

Radio Testing of the
St. Jude Medical
Implantable Cardioverter Defibrillator Device
Model: Avant™, Neutrino™ NxT, Gallant™ and
Entrant™

In accordance with FCC Part 15 Subpart C
§15.247 and IC RSS-247 Issue 3 August 2023

St. Jude Medical
15900 Valley View Court
Sylmar, CA 91342 USA



America

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Date: July 2024
Document Number: 72198928A | Version Number: 02

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EXECUTIVE SUMMARY

A sample of this product was tested and found to be in compliance with FCC Part 15 Subpart C §15.247 and IC RSS-247 Issue 3 August 2023 Radiated Spurious Emissions requirements.



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REPORT ON Radio Testing of the
St. Jude Medical
Model: Avant™, Neutrino™ NxT, Gallant™ and Entrant™
(Implantable Cardioverter Defibrillator Device)

TEST REPORT NUMBER 72198928A

TEST REPORT DATE July 2024

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DATED July 31, 2024



Revision History

72198928A St. Jude Medical Model: Avant™, Neutrino™ NxT, Gallant™ and Entrant™ Implantable Cardioverter Defibrillator Device					
DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
07/19/2024	—	Initial Release			Ferdinand S. Custodio
07/31/2024	—	02	Updated company name to St. Jude Medical	1,3,5,9,14	Ferdinand S. Custodio



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SECTION 1

REPORT SUMMARY

Radio Testing of the
St. Jude Medical
Avant™, Neutrino™ NxT, Gallant™ and Entrant™ Implantable Cardioverter Defibrillator Device



1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Avant™, Neutrino™ NxT, Gallant™ and Entrant™ Implantable Cardioverter Defibrillator Device to the requirements of FCC Part 15 Subpart C §15.247 and IC RSS-247 Issue 3 August 2023.

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. The EUT is already certified. The Grantee is seeking Class II Permissive Change due to updated antenna used. All other RF functionalities remained the same.
Manufacturer	St. Jude Medical
EUT	Implantable Cardioverter Defibrillator Device
Model Number	CDHFA500B and CDHFA500D (representative sample verified)
Model Name	Avant™, Neutrino™ NxT, Gallant™ and Entrant™
FCC ID	RIAICDRFNGQ
IC Number	7067A-ICDRF
FCC Classification	Low power Communications Device Transmitter (DTS)
Serial Number(s)	Radiated Samples - 210007976 (CDHFA500B), 210007980 (CDHFA500D), Conducted Samples – NGQ SN02, NGQ SN04
Number of Samples Tested	4
Test Specification/Issue/Date	<ul style="list-style-type: none"> • FCC Part 15 Subpart C §15.247 (October 1, 2023). • RSS-247–Digital Transmission Systems (DTS), Frequency Hopping Systems (FHSS) and Licence-Exempt Local Area Network (LE-LAN) Devices (Issue 3, August 2023). • RSS-Gen - General Requirements for Compliance of Radio Apparatus (Issue 6, Amendment 15 February 2023).
Start of Test	June 03, 2024
Finish of Test	June 21, 2024
Name of Engineer(s)	Joe Salvador Ferdinand Custodio
Related Document(s)	<ul style="list-style-type: none"> • ANSI C63.10-2013. American National Standard of Procedures for Compliance testing of Unlicensed Wireless Devices.



- OTA_DTM_Hex_Command.xlsx
- Supporting documents for Class II Permissive Change application are separate exhibits.



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC Part 15 Subpart C §15.247 and IC RSS-247 Issue 3 August 2023 with cross-reference to the corresponding IC RSS standard are shown below.

Section	§15.247 Spec Clause	RSS	Test Description	Result	Comments /Base Standard
2.1	§15.247(b)(3)	RSS-247 5.4(d)	Peak Output Power	Compliant	
-	§15.207(a)	RSS-Gen 8.8	Conducted Emissions	N/A	
-	-	RSS-Gen 6.7	99% Emission Bandwidth	N/A	
-	§15.247(a)(2)	RSS-247 5.2(a)	Minimum 6 dB RF Bandwidth	N/A	
-	§15.247(d)	RSS-247 5.5	Out-of-Band Emissions - Conducted	N/A	
2.2	§15.247(d)	RSS-247 5.5	Band-edge Compliance	Compliant	
2.3	§15.247(d)	RSS-247 5.5	Radiated Spurious Emissions	Compliant	
-	-	RSS-Gen 7.3 and 7.4	Receiver Spurious Emissions	N/A*	
-	§15.247(e)	RSS-247 5.2(b)	Power Spectral Density for Digitally Modulated Device	N/A	

N/A Not performed per test plan. The Grantee is seeking Class II Permissive Change for updated antenna used. RF characteristics up to the antenna port as declared by the Grantee remained identical justifying not repeating all original RF conducted measurements.

N/A* Not required as per RSS-Gen 5.3 The EUT does not fall into any category defined as Receiver under RSS-Gen.



1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment Under Test (EUT) are Avant™, Neutrino™ NxT, Gallant™ and Entrant™ Implantable Cardioverter Defibrillator Device. The EUT are battery-powered device placed under the skin that monitors the heart rate. Special wires connect the EUT to the heart. If an abnormal heart rhythm is detected, the EUT will deliver either pacing therapy if the heart rate is too slow or an electric shock if the heart rate is chaotic or beating too fast. The BLE function of the EUT is verified in this test report.

The Gallant and Entrant series have the same hardware as Avant. The only difference is the firmware for therapy. So, RF functionality is identical. The Neutrino series are the Japanese name and models for Avant and Gallant. Therefore, same exact hardware and firmware as Avant and Gallant. Gallant series models were provided as representative of all other models for evaluation.

Variant models are listed below:

Product Family	Certified Models						New Models	
	VR	DR	HF	DF1 VR	DF1 DR	DF1 HF	Bipolar DF1	Bipolar DF4
Avant™	CDVRA700Q	CDDRA700Q	CDHFA700Q	CDVRA700T	CDDRA700T	CDHFA700T	CDHFA700B	CDHFA700D
Neutrino™ NxT	CDVRA800Q	CDDRA800Q	CDHFA800Q	CDVRA800T	CDDRA800T	CDHFA800T	CDHFA800B	CDHFA800D
Gallant™	CDVRA500Q	CDDRA500Q	CDHFA500Q	CDVRA500T	CDDRA500T	CDHFA500T	CDHFA500B	CDHFA500D
Neutrino™ NxT	CDVRA600Q	CDDRA600Q	CDHFA600Q	CDVRA600T	CDDRA600T	CDHFA600T	CDHFA600B	CDHFA600D
Entrant™	CDVRA300Q	CDDRA300Q	CDHFA300Q	CDVRA300T	CDDRA300T	CDHFA300T	CDHFA300B	CDHFA300D

1.3.2 EUT General Description



EUT Description	Implantable Cardioverter Defibrillator Device
Model Name	Avant™, Neutrino™ NxT, Gallant™ and Entrant™
Model Numbers	CDHFA500B and CDHFA500D
Rated Voltage	Internal battery (3.0VDC)
Mode Verified	Bluetooth LE
Capability	Bluetooth LE
Primary Unit (EUT)	<input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-Production <input type="checkbox"/> Engineering (same as Production)



Manufacturer Declared Temperature Range 20°C to 37°C
 Antenna Type Integral Wire Monopole Antenna
 Manufacturer St. Jude Medical
 Antenna Model N/A
 Peak Antenna Gain

Device	Peak Antenna Gain(dBi)
CDHFA500B	-15.61
CDHFA500D	-15.04

1.3.3 Maximum Conducted Output Power

Bluetooth Low Energy (LE)	Frequency Range (MHz)	Measured RMS Power (dBm)
 Conducted Sample NGQ SN04	2402-2480	2.27
 Conducted Sample NGQ SN02	2402-2480	2.38



1.4 EUT TEST CONFIGURATION

1.4.1 Test Configuration Description

Test Configuration	Description
Default	<p>The EUT is configured with test software loaded instead of the standard product software. The test software allows for the EUT's Bluetooth radio to be controlled by an external device (eg. Apple iPod Touch). The iPod Touch can configure the EUT for transmit modes covering Low, Mid, and High channels. The manufacturer provided guidance how to program the EUT (OTA_DTM_Hex_Command.xlsx) with power setting set to 6dBm CW.</p> <p>During radiated testing, the EUT must reside in a phantom cylinder filled with tissue simulating liquid to simulate the human body. Due to the physical dimensions of the cylinder including size and weight, some test requirements cannot be practically performed such as the actual height requirement of the EUT in reference to the floor.</p>

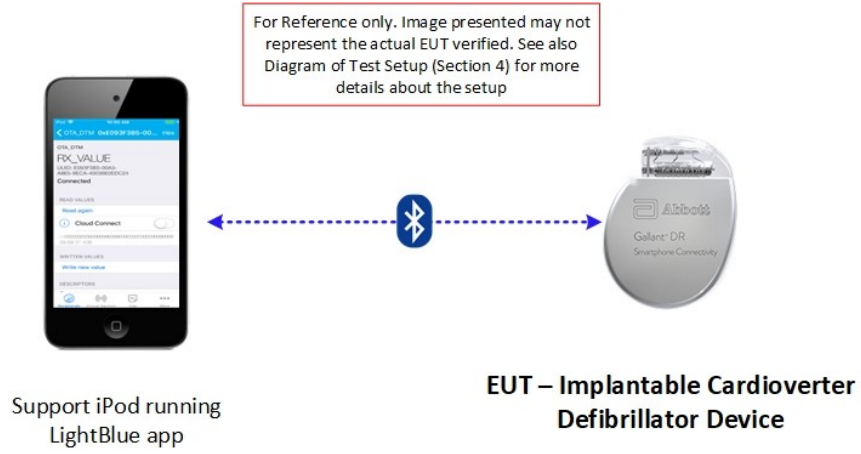
1.4.2 EUT Exercise Software

For the RF testing, test firmware is used to control the RF parameters (CW, channels, power, duration, etc.). The support iPod Touch is running LightBlue app V4.1.1.

1.4.3 Support Equipment and I/O cables

Manufacturer	Equipment/Cable	Description
Apple	iPod Touch	Model MKH62LL/A S/N CCQS92H3GGK6

1.4.4 Simplified Test Configuration Diagram





1.5 DEVIATIONS FROM THE STANDARD

EUT is a mobile device requiring verification on all three axes. However, since the EUT will be inside a torso simulator simulating placement inside a human body, only two configurations are possible to verify: Front (worse case – the front side/logo of the EUT is facing and is 2cm from the cylinder/simulator wall) and Flipped (the back side of the EUT is facing and is 2cm from the cylinder/simulator wall). These are the only positions possible while maintaining the required separation distance between the EUT and the simulator wall.

1.6 MODIFICATION RECORD

Description of Modification	Modification Fitted By	Date Modification Fitted
Serial Number: No modifications		
N/A	-	-

The table above details modifications made to the EUT during the test programme. The modifications incorporated during each test (if relevant) are recorded on the appropriate test pages.

1.7 TEST METHODOLOGY

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

For conducted and radiated emissions, the equipment under test (EUT) was configured to measure its highest possible emission level. This level was based on the maximized cable configuration from exploratory testing per ANSI C63.10-2013. The test modes were adapted according to the Operating Instructions provided by the manufacturer/client.

1.8 TEST FACILITY LOCATION

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.



America

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.

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

TÜV Product Service Inc. (San Diego) is a recognized EMC testing 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.



SECTION 2

TEST DETAILS

Radio Testing of the
St. Jude Medical
Avant™, Neutrino™ NxT, Gallant™ and Entrant™ Implantable Cardioverter Defibrillator Device



2.1 PEAK OUTPUT POWER

2.1.1 Specification Reference

FCC 47 CFR Part 15, Clause 15.247(b)(3)
RSS-247, Clause 5.4 (d)

2.1.2 Standard Applicable

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands, the maximum peak conducted output shall not exceed 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

2.1.3 Equipment Under Test and Modification State

Serial No: NGQ SN02, NGQ SN04/ Conducted Test Configuration

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

June 13, 2024 / JS

2.1.5 Test Equipment Used

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

2.1.6 Environmental Conditions (Mira Mesa Facility)

Ambient Temperature	24.6 °C
Relative Humidity	52.9 %
ATM Pressure	100.1 kPa

2.1.7 Additional Observations

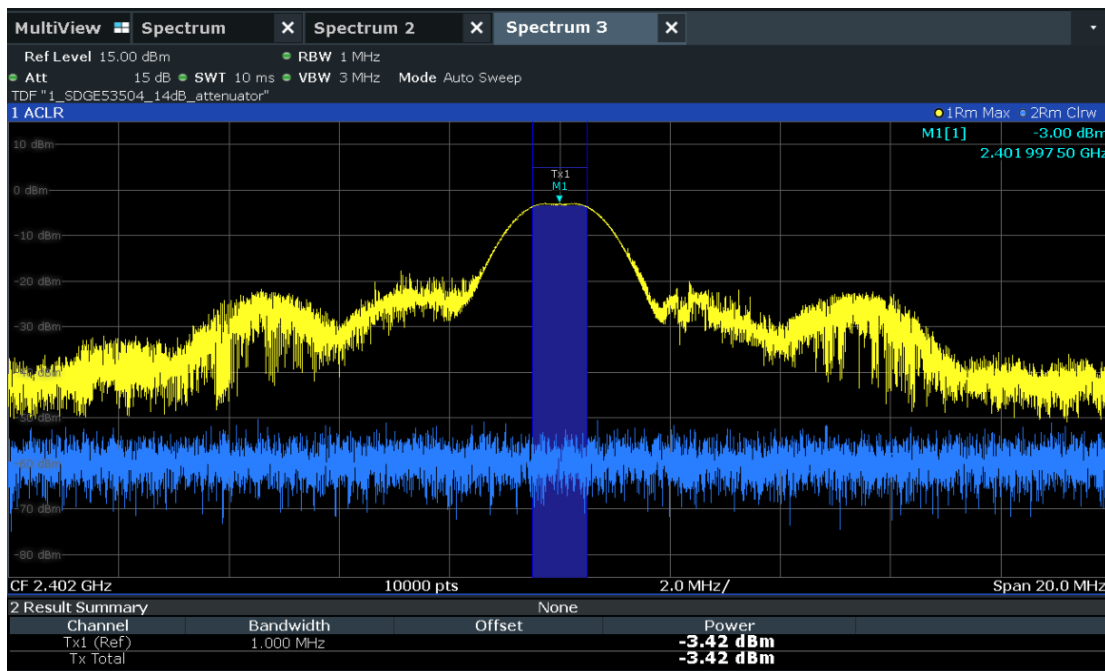
- This is a conducted test through the EUT antenna port.
- Test were performed on Low, Middle and High channels.
- This test was performed in normal conditions.



2.1.8 Test Results for Conducted Samples

Bluetooth Low Energy (LE)	Low channel (2402 MHz)	Mid channel (2440 MHz)	High channel (2480 MHz)	Limit Max (dBm)	Result
Conducted Sample NGQ SN04	-3.42 dBm	2.27 dBm	1.80 dBm	30.0	Pass
Conducted Sample NGQ SN02	-3.23 dBm	2.38 dBm	2.02 dBm	30.0	Pass

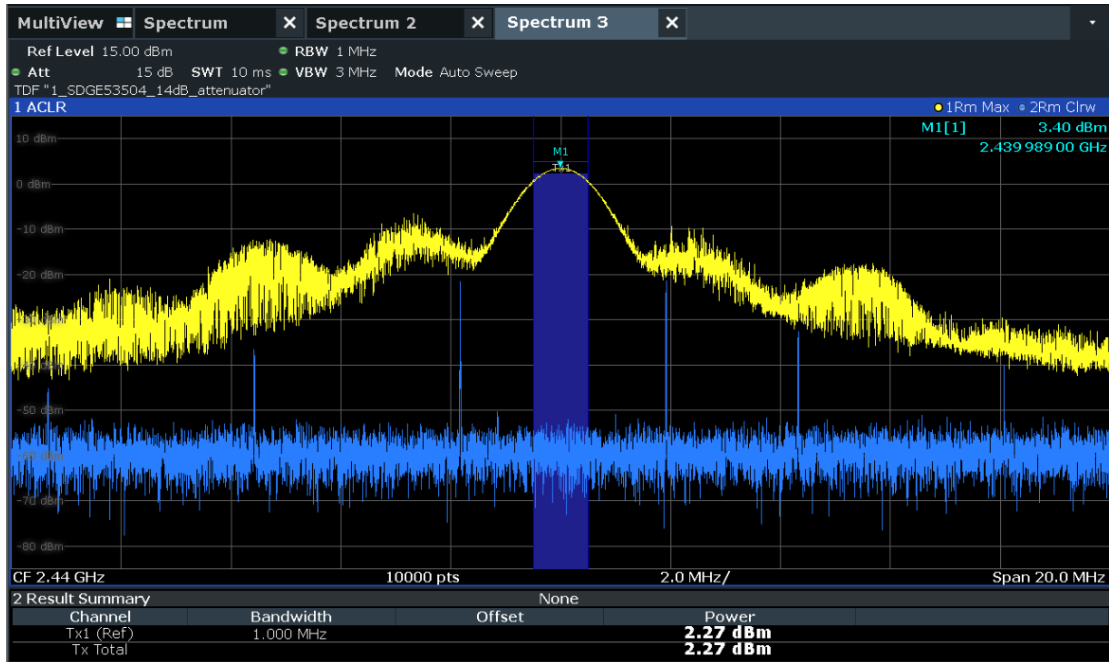
2.1.9 Test Plots



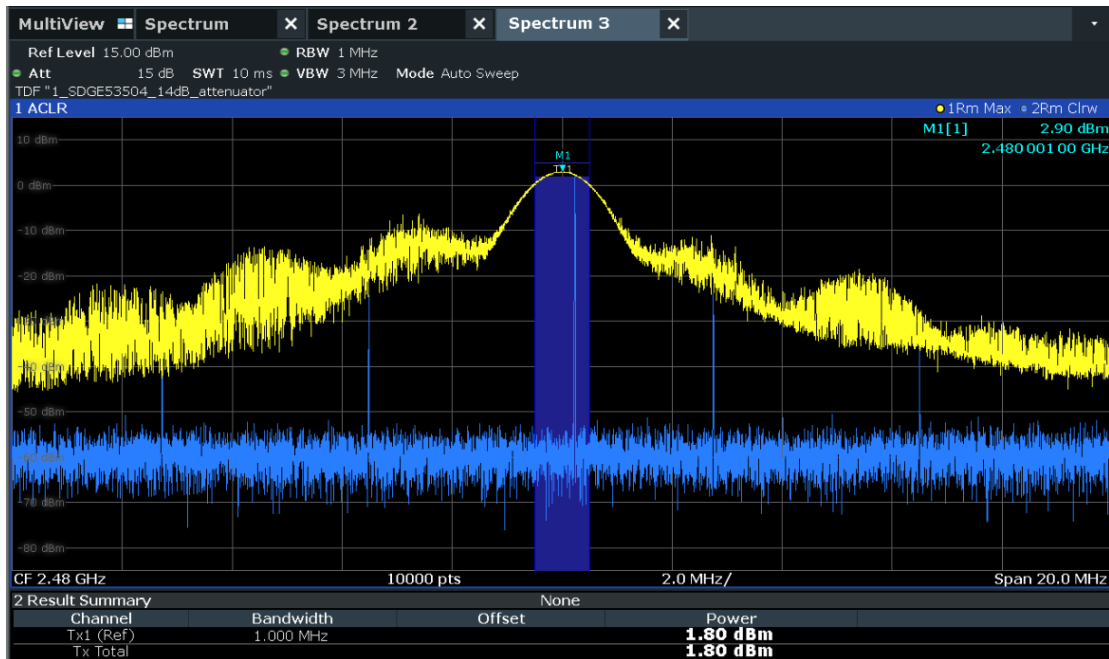
NGQ SN04 Low Channel



America



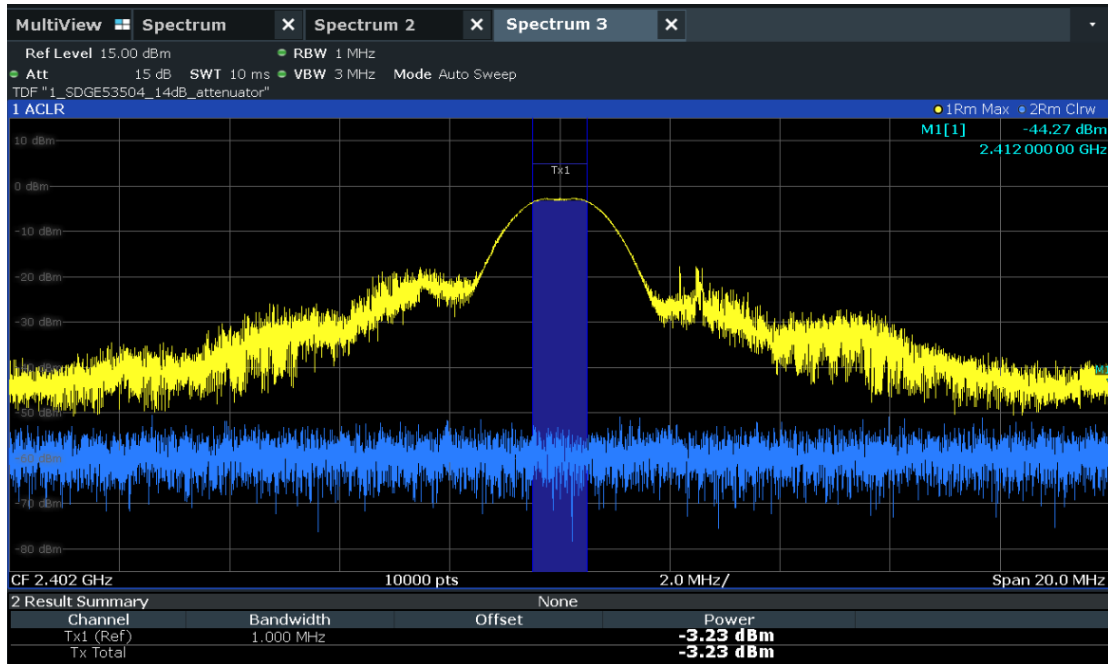
NGQ SN04 Mid Channel



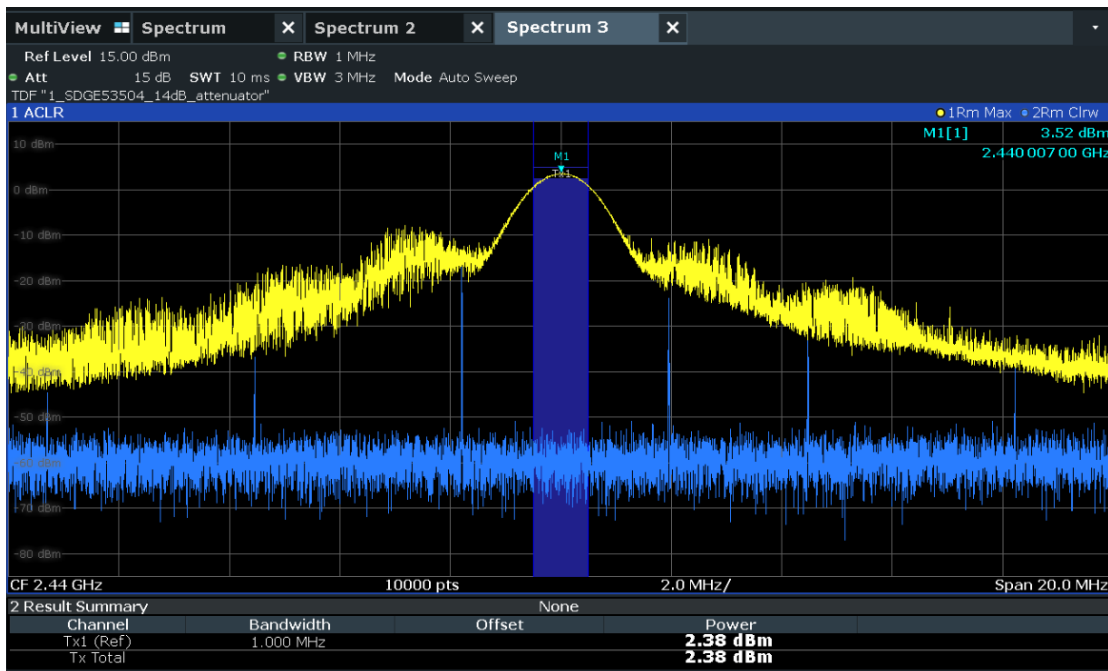
NGQ SN04 High Channel



America



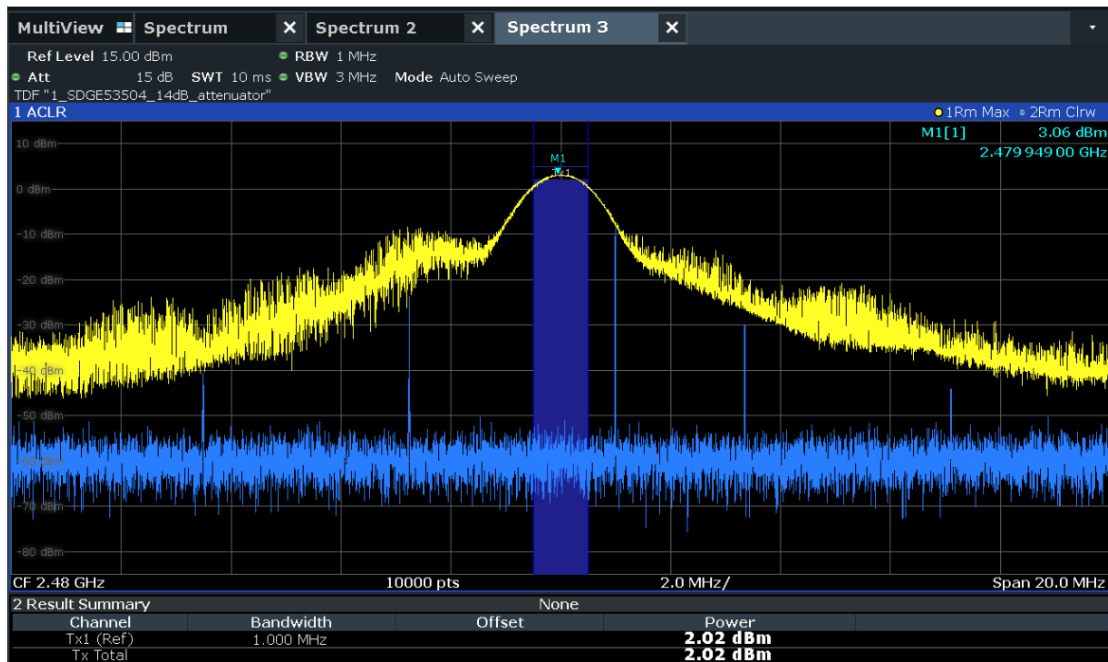
NGQ SN02 Low Channel



NGQ SN02 Mid Channel



America



NGQ SN02 High Channel



2.2 BAND-EDGE COMPLIANCE

2.2.1 Specification Reference

FCC 47 CFR Part 15, Clause 15.247(d)
FCC 47 CFR Part 15, Clause 15.205
RSS-247, Clause 5.5

2.2.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

2.2.2 Equipment Under Test and Modification State

Serial No: 210007976, 210007980 / Default Radiated Test Configuration

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

June 03 to 09, 2023 / JS

2.2.4 Test Equipment Used

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

2.2.5 Environmental Conditions (Mira Mesa Facility)

Ambient Temperature	28.6 °C
Relative Humidity	42.1 %
ATM Pressure	99.5 kPa

2.2.6 Additional Observations

- This is a radiated test. The spectrum was searched from 2310MHz to 2400MHz for Lower Band Edge and 2483.5MHz to 2500MHz for Upper Band Edge verifications. This ensures coverage of immediate restricted bands.
- There are no emissions found that do not comply to the restricted bands defined in FCC Part 15 Subpart C, 15.205 or Part 15.247(d).
- Only Low and High Channels are presented as required.
- Measurement was done using EMC32 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only. See Section 2.2.7 for sample computation.

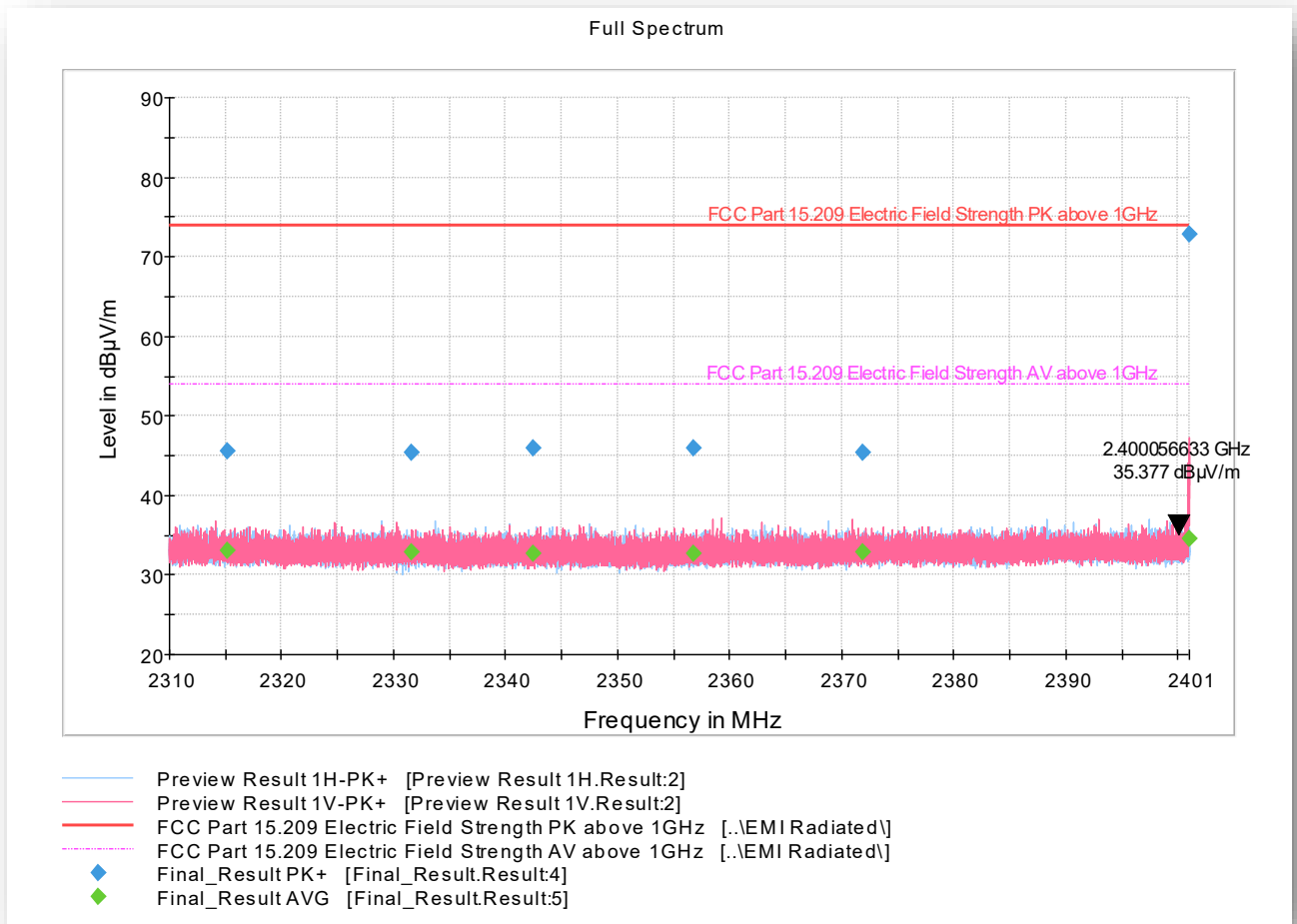


2.2.7 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (db μ V) @ 30 MHz		-0.8
Correction Factor (dB/m)	Asset# 1066 (cable)	18.1
	Asset# 1172 (cable)	0.3
	Asset# 1175(cable)	0.3
	Asset# 1002 (antenna)	17.2
Reported QuasiPeak Final Measurement (dbμV/m) @ 30MHz		11.8



2.2.8 Test Results for Lower Band Edge (500B)



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2315.20000	45.60	73.90	28.30	1000.0	1000.000	283.0	V	250.0	4
2331.59473	45.48	73.90	28.42	1000.0	1000.000	353.0	H	93.0	4
2342.49086	45.90	73.90	28.00	1000.0	1000.000	186.0	H	12.0	4
2356.69773	45.90	73.90	28.00	1000.0	1000.000	203.0	V	52.0	4
2371.91540	45.39	73.90	28.51	1000.0	1000.000	123.0	V	121.0	4
2401.00000	72.75	73.90	1.15	1000.0	1000.000	192.0	V	54.0	4

Test Notes: Marker at 2400 MHz (Low edge, not in restricted band) measures attenuation greater than 30 dB based on the fundamental measurement of Section 2.3.18 of this test report. EUT complies.



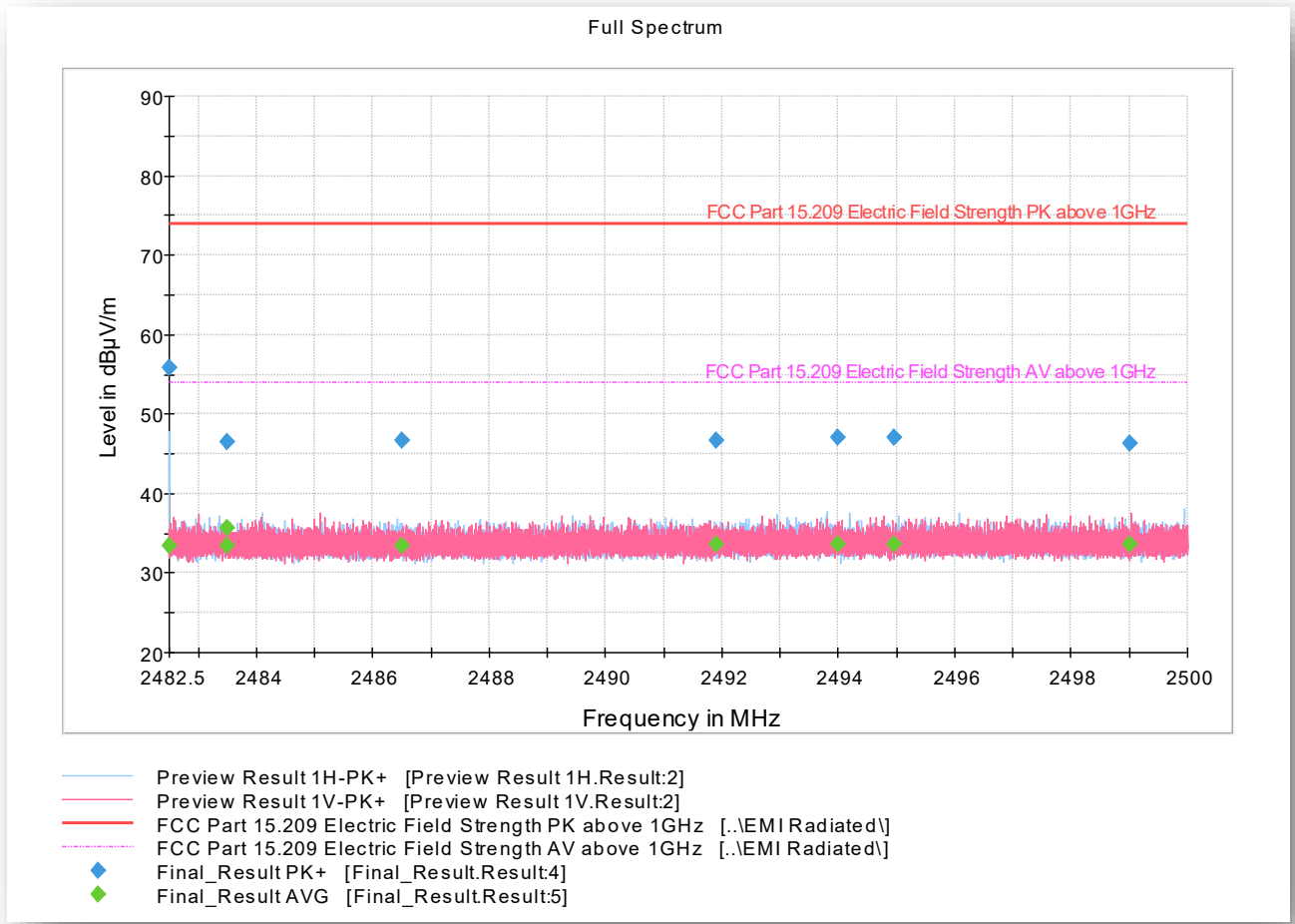
Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2315.20000	32.98	53.90	20.92	1000.0	1000.000	283.0	V	250.0	4
2331.59473	32.87	53.90	21.03	1000.0	1000.000	353.0	H	93.0	4
2342.49086	32.76	53.90	21.14	1000.0	1000.000	186.0	H	12.0	4
2356.69773	32.67	53.90	21.23	1000.0	1000.000	203.0	V	52.0	4
2371.91540	32.82	53.90	21.08	1000.0	1000.000	123.0	V	121.0	4
2401.00000	34.54	53.90	19.36	1000.0	1000.000	192.0	V	54.0	4

Test Notes: Limits used for band edge verifications (not in restricted bands) are based on fundamental measurement of Section 2.3.18 of this test report.



2.2.9 Test Results for Upper Band Edge (500B)



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2482.50000	55.85	73.90	18.05	1000.0	1000.000	172.0	H	55.0	4
2483.50000	46.45	73.90	27.45	1000.0	1000.000	328.0	H	90.0	4
2486.50000	46.72	73.90	27.18	1000.0	1000.000	363.0	V	274.0	4
2491.90000	46.65	73.90	27.25	1000.0	1000.000	363.0	H	139.0	4
2493.98766	47.05	73.90	26.85	1000.0	1000.000	107.0	H	251.0	4
2494.95216	47.04	73.90	26.86	1000.0	1000.000	203.0	H	135.0	4
2499.00000	46.35	73.90	27.55	1000.0	1000.000	363.0	H	239.0	4



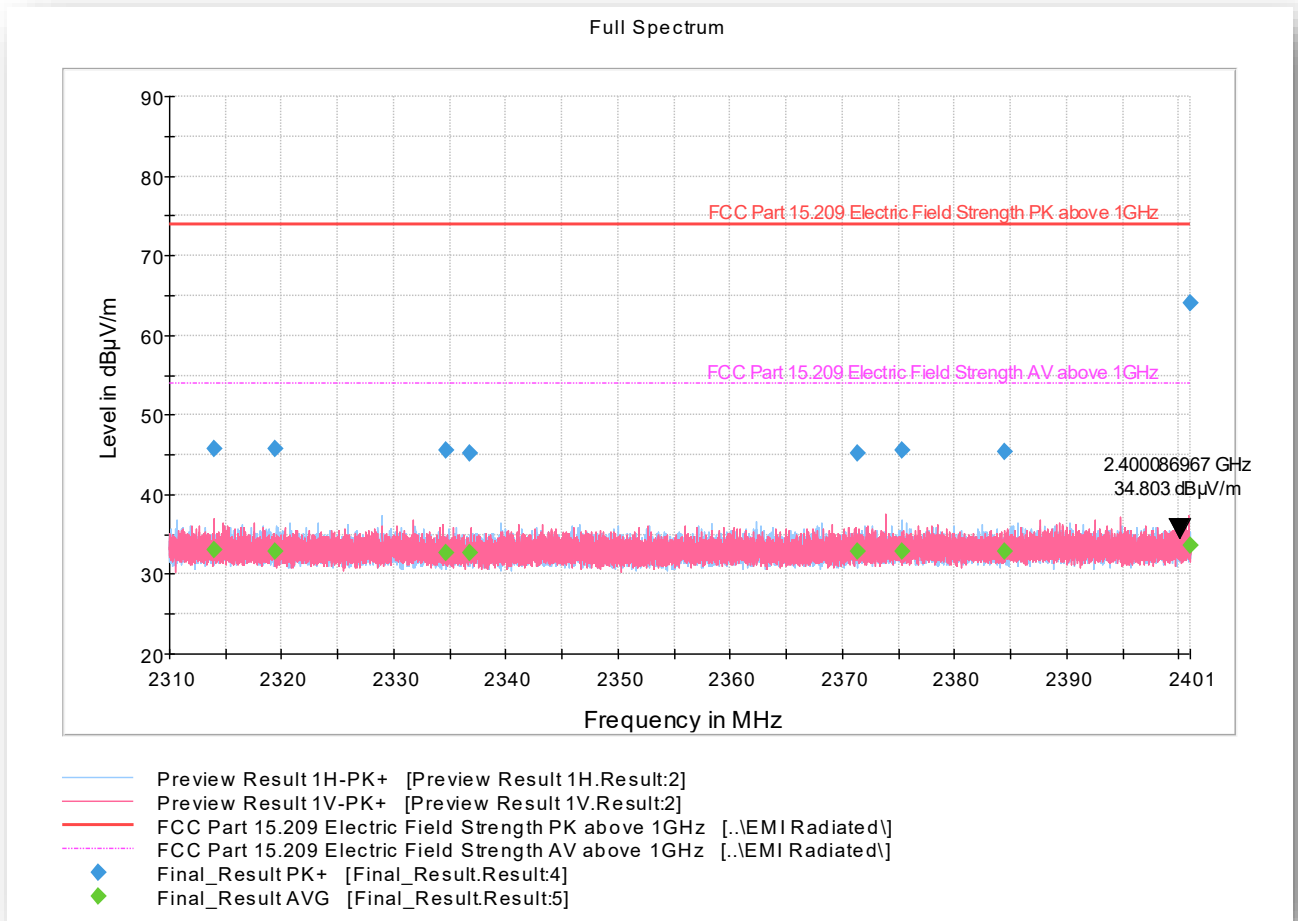
2.2.10 Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2482.50000	33.51	53.90	20.39	1000.0	1000.000	172.0	H	55.0	4
2483.50000	35.66	53.90	20.44	1000.0	1000.000	328.0	H	90.0	4
2486.50000	33.37	53.90	20.53	1000.0	1000.000	363.0	V	274.0	4
2491.90000	33.60	53.90	20.30	1000.0	1000.000	363.0	H	139.0	4
2493.98766	33.66	53.90	20.24	1000.0	1000.000	107.0	H	251.0	4
2494.95216	33.66	53.90	20.24	1000.0	1000.000	203.0	H	135.0	4
2499.00000	33.58	53.90	20.32	1000.0	1000.000	363.0	H	239.0	4

Test Notes: All emissions observed complies with §15.205(c) limits (upper band edge is within a restricted band).



2.2.11 Test Results for Lower Band Edge (500D)



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2314.00000	45.75	73.90	28.15	1000.0	1000.000	246.0	V	140.0	4
2319.40000	45.67	73.90	28.23	1000.0	1000.000	256.0	V	142.0	4
2334.69160	45.64	73.90	28.26	1000.0	1000.000	103.0	H	37.0	4
2336.69706	45.23	73.90	28.67	1000.0	1000.000	314.0	H	50.0	4
2371.28556	45.26	73.90	28.64	1000.0	1000.000	328.0	H	24.0	4
2375.29413	45.62	73.90	28.28	1000.0	1000.000	327.0	V	170.0	4
2384.49413	45.45	73.90	28.45	1000.0	1000.000	312.0	V	132.0	4
2401.00000	64.00	73.90	9.90	1000.0	1000.000	335.0	V	187.0	4

Test Notes: Marker at 2400 MHz (Low edge, not in restricted band) measures attenuation greater than 30 dB based on the fundamental measurement of Section 2.3.31 of this test report. EUT complies.



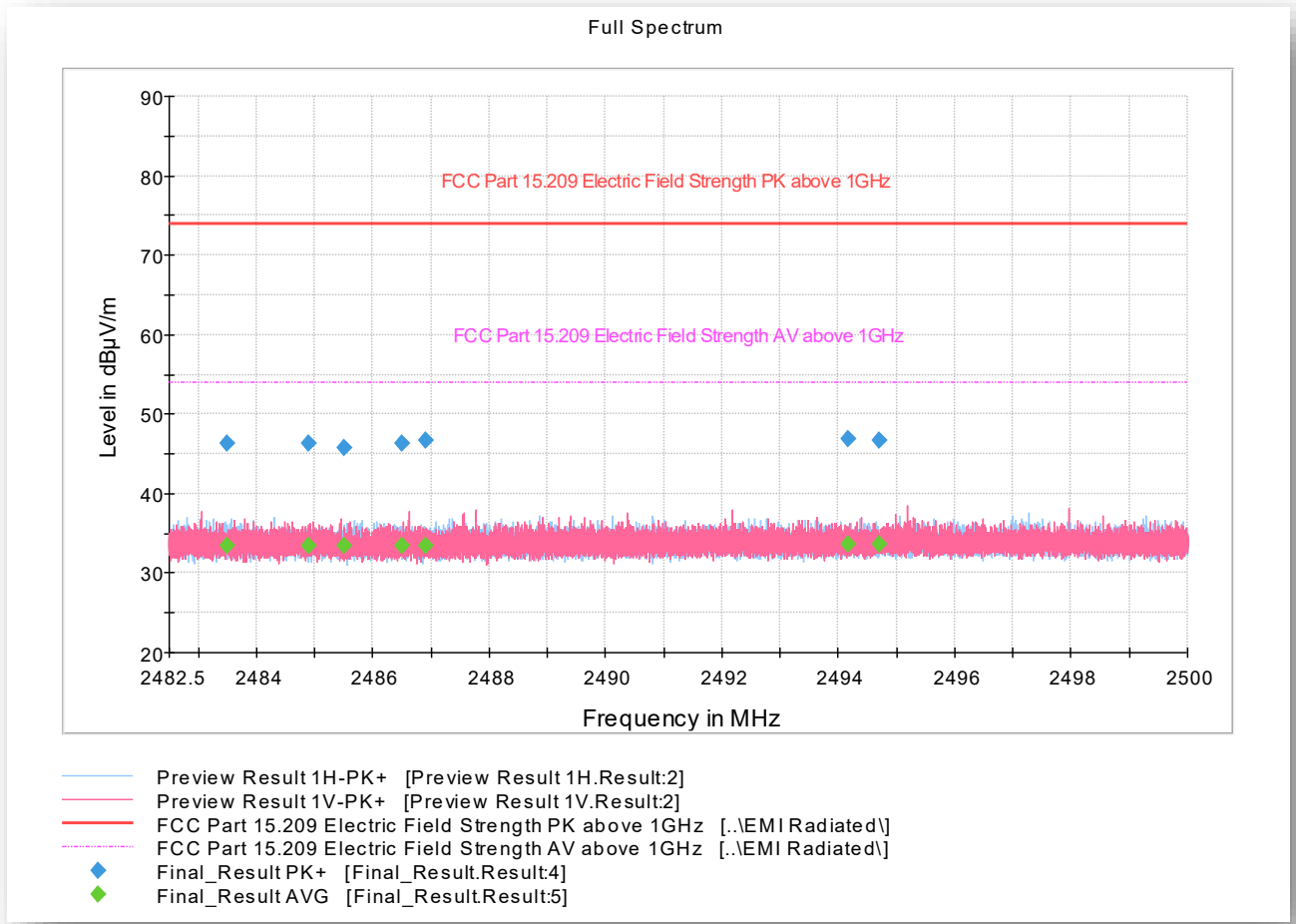
Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2314.00000	32.99	53.90	20.91	1000.0	1000.000	246.0	V	140.0	4
2319.40000	32.83	53.90	21.07	1000.0	1000.000	256.0	V	142.0	4
2334.69160	32.73	53.90	21.17	1000.0	1000.000	103.0	H	37.0	4
2336.69706	32.69	53.90	21.21	1000.0	1000.000	314.0	H	50.0	4
2371.28556	32.81	53.90	21.09	1000.0	1000.000	328.0	H	24.0	4
2375.29413	32.93	53.90	20.97	1000.0	1000.000	327.0	V	170.0	4
2384.49413	32.89	53.90	21.01	1000.0	1000.000	312.0	V	132.0	4
2401.00000	33.65	53.90	20.25	1000.0	1000.000	335.0	V	187.0	4

Test Notes: Limits used for band edge verifications (not in restricted bands) are based on fundamental measurement of Section 2.3.31 of this test report.



2.2.12 Test Results for Upper Band Edge (500D)



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.50000	46.24	73.90	27.66	1000.0	1000.000	169.0	V	276.0	4
2484.90000	46.29	73.90	27.61	1000.0	1000.000	365.0	V	216.0	4
2485.50000	45.83	73.90	28.07	1000.0	1000.000	238.0	H	190.0	4
2486.50000	46.38	73.90	27.52	1000.0	1000.000	250.0	V	172.0	4
2486.90000	46.78	73.90	27.12	1000.0	1000.000	316.0	V	200.0	4
2494.16825	46.92	73.90	26.98	1000.0	1000.000	363.0	V	334.0	4
2494.70000	46.65	73.90	27.25	1000.0	1000.000	107.0	V	287.0	4



America

Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.50000	33.39	53.90	20.51	1000.0	1000.000	169.0	V	276.0	4
2484.90000	33.38	53.90	20.52	1000.0	1000.000	365.0	V	216.0	4
2485.50000	33.37	53.90	20.53	1000.0	1000.000	238.0	H	190.0	4
2486.50000	33.36	53.90	20.54	1000.0	1000.000	250.0	V	172.0	4
2486.90000	33.37	53.90	20.53	1000.0	1000.000	316.0	V	200.0	4
2494.16825	33.65	53.90	20.25	1000.0	1000.000	363.0	V	334.0	4
2494.70000	33.65	53.90	20.25	1000.0	1000.000	107.0	V	287.0	4

Test Notes: All emissions observed complies with §15.205(c) limits (upper band edge is within a restricted band).



2.3 RADIATED SPURIOUS EMISSIONS

2.3.1 Specification Reference

FCC 47 CFR Part 15, Clause 15.247(d)
RSS-247, Clause 5.5

2.3.2 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

2.3.3 Equipment Under Test and Modification State

Serial No: 210007976, 210007980 / Default Test Configuration

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

June 03 to 09, 2023 / 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 (Mira Mesa Facility)

Ambient Temperature	28.6 °C
Relative Humidity	42.1 %
ATM Pressure	99.5 kPa

2.3.7 Additional Observations

- This is a radiated test. The spectrum was searched from 9kHz to the 10th harmonic.
- There are no emissions found that do not comply to the restricted bands defined in FCC Part 15 Subpart C, 15.205 or Part 15.247(d).
- Only the worst case BLE Channel and axis presented per model.
- Measurement was done using EMC32 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only. See Section 2.3.8 for sample computation.
- The EUT was tested in a liquid cylinder.
- The EUT was removed from the liquid cylinder only for a EIRP measurement to verify the SAR exposure to the consumer.

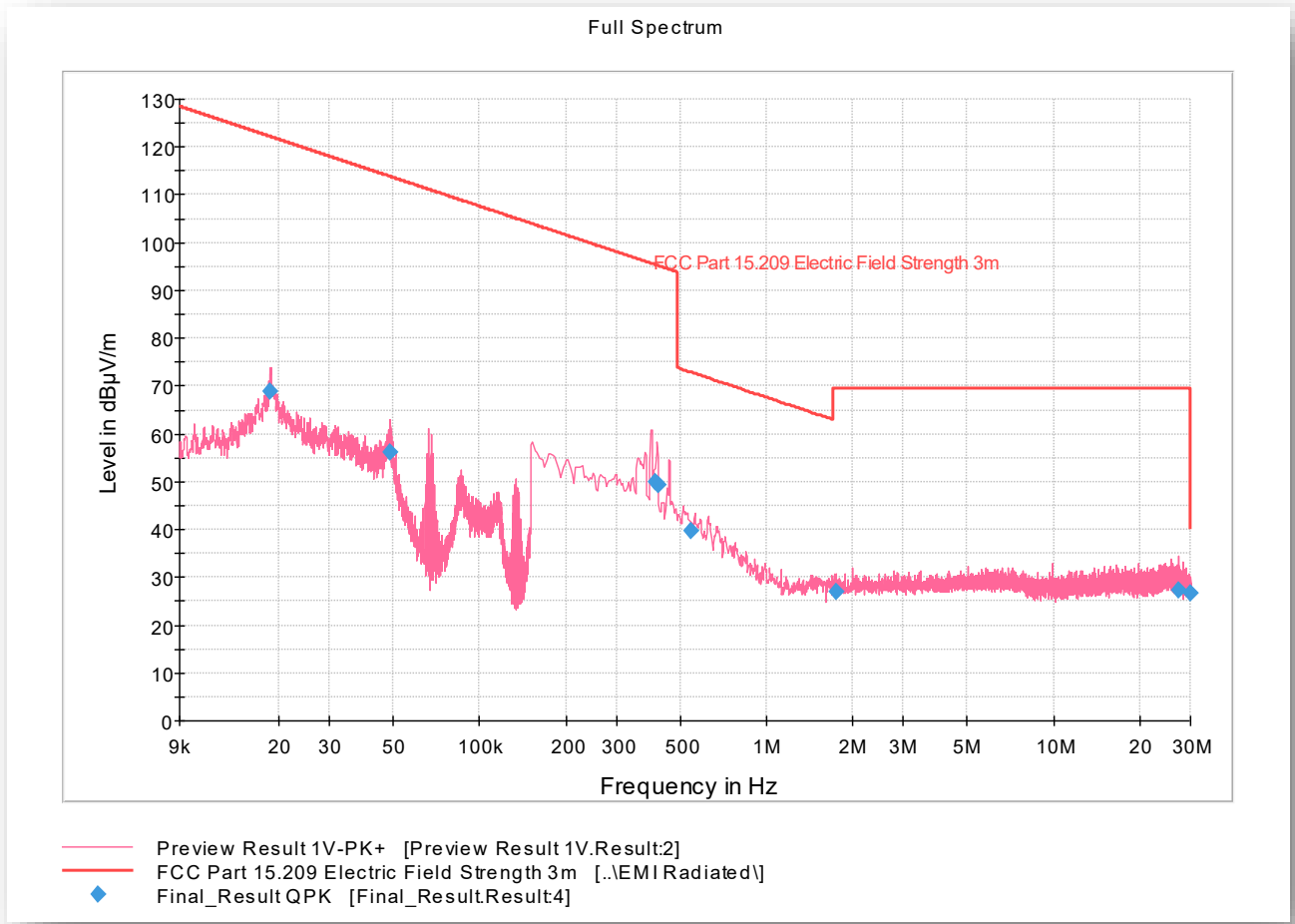


2.3.8 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (dB μ V) @ 30 MHz		-0.8
Correction Factor (dB/m)	Asset# 1066 (cable)	18.1
	Asset# 1172 (cable)	0.3
	Asset# 1175(cable)	0.3
	Asset# 1002 (antenna)	17.2
Reported QuasiPeak Final Measurement (dBμV/m) @ 30MHz		11.8



2.3.9 Test Results for 9kHz to 30MHz (500B) High Channel



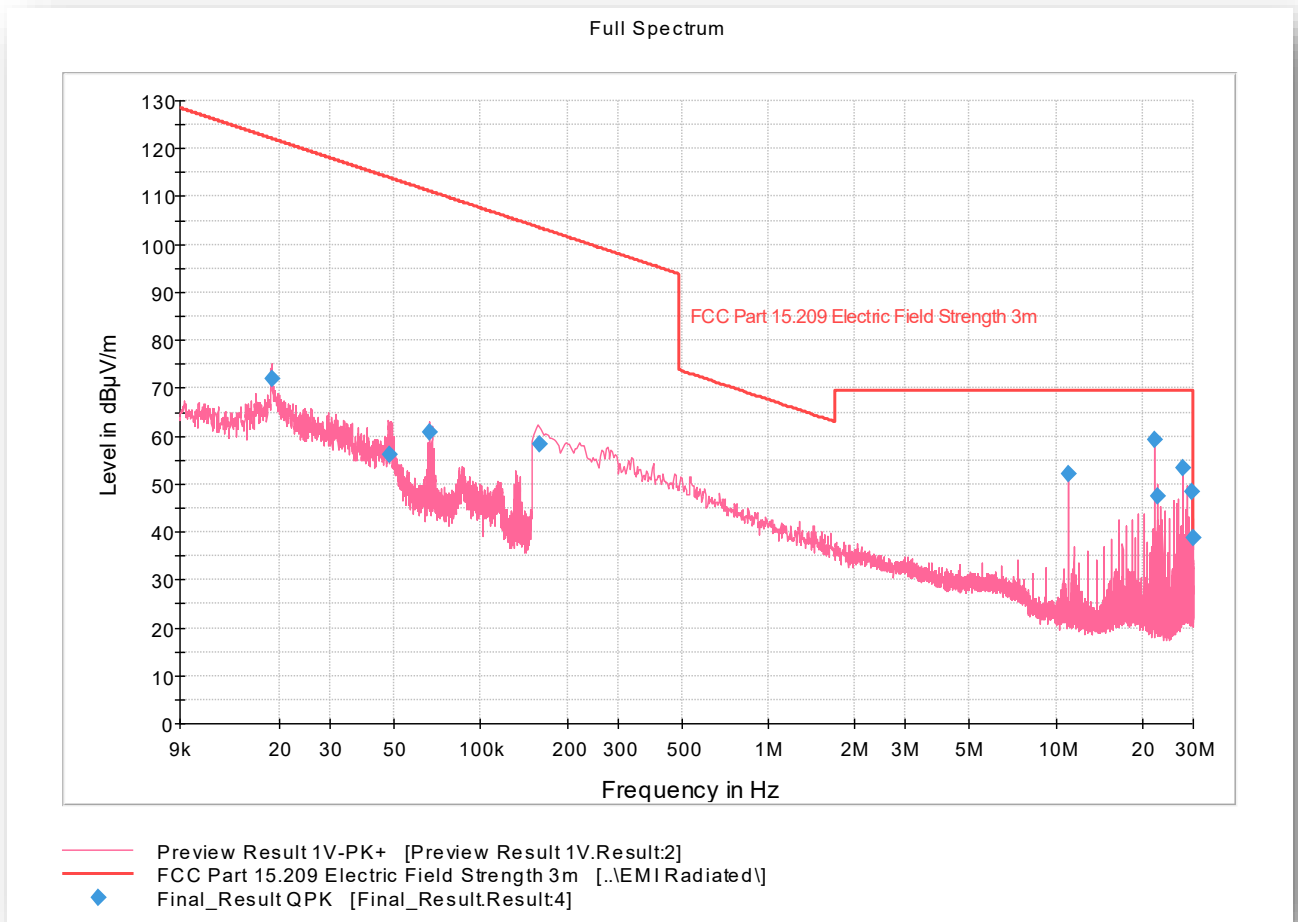
Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
0.018676	68.82	122.17	53.35	1000.	0.200	400.0	H	254.0	22
0.048832	56.07	113.83	57.76	1000.	0.200	400.0	H	230.0	20
0.408270	49.95	95.39	45.43	1000.	9.000	400.0	H	245.0	19
0.420685	49.40	95.12	45.72	1000.	9.000	400.0	H	11.0	19
0.542100	39.71	72.92	33.21	1000.	9.000	400.0	H	305.0	20
1.747474	26.97	69.50	42.53	1000.	9.000	400.0	H	204.0	20
27.160844	27.38	69.50	42.12	1000.	9.000	400.0	H	62.0	25
29.998310	26.77	69.50	42.73	1000.	9.000	400.0	H	292.0	25

Test Notes: Loop antenna HFH2-Z2335 utilized for this test.



2.3.10 Test Results for 9kHz to 30MHz (500B) Mid Channel



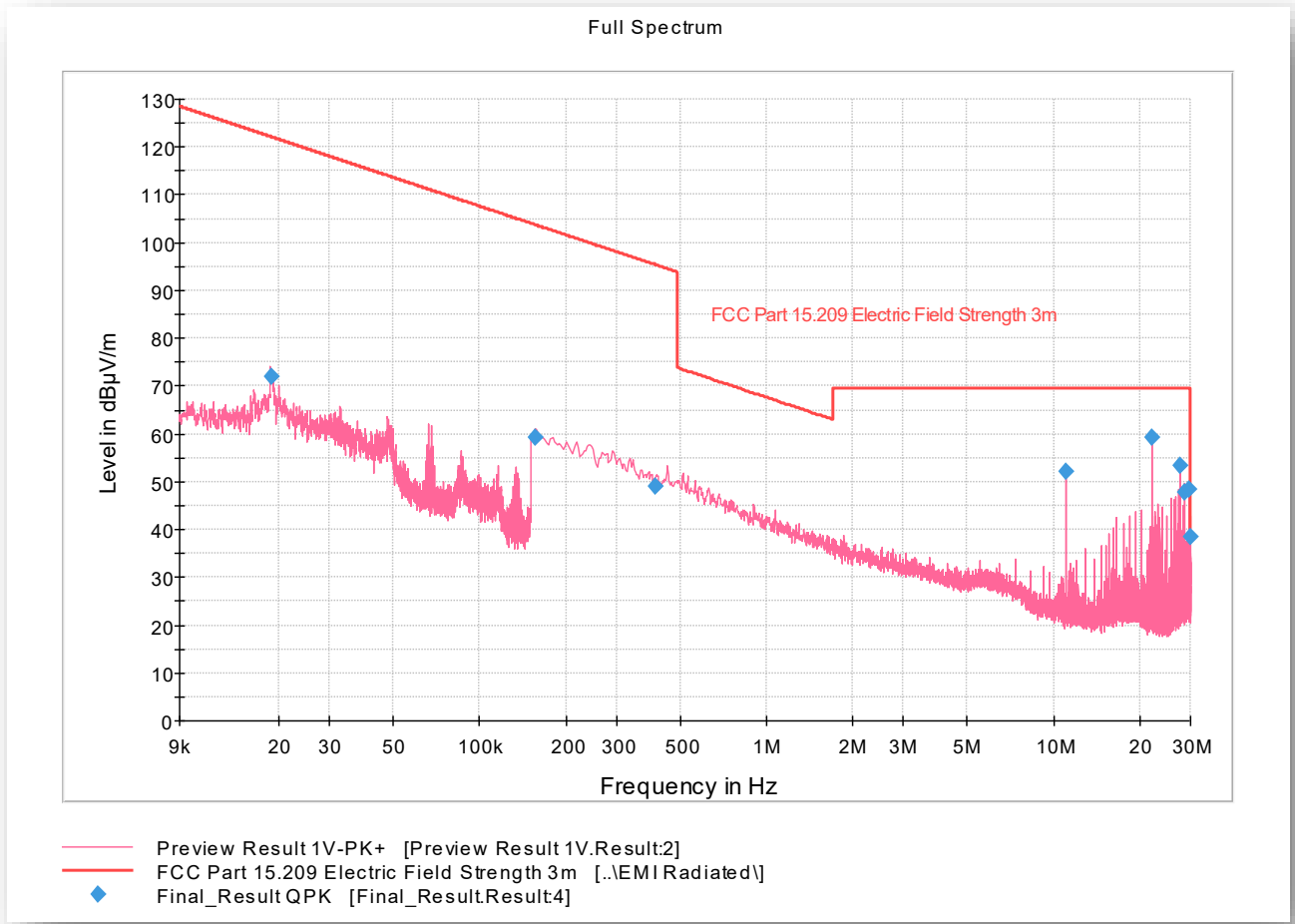
Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
0.018789	72.09	122.12	50.03	1000.	0.200	400.0	H	326.0	15
0.047950	56.29	113.98	57.69	1000.	0.200	400.0	H	229.0	14
0.066603	60.77	111.13	50.36	1000.	0.200	400.0	H	157.0	14
0.159500	58.18	103.55	45.37	1000.	9.000	400.0	H	16.0	14
11.059874	52.07	69.50	17.43	1000.	9.000	400.0	H	26.0	15
22.119997	59.23	69.50	10.27	1000.	9.000	400.0	H	186.0	14
22.581369	47.45	69.50	22.05	1000.	9.000	400.0	H	335.0	14
27.650536	53.52	69.50	15.98	1000.	9.000	400.0	H	107.0	13
29.493068	48.46	69.50	21.04	1000.	9.000	400.0	H	153.0	13
29.954225	38.86	69.50	30.64	1000.	9.000	400.0	H	74.0	13

Test Notes: Loop antenna AL-130R utilized for this test.



2.3.11 Test Results for 9kHz to 30MHz (500B) Low Channel



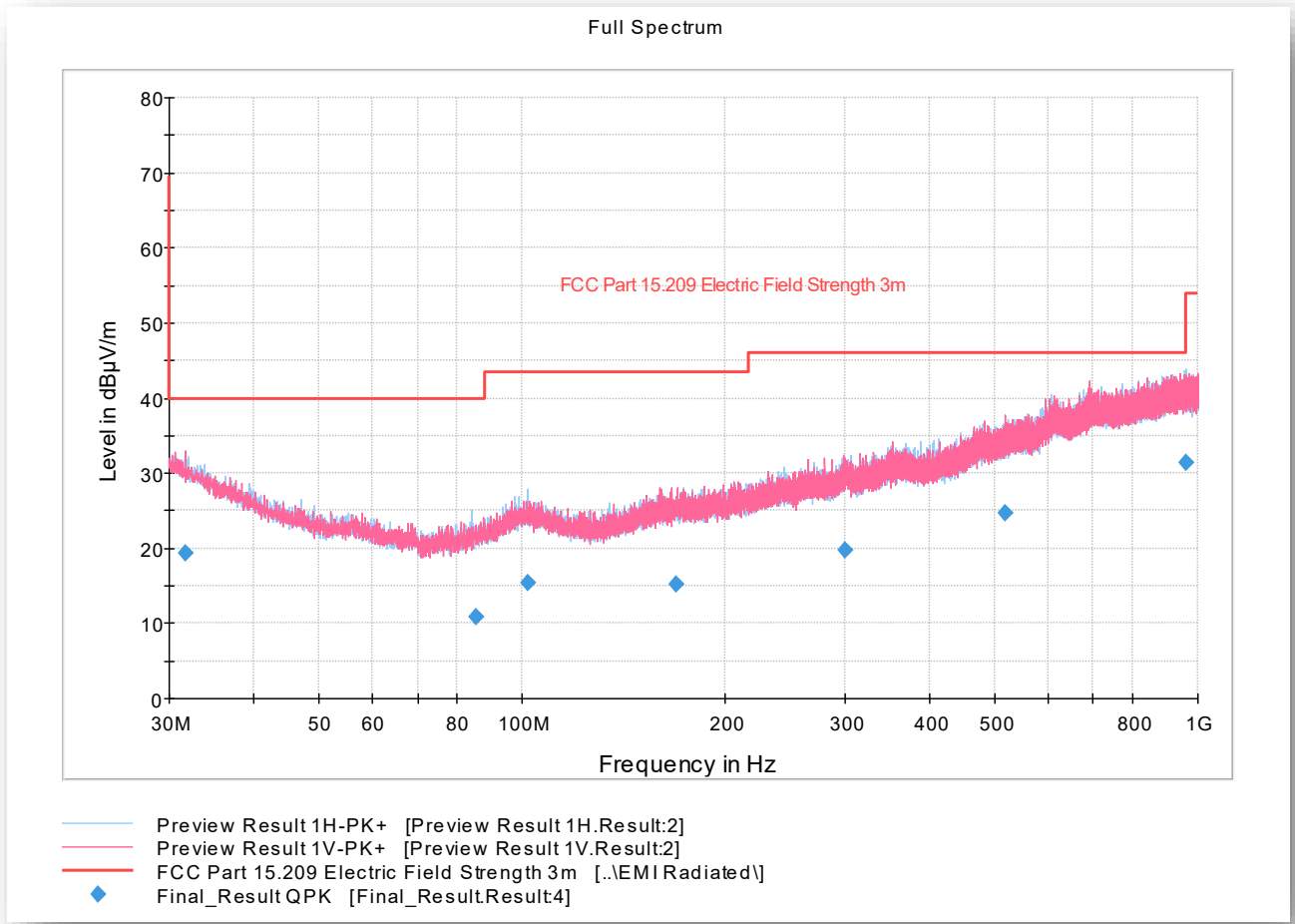
Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
0.018770	71.86	122.13	50.26	1000.	0.200	400.0	H	255.0	15
0.155500	59.26	103.77	44.50	1000.	9.000	400.0	H	262.0	14
0.408000	49.00	95.39	46.39	1000.	9.000	400.0	H	6.0	14
11.059874	52.13	69.50	17.37	1000.	9.000	400.0	H	262.0	15
22.119997	59.27	69.50	10.23	1000.	9.000	400.0	H	56.0	14
27.650536	53.52	69.50	15.98	1000.	9.000	400.0	H	48.0	13
28.572309	47.90	69.50	21.60	1000.	9.000	400.0	H	262.0	13
29.494068	48.54	69.50	20.96	1000.	9.000	400.0	H	76.0	13
29.953230	38.46	69.50	31.04	1000.	9.000	400.0	H	215.0	13

Test Notes: Loop antenna AL-130R utilized for this test.



2.3.12 Test Results for 30MHz to 1GHz (500B) High Channel



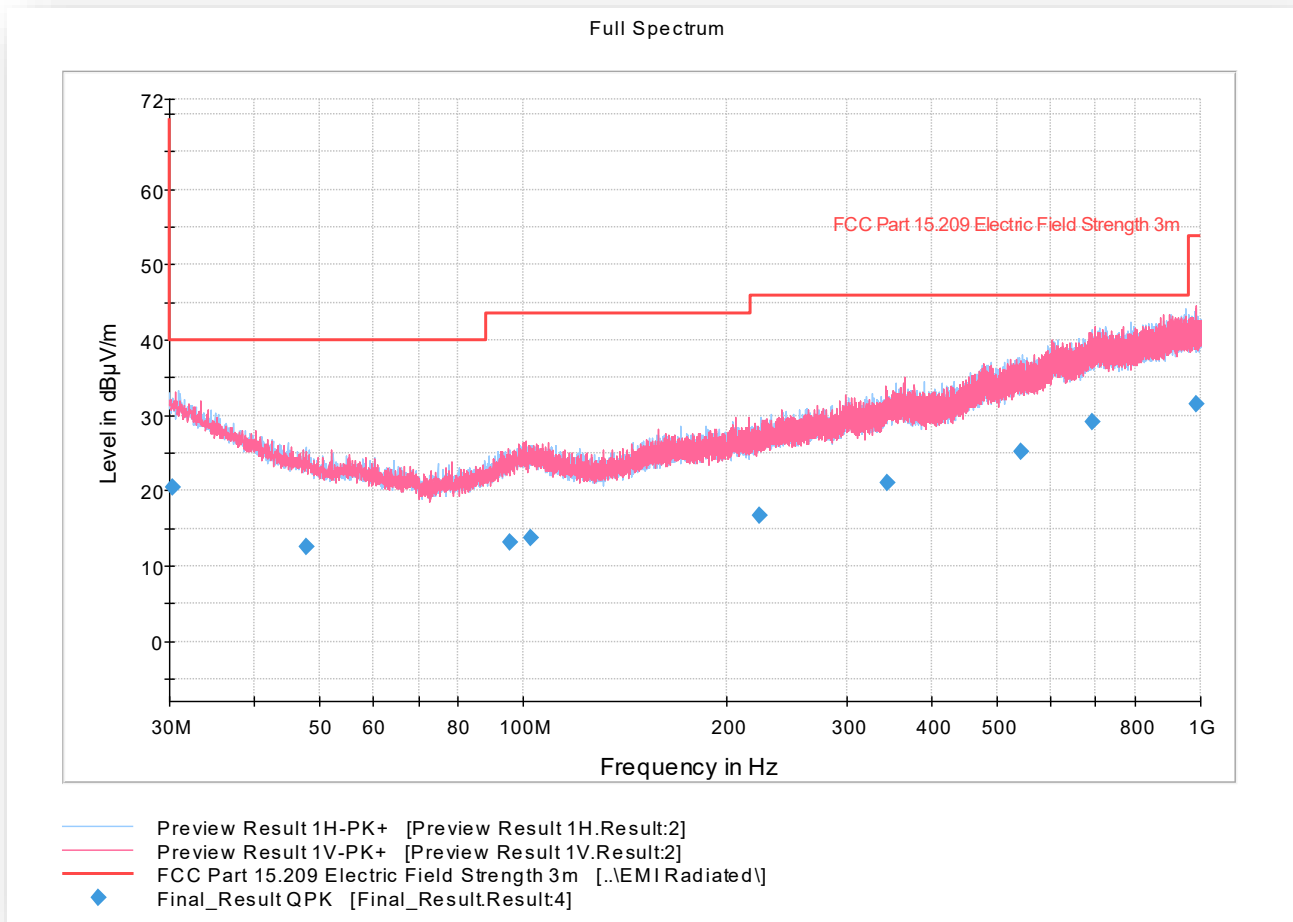
Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.729000	19.35	40.00	20.65	1000.	120.000	352.0	V	214.0	22
85.183000	10.84	40.00	29.16	1000.	120.000	366.0	H	-3.0	14
102.10333	15.49	43.50	28.01	1000.	120.000	205.0	H	220.0	16
169.14033	15.21	43.50	28.29	1000.	120.000	125.0	V	278.0	17
300.15533	19.68	46.00	26.32	1000.	120.000	365.0	V	-18.0	21
518.78900	24.72	46.00	21.28	1000.	120.000	280.0	V	96.0	26
958.16566	31.31	46.00	14.69	1000.	120.000	285.0	H	-2.0	31



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2.3.13 Test Results for 30MHz to 1GHz (500B) Mid Channel

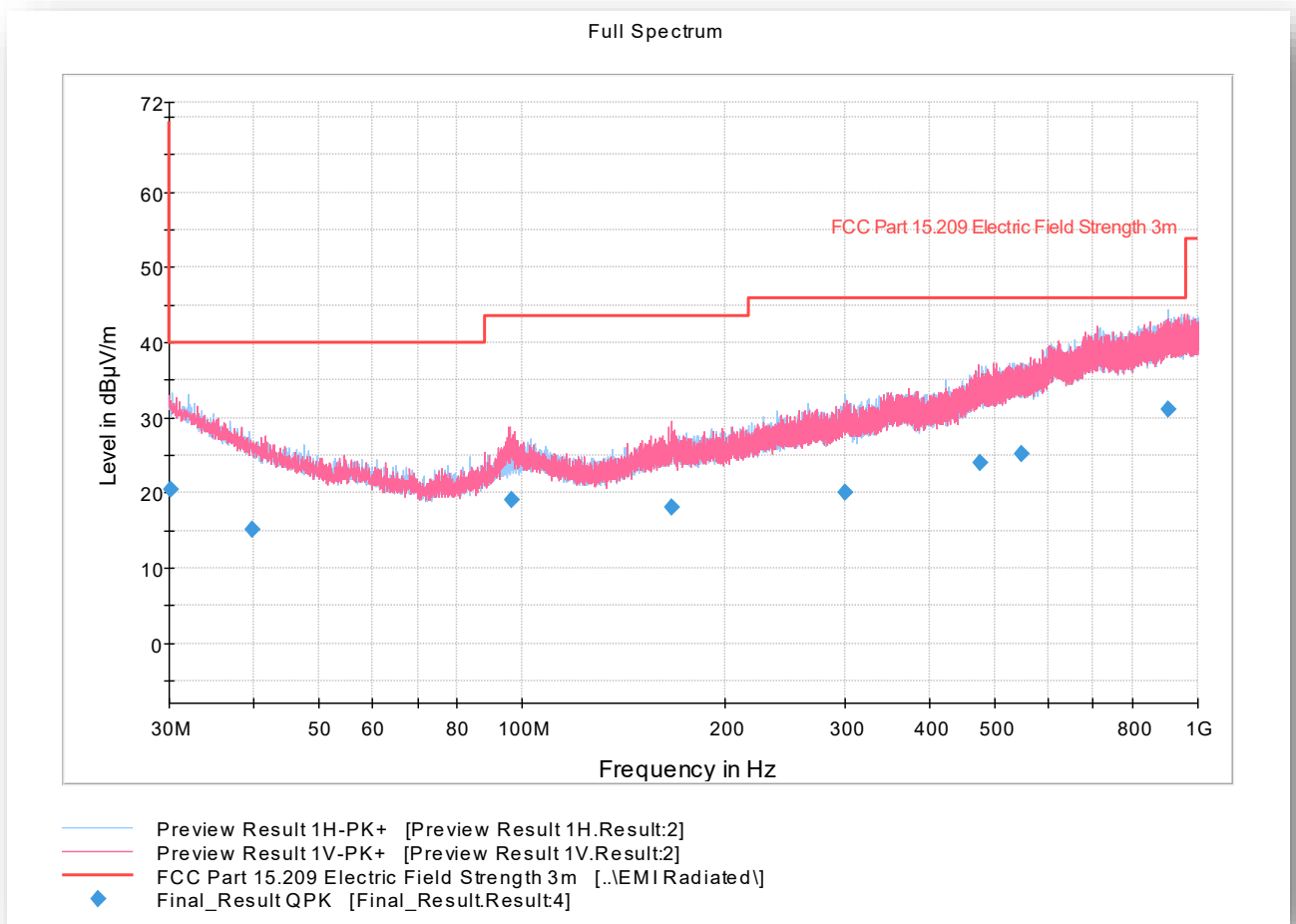


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.320000	20.49	40.00	19.51	1000.	120.000	114.0	H	328.0	22
47.654000	12.56	40.00	27.44	1000.	120.000	400.0	H	84.0	15
95.317667	13.09	43.50	30.41	1000.	120.000	325.0	V	113.0	15
102.21933	13.80	43.50	29.70	1000.	120.000	116.0	V	305.0	16
223.52333	16.72	46.00	29.28	1000.	120.000	380.0	H	237.0	18
343.76000	20.96	46.00	25.04	1000.	120.000	285.0	H	15.0	22
543.90166	25.22	46.00	20.78	1000.	120.000	365.0	H	0.0	26
692.83666	29.06	46.00	16.94	1000.	120.000	183.0	H	307.0	29
984.77933	31.47	53.90	22.43	1000.	120.000	189.0	V	33.0	31



2.3.14 Test Results for 30MHz to 1GHz (500B) Low Channel

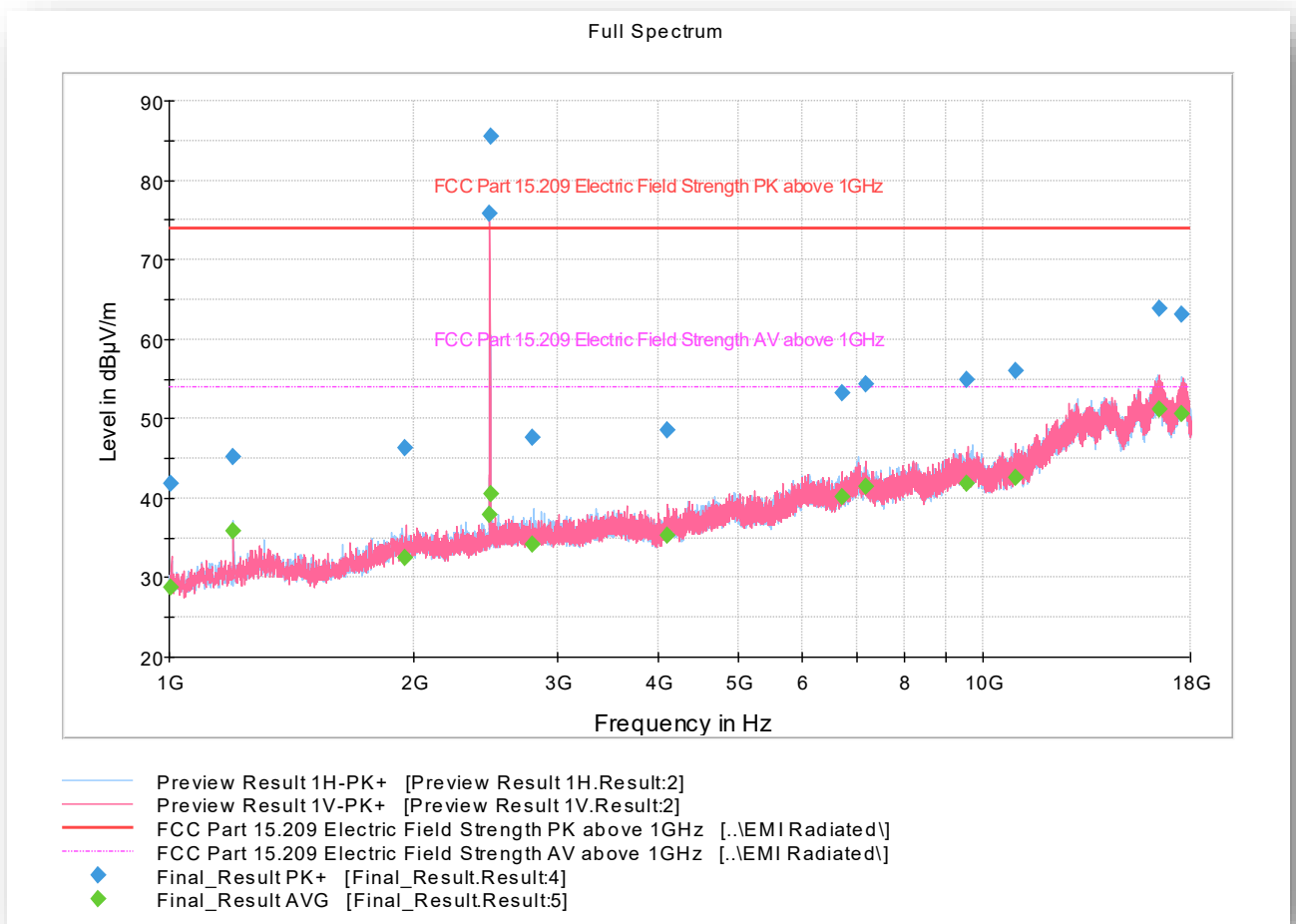


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.200000	20.50	40.00	19.50	1000.	120.000	205.0	H	147.0	22
39.813667	15.06	40.00	24.94	1000.	120.000	191.0	V	56.0	17
96.204333	19.15	43.50	24.35	1000.	120.000	100.0	V	205.0	16
166.25266	18.12	43.50	25.38	1000.	120.000	354.0	V	-9.0	17
300.84700	20.01	46.00	25.99	1000.	120.000	361.0	H	152.0	22
476.69166	23.97	46.00	22.03	1000.	120.000	125.0	V	83.0	25
547.56966	25.11	46.00	20.89	1000.	120.000	125.0	V	278.0	26
904.50700	31.13	46.00	14.87	1000.	120.000	365.0	H	172.0	31



2.3.15 Test Results for 1GHz to 18GHz (500B) High Channel



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1004.60000	41.80	73.90	32.10	1000.0	1000.000	317.0	H	31.0	-2
1200.06666	45.16	73.90	28.74	1000.0	1000.000	182.0	H	128.0	-1
1948.50000	46.24	73.90	27.66	1000.0	1000.000	365.0	V	99.0	4
2479.76666	75.88	73.90	-1.98	1000.0	1000.000	103.0	V	112.0	4
2480.06666	85.53	73.90	-11.63	1000.0	1000.000	247.0	V	50.0	4
2797.80000	47.71	73.90	26.19	1000.0	1000.000	153.0	H	266.0	5
4097.23333	48.65	73.90	25.25	1000.0	1000.000	249.0	V	41.0	7
6719.16666	53.16	73.90	20.74	1000.0	1000.000	187.0	V	29.0	10
7179.50000	54.35	73.90	19.55	1000.0	1000.000	283.0	V	243.0	10
9535.73333	54.87	73.90	19.03	1000.0	1000.000	186.0	V	288.0	12
10959.9333	55.95	73.90	17.95	1000.0	1000.000	253.0	V	162.0	15
16491.4333	63.81	73.90	10.09	1000.0	1000.000	246.0	V	1.0	21
17566.0333	63.12	73.90	10.78	1000.0	1000.000	329.0	H	294.0	23



America

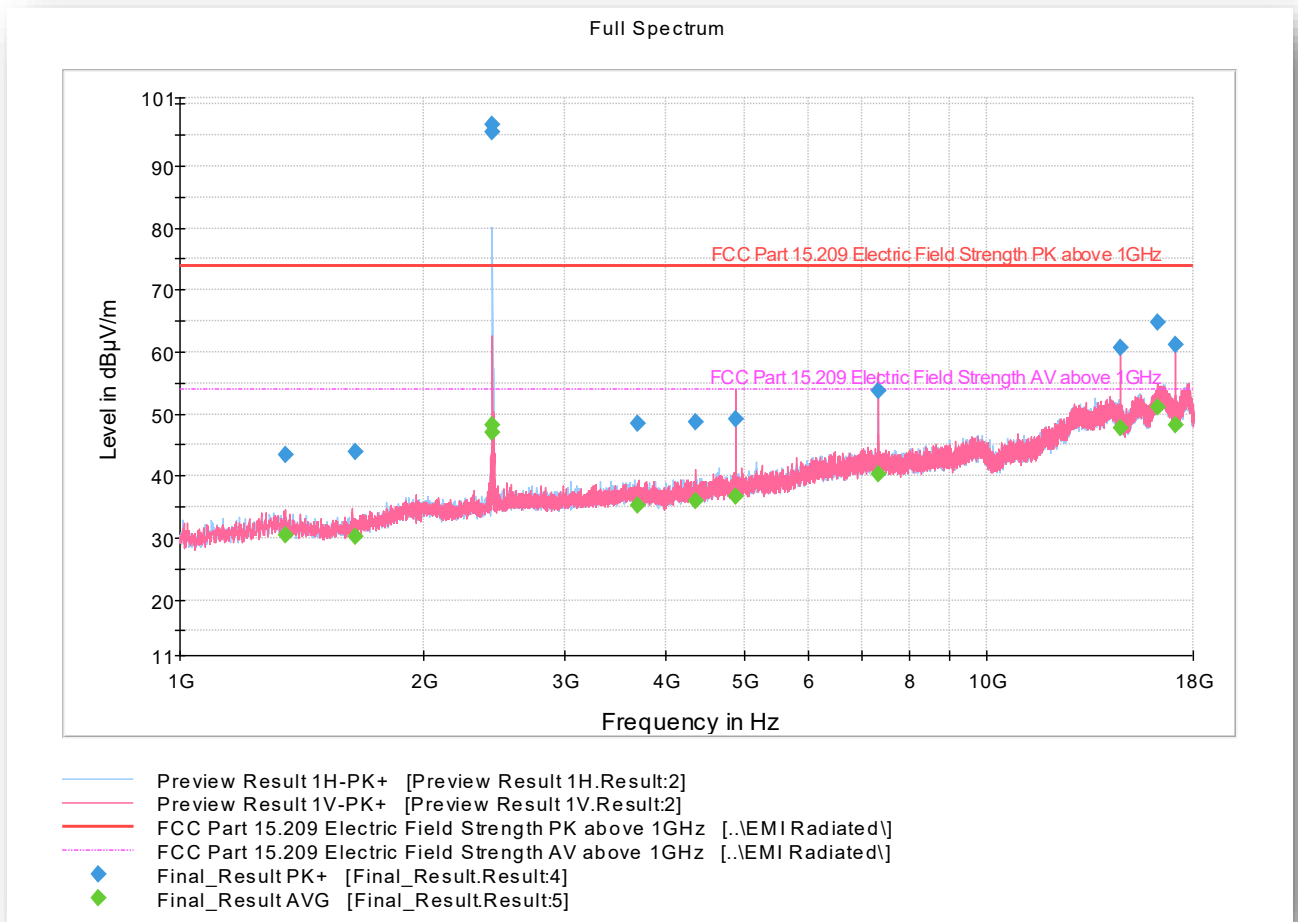
Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1004.60000	28.79	53.90	25.11	1000.0	1000.000	317.0	H	31.0	-2
1200.06666	35.86	53.90	18.04	1000.0	1000.000	182.0	H	128.0	-1
1948.50000	32.54	53.90	21.36	1000.0	1000.000	365.0	V	99.0	4
2479.76666	37.84	53.90	16.06	1000.0	1000.000	103.0	V	112.0	4
2480.06666	40.54	53.90	13.36	1000.0	1000.000	247.0	V	50.0	4
2797.80000	34.13	53.90	19.77	1000.0	1000.000	153.0	H	266.0	5
4097.23333	35.40	53.90	18.50	1000.0	1000.000	249.0	V	41.0	7
6719.16666	40.23	53.90	13.67	1000.0	1000.000	187.0	V	29.0	10
7179.50000	41.42	53.90	12.48	1000.0	1000.000	283.0	V	243.0	10
9535.73333	41.88	53.90	12.02	1000.0	1000.000	186.0	V	288.0	12
10959.9333	42.58	53.90	11.32	1000.0	1000.000	253.0	V	162.0	15
16491.4333	51.18	53.90	2.72	1000.0	1000.000	246.0	V	1.0	21
17566.0333	50.63	53.90	3.27	1000.0	1000.000	329.0	H	294.0	23



America

2.3.16 Test Results for 1GHz to 18GHz (500B) Mid Channel



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1348.66666	43.37	73.90	30.53	1000.0	1000.000	365.0	V	233.0	1
1652.20000	43.85	73.90	30.05	1000.0	1000.000	363.0	H	317.0	1
2440.10000	95.54	73.90	-21.64	1000.0	1000.000	339.0	H	60.0	4
2440.13333	96.76	73.90	-22.86	1000.0	1000.000	260.0	H	176.0	4
3696.56666	48.53	73.90	25.37	1000.0	1000.000	233.0	V	32.0	6
4359.10000	48.70	73.90	25.20	1000.0	1000.000	337.0	H	91.0	7
4884.96666	49.26	73.90	24.64	1000.0	1000.000	199.0	V	258.0	7
7323.83333	53.75	73.90	20.15	1000.0	1000.000	359.0	V	240.0	11
14640.0333	60.73	73.90	13.17	1000.0	1000.000	154.0	V	4.0	18
16259.4333	64.75	73.90	9.15	1000.0	1000.000	363.0	V	145.0	20
17076.9000	61.11	73.90	12.79	1000.0	1000.000	203.0	V	50.0	21



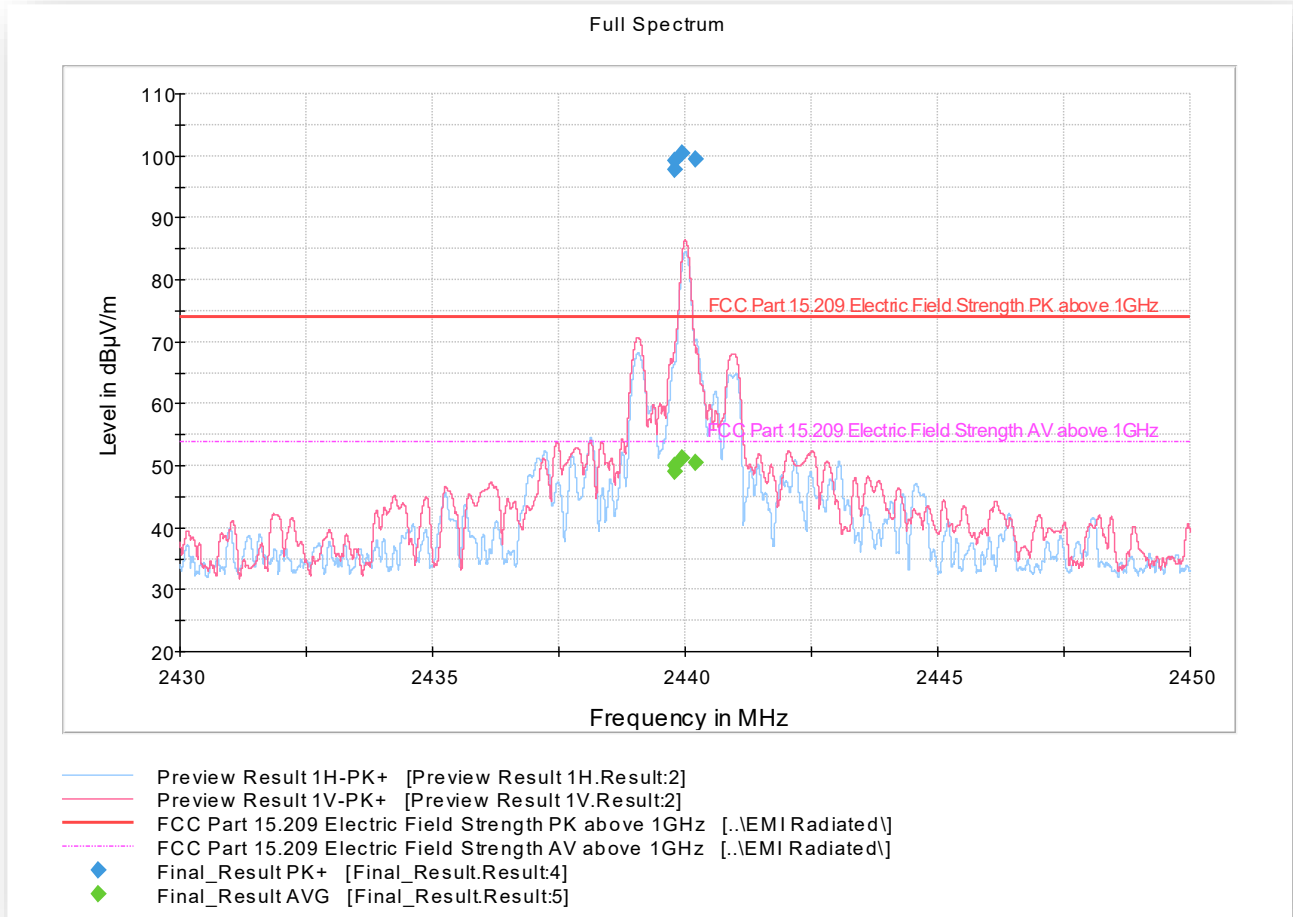
Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1348.66666	30.49	53.90	23.41	1000.0	1000.000	365.0	V	233.0	1
1652.20000	30.26	53.90	23.64	1000.0	1000.000	363.0	H	317.0	1
2440.10000	47.10	53.90	6.80	1000.0	1000.000	339.0	H	60.0	4
2440.13333	51.24	53.90	2.66	1000.0	1000.000	260.0	H	176.0	4
3696.56666	35.22	53.90	18.68	1000.0	1000.000	233.0	V	32.0	6
4359.10000	35.92	53.90	17.99	1000.0	1000.000	337.0	H	91.0	7
4884.96666	36.72	53.90	17.18	1000.0	1000.000	199.0	V	258.0	7
7323.83333	40.35	53.90	13.55	1000.0	1000.000	359.0	V	240.0	11
14640.0333	47.75	53.90	6.15	1000.0	1000.000	154.0	V	4.0	18
16259.4333	51.06	53.90	2.84	1000.0	1000.000	363.0	V	145.0	20
17076.9000	48.31	53.90	5.59	1000.0	1000.000	203.0	V	50.0	21



America

2.3.17 Test Results for EIRP 500B Mid Channel for RF Exposure calculation (EUT verified standalone TLe5c.24@2450- Fat Liquid)



Average Data

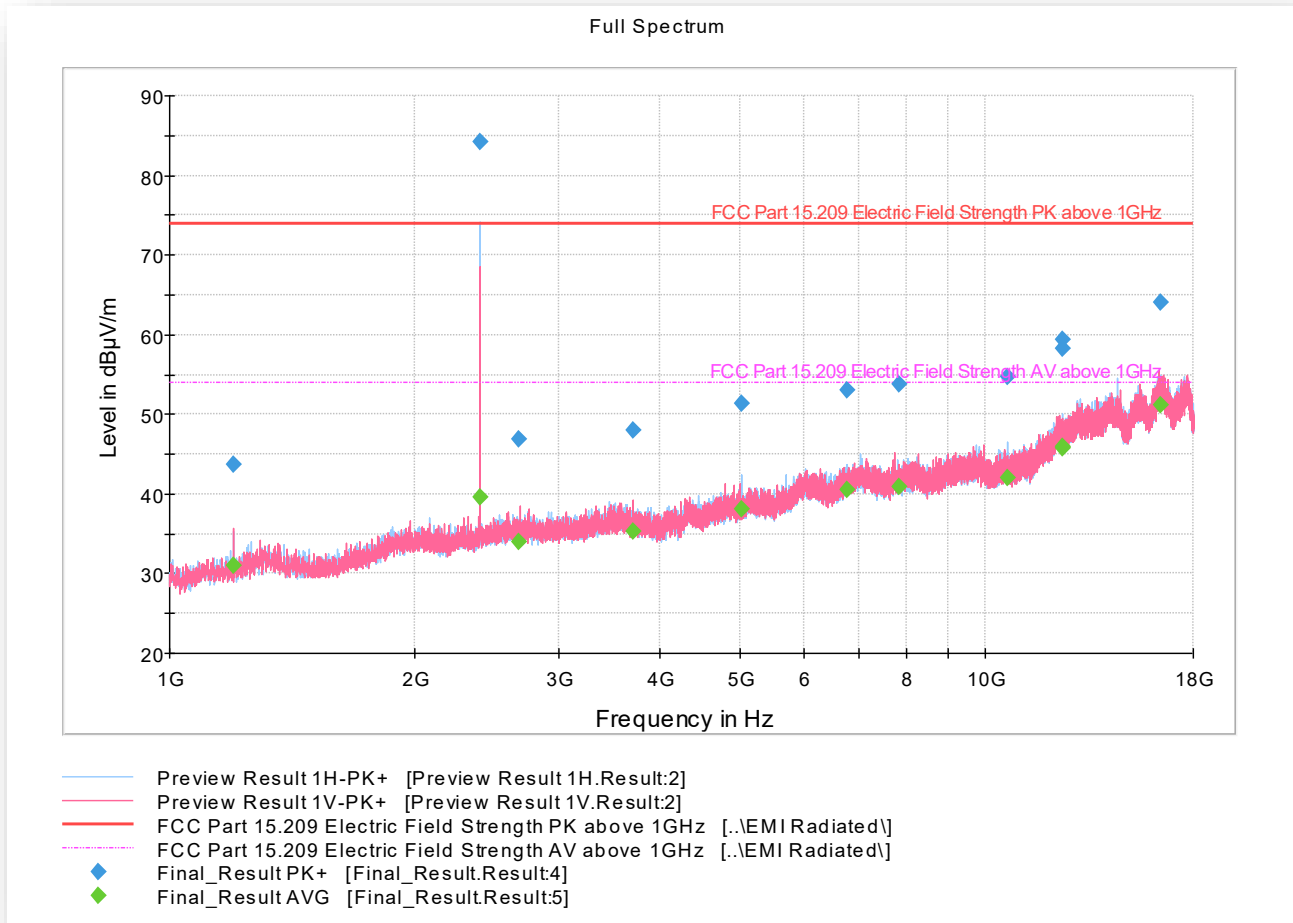
Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2439.80000	48.98	53.90	4.92	1000.0	1000.000	180.0	V	50.0	4
2439.80533	50.12	53.90	3.78	1000.0	1000.000	154.0	V	50.0	4
2439.95266	51.22	53.90	2.68	1000.0	1000.000	172.0	V	50.0	4
2440.20000	50.53	53.90	3.37	1000.0	1000.000	171.0	V	52.0	4

Test Notes: Additional EIRP measurement of worse case channel was verified with the EUT outside of the liquid and cylinder to reflect the RF Exposure to the patient. Only Average Data was utilized for SAR Exclusion.



America

2.3.18 Test Results for 1GHz to 18GHz (500B) Low Channel



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1200.06666	43.70	73.90	30.20	1000.0	1000.000	197.0	V	161.0	-1
2402.13333	84.16	73.90	-10.26	1000.0	1000.000	326.0	H	4.0	4
2681.66666	46.91	73.90	26.99	1000.0	1000.000	348.0	V	153.0	5
3696.83333	48.07	73.90	25.83	1000.0	1000.000	152.0	V	112.0	6
5035.60000	51.36	73.90	22.54	1000.0	1000.000	283.0	H	210.0	8
6762.50000	52.97	73.90	20.93	1000.0	1000.000	365.0	H	340.0	10
7833.50000	53.75	73.90	20.15	1000.0	1000.000	102.0	H	303.0	13
10657.2666	54.77	73.90	19.13	1000.0	1000.000	154.0	H	284.0	15
12455.0666	58.28	73.90	15.62	1000.0	1000.000	363.0	H	54.0	17
12457.8666	59.32	73.90	14.58	1000.0	1000.000	328.0	H	52.0	17
16425.7333	64.11	73.90	9.79	1000.0	1000.000	264.0	H	88.0	21



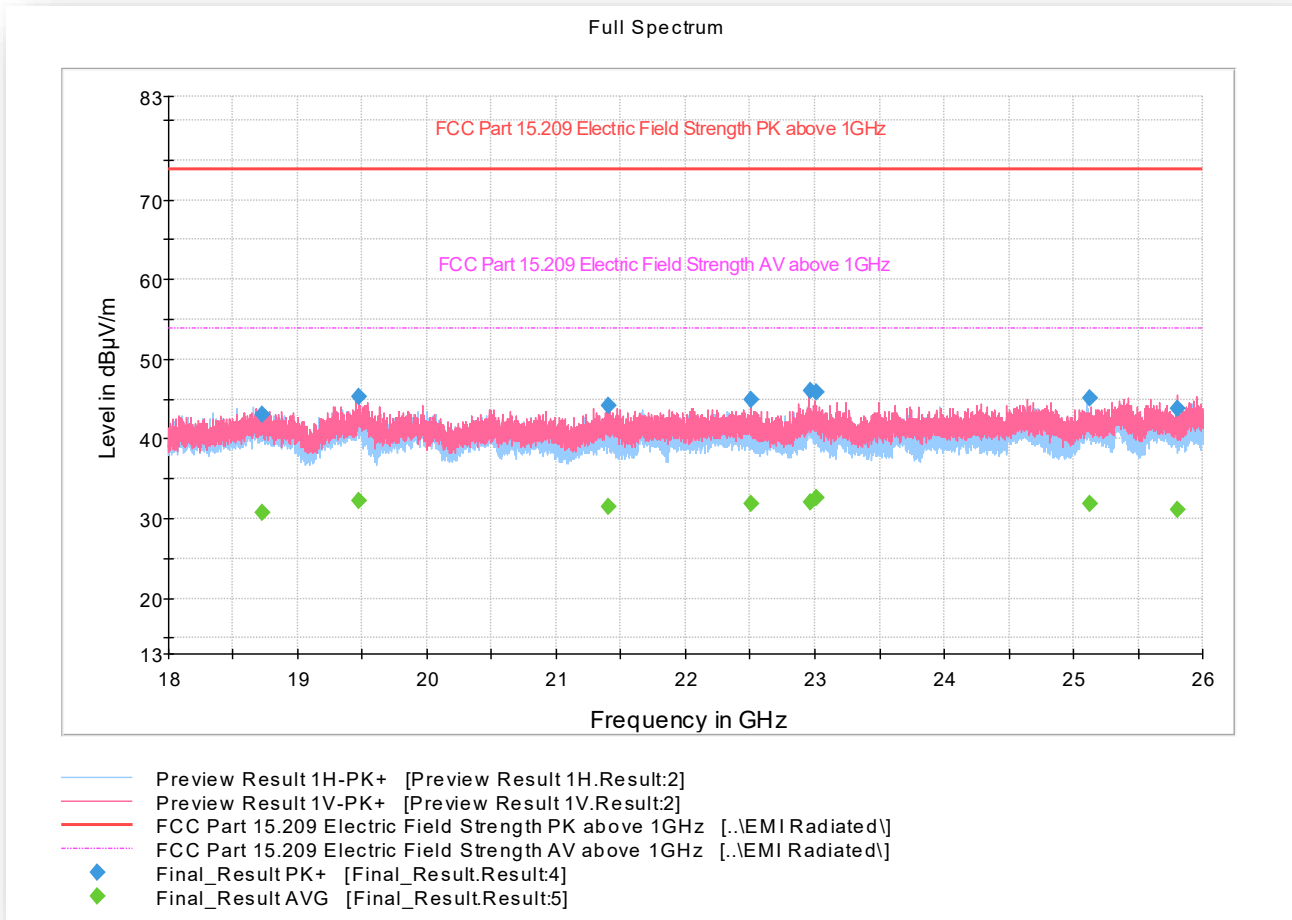
America

Average Data

Frequency (MHz)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1200.06666	31.00	53.90	22.90	1000.0	1000.000	197.0	V	161.0	-1
2402.13333	39.51	53.90	14.39	1000.0	1000.000	326.0	H	4.0	4
2681.66666	33.91	53.90	19.99	1000.0	1000.000	348.0	V	153.0	5
3696.83333	35.22	53.90	18.68	1000.0	1000.000	152.0	V	112.0	6
5035.60000	38.02	53.90	15.88	1000.0	1000.000	283.0	H	210.0	8
6762.50000	40.54	53.90	13.36	1000.0	1000.000	365.0	H	340.0	10
7833.50000	40.90	53.90	13.00	1000.0	1000.000	102.0	H	303.0	13
10657.2666	42.06	53.90	11.84	1000.0	1000.000	154.0	H	284.0	15
12455.0666	45.70	53.90	8.20	1000.0	1000.000	363.0	H	54.0	17
12457.8666	45.93	53.90	7.97	1000.0	1000.000	328.0	H	52.0	17
16425.7333	51.20	53.90	2.70	1000.0	1000.000	264.0	H	88.0	21



2.3.20 Test Results for 18GHz to 26GHz (500B) High Channel



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18722.3705	43.11	73.90	30.79	1000.0	1000.000	213.0	H	143.0	-5
19476.9745	45.25	73.90	28.65	1000.0	1000.000	163.0	V	18.0	-5
21402.7175	44.18	73.90	29.72	1000.0	1000.000	212.0	V	252.0	-4
22504.9540	44.99	73.90	28.91	1000.0	1000.000	151.0	V	151.0	-3
22960.3105	46.06	73.90	27.84	1000.0	1000.000	163.0	V	16.0	-3
23009.1070	45.77	73.90	28.13	1000.0	1000.000	155.0	V	138.0	-3
25121.3230	45.02	73.90	28.88	1000.0	1000.000	187.0	H	44.0	-2
25808.3910	43.85	73.90	30.05	1000.0	1000.000	141.0	V	76.0	-2



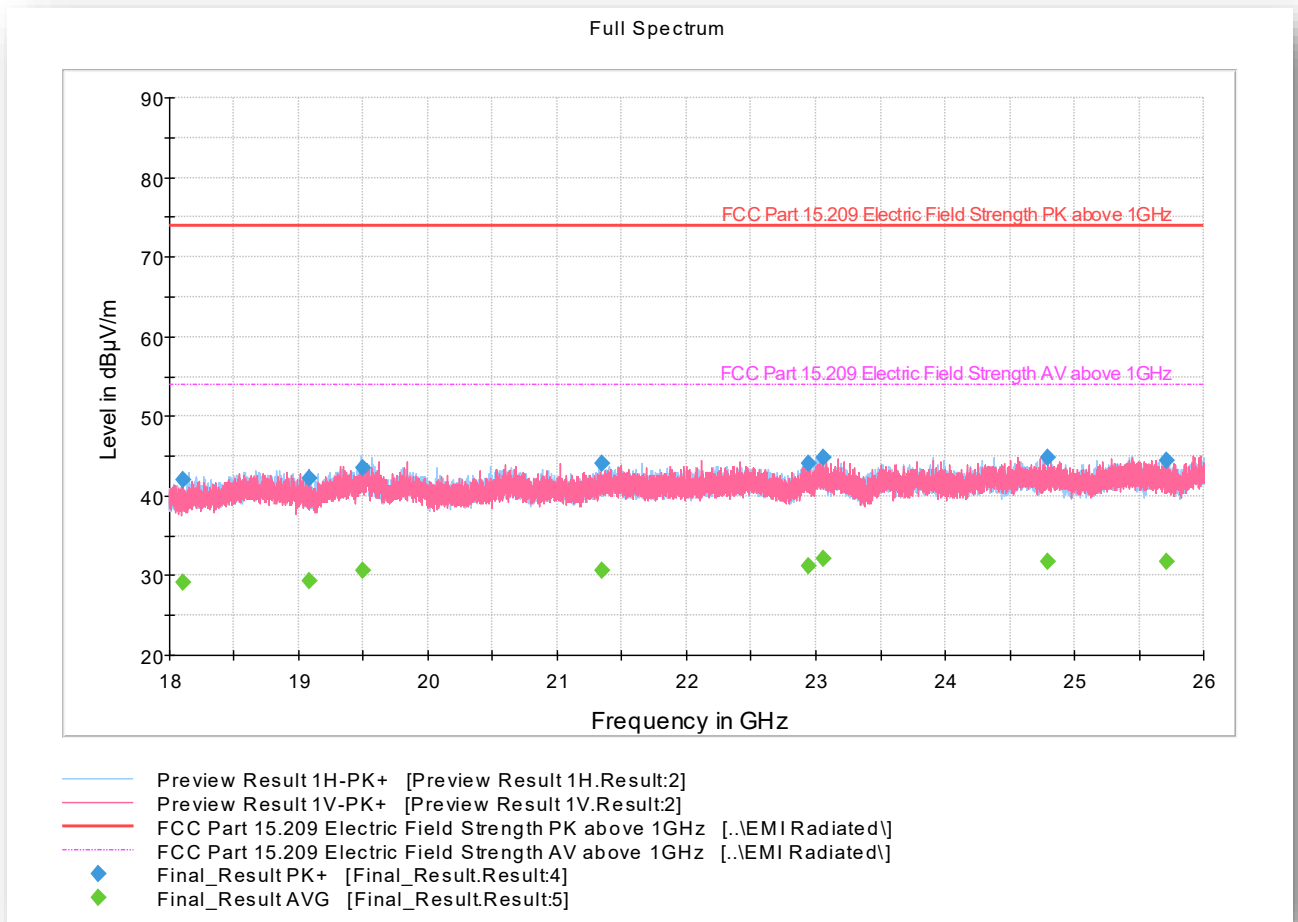
Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18722.3705	30.73	53.90	23.17	1000.0	1000.000	213.0	H	143.0	-5
19476.9745	32.14	53.90	21.76	1000.0	1000.000	163.0	V	18.0	-5
21402.7175	31.43	53.90	22.47	1000.0	1000.000	212.0	V	252.0	-4
22504.9540	31.77	53.90	22.13	1000.0	1000.000	151.0	V	151.0	-3
22960.3105	32.11	53.90	21.79	1000.0	1000.000	163.0	V	16.0	-3
23009.1070	32.54	53.90	21.36	1000.0	1000.000	155.0	V	138.0	-3
25121.3230	31.77	53.90	22.13	1000.0	1000.000	187.0	H	44.0	-2
25808.3910	31.13	53.90	22.77	1000.0	1000.000	141.0	V	76.0	-2



America

2.3.21 Test Results for 18GHz to 26GHz (500B) Mid Channel



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18104.6205	41.96	73.90	31.94	1000.0	1000.000	213.0	H	147.0	-5
19078.7855	42.22	73.90	31.68	1000.0	1000.000	138.0	V	216.0	-6
19489.4020	43.60	73.90	30.30	1000.0	1000.000	138.0	H	63.0	-5
21347.7275	43.99	73.90	29.91	1000.0	1000.000	158.0	H	45.0	-4
22941.2805	44.01	73.90	29.89	1000.0	1000.000	213.0	V	272.0	-3
23055.4765	44.92	73.90	28.98	1000.0	1000.000	162.0	V	81.0	-3
24797.4970	44.81	73.90	29.09	1000.0	1000.000	139.0	H	320.0	-2
25709.1970	44.43	73.90	29.47	1000.0	1000.000	138.0	H	216.0	-1

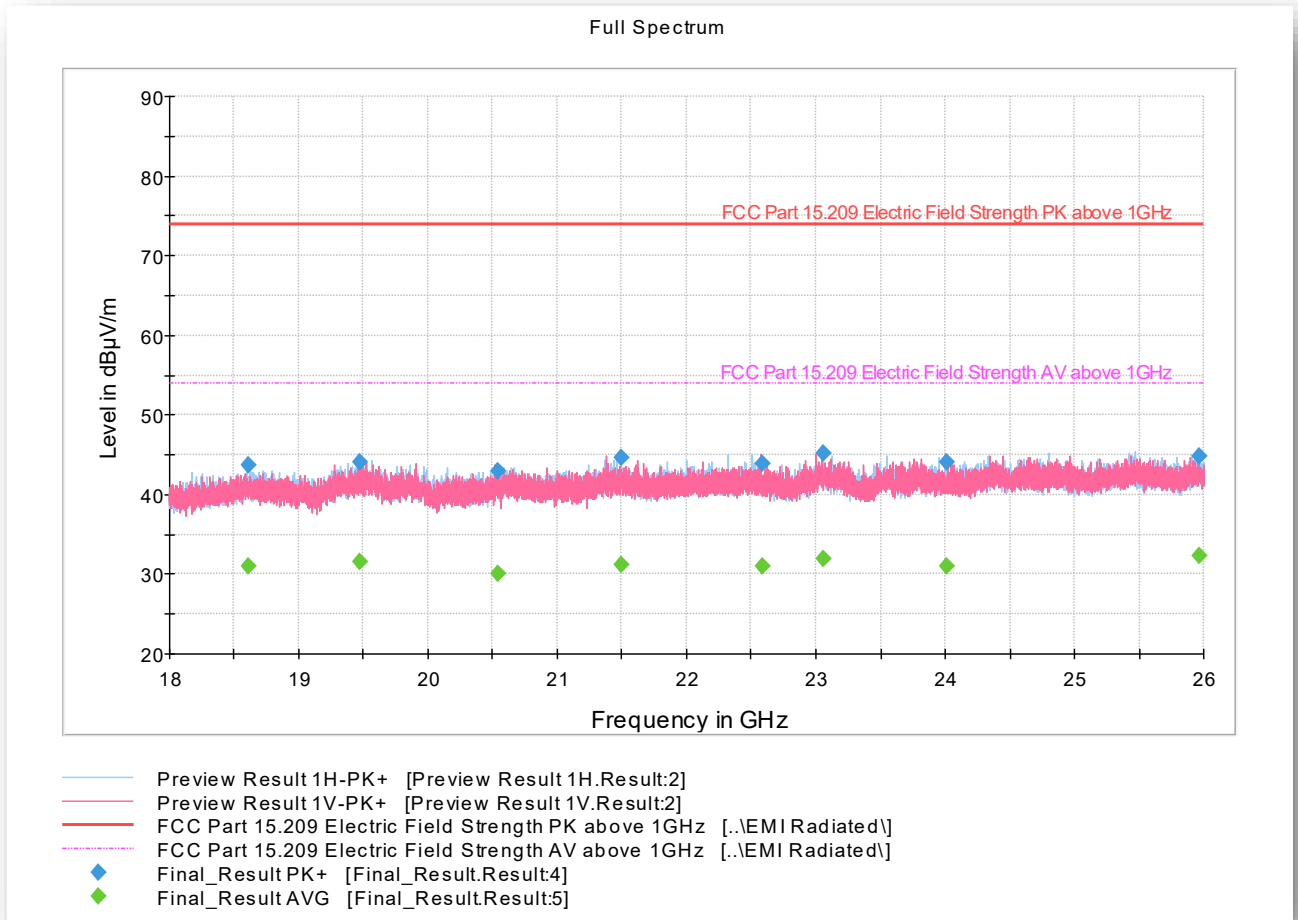


Average Data

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18104.6205	29.07	53.90	24.83	1000.0	1000.000	213.0	H	147.0	-5
19078.7855	29.31	53.90	24.59	1000.0	1000.000	138.0	V	216.0	-6
19489.4020	30.72	53.90	23.18	1000.0	1000.000	138.0	H	63.0	-5
21347.7275	30.70	53.90	23.20	1000.0	1000.000	158.0	H	45.0	-4
22941.2805	31.19	53.90	22.71	1000.0	1000.000	213.0	V	272.0	-3
23055.4765	32.19	53.90	21.71	1000.0	1000.000	162.0	V	81.0	-3
24797.4970	31.80	53.90	22.10	1000.0	1000.000	139.0	H	320.0	-2
25709.1970	31.82	53.90	22.08	1000.0	1000.000	138.0	H	216.0	-1



2.3.22 Test Results for 18GHz to 26GHz (500B) Low Channel



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18603.8950	43.72	73.90	30.18	1000.0	1000.000	137.0	H	299.0	-4
19474.4435	44.03	73.90	29.87	1000.0	1000.000	162.0	H	60.0	-5
20535.7915	43.00	73.90	30.90	1000.0	1000.000	213.0	V	265.0	-5
21491.3630	44.64	73.90	29.26	1000.0	1000.000	162.0	H	202.0	-4
22586.6220	43.92	73.90	29.98	1000.0	1000.000	154.0	V	73.0	-3
23056.0885	45.19	73.90	28.71	1000.0	1000.000	143.0	V	348.0	-3
24008.5635	43.99	73.90	29.91	1000.0	1000.000	162.0	H	332.0	-3
25966.5310	44.92	73.90	28.98	1000.0	1000.000	145.0	V	346.0	-2

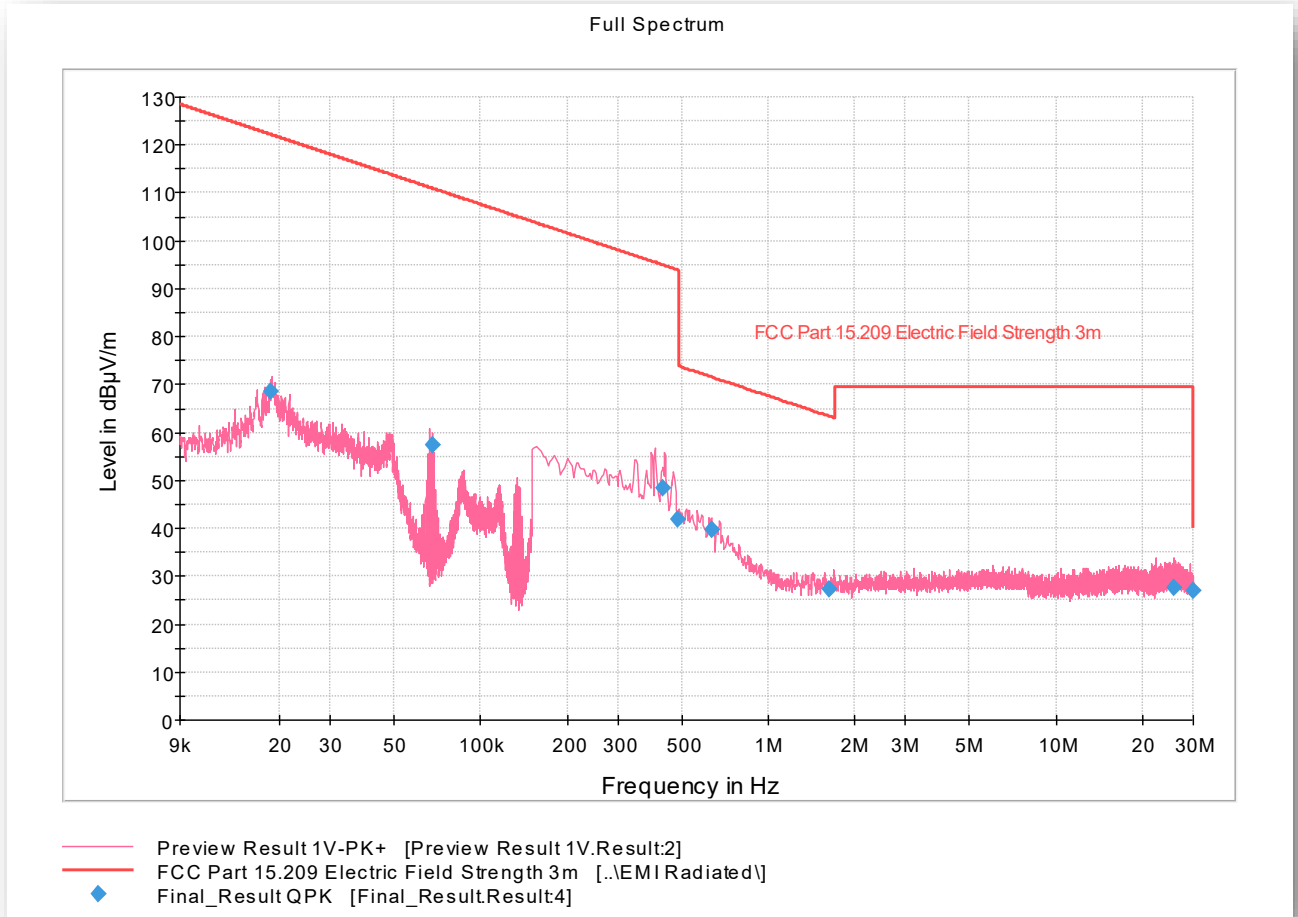


Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18603.8950	31.10	53.90	22.80	1000.0	1000.000	137.0	H	299.0	-4
19474.4435	31.53	53.90	22.37	1000.0	1000.000	162.0	H	60.0	-5
20535.7915	30.00	53.90	23.90	1000.0	1000.000	213.0	V	265.0	-5
21491.3630	31.16	53.90	22.74	1000.0	1000.000	162.0	H	202.0	-4
22586.6220	31.03	53.90	22.87	1000.0	1000.000	154.0	V	73.0	-3
23056.0885	31.95	53.90	21.95	1000.0	1000.000	143.0	V	348.0	-3
24008.5635	30.97	53.90	22.93	1000.0	1000.000	162.0	H	332.0	-3
25966.5310	32.31	53.90	21.59	1000.0	1000.000	145.0	V	346.0	-2



2.3.23 Test Results for 9kHz to 30MHz (500D) High Channel



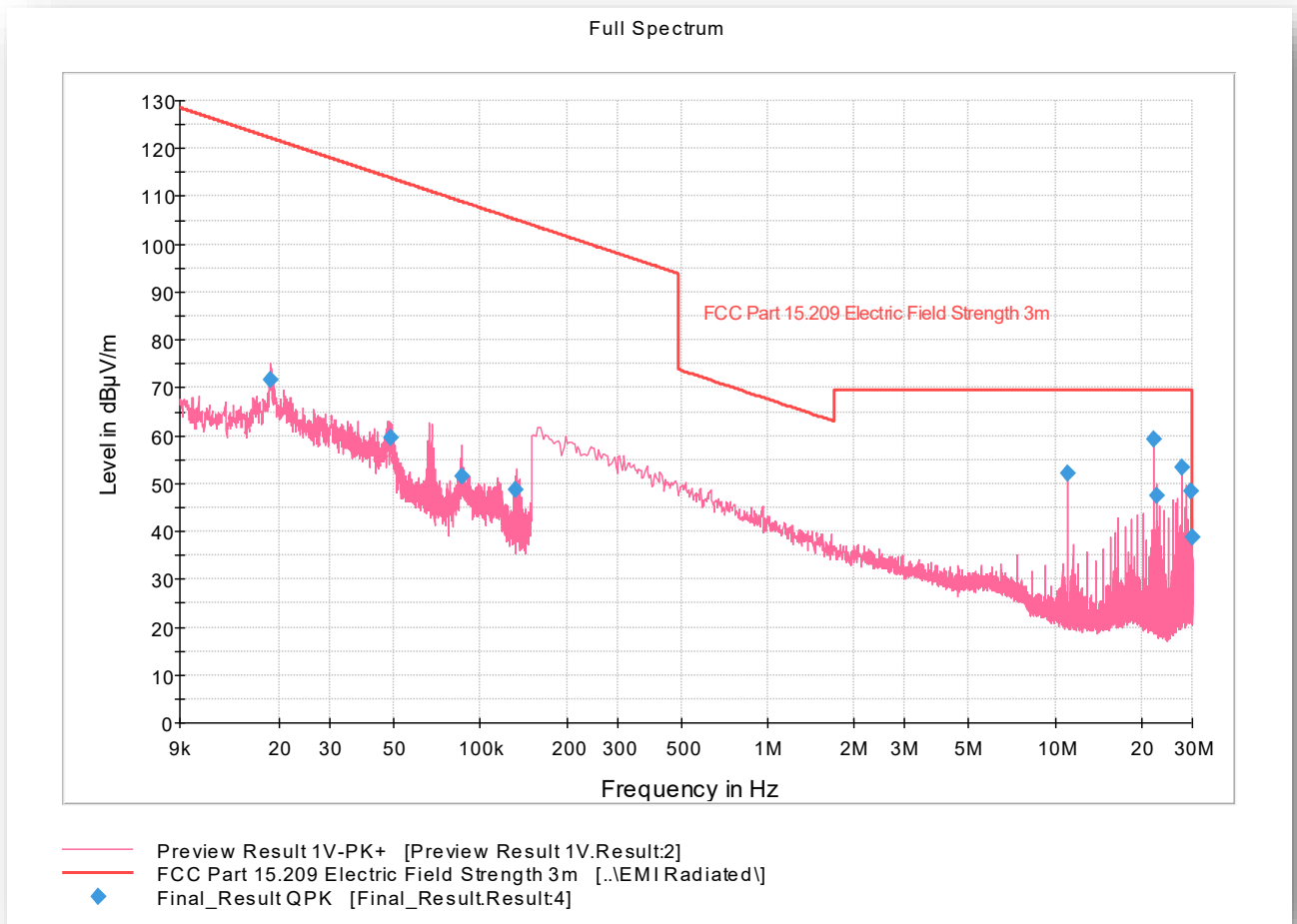
Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
0.018685	68.69	122.17	53.48	1000.	0.200	400.0	H	16.0	22
0.067635	57.44	111.00	53.56	1000.	0.200	400.0	H	185.0	20
0.430655	48.50	94.92	46.42	1000.	9.000	400.0	H	270.0	19
0.485400	41.82	93.88	52.06	1000.	9.000	400.0	H	61.0	20
0.634845	39.58	71.55	31.97	1000.	9.000	400.0	H	336.0	20
1.626154	27.29	63.37	36.08	1000.	9.000	400.0	H	224.0	20
25.615412	27.61	69.50	41.89	1000.	9.000	400.0	H	54.0	25
29.956150	26.87	69.50	42.63	1000.	9.000	400.0	H	29.0	25

Test Notes: Loop antenna HFH2-Z2335 utilized for this test.



2.3.24 Test Results for 9kHz to 30MHz (500D) Mid Channel



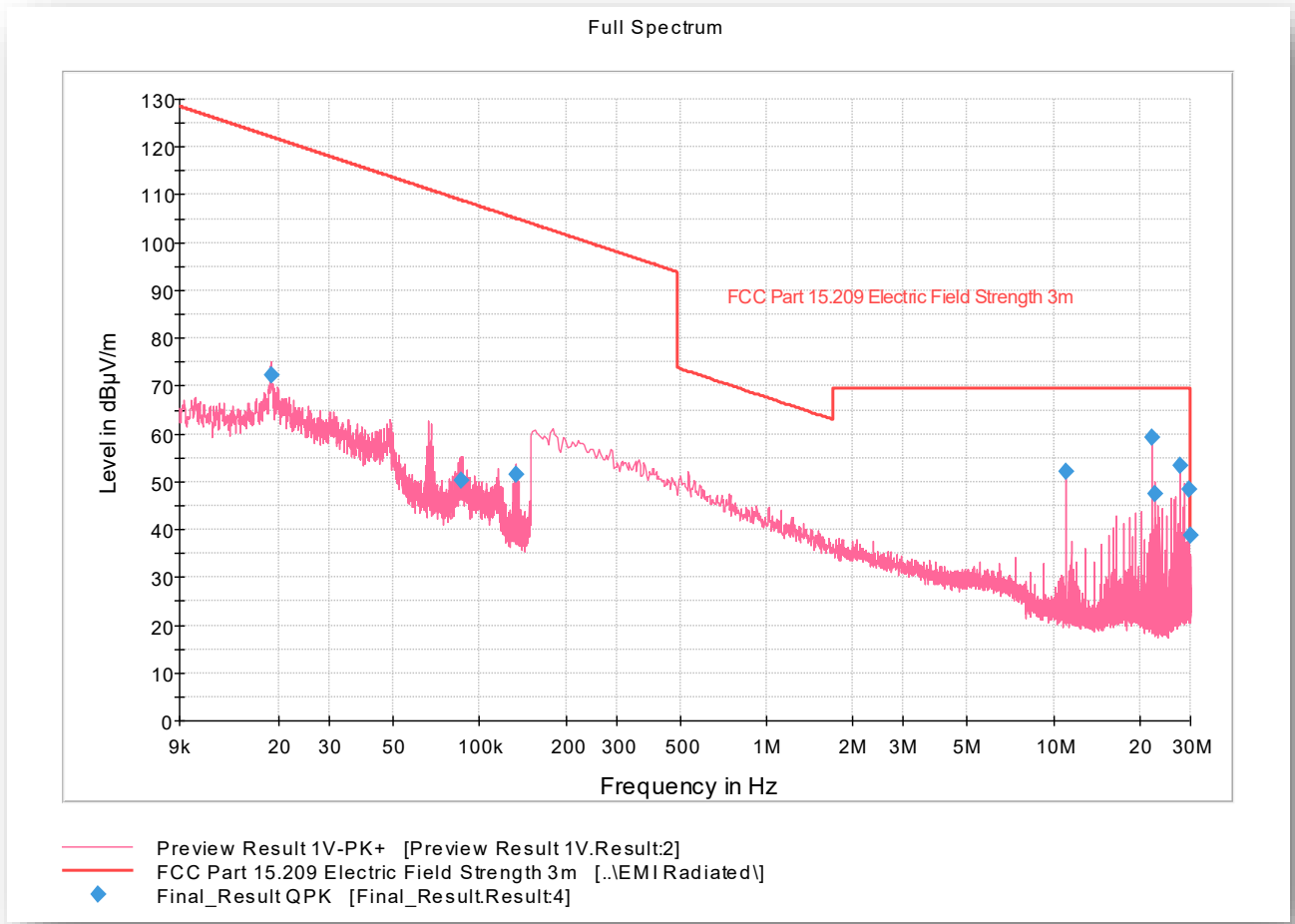
Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
0.018681	71.75	122.17	50.42	1000.	0.200	400.0	H	132.0	15
0.048932	59.68	113.81	54.13	1000.	0.200	400.0	H	16.0	14
0.086443	51.38	108.87	57.48	1000.	0.200	400.0	H	301.0	14
0.132171	48.76	105.18	56.41	1000.	0.200	400.0	H	14.0	14
11.059874	52.04	69.50	17.46	1000.	9.000	400.0	H	65.0	15
22.119997	59.22	69.50	10.28	1000.	9.000	400.0	H	294.0	14
22.581369	47.44	69.50	22.06	1000.	9.000	400.0	H	93.0	14
27.650536	53.51	69.50	15.99	1000.	9.000	400.0	H	288.0	13
29.494068	48.50	69.50	21.00	1000.	9.000	400.0	H	49.0	13
29.954230	38.81	69.50	30.69	1000.	9.000	400.0	H	72.0	13

Test Notes: Loop antenna AL-130R utilized for this test.



2.3.25 Test Results for 9kHz to 30MHz (500D) Low Channel



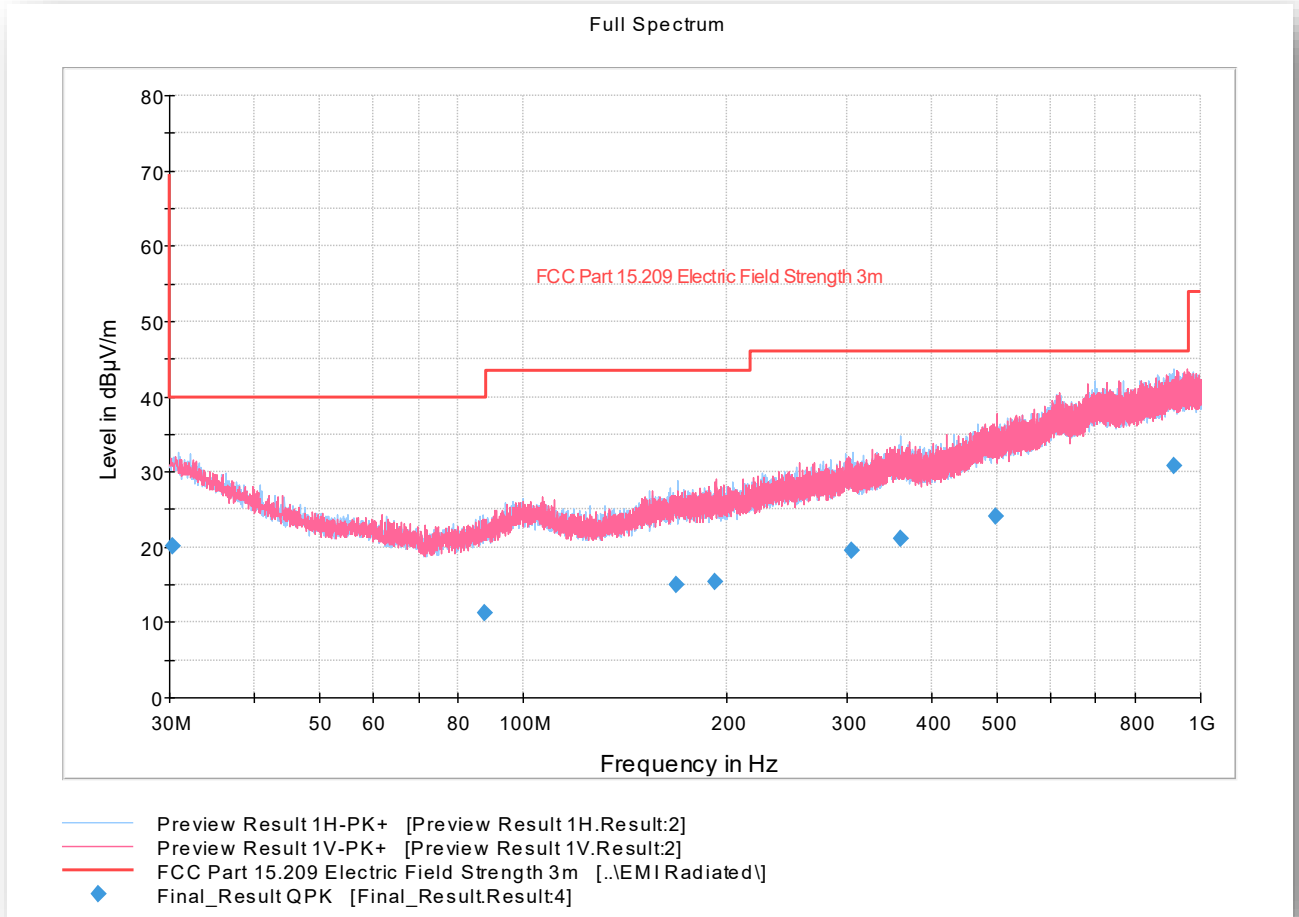
Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
0.018751	72.26	122.14	49.88	1000.	0.200	400.0	H	278.0	15
0.086317	50.11	108.88	58.77	1000.	0.200	400.0	H	326.0	14
0.134290	51.40	105.04	53.64	1000.	0.200	400.0	H	254.0	14
11.059874	52.05	69.50	17.45	1000.	9.000	400.0	H	204.0	15
22.119997	59.22	69.50	10.28	1000.	9.000	400.0	H	32.0	14
22.581369	47.44	69.50	22.06	1000.	9.000	400.0	H	65.0	14
27.650536	53.51	69.50	15.99	1000.	9.000	400.0	H	125.0	13
29.494068	48.51	69.50	20.99	1000.	9.000	400.0	H	278.0	13
29.955225	38.75	69.50	30.75	1000.	9.000	400.0	H	310.0	13

Test Notes: Loop antenna AL-130R utilized for this test.



2.3.26 Test Results for 30MHz to 1GHz (500D) High Channel

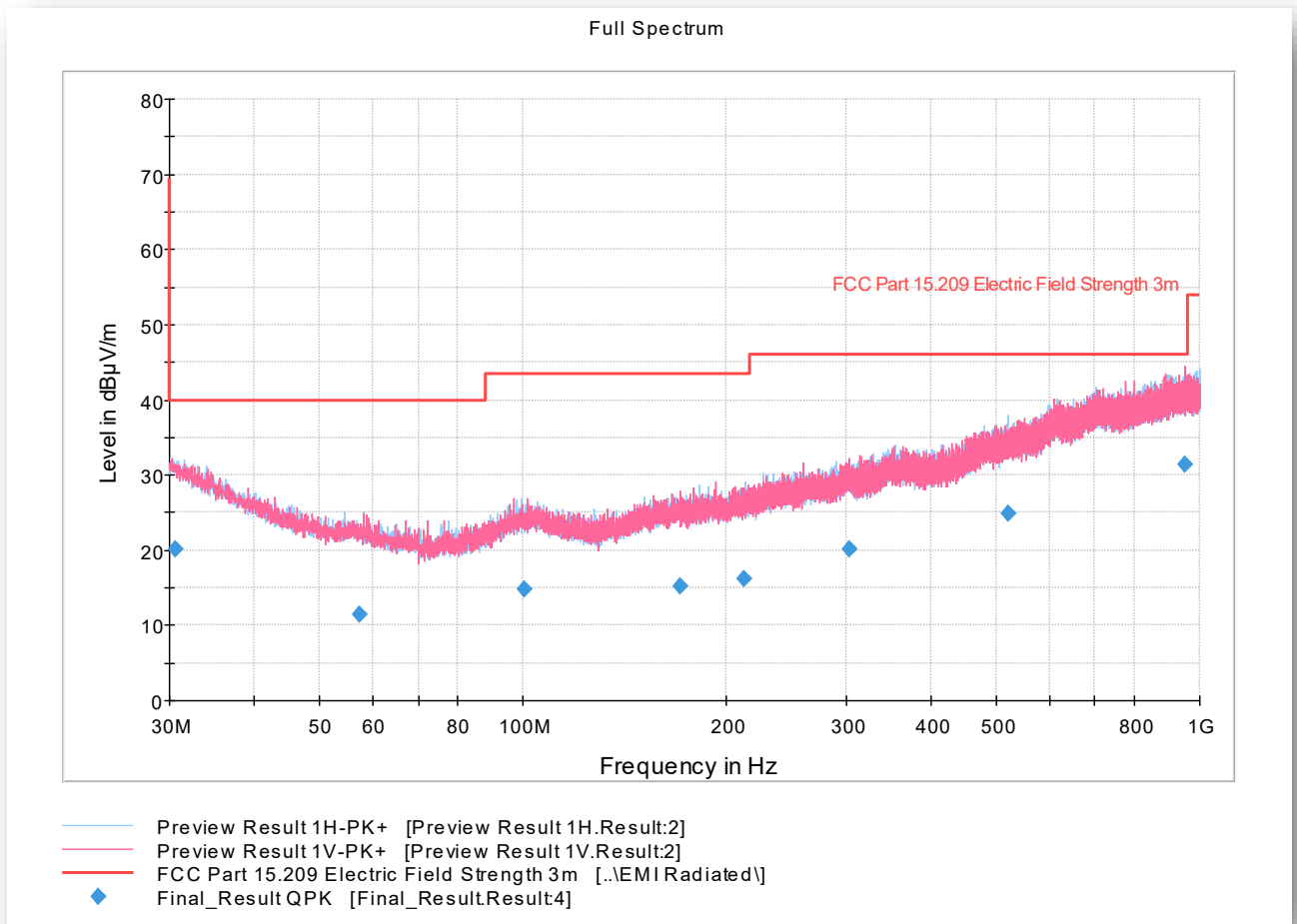


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.360000	20.21	40.00	19.79	1000.	120.000	276.0	H	296.0	22
87.607000	11.32	40.00	28.68	1000.	120.000	256.0	H	-20.0	14
167.828333	14.92	43.50	28.58	1000.	120.000	388.0	H	12.0	17
191.921000	15.48	43.50	28.02	1000.	120.000	365.0	V	304.0	17
305.324000	19.65	46.00	26.35	1000.	120.000	341.0	H	293.0	21
359.902000	21.06	46.00	24.94	1000.	120.000	114.0	H	2.0	23
498.946333	24.03	46.00	21.97	1000.	120.000	192.0	V	90.0	25
915.195666	30.85	46.00	15.16	1000.	120.000	365.0	H	16.0	31



2.3.27 Test Results for 30MHz to 1GHz (500D) Mid Channel



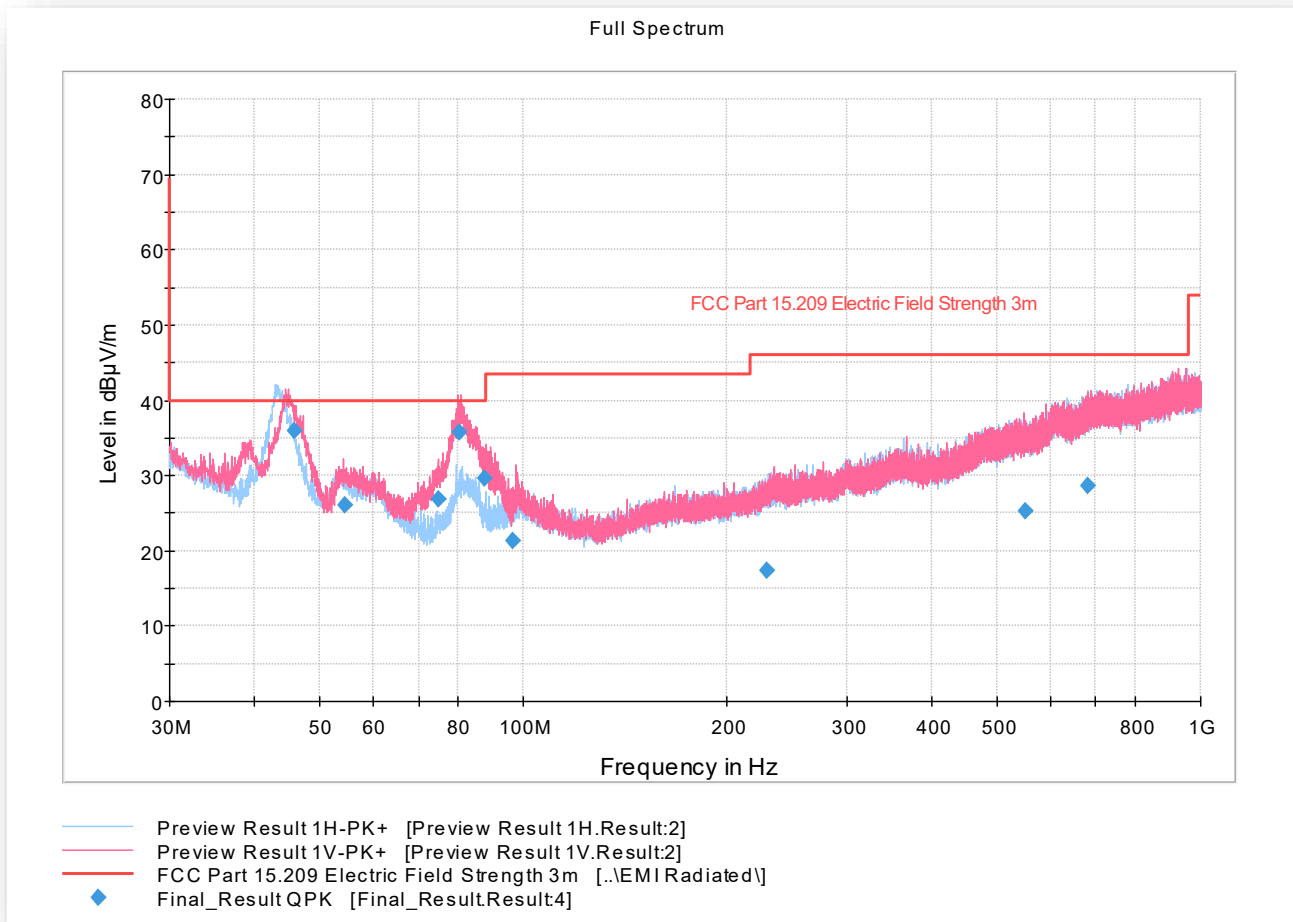
Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.680000	20.21	40.00	19.79	1000.	120.000	175.0	V	200.0	22
57.362333	11.52	40.00	28.48	1000.	120.000	311.0	H	5.0	14
100.23800	14.79	43.50	28.71	1000.	120.000	226.0	V	338.0	16
170.97166	15.22	43.50	28.28	1000.	120.000	391.0	V	337.0	17
212.43733	16.11	43.50	27.39	1000.	120.000	255.0	H	7.0	18
303.52966	20.10	46.00	25.90	1000.	120.000	369.0	V	344.0	22
521.72900	24.88	46.00	21.12	1000.	120.000	149.0	H	205.0	26
952.99933	31.44	46.00	14.56	1000.	120.000	368.0	V	-11.0	31



America

2.3.28 Test Results for 30MHz to 1GHz (500D) Low Channel

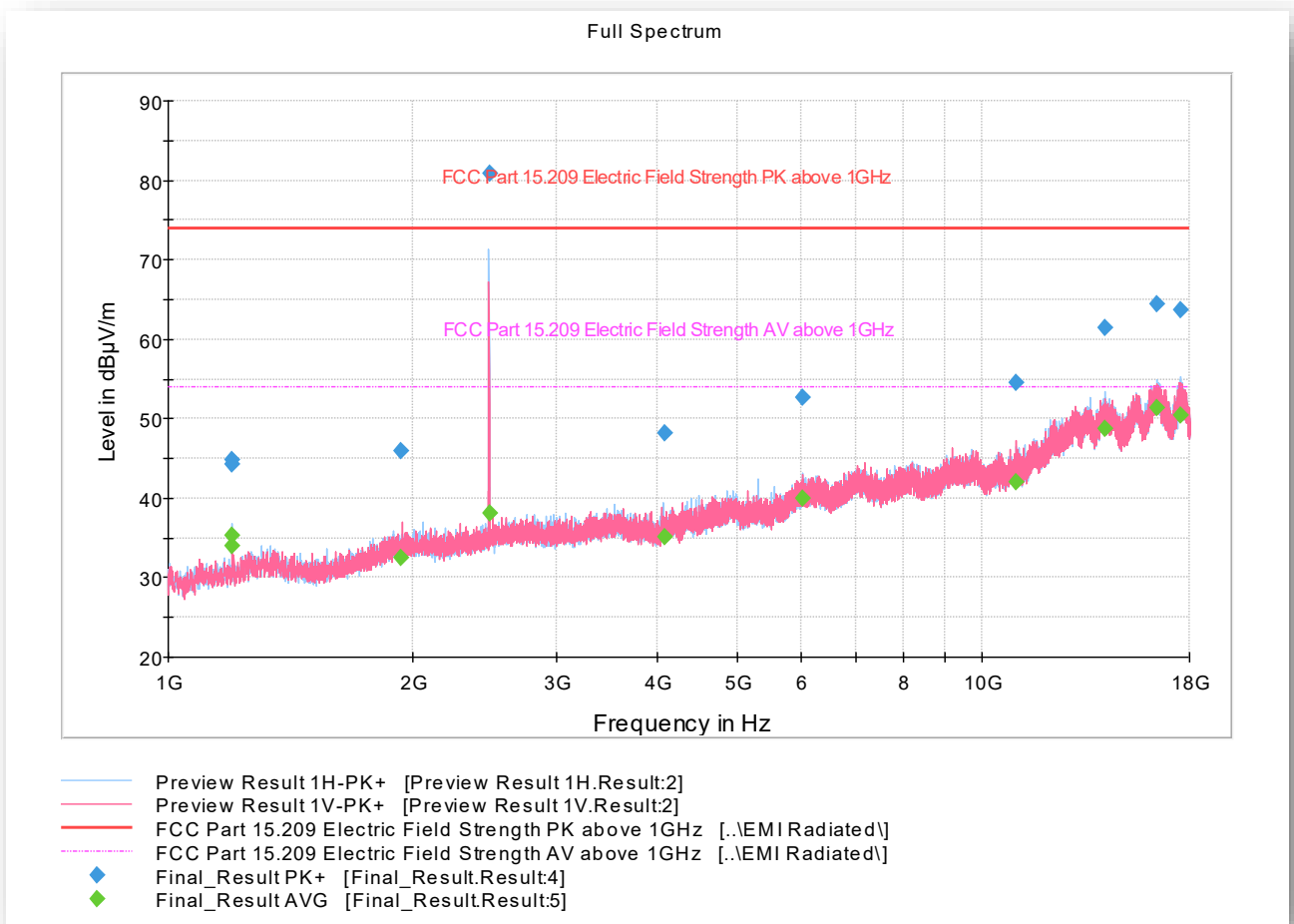


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
45.753667	35.94	40.00	4.06	1000.	120.000	100.0	V	158.0	15
54.337667	26.01	40.00	13.99	1000.	120.000	114.0	V	32.0	14
74.682333	26.92	40.00	13.08	1000.	120.000	108.0	V	303.0	13
80.204333	35.75	40.00	4.25	1000.	120.000	109.0	V	3.0	13
87.720000	29.67	40.00	10.33	1000.	120.000	125.0	V	154.0	14
96.598000	21.25	43.50	22.25	1000.	120.000	125.0	V	82.0	16
229.24733	17.45	46.00	28.55	1000.	120.000	162.0	H	258.0	19
550.22666	25.26	46.00	20.74	1000.	120.000	186.0	V	127.0	26
680.31866	28.63	46.00	17.37	1000.	120.000	181.0	H	2.0	28



2.3.29 Test Results for 1GHz to 18GHz (500D) High Channel



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1199.66666	44.21	73.90	29.69	1000.0	1000.000	187.0	H	197.0	-1
1200.06666	44.82	73.90	29.08	1000.0	1000.000	198.0	H	187.0	-1
1934.43333	46.03	73.90	27.87	1000.0	1000.000	123.0	V	26.0	4
2480.16666	80.78	73.90	-6.88	1000.0	1000.000	337.0	H	301.0	4
4070.26666	48.17	73.90	25.73	1000.0	1000.000	261.0	H	46.0	6
6019.06666	52.76	73.90	21.14	1000.0	1000.000	334.0	H	35.0	9
11034.9666	54.57	73.90	19.33	1000.0	1000.000	365.0	V	77.0	15
14160.1000	61.50	73.90	12.40	1000.0	1000.000	338.0	H	152.0	18
16391.6333	64.41	73.90	9.49	1000.0	1000.000	167.0	H	92.0	21
17583.9666	63.64	73.90	10.26	1000.0	1000.000	123.0	H	208.0	23



America

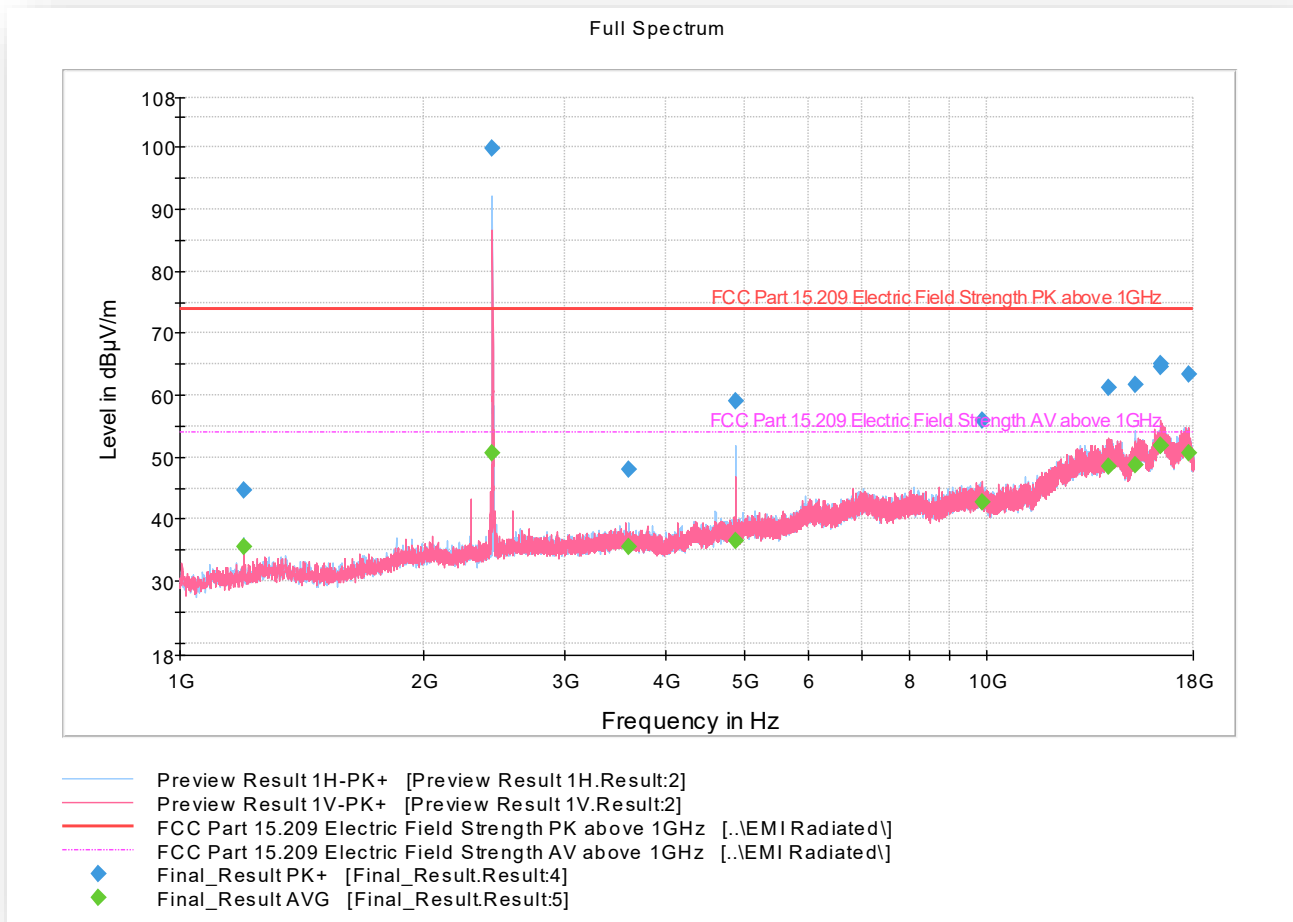
Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1199.66666	34.03	53.90	19.87	1000.0	1000.000	187.0	H	197.0	-1
1200.06666	35.23	53.90	18.67	1000.0	1000.000	198.0	H	187.0	-1
1934.43333	32.54	53.90	21.36	1000.0	1000.000	123.0	V	26.0	4
2480.16666	38.09	53.90	15.81	1000.0	1000.000	337.0	H	301.0	4
4070.26666	35.15	53.90	18.75	1000.0	1000.000	261.0	H	46.0	6
6019.06666	40.06	53.90	13.84	1000.0	1000.000	334.0	H	35.0	9
11034.9666	42.07	53.90	11.83	1000.0	1000.000	365.0	V	77.0	15
14160.1000	48.74	53.90	5.16	1000.0	1000.000	338.0	H	152.0	18
16391.6333	51.42	53.90	2.48	1000.0	1000.000	167.0	H	92.0	21
17583.9666	50.40	53.90	3.50	1000.0	1000.000	123.0	H	208.0	23



America

2.3.30 Test Results for 1GHz to 18GHz (500D) Mid Channel



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1200.06666	44.56	73.90	29.34	1000.0	1000.000	316.0	H	258.0	-1
2440.10000	99.90	73.90	-26.00	1000.0	1000.000	343.0	H	26.0	4
3603.33333	48.09	73.90	25.81	1000.0	1000.000	333.0	H	38.0	6
4879.76666	58.95	73.90	14.95	1000.0	1000.000	365.0	H	303.0	7
9861.40000	55.97	73.90	17.93	1000.0	1000.000	158.0	V	183.0	13
14133.9666	61.11	73.90	12.79	1000.0	1000.000	365.0	V	322.0	18
15284.8000	61.69	73.90	12.21	1000.0	1000.000	346.0	H	252.0	18
16382.9333	64.59	73.90	9.31	1000.0	1000.000	318.0	V	13.0	21
16386.9333	64.98	73.90	8.92	1000.0	1000.000	365.0	V	37.0	21
17754.0666	63.48	73.90	10.42	1000.0	1000.000	232.0	V	5.0	24



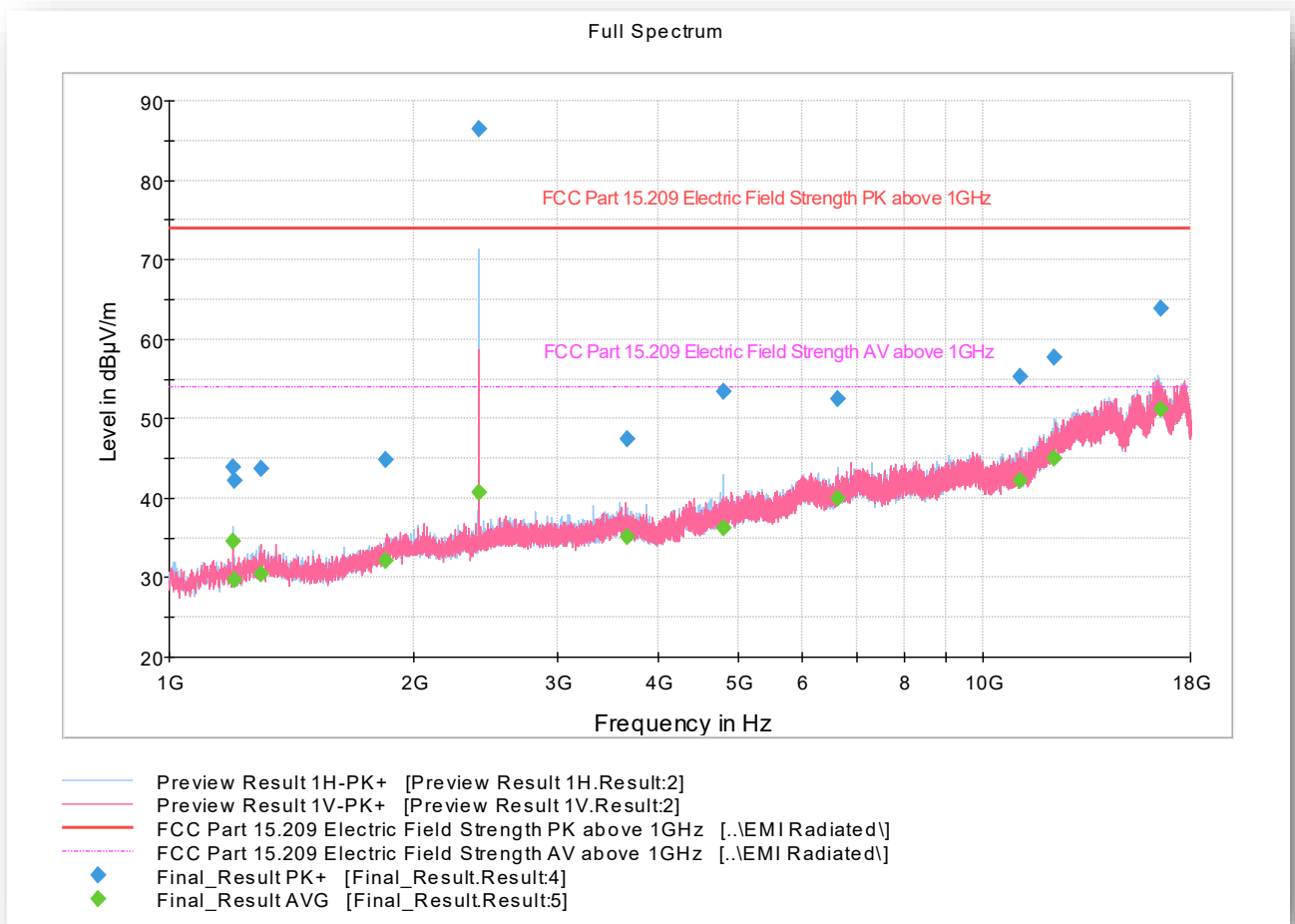
America

Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1200.06666	35.43	53.90	18.47	1000.0	1000.000	316.0	H	258.0	-1
2440.10000	50.73	53.90	3.17	1000.0	1000.000	343.0	H	26.0	4
3603.33333	35.53	53.90	18.37	1000.0	1000.000	333.0	H	38.0	6
4879.76666	36.57	53.90	17.33	1000.0	1000.000	365.0	H	303.0	7
9861.40000	42.66	53.90	11.24	1000.0	1000.000	158.0	V	183.0	13
14133.96666	48.46	53.90	5.44	1000.0	1000.000	365.0	V	322.0	18
15284.80000	48.82	53.90	5.08	1000.0	1000.000	346.0	H	252.0	18
16382.93333	51.80	53.90	2.10	1000.0	1000.000	318.0	V	13.0	21
16386.93333	51.77	53.90	2.13	1000.0	1000.000	365.0	V	37.0	21
17754.06666	50.70	53.90	3.20	1000.0	1000.000	232.0	V	5.0	24



2.3.31 Test Results for 1GHz to 18GHz (500D) Low Channel



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1200.06666	43.87	73.90	30.03	1000.0	1000.000	203.0	H	309.0	-1
1204.46666	42.27	73.90	31.63	1000.0	1000.000	170.0	H	324.0	-1
1294.93333	43.72	73.90	30.18	1000.0	1000.000	121.0	V	287.0	1
1848.36666	44.88	73.90	29.02	1000.0	1000.000	363.0	V	265.0	3
2402.13333	86.53	73.90	-12.63	1000.0	1000.000	365.0	H	240.0	4
3657.13333	47.47	73.90	26.43	1000.0	1000.000	365.0	V	71.0	6
4803.83333	53.33	73.90	20.57	1000.0	1000.000	199.0	H	26.0	7
6643.30000	52.57	73.90	21.33	1000.0	1000.000	252.0	H	28.0	10
11108.2333	55.25	73.90	18.65	1000.0	1000.000	254.0	V	144.0	16
12258.1666	57.80	73.90	16.10	1000.0	1000.000	121.0	H	77.0	18
16522.0333	63.84	73.90	10.06	1000.0	1000.000	152.0	H	49.0	21



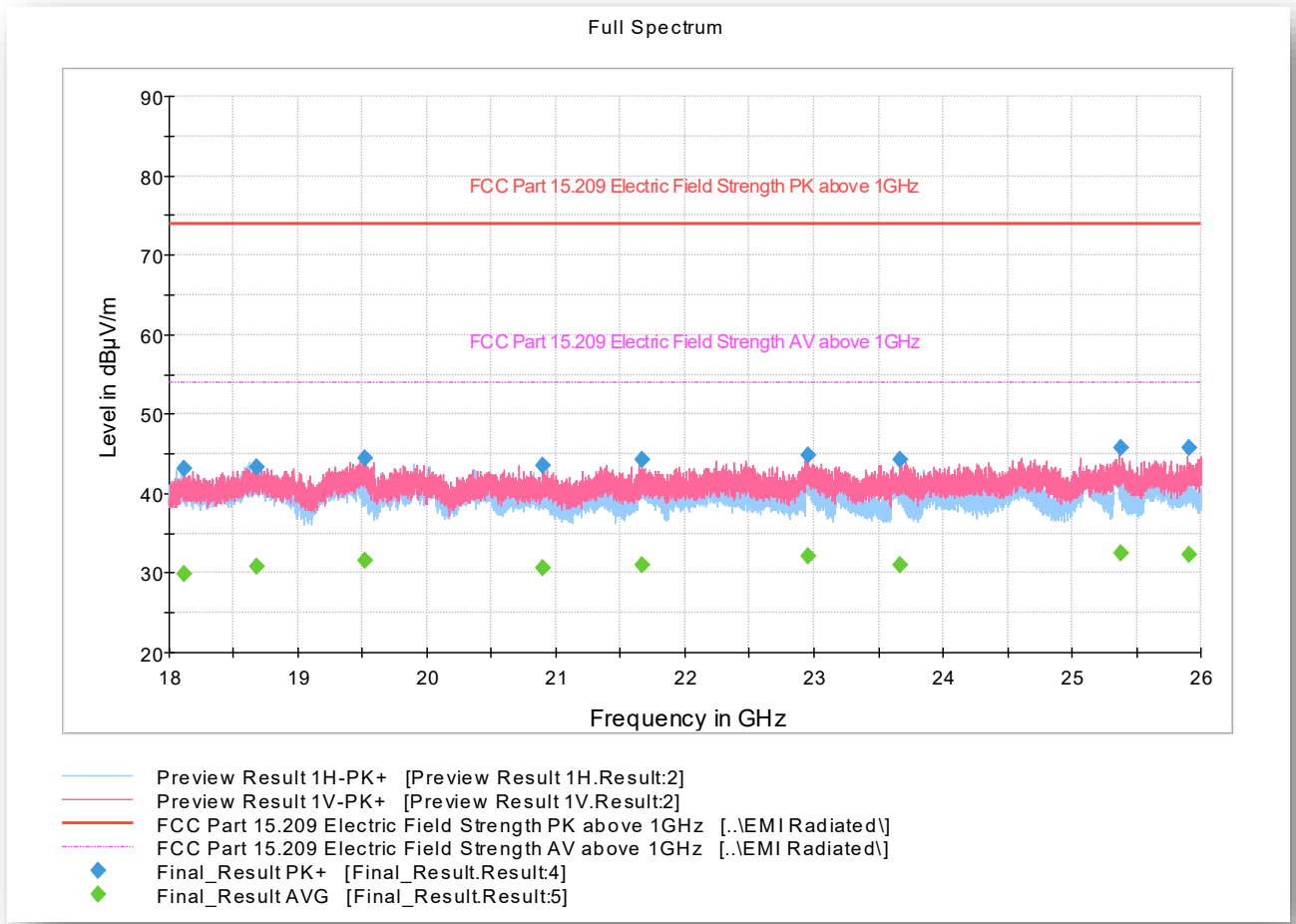
America

Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1200.06666	34.64	53.90	19.26	1000.0	1000.000	203.0	H	309.0	-1
1204.46666	29.65	53.90	24.25	1000.0	1000.000	170.0	H	324.0	-1
1294.93333	30.54	53.90	23.36	1000.0	1000.000	121.0	V	287.0	1
1848.36666	32.15	53.90	21.75	1000.0	1000.000	363.0	V	265.0	3
2402.13333	40.69	53.90	13.21	1000.0	1000.000	365.0	H	240.0	4
3657.13333	35.14	53.90	18.76	1000.0	1000.000	365.0	V	71.0	6
4803.83333	36.29	53.90	17.61	1000.0	1000.000	199.0	H	26.0	7
6643.30000	39.92	53.90	13.98	1000.0	1000.000	252.0	H	28.0	10
11108.2333	42.17	53.90	11.73	1000.0	1000.000	254.0	V	144.0	16
12258.1666	45.09	53.90	8.81	1000.0	1000.000	121.0	H	77.0	18
16522.0333	51.18	53.90	2.72	1000.0	1000.000	152.0	H	49.0	21



2.3.32 Test Results for 18GHz to 26GHz (500D) High Channel



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18111.4570	43.11	73.90	30.79	1000.0	1000.000	138.0	V	13.0	-5
18676.2390	43.32	73.90	30.58	1000.0	1000.000	187.0	V	174.0	-5
19518.8335	44.52	73.90	29.38	1000.0	1000.000	163.0	V	27.0	-5
20895.6915	43.44	73.90	30.46	1000.0	1000.000	137.0	V	188.0	-5
21663.3600	44.36	73.90	29.54	1000.0	1000.000	139.0	V	203.0	-4
22955.9690	44.75	73.90	29.15	1000.0	1000.000	162.0	V	268.0	-3
23671.9945	44.19	73.90	29.71	1000.0	1000.000	212.0	V	241.0	-2
25382.3180	45.74	73.90	28.16	1000.0	1000.000	150.0	V	38.0	-1
25902.9880	45.68	73.90	28.22	1000.0	1000.000	142.0	V	85.0	-2



America

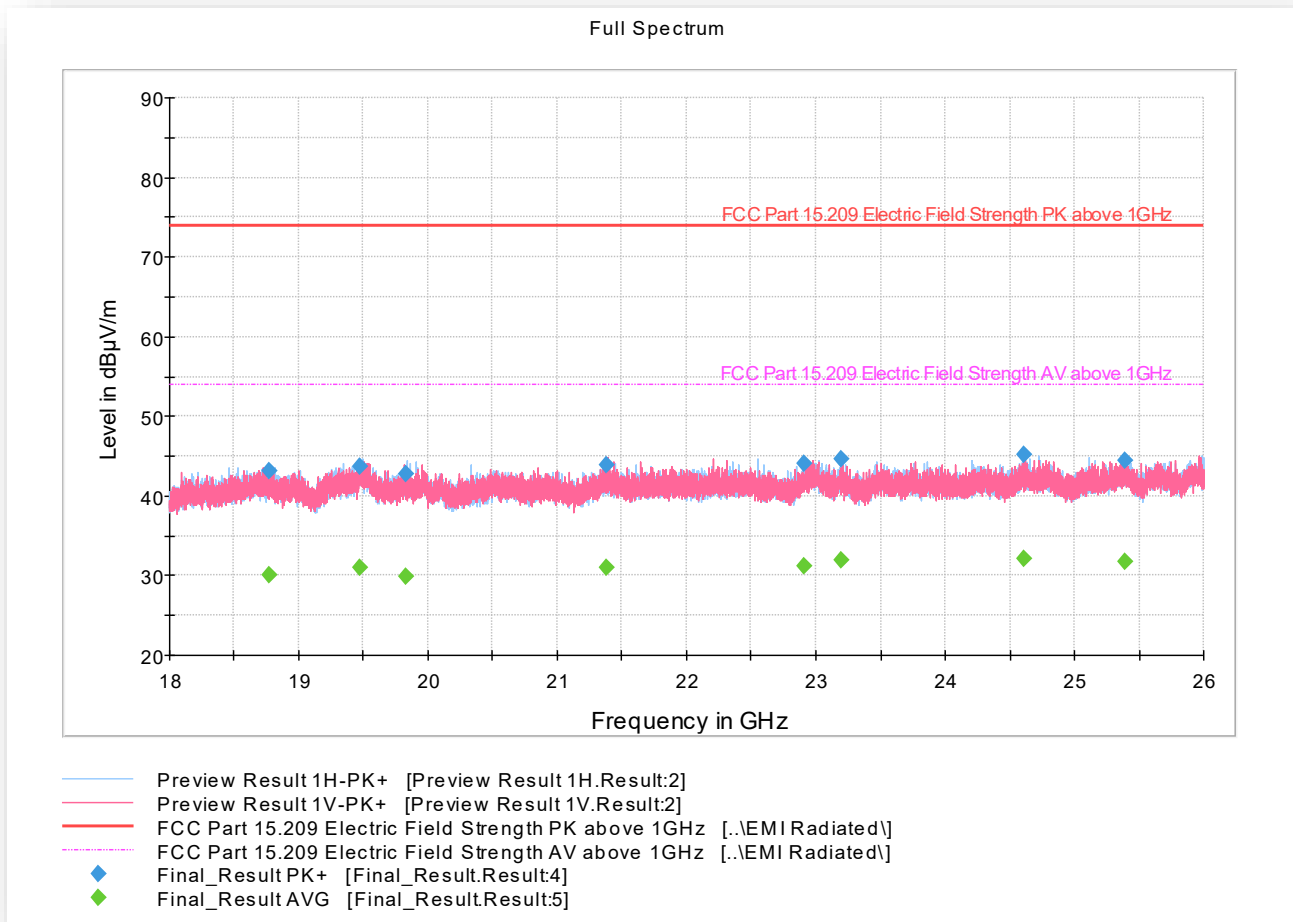
Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18111.4570	29.84	53.90	24.06	1000.0	1000.000	138.0	V	13.0	-5
18676.2390	30.81	53.90	23.09	1000.0	1000.000	187.0	V	174.0	-5
19518.8335	31.64	53.90	22.26	1000.0	1000.000	163.0	V	27.0	-5
20895.6915	30.56	53.90	23.34	1000.0	1000.000	137.0	V	188.0	-5
21663.3600	31.07	53.90	22.83	1000.0	1000.000	139.0	V	203.0	-4
22955.9690	32.15	53.90	21.75	1000.0	1000.000	162.0	V	268.0	-3
23671.9945	31.04	53.90	22.86	1000.0	1000.000	212.0	V	241.0	-2
25382.3180	32.55	53.90	21.35	1000.0	1000.000	150.0	V	38.0	-1
25902.9880	32.38	53.90	21.52	1000.0	1000.000	142.0	V	85.0	-2



America

2.3.33 Test Results for 18GHz to 26GHz (500D) Mid Channel



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18767.6225	43.09	73.90	30.81	1000.0	1000.000	213.0	H	172.0	-5
19473.7670	43.74	73.90	30.16	1000.0	1000.000	213.0	H	257.0	-5
19827.9790	42.80	73.90	31.10	1000.0	1000.000	162.0	H	238.0	-5
21384.8235	43.96	73.90	29.94	1000.0	1000.000	203.0	V	283.0	-4
22905.6580	44.01	73.90	29.89	1000.0	1000.000	193.0	H	289.0	-3
23199.1205	44.72	73.90	29.18	1000.0	1000.000	162.0	H	320.0	-3
24614.2780	45.22	73.90	28.68	1000.0	1000.000	162.0	V	259.0	-2
25385.1620	44.47	73.90	29.43	1000.0	1000.000	213.0	H	46.0	-1

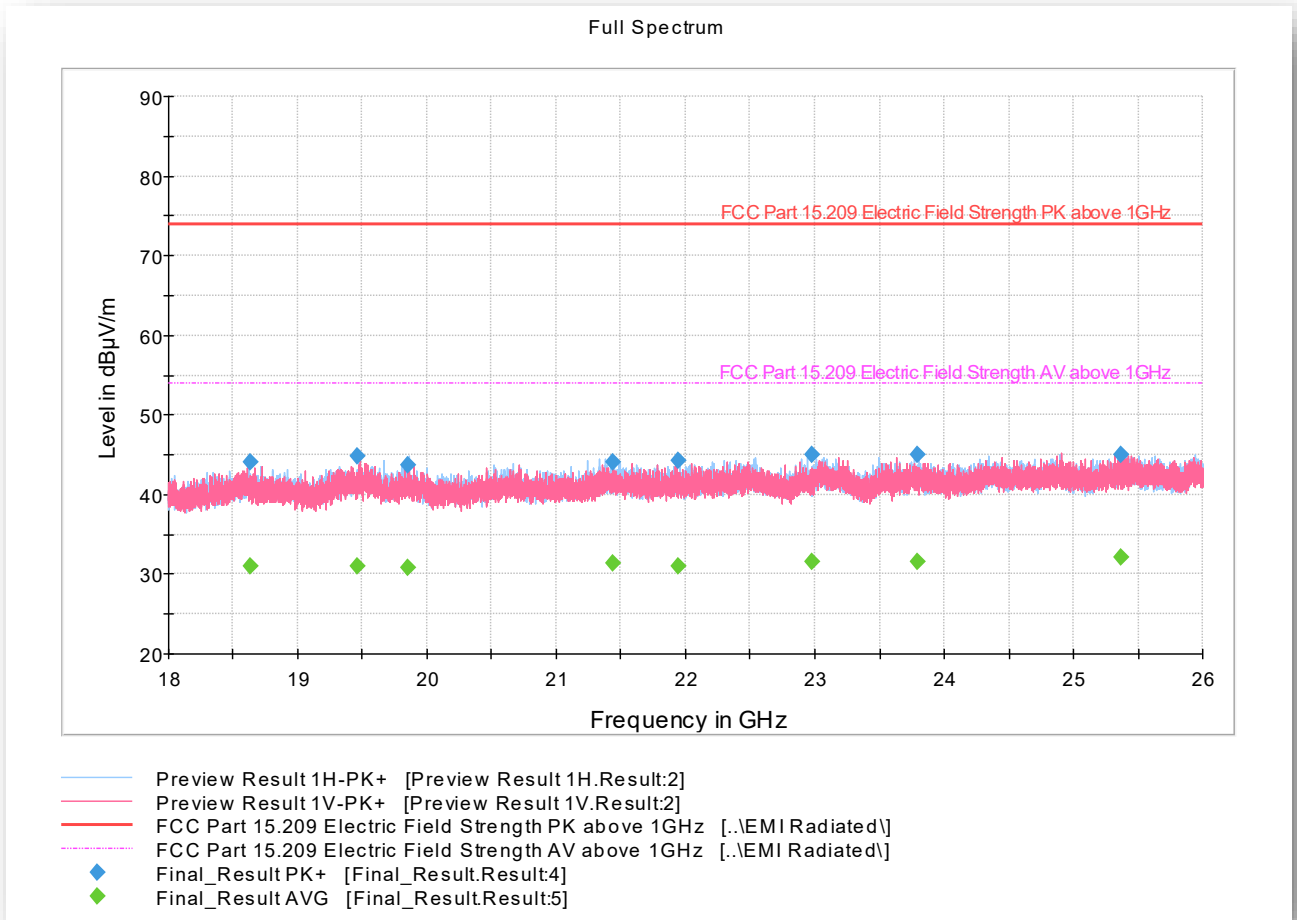


Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18767.6225	30.03	53.90	23.87	1000.0	1000.000	213.0	H	172.0	-5
19473.7670	31.10	53.90	22.80	1000.0	1000.000	213.0	H	257.0	-5
19827.9790	29.95	53.90	23.95	1000.0	1000.000	162.0	H	238.0	-5
21384.8235	31.08	53.90	22.82	1000.0	1000.000	203.0	V	283.0	-4
22905.6580	31.18	53.90	22.72	1000.0	1000.000	193.0	H	289.0	-3
23199.1205	31.86	53.90	22.04	1000.0	1000.000	162.0	H	320.0	-3
24614.2780	32.17	53.90	21.73	1000.0	1000.000	162.0	V	259.0	-2
25385.1620	31.85	53.90	22.05	1000.0	1000.000	213.0	H	46.0	-1



2.3.34 Test Results for 18GHz to 26GHz (500D) Low Channel



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18629.5700	44.17	73.90	29.73	1000.0	1000.000	138.0	H	146.0	-4
19464.7880	44.86	73.90	29.04	1000.0	1000.000	138.0	H	290.0	-5
19853.0840	43.76	73.90	30.14	1000.0	1000.000	162.0	H	208.0	-5
21437.5480	44.16	73.90	29.74	1000.0	1000.000	192.0	H	189.0	-4
21942.6630	44.23	73.90	29.67	1000.0	1000.000	198.0	H	234.0	-4
22976.1335	45.01	73.90	28.89	1000.0	1000.000	162.0	H	252.0	-3
23795.8985	44.97	73.90	28.93	1000.0	1000.000	138.0	H	78.0	-2
25365.8245	45.00	73.90	28.90	1000.0	1000.000	189.0	V	347.0	-1



Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18629.5700	31.04	53.90	22.86	1000.0	1000.000	138.0	H	146.0	-4
19464.7880	31.03	53.90	22.87	1000.0	1000.000	138.0	H	290.0	-5
19853.0840	30.86	53.90	23.04	1000.0	1000.000	162.0	H	208.0	-5
21437.5480	31.41	53.90	22.49	1000.0	1000.000	192.0	H	189.0	-4
21942.6630	30.97	53.90	22.93	1000.0	1000.000	198.0	H	234.0	-4
22976.1335	31.53	53.90	22.37	1000.0	1000.000	162.0	H	252.0	-3
23795.8985	31.50	53.90	22.40	1000.0	1000.000	138.0	H	78.0	-2
25365.8245	32.19	53.90	21.71	1000.0	1000.000	189.0	V	347.0	-1



SECTION 3

TEST EQUIPMENT USED



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						
07640	Loop Antenna	AL-130R	121086	Com-Power Corp.	06/23/22	08/08/24
6628	Loop Antenna	HFH2-Z2335.4711.52	FNr.800.458/25	Rohde & Schwarz	06/23/22	06/23/24
1033	BiConiLog Antenna	3142C	00044556	ETS Lindgren	12/01/23	12/01/25
51235	RF Pre-Amp (9kHz to 1GHz)	310	412802	Sonoma	08/21/23	08/21/24
7575	1-18GHz DRG Horn	3117	155511	ETS Lindgren	08/08/21	08/08/24
8628	Pre Amplifier	QLJ-01182835-JO	8986002	Quinstar	02/19/24	02/19/25
1049	EMI Test Receiver	ESU40	100133	Rhone & Schwarz	08/23/23	08/23/24
40815	18GHz to 40GHz Low Noise Amplifier	SLKka-30-6	19D18	Spacek Labs	09/06/23	09/06/24
9001	18-26 GHz Antenna	HO42S	101	Custom Microwave, Inc	10/26/23	10/26/25
Miscellaneous						
7619	Barometer/ Temperature/Humidity	iBTHX-W	15250268	Omega	05/27/24	05/27/25
43003	True RMS Multimeter	85 III	69880143	Fluke	10/02/23	10/02/24
	Test Software	EMC32	V10.50.40	Rhode & Schwarz	N/A	



3.2 Measurement Uncertainty

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

3.2.1 Radiated Measurements (9kHz to 30MHz)

	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	0.44 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-polarization	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 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	2.45 dB	
Expanded uncertainty				Normal, k=2	4.91 dB	

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-polarization	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	

3.2.3 Radiated Emission Measurements (1GHz to 18GHz)

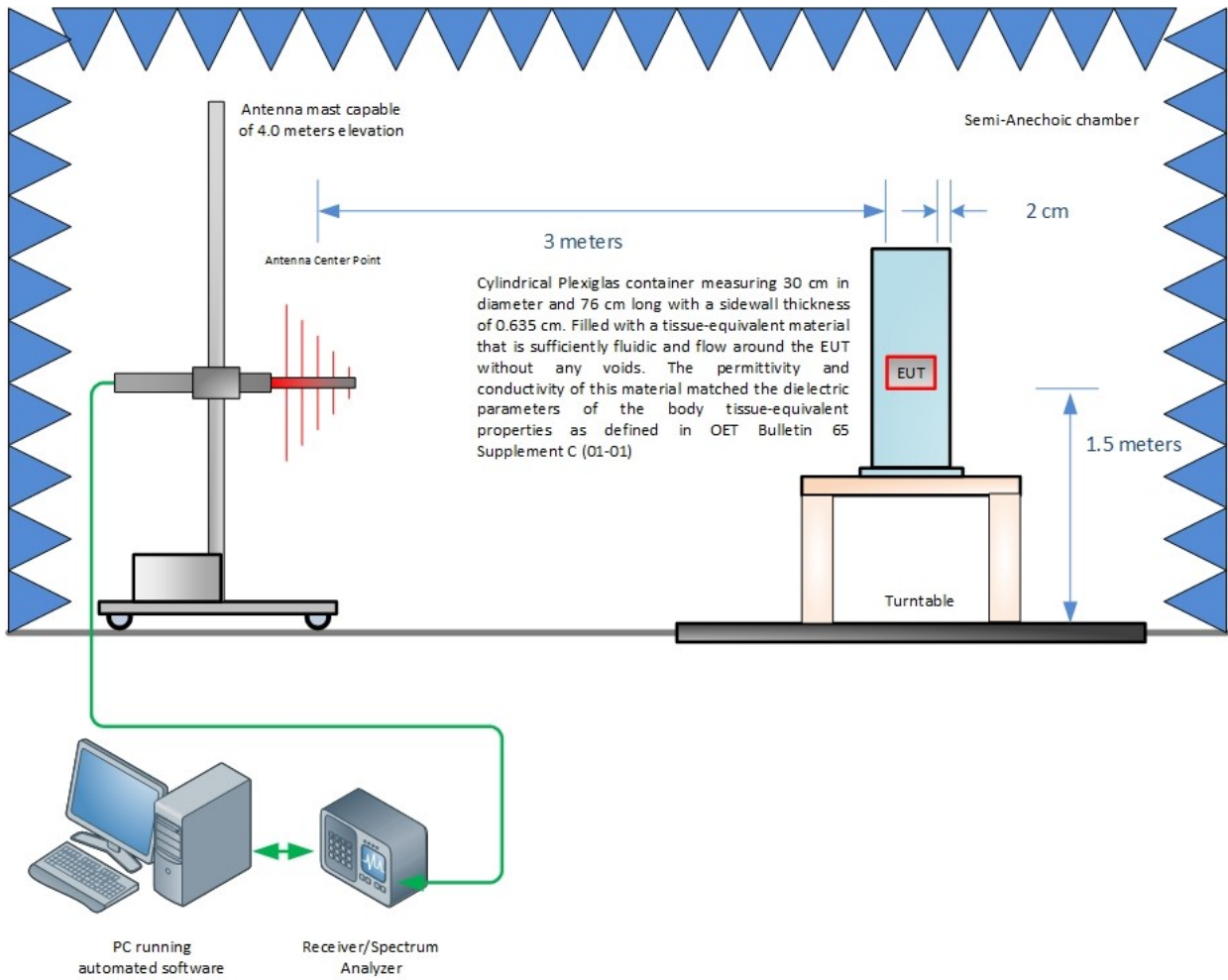
	Input Quantity (Contribution) X_i	Value	Prob. Dist.	Divisor	$u_i(x)$	$u_i(x)^2$
1	Receiver reading	0.10 dB	Normal, k=1	1.000	0.10	0.01
2	Attenuation: antenna-receiver	0.20 dB	Normal, k=2	2.000	0.10	0.01
3	Antenna factor AF	0.75 dB	Normal, k=2	2.000	0.38	0.14
4	Receiver sinewave accuracy	0.45 dB	Normal, k=2	2.000	0.23	0.05
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	3.25 dB	Triangular	2.449	1.33	1.76
16	Separation distance at 3 m	0.30 dB	Rectangular	1.732	0.17	0.03
17	Effect of setup table material	0.77 dB	Rectangular	1.732	0.44	0.20
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	2.85 dB	
Expanded uncertainty				Normal, k=2	5.70 dB	



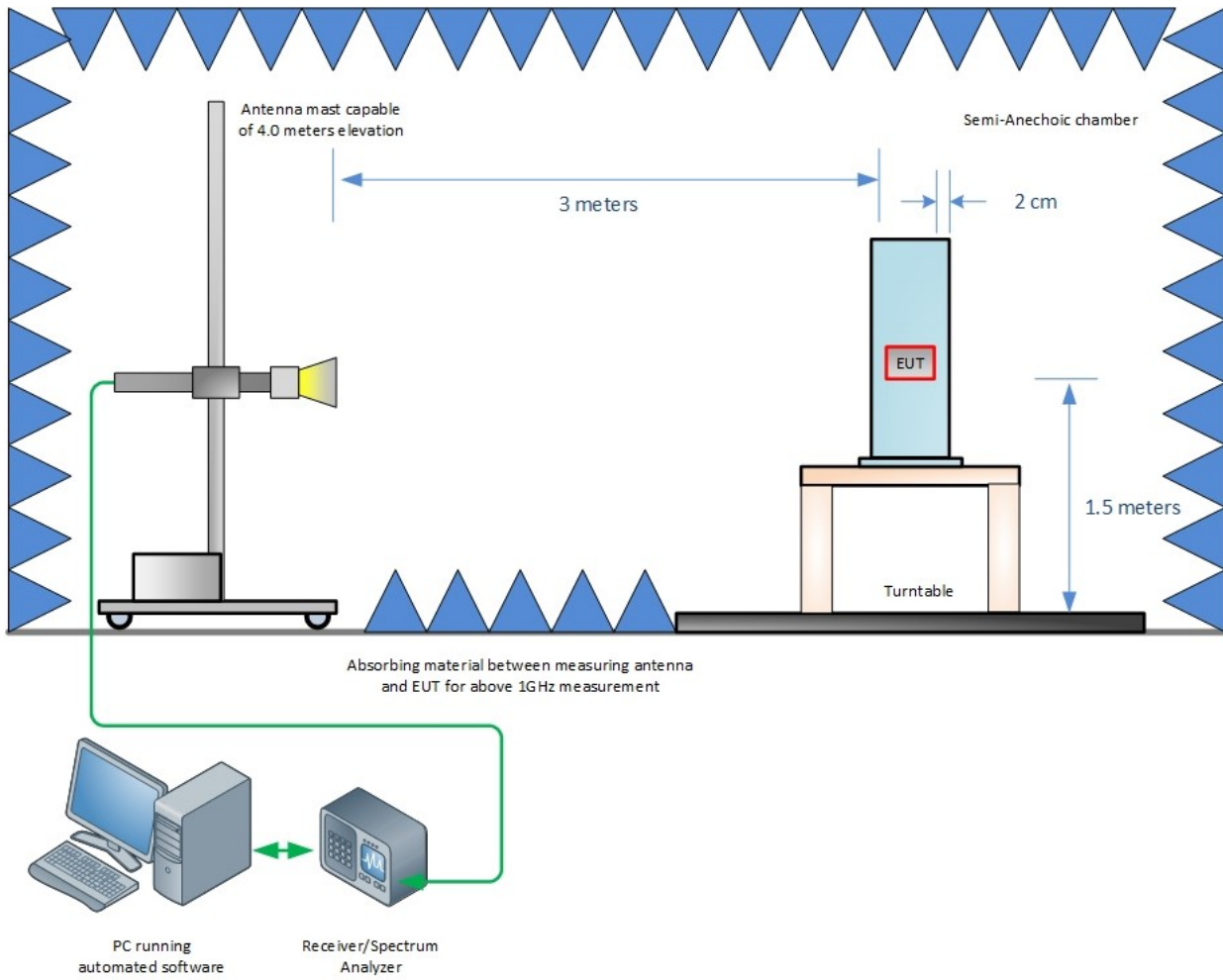
SECTION 4

DIAGRAM OF TEST SETUP

4.1 Test Setup Diagram



Radiated Emission Test Setup (Below 1GHz)



Radiated Emission Test Setup (Above 1GHz)



SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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