





Test Report



Bureau Veritas Consumer Products Services Inc.

Report No	EX0646
Client	Blues Wireless Inc. Robert [REDACTED]
Address	50 Dunham Ridge Suite 1650 Beverly, MA 01915
Phone	(781) [REDACTED]
Items tested	NOTE-ESP
Standards	EN 55032:2015/A11:2020, ICES-003 Issue 7, CFR 47 FCC Part 15 Subpart B, EN 55035:2017/A11:2020, ETSI EN 301 489-1 v2.2.3 (2019-11), ETSI EN 301 489-17 v3.2.4 (2020-09)
Test Dates	September 8 through September 11, 2023
Results	As detailed within this report
Prepared by	 Bryan Valcourt – Test Engineer
Authorized by	 Ahmed Ait Ahmed – Senior EMC Engineer
Issue Date	<u>September 14, 2023</u>
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 40 of this report.

Bureau Veritas Consumer Products Services Inc. is accredited by the American Association for Laboratory Accreditation for the specific scope of accreditation under Certificate Number 1627-01. This report may contain data which is not covered by the A2LA accreditation.



Bureau Veritas Consumer Products Services Inc.
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REV 2023-02-10 MM



Summary

On September 8 through September 11, 2023, we tested the NOTE-ESP for compliance with the following requirements:

EMC Emissions:

- EN 55032:2015/A11:2020 Class B ITE emissions requirements (EU)
- ICES-003 Issue 7 Class B Digital Apparatus emissions requirements (Canada)
- CFR 47 FCC Part 15 Subpart B Class B emissions requirements (USA)

EMC Immunity:

- EN 55035:2017/A11:2020 Electromagnetic compatibility of multimedia equipment - Immunity requirements

EMC Emissions and Immunity:

- ETSI EN 301 489-1 v2.2.3 (2019-11) Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonized Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU
- ETSI EN 301 489-17 v3.2.4 (2020-09) Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonized Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

We found that the product met the above requirements without modification (see *Modifications Required for Compliance* section on page 8). The test sample was received in good condition. The sample was received on September 8, 2023.

Product Tested

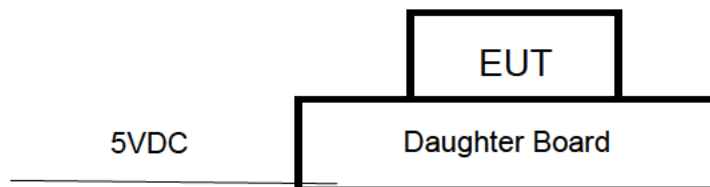
Configuration Documentation

EUT Configuration										
Work Order: X0646 Company: Blues Wireless Inc. Company Address: 50 DUNHAM RIDGE SUITE 1650 Beverly, MA Contact: Robert [REDACTED] Present: Yes, Sean Taylor										
MN			PN			SN				
EUT:			NOTE-ESP			4827E21DED00				
EUT Description: Embeddable Wifi Communications Module EUT Max Frequency: 2480MHz EUT Min Frequency: 80MHz										
Support Equipment:			MN			SN				
Daughter Board			CARR-B			N/A				
Dell Inspiron Lap top										
Archer Wifi Router			AX21			Y218003000680				
EUT Ports:										
Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out NEBS Type	Unpopulated Reason
Micro USB	USB	1	0	USB	Y	N	2m	5m	Inside	On daughter Board for Set Up
2 Pin JST Lipo Connection	Battery	1	0	Twisted Pair	N	N	0.1m	0.1m	Inside	Connected to DC Power Supply
Qwic 12C	Twisted pair	1	0	Twisted Pair	N	N	0.1m	0.1m	Inside	For Client connectivity
Software / Operating Mode Description:										
Normal Operating Mode										
Performance Criteria:										
There should be a scrolling every three seconds on the terminal screen. There should be two lines in the list that show a continuous connection to the Blues Wireless Server, by the chip connected to the router. sync: advancing last sync time from (the time stamp should be three seconds after last time stamp) sync: sync triggered by explicit sync request; continuous connection mode If the scrolling does not come up with these lines it has not connected to wifi router or Blues Server										

Clock Frequencies

EUT Frequencies (MHz)	
	80
	2480

Block Diagram



Performance Criteria

General Performance Criteria

EN 301489

For the purpose of the present document two categories of performance criteria apply:

- Performance criteria for **C**ontinuous **P**henomena (**CP**).
- Performance criteria for **T**ransient **P**henomena (**TP**).

Note: Normally, the performance criteria depends upon the type of radio equipment and/or its intended application.

Performance criteria for Continuous Phenomena (CP)

During the test, the equipment shall:

- continue to operate as intended;
- not unintentionally transmit;
- not unintentionally change its operating state;
- not unintentionally change critical stored data.

Performance criteria for Transient Phenomena (TP)

For all ports and transient phenomena with the exception described below, the following applies:

- The application of the transient phenomena shall not result in a change of the mode of operation (e.g. unintended transmission) or the loss of critical stored data.
- After application of the transient phenomena, the equipment shall operate as intended.

For surges applied to symmetrically operated wired network ports intended to be connected directly to outdoor lines the following criteria applies:

- For products with only one symmetrical port intended for connection to outdoor lines, loss of function is allowed, provided the function is self-recoverable, or can be otherwise restored. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.
- For products with more than one symmetrical port intended for connection to outdoor lines, loss of function on the port under test is allowed, provided the function is self-recoverable. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

For a 70 % residual voltage dip and voltage interruption tests, the following performance criteria apply:

- in the case where the equipment is fitted with or connected to a battery back-up, the performance criteria for transient phenomena (TP);
- in the case where the equipment is powered solely from the AC mains supply (without the use of a parallel battery back-up) volatile user data may have been lost and if applicable the communication link need not to be maintained and lost functions should be recoverable by user or operator;
- no unintentional responses shall occur at the end of the test, when the voltage is restored to nominal;
- in the event of loss of function(s) or in the event of loss of user stored data, this fact shall be recorded.

Product Specific Performance Criteria

The particular performance criteria which are specified in the relevant part of EN 301 489 series dealing with the particular type of radio equipment, take precedence over the corresponding parts of the general performance criteria.

Where particular performance criteria for specific functions are not given, then the general performance criteria shall apply.

Criterion A: The unit must operate as intended during the test. In particular, There should be a scrolling every three seconds on the terminal screen. There should be two lines in the list that show a continuous connection to the Blues Wireless Server, by the chip connected to the router.

sync: advancing last sync time from (the time stamp should be three seconds after last time stamp)

sync: sync triggered by explicit sync request; continuous connection mode

If the scrolling does not come up with these lines it has not connected to Wi-Fi router or Blues Server

Criterion B: The unit must operate as intended at the conclusion of the test with no loss of state or data.

Criterion C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

EN 301 489-17:

The performance criteria are:

- performance criteria A for immunity tests with phenomena of a continuous nature;
- performance criteria B for immunity tests with phenomena of a transient nature;
- performance criteria C for immunity tests with power interruptions exceeding a certain time.

Performance criteria overview:

An overview of the different performance criteria applicable to the EUT is given in table 2.

Table 2: Performance criteria

Criteria	During test	After test (i.e. as a result of the application of the test)
A	Shall operate as intended. (See note). Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance. Shall be no loss of function. Shall be no loss of critical stored data.
B	May be loss of function.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no loss of critical stored data.
C	May be loss of function.	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no loss of critical stored data.

NOTE: Operate as intended during the test allows a level of degradation in accordance with clause 6.2.2.

Minimum performance level:

For equipment that supports a PER or FER, the minimum performance level shall be a PER or FER less than or equal to 10 %. For equipment that does not support a PER or a FER, the minimum performance level shall be no loss of the wireless transmission function needed for the intended use of the equipment.

Performance criteria for Continuous phenomena:

The performance criteria A shall apply. Where the EUT is a transmitter in standby mode, unintentional transmission shall not occur during the test. Where the EUT is a transceiver in receive mode, unintentional transmission shall not occur during the test.

Performance criteria for Transient phenomena:



The performance criteria B shall apply for transient phenomena, except for voltage dips greater than or equal to 100 ms and voltage interruptions of 5 000 ms duration, for which performance criteria C shall apply. Where the EUT is a transmitter in standby mode, unintentional transmission shall not occur as a result of the application of the test. Where the EUT is a transceiver in receive mode, unintentional transmission shall not occur as a result of the application of the test.

Customer Supplied Data

None



Compliance Statement

TEST	RESULT	STANDARD	TEST LEVEL	MARGIN	COMMENTS
Radiated Emissions	Pass	EN 55032:2015/A11:2020 ICES-003 Issue 7 CFR 47 FCC Part 15 Subpart B	Class B	-9.1dB @ 543.068MHz	
AC Mains Conducted Emissions	N/A	EN 55032:2015/A11:2020	Class B	dB @ MHz	
DC Conducted Emissions	N/A	EN 55032:2015/A11:2020 ICES-003 Issue 7 CFR 47 FCC Part 15 Subpart B	Class B	dB @ MHz	DC power input cable <3m
Telco Line Conducted Emissions	N/A	EN 55032:2017/A11:2020 CISPR 32:2015/AMD1:2019 VCCI-CISPR 32:2016 AS/NZS CISPR 32:2015/A1:2020	Class B	dB @ MHz	No TELCO Cables
ESD	PASS	EN 55035:2017/A11:2020 ETSI EN 301 489-1 v2.2.3 ETSI EN 301 489-17 v3.2.4 IEC 61000-4-2:2008	±4kV contact ±8kV air	N/A	
RFI - Amplitude Modulated	PASS	EN 55035:2017/A11:2020 ETSI EN 301 489-1 v2.2.3 ETSI EN 301 489-17 v3.2.4 IEC 61000-4-3:2020	80-6000MHz @ 3V/m 1kHz 80%AM	N/A	
EFT	N/A	EN 55035:2017/A11:2020 IEC 61000-4-4:2012	±1kV AC ±0.5kV cables	N/A	All cables <3m
AC Surge	N/A	EN 55035:2017/A11:2020 IEC 61000-4-5:2017	±1kV L-L ±2kV L-PE	N/A	DC Powered
DC Surge	N/A	EN 55035:2017/A11:2020 IEC 61000-4-5:2017	±1kV L-L	N/A	All cables <3m
Signal/Telco Surge	N/A	EN 55035:2017/A11:2020 IEC 61000-4-5:2017	±0.5kV ±1kV	N/A	All cables <3m
CRFI	N/A	EN 55035:2017/A11:2020 IEC 61000-4-6:2013	0.15-80MHz @ 3Vrms 1kHz 80% AM	N/A	All cables <3m



TEST	RESULT	STANDARD	TEST LEVEL	MARGIN	COMMENTS
Power-Frequency Magnetic Field	PASS	EN 55035:2017/A11:2020 ETSI EN 301 489-1 v2.2.3 ETSI EN 301 489-17 v3.2.4 IEC 61000-4-8:2009	1A/m	N/A	
Voltage Dips And Short Interruptions	N/A	EN 55035:2017/A11:2020 IEC 61000-4-11:2020	<5%V for 0.5 cycle 70%V for 25/30cycles <5%V for 250/300cycles	N/A	DC Powered
Harmonics	N/A	IEC 61000-3-2:2018/AMD1:2020 EN 61000-3-2:2014	N/A	N/A	DC Powered
Flicker	N/A	IEC 61000-3-3:2013/AMD1:2017/AMD2:2020 EN 61000-3-3:2013	N/A	N/A	DC Powered

Modifications Required for Compliance

There were no modifications required for compliance.

Deviations from the Standard

None

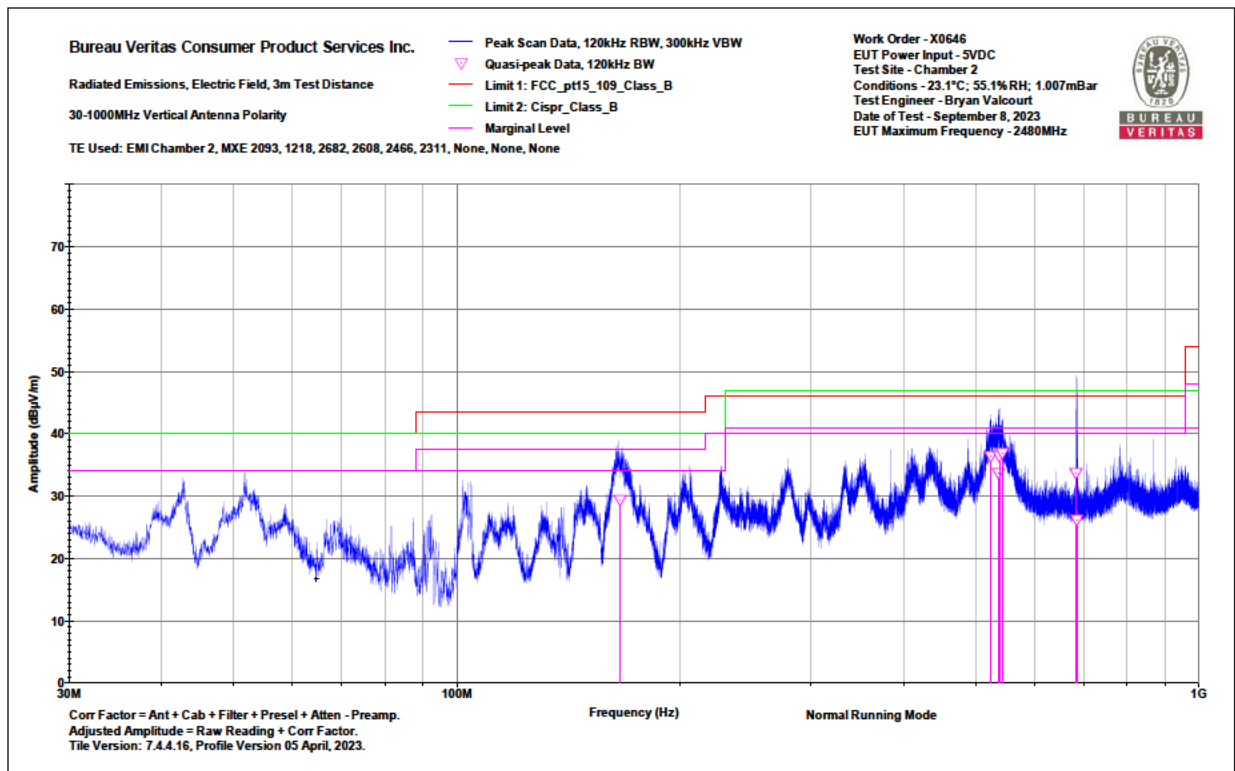


RADIATED EMISSIONS

Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance 30-1000MHz Vertical Data Notes: Normal Running Mode	Work Order - X0646 EUT Power Input - SVDC Test Site - Chamber 2 Conditions - 23.1°C; 55.1%RH; 1.007mBar Test Engineer - Bryan Valcourt Date of Test - September 8, 2023
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Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: Cisp_r_Class_B (dBµV/m)	Margin to Lim2 (dB)	Test Results Lim2 (Pass/Fail)	Worst Margin Lim2 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
166.024	44.7	-15.3	29.4	43.5	-14.1	PASS		40	-10.6	PASS		106	0
524.997	44.1	-7.6	36.4	46	-9.6	PASS		47	-10.6	PASS		105	18
537.188	40.9	-7.2	33.7	46	-12.3	PASS		47	-13.3	PASS		182	0
538.621	43.6	-7.2	36.5	46	-9.6	PASS		47	-10.5	PASS		100	28
543.068	43.9	-7	36.9	46	-9.1	PASS	-9.1	47	-10.1	PASS	-10.1	102	0
683.821	38.3	-4.6	33.7	46	-12.3	PASS		47	-13.3	PASS		105	0
684.87	30.7	-4.5	26.2	46	-19.8	PASS		47	-20.8	PASS		231	335

30-1000MHz FCC & CISPR Vertical Data Table



30-1000MHz FCC & CISPR Vertical Graph



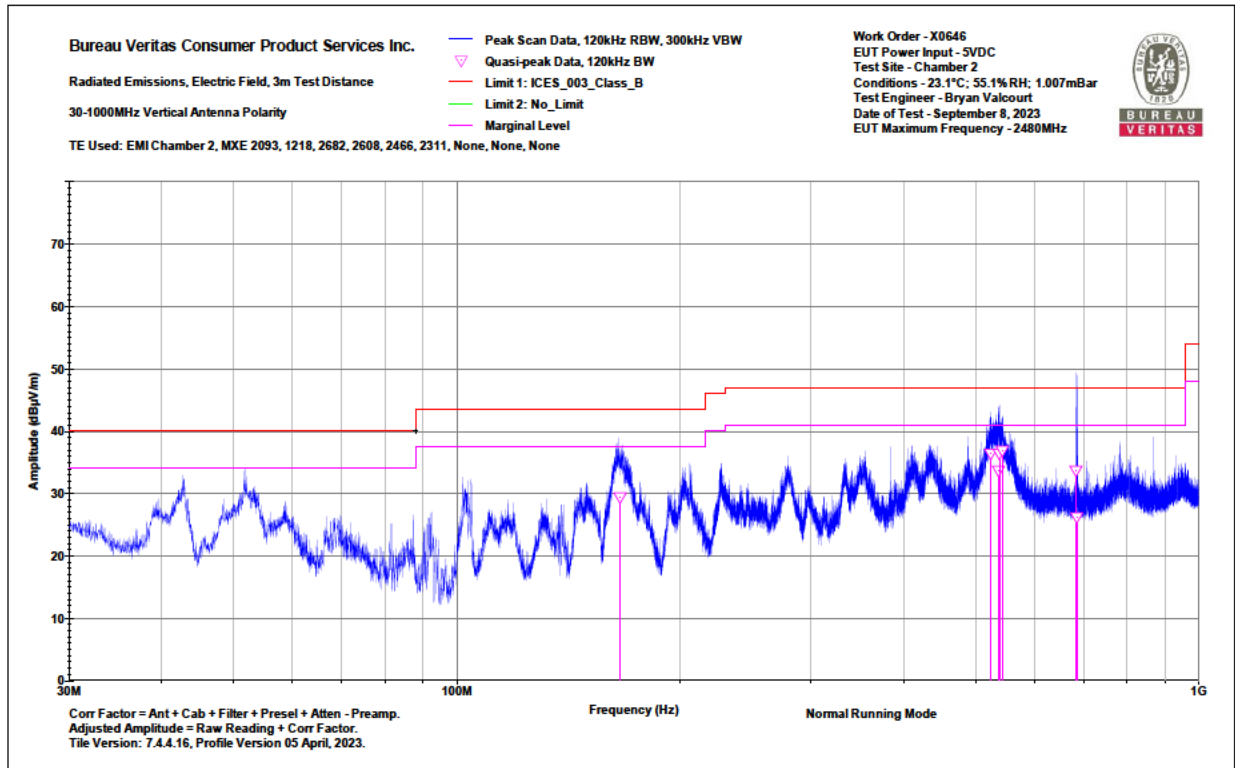
Bureau Veritas Consumer Product Services Inc.
 Radiated Emissions Electric Field 3m Distance
 30-1000MHz Vertical Data

Work Order - X0646
 EUT Power Input - 5VDC
 Test Site - Chamber 2
 Conditions - 23.1°C; 55.1%RH; 1.007mBar
 Test Engineer - Bryan Valcourt
 Date of Test - September 8, 2023

Notes:
 Normal Running Mode

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: ICES_003_Class_B (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
166.024	44.7	-15.3	29.4	43.5	-14.1	PASS		106	0
524.997	44.1	-7.6	36.4	47	-10.6	PASS		105	18
537.188	40.9	-7.2	33.7	47	-13.3	PASS		182	0
538.621	43.6	-7.2	36.5	47	-10.5	PASS		100	28
543.068	43.9	-7	36.9	47	-10.1	PASS	-10.1	102	0
683.821	38.3	-4.6	33.7	47	-13.3	PASS		105	0
684.87	30.7	-4.5	26.2	47	-20.8	PASS		231	335

30-1000MHz ICES-003 Vertical Data Table

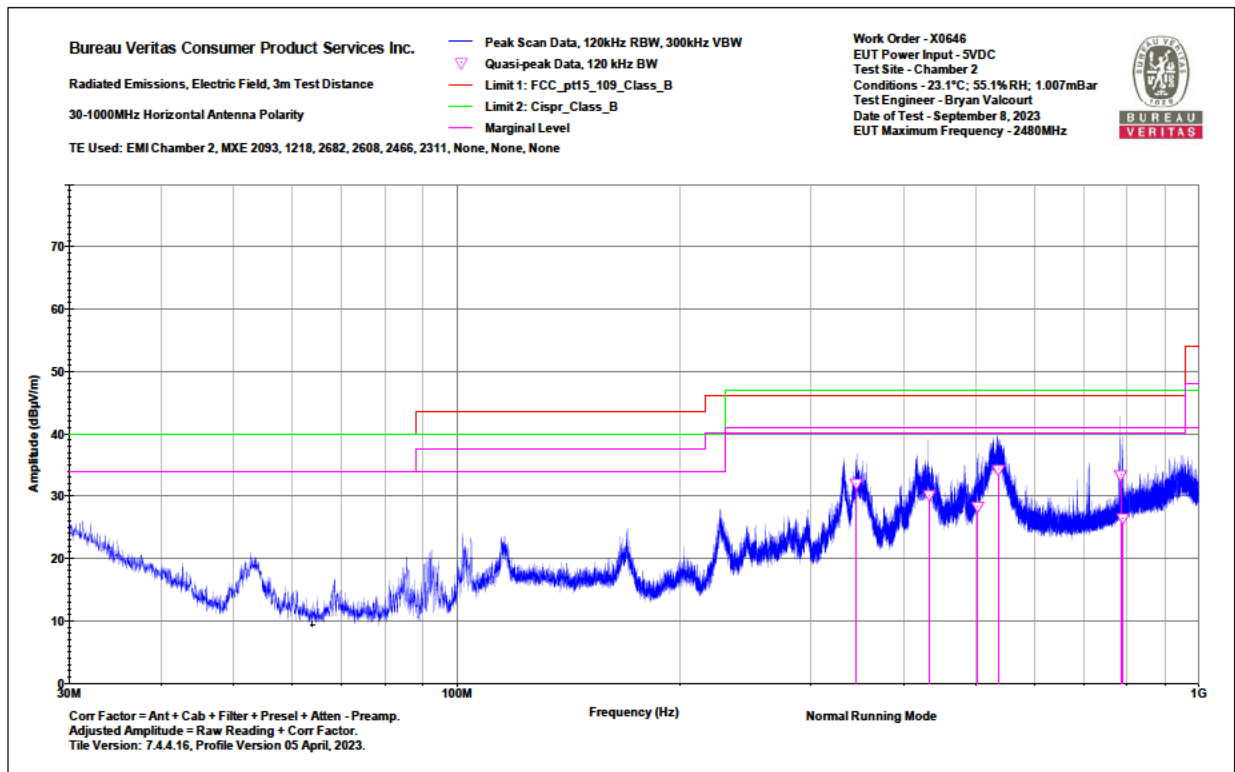


30-1000MHz ICES-003 Vertical Graph

Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance 30-1000MHz Horizontal Data Notes: Normal Running Mode	Work Order - X0646 EUT Power Input - 5VDC Test Site - Chamber 2 Conditions - 23.1°C; 55.1%RH; 1.007mBar Test Engineer - Bryan Valcourt Date of Test - September 8, 2023
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Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: Cisprr_Class_B (dBµV/m)	Margin to Lim2 (dB)	Test Results Lim2 (Pass/Fail)	Worst Margin Lim2 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
345.665	43.6	-11.6	32	46	-14.1	PASS		47	-15	PASS		189	48
433.206	39.3	-9.2	30.1	46	-15.9	PASS		47	-16.9	PASS		175	113
503.844	35.9	-7.5	28.3	46	-17.7	PASS		47	-18.7	PASS		125	88
536.811	41.4	-7.2	34.3	46	-11.8	PASS	-11.8	47	-12.7	PASS	-12.7	260	282
785.208	36.2	-2.8	33.4	46	-12.6	PASS		47	-13.6	PASS		259	129
789.274	29.2	-2.8	26.4	46	-19.6	PASS		47	-20.6	PASS		215	205

30-1000MHz FCC & CISPR Horizontal Data Table



30-1000MHz FCC & CISPR Horizontal Graph

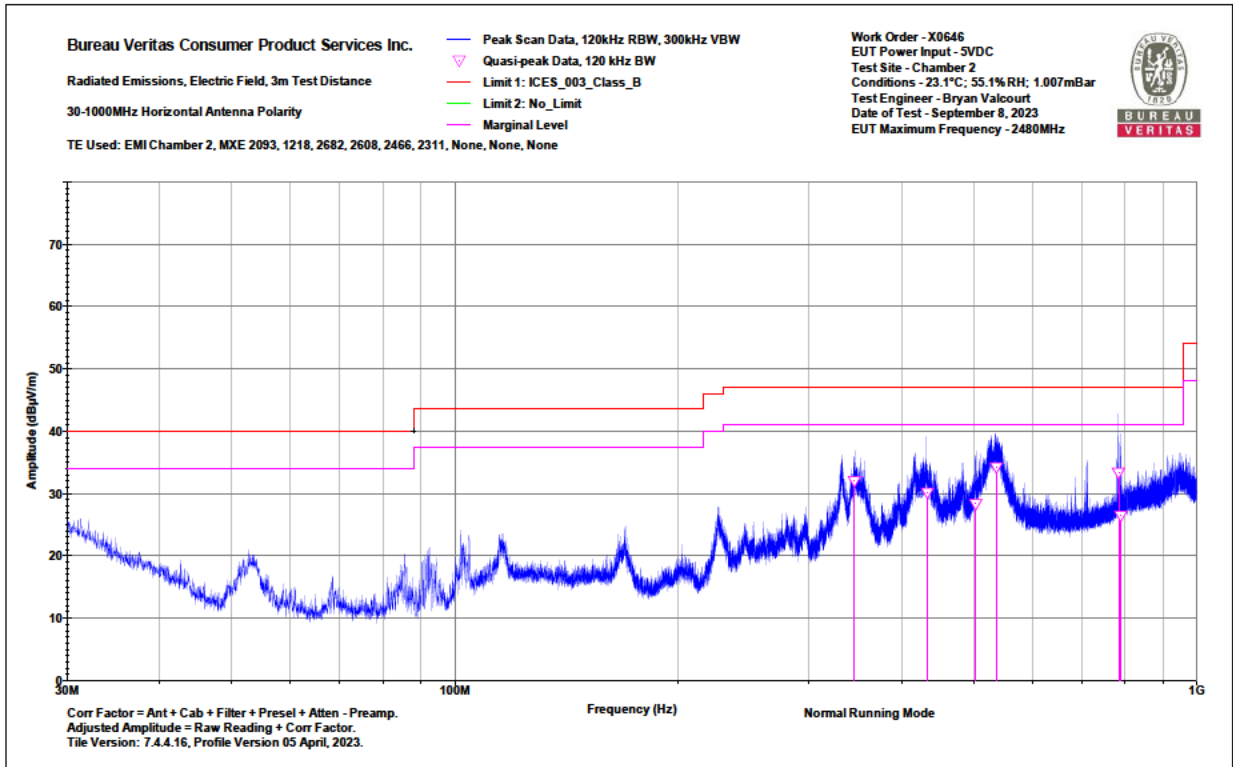
Bureau Veritas Consumer Product Services Inc.
 Radiated Emissions Electric Field 3m Distance
 30-1000MHz Horizontal Data

Work Order - X0646
 EUT Power Input - 5VDC
 Test Site - Chamber 2
 Conditions - 23.1°C; 55.1%RH; 1.007mBar
 Test Engineer - Bryan Valcourt
 Date of Test - September 8, 2023

Notes:
 Normal Running Mode

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: ICES_003_Class_B (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
345.665	43.6	-11.6	32	47	-15	PASS		189	48
433.206	39.3	-9.2	30.1	47	-16.9	PASS		175	113
503.844	35.9	-7.5	28.3	47	-18.7	PASS		125	88
536.811	41.4	-7.2	34.3	47	-12.7	PASS	-12.7	260	282
785.208	36.2	-2.8	33.4	47	-13.6	PASS		259	129
789.274	29.2	-2.8	26.4	47	-20.6	PASS		215	205

30-1000MHz ICES-003 Horizontal Data Table



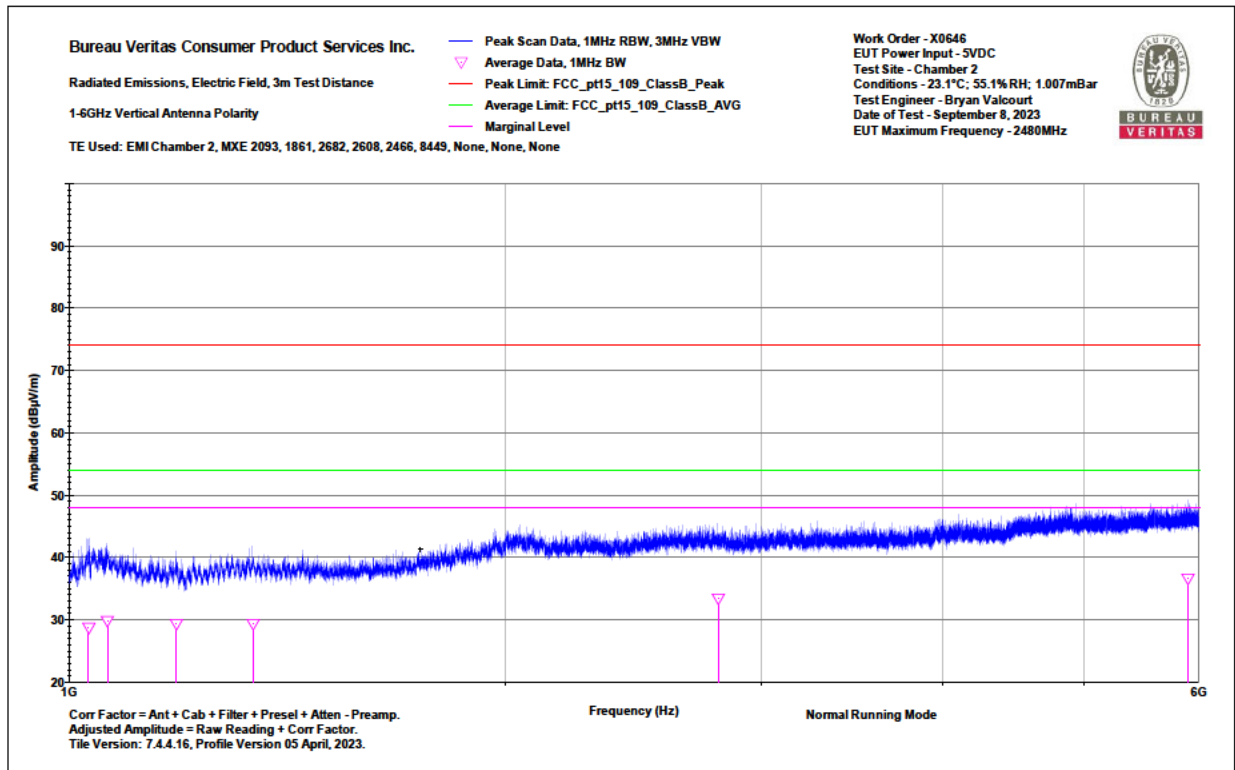
30-1000MHz ICES-003 Horizontal Graph



Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance 1-6GHz Vertical Data Notes: Normal Running Mode	Work Order - X0646 EUT Power Input - 5VDC Test Site - Chamber 2 Conditions - 23.1°C; 55.1%RH; 1.007mBar Test Engineer - Bryan Valcourt Date of Test - September 8, 2023
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Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	FCC Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1031.7	48.3	38.8	-10	38.3	74	-35.7	PASS		28.7	54	-25.2	PASS		185	254
1063.1	48.2	39.6	-9.8	38.4	74	-35.6	PASS		29.8	54	-24.2	PASS		199	290
1186.1	48.2	38.3	-8.9	39.3	74	-34.6	PASS		29.4	54	-24.6	PASS		109	324
1340.3	45.9	36.3	-6.9	39	74	-35	PASS		29.4	54	-24.6	PASS		275	305
2799.7	43.8	34.6	-1.1	42.7	74	-31.3	PASS		33.5	54	-20.5	PASS		100	79
5896.2	42.3	33.1	3.5	45.8	74	-28.2	PASS	-28.2	36.6	54	-17.4	PASS	-17.4	184	266

1-6GHz FCC Vertical Data Table



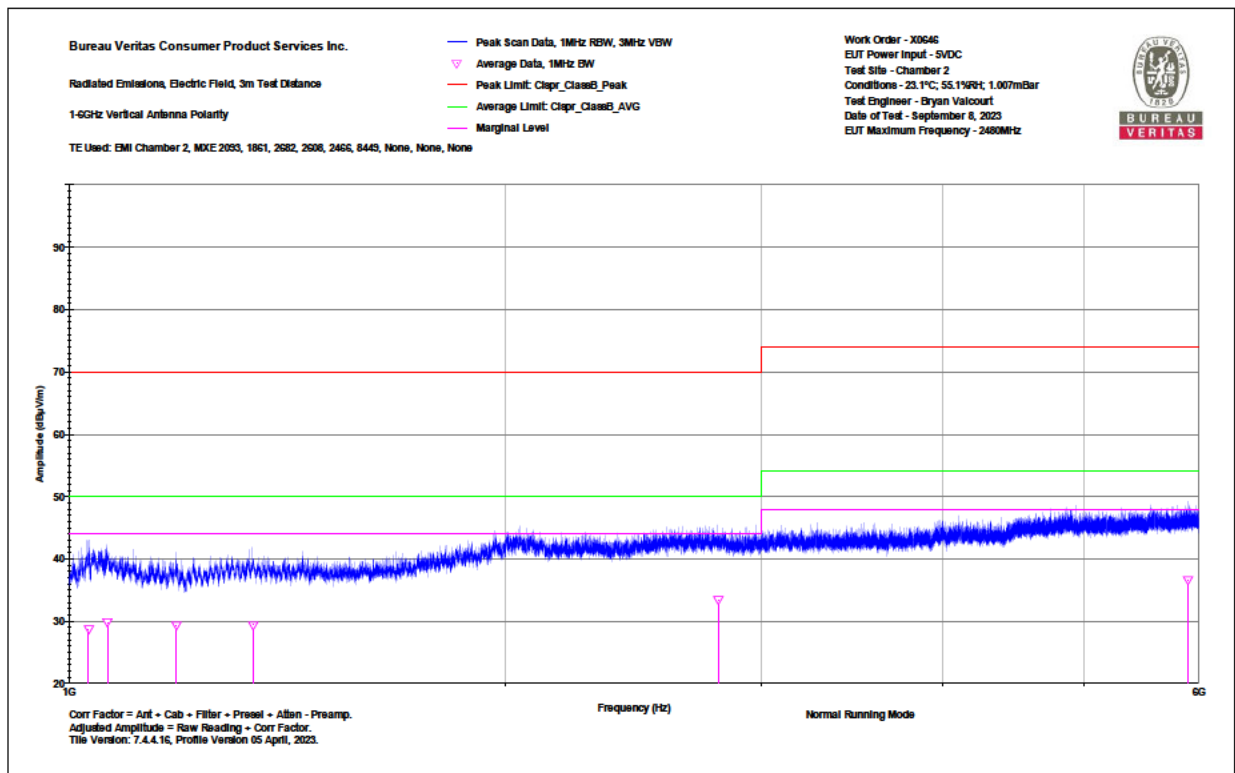
1-6GHz FCC Vertical Graph



Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance 1-6GHz Vertical Data Notes: Normal Running Mode	Work Order - X0646 EUT Power Input - 5VDC Test Site - Chamber 2 Conditions - 23.1°C; 55.1%RH; 1.007mBar Test Engineer - Bryan Valcourt Date of Test - September 8, 2023
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Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: Cspr_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: Cspr_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1031.7	48.3	38.8	-10	38.3	70	-31.7	PASS		28.7	50	-21.3	PASS		185	254
1063.1	48.2	39.6	-9.8	38.4	70	-31.6	PASS		29.8	50	-20.2	PASS		199	290
1186.1	48.2	38.3	-8.9	39.3	70	-30.7	PASS		29.4	50	-20.6	PASS		109	324
1340.3	45.9	36.3	-6.9	39	70	-31	PASS		29.4	50	-20.6	PASS		275	305
2799.7	43.8	34.6	-1.1	42.7	70	-27.3	PASS	-27.3	33.5	50	-16.5	PASS	-16.5	100	79
5896.2	42.3	33.1	3.5	45.8	74	-28.2	PASS		36.6	54	-17.4	PASS		184	266

1-6GHz CISPR Vertical Data Table



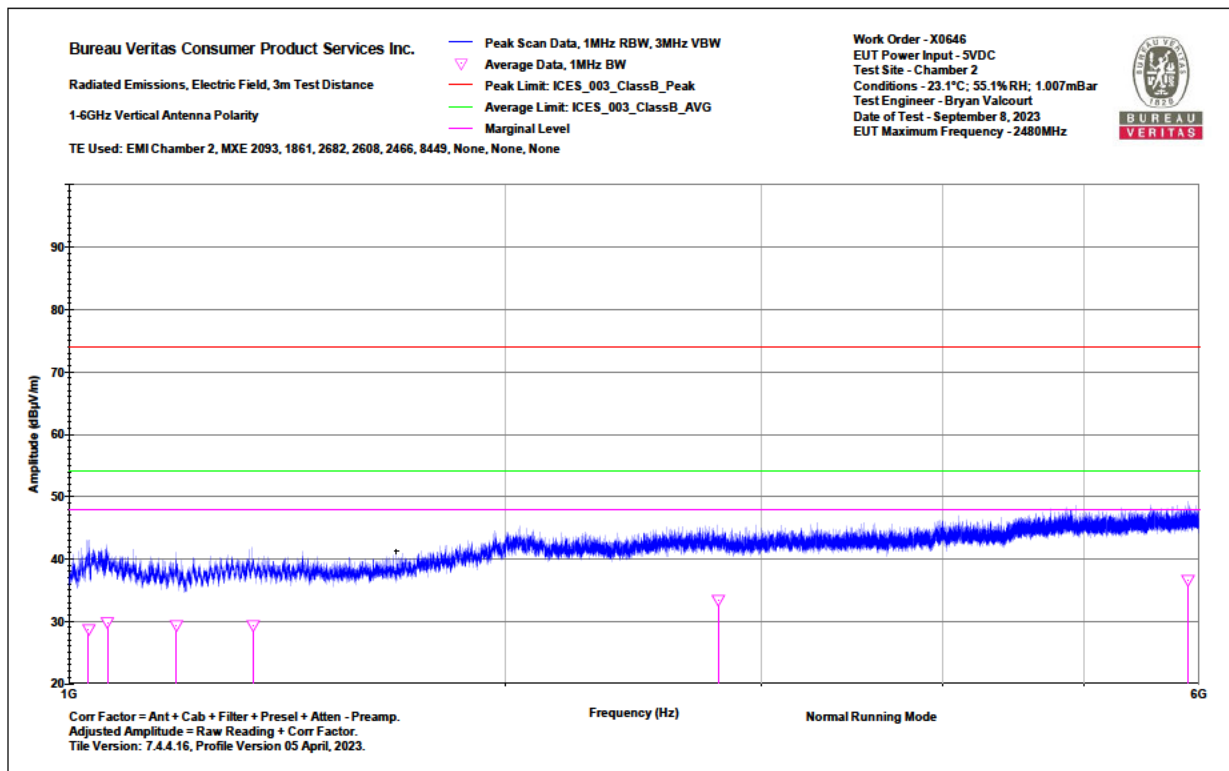
1-6GHz CISPR Vertical Graph



Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance 1-6GHz Vertical Data Notes: Normal Running Mode	Work Order - X0646 EUT Power Input - 5VDC Test Site - Chamber 2 Conditions - 23.1°C; 55.1%RH; 1.007mBar Test Engineer - Bryan Valcourt Date of Test - September 8, 2023
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Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: ICES_003_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: ICES_003_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1031.7	48.3	38.8	-10	38.3	74	-35.7	PASS		28.7	54	-25.3	PASS		185	254
1063.1	48.2	39.6	-9.8	38.4	74	-35.6	PASS		29.8	54	-24.2	PASS		199	290
1186.1	48.2	38.3	-8.9	39.3	74	-34.7	PASS		29.4	54	-24.6	PASS		109	324
1340.3	45.9	36.3	-6.9	39	74	-35	PASS		29.4	54	-24.6	PASS		275	305
2799.7	43.8	34.6	-1.1	42.7	74	-31.3	PASS		33.5	54	-20.5	PASS		100	79
5896.2	42.3	33.1	3.5	45.8	74	-28.2	PASS	-28.2	36.6	54	-17.4	PASS	-17.4	184	266

1-6GHz ICES-003 Vertical Data Table



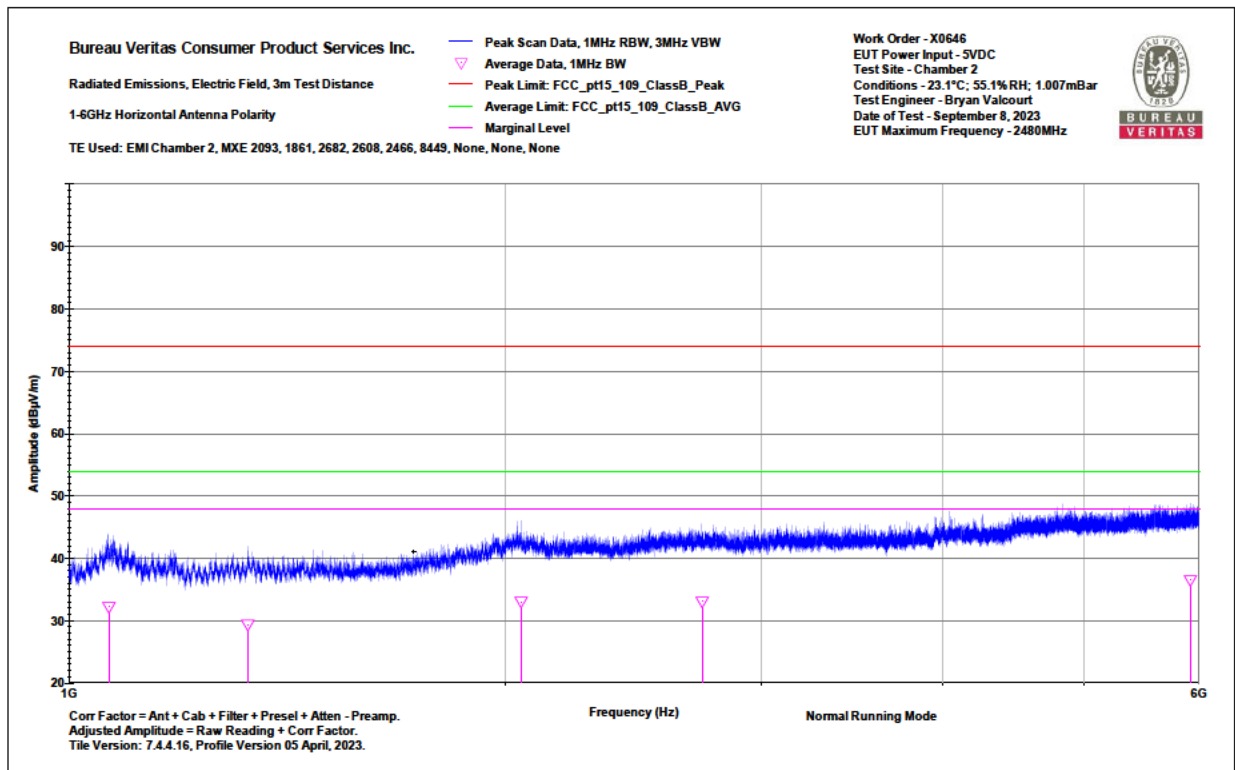
1-6GHz ICES-003 Vertical Graph



Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance 1-6GHz Horizontal Data Notes: Normal Running Mode	Work Order - X0646 EUT Power Input - 5VDC Test Site - Chamber 2 Conditions - 23.1°C; 55.1%RH; 1.007mBar Test Engineer - Bryan Valcourt Date of Test - September 8, 2023
---	--

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1065.1	52.8	42	-9.8	43	74	-31	PASS		32.2	54	-21.8	PASS		109	332
1328.3	45.3	36.3	-6.9	38.3	74	-35.7	PASS		29.3	54	-24.7	PASS		300	25
2049.3	46	34.9	-1.9	44.1	74	-29.9	PASS		33	54	-21	PASS		299	273
2730.1	43.5	34.3	-1.2	42.3	74	-31.6	PASS		33.1	54	-20.9	PASS		214	25
5918.4	45.3	33.1	3.5	48.8	74	-25.2	PASS	-25.2	36.5	54	-17.4	PASS	-17.4	175	154

1-6GHz FCC Horizontal Data Table



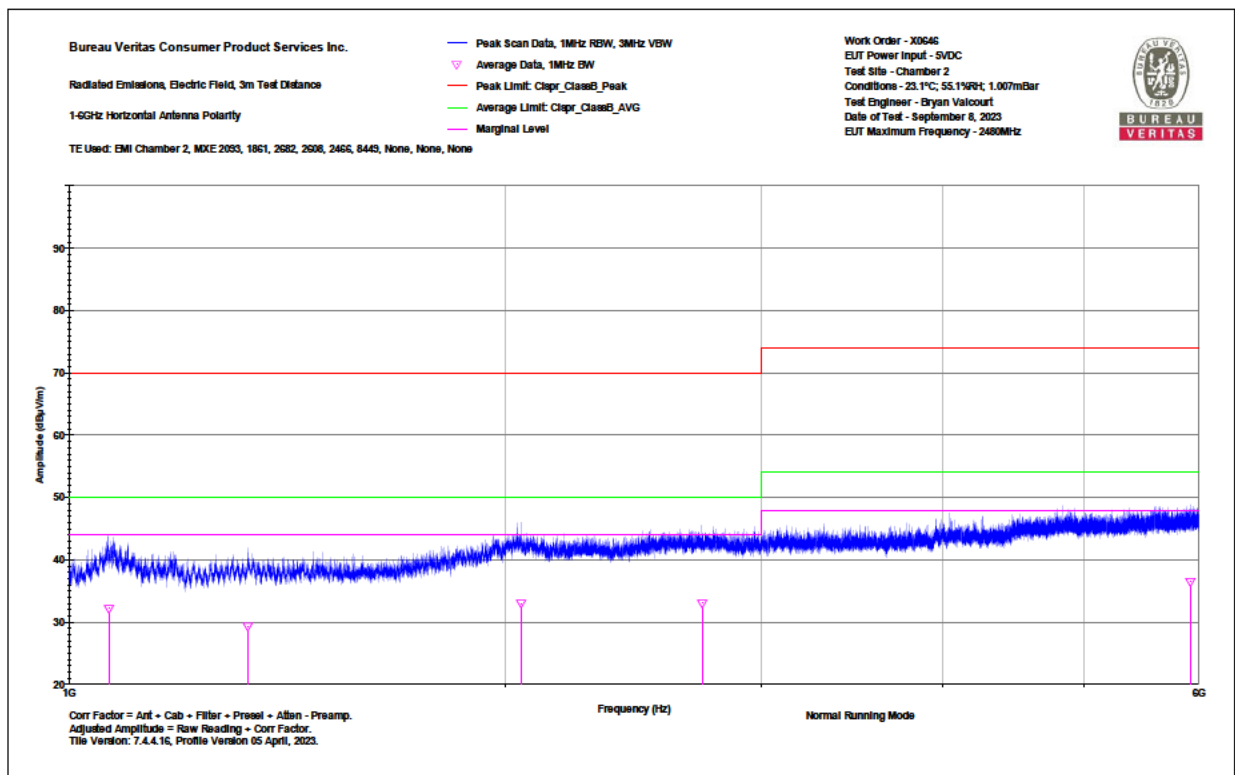
1-6GHz FCC Horizontal Graph



Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance 1-6GHz Horizontal Data Notes: Normal Running Mode	Work Order - X0646 EUT Power Input - 5VDC Test Site - Chamber 2 Conditions - 23.1°C; 55.1%RH; 1.007mBar Test Engineer - Bryan Valcourt Date of Test - September 8, 2023
---	--

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: Cspr_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: Cspr_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1065.1	52.8	42	-9.8	43	70	-27	PASS		32.2	50	-17.8	PASS		109	332
1328.3	45.3	36.3	-6.9	38.3	70	-31.7	PASS		29.3	50	-20.7	PASS		300	25
2049.3	46	34.9	-1.9	44.1	70	-25.9	PASS		33	50	-17	PASS		299	273
2730.1	43.5	34.3	-1.2	42.3	70	-27.7	PASS		33.1	50	-16.9	PASS	-16.9	214	25
5918.4	45.3	33.1	3.5	48.8	74	-25.2	PASS	-25.2	36.5	54	-17.5	PASS		175	154

1-6GHz CISPR Horizontal Data Table



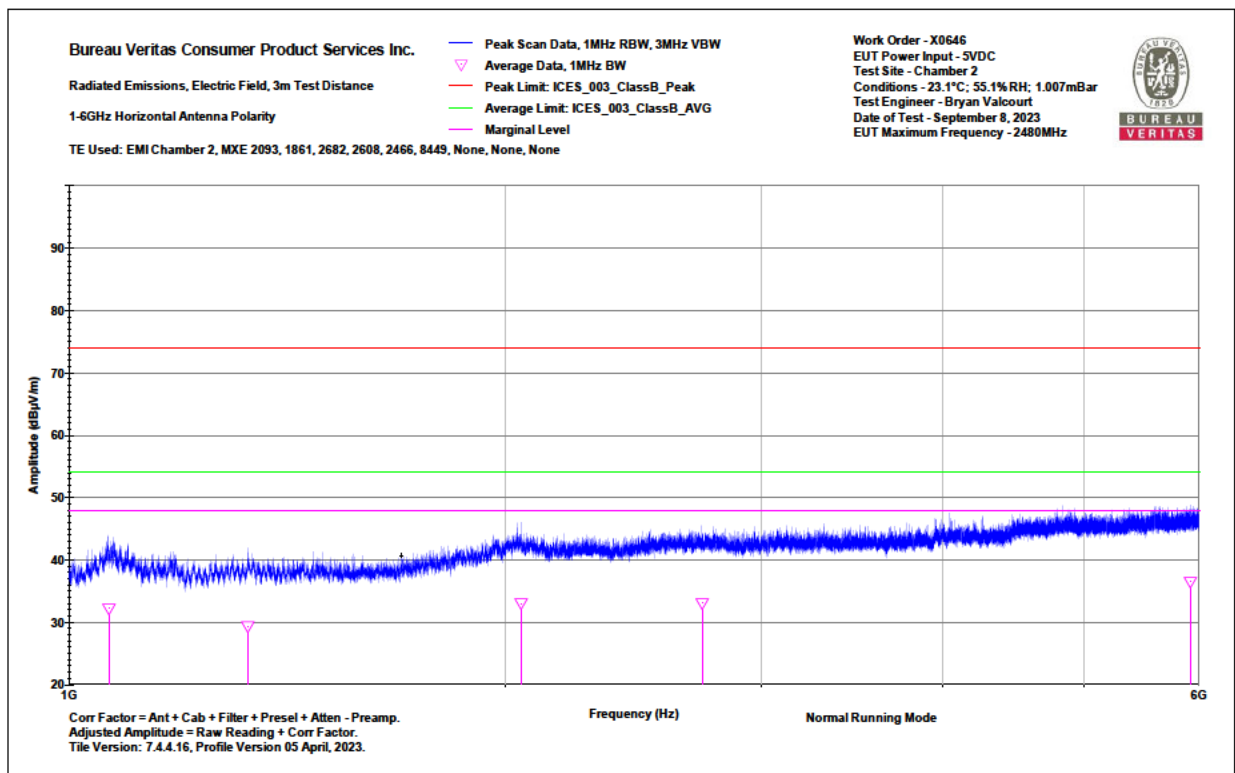
1-6GHz CISPR Horizontal Graph



Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance 1-6GHz Horizontal Data Notes: Normal Running Mode	Work Order - X0646 EUT Power Input - 5VDC Test Site - Chamber 2 Conditions - 23.1°C; 55.1%RH; 1.007mBar Test Engineer - Bryan Valcourt Date of Test - September 8, 2023
---	--

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: ICES_003_CI assB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: ICES_003_CI assB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1065.1	52.8	42	-9.8	43	74	-31	PASS		32.2	54	-21.8	PASS		109	332
1328.3	45.3	36.3	-6.9	38.3	74	-35.7	PASS		29.3	54	-24.7	PASS		300	25
2049.3	46	34.9	-1.9	44.1	74	-29.9	PASS		33	54	-21	PASS		299	273
2730.1	43.5	34.3	-1.2	42.3	74	-31.7	PASS		33.1	54	-20.9	PASS		214	25
5918.4	45.3	33.1	3.5	48.8	74	-25.2	PASS	-25.2	36.5	54	-17.5	PASS	-17.5	175	154

1-6GHz ICES-003 Horizontal Data Table



1-6GHz ICES-003 Horizontal Graph



Rev. 9/1/2023

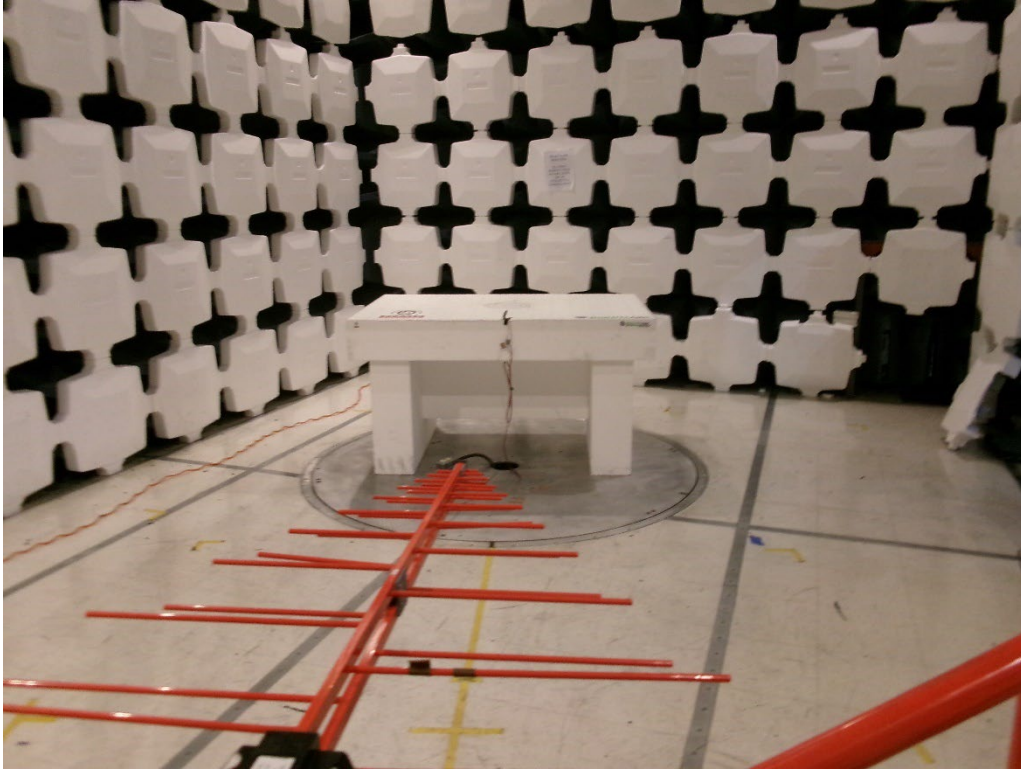
Spectrum Analyzers / Receivers / Preselectors									
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2093 MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	3/30/2024	3/30/2023	
Radiated Emissions Sites									
	FCC Code	IC Code	VCCI Code	Range	Asset	Cat	Calibration Due	Calibrated on	
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	1686	I	12/28/2024	12/28/2022	
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz	1686	I	12/28/2024	12/28/2022	
Preamps / Couplers Attenuators / Filters									
	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
2311 PA	1-1000MHz	PAM-103	COM-POWER	441174	2311	II	10/17/2023	10/17/2022	
8449B HF Preamp	1-18GHz	8449B	Agilent	1149055		II	11/1/2023	11/1/2022	
Antennas									
	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Red-Brown Bilog	30-2000MHz	JB1	Sunol	A0032406	1218	I	4/6/2025	4/6/2023	
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	3/27/2025	3/27/2023	
Meteorological Meters/Chambers									
		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	12/15/2025	12/15/2022	
Asset #2654		1235C97	Control Company	200477432	2654	I	8/18/2025	8/18/2022	
Cables									
	Range		Mfr			Cat	Calibration Due	Calibrated on	
Asset #2466	9KHz-18GHz		MegaPhase			II	11/1/2023	11/1/2022	
Asset #2608	9KHz-18GHz		Pasternack			II	11/1/2023	11/1/2022	
Asset #2682	9KHz-18GHz		Pasternack			II	10/6/2023	10/6/2022	

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

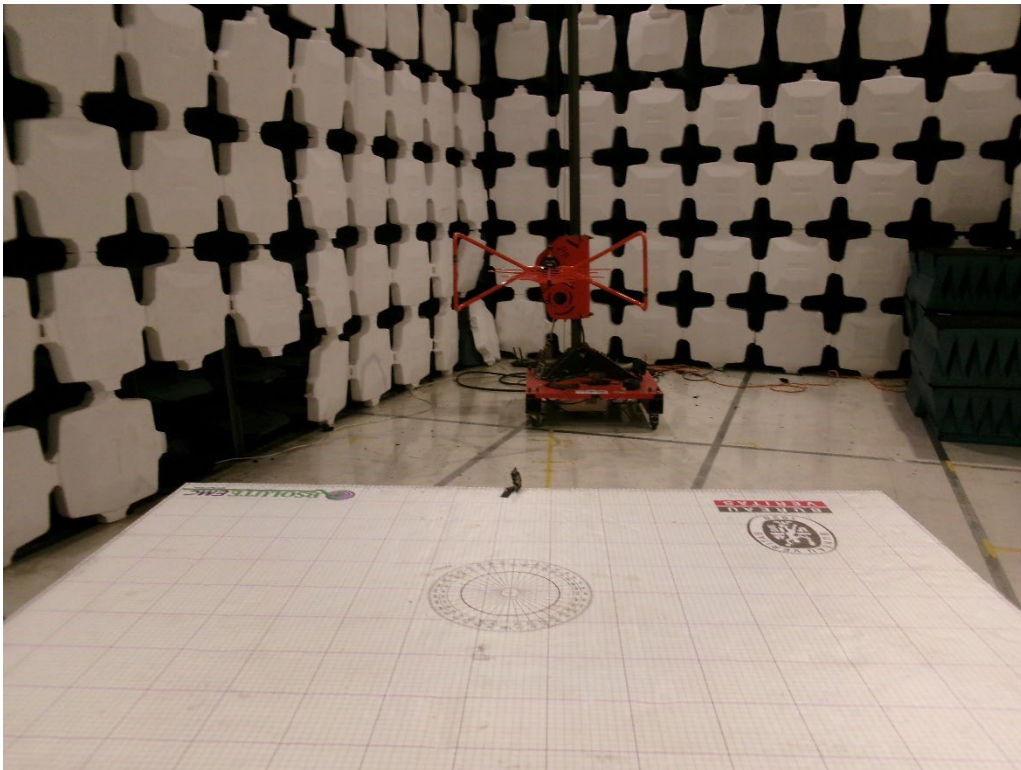
Test Equipment Used



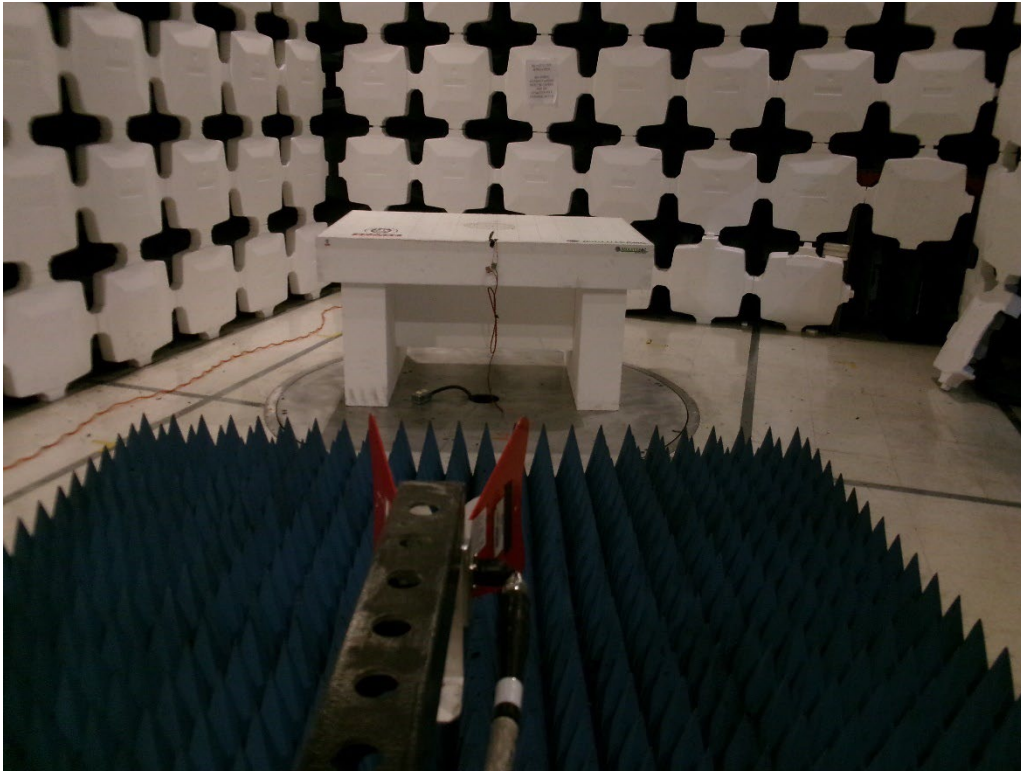
Radiated Emissions Setup Photograph(s):



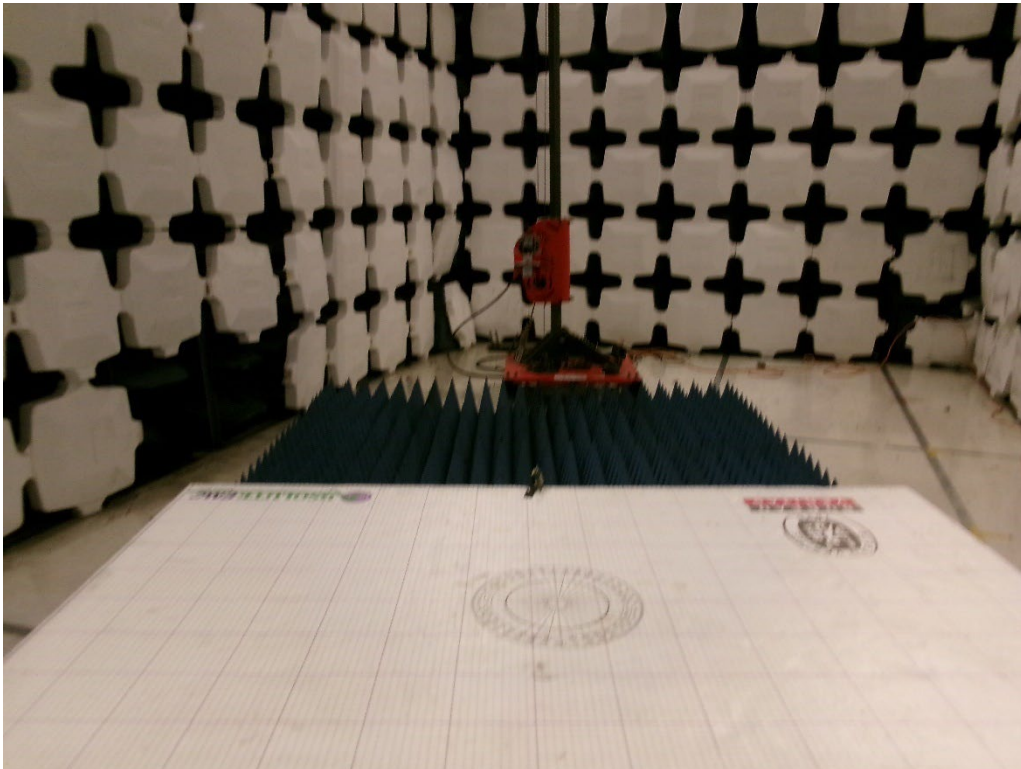
30-1000MHz Front



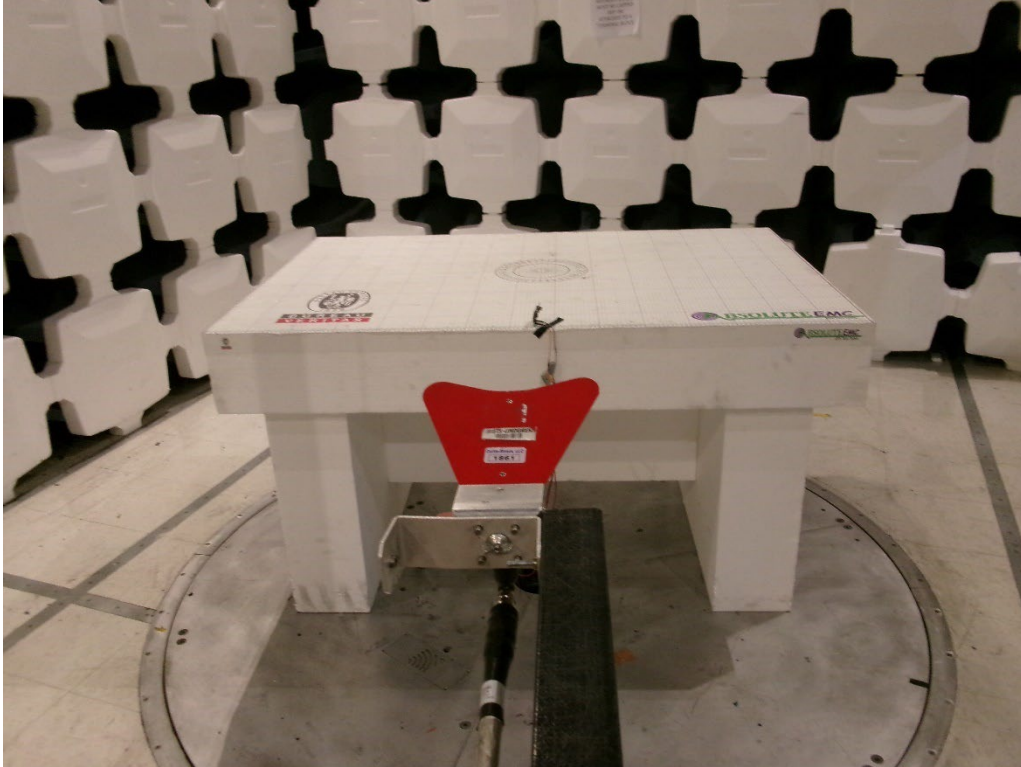
30-1000MHz Rear



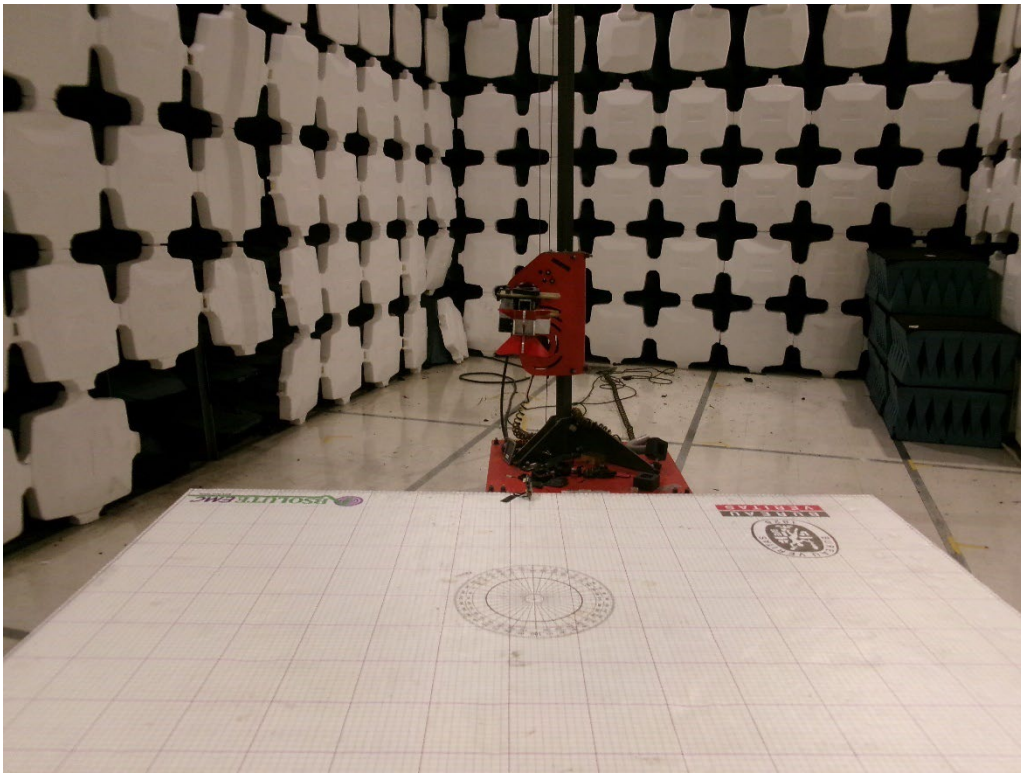
1-6GHz Front



1-6GHz Rear



6-13GHz Front



6-13GHz Rear

CONDUCTED EMISSIONS

N/A

Conducted Emissions Setup Photograph(s):

N/A



TELCO CONDUCTED EMISSIONS

Conducted Emissions Data Table(s):

N/A

Telco Conducted Emissions Setup Photograph(s):

N/A



ELECTROSTATIC DISCHARGE IMMUNITY

Electrostatic Discharge Immunity Data Table(s):

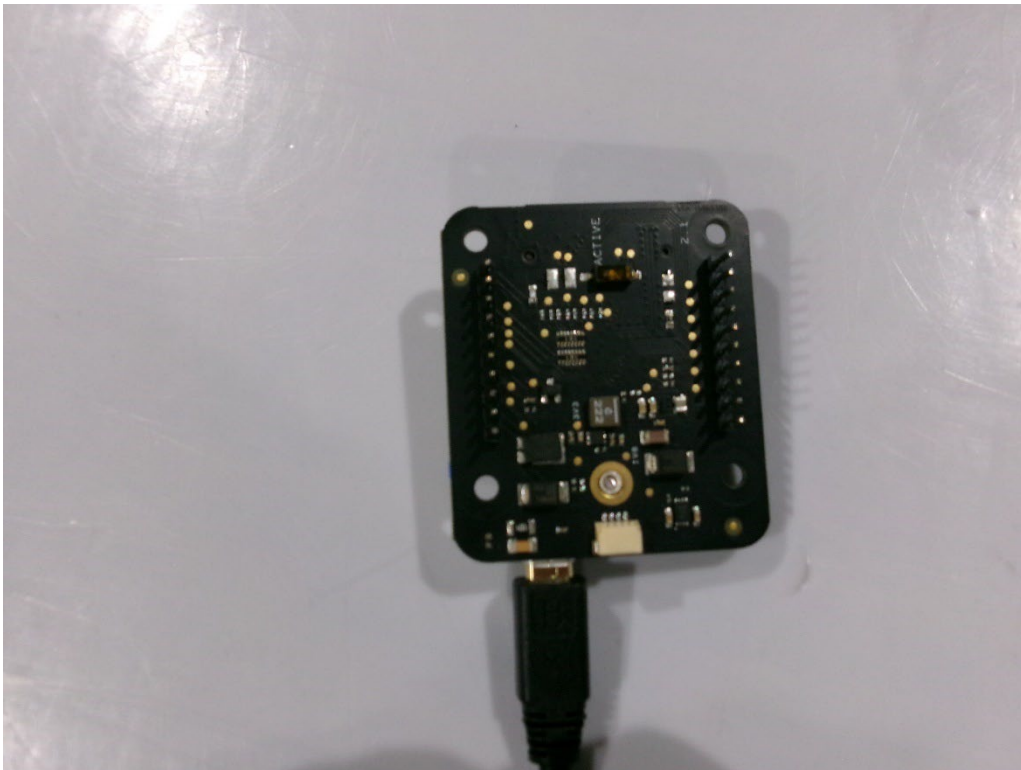
ESD DATA SHEET																																																														
Work Order: X0646 Date(s): 10-Sep-23 Engineer(s): Bryan Valcourt			Client Present:																																																											
Testing Location: Littleton Distribution Center, One Distribution Center Circle, #1 Littleton, MA 01460																																																														
Performance Criteria: B Maximum Test Parameters: ±4kV contact ±8kV air Number of Discharge: 20 times at each point Number of points: 26 Discharge Mode: Single Discharge Discharge Period: 1 second EUT Operating Voltage/Frequency: 5VDC																																																														
Test Equipment Used: <table border="1"> <thead> <tr> <th>ESD Generators / Networks</th> <th>Standard</th> <th>MN</th> <th>Mfr</th> <th>SN</th> <th>Asset</th> <th>Cat</th> <th>Calibration Due</th> <th>Calibrated on</th> </tr> </thead> <tbody> <tr> <td>A#1841</td> <td>IEC 61000-4-2 G 438+CC174.C</td> <td></td> <td>TESEQ</td> <td>1277</td> <td>1841</td> <td>I</td> <td>3/17/2024</td> <td>3/17/2023</td> </tr> <tr> <th>Oscilloscopes and Probes</th> <th></th> <th>MN</th> <th>Mfr</th> <th>SN</th> <th>Asset</th> <th>Cat</th> <th>Calibration Due</th> <th>Calibrated on</th> </tr> <tr> <td>ESD Reference 1GHz</td> <td></td> <td>TDS 684B</td> <td>Tektronix</td> <td>B011287</td> <td>1819</td> <td>I</td> <td>1/6/2024</td> <td>1/6/2023</td> </tr> <tr> <th>Meteorological Meters/Chambers</th> <th></th> <th>MN</th> <th>Mfr</th> <th>SN</th> <th>Asset</th> <th>Cat</th> <th>Calibration Due</th> <th>Calibrated on</th> </tr> <tr> <td>Weather Clock (Pressure Only) Asset #2657</td> <td></td> <td>BA928 1235C97</td> <td>Oregon Scientific Control Company</td> <td>C3166-1 200435369</td> <td>831 2657</td> <td>I I</td> <td>12/15/2025 8/18/2025</td> <td>12/15/2022 8/18/2022</td> </tr> </tbody> </table>									ESD Generators / Networks	Standard	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	A#1841	IEC 61000-4-2 G 438+CC174.C		TESEQ	1277	1841	I	3/17/2024	3/17/2023	Oscilloscopes and Probes		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	ESD Reference 1GHz		TDS 684B	Tektronix	B011287	1819	I	1/6/2024	1/6/2023	Meteorological Meters/Chambers		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	Weather Clock (Pressure Only) Asset #2657		BA928 1235C97	Oregon Scientific Control Company	C3166-1 200435369	831 2657	I I	12/15/2025 8/18/2025	12/15/2022 8/18/2022
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Atmospheric Conditions: 10-Sep-2023 Temp: 23.8°C Humidity: 55% Pressure: 1011mbar																																																														
Test Points: Horizontal Coupling Plane Vertical Coupling Plane Contact Discharge Test Points Photo Label All contact discharge points are labeled with a C on the photos provided.			Pass/Fail Pass Pass N/A	Test Levels: ±2kV, ±4kV ±2kV, ±4kV N/A	Comments: Small Board Only, no Contact points																																																									
Air Discharge Test Points Photo Label All air discharge points are labeled with an A. Points where a discharge occurred are listed below:			N/A	N/A	Small Board Only, no Air points																																																									
Discharge Point Description N/A			Discharge Voltage N/A																																																											



Electrostatic Discharge Test Points:
No Discharge points Coupling Planes only



Front of Board



Rear of Board

Electrostatic Discharge Immunity Setup Photograph(s):



RADIATED RADIO-FREQUENCY IMMUNITY

Radiated RF Immunity Data Table(s):

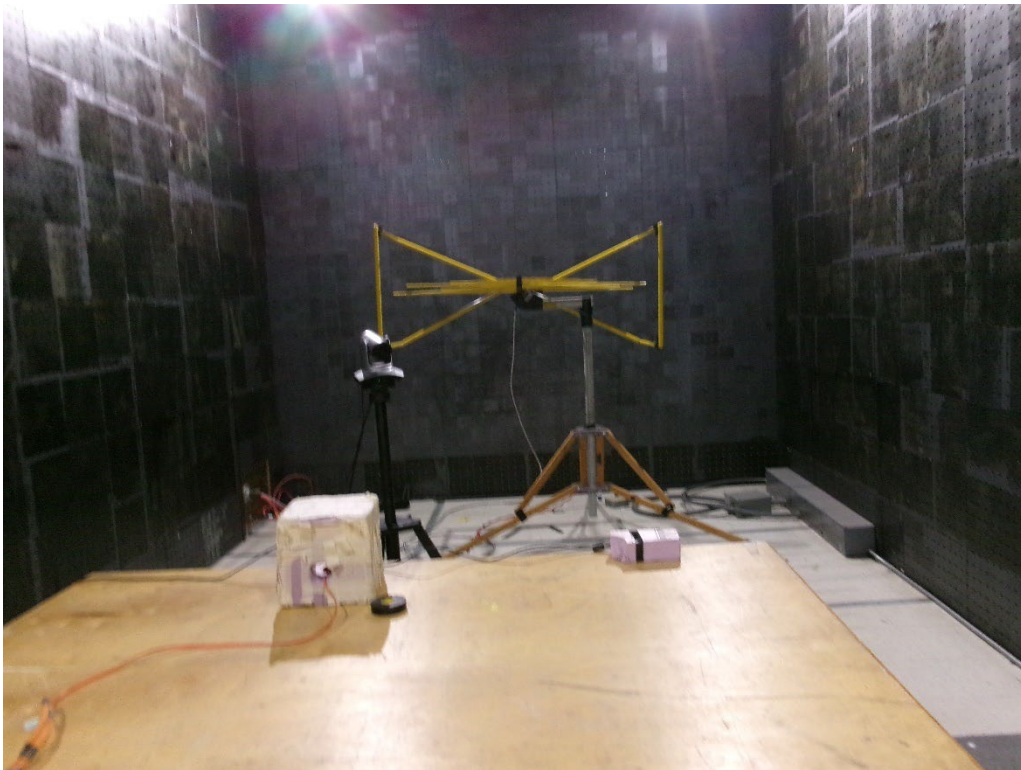
RFI DATA SHEET																																																																																																																																																																																												
Work Order: X0646 Date(s): 10-Sep-23 Engineer(s): Bryan Valcourt					Client Present: Yes																																																																																																																																																																																							
Testing Location: Littleton Distribution Center, One Distribution Center Circle, #1 - Littleton, MA 01460																																																																																																																																																																																												
Performance Criteria: A Frequency Range: 80-6000MHz 1800, 2600, 3500, 5000MHz Maximum Field Strength: 3V/m 3V/m Antenna Distance: 2m for 80-1000MHz, 1m for 1-6GHz Modulation: 80%AM 1kHz Sin 80%AM 1kHz Sine Dwell frequencies: none																																																																																																																																																																																												
EUT Operating Voltage/Frequency: 5VDC Clock dwell frequencies include: 80, 2480MHz					EUT Cycle Time: 3 Seconds																																																																																																																																																																																							
Test Equipment Used: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>RFI Systems</th> <th>Range</th> <th colspan="3">Equipment Combo</th> <th>Cat</th> <th>Calibration Due</th> <th>Calibrated on</th> </tr> </thead> <tbody> <tr> <td>RFI 1 - 500W/1000B Amp - Yellow-Black Bilog</td> <td>80 - 1000MHz</td> <td>RFI Combo 6</td> <td></td> <td></td> <td>II</td> <td>12/28/2023</td> <td>12/28/2022</td> </tr> <tr> <td>RFI 1</td> <td></td> <td>3 Meter Compact</td> <td>Panashield</td> <td>N/A</td> <td>II</td> <td></td> <td></td> </tr> <tr> <td>Yellow-Black Bilog</td> <td>20-2000MHz</td> <td>CBL6140A</td> <td>Chase</td> <td>1112</td> <td>II</td> <td></td> <td></td> </tr> <tr> <td>RFI 1 - 1862 LB Amp - Red Hom - EU</td> <td>1 - 4.2GHz</td> <td>RFI High Combo 22A</td> <td></td> <td></td> <td>II</td> <td>1/4/2024</td> <td>1/4/2023</td> </tr> <tr> <td>RFI 1</td> <td></td> <td>3 Meter Compact</td> <td>Panashield</td> <td>797</td> <td>II</td> <td></td> <td></td> </tr> <tr> <td>Red Hom</td> <td>1-10GHz</td> <td>3115</td> <td>EMCO</td> <td>1687</td> <td>II</td> <td></td> <td></td> </tr> <tr> <td>RFI 1 - 1862 HB Amp - Red Hom - EU</td> <td>4 - 10GHz</td> <td>RFI High Combo 22B</td> <td></td> <td></td> <td>II</td> <td>1/4/2024</td> <td>1/4/2023</td> </tr> <tr> <td>RFI 1</td> <td></td> <td>3 Meter Compact</td> <td>Panashield</td> <td>797</td> <td>II</td> <td></td> <td></td> </tr> <tr> <td>Red Hom</td> <td>1-10GHz</td> <td>3115</td> <td>EMCO</td> <td>1687</td> <td>II</td> <td></td> <td></td> </tr> <tr> <td>Field Probes/Compasses</td> <td>Range</td> <td>MN</td> <td>Mfr</td> <td>SN</td> <td>Asset</td> <td>Cat</td> <td>Calibration Due</td> <td>Calibrated on</td> </tr> <tr> <td>Reference Laser Field Probe</td> <td>0.1-6000MHz</td> <td>FL7006 Star Probe</td> <td>AR</td> <td>321700</td> <td>1252</td> <td>I</td> <td>9/18/2023</td> <td>8/18/2022</td> </tr> <tr> <td>Signal Generators/Comparison Noise Emitter</td> <td>Range</td> <td>MN</td> <td>Mfr</td> <td>SN</td> <td>Asset</td> <td>Cat</td> <td>Calibration Due</td> <td>Calibrated on</td> </tr> <tr> <td>Rental HF Signal Generator(1257255)</td> <td>250kHz-20GHz</td> <td>E8257D-520</td> <td>AT</td> <td>MY45470442</td> <td>1257255</td> <td>I</td> <td>9/31/2023</td> <td>8/31/2022</td> </tr> <tr> <td>Meteorological Meters/Chambers</td> <td></td> <td>MN</td> <td>Mfr</td> <td>SN</td> <td>Asset</td> <td>Cat</td> <td>Calibration Due</td> <td>Calibrated on</td> </tr> <tr> <td>Weather Clock (Pressure Only)</td> <td></td> <td>BA928</td> <td>Oregon Scientific</td> <td>C3166-1</td> <td>831</td> <td>I</td> <td>12/15/2025</td> <td>12/15/2022</td> </tr> <tr> <td>Asset #2656</td> <td></td> <td>1235C97</td> <td>Control Company</td> <td>200435359</td> <td>2656</td> <td>I</td> <td>8/18/2025</td> <td>8/18/2022</td> </tr> <tr> <td>Cables</td> <td>Range</td> <td></td> <td>Mfr</td> <td></td> <td></td> <td>Cat</td> <td>Calibration Due</td> <td>Calibrated on</td> </tr> <tr> <td>Asset #2069</td> <td>9kHz - 18GHz</td> <td></td> <td>Florida RF</td> <td></td> <td></td> <td>II</td> <td>2/15/2024</td> <td>2/15/2023</td> </tr> <tr> <td>Asset #2467</td> <td>9kHz-18GHz</td> <td></td> <td>MegaPhase</td> <td></td> <td></td> <td>II</td> <td>11/1/2023</td> <td>11/1/2022</td> </tr> <tr> <td>Asset #2581</td> <td>9kHz-18GHz</td> <td></td> <td>Pastemack</td> <td></td> <td></td> <td>II</td> <td>11/1/2023</td> <td>11/1/2022</td> </tr> </tbody> </table>										RFI Systems	Range	Equipment Combo			Cat	Calibration Due	Calibrated on	RFI 1 - 500W/1000B Amp - Yellow-Black Bilog	80 - 1000MHz	RFI Combo 6			II	12/28/2023	12/28/2022	RFI 1		3 Meter Compact	Panashield	N/A	II			Yellow-Black Bilog	20-2000MHz	CBL6140A	Chase	1112	II			RFI 1 - 1862 LB Amp - Red Hom - EU	1 - 4.2GHz	RFI High Combo 22A			II	1/4/2024	1/4/2023	RFI 1		3 Meter Compact	Panashield	797	II			Red Hom	1-10GHz	3115	EMCO	1687	II			RFI 1 - 1862 HB Amp - Red Hom - EU	4 - 10GHz	RFI High Combo 22B			II	1/4/2024	1/4/2023	RFI 1		3 Meter Compact	Panashield	797	II			Red Hom	1-10GHz	3115	EMCO	1687	II			Field Probes/Compasses	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	Reference Laser Field Probe	0.1-6000MHz	FL7006 Star Probe	AR	321700	1252	I	9/18/2023	8/18/2022	Signal Generators/Comparison Noise Emitter	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	Rental HF Signal Generator(1257255)	250kHz-20GHz	E8257D-520	AT	MY45470442	1257255	I	9/31/2023	8/31/2022	Meteorological Meters/Chambers		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	12/15/2025	12/15/2022	Asset #2656		1235C97	Control Company	200435359	2656	I	8/18/2025	8/18/2022	Cables	Range		Mfr			Cat	Calibration Due	Calibrated on	Asset #2069	9kHz - 18GHz		Florida RF			II	2/15/2024	2/15/2023	Asset #2467	9kHz-18GHz		MegaPhase			II	11/1/2023	11/1/2022	Asset #2581	9kHz-18GHz		Pastemack			II	11/1/2023	11/1/2022
RFI Systems	Range	Equipment Combo			Cat	Calibration Due	Calibrated on																																																																																																																																																																																					
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RFI 1		3 Meter Compact	Panashield	797	II																																																																																																																																																																																							
Red Hom	1-10GHz	3115	EMCO	1687	II																																																																																																																																																																																							
RFI 1 - 1862 HB Amp - Red Hom - EU	4 - 10GHz	RFI High Combo 22B			II	1/4/2024	1/4/2023																																																																																																																																																																																					
RFI 1		3 Meter Compact	Panashield	797	II																																																																																																																																																																																							
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Field Probes/Compasses	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on																																																																																																																																																																																				
Reference Laser Field Probe	0.1-6000MHz	FL7006 Star Probe	AR	321700	1252	I	9/18/2023	8/18/2022																																																																																																																																																																																				
Signal Generators/Comparison Noise Emitter	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on																																																																																																																																																																																				
Rental HF Signal Generator(1257255)	250kHz-20GHz	E8257D-520	AT	MY45470442	1257255	I	9/31/2023	8/31/2022																																																																																																																																																																																				
Meteorological Meters/Chambers		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on																																																																																																																																																																																				
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	12/15/2025	12/15/2022																																																																																																																																																																																				
Asset #2656		1235C97	Control Company	200435359	2656	I	8/18/2025	8/18/2022																																																																																																																																																																																				
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on																																																																																																																																																																																				
Asset #2069	9kHz - 18GHz		Florida RF			II	2/15/2024	2/15/2023																																																																																																																																																																																				
Asset #2467	9kHz-18GHz		MegaPhase			II	11/1/2023	11/1/2022																																																																																																																																																																																				
Asset #2581	9kHz-18GHz		Pastemack			II	11/1/2023	11/1/2022																																																																																																																																																																																				
Atmospheric Conditions: 10-Sep-2023 Temp: 22.8°C Humidity: 57% Pressure: 1011mbar																																																																																																																																																																																												
Results: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Front</th> <th>Back</th> <th>Left</th> <th>Right</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td>Horizontal</td> <td>Pass</td> <td>Pass</td> <td>N/A</td> <td>N/A</td> <td>Small Board only tested Front and Back</td> </tr> <tr> <td>Vertical</td> <td>Pass</td> <td>Pass</td> <td>N/A</td> <td>N/A</td> <td>Small Board only tested Front and Back</td> </tr> </tbody> </table>											Front	Back	Left	Right	Comments	Horizontal	Pass	Pass	N/A	N/A	Small Board only tested Front and Back	Vertical	Pass	Pass	N/A	N/A	Small Board only tested Front and Back																																																																																																																																																																	
	Front	Back	Left	Right	Comments																																																																																																																																																																																							
Horizontal	Pass	Pass	N/A	N/A	Small Board only tested Front and Back																																																																																																																																																																																							
Vertical	Pass	Pass	N/A	N/A	Small Board only tested Front and Back																																																																																																																																																																																							



Radiated RF Immunity Setup Photograph(s):



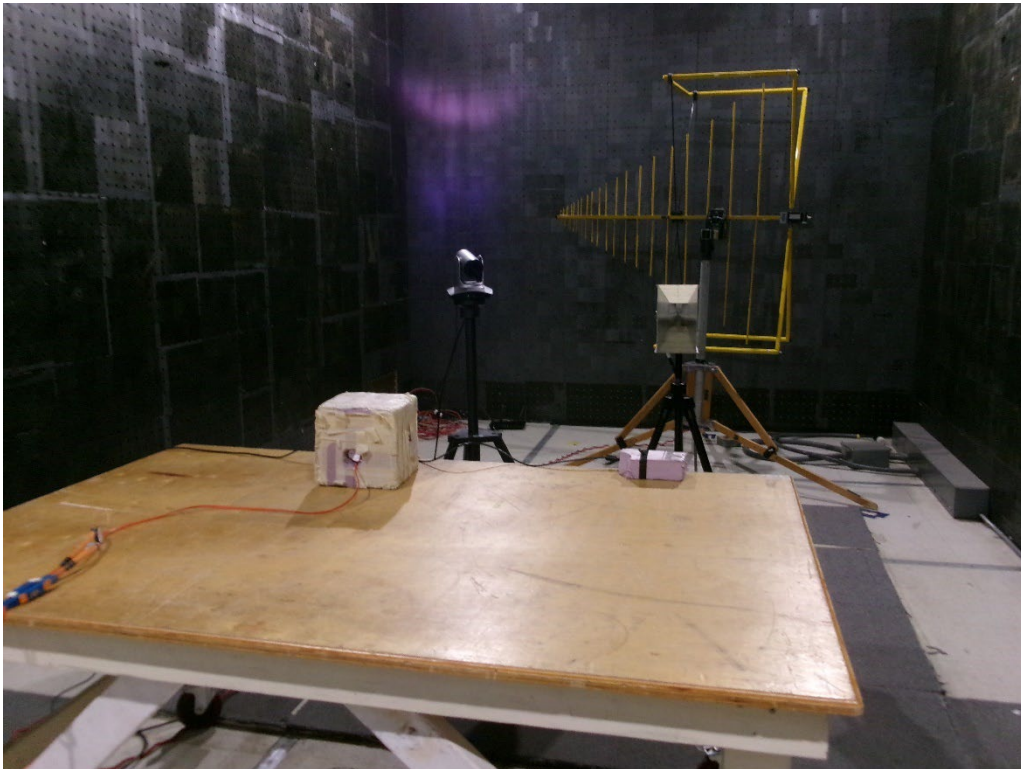
80-1000MHz Front



80-1000MHz Rear



1-6GHz Front



1-6GHz Rear

ELECTRICAL FAST TRANSIENTS IMMUNITY

Electrical Fast Transient Burst Immunity Data Table(s):

N/A

Electrical Fast Transient Burst Immunity Setup Photograph(s):

N/A



SURGE IMMUNITY

Surge Immunity Data Table(s):

N/A

Surge Immunity Setup Photograph(s):

N/A



CONDUCTED RADIO FREQUENCY IMMUNITY

Conducted RF Immunity Data Table(s):

N/A

Conducted RF Immunity Setup Photograph(s):

N/A



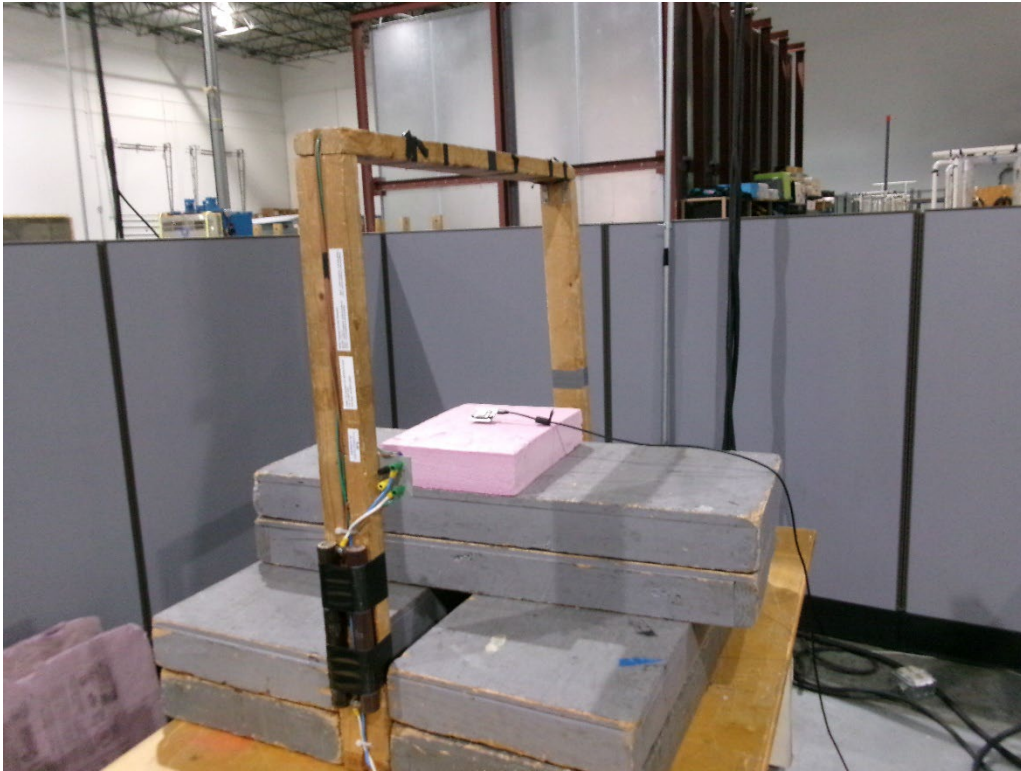
MAGNETIC FIELD IMMUNITY

Power Frequency Magnetic Field Immunity Data Table(s):

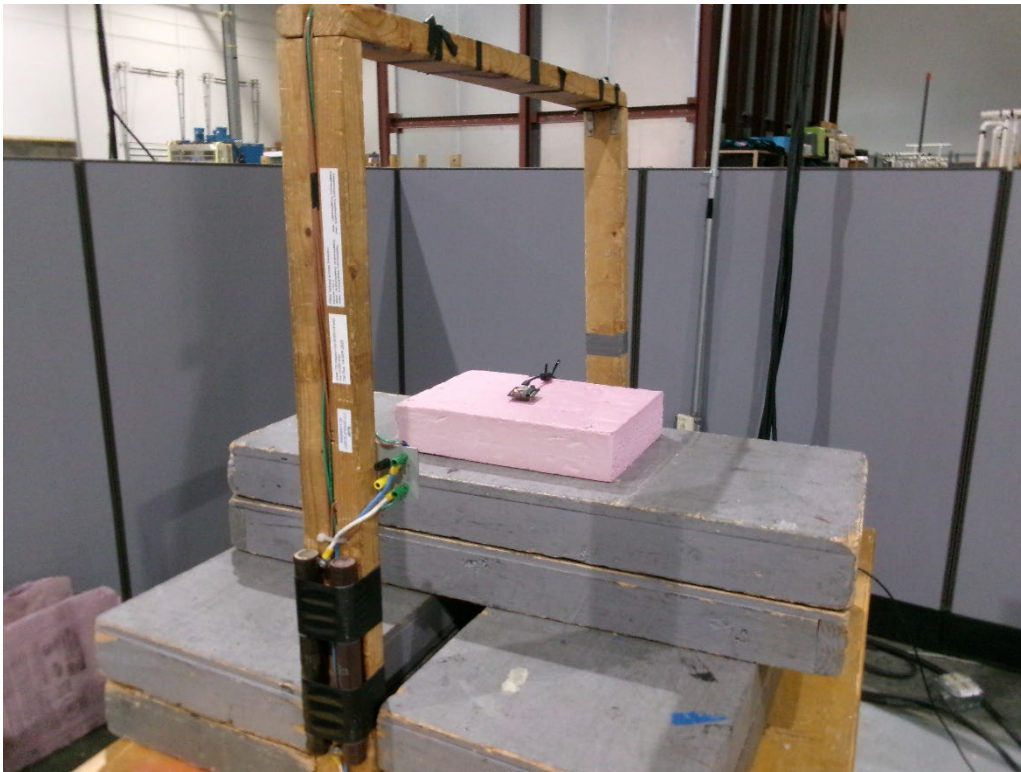
Power-Frequency Magnetic Field									
Work Order: X0646 Date(s): 10-Sep-23 Engineer(s): Bryan Valcourt					Client Present:				
Testing Location: Littleton Distribution Center, One Distribution Center Circle, #1 Littleton, MA 01460									
Performance Criteria: A Maximum Test Parameters: 1A/m Frequency: 50Hz/60Hz									
EUT Operating Voltage/Frequency: 5VDC									
Test Equipment Used:									
Antennas		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Induction Coil (10 turns)		50-60Hz	61000-4-8	C-S	N/A	778	II	9/13/2023	9/13/2022
Field Probes/Compasses		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gaussmeter (ELF Meter)		25Hz-1kHz	4080	Sypris	114173	1305	I	1/3/2024	1/3/2023
Meteorological Meters/Chambers			MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)			BA928	Oregon Scientific	C3166-1	831	I	12/15/2025	12/15/2022
Asset #2657			1235C97	Control Company	200435369	2657	I	8/18/2025	8/18/2022
Atmospheric Conditions:									
10-Sep-2023 Temp: 23.8°C			Humidity: 55%			Pressure: 1011mbar			
Orthogonal Axes Tested:									
X Pass		Y Pass		Z Pass		Pass/Fail			



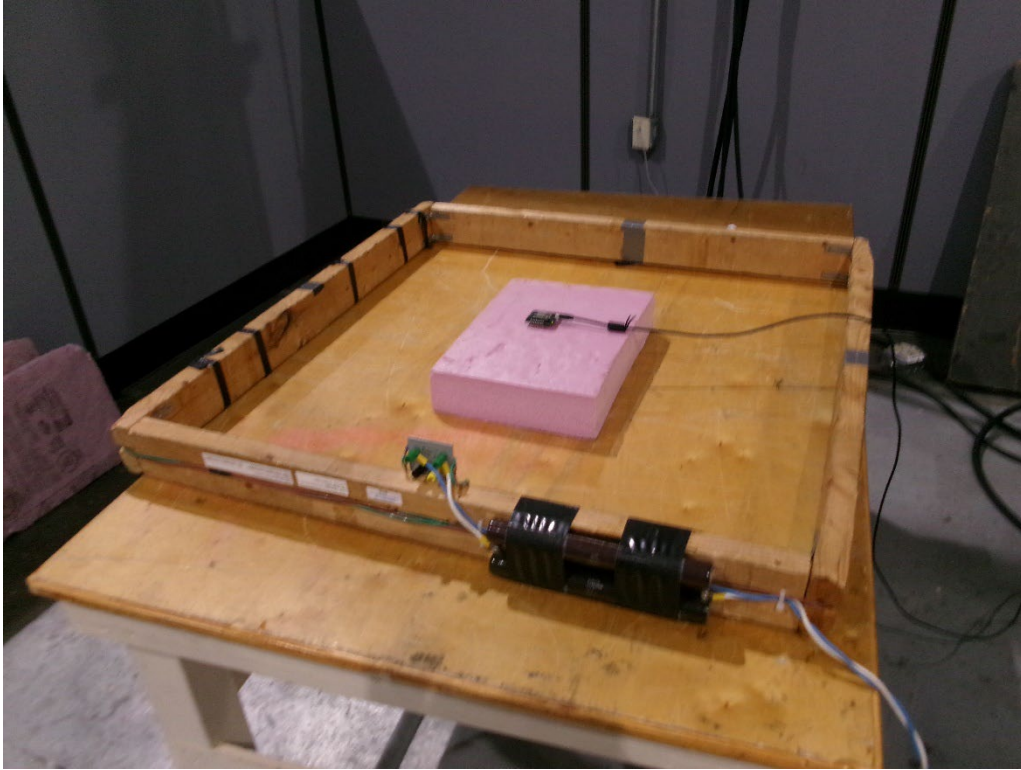
Power Frequency Magnetic Field Immunity Setup Photograph(s):



X-axis



Y-axis



Z-axis

VOLTAGE DIPS AND INTERRUPTS IMMUNITY

Mains Supply Voltage Dips, Short Interrupts and Variations Data Table(s):

N/A

Mains Supply Voltage Dips, Short Interrupts and Variations Setup Photograph(s):

N/A

HARMONIC EMISSIONS AND VOLTAGE FLUCTUATIONS/FLICKER

Harmonic Emissions and Voltage Fluctuations/Flicker Data Table(s):

N/A

Harmonic Emissions and Voltage Fluctuations/Flicker Setup Photograph(s):

N/A



Measurement Uncertainty

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Expanded Uncertainty k=2	Maximum allowable uncertainty
Radiated Emissions (30-1000MHz)		
NIST	5.6dB	N/A
CISPR [no table (i.e. floor standing)]	4.6dB	5.2dB (Ucisprr)
CISPR[table present]	6.0dB	
Radiated Emissions (1-18GHz)	6.13dB	N/A
Radiated Emissions (18-40GHz)	4.9dB	N/A
Magnetic Radiated Emissions(9KHz-30MHz)	4.41dB	N/A
Conducted Emissions		
NIST	3.9dB	N/A
CISPR	3.6dB	3.6dB (Ucisprr)
Telco Conducted Emissions (Current)	2.9dB	N/A
Telco Conducted Emissions (Voltage)	4.4dB	N/A
Electrostatic Discharge	11.5%	N/A
Radiated RF Immunity (Uniform Field)	1.6dB	N/A
Electrical Fast Transients	23.1%	N/A
Surge	23.1%	N/A
Conducted RF Immunity	3dB	N/A
Magnetic Immunity	12.8%	N/A
Dips and Interrupts	2.3V	N/A
Harmonics	3.5%	N/A
Flicker	3.5%	N/A
Radio frequency (@ 2.4GHz)	3.23 x 10 ⁻⁸	1 x 10 ⁻⁷
RF power, conducted	0.40dB	0.75dB
Maximum frequency deviation:		
• Within 300Hz and 6kHz of audio frequency / Within 6kHz and 25kHz of audio frequency	3.4% 0.3dB	5% 3dB
Adjacent channel power	1.9dB	3dB
Conducted spurious emission of transmitter, valid up to 12.75GHz	2.39dB	3dB
Conducted emission of receivers	1.3dB	3dB
Radiated emission of transmitter, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of transmitter, valid up to 80GHz	3.3dB	6dB
Radiated emission of receiver, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of receiver, valid up to 80GHz	3.3dB	6dB
Humidity	2.37%	5%
Temperature	0.7°C	1.0°C
Time	4.1%	10%
RF Power Density, Conducted	0.4dB	3dB
DC and low frequency voltages	1.3%	3%
Voltage (AC, <10kHz)	1.3%	2%
Voltage (DC)	0.62%	1%
The above reflects a 95% confidence level		



Product Documentation

If additional documentation on the product has been provided for insertion in the report, it is appended here.



Conditions Of Testing

[Bureau Veritas Consumer Products Services, Inc., a Massachusetts corporation], and/or its affiliates (collectively, the "Company") will conduct, at the request of the Submitter ("Client"), the tests specified on the submitted Test Request Form or equivalent in accordance with, and subject to, the following terms and conditions (collectively, "Conditions"):

1. All orders for tests are subject to acceptance by the Company, and no order will constitute a binding commitment of the Company unless and until such order is accepted by it, as evidenced by the issuance of a written report ("Test Report") by the Company. The Test Report is issued solely by the Company, is intended for the exclusive use of Client and shall not be published, used for advertising purposes, copied or replicated for distribution to any other person or entity or otherwise publicly disclosed without the prior written consent of the Company. By submitting a request for services to the Company, Client consents to the disclosure to accreditation bodies of those records of Client relevant to the accreditation body's assessment of the Company's competence and compliance with relevant accreditation criteria. The Company shall not be liable for any loss or damage whatsoever resulting from the failure of the Company to provide its services within any time period for completion estimated by the Company. If Client anticipates using the Test Report in any legal proceeding, arbitration, dispute resolution forum or other proceeding, it shall so notify the Company prior to submitting the Test Report in such proceeding. The Company has no obligation to provide a fact or expert witness at such proceeding unless the Company agrees in advance to do so for a separate and additional fee.
2. The Test Report will set forth the findings of the Company solely with respect to the test samples identified therein. Unless specifically and expressly indicated in the Test Report, the results set forth in such Test Report are not intended to be indicative or representative of the quality or characteristics of the lot from which a test sample is taken, and Client shall not rely upon the Test Report as being so indicative or representative of the lot or of the tested product in general. The Test Report will reflect the findings of the Company at the time of testing only, and the Company shall have no obligation to update the Test Report after its issuance. The Test Report will set forth the results of the tests performed by the Company based upon the written information provided to the Company. The Test Report will be based solely on the samples and written information submitted to the Company by Client, and the Company shall not be obligated to conduct any independent investigation or inquiry with respect thereto.
3. The Company may, in its sole discretion, destroy samples which have been furnished to the Company for testing and which have not been destroyed in the course of testing. The Company may delegate the performance of all or a portion of the services contemplated hereunder to an affiliate, agent or subcontractor of the Company, and Client consents to such delegation.
4. These Conditions and the Test Report represent the entire understanding of the parties hereto with respect to the subject matter hereof and of the Test Report, and no modification, variance or extrapolation with respect thereto shall be permitted without the prior written consent of the Company.
5. The names, service marks, trademarks and copyrights of the Company and its affiliates, including the names "**BUREAU VERITAS**," "**BUREAU VERITAS CONSUMER PRODUCTS SERVICES**," "**BVCPS**," "**MTL**," "**ACTS**," "**MTL-ACTS**" and "**BUREAU VERITAS CONSUMER PRODUCTS SERVICES INC.**" (collectively, the "Marks") are and shall remain the sole property of the Company or its affiliates and shall not be used by Client except solely to the extent that Client obtains the prior written approval of the Company and then only in the manner prescribed by the Company. Client shall not contest the validity of the Marks or take any action that might impair the value or goodwill associated with the Marks or the image or reputation of the Company or its affiliates.
6. Payment in full shall be due 30 days after the date of invoice. Interest shall be due on overdue amounts from the due date until paid at an interest rate of 1.5% per month or, if less, the maximum rate permitted by law. The Company reserves the right, at any time and from time to time, to revoke any credit extended to Client. Client shall reimburse the Company for any costs it incurs in collecting past due amounts, including court costs and fees and expenses of attorneys and collection agencies. The Test Report may not be used or relied upon by Client if and for so long as Client fails to pay when due any invoice issued by the Company or any affiliate of it to Client or any affiliate or subsidiary of Client together with interest and penalties, if any, accrued thereon.
7. The Company disclaims any and all responsibility or liability arising out of or in connection with e-mail transmissions of such information.
8. Client understands and agrees that the Company is neither an insurer nor a guarantor, that the Company does not take the place of Client or any designer, manufacturer, agent, buyer, distributor or transportation or shipping company, and that the Company disclaims all liability in such capacities. Client further understands that if it seeks assurance against loss or damage, it should obtain appropriate insurance.
9. Client agrees that the Company, by providing the services, does not take the place of Client nor any third party, nor does the Company release them from any of their obligations, nor does the Company otherwise assume, abridge, abrogate or undertake to discharge any duty of any third party to Client or any duty of Client or any third party to any other third party, and Client will not release any third party from its obligations and duties with respect to the tested goods.
10. Client shall, on a timely basis, (a) provide adequate instructions to the Company in order to enable the Company to perform properly its services, (b) provide, or cause Client's suppliers and contractors to provide, the Company with all documents necessary to enable the Company to perform its services, (c) furnish the Company with all relevant information regarding Client's intended use and purposes of the tested goods, (d) advise the Company of essential dates and deadlines relevant to the tested goods and (e) fully exercise all rights and remedies available to Client against third parties in respect of the tested goods.
11. The Company shall undertake due care and ordinary skill in the performance of its services to Client, and the Company shall accept responsibility only where such skill has not been exercised and, even in such event, only to the extent of the limitation of liability set forth herein.
12. If Client desires to assert a claim arising from or relating to (i) the performance, purported performance or non-performance of any services by the Company or (ii) the sale, resale, manufacture, distribution or use of any tested goods, it must submit that claim to the Company in a writing that sets forth with particularity the basis for such claim within 60 days from discovery of the potential claim and not more than six months after the date of issuance of the Test Report to Client. Client waives any and all such claims including, without limitation, claims that the Test Report is inaccurate, incomplete or misleading or that additional or different testing is required, unless and then only to the extent that Client submits a written claim to the Company within both such time periods.
13. CLIENT SHALL, EXCEPT TO THE EXTENT OF COMPANY'S LIABILITY TO CLIENT HEREUNDER (WHICH IN NO EVENT SHALL EXCEED THE LIMITATION OF LIABILITY HEREIN), HOLD HARMLESS AND INDEMNIFY THE COMPANY, ITS AFFILIATES AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES, AGENTS AND SUBCONTRACTORS AGAINST ALL ACTUAL OR ALLEGED THIRD PARTY CLAIMS FOR LOSS, DAMAGE OR EXPENSE OF WHATSOEVER NATURE AND HOWSOEVER ARISING FROM OR RELATING TO (i) THE PERFORMANCE, PURPORTED PERFORMANCE OR NON-PERFORMANCE OF ANY SERVICES BY THE COMPANY OR (ii) THE SALE, RESALE, MANUFACTURE, DISTRIBUTION OR USE OF ANY TESTED GOODS.



14. EXCEPT AS MAY OTHERWISE BE EXPRESSLY AGREED TO IN WRITING BY THE COMPANY AND NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN OR IN ANY TEST REPORT, NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, IS MADE.

15. (A) IN NO EVENT WHATSOEVER SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, EXEMPLARY OR PUNITIVE DAMAGES IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE TEST REPORT OR THE SERVICES PROVIDED BY THE COMPANY HEREUNDER, INCLUDING WITHOUT LIMITATION LOSS OF OR DAMAGE TO PROPERTY; LOSS OF INCOME, PROFIT OR USE; OR ANY CLAIMS OR DEMANDS MADE AGAINST CLIENT OR ANY OTHER PERSON BY ANY THIRD PARTY IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE SERVICES PROVIDED BY THE COMPANY HEREUNDER.

(B) NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN, AND IN RECOGNITION OF THE RELATIVE RISKS AND BENEFITS TO CLIENT AND THE COMPANY ASSOCIATED WITH THE TESTING SERVICES CONTEMPLATED HEREBY, THE RISKS HAVE BEEN ALLOCATED SUCH THAT UNDER NO CIRCUMSTANCES WHATSOEVER SHALL THE LIABILITY OF THE COMPANY TO CLIENT OR ANY THIRD PARTY IN RESPECT OF ANY CLAIM FOR LOSS, DAMAGE OR EXPENSE, OF WHATSOEVER NATURE OR MAGNITUDE, AND HOWSOEVER ARISING, EXCEED AN AMOUNT EQUAL TO FIVE (5) TIMES THE AMOUNT OF THE FEES PAID TO THE COMPANY FOR THE SPECIFIC SERVICES WHICH GAVE RISE TO SUCH CLAIM OR U.S.\$10,000, WHICHEVER IS THE LESSER AMOUNT.

16. The Company shall not be liable for any loss or damage resulting from any delay or failure in performance of its obligations hereunder resulting directly or indirectly from any event of force majeure or any event outside the control of the Company. If any such event occurs, the Company may immediately cancel or suspend its performance hereunder without incurring any liability whatsoever to Client.

17. Company's services, including these Conditions, shall be governed by, and construed in accordance with, the local laws of the country where the Company performs the tests or, in the case of tests performed in the United States of America, the laws of Massachusetts without regard to conflicts of laws principles. If any aspect(s) of these Conditions is found to be illegal or unenforceable, the validity, legality and enforceability of all remaining aspects of these Conditions shall not in any way be affected or impaired thereby. Any proceeding related to the subject matter hereof shall be brought, if at all, in the courts of the country where the Company performs the tests or, in the case of tests performed in the United States of America, in the courts of Massachusetts. Client waives the right to interpose any counterclaim or setoffs of any nature in any litigation arising hereunder.

The complete list of the Approved Subcontractors Bureau Veritas Consumer Products Services Inc. may use to delegate the performance of work can be provided upon request.

Rev.160009121(2)_#684340 v14CS



Appendix A: Non-Evaluated Data

This section contains information that Blues Wireless Inc. has requested accompany report. It has not been evaluated for accuracy by Bureau Veritas Consumer Products Services Inc.



Document Revision History

Issue No.	Summary of Changes	Date Issued	Prepared by	Approved by
1	Original Release	9/14/2023	BJV	AA

END OF REPORT

