



**Test Report for SmartSense by Digi**  
**Report No. EX0743-5-2 Issue 2**



# TEST REPORT

Applicant	SmartSense by Digi	
Address	186 Lincoln St. Suite 8 Boston, MA 02111	
FCC ID	2ATZ3-B3SENSOR	
ISED Canada IC	25306-B3SENSOR	
Product Marketing Name (PMN)	TM-B3SENSOR	
Model Name or Number	B3 Sensor	
Hardware Version Identification Number (HVIN)	50002144-01 Rev A	
Firmware Version Identification Number (FVIN)	82004727 Rev B	
Additional Models	None	
Date of tests	Sep 13 – 26, 2024	
FCC Test Firm DN	US1028	
Canada CABID	US0106	
The tests have been carried out according to the requirements of the following standard:		
<input checked="" type="checkbox"/> <b>FCC Part 15, Subpart C, Section 15.247</b>		
<input checked="" type="checkbox"/> <b>ISED Canada RSS-247 Issue 3</b>		
<b>CONCLUSION: The submitted sample was found to <u>COMPLY</u> with the test requirement</b>		
Prepared by Nisha Patel Wireless Engineer I	Approved by Yunus Faziloglu EMC/ Wireless Manager	
Report Issue Date: June 10, 2025	Issue Number: 2	
<p>This report is governed by, and incorporates by reference, CPS Conditions of Service as posted at the date of issuance of this report at <a href="https://www.cps.bureauveritas.com/terms-conditions">https://www.cps.bureauveritas.com/terms-conditions</a> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.</p>		



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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	PREPARED BY	APPROVED BY	DATE ISSUED
1	Original release	NP	AA	Nov 1, 2024
2	To address TCB review comments: - Updated FVIN on the cover page.	NP	YF	June 10, 2025



# 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 (Note 1)	--
15.205	247 3.3	Radiated Spurious Emissions	Y	PASS
15.209	247 5.5			
	Gen 8.9			
	Gen 8.10			
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.



## 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.



### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>NOMINAL VOLTAGE</b>	1.5VDC (Battery Powered)
<b>MODULATION TECHNOLOGY</b>	DTS
<b>MODULATION TYPES</b>	GFSK
<b>DATA RATES</b>	1Mbps (GFSK), 2Mbps (GFSK)
<b>OPERATING FREQUENCY</b>	2402MHz – 2480MHz
<b>POWER SETTING</b>	Identified during testing as the maximum setting to comply with the rules 1Mbps: 20dBm 2Mbps: 16dBm
<b>OUTPUT POWER</b>	Measured average conducted output power 1Mbps: 99.5mW 2Mbps: 46.8mW

Following antenna options were specified by the customer:

Antenna Type	Manufacturer	Model	Peak Gain	Tested
Surface Mount Ceramic	Walsin Technology Corporation	RFANT3216120A5T	2.93dBi	Y
Surface Mount Ceramic	Johanson Technology, Inc.	2450AT18B100	0.5dBi	N (Note 1)

Note 1: Since antennas are the same type, RFANT3216120A5T was tested for all radiated emissions due to its higher gain.

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

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

EUT has 40 operating channels as shown below:

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

Two samples were provided for testing, one for radiated measurements and another with an SMA connector for conducted antenna port measurements. EUT has no ports for power or I/O. 1.5VDC was supplied through an external DC power supply to ensure testing at fresh battery levels. Client supplied a support laptop with software tool and a serial cable for necessary test mode setups.

EUT configuration modes:

TEST MODE	DESCRIPTION
<b>A</b>	Transmit at 1Mbps (Duty-cycle: 64.3%)
<b>B</b>	Transmit at 2Mbps (Duty-cycle: 34.7%)

### EUT SETUP BLOCK DIAGRAMS

Radiated Emissions EUT Setup



Support laptop was removed from the chamber after necessary test mode setup.



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The 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, B	0 to 39	0,19,39	GFSK	1 & 2	-
PSD	A, B	0 to 39	0,19,39	GFSK	1 & 2	-
CBE	A, B	0 to 39	0,39	GFSK	1 & 2	-
6DB	A, B	0 to 39	0,19,39	GFSK	1 & 2	-
OBW	A, B	0 to 39	0,19,39	GFSK	1 & 2	-
CSE	A, B	0 to 39	0,19,39	GFSK	1 & 2	-
RSE<1G	A	0 to 39	0,19,39	GFSK	1	1, 2, 3
RSE≥1G	A	0 to 39	0,19,39	GFSK	1	1, 2
RBE	A, B	0 to 39	0,39	GFSK	1 & 2	2
PLCE	-	-	-	-	-	4

Notes:

- 1) For radiated emissions, only mode A was tested due to its higher output power.
- 2) For radiated emissions, worst-case orientation of the EUT was found to be the X-axis as shown in the Test Setup Photos exhibits.
- 3) For radiated emissions below 30MHz, only center channel was tested since no emissions were detected.
- 4) Not applicable since EUT is battery powered.

**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	22.2°C, 48.4%, 1014mbar	1.5V DC	NP	9/17/2024
RE≥1G	22.1°C, 50.7%, 1016mbar	1.5V DC	NP	9/16/2024
Radiated Band Edges	23.7°C, 51.2%, 1013mbar	1.5V DC	NP	9/13/2024
Antenna Port Measurements	24.0°C, 50.9%, 1009mbar	1.5V DC	YF	9/26/2024



### 3.3 MEASUREMENT PROCEDURES USED

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

**FCC KDB 558074 D01 15.247 Meas Guidance v05r02**

**ANSI C63.10-2013**

### 3.4 DESCRIPTION OF SUPPORT EQUIPMENT

Support Equipment	Model #	Serial #	Comments
Laptop	HP DESKTOP-G8HQ7IG	None	Supplied by the customer
Lab DC Power Supply	HP E3612A	KR61304227	Used during radiated emission measurements
Lab DC Power Supply	EVENTEK	KPS3010D	Used during antenna port measurements

## 4 TEST RESULTS

### 4.1 RADIATED SPURIOUS EMISSIONS

#### 4.1.1 LIMITS

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

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

**NOTE:**

- Lower limit applies at the transition frequencies.
- 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.
- Measurements above 6GHz or 18GHz can be performed at distances less than 3m from the EUT due to increased noise floor of the measurement system. Since such measurements produce higher amplitudes than what they would be if they were measured at 3 meters, this would be considered worst-case and no compensation back to 3 meters is needed. Limit conversion above 30MHz is done by using inverse linear distance extrapolation factor (20dB/decade) as allowed in FCC 15.31(f)(1).  

$$\text{Limit}(1\text{m}) = \text{Limit}(3\text{m}) + 20 \cdot \log(3/1) = \text{Limit}(3\text{m}) + 9.5$$

$$\text{Limit}(0.1\text{m}) = \text{Limit}(3\text{m}) + 20 \cdot \log(3/0.1) = \text{Limit}(3\text{m}) + 29.5$$
- 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).  

$$\text{Limit}(3\text{m}) = \text{Limit}(30\text{m}) + 40 \cdot \log(30/3) = \text{Limit}(30\text{m}) + 40$$

$$\text{Limit}(3\text{m}) = \text{Limit}(300\text{m}) + 40 \cdot \log(300/3) = \text{Limit}(300\text{m}) + 80$$
- Adjusted Reading (dBuV/m) = Raw Reading (dBuV) + Transducer(Correction) Factor (dB/m)  
 Transducer Factor (dB/m) = Antenna Factor (dB/m) – PreAmp Gain (dB) + Cable Loss (dB) + Filter Loss (dB)  
 Note: Filter loss only applies if a notch filter is used during testing.
- RSS-GEN Table 6 H-field limits are 51.5dB lower than FCC 15.209(a) E-field limits. Measurements are performed in terms of magnetic field and converted to electric field using the free space impedance of 377Ω (E-field = H-field + 51.5). Therefore resulting pass/fail margin would be the same if an E-field reading is compared to an E-field limit or an H-field reading is compared to an H-field limit.



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**4.1.2 TEST EQUIPMENT USED**

Rev. 9/13/2024

<b>Radiated Emissions Sites</b>	<b>FCC Code</b>	<b>IC Code</b>	<b>VCCI Code</b>	<b>Range</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
EMI Chamber 1	719150	2762A-6	A-0015	1-18GHz	1685	I	12/29/2024	12/29/2022
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	1686	I	12/28/2024	12/28/2022
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz	1686	I	12/28/2024	12/28/2022
<b>Spectrum Analyzers / Receivers /Preselectors</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Gauss TDEMI Ultra 40	9kHz-40GHz	TDEMI Ultra 40	Gauss	2305001	2712	I	7/23/2025	7/23/2024
<b>Antennas</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Red-Black Bilog	30-2000MHz	JB1	Sunol	A091604-2	1106	I	10/2/2025	10/2/2023
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	3/27/2025	3/27/2023
3116C Horn / PA	18-40GHz	3116C	ETS	258845	2852	I	3/21/2026	3/21/2024
2615 Active Loop Antenna	9KHz-30MHz	6502	EMCO	2049	2615	I	1/18/2025	1/18/2023
<b>Preamps /Couplers Attenuators / Filters</b>	<b>Range</b>	<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
2116 BRF	0.009-18000MHz	BRM50702	Micro-Tronics	G226	2116	II	12/5/2024	12/5/2023
<b>Cables</b>	<b>Range</b>		<b>Mfr</b>			<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Asset #2054	9kHz - 18GHz		Florida RF			II	11/2/2024	11/2/2023
Asset #2608	9KHz-18GHz		Pasternack			II	11/2/2024	11/2/2023
Asset #2594	9KHz-40GHz		Carlisle			II	2/17/2025	2/17/2024
Asset #2595	9KHz-40GHz		Carlisle			II	2/17/2025	2/17/2024
Asset #2681	9KHz-18GHz		Pasternack			II	12/7/2024	12/7/2023
Asset #3011	9KHz-18GHz		Pasternack			II	11/2/2024	11/2/2023
<b>Meteorological Meters/Chambers</b>		<b>MN</b>	<b>Mfr</b>	<b>SN</b>	<b>Asset</b>	<b>Cat</b>	<b>Calibration Due</b>	<b>Calibrated on</b>
Asset 2848		SD700	EXTECH	A.115171	2848	I	1/13/2025	1/13/2023
Asset #2847		1235C97	Control Company	200435382	2847	I	8/18/2025	8/18/2022
Asset #2654		1235C97	Control Company	200477432	2654	I	8/18/2025	8/18/2022

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



### 4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber.
- b. For below 30MHz, a loop antenna with its lowest point 1m above the ground was placed 3m away from the EUT and it was rotated 0 and 90 degrees around its vertical axis.
- c. In 30MHz-1GHz range, a biconilog antenna was mounted on a variable-height antenna tower and placed 3m away from the EUT. Antenna height was varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were investigated. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. In 1GHz-18GHz range, a horn antenna 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.
- e. In 18-25GHz a smaller horn antenna was used to make measurements at 1m away from the EUT.
- f. For battery operated equipment, tests were performed using an external power supply.
- g. Following bandwidths were used during emissions testing:

Freq. (MHz)	RBW	VBW	Pre-scan	Final
0.009-0.15	200Hz	1kHz	Peak	Not required based on pre-scan data
0.15-30	9kHz	30kHz	Peak	Not required based on pre-scan data
30-1000	120kHz	300kHz	Peak	Quasi Peak
>1000	1MHz	3MHz	Peak	Peak Max Hold and RMS Power Avg (Max Hold)

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

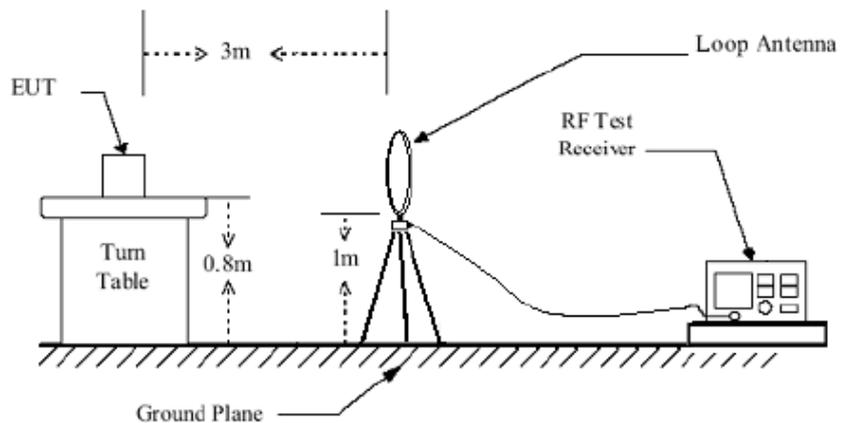
RMS power averaging default mode in measurement software is trace max-hold.

#### 4.1.4 DEVIATIONS

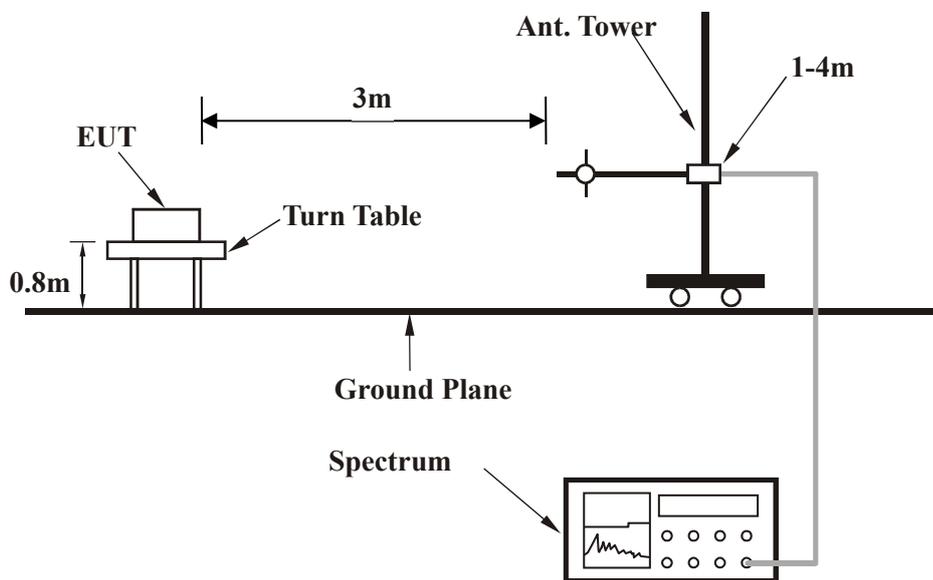
No deviations from the standard.

#### 4.1.5 TEST SETUP

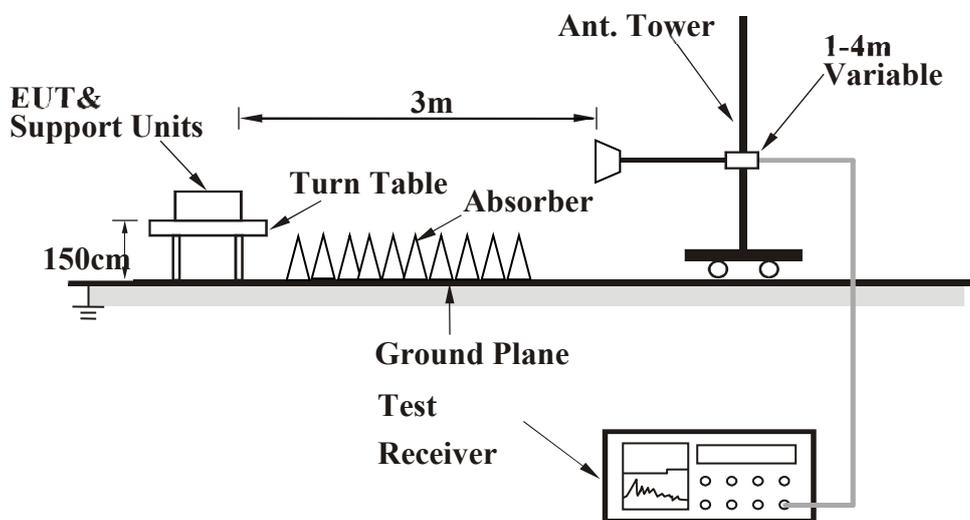
##### Below 30MHz Test Setup



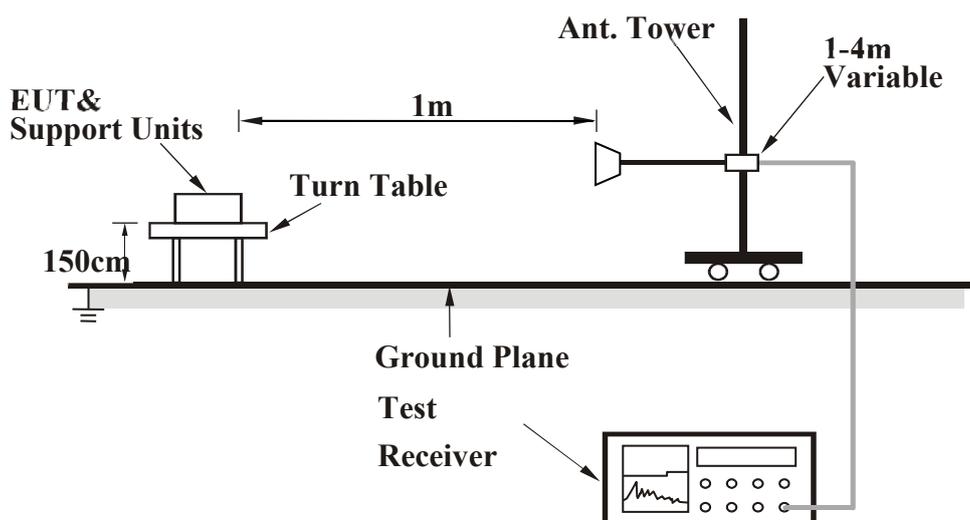
##### 30MHz - 1GHz Test Setup



## 1GHz – 18GHz Test Setup



## 18GHz – 25GHz Test Setup



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

### 4.1.6 EUT OPERATING CONDITIONS

EUT was operated according to the manufacturer's specifications.



BUREAU VERITAS

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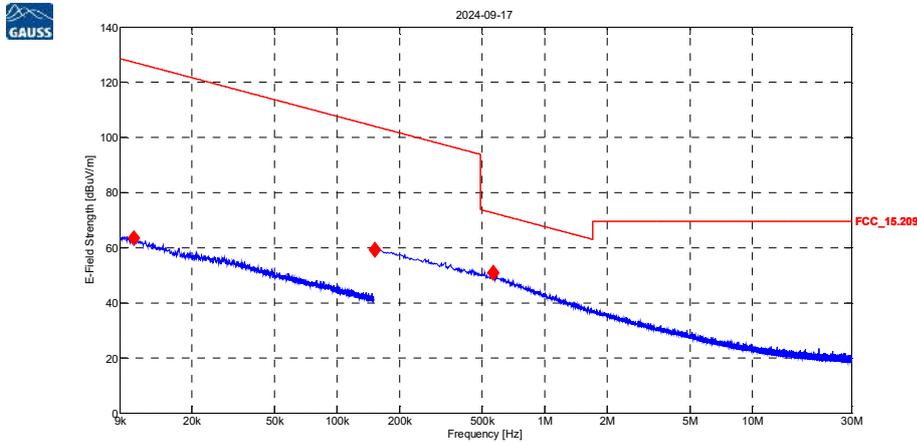


## 4.1.7 TEST RESULTS

### 9kHz-30MHz

#### BLE 1Mbps GFSK Channel 19

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



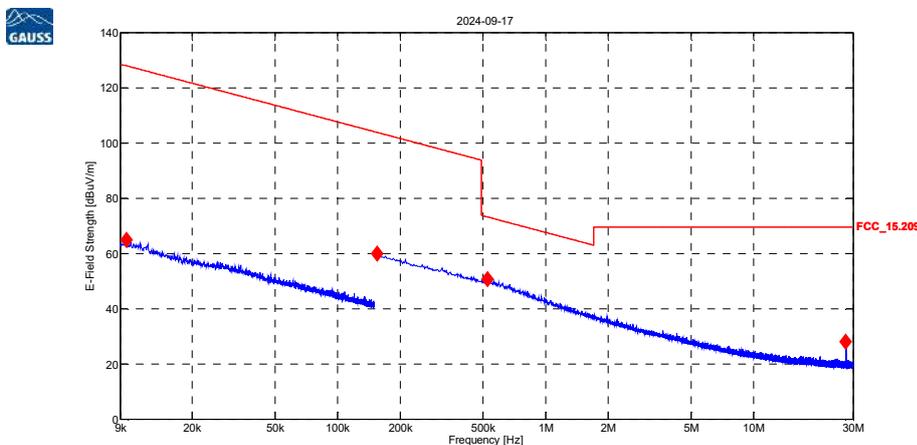
Scan1: 9.0 kHz, 100.0 Hz, 150.0 kHz; IF:200Hz, 100.0 ms MaxPeak, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Height [cm]	Angle [°]	Trans	Name
10.55 kHz	63.46	127.13	63.67	Parallel	100	355.476	18.34	FCC_15.209

Scan2: 150.0 kHz, 5.0 kHz, 30.0 MHz; IF:9kHz, 100.0 ms MaxPeak, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Height [cm]	Angle [°]	Trans	Name
152.5 kHz	59.22	103.94	44.71	Parallel	100	139.593	10.01	FCC_15.209
567.5 kHz	50.84	72.52	21.69	Parallel	100	21.484	10.21	FCC_15.209

#### 9k-30MHz Parallel, Plot and Data Table



Scan1: 9.0 kHz, 100.0 Hz, 150.0 kHz; IF:200Hz, 100.0 ms MaxPeak, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Height [cm]	Angle [°]	Trans	Name
9.65 kHz	64.92	127.90	62.99	Perpendicular	100	23.5	18.85	FCC_15.209

Scan2: 150.0 kHz, 5.0 kHz, 30.0 MHz; IF:9kHz, 100.0 ms MaxPeak, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Height [cm]	Angle [°]	Trans	Name
155 kHz	59.93	103.79	43.87	Perpendicular	100	94.798	10.01	FCC_15.209
525 kHz	50.68	73.20	22.52	Perpendicular	100	91.19	10.13	FCC_15.209
27.695 MHz	28.03	69.54	41.51	Perpendicular	100	290.439	8.54	FCC_15.209

#### 9k-30MHz Perpendicular, Plot and Data Table

Bureau Veritas Consumer Product Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

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



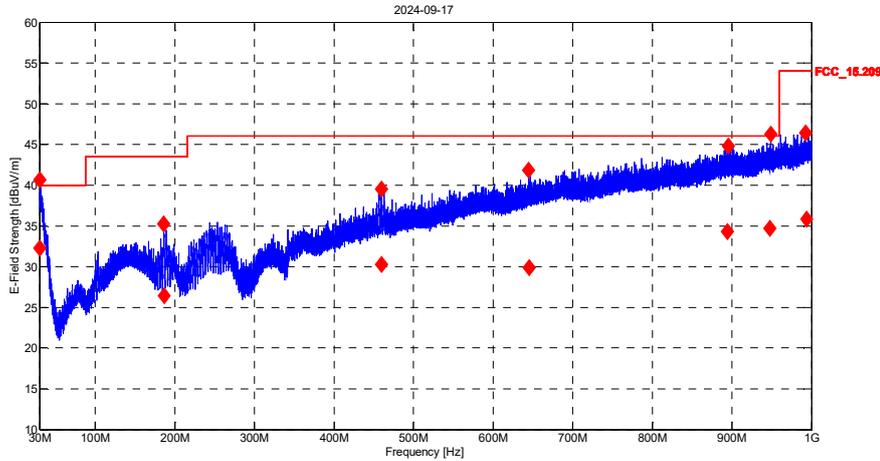
BUREAU VERITAS

# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



## 30-1000MHz

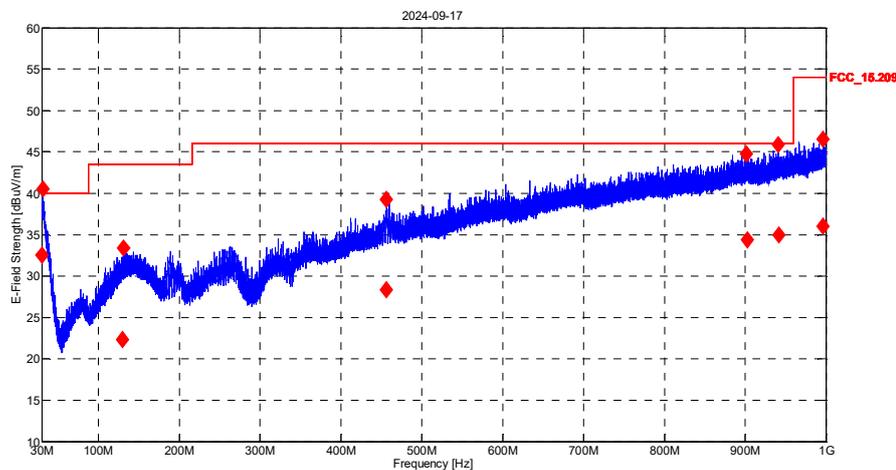
### BLE 1Mbps GFSK Channel 0



Final 1: 30.0 MHz, 50.0 kHz, 994.9 MHz; IF:120kHz, 200.0 ms QP, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
30 MHz	32.26	40.00	7.74	V	209.646	212.4	28.33	FCC 15.209
186.375 MHz	26.43	43.50	17.07	V	57.042	115.9	18.61	FCC 15.209
459.65 MHz	30.25	46.00	15.75	V	340.543	123.05	25.03	FCC 15.209
645.475 MHz	29.89	46.00	16.11	V	269.382	105.1	28.12	FCC 15.209
894.25 MHz	34.28	46.00	11.72	V	0	200	31.31	FCC 15.209
947.9 MHz	34.72	46.00	11.28	V	0	281.6	31.70	FCC 15.209
994.375 MHz	35.80	54.00	18.20	V	106.946	128.867	32.40	FCC 15.209

30-1000MHz Vertical, Plot and Data Table



Final 1: 30.0 MHz, 50.0 kHz, 998.5 MHz; IF:120kHz, 200.0 ms QP, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
30 MHz	32.53	40.00	7.47	H	156.294	203.5	28.33	FCC 15.209
129.975 MHz	22.34	43.50	21.16	H	233.759	119.58	21.27	FCC 15.209
456.3 MHz	28.38	46.00	17.62	H	65.602	207.275	24.93	FCC 15.209
902.85 MHz	34.35	46.00	11.65	H	215.396	245.772	31.33	FCC 15.209
941.9 MHz	34.95	46.00	11.05	H	198.035	145.84	31.59	FCC 15.209
996.05 MHz	36.05	54.00	17.95	H	269.912	200	32.50	FCC 15.209

30-1000MHz Horizontal, Plot and Data Table

Bureau Veritas Consumer Product Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

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

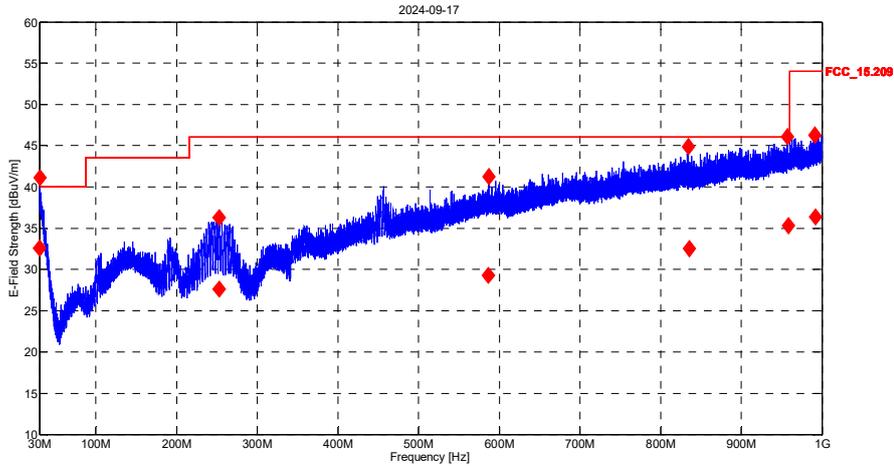


BUREAU VERITAS

# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



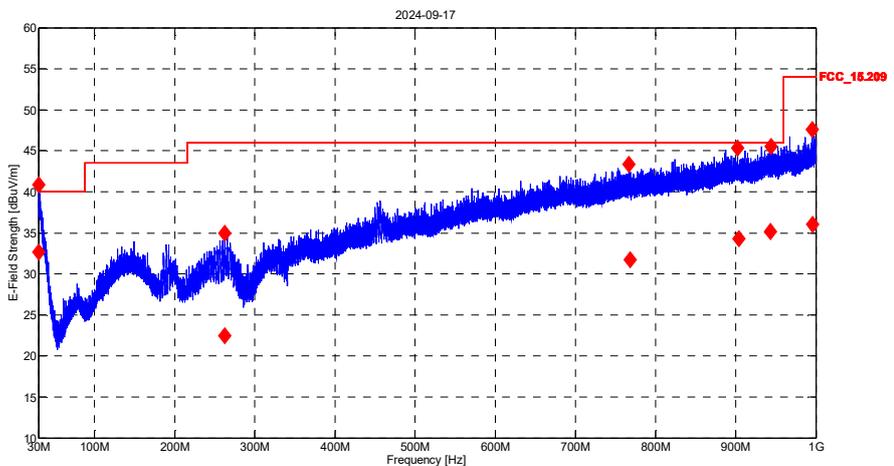
## BLE 1Mbps GFSK Channel 19



Final 1: 30.0 MHz, 50.0 kHz, 993.4 MHz; IF:120kHz, 200.0 ms QP, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
30 MHz	32.59	40.00	7.41	V	0	321.769	28.33	FCC 15.209
253.2 MHz	27.63	46.00	18.37	V	272.3	100	19.23	FCC 15.209
586.725 MHz	29.27	46.00	16.73	V	31.733	183.887	27.47	FCC 15.209
835.75 MHz	32.54	46.00	13.46	V	192.3	177.8	30.44	FCC 15.209
958.675 MHz	35.30	46.00	10.70	V	327.8	121.445	31.73	FCC 15.209
992.05 MHz	36.35	54.00	17.65	V	199.3	179.2	32.40	FCC 15.209

### 30-1000MHz Vertical, Plot and Data Table



Final 1: 30.0 MHz, 50.0 kHz, 997.9 MHz; IF:120kHz, 200.0 ms QP, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
30 MHz	32.65	40.00	7.35	H	358.9	271.737	28.33	FCC 15.209
262.725 MHz	22.45	46.00	23.55	H	286.9	100.667	19.75	FCC 15.209
768.5 MHz	31.74	46.00	14.26	H	168.352	176.211	29.78	FCC 15.209
903.925 MHz	34.31	46.00	11.69	H	350.3	161.6	31.33	FCC 15.209
943.4 MHz	35.19	46.00	10.81	H	322.5	134.222	31.60	FCC 15.209
996.05 MHz	36.01	54.00	17.99	H	38.452	133.8	32.50	FCC 15.209

### 30-1000MHz Horizontal, Plot and Data Table

Bureau Veritas Consumer Product  
Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

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Fax: (978) 486-8828

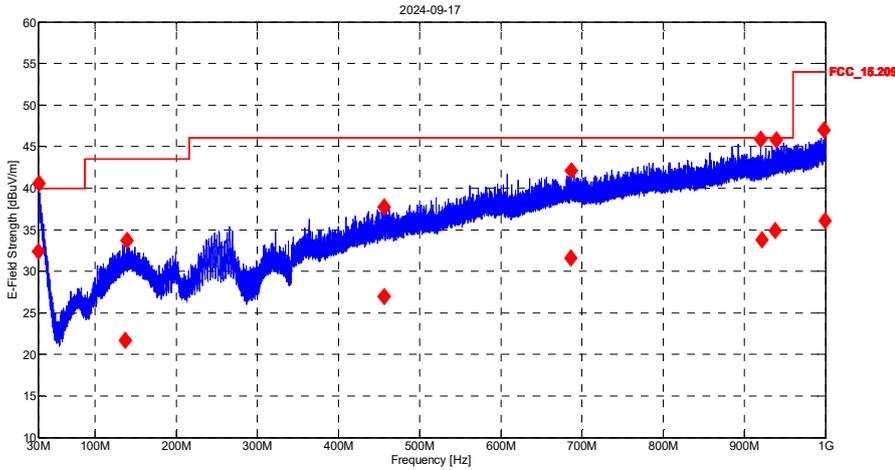


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# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



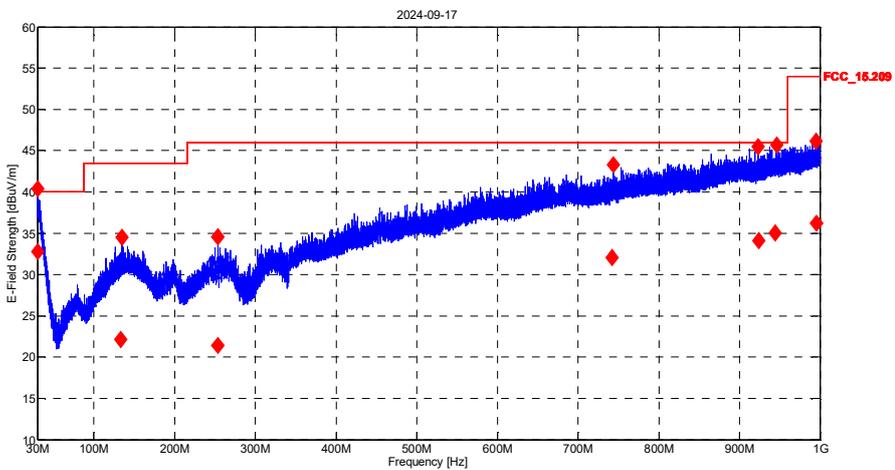
## BLE 1Mbps GFSK Channel 39



Final 1: 30.0 MHz, 50.0 kHz, 1.0 GHz; IF:120kHz, 200.0 ms QP, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
30 MHz	32.40	40.00	7.60	V	353.484	100	28.33	FCC 15.209
137.375 MHz	21.67	43.50	21.83	V	66.102	199.9	21.03	FCC 15.209
456.625 MHz	26.94	46.00	19.06	V	345.917	100.05	24.93	FCC 15.209
686.65 MHz	31.62	46.00	14.38	V	288.313	168.6	28.66	FCC 15.209
922.05 MHz	33.78	46.00	12.22	V	189.281	142.633	31.31	FCC 15.209
938.05 MHz	34.93	46.00	11.07	V	105.698	391.43	31.57	FCC 15.209
999.8 MHz	36.11	54.00	17.89	V	25.829	154.3	32.50	FCC 15.209

### 30-1000MHz Vertical, Plot and Data Table



Final 1: 30.0 MHz, 50.0 kHz, 997.1 MHz; IF:120kHz, 200.0 ms QP, Att 10dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
30 MHz	32.77	40.00	7.23	H	271.058	140.263	28.33	FCC 15.209
133.475 MHz	22.11	43.50	21.39	H	109.142	197.175	21.23	FCC 15.209
253.625 MHz	21.42	46.00	24.58	H	72.661	105.5	19.22	FCC 15.209
741.975 MHz	32.06	46.00	13.94	H	274.553	166.6	29.44	FCC 15.209
924.2 MHz	34.10	46.00	11.90	H	163.634	352.156	31.41	FCC 15.209
944.075 MHz	35.05	46.00	10.95	H	348.153	179.3	31.70	FCC 15.209
995.3 MHz	36.25	54.00	17.75	H	278.391	400	32.50	FCC 15.209

### 30-1000MHz Horizontal, Plot and Data Table

Bureau Veritas Consumer Product Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

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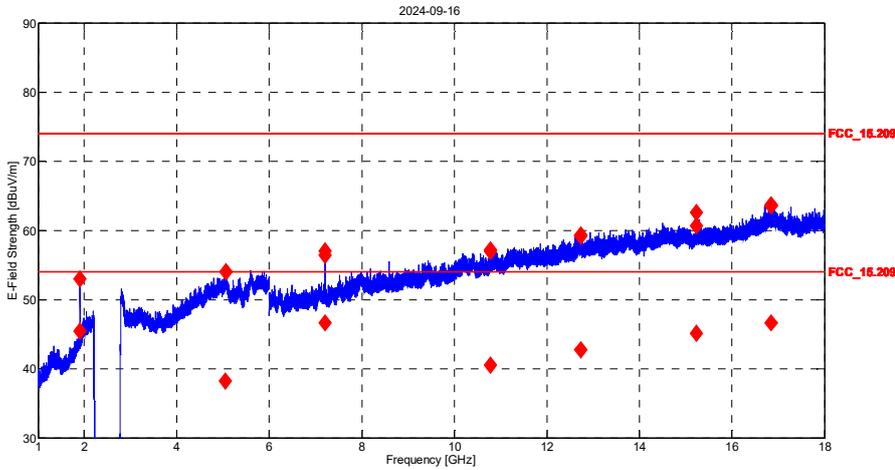
BUREAU  
VERITAS

# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



## 1-18GHz

### BLE 1Mbps GFSK Channel 0



Final 1: 1.9 GHz, 50.0 kHz, 16.9 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
1.9005 GHz	45.47	74.00	28.53	V	178.403	307.725	35.08	FCC 15.209
5.05625 GHz	53.98	74.00	20.02	V	305.234	131.368	39.91	FCC 15.209
7.205 GHz	57.04	74.00	16.96	V	31.778	167.077	42.70	FCC 15.209
10.786 GHz	56.95	74.00	17.05	V	128.4	168.027	46.22	FCC 15.209
12.73225 GHz	59.16	74.00	14.84	V	188.6	193.92	48.40	FCC 15.209
15.231 GHz	60.70	74.00	13.30	V	244.306	168.435	50.07	FCC 15.209
16.84825 GHz	63.67	74.00	10.33	V	209.967	109.444	52.65	FCC 15.209

Final 2: 1.9 GHz, 50.0 kHz, 16.9 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

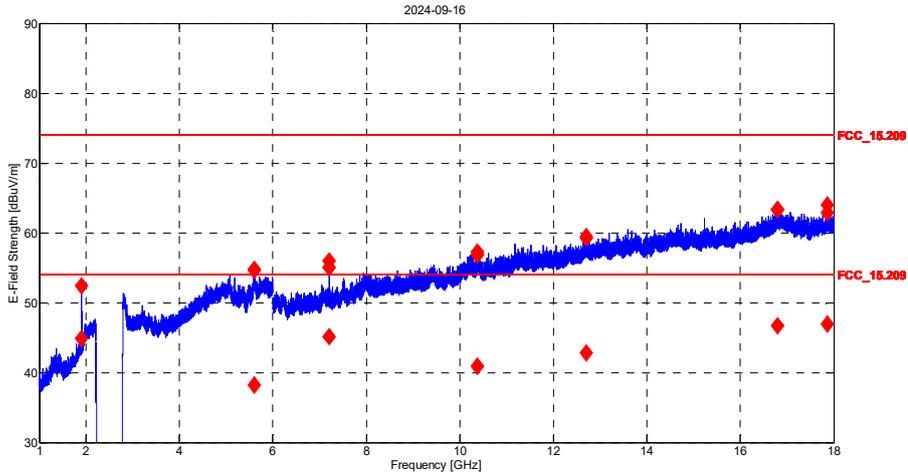
f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
1.90325 GHz	29.30	54.00	24.70	V	178.403	200	35.08	FCC 15.209
5.055 GHz	38.23	54.00	15.77	V	305.234	100	39.91	FCC 15.209
7.205 GHz	46.63	54.00	7.37	V	31.778	112.446	42.70	FCC 15.209
10.786 GHz	40.52	54.00	13.48	V	128.4	179.424	46.22	FCC 15.209
12.735 GHz	42.71	54.00	11.29	V	188.6	100	48.40	FCC 15.209
15.231 GHz	45.13	54.00	8.87	V	244.306	200	50.07	FCC 15.209
16.85025 GHz	46.62	54.00	7.38	V	209.967	100	52.65	FCC 15.209

### 1-18GHz Vertical, Plot and Data Table



BUREAU VERITAS

# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



Final 1: 1.9 GHz, 50.0 kHz, 17.9 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
1.9045 GHz	44.90	74.00	29.10	H	94.102	385.214	35.08	FCC 15.209
5.59975 GHz	54.78	74.00	19.22	H	27.563	182.569	41.80	FCC 15.209
7.20625 GHz	56.01	74.00	17.99	H	32.029	210.674	42.70	FCC 15.209
10.37875 GHz	56.90	74.00	17.10	H	271.614	234.978	46.29	FCC 15.209
12.70975 GHz	59.48	74.00	14.52	H	326.85	155.06	48.41	FCC 15.209
16.79275 GHz	63.41	74.00	10.59	H	10.982	163.977	52.64	FCC 15.209
17.85775 GHz	62.86	74.00	11.14	H	111.314	100	52.41	FCC 15.209

Final 2: 1.9 GHz, 50.0 kHz, 17.9 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
1.90375 GHz	29.50	54.00	24.50	H	94.102	344.87	35.08	FCC 15.209
5.59975 GHz	38.22	54.00	15.78	H	27.563	100.886	41.80	FCC 15.209
7.205 GHz	45.14	54.00	8.86	H	32.029	206.222	42.70	FCC 15.209
10.37575 GHz	40.89	54.00	13.11	H	271.614	200	46.29	FCC 15.209
12.71175 GHz	42.79	54.00	11.21	H	326.85	177.06	48.41	FCC 15.209
16.79275 GHz	46.74	54.00	7.26	H	10.982	100	52.64	FCC 15.209
17.8585 GHz	46.94	54.00	7.06	H	111.314	200	52.41	FCC 15.209

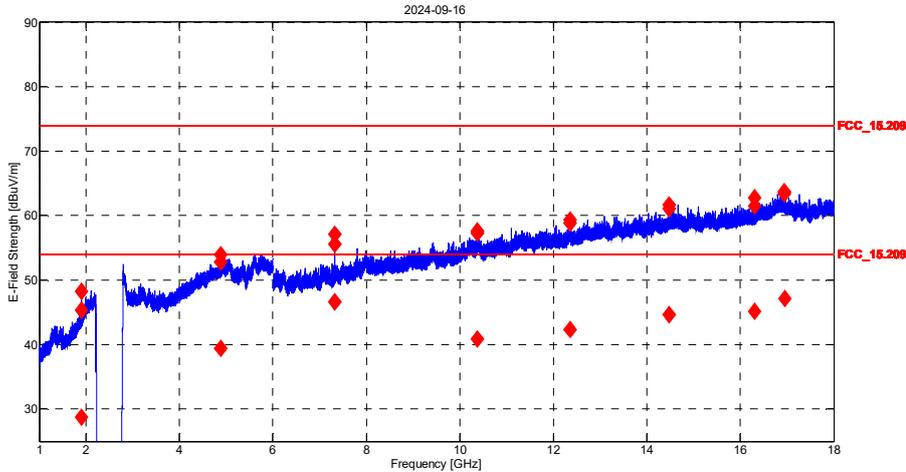
### 1-18GHz Horizontal, Plot and Data Table



Test Report for SmartSense by Digi  
Report No. EX0743-5-2 Issue 2



BLE 1Mbps GFSK Channel 19



Final 1: 1.9 GHz, 50.0 kHz, 16.9 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
1.89925 GHz	45.32	74.00	28.68	V	347.997	150.219	35.08	FCC 15.209
4.8795 GHz	52.80	74.00	21.20	V	116.528	100	40.22	FCC 15.209
7.31975 GHz	57.11	74.00	16.89	V	58.371	231.46	43.05	FCC 15.209
10.3775 GHz	57.29	74.00	16.71	V	91.129	137.8	46.29	FCC 15.209
12.36475 GHz	58.85	74.00	15.15	V	104.243	152.213	47.61	FCC 15.209
14.48 GHz	61.09	74.00	12.91	V	37.757	116.9	49.90	FCC 15.209
16.311 GHz	61.49	74.00	12.51	V	166.686	136.522	50.83	FCC 15.209
16.945 GHz	63.36	74.00	10.64	V	10.671	267.133	52.42	FCC 15.209

Final 2: 1.9 GHz, 50.0 kHz, 16.9 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
1.90325 GHz	28.73	54.00	25.27	V	347.997	119.981	35.08	FCC 15.209
4.8795 GHz	39.38	54.00	14.62	V	116.528	200.023	40.22	FCC 15.209
7.319 GHz	46.64	54.00	7.36	V	58.371	182.549	43.05	FCC 15.209
10.37775 GHz	40.89	54.00	13.11	V	91.129	100	46.29	FCC 15.209
12.362 GHz	42.36	54.00	11.64	V	104.243	185.678	47.61	FCC 15.209
14.4795 GHz	44.61	54.00	9.39	V	37.757	100	49.90	FCC 15.209
16.31025 GHz	45.18	54.00	8.82	V	166.686	191.621	50.83	FCC 15.209
16.9475 GHz	47.15	54.00	6.85	V	10.671	200	52.42	FCC 15.209

1-18GHz Vertical, Plot and Data Table



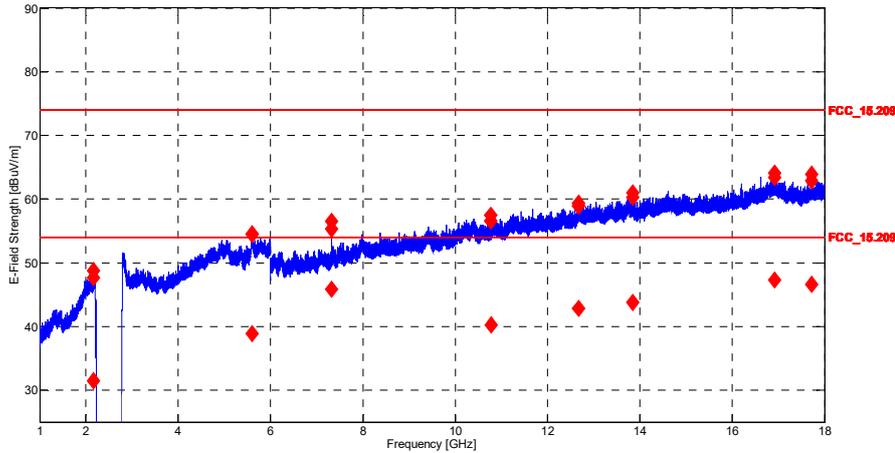
BUREAU VERITAS



# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



2024-09-16



Final 1: 2.2 GHz, 50.0 kHz, 17.7 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.1635 GHz	47.69	74.00	26.31	H	251.383	334.115	37.93	FCC 15.209
5.59925 GHz	54.57	74.00	19.43	H	272.683	135.272	41.81	FCC 15.209
7.319 GHz	56.55	74.00	17.45	H	298.186	245.339	43.05	FCC 15.209
10.77075 GHz	56.62	74.00	17.38	H	359	100	46.19	FCC 15.209
12.66975 GHz	59.31	74.00	14.69	H	134	343.465	48.31	FCC 15.209
13.84775 GHz	60.32	74.00	13.68	H	298.186	147.195	48.90	FCC 15.209
16.91625 GHz	63.42	74.00	10.58	H	202.357	194.138	52.52	FCC 15.209
17.71525 GHz	62.85	74.00	11.15	H	134	100.023	52.14	FCC 15.209

Final 2: 2.2 GHz, 50.0 kHz, 17.7 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.1635 GHz	31.46	54.00	22.54	H	251.383	200	37.93	FCC 15.209
5.602 GHz	38.91	54.00	15.09	H	272.683	175.957	41.81	FCC 15.209
7.319 GHz	45.82	54.00	8.18	H	298.186	137.265	43.05	FCC 15.209
10.77425 GHz	40.24	54.00	13.76	H	359	200	46.19	FCC 15.209
12.671 GHz	42.81	54.00	11.19	H	134	200	48.31	FCC 15.209
13.8445 GHz	43.78	54.00	10.22	H	298.186	185.762	48.90	FCC 15.209
16.917 GHz	47.35	54.00	6.65	H	202.357	100	52.52	FCC 15.209
17.714 GHz	46.66	54.00	7.34	H	134	200	52.14	FCC 15.209

### 1-18GHz Horizontal, Plot and Data Table

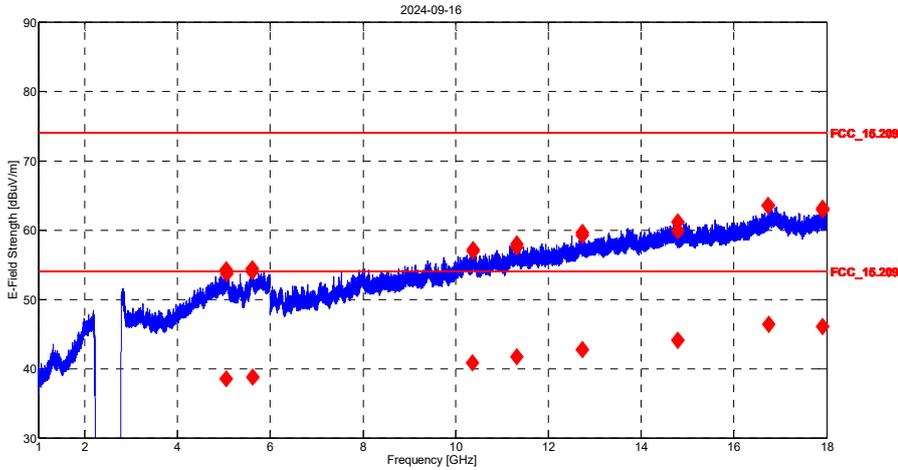


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# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



## BLE 1Mbps GFSK Channel 39



Final 1: 5.1 GHz, 50.0 kHz, 17.9 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
5.05375 GHz	54.26	74.00	19.74	V	115.872	118.076	39.91	FCC 15.209
5.61725 GHz	54.05	74.00	19.95	V	359	328.064	41.75	FCC 15.209
10.37025 GHz	56.98	74.00	17.02	V	179.233	160.489	46.21	FCC 15.209
11.324 GHz	57.51	74.00	16.49	V	359	376.359	46.92	FCC 15.209
12.72575 GHz	59.21	74.00	14.79	V	359	385.036	48.41	FCC 15.209
14.789 GHz	59.85	74.00	14.15	V	298.933	120.771	49.54	FCC 15.209
16.7415 GHz	63.52	74.00	10.48	V	130.8	199.982	52.51	FCC 15.209
17.911 GHz	63.10	74.00	10.90	V	117.467	176.684	52.33	FCC 15.209

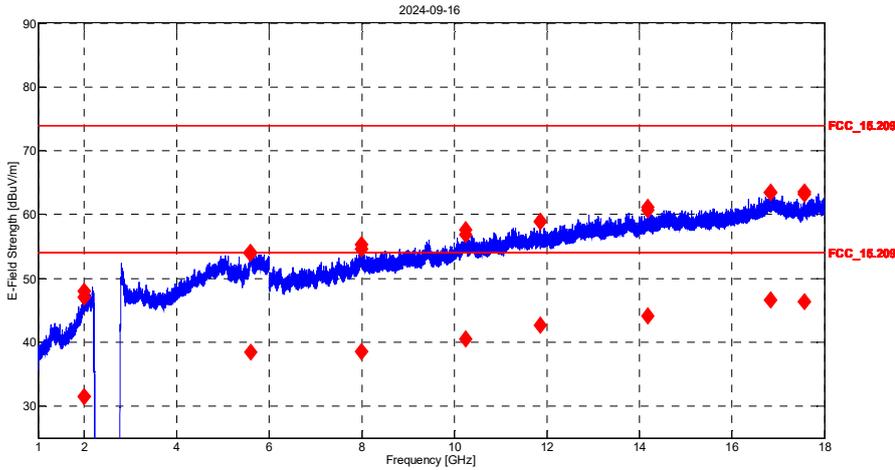
Final 2: 5.1 GHz, 50.0 kHz, 17.9 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
5.05375 GHz	38.52	54.00	15.48	V	115.872	100	39.91	FCC 15.209
5.6185 GHz	38.76	54.00	15.24	V	359	308.254	41.75	FCC 15.209
10.36625 GHz	40.85	54.00	13.15	V	179.233	185.93	46.21	FCC 15.209
11.322 GHz	41.72	54.00	12.28	V	359	300	46.92	FCC 15.209
12.7265 GHz	42.75	54.00	11.25	V	359	385.036	48.41	FCC 15.209
14.789 GHz	44.10	54.00	9.90	V	298.933	200	49.54	FCC 15.209
16.74475 GHz	46.37	54.00	7.63	V	130.8	100	52.51	FCC 15.209
17.91375 GHz	46.06	54.00	7.94	V	117.467	185.354	52.33	FCC 15.209

### 1-18GHz Vertical, Plot and Data Table



Test Report for SmartSense by Digi  
Report No. EX0743-5-2 Issue 2



Final 1: 2.0 GHz, 50.0 kHz, 17.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.00125 GHz	47.07	74.00	26.93	H	166.993	132.262	36.77	FCC 15.209
5.59125 GHz	54.10	74.00	19.90	H	325.945	116.608	41.79	FCC 15.209
7.99725 GHz	55.28	74.00	18.72	H	17.711	168.395	44.01	FCC 15.209
10.242 GHz	56.87	74.00	17.13	H	198.029	182.649	46.16	FCC 15.209
11.85675 GHz	58.96	74.00	15.04	H	256.904	255.553	47.38	FCC 15.209
14.18025 GHz	61.13	74.00	12.87	H	231.407	200.013	49.40	FCC 15.209
16.83625 GHz	63.44	74.00	10.56	H	135.957	104.427	52.66	FCC 15.209
17.5625 GHz	63.58	74.00	10.42	H	10.768	325.144	51.76	FCC 15.209

Final 2: 2.0 GHz, 50.0 kHz, 17.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2 GHz	31.53	54.00	22.47	H	166.993	190.368	36.77	FCC 15.209
5.5945 GHz	38.45	54.00	15.55	H	325.945	100	41.79	FCC 15.209
7.9965 GHz	38.58	54.00	15.42	H	17.711	179.389	44.01	FCC 15.209
10.24325 GHz	40.54	54.00	13.46	H	198.029	100	46.16	FCC 15.209
11.85675 GHz	42.71	54.00	11.29	H	256.904	300	47.38	FCC 15.209
14.181 GHz	44.09	54.00	9.91	H	231.407	107.538	49.40	FCC 15.209
16.838 GHz	46.63	54.00	7.37	H	135.957	200	52.66	FCC 15.209
17.5625 GHz	46.33	54.00	7.67	H	10.768	209.194	51.76	FCC 15.209

1-18GHz Horizontal, Plot and Data Table



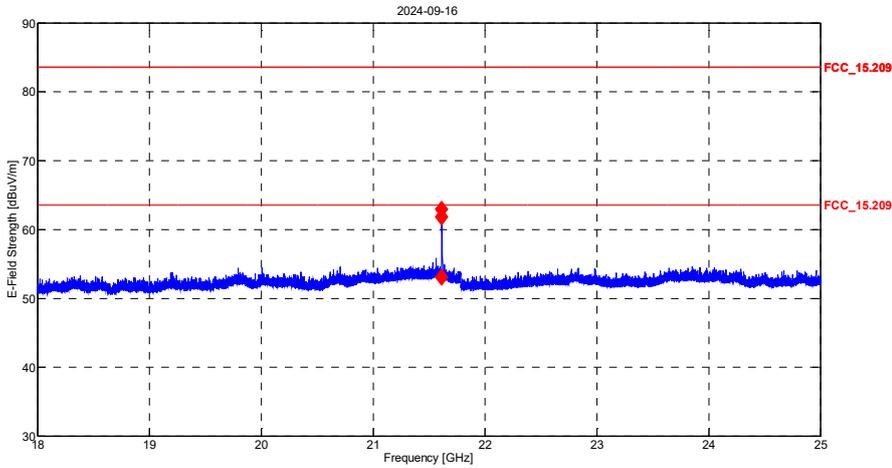
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# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



## 18-25GHz

### BLE 1Mbps GFSK Channel 0



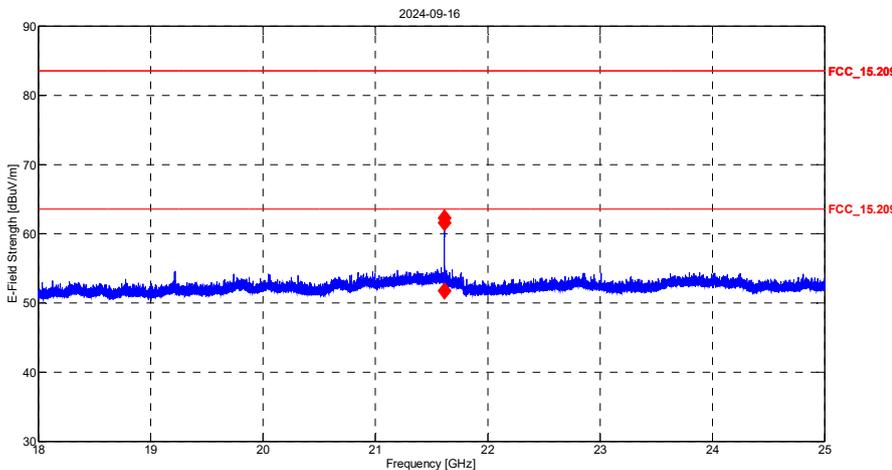
Final 1: 21.6 GHz, 50.0 kHz, 21.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
21.61525 GHz	62.86	83.50	20.64	V	26.838	177.8	12.97	FCC_15.209

Final 2: 21.6 GHz, 50.0 kHz, 21.6 GHz; IF:1MHz, 100.0 ms RMS, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
21.61525 GHz	53.02	63.50	10.48	V	26.838	172.4	12.97	FCC_15.209

### 18-25GHz Vertical, Plot and Data Table



Final 1: 21.6 GHz, 50.0 kHz, 21.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
21.61975 GHz	62.29	83.50	21.21	H	142.85	164.4	12.96	FCC_15.209

Final 2: 21.6 GHz, 50.0 kHz, 21.6 GHz; IF:1MHz, 100.0 ms RMS, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
21.61975 GHz	51.71	63.50	11.79	H	142.85	164.4	12.96	FCC_15.209

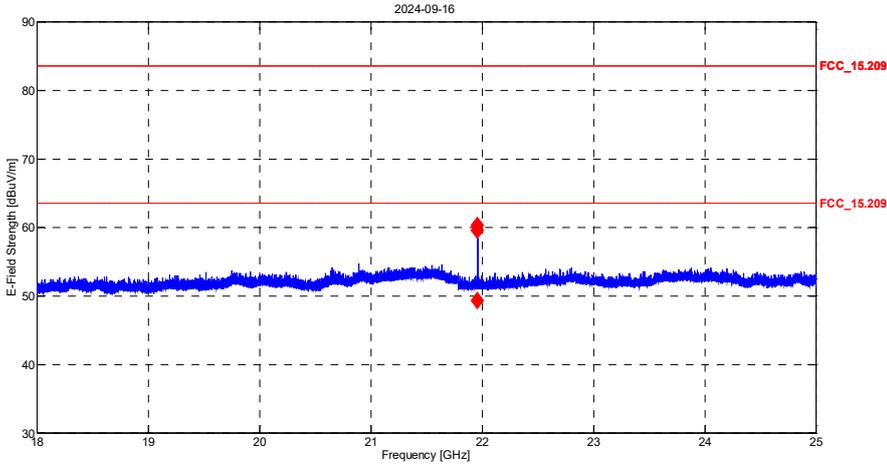
### 18-25GHz Horizontal, Plot and Data Table

Bureau Veritas Consumer Product Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

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

BLE 1Mbps GFSK Channel 19



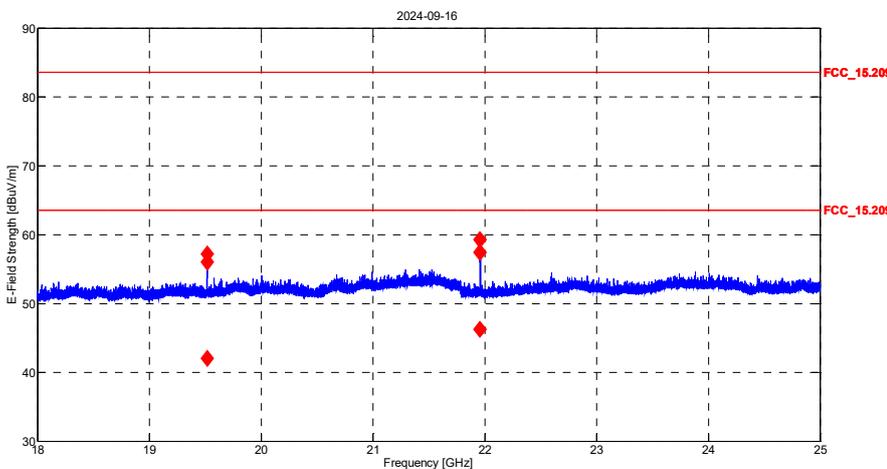
Final 1: 22.0 GHz, 50.0 kHz, 22.0 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
21.959 GHz	60.26	83.50	23.24	V	13.412	150.067	12.31	FCC_15.209

Final 2: 22.0 GHz, 50.0 kHz, 22.0 GHz; IF:1MHz, 100.0 ms RMS, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
21.957 GHz	49.32	63.50	14.18	V	13.412	150.067	12.31	FCC_15.209

18-25GHz Vertical, Plot and Data Table



Final 1: 19.5 GHz, 50.0 kHz, 22.0 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
19.519 GHz	57.20	83.50	26.30	H	97.664	131.7	12.14	FCC_15.209
21.959 GHz	57.39	83.50	26.11	H	131.175	193.583	12.31	FCC_15.209

Final 2: 19.5 GHz, 50.0 kHz, 22.0 GHz; IF:1MHz, 100.0 ms RMS, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
19.52125 GHz	42.05	63.50	21.45	H	97.664	129.4	12.14	FCC_15.209
21.957 GHz	46.21	63.50	17.29	H	131.175	191.217	12.31	FCC_15.209

18-25GHz Horizontal, Plot and Data Table

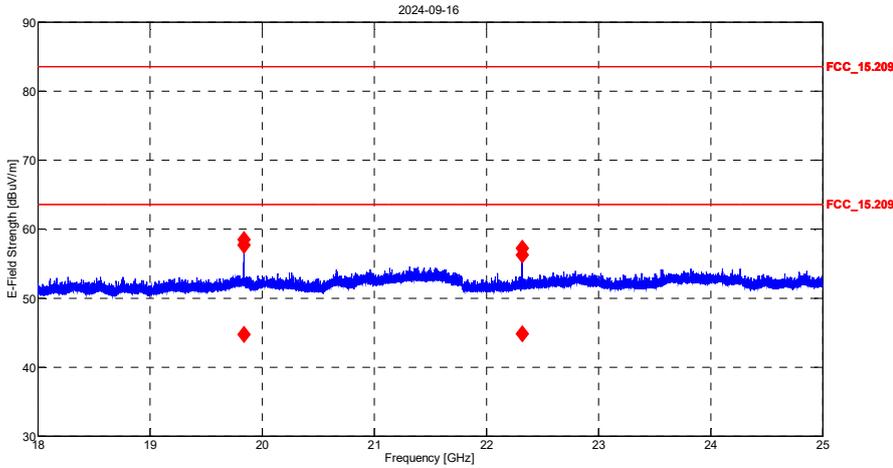


BUREAU VERITAS

# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



## BLE 1Mbps GFSK Channel 39



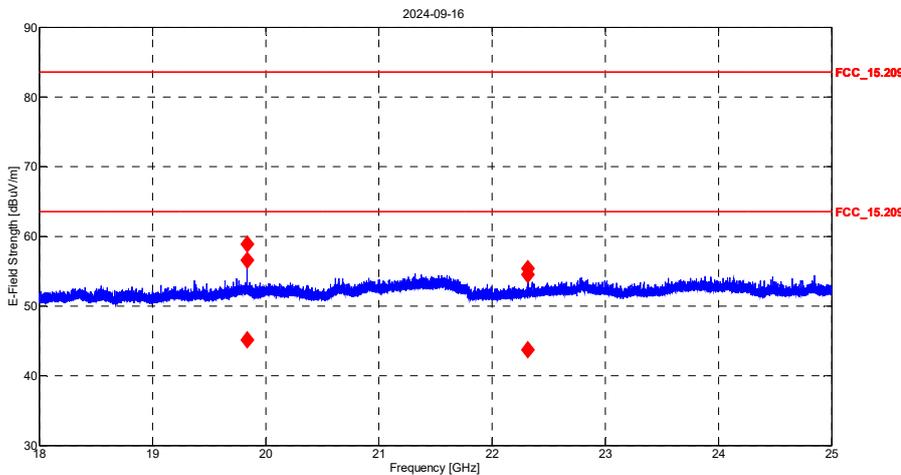
Final 1: 19.8 GHz, 50.0 kHz, 22.3 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
19.84025 GHz	58.49	83.50	25.01	V	30.455	173.357	12.64	FCC 15.209
22.3215 GHz	57.21	83.50	26.29	V	17.819	175.078	12.57	FCC 15.209

Final 2: 19.8 GHz, 50.0 kHz, 22.3 GHz; IF:1MHz, 100.0 ms RMS, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
19.8415 GHz	44.74	63.50	18.76	V	30.455	167.633	12.64	FCC 15.209
22.3215 GHz	44.83	63.50	18.67	V	17.819	174.252	12.57	FCC 15.209

## 18-25GHz Vertical, Plot and Data Table



Final 1: 19.8 GHz, 50.0 kHz, 22.3 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
19.84025 GHz	58.87	83.50	24.63	H	106.788	131.3	12.64	FCC 15.209
22.319 GHz	55.32	83.50	28.18	H	23.23	164.63	12.55	FCC 15.209

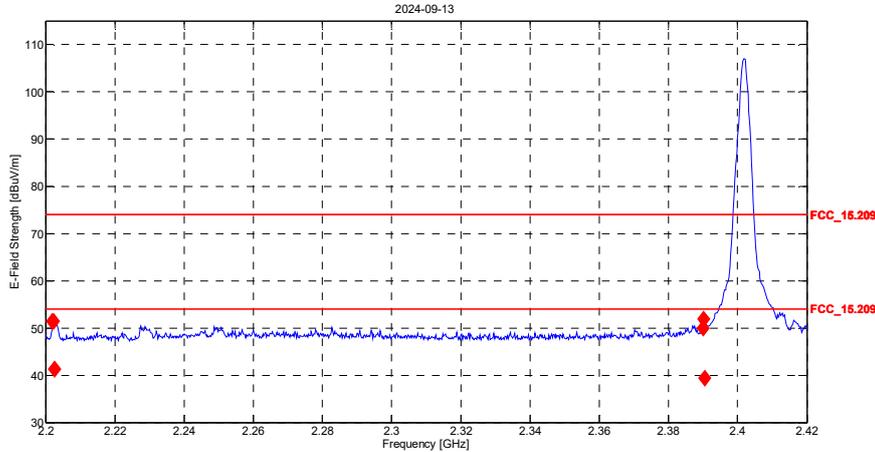
Final 2: 19.8 GHz, 50.0 kHz, 22.3 GHz; IF:1MHz, 100.0 ms RMS, Att 20dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
19.8415 GHz	45.13	63.50	18.37	H	106.788	128.567	12.64	FCC 15.209
22.317 GHz	43.71	63.50	19.79	H	23.23	164.63	12.55	FCC 15.209

## 18-25GHz Horizontal, Plot and Data Table

**Radiated Band-edge:**

**BLE 1Mbps GFSK**



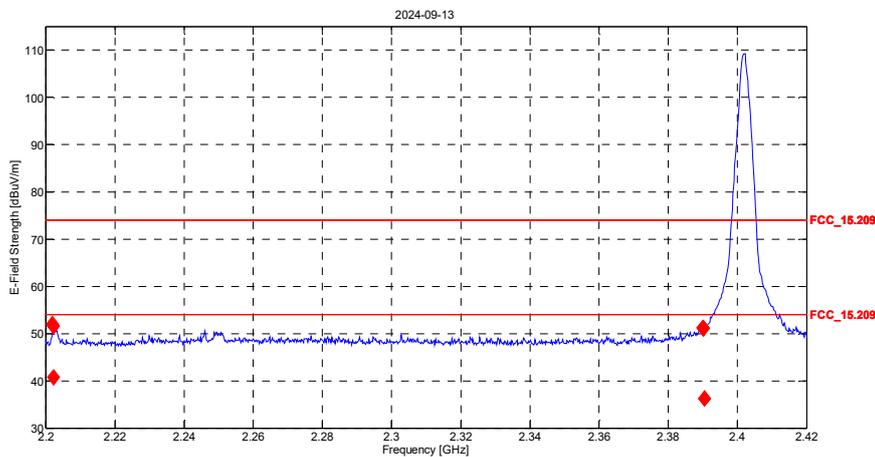
Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	51.46	74.00	22.54	V	264.134	195.474	34.40	FCC 15.209
2.39025 GHz	51.90	74.00	22.10	V	298.211	121.585	34.42	FCC 15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2025 GHz	41.27	54.00	12.73	V	264.134	189.978	34.40	FCC 15.209
2.3905 GHz	39.44	54.00	14.56	V	298.211	119.039	34.42	FCC 15.209

**CH-0 Vertical, Plot and Data Table**



Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	51.51	74.00	22.49	H	136.9	101.475	34.40	FCC 15.209
2.39025 GHz	51.08	74.00	22.92	H	99.717	247.594	34.42	FCC 15.209

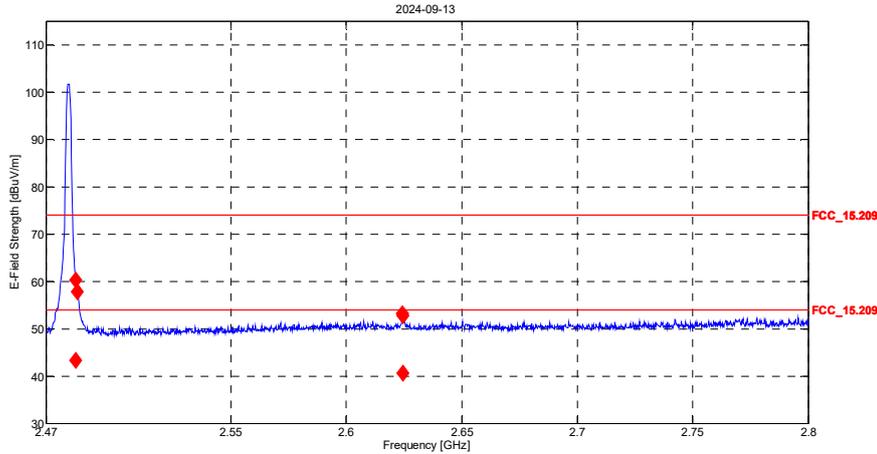
Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.20225 GHz	40.78	54.00	13.22	H	136.9	173.5	34.40	FCC 15.209
2.3905 GHz	36.29	54.00	17.71	H	99.717	218.325	34.42	FCC 15.209

**CH-0 Horizontal, Plot and Data Table**



**Test Report for SmartSense by Digi**  
**Report No. EX0743-5-2 Issue 2**



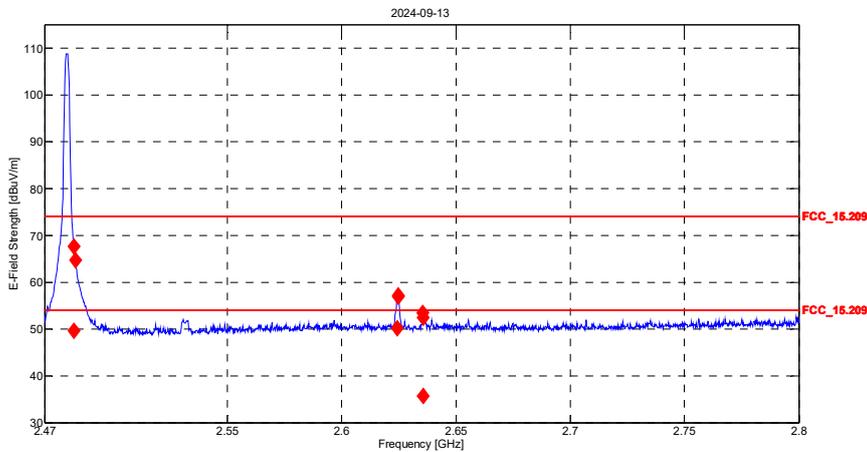
Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	60.29	74.00	13.71	V	253.747	373.7	35.00	FCC_15.209
2.6245 GHz	52.73	74.00	21.27	V	14.548	286.441	35.98	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	43.34	54.00	10.66	V	253.747	373.7	35.00	FCC_15.209
2.6245 GHz	40.57	54.00	13.43	V	14.548	107.065	35.98	FCC_15.209

**CH-39 Vertical, Plot and Data Table**



Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

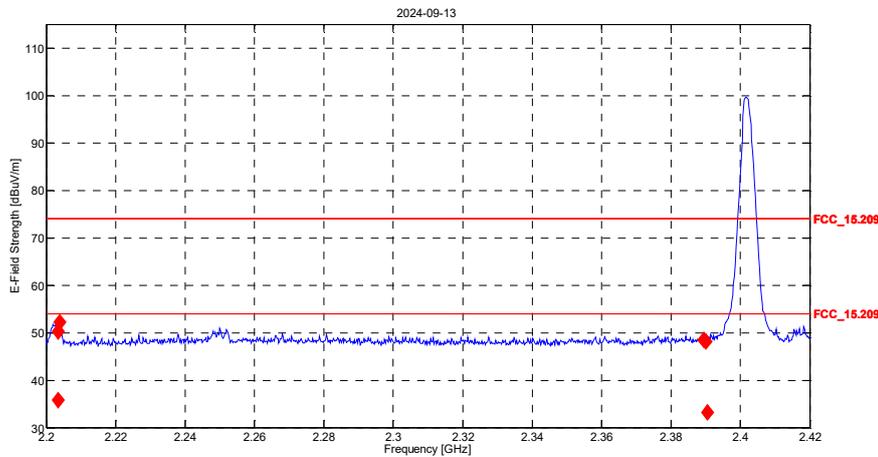
f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	67.65	74.00	6.35	H	317.235	100.005	35.00	FCC_15.209
2.62475 GHz	56.98	74.00	17.02	H	166.763	208.816	35.98	FCC_15.209
2.63575 GHz	52.44	74.00	21.56	H	176.676	333.356	36.02	FCC_15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	49.59	54.00	4.41	H	317.235	162.805	35.00	FCC_15.209
2.62425 GHz	50.15	54.00	3.85	H	166.763	202.11	35.98	FCC_15.209
2.63575 GHz	35.65	54.00	18.35	H	176.676	339.433	36.02	FCC_15.209

**Ch-39 Horizontal, Plot and Data Table**

BLE 2Mbps GFSK



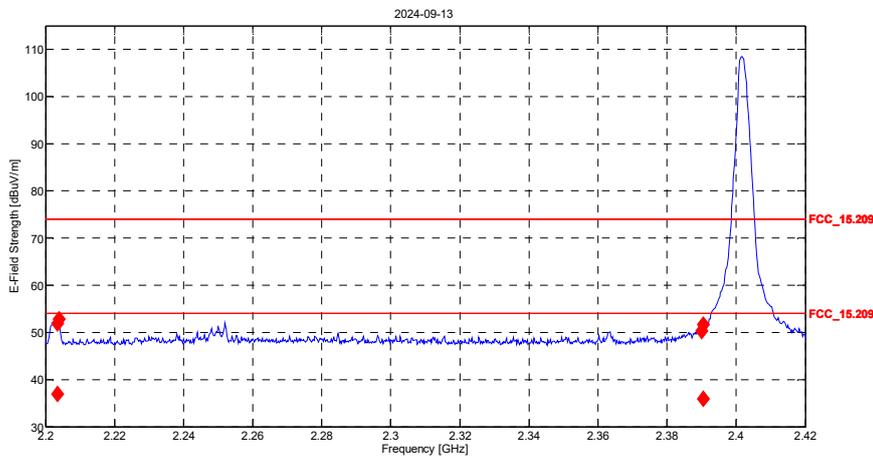
Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2035 GHz	50.31	74.00	23.69	V	271.559	100	34.40	FCC 15.209
2.3895 GHz	48.48	74.00	25.52	V	154.647	184.728	34.42	FCC 15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2035 GHz	35.77	54.00	18.23	V	271.559	100	34.40	FCC 15.209
2.3905 GHz	33.15	54.00	20.85	V	154.647	107.467	34.42	FCC 15.209

CH-0 Vertical, Plot and Data Table



Final 1: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2035 GHz	51.90	74.00	22.10	H	217.01	128.267	34.40	FCC 15.209
2.3905 GHz	51.61	74.00	22.39	H	137.235	234.75	34.42	FCC 15.209

Final 2: 2.2 GHz, 50.0 kHz, 2.4 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

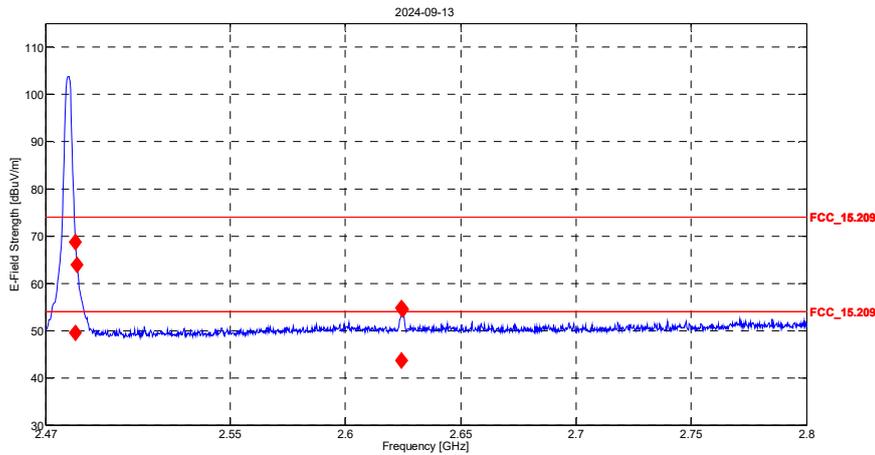
f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.2035 GHz	36.93	54.00	17.07	H	217.01	156.383	34.40	FCC 15.209
2.3905 GHz	35.88	54.00	18.12	H	137.235	126.3	34.42	FCC 15.209

CH-0 Horizontal, Plot and Data Table



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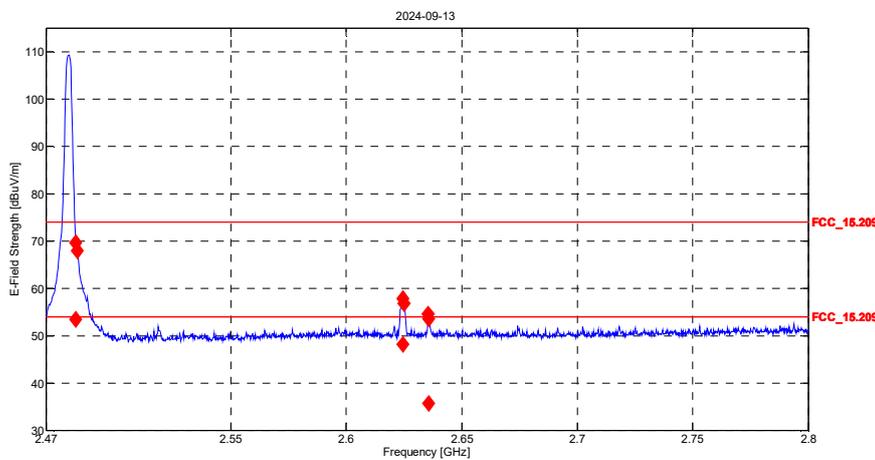
Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	68.79	74.00	5.21	V	253.015	378.886	35.00	FCC 15.209
2.62425 GHz	54.81	74.00	19.19	V	248.215	354.316	35.98	FCC 15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	49.56	54.00	4.44	V	253.015	378.886	35.00	FCC 15.209
2.62425 GHz	43.63	54.00	10.37	V	248.215	354.316	35.98	FCC 15.209

### CH-39 Vertical, Plot and Data Table



Final 1: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms MaxPeak, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	69.66	74.00	4.34	H	314.47	159.873	35.00	FCC 15.209
2.6245 GHz	57.79	74.00	16.21	H	329.915	116.175	35.99	FCC 15.209
2.63575 GHz	53.58	74.00	20.42	H	143.529	273.441	36.02	FCC 15.209

Final 2: 2.5 GHz, 50.0 kHz, 2.6 GHz; IF:1MHz, 100.0 ms RMS, Att 0dB

f	Mag [dBuV/m]	Limit	Diff	Polarization	Angle [°]	Height [cm]	Trans	Name
2.483 GHz	53.43	54.00	0.57	H	314.47	100	35.00	FCC 15.209
2.6245 GHz	48.12	54.00	5.88	H	329.915	162.725	35.99	FCC 15.209
2.63575 GHz	35.73	54.00	18.27	H	143.529	250.218	36.02	FCC 15.209

### CH-39 Horizontal, Plot and Data Table

Bureau Veritas Consumer Product Services Inc.

One Distribution Center Circle, #1  
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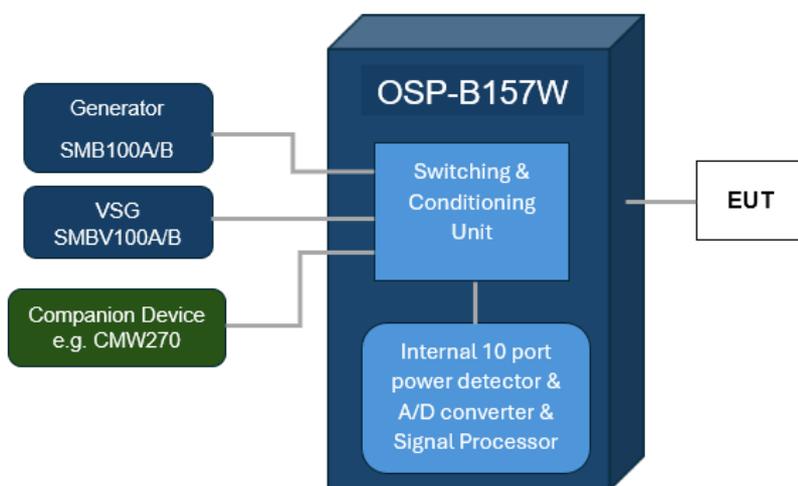
## 4.2 6dB CHANNEL BANDWIDTH & 99% OBW

### 4.2.1 LIMITS

The minimum 6 dB bandwidth shall be 500 kHz.

### 4.2.2 TEST SETUP

#### SCHEMATIC RF CABLING



### 4.2.3 TEST EQUIPMENT USED

Rev. 9/25/2024									
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	10/9/2024	10/9/2023	
Signal Generators/Comparison Noise Emitter	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
OSP-B157W8		OSP-B157W8	ROHDE & SCHWARZ	100955	2558	I	2/14/2026	2/14/2024	
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on	
API - 30dB 20W Attenuator	9KHz-40GHz	89-30-11	API Weinschel	703	2121	II	4/22/2025	4/22/2024	
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on	
Asset#2905	9Kh-26.5GHz		Mini-Circuits			II	4/22/2025	4/22/2024	

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



#### 4.2.4 TEST PROCEDURES

6dB CHANNEL BANDWIDTH (In accordance with ANSI C63.10-2013 Section 11.8.1)

- a. Set RBW = 100 kHz.
- b. Set the video bandwidth (VBW)  $\geq 3$  RBW.
- c. Detector = Peak.
- d. Trace mode = max hold.
- e. Sweep = auto couple.
- f. Allow the trace to stabilize.
- g. 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 (In accordance with ANSI C63.10-2013 Section 6.9.3)

- a. 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.
- b. 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.
- c. 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 ANSI C63.10-2013 4.1.5.2.
- d. Step a) through step c) might require iteration to adjust within the specified range.
- e. 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.
- f. Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

#### 4.2.5 DEVIATIONS

No deviations from the standard.

#### 4.2.6 EUT OPERATING CONDITIONS

EUT was operated according to manufacturer's specifications.



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**Test Report for SmartSense by Digi  
Report No. EX0743-5-2 Issue 2**



**4.2.7 TEST RESULTS**

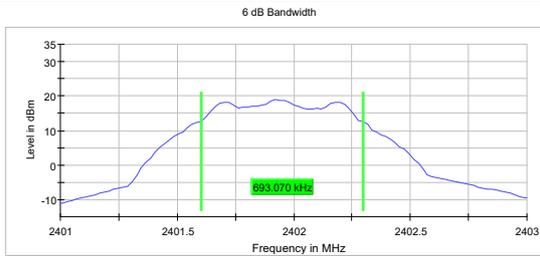
**1Mbps BLE (GFSK), 20dBm**

Test date: 09/26/2024

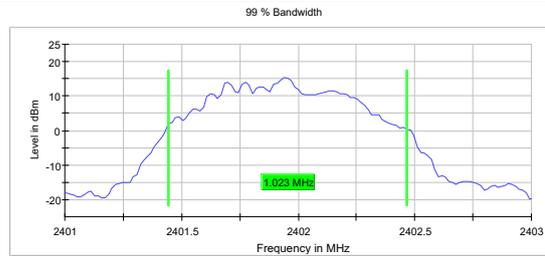
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	99% OBW (MHz)	PASS / FAIL
0	2402	0.693070	1.022556	Pass
19	2440	0.693070	1.022556	Pass
39	2480	0.693070	1.022556	Pass

**CH0**

**6dB Bandwidth**



**99% OBW**



**Measurement**

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
SweepTime	18.938 µs	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 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	8 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.07 dB	0.50 dB

**Measurement**

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	30.000 kHz	>= 30.000 kHz
VBW	100.000 kHz	>= 90.000 kHz
SweepPoints	133	~ 133
SweepTime	63.123 µs	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 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	7 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.04 dB	0.30 dB

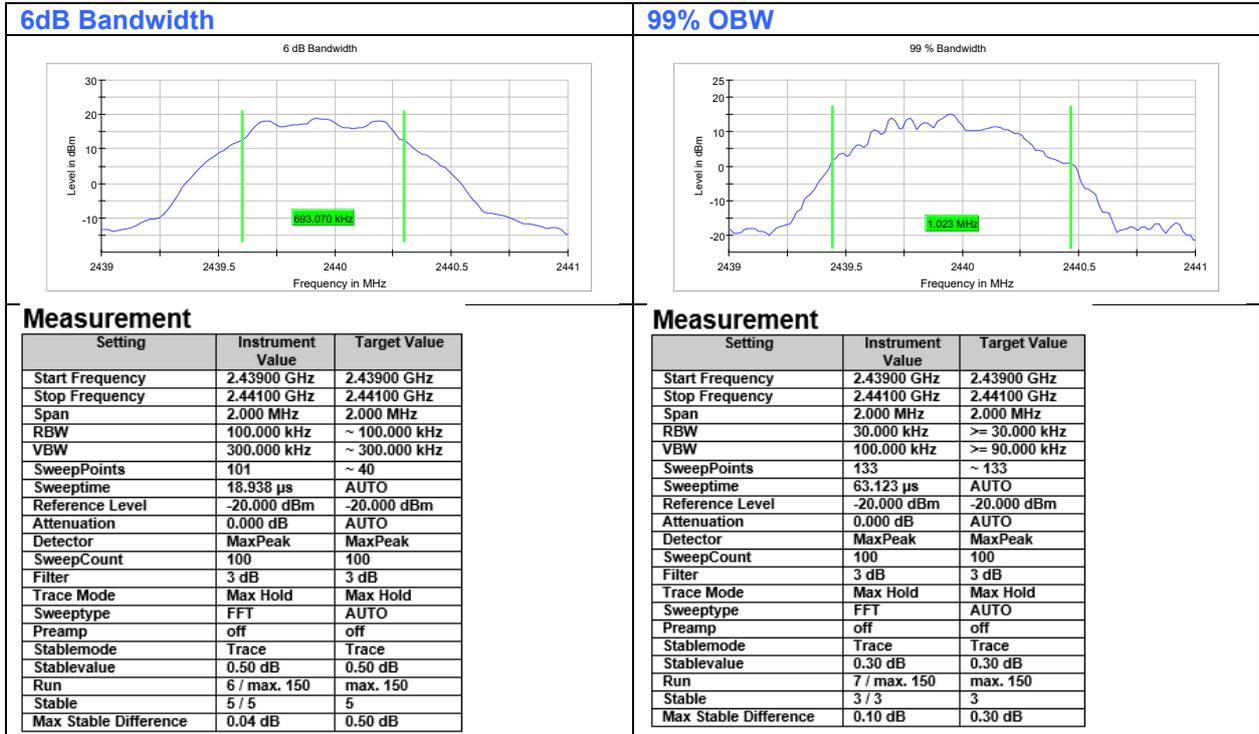


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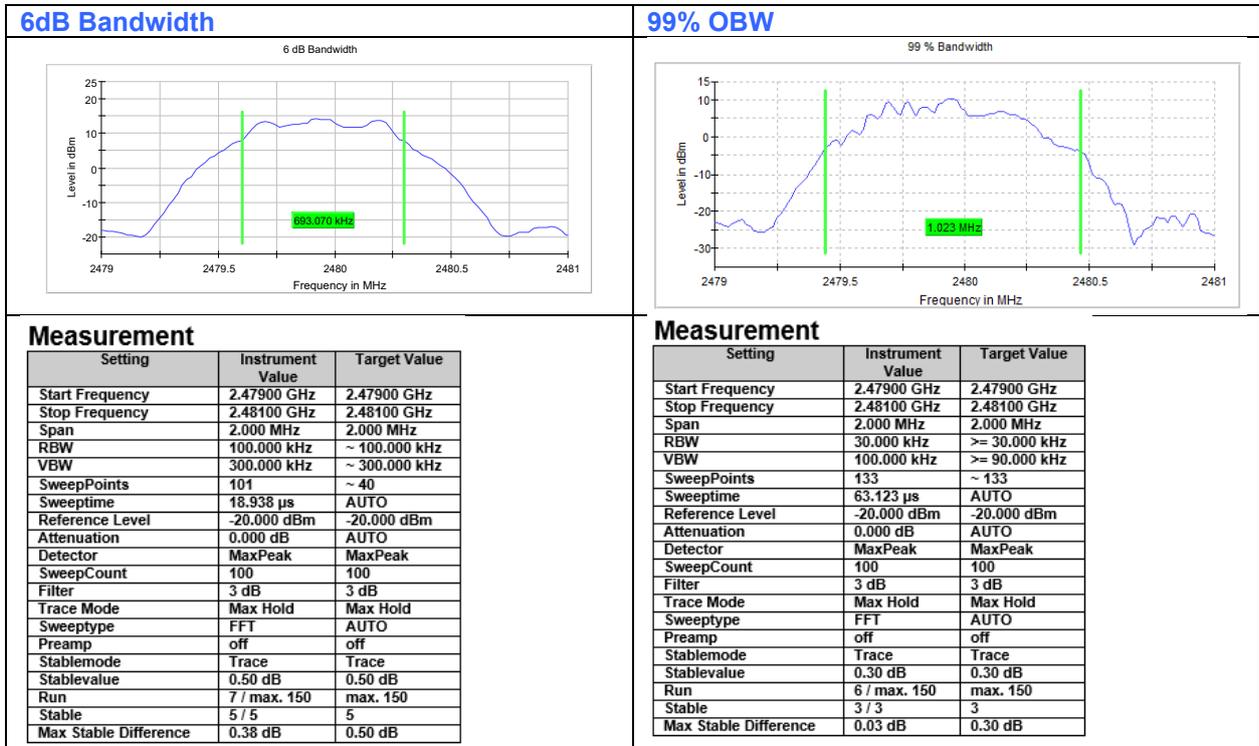
**Test Report for SmartSense by Digi  
Report No. EX0743-5-2 Issue 2**



**CH19**



**CH39**





Test Report for SmartSense by Digi  
Report No. EX0743-5-2 Issue 2



2Mbps BLE (GFSK), 16dBm

Test date: 09/26/2024

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	99% OBW (MHz)	PASS / FAIL
0	2402	1.188118	2.052434	PASS
19	2440	1.188118	2.067415	PASS
39	2480	1.188118	2.067415	PASS

CH0

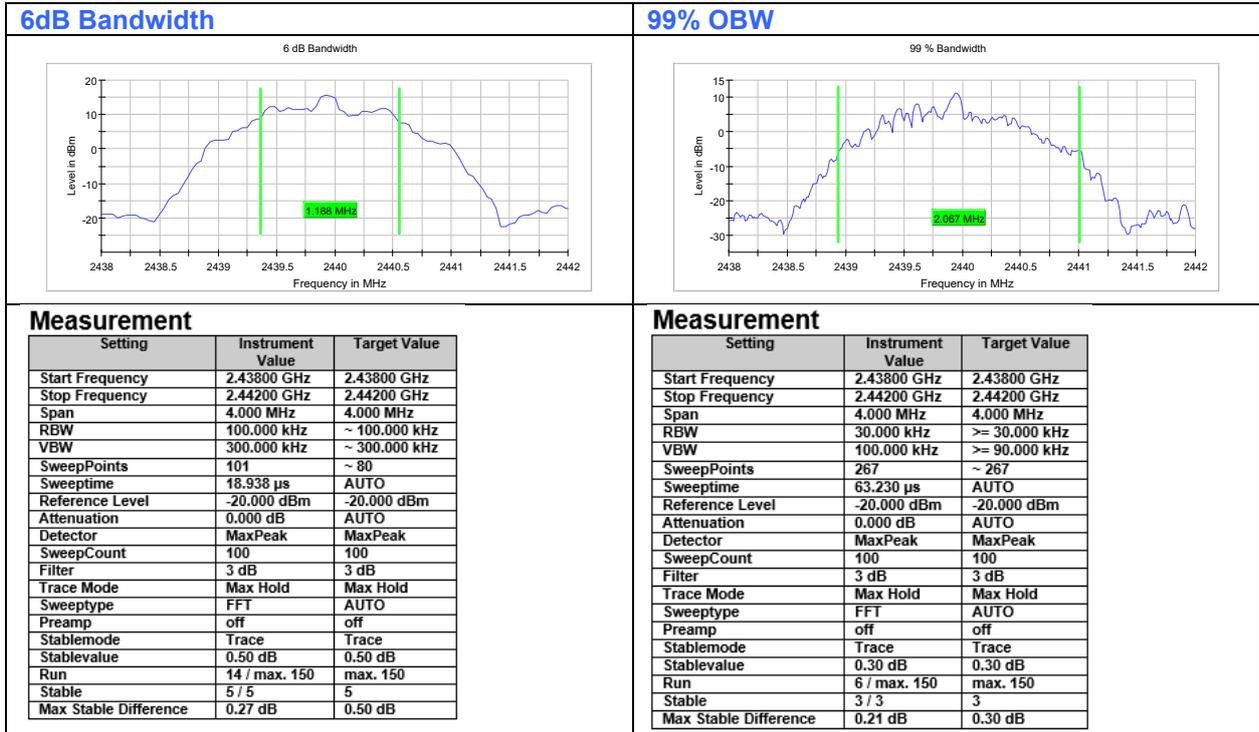
<p><b>6dB Bandwidth</b></p>	<p><b>99% OBW</b></p>																																																																																																																														
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Setting	Instrument Value	Target Value																																																																																																																													
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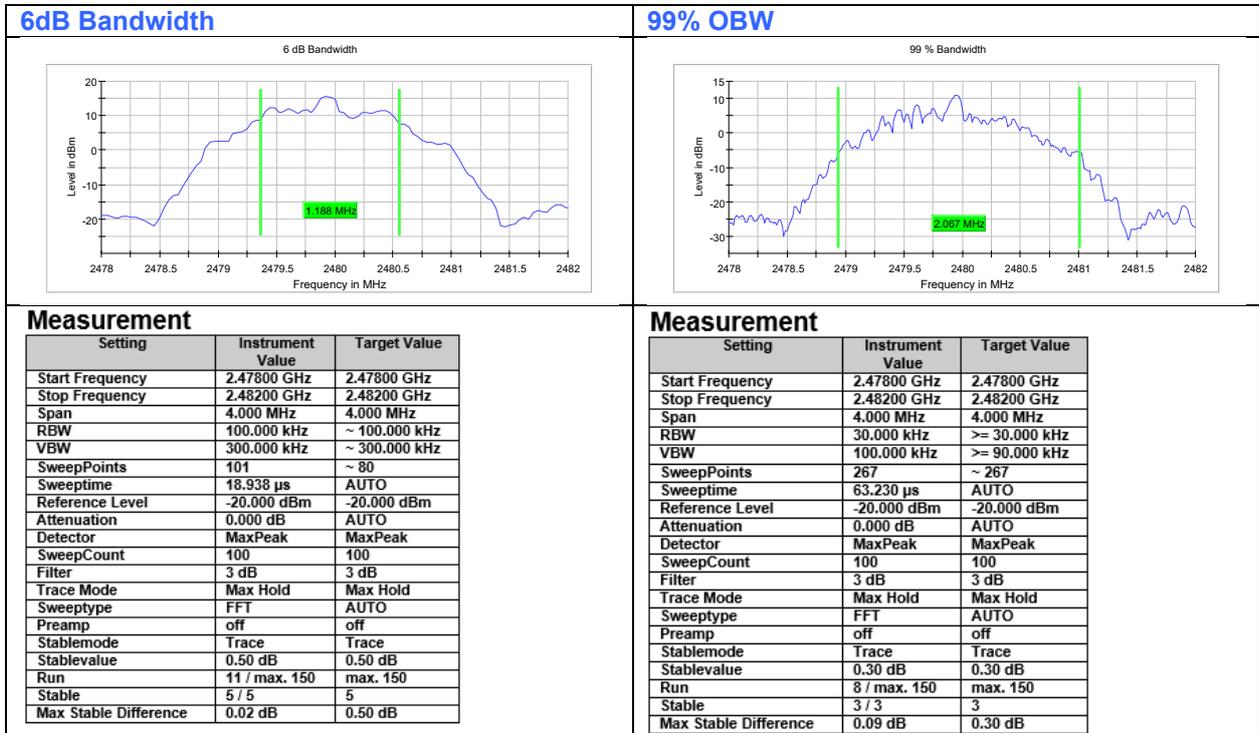
Test Report for SmartSense by Digi  
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## 4.3 CONDUCTED OUTPUT POWER

### 4.3.1 LIMITS

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

### 4.3.2 TEST SETUP

Refer to section 4.2.2.

### 4.3.3 TEST EQUIPMENT USED

Refer to section 4.2.3.

### 4.3.4 TEST PROCEDURES

Average conducted output power was measured in accordance with ANSI C63.10 - 2013 Section 11.9.2.3.2 (Method AVGPM-G).

### 4.3.5 DEVIATIONS

No deviations from the standard.

### 4.3.6 EUT OPERATING CONDITIONS

EUT was operated according to manufacturer's specifications



### 4.3.7 TEST RESULTS

#### 1Mbps BLE (GFSK), 20dBm

Test date: 09/26/2024

CHANNEL	CHANNEL FREQUENCY (MHz)	RMS POWER (dBm)	RMS POWER (mW)	LIMIT (W)	PASS/FAIL
0	2402	19.960	99.1	1	PASS
19	2440	19.978	99.5	1	PASS
39	2480	15.283	33.8	1	PASS

Channel	Channel Frequency (MHz)	RMS Power (dBm)	RMS Power (mW)	Limit (W)	Pass/Fail
Low Ch	2402	19.960	99.1	1	PASS
Mid Ch	2440	19.978	99.5	1	PASS
High Ch	2480	15.283	33.8	1	PASS



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2Mbps BLE (GFSK), 16dBm

Test date: 09/26/2024

CHANNEL	CHANNEL FREQUENCY (MHz)	RMS POWER (dBm)	RMS POWER (mW)	LIMIT (W)	PASS/FAIL
0	2402	16.658	46.3	1	PASS
19	2440	16.700	46.8	1	PASS
39	2480	16.672	46.5	1	PASS

Channel	Channel Frequency (MHz)	RMS Power (dBm)	RMS Power (mW)	Limit (W)	Pass/Fail
Low Ch	2402	16.658	46.3	1	PASS
Mid Ch	2440	16.700	46.8	1	PASS
High Ch	2480	16.672	46.5	1	PASS



## 4.4 POWER SPECTRAL DENSITY

### 4.4.1 LIMITS

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

### 4.4.2 TEST SETUP

Refer to section 4.2.2.

### 4.4.3 TEST EQUIPMENT USED

Refer to section 4.2.3.

### 4.4.4 TEST PROCEDURES

In accordance with ANSI C63.10-2013 Section 11.10.2 (Method PKPSD (Peak PSD)).

1. Set the span to 1.5 times the DTS bandwidth
2. Set the RBW = 3 kHz, VBW  $\geq$  3 x 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.

### 4.4.5 DEVIATIONS

No deviations from the standard.

### 4.4.6 EUT OPERATING CONDITIONS

EUT was operated according to manufacturer's specifications.



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**Test Report for SmartSense by Digi  
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**4.4.7 TEST RESULTS**

**1Mbps BLE (GFSK), 20dBm**

Test date: 09/26/2024

Channel	FREQ. (MHz)	PSD (dBm)	Limit (dBm)	PASS /FAIL
0	2402	4.151	8	PASS
19	2440	3.991	8	PASS
39	2480	-0.557	8	PASS

**Low Ch**

Peak Power Spectral Density

Level in dBm

Frequency in MHz

— Limit — Sum Level — PSD

**Measurement**

Setting	Instrument Value	Target Value
Start Frequency	2.40148 GHz	2.40148 GHz
Stop Frequency	2.40252 GHz	2.40252 GHz
Span	1.040 MHz	1.040 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	693	~ 693
SweepTime	11.600 ms	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	5 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.32 dB	0.50 dB

---

Peak Power Spectral Density

Level in dBm

Frequency in MHz

— Limit — Sum Level — PSD

**Measurement**

Setting	Instrument Value	Target Value
Start Frequency	2.43948 GHz	2.43948 GHz
Stop Frequency	2.44052 GHz	2.44052 GHz
Span	1.040 MHz	1.040 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	693	~ 693
SweepTime	11.600 ms	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	5 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.35 dB	0.50 dB

---

Peak Power Spectral Density

Level in dBm

Frequency in MHz

— Limit — Sum Level — PSD

**Measurement**

Setting	Instrument Value	Target Value
Start Frequency	2.47948 GHz	2.47948 GHz
Stop Frequency	2.48052 GHz	2.48052 GHz
Span	1.040 MHz	1.040 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	693	~ 693
SweepTime	11.600 ms	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	3 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.11 dB	0.50 dB

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Littleton, MA

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# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



## 2Mbps BLE (GFSK), 16dBm

Test date: 09/26/2024

Channel	FREQ. (MHz)	PSD (dBm)	Limit (dBm)	PASS /FAIL
0	2402	-0.187	8	PASS
19	2440	-0.166	8	PASS
39	2480	-0.198	8	PASS

### Low Ch

Peak Power Spectral Density

Level in dBm

Frequency in MHz

— Limit — Sum Level — PSD

#### Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40111 GHz	2.40111 GHz
Stop Frequency	2.40289 GHz	2.40289 GHz
Span	1.782 MHz	1.782 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	1188	~ 1188
SweepTime	19.900 ms	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	3 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.14 dB	0.50 dB

---

Peak Power Spectral Density

Level in dBm

Frequency in MHz

— Limit — Sum Level — PSD

#### Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43911 GHz	2.43911 GHz
Stop Frequency	2.44089 GHz	2.44089 GHz
Span	1.782 MHz	1.782 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	1188	~ 1188
SweepTime	19.900 ms	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	3 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.26 dB	0.50 dB

---

Peak Power Spectral Density

Level in dBm

Frequency in MHz

— Limit — Sum Level — PSD

#### Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47911 GHz	2.47911 GHz
Stop Frequency	2.48089 GHz	2.48089 GHz
Span	1.782 MHz	1.782 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	1188	~ 1188
SweepTime	19.900 ms	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	3 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.11 dB	0.50 dB

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## 4.5 CONDUCTED SPURIOUS EMISSIONS AND BAND-EDGES

### 4.5.1 LIMITS

30dB below the highest emission level in the operating band (in 100kHz RBW).

### 4.5.2 TEST SETUP

Refer to section 4.2.2.

### 4.5.3 TEST EQUIPMENT USED

Refer to section 4.2.3.

### 4.5.4 TEST PROCEDURES

In accordance with ANSI C63.10-2013 Section 11.11.

## 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.

### 4.5.5 DEVIATIONS

No deviations from the standard.

### 4.5.6 EUT OPERATING CONDITIONS

EUT was operated according to manufacturer's specifications.



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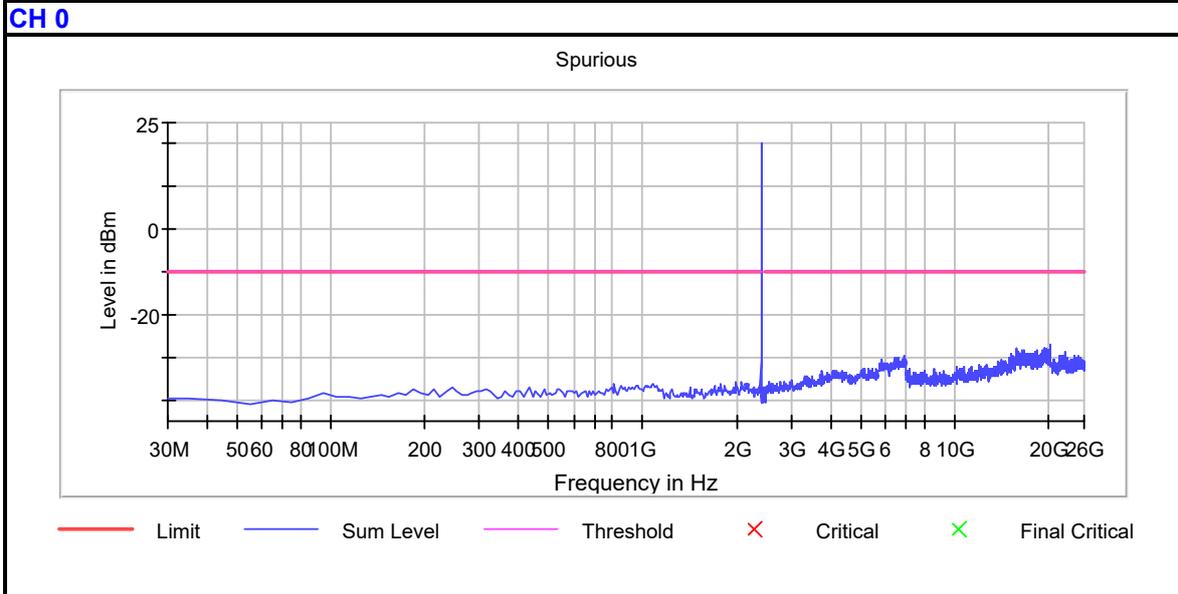
# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



## 4.5.7 TEST RESULTS

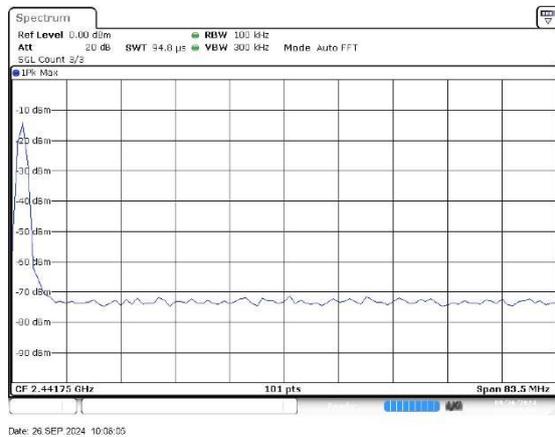
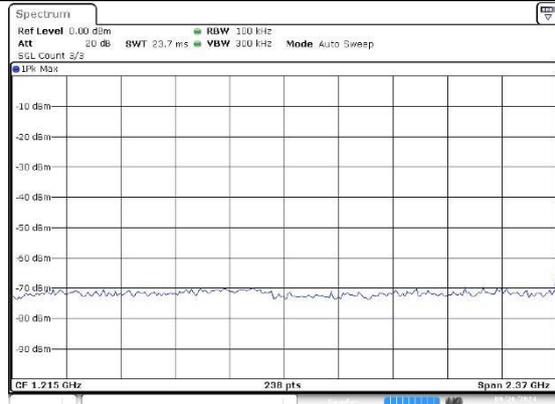
### Conducted Spurious Emission 1Mbps BLE (GFSK), 20dBm

Test date: 09/26/2024



### Pre Measurements

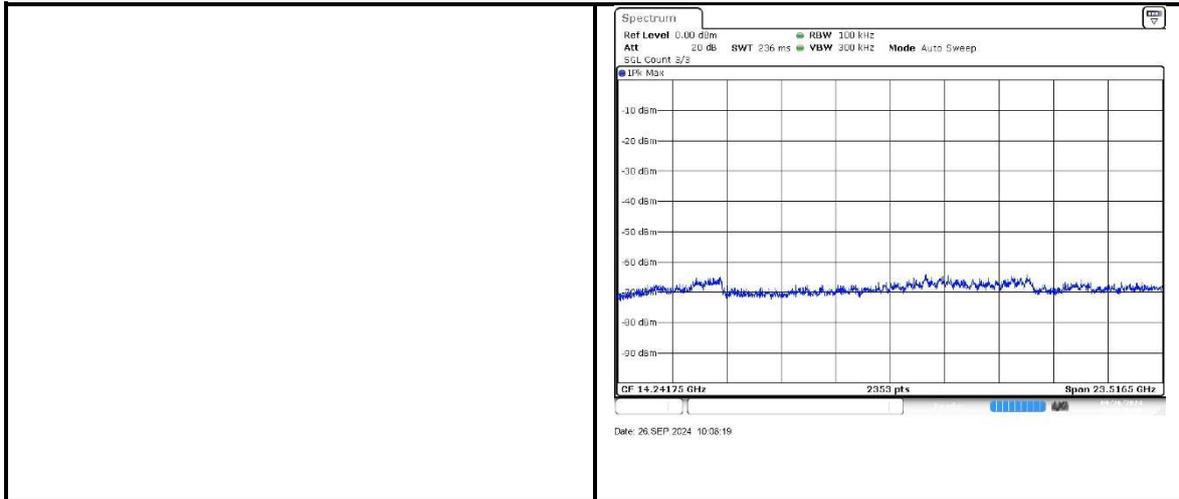
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
20148.359222	-27.2	17.4	-9.9
19468.749363	-27.8	17.9	-9.9
19488.737888	-27.8	17.9	-9.9
15780.866447	-28.0	18.1	-9.9
19588.680514	-28.1	18.3	-9.9
19898.502656	-28.2	18.3	-9.9
20108.382172	-28.2	18.3	-9.9
16740.315661	-28.2	18.3	-9.9
20248.301849	-28.2	18.4	-9.9
19868.519868	-28.3	18.4	-9.9
20158.353485	-28.3	18.4	-9.9
15720.900871	-28.3	18.5	-9.9
18459.328836	-28.4	18.5	-9.9
19498.732150	-28.5	18.6	-9.9
16500.453357	-28.5	18.7	-9.9



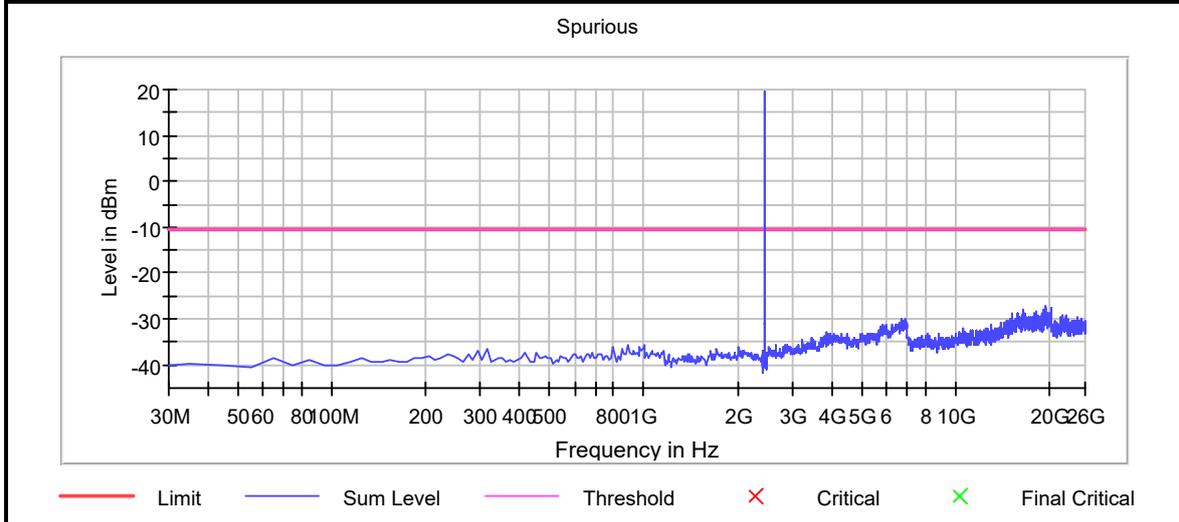


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# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2

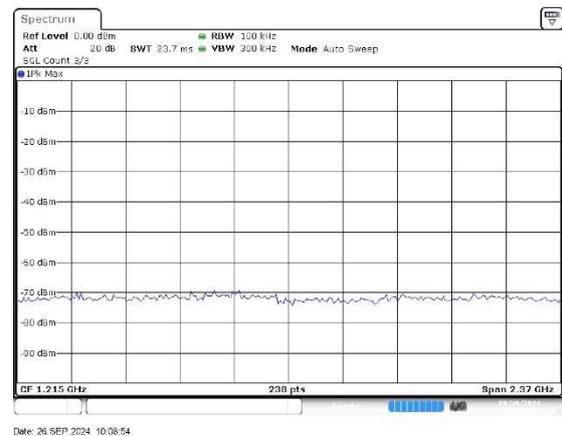


## CH 19



## Pre Measurements

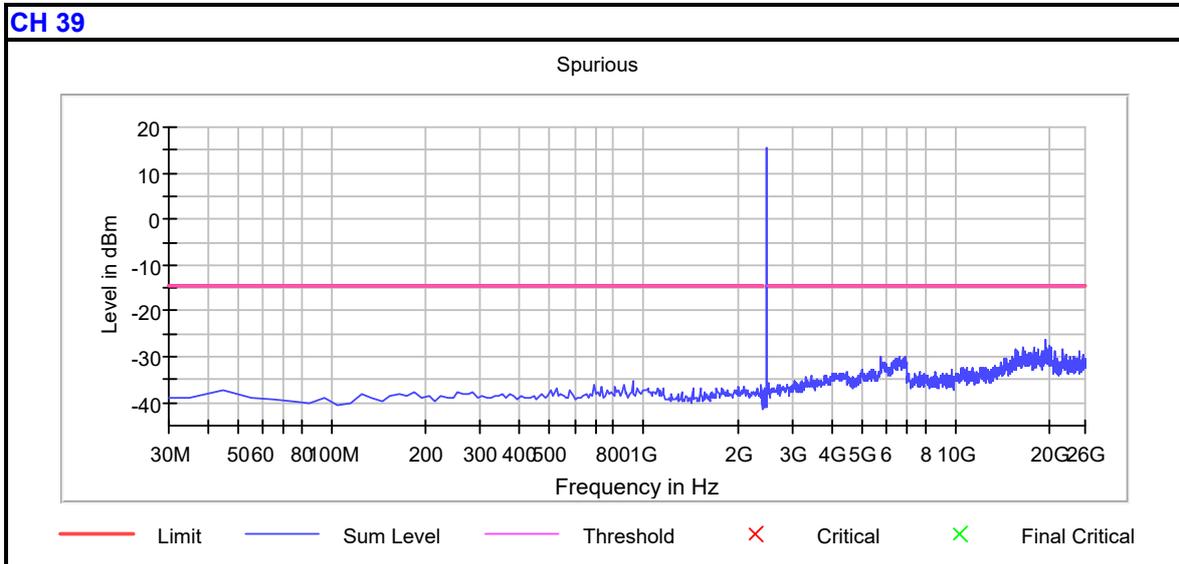
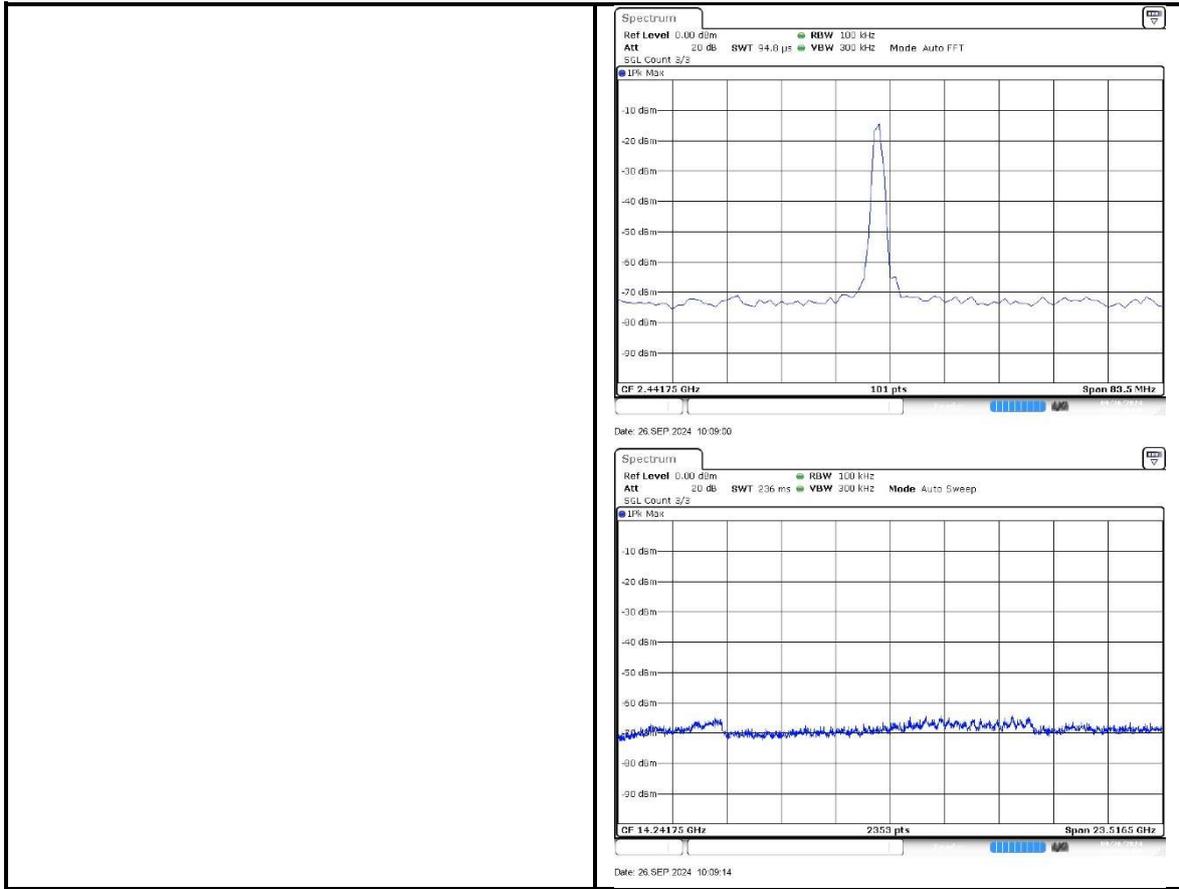
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
19518.720676	-27.2	17.0	-10.3
19488.737888	-27.6	17.4	-10.3
20228.313323	-27.7	17.4	-10.3
16420.499256	-27.9	17.7	-10.3
19458.755100	-27.9	17.7	-10.3
20148.359222	-28.0	17.7	-10.3
19498.732150	-28.0	17.8	-10.3
19178.915746	-28.1	17.8	-10.3
19538.709201	-28.1	17.8	-10.3
19468.749363	-28.1	17.8	-10.3
19508.726413	-28.1	17.8	-10.3
19528.714938	-28.1	17.8	-10.3
20198.330535	-28.3	18.0	-10.3
20158.353485	-28.3	18.0	-10.3
18129.518168	-28.4	18.1	-10.3





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# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2





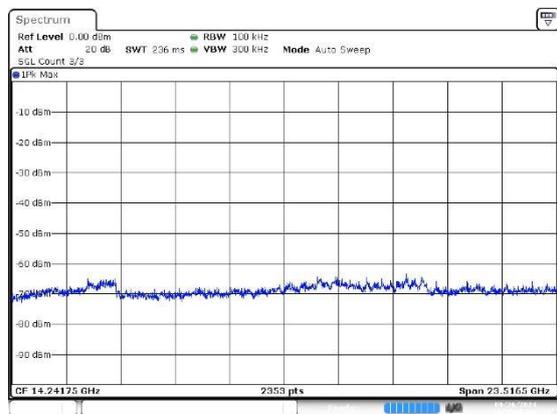
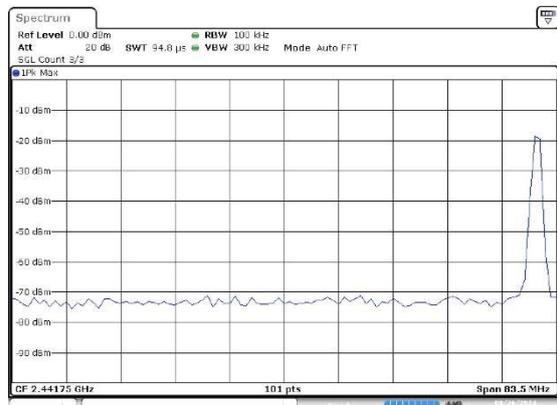
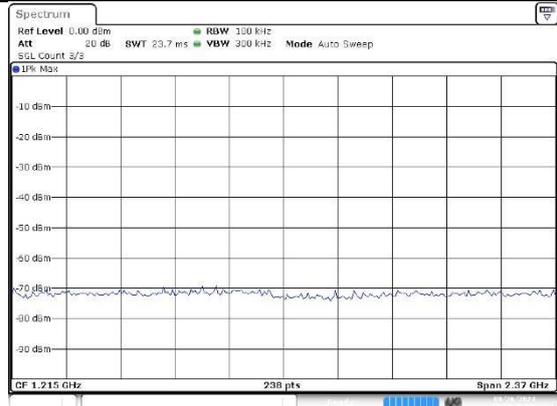
BUREAU VERITAS

# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



## Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
19508.726413	-26.3	12.0	-14.3
20128.370697	-27.4	13.1	-14.3
19558.697726	-27.8	13.5	-14.3
17779.718976	-27.9	13.5	-14.3
20198.330535	-27.9	13.6	-14.3
16400.510731	-28.0	13.6	-14.3
19888.508394	-28.0	13.6	-14.3
19488.737888	-28.0	13.6	-14.3
19868.519868	-28.0	13.7	-14.3
19468.749363	-28.1	13.7	-14.3
18439.340310	-28.2	13.9	-14.3
19528.714938	-28.3	13.9	-14.3
19538.709201	-28.3	13.9	-14.3
15680.923821	-28.3	13.9	-14.3
16410.504994	-28.4	14.0	-14.3





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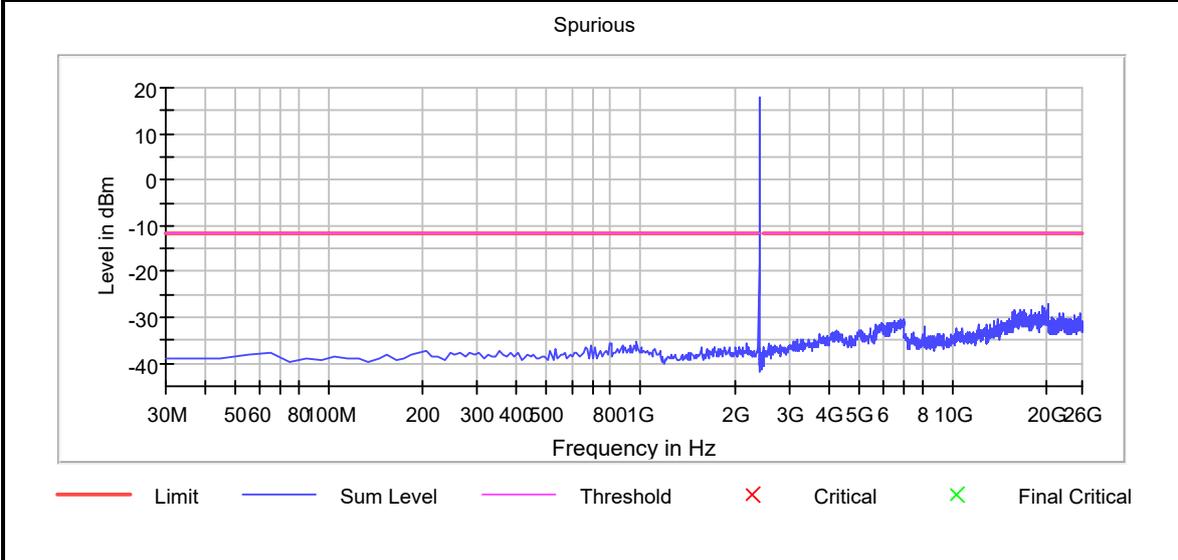
# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



## 2Mbps BLE (GFSK), 16dBm

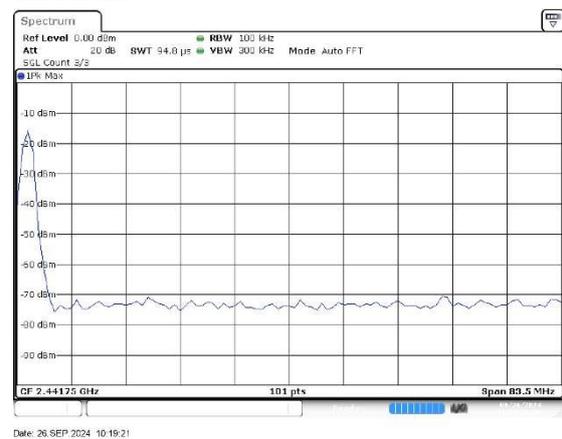
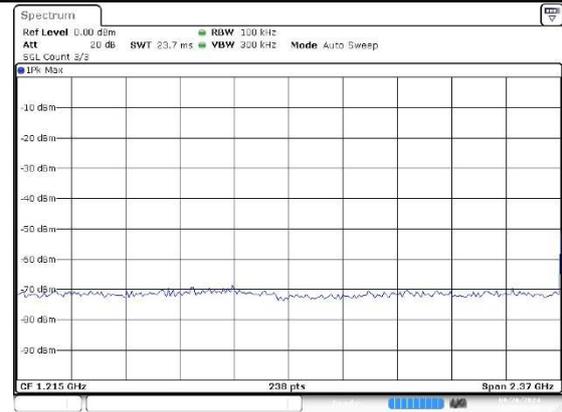
Test date: 09/26/2024

CH 0



### Pre Measurements

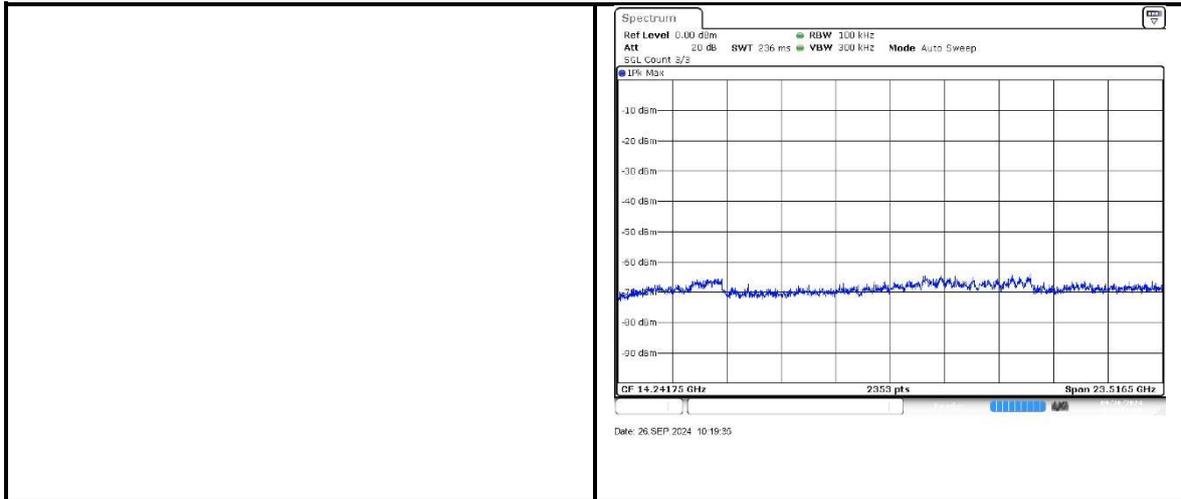
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2395.021008	-17.8	5.9	-11.8
20268.290374	-26.9	15.1	-11.8
19498.732150	-27.4	15.5	-11.8
19438.766575	-28.0	16.2	-11.8
20188.336273	-28.0	16.2	-11.8
19808.554292	-28.1	16.3	-11.8
20138.364960	-28.1	16.3	-11.8
17040.143540	-28.2	16.3	-11.8
17799.707501	-28.3	16.4	-11.8
16410.504994	-28.3	16.4	-11.8
20148.359222	-28.3	16.5	-11.8
19478.743625	-28.3	16.5	-11.8
19538.709201	-28.4	16.5	-11.8
20218.319061	-28.4	16.6	-11.8
15760.877922	-28.5	16.6	-11.8





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# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2





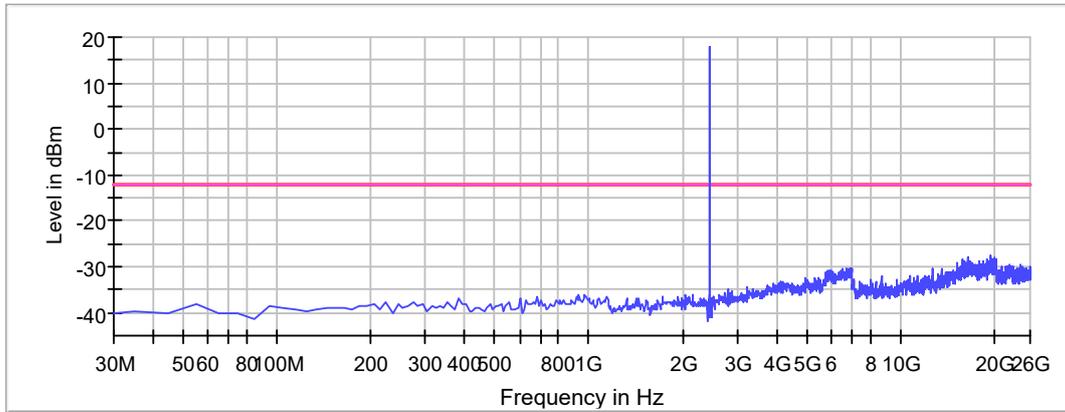
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# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



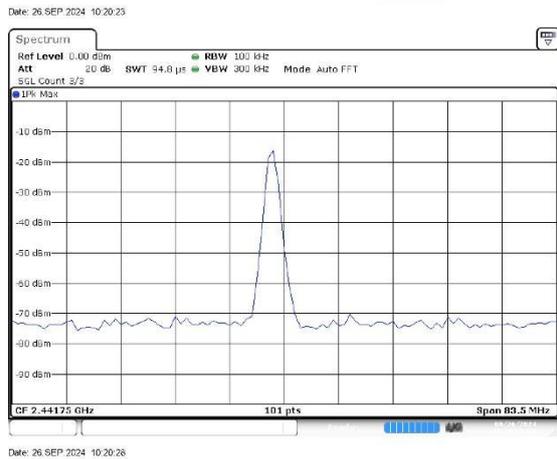
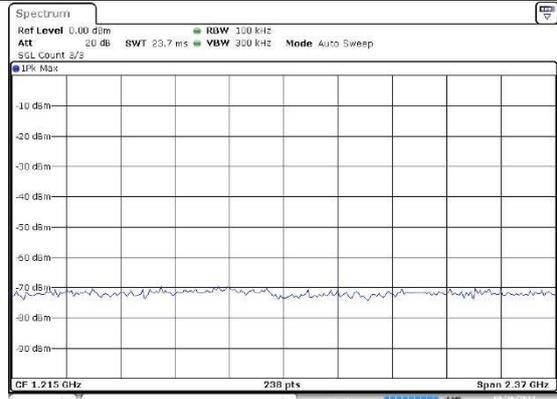
## CH 19

Spurious



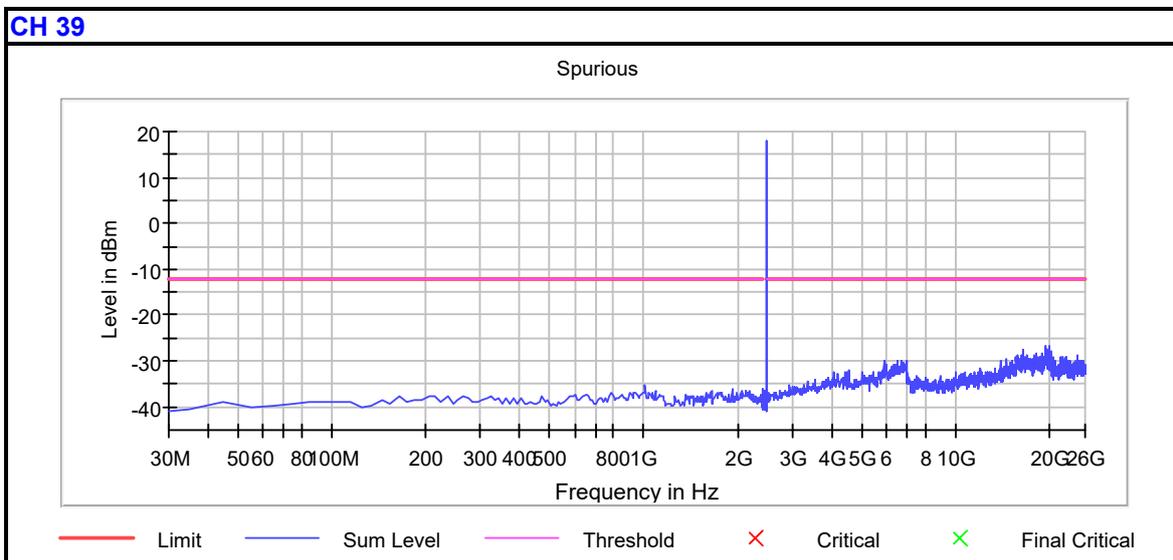
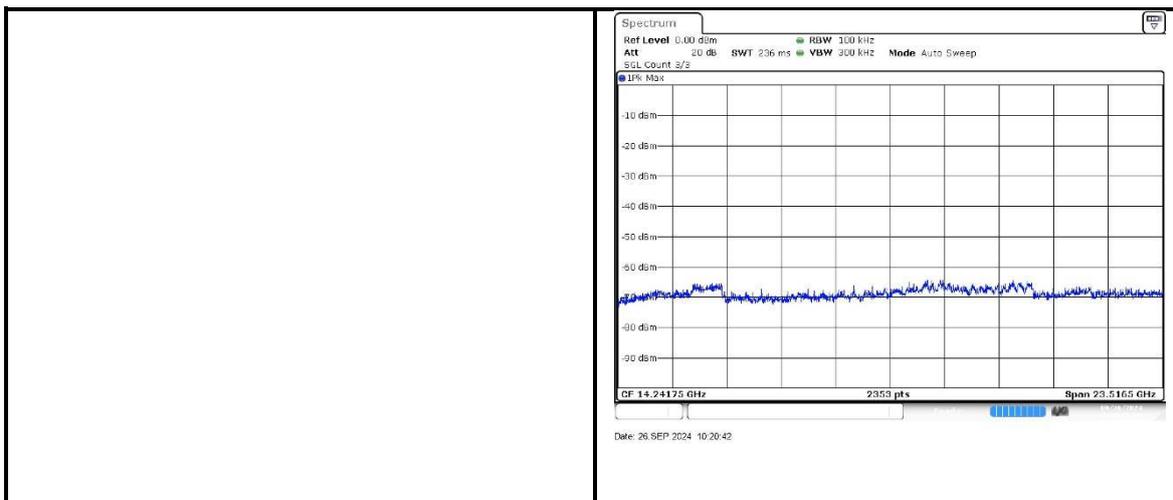
## Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
19528.714938	-27.6	15.5	-12.1
20128.370697	-27.9	15.7	-12.1
16370.527943	-28.0	15.8	-12.1
16500.453357	-28.0	15.9	-12.1
19508.726413	-28.1	16.0	-12.1
16390.516468	-28.2	16.0	-12.1
20328.255950	-28.3	16.1	-12.1
19848.531343	-28.3	16.2	-12.1
19898.502656	-28.3	16.2	-12.1
16490.459095	-28.3	16.2	-12.1
19538.709201	-28.4	16.2	-12.1
15840.832023	-28.4	16.2	-12.1
19468.749363	-28.4	16.2	-12.1
16400.510731	-28.4	16.3	-12.1
18889.082129	-28.4	16.3	-12.1



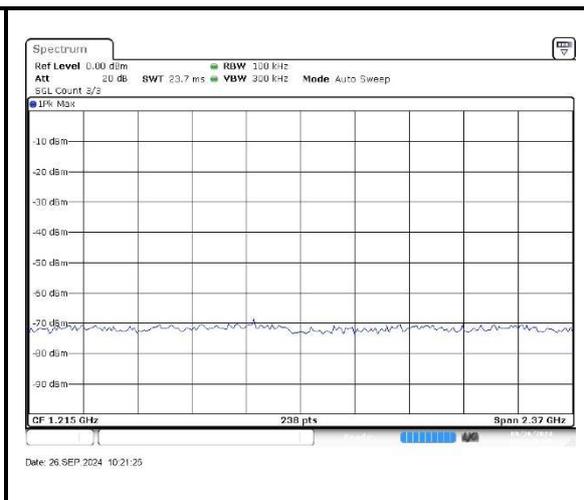


Test Report for SmartSense by Digi  
Report No. EX0743-5-2 Issue 2



**Pre Measurements**

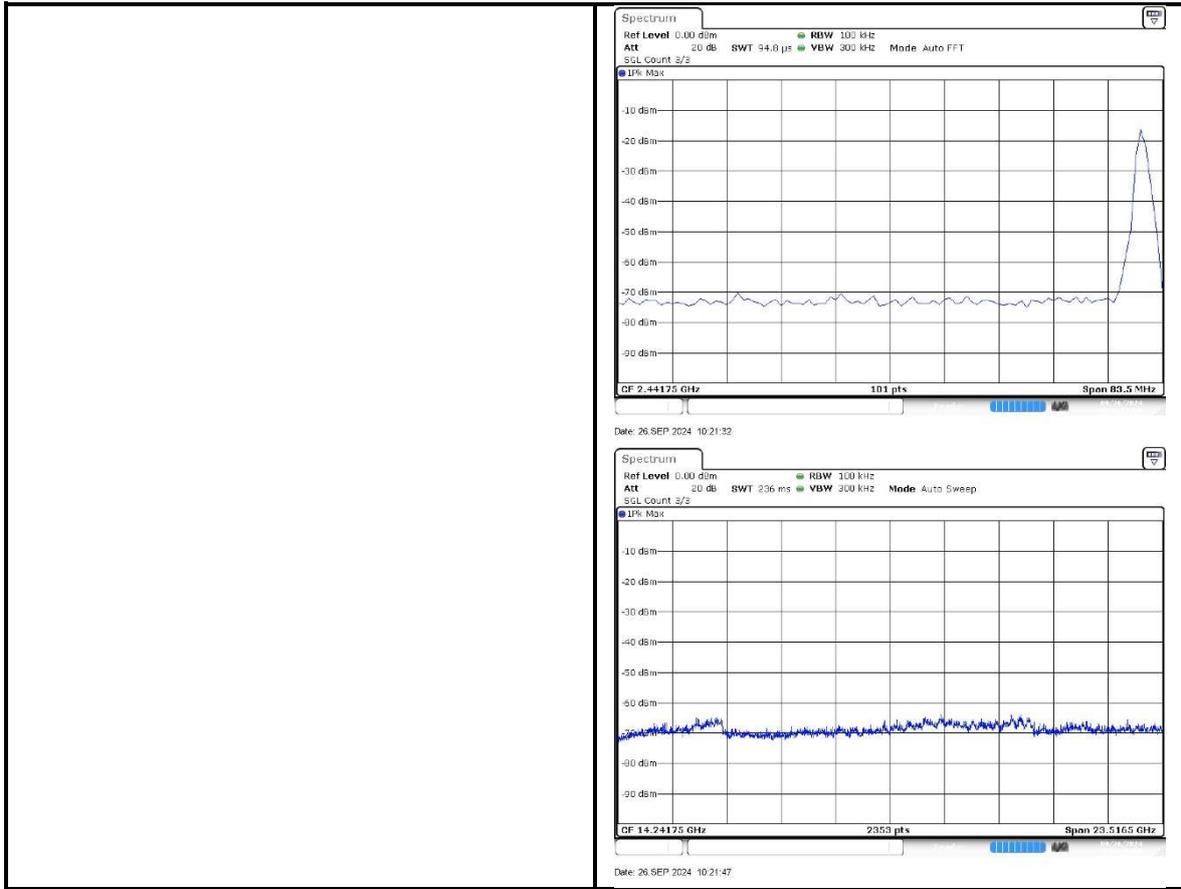
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
19458.755100	-26.8	14.7	-12.0
19868.519868	-26.9	14.8	-12.0
19478.743625	-27.0	14.9	-12.0
16400.510731	-27.6	15.5	-12.0
19488.737888	-27.7	15.7	-12.0
19798.560030	-27.7	15.7	-12.0
19828.542818	-27.9	15.9	-12.0
20218.319061	-28.0	16.0	-12.0
19898.502656	-28.0	16.0	-12.0
20168.347748	-28.1	16.1	-12.0
20208.324798	-28.1	16.1	-12.0
19728.600191	-28.2	16.1	-12.0
19468.749363	-28.2	16.2	-12.0
19928.485444	-28.3	16.2	-12.0
19548.703464	-28.4	16.3	-12.0





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# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2





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Test Report for SmartSense by Digi  
Report No. EX0743-5-2 Issue 2

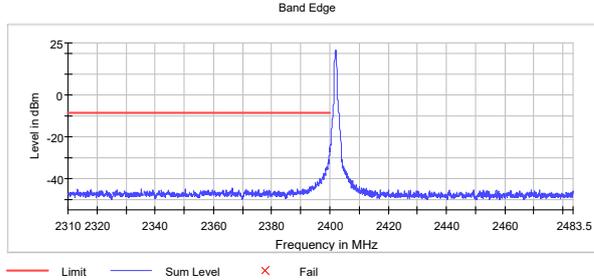


# Conducted Band Edges

## 1Mbps BLE (GFSK), 20dBm

Test date: 09/26/2024

### CH 0



### Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.975000	-27.5	19.1	-8.4	PASS
2399.925000	-28.3	19.8	-8.4	PASS
2399.825000	-28.9	20.5	-8.4	PASS
2399.775000	-29.1	20.6	-8.4	PASS
2399.875000	-29.2	20.8	-8.4	PASS
2399.525000	-31.2	22.8	-8.4	PASS
2399.725000	-31.3	22.9	-8.4	PASS
2399.475000	-31.5	23.1	-8.4	PASS
2399.675000	-31.7	23.2	-8.4	PASS
2399.575000	-32.0	23.6	-8.4	PASS
2399.425000	-32.7	24.2	-8.4	PASS
2399.625000	-33.0	24.6	-8.4	PASS
2399.375000	-33.9	25.4	-8.4	PASS
2399.325000	-34.3	25.8	-8.4	PASS
2399.075000	-34.3	25.9	-8.4	PASS

### Measurement 1

Setting	Instrument Value	Target Value
Start Frequency	2.31000 GHz	2.31000 GHz
Stop Frequency	2.40000 GHz	2.40000 GHz
Span	90.000 MHz	90.000 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1800	~ 1800
Sweeptime	113.672 µs	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 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	12 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

### Measurement 2

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 µs	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 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	0.23 dB	0.50 dB



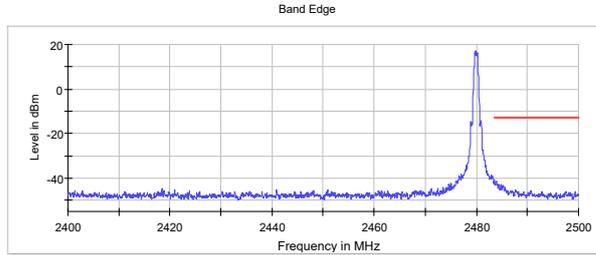
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Test Report for SmartSense by Digi  
Report No. EX0743-5-2 Issue 2



ACCREDITED  
Cert. No. 1627-01

CH 39



— Limit — Sum Level × Fail

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.925000	-41.5	28.6	-12.9	PASS
2483.825000	-41.7	28.8	-12.9	PASS
2483.875000	-41.7	28.8	-12.9	PASS
2483.775000	-41.7	28.9	-12.9	PASS
2483.575000	-42.4	29.5	-12.9	PASS
2483.525000	-42.6	29.7	-12.9	PASS
2483.625000	-42.6	29.8	-12.9	PASS
2483.975000	-42.7	29.8	-12.9	PASS
2484.375000	-42.7	29.8	-12.9	PASS
2483.675000	-42.9	30.0	-12.9	PASS
2484.475000	-42.9	30.1	-12.9	PASS
2484.875000	-42.9	30.1	-12.9	PASS
2484.125000	-43.0	30.2	-12.9	PASS
2484.025000	-43.0	30.2	-12.9	PASS
2484.425000	-43.0	30.2	-12.9	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 $\mu$ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 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

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
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	330	~ 330
SweepTime	18.945 $\mu$ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 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	0.00 dB	0.50 dB



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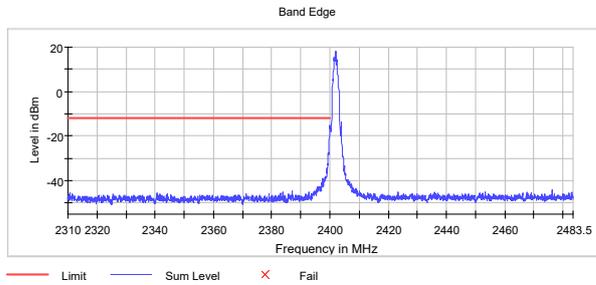
# Test Report for SmartSense by Digi Report No. EX0743-5-2 Issue 2



## 2Mbps BLE (GFSK), 16dBm

Test date: 09/26/2024

### CH 0



### Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.925000	-15.1	3.3	-11.8	PASS
2399.875000	-15.5	3.7	-11.8	PASS
2399.975000	-15.9	4.1	-11.8	PASS
2399.825000	-19.9	8.1	-11.8	PASS
2399.725000	-21.8	10.0	-11.8	PASS
2399.775000	-21.8	10.0	-11.8	PASS
2399.675000	-24.4	12.7	-11.8	PASS
2399.625000	-26.5	14.7	-11.8	PASS
2399.525000	-27.5	15.7	-11.8	PASS
2399.475000	-27.6	15.8	-11.8	PASS
2399.425000	-27.8	16.0	-11.8	PASS
2399.575000	-28.1	16.4	-11.8	PASS
2399.375000	-30.8	19.0	-11.8	PASS
2399.175000	-32.6	20.8	-11.8	PASS
2399.325000	-32.7	20.9	-11.8	PASS

### Measurement 1

Setting	Instrument Value	Target Value
Start Frequency	2.31000 GHz	2.31000 GHz
Stop Frequency	2.40000 GHz	2.40000 GHz
Span	90.000 MHz	90.000 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1800	~ 1800
SweepTime	113.672 $\mu$ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 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	0.00 dB	0.50 dB

### Measurement 2

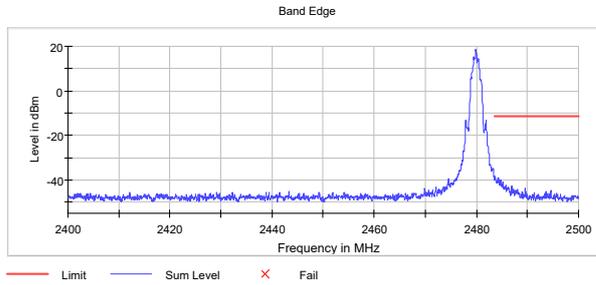
Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
SweepTime	94.727 $\mu$ s	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 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	10 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.30 dB	0.50 dB



Test Report for SmartSense by Digi  
Report No. EX0743-5-2 Issue 2



CH 39



Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.525000	-38.1	26.5	-11.6	PASS
2483.575000	-38.3	26.7	-11.6	PASS
2483.675000	-38.9	27.3	-11.6	PASS
2483.825000	-38.9	27.3	-11.6	PASS
2483.775000	-38.9	27.4	-11.6	PASS
2484.275000	-39.0	27.4	-11.6	PASS
2483.725000	-39.1	27.6	-11.6	PASS
2484.325000	-39.3	27.7	-11.6	PASS
2484.775000	-39.8	28.3	-11.6	PASS
2484.725000	-39.9	28.3	-11.6	PASS
2484.225000	-40.0	28.4	-11.6	PASS
2483.875000	-40.1	28.5	-11.6	PASS
2484.625000	-40.2	28.6	-11.6	PASS
2484.475000	-40.2	28.6	-11.6	PASS
2484.125000	-40.2	28.6	-11.6	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 µs	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 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	0.38 dB	0.50 dB

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
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	330	~ 330
Sweeptime	18.945 µs	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 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	0.00 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---