



Test Report – FCC Part 18

Applicant: Vanguard Protex Global Inc.

Approved for Release By:

Signature: Bruno Clavier

Name & Title: Bruno Clavier, General Manager

Date of Signature 6/22/2023

This test report shall not be reproduced except in full without the written and signed permission of Timco Engineering Inc. (IIA). This test report relates only to the items tested as identified and is not valid for any subsequent changes or modifications made to the equipment under test.



Table of Contents

1.	CUSTOMER INFORMATION.....	3
1.1	TEST RESULT SUMMARY	3
2.	LOCATION OF TESTING	3
2.1	TEST LABORATORY	3
2.2	TESTING WAS PERFORMED, REVIEWED BY	4
3.	TEST SAMPLE(S) (EUT/DUT)	5
3.1	DESCRIPTION OF THE EUT.....	5
3.2	CONFIGURATION OF EUT	6
3.3	TEST SETUP OF EUT	6
4.	TEST METHODS & APPLICABLE REGULATORY LIMITS.....	7
4.1	TEST METHODS/STANDARDS/GUIDANCE	7
5.	MEASUREMENT UNCERTAINTY.....	7
6.	ENVIRONMENTAL CONDITIONS	7
7.	LIST OF TEST EQUIPMENT AND TEST FACILITY.....	8
8.	TEST RESULTS	9
8.1	RADIATED EMISSIONS.....	10
8.1.1	9 kHz to 150 kHz Plot.....	11
8.1.2	150 kHz to 30 MHz Plot	12
8.1.3	30 MHz to 200 MHz, Horizontal/ Vertical Polarity Plot.....	13
8.1.4	200 MHz to 1000 MHz, Horizontal/ Vertical Polarity Plot.....	14
8.2	CONDUCTED EMISSIONS.....	15
8.2.1	Line 1 Plot.....	16
8.2.2	Line 1 Table.....	17
8.2.3	Line 2 Plot.....	18
8.2.4	Line 2 Table.....	19
9.	ANNEX-A - PHOTOGRAPHS OF THE EUT.....	20
10.	ANNEX-B – TEST SETUP PHOTOGRAPHS.....	20
11.	HISTORY OF TEST REPORT CHANGES	20



Timco Engineering, Inc., an IIA Company
849 NW State Road 45, Newberry, Florida 32669
(352) 472-5500 / testing@timcoengr.com

1. Customer Information

Applicant: Vanguard Protex Global Inc.
Address: 720 Brooker Creek Blvd. Suite 223
Oldsmar Florida, 34677, United States

1.1 Test Result Summary

The following test procedure was used ANSI C63.4-2014. Full test results are available in this report.

No additions to the test methods were needed. There were no deviations, or exclusions from the test methods. No test results are from external providers or from the customer. The test results relate only to the items tested. Timco does not offer opinions and interpretations, only a pass/fail statement.

Clauses	Description of the Requirements	Result (Pass, Fail or N/A)
Applicable Clauses from FCC 18 C		
18.305	Radiated Emission Limits	Pass
18.307	Conducted Emission Limits	Pass

2. Location of Testing

2.1 Test Laboratory

Timco Engineering Inc. is a subsidiary of Industrial Inspection & Analysis, Inc. ("IIA"). Testing was performed at Timco's permanent laboratory located at 849 NW State Road 45, Newberry, Florida 32669

FCC test firm # 578780
FCC Designation # US1070
FCC site registration is under A2LA certificate # 0955.01
ISED Canada test site registration # 2056A
EU Notified Body # 1177
For all designations see A2LA scope # 0955.01



Timco Engineering, Inc., an IIA Company
849 NW State Road 45, Newberry, Florida 32669
(352) 472-5500 / testing@timcoengr.com

2.2 Testing was performed, reviewed by

Dates of Testing: 5/22/2023 – 5/26/2023

Signature:

Sr. EMC Engineer
EMC-003838-NE



Name & Title:

Tim Royer, EMC Engineer

Date of Signature

6/22/2023

Signature:

Name & Title:

Kristoffer Costa, EMC Technician

Date of Signature

6/22/2023

Signature:

Name & Title:

Terri Allen, Project Specialist

Date of Signature

6/22/2023



3. Test Sample(s) (EUT/DUT)

The test sample was received: 5/22/2023

3.1 Description of the EUT

A description as well as unambiguous identification of the EUT(s) tested. Where more than one sample is required for technical reasons (such as the use of connected units for the purpose of conducted output power testing where the product units will have integral antennas), each specific test shall identify which unit was tested.

Identification	
FCC ID:	2AKCG-VP1821
Brief Description	Inductive Charging Sensor
Model(s) #	VP-1821
Firmware version	N/A
Software version	N/A
Serial Number	N/A

Technical Characteristics	
Technology	Inductive Charging Sensor
Antenna Connector	N/A
Voltage Rating (AC or Batt.)	AC
Frequency Range	110-205 kHz

Antenna Characteristics			
Antenna	Frequency Range	Mode / BW	Antenna Gain
1	n/a	n/a	0 dBi



3.2 Configuration of EUT

Mode	Number of Ant.
Receive	1

Operating conditions during Testing:

No modifications of the device under test (including firmware, specific software settings, and input/output signal levels to the EUT).

Retail Security electronic wireless charging. The device is a wireless inductive charger that transmits between 110-205 kHz. The charger (a.k.a. the Base Station, or Transmitter) transmits and receives data to the inductive charging receiver inside a mobile phone. Data is exchanged solely for the purpose of managing the charging system itself, and its reach is limited to the near field. The radio is not preapproved.

Peripherals used during Testing:

No peripherals used.

3.3 Test Setup of EUT

Equipment, antenna, and cable arrangement. The setup of the equipment and cable or wire placement on the test site that produces the highest radiated and the highest ac power-line conducted emissions shall be shown clearly and described. Information on the orientation of portable equipment during testing shall be included. Drawings or photographs may be used for this purpose.

Test Setups are included in the test report.



4. Test methods & Applicable Regulatory Limits

4.1 Test methods/Standards/Guidance

The measurement was performed as per ANSI 63.4. Full test results are available in this report.

Limits and Regulatory Limits:

- 1) FCC 18
- 2) KDB 680106
- 3) FCC 15

5. Measurement Uncertainty

Parameter	Uncertainty (dB)
Conducted Emissions	± 3.14 dB
Radiated Emissions (9kHz – 30 MHz)	± 3.08 dB
Radiated Emissions (30 – 200 MHz)	± 2.16 dB
Radiated Emissions (200 – 1000 MHz)	± 2.15 dB
Radiated Emissions (1 GHz – 18 GHz)	± 2.14 dB
Radiated Emissions (18 GHz – 40 GHz)	± 2.31 dB
Note: The uncertainties provided in this table represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of K=2.	

6. Environmental Conditions

Temperature & Humidity

Measurements performed at the test site did not exceed the following:

Parameter	Measurement
Temperature	23 C +/- 5%
Humidity	55% +/- 5%
Barometric Pressure	30.05 in Hg
Note: Specific environmental conditions that are applicable to a specific test are available in the test result section.	



7. List of Test Equipment and Test Facility

The test equipment used identified by type, manufacturer, serial number, or other identification and the date on which the next calibration or service check is due.

Description of the firmware or software used to operate EUT for testing purposes.

A complete list of all test equipment used shall be included with the test report. The manufacturer's model and serial numbers, and date of last calibration, and calibration interval shall be included. Measurement cable loss, measuring instrument bandwidth and detector function, video bandwidth, if appropriate, and antenna factors shall also be included where applicable.

List of Test Equipment

Test Equipment						
Type	Device	Manufacturer	Model	SN#	Current Cal	Cal Due
Antenna	Biconical 1057	Eaton	94455-1	1057	10/16/20	10/16/2023
Antenna	Active Loop	ETS-Lindgren	6502	00062529	10/20/20	10/20/2023
Antenna, NSA	Log-Periodic 1243	Eaton	96005	1243	5/4/21	5/3/2024
CHAMBER	CHAMBER	Panashield	3M	N/A	3/12/19	12/21/2023
Receiver	EMI Test Receiver R&S ESU 40	Rohde & Schwarz	ESU 40	100320	5/27/21	5/26/2024
LISN	LISN (Primary)	Electro-Metrics	ANS-25/2	225363	9/16/20	9/16/2023



8. Test Results

The results of the test are usually indicated in the form of tables, spectrum analyzer plots, charts, sample calculations, as appropriate for each test procedure.

A description and/or a block diagram of the test setup is usually provided.

The measurement results, along with the appropriate limits for comparison, may be presented in tabular or graphical form. In addition, any variation in the measurement environment may be reported if applicable (e.g., a significant change of temperature that could affect the cable loss and amplifier response).

Units of measurement

Unless noted otherwise in the referenced standard, the measurements of ac power-line conducted emissions and conducted power output will be reported in units of dB μ V. Unless noted otherwise in the referenced standard, the measurements of radiated emissions will be reported in units of decibels, referenced to one microvolt per meter (dB μ V/m) for electric fields, or to one ampere per meter (dBA/m) for magnetic fields, at the distance specified in the appropriate standards or requirements. The measurements of antenna-conducted power for receivers may be reported in units of dB μ V if the impedance of the measuring instrument is also reported. Otherwise, antenna-conducted power will be reported in units of decibels referenced to one milliwatt (dBm). All formulas for data conversions and conversion factors, if used, will be included in this measurement report.

Example:

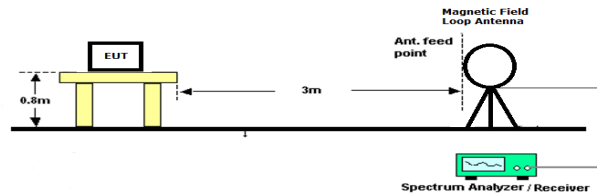
Freq (MHz)	Meter Reading	+ ACF	+CL	= FS
33	20 dB μ V	+ 10.36 dB/m	+0.40 dB	=30.36 dB μ V/m @ 3m

$$\text{EIRP} = \text{Pcond (dBm)} + \text{dBi}$$

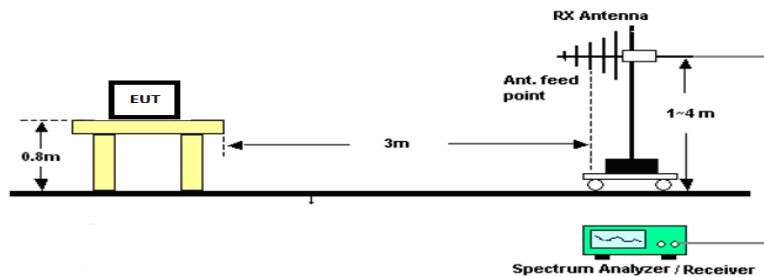
8.1 Radiated Emissions

Limits from FCC 18.305(b) and 15.209, test procedure from ANSI C63.4-2014.

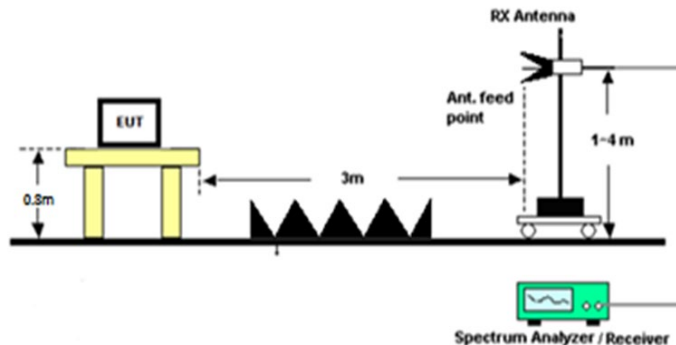
Radiated Test Setup, Below 30 MHz



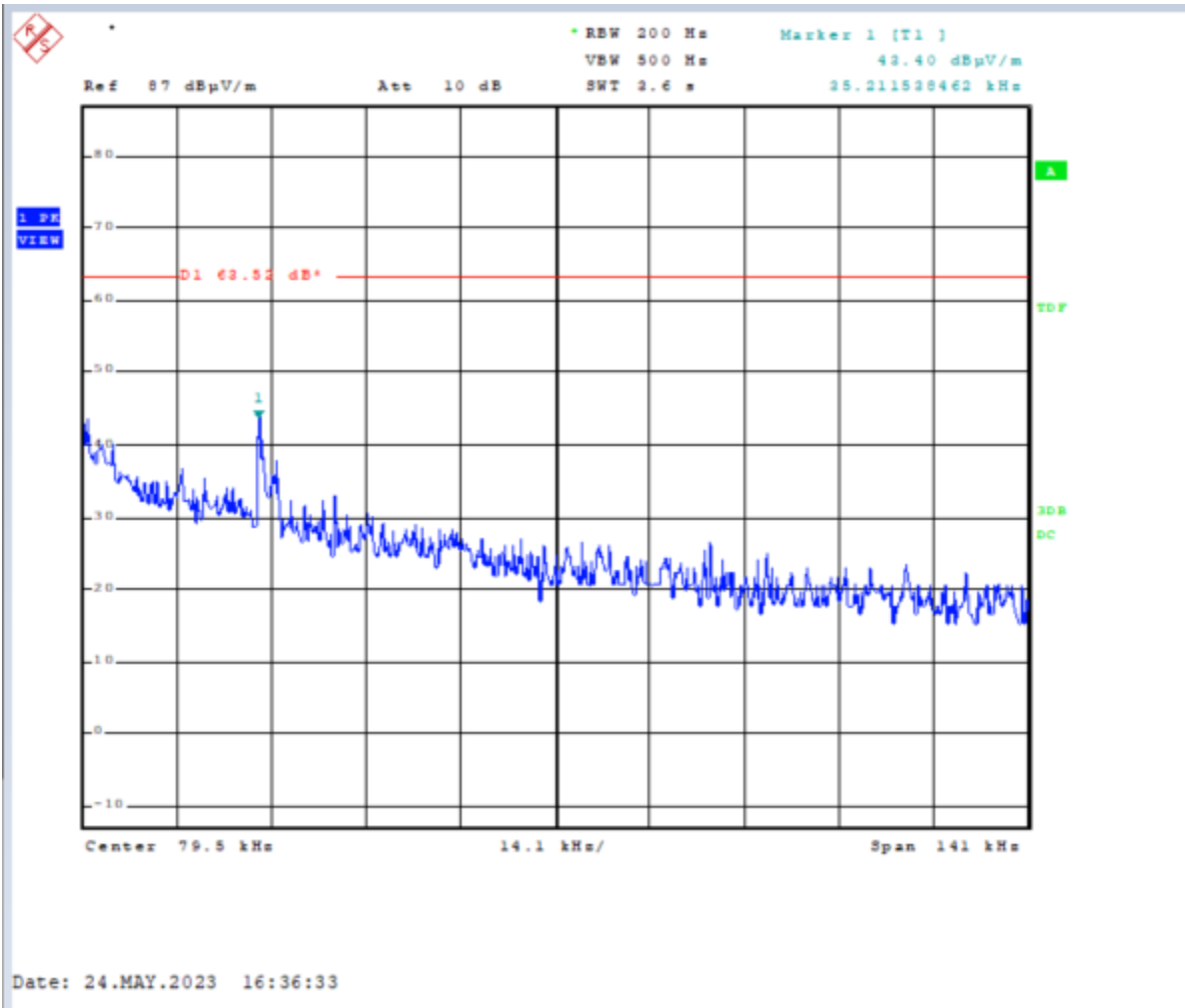
Radiated Test Setup, 30 – 1000 MHz



Radiated Test Setup, Above 1000 MHz



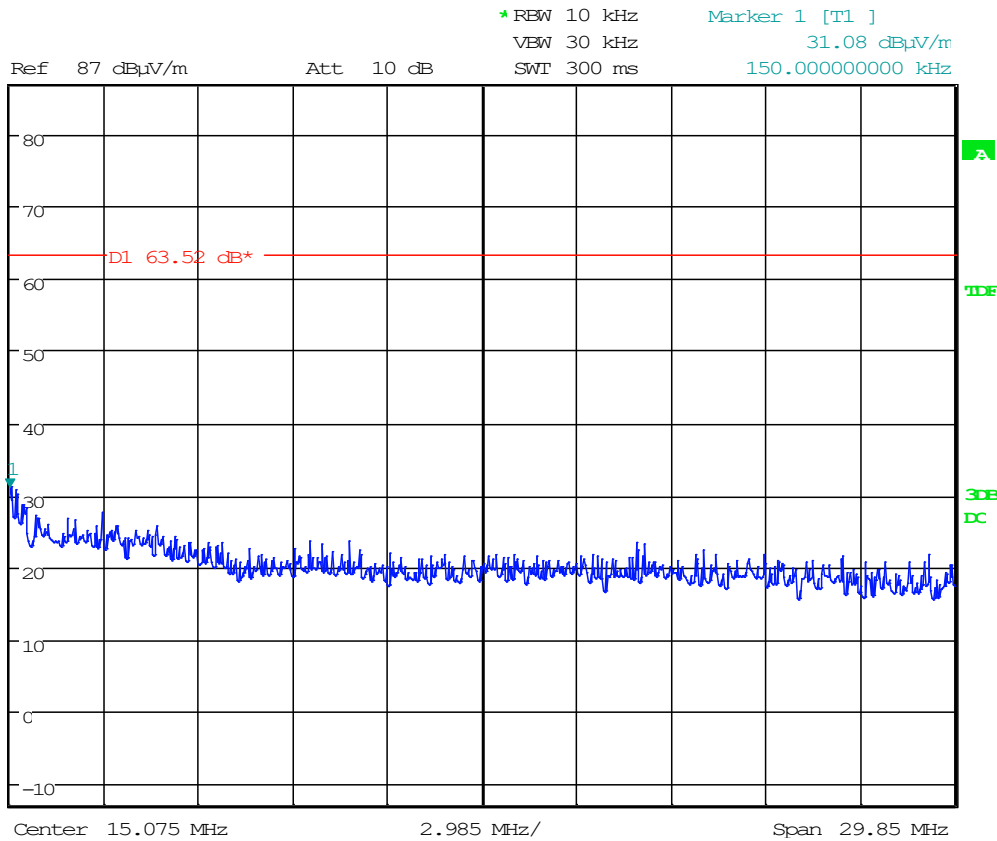
8.1.1 9 kHz to 150 kHz Plot





Timco Engineering, Inc., an IIA Company
849 NW State Road 45, Newberry, Florida 32669
(352) 472-5500 / testing@timcoengr.com

8.1.2 150 kHz to 30 MHz Plot

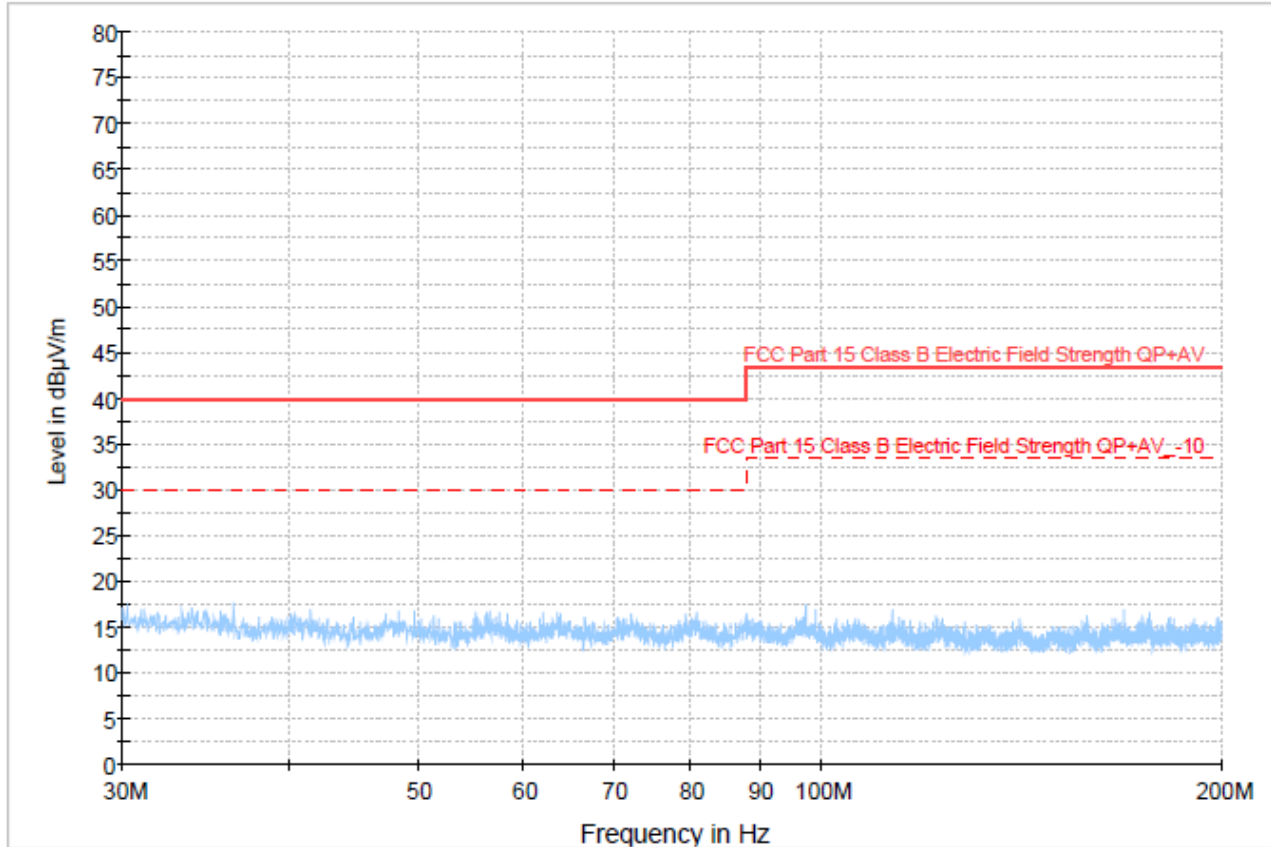


Date: 2.JUN.2023 11:50:48



8.2.1 30 MHz to 200 MHz, Horizontal/ Vertical Polarity Plot

Full Spectrum



5/24/2023

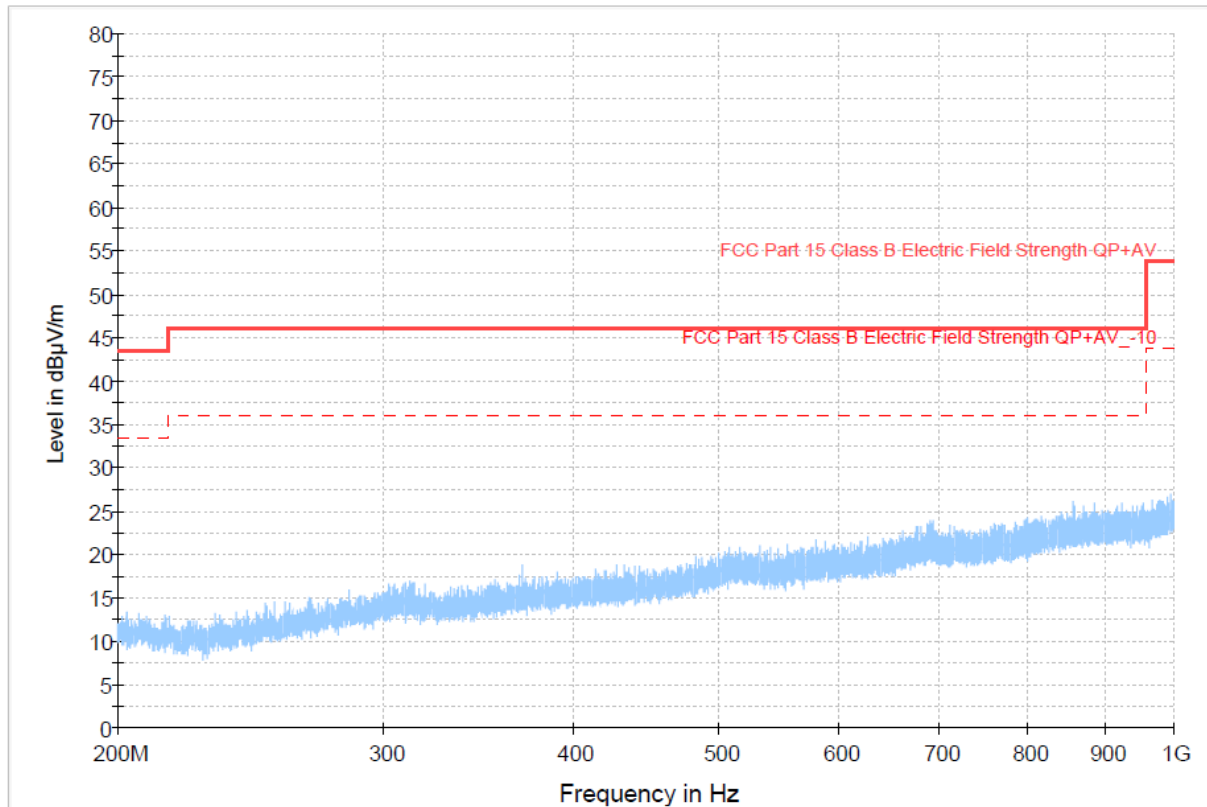
2:16:37 PM

Final Result

Frequency (MHz)	QuasiPeak (dBuV/m)	CAverage (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
---	---	---	---	---	---	---	---	---	---	---	

8.2.2 200 MHz to 1000 MHz, Horizontal/ Vertical Polarity Plot

Full Spectrum



5/24/2023

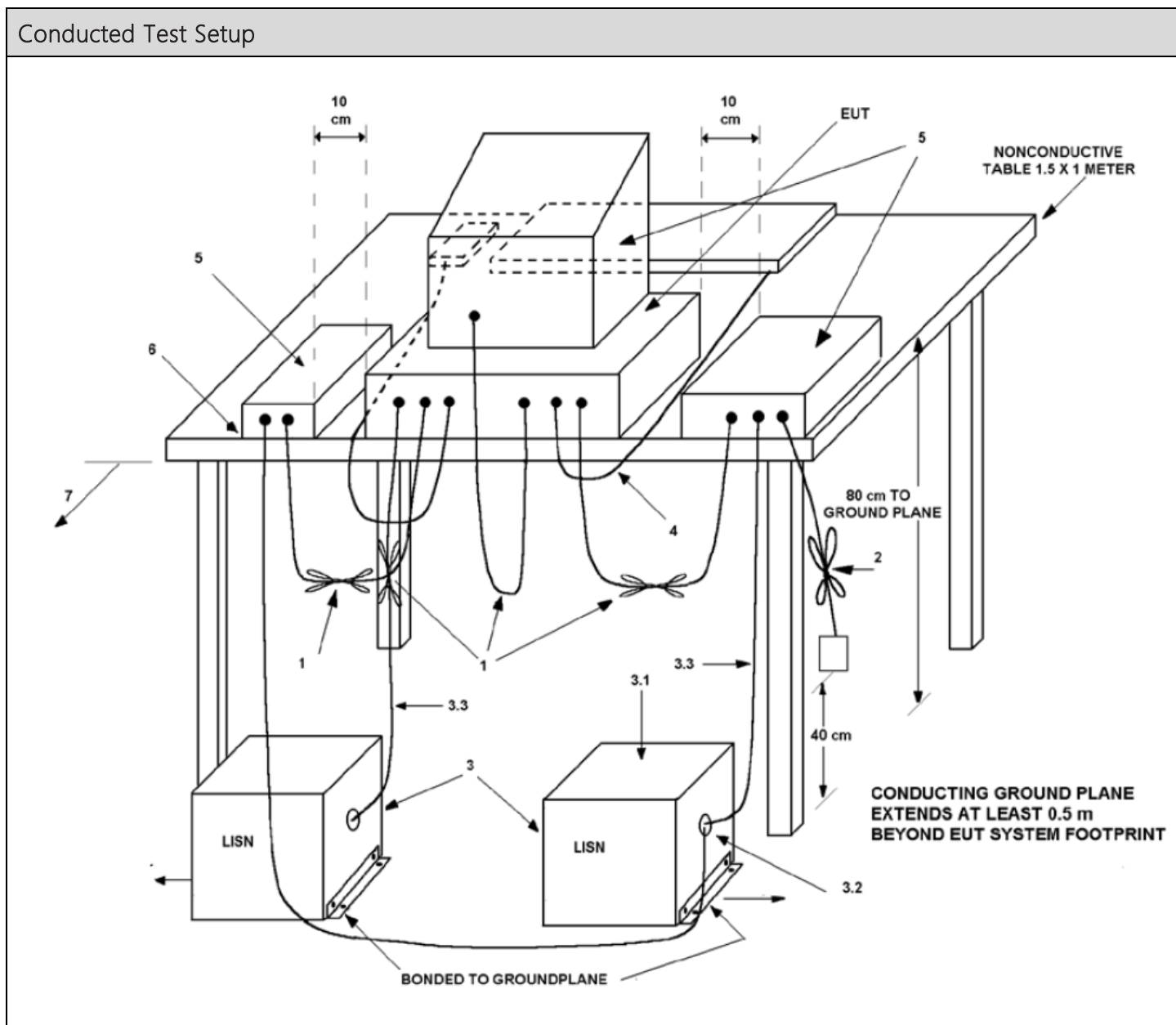
1:52:07 PM

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
--	--	--	--	--	--	--	--	--	--	--	

8.3 Conducted Emissions

Limits from FCC 15.209 and test procedure from ANSI C63.4-2014.



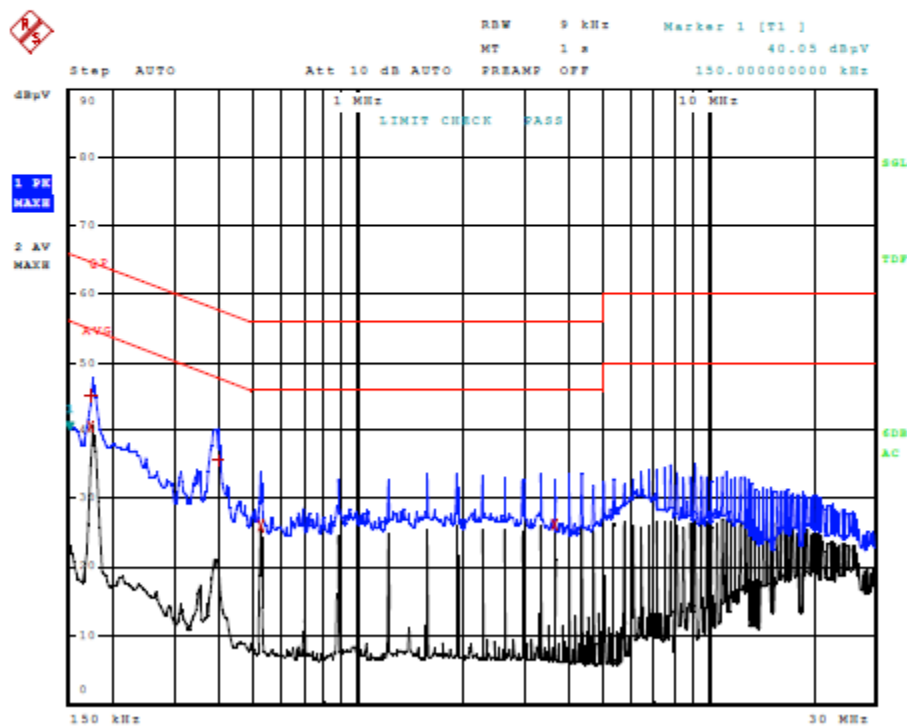
8.3.1 Line 1 Plot

25.May 23 11:59

Stepped Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: tdf_20

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	4.00 kHz	9.00 kHz	100 ms	Auto	0 dB	INPUT2





Timco Engineering, Inc., an IIA Company
849 NW State Road 45, Newberry, Florida 32669
(352) 472-5500 / testing@timcoengr.com

8.3.2 Line 1 Table

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 5

Trace	Frequency	Level (dBμV)	Detector	Delta Limit/dB
1	174.000000000 kHz	45.09	Quasi Peak	-19.68
2	174.000000000 kHz	40.55	Average	-14.22
1	394.000000000 kHz	35.66	Quasi Peak	-22.32
2	522.000000000 kHz	26.07	Average	-19.93
2	3.662000000 MHz	26.22	Average	-19.78

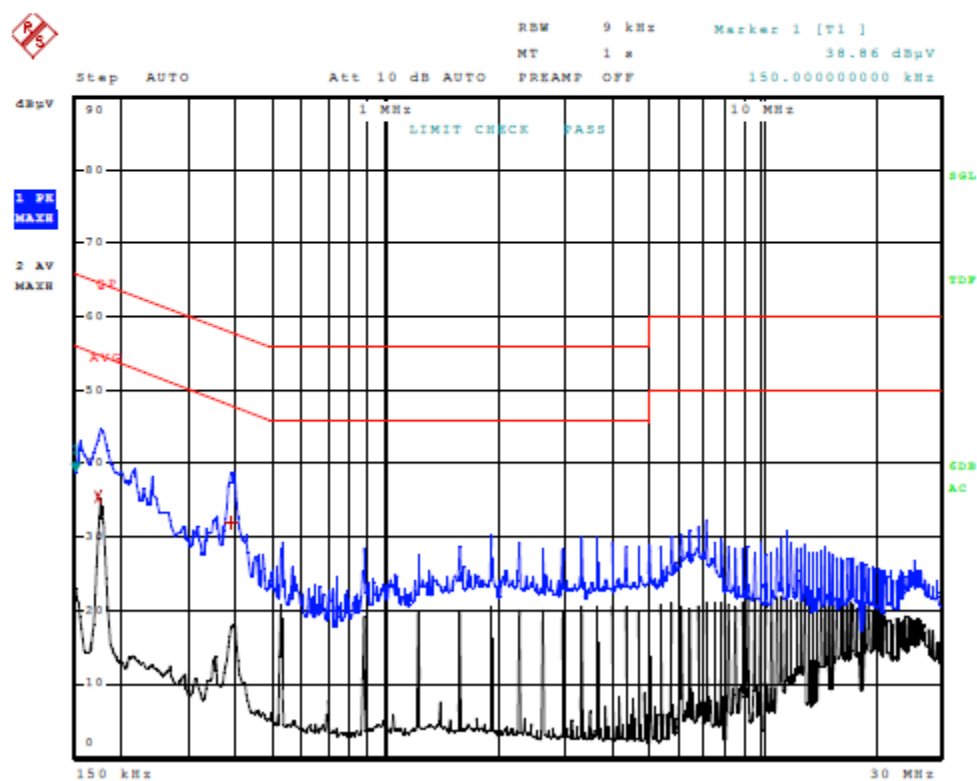
8.3.3 Line 2 Plot

25.May 23 10:22

Stepped Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: tdf_20

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamplifier	Input
150.000000 kHz	30.000000 MHz	4.00 kHz	9.00 kHz	100 ms	Auto	0 dB	INPUT2





Timco Engineering, Inc., an IIA Company
849 NW State Road 45, Newberry, Florida 32669
(352) 472-5500 / testing@timcoengr.com

8.3.4 Line 2 Table

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 2

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	174.000000000 kHz	35.36	Average	-19.40
1	390.000000000 kHz	31.93	Quasi Peak	-26.14



Timco Engineering, Inc., an IIA Company
849 NW State Road 45, Newberry, Florida 32669
(352) 472-5500 / testing@timcoengr.com

9. ANNEX-A - Photographs of the EUT

Photographs of the EUT and any manufacturer supplied accessories to be used with the EUT are in a separate document.

10. ANNEX-B – Test Setup Photographs

Test setup photographs are located in a separate document.

11. History of Test Report Changes

Test Report #	Revision #	Description	Date of Issue
TR_8054-23_FCC_18_	1	Initial release	6/9/2023



Timco Engineering, Inc., an IIA Company
849 NW State Road 45, Newberry, Florida 32669
(352) 472-5500 / testing@timcoengr.com

END OF TEST REPORT
