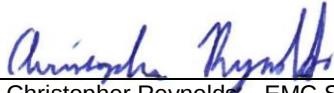




Test Report

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

Report No	EQ2777-2
Client	BioSensics LLC
Address	42 Pleasant Street Suite 2 Watertown, MA 02472
Phone	(617) 678-3206
Items tested FCC ID IC	ActivePERS (Model: AP004) 2AA5HAP004 22184-AP004
Equipment Type Equipment Code	Digital Transmission System DTS
FCC/IC Rule Parts	CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 1
Test Dates	Oct 26, 31, Nov 15, 18 and Dec 15, 2016
Results	As detailed within this report
Prepared by	 Tuyen Truong – EMC Engineer
Authorized by	 Christopher Reynolds – EMC Supervisor
Issue Date	1/17/2017
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 33 of this report.

Curtis-Straus LLC is accredited by the American Association for Laboratory Accreditation for the specific scope of accreditation under Certificate Number 1627-01. This report may contain data which is not covered by the A2LA accreditation.



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Contents

Contents.....	2
Summary.....	3
Test Methodology.....	4
Product Tested - Configuration Documentation	5
Statement of Conformity.....	6
Test Results	7
DTS Bandwidth.....	7
Output Power	10
Duty Cycle Correction Factor	13
Radiated Spurious Emissions	15
Power Spectral Density.....	25
AC Line Conducted Emissions.....	28
Occupied Bandwidth	29
Measurement Uncertainty.....	32
Conditions Of Testing.....	33

Form Final Report REV 7-20-07 (DW)



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

ActivePERS (Model: AP004) is a Bluetooth Low Energy transmitter operating in the 2402MHz-2480MHz frequency range.

Antenna Type: Internal surface mount chip

Gain: 1.5dBi

We found that the product met the above requirements with modification.

Detail of modifications as followed:

- A shunt capacitor (3pf) was added at L4 location on the RF portion of the circuit (PCA-02-51-0010-002).
- Test points TP14, TP15, TP16, TP17 and TP18 were added to the circuit (PCA-02-51-0010-002). Test point 12C lines (FLASH_SDO, FLASH_SDI, FLASH_SCLK) were added to the existing Flash Memory so the 12c lines were not shared with Accelerometer within the circuit (PCA-02-51-0010-002). Due to the change, the EUT circuit PCA-02-51-0010-02_rev1 was updated to PCA-02-51-0010-02_rev3.

The following tests were repeated with the above modifications: Output Power and Radiated Spurious Emissions.

Test samples were received in good condition.

Issue No.	Reason for change	Date Issued
1	Original Release	January 17, 2017



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Test Methodology

All testing was performed according to the following rules/procedures/documents;
CFR 47 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.

A second sample was provided with temporary RF connector for Antenna Port measurement.

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

- 2402MHz: Low Channel (#0)
- 2440MHz: Mid Channel (#19)
- 2480MHz: High Channel (#39)

EUT operating voltage is 3VDC from battery

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:	Q2777		
Company:	BioSensics LLC		
Company Address:	42 Pleasant St. Suite 2		
	Watertown, MA, 02472		
Contact:	Jackson Maier		
	MN	PN	SN
EUT:	AP004	PCA-02-51-0010-002	78C7 (Antenna port tests)
	AP004	PCA-02-51-0010-002	Sample 1 (Radiated tests)
EUT Description:	ActivePERS		
EUT Max Frequency:	24 MHz (digital circuitry)		
EUT Min Frequency:	0.032768 MHz (digital circuitry)		
Transmit Frequency Range:	2402MHz – 2480MHz		
Support Equipment	MN		
DC Power Supply	HP E3612A		
Software Operating Mode Description:			
Transmitting on 3 channels: 2402MHz (low), 2440MHz (middle), 2480MHz (high)			



BUREAU
VERITAS

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Testing Cert. No. 1627-01

Statement of Conformity

The ActivePERS (Model: AP004) has been found to conform to the following parts of 47 CFR 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.
	4		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			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	EUT has an internal surface mount chip antenna 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, 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.

Test Results

DTS Bandwidth

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

MEASUREMENTS / RESULTS

6dB Bandwidth					
Date: Oct-26-2016		Company: BioSensics LLC		Work Order: Q2777	
Engineer: Yunus Faziloglu		EUT: ActivePERS™ Model: AP004		EUT Operating Voltage/Frequency: 3VDC Battery	
Temp: 21.2°C		Humidity: 41%		Pressure: 1013mbar	
Frequency Range: 2402-2480 MHz		Measurement Type: Conducted			
Measurement Method: FCC KDB 558074 D01 DTS Meas Guidance v03r05 Section 8.2					
Notes: EUT powered by DC power supply during the test					
Frequency (MHz)	Reading (kHz)		6dB Bandwidth		
			Limit (kHz)	Margin (kHz)	Result (Pass/Fail)
			≥500	202	
			≥500	220	
			≥500	231	
2402	702	Pass			
2440	720	Pass			
2480	731	Pass			
Test Site: Wireless Test Room		Attenuator A2121			
Analyzer: A2200		Copyright Curtis-Straus LLC 2000			

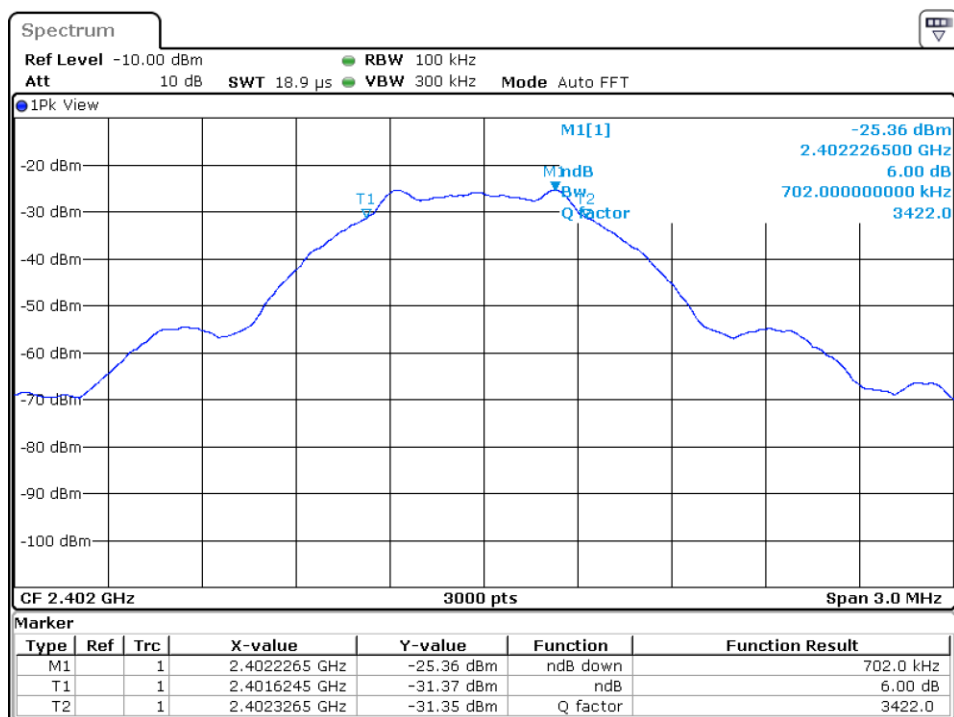
Rev. 10/2/2016

Spectrum Analyzer	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
FSV40 Signal/Spectrum Analyzer	10Hz-40GHz	FSV40	ROHDE & SCHWARZ	101551	2200	I	6/1/2017	6/1/2016
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	2/10/2017	2/10/2016
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#2082		HTC-1	HDE		2082	II	4/5/2017	4/5/2016

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

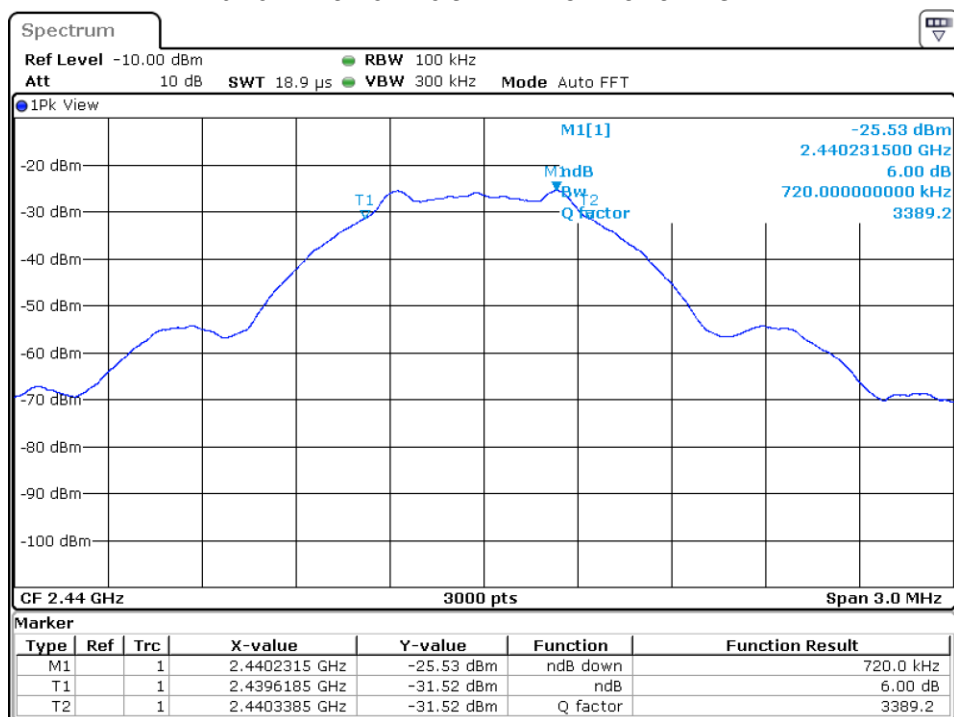


PLOT(S)



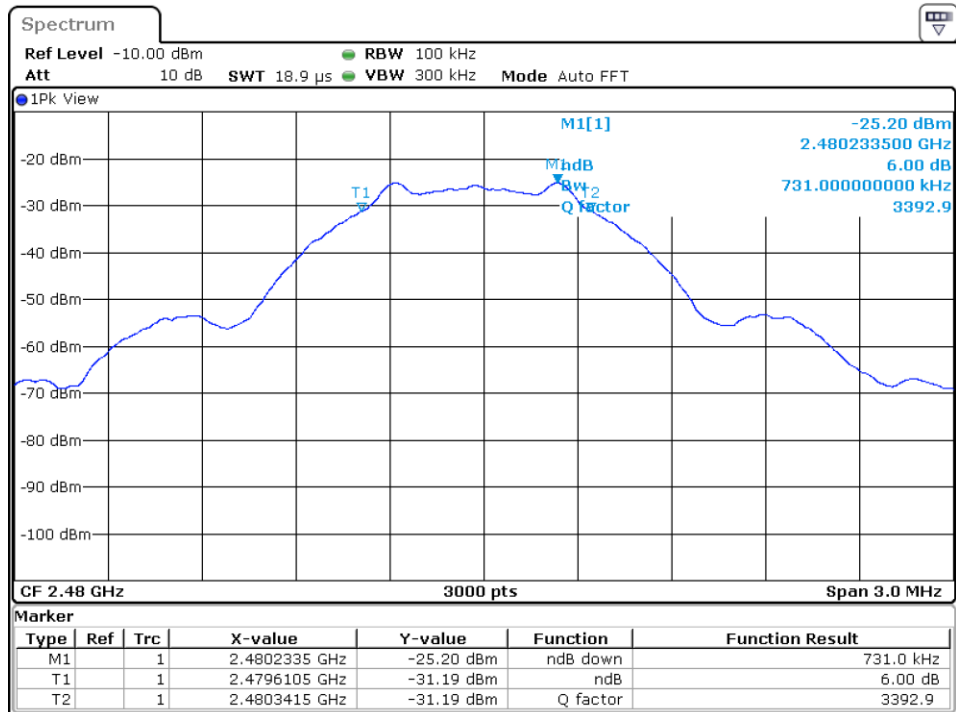
Date: 26.OCT.2016 10:10:16

6 dB Bandwidth - Low Channel



Date: 26.OCT.2016 10:12:26

6 dB Bandwidth - Mid Channel



Date: 26.OCT.2016 10:13:51

6 dB Bandwidth - High Channel

Output Power

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

Per 558074 D01 DTS Measurement Guidance v03r05 Section 9.1.1

MEASUREMENTS / RESULTS

Peak Output Power							
Date: Nov-18-2016		Company: BioSensics LLC			Work Order: Q2777		
Engineer: Yunus Faziloglu		EUT: ActivePERS™ Model: AP004			EUT Operating Voltage/Frequency: 3VDC Battery		
Temp: 21.2°C		Humidity: 41%		Pressure: 1013mbar			
Frequency Range:		2402-2480 MHz		Measurement Type: Conducted			
		Measurement Method: FCC KDB 558074 D01 DTS Meas Guidance v03r05 Section 9.1.2					
Notes: EUT powered by DC power supply during the test							
Frequency	Peak Reading	Cable Loss	Attenuator Loss	Peak Output Power	Limit	Margin	Result
(MHz)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)	(Pass/Fail)
2402.0	-29.29	1.0	29.44	1.15	30.0	-28.85	Pass
2440.0	-29.14	1.0	29.44	1.30	30.0	-28.70	Pass
2480.0	-28.41	1.0	29.44	2.03	30.0	-27.97	Pass
Test Site: Wireless Test Room					Analyzer A2200		
Peak Output Power (dBm)= Peak Reading (dBm) + Cable Loss (dB) + Attenuator Loss (dB)							

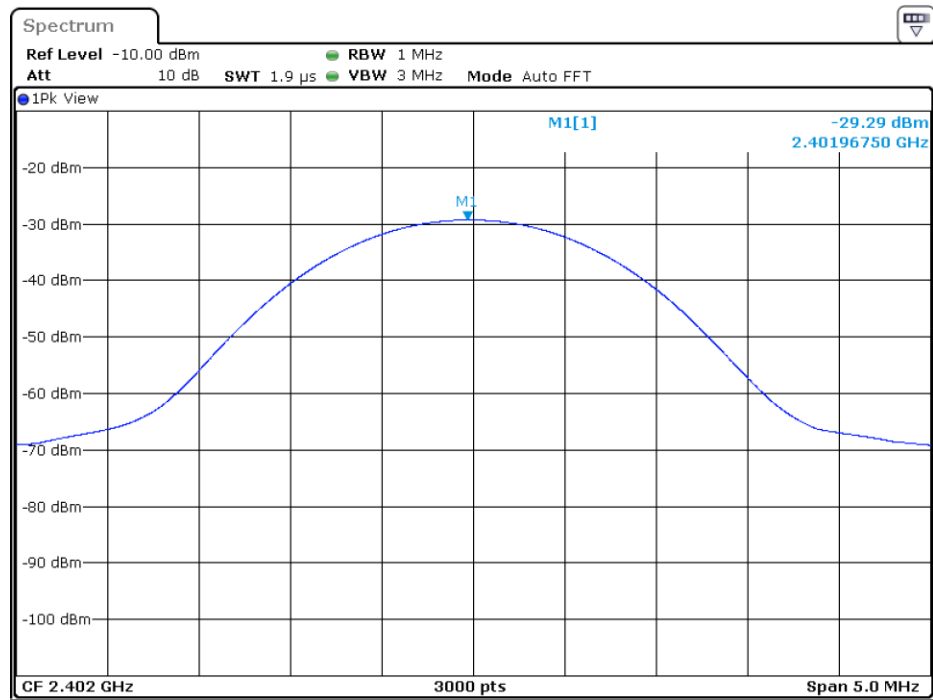
Rev. 10/2/2016

Spectrum Analyzer		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
FSV40 Signal/Spectrum Analyzer		10Hz-40GHz	FSV40	OHDE & SCHWAF	101551	2200	I	6/1/2017	6/1/2016
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	2/10/2017	2/10/2016
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#2082			HTC-1	HDE		2082	II	4/5/2017	4/5/2016

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

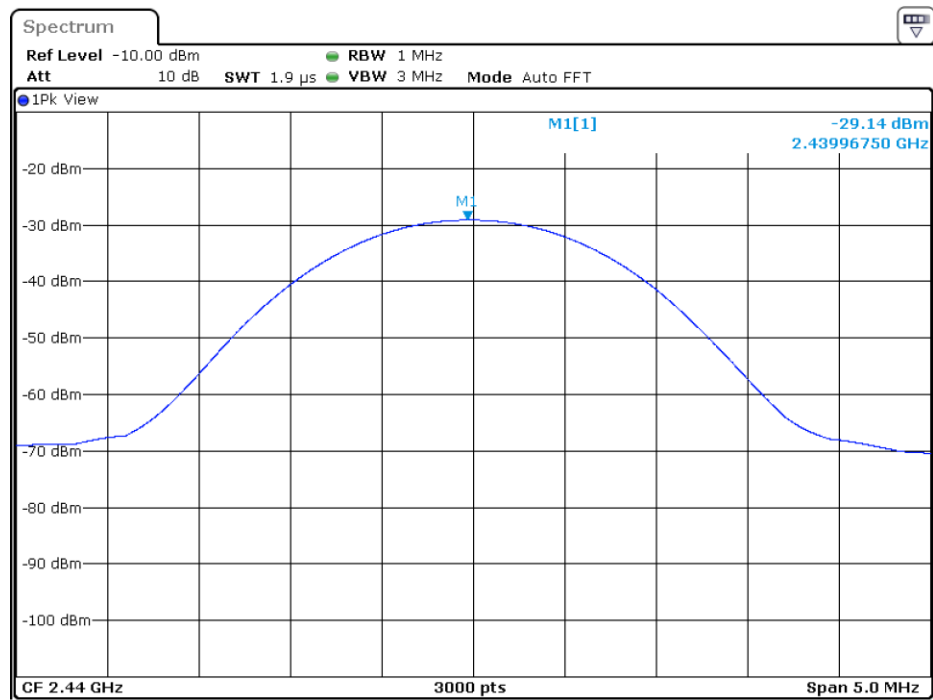


PLOT(S)



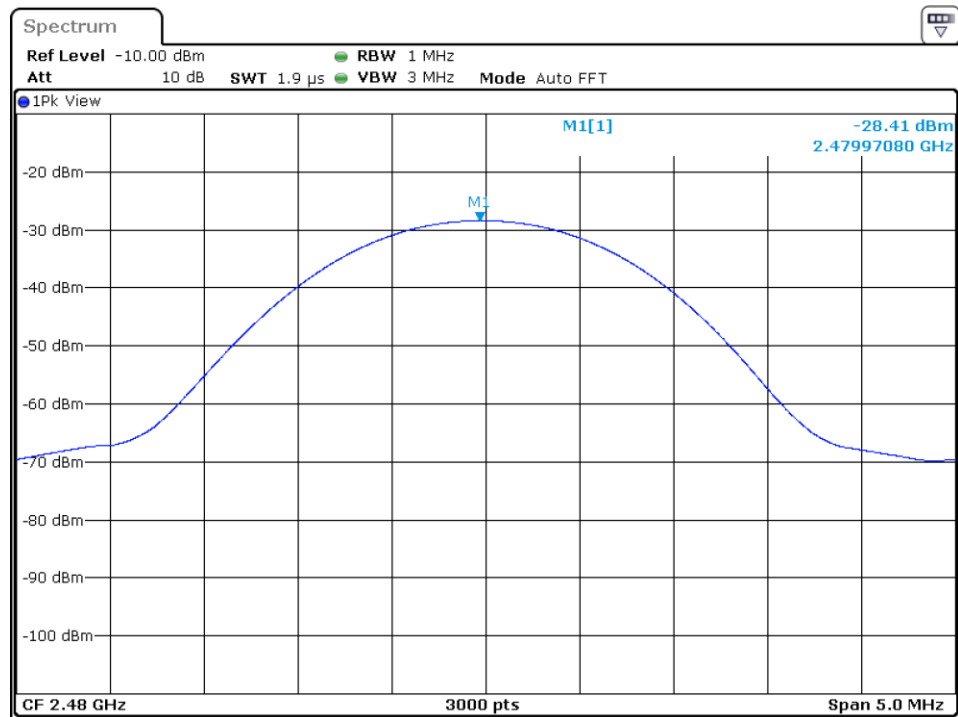
Date: 18.NOV.2016 10:31:16

Peak Output Power - Low Channel



Date: 18.NOV.2016 10:32:42

Peak Output Power - Mid Channel



Date: 18.NOV.2016 10:33:47

Peak Output Power - High Channel

Duty Cycle Correction Factor

MEASUREMENTS / RESULTS

Radiated Emissions Table - Duty Cycle Correction Factor				
Date: 18-Nov-16		Company: BioSensics		Work Order: Q2777
Engineer: Jason Haley & Zachary Johnson		EUT Desc: Active PERS		EUT Operating Voltage/Frequency: 3V DC
Temp: 24.1°C		Humidity: 25%	Pressure: 1011mBar	Battery
Frequency Range: 2480MHz			Measurement Distance: 1 m	
Notes:			EUT Max Freq: 2480MHz	
Test Site: EMI Chamber 2		Cable 1: Asset #2052		Cable 2: Asset #2053
Analyzer: SA#2		Preamp: Asset #2111		Cable 3: EMIR-HIGH-06
CSsoft Radiated Emissions Calculator		v 1.017.178		Antenna: Black Horn
				Preselector: ---
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$DCCF = 20 \cdot \log(0.121337/100) = -58.3\text{dB}$, Note: a 20dB DCCF is used as a worst case throughout this report

Rev. 11/2/2016

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA #2 (1860)	9kHz-26.5 GHz	E7405A	Agilent	MY45104916	1860	I	12/23/2016	12/23/2015
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz		I	4/29/2017	4/29/2015
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
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
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/29/2018	8/29/2016
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#2081		HTC-1	HDE		2081	II	4/5/2017	4/5/2016
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2052	9kHz - 18GHz		Florida RF			II	3/2/2017	3/2/2016
Asset #2053	9kHz - 18GHz		Florida RF			II	10/1/2017	10/30/2016
REMI-High-06	1 - 26.5GHz	U-21B0707-1	TRU			II	8/14/2017	8/14/2016

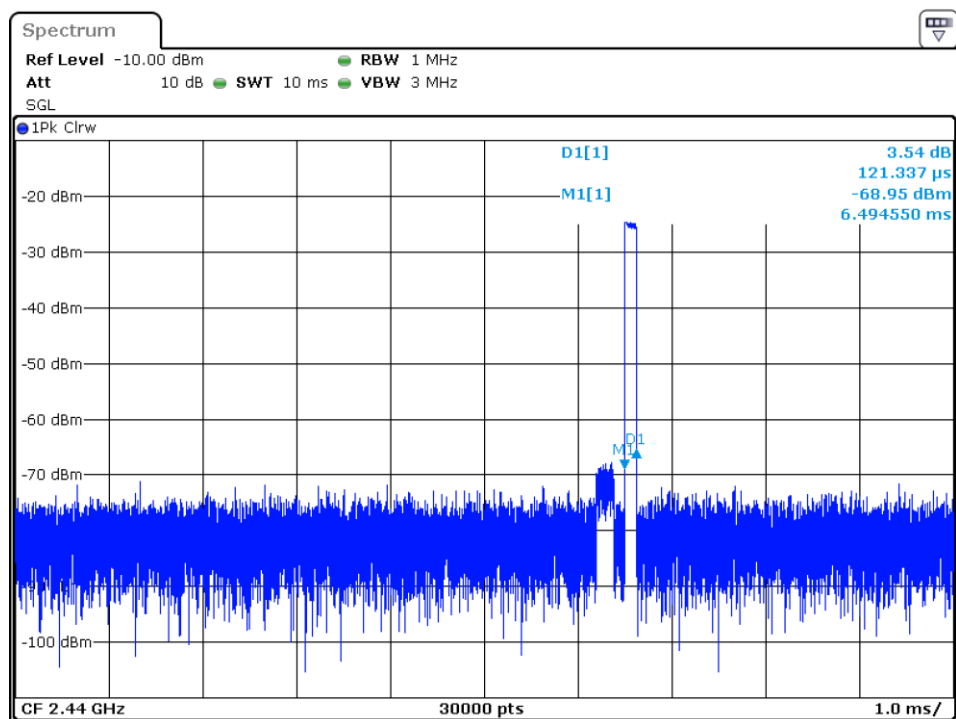
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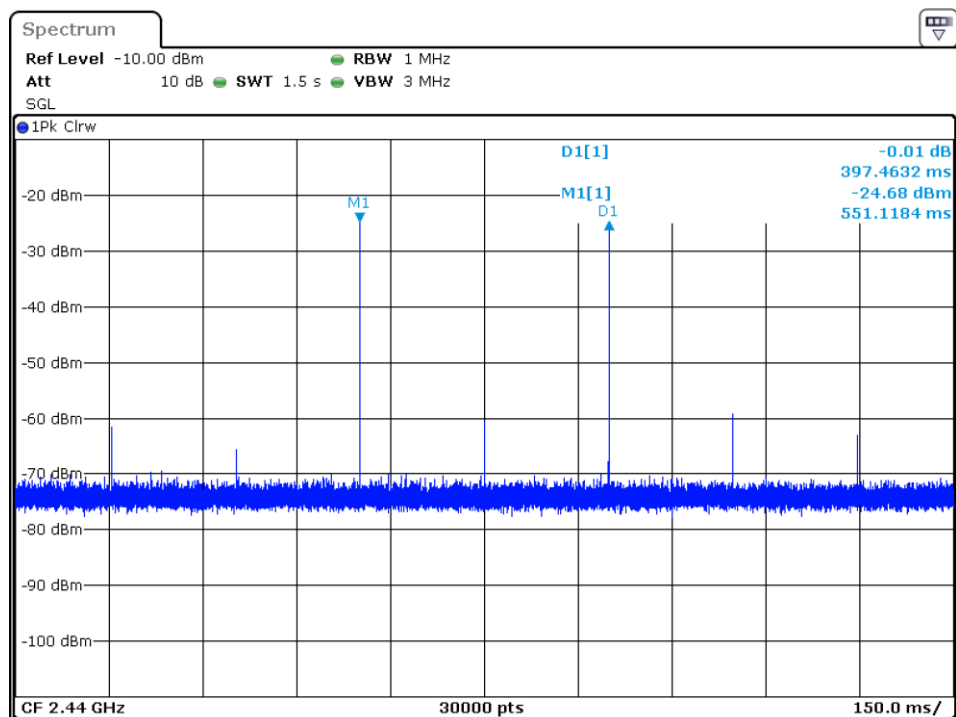


Plot(s)



Date: 26.OCT.2016 09:40:18

Duration of single pulse



Date: 26.OCT.2016 09:36:38

Period



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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)]

Radiated emissions were maximized by rotating the device around 3 orthogonal planes (X, Y and Z) and worst case emissions observed in X orientation. All the results below are for the worst case orientation only.

MEASUREMENTS / RESULTS

Band Edge

Radiated Emissions Table															
Date: 31-Oct-16				Company: BioSensics LLC					Work Order: Q2777						
Engineer: Yunus Faziloglu				EUT Desc: ActivePERS™ Model: AP004					EUT Operating Voltage/Frequency: 3VDC Battery						
Temp: 23.5°C				Humidity: 29%					Pressure: 1011mbar						
Frequency Range: Band edges									Measurement Distance: 3 m						
Notes: Powered from DC power supply 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			FCC Class B High Frequency - Average			
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	
H - NF	2483.5	24.9	11.4	0.0	32.4	3.3	60.6	47.1	74.0	-13.4	Pass	54.0	-6.9	Pass	
V - NF	2483.5	24.9	11.5	0.0	32.4	3.3	60.6	47.2	74.0	-13.4	Pass	54.0	-6.8	Pass	
H - NF	2390.0	23.9	9.8	0.0	32.3	3.2	59.4	45.3	74.0	-14.6	Pass	54.0	-8.7	Pass	
V - NF	2390.0	23.1	9.8	0.0	32.3	3.2	58.6	45.3	74.0	-15.4	Pass	54.0	-8.7	Pass	
Table Result:				Pass by -6.8 dB					Worst Freq: 2483.5 MHz						
Test Site: EMI Chamber 2				Cable 1: Asset #2052					Cable 2: Asset #2053				Cable 3: ---		
Analyzer: MXE Receiver				Preamp: none					Antenna: Blue Horn				Preselector: ---		
CSsoft Radiated Emissions Calculator v1.017.176															
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor															
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Rev. 10/30/2016

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	8/9/2017	8/9/2016
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz		I	4/29/2017	4/29/2015
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Blue Horn	1-18GHz	3117	ETS	157647	1861	I	2/8/2017	2/8/2015
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#2081		HTC-1	HDE		2081	II	4/5/2017	4/5/2016
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2052	9kHz - 18GHz		Florida RF			II	3/2/2017	3/2/2016
Asset #2053	9kHz - 18GHz		Florida RF			II	10/1/3017	10/30/2016
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
None								

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



Spurious Radiated Emissions

Radiated Emissions Table												
Date: 18-Nov-16			Company: BioSensics				Work Order: Q2777					
Engineer: JH & ZJ			EUT Desc: Active PERS				EUT Operating Voltage/Frequency: 3V DC					
Temp: 24.1°C			Humidity: 25%		Pressure: 1011mBar				Battery			
Frequency Range: 30-1000MHz							Measurement Distance: 3 m					
Notes: Center channel, FCC 80cm height all channels tested; only the worst case recorded.							EUT Max Freq: 2480MHz					
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)	---			FCC 15.209		
							Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
H	73.213	25.4	22.4	8.4	0.5	11.9	---	---	---	40.0	-28.1	Pass
H	107.067	24.4	22.4	12.3	0.6	14.9	---	---	---	43.5	-28.6	Pass
H	199.386	25.4	22.5	12.9	0.9	16.7	---	---	---	43.5	-26.8	Pass
H	525.985	27.1	21.9	17.8	1.6	24.6	---	---	---	46.0	-21.4	Pass
H	816.136	26.7	22.3	21.7	1.9	28.0	---	---	---	46.0	-18.0	Pass
H	999.345	25.7	22.0	23.6	2.1	29.4	---	---	---	54.0	-24.6	Pass
V	48.406	26.6	22.5	8.4	0.4	12.9	---	---	---	40.0	-27.1	Pass
V	87.545	29.8	22.5	7.7	0.5	15.5	---	---	---	40.0	-24.5	Pass
V	89.437	28.4	22.5	7.8	0.5	14.2	---	---	---	43.5	-29.3	Pass
V	105.733	24.3	22.4	12.0	0.6	14.5	---	---	---	43.5	-29.0	Pass
V	200.138	26.0	22.5	12.7	0.8	17.0	---	---	---	43.5	-26.5	Pass
V	816.403	26.2	22.3	21.7	1.9	27.5	---	---	---	46.0	-18.5	Pass
Table Result: Pass							by		-18.0 dB		Worst Freq: 816.136 MHz	
Test Site: EMI Chamber 2			Cable 1: Asset #2052				Cable 2: Asset #2053			Cable 3: ---		
Analyzer: MXE Receiver			Preamp: Blue				Antenna: Red-White			Preselector: ---		
CSsoft Radiated Emissions Calculator v1.017.178							Copyright Curtis-Straus LLC 2000					
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor												

Rev. 11/2/2016

Spectrum Analyzers / Receivers /Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
MXE EMI Receiver		20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	8/9/2017	8/9/2016
Radiated Emissions Sites		FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 2		719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
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	5/13/2017	5/13/2016
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
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#2081			HTC-1	HDE		2081	II	4/5/2017	4/5/2016
Cables		Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2052		9kHz - 18GHz		Florida RF			II	3/2/2017	3/2/2016
Asset #2053		9kHz - 18GHz		Florida RF			II	10/1/3017	10/30/2016

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

Radiated Emissions Table														
Date: 15-Nov-16			Company: BioSensics						Work Order: Q2777					
Engineer: JH and ZJ			EUT Desc: ActivePERS						EUT Operating Voltage/Frequency: 3V DC					
Temp: 23.6°C			Humidity: 24%						Pressure: 1008mBar		Battery			
Frequency Range: 1-6GHz								Measurement Distance: 3 m						
Notes: DCCF = -58.3dB, Average = Peak -20dB (worst case)								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 part 15.209 - Peak			FCC part 15.209 - Average		
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
Vert Y, lo ch	4804.0	39.1	19.1	17.7	34.4	4.9	60.7	40.7	74.0	-13.3	Pass	54.0	-13.3	Pass
Horz Y, lo ch	4804.0	44.5	24.5	17.7	34.4	4.9	66.1	46.1	74.0	-7.9	Pass	54.0	-7.9	Pass
Table Result:				Pass		by		-7.9 dB		Worst Freq: 4804.4 MHz				
Test Site: EMI Chamber 1				Cable 1: Asset #2051					Cable 2: Asset #2054			Cable 3: ---		
Analyzer: MXE Receiver				Preamp: Brown					Antenna: Blue Horn			Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.178													Copyright Curtis-Straus LLC 2000	
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														



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Radiated Emissions Table

Date: 15-Nov-16		Company: BioSensics						Work Order: Q2777						
Engineer: JH and ZJ		EUT Desc: ActivePERS						EUT Operating Voltage/Frequency: 3V DC						
Temp: 23.6°C		Humidity: 24%						Pressure: 1008mBar		Battery				
Frequency Range: 1-6GHz								Measurement Distance: 3 m						
Notes: DCCF = -58.3dB, Average = Peak -20dB (worst case)								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 part 15.209 - Peak			FCC part 15.209 - Average		
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
Vert Y, mid ch	4880.0	38.7	18.7	17.4	34.4	4.9	60.6	40.6	74.0	-13.4	Pass	54.0	-13.4	Pass
Horz Y, mid ch	4880.0	36.5	16.5	17.4	34.4	4.9	58.4	38.4	74.0	-15.6	Pass	54.0	-15.6	Pass
Table Result:		Pass		by		-13.4 dB				Worst Freq:		4880.0 MHz		
Test Site: EMI Chamber 1				Cable 1: Asset #2051				Cable 2: Asset #2054				Cable 3: ---		
Analyzer: MXE Receiver				Preamp: Brown				Antenna: Blue Horn				Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.178												Copyright Curtis-Straus LLC 2000		
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														

Radiated Emissions Table

Date: 15-Nov-16		Company: BioSensics				Work Order: Q2777								
Engineer: JH and ZJ		EUT Desc: ActivePERS				EUT Operating Voltage/Frequency: 3V DC								
Temp: 23.6°C		Humidity: 24%		Pressure: 1008mBar		Battery								
Frequency Range: 1-6GHz						Measurement Distance: 3 m								
Notes: DCCF = -58.3dB, Average = Peak -20dB (worst case)						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 part 15.209 - Peak			FCC part 15.209 - Average		
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
Vert Y, hi ch	4960.0	49.6	29.6	17.3	34.4	4.9	71.6	51.6	74.0	-2.4	Pass	54.0	-2.4	Pass
Horz Y, hi ch	4960.0	36.5	16.5	17.3	34.4	4.9	58.5	38.5	74.0	-15.5	Pass	54.0	-15.5	Pass
Table Result:		Pass		by		-2.4 dB				Worst Freq:		4960.0 MHz		
Test Site: EMI Chamber 1		Cable 1: Asset #2051								Cable 2: Asset #2054		Cable 3: ---		
Analyzer: MXE Receiver		Preamp: Brown								Antenna: Blue Horn		Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.178														
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
MXE EMI Receiver		20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	8/9/2017	8/9/2016
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
Brown		1-10GHz	CS	CS	N/A	1523	II	9/25/2017	9/25/2016
Antennas		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Blue Horn		1-18GHz	3117	ETS	157647	1861	I	2/8/2017	2/8/2015
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

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

Radiated Emissions Table

Date: 18-Nov-16		Company: BioSensics				Work Order: Q2777									
Engineer: JH & ZJ		EUT Desc: Active PERS				EUT Operating Voltage/Frequency: 3V DC									
Temp: 24.1°C		Humidity: 25%		Pressure: 1011mBar		Battery									
Frequency Range: 6-18GHz						Measurement Distance: 1 m									
Notes: DCCF = -58.3dB, Average = Peak -20dB (worst case)						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 Channel				---	---	---	---	---	---	---	---	---	---	---	---
V - Y axis	7206.6	70.0	50.0	37.1	37.5	9.6	80.0	60.0	83.5	-3.5	Pass	63.5	-3.5	Pass	Pass
V - Y axis	9609.0	60.7	40.7	36.3	38.4	10.5	73.3	53.3	83.5	-10.2	Pass	63.5	-10.2	Pass	Pass
V - Y axis	12011.1	51.7	31.7	37.0	39.2	12.2	66.1	46.1	83.5	-17.4	Pass	63.5	-17.4	Pass	Pass
V - Y axis	13995.9	48.9	28.9	36.6	42.0	13.2	67.5	47.5	83.5	-16.0	Pass	63.5	-16.0	Pass	Pass
Table Result:		Pass		by		-3.5 dB				Worst Freq:		7206.6 MHz			
Test Site: EMI Chamber 2				Cable 1: Asset #2052				Cable 2: Asset #2053				Cable 3: EMIR-HIGH-06			
Analyzer: SA#2				Preamp: Asset #2111				Antenna: Black Horn				Preselector: ---			
CSsoft Radiated Emissions Calculator v1.017.178															
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor															
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Radiated Emissions Table

Date: 18-Nov-16				Company: BioSensics					Work Order: Q2777						
Engineer: JH & ZJ				EUT Desc: Active PERS					EUT Operating Voltage/Frequency: 3V DC						
Temp: 24.1°C				Humidity: 25%					Pressure: 1011mBar			Battery			
Frequency Range: 6-18GHz								Measurement Distance: 1 m							
Notes: DCCF = -58.3dB, Average = Peak -20dB (worst case)								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 channel				---		---									
H -Y axis	7320.0	62.0	42.0	37.0	37.8	9.7	72.5	52.5	83.5	-11.0	Pass	63.5	-11.0	Pass	
H -Y axis	9760.0	55.2	35.2	36.2	38.6	10.6	68.2	48.2	83.5	-15.3	Pass	63.5	-15.3	Pass	
V - Y axis	7320.0	66.8	46.8	37.0	37.8	9.7	77.3	57.3	83.5	-6.2	Pass	63.5	-6.2	Pass	
Table Result:				Pass by -6.2 dB					Worst Freq:				7320.0 MHz		
Test Site: EMI Chamber 2				Cable 1: Asset #2052					Cable 2: Asset #2053				Cable 3: EMIR-HIGH-06		
Analyzer: SA#2				Preamp: Asset #2111					Antenna: Black Horn				Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.178															
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor															
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Radiated Emissions Table

Date: 18-Nov-16		Company: BioSensics				Work Order: Q2777									
Engineer: JH & ZJ		EUT Desc: Active PERS				EUT Operating Voltage/Frequency: 3V DC									
Temp: 24.1°C		Humidity: 25%				Pressure: 1011mBar		Battery							
Frequency Range: 6-18GHz						Measurement Distance: 1 m									
Notes: DCCF = -58.3dB, Average = Peak -20dB (worst case)						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)	
Hi channel				---	---	---		---	---			---	---		---
V - Y axis	9920.0	42.9	22.9	36.1	38.9	10.8	56.5	36.5	83.5	-27.0	Pass	63.5	-27.0	Pass	
H - Y axis	9920.0	44.6	24.6	36.1	38.9	10.8	58.2	38.2	83.5	-25.3	Pass	63.5	-25.3	Pass	
Table Result:		Pass		by		-25.3 dB		Worst Freq:		9920.0 MHz					
Test Site: EMI Chamber 2				Cable 1: Asset #2052				Cable 2: Asset #2053				Cable 3: EMIR-HIGH-06			
Analyzer: SA#2				Preamp: Asset #2111				Antenna: Black Horn				Preselector: ---			
CSsoft Radiated Emissions Calculator v 1.017.178															
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
SA #2 (1860)		9kHz-26.5 GHz	E7405A	Agilent	MY45104916	1860	I	12/23/2016	12/23/2015
Radiated Emissions Sites		FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 2		719150	2762A-7	A-0015	1-18GHz		I	4/29/2017	4/29/2015
Preamps /Couplers Attenuators / Filters		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
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
Black Horn		1-18GHz	3115	EMCO	9703-5148	56	I	8/29/2018	8/29/2016
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#2081			HTC-1	HDE		2081	II	4/5/2017	4/5/2016
Cables		Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #2052		9kHz - 18GHz		Florida RF			II	3/2/2017	3/2/2016
Asset #2053		9kHz - 18GHz		Florida RF			II	10/1/2017	10/30/2016
REMI-High-06		1 - 26.5GHz	U-21B0707-1	TRU			II	8/14/2017	8/14/2016

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Radiated Emissions Table

Date: 18-Nov-16				Company: BioSensics					Work Order: Q2777						
Engineer: Zac Johnson				EUT Desc: Active PERS					EUT Operating Voltage/Frequency: 3V DC						
Temp: 24.1°C				Humidity: 25%					Pressure: 1011mBar						
Frequency Range: 18-25GHz				Measurement Distance: 0.1m											
Notes:				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 Channel															
H / V	19218.0	48.0	48.0	42.0	40.3	5.8	52.1	52.1	103.5	-51.4	Pass	83.5	-31.4	Pass	
H / V	19932.0	41.8	41.8	42.6	40.2	5.9	45.3	45.3	103.5	-58.2	Pass	83.5	-38.2	Pass	
H / V	20800.0	43.2	43.2	42.9	40.1	5.9	46.3	46.3	103.5	-57.2	Pass	83.5	-37.2	Pass	
H / V	21619.0	43.1	43.1	43.0	40.3	6.1	46.5	46.5	103.5	-57.0	Pass	83.5	-37.0	Pass	
H / V	22781.0	41.6	41.6	42.2	40.5	6.4	46.3	46.3	103.5	-57.2	Pass	83.5	-37.2	Pass	
H / V	24020.0	45.1	45.1	40.9	40.4	6.5	51.1	51.1	103.5	-52.4	Pass	83.5	-32.4	Pass	
Table Result:				Pass		by		-31.4 dB		Worst Freq:				19218.0 MHz	
Test Site: EMI Chamber 2				Cable 1: EMIR-HIGH-06				Cable 2: ---				Cable 3: ---			
Analyzer: Rental SA#2				Preamp: 18-26.5GHz				Antenna: 18-26.5GHz Horn				Preselector: ---			
CSsoft Radiated Emissions Calculator v 1.017.178															
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor															
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Radiated Emissions Table

Date: 18-Nov-16				Company: BioSensics					Work Order: Q2777					
Engineer: Zac Johnson				EUT Desc: Active PERS					EUT Operating Voltage/Frequency: 3V DC					
Temp: 24.1°C				Humidity: 25%					Pressure: 1011mBar			Battery		
Frequency Range: 18-25GHz									Measurement Distance: 0.1m					
Notes:									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)
Center Channel									---	---	---	---	---	---
H/V	18812.0	40.8	40.8	41.7	40.2	5.7	45.0	45.0	103.5	-58.5	Pass	83.5	-38.5	Pass
H/V	19519.0	56.22	56.2	42.0	40.3	5.8	60.3	60.3	103.5	-43.2	Pass	83.5	-23.2	Pass
H/V	20919.0	42.5	42.5	42.8	40.1	5.9	45.7	45.7	103.5	-57.8	Pass	83.5	-37.8	Pass
H/V	21962.0	43.4	43.4	42.9	40.5	6.2	47.2	47.2	103.5	-56.3	Pass	83.5	-36.3	Pass
H/V	23593.0	42.4	42.4	41.6	40.4	6.6	47.8	47.8	103.5	-55.7	Pass	83.5	-35.7	Pass
H/V	24405.0	50.6	50.6	41.0	40.2	6.6	56.4	56.4	103.5	-47.1	Pass	83.5	-27.1	Pass
Table Result:				Pass by -23.2 dB					Worst Freq: 19519.0 MHz					
Test Site: EMI Chamber 2				Cable 1: EMIR-HIGH-06					Cable 2: ---			Cable 3: ---		
Analyzer: Rental SA#2				Preamp: 18-26.5GHz					Antenna: 18-26.5GHz Horn			Preselector: ---		
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														

Radiated Emissions Table

Date: 18-Nov-16				Company: BioSensics				Work Order: Q2777							
Engineer: Zac Johnson				EUT Desc: Active PERS				EUT Operating Voltage/Frequency: 3V DC							
Temp: 24.1°C				Humidity: 25%				Pressure: 1011mBar							
Frequency Range: 18-25GHz				Measurement Distance: 0.1m				Battery							
Notes:				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 Channel															
H/V	18938.0	41.3	41.3	41.8	40.3	5.7	45.5	45.5	103.5	-58.0	Pass	83.5	-38.0	Pass	
H/V	19491.0	41.8	41.8	42.0	40.3	5.8	45.9	45.9	103.5	-57.6	Pass	83.5	-37.6	Pass	
H/V	20758.0	43.0	43.0	42.9	40.1	6.0	46.2	46.2	103.5	-57.3	Pass	83.5	-37.3	Pass	
H/V	21731.0	42.4	42.4	43.1	40.4	6.1	45.8	45.8	103.5	-57.7	Pass	83.5	-37.7	Pass	
H/V	22704.0	41.8	41.8	42.1	40.5	6.4	46.6	46.6	103.5	-56.9	Pass	83.5	-36.9	Pass	
H/V	24048.0	41.2	41.2	40.9	40.4	6.5	47.2	47.2	103.5	-56.3	Pass	83.5	-36.3	Pass	
Table Result:				Pass by -36.3 dB				Worst Freq:				24048.0 MHz			
Test Site: EMI Chamber 2				Cable 1: EMIR-HIGH-06				Cable 2: ---				Cable 3: ---			
Analyzer: Rental SA#2				Preamp: 18-26.5GHz				Antenna: 18-26.5GHz Horn				Preselector: ---			
CSsoft Radiated Emissions Calculator v 1.017.178															
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
SA #2 (1860)	9kHz-26.5 GHz	E7405A	Agilent	MY45104916	1860	I	12/23/2016	12/23/2015
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz		I	4/29/2017	4/29/2015
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
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
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#2081		HTC-1	HDE		2081	II	4/5/2017	4/5/2016
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
REM-High-06	1 - 26.5GHz	U-21B0707-J	TRU			II	8/14/2017	8/14/2016

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



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 based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB ...
[15.247(d)]

MEASUREMENTS / RESULTS

Conducted Band Edges

Conducted Bandedge				
Date: Oct-26-2016		Company: BioSensics LLC		Work Order: Q2777
Engineer: Yunus Faziloglu		EUT: ActivePERS™ Model: AP004		EUT Operating Voltage/Frequency: 3VDC Battery
Temp: 21.2°C		Humidity: 41%		Pressure: 1013mbar
Frequency Range: 2402-2480 MHz		Measurement Type: Conducted		
Notes: EUT powered by DC power supply during the test				
	Bandedge (dBm)	Delta	Limit	
		(dB)	(dB)	(Pass/Fail)
Low Bandedge	-71.51	46.25	≥ 20	Pass
High Bandedge	-78.46	53.18	≥ 20	Pass
Test Site: Wireless Test Room		Attenuator A2121		
Analyzer: A2200		Copyright Curtis-Straus LLC 2000		

Rev. 10/2/2016

Signal Generators	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
FSV40 Signal/Spectrum Analyzer	10Hz-40GHz	FSV40	ROHDE & SCHWARZ	101551	2200	I	6/1/2017	6/1/2016
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	2/10/2017	2/10/2016
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#2082		HTC-1	HDE		2082	II	4/5/2017	4/5/2016

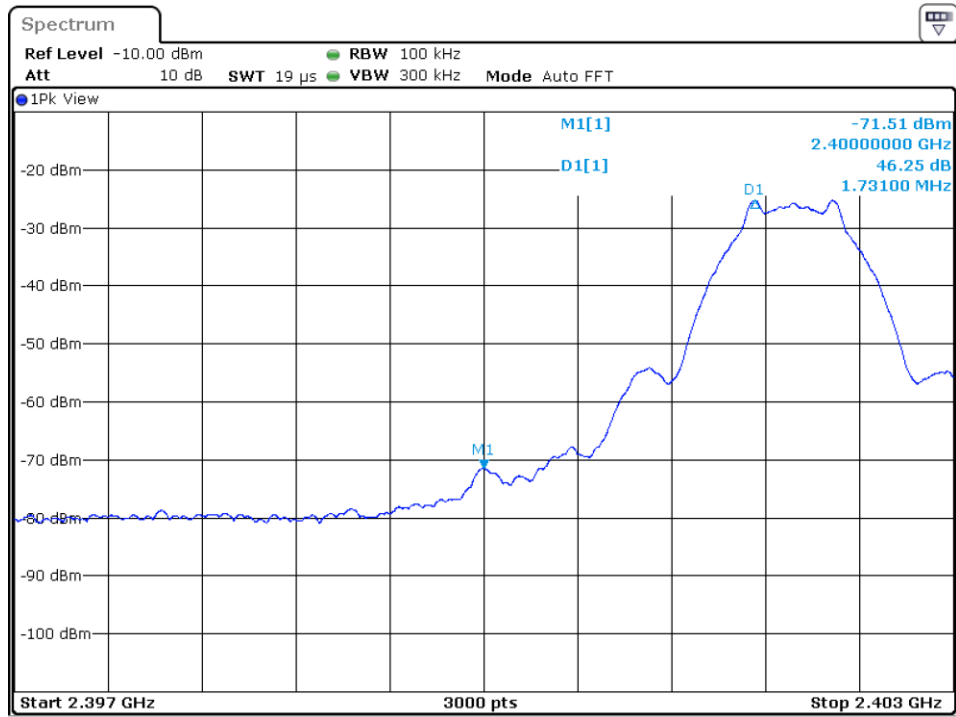
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



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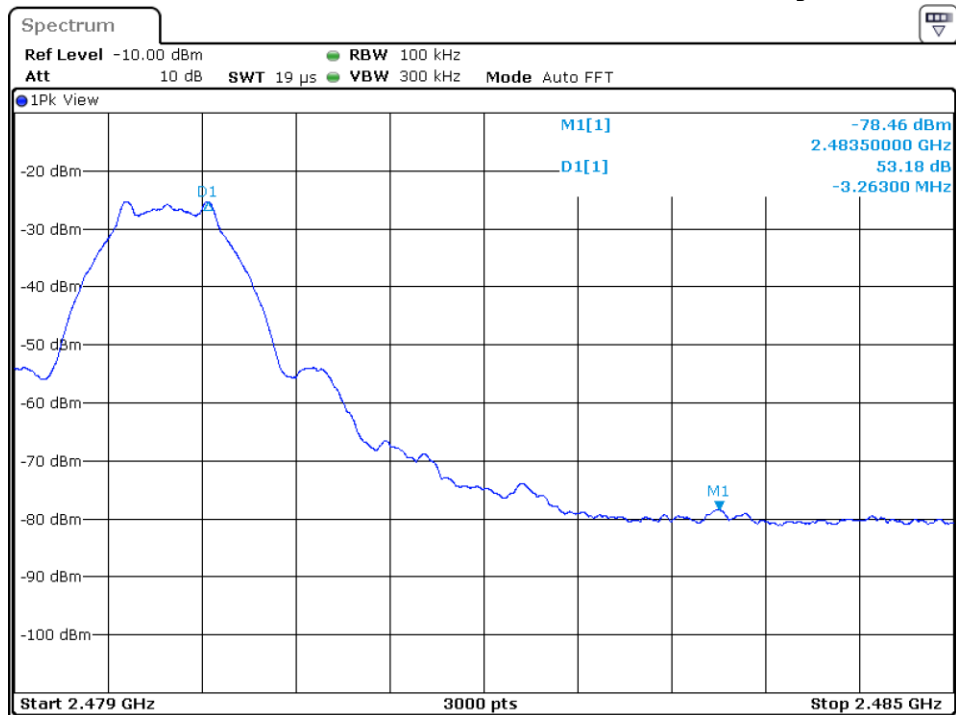


PLOT(s)



Date: 26.OCT.2016 11:12:27

Conducted Emission - Lower Band Edge



Date: 26.OCT.2016 11:19:51

Conducted Emission - Upper Band Edge



Conducted Spurious Emission

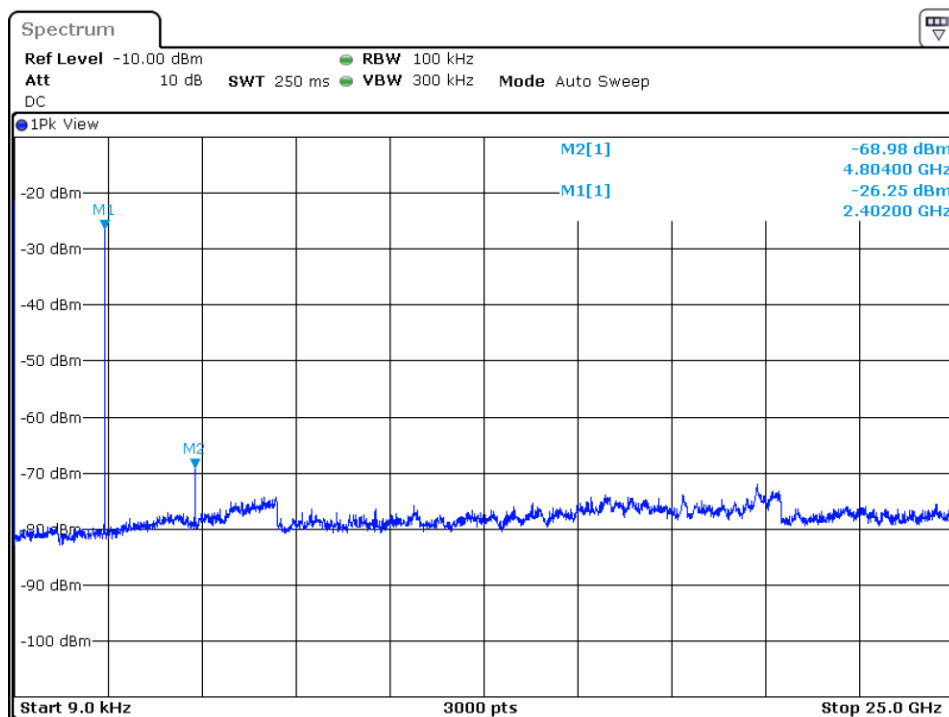
Note: 9 kHz - 25 GHz frequency range was investigated for all 3 channels (low, middle and high) at the EUT antenna port. No spurious emissions found in this range, which is more than 20dB below the fundamental.

Rev. 10/2/2016

Signal Generators		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
FSV40 Signal/Spectrum Analyzer		10Hz-40GHz	FSV40	ROHDE & SCHWARZ	101551	2200	I	6/1/2017	6/1/2016
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	2/10/2017	2/10/2016
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#2082			HTC-1	HDE		2082	II	4/5/2017	4/5/2016

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

PLOT(s)



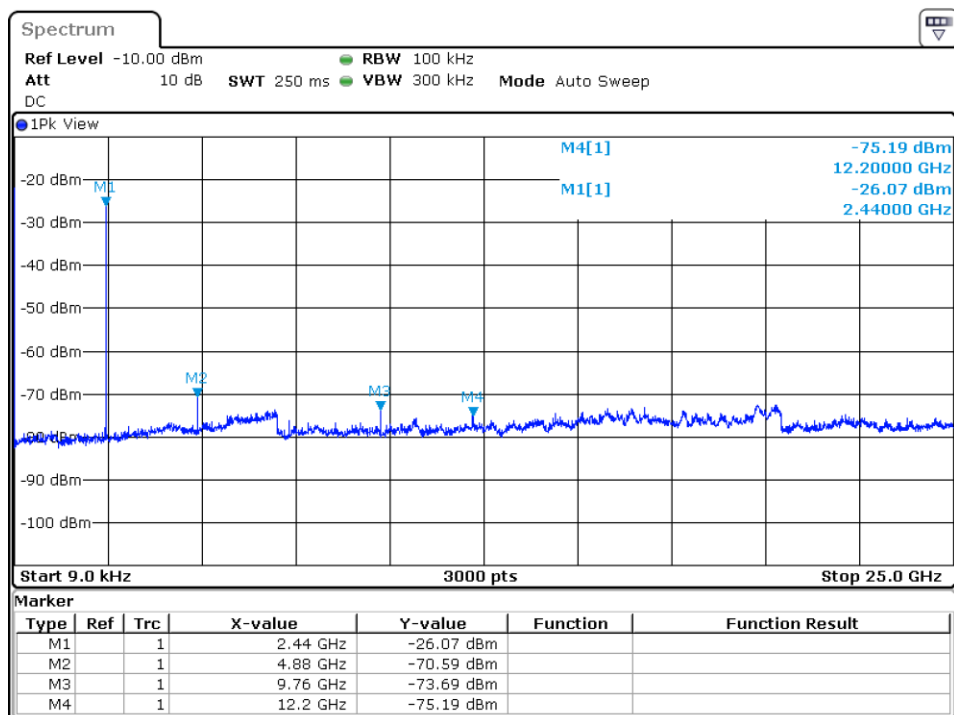
Date: 26.OCT.2016 11:51:57

Conducted Spurious - 9kHz to 25GHz (Low Channel)



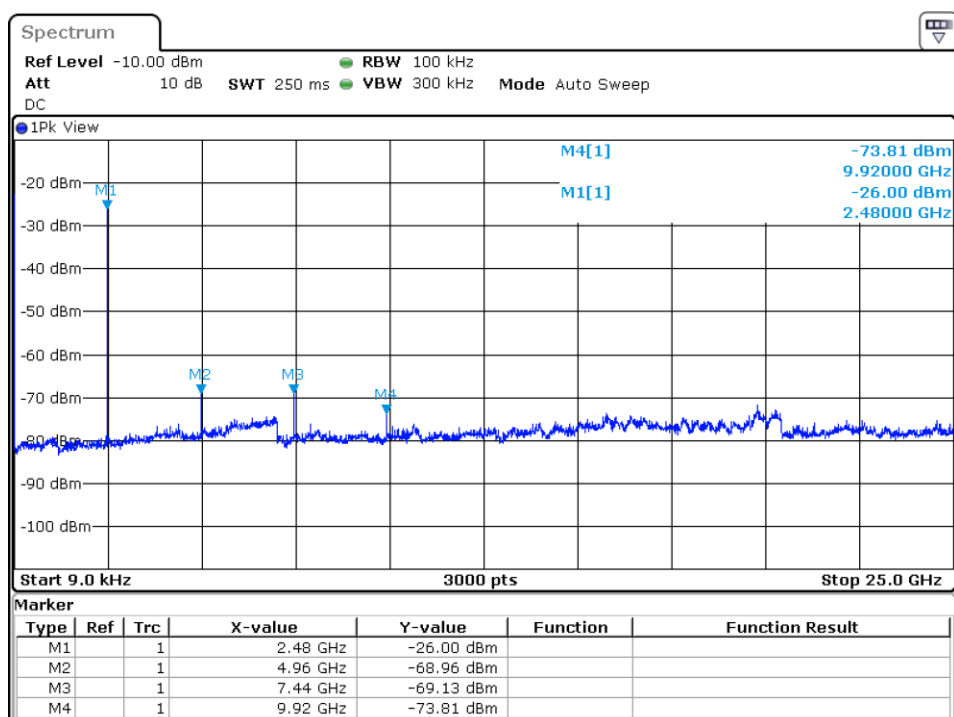
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Date: 26.OCT.2016 11:46:06

Conducted Spurious - 9kHz to 25GHz (Mid Channel)



Date: 26.OCT.2016 11:48:27

Conducted Spurious - 9kHz to 25GHz (High Channel)

Power Spectral Density

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

Per 558074 D01 DTS Measurement Guidance v03r05 Section 10.2

MEASUREMENTS / RESULTS

Peak Power Spectral Density							
Date: Oct-26-2016		Company: BioSensics LLC			Work Order: Q2777		
Engineer: Yunus Faziloglu		EUT: ActivePERS™ Model: AP004			EUT Operating Voltage/Frequency: 3VDC Battery		
Temp: 21.2°C		Humidity: 41%		Pressure: 1013mbar			
Frequency Range: 2402-2480 MHz		Measurement Type: Conducted					
		Measurement Method: FCC KDB 558074 D01 DTS Meas Guidance v03r05 Section 10.2					
Notes: EUT powered by DC power supply during the test							
Frequency	Peak Reading	Cable Loss	Attenuator Loss	Peak PSD	Limit	Margin	Result
(MHz)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
2402.0	-29.77	1.0	29.44	0.67	8.0	-7.33	Pass
2440.0	-30.03	1.0	29.44	0.41	8.0	-7.59	Pass
2480.0	-29.71	1.0	29.44	0.73	8.0	-7.27	Pass
Test Site: Wireless Test Room			Attenuator: A2121				
Analyzer: A2200			Copyright Curtis-Straus LLC 2000				
PSD(dBm) = Reading (dBm) + Cable Loss (dB) + Attenuator Loss (dBm)							

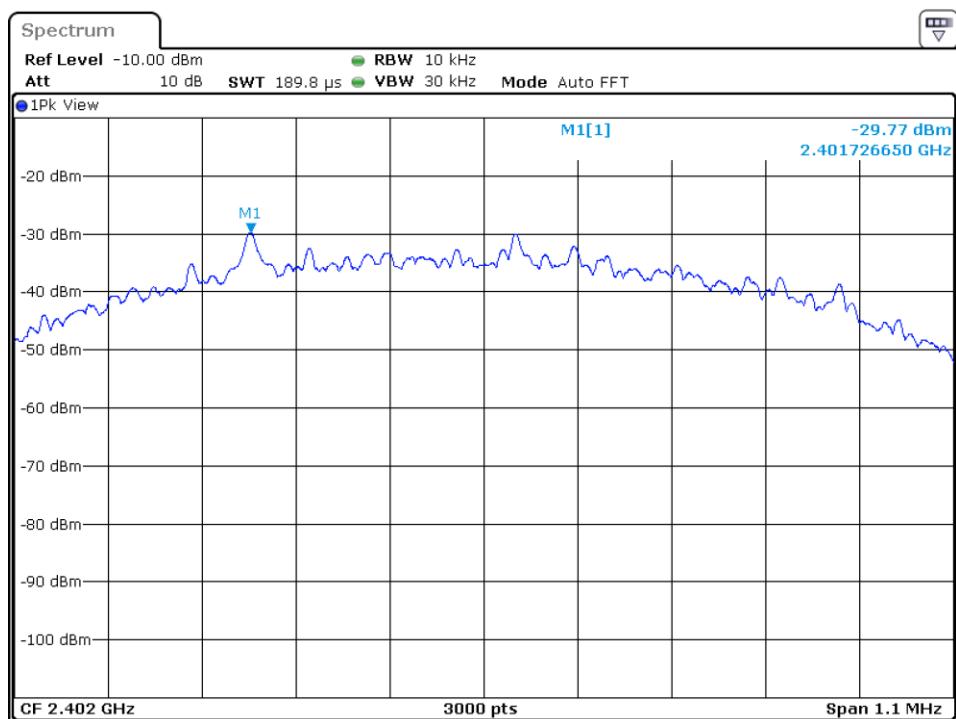
Rev. 10/2/2016

Signal Generators		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
FSV40 Signal/Spectrum Analyzer		10Hz-40GHz	FSV40	ROHDE & SCHWARZ	101551	2200	I	6/1/2017	6/1/2016
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	2/10/2017	2/10/2016
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#2082			HTC-1	HDE		2082	II	4/5/2017	4/5/2016

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

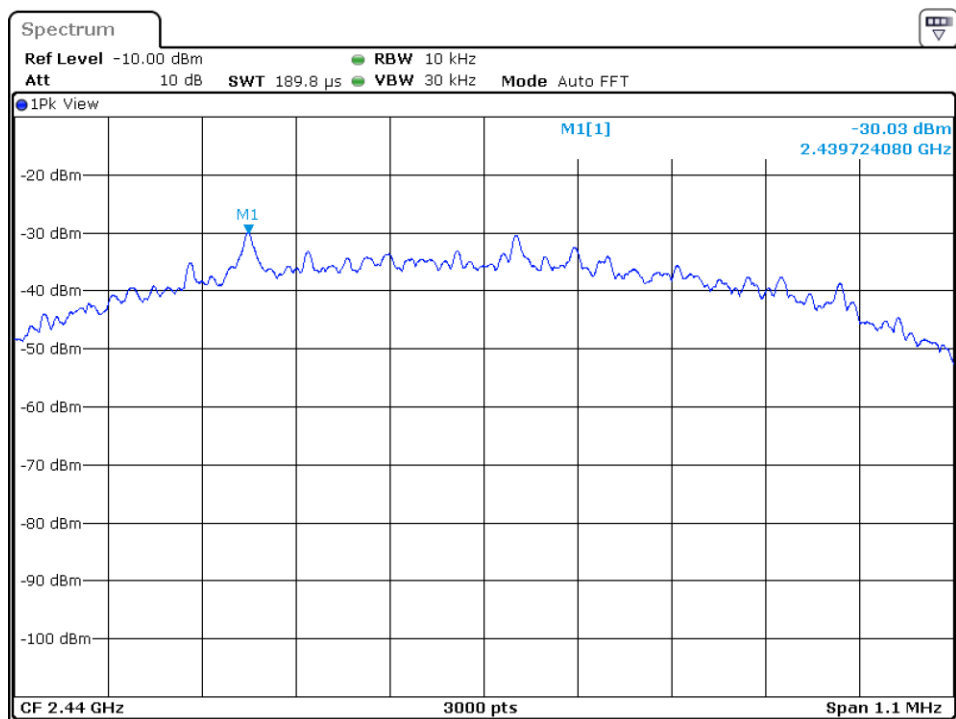


PLOT(s)



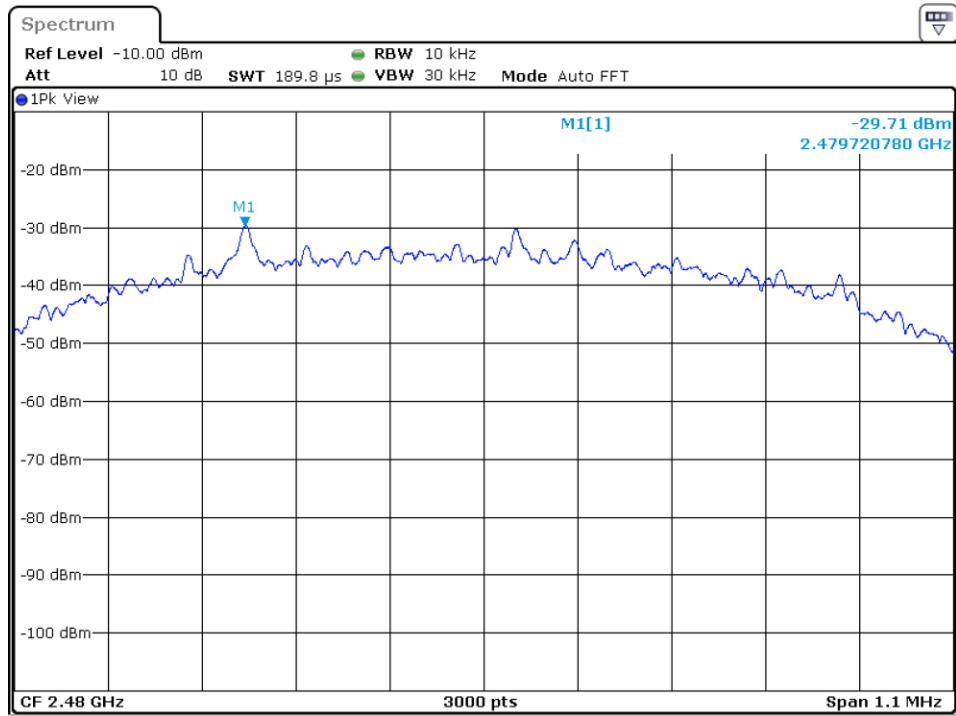
Date: 26.OCT.2016 11:03:59

PSD - Low Channel



Date: 26.OCT.2016 11:06:27

PSD - Mid Channel



Date: 26.OCT.2016 11:08:13

PSD - High Channel

AC Line Conducted Emissions LIMITS

Frequency of emission (MHz)	Quasi-peak limit (dB μ V)	Average limit (dB μ V)
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

Testing is not applicable since EUT is battery powered.

Occupied Bandwidth

Requirement: When an occupied bandwidth is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured. [RSS-GEN 6.6]

MEASUREMENTS / RESULTS

99% Occupied Bandwidth			
Date: Oct-26-2016		Company: BioSensics LLC	
Engineer: Yunus Faziloglu		EUT: ActivePERS™ Model: AP004	
Temp: 21.2°C		Humidity: 41%	
		Pressure: 1013mbar	
Frequency Range: 2402-2480 MHz		Measurement Type: Conducted	
		Measurement Method: RSS-Gen Issue 4 Section 6.6	
Notes: EUT powered by DC power supply during the test			
Frequency (MHz)	99% OBW (kHz)		
2402	1050		
2440	1057		
2480	1061		
Test Site: Wireless Test Room		Attenuator A2121	
Analyzer: A2200		Copyright Curtis-Straus LLC 2000	

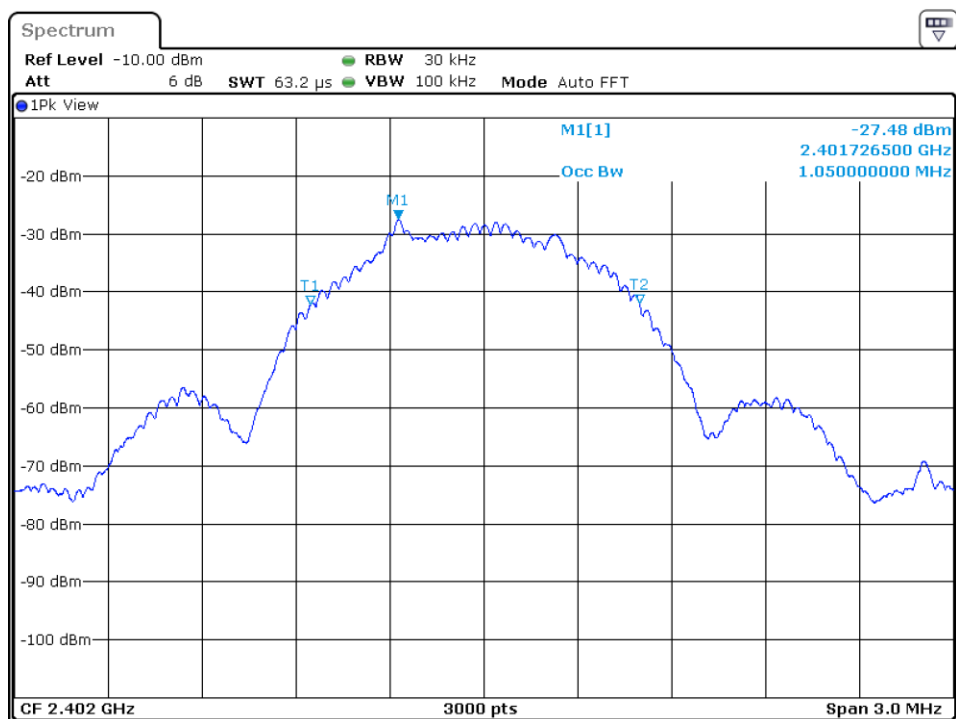
Rev. 10/2/2016

Spectrum Analyzer		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
FSV40 Signal/Spectrum Analyzer		10Hz-40GHz	FSV40	ROHDE & SCHWARZ	101551	2200	I	6/1/2017	6/1/2016
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	2/10/2017	2/10/2016
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#2082			HTC-1	HDE		2082	II	4/5/2017	4/5/2016

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

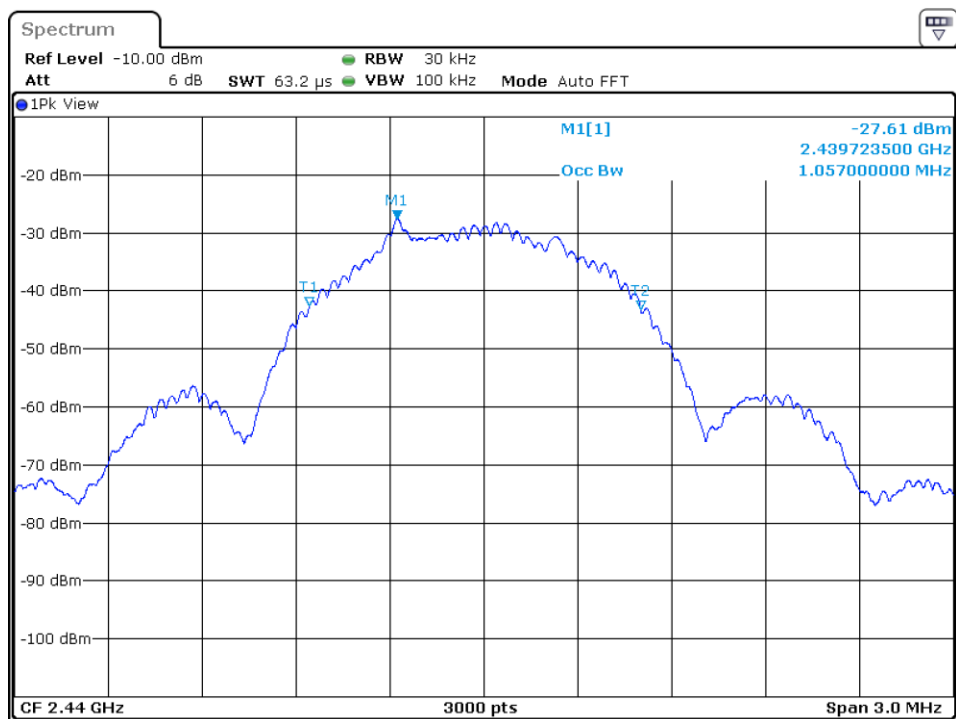


PLOT(s)



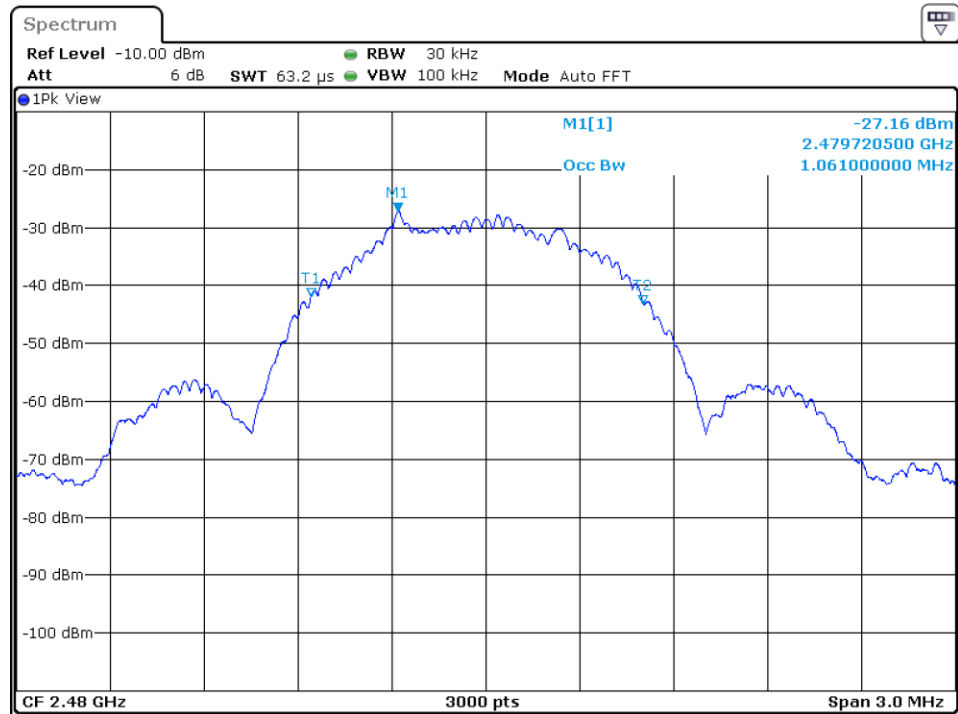
Date: 26.OCT.2016 10:18:03

Occupied Bandwidth - Low Channel



Date: 26.OCT.2016 10:19:28

Occupied Bandwidth - Mid Channel



Date: 26.OCT.2016 10:16:09

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)	5.6dB	N/A
NIST	4.6dB	5.2dB (Ucisp)
CISPR		
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	3.9dB	N/A
CISPR	3.6dB	3.6dB (Ucisp)
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%	5%
	0.3dB	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 where 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.



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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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