TEST REPORT

Applicant	u-blox AG
Address	Zuercherstrasse 68 Thalwil, Ch-8800 Switzerland

FCC ID	XPYNORAW3
ISED Canada IC	8595A-NORAW3
Product Description	Stand-alone dual-band Wi-Fi and Bluetooth modules
PMN Model/HVIN FVIN HMN	NORA-W300, NORA-W301, NORA-W306 NORA-W300, NORA-W301, NORA-W306 N/A N/A
Additional Models	See Section 3.1 for details
Date of tests	August 28, 2023 – May 16, 2024
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 3**

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

Prepared by	Approved by
Yunus Faziloglu Sr. Wireless Engineer	Ahmed Ait Ahmed EMC Manager
	
Report Issue Date: May 16, 2024	Issue Number: 2

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
1	Original release	Mar 14, 2024
2	To address TCB review comments: - Antenna gain table updated in Section 3.1 - Radiated band-edge measurements repeated to record plots	May 16, 2024

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	Y	PASS
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

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	3.3VDC from test fixture
MODULATION TECHNOLOGY	DTS
MODULATION TYPES	GFSK
DATA RATES	1Mbps (GFSK), 2Mbps (GFSK)
OPERATING FREQUENCY	2402 – 2480MHz
EUT Power Setting	8dBm
OUTPUT POWER	4.37mW (Peak Conducted)
ANTENNA TYPE **(Customer Supplied Information)**	Following antennas were provided for testing: PCB Trace Antenna with 0.5dBi gain Abracon Patch Antenna (Model AFG4507W2S-0200S) with 3.5dBi gain Linx (TE) Whip Antenna (Model ANT-DB1-RAF-RPS) with 4.1dBi gain Yageo Patch Antenna (Model ANTX100P001B24553) with 5.3dBi gain *Note: These antennas can represent antennas of the same type with equal or lesser gain from other manufacturers.*

List of Models and Differences

Model	Description	Tested
NORA-W300	open CPU with U.FL	Yes
NORA-W301	open CPU with antenna pin on bottom	Yes
NORA-W306	open CPU with PCB trace antenna	Yes
NORA-W360	u-connectXpress with U.FL	No
NORA-W361	u-connectXpress with antenna pin on bottom	No
NORA-W366	u-connectXpress with PCB trace antenna	No

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

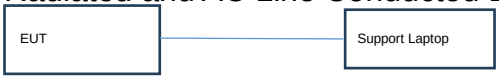
Samples of NORA-W300, NORA-W301 and NORA-W306 and the external antennas listed in Section 3.1 were provided for testing. For radiated tests, NORA-W306 was tested with its PCB trace antenna while NORA-W301 and NORA-W300 were each tested with external patch and whip antennas separately. Antenna port conducted measurements were only performed on NORA-W300 model as customer declared that the RF circuitry is identical in all models.
EUT was powered and controlled by a support laptop via a USB-C cable. EUT was controlled by U-Blox NORA-W3 Controller V1.5.0.0 software.

EUT configuration modes:

TEST MODE	DESCRIPTION
A	Transmit at 1Mbps (Duty-cycle: 63.8%)
B	Transmit at 2Mbps (Duty-cycle: 34.3%)

EUT SETUP BLOCK DIAGRAMS

Radiated and AC Line Conducted Emissions EUT Setup



For antenna port test setup block diagrams, please see the corresponding sections of this report.

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

NORA-W300

TEST	TEST MODE	AVAILABLE CHANNELS	TESTED CHANNEL	MODULATION TYPE	DATA RATE (Mbps)	Notes
RSE<1G	A	0 to 39	0 for Patch Ant. 19 for Whip Ant.	GFSK	1	1, 3, 4, 5
RSE≥1G	A	0 to 39	0,19,39	GFSK	1	1, 3, 5
RBE	A, B	0 to 39	0,39	GFSK	1 & 2	1, 5
PLCE	A	0 to 39	0	GFSK	1	3, 4

NORA-W301

TEST	TEST MODE	AVAILABLE CHANNELS	TESTED CHANNEL	MODULATION TYPE	DATA RATE (Mbps)	Notes
RSE<1G	A	0 to 39	0 for Patch Ant. 19 for Whip Ant.	GFSK	1	1, 3, 4
RSE≥1G	A	0 to 39	0,19,39	GFSK	1	1, 3
RBE	A, B	0 to 39	0,39	GFSK	1 & 2	1
PLCE	A	0 to 39	0	GFSK	1	3, 4

NORA-W306

TEST	TEST MODE	AVAILABLE CHANNELS	TESTED CHANNEL	MODULATION TYPE	DATA RATE (Mbps)	Notes
RSE<1G	A	0 to 39	0	GFSK	1	2, 4
RSE≥1G	A	0 to 39	0,19,39	GFSK	1	2
RBE	A, B	0 to 39	0,39	GFSK	1 & 2	2
PLCE	A	0 to 39	0	GFSK	1	3, 4

NORA-W300

TEST	TEST MODE	AVAILABLE CHANNELS	TESTED CHANNEL	MODULATION TYPE	DATA RATE (Mbps)	Notes
COP	A, B	0 to 39	0,19,39	GFSK	1 & 2	--
PSD	A, B	0 to 39	0,19,39	GFSK	1 & 2	--
CBE	A, B	0 to 39	0,39	GFSK	1 & 2	--
6DB	A, B	0 to 39	0,19,39	GFSK	1 & 2	--
OBW	A, B	0 to 39	0,19,39	GFSK	1 & 2	--
CSE	A	0 to 39	0,19,39	GFSK	1	3

Note 1: Based on fundamental maximization on center channel, worst-case X, Y, Z orientation was identified as;
Module: X, Abracon patch antenna: X
Module: X, Linx (TE) whip antenna: Z
All radiated testing were performed in these worst-case orientations as seen in the test setup photos exhibit.
Note 2: Worst-case X, Y or Z orientation identified as Module: X based on fundamental maximization on center channel. All radiated testing were performed in this worst-case orientation as seen in the test setup photos exhibit.
Note 3: Testing performed only on Mode A since highest output power was measured in this mode.
Note 4: Testing was limited to 1 channel only since no emissions were detected in this range.

Note 5: Pre-scans were performed on NORA-W300 and NORA-W301 with the Yageo patch antenna. NORA-W300 was found to be the worst case and therefore final testing was performed only on NORA-W300 in Module: X, Yageo patch antenna: Y orientation based on fundamental maximization on center channel.

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	20.7°C, 55.2% RH, 1016 mbar 20.7°C, 45.8% RH, 1017 mbar 21.4°C, 47.5% RH, 1013 mbar 20.2°C, 35.2% RH, 1016 mbar	3.3VDC	RMB	9/25/2023 9/27/2023 10/2/2023 1/24/2024
RE≥1G	22.9°C, 52.0% RH, 1009 mbar 23.2°C, 54.8% RH, 1005 mbar 23.0°C, 54.2% RH, 1005 mbar 21.4°C, 47.2% RH, 1010 mbar 20.2°C, 40.9% RH, 1003 mbar 22.9°C, 52.0% RH, 1016 mbar 23.1°C, 53.5% RH, 1015 mbar 17.5°C, 56.0% RH, 1003 mbar 20.5°C, 32% RH, 1018 mbar 18.4°C, 32.6% RH, 1015 mbar 20.2°C, 35.2% RH, 1016 mbar	3.3VDC	RMB	8/28/2023 9/13/2023 9/28/2023 10/3/2023 10/4/2023 11/15/2023 11/16/2023 12/05/2023 1/22/2024 1/23/2024 1/24/2024
RBE	21.5°C, 54.1% RH, 1003 mbar 20.1°C, 52.7% RH, 1004 mbar	3.3VDC	NP	5/15/2024 5/16/2024
PLCE	20.1°C, 47.3% RH, 998 mbar 20.0°C, 47.5% RH, 1001 mbar 19.1°C, 34.3% RH, 1017 mbar	3.3VDC	RMB, BQ	10/9/2023 10/10/2023 12/20/2023
Antenna Port Measurements	23.2°C, 54.8% RH, 1004 mbar 20.2°C, 45.4% RH, 1009 mbar 20.1°C, 49.6% RH, 1008 mbar	3.3VDC	RMB	9/07/2023 11/08/2023 11/30/2023

Note: On some data tables in this report, the EUT input power is listed as 5VDC. Any references to 5VDC in this report should be disregarded. Voltage supplied by the test fixture to the module was 3.3VDC during all testing.

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

3.4 DESCRIPTION OF SUPPORT EQUIPMENT

Support Equipment	Model #	Serial #
Laptop	Latitude 7310	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 EQUIPMENT USED

Rev. 10/26/2023

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental MXE EMI Receiver (1274541)	20Hz-26.5GHz	N9038A	Keysight	MY53220101	1274541	1	6/19/2024	6/19/2023
LISNs/Measurement Probes	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
LISN Asset 2092	150KHz-30MHz	NNLK 8121	Schwarzbeck	NNLK 8121-662	2092	I	10/31/2023	10/31/2022
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 1	719150		A-0015			III	NA	N/A
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**
CEMI-15	9kHz - 2GHz		C-S			II	2/14/2024	2/14/2023
Attenuators	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
20dB20W Attenuator(A#2499)	9KHz-4GHz	766-20	Narda	8710	2499	II	11/23/2023	11/23/2022

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

10/9/2023-10/10/2023 TEU

Rev. 12/7/2023

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	8/23/2024	8/23/2023
LISNs/Measurement Probes	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
LISN Asset 2708	9KHz-30MHz	LI-220C	Com-Power	20070054	2708	I	2/7/2024	2/7/2023
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 1	719150		A-0015			III	NA	N/A
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**
CEMI-04	9kHz - 2GHz		C-S			II	2/14/2024	2/14/2023
Attenuators	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
20dB ATT(A#2506)	9kHz-2GHz	PE7014-20	Pasternack	2016	2506	II	10/18/2024	10/18/2023

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

12/20/2023 TEU

4.1.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

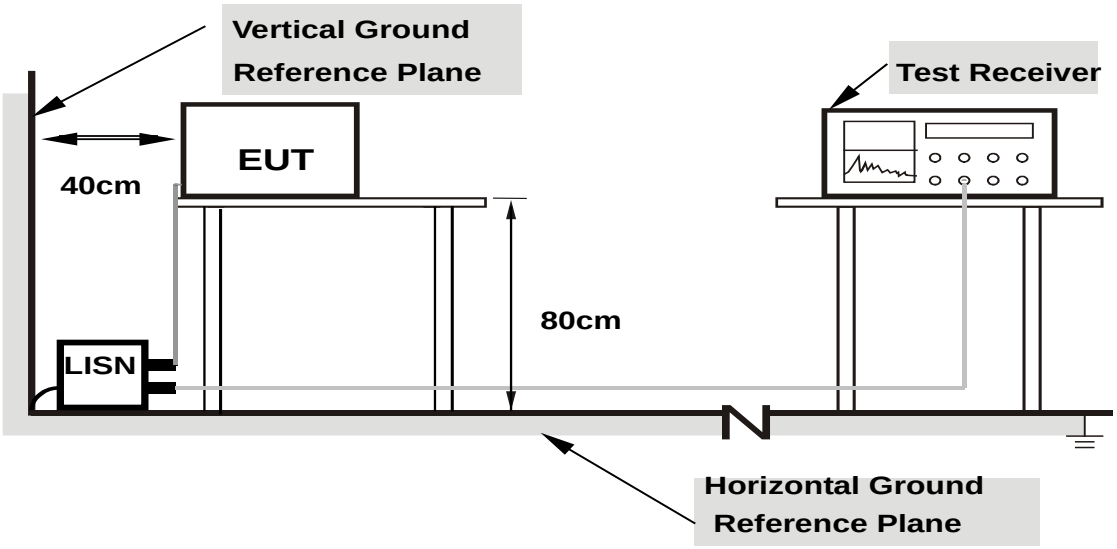
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded. RBW of 9kHz and VBW of 30kHz were used during measurement.

4.1.4 DEVIATIONS

No deviations from the standard.

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.1.6 EUT OPERATING CONDITIONS

a. EUT was operated according to manufacturer's specifications.

4.1.7 TEST RESULTS

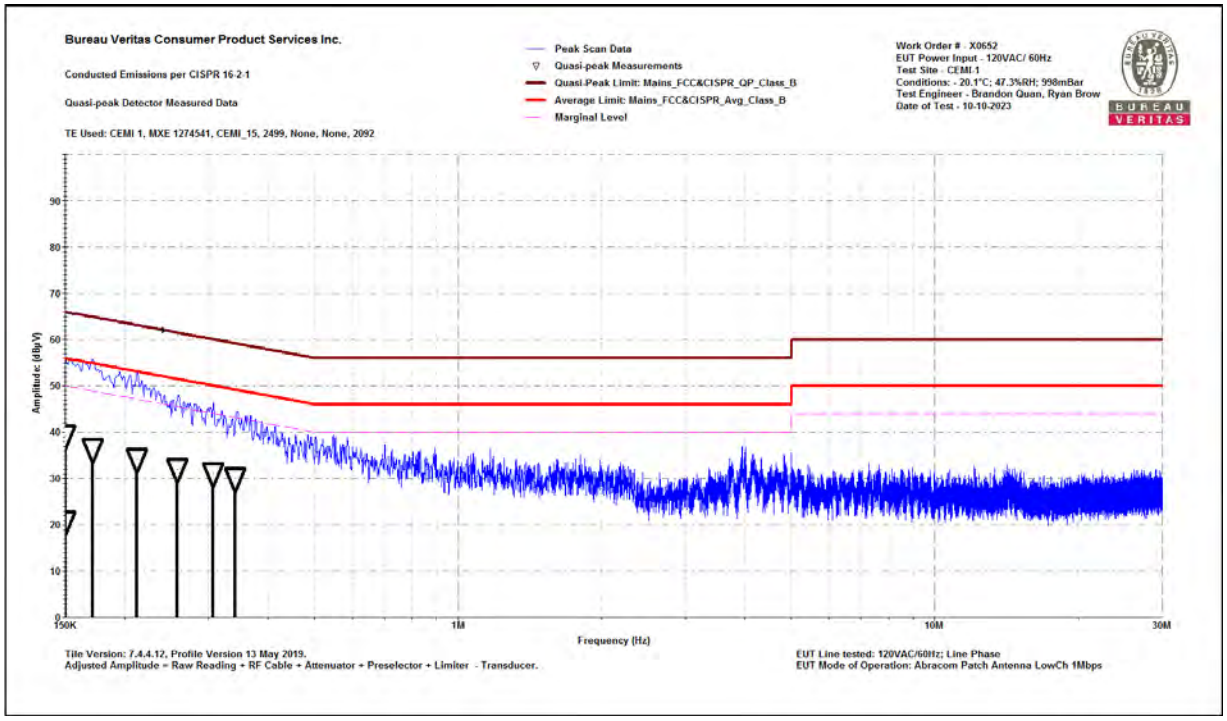
NORA-W300 with Abracon Patch Antenna

Bureau Veritas Consumer Product Services Inc.
Conducted Emissions per CISPR 16-2-1
Quasi-peak Detector Data
Notes:
EUT Line tested: 120VAC/60Hz; Line Phase
EUT Mode of Operation: Abracom Patch Antenna LowCh 1Mbps

Work Order # - X0652
EUT Power Input - 120VAC/ 60Hz
Test Site - CEMI-1
Conditions: - 20.1°C; 47.3%RH; 998mBar
Test Engineer - Brandon Quan, Ryan Brown
Date of Test - 10-10-2023

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB)	Adjusted QP Amplitude (dBµV)	QP Lim: Mains_FCC&CISPR_QP_Class_B (dBµV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)	Av Lim: Mains_FCC&CISPR_Avg_Class_B (dBµV)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Worst Margin (Avg Limit) (dB)
0.15	19.042	20.1	39.2	66	-26.8	PASS	-26.8	56	-16.8	PASS	-16.8
0.171	16.074	20.2	36.2	64.9	-28.7	PASS		54.9	-18.7	PASS	
0.212	13.931	20.2	34.1	63.1	-29	PASS		53.1	-19	PASS	
0.258	11.784	20.2	32	61.5	-29.5	PASS		51.5	-19.5	PASS	
0.307	10.908	20.2	31.1	60.1	-29	PASS		50.1	-19	PASS	
0.341	9.765	20.2	30	59.2	-29.2	PASS		49.2	-19.2	PASS	

0.15-30MHz Line Data Table



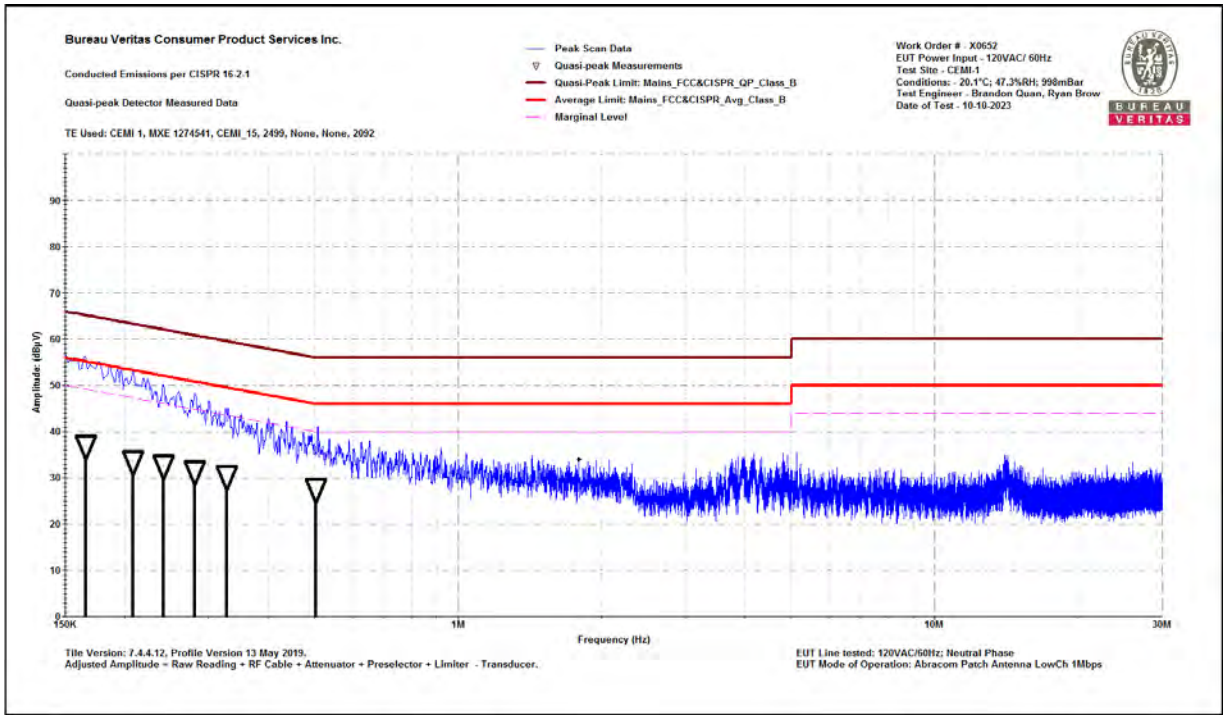
0.15-30MHz Line Graph

Bureau Veritas Consumer Product Services Inc.
Conducted Emissions per CISPR 16-2-1
Quasi-peak Detector Data
Notes:
EUT Line tested: 120VAC/60Hz; Neutral Phase
EUT Mode of Operation: Abracom Patch Antenna LowCh 1Mbps

Work Order # - X0652
EUT Power Input - 120VAC/ 60Hz
Test Site - CEMI-1
Conditions: - 20.1°C; 47.3%RH; 998mBar
Test Engineer - Brandon Quan, Ryan Brown
Date of Test - 10-10-2023

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB)	Adjusted QP Amplitude (dBµV)	QP Lim: Mains_FCC&CISPR_QP_Class_B (dBµV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)	Av Lim: Mains_FCC&CISPR_Avg_Class_B (dBµV)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Worst Margin (Avg Limit) (dB)
0.165	16.764	20.1	36.9	65.2	-28.3	PASS	-28.3	55.2	-18.3	PASS	-18.3
0.208	13.425	20.2	33.6	63.3	-29.7	PASS		53.3	-19.7	PASS	
0.241	12.347	20.2	32.5	62.1	-29.5	PASS		52.1	-19.5	PASS	
0.281	11.185	20.2	31.4	60.8	-29.4	PASS		50.8	-19.4	PASS	
0.327	10.104	20.2	30.3	59.5	-29.2	PASS		49.5	-19.2	PASS	
0.503	7.266	20.3	27.6	56	-28.4	PASS		46	-18.4	PASS	

0.15-30MHz Neutral Data Table



0.15-30MHz Neutral Graph

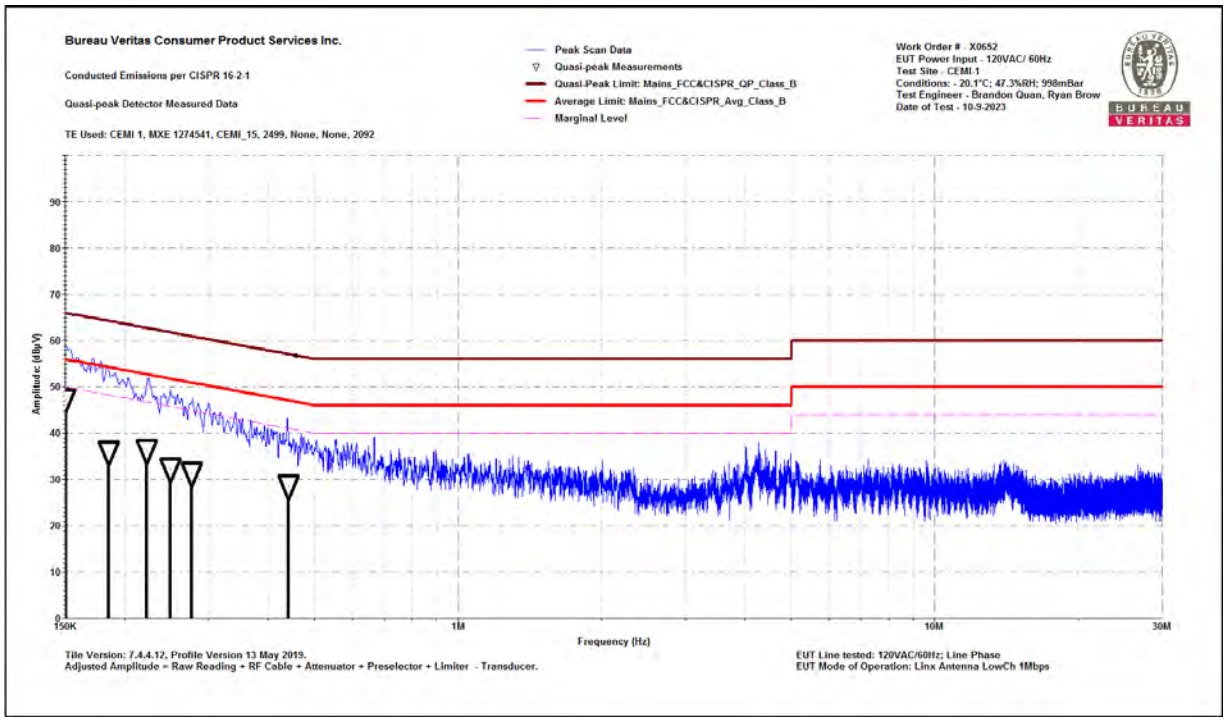
NORA-W300 with Linx (TE) Whip Antenna

Bureau Veritas Consumer Product Services Inc.
Conducted Emissions per CISPR 16-2-1
Quasi-peak Detector Data
Notes:
EUT Line tested: 120VAC/60Hz; Line Phase
EUT Mode of Operation: Linx Antenna LowCh 1Mbps

Work Order # - X0652
EUT Power Input - 120VAC/ 60Hz
Test Site - CEMI-1
Conditions: - 20.1°C; 47.3%RH; 998mBar
Test Engineer - Brandon Quan, Ryan Brown
Date of Test - 10-9-2023

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB)	Adjusted QP Amplitude (dBµV)	QP Lim: Mains_FCC&CISPR_QP_Class_B (dBµV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)	Av Lim: Mains_FCC&CISPR_Avg_Class_B (dBµV)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Worst Margin (Avg Limit) (dB)
0.15	27.069	20.1	47.2	66	-18.8	PASS	-18.8	56	-8.8	PASS	-8.8
0.185	15.818	20.2	36	64.2	-28.3	PASS		54.2	-18.3	PASS	
0.222	16.171	20.2	36.4	62.7	-26.4	PASS		52.7	-16.4	PASS	
0.25	12.186	20.2	32.4	61.8	-29.4	PASS		51.8	-19.4	PASS	
0.277	11.185	20.2	31.4	60.9	-29.6	PASS		50.9	-19.6	PASS	
0.44	8.241	20.3	28.5	57.1	-28.5	PASS		47.1	-18.5	PASS	

0.15-30MHz Line Data Table



0.15-30MHz Line Graph

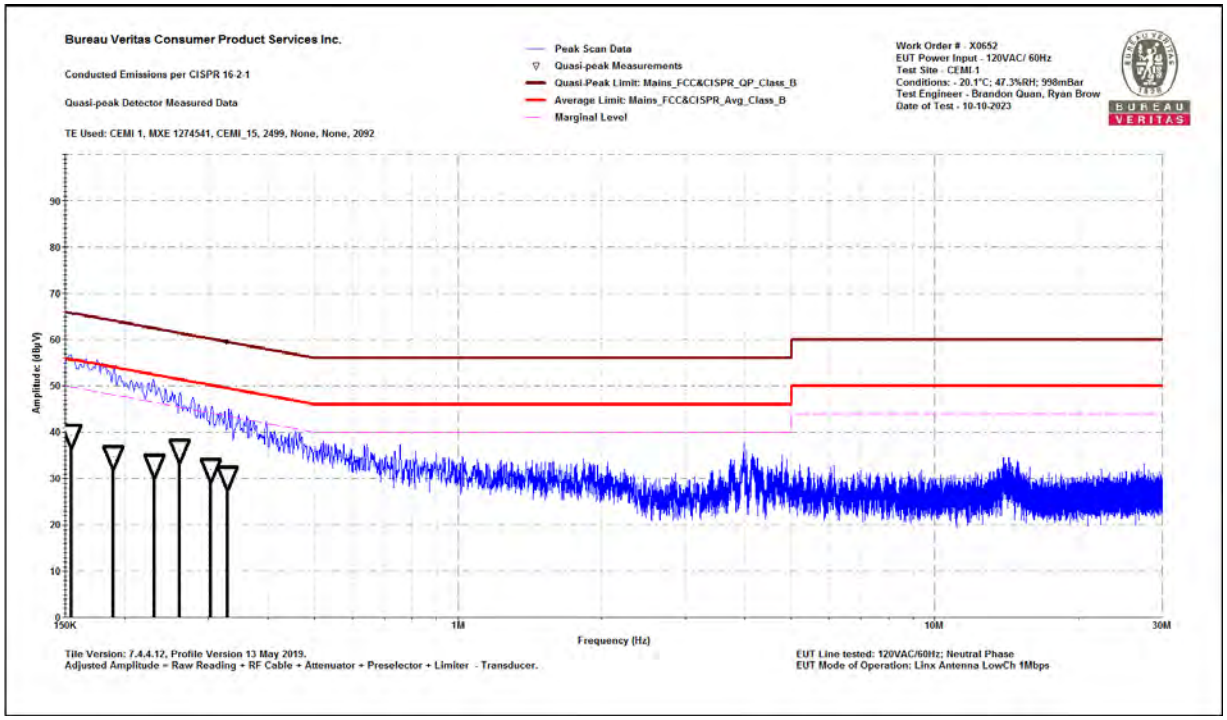
ACCREDITED
Cert. No. 1627-01

Bureau Veritas Consumer Product Services Inc.
Conducted Emissions per CISPR 16-2-1
Quasi-peak Detector Data
Notes:
EUT Line tested: 120VAC/60Hz; Neutral Phase
EUT Mode of Operation: Linx Antenna LowCh 1Mbps

Work Order # - X0652
EUT Power Input - 120VAC/ 60Hz
Test Site - CEMI-1
Conditions: - 20.1°C; 47.3%RH; 998mBar
Test Engineer - Brandon Quan, Ryan Brown
Date of Test - 10-10-2023

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB)	Adjusted QP Amplitude (dBµV)	QP Lim: Mains_FCC&CISPR_QP_Class_B (dBµV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)	Av Lim: Mains_FCC&CISPR_Avg_Class_B (dBµV)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Worst Margin (Avg Limit) (dB)
0.154	19.21	20.1	39.3	65.8	-26.4	PASS		55.8	-16.4	PASS	
0.189	14.639	20.2	34.8	64.1	-29.3	PASS		54.1	-19.3	PASS	
0.23	12.634	20.2	32.8	62.4	-29.6	PASS		52.4	-19.6	PASS	
0.26	15.984	20.2	36.2	61.4	-25.2	PASS	-25.2	51.4	-15.2	PASS	-15.2
0.303	11.765	20.2	31.9	60.2	-28.2	PASS		50.2	-18.2	PASS	
0.329	9.985	20.2	30.2	59.5	-29.3	PASS		49.5	-19.3	PASS	

0.15-30MHz Neutral Data Table



0.15-30MHz Neutral Graph

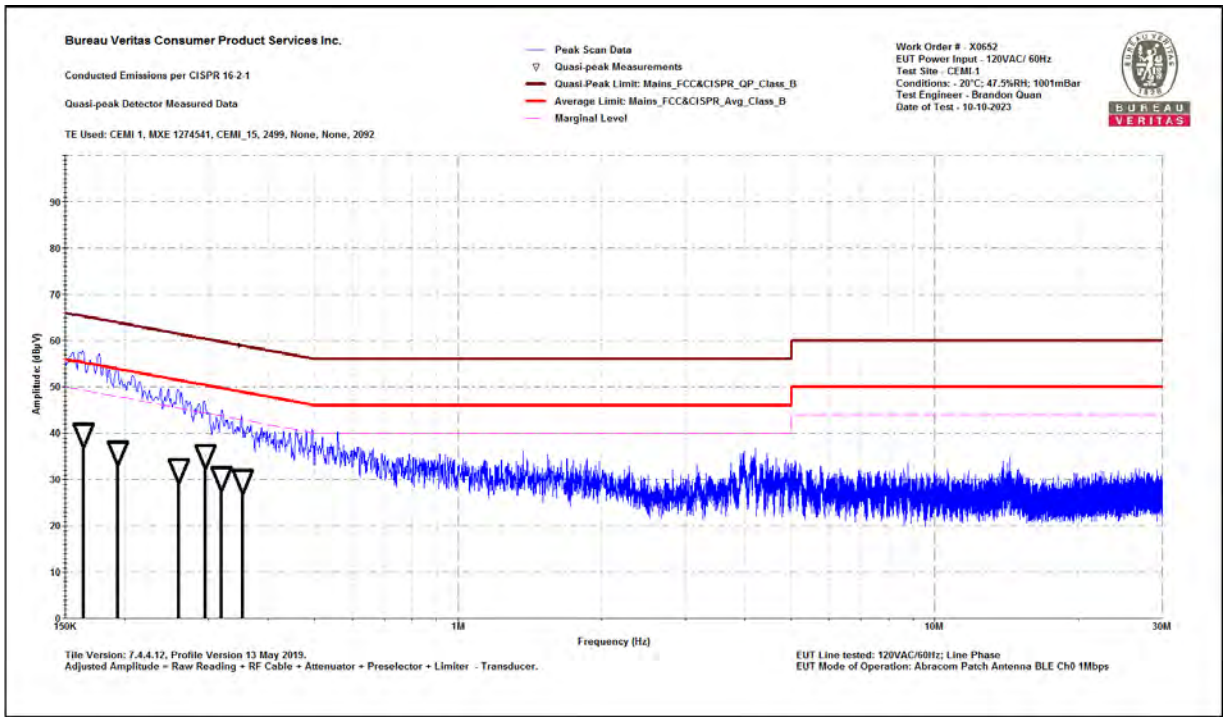
NORA-W301 with Abracon Patch Antenna

Bureau Veritas Consumer Product Services Inc.
Conducted Emissions per CISPR 16-2-1
Quasi-peak Detector Data
Notes:
EUT Line tested: 120VAC/60Hz; Line Phase
EUT Mode of Operation: Abracom Patch Antenna BLE Ch0 1Mbps

Work Order # - X0652
EUT Power Input - 120VAC/ 60Hz
Test Site - CEMI-1
Conditions: - 20°C; 47.5%RH; 1001mBar
Test Engineer - Brandon Quan
Date of Test - 10-10-2023

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB)	Adjusted QP Amplitude (dBµV)	QP Lim: Mains_FCC&CISPR_QP_Class_B (dBµV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)	Av Lim: Mains_FCC&CISPR_Avg_Class_B (dBµV)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Worst Margin (Avg Limit) (dB)
0.164	19.686	20.1	39.8	65.3	-25.5	PASS		55.3	-15.5	PASS	
0.193	15.847	20.2	36	63.9	-27.9	PASS		53.9	-17.9	PASS	
0.259	11.883	20.2	32.1	61.5	-29.4	PASS		51.5	-19.4	PASS	
0.295	14.97	20.2	35.2	60.4	-25.2	PASS	-25.2	50.4	-15.2	PASS	-15.2
0.319	10.229	20.2	30.5	59.7	-29.3	PASS		49.7	-19.3	PASS	
0.353	9.641	20.2	29.9	58.9	-29	PASS		48.9	-19	PASS	

0.15-30MHz Line Data Table



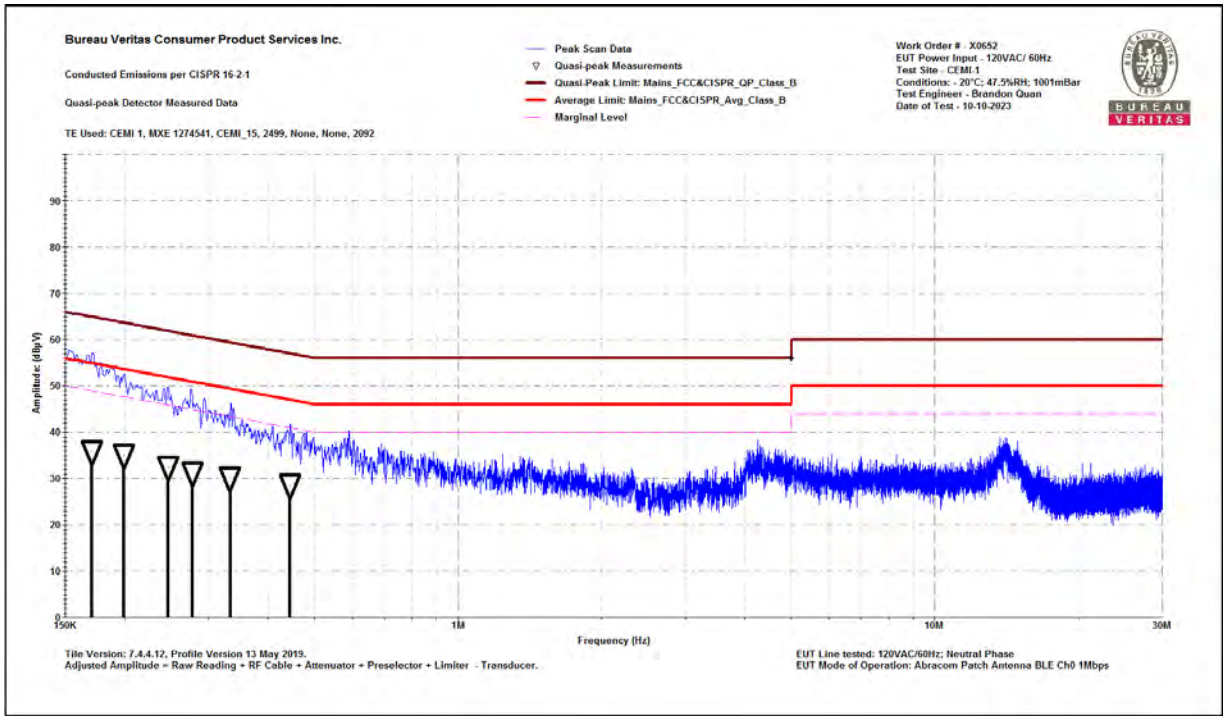
0.15-30MHz Line Graph

Bureau Veritas Consumer Product Services Inc.
Conducted Emissions per CISPR 16-2-1
Quasi-peak Detector Data
Notes:
EUT Line tested: 120VAC/60Hz; Neutral Phase
EUT Mode of Operation: Abracom Patch Antenna BLE Ch0 1Mbps

Work Order # - X0652
EUT Power Input - 120VAC/ 60Hz
Test Site - CEMI-1
Conditions: - 20°C; 47.5%RH; 1001mBar
Test Engineer - Brandon Quan
Date of Test - 10-10-2023

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB)	Adjusted QP Amplitude (dBµV)	QP Lim: Mains_FCC&CISPR_QP_Class_B (dBµV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)	Av Lim: Mains_FCC&CISPR_Avg_Class_B (dBµV)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Worst Margin (Avg Limit) (dB)
0.171	15.65	20.2	35.8	64.9	-29.1	PASS		54.9	-19.1	PASS	
0.199	14.859	20.2	35	63.6	-28.6	PASS		53.6	-18.6	PASS	
0.246	12.32	20.2	32.5	61.9	-29.4	PASS		51.9	-19.4	PASS	
0.277	11.083	20.2	31.3	60.9	-29.6	PASS		50.9	-19.6	PASS	
0.333	9.96	20.2	30.2	59.4	-29.2	PASS		49.4	-19.2	PASS	
0.445	8.313	20.3	28.6	57	-28.4	PASS	-28.4	47	-18.4	PASS	-18.4

0.15-30MHz Neutral Data Table



0.15-30MHz Neutral Graph

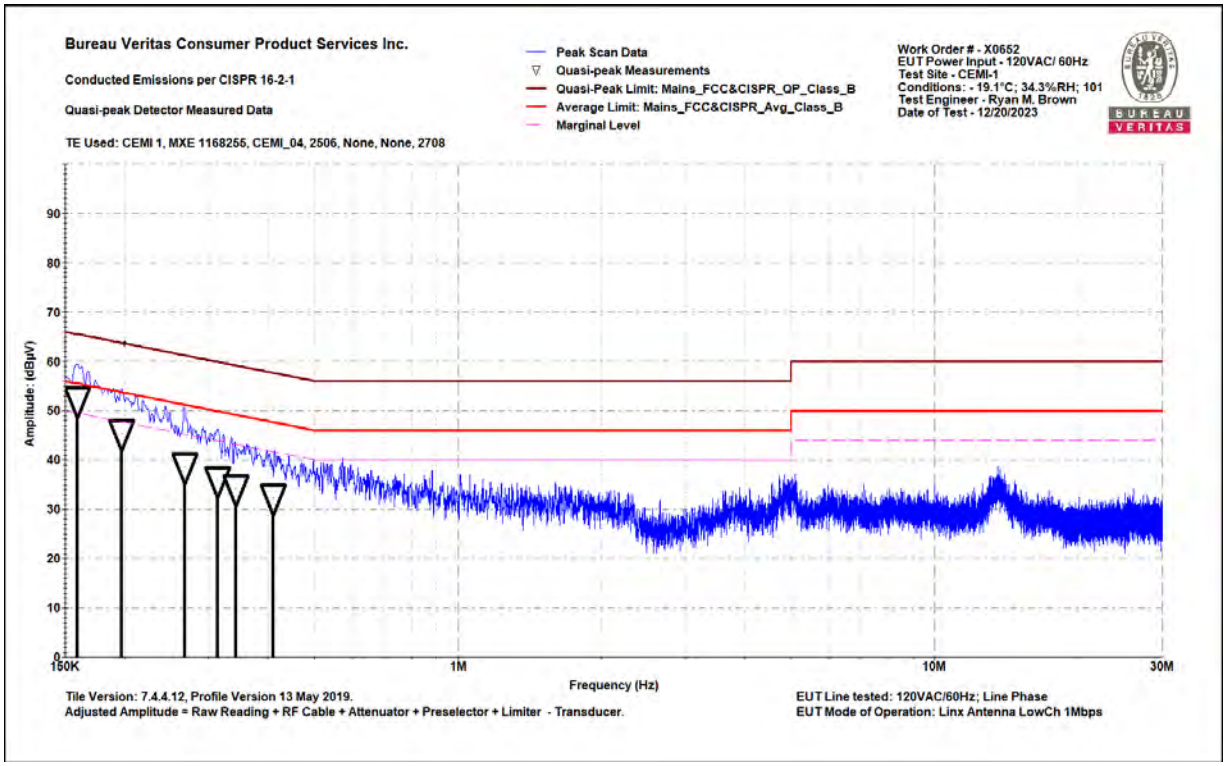
NORA-W301 with Linx (TE) Whip Antenna

Bureau Veritas Consumer Product Services Inc.
Conducted Emissions per CISPR 16-2-1
Quasi-peak Detector Data
Notes:
EUT Line tested: 120VAC/60Hz; Line Phase
EUT Mode of Operation: Linx Antenna LowCh 1Mbps

Work Order # - X0652
EUT Power Input - 120VAC/ 60Hz
Test Site - CEMI-1
Conditions: - 19.1°C; 34.3%RH; 1017mBar
Test Engineer - Ryan M. Brown
Date of Test - 12/20/2023

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB)	Adjusted QP Amplitude (dBµV)	QP Lim: Mains_FCC&CISPR_QP_Class_B (dBµV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)	Av Lim: Mains_FCC&CISPR_Avg_Class_B (dBµV)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Worst Margin (Avg Limit) (dB)
0.159	31.988	20	52	65.5	-13.5	PASS	-13.5	55.5	-3.5	PASS	-3.5
0.197	25.37	20	45.4	63.7	-18.3	PASS		53.7	-8.3	PASS	
0.267	18.47	20.1	38.5	61.2	-22.7	PASS		51.2	-12.7	PASS	
0.313	15.806	20.1	35.9	59.9	-24	PASS		49.9	-14	PASS	
0.342	14.012	20.1	34.1	59.1	-25.1	PASS		49.1	-15.1	PASS	
0.41	12.176	20.1	32.3	57.6	-25.4	PASS		47.6	-15.4	PASS	

0.15-30MHz Line Data Table



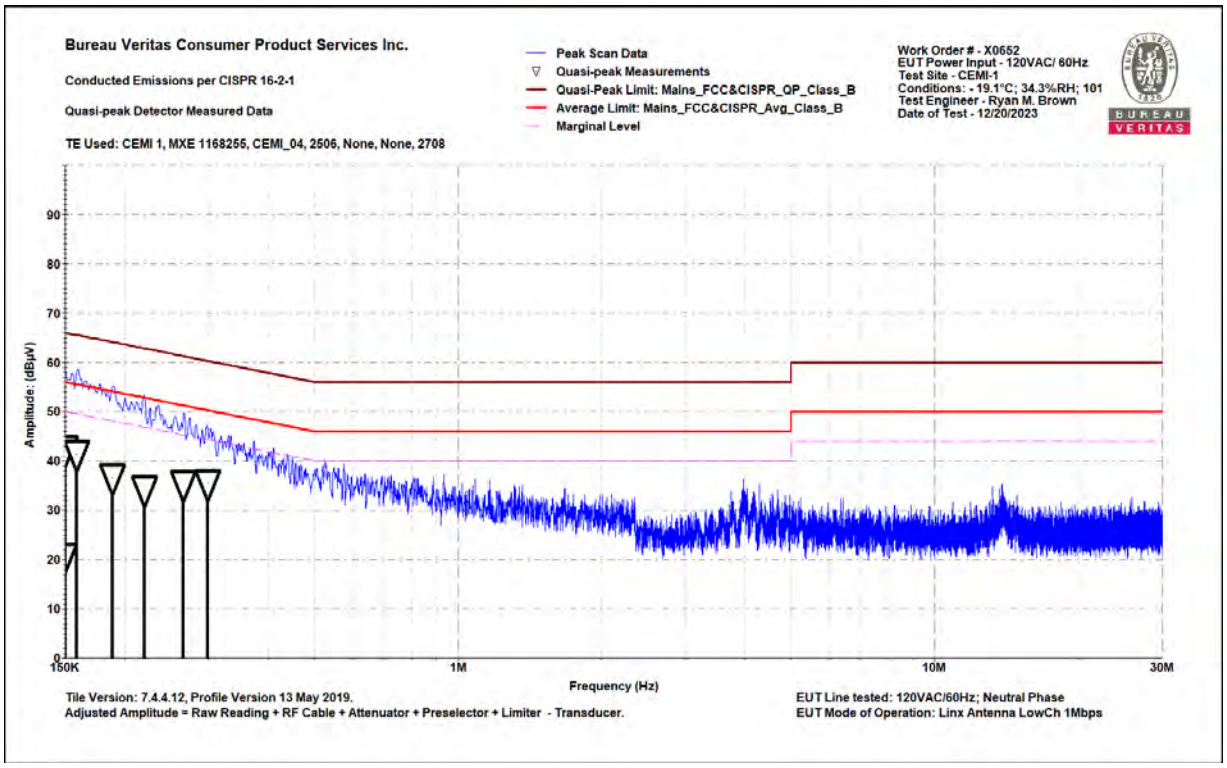
0.15-30MHz Line Graph

Bureau Veritas Consumer Product Services Inc.
Conducted Emissions per CISPR 16-2-1
Quasi-peak Detector Data
Notes:
EUT Line tested: 120VAC/60Hz; Neutral Phase
EUT Mode of Operation: Linx Antenna LowCh 1Mbps

Work Order # - X0652
EUT Power Input - 120VAC/ 60Hz
Test Site - CEMI-1
Conditions: - 19.1°C; 34.3%RH; 1017mBar
Test Engineer - Ryan M. Brown
Date of Test - 12/20/2023

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB)	Adjusted QP Amplitude (dBµV)	QP Lim: Mains_FCC&CISPR_QP_Class_B (dBµV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)	Av Lim: Mains_FCC&CISPR_Avg_Class_B (dBµV)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Worst Margin (Avg Limit) (dB)
0.15	22.333	20	42.3	66	-23.7	PASS	-23.7	56	-13.7	PASS	-13.7
0.159	21.4	20	41.4	65.5	-24.2	PASS		55.5	-14.2	PASS	
0.188	16.57	20	36.6	64.1	-27.5	PASS		54.1	-17.5	PASS	
0.22	14.028	20	34.1	62.8	-28.7	PASS		52.8	-18.7	PASS	
0.265	15.128	20	35.2	61.3	-26.1	PASS		51.3	-16.1	PASS	
0.298	15.31	20	35.3	60.3	-25	PASS		50.3	-15	PASS	

0.15-30MHz Neutral Data Table



0.15-30MHz Neutral Graph

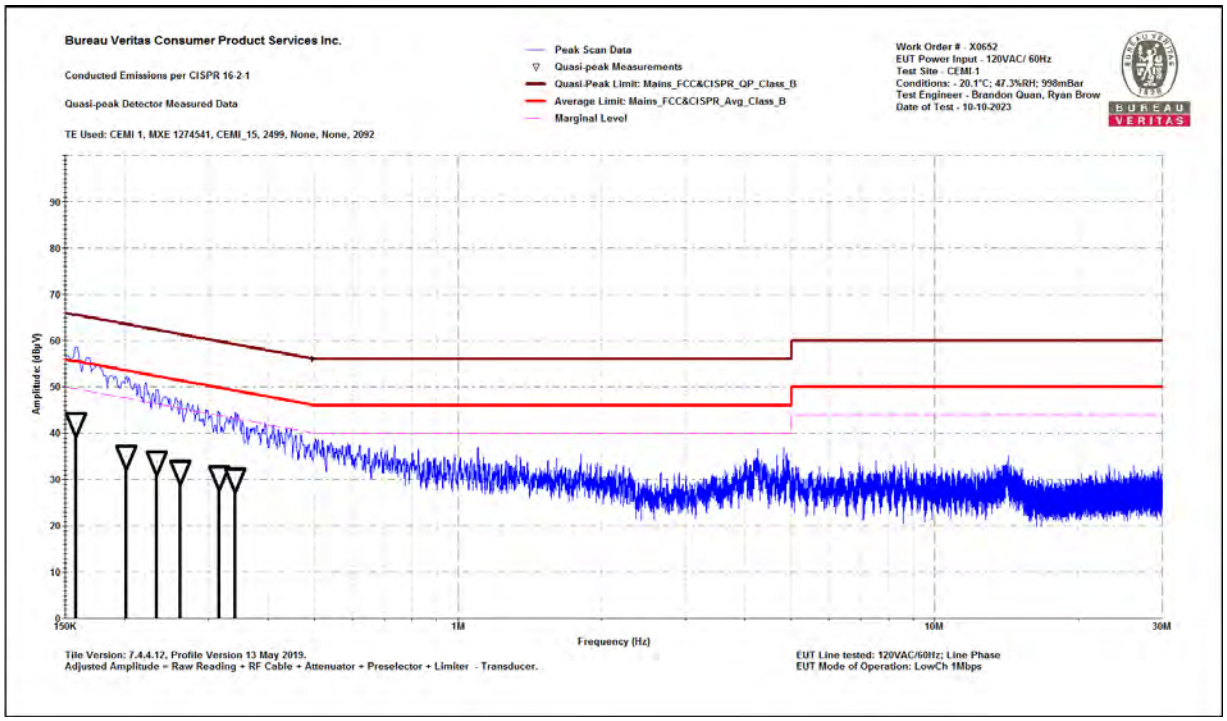
NORA-W306

Bureau Veritas Consumer Product Services Inc.
Conducted Emissions per CISPR 16-2-1
Quasi-peak Detector Data
Notes:
EUT Line tested: 120VAC/60Hz; Line Phase
EUT Mode of Operation: LowCh 1Mbps

Work Order # - X0652
EUT Power Input - 120VAC/ 60Hz
Test Site - CEMI-1
Conditions: - 20.1°C; 47.3%RH; 998mBar
Test Engineer - Brandon Quan, Ryan Brown
Date of Test - 10-10-2023

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB)	Adjusted QP Amplitude (dBµV)	QP Lim: Mains_FCC&CISPR_QP_Class_B (dBµV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)	Av Lim: Mains_FCC&CISPR_Avg_Class_B (dBµV)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Worst Margin (Avg Limit) (dB)
0.158	22.055	20.1	42.2	65.6	-23.4	PASS	-23.4	55.6	-13.4	PASS	-13.4
0.202	14.853	20.2	35	63.5	-28.5	PASS		53.5	-18.5	PASS	
0.233	13.599	20.2	33.8	62.3	-28.5	PASS		52.3	-18.5	PASS	
0.261	11.707	20.2	31.9	61.4	-29.5	PASS		51.4	-19.5	PASS	
0.315	10.355	20.2	30.6	59.8	-29.3	PASS		49.8	-19.3	PASS	
0.34	9.951	20.2	30.2	59.2	-29	PASS		49.2	-19	PASS	

0.15-30MHz Line Data Table



0.15-30MHz Line Graph

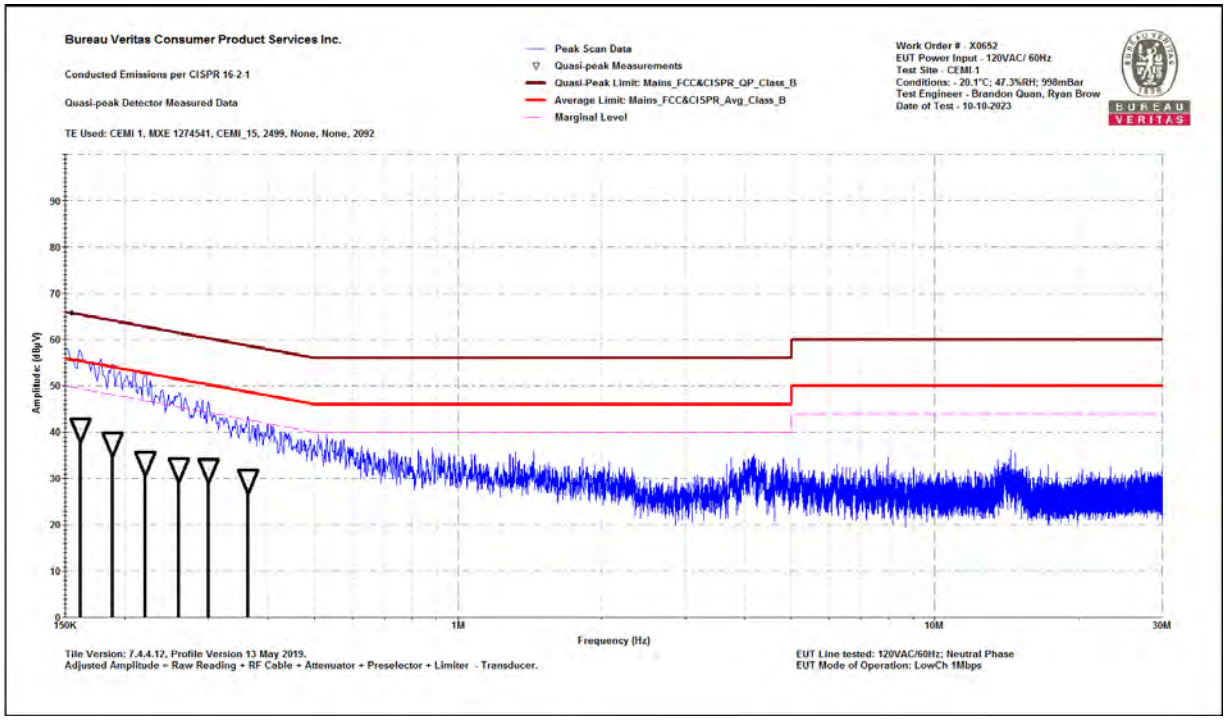
ACCREDITED
Cert. No. 1627-01

Bureau Veritas Consumer Product Services Inc.
Conducted Emissions per CISPR 16-2-1
Quasi-peak Detector Data
Notes:
EUT Line tested: 120VAC/60Hz; Neutral Phase
EUT Mode of Operation: LowCh 1Mbps

Work Order # - X0652
EUT Power Input - 120VAC/ 60Hz
Test Site - CEMI-1
Conditions: - 20.1°C; 47.3%RH; 998mBar
Test Engineer - Brandon Quan, Ryan Brown
Date of Test - 10-10-2023

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB)	Adjusted QP Amplitude (dBµV)	QP Lim: Mains_FCC&CISPR_QP_Class_B (dBµV)	Margin to QP Limit (dB)	QP Limit Results (Pass/Fail)	Worst Margin (QP Limit) (dB)	Av Lim: Mains_FCC&CISPR_Avg_Class_B (dBµV)	Margin to Avg Limit (dB)	Avg Limit Results (Pass/Fail)	Worst Margin (Avg Limit) (dB)
0.161	20.582	20.1	40.7	65.4	-24.7	PASS	-24.7	55.4	-14.7	PASS	-14.7
0.189	17.532	20.2	37.7	64.1	-26.4	PASS		54.1	-16.4	PASS	
0.221	13.33	20.2	33.5	62.8	-29.3	PASS		52.8	-19.3	PASS	
0.259	11.897	20.2	32.1	61.5	-29.4	PASS		51.5	-19.4	PASS	
0.299	11.838	20.2	32	60.3	-28.2	PASS		50.3	-18.2	PASS	
0.363	9.384	20.2	29.6	58.7	-29	PASS		48.7	-19	PASS	

0.15-30MHz Neutral Data Table



0.15-30MHz Neutral Graph

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. Lower limit applies 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

Rev. 10/26/2023

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	3/30/2024	3/30/2023
Rental MXE EMI Receiver(1170725)	20Hz-26.5GHz	N9038A	Agilent	MY51210151	1170725	I	2/21/2024	2/21/2023
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz	1685	I	11/29/2024	11/29/2022
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	10/18/2024	10/18/2023
8447F Rental PA	9KHz-1.3GHz	84477F	HP	3113A05395		II	10/18/2024	10/18/2023
2116 BRF	0.009-18000MHz	BRM50702	Micro-Tronics	G226	2116	II	11/16/2023	11/16/2022
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	10/25/2023	10/25/2021
3116C Horn / PA	18-40GHz	3116C	ETS	258845	2709	I	3/7/2024	3/7/2023
3117 Horn / PA	1-18GHZ	3117	ETS	259199	2710	I	3/15/2024	3/15/2023
2615 Active Loop Antenna	9KHz-30MHz	6502	EMCO	2049	2615	I	1/18/2025	1/18/2023
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 #2474	9KHz-18GHz		MegaPhase			II	11/1/2023	11/1/2022
Asset #2610	9KHz-18GHz		Pasternack			II	3/3/2024	3/3/2023
Asset #2288	9KHz-26.5GHz	FLC-1.5FT-SMSM+	Mini-Circuits	16021029		II	1/26/2024	1/26/2023
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 RSE 1/22/2024-1/24/2024

Rev. 1/22/2024

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	3/30/2024	3/30/2023
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz	1685	I	11/29/2024	11/29/2022
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**
3010 HF PA	1-18GHz	RAMP00M50GA	RF-LAMBDA	17032300048	3010	II	10/23/2024	10/23/2023
8447F Rental PA	9KHz-1.3GHz	84477F	HP	3113A05395		II	10/18/2024	10/18/2023
2116 BRF	0.009-18000MHz	BRM50702	Micro-Tronics	G226	2116	II	12/5/2024	12/5/2023
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	11/2/2025	11/2/2023
3116C Horn / PA	18-40GHz	3116C	ETS	258845	2709	I	3/7/2024	3/7/2023
2615 Active Loop Antenna	9KHz-30MHz	6502	EMCO	2049	2615	I	1/18/2025	1/18/2023
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	3/3/2024	3/3/2023
Asset #2288	9KHz-26.5GHz	FLC-1.5FT-SMSM+	Mini-Circuits	16021029		II	1/26/2024	1/26/2023
Asset #2681	9KHz-18GHz		Pasternack			II	12/7/2024	12/7/2023
Asset #2690	1-40GHz		Pasternack			II	8/22/2024	8/22/2023
Asset #2608	9KHz-18GHz		Pasternack			II	11/2/2024	11/2/2023

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

For Radiated Band-edge 5/15/2024-5/16/2024

Rev. 4/22/2024

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
Spectrum Analyzers / Receivers /Preselectors	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Gauss TDEMI Ultra 40	9kHz-40Ghz	TDEMI Ultra 40	Gauss	2305001	2558	1	7/9/2024	7/9/2023
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	3/27/2025	3/27/2023
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2608	9KHz-18GHz		Pasternack			II	11/2/2024	11/2/2023
Asset #2681	9KHz-18GHz		Pasternack			II	12/7/2024	12/7/2023
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

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-18GHz range, a horn antenna with preamp 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. When needed this frequency range was split into 1-6GHz at 3m and 6-18GHz at 1m.

e. In 18-25GHz a horn antenna with preamp was used to make measurements at 1m away from the EUT.

f. Following bandwidths were used during emissions testing:

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

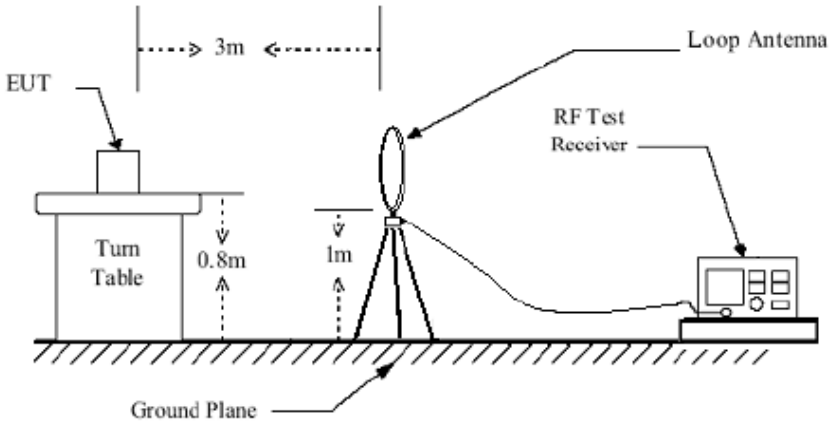
Per FCC §15.209(d), limits §15.209(a) are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. If peak measurements in these frequency bands were below the applicable limits, QPk and RMS measurements were not performed.

4.2.4 DEVIATIONS

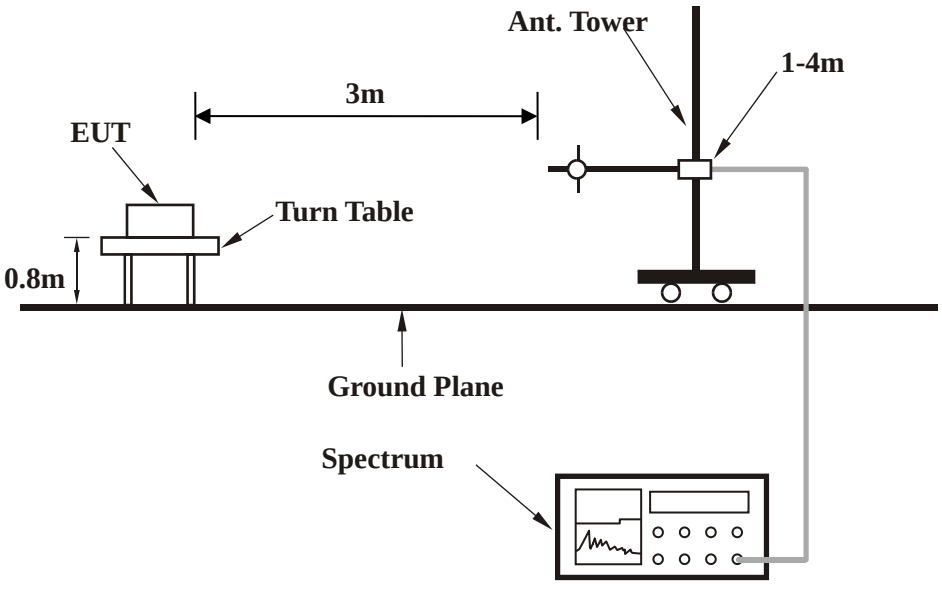
No deviations from the standard.

4.2.5 TEST SETUP

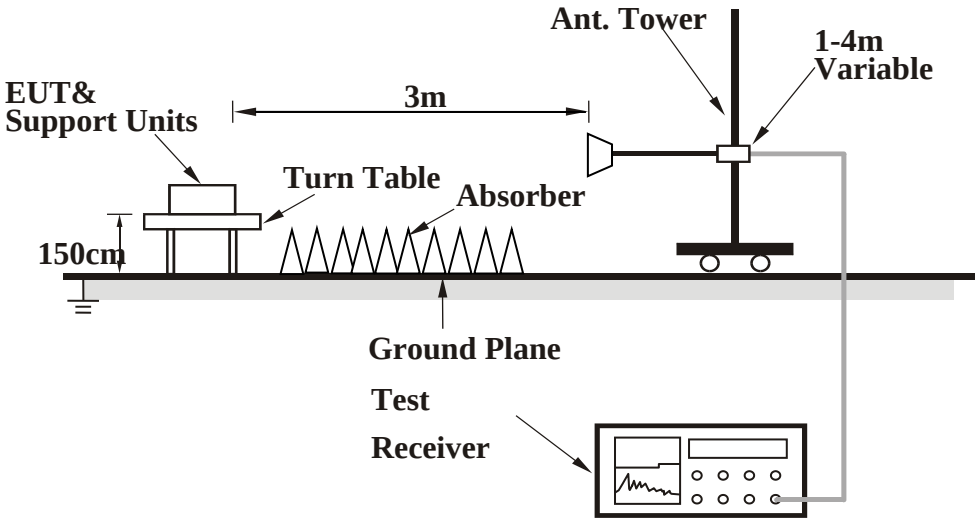
Below 30MHz Test Setup



30MHz - 1GHz Test Setup

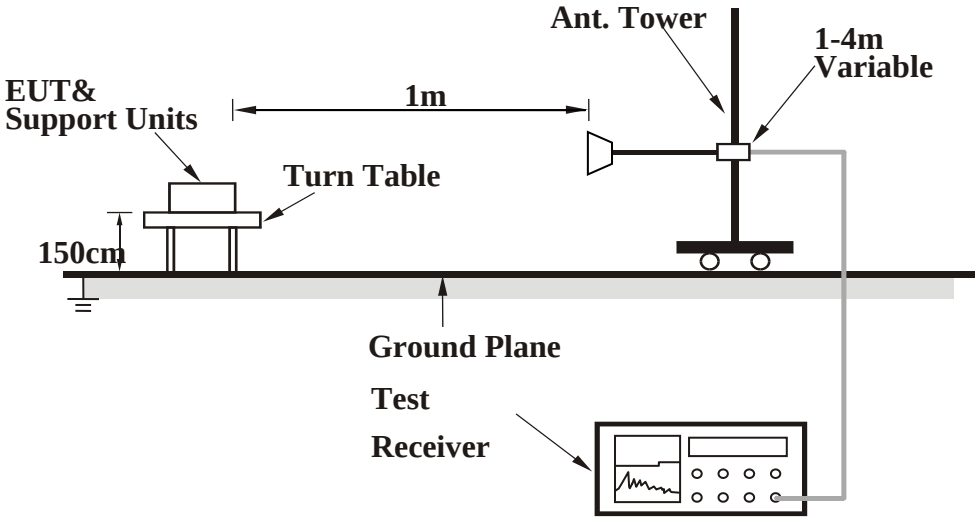


1GHz – 18GHz (or 6GHz when necessary) Test Setup



6GHz – 18GHz Test Setup (when necessary)

18GHz – 25GHz 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.

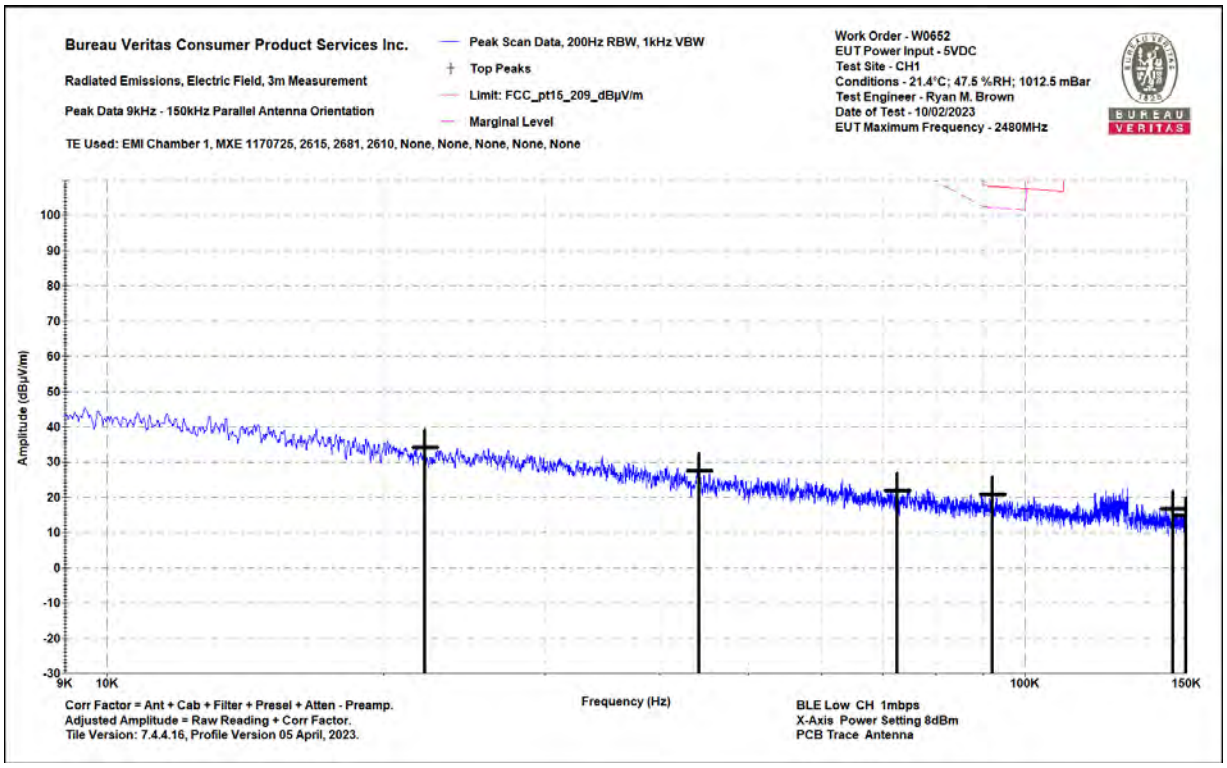
4.2.7 TEST RESULTS

Emissions below 1GHz

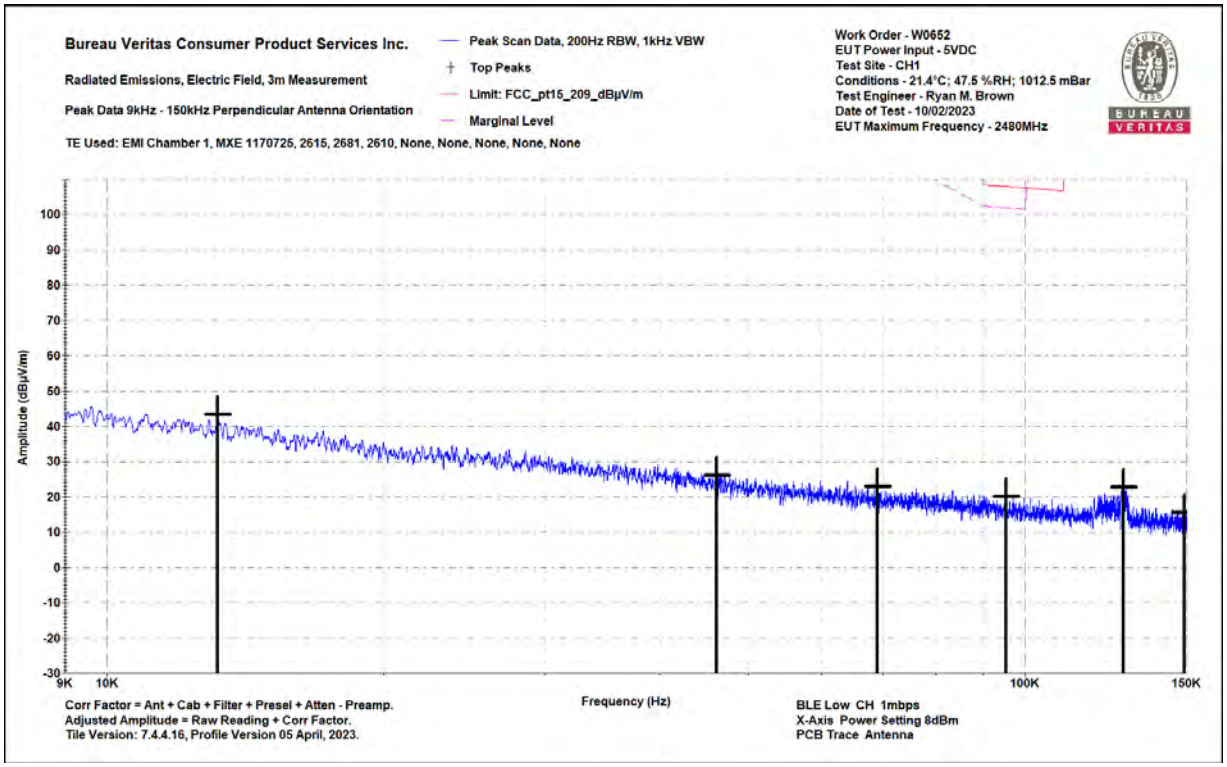
NORA-W306

Low CH, 1Mbps, Module axis: X

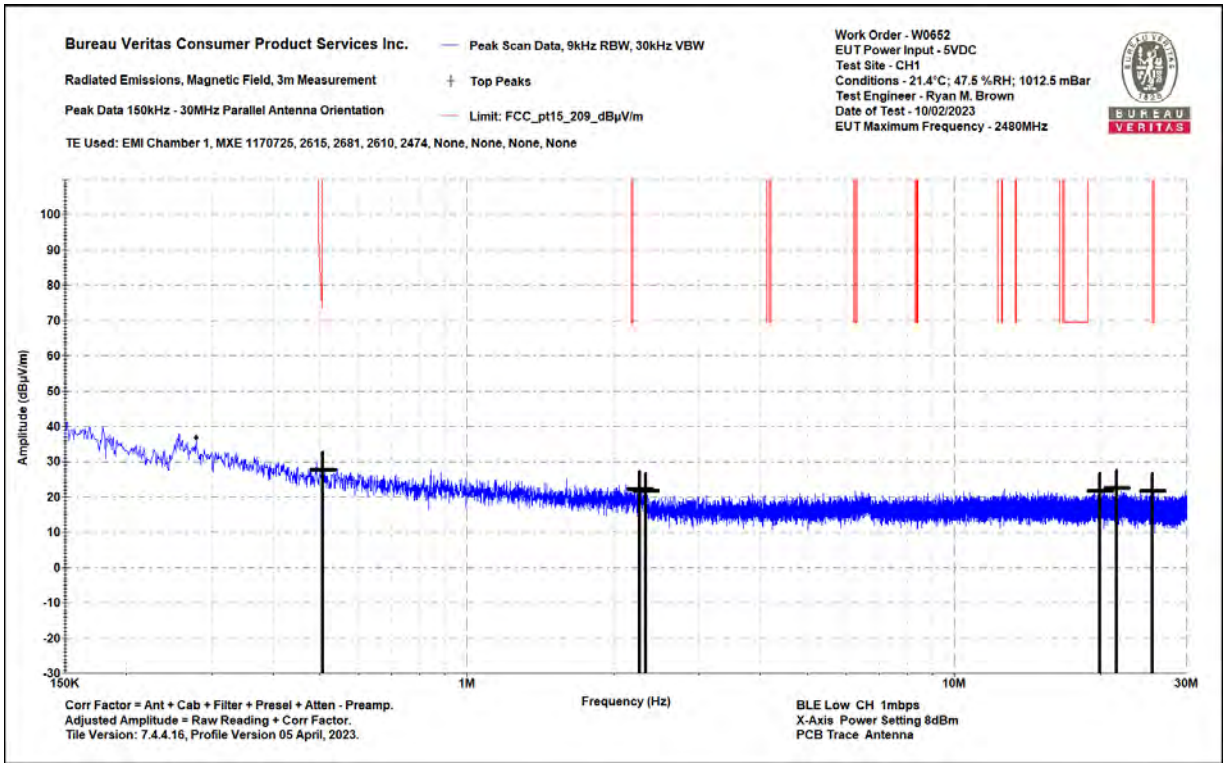
In 9kHz-30MHz range, no emissions within 20dB of the limit were identified in restricted bands. Only plots shown below.



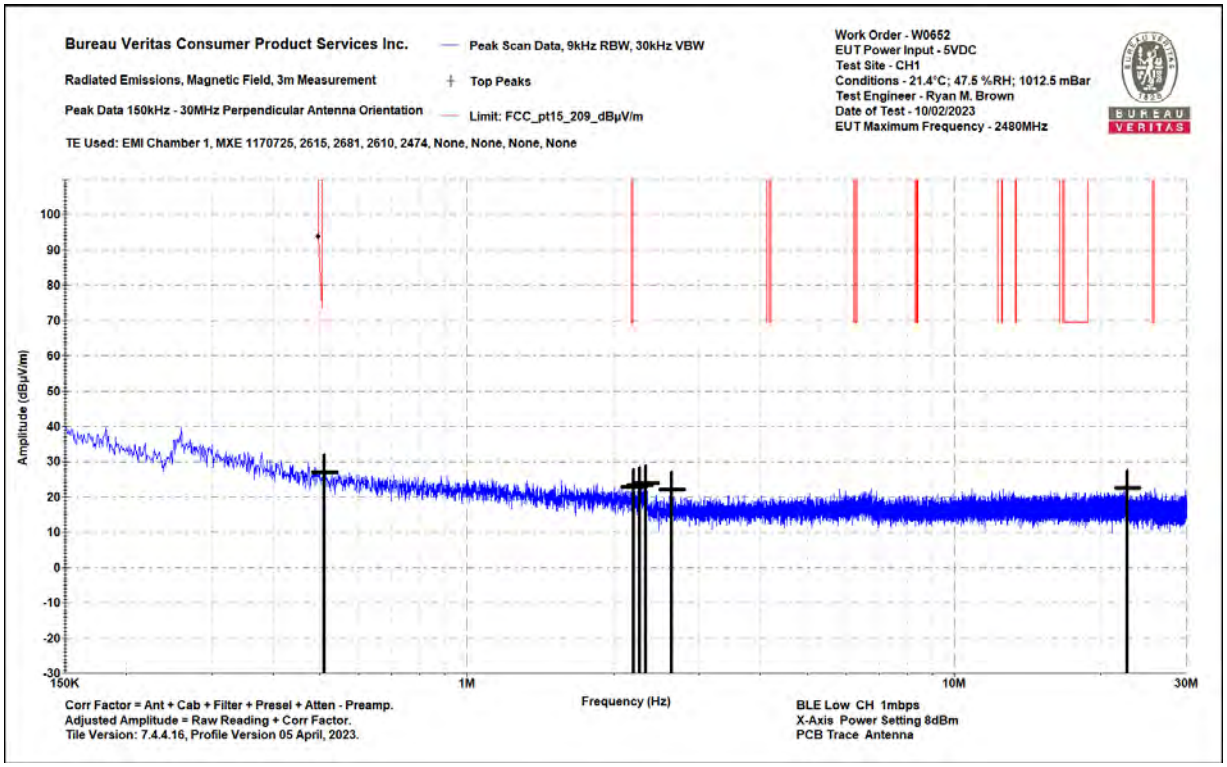
0.009-0.15MHz Parallel



0.009-0.15MHz Perpendicular



0.15-30MHz Parallel

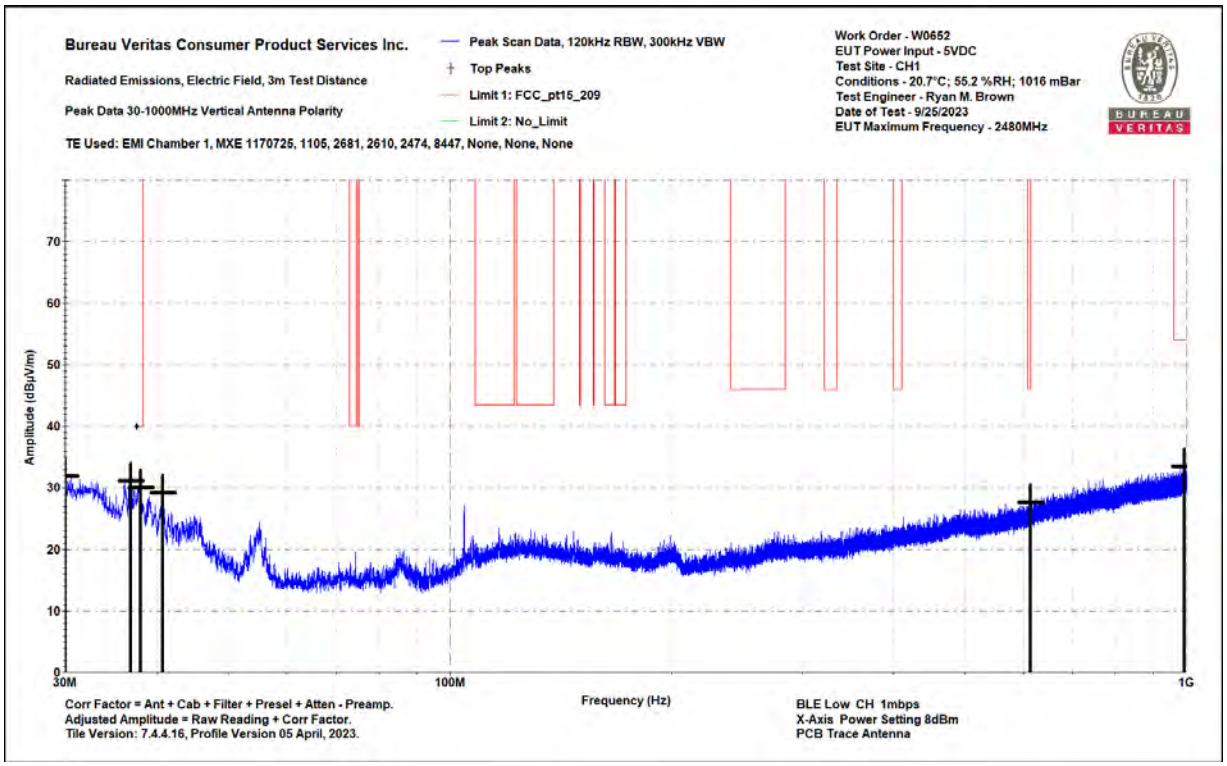


0.15-30MHz Perpendicular

Bureau Veritas Consumer Product Services Inc.	Work Order - W0652
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 5VDC
Top Peaks Vertical 30-1000MHz	Test Site - CH1
Notes:	Conditions - 20.7°C; 55.2 %RH; 1016 mBar
BLE Low CH 1mbps	Test Engineer - Ryan M. Brown
X-Axis Power Setting 8dBm	Date of Test - 9/25/2023
PCB Trace Antenna	

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)
38.027	35.5	-5.4	30.1	40	-9.9	PASS	-9.9	150	180
613.649	29.4	-1.7	27.7	46	-18.3	PASS		100	45
992.58	28.4	5	33.4	54	-20.6	PASS		200	0

30-1000MHz Vertical Data Table

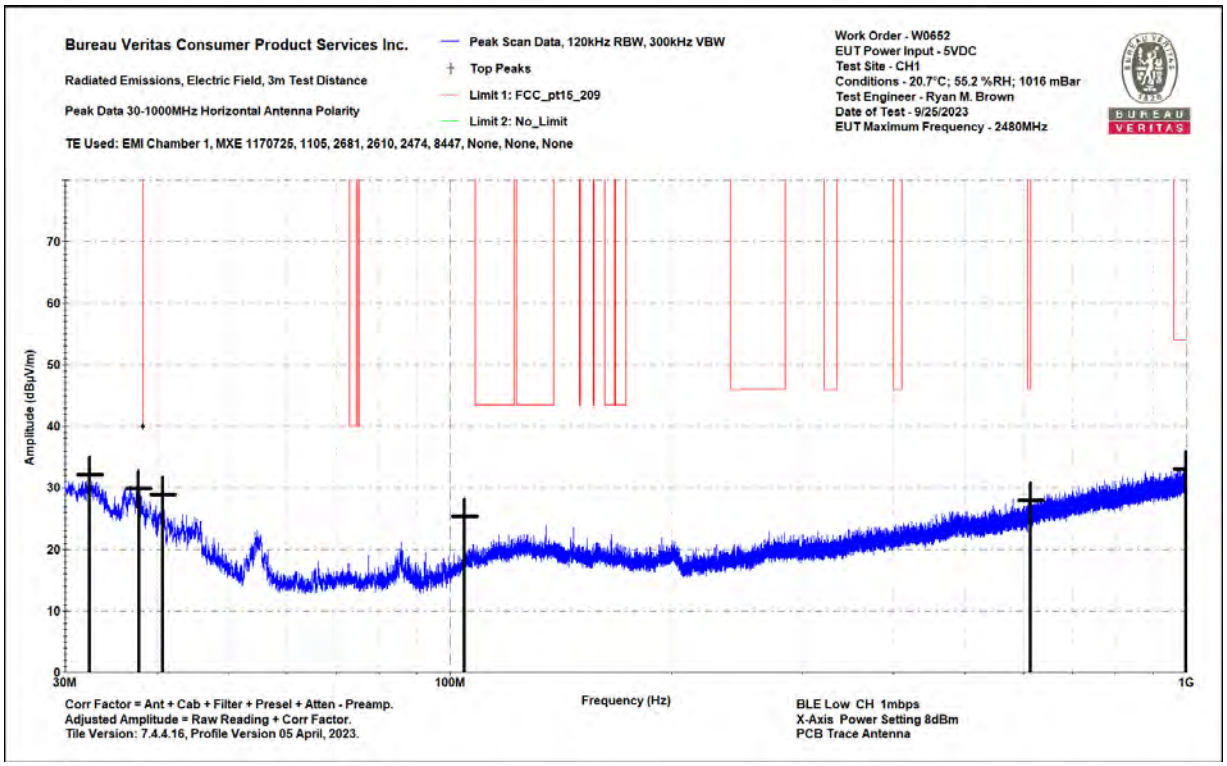


30-1000MHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.	Work Order - W0652
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 5VDC
Top Peaks Horizontal 30-1000MHz	Test Site - CH1
Notes:	Conditions - 20.7°C; 55.2 %RH; 1016 mBar
BLE Low CH 1mbps	Test Engineer - Ryan M. Brown
X-Axis Power Setting 8dBm	Date of Test - 9/25/2023
PCB Trace Antenna	

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)
37.76	35	-5.2	29.9	40	-10.1	PASS	-10.1	150	90
613.576	29.6	-1.7	28	46	-18	PASS		200	0
997.575	28.1	5	33.1	54	-20.9	PASS		200	315

30-1000MHz Horizontal Data Table

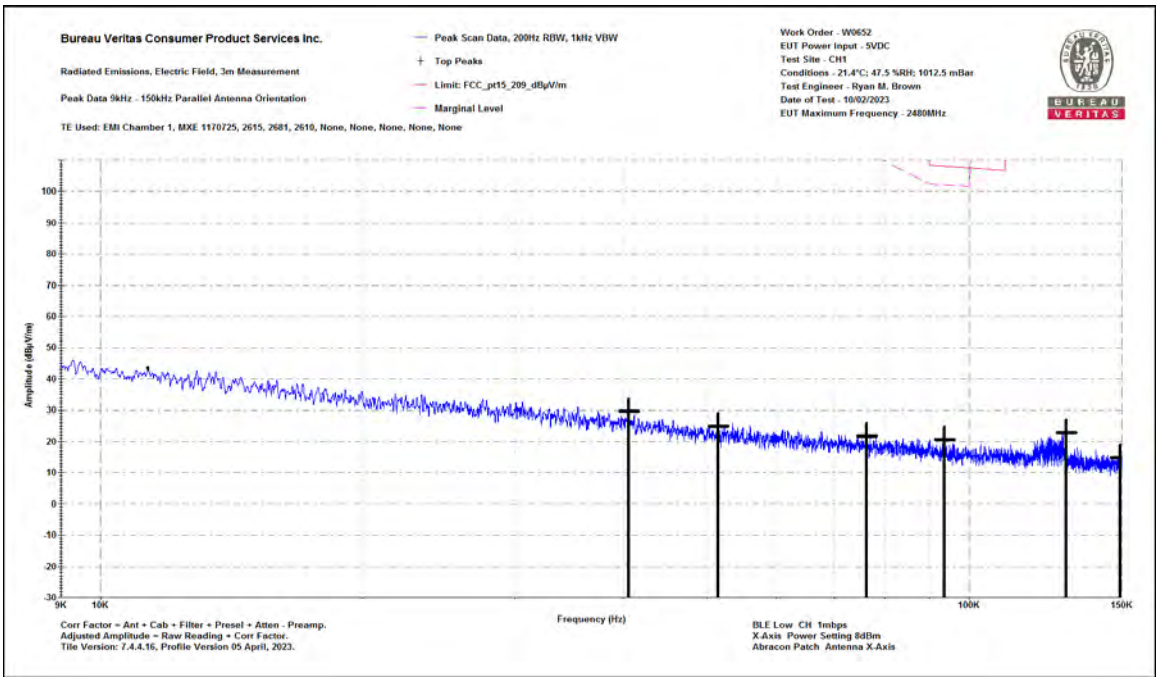


30-1000MHz Horizontal Plot

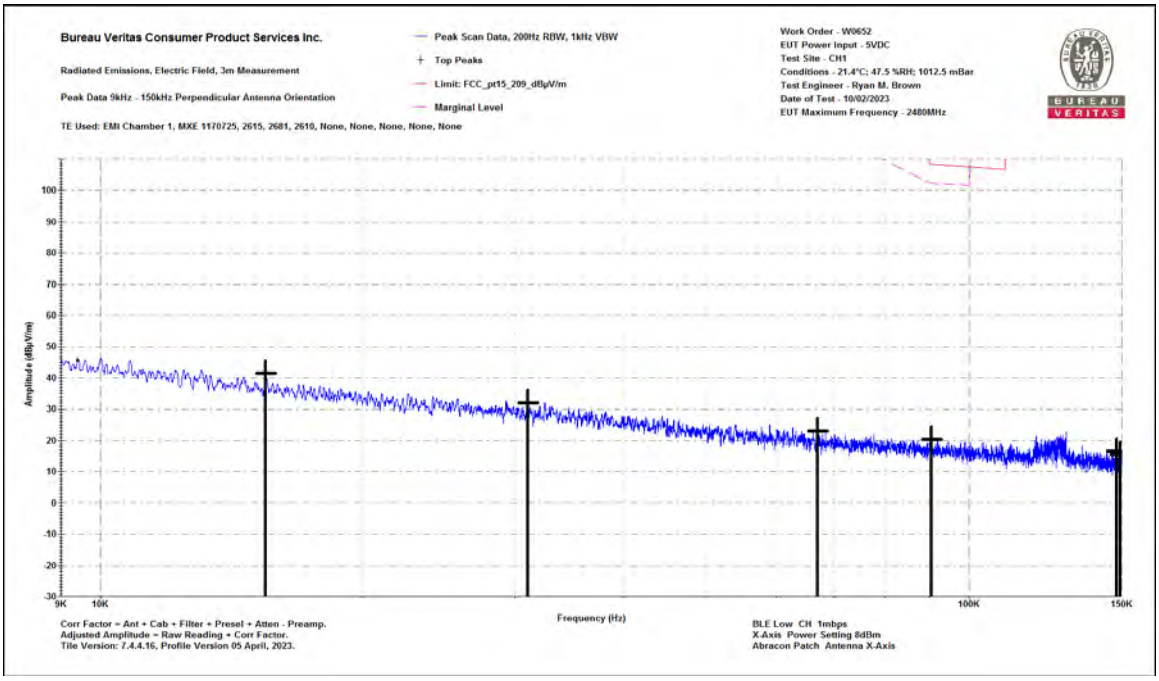
NORA-W300 with Abracon Patch Antenna

Low CH, 1Mbps, Module axis: X, External antenna axis: X

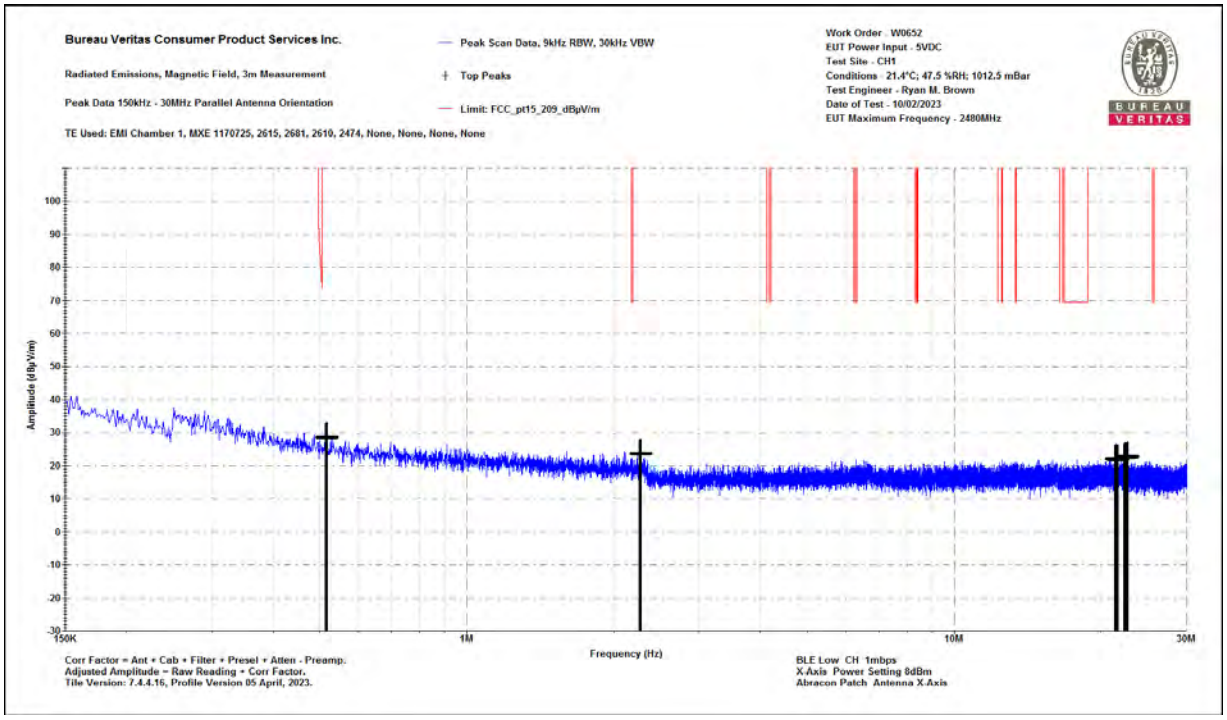
In 9kHz-30MHz range, no emissions within 20dB of the limit were identified in restricted bands. Only plots shown below.



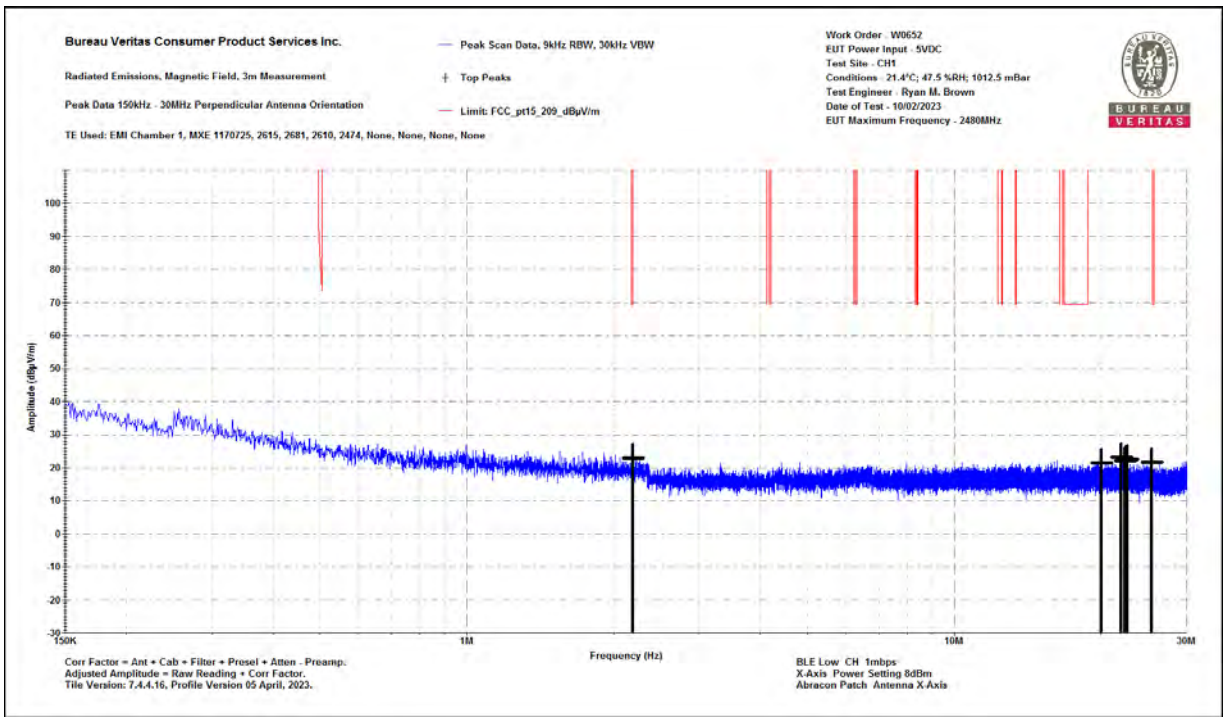
0.009-0.15MHz Parallel



0.009-0.15MHz Perpendicular



0.15-30MHz Parallel

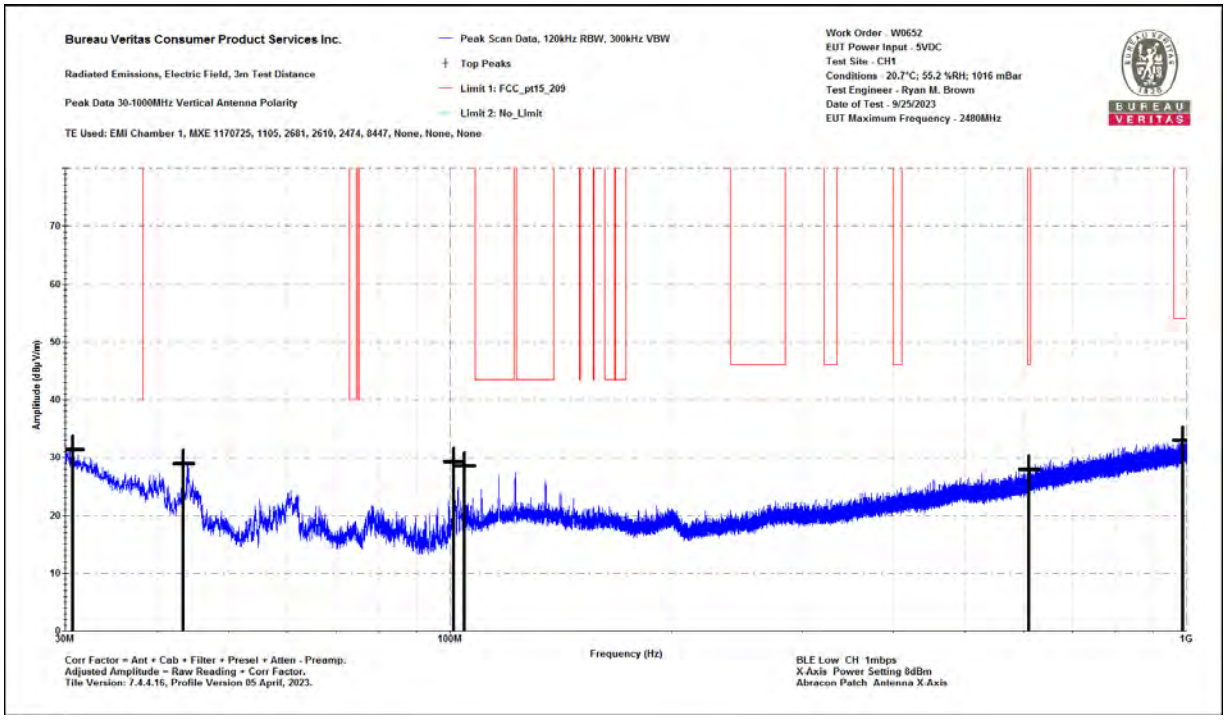


0.15-30MHz Perpendicular

Bureau Veritas Consumer Product Services Inc.	Work Order - W0652
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 5VDC
Top Peaks Vertical 30-1000MHz	Test Site - CH1
Notes:	Conditions - 20.7°C; 55.2 %RH; 1016 mBar
BLE Low CH 1mbps	Test Engineer - Ryan M. Brown
X-Axis Power Setting 8dBm	Date of Test - 9/25/2023
Abracon Patch Antenna X-Axis	

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)
611.127	29.5	-1.7	27.9	46	-18.1	PASS	-18.1	100	225
987.948	28.2	4.8	33	54	-21	PASS		200	270

30-1000MHz Vertical Data Table

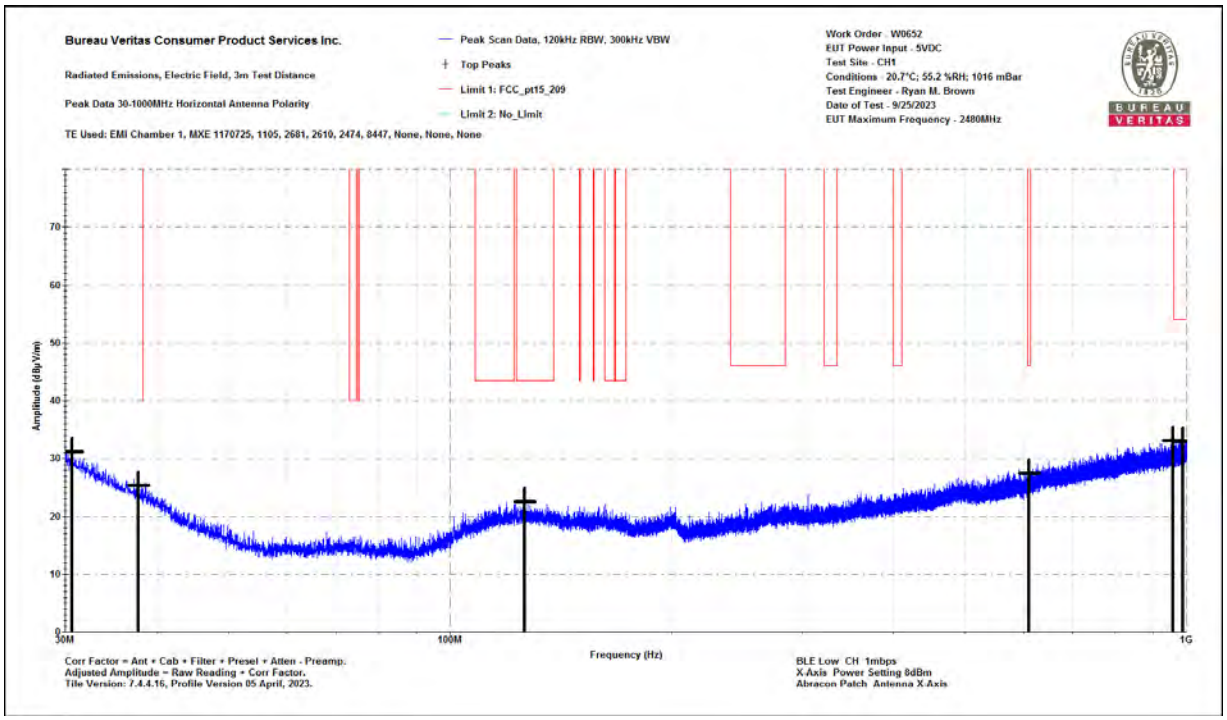


30-1000MHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.	Work Order - W0652
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 5VDC
Top Peaks Horizontal 30-1000MHz	Test Site - CH1
Notes:	Conditions - 20.7°C; 55.2 %RH; 1016 mBar
BLE Low CH 1mbps	Test Engineer - Ryan M. Brown
X-Axis Power Setting 8dBm	Date of Test - 9/25/2023
Abracon Patch Antenna X-Axis	

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)
37.736	30.4	-5.2	25.3	40	-14.7	PASS	-14.7	100	45
126.248	29.5	-7	22.6	43.5	-20.9	PASS		250	90
610.448	29.1	-1.6	27.5	46	-18.5	PASS		250	135
989.233	28.1	4.9	33	54	-21	PASS		200	270

30-1000MHz Horizontal Data Table

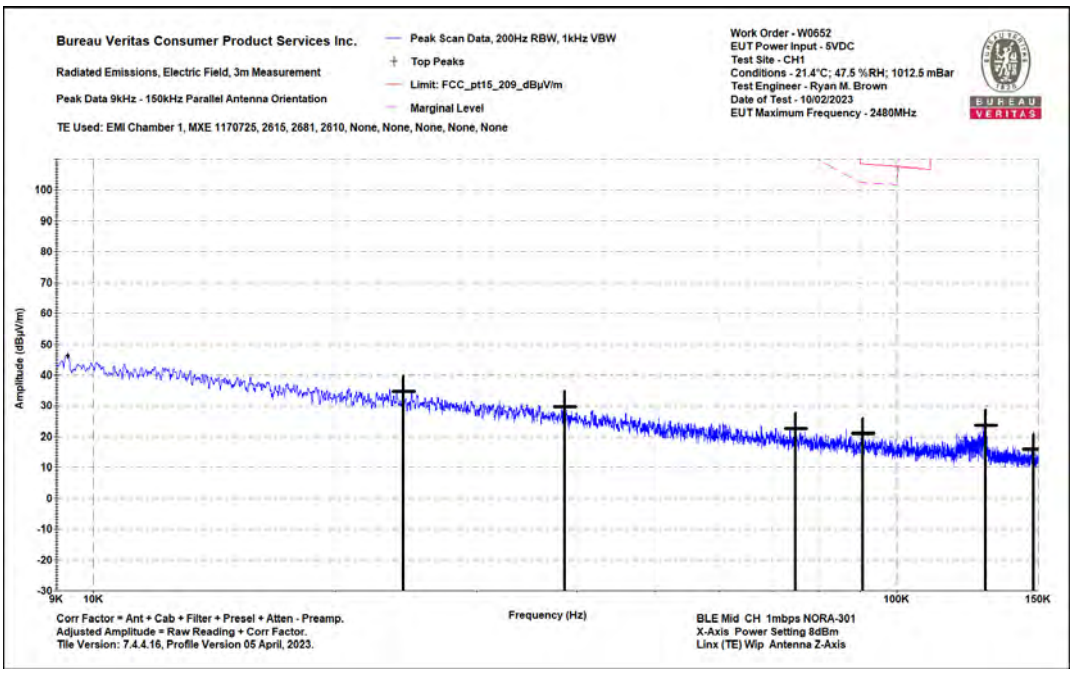


30-1000MHz Horizontal Plot

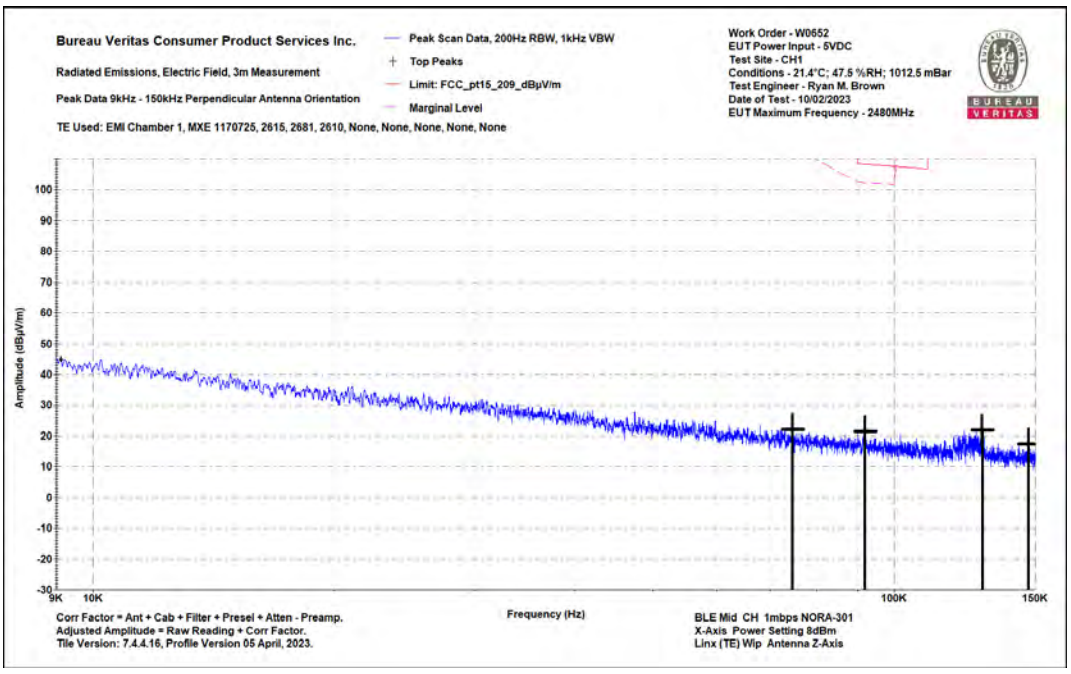
NORA-W301 with Linx (TE) Whip Antenna

Mid CH, 1Mbps, Module axis: X, External antenna axis: Z

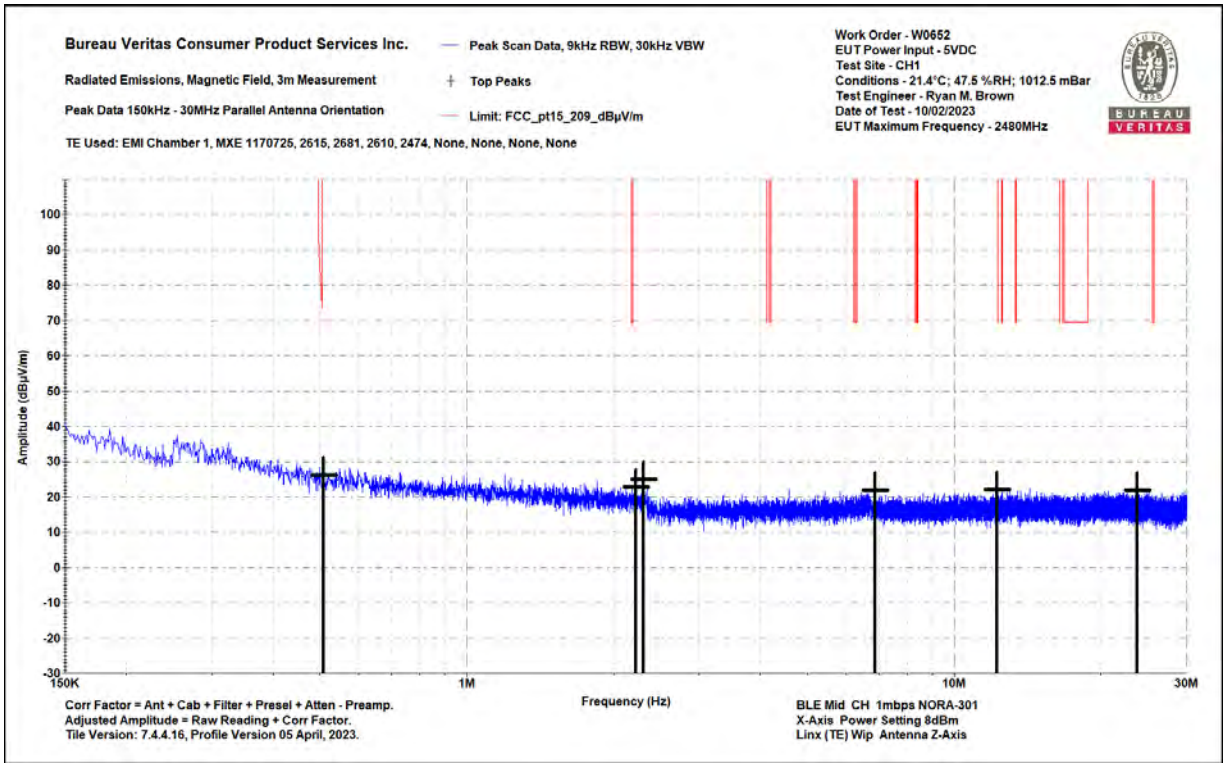
In 9kHz-30MHz range, no emissions within 20dB of the limit were identified in restricted bands. Only plots shown below.



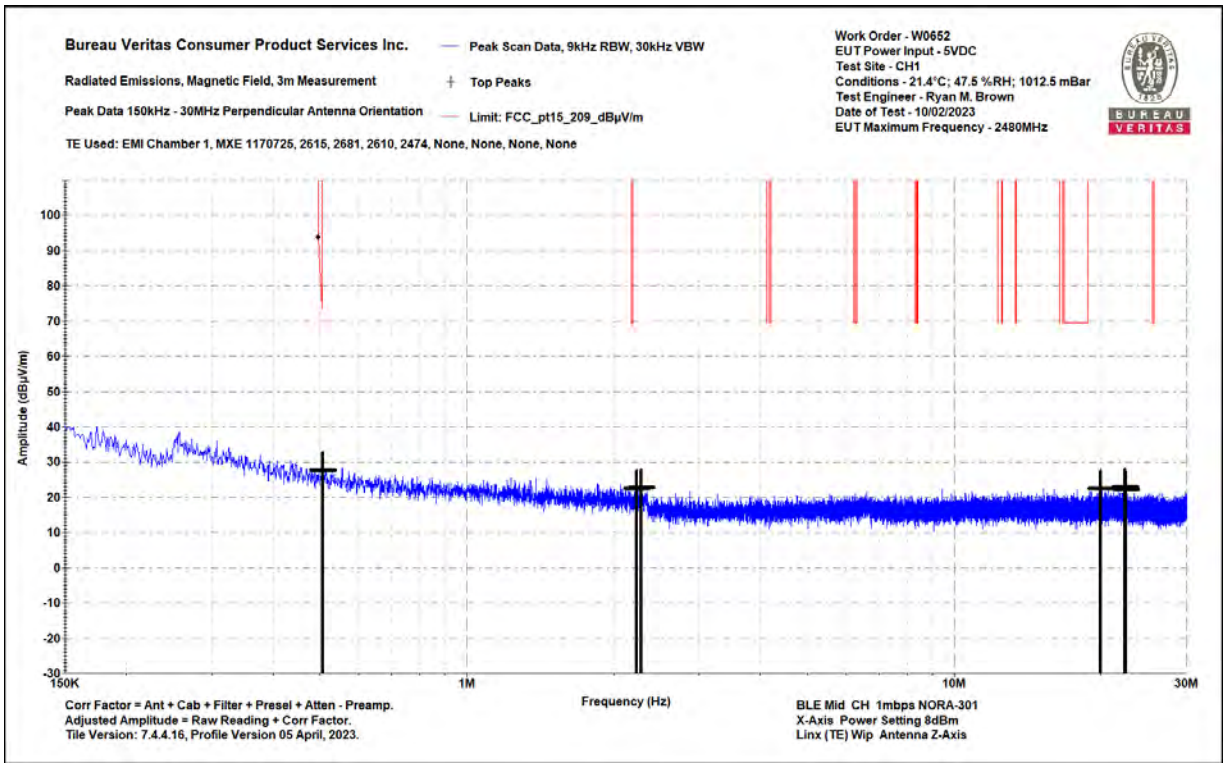
0.009-0.15MHz Parallel



0.009-0.15MHz Perpendicular



0.15-30MHz Parallel

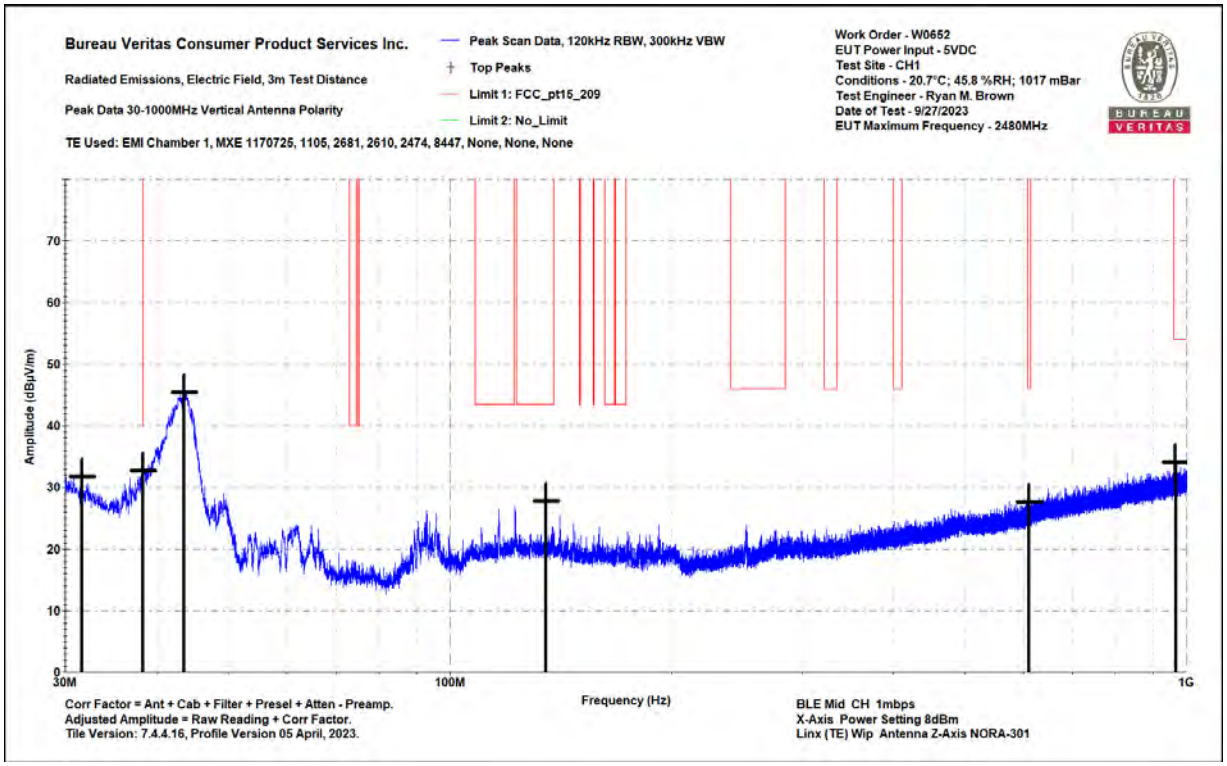


0.15-30MHz Perpendicular

Bureau Veritas Consumer Product Services Inc.	Work Order - W0652
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 5VDC
Top Peaks Vertical 30-1000MHz	Test Site - CH1
Notes:	Conditions - 20.7°C; 45.8 %RH; 1017 mBar
BLE Mid CH 1mbps	Test Engineer - Ryan M. Brown
X-Axis Power Setting 8dBm	Date of Test - 9/27/2023
Linx (TE) Wip Antenna Z-Axis NORA-301	

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)
38.221	38.2	-5.5	32.7	40	-7.3	PASS	-7.3	100	0
134.736	34.9	-7.2	27.8	43.5	-15.7	PASS		100	45
611.103	29.3	-1.7	27.7	46	-18.3	PASS		150	180
966.147	29.8	4.3	34.1	54	-19.9	PASS		100	45

30-1000MHz Vertical Data Table

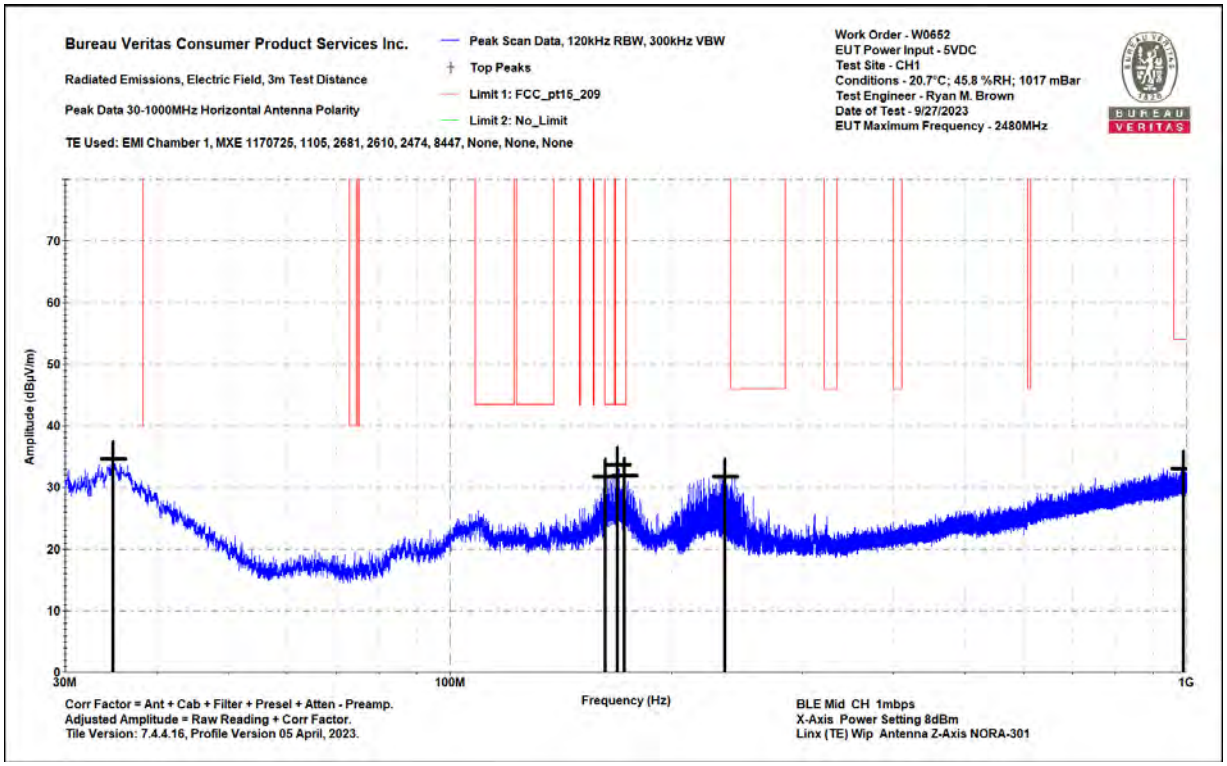


30-1000MHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.	Work Order - W0652
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 5VDC
Top Peaks Horizontal 30-1000MHz	Test Site - CH1
Notes:	Conditions - 20.7°C; 45.8 %RH; 1017 mBar
BLE Mid CH 1mbps	Test Engineer - Ryan M. Brown
X-Axis Power Setting 8dBm	Date of Test - 9/27/2023
Linx (TE) Wip Antenna Z-Axis NORA-301	

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)
162.429	40.2	-8.4	31.8	43.5	-11.7	PASS		100	135
168.928	42.5	-8.7	33.7	43.5	-9.8	PASS	-9.8	200	315
172.566	40.8	-9	31.8	43.5	-11.7	PASS		200	135
991.415	28.2	4.9	33.1	54	-20.9	PASS		200	0

30-1000MHz Horizontal Data Table

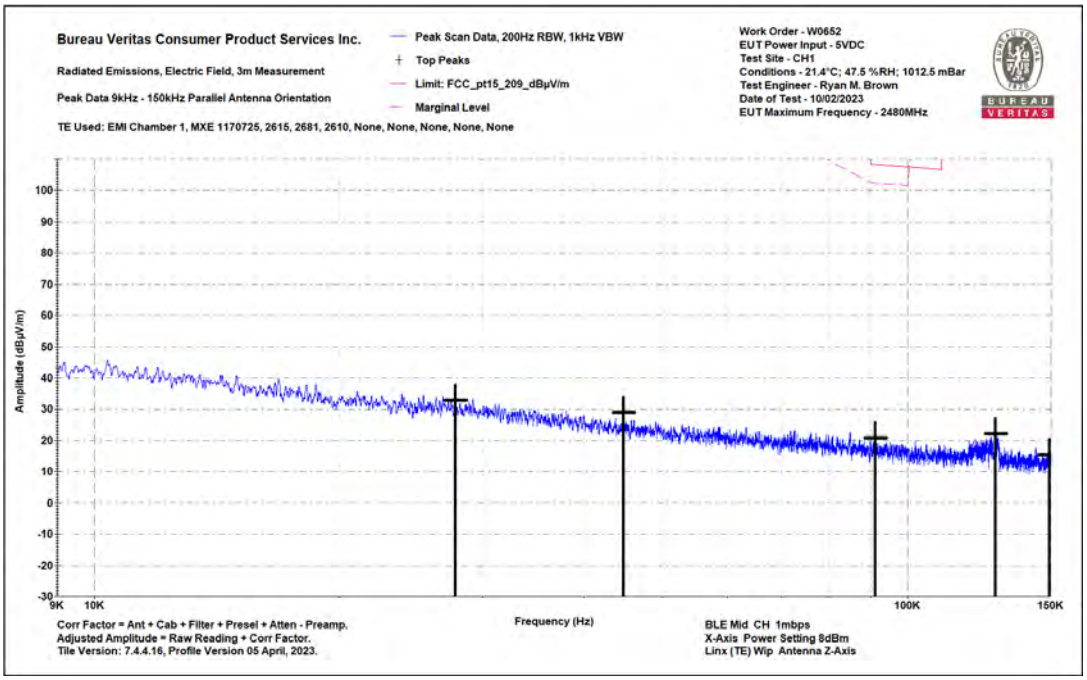


30-1000MHz Horizontal Plot

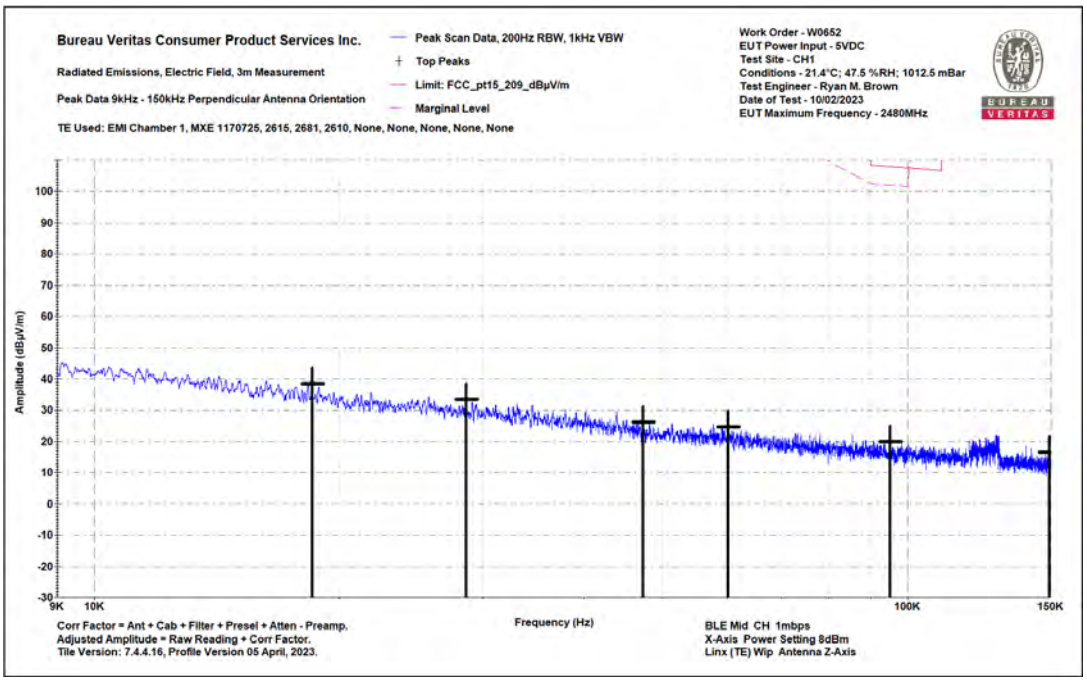
NORA-W300 with Linx (TE) Whip Antenna

Mid CH, 1Mbps, Module axis: X, External antenna axis: Z

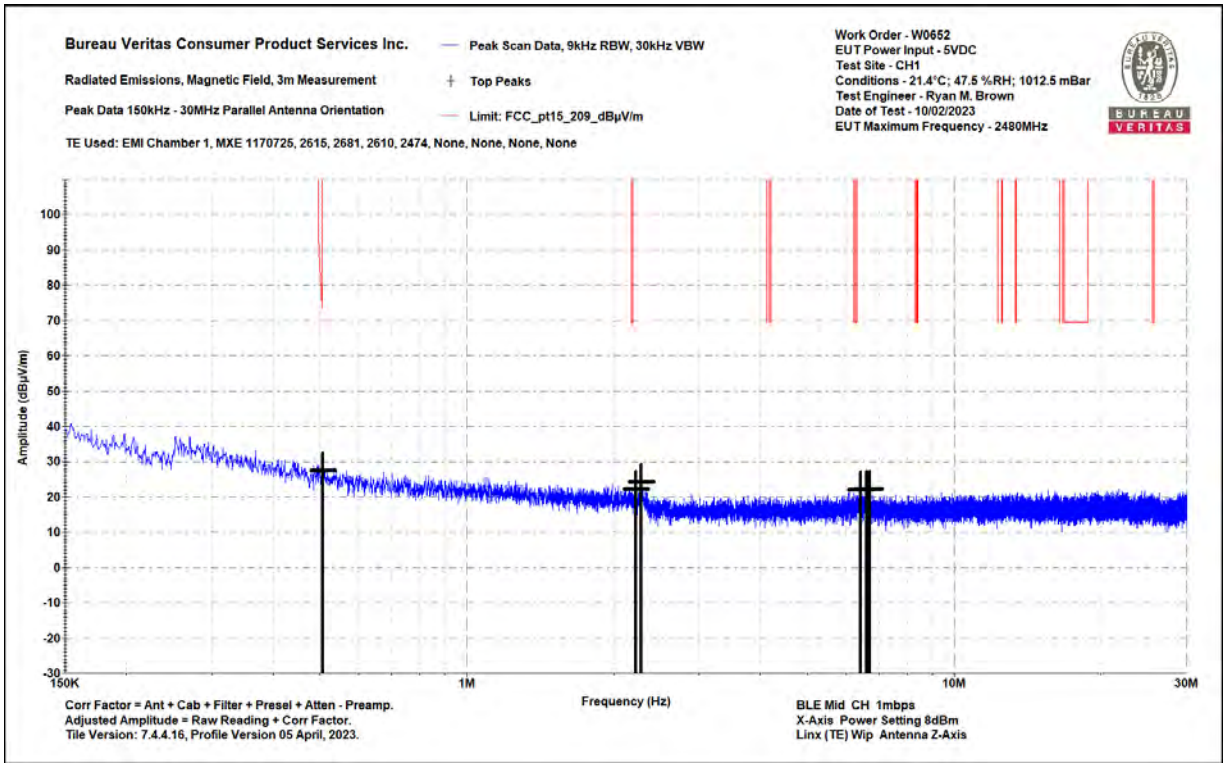
In 9kHz-30MHz range, no emissions within 20dB of the limit were identified in restricted bands. Only plots shown below.



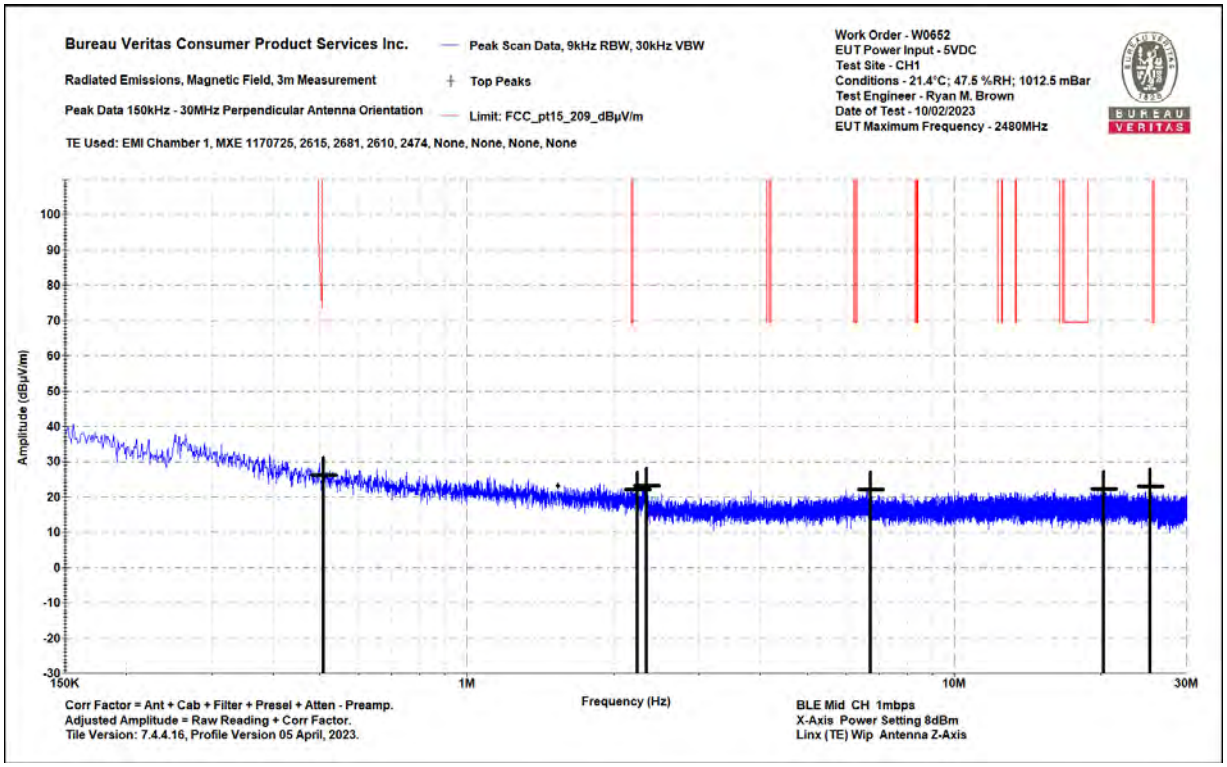
0.009-0.15MHz Parallel



0.009-0.15MHz Perpendicular



0.15-30MHz Parallel

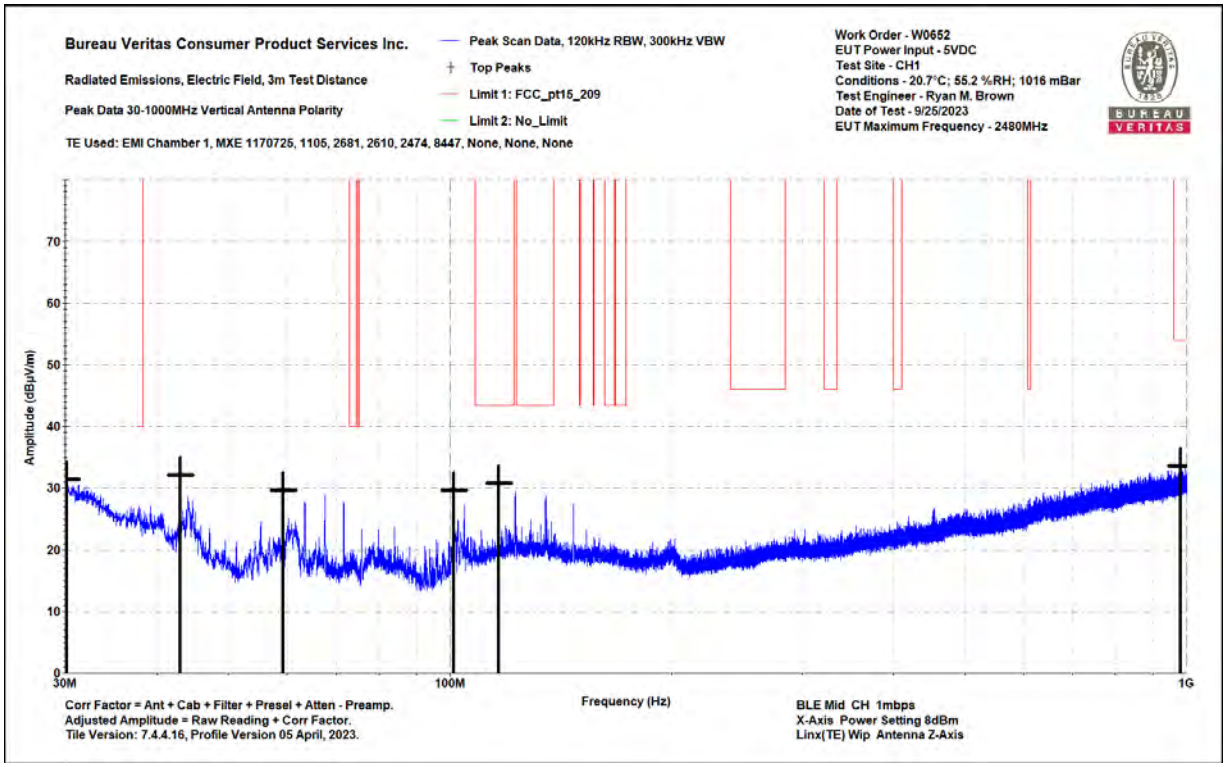


0.15-30MHz Perpendicular

Bureau Veritas Consumer Product Services Inc.	Work Order - W0652
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 5VDC
Top Peaks Vertical 30-1000MHz	Test Site - CH1
Notes:	Conditions - 20.7°C; 55.2 %RH; 1016 mBar
BLE Mid CH 1mbps	Test Engineer - Ryan M. Brown
X-Axis Power Setting 8dBm	Date of Test - 9/25/2023
Linx(TE) Wip Antenna Z-Axis	

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)
116.427	38.5	-7.7	30.8	43.5	-12.7	PASS	-12.7	100	315
981.619	28.9	4.7	33.6	54	-20.4	PASS		150	225

30-1000MHz Vertical Data Table

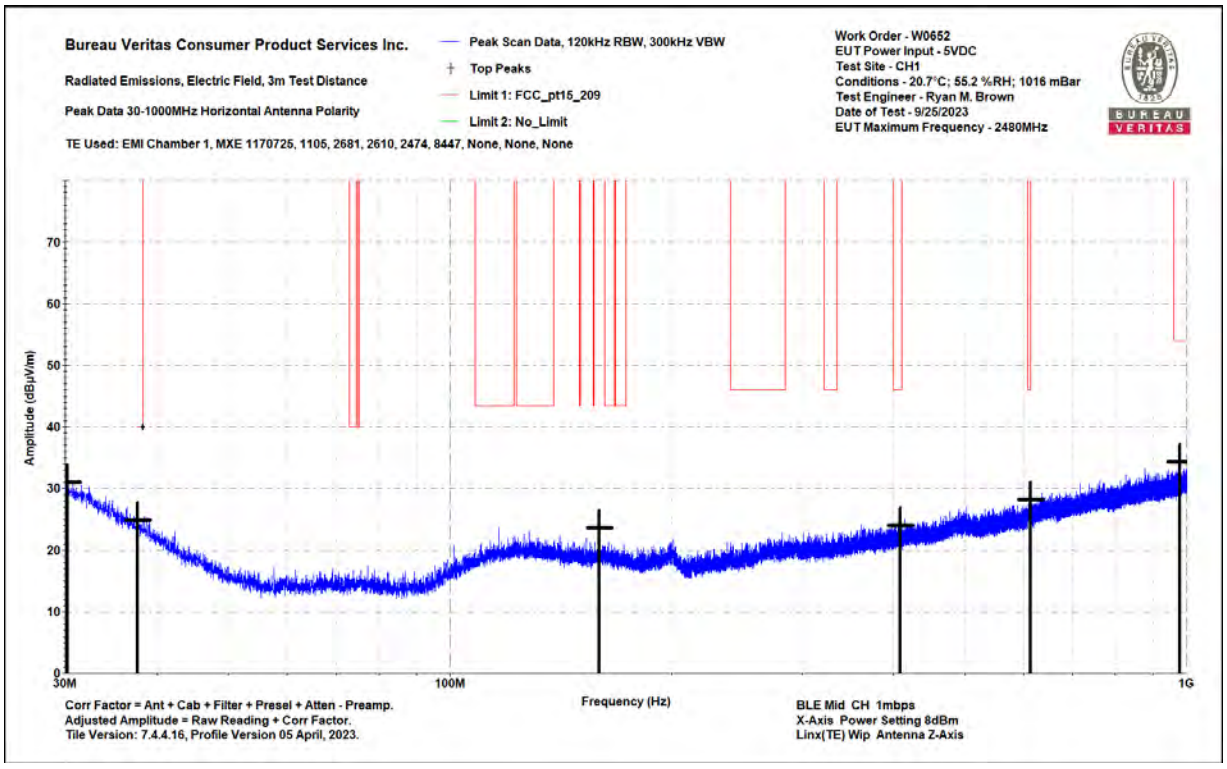


30-1000MHz Vertical Plot

Bureau Veritas Consumer Product Services Inc.	Work Order - W0652
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 5VDC
Top Peaks Horizontal 30-1000MHz	Test Site - CH1
Notes:	Conditions - 20.7°C; 55.2 %RH; 1016 mBar
BLE Mid CH 1mbps	Test Engineer - Ryan M. Brown
X-Axis Power Setting 8dBm	Date of Test - 9/25/2023
Linx(TE) Wip Antenna Z-Axis	

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)
37.639	29.9	-5.1	24.8	40	-15.2	PASS	-15.2	150	270
408.712	28.6	-4.6	23.9	46	-22.1	PASS		200	45
613.285	29.9	-1.7	28.2	46	-17.8	PASS		150	90
979.557	29.7	4.6	34.3	54	-19.7	PASS		150	180

30-1000MHz Horizontal Data Table

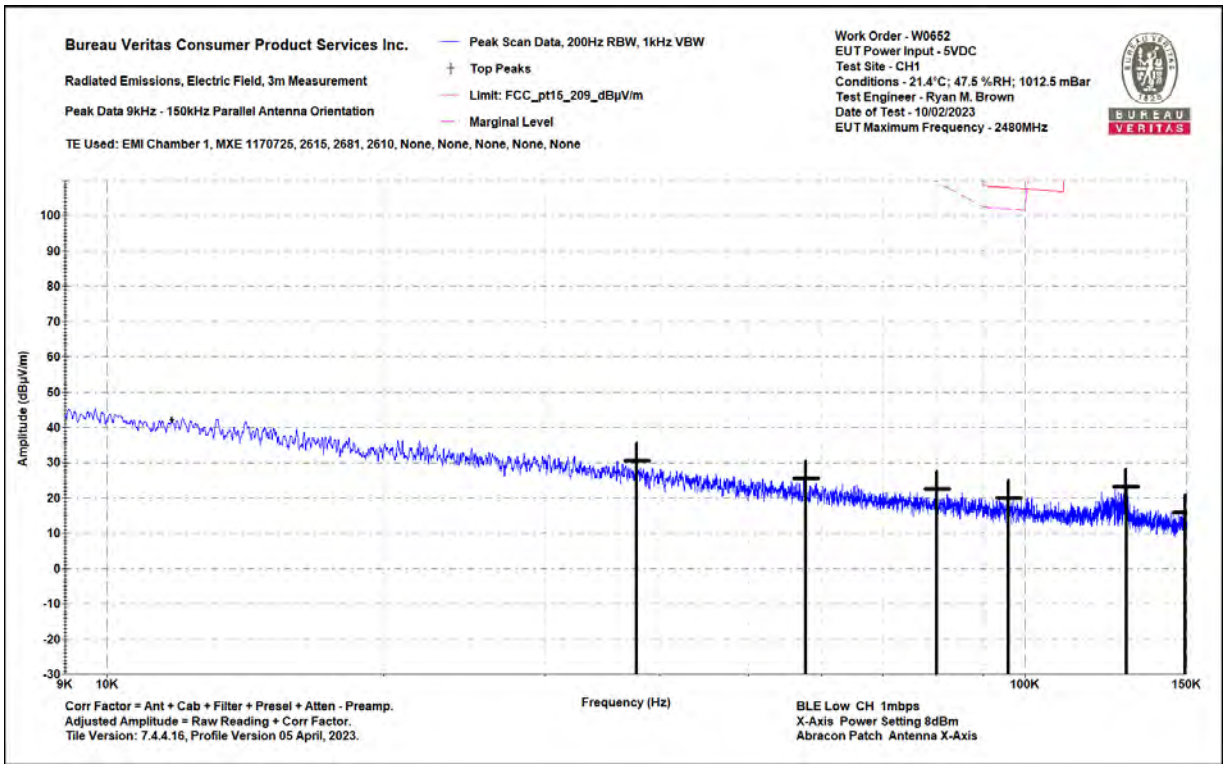


30-1000MHz Horizontal Plot

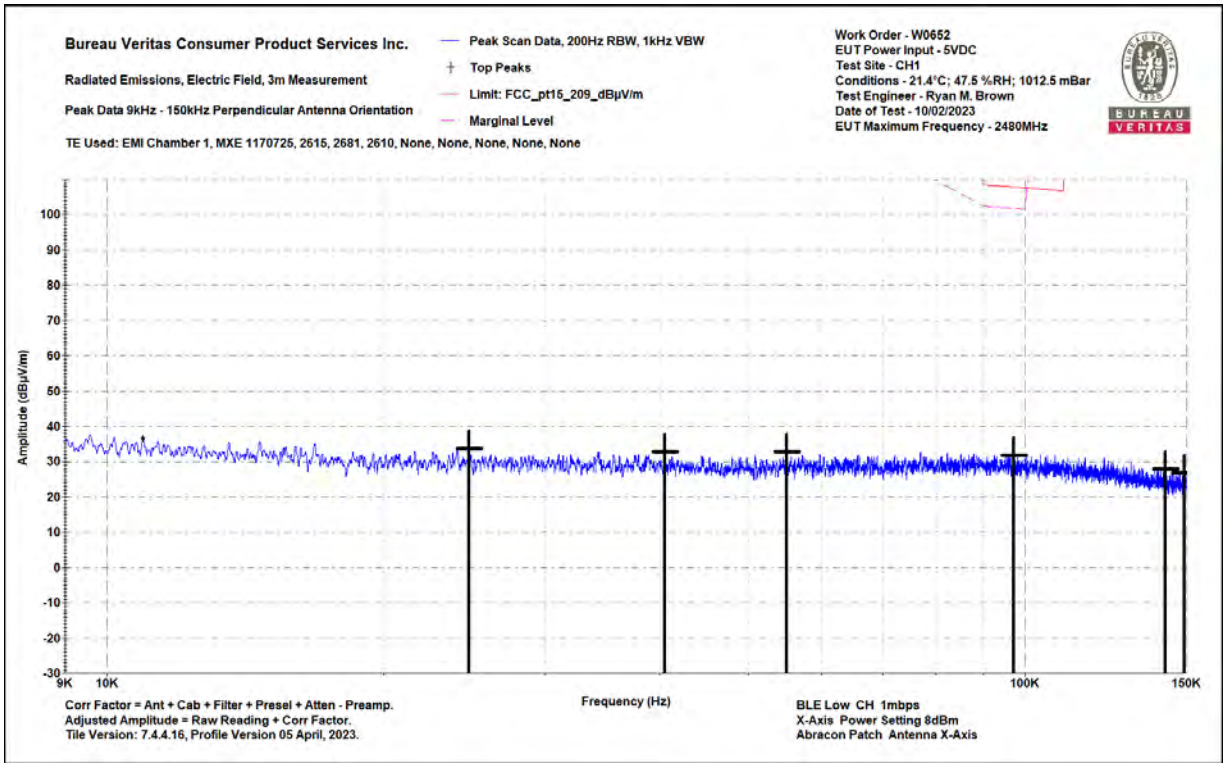
NORA-W301 with Abracon Patch Antenna

Low CH, 1Mbps, Module axis: X, External antenna axis: X

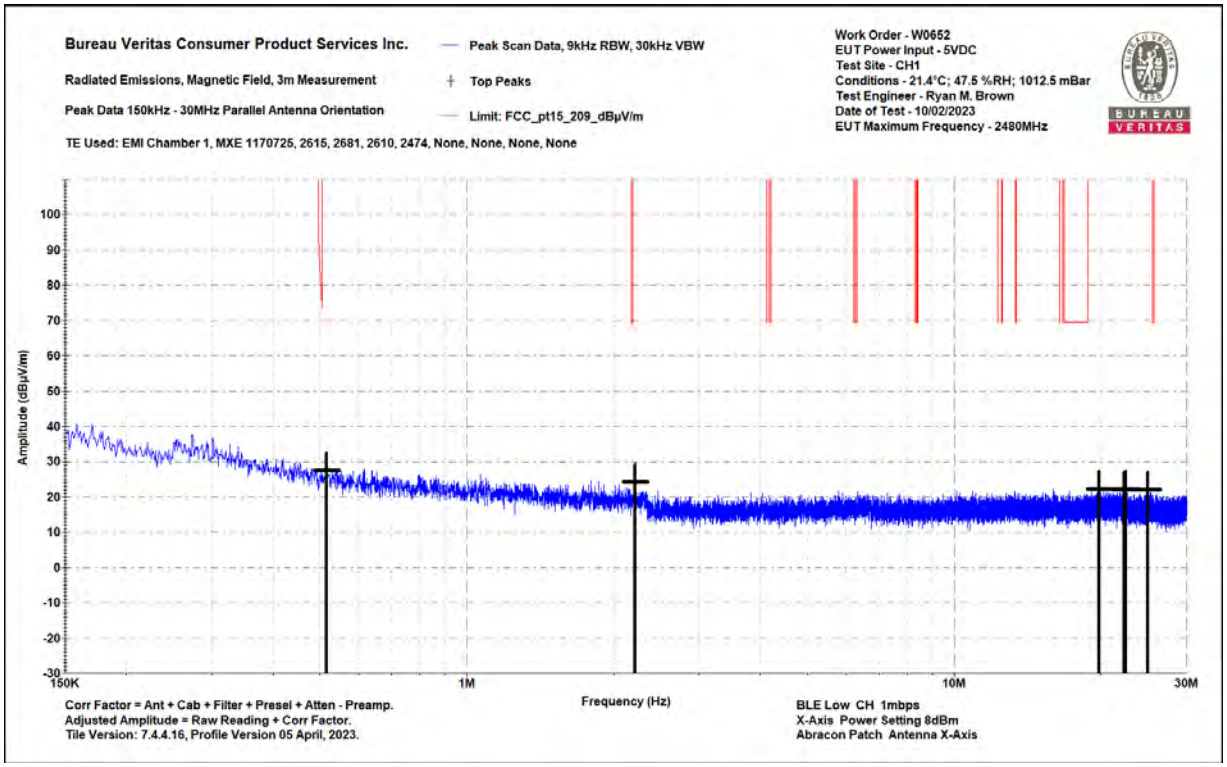
In 9kHz-30MHz range, no emissions within 20dB of the limit were identified in restricted bands. Only plots shown below.



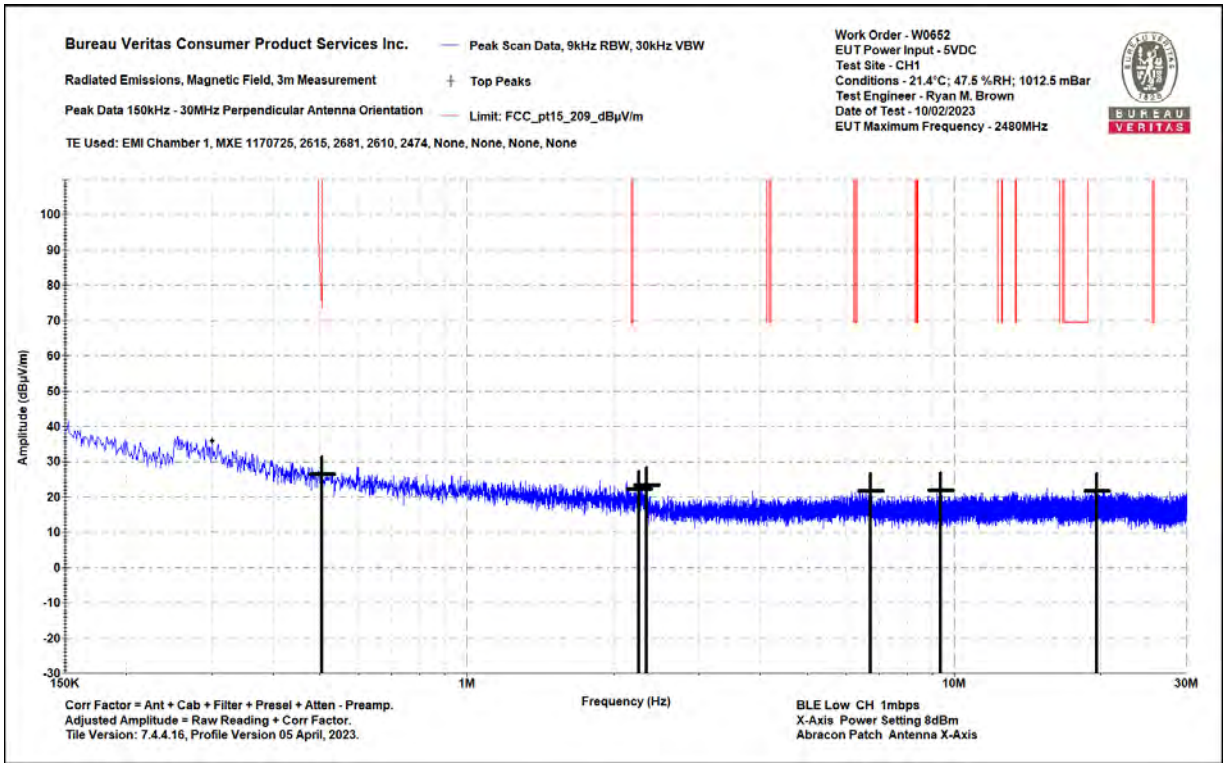
0.009-0.15MHz Parallel



0.009-0.15MHz Perpendicular



0.15-30MHz Parallel



0.15-30MHz Perpendicular

Bureau Veritas Consumer Product Services Inc.	Work Order - W0652
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 5VDC
Top Peaks Vertical 30-1000MHz	Test Site - CH1
Notes:	Conditions - 20.7°C; 45.8 %RH; 1017 mBar
BLE Low CH 1mbps	Test Engineer - Ryan M. Brown
X-Axis Power Setting 8dBm	Date of Test - 9/27/2023
Abracon Patch Antenna X-Axis NORA-301	

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)
37.59	38.1	-5	33.1	40	-6.9	PASS	-6.9	100	225
611.612	29.8	-1.7	28.2	46	-17.8	PASS		100	180
997.284	28.4	5	33.4	54	-20.6	PASS		200	180

30-1000MHz Vertical Data Table