TEST REPORT

Applicant	Assa Abloy Inc.
Address	110 Sargent Drive New Haven CT USA 06511

FCC ID	U4A-CEX100
ISED Canada IC	6982A-CEX100
Product Marketing Name (PMN)	CEX100
Model Number	52-9127-0000-000
Hardware Version of DUT	52-9127-0000-000
Software Version of DUT	s140_nrf52_6.1.1_softdevice.hex products-regulatorySupport.hex
Host Marketing Name (HMN)	CEB100, CEE100, CEM100
HMN Differences	See Section 3.1
Modular Approval Type	Limited Module
Date of tests	July 7, 2022 to Apr 24, 2023
FCC Test Firm DN Canada CABID	US1028 US0106

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 15, Subpart C, Section 15.247**
☒ **ISED Canada RSS-247 Issue 2**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by	Approved by
Ryan Brown Sr. EMC/Wireless Engineer	Yunus Faziloglu Wireless Manager
Ryan M. Brown	Y. E. Faziloglu
Report Issue Date: May-23-2023	Issue Number: 3

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TABLE OF CONTENTS

RELEASE CONTROL RECORD 4
1 SUMMARY OF TEST RESULTS 5
2 MEASUREMENT UNCERTAINTY 6
3 GENERAL INFORMATION 7
3.1 GENERAL DESCRIPTION OF EUT 7
3.2 DESCRIPTION OF TEST MODES 8
3.3 MEASUREMENT PROCEDURES USED 10
3.4 DESCRIPTION OF SUPPORT EQUIPMENT 10
4 TEST RESULTS 11
4.1 AC LINE CONDUCTED EMISSIONS 11
4.1.1 LIMITS 11
4.1.2 TEST results 11
4.2 RADIATED SPURIOUS EMISSIONS 12
4.2.1 LIMITS 12
4.2.2 TEST EQUIPMENT USED 13
4.2.3 TEST PROCEDURES 15
4.2.4 DEVIATIONS 16
4.2.5 TEST SETUP 16
4.2.6 EUT OPERATING CONDITIONS 17
4.2.7 TEST RESULTS 18
4.3 6DB CHANNEL BANDWIDTH & 99% OBW 80
4.3.1 LIMITS 80
4.3.2 TEST SETUP 80
4.3.3 TEST EQUIPMENT USED 80
4.3.4 TEST PROCEDURES 81
4.3.5 DEVIATIONS 81
4.3.6 EUT OPERATING CONDITIONS 81
4.3.7 TEST RESULTS 82
4.4 CONDUCTED OUTPUT POWER 85
4.4.1 LIMITS 85
4.4.2 TEST SETUP 85
4.4.3 TEST EQUIPMENT USED 85
4.4.4 TEST PROCEDURES 85
4.4.5 DEVIATIONS 85
4.4.6 EUT OPERATING CONDITIONS 85

4.4.7 TEST RESULTS *86*
4.5 POWER SPECTRAL DENSITY 88
4.5.1 LIMITS *88*
4.5.2 TEST SETUP *88*
4.5.3 TEST EQUIPMENT USED *88*
4.5.4 TEST PROCEDURES *88*
4.5.5 DEVIATIONS *88*
4.5.6 EUT OPERATING CONDITIONS *88*
4.5.7 TEST RESULTS *89*
4.6 CONDUCTED SPURIOUS EMISSIONS AND BAND-EDGES 91
4.6.1 LIMITS *91*
4.6.2 TEST SETUP *91*
4.6.3 TEST EQUIPMENT USED *91*
4.6.4 TEST PROCEDURES *91*
4.6.5 DEVIATIONS *92*
4.6.6 EUT OPERATING CONDITIONS *92*
4.6.7 TEST RESULTS *93*
5 PHOTOGRAPHS OF THE TEST CONFIGURATION 97
6 APPENDIX A – MODIFICATIONS 98

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
1	Original release	Apr-7-2023
2	Changed cover page EUT related fields for clarity Repeated 99% OBW measurements with higher RBW	Apr-25-2023
3	Updated antenna gain	May-23-2023

1 SUMMARY OF TEST RESULTS

EUT was tested against the following requirements:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247), RSS-247				
STANDARD SECTION		TEST TYPE AND LIMIT	APPLICABLE	RESULT
47CFR15	RSS			
15.207	Gen 8.8	AC Power Line Conducted Emissions	N/A(Note 1)	N/A
15.205 15.209	247 3.3 247 5.5 Gen 8.9 Gen 8.10	Radiated Spurious Emissions	Y	PASS
15.247(d)	247 5.5	Conducted Spurious Emissions	Y	PASS
15.247(a)(2)	247 5.2(a)	6dB Bandwidth	Y	PASS
--	Gen 6.7	99% Occupied Bandwidth	Y	PASS
15.247(b)(3)	247 5.4(d)	Conducted Output Power	Y	PASS
15.247(e)	247 5.2(b)	Power Spectral Density	Y	PASS
15.203	Gen 6.8	Antenna Requirement	Y	PASS

Note 1: EUT is Battery powered only.

2 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. Values for measurement uncertainty are calculated per ETSI TR 100 028 (2001).

Measurement	Expanded Uncertainty k=2	Maximum allowable uncertainty
Radio frequency (@ 2.4GHz)	3.23×10^{-8}	1×10^{-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		

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

NOMINAL VOLTAGE	6VDC Battery
MODULATION TECHNOLOGY	DTS
MODULATION TYPES	GFSK
DATA RATES	2Mbps (GFSK)
OPERATING FREQUENCY	2402 – 2480MHz
EUT Power Setting	5 for all channels
OUTPUT POWER	0.48mW (Peak Conducted)
ANTENNA TYPE/Gain	PCB Antenna with 5.3dBi Gain

List of Host Models and Differences

Model	Description		Tested
CEB100	(CE) CENTRIOS SERIES (10) NO KEYPAD	(B) BORED LOCK (0) KEY OVERRIDE	Yes
CEE100	(CE) CENTRIOS SERIES (10) NO KEYPAD	(E) EXIT TRIM (0) KEY OVERRIDE	Yes
CEM100	(CE) CENTRIOS SERIES (10) NO KEYPAD	(M) MORTISE LOCK (0) KEY OVERRIDE	Yes

Lowest clock frequency in the device (used/generated): 29KHz

Highest clock frequency in the device (used/generated): 2480MHz

NOTES:

1. For a more detailed description of the EUT, please refer to the manufacturer's specifications or the user's manual.
2. For photos of the EUT, please refer to External and Internal Photos exhibits.

3.2 DESCRIPTION OF TEST MODES

40 channels are provided for BLE (GFSK):

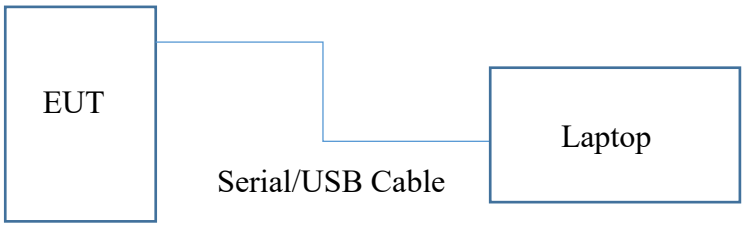
CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Two samples were provided for testing, one for radiated measurements and another with an SMA connector for conducted antenna port measurements. Both samples were powered with 6V battery and had a temporary port for a serial to USB cable for connection to a support laptop for putting the radio in necessary test modes.

EUT configuration modes:

TEST MODE	DESCRIPTION
A	Continuous Transmit at 2Mbps (Duty-cycle: 100%)

EUT SETUP BLOCK DIAGRAMS



Following channels/modes were selected for the applicable tests below.

TEST	TEST MODE	AVAILABLE CHANNELS	TESTED CHANNEL	MODULATION TYPE	DATA RATE (Mbps)	Notes
COP	A	0 to 39	0,20,39	GFSK	2	---
PSD	A	0 to 39	0,20,39	GFSK	2	---
CBE	A	0 to 39	0,39	GFSK	2	---
6DB	A	0 to 39	0,20,39	GFSK	2	---
OBW	A	0 to 39	0,20,39	GFSK	2	---
CSE	A	0 to 39	0,20,39	GFSK	2	---
RSE<1G	A	0 to 39	0,20,39	GFSK	2	1, 2
RSE≥1G	A	0 to 39	0,20,39	GFSK	2	1, 3
RBE	A	0 to 39	0,39	GFSK	2	1
PLCE	---	---	---	---	---	4

Note 1: Host models were positioned in their single installation orientation as seen in the Test Setup Photos exhibit.
Note 2: For 9kHz-30MHz range, host model CEE100 was tested on low channel and no emissions within 10dB of the limit were detected. Due to high passing margin, 3 channel testing was not performed on CEE100 and host models CEB100 and CEM100 were not tested in this frequency range.
Note 3: For 18-25GHz range, only host model CEM100 was tested. No emissions were detected and noise floor was more than 20dB below the limit. Due to high passing margin, host models CEB100 and CEE100 were not tested in this frequency range.
Note 4: Not applicable since EUT is battery powered only.
COP: Conducted Output Power
PSD: Power Spectral Density
CBE: Conducted Band-edge
6DB: 6dB Bandwidth
OBW: 99% Occupied Bandwidth
CSE: Conducted Spurious Emissions
RSE<1G: Radiated Spurious Emissions Below 1GHz
RSE≥1G: Radiated Spurious Emissions Above 1GHz
RBE: Radiated Band-edge
PLCE: Power Line Conducted Emissions

TEST CONDITIONS:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY	DATE OF TEST
RE<1G	21.8°C, 63.1% RH, 1011 mbar 21.6°C, 41.8% RH, 1024 mbar 22.6°C, 35.7% RH, 1005 mbar	6VDC	MM/RMB	11/07/2022 11/08/2022 3/06/2023
RE≥1G	21.5°C, 36% RH, 1000 mbar 21.5°C, 37.8% RH, 1015 mbar 21.5°C, 36.2% RH, 999 mbar 22.7°C, 35.6% RH, 1005 mbar 22.6°C, 33.3% RH, 1019 mbar 22.2°C, 38.4% RH, 1010 mbar 22.0°C, 41% RH, 1011 mbar 22.6°C, 33% RH, 1019 mbar 20.0°C, 47% RH, 993 mbar 21°C, 43% RH, 1005 mbar	6VDC	MM/RMB	11/17/2022 11/14/2022 11/16/2022 2/06/2022 2/07/2022 2/08/2023 2/09/2023 2/10/2023 2/13/2023 3/29/2023
PLCE	N/A	N/A	N/A	N/A
Antenna Port Measurements	23.2°C, 50.9% RH, 1010 mbar 22.5°C, 41.5% RH, 1010 mbar 22.7°C, 45.3% RH, 1012 mbar	6VDC	RMB	7/07/2022 3/09/2023 4/24/2023

3.3 MEASUREMENT PROCEDURES USED

All tests were performed in accordance with the following measurement procedures:

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10-2013

RSS-Gen Issue 5

3.4 DESCRIPTION OF SUPPORT EQUIPMENT

Support Equipment	Model #	Serial #
Dell Precision Laptop	M4800	N/A

4 TEST RESULTS

4.1 AC LINE CONDUCTED EMISSIONS

4.1.1 LIMITS

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBµV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE: 1. Lower limit applies at the transition frequencies.
2. Limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.1.2 TEST RESULTS

N/A, EUT is battery powered only.

4.2 RADIATED SPURIOUS EMISSIONS

4.2.1 LIMITS

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emissions limits specified in Section 15.209(a).

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. dBμV/m = 20*log(μV/m).
3. As specified in 15.35(b), for frequencies above 1000MHz, field strength limits are based on the use of measurement instrumentation employing an average detector function. However, there is also a limit on the peak level of the emissions that is 20 dB above the maximum permitted average emission limit.
4. Limit conversion below 30MHz is done by using the square of an inverse linear distance extrapolation factor (40 dB/decade) as allowed in FCC 15.31(f)(2).

   Limit(3m) = Limit(30m) + 40*log(30/3) = Limit(30m) + 40

   Limit (3m) = Limit (300m) + 40*log(300/3) = Limit (300m) + 80
5. RSS-GEN Table 6 H-field limits are 51.5dB lower than FCC 15.209(a) E-field limits. Measurements are performed in terms of magnetic field and converted to electric field using the free space impedance of 377Ω (E-field = H-field +51.5). Therefore resulting pass/fail margin would be the same if an E-field reading is compared to an E-field limit or an H-field reading is compared to an H-field limit.

4.2.2 TEST EQUIPMENT USED

For Radiated Emissions on test dates: 11/07/2022-11/17/2022

Rev. 11/28/2022

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
2093 MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	3/7/2023	3/7/2022
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/27/2023	1/27/2022
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	12/5/2022	12/5/2020
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz	1686	I	12/8/2022	12/8/2020
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
8449B HF Preamp	1-18GHz	8449B	Agilent	1149055		II	11/1/2023	11/1/2022
8447F Rental PA	9KHz-1.3GHz	84477F	HP	3113A05395		II	10/17/2023	10/17/2022
HF (Yellow)	18-26.5GHz	AFS4-18002650-60-8P-4	CS	467559	1266	II	10/25/2023	10/25/2022
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-Brown Bilog	30-2000MHz	JB1	Sunol	A0032406	1218	I	4/28/2023	4/28/2021
HF (White) Horn	18-26.5GHz	801-WLM	Waveline	758	758	III	Verify before Use	date of test
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	4/26/2023	4/26/2021
Small Loop	10kHz-30MHz	PLA-130/A	ARA	1024	755	I	9/12/2024	9/12/2022
Large Loop	20Hz-5MHz	6511	EMCO	9704-1154	67	I	8/22/2024	8/22/2022
Meteorological Meters/Chambers		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	11/23/2022	11/23/2020
Asset #2657		1235C97	Control Company	200435369	2657	I	8/18/2025	8/18/2022
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2468	9KHz-18GHz		MegaPhase			II	11/1/2023	11/1/2022
Asset #2610	9KHz-18GHz		Pasternack			II	3/16/2023	3/16/2022
Asset #2682	9KHz-18GHz		Pasternack			II	10/6/2023	10/6/2022
Asset #2324	1-26.5GHz	TM26-S1S1-120	MEGAPHASE	17139101 001		II	9/14/2023	9/14/2022

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

For Radiated Emissions on test dates: 2/06/2023-3/6/2023

Rev. 2/3/2023

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental MXE EMI Receiver(1168255)	20Hz-8.4GHz	N9038A	Agilent	MY53290009	1168255	I	8/12/2023	8/12/2022
2093 MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	3/7/2023	3/7/2022
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 1	719150	2762A-6	A-0015	1-18GHz	1685	I	12/29/2024	12/29/2022
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
8449B HF Preamp	1-18GHz	8449B	Agilent	1149055		II	11/1/2023	11/1/2022
8447F Rental PA	9KHz-1.3GHz	84477F	HP	3113A05395		II	10/17/2023	10/17/2022
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-Brown Bilog	30-2000MHz	JB1	Sunol	A0032406	1218	I	4/28/2023	4/28/2021
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	4/26/2023	4/26/2021
Meteorological Meters/Chambers		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Asset 2707		SD700	EXTECH	A.115171	2707	I	1/13/2025	1/13/2023
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2456	9KHz-18GHz		MegaPhase			II	11/1/2023	11/1/2022
Asset #2468	9KHz-18GHz		MegaPhase			II	11/1/2023	11/1/2022
Asset #2682	9KHz-18GHz		Pasternack			II	10/6/2023	10/6/2022
Asset #2474	9KHz-18GHz		MegaPhase			II	11/1/2023	11/1/2022
Asset #2610	9KHz-18GHz		Pasternack			II	3/16/2023	3/16/2022
Asset #2681	9KHz-18GHz		Pasternack			II	12/13/2023	12/13/2022

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

For Radiated Band-edges on test dates: 2/10/2023-2/13/2023

Rev. 2/3/2023

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
2093 MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	3/7/2023	3/7/2022
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 1	719150	2762A-6	A-0015	1-18GHz	1685	I	12/29/2024	12/29/2022
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
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**
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	4/26/2023	4/26/2021
Meteorological Meters/Chambers		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Asset 2707		SD700	EXTECH	A.115171	2707	I	1/13/2025	1/13/2023
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2610	9KHz-18GHz		Pasternack			II	3/16/2023	3/16/2022
Asset #2474	9KHz-18GHz		MegaPhase			II	11/1/2023	11/1/2022
Asset #2610	9KHz-18GHz		Pasternack			II	3/16/2023	3/16/2022
Asset #2681	9KHz-18GHz		Pasternack			II	12/13/2023	12/13/2022

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

For Radiated Emissions 18-25GHz on test dates: 03/29/2023

Rev. 3/21/2023

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/23/2024	1/23/2023
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 1	719150	2762A-6	A-0015	1-18GHz	1685	I	12/29/2024	12/29/2022
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
HF (Yellow)	18-26.5GHz	AFS4-18002650-60-8P-4	CS	467559	1266	II	10/25/2023	10/25/2022
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
HF (White) Horn	18-26.5GHz	801-WLM	Waveline	758	758	III	Verify before Use	date of test
Meteorological Meters/Chambers		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Asset 2707		SD700	EXTECH	A.115171	2707	I	1/13/2025	1/13/2023
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2323	1-26.5GHz	TM26-S1S1-120	MEGAPHASE	17139101 002		II	9/14/2023	9/14/2022

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

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber.

b. For below 30MHz, a loop antenna with its lowest point 1m above the ground was placed 3m away from the EUT and it was rotated 0 and 90 degrees around its vertical axis.

c. In 30MHz-1GHz range, a biconilog antenna was mounted on a variable-height antenna tower and placed 3m away from the EUT. Antenna height was varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were investigated. The table was rotated 360 degrees to determine the position of the highest radiation.

d. In 1GHz-6GHz range, a horn antenna was mounted on a variable-height antenna tower and placed 3m away from the EUT. Antenna height was varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were investigated. The table was rotated 360 degrees to determine the position of the highest radiation. Using the same antenna, the measurement distance was reduced to 1m in 6-18GHz range.

e. In 18-25GHz a smaller horn antenna was used to make measurements at 0.1m away from the EUT.

f. For battery operated equipment, tests were performed using fresh batteries.

g. Following bandwidths were used during emissions testing:

Freq. (MHz)	RBW	VBW	Pre-scan	Final
0.009-0.15	200Hz	1kHz	Peak	Quasi Peak
0.15-30	9kHz	30kHz	Peak	Quasi Peak
30-1000	120kHz	300kHz	Peak	Quasi Peak
>1000	1MHz	3MHz	Peak	Peak Max Hold and RMS Power Avg Trace Avg

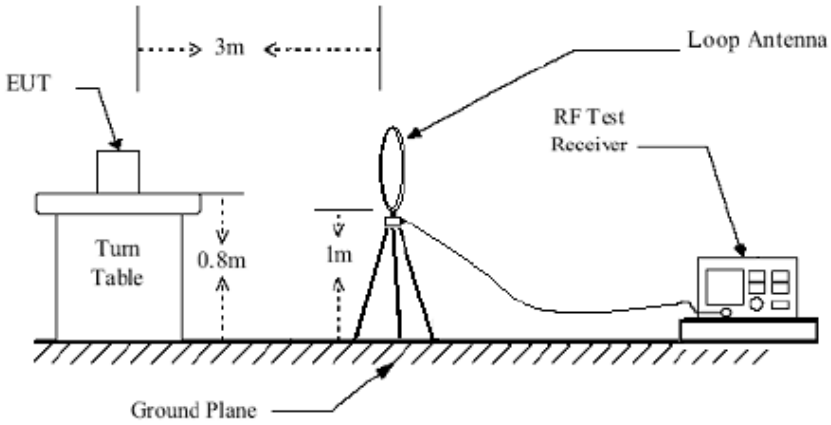
If peak measurements were below the applicable limit, QPk and RMS measurements were not performed.

4.2.4 DEVIATIONS

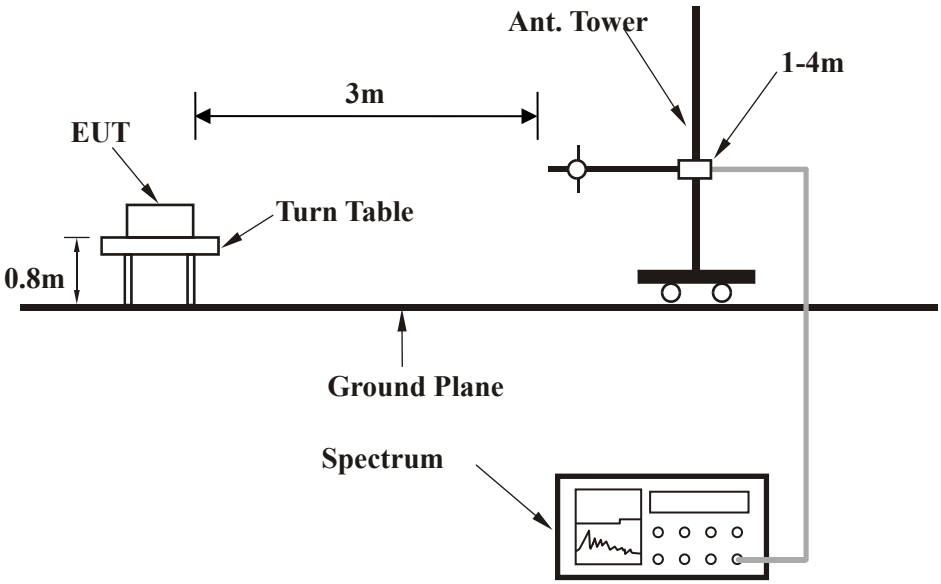
No deviations from the standard.

4.2.5 TEST SETUP

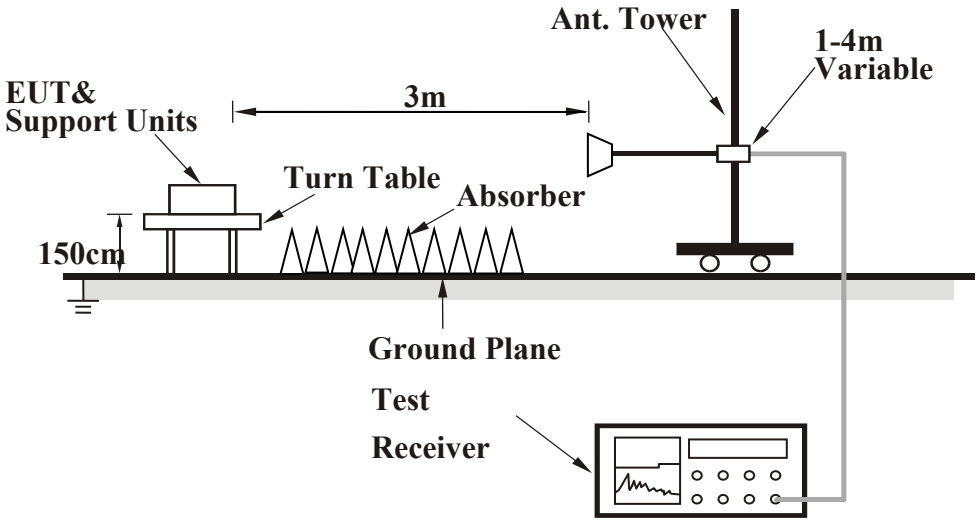
Below 30MHz Test Setup



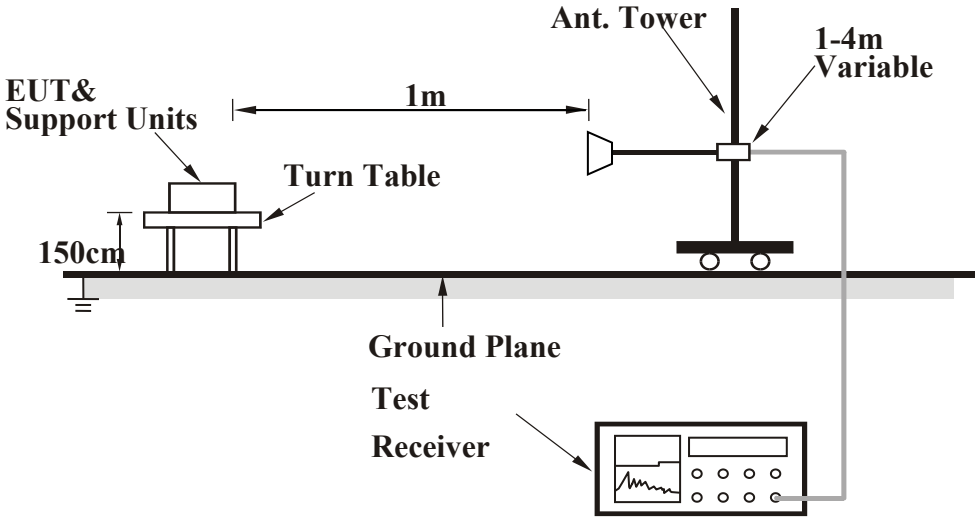
30MHz - 1GHz Test Setup



1GHz – 6GHz Test Setup



6GHz – 18GHz Test Setup



Note: For the actual test configuration, please refer to the Test Setup Photos exhibit.

4.2.6 EUT OPERATING CONDITIONS

EUT was operated according to the manufacturer's specifications.

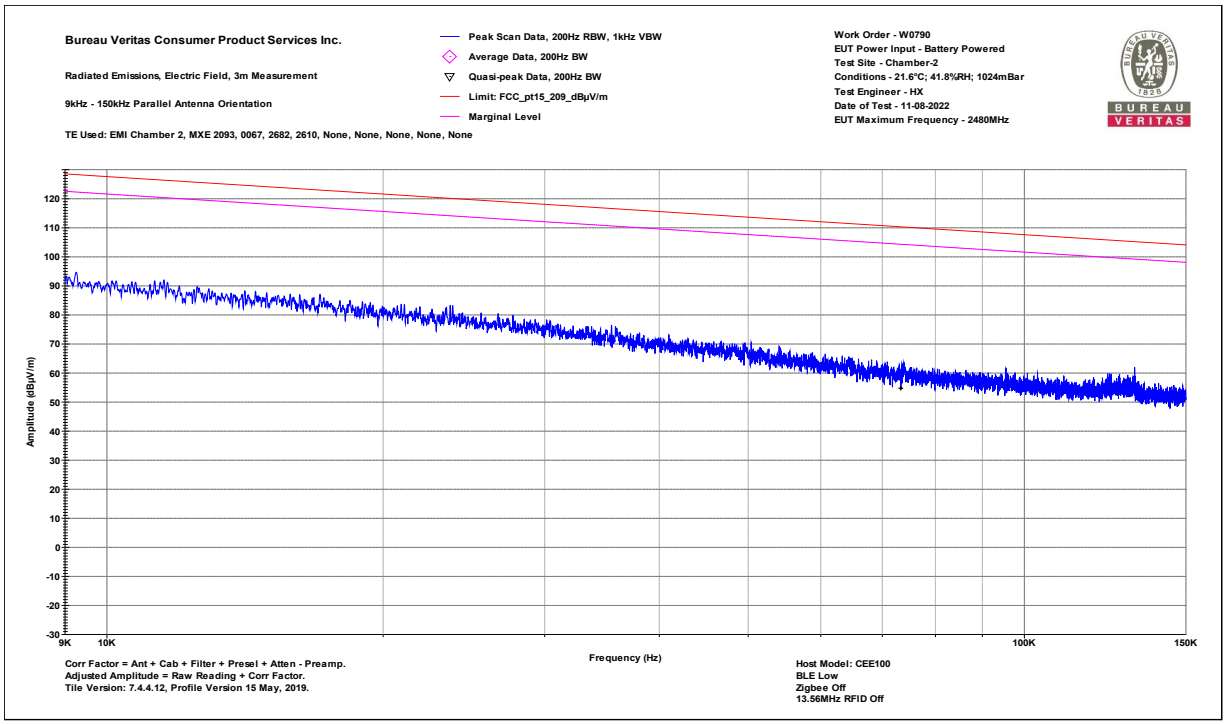
4.2.7 TEST RESULTS

Emissions below 1GHz

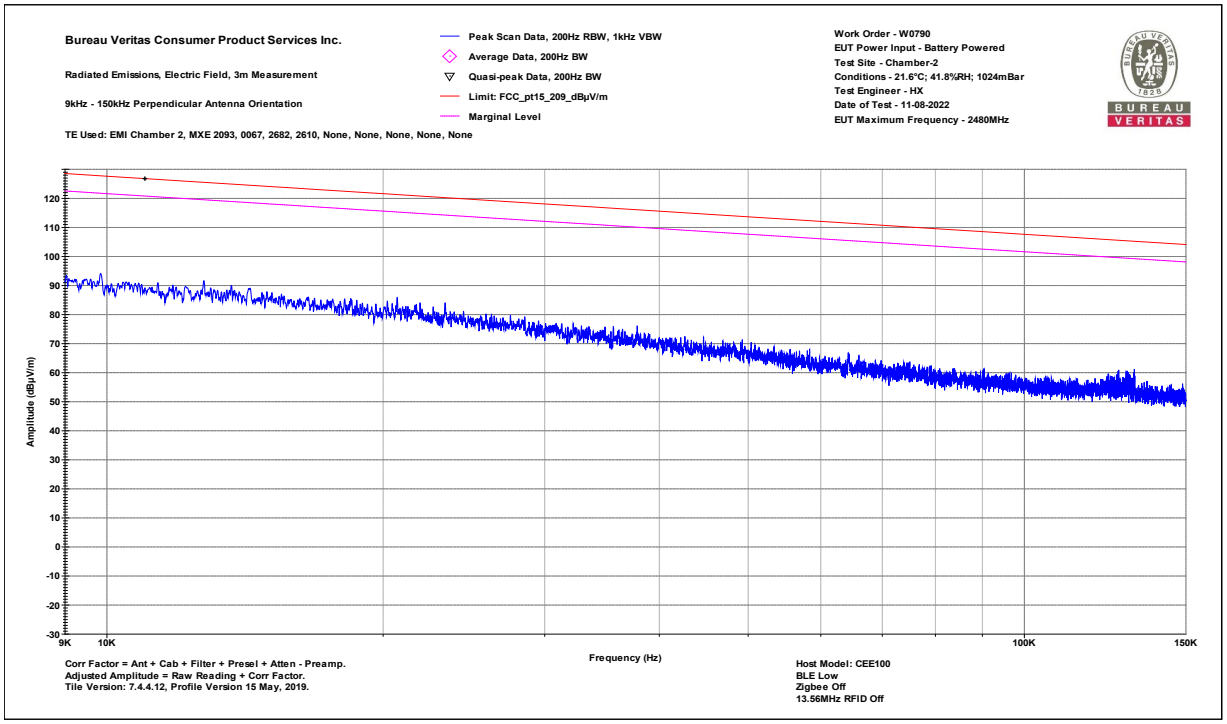
Channel 0

Host Model: CEE100

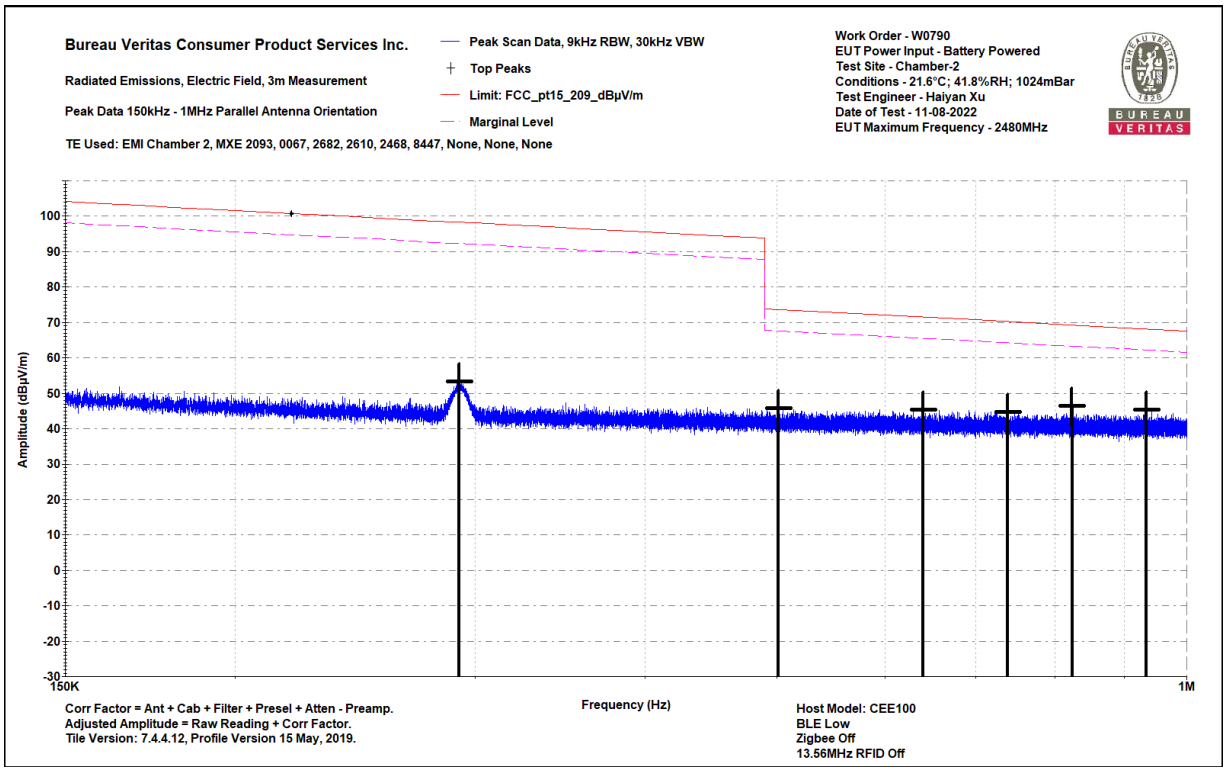
No emissions within 10dB of the limit were identified in 9kHz-30MHz range. Only plots shown below.



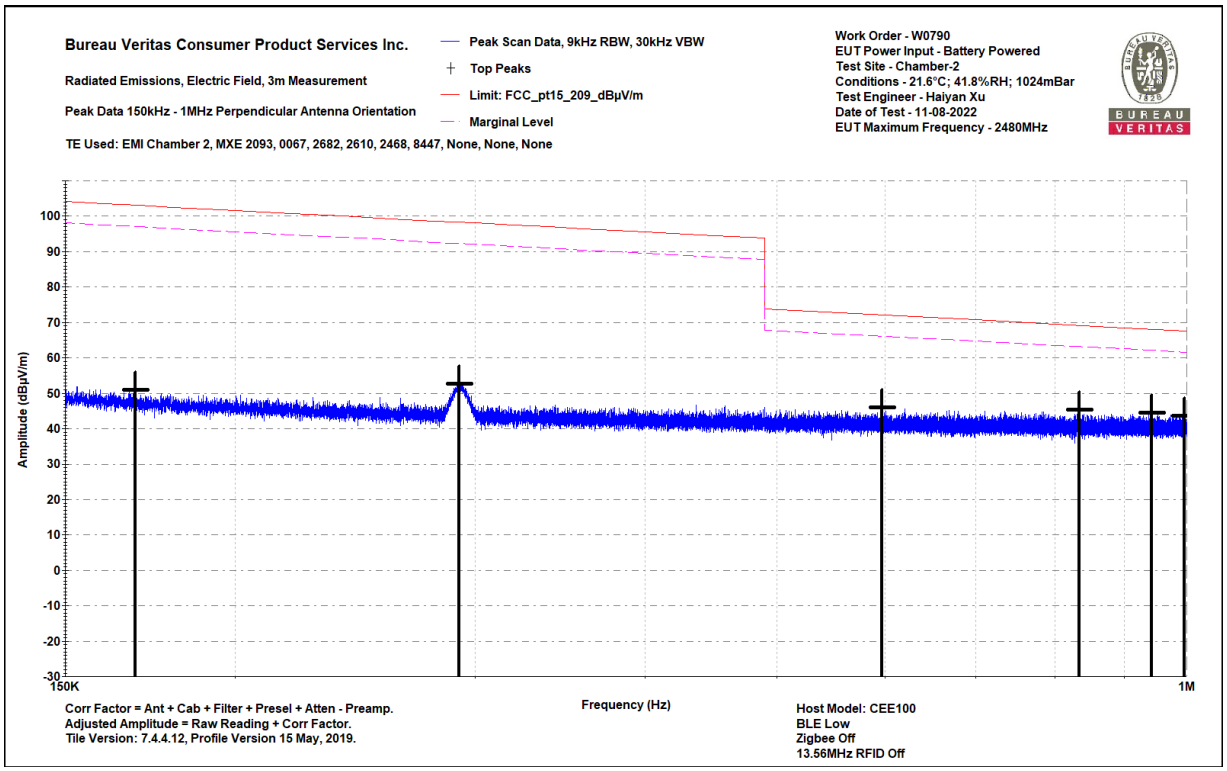
0.009-0.15MHz Parallel



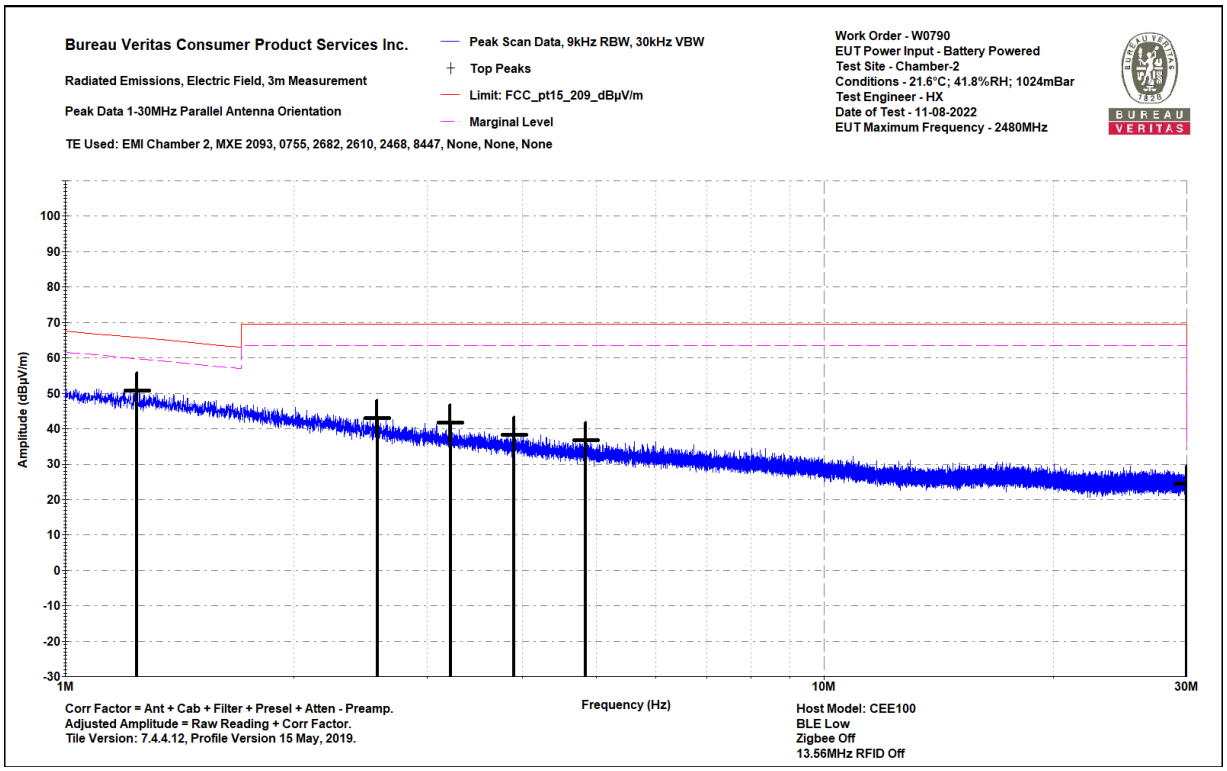
0.009-0.15MHz Perpendicular



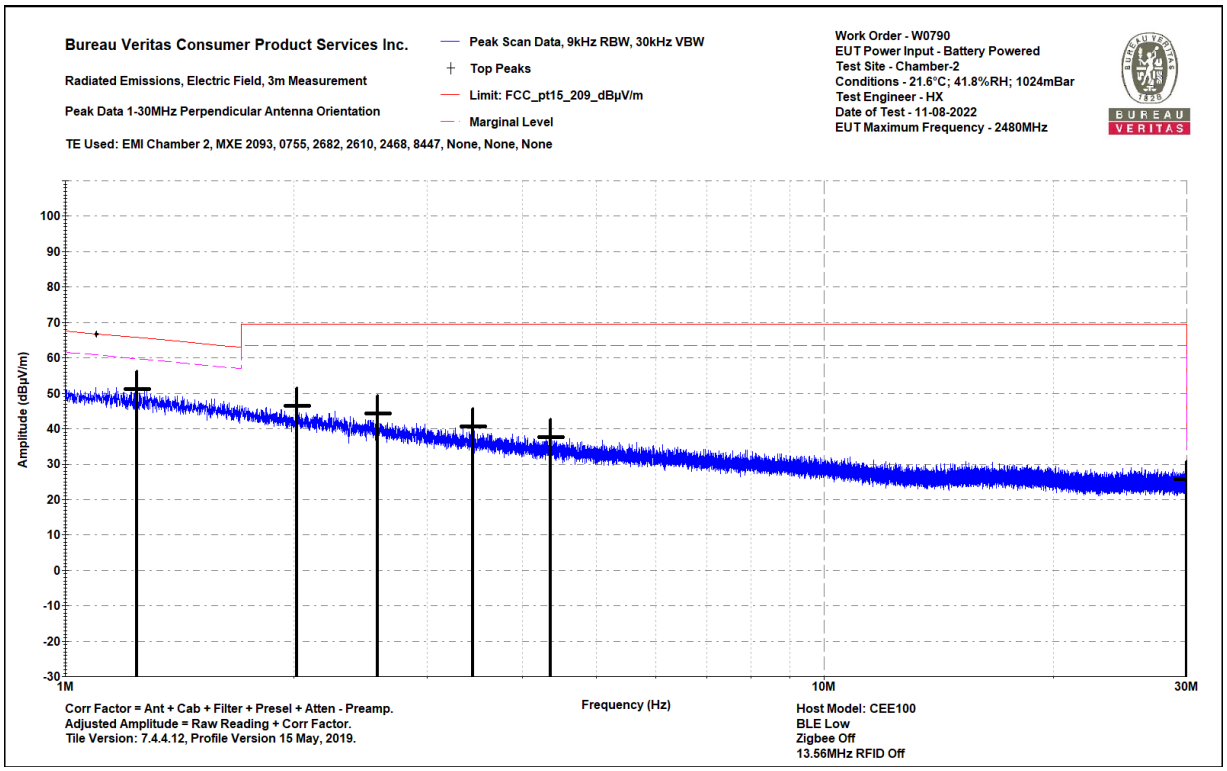
0.15-1MHz Parallel



0.15-1MHz Perpendicular



1-30MHz Parallel



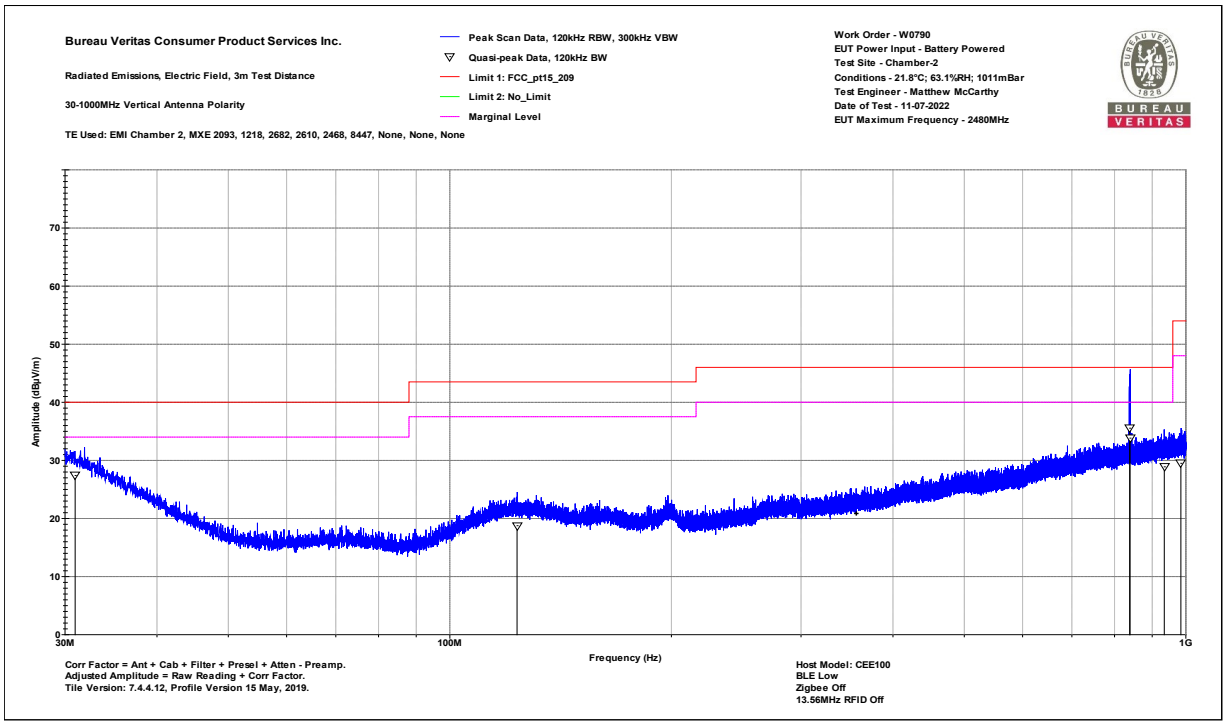
1-30MHz Perpendicular

Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 3m Distance
30-1000MHz Vertical Data
Notes:
Host Model: CEE100
BLE Low
Zigbee Off

Work Order - W0790
EUT Power Input - Battery Powered
Test Site - Chamber-2
Conditions - 21.8°C; 63.1%RH; 1011mBar
Test Engineer - Matthew McCarthy
Date of Test - 11-07-2022

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
30.973	26.2	1.2	27.4	40	-12.6	PASS		232	39
123.407	23.9	-5.1	18.8	43.5	-24.7	PASS		103	115
838.788	31	4.6	35.5	46	-10.5	PASS	-10.5	245	101
839.471	29.2	4.6	33.8	46	-12.2	PASS		138	110
934.582	23	5.9	28.9	46	-17.1	PASS		175	119
984.559	22.8	6.7	29.5	54	-24.5	PASS		175	182

30-1000MHz Vertical Data Table

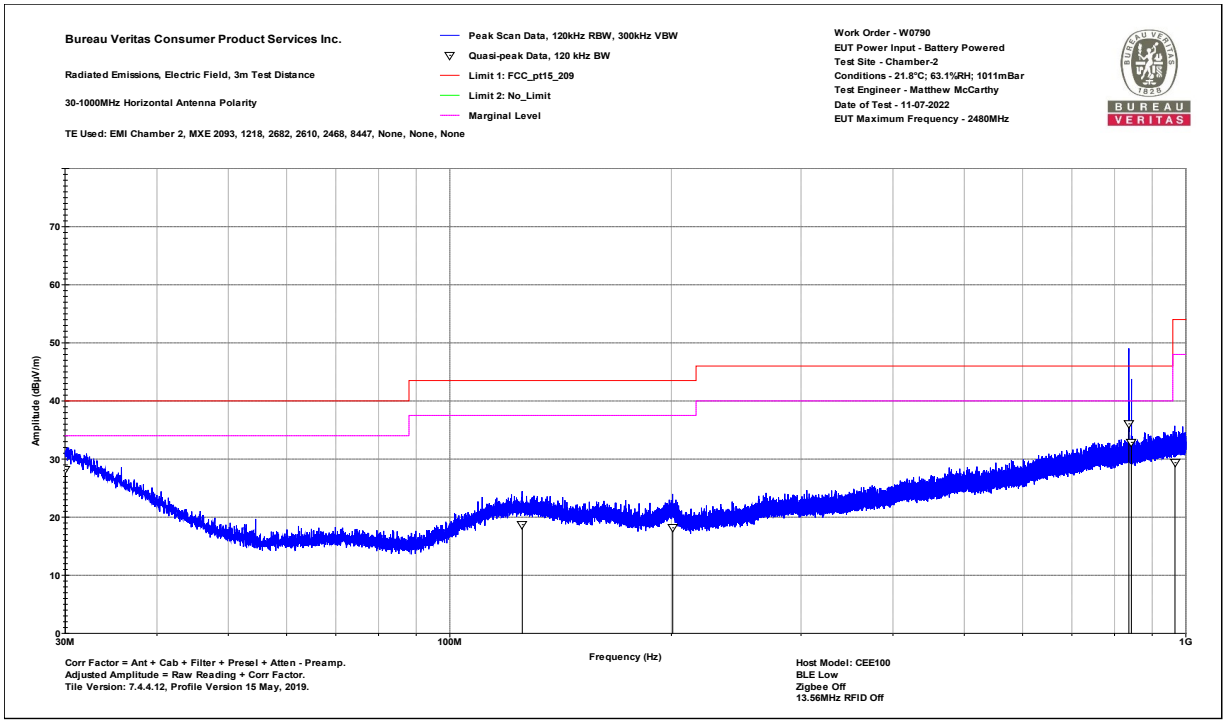


30-1000MHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery Powered
30-1000MHz Horizontal Data	Test Site - Chamber-2
Notes:	Conditions - 21.8°C; 63.1%RH; 1011mBar
Host Model: CEE100	Test Engineer - Matthew McCarthy
BLE Low	Date of Test - 11-07-2022
Zigbee Off	

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dbµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
30.033	26.2	2	28.2	40	-11.8	PASS		216	164
125.43	23.7	-5	18.7	43.5	-24.8	PASS		175	232
200.835	23.9	-5.7	18.2	43.5	-25.3	PASS		125	266
836.666	31.5	4.6	36.1	46	-9.9	PASS	-9.9	229	242
843.375	28.3	4.6	32.9	46	-13.1	PASS		256	296
966.408	22.9	6.5	29.4	54	-24.6	PASS		117	94

30-1000MHz Horizontal Data Table



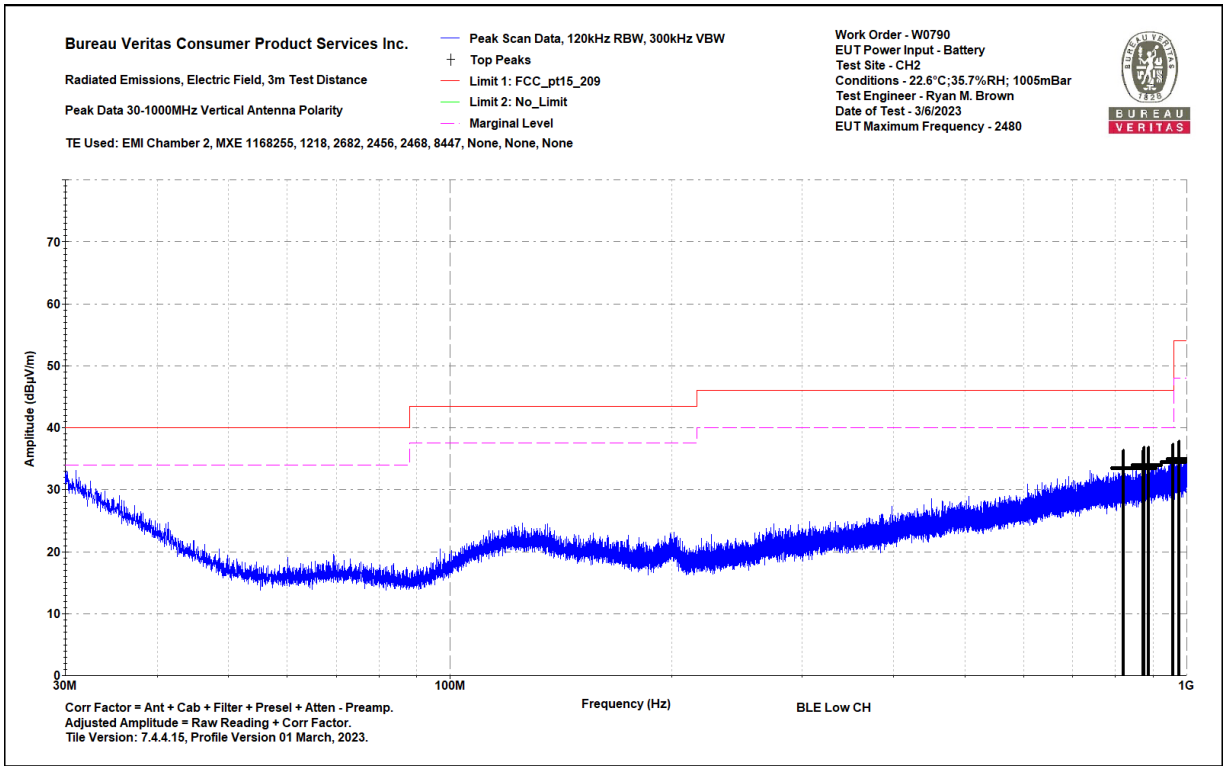
30-1000MHz Horizontal Plot

Host Model CEB100

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery
Top Peaks Vertical 30-1000MHz	Test Site - CH2
Notes:	Conditions - 22.6°C;35.7%RH; 1005mBar
BLE Low CH	Test Engineer - Ryan M. Brown
0	Date of Test - 3/6/2023

Frequency (MHz)	Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	Turntable Azimuth (degrees)
820.308	29.5	4.1	33.5	46	-12.5	PASS		200	45
873.076	28.9	4.6	33.5	46	-12.5	PASS		200	225
875.597	29.3	4.7	34	46	-12	PASS		100	315
887.601	29	4.9	33.9	46	-12.1	PASS		250	180
957.223	28.4	6.1	34.5	46	-11.5	PASS	-11.5	200	180
976.405	28.6	6.4	34.9	54	-19.1	PASS		150	0

30-1000MHz Vertical Data Table



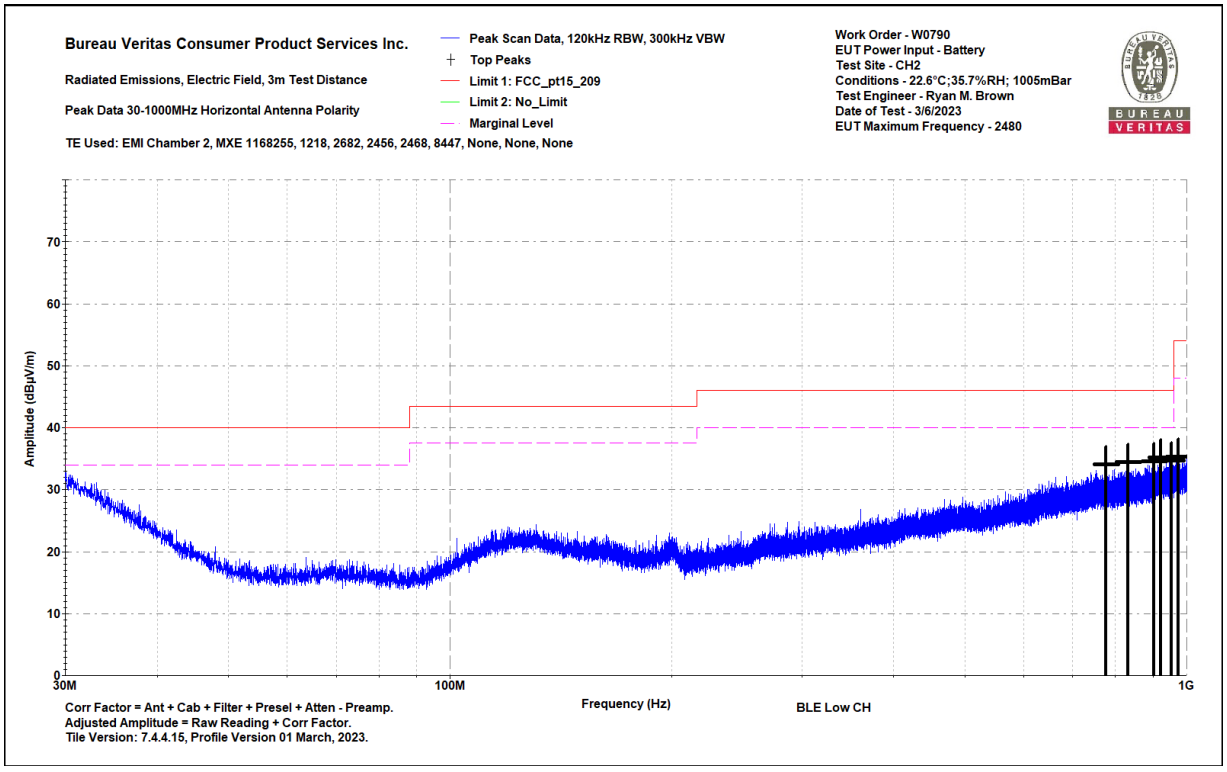
30-1000MHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 3m Distance
Top Peaks Horizontal 30-1000MHz
Notes:
BLE Low CH
0

Work Order - W0790
EUT Power Input - Battery
Test Site - CH2
Conditions - 22.6°C;35.7%RH; 1005mBar
Test Engineer - Ryan M. Brown
Date of Test - 3/6/2023

Frequency (MHz)	Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
777.797	30.5	3.5	34	46	-12	PASS		250	135
833.111	30.1	4.3	34.4	46	-11.6	PASS		250	135
903.097	29.4	5.1	34.6	46	-11.4	PASS		250	135
921.26	29.6	5.6	35.2	46	-10.8	PASS	-10.8	250	45
954.168	28.5	6.1	34.6	46	-11.4	PASS		150	135
974.562	29	6.4	35.4	54	-18.6	PASS		250	270

30-1000MHz Horizontal Data Table



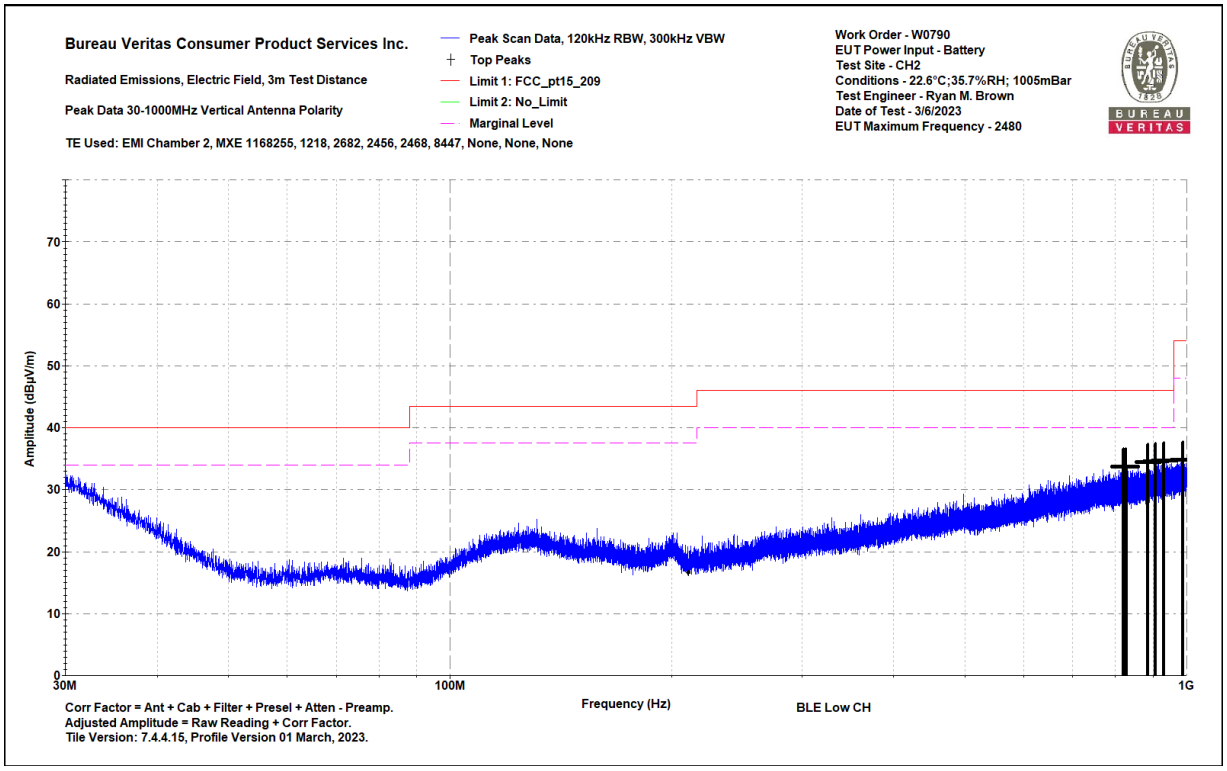
30-1000MHz Horizontal Plot

Host Model CEM100

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery
Top Peaks Vertical 30-1000MHz	Test Site - CH2
Notes:	Conditions - 22.6°C;35.7%RH; 1005mBar
BLE Low CH	Test Engineer - Ryan M. Brown
0	Date of Test - 3/6/2023

Frequency (MHz)	Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	Turntable Azimuth (degrees)
820.332	29.6	4.1	33.7	46	-12.3	PASS		250	135
827.655	29.5	4.2	33.7	46	-12.3	PASS		150	315
886.68	29.5	4.9	34.4	46	-11.6	PASS		150	45
907.122	29.3	5.3	34.6	46	-11.4	PASS		200	90
930.572	29	5.7	34.7	46	-11.3	PASS	-11.3	200	45
988.239	28.3	6.5	34.8	54	-19.2	PASS		100	180

30-1000MHz Vertical Data Table



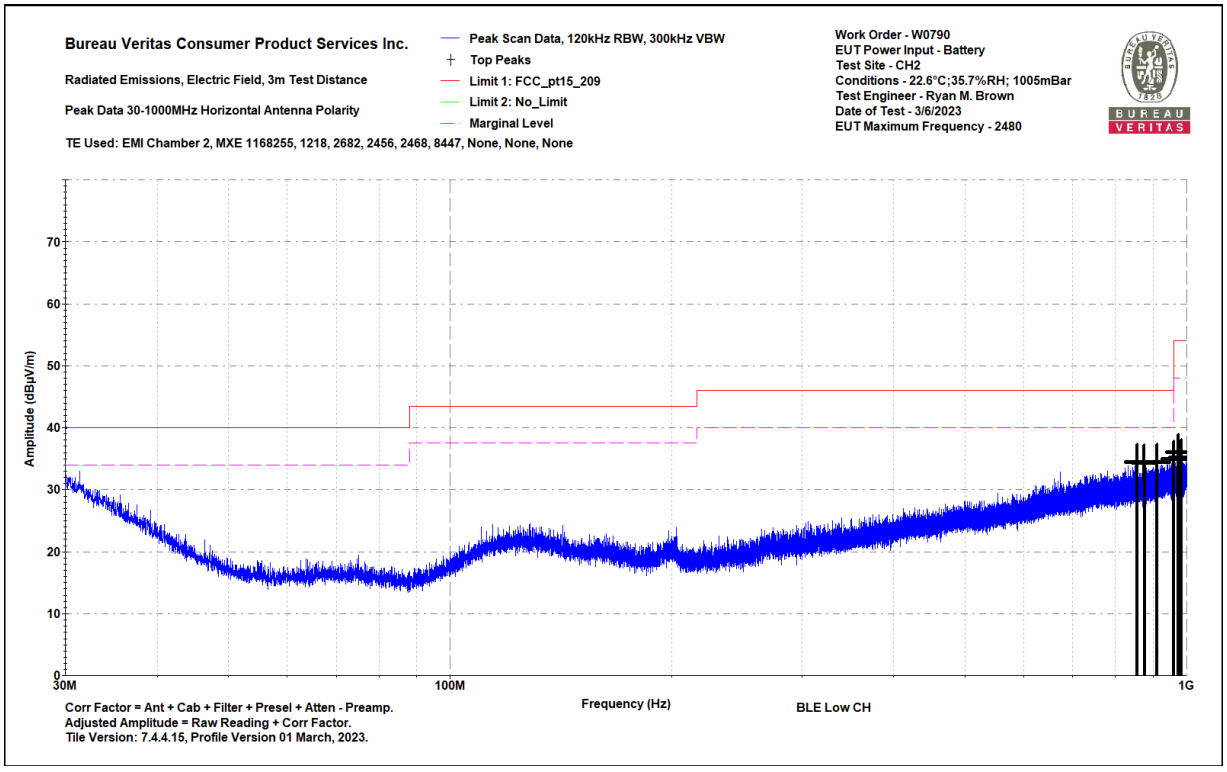
30-1000MHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 3m Distance
Top Peaks Horizontal 30-1000MHz
Notes:
BLE Low CH
0

Work Order - W0790
EUT Power Input - Battery
Test Site - CH2
Conditions - 22.6°C;35.7%RH; 1005mBar
Test Engineer - Ryan M. Brown
Date of Test - 3/6/2023

Frequency (MHz)	Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
856.367	30	4.4	34.5	46	-11.5	PASS	-11.5	250	180
876.349	29.6	4.7	34.3	46	-11.7	PASS		150	90
912.167	29.1	5.3	34.4	46	-11.6	PASS		250	90
961.394	28.9	6.1	35	54	-19	PASS		100	0
974.149	29.6	6.4	36	54	-18	PASS		250	45
983.437	28.7	6.4	35.1	54	-18.9	PASS		200	270

30-1000MHz Horizontal Data Table



30-1000MHz Horizontal Plot

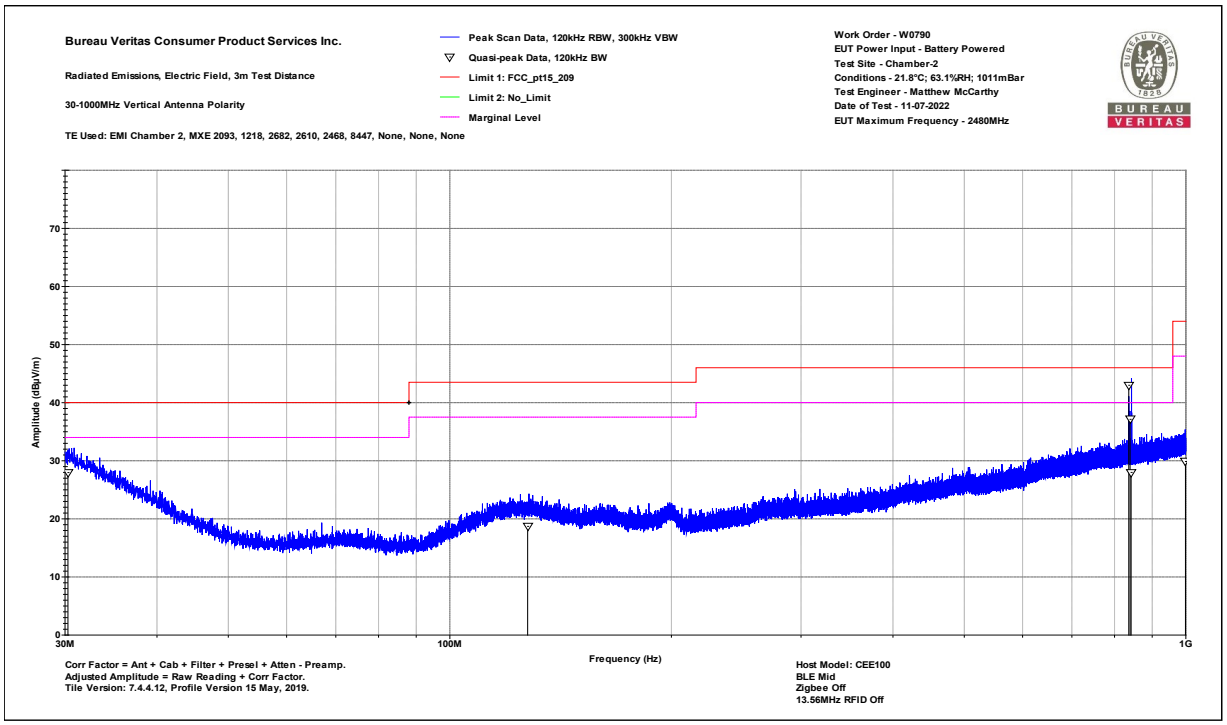
Channel 20

Host Model CEE100

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery Powered
30-1000MHz Vertical Data	Test Site - Chamber-2
Notes:	Conditions - 21.8°C; 63.1%RH; 1011mBar
Host Model: CEE100	Test Engineer - Matthew McCarthy
BLE Mid	Date of Test - 11-07-2022
Zigbee Off	

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
30.282	26.2	1.8	28	40	-12	PASS		185	3
127.554	23.7	-5	18.7	43.5	-24.8	PASS		131	77
836.455	38.4	4.6	43	46	-3	PASS	-3	259	110
839.828	32.5	4.6	37.1	46	-8.9	PASS		106	245
842.63	23.4	4.6	28	46	-18	PASS		171	25
998.717	22.8	7.1	29.9	54	-24.1	PASS		175	245

30-1000MHz Vertical Data Table

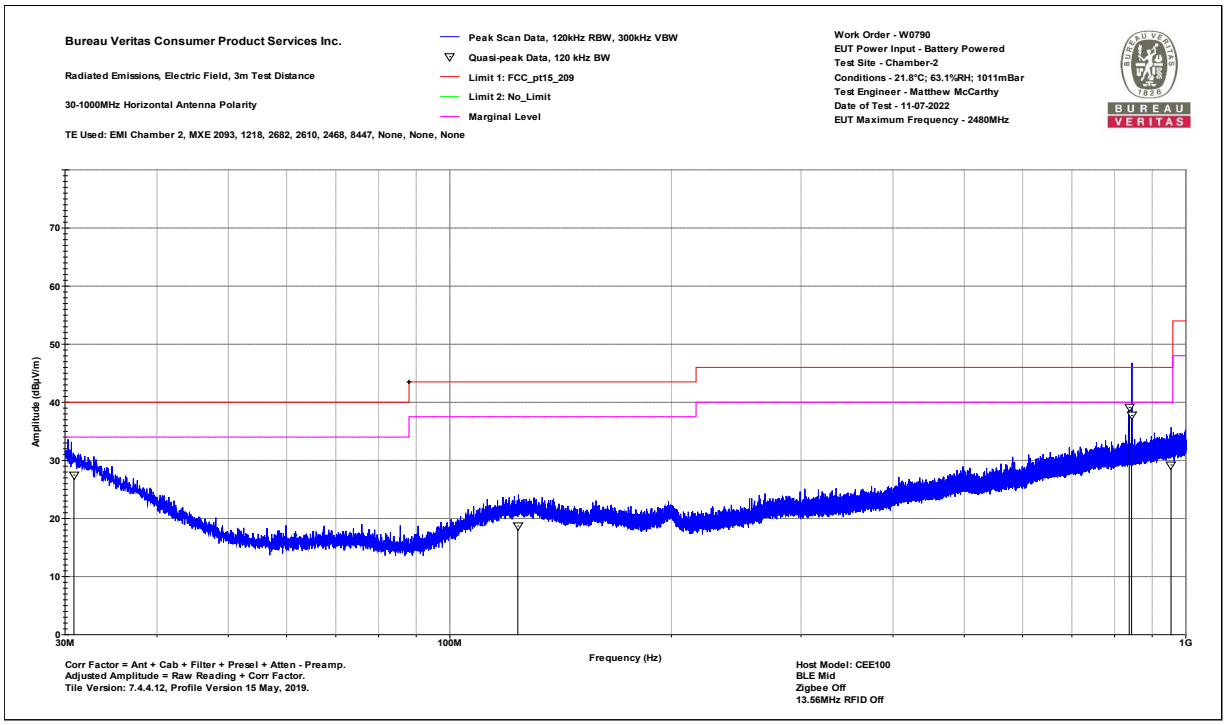


30-1000MHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery Powered
30-1000MHz Horizontal Data	Test Site - Chamber-2
Notes:	Conditions - 21.8°C; 63.1%RH; 1011mBar
Host Model: CEE100	Test Engineer - Matthew McCarthy
BLE Mid	Date of Test - 11-07-2022
Zigbee Off	

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dbµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
30.853	26.2	1.3	27.5	40	-12.5	PASS		275	127
123.689	23.8	-5.1	18.7	43.5	-24.8	PASS		151	241
837.711	34.5	4.6	39.1	46	-6.9	PASS	-6.9	125	189
843.821	33.1	4.6	37.7	46	-8.3	PASS		136	116
954.693	22.9	6.3	29.2	46	-16.8	PASS		158	245

30-1000MHz Horizontal Data Table



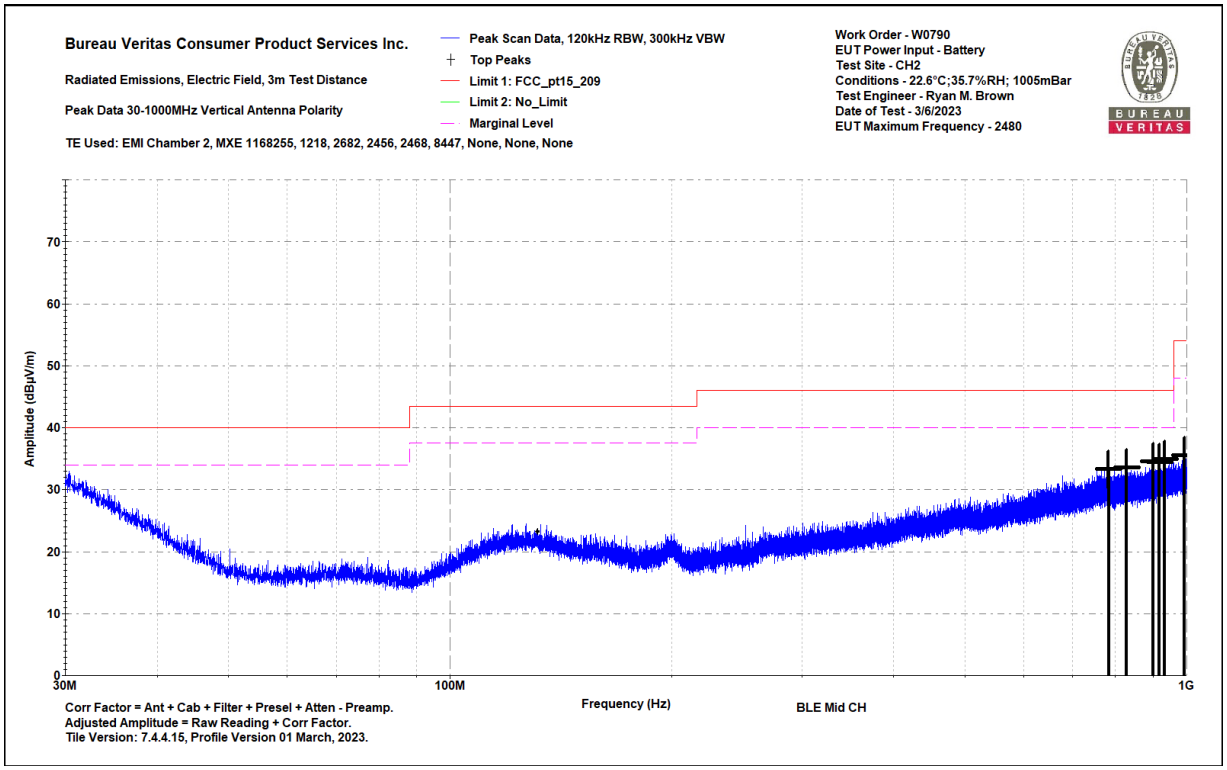
30-1000MHz Horizontal Plot

Host Model CEB100

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery
Top Peaks Vertical 30-1000MHz	Test Site - CH2
Notes:	Conditions - 22.6°C;35.7%RH; 1005mBar
BLE Mid CH	Test Engineer - Ryan M. Brown
0	Date of Test - 3/6/2023

Frequency (MHz)	Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	Turntable Azimuth (degrees)
783.52	29.9	3.4	33.3	46	-12.7	PASS		250	135
828.14	29.4	4.2	33.6	46	-12.4	PASS		200	0
899.775	29.5	5.1	34.6	46	-11.4	PASS		200	45
918.884	28.9	5.6	34.5	46	-11.5	PASS		150	0
934.428	29.2	5.7	34.9	46	-11.1	PASS	-11.1	250	0
992.385	29	6.6	35.5	54	-18.5	PASS		250	225

30-1000MHz Vertical Data Table



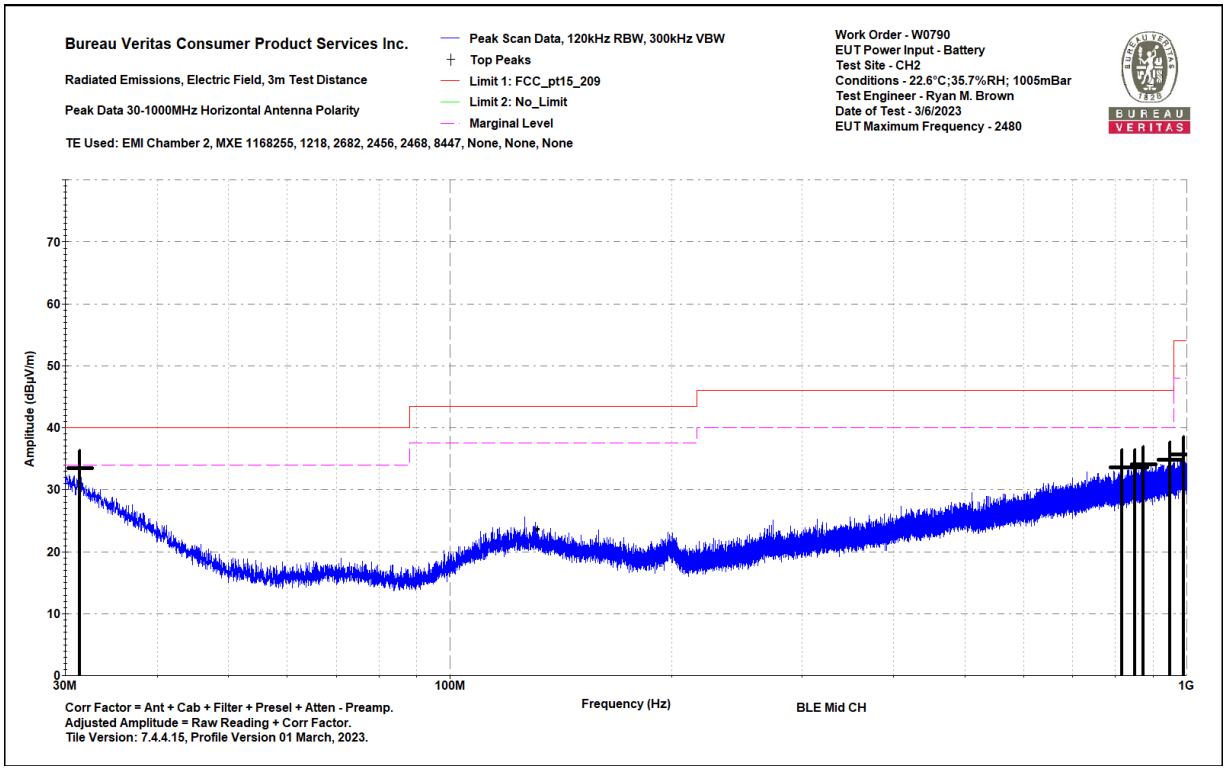
30-1000MHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 3m Distance
Top Peaks Horizontal 30-1000MHz
Notes:
BLE Mid CH
0

Work Order - W0790
EUT Power Input - Battery
Test Site - CH2
Conditions - 22.6°C;35.7%RH; 1005mBar
Test Engineer - Ryan M. Brown
Date of Test - 3/6/2023

Frequency (MHz)	Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
31.382	32.6	0.8	33.4	40	-6.6	PASS	-6.6	100	180
817.47	29.7	3.9	33.6	46	-12.4	PASS		100	270
849.65	29.2	4.4	33.5	46	-12.5	PASS		200	0
872.421	29.5	4.6	34.1	46	-11.9	PASS		100	315
949.124	28.8	6	34.8	46	-11.2	PASS		250	315
990.664	29.2	6.5	35.7	54	-18.3	PASS		150	180

30-1000MHz Horizontal Data Table



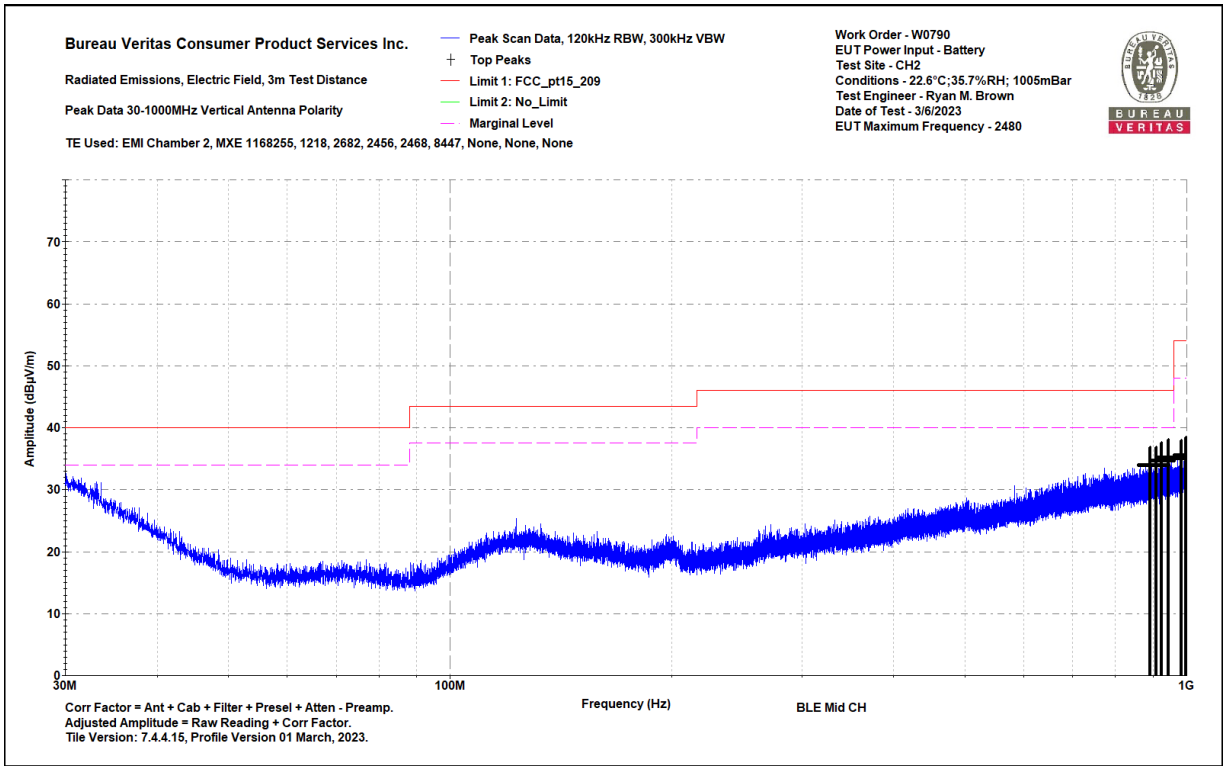
30-1000MHz Horizontal Plot

Host Model CEM100

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery
Top Peaks Vertical 30-1000MHz	Test Site - CH2
Notes:	Conditions - 22.6°C;35.7%RH; 1005mBar
BLE Mid CH	Test Engineer - Ryan M. Brown
0	Date of Test - 3/6/2023

Frequency (MHz)	Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	Turntable Azimuth (degrees)
892.306	29	5	34	46	-12	PASS		250	135
908.238	28.7	5.3	34	46	-12	PASS		200	135
925.019	29.2	5.5	34.7	46	-11.3	PASS		250	315
944.904	29.2	6	35.2	46	-10.8	PASS	-10.8	200	0
982.855	28.7	6.4	35.1	54	-18.9	PASS		250	225
998.375	28.8	6.8	35.6	54	-18.4	PASS		200	135

30-1000MHz Vertical Data Table



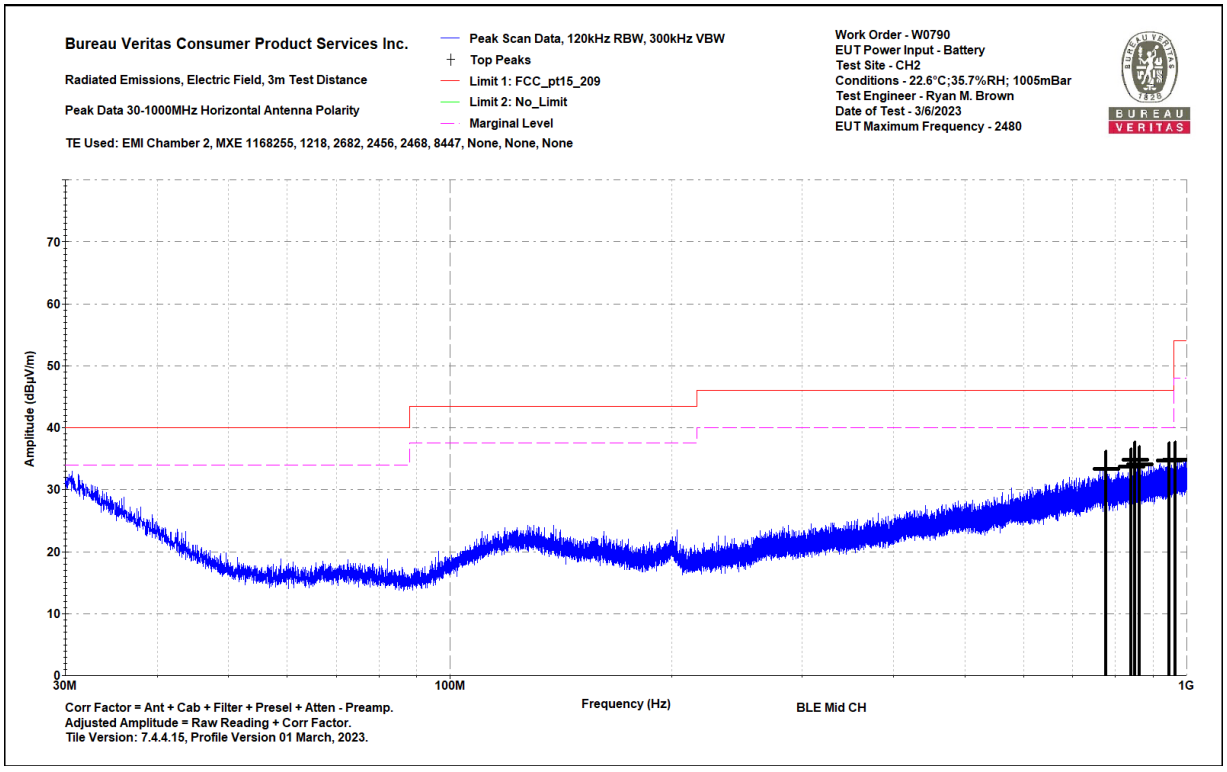
30-1000MHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 3m Distance
Top Peaks Horizontal 30-1000MHz
Notes:
BLE Mid CH
0

Work Order - W0790
EUT Power Input - Battery
Test Site - CH2
Conditions - 22.6°C;35.7%RH; 1005mBar
Test Engineer - Ryan M. Brown
Date of Test - 3/6/2023

Frequency (MHz)	Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
777.749	29.8	3.5	33.3	46	-12.7	PASS		200	90
839.562	29.4	4.3	33.7	46	-12.3	PASS		150	315
851.057	30.4	4.4	34.9	46	-11.1	PASS	-11.1	100	225
863.521	29.6	4.5	34.1	46	-11.9	PASS		250	90
947.572	28.7	6	34.7	46	-11.3	PASS		250	45
964.449	28.6	6.2	34.8	54	-19.2	PASS		150	135

30-1000MHz Horizontal Data Table



30-1000MHz Horizontal Plot

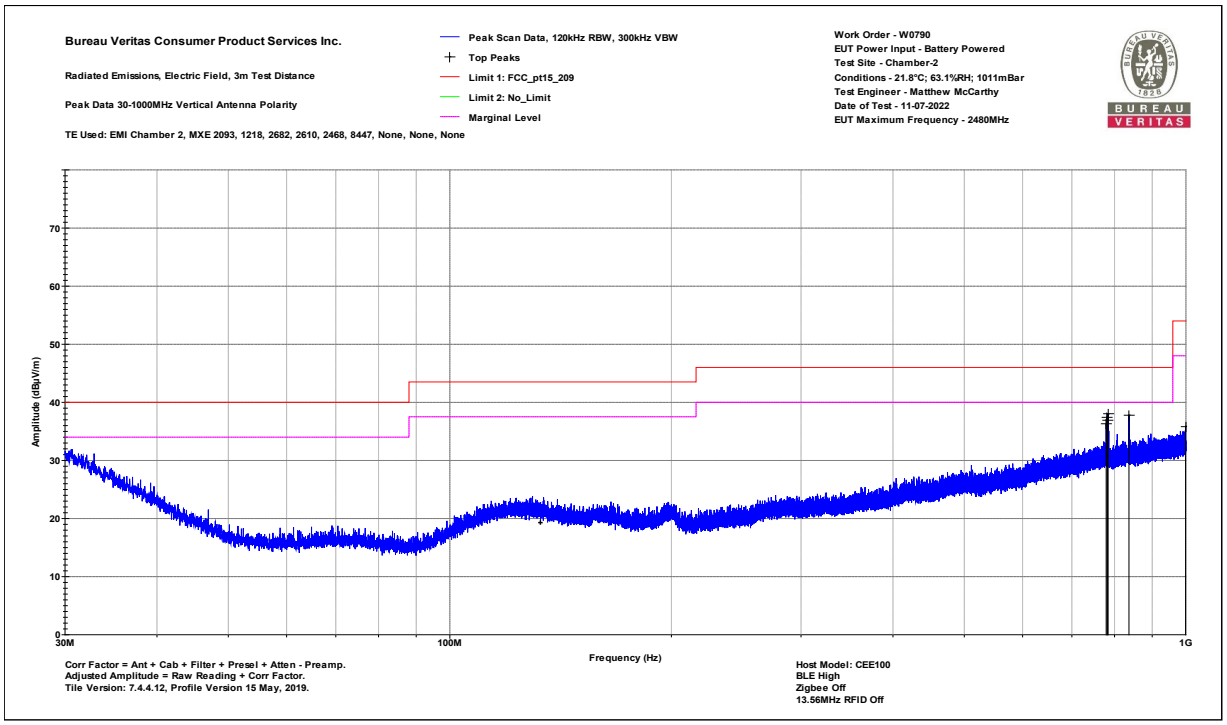
Channel 39

Host Model CEE100

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery Powered
Top Peaks Vertical 30-1000MHz	Test Site - Chamber-2
Notes:	Conditions - 21.8°C; 63.1%RH; 1011mBar
Host Model: CEE100	Test Engineer - Matthew McCarthy
BLE High	Date of Test - 11-07-2022
Zigbee Off	

Frequency (MHz)	Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	Turntable Azimuth (degrees)
779.349	32.5	3.7	36.3	46	-9.7	PASS		100	0
781.459	33.7	3.8	37.5	46	-8.5	PASS		100	0
782.841	33.2	3.7	36.9	46	-9.1	PASS		250	225
783.86	34.3	3.7	38	46	-8	PASS	-8	100	0
836.943	33.2	4.6	37.8	46	-8.2	PASS		100	270
998.981	28.8	7.1	35.9	54	-18.1	PASS		250	45

30-1000MHz Vertical Data Table



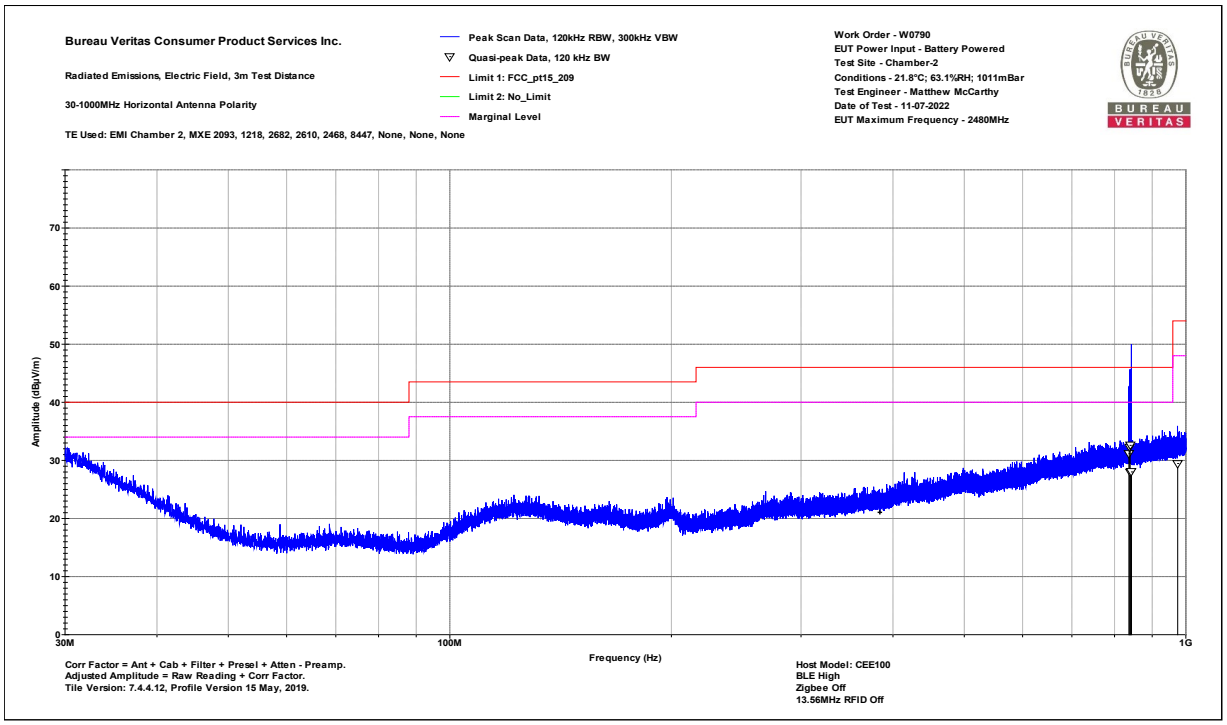
30-1000MHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 3m Distance
30-1000MHz Horizontal Data
Notes:
Host Model: CEE100
BLE High
Zigbee Off

Work Order - W0790
EUT Power Input - Battery Powered
Test Site - Chamber-2
Conditions - 21.8°C; 63.1%RH; 1011mBar
Test Engineer - Matthew McCarthy
Date of Test - 11-07-2022

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dbµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
837.481	27.7	4.6	32.3	46	-13.7	PASS		250	117
837.06	26.6	4.6	31.1	46	-14.9	PASS		211	159
840.164	28	4.6	32.6	46	-13.4	PASS	-13.4	201	147
841.352	23.3	4.6	27.9	46	-18.1	PASS		175	157
843.52	23.4	4.6	28	46	-18	PASS		125	48
974.597	22.9	6.6	29.4	54	-24.6	PASS		175	65

30-1000MHz Horizontal Data Table



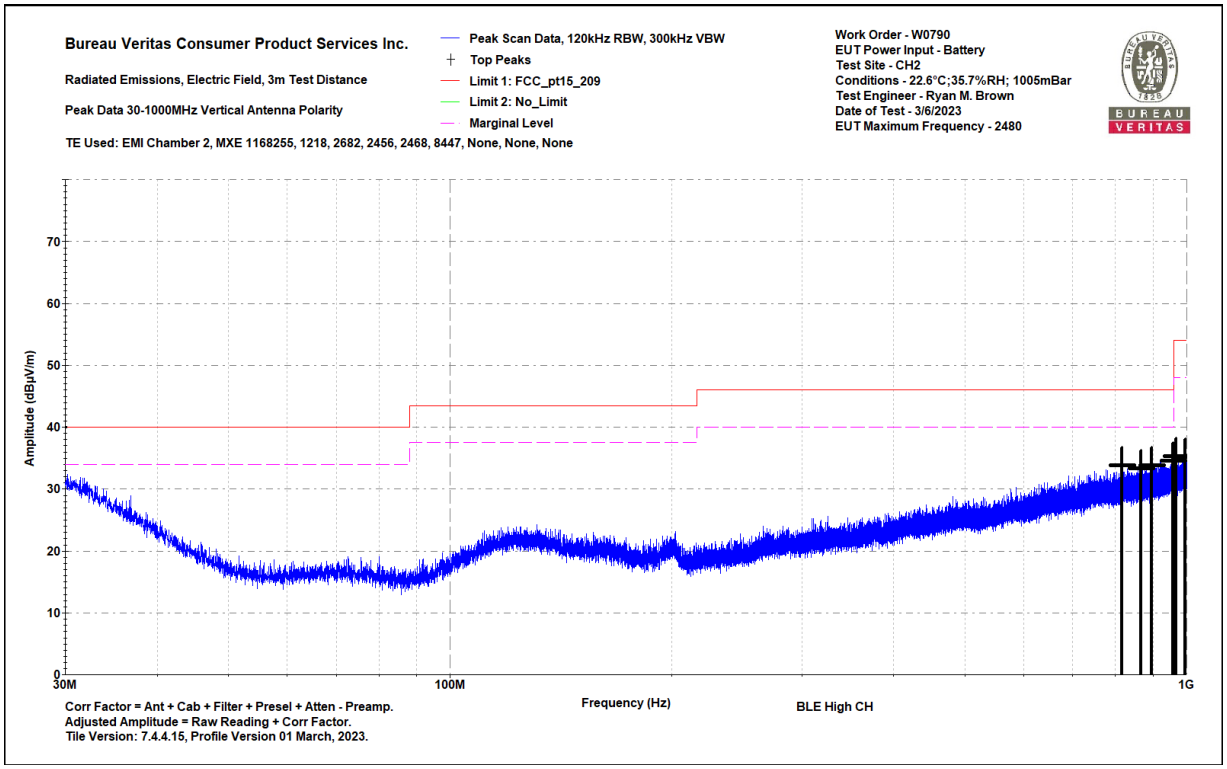
30-1000MHz Horizontal Plot

Host Model CEB100

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery
Top Peaks Vertical 30-1000MHz	Test Site - CH2
Notes:	Conditions - 22.6°C;35.7%RH; 1005mBar
BLE High CH	Test Engineer - Ryan M. Brown
0	Date of Test - 3/6/2023

Frequency (MHz)	Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	Turntable Azimuth (degrees)
817.131	30	3.9	33.9	46	-12.1	PASS		250	45
866.358	28.9	4.5	33.4	46	-12.6	PASS		100	135
897.423	28.8	5.1	33.8	46	-12.2	PASS		150	90
957.975	28.5	6.1	34.6	46	-11.4	PASS	-11.4	250	0
967.796	29.1	6.2	35.4	54	-18.6	PASS		100	270
995.732	28.4	6.7	35.1	54	-18.9	PASS		100	180

30-1000MHz Vertical Data Table



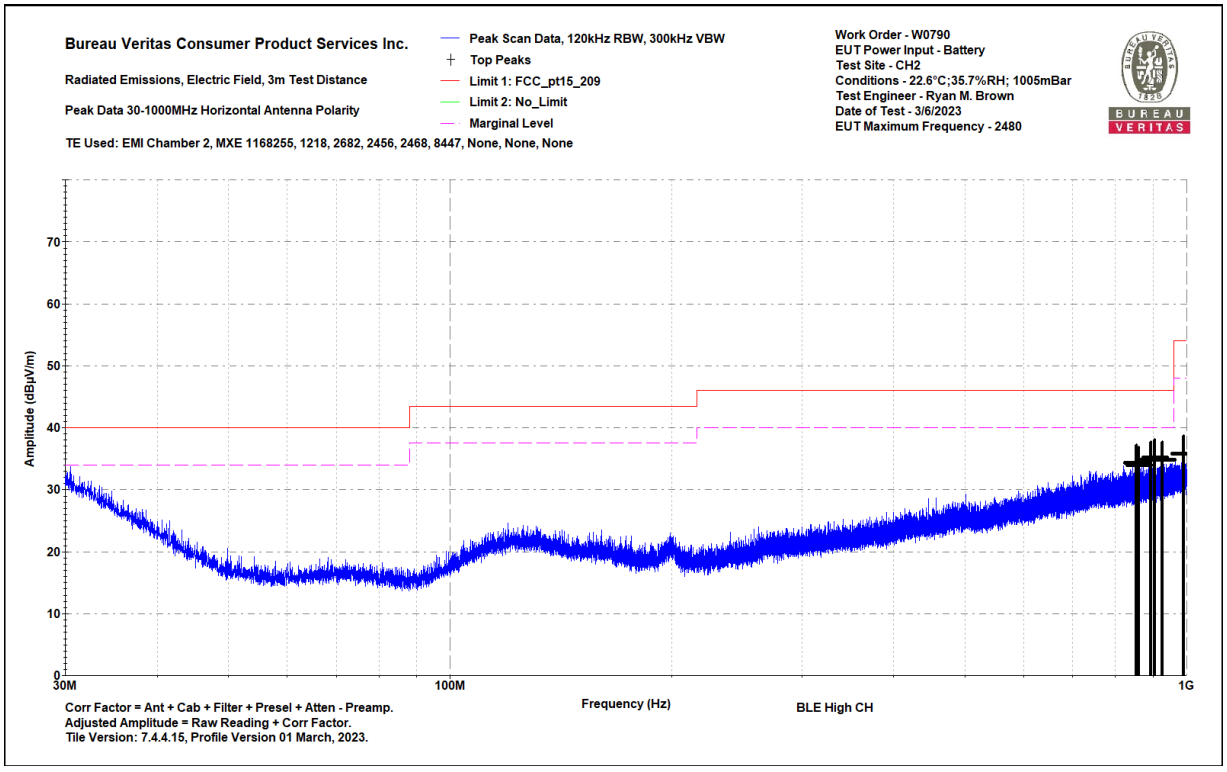
30-1000MHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 3m Distance
Top Peaks Horizontal 30-1000MHz
Notes:
BLE High CH
0

Work Order - W0790
EUT Power Input - Battery
Test Site - CH2
Conditions - 22.6°C;35.7%RH; 1005mBar
Test Engineer - Ryan M. Brown
Date of Test - 3/6/2023

Frequency (MHz)	Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
854.985	29.8	4.4	34.3	46	-11.7	PASS		100	225
860.587	29.4	4.5	33.9	46	-12.1	PASS		200	135
893.858	29.9	5	34.9	46	-11.1	PASS		150	90
904.212	30	5.2	35.2	46	-10.8	PASS	-10.8	200	180
927.371	29.2	5.6	34.8	46	-11.2	PASS		200	180
989.718	29.3	6.5	35.8	54	-18.2	PASS		100	180

30-1000MHz Horizontal Data Table



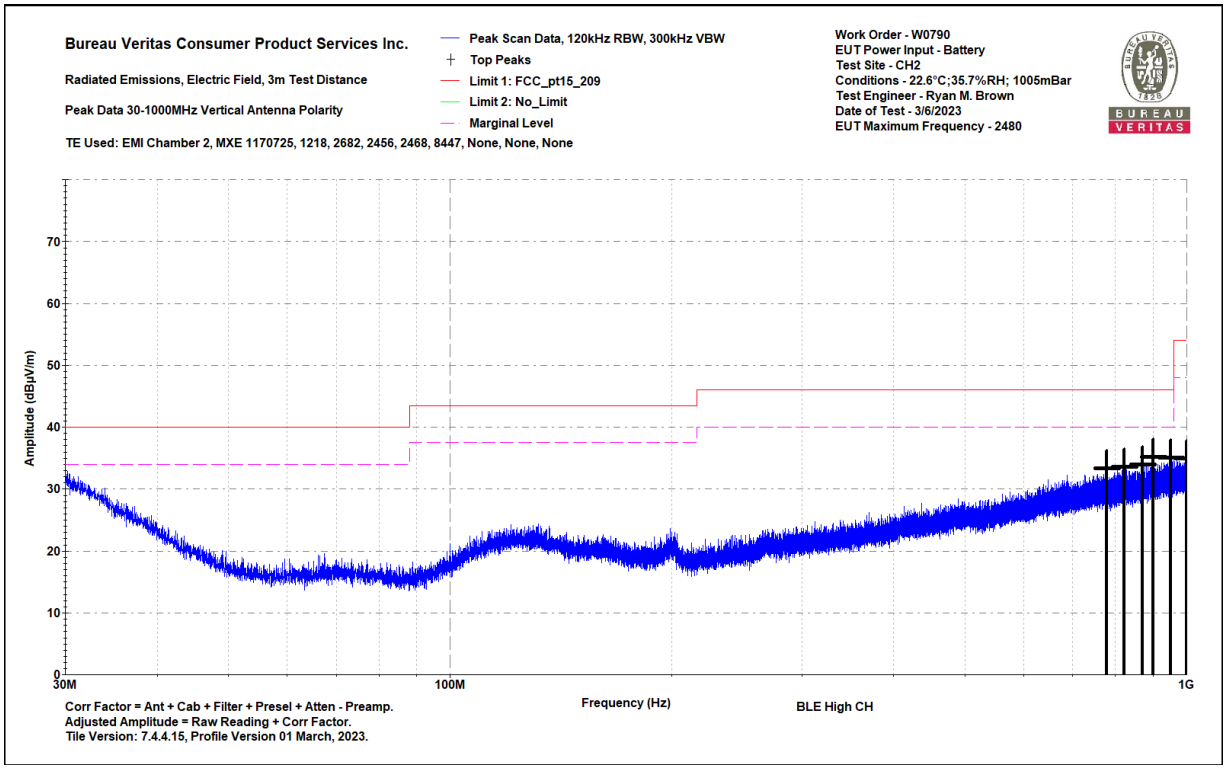
30-1000MHz Horizontal Plot

Host Model CEM100

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery
Top Peaks Vertical 30-1000MHz	Test Site - CH2
Notes:	Conditions - 22.6°C;35.7%RH; 1005mBar
BLE High CH	Test Engineer - Ryan M. Brown
0	Date of Test - 3/6/2023

Frequency (MHz)	Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	Turntable Azimuth (degrees)
779.107	29.8	3.5	33.3	46	-12.7	PASS		100	270
821.86	29.4	4.2	33.6	46	-12.4	PASS		200	225
870.82	29.4	4.6	34	46	-12	PASS		150	180
899.872	30.1	5.1	35.2	46	-10.8	PASS	-10.8	250	0
952.13	29	6	35	46	-11	PASS		150	135
999.297	28.1	6.9	35	54	-19	PASS		250	45

30-1000MHz Vertical Data Table



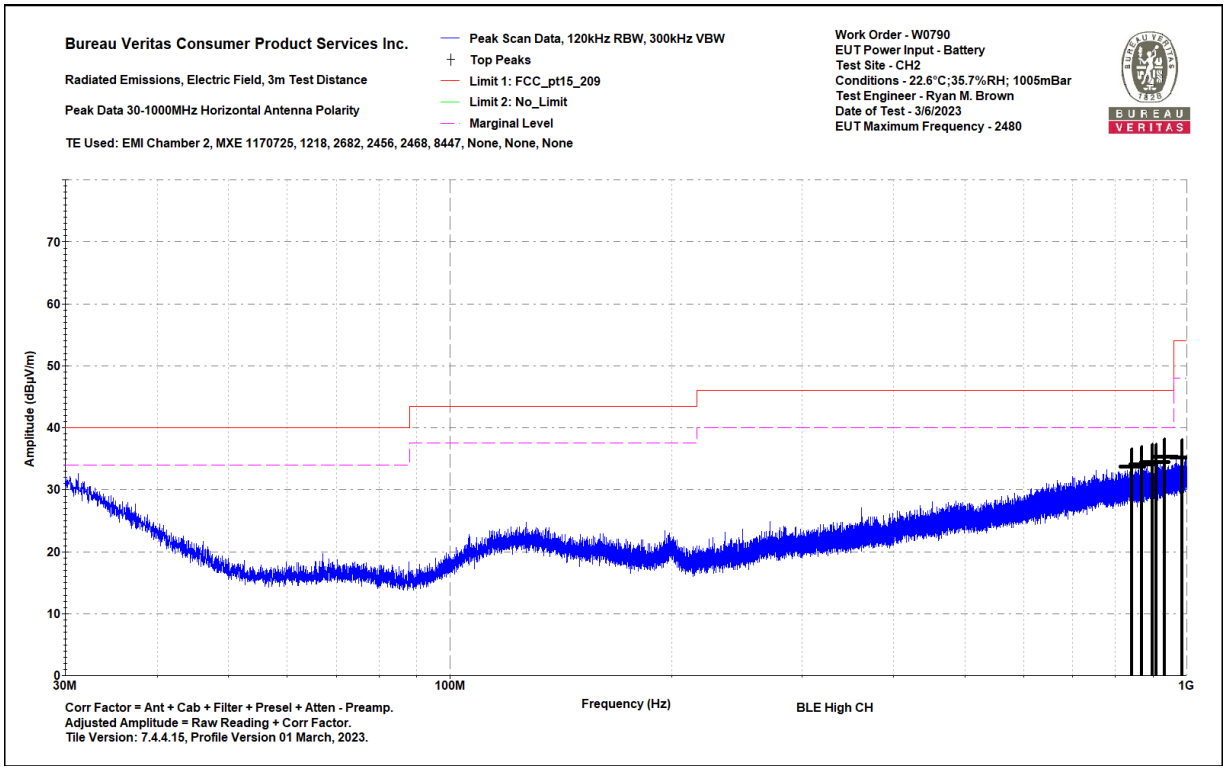
30-1000MHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 3m Distance
Top Peaks Horizontal 30-1000MHz
Notes:
BLE High CH
0

Work Order - W0790
EUT Power Input - Battery
Test Site - CH2
Conditions - 22.6°C;35.7%RH; 1005mBar
Test Engineer - Ryan M. Brown
Date of Test - 3/6/2023

Frequency (MHz)	Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Lim1: FCC_pt15_209 (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
842.375	29.5	4.3	33.8	46	-12.2	PASS		250	45
868.88	29.6	4.5	34.1	46	-11.9	PASS		200	90
897.665	29.4	5.1	34.4	46	-11.6	PASS		150	45
909.96	29.2	5.3	34.5	46	-11.5	PASS		150	0
932.876	29.7	5.7	35.4	46	-10.6	PASS	-10.6	250	315
985.304	28.8	6.5	35.2	54	-18.8	PASS		100	315

30-1000MHz Horizontal Data Table



30-1000MHz Horizontal Plot

Emissions above 1GHz

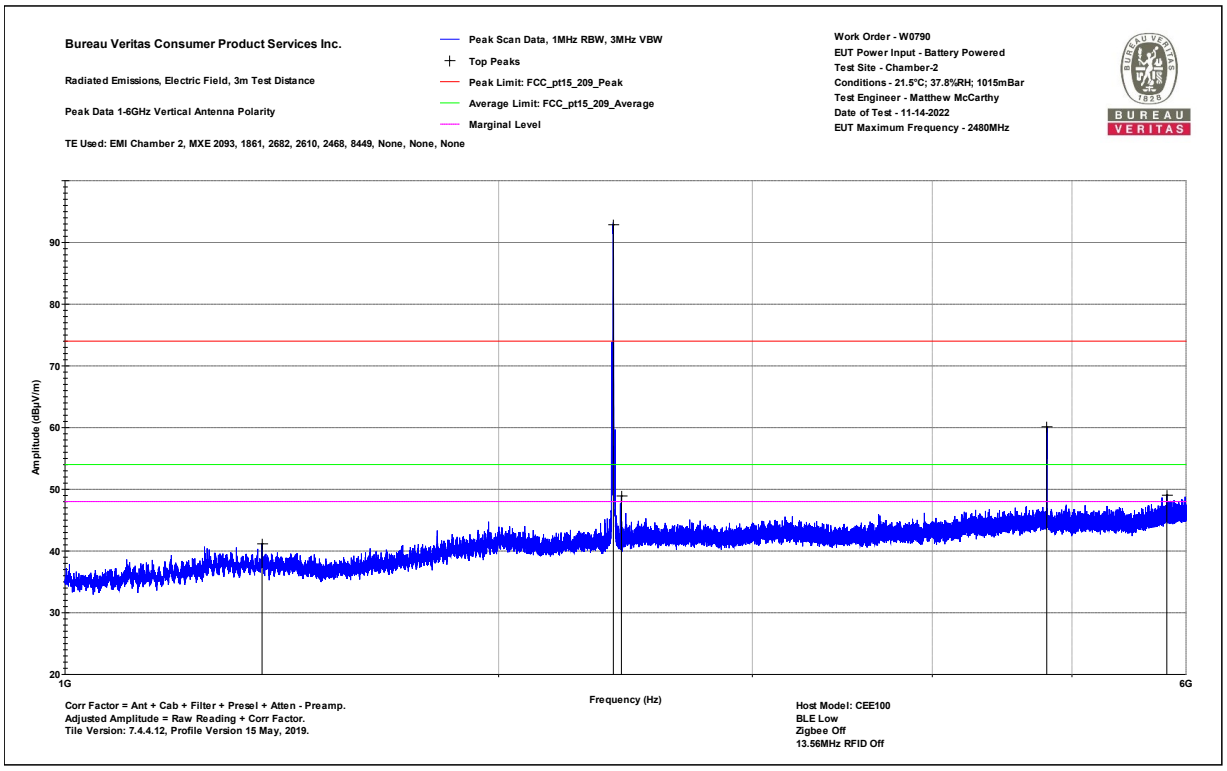
Channel 0

Host Model CEE100

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery Powered
Top Peaks Vertical 1-6GHz	Test Site - Chamber-2
Notes:	Conditions - 21.5°C; 37.8%RH; 1015mBar
Host Model: CEE100	Test Engineer - Matthew McCarthy
BLE Low	Date of Test - 11-14-2022
Zigbee Off	

Frequency (MHz)	Raw Peak (dBµV)	Raw RMS Average (dBµV)	Correction Factor (dB/m)	Adjusted Peak (dBµV/m)	Adjusted RMS Average (dBµV/m)	Peak Limit FCC 15.209 (dBµV/m)	Peak Margin (dB)	Peak Result (Pass/Fail)	Peak Worst Margin (dB)	Average Limit FCC 15.209 (dBµV/m)	Average Margin (dB)	Average Result (Pass/Fail)	Average Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1370.25	48.6	36.9	-7.4	41.2	29.5	74	-32.8	PASS	--	54	-24.5	PASS	--	300	131
2402.5	FUNDAMENTAL														
2433.75	51.4	37.2	-2.5	48.9	34.7	74	-25.1	PASS	--	54	-19.3	PASS	--	200	12
4803.13	58.3	51.7	1.8	60.1	53.5	74	-13.9	PASS	-13.9	54	-0.5	PASS	-0.5	200	50
5819.13	46.1	34.3	3.0	49.1	37.3	74	-24.9	PASS	--	54	-16.7	PASS	--	300	93

1-6GHz Vertical Data Table

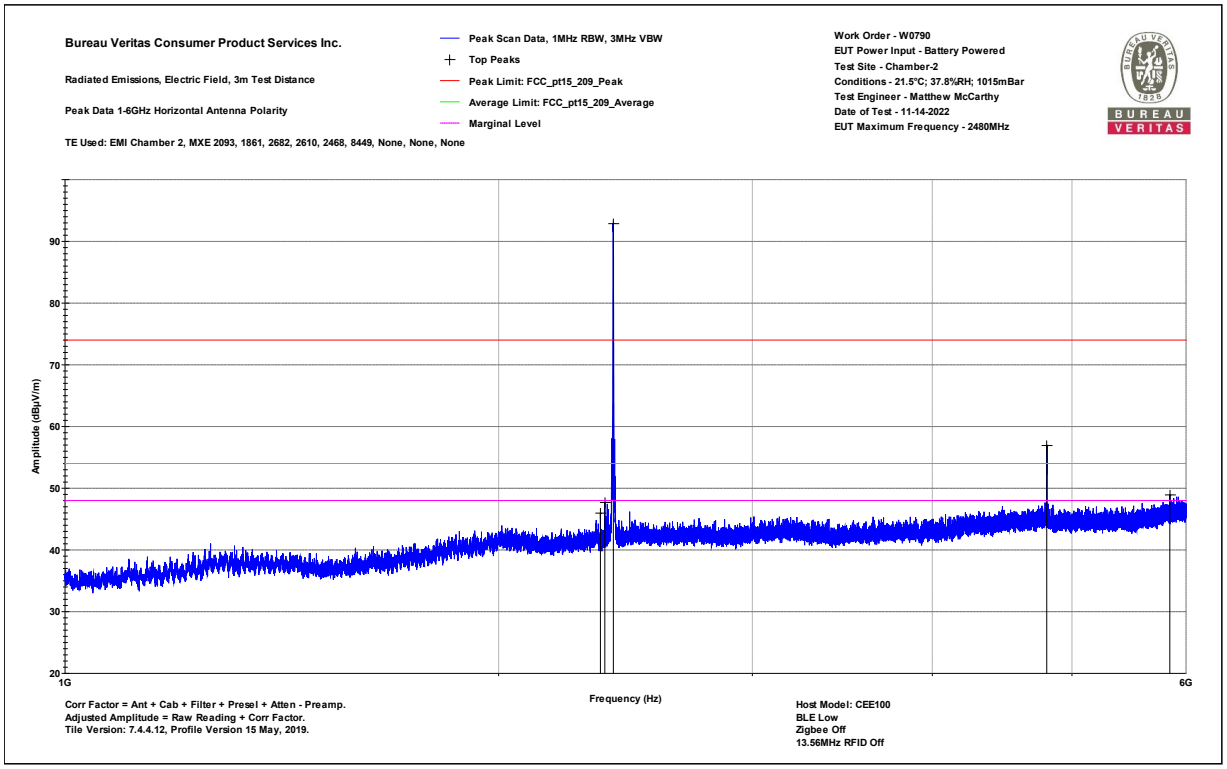


1-6GHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery Powered
Top Peaks Horizontal 1-6GHz	Test Site - Chamber-2
Notes:	Conditions - 21.5°C; 37.8%RH; 1015mBar
Host Model: CEE100	Test Engineer - Matthew McCarthy
BLE Low	Date of Test - 11-14-2022
Zigbee Off	

Frequency (MHz)	Raw Peak (dBµV)	Raw RMS Average (dBµV)	Correction Factor (dB/m)	Adjusted Peak (dBµV/m)	Adjusted RMS Average (dBµV/m)	Peak Limit FCC 15.209 (dBµV/m)	Peak Margin (dB)	Peak Result (Pass/Fail)	Peak Worst Margin (dB)	Average Limit FCC 15.209 (dBµV/m)	Average Margin (dB)	Average Result (Pass/Fail)	Average Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2353.38	48.9	35.3	-3.0	45.9	32.3	74	-28.1	PASS	--	54	-21.7	PASS	--	300	315
2369.75	50.7	35.9	-3.0	47.7	32.9	74	-26.3	PASS	--	54	-21.1	PASS	--	300	131
2402.5	FUNDAMENTAL														
4803.13	55.2	49.7	1.8	57	51.5	74	-17	PASS	-17	54	-2.5	PASS	-2.5	300	18
5846.5	45.9	33.7	3.0	48.9	36.7	74	-25.1	PASS	--	54	-17.3	PASS	--	200	30

1-6GHz Horizontal Data Table

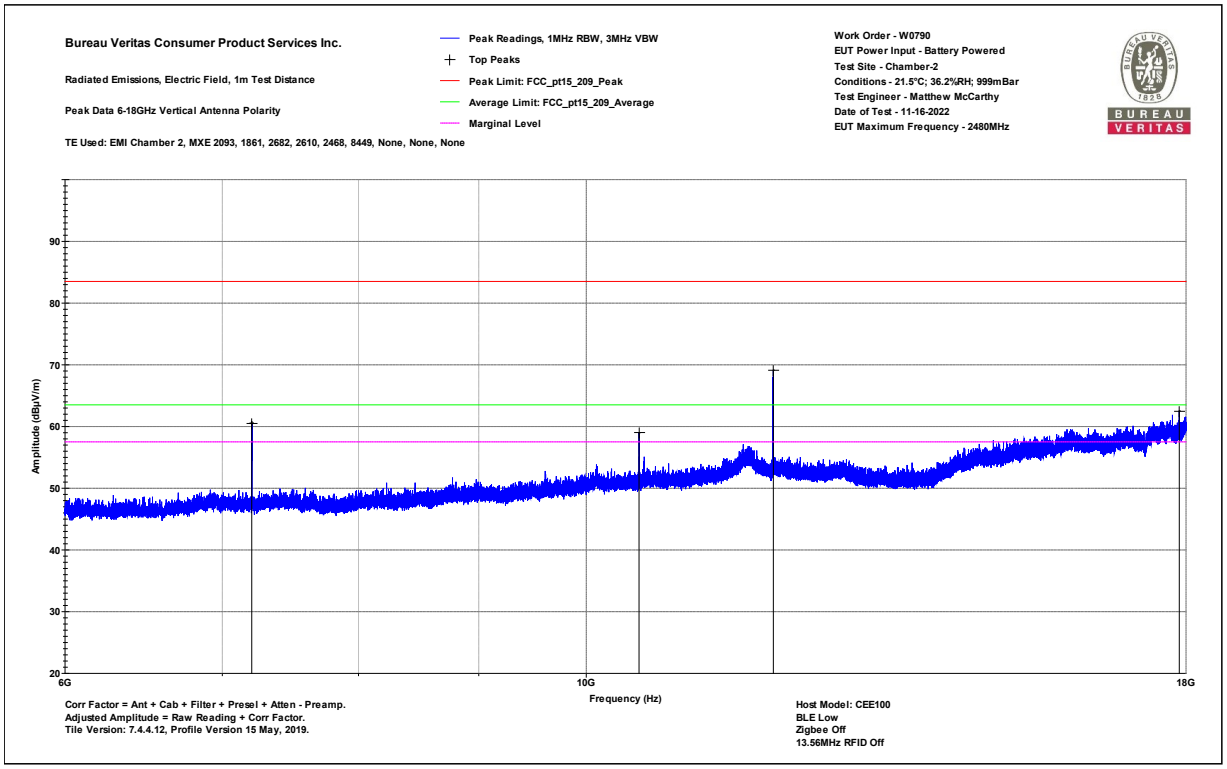


1-6GHz Horizontal Plot

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery Powered
Vertical 6-18GHz	Test Site - Chamber-2
Notes:	Conditions - 21.5°C; 36.2%RH; 999mBar
Host Model: CEE100	Test Engineer - Matthew McCarthy
BLE Low	Date of Test - 11-16-2022
Zigbee Off	

Frequency (MHz)	Raw Peak (dBµV)	Raw RMS Average (dBµV)	Correction Factor (dB/m)	Adjusted Peak (dBµV/m)	Adjusted RMS Average (dBµV/m)	Peak Limit FCC 15.209 (dBµV/m)	Peak Margin (dB)	Peak Result (Pass/Fail)	Peak Worst Margin (dB)	Average Limit FCC 15.209 (dBµV/m)	Average Margin (dB)	Average Result (Pass/Fail)	Average Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
7204.8	56.3	53.2	4.2	60.5	57.4	83.5	-23	PASS	--	63.5	-6.1	PASS	--	100	0
10531.5	51.9	40.1	7.1	59	47.2	83.5	-24.5	PASS	--	63.5	-16.3	PASS	--	200	94
12012.6	60.6	54.4	8.5	69.1	62.9	83.5	-14.4	PASS	-14.4	63.5	-0.6	PASS	-0.6	150	56
17882.1	47.8	40.6	14.7	62.5	55.3	83.5	-21	PASS	--	63.5	-8.2	PASS	--	100	56

6-18GHz Vertical Data Table



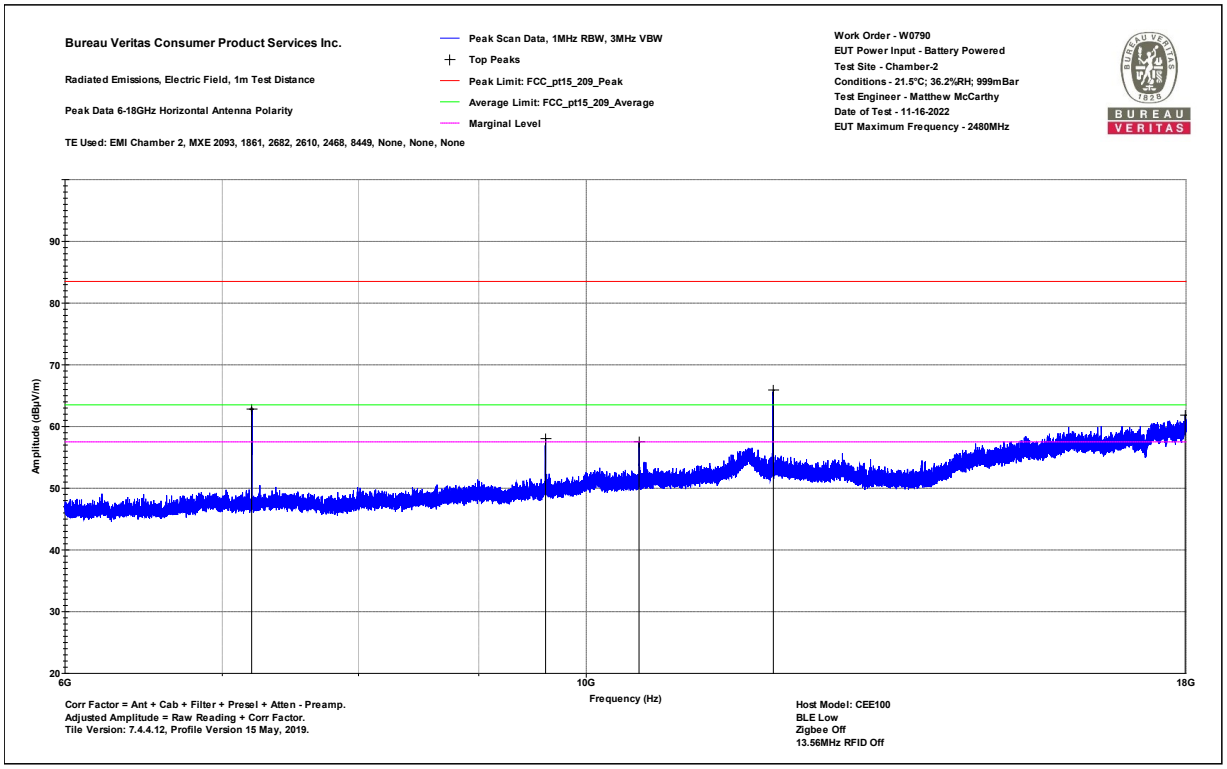
6-18GHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 3m Distance
Horizontal 6-18GHz
Notes:
Host Model: CEE100
BLE Low
Zigbee Off

Work Order - W0790
EUT Power Input - Battery Powered
Test Site - Chamber-2
Conditions - 21.5°C; 36.2%RH; 999mBar
Test Engineer - Matthew McCarthy
Date of Test - 11-16-2022

Frequency (MHz)	Raw Peak (dBµV)	Raw RMS Average (dBµV)	Correction Factor (dB/m)	Adjusted Peak (dBµV/m)	Adjusted RMS Average (dBµV/m)	Peak Limit FCC 15.209 (dBµV/m)	Peak Margin (dB)	Peak Result (Pass/Fail)	Peak Worst Margin (dB)	Average Limit FCC 15.209 (dBµV/m)	Average Margin (dB)	Average Result (Pass/Fail)	Average Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
7204.5	58.6	54.7	4.2	62.8	58.9	83.5	-20.7	PASS	--	63.5	-4.6	PASS	--	125	32
9609.9	52.5	48.7	5.5	58	54.2	83.5	-25.5	PASS	--	63.5	-9.3	PASS	--	175	50
10531.5	50.4	40.1	7.1	57.5	47.2	83.5	-26	PASS	--	63.5	-16.3	PASS	--	150	151
12012.6	57.3	51.8	8.5	65.8	60.3	83.5	-17.7	PASS	-17.7	63.5	-3.2	PASS	-3.2	125	13
17986.2	46.3	41	15.5	61.8	56.5	83.5	-21.7	PASS	--	63.5	-7	PASS	--	150	56

6-18GHz Horizontal Data Table



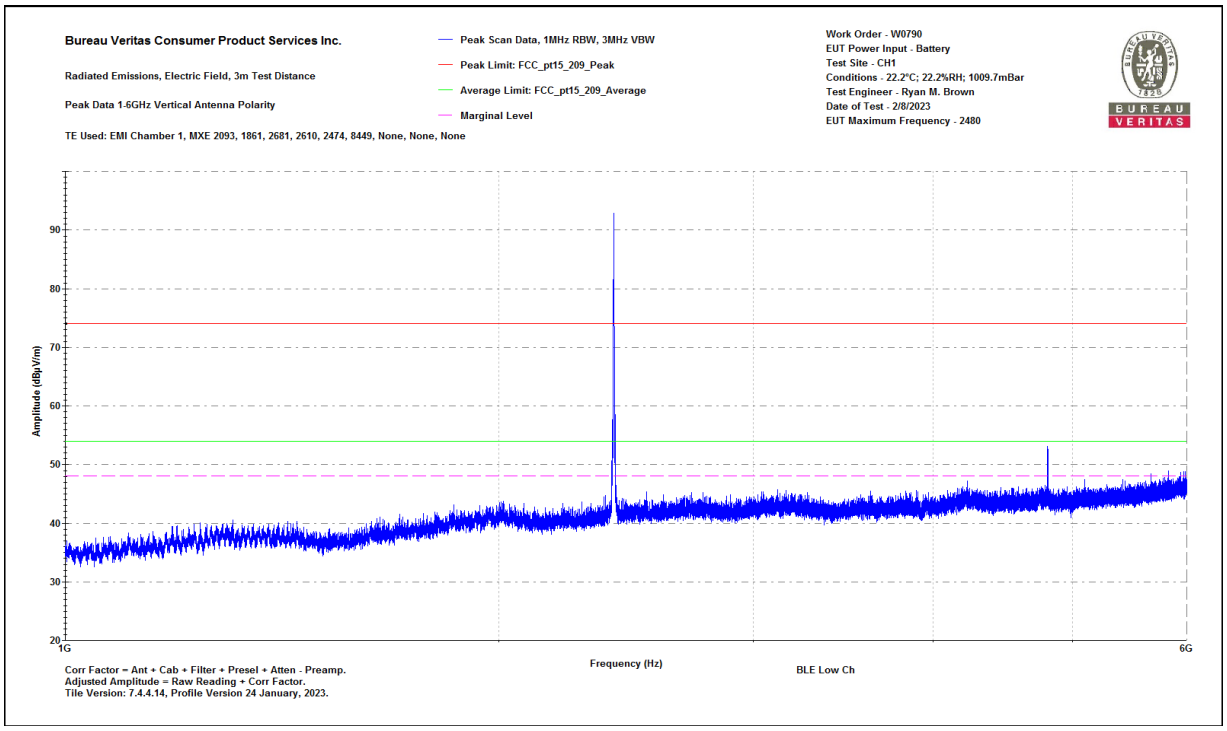
6-18GHz Horizontal Plot

Host Model CEB100

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery
1-6GHz Vertical Data	Test Site - CH1
Notes:	Conditions - 22.2°C; 38.4%RH; 1009.7mBar
BLE Low Ch	Test Engineer - Ryan M. Brown
0	Date of Test - 2/8/2023

Frequency (MHz)	Raw Peak (dBµV)	Raw RMS Average (dBµV)	Correction Factor (dB/m)	Adjusted Peak (dBµV/m)	Adjusted RMS Average (dBµV/m)	Peak Limit FCC 15.209 (dBµV/m)	Peak Margin (dB)	Peak Result (Pass/Fail)	Peak Worst Margin (dB)	Average Limit FCC 15.209 (dBµV/m)	Average Margin (dB)	Average Result (Pass/Fail)	Average Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1307.75	48.2	48.2	-7.7	40.5	40.5	74	-33.5	PASS	--	54	-13.5	PASS	--	200	169
2402.5	Fundamental														
4803.13	52.0	46.6	1.0	53.0	47.6	74	-21.0	PASS	-21.0	54	-6.4	PASS	-6.4	158	0
5828.5	46.2	36.0	2.7	48.9	38.7	74	-25.1	PASS	--	54	-15.3	PASS	--	100	0

1-6GHz Vertical Data Table

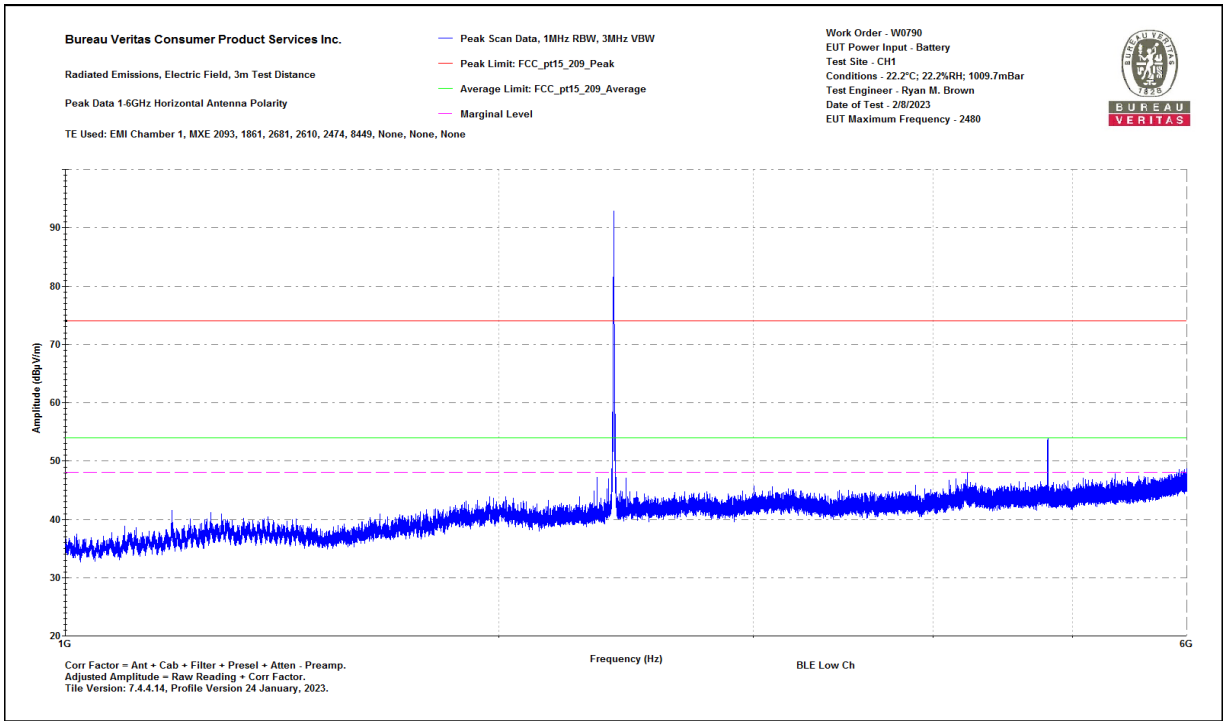


1-6GHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery
1-6GHz Horizontal Data	Test Site - CH1
Notes:	Conditions - 22.2°C; 38.4%RH; 1009.7mBar
BLE Low Ch	Test Engineer - Ryan M. Brown
0	Date of Test - 2/8/2023

Frequency (MHz)	Raw Peak (dBµV)	Raw RMS Average (dBµV)	Correction Factor (dB/m)	Adjusted Peak (dBµV/m)	Adjusted RMS Average (dBµV/m)	Peak Limit FCC 15.209 (dBµV/m)	Peak Margin (dB)	Peak Result (Pass/Fail)	Peak Worst Margin (dB)	Average Limit FCC 15.209 (dBµV/m)	Average Margin (dB)	Average Result (Pass/Fail)	Average Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2338.38	50.7	50.7	-3.4	47.3	47.3	74	-26.7	PASS	--	54	-6.7	PASS	--	300	0
2402.5	Fundamental														
2449.5	49.7	49.7	-2.6	47.1	47.1	74	-26.9	PASS	--	54	-6.9	PASS	--	300	108
4223.5	47.1	47.1	0.9	48.0	48.0	74	-26.0	PASS	--	54	-6.0	PASS	--	200	18
4804.88	56.8	49.9	1.1	57.9	51.0	74	-16.1	PASS	-16.1	54	-3.1	PASS	-3.1	300	108
5997.63	45.6	36.3	3.0	48.6	39.3	74	-25.4	PASS	--	54	-14.7	PASS	--	300	0

1-6GHz Horizontal Data Table

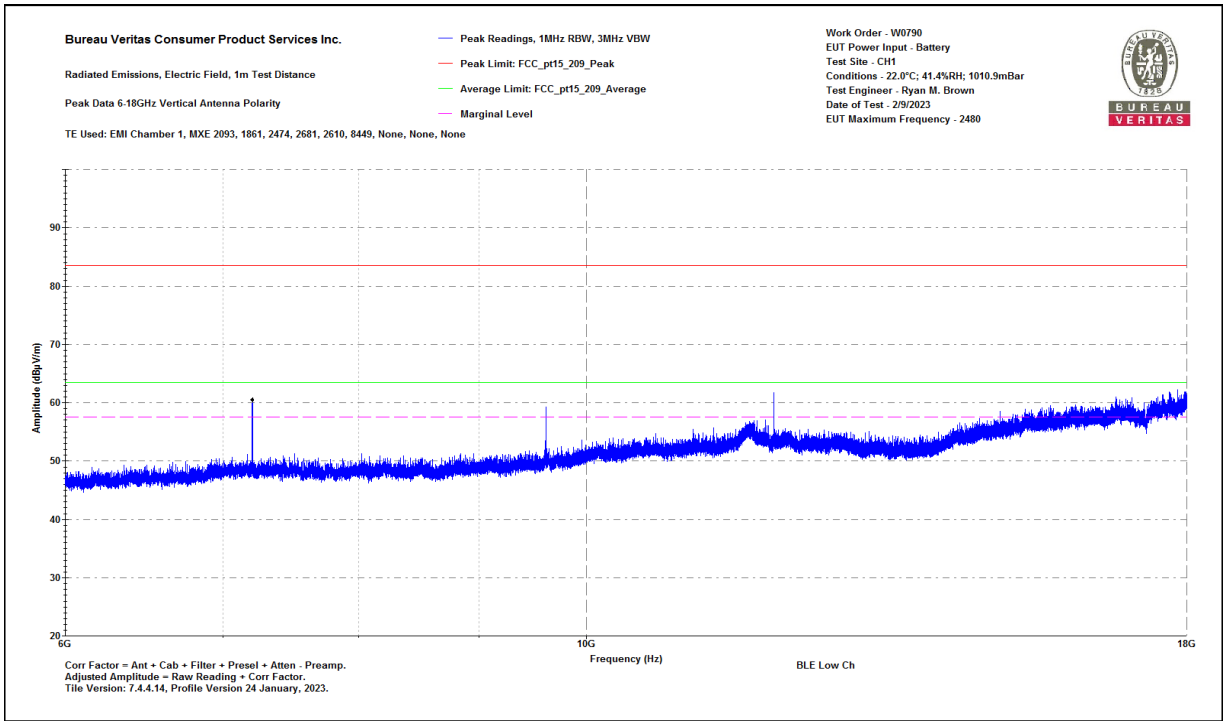


1-6GHz Horizontal Plot

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 1m Distance	EUT Power Input - Battery
Top Peaks Vertical 6-18GHz	Test Site - CH1
Notes:	Conditions - 22.0°C; 41.4%RH; 1010.9mBar
BLE Low Ch	Test Engineer - Ryan M. Brown
0	Date of Test - 2/9/2023

Frequency (MHz)	Raw Peak (dBµV)	Raw RMS Average (dBµV)	Correction Factor (dB/m)	Adjusted Peak (dBµV/m)	Adjusted RMS Average (dBµV/m)	Peak Limit FCC 15.209 (dBµV/m)	Peak Margin (dB)	Peak Result (Pass/Fail)	Peak Worst Margin (dB)	Average Limit FCC 15.209 (dBµV/m)	Average Margin (dB)	Average Result (Pass/Fail)	Average Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
12012.6	55.9	49.7	8.6	64.5	58.3	83.5	-19.0	PASS	-19.0	63.5	-5.2	PASS	-5.2	150	69
17837.4	47.6	36.2	14.6	62.2	50.8	83.5	-21.3	PASS	--	63.5	-12.7	PASS	--	200	184

6-18GHz Vertical Data Table

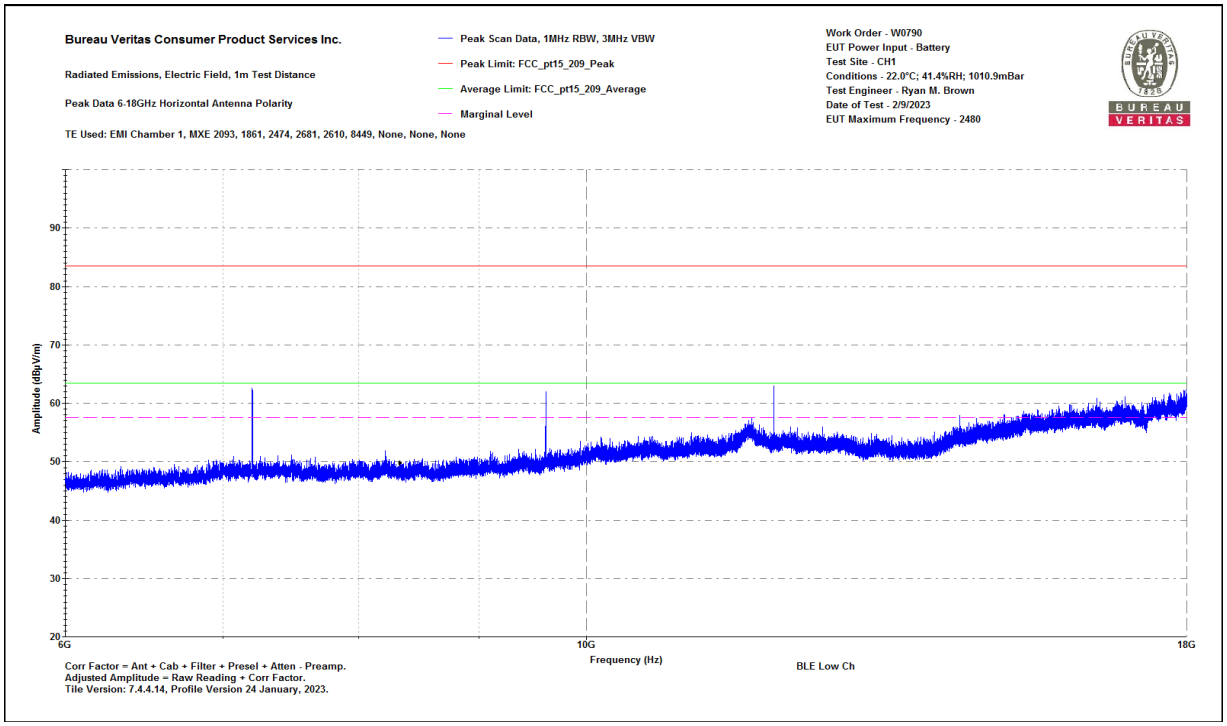


6-18GHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 1m Distance	EUT Power Input - Battery
Top Peaks Horizontal 6-18GHz	Test Site - CH1
Notes:	Conditions - 22.0°C; 41.4%RH; 1010.9mBar
BLE Low Ch	Test Engineer - Ryan M. Brown
0	Date of Test - 2/9/2023

Frequency (MHz)	Raw Peak (dBµV)	Raw RMS Average (dBµV)	Correction Factor (dB/m)	Adjusted Peak (dBµV/m)	Adjusted RMS Average (dBµV/m)	Peak Limit FCC 15.209 (dBµV/m)	Peak Margin (dB)	Peak Result (Pass/Fail)	Peak Worst Margin (dB)	Average Limit FCC 15.209 (dBµV/m)	Average Margin (dB)	Average Result (Pass/Fail)	Average Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
11757.6	48.9	35.9	8.7	57.6	44.6	74	-16.4	PASS	--	63.5	-18.9	PASS	--	125	315
12007.8	55.2	48.0	8.6	63.8	56.6	74	-10.2	PASS	-10.2	63.5	-6.9	PASS	-6.9	180	52
17988.9	46.7	35.5	15.6	62.3	51.1	74	-11.7	PASS	--	63.5	-12.4	PASS	--	150	32

6-18GHz Horizontal Data Table



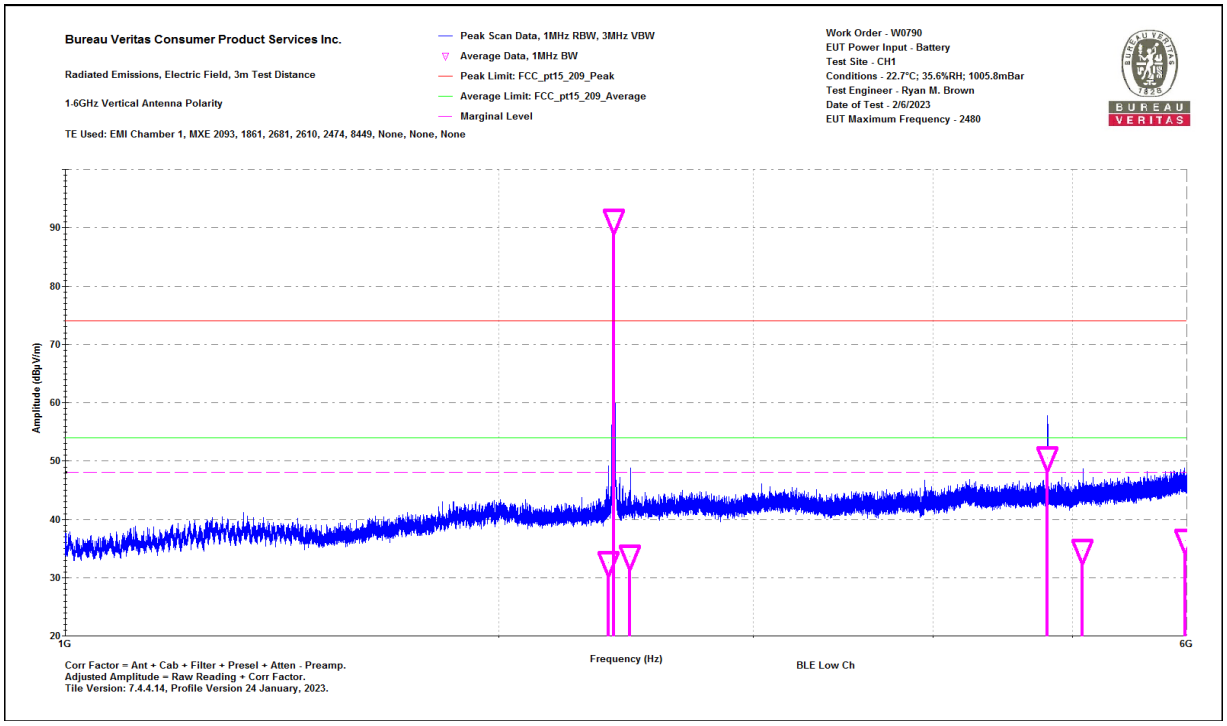
6-18GHz Horizontal Plot

Host Model CEM100

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery
1-6GHz Vertical Data	Test Site - CH1
Notes:	Conditions - 22.7°C; 35.6%RH; 1005.8mBar
BLE Low Ch	Test Engineer - Ryan M. Brown
0	Date of Test - 2/6/2023

Frequency (MHz)	Raw Peak (dBµV)	Raw RMS Average (dBµV)	Correction Factor (dB/m)	Adjusted Peak (dBµV/m)	Adjusted RMS Average (dBµV/m)	Peak Limit FCC 15.209 (dBµV/m)	Peak Margin (dB)	Peak Result (Pass/Fail)	Peak Worst Margin (dB)	Average Limit FCC 15.209 (dBµV/m)	Average Margin (dB)	Average Result (Pass/Fail)	Average Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2382.4	44.0	36.0	-3.1	40.9	32.9	74	-33.1	PASS	--	54	-21.1	PASS	--	109	41
2402.5	Fundamental														
2465.6	45.4	36.3	-2.5	42.9	33.8	74	-31.1	PASS	--	54	-20.2	PASS	--	125	44
4803.1	56.6	47.0	1.1	57.7	48.1	74	-16.3	PASS	-16.3	54	-5.9	PASS	-5.9	198	32
5081.2	41.8	34.1	1.3	43.1	35.4	74	-30.9	PASS	--	54	-18.6	PASS	--	212	92
5982.9	42.1	34.8	3.0	45.1	37.8	74	-28.9	PASS	--	54	-16.2	PASS	--	275	0

1-6GHz Vertical Data Table

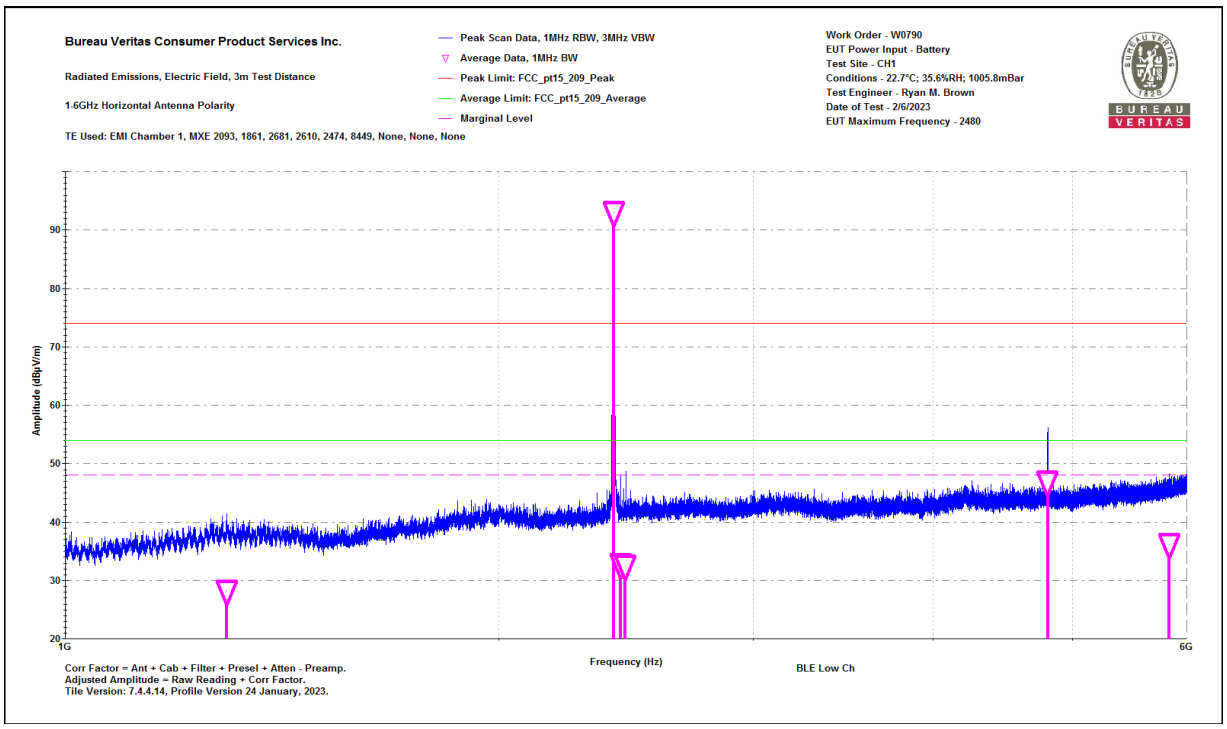


1-6GHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.	Work Order - W0790
Radiated Emissions Electric Field 3m Distance	EUT Power Input - Battery
1-6GHz Horizontal Data	Test Site - CH1
Notes:	Conditions - 22.7°C; 35.6%RH; 1005.8mBar
BLE Low Ch	Test Engineer - Ryan M. Brown
0	Date of Test - 2/6/2023

Frequency (MHz)	Raw Peak (dBµV)	Raw RMS Average (dBµV)	Correction Factor (dB/m)	Adjusted Peak (dBµV/m)	Adjusted RMS Average (dBµV/m)	Peak Limit FCC 15.209 (dBµV/m)	Peak Margin (dB)	Peak Result (Pass/Fail)	Peak Worst Margin (dB)	Average Limit FCC 15.209 (dBµV/m)	Average Margin (dB)	Average Result (Pass/Fail)	Average Worst Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1294.2	45.4	37.2	-7.5	37.9	29.7	74	-36.1	PASS	--	54	-24.3	PASS	--	296	316
2401.5	Fundamental														
2427.7	44.4	36.5	-2.7	41.7	33.8	74	-32.3	PASS	--	54	-20.2	PASS	--	196	301
2446.6	44.4	36.2	-2.6	41.8	33.6	74	-32.2	PASS	--	54	-20.5	PASS	--	187	315
4805.2	53.0	38.7	1.0	54.0	39.7	74	-20.0	PASS	-20.0	54	-14.3	PASS	-14.3	201	290
5833	44.8	35.5	2.7	47.5	38.2	74	-26.5	PASS	--	54	-15.8	PASS	--	115	256

1-6GHz Horizontal Data Table



1-6GHz Horizontal Plot