



# 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 March 29, 2023
FCC Test Firm DN	US1028
Canada CABID	US0106

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

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

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

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

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## 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 Corrected test end date on cover page	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



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## 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 x 10 <sup>-8</sup>	1 x 10 <sup>-7</sup>
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.



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### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>NOMINAL VOLTAGE</b>	6VDC Battery
<b>MODULATION TECHNOLOGY</b>	DTS
<b>MODULATION TYPES</b>	O-QPSK
<b>DATA RATES</b>	250Kbps (O-QPSK)
<b>OPERATING FREQUENCY</b>	2405 – 2480MHz
<b>EUT Power Setting</b>	5 for all channels
<b>OUTPUT POWER</b>	0.47mW (Peak Conducted)
<b>ANTENNA TYPE</b>	PCB Antenna with 5.3dBi Gain

#### List of Host Models and Differences

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

16 channels are provided for Zigbee (O-QPSK)

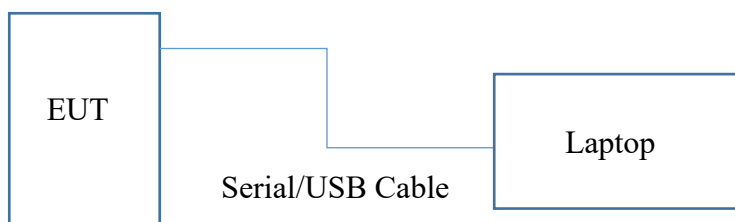
Channel	FREQ. (MHz)	Channel	FREQ. (MHz)
11	2405	19	2445
12	2410	20	2450
13	2415	21	2455
14	2420	22	2460
15	2425	23	2465
16	2430	24	2470
17	2435	25	2475
18	2440	26	2480

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 250Kbps (Duty-cycle: 100%)

#### EUT SETUP BLOCK DIAGRAMS







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

TEST	TEST MODE	AVAILABLE CHANNELS	TESTED CHANNEL	MODULATION TYPE	DATA RATE (kbps)	Notes
COP	A	11 to 26	11,18,26	O-QPSK	250	--
PSD	A	11 to 26	11,18,26	O-QPSK	250	---
CBE	A	11 to 26	11,26	O-QPSK	250	--
6DB	A	11 to 26	11,18,26	O-QPSK	250	--
OBW	A	11 to 26	11,18,26	O-QPSK	250	--
CSE	A	11 to 26	11,18,26	O-QPSK	250	---
RSE<1G	A	11 to 26	11,18,26	O-QPSK	250	1, 2
RSE≥1G	A	11 to 26	11,18,26	O-QPSK	250	1, 3
RBE	A	11 to 26	11,26	O-QPSK	250	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	22.4°C, 42% RH, 1010 mbar 21.5°C, 37.8% RH, 1015 mbar 21.2°C, 33.1% RH, 1025 mbar 22.2°C, 38.4% RH, 1010 mbar 22.0°C, 41% RH, 1011 mbar 22.6°C, 33% RH, 1019 mbar 21.3°C, 52% RH, 1003 mbar 21°C, 43% RH, 1005 mbar	6VDC	MM/RMB	11/11/2022 11/14/2022 11/15/2022 2/08/2023 2/09/2023 2/10/2023 2/16/2023 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	6VDC	RMB	7/07/2022 3/09/2023



### 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



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## 4 TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSIONS MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

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. The lower limit shall apply at the transition frequencies.

2. The 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 EMISSIONS MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSIONS MEASUREMENT

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.  $\text{dB}\mu\text{V}/\text{m} = 20 \cdot \log(\mu\text{V}/\text{m})$ .
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).  
 $\text{Limit}(3\text{m}) = \text{Limit}(30\text{m}) + 40 \cdot \log(30/3) = \text{Limit}(30\text{m}) + 40$   
 $\text{Limit}(3\text{m}) = \text{Limit}(300\text{m}) + 40 \cdot \log(300/3) = \text{Limit}(300\text{m}) + 80$
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  $377\Omega$  (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.



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4.2.2 TEST INSTRUMENTS

For Radiated Emissions on test dates: 11/07/2022-11/15/2022

Rev. 11/28/2022

Table with columns: Spectrum Analyzers / Receivers / Preselectors, Radiated Emissions Sites, Preamps / Couplers Attenuators / Filters, Antennas, Meteorological Meters/Chambers, Cables. Includes fields for Range, MN, Mfr, SN, Asset, Cat, Calibration Due, and Calibrated on.

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

For Radiated Emissions on test dates: 2/08/2023-3/6/2023

Rev. 2/3/2023

Table with columns: Spectrum Analyzers / Receivers / Preselectors, Radiated Emissions Sites, Preamps / Couplers Attenuators / Filters, Antennas, Meteorological Meters/Chambers, Cables. Includes fields for Range, MN, Mfr, SN, Asset, Cat, Calibration Due, and Calibrated on.

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



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For Radiated Band-edges on test dates: 2/09/2023-2/16/2023

Rev. 2/3/2023

Table with columns: Spectrum Analyzers / Receivers /Preselectors, Radiated Emissions Sites, Preamps /Couplers Attenuators / Filters, Antennas, Meteorological Meters/Chambers, Cables. Includes fields like Range, MN, Mfr, SN, Asset, Cat, Calibration Due, Calibrated on.

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

Table with columns: Spectrum Analyzers / Receivers /Preselectors, Radiated Emissions Sites, Preamps /Couplers Attenuators / Filters, Antennas, Meteorological Meters/Chambers, Cables. Includes fields like Range, MN, Mfr, SN, Asset, Cat, Calibration Due, Calibrated on.

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



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**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.



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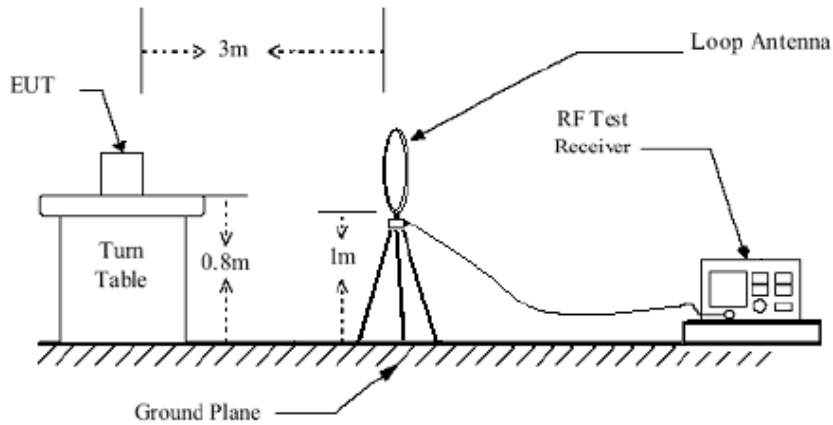


#### 4.2.4 DEVIATION FROM TEST STANDARD

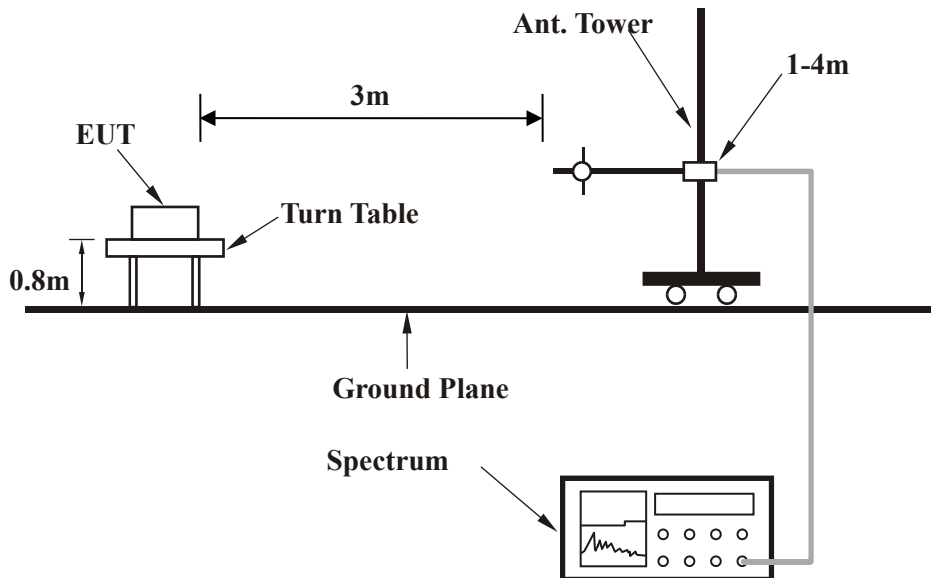
No deviation.

#### 4.2.5 TEST SETUP

##### Below 30MHz Test Setup

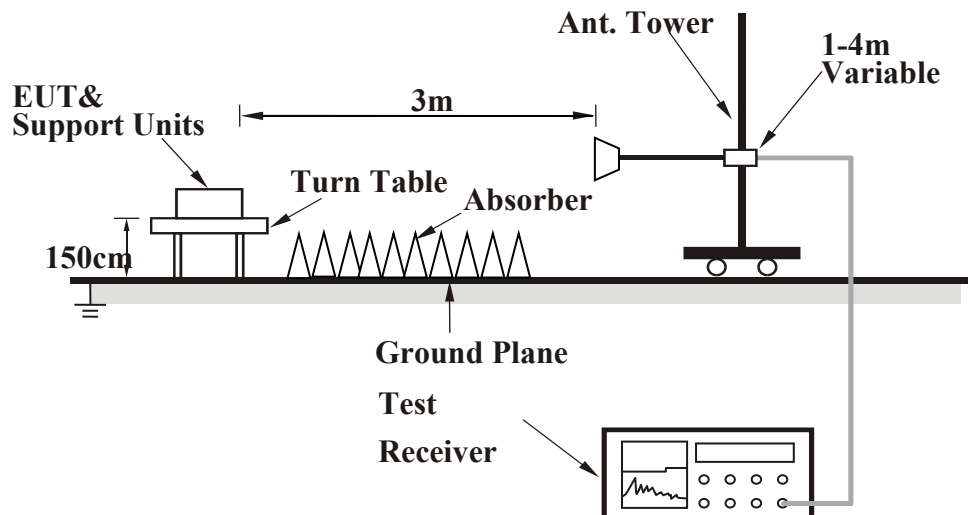


##### 30MHz – 1GHz Test Setup

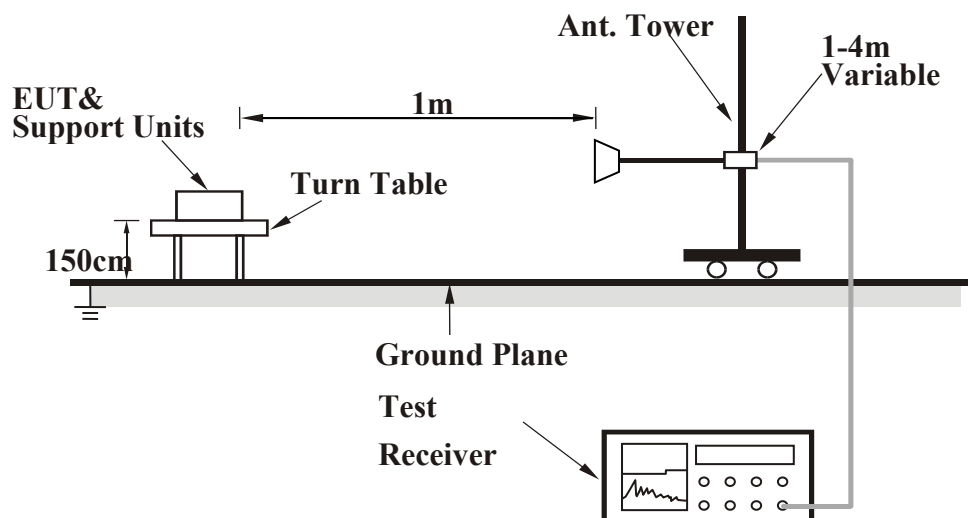




### 1GHz – 6GHz Test Setup



### 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.



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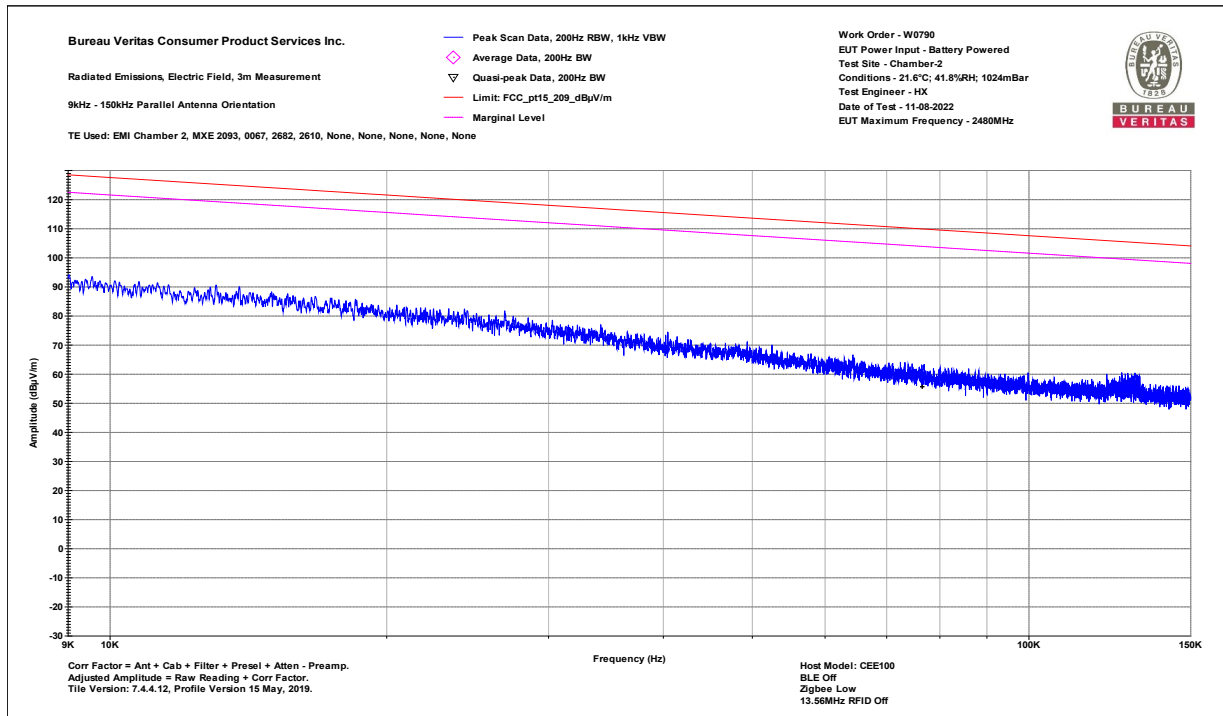
## 4.2.7 TEST RESULTS

### Emissions below 1GHz

#### Channel 11

#### Host Model: CEE100

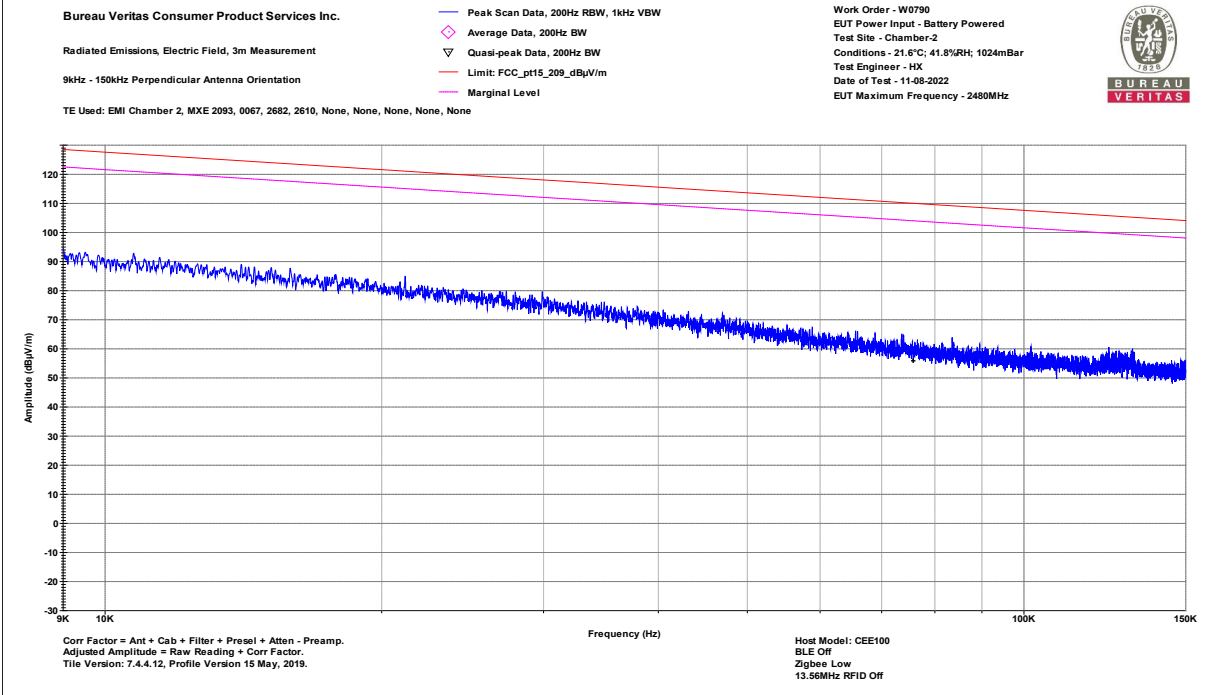
No emissions within 10dB of the limit were detected in 9kHz-30MHz range. Only plots shown below.



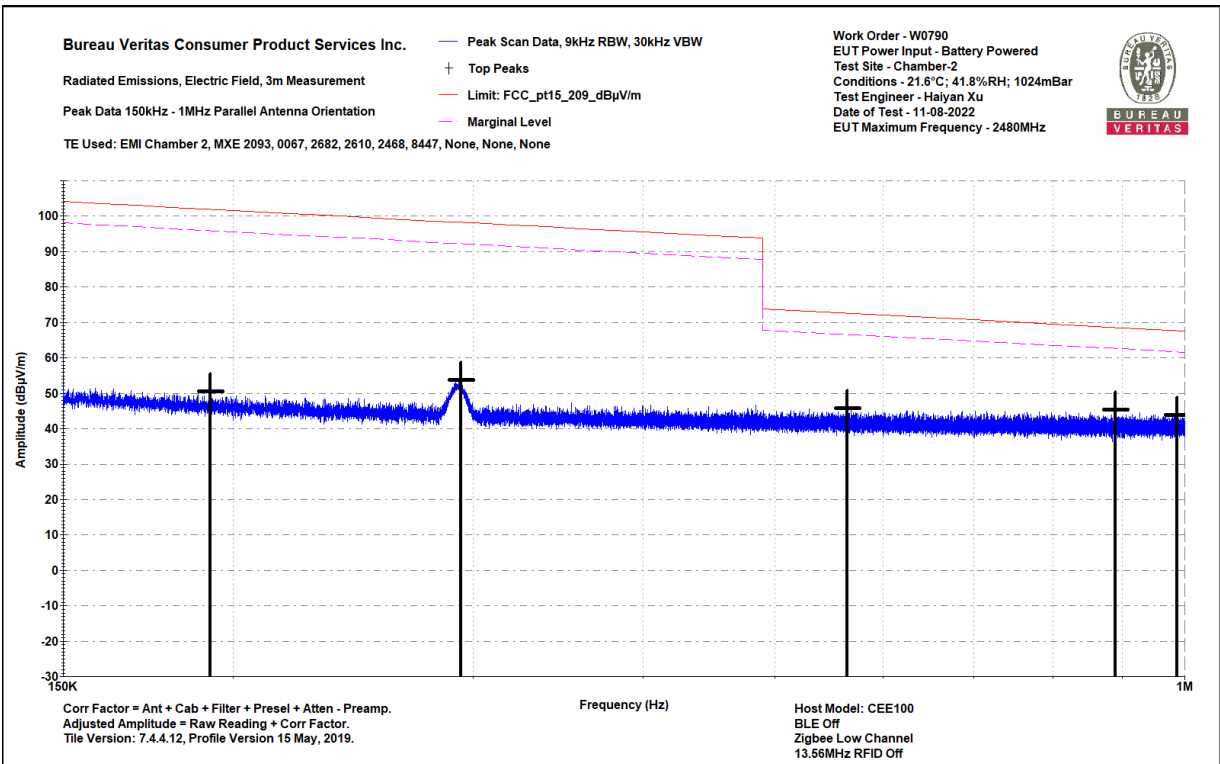
0.009-0.15MHz Parallel



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0.009-0.15MHz Perpendicular

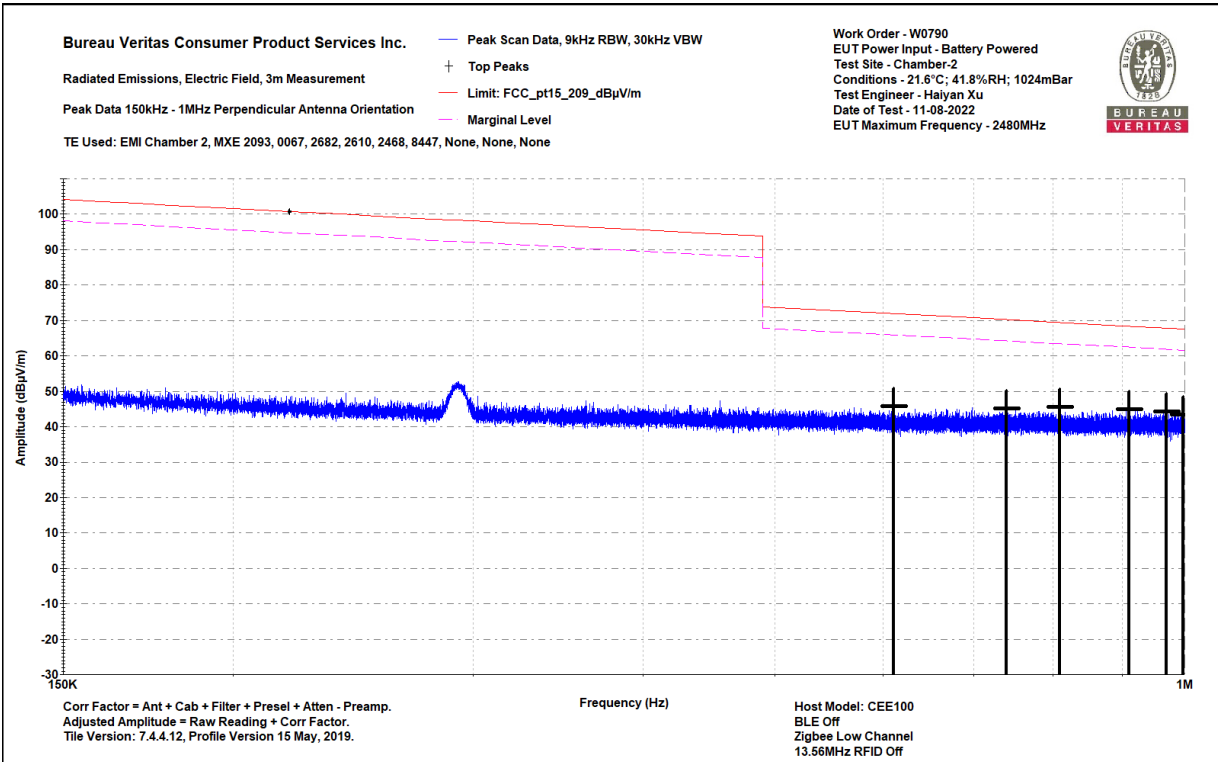


0.15-1MHz Parallel

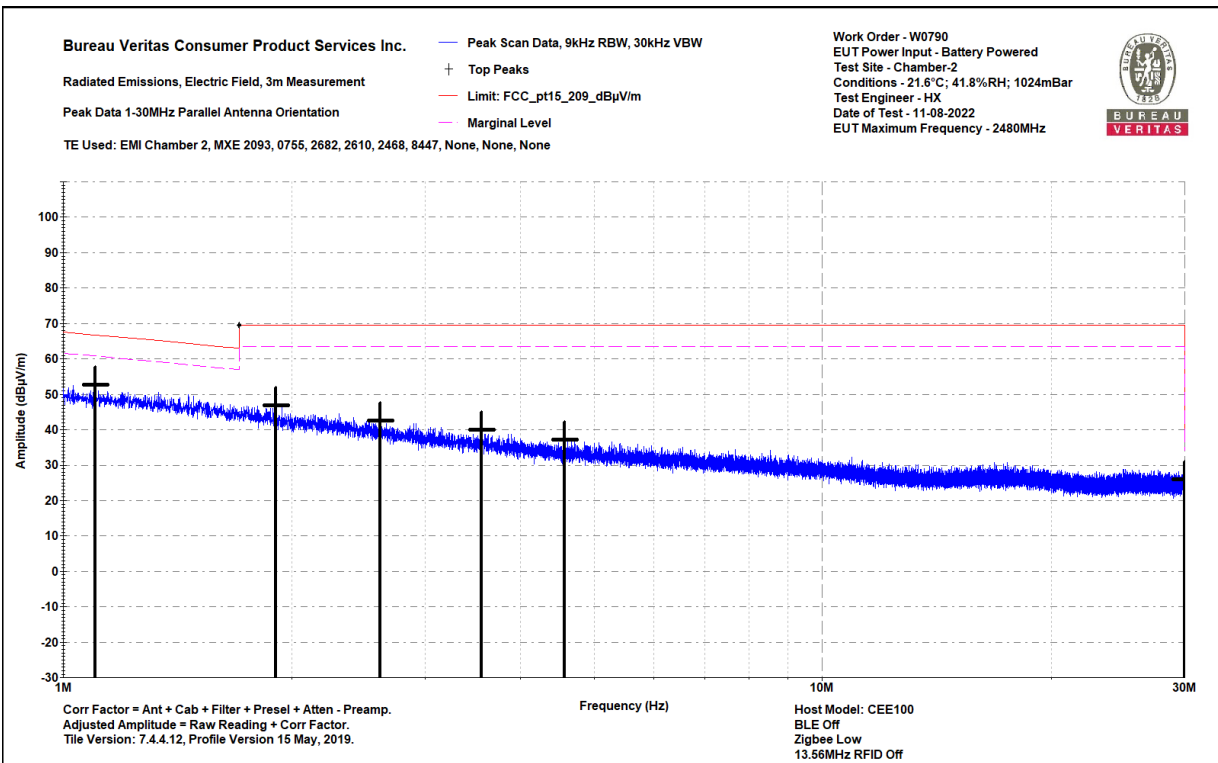


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## 0.15-1MHz Perpendicular



## 1-30MHz Parallel

Bureau Veritas Consumer Product Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

Tel.: (978) 486-8880  
Fax: (978) 486-8828



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Bureau Veritas Consumer Product Services Inc.

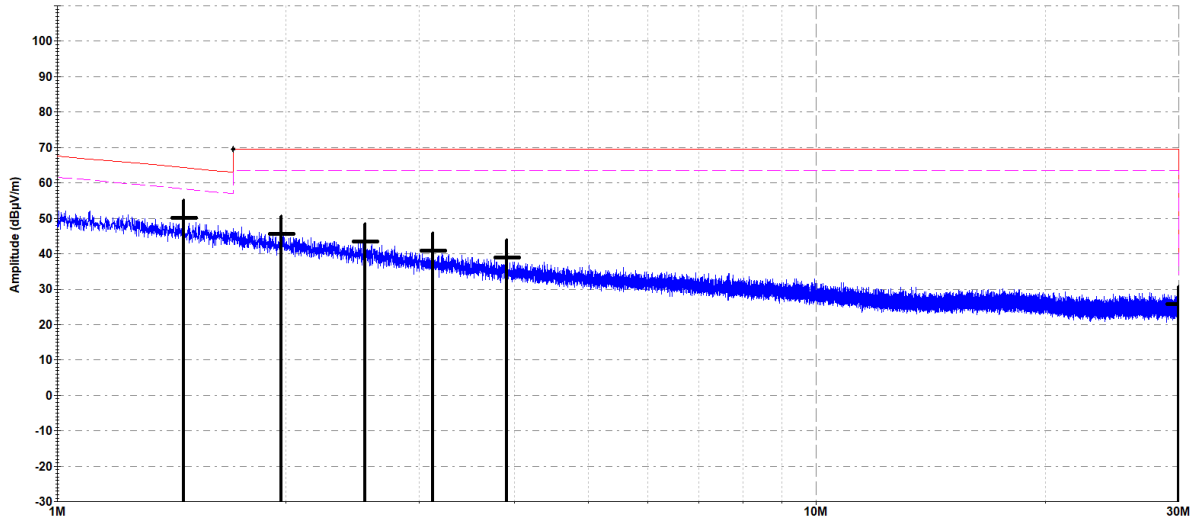
Radiated Emissions, Electric Field, 3m Measurement

Peak Data 1-30MHz Perpendicular Antenna Orientation

TE Used: EMI Chamber 2, MXE 2093, 0755, 2682, 2610, 2468, 8447, None, None, None

- Peak Scan Data, 9kHz RBW, 30kHz VBW
- + Top Peaks
- Limit: FCC\_pt15\_209\_dBµV/m
- Marginal Level

Work Order - W0790  
 EUT Power Input - Battery Powered  
 Test Site - Chamber-2  
 Conditions - 21.6°C; 41.8%RH; 1024mBar  
 Test Engineer - HX  
 Date of Test - 11-08-2022  
 EUT Maximum Frequency - 2480MHz



Corr Factor = Ant + Cab + Filter + Presel + Atten - Preamp.  
 Adjusted Amplitude = Raw Reading + Corr Factor.  
 Title Version: 7.4.4.12, Profile Version 15 May, 2019.

Host Model: CEE100  
 BLE Off  
 Zigbee Low  
 13.56MHz RFID Off

## 1-30MHz Perpendicular



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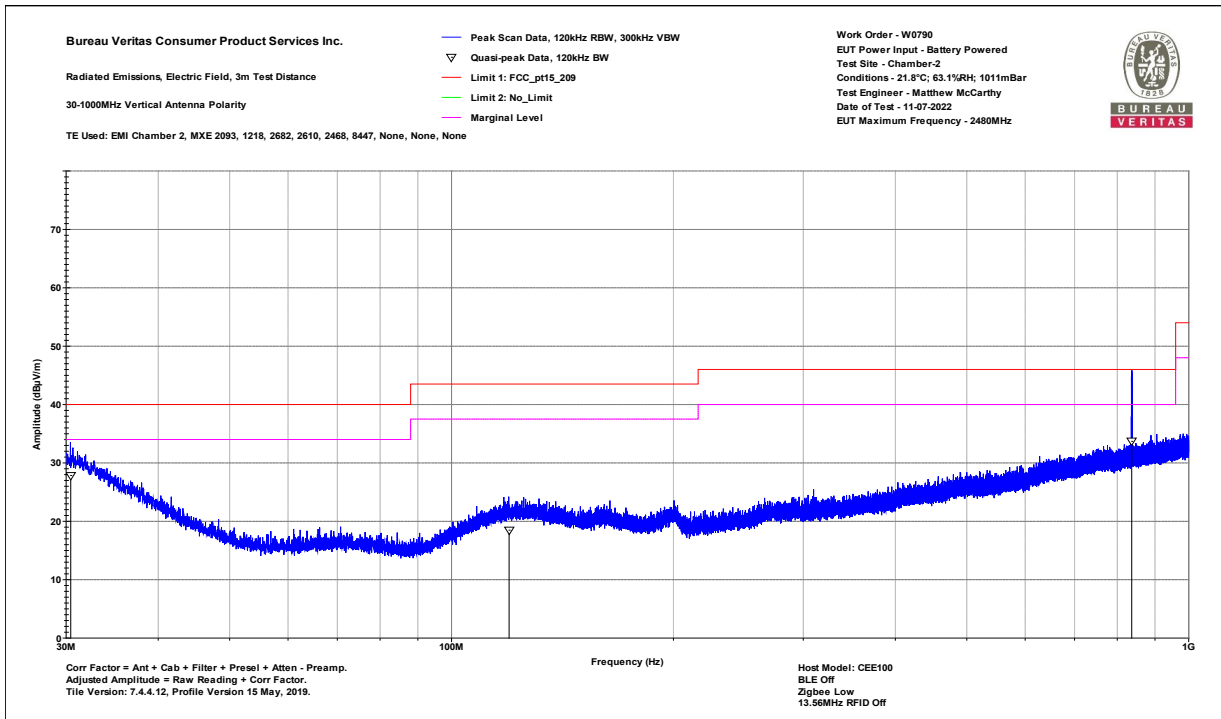


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
30-1000MHz Vertical Data  
Notes:  
Host Model: CEE100  
BLE Off  
Zigbee Low

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)
30.434	26.2	1.7	27.8	40	-12.2	PASS	-12.2	159	110
119.704	23.9	-5.4	18.5	43.5	-25	PASS		190	112
836.915	29.1	4.6	33.7	46	-12.3	PASS		275	298

## 30-1000MHz Vertical



## 30-1000MHz Vertical

Bureau Veritas Consumer Product Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

Tel.: (978) 486-8880  
Fax: (978) 486-8828



**BUREAU  
VERITAS**

**Test Report for Assa Abloy Inc.  
Report No. EW0790-3 Issue 3**

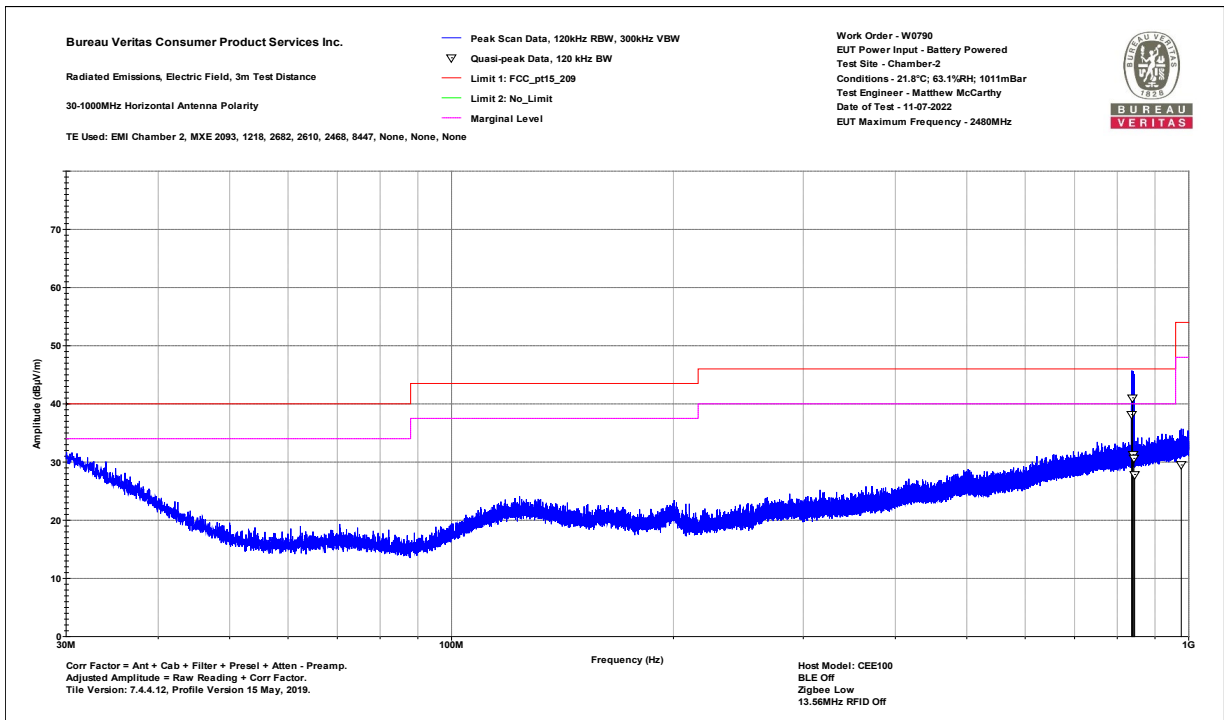


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
30-1000MHz Horizontal Data  
Notes:  
Host Model: CEE100  
BLE Off  
Zigbee Low

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)
836.677	33.6	4.6	38.2	46	-7.8	PASS		222	138
839.149	36.4	4.6	41	46	-5	PASS	-5	225	110
840.18	26.7	4.6	31.3	46	-14.7	PASS		175	30
842.621	26	4.6	30.6	46	-15.4	PASS		275	114
844.566	23.3	4.6	27.9	46	-18.1	PASS		100	159
976.904	22.9	6.6	29.5	54	-24.5	PASS		132	106

**30-1000MHz Horizontal**



**30-1000MHz Horizontal**



BUREAU VERITAS

# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

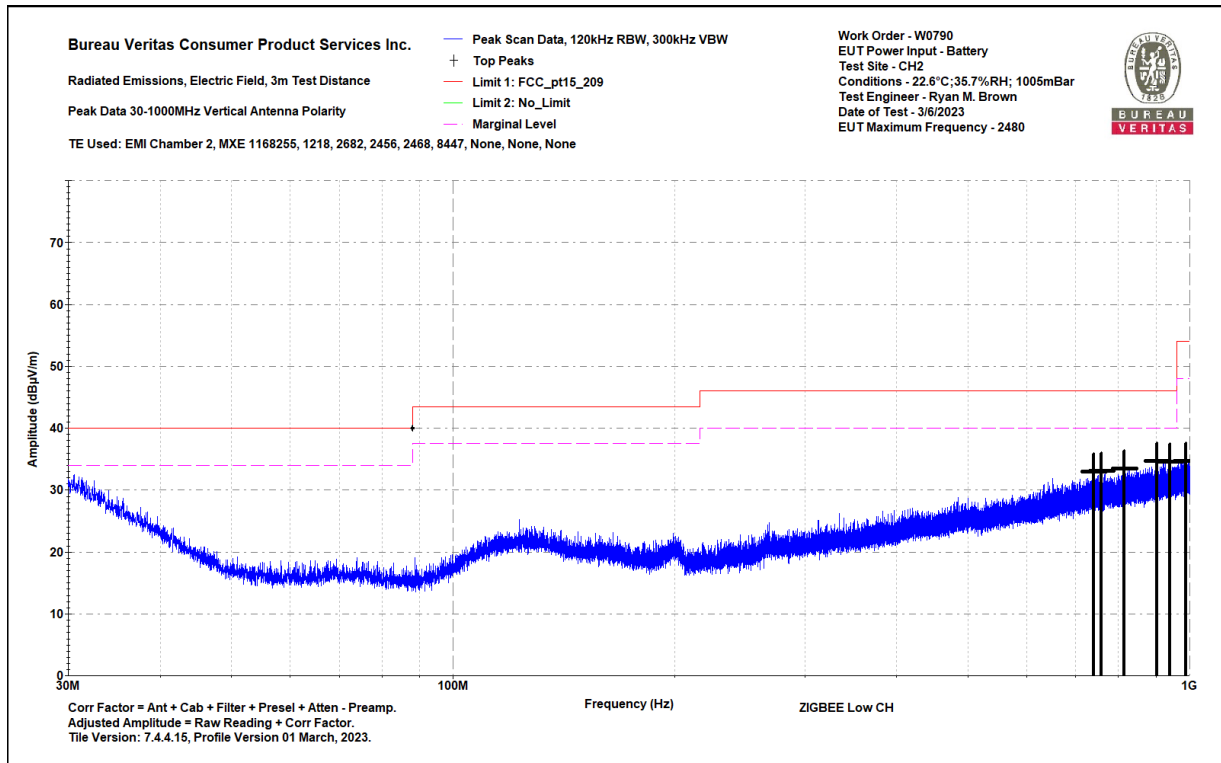


## Host Model CEB100

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
ZIGBEE 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)
740.428	30.1	2.9	32.9	46	-13.1	PASS		150	45
759.125	29.9	3.3	33.1	46	-12.9	PASS		200	180
815.7	29.6	3.9	33.5	46	-12.5	PASS		200	225
901.763	29.6	5.1	34.7	46	-11.3	PASS	-11.3	150	45
939.06	28.8	5.8	34.6	46	-11.4	PASS		200	90
988.457	28.3	6.5	34.8	54	-19.2	PASS		100	0

### 30-1000MHz Vertical



### 30-1000MHz Vertical





BUREAU VERITAS

# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

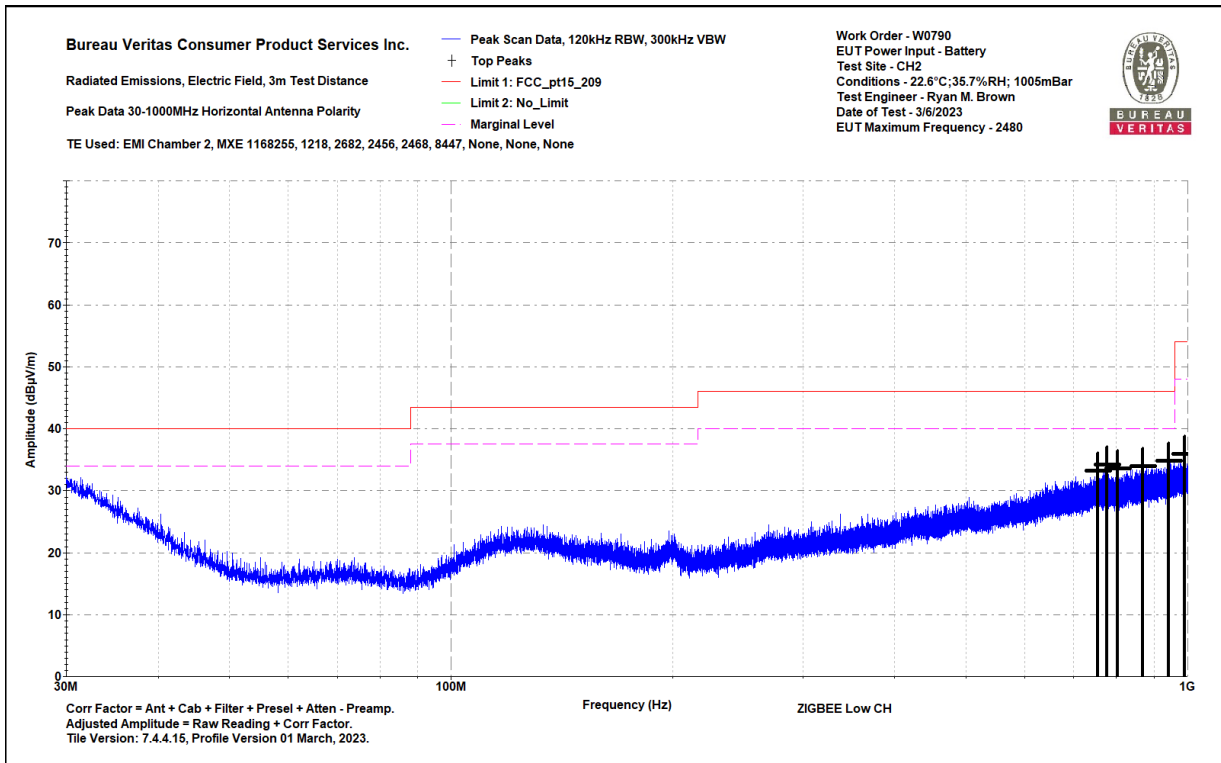


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Horizontal 30-1000MHz  
Notes:  
ZIGBEE Low CH  
0

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)
755.002	30	3.3	33.2	46	-12.8	PASS		100	135
777.458	30.7	3.5	34.2	46	-11.8	PASS		250	225
804.181	29.9	3.7	33.6	46	-12.4	PASS		150	225
869.899	29.5	4.5	34	46	-12	PASS		150	180
941.533	28.9	6	34.9	46	-11.1	PASS	-11.1	200	45
991.27	29.5	6.5	36	54	-18	PASS		200	0

## 30-1000MHz Horizontal



## 30-1000MHz Horizontal



BUREAU VERITAS

# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

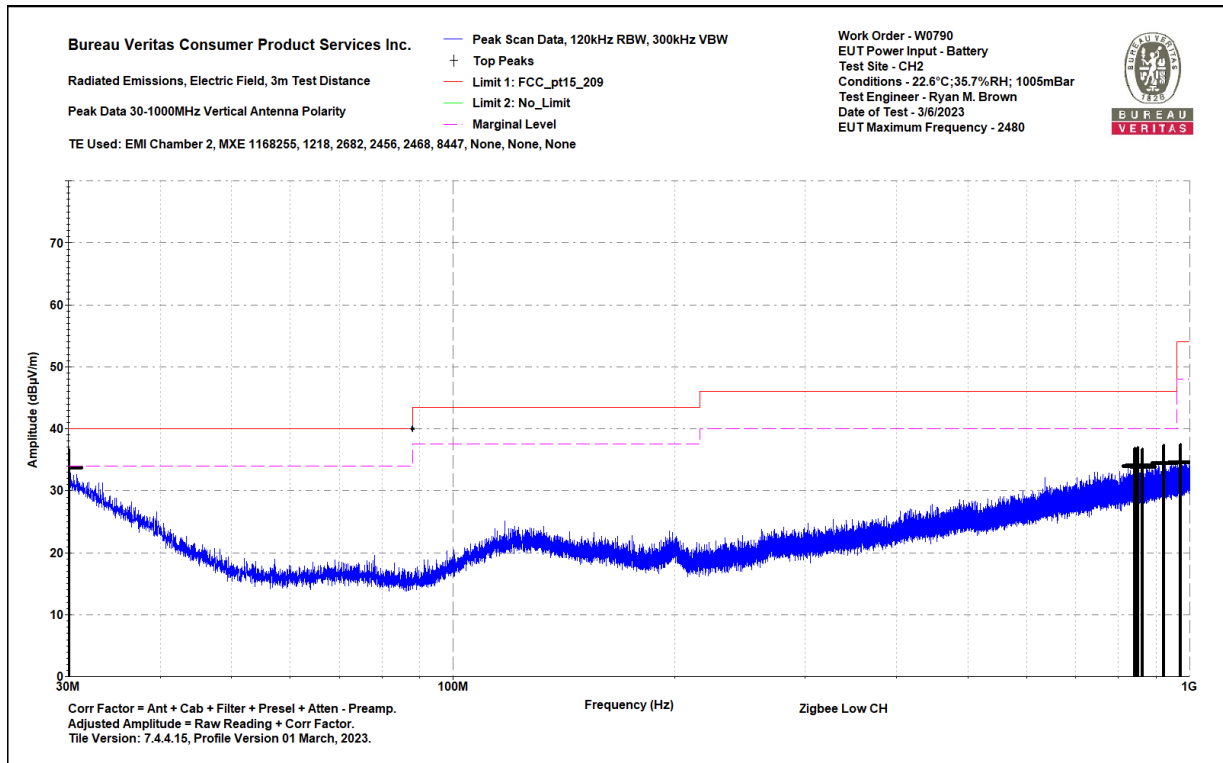


## Host Model CEM100

Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance Top Peaks Vertical 30-1000MHz Notes: Zigbee 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)	Turntable Azimuth (degrees)
30.097	31.9	1.8	33.8	40	-6.2	PASS	-6.2	150	135
843.102	29.6	4.3	33.9	46	-12.1	PASS		200	270
850.329	29.6	4.4	34	46	-12	PASS		100	180
861.945	29.4	4.4	33.9	46	-12.1	PASS		250	225
921.236	28.9	5.6	34.5	46	-11.5	PASS		150	45
972.379	28.2	6.3	34.6	54	-19.4	PASS		250	0

## 30-1000MHz Vertical



## 30-1000MHz Vertical



BUREAU VERITAS

# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3



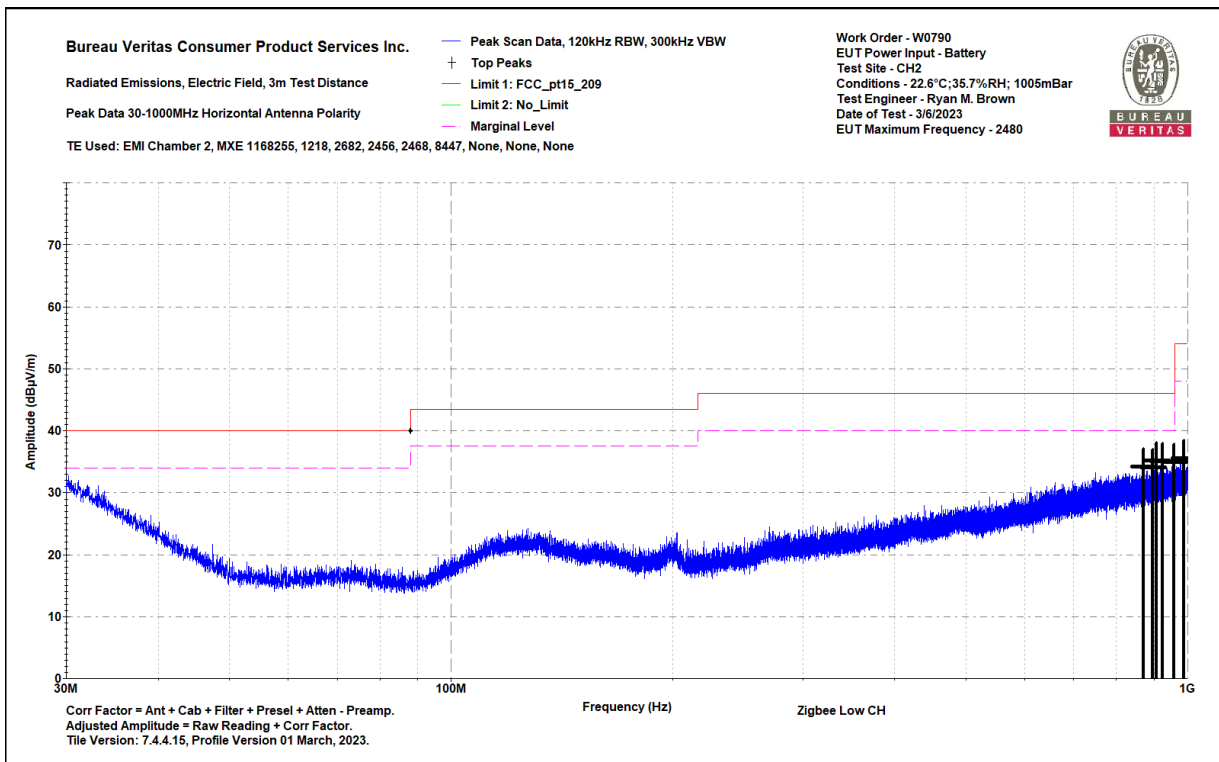
Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Horizontal 30-1000MHz

Notes:  
Zigbee 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)
871.62	29.5	4.6	34.2	46	-11.8	PASS		250	225
896.38	29	5.1	34.1	46	-11.9	PASS		150	180
906.71	29.9	5.3	35.2	46	-10.8	PASS	-10.8	100	225
924	29.4	5.6	35.1	46	-10.9	PASS		250	315
958.702	28.9	6.1	35	46	-11	PASS		200	225
988.821	29.1	6.5	35.6	54	-18.4	PASS		150	270

### 30-1000MHz Horizontal



### 30-1000MHz Horizontal



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# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3



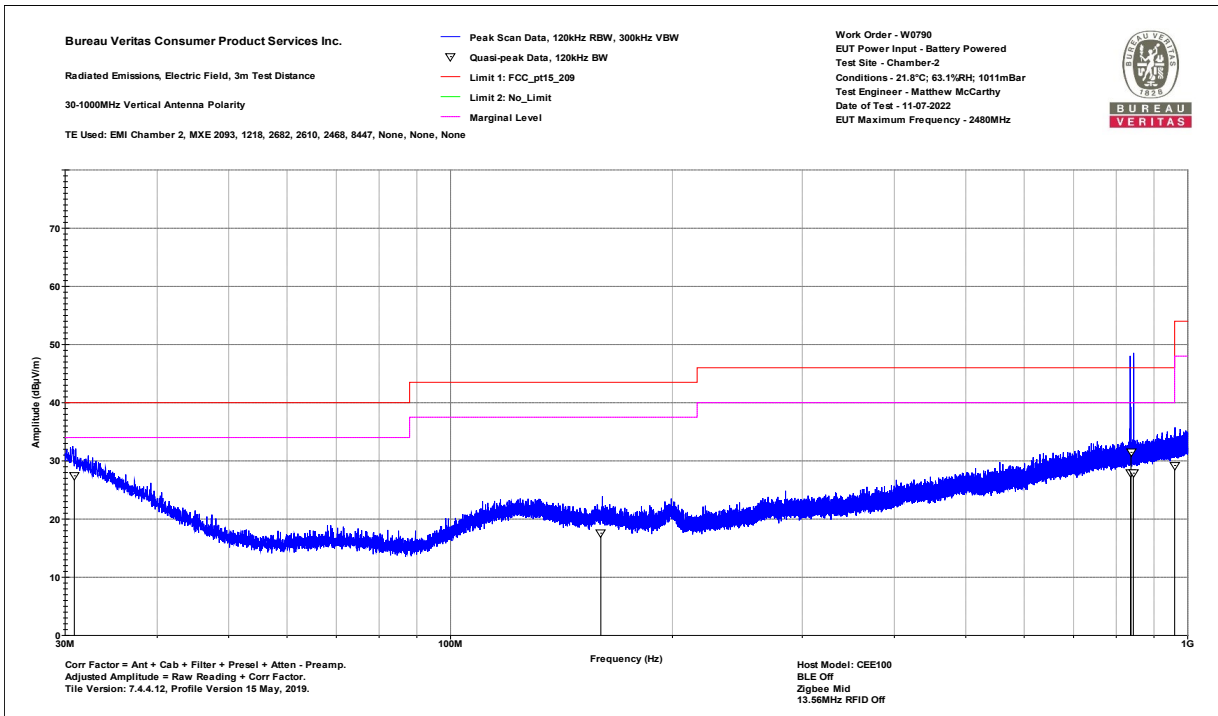
## Channel 18

### 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 Off	Date of Test - 11-07-2022
Zigbee Mid	

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)
30.883	26.2	1.3	27.4	40	-12.6	PASS	-12.6	100	138
159.885	24.2	-6.6	17.6	43.5	-25.9	PASS		125	151
836.403	23.4	4.6	27.9	46	-18.1	PASS		160	290
837.661	26.9	4.6	31.5	46	-14.5	PASS		184	165
843.761	23.3	4.6	27.9	46	-18.1	PASS		213	330
960.043	22.9	6.3	29.2	54	-24.8	PASS		175	121

### 30-1000MHz Vertical



### 30-1000MHz Vertical

Bureau Veritas Consumer Product Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

Tel.: (978) 486-8880  
Fax: (978) 486-8828



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### Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

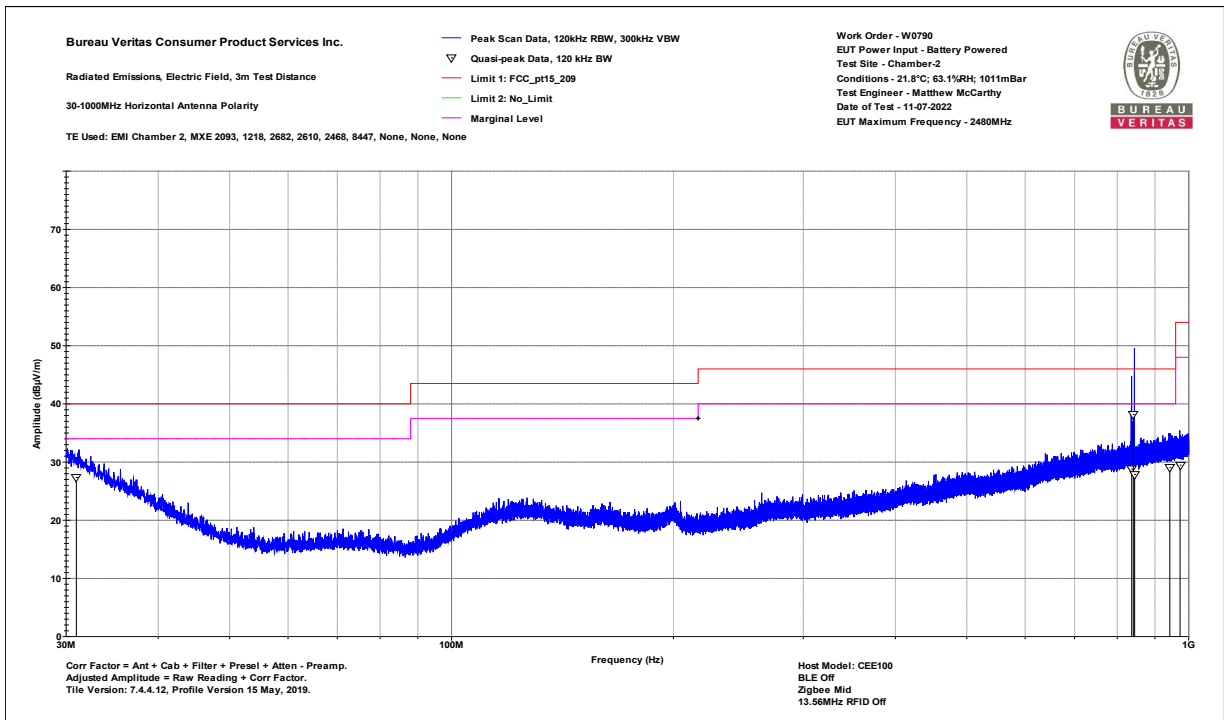


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
30-1000MHz Horizontal Data  
Notes:  
Host Model: CEE100  
BLE Off  
Zigbee Mid

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)
30.981	26.2	1.2	27.3	40	-12.7	PASS		159	4
836.965	24.2	4.6	28.8	46	-17.2	PASS		201	25
841.143	33.6	4.6	38.2	46	-7.8	PASS	-7.8	134	65
844.505	23.3	4.6	27.8	46	-18.2	PASS		156	69
942.718	22.9	6.1	29	46	-17	PASS		181	77
973.132	22.9	6.6	29.5	54	-24.5	PASS		198	290

### 30-1000MHz Horizontal



### 30-1000MHz Horizontal



BUREAU VERITAS

# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

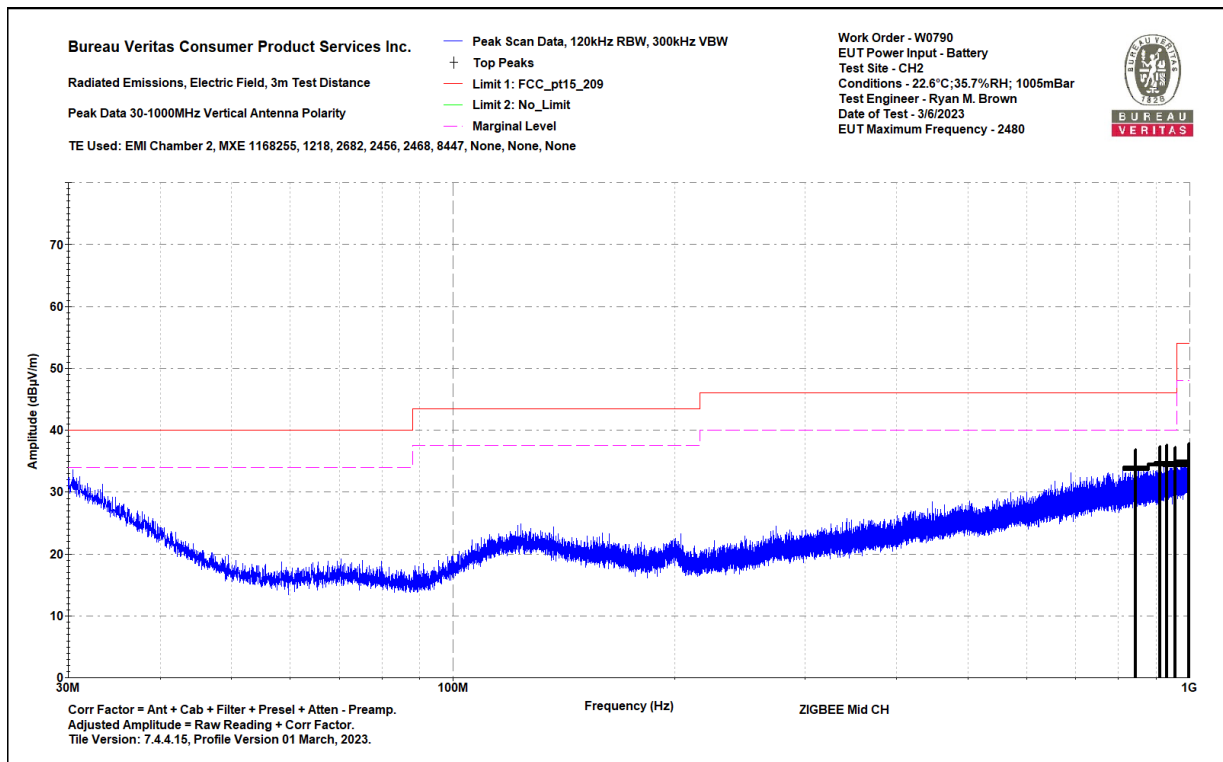


## Host Model CEB100

Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance Top Peaks Vertical 30-1000MHz Notes: ZIGBEE 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
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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)
843.709	29.6	4.3	33.9	46	-12.1	PASS		100	270
845.285	29.4	4.3	33.7	46	-12.3	PASS		150	270
911.075	29.2	5.3	34.5	46	-11.5	PASS		200	90
930.888	29	5.7	34.7	46	-11.3	PASS	-11.3	150	135
956.689	28.2	6.1	34.3	46	-11.7	PASS		150	180
998.691	28.2	6.8	35	54	-19	PASS		250	180

### 30-1000MHz Vertical



### 30-1000MHz Vertical



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# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

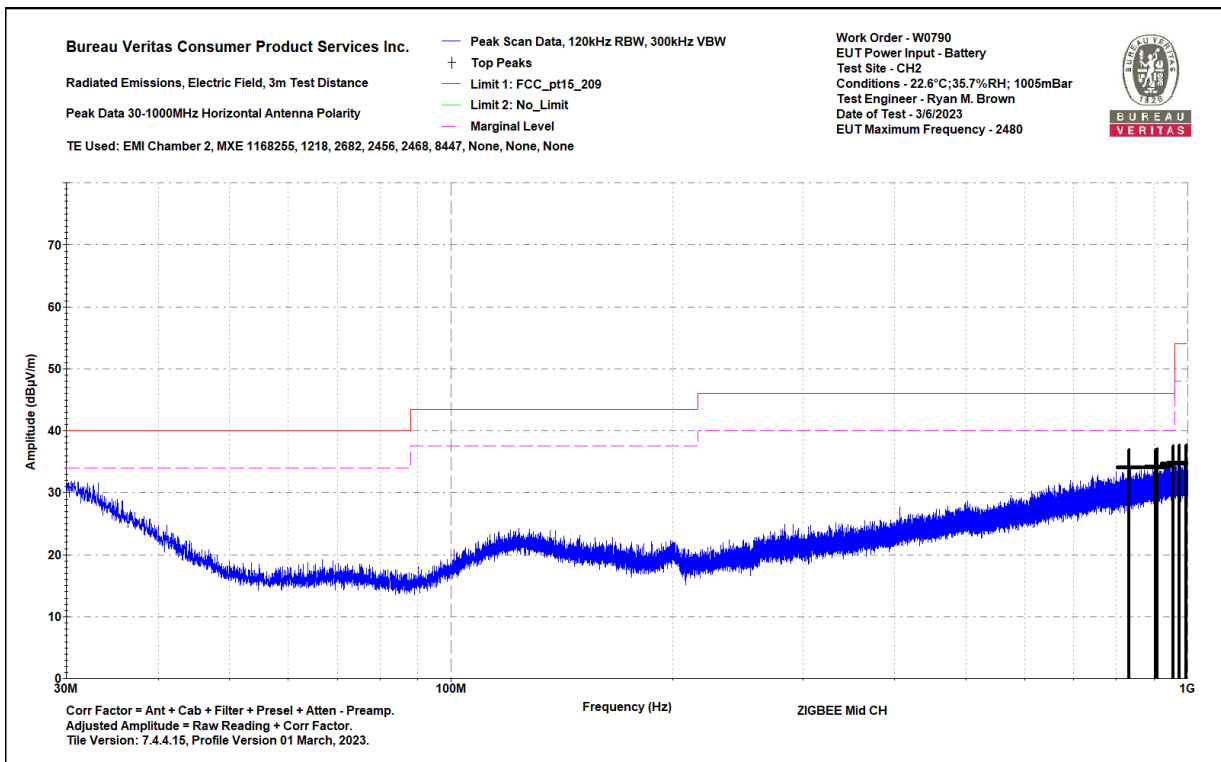


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Horizontal 30-1000MHz  
Notes:  
ZIGBEE Mid CH  
0

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)
833.257	29.8	4.3	34.1	46	-11.9	PASS		100	135
905.255	28.8	5.3	34	46	-12	PASS		150	225
908.893	28.9	5.3	34.2	46	-11.8	PASS		100	225
955.647	28.7	6.1	34.8	46	-11.2	PASS	-11.2	150	90
974.731	28.4	6.4	34.8	54	-19.2	PASS		150	90
994.18	28.2	6.6	34.8	54	-19.2	PASS		250	180

### 30-1000MHz Horizontal



### 30-1000MHz Horizontal



BUREAU VERITAS

# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

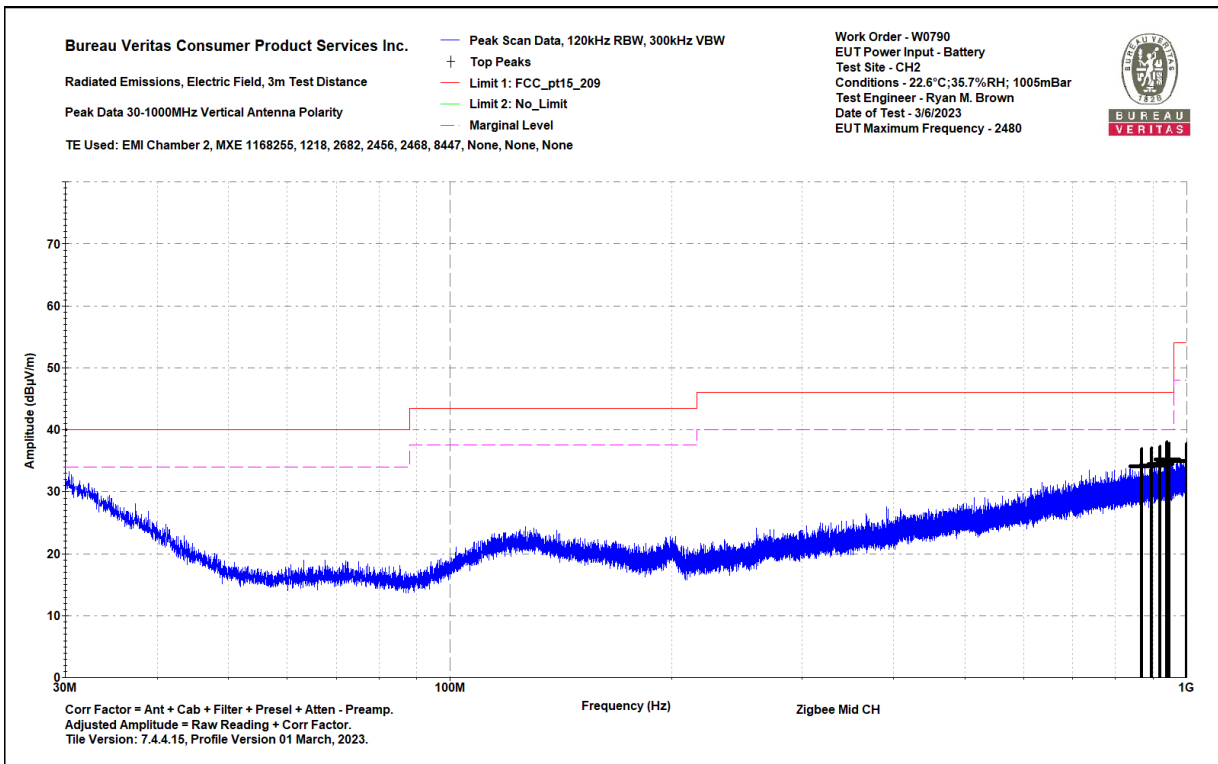


## Host Model CEM100

Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance Top Peaks Vertical 30-1000MHz Notes: Zigbee 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)	Turntable Azimuth (degrees)
869.438	29.6	4.5	34.1	46	-11.9	PASS		150	225
895.822	29.1	5.1	34.2	46	-11.8	PASS		200	225
920.654	28.8	5.6	34.4	46	-11.6	PASS		250	90
939.957	29.4	5.8	35.2	46	-10.8	PASS	-10.8	200	135
946.626	29	6	34.9	46	-11.1	PASS		100	180
999.782	28	6.9	34.9	54	-19.1	PASS		100	90

### 30-1000MHz Vertical



### 30-1000MHz Vertical





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# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

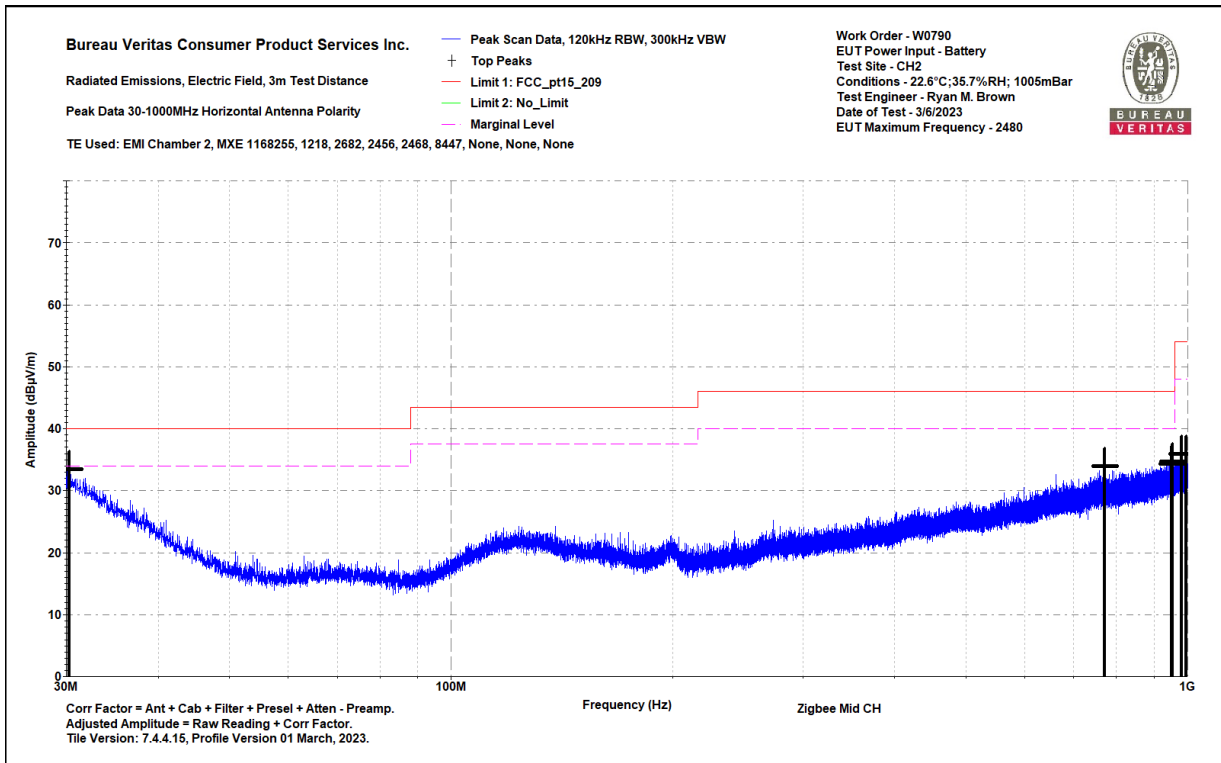


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Horizontal 30-1000MHz  
Notes:  
Zigbee Mid CH  
0

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)
30.267	31.8	1.7	33.5	40	-6.5	PASS	-6.5	250	225
771.08	30.5	3.4	34	46	-12	PASS		250	270
950.53	28.4	6	34.4	46	-11.6	PASS		100	45
953.755	28.6	6.1	34.7	46	-11.3	PASS		150	270
982.031	29.6	6.4	35.9	54	-18.1	PASS		250	225
994.471	29.2	6.7	35.9	54	-18.1	PASS		150	270

### 30-1000MHz Horizontal



### 30-1000MHz Horizontal



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# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3



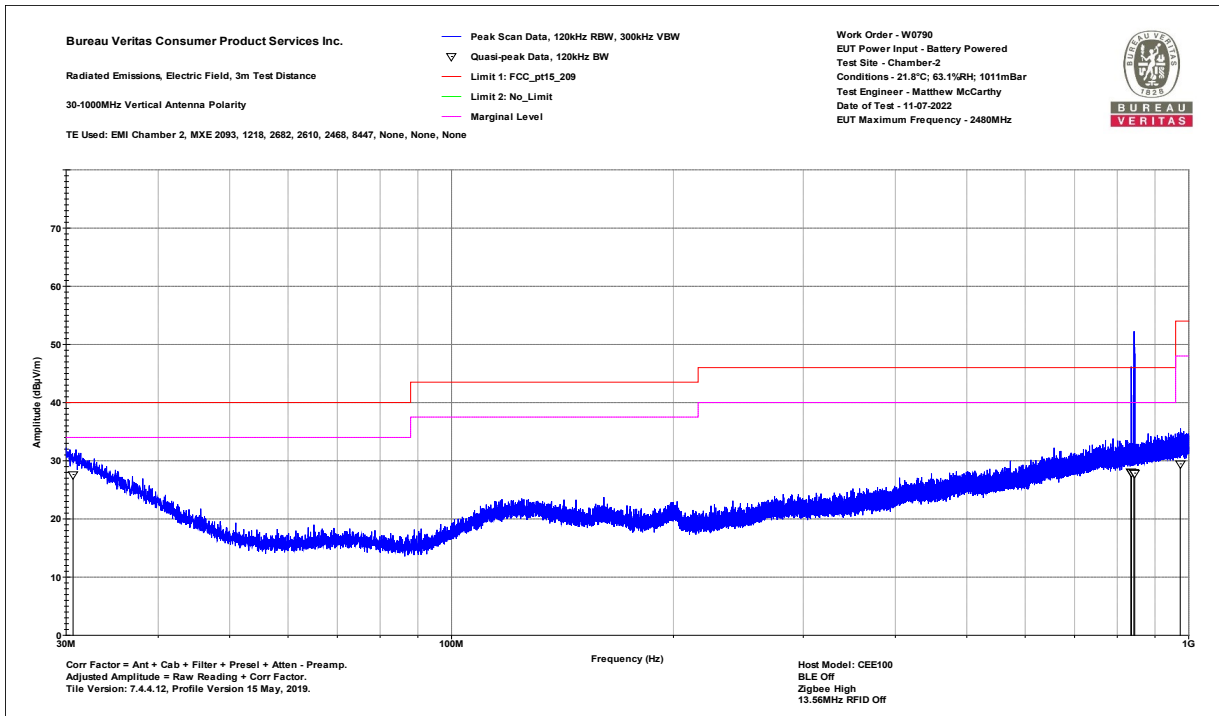
## Channel 26

### 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 Off	Date of Test - 11-07-2022
Zigbee High	

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)
30.666	26.2	1.5	27.6	40	-12.4	PASS	-12.4	205	151
834.699	23.4	4.6	28	46	-18	PASS		247	33
836.062	23.4	4.6	28	46	-18	PASS		275	160
842.402	23.3	4.6	27.9	46	-18.1	PASS		103	213
844.712	23.3	4.6	27.9	46	-18.1	PASS		125	295
973.728	22.9	6.6	29.5	54	-24.5	PASS		115	110

### 30-1000MHz Vertical



### 30-1000MHz Vertical



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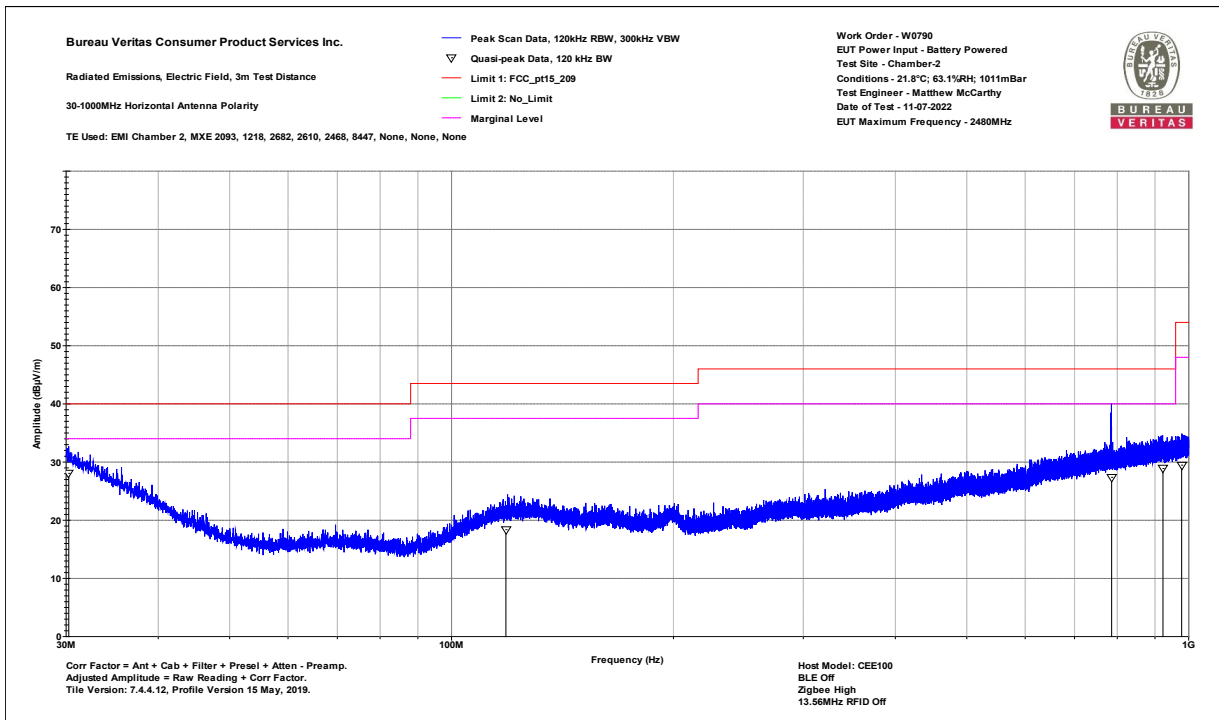
### Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3



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 Off	Date of Test - 11-07-2022
Zigbee High	

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)
30.255	26.2	1.8	28	40	-12	PASS	-12	275	267
118.512	23.8	-5.5	18.4	43.5	-25.1	PASS		196	65
786.062	23.7	3.7	27.4	46	-18.6	PASS		244	197
922.627	23.1	5.8	28.9	46	-17.1	PASS		225	109
978.095	22.9	6.6	29.5	54	-24.5	PASS		249	155

### 30-1000MHz Horizontal



### 30-1000MHz Horizontal



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# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

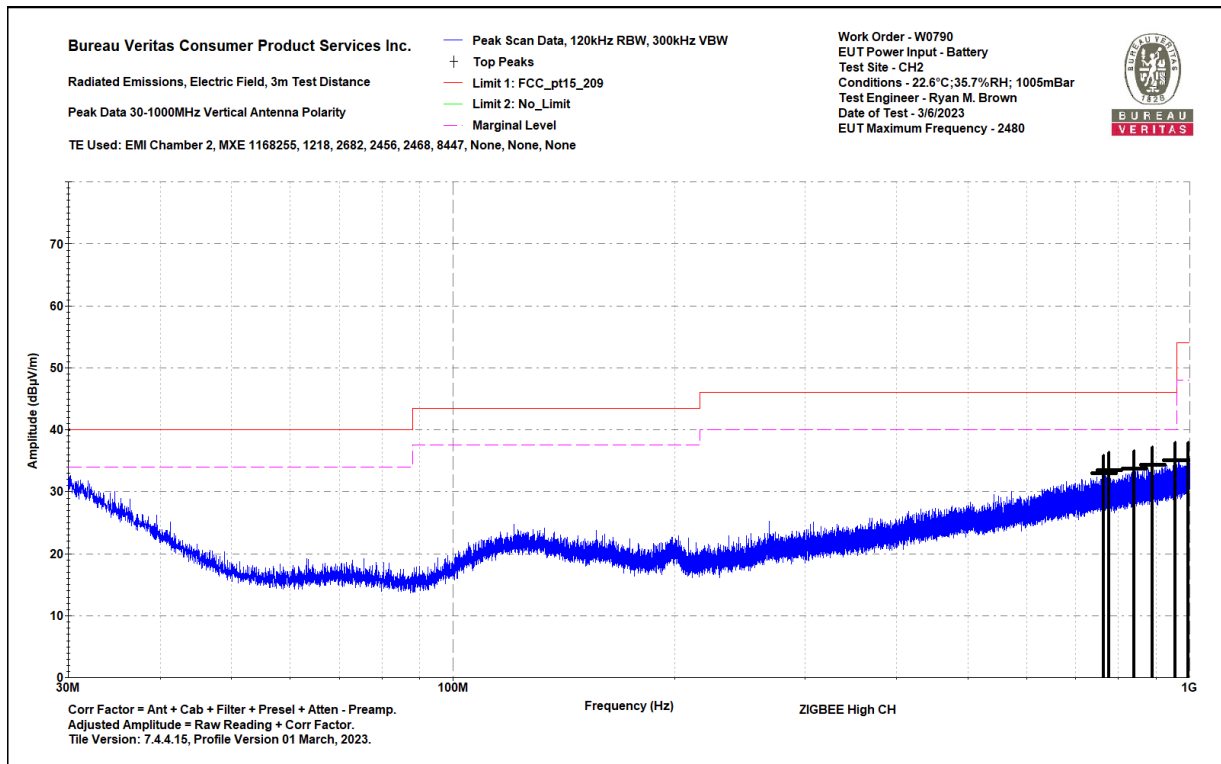


## Host Model CEB100

Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance Top Peaks Vertical 30-1000MHz Notes: ZIGBEE 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)	Turntable Azimuth (degrees)
763.684	29.7	3.2	33	46	-13	PASS		150	315
776.366	30	3.5	33.5	46	-12.5	PASS		150	90
840.75	29.5	4.3	33.8	46	-12.2	PASS		250	45
889.081	29.4	4.9	34.3	46	-11.7	PASS		200	180
955.016	29	6.1	35.1	46	-10.9	PASS	-10.9	150	45
994.786	28.3	6.7	35	54	-19	PASS		150	135

### 30-1000MHz Vertical



### 30-1000MHz Vertical



BUREAU VERITAS

# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

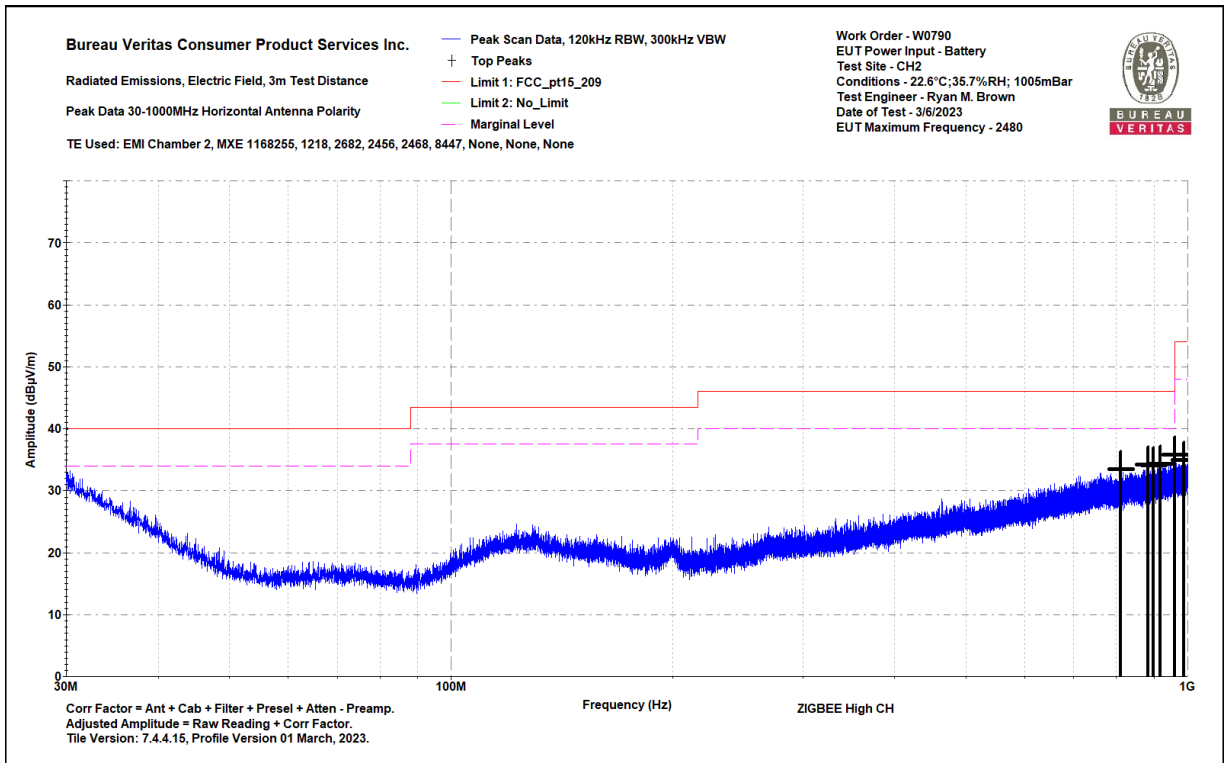


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Horizontal 30-1000MHz  
Notes:  
ZIGBEE High CH  
0

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)
811.117	29.6	3.8	33.5	46	-12.5	PASS		150	45
884.521	29.4	4.8	34.2	46	-11.8	PASS		250	225
898.78	29	5.1	34.1	46	-11.9	PASS		200	180
918.665	28.8	5.6	34.3	46	-11.7	PASS		250	135
959.6	29.7	6.1	35.8	46	-10.2	PASS	-10.2	150	90
988.069	28.5	6.5	35	54	-19	PASS		150	315

## 30-1000MHz Horizontal



## 30-1000MHz Horizontal



BUREAU VERITAS

# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3



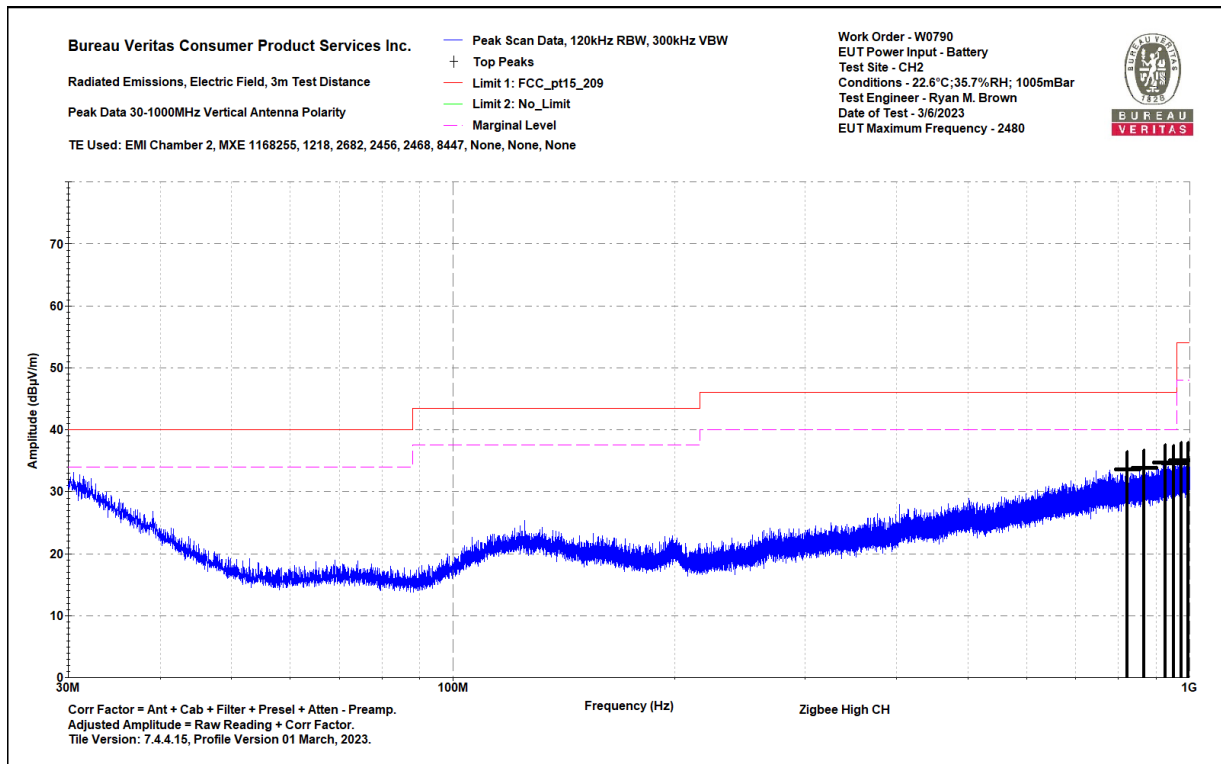
## Host Model CEM100

Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Vertical 30-1000MHz  
Notes:  
Zigbee 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_20 9 (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	Turntable Azimuth (degrees)
823.339	29.4	4.2	33.6	46	-12.4	PASS		150	45
866.188	29.4	4.5	33.9	46	-12.1	PASS		100	225
926.28	29.1	5.6	34.7	46	-11.3	PASS	-11.3	150	270
950.7	28.6	6	34.6	46	-11.4	PASS		100	315
973.592	28.8	6.4	35.1	54	-18.9	PASS		250	270
994.471	28.4	6.7	35.1	54	-18.9	PASS		250	315

### 30-1000MHz Vertical



### 30-1000MHz Vertical

Bureau Veritas Consumer Product Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

Tel.: (978) 486-8880  
Fax: (978) 486-8828



BUREAU VERITAS

# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

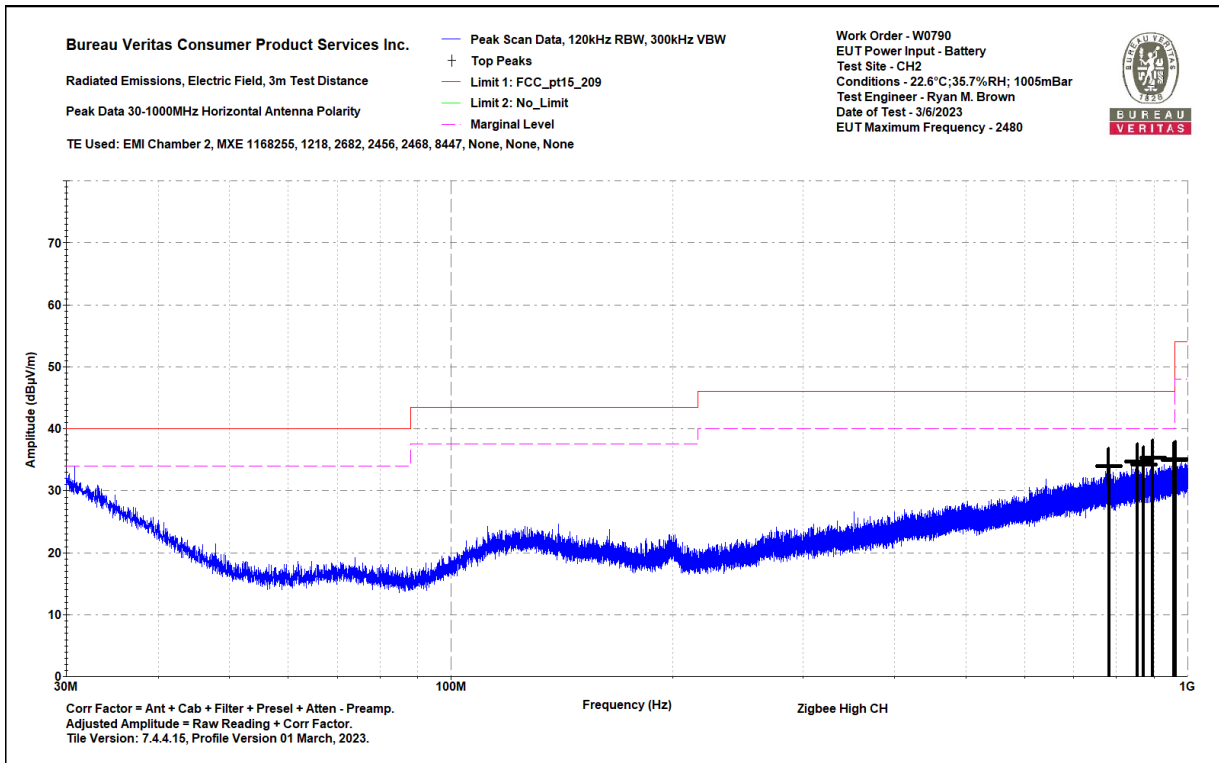


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Horizontal 30-1000MHz  
Notes:  
Zigbee High CH  
0

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)
781.508	30.5	3.5	34	46	-12	PASS		100	45
853.748	30.3	4.4	34.7	46	-11.3	PASS		100	270
870.481	29.7	4.6	34.2	46	-11.8	PASS		200	90
896.283	30.2	5.1	35.3	46	-10.7	PASS	-10.7	200	135
958.169	28.8	6.1	35	46	-11	PASS		200	90
961.709	29	6.1	35.1	54	-18.9	PASS		250	0

### 30-1000MHz Horizontal



### 30-1000MHz Horizontal

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# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3



## Emissions above 1GHz

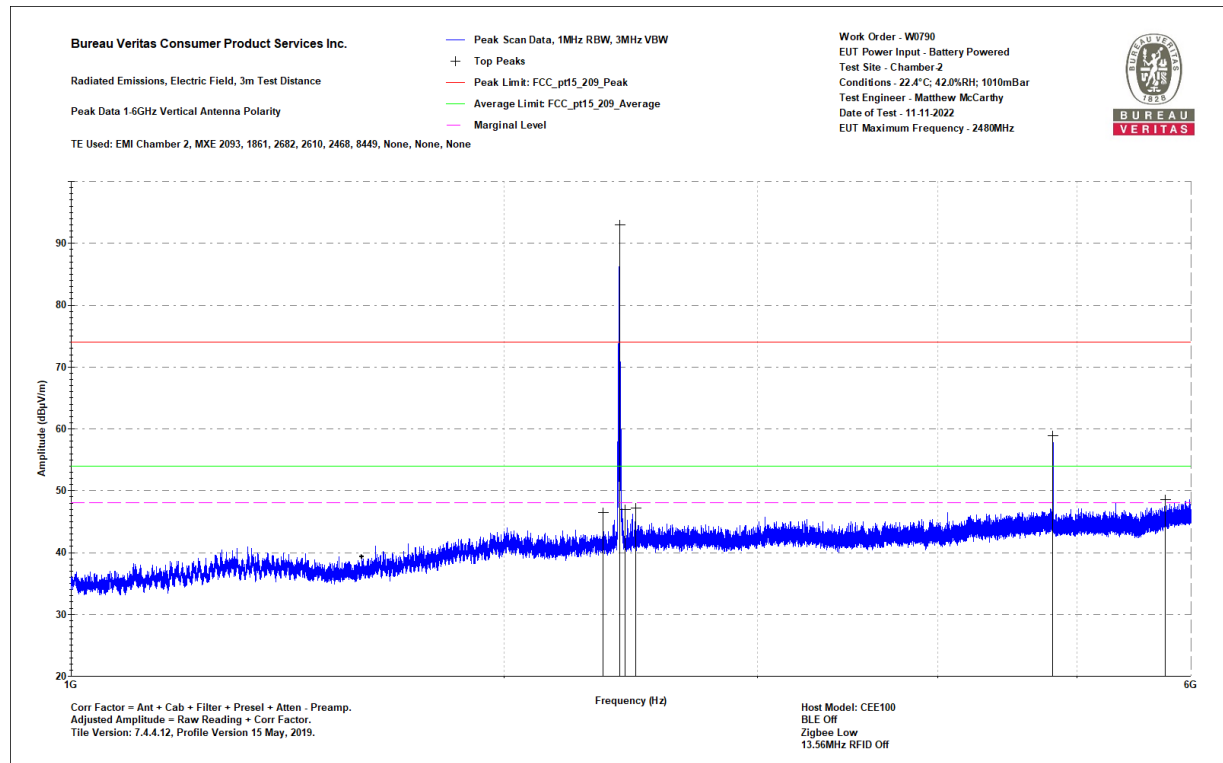
### Channel 11

### Host Model CEE100

Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance Top Peaks Vertical 1-6GHz Notes: Host Model: CEE100 BLE Off Zigbee Low	Work Order - W0790 EUT Power Input - Battery Powered Test Site - Chamber-2 Conditions - 22.4°C; 42.0%RH; 1010mBar Test Engineer - Matthew McCarthy Date of Test - 11-11-2022
--	---

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)
2340.75	49.3	35.3	-2.9	46.4	32.4	74	-27.6	PASS	--	54	-21.6	PASS	--	200	40
2405.5	FUNDAMENTAL														
2425.13	49.5	36.7	-2.6	46.9	34.1	74	-27.1	PASS	--	54	-19.9	PASS	--	200	40
2468.5	49.3	35.2	-2.1	47.2	33.1	74	-26.8	PASS	--	54	-20.9	PASS	--	100	53
4811	57.2	50.6	1.7	58.9	52.3	74	-15.1	PASS	-15.1	54	-1.7	PASS	-1.7	200	40
5758.88	45.9	33.8	2.7	48.6	36.5	74	-25.4	PASS	--	54	-17.5	PASS	--	200	315

### 1-6GHz Vertical



### 1-6GHz Vertical

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# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

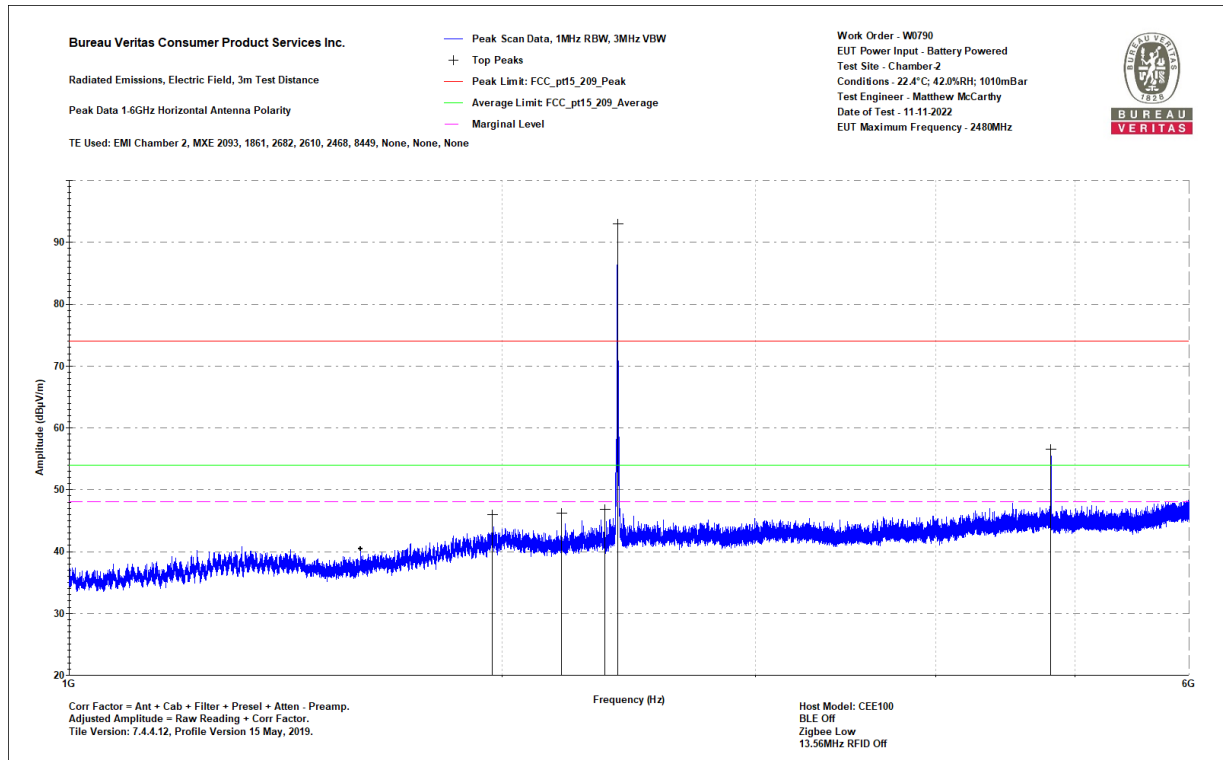


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Horizontal 1-6GHz  
Notes:  
Host Model: CEE100  
BLE Off  
Zigbee Low

Work Order - W0790  
EUT Power Input - Battery Powered  
Test Site - Chamber-2  
Conditions - 22.4°C; 42.0%RH; 1010mBar  
Test Engineer - Matthew McCarthy  
Date of Test - 11-11-2022

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)
1967.75	49.3	36.9	-3.4	45.9	33.5	74	-28.1	PASS	--	54	-20.5	PASS	--	200	40
2197.38	49.8	34.7	-3.6	46.2	31.1	74	-27.8	PASS	--	54	-22.9	PASS	--	200	12
2357.25	49.8	35.1	-3	46.8	32.1	74	-27.2	PASS	--	54	-21.9	PASS	--	200	40
FUNDAMENTAL															
4809.25	54.8	43.1	1.7	56.5	44.8	74	-17.5	PASS	-17.5	54	-9.2	PASS	-9.2	200	40

## 1-6GHz Horizontal



## 1-6GHz Horizontal

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Littleton, MA

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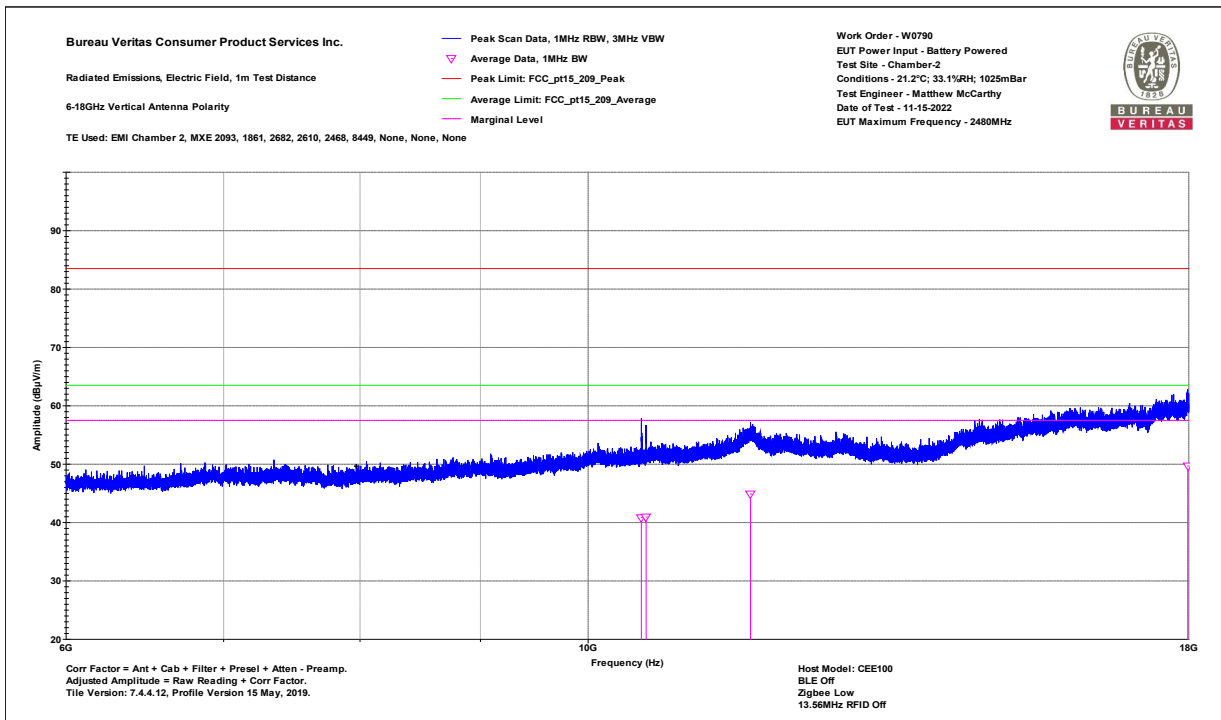
# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3



Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance Vertical 6-18GHz Notes: Host Model: CEE100 BLE Off Zigbee Low	Work Order - W0790 EUT Power Input - Battery Powered Test Site - Chamber-2 Conditions - 21.2°C; 33.1%RH; 1025mBar Test Engineer - Ryan M. Brown Date of Test - 03-09-2023
---	--

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)
10535.7	50.8	37.03	7.1	57.9	44.13	83.5	-25.6	PASS	--	63.5	-19.37	PASS	--	100	151
10582.8	49.3	36.8	7.4	56.7	44.2	83.5	-26.8	PASS	--	63.5	-19.3	PASS	--	150	0
11722.8	48.5	36.85	8.6	57.1	45.45	83.5	-26.4	PASS	--	63.5	-18.05	PASS	--	125	315
17981.1	47.4	39.76	15.5	62.9	55.26	83.5	-20.6	PASS	-20.6	63.5	-8.24	PASS	-8.24	100	285

## 6-18GHz Vertical



## 6-18GHz Vertical



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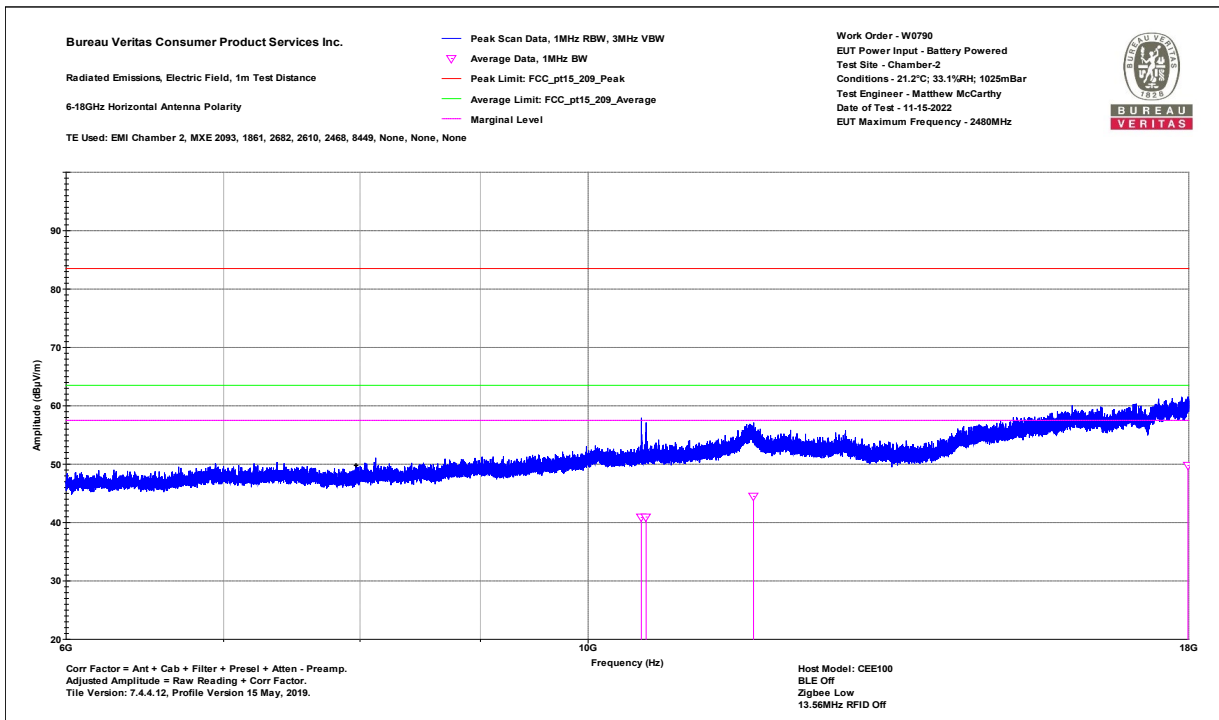
# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3



Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance Horizontal 6-18GHz Notes: Host Model: CEE100 BLE Off Zigbee Low	Work Order - W0790 EUT Power Input - Battery Powered Test Site - Chamber-2 Conditions - 21.2°C; 33.1%RH; 1025mBar Test Engineer - Ryan M. Brown Date of Test - 03-09-2023
---	--

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)
10535.7	50.8	36.91	7.1	57.9	44.01	83.5	-25.6	PASS	--	63.5	-19.49	PASS	--	150	113
10584.9	49.8	36.81	7.4	57.2	44.21	83.5	-26.3	PASS	--	63.5	-19.29	PASS	--	150	267
11759.4	48.6	36.95	8.6	57.2	45.55	83.5	-26.3	PASS	--	63.5	-17.95	PASS	--	200	305
17987.4	46	39.94	15.6	61.6	55.54	83.5	-21.9	PASS	-21.9	63.5	-7.96	PASS	-7.96	200	94

## 6-18GHz Horizontal



## 6-18GHz Horizontal



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# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

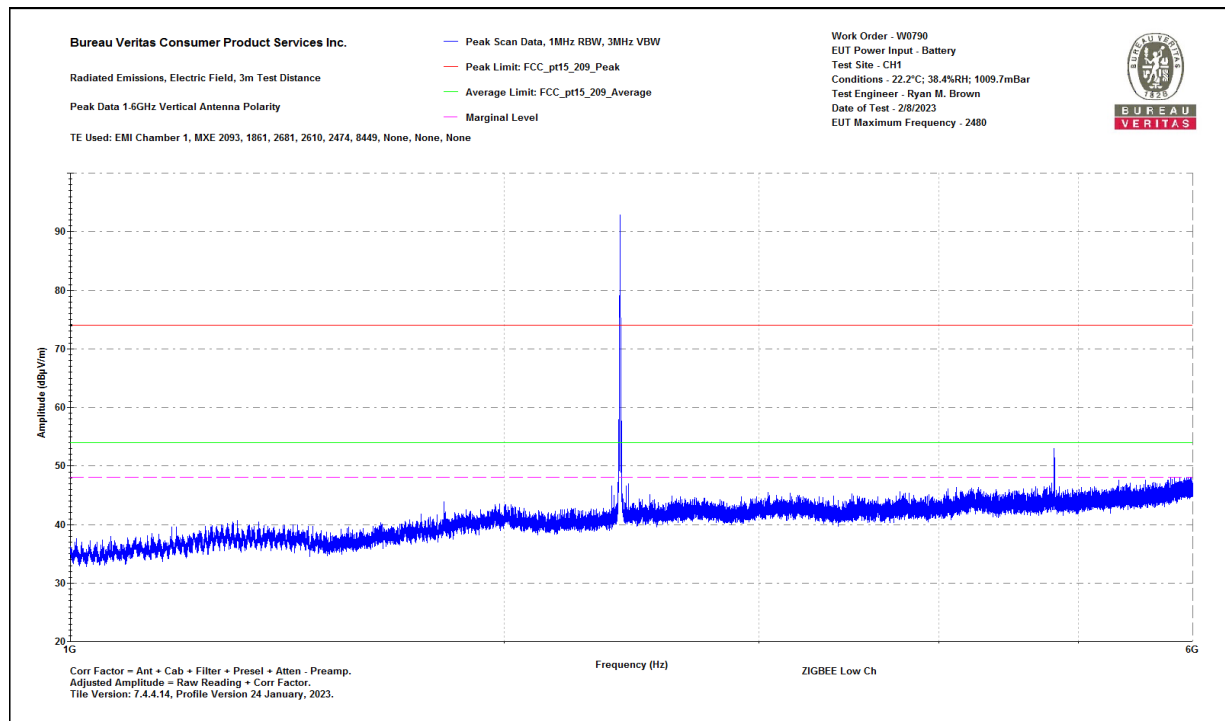


## Host Model CEB100

Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance 1-6GHz Vertical Data Notes: ZIGBEE Low Ch 0	Work Order - W0790 EUT Power Input - Battery Test Site - CH1 Conditions - 22.2°C; 38.4%RH; 1009.7mBar Test Engineer - Ryan M. Brown 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)
1815.38	49.0	49.0	-5.2	43.8	43.8	74	-30.2	PASS	--	54	-10.2	PASS	--	201	269
2374.25	49.8	49.8	-3.2	46.6	46.6	74	-27.4	PASS	--	54	-7.4	PASS	--	280	56
2404.5	Fundamental														
2437.63	49.6	49.6	-2.7	46.9	46.9	74	-27.1	PASS	--	54	-7.1	PASS	--	284	56
4809.13	53.5	46.1	1.0	54.5	47.1	74	-19.5	PASS	-19.5	54	-6.9	PASS	-6.9	116	14
5939.88	45.2	36.4	3.0	48.2	39.4	74	-25.8	PASS	--	54	-14.6	PASS	--	125	134

## 1-6GHz Vertical



## 1-6GHz Vertical



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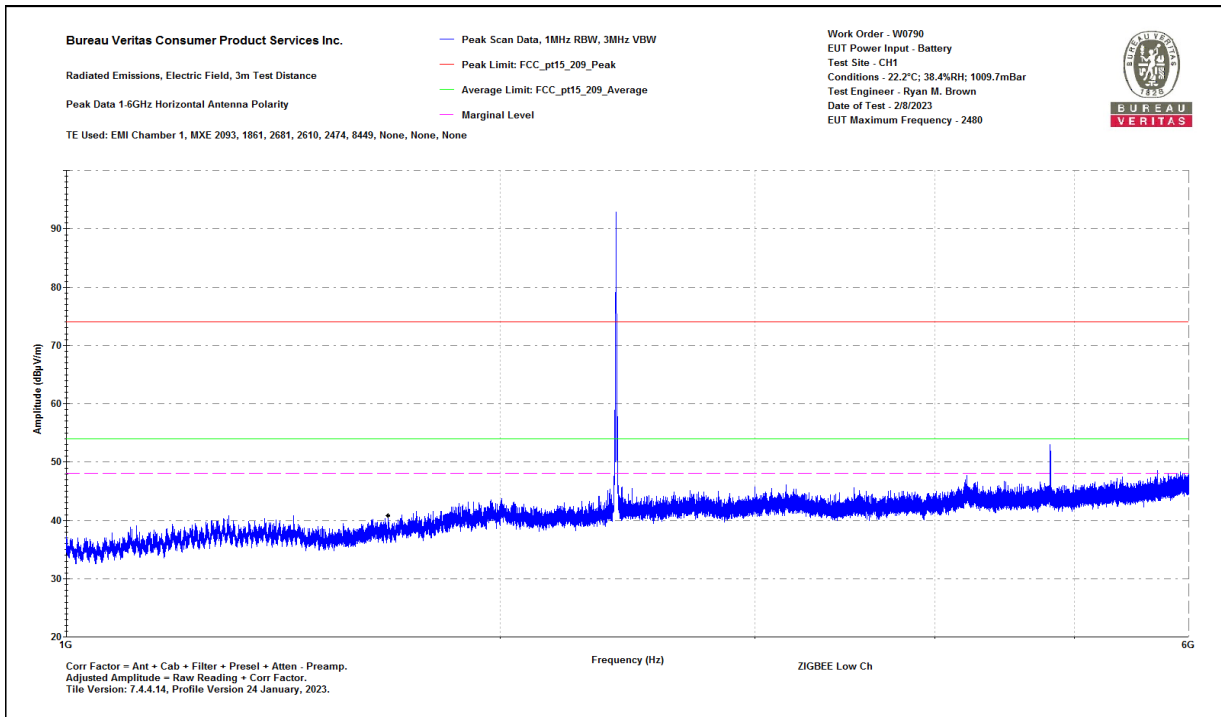
# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3



Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance 1-6GHz Horizontal Data Notes: ZIGBEE Low Ch 0	Work Order - W0790 EUT Power Input - Battery Test Site - CH1 Conditions - 22.2°C; 38.4%RH; 1009.7mBar Test Engineer - Ryan M. Brown 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)
1296.5	48.4	48.4	-7.5	40.9	40.9	74	-33.1	PASS	--	54	-13.1	PASS	--	175	41
2405.5	Fundamental														
3153.38	47.3	47.3	-1.3	46.0	46.0	74	-28.0	PASS	--	54	-8.0	PASS	--	275	57
4211.63	46.7	46.7	1.0	47.7	47.7	74	-26.3	PASS	--	54	-6.3	PASS	--	285	131
4809	53.7	46.9	1.0	54.7	47.9	74	-19.3	PASS	-19.3	54	-6.1	PASS	-6.1	300	131
5708	46.3	35.8	2.3	48.6	38.1	74	-25.4	PASS	--	54	-15.9	PASS	--	275	82

## 1-6GHz Horizontal



## 1-6GHz Horizontal

Bureau Veritas Consumer Product Services Inc.

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# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

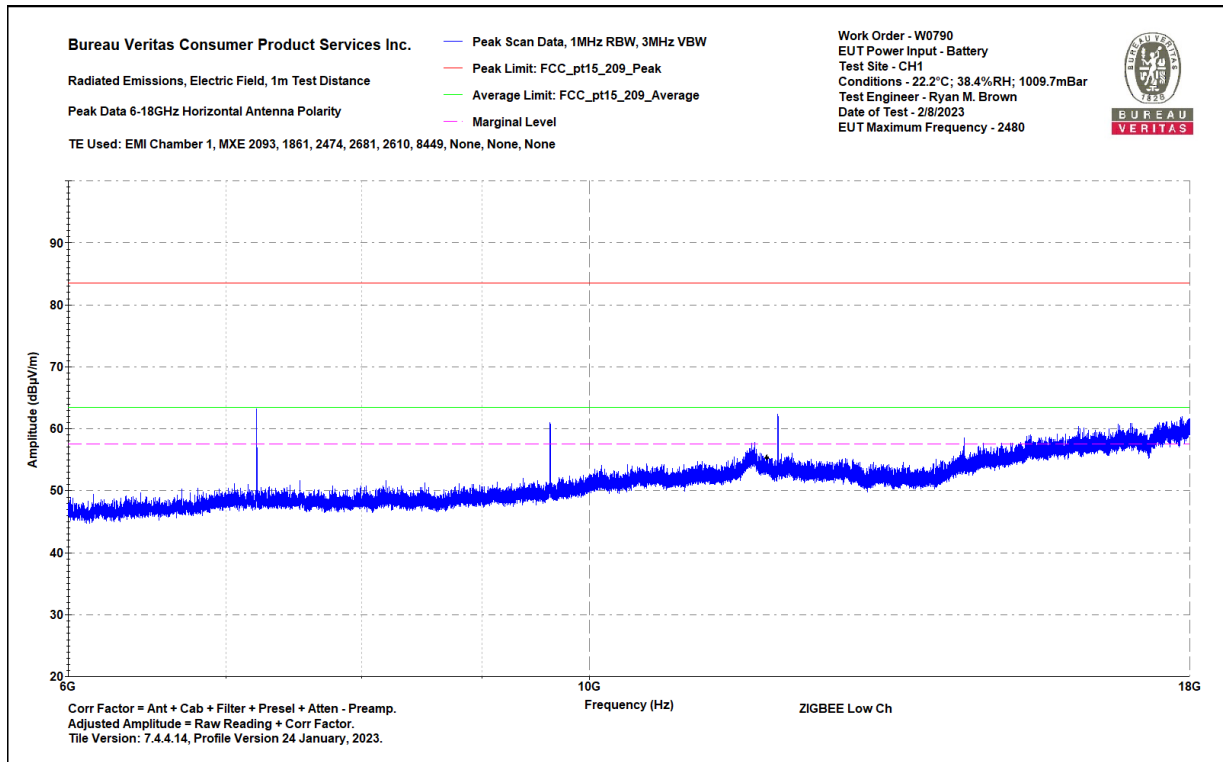


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 1m Distance  
Top Peaks Vertical 6-18GHz  
Notes:  
ZIGBEE Low Ch  
0

Work Order - W0790  
EUT Power Input - Battery  
Test Site - CH1  
Conditions - 22.2°C; 38.4%RH; 1009.7mBar  
Test Engineer - Ryan M. Brown  
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)
11719.2	49.4	38.5	8.7	58.1	47.2	83.5	-25.4	PASS	--	63.5	-16.3	PASS	--	100	223
12027.6	53.3	48.9	8.7	62.0	57.6	83.5	-21.5	PASS	--	63.5	-5.9	PASS	-5.9	150	46
17992.8	47.0	35.9	15.7	62.7	51.6	83.5	-20.8	PASS	-20.8	63.5	-11.9	PASS	--	100	109

## 6-18GHz Vertical



## 6-18GHz Vertical



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# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

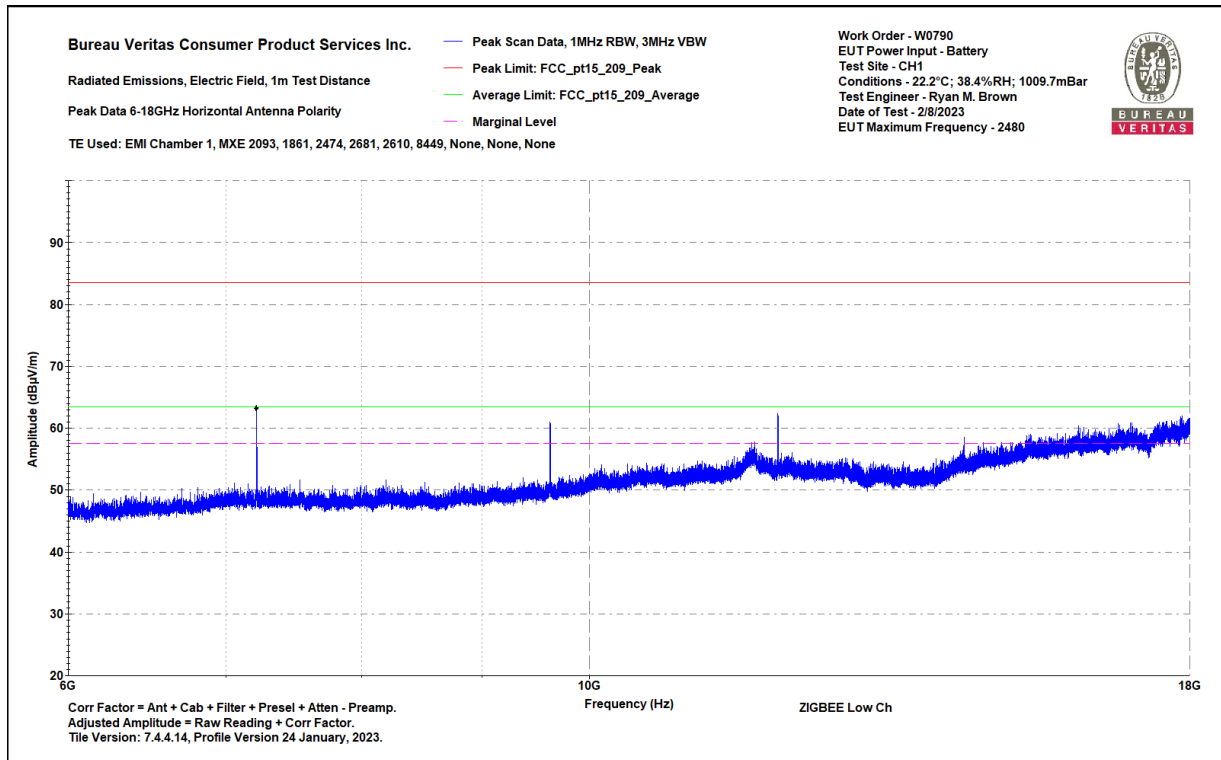


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 1m Distance  
Top Peaks Horizontal 6-18GHz  
Notes:  
ZIGBEE Low Ch  
0

Work Order - W0790  
EUT Power Input - Battery  
Test Site - CH1  
Conditions - 22.2°C; 38.4%RH; 1009.7mBar  
Test Engineer - Ryan M. Brown  
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)
11758.5	49.1	36.9	8.7	57.8	45.6	83.5	-25.7	PASS	--	63.5	-17.9	PASS	--	175	245
12022.5	53.7	46.6	8.7	62.4	55.3	83.5	-21.1	PASS	-21.1	63.5	-8.2	PASS	-8.2	200	32
17870.4	47.1	36.0	14.8	61.9	50.8	83.5	-21.6	PASS	--	63.5	-12.7	PASS	--	200	221

## 6-18GHz Horizontal



## 6-18GHz Horizontal

Bureau Veritas Consumer Product Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

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BUREAU VERITAS

# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3

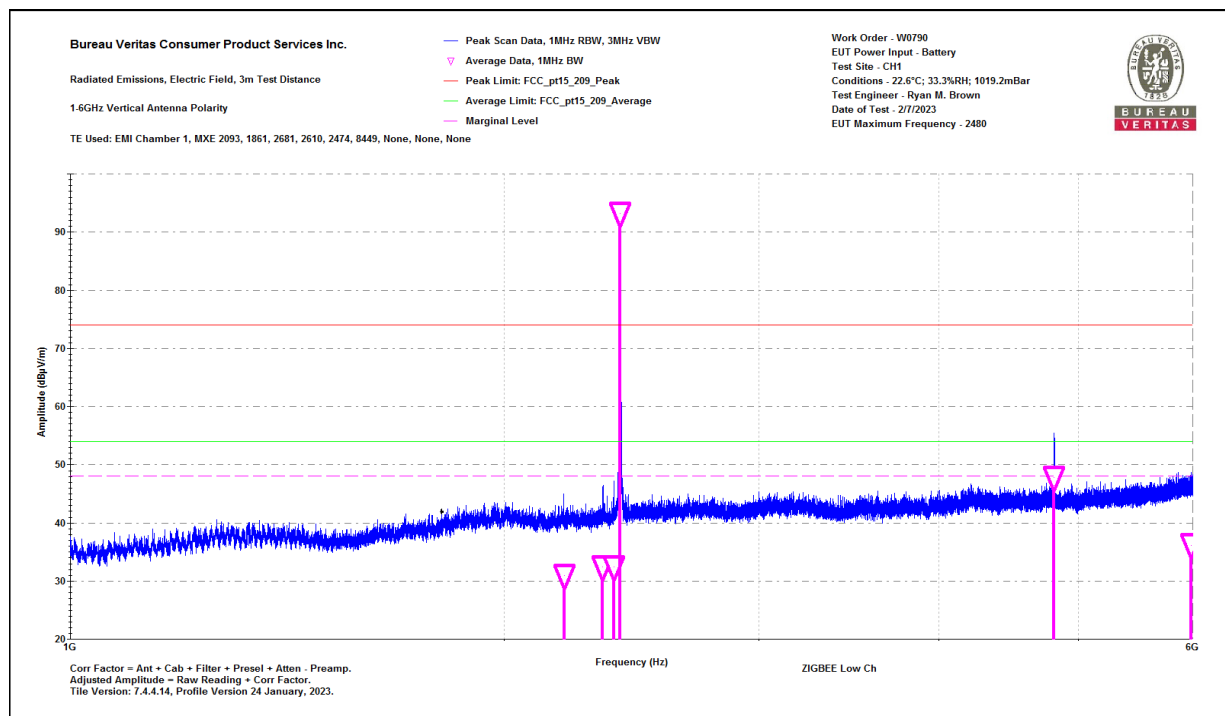


## Host Model CEM100

Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance 1-6GHz Vertical Data Notes: ZIGBEE Low Ch 0	Work Order - W0790 EUT Power Input - Battery Test Site - CH1 Conditions - 22.6°C; 33.3%RH; 1019.2mBar Test Engineer - Ryan M. Brown Date of Test - 2/7/2023
--	--

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)
2200.5	43.7	43.7	-3.8	39.9	39.9	74	-34.1	PASS	--	54	-14.1	PASS	--	100	25
2340.4	44.4	44.4	-3.4	41.0	41.0	74	-33.0	PASS	--	54	-13.0	PASS	--	300	15
2382.3	45.5	45.5	-3.1	42.4	42.4	74	-31.6	PASS	--	54	-11.6	PASS	--	275	20
2404.5	Fundamental														
4809.1	53.8	46.1	1.0	54.8	47.1	74	-19.2	PASS	-19.2	54	-6.9	PASS	-6.9	175	31
5983.9	42.0	42.0	3.0	45.0	45.0	74	-29.0	PASS	--	54	-9.0	PASS	--	220	299

## 1-6GHz Vertical



## 1-6GHz Vertical





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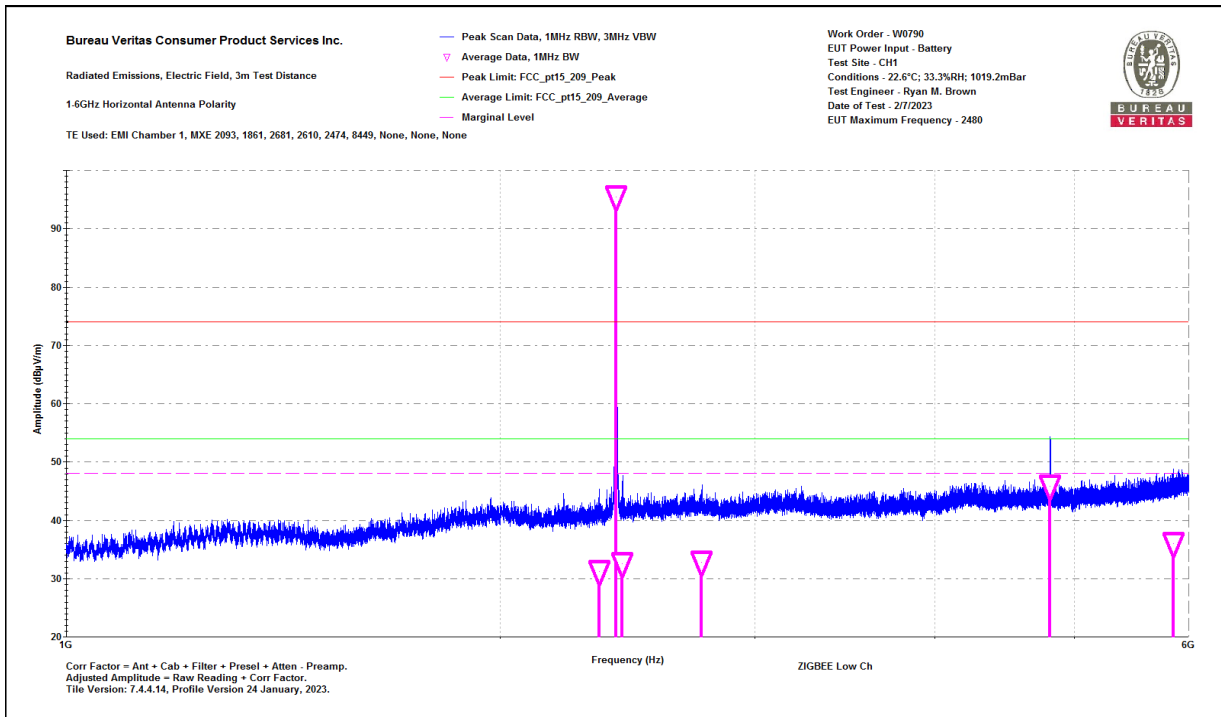
# Test Report for Assa Abloy Inc. Report No. EW0790-3 Issue 3



Bureau Veritas Consumer Product Services Inc. Radiated Emissions Electric Field 3m Distance 1-6GHz Horizontal Data Notes: ZIGBEE Low Ch 0	Work Order - W0790 EUT Power Input - Battery Test Site - CH1 Conditions - 22.6°C; 33.3%RH; 1019.2mBar Test Engineer - Ryan M. Brown Date of Test - 2/7/2023
--	--

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)
2340.5	44.3	44.3	-3.4	40.9	40.9	74	-33.1	PASS	--	54	-13.1	PASS	--	125	294
2404.5	Fundamental														
2428.2	45.2	45.2	-2.7	42.5	42.5	74	-31.5	PASS	--	54	-11.5	PASS	--	283	286
2756	44.2	44.2	-1.7	42.5	42.5	74	-31.5	PASS	--	54	-11.5	PASS	--	300	157
4809.1	51.9	45.7	1	52.9	46.7	74	-21.1	PASS	-21.1	54	-7.3	PASS	-7.3	175	152
5856.2	41.8	41.8	2.7	44.5	44.5	74	-29.5	PASS	--	54	-9.5	PASS	--	215	340

## 1-6GHz Horizontal



## 1-6GHz Horizontal

Bureau Veritas Consumer Product Services Inc.

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