

FCC Testing of the

Trividia Health Inc
SB-BLE-S036

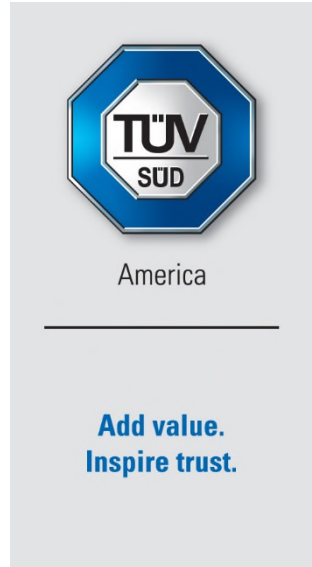
In accordance with FCC 47 CFR part 15.247

Prepared for: Trividia Health Inc
2400 NW 55th Court
Fort Lauderdale, FL 33309

FCC ID: 2ADDB-PET-01

COMMERCIAL-IN-CONFIDENCE

Date: 13. September 2019
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RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Authorized Signatory	Peter Walsh	2019 -September-13	
Testing	Jean N. Rene	2019-September-13	
Report	Thierry Jean-Charles	2019-September-13	

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.

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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	2019-September-13



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 for the tests documented herein.

This evaluation is for a Class 2 permissive change for the integration of the module into a new host configuration (Test Buddy). There are no other changes to the module per the manufacturer.

Applicant	Trividia Health Inc
Manufacturer	Trividia Health Inc
Applicant's Email Address	sleone@trividiahealth.com
Model Number(s)	SB-BLE-S036
Serial Number(s)	A00002097 (host device)
FCC ID	2ADDB-PET-01
Hardware Version(s)	Rev. 0 (host device)
Software Version(s)	V0.22 (host device)
Number of Samples Tested	1
Test Specification/Issue/Date	US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2018
Test Plan/Issue/Date	2018-July-13
Order Number	72152666
Date	2019-August-27
Date of Receipt of EUT	2019-August-30
Start of Test	2019-September-03
Finish of Test	2019-September-05
Name of Engineer(s)	Jean N. Rene
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, 2018.



1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC Part 15.247 is shown below.

Table 1.3-1: Test Result Summary

Test Parameter	Test Plan (Yes/No)	Test Result	FCC 47 CFR Rule Part	Test Report Page No
Antenna Requirement	No	Not Tested	15.203, 15.204	9
6 dB Bandwidth	No	Not Tested	15.247(a)(2)	
99% Bandwidth	No	Not Tested	-----	
Peak Output Power	No	Not Tested	15.247(b)(3)	
Band-Edge Compliance of RF Conducted Emissions	No	Not Tested	15.247(d)	
RF Conducted Spurious Emissions	No	Not Tested	15.247(d)	
Radiated Spurious Emissions into Restricted Frequency Bands	Yes	Pass	15.205, 15.209	10
Power Spectral Density	No	Not Tested	15.247(e)	
Power Line Conducted Emissions	No	Not Tested	15.207	



1.4 Product Information

1.4.1 Technical Description

The EUT is a Bluetooth Low Energy wireless module. The unit is integrated within a pet blood glucose monitor (Test Buddy).

Technical Details

Mode of Operation: Bluetooth Low Energy (BLE)
 Frequency Range: 2402 MHz - 2480 MHz
 Number of Channels: 40
 Channel Separation: 2 MHz
 Data Rate: 1 Mbps
 Modulations: GFSK
 Antenna Type/Gain: PIFA, -1.5 dBi
 Input Power: 3 VDC (CR2032 lithium battery)

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

Table 1.4.1-1 – Cable Descriptions

Cable/Port	Description
The EUT does not use any external accessory cables	

Table 1.4.1-2 – Support Equipment Descriptions

Make/Model	Description
Trividia Health, Inc. / Test Buddy	Host Device, Blood glucose monitor
Trividia Health Inc. / EQM001-2775	Check Strip



Declaration of Build Status

EQUIPMENT DESCRIPTION	
Model Name/Number	TEST BUDDY
Part Number	N/A
Hardware Version	Rev. 0 of host device
Software Version	V0.22 of host device
FCC ID (if applicable)	2ADDB-PET-01
ISED ID (if applicable)	N/A
Technical Description (Please provide a brief description of the intended use of the equipment)	Consumer use to download animal glucose data to smartphone

UN-INTENTIONAL RADIATOR	
Highest frequency generated or used in the device or on which the device operates or tunes	2480.0
Lowest frequency generated or used in the device or on which the device operates or tunes	2402.0
Class A Digital Device (Use in commercial, industrial or business environment) <input type="checkbox"/>	
Class B Digital Device (Use in residential environment only) <input checked="" type="checkbox"/>	

Power Source			
AC	Single Phase	Three Phase	Nominal Voltage
	<input type="checkbox"/>	<input type="checkbox"/>	N/A
External DC	Nominal Voltage		Maximum Current
	N/A		N/A
Battery	Nominal Voltage		Battery Operating End Point Voltage
	3V		3V

EXTREME CONDITIONS			
Maximum temperature	+	°C	Minimum temperature
			- °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: *Brian Mochly*

Position held: *Sr. Director Innovation* Date: *9/12/19*



1.4.2 Modes of Operation

The EUT was evaluated for the Bluetooth Low Energy (BLE) in the transmit mode at the low, middle and high channels across the frequency band of operation.

1.4.3 Monitoring of Performance

Preliminary radiated emission measurements were performed for the EUT set in three orthogonal orientations. The final measurements were performed using the orientations leading to the highest emissions relative to the limits as documented below.

Radiated Band-Edge Measurements: EUT in the X position (Sideways)

Radiated Spurious Measurements: EUT in the Y position (Vertical)

The module transmitted output power was not configurable via software. The EUT was operating at the maximum output power per the manufacturer.

1.4.4 Performance Criteria

The report documents compliance of the BLE radio with the FCC section 15.247 requirements. A summary of the parameters evaluated is provided below.

Table 1.4.4 -1: Performance Criteria

Parameter	Requirement
Antenna Requirement	FCC: Section 15.203. 15.204
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 for radiated emissions only to account for a new host configuration. The evaluation was performed without any deviations 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
3 VDC Battery Powered Operating		
Antenna Requirement	Jean N. Rene	A2LA
Radiated Spurious Emissions into Restricted Frequency Bands	Jean N. Rene	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: A00002097

2.1.3 Date of Test

N/A

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 a PIFA that is integral to the module. The antenna cannot be replaced without permanently damaging the product. The EUT meets the requirements of FCC Section 15.203 and 15.204.

2.1.7 Test Location and Test Equipment Used

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

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



2.2 Radiated Spurious Emissions into Restricted Frequency Bands

2.2.1 Specification Reference

FCC Sections: 15.205, 15.209

2.2.2 Equipment Under Test and Modification State

S/N: A00002097

2.2.3 Date of Test

9/3/2019 to 9/5/2019

2.2.4 Test Method

Radiated emissions tests were made over the frequency range of 9 kHz to 26.5 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 10 kHz.

2.2.5 Duty Cycle Correction

No duty cycle correction factor was applied to the measurements during this evaluation.

2.2.6 Environmental Conditions

Ambient Temperature	24.4 °C
Relative Humidity	40.6 %
Atmospheric Pressure	1012.3 mbar



2.2.7 Test Results

3 VDC Battery Powered Operating

Limit Clause FCC Sections 15.205, 15.209

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 2.2.7-1: Radiated Spurious Emissions 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 (2402 MHz)										
4804	41.50	35.57	H	4.10	45.60	39.67	74.0	54.0	28.4	14.3
4804	43.01	36.28	V	4.10	47.11	40.38	74.0	54.0	26.9	13.6
19216	40.25	30.12	H	14.98	55.23	45.10	83.5	63.5	28.3	18.4
19216	39.83	29.75	V	14.98	54.81	44.73	83.5	63.5	28.7	18.8
Middle Channel (2440 MHz)										
4880	41.42	35.64	H	4.26	45.68	39.90	74.0	54.0	28.3	14.1
4880	41.03	34.80	V	4.26	45.29	39.06	74.0	54.0	28.7	14.9
7320	43.49	36.98	H	9.25	52.74	46.23	74.0	54.0	21.3	7.8
7320	44.52	38.91	V	9.25	53.77	48.16	74.0	54.0	20.2	5.8
19520	39.05	29.46	H	14.83	53.88	44.29	83.5	63.5	29.6	19.2
19520	38.98	29.13	V	14.83	53.81	43.96	83.5	63.5	29.7	19.5
High Channel (2480 MHz)										
2483.5	58.70	43.59	H	-1.91	56.79	41.68	74.0	54.0	17.2	12.3
2483.5	62.23	45.17	V	-1.91	60.32	43.26	74.0	54.0	13.7	10.7
4960	41.50	33.10	H	4.43	45.93	37.53	74.0	54.0	28.1	16.5
4960	40.87	32.65	V	4.43	45.30	37.08	74.0	54.0	28.7	16.9
7440	44.63	39.44	H	9.42	54.05	48.86	74.0	54.0	19.9	5.1
7440	45.52	39.93	V	9.42	54.94	49.35	74.0	54.0	19.1	4.6
19840	39.31	30.41	H	14.49	53.80	44.90	83.5	63.5	29.7	18.6
19840	39.01	29.67	V	14.49	53.50	44.16	83.5	63.5	30.0	19.3

Notes:

- All emissions above 19.8 GHz were attenuated below the limits and the noise floor of the measurement equipment.
- The emissions above 18 GHz were measured at a test distance of 1m. The limits were adjusted accordingly using a distance factor of $20 \cdot \log(1/3) = 9.5$ dB

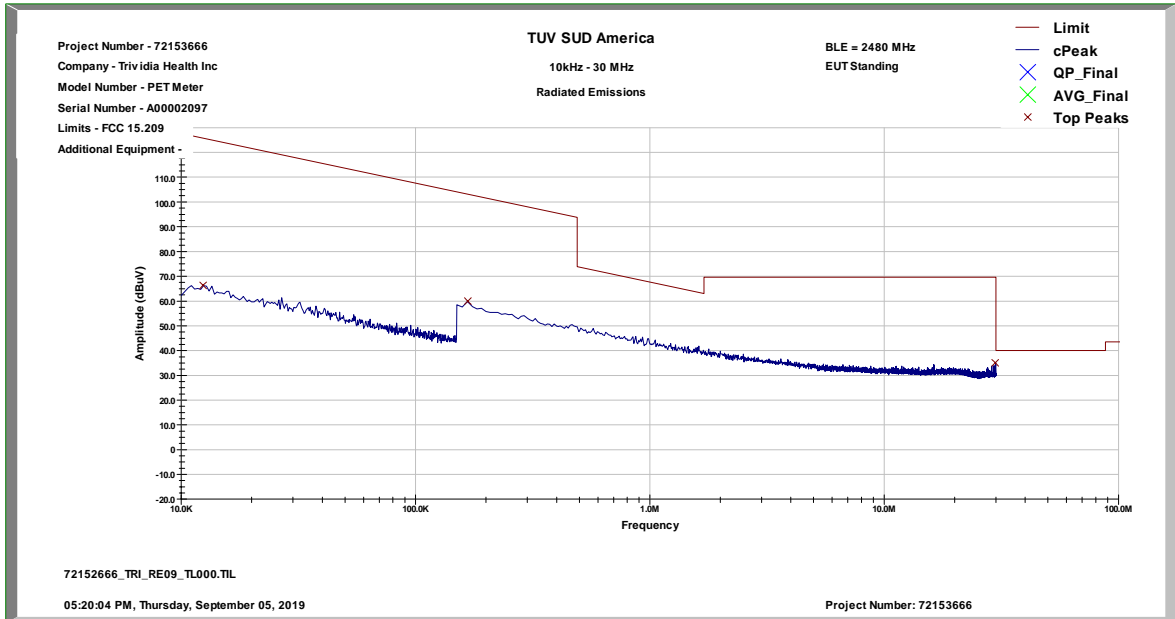


Figure 2.2.7-1: Worst-Case Radiated Pre-Scan Plot – below 30 MHz

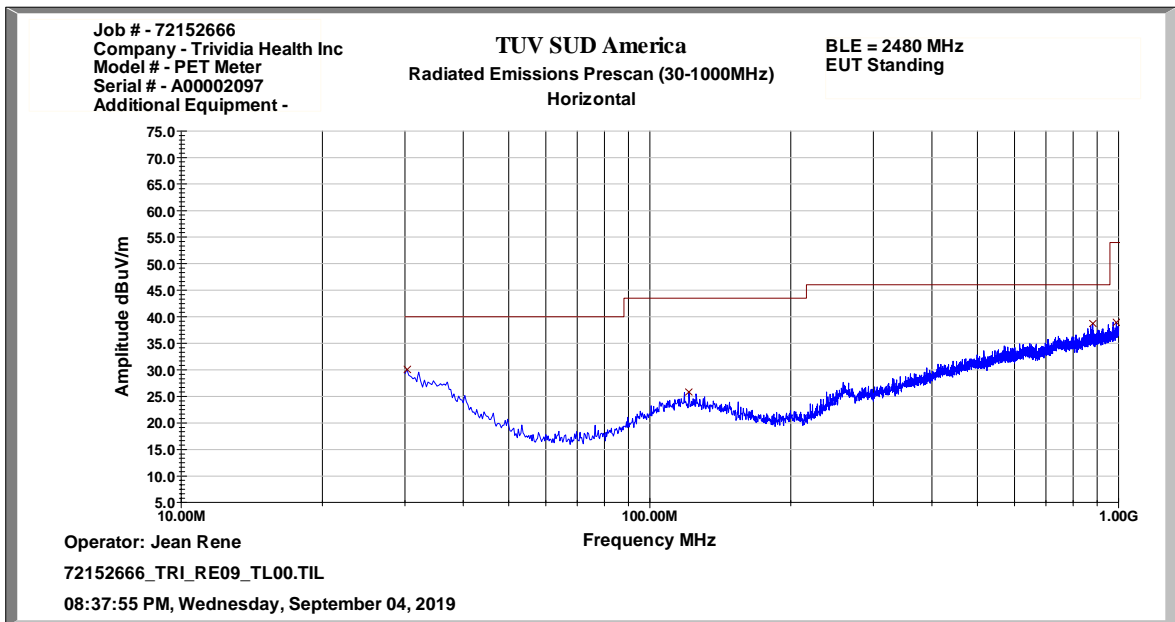


Figure 2.2.7-2: Worst-Case Radiated Pre-Scan Plot – 30 MHz – 1 GHz – Horizontal

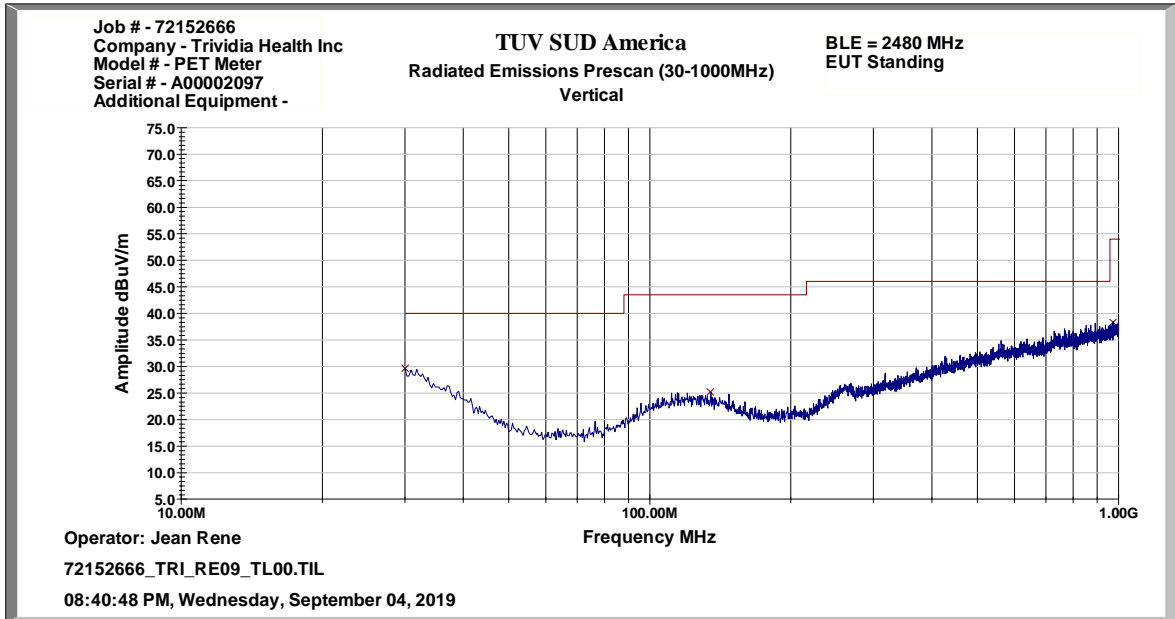


Figure 2.2.7-3: Worst-Case Radiated Pre-Scan Plot – 30 MHz – 1 GHz – Vertical

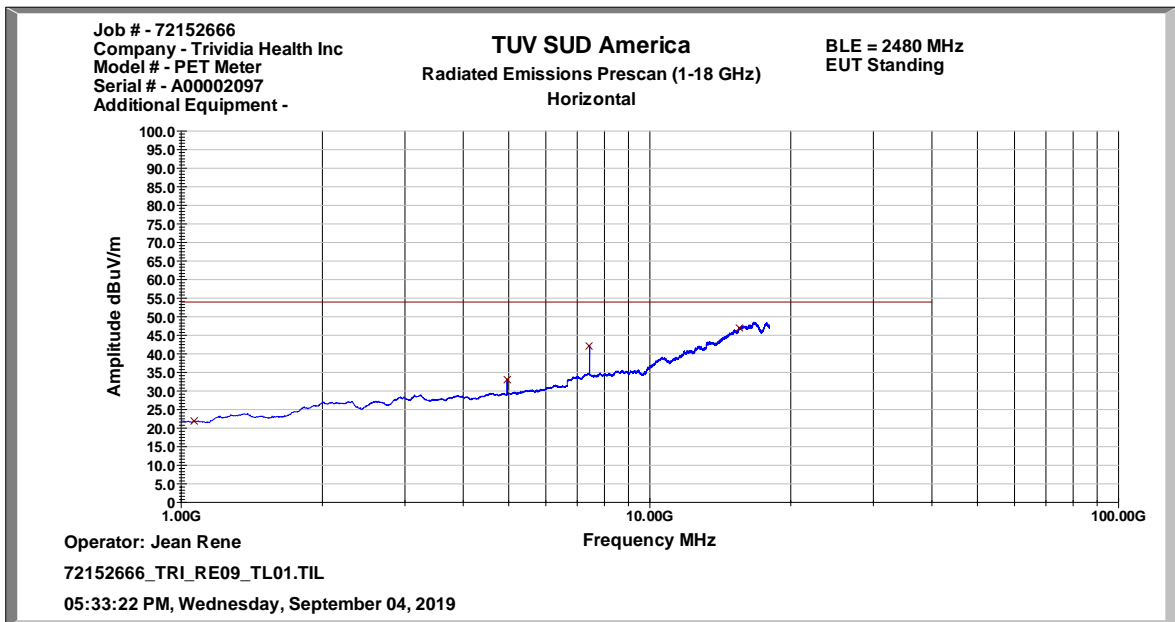


Figure 2.2.7-4: Worst-Case Radiated Pre-Scan Plot – 1 GHz – 18 GHz – Horizontal

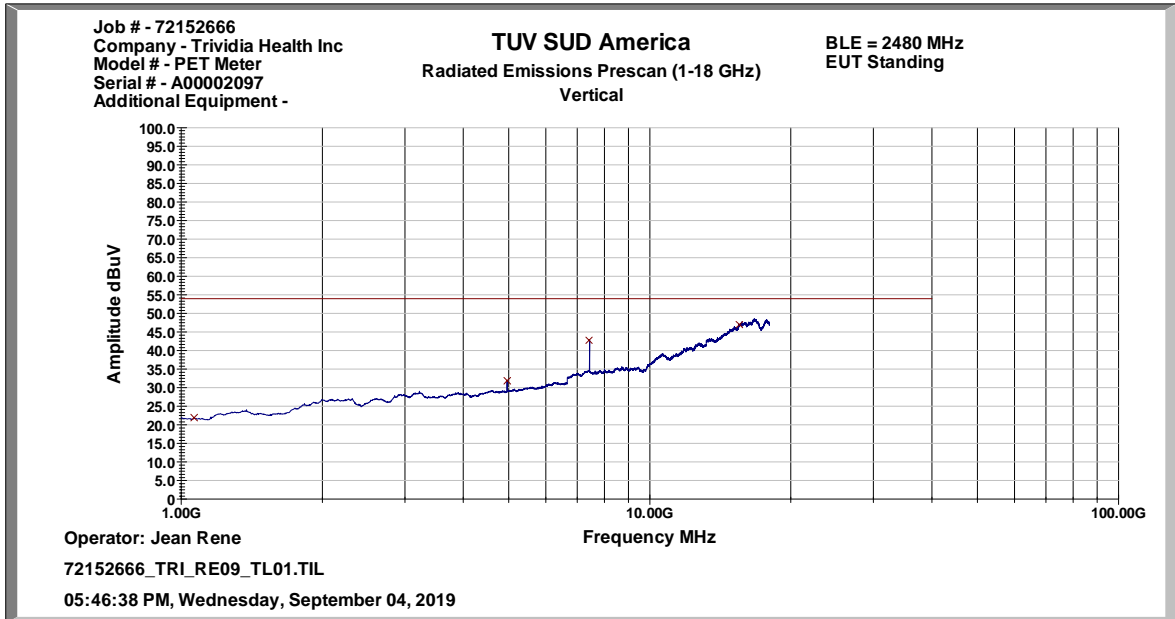


Figure 2.2.7-5: Worst-Case Radiated Pre-Scan Plot – 1 GHz – 18 GHz – Vertical

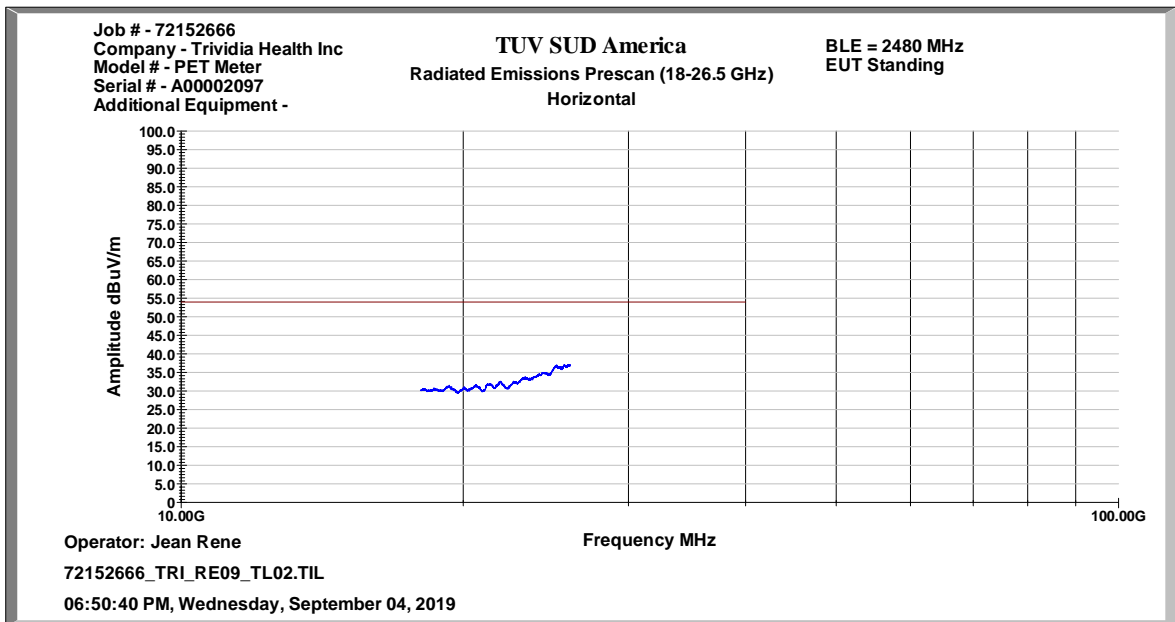


Figure 2.2.7-6: Worst-Case Radiated Pre-Scan Plot – 18 GHz – 26.5 GHz – Horizontal

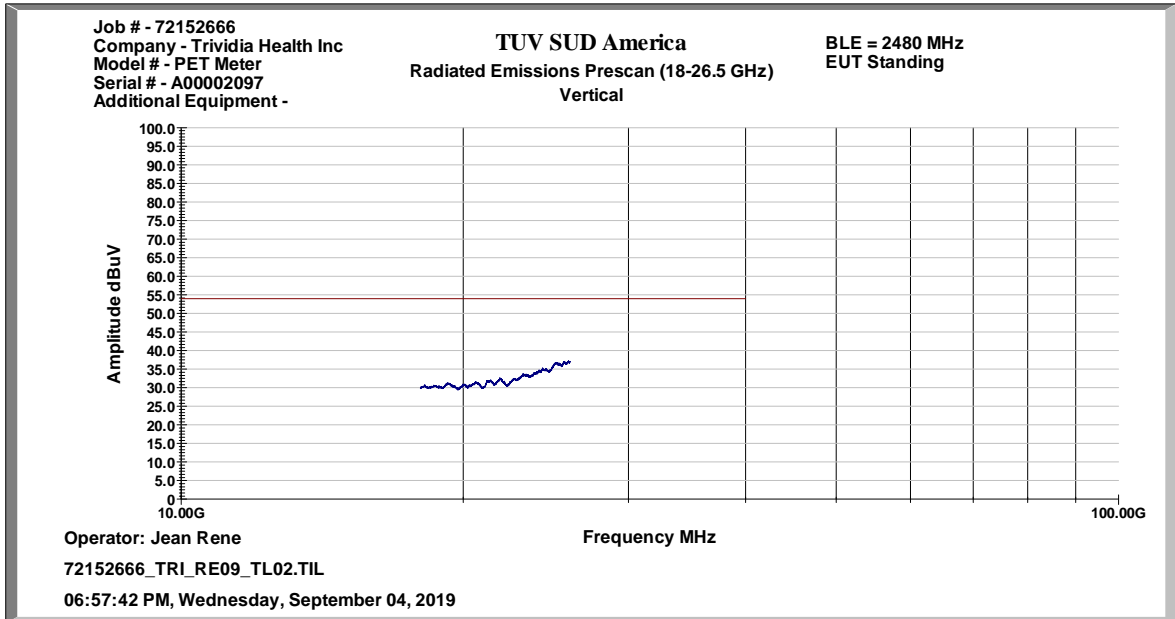


Figure 2.2.7-7: Worst-Case Radiated Pre-Scan Plot – 18 GHz – 26.5 GHz – Vertical



2.2.8 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

Corrected Level: $41.5 + 4.1 = 45.6$ dB μ V/m

Margin: 74 dB μ V/m $- 45.6$ dB μ V/m = 28.4 dB

Example Calculation: Average

Corrected Level: $35.57 + 4.1 - 0 = 39.67$ dB μ V/m

Margin: 54 dB μ V/m $- 39.67$ dB μ V/m = 14.33 dB



2.2.9 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	17-Oct-2019
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	19-Dec-2019
Loop Antenna	Com Power	AL-130	TEMC00025	N/A	24	07-Nov-2019
Horn Antenna	Schwarzbeck	BBHA-9170	TEMC00029	N/A	60	23-Aug-2021
EMC Chamber	Panashield	N/A	TEMC00031	N/A	24	28-Jan-2020
Double Ridge Guide Horn	ETS Lindgren	3117	TEMC00061	N/A	24	13-Feb-2020
18 GHz-40 GHz Microwave Preamplifier	COM-power	PAM-840A	TEMC00147	N/A	24	30-May-2020
PAM-118A	Com-Power Corporatio	PAM-118A	TEMC00160	N/A	12	27-Apr-2020
4A & 4B Test Cables	MegaPhase, LLC	1GVT4	TEMC00171	N/A	24	30-May-2020
2.4 GHz Notch Filter	Micro-Tronics	BRM50702-01	TEMC00176	N/A	12	10-Apr-2020
Radiated Cable Set 30 MHz - 1 GHz	TUV SUD Tampa	Cable 2	TEMC00179	N/A	12	07-May-2020
Radiated Cable Set 9 kHz - 30 MHz	TUV SUD Tampa	Cable 2	TEMC00186	N/A	12	08-May-2020

TU - Traceability Unscheduled

O/P MON - Traceability Unscheduled

N/A - Not Applicable



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	17-Oct-2019
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	19-Dec-2019
Loop Antenna	Com Power	AL-130	TEMC00025	N/A	24	07-Nov-2019
Horn Antenna	Schwarzbeck	BBHA-9170	TEMC00029	N/A	60	23-Aug-2021
EMC Chamber	Panashield	N/A	TEMC00031	N/A	24	28-Jan-2020
Double Ridge Guide Horn	ETS Lindgren	3117	TEMC00061	N/A	24	13-Feb-2020
18 GHz-40 GHz Microwave Pre-amplifier	COM-power	PAM-840A	TEMC00147	N/A	24	30-May-2020
PAM-118A	Com-Power Corporatio	PAM-118A	TEMC00160	N/A	12	27-Apr-2020
4A & 4B Test Cables	MegaPhase, LLC	1GVT4	TEMC00171	N/A	24	30-May-2020
2.4 GHz Notch Filter	Micro-Tronics	BRM50702-01	TEMC00176	N/A	12	10-Apr-2020
Radiated Cable Set 30 MHz - 1 GHz	TUV SUD Tampa	Cable 2	TEMC00179	N/A	12	07-May-2020
Radiated Cable Set 9 kHz - 30 MHz	TUV SUD Tampa	Cable 2	TEMC00186	N/A	12	08-May-2020

TU - Traceability Unscheduled

O/P MON - Traceability Unscheduled

N/A - Not Applicable

4 Diagram of Test Set-ups

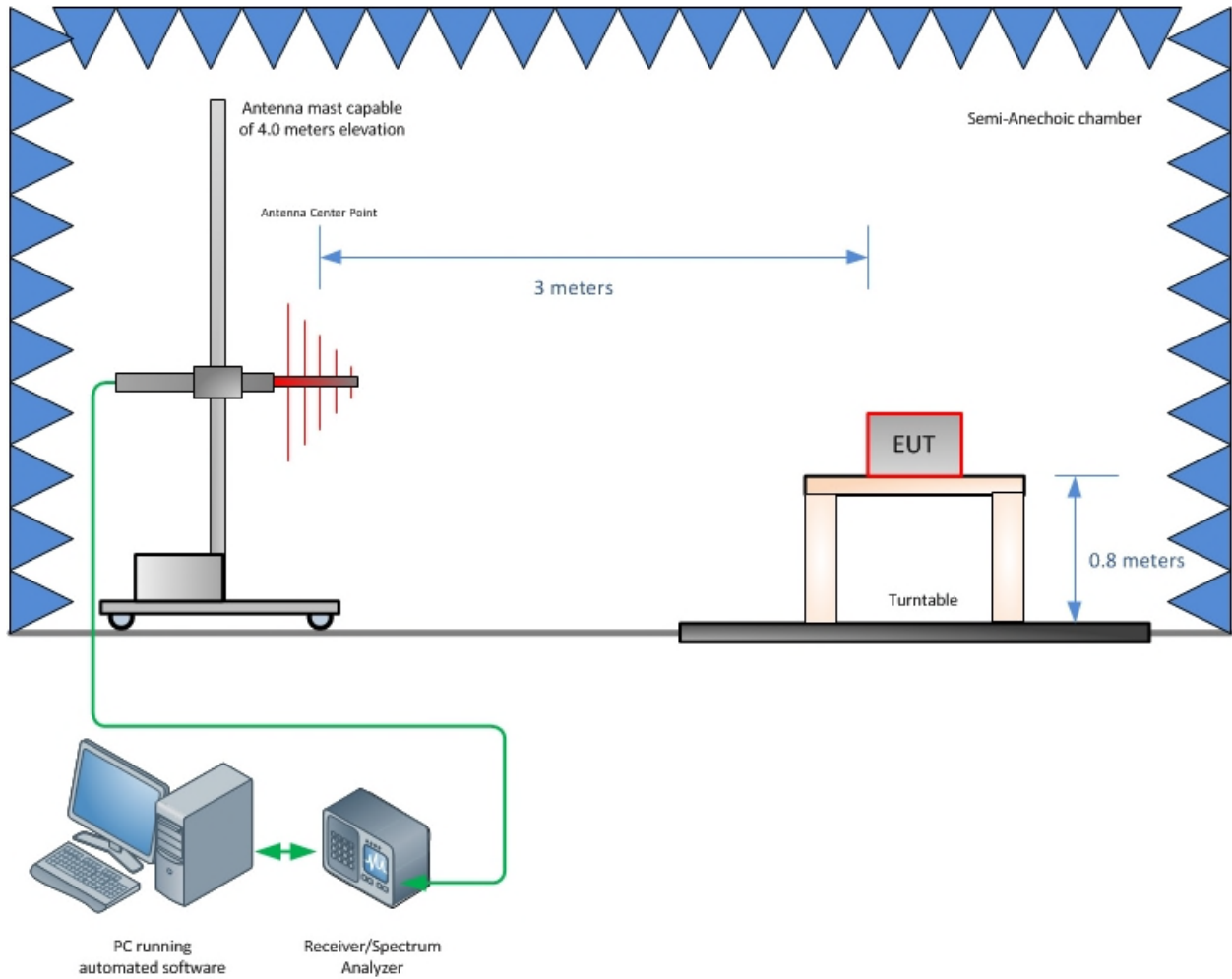


Figure 4-1 - Radiated Emissions Test Setup up to 1 GHz

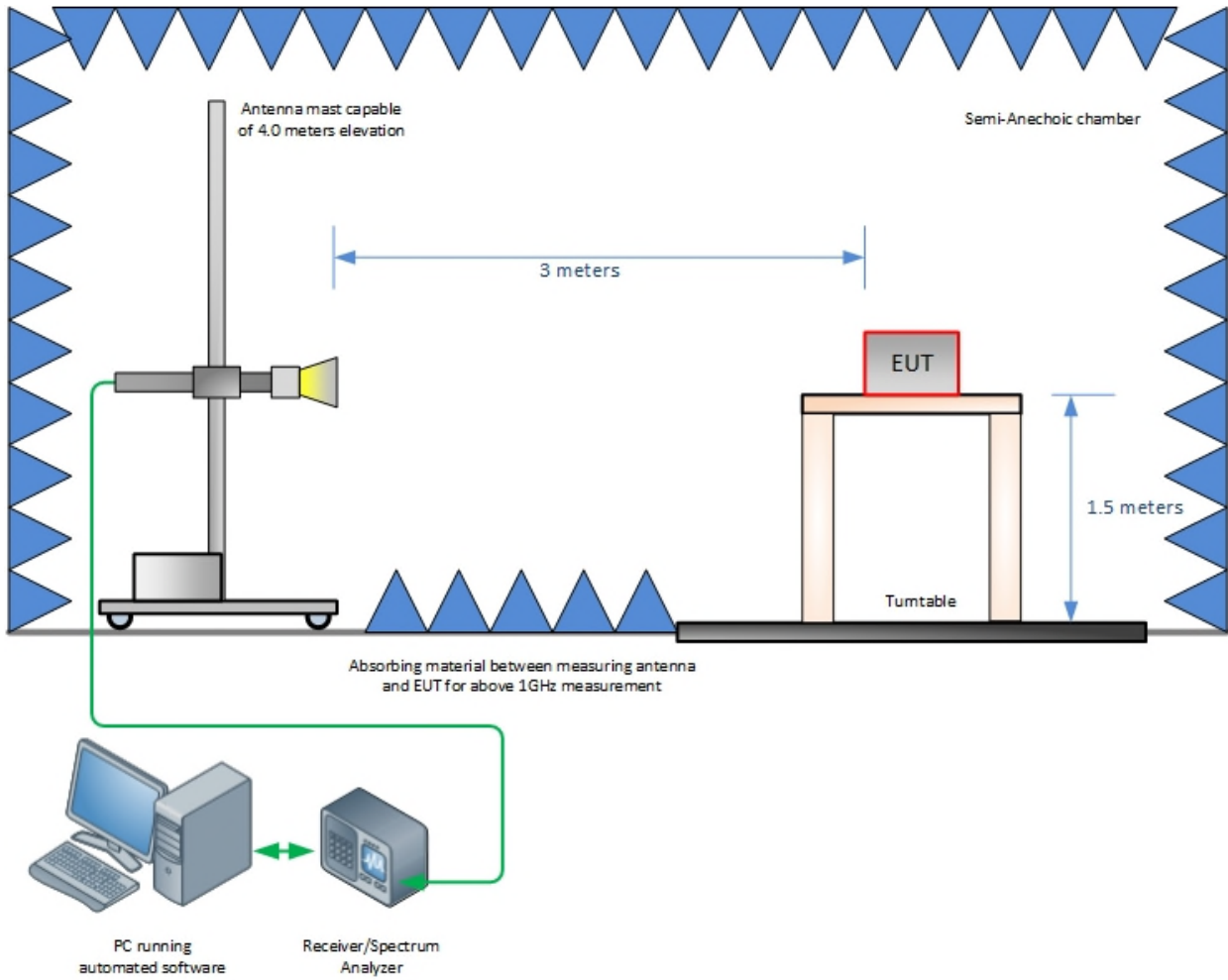


Figure 4-2 - Radiated Emissions Test Setup above 1 GHz

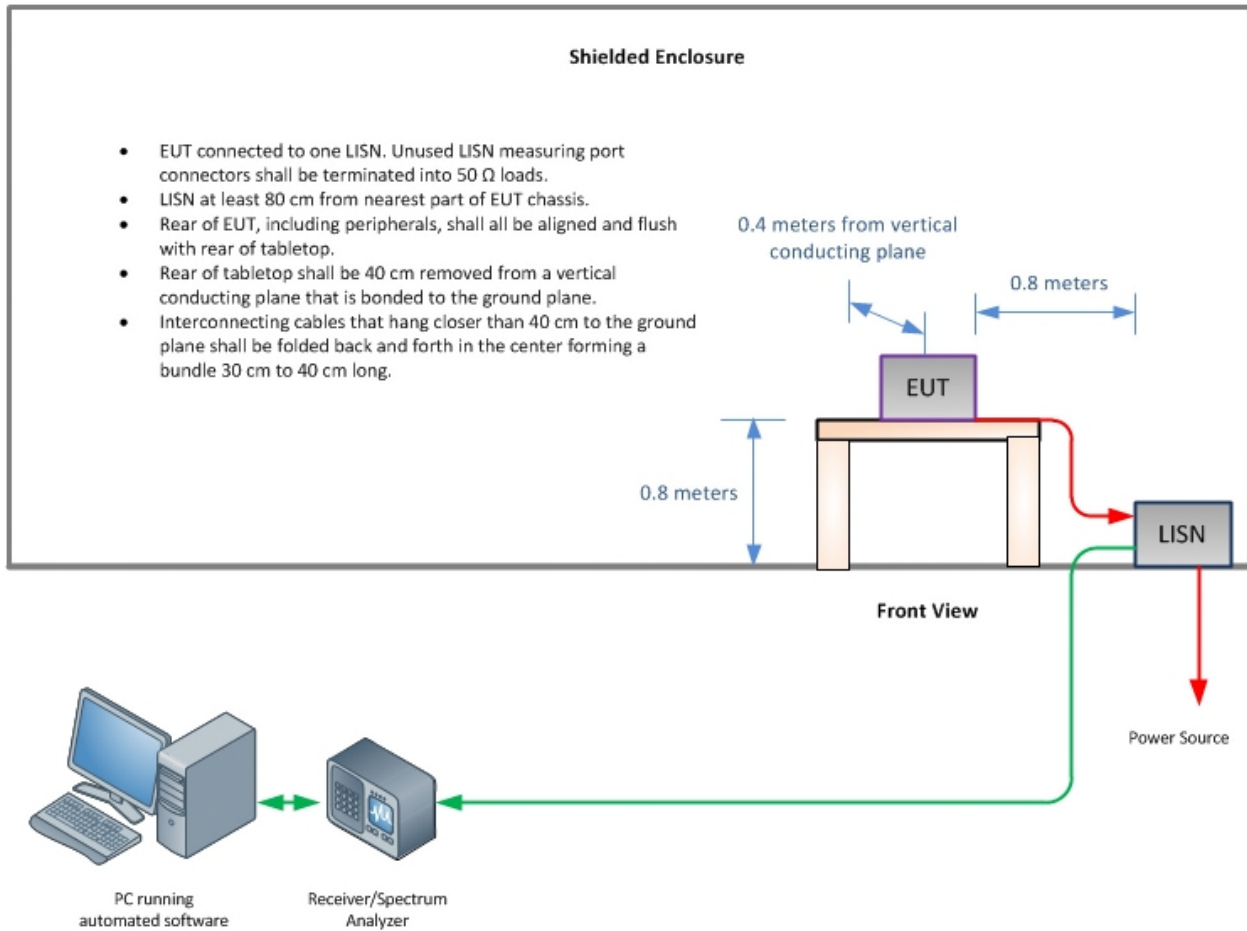


Figure 4-3 – Conducted Emissions Test Setup



5 Measurement Uncertainty

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

Table 6-1 - 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.

Compliance or non-compliance with a disturbance limit shall be determined in the following manner.

If U_{Lab} is less than or equal to U_{CISPR} in Table 5.0-1, then:

- compliance is deemed to occur if no measured disturbance exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.

If U_{Lab} is greater than U_{CISPR} , then:

- compliance is deemed to occur if no measured disturbance, increased by $(U_{Lab} - U_{CISPR})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance, increased by $(U_{Lab} - U_{CISPR})$, exceeds the disturbance limit.

The TÜV SÜD AMERICA, Inc. calculated MU is less than the internationally accepted MU, therefore an adjustment to the measured result as mentioned above is not necessary.



6 Accreditation, Disclaimers and Copyright

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