Test Report

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

Report No	EQ1581-2
Client	ROAR for Good, LLC Joseph Crabtree
Address	3401 Market St. Suite 200 Philadelphia, PA 19104 USA
Phone	(856) 577-7343
Items tested	Athena
FCC ID	2AJ85-RR1000
IC ID	22154-RR1000
FRN	0026003616
Equipment Type	Digital Transmission System
Equipment Code	DTS
Emission Designator	1M02F1D
FCC/IC Rule Parts	CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 1
Test Dates	February 14 to 21, 2017
Results	As detailed within this report
Prepared by	Zachary Johnson – Test Engineer
Authorized by	Yunus Fazilogiu – Sr. EMC Engineer
Issue Date	3/30/2017
Conditions of Issue	This Test Report is issued subject to the conditions stated in the '*Conditions of Testing*' section on page 39 of this report.

Contents

Form Final Report REV 12-07-15

Summary

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

"Athena" is a Bluetooth Low Energy transmitter operating in the 2402MHz-2480MHz frequency range.

Antenna Type: Internal surface mount chip

Gain: +0.5 dBi

We found that the product met the above requirements without modification.

Test samples were received in good condition.

Test Methodology

All testing was performed according to the following rules/procedures/documents;
CFR 47 FCC Part 15.247, RSS-247 Issue 1, RSS-Gen Issue 4, FCC KDB 558074 D01 DTS Measurement Guidance v03r05 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. The device antenna could not be maximized separately.

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

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

EUT operating voltage is 5VDC from battery or USB.

The following bandwidths were used during radiated spurious emissions testing.

Frequency	RBW	VBW
0.15-30MHz	9kHz	30kHz
30-1000MHz	120kHz	1MHz
1-25GHz	1MHz	3MHz

Product Tested - Configuration Documentation

EUT Configuration			
Work Order:	Q1581		
Company:	ROAR for Good, LLC		
Company Address:	3401 Market St. Suite 200		
	Philadelphia, PA 19104 USA		
Contact:	Joseph Crabtree		
	MN	**PN**	**SN**
EUT:	RR1000	--	Sample 1
	RR1000	--	Sample 2 (Antenna Port tests)
EUT Description:	ROAR Athena		
EUT Tx Frequency:	2402 to 2480MHz		

Support Equipment	**MN**	**SN**
Anker PowerPort2 USB Wall Charger	A2141	FY6461FF

Port Label	Port Type	# ports	# populated	cable type	shielded	ferrites	length (m)	in/out	under test	comment
Micro USB	USB	1	1	USB	Yes	No	0.2	in	yes	

Software Operating Mode Description:

The EUT provides Bluetooth communication with a single pushbutton. EUT is set to transmit on single channel; Low (2402 MHz), Mid (2440 MHz) and High (2480 MHz) respectively.

Statement of Conformity

The EUT has been found to conform to the following parts of FCC 15.247 and RSS 247 as detailed below:

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 for this device is a permanently installed PCB antenna with a +0.5dBi 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	EUT operating voltage is 5VDC from battery or USB. AC side of support DC Power Supply meets the AC Line conducted emissions requirements of this section.
			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

No modifications required for compliance

Test Results

Bandwidth

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

MEASUREMENTS / RESULTS

6dB Bandwidth

Date: 21-Feb-17 **Company:** ROAR for Good, LLC **Work Order:** Q1581
Engineer: Zac Johnson **EUT:** ROAR Athena **EUT Operating Voltage/Frequency:** 5.0V DC USB
Temp: 20.5°C **Humidity:** 34% **Pressure:** 1015mBar

Frequency Range: 2402-2480 MHz **Measurement Type:** Conducted Antenna Port
Measurement Method: FCC KDB 558074 D01 DTS Meas Guidance v03r05 Section 8.2

Notes:

Frequency (MHz)	Reading (kHz)	6dB Bandwidth Limit (kHz)	Margin (kHz)	Result (Pass/Fail)
2402	685.4	≥500	185	Pass
2440	685.4	≥500	185	Pass
2480	693.3	≥500	193	Pass

Test Site: CEMI-05 **Cable:** 2288 **Attenuator:** 2107 40dB
Analyzer: EXA 1118470

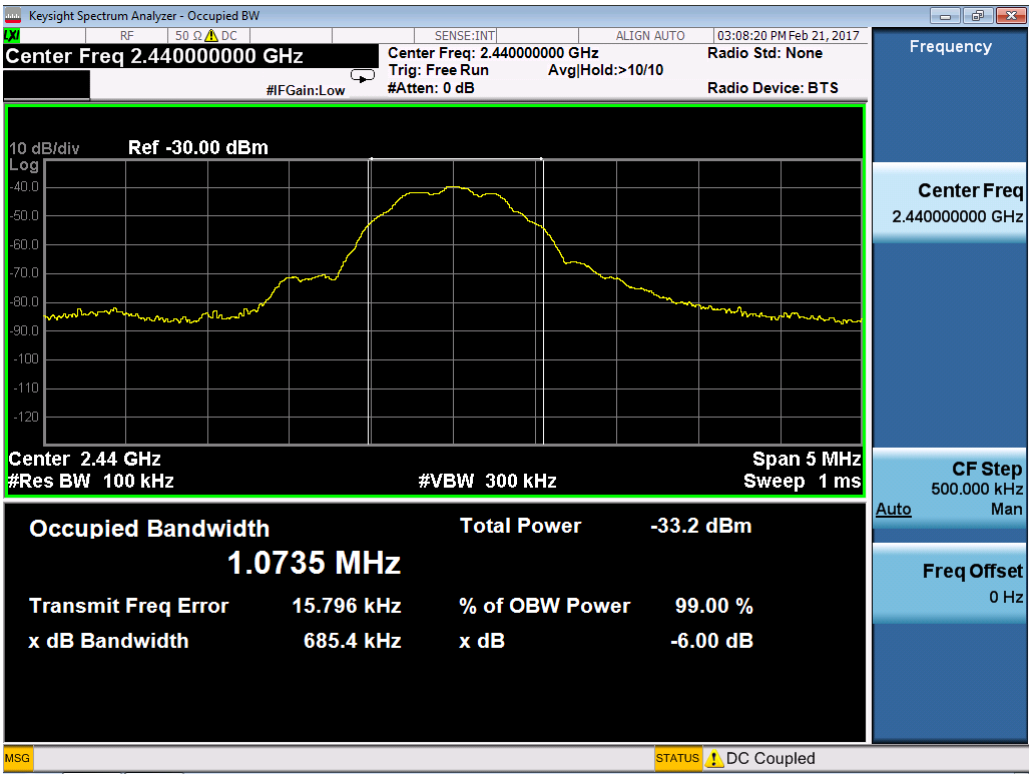
Rev. 2/20/2017

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
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 5	719150		A-0015			III	NA	N/A
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
API - 40dB 100W Attenuator	0.009-18GHz	48-40-34	API Weinschel	CG7990	2107	II	10/2/2017	10/2/2016
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#2085		HTC-1	HDE		2085	II	4/5/2017	4/5/2016
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2288	9KHz-26.5GHz	FLC-1.5FT-SMSM+	Mini-Circuits	16021029		II	1/27/2018	1/27/2017

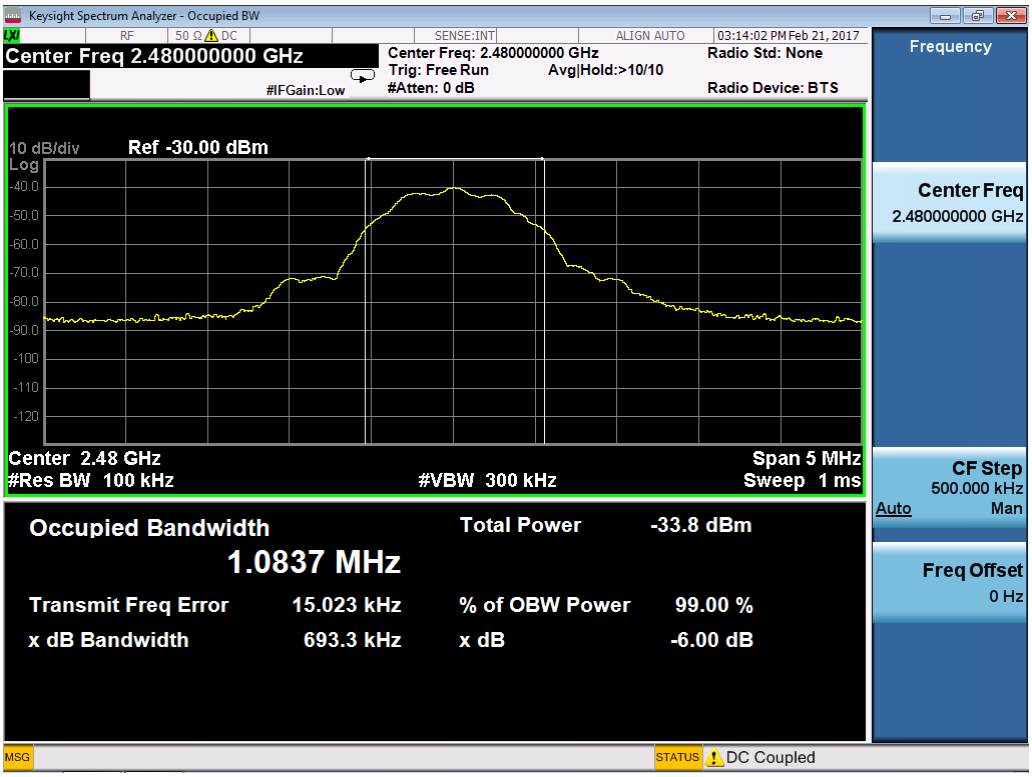
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

PLOTS

Low Channel DTS Bandwidth



Middle Channel DTS Bandwidth



High Channel DTS Bandwidth

Peak Output Power

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

MEASUREMENTS / RESULTS

Peak Output Power

Date: 20-Feb-17 **Company:** ROAR for Good, LLC **Work Order:** Q1581
Engineer: Zac Johnson **EUT:** ROAR Athena **EUT Operating Voltage/Frequency:** 5.0V DC USB
Temp: 20.5°C **Humidity:** 34% **Pressure:** 1015mBar
Frequency Range: 2402-2480 MHz **Measurement Type:** Conducted Antenna Port
Measurement Method: FCC KDB 558074 D01 DTS Meas Guidance v03r05 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)
2402.0	-39.59	0.32	39.42	0.15	30.0	-29.85	Pass
2440.0	-39.35	0.32	39.42	0.39	30.0	-29.61	Pass
2480.0	-40.13	0.32	39.42	-0.39	30.0	-30.39	Pass

Test Site: CEMI-05 **Cable:** 2288 **Attenuator:** 2107 40dB
Analyzer: EXA 1118470

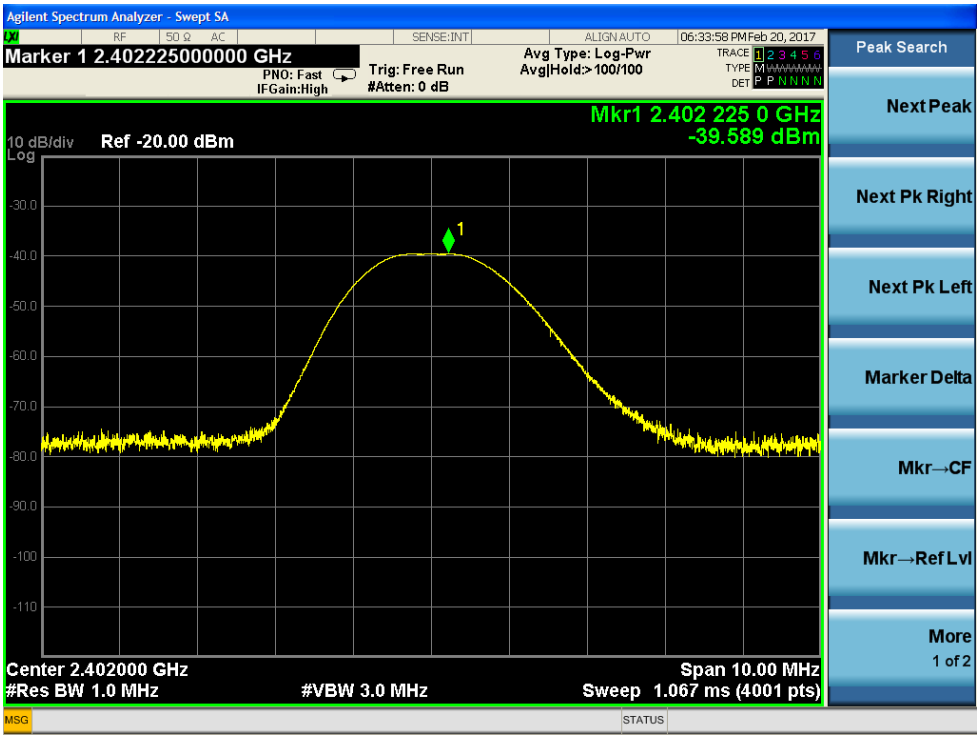
Peak Output Power (dBm)= Peak Reading (dBm) + Cable Loss (dB) + Attenuator Loss (dB)

Rev. 2/20/2017

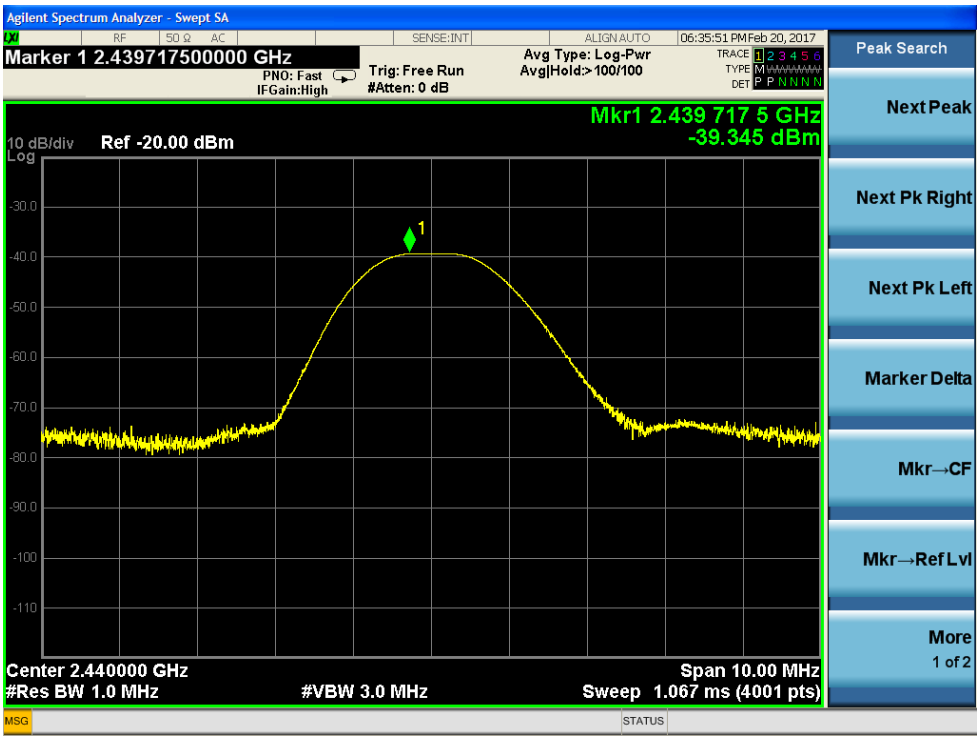
Spectrum Analyzers / Receivers /Preselectors	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Rental EXA Signal Analyzer(1118470)	9KHz-26.5GHz	N9010A-526;M	AT	MY51170093	1118470	I	1/3/2018	1/3/2017
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 5	719150		A-0015			III	NA	N/A
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
API - 40dB 100W Attenuator	0.009-18GHz	48-40-34	API Weinschel	CG7990	2107	II	10/2/2017	10/2/2016
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#2085		HTC-1	HDE		2085	II	4/5/2017	4/5/2016
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2288	9KHz-26.5GHz	FLC-1.5FT-SMSM+	Mini-Circuits	16021029		II	1/27/2018	1/27/2017

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

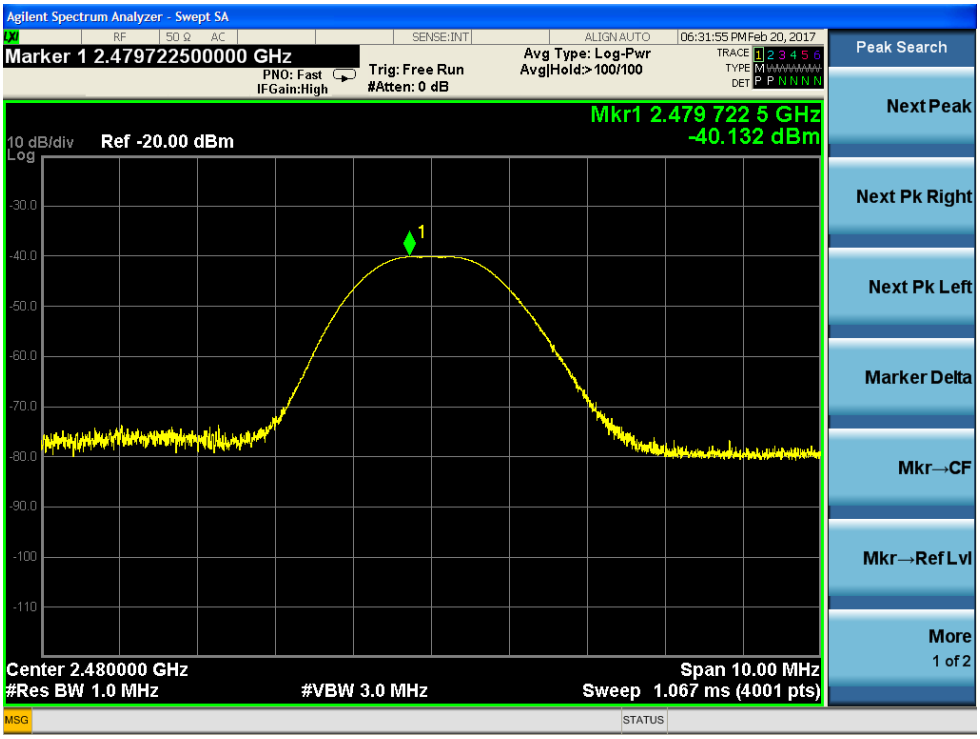
PLOTS



Low Channel Peak Output Power



Middle Channel Peak Output Power



High Channel Peak Output Power

Band Edge Measurements

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

Radiated Emissions Table - Band Edge

Date: 15-Feb-17 **Company:** ROAR for Good, LLC **Work Order:** Q1581
Engineer: Zac Johnson **EUT Desc:** ROAR Athena **EUT Operating Voltage/Frequency:** 5V DC USB
Temp: 23.8°C **Humidity:** 22% **Pressure:** 993mBar
Frequency Range: Bandedges 2400-2483.5MHz **Measurement Distance:** 3 m
Notes: CW High Power Mode **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 15.209 Limit (dBµV/m)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)	FCC 15.209 Limit (dBµV/m)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)
H	2400.0	23.0	3.0	0.0	28.2	3.4	54.6	34.6	74.0	-19.4	Pass	54.0	-19.4	Pass
V	2400.0	23.5	3.5	0.0	28.2	3.4	55.1	35.1	74.0	-18.9	Pass	54.0	-18.9	Pass
H	2483.5	23.1	3.1	0.0	28.2	3.3	54.6	34.6	74.0	-19.4	Pass	54.0	-19.4	Pass
V	2483.5	22.6	2.6	0.0	28.2	3.3	54.1	34.1	74.0	-19.9	Pass	54.0	-19.9	Pass

Table Result: Pass by -18.9 dB ***Worst Freq:*** 2400.0 MHz

Test Site: EMI Chamber 1 **Cable 1:** Asset #2051 **Cable 2:** Asset #2054 **Cable 3:** ---
Analyzer: Black **Preamp:** none **Antenna:** Yellow Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.182
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 2/13/2017

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		Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	1-18GHz		I	5/23/2017	5/23/2015

Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Yellow Horn	1-18GHz	3115	EMCO	9608-4898	37	I	8/9/2018	8/6/2016

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#2080		HTC-1	HDE		2080	II	4/5/2017	4/5/2016

Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2051	9kHz - 18GHz		Florida RF			II	3/2/2017	3/2/2016
Asset #2054	9kHz - 18GHz		Florida RF			II	10/1/3017	10/30/2016
REMI-High-07	1 - 26.5GHz	TRU-21B0707-120	TRU			II	8/14/2017	8/14/2016

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

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

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
Top Peaks Horizontal 30-1000MHz
Operator: Chris Bramley
lient Present: None
ompany: ROAR for Good

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	EUT Azimuth	Antenna Height	Margin Limit 1
MHz	dB	dBµV	dB	dB/m	dB	dBµV/m	dBµV/m	dB	Pass/Fail	degrees	centimeters	dB
30.291	-11.9	26	25.4	21.2	0.4	22.1	40	-17.9	PASS	315	200	
87.957	-12.9	38.5	25.4	7.5	0.5	21.1	40	-18.9	PASS	90	200	
92.541	-12.9	41.2	25.4	8.3	0.5	24.6	43.5	-18.9	PASS	90	200	
97.076	-8.2	44.8	25.4	9.4	0.5	29.3	43.5	-14.2	PASS	270	200	-14.2
99.646	-11.1	41.2	25.4	10.1	0.6	26.4	43.5	-17.1	PASS	90	200	
865.558	-13	28.6	25.5	21.9	2	27	46	-19	PASS	270	150	

All 3 channels were investigated; only the worst case recorded.
2402MHz - High Power CW

EUT Description - ROAR Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

30 to 1000 MHz Radiated Spurious Horizontal

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
Top Peaks Vertical 30-1000MHz
Operator: Chris Bramley
lient Present: None
ompany: ROAR for Good

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	Turntable Azimuth	Antenna Height	Worst Margin Limit 1
MHz	dB	dBµV	dB	dB/m	dB	dBµV/m	dBµV/m	dB	Pass/Fail	degrees	centimeters	dB
30.049	-8.8	28.9	25.4	21.4	0.4	25.2	40	-14.8	PASS	180	100	
43.58	-9	38.8	25.4	11.3	0.4	25	40	-15	PASS	0	100	
45.181	-7	41.7	25.4	10.3	0.4	27	40	-13	PASS	45	100	-13
48.406	-11.5	38.8	25.4	8.7	0.4	22.5	40	-17.5	PASS	315	100	
97.027	-13.1	39.9	25.4	9.4	0.5	24.4	43.5	-19.1	PASS	180	200	
98.167	-13.3	39.4	25.4	9.7	0.5	24.3	43.5	-19.3	PASS	180	200	

All 3 channels were investigated; only the worst case recorded.
2402MHz - High Power CW

EUT Description - ROAR Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

30 to 1000 MHz Radiated Spurious Vertical

Rev. 3/12/2017

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**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz		II	12/21/2018	12/21/2016
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	10/30/2017	10/30/2016
A#2111 HF Preamp	0.5-18GHz	PAM-118A	COM-POWER	551063	2111	II	11/5/2017	11/5/2016
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-Brown Bilog	30-2000MHz	JB1	Sunol	A0032406	1218	I	1/13/2019	1/13/2017
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#2080		HTC-1	HDE		2080	II	4/5/2017	4/5/2016
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2051	9kHz - 18GHz		Florida RF			II	3/5/2018	3/5/2017
Asset #2054	9kHz - 18GHz		Florida RF			II	10/1/3017	10/30/2016
REMI-High-07	1 - 26.5GHz	TRU-21B0707-120	TRU			II	8/14/2017	8/14/2016

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

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Horizontal Tabular Data
Operator: Chris Bramley
lient Present: None
ompany: ROAR for Good

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
2041.4	28.8	19.1	18.4	28	3.1	41.5	31.7	74	-32.5	PASS	54	-22.2	PASS		
4804.1	29.1	23	17.7	33.1	4.9	49.4	43.3	74	-24.6	PASS	54	-10.7	PASS		-10.7
5975	26.1	15.5	17.1	34.6	5.8	49.5	38.9	74	-24.5	PASS	54	-15.1	PASS	-24.5	

EUT Tx on Low Channel
2402MHz - High Power CW

EUT Description - ROAR Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

1-6GHz Radiated Spurious Horizontal (2402 MHz)

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Vertical Tabular Data
Operator: Chris Bramley
Client Present: None
Company: ROAR for Good

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
4803.9	32.6	28.5	17.7	33.1	4.9	52.9	48.9	74	-21.1	PASS	54	-5.1	PASS	-21.1	-5.1
5923.3	27	15.7	17.1	34.5	5.7	50.1	38.8	74	-23.9	PASS	54	-15.2	PASS		

EUT Tx on Low Channel
2402MHz - High Power CW

EUT Description - ROAR Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

1-6GHz Radiated Spurious Vertical (2402 MHz)

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Horizontal Tabular Data
Operator: Chris Bramley
Client Present: None
Company: ROAR for Good

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
4879.8	34.4	31.4	17.4	33.2	4.9	55.1	52	74	-18.9	PASS	54	-1.9	PASS	-18.9	-1.9
5862.5	24.9	15.7	17.2	34.3	5.7	47.8	38.6	74	-26.2	PASS	54	-15.4	PASS		

EUT Tx on Mid Channel
2440MHz - High Power CW

EUT Description - ROAR Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

1-6GHz Radiated Spurious Horizontal (2440 MHz)

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Vertical Tabular Data
Operator: Chris Bramley
Client Present: None
Company: ROAR for Good

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	Filter Factor
MHz	dBµV	dBµV	dB	dB/m	dB	dBµV/m	dBµV/m	dBµV/m	dB	Pass/Fail	dBµV/m	dB	Pass/Fail	dB	dB	
*4880	39.1	19.1	17.4	33.2	4.9	60.1	40.1	74	-13.9	PASS	54	-13.9	PASS	-13.9	3.9	0.3

EUT Tx on Mid Channel
2440MHz - High Power CW
*Duty Cycle Correction Factor (DCCF) is applied to harmonic measurement where it is applicable; worst case applied -20dB.

EUT Description - ROAR Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

1-6GHz Radiated Spurious Vertical (2440 MHz)

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Horizontal Tabular Data
Operator: Chris Bramley
Client Present: None
Company: ROAR for Good

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
4959.9	34.4	32.3	17.3	33.3	4.9	55.3	53.1	74	-18.7	PASS	54	-0.8	PASS	-18.7	-0.8
5977.3	23.4	14.9	17.1	34.6	5.8	46.7	38.3	74	-27.2	PASS	54	-15.7	PASS		

EUT Tx on High Channel
2480MHz - High Power CW

EUT Description - ROAR Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

1-6GHz Radiated Spurious Horizontal (2480 MHz)

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Vertical Tabular Data
Operator: Chris Bramley
Client Present: None
Company: ROAR for Good

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
*4960.1	40.6	20.6	17.3	33.3	4.9	61.5	41.5	74	-12.5	PASS	54	-12.5	PASS	-12.5	6.2
5909	24.1	15.2	17.1	34.4	5.7	47.1	38.3	74	-26.8	PASS	54	-15.7	PASS		

EUT Tx on High Channel
2480MHz - High Power CW
*Duty Cycle Correction Factor (DCCF) is applied to harmonic measurement where it is applicable; worst case applied -20dB.

EUT Description - ROAR Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

1-6GHz Radiated Spurious Vertical (2480 MHz)

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Horizontal Tabular Data
Operator: Chris Bramley
Client Present: None
Company: ROAR for Good

Frequency	Raw Peak Reading	Raw Average Reading	Preamplifier Factor	Antenna Factor	Cable Factor	Adjusted Peak Amplitude	Adjusted Average Amplitude	Peak Limit	Peak Margin	Peak Results	Average Limit	Average Margin	Average Results	EUT Azimuth	Antenna Height
MHz	dBµV	dBµV	dB	dB	dB	dBµV/m	dBµV/m	dBµV/m	dB	Pass/Fail	dBµV/m	dB	Pass/Fail	degrees	cm
*7206	63.7	43.7	37.1	37.1	9.6	73.4	53.3	83.5	-10.1	PASS	63.5	-10.2	PASS	116	150
*9607.9	61.2	41.2	36.3	38.8	10.4	74.1	54.1	83.5	-9.4	PASS	63.5	-9.4	PASS	108	150
12010	49.7	48.7	37	39	12.3	64	63	83.5	-19.5	PASS	63.5	-0.5	PASS	114	155
14410.9	38.1	28.1	37	40.9	13.2	55.2	45.2	83.5	-28.3	PASS	63.5	-18.3	PASS	164	140
16814.2	44.3	41.7	37.2	41	14.4	62.4	59.9	83.5	-21.1	PASS	63.5	-3.6	PASS	121	150
17910.8	33.6	24.8	35.4	44.7	15.2	58.1	49.3	83.5	-25.4	PASS	63.5	-14.2	PASS	228	196

EUT Tx on Low Channel
2402MHz - High Power CW
*Duty Cycle Correction Factor (DCCF) is applied to harmonic measurement where it is applicable; worst case applied -20dB.

EUT Description - ROAR Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

6-18GHz Radiated Spurious Horizontal (2402 MHz)

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Vertical Tabular Data
Operator: Chris Bramley
Client Present: None
Company: ROAR for Good

Frequency	Raw Peak Reading	Raw Average Reading	Preamplifier Factor	Antenna Factor	Cable Factor	Adjusted Peak Amplitude	Adjusted Average Amplitude	Req. 1 Peak Limit	Peak Margin	Peak Results	Average Limit	Average Margin	Average Results	EUT Azimuth	Antenna Height
MHz	dBµV	dBµV	dB	dB	dB	dBµV/m	dBµV/m	dBµV/m	dB	Pass/Fail	dBµV/m	dB	Pass/Fail	degrees	cm
*7206	70	50	37.1	37.1	9.6	79.6	59.6	83.5	-3.9	PASS	63.5	-3.9	PASS	141	152
*9608	65.9	45.9	36.3	38.8	10.4	78.8	58.8	83.5	-4.7	PASS	63.5	-4.7	PASS	139	139
12010.1	51.5	47.7	37	39	12.3	65.7	61.9	83.5	-17.8	PASS	63.5	-1.6	PASS	130	139
14409.5	37.2	27.2	37	40.9	13.2	54.3	44.3	83.5	-29.2	PASS	63.5	-19.2	PASS	106	100
16811.4	37.3	27.4	37.2	41	14.4	55.5	45.6	83.5	-28	PASS	63.5	-17.9	PASS	96	139
17944.6	35.7	25	35.5	44.9	15.3	60.4	49.6	83.5	-23.1	PASS	63.5	-13.9	PASS	275	200

EUT Tx on Low Channel
2402MHz - High Power CW
*Duty Cycle Correction Factor (DCCF) is applied to harmonic measurement where it is applicable; worst case applied -20dB.

EUT Description - ROAR Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

6-18GHz Radiated Spurious Vertical (2402 MHz)

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Horizontal Tabular Data
Operator: Chris Bramley
Client Present: None
Company: ROAR for Good

Frequency	Raw Peak Reading	Raw Average Reading	Preamplifier Factor	Antenna Factor	Cable Factor	Adjusted Peak Amplitude	Adjusted Average Amplitude	Peak Limit	Peak Margin	Peak Results	Average Limit	Average Margin	Average Results	EUT Azimuth	Antenna Height
MHz	dBµV	dBµV	dB	dB	dB	dBµV/m	dBµV/m	dBµV/m	dB	Pass/Fail	dBµV/m	dB	Pass/Fail	degrees	cm
*7320	61.4	41.4	37	37.6	9.6	71.5	51.5	83.5	-12	PASS	63.5	-12	PASS	105	145
*9759.9	53.9	33.9	36.2	38.7	10.5	67	47	83.5	-16.5	PASS	63.5	-16.5	PASS	100	158
14171.9	37.9	28.3	36.7	41.6	13.3	56.2	46.6	83.5	-27.3	PASS	63.5	-16.9	PASS	54	100
15376.8	35.8	26.8	37.2	38.5	13.9	50.9	41.9	83.5	-32.6	PASS	63.5	-21.6	PASS	101	175
15957	36.1	27.4	37.4	37.9	14	50.7	41.9	83.5	-32.8	PASS	63.5	-21.6	PASS	302	196
17974.3	33.2	24.9	35.6	45	15.3	58	49.7	83.5	-25.5	PASS	63.5	-13.8	PASS	261	124

EUT Tx on Mid Channel
2440MHz - High Power CW
Filter Factor not displayed in the data
*Duty Cycle Correction Factor (DCCF) is applied to harmonic measurement where it is applicable; worst case applied -20dB.

EUT Description - Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

6-18GHz Radiated Spurious Horizontal (2440 MHz)

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Vertical Tabular Data
Operator: Chris Bramley
Client Present: None
Company: ROAR for Good

EUT Description - Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

Frequency	Raw Peak Reading	Raw Average Reading	Preamplifier Factor	Antenna Factor	Cable Factor	Adjusted Peak Amplitude	Adjusted Average Amplitude	Req. 1 Peak Limit	Peak Margin	Peak Results	Average Limit	Average Margin	Average Results	EUT Azimuth	Antenna Height
MHz	dBµV	dBµV	dB	dB	dB	dBµV/m	dBµV/m	dBµV/m	dB	Pass/Fail	dBµV/m	dB	Pass/Fail	degrees	cm
7320	69.6	49.6	37	37.6	9.6	79.8	59.8	83.5	-3.7	PASS	63.5	-3.7	PASS	137	146
9760	63.9	43.9	36.2	38.7	10.5	77	57	83.5	-6.5	PASS	63.5	-6.5	PASS	139	146
12200	48.8	47.8	37.1	38.7	12.5	62.9	61.9	83.5	-20.6	PASS	63.5	-1.6	PASS	152	136
14639.9	48	46	37.3	40.4	13.3	64.4	62.4	83.5	-19.1	PASS	63.5	-1.1	PASS	147	146
17079.9	40.3	36.3	36.2	41.4	14.6	60.1	56.1	83.5	-23.4	PASS	63.5	-7.4	PASS	148	140
17984.2	33.8	25	35.6	45.1	15.4	58.6	49.8	83.5	-24.9	PASS	63.5	-13.7	PASS	0	100

EUT Tx on Mid Channel
2440MHz - High Power CW
Filter Factor not displayed in the data
*Duty Cycle Correction Factor (DCCF) is applied to harmonic measurement where it is applicable; worst case applied -20dB.

EUT Description - Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

6-18GHz Radiated Spurious Vertical (2440 MHz)

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Horizontal Tabular Data
Operator: Chris Bramley
Client Present: None
Company: ROAR for Good

Frequency	Raw Peak Reading	Raw Average Reading	Preamplifier Factor	Antenna Factor	Cable Factor	Adjusted Peak Amplitude	Adjusted Average Amplitude	Peak Limit	Peak Margin	Peak Results	Average Limit	Average Margin	Average Results	EUT Azimuth	Antenna Height
MHz	dBµV	dBµV	dB	dB	dB	dBµV/m	dBµV/m	dBµV/m	dB	Pass/Fail	dBµV/m	dB	Pass/Fail	degrees	cm
*7440	57.8	37.8	36.9	37.6	9.6	68.1	48.1	83.5	-15.4	PASS	63.5	-15.4	PASS	0	170
9920	48.6	47	36.1	38.9	10.6	62.1	60.4	83.5	-21.4	PASS	63.5	-3.1	PASS	295	133
14210.5	37.4	28.1	36.7	41.6	13.4	55.6	46.4	83.5	-27.9	PASS	63.5	-17.1	PASS	116	175
15342.2	38.4	27.1	37.3	38.6	13.8	53.5	42.2	83.5	-30	PASS	63.5	-21.3	PASS	302	124
16383.8	37.2	28.2	37.1	39.6	14.3	53.9	45	83.5	-29.6	PASS	63.5	-18.5	PASS	290	185
17906.7	34.9	25.2	35.4	44.7	15.2	59.4	49.7	83.5	-24.1	PASS	63.5	-13.8	PASS	302	100

EUT Tx on High Channel
2480MHz - High Power CW
Filter Factor not displayed in the data
*Duty Cycle Correction Factor (DCCF) is applied to harmonic measurement where it is applicable; worst case applied -20dB.

EUT Description - ROAR Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

6-18GHz Radiated Spurious Horizontal (2480 MHz)

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Vertical Tabular Data
Operator: Chris Bramley
Client Present: None
Company: ROAR for Good

Frequency	Raw Peak Reading	Raw Average Reading	Preamplifier Factor	Antenna Factor	Cable Factor	Adjusted Peak Amplitude	Adjusted Average Amplitude	Req. 1 Peak Limit	Peak Margin	Peak Results	Average Limit	Average Margin	Average Results	EUT Azimuth	Antenna Height
MHz	dBµV	dBµV	dB	dB	dB	dBµV/m	dBµV/m	dBµV/m	dB	Pass/Fail	dBµV/m	dB	Pass/Fail	degrees	cm
7440	53.5	51.9	36.9	37.6	9.6	63.8	62.1	83.5	-19.7	PASS	63.5	-1.4	PASS	5	100
9920.1	50	47.8	36.1	38.9	10.6	63.5	61.2	83.5	-20	PASS	63.5	-2.3	PASS	13	100
12400.1	37.9	35.5	36.6	39	12.8	53	50.6	83.5	-30.5	PASS	63.5	-12.9	PASS	139	139
14005.8	36.1	27.3	36.7	41.6	12.8	53.9	45.1	83.5	-29.6	PASS	63.5	-18.4	PASS	44	100
15726.3	36.7	27.5	37.3	37.7	14	51.2	42	83.5	-32.3	PASS	63.5	-21.5	PASS	290	200
17869.8	34.7	25.1	35.4	44.5	15.2	59	49.4	83.5	-24.5	PASS	63.5	-14.1	PASS	18	100

EUT Tx on High Channel
2480MHz - High Power CW
Filter Factor not displayed in the data
*Duty Cycle Correction Factor (DCCF) is applied to harmonic measurement where it is applicable; worst case applied -20dB.

EUT Description - ROAR Athena
EUT Power Input - 5Vdc via USB
Test Site - Chamber 1
Temperature; Humidity - 23.9°C; 22%RH
Barometric Pressure - 999mBar
EUT Maximum Frequency - 2480MHz
Work Order # - Q1581

6-18GHz Radiated Spurious Vertical (2480 MHz)

Rev. 3/12/2017

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**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 1	719150	2762A-6	A-0015	1-18GHz		I	12/21/2018	12/21/2016
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Brown	1-10GHz	CS	CS	N/A	1523	II	9/25/2017	9/25/2016
A#2111 HF Preamp	0.5-18GHz	PAM-118A	COM-POWER	551063	2111	II	11/5/2017	11/5/2016
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Yellow Horn	1-18GHz	3115	EMCO	9608-4898	37	I	8/9/2018	8/6/2016
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#2080		HTC-1	HDE		2080	II	4/5/2017	4/5/2016
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2051	9kHz - 18GHz		Florida RF			II	3/5/2018	3/5/2017
Asset #2054	9kHz - 18GHz		Florida RF			II	10/1/3017	10/30/2016
REMI-High-07	1 - 26.5GHz	TRU-21B0707-120	TRU			II	8/14/2017	8/14/2016

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

Radiated Emissions Table

Date: 15-Feb-17 **Company:** ROAR for Good, LLC **Work Order:** Q1581
Engineer: Zac Johnson **EUT Desc:** ROAR Athena **EUT Operating Voltage/Frequency:** 5V DC USB
Temp: 23.8°C **Humidity:** 22% **Pressure:** 993mBar
Frequency Range: 18-25GHz **Measurement Distance:** 0.1 m
Notes: CW High Power Mode **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 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
Low				---	---	---	---	---	---	---	---	---	---	---
H / V	18857.0	44.7	44.7	41.7	40.2	5.9	49.1	49.1	103.5	-54.4	Pass	83.5	-34.4	Pass
H / V	20870.0	45.2	45.2	42.7	40.1	6.2	48.8	48.8	103.5	-54.7	Pass	83.5	-34.7	Pass
H / V	22690.0	44.5	44.5	42.1	40.5	7.0	49.9	49.9	103.5	-53.6	Pass	83.5	-33.6	Pass
H / V	24020.0	51.6	51.6	40.9	40.4	7.0	58.1	58.1	103.5	-45.4	Pass	83.5	-25.4	Pass

Table Result: Pass by -25.4 dB ***Worst Freq:*** 24020.0 MHz

Test Site: EMI Chamber 1 **Cable 1:** EMIR-HIGH-07 **Cable 2:** --- **Cable 3:** ---
Analyzer: Brown SA **Preamp:** 18-26.5GHz **Antenna:** 18-26.5GHz Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.182

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Radiated Emissions Table

Date: 15-Feb-17 **Company:** ROAR for Good, LLC **Work Order:** Q1581
Engineer: Zac Johnson **EUT Desc:** ROAR Athena **EUT Operating Voltage/Frequency:** 5V DC USB
Temp: 23.8°C **Humidity:** 22% **Pressure:** 993mBar
Frequency Range: 18-25GHz **Measurement Distance:** 0.1 m
Notes: CW High Power Mode **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 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
Mid				---	---	---	---	---	---	---	---	---	---	---
H / V	19522.0	54.65	54.7	42.0	40.3	6.0	59.0	59.0	103.5	-44.5	Pass	83.5	-24.5	Pass
H / V	21972.0	51.4	51.4	42.8	40.5	6.7	55.8	55.8	103.5	-47.7	Pass	83.5	-27.7	Pass
H / V	24140.0	46.4	46.4	41.2	40.3	6.9	52.4	52.4	103.5	-51.1	Pass	83.5	-31.1	Pass
H / V	24405.0	50.7	50.7	41.0	40.2	7.2	57.1	57.1	103.5	-46.4	Pass	83.5	-26.4	Pass

Table Result: Pass by -24.5 dB ***Worst Freq:*** 19522.0 MHz

Test Site: EMI Chamber 1 **Cable 1:** EMIR-HIGH-07 **Cable 2:** --- **Cable 3:** ---
Analyzer: Brown SA **Preamp:** 18-26.5GHz **Antenna:** 18-26.5GHz Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.182

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Radiated Emissions Table

Date: 15-Feb-17 **Company:** ROAR for Good, LLC **Work Order:** Q1581
Engineer: Zac Johnson **EUT Desc:** ROAR Athena **EUT Operating Voltage/Frequency:** 5V DC USB
Temp: 23.8°C **Humidity:** 22% **Pressure:** 993mBar
Frequency Range: 18-25GHz **Measurement Distance:** 0.1 m
Notes: CW High Power Mode **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 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
High				---	---	---	---	---	---	---	---	---	---	---
H / V	18770.0	45.0	45.0	41.7	40.2	5.8	49.3	49.3	103.5	-54.2	Pass	83.5	-34.2	Pass
H / V	19855.0	56.7	56.7	42.4	40.3	6.0	60.6	60.6	103.5	-42.9	Pass	83.5	-22.9	Pass
H / V	22323.0	52.7	52.7	42.7	40.5	6.6	57.1	57.1	103.5	-46.4	Pass	83.5	-26.4	Pass
H / V	24810.0	50.6	50.6	41.3	40.2	7.0	56.5	56.5	103.5	-47.0	Pass	83.5	-27.0	Pass

Table Result: Pass by -22.9 dB ***Worst Freq:*** 19855.0 MHz

Test Site: EMI Chamber 1 **Cable 1:** EMIR-HIGH-07 **Cable 2:** --- **Cable 3:** ---
Analyzer: Brown SA **Preamp:** 18-26.5GHz **Antenna:** 18-26.5GHz Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.182

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 2/13/2017

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	2/21/2017	1/21/2016
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 1	719150	2762A-6	A-0015	1-18GHz		I	5/23/2017	5/23/2015
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#2080		HTC-1	HDE		2080	II	4/5/2017	4/5/2016
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
REMI-High-07	1 - 26.5GHz	TRU-21B0707-120	TRU			II	8/14/2017	8/14/2016

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

Duty Cycle Correction Factor

Limits:

Unless otherwise specified, e.g., §§15.255(b), and 15.256(l)(5), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.

[15.35(c)]

MEASUREMENTS / RESULTS

Duty Cycle Correction Factor

Date: 20-Feb-17 **Company:** ROAR for Good, LLC **Work Order:** Q1581

Engineer: Zac Johnson **EUT:** ROAR Athena **EUT Operating Voltage/Frequency:** 5.0V DC USB

Temp: 20.5°C **Humidity:** 34% **Pressure:** 1015mBar

Frequency Range: 2402 MHz **Measurement Type:** Conducted Antenna Port

Notes:

Frequency (MHz)	On Time (millisecond)	Period (millisecond)	Duty Cycle Correction Factor (DCCF) DCCF = 20*log (ON TIME / 100millisecond)
2402.0	0.4429	100.00	-47.1

Test Site: CEMI-05 **Cable:** 2288 **Attenuator:** 2107 40dB

Analyzer: EXA 1118470

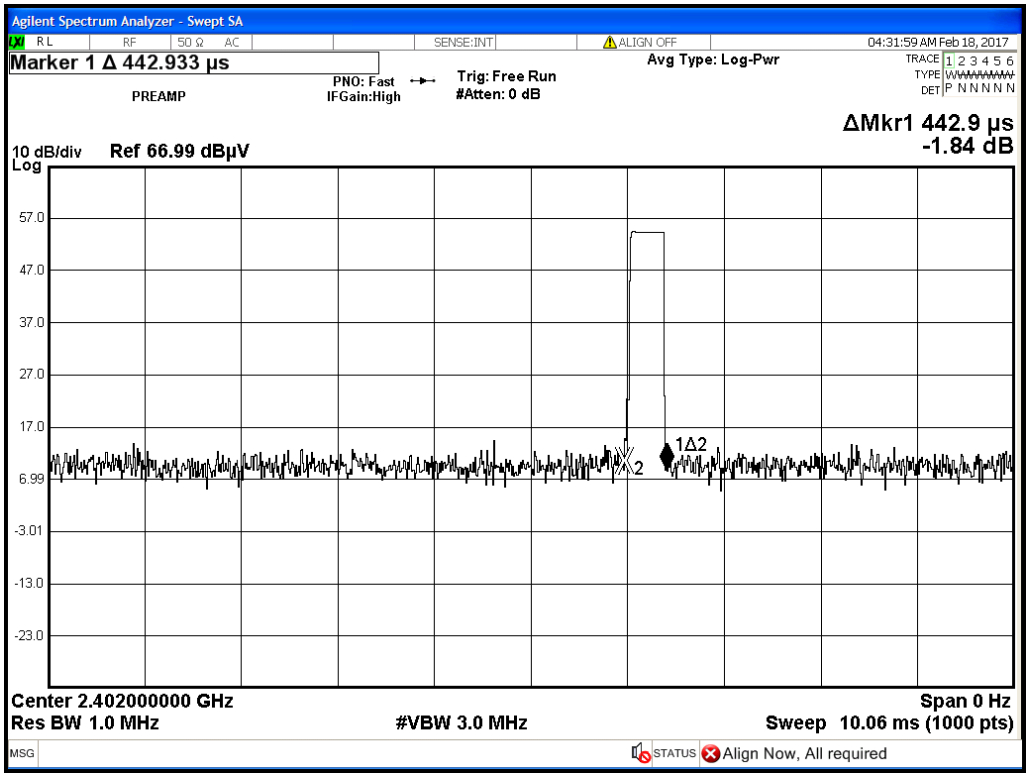
Note: Worst case DCCF (-20dB) shall be used to apply to Harmonics of the fundamental where it is applicable.

Rev. 2/20/2017

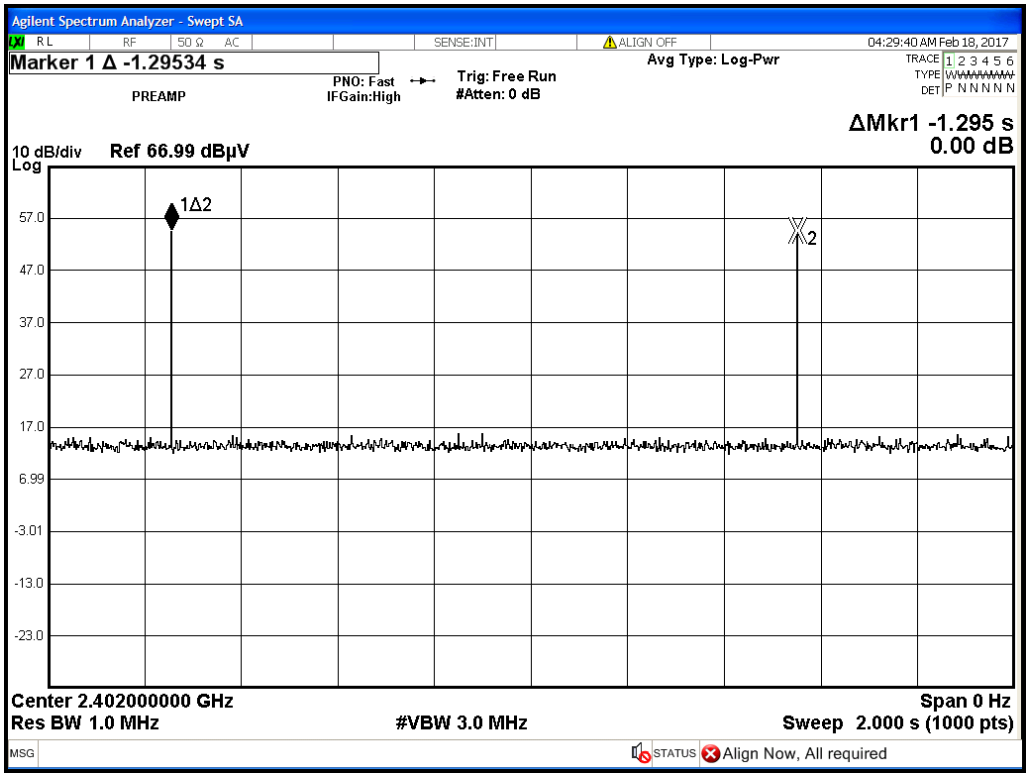
Spectrum Analyzers / Receivers /Preselectors	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Rental EXA Signal Analyzer(1118470)	9KHz-26.5GHz	N9010A-526;M	AT	MY51170093	1118470	I	1/3/2018	1/3/2017
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 5	719150		A-0015			III	NA	N/A
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
API - 40dB 100W Attenuator	0.009-18GHz	48-40-34	API Weinschel	CG7990	2107	II	10/2/2017	10/2/2016
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#2085		HTC-1	HDE		2085	II	4/5/2017	4/5/2016
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2288	9KHz-26.5GHz	FLC-1.5FT-SMSM+	Mini-Circuits	16021029		II	1/27/2018	1/27/2017

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

PLOTS



Single pulse



Period (2-second window)

Conducted Spurious Emissions

Limits: In any 100 kHz 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

Conducted Bandedge

Date: 20-Feb-17 **Company:** ROAR for Good, LLC **Work Order:** Q1581
Engineer: Zac Johnson **EUT:** ROAR Athena **EUT Operating Voltage/Frequency:** 5.0V DC USB
Temp: 20.5°C **Humidity:** 34% **Pressure:** 1015mBar
Frequency Range: 2402-2480 MHz **Measurement Type:** Conducted
Notes:

	Bandedge (dBm)	Delta (dB)	Limit (dB)	(Pass/Fail)
Low Bandedge	-87.66	48.17	≥ 20	Pass
High Bandedge	-90.00	49.93	≥ 20	Pass

Test Site: CEMI-05 **Cable:** 2288 **Attenuator:** 2107 40dB
Analyzer: EXA 1118470

Conducted Spurious Emission

Date: 20-Feb-17 **Company:** ROAR for Good, LLC **Work Order:** Q1581
Engineer: Zac Johnson **EUT:** ROAR Athena **EUT Operating Voltage/Frequency:** 5.0V DC USB
Temp: 20.5°C **Humidity:** 34% **Pressure:** 1015mBar
Frequency Range: 9KHz to 25 GHz **Measurement Type:** Conducted
Notes:

Frequency range from 9 KHz up to 25 GHz were investigated for all 3 channels (Low, Mid and High) at the EUT antenna port. Except for the fundamental frequency, all spurious emissions were at the instrument noise floor. Highest noise floor level was less than -60dB for the entire frequency range, which is more than 10dB below the fundamental limit. (see Plots for more detail)

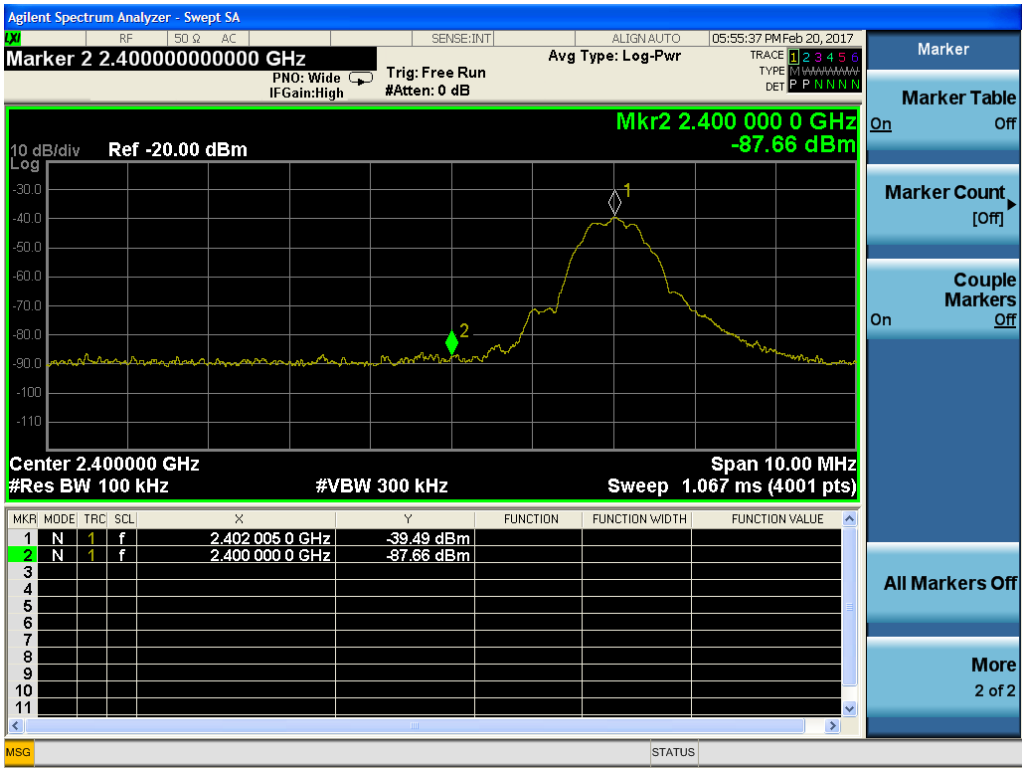
Test Site: CEMI-05 **Cable:** 2288 **Attenuator:** 2107 40dB
Analyzer: EXA 1118470

Rev. 2/20/2017

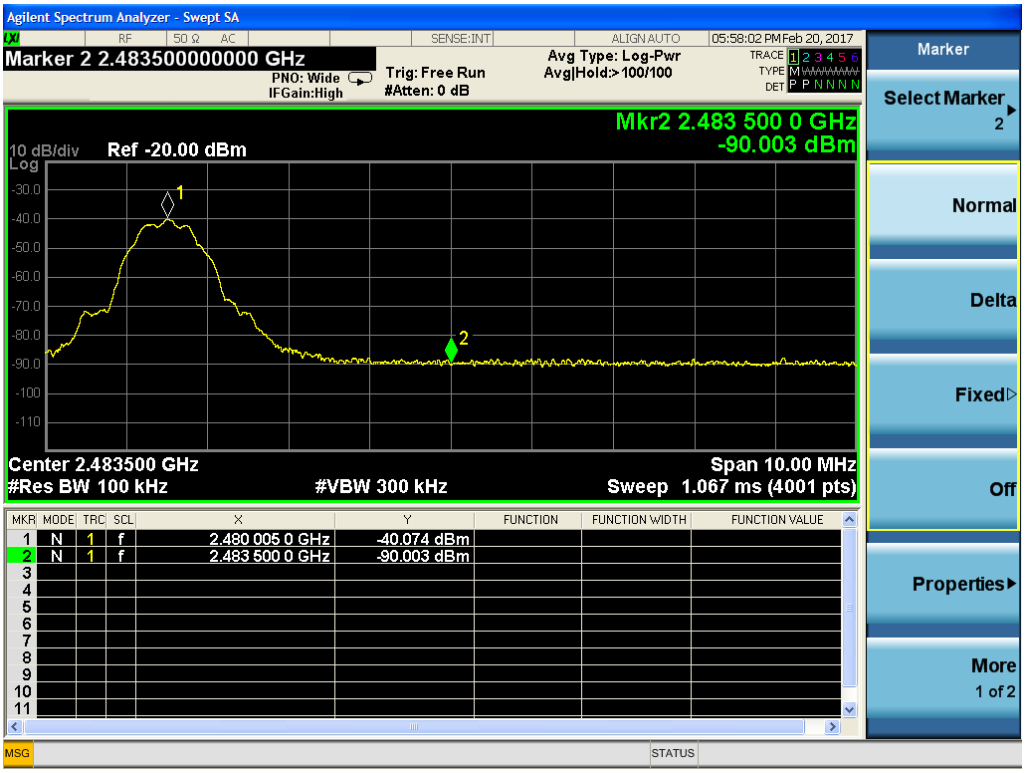
Spectrum Analyzers / Receivers /Preselectors	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Rental EXA Signal Analyzer(1118470)	9KHz-26.5GHz	N9010A-526;M	AT	MY51170093	1118470	I	1/3/2018	1/3/2017
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 5	719150		A-0015			III	NA	N/A
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
API - 40dB 100W Attenuator	0.009-18GHz	48-40-34	API Weinschel	CG7990	2107	II	10/2/2017	10/2/2016
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#2085		HTC-1	HDE		2085	II	4/5/2017	4/5/2016
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2288	9KHz-26.5GHz	FLC-1.5FT-SMSM+	Mini-Circuits	16021029		II	1/27/2018	1/27/2017

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

PLOTS



Conducted Band Edge - Lower



Conducted Band Edge - Upper

Low Channel 9 KHz - 25GHz Conducted Spurious Reference

Low Channel 9 KHz -25GHz Conducted Spurious

Middle Channel 9 KHz-25GHz Conducted Spurious Reference

Middle Channel 9 KHz -25GHz Conducted Spurious

High Channel 9 KHz -25GHz Conducted Spurious Reference

High Channel 9 KHz -25GHz Conducted Spurious

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: 21-Feb-17 **Company:** ROAR for Good, LLC **Work Order:** Q1581
Engineer: Zac Johnson **EUT:** ROAR Athena **EUT Operating Voltage/Frequency:** 5.0V DC USB
Temp: 20.5°C **Humidity:** 34% **Pressure:** 1015mBar
Frequency Range: 2402-2480 MHz **Measurement Type:** Conducted Antenna Port
Measurement Method: FCC KDB 558074 D01 DTS Meas Guidance v03r05 Section 10.2
Notes:

Frequency (MHz)	Peak Reading (dBm)	Cable Loss (dB)	Attenuator Loss (dB)	Peak PSD (dBm)	Limit (dBm)	Margin (dB)	Result
2402.0	-39.48	0.32	39.42	0.26	8.0	-7.74	Pass
2440.0	-39.40	0.32	39.42	0.34	8.0	-7.66	Pass
2480.0	-40.10	0.32	39.42	-0.36	8.0	-8.36	Pass

Test Site: CEMI-05 **Cable:** 2288 **Attenuator:** 2107 40dB
Analyzer: EXA 1118470

PSD(dBm) = Reading (dBm) + Cable Loss (dB) + Attenuator Loss (dBm)

Rev. 2/20/2017

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
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 5	719150		A-0015			III	NA	N/A
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
API - 40dB 100W Attenuator	0.009-18GHz	48-40-34	API Weinschel	CG7990	2107	II	10/2/2017	10/2/2016
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#2085		HTC-1	HDE		2085	II	4/5/2017	4/5/2016
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2288	9KHz-26.5GHz	FLC-1.5FT-SMSM+	Mini-Circuits	16021029		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 Power Spectral Density

Middle Channel Power Spectral Density

High Channel Power Spectral Density

AC Line Conducted Emissions

Limits:

Frequency of emission (MHz)	Quasi-peak limit (dBµV)	Average limit (dBµV)
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

[47 CFR 15.207(a)]

MEASUREMENTS / RESULTS

AC Side of a DC Supply Conducted Emissions

Date: 21-Feb-17 **Company:** ROAR for Good, LLC **Work Order:** Q1581
Engineer: Zac Johnson **EUT Desc:** ROAR Athena
Temp: 21.6 ºC **Humidity:** 33% **Pressure:** 1015 mBar
Notes: AC side of Support DC Power Supply tested while the EUT was transmitting
Frequency Range: 0.15-30MHz **EUT Input Voltage/Frequency:** 5VDC (battery)
Support Equipment Power Charger: 120V / 60Hz

	Quasi-Peak Readings		Average Readings		LISN Factors				FCC 15.207			FCC 15.207		
Frequency (MHz)	QP1 (dBµV)	QP2 (dBµV)	AVG1 (dBµV)	AVG2 (dBµV)	L1 (dB)	L2 (dB)	Cable Factor (dB)	ATTN Factor (dB)	QP Limit (dBµV)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dBµV)	Margin (dB)	Result (Pass/Fail)
0.15	34.6	31.8	11.8	18.0	-0.2	-0.1	0.0	-20.0	66.0	-11.2	Pass	56.0	-17.9	Pass
0.57	17.2	17.8	8.0	9.3	-0.1	0.0	0.0	-20.0	56.0	-18.1	Pass	46.0	-16.6	Pass
0.90	15.7	16.6	7.6	8.1	0.0	0.0	0.0	-20.0	56.0	-19.3	Pass	46.0	-17.8	Pass
1.23	18.2	13.4	6.7	7.0	0.0	0.0	-0.1	-20.0	56.0	-17.7	Pass	46.0	-18.9	Pass
1.70	18.6	13.3	7.0	7.1	0.0	0.0	-0.1	-20.0	56.0	-17.3	Pass	46.0	-18.8	Pass
21.22	17.1	12.4	6.7	6.8	-0.1	-0.1	-0.2	-20.0	60.0	-22.6	Pass	50.0	-22.9	Pass

Result: Pass ***Worst Margin:*** -11.2 dB ***Frequency:*** 0.150 MHz

Measurement Device: LISN ASSET 1728(Line 1) LISN ASSET 1729(Line 2) **Cable:** CEMI-13 **Spectrum Analyzer:** Rental SA #5
Attenuator: 20dB Attenuator-02 **Site:** CEMI 2

C-S CEMI Calculator Version 3.0.14 *Equipment Factor Sheet rev: 1/15/2017*
Adjusted Reading = Raw Reading + LISN Insertion Loss + Cable Loss + Attenuation

Rev. 2/20/2017

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental EXA Signal Analyzer(1199509)	9KHz-26.5GHz	N9010A-526;R	AT	SG53470118	1199509	I	1/27/2018	1/27/2017
LISNs/Measurement Probes	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
LISN Asset 1728	150kHz-30MHz	LI-150A	Com-Power	201084	1728	I	4/20/2017	4/20/2016
LISN Asset 1729	150kHz-30MHz	LI-150A	Com-Power	201085	1729	I	4/20/2017	4/20/2016
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 2	719150		A-0015			III	NA	N/A
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#2086		HTC-1	HDE		2086	II	4/5/2017	4/5/2016
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI-13	9kHz - 2GHz		C-S			II	10/2/2017	1/2/2016
Attenuators	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
20dB Attenuator-02	9kHz-2GHz			N/A		II	10/2/2017	10/2/2016

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

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 4.6.1]

MEASUREMENTS / RESULTS

99% Occupied Bandwidth

Date: 21-Feb-17 **Company:** ROAR for Good, LLC **Work Order:** Q1581
Engineer: Zac Johnson **EUT:** ROAR Athena **EUT Operating Voltage/Frequency:** 5.0V DC USB
Temp: 20.5°C **Humidity:** 34% **Pressure:** 1015mBar

Frequency Range: 2402-2480 MHz **Measurement Type:** Conducted
Measurement Method: RSS-Gen Issue 4 Section 6.6

Notes:

Frequency (MHz)	99% OBW (kHz)
2402	1020.3
2440	1016.7
2480	1019.7

Test Site: CEMI-05 **Cable:** 2288 **Attenuator:** 2107 40dB
Analyzer: EXA 1118470

Rev. 2/20/2017

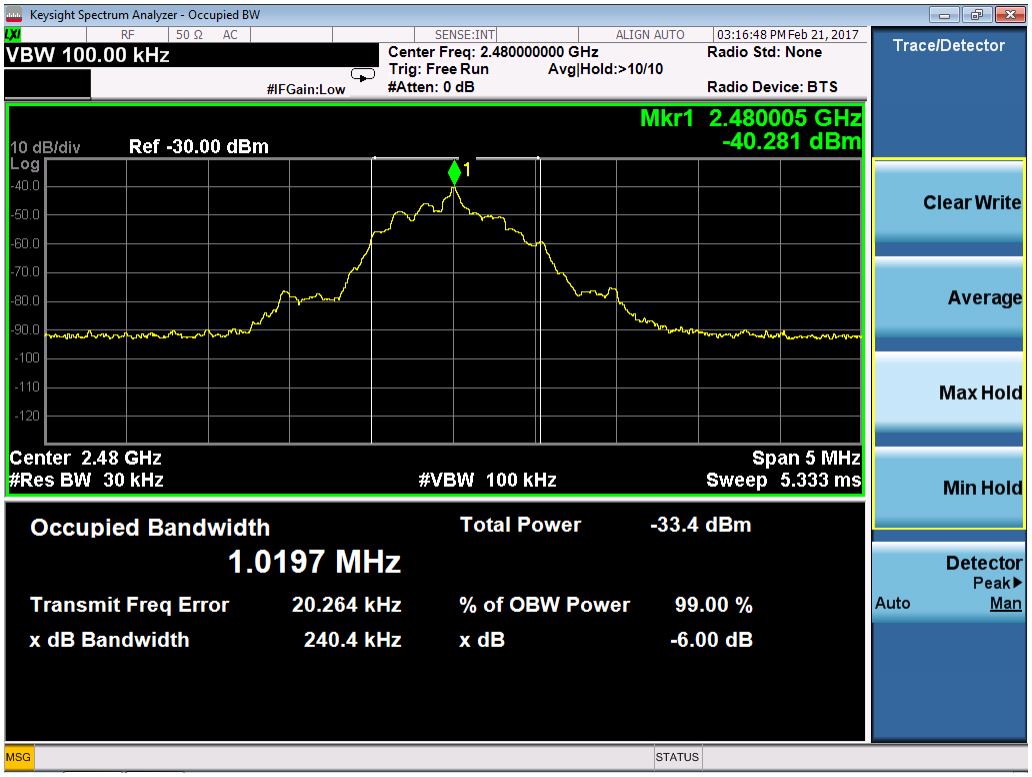
Spectrum Analyzers / Receivers /Preselectors	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Rental EXA Signal Analyzer(1118470)	9KHz-26.5GHz	N9010A-526;M	AT	MY51170093	1118470	I	1/3/2018	1/3/2017
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 5	719150		A-0015			III	NA	N/A
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
API - 40dB 100W Attenuator	0.009-18GHz	48-40-34	API Weinschel	CG7990	2107	II	10/2/2017	10/2/2016
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#2085		HTC-1	HDE		2085	II	4/5/2017	4/5/2016
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2288	9KHz-26.5GHz	FLC-1.5FT-SMSM+	Mini-Circuits	16021029		II	1/27/2018	1/27/2017

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

PLOTS

Occupied Bandwidth Low Channel

Occupied Bandwidth Middle Channel



Occupied Bandwidth 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.
Rev.160009121(2)_#684340 v14CS