



TEST REPORT


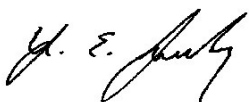
Applicant	Idion Inc.
Address	12 Plymouth Rd. Darien, Connecticut 06820 USA

FCC ID	2A8QA-ITEMPS
ISED IC	N/A
Product	iTempShield
FVIN	N/A
Model/HVIN	DWF-01824
Additional Models & Model Difference	N/A
Date of tests	Oct 31, 2022 to Jan 9, 2023

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
	 Date: Jan 11, 2023

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED	PREPARED BY	APPROVED BY
1	Original release	Nov 21, 2022	HX	YF
2	Update to fix plot rendering issues.	Nov 23, 2022	HX	YF
3	Section 3.1: Updated antenna gain to match TI application note. Section 4.2.3: Updated the description for measurement distances above 6GHz. Section 4.2.5: Added a setup diagram for 1m measurement distance in 6-18GHz range. Section 4.2.7: Added tabular data for 18-25GHz range. Section 4.4.4: Repeated peak output power measurement to meet ANSI C63.10 – 2013 Section 11.9.1.1 settings. Section 4.5.4: RBW description corrected to match the test settings.	Jan 11, 2023	RMB	YF

1 SUMMARY OF TEST RESULTS

The EUT has been 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)	3.23×10^{-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

PRODUCT	iTempShield
MODEL NO.	DWF-01824
ADDITIONAL MODEL	N/A
FCC ID	2A8QA-ITEMPS
ISED IC	N/A
NOMINAL VOLTAGE	3VDC, battery-powered
MODULATION TECHNOLOGY	DTS
MODULATION TYPES	GFSK
DATA RATES	1Mbps (GFSK)
OPERATING FREQUENCY	2402 – 2480MHz
EUT Power Setting	Maximum operating power
OUTPUT POWER	1.05mW (Peak conducted)
ANTENNA TYPE	Internal PCB trace antenna with 5.3dBi gain

The EUT is the Idion iTempShield. It is a battery-powered wearable thermometer intended for continuous measurement of human body temperature on the upper chest. It communicates via BLE to a smart device application. It is intended for single-use and for persons older than 5 years in healthcare facilities and home environments.

The device also contains a passive 13.56MHz NFC tag.

The device is operated by a 3-Volt coin-cell battery. It has a battery life of 30-60 days and is worn on the body for 1-week intervals.

EUT Ports:									
Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out Type
-No EUT Ports-	-	-	-	-	-	-	-	-	-

Lowest clock frequency in the device (used/generated): 32.768kHz

NOTES:

- For a more detailed description of the EUT, please refer to the manufacturer's specifications or the user's manual.
- 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

3.2.1. CONFIGURATION OF SYSTEM UNDER TEST

Two samples were provided for testing, one for radiated measurements and another with an SMA connector for conducted antenna port measurements.

The conducted sample was powered with an external power supply set at 3 VDC. The radiated sample was powered with a battery pack with 2x AA batteries (battery pack and batteries were supplied by the client). Fresh batteries were used during all radiated testing.

The client connected to the conducted and radiated samples in order to put the radio into the necessary test modes. EUT configuration was done by the client via NFC and a wireless connection to a Raspberry Pi command line terminal. EUT configuration modes are as follows:

TEST MODE	DESCRIPTION
A	Continuous Tx at 1Mbps

Emissions were measured by rotating the device around three orthogonal planes, and the test antenna's height and polarity was varied. Worst case results are reported.



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Test Mode Applicability and tested channel detail

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

TEST	TEST MODE	AVAILABLE CHANNELS	TESTED CHANNEL	MODULATION TYPE	DATA RATE (Mbps)	Notes
COP	A,	0 to 39	0,19,39	GFSK	1	--
PSD	A	0 to 39	0,19,39	GFSK	1	--
CBE	A,	0 to 39	0,39	GFSK	1	--
6DB	A,	0 to 39	0,19,39	GFSK	1	--
OBW	A,	0 to 39	0,19,39	GFSK	1	--
CSE	A	0 to 39	0,19,39	GFSK	1	--
RSE<1G	A	0 to 39	0,19, 39	GFSK	1	1
RSE≥1G	A	0 to 39	0,19, 39	GFSK	1	1
RBE	A	0 to 39	0,39	GFSK	1	1
PLCE	--	--	--	--	--	2

Note 1: For radiated emissions, worst-case orientation was found when the EUT was positioned on Z axis as shown in the Test Setup Photos exhibit.

Note 2: 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	22.5deg. C, 44.4%RH	3VDC	RB	Nov 1, 2022
RE≥1G	21.7deg. C, 34.9%RH 22.5deg. C, 44.4%RH	3VDC	RB	Oct 31, 2022 Nov 1, 2022
PLCE	N/A	N/A	N/A	N/A
Antenna Port Measurements	20.6deg. C, 28.1%RH 21.0deg. C, 52.4%RH	3VDC	RB	Oct 31, 2022 Jan 9, 2023



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C, Section 15.247

558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10-2013

RSS-247 Issue 2

Note: All test items have been performed and recorded as per the above standards.

3.4 DESCRIPTION OF SUPPORT UNITS

Support Equipment	Model #	Serial #
Battery Pack with 2 AA batteries	-	-
Power Supply	KPS3010D	-

4 TEST TYPES AND RESULTS

4.1 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. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



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4.2.2 TEST INSTRUMENTS

Rev. 10/25/2022

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9KHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	2/11/2023	2/11/2022
Rental MXE EMI Receiver(1170725)	20Hz-26.5GHz	N9038A	Agilent	MY51210151	1170725	I	2/3/2023	2/3/2022
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Asset	Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz	1685	I	12/6/2022	12/6/2020
EMI Chamber 1	719150	2762A-6	A-0015	1-18GHz	1685	I	12/8/2022	12/8/2020
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
2111 HF Preamp	0.5-18GHz	PAM-118A	COM-POWER	551063	2111	II	10/25/2023	10/25/2022
8447F Rental PA	9KHz-1.3GHz	84477F	HP	3113A05395		II	10/17/2023	10/17/2022
HF (Yellow)	18-26.5GHz	AFS4-18002650-60-8P-4	CS	467559	1266	II	10/25/2023	10/25/2022
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	10/25/2023	11/25/2021
HF (White) Horn	18-26.5GHz	801-WLM	Wavelline	758	758	III	Verify before Use	date of test
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	4/26/2023	4/26/2021
2615 Active Loop Antenna	9KHz-30MHz	6502	EMCO	2049	2615	I	11/23/2022	11/23/2020
Meteorological Meters/Chambers		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	11/23/2022	11/23/2020
Asset #2657		1235C97	Control Company	200435369	2657	I	8/18/2025	8/18/2022
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2466	9KHz-18GHz		MegaPhase			II	11/10/2022	11/10/2021
Asset #2580	9KHz-18GHz		Pasternack			II	1/21/2023	1/21/2022
Asset #2323	1-26.5GHz	TM26-S1S1-120	MEGAPHASE	17139101 002		II	9/14/2023	9/14/2022
Asset #2681	9KHz-18GHz		Pasternack			II	1/21/2023	1/21/2022

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. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. In 9kHz-6GHz range, the EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the center of the loop shall be 1m above the ground.
- g. In 6-18GHz range, the measurement distance was 1m. In 18-25GHz, the measurement distance was 0.1m.
- h. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, and was placed in the worst-case orientation. The turntable was rotated to maximize the emission level.

NOTE:

1. Spectrum analyzer settings used:

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 and RMS Power Avg

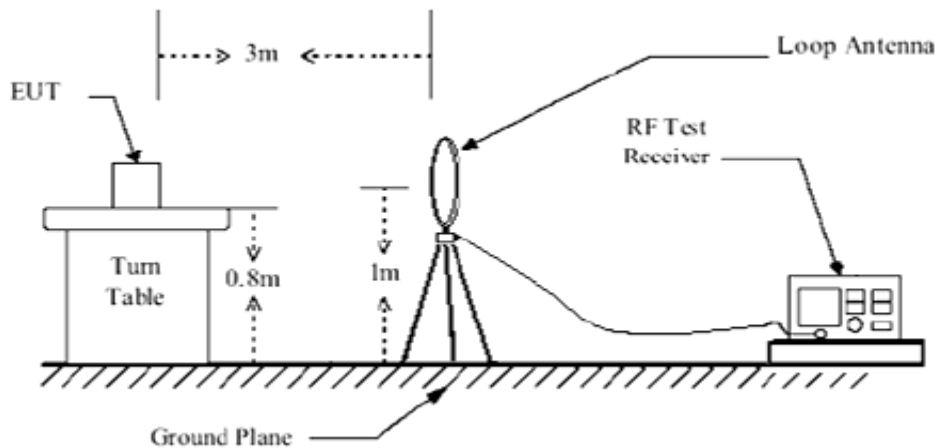
2. EUT was transmitting continuously (duty-cycle >98%) during all tests.
3. If peak measurements were below the applicable limit, QPk and RMS measurements were not performed.

4.2.4 DEVIATION FROM TEST STANDARD

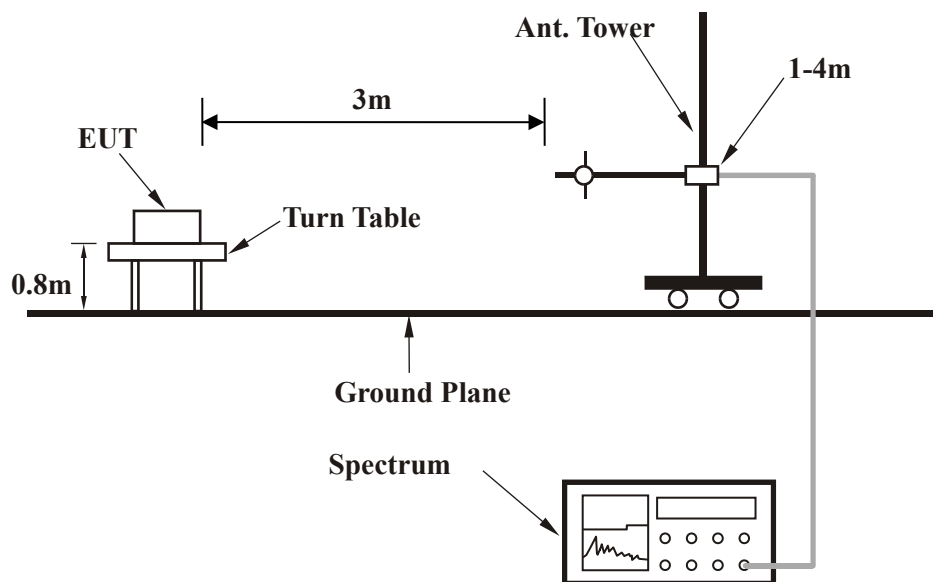
No deviation.

4.2.5 TEST SETUP

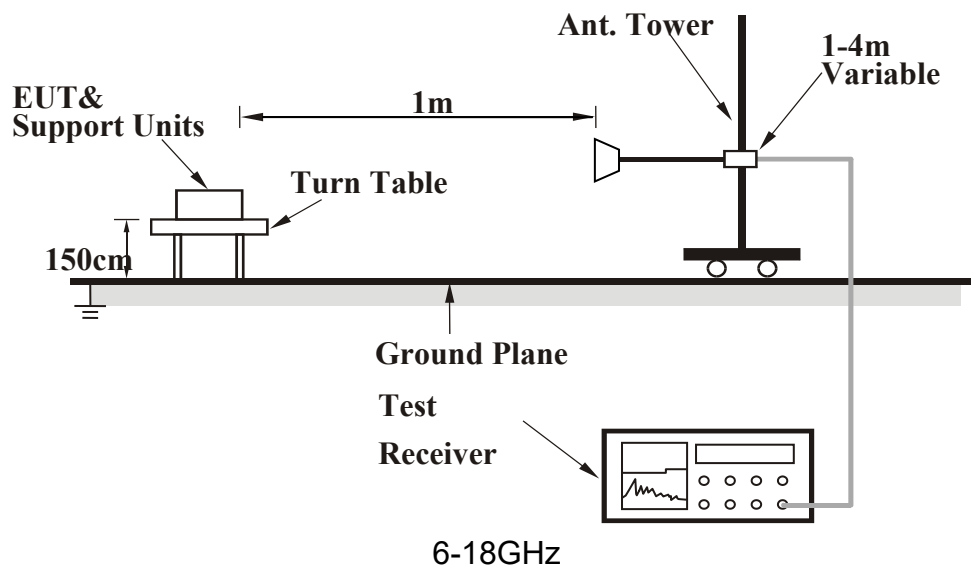
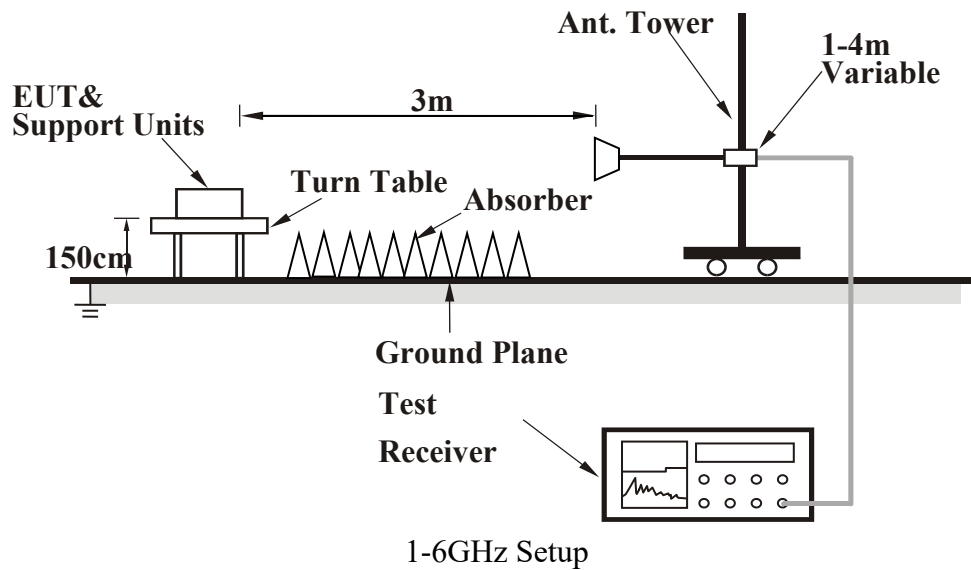
Below 30MHz test setup



Below 1GHz test setup



Above 1GHz 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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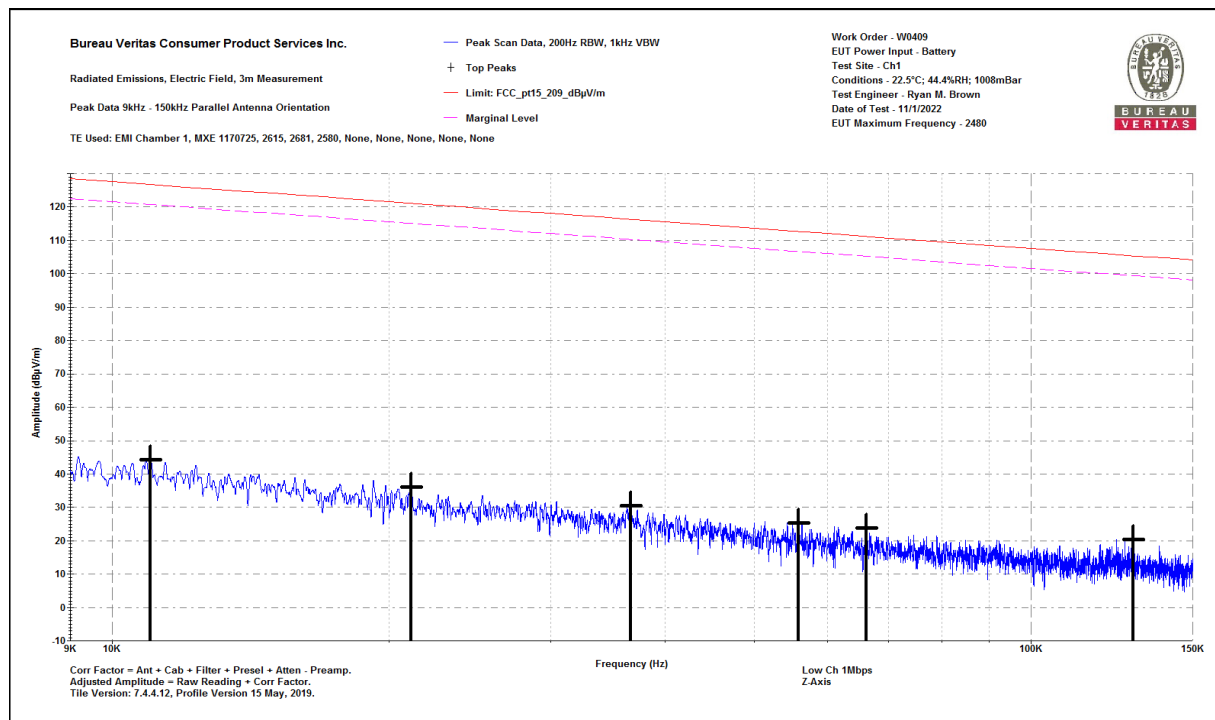


4.2.7 TEST RESULTS

Emissions below 1GHz

Results for BLE 1Mbps GFSK Channel 0

No emissions within 20dB of the limit were identified in 9kHz-30MHz range. Only plots shown below.

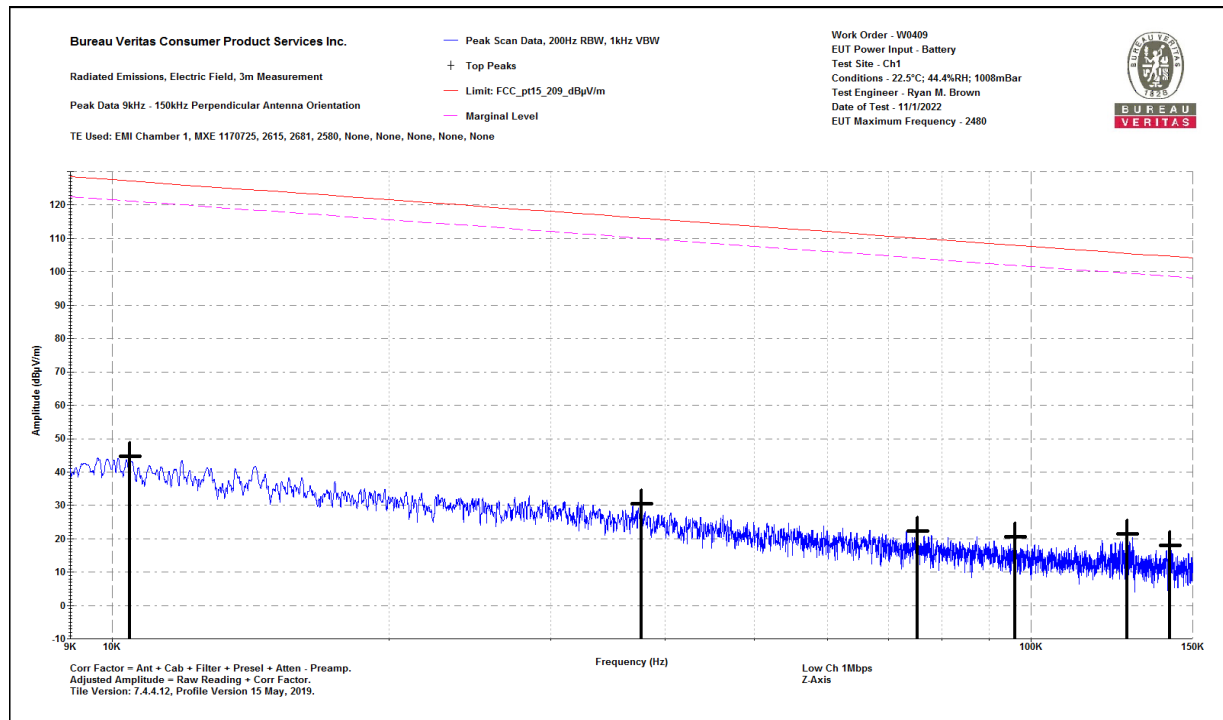


0.009-0.15MHz Parallel

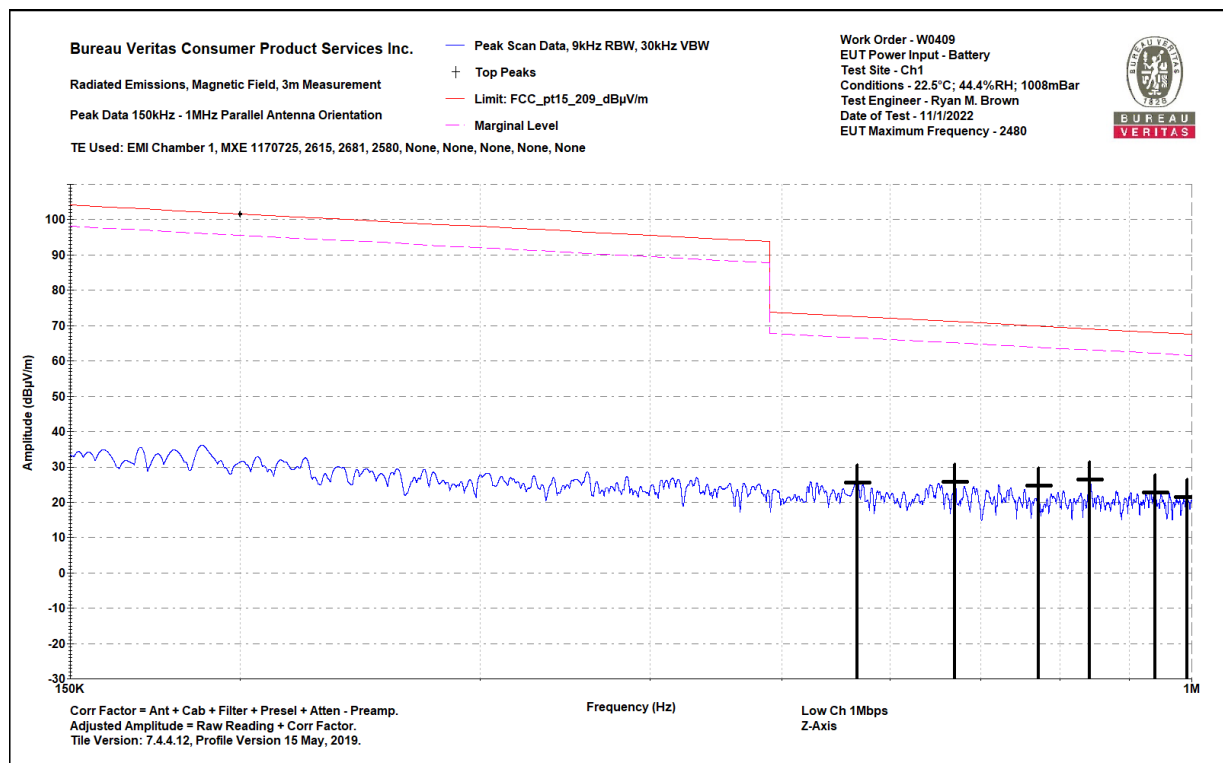


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0.009-0.15MHz Perpendicular



0.15-1MHz Parallel

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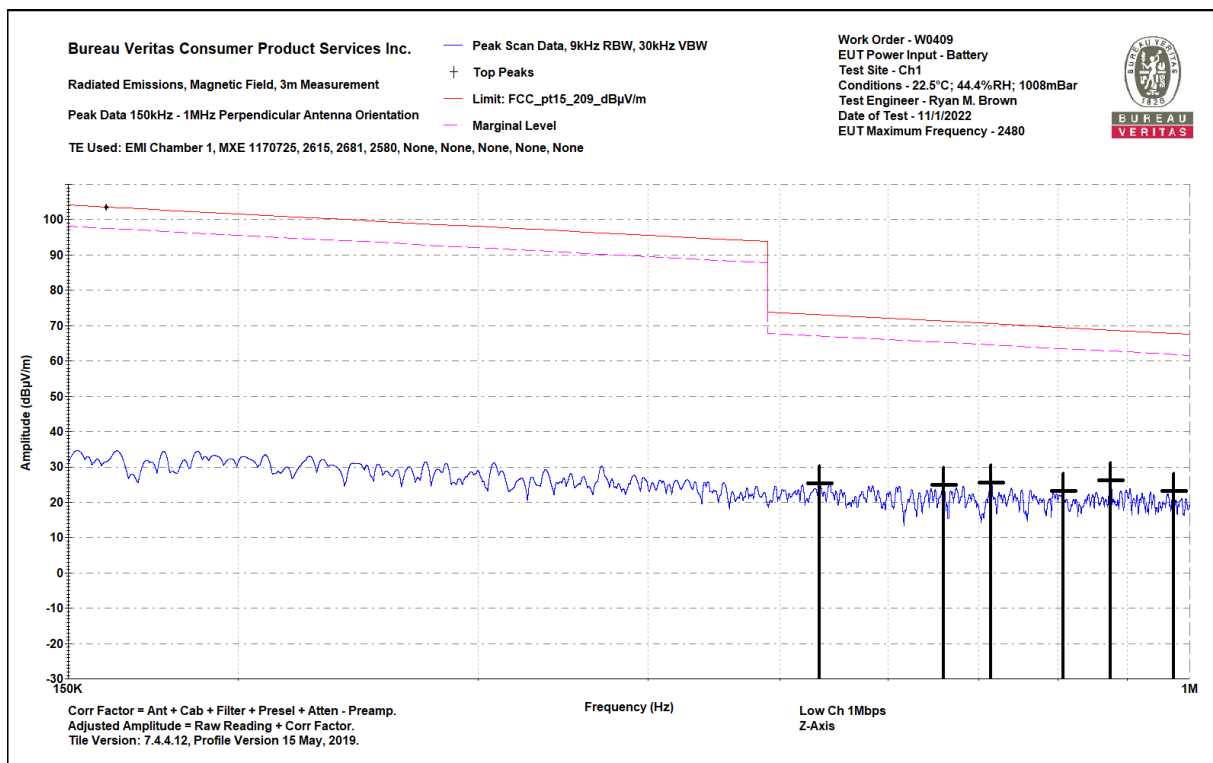
One Distribution Center Circle, #1
Littleton, MA

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

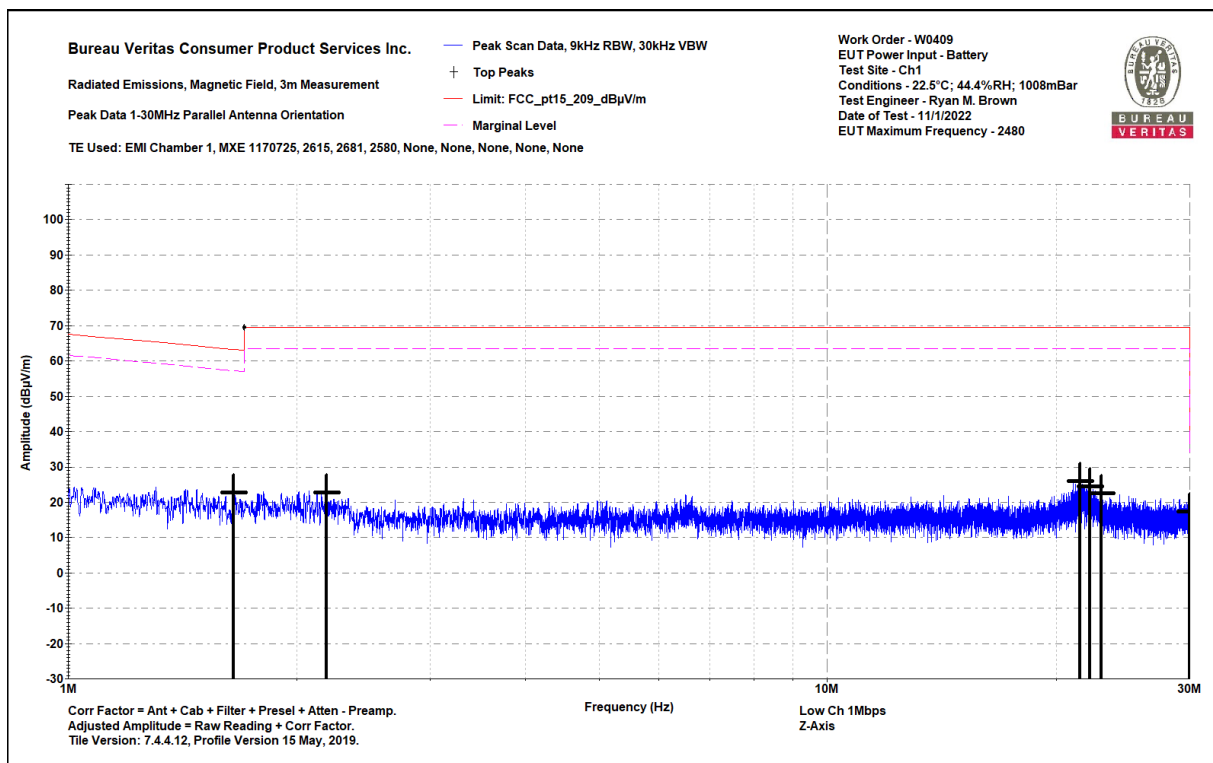


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0.15-1MHz Perpendicular



1-30MHz Parallel

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Radiated Emissions, Magnetic Field, 3m Measurement

Peak Data 1-30MHz Perpendicular Antenna Orientation

TE Used: EMI Chamber 1, MXE 1170725, 2615, 2681, 2580, None, None, None, None, None

— Peak Scan Data, 9kHz RBW, 30kHz VBW

+ Top Peaks

— Limit: FCC_pt15_209_dBμV/m

— Marginal Level

Work Order - W0409

EUT Power Input - Battery

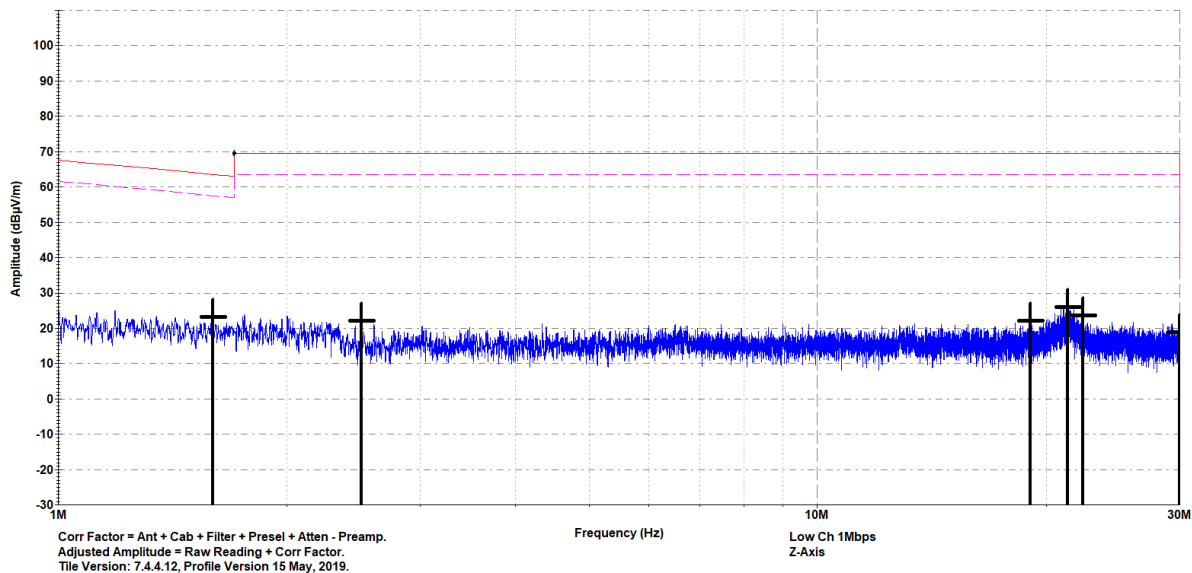
Test Site - Ch1

Conditions - 22.5°C; 44.4%RH; 1008mBar

Test Engineer - Ryan M. Brown

Date of Test - 11/1/2022

EUT Maximum Frequency - 2480



1-30MHz Perpendicular

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Bureau Veritas Consumer Product Services Inc.

Radiated Emissions Electric Field 3m Distance

Top Peaks Vertical 30-1000MHz

Notes:

Low Ch 1Mbps

Z-Axis

0

Work Order - W0409

EUT Power Input - Battery

Test Site - Ch1

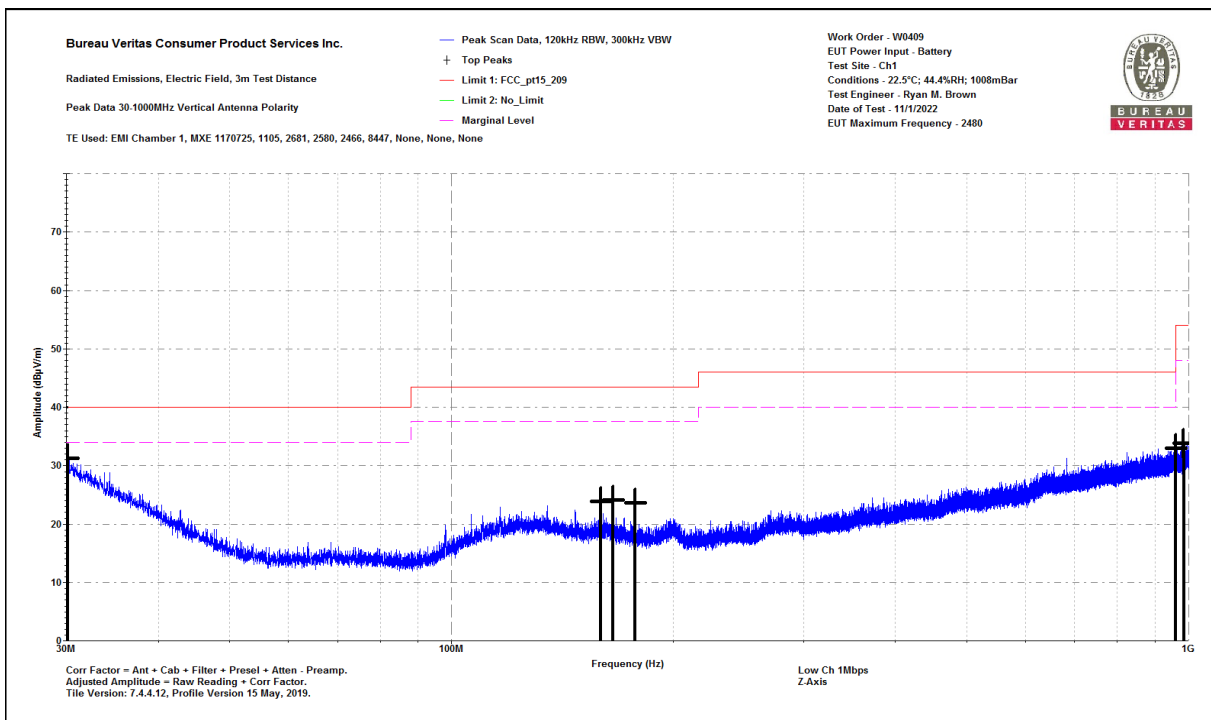
Conditions - 22.5°C; 44.4%RH; 1008mBar

Test Engineer - Ryan M. Brown

Date of Test - 11/1/2022

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)
30.121	30.8	0.5	31.2	40	-8.8	PASS	-8.8	250	90
159.228	32.2	-8.4	23.9	43.5	-19.6	PASS		100	45
165.388	32.8	-8.6	24.2	43.5	-19.3	PASS		100	45
177.585	33	-9.4	23.6	43.5	-19.9	PASS		150	180
959.575	28.4	4.6	32.9	46	-13.1	PASS		250	45
984.625	28.7	5.1	33.9	54	-20.1	PASS		200	0

30-1000MHz Vertical



30-1000MHz Vertical

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Radiated Emissions Electric Field 3m Distance

30-1000MHz Horizontal Data

Notes:

Low Ch 1Mbps

Z-Axis

0

Work Order - W0409

EUT Power Input - Battery

Test Site - Ch1

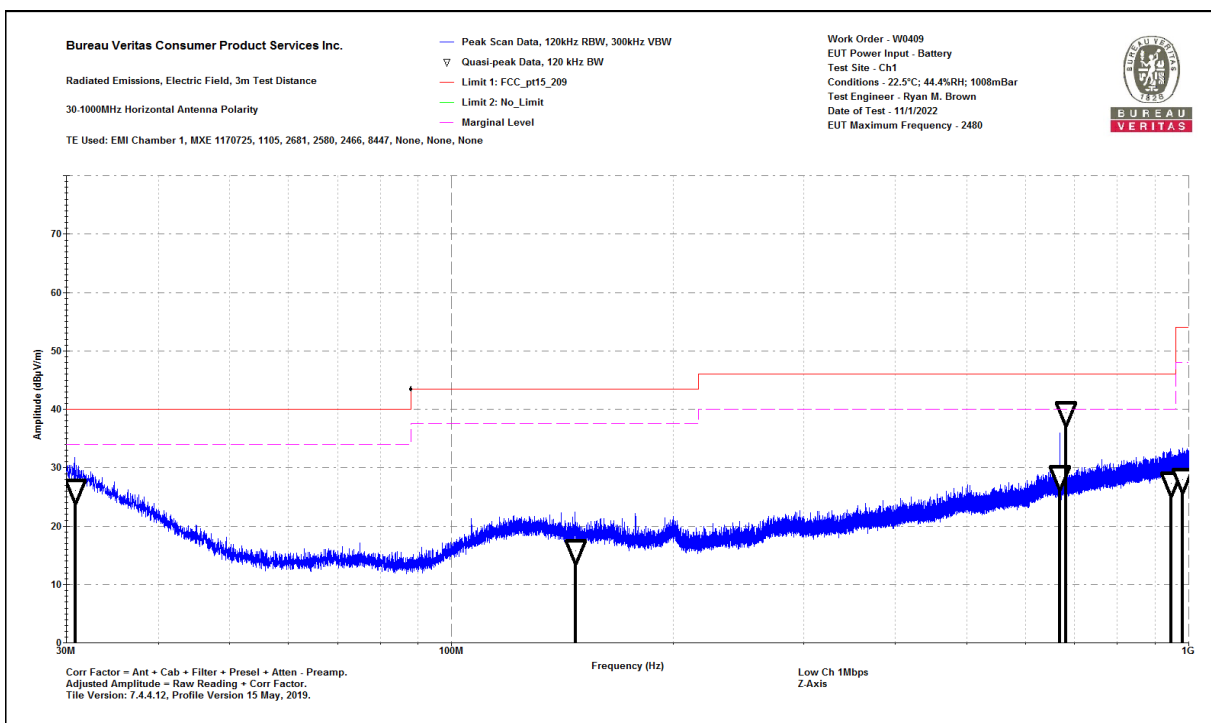
Conditions - 22.5°C; 44.4%RH; 1008mBar

Test Engineer - Ryan M. Brown

Date of Test - 11/1/2022

Frequency (MHz)	Raw QP Reading (dBμV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBμV/m)	Lim1: FCC_pt15_20 9 (dBμV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
30.886	26.2	-0.1	26.1	40	-13.9	PASS		195	340
147.211	23.8	-8	15.8	43.5	-27.7	PASS		224	65
668.502	28.8	-0.4	28.4	46	-17.6	PASS		125	11
681.917	39.6	-0.2	39.4	46	-6.6	PASS	-6.6	125	69
946.266	22.9	4.4	27.3	46	-18.7	PASS		101	11
980.008	22.9	4.9	27.9	54	-26.1	PASS		248	294

30-1000MHz Horizontal



30-1000MHz Horizontal

Bureau Veritas Consumer Product
Services Inc.

One Distribution Center Circle, #1
Littleton, MA

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



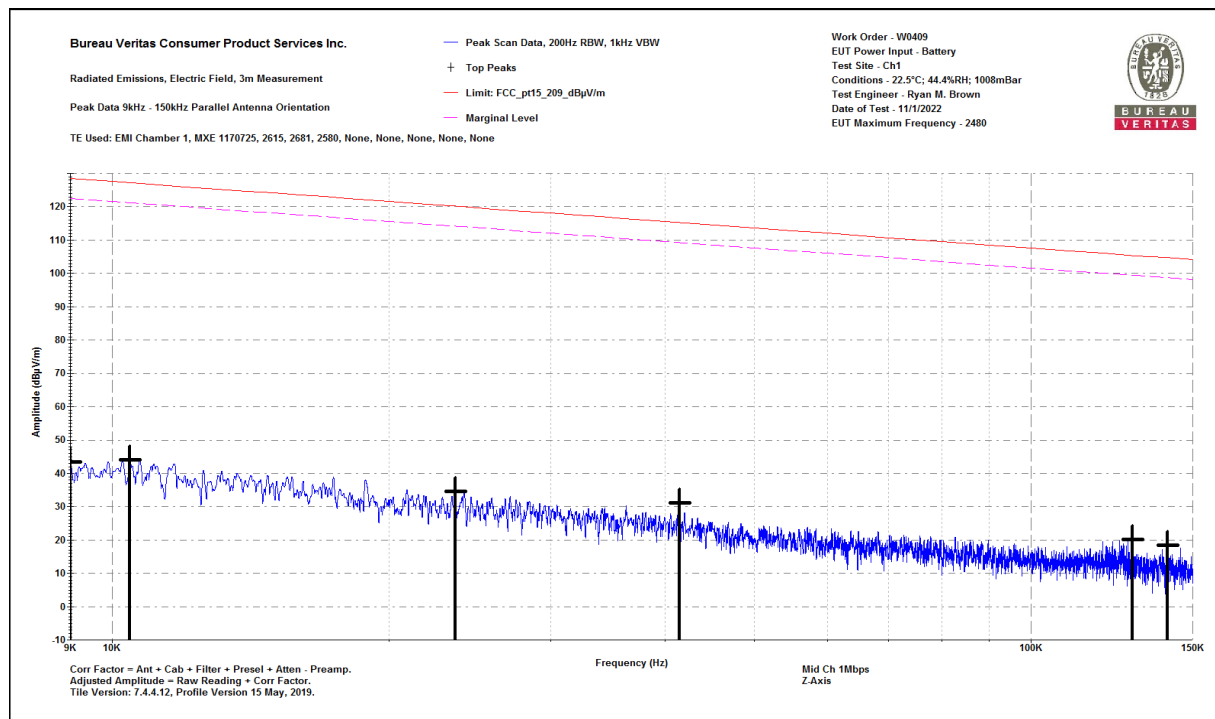
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Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3

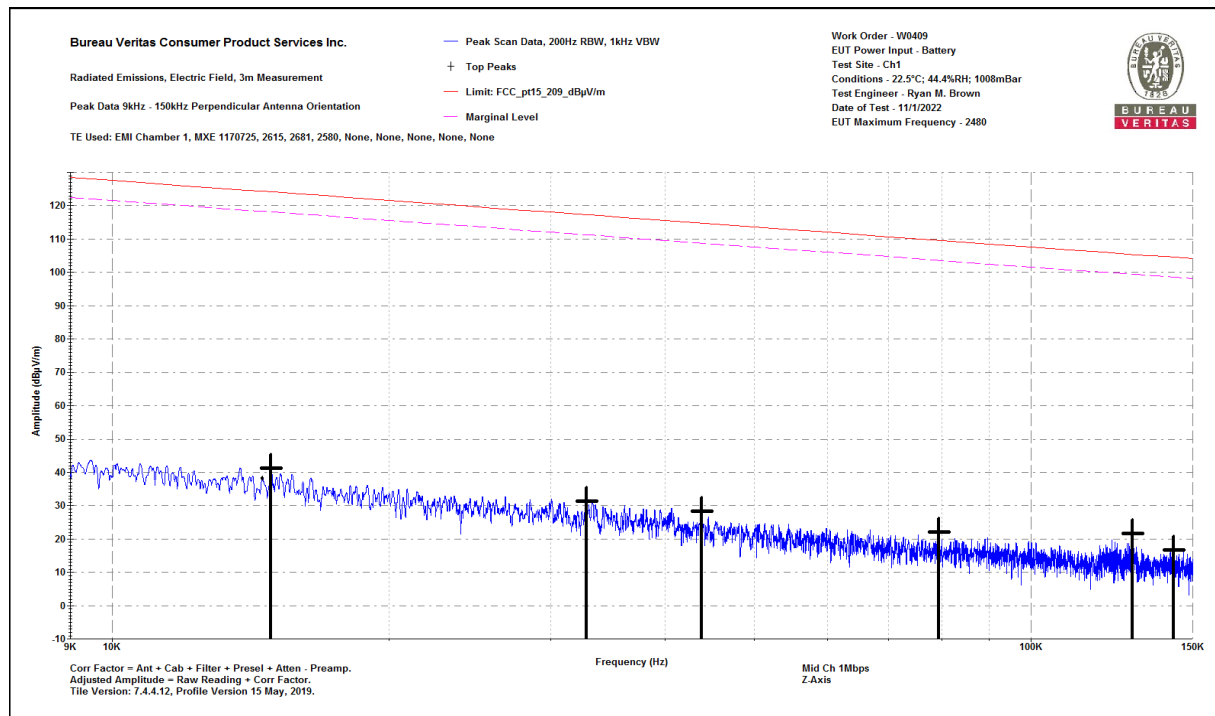


Results for BLE 1Mbps GFSK Channel 19

No emissions within 20dB of the limit were identified in 9kHz-30MHz range. Only plots shown below.



0.009-0.15MHz Parallel



0.009-0.15MHz Perpendicular

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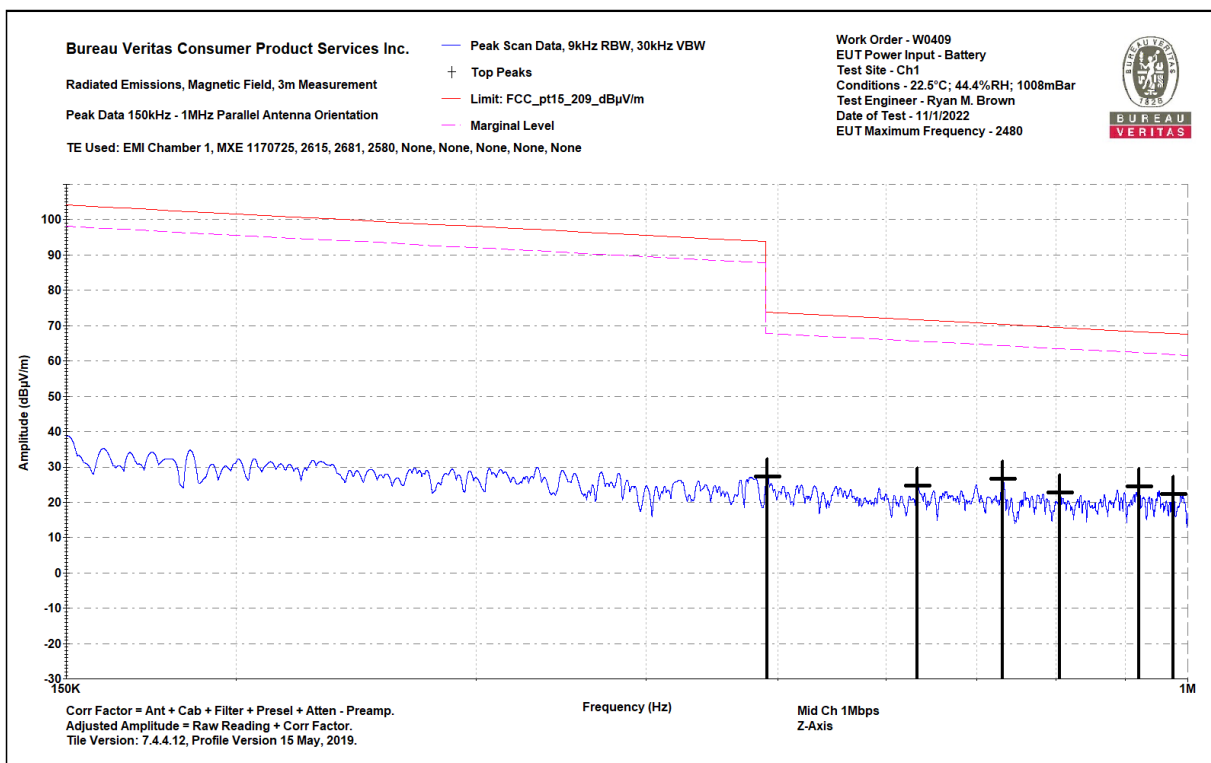
One Distribution Center Circle, #1
Littleton, MA

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

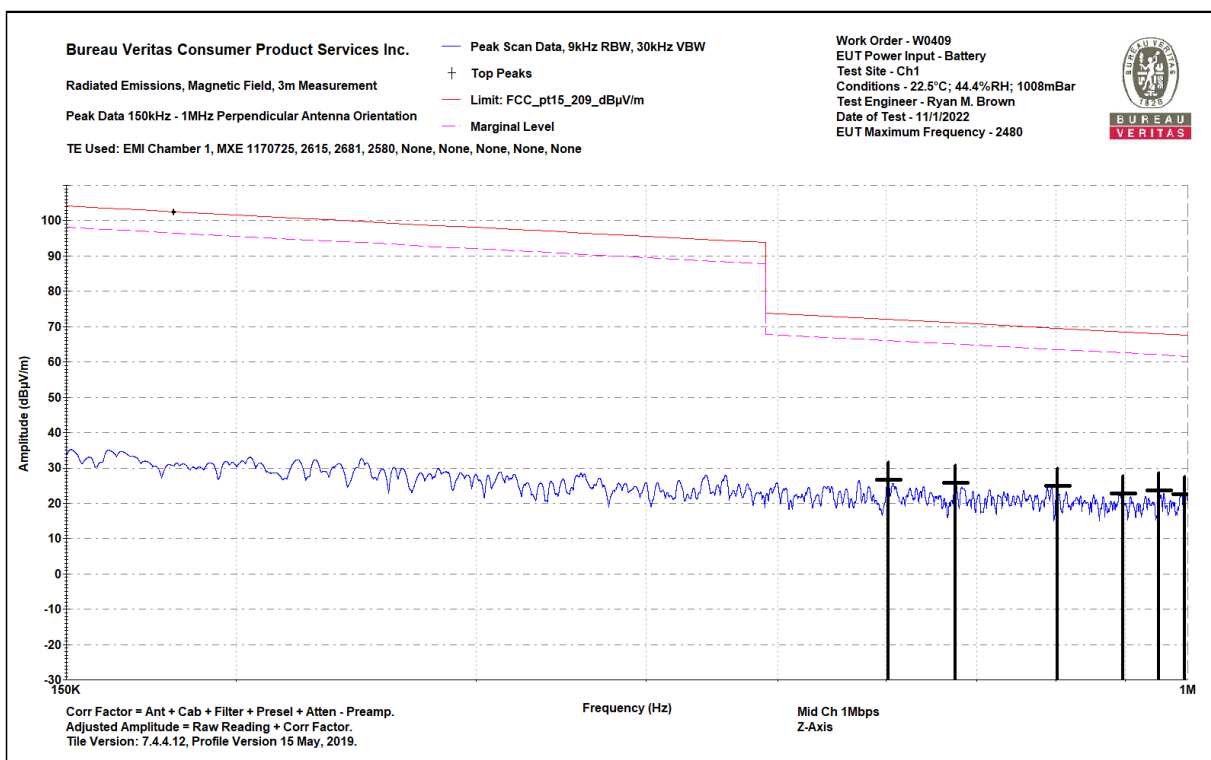


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0.15-1MHz Parallel

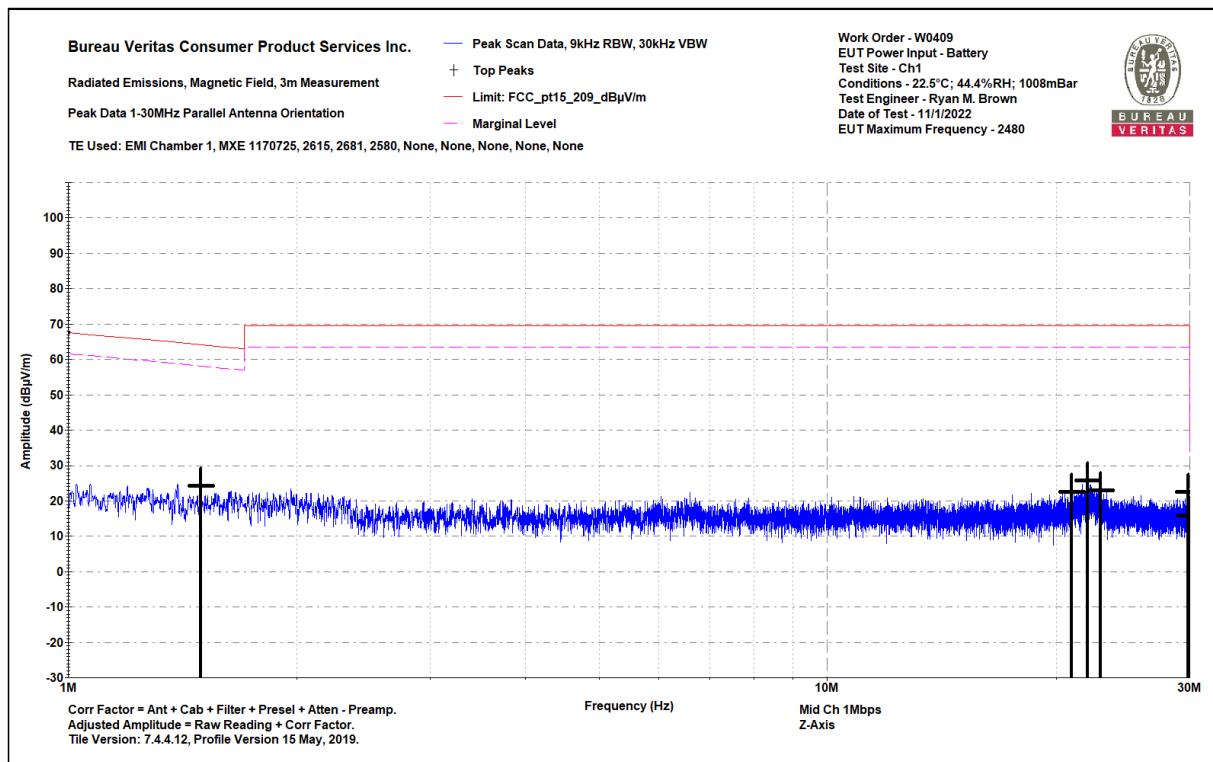


0.15-1MHz Perpendicular

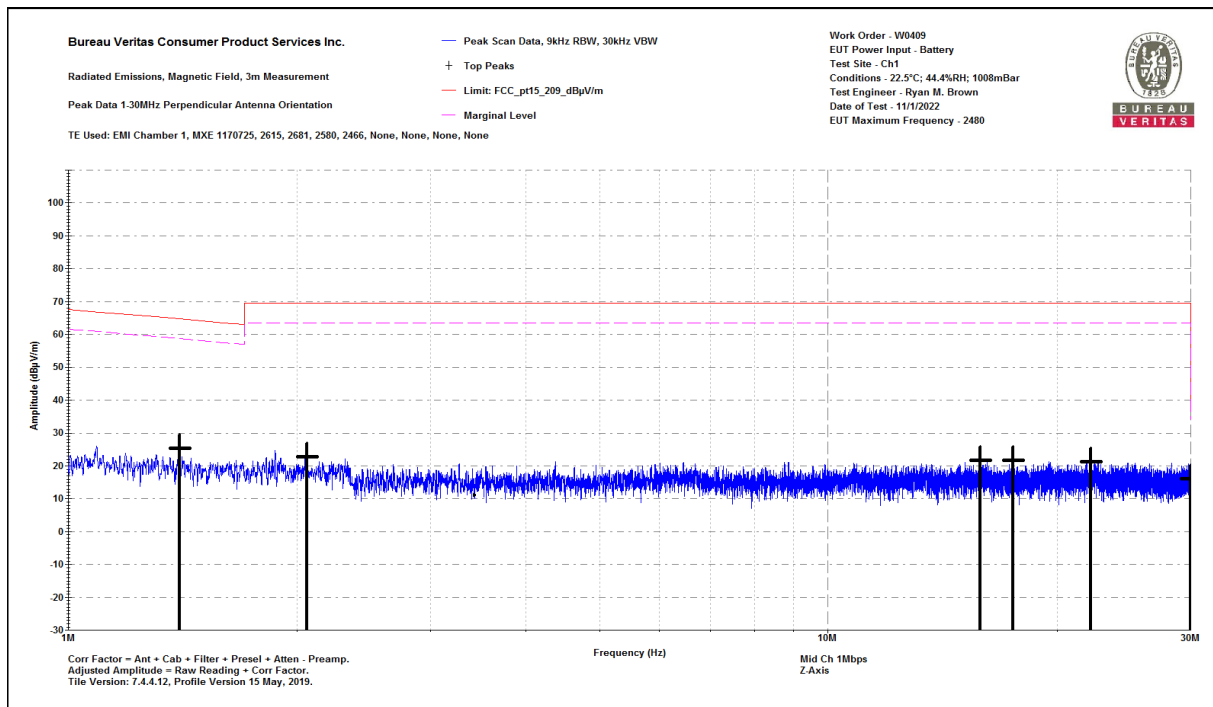
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1-30MHz Parallel



1-30MHz Perpendicular



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

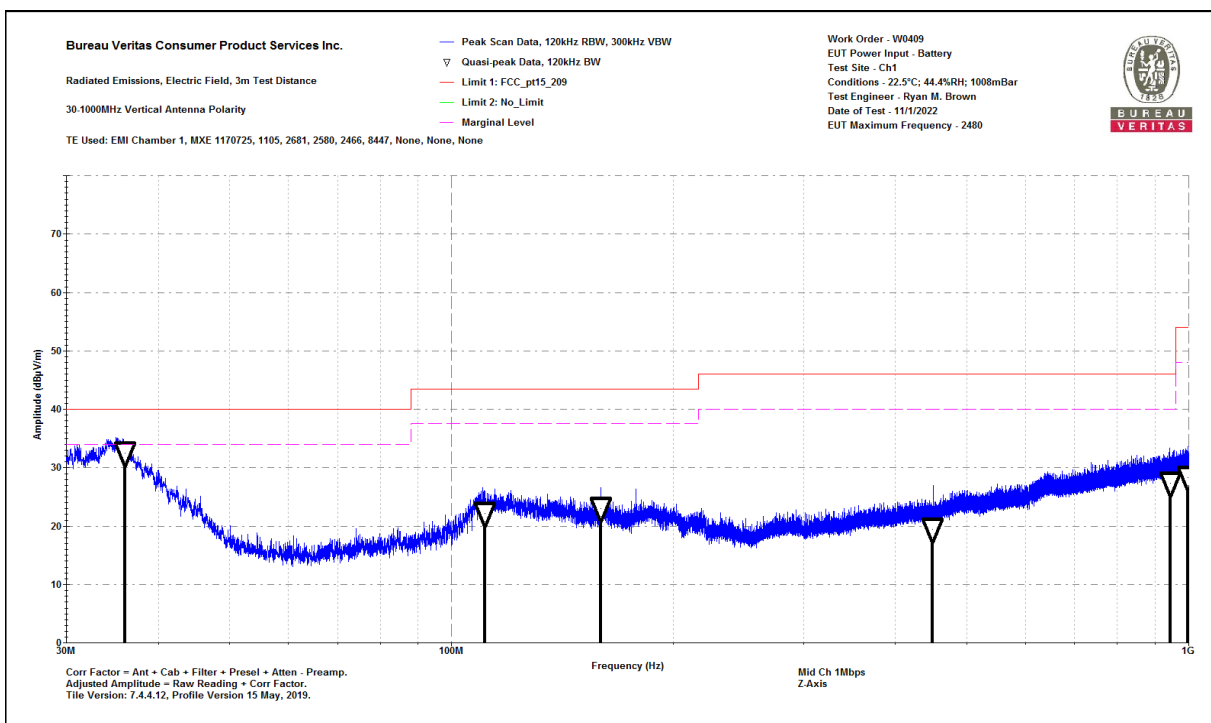
Notes:
Mid Ch 1Mbps
Z-Axis

0

Work Order - W0409
EUT Power Input - Battery
Test Site - Ch1
Conditions - 22.5°C; 44.4%RH; 1008mBar
Test Engineer - Ryan M. Brown
Date of Test - 11/1/2022

Frequency (MHz)	Raw QP Reading (dBμV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBμV/m)	Lim1: FCC_pt15_20 9 (dBμV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
36.006	36.3	-3.9	32.5	40	-7.5	PASS	-7.5	275	118
110.956	30.6	-8.4	22.2	43.5	-21.3	PASS		268	24
159.252	31.3	-8.4	23	43.5	-20.5	PASS		274	20
449.014	23.6	-4.1	19.5	46	-26.5	PASS		237	306
943.418	22.9	4.3	27.3	46	-18.7	PASS		224	68
997.584	22.8	5.5	28.3	54	-25.7	PASS		137	213

30-1000MHz Vertical



30-1000MHz Vertical

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Bureau Veritas Consumer Product Services Inc.

Radiated Emissions Electric Field 3m Distance

30-1000MHz Horizontal Data

Notes:

Mid Ch 1Mbps

Z-Axis

0

Work Order - W0409

EUT Power Input - Battery

Test Site - Ch1

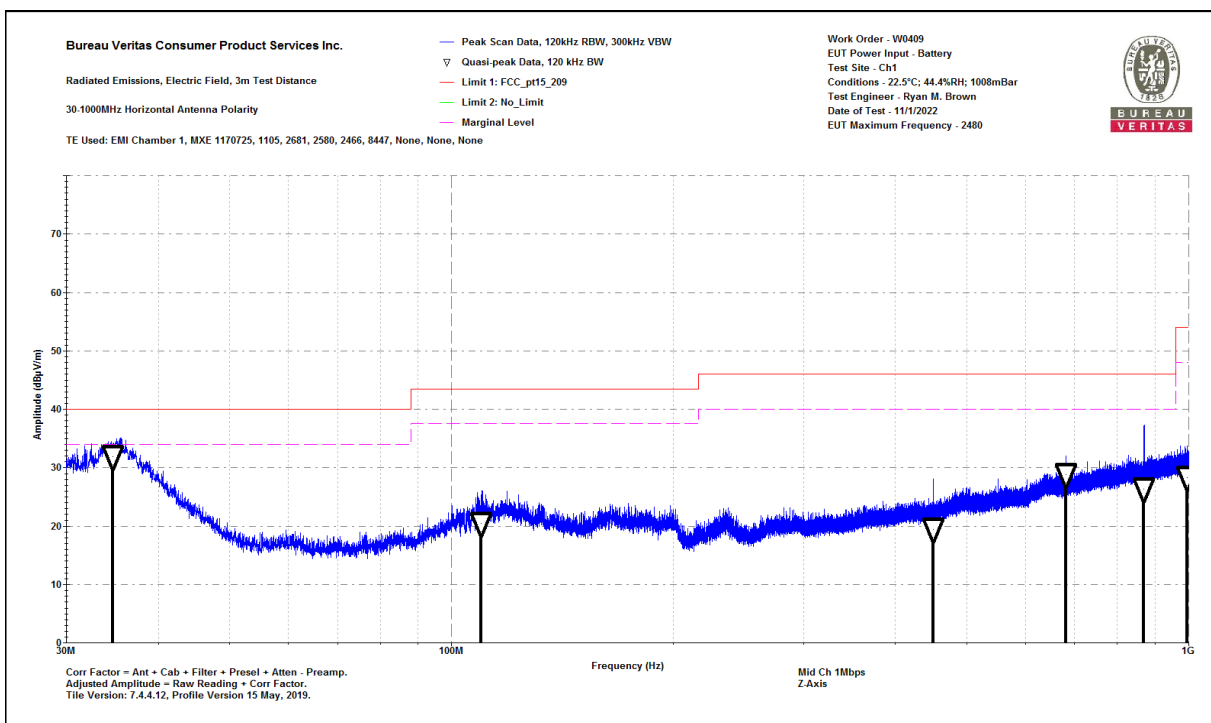
Conditions - 22.5°C; 44.4%RH; 1008mBar

Test Engineer - Ryan M. Brown

Date of Test - 11/1/2022

Frequency (MHz)	Raw QP Reading (dBμV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBμV/m)	Lim1: FCC_pt15_20 9 (dBμV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
34.71	34.7	-2.9	31.9	40	-8.1	PASS	-8.1	244	12
109.673	29.1	-8.7	20.4	43.5	-23.1	PASS		272	0
449.897	23.6	-4.2	19.4	46	-26.6	PASS		125	244
681.586	29.1	-0.2	28.8	46	-17.2	PASS		270	334
869.748	23.4	3	26.4	46	-19.6	PASS		117	322
995.952	22.8	5.5	28.3	54	-25.7	PASS		110	20

30-1000MHz Horizontal



30-1000MHz Horizontal

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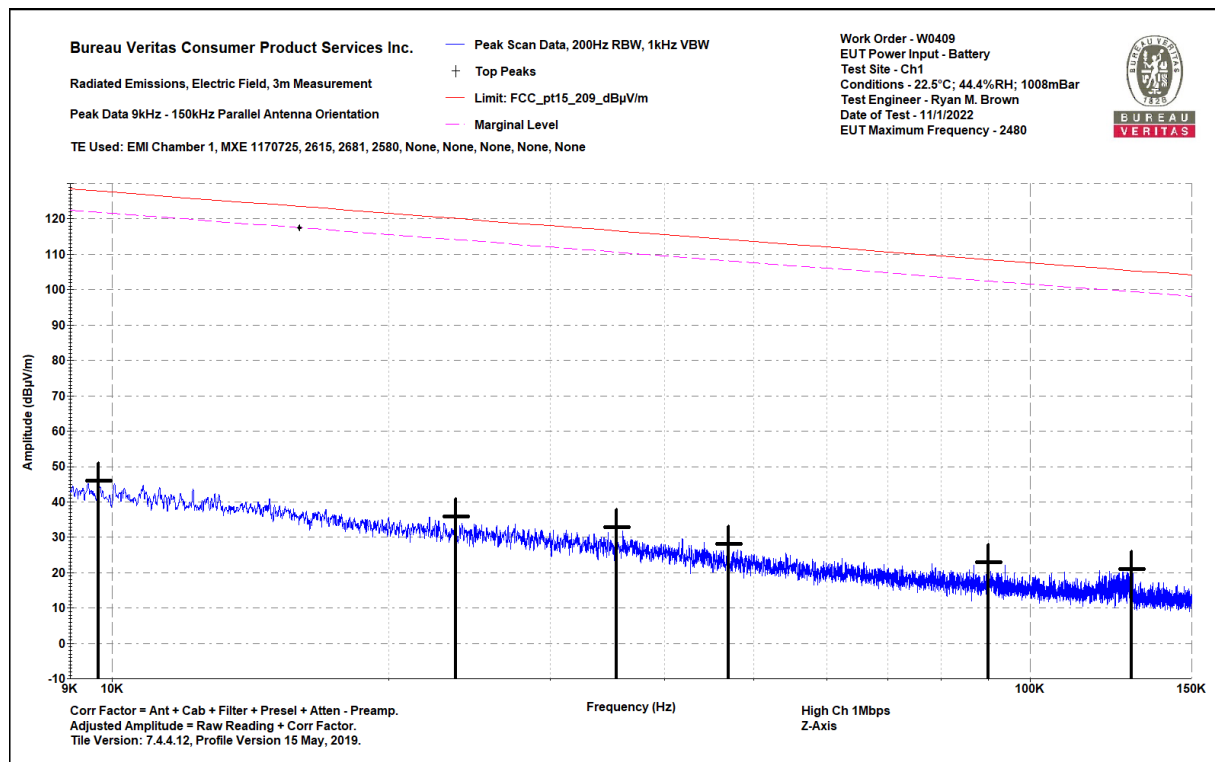
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Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3

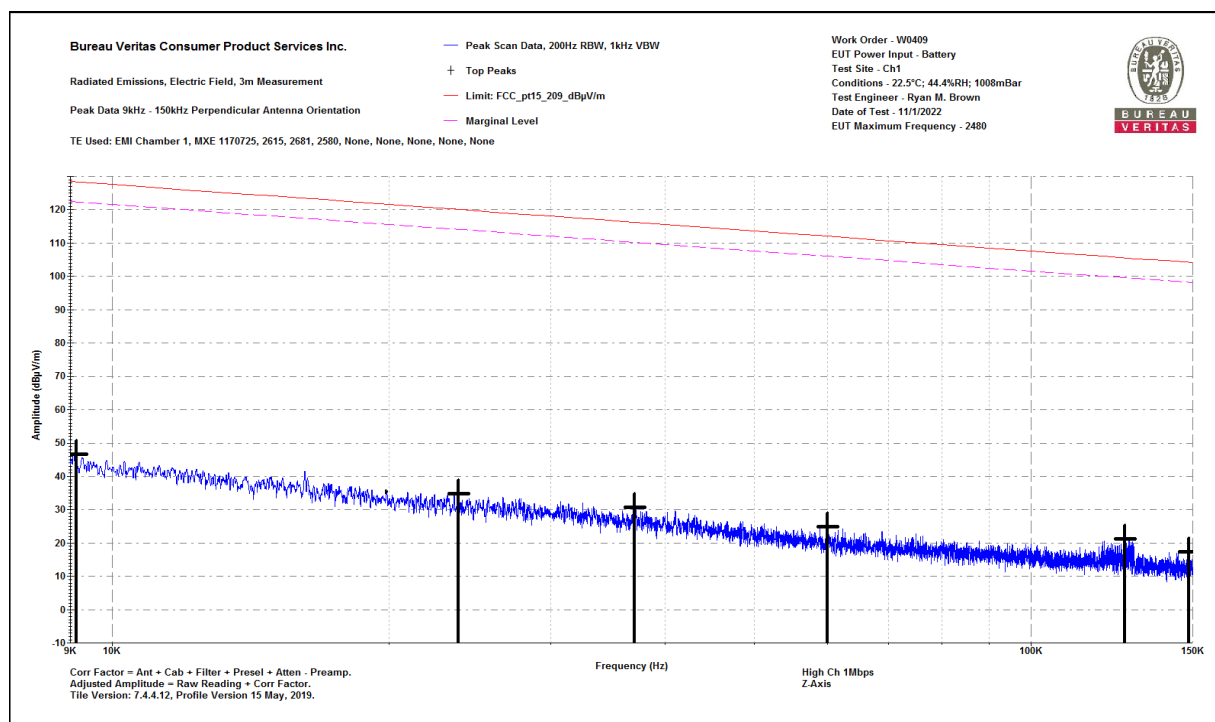


Results for BLE 1Mbps GFSK Channel 39

No emissions within 20dB of the limit were identified in 9kHz-30MHz range. Only plots shown below.



0.009-0.15MHz Parallel



0.009-0.15MHz Perpendicular

**Bureau Veritas Consumer Product
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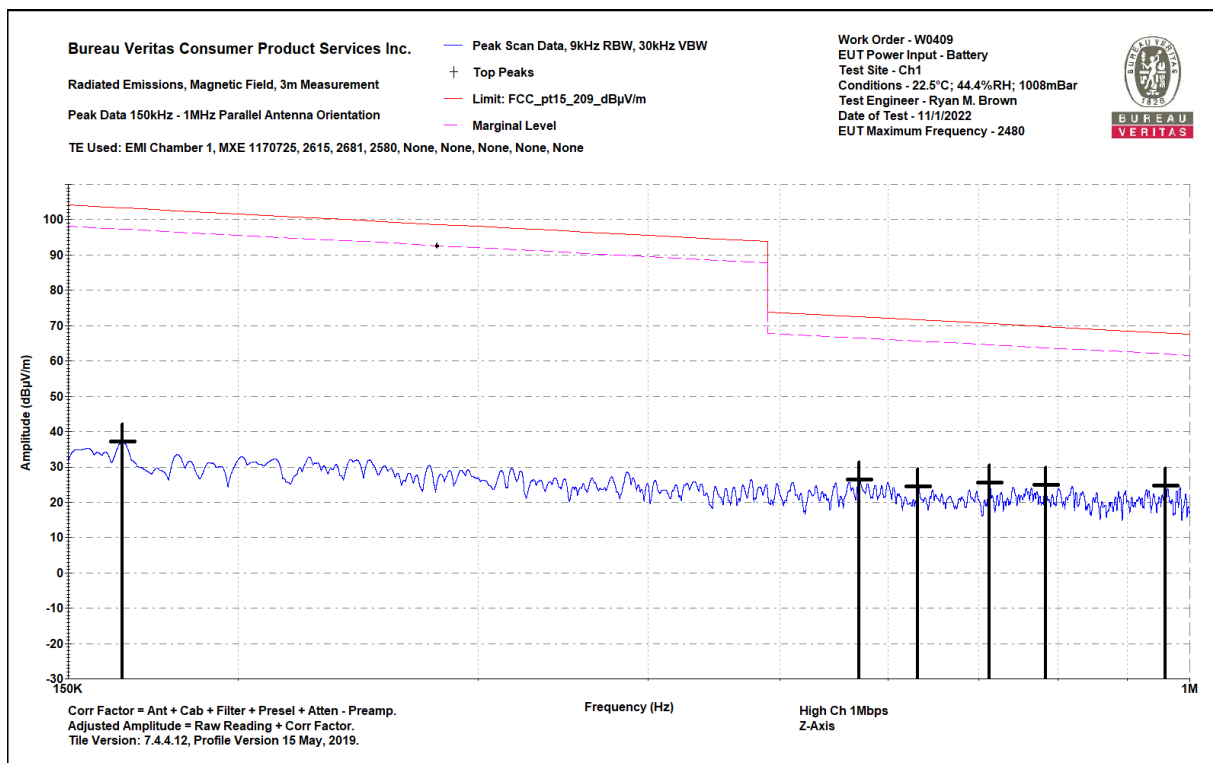
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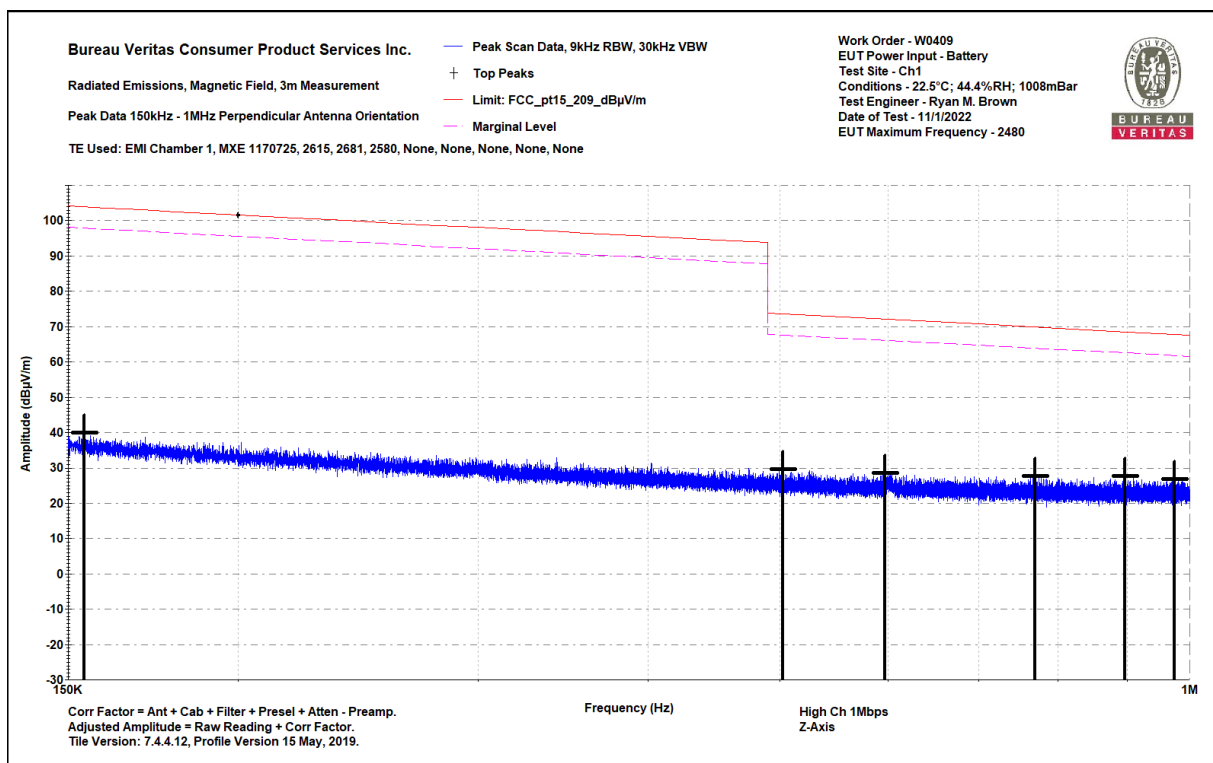


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0.15-1MHz Parallel



0.15-1MHz Perpendicular

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Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3



Bureau Veritas Consumer Product Services Inc.

Radiated Emissions, Magnetic Field, 3m Measurement

Peak Data 1-30MHz Parallel Antenna Orientation

TE Used: EMI Chamber 1, MXE 1170725, 2615, 2681, 2580, None, None, None, None, None

Peak Scan Data, 9kHz RBW, 30kHz VBW

Top Peaks

Limit: FCC_pt15_209_dBμV/m

Marginal Level

Work Order - W0409

EUT Power Input - Battery

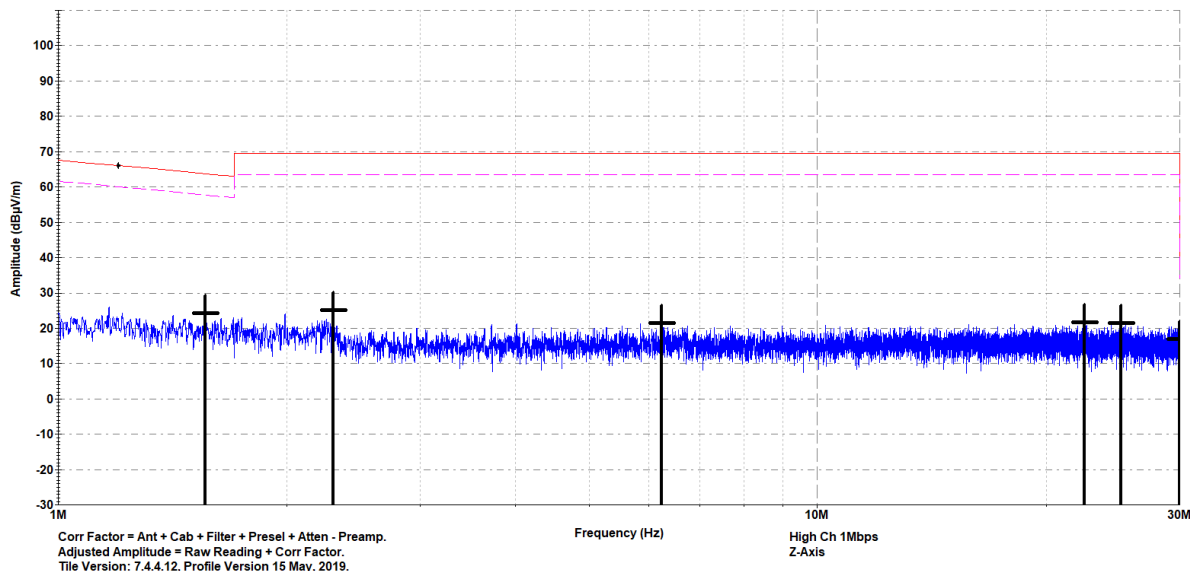
Test Site - Ch1

Conditions - 22.5°C; 44.4%RH; 1008mBar

Test Engineer - Ryan M. Brown

Date of Test - 11/1/2022

EUT Maximum Frequency - 2480



1-30MHz Parallel

Bureau Veritas Consumer Product Services Inc.

Radiated Emissions, Magnetic Field, 3m Measurement

Peak Data 1-30MHz Perpendicular Antenna Orientation

TE Used: EMI Chamber 1, MXE 1170725, 2615, 2681, 2580, None, None, None, None, None

Peak Scan Data, 9kHz RBW, 30kHz VBW

Top Peaks

Limit: FCC_pt15_209_dBμV/m

Marginal Level

Work Order - W0409

EUT Power Input - Battery

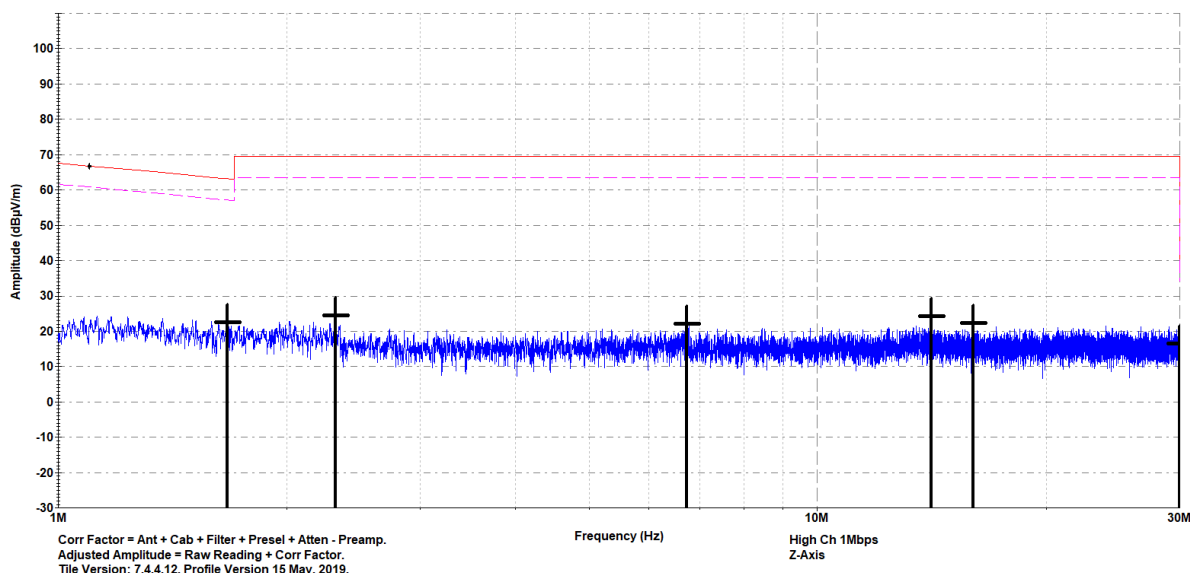
Test Site - Ch1

Conditions - 22.5°C; 44.4%RH; 1008mBar

Test Engineer - Ryan M. Brown

Date of Test - 11/1/2022

EUT Maximum Frequency - 2480



1-30MHz Perpendicular

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Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3



Bureau Veritas Consumer Product Services Inc.

Radiated Emissions Electric Field 3m Distance

Top Peaks Vertical 30-1000MHz

Notes:

High Ch 1Mbps

Z-Axis

0

Work Order - W0409

EUT Power Input - Battery

Test Site - Ch1

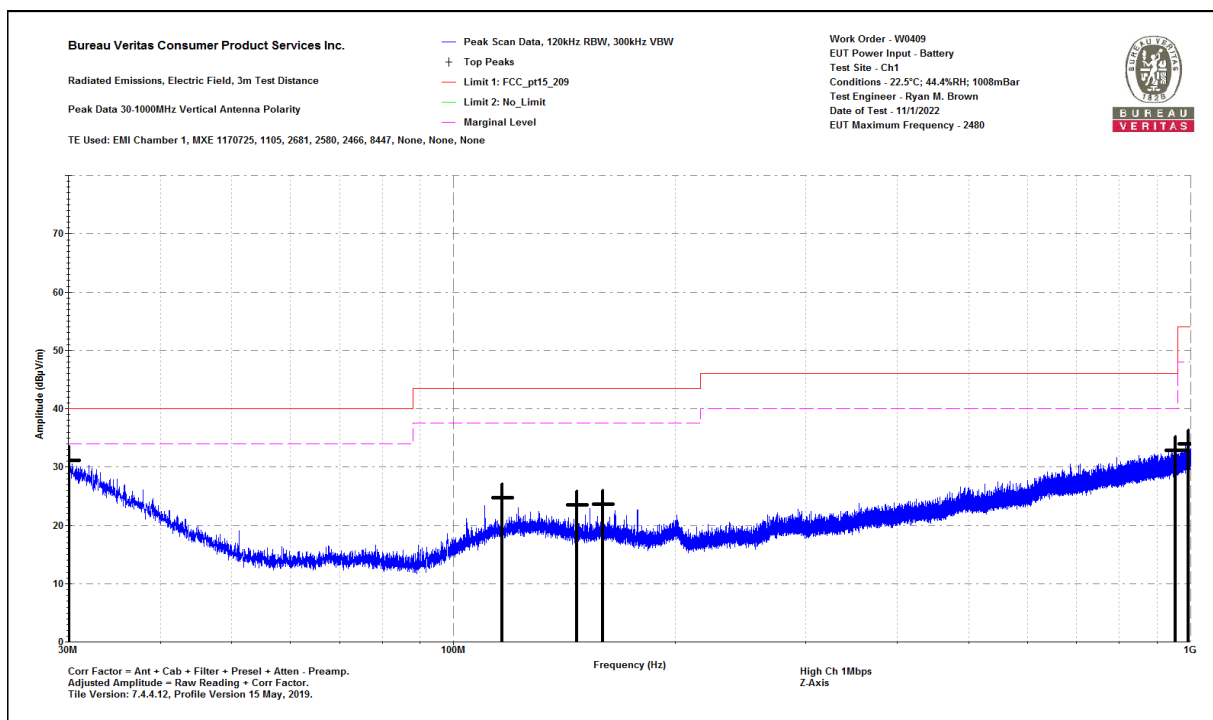
Conditions - 22.5°C; 44.4%RH; 1008mBar

Test Engineer - Ryan M. Brown

Date of Test - 11/1/2022

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)
30.097	30.6	0.5	31.1	40	-8.9	PASS	-8.9	250	0
116.427	32.5	-7.7	24.8	43.5	-18.7	PASS		100	90
146.909	31.5	-8	23.5	43.5	-20	PASS		100	90
159.228	32	-8.4	23.6	43.5	-19.9	PASS		250	45
953.489	28.3	4.5	32.8	46	-13.2	PASS		150	90
991.9	28.6	5.3	33.9	54	-20.1	PASS		250	135

30-1000MHz Vertical



30-1000MHz Vertical

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Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3



Bureau Veritas Consumer Product Services Inc.

Radiated Emissions Electric Field 3m Distance

Top Peaks Horizontal 30-1000MHz

Notes:

High Ch 1Mbps

Z-Axis

0

Work Order - W0409

EUT Power Input - Battery

Test Site - Ch1

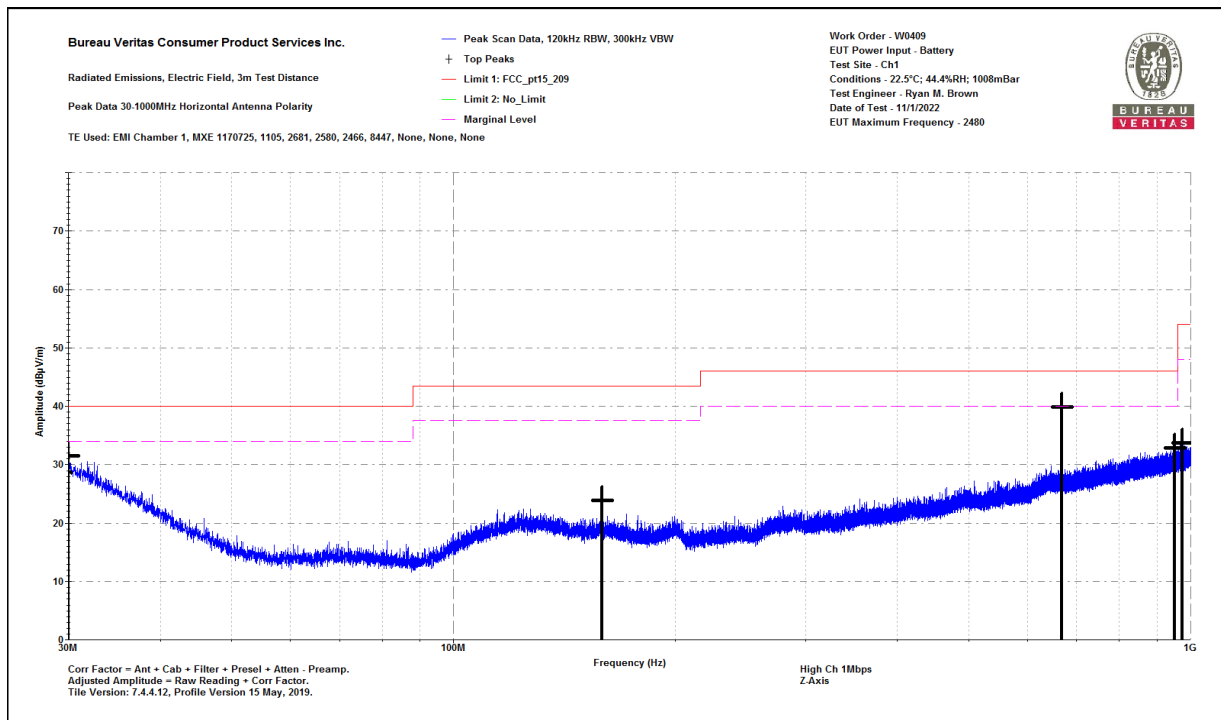
Conditions - 22.5°C; 44.4%RH; 1008mBar

Test Engineer - Ryan M. Brown

Date of Test - 11/1/2022

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)	EUT Azimuth (degrees)
30	30.9	0.6	31.5	40	-8.5	PASS		200	0
159.155	32.2	-8.4	23.8	43.5	-19.7	PASS		250	45
668.793	40.2	-0.4	39.8	46	-6.2	PASS	-6.2	250	180
950.748	28.3	4.5	32.8	46	-13.2	PASS		150	90
974.489	29	4.8	33.7	54	-20.3	PASS		200	135

30-1000MHz Horizontal



30-1000MHz Horizontal

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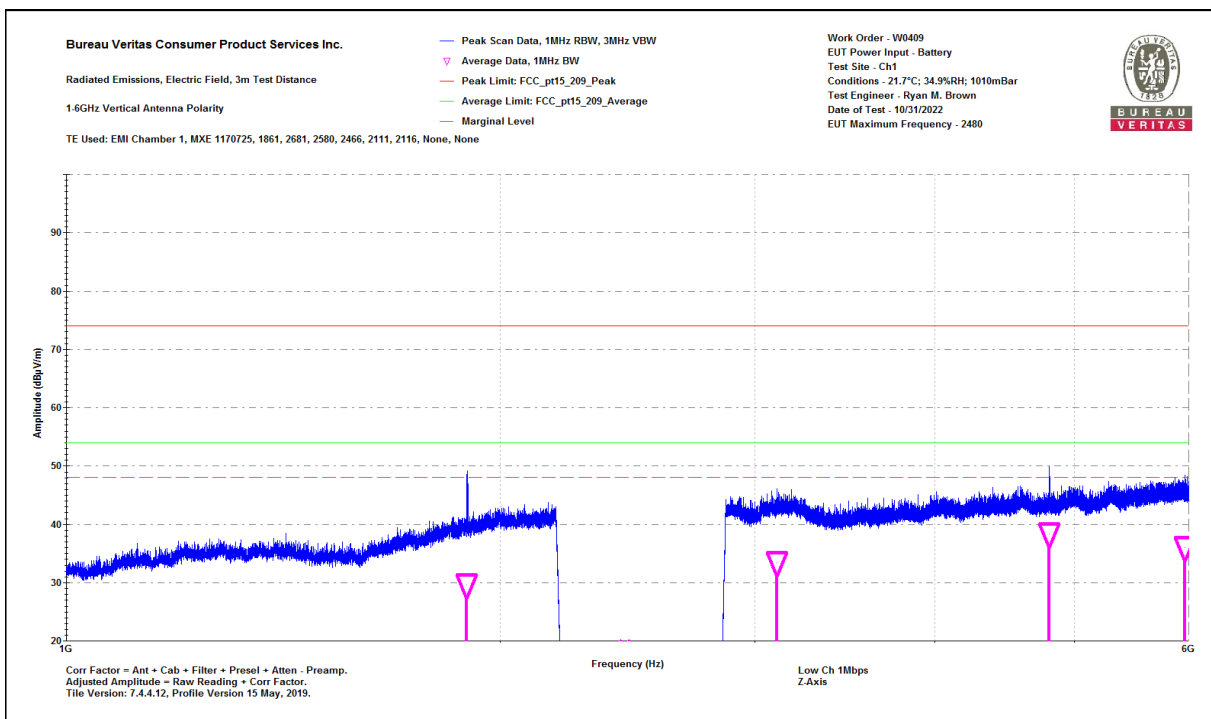
Emissions above 1GHz

Results for BLE 1Mbps GFSK Channel 0

Bureau Veritas Consumer Product Services Inc.						Work Order - W0409					
Radiated Emissions Electric Field 3m Distance						EUT Power Input - Battery					
1-6GHz Vertical Data						Test Site - Ch1					
Notes:						Conditions - 21.7°C; 34.9%RH; 1010mBar					
Low Ch 1Mbps						Test Engineer - Ryan M. Brown					
Z-Axis						Date of Test - 10/31/2022					
0											

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_20 9_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_20 9_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1895.9	44.1	35.6	-6	38.1	74	-35.9	PASS		29.7	54	-24.3	PASS		115	25
3110.8	47.5	37.1	-3.7	43.8	74	-30.2	PASS		33.4	54	-20.6	PASS		225	44
4804	50.9	41.4	-3.1	47.7	74	-26.3	PASS	-26.3	38.3	54	-15.7	PASS	-15.7	125	209
5962.5	44.7	35.9	0.2	44.9	74	-29.1	PASS		36	54	-18	PASS		190	175

1-6GHz Vertical



1-6GHz Vertical



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Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3



Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 3m Distance
1-6GHz Horizontal Data

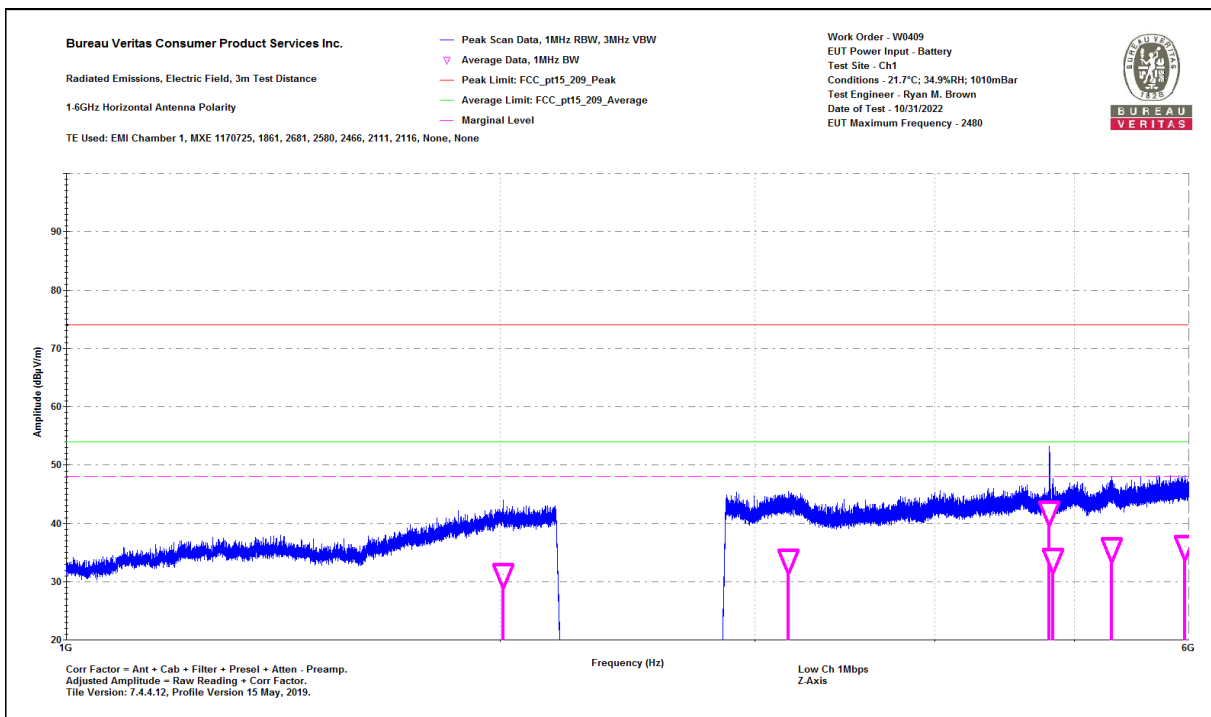
Notes:
Low Ch 1Mbps
Z-Axis

0

Work Order - W0409
EUT Power Input - Battery
Test Site - Ch1
Conditions - 21.7°C; 34.9%RH; 1010mBar
Test Engineer - Ryan M. Brown
Date of Test - 10/31/2022

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_20 9_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_20 9_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2008	45.1	35.8	-4.6	40.6	74	-33.4	PASS		31.2	54	-22.8	PASS		204	140
3166.6	45.2	37	-3.3	41.8	74	-32.2	PASS		33.7	54	-20.3	PASS		225	114
4803.7	54.8	45.1	-3.1	51.6	74	-22.4	PASS	-22.4	42	54	-12	PASS	-12	225	315
4829.8	45.1	36.9	-3.1	42	74	-32	PASS		33.8	54	-20.2	PASS		100	306
5303.3	43.3	35.8	-0.2	43.1	74	-30.9	PASS		35.6	54	-18.4	PASS		205	247
5964.4	46.9	35.8	0.2	47.1	74	-26.9	PASS		36	54	-18	PASS		125	86

1-6GHz Horizontal

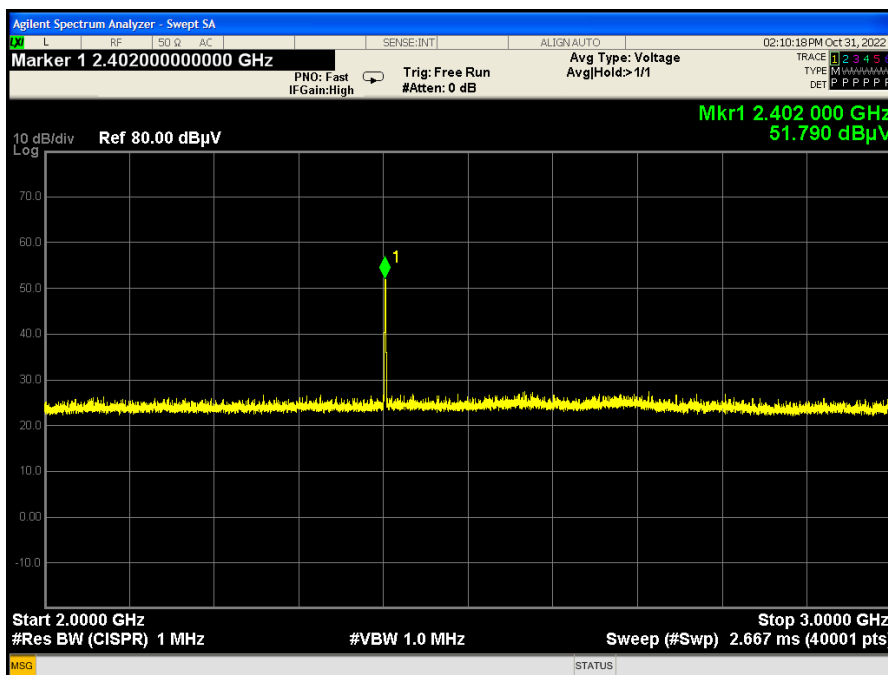


1-6GHz Horizontal

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Notch filter range: No emissions found other than the fundamental. No differences observed between horizontal or vertical antenna polarizations.



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Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3



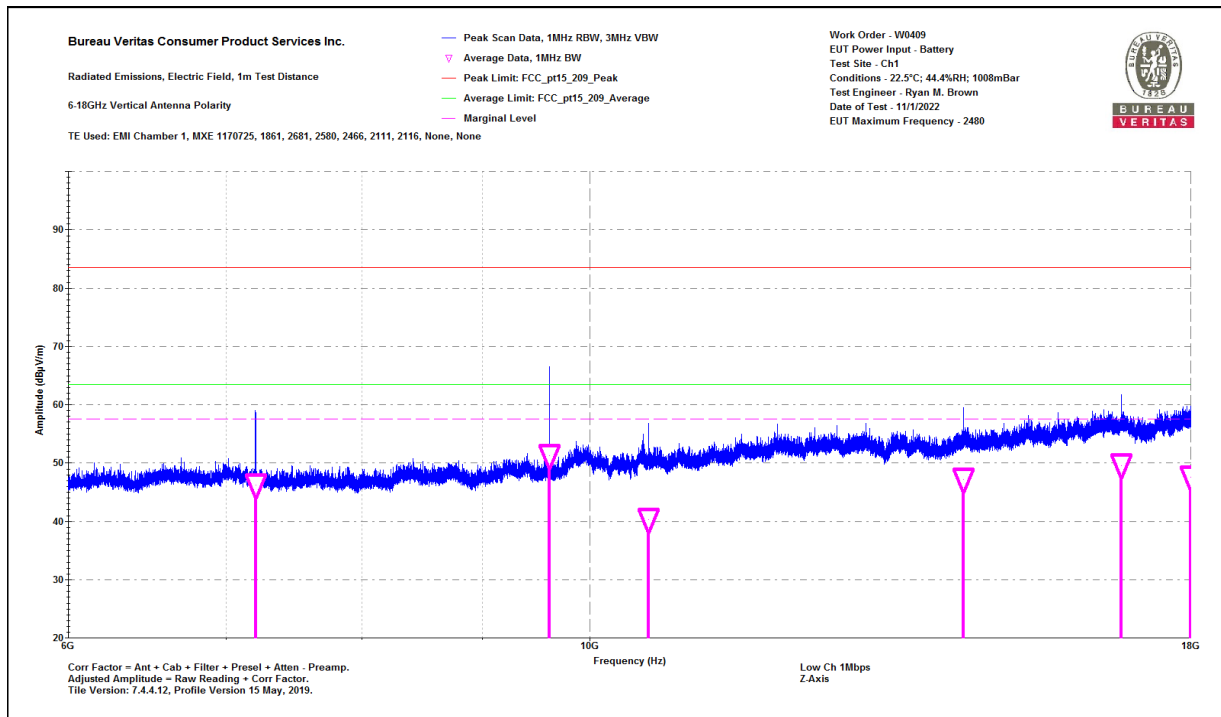
Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 1m Distance
6-18GHz Vertical Data
Notes:
Low Ch 1Mbps
Z-Axis

Work Order - W0409
EUT Power Input - Battery
Test Site - Ch1
Conditions - 22.5°C; 44.4%RH; 1008mBar
Test Engineer - Ryan M. Brown
Date of Test - 11/1/2022

0

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_20 9_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_20 9_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
7207.3	55.6	44.8	1.4	57	83.5	-26.5	PASS		46.1	63.5	-17.4	PASS		180	180
9609.6	59.1	47.7	3.6	62.7	83.5	-20.8	PASS	-20.8	51.3	63.5	-12.2	PASS	-12.2	180	188
10585.8	44.5	35.7	4.6	49.1	83.5	-34.4	PASS		40.3	63.5	-23.2	PASS		173	160
14414.7	43.4	38.2	9	52.5	83.5	-31	PASS		47.2	63.5	-16.3	PASS		200	287
16813.5	48.4	36.9	12.7	61.2	83.5	-22.3	PASS		49.6	63.5	-13.9	PASS		200	316
17999.5	42.3	33.9	13.7	56	83.5	-27.5	PASS		47.5	63.5	-16	PASS		200	240

6-18GHz Vertical



6-18GHz Vertical

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Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 1m Distance
6-18GHz Horizontal Data

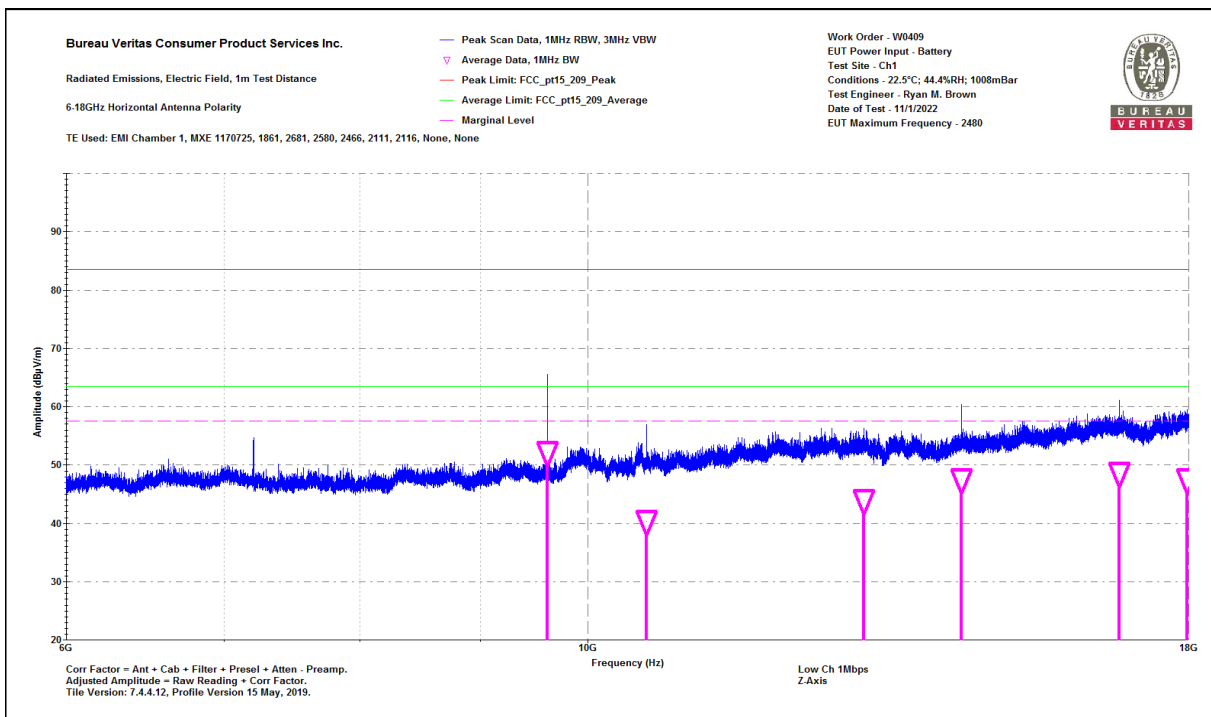
Notes:
Low Ch 1Mbps
Z-Axis

0

Work Order - W0409
EUT Power Input - Battery
Test Site - Ch1
Conditions - 22.5°C; 44.4%RH; 1008mBar
Test Engineer - Ryan M. Brown
Date of Test - 11/1/2022

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_20 9_Peak (dBμV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_20 9_Average (dBμV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
9609.6	59.6	48.6	3.6	63.2	83.5	-20.3	PASS	-20.3	52.1	63.5	-11.4	PASS	-11.4	195	249
10585.5	43.1	35.7	4.6	47.7	83.5	-35.8	PASS		40.3	63.5	-23.2	PASS		117	184
13102.3	45.1	35.4	8.4	53.4	83.5	-30.1	PASS		43.8	63.5	-19.7	PASS		150	306
14414.5	45.8	38.4	9	54.8	83.5	-28.7	PASS		47.5	63.5	-16	PASS		175	35
16816.4	46.2	35.8	12.7	58.9	83.5	-24.6	PASS		48.6	63.5	-14.9	PASS		159	20
17973.3	42.5	33.8	13.6	56.1	83.5	-27.4	PASS		47.4	63.5	-16.1	PASS		182	158

6-18GHz Horizontal



6-18GHz Horizontal

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**One Distribution Center Circle, #1
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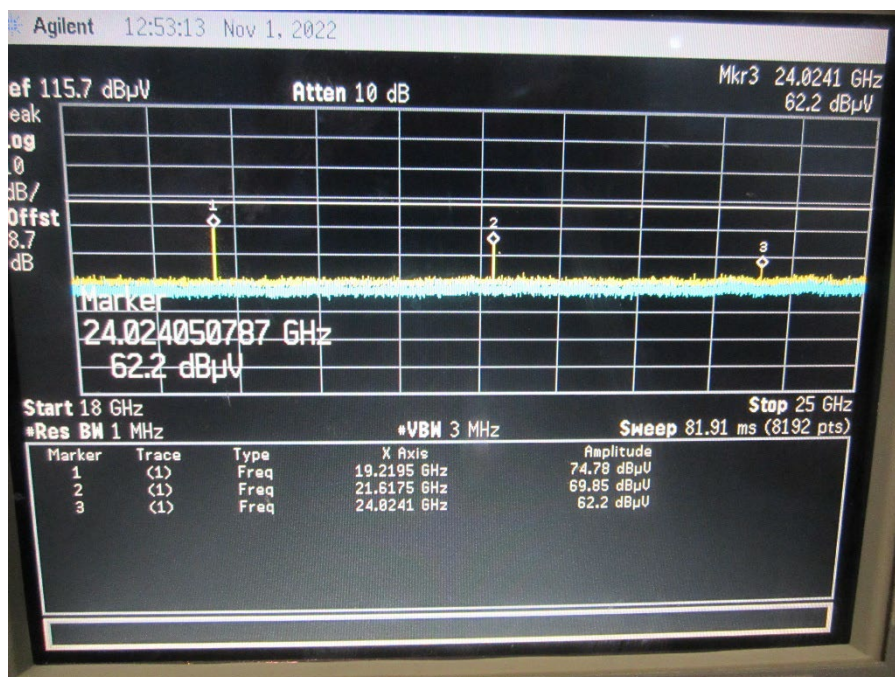
Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3



Radiated Emissions Table

Date: 01-Nov-22			Company: Idion Inc.			Work Order: W0409				
Engineer: Ryan M. Brown			EUT Desc: iTempShield			EUT Operating Voltage/Frequency: Battery				
Temp: 22.5			Humidity: 44%			Pressure: 1008				
Frequency Range: 18-25GHz						Measurement Distance: 0.1 m				
Notes: Low CH										
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Corection Factor	Adjusted Reading (dBμV/m)	---			---		
			(dB)		Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
V	19219.5	66.1	8.7	74.8	---	---	---	83.5	-8.7	Pass
V	21617.5	61.2	8.7	69.9	---	---	---	83.5	-13.6	Pass
V	24024.1	53.5	8.7	62.2	---	---	---	83.5	-21.3	Pass
			---	---	---	---	---	---	---	Pass
H	19219.5	67.3	8.7	76.0	---	---	---	83.5	-7.5	Pass
H	21617.5	63.2	8.7	71.9	---	---	---	83.5	-11.6	Pass
H	24024.1	59.0	8.7	67.7	---	---	---	83.5	-15.8	Pass
Table Result: Pass by -7.5 dB									Worst Freq: 19219.5 MHz	
Test Site: Chamber 1			Cable 1: 2323			Cable 2: ---			Cable 3: ---	
Analyzer: 1510			Preamp: 1266			Antenna: 758			Preselector: ---	
CSsoft Radiated Emissions Calculator v 1.017.225									Copyright Curtis-Straus LLC 2000	
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor										

18-25GHz

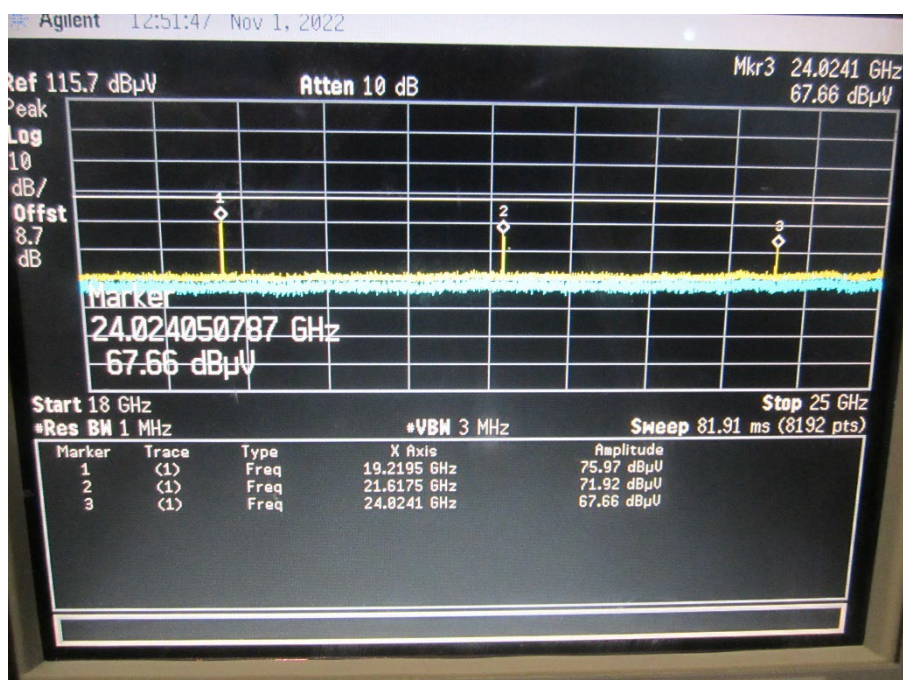


18-25GHz Vertical

Bureau Veritas Consumer Product
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Littleton, MA

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18-25GHz Horizontal



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Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3



Results for BLE 1Mbps GFSK Channel 19

Bureau Veritas Consumer Product Services Inc.

Radiated Emissions Electric Field 3m Distance

1-6GHz Vertical Data

Notes:

Mid Ch 1Mbps

Z-Axis

0

Work Order - W0409

EUT Power Input - Battery

Test Site - Ch1

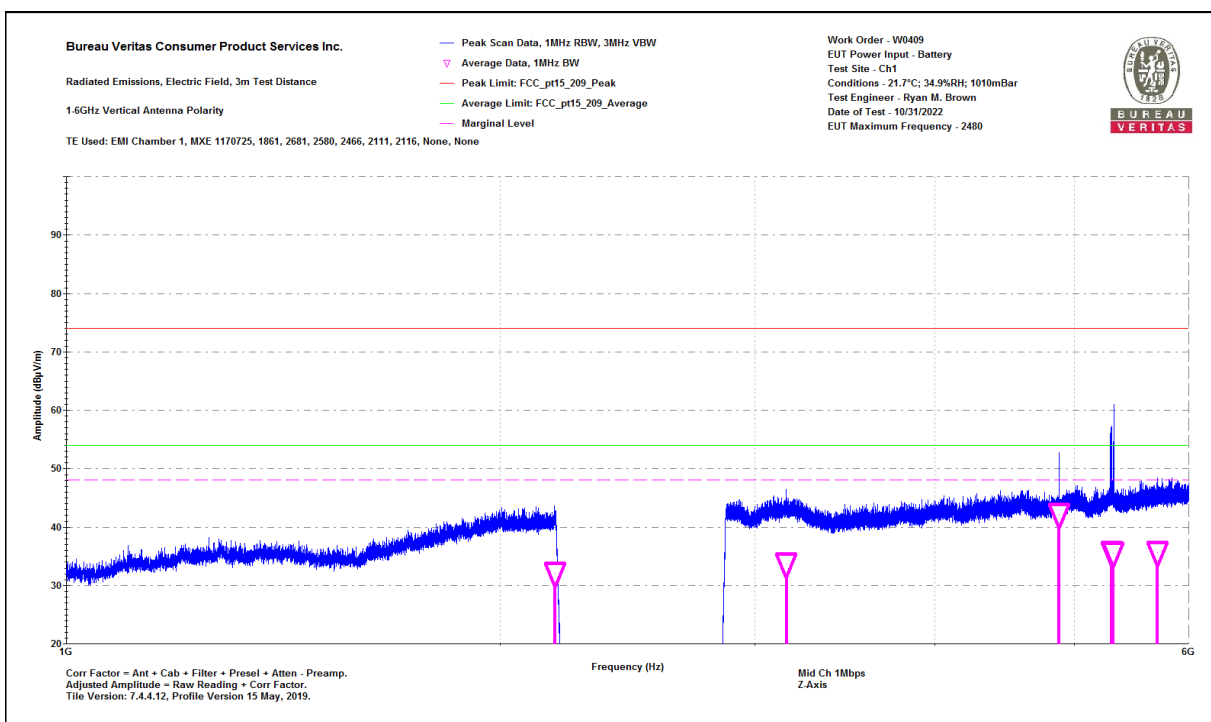
Conditions - 21.7°C; 34.9%RH; 1010mBar

Test Engineer - Ryan M. Brown

Date of Test - 10/31/2022

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_20 9_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_20 9_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2182.2	44.4	36.1	-4.1	40.2	74	-33.8	PASS		32	54	-22	PASS		116	234
3157.2	45.2	37	-3.4	41.8	74	-32.2	PASS		33.6	54	-20.4	PASS		187	0
4879.9	56.1	45.3	-3.2	52.9	74	-21.1	PASS		42.1	54	-11.9	PASS	-11.9	125	284
5306.7	50.6	35.9	-0.2	50.3	74	-23.7	PASS		35.6	54	-18.4	PASS		190	96
5320.8	59.5	35.9	-0.4	59.2	74	-14.8	PASS	-14.8	35.5	54	-18.5	PASS		225	29
5705.9	45	36.5	-0.9	44.1	74	-29.9	PASS		35.7	54	-18.3	PASS		225	1

1-6GHz Vertical



1-6GHz Vertical

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Radiated Emissions Electric Field 3m Distance
1-6GHz Horizontal Data

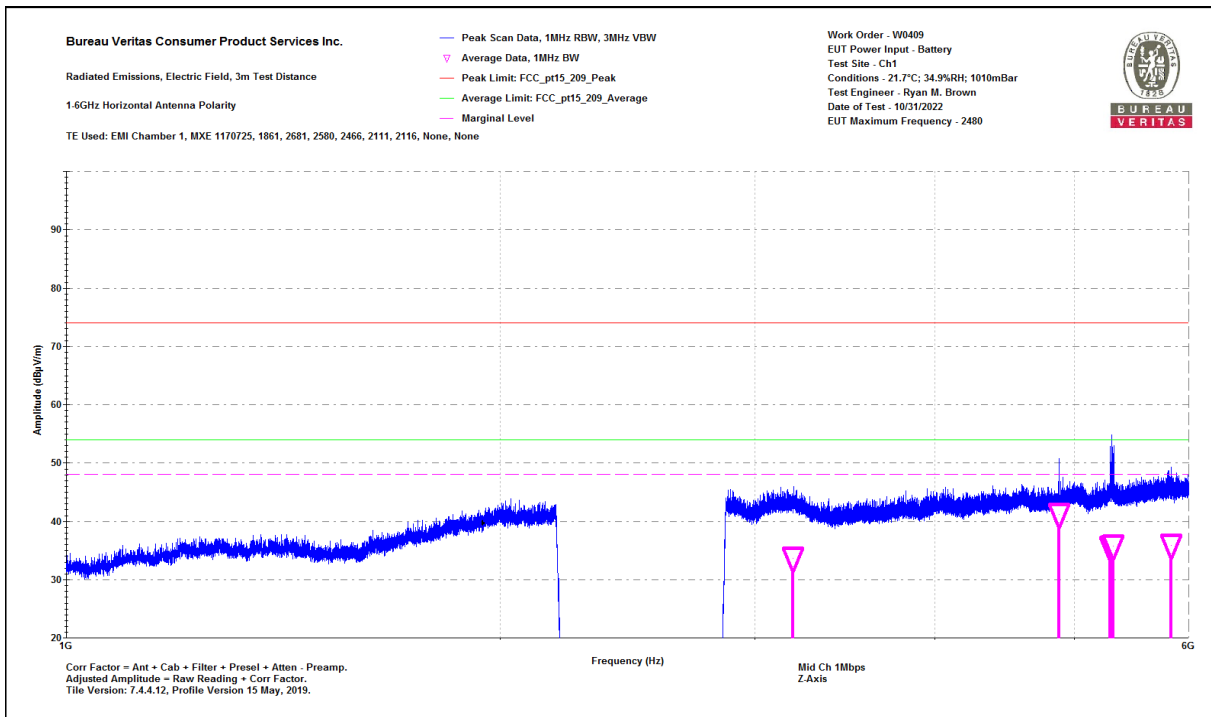
Notes:
Mid Ch 1Mbps
Z-Axis

0

Work Order - W0409
EUT Power Input - Battery
Test Site - Ch1
Conditions - 21.7°C; 34.9%RH; 1010mBar
Test Engineer - Ryan M. Brown
Date of Test - 10/31/2022

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_20 9_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_20 9_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
3191	46.4	36.9	-3.3	43.2	74	-30.8	PASS		33.6	54	-20.4	PASS		275	132
4879.9	53.1	44.3	-3.2	50	74	-24	PASS	-24	41.2	54	-12.8	PASS	-12.8	275	6
5293.3	44.6	35.8	-0.3	44.3	74	-29.7	PASS		35.5	54	-18.5	PASS		125	160
5305.2	45	35.9	-0.2	44.8	74	-29.2	PASS		35.6	54	-18.4	PASS		297	125
5321.3	45.6	36.1	-0.4	45.3	74	-28.7	PASS		35.7	54	-18.3	PASS		225	36
5831.8	45.4	36.1	-0.3	45.2	74	-28.8	PASS		35.9	54	-18.1	PASS		284	6

1-6GHz Horizontal

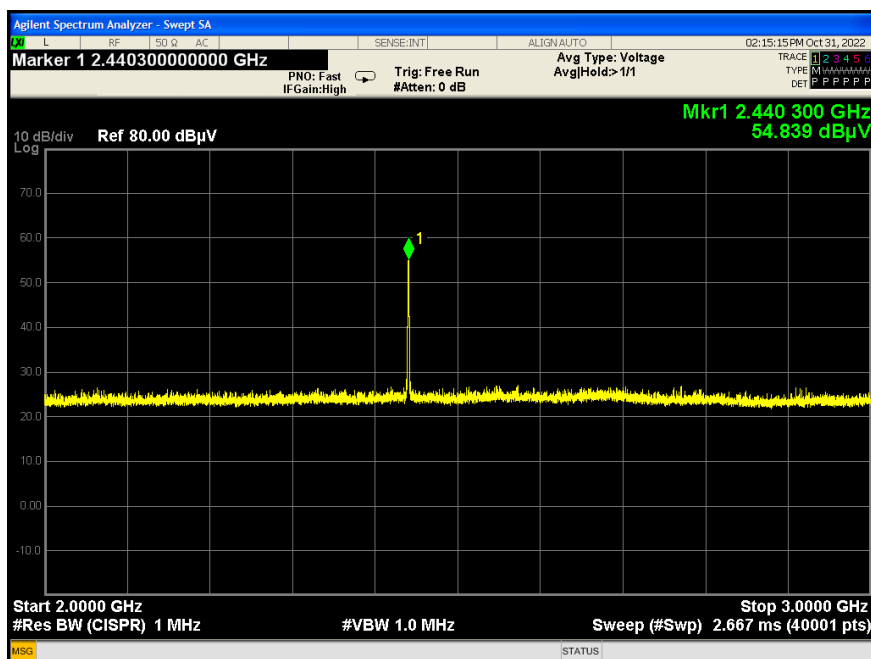


1-6GHz Horizontal

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Notch filter range: No emissions found other than the fundamental. No differences observed between horizontal or vertical antenna polarizations.



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Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3



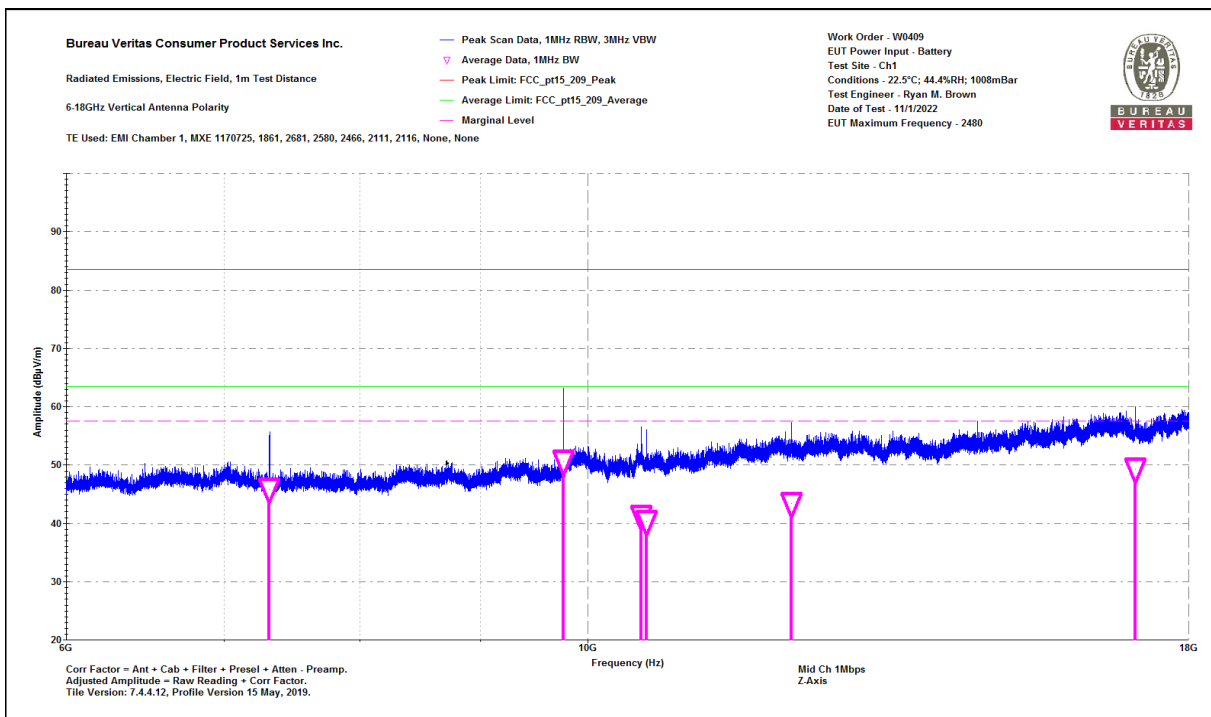
Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 1m Distance
6-18GHz Vertical Data
Notes:
Mid Ch 1Mbps
Z-Axis

Work Order - W0409
EUT Power Input - Battery
Test Site - Ch1
Conditions - 22.5°C; 44.4%RH; 1008mBar
Test Engineer - Ryan M. Brown
Date of Test - 11/1/2022

0

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_20 9_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_20 9_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
7319.6	44.4	44.9	1	45.3	83.5	-38.2	PASS		45.8	63.5	-17.7	PASS		160	210
9761.8	57.5	47	3.6	61.2	83.5	-22.3	PASS	-22.3	50.7	63.5	-12.8	PASS	-12.8	115	92
10532.1	46.6	36.5	4.7	51.3	83.5	-32.2	PASS		41.2	63.5	-22.3	PASS		157	197
10586.2	51.9	35.7	4.6	56.5	83.5	-27	PASS		40.3	63.5	-23.2	PASS		117	68
12202	47.2	36.1	7.3	54.5	83.5	-29	PASS		43.4	63.5	-20.1	PASS		200	240
17079.8	47.4	36.8	12.4	59.8	83.5	-23.7	PASS		49.2	63.5	-14.3	PASS		200	272

6-18GHz Vertical



6-18GHz Vertical

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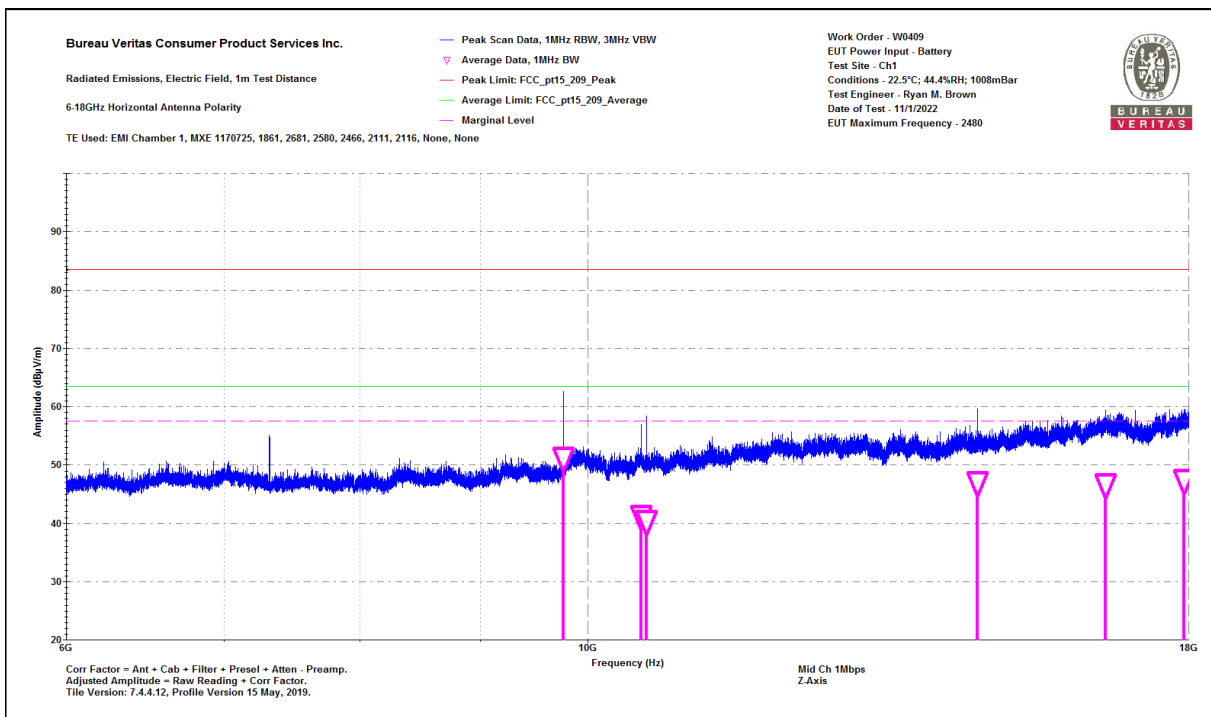
Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 1m Distance
6-18GHz Horizontal Data
Notes:
Mid Ch 1Mbps
Z-Axis

Work Order - W0409
EUT Power Input - Battery
Test Site - Ch1
Conditions - 22.5°C; 44.4%RH; 1008mBar
Test Engineer - Ryan M. Brown
Date of Test - 11/1/2022

0

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_20 9_Peak (dBµV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_20 9_Average (dBµV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
9759.9	58.7	47.5	3.6	62.3	83.5	-21.2	PASS	-21.2	51.1	63.5	-12.4	PASS	-12.4	181	145
10532.9	44.8	36.5	4.7	49.5	83.5	-34	PASS		41.2	63.5	-22.3	PASS		189	25
10586	45.4	35.7	4.6	50	83.5	-33.5	PASS		40.3	63.5	-23.2	PASS		190	39
14642.6	42.6	38	9	51.6	83.5	-31.9	PASS		47	63.5	-16.5	PASS		175	46
16594	44.6	33.9	12.6	57.2	83.5	-26.3	PASS		46.5	63.5	-17	PASS		190	333
17925.9	43	33.6	13.8	56.8	83.5	-26.7	PASS		47.4	63.5	-16.1	PASS		118	28

6-18GHz Horizontal



6-18GHz Horizontal

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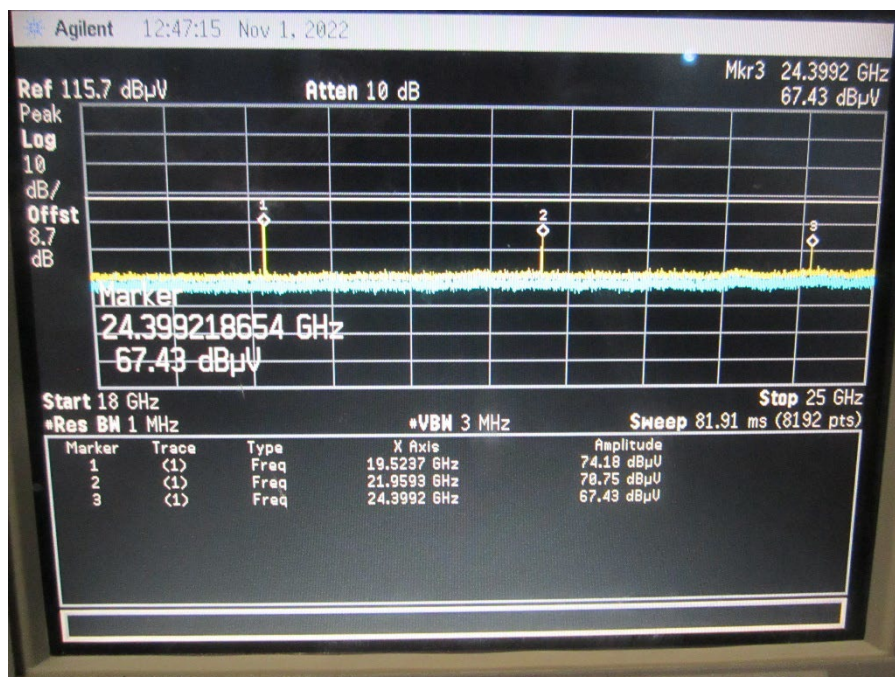
Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3



Radiated Emissions Table

Date: 01-Nov-22			Company: Idion Inc.			Work Order: W0409				
Engineer: Ryan M. Brown			EUT Desc: iTempShield			EUT Operating Voltage/Frequency: Battery				
Temp: 22.5			Humidity: 44%			Pressure: 1008				
Frequency Range: 18-25GHz						Measurement Distance: 0.1 m				
Notes: Mid CH										
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Corection Factor	Adjusted Reading (dBμV/m)	---			---		
			(dB)		Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
V	19523.7	65.5	8.7	74.2	---	---	---	83.5	-9.3	Pass
V	21959.3	62.1	8.7	70.8	---	---	---	83.5	-12.8	Pass
V	24399.2	58.7	8.7	67.4	---	---	---	83.5	-16.1	Pass
			---	---	---	---	---	---	---	Pass
H	19523.7	65.7	8.7	74.4	---	---	---	83.5	-9.1	Pass
H	21959.3	63.2	8.7	71.9	---	---	---	83.5	-11.7	Pass
H	24399.2	58.0	8.7	66.7	---	---	---	83.5	-16.8	Pass
Table Result: Pass by -7.5 dB									Worst Freq: 19219.5 MHz	
Test Site: Chamber 1			Cable 1: 2323			Cable 2: ---			Cable 3: ---	
Analyzer: 1510			Preamp: 1266			Antenna: 758			Preselector: ---	
CSsoft Radiated Emissions Calculator v 1.017.225									Copyright Curtis-Straus LLC 2000	
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor										

18-25GHz

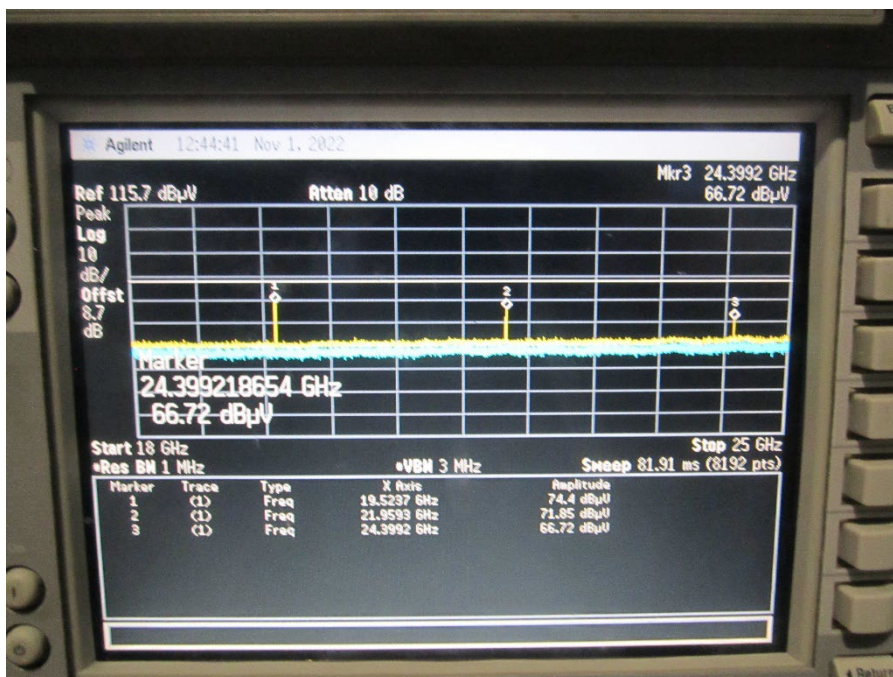


18-25GHz Vertical

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18-25GHz Horizontal



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Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3



Results for BLE 1Mbps GFSK Channel 39

Bureau Veritas Consumer Product Services Inc.

Radiated Emissions Electric Field 3m Distance

1-6GHz Vertical Data

Notes:

High Ch 1Mbps

Z-Axis

0

Work Order - W0409

EUT Power Input - Battery

Test Site - Ch1

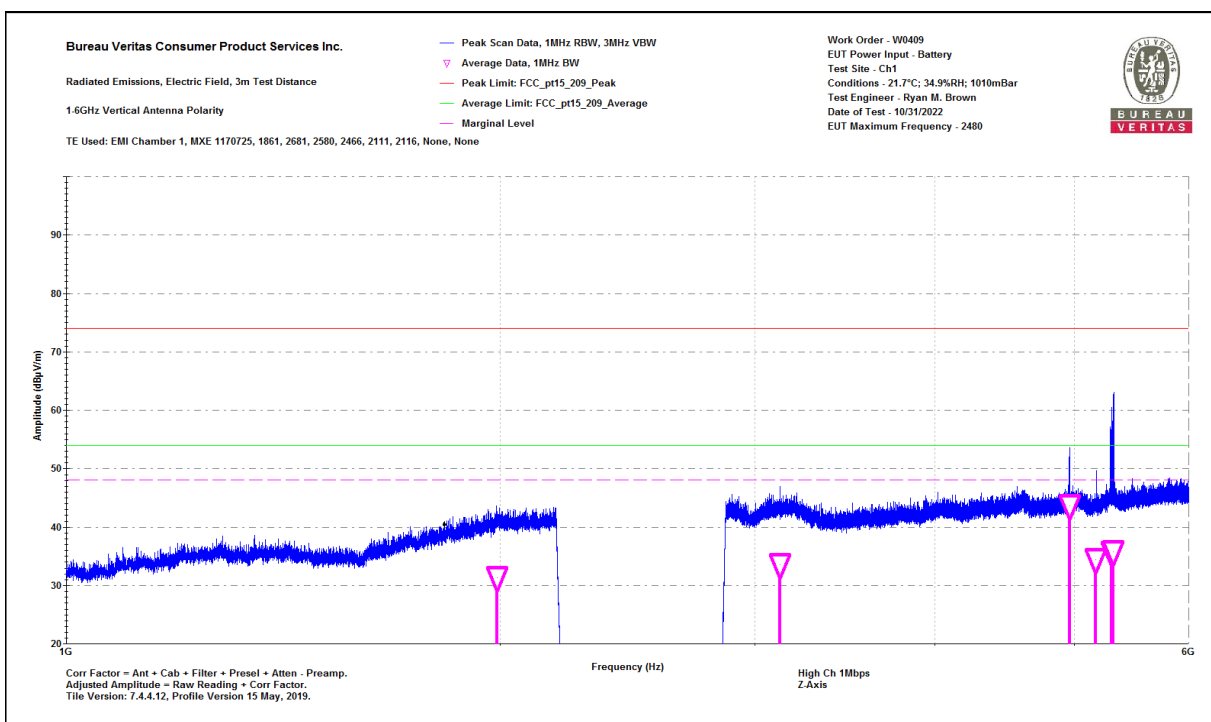
Conditions - 21.7°C; 34.9%RH; 1010mBar

Test Engineer - Ryan M. Brown

Date of Test - 10/31/2022

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_20 9_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_20 9_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1988.7	45.2	36	-4.7	40.5	74	-33.5	PASS		31.3	54	-22.7	PASS		300	121
3123.1	46.2	37.1	-3.6	42.6	74	-31.4	PASS		33.5	54	-20.5	PASS		178	143
4960.8	56.1	46.1	-2.5	53.5	74	-20.5	PASS	-20.5	43.6	54	-10.4	PASS	-10.4	105	272
5174.3	44.4	36.5	-2.1	42.3	74	-31.7	PASS		34.4	54	-19.6	PASS		125	198
5307.1	45.4	35.9	-0.2	45.2	74	-28.8	PASS		35.6	54	-18.4	PASS		275	73
5322.2	45.8	36.2	-0.4	45.4	74	-28.6	PASS		35.8	54	-18.2	PASS		179	187

1-6GHz Vertical



1-6GHz Vertical

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Radiated Emissions Electric Field 3m Distance
1-6GHz Horizontal Data

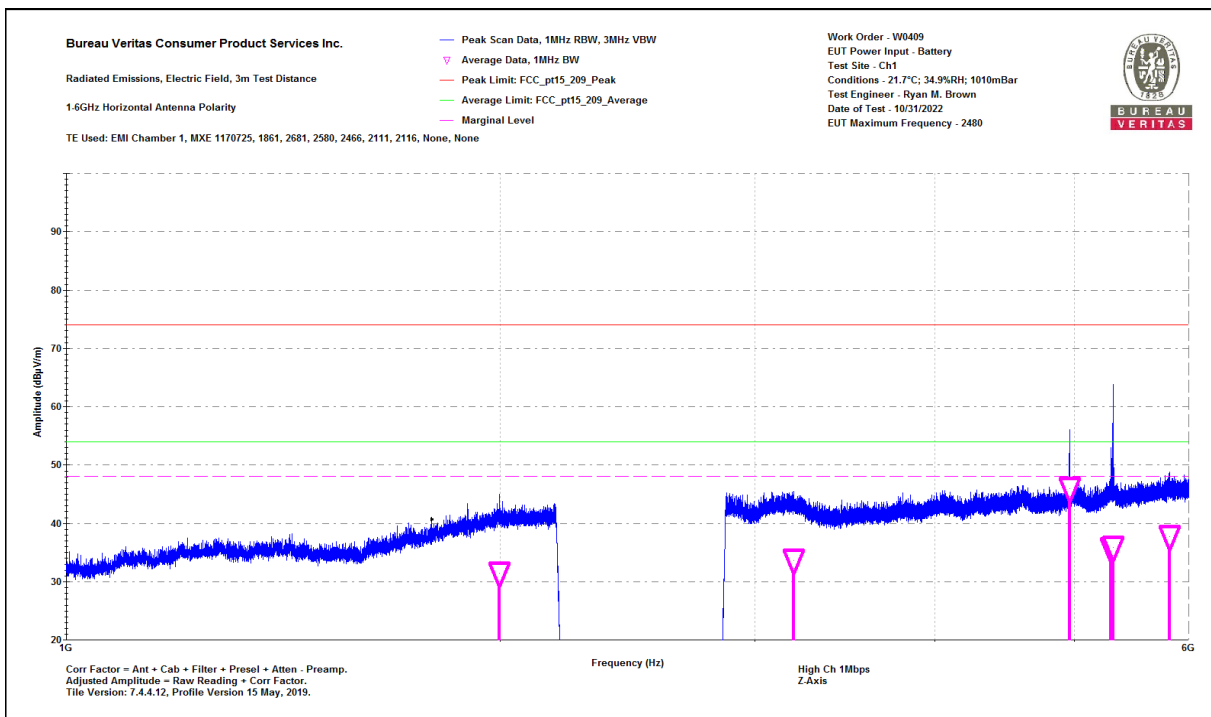
Notes:
High Ch 1Mbps
Z-Axis

0

Work Order - W0409
EUT Power Input - Battery
Test Site - Ch1
Conditions - 21.7°C; 34.9%RH; 1010mBar
Test Engineer - Ryan M. Brown
Date of Test - 10/31/2022

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_20 9_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_20 9_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1997	45.2	36	-4.6	40.6	74	-33.4	PASS		31.5	54	-22.5	PASS		212	154
3194.6	46.5	37	-3.2	43.2	74	-30.8	PASS		33.7	54	-20.3	PASS		225	290
4960.6	46.7	48.5	-2.5	44.2	74	-29.8	PASS		45.9	54	-8.1	PASS	-8.1	125	57
5299.1	46.8	35.9	-0.2	46.7	74	-27.3	PASS	-27.3	35.7	54	-18.3	PASS		275	162
5320.7	45.2	36.2	-0.4	44.8	74	-29.2	PASS		35.8	54	-18.2	PASS		125	26
5817.9	45.9	38	-0.3	45.6	74	-28.4	PASS		37.7	54	-16.3	PASS		225	55

1-6GHz Horizontal

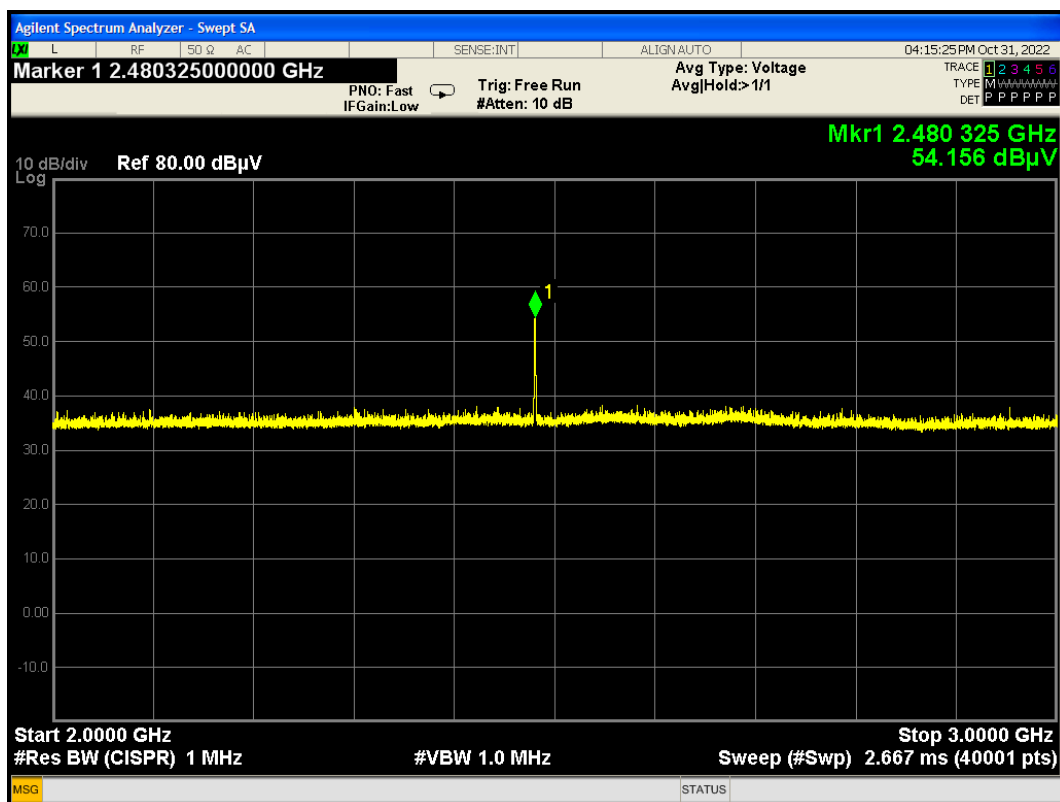


1-6GHz Horizontal

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Notch filter range: No emissions found other than the fundamental. No differences observed between horizontal or vertical antenna polarizations.



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Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3

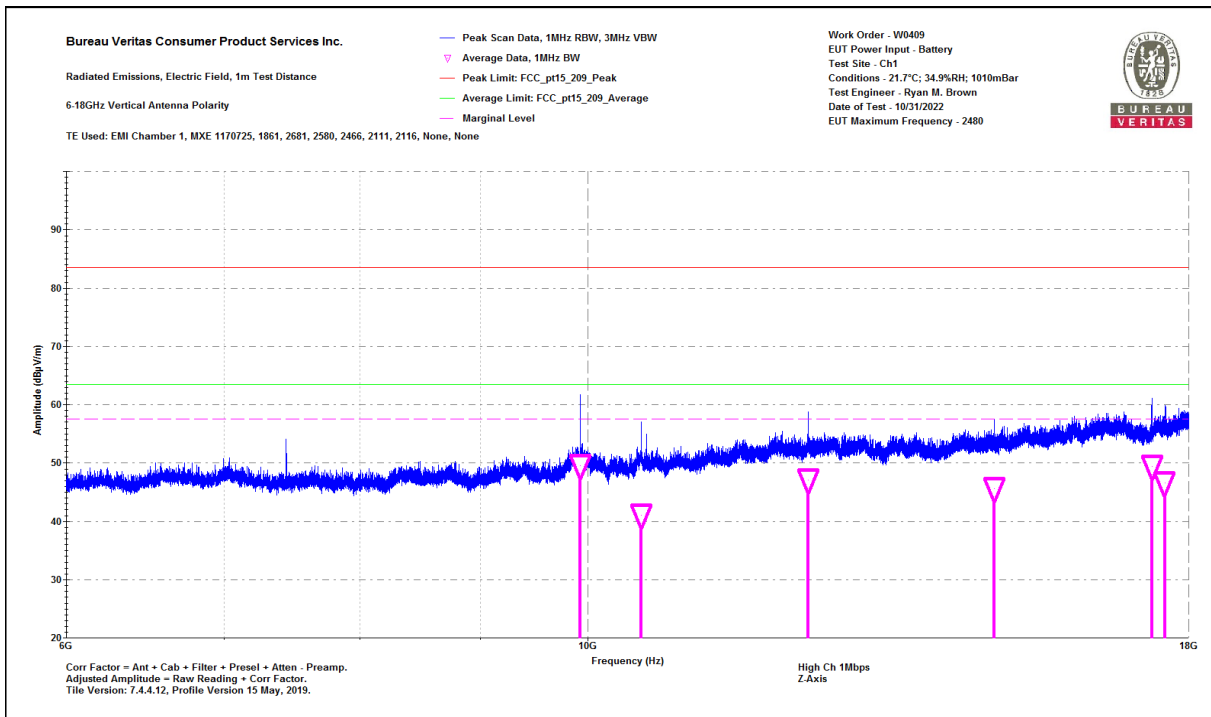


Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 1m Distance
6-18GHz Vertical Data
Notes:
High Ch 1Mbps
Z-Axis
0

Work Order - W0409
EUT Power Input - Battery
Test Site - Ch1
Conditions - 21.7°C; 34.9%RH; 1010mBar
Test Engineer - Ryan M. Brown
Date of Test - 10/31/2022

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_20 9_Peak (dBμV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_20 9_Average (dBμV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
9921.8	57.2	45.3	4.2	61.4	83.5	-22.1	PASS		49.5	63.5	-14	PASS	-14	133	133
10531.8	45.9	36.4	4.7	50.6	83.5	-32.9	PASS		41.1	63.5	-22.4	PASS		200	284
12399.8	49.3	39.6	7.5	56.8	83.5	-26.7	PASS		47	63.5	-16.5	PASS		171	160
14879.9	46.2	36.5	9.2	55.3	83.5	-28.2	PASS		45.7	63.5	-17.8	PASS		200	287
17363	49.3	37.1	12.4	61.6	83.5	-21.9	PASS	-21.9	49.4	63.5	-14.1	PASS		200	297
17582.5	43.2	33.5	13.1	56.3	83.5	-27.2	PASS		46.6	63.5	-16.9	PASS		200	257

6-18GHz Vertical



6-18GHz Vertical

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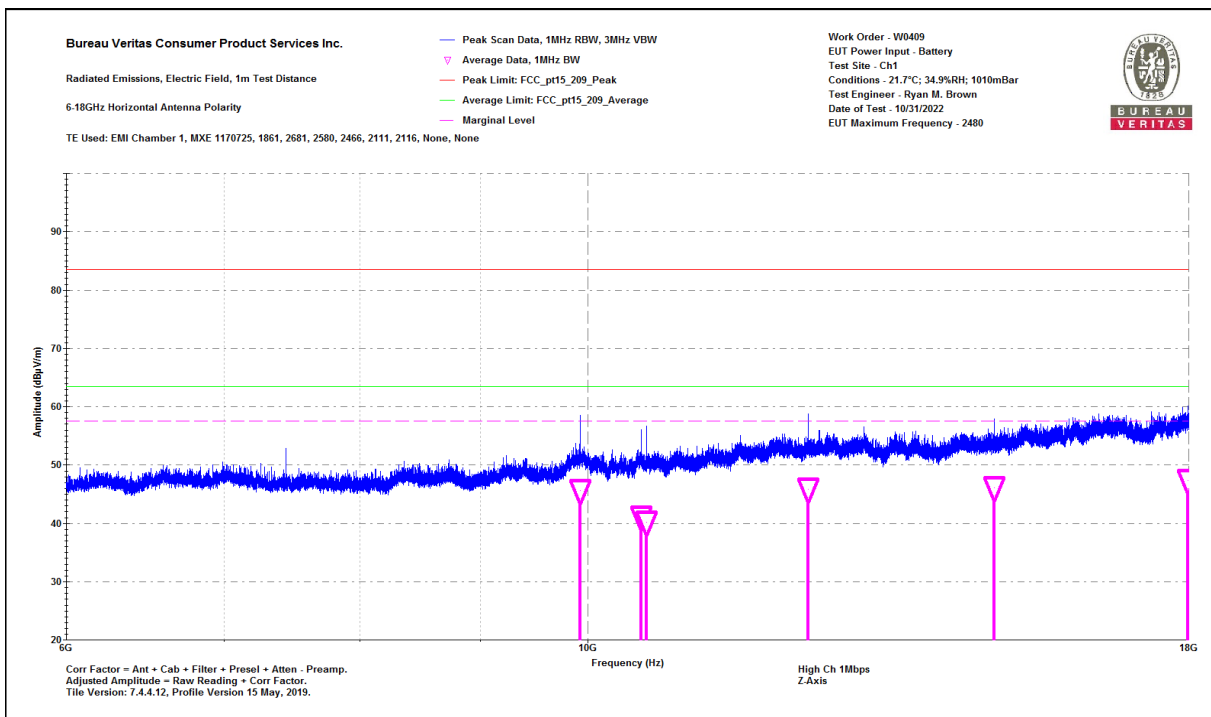
Bureau Veritas Consumer Product Services Inc.
Radiated Emissions Electric Field 1m Distance
6-18GHz Horizontal Data
Notes:
High Ch 1Mbps
Z-Axis

Work Order - W0409
EUT Power Input - Battery
Test Site - Ch1
Conditions - 21.7°C; 34.9%RH; 1010mBar
Test Engineer - Ryan M. Brown
Date of Test - 10/31/2022

0

Frequency (MHz)	Raw Peak Reading (dBμV)	Raw Avg Reading (dBμV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBμV/m)	Pk Lim: FCC_pt15_20 9_Peak (dBμV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBμV/m)	Av Lim: FCC_pt15_20 9_Average (dBμV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
9920.4	50	41.4	4.2	54.3	83.5	-29.2	PASS		45.7	63.5	-17.8	PASS		125	189
10533.9	45.9	36.4	4.7	50.6	83.5	-32.9	PASS		41.1	63.5	-22.4	PASS		125	266
10585.7	44.8	35.6	4.6	49.5	83.5	-34	PASS		40.2	63.5	-23.3	PASS		154	128
12402.2	48.3	38.4	7.4	55.8	83.5	-27.7	PASS		45.8	63.5	-17.7	PASS		125	42
14882.6	47.6	37	9.1	56.7	83.5	-26.8	PASS	-26.8	46.1	63.5	-17.4	PASS		141	157
17992.6	42.1	33.7	13.7	55.8	83.5	-27.7	PASS		47.3	63.5	-16.2	PASS	-16.2	125	169

6-18GHz Horizontal



6-18GHz Horizontal

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Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3



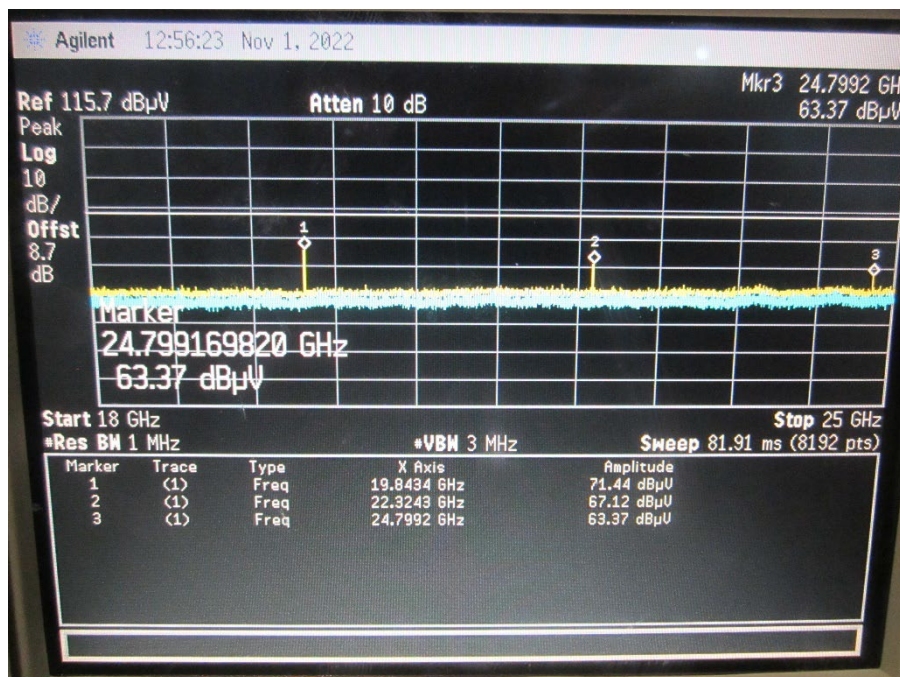
Radiated Emissions Table

Date: 01-Nov-22			Company: Idion Inc.			Work Order: W0409				
Engineer: Ryan M. Brown			EUT Desc: iTempShield			EUT Operating Voltage/Frequency: Battery				
Temp: 22.5			Humidity: 44%			Pressure: 1008				
Frequency Range: 18-25GHz						Measurement Distance: 0.1 m				
Notes: High CH										
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Corection Factor	Adjusted Reading (dBμV/m)	---			---		
			(dB)		Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
V	19843.4	64.3	8.7	73.0	---	---	---	83.5	-10.5	Pass
V	22324.3	63.5	8.7	72.2	---	---	---	83.5	-11.3	Pass
V	24799.2	54.0	8.7	62.7	---	---	---	83.5	-20.8	Pass
			---	---	---	---	---	---	---	Pass
H	19843.4	62.7	8.7	71.4	---	---	---	83.5	-12.1	Pass
H	22324.3	58.4	8.7	67.1	---	---	---	83.5	-16.4	Pass
H	24799.2	54.7	8.7	63.4	---	---	---	83.5	-20.1	Pass
Table Result: Pass by -10.5 dB									Worst Freq: 19843.4 MHz	
Test Site: Chamber 1			Cable 1: 2323			Cable 2: ---			Cable 3: ---	
Analyzer: 1510			Preamp: 1266			Antenna: 758			Preselector: ---	
CSsoft Radiated Emissions Calculator v 1.017.225									Copyright Curtis-Straus LLC 2000	
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor										

18-25GHz



18-25GHz Vertical



18-25GHz Horizontal

BLE 1Mbps GFSK Radiated Band-edge:

Radiated Emissions Table															
Date: 31-Oct-22			Company: Idion			Work Order: W0409									
Engineer: Ryan M. Brown			EUT Desc: iTempShield			EUT Operating Voltage/Frequency: Battery									
Temp: 21.7			Humidity: 35%			Pressure: 1010									
Frequency Range: Band Edge									Measurement Distance: 3 m						
Notes: Z-Axis									EUT Max Freq: 2480						
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBμV)	Average Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBμV/m)	Adjusted Avg Reading (dBμV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average			
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	
Band Edge High V H	2483.5	59.72	37.5	---	32.8	10.3	60.2	38.0	74.0	-13.8	Pass	54.0	-16.0	Pass	
	2483.5	66.159	38.8	42.6	32.8	10.3	66.7	39.3	74.0	-7.3	Pass	54.0	-14.7	Pass	
				---	---	---	---	---	---	---	---	---	---	---	
				---	---	---	---	---	---	---	---	---	---	---	
				---	---	---	---	---	---	---	---	---	---	---	
Band Edge Low V H	2390.0	64.711	37.1	41.8	32.0	10.0	64.9	37.3	74.0	-9.1	Pass	54.0	-16.7	Pass	
	2390.0	65.254	36.9	41.8	32.0	10.0	65.5	37.1	74.0	-8.5	Pass	54.0	-16.9	Pass	
				---	---	---	---	---	---	---	---	---	---	---	
				---	---	---	---	---	---	---	---	---	---	---	
				---	---	---	---	---	---	---	---	---	---	---	
Table Result:				Pass		by		-7.3 dB		Worst Freq:				2483.5 MHz	
Test Site: EMI Chamber 1			Cable 1: Asset #2681			Cable 2: Asset #2580			Cable 3: Asset #2466						
Analyzer: 1170725			Preamp: Asset #2111			Antenna: Blue Horn			Preselector: ---						
CSsoft Radiated Emissions Calculator v 1.017.225															
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor															
Copyright Curtis-Straus LLC 200															



4.2 CHANNEL BANDWIDTH MEASUREMENT 6dB BW & 99% OBW

4.3.1 LIMIT OF 6dB CHANNEL BANDWIDTH AND 99% OBW

6dB Bandwidth: The minimum 6 dB bandwidth shall be 500 kHz.

99% Bandwidth: When an occupied bandwidth is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is its 99% emission bandwidth, as calculated or measured. [RSS-GEN Issue 5 Section 6.7]

4.3.2 TEST INSTRUMENTS

Rev. 11/21/2022

Spectrum Analyzers / Receivers /Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
FSV40 Spectrum Analyzer		10Hz-40GHz	FSV40	ROHDE & SCHWARZ	101551	2200	I	10/11/2023	10/11/2022
Signal Generators/Comparison Noise Emitter		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
OSP-B157W8			OSP-B157W8	ROHDE & SCHWARZ	100955	2558	I	8/26/2023	8/26/2021
SMBV100A Vector Signal Generator		9KHz-6GHz	SMBV100A	ROHDE & SCHWARZ	261919	2201	I	10/11/2023	10/11/2022
SMB100A Signal Generator		100kHz-40GHz	SMB100A	ROHDE & SCHWARZ	179884	2557	I	10/11/2023	10/11/2022
CMW270 Wireless Connectivity Tester			CMW270	ROHDE & SCHWARZ	101066	2559	I	4/14/2024	4/14/2022
Cables		Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2595		9KHz-40GHz		Carlisle			II	1/21/2023	1/21/2022

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

4.3.3 TEST PROCEDURE

6dB Bandwidth:

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

99% OBW

1. The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
2. The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
3. Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.5.2.
4. Step a) through step c) might require iteration to adjust within the specified range.
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

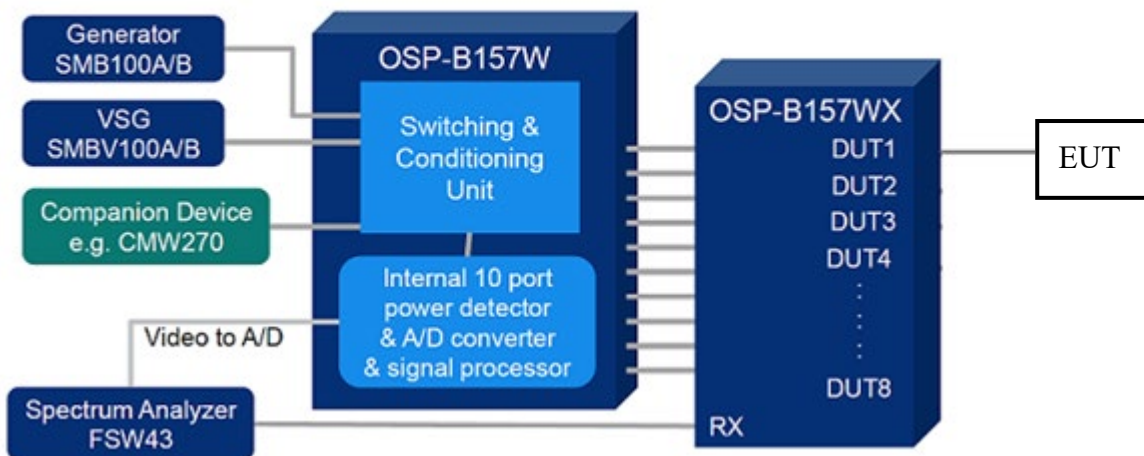
4.3.4 DEVIATION FROM TEST STANDARD

No deviation.



4.3.5 TEST SETUP

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4.3.6 TEST RESULTS

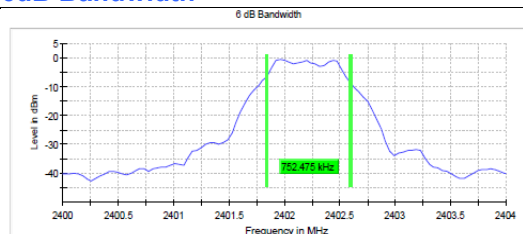
BLE (GFSK)

1Mbps:

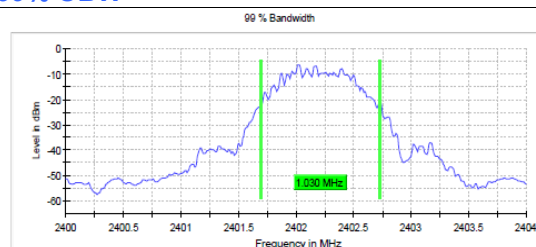
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	99% OBW (MHz)	PASS / FAIL
0	2402	0.752475	1.030000	Pass
19	2440	0.752475	1.030000	Pass
39	2480	0.792079	1.030000	Pass

CH0

6dB Bandwidth



99% OBW



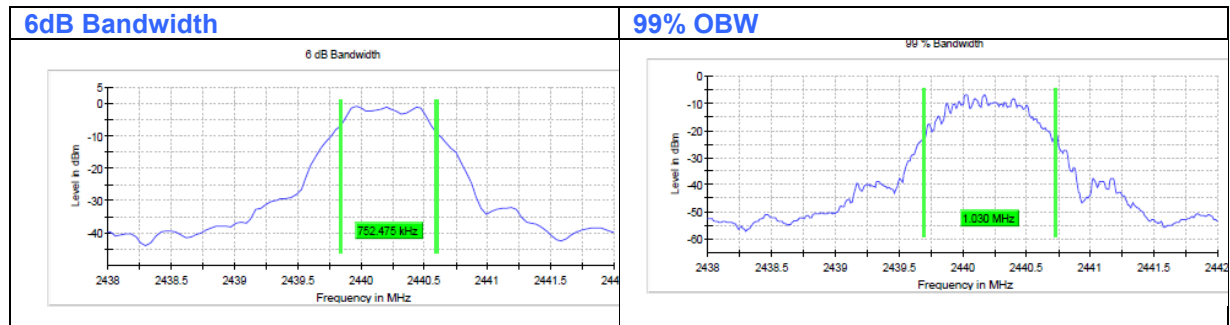


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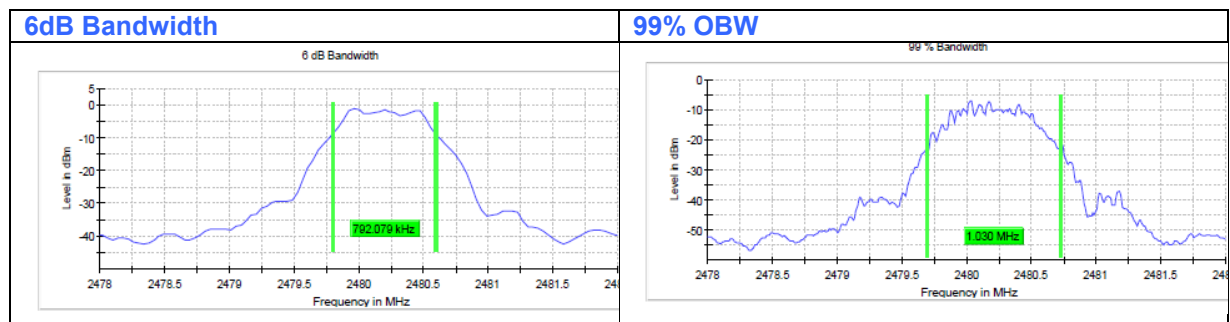
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6dB Bandwidth Measurement Settings

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.40400 GHz	2.40400 GHz
Span	4.000 MHz	4.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 80
SweepTime	18.938 μ s	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	11 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.01 dB	0.50 dB

99% OBW Measurement Settings

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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Measurement

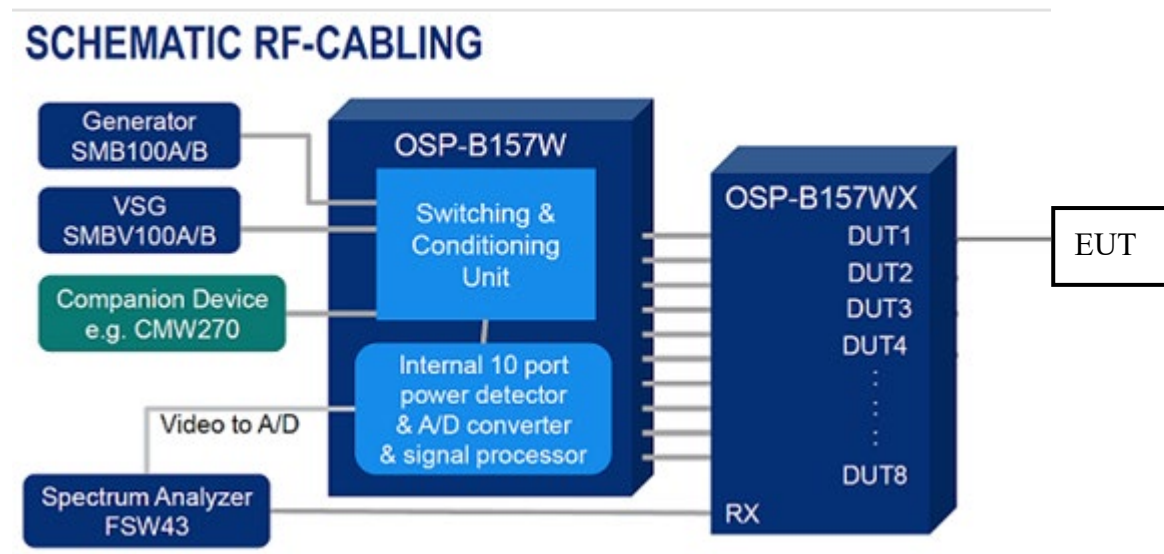
Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.40400 GHz	2.40400 GHz
Span	4.000 MHz	4.000 MHz
RBW	20.000 kHz	≥ 20.000 kHz
VBW	100.000 kHz	≥ 60.000 kHz
SweepPoints	400	~ 400
SweepTime	94.824 μ s	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	6 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.09 dB	0.30 dB

4.3 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.3.2.

4.4.4 TEST PROCEDURES

Per 11.9.1.1 of ANSI C63.10, for peak conducted output power measurement when $RBW \geq DTS$ bandwidth.

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

EUT was operated according to manufacturer's specifications.



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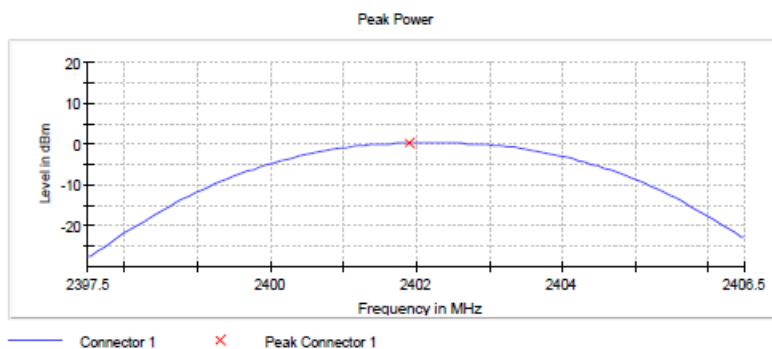
4.4.7 TEST RESULTS

BLE (GFSK)

1Mbps:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PEAK POWER LIMIT (W)	PASS/FAIL
0	2402	0.2	30	1	PASS
19	2440	-0.1	30	1	PASS
39	2480	-0.3	30	1	PASS

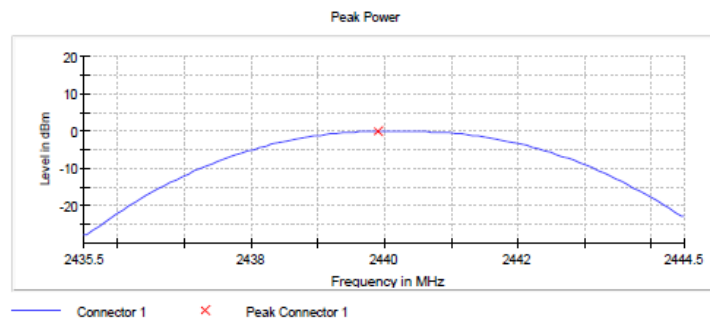
CH0



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39750 GHz	2.39750 GHz
Stop Frequency	2.40650 GHz	2.40650 GHz
Span	9.000 MHz	9.000 MHz
RBW	3.000 MHz	>= 3.000 MHz
VBW	10.000 MHz	>= 10.000 MHz
SweepPoints	101	~ 101
SweepTime	1.271 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

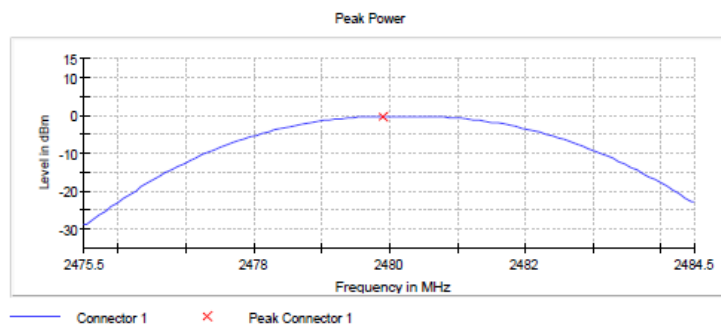
CH19



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43550 GHz	2.43550 GHz
Stop Frequency	2.44450 GHz	2.44450 GHz
Span	9.000 MHz	9.000 MHz
RBW	3.000 MHz	≥ 3.000 MHz
VBW	10.000 MHz	≥ 10.000 MHz
SweepPoints	101	~ 101
SweepTime	1.271 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.01 dB	0.50 dB

CH39



Measurement

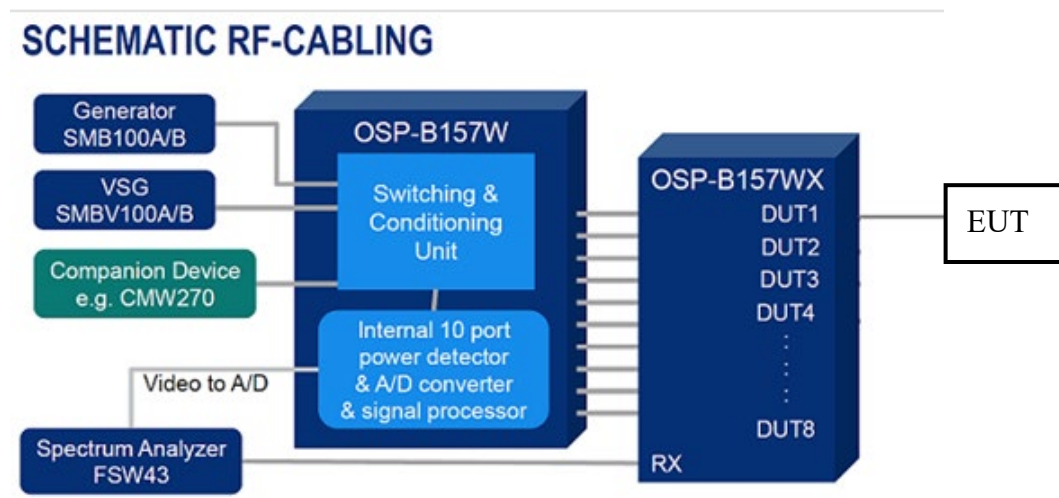
Setting	Instrument Value	Target Value
Start Frequency	2.47550 GHz	2.47550 GHz
Stop Frequency	2.48450 GHz	2.48450 GHz
Span	9.000 MHz	9.000 MHz
RBW	3.000 MHz	≥ 3.000 MHz
VBW	10.000 MHz	≥ 10.000 MHz
SweepPoints	101	~ 101
SweepTime	1.271 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.03 dB	0.50 dB

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The limit for Power Spectral Density is 8dBm/3KHz.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.3.2.

4.5.4 TEST PROCEDURE

1. Set the span to 1.5 times the DTS bandwidth
2. Set the RBW = 10 kHz, VBW $\geq 3 \times$ RBW, Detector = peak.
3. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

EUT was operated according to manufacturer's specifications.



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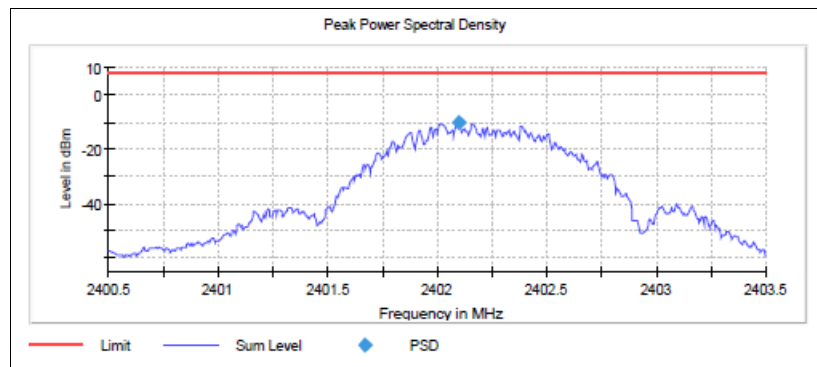
4.5.7 TEST RESULTS

BT-LE (GFSK)

1Mbps:

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-10.309	8	PASS
19	2440	-10.572	8	PASS
39	2480	-10.621	8	PASS

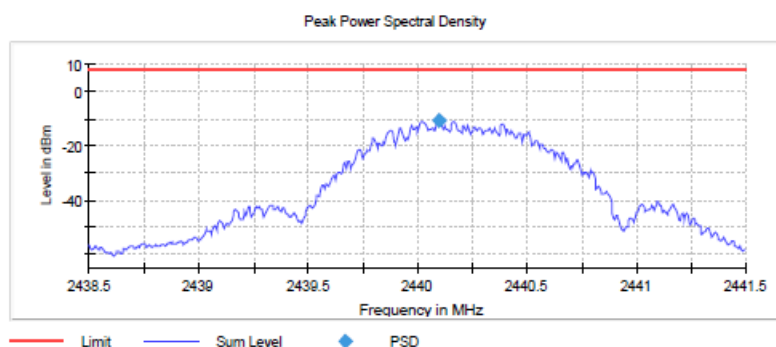
CH0



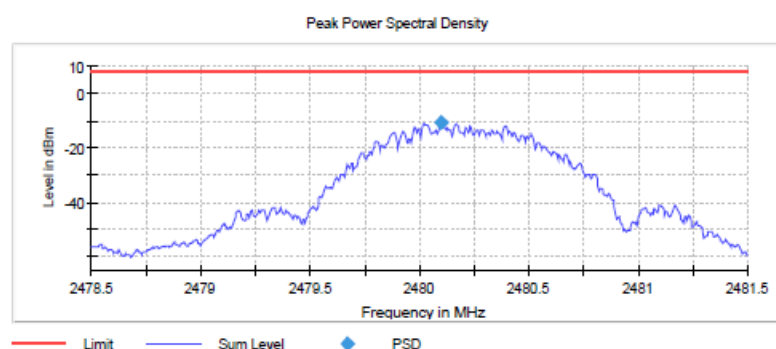
Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40050 GHz	2.40050 GHz
Stop Frequency	2.40350 GHz	2.40350 GHz
Span	3.000 MHz	3.000 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	600	~ 600
SweepTime	3.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.15 dB	0.50 dB

CH19



CH39





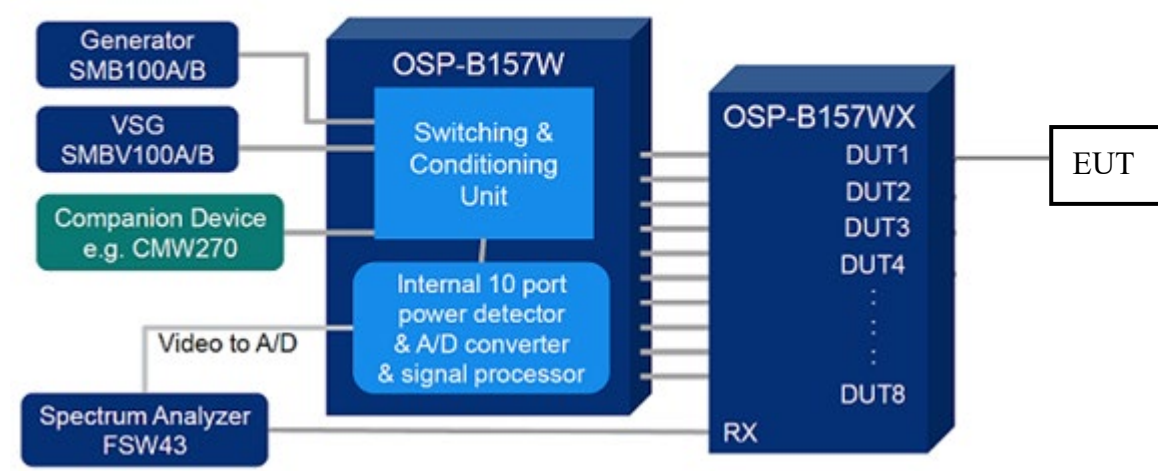
4.6 OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST SETUP

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4.6.3 TEST INSTRUMENTS

Refer to section 4.3.2.

4.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW \geq 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

EUT was operated according to manufacturer's specifications.



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4.6.7 TEST RESULTS

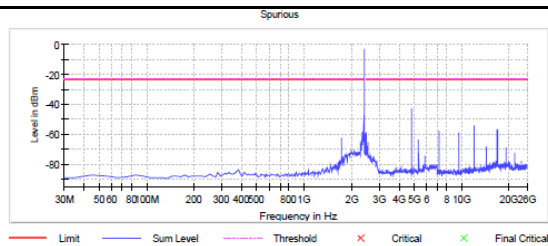
BLE (GFSK)

1Mbps Conducted Spurious Emissions:

CH 0

Pre Measurements

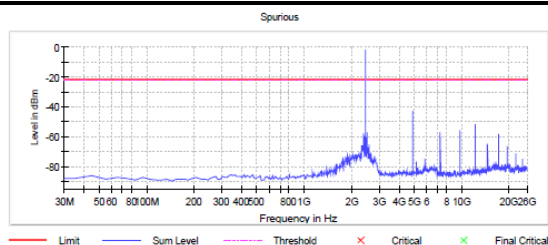
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4807.166065	-42.9	20.0	-22.9
2395.021008	-45.6	22.7	-22.9
12013.029431	-54.3	31.4	-22.9
2385.063025	-55.6	32.7	-22.9
16820.269762	-56.9	34.0	-22.9
16810.275499	-57.3	34.4	-22.9
7205.789099	-57.6	34.8	-22.9
2335.273109	-58.1	35.2	-22.9
9604.412133	-58.9	36.0	-22.9
2375.105042	-61.6	38.7	-22.9
9614.406396	-61.7	38.8	-22.9
1727.836134	-62.5	39.6	-22.9
5316.873459	-63.6	40.7	-22.9
2365.147059	-64.6	41.7	-22.9
2355.189076	-64.7	41.8	-22.9



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Pre Measurements

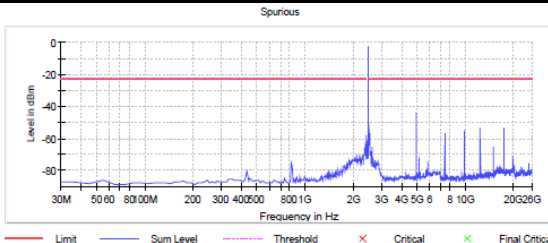
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4877.125903	-42.7	21.0	-21.7
12202.920421	-51.4	29.7	-21.7
9764.320336	-55.6	33.9	-21.7
7315.725988	-57.2	35.5	-21.7
2508.485657	-57.3	35.6	-21.7
2375.105042	-57.4	35.7	-21.7
17080.120591	-58.1	36.4	-21.7
7325.720251	-58.1	36.4	-21.7
14641.520506	-64.9	43.2	-21.7
2568.451232	-65.4	43.7	-21.7
2488.497131	-65.4	43.7	-21.7
2315.357143	-65.8	44.1	-21.7
2345.231092	-65.8	44.1	-21.7
2395.021008	-66.2	44.5	-21.7
19518.720676	-66.3	44.6	-21.7



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Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4957.080004	-44.0	21.5	-22.5
2488.497131	-48.1	25.6	-22.5
17359.95945	-53.4	30.9	-22.5
12402.805674	-53.7	31.2	-22.5
9924.228538	-55.0	32.5	-22.5
2498.491394	-55.7	33.2	-22.5
7445.651402	-56.6	34.1	-22.5
2548.462707	-56.7	34.2	-22.5
7435.657140	-58.1	35.6	-22.5
2508.485657	-59.7	37.2	-22.5
2518.479919	-64.0	41.6	-22.5
2528.474182	-64.5	42.0	-22.5
2385.063025	-64.8	42.3	-22.5
2608.428283	-65.2	42.7	-22.5
14881.382809	-65.2	42.7	-22.5





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VERITAS**

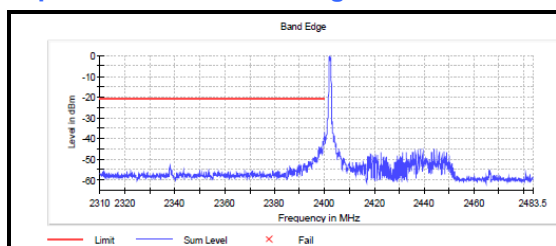
Test Report for Idion, Inc. • Report No. EW0409-2 Issue 3



Pre Measurement 1

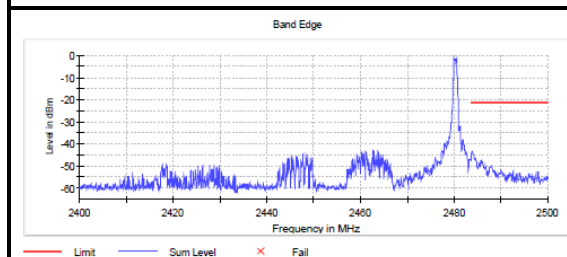
Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	238	~ 238
SweepTime	23.700 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	1.00 dB	1.00 dB
Run	9 / max. 40	max. 40
Stable	3 / 3	3
Max Stable Difference	0.00 dB	1.00 dB

1Mbps Conducted Band-edge:



Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.975000	-37.0	16.3	-20.6	PASS
2399.925000	-37.0	16.4	-20.6	PASS
2399.875000	-37.7	17.1	-20.6	PASS
2399.825000	-38.9	18.3	-20.6	PASS
2399.775000	-40.1	19.5	-20.6	PASS
2399.475000	-41.4	20.8	-20.6	PASS
2399.425000	-41.5	20.9	-20.6	PASS
2399.725000	-41.8	21.2	-20.6	PASS
2399.525000	-41.8	21.2	-20.6	PASS
2399.375000	-42.0	21.4	-20.6	PASS
2399.575000	-42.6	22.0	-20.6	PASS
2399.325000	-42.9	22.3	-20.6	PASS
2399.675000	-43.4	22.8	-20.6	PASS
2399.625000	-43.6	23.0	-20.6	PASS
2399.275000	-43.8	23.2	-20.6	PASS



Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.775000	-43.1	21.9	-21.1	PASS
2483.825000	-43.1	22.0	-21.1	PASS
2483.875000	-43.4	22.3	-21.1	PASS
2483.725000	-43.4	22.3	-21.1	PASS
2483.925000	-44.1	22.9	-21.1	PASS
2484.025000	-44.5	23.4	-21.1	PASS
2483.975000	-44.5	23.4	-21.1	PASS
2483.675000	-44.6	23.5	-21.1	PASS
2484.075000	-44.6	23.5	-21.1	PASS
2484.125000	-45.2	24.1	-21.1	PASS
2483.625000	-45.6	24.5	-21.1	PASS
2484.175000	-46.0	24.9	-21.1	PASS
2483.575000	-46.3	25.2	-21.1	PASS
2483.525000	-46.3	25.2	-21.1	PASS
2484.375000	-46.6	25.5	-21.1	PASS

Measurement 1

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
SweepTime	94.727 μ s	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	7 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.04 dB	0.50 dB

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Measurement 2

Setting	Instrument Value	Target Value
Start Frequency	2.48350 GHz	2.48350 GHz
Stop Frequency	2.50000 GHz	2.50000 GHz
Span	16.500 MHz	16.500 MHz

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	330	~ 330
SweepTime	18.945 μ s	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	20 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB



5 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the Test Setup Photos exhibit.



6 APPENDIX A – MODIFICATIONS

No modifications were made to the EUT during testing.

---END OF REPORT---