Radio Testing of the Abbott Medical ORN Exit Tool Model: 3886

In accordance with: 47 CFR §15.209 And RSS-210 Issue 10 December 2019

Product Service

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Prepared for:
Abbott Medical
6901 Preston Road,
Plano, TX 75024
USA

COMMERCIAL-IN-CONFIDENCE

Issue Date: May 2024
Document Number: 72198187A | Issue: 01

RESPONSIBLE FOR	NAME	TITLE	DATE	SIGNATURE
Prepared By	Joe Salvador	Wireless/RF Test Engineer	05/01/24	
Authorized Signatory	Ferdinand S. Custodio	Senior RADIO Test Engineer / Wireless Team Lead	05/01/24	

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

EXECUTIVE SUMMARY
A sample of this product was tested and found to be in compliance with 47 CFR §15.209 and RSS-210 Issue 10 December 2019.

A2LA Cert. No. 2955.13

ACCREDITATION
Our A2LA Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our A2LA Accreditation.

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REPORT ON	Radio Testing of the Abbott Medical Model: 3886 ORN Exit Tool
TEST REPORT NUMBER	72198187A
TEST REPORT DATE	May 2024
PREPARED FOR	Abbott Medical 6901 Preston Road, Plano, TX 75024 USA
CONTACT PERSON	Liming Zhou Sr. Product Compliance Engineer 1+972-526-4623 liming.zhou@abbott.com
PREPARED BY	Joe Salvador **Name** Authorized Signatory Title: Wireless/RF Test Engineer
APPROVED BY	Ferdinand S. Custodio **Name** Authorized Signatory Title: Senior EMC Test Engineer/Wireless Team Lead
DATED	May 01,2024

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Revision History

72198187A Abbott Medical Model: 3886 ORN Exit Tool					
DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
05/01/2024	—	Initial Release			Joe Salvador

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Contents

Product Service

SECTION 1

REPORT SUMMARY

Radio Testing of the
Abbott Medical
3886 ORN Exit Tool

Product Service

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the ORN Exit Tool to the requirements of 47 CFR §15.209 and Innovation, Science and Economic Development Canada RSS-210 Issue 10 December 2019.

Objective	To perform Radio Testing to determine the Equipment Under Test's (EUT's) compliance with the test specification, for the series of tests carried out.
Manufacturer	Abbott Medical
Model Name	ORN Exit Tool
Model Number(s)	3886
Serial Number(s)	900570 (Tx mode), 900585 (Rx mode), 900598 (Standby Mode)
Number of Samples Tested	3
FCC ID	PX2-ORMET1
IC Number	30752-ORMET1
Frequency range	9kHz to 119 kHz
Operating Frequency	65.5 kHz
Antenna Type	Internal Antenna
Modulation	ASK
Test Voltage	EUT (replaceable battery) 3.0 VDC Nominal Voltage, 2.7 VDC Minium Voltage, 3.3 VDC Maximum Voltage, 2.2 VDC Lower Extreme Voltage, 50 mA Maximum current
Test Specification/Issue/Date	• 47 CFR §15.209, (October 1, 2023) • RSS-210 Issue 10 December 2019. General Requirements for Compliance of Radio Apparatus.
Start of Test	March 26, 2024
Finish of Test	March 29, 2024
Name of Engineer(s)	Joe Salvador
Related Document(s)	MRI tool Wireless Radio test Protocol 3-16-2024.docx

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1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with 47 CFR §15.209 with cross-reference to Innovation, Science and Economic Development Canada RSS-210 Issue 10 December 2019 is shown below:

Section	FCC Spec Clause	RSS	Test Description	Result	Comments/Base Standard
2.1	§15.207(a)	RSS-210 Section 7.2	Conducted emissions	N/A	EUT utilizes replaceable batteries
2.2	§15.209(a)	RSS-210 Section 6.13	Radiated emissions limits	Compliant	
2.3	Part 2.1049	RSS-210 Section 6.7	Occupied bandwidth	Compliant	

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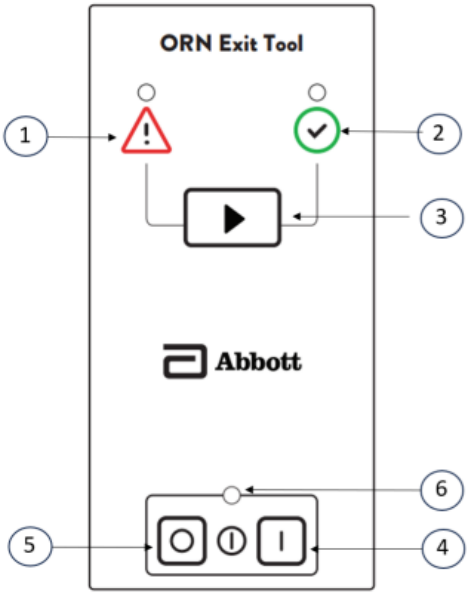
1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment Under Test (EUT) is a Abbott Medical ORN Exit Tool, see photographs below. When IPG is in MRI Mode, the bonded Patient Controller (PC) and Clinician Programmer (CP) communicate with the IPG to allow exit from MRI mode. In cases that the bonded PC and CP has been lost, or no longer available to take the IPG out of MRI mode, the ORN Exit Tool (OET) communicates to the IPG to allow exit from MRI mode. Once the OET has exited the IPG out of MRI Mode, any available PC/CP can be bonded with the IPG and therapy resumed. The Abbott Medical is defined as an accessory of the medical device, class III.



1. Error LED (red)/timeout (flashing red)
2. MRI Mode Off LED (green)
3. Function button (exit MRI Mode)
4. Power On button
5. Power Off button
6. Power LED (yellow)

ORN Mode Exit Tool.

1.4 EUT TEST CONFIGURATION

1.4.1 Test Configuration Description

Test Configuration	Description
Continuously Transmitting Mode	Under Continuously Transmitting Mode, the EUT was programmed to transmit continuously during testing. The EUT was powered by new fully charged batteries during measurement.
Standby Mode	Under Standby Mode, the EUT was programmed at standby during testing. The EUT was powered by new fully charged batteries during measurement.
Receiver Mode	Under Receiver Mode, the EUT was programmed to receive continuously during testing. The EUT was powered by new fully charged batteries during measurement.

1.4.2 EUT Exercise Software

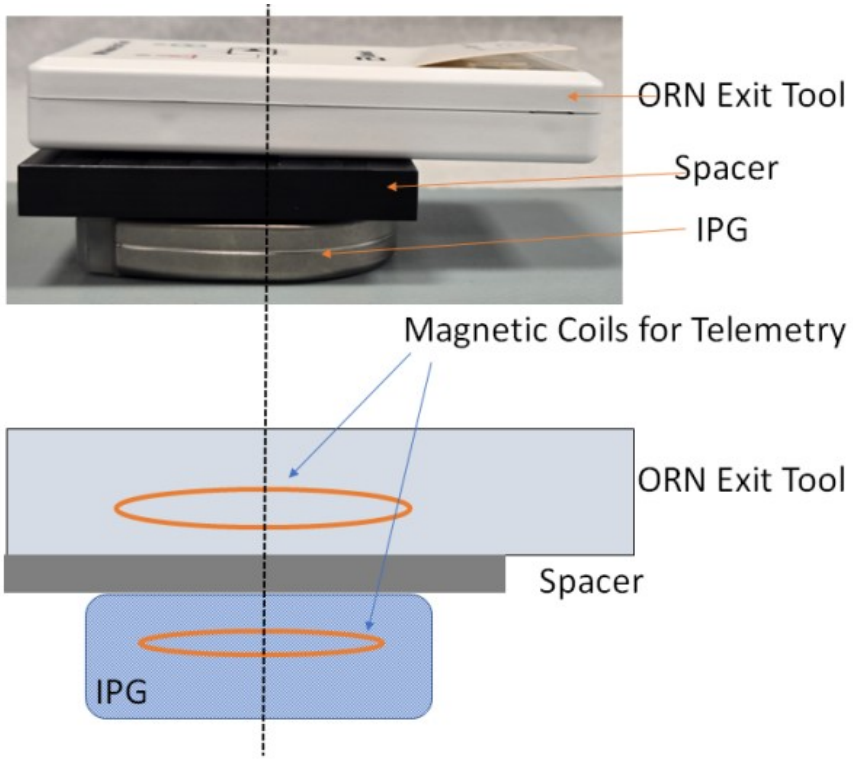
Based on the FW 1.0, the customized FW as:
Continuous Transmitting Mode: EMC_TX; Standby Mode: EMC_RX; Receiver Mode: FW1.0.

1.4.3 Support Equipment and I/O cables

Manufacturer	Part Number	Description
Spacer	n/a	3x3x1 cm plastic square
IPG	100129356	Proclaim XR5 Model 3660 SN: ANH442.1

Product Service

1.4.4 Simplified Test Configuration Diagram



Note: Both coils needs alignment for the best communication link during the test

In the test configuration, IPG is set to MRI Mode and used as a companion device. The OET has only one communication channel. The firmware is modified to keep the unit in one of three modes for the applicable tests: Continuously Transmitting Mode, standby mode, or Receiver mode.

During testing, the indicator LEDs of the OET shall be kept visible so that communication status can be monitored.Functional tests were performed by Abbott internally following predefined procedure for DUTs before the tests defined in this protocol.

1.5 DEVIATIONS FROM THE STANDARD

There were no deviations made during testing from the applicable test standard.

1.6 EUT MODIFICATION 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
n/a	As supplied by the manufacturer	-	-

1.7 TEST METHODS

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

1.8 TEST FACILITY LOCATION

Office Address:

1.8.1 TÜV SÜD America Inc. (Mira Mesa)

10040 Mesa Rim Road, San Diego, CA 92121-2912 (32.901268,-117.177681)
Phone: (858) 678 1400 Fax: (858) 546 0364.

1.8.2 TÜV SÜD America Inc. (Rancho Bernardo)

16936 Via Del Campo, San Diego, CA 92127-1708 (33.018644,-117.092409). Phone: 858 678 1400 Fax: 858 546 0364.

1.9 TEST FACILITY REGISTRATION

1.9.1 FCC – Designation No.: US1146

TÜV SÜD America Inc. (San Diego), is an accredited test facility with the site description report on file and has met all the requirements specified in §2.948 of the FCC rules. The acceptance letter from the FCC is maintained in our files and the Designation is US1146.

1.9.2 Innovation, Science and Economic Development Canada (ISED) Registration No.: 3067A-1 & 22806-1

The 10m Semi-anechoic chamber of TÜV SÜD America Inc. (San Diego Rancho Bernardo) has been registered by Certification and Engineering Bureau of Innovation, Science and Economic Development Canada for radio equipment testing with Registration No. 3067A-1.

The 3m Semi-anechoic chamber of TÜV SÜD America Inc. (San Diego Mira Mesa) has been registered by Certification and Engineering Bureau of Innovation, Science and Economic Development Canada for radio equipment testing with Registration No. 22806-1.

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1.9.3 BSMI – Laboratory Code: SL2-IN-E-028R (US0102)

TÜV Product Service Inc. (San Diego) is a recognized Evaluation of Wireless Coexistence laboratory by the BSMI under the MRA (Mutual Recognition Arrangement) with the United States. Accreditation includes CNS 13438 up to 6GHz.

1.9.4 NCC (National Communications Commission - US0102)

TÜV SÜD America Inc. (San Diego) is listed as a Foreign Recognized Telecommunication Equipment Testing Laboratory and is accredited to ISO/IEC 17025 (A2LA Certificate No.2955.13) which under APEC TEL MRA Phase 1 was designated as a Conformity Assessment Body competent to perform testing of equipment subject to the Technical Regulations covered under its scope of accreditation including RTTE01, PLMN01 and PLMN08 for TTE type of testing and LP0002 for Low-Power RF Device type of testing.

1.9.5 VCCI – Registration No. A-0412 and A-0413

TÜV SÜD America Inc. (San Diego) is a VCCI registered measurement facility which includes radiated field strength measurement, radiated field strength measurement above 1GHz, mains port interference measurement and telecommunication port interference measurement.

1.9.6 RRA – Identification No. US0102

TÜV SÜD America Inc. (San Diego) is National Radio Research Agency (RRA) recognized laboratory under Phase I of the APEC Tel MRA.

1.9.7 OFCA – U.S. Identification No. US0102

TÜV SÜD America Inc. (San Diego) is recognized by Office of the Communications Authority (OFCA) under Appendix B, Phase I of the APEC Tel MRA.

Product Service

SECTION 2

TEST DETAILS

Radio Testing of the
Abbott Medical
3886 ORN Exit Tool

2.1 CONDUCTED EMISSIONS LIMITS.

2.1.1 Specification Reference

47 CFR FCC Part 15 Subpart C 15.207(a) and RSS-210 Issue 10 December 2019.

2.1.2 Standard Applicable

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

2.1.3 Equipment Under Test and Modification State

Not performed. EUT is battery operated, test not required.

2.2 RADIATED EMISSIONS LIMITS.

2.2.1 Specification Reference

47 CFR §15.209 and RSS-210 Issue 10 December 2019.

2.2.2 Standard Applicable

(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100 **	3
88–216	150 **	3
216–960	200 **	3
Above 960	500	3

2.2.3 Equipment Under Test and Modification State

Serial No: 900570 (Tx mode), 900585 (Rx mode), 900598 (Standby Mode) / Default Test Configuration

2.2.4 Date of Test/Initial of test personnel who performed the test

March 27, 2024 / JS

2.2.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

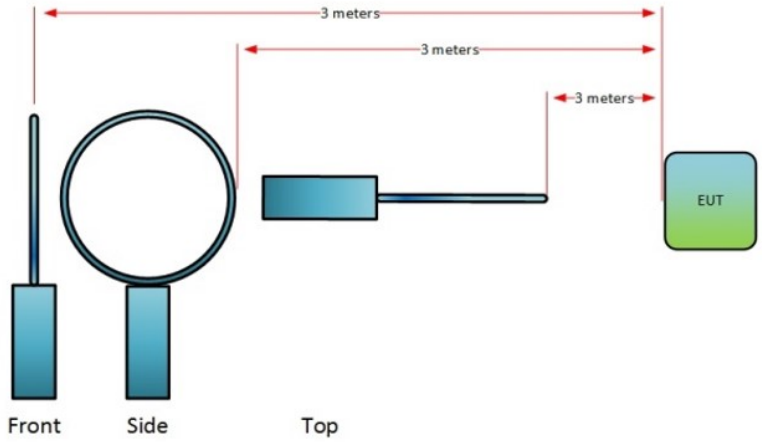
2.2.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Mira Mesa facility

Ambient Temperature	27.5 °C
Relative Humidity	43.5 %
ATM Pressure	100.1 kPa

2.2.7 Additional Observations

- This is a radiated test. The spectrum was searched from 9 kHz to 1GHz (10th Harmonic).
- Verification from 9kHz to 30MHz was performed using all 3 axes of the loop antenna.



- The EUTs were configured for TX mode, RX Mode and Standby Mode.

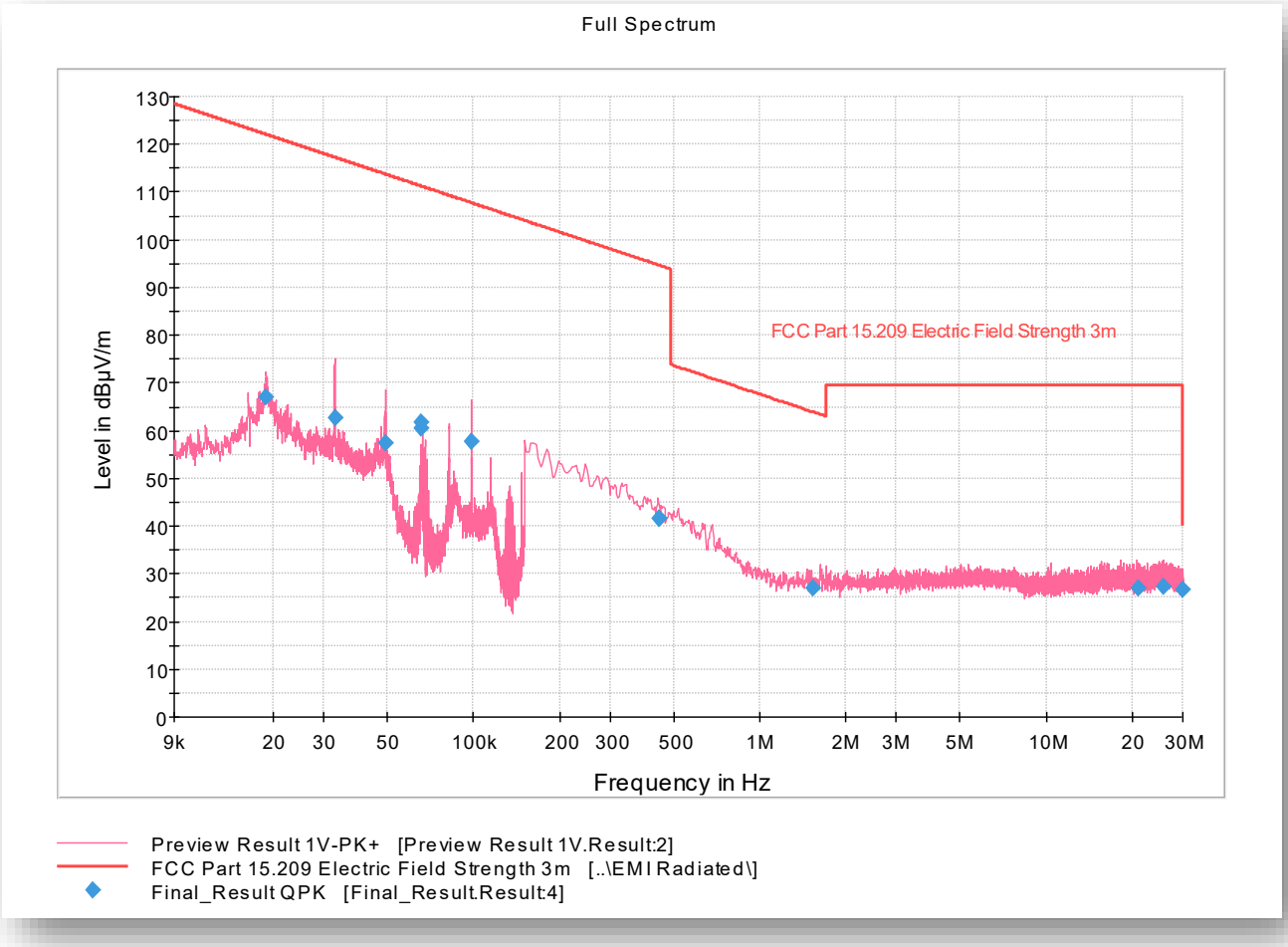
2.2.8 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (dbµV) @ 30 MHz			24.4
Correction Factor (dB/m)	Asset# 1066 (cable)	0.3 db	-12.6
	Asset# 1172 (cable)	0.3 db	
	Asset# 1016 (preamplifier)	-30.7 db	
	Asset# 1175(cable)	0.3 db	
	Asset# 1002 (antenna)	17.2 db/m	
Reported QuasiPeak Final Measurement (dbµV/m) @ 30MHz			**11.8**

2.2.9 Test Results

Compliant. See attached test plot

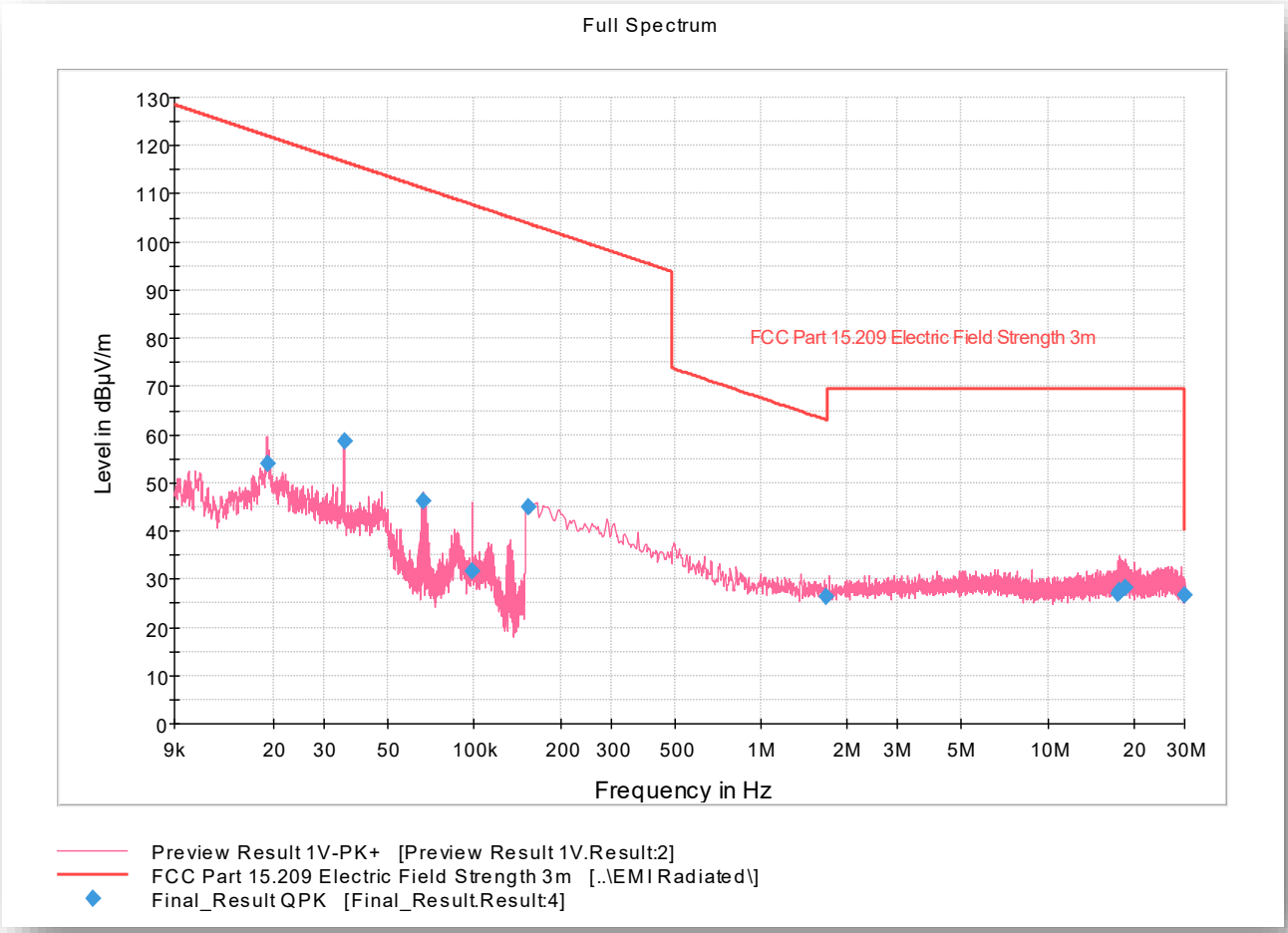
2.2.10 9kHz to 30MHz Radiated Emission Test Front (TX mode)



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)
0.018822	67.08	122.10	55.02	1000.0	0.200	H	16.0	22
0.032778	62.77	117.29	54.52	1000.0	0.200	H	16.0	21
0.049052	57.52	113.79	56.27	1000.0	0.200	H	188.0	20
0.065466	61.73	111.28	49.55	1000.0	0.200	H	333.0	20
0.065600	60.42	111.26	50.85	1000.0	0.200	H	285.0	20
0.098327	57.74	107.75	50.01	1000.0	0.200	H	333.0	20
0.442640	41.55	94.68	53.14	1000.0	9.000	H	42.0	19
0.442655	41.60	94.68	53.08	1000.0	9.000	H	42.0	19
1.534902	27.03	63.87	36.84	1000.0	9.000	H	81.0	20
20.903476	27.06	69.50	42.44	1000.0	9.000	H	300.0	24
25.765159	27.41	69.50	42.09	1000.0	9.000	H	147.0	25
29.882155	26.80	69.50	42.70	1000.0	9.000	H	239.0	25

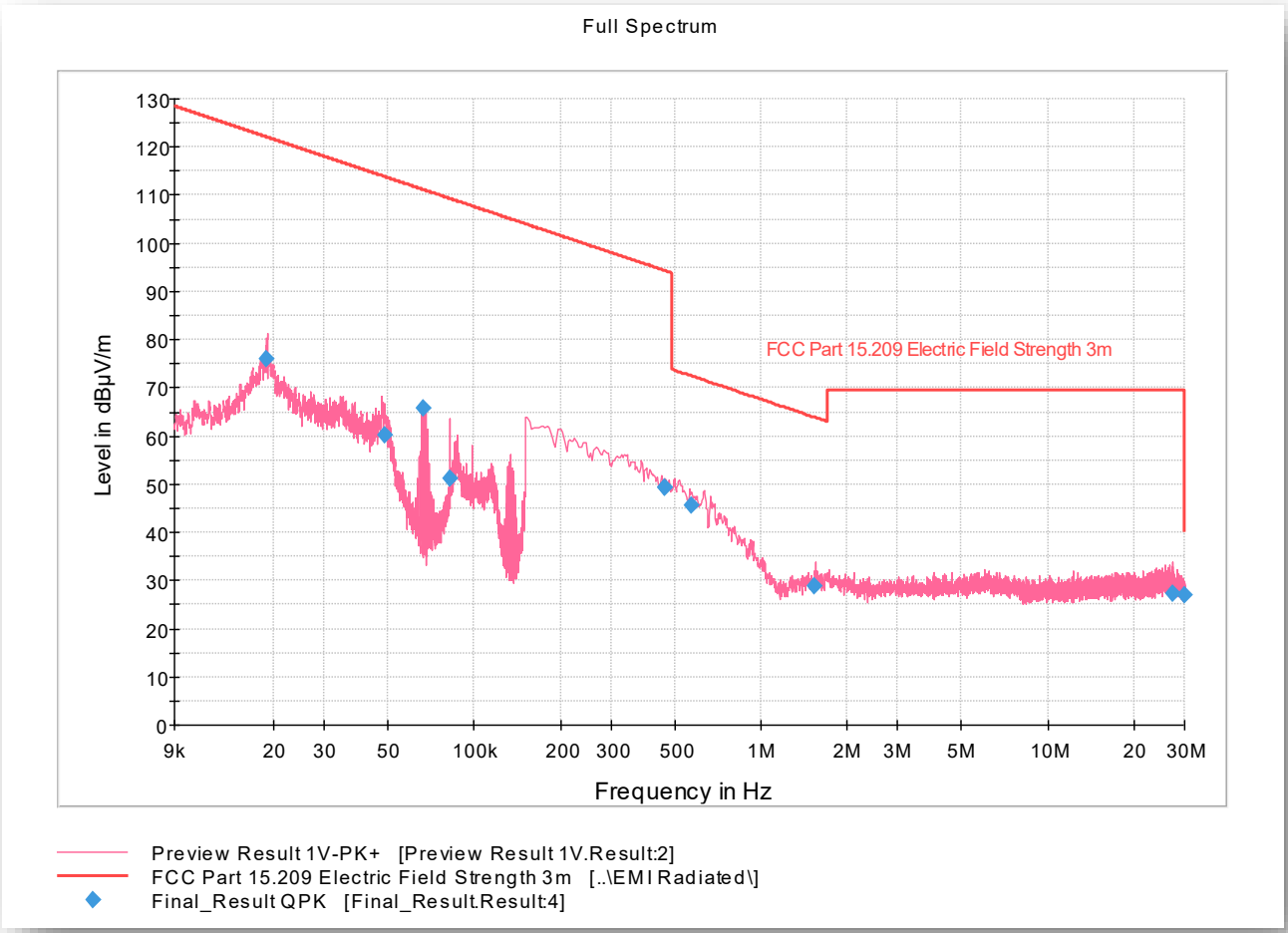
2.2.11 9kHz to 30MHz Radiated Emission Test Side (TX mode)



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)
0.018972	53.89	122.03	68.14	1000.0	0.200	H	158.0	22
0.035163	58.78	116.68	57.89	1000.0	0.200	H	229.0	21
0.066582	46.21	111.13	64.92	1000.0	0.200	H	16.0	20
0.098261	31.58	107.75	76.17	1000.0	0.200	H	326.0	20
0.155000	44.91	103.80	58.88	1000.0	9.000	H	254.0	20
1.692903	26.37	63.02	36.66	1000.0	9.000	H	16.0	20
17.600990	27.06	69.50	42.44	1000.0	9.000	H	351.0	23
17.783741	27.37	69.50	42.13	1000.0	9.000	H	304.0	23
17.821822	27.51	69.50	41.99	1000.0	9.000	H	292.0	23
18.622337	28.23	69.50	41.27	1000.0	9.000	H	220.0	23
29.881080	26.65	69.50	42.85	1000.0	9.000	H	336.0	25

2.2.12 9kHz to 30MHz Radiated Emission Test Top (TX mode)

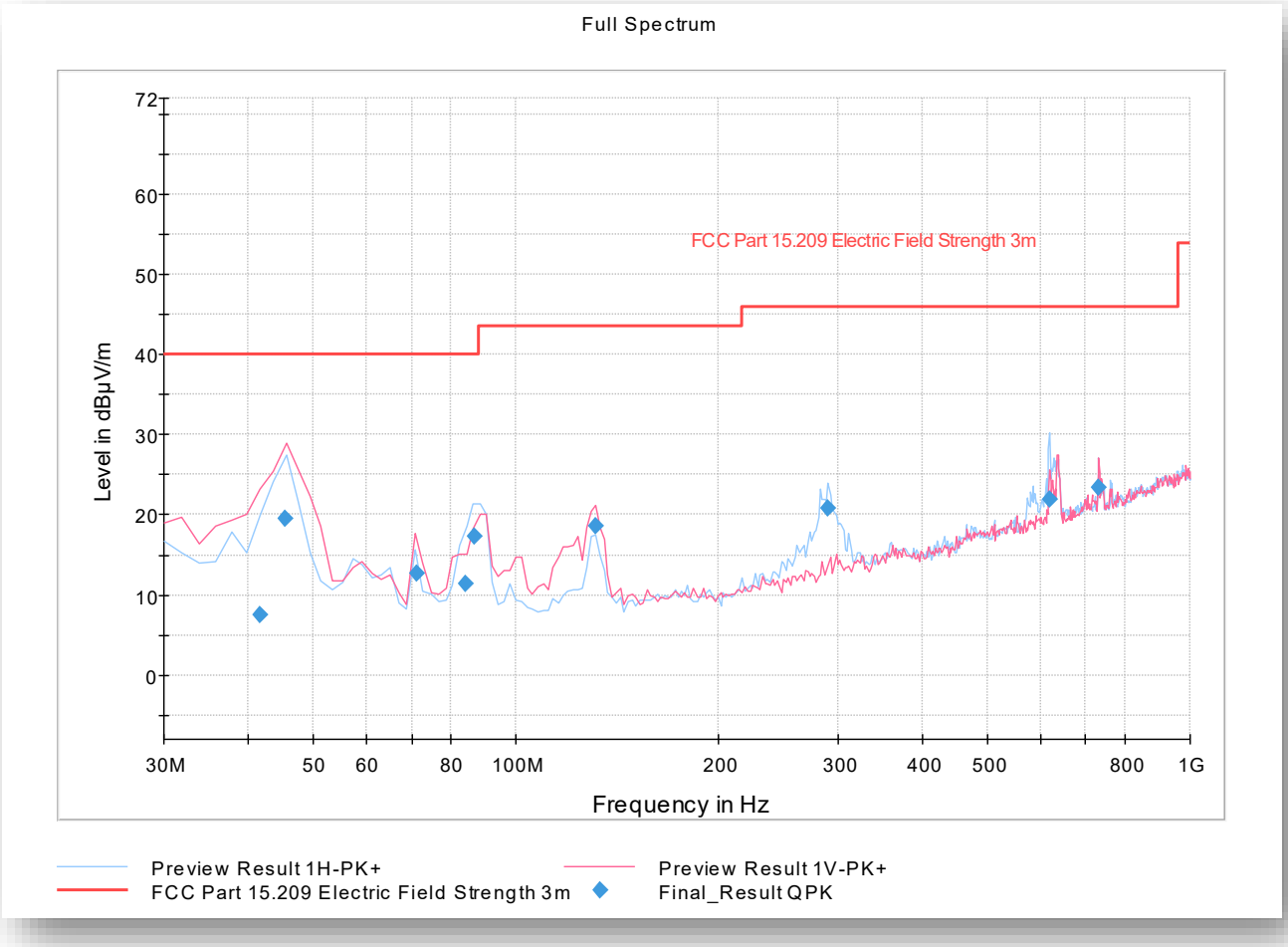


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)
0.018869	75.89	122.08	46.19	1000.0	0.200	H	16.0	22
0.048524	60.09	113.88	53.79	1000.0	0.200	H	254.0	20
0.066581	65.69	111.13	45.45	1000.0	0.200	H	61.0	20
0.081863	51.08	109.34	58.26	1000.0	0.200	H	180.0	20
0.460640	49.27	94.34	45.06	1000.0	9.000	H	340.0	20
0.462655	49.28	94.30	45.02	1000.0	9.000	H	340.0	20
0.572905	45.75	72.44	26.70	1000.0	9.000	H	307.0	20
1.535226	28.91	63.87	34.96	1000.0	9.000	H	64.0	20
27.312398	27.17	69.50	42.33	1000.0	9.000	H	238.0	25
29.902285	26.96	69.50	42.54	1000.0	9.000	H	97.0	25

Product Service

2.2.13 30MHz to 1GHz Radiated Emission Test (TX mode)

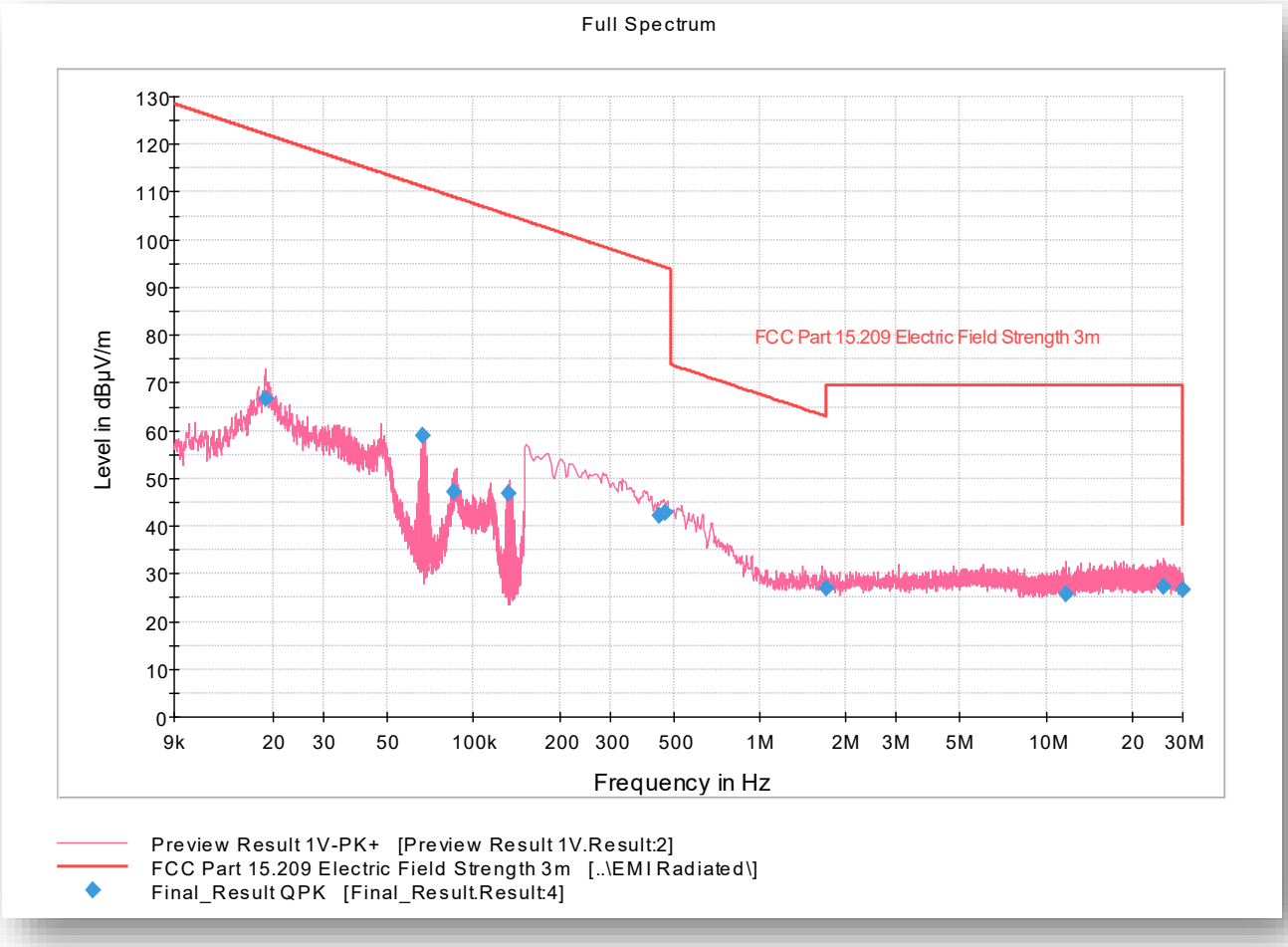


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)
41.703327	7.48	40.00	32.52	1000.0	120.000	103.0	V	340.0	-14.6
45.391102	19.52	40.00	20.48	1000.0	120.000	125.0	V	37.0	-15.8
71.181643	12.66	40.00	27.34	1000.0	120.000	104.0	V	169.0	-18.4
84.268858	11.37	40.00	28.63	1000.0	120.000	233.0	H	17.0	-17.3
86.732746	17.31	40.00	22.69	1000.0	120.000	258.0	H	24.0	-17.0
131.082164	18.63	43.50	24.87	1000.0	120.000	115.0	V	264.0	-16.1
290.680962	20.87	46.00	25.13	1000.0	120.000	110.0	H	260.0	-9.4
618.797996	21.88	46.00	24.12	1000.0	120.000	372.0	H	89.0	-1.0
731.583487	23.44	46.00	22.56	1000.0	120.000	350.0	V	251.0	0.4

Product Service

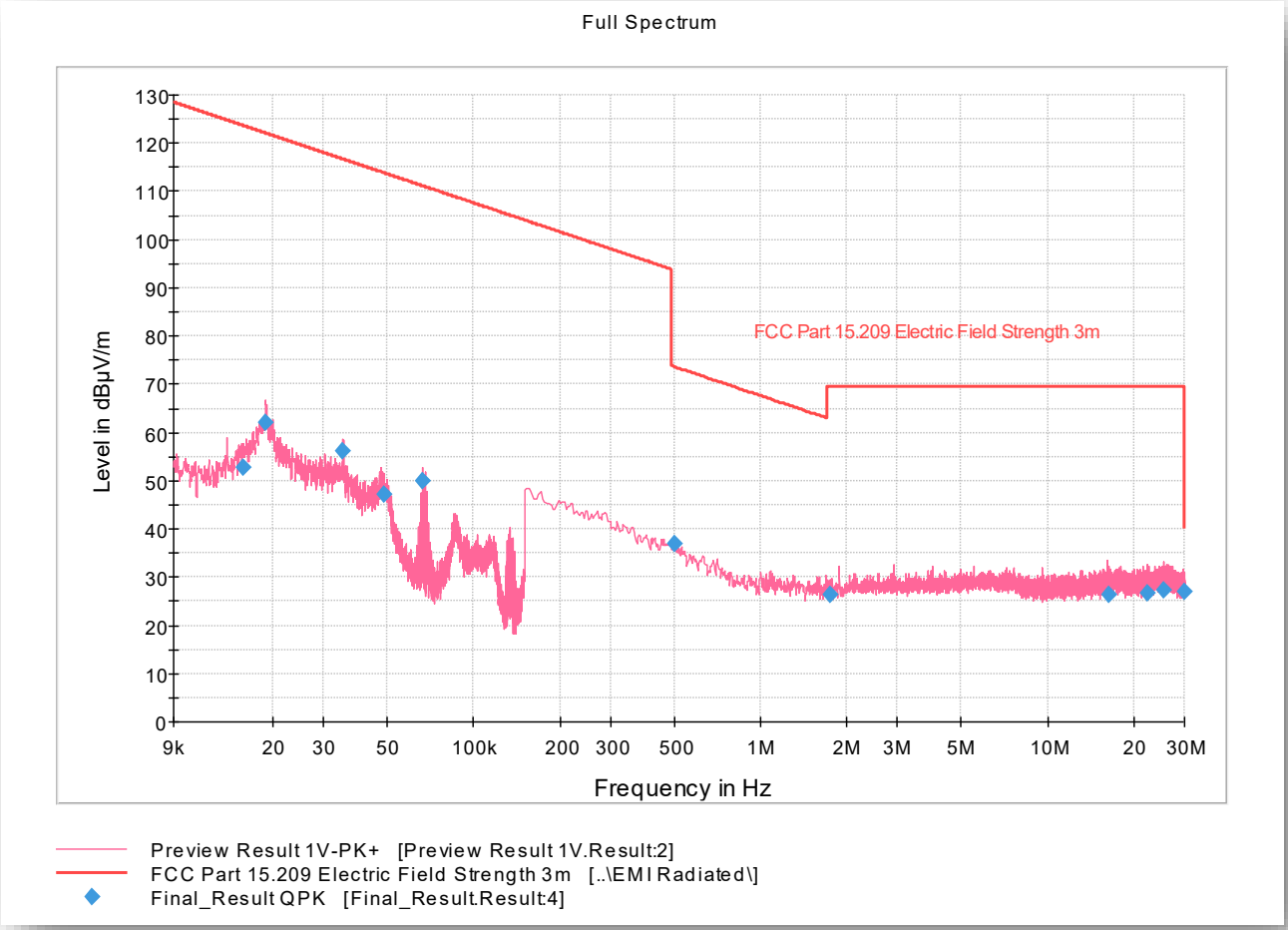
2.2.14 9kHz to 30MHz Radiated Emission Test Front (Standby mode)



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)
0.018761	66.75	122.13	55.38	1000.0	0.200	400.0	16.0	22
0.066557	58.95	111.14	52.19	1000.0	0.200	400.0	156.0	20
0.085408	47.02	108.97	61.95	1000.0	0.200	400.0	229.0	20
0.132082	46.89	105.18	58.30	1000.0	0.200	400.0	62.0	20
0.446565	42.14	94.61	52.47	1000.0	9.000	400.0	195.0	19
0.467670	42.68	94.21	51.53	1000.0	9.000	400.0	103.0	20
1.709933	27.08	69.50	42.42	1000.0	9.000	400.0	88.0	20
11.703685	25.86	69.50	43.64	1000.0	9.000	400.0	243.0	21
25.737631	27.31	69.50	42.19	1000.0	9.000	400.0	156.0	25
29.997280	26.75	69.50	42.75	1000.0	9.000	400.0	156.0	25

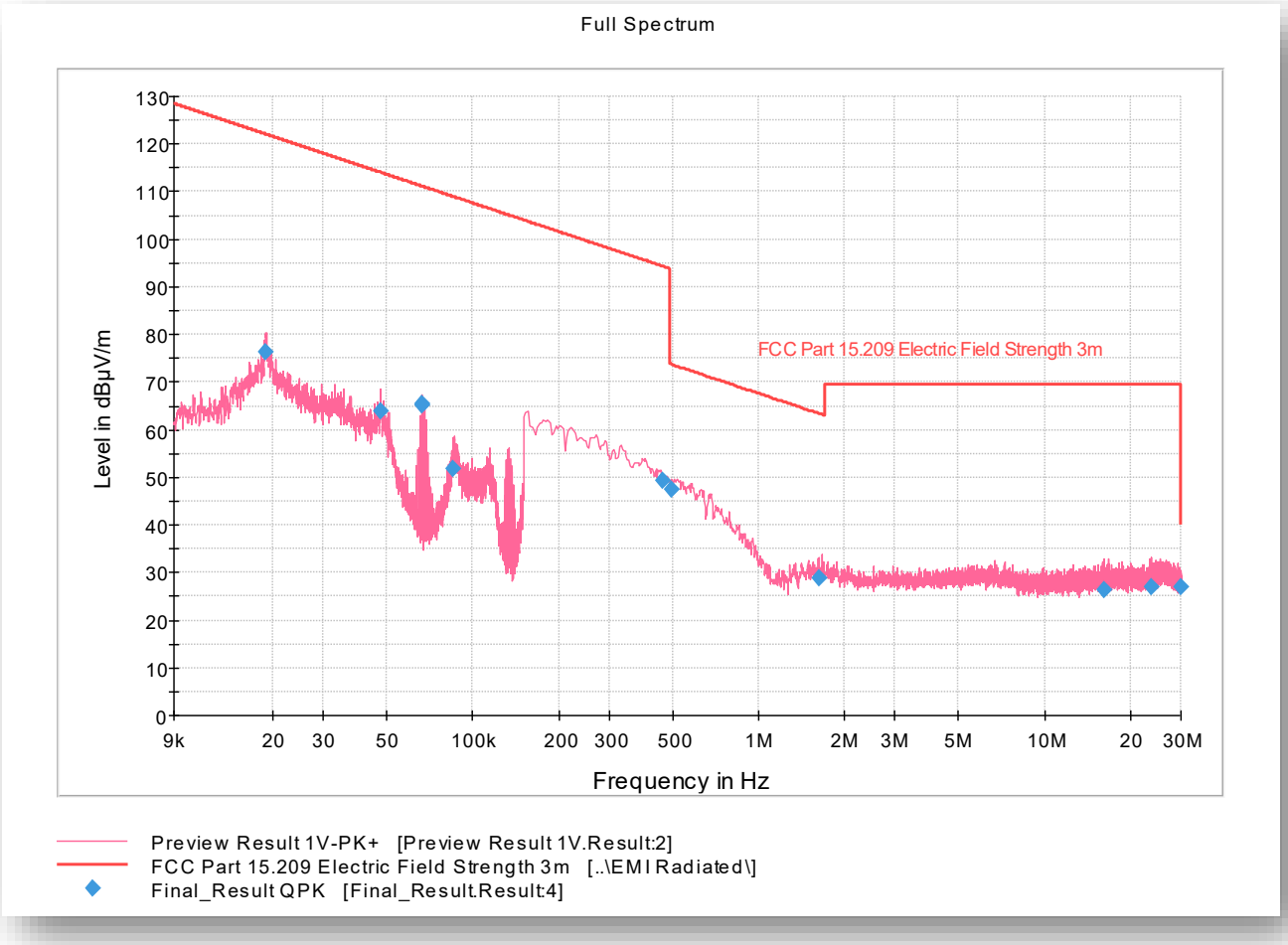
2.2.15 9kHz to 30MHz Radiated Emission Test Side (Standby mode)



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)
0.015736	52.89	123.66	70.77	1000.0	0.200	400.0	130.0	22
0.018850	62.13	122.09	59.96	1000.0	0.200	400.0	324.0	22
0.035098	56.23	116.69	60.47	1000.0	0.200	400.0	180.0	21
0.048878	47.06	113.82	66.76	1000.0	0.200	400.0	16.0	20
0.066530	49.91	111.14	61.23	1000.0	0.200	400.0	300.0	20
0.500745	37.01	73.61	36.60	1000.0	9.000	400.0	270.0	20
1.750534	26.43	69.50	43.07	1000.0	9.000	400.0	194.0	20
16.298183	26.37	69.50	43.13	1000.0	9.000	400.0	356.0	22
22.413905	26.82	69.50	42.68	1000.0	9.000	400.0	276.0	24
25.430202	27.21	69.50	42.29	1000.0	9.000	400.0	235.0	24
29.952175	26.85	69.50	42.65	1000.0	9.000	400.0	323.0	25

2.2.16 9kHz to 30MHz Radiated Emission Test Top (Standby mode)

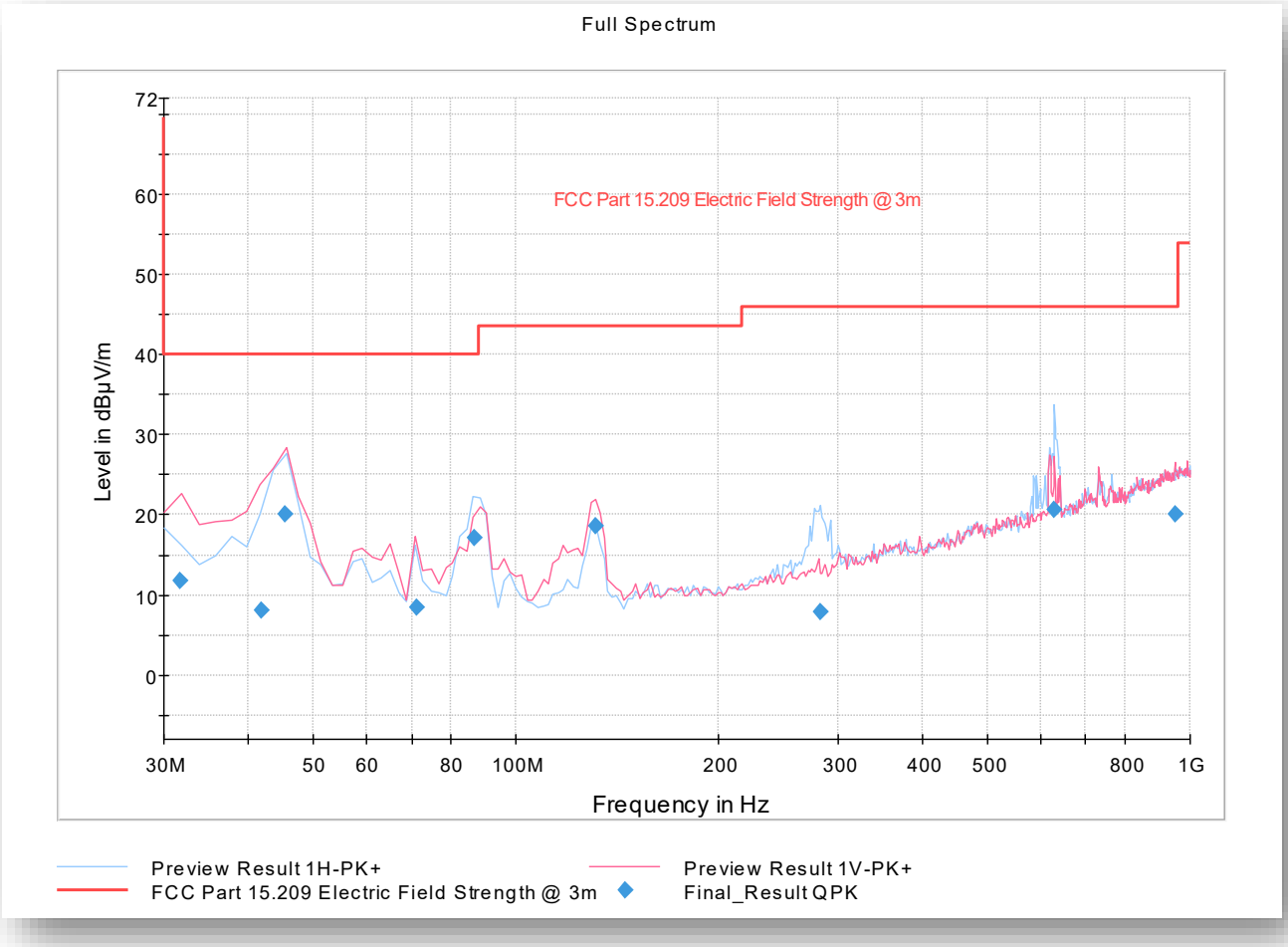


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)
0.018892	76.39	122.07	45.68	1000.0	0.200	400.0	15.0	22
0.047711	63.78	114.03	50.25	1000.0	0.200	400.0	324.0	20
0.066534	65.10	111.14	46.04	1000.0	0.200	400.0	15.0	20
0.066596	65.58	111.13	45.55	1000.0	0.200	400.0	15.0	20
0.085690	51.78	108.94	57.16	1000.0	0.200	400.0	301.0	20
0.461655	49.24	94.32	45.08	1000.0	9.000	400.0	239.0	20
0.497325	47.54	73.67	26.13	1000.0	9.000	400.0	159.0	20
1.621462	28.92	63.40	34.48	1000.0	9.000	400.0	258.0	20
16.097808	26.41	69.50	43.09	1000.0	9.000	400.0	173.0	22
23.737543	27.06	69.50	42.44	1000.0	9.000	400.0	65.0	24
29.868045	26.85	69.50	42.65	1000.0	9.000	400.0	179.0	25

Product Service

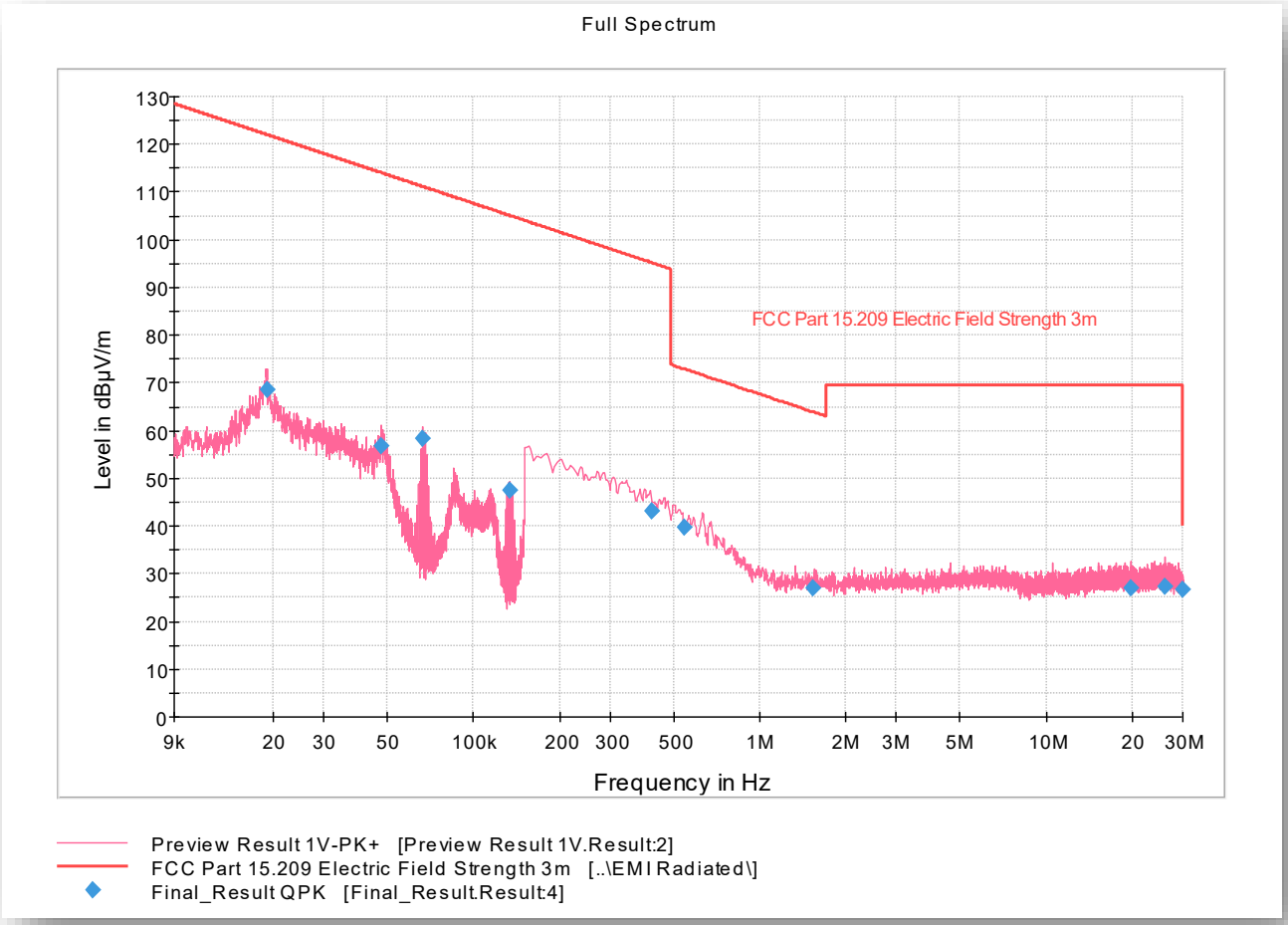
2.2.17 30MHz to 1GHz Radiated Emission Test (Standby mode)



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)
31.663888	11.86	39.99	28.13	1000.0	120.000	103.0	V	53.0	-9.8
41.863327	8.03	39.99	31.96	1000.0	120.000	113.0	V	36.0	-14.7
45.311102	20.04	39.99	19.95	1000.0	120.000	100.0	V	15.0	-15.8
71.101643	8.41	39.99	31.58	1000.0	120.000	191.0	H	340.0	-18.4
86.732746	17.21	39.99	22.78	1000.0	120.000	284.0	H	31.0	-17.0
130.882164	18.55	43.49	24.94	1000.0	120.000	138.0	V	41.0	-16.1
282.785411	7.84	45.99	38.15	1000.0	120.000	150.0	H	319.0	-9.8
628.877435	20.64	45.99	25.35	1000.0	120.000	133.0	H	174.0	-1.2
949.458918	20.06	45.99	25.93	1000.0	120.000	350.0	V	229.0	4.3

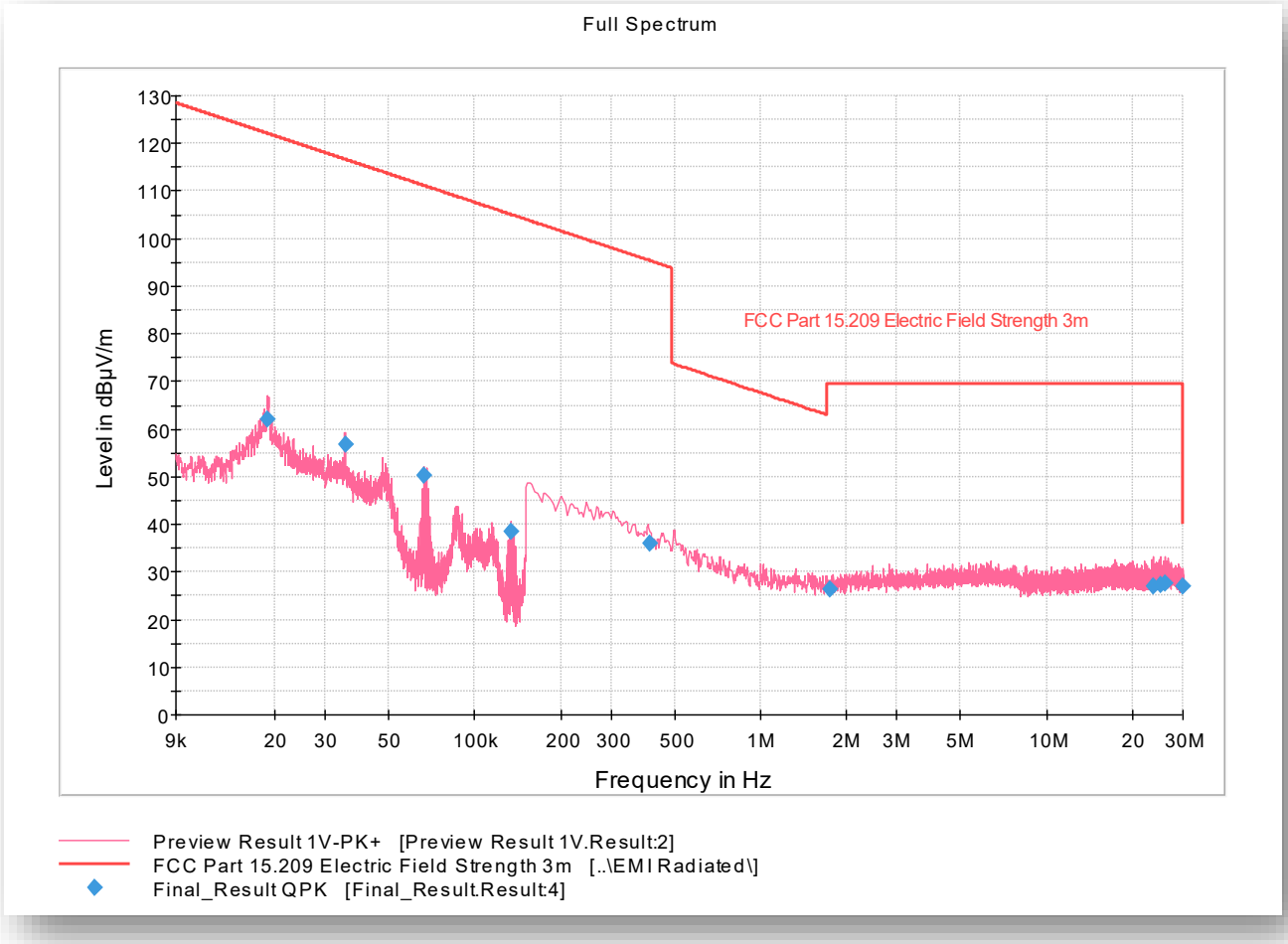
2.2.18 9kHz to 30MHz Radiated Emission Test Front (Receive mode)



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)
0.018996	68.45	122.02	53.57	1000.0	0.200	400.0	326.0	22
0.047551	56.86	114.06	57.20	1000.0	0.200	400.0	62.0	20
0.066530	58.47	111.14	52.67	1000.0	0.200	400.0	14.0	20
0.134171	47.51	105.05	57.54	1000.0	0.200	400.0	254.0	20
0.418730	43.23	95.17	51.94	1000.0	9.000	400.0	229.0	19
0.543085	39.60	72.91	33.31	1000.0	9.000	400.0	276.0	20
1.540270	27.14	63.84	36.70	1000.0	9.000	400.0	25.0	20
19.691852	26.91	69.50	42.59	1000.0	9.000	400.0	276.0	23
26.125784	27.32	69.50	42.18	1000.0	9.000	400.0	356.0	25
29.922345	26.82	69.50	42.68	1000.0	9.000	400.0	71.0	25

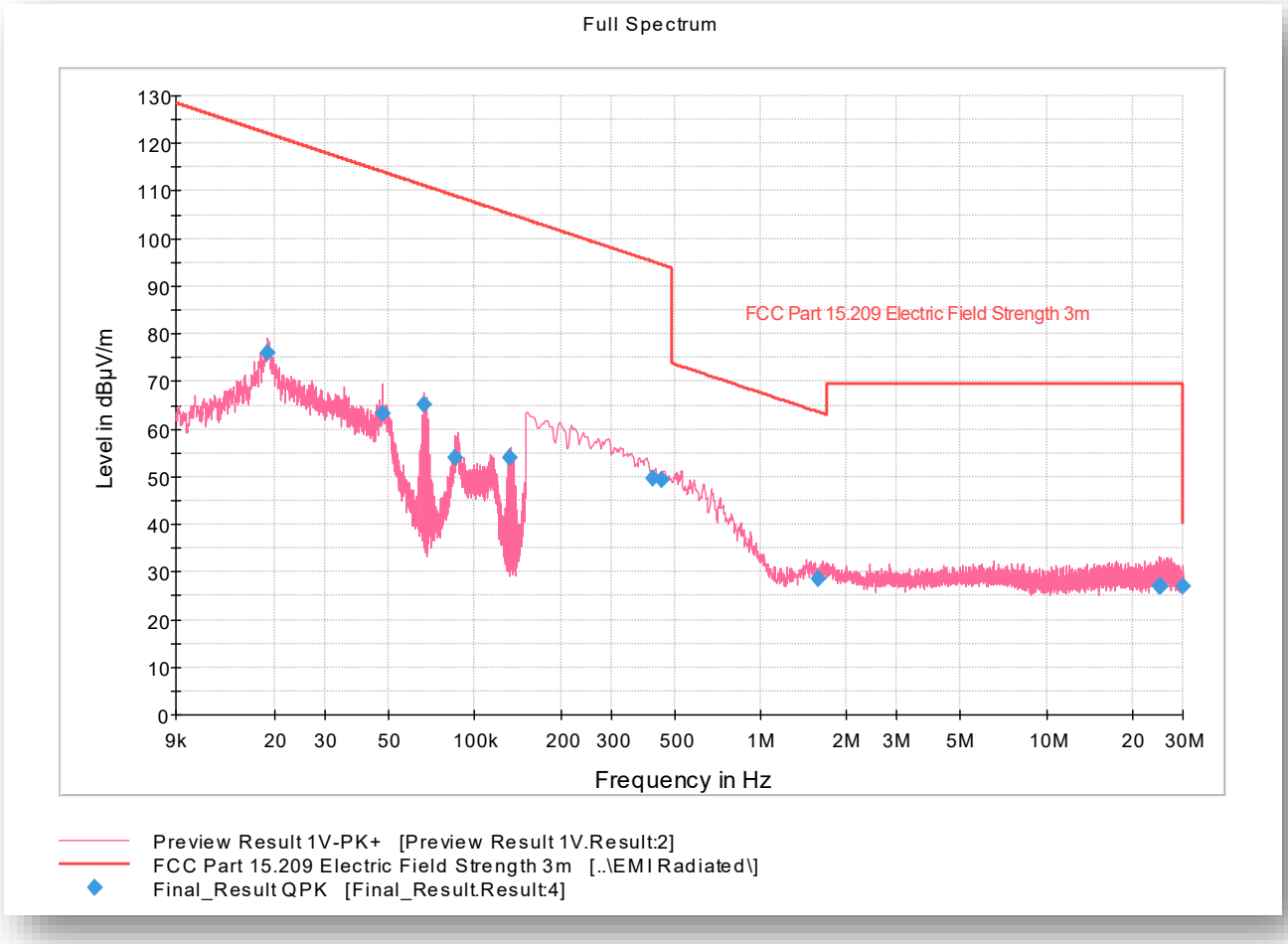
2.2.19 9kHz to 30MHz Radiated Emission Test Side (Receive mode)



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)
0.018845	62.20	122.09	59.89	1000.0	0.200	400.0	302.0	22
0.035163	56.74	116.68	59.93	1000.0	0.200	400.0	16.0	21
0.066581	50.41	111.13	60.73	1000.0	0.200	400.0	278.0	20
0.134215	38.60	105.05	66.45	1000.0	0.200	400.0	158.0	20
0.409745	35.94	95.35	59.42	1000.0	9.000	400.0	19.0	19
1.745484	26.50	69.50	43.00	1000.0	9.000	400.0	268.0	20
23.776862	27.07	69.50	42.43	1000.0	9.000	400.0	286.0	24
25.111521	27.18	69.50	42.32	1000.0	9.000	400.0	234.0	24
26.127922	27.46	69.50	42.04	1000.0	9.000	400.0	93.0	25
29.851190	26.91	69.50	42.59	1000.0	9.000	400.0	41.0	25

2.2.20 9kHz to 30MHz Radiated Emission Test Top (Receive mode)

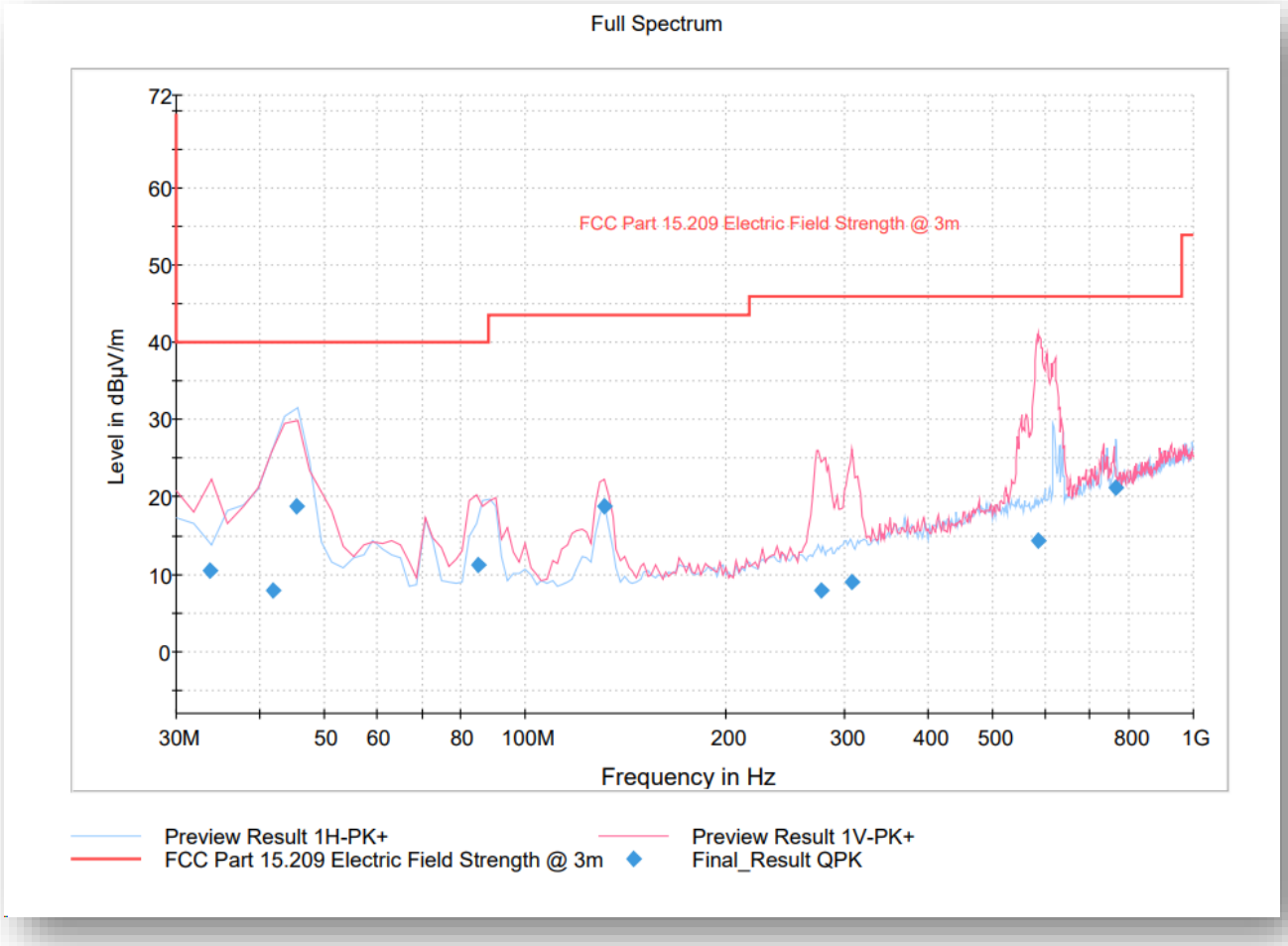


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)
0.018878	75.94	122.08	46.14	1000.0	0.200	400.0	348.0	22
0.047528	63.25	114.06	50.81	1000.0	0.200	400.0	348.0	20
0.066595	65.20	111.13	45.93	1000.0	0.200	400.0	275.0	20
0.085417	53.99	108.97	54.98	1000.0	0.200	400.0	202.0	20
0.132111	53.84	105.18	51.35	1000.0	0.200	400.0	16.0	20
0.419700	49.56	95.15	45.58	1000.0	9.000	400.0	16.0	19
0.452610	49.23	94.49	45.26	1000.0	9.000	400.0	58.0	20
1.590558	28.69	63.56	34.87	1000.0	9.000	400.0	251.0	20
24.803141	27.08	69.50	42.42	1000.0	9.000	400.0	132.0	24
24.980970	27.05	69.50	42.45	1000.0	9.000	400.0	199.0	24
29.825280	26.94	69.50	42.56	1000.0	9.000	400.0	199.0	25

Product Service

2.2.21 30MHz to 1GHz Radiated Emission Test (Receive mode)



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)
33.727776	10.45	39.99	29.54	1000.0	120.000	103.0	V	48.0	-10.9
41.783327	7.90	39.99	32.09	1000.0	120.000	133.0	V	15.0	-14.7
45.351102	18.75	39.99	21.24	1000.0	120.000	350.0	H	15.0	-15.8
84.788858	11.16	39.99	28.83	1000.0	120.000	124.0	V	317.0	-17.2
131.082164	18.73	43.49	24.76	1000.0	120.000	104.0	V	170.0	-16.1
276.593748	7.98	45.99	38.01	1000.0	120.000	120.0	V	30.0	-9.7
307.895952	8.94	45.99	37.05	1000.0	120.000	121.0	V	14.0	-8.6
583.968016	14.42	45.99	31.57	1000.0	120.000	104.0	V	164.0	-2.2
766.613467	21.22	45.99	24.77	1000.0	120.000	123.0	H	357.0	0.5

2.3 OCCUPIED BANDWIDTH

2.3.1 Specification Reference

RSS-Gen 6.7

2.3.2 Standard Applicable

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.
In some cases, the “x dB bandwidth” is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated x dB below the maximum inband power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

2.3.3 Equipment Under Test and Modification State

Serial No: 900570 (Tx Mode) / Default Test Configuration

2.3.4 Date of Test/Initial of test personnel who performed the test

March 29, 2024 / JS

2.3.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Mira Mesa facility

Ambient Temperature	28.6 °C
Relative Humidity	47.2 %
ATM Pressure	100.2 kPa

2.3.7 Additional Observations

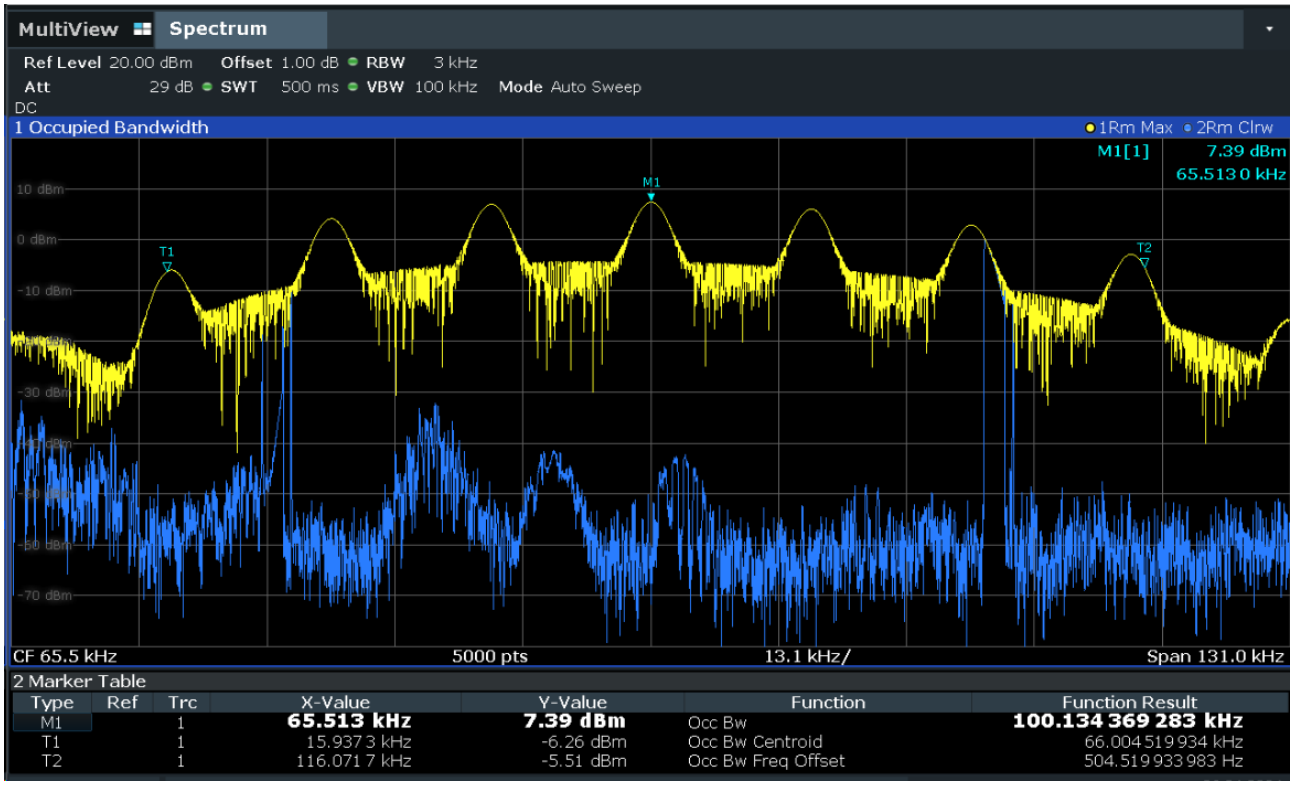
- This is a radiated test.
- The 99% OBW function of the spectrum analyzer was used for this test.
- The RBW (3 kHz) used is in range of 1% to 5% of the actual occupied bandwidth. The video bandwidth (VBW) is 100 kHz, greater than 3X the RBW value.
- f_C was calculated from: $f_C = f_H + f_L / 2$

2.3.8 Test Results

f_H	116 kHz
f_L	15.9 kHz
f_C	65.5 kHz
99% OBW	100.134 kHz

2.3.9 Test Result Plot

See attached test plot. For reference only.



Product Service

SECTION 3

TEST EQUIPMENT USED

Product Service

3.1 TEST EQUIPMENT USED.

List of absolute measuring and other principal items of test equipment.

ID Number (SDGE/SDRB)	Test Equipment	Type	Serial Number	Manufacturer	Cal Date	Cal Due Date
Radiated Emission						
1049	EMI Test Receiver	ESU40	100133	Rohde & Schwarz	08/23/23	08/23/24
7611	Signal/Spectrum Analyzer	FSW26	102017	Rohde & Schwarz	02/16/24	02/16/25
1002	Bilog Antenna	3142C	0058717	EMCO	12/01/23	12/01/25
7631	Double-ridged waveguide horn	3117	00205418	ETS-Lindgren	01/05/23	01/05/25
46797	Preamplifier	PA-122	181925	Com Power	01/05/24	01/05/25
6628	Loop Antenna	HFH2-Z2335.4711.52	FNr.800.458/25	Rohde & Schwarz	06/23/22	06/23/24

Product Service

3.2 MEASUREMENT UNCERTAINTY

Calculation of Measurement Uncertainty per CISPR 16-4-2:2011 with Corr. 1

3.2.1 Radiated Emission Measurements (Below 30MHz)

	Input Quantity (Contribution) Xi	Value		Prob. Dist.	Divisor	ui(x)	ui(x)2
1	Receiver reading	0.10	dB	Normal, k=1	1.000	0.10	0.01
2	Attenuation: antenna-receiver	0.20	dB	Normal, k=2	2.000	0.10	0.01
3	Antenna factor AF	0.44	dB	Normal, k=2	2.000	0.22	0.05
4	Receiver sinewave accuracy	0.15	dB	Normal, k=2	2.000	0.08	0.01
5	Receiver pulse amplitude	1.50	dB	Rectangular	1.732	0.87	0.75
6	Receiver pulse repetition rate	1.50	dB	Rectangular	1.732	0.87	0.75
7	Noise floor proximity	0.50	dB	Rectangular	1.732	0.29	0.08
8	Mismatch: antenna-receiver	0.95	dB	U-shaped	1.414	0.67	0.45
9	AF frequency interpolation	0.30	dB	Rectangular	1.732	0.17	0.03
10	AF height deviations	0.10	dB	Rectangular	1.732	0.06	0.00
11	Directivity difference at 3 m	3.12	dB	Rectangular	1.732	1.80	3.24
12	Phase center location at 3 m	1.00	dB	Rectangular	1.732	0.58	0.33
13	Cross-polarisation	0.90	dB	Rectangular	1.732	0.52	0.27
14	Balance	0.00	dB	Rectangular	1.732	0.00	0.00
15	Site imperfections	0.00	dB	Triangular	2.449	0.00	0.00
16	Separation distance at 3 m	0.30	dB	Rectangular	1.732	0.17	0.03
17	Effect of setup table material	0.00	dB	Rectangular	1.732	0.00	0.00
18	Table height at 10 m	0.10	dB	Normal, k=2	2.000	0.05	0.00
19	Near-field effects	0.00	dB	Triangular	2.449	0.00	0.00
20	Effect of ambient noise on OATS	0.00	dB				0.00
	Combined standard uncertainty			Normal	2.45	dB	
	Expanded uncertainty			**Normal, k=2**	**4.91**	**dB**	

Product Service

3.2.2 Radiated Measurements (30MHz to 1GHz)

	Input Quantity (Contribution) X_i	Value	Prob. Dist.	Divisor	$u_i(x)$	$u_i(x)^2$
1	Receiver reading	0.10 dB	Normal, k=1	1.000	0.10	0.01
2	Attenuation: antenna-receiver	0.20 dB	Normal, k=2	2.000	0.10	0.01
3	Antenna factor AF	0.58 dB	Normal, k=2	2.000	0.29	0.08
4	Receiver sinewave accuracy	0.15 dB	Normal, k=2	2.000	0.08	0.01
5	Receiver pulse amplitude	1.50 dB	Rectangular	1.732	0.87	0.75
6	Receiver pulse repetition rate	1.50 dB	Rectangular	1.732	0.87	0.75
7	Noise floor proximity	0.50 dB	Rectangular	1.732	0.29	0.08
8	Mismatch: antenna-receiver	0.95 dB	U-shaped	1.414	0.67	0.45
9	AF frequency interpolation	0.30 dB	Rectangular	1.732	0.17	0.03
10	AF height deviations	0.10 dB	Rectangular	1.732	0.06	0.00
11	Directivity difference at 3 m	3.12 dB	Rectangular	1.732	1.80	3.24
12	Phase center location at 3 m	1.00 dB	Rectangular	1.732	0.58	0.33
13	Cross-polarisation	0.90 dB	Rectangular	1.732	0.52	0.27
14	Balance	0.00 dB	Rectangular	1.732	0.00	0.00
15	Site imperfections	3.99 dB	Triangular	2.449	1.63	2.65
16	Separation distance at 3 m	0.30 dB	Rectangular	1.732	0.17	0.03
17	Effect of setup table material	0.57 dB	Rectangular	1.732	0.33	0.11
18	Table height at 3 m	0.10 dB	Normal, k=2	2.000	0.05	0.00
19	Near-field effects	0.00 dB	Triangular	2.449	0.00	0.00
20	Effect of ambient noise on OATS	0.00 dB				0.00
	Combined standard uncertainty		Normal	2.97 dB		
	Expanded uncertainty		**Normal, k=2**	**5.94 dB**		

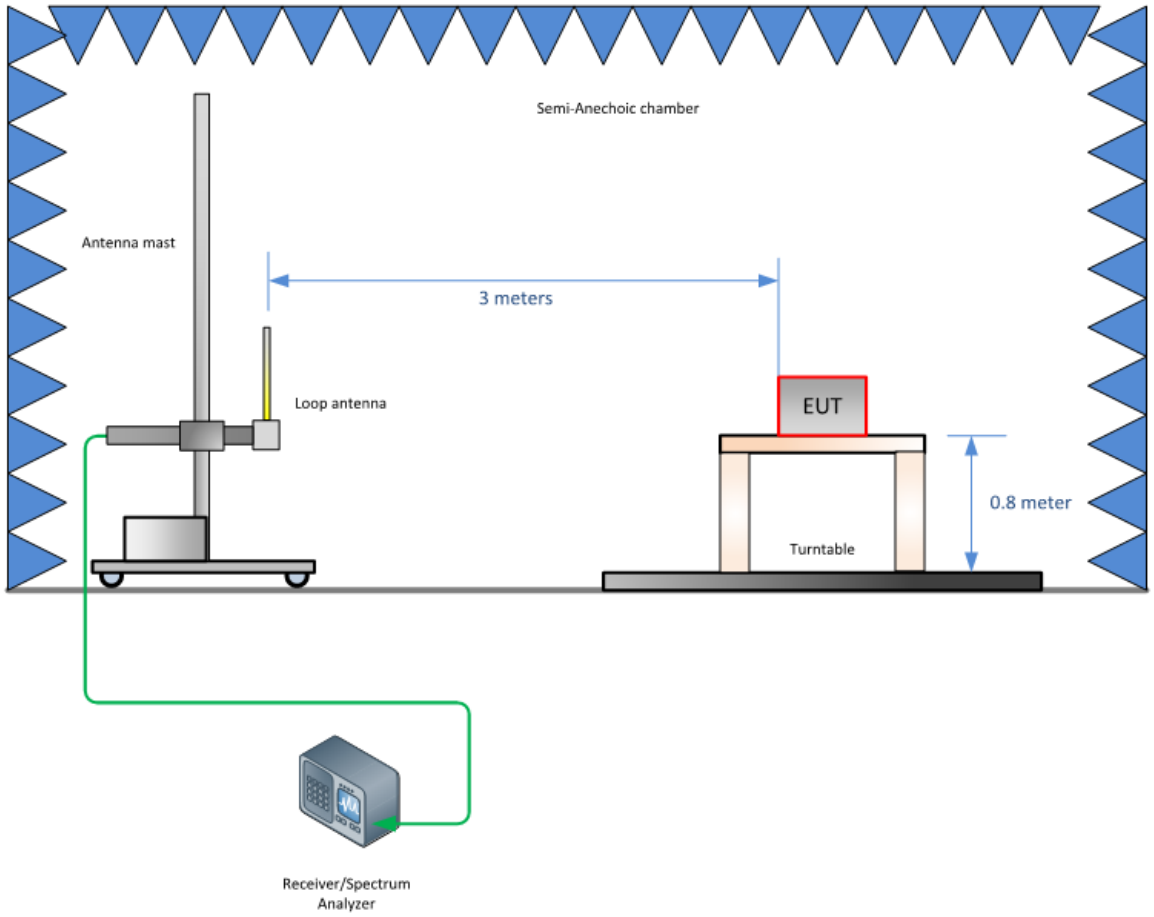
Product Service

SECTION 4

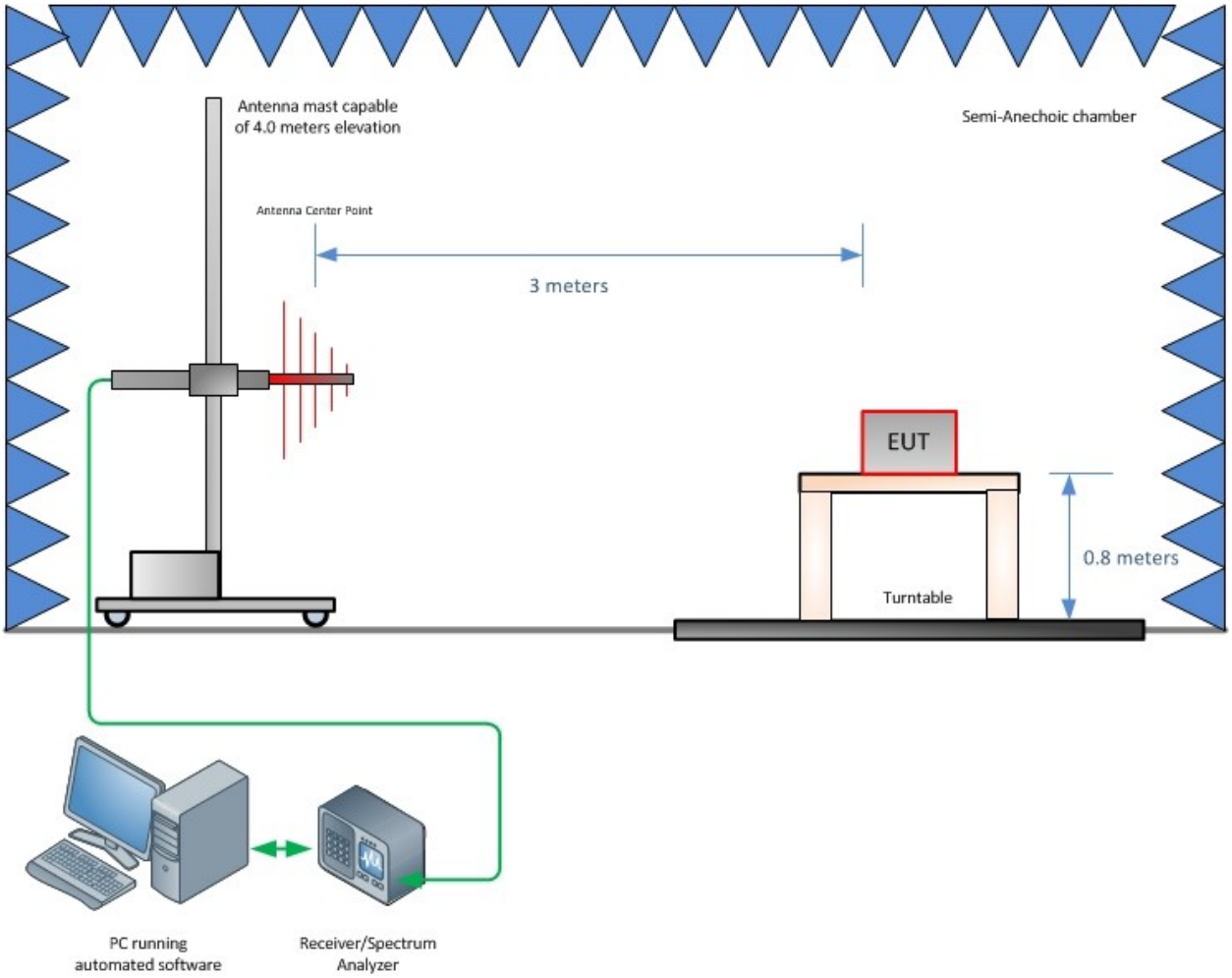
DIAGRAM OF TEST SETUP

Product Service

4.1 TEST SETUP DIAGRAM



Radiated Emission Test Setup (Below 30MHz)



Radiated Emission Test Setup (Below 1GHz)

Product Service

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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