

Report on the FCC and IC Testing of the
ITAB Shop Products AB

Model: SigmaGate 2 900

In accordance with FCC 47 CFR Part 15C, ISED
Canada RSS-210 and ISED Canada RSS-GEN



Prepared for: ITAB Shop Products AB
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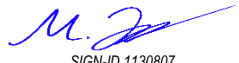
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ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15C and ISED Canada RSS-210 and ISED Canada RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Michael Ingerl	2026-05-21	 SIGN-ID 1130807 21.05.2026

Laboratory Accreditation	Laboratory recognition	ISED Canada test site registration
DAkS Reg. No. D-PL-11321-11-02	Registration No. BNetzA-CAB-16/21-	3050A-2
DAkS Reg. No. D-PL-11321-11-03	15	

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15 C 2023, ISED RSS-210 Issue 11, 2024 and ISED RSS-Gen Issue 5, 2018 + A1:2019 + A2:2021.

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1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document. (Current version replaces all previous editions)

Revision	Description of Change	Date of Issue
0	First Issue	2026-05-21

Table 1

1.2 Introduction

Applicant	ITAB Shop Products AB
Manufacturer	ITAB Shop Products AB
Model Number(s)	SigmaGate 2 900 (Tested Version) SigmaGate 2 900 High SigmaGate 2 1200 (The PCB, Radio HF and LF Part is identical at all 3 models. The Radio HF and LF Part is identical at all 3 models. See Family Request Letter from Applicant)
Serial Number(s)	---
Hardware Version(s)	---
Software Version(s)	Version 4.3.0 (GCB) Version 2.2.0 (Edge board)
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 15 C 2023, ISED RSS-210 Issue 11, 2024 and ISED RSS-Gen Issue 5, 2018 + A1:2019 + A2:2021
Test Plan/Issue/Date	---
Order Number	8227238-1
Date of Receipt of EUT	2026-01-12
Start of Test	2026-01-12
Finish of Test	2026-02-04
Name of Engineer(s)	Michael Ingerl, Alexander Grill, Andreas Staimer
Related Document(s)	ANSI C63.10:2020



1.3 Brief Summar of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15C and ISED Canada RSS-210 and ISED Canada RSS-GEN is shown below.

Section	Specification Clause	Test Description	Result	Comments/Base Standard
3.1	15.249 (a), 15.209, B.2 and 6.13	Spurious Radiated Emissions	Pass	ANSI C63.10:2020
3.2	15.205, N/A and 8.10	Restricted Band Edges	Pass	ANSI C63.10:2020
3.3	RSS-Gen, 6.7	Emission Bandwidth	Pass	ANSI C63.10:2020
3.4	RSS-Gen, 6.11	Transmitter frequency stability	Pass	---
3.5	15.203, 6.8	Antenna requirement	Pass	---
3.6	15.107, N/A and 8.8	Conducted Disturbance at Mains Terminals	Pass	ANSI C63.10:2020

Table 2



1.4 Basic information of EUT

1.4.1 Technical Description

<i>Frequency Band:</i>	902 MHz to 928 MHz		
<i>Operating Channel Width:</i>	110 kHz		
<i>Nominal Operating Frequencies:</i>			
	Channel	Mode	Frequency [MHz]
	Low	Tx	902.5
	Mid	Tx	914.5
	High	Tx	927.5
<i>Type of Antenna:</i>	Internal Antenna		
<i>Supply Voltage:</i>	24 V		
<i>Supply Frequency:</i>	0 Hz (DC)		

1.4.2 Test Configuration

The EUT was 24 V DC power supplied

1.4.3 Mode(s) of Operation

Transmitting on lowest, middle and highest frequency channel



1.5 EUT Modification Record

The table below details modifications made to the EUT during the test programme. The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3

1.6 Test Location

TÜV SÜD Product Service conducted the following tests at our Straubing Test Laboratory.

Test Name	Name of Engineer(s)
Spurious Radiated Emissions	Alexander Grill
Restricted Band Edges	Alexander Grill
Emission Bandwidth	Michael Ingerl
Transmitter frequency stability	Michael Ingerl
Antenna requirement	Michael Ingerl
Conducted Disturbance at Mains Terminal	Andreas Staimer

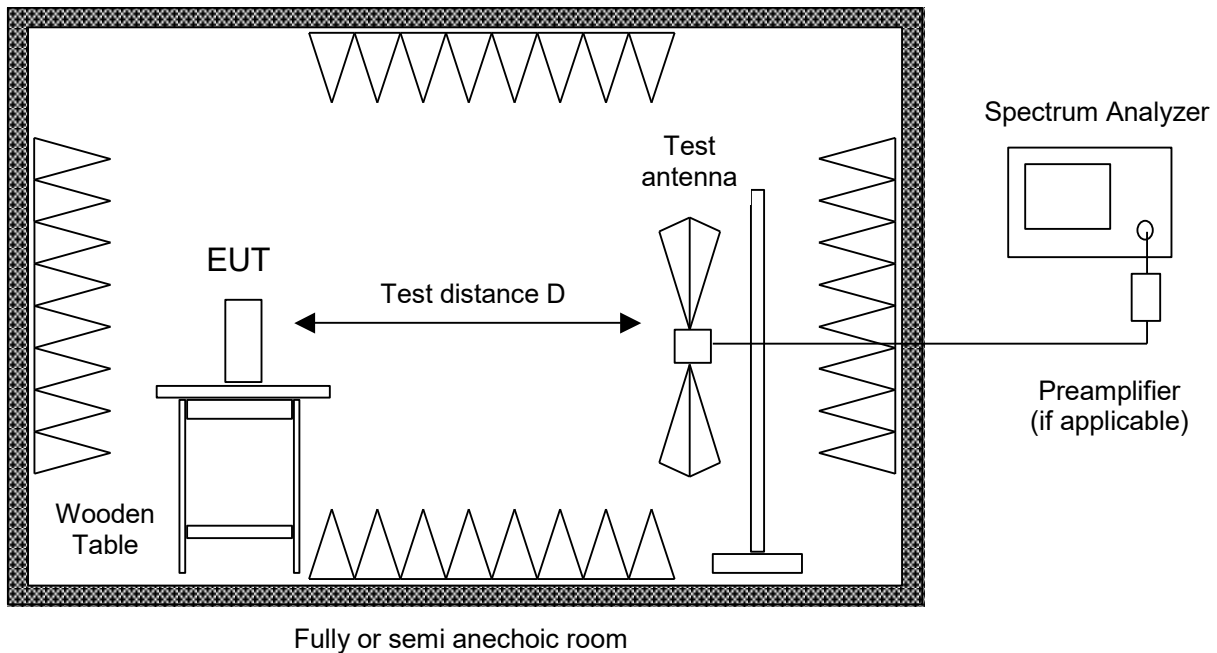
Table 4

Office Address:

Äußere Frühlingstraße 45
94315 Straubing
Germany

2 Test Setup

2.1 Radiated Emission in Fully or Semi Anechoic Room



Radiated emission in fully or semi anechoic room is measured in the frequency range from 30 MHz to the maximum frequency as specified in CFR 47 Part 15 section 15.33.

Measurements are made in both the horizontal and vertical planes of polarization using a spectrum analyzer with the detector function set to peak and resolution as well as video bandwidth set to 100 kHz (below 1 GHz) or 1 MHz (above 1 GHz).

Testing up to 1 GHz is performed with a linear polarized logarithmic periodic antenna combined with a 4:1 broadband dipole ("Trilog broadband antenna"). For testing above 1 GHz horn antennas are used.

All tests below 8.2 GHz are performed at a test distance D of 3 meters. For higher frequencies the test distance may be reduced (e.g. to 1 meter) due to the sensitivity of the measuring instrument(s) and the test results are calculated according to CFR 47 Part 15 section 15.31(f)(1) using an extrapolation factor of 20 dB/decade. If required, preamplifiers are used for the whole frequency range. Special care is taken to avoid overload, using appropriate attenuators and filters, if necessary.

If the radiated emission limits are expressed in terms of the average value of the emission there also is a peak limit corresponding to 20 dB above the maximum permitted average limit. Additionally, if pulsed operation is employed, the average field strength is determined by averaging over one complete pulse train, including blanking intervals, as specified in CFR 47 Part 15 section 15.35(c). If the pulse train exceeds 0.1 second that 0.1 second interval during which the value of the emission is at its maximum is selected for calculation. The pulse train correction is added to the peak value of the emission to get the average value.

Hand-held or body-worn devices are rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission relative to the limit and therefore shall be used for final testing.



During testing the EUT is rotated all around to find the maximum levels of emissions. Equipment and cables are placed and moved within the range of position likely to find their maximum emissions.

For final testing below 1 GHz a semi anechoic room complying with the NSA requirements of ANSI C63.4 for alternative test sites is used (see 2.2). If prescans are recorded in fully anechoic room they are indicated appropriately.

According to section 13 of KDB558074 the requirement for radiated emissions on the band edges was performed with a reduced bandwidth of 100 kHz instead of 1 MHz.

Radiated emission in the frequency range 9 kHz to 30 MHz is measured using an active loop antenna. First the whole spectrum of emission caused by the equipment is recorded at a distance of 3 meters in a fully or semi anechoic room with the detector of the spectrum analyzer or EMI receiver set to peak. This configuration is also used for recording the spectrum of intentional radiators.

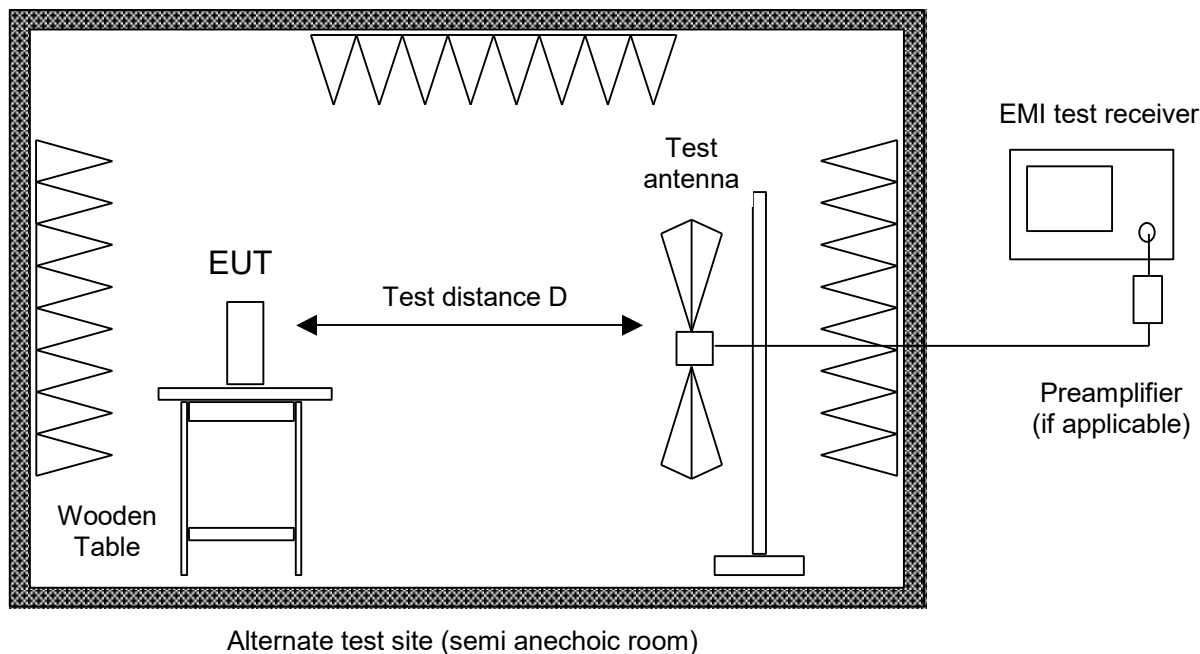
Hand-held or body-worn devices are rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission relative to the limit and therefore shall be used for final testing.

EUT is rotated all around to find the maximum levels of emissions. Equipment and cables are placed and moved within the range of position likely to find their maximum emissions. If worst case emission of the EUT cannot be recorded with EUT in standard position and loop antenna in vertical polarization the EUT (or the radiating part of the EUT) is rotated by 90 degrees instead of changing the loop antenna to horizontal polarization. This procedure is selected to minimize the influence of the environment (e.g. effects caused by the floor especially with longer distances).

Final measurement is performed at a test distance D of 30 meters using an open field test site. In case the regulation requires testing at other distances, the result is extrapolated by either making measurements at an additional distance D of 10 meters to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). In cases of very low emissions measurements are performed at shorter distances and results are extrapolated to the required distance. The provisions of CFR 47 Part 15 sections 15.31(d) and (f)(2) apply. According to CFR 47 Part 15 section 15.209(d) final measurement is performed with detector function set to quasi-peak except for the frequency bands 9 to 90 kHz and 110 to 490 kHz where, for non-pulsed operation, average detector is employed.

If the radiated emission limits are expressed in terms of the average value of the emission there also is a peak limit corresponding to 20 dB above the maximum permitted average limit. Additionally, if pulsed operation is employed, the average field strength is determined by averaging over one complete pulse train, including blanking intervals, as specified in CFR 47 Part 15 section 15.35(c). If the pulse train exceeds 0.1 second that 0.1 second interval during which the value of the emission is at its maximum is selected for calculation. The pulse train correction is added to the peak value of the emission to get the average value.

2.2 Radiated Emission at Alternative Test Site



Radiated emission in the frequency range 30 MHz to 1 GHz is measured within a semi-anechoic room with groundplane complying with the NSA requirements of ANSI C63.4 for alternative test sites. A linear polarized logarithmic periodic antenna combined with a 4:1 broadband dipole ("Trilog broadband antenna") is used. The measurement bandwidth of the test receiver is set to 120 kHz with quasi-peak detector selected.

If the radiated emission limits are expressed in terms of the average value of the emission there also is a peak limit corresponding to 20 dB above the maximum permitted average limit. Additionally, if pulsed operation is employed, the average field strength is determined by averaging over one complete pulse train, including blanking intervals, as specified in CFR 47 Part 15 section 15.35(c). If the pulse train exceeds 0.1 second that 0.1 second interval during which the value of the emission is at its maximum is selected for calculation. The pulse train correction is added to the peak value of the emission to get the average value.

Hand-held or body-worn devices are tested in the position producing the highest emission relative to the limit as verified by prescans in fully anechoic room.

If no prescan in a fully anechoic room is used first a peak scan is performed in four positions to get the whole spectrum of emission caused by EUT with the measuring antenna raised and lowered from 1 to 4 m to find table position, antenna height and antenna polarization for the maximum emission levels.

Data reduction is applied to these results to select those levels having less margin than 10 dB to or exceeding the limit using subranges and limited number of maximums. Further maximization is following.

With detector of the test receiver set to quasi-peak final measurements are performed immediately after frequency zoom (for drifting disturbances) and maximum adjustment. Equipment and cables are placed and moved within the range of position likely to find their maximum emissions.

In cases where prescans in a fully anechoic room are taken (e. g. if EUT is operating for a short time only or battery is discharged quickly) final measurements with quasi-peak detector



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are performed manually at frequencies indicated by prescan with EUT rotating all around and receiving antenna raising and lowering within 1 meter to 4 meters to find the maximum levels of emission.

Equipment and cables are placed and moved within the range of position likely to find their maximum emissions.

For measuring emissions of intentional radiators and receivers a test distance D of 3 meters is selected. Testing of unintentional radiators is performed at a distance of 10 meters. If limits specified for 3 meters shall be used for measurements performed at 10 meters distance the limits are calculated according to CFR 47 Part 15 section 15.31(d) and (f)(1) using an inverse linear-distance extrapolation factor of 20 dB/decade.



3 Test Details

3.1 Spurious Emissions

3.1.1 Specification Reference

FCC 47 CFR Part 15C, ISED Canada RSS-210 and ISED Canada RSS-GEN

3.1.2 Equipment Under Test and Modification State

SigmaGate 2 900, S/N: --- - Modification State 0

3.1.3 Date of Test

2026-01-28 - 2026-01-29

3.1.4 Test Method

Plots for average measurements were taken in accordance with ANSI C63.10:2020 clause 4.1.4.2.3 to characterize the EUT. Where emissions were detected, final average measurements were taken in accordance with ANSI C63.10:2020 clause 4.1.4.2.2.

The plots shown are the characterization of the EUT. The limits on the plots represent the most stringent case for restricted bands, (54/74 dBuV/m) when compared to 20 dBc outside restricted bands. The limits shown have been used as a threshold to determine where further measurements are necessary. Where results are within 10 dB of the limits shown on the plots, further investigation was carried out and reported in results tables.

The following conversion can be applied to convert from dB μ V/m to μ V/m:
 $10^{(\text{Field Strength in dB}\mu\text{V/m}/20)}$.

3.1.5 Environmental Conditions

Ambient Temperature	22.0 °C
Relative Humidity	34.0 %



3.1.6 Test Results

<i>Frequency range</i>	<i>Limit applied</i>	<i>Test distance</i>
9 kHz – 30 MHz	§15.209	3 m
30 MHz – 1 GHz	§15.209	3 m
1 GHz - 13 GHz	§15.209	1 m

Sample calculation:

Final Value (dBµV/m) Reading Value (dBµV) + (Cable attenuation (dB)
= + Antenna Transducer (dB(1/m)))

Additional correction of limit in the frequency range 9 – 490 kHz (300 m to 3 m): +80.0 dB

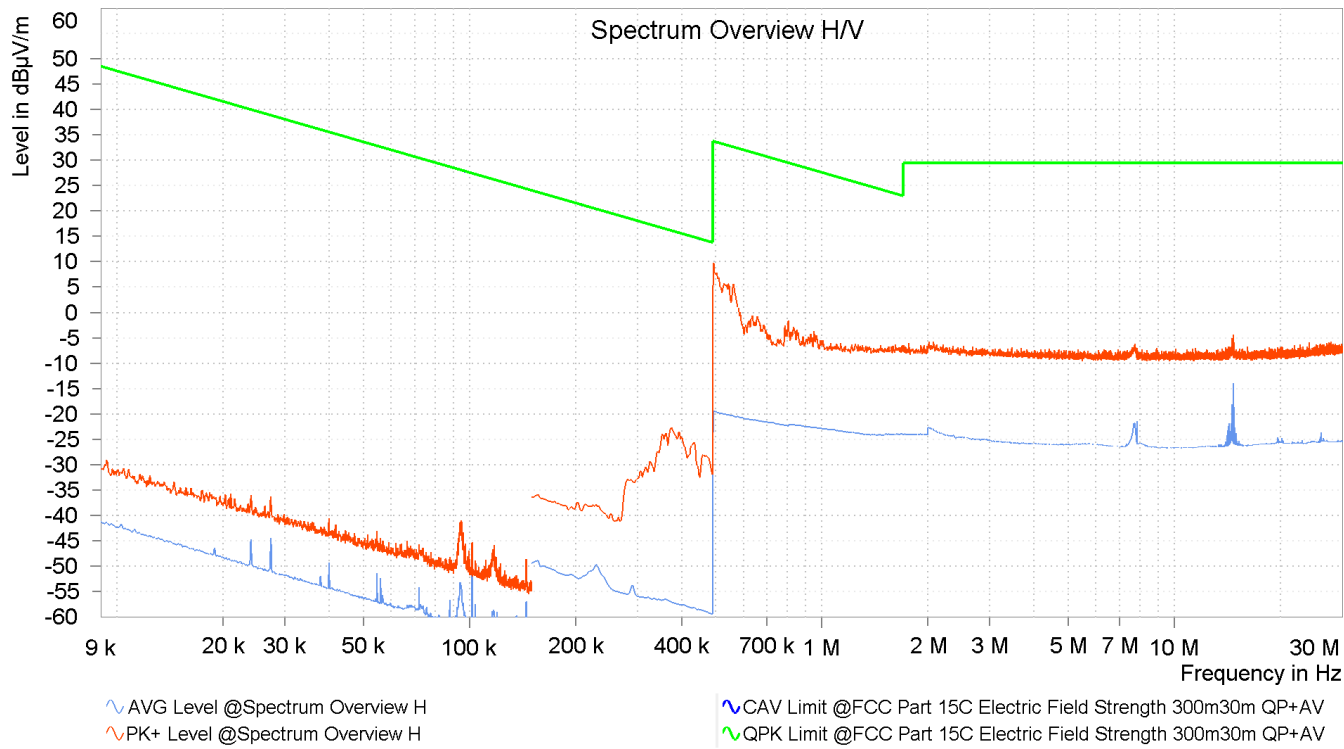
Additional correction of limit in the frequency range 490 kHz – 30 MHz (30 m to 3 m): +40.0 dB

Additional correction of limit in the frequency ranges above 1 GHz (3 m to 1 m): +9.54 dB



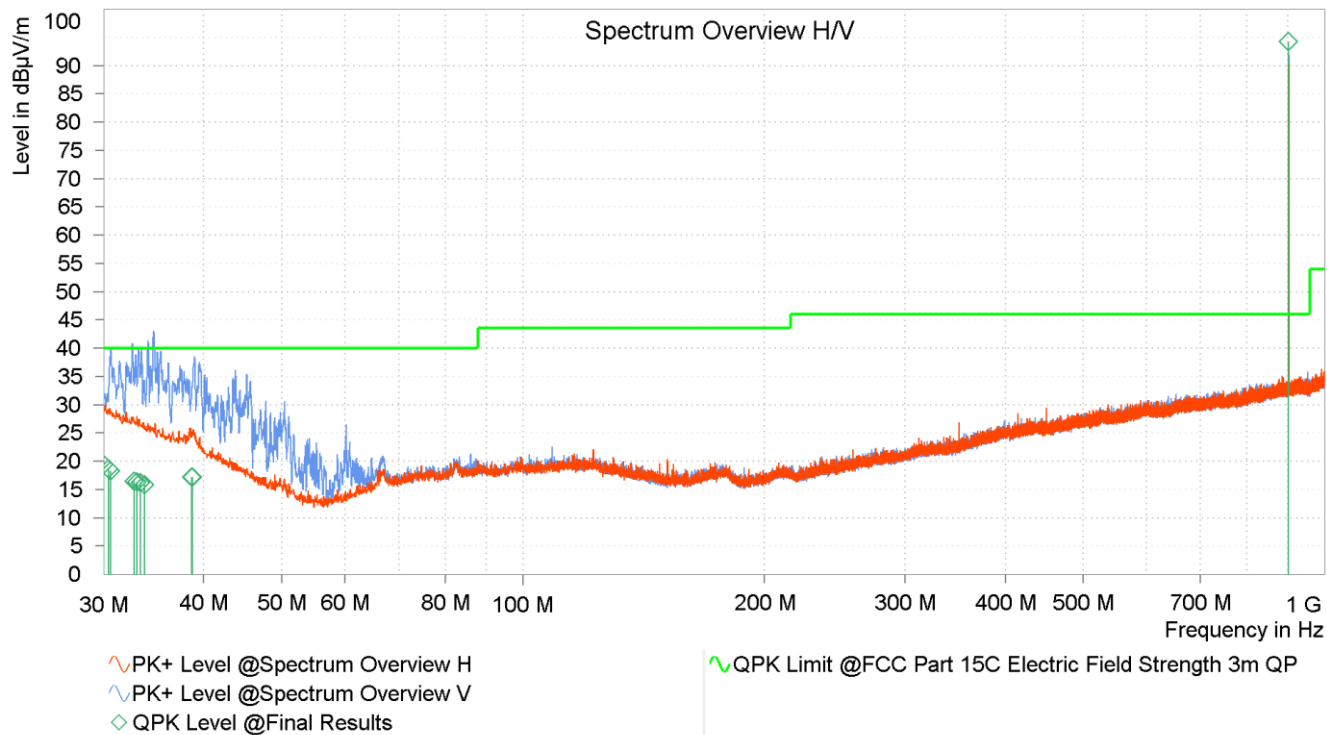
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Transmission on 902.5 MHz:





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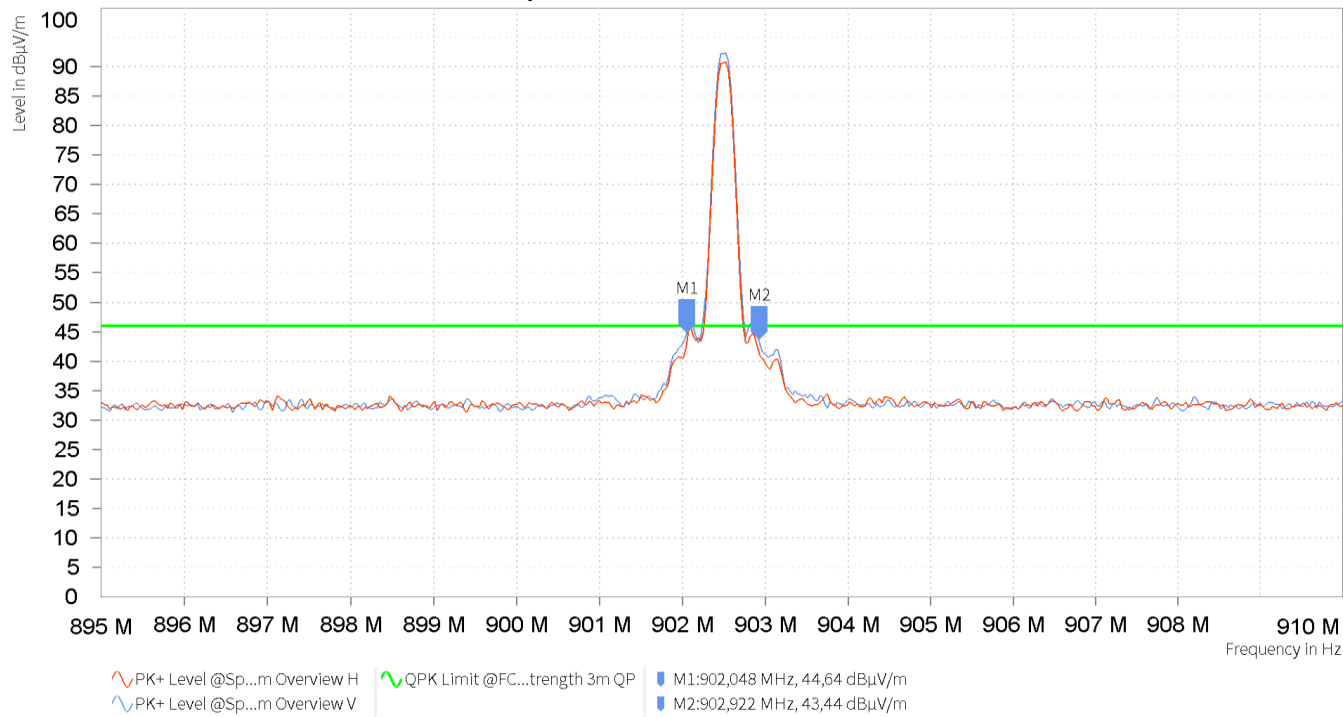
EMI Final Results

Rg	Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Meas. Time [s]
1	30.000	19.43	40.00	20.57	25.22	V	-101	1.00	120.000	15.000
1	30.450	18.59	40.00	21.41	24.95	V	-100	1.22	120.000	15.000
1	30.600	18.33	40.00	21.67	24.86	V	-107	1.10	120.000	15.000
1	32.760	16.44	40.00	23.56	23.62	V	-68	1.16	120.000	15.000
1	33.030	16.33	40.00	23.67	23.47	V	-100	1.22	120.000	15.000
1	33.330	16.17	40.00	23.83	23.30	V	-67	1.06	120.000	15.000
1	33.750	15.85	40.00	24.15	23.07	V	-124	1.16	120.000	15.000
1	38.610	17.18	40.00	22.82	20.29	V	-113	1.00	120.000	15.000
1	38.700	17.23	40.00	22.77	20.23	V	-63	1.00	120.000	15.000
1	902.520	93.68	94.00	0.32	30.40	V	11	1.00	120.000	15.000



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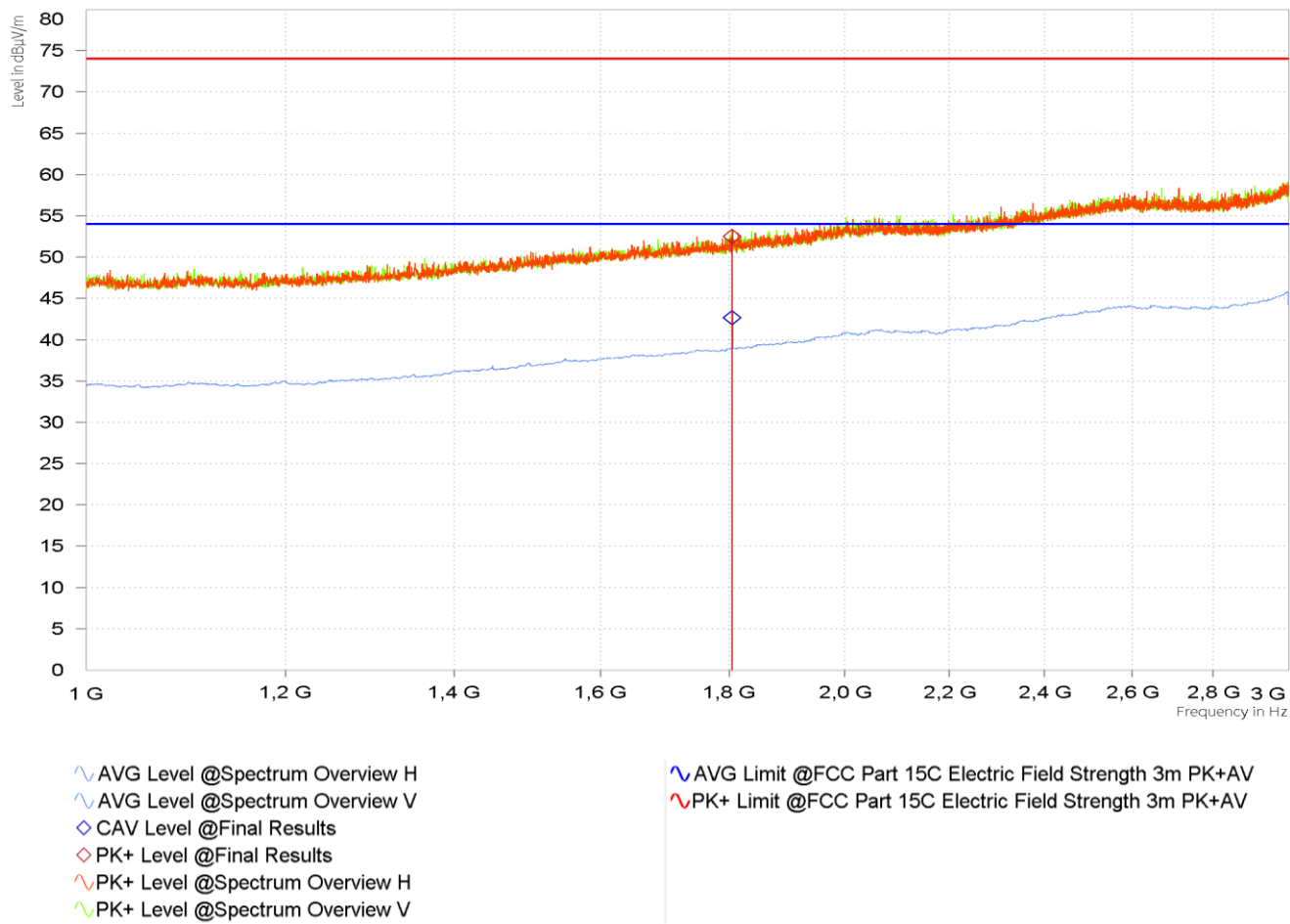
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Spectrum Overview H/V





Product Service

Spectrum Overview H/V



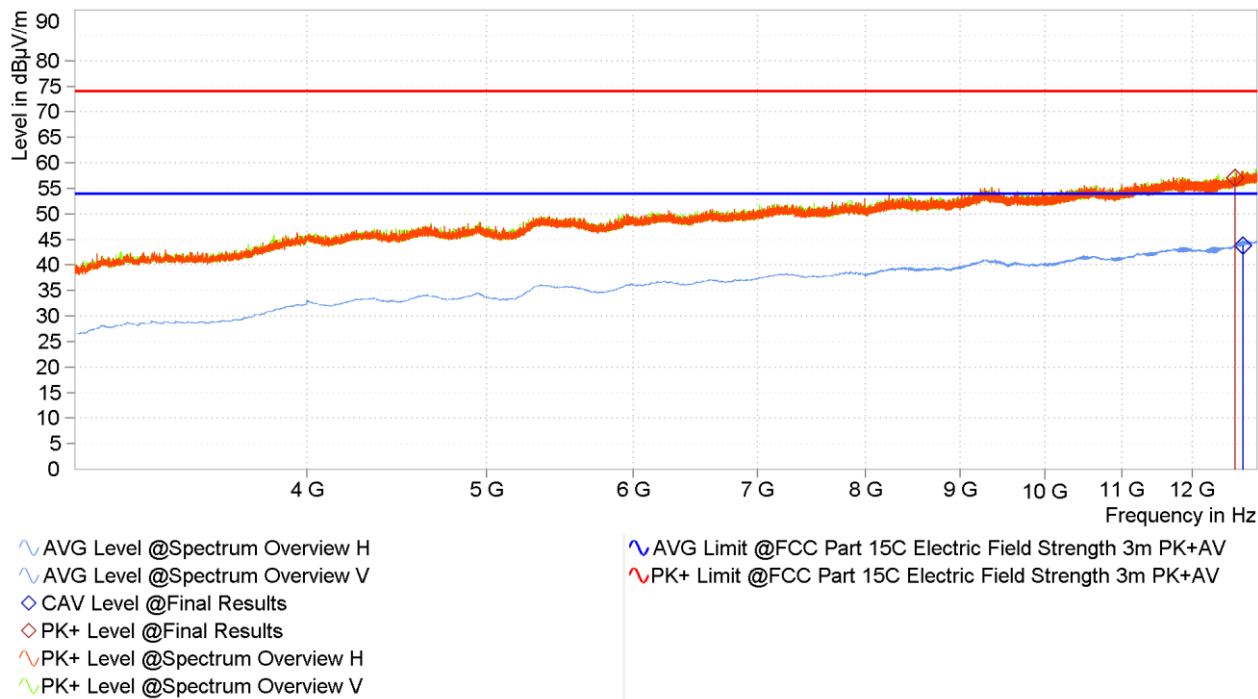
EMI Final Results

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	CAV Level [dBµV/m]	CAV: AVG Limit [dBµV/m]	CAV Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Meas. Time [s]
1	1.805.000	---	---	---	42.68	54.00	11.32	31.82	H	-79	2.13	1.000.000	15.000
1	1.805.000	52.48	74.00	21.52	---	---	---	31.82	H	-60	2.00	1.000.000	15.000



Product Service

Spectrum Overview H/V



EMI Final Results (1/2)

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	CAV Level [dBµV/m]	CAV: AVG Limit [dBµV/m]	CAV Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	12.656.000	57.02	74.00	16.98	---	---	---	41.68	V	90	2.14	1.000.000
1	12.783.250	---	---	---	43.79	54.00	10.21	41.93	H	-52	3.07	1.000.000

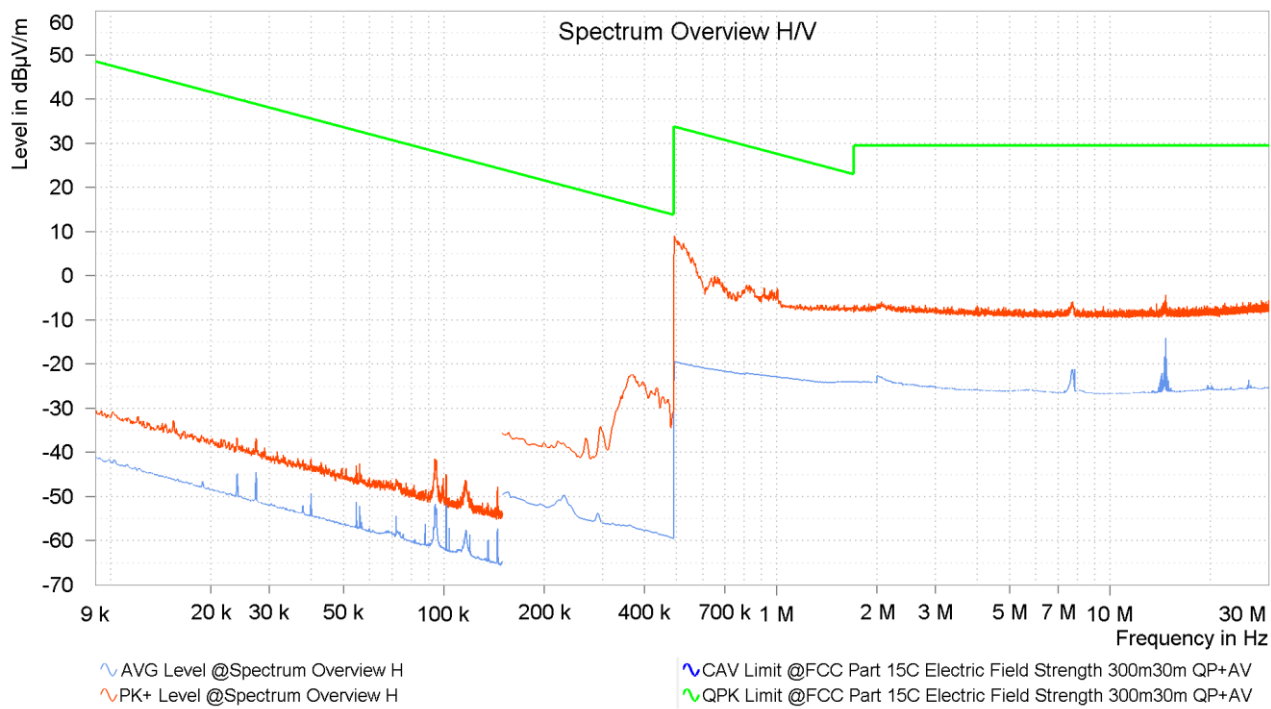
EMI Final Results (2/2)

Rg	Frequency [MHz]	Meas. Time [s]
1	12.656.000	15.000
1	12.783.250	15.000



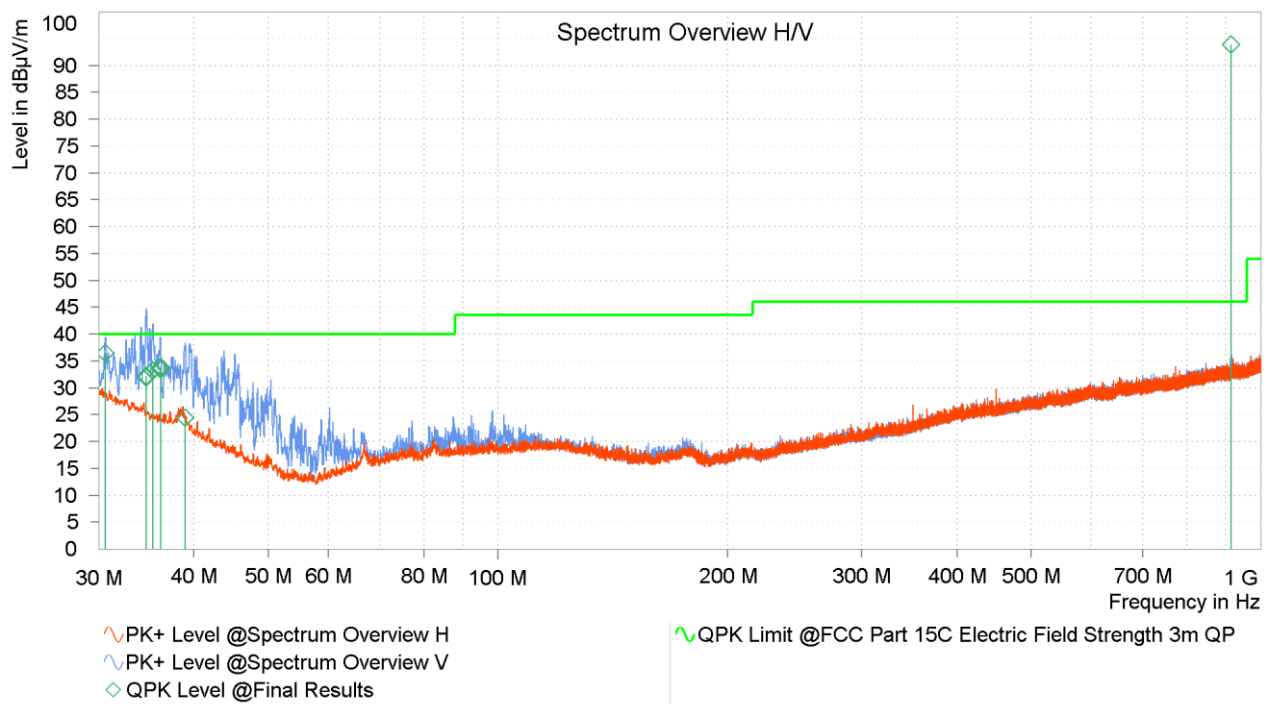
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Transmission on 914.5 MHz:





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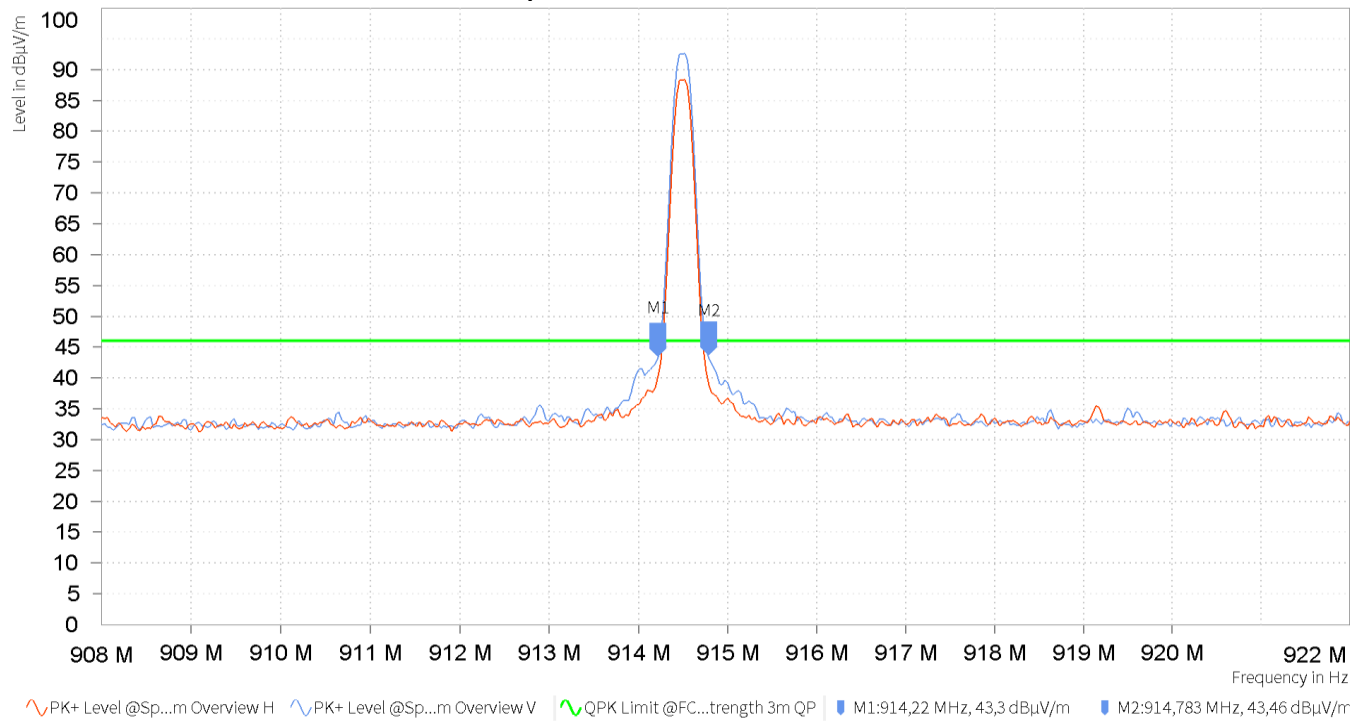
EMI Final Results

Rg	Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Meas. Time [s]
1	30.630	36.38	40.00	3.62	24.84	V	-173	1.09	120.000	15.000
1	34.650	31.87	40.00	8.13	22.57	V	-12	1.00	120.000	15.000
1	34.650	32.20	40.00	7.80	22.57	V	33	1.00	120.000	15.000
1	35.340	33.12	40.00	6.88	22.18	V	177	1.06	120.000	15.000
1	35.340	33.26	40.00	6.74	22.18	V	124	1.00	120.000	15.000
1	36.150	33.82	40.00	6.18	21.73	V	159	1.00	120.000	15.000
1	36.150	33.54	40.00	6.46	21.73	V	134	1.00	120.000	15.000
1	36.150	33.34	40.00	6.66	21.73	V	147	1.00	120.000	15.000
1	38.940	24.40	40.00	15.60	20.09	V	130	1.00	120.000	15.000
1	914.520	93.87	94.00	0.13	30.55	V	13	1.00	120.000	15.000



Product Service

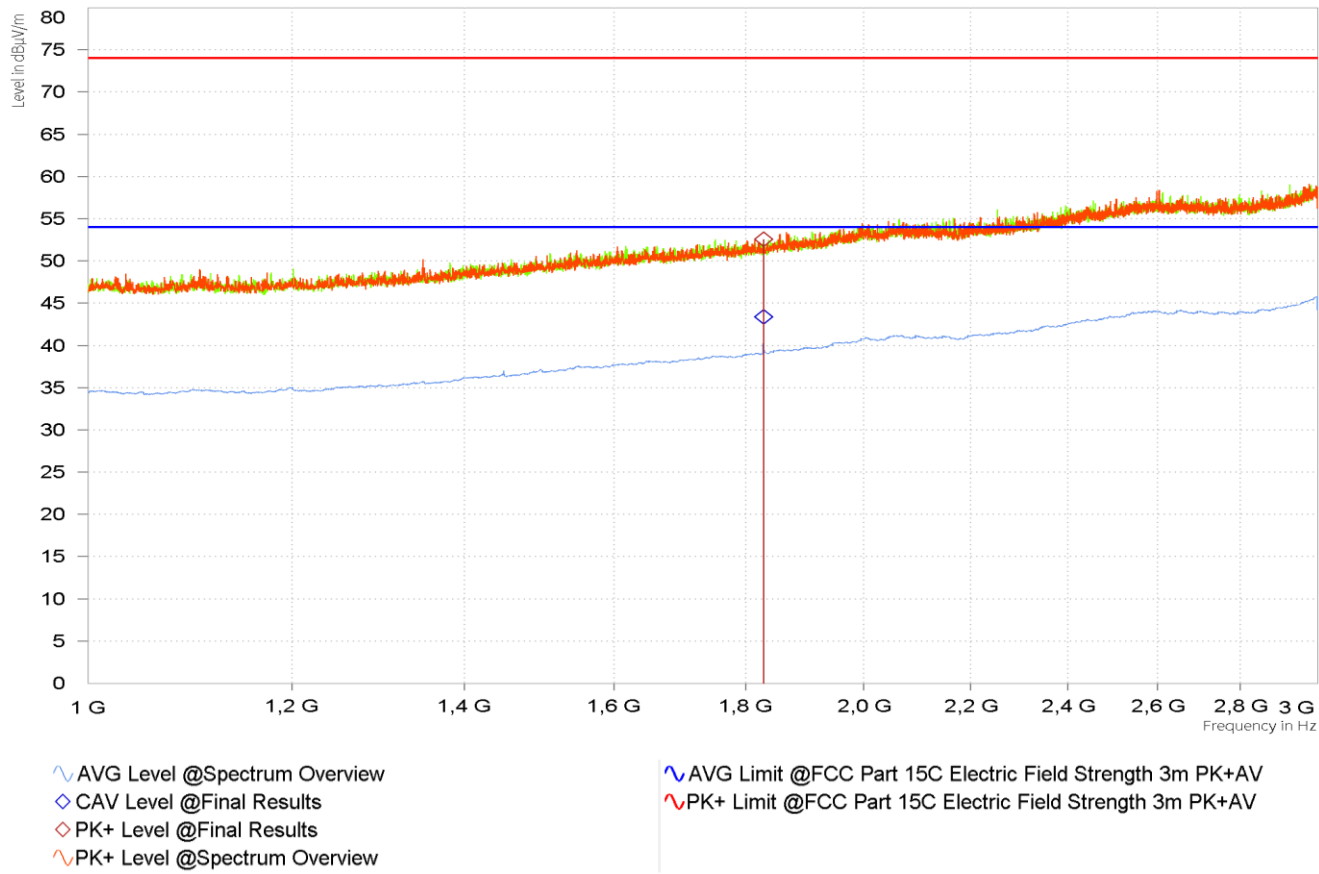
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Spectrum Overview H/V





Product Service

Spectrum Overview



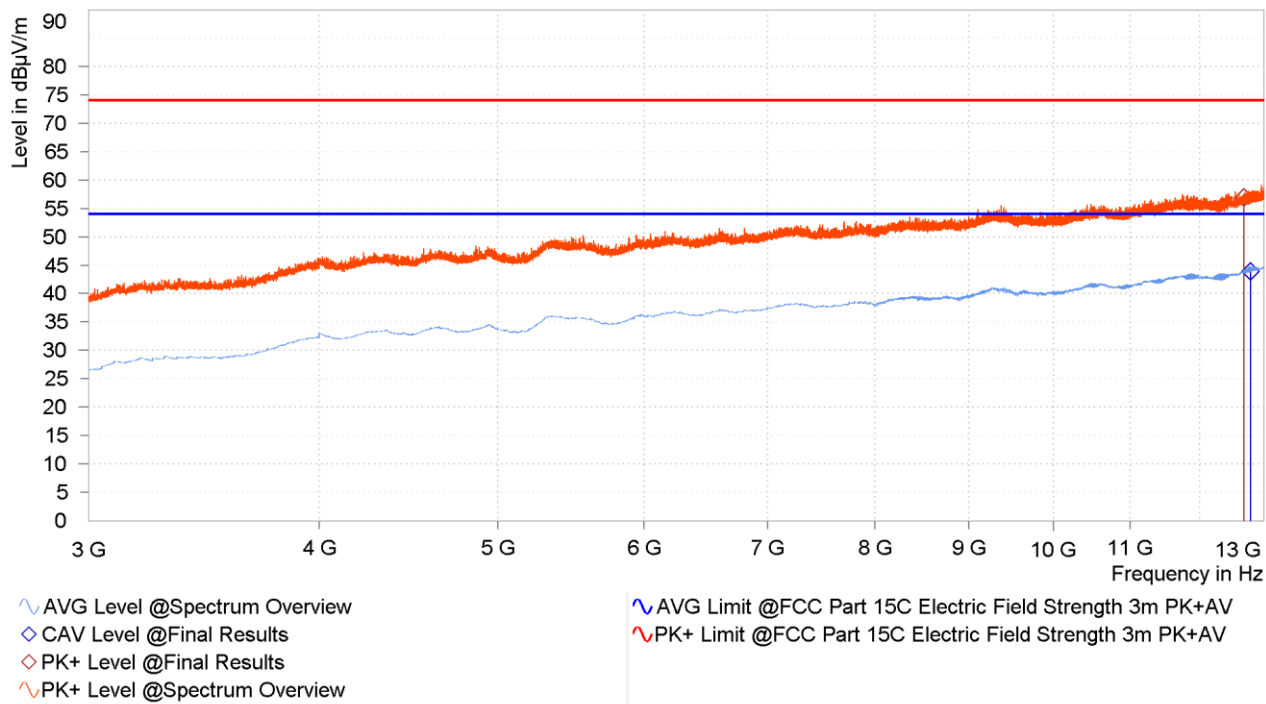
EMI Final Results

Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	CAV Level [dBµV/m]	CAV: AVG Limit [dBµV/m]	CAV Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Meas. Time [s]
1.829.000	---	---	---	43.39	54.00	10.61	32.08	H	-96	2.60	1.000.000	15.000
1.829.000	52.57	74.00	21.43	---	---	---	32.08	H	-56	2.60	1.000.000	15.000



Product Service

Spectrum Overview



EMI Final Results (1/2)

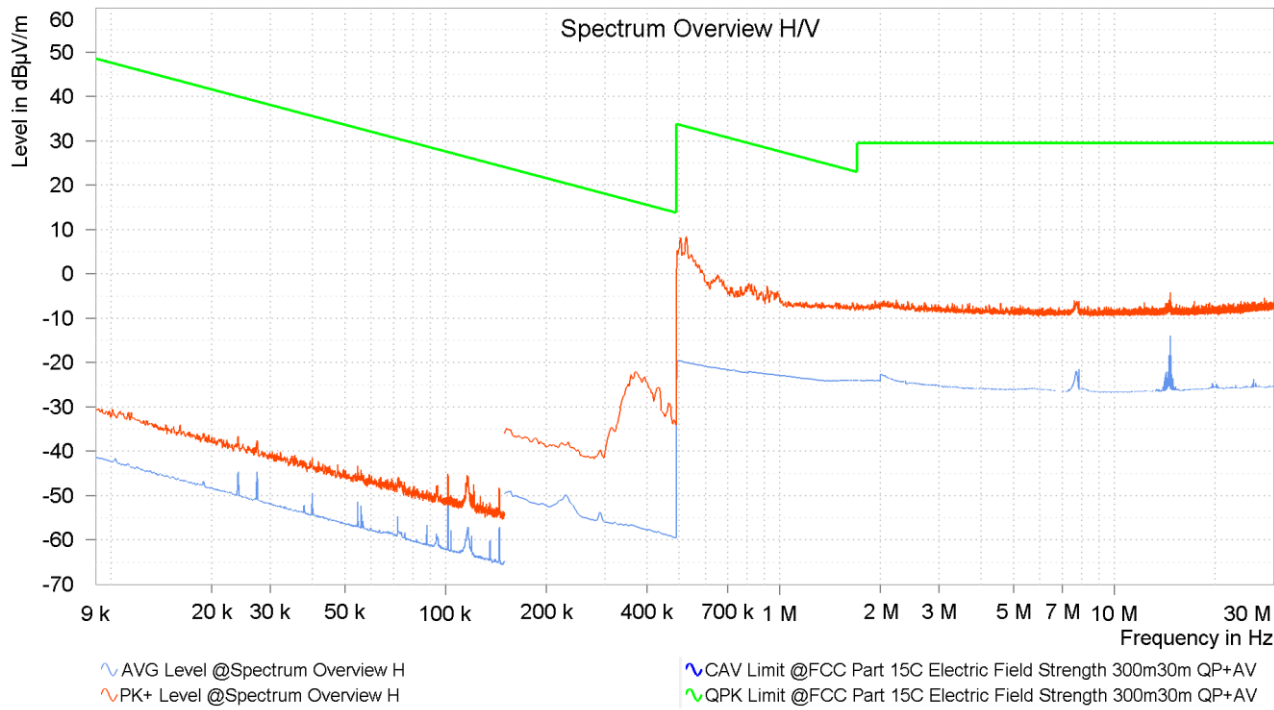
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	CAV Level [dBµV/m]	CAV: AVG Limit [dBµV/m]	CAV Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	12.685.000	56.92	74.00	17.08	---	---	---	41.74	H	181	1.39	1.000.000
1	12.785.000	---	---	---	43.86	54.00	10.14	41.94	H	30	1.10	1.000.000

EMI Final Results (2/2)

Rg	Frequency [MHz]	Meas. Time [s]
1	12.685.000	15.000
1	12.785.000	15.000



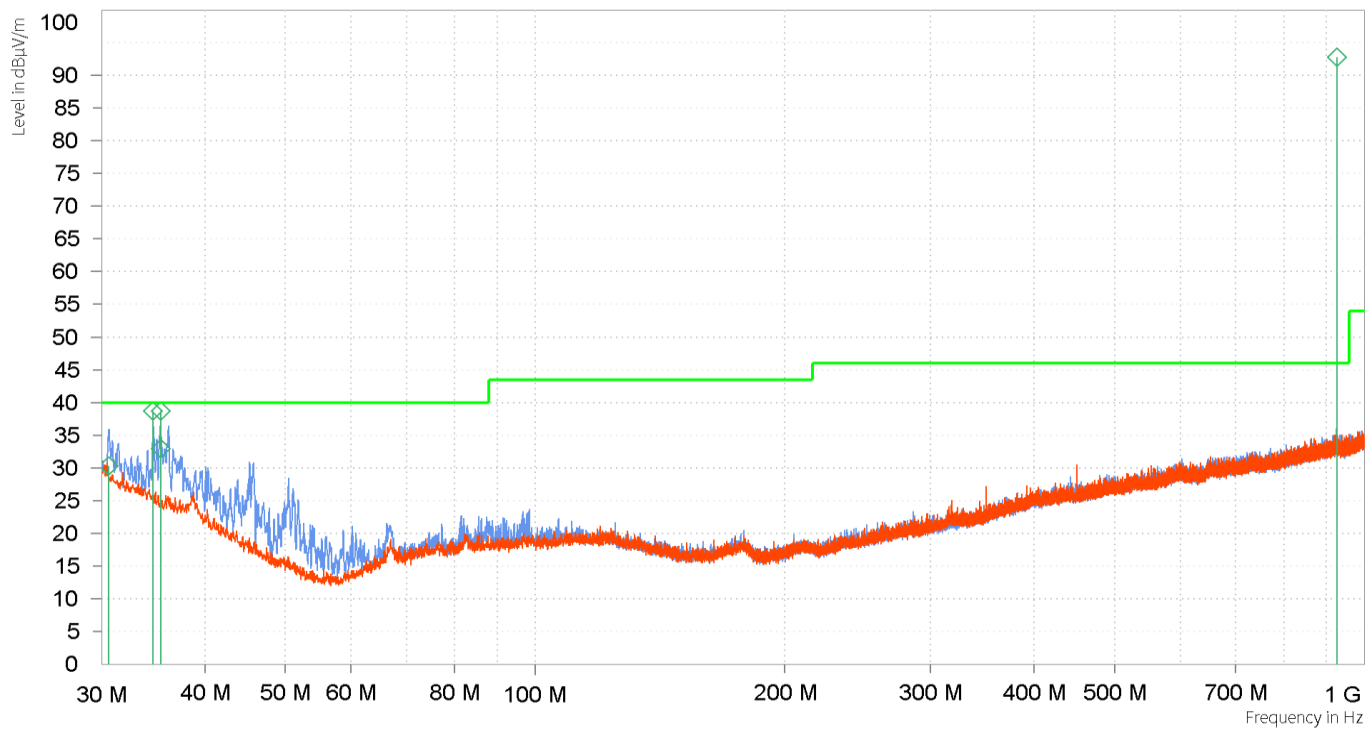
Transmission on 927.5 MHz:





Product Service

Spectrum Overview H/V



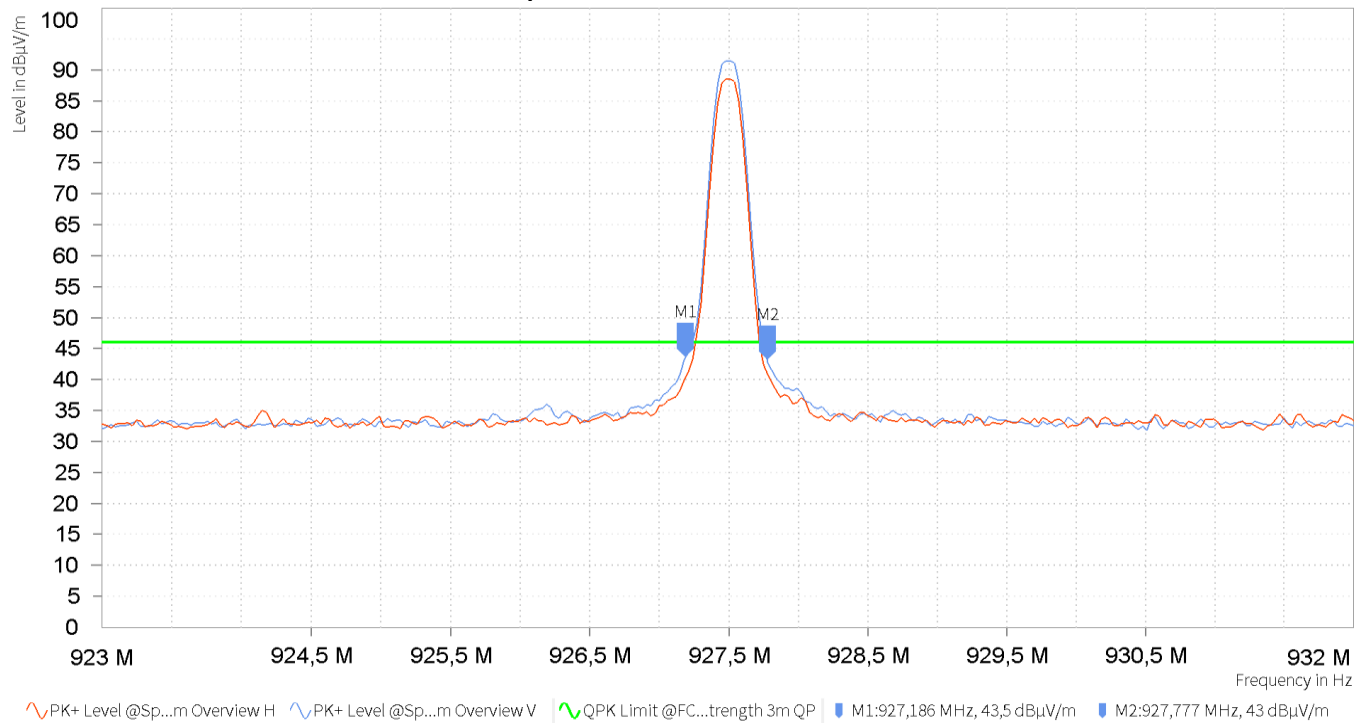
EMI Final Results

Rg	Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Meas. Time [s]
1	30.600	30.34	40.00	9.66	24.86	V	175	1.00	120.000	15.000
1	34.620	38.73	40.00	1.27	22.58	V	138	1.10	120.000	15.000
1	35.340	32.99	40.00	7.01	22.18	V	101	1.00	120.000	15.000
1	35.340	38.67	40.00	1.33	22.18	V	176	1.07	120.000	15.000
1	927.480	92.74	94.00	1.26	30.54	V	21	1.43	120.000	15.000



Product Service

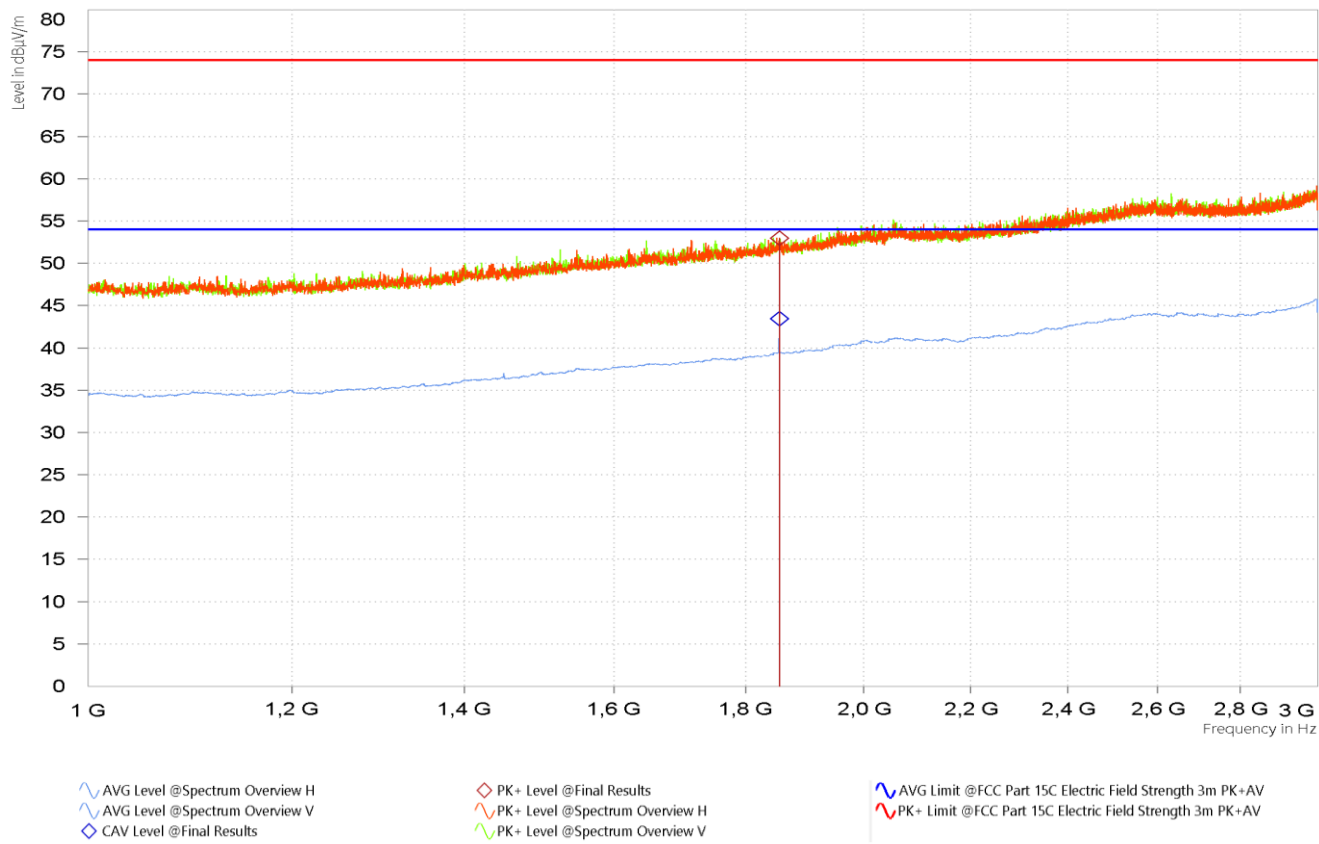
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Spectrum Overview H/V





Product Service

Spectrum Overview H/V



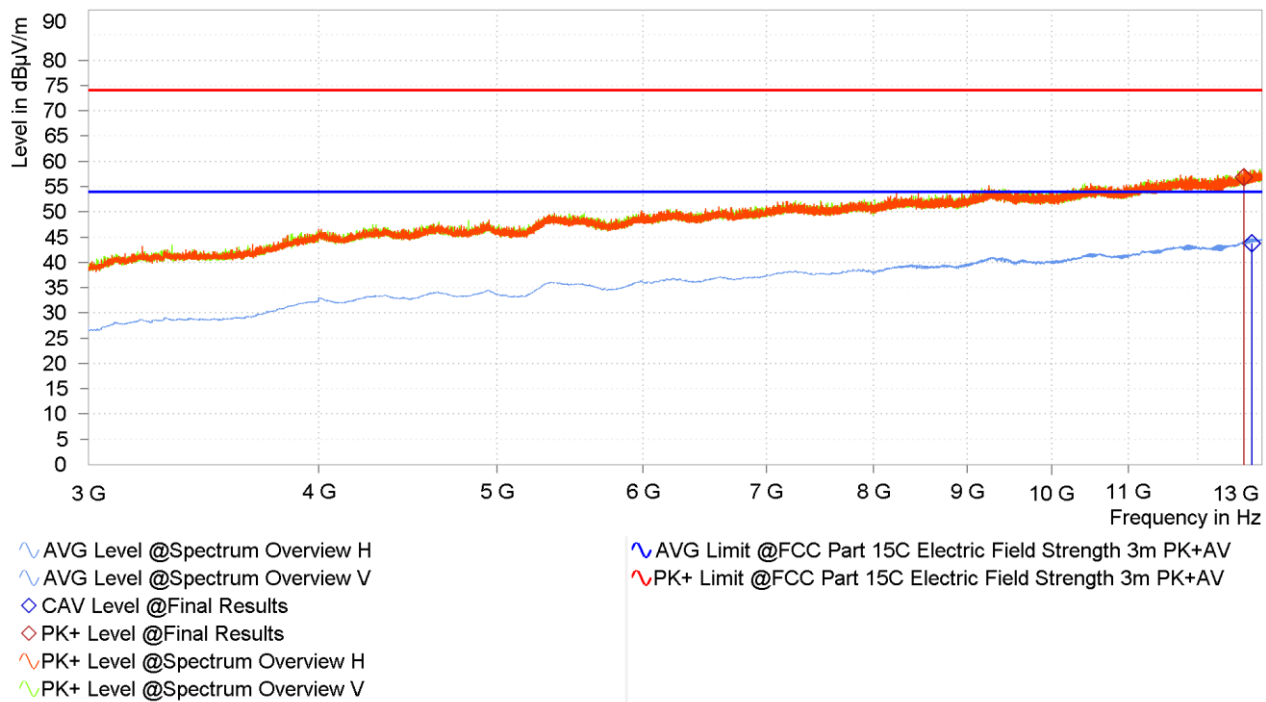
EMI Final Results

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	CAV Level [dBµV/m]	CAV: AVG Limit [dBµV/m]	CAV Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Meas. Time [s]
1	1.855.000	---	---	---	43.44	54.00	10.56	32.37	H	-90	2.21	1.000.000	15.000
1	1.855.000	52.98	74.00	21.02	---	---	---	32.37	H	-60	2.00	1.000.000	15.000



Product Service

Spectrum Overview H/V



EMI Final Results (1/2)

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	CAV Level [dBµV/m]	CAV: AVG Limit [dBµV/m]	CAV Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	12.718.500	56.88	74.00	17.12	---	---	---	41.81	V	-143	1.00	1.000.000
1	12.842.500	---	---	---	43.82	54.00	10.18	42.03	V	-150	2.56	1.000.000

EMI Final Results (2/2)

Rg	Frequency [MHz]	Meas. Time [s]
1	12.718.500	15.000
1	12.842.500	15.000



FCC 47 CFR Part 15, Limit Clause 15.209

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$)	Measurement Distance (m)
0.009 to 0.490	2400/F (kHz)	300
0.490 to 1.705	24000/F (kHz)	30
1705 to 30	30	30
30 to 88	100**	3
88 to 216	150**	3
216 to 960	200**	3
Above 960	500	5

ISED Canada RSS-210

Frequency	Electric Field Strength ($\mu\text{V}/\text{m}$)	Magnetic Field Strength (H-Field) ($\mu\text{A}/\text{m}$)	Measurement Distance (m)
9 - 490 kHz	2,400/F (F in kHz)	2,400/377F (F in kHz)	300
490 - 1,705 kHz	24,000/F (F in kHz)	24,000/377F (F in kHz)	30
1,705 kHz - 30 MHz	30	N/A	30

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$ at 3 m)
30 - 88	100
88 - 216	150
216 - 960	200
> 960	500



3.1.7 Test Location and Test Equipment Used

Radiated Tests were carried out in a semi anechoic room – cabin No. 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
EMI test receiver	Rohde & Schwarz	ESW44	39897	12	2026-03-31
Loop antenna	Schwarzbeck	FMZB 1519 C	72526	36	2028-01-31
ULTRALOG antenna	Rohde & Schwarz	HL562E	61486	36	2026-04-30
Fixed attenuator	Rohde & Schwarz	HL562E-ATT 6dB	61491	36	2026-04-30
Double ridged horn antenna	Rohde & Schwarz	HF907	40089	24	2026-11-30
Horn Antenna with preamplifier	Rohde & Schwarz	A-INFOMW LB-180400H-KF+ TS-	43661	12	2027-01-31
EMC measurement software	Rohde & Schwarz	ELEKTRA 11 Emmision - V5.11.1	68262	---	---
Semi anechoic room	Frankonia	Cabin No. 11	42961	---	---

Table 5

TU - Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment

N/A - Not Applicable



3.2 Restricted Band Edges

3.2.1 Specification Reference

FCC 47 CFR Part 15C, ISED Canada RSS-210 and ISED Canada RSS-GEN

3.2.2 Equipment Under Test and Modification State

SigmaGate 2 900, S/N: --- - Modification State 0

3.2.3 Date of Test

2026-01-28 - 2026-01-29

3.2.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 6.10.5.

Plots for average measurements were taken in accordance with ANSI C63.10 clause 4.1.4.2.3. These are shown for information purposes and were used to determine the worst case measurement point. Final average measurements were then taken in accordance with ANSI C63.10 clause 4.1.4.2.2. to obtain the measurement result recorded in the test results tables.

The following conversion can be applied to convert from dB μ V/m to μ V/m:
 $10^{(\text{Field Strength in dB}\mu\text{V/m}/20)}$.

3.2.5 Environmental Conditions

Ambient	22.0 °C
Temperature	
Relative Humidity	34.0 %

3.2.6 Test Results

Results are shown in chapter 3.1



FCC 47 CFR Part 15, Limit Clause 15.205
and
ISED Canada RSS-GEN, Limit Clause 8.10

3.2.7 Test Location and Test Equipment Used

Radiated Tests were carried out in a semi anechoic room – cabin No. 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
EMI test receiver	Rohde & Schwarz	ESW44	39897	12	2026-03-31
Loop antenna	Schwarzbeck	FMZB 1519 C	72526	36	2028-01-31
ULTRALOG antenna	Rohde & Schwarz	HL562E	61486	36	2026-04-30
Fixed attenuator	Rohde & Schwarz	HL562E-ATT 6dB	61491	36	2026-04-30
Double ridged horn antenna	Rohde & Schwarz	HF907	40089	24	2026-11-30
Horn Antenna with preamplifier	Rohde & Schwarz	A-INFOMW LB-180400H-KF+ TS-	43661	12	2027-01-31
EMC measurement software	Rohde & Schwarz	ELEKTRA 11 Emmision - V5.11.1	68262	---	---
Semi anechoic room	Frankonia	Cabin No. 11	42961	---	---

Table 6

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment
N/A - Not Applicable



3.3 Emission Bandwidth

3.3.1 Specification Reference

FCC 47 CFR Part 15C, ISED Canada RSS-210 and ISED Canada RSS-GEN

3.3.2 Equipment Under Test and Modification State

SigmaGate 2 900, S/N: --- - Modification State 0

3.3.3 Date of Test

2026-02-04

3.3.4 Test Method

Test according to KDB 558074 D01 DTS Meas Guidance v05 and ANSI C63.10:2020 11.8.1

3.3.5 Environmental Conditions

Ambient Temperature 22.0 °C
Relative Humidity 35.0 %

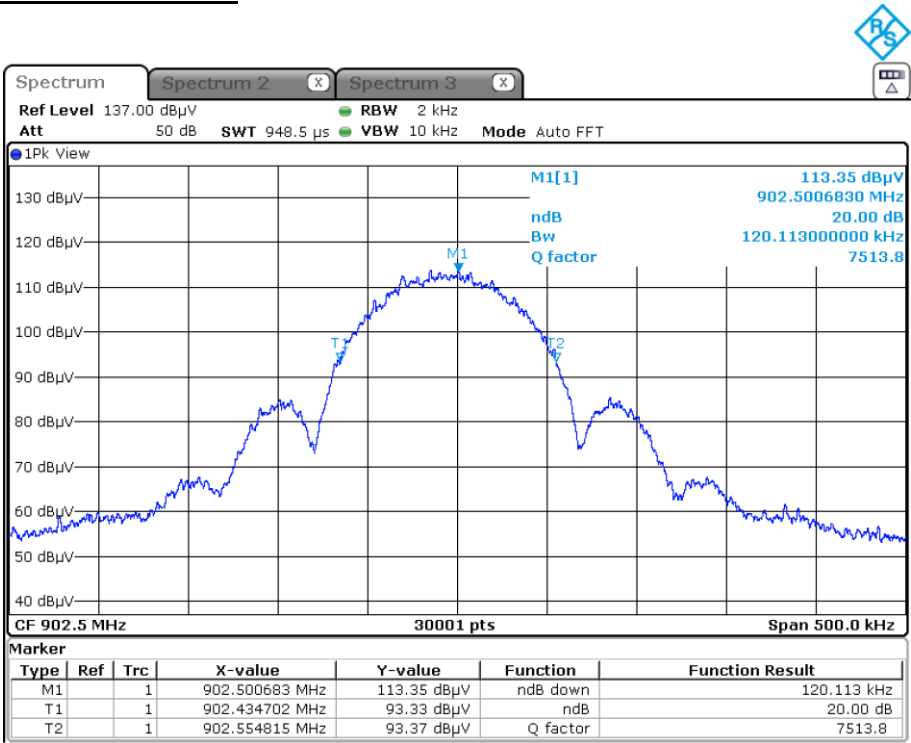
3.3.6 Test Results

Frequency (MHz)	20 dB Bandwidth (kHz)	6 dB Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
902.5	120.113	64.681	105.463
914.5	119.729	59.681	105.579
927.5	119.029	63.865	106.463



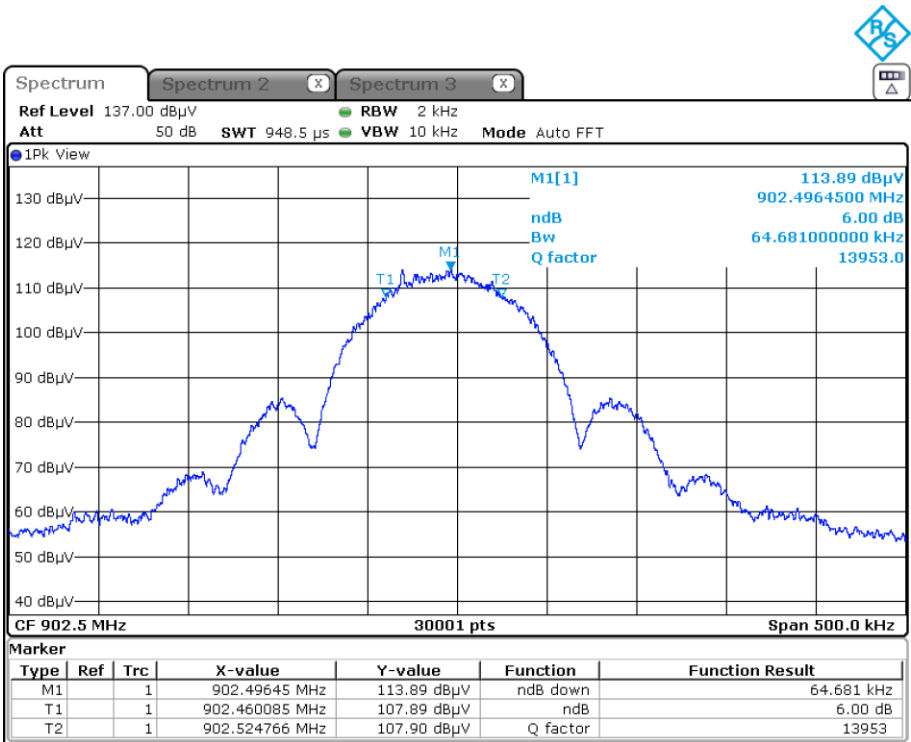
Product Service

Transmission on 902.5 MHz



Date: 3.FEB.2026 10:43:04

20dB-BW, 902.5 MHz,

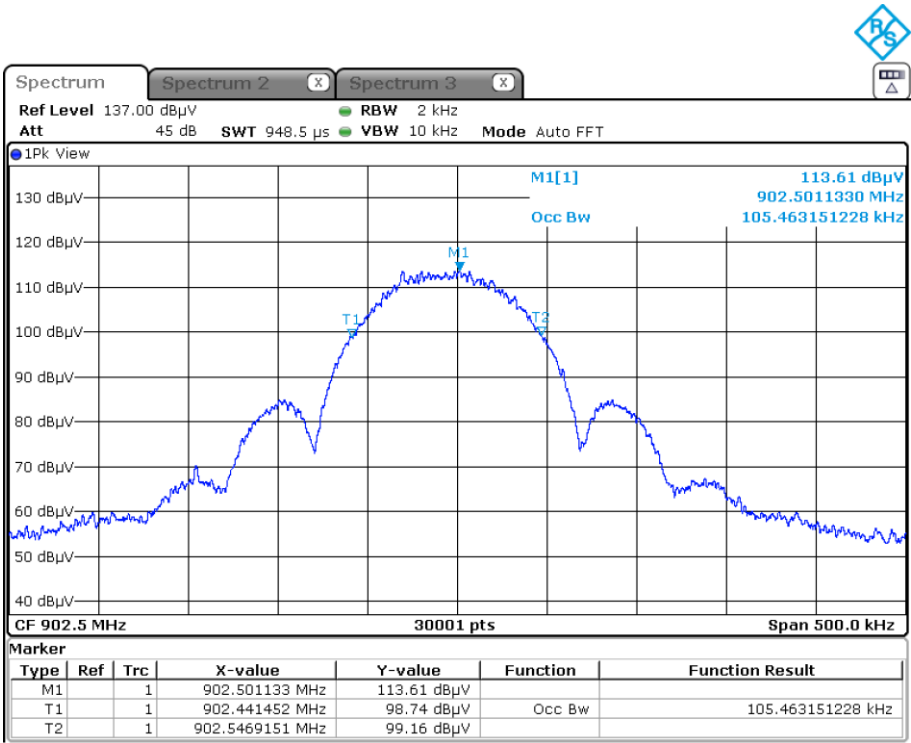


Date: 3.FEB.2026 10:41:06

6dB-BW, 902.5 MHz



Product Service



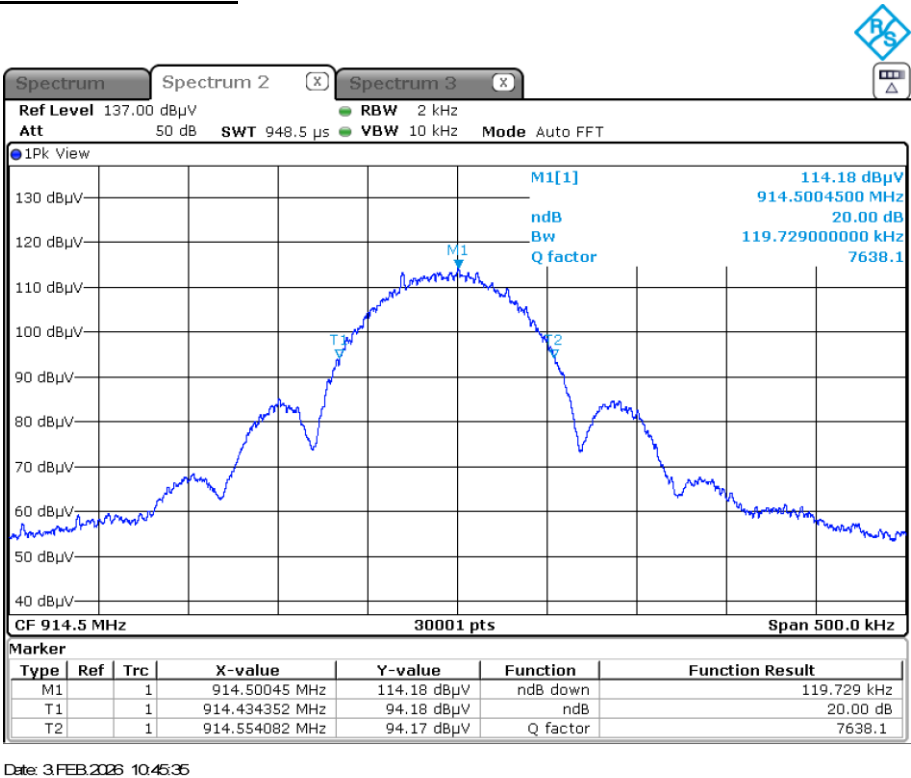
Date: 3 FEB 2026 10:44:08

99%-BW, 902.5 MHz

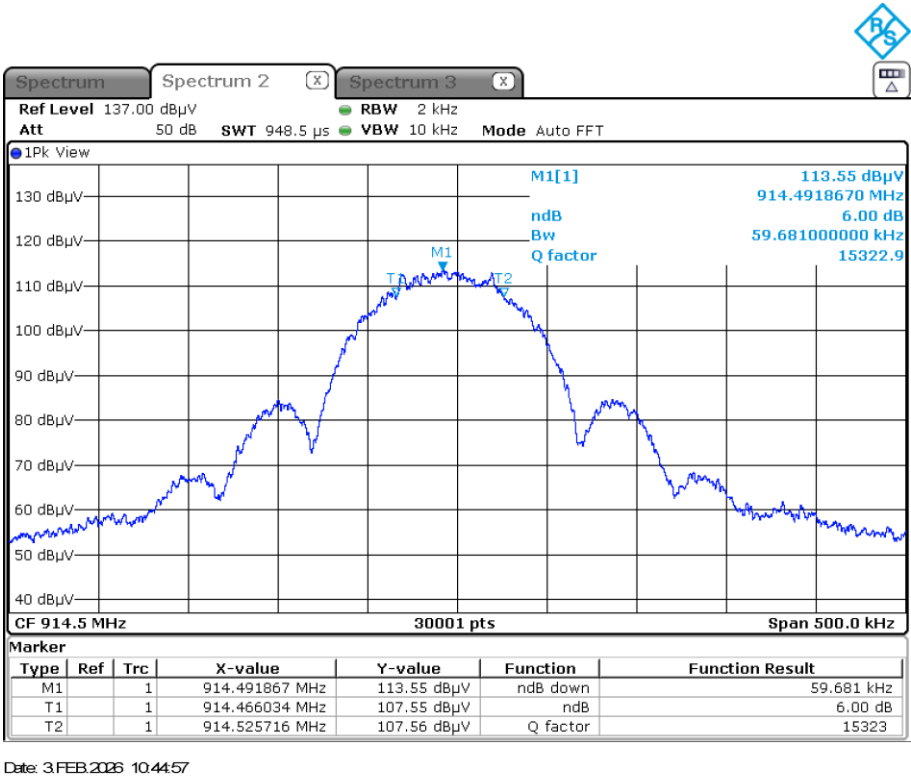


Product Service

Transmission on 914.5 MHz



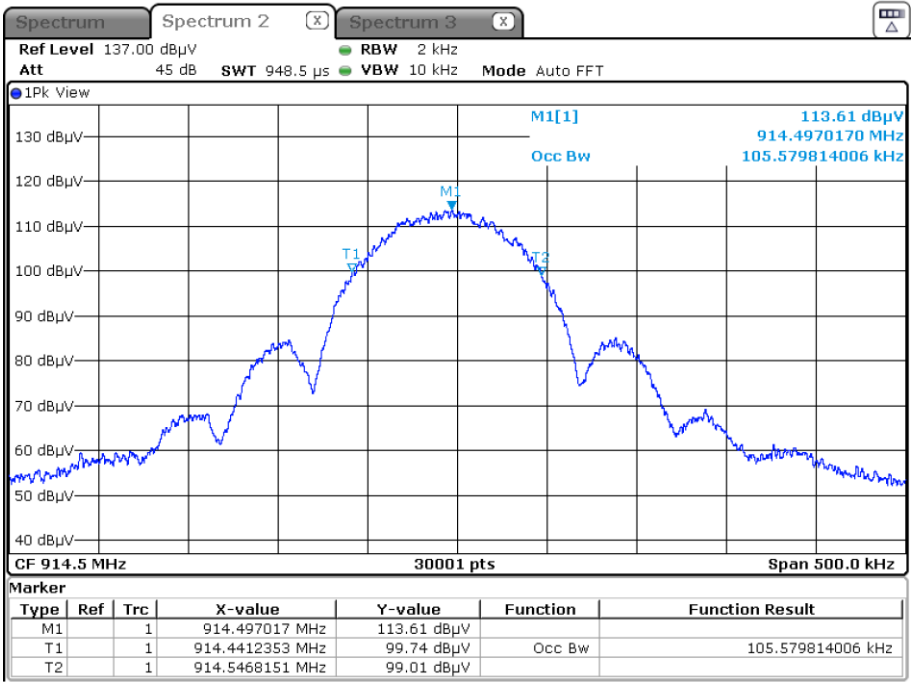
20dB-BW, 914.5 MHz



6dB-BW, 914.5 MHz



Product Service



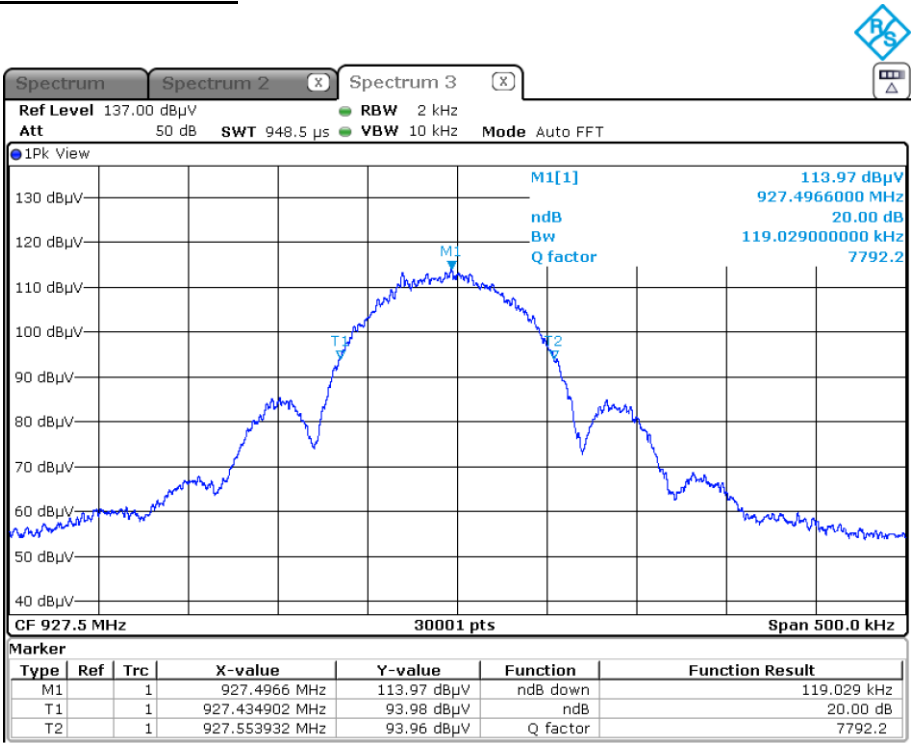
Date: 3.FEB.2026 10:46:09

99%-BW, 914.5 MHz



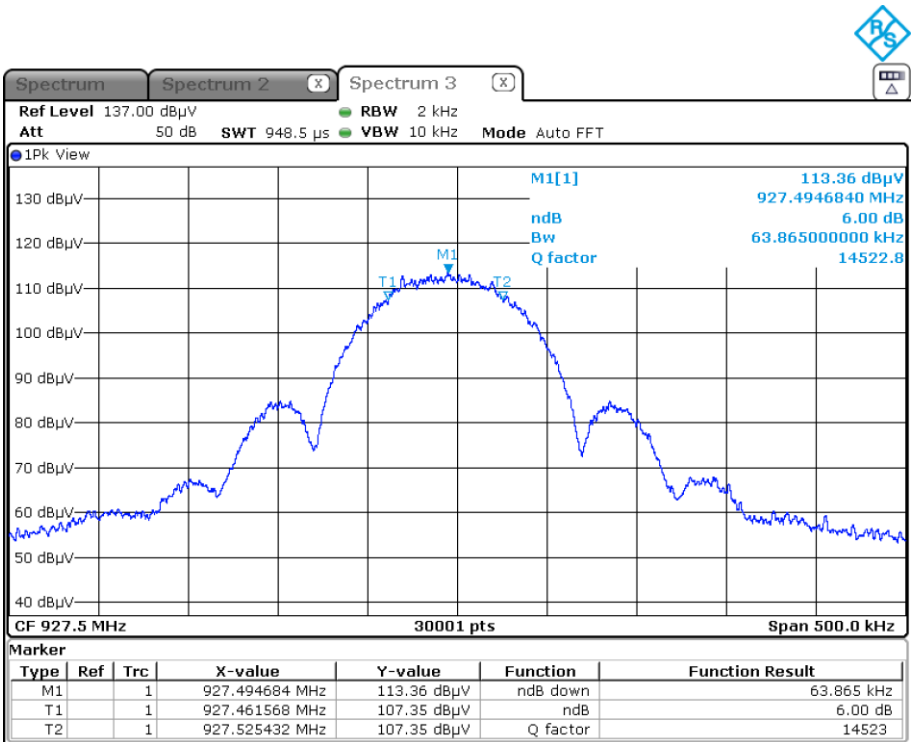
Product Service

Transmission on 927.5 MHz



Date: 3.FEB.2026 10:48:08

20dB-BW, 927.5 MHz

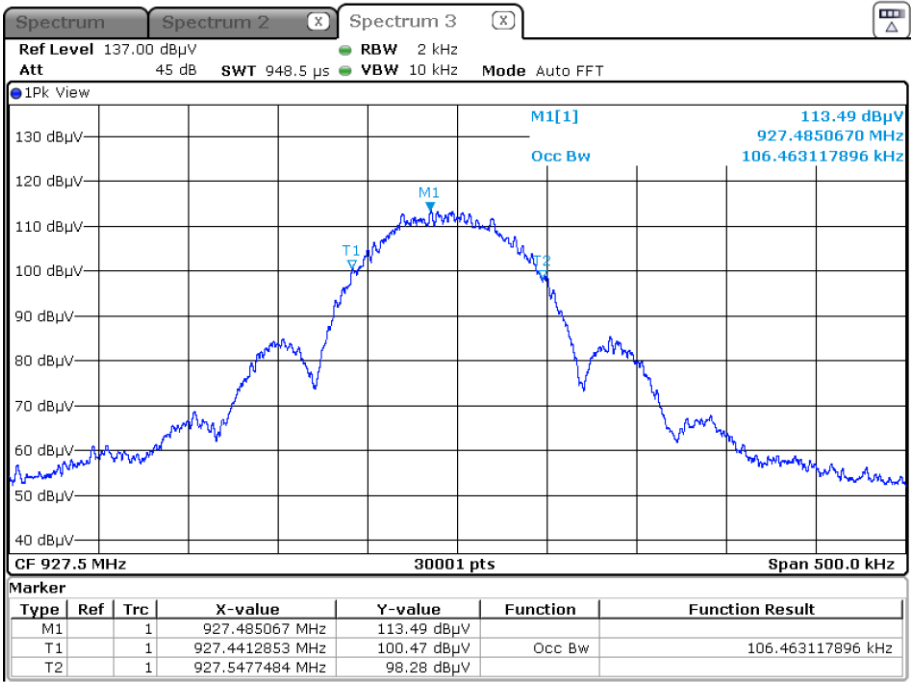


Date: 3.FEB.2026 10:47:41

6dB-BW, 927.5 MHz



Product Service



Date: 3.FEB.2026 10:47:03

99%-BW, 927.5 MHz



No Limit

3.3.7 Test Location and Test Equipment Used

Conducted test was carried out in Non-shielded room with Test system TS8997.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Spectrum and signal analyser	Rohde & Schwarz	FSV40	20219	24	2026-03-31
Switching Device	Rohde & Schwarz	OSP120 I	20248	24	2026-07-31
Switching Device	Rohde & Schwarz	OSP120 II	38807	36	2026-08-31
EMC Measurement Software	Rohde & Schwarz	EMC32 TS8997 - V10.50.00	44381	---	---

Table 7

TU - Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment

N/A - Not Applicable



3.4 Transmitter frequency stability

3.4.1 Specification Reference

RSS-Gen

3.4.2 Equipment Under Test and Modification State

SigmaGate 2 900, S/N: --- - Modification State 0

3.4.3 Date of Test

2026-02-04

3.4.4 Test Method

RSS-Gen, Issue 5, March 2019, chapter 6.11

3.4.5 Environmental Conditions

Ambient	
Temperature	22.0 °C
Relative Humidity	35.0 %



3.4.6 Test Results

Temperature	Voltage	Frequency (MHz)	Frequency Deviation (%)
-30.0 °C	24 V DC	902.5	0.00052
-20.0 °C	24 V DC	902.5	0.00050
-10.0 °C	24 V DC	902.5	0.00043
0.0 °C	24 V DC	902.5	0.00039
+10.0 °C	24 V DC	902.5	0.00035
+20.0 °C	24 V DC	902.5	0.00000
+30.0 °C	24 V DC	902.5	0.00042
+40.0 °C	24 V DC	902.5	0.00041
+50.0 °C	24 V DC	902.5	0.00049
+20.0 °C	20.4 V DC	902.5	0.00050
+20.0 °C	27.6 V DC	902.5	0.00044

Temperature	Voltage	Frequency (MHz)	Frequency Deviation (%)
-30.0 °C	24 V DC	927.5	0.00045
-20.0 °C	24 V DC	927.5	0.00040
-10.0 °C	24 V DC	927.5	0.00039
0.0 °C	24 V DC	927.5	0.00046
+10.0 °C	24 V DC	927.5	0.00035
+20.0 °C	24 V DC	927.5	0.00000
+30.0 °C	24 V DC	927.5	0.00039
+40.0 °C	24 V DC	927.5	0.00041
+50.0 °C	24 V DC	927.5	0.00044
+20.0 °C	20.4 V DC	927.5	0.00045
+20.0 °C	27.6 V DC	927.5	0.00046



3.4.7 Test Location and Test Equipment Used

Conducted test was carried out in Non-shielded room with Test system TS8997.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Spectrum and signal analyser	Rohde & Schwarz	FSV40	20219	24	2026-03-31
Switching Device	Rohde & Schwarz	OSP120 I	20248	24	2026-07-31
Switching Device	Rohde & Schwarz	OSP120 II	38807	36	2026-08-31
EMC Measurement Software	Rohde & Schwarz	EMC32 TS8997 - V10.50.00	44381	---	---
Climatic test chamber	Espec	PL-4J	38958	18	2026-09-06

Table 8

TU - Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment

N/A - Not Applicable



3.5 Antenna requirement

3.5.1 Specification Reference

FCC 47 CFR Part 15 C, Clauses 15.203
ISED RSS-Gen, Clauses 6.8

3.5.2 Equipment under Test and Modification State

SigmaGate 2 900, S/N: --- - Modification State 0

3.5.3 Specification Limits

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.



Product Service

3.5.4 Test Results

The EUT uses a internal antenna

3.6 Conducted Disturbance at Mains Terminals

3.6.1 Specification Reference

FCC 47 CFR Part 15B and RSS-Gen, Clause 15.107 and 8.8

3.6.2 Equipment Under Test and Modification State

Sigmagate 2 900, S/N: ---. - Modification State 0

3.6.3 Date of Test

2026-01-12

3.6.4 Test Method

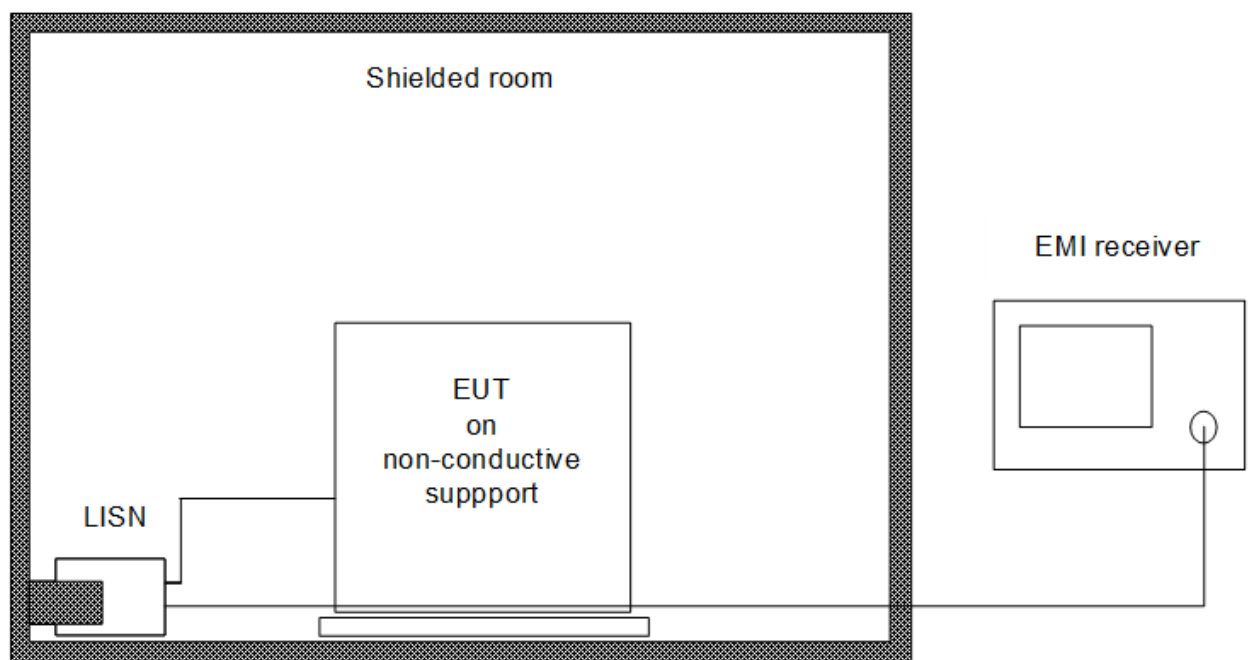


Figure 1

The EUT was placed on a non-conductive support 0.1m above a reference ground plane. All power was connected to the EUT through a Line Impedance Stabilization Network (LISN). Conducted disturbance voltage measurements on mains lines were made at the output of the LISN. The LISN was placed 0.8 m from the boundary of the EUT and bounded to the reference ground plane. To simplify testing with quasi-peak and linear average (cisp-r-average) detector the following procedure is used: First the whole spectrum of emission caused by the equipment under test (EUT) is recorded with the detectors set to peak and average using CISPR bandwidth of 9 kHz. After that all emission levels having less margin than 10 dB to or exceeding the average limit are retested with the detectors set to quasi-peak and average. If the average limit is kept with quasi-peak levels measurement with average detector is optional. In cases of emission levels between quasi-peak and average limit an additional measurement with average detector has to be performed.



Product Service

3.6.5 Environmental Conditions

Ambient Temperature 23.0 °C
Relative Humidity 24.0 %

3.6.6 Specification Limits

Required Specification Limits - Class B			
Line Under Test	Frequency Range (MHz)	Quasi-Peak Test Limit (dBµV)	CISPR Average Test Limit (dBµV)
AC Power Port	0.15 to 0.5	66 to 56 ⁽¹⁾	56 to 46 ⁽¹⁾
	0.5 to 5	56	46
	5 to 30	60	50
Supplementary information: Note 1. Decreases with the logarithm of the frequency.			

Table 9



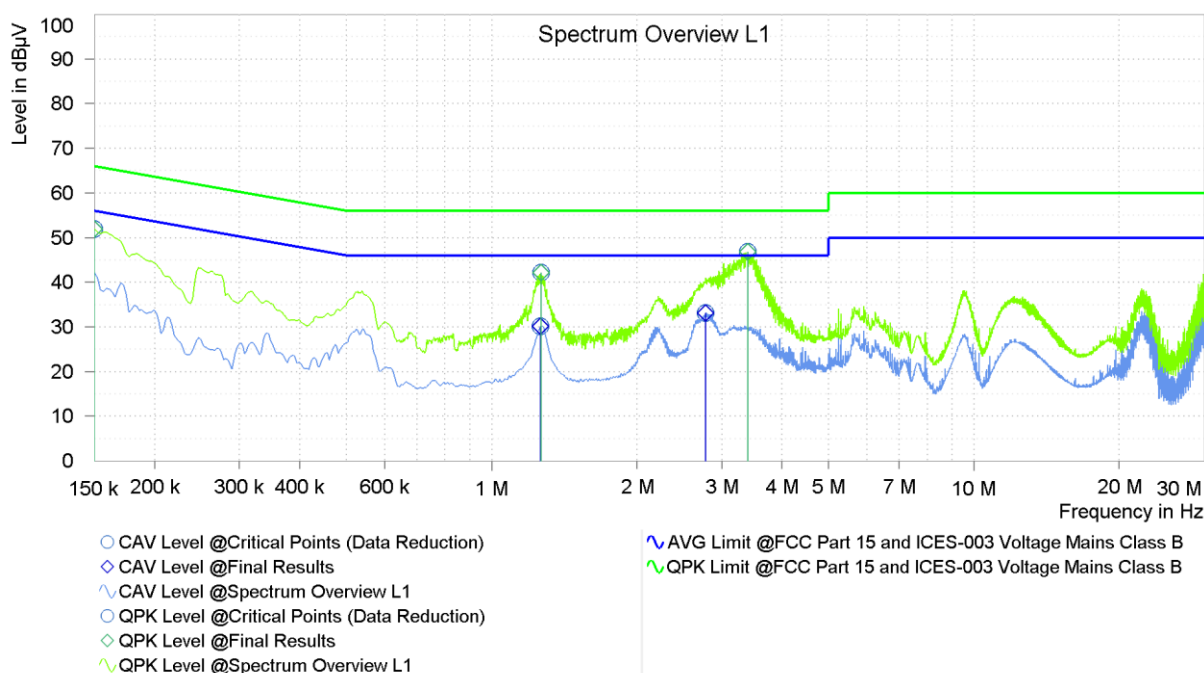
3.6.7 Test Results

Results for Configuration and Mode: 120Vac 60Hz working mode

This test was performed to the requirements of the Class B limits.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.



- Graphical Results - AC L1

Rg	Frequency [MHz]	QPK Level [dBµV]	QPK Limit [dBµV]	QPK Margin [dB]	CAV Level [dBµV]	CAV: AVG Limit [dBµV]	CAV Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
1	0.150	51.92	66.00	14.08	---	56.00	---	10.07	L1	9.000	15.000
1	1.264	---	56.00	---	30.13	46.00	15.87	10.13	L1	9.000	15.000
1	1.266	42.17	56.00	13.83	---	46.00	---	10.13	L1	9.000	15.000
1	2.780	---	56.00	---	33.12	46.00	12.88	10.13	L1	9.000	15.000
1	3.399	46.82	56.00	9.18	---	46.00	---	10.14	L1	9.000	15.000

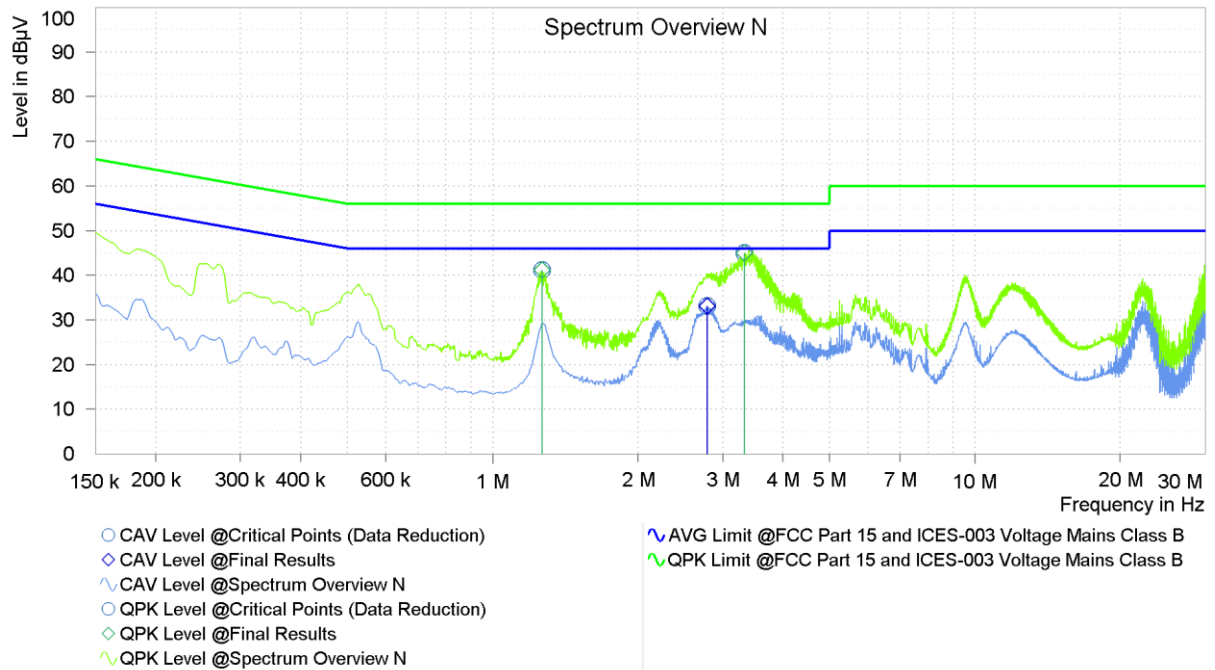
Table 10

Results for Configuration and Mode: 120Vac 60Hz working mode

This test was performed to the requirements of the Class B limits.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.



- Graphical Results - AC N

Rg	Frequency [MHz]	QPK Level [dBµV]	QPK Limit [dBµV]	QPK Margin [dB]	CAV Level [dBµV]	CAV: AVG Limit [dBµV]	CAV Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
1	1.266	41.22	56.00	14.78	---	46.00	---	10.13	N	9.000	15.000
1	2.783	---	56.00	---	33.13	46.00	12.87	10.13	N	9.000	15.000
1	3.329	44.99	56.00	11.01	---	46.00	---	10.14	N	9.000	15.000

Table 11



Product Service

3.6.8 Test Location and Test Equipment Used

This test was carried out in Shielded room - cabin no. 9.

Instrument	Manufacturer	Type No	T-ID	Calibration Period	Calibration Expires
EMI test receiver	Rohde & Schwarz GmbH & Co. KG	EPL1000	67137	12 months	2026-07-31
Shielded room	Albatross Projects GmbH	Cabin no. 9	21083	---	---
V-network	Rohde & Schwarz GmbH & Co. KG	ENV216	39908	12 months	2026-07-31

Table 12

4 Measurement Uncertainty

The measurement uncertainty in the laboratory is less than or equal to the maximum measurement uncertainty according to EN 55016-4-2: 2011 + A1 + A2 + AC and CISPR16-4-2: 2011 + A1 + A2 + Cor1 (UCISPR). This normative regulation means that the measured value is also the value to be assessed in relation to the limit value.

For a 95% confidence level, the measurement uncertainties for defined systems are:

Radio Testing			
Test Name	kp	Expanded Uncertainty	Note
Occupied Bandwidth	2.0	$\pm 1.14 \%$	2
RF-Frequency error	1.96	$\pm 1 \cdot 10^{-7}$	7
RF-Power, conducted carrier	2	$\pm 0.079 \text{ dB}$	2
RF-Power uncertainty for given BER	1.96	$+0.94 \text{ dB} / -1.05$	7
RF power, conducted, spurious emissions	1.96	$+1.4 \text{ dB} / -1.6 \text{ dB}$	7
RF power, radiated			
25 MHz – 4 GHz	1.96	$+3.6 \text{ dB} / -5.2 \text{ dB}$	8
1 GHz – 18 GHz	1.96	$+3.8 \text{ dB} / -5.6 \text{ dB}$	8
18 GHz – 26.5 GHz	1.96	$+3.4 \text{ dB} / -4.5 \text{ dB}$	8
40 GHz – 170 GHz	1.96	$+4.2 \text{ dB} / -7.1 \text{ dB}$	8
Spectral Power Density, conducted	2.0	$\pm 0.53 \text{ dB}$	2
Maximum frequency deviation			
300 Hz – 6 kHz	2	$\pm 2.89 \%$	2
6 kHz – 25 kHz	2	$\pm 0.2 \text{ dB}$	2
Maximum frequency deviation for FM	2	$\pm 2.89 \%$	2
Adjacent channel power 25 MHz – 1 GHz	2	$\pm 2.31 \%$	2
Temperature	2	$\pm 0.39 \text{ K}$	4
(Relative) Humidity	2	$\pm 2.28 \%$	2
DC- and low frequency AC voltage			
DC voltage	2	$\pm 0.01 \%$	2
AC voltage up to 1 kHz	2	$\pm 1.2 \%$	2
Time	2	$\pm 0.6 \%$	2

Table 13



Radio Interference Emission Testing			
Test Name	kp	Expanded Uncertainty	Note
Conducted Voltage Emission			
9 kHz to 150 kHz (50Ω/50μH AMN)	2	± 3.8 dB	1
150 kHz to 30 MHz (50Ω/50μH AMN)	2	± 3.4 dB	1
100 kHz to 200 MHz (50Ω/5μH AMN)	2	± 3.6 dB	1
Discontinuous Conducted Emission			
9 kHz to 150 kHz (50Ω/50μH AMN)	2	± 3.8 dB	1
150 kHz to 30 MHz (50Ω/50μH AMN)	2	± 3.4 dB	1
Conducted Current Emission			
9 kHz to 200 MHz	2	± 3.5 dB	1
Magnetic Fieldstrength			
9 kHz to 30 MHz (with loop antenna)	2	± 3.9 dB	1
9 kHz to 30 MHz (large-loop antenna 2 m)	2	± 3.5 dB	1
Radiated Emission			
Test distance 1 m (ALSE)			
9 kHz to 150 kHz	2	± 4.6 dB	1
150 kHz to 30 MHz	2	± 4.1 dB	1
30 MHz to 200 MHz	2	± 5.2 dB	1
200 MHz to 2 GHz	2	± 4.4 dB	1
2 GHz to 3 GHz	2	± 4.6 dB	1
Test distance 3 m			
30 MHz to 300 MHz	2	± 4.9 dB	1
300 MHz to 1 GHz	2	± 5.0 dB	1
1 GHz to 6 GHz	2	± 4.6 dB	1
Test distance 10 m			
30 MHz to 300 MHz	2	± 4.9 dB	1
300 MHz to 1 GHz	2	± 4.9 dB	1
Radio Interference Power			
30 MHz to 300 MHz	2	± 3.5 dB	1
Harmonic Current Emissions			4
Voltage Changes, Voltage Fluctuations and Flicker			4

Table 14



Immunity Testing			
Test Name	kp	Expanded Uncertainty	Note
Electrostatic Discharges			4
Radiated RF-Field			
Pre-calibrated field level	2	+32.2 / -24.3 %	5
Dynamic feedback field level	2.05	+21.2 / -17.5 %	3
Electrical Fast Transients (EFT) / Bursts			4
Surges			4
Conducted Disturbances, induced by RF-Fields			
via CDN	2	+15.1 / -13.1 %	6
via EM clamp	2	+42.6 / -29.9 %	6
via current clamp	2	+43.9 / -30.5 %	6
Power Frequency Magnetic Field	2	+20.7 / -17.1 %	2
Pulse Magnetic Field			4
Voltage Dips, Short Interruptions and Voltage Variations			4
Oscillatory Waves		a	4
Conducted Low Frequency Disturbances			
Voltage setting	2	± 0.9 %	2
Frequency setting	2	± 0.1 %	2
Electrical Transient Transmission in Road Vehicles			4

Table 15

Note 1:

The expanded uncertainty reported according to CISPR 16-4-2:2003-11 is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2$, providing a level of confidence of $p = 95.45\%$

Note 2:

The expanded uncertainty reported according to UKAS Lab 34 (Edition 1, 2002-08) is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2$, providing a level of confidence of $p = 95.45\%$

Note 3:

The expanded uncertainty reported according to UKAS Lab 34 (Edition 1, 2002-08) is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2.05$, providing a level of confidence of $p = 95.45\%$

Note 4:

It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence.

Note 5:

The expanded uncertainty reported according to IEC 61000-4-3 is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2$, providing a level of confidence of $p = 95.45\%$

Note 6:

The expanded uncertainty reported according to IEC 61000-4-6 is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2$, providing a level of confidence of $p = 95.45\%$

Note 7:

The expanded uncertainty reported according to ETSI TR 100 028 V1.4.1 (all parts) is based on a standard uncertainty multiplied by a coverage factor of $k_p = 1.96$, providing a level of confidence of $p = 95.45\%$



Product Service

Note 8:

The expanded uncertainty reported according to ETSI TR 102 273 V1.2.1 (all parts) is based on a standard uncertainty multiplied by a coverage factor of $k_p = 1.96$, providing a level of confidence of $p = 95.45\%$