
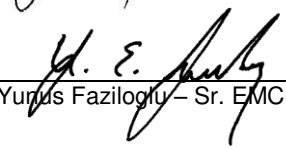


Test Report



**BUREAU
VERITAS**

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

Report No	EQ1125-1
Client	ASSA ABLOY Inc.
Address	110 Sargent Drive New Haven, CT, 06511
Phone	203-499-6836
Items tested FCC ID IC FRN	Aperio V3 iN100 U4A-SCYMCA1 6982A-SCYMCA1 0016550824
Equipment Type Equipment Code Emission Designator	Part 15 Low Power Communication Device Transmitter DXX 354KA1D
FCC Rule Parts	47 CFR 15.225, RSS-210 Issue 8
Test Dates	05/16/2016 through 05/26/2016
Results	As detailed within this report
Prepared by	 Jason Haley - Test Engineer
Authorized by	 Yunus Faziloglu - Sr. EMC Engineer
Issue Date	7/11/2016
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 17 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 a “Limited Modular Approval” certification application of a transmitter operating pursuant to 47 CFR 15.225 and RSS-210. The product is the Aperio V3 iN100. Its operating frequency is 13.56MHz.

We found that the product met the above requirements without modifications. Steve Morse from ASSA ABLOY Inc. was present during testing. The test sample was received in good condition.

Release Control Record

Issue No.	Reason for change	Date Issued
1	Original Release	July 11, 2016



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Test Methodology

All testing was performed according to the following rules/procedures/documents;
CFR 47 Part 15.225, RSS-210 Issue 8, RSS-Gen Issue 4 and ANSI C63.10-2013.

Radiated Emissions were maximized by rotating the device around three orthogonal axes as well as varying the test antenna’s height and polarity. The device antenna cannot be maximized separately.

The EUT operating voltage is 9VDC from battery. Fresh batteries were used during testing.

The environmental conditions during each test are detailed in the results tables for each section.

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

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

Release Control Record

Issue No.	Reason for change	Date Issued
1	Original Release	July 11, 2016



Product Tested - Configuration Documentation

EUT Configuration										
Work Order:	Q1125									
Company:	ASSA ABLOY Inc.									
Company Address:	110 Sargent Drive New Haven, CT, 06511									
Contact:	Steve Morse									
EUT:	MN	PN	SN							
	IN100	IN100	1							
EUT Description:	Aperio V3									
EUT Max Frequency:	2475 MHz									
EUT Min Frequency:	0.032 MHz									
Support Equipment	MN					SN				
Laptop computer	dell									
Sargent 12V Supply	3521					Sample 1				
Sargent 24V Supply	3520					Sample 1				
AC/DC Brick	SYS1308-2424-W2					SW-241PR				
Port Label	Port Type	# ports	# populated	cable type	shielded	ferrites	length (m)	in/out	under test	comment
DC Power input	Power DC	1	1	Power DC	No	No	10	in	yes	*not used for emissions. emissions done with battery power
USB setup port	USB	1	1	USB	Yes	No	1	in	yes	*used to setup the radio power and channels
Software Operating Mode Description:										
For emissions testing, the EUT will be operated by the client. Commands are given to the EUT over USB, setting up the radio parameters. Then the laptop and usb are disconnected and the EUT continues operating in that mode until battery power is removed.										
Performance Criteria:										
Client operated										



Test Results

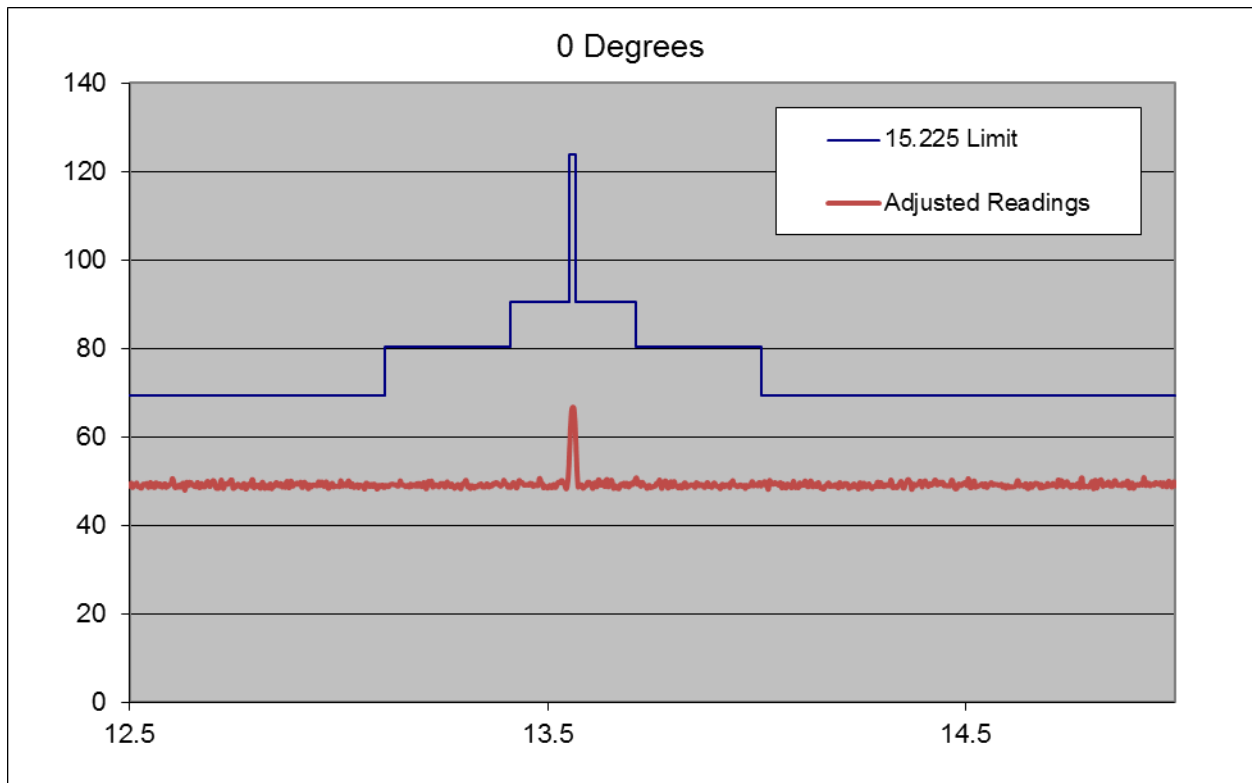
Fundamental Emission

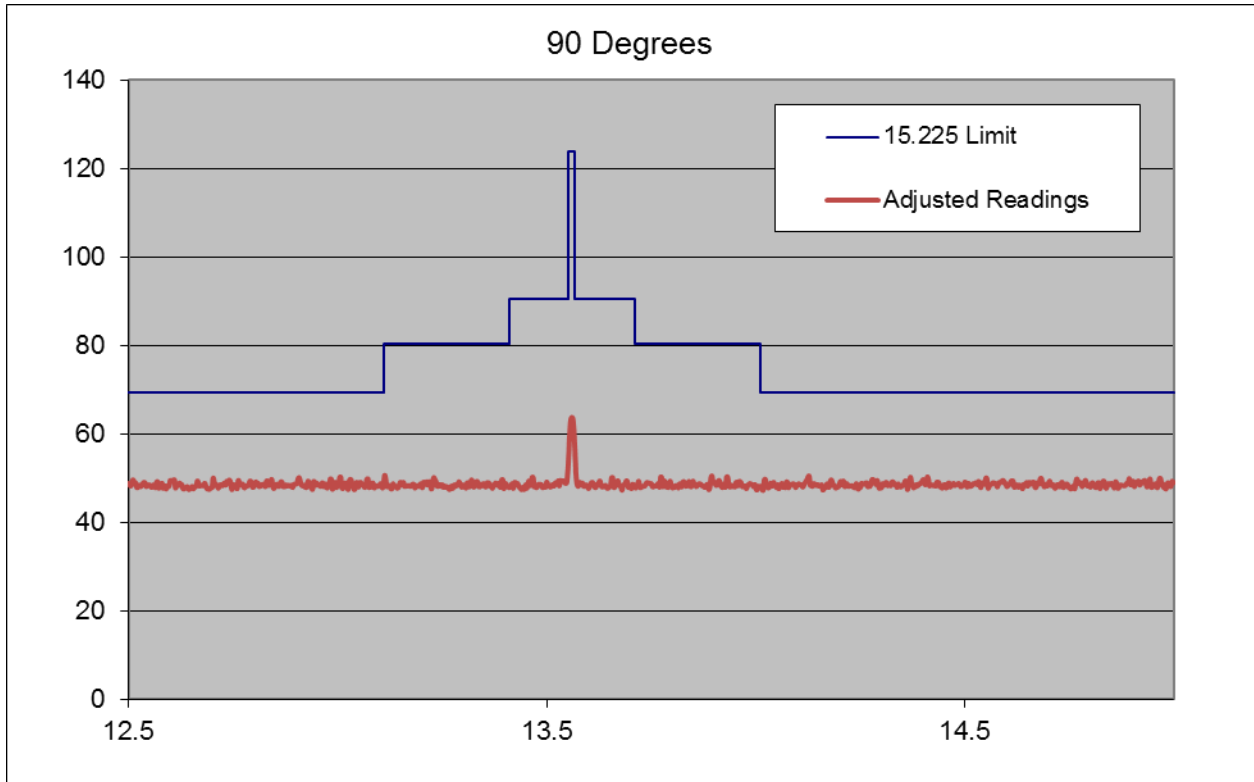
LIMIT

The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters, (124 dBuV/m at 3m.)
[15.225 (a)]

MEASUREMENTS / RESULTS

Fundamental Radiated Emissions Table												
Date: 17-May-16			Company: AssaAbloy				Work Order: Q1125					
Engineer: Jason Haley			EUT Desc: Aperio V3 iN100				EUT Operating Voltage/Frequency: Battery					
Temp: 22°C			Humidity: 27%				Pressure: 1013mBar					
Frequency Range: 1-30MHz							Measurement Distance: 3 m					
Notes: Peak Readings							EUT Max Freq: 13.56MHz					
Antenna Polarization (0° - 90°)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	FCC Part 15.225					
							Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
0	13.56	26.8	0.0	39.2	0.4	66.4	---	---	---	124.0	-57.6	Pass
90	13.56	23.8	0.0	39.2	0.4	63.4	---	---	---	124.0	-60.6	Pass
Table Result: Pass by -57.6 dB							Worst Freq: 13.56 MHz					
Test Site: EMI Chamber 1			Cable 1: Asset #2051				Cable 2: Asset #1785			Cable 3: ---		
Analyzer: MXE			Preamp: none				Antenna: Sm Loop (high)			Preselector: ---		
CSsoft Radiated Emissions Calculator v 1.017.162										Copyright Curtis-Straus LLC 2000		
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor												





Radiated Spurious Emissions

LIMITS

The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209. [15.225(d)]

MEASUREMENTS / RESULTS

Radiated Emissions Table												
Date: 17-May-16			Company: AssaAbloy				Work Order: Q1125					
Engineer: Jason Haley			EUT Desc: Aperio V3 iN100				EUT Operating Voltage/Frequency: Battery					
Temp: 22°C			Humidity: 27%				Pressure: 1013mBar					
Frequency Range: 9kHz-30MHz						Measurement Distance: 3 m						
Notes: Peak Readings						EUT Max Freq: 13.56MHz						
Antenna Polarization (0° - 90°)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	FCC Part 15.209					
							Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
0	0.0135	24.3	0.0	82.2	0.0	106.5	---	---	---	125.0	-18.5	Pass
90	0.01279	25.8	0.0	82.6	0.0	108.4	---	---	---	125.5	-17.1	Pass
0	0.0143	24.8	0.0	81.8	0.0	106.6	---	---	---	124.5	-17.9	Pass
0	0.02597	23.7	0.0	77.2	0.0	100.9	---	---	---	119.3	-18.4	Pass
90	0.03279	29.2	0.0	75.5	0.0	104.7	---	---	---	117.3	-12.6	Pass
0	0.0441	27.7	0.0	72.6	0.0	100.3	---	---	---	114.7	-14.4	Pass
90	0.06275	24.1	0.0	69.0	0.0	93.1	---	---	---	111.7	-18.6	Pass
0	0.06281	24.7	0.0	69.0	0.0	93.7	---	---	---	111.6	-17.9	Pass
90	0.12162	14.8	0.0	63.7	0.1	78.6	---	---	---	105.9	-27.3	Pass
0	0.13152	15.2	0.0	63.2	0.1	78.5	---	---	---	105.2	-26.7	Pass
90, n.f.	0.296	15.9	0.0	57.0	0.1	73.0	---	---	---	98.2	-25.2	Pass
0, n.f.	0.296	14.7	0.0	57.0	0.1	71.8	---	---	---	98.2	-26.4	Pass
90, n.f.	6.319	11.2	0.0	42.5	0.3	54.0	---	---	---	69.5	-15.5	Pass
0, n.f.	6.412	10.7	0.0	42.4	0.3	53.4	---	---	---	69.5	-16.1	Pass
0, n.f.	20.5	13.0	0.0	37.7	0.4	51.1	---	---	---	69.5	-18.4	Pass
90, n.f.	29.58	12.6	0.0	36.7	0.5	49.8	---	---	---	69.5	-19.7	Pass
Table Result: Pass						by -12.6 dB			Worst Freq: 0.03279 MHz			
Test Site: EMI Chamber 1			Cable 1: Asset #2051			Cable 2: Asset #1785			Cable 3: ---			
Analyzer: MXE			Preamp: none			Antenna: 5m Loop (high)			Preselector: ---			
CSsoft Radiated Emissions Calculator v 1.017.162						Copyright Curtis-Straus LLC 2000						
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor												



Radiated Emissions Table

Date: 17-May-16		Company: AssaAbloy				Work Order: Q1125						
Engineer: Jason Haley		EUT Desc: Aperio V3 iN100				EUT Operating Voltage/Frequency: Battery						
Temp: 22°C		Humidity: 27%		Pressure: 1013mBar								
Frequency Range: 30-1000MHz							Measurement Distance: 3 m					
Notes: Peak Readings							EUT Max Freq: 13.56MHz					
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	---			FCC Class B		
							Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
Vert	257.65	42.4	25.5	11.9	1.2	30.0	---	---	---	46.0	-16.0	Pass
Vert	161.73	41.6	25.9	12.2	1.0	28.9	---	---	---	43.5	-14.6	Pass
Vert	501.74	41.3	25.3	18.1	1.4	35.5	---	---	---	46.0	-10.5	Pass
Vert	158.67	40.5	25.9	12.3	1.0	27.9	---	---	---	43.5	-15.6	Pass
Vert	528.86	40.2	25.3	17.9	1.8	34.6	---	---	---	46.0	-11.4	Pass
Vert	298.32	39.7	25.5	13.4	1.2	28.8	---	---	---	46.0	-17.2	Pass
Horiz	257.65	51.0	25.5	11.9	1.2	38.6	---	---	---	46.0	-7.4	Pass
Horiz	271.21	46.2	25.6	13.3	1.1	35.0	---	---	---	46.0	-11.0	Pass
Horiz	298.32	46.2	25.5	13.4	1.2	35.3	---	---	---	46.0	-10.7	Pass
Horiz	176.31	45.6	25.9	11.2	1.1	32.0	---	---	---	43.5	-11.5	Pass
Horiz	162.75	42.7	25.9	12.1	1.0	29.9	---	---	---	43.5	-13.6	Pass
Horiz	244.1	41.9	25.7	11.7	1.2	29.1	---	---	---	46.0	-16.9	Pass
Table Result: Pass							by -7.4 dB		Worst Freq: 257.65 MHz			
Test Site: EMI Chamber 1		Cable 1: Asset #2051			Cable 2: Asset #1785			Cable 3: ---				
Analyzer: MXE		Preamp: Red-White			Antenna: Red-Brown			Preselector: ---				
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor												

Radiated Emissions Table

Date: 17-May-16		Company: AssaAbloy				Work Order: Q1125								
Engineer: Jason Haley		EUT Desc: Aperio V3 iN100				EUT Operating Voltage/Frequency: Battery								
Temp: 22°C		Humidity: 27%		Pressure: 1013mBar										
Frequency Range: 1-6GHz							Measurement Distance: 3 m							
Notes: Noise Floor Readings 13.56MHz Radio Active							EUT Max Freq: 13.56MHz							
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)
Vert	1000.0	30.2	20.0	20.9	24.2	2.2	35.7	25.5	74.0	-38.3	Pass	54.0	-28.5	Pass
Vert	2000.0	27.0	17.3	19.1	28.0	3.0	38.9	29.2	74.0	-35.1	Pass	54.0	-24.8	Pass
Vert	3000.0	28.2	17.9	19.9	29.9	3.6	41.8	31.5	74.0	-32.2	Pass	54.0	-22.5	Pass
Vert	4000.0	28.6	17.5	18.9	32.6	4.5	46.8	35.7	74.0	-27.2	Pass	54.0	-18.3	Pass
Vert	5000.0	27.9	17.0	17.9	33.0	5.0	48.0	37.1	74.0	-26.0	Pass	54.0	-16.9	Pass
Vert	6000.0	28.7	16.8	17.5	34.1	6.4	51.7	39.8	74.0	-22.3	Pass	54.0	-14.2	Pass
Horiz	1500.0	26.95	18.7	19.0	25.5	2.7	36.2	27.9	74.0	-37.8	Pass	54.0	-26.1	Pass
Horiz	2500.0	27.5	18.9	20.2	28.5	3.6	39.4	30.8	74.0	-34.6	Pass	54.0	-23.2	Pass
Horiz	3500.0	28.3	18.6	19.2	31.3	4.0	44.4	34.7	74.0	-29.6	Pass	54.0	-19.3	Pass
Horiz	4500.0	28.0	17.4	17.9	32.4	4.7	47.2	36.6	74.0	-26.8	Pass	54.0	-17.4	Pass
Horiz	5500.0	28.6	16.7	17.6	33.9	5.6	50.5	38.6	74.0	-23.5	Pass	54.0	-15.4	Pass
Table Result: Pass							by -14.2 dB		Worst Freq: 6000.0 MHz					
Test Site: EMI Chamber 1		Cable 1: Asset #2051			Cable 2: Asset #1785			Cable 3: ---						
Analyzer: MXE		Preamp: Asset #1517			Antenna: Orange Horn			Preselector: ---						
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														



Radiated Emissions Table														
Date: 17-May-16			Company: AssaAbloy				Work Order: Q1125							
Engineer: Jason Haley			EUT Desc: Aperio V3 iN100				EUT Operating Voltage/Frequency: Battery							
Temp: 22°C			Humidity: 27%				Pressure: 1013mBar							
Frequency Range: 6-18GHz						Measurement Distance: 1 m								
Notes: Noise Floor Readings 13.56MHz Radio Active						EUT Max Freq: 13.56MHz								
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)
Vert	6000.0	27.3	17.8	17.5	34.8	6.4	51.0	41.5	83.5	-32.5	Pass	63.5	-22.0	Pass
Horz	7000.0	27.91	16.7	16.3	36.0	6.7	54.3	43.1	83.5	-29.2	Pass	63.5	-20.4	Pass
Vert	8000.0	27.1	17.0	16.5	37.4	6.3	54.3	44.2	83.5	-29.2	Pass	63.5	-19.3	Pass
Horz	9000.0	27.92	17.2	17.4	37.9	6.7	55.1	44.4	83.5	-28.4	Pass	63.5	-19.1	Pass
Vert	10000.0	27.8	17.2	17.1	38.4	8.4	57.5	46.9	83.5	-26.0	Pass	63.5	-16.6	Pass
Horz	11000.0	26.2	17.4	16.5	38.5	8.1	56.3	47.5	83.5	-27.2	Pass	63.5	-16.0	Pass
Vert	13000.0	28.2	17.6	15.6	40.7	9.6	62.9	52.3	83.5	-20.6	Pass	63.5	-11.2	Pass
Horz	14000.0	30.3	18.2	16.5	42.3	8.6	64.7	52.6	83.5	-18.8	Pass	63.5	-10.9	Pass
Horz	15000.0	30.3	19.1	17.0	39.5	8.7	61.5	50.3	83.5	-22.0	Pass	63.5	-13.2	Pass
Vert	16000.0	31.6	20.8	16.5	37.9	9.1	62.1	51.3	83.5	-21.4	Pass	63.5	-12.2	Pass
Horz	17000.0	30.2	20.1	16.3	43.0	9.3	66.2	56.1	83.5	-17.3	Pass	63.5	-7.4	Pass
Table Result: Pass by -7.4 dB Worst Freq: 17000.0 MHz														
Test Site: EMI Chamber 1			Cable 1: Asset #2051				Cable 2: Asset #1785			Cable 3: ---				
Analyzer: MXE			Preamp: Asset #1517				Antenna: Orange Horn			Preselector: ---				
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														

Rev. 5/13/2016

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	7/21/2016	7/21/2015
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	Calibrated on	
EMI Chamber 1	719150	2762A-6	A-0015	30-1000MHz	II	3/21/2017	3/21/2015	
Preamps / Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	12/27/2016	12/27/2015
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Red-Brown Bilog	30-2000MHz	JB1	Sunol	A0032406	1218	I	12/4/2016	12/4/2014
Small Loop	10kHz-30MHz	PLA-130/A	ARA	1024	755	I	5/29/2016	5/29/2014
Meteorological Meters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	4/28/2017	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 #1785	9kHz - 18GHz	Florida RF	II	1/5/2017	1/5/2016			
Asset #2051	9kHz - 18GHz	Florida RF	II	3/2/2017	3/2/2016			

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

Radiated Emissions Table														
Date: 17-May-16			Company: AssaAbloy				Work Order: Q1125							
Engineer: Jason Haley			EUT Desc: Aperio V3 iN100				EUT Operating Voltage/Frequency: Battery							
Temp: 22°C			Humidity: 27%				Pressure: 1013mBar							
Frequency Range: 18-25GHz						Measurement Distance: 0.1 m								
Notes: Noise Floor Readings 13.56MHz radio active						EUT Max Freq: 13.56MHz								
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)
Maximized	24135.0	41.9	41.9	40.9	40.3	6.9	48.2	48.2	103.5	-55.3	Pass	83.5	-35.3	Pass
Maximized	18000.0	37.3	37.3	39.4	40.1	5.6	43.6	43.6	103.5	-59.9	Pass	83.5	-39.9	Pass
Maximized	20000.0	37.9	37.9	41.6	40.2	6.1	42.6	42.6	103.5	-60.9	Pass	83.5	-40.9	Pass
Maximized	22000.0	39.4	39.4	42.0	40.5	6.7	44.6	44.6	103.5	-58.9	Pass	83.5	-38.9	Pass
Maximized	25000.0	39.6	39.6	40.9	40.3	7.0	46.0	46.0	103.5	-57.5	Pass	83.5	-37.5	Pass
Table Result: Pass by -35.3 dB Worst Freq: 24135.0 MHz														
Test Site: EMI Chamber 1			Cable 1: EMIR-HIGH-07				Cable 2: ---			Cable 3: ---				
Analyzer: MXE			Preamp: 18-26.5GHz				Antenna: 18-26.5GHz Horn			Preselector: ---				
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Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor														



Rev. 5/13/2016

Category	Item	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Spectrum Analyzers / Receivers / Preselectors	MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	7/21/2016	7/21/2015
	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	HF (Yellow)	18-26.5GHz	AFS4-18002650-60-8P-4	CS	467559	1266	II	3/8/2017	3/8/2016
	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 5/29/2014
Meteorological Meters	Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	4/28/2017	4/28/2016
	TH A#2080		HTC-1	HDE		2080	II	4/5/2017	4/5/2016 4/5/2016
Cables	REMI-High-07	1 - 26.5GHz	TRU-21B0707-120	TRU			II	8/7/2016	8/7/2015 1/5/2016 3/2/2016

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



Frequency Tolerance

LIMITS

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to $+ 50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.
[15.225(e)]

MEASUREMENTS / RESULTS

Frequency Tolerance Table						
Date: 18-May-16		Company: AssaAbloy		Work Order: Q1125		
Engineer: Jason Haley		EUT Desc: Aperio V3 iIN100		EUT Operating Voltage/Frequency: Nominal is 12-24Vdc		
Temp: 22°C		Humidity: 27%		Pressure: 1013mBar		
Frequency Range: 13.56MHz						
Notes: Peak Readings RBW=100Hz, VBW=680Hz, Span=200Hz				EUT Max Freq: 13.56MHz		
Temperature (degrees C)	EUT Voltage (V)	Measured Transmit Frequency (MHz)	Limit (+/- percentage)	FCC Part 15.225		
				Upper Limit (MHz)	Lower Limit (MHz)	Result (Pass/Fail)
20 (For Reference Frequency)	12.0	13.560120770	N/A	N/A	N/A	N/A
20	10.2	13.560120230	0.010	13.56147678	13.55876476	Pass
20	27.6	13.560119900	0.010	13.56147678	13.55876476	Pass
-20	12.0	13.560141510	0.010	13.56147678	13.55876476	Pass
50	12.0	13.560084580	0.010	13.56147678	13.55876476	Pass
Table Result: Pass						
Test Site: EMI Chamber 1		Cable 1: Asset #2051		Cable 2: Asset #1785		Cable 3: ---
Analyzer: MXE		Preamp: Red-White		Antenna: Red-Brown		Preselector: ---
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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	7/21/2016	7/21/2015
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Small Loop	10kHz-30MHz	PLA-130/A	ARA	1024	755	I	5/29/2016	5/29/2014
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only) TH A#2086		BA928 HTC-1	Oregon Scientific HDE	C3166-1	831 2086	I II	4/28/2017 4/5/2017	4/28/2016 4/5/2016
Cables	Range		Mfr			Cat	Calibration Due	Calibrated on
Asset #1786	9kHz - 18GHz		Florida RF			II	3/7/2017	3/7/2016

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



99% Occupied Bandwidth

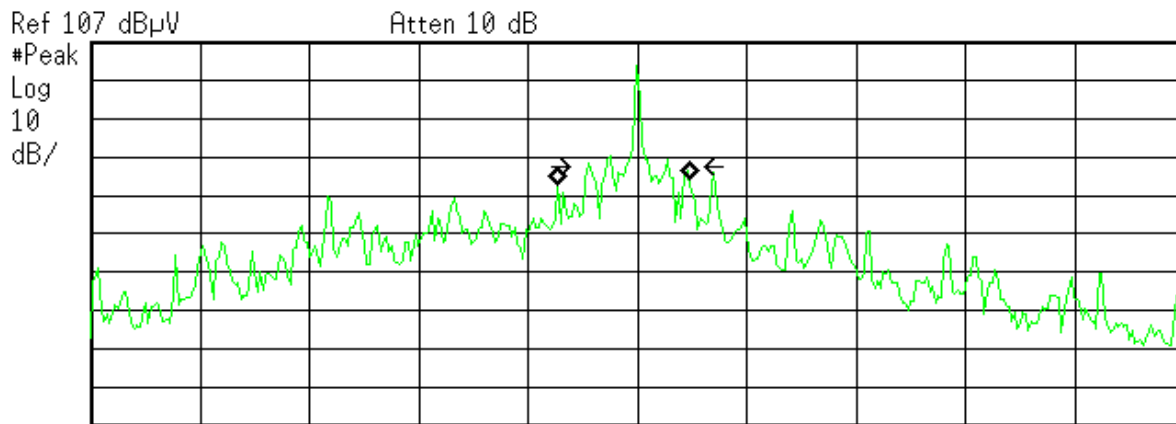
REQUIREMENT

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]

99% Occupied Bandwidth			
Date: 29-Jun-16	Company: AssaAbloy		Work Order: Q1125
Engineer: Yunus Faziloglu	EUT Desc: Aperio V3 iN100		EUT Operating Voltage/Frequency: Battery
Temp: 24.4°C	Humidity: 54%	Pressure: 1001mBar	
Fundamental Frequency: 13.56MHz			
Frequency (MHz)	Measured 99% Occupied Bandwidth (kHz)		
13.56	354.3		
Test Site: CEMI1	Cable 1: EMIR-15	Analyzer: 1510	Antenna: A00755 Cable 3: ---
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Agilent 11:47:36 Jun 29, 2016

R T



Center 13.56 MHz Span 3 MHz
 #Res BW 3 kHz #VBW 10 kHz Sweep 343.1 ms (401 pts)

Occupied Bandwidth
 354.3287 kHz

Occ BW % Pwr 99.00 %
 x dB -26.00 dB

Transmit Freq Error -38.091 kHz
 x dB Bandwidth 263.403 kHz

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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	
Spectrum Analyzers / Receivers / Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown		9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	1/21/2017	1/21/2016
Antennas		Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Small Loop		10kHz-30MHz	PLA-130/A	ARA	1024	755	I	6/14/2018	6/14/2016
Cables		Range	Mfr				Cat	Calibration Due	Calibrated on
REMI-15		9kHz - 2GHz	C-S				II	9/10/2016	9/10/2015

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



AC Line Conducted Emissions LIMITS

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

*Decreases with the logarithm of the frequency.

[47 CFR 15.207(a)]

MEASUREMENTS / RESULTS

AC Side of a DC Supply Conducted Emissions														
Date: 17-May-16				Company: AssaAbloy				Work Order: Q1125						
Engineer: Chris Bramley				EUT Desc: Aperio V3 iN100 - 13.56MHz Radio				Pressure: 1001 mBar						
Temp: 22.5 °C				Humidity: 32%										
Notes: Sargent 12V DC Supply. To demonstrate compliance at 13.56MHz fundamental, the EUT antenna was removed and replaced with 50Ohm load														
Frequency Range: 0.15-30MHz						EUT Input Voltage/Frequency: 120V/60Hz								
Frequency (MHz)	Quasi-Peak Readings		Average Readings		LISN Factors		Cable Factor (dB)	ATTN Factor (dB)	FCC/CISPR Class B			FCC/CISPR Class B		
	QP1 (dBµV)	QP2 (dBµV)	AVG1 (dBµV)	AVG2 (dBµV)	L1 (dB)	L2 (dB)			QP Limit (dBµV)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dBµV)	Margin (dB)	Result (Pass/Fail)
0.15 with antenna	21.8	20.5	16.4	15.7	-0.1	-0.2	-0.1	-20.8	66.0	-23.2	Pass	56.0	-18.7	Pass
0.8 with antenna	3.9	5.2	3.6	4.6	-0.1	-0.1	-0.1	-20.8	56.0	-29.8	Pass	46.0	-20.5	Pass
0.985 with antenna	4.5	3.9	3.1	3.0	-0.1	-0.1	-0.1	-20.8	56.0	-30.6	Pass	46.0	-22.0	Pass
1.7 with antenna	3.4	3.7	1.8	2.8	-0.1	-0.1	-0.1	-20.8	56.0	-31.3	Pass	46.0	-22.2	Pass
5 with antenna	6.4	4.8	4.9	3.9	-0.1	-0.1	-0.2	-20.8	56.0	-28.6	Pass	46.0	-20.1	Pass
13.56 with antenna	65.6		64.6		-0.1		-0.2	-20.9	60.0	26.8	N/A	50.0	35.8	N/A
13.56 without antenna	27.4	25.0	26.9	24.9	-0.1	-0.1	-0.2	-20.9	60.0	-11.4	Pass	50.0	-1.9	Pass
Result: Pass				Worst Margin: -1.9 dB				Frequency: 13.560 MHz						
Measurement Device: LISN ASSET 1730(Line 1) LISN ASSET 1731 (Line 2)						Cable: CEM1-01			Spectrum Analyzer: SA EMI Chamber (1327)					
						Attenuator: 20dB Attenuator-07			Site: CEMI 5					
C-S CEMI Calculator Version 3.0.14						Equipment Factor Sheet rev: 5/11/2016								
Adjusted Reading = Raw Reading + LISN Insertion Loss + Cable Loss + Attenuation														

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on		
SA EMI Chamber (1327)	9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	7/10/2016	7/10/2015		
LISNs/Measurement Probes	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on		
LISN Asset 1730	150kHz-30MHz	LI-150A	Com-Power	201090	1730	I	3/10/2017	3/10/2016		
LISN Asset 1731	150kHz-30MHz	LI-150A	Com-Power	201091	1731	I	3/10/2017	3/10/2016		
Conducted Test Sites (Mains / Telco)	FCC Code	VCCI Code	Cat	Calibration Due	Calibrated on					
CEMI 5	719150	A-0015	III	NA	N/A					
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on			
TH A#2082	HTC-1	HDE	2082	2082	II	4/5/2017	4/5/2016			
Barometric A#2160	5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016			
Cables	Range	Mfr	Cat	Calibration Due	Calibrated on					
CEMI-01	9kHz - 2GHz	C-S	II	9/11/2016	9/11/2015					
Attenuators	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on		
20dB Attenuator-07	9kHz-2GHz	BW-N20W+	MCL	N/A	II	4/10/2017	4/10/2016			

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



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 (Ucisprr)
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 (Ucisprr)
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.



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13. CLIENT SHALL, EXCEPT TO THE EXTENT OF COMPANY'S LIABILITY TO CLIENT HEREUNDER (WHICH IN NO EVENT SHALL EXCEED THE LIMITATION OF LIABILITY HEREIN), HOLD HARMLESS AND INDEMNIFY THE COMPANY, ITS AFFILIATES AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES, AGENTS AND SUBCONTRACTORS AGAINST ALL ACTUAL OR ALLEGED THIRD PARTY CLAIMS FOR LOSS, DAMAGE OR EXPENSE OF WHATSOEVER NATURE AND HOWSOEVER ARISING FROM OR RELATING TO (i) THE PERFORMANCE, PURPORTED PERFORMANCE OR NON-PERFORMANCE OF ANY SERVICES BY THE COMPANY OR (ii) THE SALE, RESALE, MANUFACTURE, DISTRIBUTION OR USE OF ANY TESTED GOODS.

14. EXCEPT AS MAY OTHERWISE BE EXPRESSLY AGREED TO IN WRITING BY THE COMPANY AND NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN OR IN ANY TEST REPORT, NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, IS MADE.

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

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

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

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

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