RADIO Testing of the
DICKEY John, Corp.
RVS III Radar Sensor
Model: RVS III – DJRVSIII – B7JDJCRVSIII

In accordance with:
FCC Part 15.245

Product Service

Choose certainty.
Add value.

Prepared for:
DICKEY John, Corp.
5200 DICKEY John Road
Auburn, IL 62615

COMMERCIAL-IN-CONFIDENCE

Issue Date: December 2024
Document Number: 721006271 | Issue: 01

RESPONSIBLE FOR	NAME	TITLE	DATE	SIGNATURE
Prepared By				
Authorized Signatory				

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

EXECUTIVE SUMMARY
A sample of this product was tested and found to be in compliance with FCC Part 15.245

A2LA Cert. No. 2955.13

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

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Product Service

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Product Service

1 Report Summary

1.1 Report Modification Record

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

Issue	Description of Change	Date of Issue
1	Initial Release	December 19, 2024

1.2 Introduction

The information contained in this report is intended to show verification of the DICKEY John Corp. RVS III – DJRVSIII – B7JDJCRVSIII to the requirements of FCC Part 15.245. The RVS III – DJRVSIII – B7JDJCRVSIII has a Single Beam 24.125 GHz that has been certified under FCC ID B7JDJCRVSIII. This is a re-issue of the original test report with updated model number for North America Market.

Manufacturer	DICKEY John, Corp. 5200 DICKEY John Road Auburn, IL 62615
Applicant Contact Information	Dr. Barry C. Mears Senior Staff Engineer bmears@dickey-john.com (217) 438-2253
FCC ID	B7JDJCRVSIII
Model Number(s)	RVS III – DJRVSIII – B7JDJCRVSIII
Serial Number(s)	N/A
Mode Verified	24.125 GHz
Capability	24.125 GHz
Number of Samples Tested	1
Test Specification/Issue/Date	• FCC Part 15.245 (October 2024)
Date of Receipt of EUT	September 04, 2015
Start of Test	September 04, 2015
Finish of Test	September 25, 2015
Name of Engineer(s)	Nikolay Shtin
Related Document(s)	None

Product Service

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC Part 15 Subpart C §15.245 with cross-reference to the corresponding ISED RSS standard are shown below.

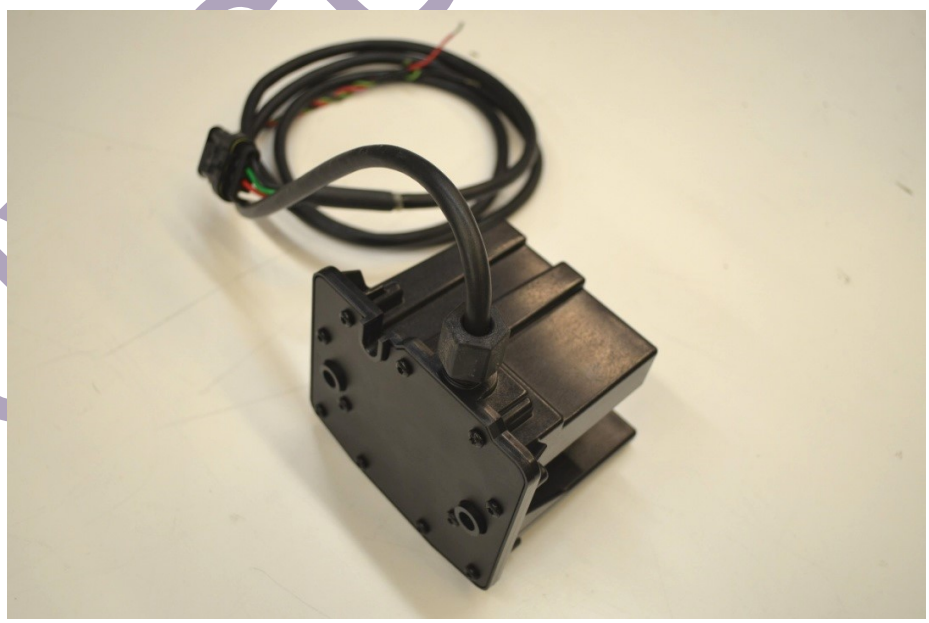
Section	Part 15	RSS	Test Description	Result
		RSS-Gen 4.6.1	99% Emission Bandwidth	*N/A
2.1	§15.245(b)	RSS-210 F.2(a)(b)(c)	Field Strength Limits for Fundamental Emissions & Harmonics	Compliant
2.2	§15.245(b)(3)	RSS-210 F.2(d)	Spurious Radiated Emissions	Compliant

*N/A EUT operates in CW mode.

1.4 Product Information

1.4.1 Technical Description

The Equipment Under Test (EUT) was a DICKEY John, Corp., RVS III Radar Sensor Model No: RVS III – DJRVSIII – B7JDJCRVSIII Radar Sensor. The EUT is a third-generation ground speed sensor. The EUT operates on 24.125 GHz nominal frequency in the 24.075-24.175 GHz band.



Equipment Under Test

1.4.2 EUT Specification

EUT Description	Radar Sensor
Product Name	RVS III Radar Sensor
Model Number (s)	RVS III – DJRVSIII – B7JDJCRVSIII
Rated Voltage	12.0 VDC
Output Power	125.2 dBµV/m @ 3 meters
Frequency Range	24125 MHz in the 24075 MHz to 24175 MHz Band
Number of Operating Frequencies	1
Channels Verified	24125 MHz
Antenna Type (Used during evaluation	Integral (Complies with Part 15.203 requirements)

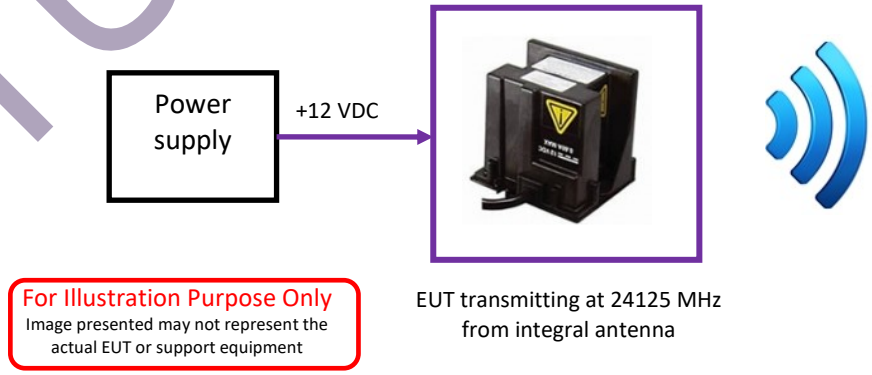
1.4.3 Antenna Details

Manufacturer	Dickey-john Corp.
Antenna Type	Planar array antenna
Antenna Gain	23 dBi
EUT Antenna Connector	N/A .
Maximum Dimensions	3.4” H x 3.325” W x 0.02” T

1.4.4 Test Configuration

Configuration Number	Description
Default	Radiated configuration only. EUT transmitting through the internal antenna

1.4.5 Simplified Test Configuration Diagram



1.4.6 Support Equipment and I/O cables

Manufacturer	Equipment/Cable	Description
N/A	N/A	N/A

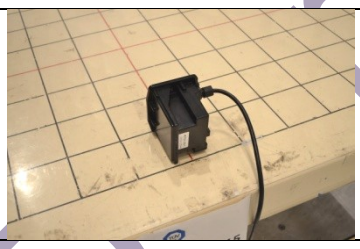
1.5 Deviations from the Standard

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

1.6 Worst Case Configuration

For radiated measurements, X and Y were verified. Identical results obtained between these two orientations. Verification performed using X orientation.

"X" Configuration



"Y" Configuration

1.7 EUT Modification Record

The table below details modifications made to the EUT during the test program. The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
0	As supplied by the manufacturer	-	-

1.8 Test Methods

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

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.

1.9 Test Location

TÜV SÜD America conducted the following tests at our San Diego CA, Test Laboratory's.

Office Address:

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.

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.

1.10 Test Facility Registration

1.10.1 FCC – Designation No.: US1146

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

1.10.2 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.

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

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

1.10.4 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.

1.10.5 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.

1.10.6 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.

1.10.7 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.

2 Test Details

2.1 Field Strength Limits for Fundamental and Harmonics.

2.1.1 Specification Reference

Part 15 Subpart C §15.245(b)

2.1.2 Standard Applicable

(b) The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (millivolts/meter)
902–928 MHz	500	1.6
2400–2483.5 MHz	500	1.6
5725–5875 MHz	500	1.6
10500-10550 MHz	2500	25
24075-24175 MHz	**2500**	**25**

(1) Regardless of the limits shown in the above table, harmonic emissions in the restricted bands below 17.7 GHz, as specified in § 15.205, shall not exceed the field strength limits shown in § 15.209. Harmonic emissions in the restricted bands at and above 17.7 GHz shall not exceed the following field strength limits:
(i) For the second and third harmonics of field disturbance sensors operating in the 24075-24175 MHz band and for other field disturbance sensors designed for use only within a building or to open building doors, 25.0 mV/m.
(ii) For all other field disturbance sensors, 7.5 mV/m.
(iii) Field disturbance sensors designed to be used in motor vehicles or aircraft must include features to prevent continuous operation unless their emissions in the restricted bands, other than the second and third harmonics from devices operating in the 24075-24175 MHz band, fully comply with the limits given in § 15.209. Continuous operation of field disturbance sensors designed to be used in farm equipment, vehicles such as forklifts that are intended primarily for use indoors or for very specialized operations, or railroad locomotives, railroad cars and other equipment which travels on fixed tracks is permitted. A field disturbance sensor will be considered not to be operating in a continuous mode if its operation is limited to specific activities of limited duration (e.g., putting a vehicle into reverse gear, activating a turn signal, etc.).

2.1.3 Equipment Under Test and Modification State

Serial No: N/A / Default Test Configuration

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

September 4 and September 25, 2015/NS

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/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	23.0°C
Relative Humidity	20.5%
ATM Pressure	99.7 kPa

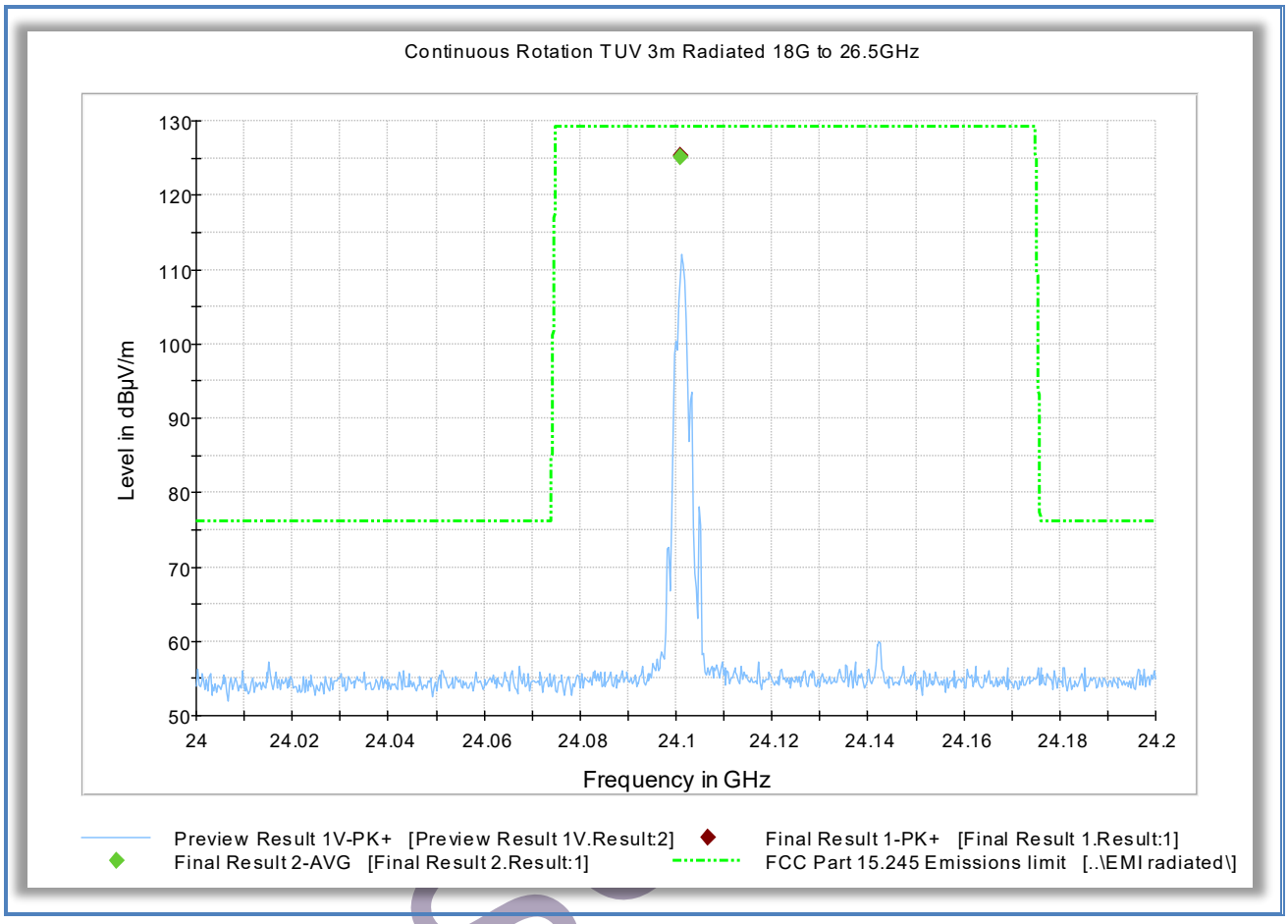
2.1.7 Additional Observations

- This is a radiated test. The spectrum was searched up to 4th harmonic (96.7 GHz), There are no harmonic emissions observed above 50 GHz (only 2nd Harmonic presented).
- Test distance of 3 m was used for the fundamental emissions measurement. The 2nd and 3rd harmonics emissions were evaluated at 0.4 m distance. For the 4th harmonic measurements, test distance was reduced to 0.2 m to assure that the noise floor is at least 10 dB below the applicable limit.
- Corrections factors of 17.5 dB and 23.5 dB were used to extrapolate the field strength measured at 0.4 metres and 0.2 meters to the 3 meters distance as specified in § 15.31.
- Fundamental emission measurement was done using EMC32 V8.53 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 2.1.8 for sample computation.

2.1.8 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (dbµV) **@ 24100.8666 MHz**			106.4
Correction Factor (dB)	Asset# 8849 (cable)	11.6	**18.8**
	Asset# 115T1 (preamplifier)	-33.2	
	Asset# 1151 (antenna)	40.4	
Reported Peak Final Measurement (dbµV/m) @ 24100.8666 MHz			**125.2**

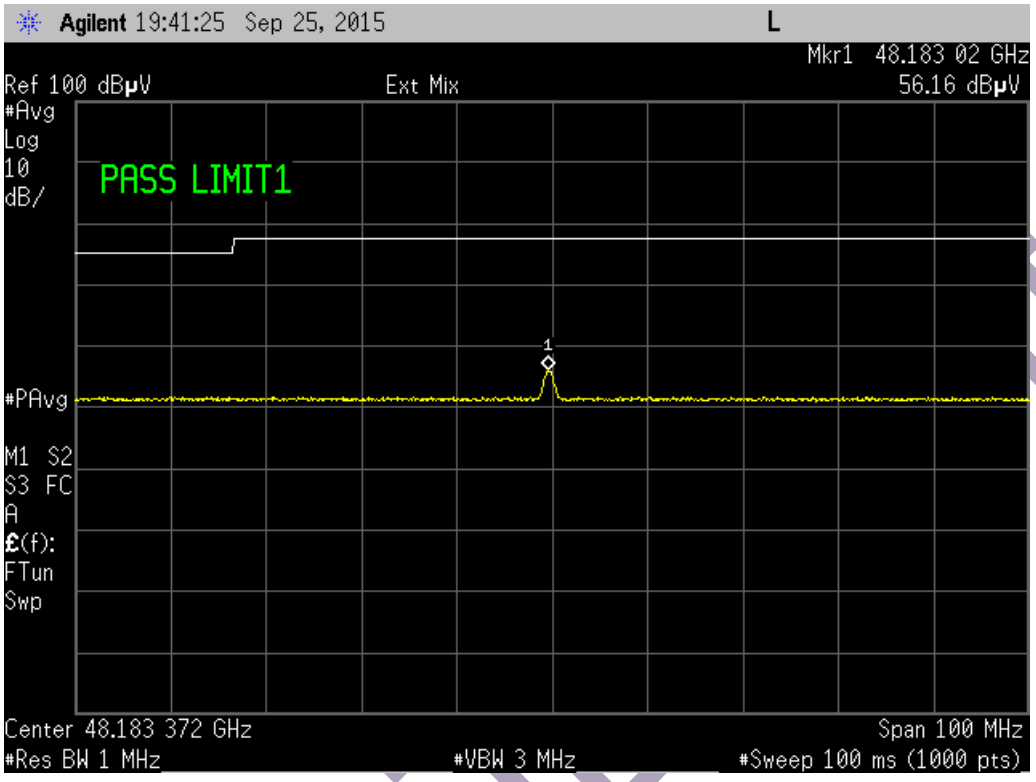
2.1.9 Test Results (Fundamental)



Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
24100.866	125.2	1000.	1000.000	100.0	H	1.0	18.8	4.0	129.2

2.1.10 Test Results (Harmonics)



2nd Harmonic

2.2 Spurious radiated emissions

2.2.1 Specification Reference

Part 15 Subpart C §15.245(3)

2.2.2 Standard Applicable

(3) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

2.2.3 Equipment Under Test and Modification State

Serial No: N/A / Default Test Configuration

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

September 4 and September 25, 2015/NS

2.2.5 Test Equipment Used

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

2.2.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	23.0°C
Relative Humidity	50.5%
ATM Pressure	99.1 kPa

2.2.7 Additional Observations

- This is a radiated test. The spectrum was searched from 30MHz to 100 GHz. There are no significant spurious emissions observed.
- Test distance of 3 m was used for the spurious emissions measurement below 40 GHz. The emissions in the range from 40 GHz to 75 GHz were evaluated at 0.4 m distance. For the measurements above 75 GHz, the test distance was reduced to 0.2 m to assure that the noise floor is at least 10 dB below the applicable limit.
- Corrections factors of 17.5 dB and 23.5 dB were used to extrapolate the field strengths measured at 0.4 metres and 0.2 meters to the 3 meters distance as specified in § 15.31.
- All the emissions below 40 GHz comply with the general radiated emission limits of §15.209.
- Measurement was done using EMC32 V8.53 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 2.5.1 for sample computation.

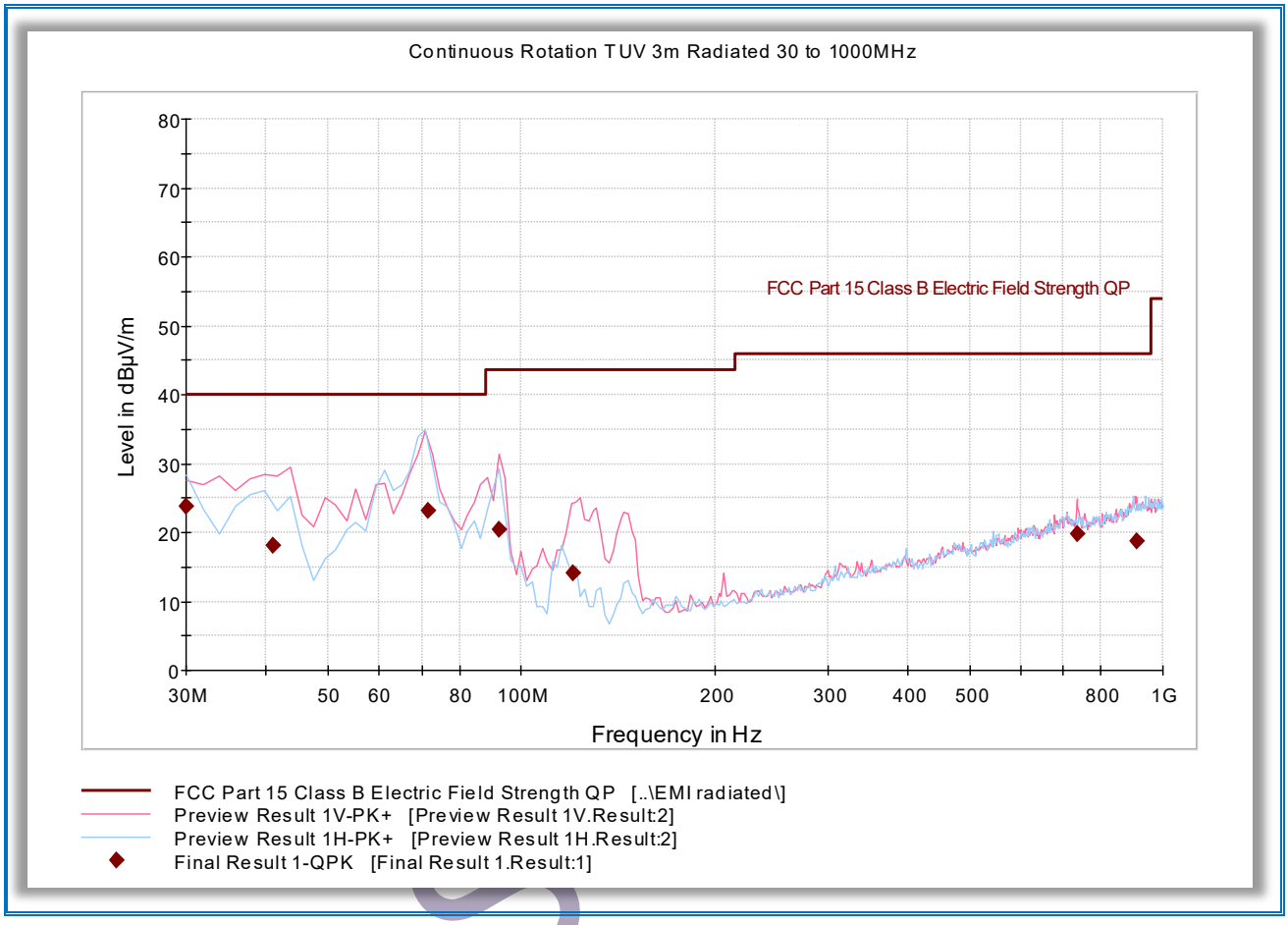
2.2.1 Sample Computation (Radiated Emission)

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

2.2.2 Test Results

See attached plots.

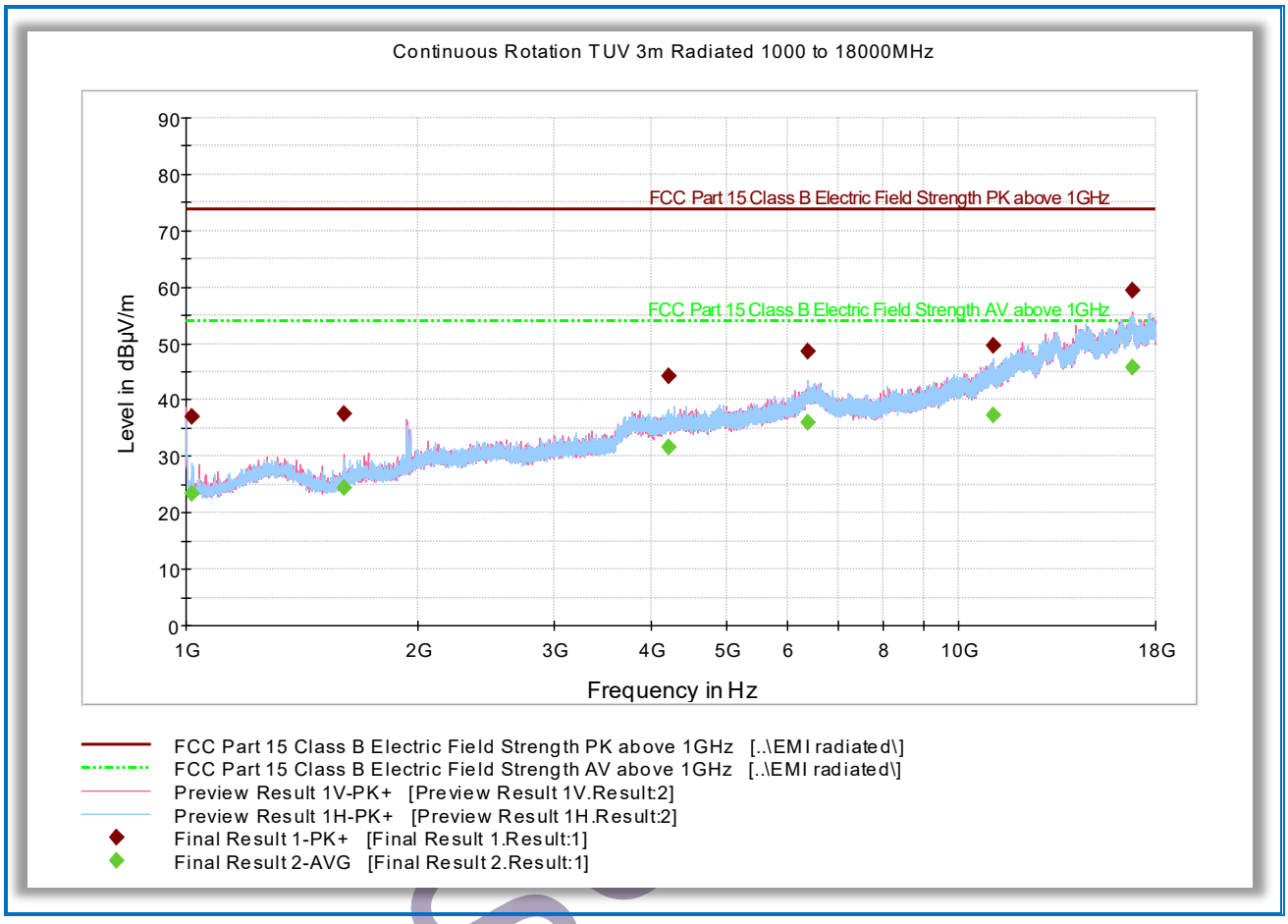
2.2.3 Test Results Below 1GHz



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.040000	23.7	1000.0	120.000	116.0	H	153.0	-11.6	16.3	40.0
41.087214	18.1	1000.0	120.000	105.0	V	-3.0	-17.2	21.9	40.0
71.541643	23.2	1000.0	120.000	300.0	H	11.0	-22.4	16.8	40.0
92.204409	20.3	1000.0	120.000	105.0	V	-11.0	-20.4	23.2	43.5
120.306613	14.0	1000.0	120.000	110.0	V	-9.0	-20.4	29.5	43.5
736.191263	19.8	1000.0	120.000	100.0	V	80.0	-1.7	26.2	46.0
908.453387	18.8	1000.0	120.000	150.0	V	106.0	1.0	27.2	46.0

2.2.4 Test Results from 1 GHz to 18 GHz



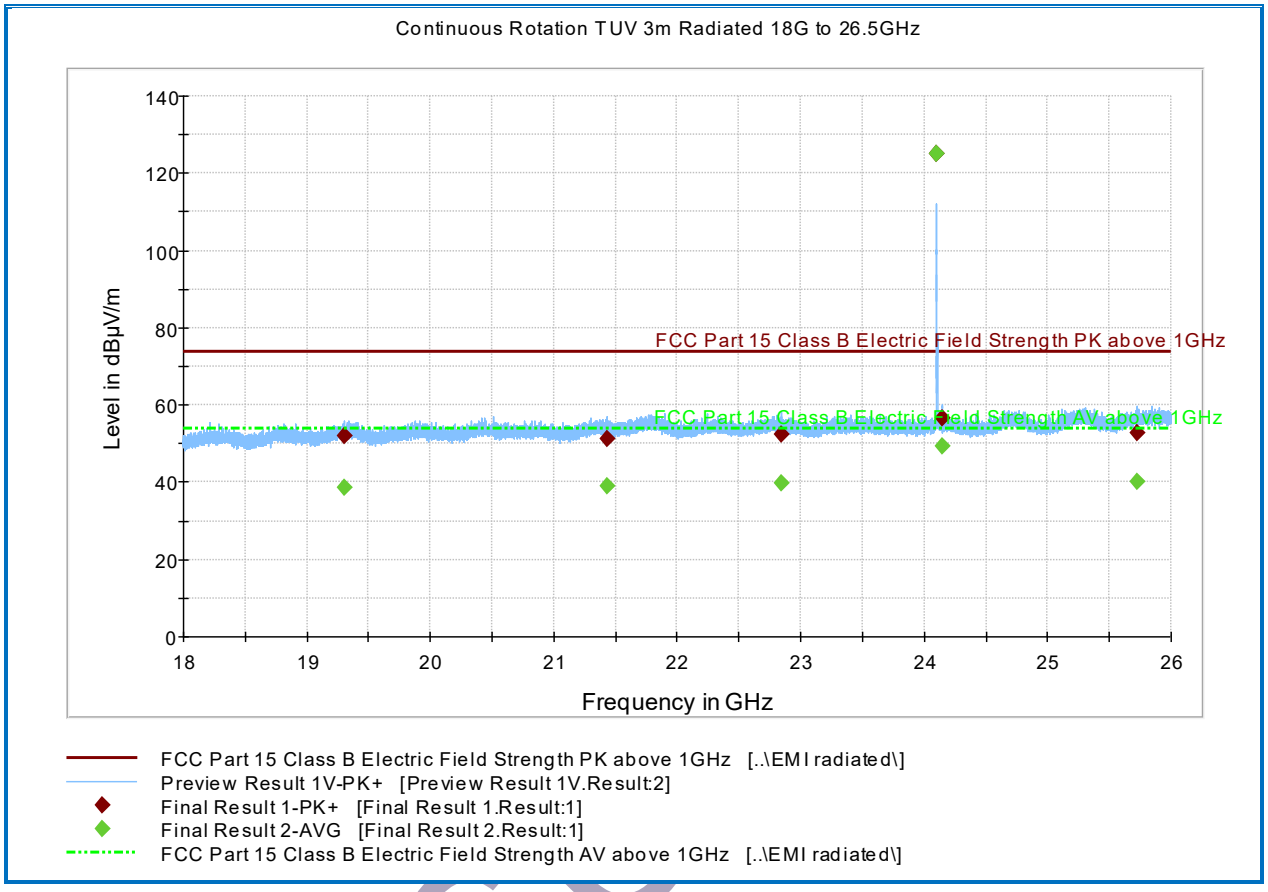
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1017.60000	37.0	1000.0	1000.000	246.3	H	152.0	-7.4	36.9	73.9
1599.50000	37.4	1000.0	1000.000	123.7	V	78.0	-5.6	36.5	73.9
4213.60000	44.3	1000.0	1000.000	198.5	H	238.0	5.4	29.6	73.9
6384.26666	48.6	1000.0	1000.000	407.6	H	20.0	11.4	25.3	73.9
11095.1666	49.6	1000.0	1000.000	103.7	H	57.0	15.0	24.3	73.9
16791.1000	59.3	1000.0	1000.000	101.7	V	275.0	24.7	14.6	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1017.60000	23.4	1000.0	1000.000	246.3	H	152.0	-7.4	30.5	53.9
1599.50000	24.5	1000.0	1000.000	123.7	V	78.0	-5.6	29.4	53.9
4213.60000	31.7	1000.0	1000.000	198.5	H	238.0	5.4	22.2	53.9
6384.26666	36.0	1000.0	1000.000	407.6	H	20.0	11.4	17.9	53.9
11095.1666	37.2	1000.0	1000.000	103.7	H	57.0	15.0	16.7	53.9
16791.1000	45.8	1000.0	1000.000	101.7	V	275.0	24.7	8.1	53.9

2.2.5 Test Results from 18 GHz to 26 GHz



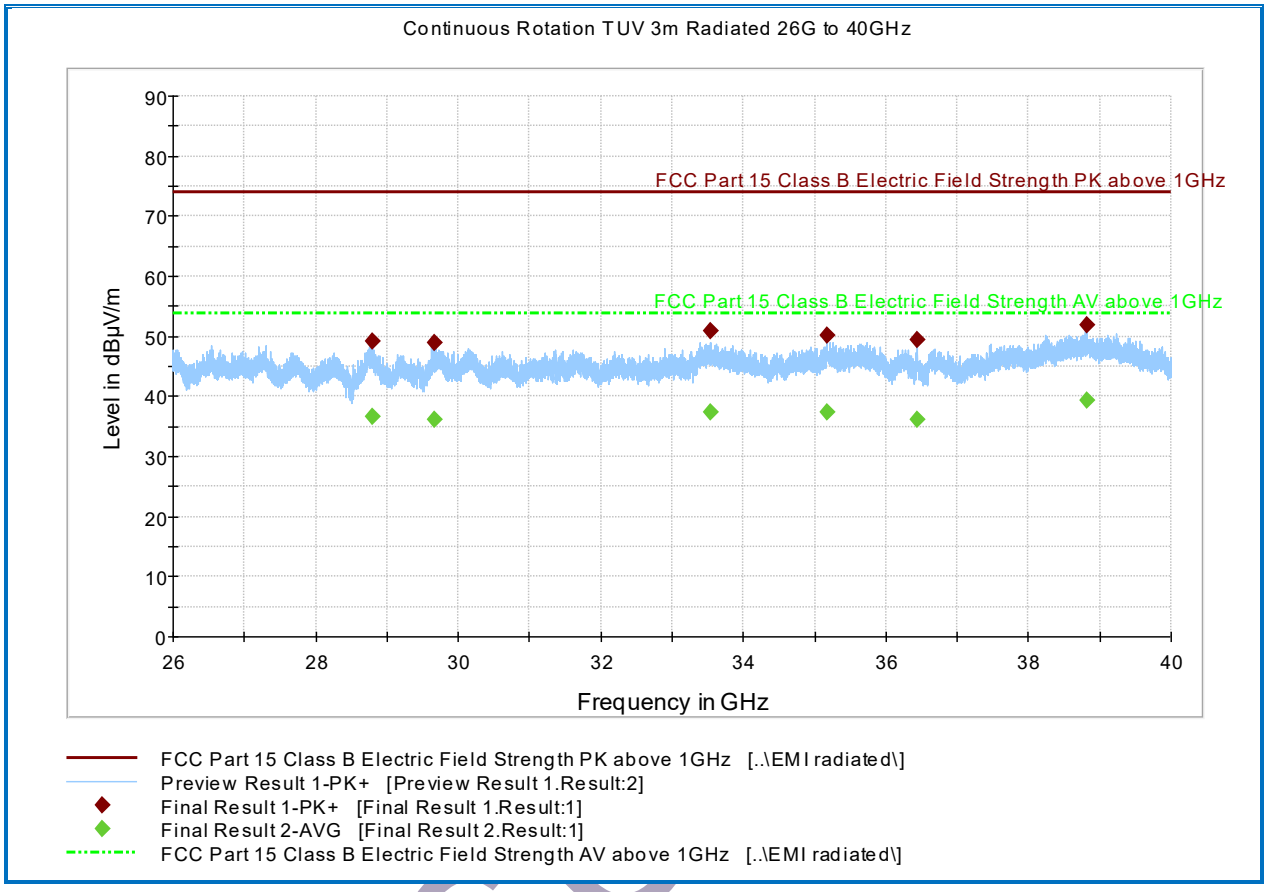
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
19298.6666	52.2	1000.0	1000.000	100.0	H	286.0	16.9	21.7	73.9
21434.8666	51.4	1000.0	1000.000	100.0	H	40.0	18.2	22.5	73.9
22847.3333	52.5	1000.0	1000.000	100.0	H	177.0	18.6	21.4	73.9
24100.8666	125.2	1000.0	1000.000	100.0	H	1.0	18.8	Fundamental	
24141.8000	56.6	1000.0	1000.000	100.0	H	0.0	18.7	17.3	73.9
25724.0666	52.9	1000.0	1000.000	100.0	H	-10.0	19.9	21.0	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
19298.6666	38.6	1000.0	1000.000	100.0	H	286.0	16.9	15.3	53.9
21434.8666	38.9	1000.0	1000.000	100.0	H	40.0	18.2	15.0	53.9
22847.3333	39.7	1000.0	1000.000	100.0	H	177.0	18.6	14.2	53.9
24100.8666	125.2	1000.0	1000.000	100.0	H	1.0	18.8	Fundamental	
24141.8000	49.4	1000.0	1000.000	100.0	H	0.0	18.7	4.5	53.9
25724.0666	40.0	1000.0	1000.000	100.0	H	-10.0	19.9	13.9	53.9

2.2.6 Test Results from 26 GHz to 40 GHz



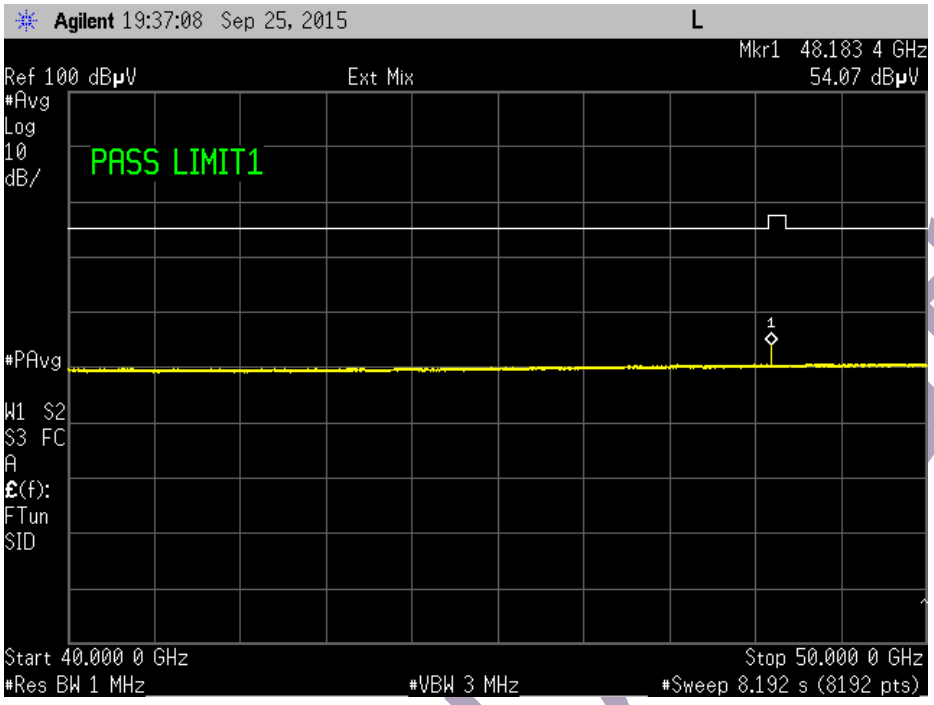
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
28798.8666	49.3	1000.0	1000.000	100.7	H	314.0	7.0	24.6	73.9
29666.5333	49.0	1000.0	1000.000	100.7	H	186.0	8.1	24.9	73.9
33542.5333	50.9	1000.0	1000.000	100.7	H	304.0	9.9	23.0	73.9
35170.0666	50.1	1000.0	1000.000	100.7	H	156.0	10.6	23.8	73.9
36443.8000	49.3	1000.0	1000.000	100.7	H	211.0	10.1	24.6	73.9
38826.0666	51.8	1000.0	1000.000	100.7	H	11.0	13.4	22.1	73.9

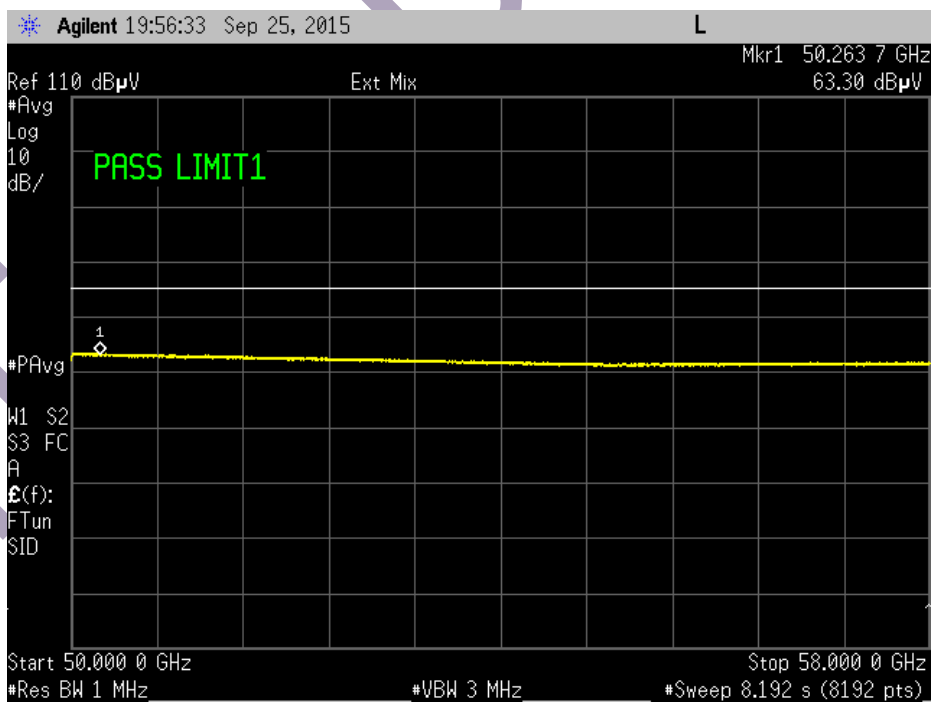
Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
28798.8666	36.6	1000.0	1000.000	100.7	H	314.0	7.0	17.3	53.9
29666.5333	36.2	1000.0	1000.000	100.7	H	186.0	8.1	17.7	53.9
33542.5333	37.3	1000.0	1000.000	100.7	H	304.0	9.9	16.6	53.9
35170.0666	37.4	1000.0	1000.000	100.7	H	156.0	10.6	16.5	53.9
36443.8000	36.3	1000.0	1000.000	100.7	H	211.0	10.1	17.6	53.9
38826.0666	39.2	1000.0	1000.000	100.7	H	11.0	13.4	14.7	53.9

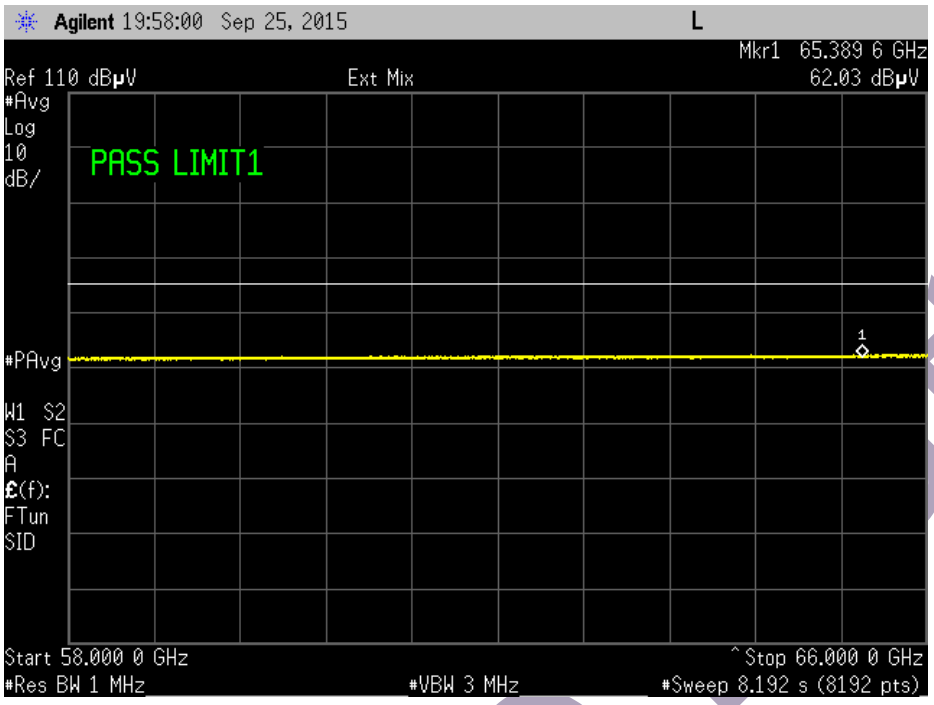
2.2.7 Test Results from 40 GHz to 110 GHz



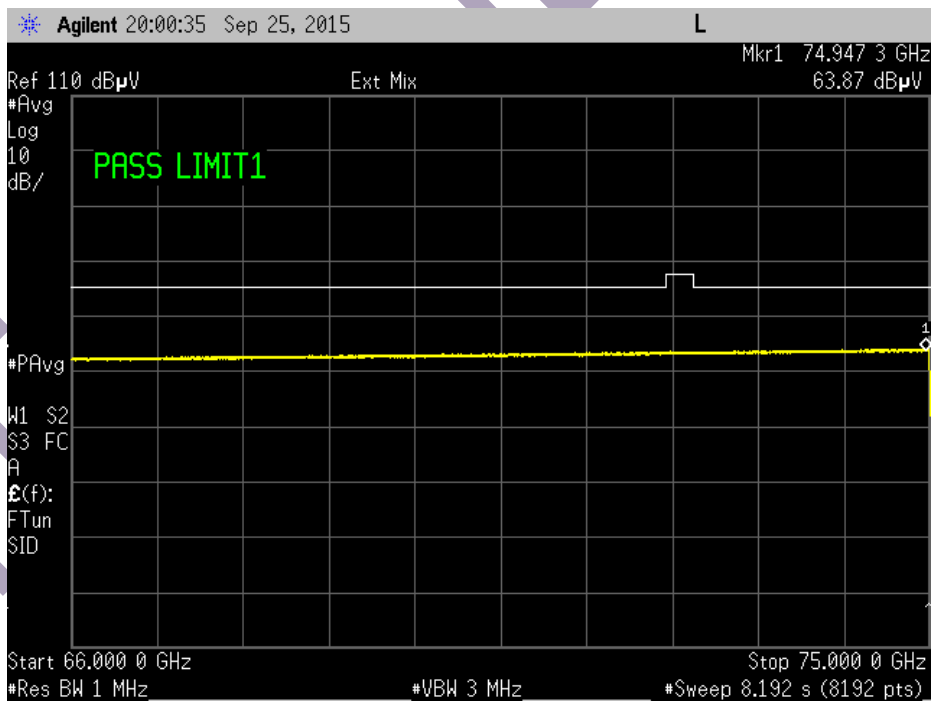
Spurious emissions from 40 GHz to 50 GHz



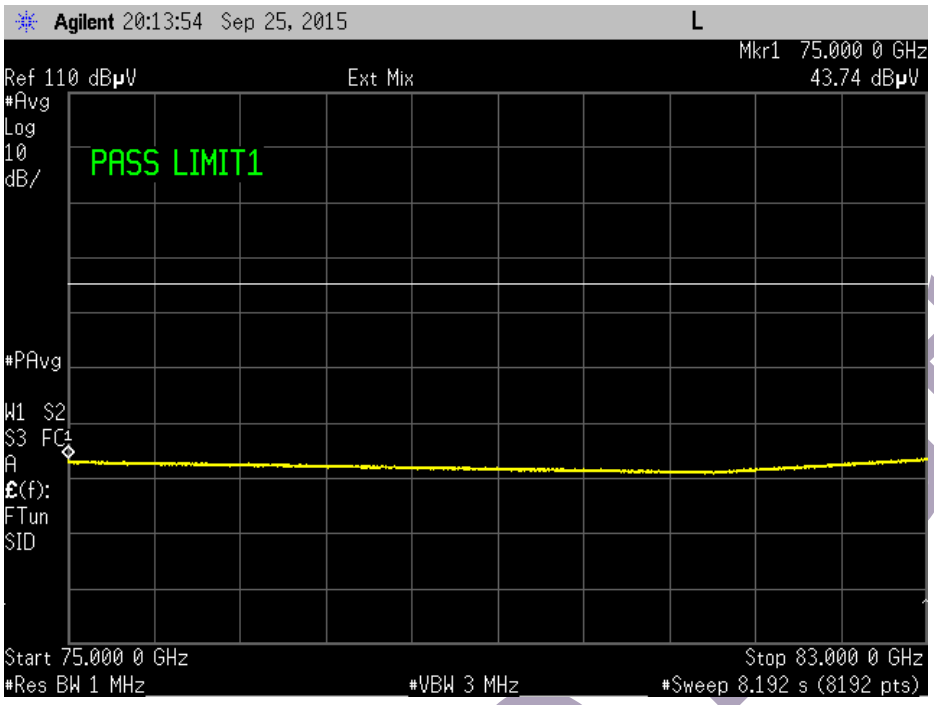
Spurious emissions from 50 GHz to 58 GHz



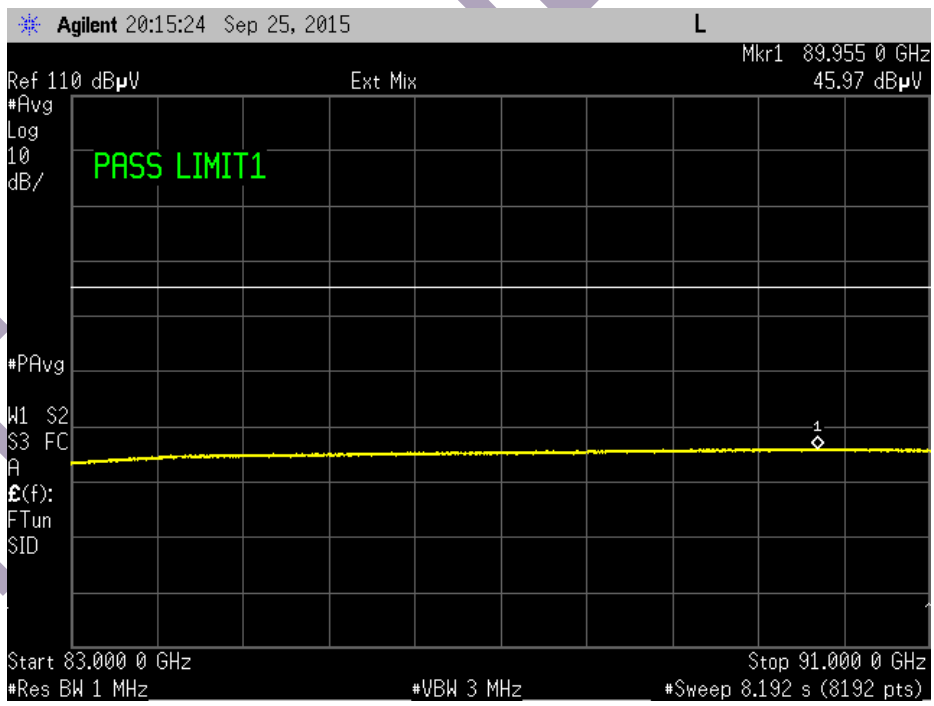
Spurious emissions from 58 GHz to 66 GHz



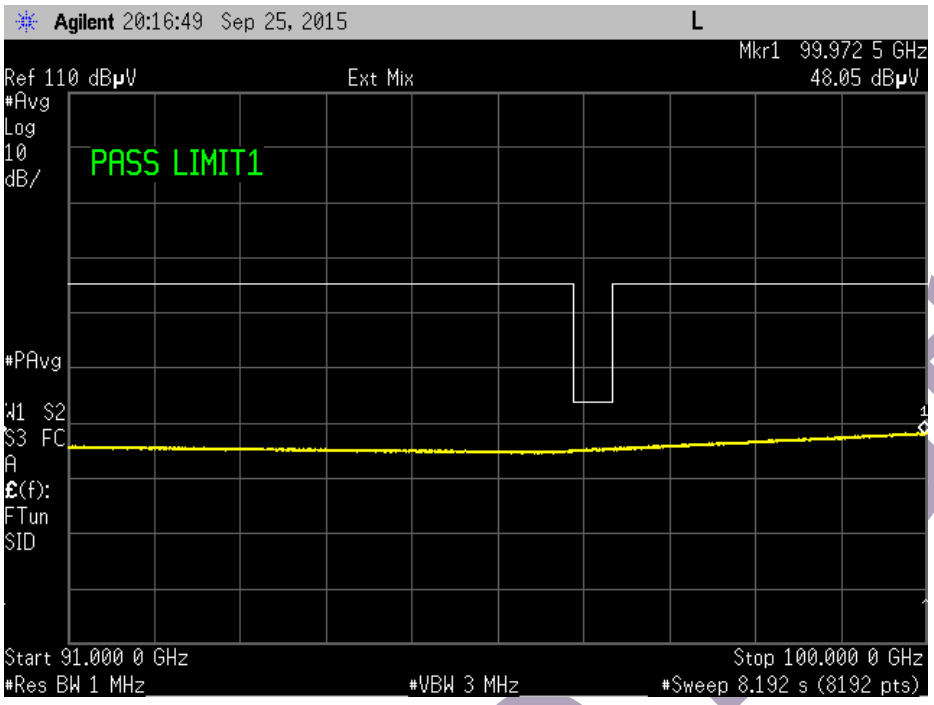
Spurious emissions from 66 GHz to 75 GHz



Spurious emissions from 75 GHz to 83 GHz



Spurious emissions from 83 GHz to 91 GHz



Spurious emissions from 91 GHz to 100 GHz

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 Test Setup						
1003	Signal Generator	SMR-40	1104.0002.40	Rhode & Schwarz	04/29/15	04/29/16
7611	Signal/Spectrum Analyzer	FSW26	102017	Rhode & Schwarz	03/25/15	03/25/16
1002	Bilog Antenna	3142C	00058717	ETS-Lindgren	01/30/14	01/30/16
1016	Pre-amplifier	PAM-0202	187	PAM	12/10/14	12/10/15
1051	Double-ridged waveguide horn antenna	3115	9408-4329	EMCO	02/28/14	02/28/16
7618	Horn antenna (18-26.5 GHz)	3160-09	012054-004	ETS - Lindgren	07/10/2015	07/10/2017
9002	Horn antenna (26-40 GHz)	HO28S	102	Custom Microwaves	07/10/2015	07/10/2017
9003	Horn antenna (40-60 GHz)	HO19R	103	Custom Microwaves	Verified	
9004	Horn antenna (50-75 GHz)	HO15R	104	Custom Microwaves	Verified	
9005	Horn antenna (75-110 GHz)	HO10R	105	Custom Microwaves	Verified	
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	03/11/15	03/11/16
8628	Pre-amplifier	QLJ 01182835-JO	8986002	QuinStar Technologies Inc.	03/20/15	03/20/16
1151	Pre-amplifier (18-26.5 GHz)	TS-PR26	3545.7014.03	Rhode & Schwarz	Verified by 1003 and 7611	
n/a	Pre-amplifier (18-40 GHz)	SLKKa-30-6	15G27	Spacek Labs	Verified by 1003 and 7611	
n/a	Pre-amplifier (75-110 GHz)	FLNA-10-0005	FTL10839	Farran Technology Ltd.	Verified	
6823	Spectrum Analyzer	E4446A	US44300486	Keysight Technologies	10/11/14	10/11/15
7555	Harmonics mixer	11970U	n/a	Keysight Technologies	Verified	
7556	Harmonics mixer	11970V	n/a	Keysight Technologies	Verified	
7557	Harmonics mixer	11970W	n/a	Keysight Technologies	Verified	
1153	High-frequency cable	SucoFlex 100 SX	N/A	Suhner	Verified by 1003 and 7611	
8543	High-frequency cable	Micropore 19057793	N/A	United Microwave Products	Verified by 1003 and 7611	
8849	High-frequency cable	SAC-26G-6.1	363	A.H.Systems	01/14/15	01/14/16
Miscellaneous						
6792	Multimeter	3478A	2911A70964	Hewlett Packard	08/14/15	08/14/16
11312	Mini Environmental Quality Meter	850027	CF099-56010-340	Sper Scientific	04/09/15	04/09/16
	Test Software	EMC32	V8.53	Rhode & Schwarz	N/A	

Note: Test equipment was within calibration during testing.

4 Measurement Uncertainty

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

4.1 Radiated Emissions Measurements – Below 1GHz

	Input Quantity (Contribution) X_i	Value		Prob. Dist.	Divisor	$u_i(x)$	$u_i(x)^2$
1	Receiver reading	0.10	dB	Normal, k=1	1.000	0.10	0.01
2	Attenuation: antenna-receiver	0.20	dB	Normal, k=2	2.000	0.10	0.01
3	Antenna factor AF	0.58	dB	Normal, k=2	2.000	0.29	0.08
4	Receiver sinewave accuracy	0.15	dB	Normal, k=2	2.000	0.08	0.01
5	Receiver pulse amplitude	1.50	dB	Rectangular	1.732	0.87	0.75
6	Receiver pulse repetition rate	1.50	dB	Rectangular	1.732	0.87	0.75
7	Noise floor proximity	0.50	dB	Rectangular	1.732	0.29	0.08
8	Mismatch: antenna-receiver	0.95	dB	U-shaped	1.414	0.67	0.45
9	AF frequency interpolation	0.30	dB	Rectangular	1.732	0.17	0.03
10	AF height deviations	0.10	dB	Rectangular	1.732	0.06	0.00
11	Directivity difference at 3 m	3.12	dB	Rectangular	1.732	1.80	3.24
12	Phase center location at 3 m	1.00	dB	Rectangular	1.732	0.58	0.33
13	Cross-polarisation	0.90	dB	Rectangular	1.732	0.52	0.27
14	Balance	0.00	dB	Rectangular	1.732	0.00	0.00
15	Site imperfections	3.99	dB	Triangular	2.449	1.63	2.65
16	Separation distance at 3 m	0.30	dB	Rectangular	1.732	0.17	0.03
17	Effect of setup table material	0.57	dB	Rectangular	1.732	0.21	0.12
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**	

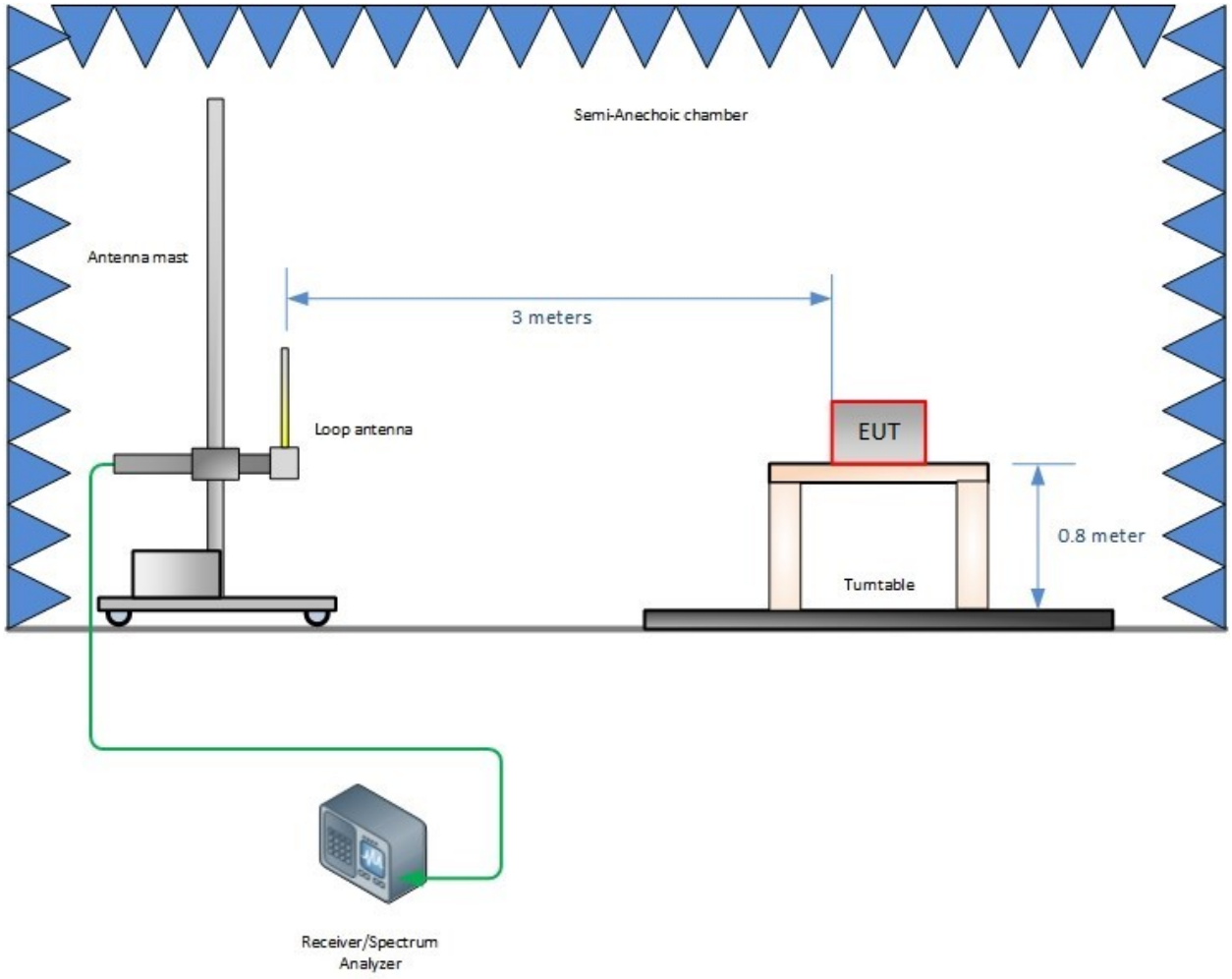
4.2 Radiated Emissions Measurements – Above 1GHz

	Input Quantity (Contribution) X_i	Value		Prob. Dist.	Divisor	$u_i(x)$
1	Receiver reading	0.10	dB	Normal, k=1	1.000	0.10
2	Attenuation: antenna-receiver	0.30	dB	Normal, k=2	2.000	0.15
3	Preamplifier Gain	0.20	dB	Normal, k=2	2.000	0.10
4	Antenna factor AF	0.47	dB	Normal, k=2	2.000	0.24
5	Sinewave accuracy	0.15	dB	Normal, k=2	2.000	0.08
6	Instability of preamp gain	1.21	dB	Rectangular	1.732	0.70
7	Noise floor proximity	0.70	dB	Rectangular	1.732	0.40
8	Mismatch: antenna-preamplifier	1.41	dB	U-shaped	1.414	1.00
9	Mismatch: preamplifier-receiver	1.30	dB	U-shaped	1.414	0.92
10	AF frequency interpolation	0.30	dB	Rectangular	1.732	0.17
11	Directivity difference at 3 m	1.50	dB	Rectangular	1.732	0.87
12	Phase center location at 3 m	0.30	dB	Rectangular	1.732	0.17
13	Cross-polarisation	0.90	dB	Rectangular	1.732	0.52
14	Site imperfections VSWR (Method 2)	5.03	dB	Triangular	2.000	4.89
15	Effect of setup table material	1.57	dB	Rectangular	1.732	1.41
16	Separation distance at 3 m	0.30	dB	Rectangular	1.732	0.17
17	Table height at 3 m	0.00	dB	Normal, k=2	2.000	0.00
	Combined standard uncertainty			Normal	2.35	dB
	Expanded uncertainty			**Normal, k=2**	**4.71**	**dB**

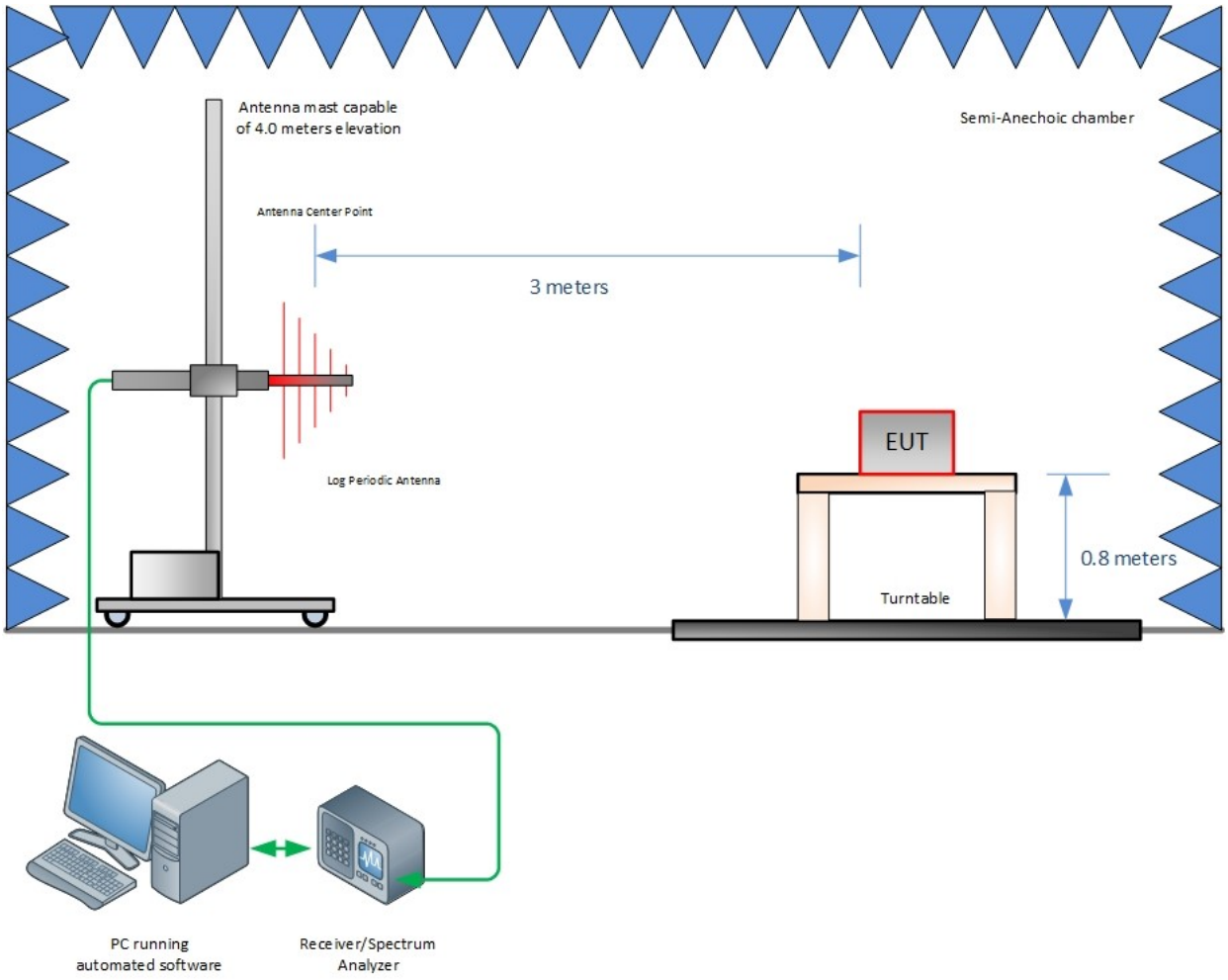
8	Mismatch: antenna-receiver	0.95	dB	U-shaped	1.414	0.67	0.45
9	AF frequency interpolation	0.30	dB	Rectangular	1.732	0.17	0.03
10	AF height deviations	0.10	dB	Rectangular	1.732	0.06	0.00
11	Directivity difference at 3 m	3.12	dB	Rectangular	1.732	1.80	3.24
12	Phase center location at 3 m	1.00	dB	Rectangular	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**

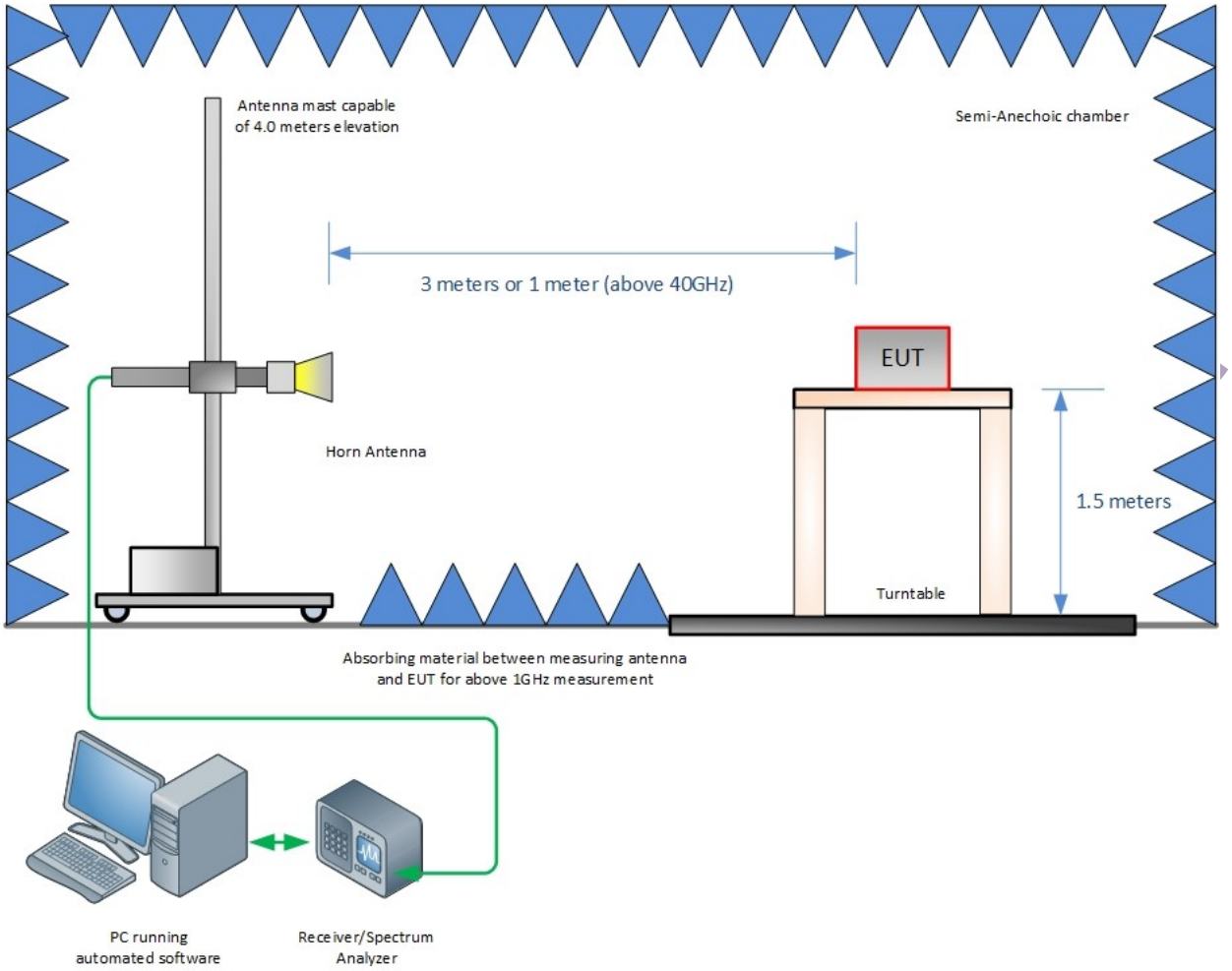
5 Test Set-up Diagrams for Emissions Test



Radiated Emission Test Setup (Below 30MHz)



Radiated Emission Test Setup (30MHz to 1GHz)



Radiated Emission Test Setup (Above 1GHz)

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