

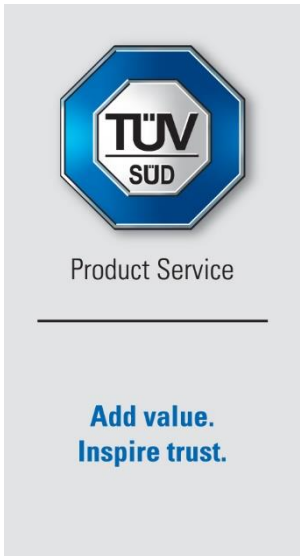
Report on the FCC and IC Testing of the Marquardt

Model: UK1

In accordance with FCC 47 CFR Part 15 F and ISSED RSS-220 and ISSED RSS-Gen

Prepared for: Marquardt GmbH
Schloßstr. 16
78604 Rietheim-Weilheim
Germany

FCC ID: IYZUK1
IC: 2701A-UK1



COMMERCIAL-IN-CONFIDENCE

Date: 2024-12-10
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Authorised Signatory	Matthias Stumpe	2024-12-10	 SIGN-ID 997499

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

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 15 F and ISSED RSS-220 and RSS-GEN.

The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Alexander Deese	2024-12-10	 SIGN-ID 996067

Laboratory Accreditation DAkkS Reg. No. D-PL-11321-11-03 DAkkS Reg. No. D-PL-11321-11-04	Laboratory recognition Registration No. BNetzA-CAB-16/21-15	Industry Canada test site registration 3050A-2
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Executive Statement:

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15 F:2023 and ISSED RSS-220:2018 and ISSED RSS-Gen:2019

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1 Report Summary

1.1 Modification Report

Alternations and additions of this report will be issued to the holders of each copy in the form of a complete document.

Revision	Description of changes	Date of Issue
0	First Issue	2024-11-18
1	Added hardware- and software- version, page 2 Chapter 2.3.6 and 2.4.6: C63.10 reference corrected to 10.2 and 10.3	2024-12-05
2	Added additional descriptions for carrier measurements in sections 2.2.6 and 2.3.6. Added plots for average carrier measurements in section 2.3.7.	2024-12-10

Table 1: Report of Modifications

1.2 Introduction

Applicant	Marquardt GmbH
Manufacturer	Marquardt GmbH
Model Number(s)	UK1
Serial Number(s)	Conducted sample: 2624000072726007 Radiated sample: 2624000072726004
Hardware Version(s)	585172012-02
Software Version(s)	2.24
Number of Samples Tested	1
Test Specification(s) / Issue / Date	FCC 47 CFR Part15 F : 2023, FCC 47 CFR Part15 C : 2023 and ISED RSS-220, Issue 1, Amd. 1 : 2018 ISED RSS-Gen, Issue 5, Amd. 1 : 2019, Amd. 2 : 2021
Test Plan/Issue/Date	---
Order Number	6200690437-U35
Date	2024-05-15
Date of Receipt of EUT	2024-10-22
Start of Test	2024-10-22
Finish of Test	2024-11-14
Name of Engineer(s)	Alexander Deese, Martin Steindl, Alex Fink
Related Document(s)	ANSI C63.10:2013



1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15 F and ISSED RSS-220 and RSS-Gen is shown below.

Section	Specification Clause	Test Description	Result
2.1	15.503(d)	Bandwidth of Signal	Pass
2.2	15.519(e), 15.521	Peak Power	Pass
2.3	15.505(a), 15.519(c), 15.209	Radiated Emissions	Pass
2.4	15.519(d)	Radiated Emissions in GPS bands	Pass
	15.505(a), 15.207	Conducted Disturbance at Mains Terminal	N/A
2.5	15.519(a)	Signal deactivation	Pass

Table 2: Results according to FCC 47 CFR Part 15 F

Section	Specification Clause	Test Description	Result
2.1	2	Bandwidth of Signal	Pass
2.2	5.3.1(g), Annex 4	Peak Power	Pass
2.3	5.3.1(c) 5.3.1(d)	Radiated Emissions	Pass
2.4	5.3.1(e)	Radiated Emissions in GPS bands	Pass
2.5	5.3.1(b)	Signal deactivation	Pass

Table 3: Results according to ISSED RSS-220

Section	Specification Clause	Test Description	Result
2.1	6.7	Bandwidth of Signal	Pass
2.3	8.9	Radiated Emissions	Pass
	8.11	Temperature Stability	N/A
	8.8	AC Power Line Conducted Emissions	N/A
2.3	8.9, 8.10	Radiated Emissions	Pass

Table 4: Results according to ISSED RSS-Gen

1.4 Product Information

1.4.1 Technical Description

<i>Frequency Band:</i>	6.0 GHz to 9.0 GHz
<i>Supply Voltage:</i>	3.0 V lithium battery
<i>Supply Frequency:</i>	0 Hz

1.4.2 Labeling of EUT



1.5 Test Configuration

The applicant provided two test samples, one for radiated emission tests with attached antenna and one conducted sample with temporary antenna connector.

The radiated sample was used for the following tests. The operation mode was configured with a test software provided by the customer.



Product Service

1.6 Modes of Operation

Mode 1:

Band 5; Center frequency: 6.5 GHz; Bandwidth: 600 MHz

Mode 2:

Band 6; Center frequency: 7 GHz; Bandwidth: 600 MHz

Mode 3:

Band 8; Center frequency: 7.5 GHz; Bandwidth: 600 MHz

Mode 4:

Band 9; Center frequency: 8 GHz; Bandwidth: 600 MHz

1.7 Deviations from Standard



1.8 EUT Modifications Record

The table below details modifications made to the EUT during the test program.
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 5

1.9 Test Location

TÜV SÜD Product Service conducted the following tests at our Straubing test laboratory:

Test Name	Name of Engineer(s)
Configuration according to 1.5 and 1.6	
Bandwidth of Signal	Martin Steindl
Peak Power	Martin Steindl
Radiated Emissions	Alexander Deese, Alex Fink
Radiated Emissions in GPS bands	Alexander Deese
Signal deactivation	Martin Steindl

Office Address:

Äußere Frühlingstraße 45
94315 Straubing
Germany



2 Test Details

2.1 Bandwidth of Signal

2.1.1 Specification Reference

FCC 47 CFR Part 15 F, Clause 15.503(d)
ISED RSS-220, Clause 2
ISED RSS-Gen, Clause 6.7

2.1.2 Equipment under Test and Modification State

UK1; S/N 2624000072726004; Modification state 0

2.1.3 Date of Test

2024-10-24

2.1.4 Environmental Conditions

Ambient Temperature	23 °C
Relative Humidity	52 %

2.1.5 Specification Limits

A UWB device is an intentional radiator that has either a -10 dBc bandwidth ($f_H - f_L$) of at least 500 MHz or a -10 dBc fractional bandwidth ($2 \frac{f_H - f_L}{f_H + f_L}$) greater than 0.2.

2.1.6 Test Method

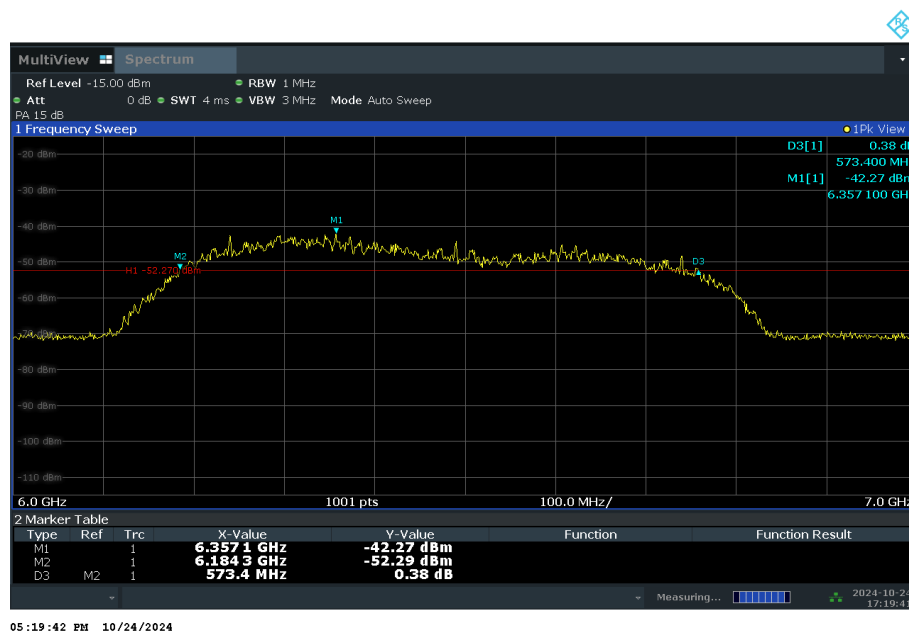
The test was performed according to ANSI C63.10, clauses 6.9 and 10.1
See section 2.3 of this test report for details.



2.1.7 Test Results

Frequency Channel	f_L (GHz)	f_H (GHz)	-10 dB Bandwidth (MHz)	-10 dB Fractional Bandwidth
5	6.1843	6.7577	573.4	0.08861
6	6.7233	7.2698	546.5	0.07811
8	7.1653	7.7687	603.4	0.08081
9	7.7363	8.2678	531.5	0.06642

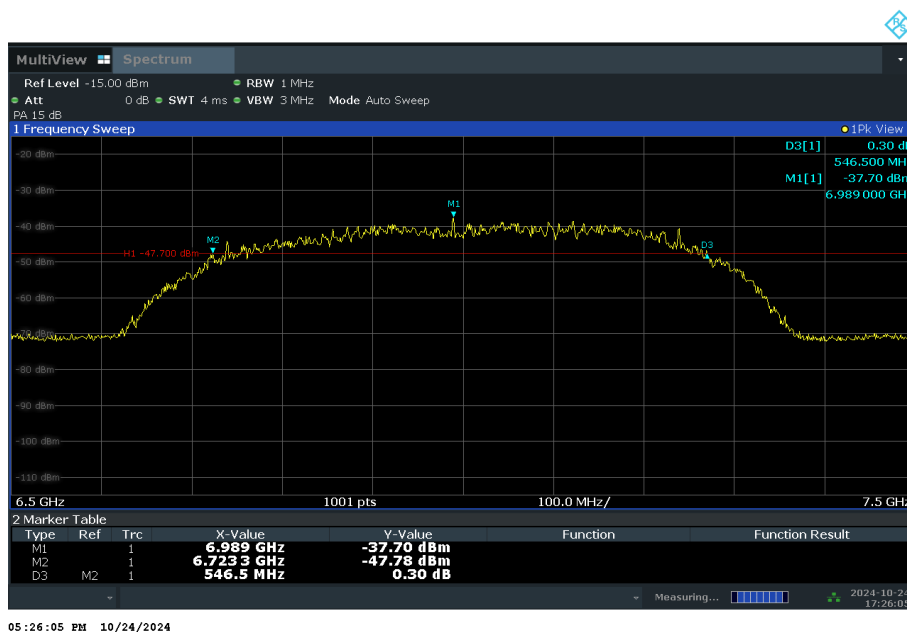
Table 6: 10 dB bandwidth and fractional bandwidth



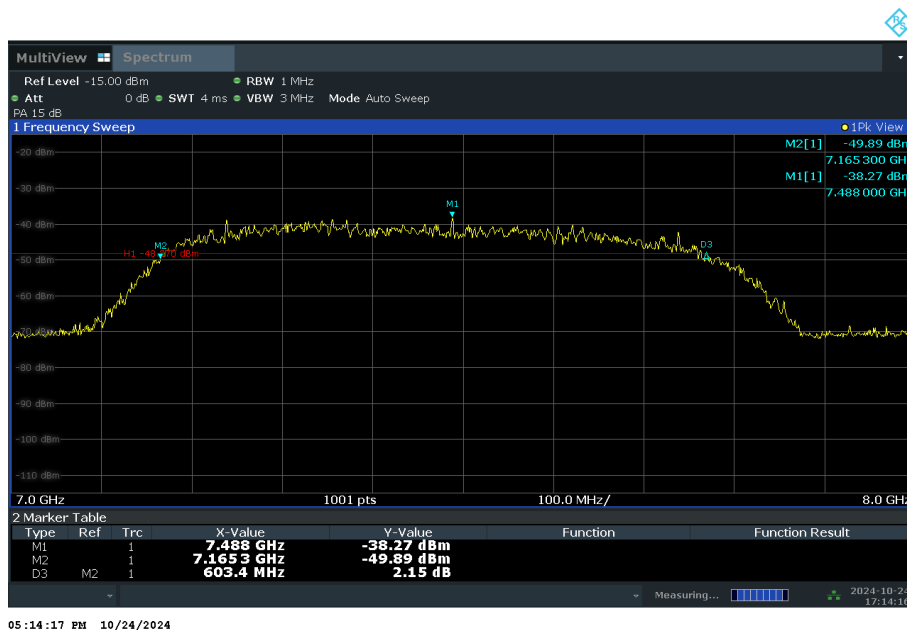
10dB Bandwidth – Channel 5



Product Service



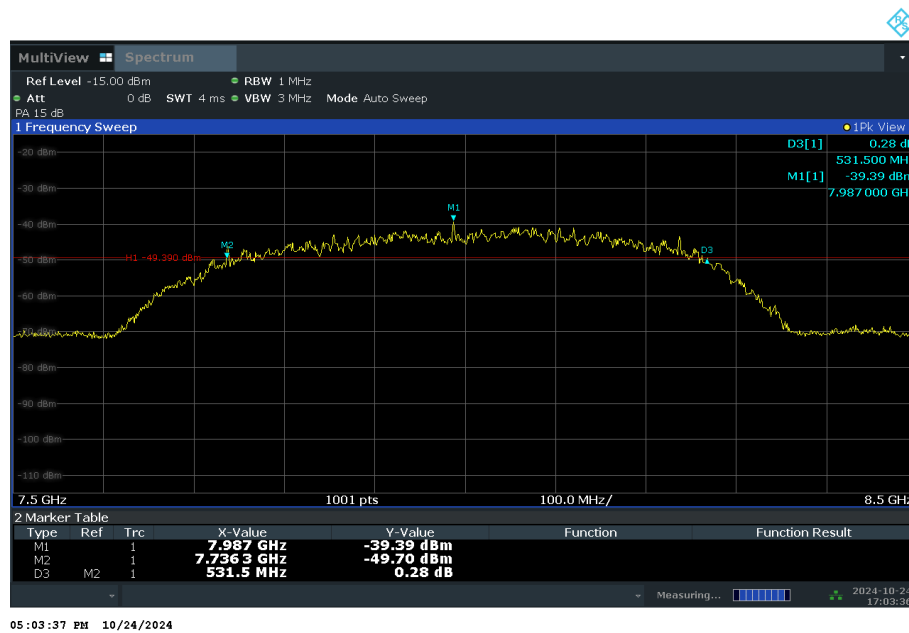
10dB Bandwidth – Channel 6



10dB Bandwidth – Channel 8



Product Service



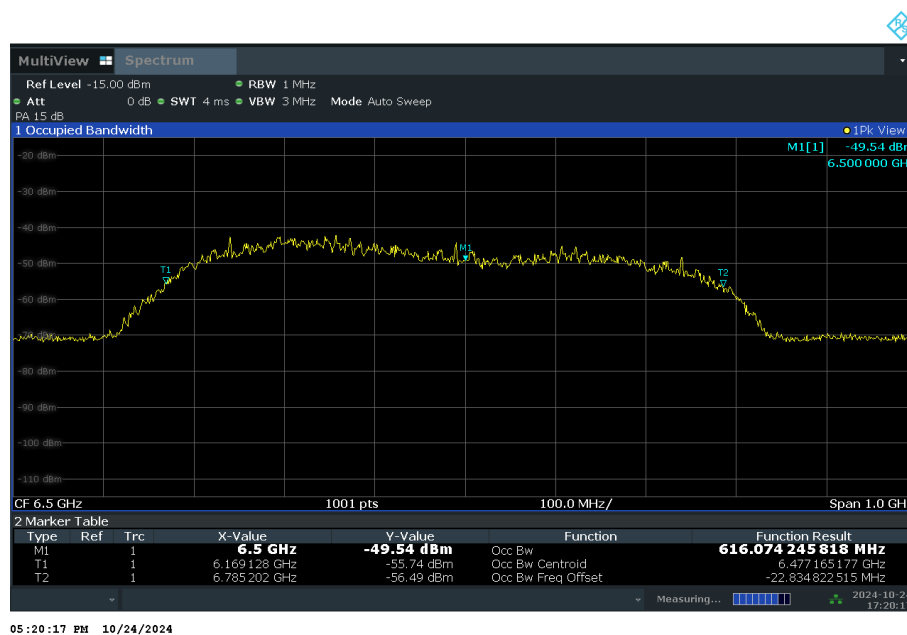
10dB Bandwidth – Channel 9



Product Service

Frequency Channel	99% Bandwidth (MHz)
5	616.074245818
6	585.712140459
8	633.324505013
9	596.307411758

Table 7: 99% bandwidth

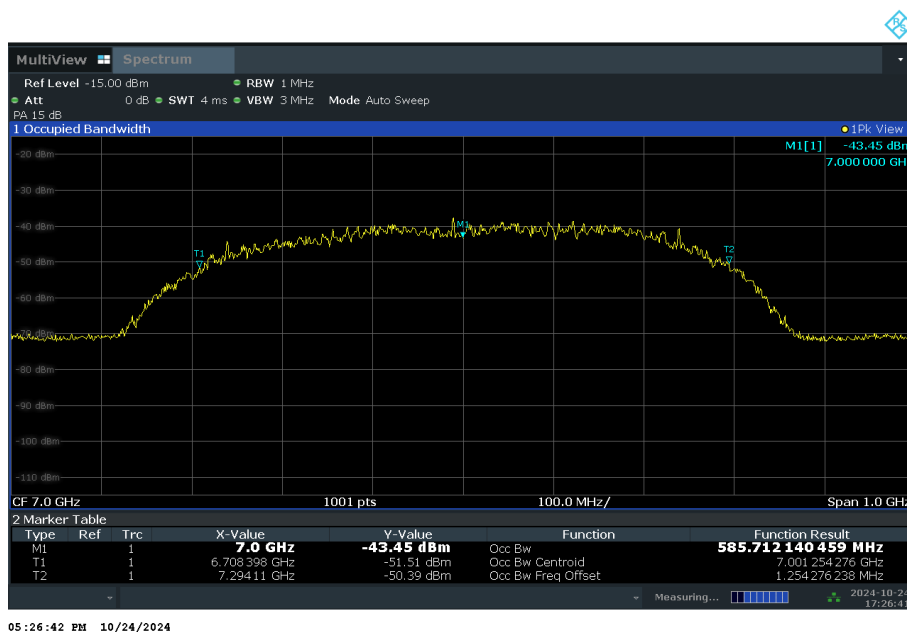


99% Bandwidth – Channel 5

Ca

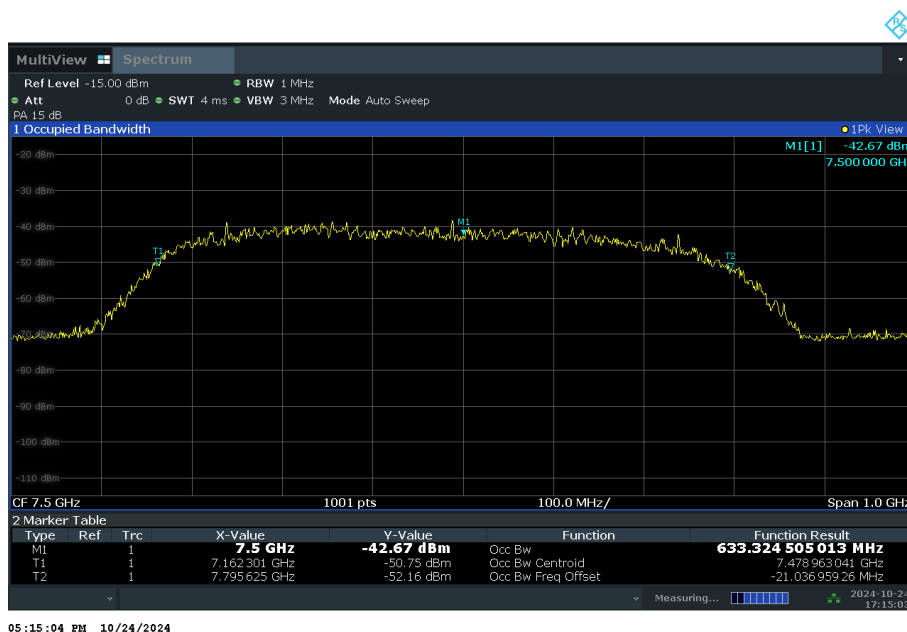


Product Service



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99% Bandwidth – Channel 6

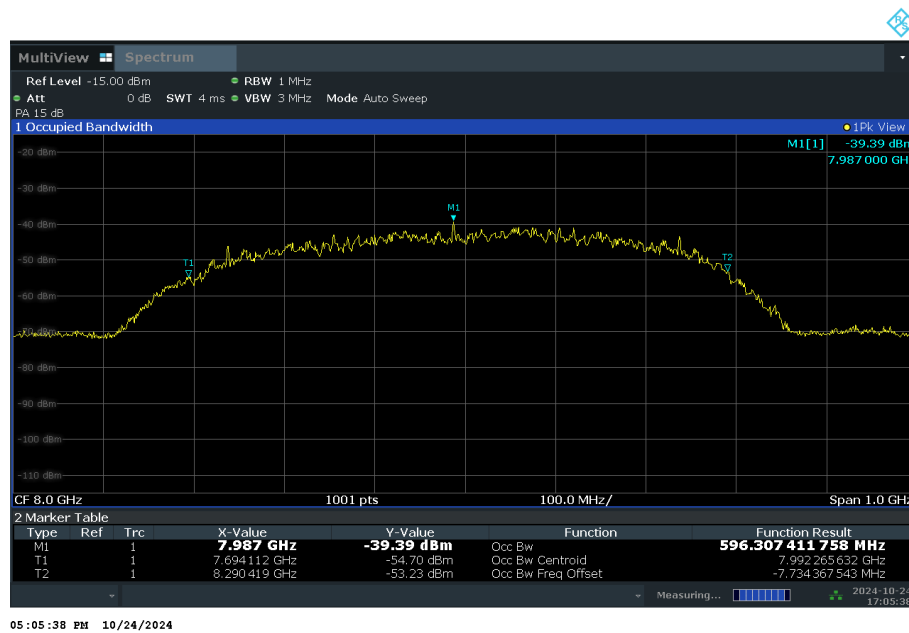


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99% Bandwidth – Channel 8



Product Service



99% Bandwidth – Channel 9



Product Service

2.1.8 Test Location and Test Equipment

The test was carried out in fully anechoic room no. 2:

Instrument	Manufacturer	Type No	TE No	Calibra- tion Pe- riod (months)	Calibration Due
Signal and Spectrum Analyser	Rohde & Schwarz	FSW43	53496	12	2025-04-30
Double Ridged Horn Antenna	Rohde & Schwarz	HF907	64145	24	2025-06-30
Fully anechoic room	Albatross	Cabin no. 2	19312	---	---

Table 8



2.2 Peak Power

2.2.1 Specification Reference

FCC 47 CFR Part 15 F, Clause 15.519(e) and 15.521
ISED RSS-220, Clauses 4. 5.3.1(g) and Annex 4

2.2.2 Equipment under Test and Modification State

UK1; S/N 2624000072726004; Modification state 0

2.2.3 Date of Test

2024-10-24

2.2.4 Environmental Conditions

Ambient Temperature	23 °C
Relative Humidity	52 %

2.2.5 Specification Limits

There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, f_M . That limit is 0 dBm e.i.r.p. It is acceptable to employ a different resolution bandwidth, and a correspondingly different peak emission limit, following the procedures.

2.2.6 Test Method

The test was performed according to ANSI C63.10, section 10.3.5
See section 2.3 of this test report for details.

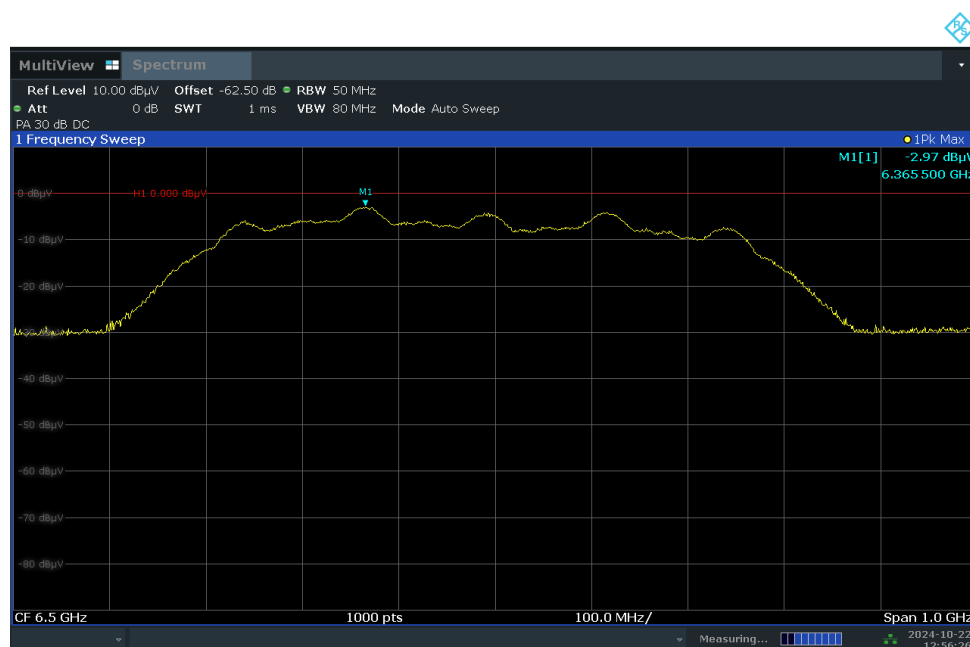
The plots show the emission level in dBm. For technical reasons the reading of the spectrum analyzer is in dB μ V. The offset value applied is the correction factor to convert the reading value from dB μ V to dBm.



2.2.7 Test Results

Frequency Channel	f_M (GHz)	Resolution Bandwidth (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)
5	6.3655	50	-2.97	0
6	6.8655	50	-3.71	0
8	7.3625	50	-3.50	0
9	7.9955	50	-4.61	0

Table 9: Peak Power

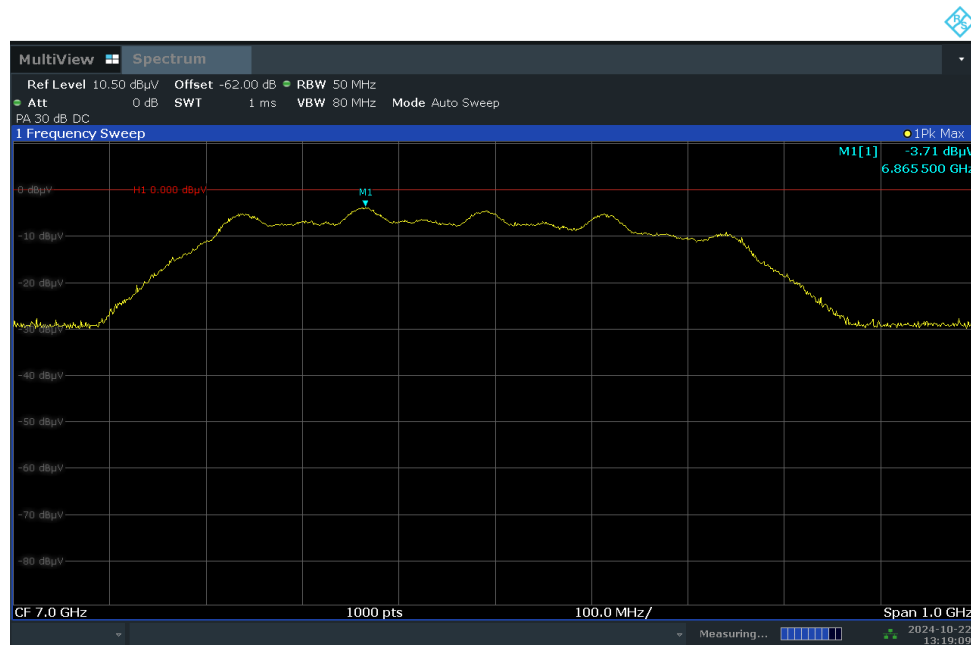


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Peak Power - Channel 5: -2.97 dBm

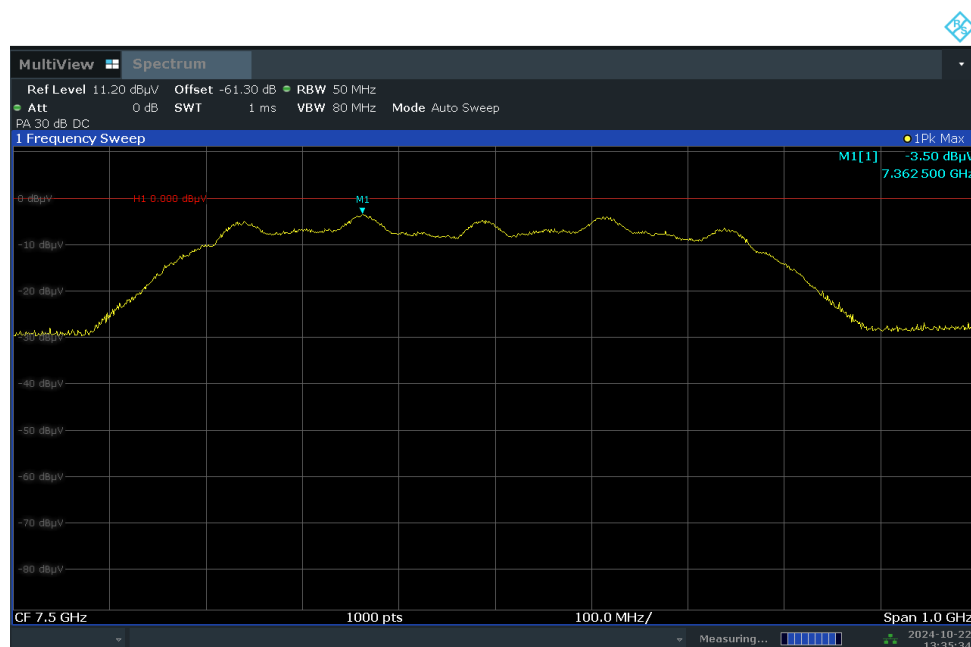


Product Service



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Peak Power - Channel 6: -3.71 dBm

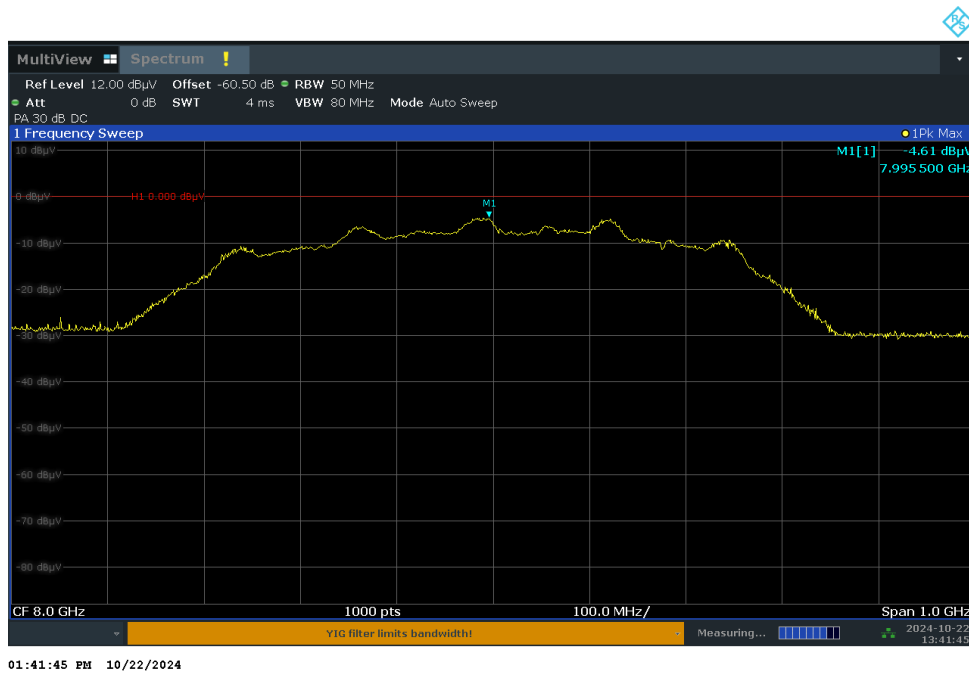


01:35:34 PM 10/22/2024

Peak Power - Channel 8: -3.50 dBm



Product Service



01:41:45 PM 10/22/2024

Peak Power - Channel 9: -4.61 dBm



2.2.8 Test Location and Test Equipment

The test was carried out in fully anechoic room no. 2:

<i>Instrument</i>	<i>Manufacturer</i>	<i>Type No</i>	<i>TE No</i>	<i>Calibra- tion Pe- riod (months)</i>	<i>Calibration Due</i>
Signal and Spectrum Analyzer	Rohde & Schwarz	FSW43	53496	12	2025-04-30
Double Ridged Horn Antenna	Rohde & Schwarz	HF907	64145	24	2025-06-30
Fully anechoic room	Albatross	Cabin no. 2	19312	---	---

Table 10



Product Service

2.3 Radiated Emissions

2.3.1 Specification Reference

FCC 47 CFR Part 15 F, Clauses 15.15.505(a) and 15.519(c)
FCC 47 CFR Part 15 C, Clauses 15.209
ISED RSS-220, Clause 5.3.1(c), 5.3.1(d)
ISED RSS-Gen, Clauses 8.9

2.3.2 Equipment under Test and Modification State

UK1; S/N 2624000072726004; Modification state 0

2.3.3 Date of Test

2024-10-24 to 2024-10-26

2.3.4 Environmental Conditions

Ambient Temperature	23 °C
Relative Humidity	51 %

2.3.5 Specification Limits

2.3.5.1 Radiated emissions up to 960 MHz according to 47 CFR 15.517(c), 15.519(c) and ISSED RSS-220, Clause 5.2.1 (c), 5.2.1 (c), 5.3.1 (d), 5.3.1 (d)

The radiated emissions at or below 960 MHz from a device operating under the provisions of this sections shall not exceed the general radiated emission limits:

General radiated emission limits:					
Frequency Range (MHz)	Test distance (m)	Field strength		Field strength	
		($\mu\text{A/m}$)	($\text{dB}\mu\text{A/m}$)	($\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)
0.009 – 0.49	300	$6.37 / f$	$20*\lg(6.37 / f)$	$2400 / f$	$20*\lg(2400 / f)$
0.49 – 1.705	30	$63.7 / f$	$20*\lg(63.7 / f)$	$24000 / f$	$20*\lg(24000 / f)$
1.705 - 30	30	0.08	$20*\lg(0.08 / f)$	30	$20*\lg(30 / f)$
30 – 88	3	---	---	100	40
88 – 216	3	--	---	150	43.5
126 – 960	3	--	---	200	46
Note 1: f in kHz					

Table 11 General radiated emission limits

At frequencies at or above 30 MHz, measurements may be performed at distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 m, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempts should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

2.3.5.2 Radiated emissions above 960 MHz according to 47 CFR 15.517(c)

The radiated emissions above 960 MHz shall not exceed the following average (RMS) limits when measured using a resolution bandwidth of 1 MHz:

Frequency range	EIRP
960 MHz – 1610 MHz	-75.3 dBm
1610 MHz – 1990 MHz	-53.3 dBm
1990 MHz – 3.1 GHz	-51.3 dBm
3.1 GHz – 10.6 GHz	-41.3 dBm
above 10.6 GHz	-51.3 dBm



2.3.5.3 Radiated emissions above 960 MHz according to 47 CFR 15.519(c)

The radiated emissions above 960 MHz shall not exceed the following average (RMS) limits when measured using a resolution bandwidth of 1 MHz:

<i>Frequency range</i>	<i>EIRP</i>
960 MHz – 1610 MHz	-75.3 dBm
1610 MHz – 1990 MHz	-63.3 dBm
1990 MHz – 3.1 GHz	-61.3 dBm
3.1 GHz – 10.6 GHz	-41.3 dBm
above 10.6 GHz	-61.3 dBm

2.3.5.4 Radiated emissions above 960 MHz according to ISSED RSS-220, Clause 5.2.1 (d)

The radiated emissions above 960 MHz shall not exceed the following average (RMS) limits when measured using a resolution bandwidth of 1 MHz:

<i>Frequency range</i>	<i>EIRP</i>
960 MHz – 1610 MHz	-75.3 dBm
1610 MHz – 4750 MHz	-70.0 dBm
4750 MHz – 10.6 GHz	-41.3 dBm
above 10.6 GHz	-51.3 dBm

2.3.5.5 Radiated emissions above 960 MHz according to ISSED RSS-220, Clause 5.3.1 (d)

The radiated emissions above 960 MHz shall not exceed the following average (RMS) limits when measured using a resolution bandwidth of 1 MHz:

<i>Frequency range</i>	<i>EIRP</i>
960 MHz – 1610 MHz	-75.3 dBm
1610 MHz – 4750 MHz	-70.0 dBm
4750 MHz – 10.6 GHz	-41.3 dBm
above 10.6 GHz	-61.3 dBm

2.3.6 Test Method

The test was performed according to ANSI C63.10, sections 10.2 and 10.3

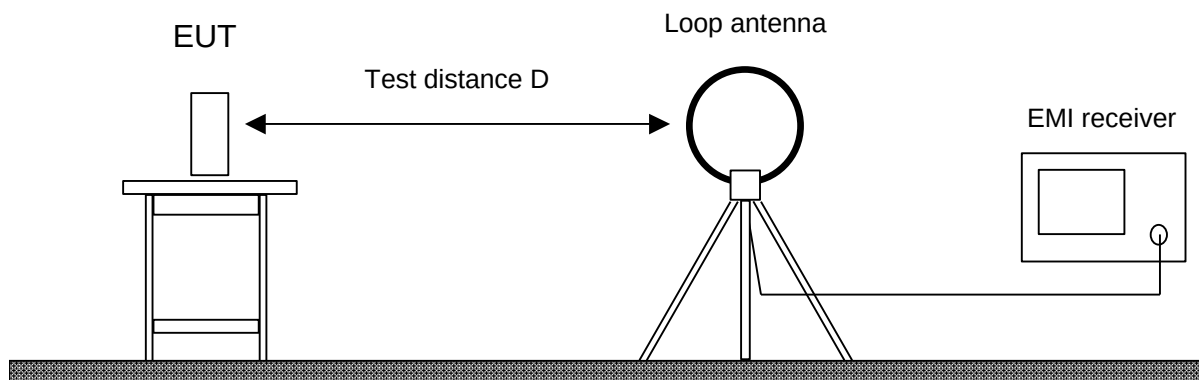
Prescans are performed in six positions of the EUT to get the full spectrum of emission caused by the EUT with the measuring antenna raised and lowered from 1 m to 4 m with vertical and horizontal polarisation to find the combination of table position, antenna height and antenna polarisation for the maximum emission levels.

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

Further maximisation for adjusting the maximum position is following.

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

2.3.6.1 Frequency range 9 kHz – 30 MHz

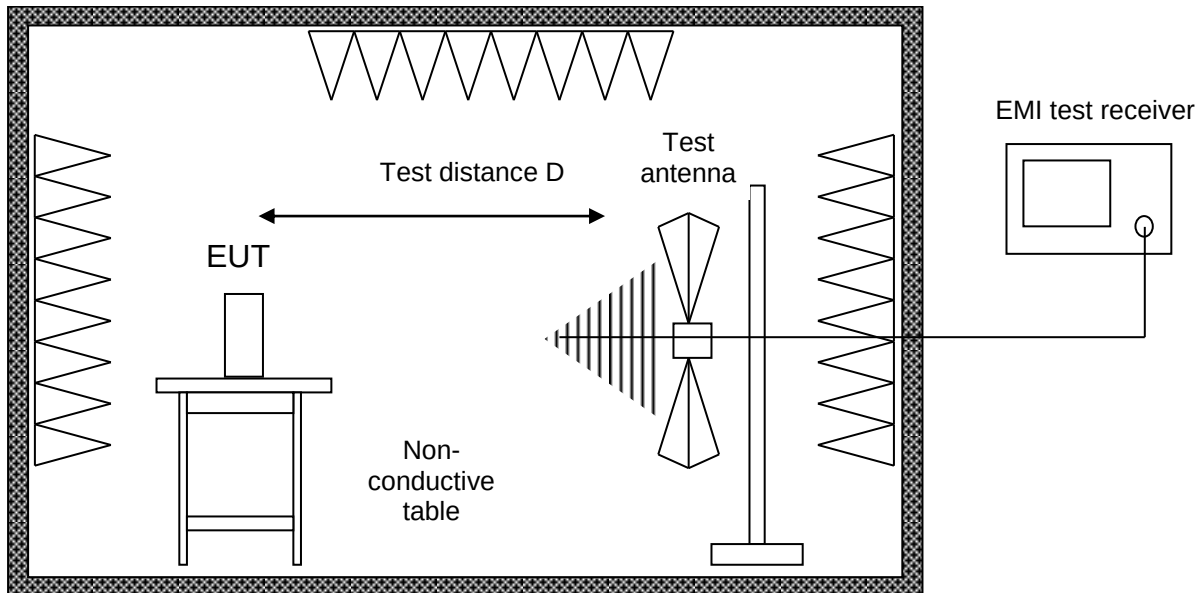


The EUT was placed on a non-conductive table, 0.8 m above the ground.

Radiated emissions in the frequency 9 kHz – 30 MHz is measured within a semi-anechoic room with an active loop antenna with the measurement detector set to peak. In addition in the frequency range 9 kHz to 490 kHz also an average detector was used. The measurement bandwidth of the receiver was set to 300 Hz in the frequency range 9 kHz to 150 kHz and 10 kHz in the frequency range 150 kHz to 30 MHz. Prescans were performed in six positions of the EUT.

For final measurements the detector was set to CISPR quasi-peak and in addition to CISPR average in the frequency range 9 kHz to 490 kHz with a resolution bandwidth 200 Hz in the frequency range 9 kHz to 150 kHz and 9 kHz in the frequency range 150 kHz to 30 MHz. Final tests were performed immediately after a final frequency and zoom (for drifting disturbances) and maximum adjustment.

2.3.6.2 Frequency range 30 MHz – 1 GHz



Alternate test site (semi anechoic room)

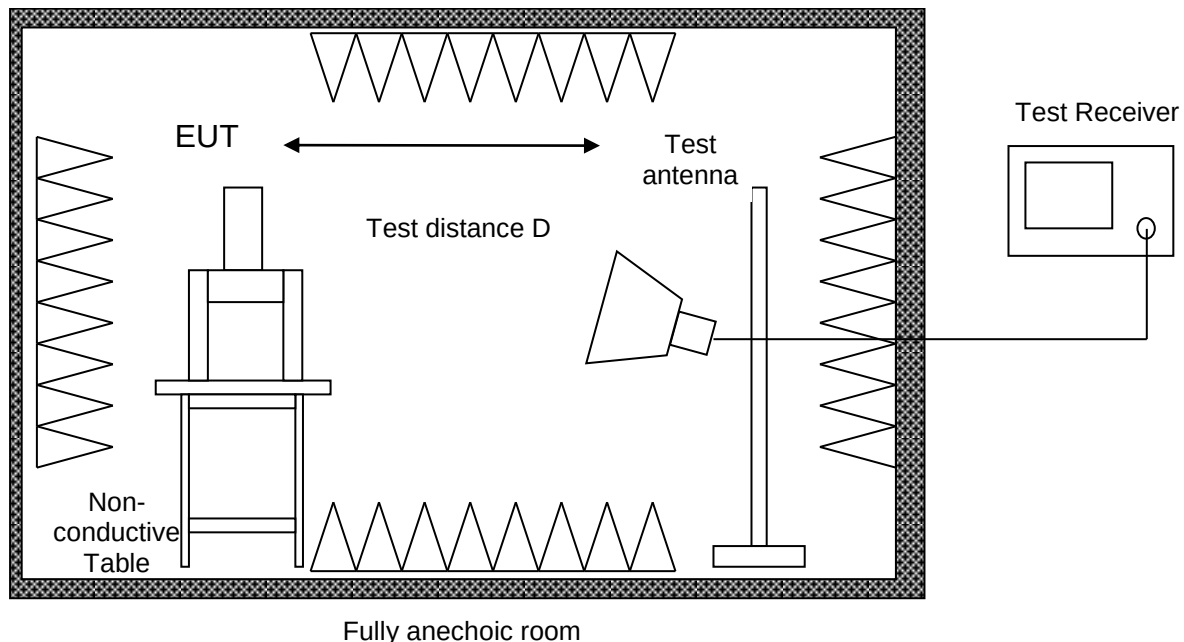
The EUT was placed on a non-conductive table, 0.8 m above the ground plane

Radiated emissions in the frequency range 30 MHz – 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 polarised logarithmic periodic antenna combined with a 4:1 broadband dipole ("Trilog broadband antenna") is used.

For prescan tests the test receiver is set to peak-detector with a bandwidth of 120 kHz.

With the measurement bandwidth of the test receiver set to 120 kHz CISPR quasi-peak detector is selected for final measurements following immediately after a final frequency zoom (for drifting disturbances) and maximum adjustment.

2.3.6.3 Frequency range above 1 GHz



The EUT was placed on a non-conductive table, 1.5 m above the ground plane. Radiated emission tests above 1 GHz are performed in a fully anechoic room with the S_{VSWR} requirements of ANSI C63.4. Measurements are performed both in the horizontal and vertical planes of polarisation using a test receiver with the detector function set to peak and average and the resolution bandwidth set to 1 MHz. Testing above 1 GHz is performed with horn antennas with the EUT in boresight of the antenna.

For prescan tests the test receiver is set to peak- and average-detector with a bandwidth of 1 MHz. With the measurement bandwidth of the test receiver set to 1 MHz and peak- and CISPR average-detector is selected for final measurements following immediately after a final frequency zoom (for drifting disturbances) and maximum adjustment.

The average value of the carrier was measured manually in polarisation of maximum emission as a separate plot for technical reasons. This frequency range was left out in the automatic measurement. The spectrum analyzer plots show the emission level in dBm. For technical reasons the reading of the spectrum analyzer is in dB μ V. The offset value applied is the correction factor to convert the reading value from dB μ V to dBm.



2.3.7 Test Results

<i>Frequency range</i>	<i>Limit applied</i>	<i>Test distance</i>
9 kHz – 30 MHz	FCC 15.209	3 m
30 MHz – 1 GHz	FCC 15.209	3 m
960 MHz – 5 GHz	FCC 15.519 RSS-220 5.3.1(d)	0.25 m
5 GHz – 8.2 GHz	FCC 15.519 RSS-220 5.3.1(d)	1 m
5 GHz – 10.5 GHz	FCC 15.519 RSS-220 5.3.1(d)	1 m
8.2 GHz – 12.4 GHz	FCC 15.519 RSS-220 5.3.1(d)	0.5 m
10.5 GHz – 12.4 GHz	FCC 15.519 RSS-220 5.3.1(d)	0.5 m
12.4 GHz – 18 GHz	FCC 15.519 RSS-220 5.3.1(d)	0.25 m
18 GHz – 26.5 GHz	FCC 15.519 RSS-220 5.3.1(d)	0.05 m
26.5 GHz – 40 GHz	FCC 15.519 RSS-220 5.3.1(d)	0.05 m

Table 12

Sample calculation:

$$\text{Final Value (dB}\mu\text{V/m)} = \text{Reading Value (dB}\mu\text{V)} + (\text{Cable attenuation (dB)} + \text{Antenna Transducer (dB(1/m))})$$

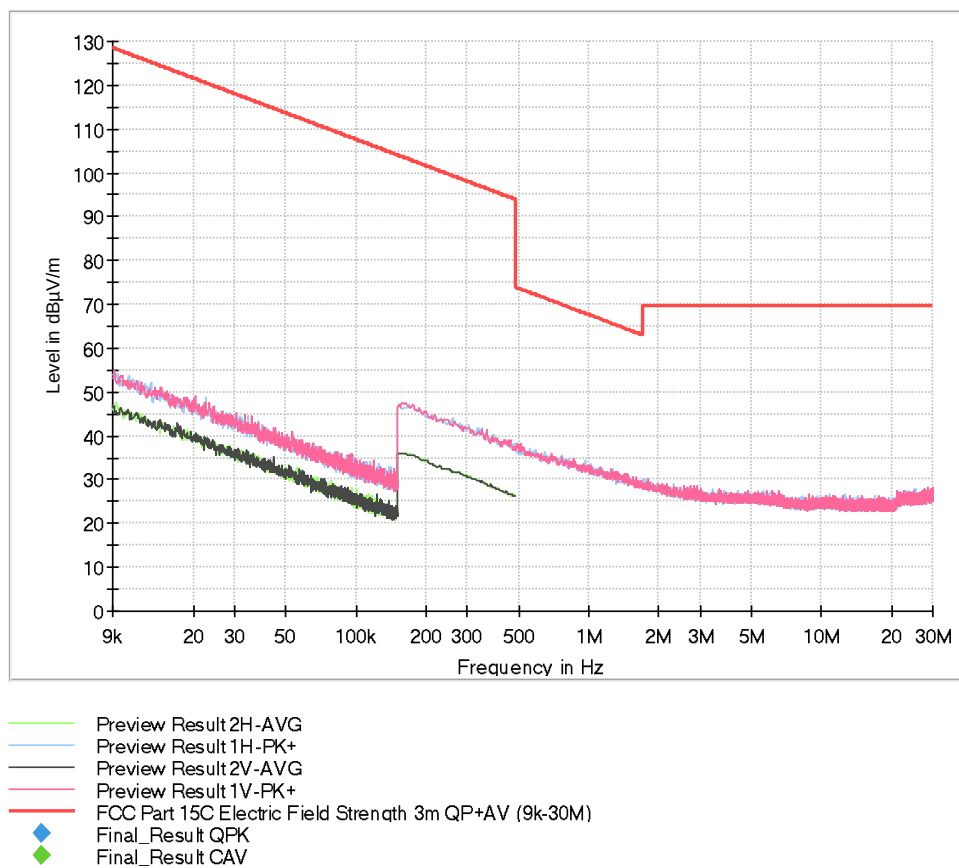
Additional correction of limit in the frequency range 9 – 490 kHz (300 m to 3 m): +80.0 dB

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

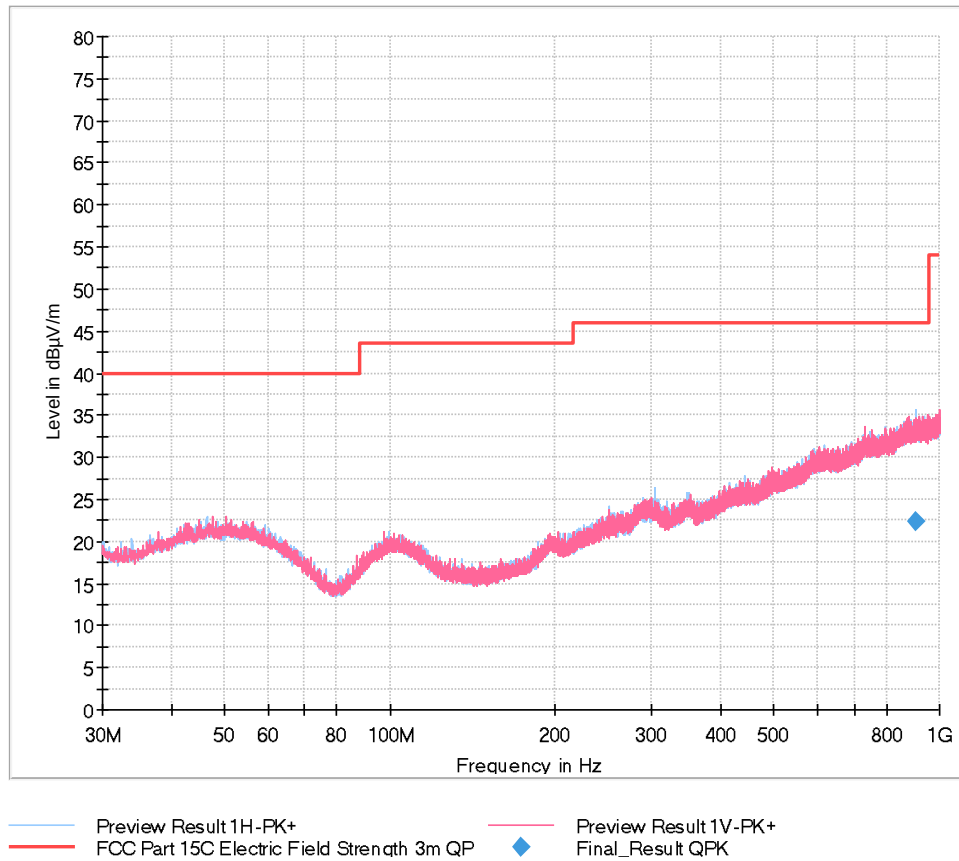


Mode 1:





Product Service

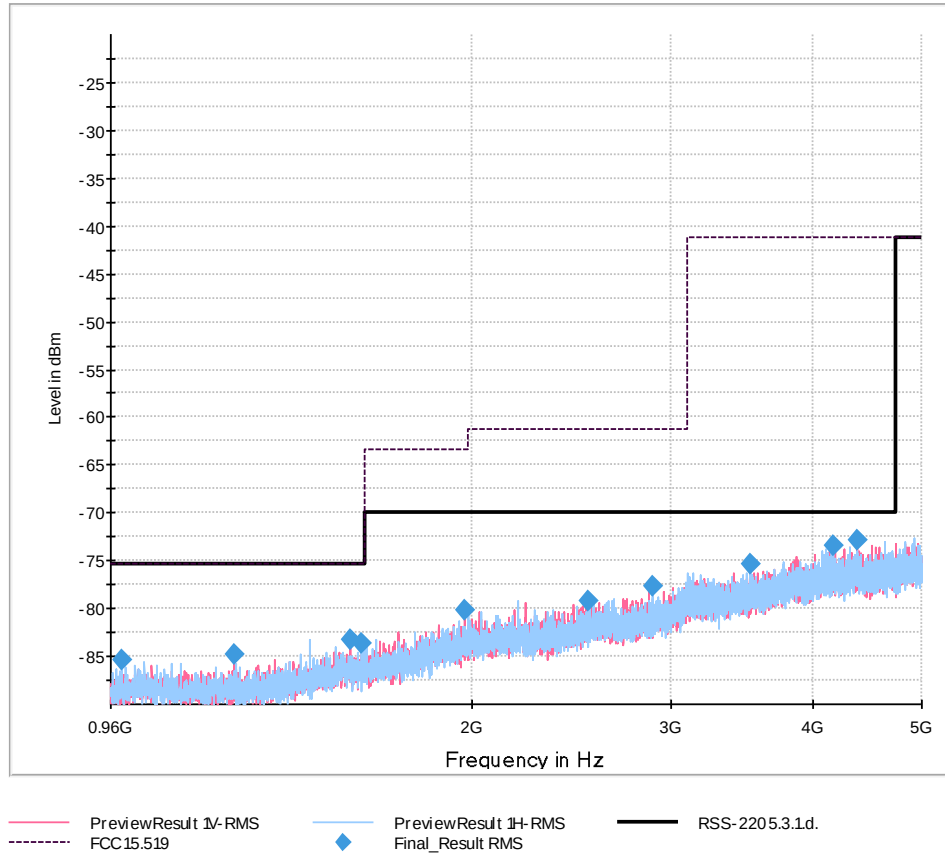


Final Results:

Frequency MHz	QuasiPeak dBµV/m	Limit dBµV/m	Margin dB	Meas. Time ms	Band- width kHz	Height cm	Pol	Azi- muth deg	Corr. dB/m
904.950000	22.46	46.02	23.56	1000.0	120.000	184.0	H	117.0	32.3

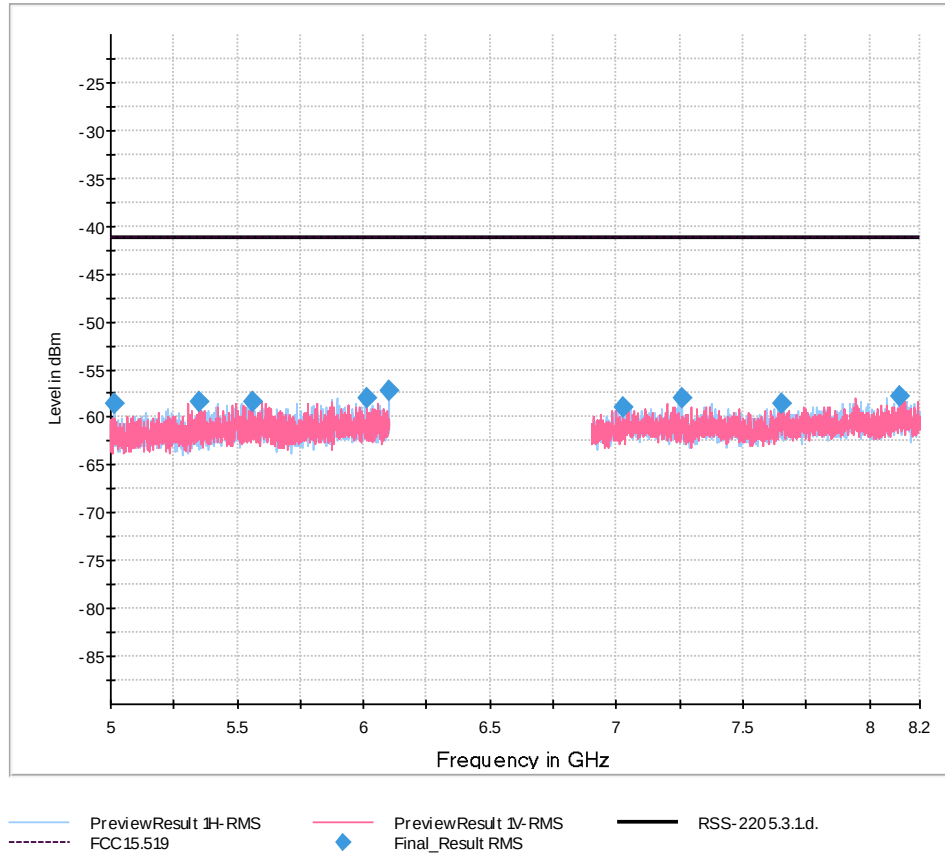


Product Service



Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
980.692683	-85.45	-75.30	10.15	2.5	1000.000	150.0	H	111.0	-122.2
1234.424390	-84.70	-75.30	9.40	2.5	1000.000	150.0	V	211.0	-121.7
1561.073171	-83.23	-75.30	7.93	2.5	1000.000	150.0	V	236.0	-119.5
1599.009756	-83.65	-75.30	8.35	2.5	1000.000	150.0	H	92.0	-119.3
1972.956098	-80.19	-70.00	10.19	2.5	1000.000	150.0	V	116.0	-116.0
2535.600000	-79.18	-70.00	9.18	2.5	1000.000	150.0	H	128.0	-114.1
2894.765854	-77.71	-70.00	7.71	2.5	1000.000	150.0	H	67.0	-112.9
3529.834146	-75.43	-70.00	5.43	2.5	1000.000	150.0	H	183.0	-110.3
4174.263415	-73.51	-70.00	3.51	2.5	1000.000	150.0	H	278.0	-108.0
4381.190244	-72.80	-70.00	2.80	2.5	1000.000	150.0	V	82.0	-107.8

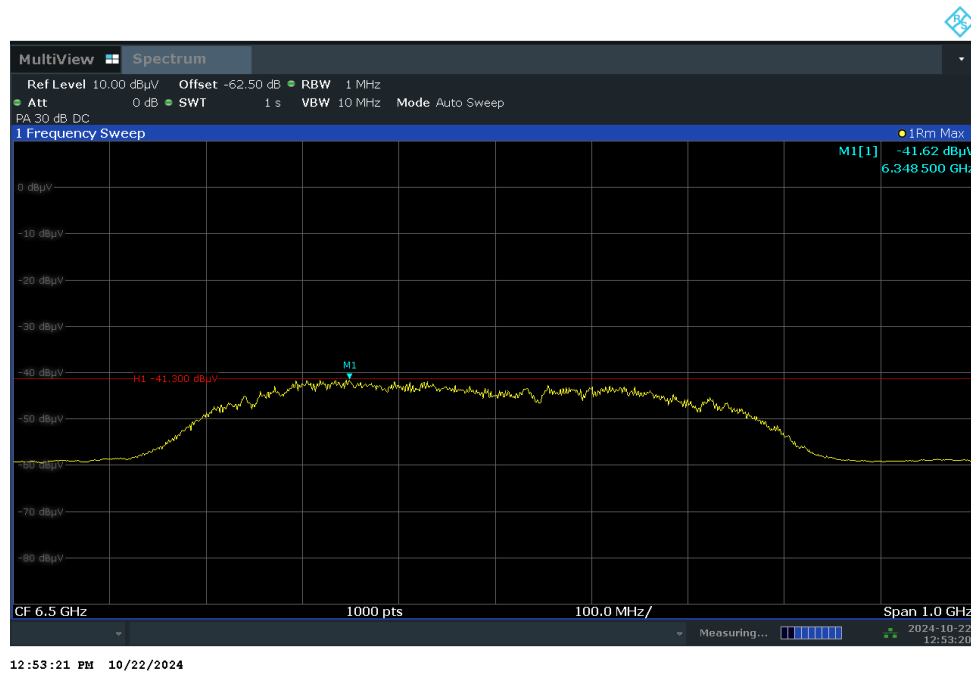


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
5013.000000	-58.52	-41.30	17.22	2.5	1000.000	150.0	H	219.0	-95.3
5351.500000	-58.39	-41.30	17.09	2.5	1000.000	150.0	V	13.0	-94.8
5560.000000	-58.29	-41.30	16.99	2.5	1000.000	150.0	V	228.0	-94.5
6013.000000	-57.95	-41.30	16.65	2.5	1000.000	150.0	V	74.0	-94.2
6098.500000	-57.21	-41.30	15.91	2.5	1000.000	150.0	H	133.0	-93.9
7023.000000	-58.88	-41.30	17.58	2.5	1000.000	150.0	H	36.0	-93.3
7260.000000	-58.02	-41.30	16.72	2.5	1000.000	150.0	H	84.0	-93.4
7654.500000	-58.59	-41.30	17.29	2.5	1000.000	150.0	H	251.0	-93.0
8119.500000	-57.80	-41.30	16.50	2.5	1000.000	150.0	H	336.0	-93.1



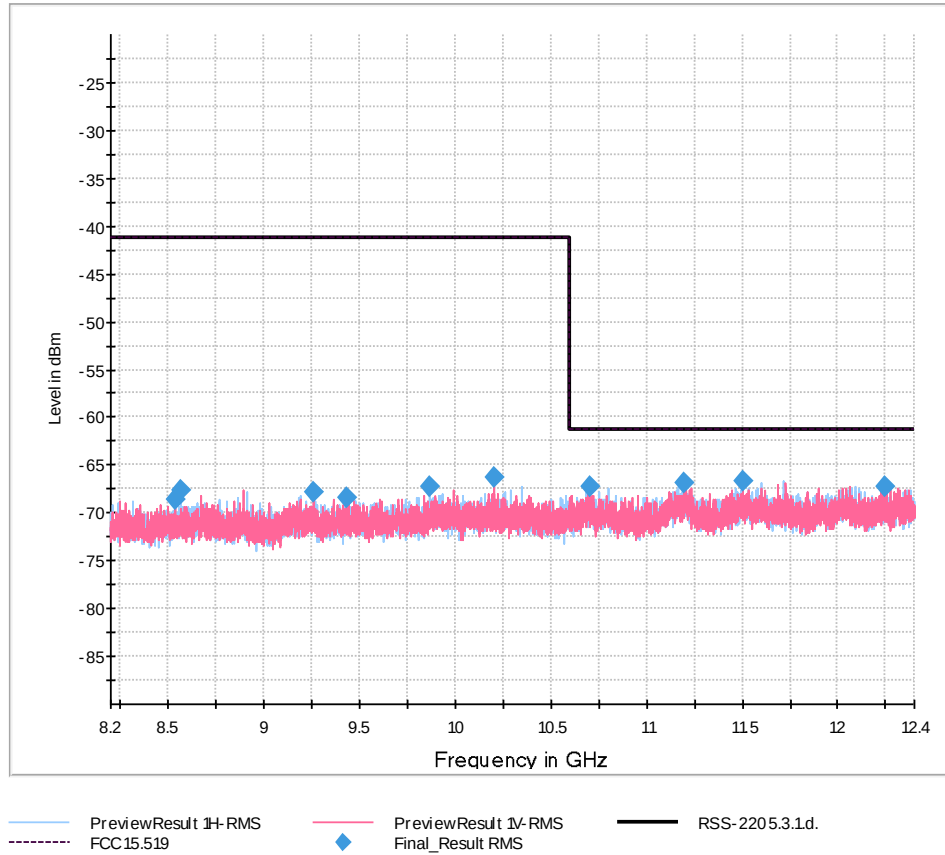
Product Service



Average Power - Channel 5: -41.62 dBm



Product Service

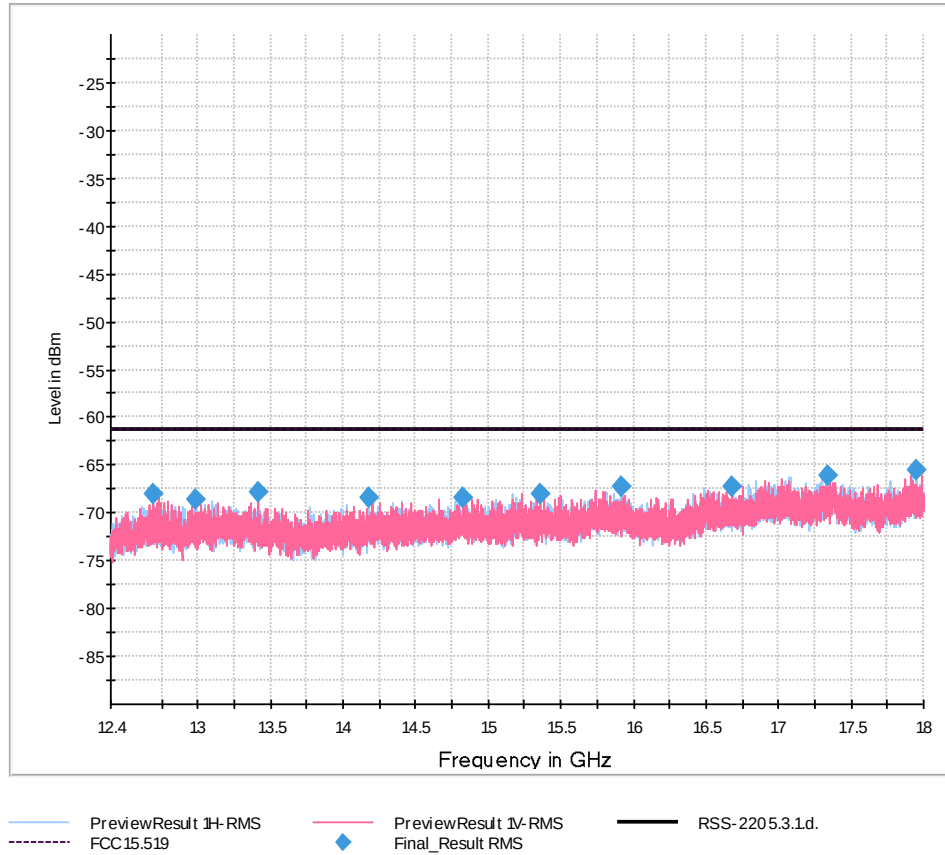


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azi- muth deg	Corr. dB
8541.000000	-68.54	-41.30	27.24	2.5	1000.000	150.0	V	250.0	-105
8566.500000	-67.71	-41.30	26.41	2.5	1000.000	150.0	H	130.0	-105
9262.000000	-67.84	-41.30	26.54	2.5	1000.000	150.0	V	315.0	-104
9434.000000	-68.33	-41.30	27.03	2.5	1000.000	150.0	H	107.0	-104
9865.500000	-67.31	-41.30	26.01	2.5	1000.000	150.0	H	0.0	-103
10205.500000	-66.28	-41.30	24.99	2.5	1000.000	150.0	V	73.0	-103
10704.500000	-67.25	-61.30	5.95	2.5	1000.000	150.0	V	149.0	-103
11192.500000	-66.94	-61.30	5.64	2.5	1000.000	150.0	V	52.0	-102
11500.500000	-66.69	-61.30	5.39	2.5	1000.000	150.0	H	91.0	-102
12247.000000	-67.21	-61.30	5.91	2.5	1000.000	150.0	V	221.0	-102



Product Service

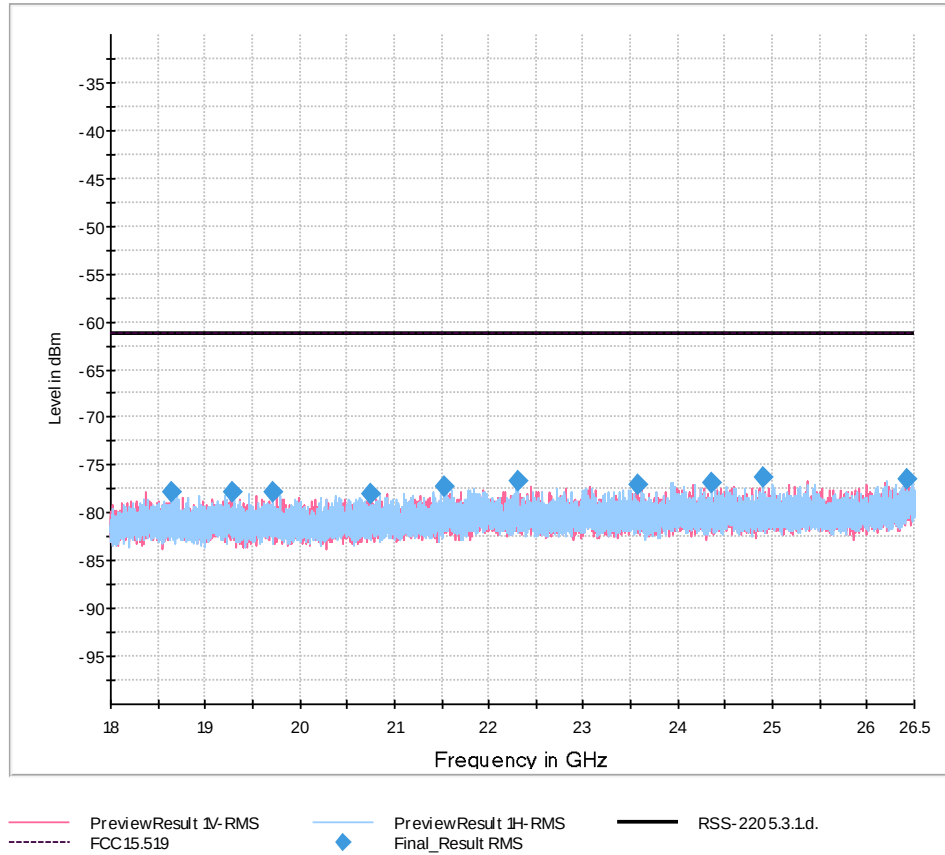


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azi- muth deg	Corr. dB
12690.733333	-68.02	-61.30	6.72	2.5	1000.000	150.0	H	157.0	-105
12979.133333	-68.56	-61.30	7.26	2.5	1000.000	150.0	H	29.0	-104
13410.800000	-67.89	-61.30	6.59	2.5	1000.000	150.0	V	78.0	-104
14172.866667	-68.39	-61.30	7.09	2.5	1000.000	150.0	H	191.0	-104
14823.866667	-68.38	-61.30	7.08	2.5	1000.000	150.0	V	61.0	-104
15359.133333	-67.95	-61.30	6.65	2.5	1000.000	150.0	V	237.0	-104
15918.200000	-67.15	-61.30	5.85	2.5	1000.000	150.0	H	36.0	-104
16677.000000	-67.22	-61.30	5.93	2.5	1000.000	150.0	V	326.0	-103
17338.266667	-66.17	-61.30	4.87	2.5	1000.000	150.0	H	170.0	-102
17954.733333	-65.60	-61.30	4.30	2.5	1000.000	150.0	H	97.0	-102



Product Service

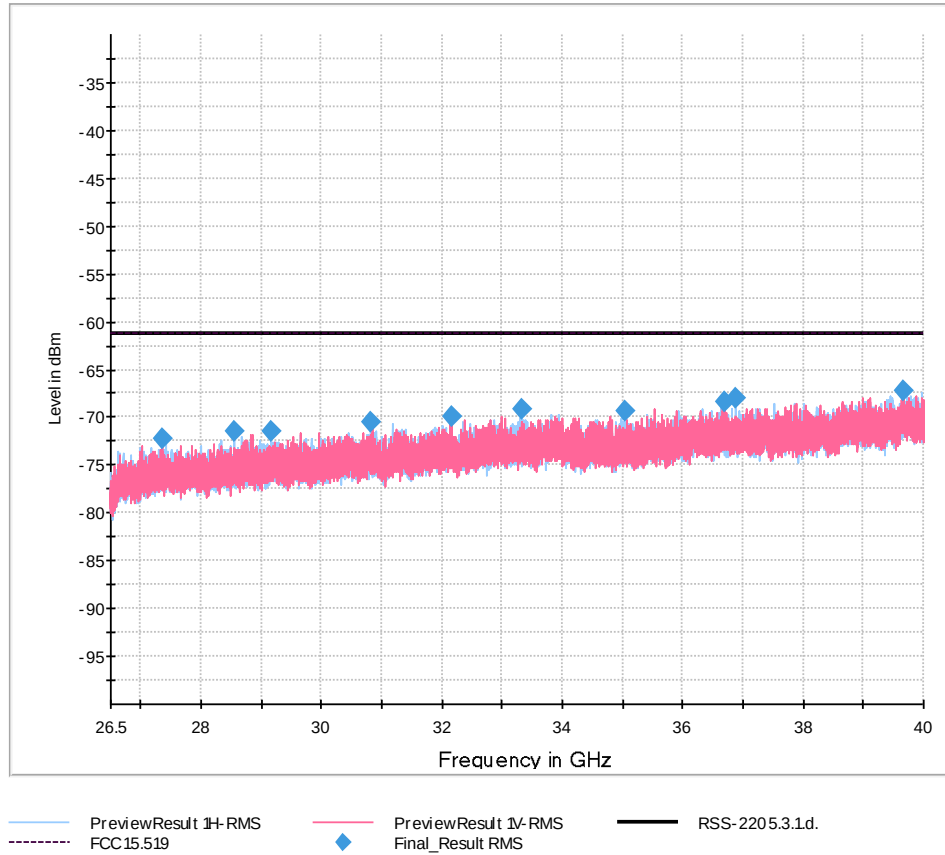


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
18636.083333	-77.77	-61.30	16.47	20.0	1000.000	150.0	H	342.0	-89
19282.555556	-77.89	-61.30	16.59	20.0	1000.000	150.0	V	108.0	-89
19706.138889	-77.89	-61.30	16.59	20.0	1000.000	150.0	H	0.0	-89
20754.472222	-77.97	-61.30	16.67	20.0	1000.000	150.0	V	324.0	-89
21527.500000	-77.29	-61.30	15.99	20.0	1000.000	150.0	V	104.0	-88
22306.666667	-76.75	-61.30	15.45	20.0	1000.000	150.0	H	12.0	-88
23569.388889	-77.10	-61.30	15.80	20.0	1000.000	150.0	V	179.0	-88
24350.444444	-76.81	-61.30	15.51	20.0	1000.000	150.0	H	39.0	-88
24892.083333	-76.34	-61.30	15.04	20.0	1000.000	150.0	H	189.0	-88
26415.472222	-76.47	-61.30	15.17	20.0	1000.000	150.0	V	220.0	-87



Product Service

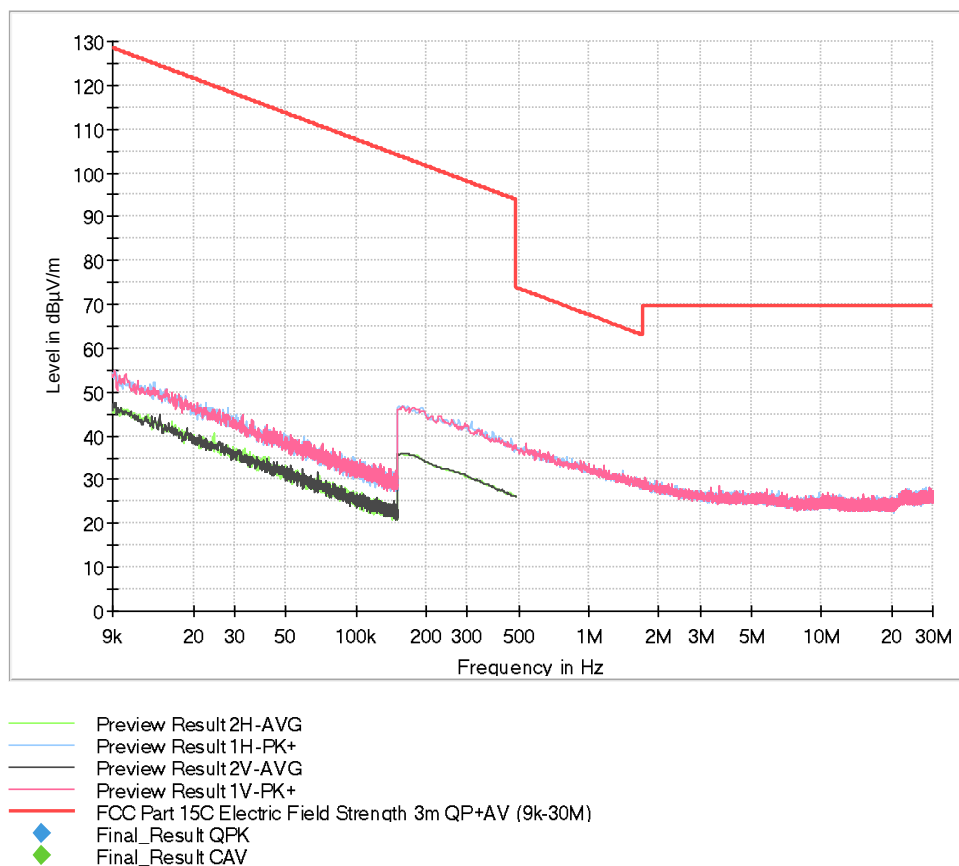


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
27350.017857	-72.15	-61.30	10.85	20.0	1000.000	150.0	V	252.0	-84
28546.696429	-71.49	-61.30	10.19	20.0	1000.000	150.0	H	300.0	-84
29171.071429	-71.39	-61.30	10.09	20.0	1000.000	150.0	H	170.0	-83
30818.071429	-70.41	-61.30	9.11	20.0	1000.000	150.0	H	321.0	-83
32151.678571	-69.84	-61.30	8.54	20.0	1000.000	150.0	V	126.0	-83
33325.214286	-69.21	-61.30	7.91	20.0	1000.000	150.0	H	0.0	-82
35047.910714	-69.31	-61.30	8.01	20.0	1000.000	150.0	H	244.0	-82
36702.625000	-68.38	-61.30	7.08	20.0	1000.000	150.0	H	0.0	-82
36866.071429	-68.07	-61.30	6.77	20.0	1000.000	150.0	H	1.0	-82
39652.375000	-67.28	-61.30	5.98	20.0	1000.000	150.0	V	22.0	-81

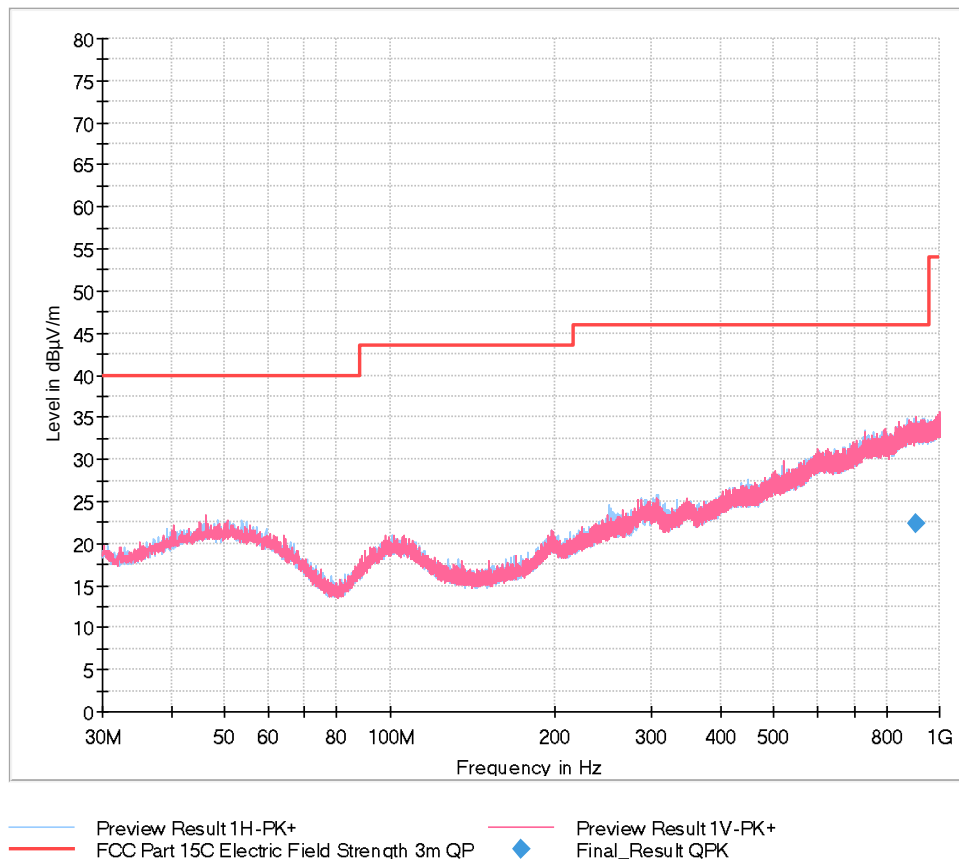


Mode 2:





Product Service

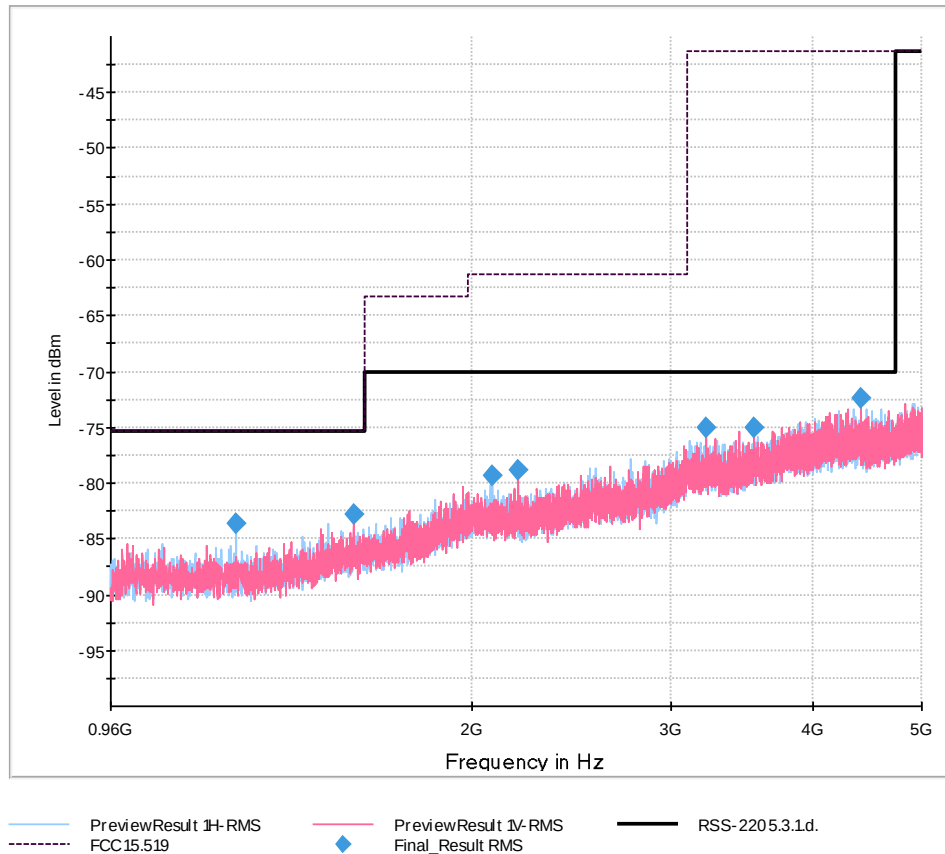


Final Results:

Frequency MHz	Qua- siPeak dBμV/m	Limit dBμV/m	Margin dB	Meas. Time ms	Band- width kHz	Height cm	Pol	Azi- muth deg	Corr. dB/m
905.760000	22.38	46.02	23.64	1000.0	120.000	350.0	V	-39.0	32.3



Product Service

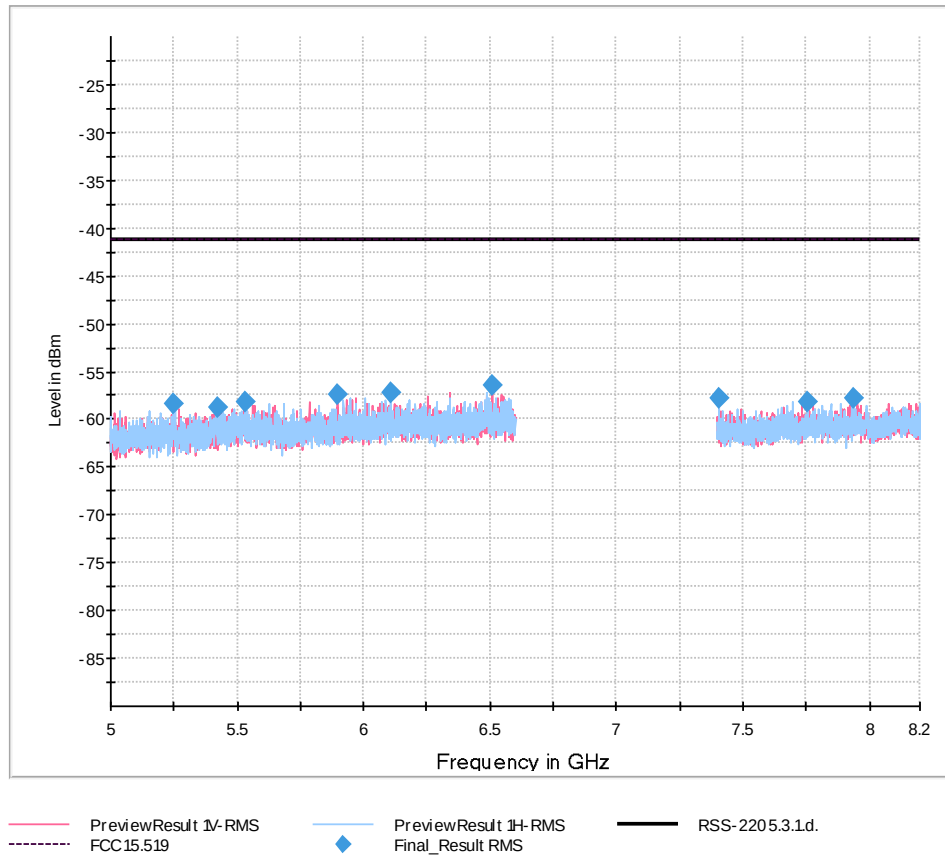


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
1238.365854	-83.55	-75.30	8.25	2.5	1000.000	150.0	H	123.0	-122
1572.404878	-82.77	-75.30	7.47	2.5	1000.000	150.0	V	269.0	-119
2088.736585	-79.41	-70.00	9.41	2.5	1000.000	150.0	H	169.0	-116
2201.068293	-78.79	-70.00	8.79	2.5	1000.000	150.0	V	221.0	-116
3228.804878	-75.07	-70.00	5.07	2.5	1000.000	150.0	V	176.0	-111
3553.975610	-74.96	-70.00	4.96	2.5	1000.000	150.0	V	305.0	-110
4422.575610	-72.42	-70.00	2.42	2.5	1000.000	150.0	V	99.0	-108



Product Service

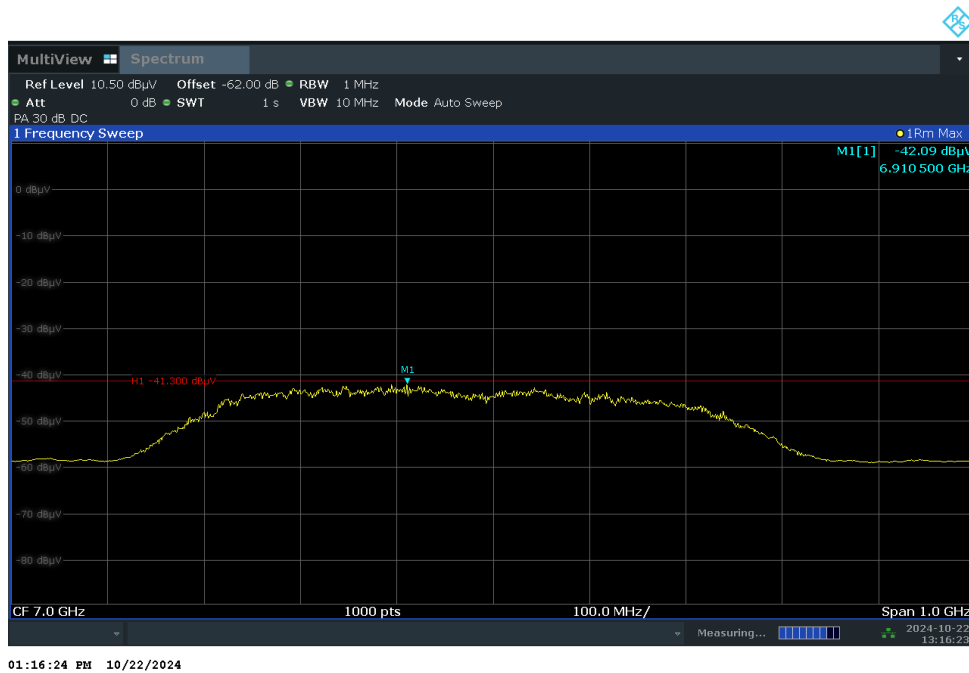


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
5246.000000	-58.47	-41.30	17.17	2.5	1000.000	150.0	V	321.0	-95
5419.500000	-58.84	-41.30	17.54	2.5	1000.000	150.0	H	15.0	-95
5534.000000	-58.10	-41.30	16.80	2.5	1000.000	150.0	H	76.0	-95
5899.500000	-57.43	-41.30	16.13	2.5	1000.000	150.0	V	313.0	-94
6111.000000	-57.13	-41.30	15.83	2.5	1000.000	150.0	V	270.0	-94
6507.000000	-56.40	-41.30	15.10	2.5	1000.000	150.0	V	241.0	-93
7408.000000	-57.81	-41.30	16.51	2.5	1000.000	150.0	H	154.0	-93
7755.000000	-58.12	-41.30	16.82	2.5	1000.000	150.0	V	32.0	-93
7938.000000	-57.76	-41.30	16.46	2.5	1000.000	150.0	H	0.0	-93



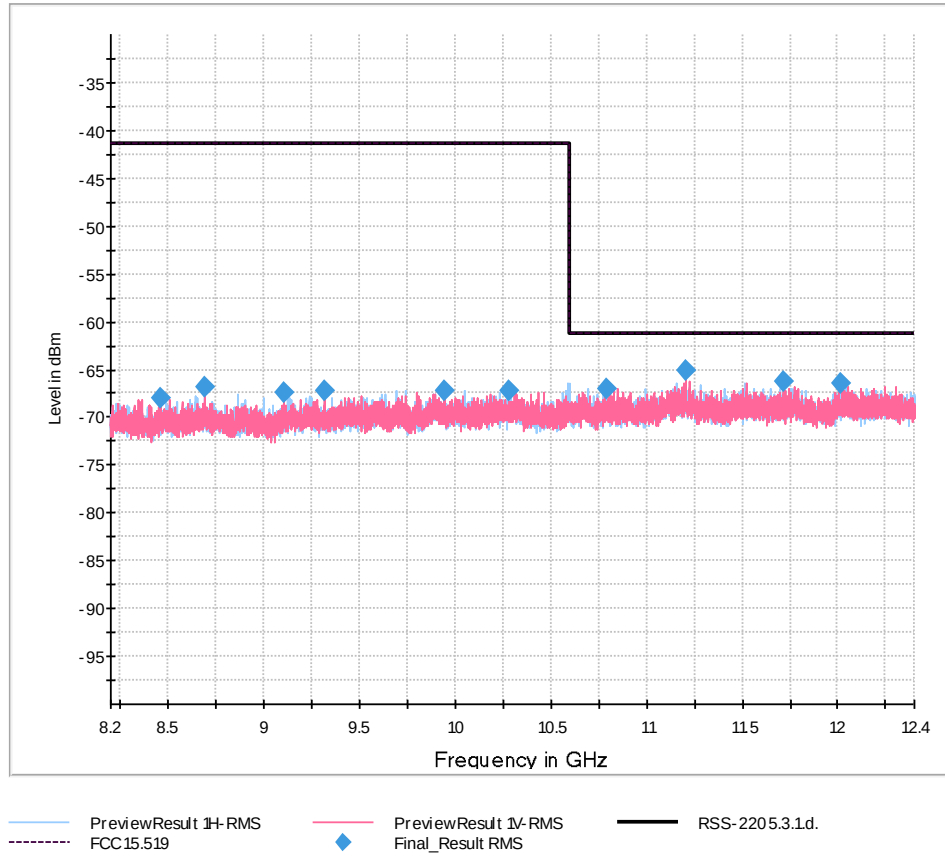
Product Service



Average Power - Channel 6: -42.09 dBm



Product Service

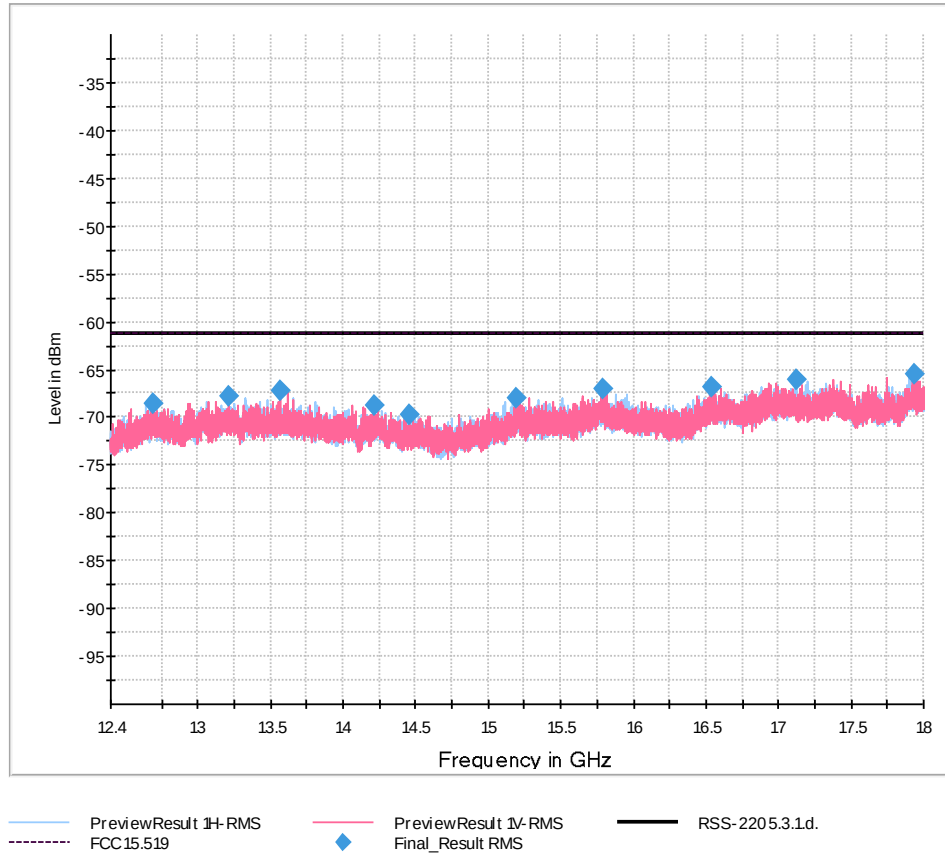


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
8460.000000	-67.98	-41.30	26.68	2.5	1000.000	150.0	V	114.0	-105
8687.000000	-66.84	-41.30	25.54	2.5	1000.000	150.0	V	272.0	-105
9104.000000	-67.42	-41.30	26.12	2.5	1000.000	150.0	V	10.0	-104
9317.500000	-67.16	-41.30	25.86	2.5	1000.000	150.0	V	52.0	-104
9946.500000	-67.21	-41.30	25.91	2.5	1000.000	150.0	V	315.0	-103
10281.500000	-67.15	-41.30	25.85	2.5	1000.000	150.0	H	285.0	-104
10786.500000	-66.95	-61.30	5.65	2.5	1000.000	150.0	H	198.0	-103
11203.000000	-65.12	-61.30	3.82	2.5	1000.000	150.0	V	354.0	-102
11720.500000	-66.23	-61.30	4.93	2.5	1000.000	150.0	V	223.0	-103
12014.500000	-66.47	-61.30	5.17	2.5	1000.000	150.0	H	66.0	-102

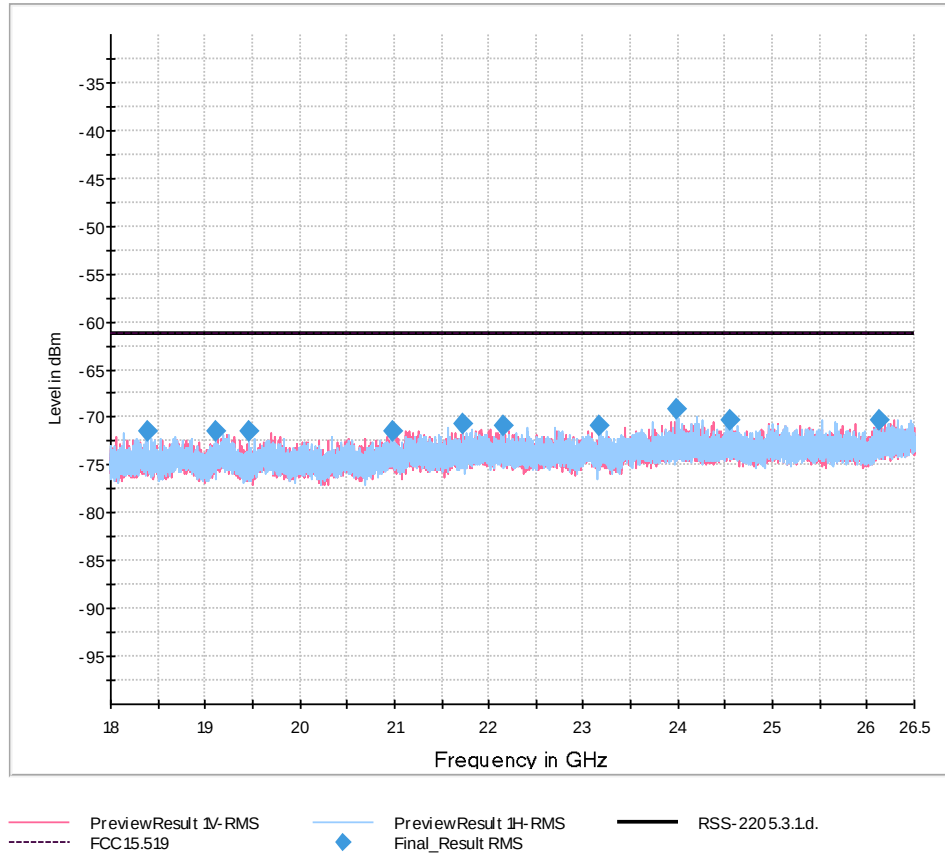


Product Service



Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
12692.600000	-68.48	-61.30	7.18	2.5	1000.000	150.0	H	254.0	-105
13218.533333	-67.74	-61.30	6.44	2.5	1000.000	150.0	H	235.0	-104
13568.533333	-67.24	-61.30	5.94	2.5	1000.000	150.0	V	27.0	-104
14211.133333	-68.78	-61.30	7.48	2.5	1000.000	150.0	H	298.0	-104
14458.933333	-69.69	-61.30	8.39	2.5	1000.000	150.0	V	136.0	-104
15198.600000	-67.95	-61.30	6.65	2.5	1000.000	150.0	H	101.0	-104
15793.600000	-67.06	-61.30	5.76	2.5	1000.000	150.0	V	18.0	-104
16541.666667	-66.88	-61.30	5.58	2.5	1000.000	150.0	V	209.0	-103
17119.866667	-66.12	-61.30	4.82	2.5	1000.000	150.0	H	192.0	-102
17938.400000	-65.54	-61.30	4.24	2.5	1000.000	150.0	V	263.0	-102

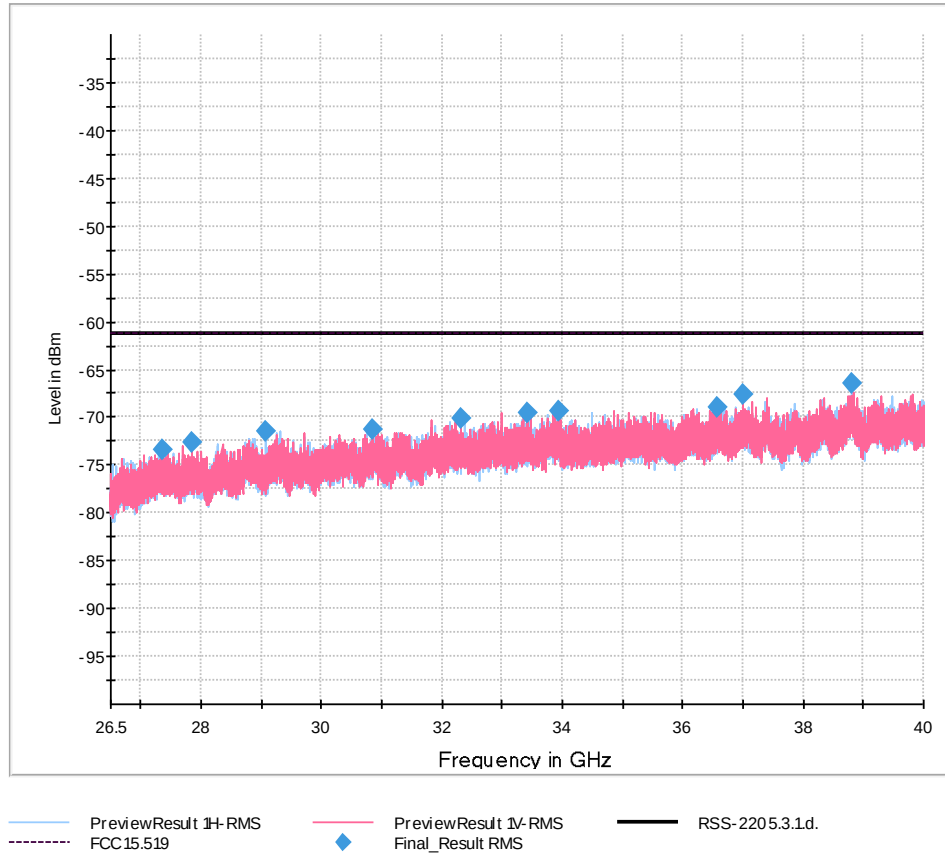


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
18389.111111	-71.37	-61.30	10.07	20.0	1000.000	150.0	H	215.0	-83
19112.555556	-71.52	-61.30	10.22	20.0	1000.000	150.0	H	31.0	-83
19460.111111	-71.50	-61.30	10.20	20.0	1000.000	150.0	H	59.0	-83
20979.250000	-71.52	-61.30	10.22	20.0	1000.000	150.0	H	299.0	-82
21731.500000	-70.72	-61.30	9.42	20.0	1000.000	150.0	V	133.0	-82
22148.472222	-70.79	-61.30	9.49	20.0	1000.000	150.0	H	123.0	-82
23170.833333	-70.96	-61.30	9.66	20.0	1000.000	150.0	H	242.0	-82
23993.444444	-69.22	-61.30	7.92	20.0	1000.000	150.0	H	113.0	-82
24554.444444	-70.24	-61.30	8.94	20.0	1000.000	150.0	V	339.0	-82
26119.861111	-70.25	-61.30	8.95	20.0	1000.000	150.0	V	335.0	-82



Product Service

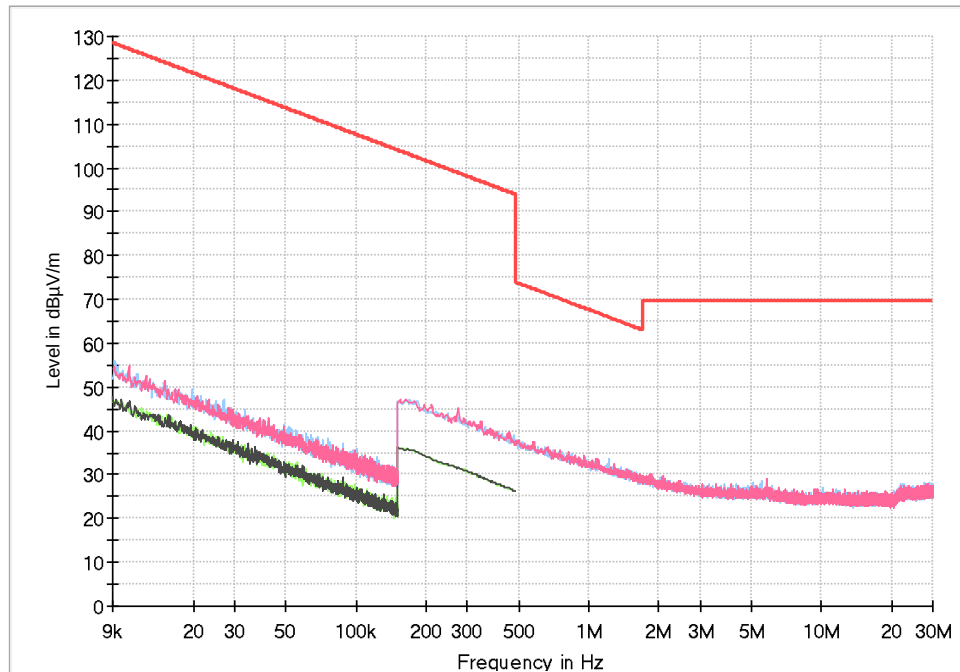


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
27358.696429	-73.40	-61.30	12.10	20.0	1000.000	150.0	V	117.0	-84
27834.571429	-72.67	-61.30	11.37	20.0	1000.000	150.0	V	184.0	-84
29075.607143	-71.51	-61.30	10.21	20.0	1000.000	150.0	H	29.0	-83
30839.767857	-71.29	-61.30	9.99	20.0	1000.000	150.0	H	0.0	-83
32328.625000	-70.08	-61.30	8.78	20.0	1000.000	150.0	V	133.0	-83
33404.285714	-69.46	-61.30	8.16	20.0	1000.000	150.0	V	299.0	-82
33932.714286	-69.35	-61.30	8.05	20.0	1000.000	150.0	V	146.0	-82
36570.517857	-68.88	-61.30	7.58	20.0	1000.000	150.0	H	70.0	-82
36998.178571	-67.53	-61.30	6.23	20.0	1000.000	150.0	V	334.0	-82
38794.160714	-66.42	-61.30	5.12	20.0	1000.000	150.0	H	249.0	-81



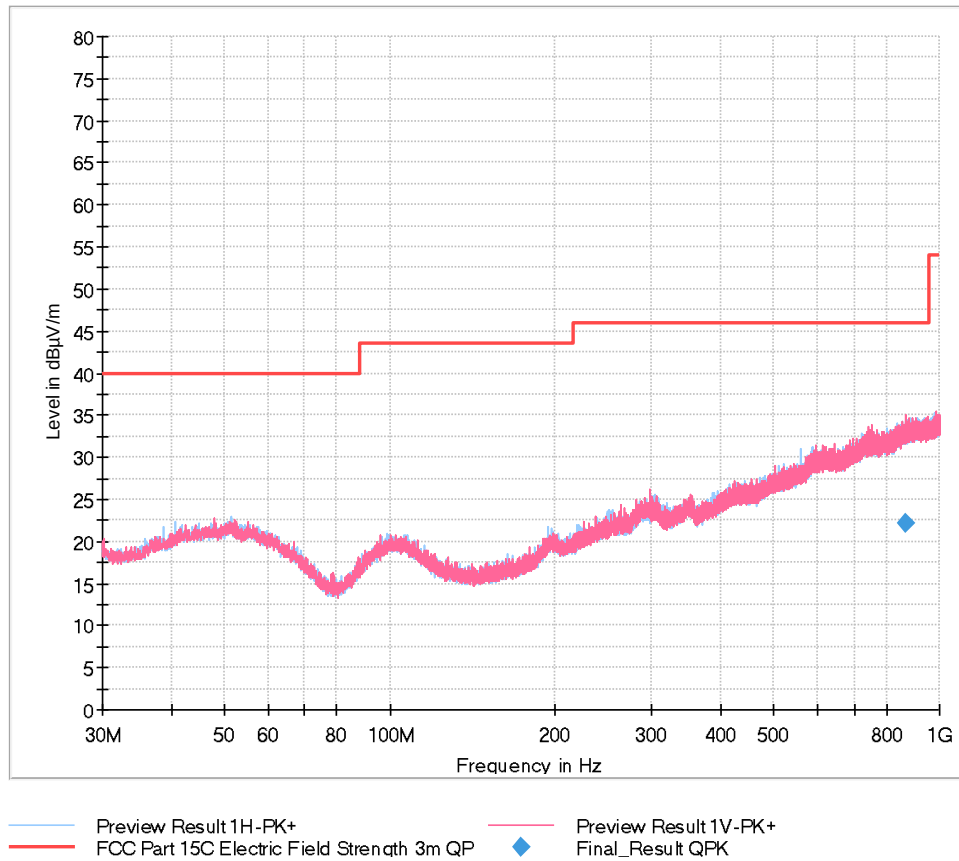
Mode 3:



- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC Part 15C Electric Field Strength 3m QP+AV (9k-30M)
- Final Result QPK
- Final Result CAV



Product Service

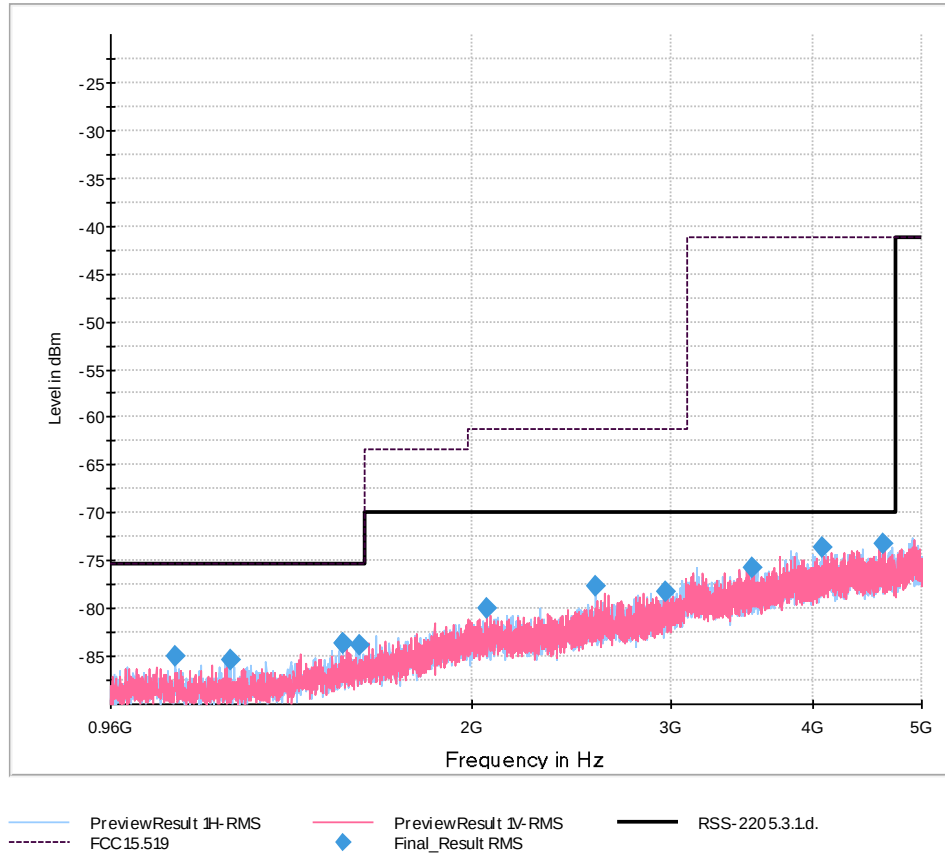


Final Results:

Frequency MHz	Qua- siPeak dBµV/m	Limit dBµV/m	Margin dB	Meas. Time ms	Band- width kHz	Height cm	Pol	Azi- muth deg	Corr. dB/m
869.700000	22.22	46.02	23.80	1000.0	120.000	140.0	V	-122.0	31.7



Product Service

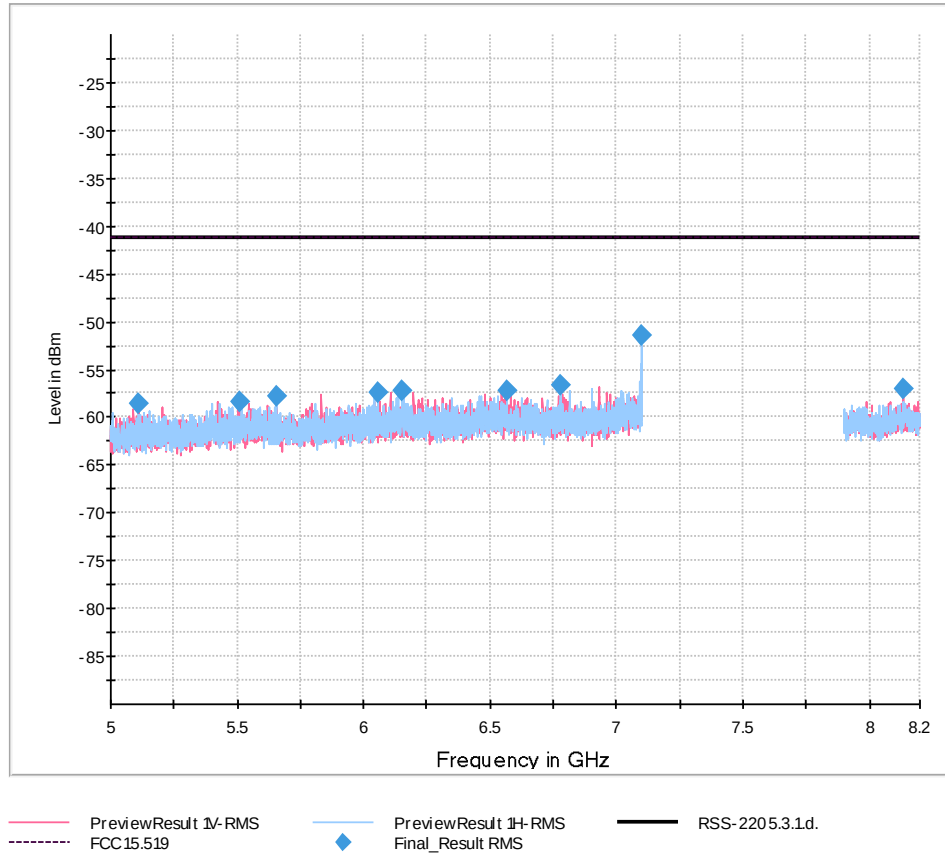


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
1095.487805	-84.98	-75.30	9.68	2.5	1000.000	150.0	H	320.0	-122.0
1224.078049	-85.44	-75.30	10.14	2.5	1000.000	150.0	H	36.0	-121.7
1540.380488	-83.59	-75.30	8.29	2.5	1000.000	150.0	H	329.0	-119.7
1540.380488	-83.59	-75.30	8.29	2.5	1000.000	150.0	H	329.0	-119.7
1593.590244	-83.90	-75.30	8.60	2.5	1000.000	150.0	H	85.0	-119.4
2063.117073	-80.06	-70.00	10.06	2.5	1000.000	150.0	V	250.0	-115.6
2577.478049	-77.63	-70.00	7.63	2.5	1000.000	150.0	H	219.0	-113.9
2970.639024	-78.20	-70.00	8.20	2.5	1000.000	150.0	H	31.0	-112.5
3536.239024	-75.69	-70.00	5.69	2.5	1000.000	150.0	V	136.0	-110.2
4079.668293	-73.66	-70.00	3.66	2.5	1000.000	150.0	H	248.0	-107.9
4618.170732	-73.19	-70.00	3.19	2.5	1000.000	150.0	V	260.0	-107.6



Product Service

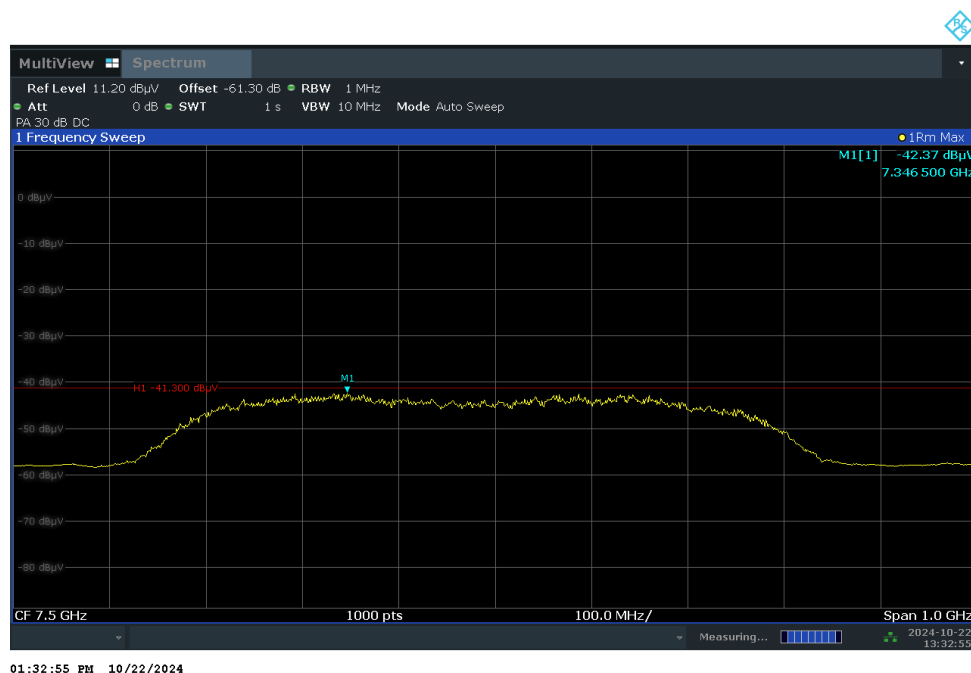


Final Results:

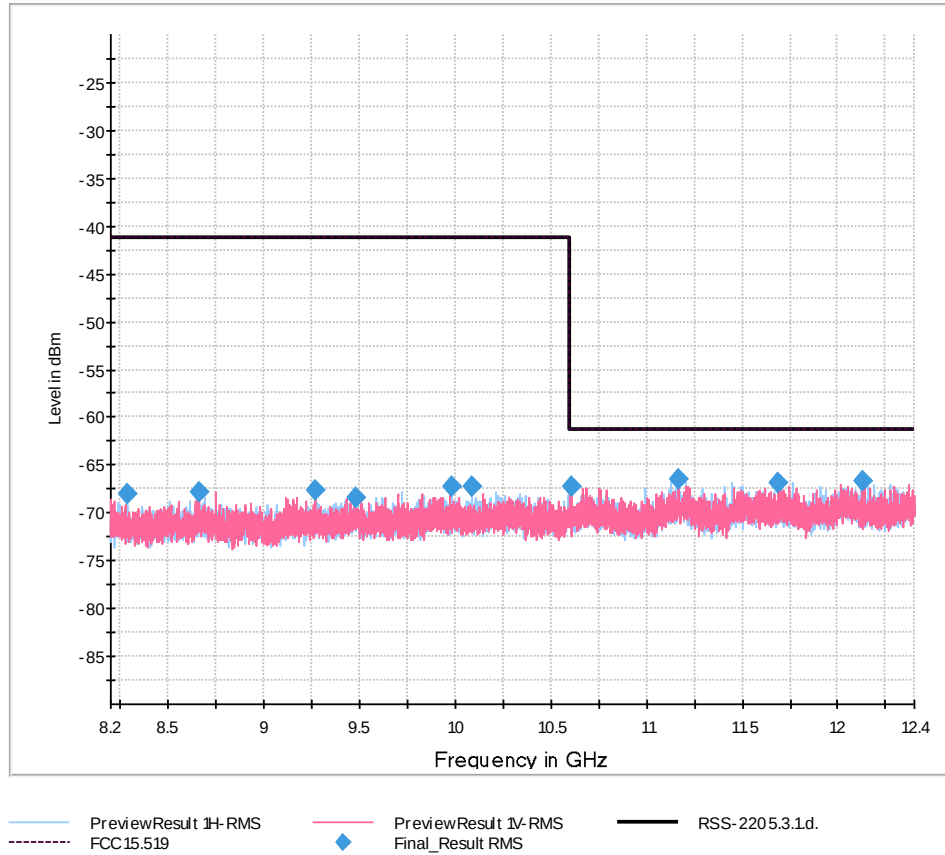
Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
5112.500000	-58.61	-41.30	17.31	2.5	1000.000	150.0	V	263.0	-95.2
5509.500000	-58.30	-41.30	17.00	2.5	1000.000	150.0	V	66.0	-94.6
5657.000000	-57.73	-41.30	16.43	2.5	1000.000	150.0	V	305.0	-94.7
6060.000000	-57.47	-41.30	16.17	2.5	1000.000	150.0	H	244.0	-94.1
6150.500000	-57.27	-41.30	15.97	2.5	1000.000	150.0	H	161.0	-94.0
6567.500000	-57.19	-41.30	15.89	2.5	1000.000	150.0	H	348.0	-93.5
6776.000000	-56.65	-41.30	15.35	2.5	1000.000	150.0	H	249.0	-93.8
7096.500000	-51.35	-41.30	10.05	2.5	1000.000	150.0	H	319.0	-92.8
8136.500000	-57.02	-41.30	15.72	2.5	1000.000	150.0	V	0.0	-93.2



Product Service



Average Power - Channel 8: -42.37 dBm

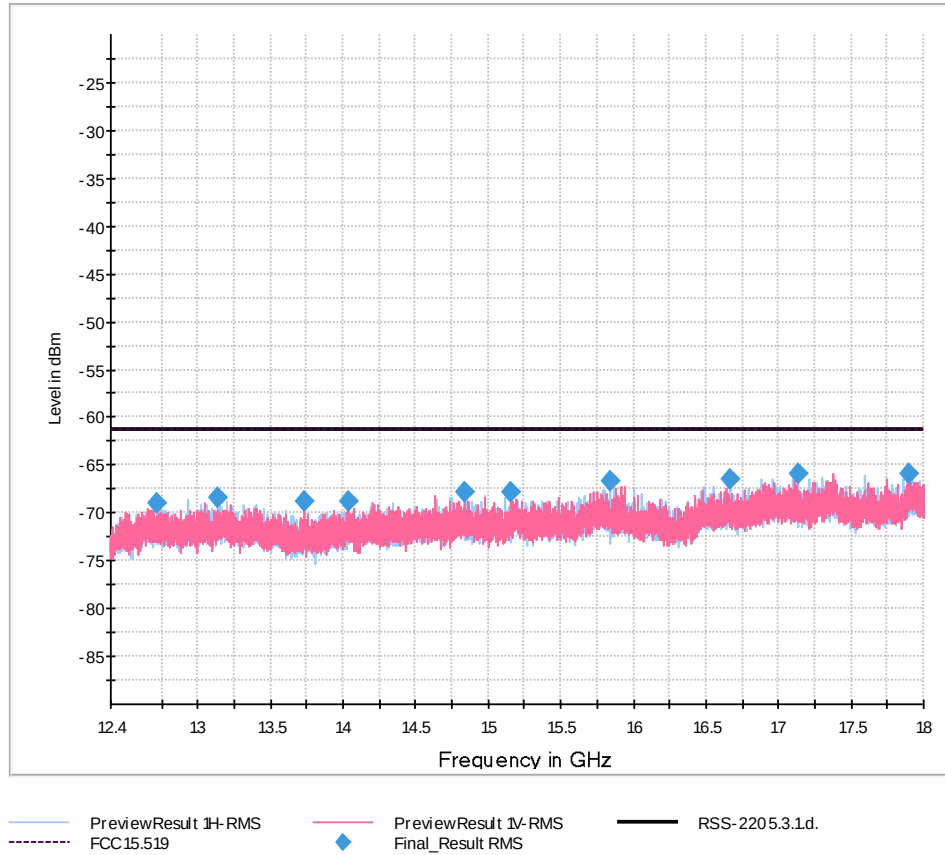


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azi- muth deg	Corr. dB
8285.000000	-67.98	-41.30	26.68	2.5	1000.000	150.0	H	320.0	-105
8662.500000	-67.85	-41.30	26.55	2.5	1000.000	150.0	V	128.0	-105
9266.500000	-67.62	-41.30	26.32	2.5	1000.000	150.0	V	170.0	-104
9479.500000	-68.31	-41.30	27.01	2.5	1000.000	150.0	H	26.0	-104
9980.500000	-67.17	-41.30	25.87	2.5	1000.000	150.0	H	152.0	-103
10084.500000	-67.17	-41.30	25.87	2.5	1000.000	150.0	H	152.0	-103
10608.000000	-67.31	-61.30	6.01	2.5	1000.000	150.0	V	89.0	-103
11165.500000	-66.52	-61.30	5.22	2.5	1000.000	150.0	V	99.0	-103
11683.000000	-66.77	-61.30	5.47	2.5	1000.000	150.0	V	79.0	-102
12127.000000	-66.75	-61.30	5.45	2.5	1000.000	150.0	V	303.0	-103



Product Service

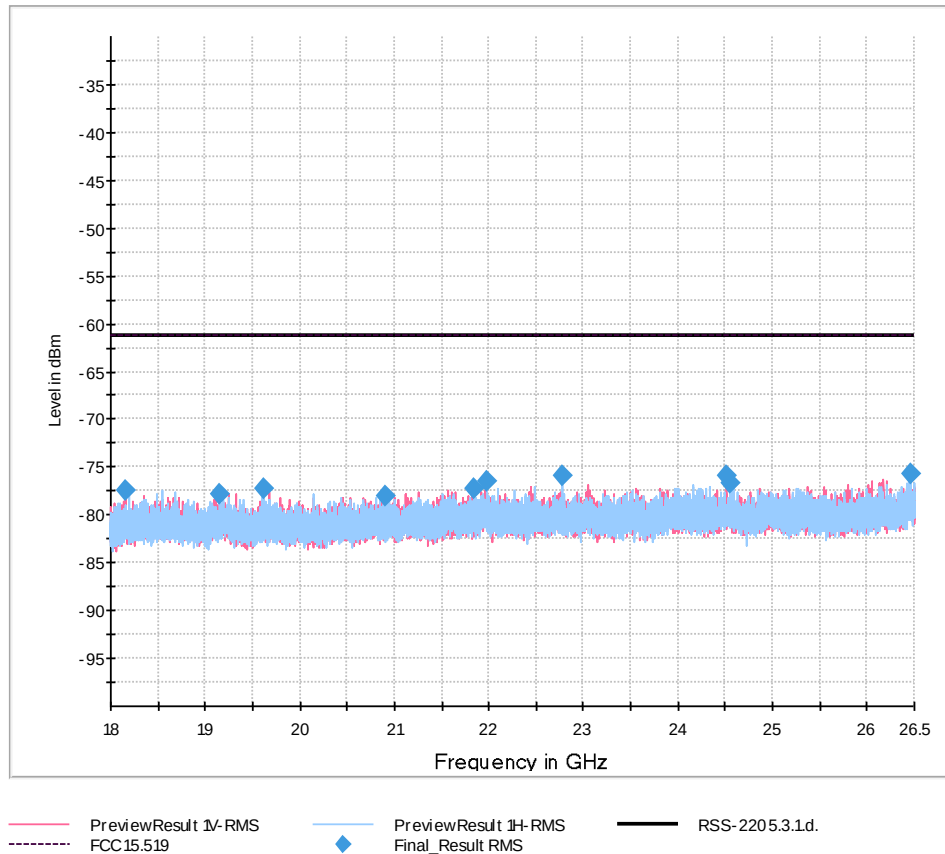


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Mar- gin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azi- muth deg	Corr. dB
12722.466667	-69.04	-61.30	7.74	2.5	1000.000	150.0	H	196.0	-105
13134.066667	-68.33	-61.30	7.03	2.5	1000.000	150.0	H	2.0	-104
13729.533333	-68.73	-61.30	7.43	2.5	1000.000	150.0	V	65.0	-104
14035.666667	-68.72	-61.30	7.42	2.5	1000.000	150.0	V	71.0	-104
14836.000000	-67.76	-61.30	6.46	2.5	1000.000	150.0	V	287.0	-104
15151.000000	-67.84	-61.30	6.54	2.5	1000.000	150.0	V	124.0	-104
15843.533333	-66.76	-61.30	5.46	2.5	1000.000	150.0	H	268.0	-104
16672.800000	-66.43	-61.30	5.13	2.5	1000.000	150.0	H	44.0	-103
17136.200000	-65.98	-61.30	4.68	2.5	1000.000	150.0	H	57.0	-102
17899.200000	-65.97	-61.30	4.67	2.5	1000.000	150.0	V	344.0	-102



Product Service

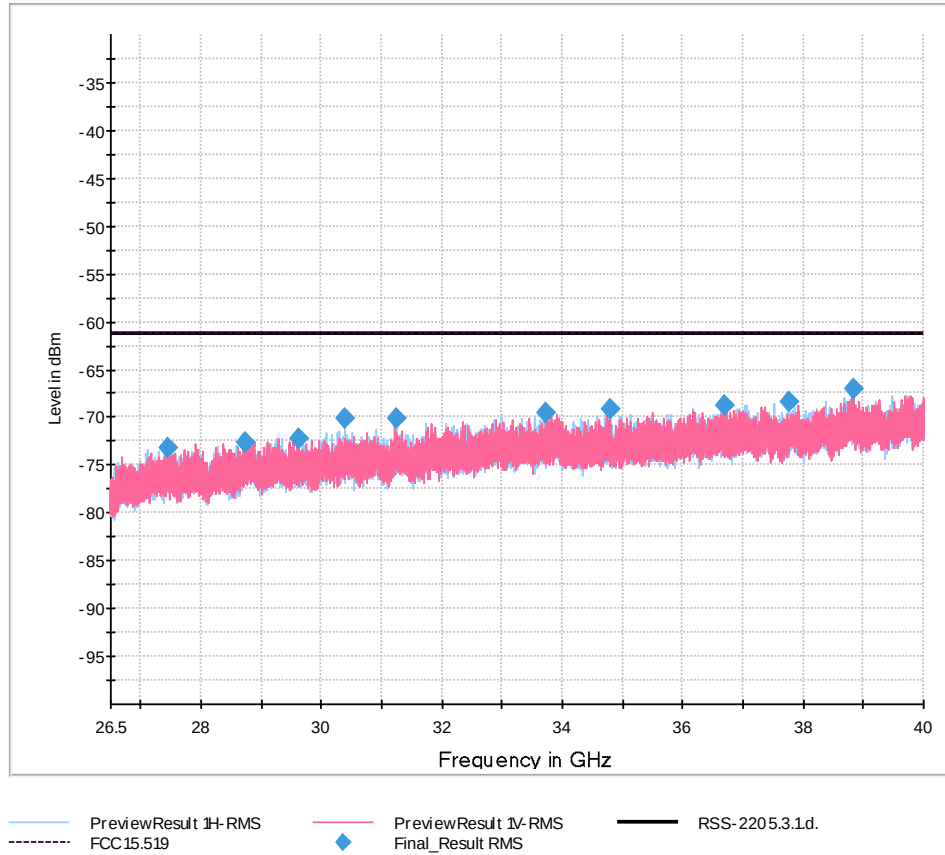


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
18163.388889	-77.40	-61.30	16.10	20.0	1000.000	150.0	V	147.0	-89
19153.638889	-77.75	-61.30	16.45	20.0	1000.000	150.0	H	27.0	-89
19613.583333	-77.25	-61.30	15.95	20.0	1000.000	150.0	H	71.0	-89
20898.027778	-77.95	-61.30	16.65	20.0	1000.000	150.0	H	171.0	-88
21835.861111	-77.21	-61.30	15.91	20.0	1000.000	150.0	H	234.0	-88
21982.722222	-76.52	-61.30	15.22	20.0	1000.000	150.0	H	310.0	-88
22775.111111	-75.98	-61.30	14.68	20.0	1000.000	150.0	H	150.0	-88
24514.305556	-75.96	-61.30	14.66	20.0	1000.000	150.0	V	0.0	-88
24551.611111	-76.74	-61.30	15.44	20.0	1000.000	150.0	H	197.0	-88
26463.166667	-75.63	-61.30	14.33	20.0	1000.000	150.0	V	239.0	-87



Product Service

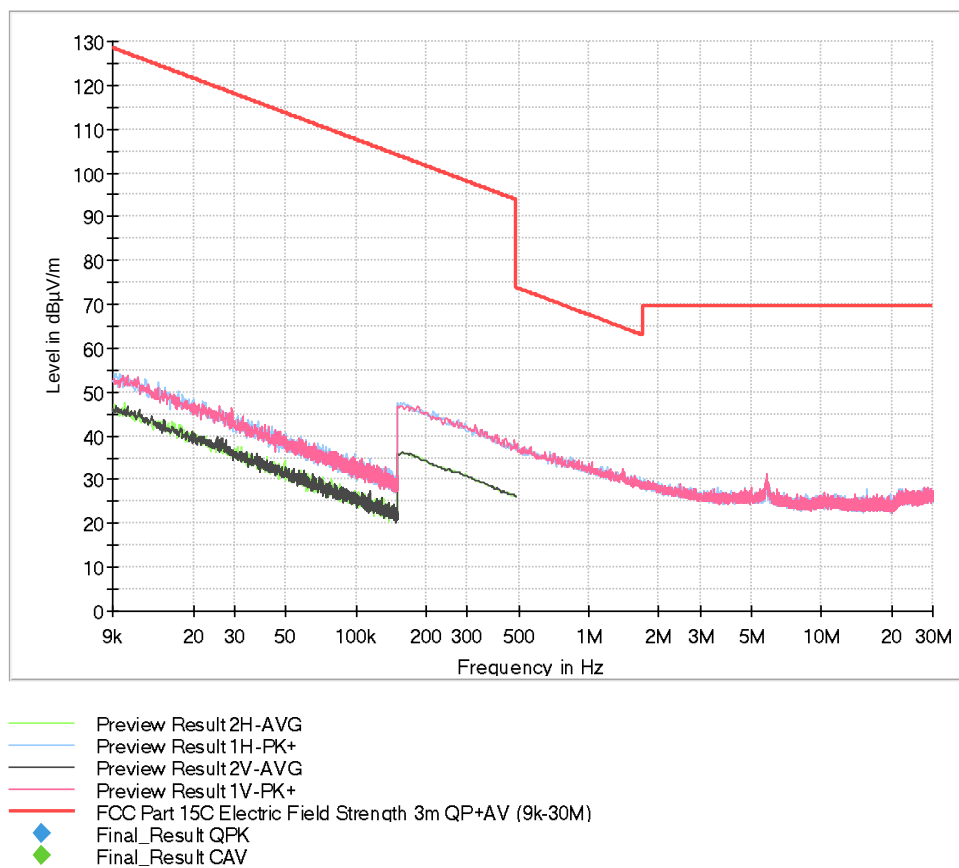


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
27463.321429	-73.15	-61.30	11.85	20.0	1000.000	150.0	H	283.0	-84
28726.535714	-72.71	-61.30	11.41	20.0	1000.000	150.0	H	136.0	-84
29632.482143	-72.23	-61.30	10.93	20.0	1000.000	150.0	V	347.0	-83
30389.928571	-70.06	-61.30	8.76	20.0	1000.000	150.0	H	26.0	-83
31248.142857	-70.08	-61.30	8.78	20.0	1000.000	150.0	H	229.0	-83
33720.089286	-69.57	-61.30	8.27	20.0	1000.000	150.0	V	99.0	-82
34803.464286	-69.10	-61.30	7.80	20.0	1000.000	150.0	V	55.0	-82
36685.267857	-68.68	-61.30	7.38	20.0	1000.000	150.0	V	126.0	-82
37753.214286	-68.31	-61.30	7.01	20.0	1000.000	150.0	H	0.0	-81
38829.839286	-66.96	-61.30	5.66	20.0	1000.000	150.0	V	39.0	-81

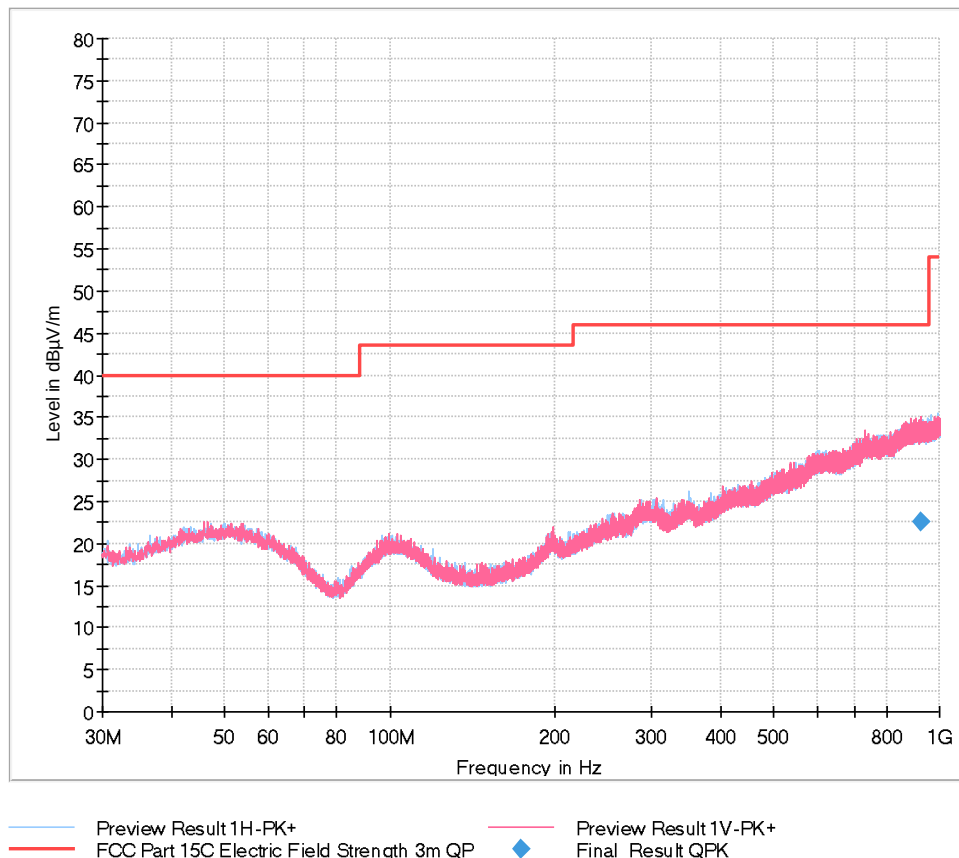


Mode 4:





Product Service

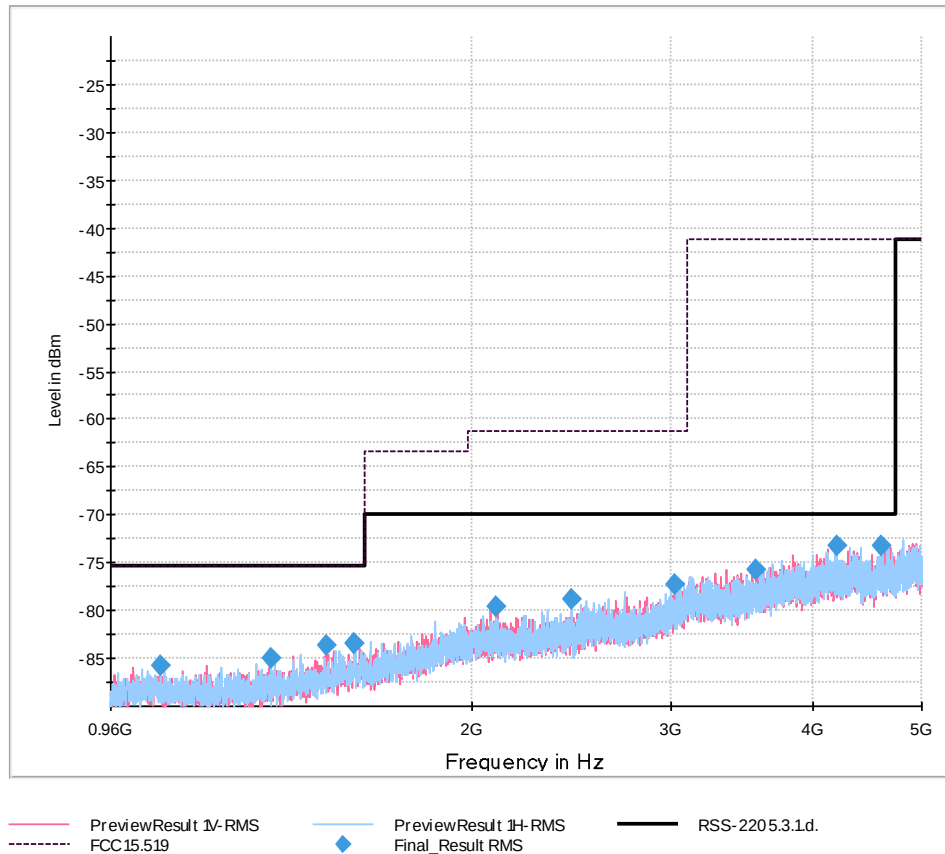


Final Results:

Frequency MHz	Qua- siPeak dBµV/m	Limit dBµV/m	Margin dB	Meas. Time ms	Band- width kHz	Height cm	Pol	Azi- muth deg	Corr. dB/m
922.800000	22.50	46.02	23.53	1000.0	120.000	210.0	V	-15.0	32.3

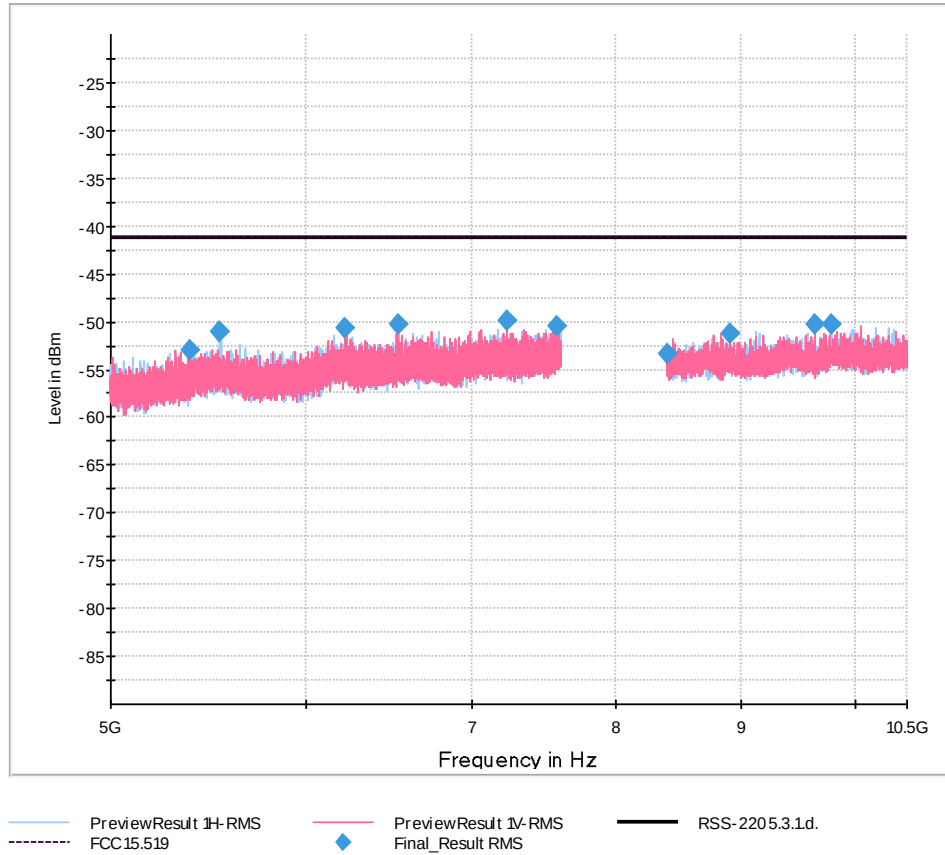


Product Service



Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
1061.492683	-85.76	-75.30	10.46	2.5	1000.000	150.0	V	95.0	-122
1330.497561	-84.90	-75.30	9.60	2.5	1000.000	150.0	H	31.0	-121
1488.648781	-83.61	-75.30	8.31	2.5	1000.000	150.0	V	77.0	-120
1575.360976	-83.43	-75.30	8.13	2.5	1000.000	150.0	V	182.0	-119
1575.360976	-83.43	-75.30	8.13	2.5	1000.000	150.0	V	182.0	-119
2104.009756	-79.56	-70.00	9.56	2.5	1000.000	150.0	V	345.0	-116
2451.843902	-78.74	-70.00	8.74	2.5	1000.000	150.0	H	78.0	-115
3028.282927	-77.36	-70.00	7.36	2.5	1000.000	150.0	V	209.0	-112
3567.278049	-75.64	-70.00	5.64	2.5	1000.000	150.0	V	183.0	-110
4214.170732	-73.18	-70.00	3.18	2.5	1000.000	150.0	H	173.0	-108
4602.404878	-73.25	-70.00	3.25	2.5	1000.000	150.0	V	292.0	-108

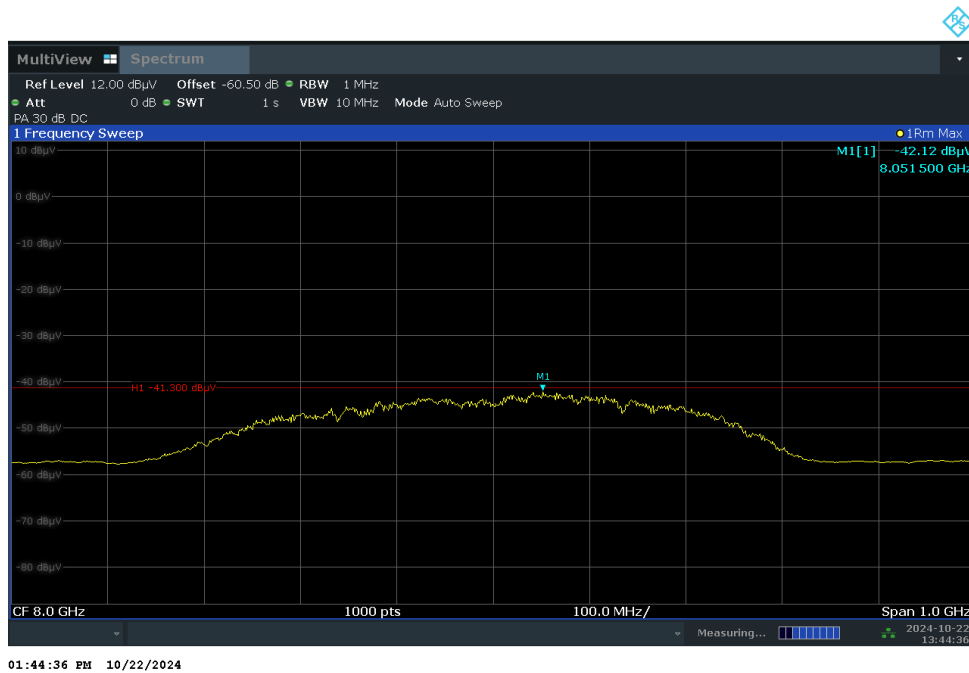


Final Results:

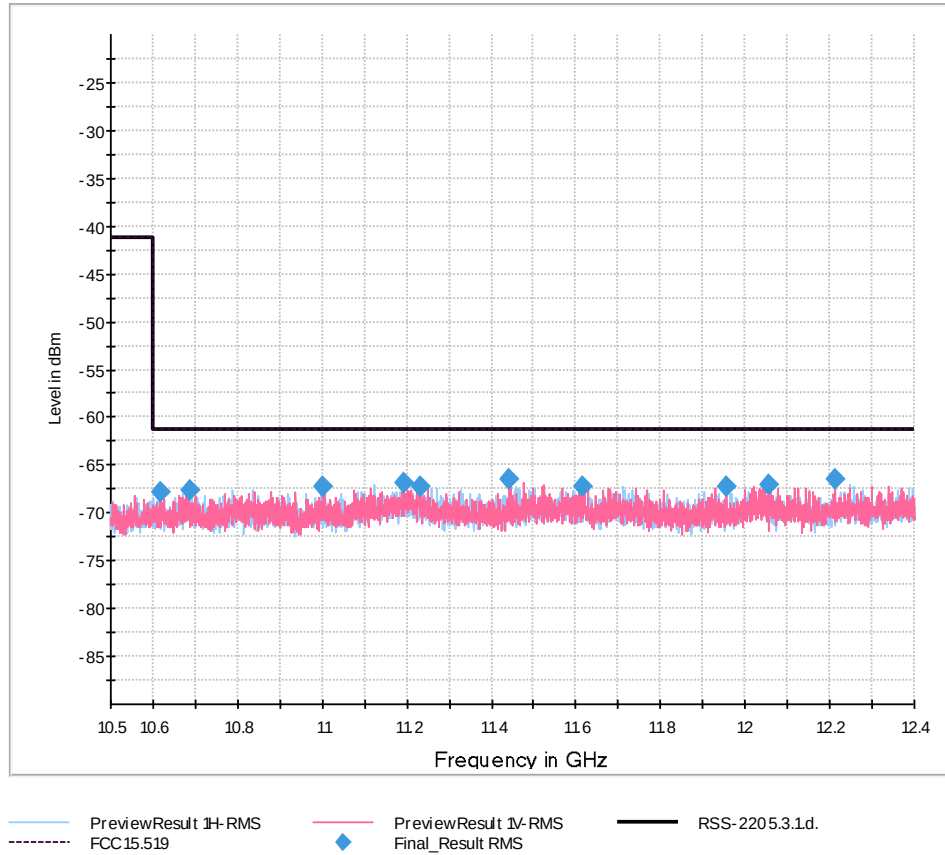
Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azi- muth deg	Corr. dB
5384.800000	-53.02	-41.30	11.72	2.5	1000.000	150.0	V	320.0	-66
5535.971429	-51.00	-41.30	9.70	2.5	1000.000	150.0	H	324.0	-66
5535.971429	-51.00	-41.30	9.70	2.5	1000.000	150.0	H	324.0	-66
6218.285714	-50.67	-41.30	9.37	2.5	1000.000	150.0	V	59.0	-65
6540.685714	-50.27	-41.30	8.97	2.5	1000.000	150.0	V	63.0	-65
7229.685714	-49.94	-41.30	8.64	2.5	1000.000	150.0	V	93.0	-64
7580.871429	-50.51	-41.30	9.21	2.5	1000.000	150.0	H	8.0	-64
8403.000000	-53.29	-41.30	11.99	2.5	1000.000	150.0	H	27.0	-63
8898.500000	-51.16	-41.30	9.86	2.5	1000.000	150.0	H	328.0	-62
9640.000000	-50.29	-41.30	8.99	2.5	1000.000	150.0	V	179.0	-62
9782.000000	-50.26	-41.30	8.96	2.5	1000.000	150.0	H	211.0	-62



Product Service

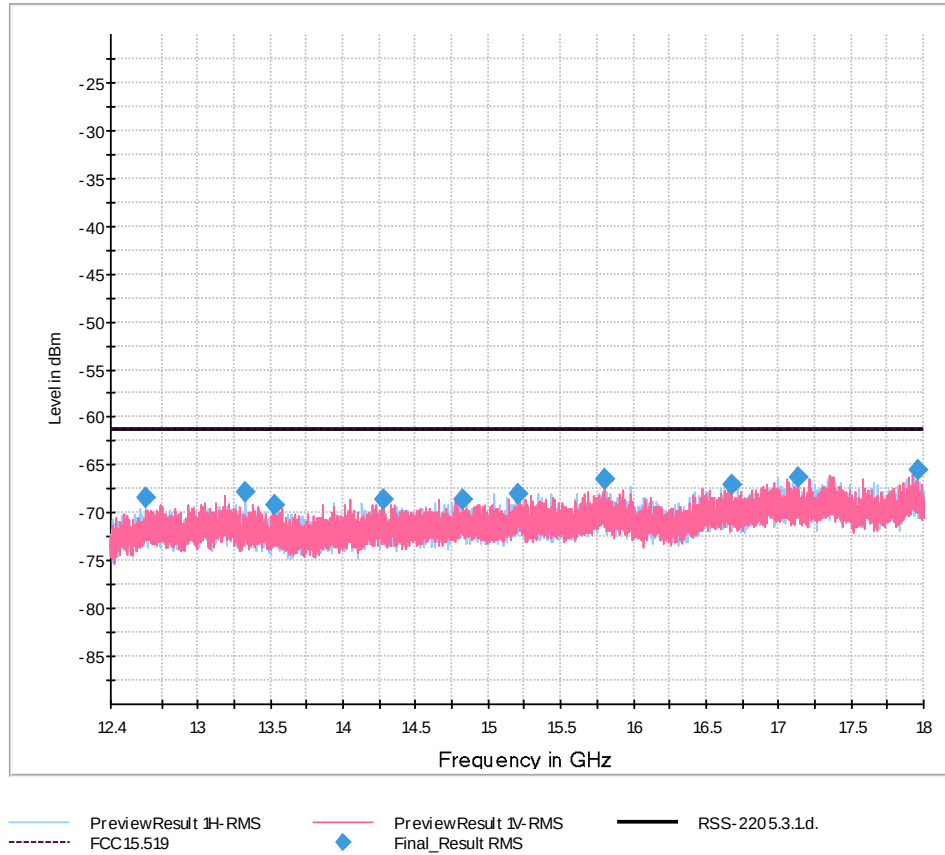


Average Power - Channel 9: -42.12 dBm



Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azi- muth deg	Corr. dB
10618.000000	-67.81	-61.30	6.51	2.5	1000.000	150.0	H	118.0	-103
10687.500000	-67.65	-61.30	6.35	2.5	1000.000	150.0	H	237.0	-102
11000.000000	-67.21	-61.30	5.91	2.5	1000.000	150.0	V	83.0	-103
11191.000000	-66.81	-61.30	5.51	2.5	1000.000	150.0	H	15.0	-102
11232.500000	-67.15	-61.30	5.85	2.5	1000.000	150.0	V	118.0	-102
11441.500000	-66.56	-61.30	5.26	2.5	1000.000	150.0	V	270.0	-103
11614.500000	-67.18	-61.30	5.88	2.5	1000.000	150.0	V	218.0	-102
11954.500000	-67.32	-61.30	6.02	2.5	1000.000	150.0	V	350.0	-103
12055.000000	-67.14	-61.30	5.84	2.5	1000.000	150.0	H	278.0	-102
12213.000000	-66.51	-61.30	5.21	2.5	1000.000	150.0	V	355.0	-103

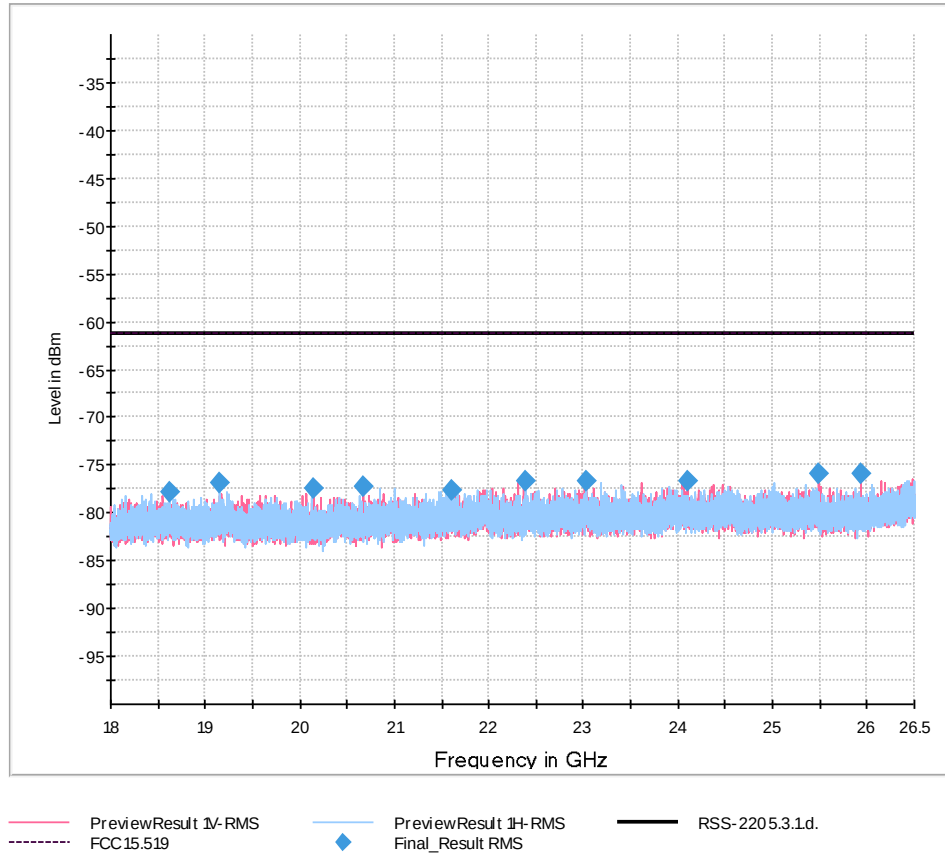


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azi- muth deg	Corr. dB
12646.400000	-68.44	-61.30	7.14	2.5	1000.000	150.0	H	70.0	-105
13328.200000	-67.90	-61.30	6.60	2.5	1000.000	150.0	H	125.0	-104
13536.333333	-69.13	-61.30	7.83	2.5	1000.000	150.0	V	284.0	-104
14276.933333	-68.64	-61.30	7.34	2.5	1000.000	150.0	V	34.0	-104
14824.800000	-68.61	-61.30	7.31	2.5	1000.000	150.0	H	138.0	-104
15207.000000	-68.04	-61.30	6.74	2.5	1000.000	150.0	H	308.0	-104
15796.866667	-66.57	-61.30	5.27	2.5	1000.000	150.0	H	141.0	-104
15796.866667	-66.57	-61.30	5.27	2.5	1000.000	150.0	H	141.0	-104
16677.000000	-67.13	-61.30	5.83	2.5	1000.000	150.0	V	195.0	-103
17137.133333	-66.24	-61.30	4.94	2.5	1000.000	150.0	H	15.0	-102
17966.866667	-65.57	-61.30	4.27	2.5	1000.000	150.0	H	8.0	-102



Product Service

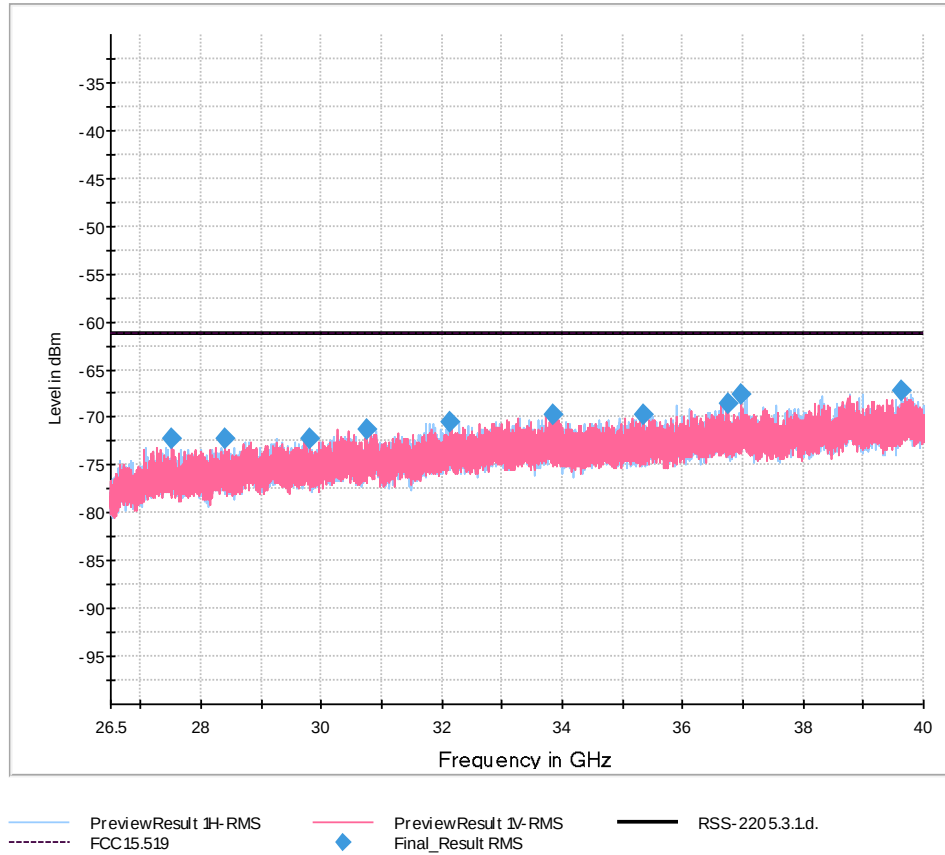


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
18623.805556	-77.87	-61.30	16.57	20.0	1000.000	150.0	V	225.0	-89
19159.305556	-76.95	-61.30	15.65	20.0	1000.000	150.0	H	195.0	-89
20150.027778	-77.37	-61.30	16.07	20.0	1000.000	150.0	V	62.0	-89
20669.000000	-77.33	-61.30	16.03	20.0	1000.000	150.0	V	102.0	-89
21616.277778	-77.59	-61.30	16.29	20.0	1000.000	150.0	H	47.0	-88
22395.444444	-76.60	-61.30	15.30	20.0	1000.000	150.0	H	34.0	-88
23038.611111	-76.64	-61.30	15.34	20.0	1000.000	150.0	V	2.0	-88
24098.277778	-76.61	-61.30	15.31	20.0	1000.000	150.0	V	250.0	-88
25491.805556	-75.89	-61.30	14.59	20.0	1000.000	150.0	V	0.0	-88
25926.250000	-75.96	-61.30	14.66	20.0	1000.000	150.0	V	102.0	-88



Product Service



Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
27517.803571	-72.23	-61.30	10.93	20.0	1000.000	150.0	V	162.0	-84
28410.250000	-72.22	-61.30	10.92	20.0	1000.000	150.0	V	107.0	-84
29812.803571	-72.18	-61.30	10.88	20.0	1000.000	150.0	V	359.0	-83
30765.517857	-71.23	-61.30	9.93	20.0	1000.000	150.0	H	321.0	-83
32119.857143	-70.42	-61.30	9.12	20.0	1000.000	150.0	V	118.0	-83
33851.714286	-69.80	-61.30	8.50	20.0	1000.000	150.0	V	147.0	-82
35341.053571	-69.65	-61.30	8.35	20.0	1000.000	150.0	V	328.0	-82
36758.553571	-68.56	-61.30	7.26	20.0	1000.000	150.0	V	300.0	-82
36956.232143	-67.59	-61.30	6.30	20.0	1000.000	150.0	V	181.0	-82
39632.607143	-67.14	-61.30	5.84	20.0	1000.000	150.0	H	0.0	-81



2.3.8 Test Location and Test Equipment

The test was carried out in fully anechoic room no. 2 and semi anechoic room no. 3:

<i>Instrument</i>	<i>Manufacturer</i>	<i>Type No</i>	<i>TE No</i>	<i>Calibra- tion Pe- riod (months)</i>	<i>Calibration Due</i>
Signal and Spectrum Analyzer	Rohde & Schwarz	FSW43	53496	12	2025-04-30
ULTRALOG Antenna	Rohde & Schwarz	HL562E	38401	36	2026-01-31
Double Ridged Horn Antenna	Rohde & Schwarz	HF907	64145	24	2025-06-30
Horn antenna	EMCO	3160-08	18875	---	---
Horn antenna	EMCO	3160-09	19125	---	---
Horn antenna	EMCO	3160-10	19442	---	---
EMC measurement software	Rohde & Schwarz	EMC32 Emission K2 – V10.60.20	44375	---	---
Fully anechoic room	Albatross	Cabin no. 2	19312	---	---
EMI test receiver	Rohde & Schwarz	ESR7	61814	12	2025-06-30
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	19691	36	2027-04-30
Loop antenna	Schwarzbeck	FMZB 1519 B	44334	36	2026-06-30
Semi anechoic room	Frankonia	Cabin no. 3	56331	35	2025-07-07

Table 13



2.4 Radiated Emissions in GPS bands

2.4.1 Specification Reference

FCC 47 CFR Part 15 F, Clauses 15.519 (d)
ISED RSS-220, Clause 5.3.1 (d)

2.4.2 Equipment under Test and Modification State

UK1; S/N 2624000072726004; Modification state 0

2.4.3 Date of Test

2024-10-24 to 2024-10-25

2.4.4 Environmental Conditions

Ambient Temperature	23 °C
Relative Humidity	51 %

2.4.5 Specification Limits

In addition to the radiated emission limits above, UWB transmitters shall not exceed the following average (RMS) limits when measured using a resolution bandwidth of no less than 1 kHz:

<i>Frequency range</i>	<i>EIRP</i>
1164 MHz – 1240 MHz	-85.3 dBm
1559 MHz – 1620 MHz	-85.3 dBm



Product Service

2.4.6 Test Method

The test was performed according to ANSI C63.10, sections 10.2 and 10.3
See section 2.4.6 for details.

2.4.7 Test Results

<i>Frequency range</i>	<i>Limit applied</i>	<i>Test distance</i>
1164 MHz – 1240 MHz	FCC 15.519 (d) RSS-220 5.3.1(d)	0.25 m
1559 MHz – 1620 MHz	FCC 15.519 (d) RSS-220 5.3.1(d)	0.25 m

Table 14

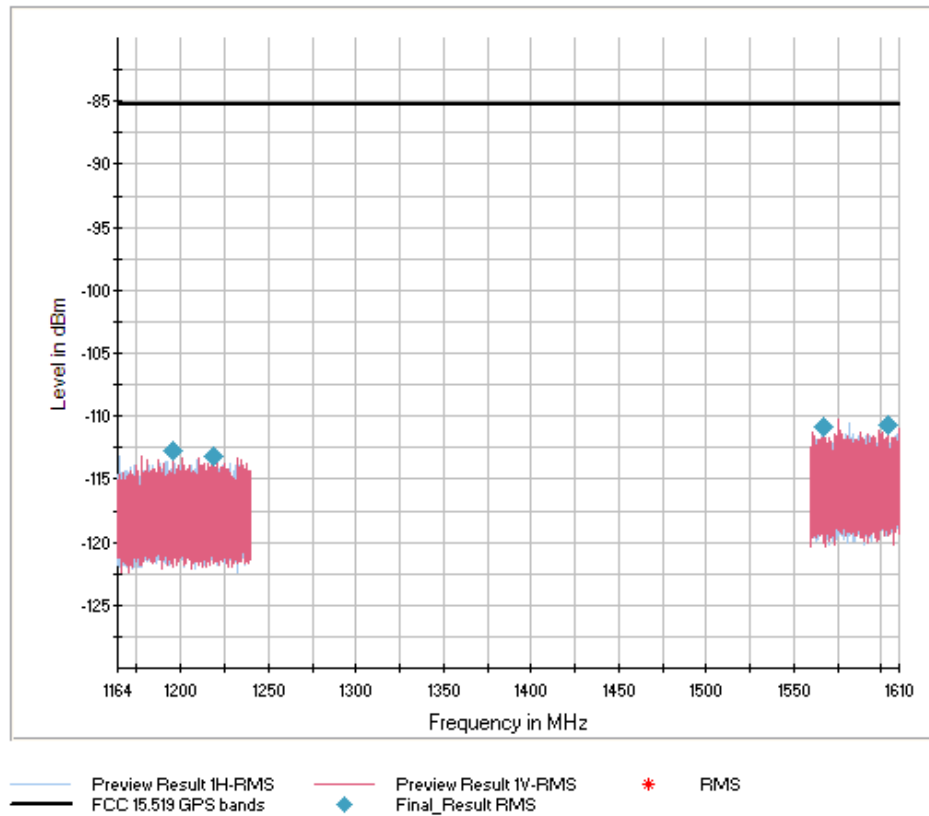
Sample calculation:

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



Product Service

Mode 1:

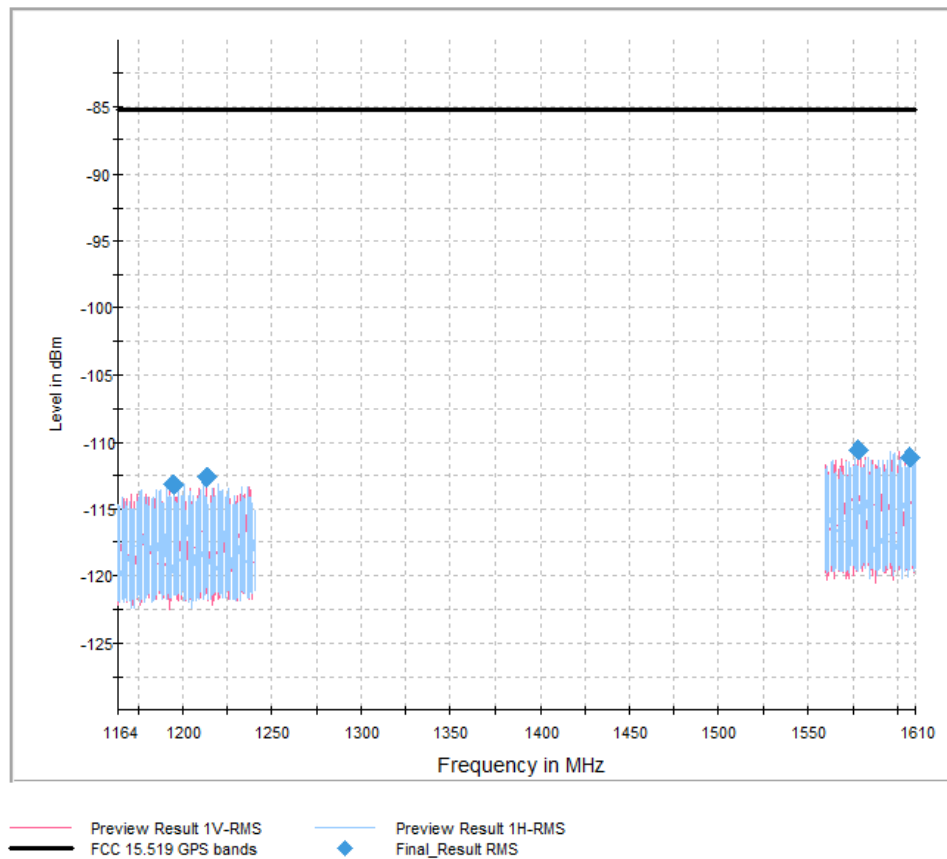


Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
1196.053000	-112.80	-85.30	27.50	2.5	1.000	150.0	V	308.0	-122
1218.688080	-113.13	-85.30	27.83	2.5	1.000	150.0	H	192.0	-122
1566.895310	-110.91	-85.30	25.61	2.5	1.000	150.0	V	152.0	-119
1603.521980	-110.68	-85.30	25.38	2.5	1.000	150.0	V	165.0	-119



Mode 2:



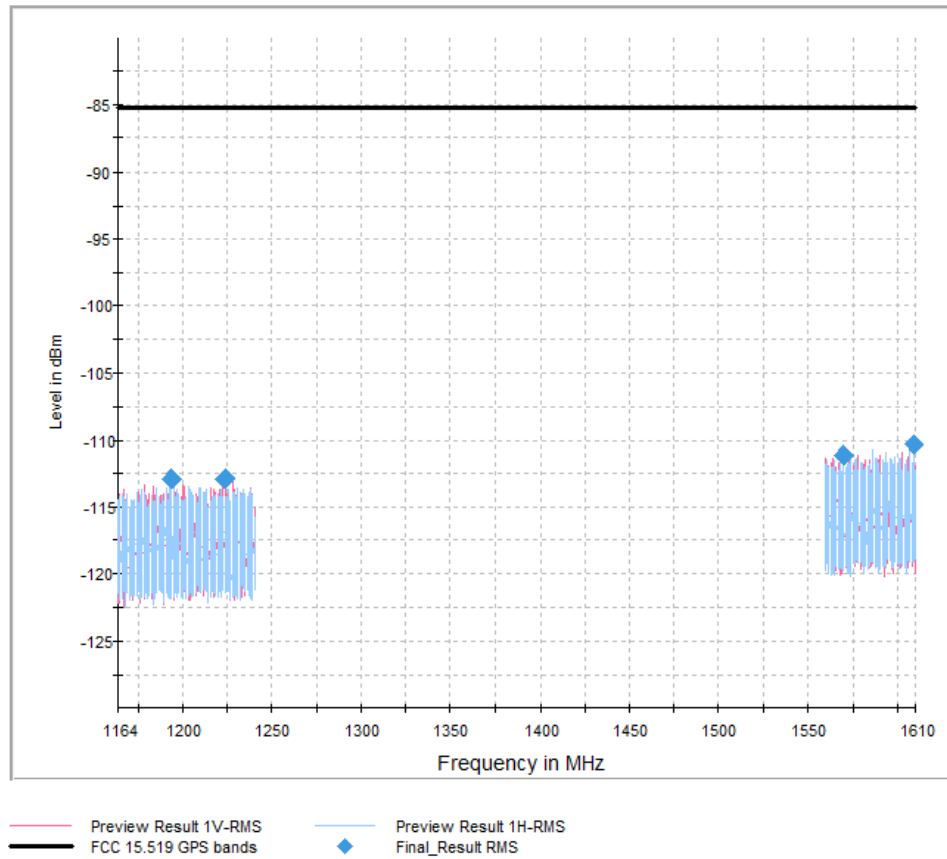
Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB
1194.851440	-113.22	-85.30	27.92	2.5	1.000	150.0	H	120.0	-122
1213.790640	-112.67	-85.30	27.37	2.5	1.000	150.0	V	59.0	-122
1578.001580	-110.56	-85.30	25.26	2.5	1.000	150.0	V	31.0	-119
1606.432550	-111.11	-85.30	25.81	2.5	1.000	150.0	V	249.0	-119



Product Service

Mode 3:



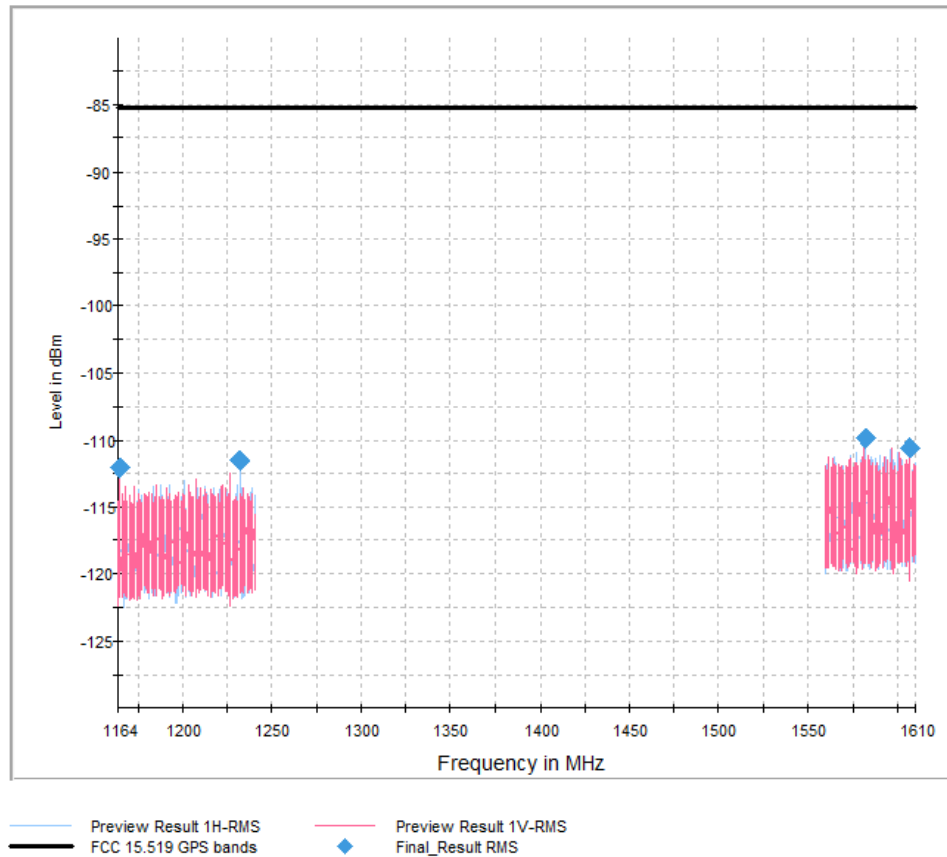
Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Band- width kHz	Height cm	Pol	Azimuth deg	Corr. dB
1193.589840	-112.91	-85.30	27.61	2.5	1.000	150.0	H	0.0	-121.8
1224.182880	-112.95	-85.30	27.65	2.5	1.000	150.0	V	142.0	-121.7
1569.664610	-111.14	-85.30	25.84	2.5	1.000	150.0	V	43.0	-119.5
1608.631160	-110.36	-85.30	25.06	2.5	1.000	150.0	H	42.0	-119.3



Product Service

Mode 4:



Final Results:

Frequency MHz	RMS dBm	Limit dBm	Margin dB	Meas. Time ms	Band- width kHz	Height cm	Pol	Azimuth deg	Corr. dB
1165.159000	-112.15	-85.30	26.85	2.5	1.000	150.0	V	199.0	-121.9
1232.574800	-111.58	-85.30	26.28	2.5	1.000	150.0	H	265.0	-121.7
1582.121870	-109.83	-85.30	24.53	2.5	1.000	150.0	H	352.0	-119.4
1606.774250	-110.52	-85.30	25.22	2.5	1.000	150.0	V	352.0	-119.3



2.4.8 Test Location and Test Equipment

The test was carried out in fully anechoic room no. 2:

<i>Instrument</i>	<i>Manufacturer</i>	<i>Type No</i>	<i>TE No</i>	<i>Calibra- tion Pe- riod (months)</i>	<i>Calibration Due</i>
Signal and Spectrum Analyzer	Rohde & Schwarz	FSW43	53496	12	2025-04-30
ULTRALOG Antenna	Rohde & Schwarz	HL562E	38401	36	2026-01-31
Double Ridged Horn Antenna	Rohde & Schwarz	HF907	64145	24	2025-06-30
Horn antenna	EMCO	3160-08	18875	---	---
Horn antenna	EMCO	3160-09	19125	---	---
Horn antenna	EMCO	3160-10	19442	---	---
EMC measurement software	Rohde & Schwarz	EMC32 Emission K2 – V10.60.20	44375	---	---
Fully anechoic room	Albatross	Cabin no. 2	19312	---	---

Table 15



2.5 Signal deactivation

2.5.1 Specification Reference

FCC 47 CFR Part 15 F, Clause 15.519(a)
ISED RSS-220, Clauses 4. 5.3.1(b)

2.5.2 Equipment under Test and Modification State

UK1; S/N 2624000072726004; Modification state 0

2.5.3 Date of Test

2024-11-14

2.5.4 Environmental Conditions

Ambient Temperature	21 °C
Relative Humidity	38 %

2.5.5 Specification Limits

The device is to transmit only when it is sending information to an associated receiver. The device shall cease transmission of information within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received. An acknowledgment of reception must continue to be received by the UWB device at least every 10 seconds or the UWB device shall cease transmitting any information other than periodic signals used for the establishment or re-establishment of a communication link with an associated receiver

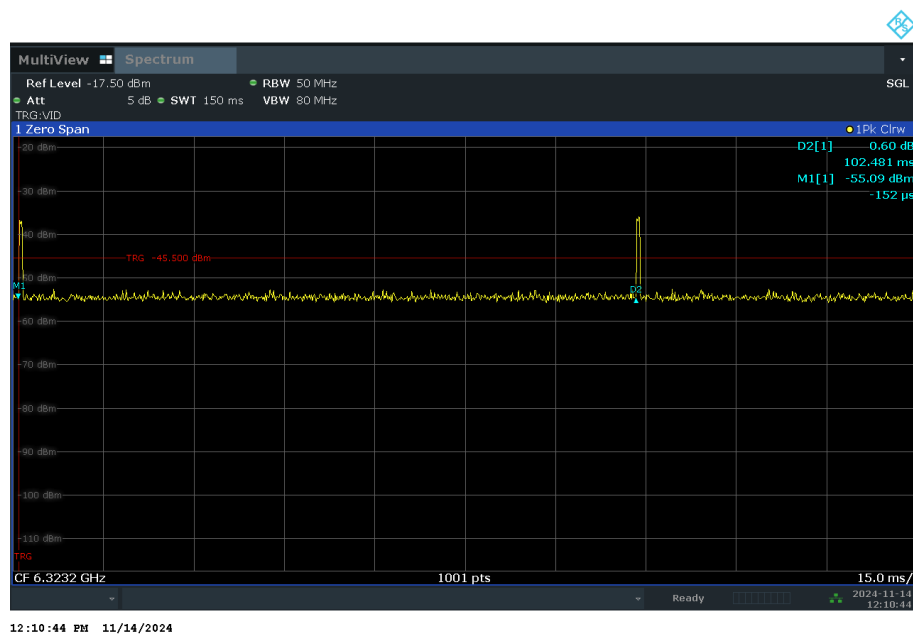
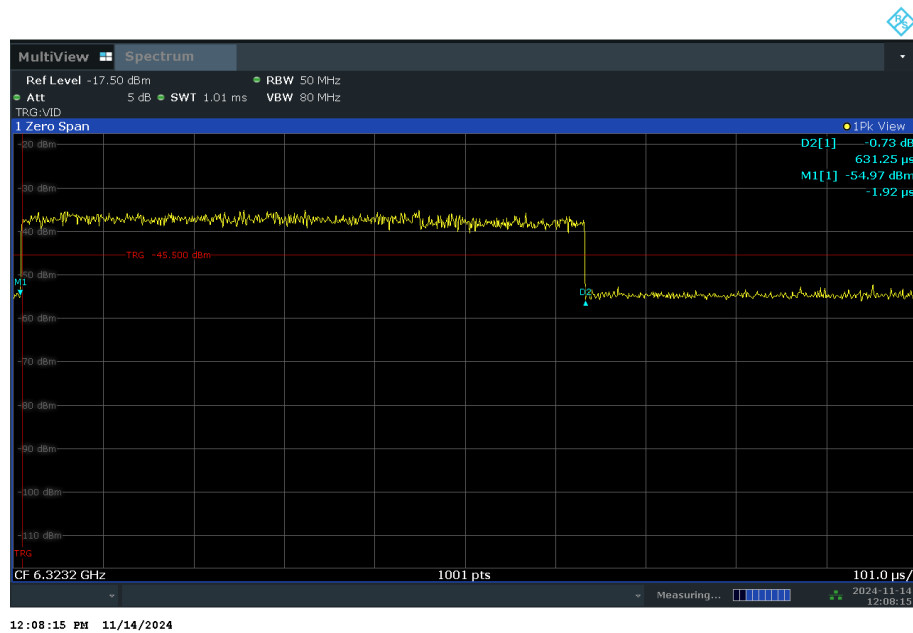
2.5.6 Test Method

The test was performed with Channel 6. The EUT was triggered via Bluetooth and responding via UWB.



Product Service

2.5.7 Test Results



The EUT ceased transmission after 102.5 ms.



2.5.8 Test Location and Test Equipment

The test was carried out in fully anechoic room no. 2:

<i>Instrument</i>	<i>Manufacturer</i>	<i>Type No</i>	<i>TE No</i>	<i>Calibra- tion Pe- riod (months)</i>	<i>Calibration Due</i>
Signal and Spectrum Analyzer	Rohde & Schwarz	FSW43	53496	12	2025-04-30
Double Ridged Horn Antenna	Rohde & Schwarz	HF907	64145	24	2025-06-30
Fully anechoic room	Albatross	Cabin no. 2	19312	---	---

Table 16



3 Measurement Uncertainty

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

<i>Radio Interference Emission Testing</i>		
<i>Test Name</i>	<i>kp</i>	<i>Expanded Uncertainty</i>
Conducted Voltage Emission		
9 kHz to 150 kHz (50Ω/50μH AMN)	2	± 3.8 dB
150 kHz to 30 MHz (50Ω/50μH AMN)	2	± 3.4 dB
100 kHz to 200 MHz (50Ω/5μH AMN)	2	± 3.6 dB
Discontinuous Conducted Emission		
9 kHz to 150 kHz (50Ω/50μH AMN)	2	± 3.8 dB
150 kHz to 30 MHz (50Ω/50μH AMN)	2	± 3.4 dB
Conducted Current Emission		
9 kHz to 200 MHz	2	± 3.5 dB
Magnetic Fieldstrength		
9 kHz to 30 MHz (with loop antenna)	2	± 3.9 dB
9 kHz to 30 MHz (large-loop antenna 2 m)	2	± 3.5 dB
Radiated Emission		
30 MHz to 300 MHz	2	± 4.9 dB
300 MHz to 1 GHz	2	± 5.0 dB
1 GHz to 6 GHz	2	± 4.6 dB
Test distance 10 m		
30 MHz to 300 MHz	2	± 4.9 dB
300 MHz to 1 GHz	2	± 4.9 dB
The expanded uncertainty reported according to CISPR16-4-2: 2011 + A1 + A2 + Cor1 is based on a standard uncertainty multiplied by a coverage factor of $k_p = 2$, providing a level of confidence of $p = 95.45\%$		

Table 17 Measurement uncertainty based on CISPR 16-4-2



<i>Radio Interference Emission Testing</i>		
<i>Test Name</i>	<i>kp</i>	<i>Expanded Uncertainty</i>
Occupied Bandwidth	2	± 5 %
Conducted Power		
9 kHz ≤ f < 30 MHz	2	± 1.0 dB
30 MHz ≤ f < 1 GHz	2	± 1.5 dB
1 GHz ≤ f ≤ 40 GHz	2	± 2.5 dB
1 MS/s power sensor (TS8997)	2	± 1.5 dB
Occupied Bandwidth	2	± 5 %
Power Spectral Density	2	± 3.0 dB
Radiated Power		
25 MHz – 6 GHz	1.96	±4.4 dB
1 GHz – 18 GHz	1.96	±4.7 dB
18 GHz – 40 GHz	1.96	±4.9 dB
40 GHz – 325 GHz	1.96	±6.1 dB
Conducted Spurious Emissions	2	± 3.0 dB
Radiated Spurious Emissions	2	± 6.0 dB
Voltage		
DC	2	± 1.0 %
AC	2	± 2.0 %
Time (automatic)	2	± 5 %
Frequency	2	± 10 ⁻⁷
The expanded uncertainty reported according to ETSI TR 100 028:2001 is based on a standard uncertainty multiplied by a coverage factor of kp = 2, providing a level of confidence of p = 95.45%		

Table 18 Measurement uncertainty based on ETSI TR 100 028

The measurement uncertainty in the laboratory is less than or equal to the maximum measurement uncertainty according to CISPR16-4-2: 2011 + A1 + A2 + Cor1 (U_{CISPR}) and as specified in the test report below. This normative regulation means that the measured value is also the value to be assessed in relation to the limit value.



Test Name	Expanded Uncertainty
Occupied Bandwidth	±5 %
Conducted Power	
9 kHz ≤ f < 30 MHz	±1.0 dB
30 MHz ≤ f < 1 GHz	±1.5 dB
1 GHz ≤ f ≤ 40 GHz	±2.5 dB
1 MS/s power sensor (2.4 / 5 GHz band)	±1.5 dB
Power Spectral Density	±3.0 dB
Radiated Power	
25 MHz – 26.5 GHz	±6.0 dB
26.5 GHz – 66 GHz	±8.0 dB
40 GHz – 325 GHz	±10.0 dB
Conducted Spurious Emissions	±3.0 dB
Radiated Field Strength 9 kHz – 40 GHz	±6.0 dB
Voltage	
DC	± 1.0 %
AC	± 2.0 %
Time (automatic)	± 5 %
Frequency	± 10 ⁻⁷

Table 19 Decision Rule: Maximum allowed measurement uncertainty