DEKRA Testing and Certification, S.A.U.
Parque Tecnológico de Andalucía,
c/ Severo Ochoa nº 2 · 29590 Campanillas · Málaga · España
C.I.F. A29507456

ISED CABid: ES1909

Test Report No:
NIE: 70193RRF.004

Test Report
USA FCC Part 15.209
CANADA RSS-Gen, RSS-210

(*) Identification of item tested	Rechargeable wireless hearing instrument
(*) Trademark	ReSound, Beltone, Interton, GN Hearing
(*) Model and /or type reference	CARR1
Other identification of the product	HW version: PCBA,CAMBR RHI FEM,V3.A,C6.0 SW version: Dooku 3 FCC ID: X26CARR1 IC: 6941C-CARR1
(*) Features	Audio amplification, proprietary 2.4 GHz wireless functionality (Proximity), Bluetooth 5.0 and 10.667 MHz wireless magnetic induction functionality. Wireless rechargeability at 333 kHz.
Manufacturer	GN HEARING A/S Lautrupbjerg 7, 2750 Ballerup, Denmark
Test method requested, standard	USA FCC Part 15.209 (10-1-20 Edition): Radiated emission limits; general requirements. CANADA RSS-Gen Issue 5 Amendment 2 (Feb. 2021) General Requirements for Compliance of Radio Apparatus. CANADA RSS-210 Issue 10 Amendment 1 (April 2020). Licence-Exempt Radio Apparatus: Category I Equipment. ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Rafael López EMC Consumer & RF Lab. Manager 2022.06.30 09:54:05 +02'00'
Date of issue	2022-06-28
Report template No.	FDT08_24 (*) "Data provided by the client"

Index

Competences and guarantees

DEKRA Testing and Certification S.A.U. is a testing laboratory accredited by the National Accreditation Body (ENAC - Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

DEKRA Testing and Certification S.A.U is an FCC-recognized accredited testing laboratory with appropriate scope of accreditation that include testing performed in this test report.

DEKRA Testing and Certification S.A.U is an ISED-recognized accredited testing laboratory, CABid: ES1909, with the appropriate scope of accreditation that covers the performed tests in this report.

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

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

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

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

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification S.A.U.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification S.A.U. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Testing and Certification S.A.U. internal document PODT000.

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").

2. The sample of the model CARR1 is a rechargeable wireless hearing aid.

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of result.

Usage of samples

Samples undergoing test have been selected by: The client.

Id	Control Number	Description	Model	Serial No.	Date of Reception	Application
S/01	70193E_142.1	Rechargeable wireless hearing instrument	CARR1	2100818818	2022-03-22	Equipment Under Test
S/02	70193E_127.1	Rechargeable wireless hearing instrument	CARR1	2100818636	2022-03-21	Equipment Under Test

Notes referenced to samples during the project:

Id	Type
S/01	Sample used for Conducted tests.
S/02	Sample used for Radiated tests.

Test sample description

Ports……..:	Port name and description		Cable				
			Specified max length [m]	Attached during test	Shielded	Coupled to patient(3)	
	-			☐	☐	☐	
	-			☐	☐	☐	
	-			☐	☐	☐	
Supplementary information to the ports……..:	-						
Rated power supply ..... :	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	☐	AC:	☐	☐	☐	☐	☐
	☒	DC: 3.8 Vdc. Internal rechargable battery.					
Rated Power..... :	3.8 V						
Clock frequencies..... :	2.48 GHz and 10.667 MHz						
Other parameters ..... :	-						
Software version..... :	Dooku2						
Hardware version ..... :	PCBA,CAMBR RHI FEM,V3.A,C6.0						
Dimensions in cm (W x H x D) ... :	-						
Mounting position ..... :	☐	Table top equipment					
	☐	Wall/Ceiling mounted equipment					
	☐	Floor standing equipment					
	☐	Hand-held equipment					
	☒	Other: Placed behind ear					
Modules/parts..... :	Module/parts of test item		Type		Manufacturer		
	-						
	-						
Accessories (not part of the test item) ..... :	Description		Type		Manufacturer		
	Computer		Certified according to IEC 60950-1, IEC 62368-1 or equivalent standard		-		
Documents as provided by the applicant..... :	Description		File name		Issue date		
	-						

(3) Only for Medical Equipment

Identification of the client

GN HEARING A/S

Lautrupbjerg 7, 2750 Ballerup, Denmark

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2022-04-06
Date (finish)	2022-05-18

Document history

Report number	Date	Description
70193RRF.004	2022-06-28	First release.

Environmental conditions

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

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 20 % Max. = 75 %

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

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 20 % Max. = 75 %

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

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 20 % Max. = 75 %

Remarks and comments

The tests have been performed by the technical personnel: Daniel Mejías, Victoria Olmedo, Gonzalo Rueda.

Used instrumentation:

Conducted Measurements:

Equipment	Model	Manufacturer	Next Calibration
SHIELDED ROOM	S101	ETS LINDGREN	N/A
SIGNAL AND SPECTRUM ANALYZER 2Hz-50GHz	FSW50	ROHDE AND SCHWARZ	2023-07-29
DC POWER SUPPLY 30V/5A	U8002A	KEYSIGHT TECHNOLOGIES	N/A
DIGITAL MULTIMETER	175	FLUKE	2022-11-04

Radiated Measurements:

Equipment	Model	Manufacturer	Next Calibration
SEMIANECHOIC ABSORBER LINED CHAMBER II	FACT 3 200 STP	ETS LINDGREN	2023-08-28
SHIELDED ROOM	S101	ETS LINDGREN	N/A
ACTIVE LOOP ANTENNA 9 kHZ-30 MHz	FMZB 1519B	SCHWARZBECK	2022-11-06
ULTRALOG ANTENNA 30MHz-6GHz	HL562E_UPG	ROHDE AND SCHWARZ	2022-10-15
EMI TEST RECEIVER 2Hz-44GHz	ESW44	ROHDE AND SCHWARZ	2023-12-30

Testing verdicts

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

Summary

1. SRD 10.667 MHz.

FCC PART 15.209 / RSS-Gen, RSS-210 PARAGRAPH			
Requirement – Test case		**Verdict**	**Remark**
Occupied bandwidth		P	
15.209 (a) / RSS-Gen 8.9, RSS-210 7.2	General field strength and Transmitter emission limits	P	
Supplementary information and remarks: None.			

Appendix A: Test results

INDEX

TEST CONDITIONS

(*) Declared by the Applicant

POWER SUPPLY (*):

Vnominal:	3.8 Vdc
Type of Power Supply:	Rechargeable battery.

ANTENNA (*):

Type of Antenna:	Integral (induction coil).

TEST FREQUENCIES (*):

Nominal Operating Frequency:	10.667 MHz

Test setup

CONDUCTED MEASUREMENTS:

The equipment under test EUT was set up in a shielded room and connected to the spectrum analyzer through an RF cable.

RADIATED MEASUREMENTS:

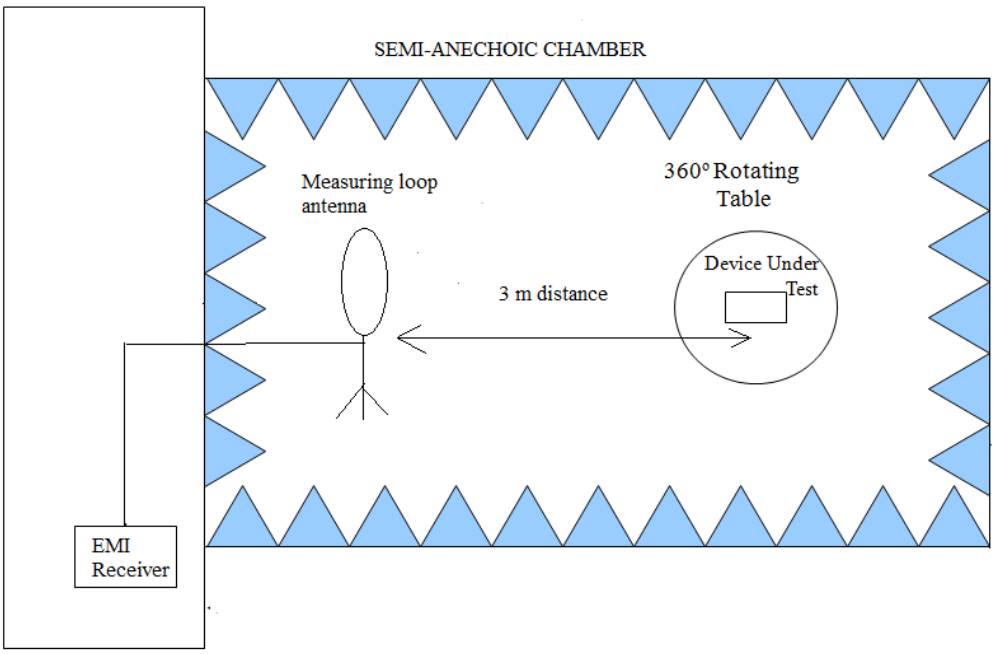
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 3 m (Loop antenna for the range 9 kHz to 30 MHz and Bilog antenna for the range 30 MHz to 200 MHz).

For radiated emissions in the range 9 kHz to 30 MHz performed at a distance closer than the distance specified in the standard, an inverse proportionality factor of 40 dB per decade is used to normalize the measured data for determining compliance.

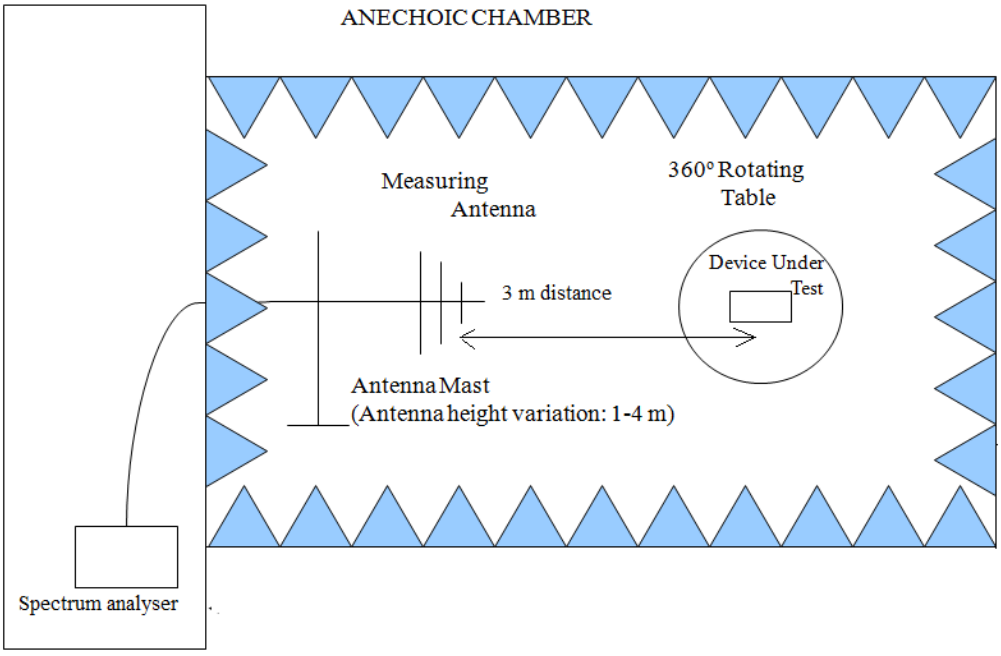
The equipment under test was set up on a non-conductive platform above the ground plane and its situation and orientation were varied to find the maximum radiated emission. It was also rotated 360º.

In the range between 9 kHz and 30 MHz the measurements were made in the three different orientation planes of the loop antenna to determine the maximum received field.
Measurements above 30 MHz up to 200 MHz were made in both horizontal and vertical planes of polarization and the measuring antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Radiated measurements setup f < 30 MHz:



Radiated measurements setup f > 30 MHz up to 200 MHz:

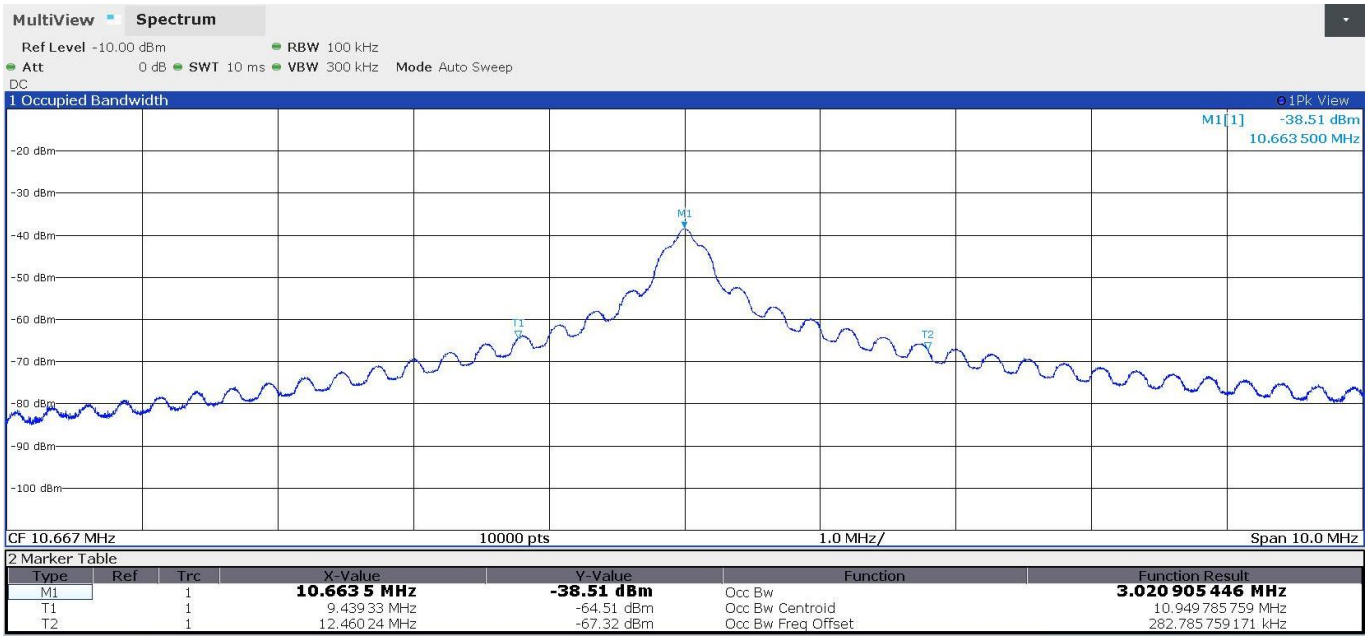


Occupied Bandwidth

Results

99% Bandwidth (MHz)	3.020905446
Measurement uncertainty (kHz)	< ±1.42

Attachments



15.209 (a) / RSS-Gen 8.9, RSS-210 7.2
General field strength and Transmitter emission limits

Limits

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table (see §15.205(c) / RSS-Gen):

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Magnetic field strength (H-Field) (µA/m)	Measurement distance (m)
0.009 - 0.490	2400/F(kHz)	-	6.37/ F(kHz)	300
0.490 - 1.705	24000/F(kHz)	-	63.7/ F(kHz)	30
1.705 - 30.0	30	29.54	0.08	30
30 - 88	100	40	-	3
88 - 216	150	43.5	-	3
216 - 960	200	46	-	3
Above 960	500	54	-	3

Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.

Results

All tests were performed in a semi-anechoic chamber at a distance of 3 m, except the measurement of the fundamental emission which was performed at a distance of 1 m due to its extremely low emission level. The maximum peak value of the fundamental emission was measured as the worst case.

The spectrum was inspected from 9 kHz to 200 MHz for spurious signals search.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyser. This correction factor includes antenna factor and cable loss.

Fundamental emission:

E (dBµV/m) measured at 1 m (Peak value)	29.11
E (dBµV/m) extrapolated to 30 m (40 dB/decade)	-29.97
Equivalent level (dBµA/m) at 30 m	-81.47
Measurement uncertainty (dB)	< ±3.08

Verdict

Pass

Frequency range 9 kHz – 30 MHz:

No spurious frequencies detected at less than 20 dB below the limit.

Measurement uncertainty (dB): < ±3.08

Frequency range 30 – 200 MHz:

No spurious frequencies detected at less than 20 dB below the limit.

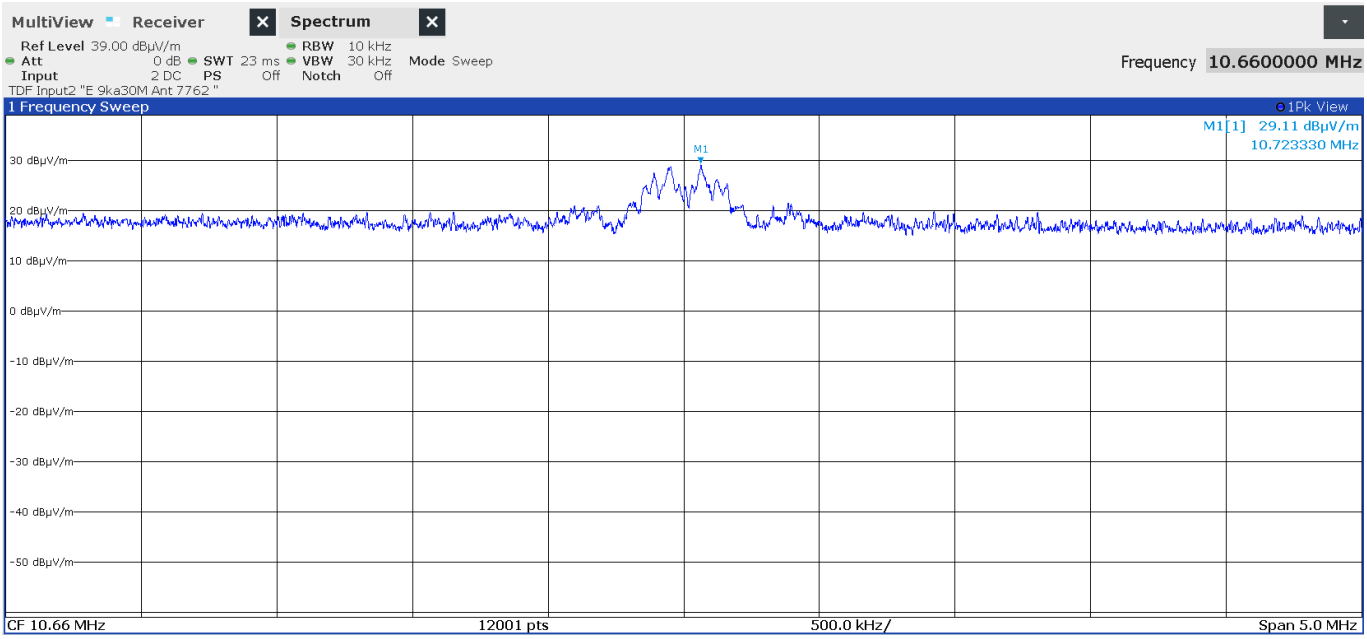
Measurement uncertainty (dB): < ±5.07

Verdict

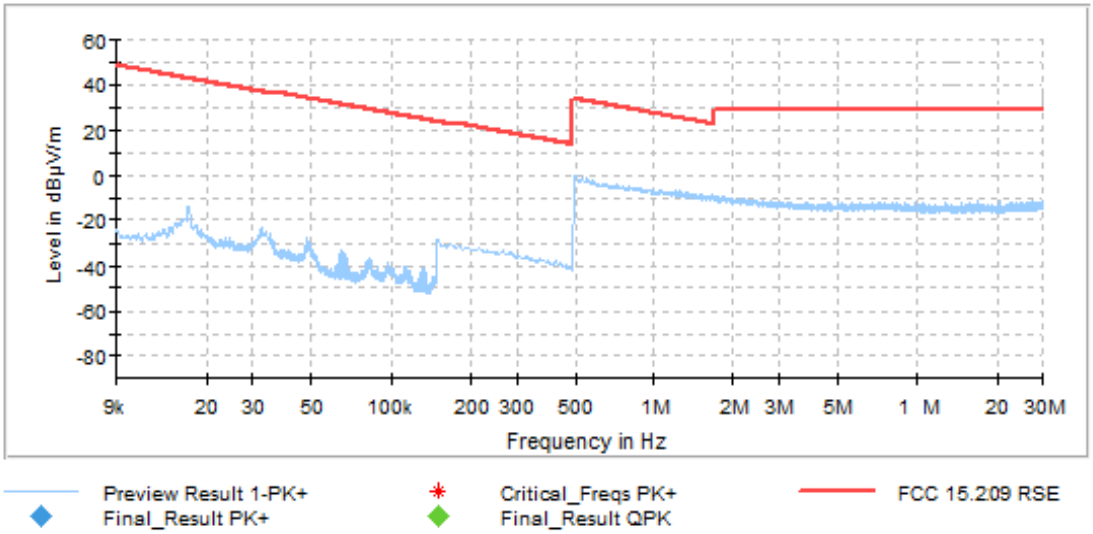
Pass

Attachments

- **FUNDAMENTAL EMISSION**



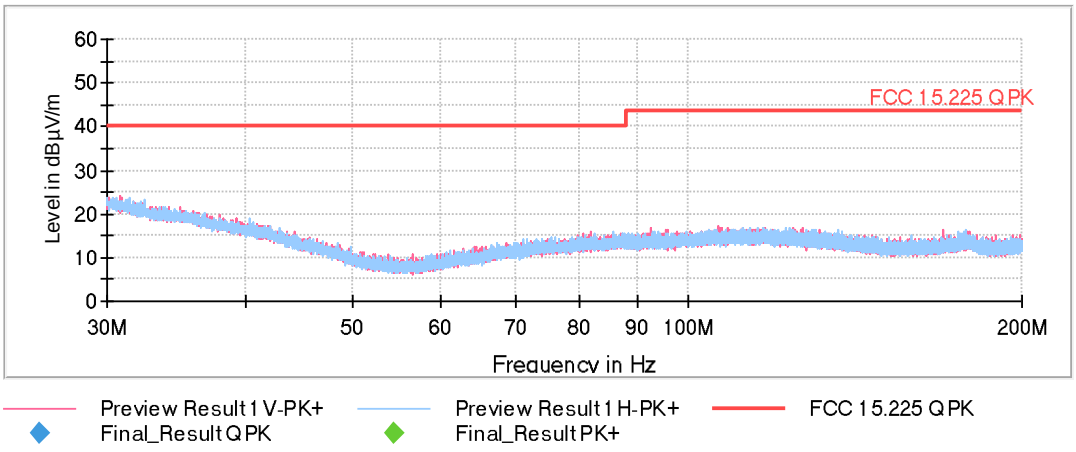
- **FREQUENCY RANGE 9 kHz – 30 MHz**



Note: The scan is performed with a peak detector.

Resolution bandwidth:
200 Hz for 9 kHz ≤ f ≤ 150 kHz
9 kHz for 150 kHz ≤ f ≤ 30 MHz

- **FREQUENCY RANGE 30 – 200 MHz**



Note: The scan is performed with a peak detector.

Resolution bandwidth:
100 kHz