



CE Radio Test Report

APPLICANT : Texas Instruments Incorporated
EQUIPMENT : WiFi and Bluetooth Module
BRAND NAME : Texas Instruments
MODEL NAME : WL18MODGI
MARKETING NAME : WL18x7MOD WiLink™ 8 Dual-Band Industrial Module –Wi-Fi®, Bluetooth®, and Bluetooth Low Energy (LE)
STANDARD : ETSI EN 301 893 V2.1.1 (2017-05)
TEST DATE(S) : Jun. 06, 2017

The measurements shown in this partial report were made in accordance with the procedures given in ETSI EN 301 893 v2.1.1 (2017-05).

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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Report Version : Rev. 01
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APPENDIX A. ORIGINAL REPORT



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
ER741330B	Rev. 01	Initial issue of report	Jun. 15, 2017



SUMMARY OF TEST RESULT

CLAUSE (EN 301 893)	TEST PARAMETER	PASS/FAIL	REMARK
Transmitter Parameters			
4.2.1	Centre Frequencies	Not Required	-
4.2.2	Channel Bandwidth	Not Required	-
4.2.3	RF Output Power, Transmit Power Control (TPC)	Not Required	-
4.2.3	Power Density	Not Required	-
4.2.4	Transmitter Spurious Emissions	Not Required	-
4.2.6	Dynamic Frequency Selection (DFS)	Not Required	-
4.2.7	Adaptivity	Not Required	compliant to clause 4.8 of harmonized standard EN 301 893 v1.8.1
Receiver Parameters			
4.2.5	Receiver Spurious Emissions	Not Required	-
4.2.8	Receiver Blocking	PASS	-



1. General Description

1.1 Applicant

Texas Instruments Incorporated
12500 TI BLVD., Dallas Texas, 75243

1.2 Manufacturer

Texas Instruments Incorporated
12500 TI BLVD., Dallas Texas, 75243

1.3 Product Feature of Equipment Under Test

Bluetooth, WLAN 802.11 b/g/n, 802.11 a/n

Antenna information					
	Brand	Antenna Type	Model	2.4GHz ~2.5GHz Gain	4.9GHz ~5.8GHz Gain
1	Ethertronics	PCB	100423	-0.6dBi	4.5dBi
2	LSR	Rubber Whip / Dipole	001-0012	2dBi	2dBi
3			080-0013	2dBi	2dBi
4			080-0014	2dBi	2dBi
5		PIFA	001-0016	2.5dBi	3dBi
6			001-0021	2.5dBi	3dBi
7	Laird	PCB	CAF94504	2dBi	4dBi
8			CAF94505	2dBi	4dBi
9	Pulse	CHIP	W3006	3.2dBi	4.2dBi
10	TDK	CHIP	ANT016008	2.5dBi	3.96dBi

Remark:

1. This is a variant report by updating test standards to RED. Since the test result is not affected by the changes, all the test cases were performed on original report which can be referred to Sporton Report Number ER4O0971C as appendix A.
2. The EUT used a dual band CHIP antenna (Brand: Pulse)

1.4 Modification of EUT

No modifications are made to the EUT during all test items.



1.5 Testing Facility

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No. : DFS02-HY

1.6 Applied Standards

According to the specifications of the manufacturer, the EUT must complies with the requirements of **ETSI EN 301 893 v2.1.1 (2017-05)**.

Note: All test items were verified and recorded according to the standards and without any deviation during the test.



2. Test Configuration of Equipment under Test

2.1 Test Channel

Test	Clause	Test channels		
		Lower sub-band (5 150 MHz to 5 350 MHz)		Higher sub-band 5 470 MHz to 5 725 MHz
		5 150 MHz to 5 250 MHz	5 250 MHz to 5 350 MHz	
Centre frequencies	5.4.2	C7 (see note 1)		C8 (see note 1)
Occupied Channel Bandwidth	5.4.3	C7		C8
Power, power density	5.4.4	C1	C2	C3, C4
Transmitter unwanted emissions outside the 5 GHz RLAN bands	5.4.5	C7 (see note 1)		C8 (see note 1)
Transmitter unwanted emissions within the 5 GHz RLAN bands	5.4.6	C1	C2	C3, C4
Receiver spurious emissions	5.4.7	C7 (see note 1)		C8 (see note 1)
Transmit Power Control (TPC)	5.4.4	n.a. (see note 2)	C2 (see note 1)	C3, C4 (see note 1)
Dynamic Frequency Selection (DFS)	5.4.8	n.a. (see note 2)	C5	C6 (see note 3)
Adaptivity	5.4.9	C9		
Receiver Blocking	5.4.10	C7		C8
<p>C1, C3: The lowest declared channel for every declared <i>Nominal Channel Bandwidth</i> within this band. For the power density testing, it is sufficient to only perform this test using the lowest <i>Nominal Channel Bandwidth</i>.</p> <p>C2, C4: The highest declared channel for every declared <i>Nominal Channel Bandwidth</i> within this band. For the power density testing, it is sufficient to only perform this test using the lowest <i>Nominal Channel Bandwidth</i>.</p> <p>C5, C6: One channel out of the declared channels for this frequency range. If more than one <i>Nominal Channel Bandwidth</i> has been declared for this sub-band, testing shall be performed using the lowest and highest <i>Nominal Channel Bandwidth</i>.</p> <p>C7, C8: One channel out of the declared channels for this sub-band. For <i>Occupied Channel Bandwidth</i>, testing shall be repeated for every declared <i>Nominal Channel Bandwidth</i> within this sub-band.</p> <p>C9: One channel out of the declared channels.</p> <p>NOTE 1: In case of more than one channel plan has been declared, testing of these specific requirements need only be performed using one of the declared channel plans.</p> <p>NOTE 2: Testing is not required for <i>Nominal Channel Bandwidths</i> that fall completely within the frequency range 5 150 MHz to 5 250 MHz.</p> <p>NOTE 3: Where the declared channel plan includes channels whose <i>Nominal Channel Bandwidth</i> falls completely or partly within the 5 600 MHz to 5 650 MHz band, the tests for the <i>Channel Availability Check</i> (and where implemented, for the <i>Off-Channel CAC</i>) shall be performed on one of these channels in addition to a channel within the band 5 470 MHz to 5 600 MHz or within the band 5 650 MHz to 5 725 MHz.</p>				

3. Receiver Parameters

3.1 Receiver Blocking Test

3.1.1 Limit of Receiver Blocking Test

Wanted signal mean power from companion device [dBm]	Blocking signal frequency [MHz]	Blocking signal power [dBm]		Type of blocking signal
		Master or Slave with radar detection	Slave without radar detection	
Pmin + 6 dB	5 100	-53	-59	Continuous Wave
Pmin + 6 dB	4 900 5 000 5 975	-47	-53	Continuous Wave
<p>NOTE 1: Pmin is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria in the absence of any blocking signal.</p> <p>NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the same levels should be used at the antenna connector irrespective of antenna gain.</p>				

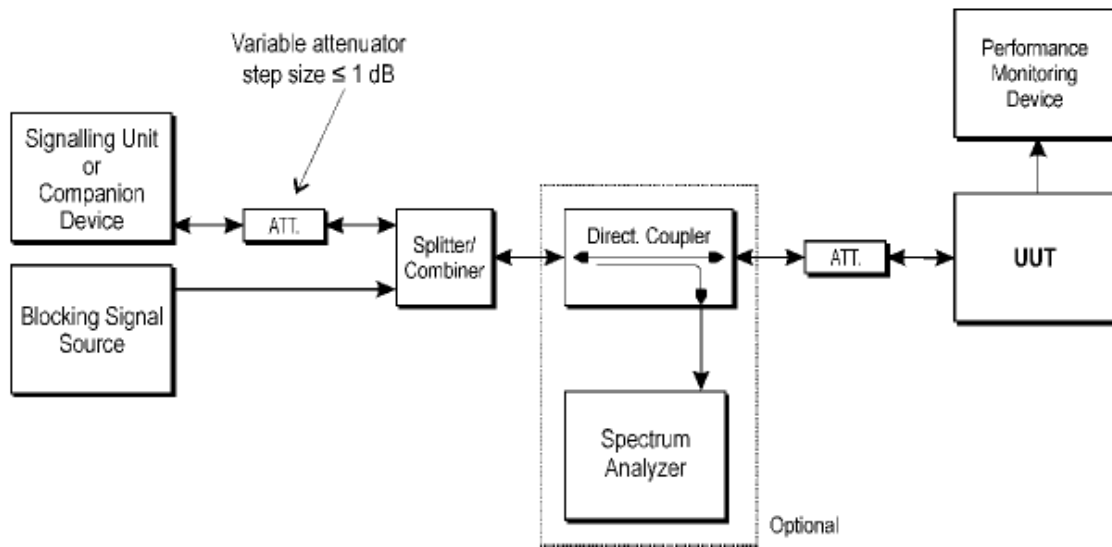
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 8 of this test report.

3.1.3 Test Procedures

1. Refer to Section 5.4.10 of ETSI EN 301 893 v2.1.1 (2017-05).
2. For systems using multiple receive chains only one chain (antenna port) need to be tested. All other receiver inputs shall be terminated.

3.1.4 Test Setup





3.1.5 Test Results of Receiver Blocking

Pmin = CMW500 burst power - path cable loss - attenuator.

Slave without radar detection

WiFi 802.11a 6Mbps Channel 36			
Wanted signal From companion	Blocking signal Frequency(MHz)	Blocking signal Power(dBm)	PER (%)
Pmin + 6dB	5100	-59	1
Pmin + 6dB	4900	-53	1.3
Pmin + 6dB	5000	-53	0.9
Pmin + 6dB	5975	-53	0.8
PER = 7.6 % when Pmin= -92 dBm before blocker is injected.			

WiFi 802.11a 6Mbps Channel 100			
Wanted signal From companion	Blocking signal Frequency(MHz)	Blocking signal Power(dBm)	PER (%)
Pmin + 6dB	5100	-59	0.6
Pmin + 6dB	4900	-53	1.1
Pmin + 6dB	5000	-53	1.1
Pmin + 6dB	5975	-53	0.7
PER = 1.4 % when Pmin= -92 dBm before blocker is injected.			



4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY41000161	3Hz~13.2GHz	Nov. 28, 2016	Jun. 06, 2017	Nov. 27, 2017	Conducted (DFS02-HY)
Base Station	Rohde & Schwarz	CMW500	132247	GSM/GPRS/WC DMA/FD-LTE/TD -LTE/MIMO	Dec. 14, 2016	Jun. 06, 2017	Dec. 13, 2017	Conducted (DFS02-HY)
Signal Generator	Rohde & Schwarz	SMF100A	101107	100kHz~40GHz	May 22, 2017	Jun. 06, 2017	May 21, 2018	Conducted (DFS02-HY)



5. Uncertainty Evaluation

Test Item	Uncertainty
Temperature	±0.8 °C
Humidity	±3 %



Appendix A. Original Report

Please refer to Sporton report number ER4O0971C as below.



CE Radio Test Report

APPLICANT : Texas Instruments Incorporated
EQUIPMENT : WiFi and Bluetooth Module
BRAND NAME : Texas Instruments
MODEL NAME : WL18MODGI
STANDARD : ETSI EN 301 893 V1.7.1 (2012-06)
TEST DATE(S) : Nov. 18, 2014 ~ Dec. 18, 2014

The measurements shown in this test report were made in accordance with the procedures given in ETSI Standard EN 301 893 v1.7.1 (2012-06).

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
ER4O0971C	Rev. 01	Initial issue of report	Jan. 06, 2015



SUMMARY OF TEST RESULT

CLAUSE (EN 301 893)	TEST PARAMETER	PASS/FAIL	REMARK
Transmitter Parameters			
4.2	Centre Frequencies	PASS	-
4.3	Channel Bandwidth	PASS	-
4.4	RF Output Power, Transmit Power Control (TPC)	PASS	-
4.4	Power Density	PASS	-
4.5	Transmitter Spurious Emissions	PASS	Under limit 6.85 dB at 17889.000 MHz
4.7	Dynamic Frequency Selection (DFS)	-	Please refer to DFS report. Report No. : EY4O0971
4.9	Adaptivity (Channel Access Mechanism)	PASS	-
4.10	User Access Restrictions	PASS	-
Receiver Parameters			
4.6	Receiver Spurious Emissions	PASS	Under limit 10.87 dB at 17871.000 MHz

N/A: Not Applicable



1. General Description

1.1 Applicant

Texas Instruments Incorporated
12500 TI Boulevard, M/S 8751, Dallas, TX 75243, USA

1.2 Manufacturer

Jorjin Technologies Inc
17F, No. 239, Sec. 1, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	WiFi and Bluetooth Module
Brand Name	Texas Instruments
Model Name	WL18MODGI
EUT supports Radios application	WLAN 11b/g/n HT20 WLAN 11a/n HT20/HT40 Bluetooth v4.0 EDR/LE
HW Version	WG7837-T0B
EUT Stage	Identical Prototype

Remark:The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx / Rx Frequency Range	5150 MHz ~ 5250 MHz; 5250 MHz ~ 5350 MHz; 5470 MHz ~ 5725 MHz
Channel Spacing	20 MHz
Maximum EIRP Average Power	802.11a : 20.45 dBm 802.11n HT20 : 20.46 dBm 802.11n HT40 : 17.84 dBm
Duty Cycle	<Ant. 1> 802.11a : 32.38% 802.11n HT20 : 33.33% 802.11n HT40 : 30.39% <Ant. 2> 802.11a : 32.38% 802.11n HT20 : 33.33% 802.11n HT40 : 30.59%
Type of Modulation	802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM)

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Antenna Information			
Antenna Type	Brand	2.4GHz~2.5GHz	4.9GHz~5.8GHz
PCB	Ethertronics	-0.6	4.5
Dipole	LSR	2	2
PCB	Laird	2	4
Chip	Pulse	3.2	4.2
PIFA	LSR	2	3
Chip	TDK	2.4	3.96

1.5 Modification of EUT

No modifications are made to the EUT during all test items.



1.6 Testing Facility

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No. : TH02-HY ; 03CH07-HY

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 13-1&14-1, Lane 19, Wen 33rd St. Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-318-0787/+886-3-318-0792 FAX: +886-3-318-0287
Test Site No.	Sporton Site No. : 05CH03-HY

1.7 Applied Standards

According to the specifications of the manufacturer, the EUT must complies with the requirements of **ETSI EN 301 893 v1.7.1 (2012-06)**.

Note: All test items were verified and recorded according to the standards and without any deviation during the test.

1.8 Test Condition

Normal Voltage	AC 120V
Extreme Voltage	AC 108V and AC 132V
Normal Temperature	25°C
Extreme Temperature	-40°C and 85°C

Note:

1. The manufacturer declared that the EUT could work properly between voltage 108V~132V.
2. The test temperature was between -40°C ~ 85°C by manufacturer requested.



2. Test Configuration of Equipment under Test

2.1 RF Power

- a. During testing, the interface cables and equipment positions were varied according to European Standard EN 301 893 v1.7.1 (2012-06).
- b. The complete test system included EUT for RF test.
- c. Preliminary tests were performed in different data rate and recorded the RF power output in the following tables:

<Ant. 1>

5GHz 802.11a RF Output Power (dBm)				
Channel	36	64	100	140
Frequency (MHz)	5180	5320	5500	5700
Duty Cycle (%)	32.38	32.38	32.38	32.38
Avg. Power	15.54	12.98	14.30	11.82

5GHz 802.11n HT20 RF Output Power (dBm)				
Channel	36	64	100	140
Frequency (MHz)	5180	5320	5500	5700
Duty Cycle (%)	33.33	33.33	33.33	33.33
Avg. Power	15.71	12.79	14.06	11.76

5GHz 802.11n HT40 RF Output Power (dBm)				
Channel	38	62	102	134
Frequency (MHz)	5190	5310	5510	5670
Duty Cycle (%)	30.39	30.39	30.39	30.39
Avg. Power	11.48	11.80	11.52	12.56



<Ant. 2>

5GHz 802.11a RF Output Power (dBm)				
Channel	36	64	100	140
Frequency (MHz)	5180	5320	5500	5700
Duty Cycle (%)	32.38	32.38	32.38	32.38
Avg. Power	15.71	13.28	14.52	11.94

5GHz 802.11n HT20 RF Output Power (dBm)				
Channel	36	64	100	140
Frequency (MHz)	5180	5320	5500	5700
Duty Cycle (%)	33.33	33.33	33.33	33.33
Avg. Power	15.54	13.37	14.93	12.19

5GHz 802.11n HT40 RF Output Power (dBm)				
Channel	38	62	102	134
Frequency (MHz)	5190	5310	5510	5670
Duty Cycle (%)	30.59	30.59	30.59	30.59
Avg. Power	11.73	12.19	11.25	12.80

- d. The data rates were set in 6Mbps for 802.11a, MCS0 for 802.11n HT20, and MCS0 for 802.11n HT40 due to the highest RF output power for rest of test items.



2.2 Test Mode

Frequency range of conducted spurious emission was investigated from 25 MHz to 26 GHz and radiation was investigated from 30 MHz to 18GHz.

Pre-scanned tests were conducted to determine the final configuration from all possible combinations. The following tables are showing the test modes as the worst cases and recorded in this report.

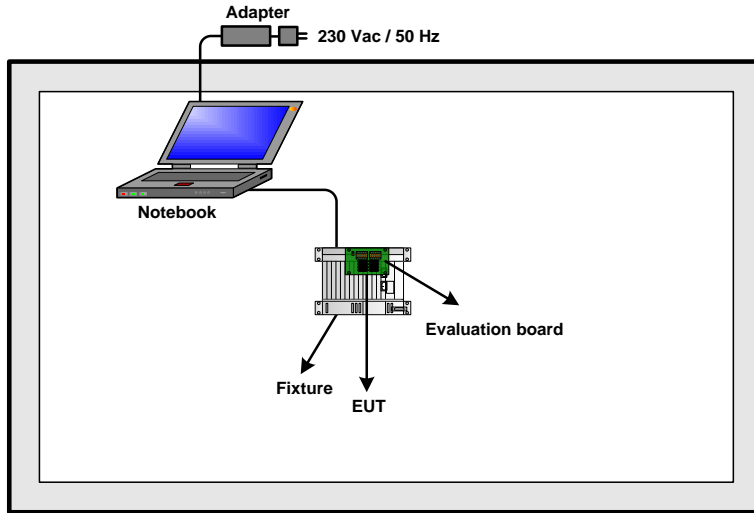
Test Modes		
RF	802.11a (5150 MHz ~ 5350 MHz) OFDM	802.11a (5470 MHz ~ 5725 MHz) OFDM
Tx	802.11a CH36 (5180MHz) for Ant. 1 802.11a CH36 (5180MHz) for Ant. 2	802.11a CH100 (5500MHz) for Ant. 1
Rx	802.11a CH36 (5180MHz) for Ant. 1	-

Test Modes		
RF	802.11n HT20 (5150 MHz ~ 5350 MHz) OFDM	802.11n HT20 (5470 MHz ~ 5725 MHz) OFDM
Tx	802.11n HT20 CH36 (5180MHz) for Ant. 1	802.11n HT20 CH100 (5500MHz) for Ant. 1

Test Modes		
RF	802.11n HT40 (5150 MHz ~ 5350 MHz) OFDM	802.11n HT40 (5470 MHz ~ 5725 MHz) OFDM
Tx	802.11n HT40 CH38 (5190MHz) for Ant. 1	802.11n HT40 CH134 (5670MHz) for Ant. 1

Remark: All test modes of the Transmitter and Receiver Radiated Spurious Emission (RSE) were tested; only the test worse data in bold of these modes were reported.

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	Fixture	N/A	N/A	N/A	N/A	N/A
3.	Evaluation board	N/A	WG1300BE00	N/A	N/A	N/A

2.5 EUT Operation Test Setup

Programmed RF utility, "RTTT Tool" installed in the notebook provides functions like channel selection and power level for continuous transmitting and receiving signals.

2.6 Test Channel

Test	Clause	Test channels		
		Lower sub-band (5 150 MHz to 5 350 MHz)		Higher sub-band 5 470 MHz to 5 725 MHz
		5 150 MHz to 5 250 MHz	5 250 MHz to 5 350 MHz	
Centre frequencies	5.3.2	C7 (see note 1)		C8 (see note 1)
Occupied Channel Bandwidth	5.3.3	C7		C8
Power, power density	5.3.4	C1	C2	C3, C4
Transmitter unwanted emissions outside the 5 GHz RLAN bands	5.3.5	C7 (see note 1)		C8 (see note 1)
Transmitter unwanted emissions within the 5 GHz RLAN bands	5.3.6	C1	C2	C3, C4
Receiver spurious emissions	5.3.7	C7 (see note 1)		C8 (see note 1)
Transmit Power Control (TPC)	5.3.4	n.a. (see note 2)	C2 (see note 1)	C3, C4 (see note 1)
Dynamic Frequency Selection (DFS)	5.3.8	n.a. (see note 2)	C5	C6 (see note 3)
Adaptivity	5.3.9	C7		C8
<p>C1, C3: The lowest declared channel for every declared nominal channel bandwidth within this band. C2, C4: The highest declared channel for every declared nominal channel bandwidth within this band. C5, C6: One channel out of the declared channels for this frequency range. If more than one nominal channel bandwidth has been declared for this sub-band, testing shall be performed using the lowest and highest nominal channel bandwidth. C7, C8: One channel out of the declared channels for this sub-band. For Occupied Channel Bandwidth, testing shall be repeated for every declared nominal channel bandwidth within this sub-band. For Adaptivity, testing shall be performed using the highest nominal channel bandwidth.</p> <p>NOTE 1: In case of more than 1 channel plan has been declared, testing of these specific requirements need only be performed using one of the declared channel plans. NOTE 2: Testing is not required for nominal channel bandwidths that fall completely within the frequency range 5 150 MHz to 5 250 MHz. NOTE 3: Where the declared channel plan includes channels whose nominal channel bandwidth falls completely or partly within the 5 600 MHz to 5 650 MHz band, the tests for the <i>Channel Availability Check</i> (and where implemented, for the <i>Off-Channel CAC</i>) shall be performed on one of these channels in addition to a channel within the band 5 470 MHz to 5 600 MHz or 5 650 MHz to 5 725 MHz band.</p>				

3. Transmitter Parameters

3.1 Centre Frequencies

3.1.1 Limit of Centre Frequencies

SUBCLAUSE 4.2.2	
TEST CONDITION	LIMIT
Under all test conditions	$f_c \pm 20 \text{ ppm.}$

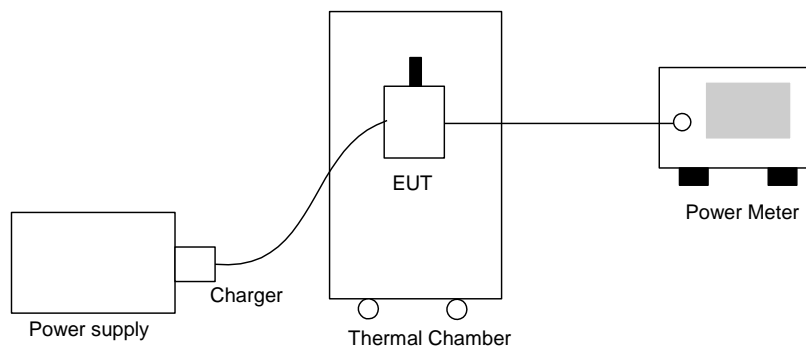
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 6 of this test report.

3.1.3 Test Procedure

1. EUT was placed in the thermal chamber.
2. The transmitter output port was connected to the spectrum analyzer.
3. Set spectrum analyzer with 100 kHz RBW and 300 kHz VBW.
4. Set thermal chamber temperature and power supply voltage to suitable value.
5. Recording f_L or f_H according sub clause 5.3.2.
6. Repeating step 5 and 6 at different conditions and different channel.

3.1.4 Test Setup





3.1.5 Test Results

EUT Mode :	Band I + II (5150 MHz ~ 5350 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%

Band I + II												
Mod.	Data Rate	NTX	Channel	Freq. (MHz)	Carrier Frequency					Freq. with Max Deviation (MHz)	Max Deviation (ppm)	Pass /Fail
					Tnom	Tmin		Tmax				
					25 °C	-40 °C		85 °C				
					Vnom	Vmin	Vmax	Vmin	Vmax			
					120	108	132	108	132			
11a	6Mbps	1	36	5180	5180.04	5180.00	5180.04	5180.00	5180.00	5180.04	7.72	Pass
HT20	MCS0	1	36	5180	5180.00	5180.00	5180.00	5180.00	5180.00	5180.00	0.00	Pass
HT40	MCS0	1	38	5190	5190.08	5190.08	5190.08	5190.08	5190.08	5190.08	15.41	Pass
Deviation Limit(ppm)											±20	

EUT Mode :	Band III (5470 MHz ~ 5725 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%

Band III												
Mod.	Data Rate	NTX	Channel	Freq. (MHz)	Carrier Frequency					Freq. with Max Deviation (MHz)	Max Deviation (ppm)	Pass /Fail
					Tnom	Tmin		Tmax				
					25 °C	-40 °C		85 °C				
					Vnom	Vmin	Vmax	Vmin	Vmax			
					120	108	132	108	132			
11a	6Mbps	1	100	5500	5500.00	5500.00	5499.96	5499.96	5500.00	5499.96	-7.27	Pass
HT20	MCS0	1	100	5500	5500.00	5500.00	5500.00	5500.00	5500.00	5500.00	0.00	Pass
HT40	MCS0	1	102	5510	5510.00	5510.00	5510.00	5510.08	5510.08	5510.08	14.52	Pass
Deviation Limit(ppm)											±20	

3.2 Nominal Channel Bandwidth and Occupied Channel Bandwidth

3.2.1 Limit of channel bandwidth

SUBCLAUSE 4.3.2	
TEST CONDITION	LIMIT
Under all test conditions	Nominal Channel Bandwidth: shall be at least 5 MHz at all times Occupied Channel Bandwidth: 80%~ 100% of the declared nominal channel bandwidth

Note: The During an established communication, a device is allowed to operate temporarily in a mode where its Occupied Channel Bandwidth may be reduced to as low as 40 % of its Nominal Channel Bandwidth with a minimum of 4 MHz.

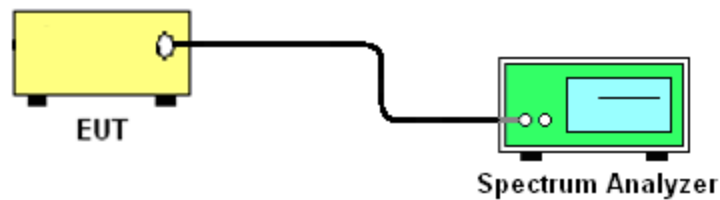
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 6 of this test report.

3.2.3 Test Procedure

1. The transmitter output port was connected to the spectrum analyzer.
2. Set spectrum analyzer with 100 kHz RBW and 300 kHz VBW.
3. Recording the occupied bandwidth for each channel.

3.2.4 Test Setup





3.2.5 Test Results

EUT Mode :	Band I + II (5150 MHz ~ 5350 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%

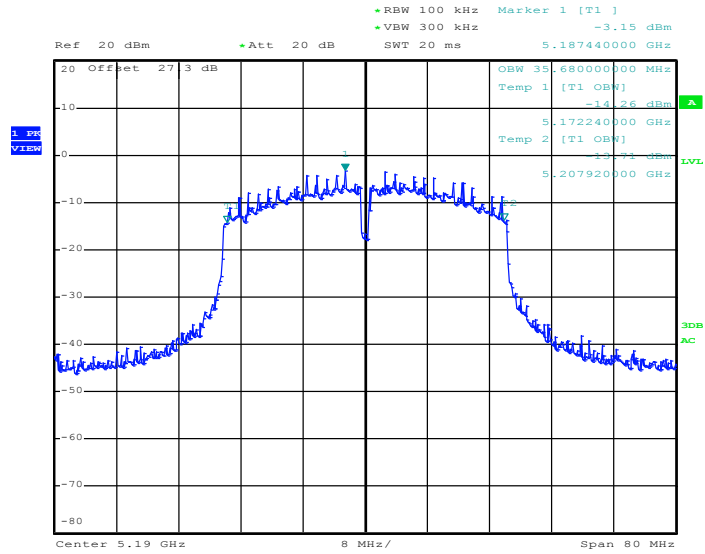
Band I + II									
Mod.	Data Rate	NTX	Channel	Freq. (MHz)	OBW (MHz)		Min Limit (MHz)	Max Limit (MHz)	Pass/Fail
					Ant. 1	Ant. 2			
11a	6Mbps	1	36	5180	-	16.48	16	20	Pass
HT20	MCS0	1	36	5180	-	17.6	16	20	Pass
HT40	MCS0	1	38	5190	-	35.68	32	40	Pass

EUT Mode :	Band III (5470 MHz ~ 5725 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%

Band III									
Mod.	Data Rate	NTX	Channel	Freq. (MHz)	OBW (MHz)		Min Limit (MHz)	Max Limit (MHz)	Pass/Fail
					Ant. 1	Ant. 2			
11a	6Mbps	1	100	5500	-	16.4	16	20	Pass
HT20	MCS0	1	100	5500	-	17.52	16	20	Pass
HT40	MCS0	1	102	5510	-	35.52	32	40	Pass



Maximum Occupied Channel Bandwidth Plot



Date: 15.DEC.2014 14:08:13



3.3 RF Output Power

3.3.1 Limit of RF Output Power

X	Radar detection function		
X	TPC Function		
Frequency	Highest Power (dBm)	Lowest Power (dBm)	
5150-5250 MHz	23	-	
5250-5350 MHz	20	No TPC	
5470-5725 MHz	20	No TPC	
Symbol Note			
V	Support	X	Not Support

Mean e.i.r.p. limits for RF output power and power density at the highest power level				
Frequency range [MHz]	Mean e.i.r.p. limit [dBm]		Mean e.i.r.p. density limit [dBm/MHz]	
	with TPC	without TPC	with TPC	without TPC
5 150 to 5 350	23	20/23 (see note 1)	10	7/10 (see note 2)
5 470 to 5 725	30 (see note 3)	27 (see note 3)	17 (see note 3)	14 (see note 3)
NOTE 1: The applicable limit is 20 dBm, except for transmissions whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz, in which case the applicable limit is 23 dBm.				
NOTE 2: The applicable limit is 7 dBm/MHz, except for transmissions whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz, in which case the applicable limit is 10 dBm/MHz.				
NOTE 3: Slave devices without a Radar Interference Detection function shall comply with the limits for the band 5 250 MHz to 5 350 MHz.				
Mean e.i.r.p. limits for RF output power at the lowest power level of the TPC range				
Frequency range	Mean e.i.r.p. [dBm]			
5 250 MHz to 5 350 MHz	17			
5 470 MHz to 5 725 MHz	24 (see note)			
NOTE: Slave devices without a Radar Interference Detection function shall comply with the limits for the band 5 250 MHz to 5 350 MHz.				

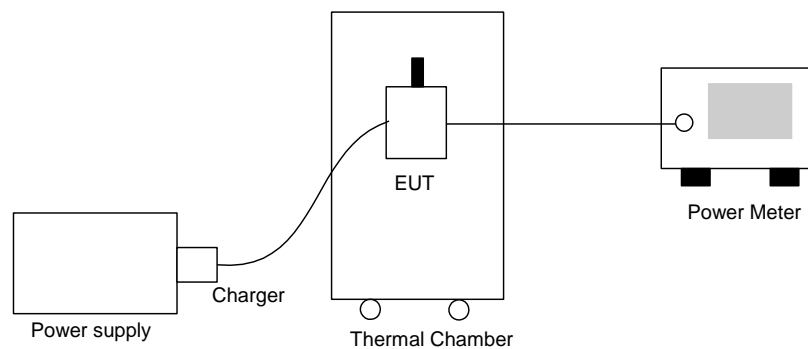
3.3.2 Measuring Instruments

The measuring equipment is listed in the section 6 of this test report.

3.3.3 Test Procedure

1. EUT was placed in the thermal chamber.
2. The transmitter output port was connected to the power meter.
3. Set thermal chamber temperature and power supply voltage to suitable value.
4. The conducted power is equal to the reading level on power meter offset with cable loss.
5. The EIRP is equal to the conducted power plus the antenna gain.
6. Repeating step 4 to 6 at different test condition and different channels.

3.3.4 Test Setup





3.3.5 Test Results

EUT Mode :	Band I (5150 MHz ~ 5250 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%

CE Band I single antenna																
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Average Conducted Power with duty factor (dBm)										Duty Factor (dB)	
					Ant. 1					Ant. 2						
					Tnom	Tmin	Tmax		Tnom	Tmin	Tmax					
					25 °C	-40 °C	85 °C		25 °C	-40 °C	85 °C					
					Vnom	Vmin	Vmax	Vmin	Vmax	Vnom	Vmin	Vmax	Vmin	Vmax		
					120	108	132	108	132	120	108	132	108	132	Ant. 1	Ant. 2
11a	6Mbps	1	36	5180	15.54	-	-	-	-	15.71	15.90	15.95	15.39	15.42	4.90	4.90
HT20	MCS0	1	36	5180	15.71	-	-	-	-	15.54	15.83	15.96	15.62	15.68	4.77	4.77
HT40	MCS0	1	38	5190	11.48	-	-	-	-	11.73	11.92	12.02	10.65	10.67	5.17	5.14
Antenna Gain(dBi)					4.50					4.50					-	

Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Average EIRP Power (dBm)										EIRP Power Limit (dBm)	Pass /Fail
					Ant. 1					Ant. 2						
					Tnom	Tmin	Tmax		Tnom	Tmin	Tmax					
					25 °C	-40 °C	85 °C		25 °C	-40 °C	85 °C					
					Vnom	Vmin	Vmax	Vmin	Vmax	Vnom	Vmin	Vmax	Vmin	Vmax		
					120	108	132	108	132	120	108	132	108	132		
11a	6Mbps	1	36	5180	20.04	-	-	-	-	20.21	20.40	20.45	19.89	19.92	23.00	Pass
HT20	MCS0	1	36	5180	20.21	-	-	-	-	20.04	20.33	20.46	20.12	20.18	23.00	Pass
HT40	MCS0	1	38	5190	15.98	-	-	-	-	16.23	16.42	16.52	15.15	15.17	23.00	Pass
Antenna Gain(dBi)					4.50					4.50					-	

Note:

Measured average power has offset cable loss and duty factor.

Average EIRP Power = Average Conducted Power with duty factor + Antenna Gain



EUT Mode :	Band II (5250 MHz ~ 5350 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%

CE Band II single antenna																
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Average Conducted Power with duty factor (dBm)										Duty Factor (dB)	
					Ant. 1					Ant. 2						
					Tnom	Tmin	Tmax		Tnom	Tmin	Tmax					
					25 °C	-40 °C	85 °C		25 °C	-40 °C	85 °C					
					Vnom	Vmin	Vmax	Vmin	Vmax	Vnom	Vmin	Vmax	Vmin	Vmax		
Ant. 1		Ant. 2														
11a	6Mbps	1	64	5320	12.98	-	-	-	-	13.28	13.76	13.82	12.54	12.58	4.90	4.90
HT20	MCS0	1	64	5320	12.79	-	-	-	-	13.37	13.10	13.25	12.43	12.47	4.77	4.77
HT40	MCS0	1	62	5310	11.80	-	-	-	-	12.19	11.83	11.88	10.93	10.96	5.17	5.14
Antenna Gain(dBi)					4.50					4.50						

Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Average EIRP Power (dBm)										EIRP Power Limit (dBm)	Pass /Fail
					Ant. 1					Ant. 2						
					Tnom	Tmin	Tmax		Tnom	Tmin	Tmax					
					25 °C	-40 °C	85 °C		25 °C	-40 °C	85 °C					
					Vnom	Vmin	Vmax	Vmin	Vmax	Vnom	Vmin	Vmax	Vmin	Vmax		
11a	6Mbps	1	64	5320	17.48	-	-	-	-	17.78	18.26	18.32	17.04	17.08	20.00	Pass
HT20	MCS0	1	64	5320	17.29	-	-	-	-	17.87	17.60	17.75	16.93	16.97	20.00	Pass
HT40	MCS0	1	62	5310	16.30	-	-	-	-	16.69	16.33	16.38	15.43	15.46	20.00	Pass
Antenna Gain(dBi)					4.50					4.50					-	

Note:

Measured average power has offset cable loss and duty factor.

Average EIRP Power = Average Conducted Power with duty factor + Antenna Gain



EUT Mode :	Band III (5470 MHz ~ 5725 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%

CE Band III single antenna																
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Average Conducted Power with duty factor (dBm)										Duty Factor (dB)	
					Ant. 1					Ant. 2						
					Tnom	Tmin	Tmax		Tnom	Tmin	Tmax					
					25 °C	-40 °C	85 °C		25 °C	-40 °C	85 °C					
					Vnom	Vmin	Vmax	Vmin	Vmax	Vnom	Vmin	Vmax	Vmin	Vmax		
												Ant. 1	Ant. 2			
11a	6Mbps	1	100	5500	14.30	-	-	-	-	14.52	14.03	14.12	14.10	14.14	4.90	4.90
			140	5700	11.82	-	-	-	-	11.94	13.10	13.11	11.21	11.31	4.90	4.90
HT20	MCS0	1	100	5500	14.06	-	-	-	-	14.93	13.21	13.37	14.03	14.04	4.77	4.77
			140	5700	11.76	-	-	-	-	12.19	11.89	12.00	10.96	11.00	4.77	4.77
HT40	MCS0	1	102	5510	11.52	-	-	-	-	11.25	10.62	10.84	10.17	10.32	5.17	5.14
			134	5670	12.56	-	-	-	-	12.80	13.23	13.34	11.67	11.75	5.17	5.14
Antenna Gain(dBi)					4.50					4.50					-	

Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Average EIRP Power (dBm)										EIRP Power Limit (dBm)	Pass /Fail
					Ant. 1					Ant. 2						
					Tnom	Tmin	Tmax		Tnom	Tmin	Tmax					
					25 °C	-40 °C	85 °C		25 °C	-40 °C	85 °C					
					Vnom	Vmin	Vmax	Vmin	Vmax	Vnom	Vmin	Vmax	Vmin	Vmax		
11a	6Mbps	1	100	5500	18.80	-	-	-	-	19.02	18.53	18.62	18.60	18.64	20.00	Pass
			140	5700	16.32	-	-	-	-	16.44	17.60	17.61	15.71	15.81	20.00	Pass
HT20	MCS0	1	100	5500	18.56	-	-	-	-	19.43	17.71	17.87	18.53	18.54	20.00	Pass
			140	5700	16.26	-	-	-	-	16.69	16.39	16.50	15.46	15.50	20.00	Pass
HT40	MCS0	1	102	5510	16.02	-	-	-	-	15.75	15.12	15.34	14.67	14.82	20.00	Pass
			134	5670	17.06	-	-	-	-	17.30	17.73	17.84	16.17	16.25	20.00	Pass
Antenna Gain(dBi)					4.50					4.50					-	

Note:

Measured average power has offset cable loss and duty factor.

Average EIRP Power = Average Conducted Power with duty factor + Antenna Gain



3.4 Power Density

3.4.1 Limit of Power Density

X	Radar detection function		
X	TPC Function		
	Frequency	Power Density (dBm)	
	5150-5250 MHz	10	
	5250-5350 MHz	7	
	5470-5725 MHz	7	
Symbol Note			
V	Support	X	Not Support

Mean e.i.r.p. limits for RF output power and power density at the highest power level				
Frequency range [MHz]	Mean e.i.r.p. limit [dBm]		Mean e.i.r.p. density limit [dBm/MHz]	
	with TPC	without TPC	with TPC	without TPC
5 150 to 5 350	23	20/23 (see note 1)	10	7/10 (see note 2)
5 470 to 5 725	30 (see note 3)	27 (see note 3)	17 (see note 3)	14 (see note 3)
NOTE 1: The applicable limit is 20 dBm, except for transmissions whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz, in which case the applicable limit is 23 dBm.				
NOTE 2: The applicable limit is 7 dBm/MHz, except for transmissions whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz, in which case the applicable limit is 10 dBm/MHz.				
NOTE 3: Slave devices without a Radar Interference Detection function shall comply with the limits for the band 5 250 MHz to 5 350 MHz.				

3.4.2 Measuring Instruments

The measuring equipment is listed in the section 6 of this test report.

3.4.3 Test Procedure

1. Refer to Section 5.3.4.2.1.3.1 of ETSI EN 301 893 v1.7.1 (2012-06).
2. The maximum radiated spectral power density, EIRP density, is determined by the conducted power density plus antenna gain with $10\log(1/x)$, where x is the duty cycle of the EUT in continuously transmitting mode.

3.4.4 Test Setup





3.4.5 Test Results

EUT Mode :	Band I (5150 MHz ~ 5250 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%

Band I																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power Density with Duty Factor (dBm/MHz)			EIRP Power Density (dBm/MHz)			Antenna Gain (dBi)		PSD Limit (dBm/MHz)	Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	SUM	Ant 1	Ant 2		
11a	6Mbps	1	36	5180	4.90	4.90	-	4.16	-	-	8.66	-	4.50	4.50	10	Pass
HT20	MCS0	1	36	5180	4.77	4.77	-	4.09	-	-	8.59	-	4.50	4.50	10	Pass
HT40	MCS0	1	38	5190	5.17	5.14	-	-3.54	-	-	0.96	-	4.50	4.50	10	Pass

Note:

1. Measured power density (dBm) has offset with cable loss and duty factor.
2. Maximum Spectral Power Density EIRP(dBm) = Measured power density (dBm) + Antenna gain (dBi).

EUT Mode :	Band II (5250 MHz ~ 5350 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%

Band II																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power Density with Duty Factor (dBm/MHz)			EIRP Power Density (dBm/MHz)			Antenna Gain (dBi)		PSD Limit (dBm/MHz)	Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	SUM	Ant 1	Ant 2		
11a	6Mbps	1	64	5320	4.90	4.90	-	1.56	-	-	6.06	-	4.50	4.50	7	Pass
HT20	MCS0	1	64	5320	4.77	4.77	-	1.42	-	-	5.92	-	4.50	4.50	7	Pass
HT40	MCS0	1	62	5310	5.17	5.14	-	-3.09	-	-	1.41	-	4.50	4.50	7	Pass

Note:

1. Measured power density (dBm) has offset with cable loss and duty factor.
2. Maximum Spectral Power Density EIRP(dBm) = Measured power density (dBm) + Antenna gain (dBi).



EUT Mode :	Band III (5470 MHz ~ 5725 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%

Band III																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)			Conducted Power Density with Duty Factor (dBm/MHz)			EIRP Power Density (dBm/MHz)			Antenna Gain (dBi)		PSD Limit (dBm/MHz)	Pass /Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	SUM	Ant 1	Ant 2	SUM	Ant 1	Ant 2		
11a	6Mbps	1	100	5500	4.90	4.90	-	1.26	-	-	5.76	-	4.50	4.50	7	Pass	
HT20	MCS0	1	140	5700	4.90	4.90	-	0.13		-	4.63		4.50	4.50	7	Pass	
HT40	MCS0	1	100	5500	4.77	4.77	-	2.10		-	6.60		4.50	4.50	7	Pass	
11a	6Mbps	1	134	5670	4.77	4.77	-	0.19		-	4.69		4.50	4.50	7	Pass	
HT20	MCS0	1	100	5500	5.17	5.14	-	-1.88		-	2.62		4.50	4.50	7	Pass	
HT40	MCS0	1	140	5700	5.17	5.14	-	-1.33		-	3.17		4.50	4.50	7	Pass	

Note:

1. Measured power density (dBm) has offset with cable loss and duty factor.
2. Maximum Spectral Power Density EIRP(dBm) = Measured power density (dBm) + Antenna gain (dBi).

3.5 Transmitter Unwanted Emissions Outside of Band

3.5.1 Limit of Transmitter Unwanted Emissions Outside of Band

Transmitter unwanted emission limits outside the 5 GHz RLAN bands:

SUBCLAUSE 4.5.1.2		
FREQUENCY RANGE	MAXIMUM POWER ERP (<=1 GHZ) EIRP (>1 GHZ)	BANDWIDTH
30 MHz to 47 MHz	-36 dBm	100 KHz
47 MHz to 74 MHz	-54 dBm	100 KHz
74 MHz to 87,5 MHz	-36 dBm	100 KHz
87,5 MHz to 118 MHz	-54 dBm	100 KHz
118 MHz to 174 MHz	-36 dBm	100 KHz
174 MHz to 230 MHz	-54 dBm	100 KHz
230 MHz to 470 MHz	-36 dBm	100 KHz
470 MHz to 862 MHz	-54 dBm	100 KHz
862 MHz to 1 GHz	-36 dBm	100 KHz
1 GHz to 5,15 GHz	-30 dBm	1 MHz
5,35 GHz to 5,47 GHz	-30 dBm	1 MHz
5,725 GHz to 26 GHz	-30 dBm	1 MHz

3.5.2 Measuring Instruments

The measuring equipment is listed in the section 6 of this test report.

3.5.3 Test Procedures

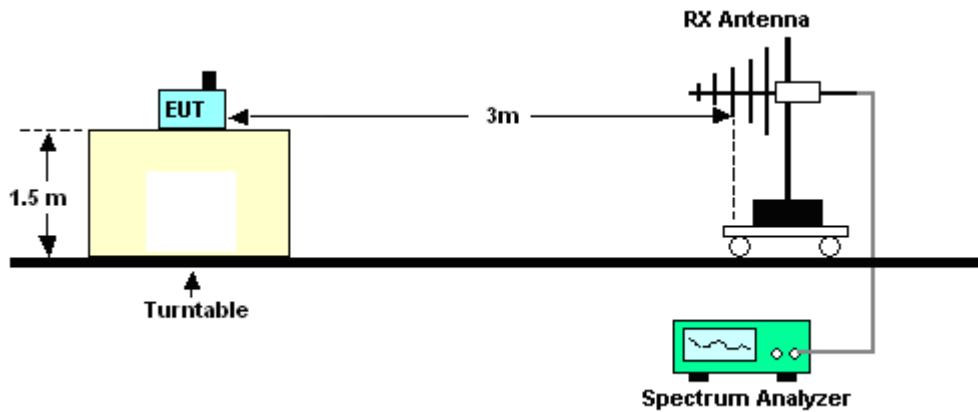
Refer to Section 5.3.5 of ETSI EN 301 893 v1.7.1 (2012-06).

3.5.4 Test Setup

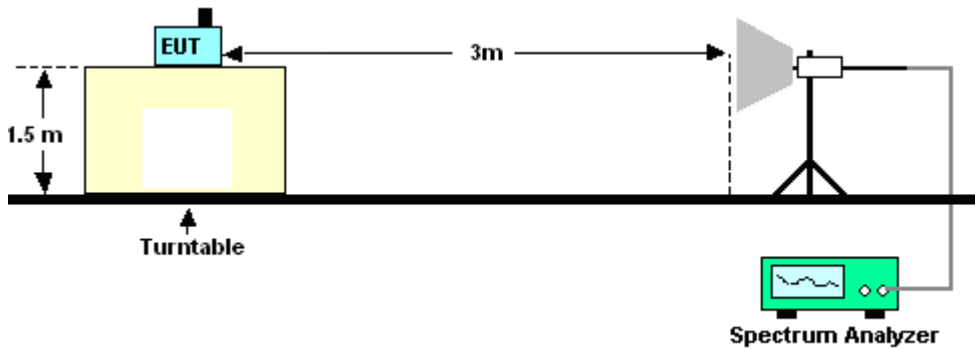
- Test Setup of Conducted Measurement



- Test Setup of Radiated Measurement
<Below 1GHz>



<Above 1GHz>

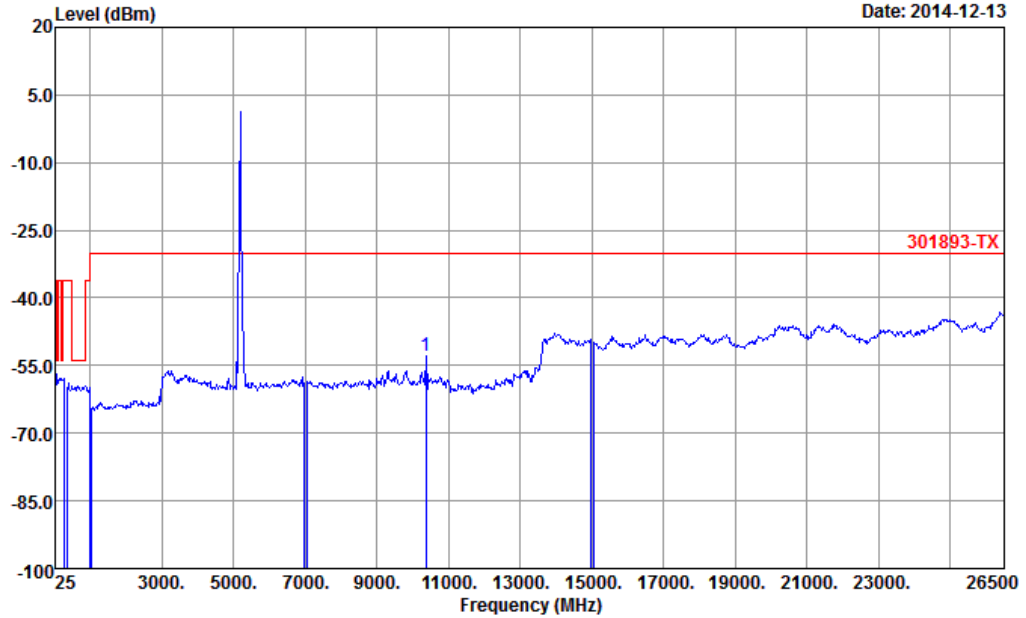




3.5.5 Test Results for Conducted Setup

Number of TX = 1, Ant. 1 (Measured)

Test Mode :	802.11a CH36 (5180MHz) for Ant. 1	Temperature :	22~24°C
Test Engineer :	Eric Shih	Relative Humidity :	42~44%

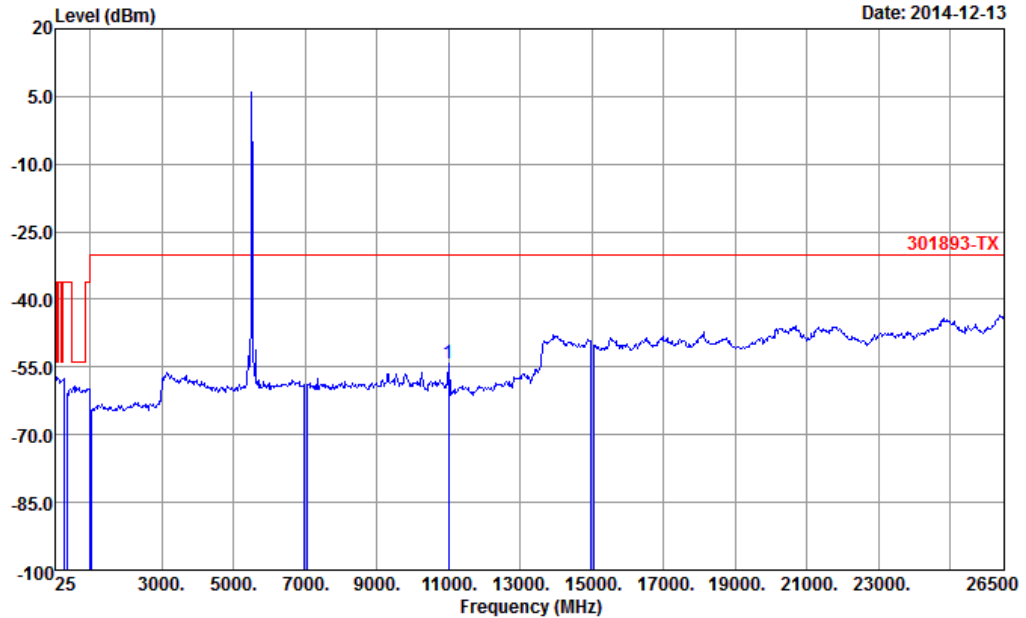


Site : 03CH07-HY
 Condition : 301893-TX ANT GAIN+4.5 5G

	Freq	Level	Over	Limit	ReadAntenna	Cable	Aux	Aux2	Remark
	MHz	dBm	dB	dBm	dBm	dB	dB	dB	
1	10360.00	-53.02	-23.02	-30.00	-60.02	4.50	2.50	0.00	0.00 RMS



Test Mode :	802.11a CH100 (5500MHz) for Ant. 1	Temperature :	22~24°C
Test Engineer :	Eric Shih	Relative Humidity :	42~44%

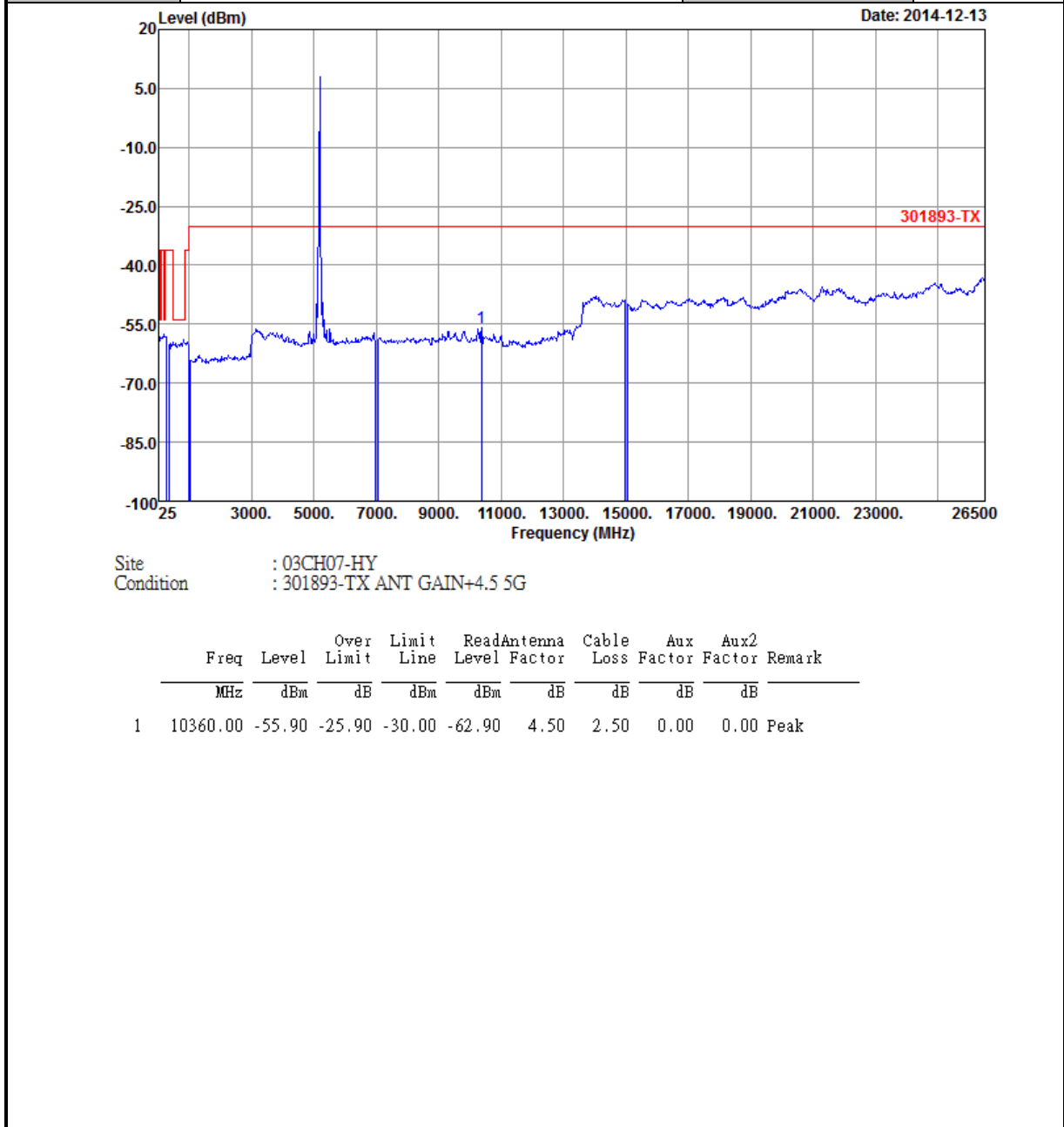


Site : 03CH07-HY
 Condition : 301893-TX ANT GAIN+4.5 5G

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Aux Factor	Aux2 Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	dB	dB	dB	
1	11000.00	-54.08	-24.08	-30.00	-61.08	4.50	2.50	0.00	0.00	RMS

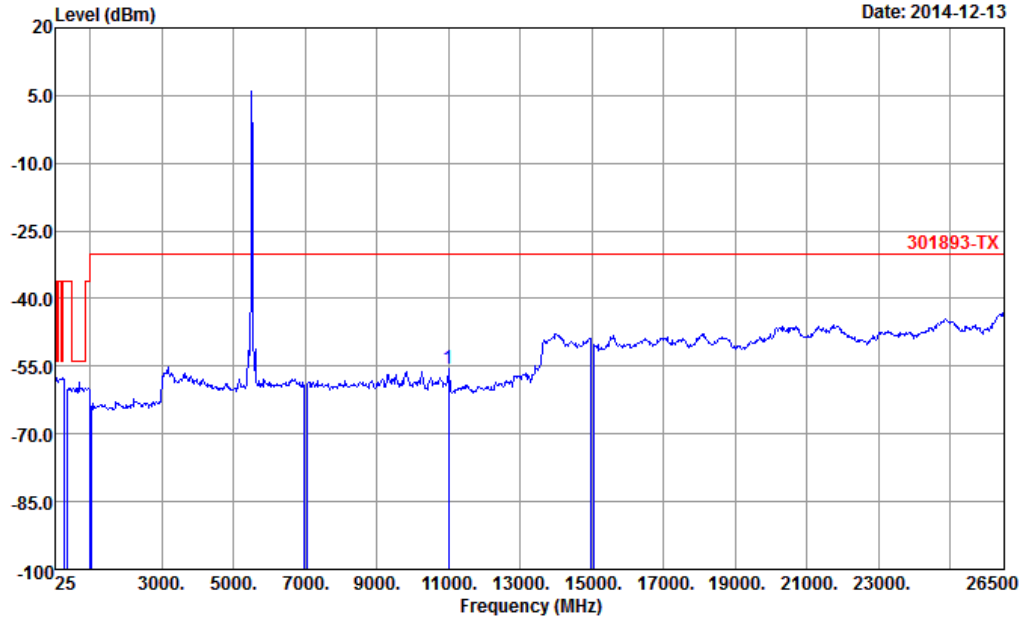


Test Mode :	802.11n HT20 CH36 (5180MHz) for Ant. 1	Temperature :	22~24°C
Test Engineer :	Eric Shih	Relative Humidity :	42~44%





Test Mode :	802.11n HT20 CH100 (5500MHz) for Ant. 1	Temperature :	22~24°C
Test Engineer :	Eric Shih	Relative Humidity :	42~44%

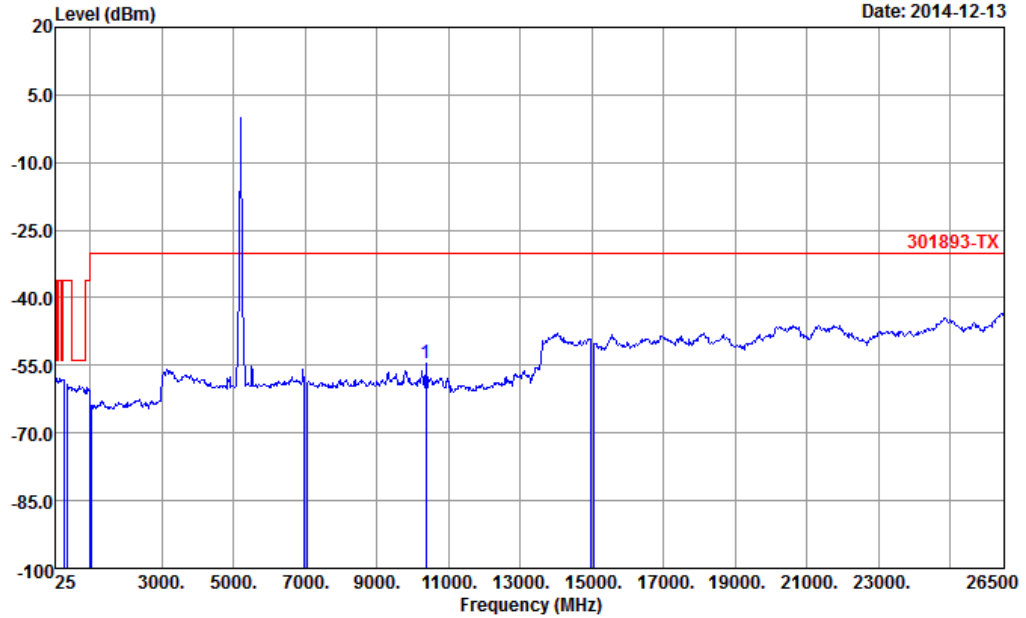


Site : 03CH07-HY
 Condition : 301893-TX ANT GAIN+4.5 5G

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Aux Factor	Aux2 Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	dB	dB	dB	
1	11000.00	-55.39	-25.39	-30.00	-62.39	4.50	2.50	0.00	0.00	RMS



Test Mode :	802.11n HT40 CH38 (5190MHz) for Ant. 1	Temperature :	22~24°C
Test Engineer :	Eric Shih	Relative Humidity :	42~44%

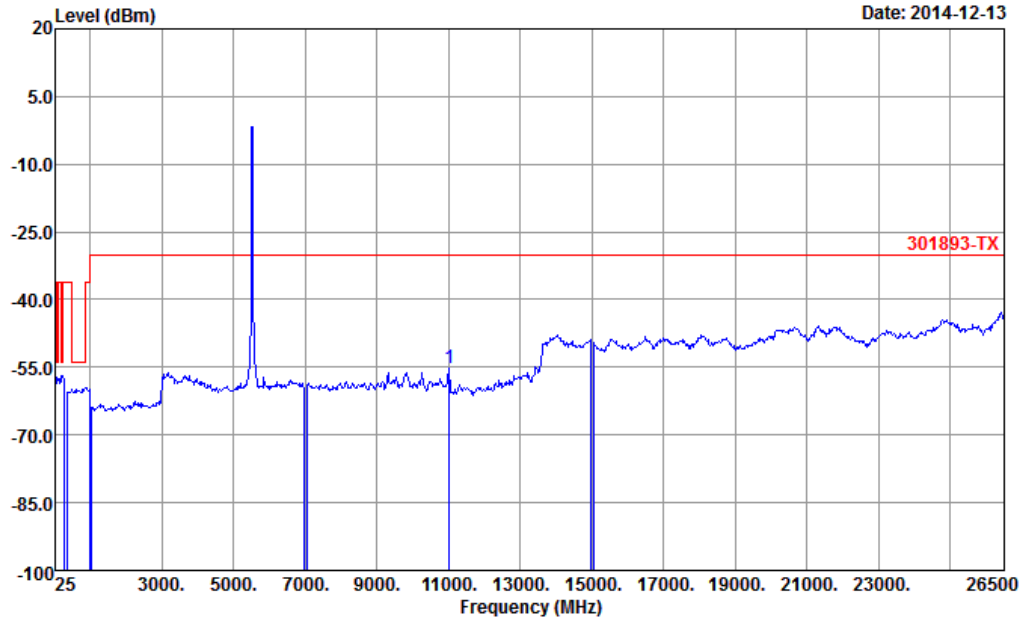


Site : 03CH07-HY
 Condition : 301893-TX ANT GAIN+4.5 5G

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Aux Factor	Aux2 Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	dB	dB	dB	
1	10376.00	-54.70	-24.70	-30.00	-61.70	4.50	2.50	0.00	0.00	Peak



Test Mode :	802.11n HT40 CH102 (5510MHz) for Ant. 1	Temperature :	22~24°C
Test Engineer :	Eric Shih	Relative Humidity :	42~44%



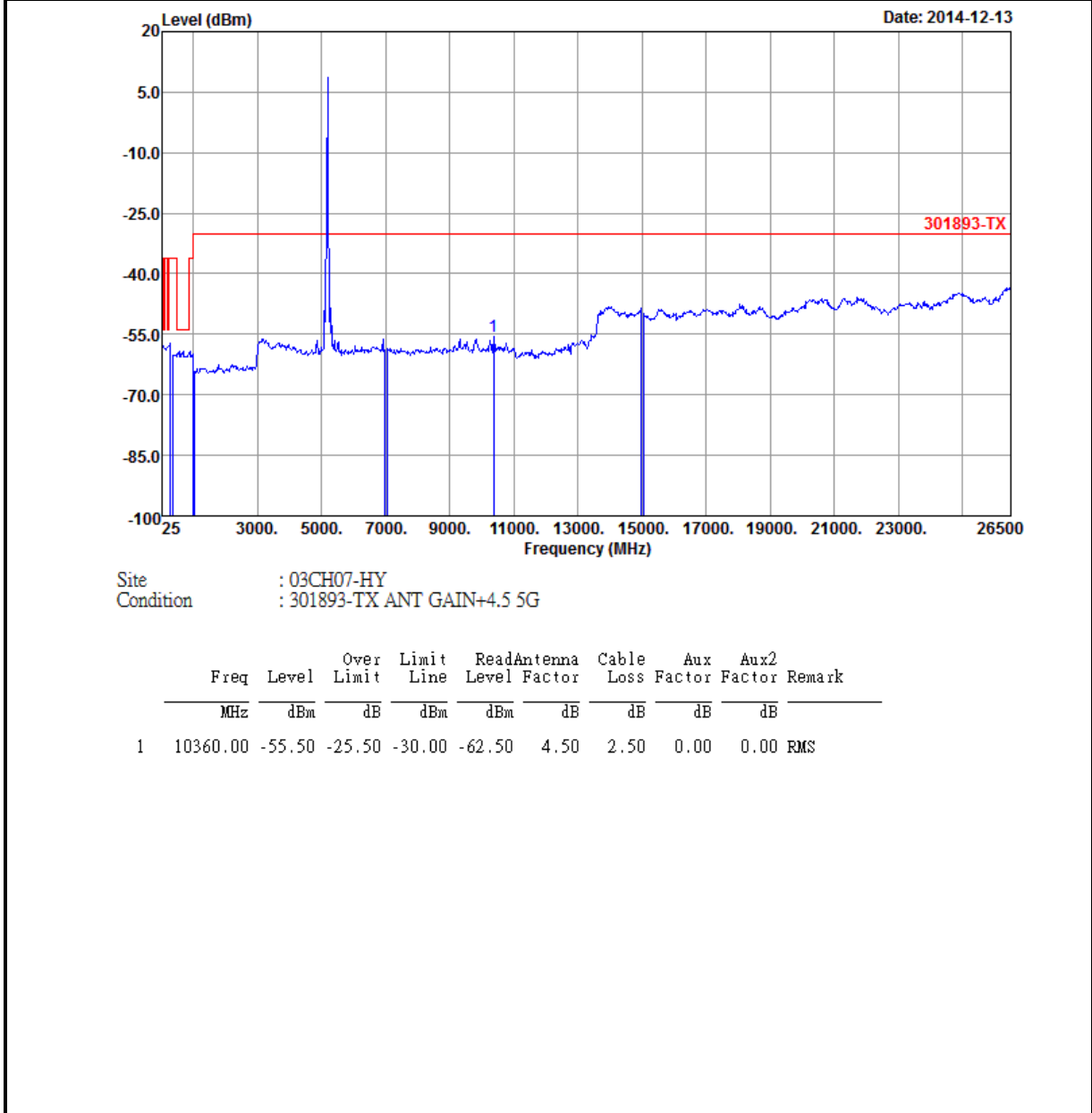
Site : 03CH07-HY
 Condition : 301893-TX ANT GAIN+4.5 5G

	Freq	Level	Over	Limit	ReadAntenna	Cable	Aux	Aux2	Remark
	MHz	dBm	dB	dBm	dBm	dB	dB	dB	
1	11016.00	-55.34	-25.34	-30.00	-62.34	4.50	2.50	0.00	0.00 RMS



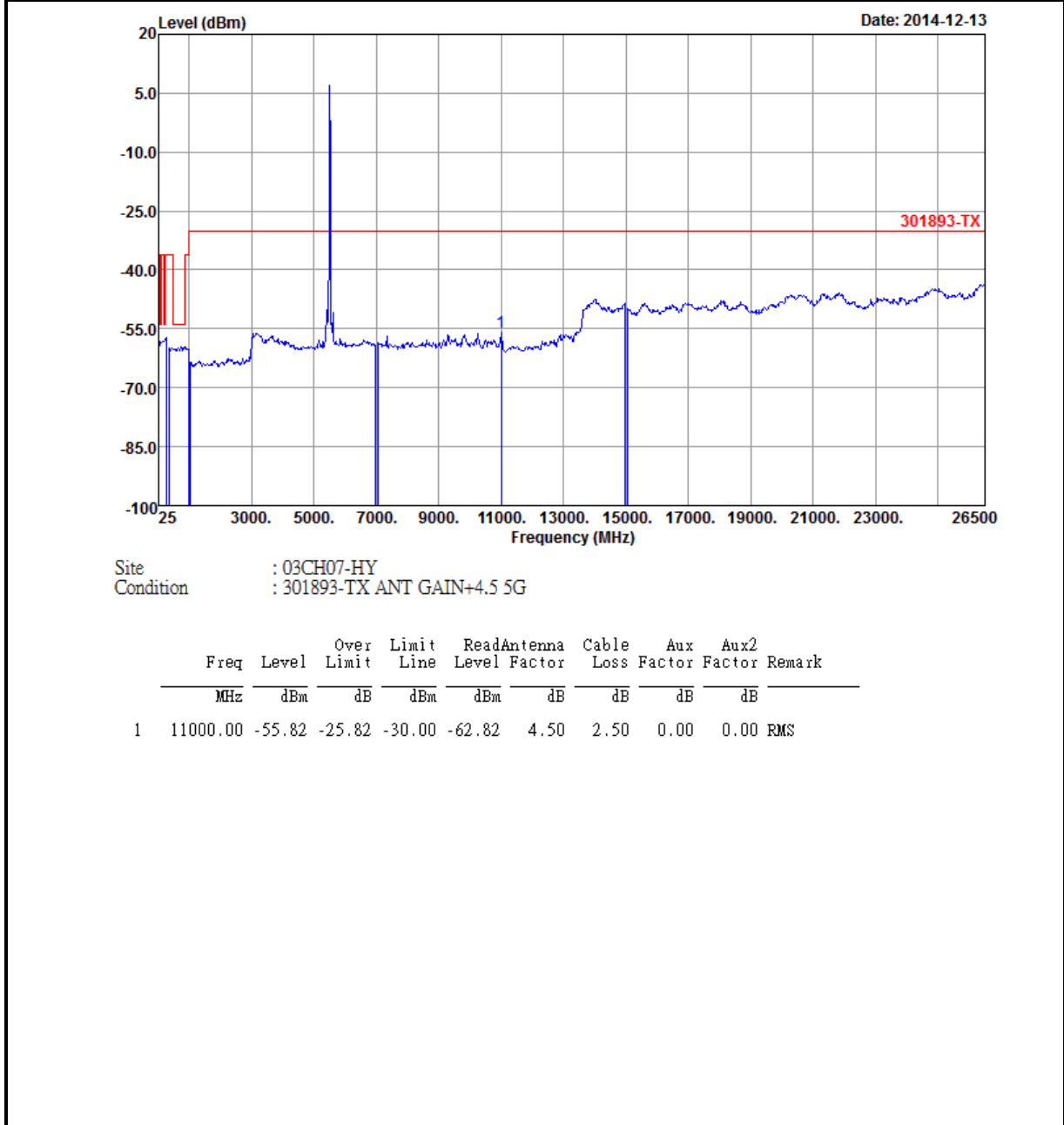
Number of TX = 1, Ant. 2 (Measured)

Test Mode :	802.11a CH36 (5180MHz) for Ant. 2	Temperature :	22~24°C
Test Engineer :	Eric Shih	Relative Humidity :	42~44%



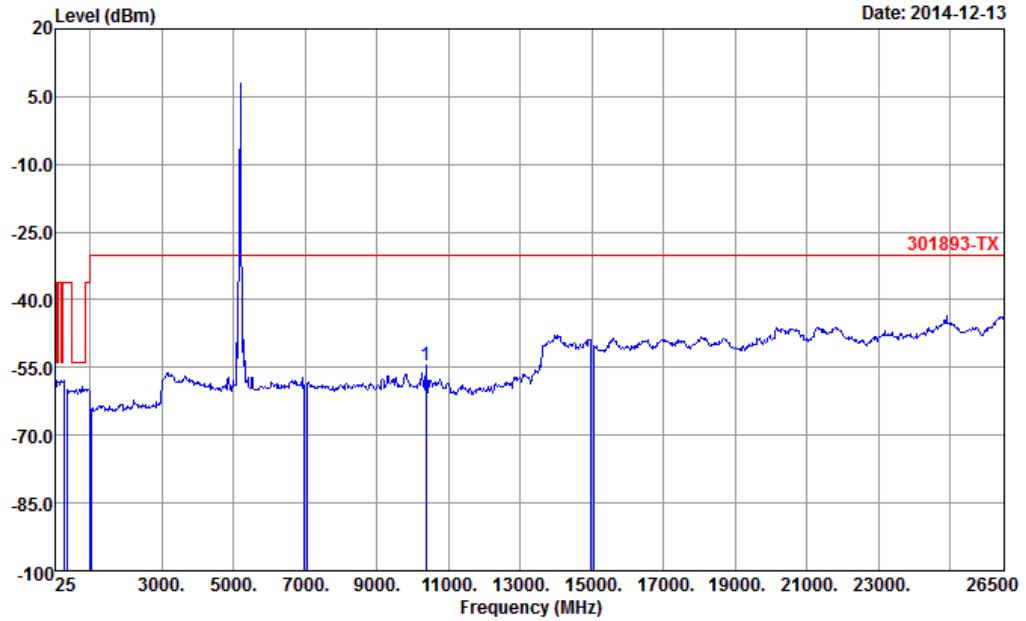


Test Mode :	802.11a CH100 (5500MHz) for Ant. 2	Temperature :	22~24°C
Test Engineer :	Eric Shih	Relative Humidity :	42~44%





Test Mode :	802.11n HT20 CH36 (5180MHz) for Ant. 2	Temperature :	22~24°C
Test Engineer :	Eric Shih	Relative Humidity :	42~44%

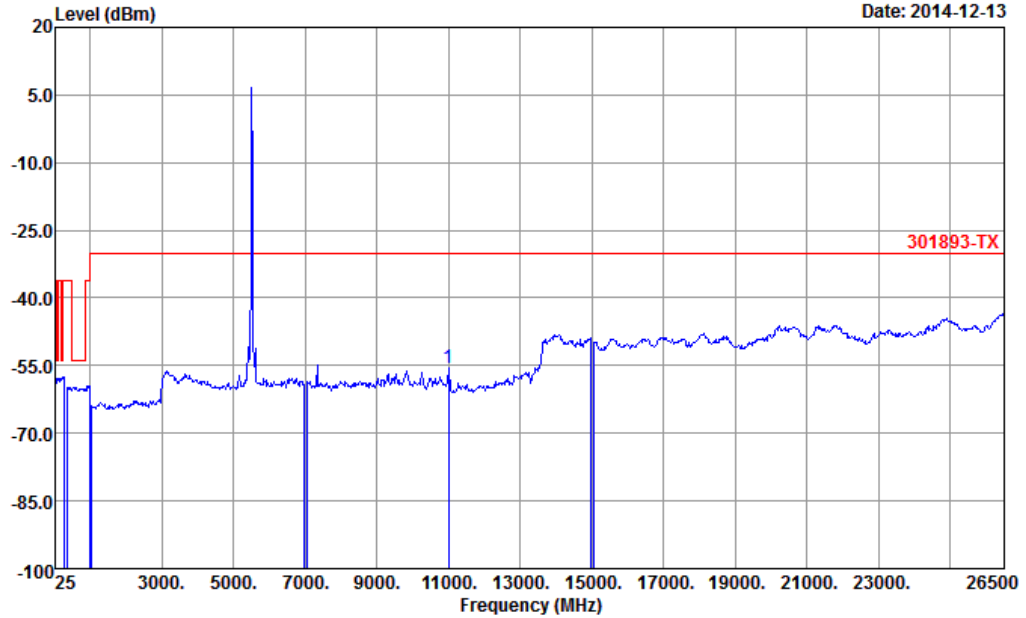


Site : 03CH07-HY
 Condition : 301893-TX ANT GAIN+4.5 5G

	Freq	Level	Over	Limit	ReadAntenna	Cable	Aux	Aux2	Remark
	MHz	dBm	dB	dBm	dBm	dB	dB	dB	
1	10360.00	-54.64	-24.64	-30.00	-61.64	4.50	2.50	0.00	0.00 RMS



Test Mode :	802.11n HT20 CH100 (5500MHz) for Ant. 2	Temperature :	22~24°C
Test Engineer :	Eric Shih	Relative Humidity :	42~44%

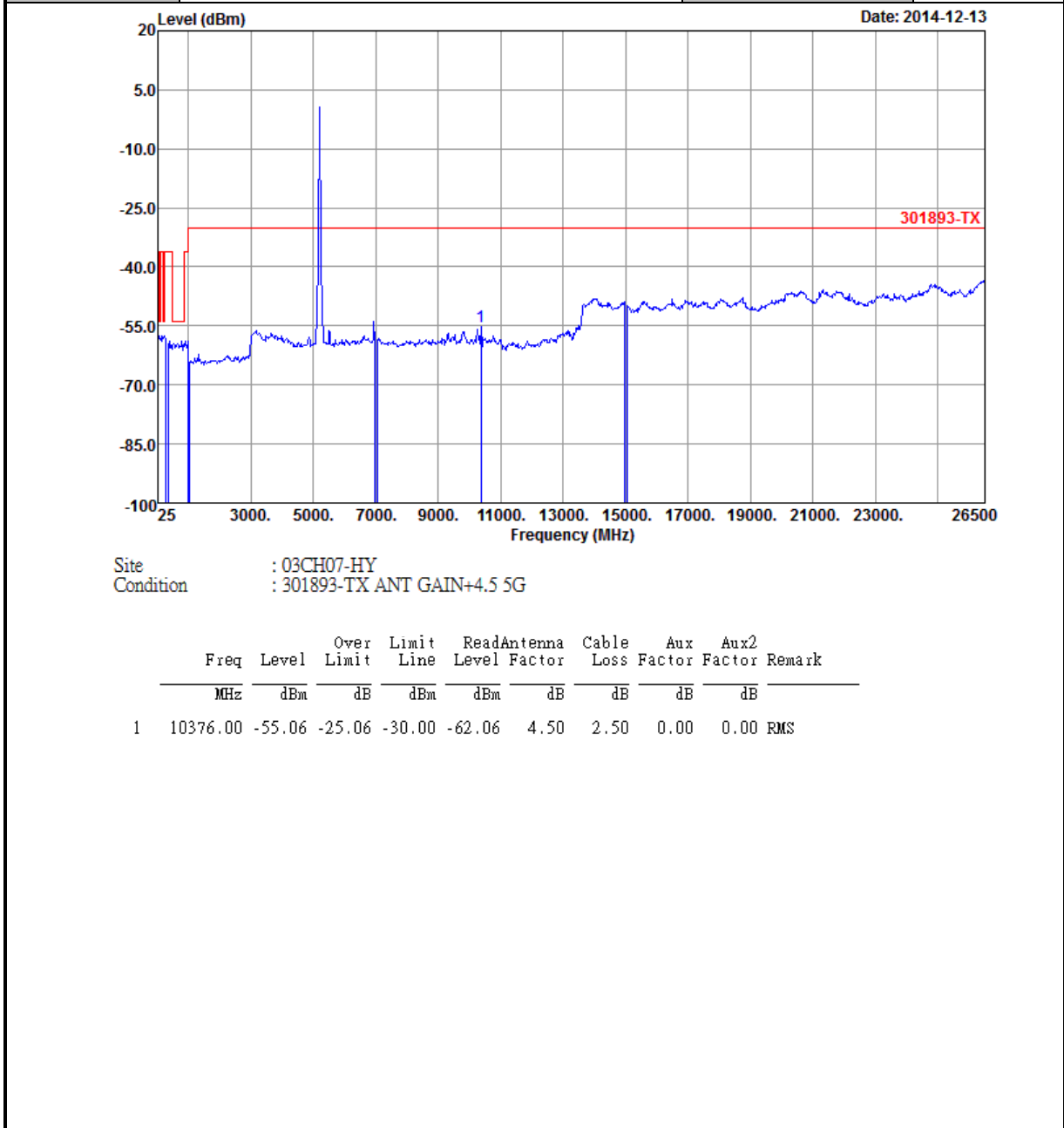


Site : 03CH07-HY
 Condition : 301893-TX ANT GAIN+4.5 5G

	Freq	Level	Over	Limit	ReadAntenna	Cable	Aux	Aux2	Remark
	MHz	dBm	dB	dBm	dBm	dB	dB	dB	
1	11000.00	-55.61	-25.61	-30.00	-62.61	4.50	2.50	0.00	0.00 Peak

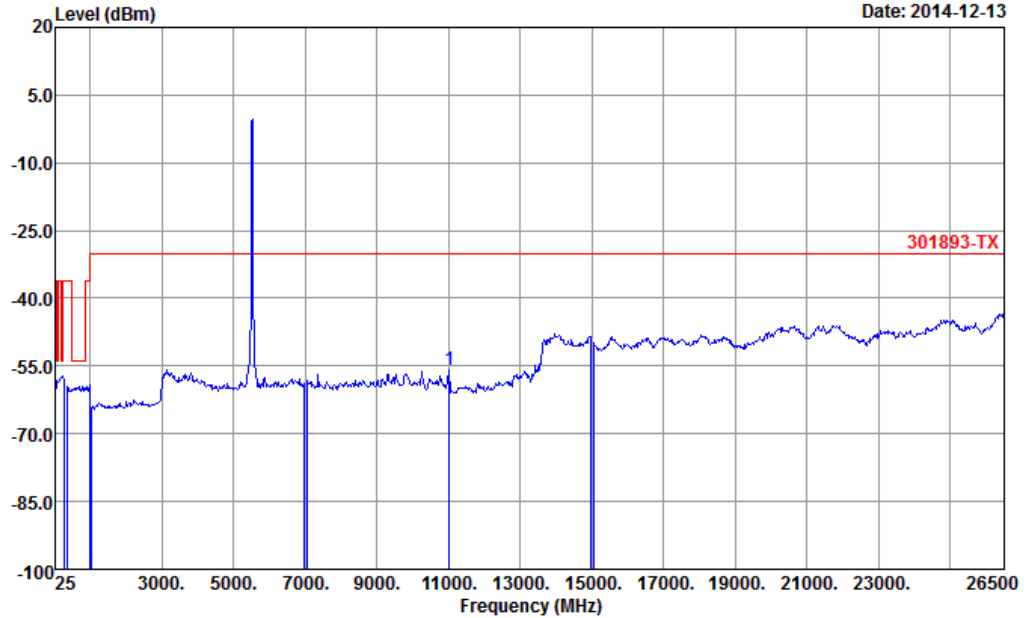


Test Mode :	802.11n HT40 CH38 (5190MHz) for Ant. 2	Temperature :	22~24°C
Test Engineer :	Eric Shih	Relative Humidity :	42~44%





Test Mode :	802.11n HT40 CH102 (5510MHz) for Ant. 2	Temperature :	22~24°C
Test Engineer :	Eric Shih	Relative Humidity :	42~44%



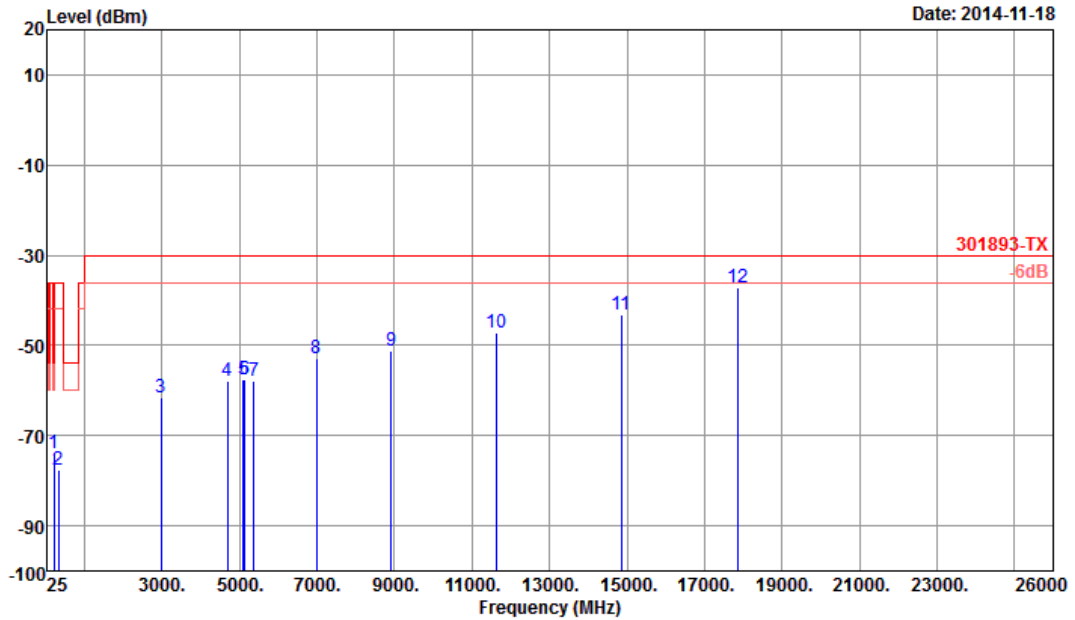
Site : 03CH07-HY
 Condition : 301893-TX ANT GAIN+4.5 5G

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Aux Factor	Aux2 Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	dB	dB	dB	
1	11016.00	-55.77	-25.77	-30.00	-62.77	4.50	2.50	0.00	0.00	RMS



3.5.6 Test Result of Radiated Measurement

Test Mode :	802.11a CH36 (5180MHz) for Ant. 1	Temperature :	23~24°C
Test Engineer :	Chivalry Liu	Relative Humidity :	43~44%
		Polarization :	Horizontal

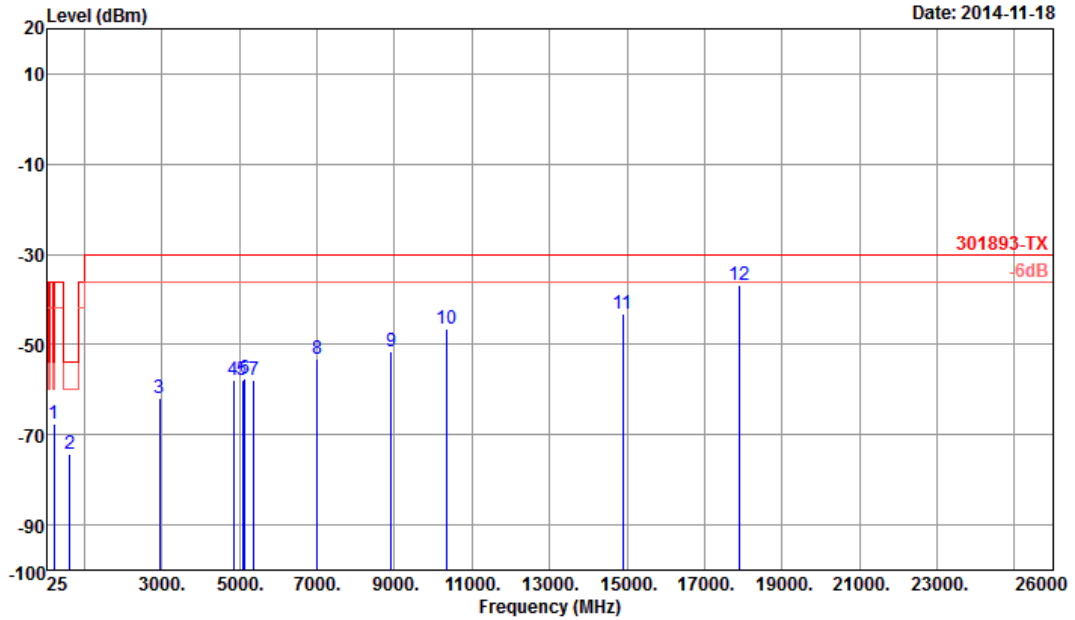


Site : 05CH03-HY
 Condition : 301893-TX HORIZONTAL
 Power : From System

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	207.60	-73.82	-19.82	-54.00	-60.07	-13.75	HORIZONTAL
2	334.30	-77.66	-41.66	-36.00	-67.95	-9.71	HORIZONTAL
3	2974.00	-61.48	-31.48	-30.00	-71.83	10.35	HORIZONTAL
4	4684.00	-57.94	-27.94	-30.00	-72.88	14.94	HORIZONTAL
5	5092.00	-57.63	-27.63	-30.00	-72.88	15.25	HORIZONTAL
6	5139.50	-57.41	-27.41	-30.00	-72.72	15.31	HORIZONTAL
7	5369.65	-57.79	-27.79	-30.00	-73.42	15.63	HORIZONTAL
8	6984.00	-52.97	-22.97	-30.00	-73.63	20.66	HORIZONTAL
9	8914.00	-51.24	-21.24	-30.00	-75.54	24.30	HORIZONTAL
10	11637.00	-47.19	-17.19	-30.00	-76.64	29.45	HORIZONTAL
11	14850.00	-43.28	-13.28	-30.00	-75.92	32.64	HORIZONTAL
12 @	17844.00	-37.05	-7.05	-30.00	-75.62	38.57	HORIZONTAL



Test Mode :	802.11a CH36 (5180MHz) for Ant. 1	Temperature :	23~24°C
Test Engineer :	Chivalry Liu	Relative Humidity :	43~44%
		Polarization :	Vertical

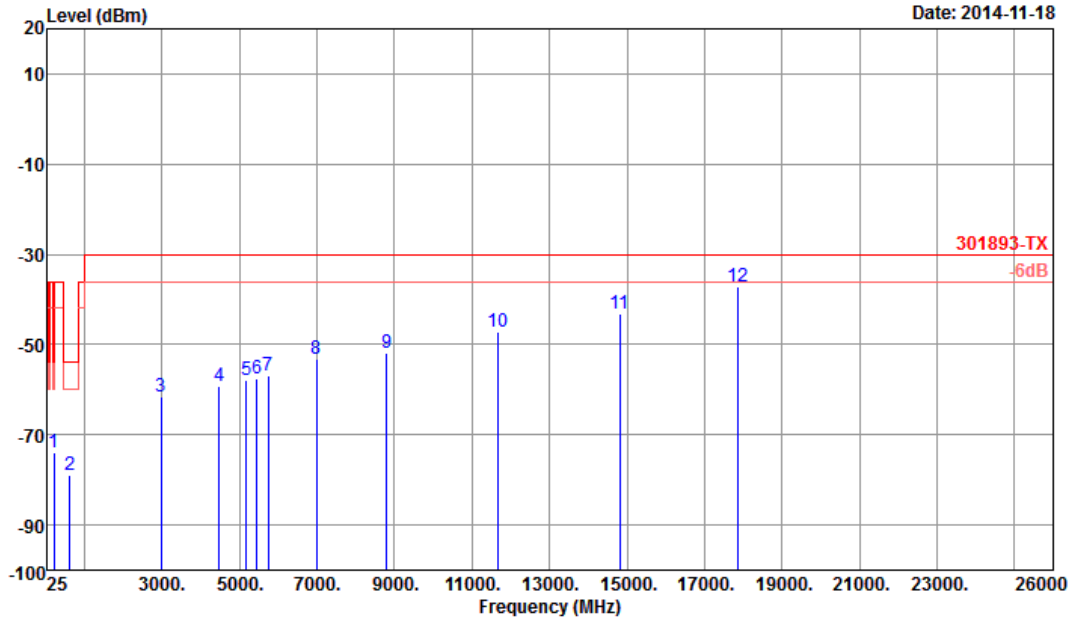


Site : 05CH03-HY
 Condition : 301893-TX VERTICAL
 Power : From System

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	207.05	-67.44	-13.44	-54.00	-54.03	-13.41	VERTICAL
2	621.30	-74.39	-20.39	-54.00	-69.27	-5.12	VERTICAL
3	2932.00	-61.82	-31.82	-30.00	-71.88	10.06	VERTICAL
4	4836.00	-57.99	-27.99	-30.00	-73.33	15.34	VERTICAL
5	5086.00	-57.95	-27.95	-30.00	-72.98	15.03	VERTICAL
6	5137.15	-57.55	-27.55	-30.00	-72.77	15.22	VERTICAL
7	5370.40	-57.87	-27.87	-30.00	-73.40	15.53	VERTICAL
8	6998.00	-53.37	-23.37	-30.00	-73.75	20.38	VERTICAL
9	8920.00	-51.54	-21.54	-30.00	-75.63	24.09	VERTICAL
10	10356.00	-46.59	-16.59	-30.00	-74.14	27.55	VERTICAL
11	14898.00	-43.11	-13.11	-30.00	-75.92	32.81	VERTICAL
12 @	17889.00	-36.85	-6.85	-30.00	-75.61	38.76	VERTICAL



Test Mode :	802.11a CH100 (5500MHz) for Ant. 1	Temperature :	23~24°C
Test Engineer :	Chivalry Liu	Relative Humidity :	43~44%
		Polarization :	Horizontal

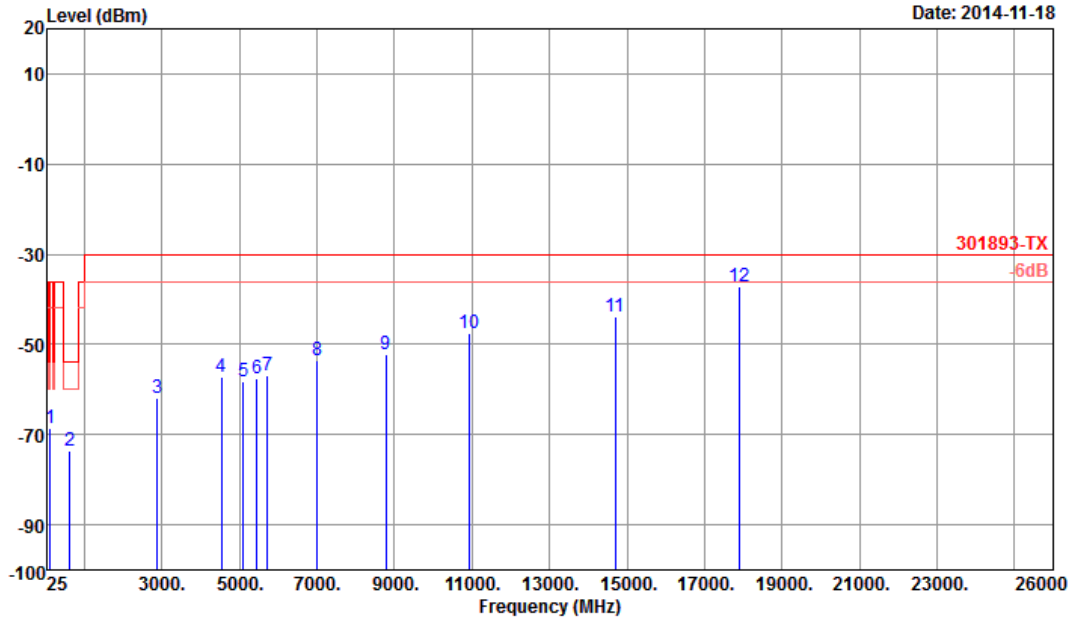


Site : 05CH03-HY
 Condition : 301893-TX HORIZONTAL
 Power : From System

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	207.05	-73.91	-19.91	-54.00	-60.16	-13.75	HORIZONTAL
2	626.90	-78.94	-24.94	-54.00	-73.61	-5.33	HORIZONTAL
3	2972.00	-61.73	-31.73	-30.00	-72.08	10.35	HORIZONTAL
4	4482.00	-59.11	-29.11	-30.00	-73.09	13.98	HORIZONTAL
5	5176.00	-57.91	-27.91	-30.00	-73.59	15.68	HORIZONTAL
6	5440.15	-57.63	-27.63	-30.00	-73.44	15.81	HORIZONTAL
7	5743.20	-57.02	-27.02	-30.00	-73.47	16.45	HORIZONTAL
8	6980.00	-53.22	-23.22	-30.00	-73.88	20.66	HORIZONTAL
9	8788.00	-51.74	-21.74	-30.00	-75.69	23.95	HORIZONTAL
10	11670.00	-47.23	-17.23	-30.00	-76.62	29.39	HORIZONTAL
11	14817.00	-43.31	-13.31	-30.00	-75.93	32.62	HORIZONTAL
12 @	17859.00	-37.06	-7.06	-30.00	-75.82	38.76	HORIZONTAL



Test Mode :	802.11a CH100 (5500MHz) for Ant. 1	Temperature :	23~24°C
Test Engineer :	Chivalry Liu	Relative Humidity :	43~44%
		Polarization :	Vertical

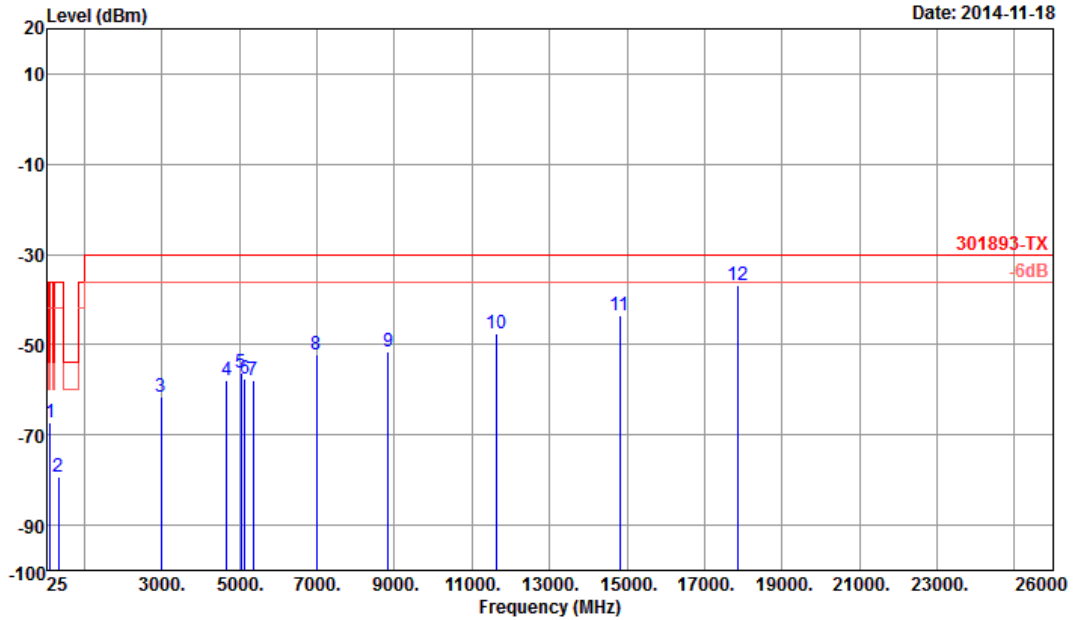


Site : 05CH03-HY
 Condition : 301893-TX VERTICAL
 Power : From System

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	119.88	-68.68	-32.68	-36.00	-53.78	-14.90	VERTICAL
2	622.00	-73.52	-19.52	-54.00	-68.38	-5.14	VERTICAL
3	2872.00	-62.00	-32.00	-30.00	-71.81	9.81	VERTICAL
4	4532.00	-57.24	-27.24	-30.00	-71.23	13.99	VERTICAL
5	5096.00	-58.09	-28.09	-30.00	-73.18	15.09	VERTICAL
6	5442.15	-57.68	-27.68	-30.00	-73.41	15.73	VERTICAL
7	5729.00	-56.90	-26.90	-30.00	-73.38	16.48	VERTICAL
8	6996.00	-53.60	-23.60	-30.00	-73.98	20.38	VERTICAL
9	8780.00	-52.16	-22.16	-30.00	-75.88	23.72	VERTICAL
10	10920.00	-47.43	-17.43	-30.00	-75.85	28.42	VERTICAL
11	14688.00	-43.85	-13.85	-30.00	-76.40	32.55	VERTICAL
12 @	17886.00	-37.10	-7.10	-30.00	-75.84	38.74	VERTICAL



Test Mode :	802.11n HT20 CH36 (5180MHz) for Ant. 1	Temperature :	23~24°C
Test Engineer :	Chivalry Liu	Relative Humidity :	43~44%
		Polarization :	Horizontal

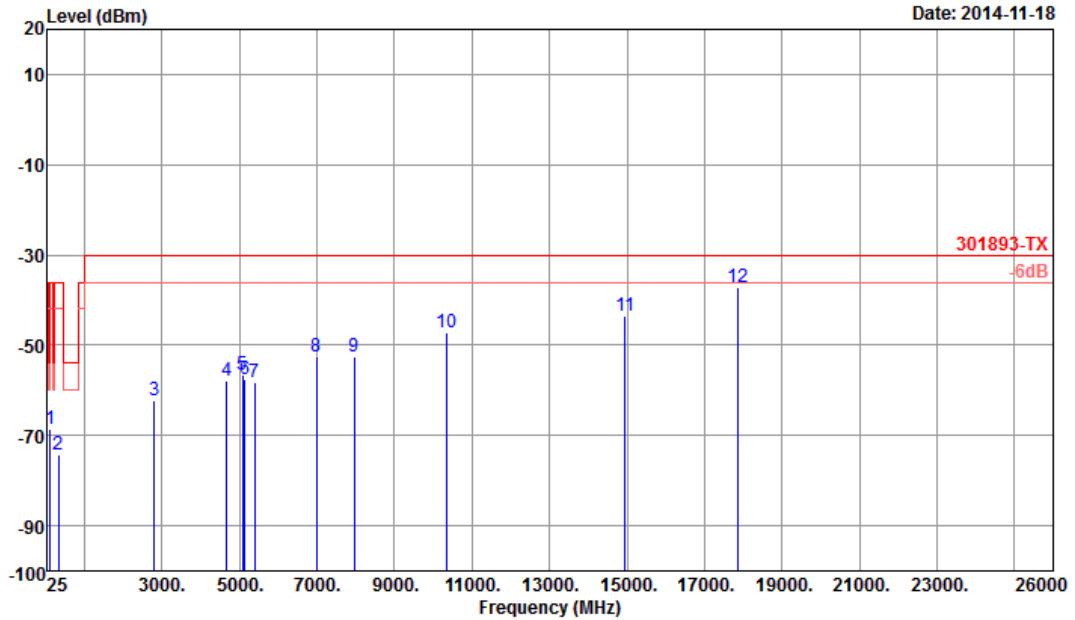


Site : 05CH03-HY
 Condition : 301893-TX HORIZONTAL
 Power : From System

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	115.20	-67.29	-13.29	-54.00	-50.29	-17.00	HORIZONTAL
2	332.20	-79.28	-43.28	-36.00	-69.51	-9.77	HORIZONTAL
3	2974.00	-61.60	-31.60	-30.00	-71.95	10.35	HORIZONTAL
4	4676.00	-57.92	-27.92	-30.00	-72.77	14.85	HORIZONTAL
5	5048.00	-56.22	-26.22	-30.00	-71.41	15.19	HORIZONTAL
6	5133.90	-57.61	-27.61	-30.00	-72.90	15.29	HORIZONTAL
7	5355.85	-57.90	-27.90	-30.00	-73.48	15.58	HORIZONTAL
8	6984.00	-52.03	-22.03	-30.00	-72.69	20.66	HORIZONTAL
9	8832.00	-51.70	-21.70	-30.00	-75.78	24.08	HORIZONTAL
10	11643.00	-47.44	-17.44	-30.00	-76.89	29.45	HORIZONTAL
11	14814.00	-43.52	-13.52	-30.00	-76.14	32.62	HORIZONTAL
12 @	17877.00	-36.98	-6.98	-30.00	-75.92	38.94	HORIZONTAL



Test Mode :	802.11n HT20 CH36 (5180MHz) for Ant. 1	Temperature :	23~24°C
Test Engineer :	Chivalry Liu	Relative Humidity :	43~44%
		Polarization :	Vertical

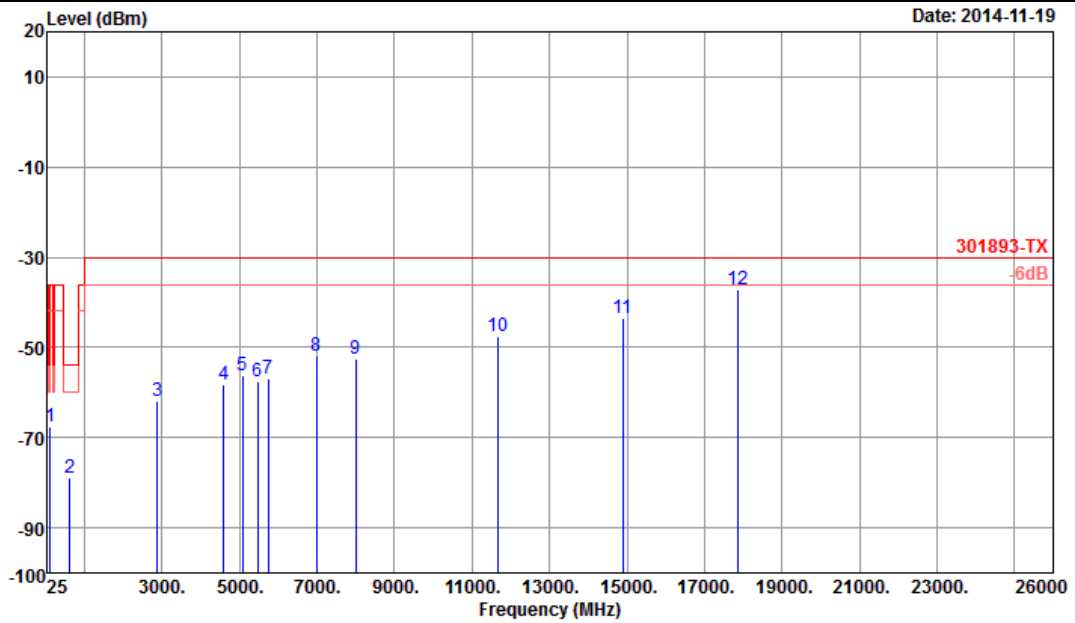


Site : 05CH03-HY
 Condition : 301893-TX VERTICAL
 Power : From System

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	119.88	-68.73	-32.73	-36.00	-53.83	-14.90	VERTICAL
2	332.20	-74.29	-38.29	-36.00	-64.46	-9.83	VERTICAL
3	2808.00	-62.34	-32.34	-30.00	-71.90	9.56	VERTICAL
4	4676.00	-57.87	-27.87	-30.00	-72.50	14.63	VERTICAL
5	5086.00	-56.41	-26.41	-30.00	-71.44	15.03	VERTICAL
6	5139.45	-57.66	-27.66	-30.00	-72.88	15.22	VERTICAL
7	5396.10	-58.06	-28.06	-30.00	-73.69	15.63	VERTICAL
8	6982.00	-52.53	-22.53	-30.00	-72.87	20.34	VERTICAL
9	7952.00	-52.57	-22.57	-30.00	-76.05	23.48	VERTICAL
10	10362.00	-47.04	-17.04	-30.00	-74.63	27.59	VERTICAL
11	14958.00	-43.50	-13.50	-30.00	-76.35	32.85	VERTICAL
12 @	17880.00	-37.12	-7.12	-30.00	-75.86	38.74	VERTICAL



Test Mode :	802.11n HT20 CH100 (5500MHz) for Ant. 1	Temperature :	23~24°C
Test Engineer :	Chivalry Liu	Relative Humidity :	43~44%
		Polarization :	Horizontal

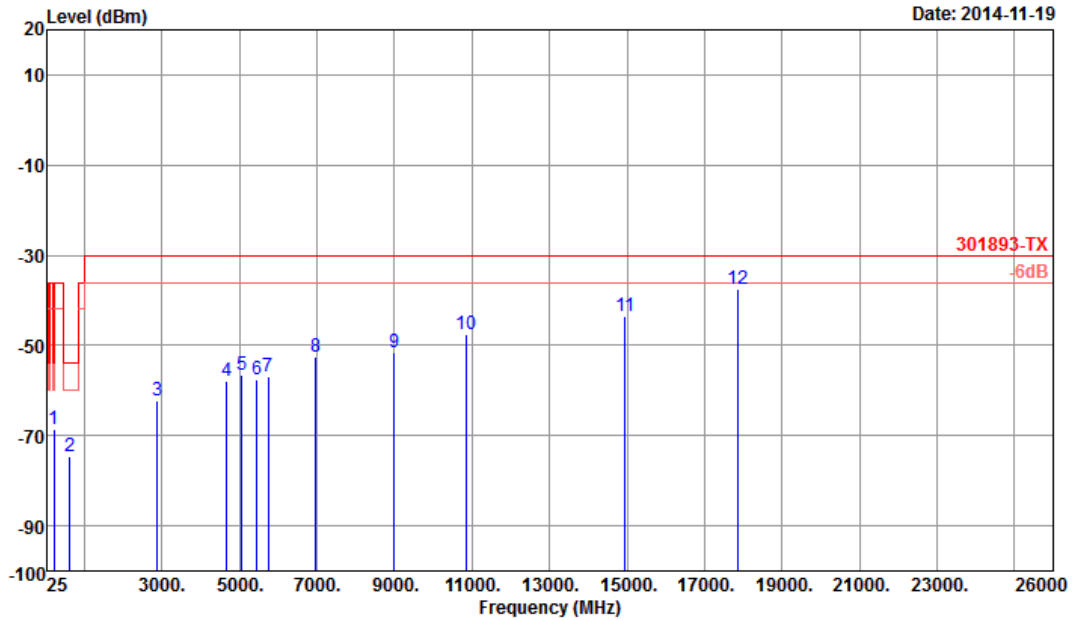


Site : 05CH03-HY
 Condition : 301893-TX HORIZONTAL
 Power : From System

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	115.20	-67.47	-13.47	-54.00	-50.47	-17.00	HORIZONTAL
2	626.90	-79.07	-25.07	-54.00	-73.74	-5.33	HORIZONTAL
3	2872.00	-61.78	-31.78	-30.00	-71.76	9.98	HORIZONTAL
4	4582.00	-58.36	-28.36	-30.00	-72.81	14.45	HORIZONTAL
5	5086.00	-56.19	-26.19	-30.00	-71.42	15.23	HORIZONTAL
6	5462.65	-57.53	-27.53	-30.00	-73.43	15.90	HORIZONTAL
7	5749.05	-56.90	-26.90	-30.00	-73.35	16.45	HORIZONTAL
8	6982.00	-51.97	-21.97	-30.00	-72.63	20.66	HORIZONTAL
9	8004.00	-52.54	-22.54	-30.00	-76.11	23.57	HORIZONTAL
10	11682.00	-47.41	-17.41	-30.00	-76.80	29.39	HORIZONTAL
11	14901.00	-43.50	-13.50	-30.00	-76.21	32.71	HORIZONTAL
12 @	17871.00	-37.11	-7.11	-30.00	-75.88	38.77	HORIZONTAL



Test Mode :	802.11n HT20 CH100 (5500MHz) for Ant. 1	Temperature :	23~24°C
Test Engineer :	Chivalry Liu	Relative Humidity :	43~44%
		Polarization :	Vertical

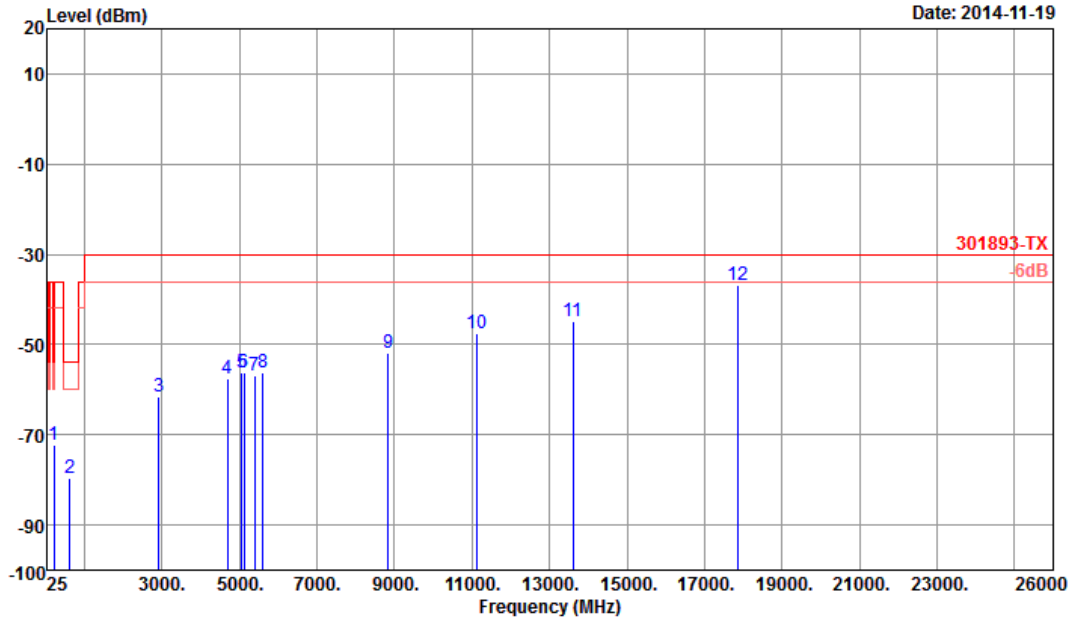


Site : 05CH03-HY
 Condition : 301893-TX VERTICAL
 Power : From System

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	207.33	-68.57	-14.57	-54.00	-55.16	-13.41	VERTICAL
2	622.00	-74.50	-20.50	-54.00	-69.36	-5.14	VERTICAL
3	2870.00	-62.11	-32.11	-30.00	-71.92	9.81	VERTICAL
4	4676.00	-57.85	-27.85	-30.00	-72.48	14.63	VERTICAL
5	5064.00	-56.38	-26.38	-30.00	-71.35	14.97	VERTICAL
6	5443.20	-57.61	-27.61	-30.00	-73.34	15.73	VERTICAL
7	5731.05	-56.86	-26.86	-30.00	-73.34	16.48	VERTICAL
8	6974.00	-52.62	-22.62	-30.00	-72.92	20.30	VERTICAL
9	8984.00	-51.41	-21.41	-30.00	-75.68	24.27	VERTICAL
10	10866.00	-47.61	-17.61	-30.00	-75.96	28.35	VERTICAL
11	14949.00	-43.45	-13.45	-30.00	-76.30	32.85	VERTICAL
12 @	17859.00	-37.50	-7.50	-30.00	-76.07	38.57	VERTICAL



Test Mode :	802.11n HT40 CH38 (5190MHz) for Ant. 1	Temperature :	23~24°C
Test Engineer :	Chivalry Liu	Relative Humidity :	43~44%
		Polarization :	Horizontal

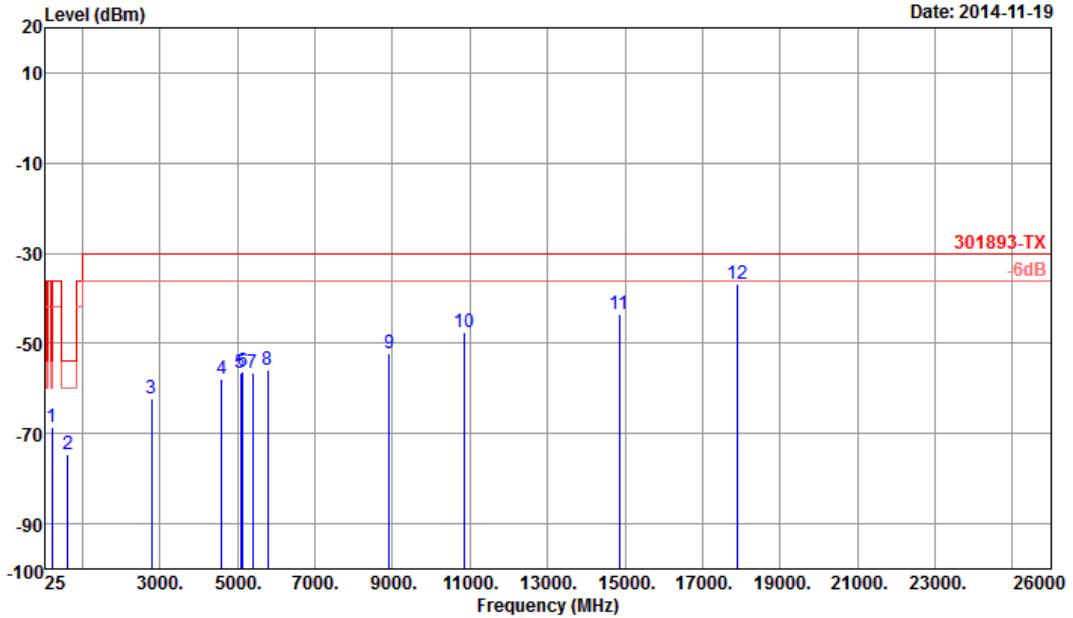


Site : 05CH03-HY
 Condition : 301893-TX HORIZONTAL
 Power : From System

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	207.05	-72.27	-18.27	-54.00	-58.52	-13.75	HORIZONTAL
2	626.90	-79.64	-25.64	-54.00	-74.31	-5.33	HORIZONTAL
3	2910.00	-61.65	-31.65	-30.00	-71.75	10.10	HORIZONTAL
4	4682.00	-57.43	-27.43	-30.00	-72.37	14.94	HORIZONTAL
5	5064.00	-56.26	-26.26	-30.00	-71.47	15.21	HORIZONTAL
6	5107.15	-56.19	-26.19	-30.00	-71.47	15.28	HORIZONTAL
7	5396.30	-56.75	-26.75	-30.00	-72.47	15.72	HORIZONTAL
8	5600.00	-56.17	-26.17	-30.00	-72.34	16.17	HORIZONTAL
9	8828.00	-51.96	-21.96	-30.00	-76.01	24.05	HORIZONTAL
10	11133.00	-47.47	-17.47	-30.00	-76.35	28.88	HORIZONTAL
11	13608.00	-44.83	-14.83	-30.00	-76.99	32.16	HORIZONTAL
12 @	17877.00	-36.96	-6.96	-30.00	-75.90	38.94	HORIZONTAL



Test Mode :	802.11n HT40 CH38 (5190MHz) for Ant. 1	Temperature :	23~24°C
Test Engineer :	Chivalry Liu	Relative Humidity :	43~44%
		Polarization :	Vertical

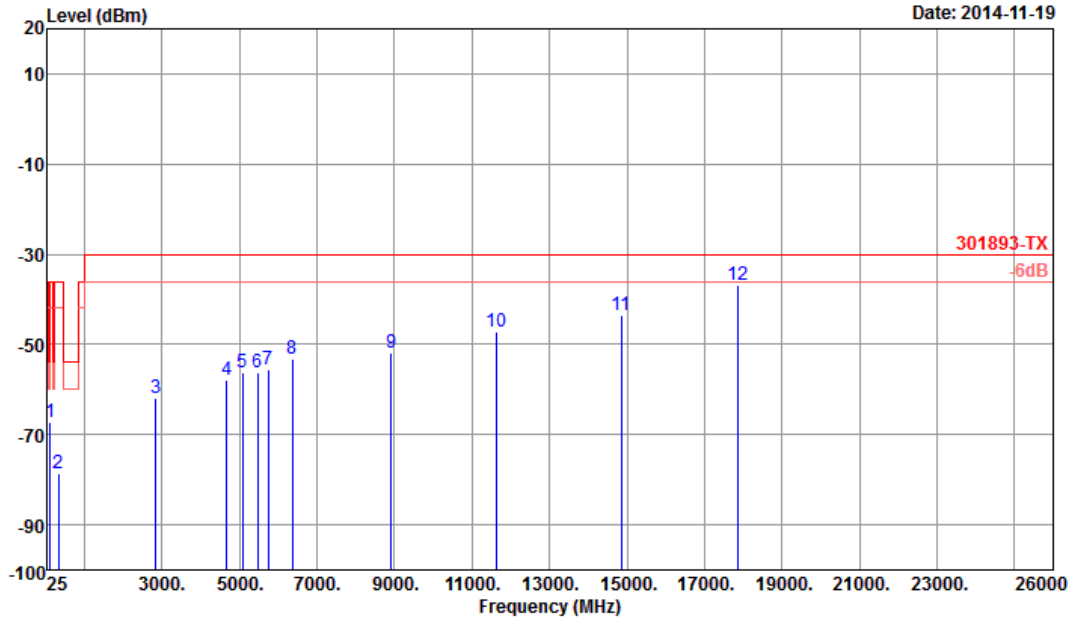


Site : 05CH03-HY
 Condition : 301893-TX VERTICAL
 Power : From System

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	207.33	-68.66	-14.66	-54.00	-55.25	-13.41	VERTICAL
2	622.70	-74.67	-20.67	-54.00	-69.53	-5.14	VERTICAL
3	2774.00	-62.15	-32.15	-30.00	-71.58	9.43	VERTICAL
4	4582.00	-58.02	-28.02	-30.00	-72.25	14.23	VERTICAL
5	5078.00	-56.53	-26.53	-30.00	-71.56	15.03	VERTICAL
6	5127.85	-56.31	-26.31	-30.00	-71.53	15.22	VERTICAL
7	5390.60	-56.68	-26.68	-30.00	-72.25	15.57	VERTICAL
8	5774.00	-55.98	-25.98	-30.00	-72.57	16.59	VERTICAL
9	8916.00	-52.07	-22.07	-30.00	-76.16	24.09	VERTICAL
10	10866.00	-47.50	-17.50	-30.00	-75.85	28.35	VERTICAL
11	14844.00	-43.40	-13.40	-30.00	-76.12	32.72	VERTICAL
12 @	17898.00	-36.94	-6.94	-30.00	-75.86	38.92	VERTICAL



Test Mode :	802.11n HT40 CH134 (5670MHz) for Ant. 1	Temperature :	23~24°C
Test Engineer :	Chivalry Liu	Relative Humidity :	43~44%
		Polarization :	Horizontal

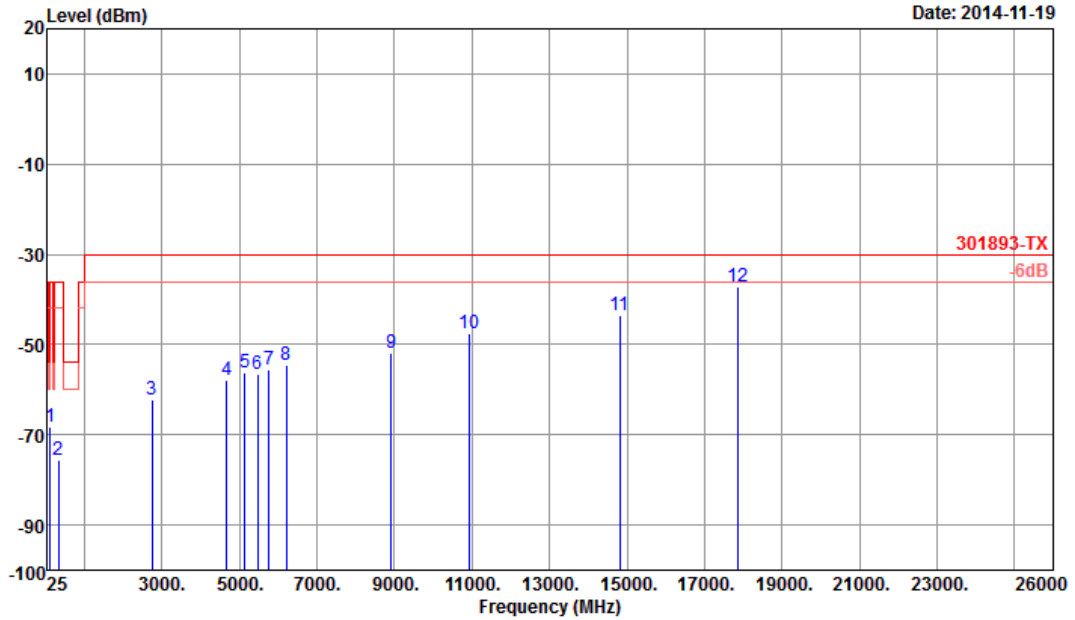


Site : 05CH03-HY
 Condition : 301893-TX HORIZONTAL
 Power : From System

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	115.20	-67.14	-13.14	-54.00	-50.14	-17.00	HORIZONTAL
2	332.90	-78.54	-42.54	-36.00	-68.83	-9.71	HORIZONTAL
3	2836.00	-61.86	-31.86	-30.00	-71.72	9.86	HORIZONTAL
4	4678.00	-57.75	-27.75	-30.00	-72.60	14.85	HORIZONTAL
5	5072.00	-56.20	-26.20	-30.00	-71.43	15.23	HORIZONTAL
6	5462.00	-56.33	-26.33	-30.00	-72.18	15.85	HORIZONTAL
7	5737.65	-55.58	-25.58	-30.00	-72.03	16.45	HORIZONTAL
8	6366.00	-53.25	-23.25	-30.00	-72.05	18.80	HORIZONTAL
9	8912.00	-51.70	-21.70	-30.00	-75.97	24.27	HORIZONTAL
10	11640.00	-47.10	-17.10	-30.00	-76.55	29.45	HORIZONTAL
11	14862.00	-43.52	-13.52	-30.00	-76.16	32.64	HORIZONTAL
12 @	17868.00	-36.97	-6.97	-30.00	-75.74	38.77	HORIZONTAL



Test Mode :	802.11n HT40 CH134 (5670MHz) for Ant. 1	Temperature :	23~24°C
Test Engineer :	Chivalry Liu	Relative Humidity :	43~44%
		Polarization :	Vertical

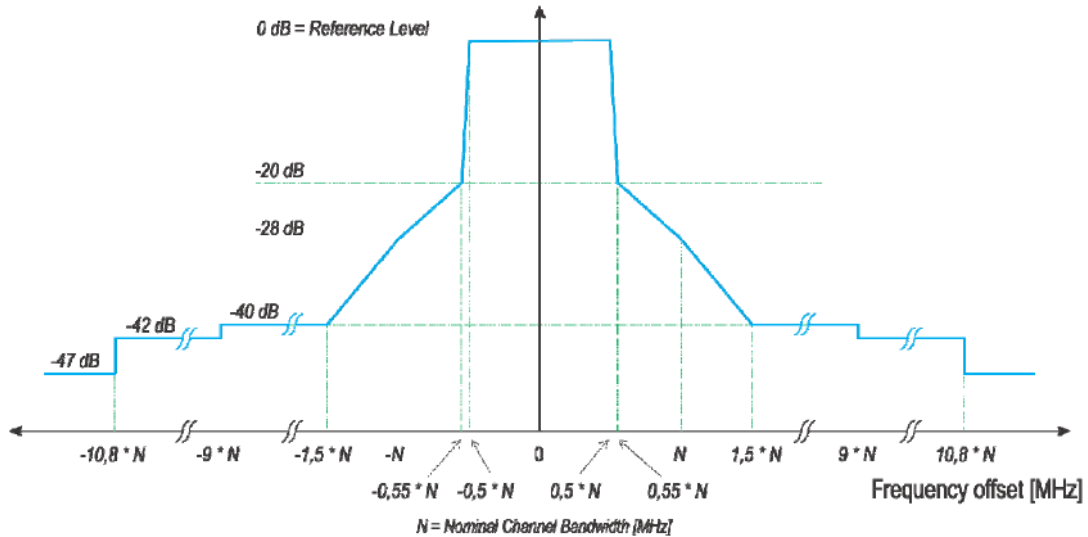


Site : 05CH03-HY
 Condition : 301893-TX VERTICAL
 Power : From System

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	119.88	-68.20	-32.20	-36.00	-53.30	-14.90	VERTICAL
2	332.90	-75.53	-39.53	-36.00	-65.77	-9.76	VERTICAL
3	2742.00	-62.39	-32.39	-30.00	-71.69	9.30	VERTICAL
4	4674.00	-58.03	-28.03	-30.00	-72.66	14.63	VERTICAL
5	5146.00	-56.37	-26.37	-30.00	-71.66	15.29	VERTICAL
6	5461.50	-56.43	-26.43	-30.00	-72.22	15.79	VERTICAL
7	5756.30	-55.60	-25.60	-30.00	-72.15	16.55	VERTICAL
8	6206.00	-54.50	-24.50	-30.00	-72.40	17.90	VERTICAL
9	8912.00	-51.80	-21.80	-30.00	-75.85	24.05	VERTICAL
10	10944.00	-47.39	-17.39	-30.00	-75.82	28.43	VERTICAL
11	14808.00	-43.50	-13.50	-30.00	-76.18	32.68	VERTICAL
12 @	17871.00	-37.10	-7.10	-30.00	-75.68	38.58	VERTICAL

3.6 Transmitter Unwanted Emissions within the 5GHz RLAN Band

3.6.1 Limit of Transmitter Unwanted Emissions within the Band



NOTE: dBc is the spectral density relative to the maximum spectral power density of the transmitted signal.

3.6.2 Measuring Instruments

The measuring equipment is listed in the section 6 of this test report.

3.6.3 Test Procedures

Refer to Section 5.3.6 of ETSI EN 301 893 v1.7.1 (2012-06).

Option 2: For equipment without continuous transmission capability in 5.3.6.2.1.2 will be followed.

This option can also be used as an alternative to option 1 for systems operating in a continuous transmission mode.

3.6.4 Test Setup

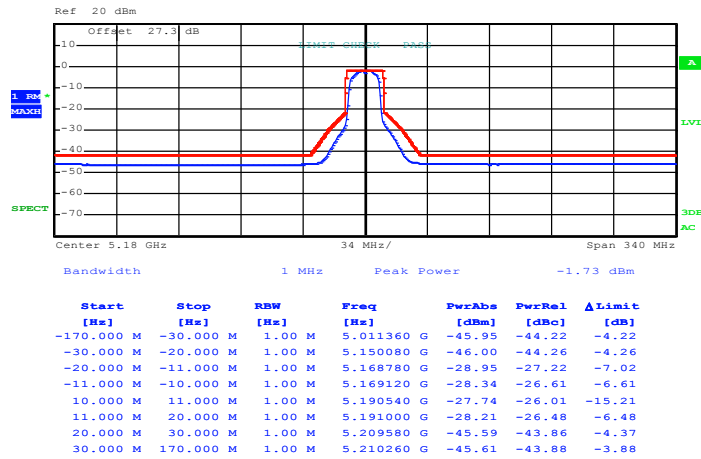




3.6.5 Test Results

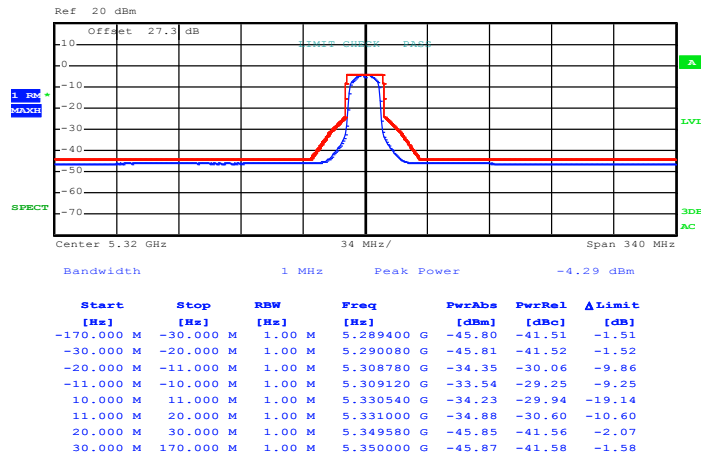
EUT Mode :	802.11a (5150 MHz ~ 5350 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%
Antenna Gain :	4.50dBi	Duty Cycle :	32.38%

Plot on Channel CH36 5180MHz



Date: 15.DEC.2014 11:04:05

Plot on Channel CH64 5320MHz

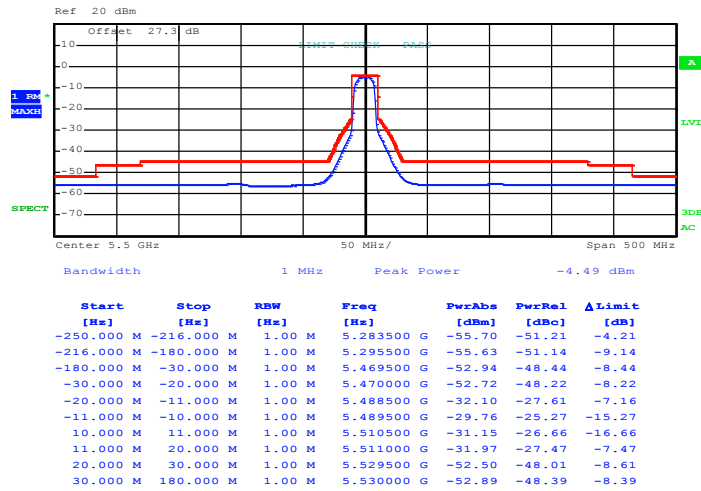


Date: 15.DEC.2014 11:27:43



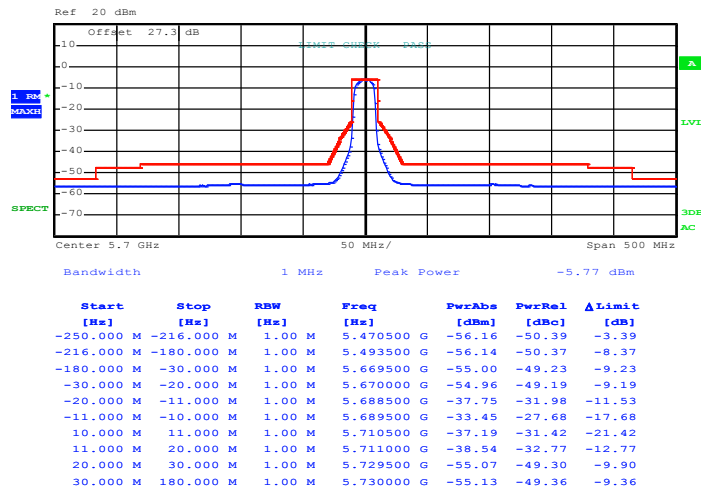
EUT Mode :	802.11a (5470 MHz ~ 5725 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%
Antenna Gain :	4.50dB	Duty Cycle :	32.38%

Plot on Channel CH100 5500MHz



Date: 15.DEC.2014 11:40:44

Plot on Channel CH140 5700MHz

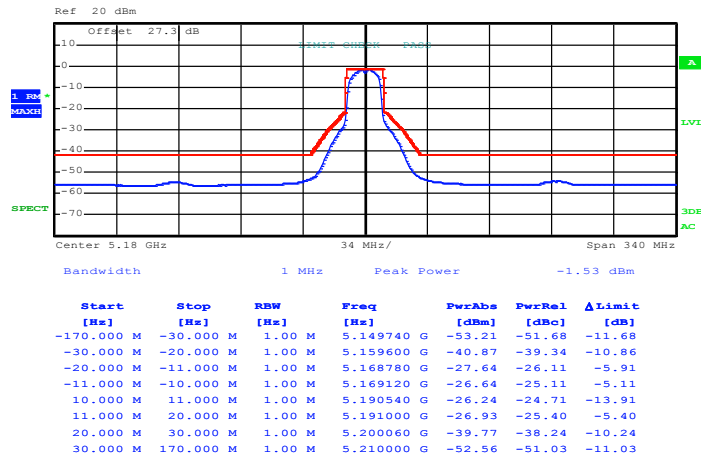


Date: 15.DEC.2014 11:46:37



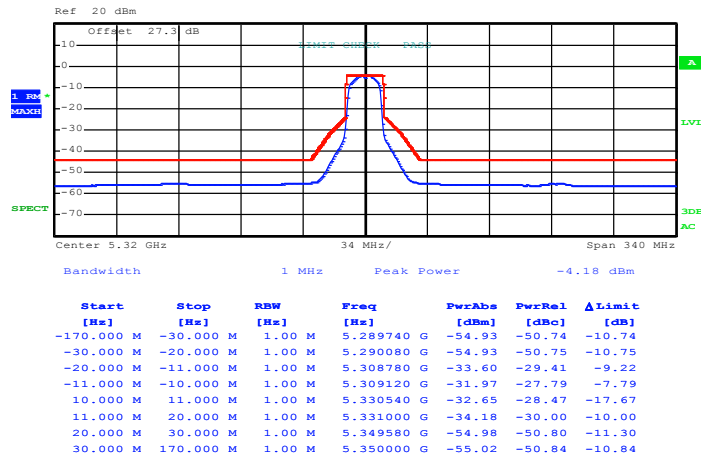
EUT Mode :	802.11n HT20 (5150 MHz ~ 5350 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%
Antenna Gain :	4.50dBi	Duty Cycle :	33.33%

Plot on Channel CH36 5180MHz



Date: 15.DEC.2014 11:52:26

Plot on Channel CH64 5320MHz

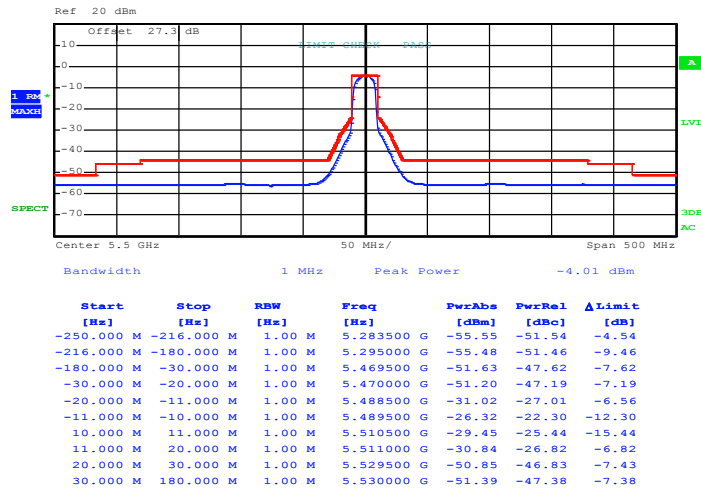


Date: 15.DEC.2014 12:05:10



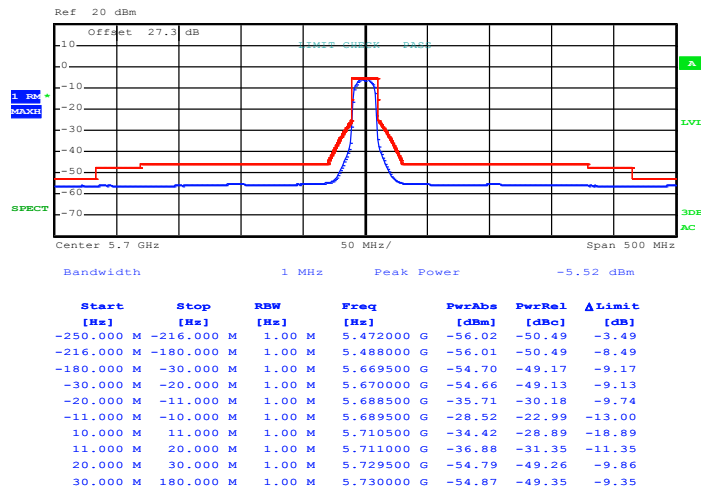
EUT Mode :	802.11n HT20 (5470 MHz ~ 5725 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%
Antenna Gain :	4.50dBi	Duty Cycle :	33.33%

Plot on Channel CH100 5500MHz



Date: 15.DEC.2014 13:52:07

Plot on Channel CH140 5700MHz

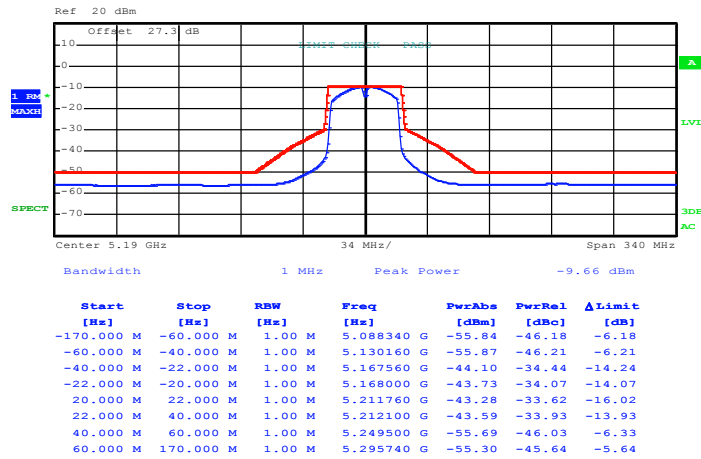


Date: 15.DEC.2014 14:13:16



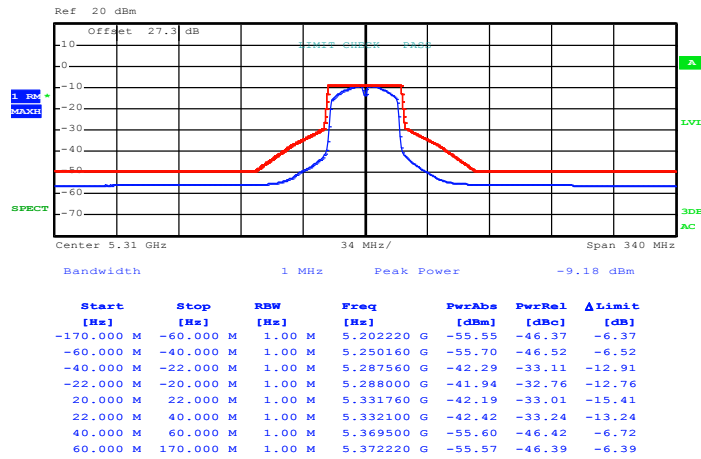
EUT Mode :	802.11n HT40 (5150 MHz ~ 5350 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%
Antenna Gain :	4.50dBi	Duty Cycle :	30.39%

Plot on Channel CH38 5190MHz



Date: 15.DEC.2014 12:13:04

Plot on Channel CH62 5310MHz

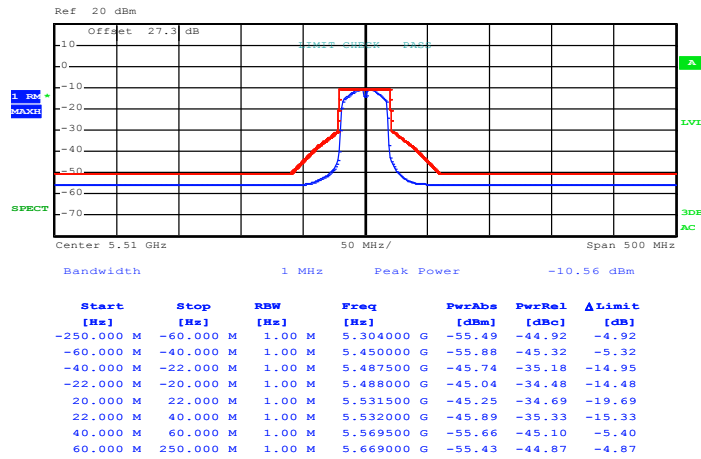


Date: 15.DEC.2014 12:21:56



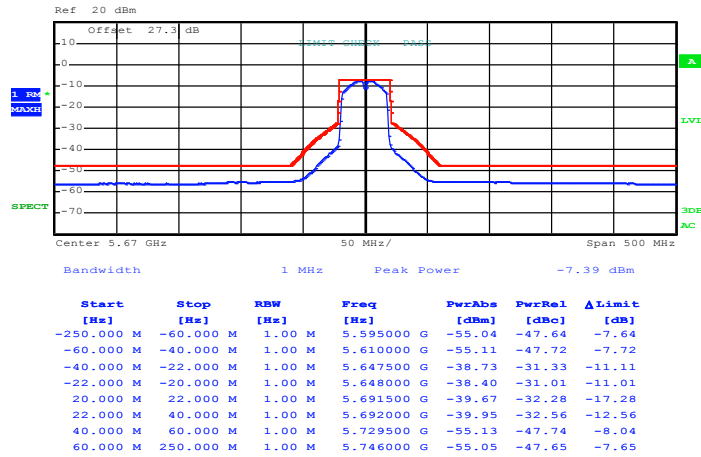
EUT Mode :	802.11n HT40 (5470 MHz ~ 5725 MHz)	Temperature :	21~25°C
Test Engineer :	Alex Lee	Relative Humidity :	51~54%
Antenna Gain :	4.50dBi	Duty Cycle :	30.39%

Plot on Channel CH102 5510MHz



Date: 15.DEC.2014 13:45:33

Plot on Channel CH134 5670MHz



Date: 15.DEC.2014 13:59:40

3.7 Adaptivity

3.7.1 Limit of Adaptivity

Load based Equipment may implement an LBT based spectrum sharing mechanism based on the Clear Channel Assessment (CCA) mode using "energy detect", as described in IEEE 802.11™-2007, clauses 9 and 17, in IEEE 802.11n™-2009 , clauses 9, 11 and 20 providing they comply with the conformance requirements.

Short Control Signaling Transmissions shall have a maximum duty cycle of 5 % within an observation period of 50 ms.

3.7.2 Measurement Instruments

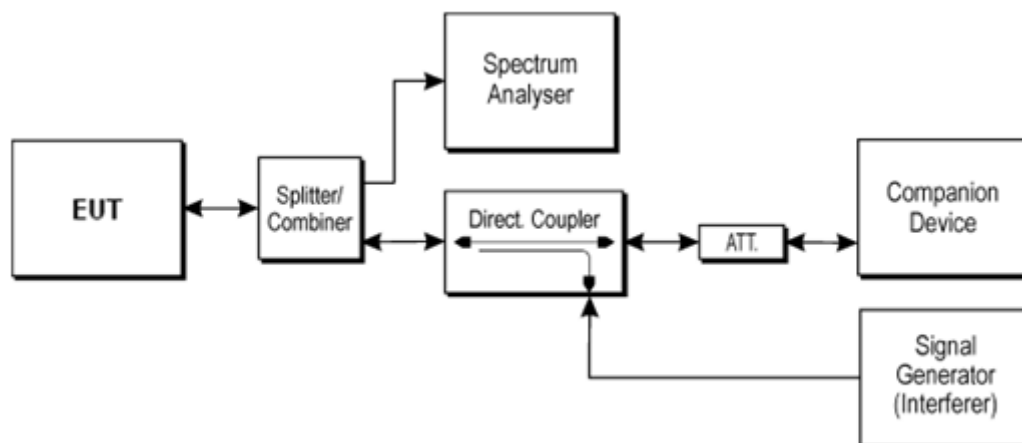
The measuring equipment is listed in the section 6 of this test report.

3.7.3 Test Procedures

Refer to Section 5.3.9 of ETSI EN 301 893 V1.7.1 (2012-06).

Configure the EUT for normal transmissions with a sufficiently high payload (transmitter activity ratio > 30 %) to allow demonstration of compliance of the adaptive mechanism on the channel being tested.

3.7.4 Test Setup





3.7.5 Support Unit used in test configuration and system

Item	Instrument	Manufacturer	Model No.	Characteristics
1.	WLAN AP	Motorola	AP7131N	Dual Band AP
2.	Notebook	Lenovo	E335	FTP / LAN

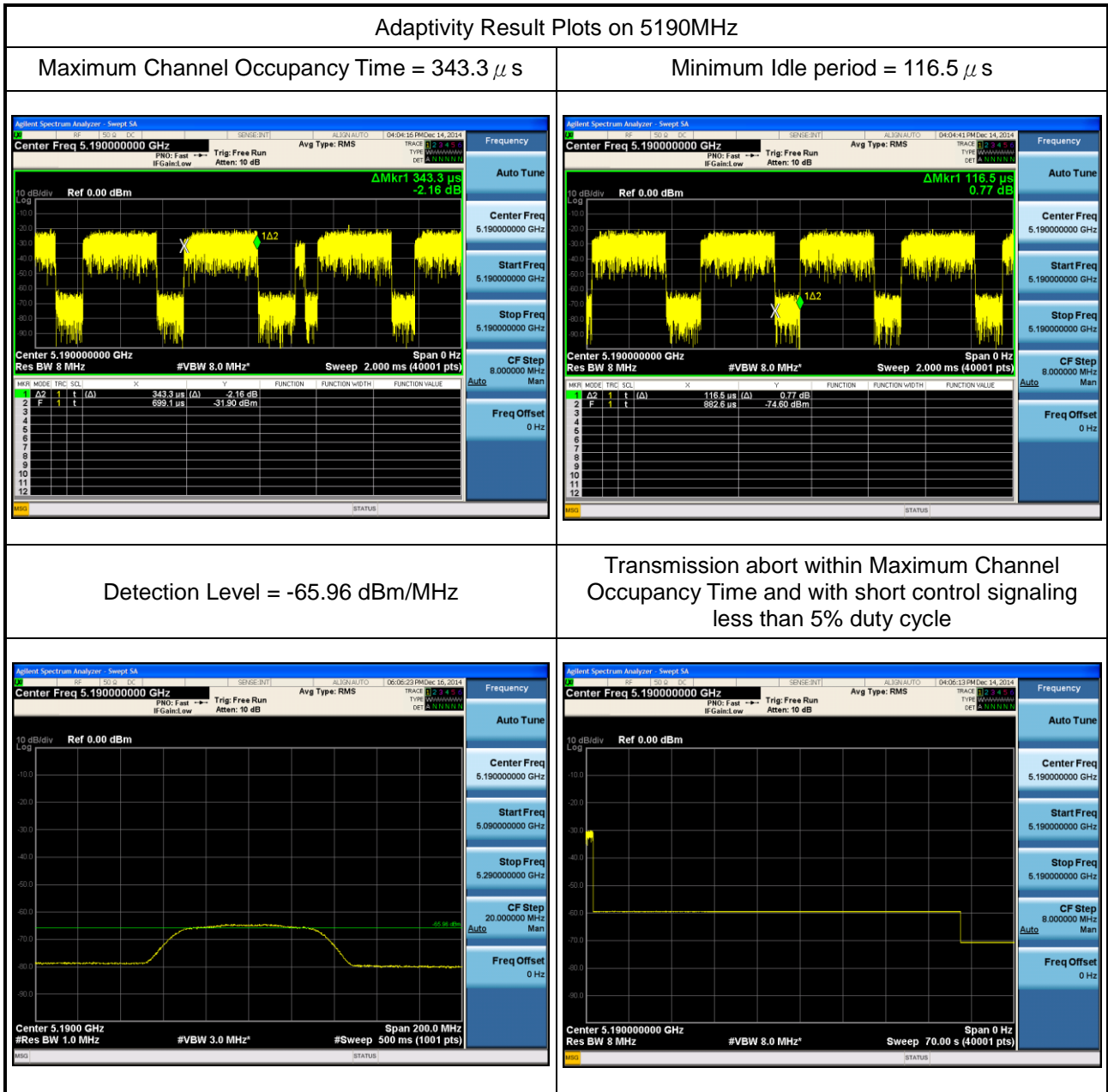
3.7.6 Test Results of Adaptivity and Receiver Blocking

	Modulation	Data Rate (single)	Nominal Bandwidth	Channel	Test Frequency	Test Result
WIFI 5GHz	802.11n	135 Mbit/s	40MHz	38	5190 MHz	PASS
	HT40			102	5510 MHz	PASS

Note: The CCA time is declared by the manufacturer.



3.7.7 Test Results



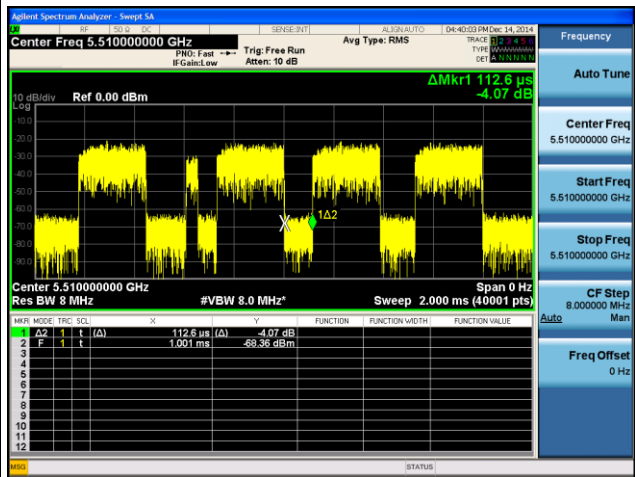
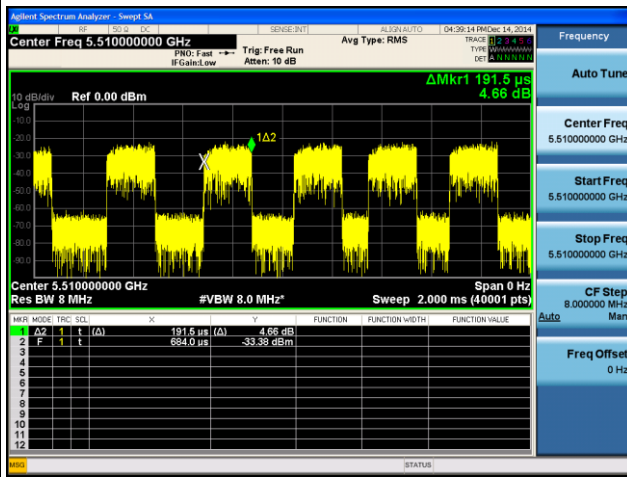
Note: Measurement has offset with cable loss and antenna gain.



Adaptivity Result Plots on 5510MHz

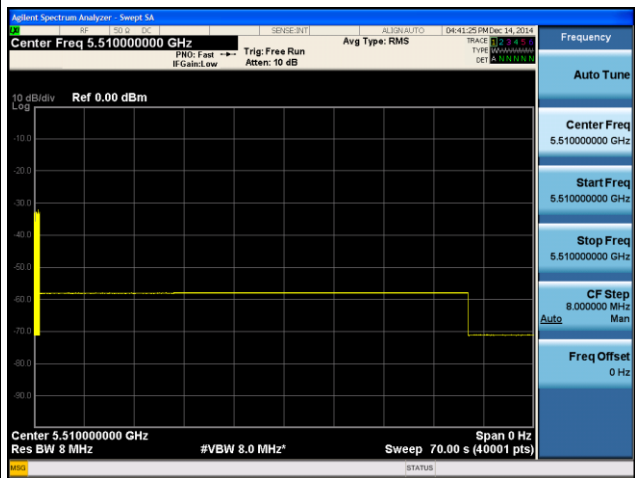
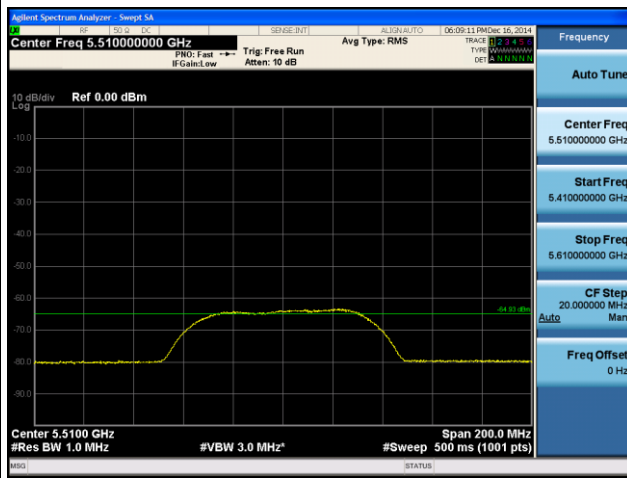
Maximum Channel Occupancy Time = 191.5 μ s

Minimum Idle period = 112.6 μ s



Detection Level = -64.93 dBm/MHz

Transmission abort within Maximum Channel Occupancy Time and with short control signaling less than 5% duty cycle



Note: Measurement has offset with cable loss and antenna gain.



3.8 User Access Restrictions

3.8.1 Definition and Requirement

User Access Restrictions are restraints implemented in the RLAN to restrict access for the user to certain hardware and/or software settings of the equipment.

3.8.2 Description

According to the manufacturer's technical document, this device complies with this test case.



4. Receiver Parameters

4.1 Receiver Spurious Emissions

4.1.1 Limit of Receiver Spurious Emissions

Spurious emission limits for receivers

SUBCLAUSE 4.6.2		
FREQUENCY RANGE	MAXIMUM POWER ERP (<=1 GHZ) EIRP (>1 GHZ)	MEASURED BANDWIDTH
30 MHz to 1 GHz	-57 dBm	100 KHz
1 GHz to 26 GHz	-47 dBm	1 MHz

4.1.2 Measuring Instruments

The measuring equipment is listed in the section 6 of this test report.

4.1.3 Test Procedures

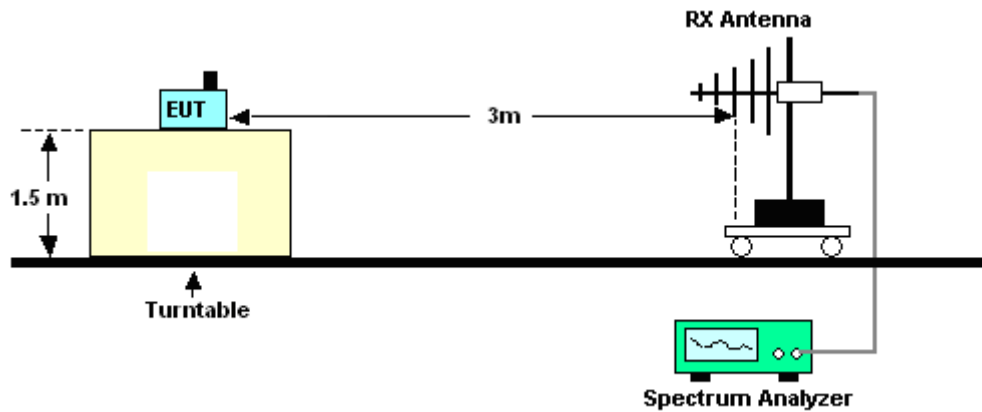
Refer to Section 5.3.7 of ETSI EN 301 893 v1.7.1 (2012-06).

4.1.4 Test Setup

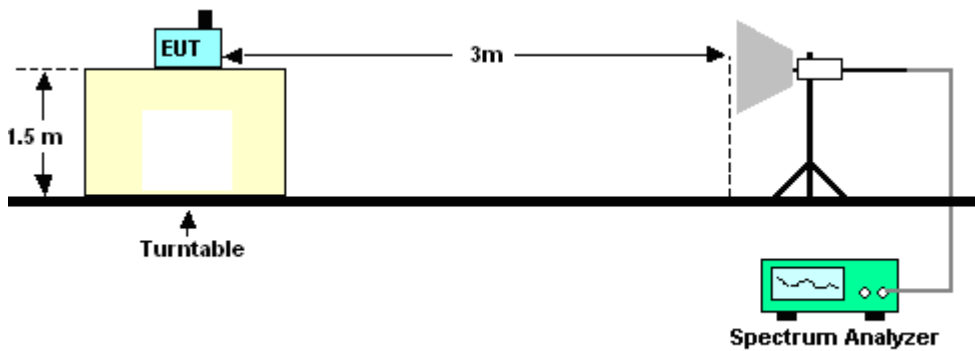
- Test Setup of Conducted Measurement



- Test Setup of Radiated Measurement
<Below 1GHz>



- <Above 1GHz>

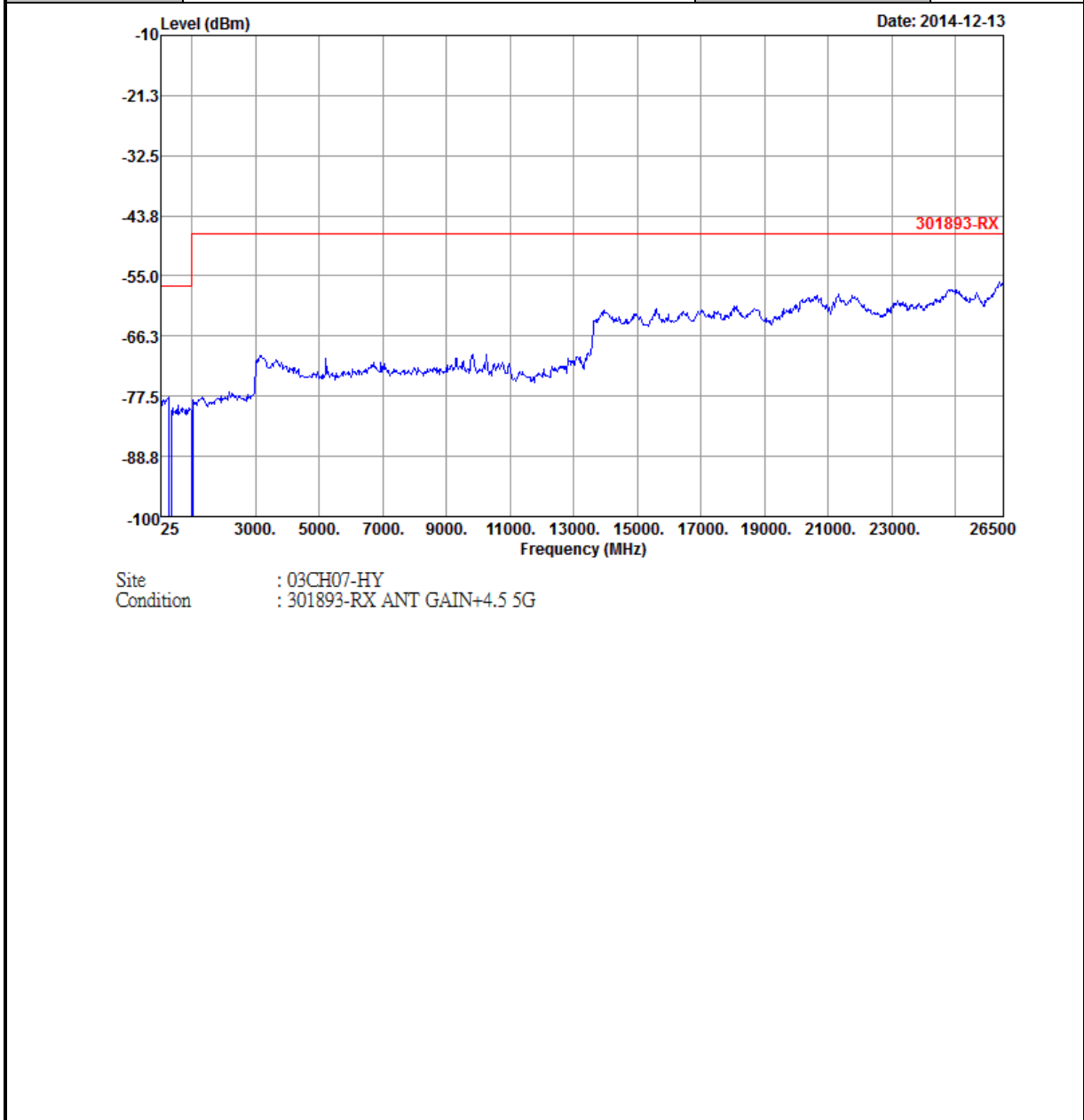




4.1.5 Test Results for Conducted Setup

Number of TX = 1, Ant. 1 (Measured)

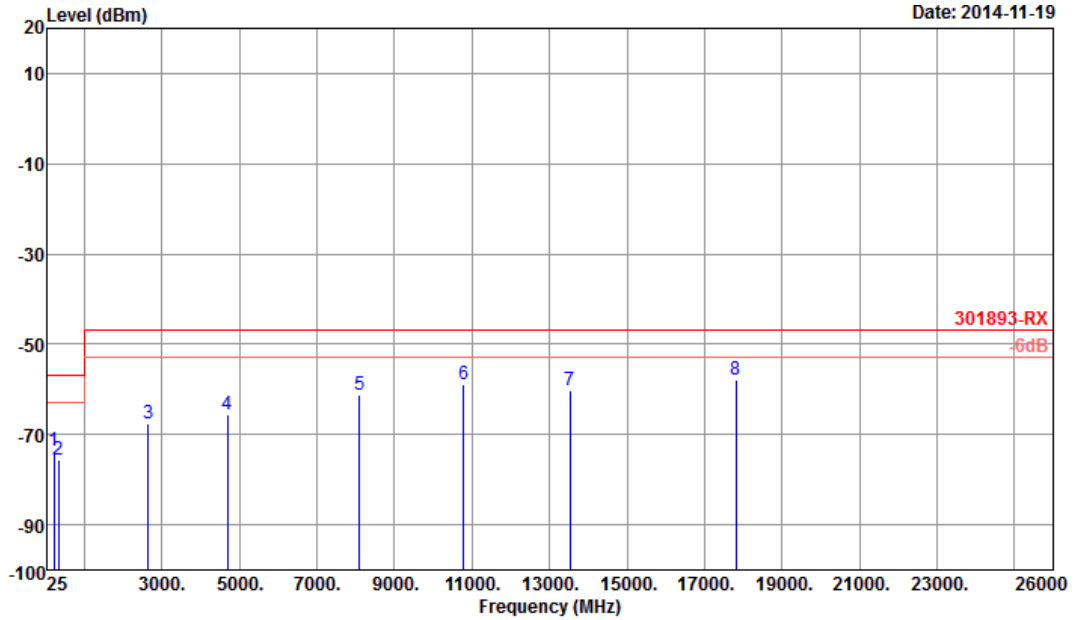
Test Mode :	802.11a CH36 (5180MHz) for Ant. 1	Temperature :	22~24°C
Test Engineer :	Eric Shih	Relative Humidity :	42~44%





4.1.6 Test Result of Radiated Measurement

Test Mode :	802.11a CH36 (5180MHz) for Ant. 1	Temperature :	23~24°C
Test Engineer :	Chivalry Liu	Relative Humidity :	43~44%
		Polarization :	Horizontal

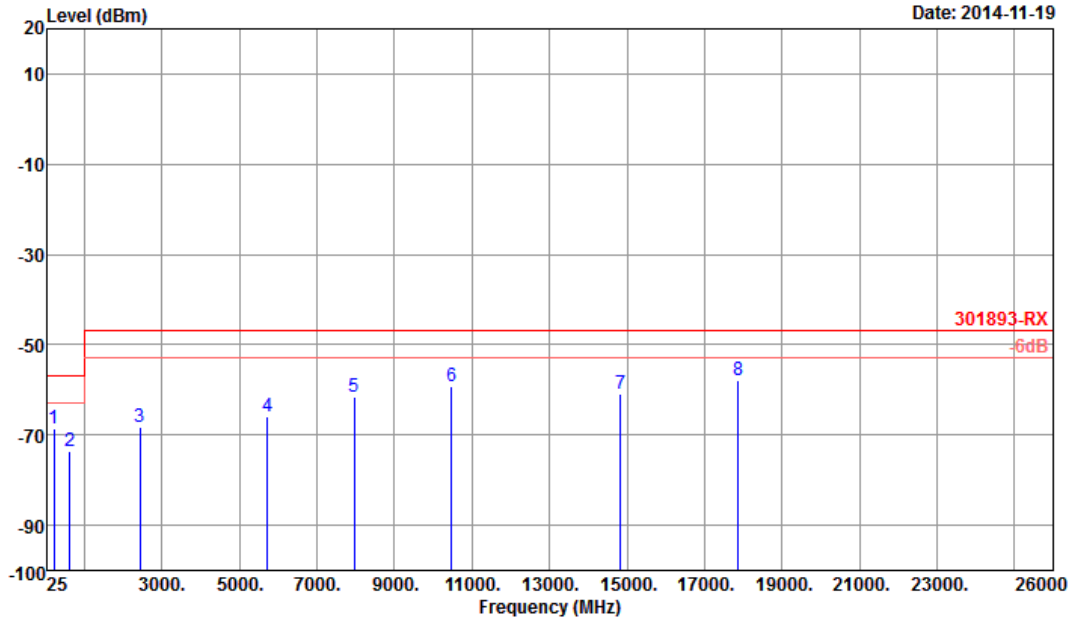


Site : 05CH03-HY
 Condition : 301893-RX HORIZONTAL
 Power : From System

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	207.60	-73.67	-16.67	-57.00	-59.92	-13.75	HORIZONTAL
2	335.70	-75.62	-18.62	-57.00	-65.98	-9.64	HORIZONTAL
3	2638.00	-67.54	-20.54	-47.00	-59.89	-7.65	HORIZONTAL
4	4680.00	-65.46	-18.46	-47.00	-63.51	-1.95	HORIZONTAL
5	8097.00	-61.26	-14.26	-47.00	-68.68	7.42	HORIZONTAL
6	10782.00	-59.01	-12.01	-47.00	-70.06	11.05	HORIZONTAL
7	13536.00	-60.08	-13.08	-47.00	-71.92	11.84	HORIZONTAL
8 @	17817.00	-58.02	-11.02	-47.00	-74.61	16.59	HORIZONTAL



Test Mode :	802.11a CH36 (5180MHz) for Ant. 1	Temperature :	23~24°C
Test Engineer :	Chivalry Liu	Relative Humidity :	43~44%
		Polarization :	Vertical



Site : 05CH03-HY
 Condition : 301893-RX VERTICAL
 Power : From System

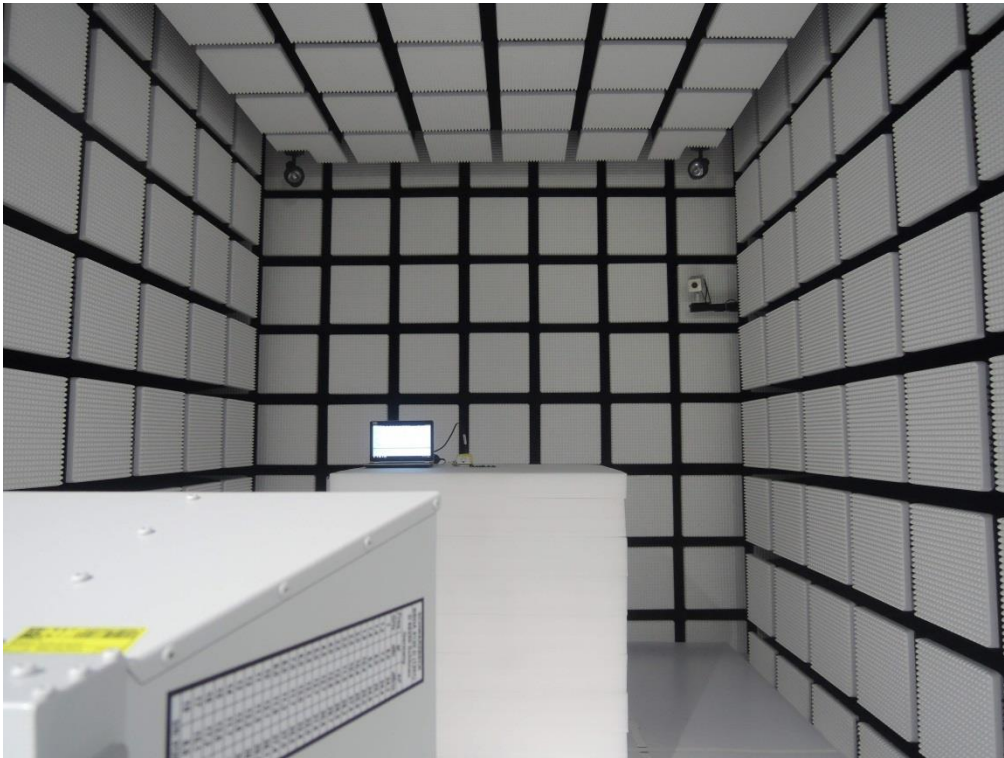
	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	207.60	-68.61	-11.61	-57.00	-55.20	-13.41	VERTICAL
2	622.00	-73.65	-16.65	-57.00	-68.51	-5.14	VERTICAL
3	2430.00	-68.40	-21.40	-47.00	-60.53	-7.87	VERTICAL
4	5730.00	-65.95	-18.95	-47.00	-66.00	0.05	VERTICAL
5	7959.00	-61.60	-14.60	-47.00	-68.93	7.33	VERTICAL
6	10479.00	-59.15	-12.15	-47.00	-70.17	11.02	VERTICAL
7	14832.00	-60.90	-13.90	-47.00	-73.02	12.12	VERTICAL
8 @	17871.00	-57.87	-10.87	-47.00	-74.77	16.90	VERTICAL

5. Photographs of Radiated Emission Test Configuration

25MHz~1GHz



1GHz~18GHz



18GHz~26GHz





6. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 09, 2014	Dec. 09, 2014 ~ Dec. 18, 2014	Jun. 08, 2015	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Aug. 09, 2014	Dec. 09, 2014 ~ Dec. 18, 2014	Aug. 08, 2015	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Aug. 09, 2014	Dec. 09, 2014 ~ Dec. 18, 2014	Aug. 08, 2015	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D3SP	TBN-930701	N/A	Jul. 17, 2014	Dec. 09, 2014 ~ Dec. 18, 2014	Jul. 16, 2015	Conducted (TH02-HY)
Signal Generator (Interferer)	Rohde & Schwarz	SMJ100A	101375	9kHz~6GHz	Feb. 19, 2014	Dec. 14, 2014 ~ Dec. 18, 2014	Feb. 18, 2015	Conducted (TH02-HY)
Signal Generator (Blocker)	Rohde & Schwarz	SMU200A	103008	9kHz~3GHz	May 13, 2014	Dec. 14, 2014 ~ Dec. 18, 2014	May 12, 2015	Conducted (TH02-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Mar. 10, 2014	Dec. 14, 2014 ~ Dec. 18, 2014	Mar. 09, 2015	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV30	101749	10Hz ~ 30GHz	Feb. 10, 2014	Dec. 13, 2014	Feb. 09, 2015	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~ 44GHz	Feb. 10, 2014	Nov. 18, 2014 ~ Nov. 19, 2014	Feb. 09, 2015	Radiation (05CH03-HY)
Bilog Antenna	TDK	HLP-3003C	130776	30MHz ~ 3GHz	Dec. 12, 2013	Nov. 18, 2014 ~ Nov. 19, 2014	Dec. 11, 2014	Radiation (05CH03-HY)
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1212	1GHz ~ 18GHz	Mar. 03, 2014	Nov. 18, 2014 ~ Nov. 19, 2014	Mar. 02, 2015	Radiation (05CH03-HY)
Amplifier	EMCI	EMC001830	980191	10MHz~8GHz	Jan. 27, 2014	Nov. 18, 2014 ~ Nov. 19, 2014	Jan. 26, 2015	Radiation (05CH03-HY)
Preamplifier	Agilent	8449B	3008A02665	1GHz~26.5GHz	Feb. 10, 2014	Nov. 18, 2014 ~ Nov. 19, 2014	Feb. 09, 2015	Radiation (05CH03-HY)
Antenna Mast	ChainTek	MD-200	1308055	1m ~ 4m	N/A	Nov. 18, 2014 ~ Nov. 19, 2014	N/A	Radiation (05CH03-HY)
Turn Table	ChainTek	T-150S	1308010	0 degree ~ 360 degree	N/A	Nov. 18, 2014 ~ Nov. 19, 2014	N/A	Radiation (05CH03-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 02, 2014	Nov. 18, 2014 ~ Nov. 19, 2014	Oct. 01, 2015	Radiation (05CH03-HY)



7. Uncertainty Evaluation

Test Item	Uncertainty
RF Frequency	2.33×10^{-7} (Hz)
RF output power, conducted	± 0.61 dB
Power density, conducted	± 0.60 dB
Radiated emissions	± 3.51 dB
Conducted emissions	± 1.94 dB
Temperature	± 0.8 °C
Humidity	± 3 %
Time	± 0.33 %