

FCC and ISED Canada Testing of the

Frymaster, LLC
WG7833-B0

In accordance with FCC 47 CFR part 15.247 and
ISED Canada's Radio Standards Specifications
RSS-247

Prepared for: Frymaster, LLC
8700 Line Avenue
Shreveport, LA 71106

FCC ID: 2AQ4D-5066500
IC: 24291-5066500



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RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Authorized Signatory	Peter Walsh	2020 -December-21	
Testing	Thierry Jean Charles	2020-December-21	

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

FCC Accreditation
Designation Number US1063 Tampa, FL Test Laboratory
Innovation, Science, and Economic Development Canada
Accreditation
Site Number 2087A-2 Tampa, FL Test Laboratory

EXECUTIVE SUMMARY

Samples of this product were tested and found to be in compliance with 15.247 and ISED Canada's RSS-247.



A2LA Cert. No. 2955.15

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TÜV SÜD America
5610 West Sligh Ave., Suite 100
Tampa, FL 33634

Phone: 813-284-2715
www.tuv-sud-america.com

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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	First Issue	2020-December-21

1.2 Introduction

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations Section 15.247 and Innovation Science and Economic Development Canada's Radio Standards Specification RSS-247 for the tests documented herein.

The evaluation is investigating compliance of the Frymaster, LLC wireless module model WG7833-B0, (FCC ID: 2AQ4D-5066500, IC: 24291-5066500), when integrated within the Convotherm Elektrogeräte GmbH model 5066500 host product. The Maximum TX Output Power of the 2.4 GHz Bluetooth Low Energy (BLE) radio was reduced as documented herein to meet the requirements.



Applicant	Frymaster, LLC
Manufacturer	Jorgin
Applicant's Email Address	ralph.macy@welbilt.com
Model Number(s)	WG7833-B0
Host Serial Number(s)	ACVT1902000023, ACTV1902000016
FCC ID	2AQ4D-5066500
ISED Certification Number	24291-5066500
Hardware Version(s)	Rev. 0.7
Software Version(s)	N/A
Number of Samples Tested	2
Test Specification/Issue/Date	US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2019 Innovation, Science and Economic Development Canada Radio Standards Specification: RSS-247 — Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices, Issue 2, February 2017
Test Plan/Issue/Date	2020-May-12
Order Number	72160507
Date	2020-June-04
Date of Receipt of EUT	2020-July-27
Start of Test	2020-July-30
Finish of Test	2020-September-09
Name of Engineer(s)	Thierry Jean-Charles
Related Document(s)	ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2019. FCC OET KDB 558074 D01 15.247 Meas Guidance v05r02: Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating under Section 15.247 of the FCC Rules. Innovation, Science and Economic Development Canada Radio Standards Specification: RSS-GEN - General Requirements for Compliance of Radio Apparatus, Issue 5, Amendment 1, March 2019.

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC Part 15.247 and ISED Canada's RSS-247 is shown below.

Table 1.3-1: Test Result Summary

Test Parameter	Test Plan (Yes/No)	Test Result	FCC 47 CFR Rule Part	ISED Canada's RSS	Test Report Page No
Antenna Requirement	Yes	Pass	15.203, 15.204	-----	10
6 dB Bandwidth	No	Not Tested	15.247(a)(2)	RSS-247 5.2(a)	
99% Bandwidth	No	Not Tested	-----	RSS-GEN 6.6	
Peak Output Power	Yes	Pass	15.247(b)(3)	RSS-247 5.4(d)	11
Band-Edge Compliance of RF Conducted Emissions	No	Not Tested	15.247(d)	RSS-247 5.5	
RF Conducted Spurious Emissions	No	Not Tested	15.247(d)	RSS-247 5.5	
Radiated Spurious Emissions into Restricted Frequency Bands	Yes	Pass	15.205, 15.209	RSS-GEN 8.9, 8.10	14
Power Spectral Density	No	Not Tested	15.247(e)	RSS-247 5.2(b)	
Power Line Conducted Emissions	No	Not Tested	15.207	RSS-GEN 8.8	
Duty Cycle	No	-----	N/A	N/A	

1.4 Product Information

1.4.1 Technical Description

The EUT consists of an 802.11a/b/g/n / BLE module. The information provided below applies to the 2.4 GHz BLE radio.

Technical Details

Mode of Operation: Bluetooth Low Energy (BLE)
Frequency Range: 2402 - 2480 MHz
Number of Channels: 40
Channel Separation: 2 MHz
Data Rate: 1 Mbps
Modulations: GFSK
Antenna Type/Gain: PCB Antenna / 4.13 dBi
Input Power: 120V/60Hz (Host Device)

A full description and detailed product specification details are available from the manufacturer.

Table 1.4.1-1 – Cable Descriptions

Cable/Port	Description
Ethernet	10 m cable from EUT, not shielded, connected to router
USB	30 cm cable from EUT, not shielded, flash drive installed
RS485	65 cm cable from EUT, not shielded, connected to loopback board
AC switch	1.3 m, not shielded
DC wiring	75 cm cable from EUT, not shielded, connected to power supply

Table 1.4.1-2 – Support Equipment Descriptions

Make/Model	Description
Dell / Latitude E7250	Laptop
Welbilt / UI Function Test Adapter Board Ver. A	Adaptor Board
NetGear / N600 Wireless Dual Band Router WNDR3400	Ethernet router
Meanwell/GST36B12-P1J	Power supply
Generic	USB flash drives (2)

Declaration of Build Status

EQUIPMENT DESCRIPTION				
Model Name/Number	WG7833-B0			
Part Number				
Hardware Version	Rev. 0.7			
Software Version				
FCC ID (if applicable)		2AQ4D-5066500		
ISED ID (if applicable)		24291-5066500		
Technical Description (Please provide a brief description of the intended use of the equipment)		RF Module, IEEE 802.11a/b/g/n with BT/BLE		
UN-INTENTIONAL RADIATOR				
Highest frequency generated or used in the device or on which the device operates or tunes				
Lowest frequency generated or used in the device or on which the device operates or tunes				
<input type="checkbox"/> Class A Digital Device (Use in commercial, industrial or business environment) <input type="checkbox"/> <input checked="" type="checkbox"/> Class B Digital Device (Use in residential environment only)				
Power Source				
AC	Single Phase	Three Phase		
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Nominal Voltage	
External DC	Nominal Voltage		Maximum Current	
	12 to 24 Vdc		1A	
Battery	Nominal Voltage		Battery Operating End Point Voltage	
EXTREME CONDITIONS				
Maximum temperature	0	°C	Minimum temperature	
			60	
			°C	
Ancillaries				
Please list all ancillaries which will be used with the device.				

I hereby declare that the information supplied is correct and complete.

Name: Ralph Macy

Position held: Engineering Manager Date: 12/03/2020

1.4.2 Modes of Operation

The EUT was evaluated for the 2.4 GHz BLE radio while integrated within the 5066500 display host product. The host device was set in typical orientation of installation.

1.4.3 Monitoring of Performance

The EUT was evaluated for TX output power and radiated spurious emissions. The EUT power settings and data rate configurations are provided below:

Table 1.4.3-1: EUT Test Configurations

Mode	Test FW. Power Setting	Data rate	Tested Channels
BLE	6	1 Mbps	2402, 2440, 2480 MHz

1.4.4 Performance Criteria

The EUT was evaluated for the maximum TX Output Power and and Radiated Spurious Emissions as described below.

Table 1.4.4 -1: Performance Criteria

Parameter	Requirement
Antenna Requirement	FCC: Section 15.203. 15.204
Peak Output Power	FCC: Section 15.247(b)(3); ISED Canada:RSS-247 5.4(d)
Radiated Spurious Emissions into Restricted Frequency Bands	FCC: Sections 15.205, 15.209; ISED Canada: RSS-GEN 8.9, 8.10

1.5 Deviations from the Standard

The EUT was evaluated without any deviation from the test standards.

1.6 EUT Modification Record

The table below details modifications made to the EUT during the test programme. 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

The equipment was tested as provided without any modifications.

1.7 Test Location

TÜV SÜD Product Service conducted the following tests at our Tampa FL Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
AC Powered Operating		
Antenna Requirement	Thierry Jean-Charles	A2LA
Peak Output Power	Thierry Jean-Charles	A2LA
Radiated Spurious Emissions into Restricted Frequency Bands	Thierry Jean-Charles	A2LA

Office Address:

TÜV SÜD America, Inc.
5610 W. Sligh Ave, Suite 100
Tampa, FL 33634
USA

2 Test Details

2.1 Antenna Requirements

2.1.1 Specification Reference

FCC: Section 15.203, 15.204

2.1.2 Equipment Under Test and Modification State

S/N: ACTV1902000016

2.1.3 Date of Test

8/5/2020

2.1.4 Test Method

N/A

2.1.5 Environmental Conditions

Ambient Temperature	N/A
Relative Humidity	N/A
Atmospheric Pressure	N/A

2.1.6 Test Results

Limit Clause FCC Sections: 15.203, 15.204

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

The EUT uses U.FL. connectors at the antenna ports. The antenna connectors are considered unique and therefore meet the requirements of FCC Section 15.203.

2.1.7 Test Location and Test Equipment Used

This test was carried out in TÜV SÜD America, Inc., 5610 W. Sligh Ave, Suite 100, Tampa, FL 33634, USA.

As this is a visual inspection, no test equipment was used.

2.2 Peak Output Power

2.2.1 Specification Reference

FCC Section 15.247(b)(3)
ISED Canada: RSS-247 5.4(d)

2.2.2 Equipment Under Test and Modification State

S/N: ACTV1902000016

2.2.3 Date of Test

8/31/2020

2.2.4 Test Method

The fundamental emission output power was measured in accordance with ANSI C63.10 Subclause 11.9.1.1 RBW \geq DTS bandwidth. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer through suitable attenuation.

2.2.5 Environmental Conditions

Ambient Temperature	25°C
Relative Humidity	47.6 %
Atmospheric Pressure	1015.9 mbar

2.2.6 Test Results

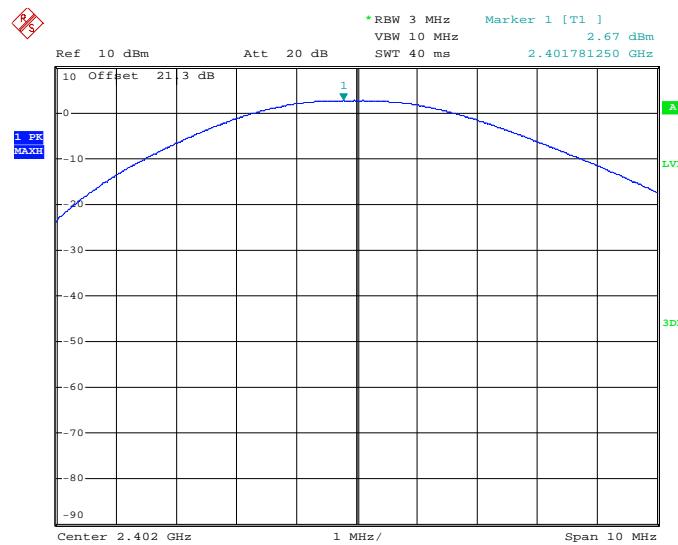
AC Powered Operating

Limit Clause FCC Part 15.247(b)(3), ISED RSS-247 5.4(d)

The Maximum Output Power allowed for systems using digital modulation is 1 Watt (30 dBm)

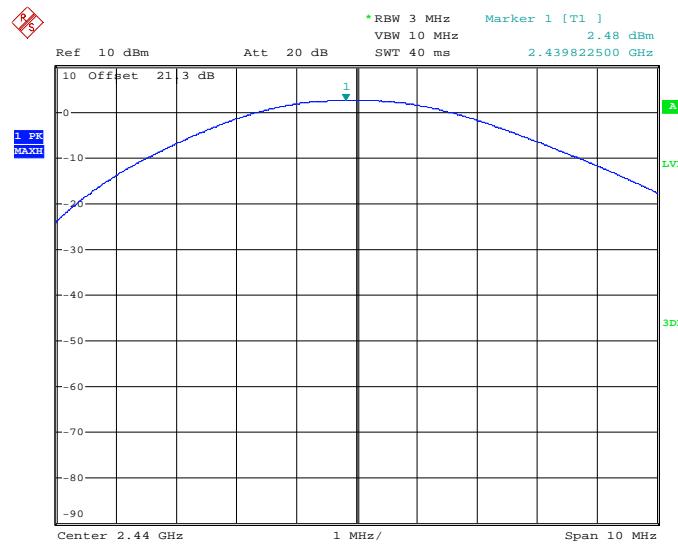
Table 2.2.6-1: Maximum Output Power Results

Frequency (MHz)	Output Power (dBm)
2402	2.67
2440	2.48
2480	2.67



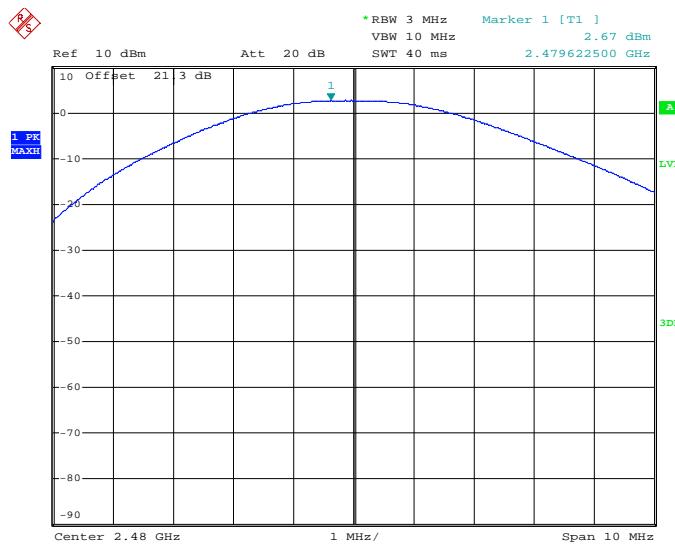
Date: 31.AUG.2020 20:54:45

Figure 2.2.6-1: Maximum Output Power Results – 802.11b Low Channel



Date: 31.AUG.2020 20:59:32

Figure 2.2.6-2: Maximum Output Power Results – 802.11b Middle Channel



Date: 31.AUG.2020 21:03:47

Figure 2.2.6-3: Maximum Output Power Results – 802.11b High Channel

2.2.7 Test Location and Test Equipment Used

This test was carried out in TÜV SÜD America, Inc., 5610 W. Sligh Ave, Suite 100, Tampa, FL 33634, USA.

Instrument	Manufacturer	Type No	TE No	Software / Firmware Revision	Calibration Period (months)	Calibration Due
Spectrum Analyzer	Rohde & Schwarz	FSP40	BEMC00283	4.50 SP5	24	04-Oct-2021
Attenuator 20dB, 2.9 mm-M/F, DC-40GHz 2 W	Aeroflex Inmet	40AH2W-20	BEMC02111	N/A	12	24-Jul-2021
Duratest High Frequency Cable 26.5GHz	Teledyne Storm Products	921-0101-036	BEMC02112	N/A	12	12-Oct-2020

TU - Traceability Unscheduled

O/P MON - Traceability Unscheduled

N/A - Not Applicable

2.3 Radiated Spurious Emissions into Restricted Frequency Bands

2.3.1 Specification Reference

FCC Sections: 15.205, 15.209;
ISED Canada: RSS-GEN 8.9, 8.10

2.3.2 Equipment Under Test and Modification State

S/N: ACVT1902000023

2.3.3 Date of Test

7/30/2020 to 9/9/2020

2.3.4 Test Method

Radiated emissions tests were made over the frequency range of 9 kHz to 26 GHz, 10 times the highest fundamental frequency. Each emission found to be in a restricted band as defined by section 15.205, including any emission at the operational band-edge, was compared to the radiated emission limits as defined in Section 15.209.

For measurements below 30 MHz, the receive antenna height was set to 1 m and the EUT was rotated through 360 degrees. The resolution bandwidth was set to 200 Hz below 150 kHz and to 9 kHz above 150 kHz.

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 1000 MHz, quasi-peak measurements were made using a resolution bandwidth RBW of 120 kHz and a video bandwidth VBW of 300 kHz. For frequencies above 1000 MHz, peak measurements are made with RBW of 1 MHz and VBW of 3 MHz. Average measurements are performed in the linear scale using VBW of 1 kHz.

2.3.5 Duty Cycle Correction

No duty cycle correction factor was used during the evaluation for radiated emissions.

2.3.6 Environmental Conditions

Ambient Temperature	24.8 °C
Relative Humidity	48.8 %
Atmospheric Pressure	1014.1 mbar

2.3.7 Test Results

AC Powered Operating

Limit Clause FCC Sections 15.205, 15.209, ISED Canada: RSS-GEN 8.9, 8.10

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.4090-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Table 2.3.7-1: Radiated Emissions Test Results

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
2390	54.80	41.90	H	-5.22	49.58	36.68	74.0	54.0	24.4	17.3
2390	56.71	43.27	V	-5.22	51.49	38.05	74.0	54.0	22.5	15.9
4804	45.01	36.00	H	-0.22	44.79	35.78	74.0	54.0	29.2	18.2
4804	50.18	43.75	V	-0.22	49.96	43.53	74.0	54.0	24.0	10.5
12010	41.47	30.30	H	11.49	52.96	41.79	74.0	54.0	21.0	12.2
12010	40.65	29.66	V	11.49	52.14	41.15	74.0	54.0	21.9	12.9
19216	39.72	27.98	H	11.75	51.47	39.73	83.5	63.5	32.0	23.8
19216	41.36	28.17	V	11.75	53.11	39.92	83.5	63.5	30.4	23.6
Middle Channel										
4880	46.79	38.76	H	-0.09	46.70	38.67	74.0	54.0	27.3	15.3
4880	52.48	46.81	V	-0.09	52.39	46.72	74.0	54.0	21.6	7.3
7320	46.59	37.98	H	3.71	50.30	41.69	74.0	54.0	23.7	12.3
7320	44.77	34.72	V	3.71	48.48	38.43	74.0	54.0	25.5	15.6
12200	40.80	29.45	H	11.07	51.87	40.52	74.0	54.0	22.1	13.5
12200	39.98	28.71	V	11.07	51.05	39.78	74.0	54.0	23.0	14.2
19520	39.56	28.09	H	11.64	51.20	39.73	83.5	63.5	32.3	23.8
19520	38.45	25.94	V	11.64	50.09	37.58	83.5	63.5	33.4	25.9
High Channel										
2483.5	55.53	43.58	H	-5.05	50.48	38.53	74.0	54.0	23.5	15.5
2483.5	63.01	56.82	V	-5.05	57.96	51.77	74.0	54.0	16.0	2.2
4960	49.16	42.67	H	0.05	49.21	42.72	74.0	54.0	24.8	11.3
4960	43.93	33.89	V	0.05	43.98	33.94	74.0	54.0	30.0	20.1
7440	48.84	40.69	H	3.81	52.65	44.50	74.0	54.0	21.4	9.5
7440	47.48	38.57	V	3.81	51.29	42.38	74.0	54.0	22.7	11.6
12400	42.68	32.40	H	10.63	53.31	43.03	74.0	54.0	20.7	11.0
12400	41.04	29.50	V	10.63	51.67	40.13	74.0	54.0	22.3	13.9
19840	39.75	26.64	H	11.68	51.43	38.32	83.5	63.5	32.1	25.2
22320	37.91	25.49	H	13.96	51.87	39.45	83.5	63.5	31.6	24.1
22320	38.05	24.93	V	13.96	52.01	38.89	83.5	63.5	31.5	24.6

Note:

- All emissions above 22.4 GHz were attenuated below the limits and the noise floor of the measurement equipment.
- The emissions above 18 GHz were performed using a test distance of 1 meter. The limits are adjusted using a distance correction factor of $20 \cdot \log(3/1) = 9.5$ dB.

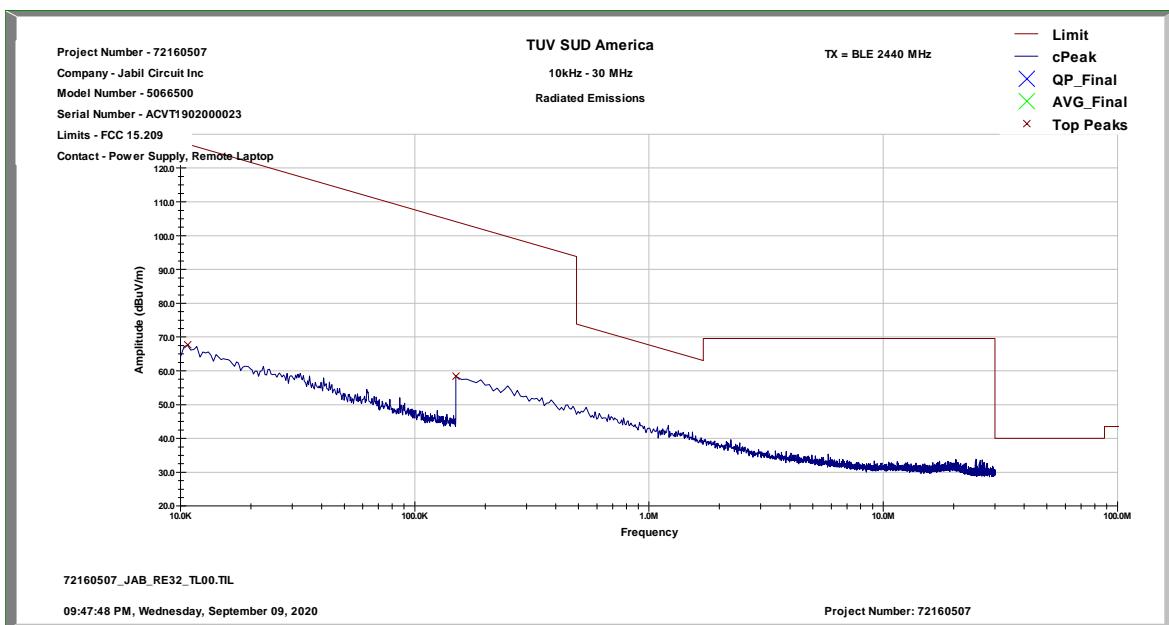


Figure 2.3.7-1: Radiated Emissions Representative Scan – below 30 MHz

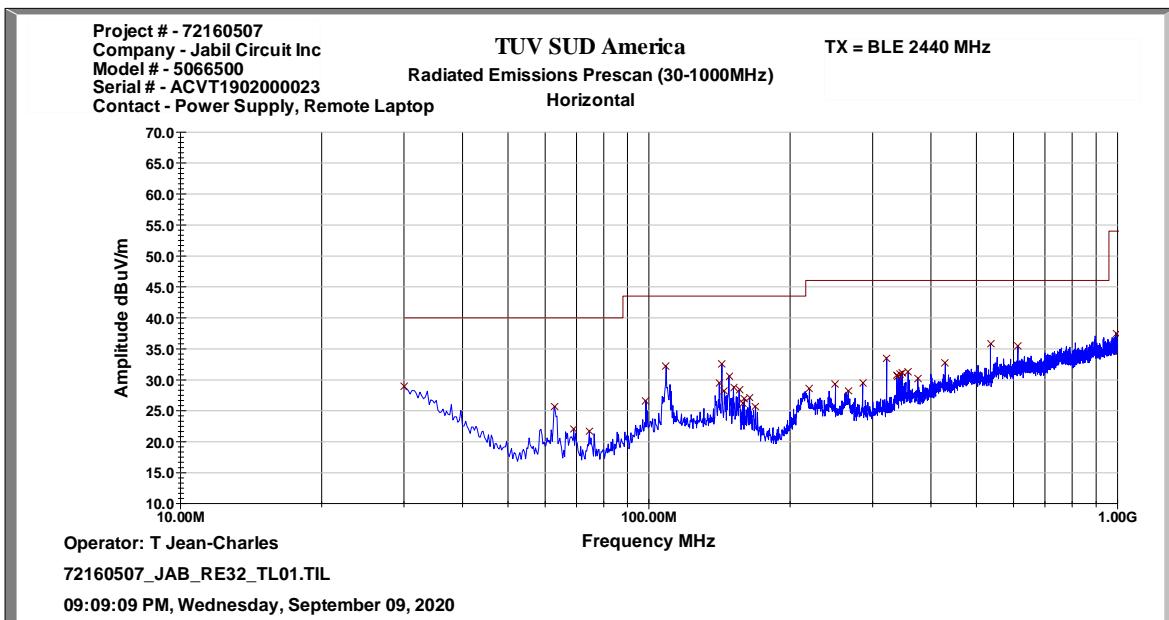


Figure 2.3.7-2: Radiated Emissions Representative Scan – 30 MHz – 1 GHz – Horizontal Polarization

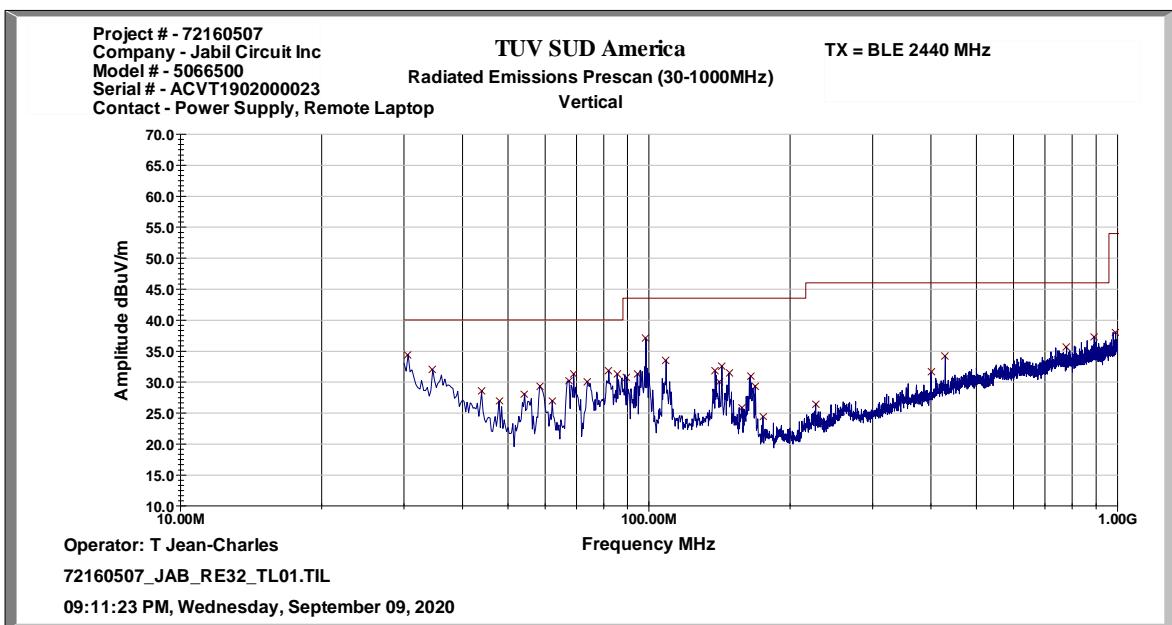


Figure 2.3.7-3: Radiated Emissions Representative Scan – 30 MHz – 1 GHz – Vertical Polarization

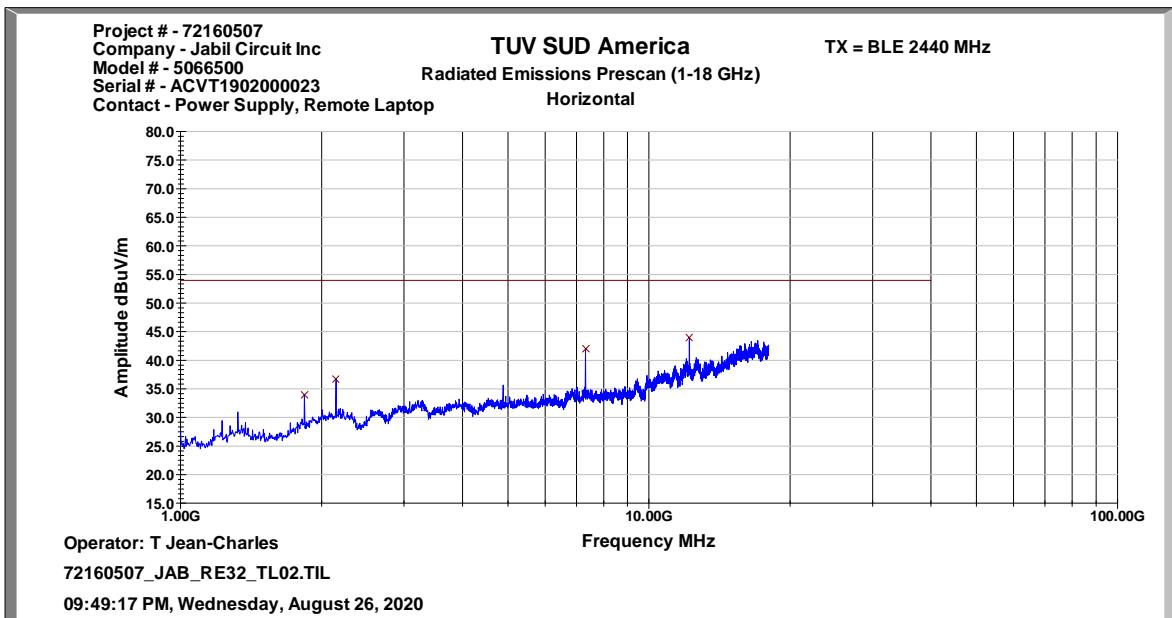


Figure 2.3.7-4: Radiated Emissions Representative Scan – 1 GHz – 18 GHz – Horizontal Polarization

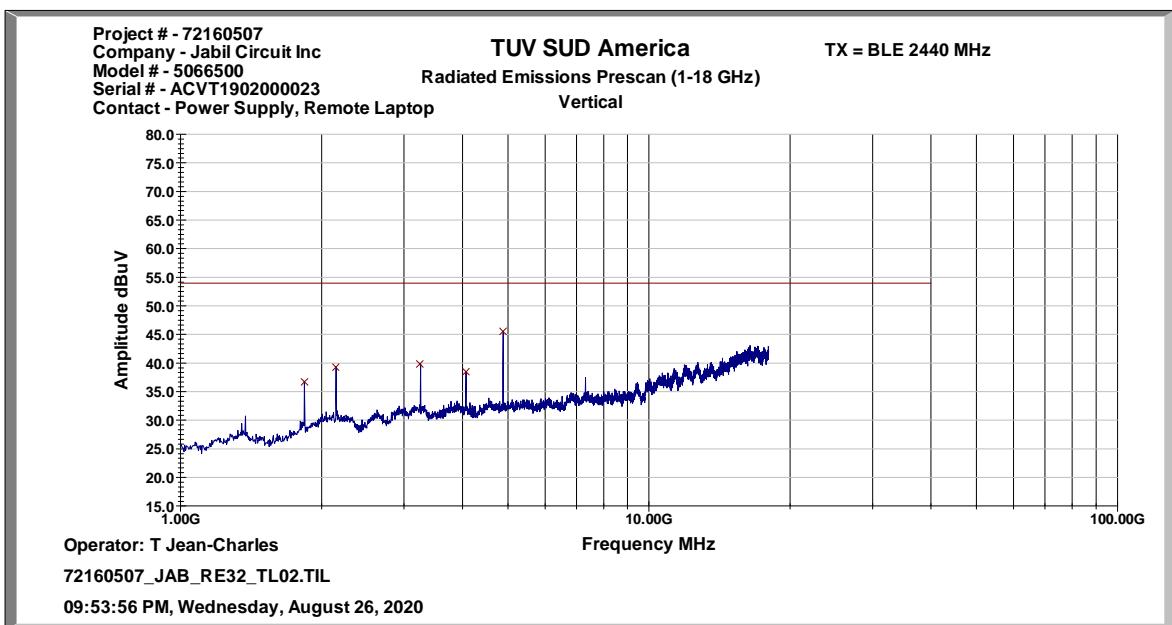


Figure 2.3.7-5: Radiated Emissions Representative Scan – 1 GHz – 18 GHz – Vertical Polarization

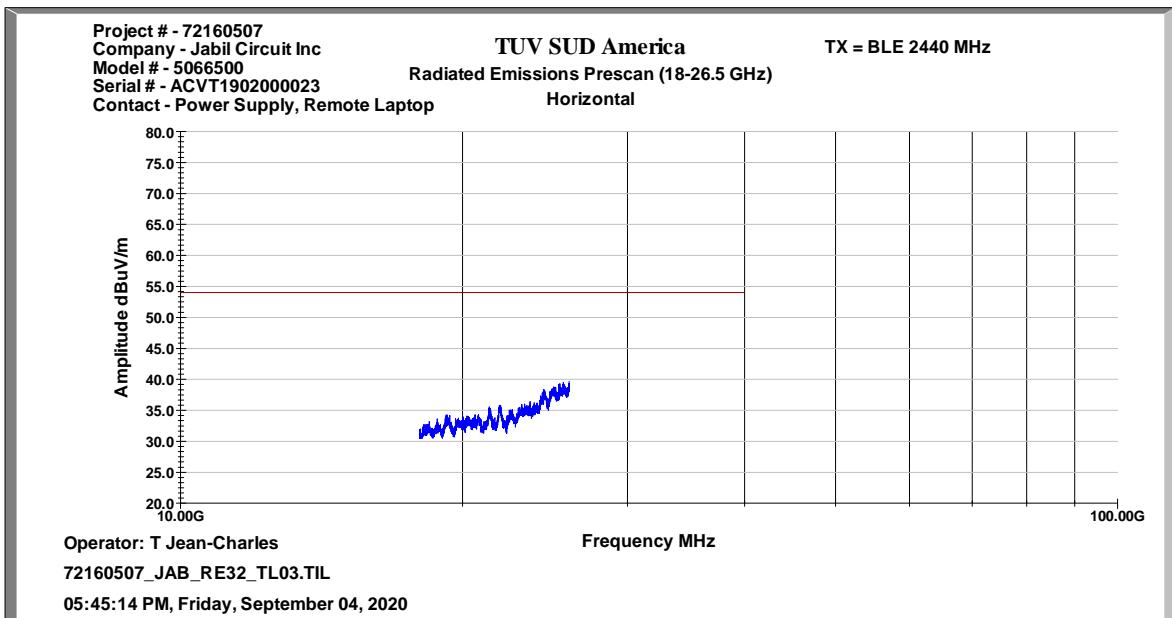


Figure 2.3.7-6: Radiated Emissions Representative Scan – 18 GHz – 26.5 GHz – Horizontal Polarization

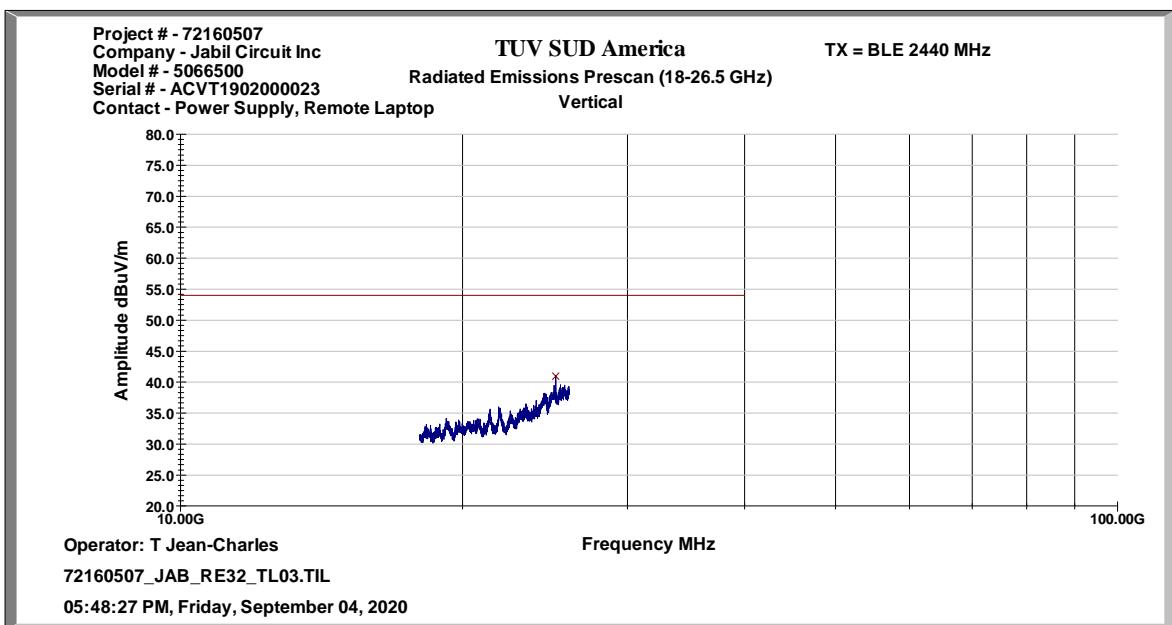


Figure 2.3.7-7: Radiated Emissions Representative Scan – 18 GHz – 26.5 GHz – Vertical Polarization

2.3.8 Sample Calculations

$$R_C = R_U + CF_T$$

Where:

CF _T	=	Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
R _U	=	Uncorrected Reading
R _C	=	Corrected Level
AF	=	Antenna Factor
CA	=	Cable Attenuation
AG	=	Amplifier Gain
DC	=	Duty Cycle Correction Factor

Example Calculation: Peak

$$\text{Corrected Level: } 54.8 + (-5.22) = 49.58 \text{ dB}\mu\text{V/m}$$

$$\text{Margin: } 74 \text{ dB}\mu\text{V/m} - 49.58 \text{ dB}\mu\text{V/m} = 24.42 \text{ dB}$$

Example Calculation: Average

$$\text{Corrected Level: } 41.9 + (-5.22) - 0 = 36.68 \text{ dB}\mu\text{V/m}$$

$$\text{Margin: } 54 \text{ dB}\mu\text{V/m} - 36.68 \text{ dB}\mu\text{V/m} = 17.32 \text{ dB}$$

2.3.9 Test Location and Test Equipment Used

This test was carried out in TÜV SÜD America, Inc., 5610 W. Sligh Ave, Suite 100, Tampa, FL 33634, USA.

Instrument	Manufacturer	Type No	TE No	Software / Firmware Revision	Calibration Period (months)	Calibration Due
9kHz-26.5GHz EMC analyzer/HYZ	Agilent	E7405A	BEMC00523	A.14.06	24	27-Nov-2020
10dB Attenuator	Merrimac	FAN-6-10K	BEMC02086	N/A	12	12-Oct-2020
Tile Automation Software	ETS Lindgren	TILE4! - Version 4.2.A	BEMC02095	4.2A	N/A	NCR
BI LOG PERIODIC, ANTENNA	Schaffner	CBL6112B	TEMC00005	N/A	24	31-Oct-2021
Loop Antenna	Com Power	AL-130	TEMC00025	N/A	24	26-Sep-2021
Horn Antenna	Schwarzbeck	BBHA-9170	TEMC00029	N/A	60	23-Aug-2021
EMC Chamber	Panashield	N/A	TEMC00031	N/A	36	28-Jan-2021
Double Ridge Guide Horn	ETS Lindgren	3117	TEMC00061	N/A	24	07-Feb-2022
18 GHz-40 GHz Microwave Preamplifier	COM-power	PAM-840A	TEMC00147	N/A	12	16-Mar-2021
PAM-118A	Com-Power Corporation	PAM-118A	TEMC00160	N/A	12	16-Mar-2021
2.4 GHz Notch Filter	Micro-Tronics	BRM50702-01	TEMC00176	N/A	12	12-Mar-2021
A81-0303 18 GHz Cable Set	Teledyne Storm Products	A81-0303-360/96	TEMC00201	N/A	12	22-Apr-2021
1571AN 40 GHz Cable	IW Microwave	KPS-1571AN	TEMC00218	N/A	12	06-Jul-2021

TU - Traceability Unscheduled

O/P MON - Traceability Unscheduled

N/A - Not Applicable

NCR – No Calibration Required

3 Test Equipment Information

3.1 General Test Equipment Used

Instrument	Manufacturer	Type No	TE No	Software / Firmware Revision	Calibration Period (months)	Calibration Due
9kHz-26.5GHz EMC analyzer/HYZ	Agilent	E7405A	BEMC00523	A.14.06	24	27-Nov-2020
10dB Attenuator	Merrimac	FAN-6-10K	BEMC02086	N/A	12	12-Oct-2020
Tile Automation Software	ETS Lindgren	TILE4! - Version 4.2.A	BEMC02095	4.2A	N/A	NCR
BI LOG PERIODIC, ANTENNA	Schaffner	CBL6112B	TEMC00005	N/A	24	31-Oct-2021
Loop Antenna	Com Power	AL-130	TEMC00025	N/A	24	26-Sep-2021
Horn Antenna	Schwarzbeck	BBHA-9170	TEMC00029	N/A	60	23-Aug-2021
EMC Chamber	Panashield	N/A	TEMC00031	N/A	36	28-Jan-2021
Double Ridge Guide Horn	ETS Lindgren	3117	TEMC00061	N/A	24	07-Feb-2022
18 GHz-40 GHz Microwave Preamplifier	COM-power	PAM-840A	TEMC00147	N/A	12	16-Mar-2021
PAM-118A	Com-Power Corporation	PAM-118A	TEMC00160	N/A	12	16-Mar-2021
2.4 GHz Notch Filter	Micro-Tronics	BRM50702-01	TEMC00176	N/A	12	12-Mar-2021
A81-0303 18 GHz Cable Set	Teledyne Storm Products	A81-0303-360/96	TEMC00201	N/A	12	22-Apr-2021
1571AN 40 GHz Cable	IW Microwave	KPS-1571AN	TEMC00218	N/A	12	06-Jul-2021
Spectrum Analyzer	Rohde & Schwarz	FSP40	BEMC00283	4.50 SP5	24	04-Oct-2021
Attenuator 20dB, 2.9 mm-M/F, DC-40GHz 2 W	Aeroflex Inmet	40AH2W-20	BEMC02111	N/A	12	24-Jul-2021
Duratest High Frequency Cable 26.5GHz	Teledyne Storm Products	921-0101-036	BEMC02112	N/A	12	12-Oct-2020

TU - Traceability Unscheduled

O/P MON - Traceability Unscheduled

N/A - Not Applicable

NCR – No Calibration Required

4 Diagram of Test Set-ups

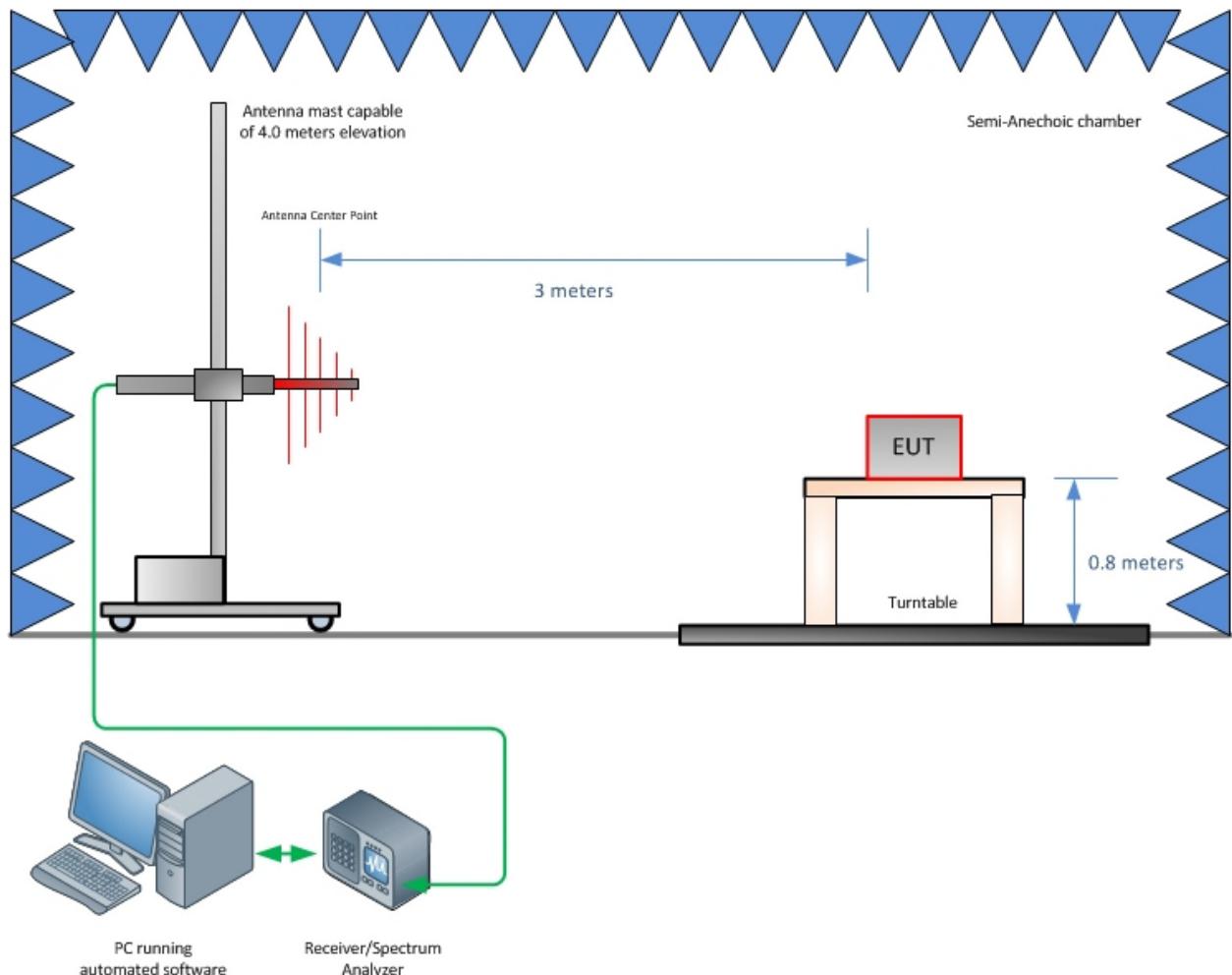


Figure 4-1 - Radiated Emissions Test Setup up to 1 GHz

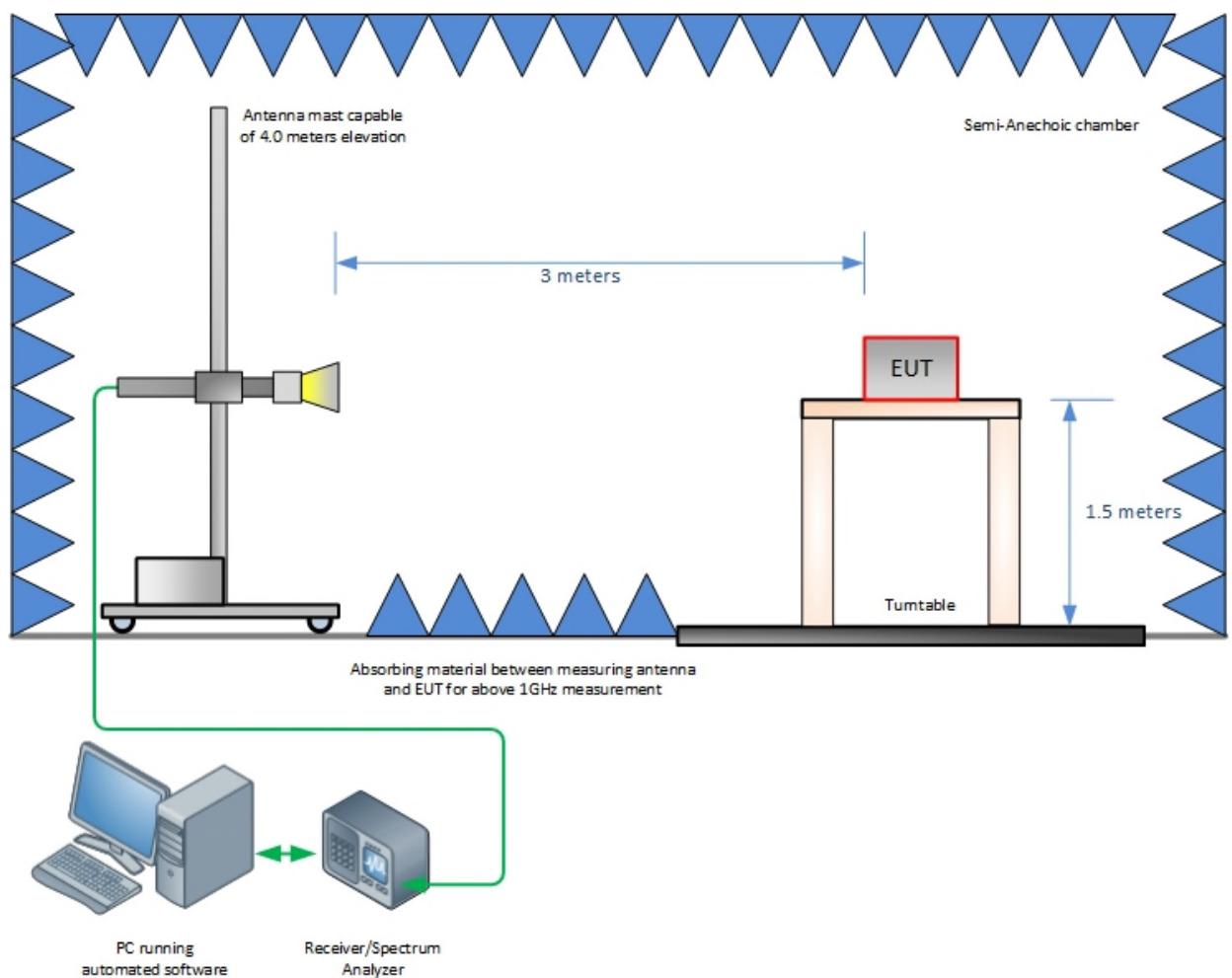


Figure 4-2 - Radiated Emissions Test Setup above 1 GHz

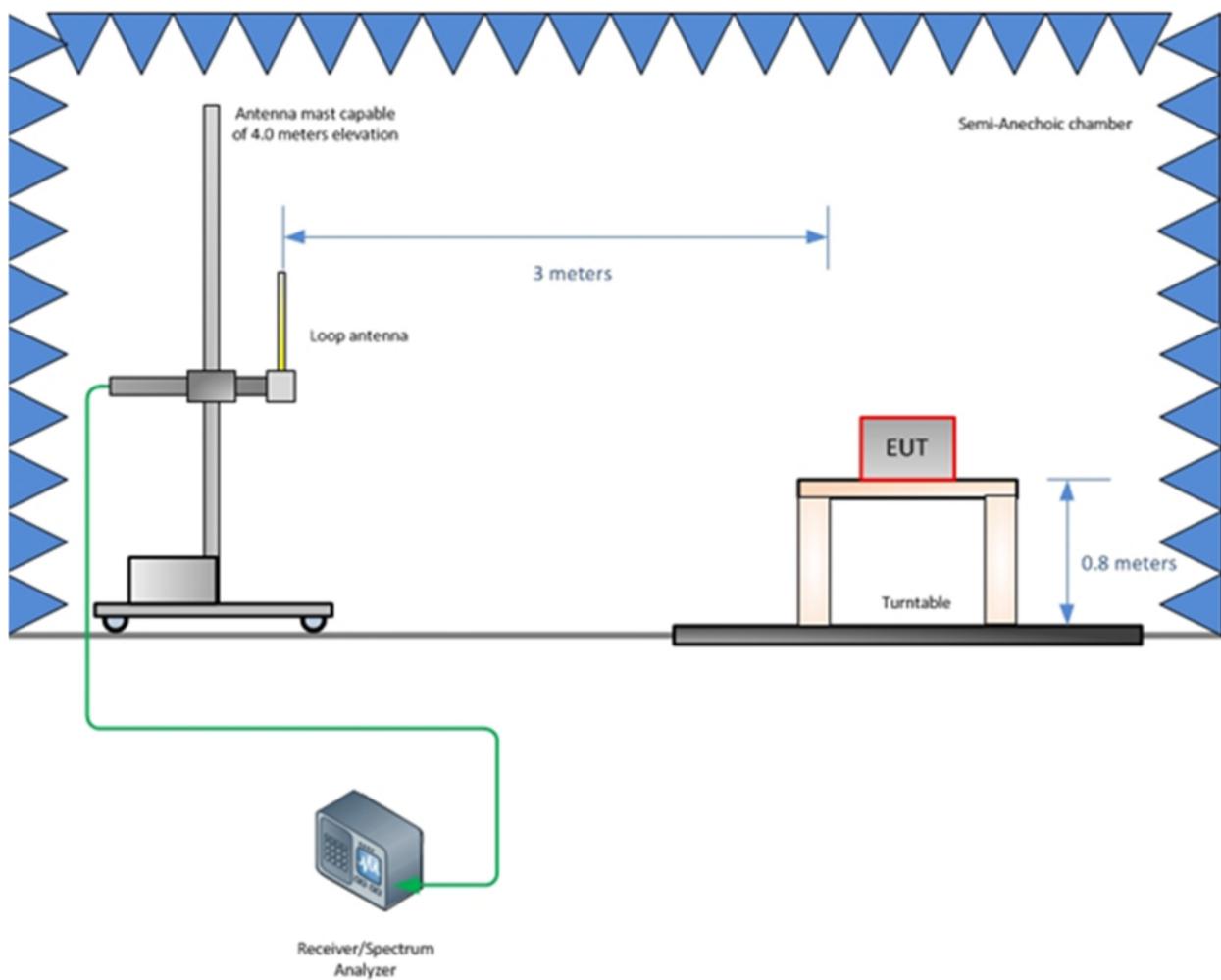


Figure 4-3 - Radiated Emissions Test Setup below 30 MHz

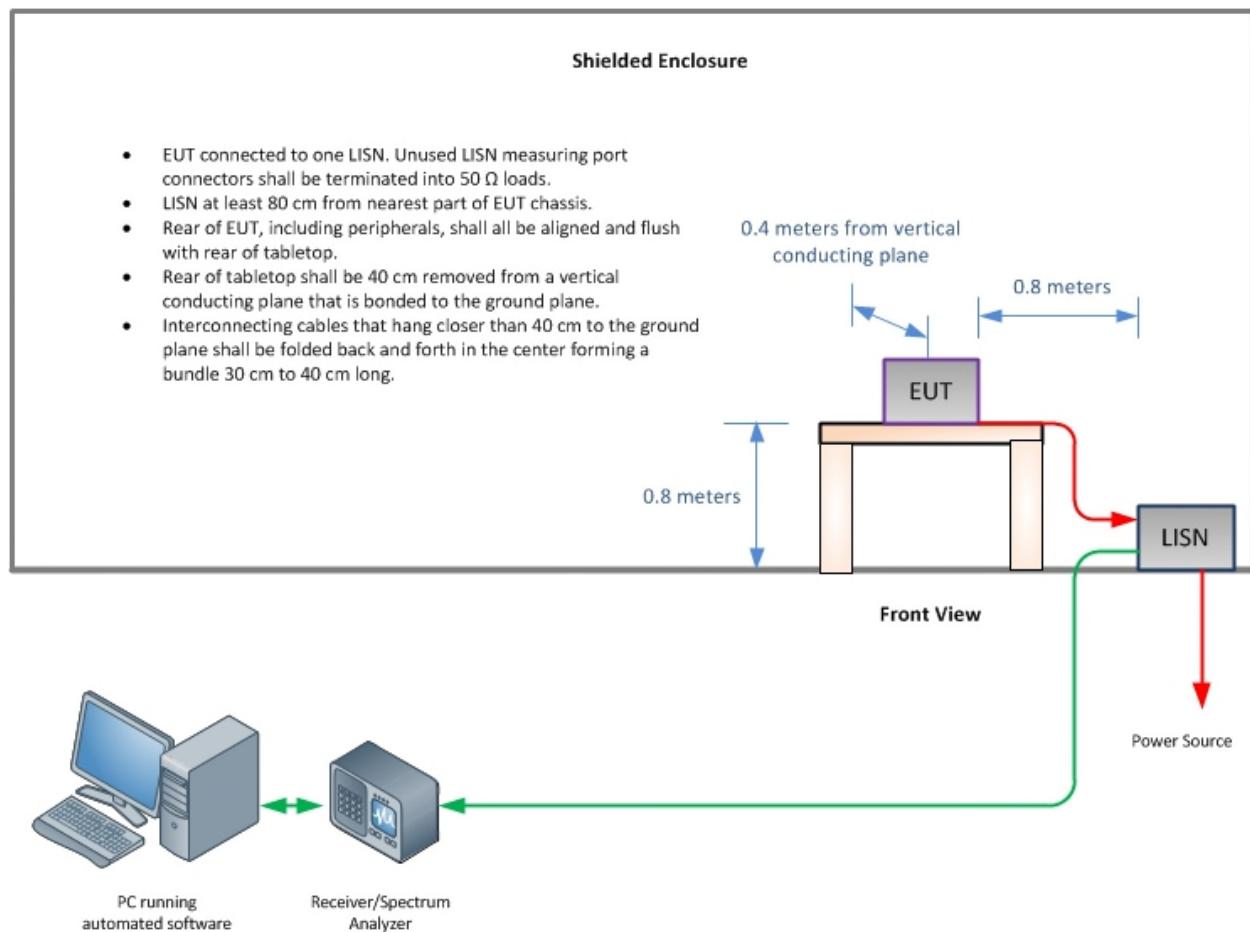


Figure 4-4 – Conducted Emissions Test Setup

5 Measurement Uncertainty

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

Table 5-1 - Values of U_{cispr} and U_{Lab}

Measurement	U_{cispr}	U_{Lab}
Conducted disturbance (mains port) (9 kHz – 150 kHz) (150 kHz – 30 MHz)	3.8 dB 3.4 dB	3.71 dB 3.31 dB
Conducted disturbance (telecom port) (150 kHz – 30 MHz 55 dB LCL) (150 kHz – 30 MHz 65 dB LCL) (150 kHz – 30 MHz 75 dB LCL)	5.0 dB 5.0 dB 5.0 dB	4.11 dB 4.50 dB 4.94 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site) (30 MHz – 1 000 MHz) (1 – 6 GHz) (6-18 GHz)	6.3 dB 5.2 dB 5.5 dB	5.85 dB 4.48 dB 4.48 dB

Notes:

U_{cispr} resembles a value of measurement uncertainty for a specific test, which was determined by considering uncertainties associated with the quantities listed in CISPR 16-4-2:2011.

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