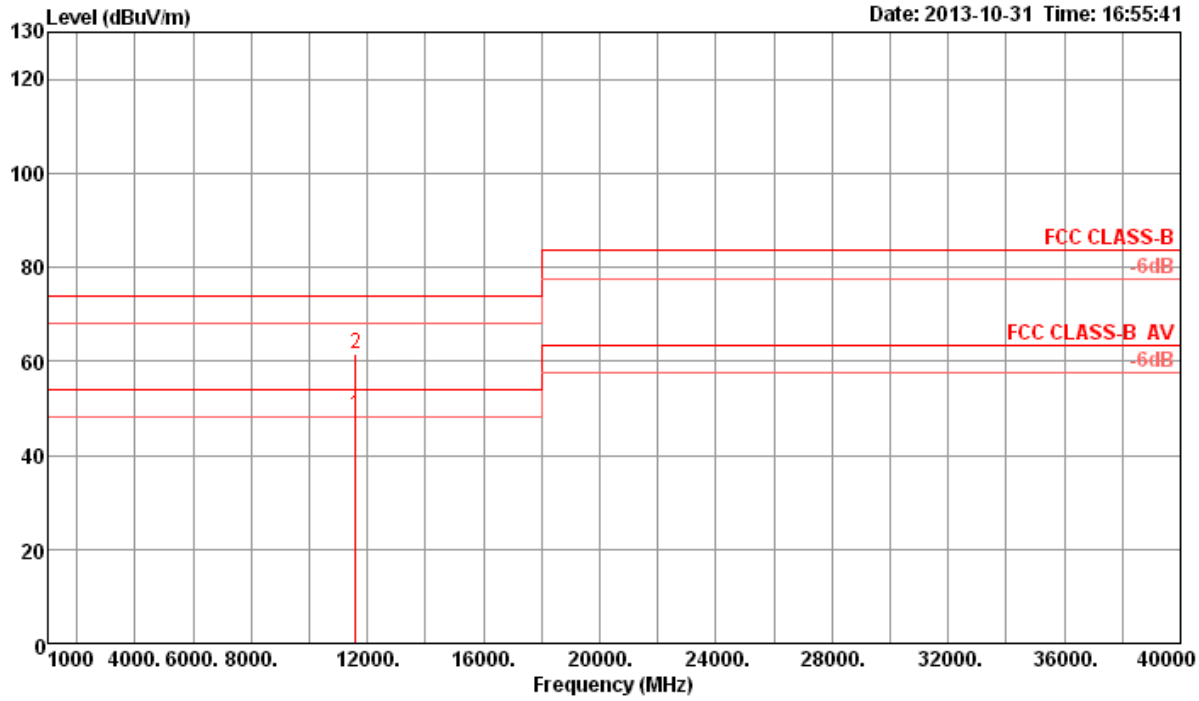
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11n 20MHz MCS0 / CH 161 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	H



	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	11609.90	58.53	74.00	-15.47	49.84	5.15	38.84	35.30	Peak	101	129	HORIZONTAL
2	11610.00	47.09	54.00	-6.91	38.40	5.15	38.84	35.30	Average	101	129	HORIZONTAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

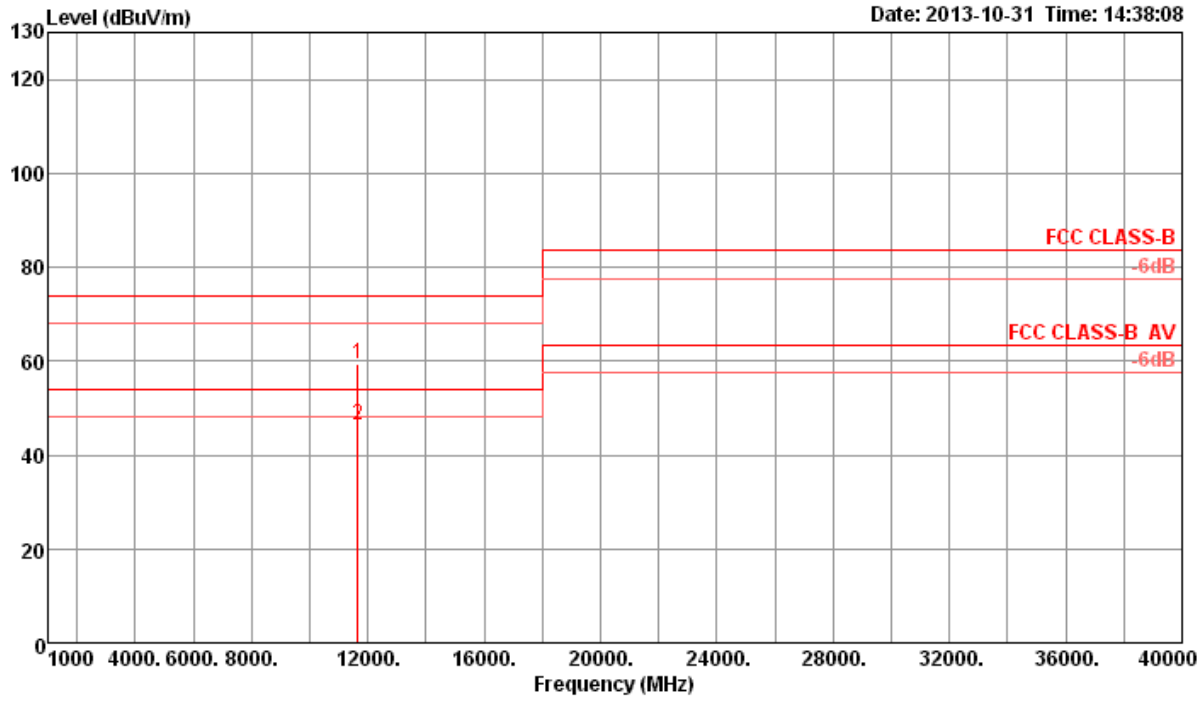
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11n 20MHz MCS0 / CH 161 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	V



	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	11603.10	48.52	54.00	-5.48	39.83	5.15	38.84	35.30	Average	100	163	VERTICAL
2	11603.60	61.45	74.00	-12.55	52.76	5.15	38.84	35.30	Peak	100	163	VERTICAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

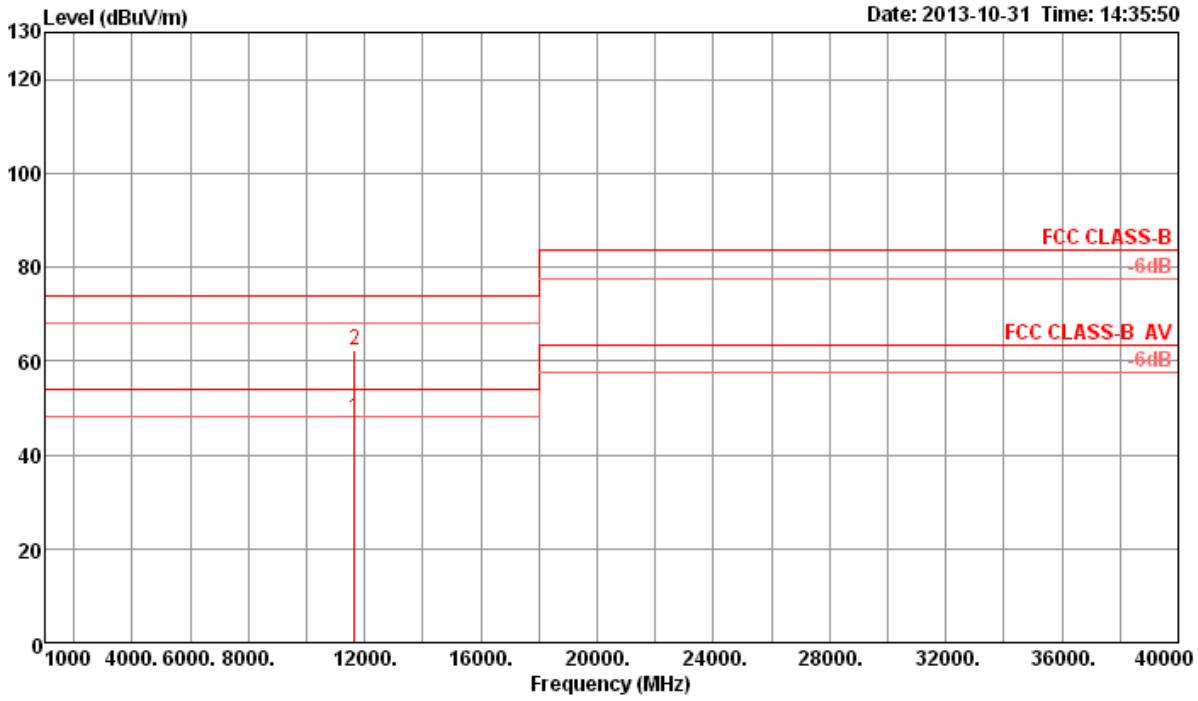
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11n 20MHz MCS0 / CH 165 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	H



	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	11648.00	59.52	74.00	-14.48	50.80	5.16	38.86	35.30	Peak	100	135	HORIZONTAL
2	11649.84	46.40	54.00	-7.60	37.68	5.16	38.86	35.30	Average	100	135	HORIZONTAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

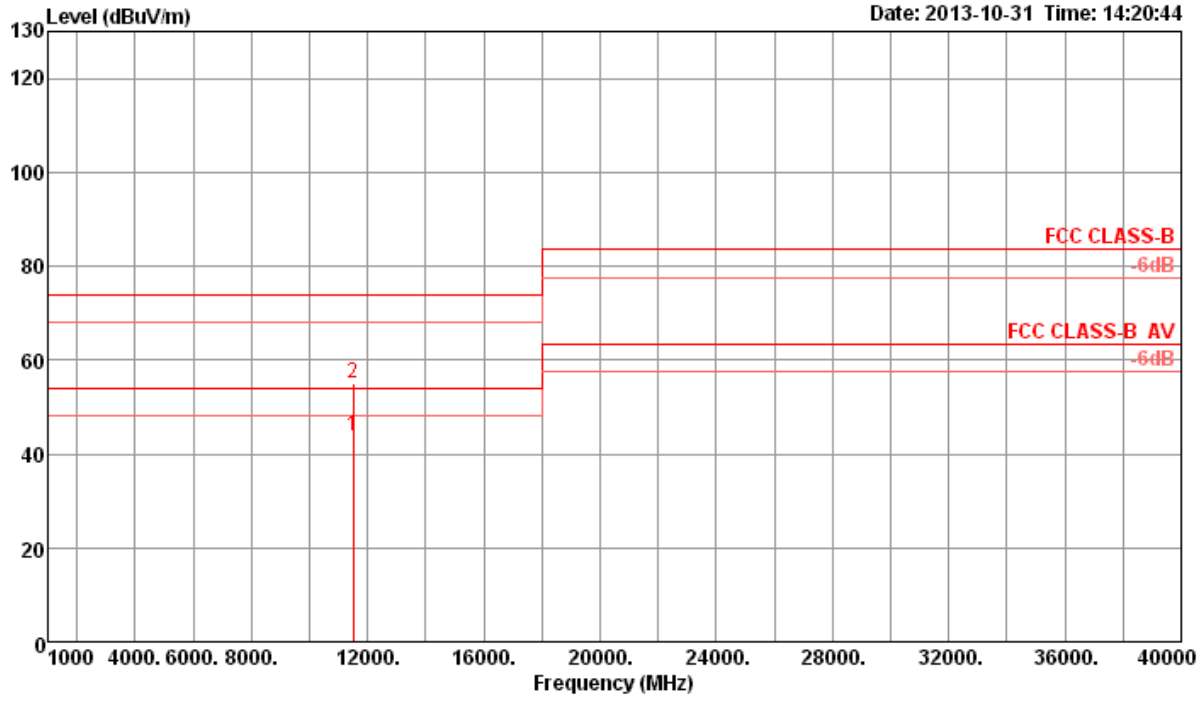
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11n 20MHz MCS0 / CH 165 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	V



	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	11642.47	47.87	54.00	-6.13	39.15	5.16	38.86	35.30	Average	100	168	VERTICAL
2	11643.27	62.23	74.00	-11.77	53.51	5.16	38.86	35.30	Peak	100	168	VERTICAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

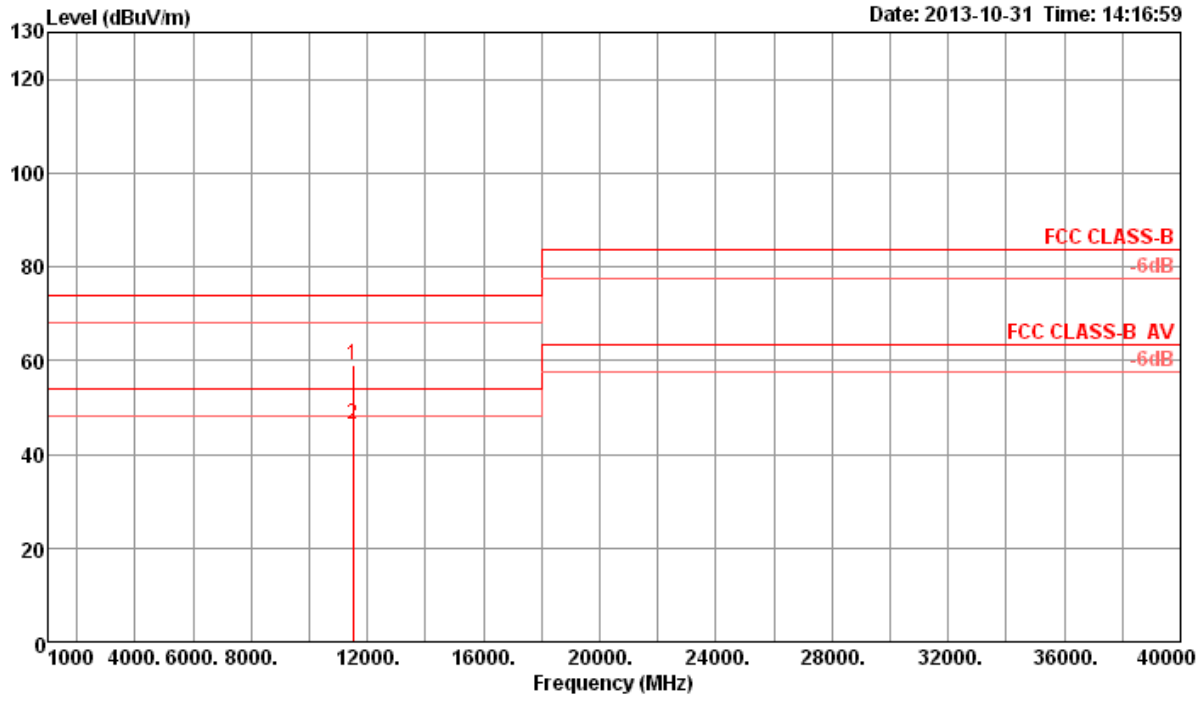
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11n 40MHz MCS0 / CH 151 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	H



	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	11509.84	43.82	54.00	-10.18	35.19	5.12	38.79	35.28	Average	99	127	HORIZONTAL
2	11510.32	54.90	74.00	-19.10	46.27	5.12	38.79	35.28	Peak	99	127	HORIZONTAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

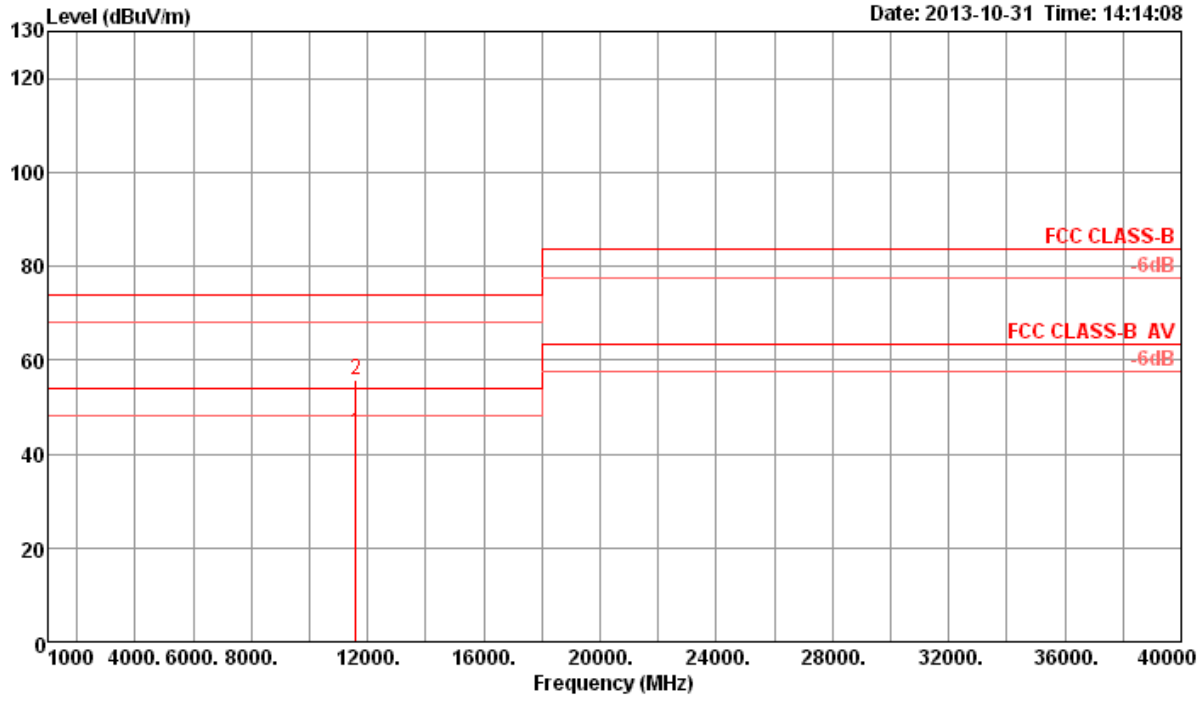
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11n 40MHz MCS0 / CH 151 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	V



	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	11509.79	59.08	74.00	-14.92	50.45	5.12	38.79	35.28	Peak	102	165	VERTICAL
2	11510.03	46.37	54.00	-7.63	37.74	5.12	38.79	35.28	Average	102	165	VERTICAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

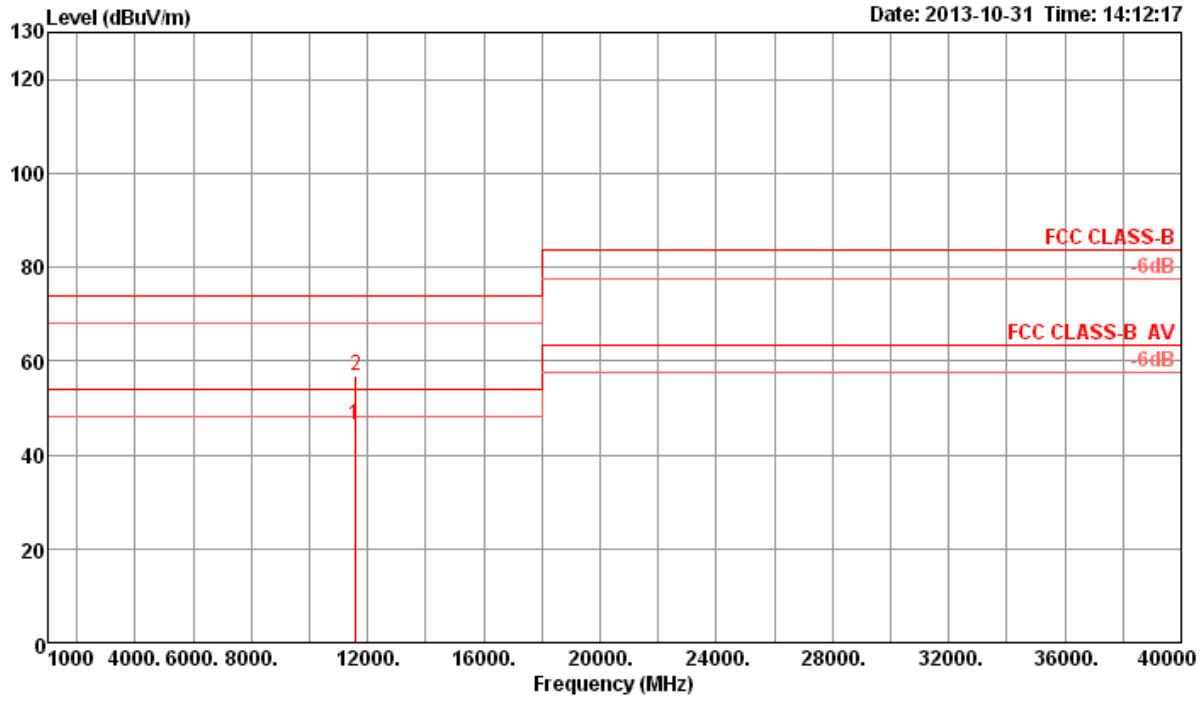
Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11n 40MHz MCS0 / CH 159 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	H



	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	11589.92	44.65	54.00	-9.35	35.98	5.14	38.83	35.30	Average	100	131	HORIZONTAL
2	11590.32	55.78	74.00	-18.22	47.11	5.14	38.83	35.30	Peak	100	131	HORIZONTAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Emission not in Restricted Bands (Above 1GHz)			
Operating Mode	IEEE 802.11n 40MHz MCS0 / CH 159 / Ant. 1 + 2 + 3 + 4		
Temperature	24℃	**Humidity**	59%
Test Engineer	Kenneth Huang	**Polarization**	V



	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	11581.99	46.27	54.00	-7.73	37.60	5.14	38.83	35.30	Average	100	171	VERTICAL
2	11583.35	56.92	74.00	-17.08	48.25	5.14	38.83	35.30	Peak	100	171	VERTICAL

Note 1:The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Note 2: Emission level (dBuV/m) = 20 log Emission level (uV/m).
Note 3: Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Note 4: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

3.6 Band Edge and Fundamental Emissions Measurement

3.6.1 Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. 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 (microvolt/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

3.6.2 Measuring Instruments and Setting

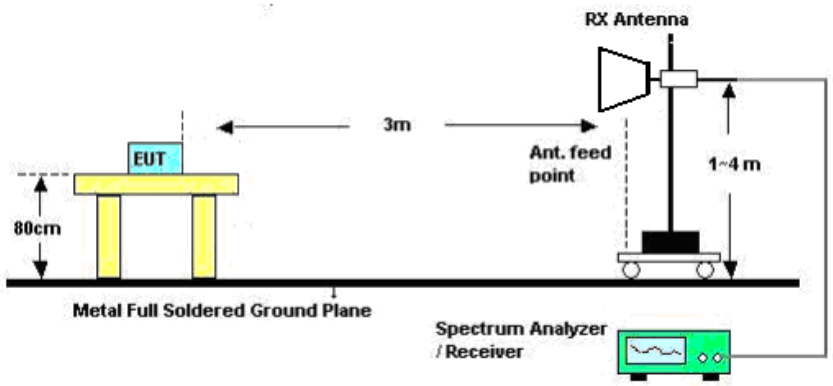
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Analyzer	Setting
Attenuation	Auto
Span Frequency	100 MHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 10Hz for Average
RBW / VBW (Emission in non-restricted band)	100 kHz / 300 kHz for Peak

3.6.3 Test Procedures

1. The test procedure is the same as section 3.5.3, only the freqeuncy range investigated is limited to 100MHz around bandedges.
2. In case the emission is fail due to the used RBW/VBW is too wide, marker-delta method of FCC Public Notice DA00-705 will be followed.

3.6.4 Test Setup Layout



3.6.5 Test Deviation

There are no deviations with the original standard.

3.6.6 EUT Operation during Test

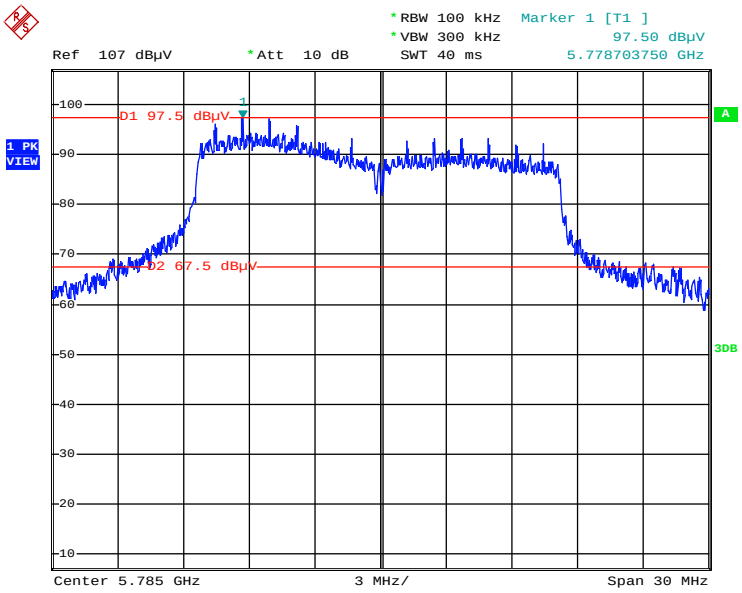
The EUT was programmed to be in continuously transmitting mode.

3.6.7 Test Result of Band Edge and Fundamental Emissions

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

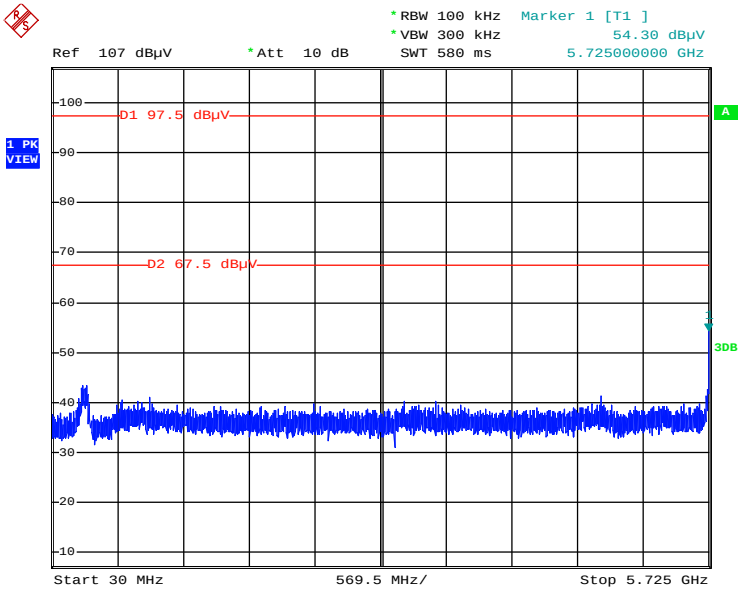
Mode	TX Chain	Test Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	Ant.1+2+3+4	149, 157, 161, 165	OFDM	BPSK	6
802.11n 20MHz	Ant.1+2+3+4	149, 157, 161, 165	OFDM	BPSK	MCS0
802.11n 40MHz	Ant.1+2+3+4	151, 159	OFDM	BPSK	MCS0

Low Band Edge Plot on Configuration IEEE 802.11a / Reference Level / Ant. 1 + 2 + 3 + 4



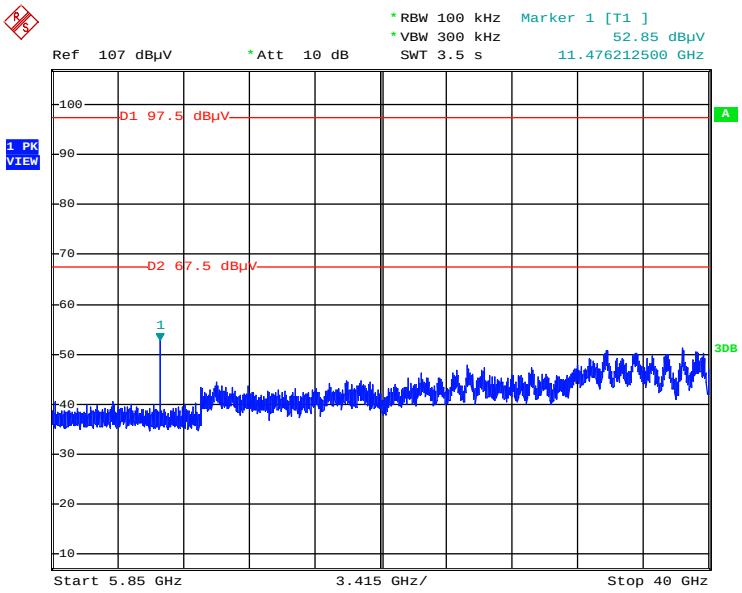
Date: 31.OCT.2013 18:40:17

Low Band Edge Plot on Configuration IEEE 802.11a / 5745 MHz / Ant. 1 + 2 + 3 + 4



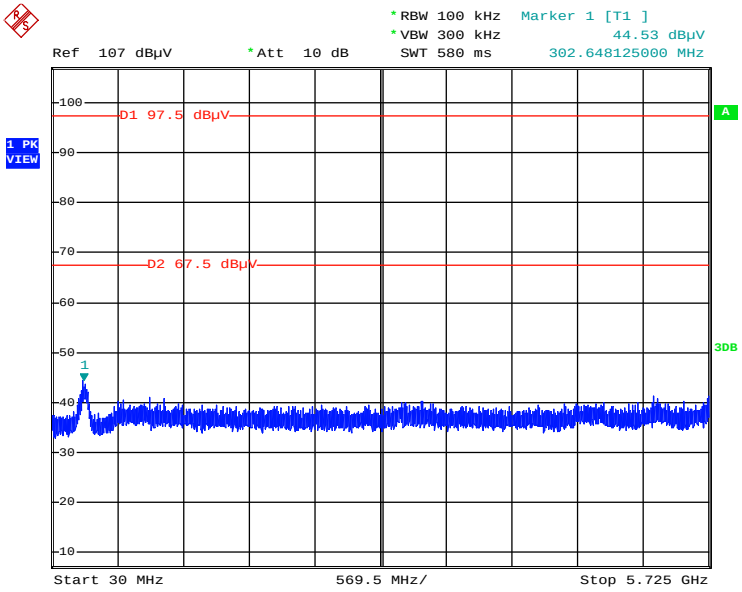
Date: 31.OCT.2013 18:41:37

Low Band Edge Plot on Configuration IEEE 802.11a / 5745 MHz / Ant. 1 + 2 + 3 + 4



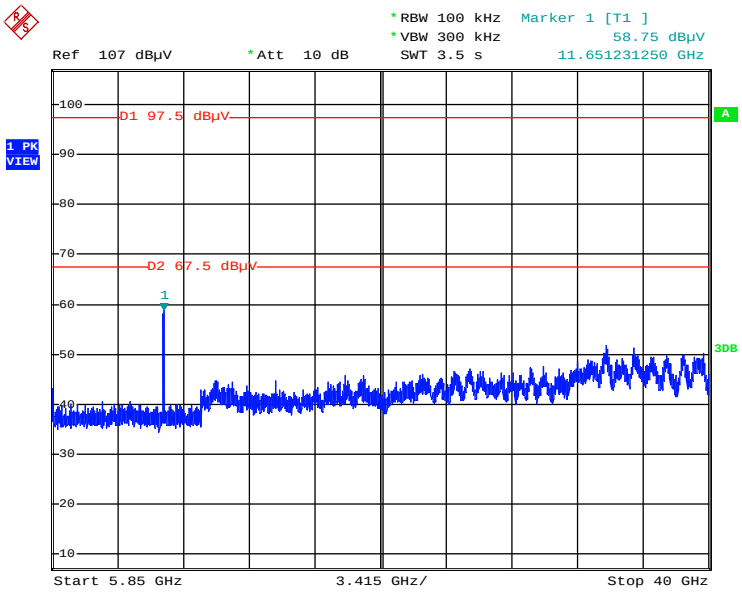
Date: 31.OCT.2013 18:42:28

Low Band Edge Plot on Configuration IEEE 802.11a / 5825 MHz / Ant. 1 + 2 + 3 + 4



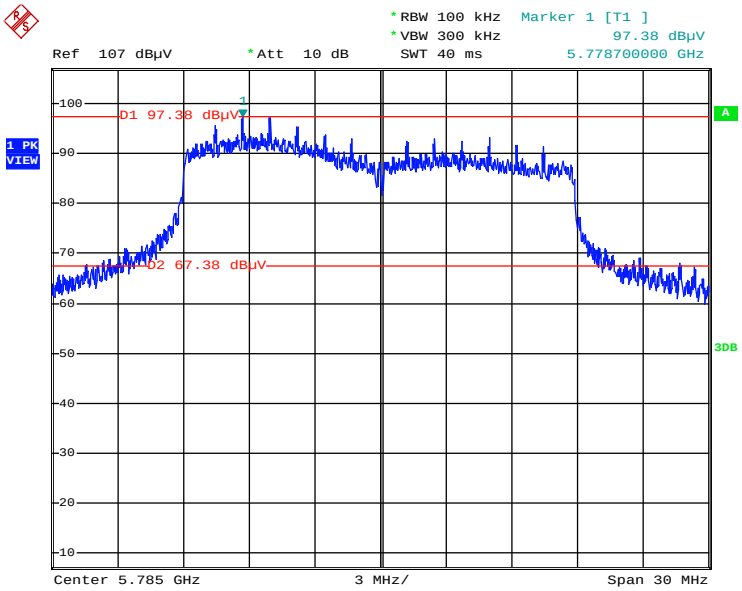
Date: 31.OCT.2013 18:44:06

Low Band Edge Plot on Configuration IEEE 802.11a / 5825 MHz / Ant. 1 + 2 + 3 + 4



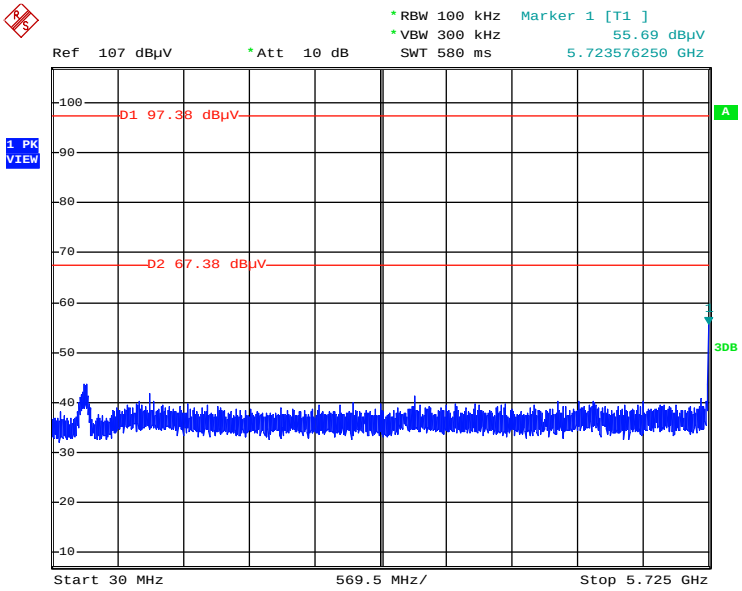
Date: 31.OCT.2013 18:44:59

Low Band Edge Plot on Configuration IEEE 802.11n 20MHz MCS0 / Reference Level / Ant. 1 + 2 + 3 + 4



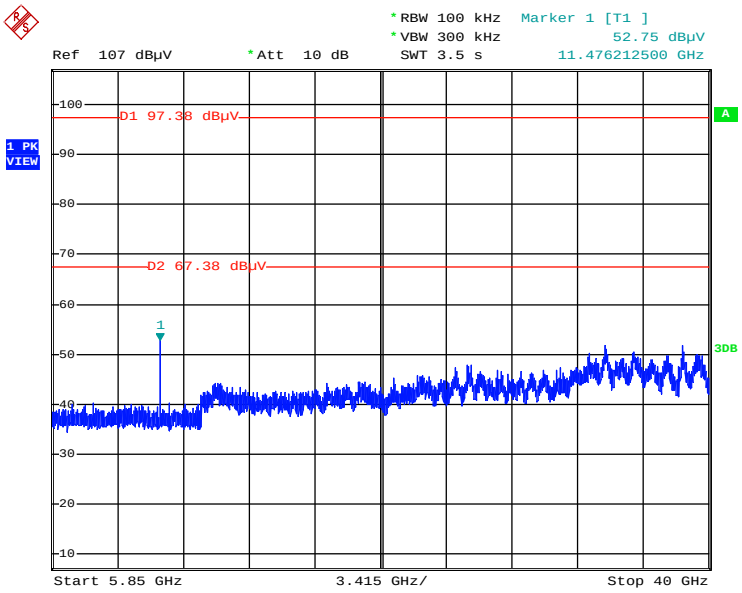
Date: 31.OCT.2013 18:32:37

Low Band Edge Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5745 MHz / Ant. 1 + 2 + 3 + 4



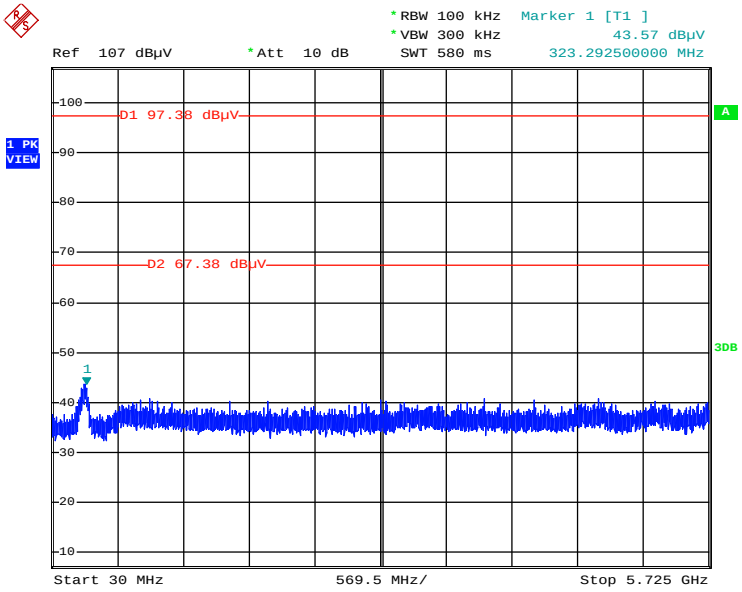
Date: 31.OCT.2013 18:34:22

Low Band Edge Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5745 MHz / Ant. 1 + 2 + 3 + 4



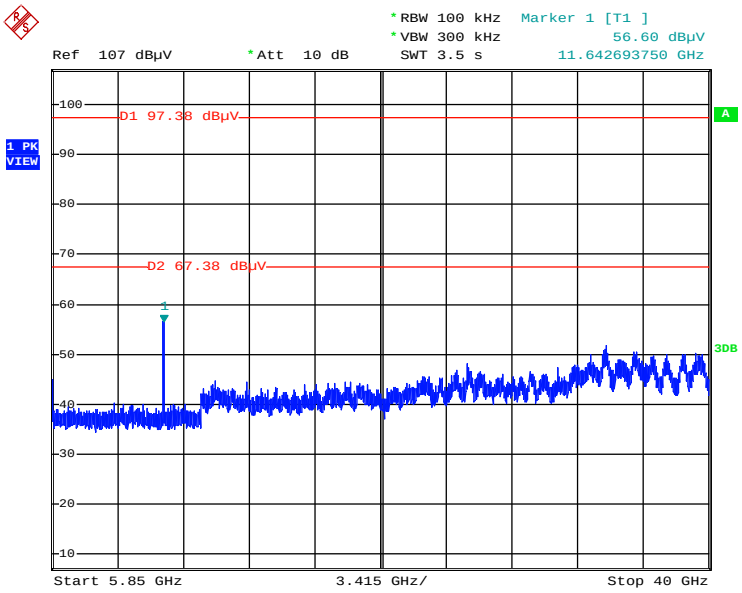
Date: 31.OCT.2013 18:35:20

Low Band Edge Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5825 MHz / Ant. 1 + 2 + 3 + 4



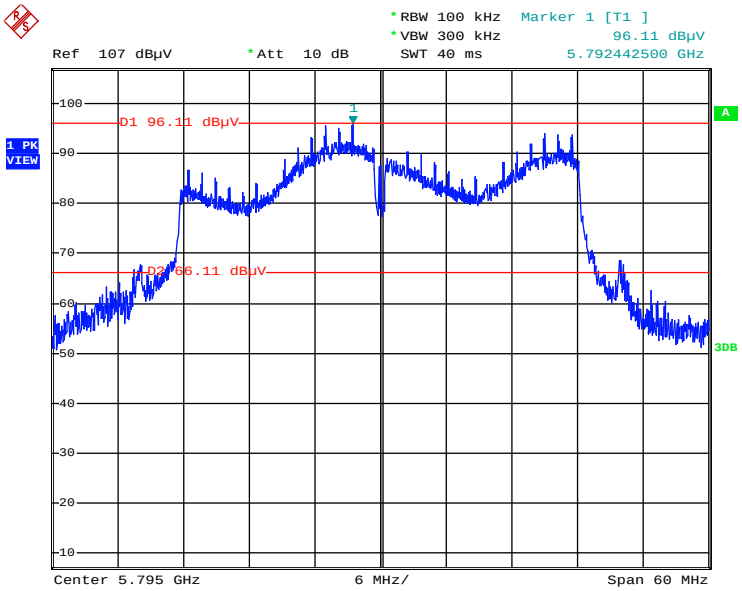
Date: 31.OCT.2013 18:36:31

Low Band Edge Plot on Configuration IEEE 802.11n 20MHz MCS0 / 5825 MHz / Ant. 1 + 2 + 3 + 4



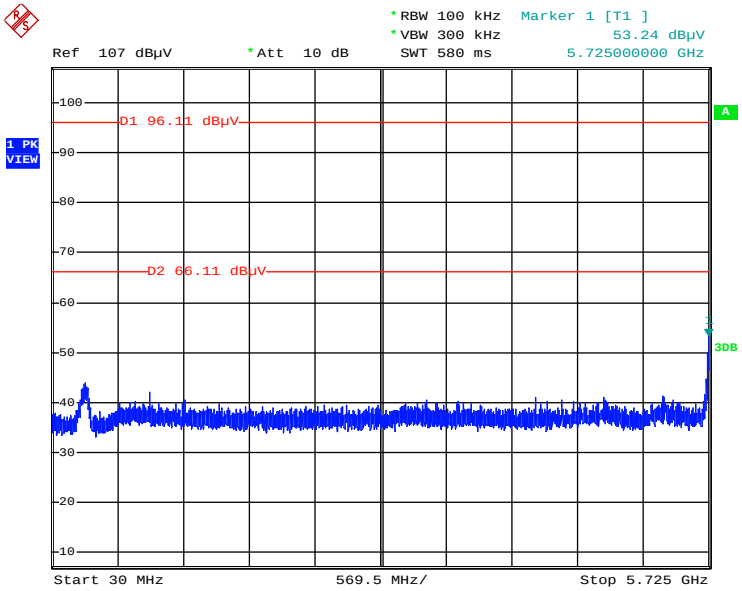
Date: 31.OCT.2013 18:37:31

Low Band Edge Plot on Configuration IEEE 802.11n 40MHz MCS0 / Reference Level / Ant. 1 + 2 + 3 + 4



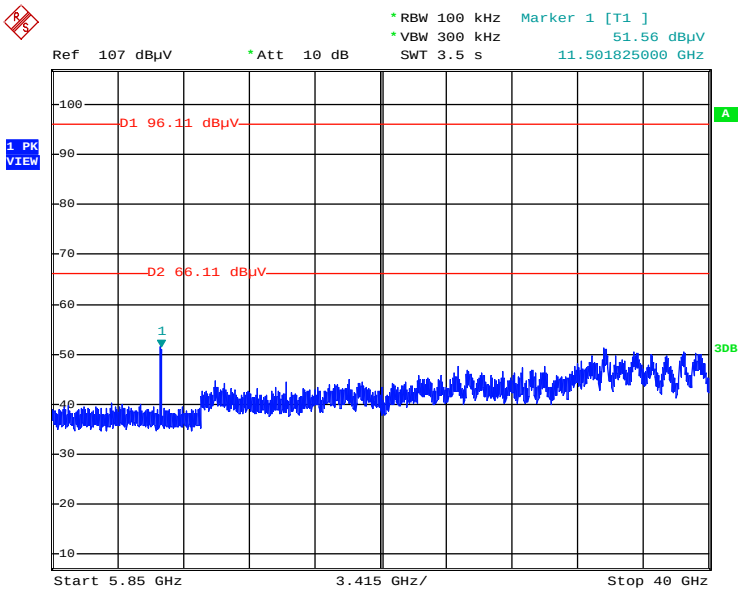
Date: 31.OCT.2013 18:21:42

Low Band Edge Plot on Configuration IEEE 802.11n 40MHz MCS0 / 5755 MHz / Ant. 1 + 2 + 3 + 4



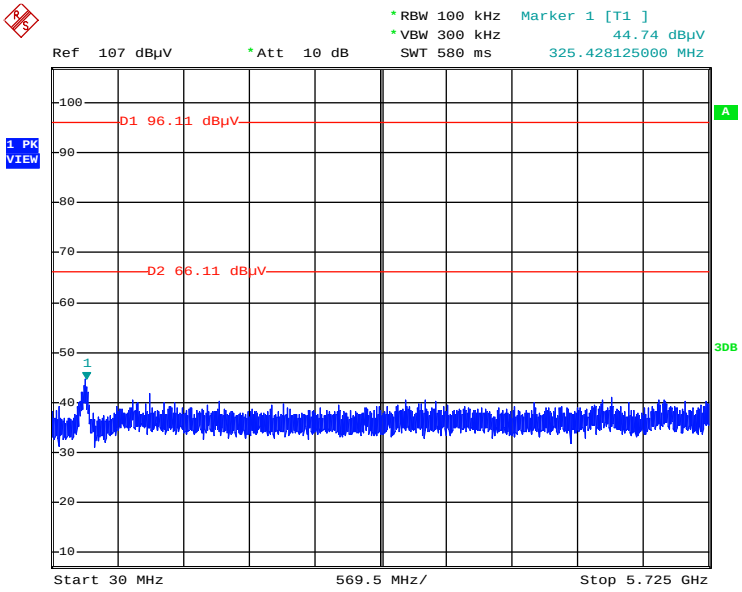
Date: 31.OCT.2013 18:26:31

Low Band Edge Plot on Configuration IEEE 802.11n 40MHz MCS0 / 5755 MHz / Ant. 1 + 2 + 3 + 4



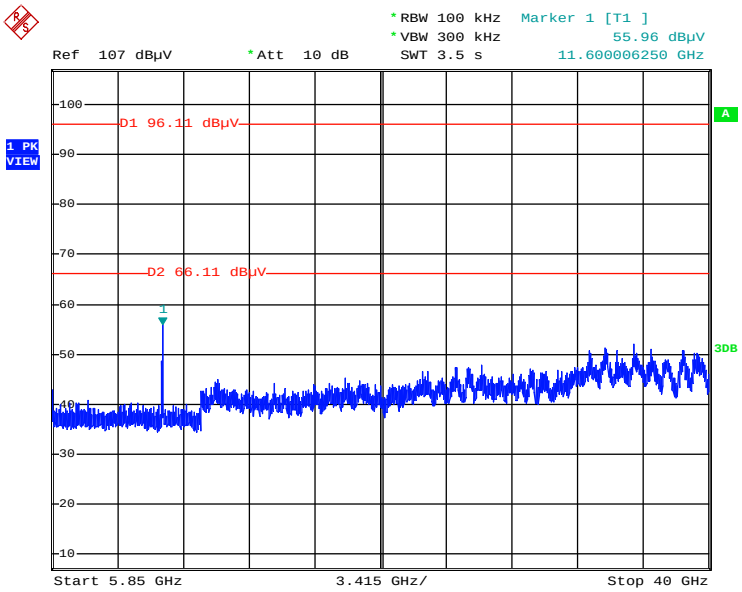
Date: 31.OCT.2013 18:27:31

Low Band Edge Plot on Configuration IEEE 802.11n 40MHz MCS0 / 5795 MHz / Ant. 1 + 2 + 3 + 4



Date: 31.OCT.2013 18:23:32

Low Band Edge Plot on Configuration IEEE 802.11n 40MHz MCS0 / 5795 MHz / Ant. 1 + 2 + 3 + 4



Date: 31.OCT.2013 18:24:38

3.7 Antenna Requirements

3.7.1 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.

3.7.2 Antenna Connector Construction

Please refer to section 2.3 in this test report; antenna connector complied with the requirements.

4 LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100355	9 kHz ~ 2.75 GHz	Apr. 12, 2013	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150 kHz~100 MHz	Nov. 26, 2012	Conduction (CO01-CB)
Arifical Mains Network	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Nov. 11, 2013	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150 kHz ~ 30 MHz	Dec. 04, 2012	Conduction (CO01-CB)
Software	Audix	E3	5.410e	-	-	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Apr. 16, 2013	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Nov. 05, 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. 12, 2013	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 23, 2012	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Oct. 23, 2013	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100056	9kHz~40GHz	Nov. 16, 2012	Radiation (03CH01-CB)
EMI Test Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8GHz	Nov. 26, 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	Nov. 29, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Sep. 18, 2013	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Sep. 18, 2013	Conducted (TH01-CB)

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

*Calibration Interval of instruments listed above is two year.

N.C.R. means Non-Calibration required.

5 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

6 MEASUREMENT UNCERTAINTY

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	0.026	dB	normal(k=2)	0.013
Cable loss	0.002	dB	normal(k=2)	0.001
AMN/LISN specification	1.200	dB	normal(k=2)	0.600
Mismatch Receiver VSWR 1= AMN/LISN VSWR 2=	-0.080	dB	U-shaped	0.060
Combined standard uncertainty Uc(y)				1.2
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				2.4

Uncertainty of Radiated Emission Measurement (30MHz ~ 1,000MHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	±0.173	dB	K=1	0.086
Cable loss	±0.174	dB	K=2	0.087
Antenna gain	±0.169	dB	K=2	0.084
Site imperfection	±0.433	dB	Triangular	0.214
Pre-amplifier gain	±0.366	dB	K=2	0.183
Transmitter antenna	±1.200	dB	Rectangular	0.600
Signal generator	±0.461	dB	Rectangular	0.231
Mismatch	±0.080	dB	U-shape	0.040
Spectrum analyzer	±0.500	dB	Rectangular	0.250
Combined standard uncertainty Uc(y)				1.778
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				3.555

Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	±0.191	dB	K=1	0.095
Cable loss	±0.169	dB	K=2	0.084
Antenna gain	±0.191	dB	K=2	0.096
Site imperfection	±0.582	dB	Triangular	0.291
Pre-amplifier gain	±0.304	dB	K=2	0.152
Transmitter antenna	±1.200	dB	Rectangular	0.600
Signal generator	±0.461	dB	Rectangular	0.231
Mismatch	±0.080	dB	U-shape	0.040
Spectrum analyzer	±0.500	dB	Rectangular	0.250
Combined standard uncertainty Uc(y)				1.839
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				3.678

Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	±0.186	dB	K=1	0.093
Cable loss	±0.167	dB	K=2	0.083
Antenna gain	±0.190	dB	K=2	0.095
Site imperfection	±0.488	dB	Triangular	0.244
Pre-amplifier gain	±0.269	dB	K=2	0.134
Transmitter antenna	±1.200	dB	Rectangular	0.600
Signal generator	±0.461	dB	Rectangular	0.231
Mismatch	±0.080	dB	U-shape	0.040
Spectrum analyzer	±0.500	dB	Rectangular	0.250
Combined standard uncertainty Uc(y)				1.771
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				3.541

Uncertainty of Conducted Emission Measurement

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Cable loss	±0.038	dB	K=2	0.019
Attenuator	±0.047	dB	K=2	0.024
Power Meter specification	±0.300	dB	Triangular	0.150
Power Sensor specification	±0.300	dB	Rectangular	0.150
Signal generator	±0.461	dB	Rectangular	0.231
Mismatch	±0.080	dB	U-shape	0.040
Spectrum analyzer	±0.500	dB	Rectangular	0.250
Combined standard uncertainty Uc(y)				0.863
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				1.726