
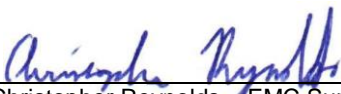




Test Report

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

Report No	EO0877-1
Client	Onset Computer Corporation Jacob Lacourse
Address	470 MacArthur Blvd. Bourne, MA 02532
Phone	508-743-3195
Items tested	MX1101
FCC ID	WXF-MX1101
IC	7936A-MX1101
FRN	0009380064
Equipment Type	Part 15.247 Digitally Modulated
Equipment Code	DTS
FCC/IC Rule Parts	47 CFR 15.247, RSS-210 Issue 8, RSS GEN Issue 3
Test Dates	June 3 – 11, 2014
Results	As detailed within this report
Prepared by	 Tuyen Truong A. – Test Engineer
Authorized by	 Christopher Reynolds – EMC Supervisor
Issue Date	7/3/2014
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page Error! Bookmark not defined. 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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Form Final Report REV 7-20-07 (DW)



Summary

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.247. The product is the MX1101. It is a digitally modulated transmitter that operates in the range 2400-2483.5MHz. Product was tested with an on board antenna with a gain of -2dBi.

We found that the products met the above requirements without modification. Jacob Lacourse from Onset Computer Corporation was present during the testing. The test samples were received in good condition.



Test Methodology

Radiated emission and AC Line conducted testing were performed according to the procedures specified in FCC Guidance for performing compliance measurement on DTS operating under section 15.247, April 19, 2013 and ANSI C63.10 (2009) and C63.4 (2003). Radiated Emissions were maximized by rotating the device around its axes as well as varying the test antenna's height and polarity. The antenna was maximized separately.

Conducted emissions at the antenna port were performed, as required by rule section.

The EUT operating voltage is 3Vdc (2xAAA battery). No AC Line conducted testing required.

Low operating channel frequency = 2402MHz

Mid operating channel frequency = 2440MHz

High operating channel frequency = 2480MHz

The following bandwidths were used during radiated spurious and line conducted emissions.

Frequency	RBW	VBW
0.15-30MHz	9kHz	30kHz
30-1000MHz	120kHz	1MHz
1-10GHz	1MHz	3MHz

Product Tested - Configuration Documentation

EUT Configuration										
Work Order: O0877 Company: Onset Computer Corporation Company Address: 470 MacArthur Blvd. Bourne, MA 02532 Contact: Jim Corrigan Person Present: Jim Corrigan										
		MN				SN		Comment		
EUT:		MX1101				10517838				
		MX1101				10517839		*conducted antenna port tests		
EUT Description: MX1101 EUT Max Frequency: 16MHz EUT Min Frequency: 32KHz EUT TX Frequency: 2.4-2.4853GHz										
Support Equipment:		MN				SN				
Dell Laptop		PP18L				1524				
EUT Ports:										
Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out NEBS Type	Unpopulated Reason
None	na									
Software / Operating Mode Description:										
EUT is set to transmit on Low, Mid and High channels through out 2.4 to 2.4835GHz range.										



BUREAU
VERITAS

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Statement of Conformity

The MX1101 has been found to conform to the following parts of 47 CFR and as detailed below:

RSS-GEN	RSS 210	Part 15	Comments
5.3		15.15(b)	There are no controls accessible to the user that varies the output power above specified limits.
5.2		15.19	The label is shown in the label exhibit.
7.1.5		15.21	Information to the user is shown in the instruction manual exhibit.
		15.27	No special accessories are required for compliance.
		15.31	The EUT was tested in accordance with the measurement standards in this section.
		15.33	Frequency range was investigated according to this section, unless noted in specific rule section under which the equipment operates.
		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.
7.1.4		15.203	EUT employs a permanently connected antenna.
	2.6	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.
7.2.2		15.207	No testing required since EUT is battery operated (2xAAA batteries).
	Annex 8	15.247	The unit complies with the requirements of 15.247
4.6.1		15.247	Occupied Bandwidth measurements were made.

Test Results**Bandwidth****LIMIT**

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

MEASUREMENTS / RESULTS

Engineer	Tuyen Truong A.
Date	6/6/2014
Site	Chamber 1
Environmental Conditions	22.4°C, 34%, 1013mb

6dB Bandwidth

Frequency (MHz)	Mode	6dB Bandwidth (KHz)
2402	DSSS	672.532
2440	DSSS	659.693
2480	DSSS	652.598
Tested by: Tuyen Truong Date: 6/6/2014 Company: Onset Computer Corporation EUT: MX1101		
RBW = 100KHz VBW = 300KHz Analyzer: SA 1328 Attenuator: PE7019-20		

Rev. 6/3/2014

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1328)	9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	I	1/13/2015	1/13/2014
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	>1GHz		I	5/17/2015	5/17/2013
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/13/2014	7/13/2013
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#1832		35519-044	Control Company	130318277	1832	II	6/13/2015	6/13/2013

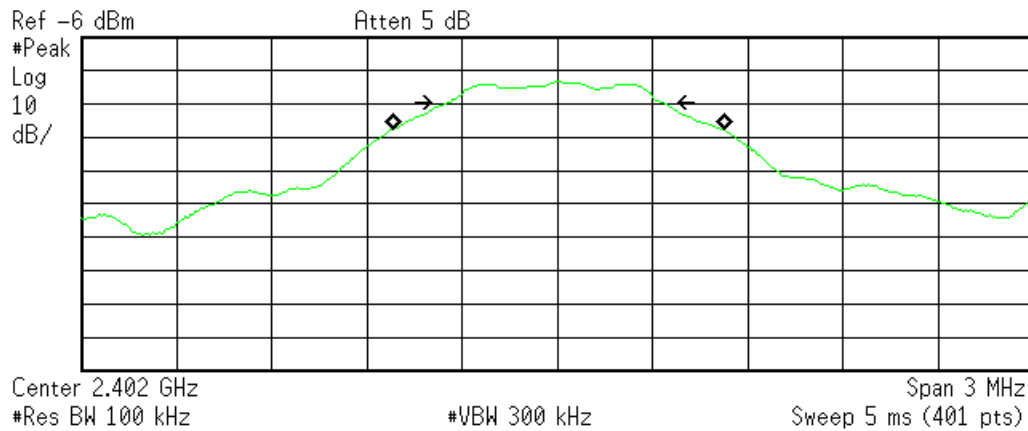
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



PLOT(s)

* Agilent 15:34:43 Jun 4, 2014

R T



Occupied Bandwidth
1.0433 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

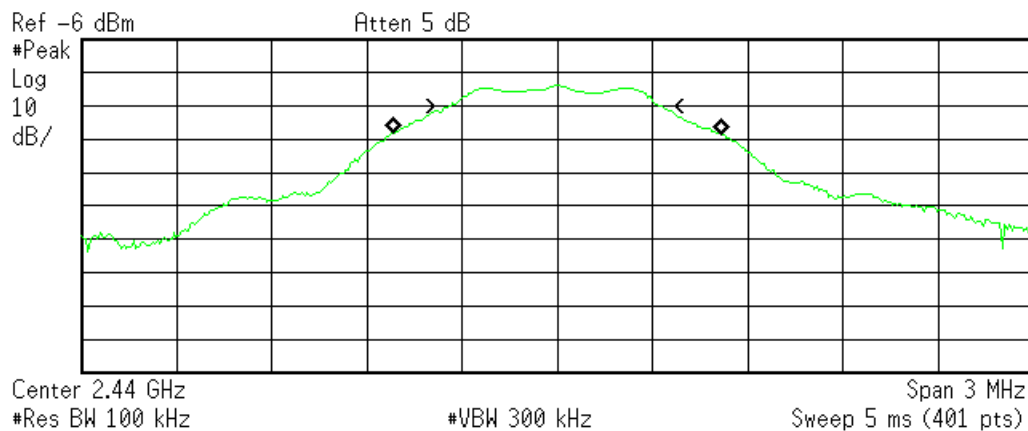
Transmit Freq Error 3.435 kHz
x dB Bandwidth 672.532 kHz

C:\temp.gif file saved

Low Channel – 6dB Bandwidth

* Agilent 15:35:49 Jun 4, 2014

R T



Occupied Bandwidth
1.0355 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 1.855 kHz
x dB Bandwidth 659.693 kHz

C:\temp.gif file saved

Mid Channel – 6dB Bandwidth

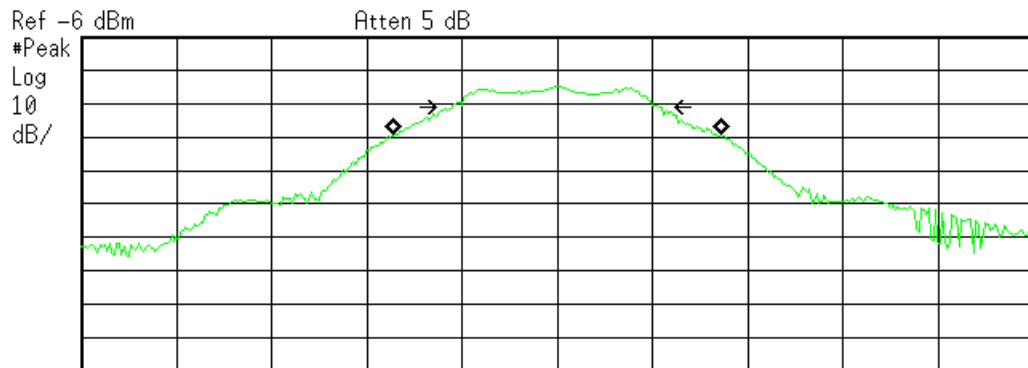


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Agilent 15:36:29 Jun 4, 2014

R T



Center 2.48 GHz Span 3 MHz
#Res BW 100 kHz #VBW 300 kHz Sweep 5 ms (401 pts)

Occupied Bandwidth
1.0313 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -657.233 Hz
x dB Bandwidth 652.598 kHz

C:\temp.gif file saved

High Channel - 6 dB Bandwidth

Fundamental Emission Output Power**LIMIT**

Conducted Output Power

1 Watt

[15.247(b) (3)]

MEASUREMENTS / RESULTS

Engineer	Tuyen Truong
Date	5/7/2014
Site	CEMI6
Environmental Conditions	22.4°C, 34%, 1013mb

Maximum Conducted Peak Output Power

Tested by: Tuyen Truong				WO: O0877		
Date: 6/6/2014				Analyzer: 1328		
Company: Onset Computer Corp				RBW = 1000KHz		
EUT: MX1101				Attenuator: PE7019-20 #791		
				VBW = 3000KHz		
				Operating Voltage: 3Vdc		
TX Mode: DSSS						
Channel	Measured	Attenuator	Adjusted			
(MHz)	power	factor	power	Limit	Margin	Result
	(dBm)	(dB)	measurement	(dBm)	(dB)	
	(dBm)		(dBm)			
2402	-19.37	19.92	0.55	30	-29.45	PASS
2440	-19.71	19.92	0.21	30	-29.79	PASS
2480	-20.63	19.92	-0.71	30	-30.71	PASS

Rev. 6/3/2014

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1328)	9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	I	1/13/2015	1/13/2014
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	>1GHz		I	5/17/2015	5/17/2013
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/13/2014	7/13/2013
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#1832		35519-044	Control Company	130318277	1832	II	6/13/2015	6/13/2013

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

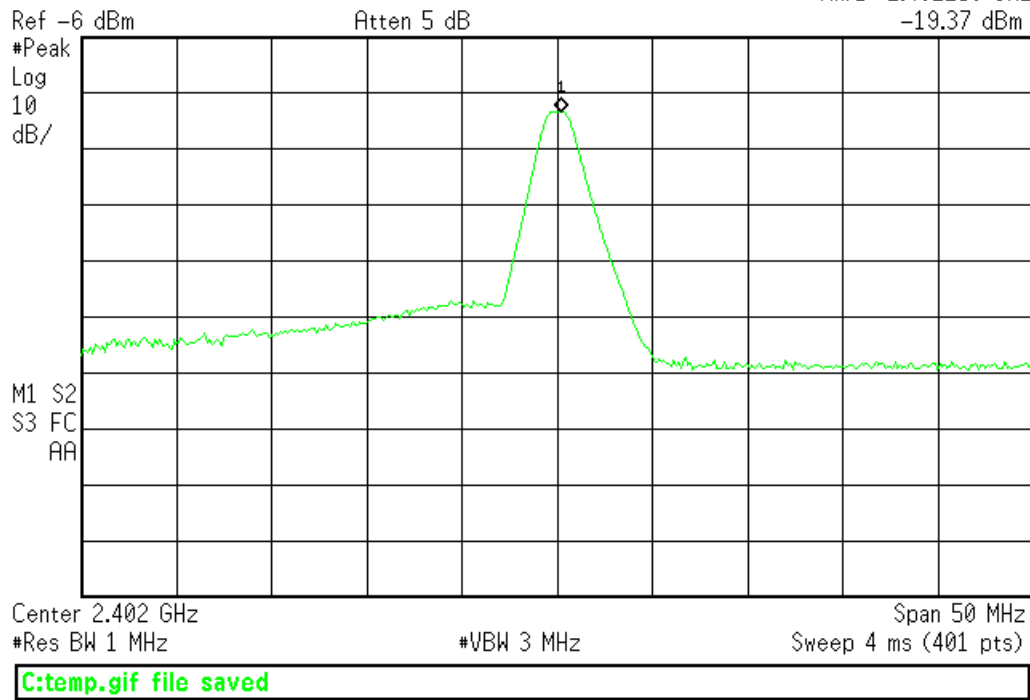


PLOTS

Agilent 12:37:59 Jun 6, 2014

R T

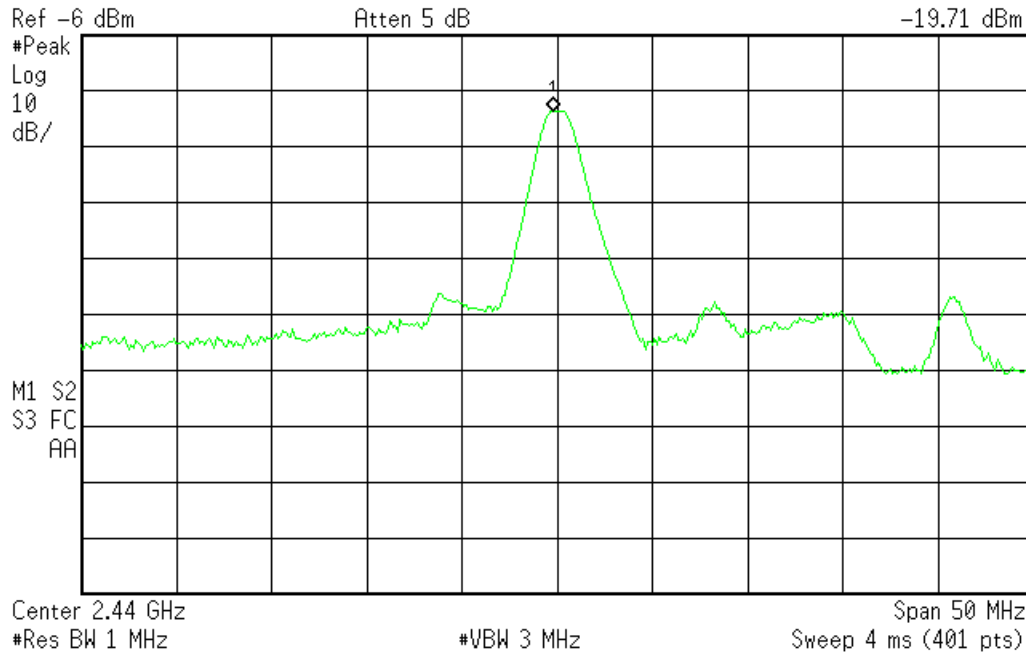
Mkr1 2.402250 GHz
-19.37 dBm



Low Channel – Channel Power

Agilent 12:41:53 Jun 6, 2014

R T

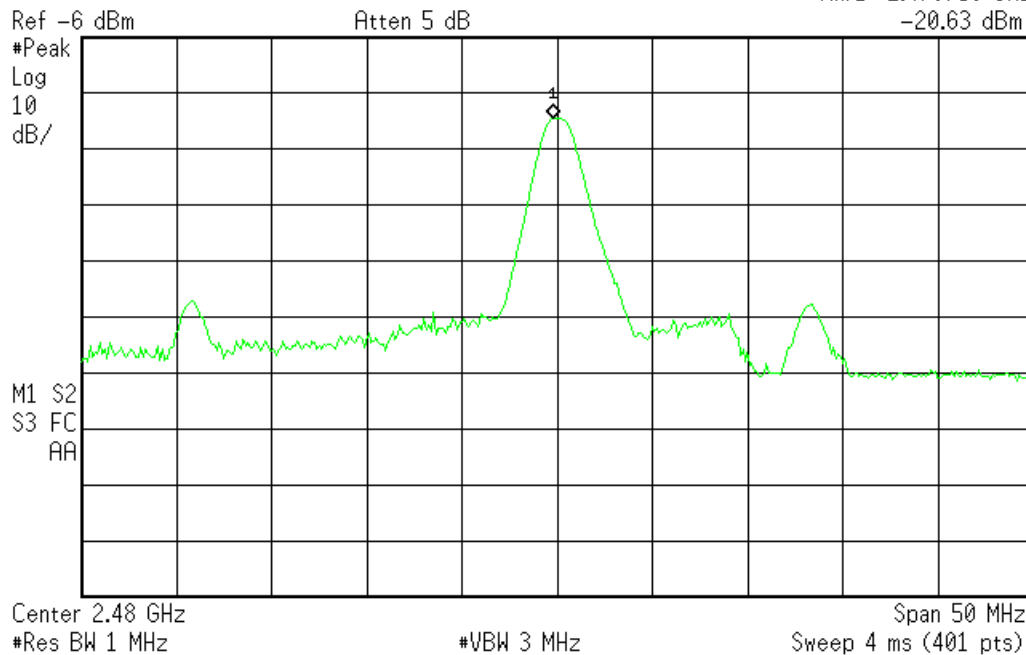
Mkr1 2.439750 GHz
-19.71 dBm

C:\temp.gif file saved

Mid Channel – Channel Power

Agilent 12:42:50 Jun 6, 2014

R T

Mkr1 2.479750 GHz
-20.63 dBm

C:\temp.gif file saved

High Channel – Channel Power



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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)]

MEASUREMENTS / RESULTS

Radiated Emissions Table												
Date: 04-Jun-14			Company: Onset Computer Corporation						Work Order: O0877			
Engineer: Tuyen Truong			EUT Desc: MX1101						EUT Operating Voltage/Frequency: 3Vdc (battery)			
Temp: 24°C			Humidity: 35%			Pressure: 1016mBar						
Frequency Range: 30 to 1000 MHz							Measurement Distance: 3 m					
Notes:							EUT Max Freq: 16 MHz TX Frequency: 2.4-2.4835GHz					
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dBuV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBuV/m)	---			FCC 15.209		
							Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)
v	71.2	36.2	25.4	8.5	0.7	20.0	---	---	---	40.0	-20.0	Pass
v	163.4	37.6	25.3	12.0	1.3	25.6	---	---	---	43.5	-17.9	Pass
h	177.9	28.8	25.3	10.9	1.1	15.5	---	---	---	43.5	-28.0	Pass
v	238.6	35.3	25.4	11.7	1.3	22.9	---	---	---	46.0	-23.1	Pass
v	565.9	30.3	25.3	18.6	2.0	25.6	---	---	---	46.0	-20.4	Pass
h	852.0	27.3	25.3	21.8	2.6	26.4	---	---	---	46.0	-19.6	Pass
Table Result: Pass							by -17.9 dB			Worst Freq: 163.4 MHz		
Test Site: EMI Chamber 1			Cable 1: Asset #1505				Cable 2: Asset #1507			Cable 3: ---		
Analyzer: Asset #1328			Preamp: Red				Antenna: Red-Black			Preselector: ---		

Rev. 6/1/2014

Spectrum Analyzers / Receivers /Preselectors SA EMI Chamber (1328)	Range 9kHz-13.2 GHz	MN E4405B	Mfr Agilent	SN MY44210241	Asset 1328	Cat I	Calibration Due 1/13/2015	Calibrated on 1/13/2014
Radiated Emissions Sites EMI Chamber 1	FCC Code 719150	IC Code 2762A-6	VCCI Code A-0015	Range >1GHz		Cat I	Calibration Due 5/17/2015	Calibrated on 5/17/2013
Preamps/Couplers Attenuators / Filters Red	Range 0.009-2000MHz	MN ZFL-1000-LN	Mfr CS	SN N/A	Asset 798	Cat II	Calibration Due 2/4/2015	Calibrated on 2/4/2014
Antennas Red-Black Bilog	Range 30-2000MHz	MN JB1	Mfr Sunol	SN A091604-2	Asset 1106	Cat I	Calibration Due 1/28/2015	Calibrated on 1/28/2013
Meteorological Meters Weather Clock (Pressure Only) TH A#1832		MN BA928 35519-044	Mfr Oregon Scientific Control Company	SN C3166-1 130318277	Asset 831 1832	Cat I II	Calibration Due 3/19/2016 6/13/2015	Calibrated on 3/19/2014 6/13/2013
Cables Asset #1505 Asset #1507	Range 9kHz - 18GHz 9kHz - 18GHz		Mfr Florida RF Florida RF			Cat II II	Calibration Due 3/7/2015 2/23/2015	Calibrated on 3/7/2014 2/23/2014

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

Radiated Emissions Table															
Date: 04-Jun-14			Company: Onset Computer Corporation						Work Order: O0877						
Engineer: Tuyen Truong			EUT Desc: MX1101						EUT Operating Voltage/Frequency: 3Vdc (battery)						
Temp: 24°C			Humidity: 35%						Pressure: 1016mBar						
Frequency Range: 1-6GHz									Measurement Distance: 3 m						
Notes: Low, Mid and High channels were tested									EUT Max Freq: 16 MHz						
Duty cycle is 12.3ms in 100ms window. Duty cycle correction factor is -16.6									TX Frequency: 2.4-2.4835GHz						
Antenna Polarization (H/V)		Frequency (MHz)	Peak Reading (dBuV)	Average Reading (dBuV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBuV/m)	Adjusted Avg Reading (dBuV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
										Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)
h		1885.0	52.38	35.8	21.0	27.6	3.9	62.9	46.3	74.0	-11.1	Pass	54.0	-7.7	Pass
h		4804.0	36.64	20.0	20.7	32.9	6.6	55.4	38.8	74.0	-18.6	Pass	54.0	-15.2	Pass
h		4880.0	34.62	18.0	20.8	32.8	6.8	53.4	36.8	74.0	-20.6	Pass	54.0	-17.2	Pass
h		4960.0	36.35	19.8	20.7	33.0	6.8	55.5	38.9	74.0	-18.5	Pass	54.0	-15.2	Pass
Table Result:			Pass		by		-7.7 dB		Worst Freq:			1885.0 MHz			
Test Site: EMI Chamber 1			Cable 1: Asset #1505			Cable 2: Asset #1507			Cable 3: ---						
Analyzer: Gold			Preamp: Asset #1517			Antenna: Orange Horn			Preselector: ---						



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Rev. 6/1/2014

Spectrum Analyzers / Receivers / Preselectors Gold	Range 100Hz-26.5 GHz	MN E4407B	Mfr Agilent	SN MY45113816	Asset 1284	Cat I	Calibration Due 3/28/2015	Calibrated on 3/28/2014
Radiated Emissions Sites EMI Chamber 1	FCC Code 719150	IC Code 2762A-6	VCCI Code A-0015	Range >1GHz		Cat I	Calibration Due 5/17/2015	Calibrated on 5/17/2013
Preamps / Couplers Attenuators / Filters 1517 HF Preamp	Range 1-20GHz	MN CS	Mfr CS	SN N/A	Asset 1517	Cat II	Calibration Due 9/11/2014	Calibrated on 9/11/2013
Antennas Orange Horn	Range 1-18GHz	MN 3115	Mfr EMCO	SN 0004-6123	Asset 390	Cat I	Calibration Due 10/2/2014	Calibrated on 10/2/2013
Meteorological Meters Weather Clock (Pressure Only) TH A#1832		MN BA928 35519-044	Mfr Oregon Scientific Control Company	SN C3166-1 130318277	Asset 831 1832	Cat I II	Calibration Due 3/19/2016 6/13/2015	Calibrated on 3/19/2014 6/13/2013
Cables Asset #1505 Asset #1507	Range 9kHz - 18GHz 9kHz - 18GHz		Mfr Florida RF Florida RF			Cat II II	Calibration Due 3/7/2015 2/23/2015	Calibrated on 3/7/2014 2/23/2014

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

Radiated Emissions Table															
Date: 04-Jun-14				Company: Onset Computer Corporation						Work Order: O0877					
Engineer: Tuyen Truong				EUT Desc: MX1101						EUT Operating Voltage/Frequency: 3Vdc					
Temp: 24°C				Humidity: 35%						Pressure: 1016mBar					
Frequency Range: 6-18GHz										Measurement Distance: 1 m					
Notes: High Pass Filter #817 is in line (-0.85dB) Duty cycle is 14.76ms in 100ms window. Duty cycle correction factor is -16.6										EUT Max Freq: 16 MHz					
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBuV)	Average Reading (dBuV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	High Pass Filter (dB)	Adjusted Peak Reading (dBuV/m)	Adjusted Avg Reading (dBuV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
										Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBuV/m)	Margin (dB)	Result (Pass/Fail)
v	7320.0	42.4	25.8	20.5	37.4	7.8	0.85	68.0	51.4	83.5	-15.6	Pass	63.5	-12.2	Pass
h	7320.0	43.39	26.8	20.5	37.4	7.8	0.85	69.0	52.3	83.5	-14.6	Pass	63.5	-11.2	Pass
h	7440.0	43.2	26.6	20.4	37.4	7.8	0.85	68.9	52.3	83.5	-14.7	Pass	63.5	-11.3	Pass
v	7440.0	44.19	27.6	20.4	37.4	7.8	0.85	69.9	53.2	83.5	-13.7	Pass	63.5	-10.3	Pass
Table Result:		Pass		by		-10.3		dB		Worst Freq:		7440.0 MHz			
Test Site: EMI Chamber 1				Cable 1: Asset #1505				Cable 2: Asset #1507				Cable 3: ---			
Analyzer: Gold				Preamp: Asset #1517				Antenna: Orange Horn				Preselector: ---			

Rev. 6/1/2014

Spectrum Analyzers / Receivers / Preselectors Gold	Range 100Hz-26.5 GHz	MN E4407B	Mfr Agilent	SN MY45113816	Asset 1284	Cat I	Calibration Due 3/28/2015	Calibrated on 3/28/2014
Radiated Emissions Sites EMI Chamber 1	FCC Code 719150	IC Code 2762A-6	VCCI Code A-0015	Range >1GHz		Cat I	Calibration Due 5/17/2015	Calibrated on 5/17/2013
Preamps / Couplers Attenuators / Filters 1517 HF Preamp	Range 1-20GHz	MN CS	Mfr CS	SN N/A	Asset 1517	Cat II	Calibration Due 9/11/2014	Calibrated on 9/11/2013
Antennas Orange Horn	Range 1-18GHz	MN 3115	Mfr EMCO	SN 0004-6123	Asset 390	Cat I	Calibration Due 10/2/2014	Calibrated on 10/2/2013
Meteorological Meters Weather Clock (Pressure Only) TH A#1832		MN BA928 35519-044	Mfr Oregon Scientific Control Company	SN C3166-1 130318277	Asset 831 1832	Cat I II	Calibration Due 3/19/2016 6/13/2015	Calibrated on 3/19/2014 6/13/2013
Cables Asset #1505 Asset #1507	Range 9kHz - 18GHz 9kHz - 18GHz		Mfr Florida RF Florida RF			Cat II II	Calibration Due 3/7/2015 2/23/2015	Calibrated on 3/7/2014 2/23/2014

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



Radiated Emissions Table

Date: 04-Jun-14				Company: Onset Computer Corporation					Work Order: O0877					
Engineer: Tuyen Truong				EUT Desc: MX1101					EUT Operating Voltage/Frequency: 3Vdc (battery)					
Temp: 24°C				Humidity: 35%					Pressure: 1016mBar					
Frequency Range: 18-26.5GHz									Measurement Distance: 3 m					
Notes: Low, Mid and High channels were tested									EUT Max Freq: 16 MHz					
									TX Frequency: 2.4-2.4835GHz					
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)
No Emissions Found in This Range														
Test Site: EMI Chamber 1				Cable 1: EMIR-HIGH-13					Cable 2: ---			Cable 3: ---		
Analyzer: Brown				Preamp: 18-26.5GHz					Antenna: 18-26.5GHz Horn			Preselector: ---		

Rev. 6/1/2014

Spectrum Analyzers / Receivers/Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	5/12/2015	5/12/2014
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	>1GHz		I	5/17/2015	5/17/2013
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	I	3/30/2015	3/30/2014
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	3/19/2016	3/19/2014
TH A#1832		35519-044	Control Company	130318277	1832	II	6/13/2015	6/13/2013
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
REM-High-13	9kHz - 26.5GHz		C-S			II	2/12/2015	2/12/2014

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

Radiated Emissions Table

Date: 03-Jun-14				Company: Onset Computer Corporation						Work Order: O0877							
Engineer: Tuyen Truong				EUT Desc: MX1101						EUT Operating Voltage/Frequency: 3Vdc							
Temp: 24°C				Humidity: 34%						Pressure: 1016 mBar							
Frequency Range: Radiated Band Edge									Measurement Distance: 3 m								
Notes: y-orientation (sitting up)									EUT Max Freq: 16MHz								
									TX Freq: 2.4-2.4835GHz								
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)			
v	2400.0	28.15	28.1	22.3	28.0	4.9	38.8	38.7	74.0	-35.2	Pass	54.0	-15.3	Pass			
v	2483.5	21.44	21.5	22.7	28.2	5.1	32.0	32.1	74.0	-42.0	Pass	54.0	-21.9	Pass			
Table Result:		Pass		by		-15.3 dB				Worst Freq:		2400.0 MHz					
Test Site: EMI Chamber 1				Cable 1: Asset #1505				Cable 2: Asset #1507				Cable 3: ---					
Analyzer: Gold				Preamp: Asset #1517				Antenna: Orange Horn				Preselector: ---					

Rev. 6/1/2014

Spectrum Analyzers / Receivers/Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	3/28/2015	3/28/2014
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	>1GHz		I	5/17/2015	5/17/2013
Preamps/Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	II	9/11/2014	9/11/2013
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Orange Horn	1-18GHz	3115	EMCO	0004-6123	390	I	10/2/2014	10/2/2013
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#1832		35519-044	Control Company	130318277	1832	II	6/13/2015	6/13/2013
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #1505	9kHz - 18GHz		Florida RF			II	3/7/2015	3/7/2014
Asset #1507	9kHz - 18GHz		Florida RF			II	2/23/2015	2/23/2014

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



Conducted Spurious Emissions

LIMITS

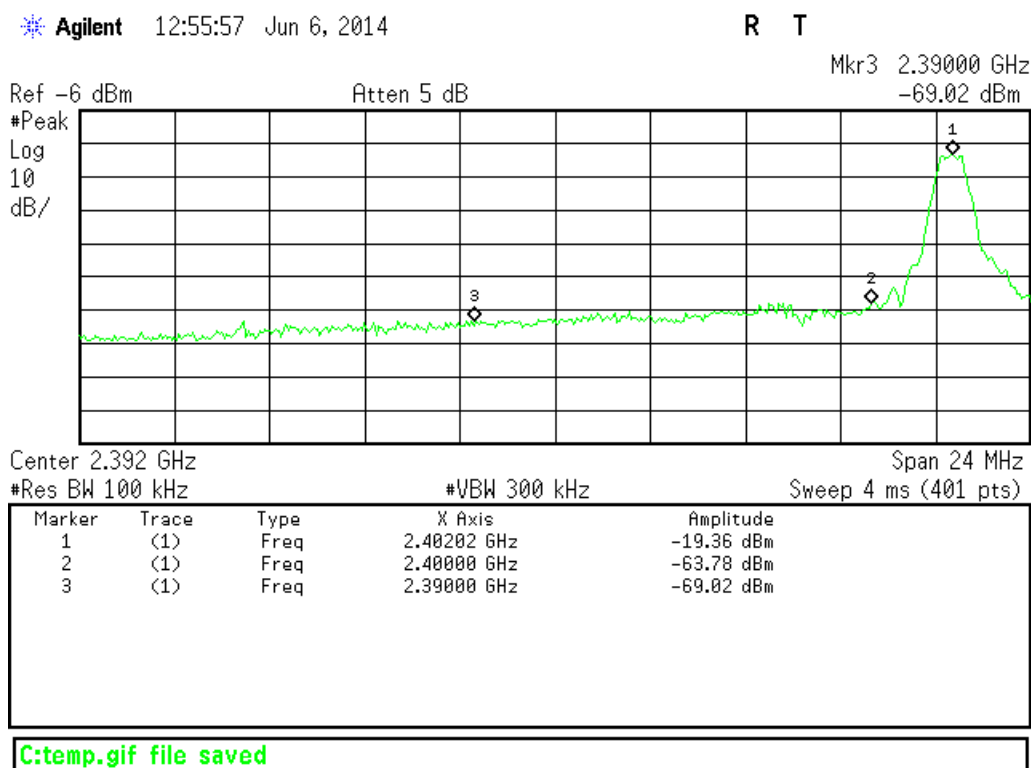
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth that contains the highest level of 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

Plots

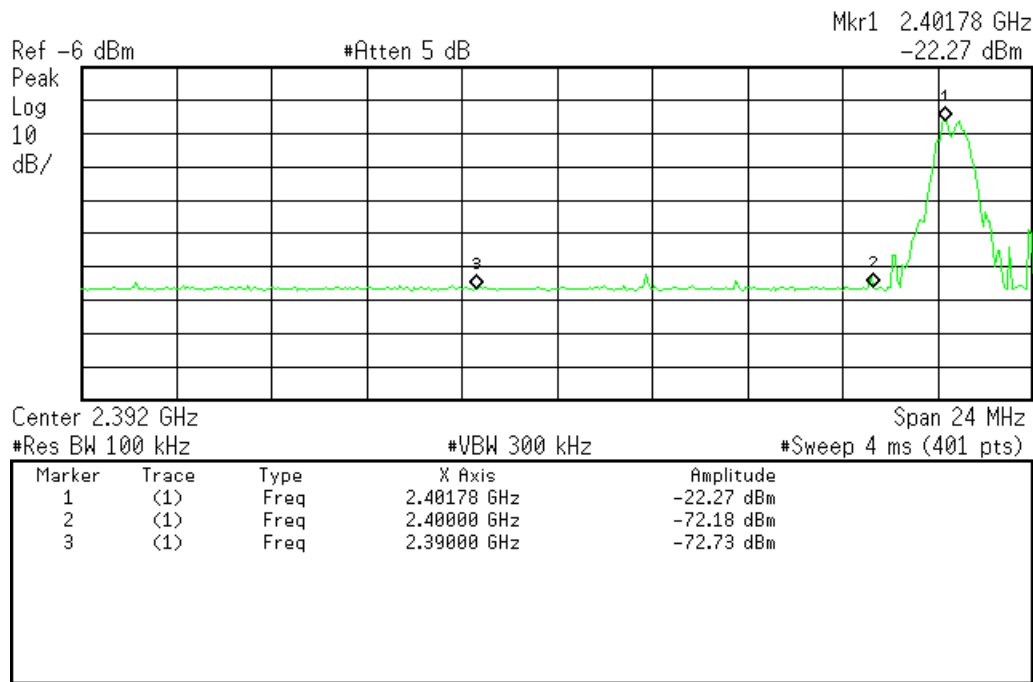
Conducted Band Edge



Lower Channel – Band-edge (<-20dBm) – Continuous Transmission

* Agilent 13:03:02 Jun 3, 2014

R T

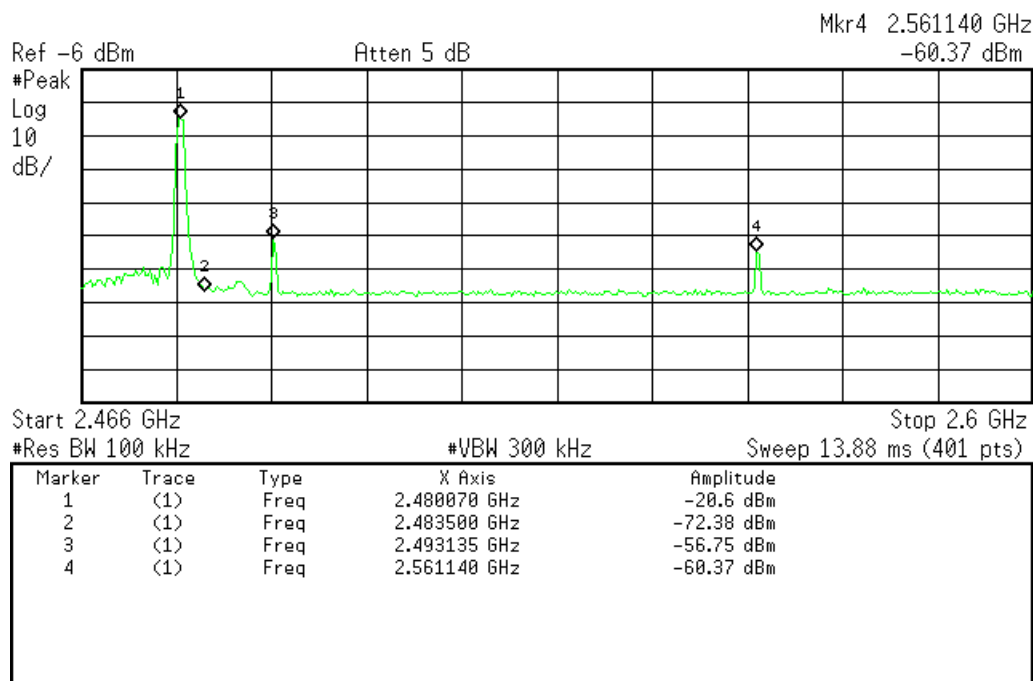


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Lower Channel - Band-edge (<-20dBm) - Normal Operation

* Agilent 12:58:40 Jun 6, 2014

R T



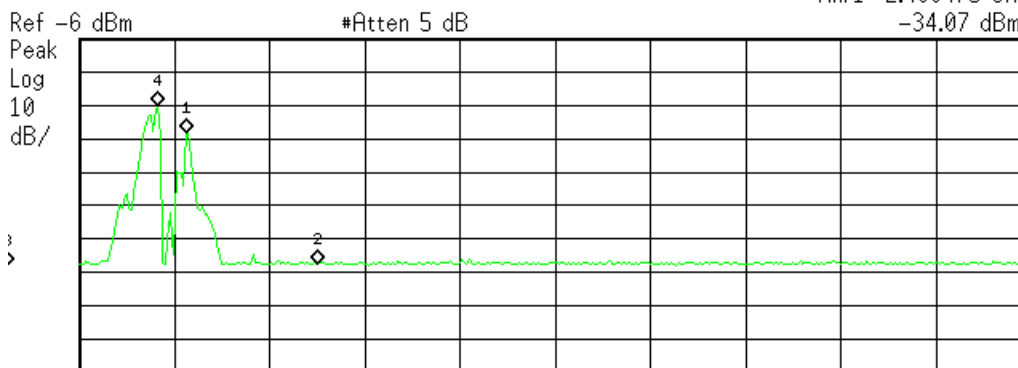
C:\temp.gif file saved

Upper Channel - Band-edge (<-20dBm) - Continuous Transmission



Agilent 13:07:56 Jun 3, 2014

R T

Mkr1 2.480475 GHz
-34.07 dBm

Start 2.478 GHz Stop 2.5 GHz
#Res BW 100 kHz #VBW 300 kHz #Sweep 5 ms (401 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.480475 GHz	-34.07 dBm
2	(1)	Freq	2.483500 GHz	-73.27 dBm
3	(1)	Freq	2.500000 GHz	-73.33 dBm
4	(1)	Freq	2.479815 GHz	-25.9 dBm

C:\temp.gif file saved

Upper Channel - Band-edge (<-20dBm) - Normal Operation

Conducted Spurious Emission

Conducted Spurious Emissions at the Antenna Port:

For these scans, the spectrum analyzer was set to the following:

Span: 400MHz
Resolution Bandwidth: 100 KHz
Video Bandwidth: 300 KHz
Points per sweep: 8192

The frequency range 30MHz-25GHz was tested at EUT antenna port and no emissions were found within 10dB of the limit, which was set at 20dB below the power of the transmit frequency. The low, mid, and high channels were tested.

Rev. 6/3/2014

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1328)	9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	I	1/13/2015	1/13/2014
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	>1GHz		I	5/17/2015	5/17/2013
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/13/2014	7/13/2013
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#1832		35519-044	Control Company	130318277	1832	II	6/13/2015	6/13/2013

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



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Power Spectral Density

LIMIT

...the 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)]

MEASUREMENTS / RESULTS

Engineer	Tuyen Truong A.
Date	6/6/2014
Site	Chamber 1
Environmental Conditions	22.4°C, 34%, 1013mb

15.247 (e) Maximum Power Spectral Density

Tested by: Tuyen Truong

Date: 6/6/2014

Analyzer: Asset #1328

Company: Onset Computer Corporation

Attenuation: PE7019-20 #791

RBW = 100KHz

EUT: MX1101

VBW = 300KHz

channel (MHz)	mode	measured PSD (dBm)	attenuator factor (dB)	adjusted power measurement	bandwidth correction factor adjustment	limit (dBm)	margin (dB)	result
2402	DMSS	-19.37	19.92	0.55	0	8	-7.45	Pass
2440	DMSS	-19.70	19.92	0.22	0	8	-7.78	Pass
2480	DMSS	-20.63	19.92	-0.71	0	8	-8.71	Pass

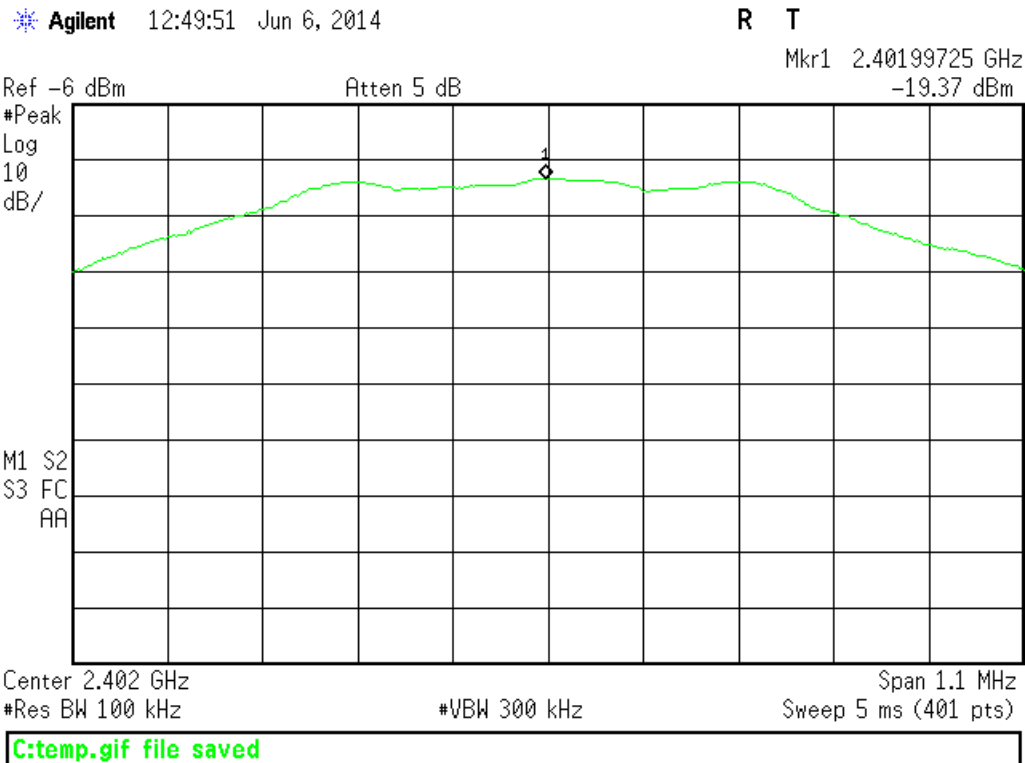
Rev. 6/3/2014

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1328)	9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	I	1/13/2015	1/13/2014
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 1	719150	2762A-6	A-0015	>1GHz		I	5/17/2015	5/17/2013
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/13/2014	7/13/2013
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#1832		35519-044	Control Company	130318277	1832	II	6/13/2015	6/13/2013

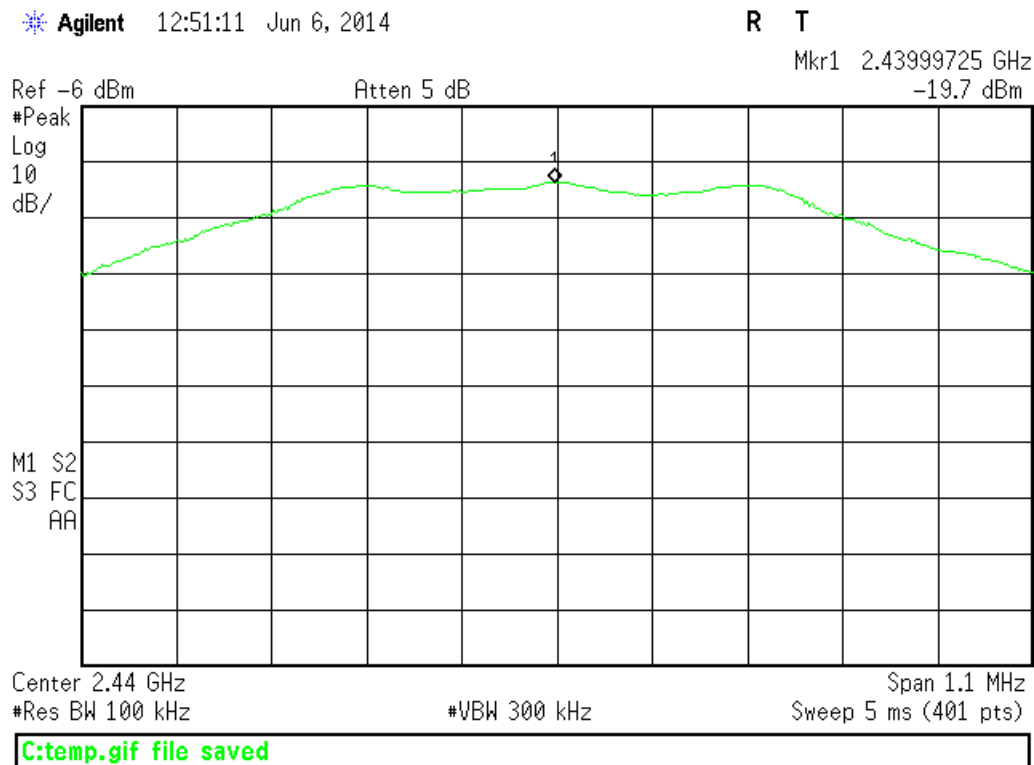
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



PLOTS



Channel Low – PSD



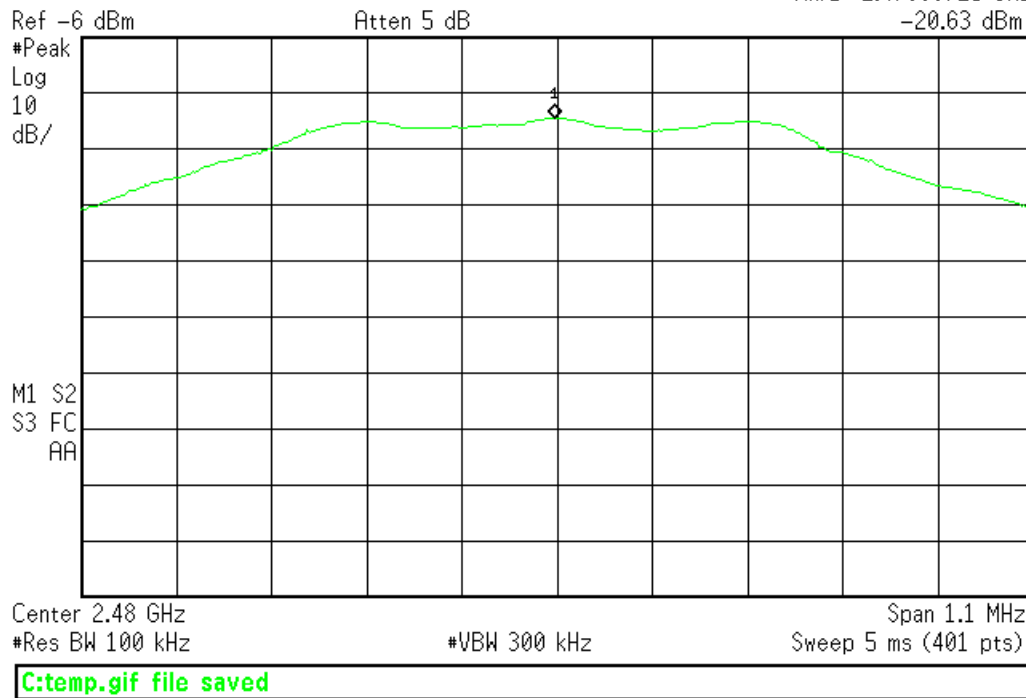
Channel Mid – PSD



Agilent 12:47:06 Jun 6, 2014

R T

Mkr1 2.47999725 GHz
-20.63 dBm



Channel High – PSD

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

Engineer	Tuyen Truong
Date	6/03/2014
Site	N/A
Environmental Conditions	N/A

No AC Line Conducted Emissions testing required since EUT is battery operated (2xAAA batteries)

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 4.6.1]

Engineer	Tuyen Truong
Date	6/6/2014
Site	Chamber 1
Environmental Conditions	23.9°C, 25%, 1015mb

99% Occupied Bandwidth

Frequency (MHz)	Mode	99% Occupied Bandwidth (KHz)
2402	DSSS	1043.3
2440	DSSS	1035.5
2480	DSSS	1031.3
Tested by: Tuyen Truong Date: 6/6/2014 Company: Onset Computer Corporation EUT: MX1101		
RBW = 100KHz VBW = 300KHz Analyzer: SA 1328 Attenuator: PE7019-20		

Rev. 6/3/2014

Spectrum Analyzers / Receivers / Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
SA EMI Chamber (1328)	9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	I	1/13/2015
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due
EMI Chamber 1	719150	2762A-6	A-0015	>1GHz		I	5/17/2015
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/13/2014
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016
TH A#1832		35519-044	Control Company	130318277	1832	II	6/13/2015

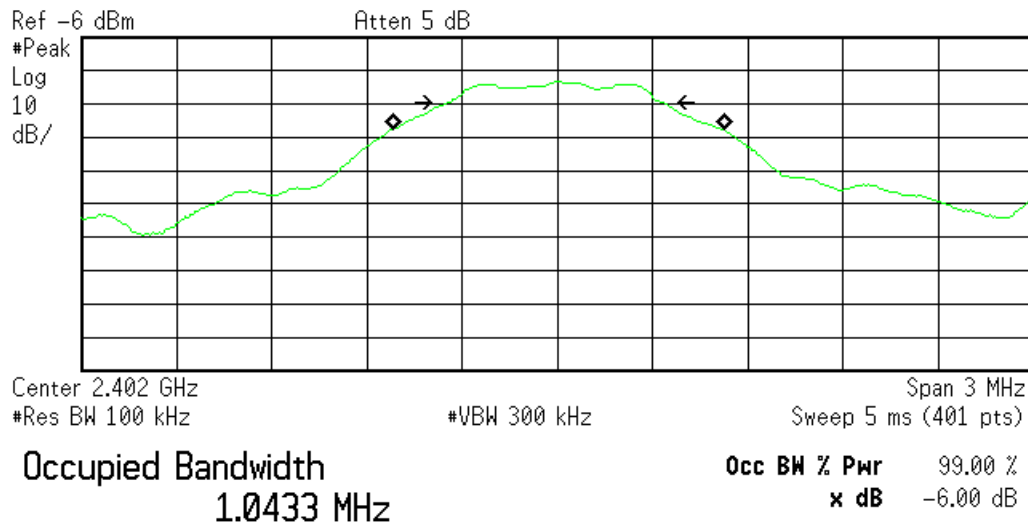
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



Plot(s)

* Agilent 15:34:43 Jun 4, 2014

R T



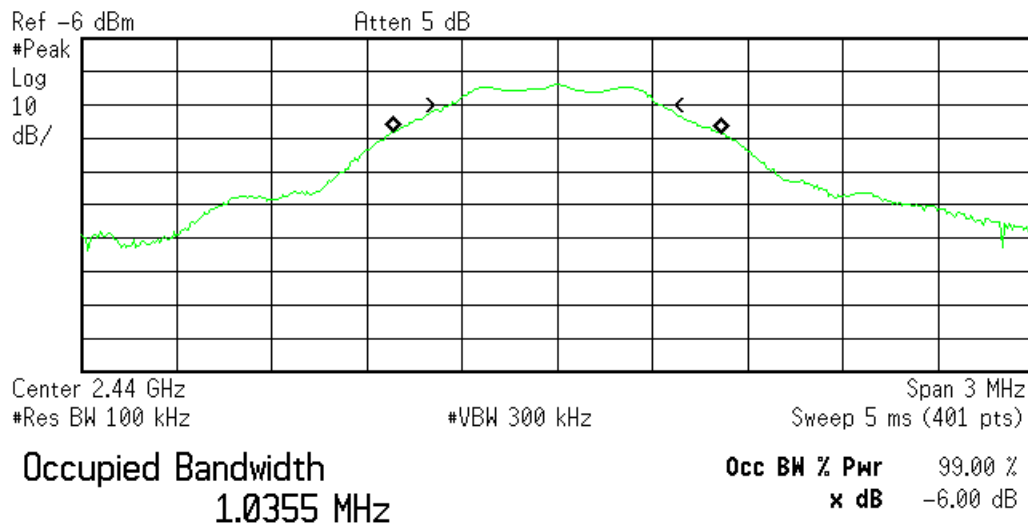
Transmit Freq Error 3.435 kHz
x dB Bandwidth 672.532 kHz

C:\temp.gif file saved

Low Channel – Occupied Bandwidth

* Agilent 15:35:49 Jun 4, 2014

R T



Transmit Freq Error 1.855 kHz
x dB Bandwidth 659.693 kHz

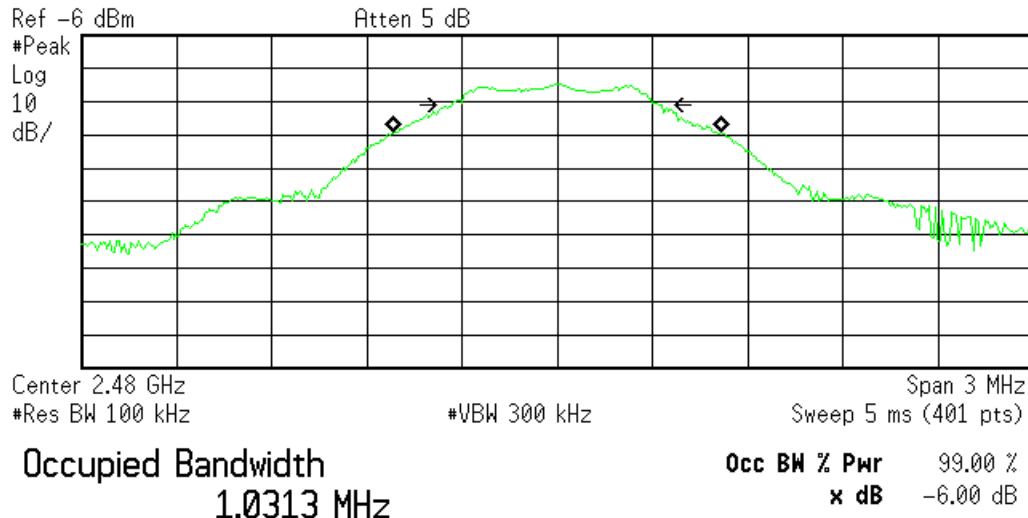
C:\temp.gif file saved

Mid Channel – Occupied Bandwidth



Agilent 15:36:29 Jun 4, 2014

R T



Transmit Freq Error -657.233 Hz
x dB Bandwidth 652.598 kHz

C:\temp.gif file saved

High Channel – Occupied Bandwidth

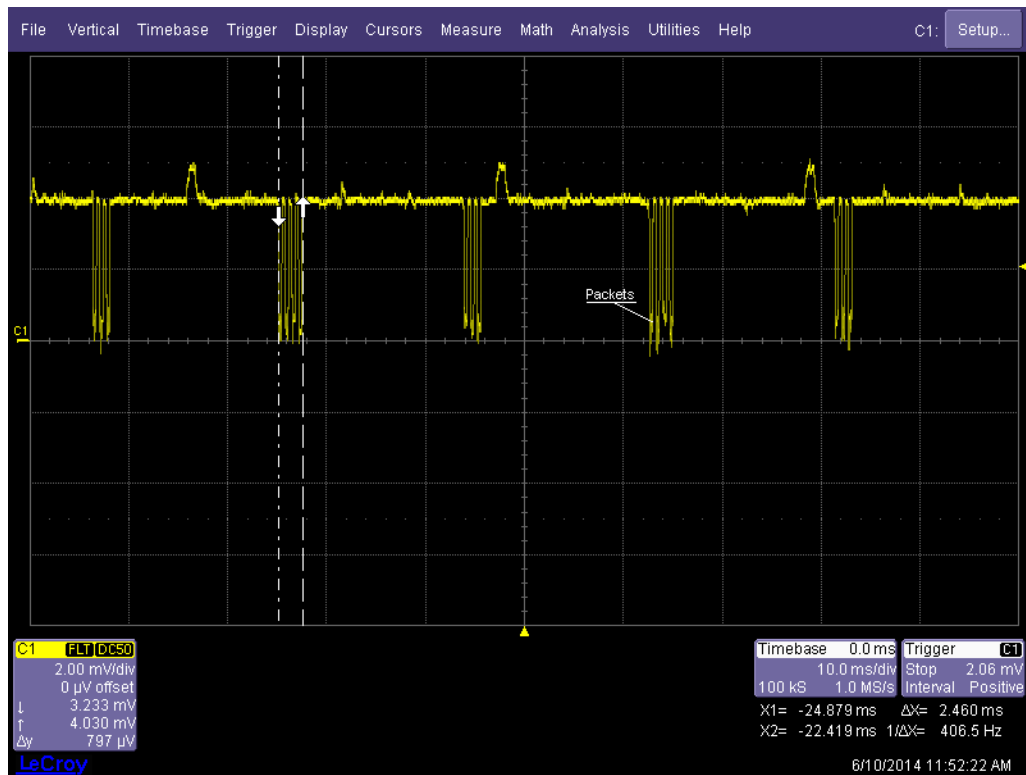
Duty Cycle Correction Calculation

MEASUREMENTS / CALCULATIONS

Engineer	Tuyen Truong
Date	6/11/2014
Site	At Desk
Environmental Conditions	24.1°C, 31%, 1005mb

$$\begin{aligned}
 \text{DCCF} &= 20 * \log (\text{total On Time} / 100\text{ms}) \\
 &= 20 * \log (2.46 * 6 / 100) \\
 &= -16.6
 \end{aligned}$$

PLOTS



Individual Pulse On time – 14.76ms in 100ms Window

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	5.6dB	N/A
CISPR	4.6dB	5.2dB (Ucisp)
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% 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 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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(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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