CE Test Report

Equipment	:	**Sterling-LWB5 Module**
Model No.	:	**450-0162, 450-0168, 450-0169** **(Refer to item 1.1.1 for more details)**
Brand Name	:	**Laird Connectivity**
Applicant	:	**Laird Connectivity LLC**
Address	:	**W66N220 Commerce Court, Cedarburg, Wisconsin 53012, USA**
Standard	:	**EN 301 893 V2.1.1 (2017-05)**
Received Date	:	**Sep. 06, 2022**
Tested Date	:	**Aug. 07~ Sep. 04, 2017 (for original test)** **Sep. 22, 2022 (for new test)**

We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:	**Approved by:**
James Fan / Assistant Manager	**Gary Chang / Manager**

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Release Record

Report No.	Version	Description	Issued Date
ER770305-03AN	Rev. 01	Initial issue	Oct. 05, 2022

Summary of Test Result

Ref. Std. Clause	Test Items	Measured	Result
4.2.1	Carrier Frequencies	Meet the requirement of limit.	Pass
4.2.2	Nominal Channel Bandwidth and Occupied Channel Bandwidth	Meet the requirement of limit.	Pass
4.2.3	RF Output Power & Transmit Power Control (TPC)	5.15-5.25GHz: 20.19 dBm 5.25-5.35GHz: 20.21 dBm 5.47-5.725GHz: 20.65 dBm	Pass
4.2.3	Power Density	Meet the requirement of limit.	Pass
4.2.4	Transmitter Unwanted Emissions	Meet the requirement of limit.	Pass
4.2.5	Receiver Spurious Emissions	Meet the requirement of limit.	Pass
4.2.6	Dynamic Frequency Selection (DFS)	Meet the requirement of limit.	Pass
4.2.7	Adaptivity (Channel Access Mechanism)	Meet the requirement of limit.	Pass
4.2.8	Receiver Blocking	Meet the requirement of limit.	Pass
4.2.9	User Access Restrictions	Meet the requirement of limit.	Pass
4.2.10	Geo-location capability	This test is not required since the device does not support this function	NA

Note:
1. The DFS measurement was recorded in Report No.: EY770305.

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Information

This report is issued as a supplementary report to original ICC report no. ER770305AN. The modification is adding test of channel access mechanism, maximum channel occupancy time and changing the brand model and applicant name. Therefore, related test items had been performed and presented in the following sections.

1.1.1 Product Details

The following models are provided to this EUT.

Brand Name	Model Name	Product Name	Description
Laird Connectivity	450-0162	Sterling-LWB5 Module	SIP Module
	450-0168		U.FL Module
	450-0169		Chip Antenna Module

1.1.2 Specification of the Equipment under Test (EUT)

RF General Information					
IEEE Std. 802.11	Frequency Range (MHz)	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N_{TX})	Data Rate / MCS
a	5150-5250 5250-5350 5500-5700	5180-5240 5260-5320 5500-5700	36-48 [4] 52-64 [4] 100-140 [11]	1	6-54 Mbps
n (HT20)	5150-5250 5250-5350 5500-5700	5180-5240 5260-5320 5500-5700	36-48 [4] 52-64 [4] 100-140 [11]	1	MCS 0-7
n (HT40)	5150-5250 5250-5350 5500-5700	5190-5230 5270-5310 5510-5670	38-46 [2] 54-62 [2] 102-134 [5]	1	MCS 0-7
ac (VHT20)	5150-5250 5250-5350 5500-5700	5180-5240 5260-5320 5500-5700	36-48 [4] 52-64 [4] 100-140 [11]	1	MCS 0-9
ac (VHT40)	5150-5250 5250-5350 5500-5700	5190-5230 5270-5310 5510-5670	38-46 [2] 54-62 [2] 102-134 [5]	1	MCS 0-9
ac (VHT80)	5150-5250 5250-5350 5500-5700	5210 5290 5530-5610	42 [1] 58 [1] 106-122 [2]	1	MCS 0-9
Note 1: 802.11a/n/ac uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.					

1.1.3 Antenna Details

Ant. No.	Model	Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)			
				2400~2483.5	5150~5250	5250~5350	5470~5725
1	LSR/001-0009	Dipole	IPEX U.FL	2	2		
2	LSR/FlexPIFA 001-0016	PIFA	IPEX U.FL	2.5	3		
3	LSR/001-0012	Dipole	IPEX U.FL	2	2		
4	CHIP ANTENNA: Johanson P/N: 2450AD14A5500#	Chip	IPEX U.FL	1	4		

1.1.4 EUT Operational Condition

Power Supply Type	3.3Vdc from host		
SW Version	6.37.39.77		
Operational Voltage	☒ Vnom (3.3 V)	☒ Vmax (3.6 V)	☒ Vmin (1.71 V)
Operational Climatic	☒ Tnom (20°C)	☒ Tmax (85°C)	☒ Tmin (-40°C)

1.1.5 Accessories

N/A

1.1.6 Adaptive Equipment

Adaptive Equipment		
☒	Adaptive Equipment without the possibility to switch to a non-adaptive mode:	
	☒	The equipment has implemented an LBT based DAA mechanism:
		☐ The equipment is Frame Based equipment
		☒ The equipment is Load Based equipment
		☐ The equipment can switch dynamically between Frame Based and Load Based equipment
	☐	The equipment has implemented an non-LBT based DAA mechanism
	☐	The equipment can operate in more than one adaptive mode
☐	Adaptive Equipment which can also operate in a non-adaptive mode	

1.1.7 Channel List

Frequency band (MHz)		5150~5350	
802.11a / n HT20 / ac VHT20		802.11n HT40 / ac VHT40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
36	5180	38	5190
40	5200	46	5230
44	5220	54	5270
48	5240	62	5310
52	5260	802.11ac VHT80	
56	5280	42	5210
60	5300	58	5290
64	5320	--	--

Frequency band (MHz)		5500~5700	
802.11a / n HT20 / ac VHT20		802.11n HT40 / ac VHT40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
100	5500	102	5510
104	5520	110	5550
108	5540	118	5590
112	5560	126	5630
116	5580	134	5670
120	5600	802.11ac VHT80	
124	5620	106	5530
128	5640	122	5610
132	5660	--	--
136	5680	--	--
140	5700	--	--

1.1.8 Test Tool and Duty Cycle

Test tool	Sterling WLAN RF Eval Tool, Version: 2.10.0.0
Duty Cycle Of Test Signal (%)	96.98% - IEEE 802.11a 96.47% - IEEE 802.11ac VHT20 93.20% - IEEE 802.11ac VHT40 87.98% - IEEE 802.11ac VHT80
Duty Factor	0.13 - IEEE 802.11a 0.16 - IEEE 802.11ac VHT20 0.31 - IEEE 802.11ac VHT40 0.56 - IEEE 802.11ac VHT80

1.1.9 Power Setting

Modulation Mode	Test Frequency (MHz)											
	a / ac (VHT20)				ac (VHT40)				ac (VHT80)			
	5180	5320	5500	5700	5190	5310	5510	5670	5210	5290	5530	5610
a	16	16	16	16	--	--	--	--	--	--	--	--
ac (VHT20)	14	14	14	14	--	--	--	--	--	--	--	--
ac (VHT40)	--	--	--	--	10	10	10	10	--	--	--	--
ac (VHT80)	--	--	--	--	--	--	--	--	10	10	10	10

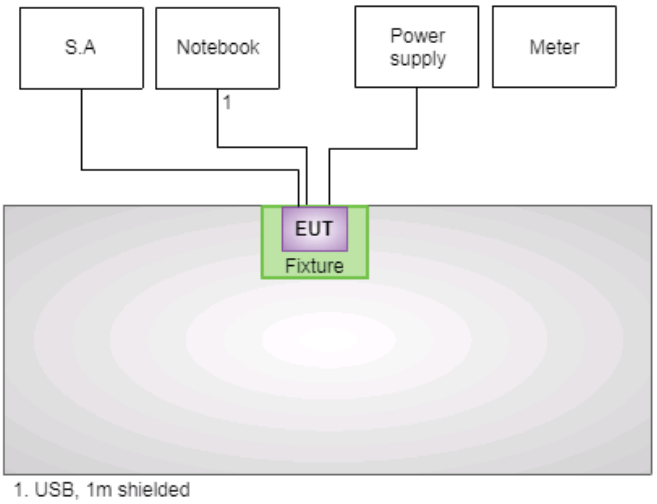
1.2 Local Support Equipment List

Support Equipment List						
No.	Equipment	Brand	Model	S/N	FCC ID	Signal cable / Length (m)
1	Notebook	DELL	Latitude E6430	J5GB4X1	DoC	USB, 1m shielded.
2	DC Power Supply	GWINSTEK	GPC-3060D	EM884797	---	---
3	Fixture	---	---	---	---	---

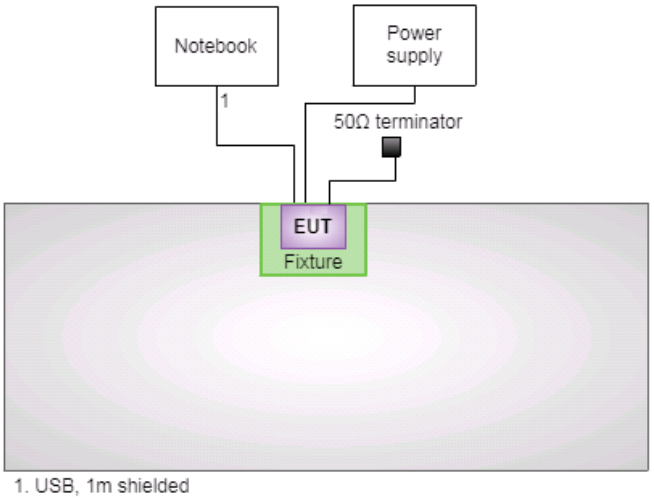
Note: Fixture is provided by applicant.

1.3 Test Setup Chart

Test Setup Diagram (Conducted)



Test Setup Diagram (Radiated)



1.4 Test Equipment and Calibration Data

Test Item	Radiated Emissions				
Test Site	Fully-anechoic chamber 2 / (05CH02-WS)				
Tested Date	Aug. 07 ~ Aug. 08, 2017				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	Agilent	N9010A	MY52221474	Oct. 14, 2016	Oct. 13, 2017
Bilog Antenna 30-1000MHz	SCHWARZBECK	VULB9168	9168-563	Jan. 05, 2017	Jan. 04, 2018
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	9120D-1205	Jan. 05, 2017	Jan. 04, 2018
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170508	Dec. 29, 2016	Dec. 28, 2017
Preamplifier	Agilent	83017A	MY53270013	Jan. 10, 2017	Jan. 09, 2018
Preamplifier 30-1000MHz	EMC	EMC02325	980188	Dec. 13, 2016	Dec. 12, 2017
Preamplifier	EMC	EMC184045B	980192	Aug. 24, 2016	Aug. 23, 2017
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22622/4	Dec. 13, 2016	Dec. 12, 2017
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22623/4	Dec. 14, 2016	Dec. 13, 2017
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22621/4	Dec. 14, 2016	Dec. 13, 2017
RF cable-4M	HUBER+SUHNER	SUCOFLEX104	MY22579/4	Dec. 14, 2016	Dec. 13, 2017
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-002	Dec. 14, 2016	Dec. 13, 2017
LF cable-3M	EMC	EMC8D-NM-NM-3000	131102	Dec. 14, 2016	Dec. 13, 2017
LF cable-10M	EMC	EMC8D-NM-NM-10000	131101	Dec. 14, 2016	Dec. 13, 2017
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Adaptivity				
Test Site	(TH01-WS)				
Tested Date	Aug. 30, 2017				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV-7	101607	Dec. 07, 2016	Dec. 06, 2017
RF cable-4M	HUBER+SUHNER	SUCOFLEX_104	MY15686/4	Dec. 16, 2016	Dec. 15, 2017
RF cable-0.5M	HUBER+SUHNER	SUCOFLEX_104	296081/4	Dec. 16, 2016	Dec. 15, 2017
RF cable-0.2M	HUBER+SUHNER	SUCOFLEX_104	329023/4	Dec. 16, 2016	Dec. 15, 2017
RF cable-0.2M	HUBER+SUHNER	SUCOFLEX_104	329021/4	Dec. 16, 2016	Dec. 15, 2017
MXG-B RF Vector Signal Generator	Agilent	N5182B	MY53051912	Apr. 15, 2017	Apr. 14, 2018
Preamplifier	Burgeon	BPA-530	100219	Jul. 28, 2017	Jul. 27, 2018
Oscilloscope	National Instruments	USB-5133	F651FF	Jul. 28, 2017	Jun. 27, 2018
Measurement Software	Sporton	Sporton_3	2.2.0.0	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Sep. 04, 2017				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	ROHDE&SCHWARZ	FSV40	101486	Nov. 15, 2016	Nov. 14, 2017
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Nov. 21, 2016	Nov. 20, 2017
Power Sensor	Agilent	U2021XA	MY53480019	Feb. 06, 2017	Feb. 05, 2018
Power Sensor	Agilent	U2021XA	MY53510003	Feb. 06, 2017	Feb. 05, 2018
Power Sensor	Agilent	U2021XA	MY54070003	Feb. 15, 2017	Feb. 14, 2018
Power Sensor	Agilent	U2021XA	MY54060013	Feb. 15, 2017	Feb. 14, 2018
Signal Generator	R&S	SMB100A	175727	Oct. 19, 2016	Oct. 18, 2017
DC POWER SOURCE	GW INSTEK	GPC-6030D	EM892433	Oct. 20, 2016	Oct. 19, 2017
Combiner(1X2)	woken	0120A02201801O	DOM2AEW1A23	Dec. 15, 2016	Dec. 14, 2017
Combiner(1X4)	woken	0120A04056002D	111204	Dec. 15, 2016	Dec. 14, 2017
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Measurement Software	Agilent	EN RF test	1.1501125	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Adaptivity				
Test Site	(TH01-WS)				
Tested Date	Sep. 22, 2022				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum	R&S	FSV-7	101607	Jan. 28, 2022	Jan. 27, 2023
RF cable-4M	HUBER+SUHNER	SUCOFLEX_104	MY15686/4	Oct. 12, 2021	Oct. 11, 2022
RF cable-0.5M	HUBER+SUHNER	SUCOFLEX_104	296081/4	Oct. 14, 2021	Oct. 13, 2022
RF cable-0.2M	HUBER+SUHNER	SUCOFLEX_104	329023/4	Oct. 14, 2021	Oct. 13, 2022
RF cable-0.2M	HUBER+SUHNER	SUCOFLEX_104	329021/4	Oct. 14, 2021	Oct. 13, 2022
MXG-B RF Vector Signal Generator	Agilent	N5182B	MY53050081	May 17, 2022	May 16, 2023
Preamplifier	Burgeon	BPA-530	100219	Nov. 15, 2021	Nov. 14, 2022
Oscilloscope	National Instruments	USB-5133	F651FF	Aug. 16, 2022	Aug. 15, 2023
Combiner(1X2)	Woken	2WAYDIV-1	0120A02056002D	Oct. 15, 2021	Oct. 14, 2022
Combiner(1X2)	Woken	DOM2AEW1A22	0120A02201801O	Oct. 15, 2021	Oct. 14, 2022
Combiner(1X4)	Woken	4WAYDIV	0120A042011010	Oct. 14, 2021	Oct. 13, 2022
Direction Coupler	Marvelous Microwave	MVE4514-20	20	Oct. 14, 2021	Oct. 13, 2022
Attenuator	Warison	WATT-6SR1211	01	Oct. 14, 2021	Oct. 13, 2022
Measurement Software	Sporton	Sporton_3	2.2.0.0	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Receiver Blocking				
Test Site	(05CH01-WS)				
Tested Date	Aug. 30, 2017				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Wireless connectivity tester	ROHDE&SCHWARZ	CMW270	100856	Nov. 07, 2016	Nov. 06, 2017
Signal Generator	R&S	SMB100A	175727	Oct. 19, 2016	Oct. 18, 2017
RF Cable	HUBER+SUHNER	SUCOFLEX_104	500202/4	Dec. 16, 2016	Dec. 15, 2017
RF Cable	HUBER+SUHNER	SUCOFLEX_104	296088/4	Dec. 16, 2016	Dec. 15, 2017
RF Cable	HUBER+SUHNER	SUCOFLEX_104	329023/4	Dec. 16, 2016	Dec. 15, 2017
Note: Calibration Interval of instruments listed above is one year.					

1.5 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

EN 301 893 V2.1.1 (2017-05)

1.6 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Measurement Uncertainty		
Parameters	**Uncertainty**	**Limit**
Radio Frequency	±1.4 x 10^{-9}	±1 × 10^{-5}
RF power conducted	±0.808 dB	±1,5 dB
RF power radiated	±3.398 dB	±6 dB
Spurious emission, conducted	±2.470 dB	±3 dB
Spurious emission, radiated	±3.398 dB	±6 dB
Humidity	±4.7%	±5 %
Temperature	±0.8 °C	±2 °C
Time	±0.1 %	±10 %

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
RF Conducted	TH01-WS	23°C / 65%	Jack Li
Radiated Emission	05CH02-WS	24°C / 65%	Ryan Lee
Adaptivity	TH01-WS	23°C / 67%	Jack Li
Receiver Blocking	05CH01-WS	22.5°C / 64%	David Chiu

2.2 Testing Facility

Test Laboratory	International Certification Corp.
Test Site	TH01-WS, 05CH01-WS
Address of Test Site (Kwei Shan)	No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.
Test Laboratory	International Certification Corp.
Test Site	05CH02-WS
Address of Test Site (Kwei Shan II)	No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.

2.3 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
RF Output Power Power Spectral Density	11a VHT20 VHT40 VHT80	5180 / 5320 / 5500 / 5700 5180 / 5320 / 5500 / 5700 5190 / 5310 / 5510 / 5670 5210 / 5290 / 5530 / 5610	6 Mbps MCS 0 MCS 0 MCS 0	1, 2, 3
Transmitter Unwanted Emissions outside the 5 GHz RLAN Bands	11a VHT20 VHT40 VHT80	5180 / 5700 5180 / 5700 5190 / 5670 5210 / 5610	6 Mbps MCS 0 MCS 0 MCS 0	3
Carrier Frequencies Occupied Channel Bandwidth Transmitter Unwanted Emissions within the 5 GHz RLAN Band	11a VHT20 VHT40 VHT80	5180 / 5320 / 5500 / 5700 5180 / 5320 / 5500 / 5700 5190 / 5310 / 5510 / 5670 5210 / 5290 / 5530 / 5610	6 Mbps MCS 0 MCS 0 MCS 0	3
Receiver Spurious Emissions	11a VHT20 VHT40 VHT80	5180 / 5700 5180 / 5700 5190 / 5670 5210 / 5610	6 Mbps MCS 0 MCS 0 MCS 0	3
Adaptivity	11a VHT40	5180 / 5500 5190 / 5510	6 Mbps MCS 0	3
Receiver Blocking	11a	5180 / 5700	6 Mbps	3

NOTE:

1. The test configurations are listed as follows:
   Configuration 1 : Dipole Antenna
   Configuration 2 : PIFA Antenna
   Configuration 3 : Chip Antenna
2. 50Ω terminators is connected to antenna port of EUT for radiated emission measurement.

3 Transmitter Test Results

3.1 Carrier Frequencies

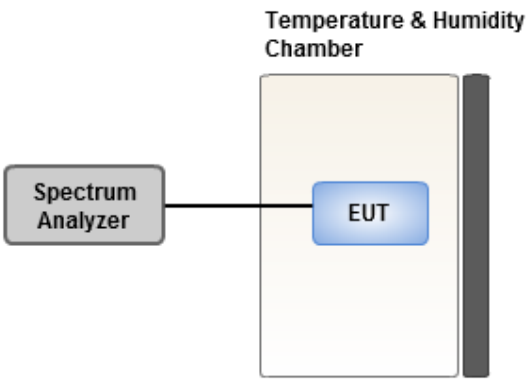
3.1.1 Limit of Carrier Frequencies

The actual centre frequency for any given channel declared by the manufacturer shall be maintained within the range f_c ± 20 ppm.

3.1.2 Test Procedures

Reference to clause 5.4.2.2 of ETSI EN 301 893 V2.1.1 (2017-05).

3.1.3 Test Setup



3.1.4 Test Result of Carrier Frequencies

Condition	Modulation Mode	Freq. (MHz)	Carrier Centre Frequencies (ppm)		Limit (ppm)
			Frequency (MHz)	Carrier Stability	
$T_{nom}V_{nom}$	802.11a	5180	5179.98986	-1.96	20
$T_{min}V_{max}$	802.11a	5180	5179.97525	-4.78	20
$T_{min}V_{min}$	802.11a	5180	5179.97525	-4.78	20
$T_{max}V_{max}$	802.11a	5180	5180.09288	17.93	20
$T_{max}V_{min}$	802.11a	5180	5180.09288	17.93	20
$T_{nom}V_{nom}$	802.11a	5320	5319.98739	-2.37	20
$T_{min}V_{max}$	802.11a	5320	5319.97978	-3.80	20
$T_{min}V_{min}$	802.11a	5320	5319.97978	-3.80	20
$T_{max}V_{max}$	802.11a	5320	5320.09187	17.27	20
$T_{max}V_{min}$	802.11a	5320	5320.09187	17.27	20
$T_{nom}V_{nom}$	802.11a	5500	5499.98690	-2.38	20
$T_{min}V_{max}$	802.11a	5500	5499.98270	-3.15	20
$T_{min}V_{min}$	802.11a	5500	5499.98270	-3.15	20
$T_{max}V_{max}$	802.11a	5500	5500.10021	18.22	20
$T_{max}V_{min}$	802.11a	5500	5500.10021	18.22	20
$T_{nom}V_{nom}$	802.11a	5700	5699.98697	-2.29	20
$T_{min}V_{max}$	802.11a	5700	5699.98262	-3.05	20
$T_{min}V_{min}$	802.11a	5700	5699.98262	-3.05	20
$T_{max}V_{max}$	802.11a	5700	5700.10284	18.04	20
$T_{max}V_{min}$	802.11a	5700	5700.10284	18.04	20

Condition	Modulation Mode	Freq. (MHz)	Carrier Centre Frequencies (ppm)		Limit (ppm)
			Frequency (MHz)	Carrier Stability	
$T_{nom}V_{nom}$	802.11ac VHT20	5180	5179.98986	-1.96	20
$T_{min}V_{max}$	802.11ac VHT20	5180	5179.97525	-4.78	20
$T_{min}V_{min}$	802.11ac VHT20	5180	5179.97525	-4.78	20
$T_{max}V_{max}$	802.11ac VHT20	5180	5180.09288	17.93	20
$T_{max}V_{min}$	802.11ac VHT20	5180	5180.09288	17.93	20
$T_{nom}V_{nom}$	802.11ac VHT20	5320	5319.98739	-2.37	20
$T_{min}V_{max}$	802.11ac VHT20	5320	5319.97978	-3.80	20
$T_{min}V_{min}$	802.11ac VHT20	5320	5319.97978	-3.80	20
$T_{max}V_{max}$	802.11ac VHT20	5320	5320.09187	17.27	20
$T_{max}V_{min}$	802.11ac VHT20	5320	5320.09187	17.27	20
$T_{nom}V_{nom}$	802.11ac VHT20	5500	5499.98690	-2.38	20
$T_{min}V_{max}$	802.11ac VHT20	5500	5499.98270	-3.15	20
$T_{min}V_{min}$	802.11ac VHT20	5500	5499.98270	-3.15	20
$T_{max}V_{max}$	802.11ac VHT20	5500	5500.10021	18.22	20
$T_{max}V_{min}$	802.11ac VHT20	5500	5500.10021	18.22	20
$T_{nom}V_{nom}$	802.11ac VHT20	5700	5699.98697	-2.29	20
$T_{min}V_{max}$	802.11ac VHT20	5700	5699.98262	-3.05	20
$T_{min}V_{min}$	802.11ac VHT20	5700	5699.98262	-3.05	20
$T_{max}V_{max}$	802.11ac VHT20	5700	5700.10284	18.04	20
$T_{max}V_{min}$	802.11ac VHT20	5700	5700.10284	18.04	20

Condition	Modulation Mode	Freq. (MHz)	Carrier Centre Frequencies (ppm)		Limit (ppm)
			Frequency (MHz)	Carrier Stability	
$T_{nom}V_{nom}$	802.11ac VHT40	5190	5189.98798	-2.32	20
$T_{min}V_{max}$	802.11ac VHT40	5190	5189.97773	-4.29	20
$T_{min}V_{min}$	802.11ac VHT40	5190	5189.97773	-4.29	20
$T_{max}V_{max}$	802.11ac VHT40	5190	5190.09245	17.81	20
$T_{max}V_{min}$	802.11ac VHT40	5190	5190.09245	17.81	20
$T_{nom}V_{nom}$	802.11ac VHT40	5310	5309.98839	-2.19	20
$T_{min}V_{max}$	802.11ac VHT40	5310	5309.98239	-3.32	20
$T_{min}V_{min}$	802.11ac VHT40	5310	5309.98239	-3.32	20
$T_{max}V_{max}$	802.11ac VHT40	5310	5310.09573	18.03	20
$T_{max}V_{min}$	802.11ac VHT40	5310	5310.09573	18.03	20
$T_{nom}V_{nom}$	802.11ac VHT40	5510	5509.98692	-2.37	20
$T_{min}V_{max}$	802.11ac VHT40	5510	5509.98305	-3.08	20
$T_{min}V_{min}$	802.11ac VHT40	5510	5509.98305	-3.08	20
$T_{max}V_{max}$	802.11ac VHT40	5510	5510.09906	17.98	20
$T_{max}V_{min}$	802.11ac VHT40	5510	5510.09906	17.98	20
$T_{nom}V_{nom}$	802.11ac VHT40	5670	5669.98646	-2.39	20
$T_{min}V_{max}$	802.11ac VHT40	5670	5669.98239	-3.11	20
$T_{min}V_{min}$	802.11ac VHT40	5670	5669.98239	-3.11	20
$T_{max}V_{max}$	802.11ac VHT40	5670	5670.10207	18.00	20
$T_{max}V_{min}$	802.11ac VHT40	5670	5670.10207	18.00	20

Condition	Modulation Mode	Freq. (MHz)	Carrier Centre Frequencies (ppm)		Limit (ppm)
			Frequency (MHz)	Carrier Stability	
$T_{nom}V_{nom}$	802.11ac VHT80	5210	5209.98770	-2.36	20
$T_{min}V_{max}$	802.11ac VHT80	5210	5209.97887	-4.06	20
$T_{min}V_{min}$	802.11ac VHT80	5210	5209.97887	-4.06	20
$T_{max}V_{max}$	802.11ac VHT80	5210	5210.09398	18.04	20
$T_{max}V_{min}$	802.11ac VHT80	5210	5210.09398	18.04	20
$T_{nom}V_{nom}$	802.11ac VHT80	5290	5289.98833	-2.21	20
$T_{min}V_{max}$	802.11ac VHT80	5290	5289.98112	-3.57	20
$T_{min}V_{min}$	802.11ac VHT80	5290	5289.98112	-3.57	20
$T_{max}V_{max}$	802.11ac VHT80	5290	5290.09371	17.71	20
$T_{max}V_{min}$	802.11ac VHT80	5290	5290.09371	17.71	20
$T_{nom}V_{nom}$	802.11ac VHT80	5530	5529.98700	-2.35	20
$T_{min}V_{max}$	802.11ac VHT80	5530	5529.98362	-2.96	20
$T_{min}V_{min}$	802.11ac VHT80	5530	5529.98362	-2.96	20
$T_{max}V_{max}$	802.11ac VHT80	5530	5530.09927	17.95	20
$T_{max}V_{min}$	802.11ac VHT80	5530	5530.09927	17.95	20
$T_{nom}V_{nom}$	802.11ac VHT80	5610	5609.98689	-2.34	20
$T_{min}V_{max}$	802.11ac VHT80	5610	5609.98205	-3.20	20
$T_{min}V_{min}$	802.11ac VHT80	5610	5609.98205	-3.20	20
$T_{max}V_{max}$	802.11ac VHT80	5610	5610.10249	18.27	20
$T_{max}V_{min}$	802.11ac VHT80	5610	5610.10249	18.27	20

3.2 Occupied Channel Bandwidth

3.2.1 Limit of Occupied Channel Bandwidth

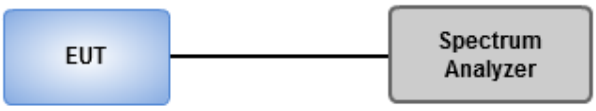
The Nominal Channel Bandwidth for a single Operating Channel shall be 20 MHz

The Occupied Channel Bandwidth shall be between 80 % and 100 % of the Nominal Channel Bandwidth. In case of smart antenna systems (devices with multiple transmit chains) each of the transmit chains shall meet this requirement.
The Occupied Channel Bandwidth might change with time/payload.

3.2.2 Test Procedures

Reference to clause 5.4.3.2 of ETSI EN 301 893 V2.1.1 (2017-05).

3.2.3 Test Setup



3.2.4 Test Result of Occupied Channel Bandwidth

Modulation Mode	Frequency (MHz)	Occupied Channel Bandwidth (MHz)	Occupied Channel Bandwidth Limit (MHz)
802.11a	5180	16.49	16-20
802.11a	5320	16.43	16-20
802.11a	5500	16.49	16-20
802.11a	5700	16.49	16-20
802.11ac VHT20	5180	17.71	16-20
802.11ac VHT20	5320	17.71	16-20
802.11ac VHT20	5500	17.71	16-20
802.11ac VHT20	5700	17.71	16-20
802.11ac VHT40	5190	36.23	32-40
802.11ac VHT40	5310	36.23	32-40
802.11ac VHT40	5510	36.23	32-40
802.11ac VHT40	5670	36.23	32-40
802.11ac VHT80	5210	75.71	64-80
802.11ac VHT80	5290	75.71	64-80
802.11ac VHT80	5530	75.71	64-80
802.11ac VHT80	5610	75.71	64-80

3.3 RF Output Power, Transmit Power Control (TPC) and Power density

3.3.1 Limit of RF Output Power, Transmit Power Control (TPC) and Power Density

Mean e.i.r.p. limits for RF output power and Power Density at the highest power level (P_H)

Frequency range (MHz)	Mean e.i.r.p. limit for P_H (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 frequency range 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 (MHz)	Mean e.i.r.p. (dBm) limit for P_L
5 250 to 5 350	17
5 470 to 5 725	24 (see note)

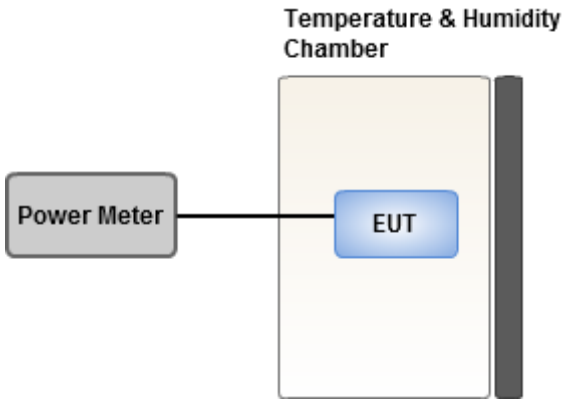
Note: Slave devices without a *Radar Interference Detection* function shall comply with the limits for the band 5 250 MHz to 5 350 MHz.

3.3.2 Test Procedures

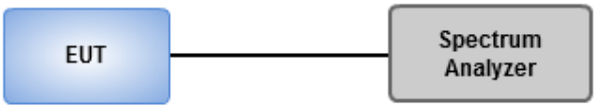
Reference to clause 5.4.4.2 of ETSI EN 301 893 V2.1.1 (2017-05).

3.3.3 Test Setup

For RF Output Power, Transmit Power Control (TPC)



For Power Density



3.3.4 Test Result of RF Output Power at the Highest Power

Configuration 1 : Dipole Antenna

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11a**	**Limit (dBm)**
$T_{nom}V_{nom}$	5180	17.35	23
$T_{min}V_{max}$	5180	18.17	23
$T_{min}V_{min}$	5180	18.19	23
$T_{max}V_{max}$	5180	16.77	23
$T_{max}V_{min}$	5180	16.74	23
$T_{nom}V_{nom}$	5320	17.50	23
$T_{min}V_{max}$	5320	18.19	23
$T_{min}V_{min}$	5320	18.21	23
$T_{max}V_{max}$	5320	16.83	23
$T_{max}V_{min}$	5320	16.81	23
$T_{nom}V_{nom}$	5500	17.82	23
$T_{min}V_{max}$	5500	18.63	23
$T_{min}V_{min}$	5500	18.65	23
$T_{max}V_{max}$	5500	17.27	23
$T_{max}V_{min}$	5500	17.24	23
$T_{nom}V_{nom}$	5700	17.64	23
$T_{min}V_{max}$	5700	18.47	23
$T_{min}V_{min}$	5700	18.50	23
$T_{max}V_{max}$	5700	17.08	23
$T_{max}V_{min}$	5700	17.06	23

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT20**	**Limit (dBm)**
$T_{nom}V_{nom}$	5180	15.37	23
$T_{min}V_{max}$	5180	15.98	23
$T_{min}V_{min}$	5180	16.01	23
$T_{max}V_{max}$	5180	14.76	23
$T_{max}V_{min}$	5180	14.74	23
$T_{nom}V_{nom}$	5320	15.60	23
$T_{min}V_{max}$	5320	16.36	23
$T_{min}V_{min}$	5320	16.38	23
$T_{max}V_{max}$	5320	15.05	23
$T_{max}V_{min}$	5320	15.03	23
$T_{nom}V_{nom}$	5500	15.71	23
$T_{min}V_{max}$	5500	16.49	23
$T_{min}V_{min}$	5500	16.52	23
$T_{max}V_{max}$	5500	15.23	23
$T_{max}V_{min}$	5500	15.21	23
$T_{nom}V_{nom}$	5700	15.24	23
$T_{min}V_{max}$	5700	15.89	23
$T_{min}V_{min}$	5700	15.91	23
$T_{max}V_{max}$	5700	14.78	23
$T_{max}V_{min}$	5700	14.76	23

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT40**	**Limit (dBm)**
$T_{nom}V_{nom}$	5190	11.80	23
$T_{min}V_{max}$	5190	12.68	23
$T_{min}V_{min}$	5190	12.70	23
$T_{max}V_{max}$	5190	11.31	23
$T_{max}V_{min}$	5190	11.29	23
$T_{nom}V_{nom}$	5310	11.42	23
$T_{min}V_{max}$	5310	12.27	23
$T_{min}V_{min}$	5310	12.29	23
$T_{max}V_{max}$	5310	10.98	23
$T_{max}V_{min}$	5310	10.96	23
$T_{nom}V_{nom}$	5510	11.82	23
$T_{min}V_{max}$	5510	12.71	23
$T_{min}V_{min}$	5510	12.73	23
$T_{max}V_{max}$	5510	11.27	23
$T_{max}V_{min}$	5510	11.25	23
$T_{nom}V_{nom}$	5670	11.30	23
$T_{min}V_{max}$	5670	12.15	23
$T_{min}V_{min}$	5670	12.17	23
$T_{max}V_{max}$	5670	10.75	23
$T_{max}V_{min}$	5670	10.73	23

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT80**	**Limit (dBm)**
$T_{nom}V_{nom}$	5210	11.49	23
$T_{min}V_{max}$	5210	12.25	23
$T_{min}V_{min}$	5210	12.28	23
$T_{max}V_{max}$	5210	10.95	23
$T_{max}V_{min}$	5210	10.93	23
$T_{nom}V_{nom}$	5290	11.47	23
$T_{min}V_{max}$	5290	12.31	23
$T_{min}V_{min}$	5290	12.35	23
$T_{max}V_{max}$	5290	10.86	23
$T_{max}V_{min}$	5290	10.83	23
$T_{nom}V_{nom}$	5530	11.58	23
$T_{min}V_{max}$	5530	12.34	23
$T_{min}V_{min}$	5530	12.37	23
$T_{max}V_{max}$	5530	11.04	23
$T_{max}V_{min}$	5530	11.02	23
$T_{nom}V_{nom}$	5610	11.33	23
$T_{min}V_{max}$	5610	12.02	23
$T_{min}V_{min}$	5610	12.04	23
$T_{max}V_{max}$	5610	10.88	23
$T_{max}V_{min}$	5610	10.86	23

Configuration 2 : PIFA Antenna

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11a**	**Limit (dBm)**
$T_{nom}V_{nom}$	5180	18.35	23
$T_{min}V_{max}$	5180	19.17	23
$T_{min}V_{min}$	5180	19.19	23
$T_{max}V_{max}$	5180	17.77	23
$T_{max}V_{min}$	5180	17.74	23
$T_{nom}V_{nom}$	5320	18.50	23
$T_{min}V_{max}$	5320	19.19	23
$T_{min}V_{min}$	5320	19.21	23
$T_{max}V_{max}$	5320	17.83	23
$T_{max}V_{min}$	5320	17.81	23
$T_{nom}V_{nom}$	5500	18.82	23
$T_{min}V_{max}$	5500	19.63	23
$T_{min}V_{min}$	5500	19.65	23
$T_{max}V_{max}$	5500	18.27	23
$T_{max}V_{min}$	5500	18.24	23
$T_{nom}V_{nom}$	5700	18.64	23
$T_{min}V_{max}$	5700	19.47	23
$T_{min}V_{min}$	5700	19.50	23
$T_{max}V_{max}$	5700	18.08	23
$T_{max}V_{min}$	5700	18.06	23

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT20**	**Limit (dBm)**
$T_{nom}V_{nom}$	5180	16.37	23
$T_{min}V_{max}$	5180	16.98	23
$T_{min}V_{min}$	5180	17.01	23
$T_{max}V_{max}$	5180	15.76	23
$T_{max}V_{min}$	5180	15.74	23
$T_{nom}V_{nom}$	5320	16.60	23
$T_{min}V_{max}$	5320	17.36	23
$T_{min}V_{min}$	5320	17.38	23
$T_{max}V_{max}$	5320	16.05	23
$T_{max}V_{min}$	5320	16.03	23
$T_{nom}V_{nom}$	5500	16.71	23
$T_{min}V_{max}$	5500	17.49	23
$T_{min}V_{min}$	5500	17.52	23
$T_{max}V_{max}$	5500	16.23	23
$T_{max}V_{min}$	5500	16.21	23
$T_{nom}V_{nom}$	5700	16.24	23
$T_{min}V_{max}$	5700	16.89	23
$T_{min}V_{min}$	5700	16.91	23
$T_{max}V_{max}$	5700	15.78	23
$T_{max}V_{min}$	5700	15.76	23

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT40**	**Limit (dBm)**
$T_{nom}V_{nom}$	5190	12.80	23
$T_{min}V_{max}$	5190	13.68	23
$T_{min}V_{min}$	5190	13.70	23
$T_{max}V_{max}$	5190	12.31	23
$T_{max}V_{min}$	5190	12.29	23
$T_{nom}V_{nom}$	5310	12.42	23
$T_{min}V_{max}$	5310	13.27	23
$T_{min}V_{min}$	5310	13.29	23
$T_{max}V_{max}$	5310	11.98	23
$T_{max}V_{min}$	5310	11.96	23
$T_{nom}V_{nom}$	5510	12.82	23
$T_{min}V_{max}$	5510	13.71	23
$T_{min}V_{min}$	5510	13.73	23
$T_{max}V_{max}$	5510	12.27	23
$T_{max}V_{min}$	5510	12.25	23
$T_{nom}V_{nom}$	5670	12.30	23
$T_{min}V_{max}$	5670	13.15	23
$T_{min}V_{min}$	5670	13.17	23
$T_{max}V_{max}$	5670	11.75	23
$T_{max}V_{min}$	5670	11.73	23

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT80**	**Limit (dBm)**
$T_{nom}V_{nom}$	5210	12.49	23
$T_{min}V_{max}$	5210	13.25	23
$T_{min}V_{min}$	5210	13.28	23
$T_{max}V_{max}$	5210	11.95	23
$T_{max}V_{min}$	5210	11.93	23
$T_{nom}V_{nom}$	5290	12.47	23
$T_{min}V_{max}$	5290	13.31	23
$T_{min}V_{min}$	5290	13.35	23
$T_{max}V_{max}$	5290	11.86	23
$T_{max}V_{min}$	5290	11.83	23
$T_{nom}V_{nom}$	5530	12.58	23
$T_{min}V_{max}$	5530	13.34	23
$T_{min}V_{min}$	5530	13.37	23
$T_{max}V_{max}$	5530	12.04	23
$T_{max}V_{min}$	5530	12.02	23
$T_{nom}V_{nom}$	5610	12.33	23
$T_{min}V_{max}$	5610	13.02	23
$T_{min}V_{min}$	5610	13.04	23
$T_{max}V_{max}$	5610	11.88	23
$T_{max}V_{min}$	5610	11.86	23

Configuration 3 : Chip Antenna

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11a**	**Limit (dBm)**
$T_{nom}V_{nom}$	5180	19.35	23
$T_{min}V_{max}$	5180	20.17	23
$T_{min}V_{min}$	5180	**20.19**	23
$T_{max}V_{max}$	5180	18.77	23
$T_{max}V_{min}$	5180	18.74	23
$T_{nom}V_{nom}$	5320	19.50	23
$T_{min}V_{max}$	5320	20.19	23
$T_{min}V_{min}$	5320	**20.21**	23
$T_{max}V_{max}$	5320	18.83	23
$T_{max}V_{min}$	5320	18.81	23
$T_{nom}V_{nom}$	5500	19.82	23
$T_{min}V_{max}$	5500	20.63	23
$T_{min}V_{min}$	5500	**20.65**	23
$T_{max}V_{max}$	5500	19.27	23
$T_{max}V_{min}$	5500	19.24	23
$T_{nom}V_{nom}$	5700	19.64	23
$T_{min}V_{max}$	5700	20.47	23
$T_{min}V_{min}$	5700	20.50	23
$T_{max}V_{max}$	5700	19.08	23
$T_{max}V_{min}$	5700	19.06	23

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT20**	**Limit (dBm)**
$T_{nom}V_{nom}$	5180	17.37	23
$T_{min}V_{max}$	5180	17.98	23
$T_{min}V_{min}$	5180	18.01	23
$T_{max}V_{max}$	5180	16.76	23
$T_{max}V_{min}$	5180	16.74	23
$T_{nom}V_{nom}$	5320	17.60	23
$T_{min}V_{max}$	5320	18.36	23
$T_{min}V_{min}$	5320	18.38	23
$T_{max}V_{max}$	5320	17.05	23
$T_{max}V_{min}$	5320	17.03	23
$T_{nom}V_{nom}$	5500	17.71	23
$T_{min}V_{max}$	5500	18.49	23
$T_{min}V_{min}$	5500	18.52	23
$T_{max}V_{max}$	5500	17.23	23
$T_{max}V_{min}$	5500	17.21	23
$T_{nom}V_{nom}$	5700	17.24	23
$T_{min}V_{max}$	5700	17.89	23
$T_{min}V_{min}$	5700	17.91	23
$T_{max}V_{max}$	5700	16.78	23
$T_{max}V_{min}$	5700	16.76	23

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT40**	**Limit (dBm)**
$T_{nom}V_{nom}$	5190	13.80	23
$T_{min}V_{max}$	5190	14.68	23
$T_{min}V_{min}$	5190	14.70	23
$T_{max}V_{max}$	5190	13.31	23
$T_{max}V_{min}$	5190	13.29	23
$T_{nom}V_{nom}$	5310	13.42	23
$T_{min}V_{max}$	5310	14.27	23
$T_{min}V_{min}$	5310	14.29	23
$T_{max}V_{max}$	5310	12.98	23
$T_{max}V_{min}$	5310	12.96	23
$T_{nom}V_{nom}$	5510	13.82	23
$T_{min}V_{max}$	5510	14.71	23
$T_{min}V_{min}$	5510	14.73	23
$T_{max}V_{max}$	5510	13.27	23
$T_{max}V_{min}$	5510	13.25	23
$T_{nom}V_{nom}$	5670	13.30	23
$T_{min}V_{max}$	5670	14.15	23
$T_{min}V_{min}$	5670	14.17	23
$T_{max}V_{max}$	5670	12.75	23
$T_{max}V_{min}$	5670	12.73	23

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT80**	**Limit (dBm)**
$T_{nom}V_{nom}$	5210	13.49	23
$T_{min}V_{max}$	5210	14.25	23
$T_{min}V_{min}$	5210	14.28	23
$T_{max}V_{max}$	5210	12.95	23
$T_{max}V_{min}$	5210	12.93	23
$T_{nom}V_{nom}$	5290	13.47	23
$T_{min}V_{max}$	5290	14.31	23
$T_{min}V_{min}$	5290	14.35	23
$T_{max}V_{max}$	5290	12.86	23
$T_{max}V_{min}$	5290	12.83	23
$T_{nom}V_{nom}$	5530	13.58	23
$T_{min}V_{max}$	5530	14.34	23
$T_{min}V_{min}$	5530	14.37	23
$T_{max}V_{max}$	5530	13.04	23
$T_{max}V_{min}$	5530	13.02	23
$T_{nom}V_{nom}$	5610	13.33	23
$T_{min}V_{max}$	5610	14.02	23
$T_{min}V_{min}$	5610	14.04	23
$T_{max}V_{max}$	5610	12.88	23
$T_{max}V_{min}$	5610	12.86	23

3.3.5 Test Result of RF Output Power at the Lowest Power

Configuration 1 : Dipole Antenna

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11a**	**Limit (dBm)**
$T_{nom}V_{nom}$	5320	11.50	17
$T_{min}V_{max}$	5320	12.19	17
$T_{min}V_{min}$	5320	12.21	17
$T_{max}V_{max}$	5320	10.83	17
$T_{max}V_{min}$	5320	10.81	17
$T_{nom}V_{nom}$	5500	11.82	17
$T_{min}V_{max}$	5500	12.63	17
$T_{min}V_{min}$	5500	12.65	17
$T_{max}V_{max}$	5500	11.27	17
$T_{max}V_{min}$	5500	11.24	17
$T_{nom}V_{nom}$	5700	11.64	17
$T_{min}V_{max}$	5700	12.47	17
$T_{min}V_{min}$	5700	12.50	17
$T_{max}V_{max}$	5700	11.08	17
$T_{max}V_{min}$	5700	11.06	17

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT20**	**Limit (dBm)**
$T_{nom}V_{nom}$	5320	9.60	17
$T_{min}V_{max}$	5320	10.36	17
$T_{min}V_{min}$	5320	10.38	17
$T_{max}V_{max}$	5320	9.05	17
$T_{max}V_{min}$	5320	9.03	17
$T_{nom}V_{nom}$	5500	9.71	17
$T_{min}V_{max}$	5500	10.49	17
$T_{min}V_{min}$	5500	10.52	17
$T_{max}V_{max}$	5500	9.23	17
$T_{max}V_{min}$	5500	9.21	17
$T_{nom}V_{nom}$	5700	9.24	17
$T_{min}V_{max}$	5700	9.89	17
$T_{min}V_{min}$	5700	9.91	17
$T_{max}V_{max}$	5700	8.78	17
$T_{max}V_{min}$	5700	8.76	17

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT40**	**Limit (dBm)**
$T_{nom}V_{nom}$	5310	5.42	17
$T_{min}V_{max}$	5310	6.27	17
$T_{min}V_{min}$	5310	6.29	17
$T_{max}V_{max}$	5310	4.98	17
$T_{max}V_{min}$	5310	4.96	17
$T_{nom}V_{nom}$	5510	5.82	17
$T_{min}V_{max}$	5510	6.71	17
$T_{min}V_{min}$	5510	6.73	17
$T_{max}V_{max}$	5510	5.27	17
$T_{max}V_{min}$	5510	5.25	17
$T_{nom}V_{nom}$	5670	5.30	17
$T_{min}V_{max}$	5670	6.15	17
$T_{min}V_{min}$	5670	6.17	17
$T_{max}V_{max}$	5670	4.75	17
$T_{max}V_{min}$	5670	4.73	17

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT80**	**Limit (dBm)**
$T_{nom}V_{nom}$	5290	5.47	17
$T_{min}V_{max}$	5290	6.31	17
$T_{min}V_{min}$	5290	6.35	17
$T_{max}V_{max}$	5290	4.86	17
$T_{max}V_{min}$	5290	4.83	17
$T_{nom}V_{nom}$	5530	5.58	17
$T_{min}V_{max}$	5530	6.34	17
$T_{min}V_{min}$	5530	6.37	17
$T_{max}V_{max}$	5530	5.04	17
$T_{max}V_{min}$	5530	5.02	17
$T_{nom}V_{nom}$	5610	5.33	17
$T_{min}V_{max}$	5610	6.02	17
$T_{min}V_{min}$	5610	6.04	17
$T_{max}V_{max}$	5610	4.88	17
$T_{max}V_{min}$	5610	4.86	17

Configuration 2 : PIFA Antenna

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11a**	**Limit (dBm)**
$T_{nom}V_{nom}$	5320	12.50	17
$T_{min}V_{max}$	5320	13.19	17
$T_{min}V_{min}$	5320	13.21	17
$T_{max}V_{max}$	5320	11.83	17
$T_{max}V_{min}$	5320	11.81	17
$T_{nom}V_{nom}$	5500	12.82	17
$T_{min}V_{max}$	5500	13.63	17
$T_{min}V_{min}$	5500	13.65	17
$T_{max}V_{max}$	5500	12.27	17
$T_{max}V_{min}$	5500	12.24	17
$T_{nom}V_{nom}$	5700	12.64	17
$T_{min}V_{max}$	5700	13.47	17
$T_{min}V_{min}$	5700	13.50	17
$T_{max}V_{max}$	5700	12.08	17
$T_{max}V_{min}$	5700	12.06	17

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT20**	**Limit (dBm)**
$T_{nom}V_{nom}$	5320	10.60	17
$T_{min}V_{max}$	5320	11.36	17
$T_{min}V_{min}$	5320	11.38	17
$T_{max}V_{max}$	5320	10.05	17
$T_{max}V_{min}$	5320	10.03	17
$T_{nom}V_{nom}$	5500	10.71	17
$T_{min}V_{max}$	5500	11.49	17
$T_{min}V_{min}$	5500	11.52	17
$T_{max}V_{max}$	5500	10.23	17
$T_{max}V_{min}$	5500	10.21	17
$T_{nom}V_{nom}$	5700	10.24	17
$T_{min}V_{max}$	5700	10.89	17
$T_{min}V_{min}$	5700	10.91	17
$T_{max}V_{max}$	5700	9.78	17
$T_{max}V_{min}$	5700	9.76	17

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT40**	**Limit (dBm)**
$T_{nom}V_{nom}$	5310	6.42	17
$T_{min}V_{max}$	5310	7.27	17
$T_{min}V_{min}$	5310	7.29	17
$T_{max}V_{max}$	5310	5.98	17
$T_{max}V_{min}$	5310	5.96	17
$T_{nom}V_{nom}$	5510	6.82	17
$T_{min}V_{max}$	5510	7.71	17
$T_{min}V_{min}$	5510	7.73	17
$T_{max}V_{max}$	5510	6.27	17
$T_{max}V_{min}$	5510	6.25	17
$T_{nom}V_{nom}$	5670	6.30	17
$T_{min}V_{max}$	5670	7.15	17
$T_{min}V_{min}$	5670	7.17	17
$T_{max}V_{max}$	5670	5.75	17
$T_{max}V_{min}$	5670	5.73	17

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT80**	**Limit (dBm)**
$T_{nom}V_{nom}$	5290	6.47	17
$T_{min}V_{max}$	5290	7.31	17
$T_{min}V_{min}$	5290	7.35	17
$T_{max}V_{max}$	5290	5.86	17
$T_{max}V_{min}$	5290	5.83	17
$T_{nom}V_{nom}$	5530	6.58	17
$T_{min}V_{max}$	5530	7.34	17
$T_{min}V_{min}$	5530	7.37	17
$T_{max}V_{max}$	5530	6.04	17
$T_{max}V_{min}$	5530	6.02	17
$T_{nom}V_{nom}$	5610	6.33	17
$T_{min}V_{max}$	5610	7.02	17
$T_{min}V_{min}$	5610	7.04	17
$T_{max}V_{max}$	5610	5.88	17
$T_{max}V_{min}$	5610	5.86	17

Configuration 3 : Chip Antenna

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11a**	**Limit (dBm)**
$T_{nom}V_{nom}$	5320	13.50	17
$T_{min}V_{max}$	5320	14.19	17
$T_{min}V_{min}$	5320	14.21	17
$T_{max}V_{max}$	5320	12.83	17
$T_{max}V_{min}$	5320	12.81	17
$T_{nom}V_{nom}$	5500	13.82	17
$T_{min}V_{max}$	5500	14.63	17
$T_{min}V_{min}$	5500	14.65	17
$T_{max}V_{max}$	5500	13.27	17
$T_{max}V_{min}$	5500	13.24	17
$T_{nom}V_{nom}$	5700	13.64	17
$T_{min}V_{max}$	5700	14.47	17
$T_{min}V_{min}$	5700	14.50	17
$T_{max}V_{max}$	5700	13.08	17
$T_{max}V_{min}$	5700	13.06	17

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT20**	**Limit (dBm)**
$T_{nom}V_{nom}$	5320	11.60	17
$T_{min}V_{max}$	5320	12.36	17
$T_{min}V_{min}$	5320	12.38	17
$T_{max}V_{max}$	5320	11.05	17
$T_{max}V_{min}$	5320	11.03	17
$T_{nom}V_{nom}$	5500	11.71	17
$T_{min}V_{max}$	5500	12.49	17
$T_{min}V_{min}$	5500	12.52	17
$T_{max}V_{max}$	5500	11.23	17
$T_{max}V_{min}$	5500	11.21	17
$T_{nom}V_{nom}$	5700	11.24	17
$T_{min}V_{max}$	5700	11.89	17
$T_{min}V_{min}$	5700	11.91	17
$T_{max}V_{max}$	5700	10.78	17
$T_{max}V_{min}$	5700	10.76	17

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT40**	**Limit (dBm)**
$T_{nom}V_{nom}$	5310	7.42	17
$T_{min}V_{max}$	5310	8.27	17
$T_{min}V_{min}$	5310	8.29	17
$T_{max}V_{max}$	5310	6.98	17
$T_{max}V_{min}$	5310	6.96	17
$T_{nom}V_{nom}$	5510	7.82	17
$T_{min}V_{max}$	5510	8.71	17
$T_{min}V_{min}$	5510	8.73	17
$T_{max}V_{max}$	5510	7.27	17
$T_{max}V_{min}$	5510	7.25	17
$T_{nom}V_{nom}$	5670	7.30	17
$T_{min}V_{max}$	5670	8.15	17
$T_{min}V_{min}$	5670	8.17	17
$T_{max}V_{max}$	5670	6.75	17
$T_{max}V_{min}$	5670	6.73	17

Maximum Transmit Power (dBm)			
Condition	**Freq. (MHz)**	**802.11ac VHT80**	**Limit (dBm)**
$T_{nom}V_{nom}$	5290	7.47	17
$T_{min}V_{max}$	5290	8.31	17
$T_{min}V_{min}$	5290	8.35	17
$T_{max}V_{max}$	5290	6.86	17
$T_{max}V_{min}$	5290	6.83	17
$T_{nom}V_{nom}$	5530	7.58	17
$T_{min}V_{max}$	5530	8.34	17
$T_{min}V_{min}$	5530	8.37	17
$T_{max}V_{max}$	5530	7.04	17
$T_{max}V_{min}$	5530	7.02	17
$T_{nom}V_{nom}$	5610	7.33	17
$T_{min}V_{max}$	5610	8.02	17
$T_{min}V_{min}$	5610	8.04	17
$T_{max}V_{max}$	5610	6.88	17
$T_{max}V_{min}$	5610	6.86	17

3.3.6 Test Result of Power Density

Configuration 1 : Dipole Antenna

Modulation Mode	Freq. (MHz)	Power Density (dBm/1MHz) e.i.r.p.	Limit (dBm/1MHz) e.i.r.p.	Results
11a	5180	5.78	10	Pass
11a	5320	5.72	10	Pass
11a	5500	6.02	10	Pass
11a	5700	5.86	10	Pass
802.11ac VHT20	5180	3.31	10	Pass
802.11ac VHT20	5320	3.51	10	Pass
802.11ac VHT20	5500	3.64	10	Pass
802.11ac VHT20	5700	3.21	10	Pass
802.11ac VHT40	5190	-3.13	10	Pass
802.11ac VHT40	5310	-3.63	10	Pass
802.11ac VHT40	5510	-3.13	10	Pass
802.11ac VHT40	5670	-3.67	10	Pass
802.11ac VHT80	5210	-6.22	10	Pass
802.11ac VHT80	5290	-6.33	10	Pass
802.11ac VHT80	5530	-6.12	10	Pass
802.11ac VHT80	5610	-6.36	10	Pass

Configuration 2 : PIFA Antenna

Modulation Mode	Freq. (MHz)	Power Density (dBm/1MHz) e.i.r.p.	Limit (dBm/1MHz) e.i.r.p.	Results
11a	5180	6.78	10	Pass
11a	5320	6.72	10	Pass
11a	5500	7.02	10	Pass
11a	5700	6.86	10	Pass
802.11ac VHT20	5180	4.31	10	Pass
802.11ac VHT20	5320	4.51	10	Pass
802.11ac VHT20	5500	4.64	10	Pass
802.11ac VHT20	5700	4.21	10	Pass
802.11ac VHT40	5190	-2.13	10	Pass
802.11ac VHT40	5310	-2.63	10	Pass
802.11ac VHT40	5510	-2.13	10	Pass
802.11ac VHT40	5670	-2.67	10	Pass
802.11ac VHT80	5210	-5.22	10	Pass
802.11ac VHT80	5290	-5.33	10	Pass
802.11ac VHT80	5530	-5.12	10	Pass
802.11ac VHT80	5610	-5.36	10	Pass

Configuration 3 : Chip Antenna

Modulation Mode	Freq. (MHz)	Power Density (dBm/1MHz) e.i.r.p.	Limit (dBm/1MHz) e.i.r.p.	Results
11a	5180	7.78	10	Pass
11a	5320	7.72	10	Pass
11a	5500	8.02	10	Pass
11a	5700	7.86	10	Pass
802.11ac VHT20	5180	5.31	10	Pass
802.11ac VHT20	5320	5.51	10	Pass
802.11ac VHT20	5500	5.64	10	Pass
802.11ac VHT20	5700	5.21	10	Pass
802.11ac VHT40	5190	-1.13	10	Pass
802.11ac VHT40	5310	-1.63	10	Pass
802.11ac VHT40	5510	-1.13	10	Pass
802.11ac VHT40	5670	-1.67	10	Pass
802.11ac VHT80	5210	-4.22	10	Pass
802.11ac VHT80	5290	-4.33	10	Pass
802.11ac VHT80	5530	-4.12	10	Pass
802.11ac VHT80	5610	-4.36	10	Pass

3.4 Transmitter Unwanted Emissions outside the 5 GHz RLAN Bands

3.4.1 Limit of Transmitter Unwanted Emissions outside the 5 GHz RLAN Bands

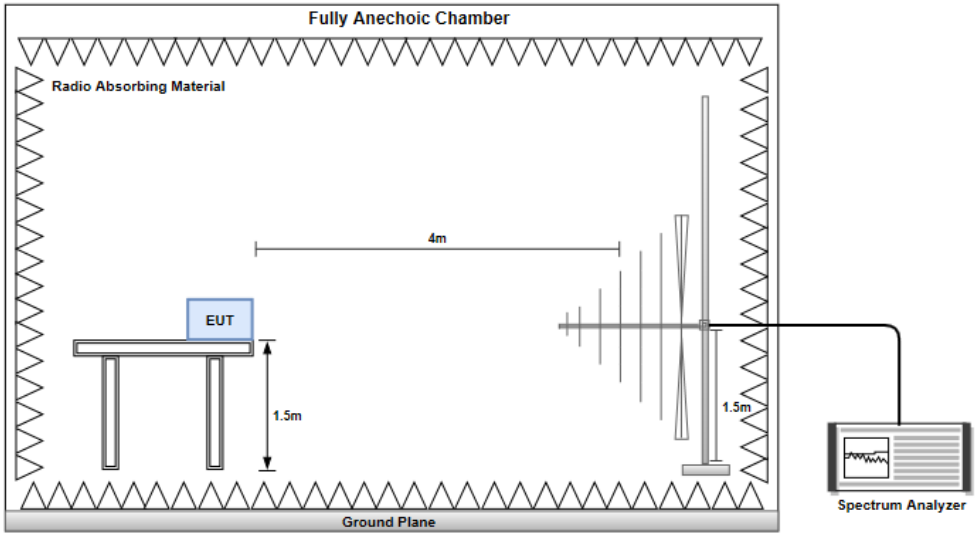
Frequency Range	Maximum Power	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 862 MHz	-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

3.4.2 Test Procedures

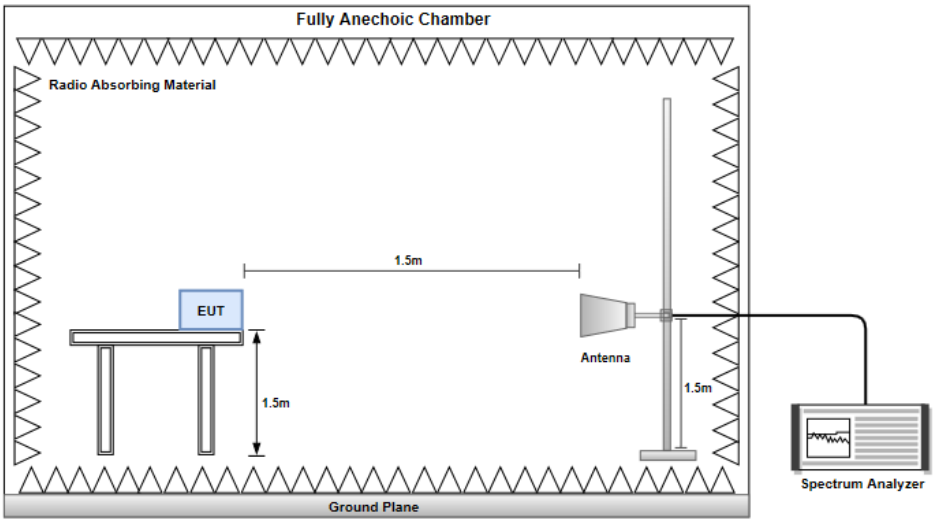
Reference to clause 5.4.5.2 of ETSI EN 301 893 V2.1.1 (2017-05).

3.4.3 Test Setup

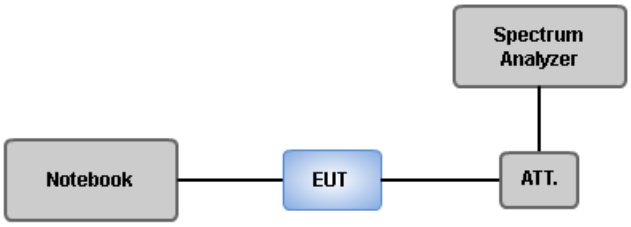
Below 1GHz



Above 1 GHz

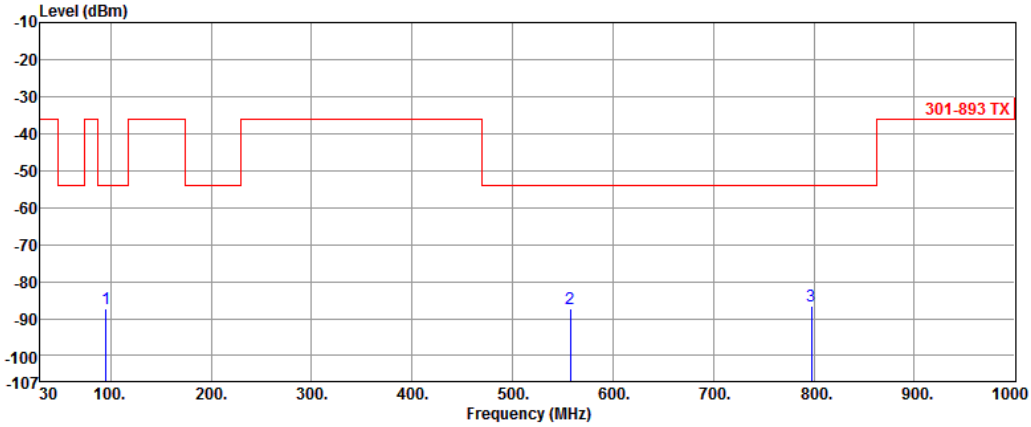


Conducted Emission



3.4.4 Transmitter Conducted Unwanted Emissions (Below 1GHz)

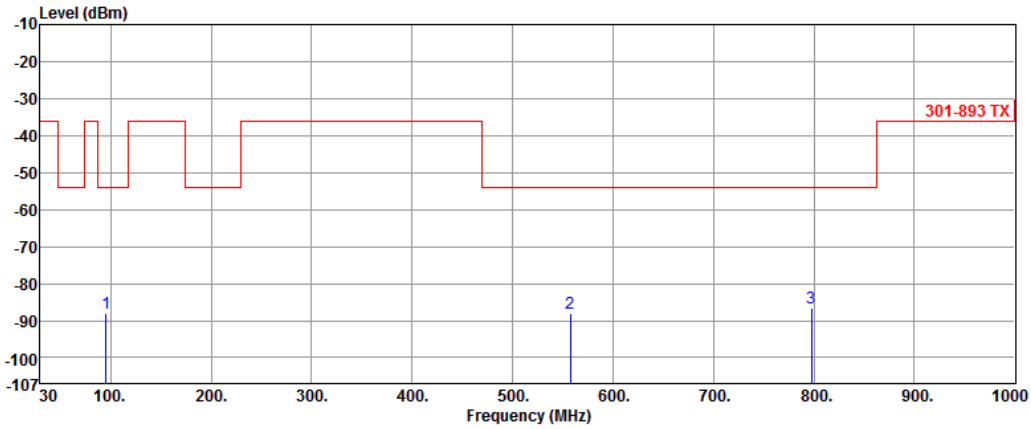
Modulation	11a	Test Freq. (MHz)	5180



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	95.15	-87.34	-54.00	-33.34	0.00	-87.34
2	557.64	-87.16	-54.00	-33.16	0.00	-87.16
3	797.84	-86.72	-54.00	-32.72	0.00	-86.72

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

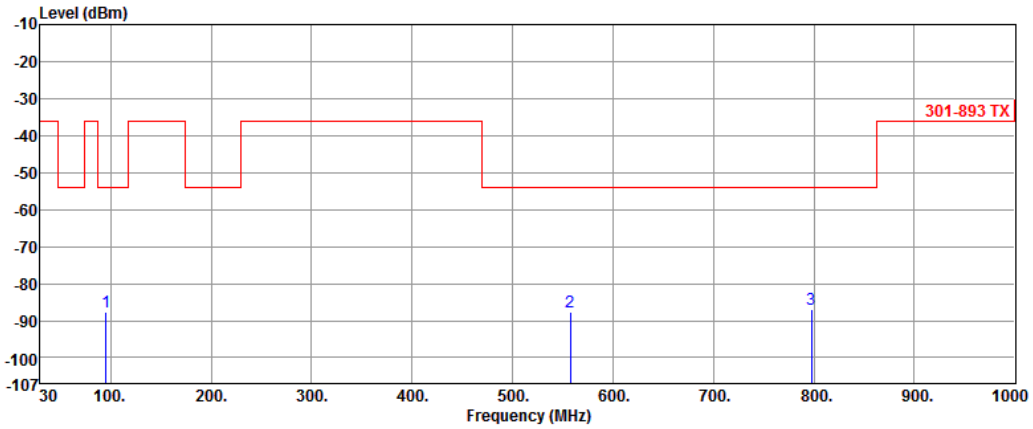
Modulation	11a	Test Freq. (MHz)	5700



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	95.15	-87.98	-54.00	-33.98	0.00	-87.98
2	557.58	-87.90	-54.00	-33.90	0.00	-87.90
3	797.55	-86.66	-54.00	-32.66	0.00	-86.66

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

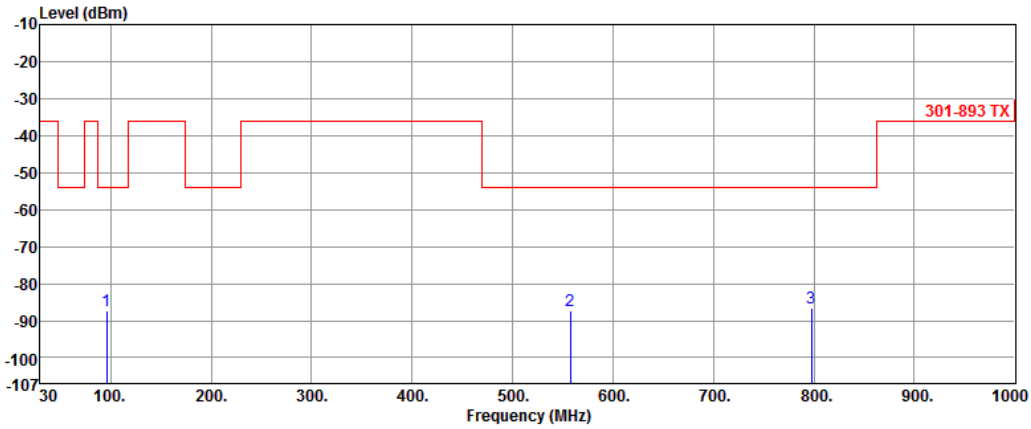
Modulation	VHT20	Test Freq. (MHz)	5180



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	95.54	-87.65	-54.00	-33.65	0.00	-87.65
2	557.42	-87.55	-54.00	-33.55	0.00	-87.55
3	797.84	-86.96	-54.00	-32.96	0.00	-86.96

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

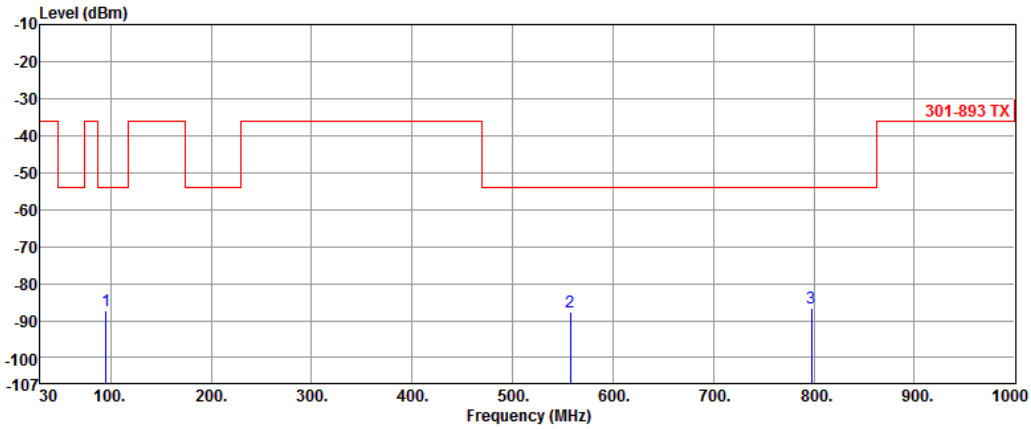
Modulation	VHT20	Test Freq. (MHz)	5700



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	95.84	-87.47	-54.00	-33.47	0.00	-87.47
2	557.32	-87.46	-54.00	-33.46	0.00	-87.46
3	797.40	-86.46	-54.00	-32.46	0.00	-86.46

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

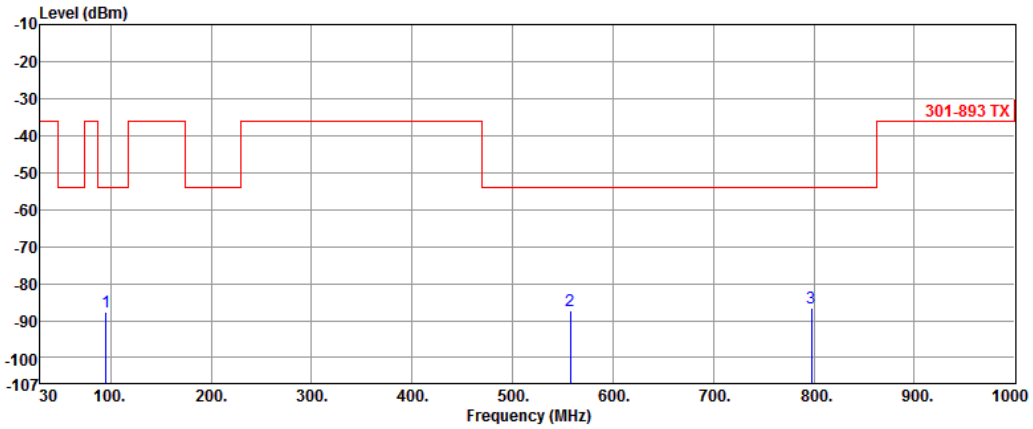
Modulation	VHT40	Test Freq. (MHz)	5190



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	95.16	-87.47	-54.00	-33.47	0.00	-87.47
2	557.37	-87.75	-54.00	-33.75	0.00	-87.75
3	797.63	-86.47	-54.00	-32.47	0.00	-86.47

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

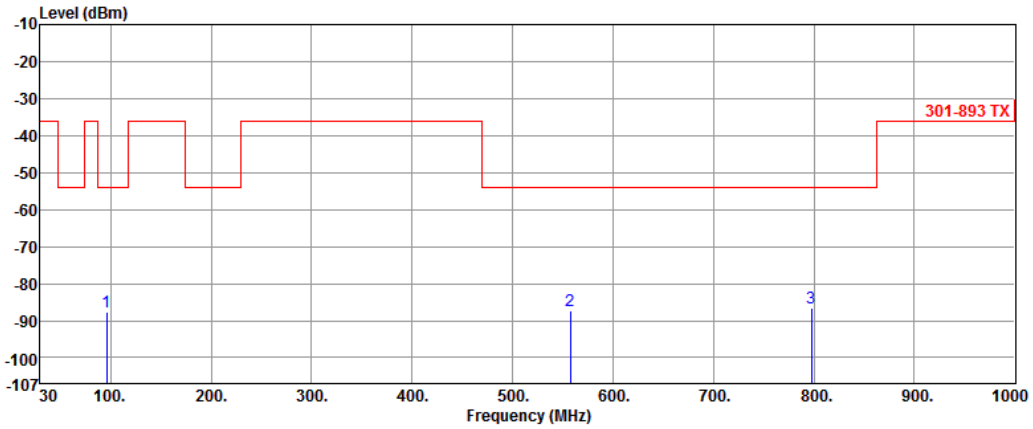
Modulation	VHT40	Test Freq. (MHz)	5670



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	95.35	-87.64	-54.00	-33.64	0.00	-87.64
2	557.35	-87.41	-54.00	-33.41	0.00	-87.41
3	797.64	-86.55	-54.00	-32.55	0.00	-86.55

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

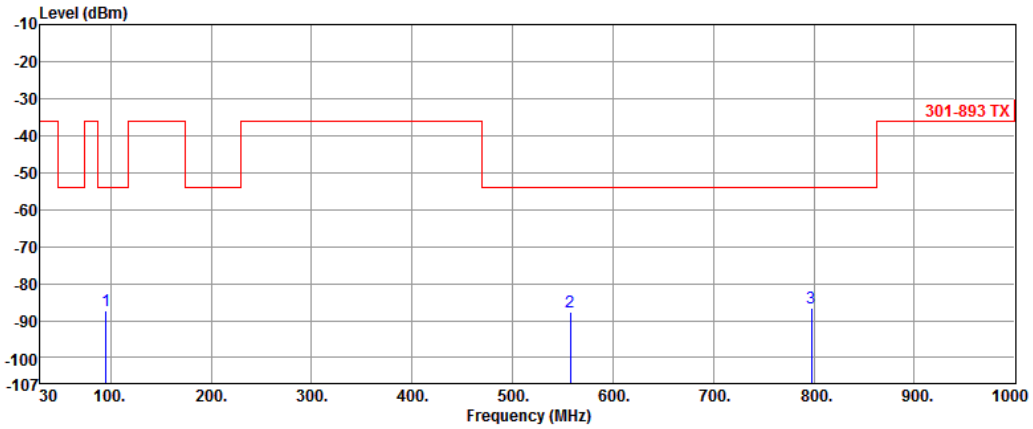
Modulation	VHT80	Test Freq. (MHz)	5210



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	95.64	-87.54	-54.00	-33.54	0.00	-87.54
2	557.35	-87.46	-54.00	-33.46	0.00	-87.46
3	797.55	-86.65	-54.00	-32.65	0.00	-86.65

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

Modulation	VHT80	Test Freq. (MHz)	5610

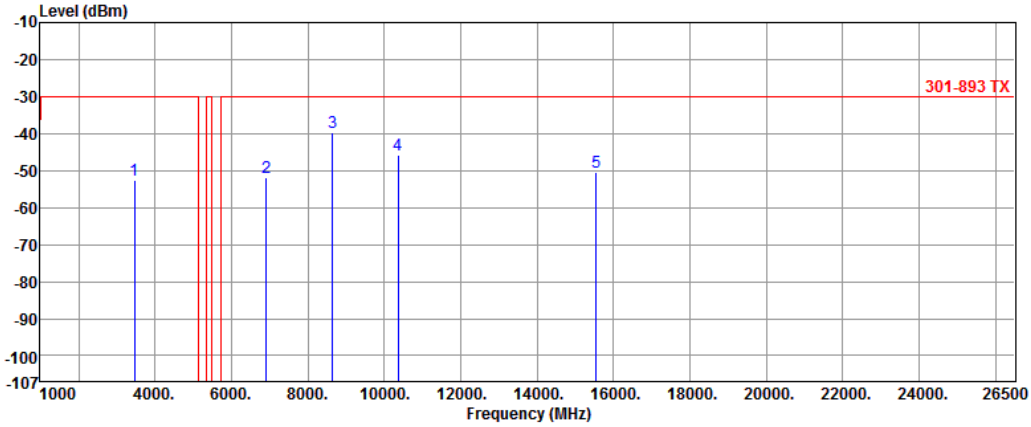


	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	95.54	-87.45	-54.00	-33.45	0.00	-87.45
2	557.84	-87.66	-54.00	-33.66	0.00	-87.66
3	797.68	-86.59	-54.00	-32.59	0.00	-86.59

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

3.4.5 Transmitter Conducted Unwanted Emissions (Above 1GHz)

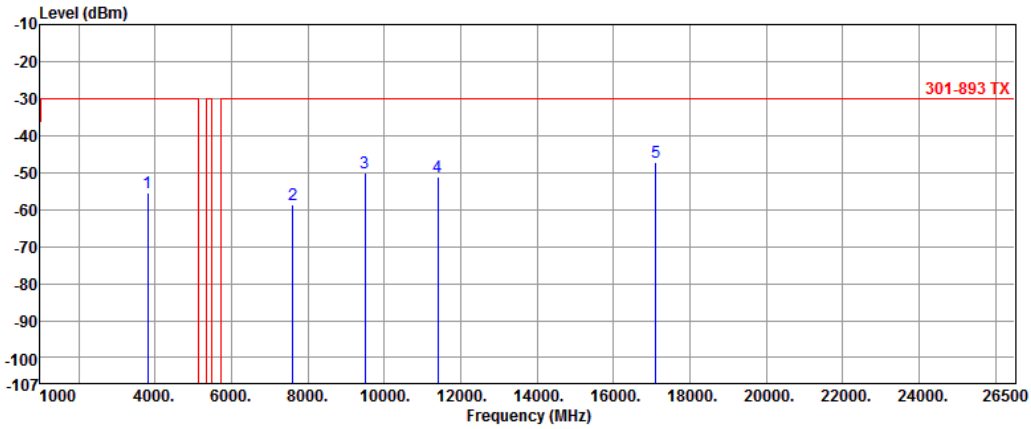
Modulation	11a	Test Freq. (MHz)	5180



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3453.84	-52.67	-30.00	-22.67	0.00	-52.67
2	6909.68	-51.94	-30.00	-21.94	0.00	-51.94
3	8636.80	-39.72	-30.00	-9.72	0.00	-39.72
4	10359.58	-45.69	-30.00	-15.69	0.00	-45.69
5	15542.96	-50.34	-30.00	-20.34	0.00	-50.34

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

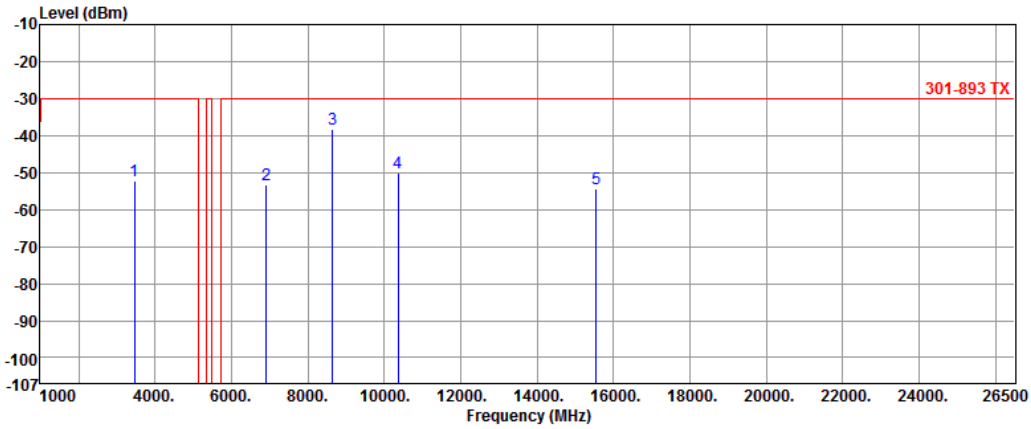
Modulation	11a	Test Freq. (MHz)	5700



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3800.68	-55.45	-30.00	-25.45	0.00	-55.45
2	7602.98	-58.74	-30.00	-28.74	0.00	-58.74
3	9497.98	-50.01	-30.00	-20.01	0.00	-50.01
4	11405.68	-51.30	-30.00	-21.30	0.00	-51.30
5	17098.58	-47.07	-30.00	-17.07	0.00	-47.07

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

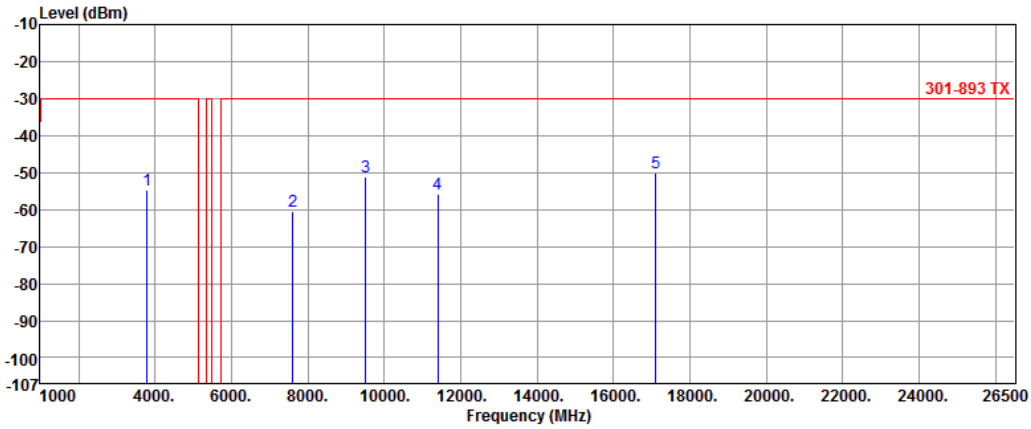
Modulation	VHT20	Test Freq. (MHz)	5180



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3453.43	-52.28	-30.00	-22.28	0.00	-52.28
2	6914.54	-53.37	-30.00	-23.37	0.00	-53.37
3	8637.56	-38.38	-30.00	-8.38	0.00	-38.38
4	10363.17	-50.14	-30.00	-20.14	0.00	-50.14
5	15538.84	-54.23	-30.00	-24.23	0.00	-54.23

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

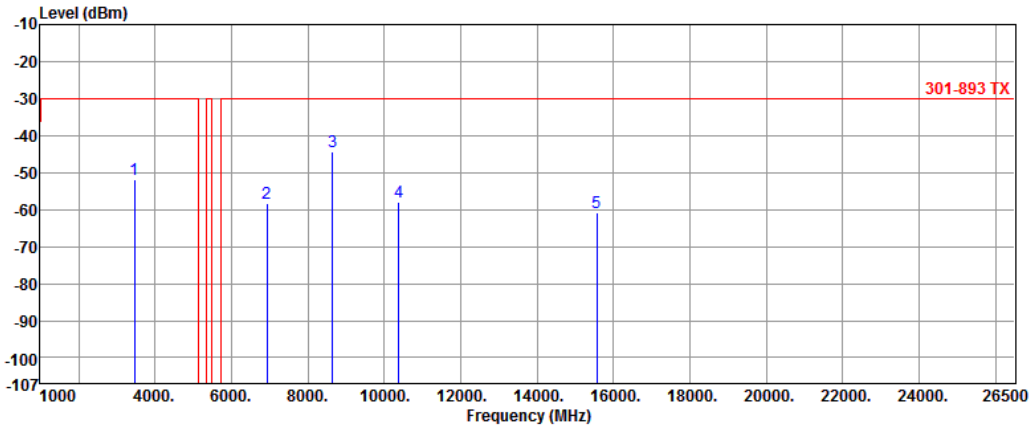
Modulation	VHT20	Test Freq. (MHz)	5700



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3799.84	-54.75	-30.00	-24.75	0.00	-54.75
2	7599.65	-60.34	-30.00	-30.34	0.00	-60.34
3	9504.84	-51.18	-30.00	-21.18	0.00	-51.18
4	11398.84	-55.81	-30.00	-25.81	0.00	-55.81
5	17096.84	-50.04	-30.00	-20.04	0.00	-50.04

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

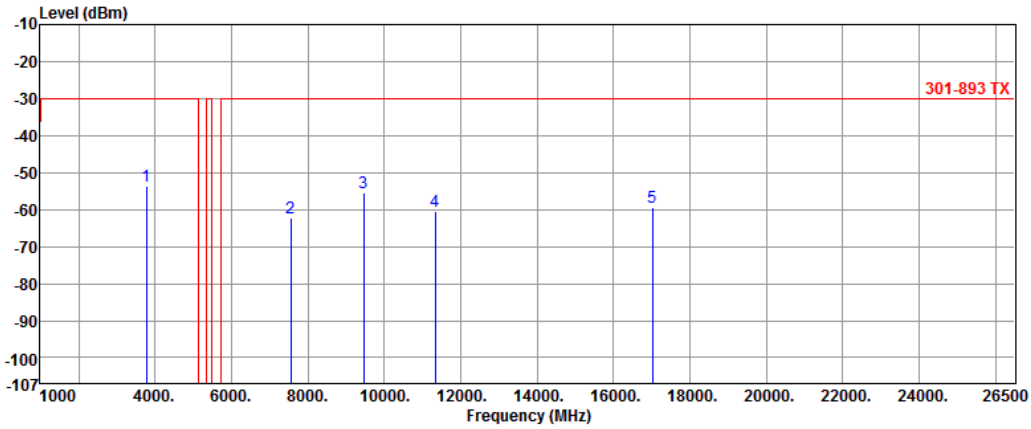
Modulation	VHT40	Test Freq. (MHz)	5190



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3459.74	-51.98	-30.00	-21.98	0.00	-51.98
2	6920.65	-58.34	-30.00	-28.34	0.00	-58.34
3	8637.85	-44.46	-30.00	-14.46	0.00	-44.46
4	10380.54	-57.90	-30.00	-27.90	0.00	-57.90
5	15569.54	-60.66	-30.00	-30.66	0.00	-60.66

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

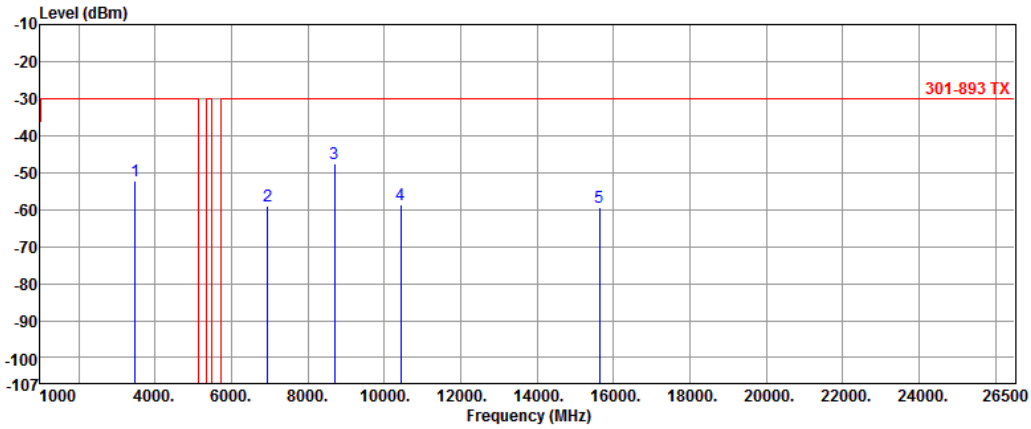
Modulation	VHT40	Test Freq. (MHz)	5670



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3779.65	-53.54	-30.00	-23.54	0.00	-53.54
2	7559.54	-62.11	-30.00	-32.11	0.00	-62.11
3	9452.84	-55.52	-30.00	-25.52	0.00	-55.52
4	11339.65	-60.44	-30.00	-30.44	0.00	-60.44
5	17010.54	-59.55	-30.00	-29.55	0.00	-59.55

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

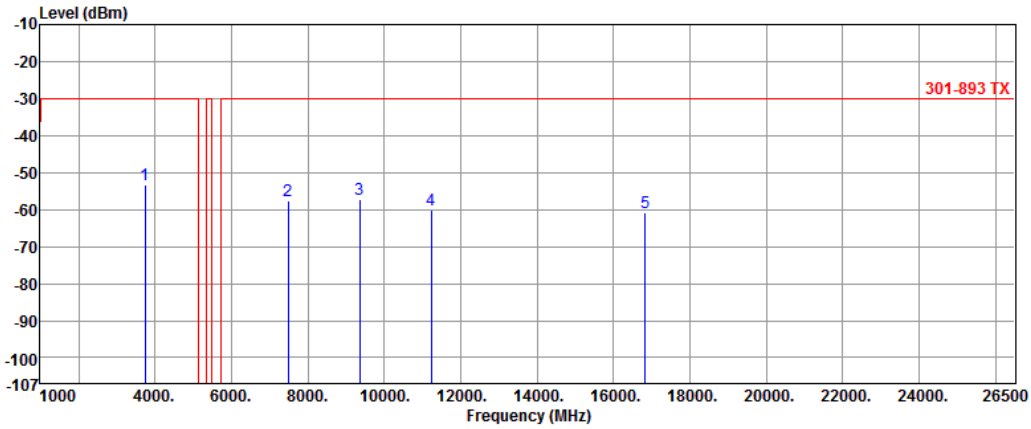
Modulation	VHT80	Test Freq. (MHz)	5210



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3473.42	-52.12	-30.00	-22.12	0.00	-52.12
2	6946.66	-58.87	-30.00	-28.87	0.00	-58.87
3	8689.84	-47.55	-30.00	-17.55	0.00	-47.55
4	10424.65	-58.77	-30.00	-28.77	0.00	-58.77
5	15630.68	-59.39	-30.00	-29.39	0.00	-59.39

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

Modulation	VHT80	Test Freq. (MHz)	5610

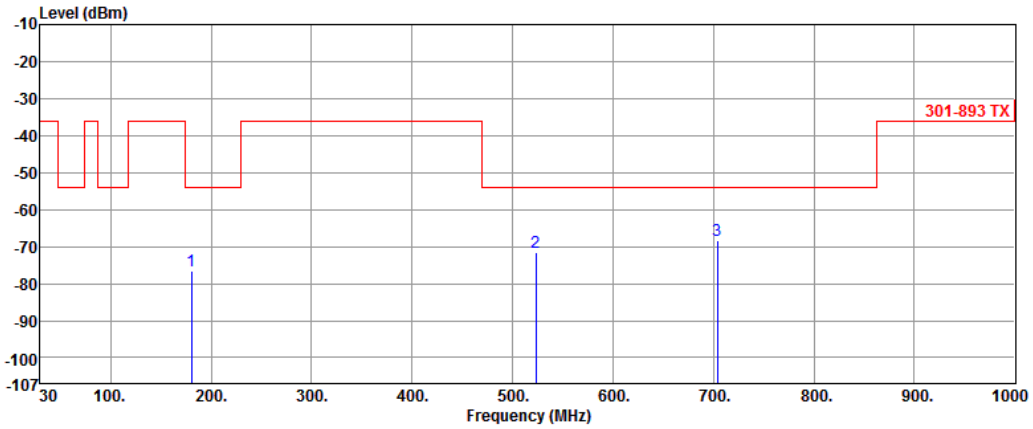


	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3740.84	-53.46	-30.00	-23.46	0.00	-53.46
2	7479.65	-57.73	-30.00	-27.73	0.00	-57.73
3	9356.78	-57.33	-30.00	-27.33	0.00	-57.33
4	11220.52	-60.29	-30.00	-30.29	0.00	-60.29
5	16832.58	-60.79	-30.00	-30.79	0.00	-60.79

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

3.4.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

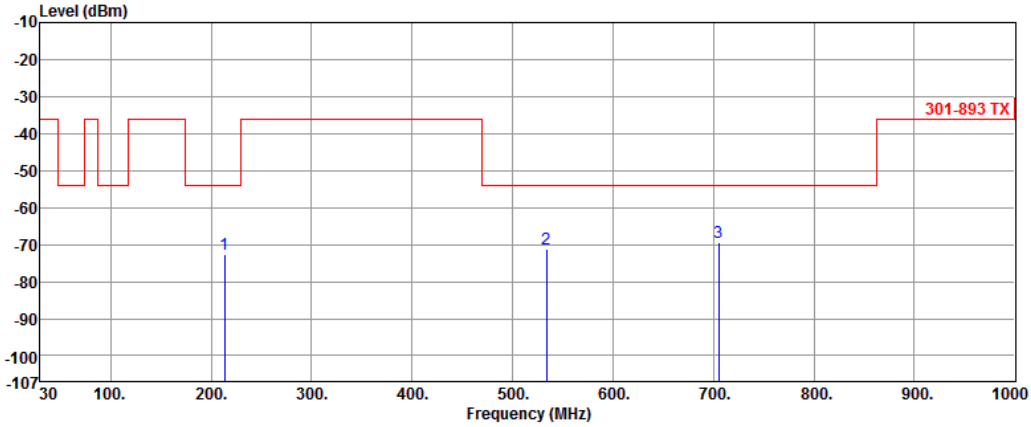
Modulation	11a	**Test Freq. (MHz)**	5180
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	180.46	-76.55	-54.00	-22.55	-3.62	-72.93
2	523.45	-71.69	-54.00	-17.69	4.21	-75.90
3	704.12	-68.44	-54.00	-14.44	8.11	-76.55

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

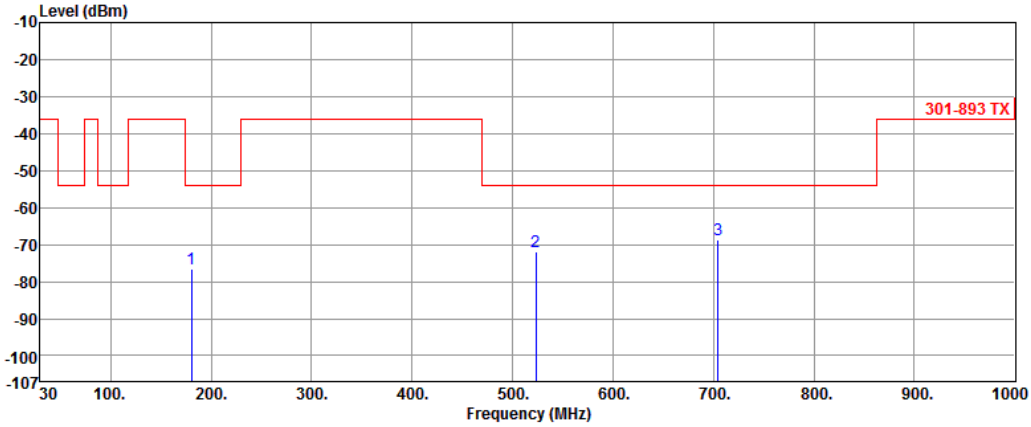
Modulation	11a	Test Freq. (MHz)	5180
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	213.51	-72.58	-54.00	-18.58	-5.16	-67.42
2	533.98	-71.15	-54.00	-17.15	5.49	-76.64
3	704.96	-69.45	-54.00	-15.45	7.11	-76.56

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

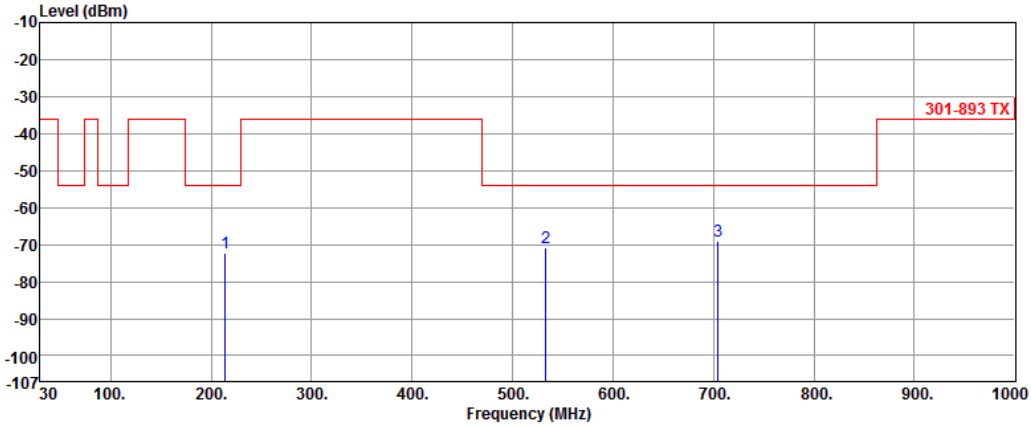
Modulation	11a	Test Freq. (MHz)	5700
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	180.63	-76.58	-54.00	-22.58	-3.66	-72.92
2	523.46	-71.85	-54.00	-17.85	4.21	-76.06
3	704.51	-68.53	-54.00	-14.53	8.13	-76.66

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

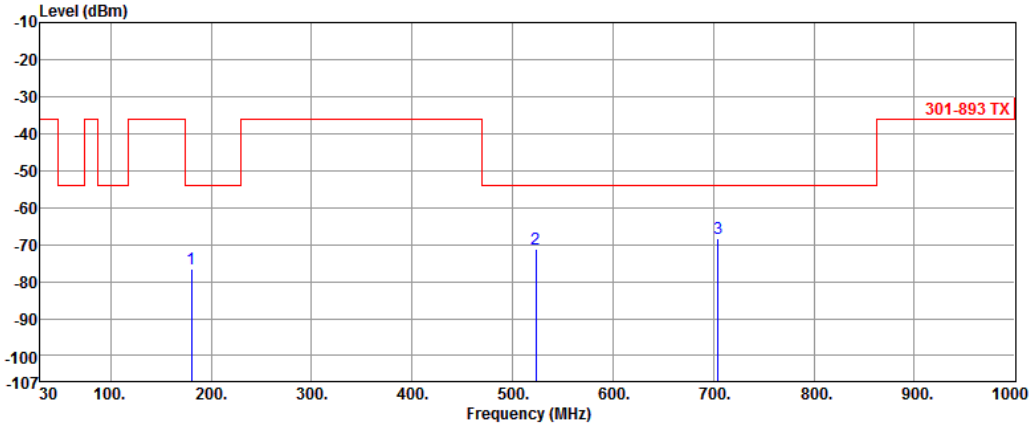
Modulation	11a	Test Freq. (MHz)	5700
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	213.84	-72.42	-54.00	-18.42	-5.19	-67.23
2	533.17	-71.01	-54.00	-17.01	5.50	-76.51
3	704.65	-69.18	-54.00	-15.18	7.11	-76.29

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

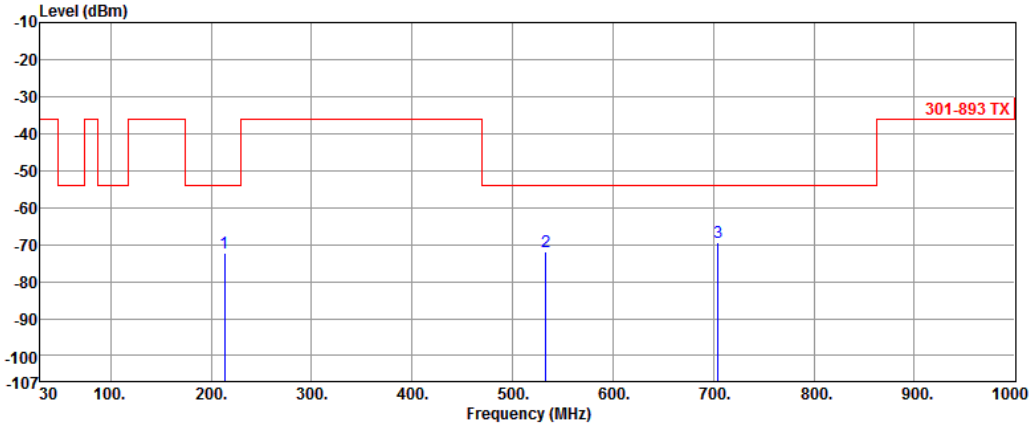
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	180.25	-76.49	-54.00	-22.49	-3.59	-72.90
2	523.54	-71.16	-54.00	-17.16	4.21	-75.37
3	704.58	-68.45	-54.00	-14.45	8.13	-76.58

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

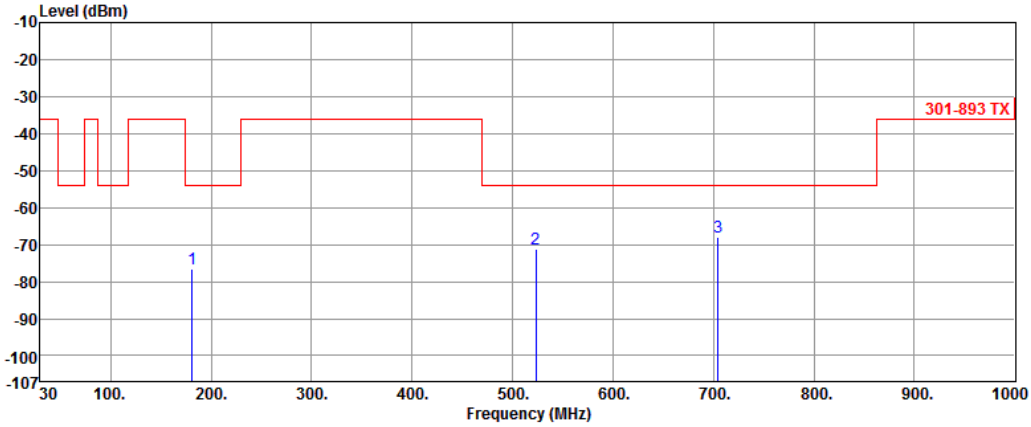
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	213.54	-72.46	-54.00	-18.46	-5.16	-67.30
2	533.45	-71.96	-54.00	-17.96	5.50	-77.46
3	704.74	-69.32	-54.00	-15.32	7.11	-76.43

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

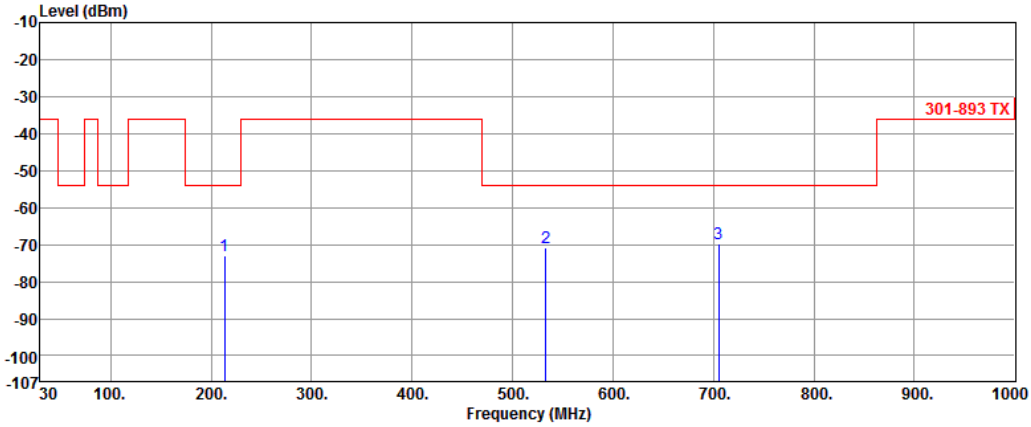
Modulation	VHT20	Test Freq. (MHz)	5700
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	180.97	-76.66	-54.00	-22.66	-3.72	-72.94
2	523.35	-71.15	-54.00	-17.15	4.20	-75.35
3	704.70	-68.10	-54.00	-14.10	8.14	-76.24

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

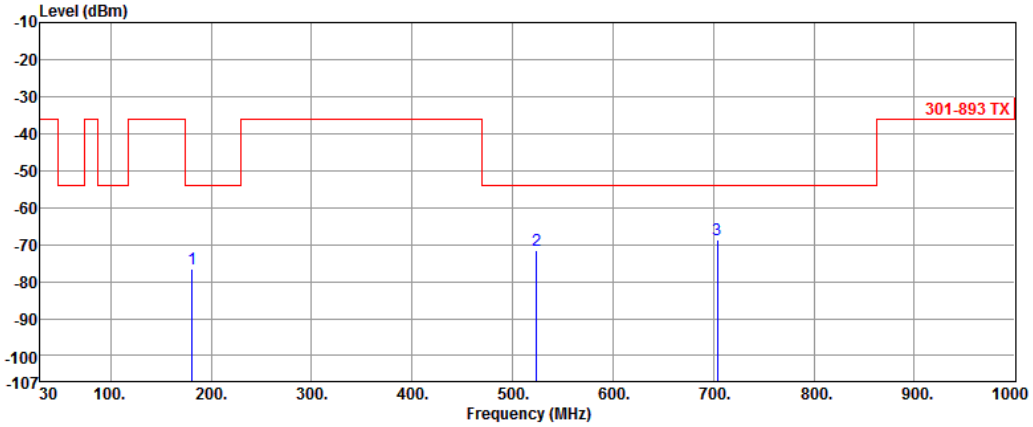
Modulation	VHT20	Test Freq. (MHz)	5700
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	213.56	-72.96	-54.00	-18.96	-5.16	-67.80
2	533.12	-71.01	-54.00	-17.01	5.50	-76.51
3	704.97	-69.83	-54.00	-15.83	7.11	-76.94

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

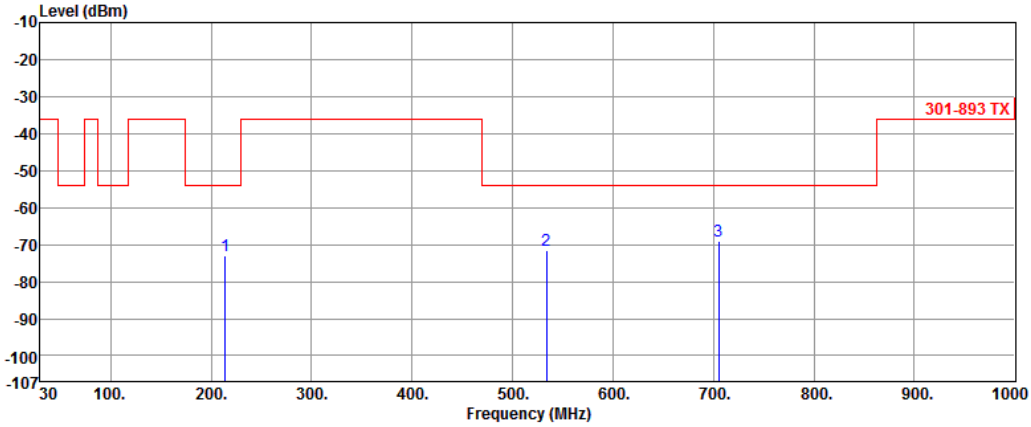
Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	180.78	-76.63	-54.00	-22.63	-3.68	-72.95
2	523.94	-71.42	-54.00	-17.42	4.23	-75.65
3	704.02	-68.87	-54.00	-14.87	8.10	-76.97

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

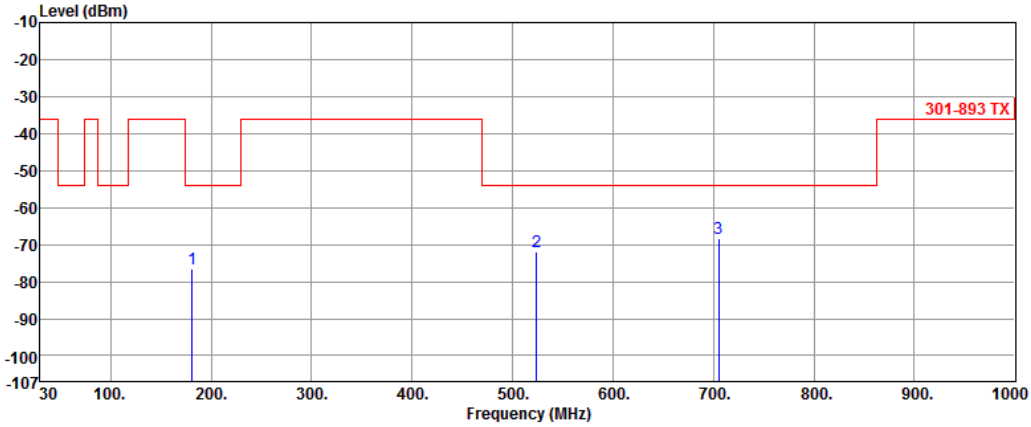
Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	213.87	-72.86	-54.00	-18.86	-5.19	-67.67
2	533.51	-71.70	-54.00	-17.70	5.50	-77.20
3	704.94	-69.05	-54.00	-15.05	7.11	-76.16

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

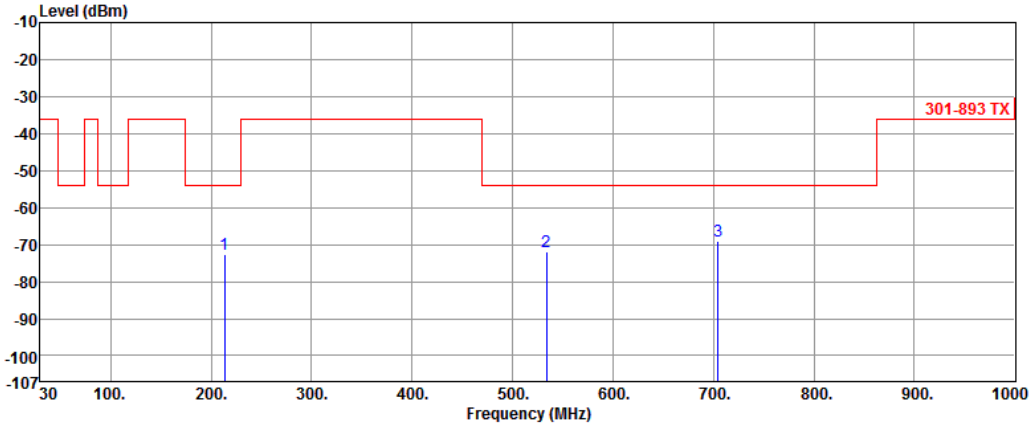
Modulation	VHT40	Test Freq. (MHz)	5670
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	180.78	-76.48	-54.00	-22.48	-3.68	-72.80
2	523.94	-71.75	-54.00	-17.75	4.23	-75.98
3	704.94	-68.45	-54.00	-14.45	8.15	-76.60

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

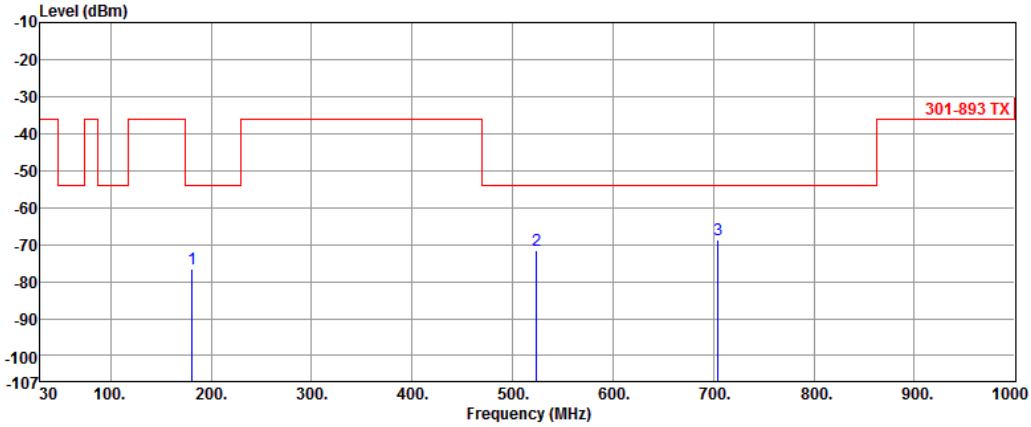
Modulation	VHT40	Test Freq. (MHz)	5670
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	213.65	-72.75	-54.00	-18.75	-5.17	-67.58
2	533.84	-71.75	-54.00	-17.75	5.49	-77.24
3	704.65	-69.02	-54.00	-15.02	7.11	-76.13

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

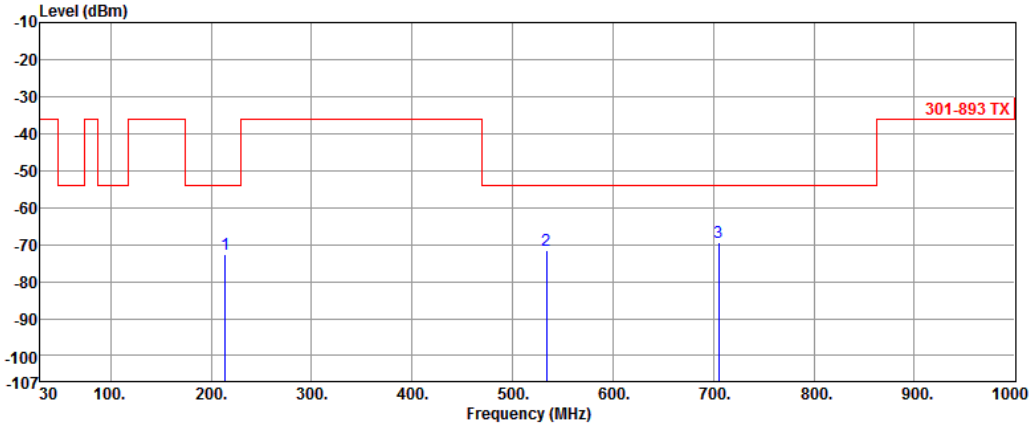
Modulation	VHT80	Test Freq. (MHz)	5210
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	180.84	-76.48	-54.00	-22.48	-3.69	-72.79
2	523.85	-71.45	-54.00	-17.45	4.22	-75.67
3	704.45	-68.58	-54.00	-14.58	8.13	-76.71

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

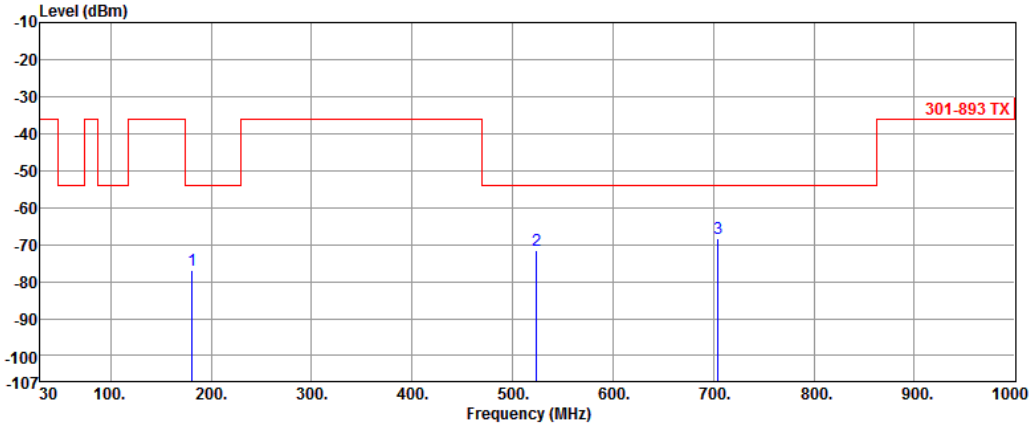
Modulation	VHT80	Test Freq. (MHz)	5210
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	213.84	-72.76	-54.00	-18.76	-5.19	-67.57
2	533.85	-71.47	-54.00	-17.47	5.49	-76.96
3	704.97	-69.48	-54.00	-15.48	7.11	-76.59

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

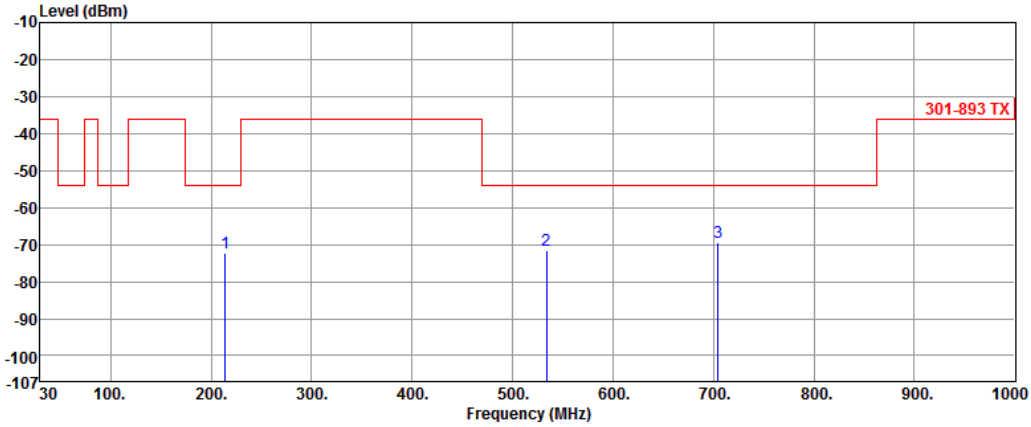
Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	180.85	-76.97	-54.00	-22.97	-3.70	-73.27
2	523.58	-71.58	-54.00	-17.58	4.21	-75.79
3	704.85	-68.45	-54.00	-14.45	8.14	-76.59

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Vertical		

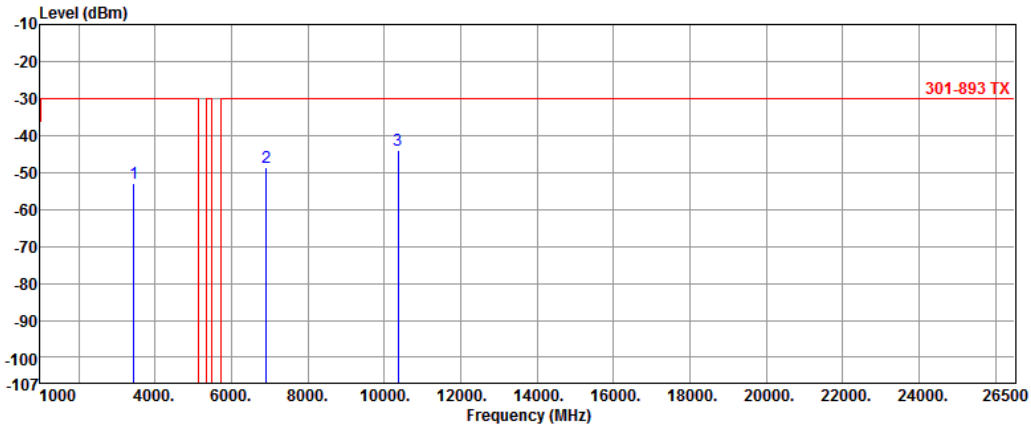


	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	213.84	-72.26	-54.00	-18.26	-5.19	-67.07
2	533.84	-71.70	-54.00	-17.70	5.49	-77.19
3	704.69	-69.48	-54.00	-15.48	7.11	-76.59

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

3.4.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)

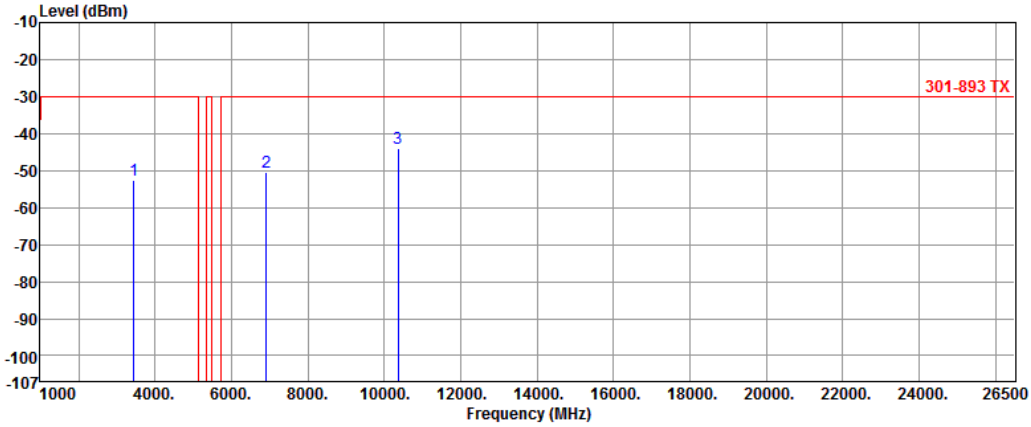
Modulation	11a	**Test Freq. (MHz)**	5180
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3453.31	-53.02	-30.00	-23.02	7.55	-60.57
2	6906.55	-48.73	-30.00	-18.73	16.61	-65.34
3	10360.70	-43.99	-30.00	-13.99	21.81	-65.80

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

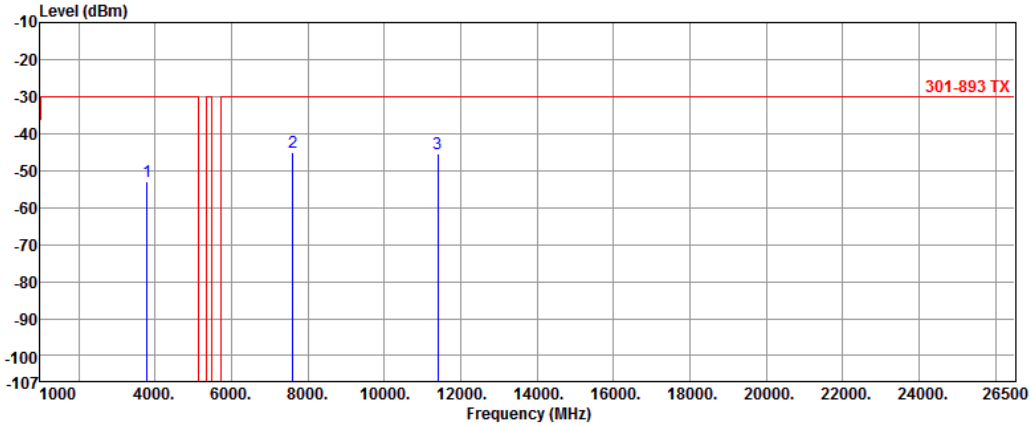
Modulation	11a	Test Freq. (MHz)	5180
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3453.20	-52.59	-30.00	-22.59	6.54	-59.13
2	6906.30	-50.56	-30.00	-20.56	15.18	-65.74
3	10361.84	-43.85	-30.00	-13.85	22.32	-66.17

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

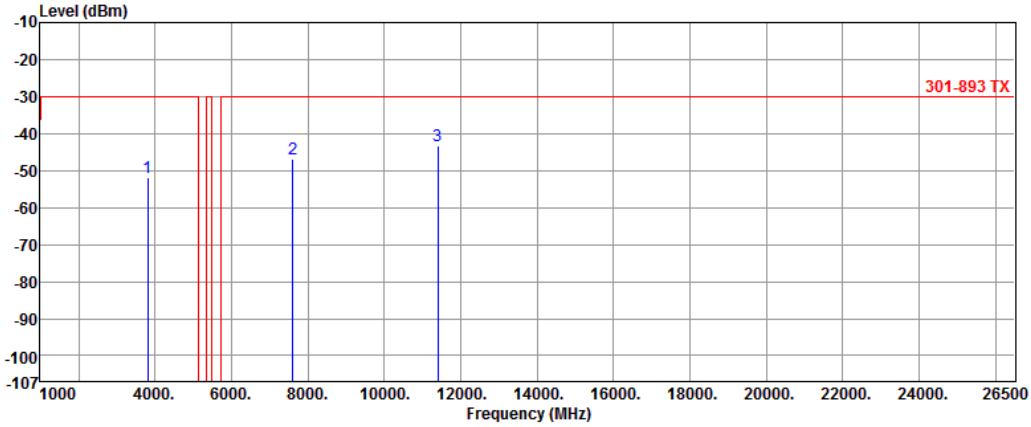
Modulation	11a	Test Freq. (MHz)	5700
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3799.95	-52.84	-30.00	-22.84	8.82	-61.66
2	7600.09	-45.05	-30.00	-15.05	16.81	-61.86
3	11398.33	-45.57	-30.00	-15.57	20.99	-66.56

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

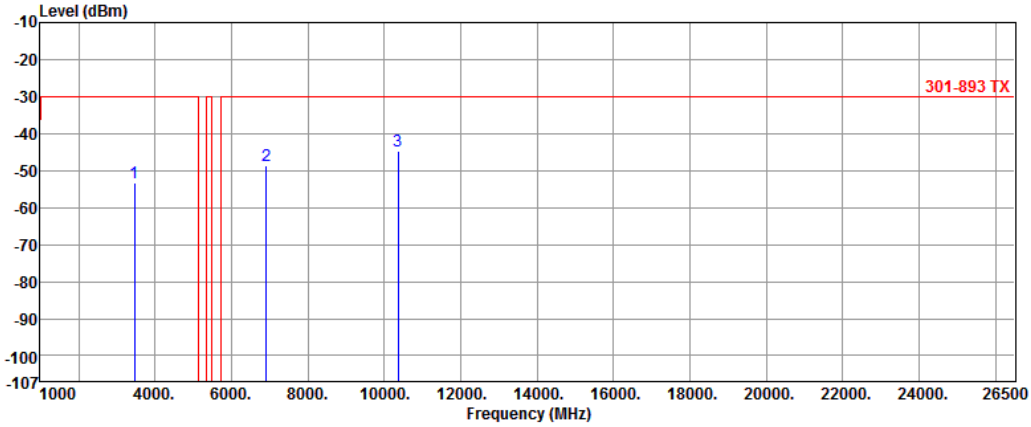
Modulation	11a	Test Freq. (MHz)	5700
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3800.06	-51.99	-30.00	-21.99	8.91	-60.90
2	7599.94	-46.70	-30.00	-16.70	17.28	-63.98
3	11405.55	-43.25	-30.00	-13.25	21.07	-64.32

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

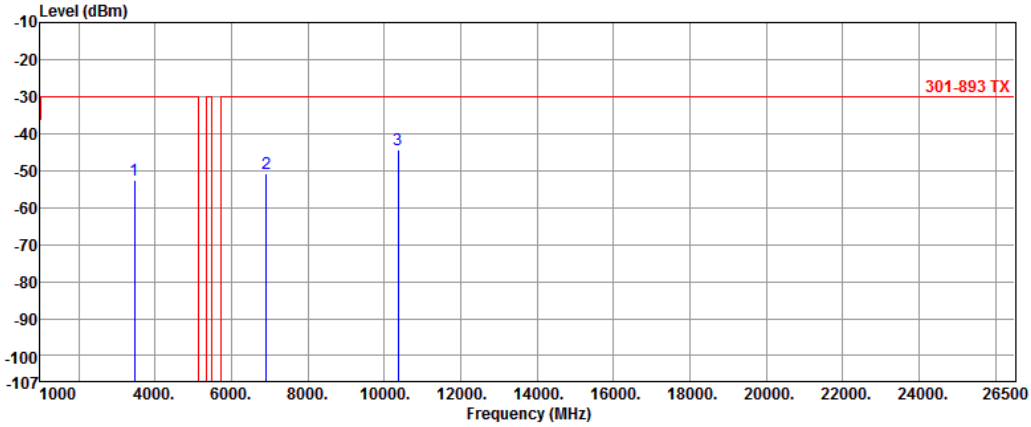
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3453.54	-53.32	-30.00	-23.32	7.55	-60.87
2	6906.50	-48.57	-30.00	-18.57	16.61	-65.18
3	10360.13	-44.71	-30.00	-14.71	21.81	-66.52

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

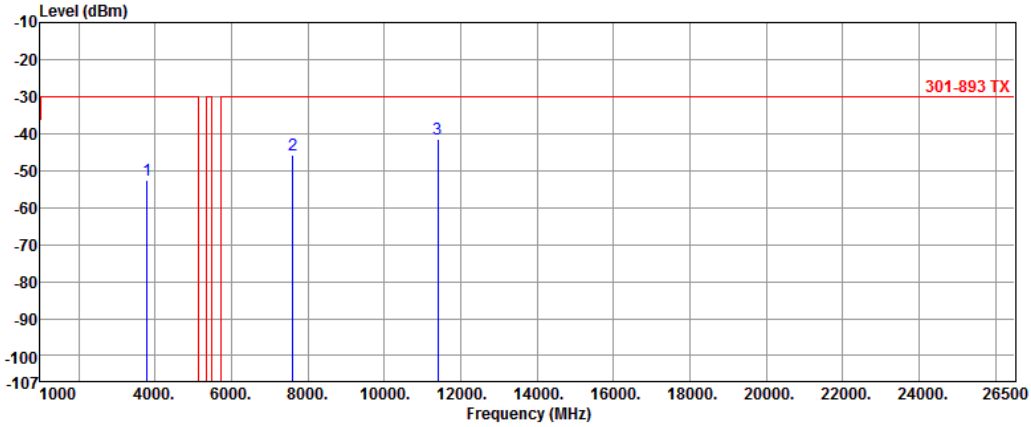
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3453.65	-52.65	-30.00	-22.65	6.54	-59.19
2	6906.63	-50.65	-30.00	-20.65	15.19	-65.84
3	10358.20	-44.33	-30.00	-14.33	22.32	-66.65

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

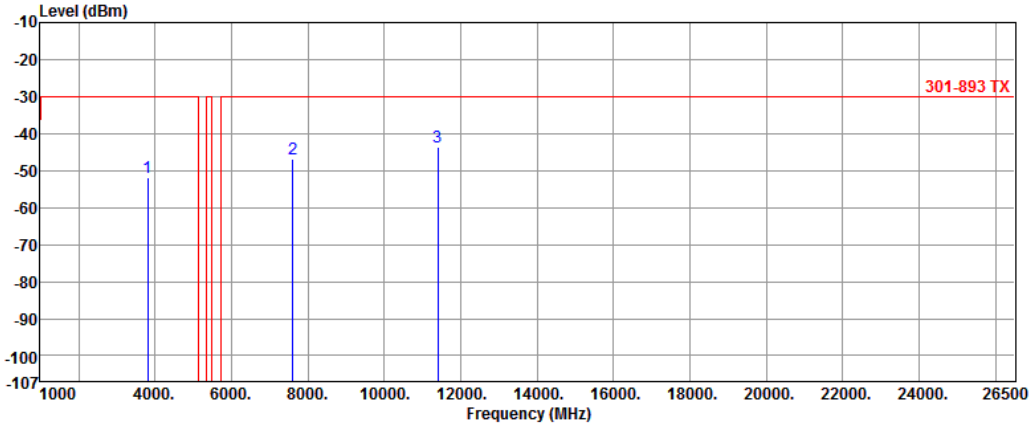
Modulation	VHT20	Test Freq. (MHz)	5700
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3799.87	-52.54	-30.00	-22.54	8.82	-61.36
2	7600.08	-45.65	-30.00	-15.65	16.81	-62.46
3	11401.87	-41.54	-30.00	-11.54	20.98	-62.52

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

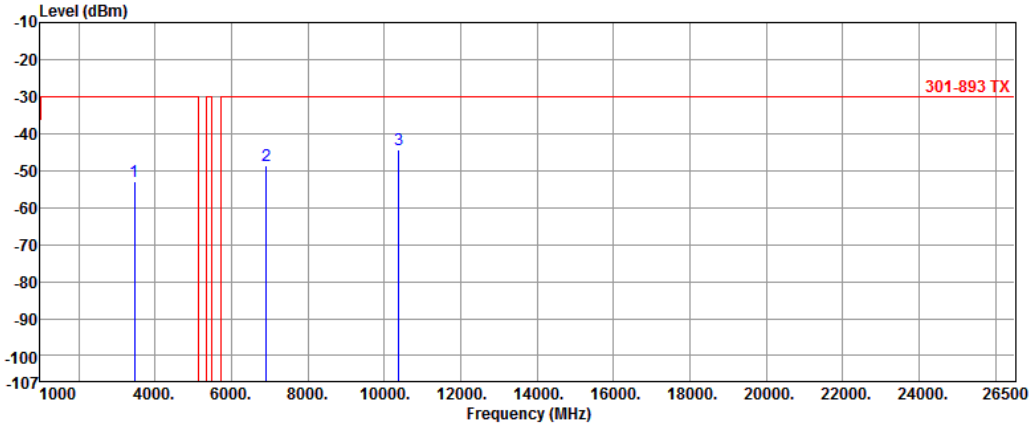
Modulation	VHT20	Test Freq. (MHz)	5700
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3800.84	-51.84	-30.00	-21.84	8.91	-60.75
2	7599.90	-46.85	-30.00	-16.85	17.28	-64.13
3	11401.05	-43.54	-30.00	-13.54	21.08	-64.62

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

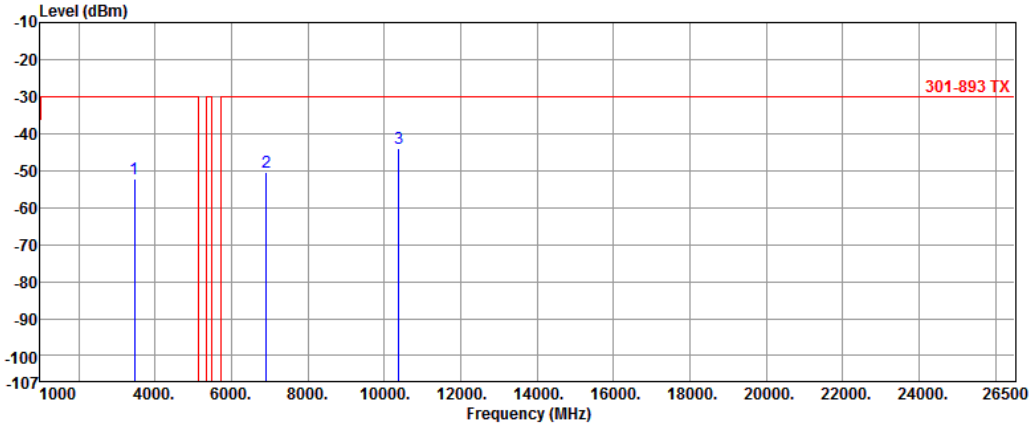
Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3459.88	-52.90	-30.00	-22.90	7.52	-60.42
2	6919.94	-48.74	-30.00	-18.74	16.59	-65.33
3	10378.30	-44.48	-30.00	-14.48	21.89	-66.37

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

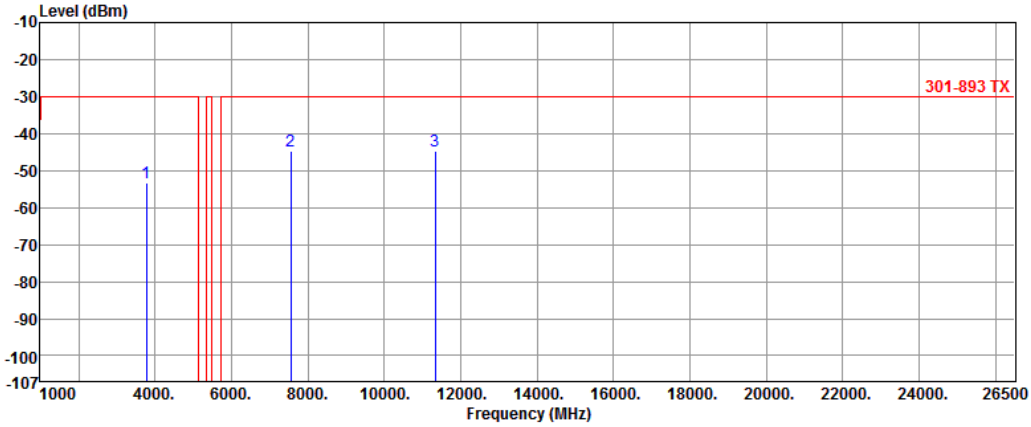
Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3460.06	-52.16	-30.00	-22.16	6.64	-58.80
2	6919.91	-50.47	-30.00	-20.47	15.43	-65.90
3	10377.80	-44.17	-30.00	-14.17	22.31	-66.48

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

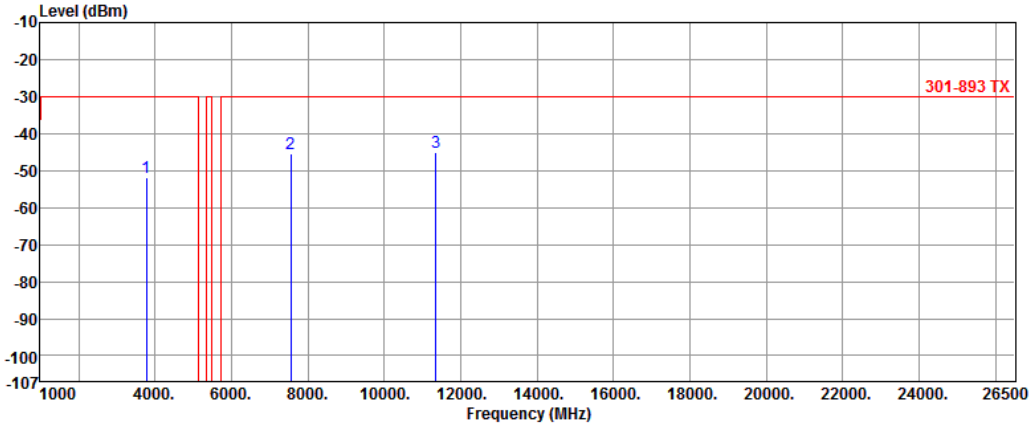
Modulation	VHT40	Test Freq. (MHz)	5670
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3779.74	-53.33	-30.00	-23.33	8.74	-62.07
2	7559.84	-44.72	-30.00	-14.72	16.95	-61.67
3	11338.03	-44.60	-30.00	-14.60	21.37	-65.97

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

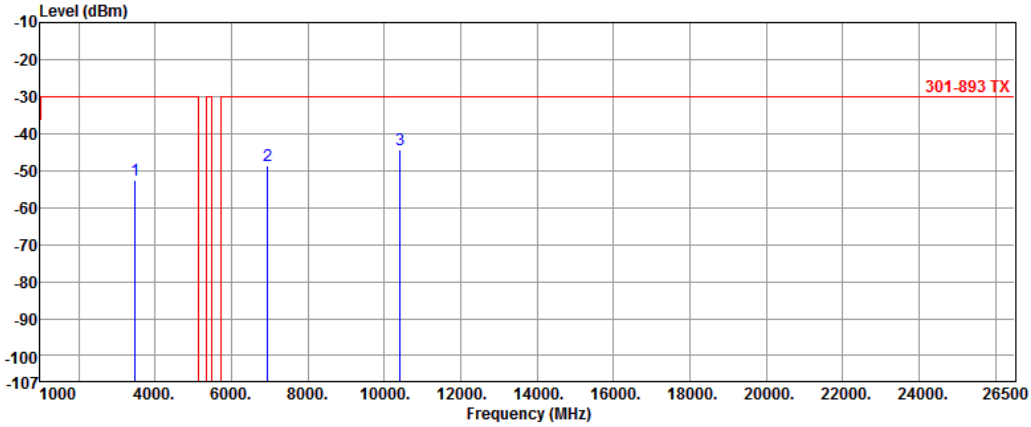
Modulation	VHT40	Test Freq. (MHz)	5670
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3780.04	-52.00	-30.00	-22.00	8.76	-60.76
2	7559.67	-45.41	-30.00	-15.41	17.31	-62.72
3	11341.15	-44.97	-30.00	-14.97	20.85	-65.82

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

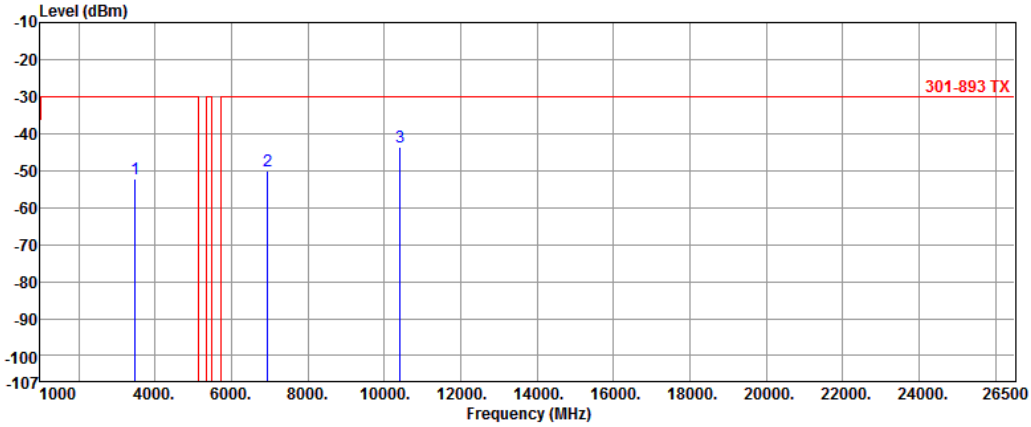
Modulation	VHT80	Test Freq. (MHz)	5210
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3473.36	-52.74	-30.00	-22.74	7.45	-60.19
2	6946.66	-48.68	-30.00	-18.68	16.55	-65.23
3	10420.24	-44.37	-30.00	-14.37	22.05	-66.42

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

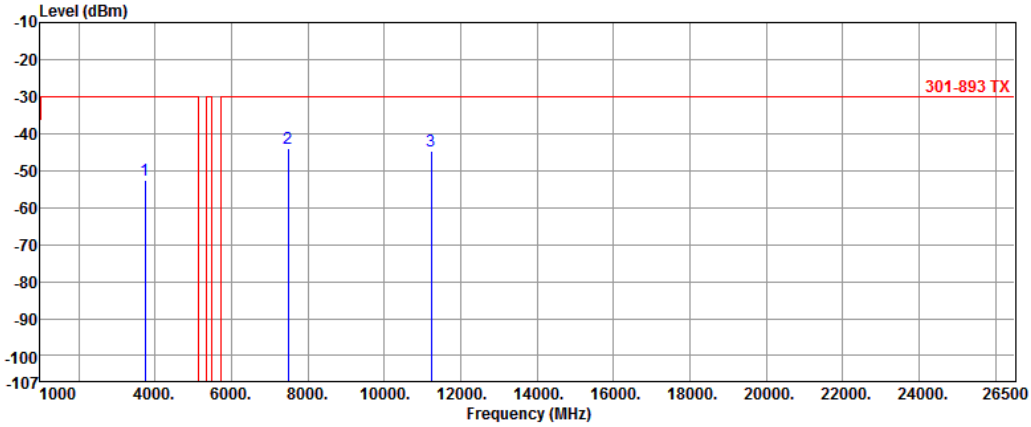
Modulation	VHT80	Test Freq. (MHz)	5210
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3473.18	-52.39	-30.00	-22.39	6.82	-59.21
2	6946.97	-50.12	-30.00	-20.12	15.93	-66.05
3	10419.92	-43.54	-30.00	-13.54	22.29	-65.83

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

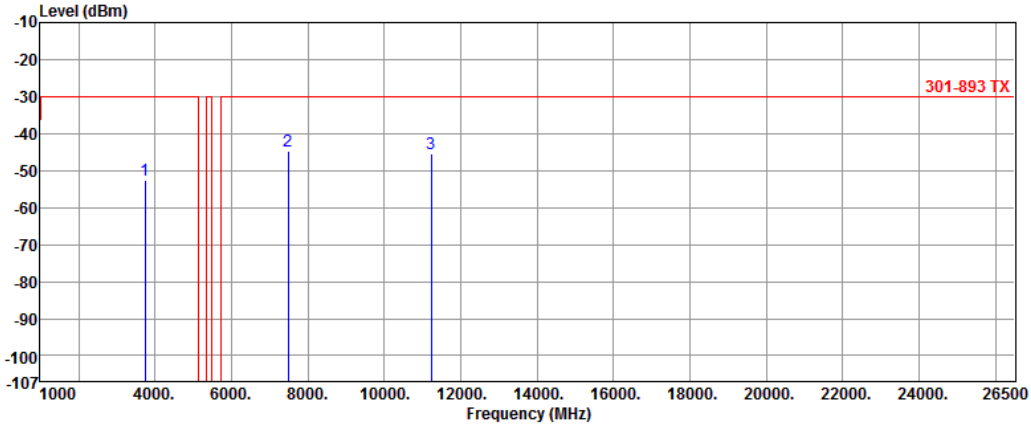
Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3740.07	-52.59	-30.00	-22.59	8.60	-61.19
2	7479.95	-44.14	-30.00	-14.14	17.11	-61.25
3	11222.33	-44.67	-30.00	-14.67	20.77	-65.44

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Vertical		

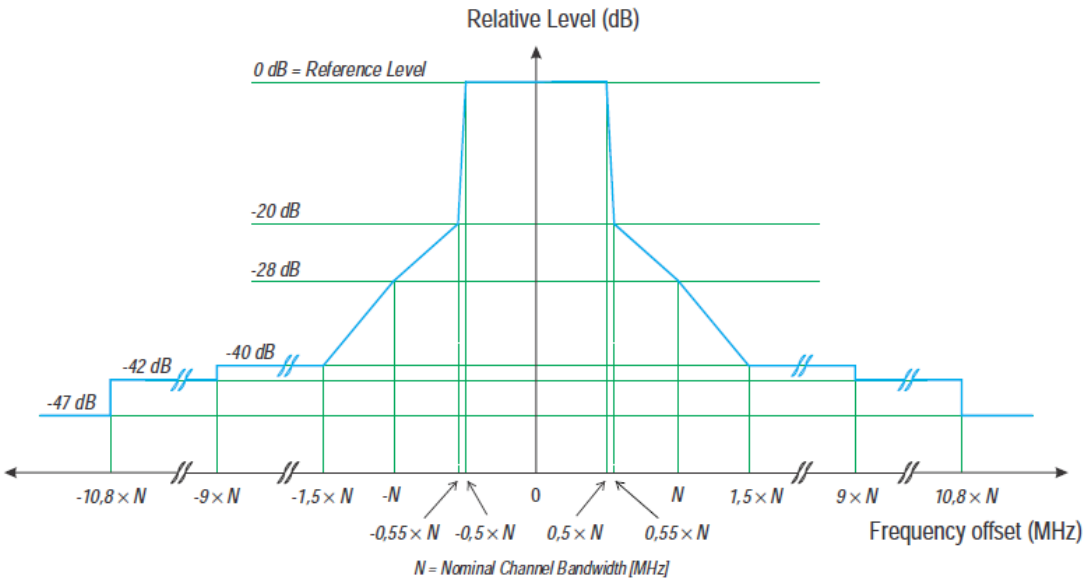


	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3739.74	-52.51	-30.00	-22.51	8.46	-60.97
2	7479.87	-44.64	-30.00	-14.64	17.47	-62.11
3	11221.33	-45.32	-30.00	-15.32	20.43	-65.75

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

3.5 Transmitter Unwanted Emissions within the 5 GHz RLAN Band

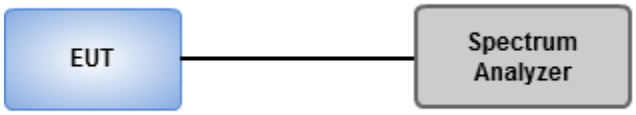
3.5.1 Limit of Transmitter Unwanted Emissions within the 5 GHz RLAN Band



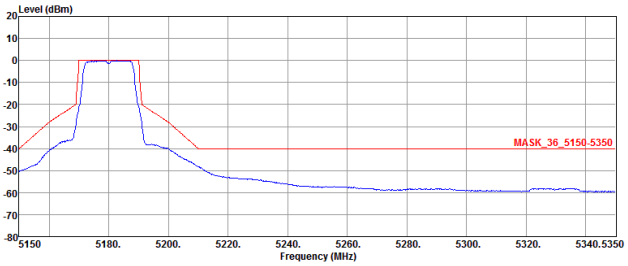
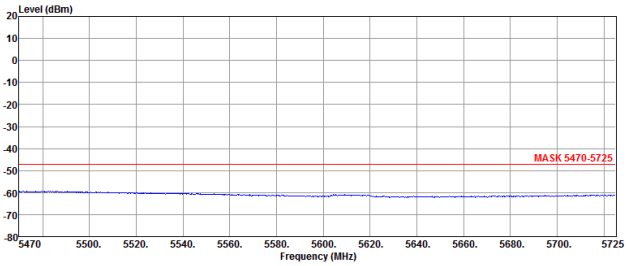
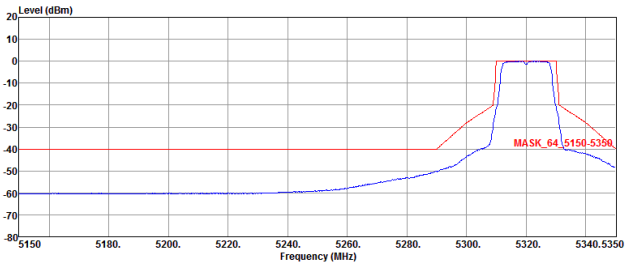
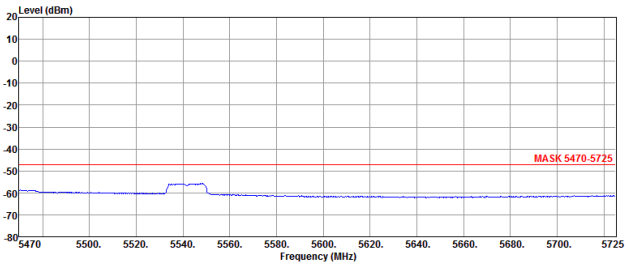
3.5.2 Test Procedures

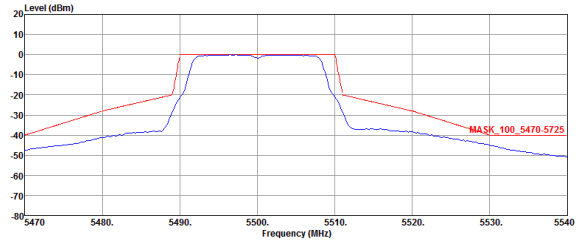
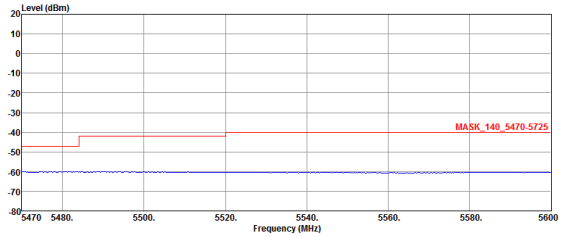
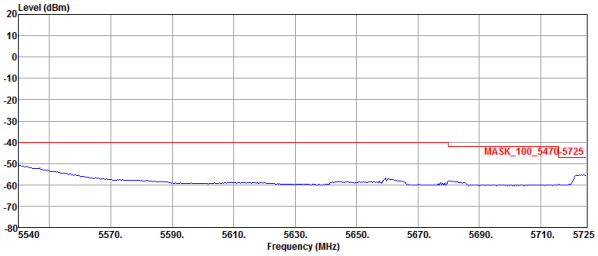
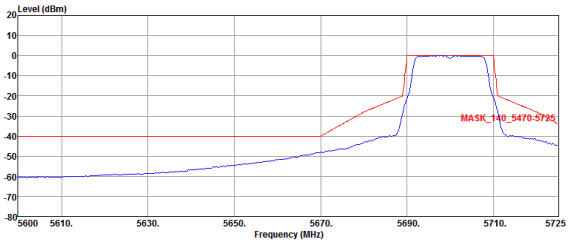
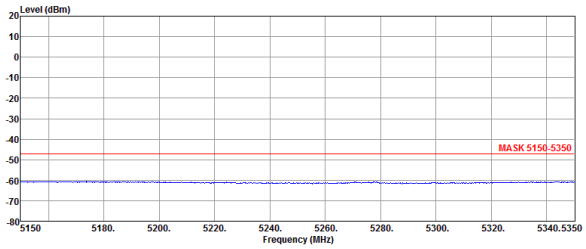
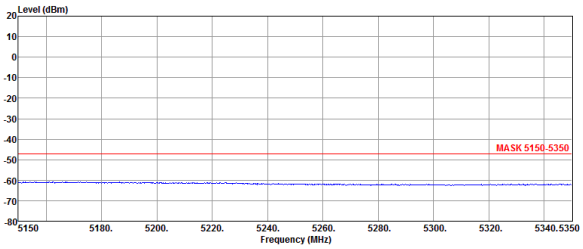
Reference to clause 5.4.6.2 of ETSI EN 301 893 V2.1.1 (2017-05).

3.5.3 Test Setup

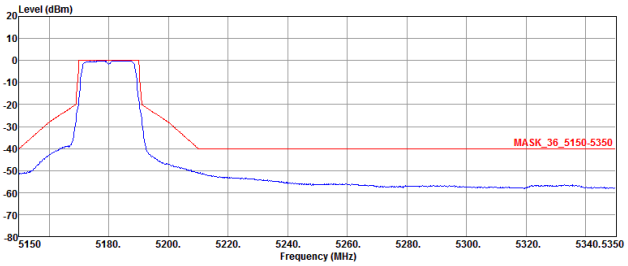
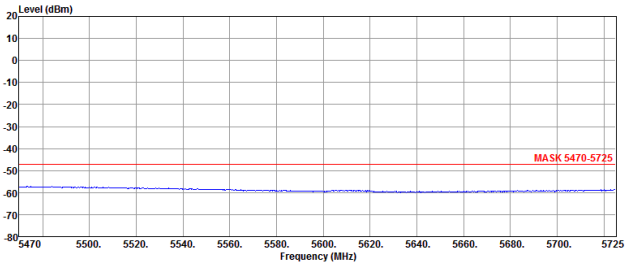
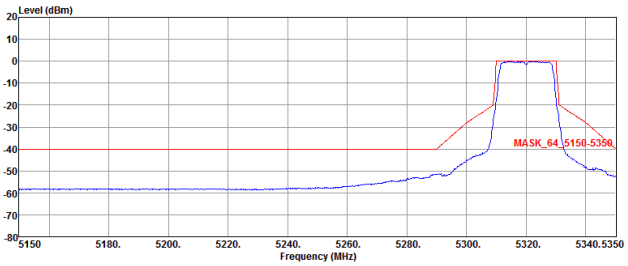
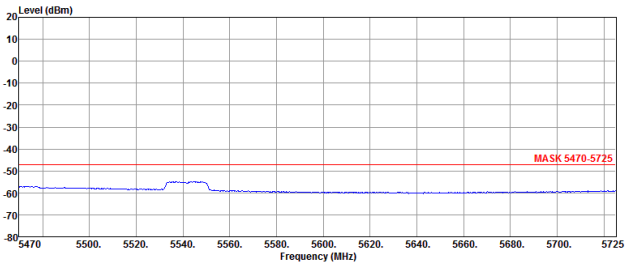


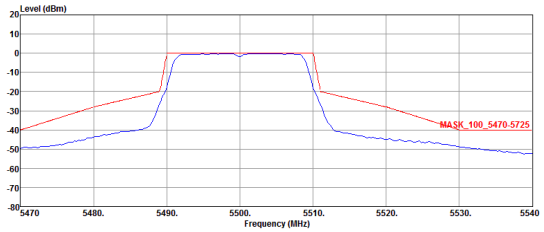
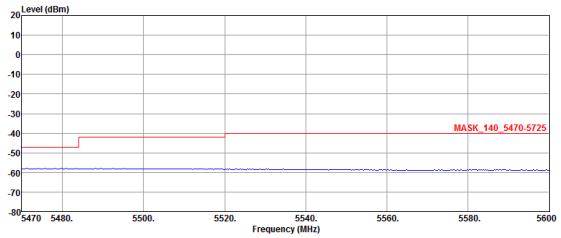
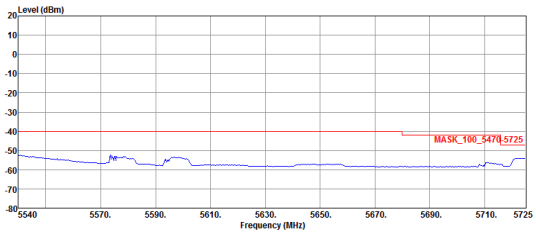
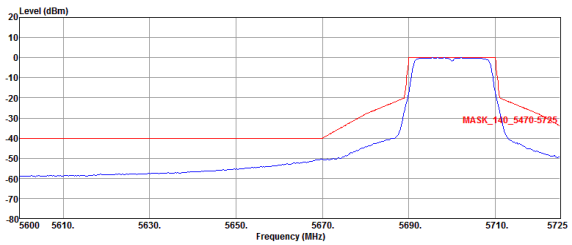
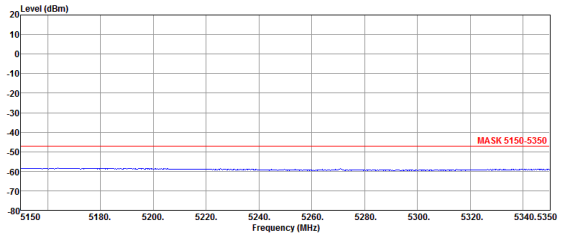
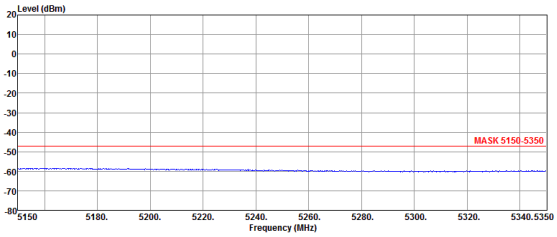
3.5.4 Test Result of Transmitter Unwanted Emissions within the 5 GHz RLAN Band for 802.11a

5180MHz	5180MHz
	
5320MHz	**5320MHz**
	

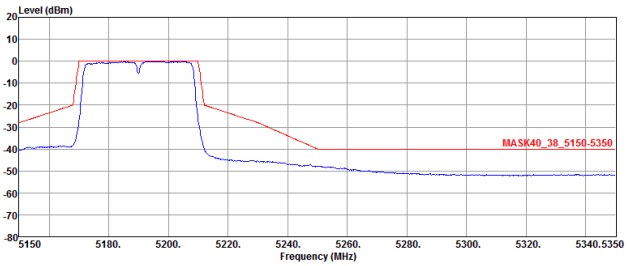
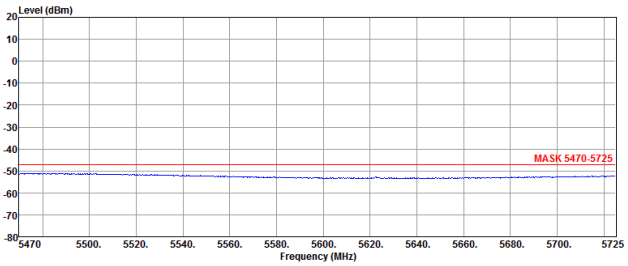
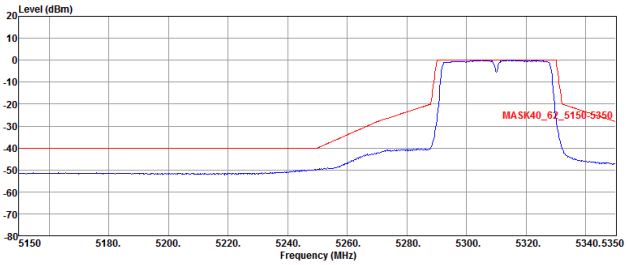
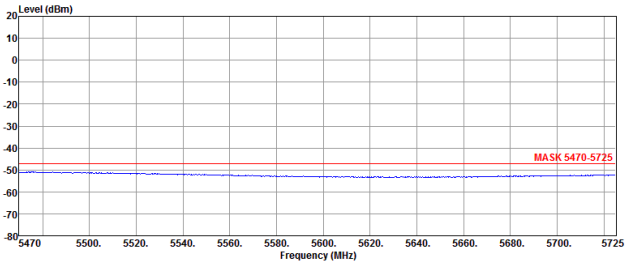
5500MHz	5700MHz
	
5500MHz	**5700MHz**
	
5500MHz	**5700MHz**
	

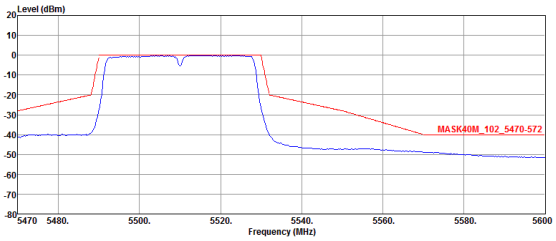
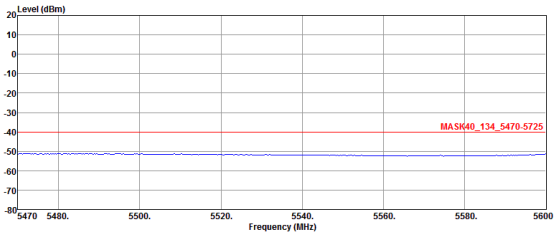
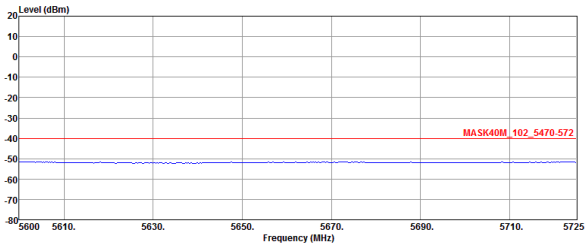
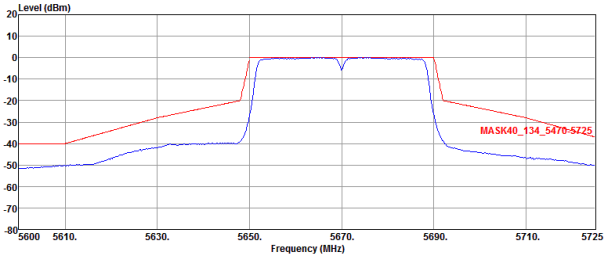
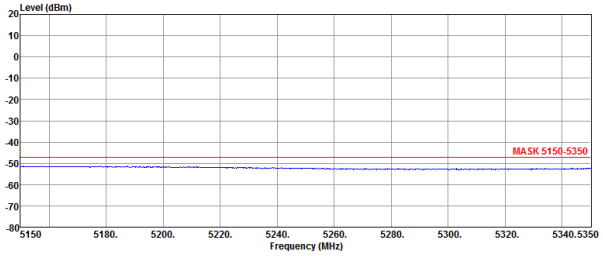
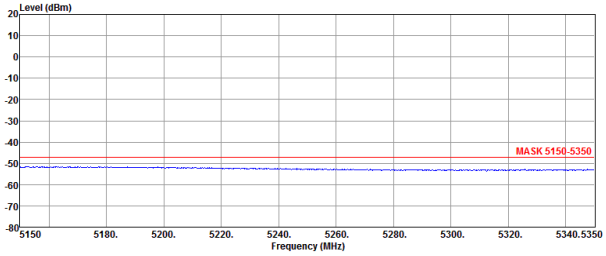
3.5.5 Test Result of Transmitter Unwanted Emissions within the 5 GHz RLAN Band for 802.11ac VHT20

5180MHz	5180MHz
	
5320MHz	**5320MHz**
	

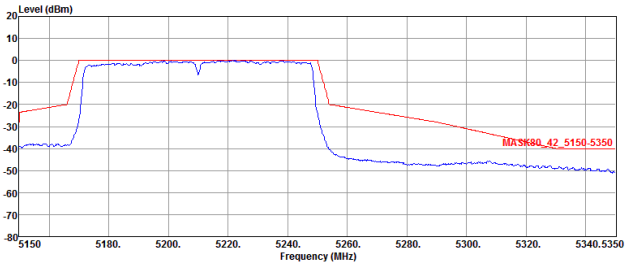
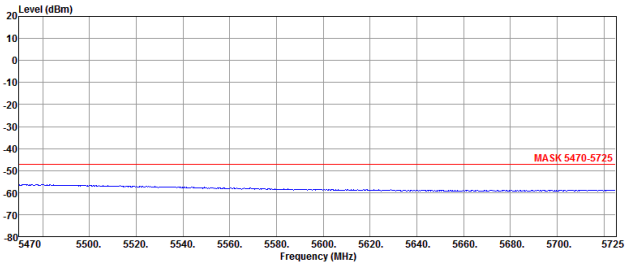
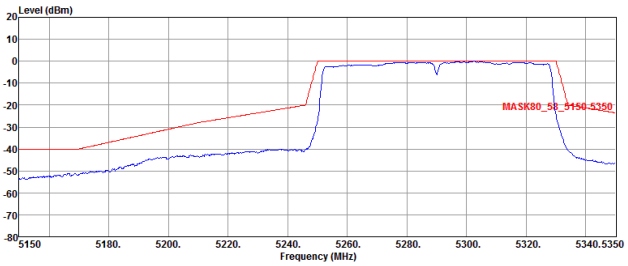
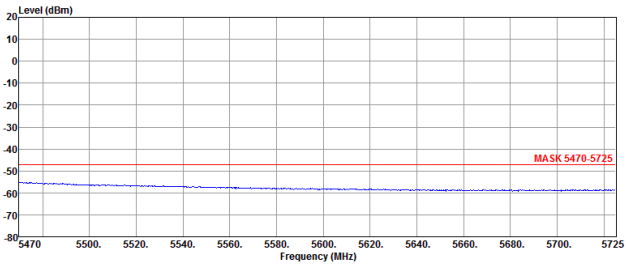
5500MHz	5500MHz
	
5500MHz	**5700MHz**
	
5500MHz	**5700MHz**
	

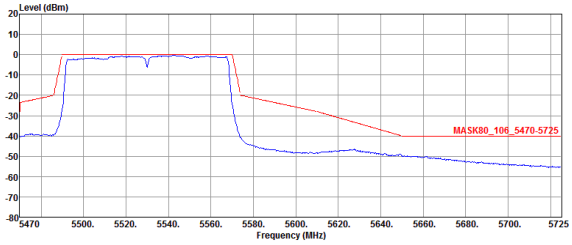
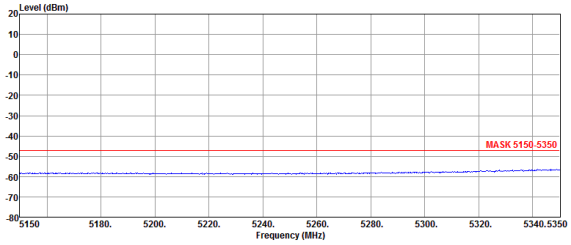
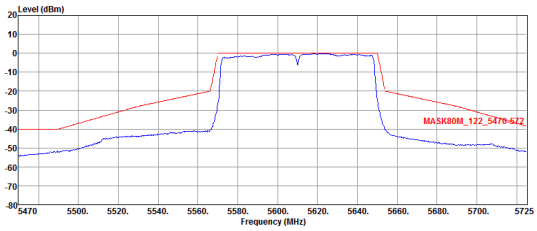
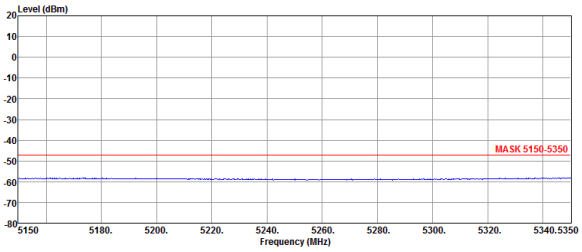
3.5.6 Test Result of Transmitter Unwanted Emissions within the 5 GHz RLAN Band for 802.11ac VHT40

5190MHz	5190MHz
	
5310MHz	**5310MHz**
	

5510MHz	5670MHz
	
5510MHz	**5670MHz**
	
5510MHz	**5670MHz**
	

3.5.7 Test Result of Transmitter Unwanted Emissions within the 5 GHz RLAN Band for 802.11ac VHT80

5210MHz	5210MHz
	
5290MHz	**5290MHz**
	

5530MHz	5530MHz
	
5610MHz	**5610MHz**
	

4 Receiver Test Results

4.1 Receiver Spurious Emissions

4.1.1 Limit of Receiver Spurious Emissions

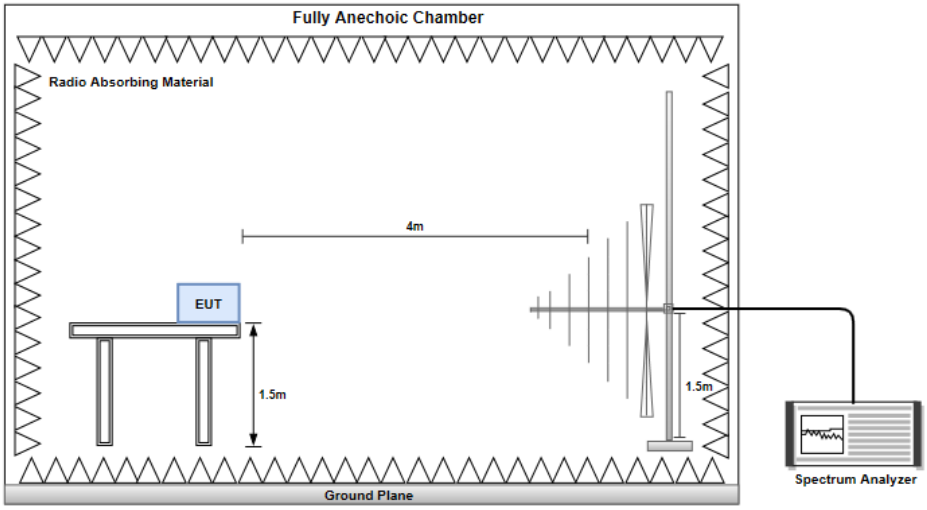
Frequency Range	Maximum Power	Measurement Bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 26 GHz	-47 dBm	1 MHz

4.1.2 Test Procedures

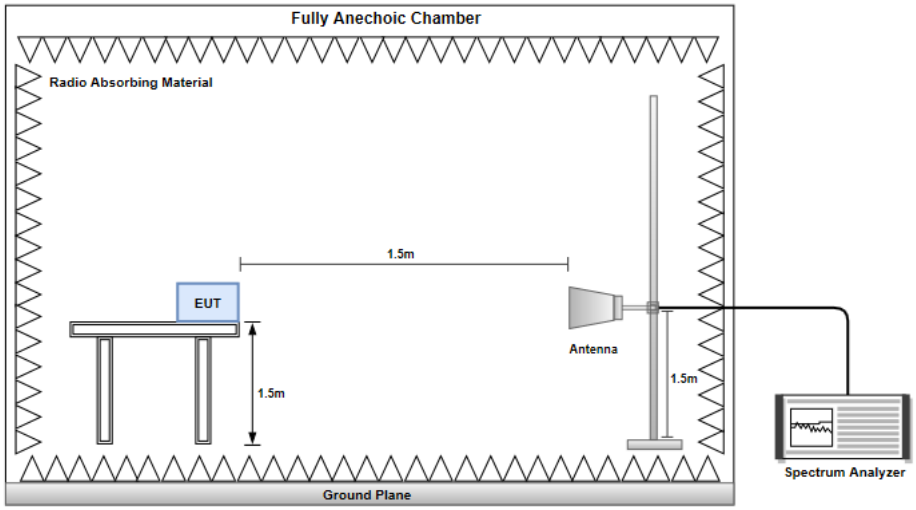
Reference to clause 5.4.7.2 of ETSI EN 301 893 V2.1.1 (2017-05).

4.1.3 Test Setup

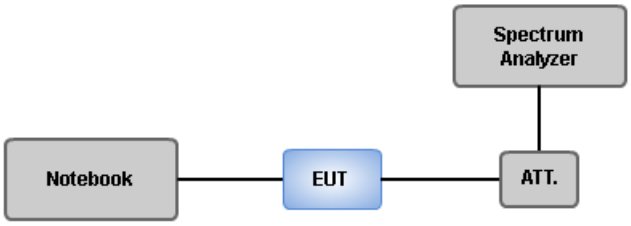
Below 1GHz



Above 1 GHz

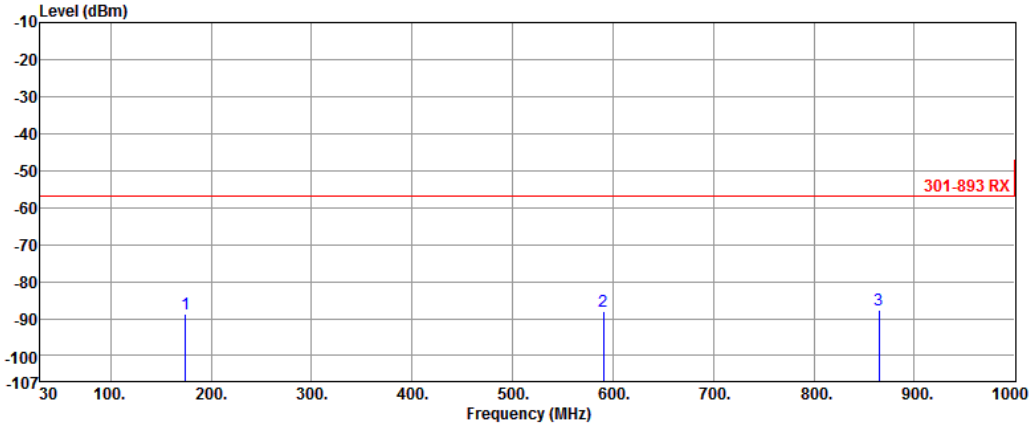


Conducted Emission



4.1.4 Receiver Conducted Spurious Emissions (Below 1GHz)

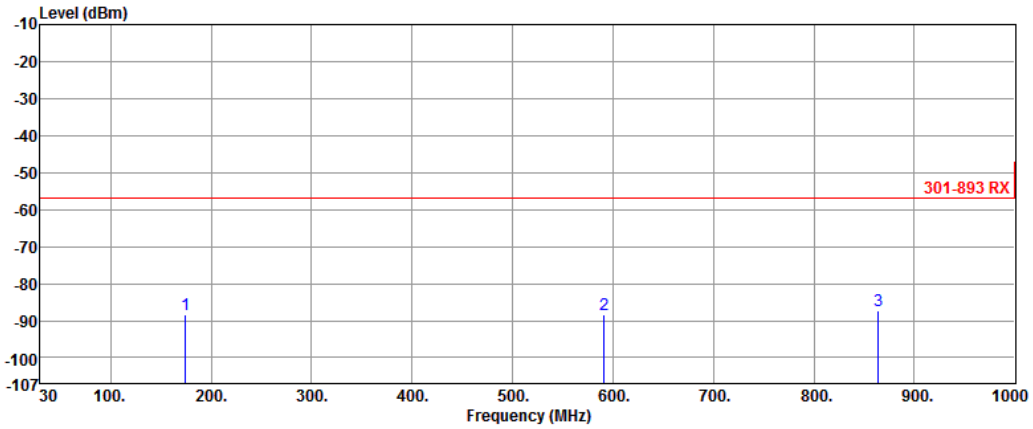
Modulation	11a	Test Freq. (MHz)	5180



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	174.15	-88.82	-57.00	-31.82	0.00	-88.82
2	590.74	-88.13	-57.00	-31.13	0.00	-88.13
3	864.54	-87.60	-57.00	-30.60	0.00	-87.60

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

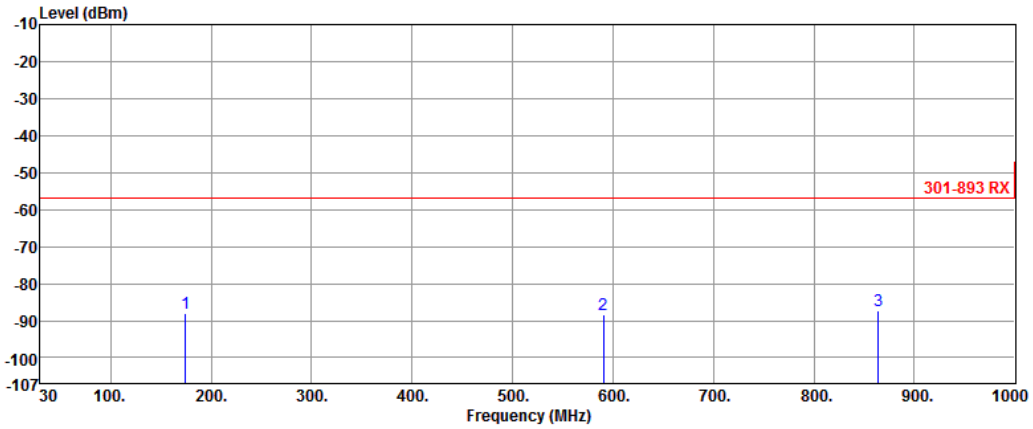
Modulation	11a	Test Freq. (MHz)	5700



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	174.15	-88.54	-57.00	-31.54	0.00	-88.54
2	590.84	-88.45	-57.00	-31.45	0.00	-88.45
3	864.24	-87.47	-57.00	-30.47	0.00	-87.47

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

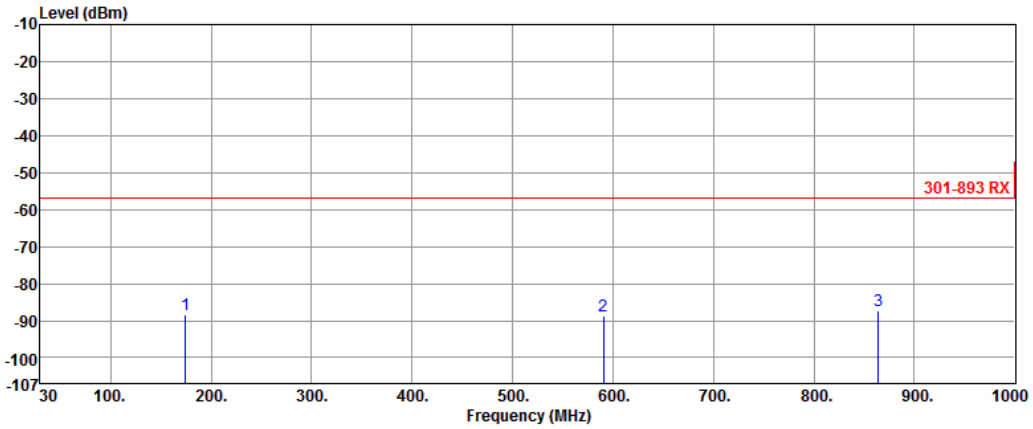
Modulation	VHT20	Test Freq. (MHz)	5180



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	174.25	-88.14	-57.00	-31.14	0.00	-88.14
2	590.25	-88.45	-57.00	-31.45	0.00	-88.45
3	864.33	-87.16	-57.00	-30.16	0.00	-87.16

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

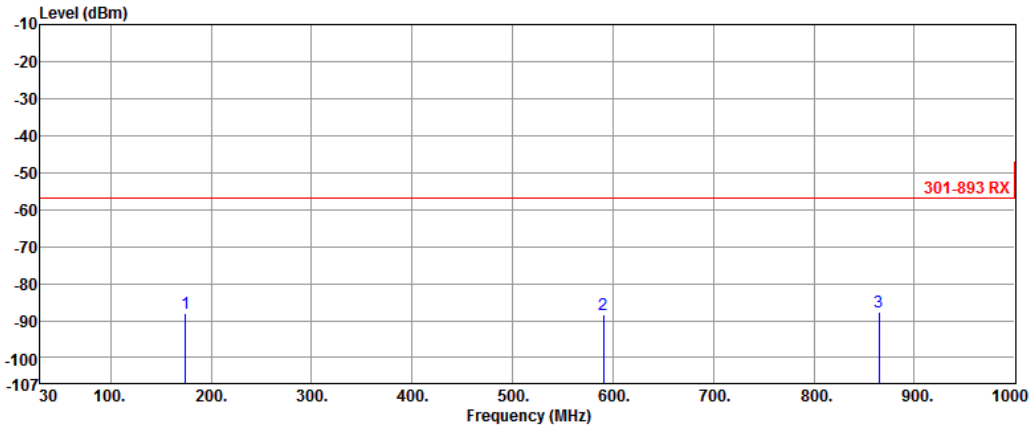
Modulation	VHT20	Test Freq. (MHz)	5700



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	174.35	-88.45	-57.00	-31.45	0.00	-88.45
2	590.36	-88.65	-57.00	-31.65	0.00	-88.65
3	864.15	-87.16	-57.00	-30.16	0.00	-87.16

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

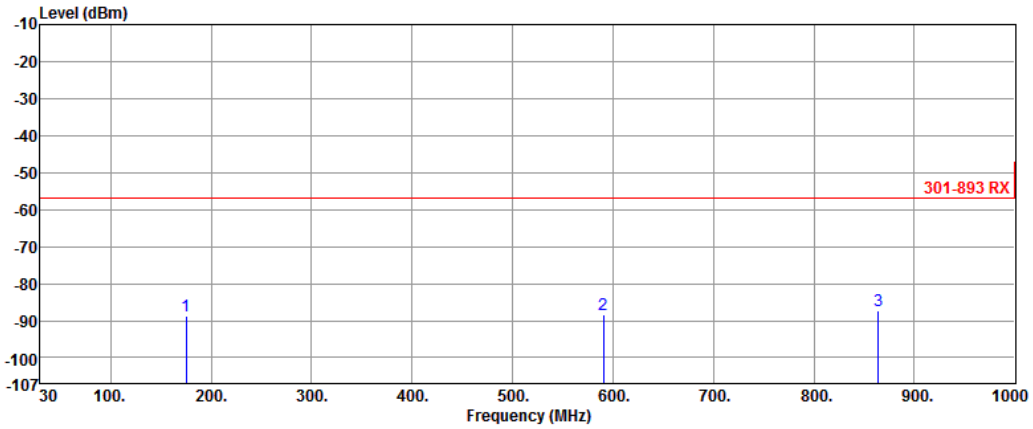
Modulation	VHT40	Test Freq. (MHz)	5190



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	174.48	-88.14	-57.00	-31.14	0.00	-88.14
2	590.54	-88.45	-57.00	-31.45	0.00	-88.45
3	864.51	-87.63	-57.00	-30.63	0.00	-87.63

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

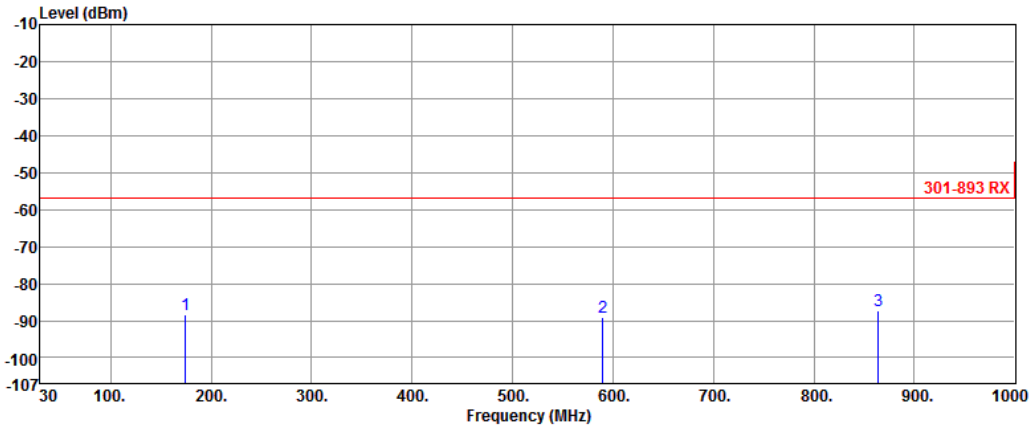
Modulation	VHT40	Test Freq. (MHz)	5670



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	174.84	-88.58	-57.00	-31.58	0.00	-88.58
2	590.32	-88.45	-57.00	-31.45	0.00	-88.45
3	864.12	-87.42	-57.00	-30.42	0.00	-87.42

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

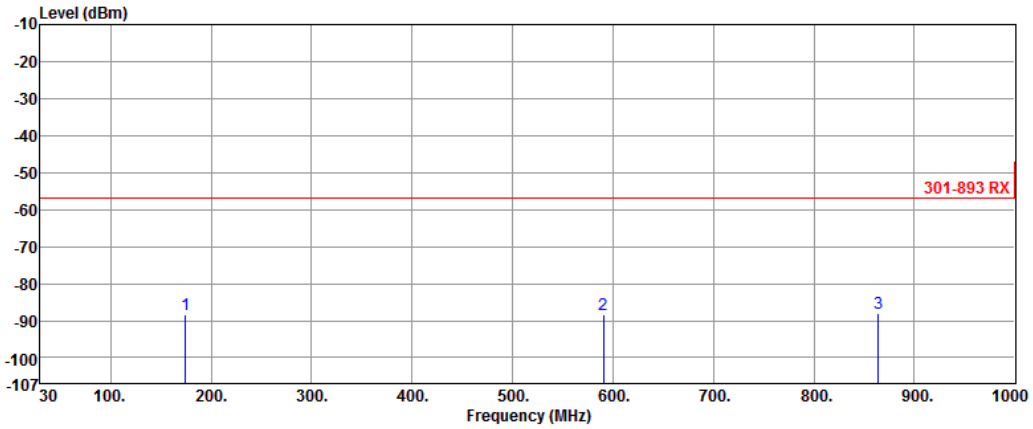
Modulation	VHT80	Test Freq. (MHz)	5210



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	174.46	-88.45	-57.00	-31.45	0.00	-88.45
2	590.17	-88.99	-57.00	-31.99	0.00	-88.99
3	864.42	-87.46	-57.00	-30.46	0.00	-87.46

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

Modulation	VHT80	Test Freq. (MHz)	5610

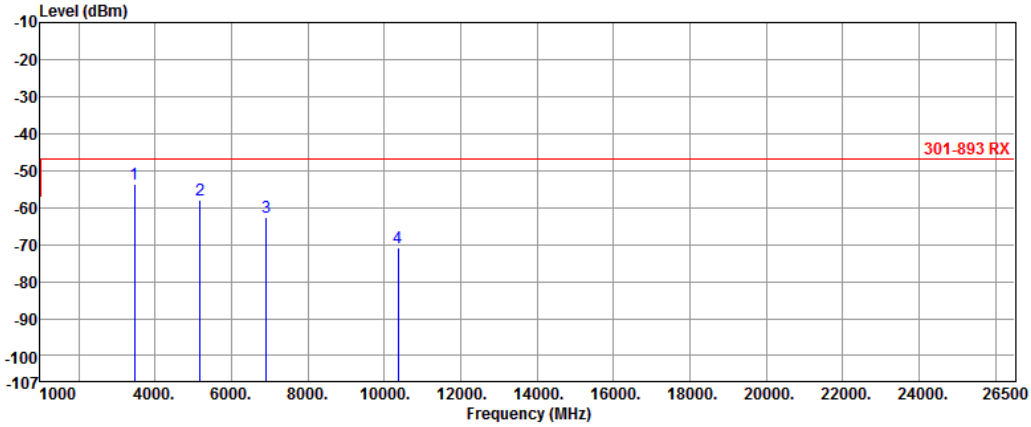


	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	174.15	-88.45	-57.00	-31.45	0.00	-88.45
2	590.65	-88.51	-57.00	-31.51	0.00	-88.51
3	864.15	-87.90	-57.00	-30.90	0.00	-87.90

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

4.1.5 Receiver Conducted Spurious Emissions (Above 1GHz)

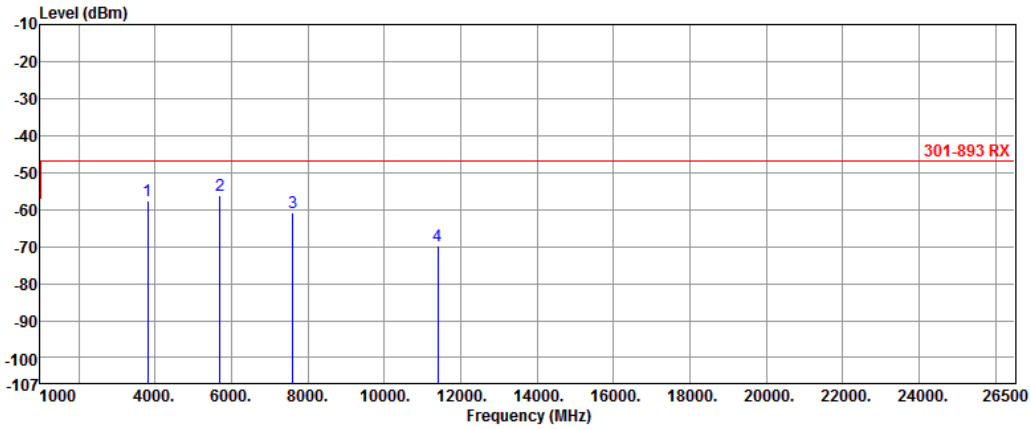
Modulation	11a	Test Freq. (MHz)	5180



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3453.65	-53.61	-47.00	-6.61	0.00	-53.61
2	5180.15	-57.83	-47.00	-10.83	0.00	-57.83
3	6906.35	-62.66	-47.00	-15.66	0.00	-62.66
4	10360.65	-70.70	-47.00	-23.70	0.00	-70.70

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

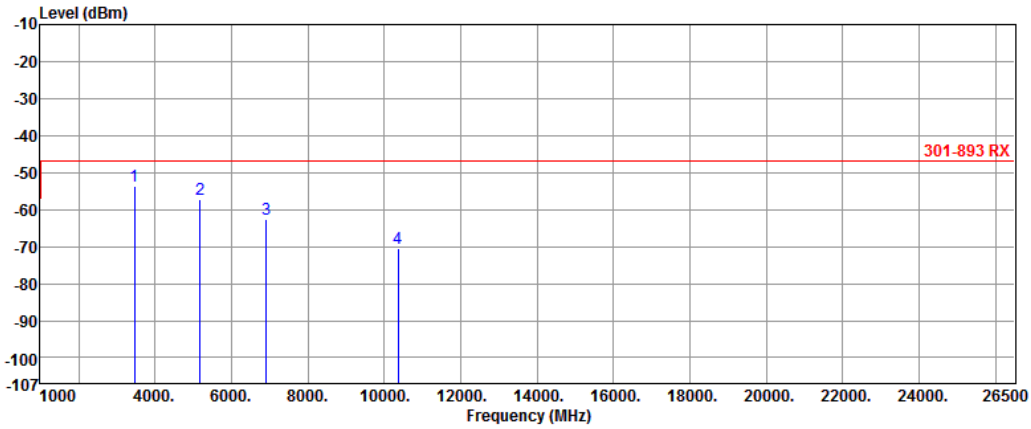
Modulation	11a	Test Freq. (MHz)	5700



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3800.16	-57.49	-47.00	-10.49	0.00	-57.49
2	5700.54	-56.15	-47.00	-9.15	0.00	-56.15
3	7600.54	-60.95	-47.00	-13.95	0.00	-60.95
4	11400.35	-69.91	-47.00	-22.91	0.00	-69.91

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

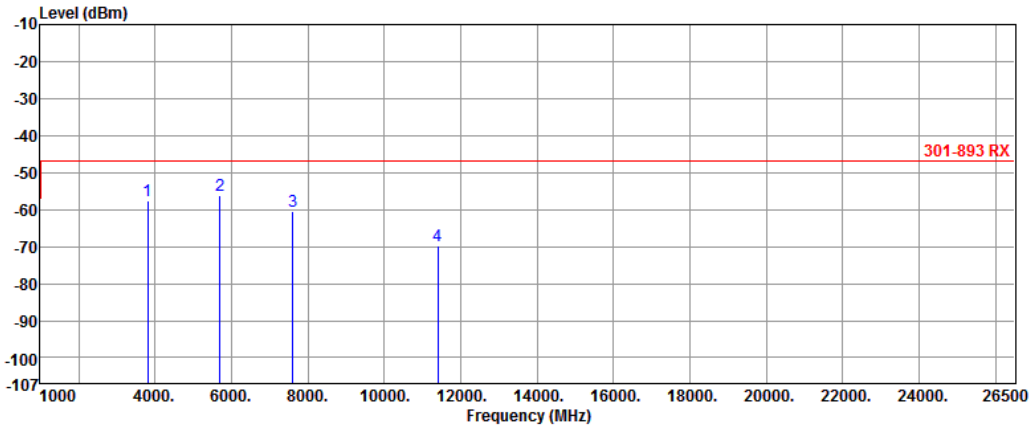
Modulation	VHT20	Test Freq. (MHz)	5180



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3453.79	-53.51	-47.00	-6.51	0.00	-53.51
2	5180.15	-57.12	-47.00	-10.12	0.00	-57.12
3	6906.34	-62.46	-47.00	-15.46	0.00	-62.46
4	10360.65	-70.50	-47.00	-23.50	0.00	-70.50

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

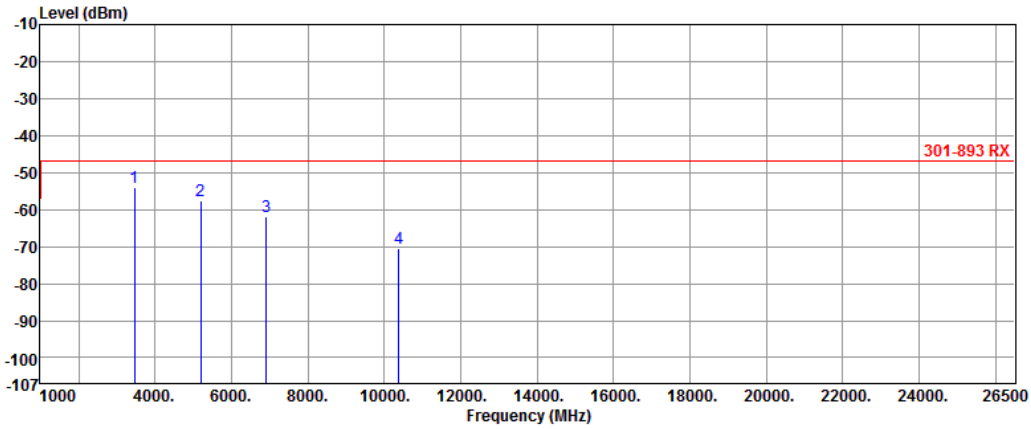
Modulation	VHT20	Test Freq. (MHz)	5700



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3800.35	-57.59	-47.00	-10.59	0.00	-57.59
2	5700.66	-56.15	-47.00	-9.15	0.00	-56.15
3	7600.15	-60.46	-47.00	-13.46	0.00	-60.46
4	11400.58	-69.69	-47.00	-22.69	0.00	-69.69

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

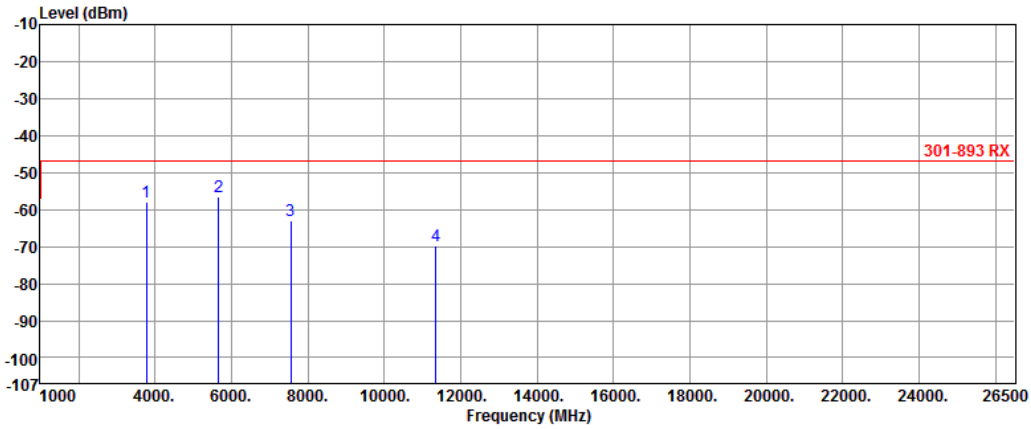
Modulation	VHT40	Test Freq. (MHz)	5190



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3459.78	-53.93	-47.00	-6.93	0.00	-53.93
2	5189.84	-57.67	-47.00	-10.67	0.00	-57.67
3	6919.54	-62.01	-47.00	-15.01	0.00	-62.01
4	10379.60	-70.56	-47.00	-23.56	0.00	-70.56

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

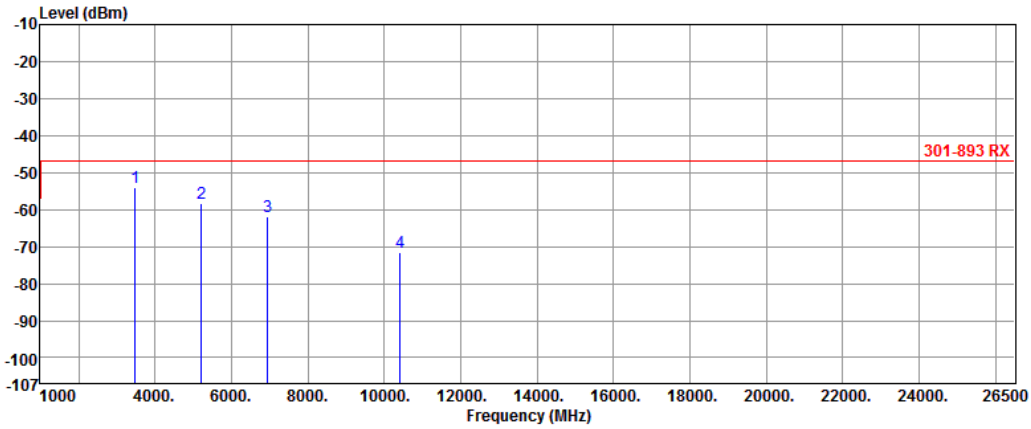
Modulation	VHT40	Test Freq. (MHz)	5670



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3779.99	-57.94	-47.00	-10.94	0.00	-57.94
2	5670.78	-56.53	-47.00	-9.53	0.00	-56.53
3	7559.84	-62.90	-47.00	-15.90	0.00	-62.90
4	11340.64	-69.67	-47.00	-22.67	0.00	-69.67

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

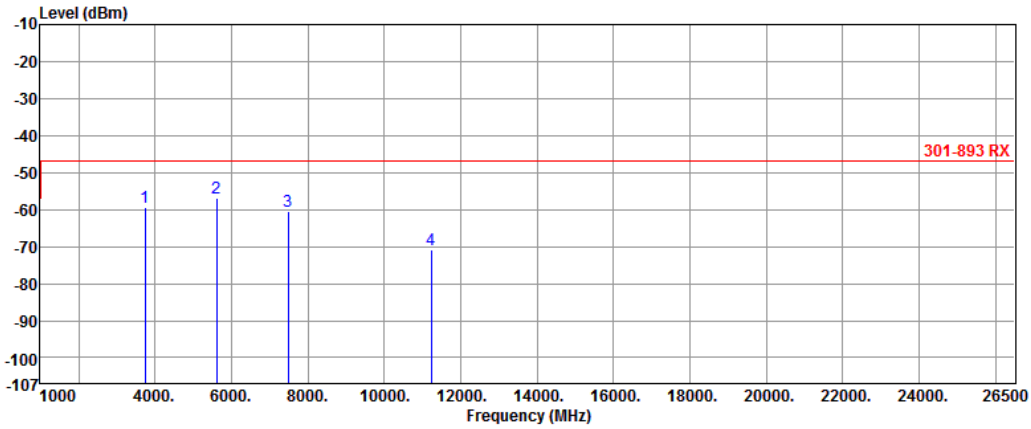
Modulation	VHT80	Test Freq. (MHz)	5210



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3473.35	-54.11	-47.00	-7.11	0.00	-54.11
2	5209.84	-58.24	-47.00	-11.24	0.00	-58.24
3	6946.48	-61.82	-47.00	-14.82	0.00	-61.82
4	10419.85	-71.66	-47.00	-24.66	0.00	-71.66

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

Modulation	VHT80	Test Freq. (MHz)	5610

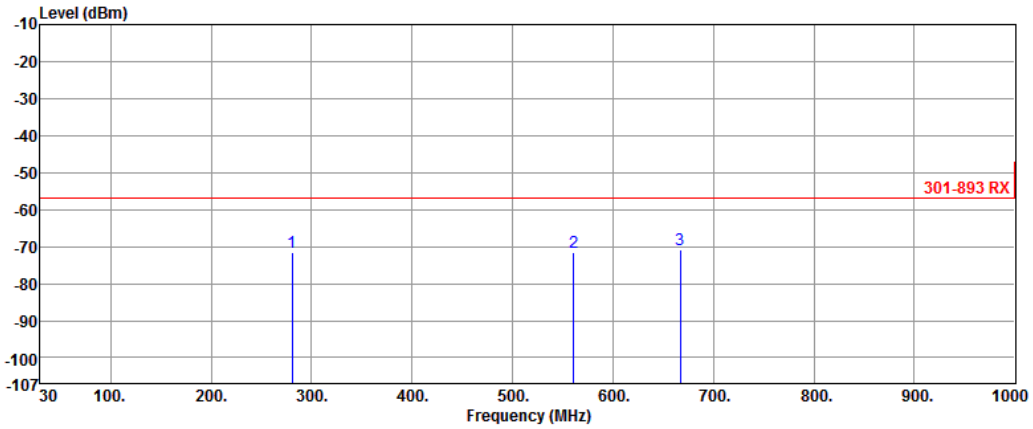


	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3740.84	-59.55	-47.00	-12.55	0.00	-59.55
2	5610.02	-56.98	-47.00	-9.98	0.00	-56.98
3	7479.48	-60.57	-47.00	-13.57	0.00	-60.57
4	11219.78	-70.71	-47.00	-23.71	0.00	-70.71

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

4.1.6 Receiver Radiated Unwanted Emissions (Below 1GHz)

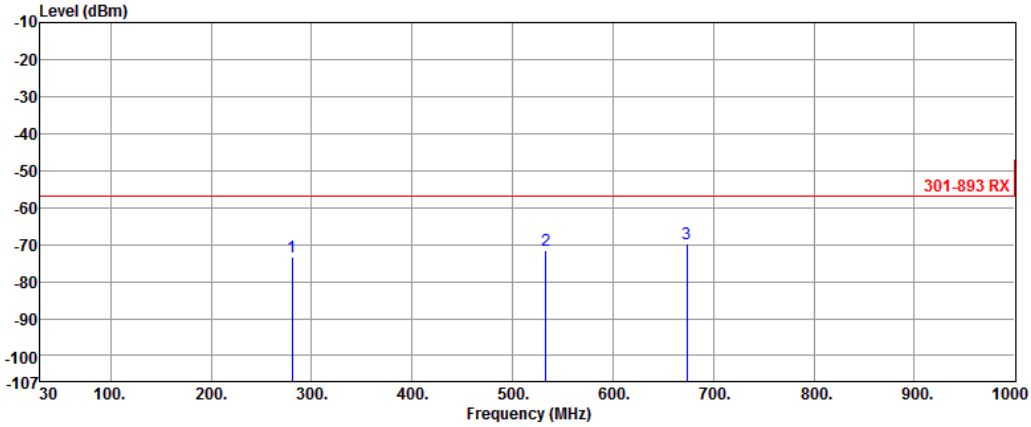
Modulation	11a	**Test Freq. (MHz)**	5180
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.78	-71.54	-57.00	-14.54	-0.31	-71.23
2	560.84	-71.66	-57.00	-14.66	4.72	-76.38
3	666.84	-70.75	-57.00	-13.75	6.78	-77.53

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

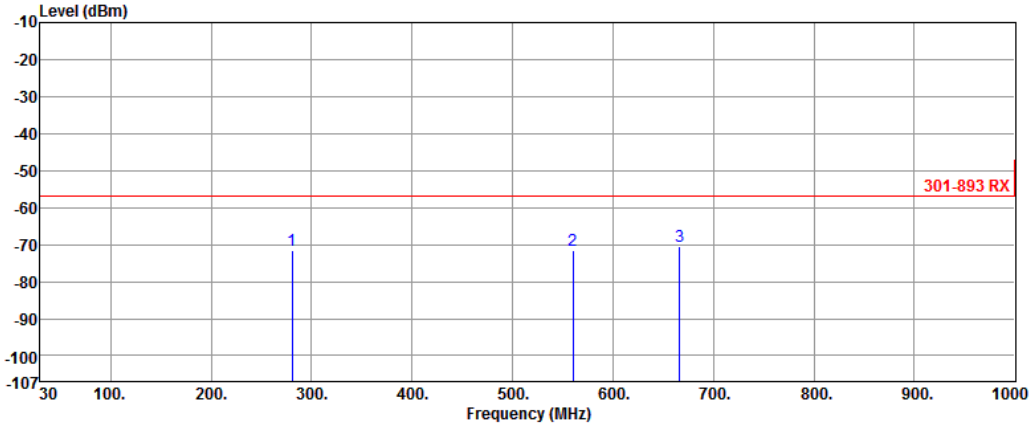
Modulation	11a	Test Freq. (MHz)	5180
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.58	-73.50	-57.00	-16.50	-0.90	-72.60
2	533.41	-71.51	-57.00	-14.51	5.50	-77.01
3	673.45	-69.92	-57.00	-12.92	7.26	-77.18

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

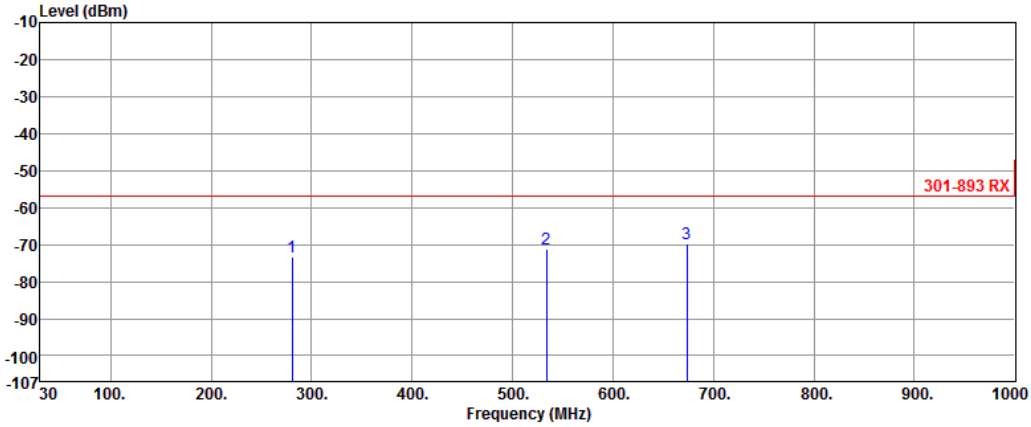
Modulation	11a	Test Freq. (MHz)	5700
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.45	-71.40	-57.00	-14.40	-0.29	-71.11
2	560.45	-71.42	-57.00	-14.42	4.71	-76.13
3	666.32	-70.47	-57.00	-13.47	6.76	-77.23

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

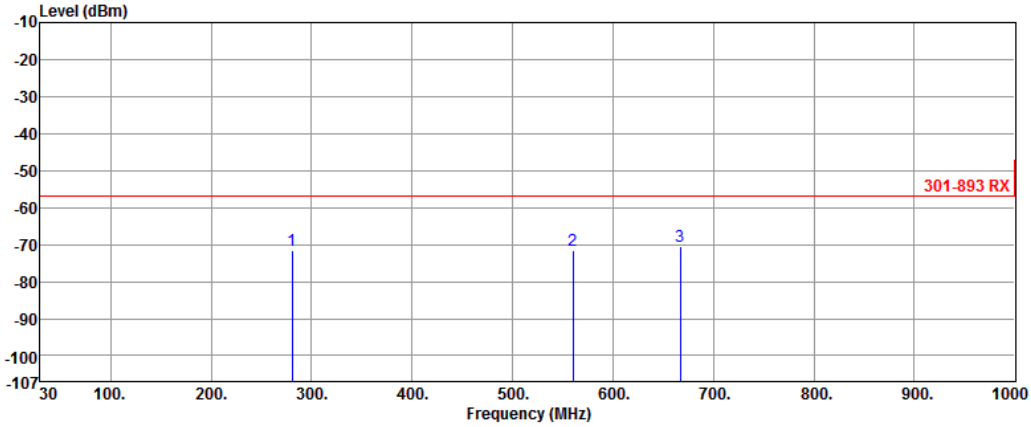
Modulation	11a	Test Freq. (MHz)	5700
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.85	-73.47	-57.00	-16.47	-0.92	-72.55
2	533.65	-71.17	-57.00	-14.17	5.50	-76.67
3	673.50	-69.75	-57.00	-12.75	7.26	-77.01

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

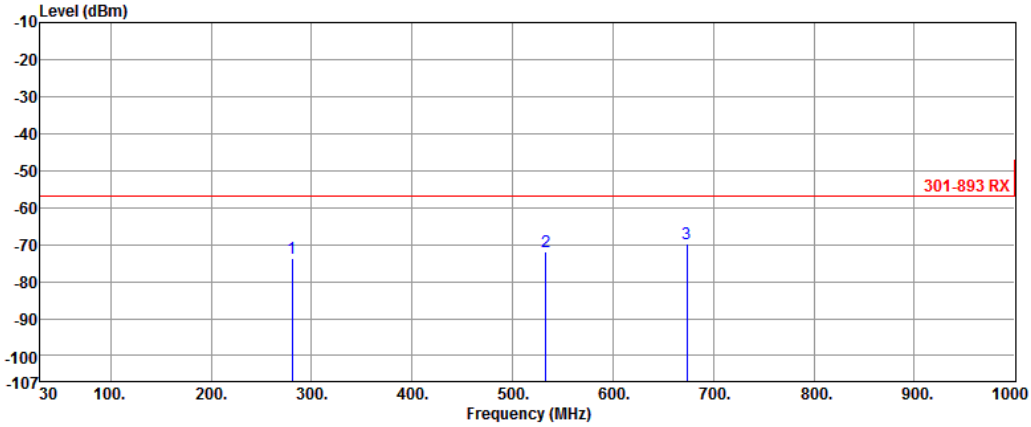
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.70	-71.70	-57.00	-14.70	-0.30	-71.40
2	560.46	-71.42	-57.00	-14.42	4.71	-76.13
3	666.85	-70.48	-57.00	-13.48	6.78	-77.26

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

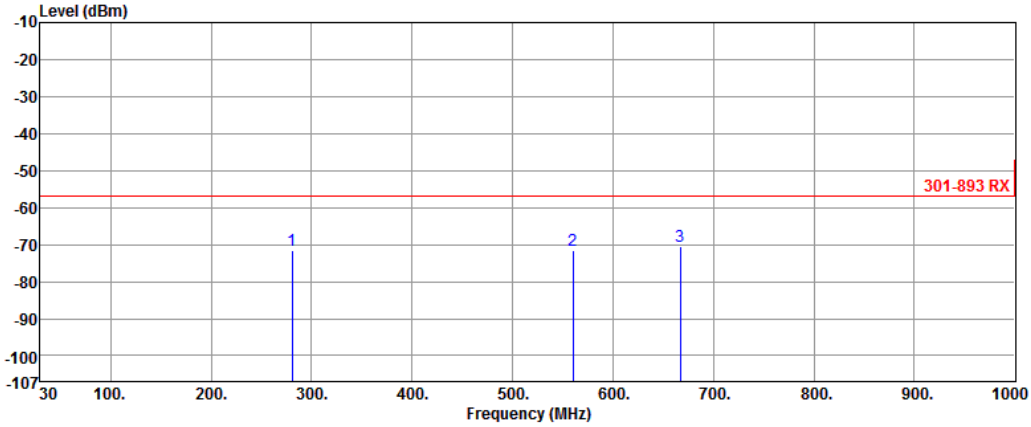
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.48	-73.84	-57.00	-16.84	-0.90	-72.94
2	533.44	-71.99	-57.00	-14.99	5.50	-77.49
3	673.58	-69.65	-57.00	-12.65	7.27	-76.92

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

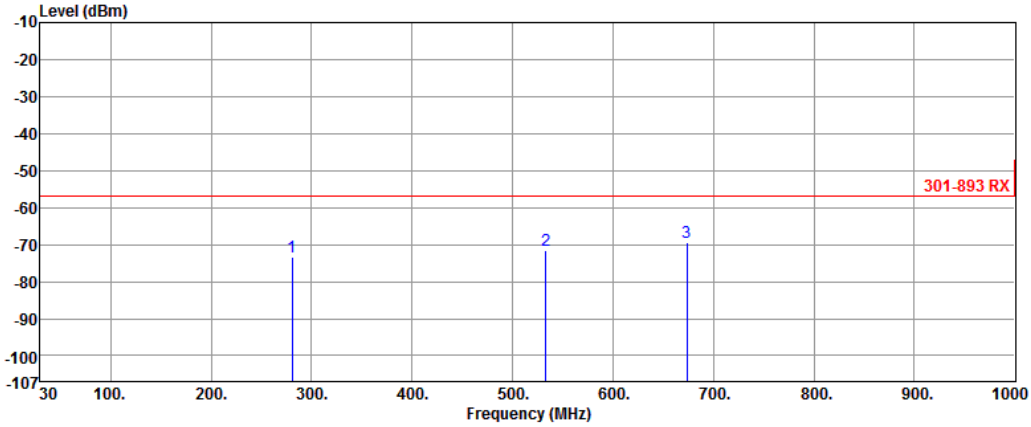
Modulation	VHT20	Test Freq. (MHz)	5700
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.78	-71.40	-57.00	-14.40	-0.31	-71.09
2	560.40	-71.49	-57.00	-14.49	4.70	-76.19
3	666.87	-70.53	-57.00	-13.53	6.78	-77.31

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

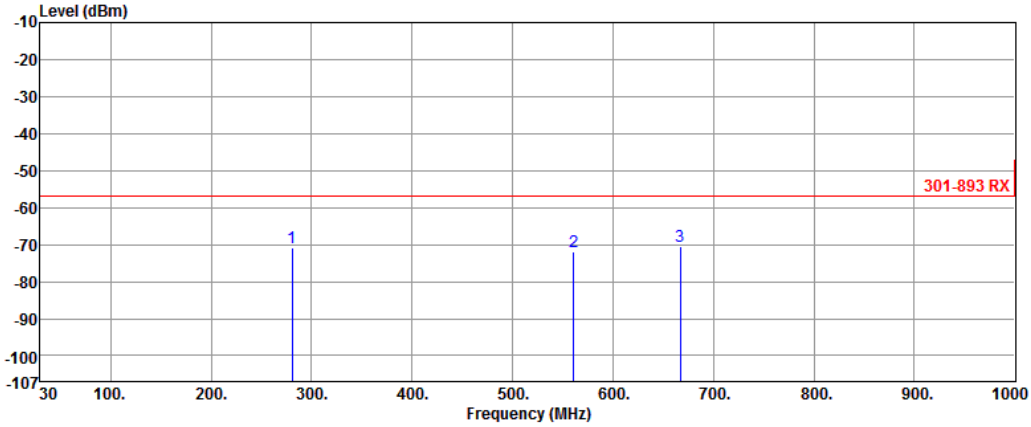
Modulation	VHT20	Test Freq. (MHz)	5700
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.58	-73.47	-57.00	-16.47	-0.90	-72.57
2	533.45	-71.52	-57.00	-14.52	5.50	-77.02
3	673.52	-69.45	-57.00	-12.45	7.26	-76.71

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

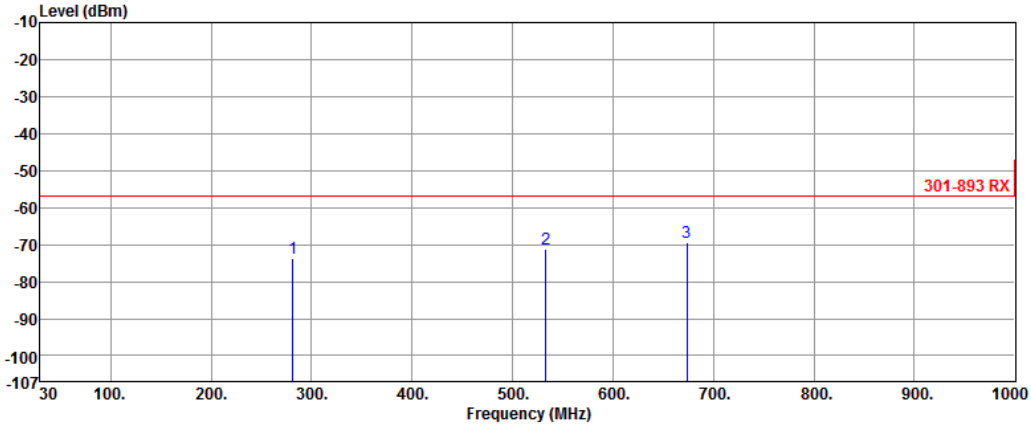
Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.47	-71.01	-57.00	-14.01	-0.30	-70.71
2	560.70	-71.99	-57.00	-14.99	4.72	-76.71
3	666.84	-70.44	-57.00	-13.44	6.78	-77.22

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

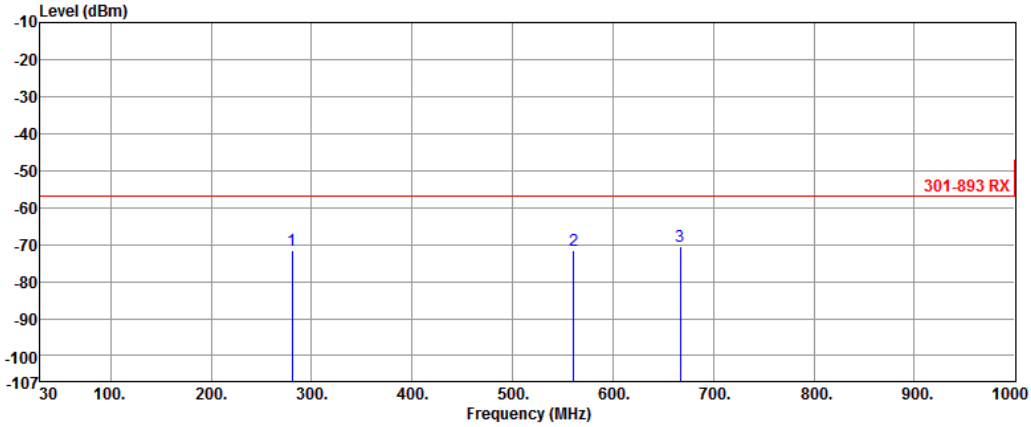
Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.99	-73.74	-57.00	-16.74	-0.93	-72.81
2	533.00	-71.18	-57.00	-14.18	5.50	-76.68
3	673.74	-69.45	-57.00	-12.45	7.27	-76.72

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

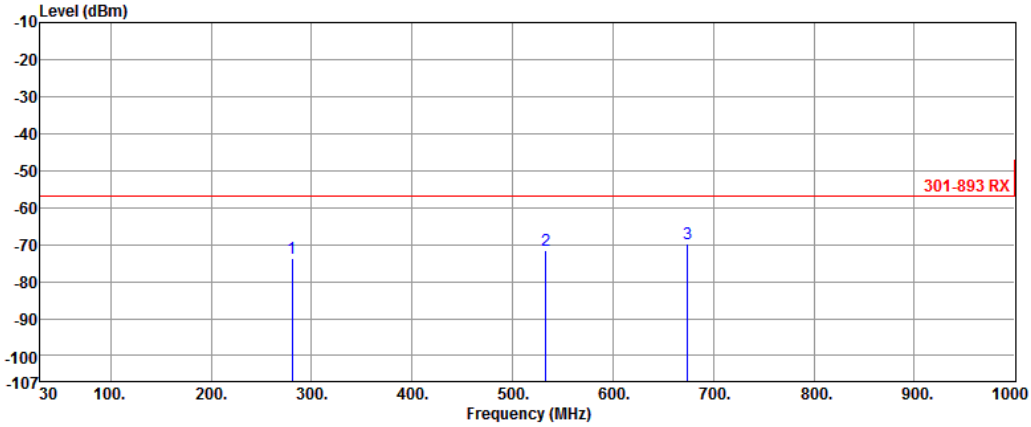
Modulation	VHT40	Test Freq. (MHz)	5670
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.84	-71.45	-57.00	-14.45	-0.32	-71.13
2	560.85	-71.39	-57.00	-14.39	4.72	-76.11
3	666.87	-70.42	-57.00	-13.42	6.78	-77.20

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

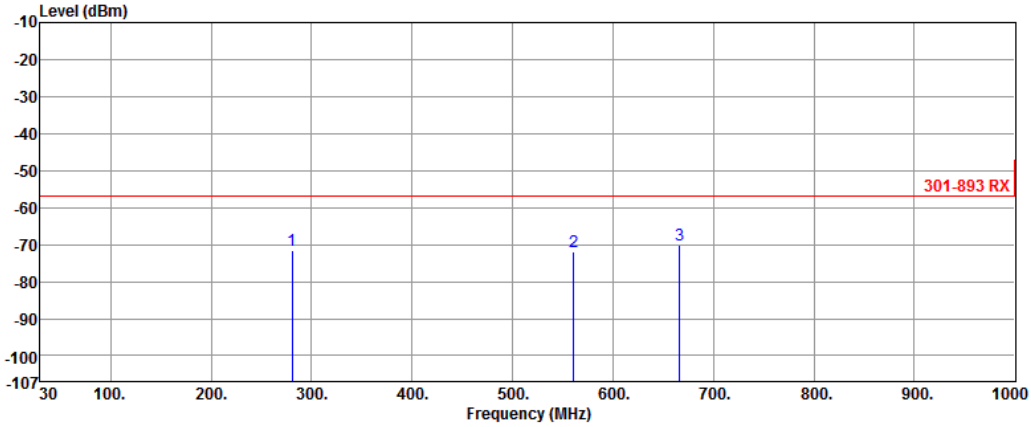
Modulation	VHT40	Test Freq. (MHz)	5670
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.89	-73.74	-57.00	-16.74	-0.92	-72.82
2	533.35	-71.50	-57.00	-14.50	5.50	-77.00
3	673.94	-69.65	-57.00	-12.65	7.28	-76.93

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

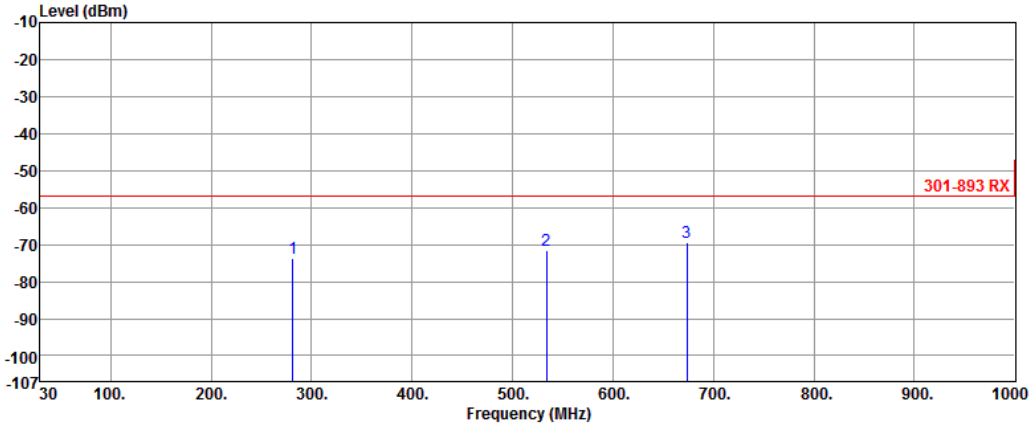
Modulation	VHT80	Test Freq. (MHz)	5210
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.65	-71.68	-57.00	-14.68	-0.30	-71.38
2	560.64	-71.89	-57.00	-14.89	4.71	-76.60
3	666.32	-70.10	-57.00	-13.10	6.76	-76.86

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

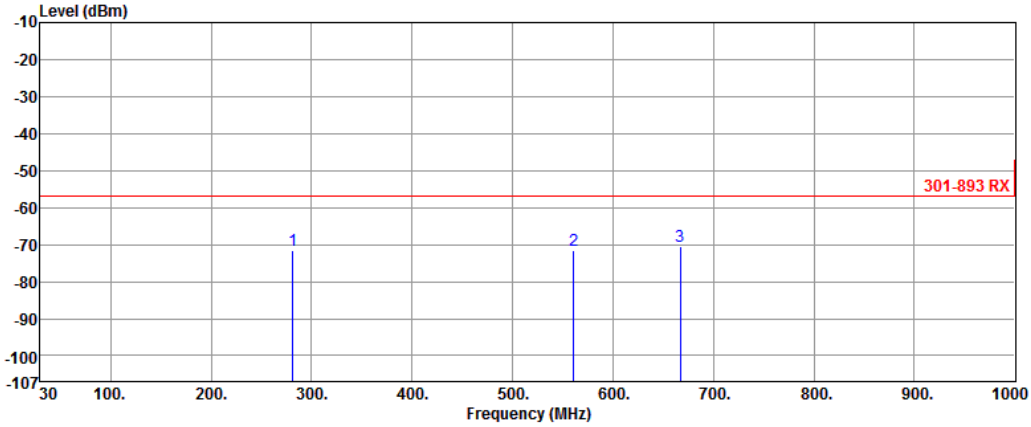
Modulation	VHT80	Test Freq. (MHz)	5210
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.99	-73.78	-57.00	-16.78	-0.93	-72.85
2	533.97	-71.74	-57.00	-14.74	5.49	-77.23
3	673.90	-69.36	-57.00	-12.36	7.28	-76.64

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

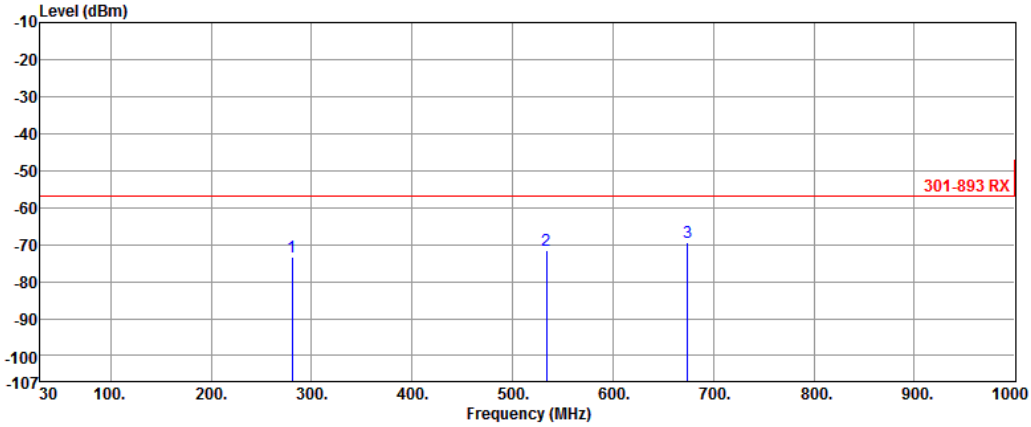
Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.98	-71.62	-57.00	-14.62	-0.32	-71.30
2	560.85	-71.49	-57.00	-14.49	4.72	-76.21
3	666.69	-70.66	-57.00	-13.66	6.77	-77.43

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Vertical		

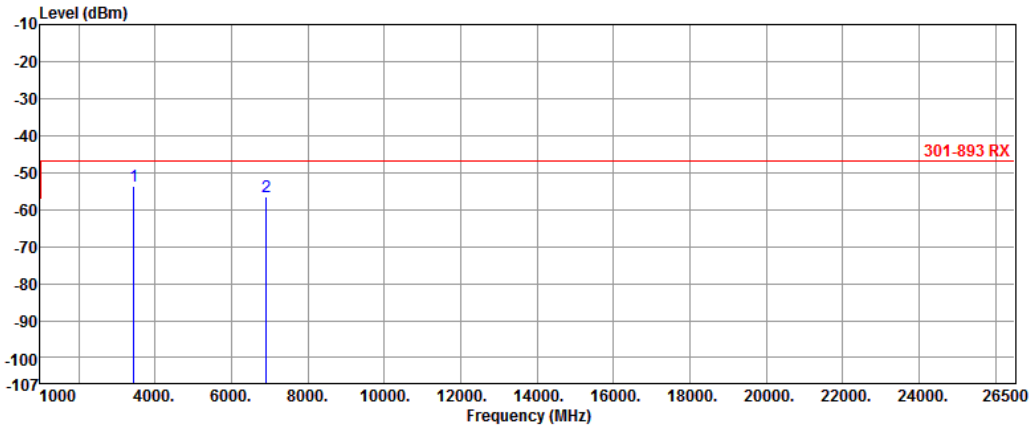


	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	280.79	-73.47	-57.00	-16.47	-0.91	-72.56
2	533.54	-71.69	-57.00	-14.69	5.50	-77.19
3	673.97	-69.45	-57.00	-12.45	7.28	-76.73

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

4.1.7 Receiver Radiated Unwanted Emissions (Above 1GHz)

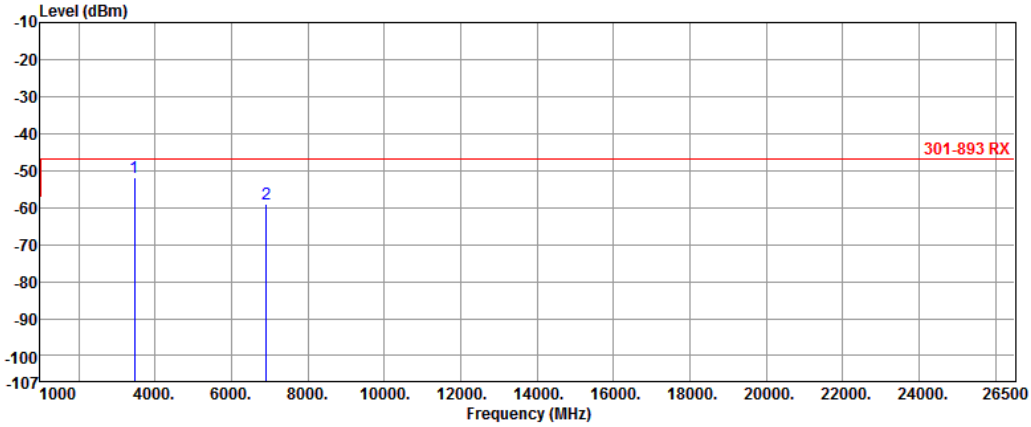
Modulation	11a	Test Freq. (MHz)	5180
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3453.32	-53.57	-47.00	-6.57	7.55	-61.12
2	6906.69	-56.37	-47.00	-9.37	16.61	-72.98

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

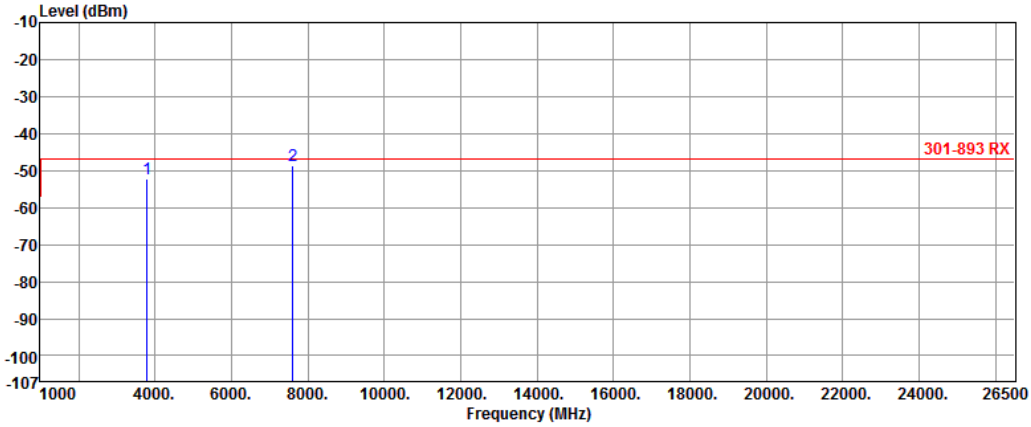
Modulation	11a	Test Freq. (MHz)	5180
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3453.39	-51.78	-47.00	-4.78	6.54	-58.32
2	6906.66	-59.15	-47.00	-12.15	15.19	-74.34

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

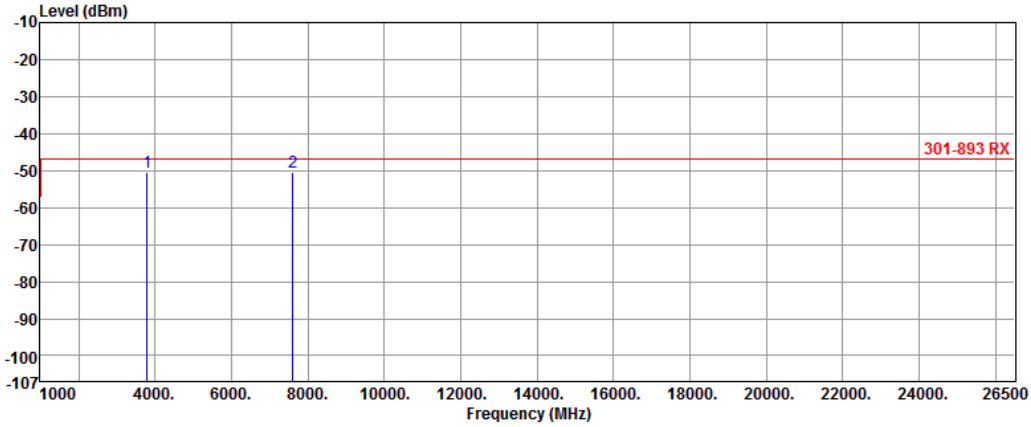
Modulation	11a	Test Freq. (MHz)	5700
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3800.00	-52.06	-47.00	-5.06	8.82	-60.88
2	7600.04	-48.57	-47.00	-1.57	16.81	-65.38

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

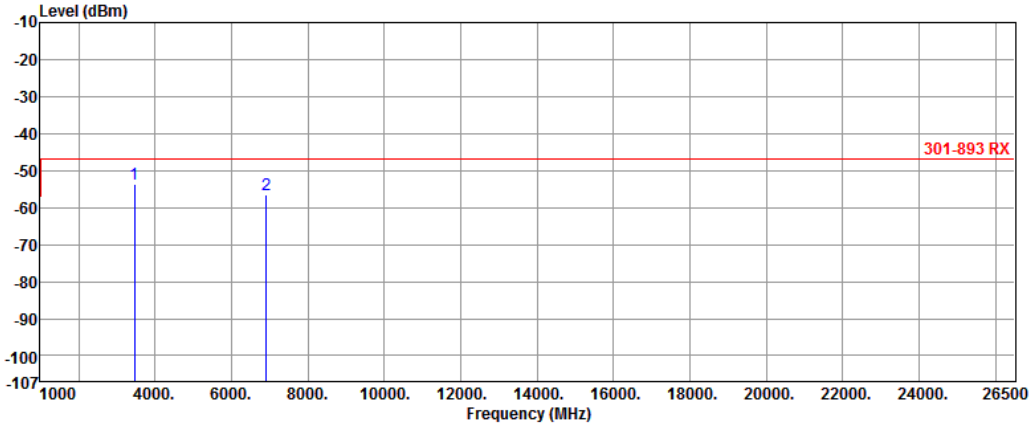
Modulation	11a	Test Freq. (MHz)	5700
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3799.96	-50.38	-47.00	-3.38	8.91	-59.29
2	7600.00	-50.42	-47.00	-3.42	17.28	-67.70

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

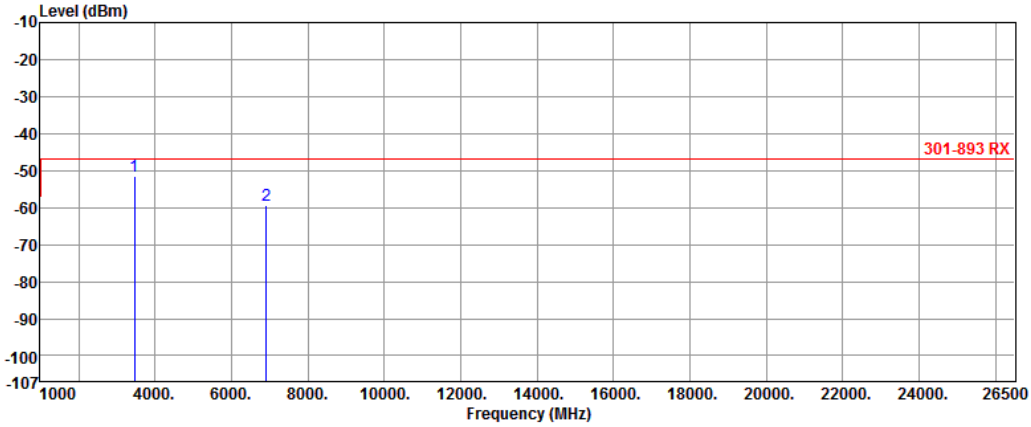
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3453.65	-53.65	-47.00	-6.65	7.55	-61.20
2	6906.15	-56.55	-47.00	-9.55	16.62	-73.17

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

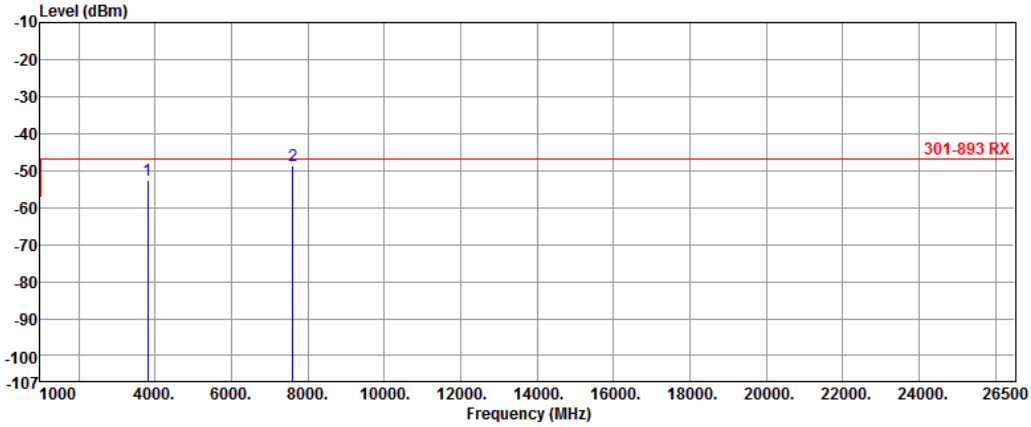
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3453.54	-51.54	-47.00	-4.54	6.54	-58.08
2	6906.54	-59.54	-47.00	-12.54	15.18	-74.72

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

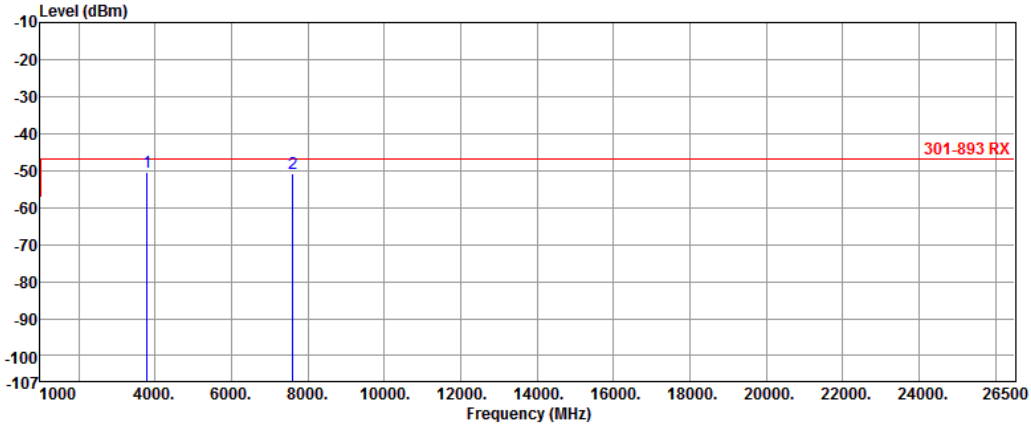
Modulation	VHT20	Test Freq. (MHz)	5700
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3800.02	-52.42	-47.00	-5.42	8.82	-61.24
2	7600.05	-48.65	-47.00	-1.65	16.81	-65.46

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

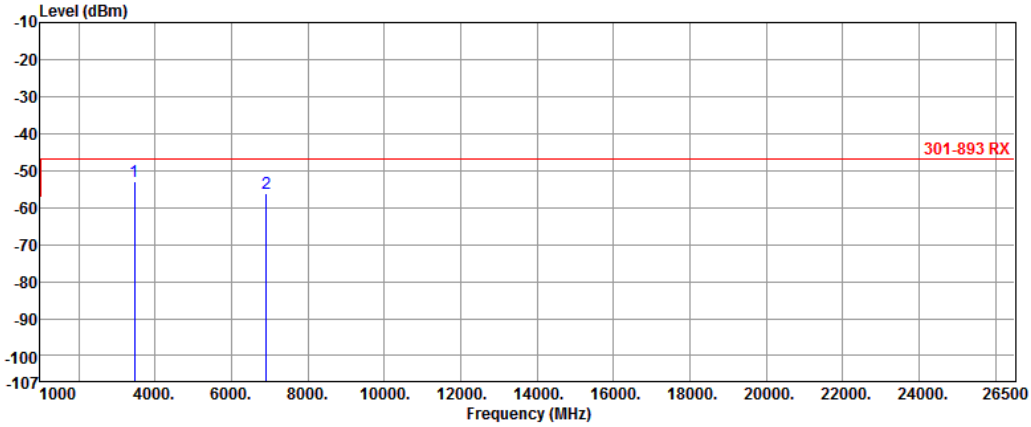
Modulation	VHT20	Test Freq. (MHz)	5700
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3799.45	-50.48	-47.00	-3.48	8.91	-59.39
2	7600.03	-50.65	-47.00	-3.65	17.28	-67.93

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

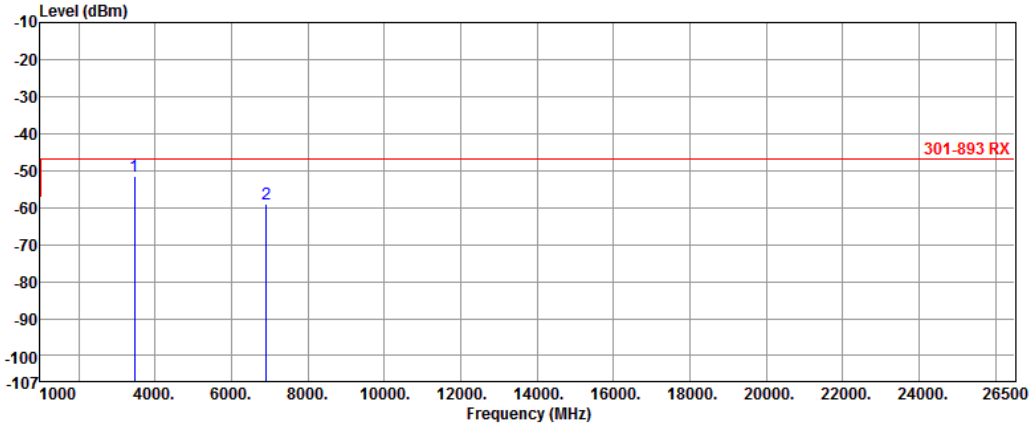
Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3460.14	-52.92	-47.00	-5.92	7.52	-60.44
2	6920.14	-56.19	-47.00	-9.19	16.59	-72.78

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

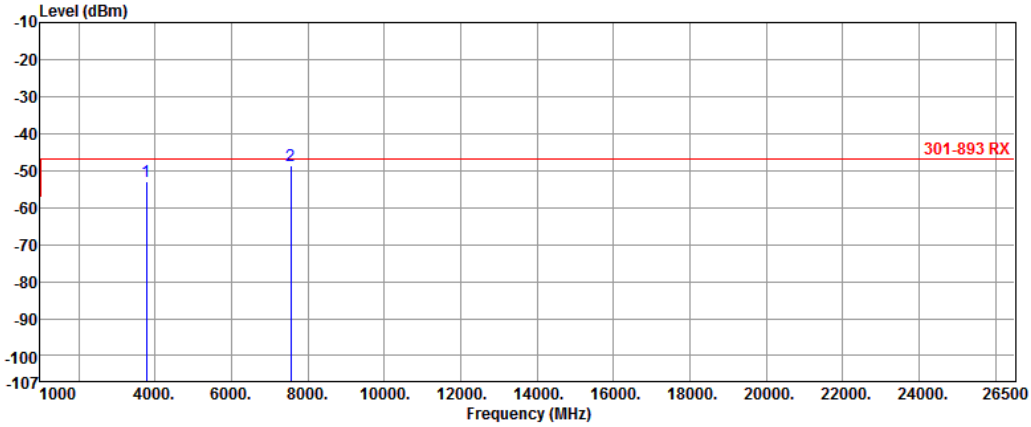
Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3460.04	-51.60	-47.00	-4.60	6.64	-58.24
2	6920.04	-59.13	-47.00	-12.13	15.43	-74.56

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

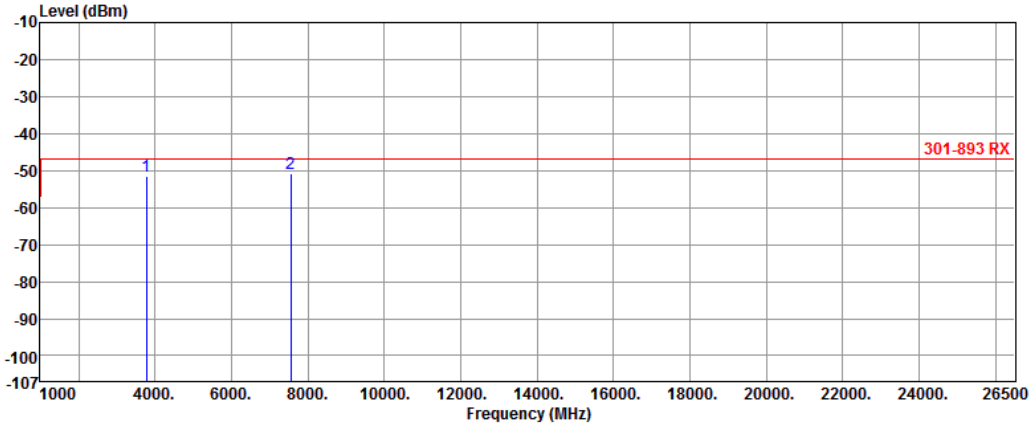
Modulation	VHT40	Test Freq. (MHz)	5670
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3779.87	-52.81	-47.00	-5.81	8.74	-61.55
2	7560.04	-48.79	-47.00	-1.79	16.95	-65.74

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

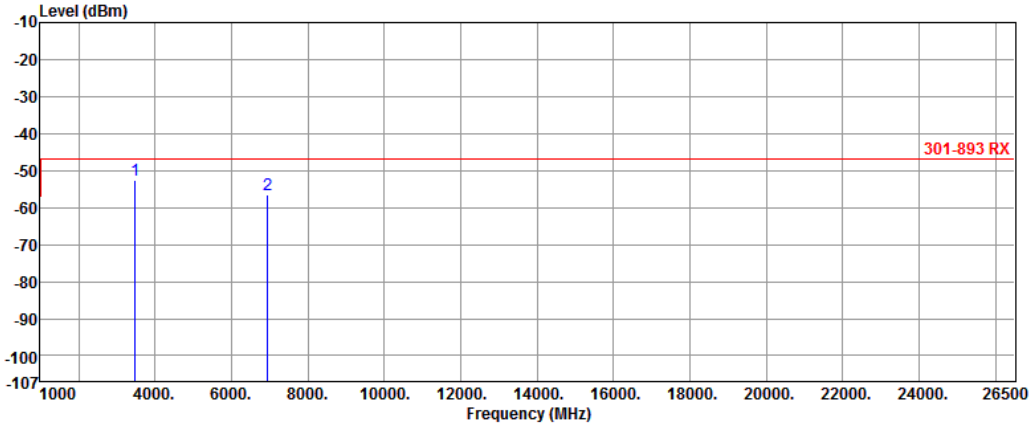
Modulation	VHT40	Test Freq. (MHz)	5670
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3780.29	-51.43	-47.00	-4.43	8.76	-60.19
2	7560.03	-50.73	-47.00	-3.73	17.31	-68.04

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

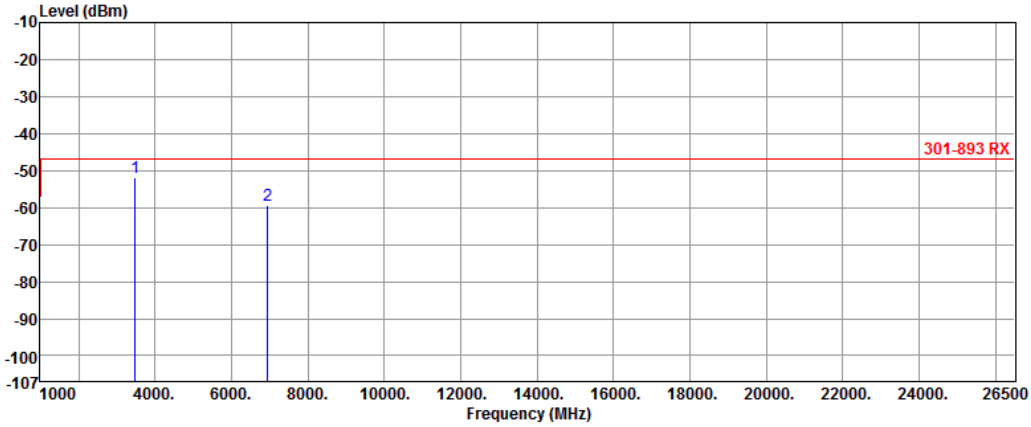
Modulation	VHT80	Test Freq. (MHz)	5210
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3473.17	-52.63	-47.00	-5.63	7.46	-60.09
2	6946.68	-56.54	-47.00	-9.54	16.55	-73.09

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

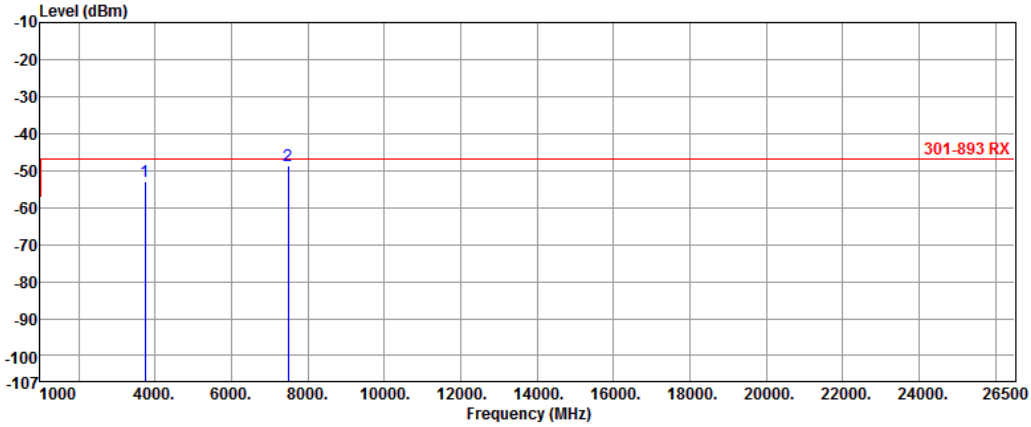
Modulation	VHT80	Test Freq. (MHz)	5210
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3473.31	-52.04	-47.00	-5.04	6.82	-58.86
2	6946.60	-59.53	-47.00	-12.53	15.92	-75.45

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

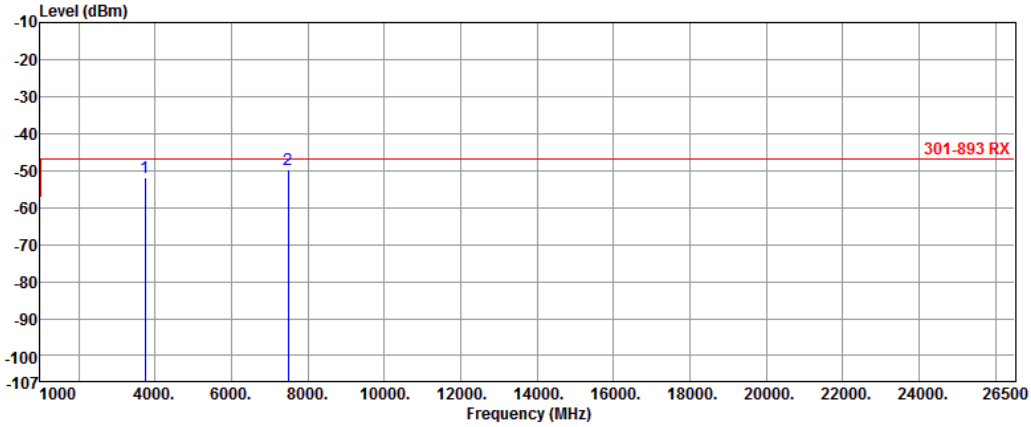
Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Horizontal		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3740.05	-52.93	-47.00	-5.93	8.60	-61.53
2	7479.95	-48.62	-47.00	-1.62	17.11	-65.73

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Vertical		



	Freq.	Measured value	Limit	Margin	Factor	Reading
	MHz	dBm	dBm	dB	dB	dBm
1	3739.72	-52.04	-47.00	-5.04	8.46	-60.50
2	7480.03	-49.77	-47.00	-2.77	17.47	-67.24

Note 1: Measured Value (dBm) = Reading (dBm) + Factor (dB)
Note 2: Margin (dB) = Measured Value (dBm) – Limit (dBm)

5 Adaptivity Test Results

5.1 Adaptivity

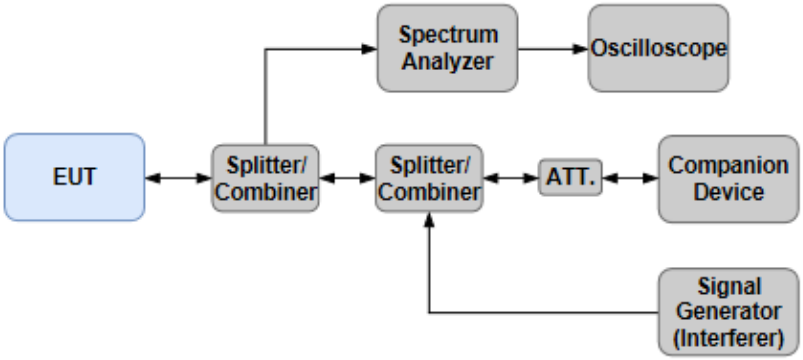
5.1.1 Adaptivity Limit

Adaptivity Limit
☐ Frame Based Equipment The ED Threshold Level (TL), at the input of the receiver, shall be proportional to the maximum transmit power (PH) according to the formula which assumes a 0 dBi receive antenna and PH to be specified in dBm e.i.r.p. For P_H ≤ 13 dBm: TL = -75 dBm/MHz For 13 dBm < P_H < 23 dBm: TL = -85 dBm/MHz + (23 dBm - P_H) For P_H ≥ 23 dBm: TL = -85 dBm/MHz
☒ Load Based Equipment ☒ **Option 1:** For equipment that for its operation in the 5 GHz bands is conforming to IEEE 802.11™-2016 [9], clause 17, clause 19 or clause 21, or any combination of these clauses, the *ED Threshold Level (TL)* is independent of the equipment's maximum transmit power (P_H). Assuming a 0 dBi receive antenna the *ED Threshold Level (TL)* shall be: TL = -75 dBm/MHz
☐ **Option 2:** For equipment conforming to one or more of the clauses listed in Option 1, and to at least one other operating mode, and for equipment conforming to none of the clauses listed in Option 1, the *ED Threshold Level (TL)* shall be proportional to the equipment's maximum transmit power (P_H). Assuming a 0 dBi receive antenna the *ED Threshold Level (TL)* shall be: For P_H ≤ 13 dBm: TL = -75 dBm/MHz For 13 dBm < P_H < 23 dBm: TL = -85 dBm/MHz + (23 dBm - P_H) For P_H ≥ 23 dBm: TL = -85 dBm/MHz
☒ Short Control Signalling Transmissions: ● within an observation period of 50 ms, the number of *Short Control Signalling Transmissions* by the equipment shall be equal to or less than 50; and ● the total duration of the equipment's *Short Control Signalling Transmissions* shall be less than 2 500 µs within said observation period.
☒ Channel Access Mechanism / Maximum Channel Occupancy Time(s) : For Supervising Devices refer to clause 4.2.7.3.2.4 Table 7. For Supervised Devices refer to clause 4.2.7.3.2.4 Table 8. ☒Option A: Measurement for Channel Access Mechanism and Maximum Channel Occupancy Time(s) ☐Option B: Compliance by declaration for the Channel Access Mechanism and Maximum Channel Occupancy Time(s)

5.1.2 Test Procedures

Reference to clause 5.4.9.3 of ETSI EN 301 893 V2.1.1 (2017-05).

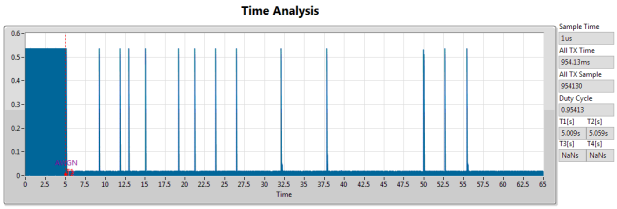
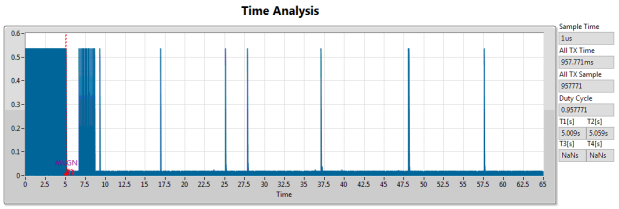
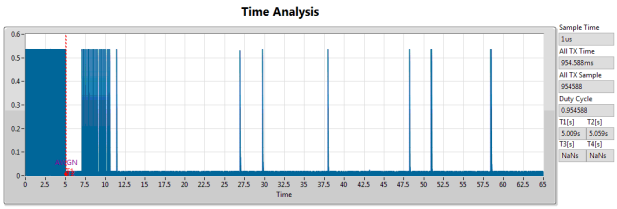
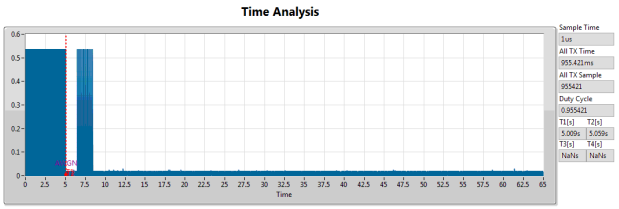
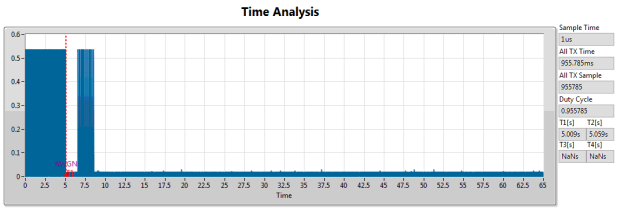
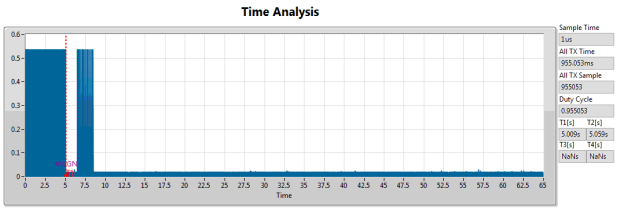
5.1.3 Test Setup



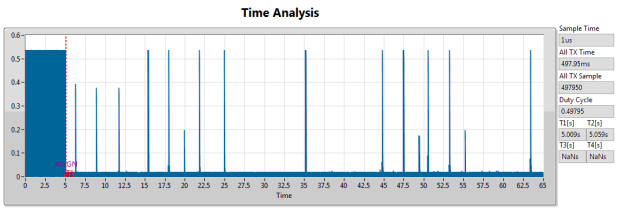
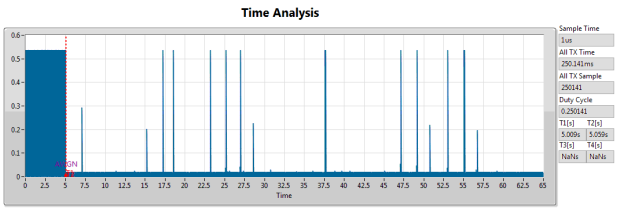
5.1.4 Test Result of Adaptivity and Short Control Signalling Transmissions

Adaptivity Result						
Equipment / Device type	Load Based Equipment / Supervised Device					
Energy Detect Threshold Level (dBm)	-73					
Modulation Mode	**Freq. (MHz)**	**Interference Signal Frequency (MHz)**	**Interference Signal Type**	**Short Control Signalling Transmissions (ms)/period Numbers**	**Channel Occupancy Time (ms)**	**Adaptivity**
802.11a	5180	5180	AWGN	1.511 / 4	5.701	PASS
802.11a	5180	5180	OFDM	1.51 / 4		
802.11a	5180	5180	LTE	2.315 / 6		
802.11a	5500	5500	AWGN	0.491 / 3	5.396	PASS
802.11a	5500	5500	OFDM	0.739 / 17		
802.11a	5500	5500	LTE	0.492 / 3		
802.11ac (VHT40)	5190	5200	AWGN	1.526 / 4	3.831	PASS
802.11ac (VHT40)	5510	5520	AWGN	1.528 / 4	5.681	PASS
Limit				< 2.5 ms / 50	6 ms	N/A

Adaptivity Result Plots

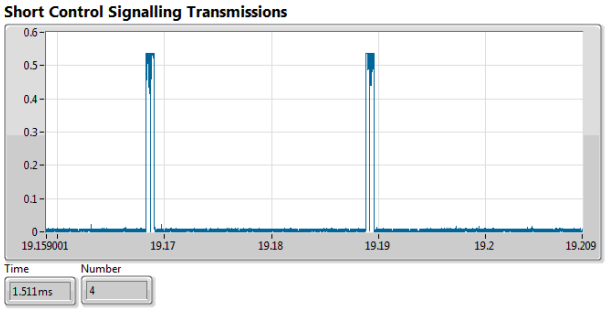
802.11a - 5180MHz (AWGN)	802.11a - 5180MHz (OFDM)
	
802.11a - 5180MHz (LTE)	**802.11a - 5500MHz (AWGN)**
	
802.11a - 5500MHz (OFDM)	**802.11a - 5500MHz (LTE)**
	

Adaptivity Result Plots

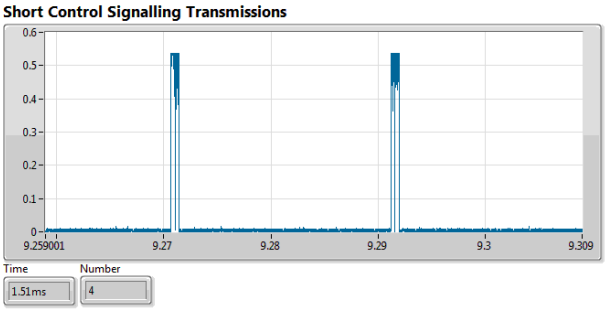
802.11ac (VHT40) - 5190MHz (AWGN)	802.11ac (VHT40) - 5510MHz (AWGN)
	

Short Control Signalling Transmissions Plots

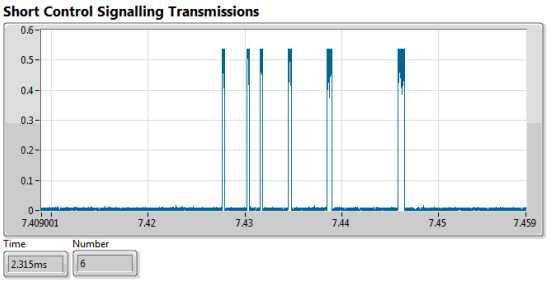
802.11a - 5180MHz (AWGN)



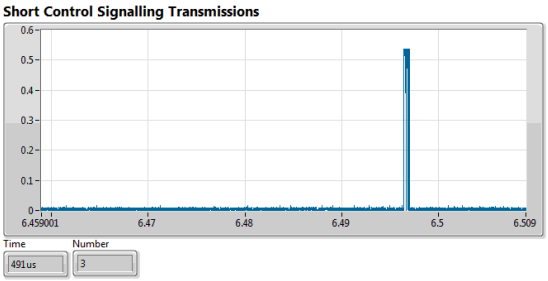
802.11a - 5180MHz (OFDM)



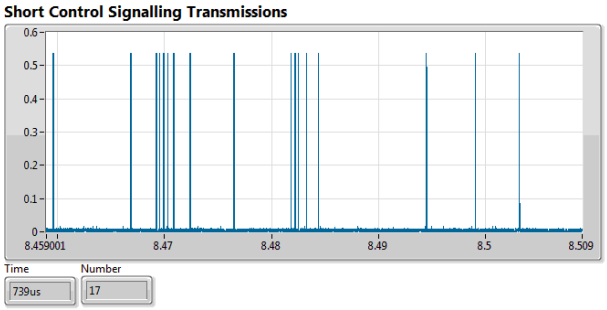
802.11a - 5180MHz (LTE)



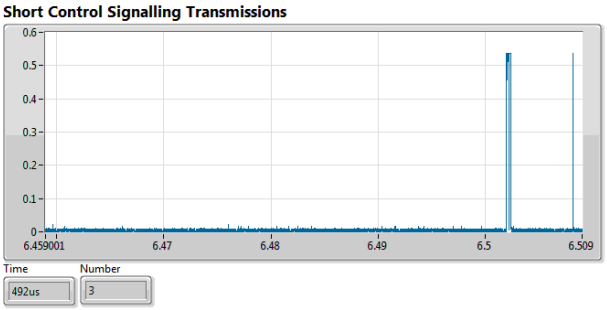
802.11a - 5500MHz (AWGN)



802.11a - 5500MHz (OFDM)

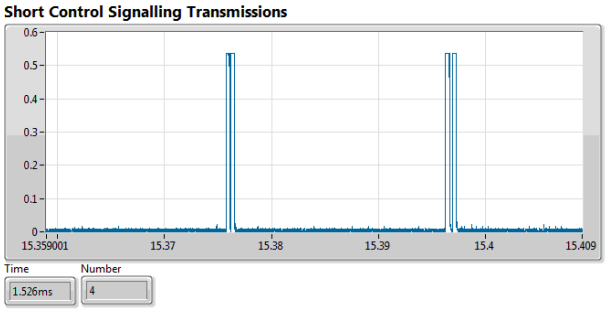


802.11a - 5500MHz (LTE)

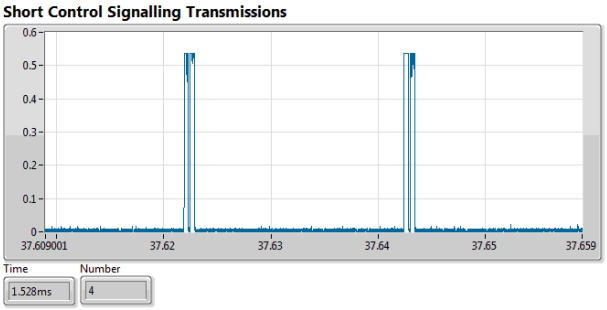


Short Control Signalling Transmissions Plots

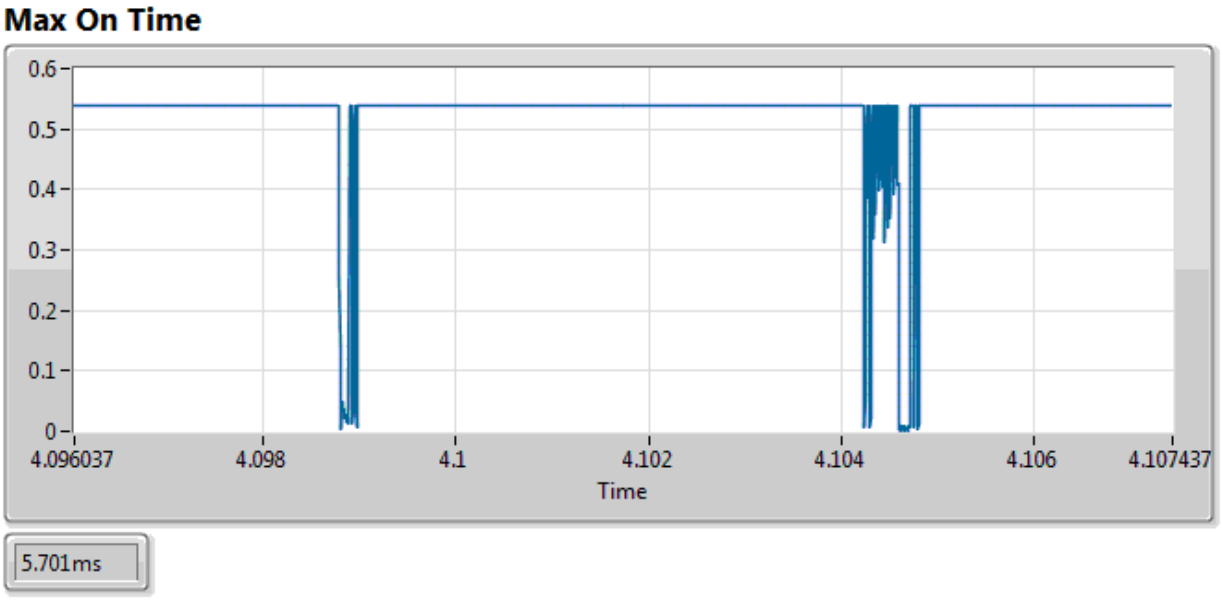
802.11ac (VHT40) - 5190MHz (AWGN)



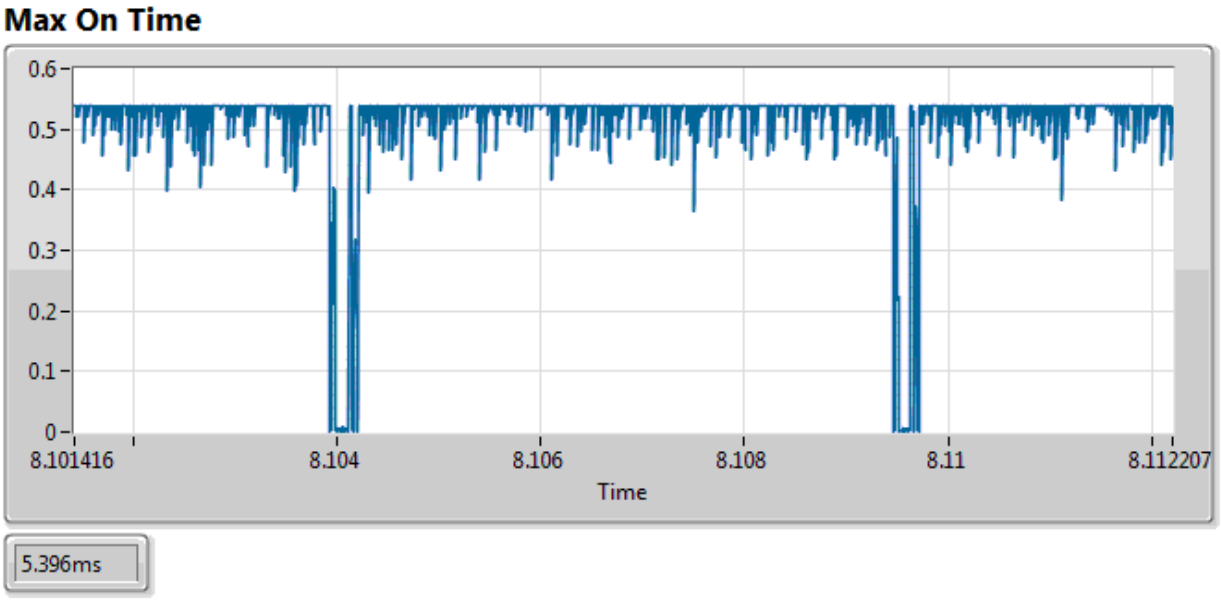
802.11ac (VHT40) - 5510MHz (AWGN)



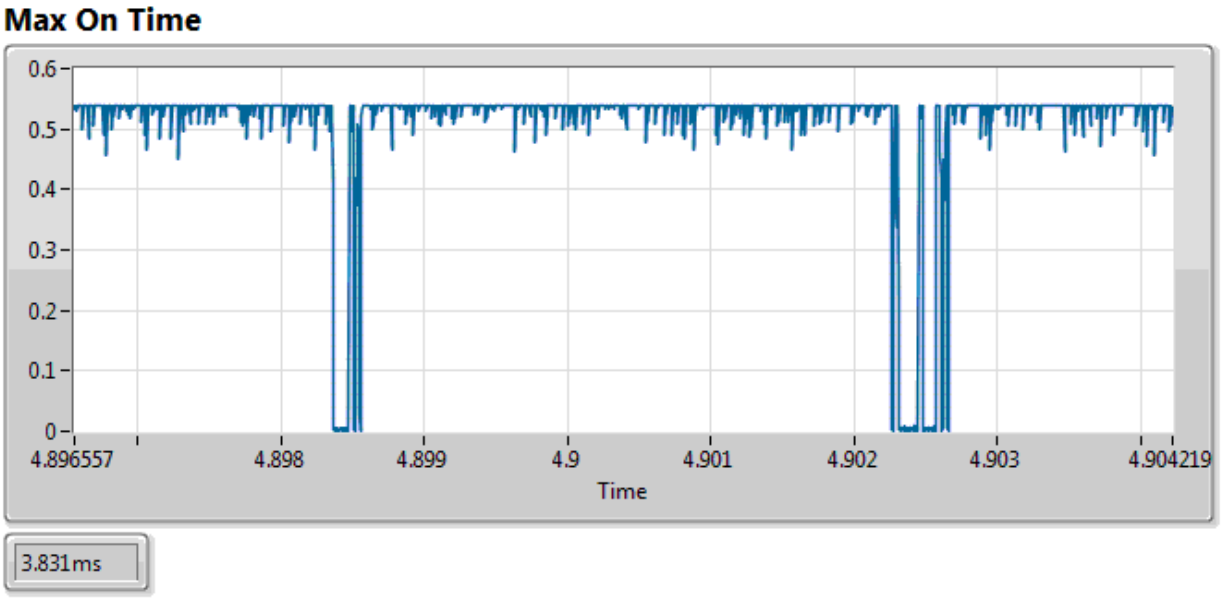
Channel Occupancy Time
802.11a - 5180MHz



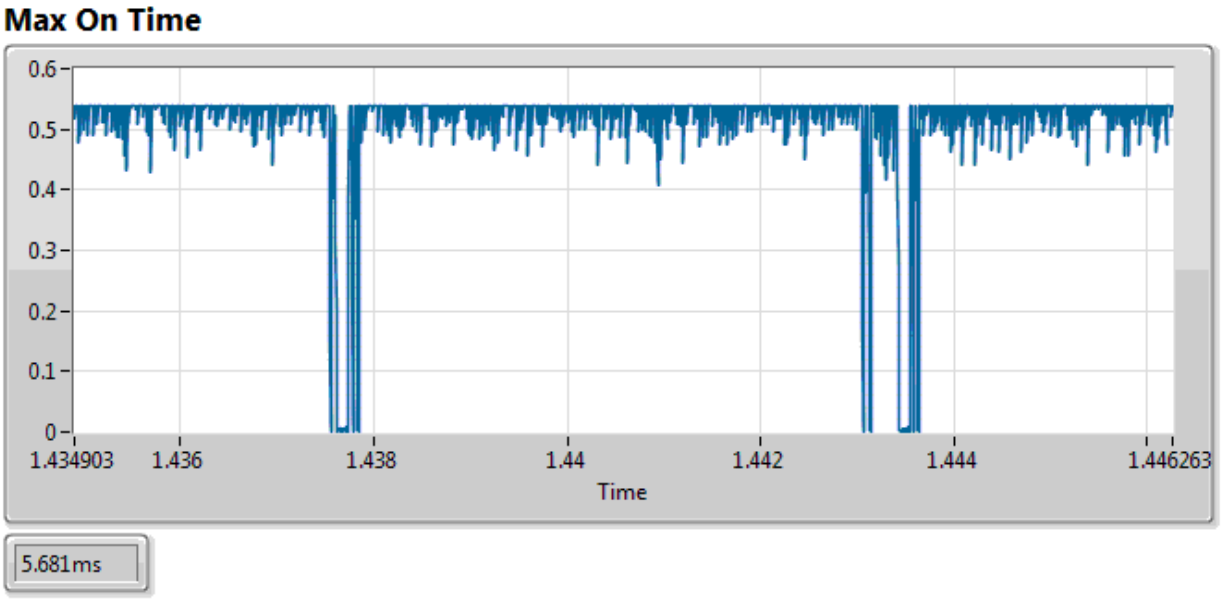
802.11a - 5500MHz



Channel Occupancy Time
802.11ac (VHT40) - 5190MHz



802.11ac (VHT40) - 5510MHz



Idle Period probability evaluation

Priority Class	Class 2
Operating Type	Supervised Device
Test condition	11a / 5180MHz

n	H(Bn)	Pn	Pn Limit	Result
0	432	0.03878	0.05000	Pass
1	9	0.03959	0.12000	Pass
2	557	0.08959	0.18250	Pass
3	1289	0.20530	0.24500	Pass
4	642	0.26293	0.30750	Pass
5	649	0.32118	0.37000	Pass
6	637	0.37837	0.43250	Pass
7	617	0.43375	0.49500	Pass
8	677	0.49452	0.55750	Pass
9	639	0.55189	0.62000	Pass
10	644	0.60969	0.68250	Pass
11	630	0.66625	0.74500	Pass
12	600	0.72011	0.80750	Pass
13	568	0.77110	0.87000	Pass
14	551	0.82056	0.93250	Pass
15	533	0.86840	0.99500	Pass
16	1466	1.00000	1.00000	Pass

Priority Class	Class 2
Operating Type	Supervised Device
Test condition	11a / 5500MHz

n	H(Bn)	Pn	Pn Limit	Result
0	527	0.04658	0.05000	Pass
1	327	0.07548	0.12000	Pass
2	564	0.12533	0.18250	Pass
3	700	0.18720	0.24500	Pass
4	669	0.24633	0.30750	Pass
5	650	0.30378	0.37000	Pass
6	681	0.36397	0.43250	Pass
7	683	0.42434	0.49500	Pass
8	676	0.48409	0.55750	Pass
9	616	0.53854	0.62000	Pass
10	671	0.59784	0.68250	Pass
11	689	0.65874	0.74500	Pass
12	611	0.71275	0.80750	Pass
13	644	0.76967	0.87000	Pass
14	622	0.82464	0.93250	Pass
15	620	0.87944	0.99500	Pass
16	1364	1.00000	1.00000	Pass

Priority Class	Class 2
Operating Type	Supervised Device
Test condition	11ac VHT40 / 5190MHz

n	H(Bn)	Pn	Pn Limit	Result
0	18	0.00144	0.05000	Pass
1	22	0.00321	0.12000	Pass
2	189	0.01837	0.18250	Pass
3	1252	0.11882	0.24500	Pass
4	891	0.19031	0.30750	Pass
5	677	0.24462	0.37000	Pass
6	712	0.30175	0.43250	Pass
7	665	0.35510	0.49500	Pass
8	606	0.40372	0.55750	Pass
9	624	0.45379	0.62000	Pass
10	545	0.49751	0.68250	Pass
11	564	0.54276	0.74500	Pass
12	546	0.58657	0.80750	Pass
13	386	0.61754	0.87000	Pass
14	360	0.64642	0.93250	Pass
15	354	0.67482	0.99500	Pass
16	4053	1.00000	1.00000	Pass

Priority Class	Class 2
Operating Type	Supervised Device
Test condition	11ac VHT40 / 5510MHz

n	H(Bn)	Pn	Pn Limit	Result
0	480	0.04168	0.05000	Pass
1	15	0.04299	0.12000	Pass
2	618	0.09666	0.18250	Pass
3	1004	0.18385	0.24500	Pass
4	654	0.24064	0.30750	Pass
5	683	0.29996	0.37000	Pass
6	693	0.36014	0.43250	Pass
7	683	0.41945	0.49500	Pass
8	687	0.47911	0.55750	Pass
9	712	0.54095	0.62000	Pass
10	670	0.59913	0.68250	Pass
11	685	0.65862	0.74500	Pass
12	688	0.71837	0.80750	Pass
13	632	0.77325	0.87000	Pass
14	572	0.82293	0.93250	Pass
15	647	0.87911	0.99500	Pass
16	1392	1.00000	1.00000	Pass

6 Receiver Blocking Test Results

6.1 Receiver Blocking

6.1.1 Limit of Receiver Blocking

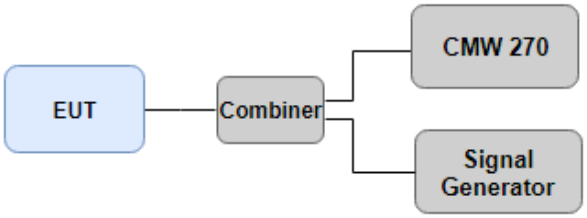
Receiver Blocking Parameters				
Wanted Signal Mean Power from Companion Device (dBm)	Blocking Signal Frequency (MHz)	Blocking Signal Power (dBm) (see note 2)		Type of Blocking Signal
		Master or Slave with radar detection	Slave without radar detection	
P_{min} + 6 dB	5 100	-53	-59	Continuous Wave
P_{min} + 6 dB	4 900 5 000 5 975	-47	-53	Continuous Wave

Note 1: P_{min} is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria (The minimum performance criterion shall be a PER of less than or equal to 10 %) in the absence of any blocking signal.
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.

6.1.2 Test Procedures

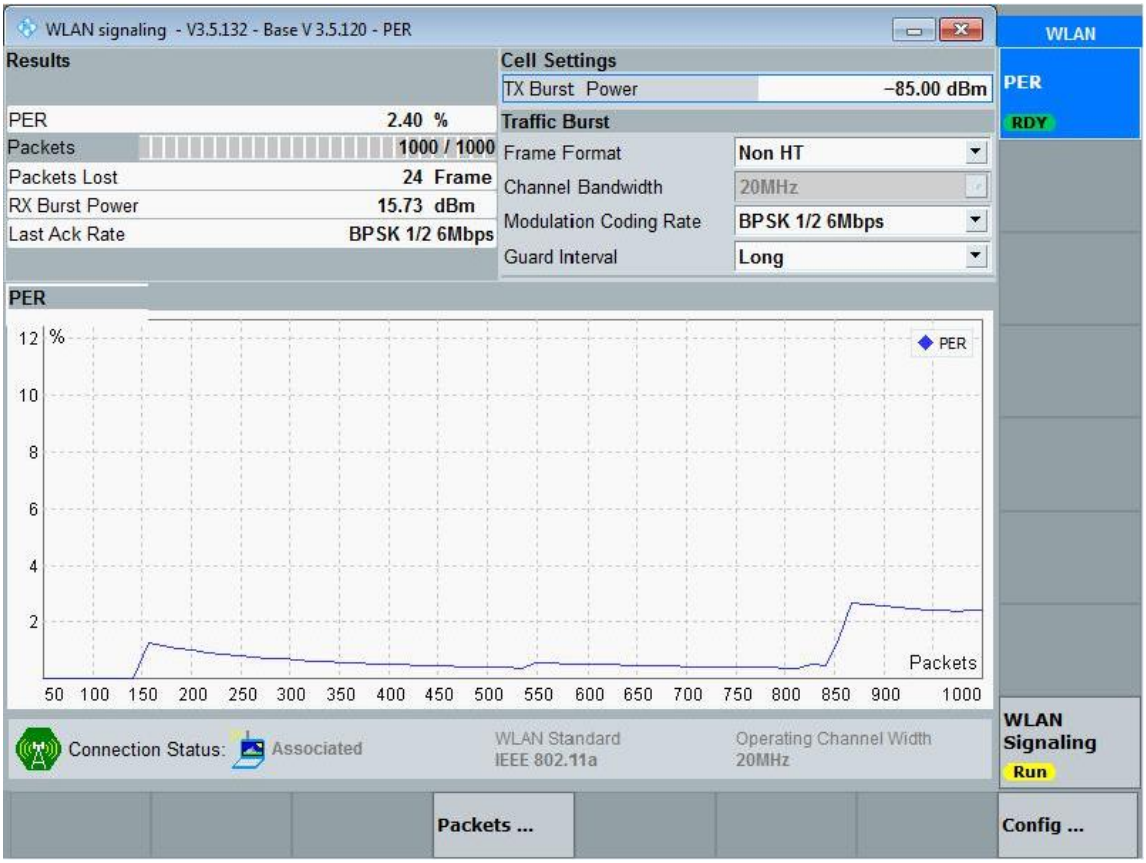
Reference to clause 5.4.10.2 of ETSI EN 301 893 V2.1.1 (2017-05).

6.1.3 Test Setup



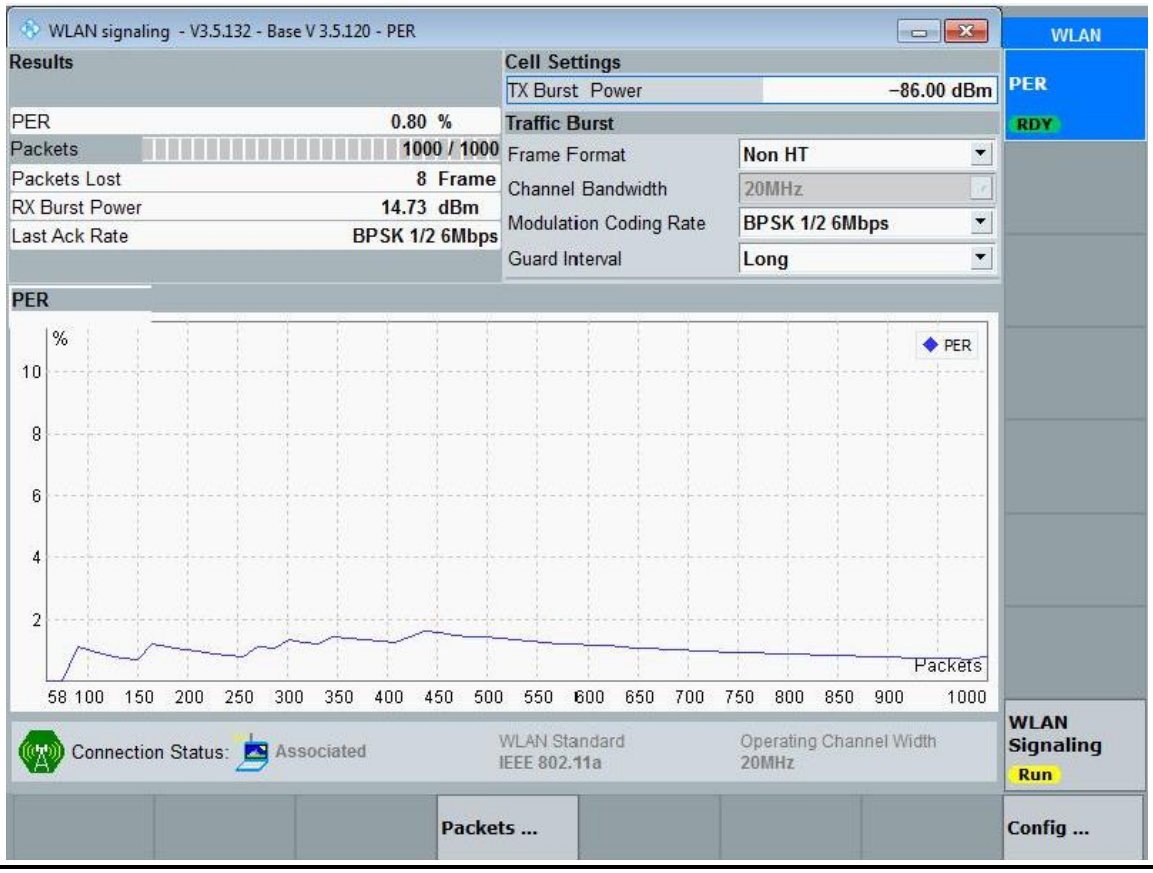
6.1.4 Test Result of Receiver Blocking

11a / 5180 MHz
Without Interference Signal Sensitivity Level



PER minimum performance criteria	10 %		
Sensitivity Level	-85		**dBm**
Want Signal Mean Power form Companion Device (dBm)	**Blocking Signal Frequency (MHz)**	**Blocking Signal Power (dBm)**	**Test Result**
-79	5100	-59	Pass
-79	4900	-53	Pass
-79	5000		Pass
-79	5975		Pass

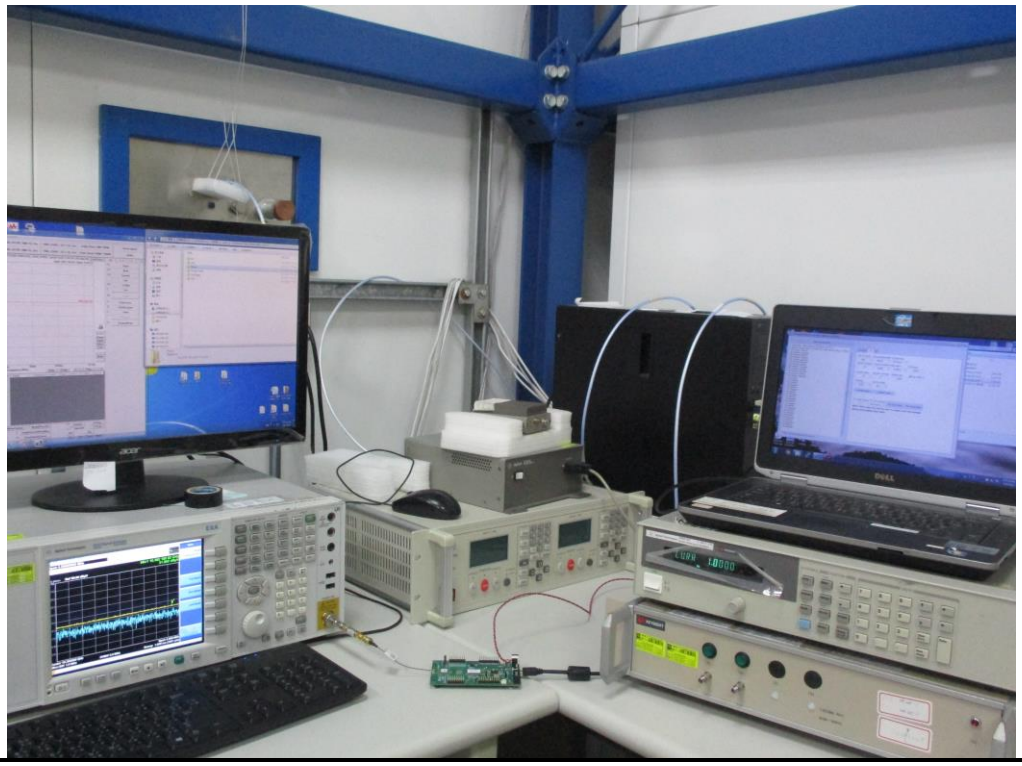
11a / 5700 MHz
Without Interference Signal Sensitivity Level



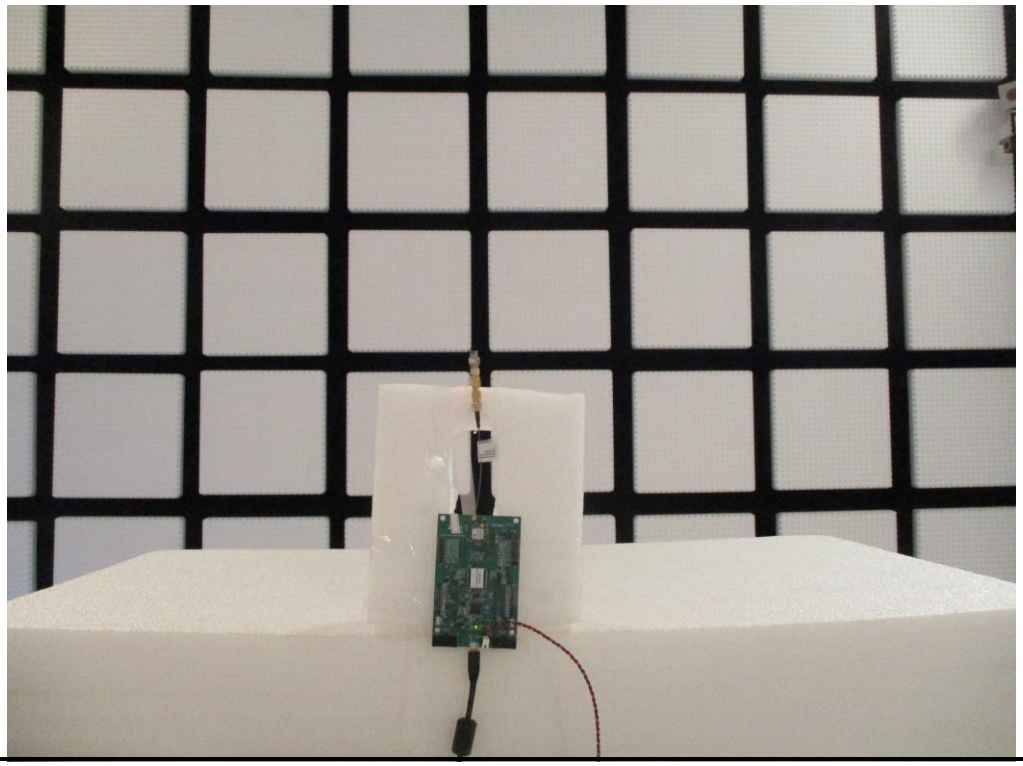
PER minimum performance criteria	10 %		
Sensitivity Level	-86		**dBm**
Want Signal Mean Power form Companion Device (dBm)	**Blocking Signal Frequency (MHz)**	**Blocking Signal Power (dBm)**	**Test Result**
-80	5100	-59	Pass
-80	4900	-53	Pass
-80	5000		Pass
-80	5975		Pass

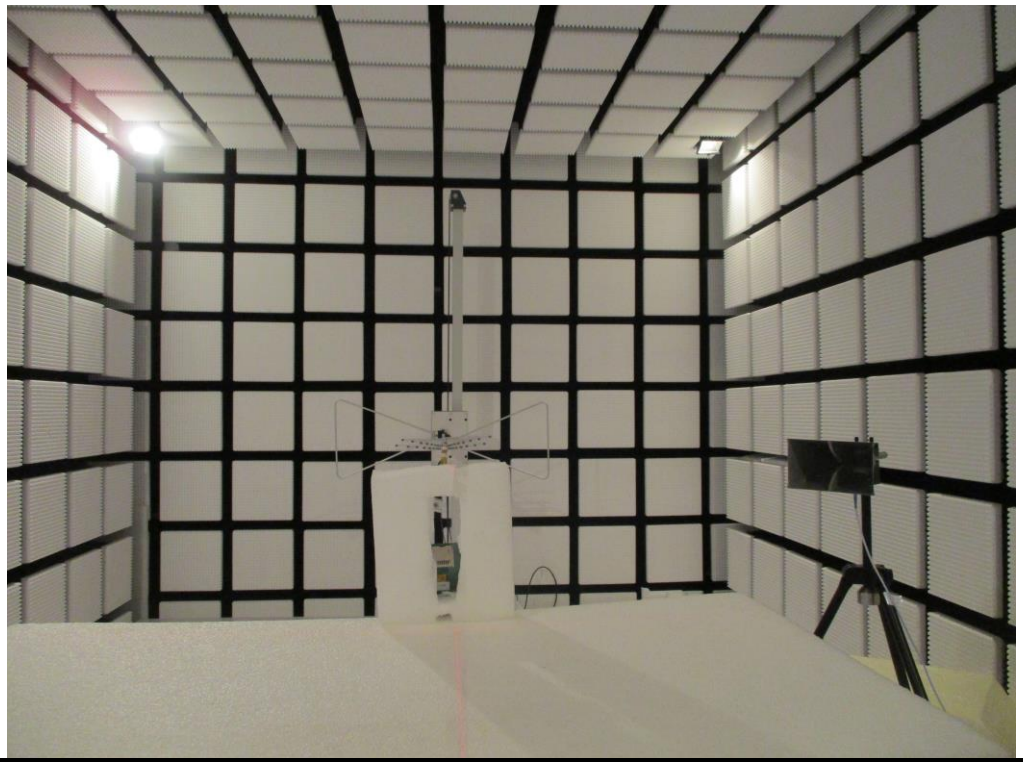
7 Photographs of the Test Configuration

Conducted Spurious Emission Test

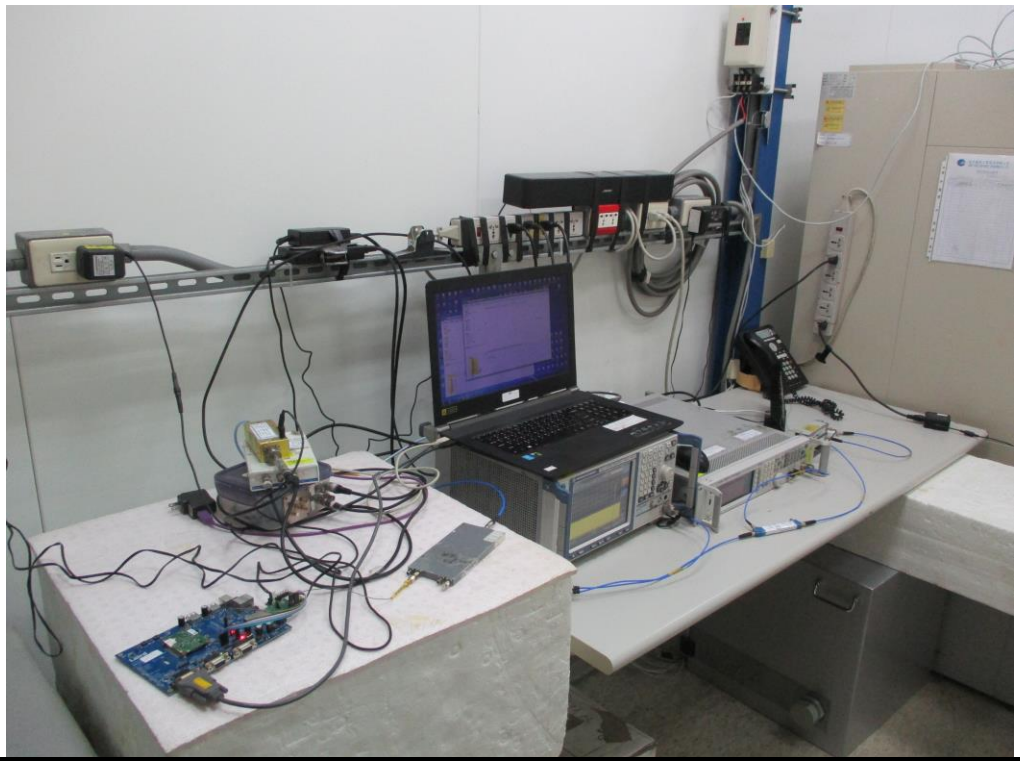


Radiated Spurious Emission Test

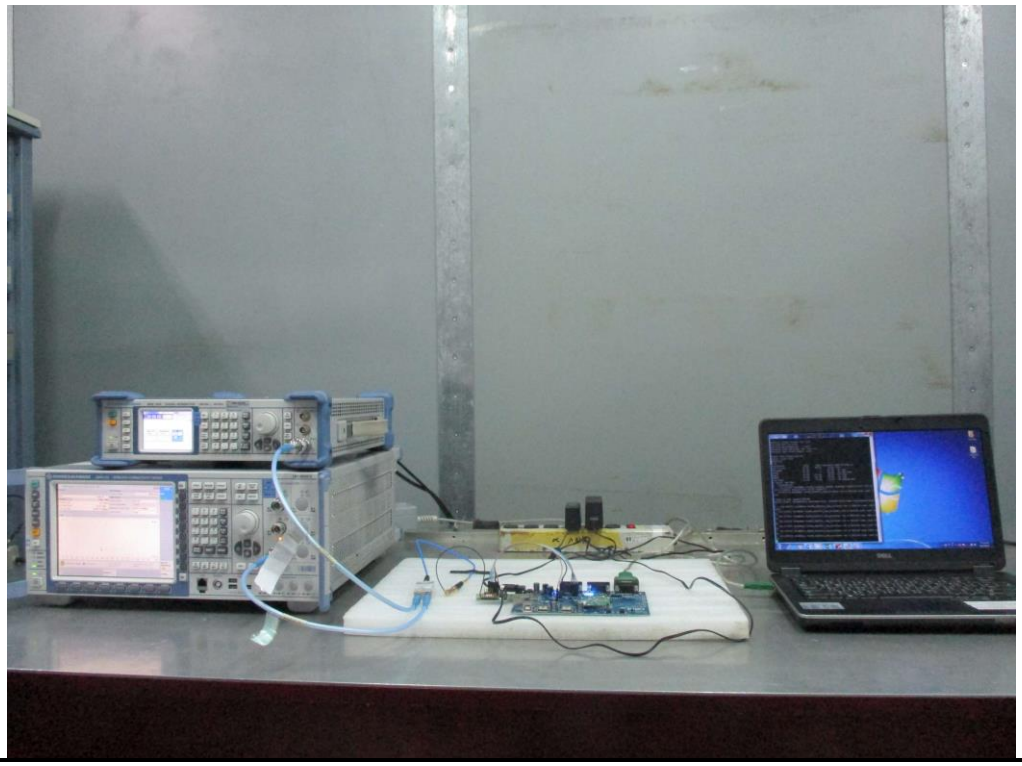




Adaptivity, Unwanted Signal and Short Control Signalling Transmissions Test



Receiver Blocking Test



8 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

Linkou

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.)

Kwei Shan

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

No.2-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

Kwei Shan Site II

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 333, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666
Fax: 886-3-318-0345
Email: ICC_Service@icertifi.com.tw

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