Engineering Test Report No. 2102837-01 Rev. A		
Report Date	October 29, 2021	
Manufacturer Name	TriMark Corporation	
Manufacturer Address	500 Bailey Ave New Hampton, IA 50659	
Model No.	40495-01	
Date Received	October 11, 2021	
Test Dates	October 11 and 12, 2021	
Specifications	FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C Innovation, Science, and Economic Development Canada, RSS-210 Innovation, Science, and Economic Development Canada, RSS-GEN	
Test Facility	Elite Electronic Engineering, Inc. 1516 Centre Circle, Downers Grove, IL 60515	FCC Reg. Number: 269750 IC Reg. Number: 2987A CAB Identifier: US0107
Signature	Tylar Jozefczyk	
Tested by	Tylar Jozefczyk	
Signature	Raymond J Klouda	
Approved by	Raymond J. Klouda, Registered Professional Engineer of Illinois – 44894	
PO Number	13483101-000 ON	

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1. Report Revision History

Revision	Date	Description
–	02 NOV 2021	Initial Release of Engineering Test Report No. 2102837-01
A	25 MAR 2022 by TMJ	- Engineering Test Report Number updated from 2102837-01 to 2102837-01 Rev. A throughout report. - Section 22: added RSS-Gen magnetic field limit table and data tables.

2. Introduction

2.1. Scope of Tests

This document presents the results of a series of RF emissions tests that were performed on the TriMark Corporation ERX6 (hereinafter referred to as the Equipment Under Test (EUT)). The EUT was manufactured and submitted for testing by TriMark Corporation located in New Hampton, IA.

2.2. Purpose

The test series was performed to determine if the EUT meets the RF emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C.

The test series was also performed to determine if the EUT meets the RF emission requirements of the Innovation, Science, and Economic Development Canada Radio Standards Specification RSS-GEN and Industry Canada Radio Standards Specification RSS-210 for Transmitters.

Testing was performed in accordance with ANSI C63.10-2013.

2.3. Identification of the EUT

The EUT was identified as follows:

EUT Identification	
Product Description	ERX6
Model/Part No.	40495-01
Serial No.	21/36-00005
Size of EUT	154mm x 134mm x 37.5mm
Software/Firmware Version	40318.A1
Band of Operation	125kHz (Transmit) 433MHz (Receive)
Antenna Type	Emitter Antenna (ferrite core wound with enameled copper wire and tuning capacitor)
Manufacturer Supplied [1] Antenna Gain	1dBi
Occupied (99%) Bandwidth	7.63kHz
Emission Classification	7K63K1D--
Product FCC ID & ISED UPN Number	FCC ID: TV2ERX6 ISED UPN: 6262A-ERX6

Note 1 – Antenna gain is supplied by the manufacturer and Elite is not responsible for the accuracy of the antenna gain.

The EUT listed above was used throughout the test series.

3. Power Input

The EUT was powered by 24VDC from a twisted pair, 1-meter, cable harness.

4. Grounding

The EUT was not connected to ground.

5. Support Equipment

The EUT was submitted for testing along with the following support equipment:

Description	Model #	S/N
Laptop	N/A	N/A

6. Interconnect Leads

No interconnect cables were submitted with the test item.

7. Modifications Made to the EUT

No modifications were made to the EUT during the testing.

8. Modes of Operation

The EUT and all peripheral equipment were energized. The unit was programmed to transmit in one of the following modes:

Mode	Description
Tx	EUT was set to transmit at 125kHz from one of three antennas.
Rx	EUT was set to receive at 433MHz.

9. Test Specifications

The tests were performed to selected portions of, and in accordance with the test specifications.

- Federal Communications Commission “Code of Federal Regulations”, Title 47, Chapter I, Subchapter A, Part 15, Subpart B
- Federal Communications Commission “Code of Federal Regulations”, Title 47, Chapter I, Subchapter A, Part 15, Subpart C
- ANSI C63.4-2014, “American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40 GHz”
- ANSI C63.10-2013, “American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices”
- ICES-003, Issue 7, October 2020, “Information Technology Equipment (including Digital Apparatus)”
- RSS-Gen Issue 5, February 2021, Amendment 2, Innovation, Science, and Economic Development Canada, “General Requirements for Compliance of Radio Apparatus”
- RSS-210 Issue 10, April 2020, Amendment 1, “License-Exempt Radio Apparatus: Category I Equipment”

10. Test Plan

No test plan was provided. Instructions were provided by personnel from TriMark Corporation and used in conjunction with the FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Innovation, Science, and Economic Development Canada, RSS-210, and ANSI C63.4-2014 specifications.

11. Deviation, Additions to, or Exclusions from Test Specifications

There were no deviations, additions to, or exclusions from the test specifications during this test series.

12. Laboratory Conditions

The following laboratory conditions were present during testing:

Ambient Parameters	Value
Temperature	24.5°C
Relative Humidity	38%
Atmospheric Pressure	1005.2mb

13. Summary

The following EMC tests were performed, and the results are shown below:

Test Description	Requirements	Test Method	Results
Receiver Radiated Emissions	FCC §15.109 ISED RSS-GEN	ANSI C63.4:2014	Conforms
Occupied Bandwidth (99%)	RSS-GEN ISED RSS-210	ANSI C63.10:2013	Conforms
Spurious Radiated Emissions	FCC §15.209 ISED RSS-210	ANSI C63.10:2013	Conforms

14. Sample Calculations

For Radiated Emissions:

The resultant field strength (FS) is a summation in decibels (dB) of the receiver meter reading (MTR), the antenna correction factor (AF), and the cable loss factor (CF). If an external preamplifier is used, the total is reduced by its gain (-PA). If a distance correction (DC) is required, it is added to the total.

Formula 1: FS (dBµV/m) = MTR (dBµV) + AF (dB/m) + CF (dB) + (- PA (dB)) + DC (dB)

To convert the Field Strength dBµV/m term to µV/m, the dBµV/m is first divided by 20. The Base 10 AntiLog is taken of this quotient. The result is the Field Strength value in µV/m terms.

Formula 2: FS (µV/m) = AntiLog [(FS (dBµV/m))/20]

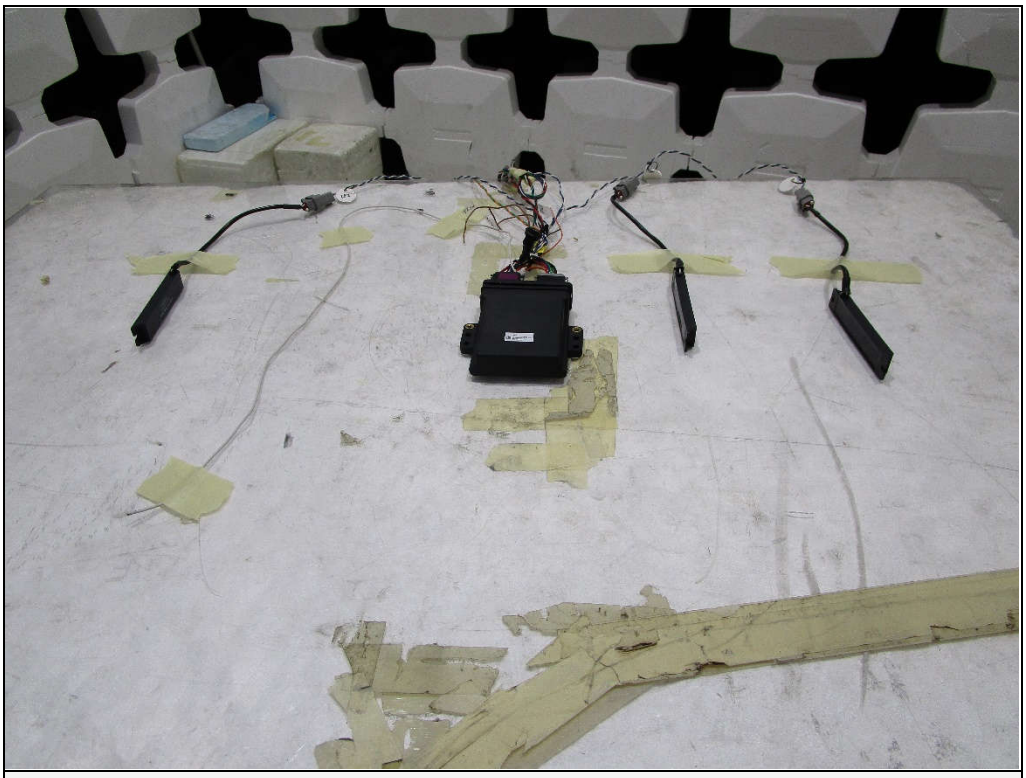
15. Statement of Conformity

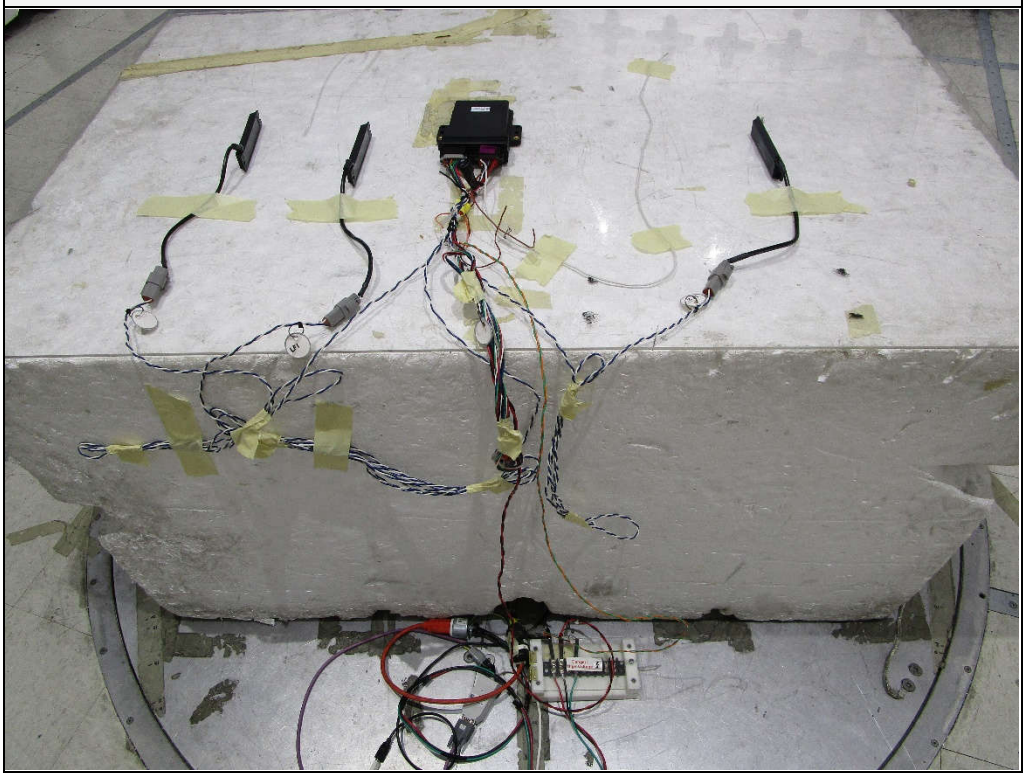
The TriMark Corporation ERX6 (Model No. 40495-01, Serial No. 21/36-00005) did fully conform to the selected requirements of FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C and Innovation, Science, and Economic Development Canada, RSS-210.

16. Certification

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C and Innovation, Science, and Economic Development Canada, RSS-210 test specifications. The data presented in this test report pertains to the EUT on the test date specified. Any electrical or mechanical modifications made to the EUT subsequent to the specified test date will serve to invalidate the data and void this certification.

17. Photographs of EUT



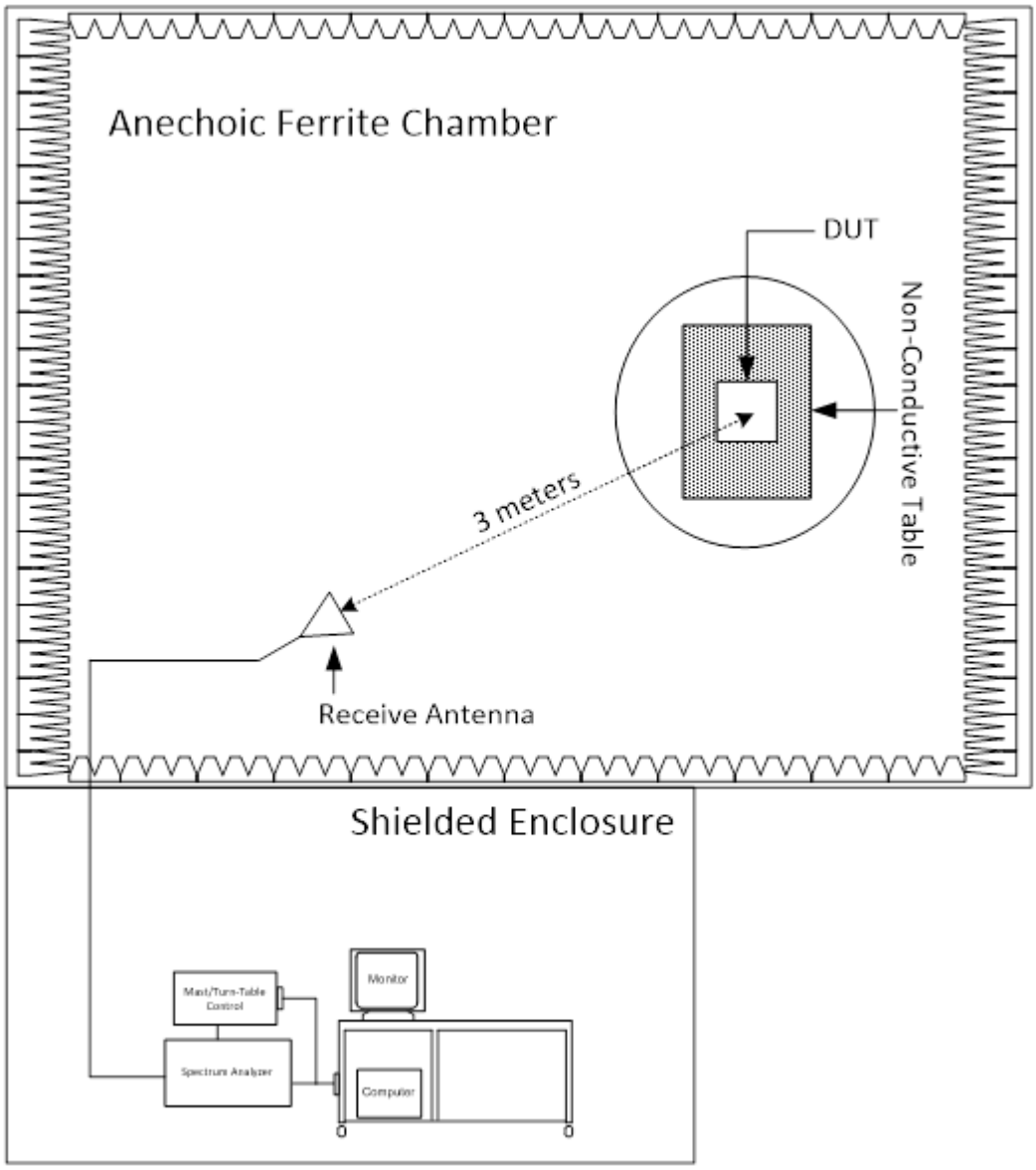


18. Equipment List

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Due Date
APW14	PREAMPLIFIER	PLANAR	PE2-35-120-5R0-10-12-SFF	PL22671	1-20GHz	9/21/2021	9/21/2022
CDZ3	LAB WORKSTATION	ELITE	LWS-10		WINDOWS 10	CNR	
NLS0	24" ACTIVE LOOP ANTENNA	EMCO	6502	89979	10KHZ-30MHZ	9/11/2020	9/11/2022
NTA4	BILOG ANTENNA	TESEQ	6112D	46660	20-2000GHZ	10/5/2020	11/5/2021
NWQ0	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS LINDGREN	3117	66657	1GHZ-18GHZ	5/13/2020	5/13/2022
RBG2	EMI ANALYZER	ROHDE & SCHWARZ	ESW44	101591	2HZ-44GHZ	3/11/2021	3/11/2022
SES0	24VDC POWER SUPPLY	P-TRANS	FS-32024-1M	001	18-27VDC	NOTE 1	
SMAV	DC POWER SUPPLY	VOLTEQ	HY3020EX	020177933	30VDC/20A	NOTE 1	
VBV2	CISPR EN FCC ICES RE.EXE	ELITE	CISPR EN FCC ICES RE.EXE	---	---	N/A	
WKA1	SOFTWARE, UNIVERSAL RCV EMI	ELITE	UNIV_RCV_EMI	1	---	I/O	

N/A: Not Applicable I/O: Initial Only CNR: Calibration Not Required
NOTE 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

19. Block Diagram of Test Setup



Radiated Measurements Test Setup

20. Receiver Radiated Emissions

EUT Information	
Manufacturer	TriMark Corporation
Product	ERX6
Model No.	40495-01
Serial No.	21/36-00005
Mode	Rx

Test Site Information	
Setup Format	Tabletop
Height of Support	N/A
Type of Test Site	Semi-Anechoic Chamber
Test Site Used	Room 29
Type of Antennas Used	Below 1GHz: Bilog (or equivalent) Above 1GHz: Double-ridged waveguide (or equivalent)
Highest Internal Frequency	433MHz
Highest Measurement Frequency	2GHz
Notes	The cables were manually maximized during the preliminary emissions sweeps. The cable arrangement which resulted in the worst-case emissions was utilized.

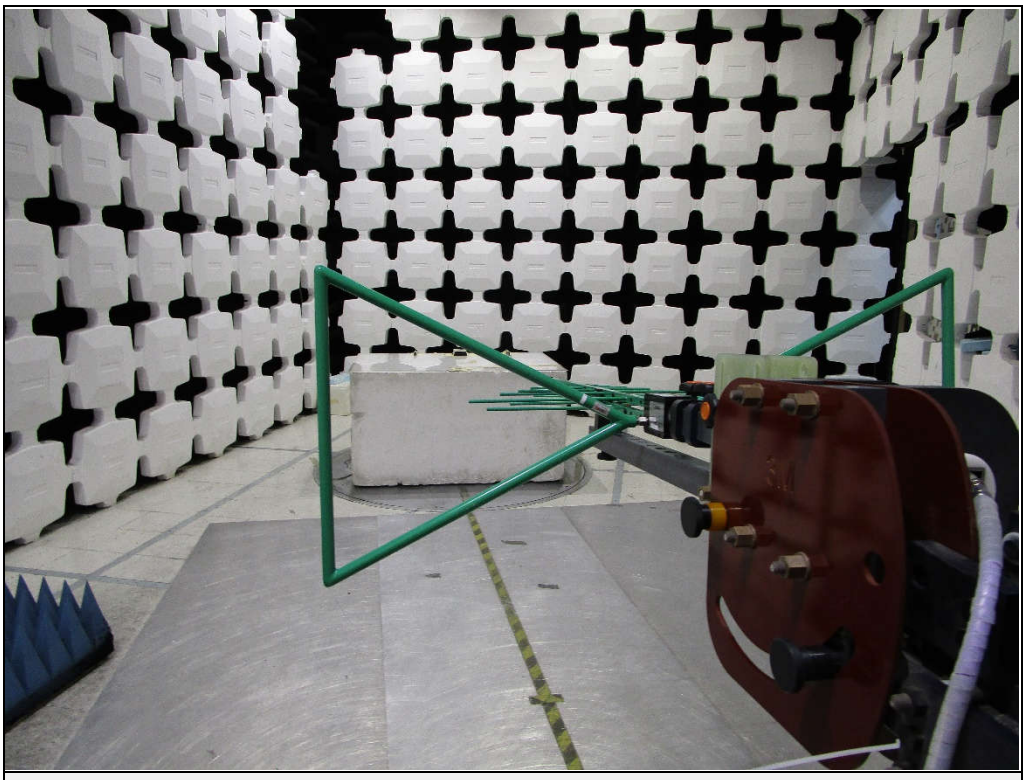
Measurement Uncertainty	
Measurement Type	Expanded Measurement Uncertainty
Radiated disturbance (electric field strength on an open area test site or alternative test site) (30 MHz – 1000 MHz)	4.3
Radiated disturbance (electric field strength on an open area test site or alternative test site) (1 GHz – 6 GHz)	3.1

Requirements
The field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the values in the following tables.

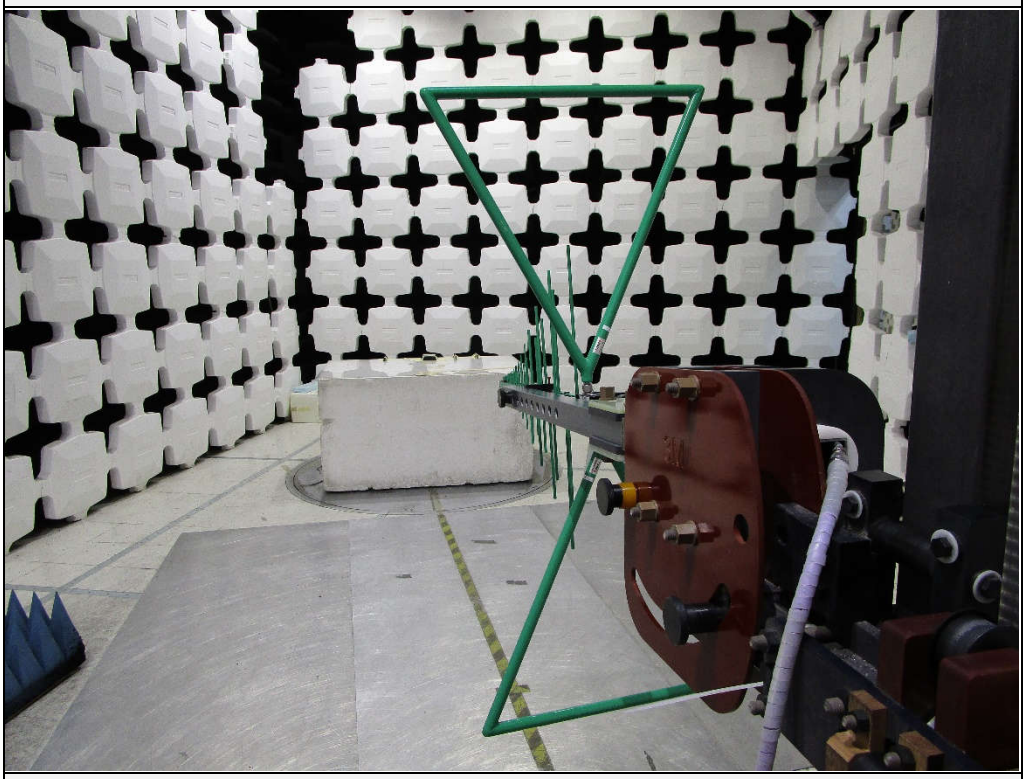
FCC Part 15 Class B Radiated Emissions Limits (30MHz to 1GHz)		
Frequency of Emission (MHz)	Field Strength (µV/m)	Field Strength (dBµV/m)
30 – 88	100	40
88 – 216	150	43.5
216 – 960	200	46
Above 960	500	54
FCC Part 15 Class B Radiated Emissions Limits (Above 1GHz)		
Frequency of Emission (MHz)	Peak Limit (dBµV/m)	Average Limit (dBµV/m)
Above 1000	74	54

ICES-003 Class B Radiated Emissions Limits (30MHz to 1GHz)		
Frequency Range (MHz)	Field Strength at 3 meters (dBµV/m)	Field Strength at 10 meters (dBµV/m)
30 – 88	40	30
88 – 216	43.5	33.1
216 – 230	46	35.6
230 – 960	47	37
960 – 1000	54	43.5
ICES-003 Class B Radiated Emissions Limits (At and Above 1GHz)		
Frequency Range (GHz)	Average (dBµV/m)	Peak (dBµV/m)
1 – F_M	54	74
F_M = highest measurement frequency		

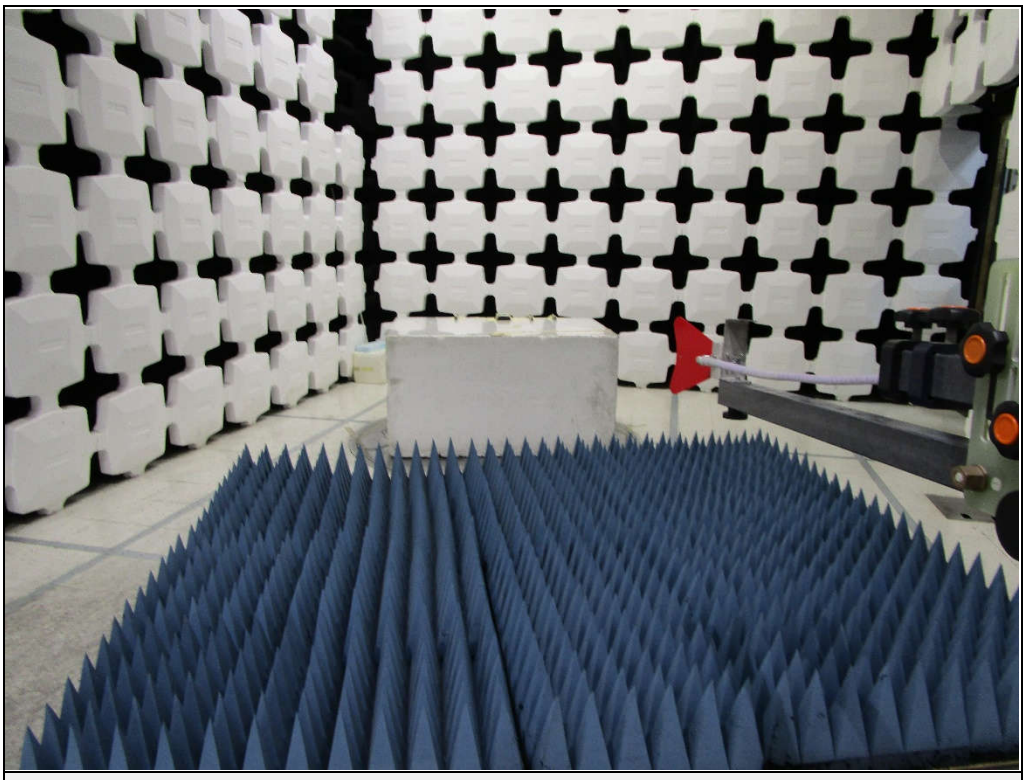
Procedure
Since a quasi-peak detector and an average detector requires long integration times, it is not practical to automatically sweep through the quasi-peak and average levels. Therefore, radiated emissions from the EUT were first scanned using a peak detector and automatically plotted. The frequencies where significant emission levels were noted were then remeasured using the quasi-peak detector or average detector. The EUT and all peripheral equipment were placed on an 80cm high non-conductive stand. The broadband measuring antenna was positioned at a 3 meter distance from the EUT. The frequency range from 30MHz to 1GHz was investigated using a peak detector function with the bilog antenna at several heights, horizontal and vertical polarization, and with several different orientations of the EUT with respect to the antenna. The frequency range from 1GHz to 2GHz was investigated using a peak detector function with the double ridged waveguide antenna at several heights, horizontal and vertical polarization, and with several different orientations of the EUT with respect to the antenna. The maximum levels for each antenna polarization were plotted. Final radiated emissions were performed on all significant broadband and narrowband emissions found in the exploratory sweeps using the following methods: 1) Measurements from 30MHz to 1GHz were made using a quasi-peak detector and a broadband bilog antenna. Measurements above 1GHz were made using an average detector and a broadband double ridged waveguide antenna. 2) To ensure that maximum or worst case, emission levels were measured, the following steps were taken: a) The EUT was rotated so that all sides were exposed to the receiving antenna. b) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured. c) The measuring antenna was raised and lowered from 1 to 4 meters for each antenna polarization to maximize the readings. d) For hand-held or body-worn devices, the EUT was rotated through three orthogonal axes to determine which orientation produces the highest emission relative to the limit.



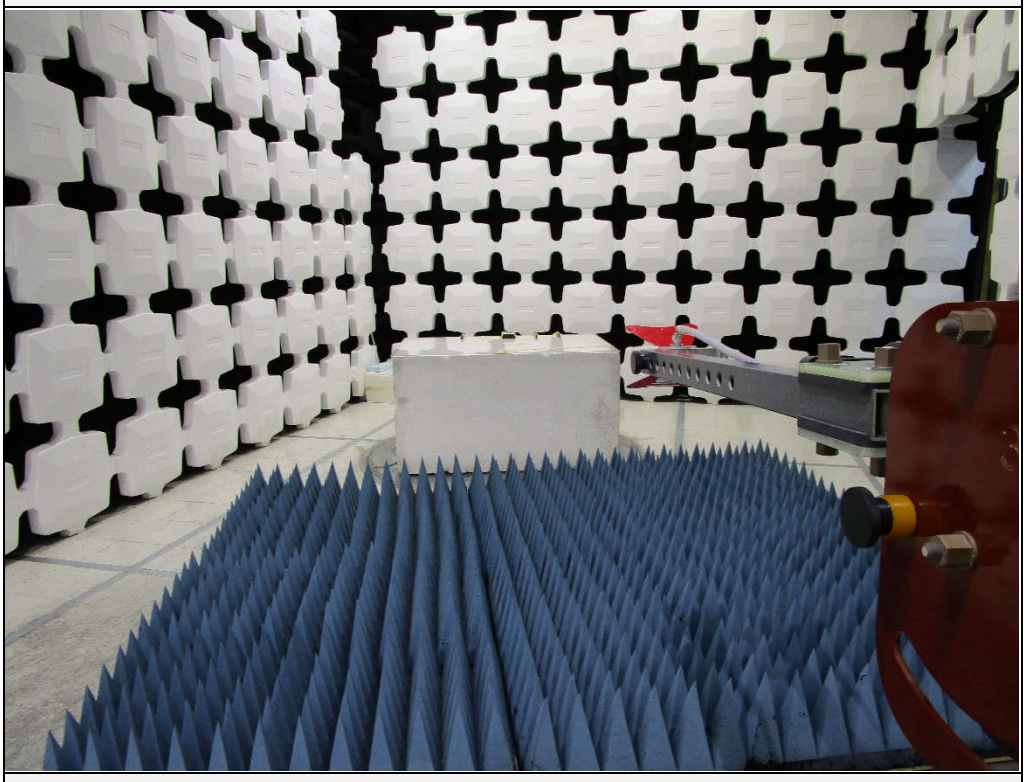
Test Setup for Radiated Emissions: 30MHz to 1GHz, Horizontal Polarization



Test Setup for Radiated Emissions: 30MHz to 1GHz, Vertical Polarization



Test Setup for Radiated Emissions: Above 1GHz, Horizontal Polarization

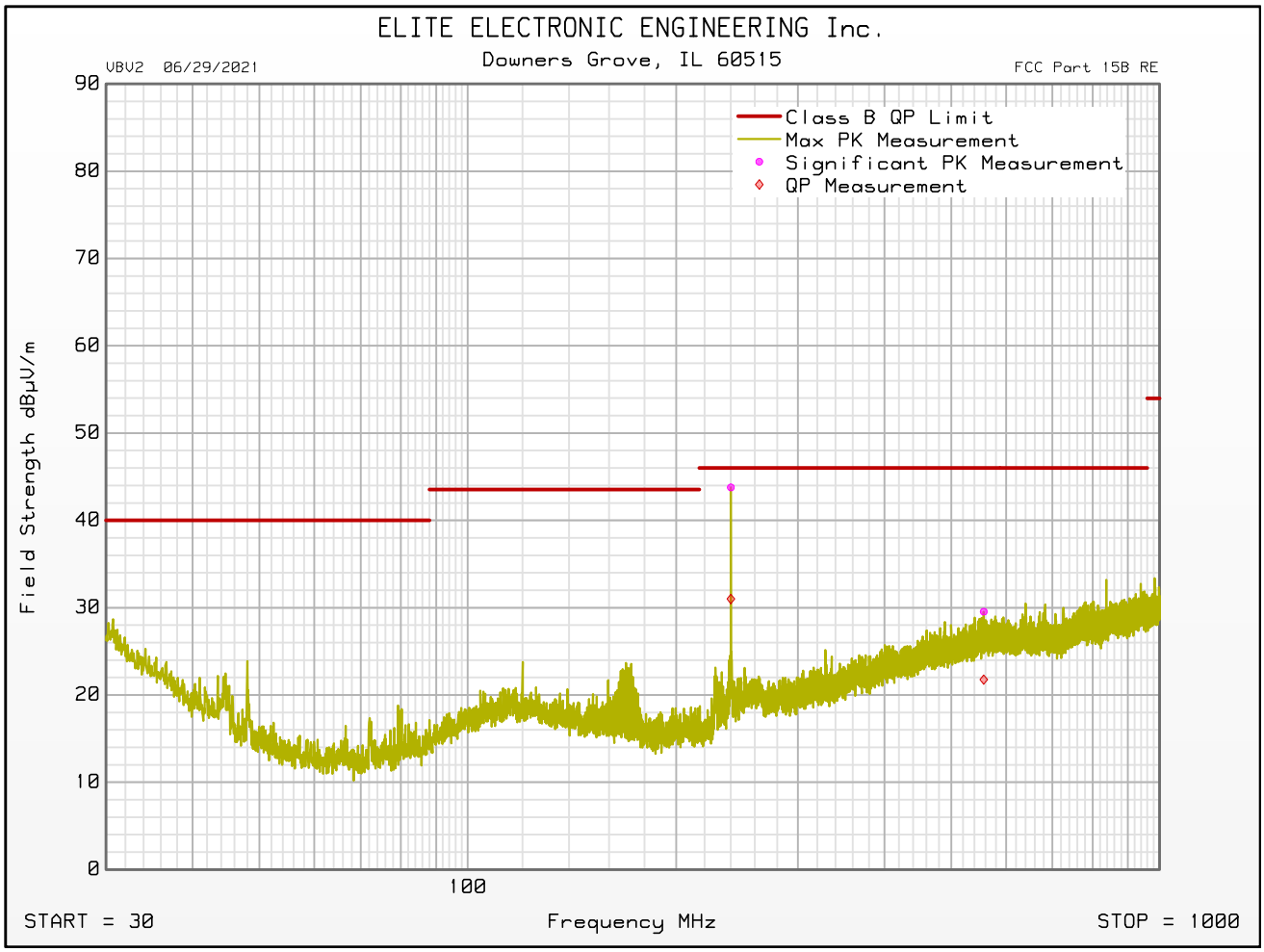


Test Setup for Radiated Emissions: Above 1GHz, Vertical Polarization

FCC Part 15B Class B
Radiated RF Emissions Test

SW ID/Rev: VBV2 06/29/2021

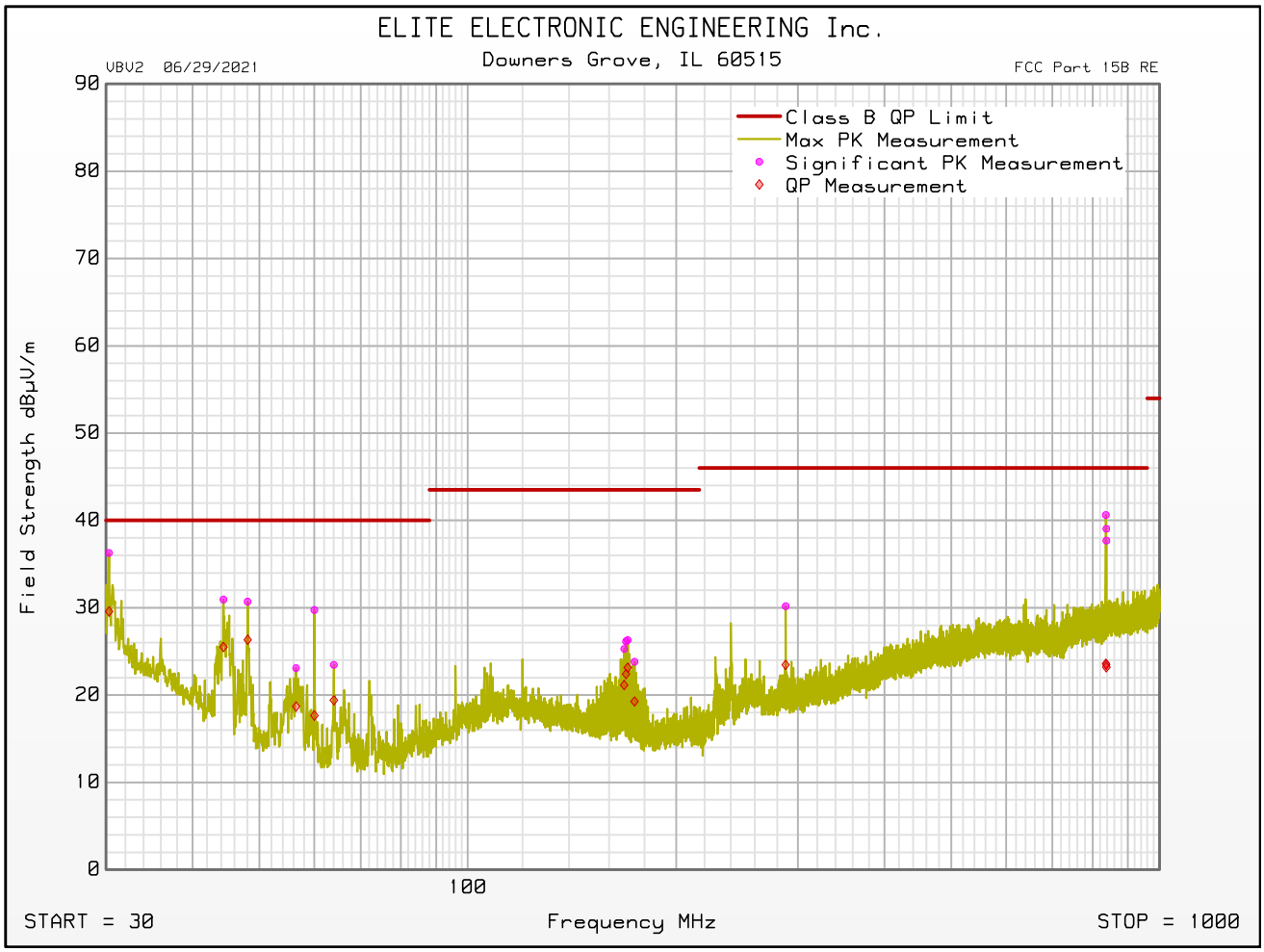
Manufacturer	:	TRIMARK
Model	:	40495-01
Serial Number	:	
DUT Mode	:	RX @ 433MHZ
Turntable Step Angle (°)	:	45
Mast Positions (cm)	:	120, 200, 340
Antenna Polarization	:	Horizontal
Scan Type	:	Stepped Scan
Test RBW	:	120 kHz
Prelim Dwell Time (s)	:	0.0001
Notes	:	24VDC
Test Engineer	:	T. Jozefczyk
Test Date	:	Oct 11, 2021 02:43:04 PM



FCC Part 15B Class B
Radiated RF Emissions Test

SW ID/Rev: VBV2 06/29/2021

Manufacturer	:	TRIMARK
Model	:	40495-01
Serial Number	:	
DUT Mode	:	RX @ 433MHZ
Turntable Step Angle (°)	:	45
Mast Positions (cm)	:	120, 200, 340
Antenna Polarization	:	Vertical
Scan Type	:	Stepped Scan
Test RBW	:	120 kHz
Prelim Dwell Time (s)	:	0.0001
Notes	:	24VDC
Test Engineer	:	T. Jozefczyk
Test Date	:	Oct 11, 2021 02:43:04 PM



FCC Part 15B Class B
Radiated RF Emissions Test

SW ID/Rev: VBV2 06/29/2021

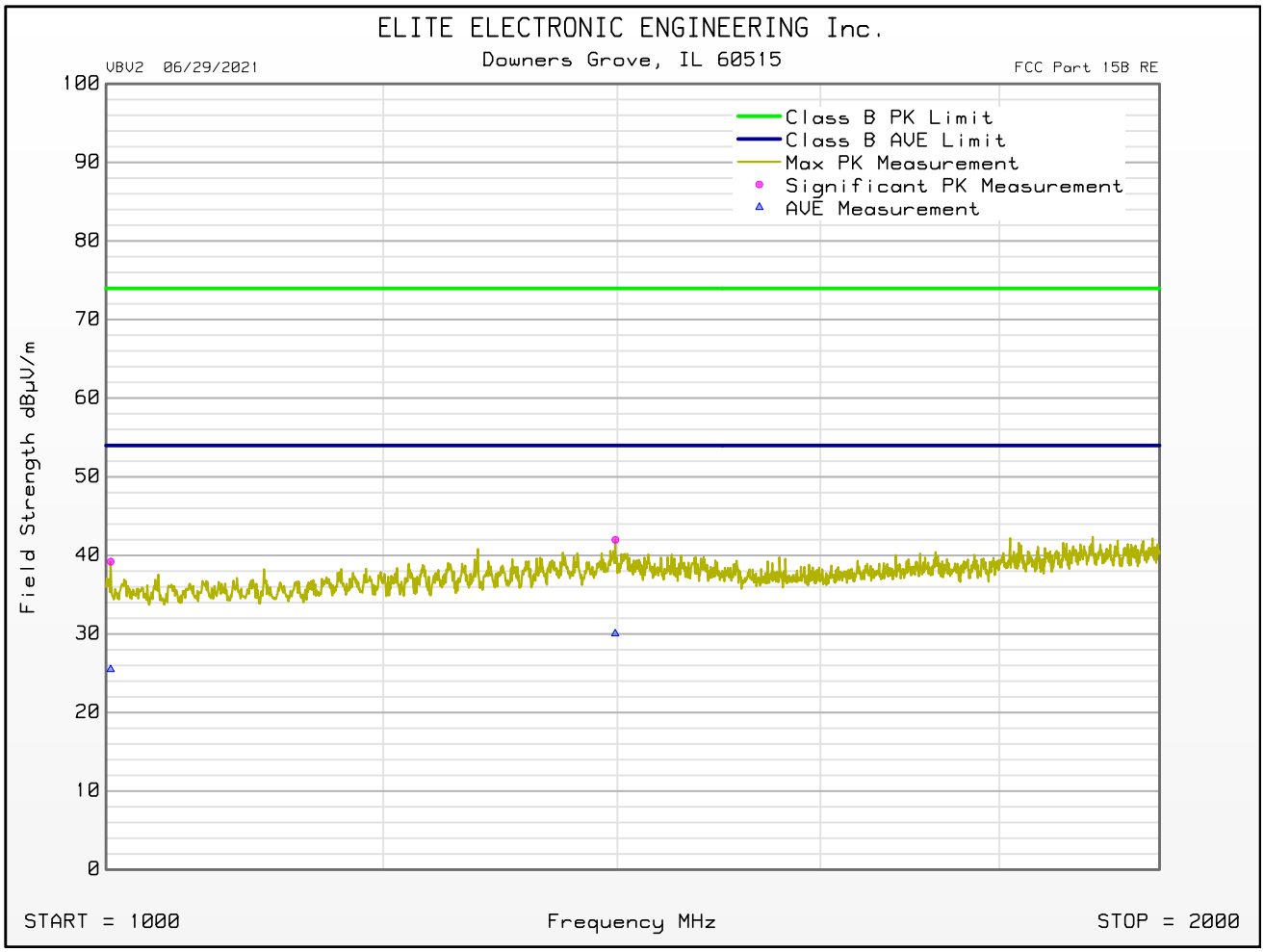
Manufacturer : TRIMARK
Model : 40495-01
Serial Number :
DUT Mode : RX @ 433MHZ
Turntable Step Angle (°): 45
Mast Positions (cm) : 120, 200, 340
Scan Type : Stepped Scan
Test RBW : 120 kHz
Prelim Dwell Time (s) : 0.0001
Notes : 24VDC
Test Engineer : T. Jozefczyk
Test Date : Oct 11, 2021 02:43:04 PM

Freq MHz	Peak Mtr Rdg dBuV	QP Mtr Rdg dBuV	Ant Fac dB/m	Amp Fac dB	Cbl Fac dB	Dist Corr dB	Peak Total dBµV/m	QP Total dBµV/m	QP Limit dBµV/m	QP Lim Mrg dB	Ant Pol	Mast Ht cm	Azim °	Excessive QP Level
30.300	11.6	4.9	24.3	0.0	0.3	0.0	36.3	29.6	40.0	-10.4	Vertical	200	315	
44.340	13.9	8.5	16.6	0.0	0.4	0.0	30.9	25.5	40.0	-14.5	Vertical	200	315	
48.060	15.5	11.1	14.8	0.0	0.5	0.0	30.7	26.3	40.0	-13.7	Vertical	200	315	
56.460	9.9	5.5	12.7	0.0	0.5	0.0	23.1	18.7	40.0	-21.3	Vertical	200	270	
60.000	16.8	4.7	12.4	0.0	0.5	0.0	29.7	17.7	40.0	-22.3	Vertical	200	180	
64.020	10.7	6.6	12.2	0.0	0.5	0.0	23.5	19.4	40.0	-20.6	Vertical	200	45	
168.280	8.6	4.5	15.8	0.0	0.8	0.0	25.3	21.2	43.5	-22.4	Vertical	200	180	
169.300	9.6	5.8	15.8	0.0	0.8	0.0	26.2	22.4	43.5	-21.1	Vertical	200	0	
170.260	9.8	6.6	15.7	0.0	0.8	0.0	26.3	23.1	43.5	-20.4	Vertical	120	45	
174.160	7.5	3.0	15.5	0.0	0.8	0.0	23.8	19.3	43.5	-24.2	Vertical	200	0	
240.000	25.4	12.6	17.4	0.0	1.0	0.0	43.8	31.0	46.0	-15.0	Horizontal	200	180	
288.000	10.4	3.7	18.7	0.0	1.1	0.0	30.2	23.5	46.0	-22.5	Vertical	200	225	
556.980	3.3	-4.5	24.7	0.0	1.5	0.0	29.5	21.8	46.0	-24.2	Horizontal	120	225	
836.280	12.7	-4.3	26.1	0.0	1.8	0.0	40.6	23.6	46.0	-22.4	Vertical	200	45	
837.360	11.1	-4.5	26.1	0.0	1.8	0.0	39.0	23.5	46.0	-22.5	Vertical	120	90	
837.600	9.7	-4.8	26.1	0.0	1.8	0.0	37.7	23.2	46.0	-22.8	Vertical	340	45	

FCC Part 15B Class B
Radiated RF Emissions Test

SW ID/Rev: VBV2 06/29/2021

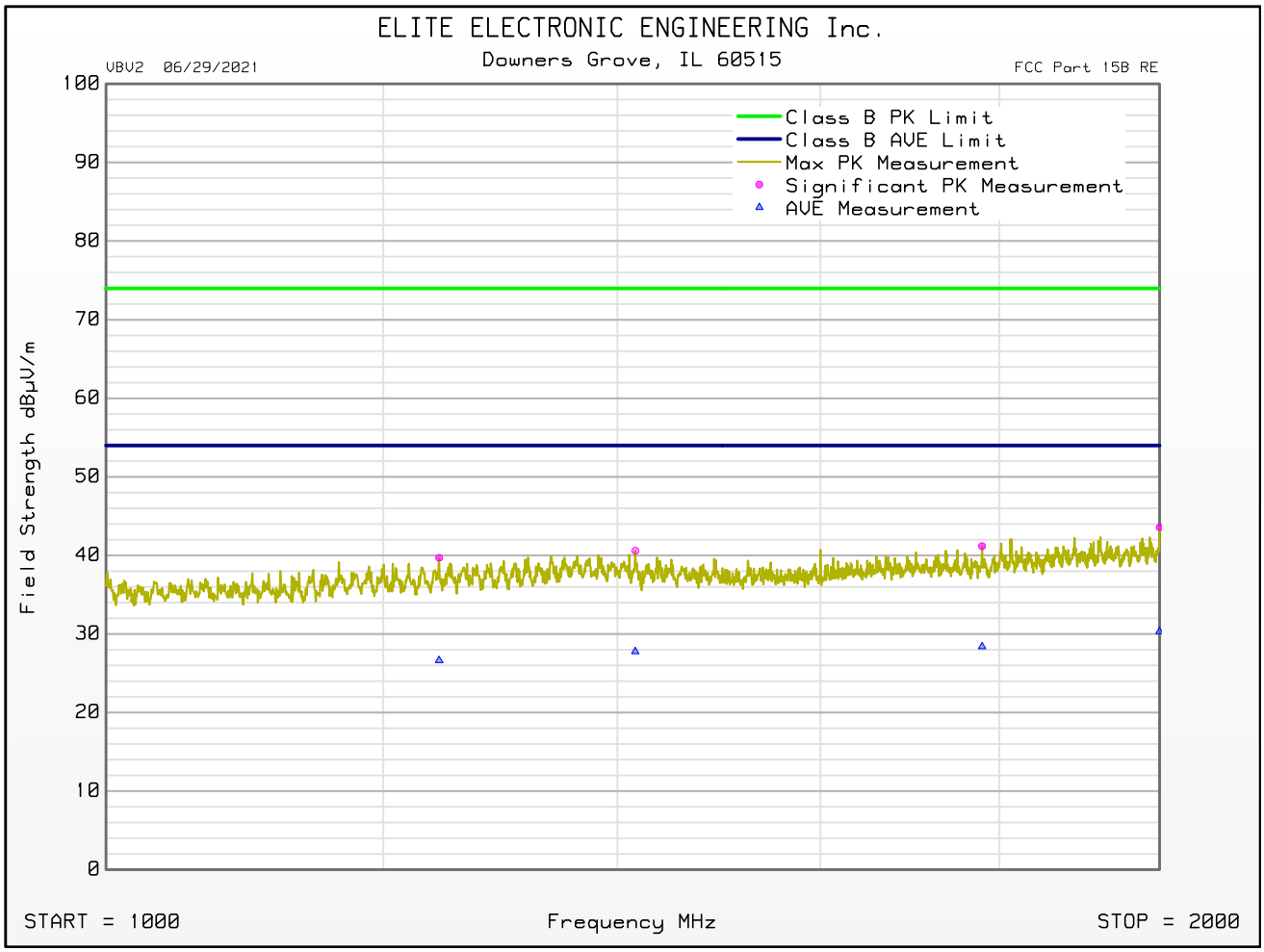
Manufacturer	:	TRIMARK
Model	:	40495-01
Serial Number	:	
DUT Mode	:	RX @ 433MHZ
Turntable Step Angle (°)	:	45
Mast Positions (cm)	:	120, 200, 340
Antenna Polarization	:	Horizontal
Scan Type	:	Stepped Scan
Test RBW	:	1 MHz
Prelim Dwell Time (s)	:	0.0001
Notes	:	24VDC
Test Engineer	:	T. Jozefczyk
Test Date	:	Oct 11, 2021 03:11:32 PM



FCC Part 15B Class B
Radiated RF Emissions Test

SW ID/Rev: VBV2 06/29/2021

Manufacturer	:	TRIMARK
Model	:	40495-01
Serial Number	:	
DUT Mode	:	RX @ 433MHZ
Turntable Step Angle (°)	:	45
Mast Positions (cm)	:	120, 200, 340
Antenna Polarization	:	Vertical
Scan Type	:	Stepped Scan
Test RBW	:	1 MHz
Prelim Dwell Time (s)	:	0.0001
Notes	:	24VDC
Test Engineer	:	T. Jozefczyk
Test Date	:	Oct 11, 2021 03:11:32 PM



FCC Part 15B Class B
Radiated RF Emissions Test

SW ID/Rev: VBV2 06/29/2021

Manufacturer : TRIMARK
Model : 40495-01
Serial Number :
DUT Mode : RX @ 433MHZ
Turntable Step Angle (°): 45
Mast Positions (cm) : 120, 200, 340
Scan Type : Stepped Scan
Test RBW : 1 MHz
Prelim Dwell Time (s) : 0.0001
Notes : 24VDC
Test Engineer : T. Jozefczyk
Test Date : Oct 11, 2021 03:11:32 PM

Freq MHz	Peak Mtr Rdg dBuV	Ant Fac dB/m	Amp Fac dB	Cbl Fac dB	Dist Corr dB	Peak Total dBµV/m	Peak Limit dBµV/m	Peak Lim Mrg dB	Ant Pol	Mast Ht cm	Azim °	Excessive Peak Level
1003.000	50.2	28.0	-41.0	2.0	0.0	39.2	74.0	-34.8	Horizontal	200	180	
1245.000	49.1	29.1	-40.7	2.2	0.0	39.7	74.0	-34.3	Vertical	200	180	
1398.000	51.5	28.4	-40.3	2.3	0.0	42.0	74.0	-32.0	Horizontal	340	90	
1416.500	50.2	28.4	-40.3	2.4	0.0	40.6	74.0	-33.4	Vertical	120	45	
1779.500	48.1	30.5	-40.1	2.6	0.0	41.2	74.0	-32.8	Vertical	340	0	
2000.000	48.7	32.0	-39.9	2.8	0.0	43.6	74.0	-30.4	Vertical	200	180	

Freq MHz	Average Mtr Rdg dBuV	Ant Fac dB/m	Amp Fac dB	Cbl Fac dB	Dist Corr dB	Average Total dBµV/m	Average Limit dBµV/m	Average Lim Mrg dB	Ant Pol	Mast Ht cm	Azim °	Excessive Average Level
1003.000	36.5	28.0	-41.0	2.0	0.0	25.5	54.0	-28.5	Horizontal	200	180	
1245.000	36.0	29.1	-40.7	2.2	0.0	26.6	54.0	-27.3	Vertical	200	180	
1398.000	39.6	28.4	-40.3	2.3	0.0	30.0	54.0	-24.0	Horizontal	340	90	
1416.500	37.3	28.4	-40.3	2.4	0.0	27.8	54.0	-26.2	Vertical	120	45	
1779.500	35.3	30.5	-40.1	2.6	0.0	28.4	54.0	-25.6	Vertical	340	0	
2000.000	35.4	32.0	-39.9	2.8	0.0	30.3	54.0	-23.7	Vertical	200	180	

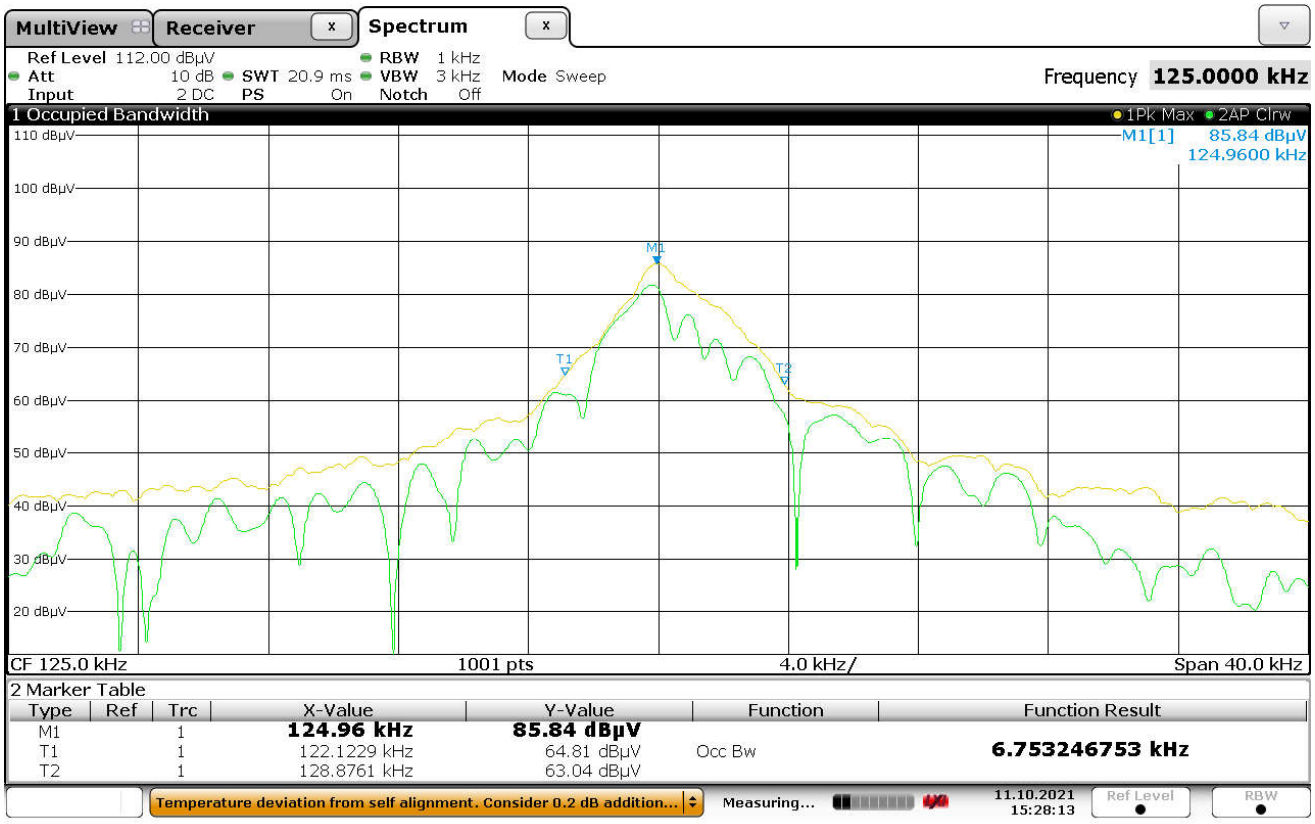
21. Occupied Bandwidth (99%)

EUT Information	
Manufacturer	TriMark Corporation
Product	ERX6
Model No.	40495-01
Serial No.	21/36-00005
Mode	Tx

Test Setup Details	
Setup Format	Tabletop
Height of Support	N/A
Measurement Method	Radiated
Type of Test Site	Semi-Anechoic Chamber
Type of Antennas Used	Below 30MHz: Loop Antenna (or equivalent)
Notes	

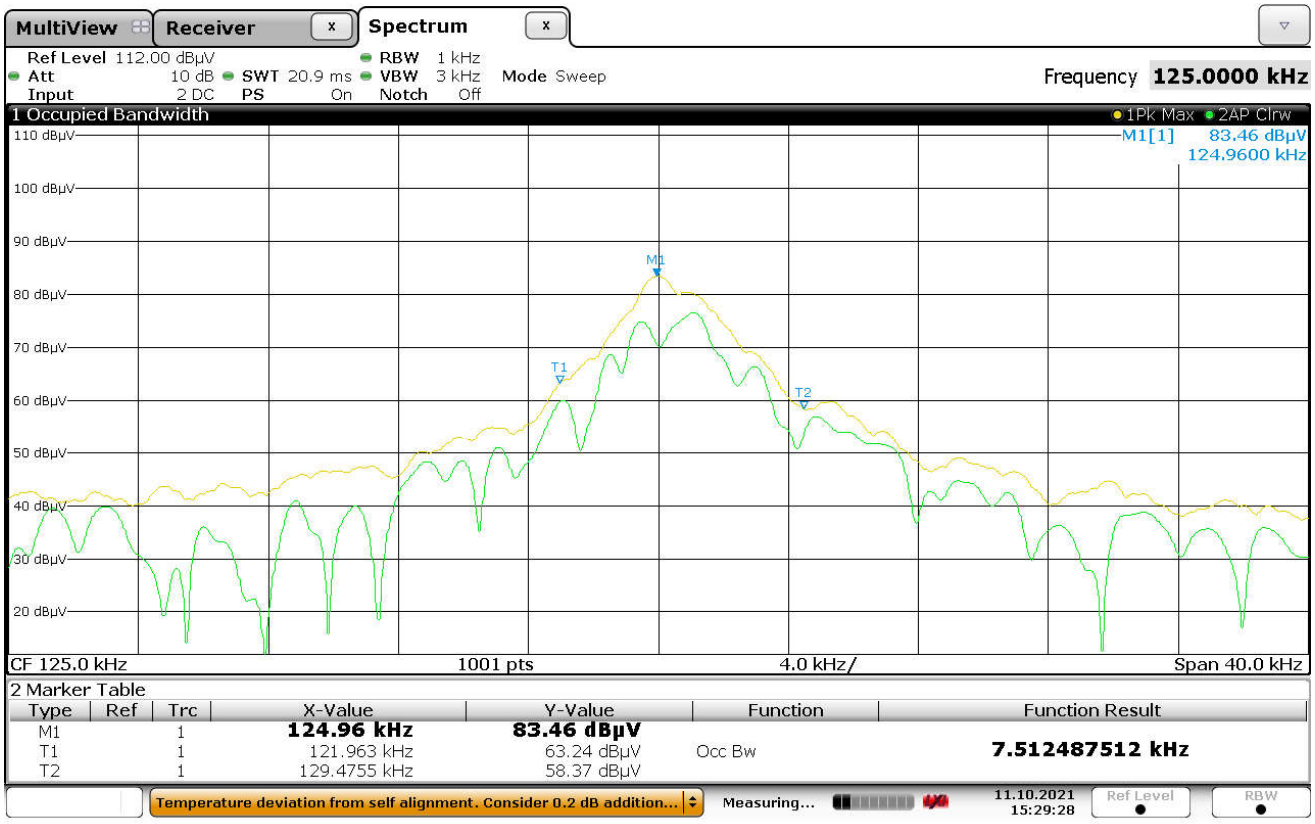
Procedure
The EUT was setup inside the chamber. The EUT was allowed to transmit continuously. The transmit channel was set separately to low, middle, and high channels. The resolution bandwidth (RBW) was set to 1% to 5% of the actual occupied / x dB bandwidth, the video bandwidth (VBW) was set 3 times greater than the RBW, and the span was set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency. The 'Max-Hold' function was engaged. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined. The analyzer's display was plotted using a 'screen dump' utility.

Test Details	
Manufacturer	TriMark Corporation
EUT	ERX6
Model No.	40495-01
Serial No.	21/36-00005
Mode	Tx
Frequency Tested	125kHz – Antenna 1
Result	OBW = 6.753kHz
Notes	



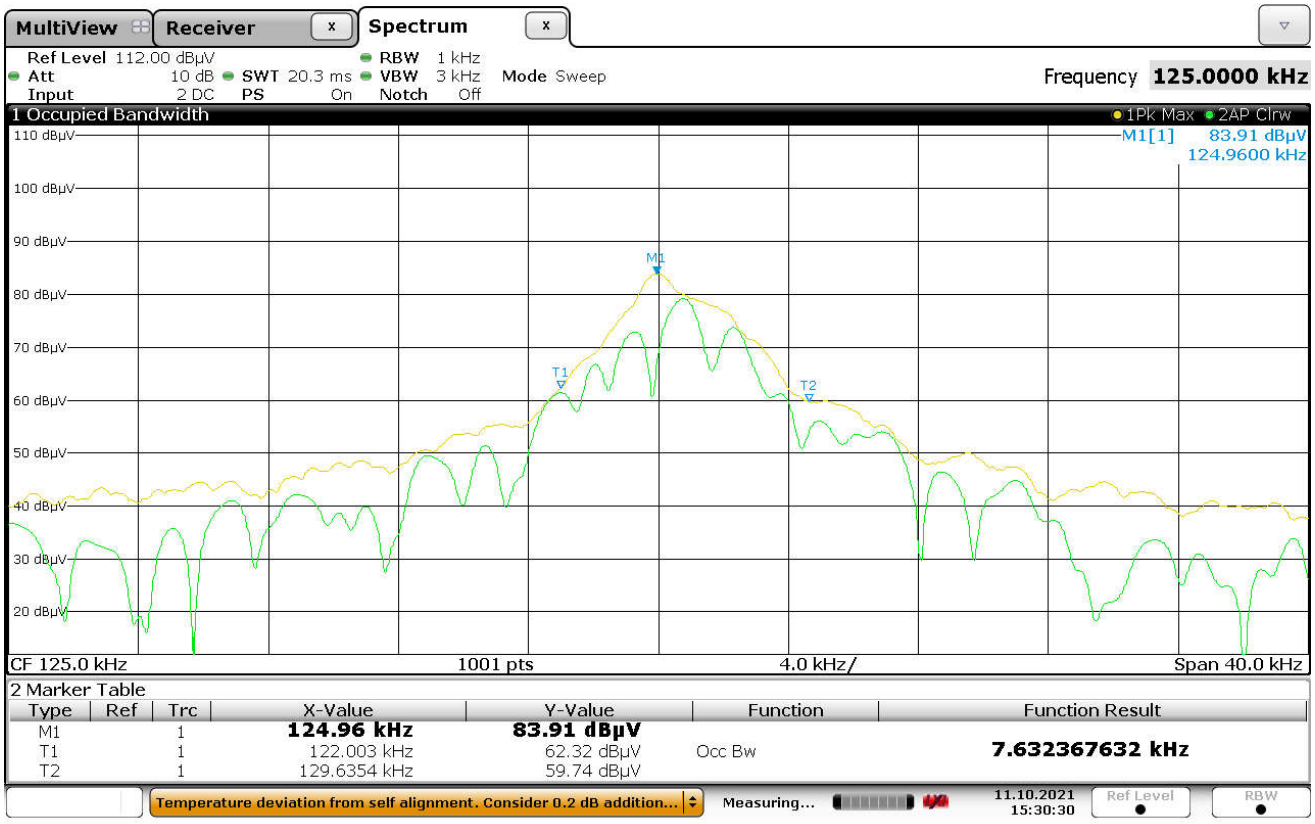
Date: 11.OCT.2021 15:28:13

Test Details	
Manufacturer	TriMark Corporation
EUT	ERX6
Model No.	40495-01
Serial No.	21/36-00005
Mode	Tx
Frequency Tested	125kHz – Antenna 2
Result	OBW = 7.51kHz
Notes	



Date: 11.OCT.2021 15:29:28

Test Details	
Manufacturer	TriMark Corporation
EUT	ERX6
Model No.	40495-01
Serial No.	21/36-00005
Mode	Tx
Frequency Tested	125kHz – Antenna 3
Result	OBW = 7.63kHz
Notes	



Date: 11.OCT.2021 15:30:30

22. Spurious Radiated Emissions

EUT Information	
Manufacturer	TriMark Corporation
Product	ERX6
Model No.	40495-01
Serial No.	21/36-00005
Mode	Tx

Test Setup Details	
Setup Format	Tabletop
Height of Support	N/A
Type of Test Site	Semi-Anechoic Chamber
Test Site Used	Room 29
Type of Antennas Used	Loop Antenna (or equivalent)
Notes	N/A

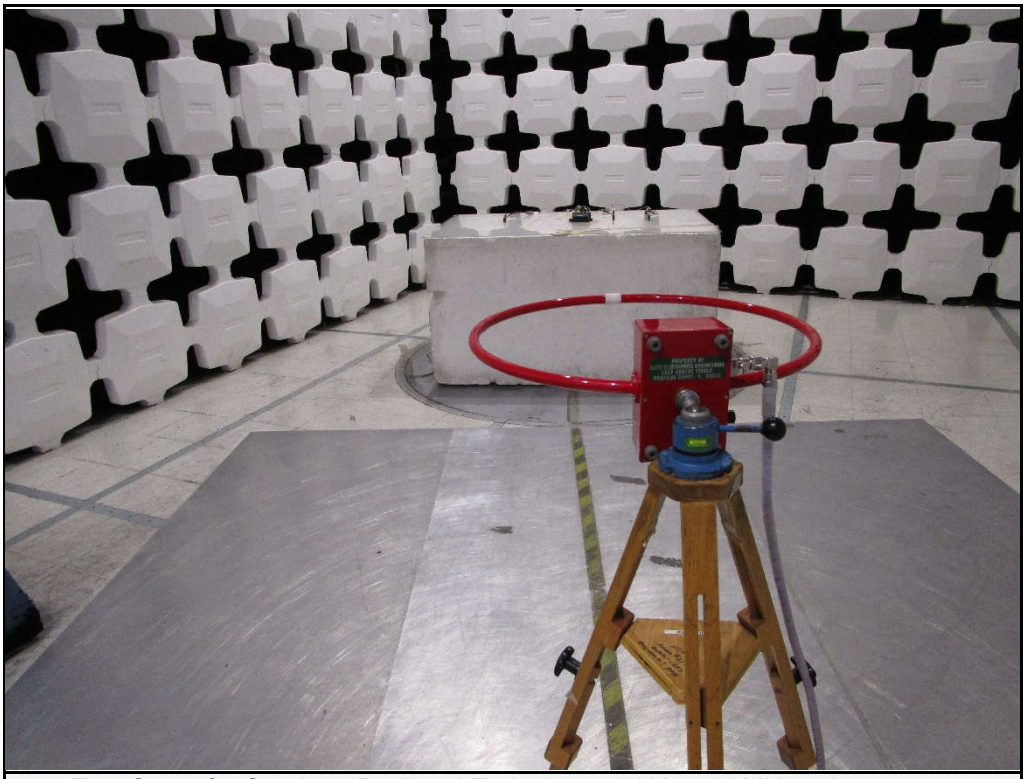
Measurement Uncertainty	
Measurement Type	Expanded Measurement Uncertainty
Radiated disturbance (electric field strength on an open area test site or alternative test site) (30 MHz – 1000 MHz)	4.3
Radiated disturbance (electric field strength on an open area test site or alternative test site) (1 GHz – 6 GHz)	3.1

Requirements
The EUT must comply with the requirements of FCC "Code of Federal Regulations Title 47", Part 15, Subpart C, Section 15.209 et seq., as well as the requirements of RSS-GEN Section 8.10.

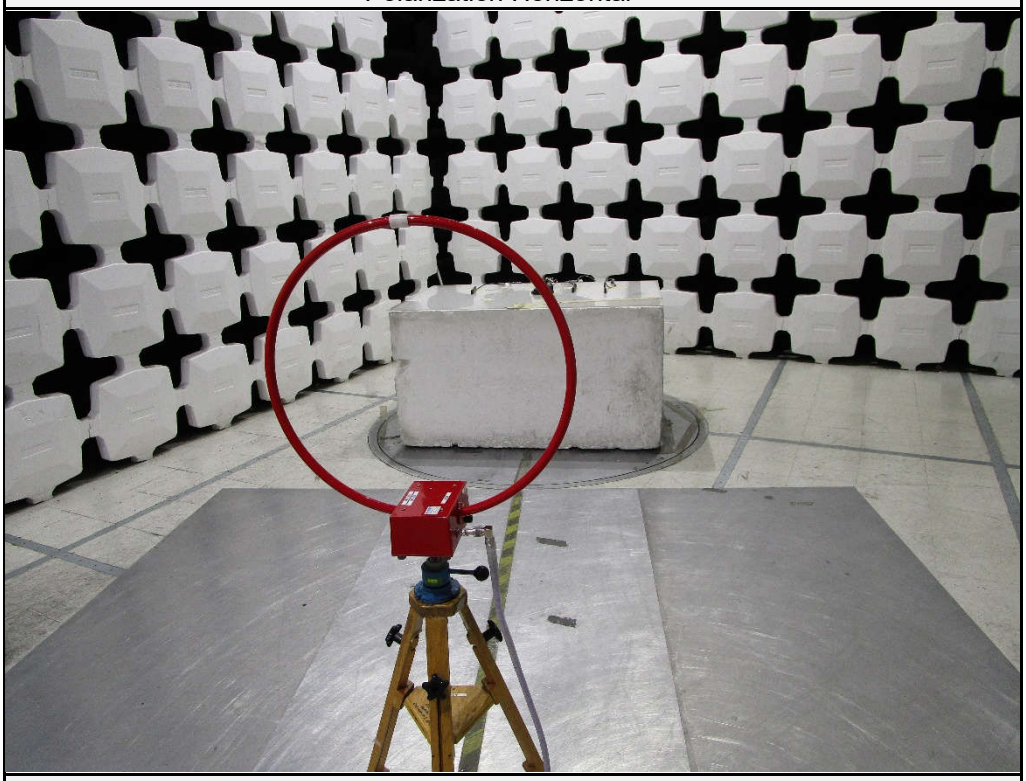
FCC Radiated Emissions Limits		
Frequency (MHz)	Field Strength (µV/m)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	3

RSS-Gen Radiated Emissions Limits		
Frequency (MHz)	Field Strength (µA/m)	Measurement Distance (meters)
0.009 – 0.490 [1]	6.37/F(kHz)	300
0.490 – 1.705	63.7/F(kHz)	30
1.705 – 30	0.08	3
Note 1: The emissions limits for the ranges 9 – 90kHz and 110 – 490kHz are based on measurements employing a linear average detector.		

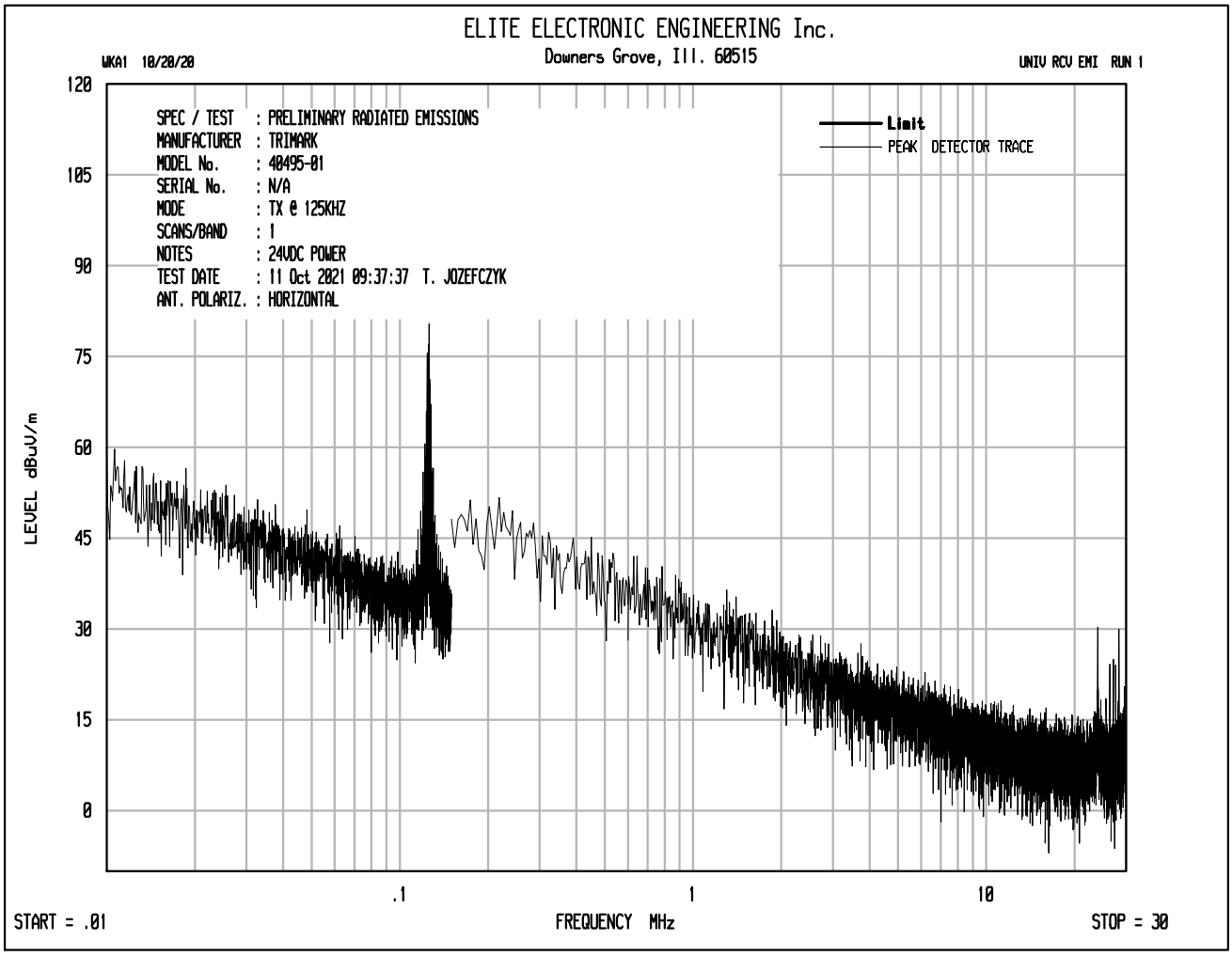
Procedure
All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4-2014 for site attenuation. The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All powerlines and signal lines entering the enclosure pass through filters on the enclosure wall. The powerline filters prevent extraneous signals from entering the enclosure on these leads. A preliminary radiated emissions test was performed to determine the emission characteristics of the EUT. For the preliminary test, a broadband measuring antenna was positioned at a 3 meter distance from the EUT. The entire frequency range from 10kHz to 30MHz was investigated using a peak detector function. The final emission tests were then manually performed over the frequency range of 125kHz to 1.25MHz. Between 125kHz to 1.25MHz, a loop antenna was used as the pick-up device. The EUT was placed on an 80cm high non-conductive stand. To ensure that maximum or worst case, emission levels were measured, the following steps were taken: 1) The EUT was rotated so that all of its sides were exposed to the receiving antenna. 2) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured. 3) The measuring antenna was raised and lowered from 1 to 4 meters for each antenna polarization to maximize the readings. 4) For hand-held or body-worn devices, the EUT was rotated through three orthogonal axes to determine which orientation produces the highest emission relative to the limit.

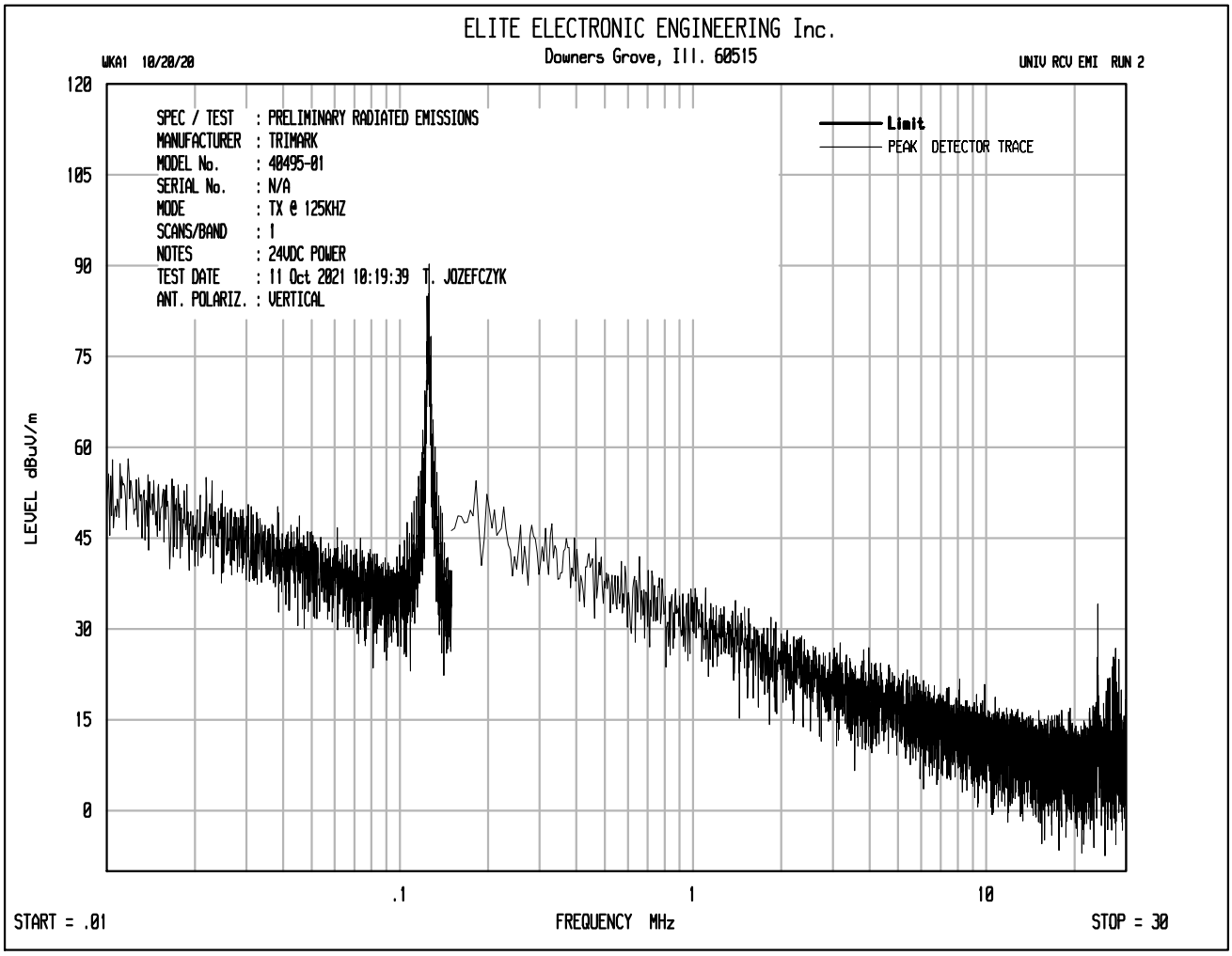


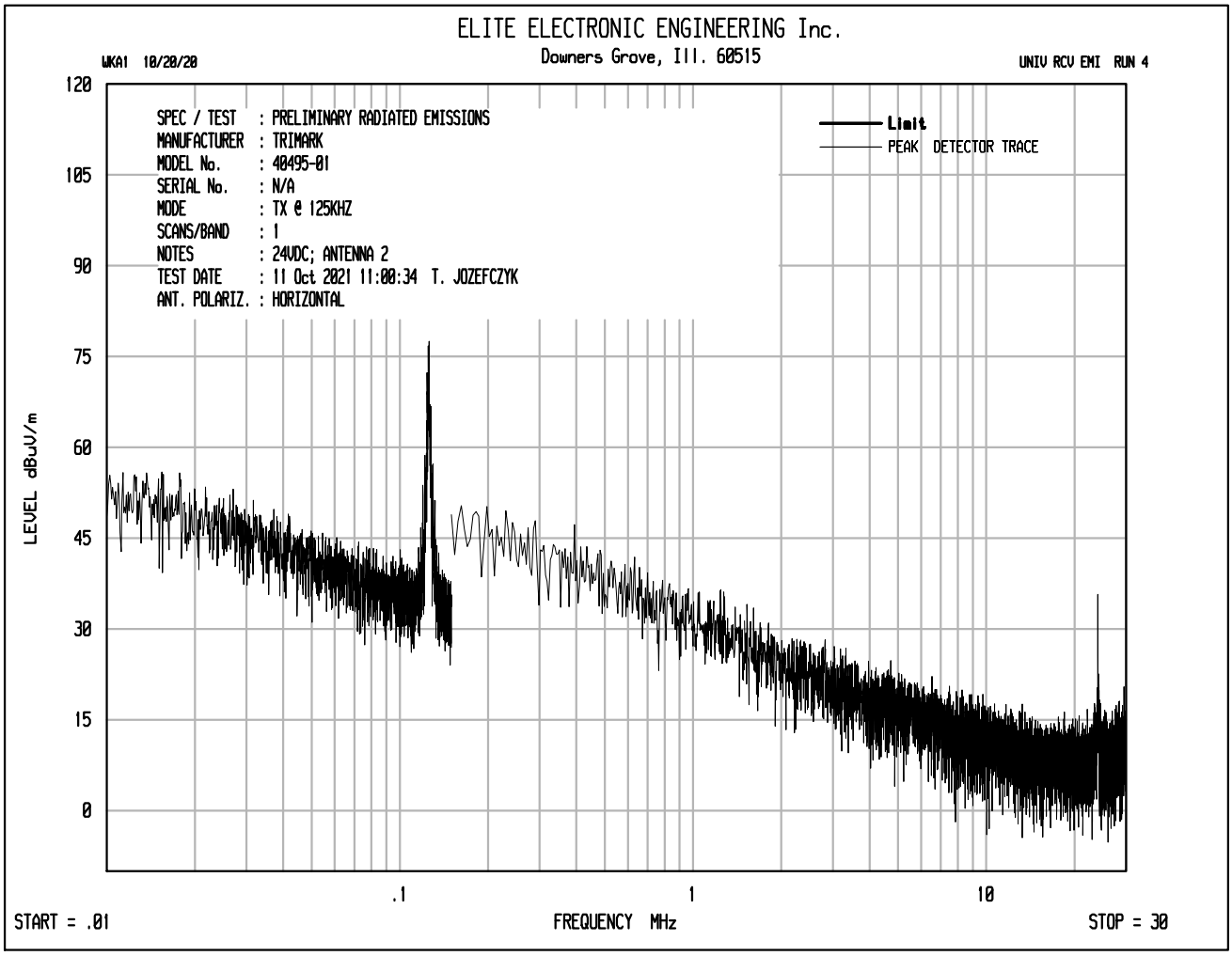
Test Setup for Spurious Radiated Emissions, 10kHz – 30MHz – Antenna Polarization Horizontal

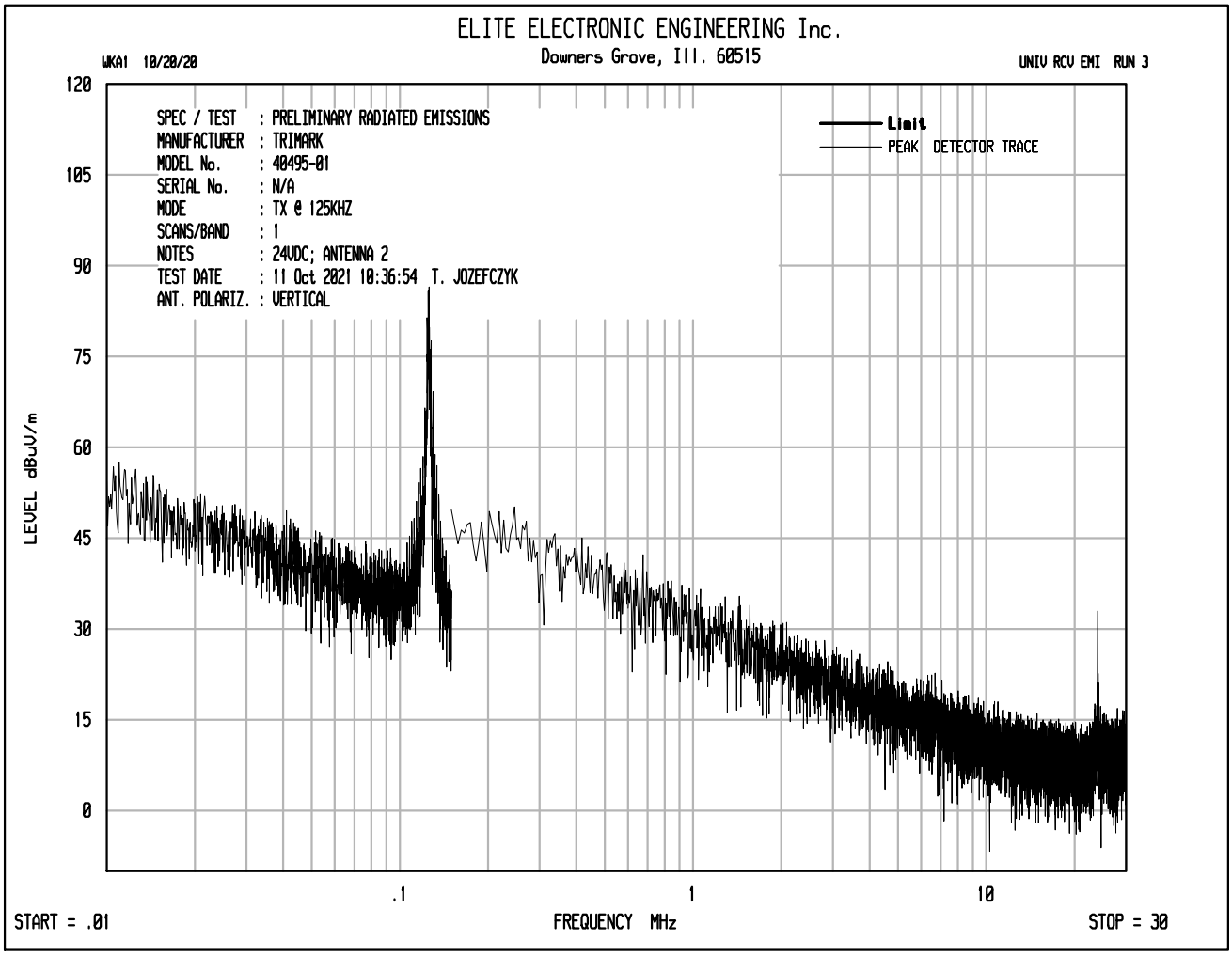


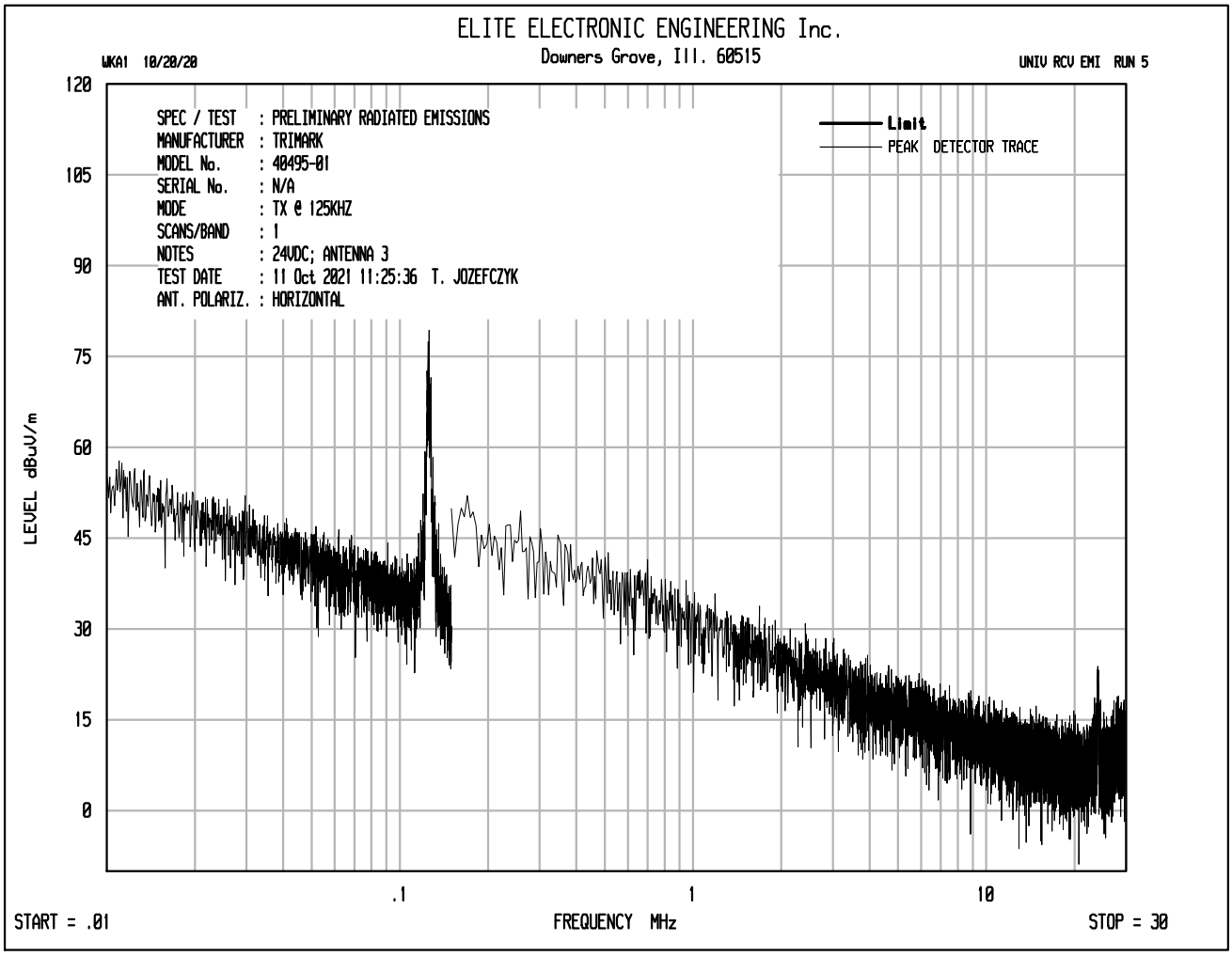
Test Setup for Spurious Radiated Emissions, 10kHz – 30MHz – Antenna Polarization Vertical

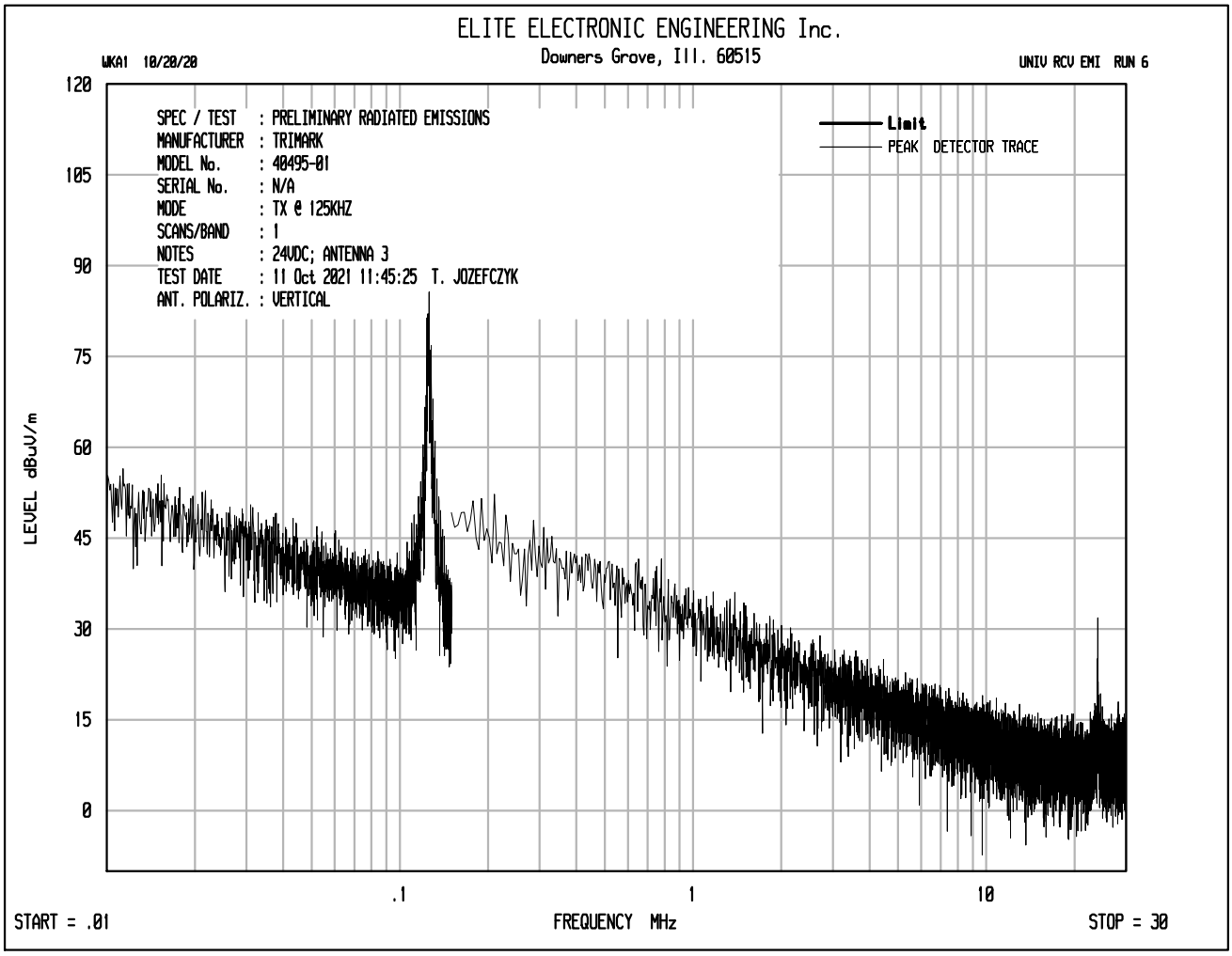

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 10/20/20
UNIV RCV EMI RUN 1
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TRIMARK
MODEL No. : 40495-01
SERIAL No. : N/A
MODE : TX @ 125KHZ
SCANS/BAND : 1
NOTES : 24VDC POWER
TEST DATE : 11 Oct 2021 09:37:37 T. JOZEFCZYK
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
.1
1
10
START = .01
FREQUENCY MHz
STOP = 30


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 10/20/20
UNIV RCV EMI RUN 2
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TRIMARK
MODEL No. : 40495-01
SERIAL No. : N/A
MODE : TX @ 125KHZ
SCANS/BAND : 1
NOTES : 24VDC POWER
TEST DATE : 11 Oct 2021 10:19:39 T. JOZEFCZYK
ANT. POLARIZ. : VERTICAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
.1
1
10
START = .01
FREQUENCY MHz
STOP = 30


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 10/20/20
UNIV RCV EMI RUN 4
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TRIMARK
MODEL No. : 40495-01
SERIAL No. : N/A
MODE : TX @ 125KHZ
SCANS/BAND : 1
NOTES : 24VDC; ANTENNA 2
TEST DATE : 11 Oct 2021 11:00:34 T. JOZEFCZYK
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
.1
1
10
START = .01
FREQUENCY MHz
STOP = 30


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 10/20/20
UNIV RCV EMI RUN 3
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TRIMARK
MODEL No. : 40495-01
SERIAL No. : N/A
MODE : TX @ 125KHZ
SCANS/BAND : 1
NOTES : 24VDC; ANTENNA 2
TEST DATE : 11 Oct 2021 10:36:54 T. JOZEFCZYK
ANT. POLARIZ. : VERTICAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
.1
1
10
START = .01
FREQUENCY MHz
STOP = 30


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 10/20/20
UNIV RCV EMI RUN 5
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TRIMARK
MODEL No. : 40495-01
SERIAL No. : N/A
MODE : TX @ 125KHZ
SCANS/BAND : 1
NOTES : 24VDC; ANTENNA 3
TEST DATE : 11 Oct 2021 11:25:36 T. JOZEFCZYK
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
.1
1
10
START = .01
FREQUENCY MHz
STOP = 30


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 10/20/20
UNIV RCV EMI RUN 6
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : TRIMARK
MODEL No. : 40495-01
SERIAL No. : N/A
MODE : TX @ 125KHZ
SCANS/BAND : 1
NOTES : 24VDC; ANTENNA 3
TEST DATE : 11 Oct 2021 11:45:25 T. JOZEFCZYK
ANT. POLARIZ. : VERTICAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
.1
1
10
START = .01
FREQUENCY MHz
STOP = 30

Test Details	
Manufacturer	TriMark Corporation
EUT	ERX6
Model No.	40495-01
Serial No.	21/36-00005
Mode	Tx
Frequency Tested	125kHz – Antenna 1
Notes	Test Distance = 3 meters Distance Correction Factor: Per CFR 15.31(f)(2), at frequencies below 30MHz measurements may be performed at a distance closer than that specified in the regulations. The results may be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (40dB/decade). - Distance correction factor (300 meters to 3 meters) = -80dB (2 decades @ 40dB per decade) - Distance correction factor (30 meters to 3 meters) = -40dB (1 decade @ 40dB per decade)

Freq. (kHz)	Ant Pol	Meter Reading (dBµV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Dist. Corr. (dB)	Total (dBuV/m)	Total (uV/m)	Limit (uV/m)	Specified Test Distance (meters)	Margin (dB)
0.125	H	76.18		0.25	10.68	0.00	-80.00	7.11	2.27	19.20	300.00	-18.55
0.125	V	81.42		0.25	10.68	0.00	-80.00	12.35	4.15	19.20	300.00	-13.31
0.250	H	44.64	Ambient	0.25	10.63	0.00	-80.00	-24.47	0.06	9.60	300.00	-44.12
0.250	V	45.55	Ambient	0.25	10.63	0.00	-80.00	-23.56	0.07	9.60	300.00	-43.21
0.375	H	42.51	Ambient	0.25	10.69	0.00	-80.00	-26.55	0.05	6.40	300.00	-42.67
0.375	V	44.01	Ambient	0.25	10.69	0.00	-80.00	-25.05	0.06	6.40	300.00	-41.17
0.500	H	39.27	Ambient	0.25	10.73	0.00	-40.00	10.26	3.26	48.00	30.00	-23.37
0.500	V	39.23	Ambient	0.25	10.73	0.00	-40.00	10.22	3.24	48.00	30.00	-23.41
0.625	H	37.06	Ambient	0.25	10.72	0.00	-40.00	8.04	2.52	38.40	30.00	-23.65
0.625	V	37.28	Ambient	0.25	10.72	0.00	-40.00	8.26	2.59	38.40	30.00	-23.43
0.750	H	35.82	Ambient	0.25	10.71	0.00	-40.00	6.79	2.18	32.00	30.00	-23.32
0.750	V	35.33	Ambient	0.25	10.71	0.00	-40.00	6.30	2.06	32.00	30.00	-23.81
0.875	H	33.90	Ambient	0.25	10.73	0.00	-40.00	4.89	1.76	27.43	30.00	-23.88
0.875	V	33.63	Ambient	0.25	10.73	0.00	-40.00	4.62	1.70	27.43	30.00	-24.15
1.000	H	32.84	Ambient	0.25	10.75	0.00	-40.00	3.85	1.56	24.00	30.00	-23.76
1.000	V	32.36	Ambient	0.25	10.75	0.00	-40.00	3.37	1.47	24.00	30.00	-24.24
1.125	H	31.25	Ambient	0.25	10.77	0.00	-40.00	2.28	1.30	21.33	30.00	-24.31
1.125	V	31.40	Ambient	0.25	10.77	0.00	-40.00	2.43	1.32	21.33	30.00	-24.16
1.250	H	31.01	Ambient	0.25	10.79	0.00	-40.00	2.05	1.27	19.20	30.00	-23.61
1.250	V	31.06	Ambient	0.25	10.79	0.00	-40.00	2.10	1.27	19.20	30.00	-23.56

Total (dBµV/m) = Meter Reading + CBL Fac. + Ant. Fac. + Pre Amp + Dist. Corr.

Test Details	
Manufacturer	TriMark Corporation
EUT	ERX6
Model No.	40495-01
Serial No.	21/36-00005
Mode	Tx
Frequency Tested	125kHz – Antenna 2
Notes	Test Distance = 3 meters Distance Correction Factor: Per CFR 15.31(f)(2), at frequencies below 30MHz measurements may be performed at a distance closer than that specified in the regulations. The results may be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (40dB/decade). - Distance correction factor (300 meters to 3 meters) = -80dB (2 decades @ 40dB per decade) - Distance correction factor (30 meters to 3 meters) = -40dB (1 decade @ 40dB per decade)

Freq. (kHz)	Ant Pol	Meter Reading (dBµV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Dist. Corr. (dB)	Total (dBuV/m)	Total (uV/m)	Limit (uV/m)	Specified Test Distance (meters)	Margin (dB)
0.125	H	71.90		0.25	10.68	0.00	-80.00	2.83	1.39	19.20	300.00	-22.83
0.125	V	80.96		0.25	10.68	0.00	-80.00	11.89	3.93	19.20	300.00	-13.77
0.250	H	45.38	Ambient	0.25	10.63	0.00	-80.00	-23.73	0.07	9.60	300.00	-43.38
0.250	V	46.17	Ambient	0.25	10.63	0.00	-80.00	-22.94	0.07	9.60	300.00	-42.59
0.375	H	42.36	Ambient	0.25	10.69	0.00	-80.00	-26.70	0.05	6.40	300.00	-42.82
0.375	V	43.18	Ambient	0.25	10.69	0.00	-80.00	-25.88	0.05	6.40	300.00	-42.00
0.500	H	39.70	Ambient	0.25	10.73	0.00	-40.00	10.69	3.42	48.00	30.00	-22.94
0.500	V	39.32	Ambient	0.25	10.73	0.00	-40.00	10.31	3.28	48.00	30.00	-23.32
0.625	H	37.32	Ambient	0.25	10.72	0.00	-40.00	8.30	2.60	38.40	30.00	-23.39
0.625	V	37.36	Ambient	0.25	10.72	0.00	-40.00	8.34	2.61	38.40	30.00	-23.35
0.750	H	34.73	Ambient	0.25	10.71	0.00	-40.00	5.70	1.93	32.00	30.00	-24.41
0.750	V	35.59	Ambient	0.25	10.71	0.00	-40.00	6.56	2.13	32.00	30.00	-23.55
0.875	H	34.01	Ambient	0.25	10.73	0.00	-40.00	5.00	1.78	27.43	30.00	-23.77
0.875	V	34.07	Ambient	0.25	10.73	0.00	-40.00	5.06	1.79	27.43	30.00	-23.71
1.000	H	33.04	Ambient	0.25	10.75	0.00	-40.00	4.05	1.59	24.00	30.00	-23.56
1.000	V	32.52	Ambient	0.25	10.75	0.00	-40.00	3.53	1.50	24.00	30.00	-24.08
1.125	H	31.64	Ambient	0.25	10.77	0.00	-40.00	2.67	1.36	21.33	30.00	-23.92
1.125	V	31.09	Ambient	0.25	10.77	0.00	-40.00	2.12	1.28	21.33	30.00	-24.47
1.250	H	30.34	Ambient	0.25	10.79	0.00	-40.00	1.38	1.17	19.20	30.00	-24.28
1.250	V	30.25	Ambient	0.25	10.79	0.00	-40.00	1.29	1.16	19.20	30.00	-24.37

Total (dBµV/m) = Meter Reading + CBL Fac. + Ant. Fac. + Pre Amp + Dist. Corr.

Test Details	
Manufacturer	TriMark Corporation
EUT	ERX6
Model No.	40495-01
Serial No.	21/36-00005
Mode	Tx
Frequency Tested	125kHz – Antenna 3
Notes	Test Distance = 3 meters Distance Correction Factor: Per CFR 15.31(f)(2), at frequencies below 30MHz measurements may be performed at a distance closer than that specified in the regulations. The results may be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (40dB/decade). - Distance correction factor (300 meters to 3 meters) = -80dB (2 decades @ 40dB per decade) - Distance correction factor (30 meters to 3 meters) = -40dB (1 decade @ 40dB per decade)

Freq. (kHz)	Ant Pol	Meter Reading (dBµV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Dist. Corr. (dB)	Total (dBuV/m)	Total (uV/m)	Limit (uV/m)	Specified Test Distance (meters)	Margin (dB)
0.125	H	71.85		0.25	10.68	0.00	-80.00	2.78	1.38	19.20	300.00	-22.88
0.125	V	80.96		0.25	10.68	0.00	-80.00	11.89	3.93	19.20	300.00	-13.77
0.250	H	45.51	Ambient	0.25	10.63	0.00	-80.00	-23.60	0.07	9.60	300.00	-43.25
0.250	V	45.62	Ambient	0.25	10.63	0.00	-80.00	-23.49	0.07	9.60	300.00	-43.14
0.375	H	41.79	Ambient	0.25	10.69	0.00	-80.00	-27.27	0.04	6.40	300.00	-43.39
0.375	V	42.88	Ambient	0.25	10.69	0.00	-80.00	-26.18	0.05	6.40	300.00	-42.30
0.500	H	39.34	Ambient	0.25	10.73	0.00	-40.00	10.33	3.28	48.00	30.00	-23.30
0.500	V	40.23	Ambient	0.25	10.73	0.00	-40.00	11.22	3.64	48.00	30.00	-22.41
0.625	H	37.52	Ambient	0.25	10.72	0.00	-40.00	8.50	2.66	38.40	30.00	-23.19
0.625	V	37.88	Ambient	0.25	10.72	0.00	-40.00	8.86	2.77	38.40	30.00	-22.83
0.750	H	35.63	Ambient	0.25	10.71	0.00	-40.00	6.60	2.14	32.00	30.00	-23.51
0.750	V	35.20	Ambient	0.25	10.71	0.00	-40.00	6.17	2.03	32.00	30.00	-23.94
0.875	H	34.13	Ambient	0.25	10.73	0.00	-40.00	5.12	1.80	27.43	30.00	-23.65
0.875	V	33.76	Ambient	0.25	10.73	0.00	-40.00	4.75	1.73	27.43	30.00	-24.02
1.000	H	32.61	Ambient	0.25	10.75	0.00	-40.00	3.62	1.52	24.00	30.00	-23.99
1.000	V	33.35	Ambient	0.25	10.75	0.00	-40.00	4.36	1.65	24.00	30.00	-23.25
1.125	H	31.26	Ambient	0.25	10.77	0.00	-40.00	2.29	1.30	21.33	30.00	-24.30
1.125	V	30.90	Ambient	0.25	10.77	0.00	-40.00	1.93	1.25	21.33	30.00	-24.66
1.250	H	29.94	Ambient	0.25	10.79	0.00	-40.00	0.98	1.12	19.20	30.00	-24.68
1.250	V	30.44	Ambient	0.25	10.79	0.00	-40.00	1.48	1.19	19.20	30.00	-24.18

Total (dBµV/m) = Meter Reading + CBL Fac. + Ant. Fac. + Pre Amp + Dist. Corr.

Test Details	
Manufacturer	TriMark Corporation
EUT	ERX6
Model No.	40495-01
Serial No.	21/36-00005
Mode	Tx
Frequency Tested	125kHz – Antenna 1
Notes	Test Distance = 3 meters Distance Correction Factor: Per CFR 15.31(f)(2), at frequencies below 30MHz measurements may be performed at a distance closer than that specified in the regulations. The results may be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (40dB/decade). - Distance correction factor (300 meters to 3 meters) = -80dB (2 decades @ 40dB per decade) - Distance correction factor (30 meters to 3 meters) = -40dB (1 decade @ 40dB per decade)

Freq. (kHz)	Ant Pol	Meter Reading (dBµV)	Ambient	CBL Fac (dB)	Ant Fac (dBS/m)	Pre Amp (dB)	Dist. Corr. (dB)	Total (dBuA/m)	Total (uA/m)	Limit (uA/m)	Specified Test Distance (meters)	Margin (dB)
0.125	H	76.18		0.25	-40.82	0.00	-80.00	-44.39	0.01	940.73	300.00	-103.86
0.125	V	81.42		0.25	-40.82	0.00	-80.00	-39.15	0.01	940.73	300.00	-98.62
0.250	H	44.64	Ambient	0.25	-40.87	0.00	-80.00	-75.97	0.00	88.84	300.00	-114.94
0.250	V	45.55	Ambient	0.25	-40.87	0.00	-80.00	-75.06	0.00	88.84	300.00	-114.03
0.375	H	42.51	Ambient	0.25	-40.81	0.00	-80.00	-78.05	0.00	88.47	300.00	-116.98
0.375	V	44.01	Ambient	0.25	-40.81	0.00	-80.00	-76.55	0.00	88.47	300.00	-115.48
0.500	H	39.27	Ambient	0.25	-40.77	0.00	-40.00	-41.24	0.01	88.11	30.00	-80.14
0.500	V	39.23	Ambient	0.25	-40.77	0.00	-40.00	-41.28	0.01	88.11	30.00	-80.18
0.625	H	37.06	Ambient	0.25	-40.78	0.00	-40.00	-43.46	0.01	87.75	30.00	-82.33
0.625	V	37.28	Ambient	0.25	-40.78	0.00	-40.00	-43.24	0.01	87.75	30.00	-82.11
0.750	H	35.82	Ambient	0.25	-40.79	0.00	-40.00	-44.71	0.01	87.38	30.00	-83.54
0.750	V	35.33	Ambient	0.25	-40.79	0.00	-40.00	-45.20	0.01	87.38	30.00	-84.03
0.875	H	33.90	Ambient	0.25	-40.77	0.00	-40.00	-46.61	0.00	87.02	30.00	-85.40
0.875	V	33.63	Ambient	0.25	-40.77	0.00	-40.00	-46.88	0.00	87.02	30.00	-85.67
1.000	H	32.84	Ambient	0.25	-40.75	0.00	-40.00	-47.65	0.00	86.66	30.00	-86.41
1.000	V	32.36	Ambient	0.25	-40.75	0.00	-40.00	-48.13	0.00	86.66	30.00	-86.89
1.125	H	31.25	Ambient	0.25	-40.73	0.00	-40.00	-49.22	0.00	86.29	30.00	-87.94
1.125	V	31.40	Ambient	0.25	-40.73	0.00	-40.00	-49.07	0.00	86.29	30.00	-87.79
1.250	H	31.01	Ambient	0.25	-40.71	0.00	-40.00	-49.45	0.00	85.93	30.00	-88.13
1.250	V	31.06	Ambient	0.25	-40.71	0.00	-40.00	-49.40	0.00	85.93	30.00	-88.08

Total (dBµA/m) = Meter Reading + CBL Fac. + Ant. Fac. + Pre Amp + Dist. Corr.

Test Details	
Manufacturer	TriMark Corporation
EUT	ERX6
Model No.	40495-01
Serial No.	21/36-00005
Mode	Tx
Frequency Tested	125kHz – Antenna 2
Notes	Test Distance = 3 meters Distance Correction Factor: Per CFR 15.31(f)(2), at frequencies below 30MHz measurements may be performed at a distance closer than that specified in the regulations. The results may be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (40dB/decade). - Distance correction factor (300 meters to 3 meters) = -80dB (2 decades @ 40dB per decade) - Distance correction factor (30 meters to 3 meters) = -40dB (1 decade @ 40dB per decade)

Freq. (kHz)	Ant Pol	Meter Reading (dBµV)	Ambient	CBL Fac (dB)	Ant Fac (dBS/m)	Pre Amp (dB)	Dist. Corr. (dB)	Total (dBuA/m)	Total (uA/m)	Limit (uA/m)	Specified Test Distance (meters)	Margin (dB)
0.125	H	71.90		0.25	-40.82	0.00	-80.00	-48.67	0.00	940.73	300.00	-108.14
0.125	V	80.96		0.25	-40.82	0.00	-80.00	-39.61	0.01	940.73	300.00	-99.08
0.250	H	45.38	Ambient	0.25	-40.87	0.00	-80.00	-75.23	0.00	88.84	300.00	-114.20
0.250	V	46.17	Ambient	0.25	-40.87	0.00	-80.00	-74.44	0.00	88.84	300.00	-113.41
0.375	H	42.36	Ambient	0.25	-40.81	0.00	-80.00	-78.20	0.00	88.47	300.00	-117.13
0.375	V	43.18	Ambient	0.25	-40.81	0.00	-80.00	-77.38	0.00	88.47	300.00	-116.31
0.500	H	39.70	Ambient	0.25	-40.77	0.00	-40.00	-40.81	0.01	88.11	30.00	-79.71
0.500	V	39.32	Ambient	0.25	-40.77	0.00	-40.00	-41.19	0.01	88.11	30.00	-80.09
0.625	H	37.32	Ambient	0.25	-40.78	0.00	-40.00	-43.20	0.01	87.75	30.00	-82.07
0.625	V	37.36	Ambient	0.25	-40.78	0.00	-40.00	-43.16	0.01	87.75	30.00	-82.03
0.750	H	34.73	Ambient	0.25	-40.79	0.00	-40.00	-45.80	0.01	87.38	30.00	-84.63
0.750	V	35.59	Ambient	0.25	-40.79	0.00	-40.00	-44.94	0.01	87.38	30.00	-83.77
0.875	H	34.01	Ambient	0.25	-40.77	0.00	-40.00	-46.50	0.00	87.02	30.00	-85.29
0.875	V	34.07	Ambient	0.25	-40.77	0.00	-40.00	-46.44	0.00	87.02	30.00	-85.23
1.000	H	33.04	Ambient	0.25	-40.75	0.00	-40.00	-47.45	0.00	86.66	30.00	-86.21
1.000	V	32.52	Ambient	0.25	-40.75	0.00	-40.00	-47.97	0.00	86.66	30.00	-86.73
1.125	H	31.64	Ambient	0.25	-40.73	0.00	-40.00	-48.83	0.00	86.29	30.00	-87.55
1.125	V	31.09	Ambient	0.25	-40.73	0.00	-40.00	-49.38	0.00	86.29	30.00	-88.10
1.250	H	30.34	Ambient	0.25	-40.71	0.00	-40.00	-50.12	0.00	85.93	30.00	-88.80
1.250	V	30.25	Ambient	0.25	-40.71	0.00	-40.00	-50.21	0.00	85.93	30.00	-88.89

Total (dBµA/m) = Meter Reading + CBL Fac. + Ant. Fac. + Pre Amp + Dist. Corr.

Test Details	
Manufacturer	TriMark Corporation
EUT	ERX6
Model No.	40495-01
Serial No.	21/36-00005
Mode	Tx
Frequency Tested	125kHz – Antenna 3
Notes	Test Distance = 3 meters Distance Correction Factor: Per CFR 15.31(f)(2), at frequencies below 30MHz measurements may be performed at a distance closer than that specified in the regulations. The results may be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (40dB/decade). - Distance correction factor (300 meters to 3 meters) = -80dB (2 decades @ 40dB per decade) - Distance correction factor (30 meters to 3 meters) = -40dB (1 decade @ 40dB per decade)

Freq. (kHz)	Ant Pol	Meter Reading (dBµV)	Ambient	CBL Fac (dB)	Ant Fac (dBS/m)	Pre Amp (dB)	Dist. Corr. (dB)	Total (dBuA/m)	Total (uA/m)	Limit (uA/m)	Specified Test Distance (meters)	Margin (dB)
0.125	H	71.85		0.25	-40.82	0.00	-80.00	-48.72	0.00	940.73	300.00	-108.19
0.125	V	80.96		0.25	-40.82	0.00	-80.00	-39.61	0.01	940.73	300.00	-99.08
0.250	H	45.51	Ambient	0.25	-40.87	0.00	-80.00	-75.10	0.00	88.84	300.00	-114.07
0.250	V	45.62	Ambient	0.25	-40.87	0.00	-80.00	-74.99	0.00	88.84	300.00	-113.96
0.375	H	41.79	Ambient	0.25	-40.81	0.00	-80.00	-78.77	0.00	88.47	300.00	-117.70
0.375	V	42.88	Ambient	0.25	-40.81	0.00	-80.00	-77.68	0.00	88.47	300.00	-116.61
0.500	H	39.34	Ambient	0.25	-40.77	0.00	-40.00	-41.17	0.01	88.11	30.00	-80.07
0.500	V	40.23	Ambient	0.25	-40.77	0.00	-40.00	-40.28	0.01	88.11	30.00	-79.18
0.625	H	37.52	Ambient	0.25	-40.78	0.00	-40.00	-43.00	0.01	87.75	30.00	-81.87
0.625	V	37.88	Ambient	0.25	-40.78	0.00	-40.00	-42.64	0.01	87.75	30.00	-81.51
0.750	H	35.63	Ambient	0.25	-40.79	0.00	-40.00	-44.90	0.01	87.38	30.00	-83.73
0.750	V	35.20	Ambient	0.25	-40.79	0.00	-40.00	-45.33	0.01	87.38	30.00	-84.16
0.875	H	34.13	Ambient	0.25	-40.77	0.00	-40.00	-46.38	0.00	87.02	30.00	-85.17
0.875	V	33.76	Ambient	0.25	-40.77	0.00	-40.00	-46.75	0.00	87.02	30.00	-85.54
1.000	H	32.61	Ambient	0.25	-40.75	0.00	-40.00	-47.88	0.00	86.66	30.00	-86.64
1.000	V	33.35	Ambient	0.25	-40.75	0.00	-40.00	-47.14	0.00	86.66	30.00	-85.90
1.125	H	31.26	Ambient	0.25	-40.73	0.00	-40.00	-49.21	0.00	86.29	30.00	-87.93
1.125	V	30.90	Ambient	0.25	-40.73	0.00	-40.00	-49.57	0.00	86.29	30.00	-88.29
1.250	H	29.94	Ambient	0.25	-40.71	0.00	-40.00	-50.52	0.00	85.93	30.00	-89.20
1.250	V	30.44	Ambient	0.25	-40.71	0.00	-40.00	-50.02	0.00	85.93	30.00	-88.70

Total (dBµA/m) = Meter Reading + CBL Fac. + Ant. Fac. + Pre Amp + Dist. Corr.

23. Scope of Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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ELECTRICAL

Valid To: June 30, 2023 Certificate Number: 1786.01

In recognition of the successful completion of the A2LA Accreditation Program evaluation process, accreditation is granted to this laboratory to perform the following automotive electromagnetic compatibility and other electrical tests:

Test Technology:	Test Method(s) [1]:
Transient Immunity	ISO 7637-2 (including emissions); ISO 7637-3; ISO 16750-2:2012, Sections 4.6.3 and 4.6.4; CS-11979, Section 6.4; CS.00054, Section 5.9; EMC-CS-2009.1 (CI220); FMC1278 (CI220, CI221, CI222); GMW 3097, Section 3.5; SAE J1113-11; SAE J1113-12; ECE Regulation 10.06 Annex 10
Electrostatic Discharge (ESD)	ISO 10605 (2001, 2008); CS-11979 Section 7.0; CS.00054, Section 5.10; EMC-CS-2009.1 (CI 280); FMC1278 (CI280); SAE J1113-13; GMW 3097 Section 3.6
Conducted Emissions	CISPR 25 (2002, 2008), Sections 6.2 and 6.3; CISPR 25 (2016), Sections 6.3 and 6.4; CS-11979, Section 5.1; CS.00054, Sections 5.6.1 and 5.6.2; GMW 3097, Section 3.3.2; EMC-CS-2009.1 (CE 420); FMC1278 (CE420, CE421)
Radiated Emissions Anechoic	CISPR 25 (2002, 2008), Section 6.4; CISPR 25 (2016), Section 6.5; CS-11979, Section 5.3; CS.00054, Section 5.6.3; GMW 3097, Section 3.3.1; EMC-CS-2009.1 (RE 310); FMC1278 (RE310); ECE Regulation 10.06 Annex 7 (Broadband) ECE Regulation 10.06 Annex 8 (Narrowband)

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Test Technology:	Test Method(s) [1]:
Vehicle Radiated Emissions	CISPR 12; CISPR 36; ICES-002; ECE Regulation 10.06 Annex 5
Bulk Current Injection (BCI)	ISO 11452-4; CS-11979, Section 6.1; CS.00054, Section 5.8.1; GMW 3097, Section 3.4.1; SAE J1113-4; EMC-CS-2009.1 (RI112); FMC1278 (RI112); ECE Regulation 10.06 Annex 9
Radiated Immunity Anechoic *(Including Radar Pulse)*	ISO 11452-2; ISO 11452-5; CS-11979, Section 6.2; CS.00054, Section 5.8.2; GMW 3097, Section 3.4.2; EMC-CS-2009.1 (RI114); FMC1278 (RI114); SAE J1113-21; ECE Regulation 10.06 Annex 9
Radiated Immunity Magnetic Field	ISO 11452-8
Radiated Immunity Reverb	ISO/IEC 61000-4-21; GMW 3097, Section 3.4.3; EMC-CS-2009.1 (RI114); FMC1278 (RI114); ISO 11452-11
Radiated Immunity *(Portable Transmitters)*	ISO 11452-9; EMC-CS-2009.1 (RI115); FMC1278 (RI115)
Vehicle Radiated Immunity (ALSE)	ISO 11451-2; ECE Regulation 10.06 Annex 6
Vehicle Product Specific EMC Standards	EN 14982; EN ISO 13309, ISO 13766; EN 50498; EC Regulation No. 2015/208; EN 55012
Electrical Loads	ISO 16750-2
Emissions Radiated and Conducted (3m Semi-anechoic chamber, up to 40 GHz)	47 CFR, FCC Part 15 B (using ANSI C63.4:2014); 47 CFR, FCC Part 18 (using FCC MP-5:1986); ICES-001; ICES-003; ICES-005; IEC/CISPR 11, Ed. 4.1 (2004-06); AS/NZS CISPR 11 (2004); IEC/CISPR 11 Ed 5 (2009-05) + A1 (2010); KN 11 (2008-5) with RRL Notice No. 2008-3 (May 20, 2008); CISPR 11; EN 55011; KS C 9811; CNS 13803 (1997, 2003); CISPR 14-1; EN 55014-1; AS/NZS CISPR 14.1; KS C 9814-1; KN 14-1; IEC/CISPR 22 (1997); EN 55022 (1998) + A1(2000); EN 55022 (1998) + A1(2000) + A2(2003); EN 55022 (2006); IEC/CISPR 22 (2008-09); AS/NZS CISPR 22 (2004); AS/NZS CISPR 22, 3rd Edition (2006); KN 22 (up to 6 GHz); CNS 13438 (up to 6 GHz); VCCI V-3 (up to 6 GHz); CISPR 32; EN 55032; KS C 9832; KN 32; ECE Regulation 10.06 Annex 14
Cellular Radiated Spurious Emissions	ETSI TS 151 010-1 GSM; 3GPP TS 51.010-1, Sec 12; ETSI TS 134 124 UMTS; 3GPP TS 34.124; ETSI TS 136 124 LTE; E-UTRA; 3GPP TS 36.124

Test Technology:	Test Method(s) [1]:
Emissions (cont'd)	
Current Harmonics	IEC 61000-3-2; EN 61000-3-2; KN 61000-3-2; KS C 9610-3-2; ECE Regulation 10.06 Annex 11
Flicker and Fluctuations	IEC 61000-3-3; EN 61000-3-3; KN 61000-3-3; KS C 9610-3-3; ECE Regulation 10.06 Annex 12
Immunity	
Electrostatic Discharge	IEC 61000-4-2, Ed. 1.2 (2001); IEC 61000-4-2 (1995) + A1(1998) + A2(2000); EN 61000-4-2 (1995); EN 61000-4-2 (2009-05); KN 61000-4-2 (2008-5); RRL Notice No. 2008-4 (May 20, 2008); IEC 61000-4-2; EN 61000-4-2; KN 61000-4-2; KS C 9610-4-2; IEEE C37.90.3 2001
Radiated Immunity	IEC 61000-4-3 (1995) + A1(1998) + A2(2000); IEC 61000-4-3, Ed. 3.0 (2006-02); IEC 61000-4-3, Ed. 3.2 (2010); KN 61000-4-3 (2008-5); RRL Notice No. 2008-4 (May 20, 2008); IEC 61000-4-3; EN 61000-4-3; KN 61000-4-3; KS C 9610-4-3; IEEE C37.90.2 2004
Electrical Fast Transient/Burst	IEC 61000-4-4, Ed. 2.0 (2004-07); IEC 61000-4-4, Ed. 2.1 (2011); IEC 61000-4-4 (1995) + A1(2000) + A2(2001); KN 61000-4-4 (2008-5); RRL Notice No. 2008-5 (May 20, 2008); IEC 61000-4-4; EN 61000-4-4; KN 61000-4-4; KS C 9610-4-4; ECE Regulation 10.06 Annex 15
Surge	IEC 61000-4-5 (1995) + A1(2000); IEC 61000-4-5, Ed 1.1 (2005-11); EN 61000-4-5 (1995) + A1(2001); KN 61000-4-5 (2008-5); RRL Notice No. 2008-4 (May 20, 2008); IEC 61000-4-5; EN 61000-4-5; KN 61000-4-5; KS C 9610-4-5; IEEE C37.90.1 2012; IEEE STD C62.41.2 2002; ECE Regulation 10.06 Annex 16
Conducted Immunity	IEC 61000-4-6 (1996) + A1(2000); IEC 61000-4-6, Ed 2.0 (2006-05); IEC 61000-4-6 Ed. 3.0 (2008); KN 61000-4-6 (2008-5); RRL Notice No. 2008-4 (May 20, 2008); EN 61000-4-6 (1996) + A1(2001); IEC 61000-4-6; EN 61000-4-6; KN 61000-4-6; KS C 9610-4-6

Test Technology:	Test Method(s) [1]:
Immunity (cont'd)	
Power Frequency Magnetic Field Immunity (*Down to 3 A/m*)	IEC 61000-4-8 (1993) + A1(2000); IEC 61000-4-8 (2009); EN 61000-4-8 (1994) + A1(2000); KN 61000-4-8 (2008-5); RRL Notice No. 2008-4 (May 20, 2008); IEC 61000-4-8; EN 61000-4-8; KN 61000-4-8; KS C 9610-4-8
Voltage Dips, Short Interrupts, and Line Voltage Variations	IEC 61000-4-11, Ed. 2 (2004-03); KN 61000-4-11 (2008-5); RRL Notice No. 2008-4 (May 20, 2008); IEC 61000-4-11; EN 61000-4-11; KN 61000-4-11; KS C 9610-4-11
Ring Wave	IEC 61000-4-12, Ed. 2 (2006-09); EN 61000-4-12:2006; IEC 61000-4-12; EN 61000-4-12; KN 61000-4-12; IEEE STD C62.41.2 2002
Generic and Product Specific EMC Standards	IEC/EN 61000-6-1; AS/NZS 61000-6-1; KN 61000-6-1; KS C 9610-6-1; IEC/EN 61000-6-2; AS/NZS 61000-6-2; KN 61000-6-2; KS C 9610-6-2; IEC/EN 61000-6-3; AS/NZS 61000-6-3; KN 61000-6-3; KS C 9610-6-3; IEC/EN 61000-6-4; AS/NZS 61000-6-4; KN 61000-6-4; KS C 9610-6-4; EN 50130-4; EN 61326-1; EN 50121-3-2; EN 12895; EN 50270; EN 50491-1; EN 50491-2; EN 50491-3; EN 55015; EN 60730-1; EN 60945; IEC 60533; EN 61326-2-6; EN 61800-3; IEC/CISPR 14-2; EN 55014-2; AS/NZS CISPR 14.2; KN 14-2; KS C 9814-2; IEC/CISPR 24; AS/NZS CISPR 24; EN 55024; KN 24; IEC/CISPR 35; AS/NZS CISPR 35; EN 55035; KN 35; KS C 9835; IEC 60601-1-2; JIS T0601-1-2
TxRx EMC Requirements	EN 301 489-1; EN 301 489-3; EN 301 489-9; EN 301 489-17; EN 301 489-19; EN 301 489-20
European Radio Test Standards	ETSI EN 300 086-1; ETSI EN 300 086-2; ETSI EN 300 113-1; ETSI EN 300 113-2; ETSI EN 300 220-1; ETSI EN 300 220-2; ETSI EN 300 220-3-1; ETSI EN 300 220-3-2; ETSI EN 300 330-1; ETSI EN 300 330-2; ETSI EN 300 440-1; ETSI EN 300 440-2; ETSI EN 300 422-1; ETSI EN 300 422-2; ETSI EN 300 328; ETSI EN 301 893; ETSI EN 301 511; ETSI EN 301 908-1; ETSI EN 908-2; ETSI EN 908-13; ETSI EN 303 413; ETSI EN 302 502; EN 303 340; EN 303 345-2; EN 303 345-3; EN 303 345-4

Test Technology:	Test Method(s) [1]:
Canadian Radio Tests	RSS-102 (RF Exposure Evaluation only); RSS-111; RSS-112; RSS-117; RSS-119; RSS-123; RSS-125; RSS-127; RSS-130; RSS-131; RSS-132; RSS-133; RSS-134; RSS-135; RSS-137; RSS-139; RSS-140; RSS-141; RSS-142; RSS-170; RSS-181; RSS-182; RSS-191; RSS-192; RSS-194; RSS-195; RSS-196; RSS-197; RSS-199; RSS-210; RSS-211; RSS-213; RSS-215; RSS-216; RSS-220; RSS-222; RSS-236; RSS-238; RSS-243; RSS-244; RSS-247; RSS-251; RSS-252; RSS-287; RSS-288; RSS-310; RSS-GEN
Mexico Radio Tests	IFT-008-2015; NOM-208-SCFI-2016
Japan Radio Tests	Radio Law No. 131, Ordinance of MPT No. 37, 1981, MIC Notification No. 88:2004, Table No. 22-11; ARIB STD-T66, Regulation 18
Taiwan Radio Tests	LP-0002 (July 15, 2020)
Australia/New Zealand Radio Tests	AS/NZS 4268; Radiocommunications (Short Range Devices) Standard (2014)
Hong Kong Radio Tests	HKCA 1039 Issue 6; HKCA 1042; HKCA 1033 Issue 7; HKCA 1061; HKCA 1008; HKCA 1043; HKCA 1057; HKCA 1073
Korean Radio Test Standards	KN 301 489-1; KN 301 489-3; KN 301 489-9; KN 301 489-17; KN 301 489-52; KS X 3124; KS X 3125; KS X 3130; KS X 3126; KS X 3129
Vietnam Radio Test Standards	QCVN 47:2015/BTTTT; QCVN 54:2020/BTTTT; QCVN 55:2011/BTTTT; QCVN 65:2013/BTTTT; QCVN 73:2013/BTTTT; QCVN 74:2020/BTTTT; QCVN 112:2017/BTTTT; QCVN 117:2020//BTTTT
Vietnam EMC Test Standards	QCVN 18:2014/BTTTT; QCVN 86:2019/BTTTT; QCVN 96:2015/BTTTT; QCVN 118:2018/BTTTT
Unlicensed Radio Frequency Devices *(3 Meter Semi-Anechoic Room)*	47 CFR FCC Part 15C, 15D, 15E, 15F, 15G, 15H (using ANSI C63.10:2013, ANSI C63.17:2013 and FCC KDB 905462 D02 (v02))
Licensed Radio Service Equipment	47 CFR FCC Parts 20, 22, 24, 25, 27, 30, 73, 74, 80, 87, 90, 95, 96, 97, 101 (using ANSI/TIA-603-E, TIA-102.CAAA-E, ANSI C63.26:2015)

Test Technology:	Test Method(s) [1]:
OTA (Over the Air) Performance GSM, GPRS, EGPRS UMTS (W-CDMA) LTE including CAT M1 A-GPS for UMTS/GSM LTS A-GPS, A-GLONASS, SIB8/SIB16 Large Device/Laptop/Tablet Testing Integrated Device Testing WiFi 802.11 a/b/g/n/a	CTIA Test Plan for Wireless Device Over-the-Air Performance (Method for Measurement for Radiated Power and Receiver Performance) V3.8.2; CTIA Test Plan for RF Performance Evaluation of WiFi Mobile Converged Devices V2.1.0
Electrical Measurements and Simulation AC Voltage / Current (1mV to 5kV) 60 Hz (0.1V to 250V) up to 500 MHz (1μA to 150A) 60 Hz DC Voltage / Current (1mV to 15-kV) / (1μA to 10A) Power Factor / Efficiency / Crest Factor (Power to 30kW) Resistance (1mΩ to 4000MΩ) Surge (Up to 10 kV / 5 kA) (Combination Wave and Ring Wave)	 FAA AC 150/5345-10H FAA AC 150/5345-43J FAA AC 150/5345-44K FAA AC 150/5345-46E FAA AC 150/5345-47C FAA EB 67D

On the following products and materials:
Telecommunications Terminal Equipment (TTE), Radio Equipment, Network Equipment, Information Technology Equipment (ITE), Automotive Electronic Equipment, Automotive Hybrid Electronic Devices, Maritime Navigation and Radio Communication Equipment and Systems, Vehicles, Boats and Internal Combustion Engine Driven Devices, Automotive, Aviation, and General Lighting Products, Medical Electrical Equipment, Motors, Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment, Household Appliances, Electric Tools, Low-voltage Switchgear and Control gear, Programmable Controllers, Electrical Equipment for Measurement, Control and Laboratory Use, Base Materials, Power and Data Transmission Cables and Connectors

[1] When the date, edition, version, etc. is not identified in the scope of accreditation, laboratories may use the version that immediately precedes the current version for a period of one year from the date of publication of the standard measurement method, per part C., Section 1 of A2LA *R101 - General Requirements - Accreditation of ISO-IEC 17025 Laboratories*.

Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1[2]

Rule Subpart/Technology	Test Method	Maximum Frequency (MHz)
Unintentional Radiators Part 15B	ANSI C63.4:2014	40000

Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1[2]

Rule Subpart/Technology	Test Method	Maximum Frequency (MHz)
Industrial, Scientific, and Medical Equipment Part 18	FCC MP-5 (February 1986)	40000
Intentional Radiators Part 15C	ANSI C63.10:2013	40000
Unlicensed Personal Communication Systems Devices Part 15D	ANSI C63.17:2013	40000
U-NII without DFS Intentional Radiators Part 15E	ANSI C63.10:2013	40000
U-NII with DFS Intentional Radiators Part 15E	FCC KDB 905462 D02 (v02)	40000
UWB Intentional Radiators Part 15F	ANSI C63.10:2013	40000
BPL Intentional Radiators Part 15G	ANSI C63.10:2013	40000
White Space Device Intentional Radiators Part 15H	ANSI C63.10:2013	40000
Commercial Mobile Services (FCC Licensed Radio Service Equipment) Parts 22 (cellular), 24, 25 (below 3 GHz), and 27	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
General Mobile Radio Services (FCC Licensed Radio Service Equipment) Parts 22 (non-cellular), 90 (below 3 GHz), 95, 97, and 101 (below 3 GHz)	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
Citizens Broadband Radio Services (FCC Licensed Radio Service Equipment) Part 96	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000

Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1[2]

Rule Subpart/Technology	Test Method	Maximum Frequency (MHz)
Maritime and Aviation Radio Services		
Parts 80 and 87	ANSI/TIA-603-E; ANSI C63.26:2015	40000
Microwave and Millimeter Bands Radio Services		
Parts 25, 30, 74, 90 (above 3 GHz), 97 (above 3 GHz), and 101	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
Broadcast Radio Services		
Parts 73 and 74 (below 3 GHz)	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
Signal Boosters		
Part 20 (Wideband Consumer Signal Boosters, Provider-specific signal boosters, and Industrial Signal Boosters) Section 90.219	ANSI C63.26:2015	40000

[2] Accreditation does not imply acceptance to the FCC equipment authorization program. Please see the FCC website (https://apps.fcc.gov/oetcf/eas/) for a listing of FCC approved laboratories.

Accredited Laboratory

A2LA has accredited

ELITE ELECTRONIC ENGINEERING INC.

Downers Grove, IL

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories.* This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 19th day of May 2021.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1786.01
Valid to June 30, 2023

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.