Test Report

Curtis-Straus LLC, *a wholly owned subsidiary of BV CPS*

Report No	ER1379-2
Client	Schechter Tech LLC DBA TemperatureAlert
Address	108 Lincoln Street, Suite BA Boston, MA 02111
Phone	(617) 326-7300
Items tested	Bluetooth Food Probe (Model: TM-BFP150)
FCC ID	SZ9TMBFP150
IC	10940A-TMBFP150
FRN	0022436158
FCC/IC Rule Parts	CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 1
Test Dates	June 12 - 13, 2017
Results	As detailed within this report
Prepared by	Zachary Johnson – Test Engineer
Authorized by	Yunus Fazlioglu – Sr. EMC Engineer
Issue Date	8/8/2017
Conditions of Issue	This Test Report is issued subject to the conditions stated in the '*Conditions of Testing*' section on page 27 of this report.

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Form Final Report REV 12-07-15

Summary and Methodology

This test report supports an application for certification of a transmitter operating pursuant to: CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 1

The Bluetooth LE Kitchen Thermometer operates in the 2402MHz - 2480MHz frequency range and has a PCB trace antenna with 1.5dBi gain. It is powered by two AA batteries.

We found that the product met the above requirements without modification. Test sample was received in good condition.

All testing was performed according to the following rules/procedures/documents;
CFR Title 47 FCC Part 15.247, RSS-247 Issue 1, RSS-Gen Issue 4, FCC KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013.

Radiated emissions were maximized by rotating the device around 3 orthogonal planes (X, Y and Z) as well as varying the test antenna's height and polarity. EUT antenna is internal, therefore it cannot be maximized separately. Fresh batteries were used during all testing.

RF measurements were performed at the antenna port on 3 channels as follows:

- 2402MHz: Low Channel
- 2440MHz: Mid Channel
- 2480MHz: High Channel

The following bandwidths were used during radiated spurious emissions testing.

Frequency	RBW	VBW
30-1000MHz	120kHz	1MHz
1-25GHz	1MHz	3MHz

Product Tested - Configuration Documentation

EUT Configuration			
Work Order:	R1379		
Company:	Schechter Tech LLC DBA Temperature Alert		
Company Address:	108 Lincoln Street, Suite BA		
	Boston, MA, 02111		
Contact:	Andrew Oswald		
	MN	**PN**	**SN**
EUT:	TM-BFP150	--	Multiple Samples
EUT Description:	Bluetooth Food Probe		
EUT Max Frequency (digital):	32 MHz		
EUT Min Frequency (digital):	0.032 MHz		
Software Operating Mode Description:			
EUT transmitting continuously with modulation on 2402MHz (low), 2440MHz (middle) and 2480MHz (high) channels.			

Statement of Conformity

RSS-GEN	RSP-100	RSS 247	Part 15	Comments
6.3			15.15(b)	There are no controls accessible to the user that varies the output power to operate in violation of the regulatory requirements.
	3.1		15.19	The label is shown in the label exhibit.
	3.2		15.21	Information to the user is shown in the instruction manual exhibit.
			15.27	No special accessories are required for compliance.
3, 6.1, 6.5			15.31	The EUT was tested in accordance with the measurement standards in this section.
6.13			15.33	Frequency range was investigated according to this section, unless noted in specific rule section under which the equipment operates.
8.1			15.35	The EUT emissions were measured using the measurement detector and bandwidth specified in this section, unless noted in specific rule section under which the equipment operates.
8.3			15.203	The antenna is a PCB trace with 1.5dBi gain.
8.10			15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209 or RSS-Gen as applicable
8.8			15.207	N/A. EUT is battery powered only.
			15.247	The unit complies with the requirements of 15.247
		RSS 247		The unit complies with the requirements of RSS-247
6.6				Occupied Bandwidth measurements were made.

Modifications Required for Compliance

None

Test Results

DTS (6dB) Bandwidth

Limit: The minimum 6 dB bandwidth shall be at least 500 kHz.
[15.247(a) (2)]

MEASUREMENTS / RESULTS

DTS (6dB) Bandwidth

Date: 07-Jun-17 **Company:** Temperature Alert **Work Order:** R1379
Engineer: Zac Johnson **EUT:** BTLE Kitchen Thermometer **Operating Voltage/Frequency:** 3V DC
Temp: 20.2°C **Humidity:** 45% **Pressure:** 1002 mBar Battery
Frequency Range: 2402-2480 MHz **Measurement Type:** Conducted
Measurement Method: FCC KDB 558074 D01 DTS Meas Guidance v04 Section 8.2

Frequency (MHz)	Reading (kHz)	6dB Bandwidth Limit (kHz)	Margin (kHz)	Result (Pass/Fail)
2402	704.4	≥500	204.4	Pass
2440	724.3	≥500	224.3	Pass
2480	725.6	≥500	225.6	Pass

Test Site: CEMI-5 **Cable:** 2286 **Attenuator:** 2121
Analyzer: 1118470

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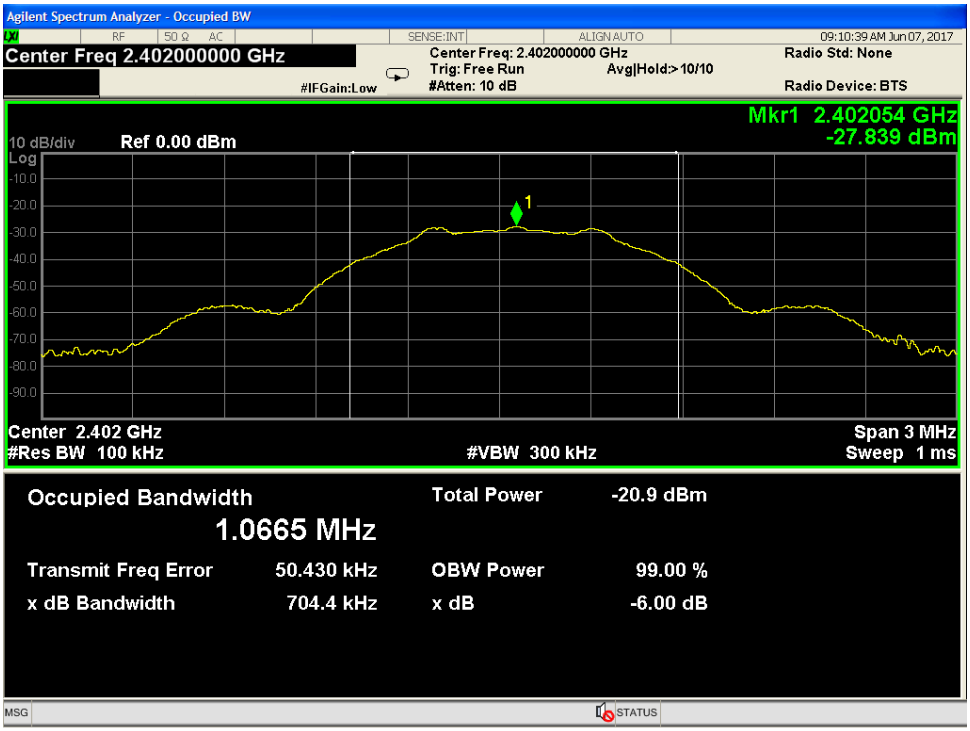
Rev. 6/24/2017

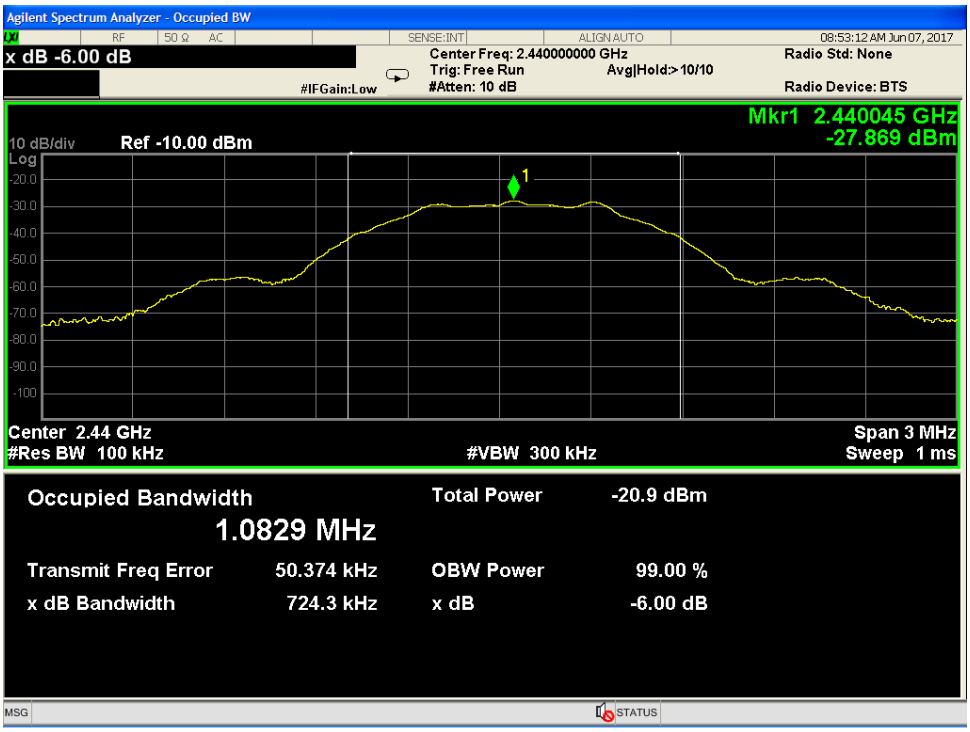
Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental EXA Signal Analyzer(1118470)	9KHz-26.5GHz	N9010A-526;M	AT	MY51170093	1118470	I	1/3/2018	1/3/2017
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
API - 30dB 20W Attenuator	9KHz-40GHz	89-30-11	API Weinschel	703	2121	I	3/22/2018	3/22/2217
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2286	9KHz-26.5GHz	FLC-1.5FT-SMSM+	Mini-Circuits	16021030		II	1/27/2018	1/27/2017

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

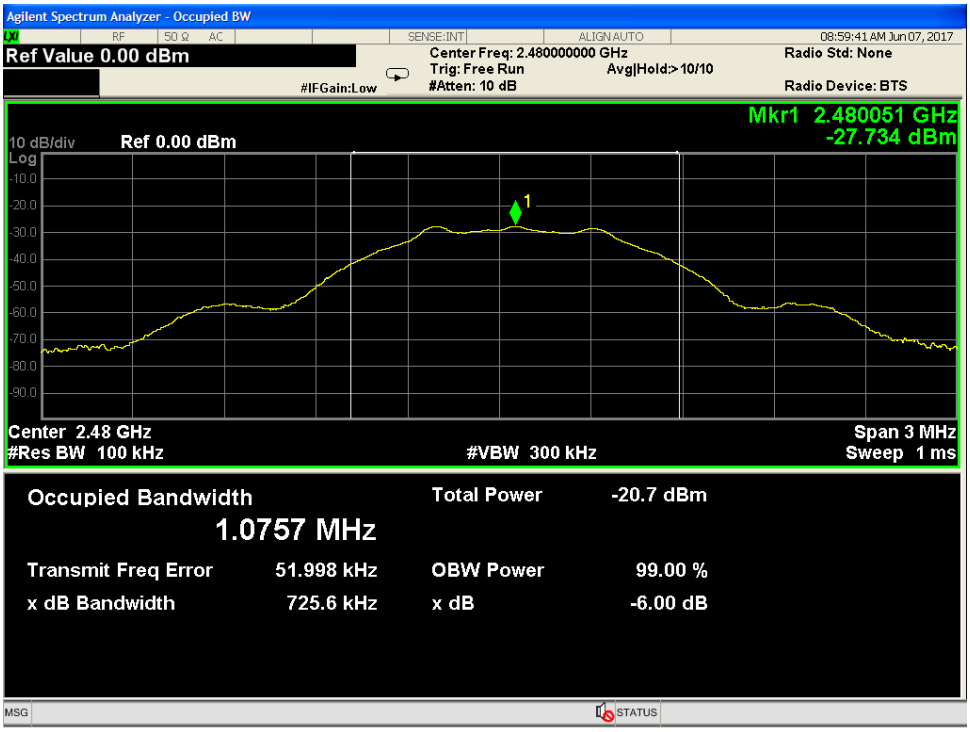
PLOTS



Low Channel



Mid Channel



High Channel

Peak Power

LIMIT: 1 Watt Conducted Output Power
[15.247(b) (3)]

MEASUREMENTS / RESULTS

Peak Output Power

Date: 07-Jun-17 **Company:** Temperature Alert **Work Order:** R1379
Engineer: Zac Johnson **EUT:** BTLE Kitchen Thermometer **Operating Voltage/Frequency:** 3V DC
Temp: 20.2°C **Humidity:** 45% **Pressure:** 1002mbar Battery
Frequency Range: 2402-2480 MHz **Measurement Type:** Conducted
Measurement Method: FCC KDB 558074 D01 DTS Meas Guidance v04 Section 9.1.1
Notes:

Frequency (MHz)	Peak Reading (dBm)	Cable Loss (dB)	Attenuator Loss (dB)	Peak Output Power (dBm)	Limit (dBm)	Margin (dB)	Result (Pass/Fail)
2402	-27.81	0.40	29.44	2.03	30.0	-27.97	Pass
2440	-27.68	0.40	29.44	2.16	30.0	-27.84	Pass
2480	-27.62	0.40	29.44	2.22	30.0	-27.78	Pass

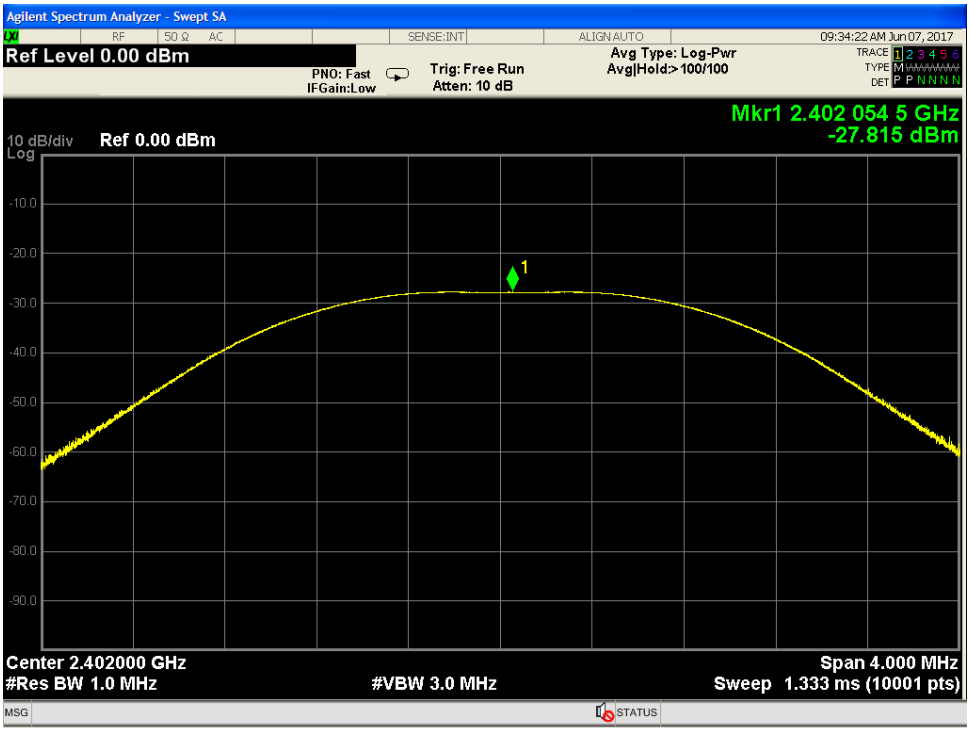
Test Site: CEMI-5 **Cable:** 2286 **Attenuator:** 2121
Analyzer: 118470 SA
Peak Output Power (dBm)= Peak Reading (dBm) + Cable Loss (dB) + Attenuator Loss (dB)

Rev. 6/24/2017

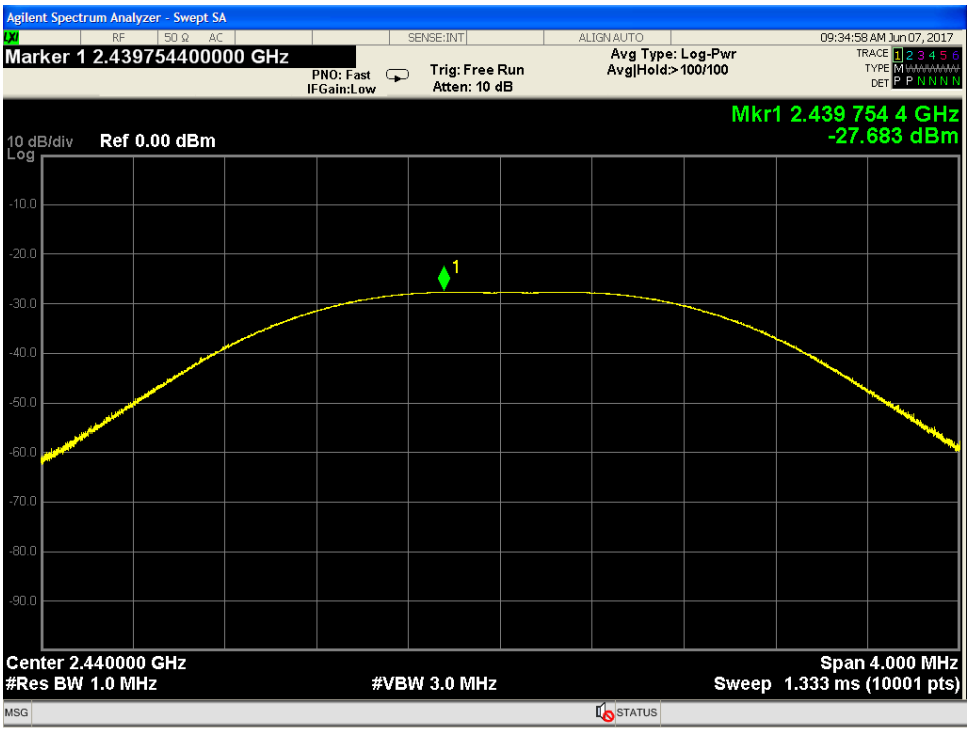
Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental EXA Signal Analyzer(1118470)	9KHz-26.5GHz	N9010A-526;M	AT	MY51170093	1118470	I	1/3/2018	1/3/2017
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
API - 30dB 20W Attenuator	9KHz-40GHz	89-30-11	API Weinschel	703	2121	I	3/22/2018	3/22/2217
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2286	9KHz-26.5GHz	FLC-1.5FT-SMSM+	Mini-Circuits	16021030		II	1/27/2018	1/27/2017

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

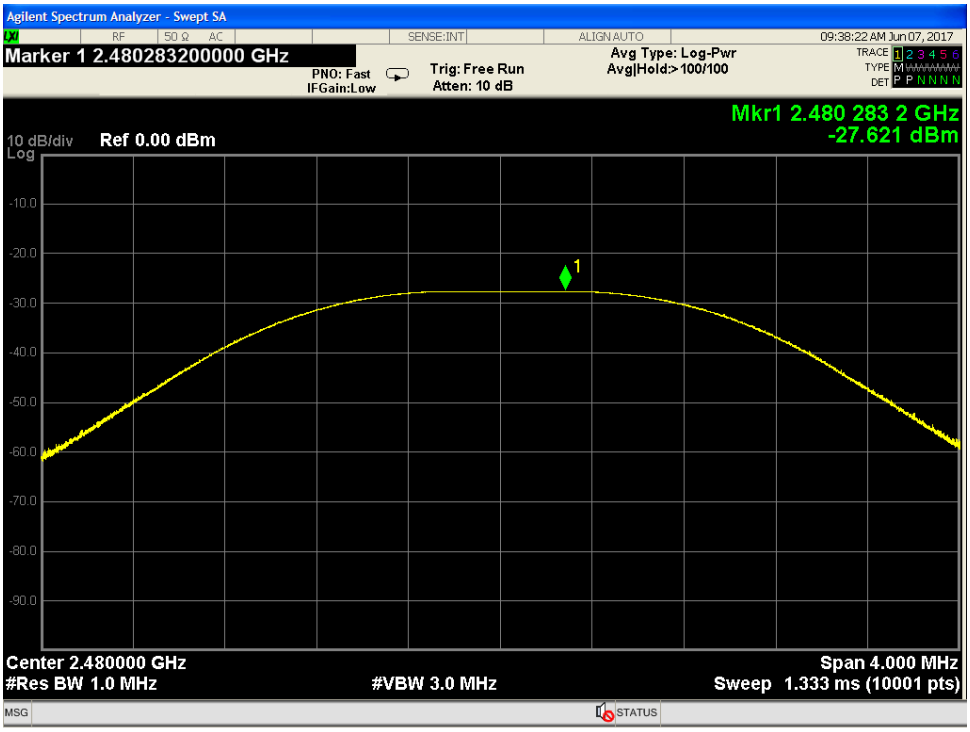
PLOTS



Low Channel



Mid Channel



High Channel

Band Edge Measurements (Conducted and Radiated)

Limits: Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).
[15.247(d)]

MEASUREMENTS / RESULTS

Conducted Bandedge

Date: 07-Jun-17 **Company:** Temperature Alert **Work Order:** R1379
Engineer: Zac Johnson **EUT:** BTLE Kitchen Thermometer **Operating Voltage/Frequency:** 3V DC
Temp: 20.2°C **Humidity:** 45% **Pressure:** 1002mbar Battery
Frequency Range: 2400-2483.5 MHz **Measurement Type:** Conducted
Notes:

	Bandedge (dBm)	Delta (dB)	Limit (dB)	(Pass/Fail)
Low Bandedge	-78.3	50.46	≥ 20	Pass
High Bandedge	-78.5	50.72	≥ 20	Pass

Test Site: CEMI-5 **Cable:** 2286 **Attenuator:** 2121
Analyzer: 1118470

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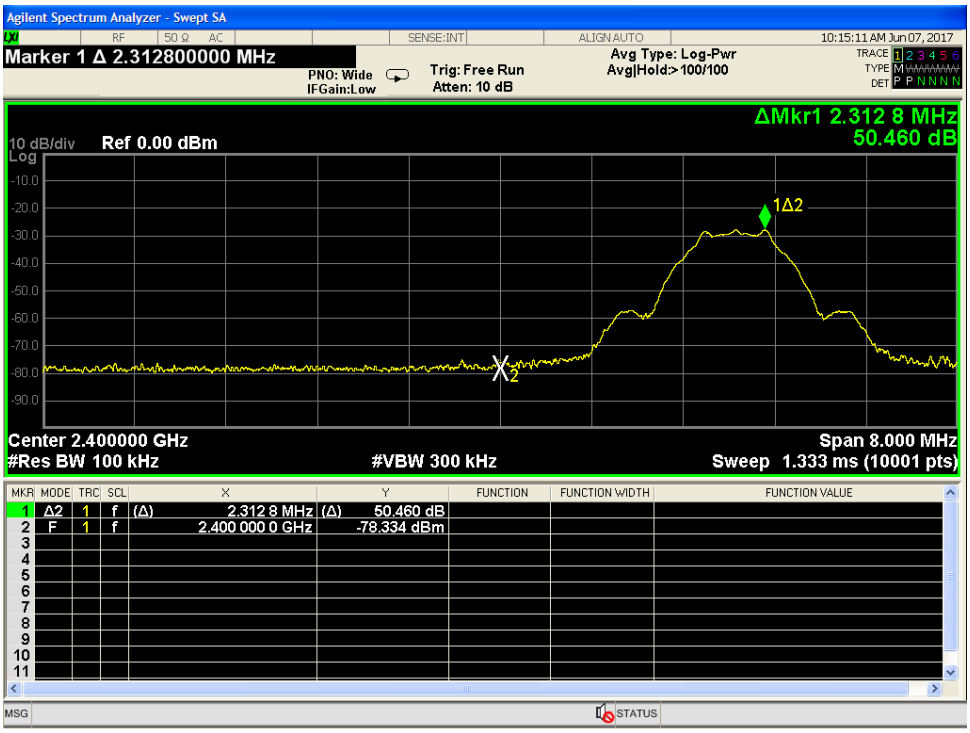
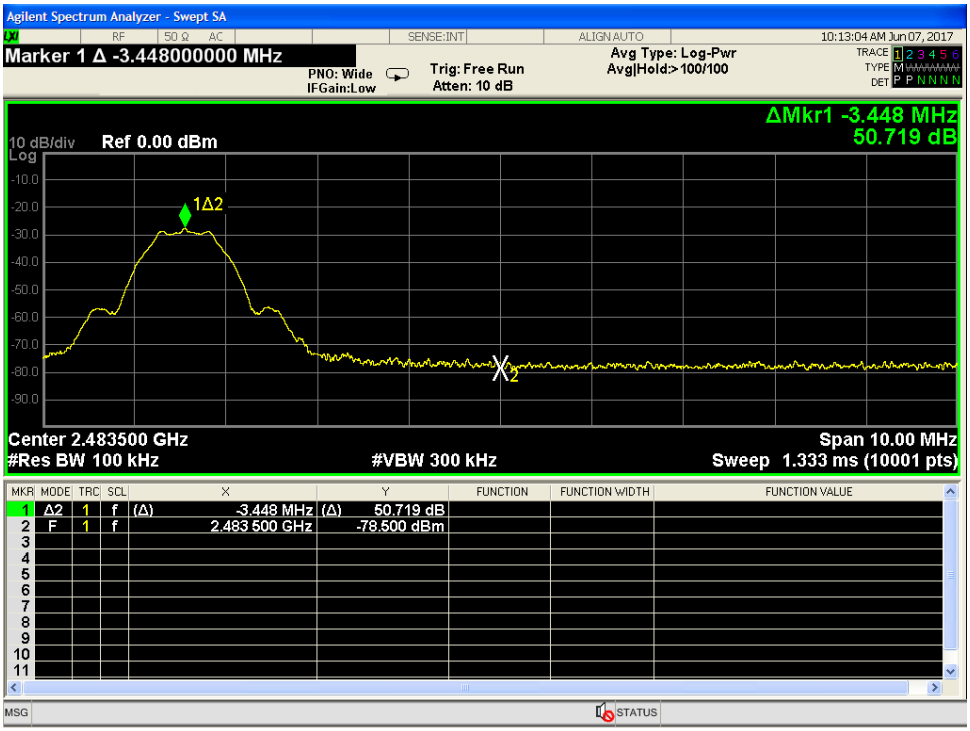
Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental EXA Signal Analyzer(1118470)	9KHz-26.5GHz	N9010A-526;M	AT	MY51170093	1118470	I	1/3/2018	1/3/2017
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
API - 30dB 20W Attenuator	9KHz-40GHz	89-30-11	API Weinschel	703	2121	I	3/22/2018	3/22/2217
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2286	9KHz-26.5GHz	FLC-1.5FT-SMSM+	Mini-Circuits	16021030		II	1/27/2018	1/27/2017

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

PLOTS



Low Band Edge - Low Channel



High Band Edge - High Channel

Radiated Bandedges

Date: 08-Jun-17 **Company:** Temperature Alert **Work Order:** R1379
Engineer: Chris Hamel **EUT Desc:** BTLE Kitchen Thermometer **EUT Operating Voltage/Frequency:** 3VDC
Temp: 24.9C **Humidity:** 50% **Pressure:** 1001mbar
Frequency Range: Bandedges **Measurement Distance:** 3 m
Notes: Worst Case Orientation: X **EUT Max Freq:** 2480MHz

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 Limit (dBµV/m)	FCC Class B High Frequency - Peak Margin (dB)	FCC Class B High Frequency - Peak Result (Pass/Fail)	FCC Class B High Frequency - Average Limit (dBµV/m)	FCC Class B High Frequency - Average Margin (dB)	FCC Class B High Frequency - Average Result (Pass/Fail)
V	2483.5	26.7	14.3	0.0	28.2	3.5	58.4	46.0	74.0	-15.6	Pass	54.0	-8.0	Pass
H	2483.5	26.4	14.1	0.0	28.2	3.5	58.1	45.8	74.0	-15.9	Pass	54.0	-8.2	Pass
V	2390.0	22.1	9.4	0.0	28.0	3.4	53.5	40.8	74.0	-20.5	Pass	54.0	-13.2	Pass
H	2390.0	23.4	9.6	0.0	28.0	3.4	54.8	41.0	74.0	-19.2	Pass	54.0	-13.0	Pass

Table Result: Pass by -8.0 dB ***Worst Freq:*** 2483.5 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** ---
Analyzer: 1170725 **Preamp:** none **Antenna:** Orange Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.188
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor
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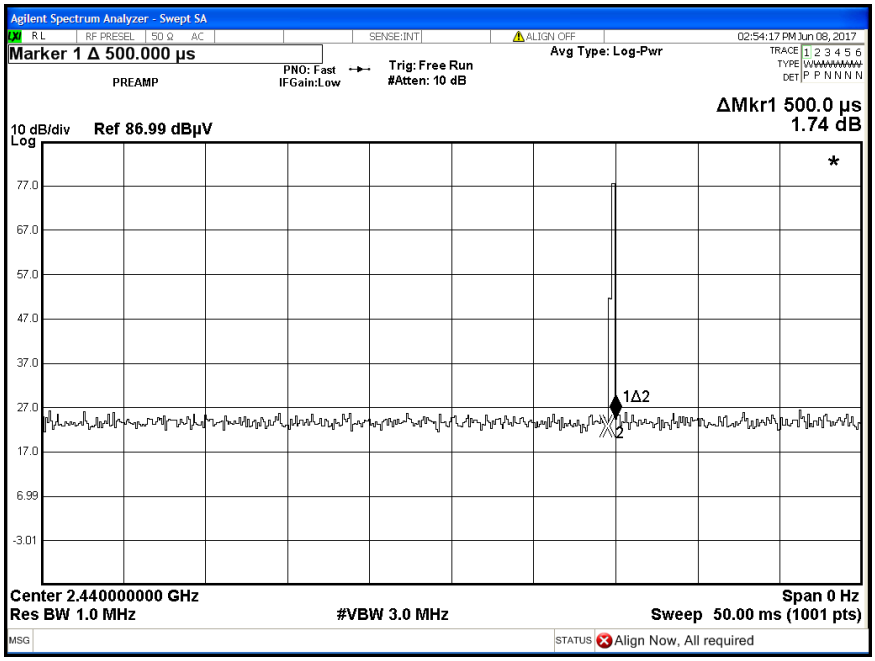
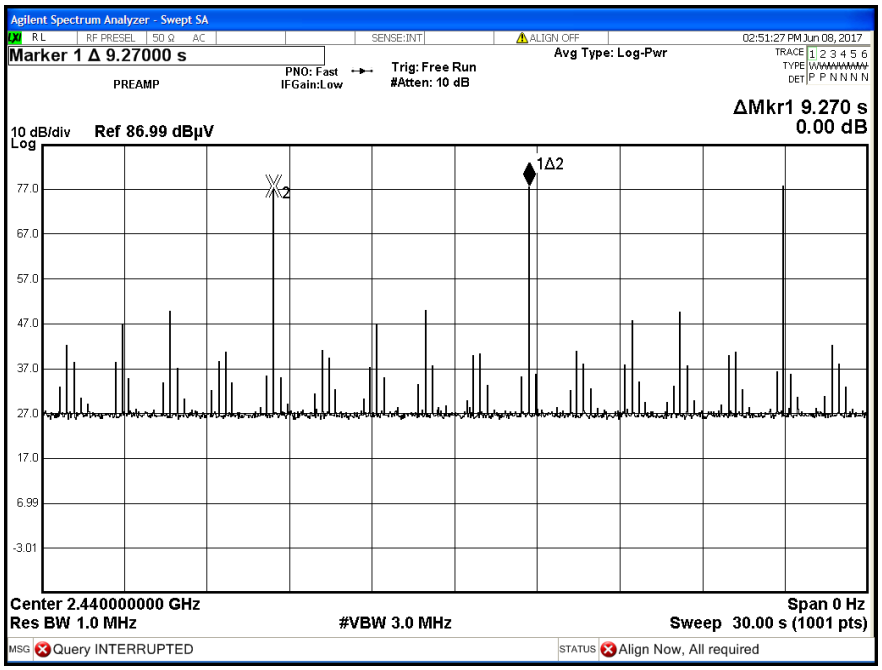
Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental MXE EMI Receiver(1170725)	20Hz-26.5GHz	N9038A	Agilent	MY51210151	1170725	I	12/22/2017	12/22/2016
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz	1686	I	12/21/2018	12/21/2016
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Orange Horn	1-18GHz	3115	EMCO	0004-6123	390	I	10/13/2018	10/13/2016
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	4/28/2018	4/28/2016
TH A#2078		HTC-1	HDE		2078	II	3/23/2018	3/23/2017
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2052	9kHz - 18GHz		Florida RF			II	3/5/2018	3/5/2017
Asset #2053	9kHz - 18GHz		Florida RF			II	10/30/3017	10/30/2016

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

Duty-Cycle Correction Factor



Single pulse



Pulse Train

A single 0.5ms pulse in any 100ms period is possible as worst case.
Duty Cycle Correction Factor (DCCF) = 20*log(0.5/100) = -46dB
-20dB DCCF used in this report when applicable.

Radiated Spurious Emissions

Limits: Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).
[15.247(d)]

MEASUREMENTS / RESULTS

30MHz – 1GHz

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
Top Peaks Horizontal 30-1000MHz
Operator: Chris Bramley
Tx at 2480MHz
Modulated
80cm Height

Work Order - R1379
EUT Power Input - Battery
Test Site - Chamber 2
Temp; Humid; Pres - 24.1°C; 35%RH; 1009mBar
Witnessed by - N/A
EUT Maximum Frequency - 32MHz
Req. 1; Req. 2 - FCC 15.247

Frequency	Delta to Marginal Level	Peak Reading	Preamplifier Factor	Antenna Factor	Cable Factor	Adjusted Peak Level	Requirement 1 Limit	Requirement 1 Margin	Requirement 1 Results	Antenna Height	EUT Azimuth	Worst Margin Limit 1
MHz	dB	dBµV	dB	dB/m	dB	dBµV/m	dBµV/m	dB	Pass/Fail	centimeters	degrees	dB
30.024	-11.2	23.5	22.4	21.3	0.4	22.8	40	-17.2	PASS	250	135	-17.2
74.668	-22.1	25.3	22.4	8.5	0.6	11.9	40	-28.1	PASS	100	0	
199.532	-21.2	25.1	22.5	12.8	0.9	16.4	43.5	-27.2	PASS	100	225	
887.892	-11.3	26.3	21.8	22.3	2	28.7	46	-17.3	PASS	250	135	
985.547	-18.6	26.1	22.1	23.3	2.1	29.4	54	-24.6	PASS	150	135	

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
Top Peaks Vertical 30-1000MHz
Operator: Chris Bramley
Tx at 2480MHz
Modulated
80cm Height

Work Order - R1379
EUT Power Input - Battery
Test Site - Chamber 2
Temp; Humid; Pres - 24.1°C; 35%RH; 1009mBar
Witnessed by - N/A
EUT Maximum Frequency - 32MHz
Req. 1; Req. 2 - FCC 15.247

Frequency	Delta to Marginal Level	Peak Reading	Preamp Factor	Antenna Factor	Cable Factor	Adjusted Peak Reading	Requirement 1 Limit	Requirement 1 Margin	Requirement 1 Results	Antenna Height	Turntable Azimuth	Worst Margin Limit 1
MHz	dB	dBµV	dB	dB/m	dB	dBµV/m	dBµV/m	dB	Pass/Fail	centimeters	degrees	dB
30.049	-10.5	24.2	22.4	21.3	0.4	23.5	40	-16.5	PASS	200	270	-16.5
194.367	-20.8	26.1	22.5	12.2	1	16.8	43.5	-26.8	PASS	200	270	
732.935	-12.5	27.8	22.5	20.4	1.8	27.5	46	-18.5	PASS	150	315	
931.178	-10.9	26.7	22	22.4	2	29.1	46	-16.9	PASS	100	225	

1GHz-6GHz Low Channel

Curtis Straus - a Bureau Veritas Company												Work Order - R1379			
Radiated Emissions Electric Field 3m Distance												EUT Power Input - 3VDC			
1-6GHz Vertical Tabular Data												Test Site - CH2			
Operator: cch											Temp; Humid; Pres - 24.1°C; 35%RH; 1009mBar				
All emissions below were pulsing with the fundamental, therefore -20dB DCCF applied to peak readings for averages															
Frequency	Raw Peak Reading	Raw Average Reading	Preamp Factor	Antenna Factor	Cable Factor	Adjusted Peak Amplitude	Adjusted Average Amplitude	Peak Limit	Peak Margin	Peak Results	Average Limit	Average Margin	Average Results	Worst Peak Margin	Worst Average Margin
MHz	dBµV	dBµV	dB	dB/m	dB	dBµV/m	dBµV/m	dBµV/m	dB	Pass/Fail	dBµV/m	dB	Pass/Fail	dB	dB
2274.3	27.7	7.7	0	27.8	3.4	58.9	38.9	74	-15	PASS	54	-15	PASS	-15	-15
2293.1	25.6	5.6	0	27.8	3.4	56.8	36.8	74	-17.1	PASS	54	-17.1	PASS		
2337.6	25	5	0	27.9	3.4	56.3	36.3	74	-17.7	PASS	54	-17.7	PASS		
2511	26.4	6.4	0	28.3	3.5	58.3	38.3	74	-15.7	PASS	54	-15.7	PASS		
2530	25.8	5.8	0	28.4	3.6	57.8	37.8	74	-16.2	PASS	54	-16.2	PASS		

Curtis Straus - a Bureau Veritas Company												Work Order - R1379			
Radiated Emissions Electric Field 3m Distance												EUT Power Input - 3VDC			
1-6GHz Horizontal Tabular Data												Test Site - CH2			
Operator: cch											Temp; Humid; Pres - 24.1°C; 35%RH; 1009mBar				
All emissions below were pulsing with the fundamental, therefore -20dB DCCF applied to peak readings for averages															
Frequency	Raw Peak Reading	Raw Average Reading	Preamp Factor	Antenna Factor	Cable Factor	Adjusted Peak Amplitude	Adjusted Average Amplitude	Peak Limit	Peak Margin	Peak Results	Average Limit	Average Margin	Average Results	Worst Peak Margin	Worst Average Margin
MHz	dBµV	dBµV	dB	dB/m	dB	dBµV/m	dBµV/m	dBµV/m	dB	Pass/Fail	dBµV/m	dB	Pass/Fail	dB	dB
2273.9	28.8	8.8	0	27.8	3.4	60	40	74	-14	PASS	54	-14	PASS		
2293	27.2	7.2	0	27.8	3.4	58.4	38.4	74	-15.5	PASS	54	-15.5	PASS		
2337.8	28.9	8.9	0	27.9	3.4	60.2	40.2	74	-13.7	PASS	54	-13.7	PASS		
2510.9	27.5	7.5	0	28.3	3.5	59.4	39.4	74	-14.6	PASS	54	-14.6	PASS		
2530.2	28.8	8.8	0	28.4	3.6	60.8	40.8	74	-13.1	PASS	54	-13.1	PASS	-13.1	-13.1

1GHz-6GHz Mid Channel

Curtis Straus - a Bureau Veritas Company												Work Order - R1379			
Radiated Emissions Electric Field 3m Distance												EUT Power Input - 3VDC			
1-6GHz Vertical Tabular Data												Test Site - CH2			
Operator: cch											Temp; Humid; Pres - 24.1°C; 35%RH; 1009mBar				
All emissions below were pulsing with the fundamental, therefore -20dB DCCF applied to peak readings for averages															
Frequency	Raw Peak Reading	Raw Average Reading	Preamp Factor	Antenna Factor	Cable Factor	Adjusted Peak Amplitude	Adjusted Average Amplitude	Peak Limit	Peak Margin	Peak Results	Average Limit	Average Margin	Average Results	Worst Peak Margin	Worst Average Margin
MHz	dBµV	dBµV	dB	dB/m	dB	dBµV/m	dBµV/m	dBµV/m	dB	Pass/Fail	dBµV/m	dB	Pass/Fail	dB	dB
2312	27.7	7.7	0	27.9	3.4	59	39	74	-15	PASS	54	-15	PASS	-15	-15
2331.1	24.3	4.3	0	27.9	3.4	55.6	35.6	74	-18.4	PASS	54	-18.4	PASS		
2548.8	24.3	4.3	0	28.5	3.6	56.4	36.4	74	-17.6	PASS	54	-17.6	PASS		
2567.4	22.7	2.7	0	28.6	3.6	54.9	34.9	74	-19.1	PASS	54	-19.1	PASS		

Curtis Straus - a Bureau Veritas Company												Work Order - R1379			
Radiated Emissions Electric Field 3m Distance												EUT Power Input - 3VDC			
1-6GHz Horizontal Tabular Data												Test Site - CH2			
Operator: cch											Temp; Humid; Pres - 24.1°C; 35%RH; 1009mBar				
All emissions below were pulsing with the fundamental, therefore -20dB DCCF applied to peak readings for averages															
Frequency	Raw Peak Reading	Raw Average Reading	Preamp Factor	Antenna Factor	Cable Factor	Adjusted Peak Amplitude	Adjusted Average Amplitude	Peak Limit	Peak Margin	Peak Results	Average Limit	Average Margin	Average Results	Worst Peak Margin	Worst Average Margin
MHz	dBµV	dBµV	dB	dB/m	dB	dBµV/m	dBµV/m	dBµV/m	dB	Pass/Fail	dBµV/m	dB	Pass/Fail	dB	dB
2311.7	30.9	10.9	0	27.9	3.4	62.1	42.1	74	-11.9	PASS	54	-11.9	PASS	-11.9	-11.9
2330.9	28.2	8.2	0	27.9	3.4	59.5	39.5	74	-14.5	PASS	54	-14.5	PASS		
2375.9	27	7	0	28	3.4	58.4	38.4	74	-15.6	PASS	54	-15.6	PASS		
2549	26.8	6.8	0	28.5	3.6	58.9	38.9	74	-15.1	PASS	54	-15.1	PASS		
2568.4	28.2	8.2	0	28.6	3.6	60.4	40.4	74	-13.6	PASS	54	-13.6	PASS		

1GHz-6GHz High Channel

Curtis Straus - a Bureau Veritas Company													Work Order - R1379		
Radiated Emissions Electric Field 3m Distance													EUT Power Input - Battery		
1-6GHz Horizontal Tabular Data													Test Site - Chamber 2		
Operator: Chris Bramley												Temp; Humid; Pres - 24.1°C; 35%RH; 1009mBar			
All emissions below were pulsing with the fundamental, therefore -20dB DCCF applied to peak readings for averages															
Frequency	Raw Peak Reading	Raw Average Reading	Preamp Factor	Antenna Factor	Cable Factor	Adjusted Peak Amplitude	Adjusted Average Amplitude	Peak Limit	Peak Margin	Peak Results	Average Limit	Average Margin	Average Results	Worst Peak Margin	Worst Average Margin
MHz	dBµV	dBµV	dB	dB/m	dB	dBµV/m	dBµV/m	dBµV/m	dB	Pass/Fail	dBµV/m	dB	Pass/Fail	dB	dB
2332.8	25.8	5.8	0	27.9	3.4	57.1	37.1	74	-16.8	PASS	54	-16.8	PASS		
2352.1	31.9	11.9	0	27.9	3.4	63.2	43.2	74	-10.8	PASS	54	-10.8	PASS	-10.8	-10.8
2371.5	30.1	10.1	0	28	3.4	61.5	41.5	74	-12.5	PASS	54	-12.5	PASS		
2397.2	26.3	6.3	0	28	3.4	57.7	37.7	74	-16.2	PASS	54	-16.2	PASS		
2544	25.1	5.1	0	28.5	3.6	57.2	37.2	74	-16.8	PASS	54	-16.8	PASS		
2563.1	24.9	4.9	0	28.6	3.6	57	37	74	-16.9	PASS	54	-16.9	PASS		
2589.1	26.5	6.5	0	28.7	3.6	58.9	38.9	74	-15.1	PASS	54	-15.1	PASS		
2608.4	26	6	0	28.8	3.6	58.4	38.4	74	-15.5	PASS	54	-15.5	PASS		

Curtis Straus - a Bureau Veritas Company													Work Order - R1379		
Radiated Emissions Electric Field 3m Distance													EUT Power Input - Battery		
1-6GHz Vertical Tabular Data													Test Site - Chamber 2		
Operator: Chris Bramley												Temp; Humid; Pres - 24.1°C; 35%RH; 1009mBar			
All emissions below were pulsing with the fundamental, therefore -20dB DCCF applied to peak readings for averages															
Frequency	Raw Peak Reading	Raw Average Reading	Preamp Factor	Antenna Factor	Cable Factor	Adjusted Peak Amplitude	Adjusted Average Amplitude	Peak Limit	Peak Margin	Peak Results	Average Limit	Average Margin	Average Results	Worst Peak Margin	Worst Average Margin
MHz	dBµV	dBµV	dB	dB/m	dB	dBµV/m	dBµV/m	dBµV/m	dB	Pass/Fail	dBµV/m	dB	Pass/Fail	dB	dB
2351.9	26.6	6.6	0	27.9	3.4	58	38	74	-16	PASS	54	-16	PASS	-16	-16
2370.7	25.9	5.9	0	28	3.4	57.3	37.3	74	-16.7	PASS	54	-16.7	PASS		
2397.2	23.8	3.8	0	28	3.4	55.2	35.2	74	-18.8	PASS	54	-18.8	PASS		
2543.6	23	3	0	28.5	3.6	55	35	74	-18.9	PASS	54	-18.9	PASS		
2588.8	23.9	3.9	0	28.7	3.6	56.2	36.2	74	-17.8	PASS	54	-17.8	PASS		
2607.8	25.5	5.5	0	28.8	3.6	57.9	37.9	74	-16.1	PASS	54	-16.1	PASS		

6GHz – 25GHz

No emissions found.

Rev. 6/1/2017

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental MXE EMI Receiver(1168255)	20Hz-8.4GHz	N9038A	Agilent	MY53290009	1168255	I	7/14/2017	7/14/2016
Rental MXE EMI Receiver(1170725)	20Hz-26.5GHz	N9038A	Agilent	MY51210151	1170725	I	12/22/2017	12/22/2016

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Asset	Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	1686	I	12/21/2018	12/21/2016
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz	1686	I	12/21/2018	12/21/2016

Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Blue	0.009-2000MHz	ZFL-1000-LN	CS	N/A	759	II	5/9/2018	5/9/2017
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	II	8/14/2017	8/14/2016

Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/12/2017	8/12/2015
Orange Horn	1-18GHz	3115	EMCO	0004-6123	390	I	10/13/2018	10/13/2016

Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	4/28/2018	4/28/2016
TH A#2078		HTC-1	HDE		2078	II	3/23/2018	3/23/2017

Cables	Range	Mfr			Cat	Calibration Due	Calibrated on
Asset #2052	9kHz - 18GHz	Florida RF			II	3/5/2018	3/5/2017
Asset #2053	9kHz - 18GHz	Florida RF			II	10/30/3017	10/30/2016

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

Rev. 6/12/2017

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	2/28/2018	2/28/2017
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 1	719150	2762A-6	A-0015	1-18GHz	1685	I	12/21/2018	12/21/2016
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
HF (Yellow)	18-26.5GHz	AFS4-18002650-60-8P-4	CS	467559	1266	II	9/16/2017	9/16/2016
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
HF (White) Horn	18-26.5GHz	801-WLM	Waveline	758	758	III	Verify before Use	date of test
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	4/28/2018	4/28/2016
TH A#2084		HTC-1	HDE		2084	II	3/23/2018	3/23/2017
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2328	1 - 26.5GHz	PE350-72	Pasternack	1539		II	2/6/2018	2/6/2017

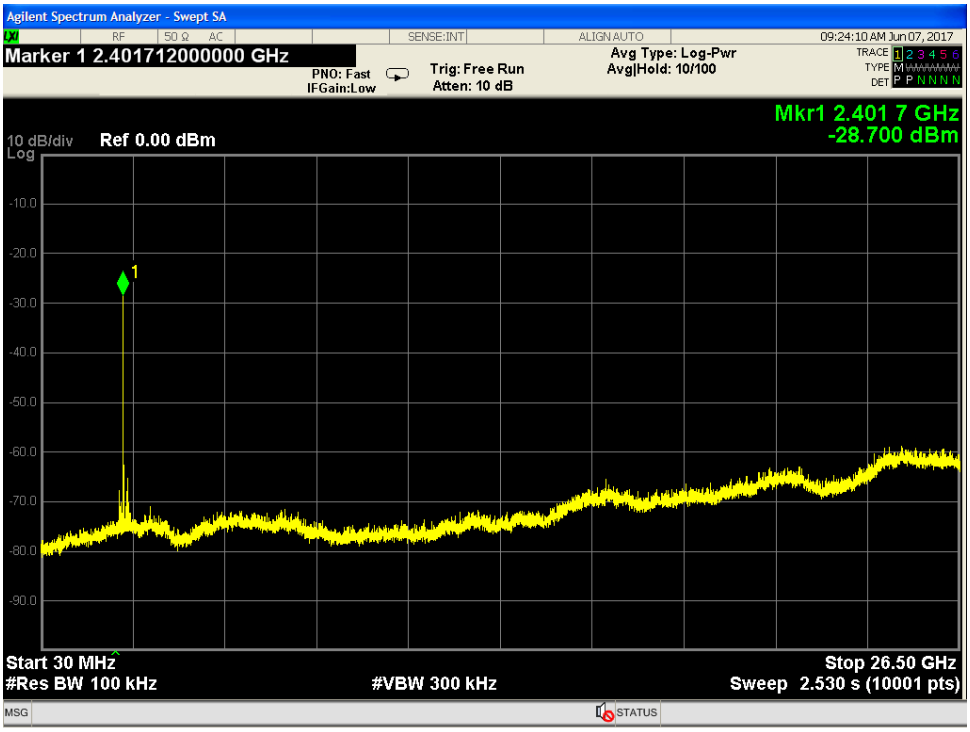
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

Conducted Spurious Emissions

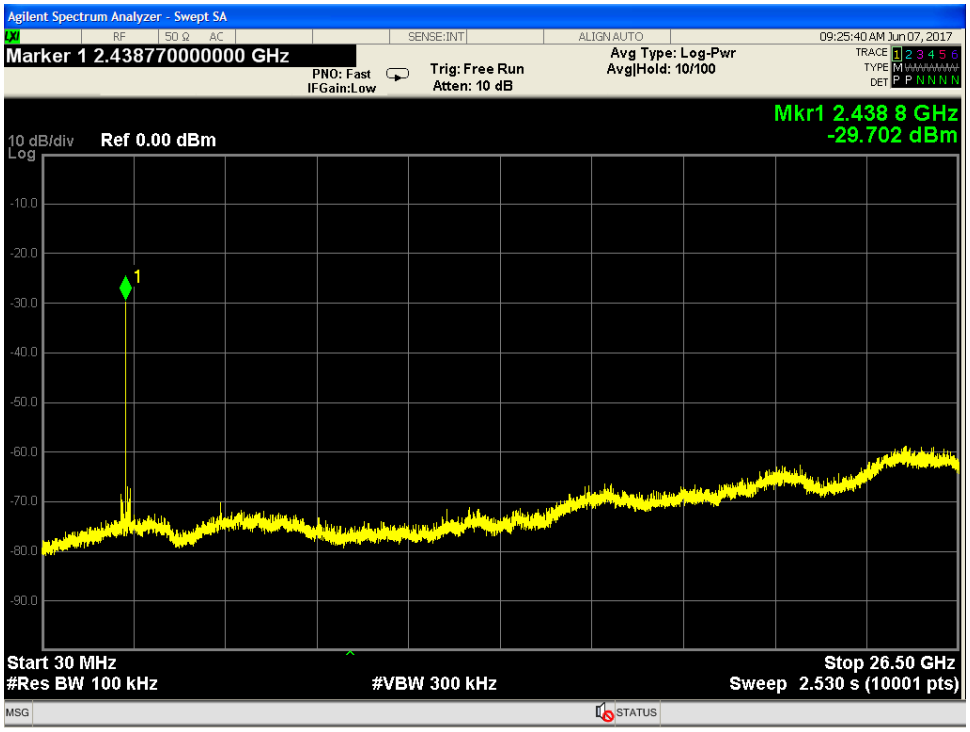
Limits: In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth that contains the highest level of desired power.
[15.247(d)]

MEASUREMENTS / RESULTS

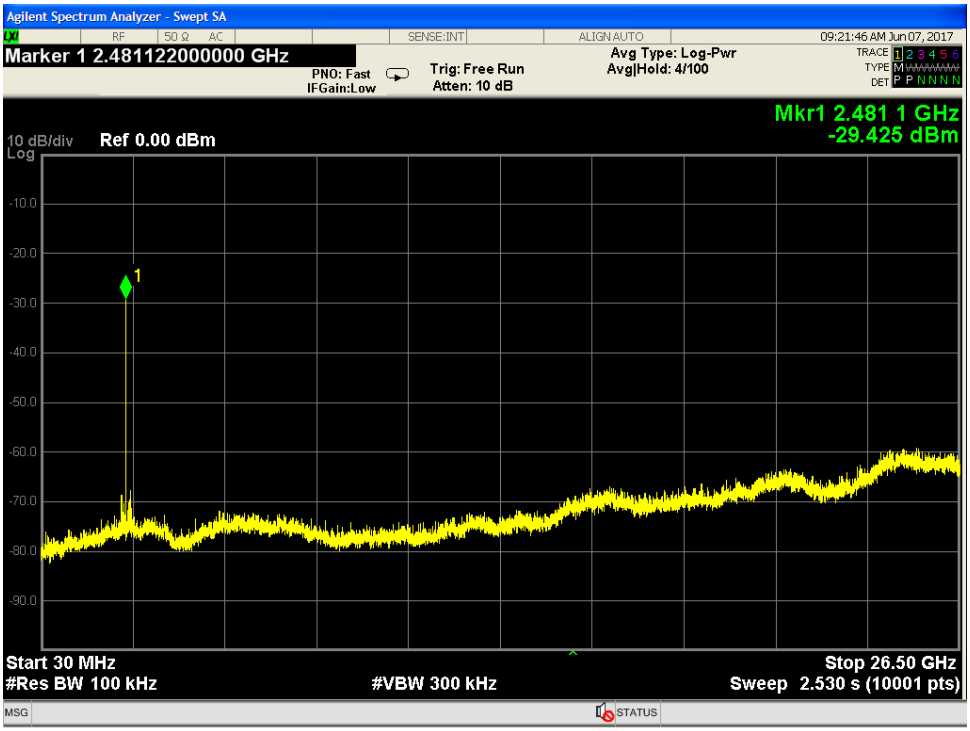
3 channels (low, middle and high) were tested and no emissions within 20dB of their corresponding fundamentals were observed.



Low Channel



Mid Channel



High Channel

Power Spectral Density

Limit: The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission. [15.247(e)]

MEASUREMENTS / RESULTS

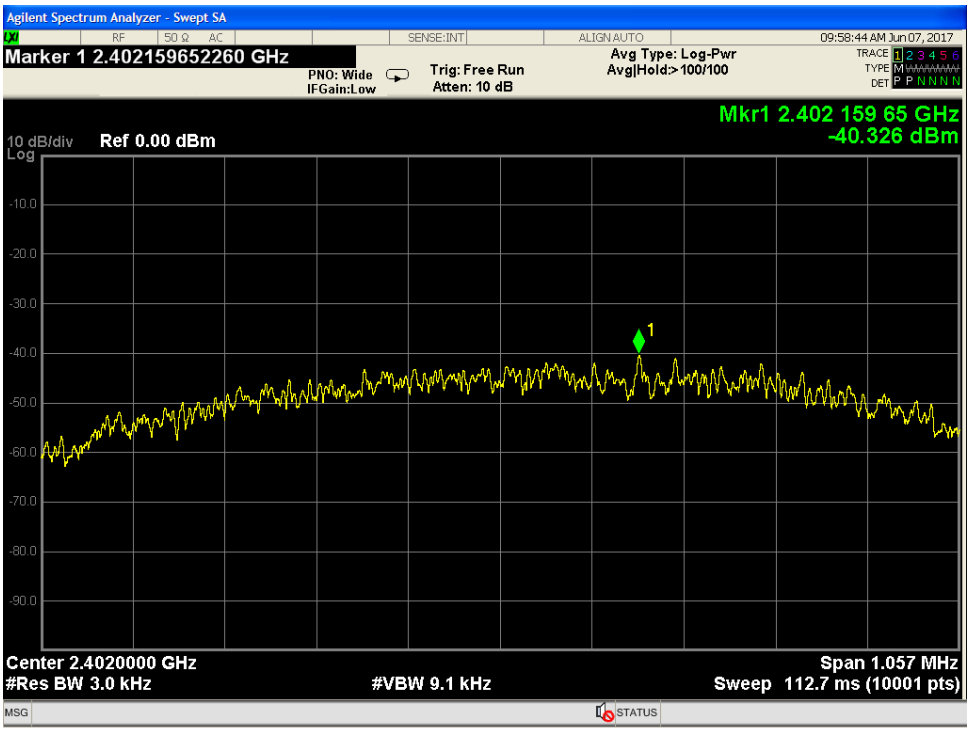
Peak Power Spectral Density

Date: 07-Jun-17 **Company:** Temperature Alert **Work Order:** R1379
Engineer: Zac Johnson **EUT:** BTLE Kitchen Thermometer **Operating Voltage/Frequency:** 3V DC
Temp: 20.2°C **Humidity:** 45% **Pressure:** 1002mbar Battery
Frequency Range: 2402-2480 MHz **Measurement Type:** Conducted
Measurement Method: FCC KDB 558074 D01 DTS Meas Guidance v04 Section 10.2
Notes:

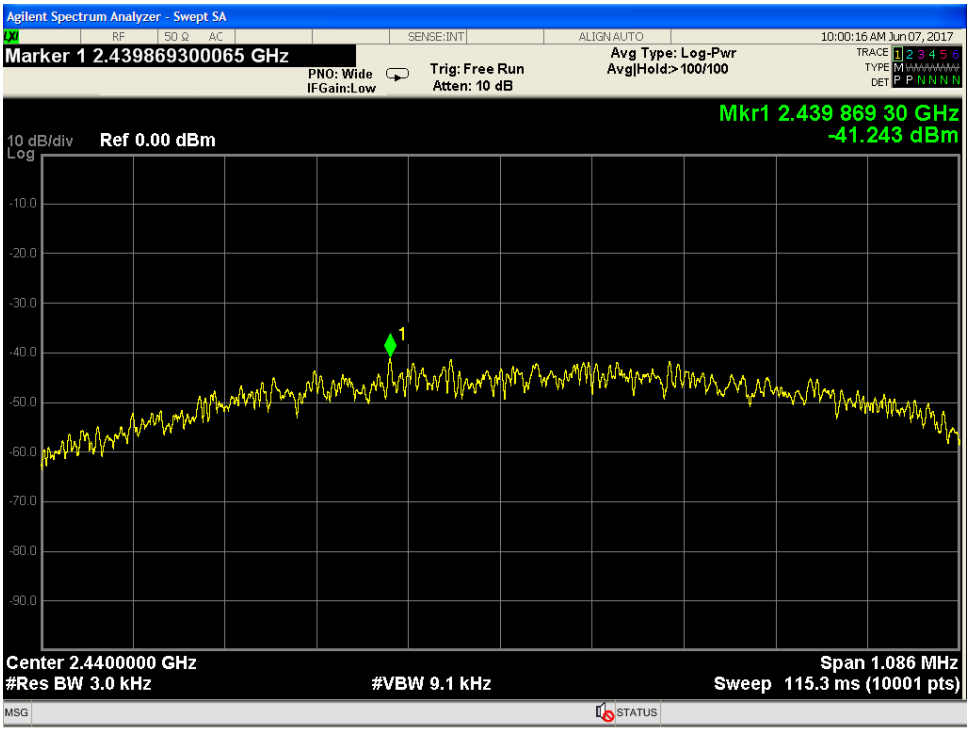
Frequency (MHz)	Peak Reading (dBm)	Cable Loss (dB)	Attenuator Loss (dB)	Peak PSD (dBm)	Limit (dBm)	Margin (dB)	Result
2402	-40.32	0.40	29.44	-10.48	8.0	-18.48	Pass
2440	-41.24	0.40	29.44	-11.40	8.0	-19.40	Pass
2480	-41.23	0.40	29.44	-11.39	8.0	-19.39	Pass

Test Site: CEMI-5 **Cable:** 2286 **Attenuator:** 2121
Analyzer: 1118470
PSD(dBm) = Reading (dBm) + Cable Loss (dB) + Attenuator Loss (dBm)

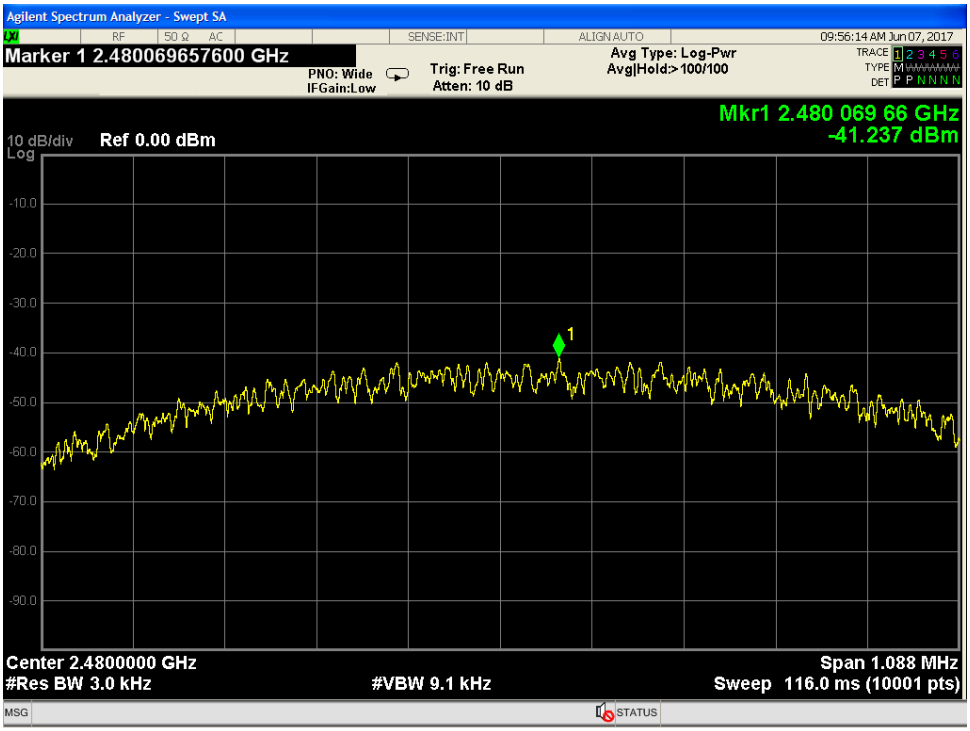
PLOTS



Low Channel



Mid Channel



High Channel

Occupied Bandwidth

Requirement: 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 6.6]

MEASUREMENTS / RESULTS

99% Occupied Bandwidth

Date: 07-Jun-17	**Company:** Temperature Alert	**Work Order:** R1379
Engineer: Zac Johnson	**EUT:** BTLE Kitchen Thermometer	**Operating Voltage/Frequency:** 3V DC Battery
Temp: 20.2°C	**Humidity:** 45% **Pressure:** 1002mbar	
Frequency Range: 2402-2480 MHz	**Measurement Type:** Conducted	
	Measurement Method: RSS-Gen Issue 4 Section 6.6	

Frequency (MHz)	99% OBW (kHz)
2402	1050.7
2440	1065.2
2480	1050.2

Test Site: CEMI-5 **Cable:** 2286 **Attenuator:** 2121
Analyzer: 1118470

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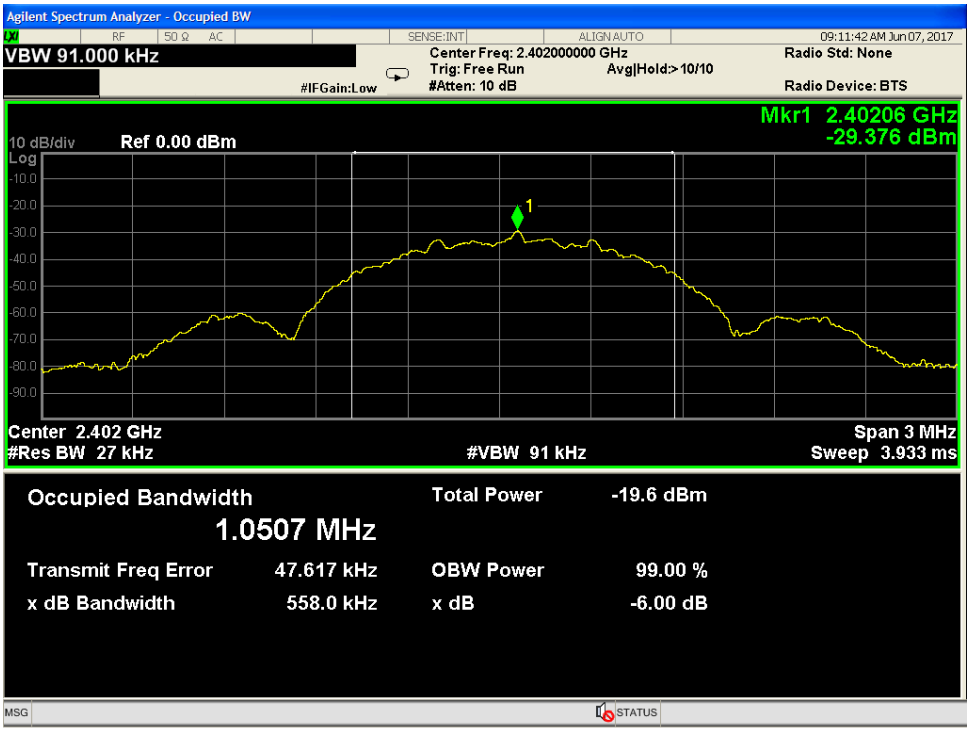
Rev. 6/24/2017

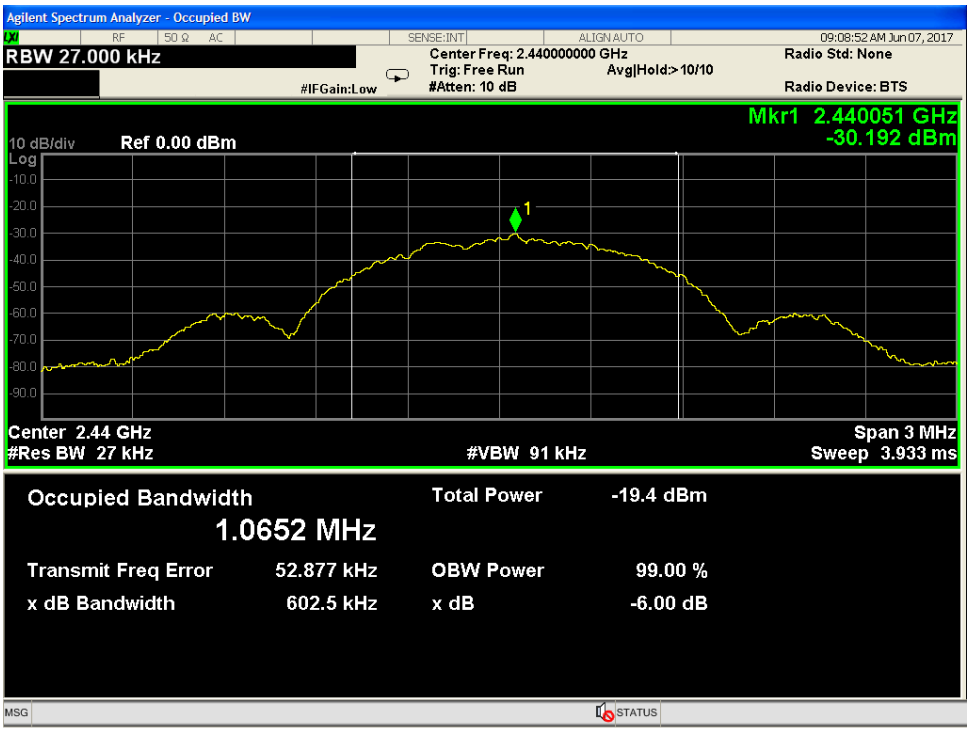
Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental EXA Signal Analyzer(1118470)	9KHz-26.5GHz	N9010A-526;M	AT	MY51170093	1118470	I	1/3/2018	1/3/2017
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
API - 30dB 20W Attenuator	9KHz-40GHz	89-30-11	API Weinschel	703	2121	I	3/22/2018	3/22/2217
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2286	9KHz-26.5GHz	FLC-1.5FT-SMSM+	Mini-Circuits	16021030		II	1/27/2018	1/27/2017

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

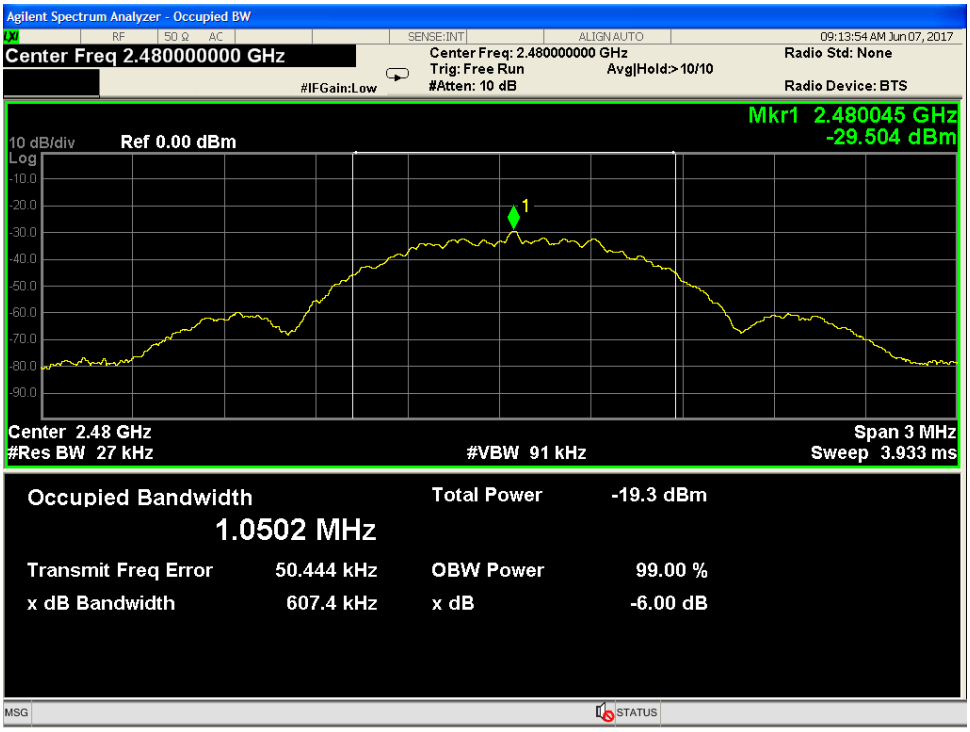
PLOTS



Low Channel



Mid Channel



High Channel

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.

Measurement	Expanded Uncertainty k=2	Maximum allowable uncertainty
Radiated Emissions (30-1000MHz) NIST CISPR	 5.6dB 4.6dB	 N/A 5.2dB (Ucispr)
Radiated Emissions (1-26.5GHz)	4.6dB	N/A
Radiated Emissions (above 26.5GHz)	4.9dB	N/A
Magnetic Radiated Emissions	5.6dB	N/A
Conducted Emissions NIST CISPR	 3.9dB 3.6dB	 N/A 3.6dB (Ucispr)
Telco Conducted Emissions (Current)	2.9dB	N/A
Telco Conducted Emissions (Voltage)	4.4dB	N/A
Electrostatic Discharge	11.5%	N/A
Radiated RF Immunity (Uniform Field)	1.6dB	N/A
Electrical Fast Transients	23.1%	N/A
Surge	23.1%	N/A
Conducted RF Immunity	3dB	N/A
Magnetic Immunity	12.8%	N/A
Dips and Interrupts	2.3V	N/A
Harmonics	3.5%	N/A
Flicker	3.5%	N/A
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		

Conditions of Testing

[Bureau Veritas Consumer Products Services, Inc., a Massachusetts corporation], and/or its affiliates (collectively, the "Company") will conduct, at the request of the Submitter ("Client"), the tests specified on the submitted Test Request Form or equivalent in accordance with, and subject to, the following terms and conditions (collectively, "Conditions"):

1. All orders for tests are subject to acceptance by the Company, and no order will constitute a binding commitment of the Company unless and until such order is accepted by it, as evidenced by the issuance of a written report ("Test Report") by the Company. The Test Report is issued solely by the Company, is intended for the exclusive use of Client and shall not be published, used for advertising purposes, copied or replicated for distribution to any other person or entity or otherwise publicly disclosed without the prior written consent of the Company. By submitting a request for services to the Company, Client consents to the disclosure to accreditation bodies of those records of Client relevant to the accreditation body's assessment of the Company's competence and compliance with relevant accreditation criteria. The Company shall not be liable for any loss or damage whatsoever resulting from the failure of the Company to provide its services within any time period for completion estimated by the Company. If Client anticipates using the Test Report in any legal proceeding, arbitration, dispute resolution forum or other proceeding, it shall so notify the Company prior to submitting the Test Report in such proceeding. The Company has no obligation to provide a fact or expert witness at such proceeding unless the Company agrees in advance to do so for a separate and additional fee.
2. The Test Report will set forth the findings of the Company solely with respect to the test samples identified therein. Unless specifically and expressly indicated in the Test Report, the results set forth in such Test Report are not intended to be indicative or representative of the quality or characteristics of the lot from which a test sample is taken, and Client shall not rely upon the Test Report as being so indicative or representative of the lot or of the tested product in general. The Test Report will reflect the findings of the Company at the time of testing only, and the Company shall have no obligation to update the Test Report after its issuance. The Test Report will set forth the results of the tests performed by the Company based upon the written information provided to the Company. The Test Report will be based solely on the samples and written information submitted to the Company by Client, and the Company shall not be obligated to conduct any independent investigation or inquiry with respect thereto.
3. The Company may, in its sole discretion, destroy samples which have been furnished to the Company for testing and which have not been destroyed in the course of testing. The Company may delegate the performance of all or a portion of the services contemplated hereunder to an affiliate, agent or subcontractor of the Company, and Client consents to such delegation.
4. These Conditions and the Test Report represent the entire understanding of the parties hereto with respect to the subject matter hereof and of the Test Report, and no modification, variance or extrapolation with respect thereto shall be permitted without the prior written consent of the Company.
5. The names, service marks, trademarks and copyrights of the Company and its affiliates, including the names "**BUREAU VERITAS," "BUREAU VERITAS CONSUMER PRODUCTS SERVICES," "BVCPS", "MTL", "ACTS", "MTL-ACTS" and CURTIS-STRAUS** (collectively, the "Marks") are and shall remain the sole property of the Company or its affiliates and shall not be used by Client except solely to the extent that Client obtains the prior written approval of the Company and then only in the manner prescribed by the Company. Client shall not contest the validity of the Marks or take any action that might impair the value or goodwill associated with the Marks or the image or reputation of the Company or its affiliates.
6. Payment in full shall be due 30 days after the date of invoice. Interest shall be due on overdue amounts from the due date until paid at an interest rate of 1.5% per month or, if less, the maximum rate permitted by law. The Company reserves the right, at any time and from time to time, to revoke any credit extended to Client. Client shall reimburse the Company for any costs it incurs in collecting past due amounts, including court costs and fees and expenses of attorneys and collection agencies. The Test Report may not be used or relied upon by Client if and for so long as Client fails to pay when due any invoice issued by the Company or any affiliate of it to Client or any affiliate or subsidiary of Client together with interest and penalties, if any, accrued thereon.
7. The Company disclaims any and all responsibility or liability arising out of or in connection with e-mail transmissions of such information.
8. Client understands and agrees that the Company is neither an insurer nor a guarantor, that the Company does not take the place of Client or any designer, manufacturer, agent, buyer, distributor or transportation or shipping company, and that the Company disclaims all liability in such capacities. Client further understands that if it seeks assurance against loss or damage, it should obtain appropriate insurance.
9. Client agrees that the Company, by providing the services, does not take the place of Client nor any third party, nor does the Company release them from any of their obligations, nor does the Company otherwise assume, abridge, abrogate or undertake to discharge any duty of any third party to Client or any duty of Client or any third party to any other third party, and Client will not release any third party from its obligations and duties with respect to the tested goods.
10. Client shall, on a timely basis, (a) provide adequate instructions to the Company in order to enable the Company to perform properly its services, (b) provide, or cause Client's suppliers and contractors to provide, the Company with all documents necessary to enable the Company to perform its services, (c) furnish the Company with all relevant information regarding Client's intended use and purposes of the tested goods, (d) advise the Company of essential dates and deadlines relevant to the tested goods and (e) fully exercise all rights and remedies available to Client against third parties in respect of the tested goods.
11. The Company shall undertake due care and ordinary skill in the performance of its services to Client, and the Company shall accept responsibility only were such skill has not been exercised and, even in such event, only to the extent of the limitation of liability set forth herein.
12. If Client desires to assert a claim arising from or relating to (i) the performance, purported performance or non-performance of any services by the Company or (ii) the sale, resale, manufacture, distribution or use of any tested goods, it must submit that claim to the Company in a writing that sets forth with particularity the basis for such claim within 60 days from discovery of the potential claim and not more than six months after the date of issuance of the Test Report to Client. Client waives any and all such claims including, without limitation, claims that the Test Report is inaccurate, incomplete or misleading or that additional or different testing is required, unless and then only to the extent that Client submits a written claim to the Company within both such time periods.
13. CLIENT SHALL, EXCEPT TO THE EXTENT OF COMPANY'S LIABILITY TO CLIENT HEREUNDER (WHICH IN NO EVENT SHALL EXCEED THE LIMITATION OF LIABILITY HEREIN), HOLD HARMLESS AND INDEMNIFY THE COMPANY, ITS AFFILIATES AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES, AGENTS AND SUBCONTRACTORS AGAINST ALL ACTUAL OR ALLEGED THIRD PARTY CLAIMS FOR LOSS, DAMAGE OR EXPENSE OF WHATSOEVER NATURE AND HOWSOEVER ARISING FROM OR RELATING TO (i) THE PERFORMANCE, PURPORTED PERFORMANCE OR NON-PERFORMANCE OF ANY SERVICES BY THE COMPANY OR (ii) THE SALE, RESALE, MANUFACTURE, DISTRIBUTION OR USE OF ANY TESTED GOODS.
14. EXCEPT AS MAY OTHERWISE BE EXPRESSLY AGREED TO IN WRITING BY THE COMPANY AND NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN OR IN ANY TEST REPORT, NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, IS MADE.

15. (A) IN NO EVENT WHATSOEVER SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, EXEMPLARY OR PUNITIVE DAMAGES IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE TEST REPORT OR THE SERVICES PROVIDED BY THE COMPANY HEREUNDER, INCLUDING WITHOUT LIMITATION LOSS OF OR DAMAGE TO PROPERTY; LOSS OF INCOME, PROFIT OR USE; OR ANY CLAIMS OR DEMANDS MADE AGAINST CLIENT OR ANY OTHER PERSON BY ANY THIRD PARTY IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE SERVICES PROVIDED BY THE COMPANY HEREUNDER.

(B)NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN, AND IN RECOGNITION OF THE RELATIVE RISKS AND BENEFITS TO CLIENT AND THE COMPANY ASSOCIATED WITH THE TESTING SERVICES CONTEMPLATED HEREBY, THE RISKS HAVE BEEN ALLOCATED SUCH THAT UNDER NO CIRCUMSTANCES WHATSOEVER SHALL THE LIABILITY OF THE COMPANY TO CLIENT OR ANY THIRD PARTY IN RESPECT OF ANY CLAIM FOR LOSS, DAMAGE OR EXPENSE, OF WHATSOEVER NATURE OR MAGNITUDE, AND HOWSOEVER ARISING, EXCEED AN AMOUNT EQUAL TO FIVE (5) TIMES THE AMOUNT OF THE FEES PAID TO THE COMPANY FOR THE SPECIFIC SERVICES WHICH GAVE RISE TO SUCH CLAIM OR U.S.$10,000, WHICHEVER IS THE LESSER AMOUNT.

16. The Company shall not be liable for any loss or damage resulting from any delay or failure in performance of its obligations hereunder resulting directly or indirectly from any event of force majeure or any event outside the control of the Company. If any such event occurs, the Company may immediately cancel or suspend its performance hereunder without incurring any liability whatsoever to Client.

17. Company's services, including these Conditions, shall be governed by, and construed in accordance with, the local laws of the country where the Company performs the tests or, in the case of tests performed in the United States of America, the laws of Massachusetts without regard to conflicts of laws principles. If any aspect(s) of these Conditions is found to be illegal or unenforceable, the validity, legality and enforceability of all remaining aspects of these Conditions shall not in any way be affected or impaired thereby. Any proceeding related to the subject matter hereof shall be brought, if at all, in the courts of the country where the Company performs the tests or, in the case of tests performed in the United States of America, in the courts of Massachusetts. Client waives the right to interpose any counterclaim or setoffs of any nature in any litigation arising hereunder.

The complete list of the Approved Subcontractors Curtis-Straus may use to delegate the performance of work can be provided upon request.
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