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July 22, 2021

Mobilogix, Inc.
5500 Trabuco Rd, Suite 150
Irvine, California 92620

Dear Ramy Mourad,

Enclosed is the EMC Wireless test report for compliance testing of the Mobilogix, Inc., ATD500Y as tested to the requirements of Title 47 of the CFR, Ch. 1 (10-1-06 ed.), Part 15 Subpart C for Intentional Radiators.

Thank you for using the services of Eurofins E&E North America. If you have any questions regarding these results or if we can be of further service to you, please feel free to contact me.

Sincerely yours,

Rheine Nguyen

Documentation Department
Eurofins Electrical and Electronic Testing NA, Inc.

Reference: (\Mobilogix, Inc.\WIRS113445-FCC 247 BLE)

ACCREDITED
TESTING CERT #0591.02

Electromagnetic Compatibility Criteria
Test Report

for the

Mobilogix, Inc.
ATD500Y

Tested under
the FCC Certification Rules
contained in
15.247 Subpart C for Intentional Radiators

Report: WIRS113445-FCC 247 BLE

Prepared For:

Mobilogix, Inc.
5500 Trabuco Rd, Suite 150
Irvine, California 92620

Prepared By:
Eurofins Electrical and Electronic Testing NA, Inc.
3162 Belick St., Santa Clara, CA 95054

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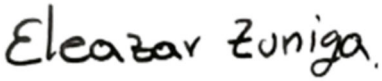
Arsalan Hasan
Project Engineer, Electromagnetic Compatibility Lab

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules Part 15.247 under normal use and maintenance.



Eleazar Zuniga, PhD.
Director, Wireless Technologies

Report Status Sheet

Revision	Report Date	Reason for Revision
0	July 22, 2021	Initial Issue.

Table of Contents

List of Terms and Abbreviations

AC	**A**lternating **C**urrent
ACF	**A**ntenna **C**orrection **F**actor
Cal	**Cal**ibration
d	**M**easurement **D**istance
dB	**D**eci**b**els
dBµA	**D**eci**b**els above one **micro**amp
dBµV	**D**eci**b**els above one **micro**volt
dBµA/m	**D**eci**b**els above one **micro**amp **per m**eter
dBµV/m	**D**eci**b**els above one **micro**volt **per m**eter
DC	**D**irect **C**urrent
E	**E**lectric Field
DSL	**D**igital **S**ubscriber **L**ine
ESD	**E**lectro**s**tatic **D**ischarge
EUT	**E**quipment **U**nder **T**est
f	**F**requency
FCC	**F**ederal **C**ommunications **C**ommission
GRP	**G**round **R**eference **P**lane
H	Magnetic Field
HCP	**H**orizontal **C**oupling **P**lane
Hz	**H**ert**z**
IEC	**I**nternational **E**lectrotechnical **C**ommission
kHz	**kilo**hert**z**
kPa	**kilo**pa**s**cal
kV	**kilo**volt
LISN	**L**ine **I**mpedance **S**tabilization **N**etwork
MHz	**M**ega**h**ertz
µH	**micro**henry
µ	**micro**farad
µs	**micro**seconds
NEBS	**N**etwork **E**quipment-**B**uilding **S**ystem
PRF	**P**ulse **R**epetition **F**requency
RF	**R**adio **F**requency
RMS	**R**oot-**M**ean-**S**quare
TWT	**T**raveling **W**ave **T**ube
V/m	**V**olts **per m**eter
VCP	**V**ertical **C**oupling **P**lane

I. Executive Summary

1.1 Purpose of Test

An EMC Wireless evaluation was performed to determine compliance of the Mobilogix, Inc., ATD500Y, with the requirements of Part 15, §15.247. All references are to the most current version of Title 47 of the Code of Federal Regulations in effect. In accordance with §2.1033, the following data is presented in support of the Certification of the ATD500Y Mobilogix, Inc. should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the ATD500Y, has been **permanently** discontinued.

1.2 Executive Summary

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, §15.247, in accordance with Mobilogix, Inc., purchase order number MOB2106. All tests were conducted using measurement procedure ANSI C63.4-2014.

FCC Reference 47 CFR Part 15.247:2005	Description	Compliance
Title 47 of the CFR, Part 15 §15.203	Antenna Requirement	Data valid from module original certification FCC-ID: QOQBGM13P
Title 47 of the CFR, Part 15 §15.207(a)	Conducted Emission Limits	N/A
Title 47 of the CFR, Part 15 §15.247(a)(2)	6dB Occupied Bandwidth	Data valid from module original certification FCC-ID: QOQBGM13P
Title 47 of the CFR, Part 15 §15.247(b)	Peak Power Output	Data valid from module original certification FCC-ID: QOQBGM13P
Title 47 of the CFR, Part 15 §15.247(d); §15.209; §15.205	Radiated Spurious Emissions Requirements	Compliant
Title 47 of the CFR, Part 15 §15.247(d)	RF Conducted Spurious Emissions Requirements	Data valid from module original certification FCC-ID: QOQBGM13P
Title 47 of the CFR, Part 15 §15.247(d)	RF Conducted Band Edge	Data valid from module original certification FCC-ID: QOQBGM13P
Title 47 of the CFR, Part 15; §15.247(e)	Peak Power Spectral Density	Data valid from module original certification FCC-ID: QOQBGM13P

Executive Summary of EMC Part 15.247 ComplianceTesting

Rationale:
Per KDB KDB 996369 D04 “Modular Transmitter Integration Guide – Guidance for Host Product Manufacturers” only spot checks are reported in this filing

II. Equipment Configuration

2.1 Overview

Eurofins Electrical and Electronic Testing NA, Inc. was contracted by Mobilogix, Inc. to perform testing on the ATD500Y, under Mobilogix, Inc.'s purchase order number MOB2106.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the Mobilogix, Inc., ATD500Y.

The results obtained relate only to the item(s) tested.

Model(s) Tested:	ATD500Y	
Model(s) Covered:	ATD500Y	
EUT Specifications:	Primary Power: 3.8 VDC (Battery Powered)	
	FCC ID: 2AH4HATD500Y	
	Type of Modulations:	GFSK
	Equipment Code:	DTS
	EUT Frequency Ranges:	2402 – 2480 MHz
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: 15-35° C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
Evaluated by:	Arsalan Hasan	
Report Date(s):	July 22, 2021	

EUT Summary Table

2.2 References

CFR 47, Part 15, Subpart C	Federal Communication Commission, Code of Federal Regulations, Title 47, Part 15: General Rules and Regulations, Allocation, Assignment, and Use of Radio Frequencies
ANSI C63.4:2014	Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the Range of 9 kHz to 40 GHz
ISO/IEC 17025:2005	General Requirements for the Competence of Testing and Calibration Laboratories
ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

References

2.3 Test Site

All testing was performed at Eurofins Electrical and Electronic Testing NA, Inc., 3162 Belick St., Santa Clara, CA 95054. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology. Radiated Emissions measurements were performed in a 5 meter semi-anechoic chamber (equivalent to an Open Area Test Site). In accordance with §2.948(a)(3), a complete site description is contained at Eurofins Electrical and Electronic Testing NA, Inc.

Eurofins MET Laboratories Inc. (Eurofins E&E North America) is part of the Eurofins Electrical & Electronics (E&E) global compliance network.

2.4 Measurement Uncertainty

Test Method	Typical Expanded Uncertainty	K	Confidence Level
RF Frequencies	±4.52 Hz	2	95%
RF Power Conducted Emissions	±2.32 dB	2	95%
RF Power Conducted Spurious Emissions	±2.25 dB	2	95%
RF Power Radiated Emissions	±3.01 dB	2	95%

Measurement Uncertainty

2.5 Description of Test Sample

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Name of EUT/Model:	ADT500Y
Description of EUT and its intended use:	The EUT is an asset tracker.
Selected Operation Mode(s):	The EUT radio is control by the control software.
Rationale for the selection of the Operation Mode(s):	The control software ensures the proper channels are selected.
Monitoring Method(s):	The signals are displayed on a spectrum analyzer.
Emissions Class Declaration:	Class B
Configuration(s):	NA
EUT Power Requirement	
Voltage:	3.8 V
AC or DC:	DC

Voltage Frequency:	NA
Number of Phases:	NA
Current:	0.1 A
Physical Description	
EUT Arrangement:	Table Top
System with Multiple Chassis?	NA
Size (HxWxD - inches):	20mm x 120mm x 55mm
Weight (lbs):	0.5 lbs
Other Info	
EUT Software (internal to EUT):	Rev 1
Support Software (used by support PC to exercise EUT):	NA
Firmware:	Rev 1
Transmitter Parameters	
Description of your unit:	NA
Modulation Type:	GFSK
Number of Channels:	NA
Frequency range (MHz):	BLE: 2402 MHz - 2480 MHz
Antenna Type:	Chip
Antenna Gain (dBi):	1 dBi
PMN:	NA
HVIN:	NA
FVIN:	NA
HMN:	NA
Data Rates:	NA
Expected Power Level:	19 dBm (Conducted)
Number of Antenna:	Cellular: 1 BLE: 1
Number of Intentional Transmitters:	Cellular: 1 BLE: 1
Number of Certified Intentional Transmitter Modules:	Cellular: 1 BLE: 1

EUT List

Ref. ID	Slot #	Name/Description	Model Number	Part Number	Serial Number	Rev. #
1	NA	ADT500Y	ADT500Y	NA	NA	1

Ports and Cabling

Ref. Id	Port Name on EUT	Cable Description or reason for no cable	Qty	Length as tested (m)	Max Length (m)	Shielded? (Y/N)	Termination Box ID & Port Name
NA	NA	NA	NA	NA	NA	NA	NA

Support Equipment

Ref. ID	Name/Description	Manufacturer	Model Number	Customer Supplied Calibration Data
NA	NA	NA	NA	NA

2.6 Modifications

2.6.1 Modifications to EUT

No modifications were made to the EUT.

2.6.2 Modifications to Test Standard

No modifications were made to the test standard.

2.7 Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to Mobilogix, Inc. upon completion of testing.

III. Electromagnetic Compatibility Criteria for Intentional Radiators

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(d) Radiated Spurious Emissions Requirements and Band Edge

Test Requirements: **§15.247(d); §15.205:** Emissions outside the frequency band.

§15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a).

§15.205(a): Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090–0.110----------	16.42–16.423	399.9–410	4.5–5.15
[1] 0.495–0.505----------	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905----------	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128----------	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775----------	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775----------	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218----------	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825----------	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225----------	123–138	2200–2300	14.47–14.5
8.291–8.294----------	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366----------	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675----------	156.7–156.9	2655–2900	22.01–23.12
8.41425–8.41475----------	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293----------	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025----------	240–285	3345.8–3358 36.	43–36.5
12.57675–12.57725----------	322–335.4	3600–4400	([2])

Restricted Bands of Operation

[1] Until February 1, 1999, this restricted band shall be 0.490 – 0.510 MHz.

[2] Above 38.6

Test Requirement(s): **§ 15.209 (a):** Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in

Frequency (MHz)	§ 15.209(a),Radiated Emission Limits (dBµV) @ 3m
30 - 88	40.00
88 - 216	43.50
216 - 960	46.00
Above 960	54.00

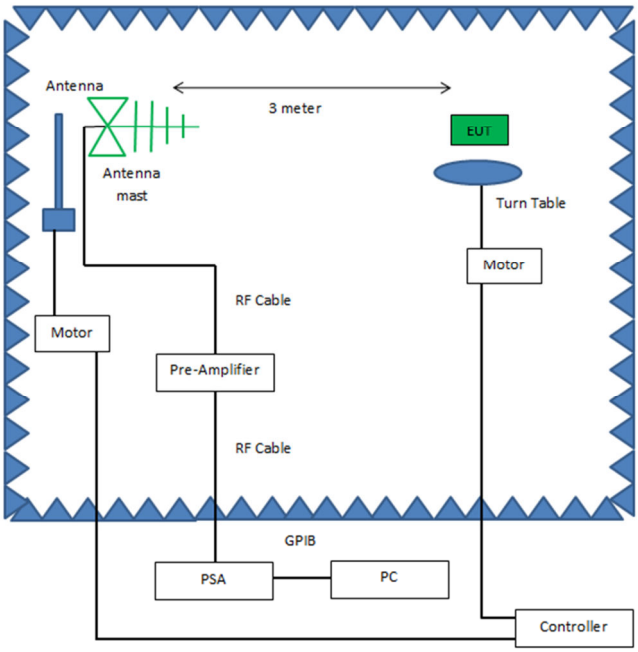
Radiated Emissions Limits Calculated from FCC Part 15, § 15.209 (a)

Test Procedures: The transmitter was turned on. Measurements were performed of the low, mid and high Channels. The EUT was rotated orthogonally through all three axes. Plots shown are corrected for both antenna correction factor and distance and compared to a 3 m limit line. Only noise floor was measured below 30 MHz and above 18 GHz.

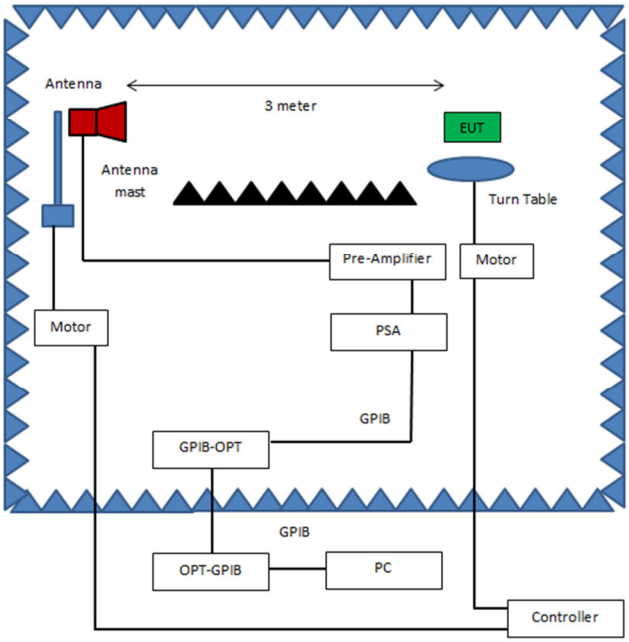
Test Results: The EUT **completed testing** to the requirements of **§ 15.247(d)**. No anomalies noted.

Test Engineer: Arsalan Hasan

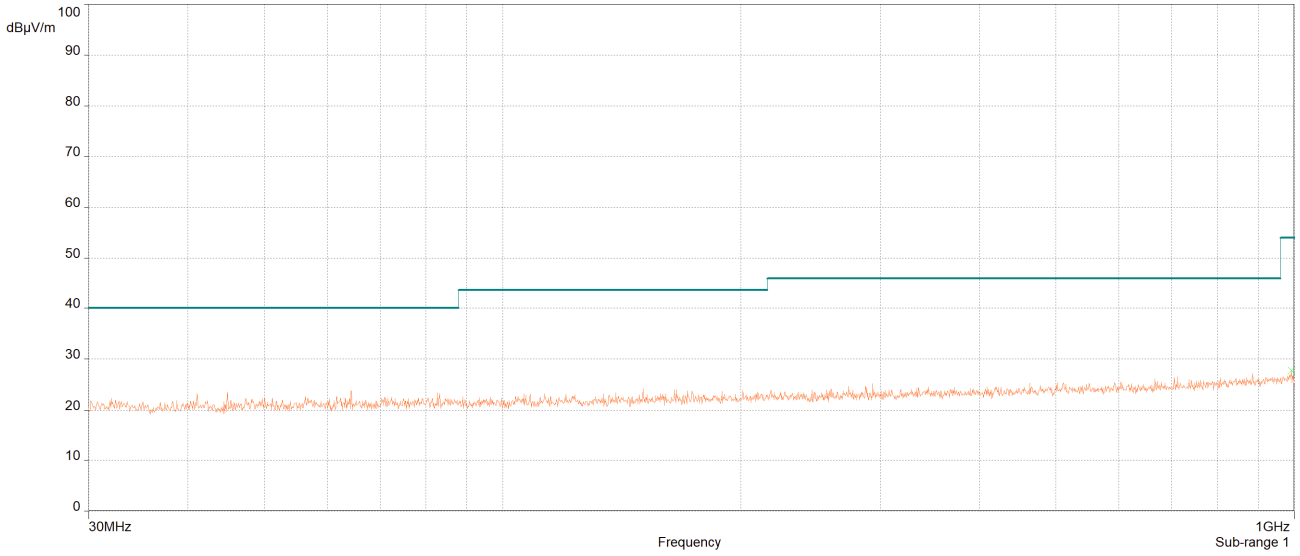
Test Date: July 15, 2021



Radiated Emissions, Below 1GHz, Test Setup



Radiated Emissions, Above 1GHz, Test Setup



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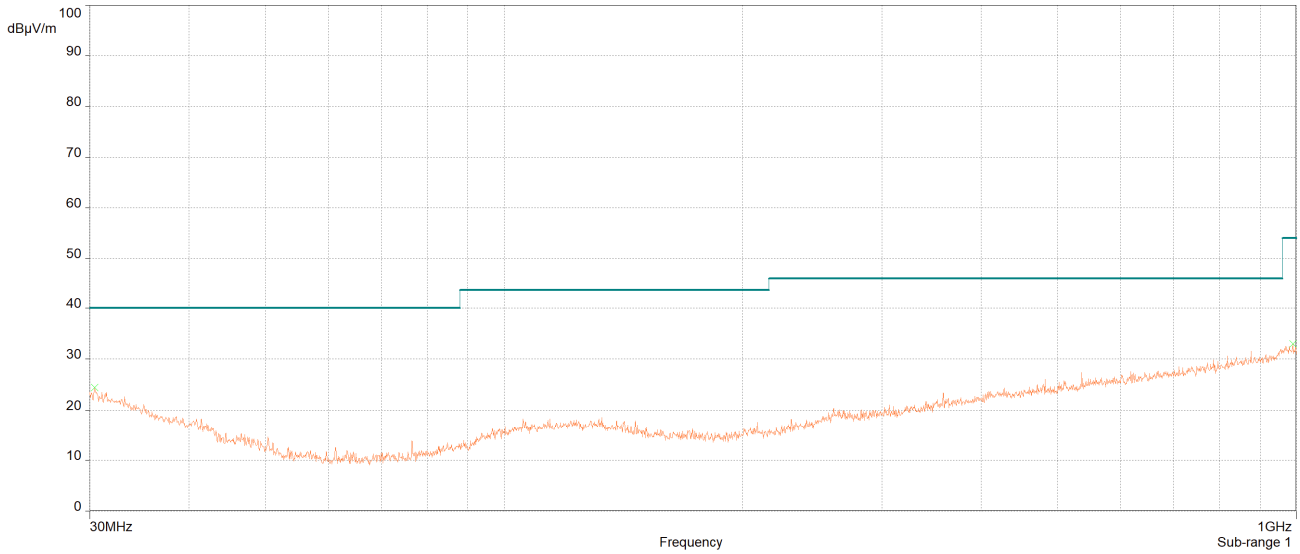
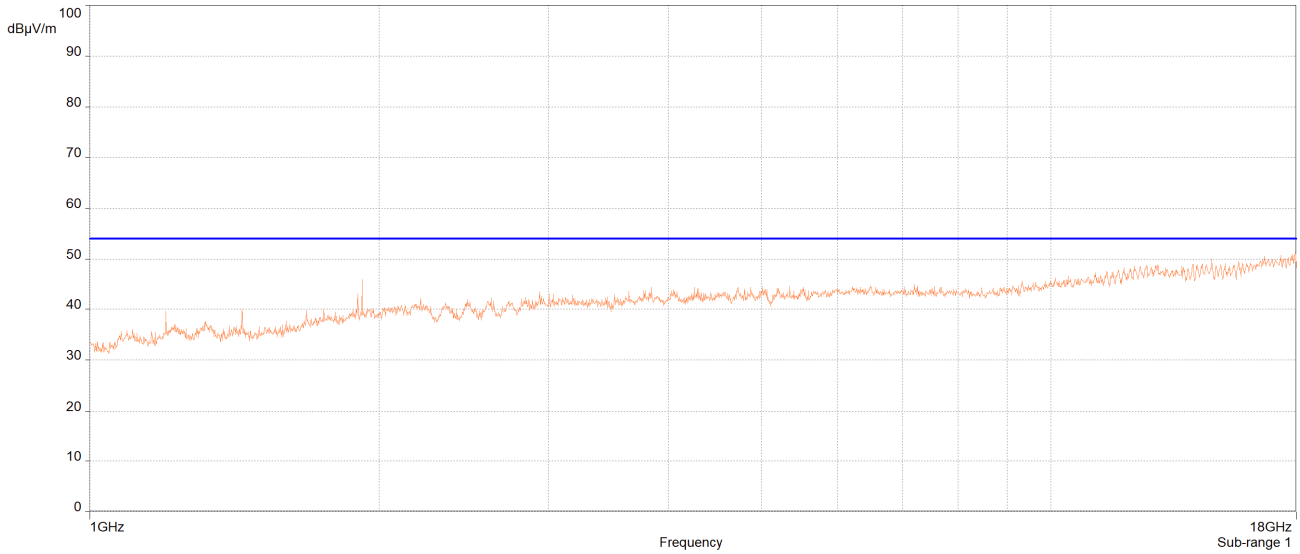


Horizontal

Radiated Emissions, BLE, 30 MHz - 1 GHz, (worst case)



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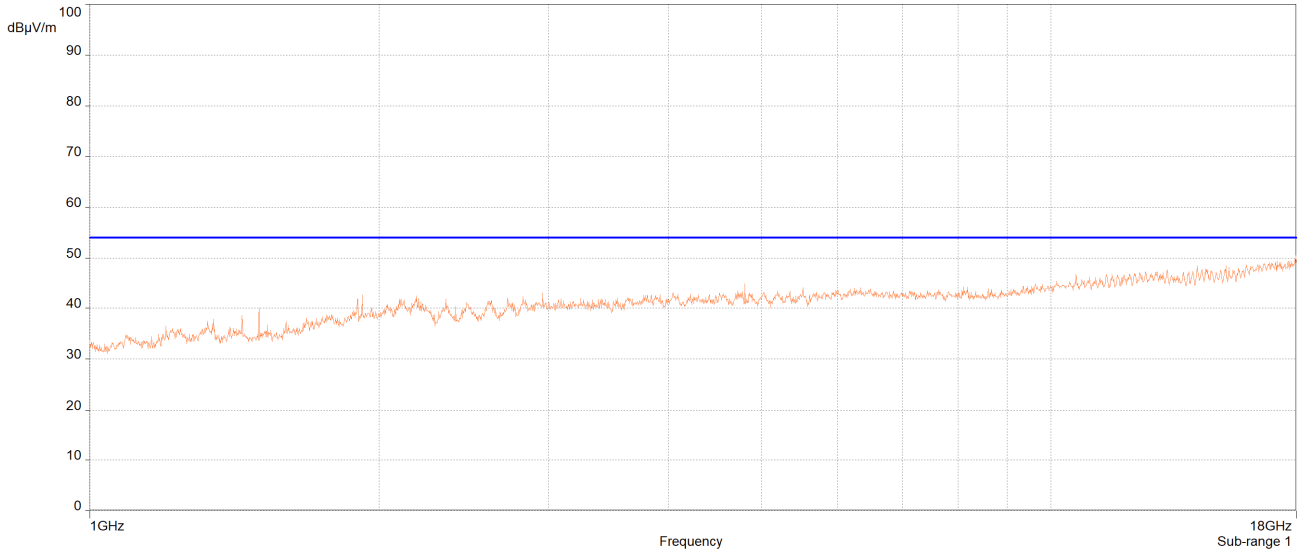
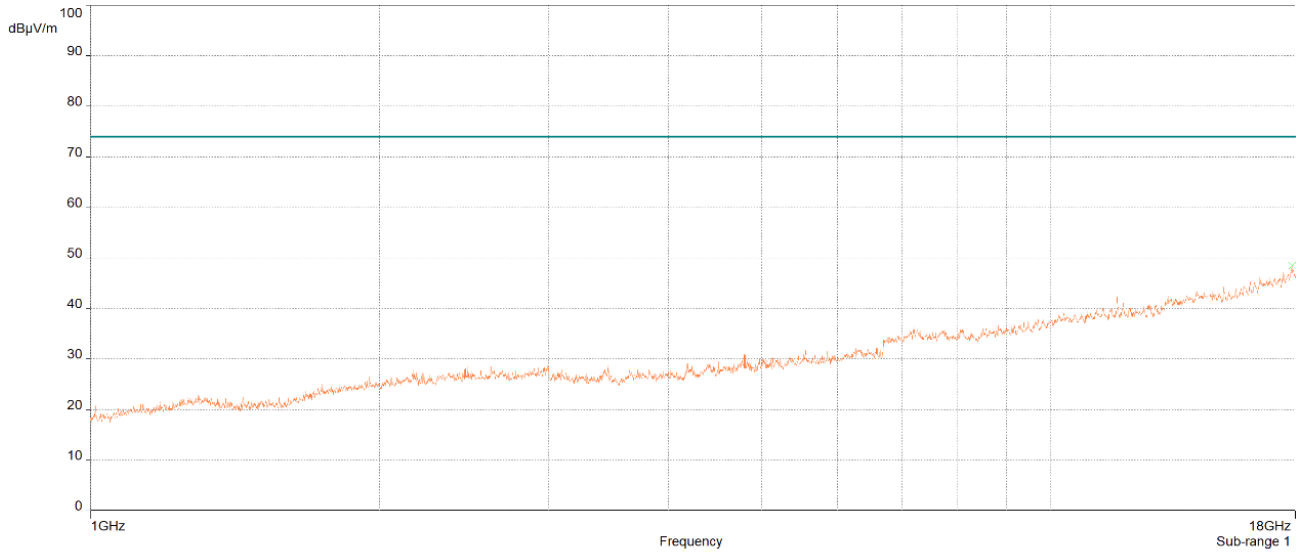


Horizontal

Radiated Spurious Emissions Requirements, Low Channel 2402MHz, Average



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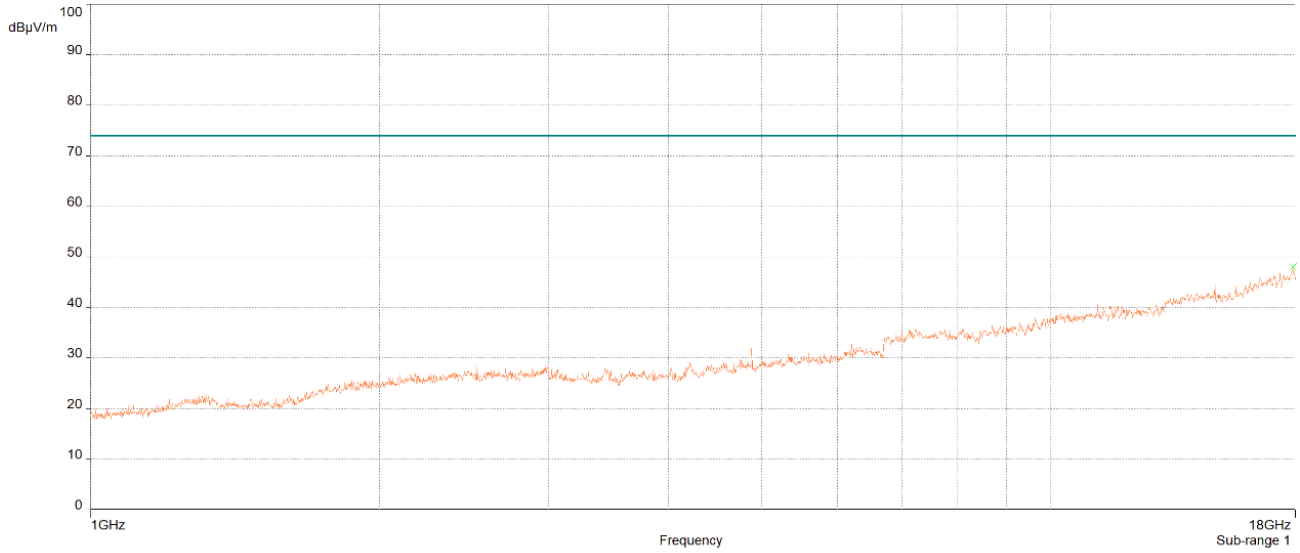
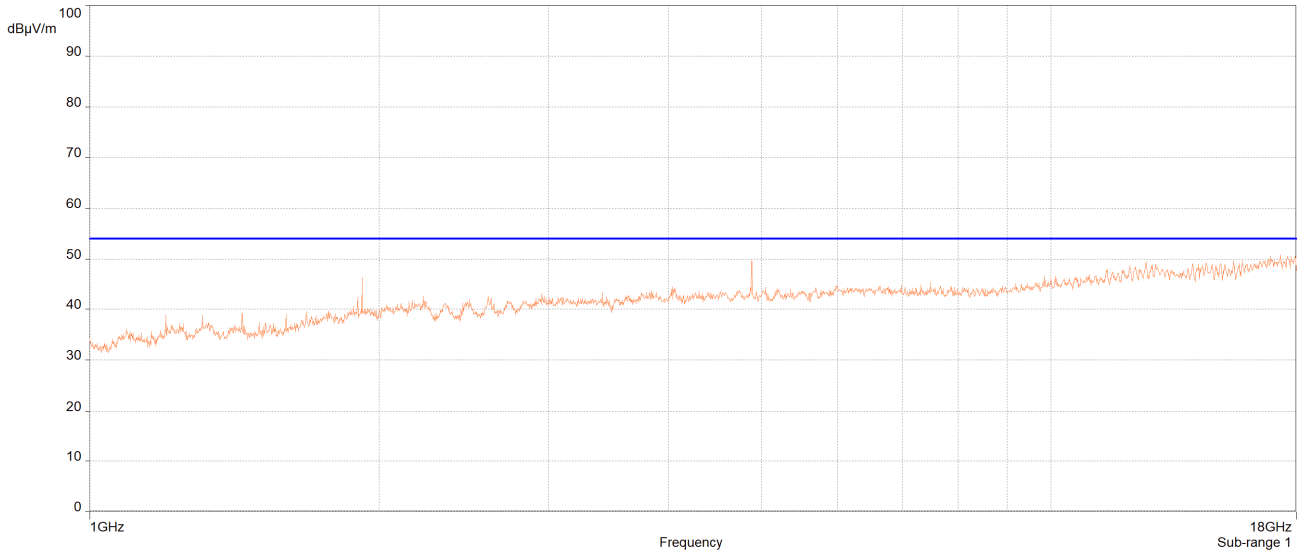


Horizontal

Radiated Spurious Emissions Requirements, Low Channel 2402MHz, Peak



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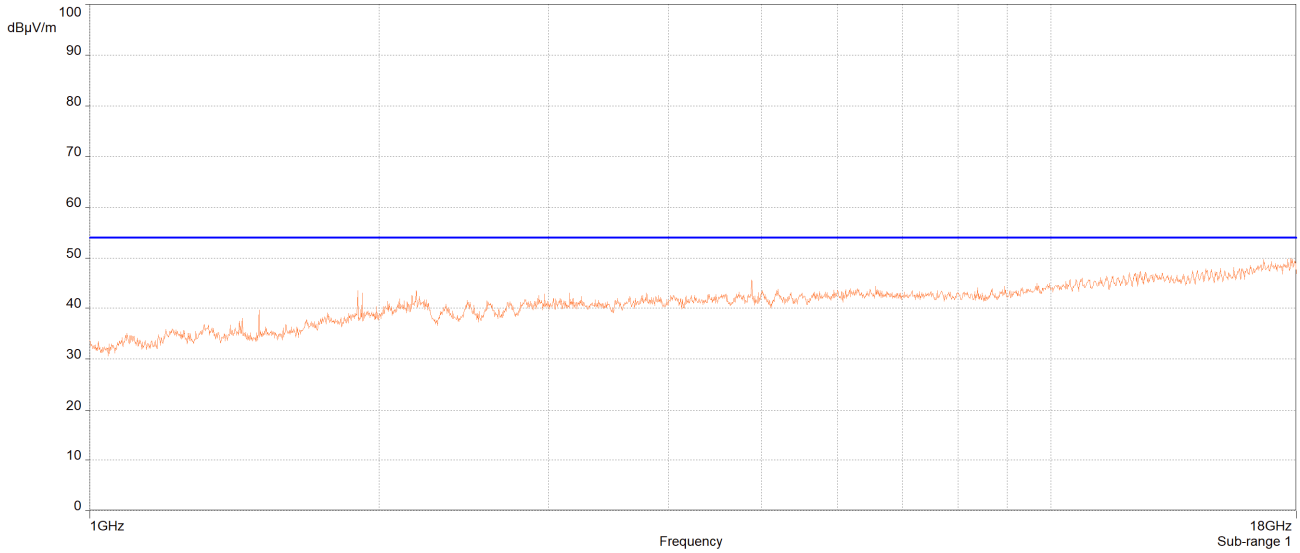
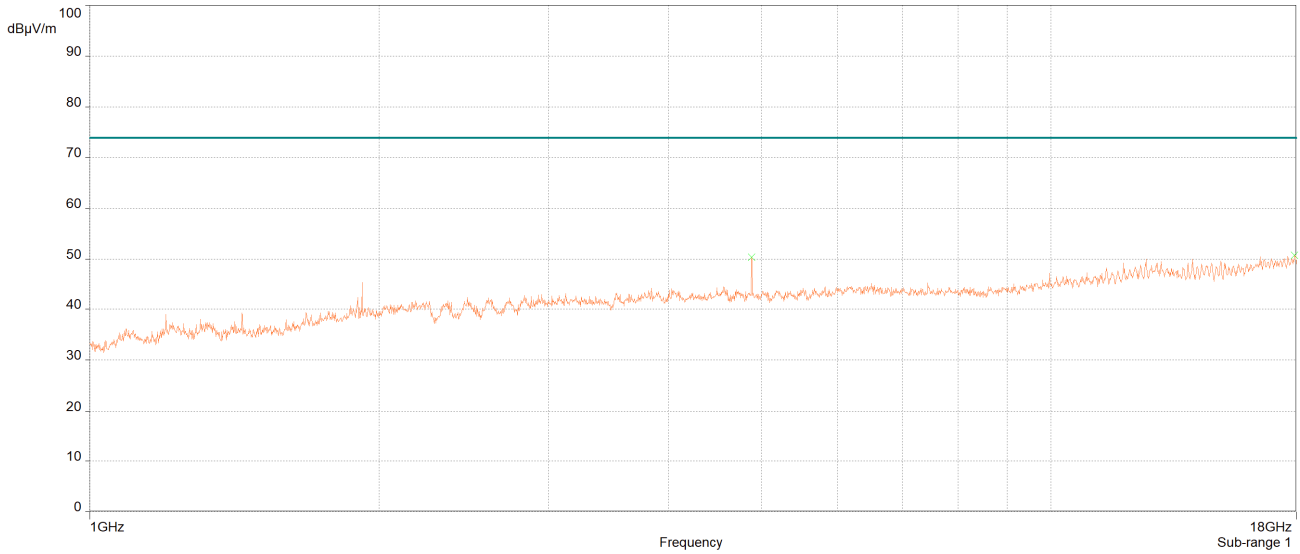


Horizontal

Radiated Spurious Emissions Requirements, Mid Channel 2442MHz, Average



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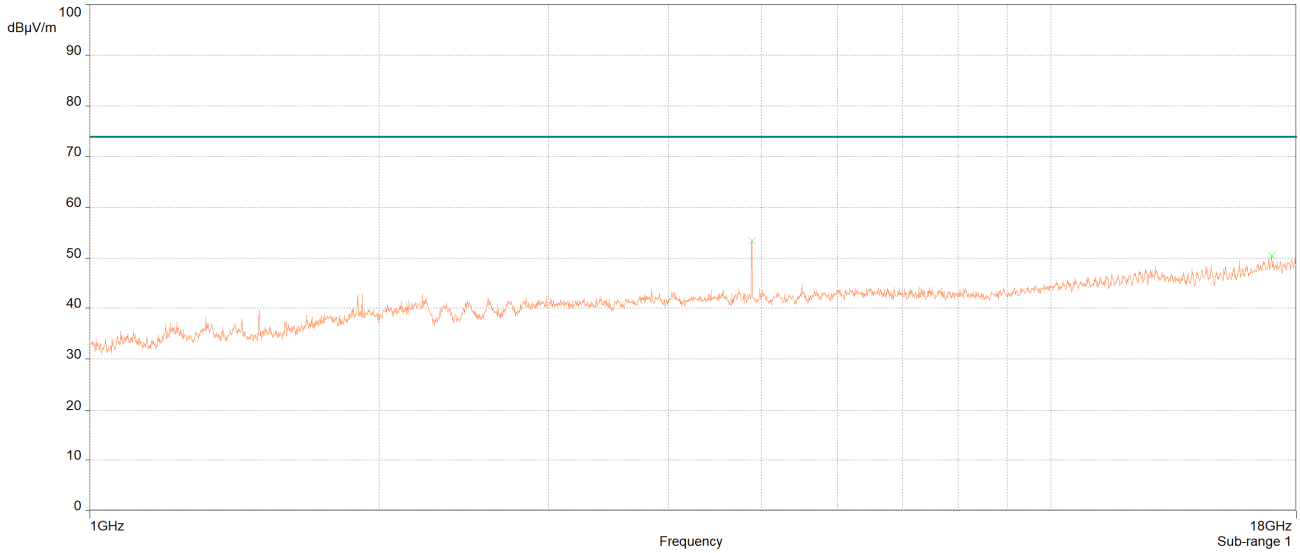
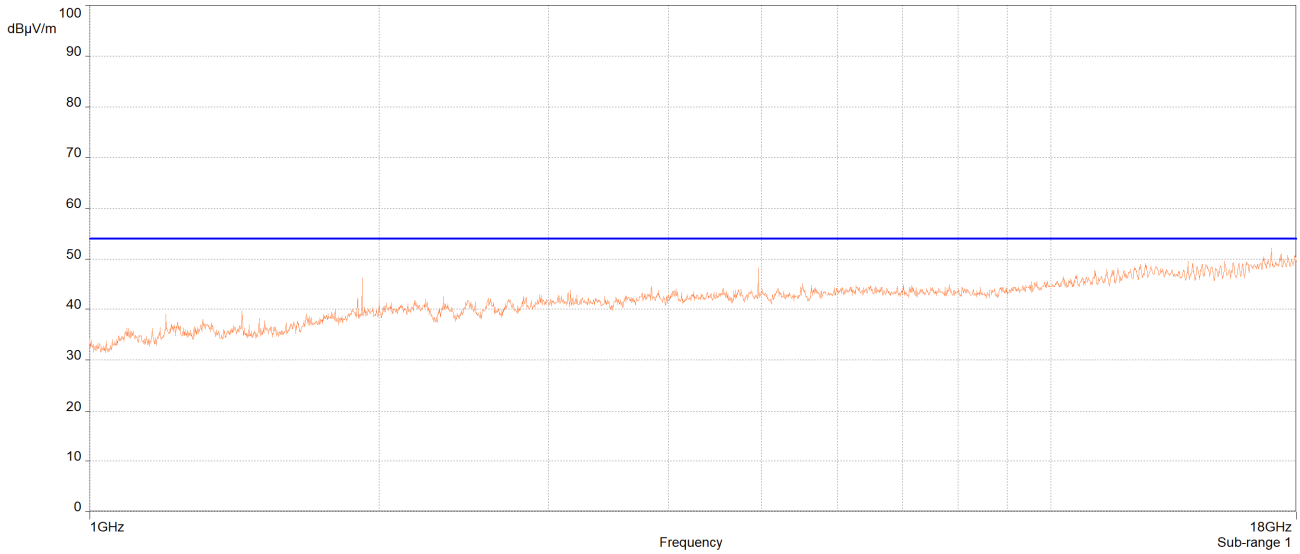
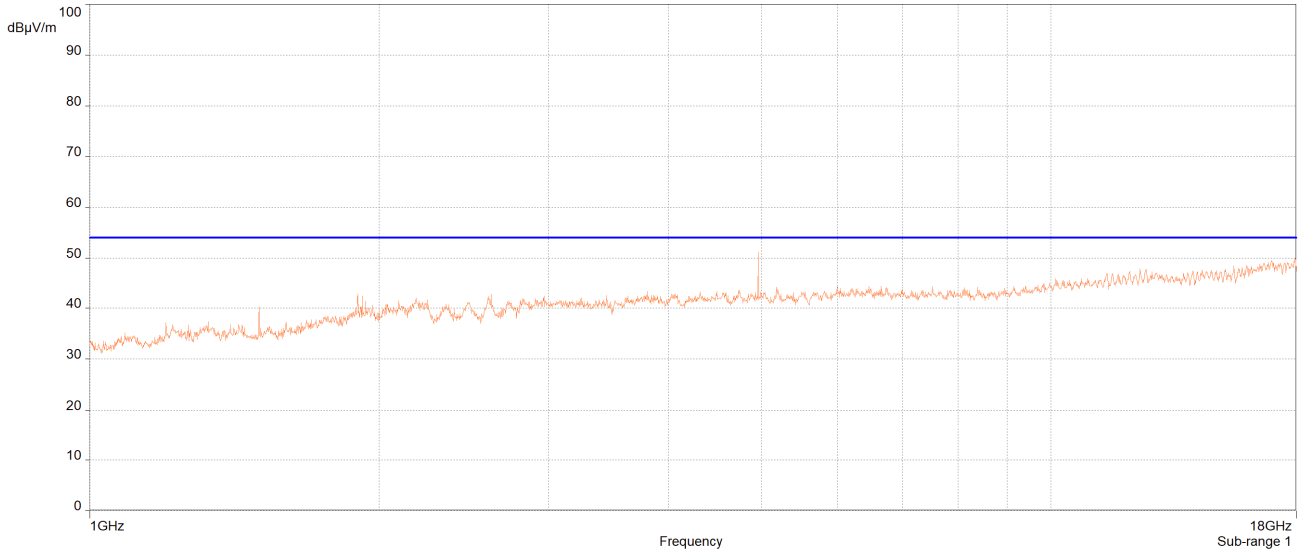


Horizontal

Radiated Spurious Emissions Requirements, Mid Channel 2442MHz, Peak

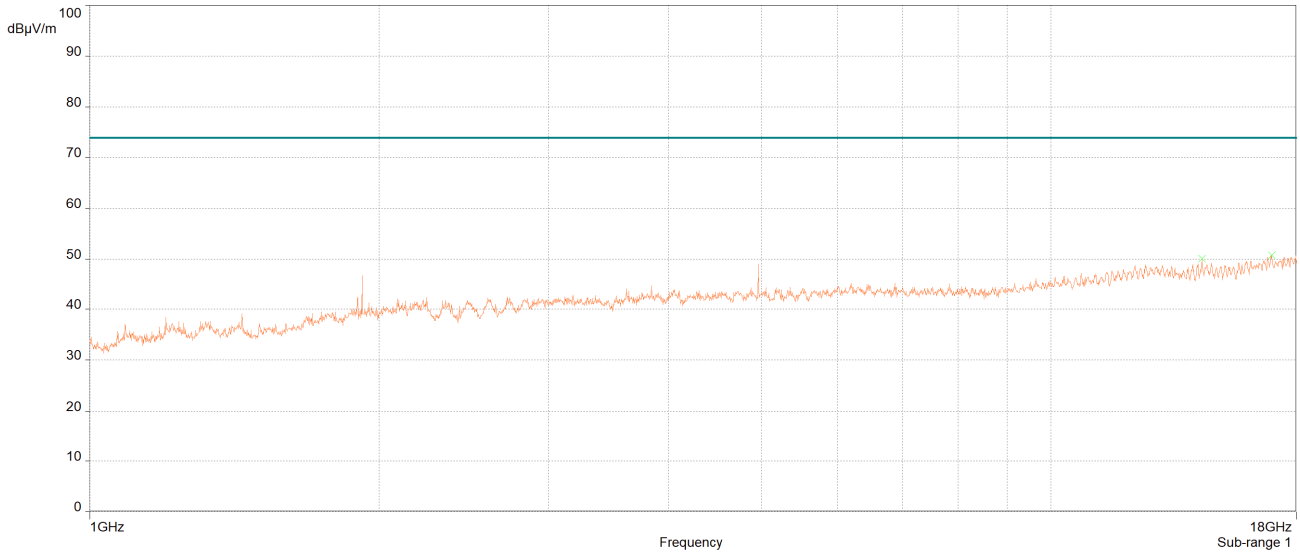


Vertical



Horizontal

Radiated Spurious Emissions Requirements, High Channel 2480MHz, Average



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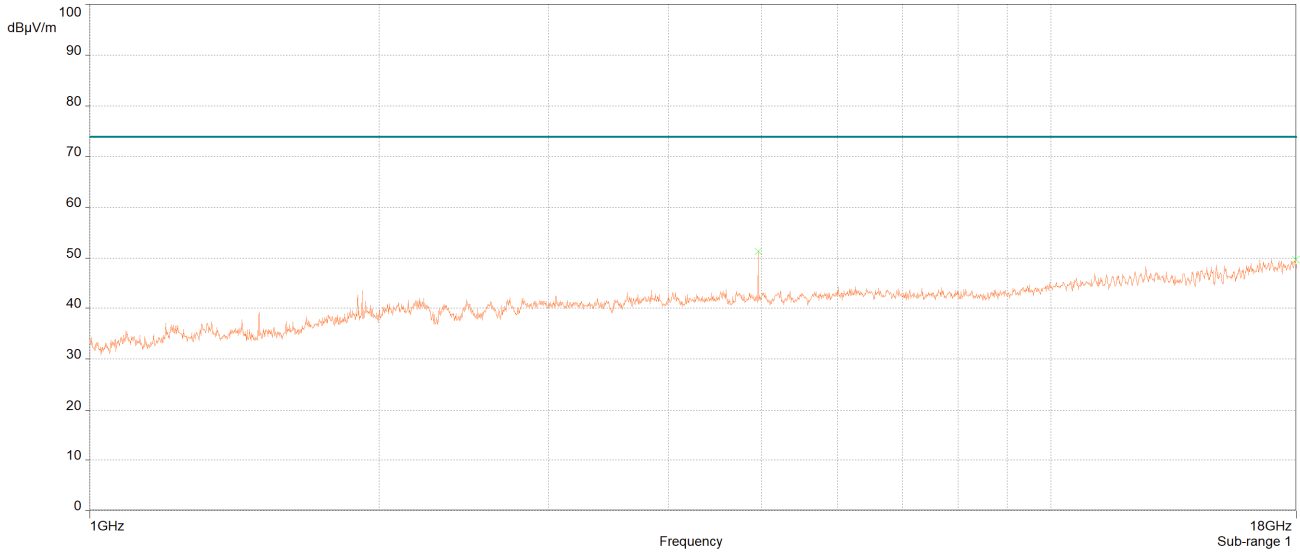
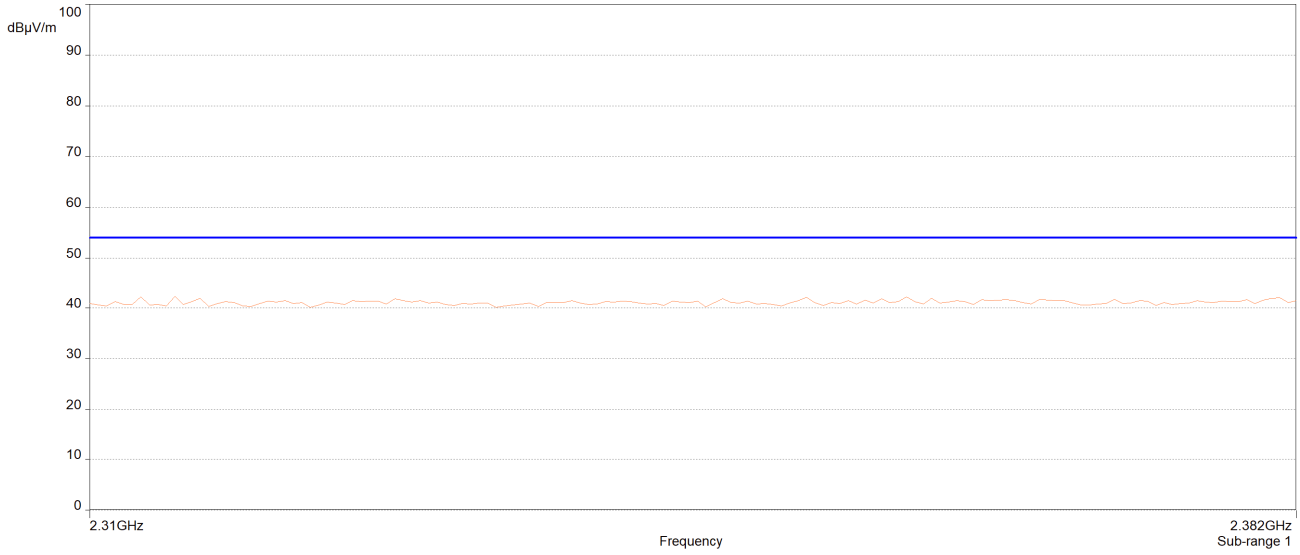
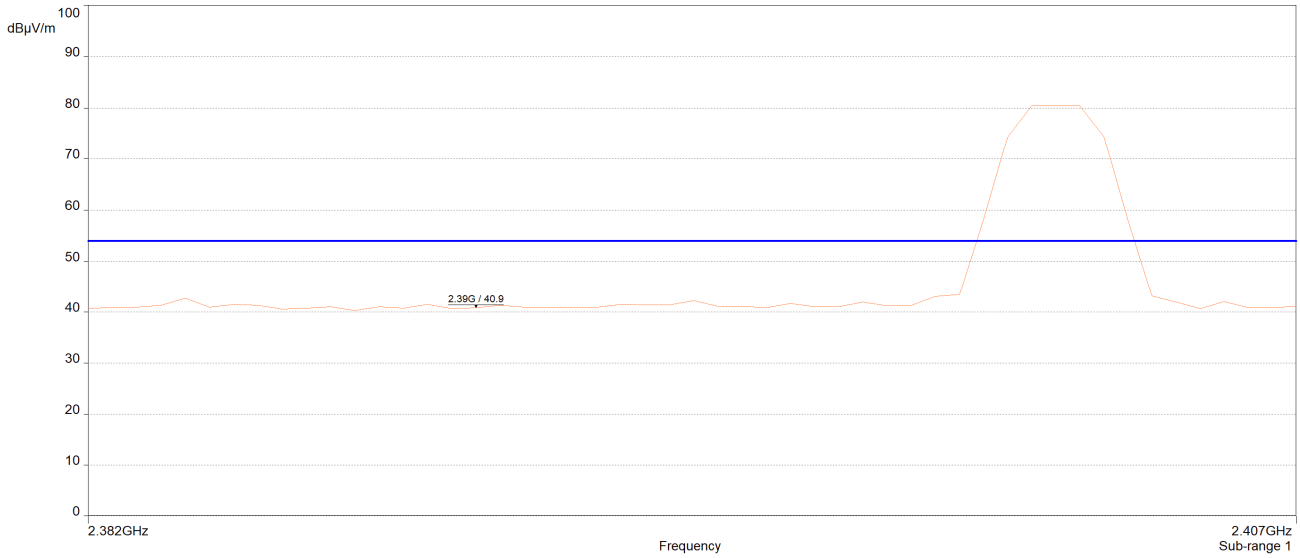


Horizontal

Radiated Spurious Emissions Requirements, High Channel 2480MHz, Peak

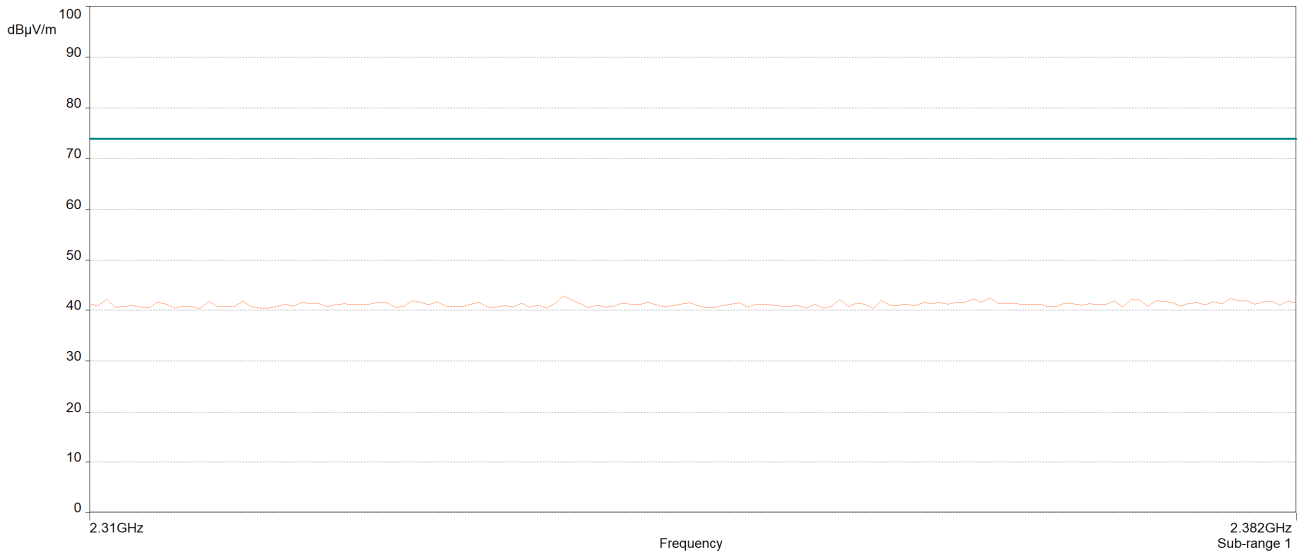
Radiated Band Edge Measurements

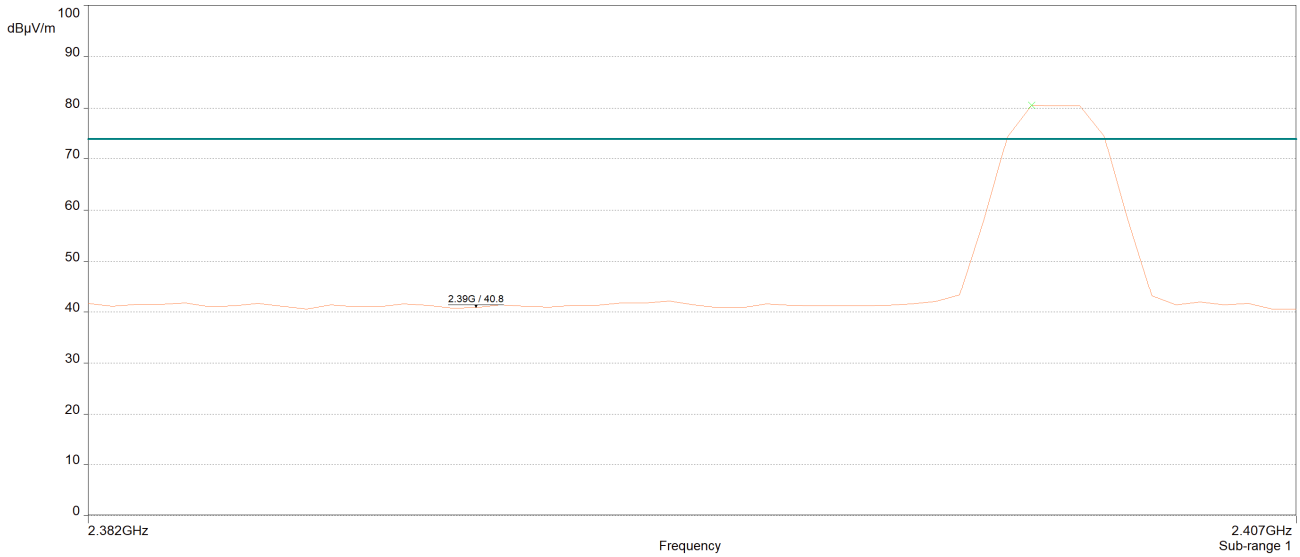




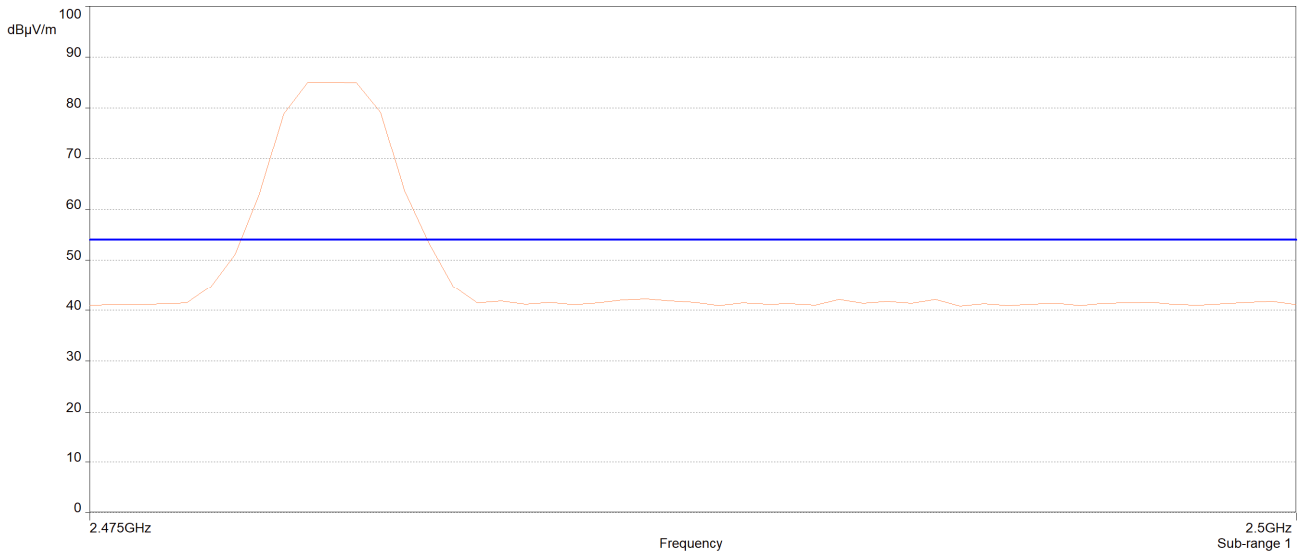
Vertical

Radiated Band Edge, Low Channel 2402MHz, Average



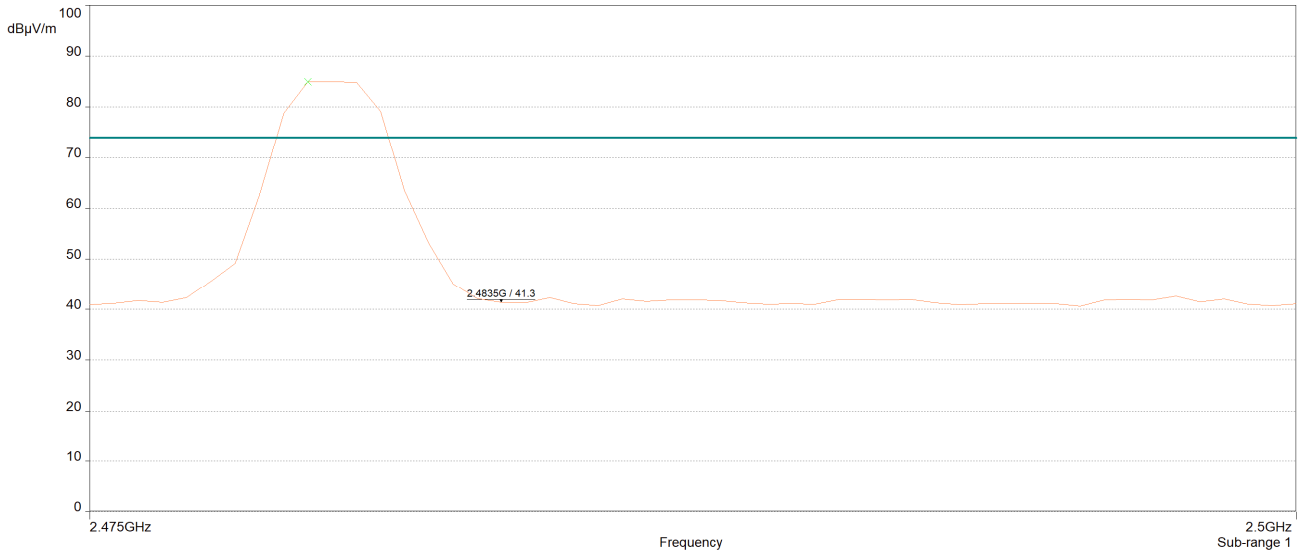


Radiated Band Edge, Low Channel 2402MHz, Peak



Vertical

Radiated Band Edge, High Channel 2480MHz, Average



Vertical

Radiated Band Edge, High Channel 2480MHz, Peak

IV. Test Equipment

Test Equipment

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2017.

Asset #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1S2399	TURNTABLE/MAST CONTROLLER	SUNOL SCIENCES	SC99V	SEE NOTE 1	
1S2600	BILOG ANTENNA	TESEQ	CBL6112D	03/19/2021	03/19/2022
1S3826	DRG HORN ANTENNA	ETS-LINDGREN	3117	12/03/2020	12/03/2022
1S2003	PXA Signal Analyzer	Keysight	N9030B	09/15/2020	09/15/2021
1S2587	PRE AMPLIFIER	AML COMMUNICATIONS	AML0126L3801	SEE NOTE 1	
1S2653	AMPLIFIER	SONOMA INSTRUMENT	310 N	SEE NOTE 1	
1S2486	5 METER CHAMBER	PANASHIELD - ETS	5M	SEE NOTE 2	

Test Equipment List

Note 1: Functionally tested equipment is verified using calibrated instrumentation at the time of testing.
Note 2: Latest NSA and VSWR data available upon request.

End of Report