



C2PC Test Report

For:

Uhnder Inc.

Model Name:

UR-HM1140-1, UR-HM1140-2, UR-HM1140-3

Product Description:

4D Digital Imaging Radar Sensor

FCC ID: 2AXF3-URHM1140

IC ID: 26449-URHM1140

Applied Rules and Standards:

47 CFR Part 95 Subpart M

RSS-251 Issue 2 & RSS-Gen Issue 5

REPORT #: EMC_UHNDE_004_20001_C2PC_Rev 1

DATE: 2021-02-25



A2LA Accredited

IC recognized #
3462B-1

CETECOM Inc.

411 Dixon Landing Road • Milpitas, CA 95035 • U.S.A.

Phone: + 1 (408) 586 6200 • Fax: + 1 (408) 586 6299 • E-mail: info@cetecom.com • <http://www.cetecom.com>

CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

TABLE OF CONTENTS

1	ASSESSMENT	3
2	ADMINISTRATIVE DATA	4
2.1	IDENTIFICATION OF THE TESTING LABORATORY ISSUING THE EMC TEST REPORT	4
2.2	IDENTIFICATION OF THE CLIENT	4
2.3	IDENTIFICATION OF THE MANUFACTURER	4
3	EQUIPMENT UNDER TEST (EUT)	5
3.1	EUT SPECIFICATIONS	5
3.2	EUT SAMPLE DETAILS	6
3.3	ACCESSORY EQUIPMENT (AE) DETAILS	6
3.4	TEST SAMPLE CONFIGURATION	6
3.5	EUT MODE OF OPERATION	6
3.6	JUSTIFICATION FOR WORST CASE MODE OF OPERATION	6
4	SUBJECT OF INVESTIGATION	7
5	MEASUREMENT RESULTS SUMMARY	7
6	MEASUREMENT UNCERTAINTY	7
6.1	ENVIRONMENTAL CONDITIONS:	7
6.2	DATES OF TESTING:	7
7	MEASUREMENT PROCEDURES	8
8	TEST RESULT DATA	10
8.1	UNWANTED EMISSIONS	10
9	TEST SETUP PHOTOS	27
10	TEST EQUIPMENT AND ANCILLARIES USED FOR TESTING	27
11	HISTORY	28

1 Assessment

This test report is to support a request for C2PC under the FCC ID: 2AXF3-URHM1140 and IC ID: 26449-URHM1140. The objective of the measurements done by CETECOM Inc. was to assess the performance of the EUT according to the relevant requirements specified in FCC rules Part 95 subpart M of Title 47 of the Code of Federal Regulations and Radio Standard Specification RSS-251 of ISED Canada.

The testing carried out by CETECOM Inc. is sufficient to verify that there is no increase of emissions due to the product changes submitted by the manufacturer. All HW changes encompassed in this C2PC filing were to reduce costs by adding cable vendors and to improve the design to reduce emissions below 18 GHz. No changes were made that would cause an increase in emissions above 18 GHz.

Company	Description	Model #
Uhnder Inc.	4D Digital Imaging Radar Sensor	UR-HM1140-1, UR-HM1140-2, UR-HM1140-3

Responsible for Testing Laboratory:

		Cindy Li	
2021-02-25	Compliance	(EMC Lab Manager)	
Date	Section	Name	Signature

Responsible for the Report:

		Kris Lazarov	
2021-02-25	Compliance	(EMC Engineer)	
Date	Section	Name	Signature

The test results of this test report relate exclusively to the test item specified in Section 3.

CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Street Address:	411 Dixon Landing Road
City/Zip Code	Milpitas, CA 95035
Country	USA
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
EMC Lab Manager:	Cindy Li
Responsible Project Leader:	Akanksha Baskaran

2.2 Identification of the Client

Client's Name:	Uhnder Inc.
Street Address:	3409 Executive Center Drive Suite 205
City/Zip Code	Austin TX
Country	US

2.3 Identification of the Manufacturer

Manufacturer's Name:	Same as Client
Manufacturers Address:	
City/Zip Code	
Country	

3 Equipment Under Test (EUT)

3.1 EUT Specifications

Model No:	UR-HM1140-1, UR-HM1140-2, UR-HM1140-3 – See Notes 1, and 2
HW Version :	See Note 2 and Section 3.2
SW Version :	See Note 2 and Section 3.2
FCC-ID :	2AXF3-URHM1140
IC-ID:	26449-URHM1140
FWIN:	N/A
HVIN:	UR-HM1140-1, UR-HM1140-2, UR-HM1140-3
PMN:	UR-HM1140
Product Description:	4D Digital Imaging Radar Sensor
Frequency Range:	Nominal band: 76 GHz – 81 GHz
Modulation Characteristics:	PMCW
Modes of Operation:	Single Mode – Continuous transmit
Antenna Information:	2*96=192 Virtual Receivers
Operating Voltage Range:	Vmin: 10V/ Vnom: 12V / Vmax: 16V
Operating Temperature Range:	From: -10 C to +85 C, > 0.8 m/s air flow
Other Co-transmitting Radios:	None
Sample Revision	☐ Prototype Unit; ☐ Production Unit; ☒ Pre-Production

Note 1: The modules UR-HM1140-1, UR-HM1140-2, UR-HM1140-3 are identical electrically, and mechanically, and operate with the same firmware. The only difference between devices is the length of the attached cable.

Note 2: Five samples with hardware and software modifications were submitted for radiated spurious emissions evaluation from 30 MHz to 18 GHz. For sample details see Section 3.2 of this report.

3.2 EUT Sample details

EUT #	Serial Number	HW Version	SW Version	Notes/Comments
1	Engineering Sample 1	MOD 1162	0.7.6-RC8	Quill v1.1, PCBA: Lockhart v1p10 (with Red (Belden) Cable & EMI gasket/ copper tape).
2	Engineering Sample 2	MOD-1197	0.7.6-RC9	Quill v1.1, PCBA: Lockhart v1p10 (with Black (CAZN) Cable & EMI gasket/copper tape).
3	Engineering Sample 3	MOD -1236	0.7.6-Au	Quill v1.2, PCBA: Lockhart v1p20 (with Black (CAZN) Cable & EMI gasket/copper tape).
4	Engineering Sample 4	MOD-1301	0.7.6-Au	Quill v1.2, PCBA: Lockhart v1p20 (with Black (Foxlink) Cable & EMI gasket/copper tape).
5	Engineering Sample 5	MOD-1231	0.7.6-Au	Quill v1.2, PCBA: Lockhart v1p20 (with Red (Belden) Cable & EMI gasket/ copper tape).

3.3 Accessory Equipment (AE) details

AE #	Type	Model	Manufacturer	Serial Number
1	Mini PC	Intel NUC	Intel	G6BE01600FKM

3.4 Test Sample Configuration

EUT Set-up #	Combination of AE used for test set up	Comments
1	EUT # 1 + AE # 1	
2	EUT # 2 + AE # 1	
3	EUT # 3 + AE # 1	
4	EUT # 4 + AE # 1	
5	EUT # 5 + AE # 1	

3.5 EUT Mode of operation

Operation Mode #	Operation Mode	Comments
1	Single Mode	EUT continuously scanning

3.6 Justification for Worst Case Mode of Operation

During the testing process, the EUT was tested with transmitter sets to highest possible duty cycle. For radiated measurements, all data in this report shows the worst case between horizontal and vertical antenna polarizations and for all orientations of the EUT.

4 Subject of Investigation

This test report is to support a request for C2PC under the FCC ID: 2AXF3-URHM1140 and IC ID: 26449-URHM1140. The objective of the measurements done by CETECOM Inc. was to assess the performance of the EUT according to the relevant requirements specified in FCC rules Part 95 subpart M of Title 47 of the Code of Federal Regulations and Radio Standard Specification RSS-251 of ISED Canada.

5 Measurement Results Summary

Test Specification	Test Case	Temperature and Voltage Conditions	Pass	NA	NP	Result
§2.1049; §95.3379 (b) RSS-251 (7)	Occupied Bandwidth	Nominal	☐	☐	☒	Complies See Note 2
§2.1055; §95.3379 (b) RSS-251 (11); RSS-Gen (8.11)	Frequency Stability	Extreme Temperature and Voltage	☐	☐	☒	Complies See Note 2
§95.3367 RSS-251 (8)(9)	Radiated Power	Nominal	☐	☐	☒	Complies See Note 2
§95.3379 RSS-251 (10); RSS-Gen (6.13)	Unwanted Emissions	Nominal	☒	☐	☐	Complies See Note 3

Note 1: NA= Not Applicable; NP= Not Performed.

Note 2: This test was performed previously under the new equipment authorization under the FCC ID: 2AXF3-URHM1140, the results are in test report # "EMC_UHNDE_003_20001_FCC_95M_Rev1" from 2020-10-28

Note 3: The test was conducted only for the frequency range effected by the changes from 30MHz to 18 GHz.

6 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus, with 95% confidence interval (in dB delta to result), based on a coverage factor k=1.

Radiated measurement

9 kHz to 30 MHz	±2.5 dB (Magnetic Loop Antenna)
30 MHz to 1000 MHz	±2.0 dB (Biconilog Antenna)
1 GHz to 40 GHz	±2.3 dB (Horn Antenna)

According to TR 102 273 a multiplicative propagation of error is assumed for RF measurement systems. For this reason the RMS method is applied to dB values and not to linear values as appropriate for additive propagation of error. Also used: <http://physics.nist.gov/cuu/Uncertainty/typeb.html>. The above calculated uncertainties apply to direct application of the Substitution method. The Substitution method is used for emissions closer than 3 dB to the limit.

6.1 Environmental Conditions:

The following environmental conditions were maintained during the course of testing:

- Ambient Temperature: 20-25° C
- Relative humidity: 40-60%

6.2 Dates of Testing:

12/04/2020 - 1/26/2021

7 Measurement Procedures

The radiated measurement is performed according to ANSI C63.10 (2013)

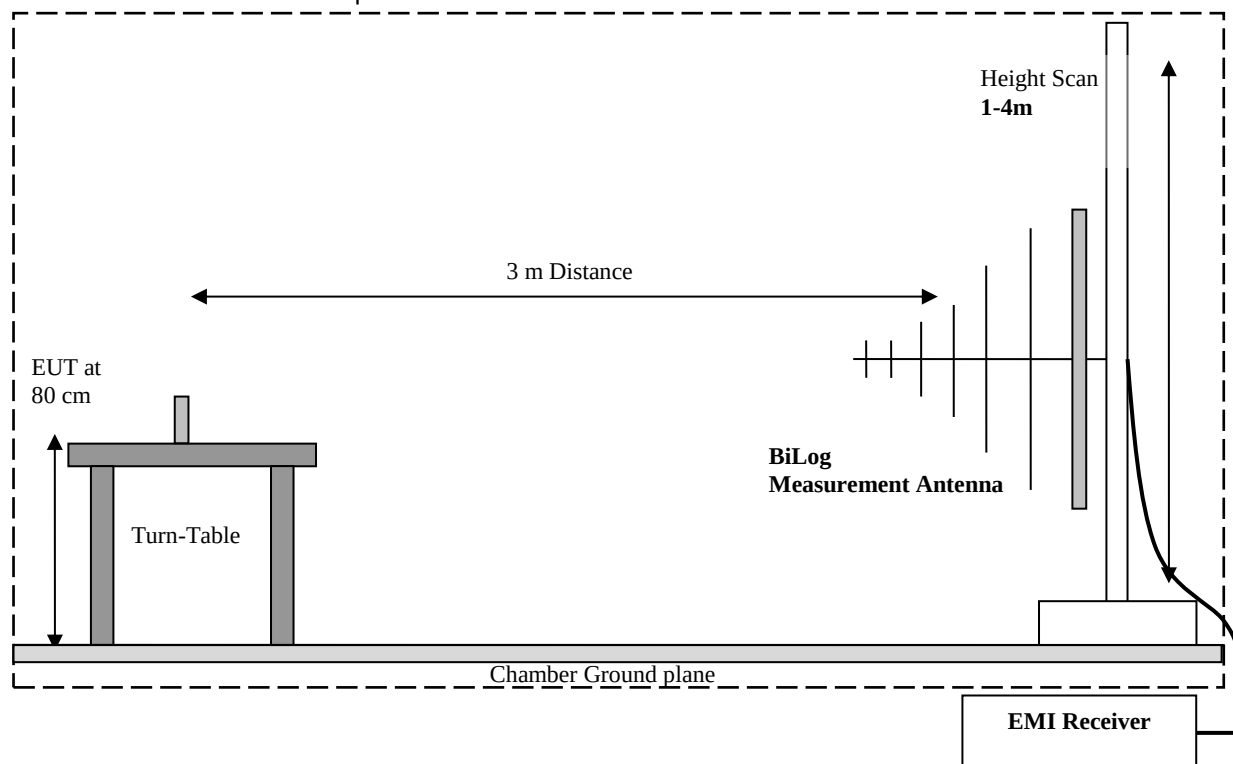
- Measurements below 40 GHz are split to 5 frequency ranges using appropriate antennas and EUT configuration. Magnetic loop is used from 9 kHz to 30 MHz; Biconilog antenna is used from 30 MHz to 1 GHz; and three different horn antennas are used to cover frequencies up to 40 GHz.
- Exploratory measurements are performed with the EUT rotated from 0° to 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.
- Using the orientation and equipment arrangement of the EUT, based on the measurement results found during the exploratory measurement, the EUT arrangement, appropriate modulation, and modes of operation that produce the emissions that have the highest amplitude relative to the limit are selected for the final measurement.
- In case there are no emissions above noise floor level only the maximum trace is reported as described above.
- Radiated field strength levels are calculated from the measurement instrument readings, using the following equation:

$$FS \text{ (dB}\mu\text{V/m)} = \text{Measured Value on SA} + \text{Cable Loss} + \text{Antenna Factor}$$

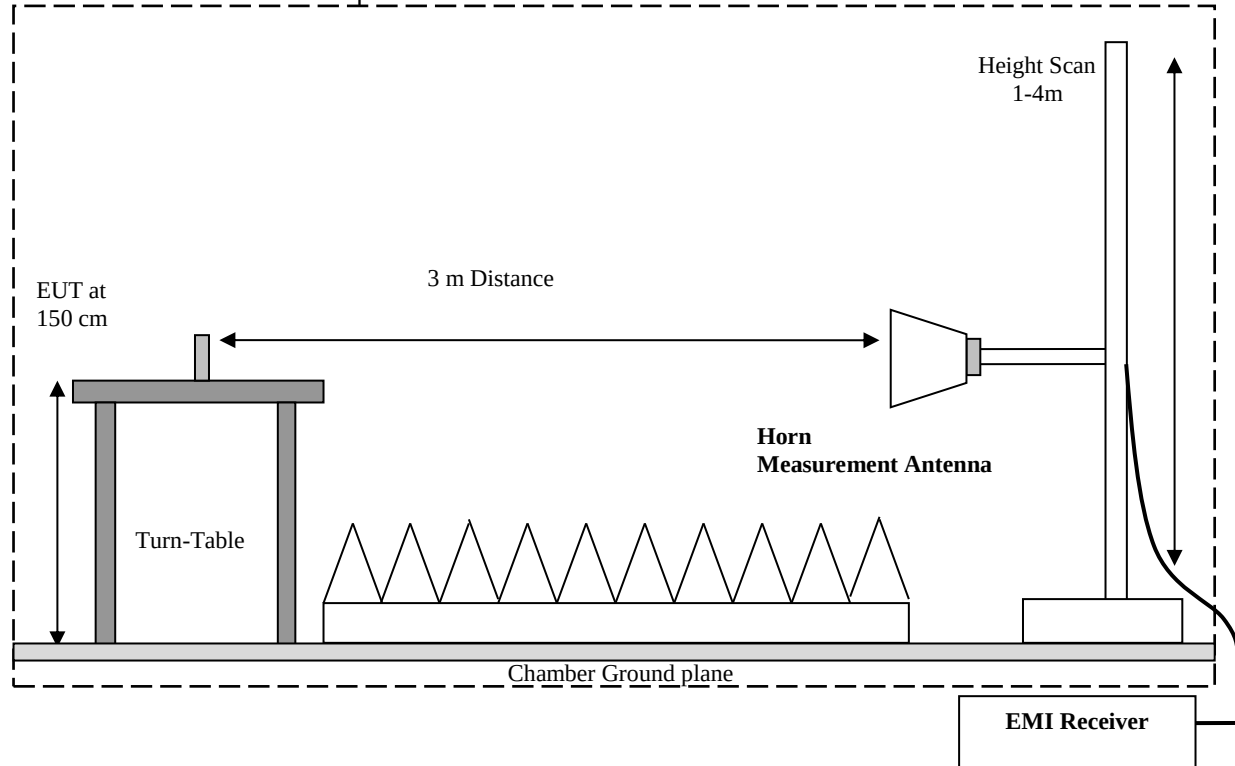
Where:

- Measured Value on SA in dB μ V
- Cable Loss between the receiving antenna and SA in dB
- Antenna Factor in dB/m

Radiated Emissions Test Setup 30 MHz to 1 GHz



Radiated Emissions Test Setup 1 GHz to 18 GHz



8 Test Result Data

8.1 Unwanted Emissions

8.1.1 Measurement according to ANSI C63.10 (2013)

Spectrum Analyzer Settings:

- Frequency = 30 MHz – 1 GHz
- Detector = Quasi-Peak
- RBW= 120 KHz

- Frequency 1 - 18 GHz
- Detector = Peak / Average
- RBW = 1 MHz

- The highest (or worst-case) data rate shall be recorded for each measurement.
- For testing frequencies below 30 MHz at distance other than the specified in the standard, the limit conversion is calculated by using the FCC materials for the ANSI 63 committee issued on January, 27 1991.

8.1.2 Limits:

FCC § 95.3379 (a) & RSS-Gen 8.9

(a) The power density of any emissions outside the 76-81 GHz band shall consist solely of spurious emissions and shall not exceed the following:

(1) Radiated emissions below 40 GHz shall not exceed the field strength as shown in the following emissions table.

Frequency of emission (MHz)	Field strength (μV/m)	Measurement Distance (m)	Field strength @ 3m (dBμV/m)
0.009–0.490	2400/F(kHz) / -----	300	-
0.490–1.705	24000/F(kHz) / -----	30	-
1.705–30.0	30 / (29.5)	30	-
30–88	100	3	40 dBμV/m
88–216	150	3	43.5 dBμV/m
216–960	200	3	46 dBμV/m
Above 960	500	3	54 dBμV/m

(2) The power density of radiated emissions outside the 76-81 GHz band above 40.0 GHz shall not exceed the following, based on measurements employing an average detector with a 1 MHz RBW:

(i) For radiated emissions outside the 76-81 GHz band between 40 GHz and 200 GHz from field disturbance sensors and radar systems operating in the 76-81 GHz band: 600 pW/cm² at a distance of 3 meters from the exterior surface of the radiating structure.

(ii) For radiated emissions above 200 GHz from field disturbance sensors and radar systems operating in the 76-81 GHz band: 1000 pW/cm² at a distance of 3 meters from the exterior surface of the radiating structure.

(3) For field disturbance sensors and radar systems operating in the 76-81 GHz band, the spectrum shall be investigated up to 231.0 GHz.

RSS-251 8.2; 9.2

The radar device's unwanted emissions outside the 76-81 GHz frequency band shall comply with the limits in table below.

Emission frequency range	Limit	Applicable detector
Below 40 GHz	RSS-Gen general field strength limits for license-exempt radio apparatus	RSS-Gen requirements
40-162 GHz *	-30 dBm/MHz (e.i.r.p.)	RMS detector
Note: * For radar devices that operate solely in the 76-77 GHz band (i.e. the occupied bandwidth is entirely contained in the 76-77 GHz band), an unwanted emissions limit of 0 dBm/MHz shall apply for the unwanted emission that fall in the 73.5-76 GHz band. Outside of the 73.5-76 GHz band, the unwanted emission limits prescribed in table 1 shall apply.		

FCC §15.205 & RSS-Gen 8.10

- Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

- 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)).

*PEAK LIMIT= 74 dBμV/m

*AVG. LIMIT= 54 dBμV/m

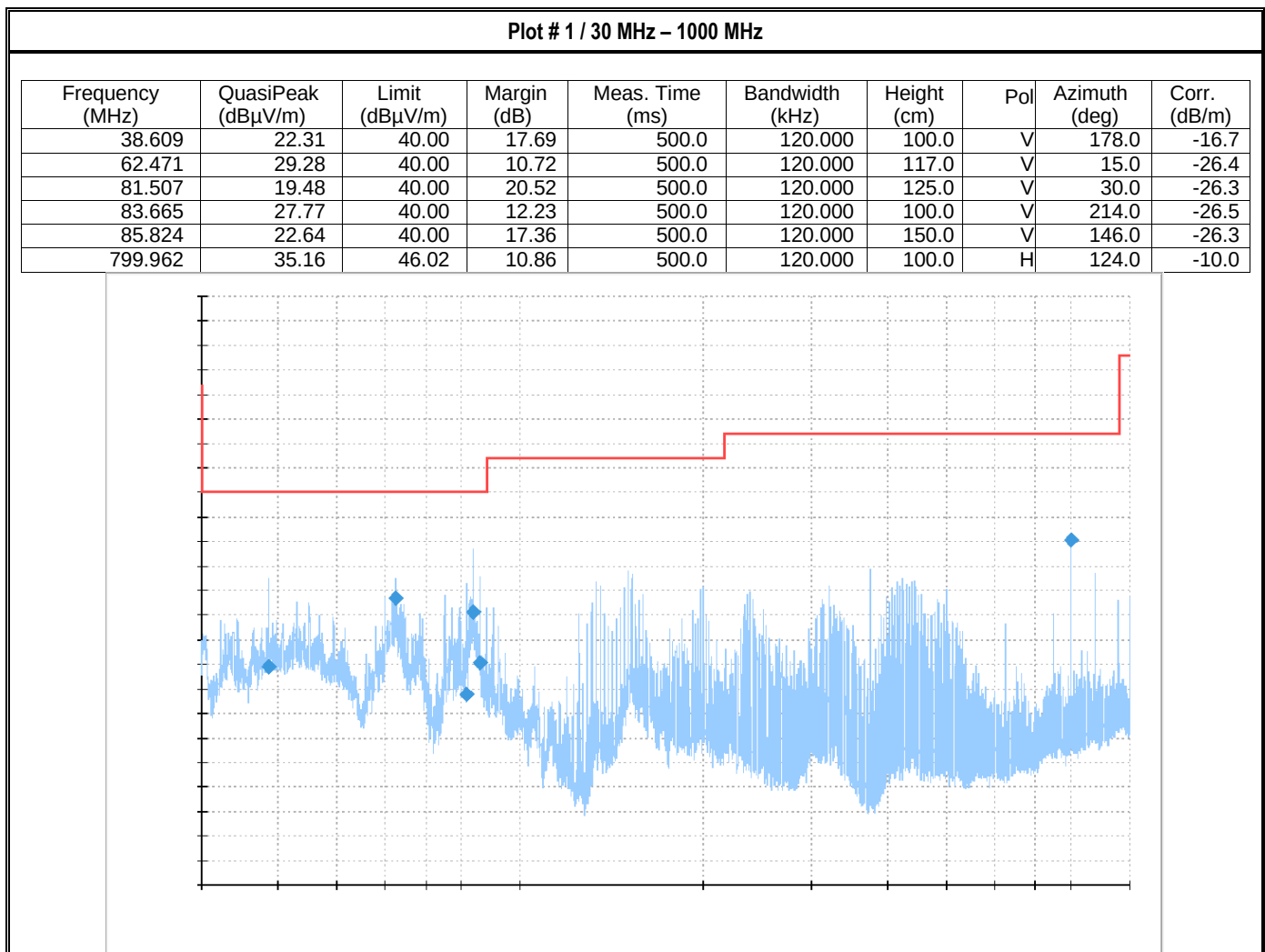
8.1.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input
22° C	1, 2, 3, 4, 5	1	12 VDC

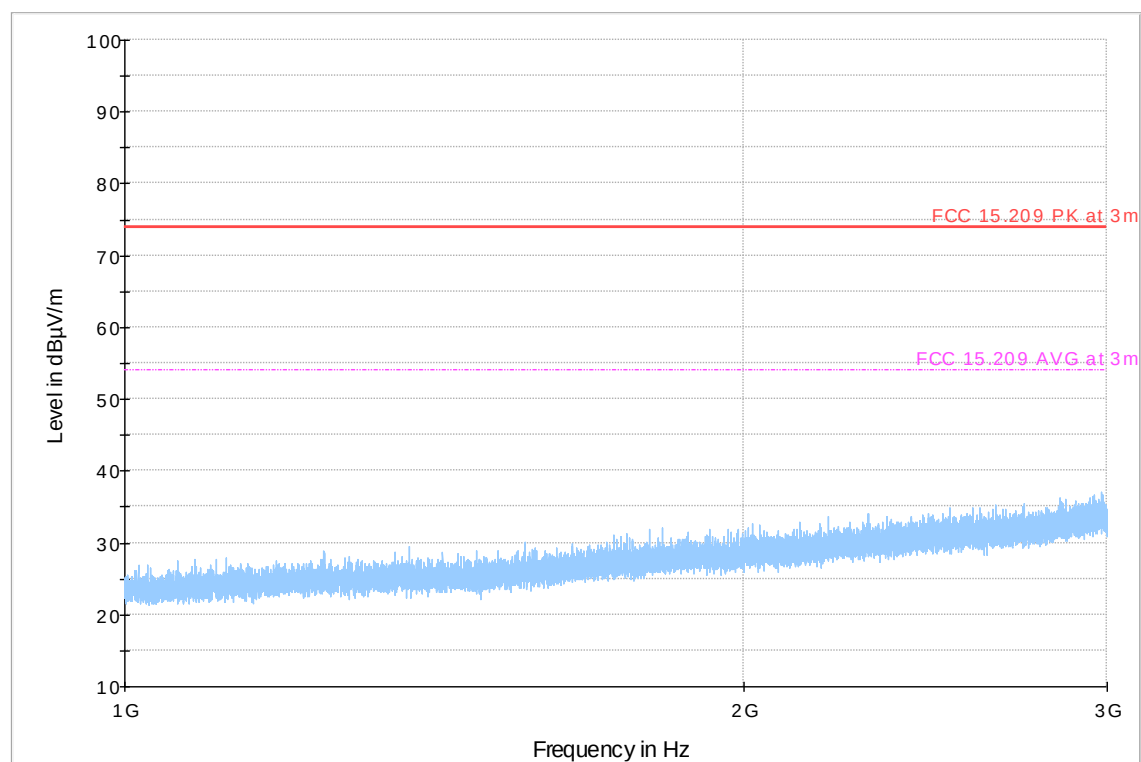
8.1.4 Measurement result:

Plot #	EUT Set-Up #	Scan Frequency	Limit	Result
1 - 3	1	30 MHz – 18 GHz	See section 8.1.2	Pass
4-6	2	30 MHz – 18 GHz	See section 8.1.2	Pass
7-9	3	30 MHz – 18 GHz	See section 8.1.2	Pass
10-12	4	30 MHz – 18 GHz	See section 8.1.2	Pass
13-15	5	30 MHz – 18 GHz	See section 8.1.2	Pass

8.1.5 Measurement Plots:



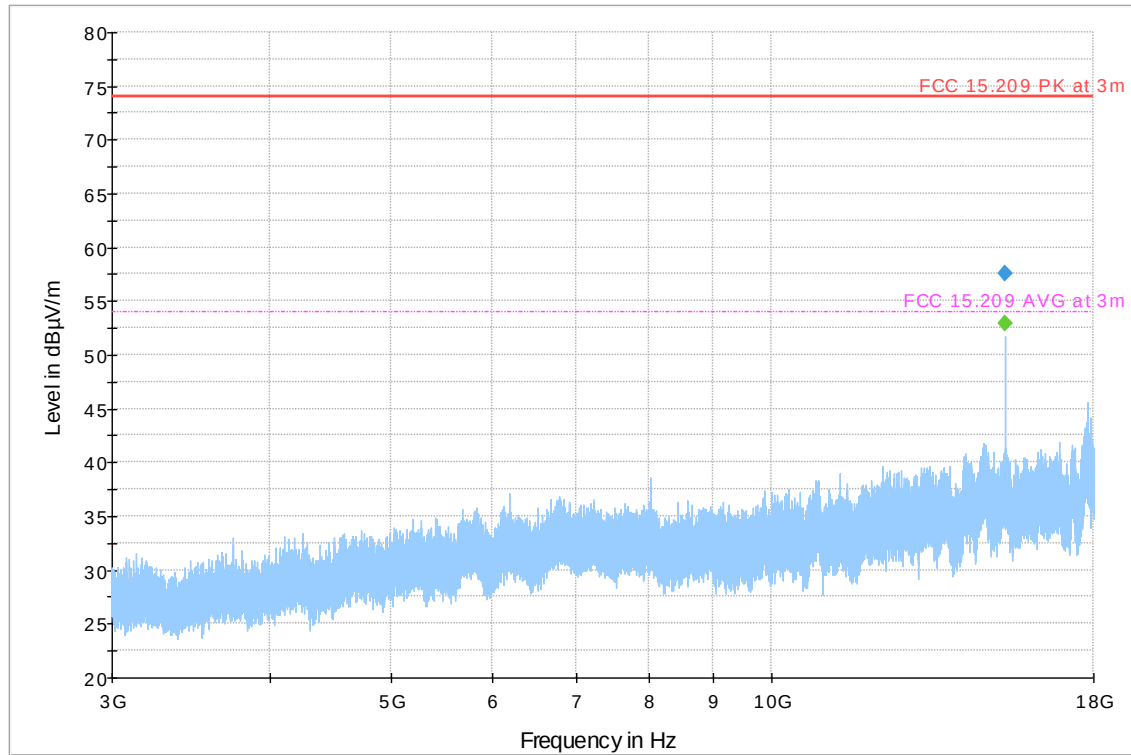
Plot # 2 / 1-3 GHz



Preview Result 1-PK+ FCC 15.209 PK at 3m FCC 15.209 AVG at 3m
◆ Final_Result PK+ ◆ Final_Result CAV

Plot # 3 / 3 - 18 GHz

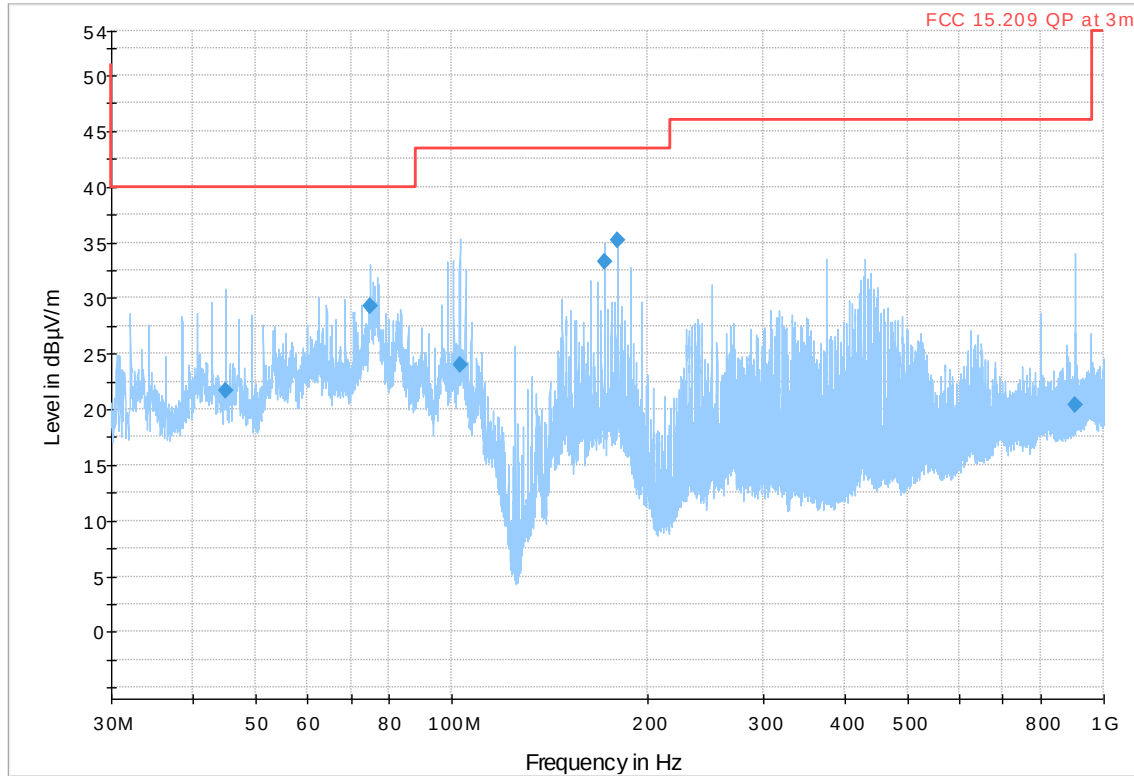
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
15319.350	---	52.93	53.98	1.05	500.0	1000.000	193.0	V	65.0	9.0
15319.350	57.55	---	73.98	16.43	500.0	1000.000	193.0	V	65.0	9.0



Preview Result 1-PK+ Final_Result PK+ FCC 15.209 PK at 3m Final_Result CAV FCC 15.209 AVG at 3m

Plot # 4 / 30 MHz – 1000 MHz

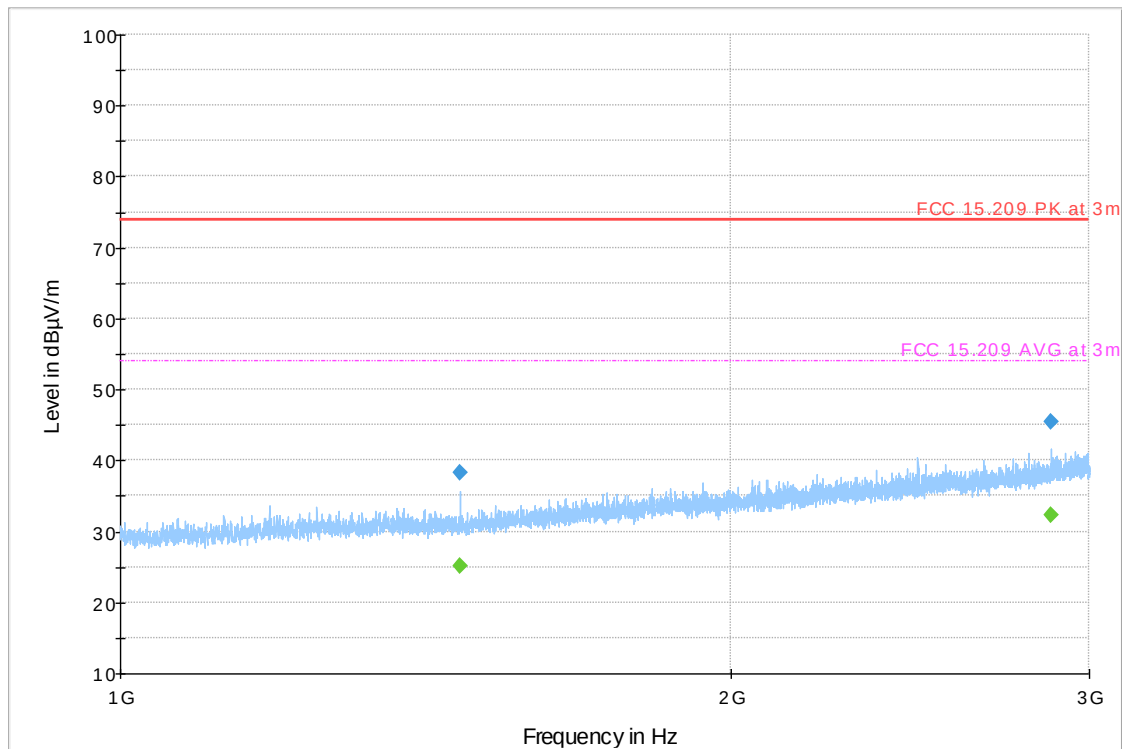
Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
44.890	21.74	40.00	18.26	500.0	120.000	134.0	V	140.0	-23.5
74.863	29.28	40.00	10.72	500.0	120.000	142.0	V	235.0	-23.8
102.702	24.00	43.50	19.50	500.0	120.000	160.0	V	348.0	-22.7
171.305	33.32	43.50	10.18	500.0	120.000	250.0	H	273.0	-21.8
179.453	35.18	43.50	8.32	500.0	120.000	206.0	H	263.0	-20.8
905.595	20.39	46.02	25.64	500.0	120.000	202.0	V	207.0	-4.9



— Preview Result 1-PK+ — FCC 15.209 QP at 3m ◆ Final_Result QPK

Plot # 5 / 1-3 GHz

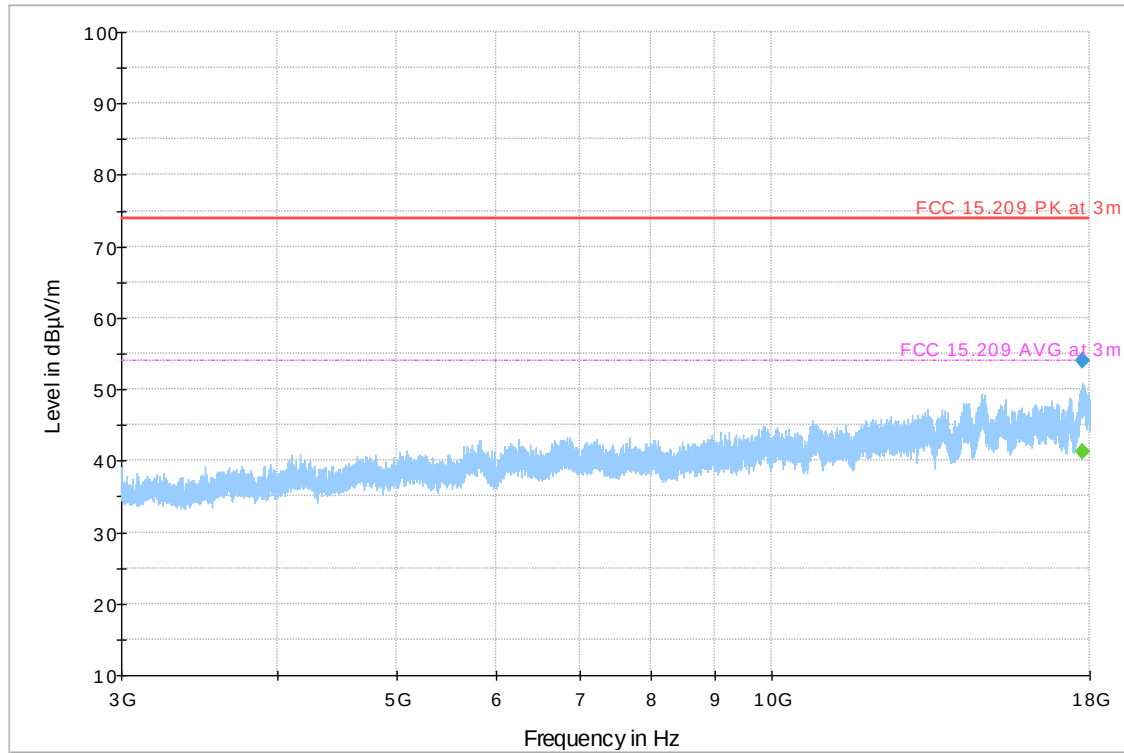
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1470.250	---	25.08	53.98	28.90	500.0	1000.000	185.0	H	92.0
1470.250	38.31	---	73.98	35.67	500.0	1000.000	185.0	H	92.0
2873.750	---	32.39	53.98	21.59	500.0	1000.000	151.0	H	59.0
2873.750	45.40	---	73.98	28.58	500.0	1000.000	151.0	H	59.0



◆ Preview Result 1-PK+ Final_Result PK+ ◆ FCC 15.209 PK at 3m Final_Result CAV ◆ FCC 15.209 AVG at 3m

Plot # 6 / 3 - 18 GHz

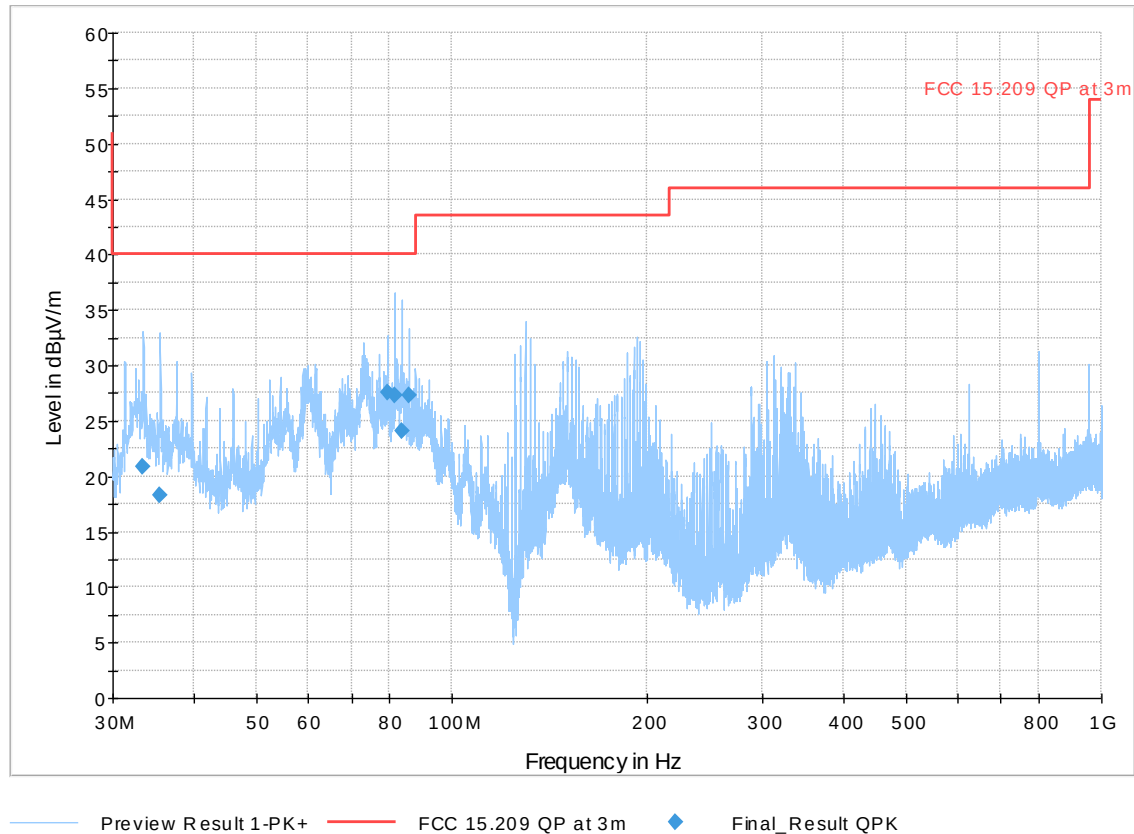
Frequency (MHz)	MaxPeak (dB μ V/m)	CAverage (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
17787.750	---	41.27	53.98	12.71	500.0	1000.000	100.0	V	0.0	17.1
17787.750	54.04	---	73.98	19.94	500.0	1000.000	100.0	V	0.0	17.1



◆ Preview Result 1-PK+ Final_Result PK+ ◆ FCC 15.209 PK at 3m Final_Result CAV ◆ FCC 15.209 AVG at 3m

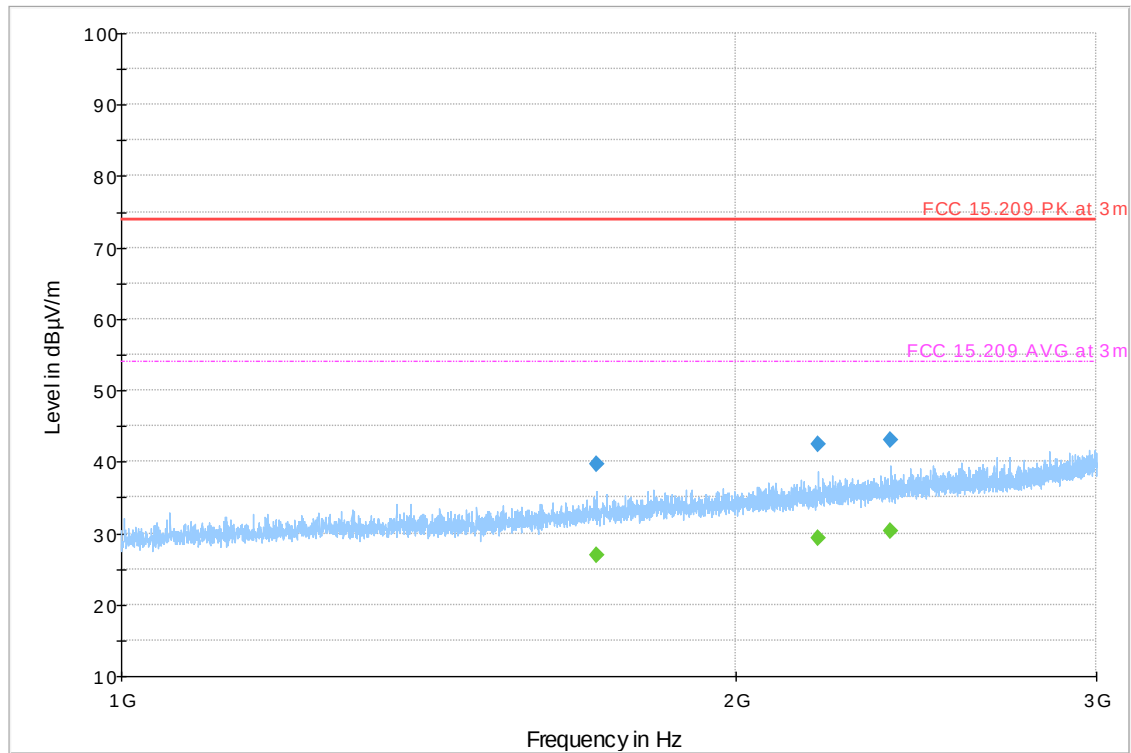
Plot # 7 / 30 MHz – 1000 MHz

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
33.419	20.88	40.00	19.12	500.0	120.000	100.0	V	92.0	-16.8
35.505	18.28	40.00	21.72	500.0	120.000	117.0	V	121.0	-18.1
79.373	27.51	40.00	12.49	500.0	120.000	100.0	V	325.0	-23.8
81.531	27.26	40.00	12.74	500.0	120.000	100.0	V	89.0	-24.0
83.568	24.02	40.00	15.98	500.0	120.000	159.0	V	4.0	-24.0
85.678	27.31	40.00	12.69	500.0	120.000	117.0	V	-29.0	-23.9



Plot # 8 / 1-3 GHz

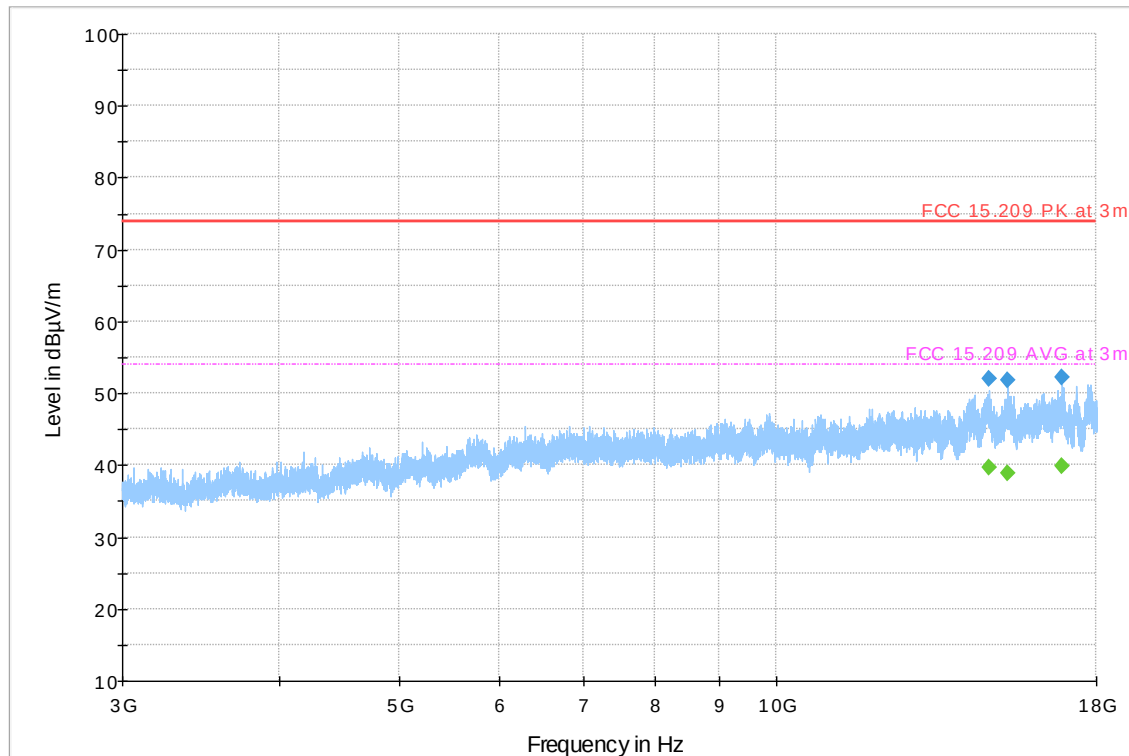
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1708.500	---	27.02	53.98	26.96	500.0	1000.000	251.0	H	283.0	30.2
1708.500	39.58	---	73.98	34.40	500.0	1000.000	251.0	H	283.0	30.2
2193.750	---	29.32	53.98	24.66	500.0	1000.000	275.0	H	261.0	32.0
2193.750	42.38	---	73.98	31.60	500.0	1000.000	275.0	H	261.0	32.0
2380.500	---	30.29	53.98	23.69	500.0	1000.000	275.0	H	316.0	32.5
2380.500	43.02	---	73.98	30.96	500.0	1000.000	275.0	H	316.0	32.5



Preview Result 1-PK+ Final_Result PK+ FCC 15.209 PK at 3m Final_Result CAV FCC 15.209 AVG at 3m

Plot # 9 / 3 - 18 GHz

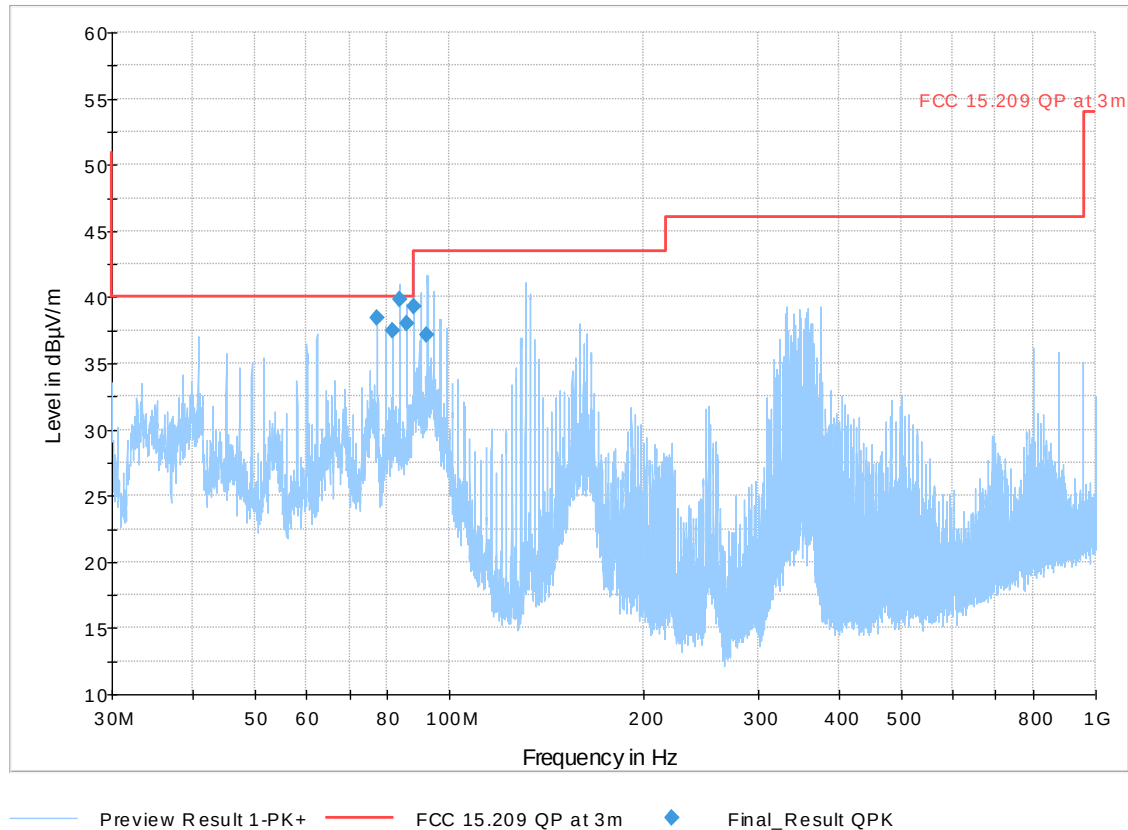
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
14762.750	---	39.65	53.98	14.33	500.0	1000.000	251.0	H	-42.0	9.1
14762.750	52.07	---	73.98	21.91	500.0	1000.000	251.0	H	-42.0	9.1
15305.750	---	38.81	53.98	15.17	500.0	1000.000	288.0	H	143.0	10.3
15305.750	51.91	---	73.98	22.07	500.0	1000.000	288.0	H	143.0	10.3
16907.500	---	39.85	53.98	14.13	500.0	1000.000	300.0	H	300.0	14.1
16907.500	52.19	---	73.98	21.79	500.0	1000.000	300.0	H	300.0	14.1



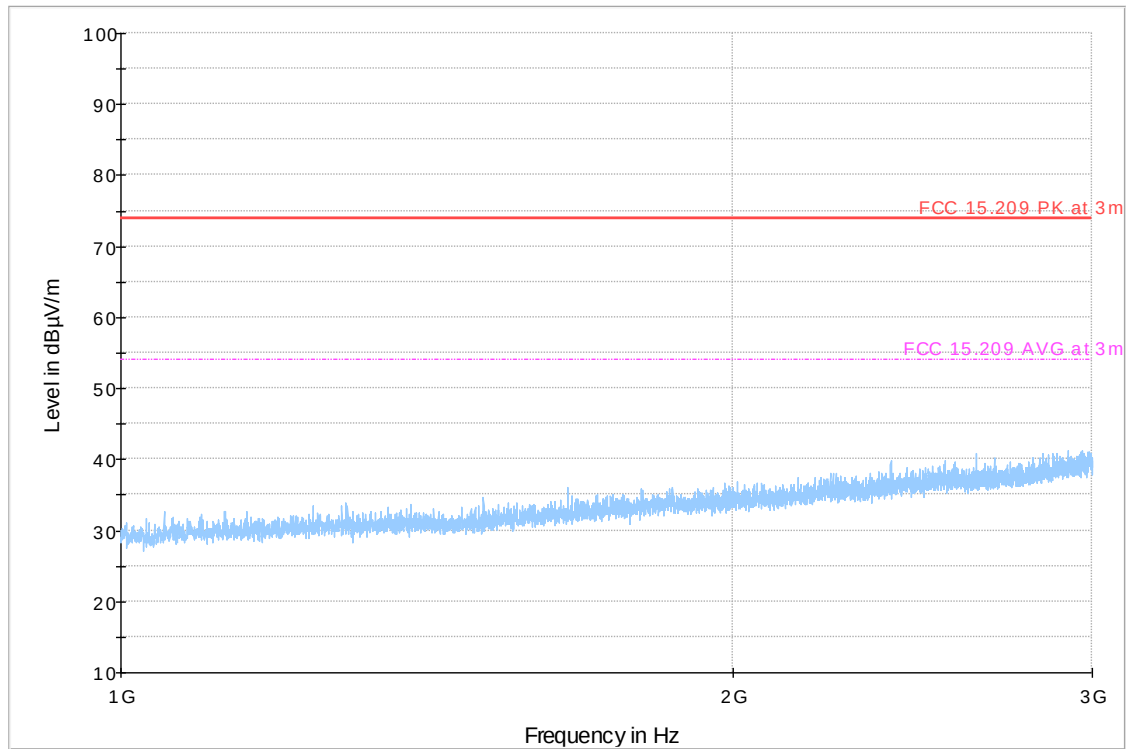
Preview Result 1-PK+ Final_Result PK+ FCC 15.209 PK at 3m Final_Result CAV FCC 15.209 AVG at 3m

Plot # 10 / 30 MHz – 1000 MHz

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
77.288	38.46	40.00	1.54	500.0	120.000	151.0	V	328.0	-20.5
81.580	37.51	40.00	2.49	500.0	120.000	159.0	V	137.0	-19.5
83.690	39.87	40.00	0.13	500.0	120.000	150.0	V	333.0	-18.9
85.848	37.99	40.00	2.01	500.0	120.000	151.0	V	220.0	-18.5
87.982	39.33	40.00	0.67	500.0	120.000	107.0	V	334.0	-18.1
92.298	37.15	43.50	6.35	500.0	120.000	167.0	V	217.0	-17.2



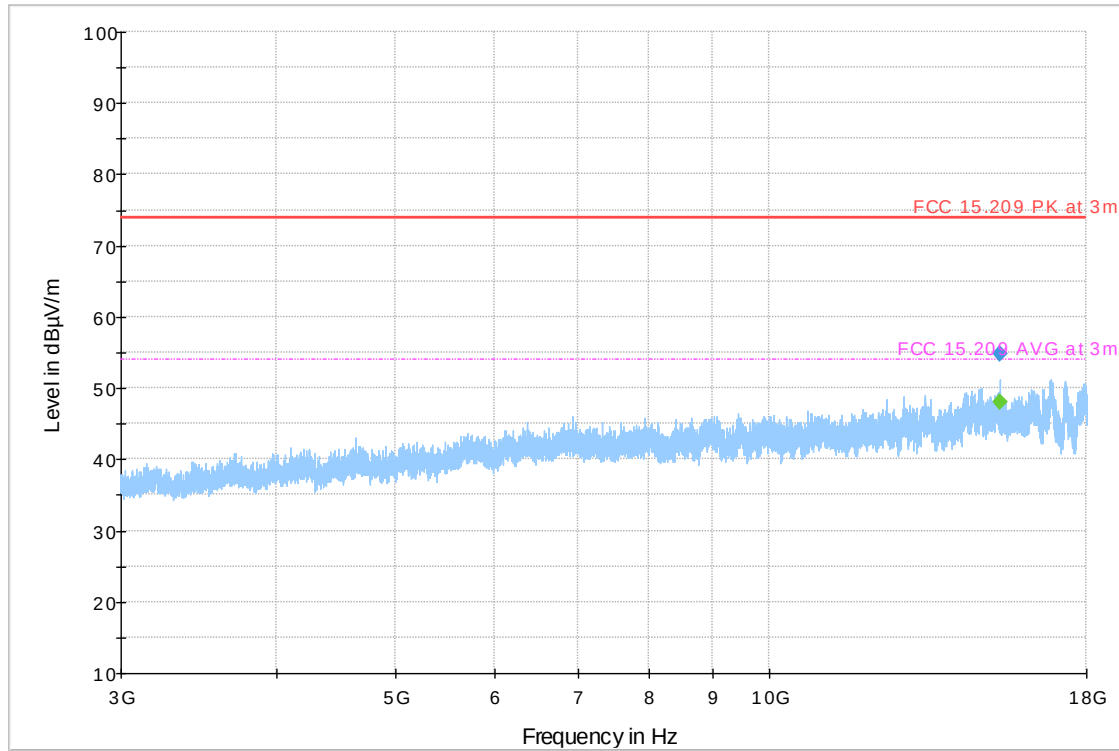
Plot # 11 / 1-3 GHz



◆ Preview Result 1-PK+ — FCC 15.209 PK at 3m - - - FCC 15.209 AVG at 3m
◆ Final_Result PK+ ◆ Final_Result CAV

Plot # 12 / 3 - 18 GHz

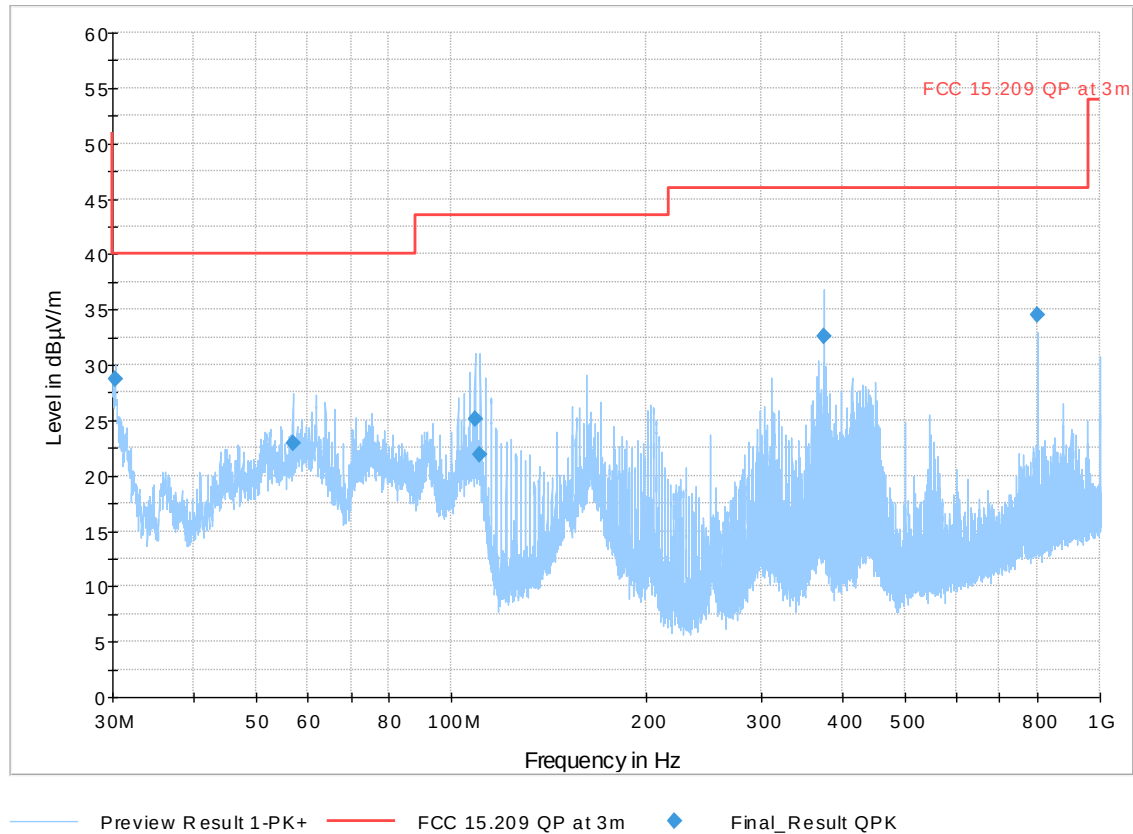
Frequency (MHz)	MaxPeak (dB μ V/m)	CAverage (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
15316.750	---	47.96	53.98	6.02	500.0	1000.000	141.0	H	150.0	10.3
15316.750	54.72	---	73.98	19.26	500.0	1000.000	141.0	H	150.0	10.3



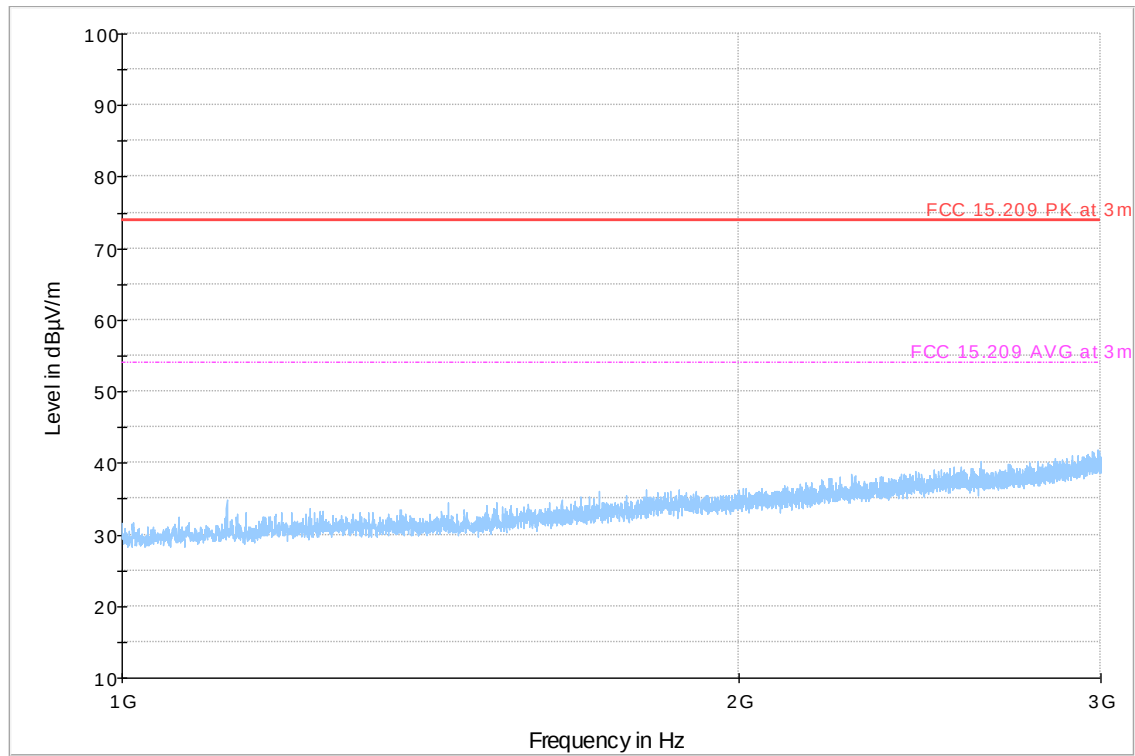
Preview Result 1-PK+ Final_Result PK+ FCC 15.209 PK at 3m Final_Result CAV FCC 15.209 AVG at 3m

Plot # 13 / 30 MHz – 1000 MHz

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.291	28.74	40.00	11.26	500.0	120.000	134.0	V	295.0	-17.5
56.893	22.92	40.00	17.08	500.0	120.000	116.0	V	303.0	-28.2
108.570	25.16	43.50	18.34	500.0	120.000	100.0	V	74.0	-19.9
110.680	21.88	43.50	21.62	500.0	120.000	100.0	V	351.0	-19.5
374.956	32.52	46.02	13.50	500.0	120.000	100.0	H	7.0	-18.2
799.841	34.48	46.02	11.54	500.0	120.000	107.0	H	203.0	-10.6



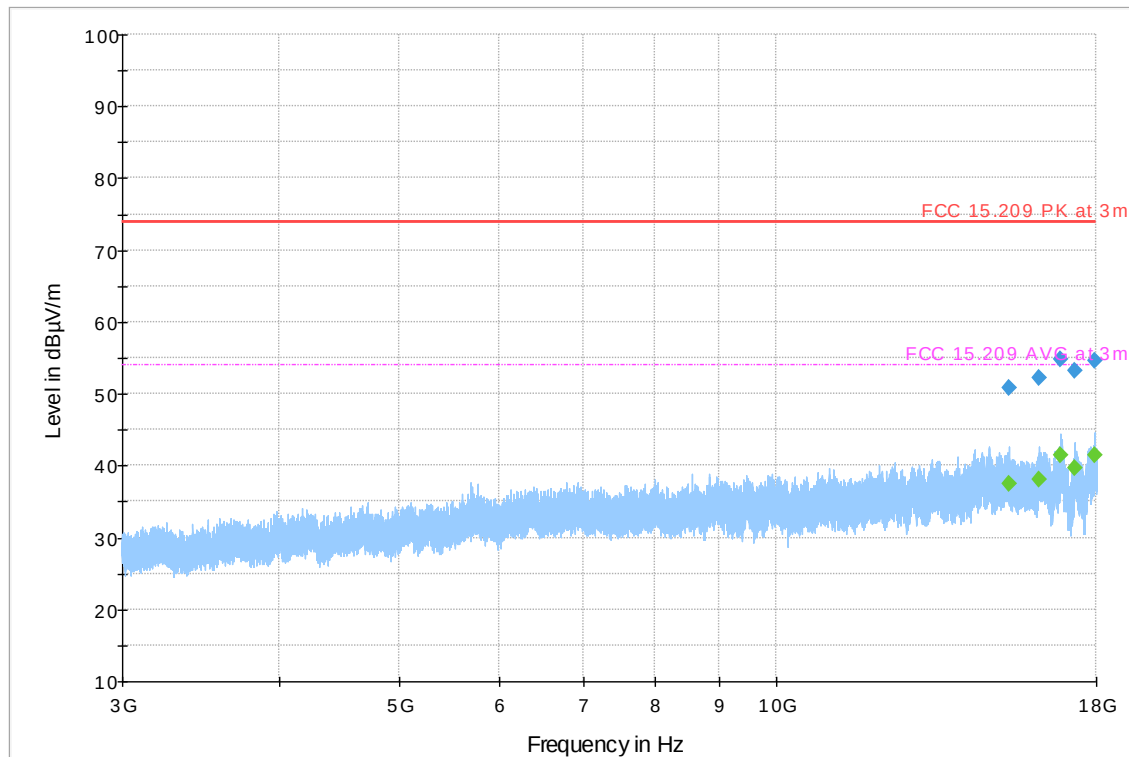
Plot # 14 / 1-3 GHz



— Preview Result 1-PK+ — FCC 15.209 PK at 3m — FCC 15.209 AVG at 3m
◆ Final_Result PK+ ◆ Final_Result CAV

Plot # 15 / 3 - 18 GHz

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
15341.500	50.90	---	73.98	23.08	500.0	1000.000	234.0	V	247.0	10.3
15341.500	---	37.53	53.98	16.45	500.0	1000.000	234.0	V	247.0	10.3
16207.500	---	38.13	53.98	15.85	500.0	1000.000	208.0	H	40.0	13.1
16207.500	52.15	---	73.98	21.83	500.0	1000.000	208.0	H	40.0	13.1
16870.750	---	41.43	53.98	12.54	500.0	1000.000	118.0	V	10.0	14.3
16870.750	54.85	---	73.98	19.13	500.0	1000.000	118.0	V	10.0	14.3
17309.400	---	39.69	53.98	14.29	500.0	1000.000	334.0	V	-19.0	15.6
17309.400	53.18	---	73.98	20.80	500.0	1000.000	334.0	V	-19.0	15.6
17947.600	54.69	---	73.98	19.29	500.0	1000.000	232.0	H	-90.0	17.5
17947.600	---	41.43	53.98	12.55	500.0	1000.000	232.0	H	-90.0	17.5



◆ Preview Result 1-PK+ ◆ FCC 15.209 PK at 3m ◆ FCC 15.209 AVG at 3m
◆ Final_Result PK+ ◆ Final_Result CAV

9 Test setup photos

Setup photos are included in supporting file name: "EMC_UHNDE_004_20001_C2PC_Setup_Photos.pdf"

10 Test Equipment And Ancillaries Used For Testing

Equipment Name/Type	Manufacturer	Model	Serial #	Calibration Cycle	Last Calibration Date
EMI Receiver/Analyzer	Rohde&Schwarz	ESW44	101715	3 years	01/07/2020
Biconlog Antenna	A.H. Systems; JFW	BiLA2G; 50FHAO-006-100	569; 343	3 years	12/01/2020
Horn Antenna	EMCO	3115	35111	3 years	04/17/2019
Horn Antenna	ETS Lindgren	3117-PA	215984	3 years	01/26/2018
Compact Digital Barometer	Control Company	D4540001	130070752	3 Years	04/13/2020

Note: Equipment used meets the measurement uncertainty requirements as required per applicable standards for 95% confidence levels.

Calibration due dates, unless defined specifically, falls on the last day of the month. Items indicated "N/A" for cal status either do not specifically require calibration or is internally characterized before use.

11 History

Date	Template Revision	Changes to report	Prepared by
2021-02-03	EMC_UHNDE_004_20001_C2PC	Initial Version	Kris Lazarov
2021-02-25	EMC_UHNDE_004_20001_C2PC_Rev 1	Expanded the assessment statement in section 1; Fixed typos in the Customer name and IC ID throughout the report.	Kris Lazarov

<<< The End >>>