



FCC LISTED, REGISTRATION
NUMBER: 2764.01

ISED LISTED REGISTRATION
NUMBER: 23595-1

Test Report No:

4892ERM.005

Partial Test report

USA FCC Part 15.407 (U-NII), 15.209; & CANADA RSS-247, RSS-Gen
Unlicensed National Information Infrastructure Devices. General technical requirements.
License-Exempt Radio Apparatus (All Frequency Bands): Category I Equipment.
General Requirements and Information for the Certification of Radio Apparatus.

(*) Identification of item tested	Wireless Alarm System with Integrated Home Automation
(*) Trademark	Qolsys
(*) Model and /or type reference	IQPanel5
Other identification of the product	Contains FCC ID: XMR2022SC200ENA Contains IC ID: 10224A-022SC200ENA
(*) Features	LTE, BLE, Wi-Fi, Z-Wave, Power G
Manufacturer	Qolsys Inc. 1919 S Bascom Ave., Suite 600, Campbell, CA 95008, USA
Test method requested, standard	USA FCC Part 15.407 (07-1-24) Edition : Unlicensed National Information Infrastructure Devices. General technical requirements. USA FCC Part 15.209 (06-28-21) Edition: Radiated emission limits; general requirements. CANADA RSS-247 Issue 3 (August 2023). CANADA RSS-Gen Issue 5 (March 2019). 789033 D02 General UNII Test Procedures New Rules v02r01 Guidance for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
Summary	See Appendix A
Approved by (name / position & signature)	Domingo Galvez EMC&RF Lab Manager
Date of issue	01-28-2025
Report template No	FDT08_23 (*) "Data provided by the client"

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Acronyms

Acronym ID	Acronym Description
	Emission Bandwidth
# of Tx Chains	Number of Transmission Chains
Avg Power	Maximum Average Conducted Output Power
DC	Duty Cycle
Freq	Frequency
Max EIRP	Maximum Burst EIRP
Mod	Modulation
Mode	Mode
Occ Ch BW	Occupied Channel Bandwidth
Operation Band	Operation Band
PSD	Power Spectrum Density
Port	Active Port
TPC	TPC

Competences and guarantees

DEKRA Certification Inc. is a testing laboratory accredited by A2LA (The American Association for Laboratory Accreditation), to perform the tests indicated in the Certificate 2764.01 and CAB ID US0215.

DEKRA Certification Inc. is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Certification Inc. has a calibration and maintenance program for its measurement equipment.

DEKRA Certification Inc. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Certification at the time of performance of the test.

DEKRA Certification Inc. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General conditions

1. This report is only referred to the item that has undergone the test.
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Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Certification internal document PODT000.

Test case	Frequency (MHz)	U (k=2)	Units
Radiated Spurious Emission	30-180	4.27	dB
	180-1000	3.14	dB
	1000-18000	3.30	dB
	18000-40000	3.49	dB

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").
2. The sample consists of a IQPanel5 is a wireless alarm system that monitors protected premises and sends alarms via LTE cellular network or Wi-Fi to a compatible alarm receiver at the monitoring station. It receives alarms from PowerG fire/intrusion initiating devices, it has integral siren and touch screen display. It also contains Z-Wave interface for controlling home automation devices. It is powered via an external power adapter rated 12Vdc/1A and it has an internal back-up battery for 24h standby.

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples used for testing have been selected by: The client.

Sample S/01 is composed of the following elements, accessories and auxiliary equipment:

Id	Control Number	Description	Manufacturer / Model	Serial N°	Date of Reception	Application
S/01	4892/07	LTE/Wi-Fi (TX)(Radiated)	Qolsys/IQPanel5	QP5017X062447G09150	12/18/2024	Element Under Test
S/01	4892/09	Laptop	DELL / Latitude 5400	8H6J733	12/18/2024	Accessory
S/01	4892/10	Laptop Adapter	DELL	-	12/18/2024	Accessory
S/01	4892/12	USB to Micro usb	-	-	12/18/2024	Accessory

1. Sample S/01, was used for the following test(s): All Radiated tests indicated in appendix A.

Test sample description

Test Sample description (compulsory information for EMC and RF testing services)

Ports..... :	Port name and description	Cable									
		Specified length [m]	Attached during test	Shielded	Coupled to patient						
	Ethernet (when EThernet card is populated)		☒	☐	☐						
			☐	☐	☐						
			☐	☐	☐						
			☐	☐	☐						
Supplementary information to the ports..... :	No Data Provided										
Rated power supply	Voltage and Frequency		Reference poles								
			L1	L2	L3	N	PE				
	☒	AC: 120Vac/60Hz/0.6 8A	☐	☐	☐	☐	☐				
	☐	AC:	☐	☐	☐	☐	☐				
	☒	DC: 12V/1A external adapter (part of the EUT)									
	☒	DC: rechargeable 3.7V, 3000mAh lithium-ion battery									
Rated Power	12W										
Clock frequencies.....	24MHz, 39MHz, 38.4MHz										
Other parameters	No Data Provided										
Software version	5.0.1										
Hardware version	QB9501 Rev. OA										
Dimensions in cm (W x H x D).....	15.5 x 19.1 x 2.6										
Mounting position	☒	Tabletop equipment									
	☒	Wall/Ceiling mounted equipment									
	☐	Floor standing equipment									
	☐	Hand-held equipment									
	☐	Other: Cluster in the car									

Modules/parts	Module/parts of test item	Type	Manufacturer
	IQPanel5 Control Panel	Panel	Qolsys
	AC/DC Power adapter (use for conducted EMC)	Power Supply	Sure-Power
	Ethernet card (optional) (use for EMC testing)	Card	Qolsys
	SRF319 security receiver card (optional)(use for EMC)	Card	Qolsys
Accessories (not part of the test item)	Description	Type	Manufacturer
Documents as provided by the applicant.....	Description	File name	Issue date
	Block Diagram and Operational description		
	Schematic/Parts Lists/PCB		
	Internal/External photos		
	Manual/Labels		
	Declaration Equipment Data	FDT30_18 Declaration Equipment Data	12/11/2024
Copy of marking plate:			
			

Identification of the client

Qolsys Inc.
1919 S Bascom Ave., Suite 600,
Campbell, CA 95008,
USA

Testing period and place

Test Location	DEKRA Certification Inc.
Date (start)	12-18-2024
Date (finish)	12-23-2024

Document history

Report number	Date	Description
4892ERM.005	01-28-2025	First release.

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the semi anechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

Remarks and comments

The tests have been performed by the technical personnel: Fahim Tahiree, Yuqi Wang, Madhava Gooduru, Koji Nishimoto and Yuri Barone.

List of equipment used during the test

Radiated Measurements

Control Number	Description	Serial No	Last Calibration	Next Calibration
878	Power supply (AMETEK / PROG-DC-PS)	1707A01783	N/A	N/A
1012	ESR26 EMI Test Receiver	101478	2023-01-18	2025-01-18
1014	FSV40 Signal Analyzer 40GHz	101626	2024-10-04	2026-10-04
1056	3116C DOUBLE-RIDGED WAVEGUIDE HORN ANTENNA (18-40GHz)	213179	2024-07-01	2027-07-01
1057	3115 DOUBLE-RIDGED WAVEGUIDE HORN ANTENNA (750 MHz-18 GHz)	211373	2023-07-18	2026-07-18
1064	3142E Biconilog Antenna	208600	2021-12-13	2024-02-13
1472	Ethernet SNMP Thermometer - SAC2	60038038794	2022-10-24	2025-10-24
1473	Ethernet SNMP Thermometer - CR2	60038038777	2022-10-24	2025-10-24
1179	Semi anechoic Absorber Lined Chamber	F169021	N/A	N/A
1314	Wireless Measurement Software R&S EMC32	-	N/A	N/A
1461	Low Noise Preamplifier (1-18GHz)	2213857B	2024-06-06	2026-06-06

Testing verdicts

Fail	F
Not applicable	N/A
Not measured	N/M
Pass	P

Summary

FCC PART 15 PARAGRAPH / RSS-247			
Requirement	Test case	Verdict	Remark
FCC 15.407 (a) / RSS-247 6.2	Power Limits. Maximum Output Power	N/M	Refer 1
FCC 15.407 (a) / RSS-247 6.2	Maximum Power Spectral Density	N/M	Refer 1
FCC 2.1049 / RSS-Gen 6.7	99% Occupied Bandwidth	N/M	Refer 1
FCC 15.403 / RSS-Gen 6.7	26 dB Emission Bandwidth	N/M	Refer 1
FCC 15.407 (b) / RSS-247 6.2	Band-edge Conducted Emissions	N/M	Refer 1
FCC 15.407 (e) / RSS 247 6.2.4.1	6 dB Emission Bandwidth	N/M	Refer 1
FCC 15.407 (b), 15.205 & 15.209 / RSS-Gen 8.9 & 8.10	Undesirable radiated emissions	P	N/A
<u>Supplementary information and remarks:</u> 1. This test report covers only the partial testing of the Wi-Fi 5GHz radio module that is integrated in the IQPanel5.			

Appendix A: Test results



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TEST CASES DETAILS	15
<i>FCC 15.407 (b), 15.205 & 15.209 / RSS-Gen 8.9 & 8.10 Undesirable radiated emissions</i>	15

PRODUCT INFORMATION

(*): The following information is provided by the client

Information	Description
Equipment type	Wi-Fi 5 GHz
TPC Function	No
Operating Frequency Range	5150 - 5250 MHz 5250 – 5350 MHz 5470 – 5725 MHz 5725 – 5850 MHz
Nominal Channel Bandwidth	20/ 40/ 80 MHz
Antenna type	chip antenna (ANT3, Vigorconn P/N 3.N101.0770) on the main board
RF Output Power	16.36 dBm
Antenna gain	4 dBi
Supply Voltage	120 Vac
Modulation:	OFDM (QPSK, BPSK, 16QAM, 64QAM, 256QAM)
Transmit Data Rate:	802.11 a/n/ac Rates: IEEE 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE 802.11n: MCS0-7 IEEE 802.11ac: VHT SS1 MCS 0-9 VHT SS2 MCS 0-9
Geo-location capability	No

TEST CONDITIONS

(*): Data provided by the client.

TEST CONDITIONS	DESCRIPTION
TC#01 ⁽¹⁾ (ac mode)	<u>Power supply (V):</u> $V_{\text{nominal}} = 120 \text{ Vac}$ <u>Test Frequencies for Conducted/Radiated tests: (SISO A)</u> <u>UNII-3:</u> Lowest channel: 5755 MHz Highest channel: 5795 MHz <u>Channel Bandwidth:</u> 40 MHz

Note (1): The worst case has been determined according to a pretesting of the radiated spurious emission.

RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at 3 m for the frequency range 30-1000 MHz (Bilog antenna) and 1-18 GHz Double ridge horn antennas, and 1m for the frequency range 18 GHz- 40 GHz Double ridge horn antenna.

For radiated emissions in the range 18 - 40 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

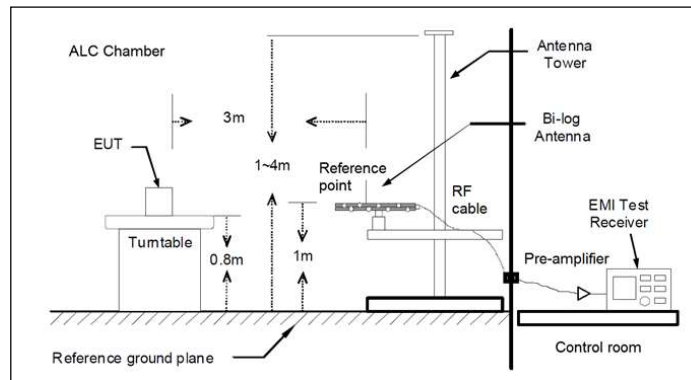


Fig A1: Radiated measurements Setup $f < 1$ GHz

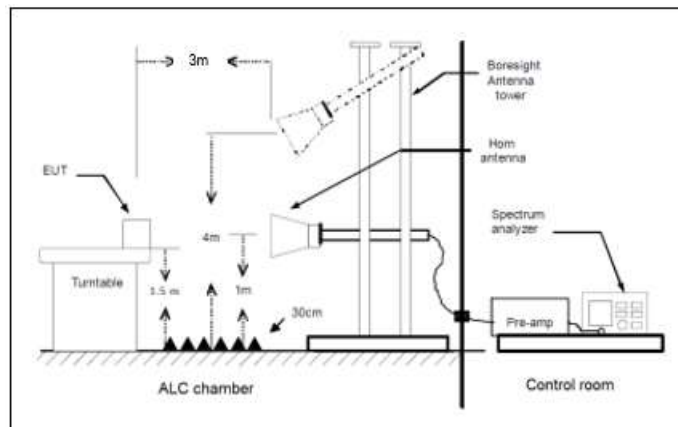


Fig A2: Radiated measurements setup $1 < f < 18$ GHz

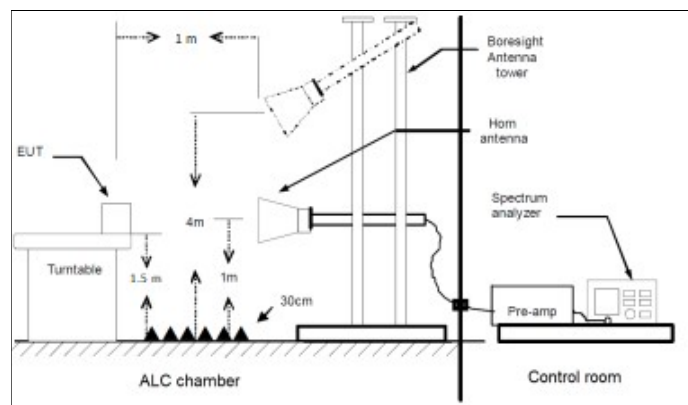


Fig A3: Radiated measurements setup $f > 18$ GHz

TEST CASES DETAILS

FCC 15.407 (b), 15.205 & 15.209 / RSS-Gen 8.9 & 8.10 Undesirable radiated emissions

Limits

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)):

Frequency Range (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	300
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 40000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

UNII-3:

Modulation: 802.11ac VHT40 SS1 (OFDM MCS0)

Results

Verdict

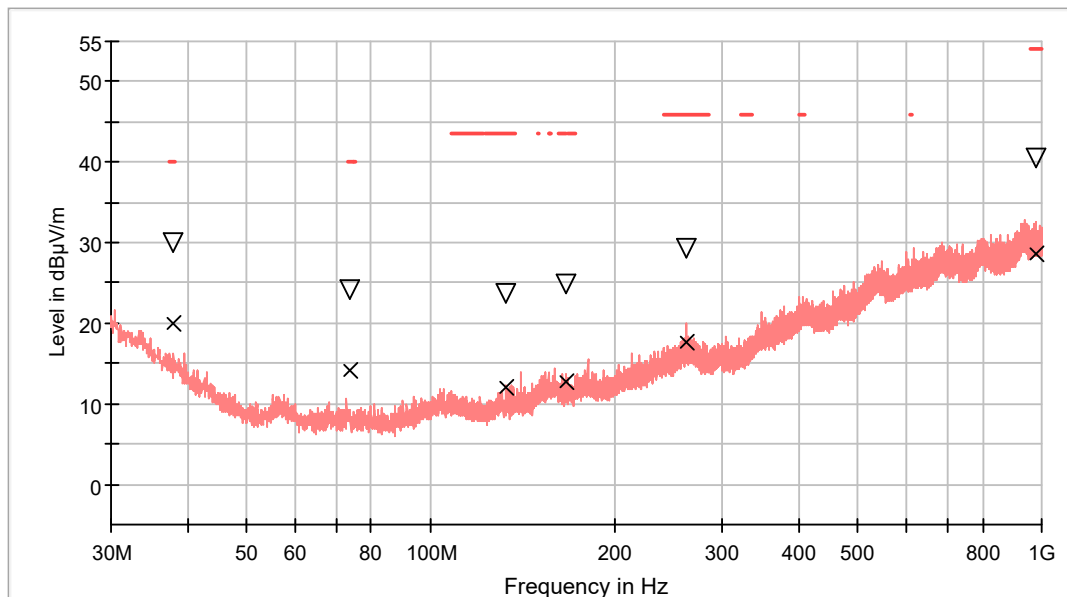
Pass

Attachments

Frequency Range GHz = [0.03, 1], Frequency MHz = 5755.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), Measurement Point = 1

Images:

RF_FCC_15.247_E Field_30MHz_1GHz



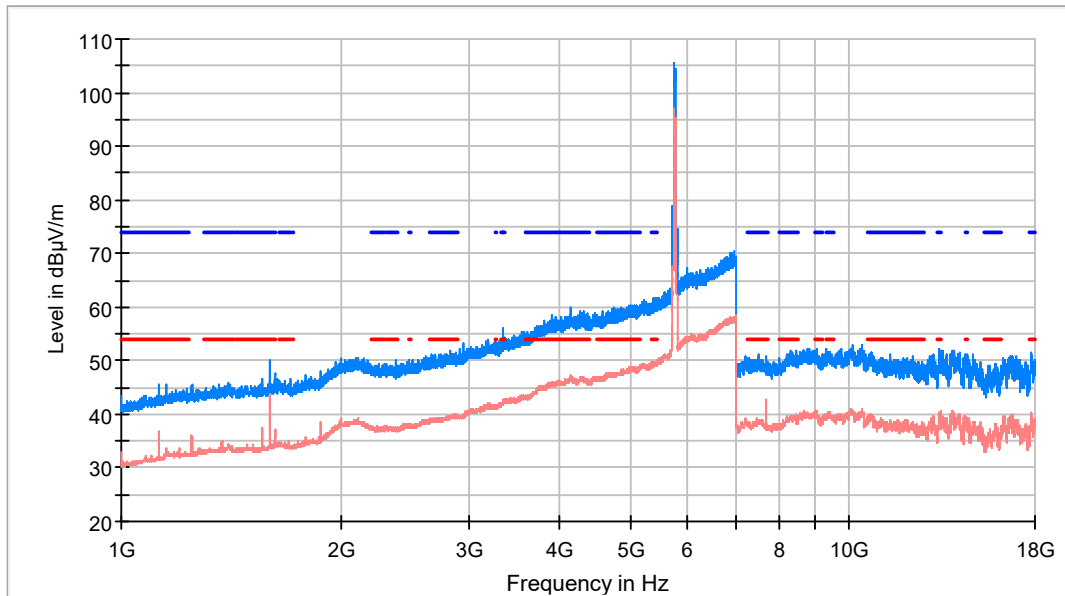
— TX limits to Spurious Emission FCC15.407 (30MHz to 1GHz) Restricted Bands QPK Limit
PK+ _MAXH
▽ MaxPeak-PK+ (Single)
× QuasiPeak-QPK (Single)

Frequency (MHz)	MaxPeak (dBμV/m)	QuasiPeak (dBμV/m)	Pol	Margin - QPK (dB)	Limit - QPK (dBμV/m)
37.857000	30.1	20.0	V	20.0	40.0
73.844000	24.3	14.1	V	25.9	40.0
132.771500	23.7	12.0	H	31.5	43.5
166.188000	24.9	12.7	V	30.8	43.5
262.848500	29.2	17.6	V	28.4	46.0
981.376000	40.6	28.6	V	25.4	54.0

Frequency Range GHz = [1, 18], Frequency MHz = 5755.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), Measurement Point = 1

Images:

RF_FCC_15.407_E Field_1GHz_18GHz_3m(SAC2)



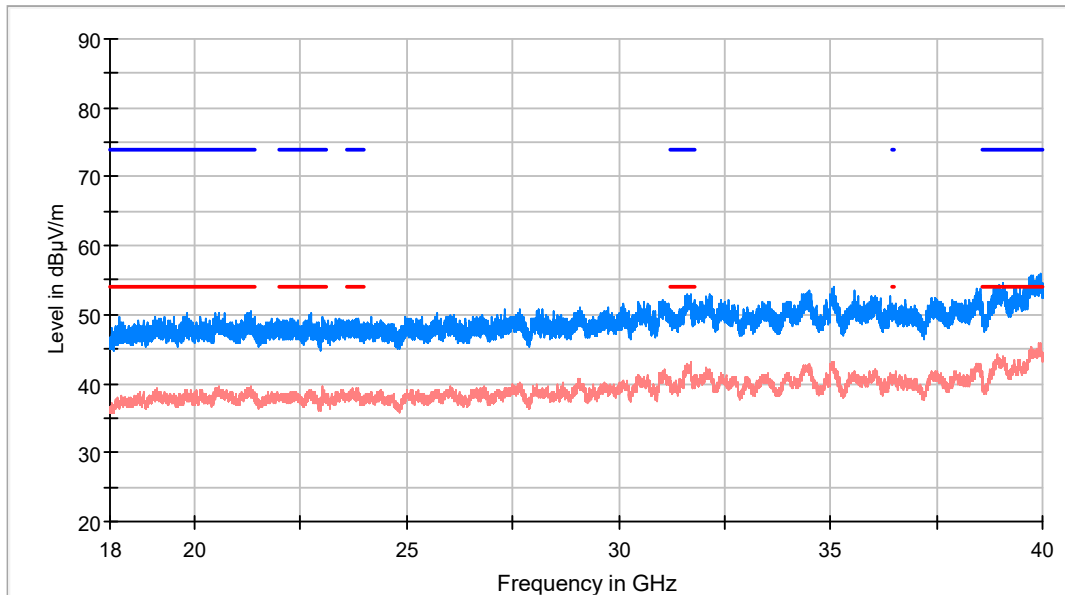
— PK+_MAXH
 - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
 - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit
 — AVG_MAXH

Frequency (MHz)	PK+_MAXH (dBμV/m)	AVG_MAXH (dBμV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBμV/m)	Comment
1124.500000	45.1	36.7	V	17.3	54.0	
1600.000000	50.0	43.8	V	10.2	54.0	
5745.500000	105.4	95.3	H	---	---	Fundamental
7672.833333	50.7	42.9	H	11.1	54.0	

Frequency Range GHz = [18, 40], Frequency MHz = 5755.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), Measurement Point = 1

Images:

RF_FCC_15.407_E Field_18GHz_40GHz(SAC2)



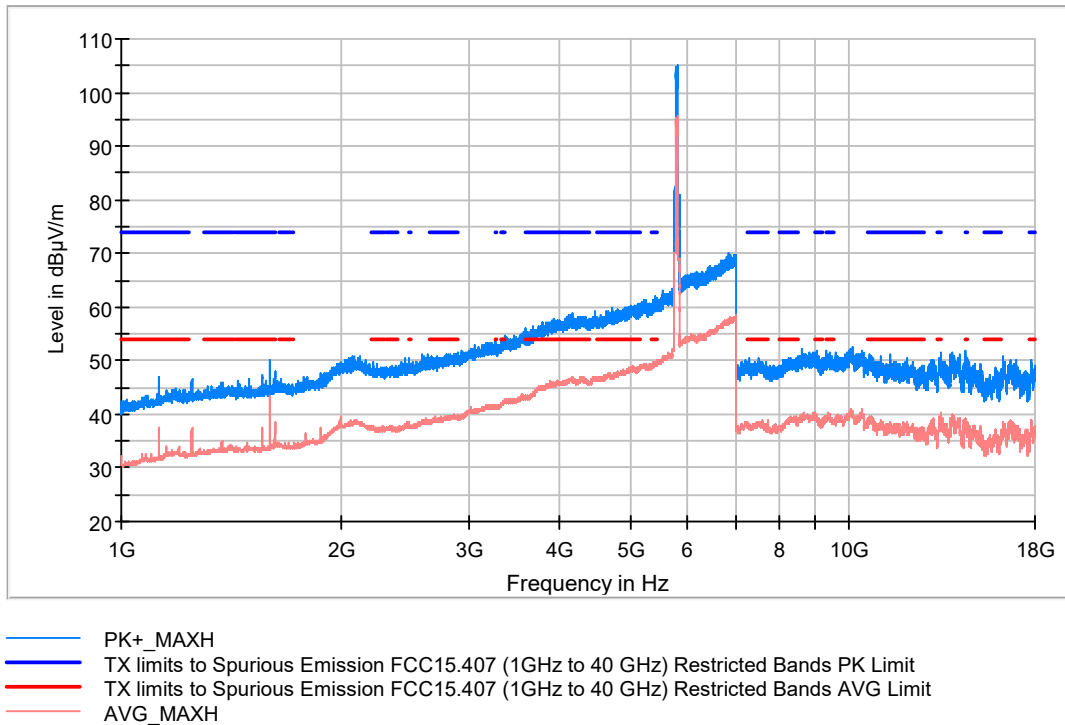
- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

Frequency (MHz)	PK+_MAXH (dBμV/m)	AVG_MAXH (dBμV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBμV/m)
19122.000000	48.3	39.4	V	14.6	54.0
31692.250000	51.9	42.9	V	11.1	54.0
39923.687500	54.1	46.0	V	8.0	54.0

Frequency Range GHz = [1, 18], Frequency MHz = 5795.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), Measurement Point = 1

Images:

RF_FCC_15.407_E Field_1GHz_18GHz_3m(SAC2)

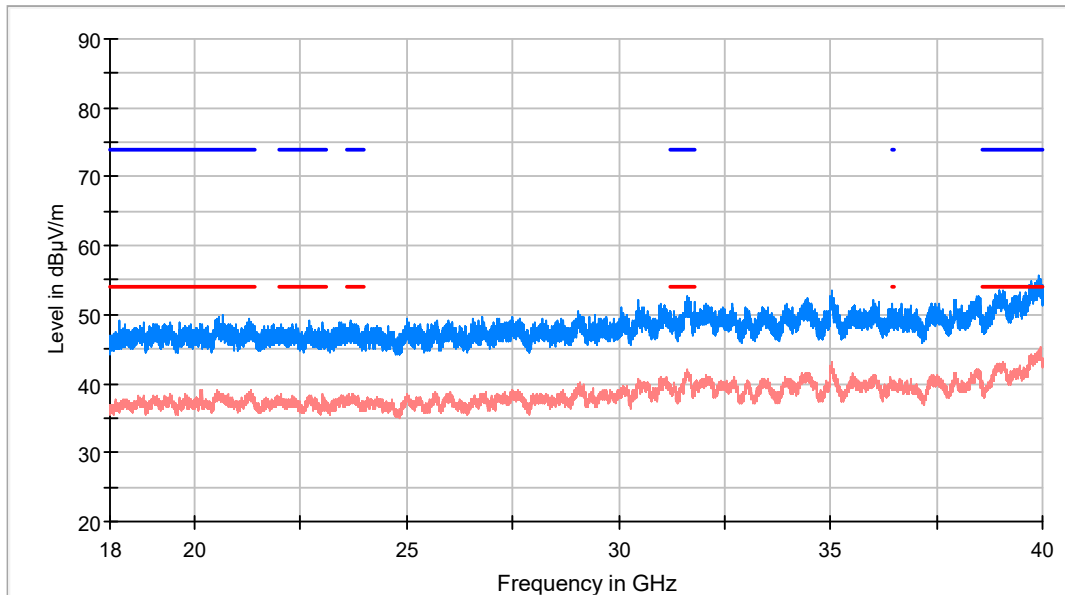


Frequency (MHz)	PK+_MAXH (dBμV/m)	AVG_MAXH (dBμV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBμV/m)	Comment
1125.000000	46.1	37.6	V	16.4	54.0	
1559.000000	47.2	37.4	V	16.6	54.0	
1600.000000	49.9	43.4	V	10.6	54.0	
5798.500000	105.2	95.3	H	---	---	Fundamental

Frequency Range GHz = [18, 40], Frequency MHz = 5795.00000, Modulation = 802.11ac VHT40 SS1 (OFDM MCS0), Measurement Point = 1

Images:

RF_FCC_15.407_E Field_18GHz_40GHz(SAC2)



- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

Frequency (MHz)	PK+_MAXH (dBμV/m)	AVG_MAXH (dBμV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBμV/m)
23000.875000	47.6	38.6	V	15.4	54.0
31599.437500	50.9	42.0	H	12.0	54.0
39707.125000	53.2	43.9	V	10.1	54.0