



EMC TEST REPORT

(FULL COMPLIANCE)

Report Number: 102749283LEX-001

Project Number: G102749283

Report Issue Date: 2/7/2017

Model(s) Tested: ADA EZ WIM

FCC Standards: FCC Part 15.231

IC Standards: RSS-210 Issue 9

Tested by:
Intertek Testing Services NA, Inc.
731 Enterprise Drive
Lexington, KY 40510
USA

Client:
ASSA Abloy
3000 Hwy 74 East
Monroe, NC 28112

Report prepared by

Brian Daffin,
Engineer

Report reviewed by

Bryan Taylor,
Team Leader

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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

Section	Test full name	Result
6	Radiated Emissions § 15.231(b) RSS-210 (A1.2)	Compliant
7	Power Port Conducted Emissions § 15.207 RSS-Gen (8.8)	Compliant
8	Occupied Bandwidth § 15.231(c) RSS-210 (A1.3)	Compliant
9	Transmitter De-activation Time § 15.231(a) RSS-210 (A1.1)	Compliant
10	Transmitter Duty Cycle Correction Factor ANSI C63.10:2013	Compliant
11	Antenna Requirement § 15.203 RSS-Gen (8.3)	Compliant
12	Revision History	

3 Client Information

This EUT was tested at the request of:

Client: ASSA Abloy
3000 Hwy 74 East
Monroe, NC 28112

Contact: Jeff Trull
Telephone: (704) 291 – 9499
Email: Jeff.trull@assaabloy.com

Manufacturer: ASSA Abloy
3000 Hwy 74 East
Monroe, NC 28112
USA

4 Description of Equipment under Test and Variant Models

Description of Equipment Under Test (provided by client)			
Controller board for automated door system.			
Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
ADA EZ WIM	ASSA Abloy	ADA EZ WIM	35

Receive Date:	10/4/2016
Received Condition:	Good
Type:	Production

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
24 VDC	<1 A	DC	1

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	The device had a button that would initiate a brief transmission after being pressed.
2	The device continuously transmitted at 315MHz.

Variant Models:

There were no variant models covered by this evaluation.

5 System Setup and Method

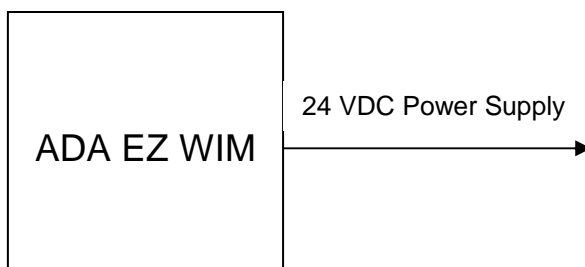
Cables used in the test configuration:

Cables					
ID	Description	Length (m)	Shielding	Ferrites	Termination
	Power Cable	10	No	No	DC Plug

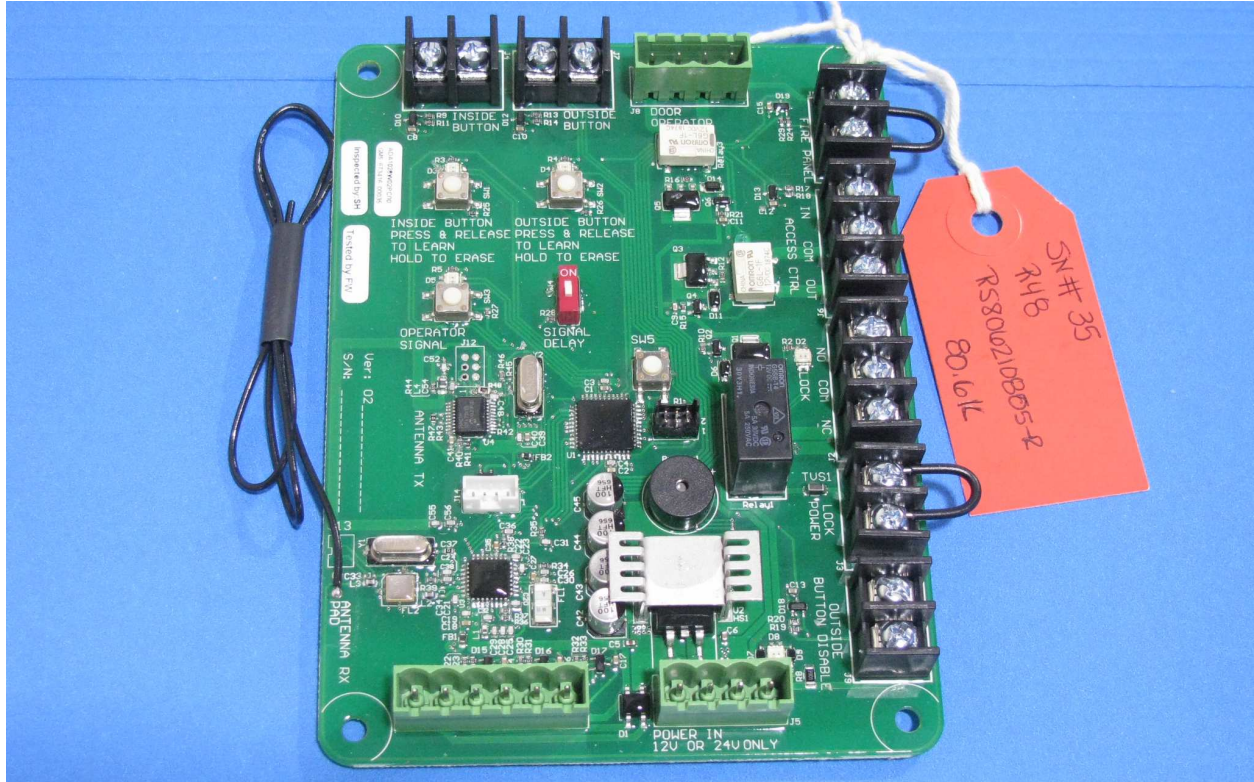
Support equipment used in the test configuration:

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
DC Power Supply	SHENZHEN KEZHEN ELECTRONIC CO LTD	KZ2400750	N/A

5.1 EUT Block Diagram:



5.2 Sample Photo:



6 Radiated Emissions

6.1 Method

Tests are performed in accordance with Title 47 CFR Part 15.231(b) and ANSI C63.10:2013.

TEST SITE: 10m ALSE

Site Designation: 10m Chamber

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucisp
Radiated Emissions, 10m	30-1000 MHz	3.9dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	4.0dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.7dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	4.7dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	4.7dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	4.7dB	5.5 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$
$$NF = \text{Net Reading in dB}\mu\text{V}$$

Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$
$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$

6.2 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
EMI Test Receiver	10887490.26	Rohde & Schwarz	ESI26	9/20/2016	9/20/2017
Preamplifier	122005	Rohde&Schwarz	TS-PR18	11/17/2016	11/17/2017
Biconnilog Antenna	00051864	ETS	3142C	3/23/2016	3/23/2017
Horn Antenna	154521	ETS	3117	11/14/2016	11/14/2017
System Controller	121701-1	Sunol Sciences	SC99V	Verify at Time of Use	Verify at Time of Use
3m Cable Antenna→Preamp	3074			11/17/2016	11/17/2017
3m Cable Preamp→Chamber	2588			11/17/2016	11/17/2017
3m Cable Chamber→Control Room	2593			11/17/2016	11/17/2017
3m Cable Control Room→Receiver	2592			11/17/2016	11/17/2017
10m Cable Antenna→Preamp	3339			11/17/2016	11/17/2017
10m Cable Preamp→Chamber	3172			11/17/2016	11/17/2017
10m Cable Chamber→Control Room	2590			11/17/2016	11/17/2017
10m Cable Control Room→Receiver	2589			11/17/2016	11/17/2017

Software Utilized:

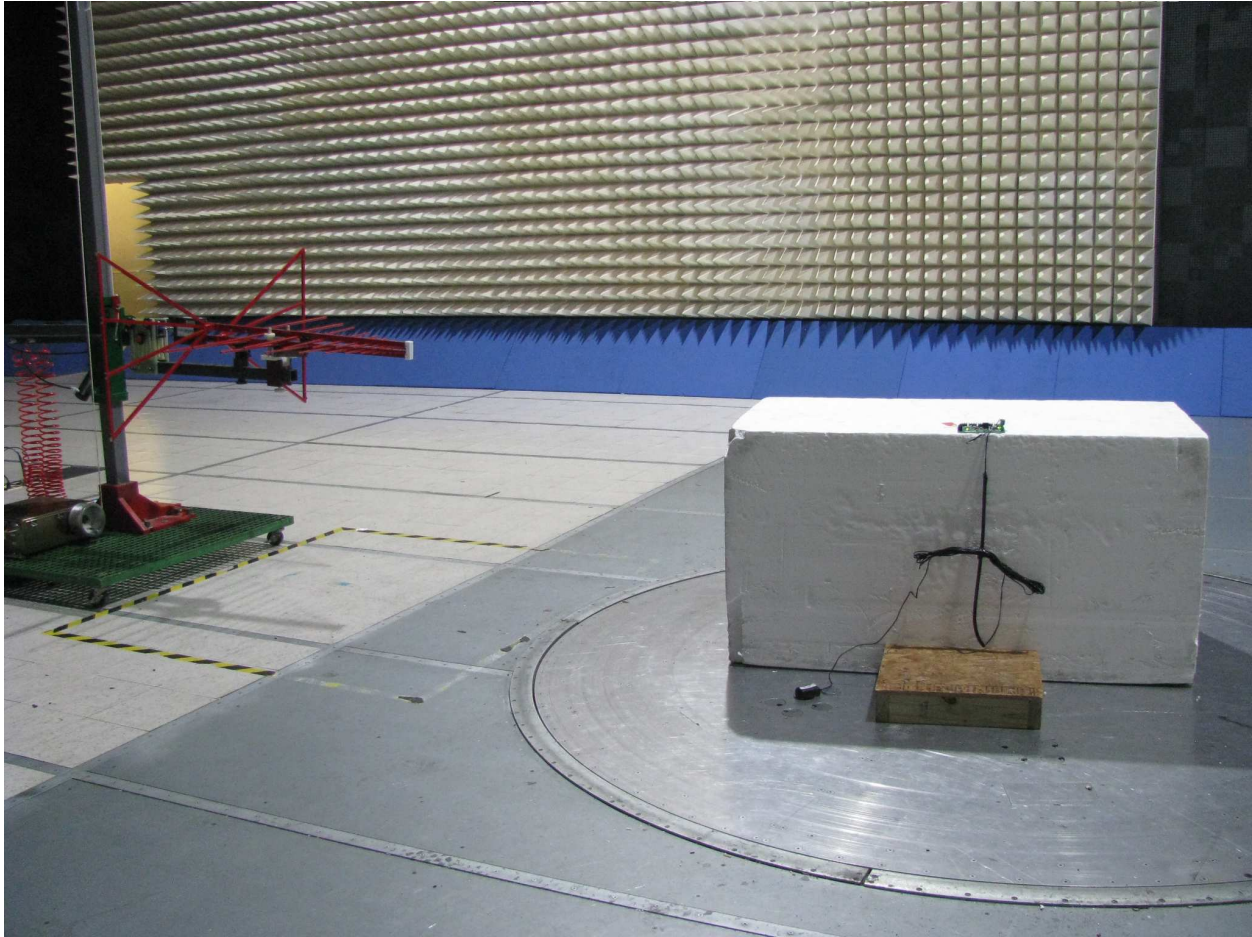
Name	Manufacturer	Version
EMC32	Rohde&Schwarz	Version 9.15.02

6.3 Results:

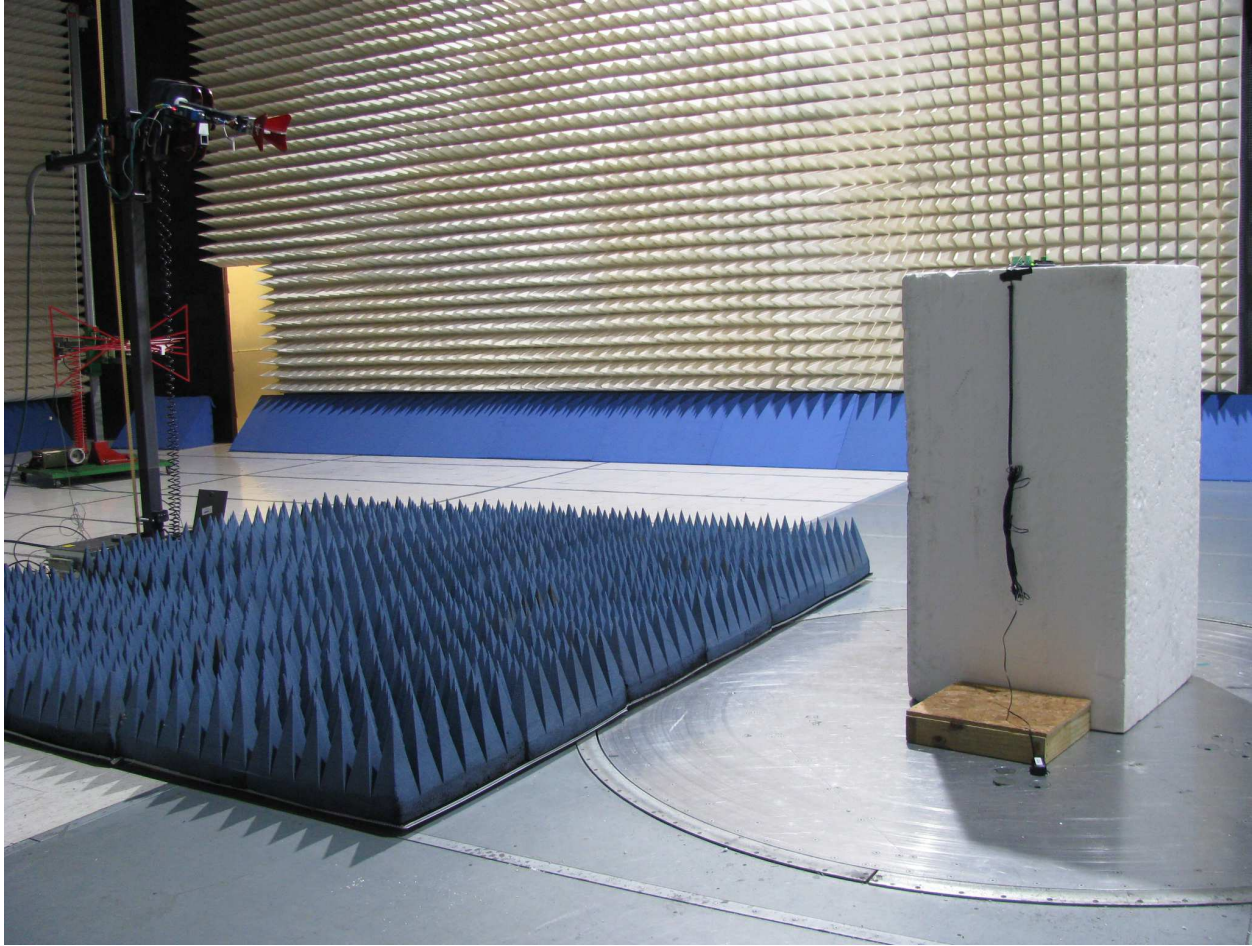
The sample tested was found to Comply.

6.4 Setup Photographs:

Below 1Ghz:



Above 1Ghz:



6.5 Test Data:

Fundamental Emission:

Frequency (MHz)	Final Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Measured (dBµV/m)	Duty Cycle Correction Factor (dB)	Measurement Detector
314.92	75.59	95.62	20.03	103.9	H	238	75.59	0.00	MaxPeak
314.92	69.50	75.62	6.12	103.9	H	238	75.59	-6.09	Average

Spurious Emissions:

Frequency (MHz)	Final Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Measured (dBµV/m)	Duty Cycle Correction Factor (dB)	Detector
478.70	31.23	55.62	24.39	154.2	H	0	37.32	-6.09	MaxPeak
629.91	42.69	55.62	12.93	115.1	H	258	48.78	-6.09	MaxPeak
944.80	50.72	55.62	4.90	130.5	H	201	56.81	-6.09	MaxPeak
1259.78	45.55	55.62	10.07	162.0	H	160	51.64	-6.09	MaxPeak
1574.67	52.13	54.00	1.87	135.0	H	155	58.22	-6.09	MaxPeak
1889.61	46.15	55.62	9.47	159.0	H	201	52.24	-6.09	MaxPeak
2204.53	43.00	54.00	11.00	130.0	H	319	49.09	-6.09	MaxPeak
11973.43	43.85	54.00	10.15	189.0	H	346	49.94	-6.09	MaxPeak
17988.74	49.23	54.00	4.77	162.0	V	141	55.32	-6.09	MaxPeak

Note: The emissions were investigated in 3 orthogonal positions, the worst case was reported.

Test Personnel: Brian Daffin
 Supervising/Reviewing Engineer: _____
 (Where Applicable) N/A
 Product Standard: Title 47 CFR Part 15.231(b)
 Input Voltage: 24 VDC
 Pretest Verification w/ Ambient Signals or BB Source: Yes

Test Date: 11/22/2016
 Ambient Temperature: 24.1 C
 Relative Humidity: 34.6 %
 Atmospheric Pressure: 986.0 mbar

Deviations, Additions, or Exclusions: None

7 Power Port Conducted Emissions

7.1 Method

Tests are performed in accordance with Title 47 CFR Part 15.207 and ANSI C63.10:2013.

TEST SITE: Ground Plane

Site Designation: Ground Plane

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucisp
AC Line Conducted Emissions	150 kHz - 30 MHz	3.1dB	3.4dB
Telco Port Emissions	150 kHz - 30 MHz	3.2dB	5.0dB

As shown in the table above our conducted emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculations

The following is how net line-conducted readings were determined:

$$NF = RF + LF + CF + AF$$

Where NF = Net Reading in dB μ V

RF = Reading from receiver in dB μ V

LF = LISN or ISN Correction Factor in dB

CF = Cable Correction Factor in dB

AF = Attenuator Loss Factor in dB

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

$$NF = \text{Net Reading in dB}\mu\text{V}$$

Example:

$$NF = RF + LF + CF + AF = 28.5 + 0.2 + 0.4 + 20.0 = 49.1 \text{ dB}\mu\text{V}$$

$$UF = 10^{(49.1 \text{ dB}\mu\text{V} / 20)} = 285.1 \mu\text{V/m}$$

7.2 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
EMI Test Receiver	10887490.26	Rohde & Schwarz	ES126	9/20/2016	9/20/2017
LISN	2509	Fischer Custom Communication	FCC-LKISN-50-50-2M	3/17/2016	3/17/2017
Cable	Cond 2			11/17/2016	11/17/2017

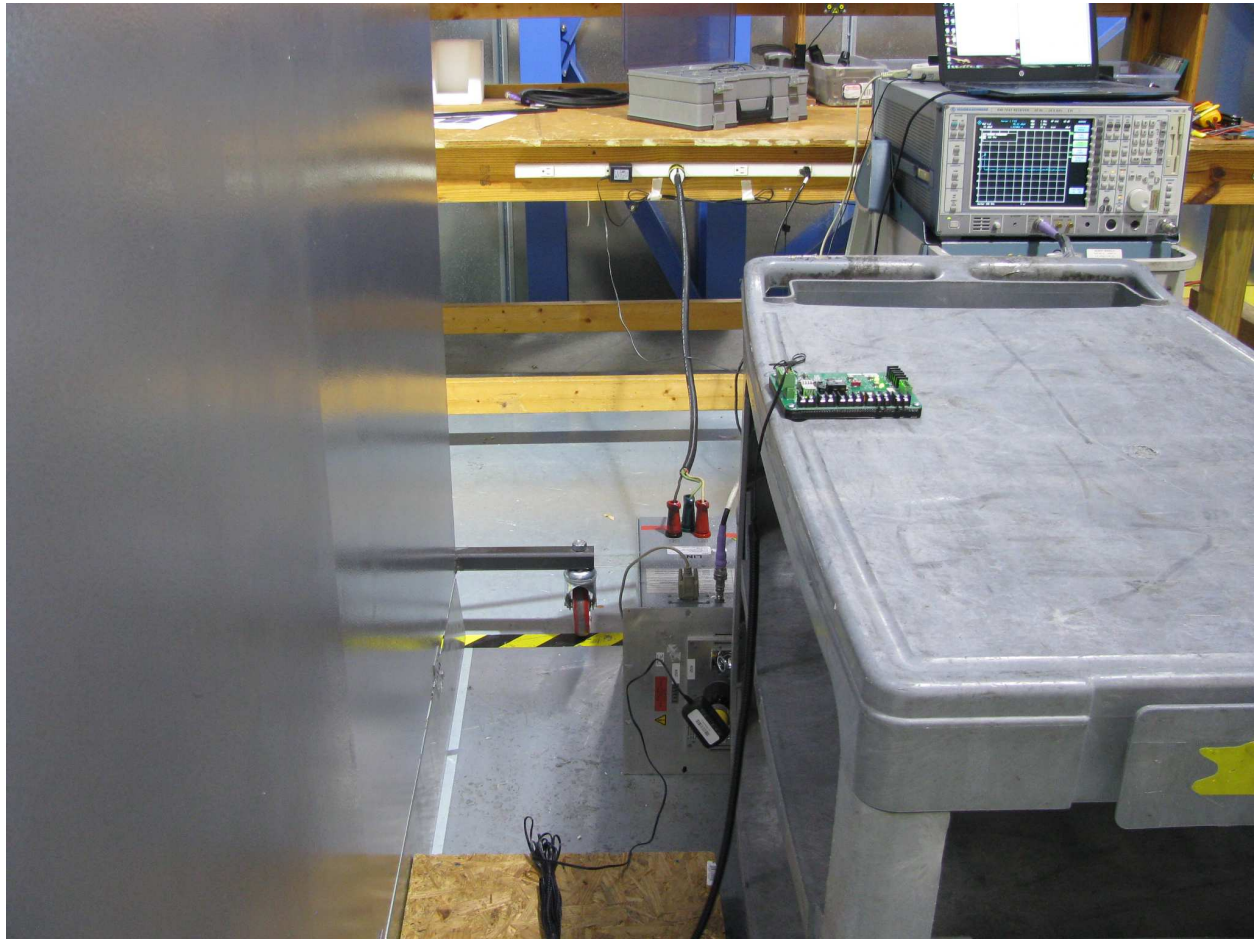
Software Utilized:

Name	Manufacturer	Version
TILE	ETS Lindgren	V7.0.6.545

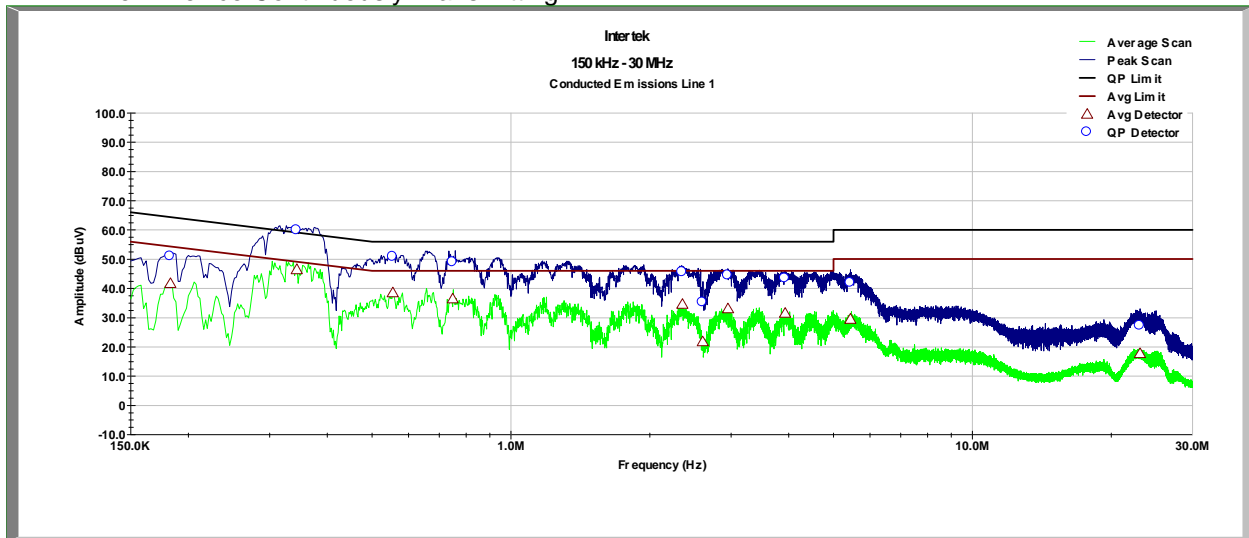
7.3 Results:

The sample tested was found to Comply.

7.4 Setup Photographs:

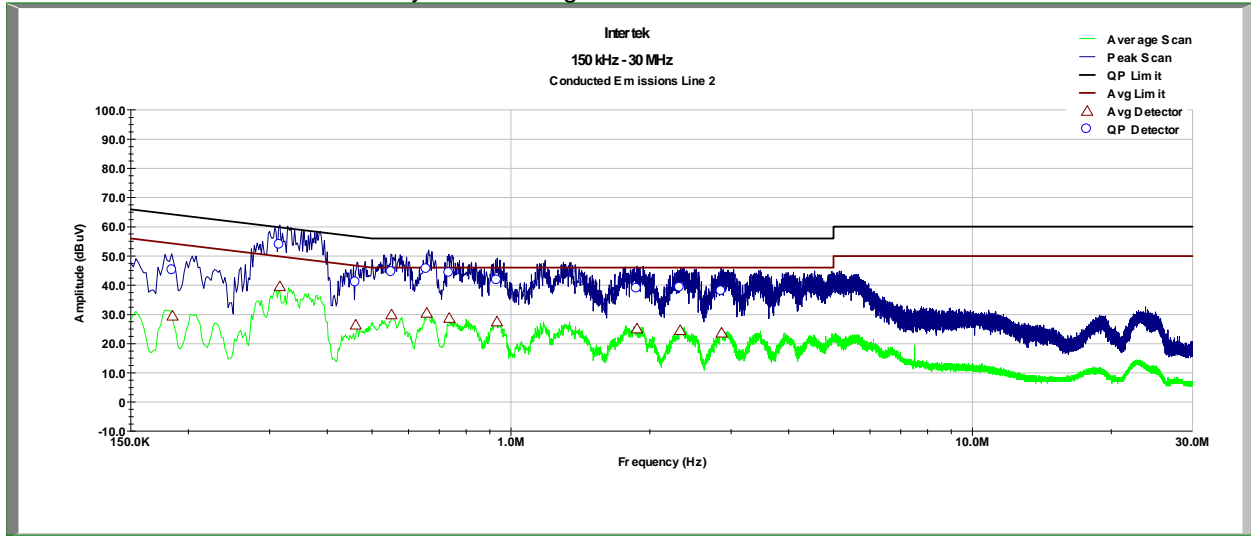


7.5 Test Data:
Line 1-Device Continuously Transmitting



Frequency (MHz)	Quasi-Peak (dBuV)	Quasi-Peak Limit (dBuV)	Quasi-Peak Margin (dB)	Average (dBuV)	Average Limit (dBuV)	Average Margin (dB)
182.80 KHz	50.931	65.063	14.132	41.715	55.063	13.348
343.50 KHz	59.880	60.471	0.591	46.463	50.471	4.008
554.70 KHz	50.723	56.000	5.277	38.582	46.000	7.418
748.00 KHz	48.875	56.000	7.125	36.390	46.000	9.610
2.353 MHz	45.506	56.000	10.494	34.598	46.000	11.402
2.605 MHz	35.194	56.000	20.806	21.783	46.000	24.217
2.955 MHz	44.405	56.000	11.595	33.080	46.000	12.920
3.930 MHz	43.376	56.000	12.624	31.518	46.000	14.482
5.443 MHz	41.762	60.000	18.238	29.512	50.000	20.488
23.100 MHz	27.094	60.000	32.906	17.699	50.000	32.301

Line 2-Device Continuously Transmitting



Frequency (MHz)	Quasi-Peak (dBuV)	Quasi-Peak Limit (dBuV)	Quasi-Peak Margin (dB)	Average (dBuV)	Average Limit (dBuV)	Average Margin (dB)
184.70 KHz	45.008	65.009	20.000	29.390	55.009	25.619
315.60 KHz	53.741	61.269	7.527	39.553	51.269	11.715
461.20 KHz	40.890	57.109	16.219	26.404	47.109	20.704
551.30 KHz	44.421	56.000	11.579	29.910	46.000	16.090
657.00 KHz	45.465	56.000	10.535	30.415	46.000	15.585
735.40 KHz	44.085	56.000	11.915	28.672	46.000	17.328
933.10 KHz	41.608	56.000	14.392	27.421	46.000	18.579
1.877 MHz	38.698	56.000	17.302	25.020	46.000	20.980
2.328 MHz	39.060	56.000	16.940	24.456	46.000	21.544
2.861 MHz	37.876	56.000	18.124	23.574	46.000	22.426

Test Personnel: Brian Daffin
 Supervising/Reviewing Engineer: _____
 (Where Applicable) N/A
 Product Standard: Title 47 CFR Part 15.207
 Input Voltage: 24 VDC
 Pretest Verification w/ Ambient Signals or BB Source: Yes

Test Date: 10/13/2016
 Limit Applied: Class A
 Ambient Temperature: 22.4 C
 Relative Humidity: 39.9 %
 Atmospheric Pressure: 995.5 mbar

Deviations, Additions, or Exclusions: None

8 Occupied Bandwidth

8.1 Method

Tests are performed in accordance with Title 47 CFR Part 15.231(c) and ANSI C63.10:2013.

TEST SITE: 10m ALSE

Site Designation: 10m Chamber

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucisprr
Radiated Emissions, 10m	30-1000 MHz	3.9dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	4.0dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.7dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	4.7dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	4.7dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	4.7dB	5.5 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

8.2 Criteria

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz.

8.3 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
EMI Test Receiver	10887490.26	Rohde & Schwarz	ESI26	9/20/2016	9/20/2017
Preamplifier	122005	Rohde&Schwarz	TS-PR18	11/17/2016	11/17/2017
Biconnilog Antenna	00051864	ETS	3142C	3/23/2016	3/23/2017
Horn Antenna	154521	ETS	3117	11/14/2016	11/14/2017
System Controller	121701-1	Sunol Sciences	SC99V	Verify at Time of Use	Verify at Time of Use
3m Cable Antenna→Preamp	3074			11/17/2016	11/17/2017
3m Cable Preamp→Chamber	2588			11/17/2016	11/17/2017
3m Cable Chamber→Control Room	2593			11/17/2016	11/17/2017
3m Cable Control Room→Receiver	2592			11/17/2016	11/17/2017
10m Cable Antenna→Preamp	3339			11/17/2016	11/17/2017
10m Cable Preamp→Chamber	3172			11/17/2016	11/17/2017
10m Cable Chamber→Control Room	2590			11/17/2016	11/17/2017
10m Cable Control Room→Receiver	2589			11/17/2016	11/17/2017

Software Utilized:

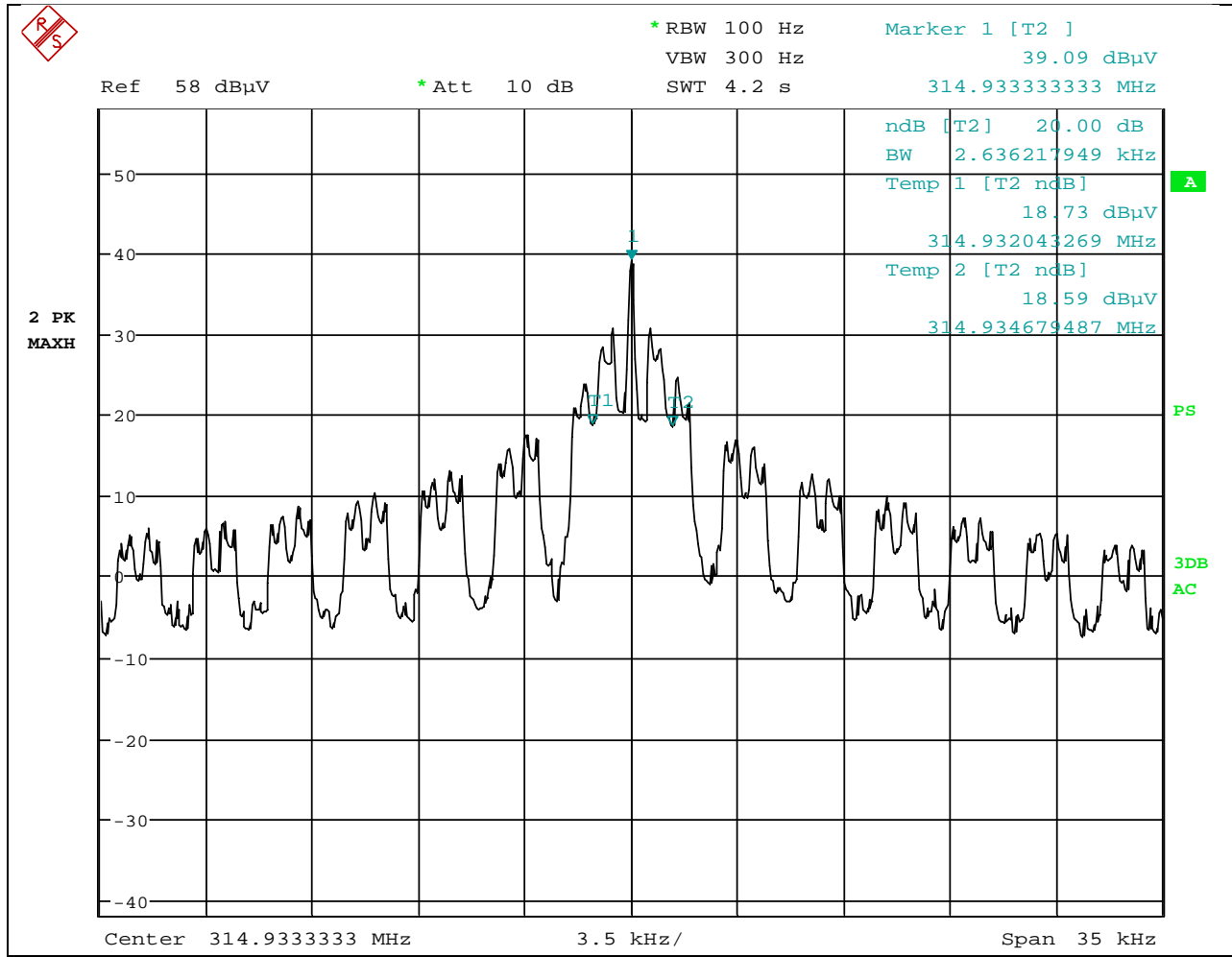
Name	Manufacturer	Version
EMC32	Rohde&Schwarz	Version 9.15.02

8.4 Results:

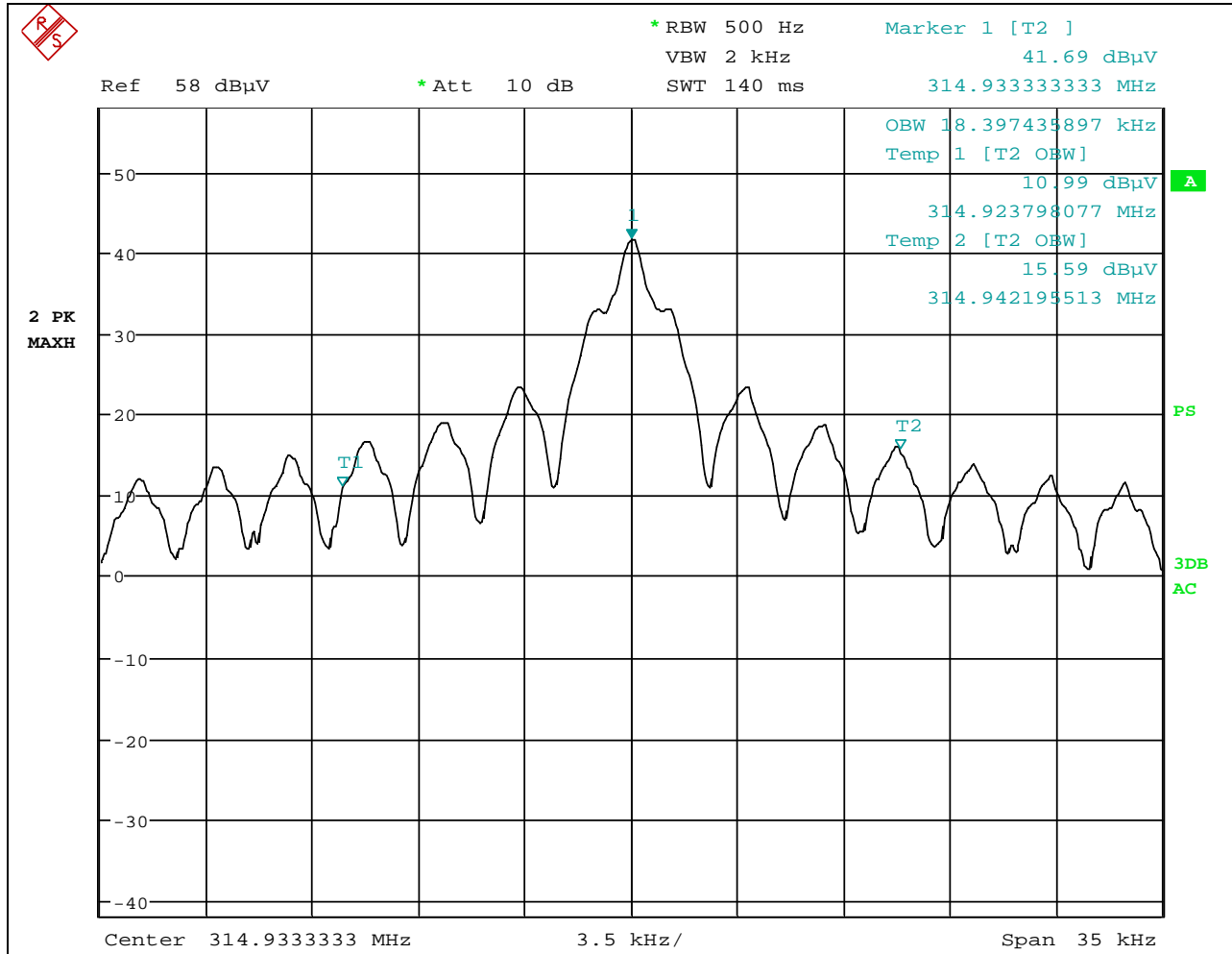
The sample tested was found to Comply.

8.5 Test Data

20dB Down Bandwidth – 2.632 kHz



99% Power Bandwidth – 18.397 kHz



Test Personnel: Brian Daffin
 Supervising/Reviewing Engineer
 (Where Applicable): N/A
 Product Standard: Title 47 CFR Part 15.231(c)
 Input Voltage: 24 VDC
 Pretest Verification w/ Ambient Signals or BB Source: Yes

Test Date: 10/13/2016
 Ambient Temperature: 22.4 C
 Relative Humidity: 39.9 %
 Atmospheric Pressure: 995.5 mbar

Deviations, Additions, or Exclusions: None

9 Transmitter De-activation Time

9.1 Method

Tests are performed in accordance with Title 47 CFR Part 15.231(a) and ANSI C63.10:2013.

This test was performed by setting the spectrum analyzer into a zero span mode that plots field strength vs time. Then the spectrum analyzer was set to trigger upon activation and measure the duration of time that the transmitter was active.

TEST SITE: 10m ALSE

Site Designation: 10m Chamber

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
Radiated Emissions, 10m	30-1000 MHz	3.9dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	4.0dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.7dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	4.7dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	4.7dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	4.7dB	5.5 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

9.2 Criteria

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

9.3 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
EMI Test Receiver	10887490.26	Rohde & Schwarz	ESI26	9/20/2016	9/20/2017
Preamplifier	122005	Rohde&Schwarz	TS-PR18	11/17/2016	11/17/2017
Biconnilog Antenna	00051864	ETS	3142C	3/23/2016	3/23/2017
Horn Antenna	154521	ETS	3117	11/14/2016	11/14/2017
System Controller	121701-1	Sunol Sciences	SC99V	Verify at Time of Use	Verify at Time of Use
3m Cable Antenna→Preamp	3074			11/17/2016	11/17/2017
3m Cable Preamp→Chamber	2588			11/17/2016	11/17/2017
3m Cable Chamber→Control Room	2593			11/17/2016	11/17/2017
3m Cable Control Room→Receiver	2592			11/17/2016	11/17/2017
10m Cable Antenna→Preamp	3339			11/17/2016	11/17/2017
10m Cable Preamp→Chamber	3172			11/17/2016	11/17/2017
10m Cable Chamber→Control Room	2590			11/17/2016	11/17/2017
10m Cable Control Room→Receiver	2589			11/17/2016	11/17/2017

Software Utilized:

Name	Manufacturer	Version
EMC32	Rohde&Schwarz	Version 9.15.02

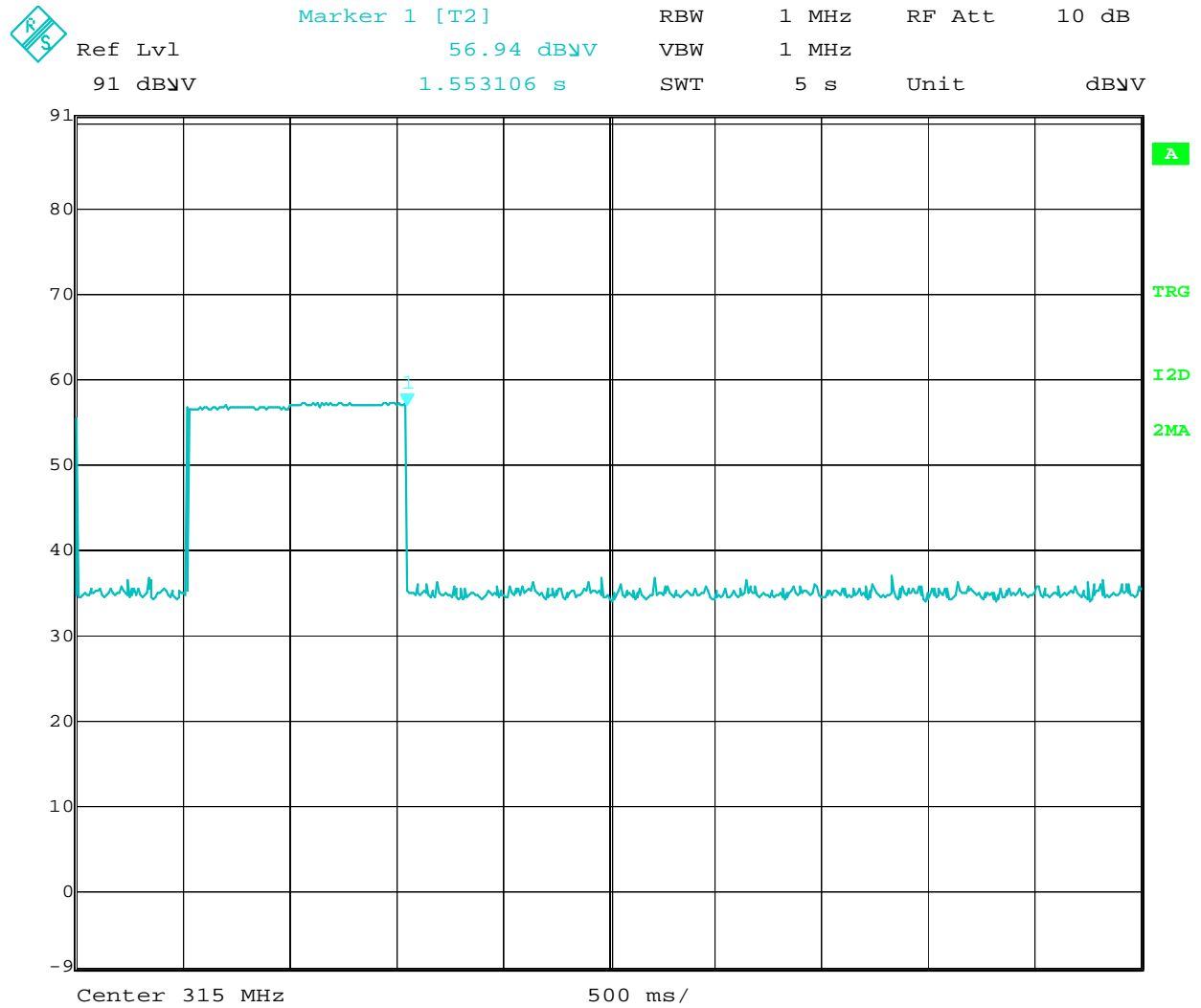
9.4 Results:

The sample tested was found to Comply

9.5 Test Data:

Sweep time 5s

This plot shows that the transmitter ceases activity before the five second requirement is up.



10 Transmitter Duty Cycle Correction Factor

10.1 Method

Tests are performed in accordance with ANSI C63.10: 2013.

TEST SITE: 10m ALSE

Site Designation: 10m Chamber

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucisp
Radiated Emissions, 10m	30-1000 MHz	3.9dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	4.0dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.7dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	4.7dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	4.7dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	4.7dB	5.5 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

10.2 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
EMI Test Receiver	10887490.26	Rohde & Schwarz	ESI26	9/20/2016	9/20/2017
Preamplifier	122005	Rohde&Schwarz	TS-PR18	11/17/2016	11/17/2017
Biconnilog Antenna	00051864	ETS	3142C	3/23/2016	3/23/2017
Horn Antenna	154521	ETS	3117	11/14/2016	11/14/2017
System Controller	121701-1	Sunol Sciences	SC99V	Verify at Time of Use	Verify at Time of Use
3m Cable Antenna→Preamp	3074			11/17/2016	11/17/2017
3m Cable Preamp→Chamber	2588			11/17/2016	11/17/2017
3m Cable Chamber→Control Room	2593			11/17/2016	11/17/2017
3m Cable Control Room→Receiver	2592			11/17/2016	11/17/2017
10m Cable Antenna→Preamp	3339			11/17/2016	11/17/2017
10m Cable Preamp→Chamber	3172			11/17/2016	11/17/2017
10m Cable Chamber→Control Room	2590			11/17/2016	11/17/2017
10m Cable Control Room→Receiver	2589			11/17/2016	11/17/2017

Software Utilized:

Name	Manufacturer	Version
EMC32	Rohde&Schwarz	Version 9.15.02

10.3 Results:

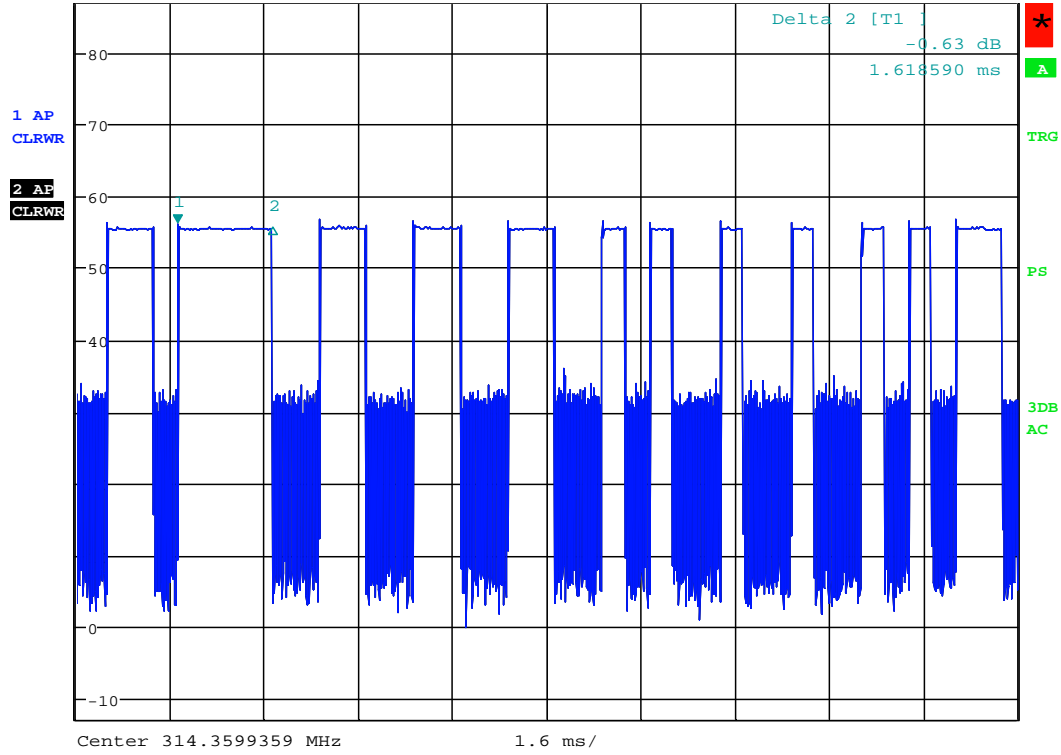
The sample tested was found to Comply.

10.4 Test Data:

Long Pulse = 1.714744ms



MARKER 1
1.71474359 ms
Ref 87 dBµV *Att 10 dB
RBW 3 MHz Marker 1 [T1]
VBW 10 MHz 56.30 dBµV
SWT 16 ms 1.714744 ms



Medium Pulse = 794.8717949µs



DELTA MARKER 2
794.8717949 µs

RBW 3 MHz

Delta 2 [T1]

VBW 10 MHz

-0.91 dB

Ref 87 dBµV

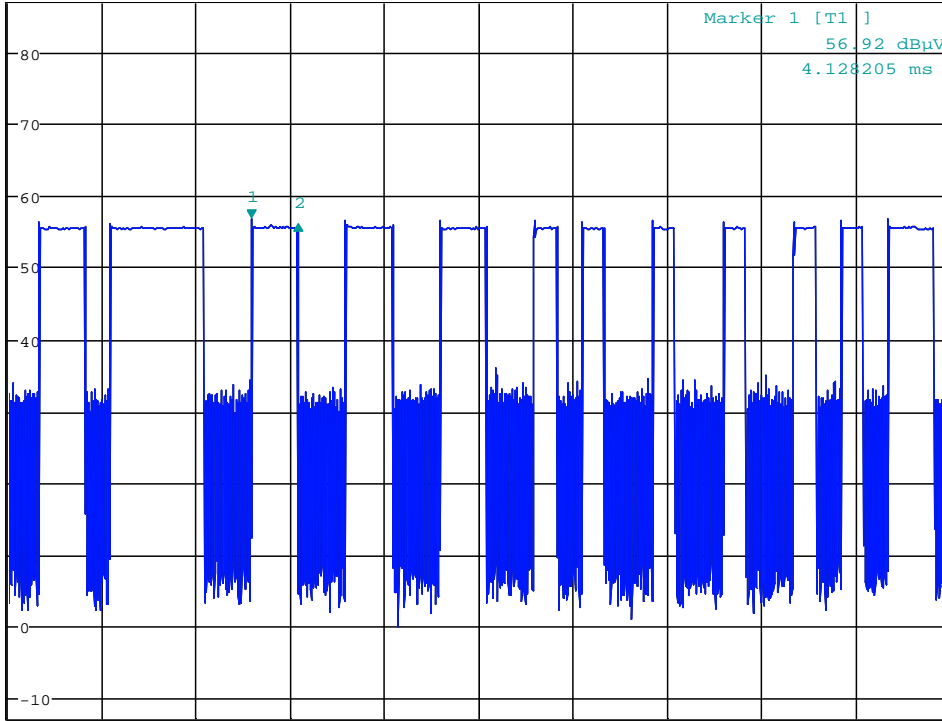
* Att 10 dB

SWT 16 ms

794.871795 µs

1 AP
CLRWR

2 AP
CLRWR



Center 314.3599359 MHz

1.6 ms/

Short Pulse = 384.6153846 μ s



DELTA MARKER 2
384.6153846 μ s

RBW 3 MHz

Delta 2 [T1]

VBW 10 MHz

-0.74 dB

Ref 87 dB μ V

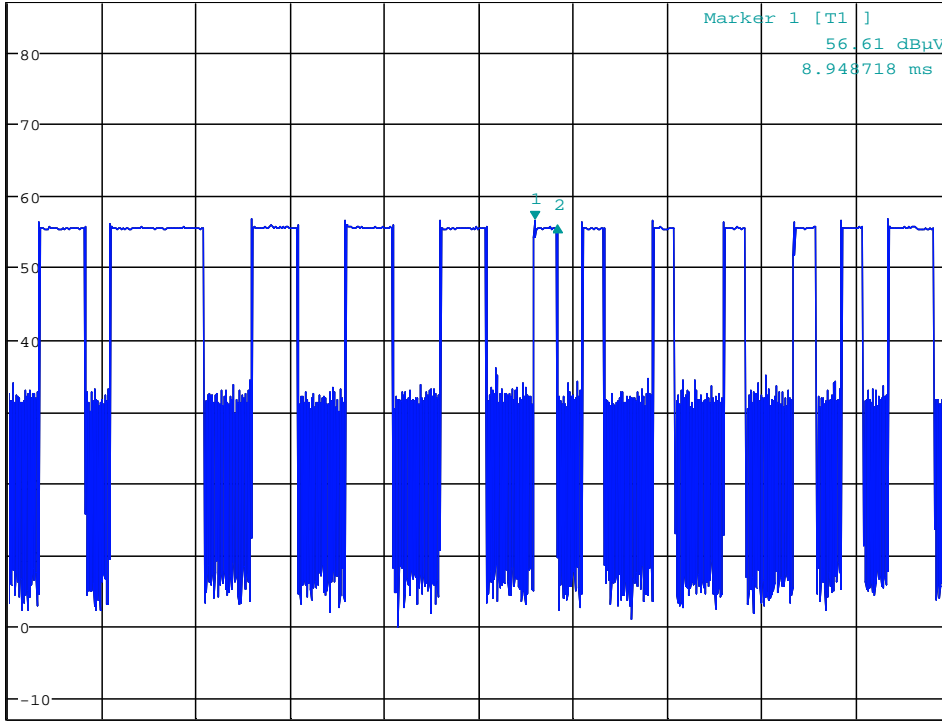
*Att 10 dB

SWT 16 ms

384.615385 μ s

1 AP
CLRWR

2 AP
CLRWR



*

A

TRG

PS

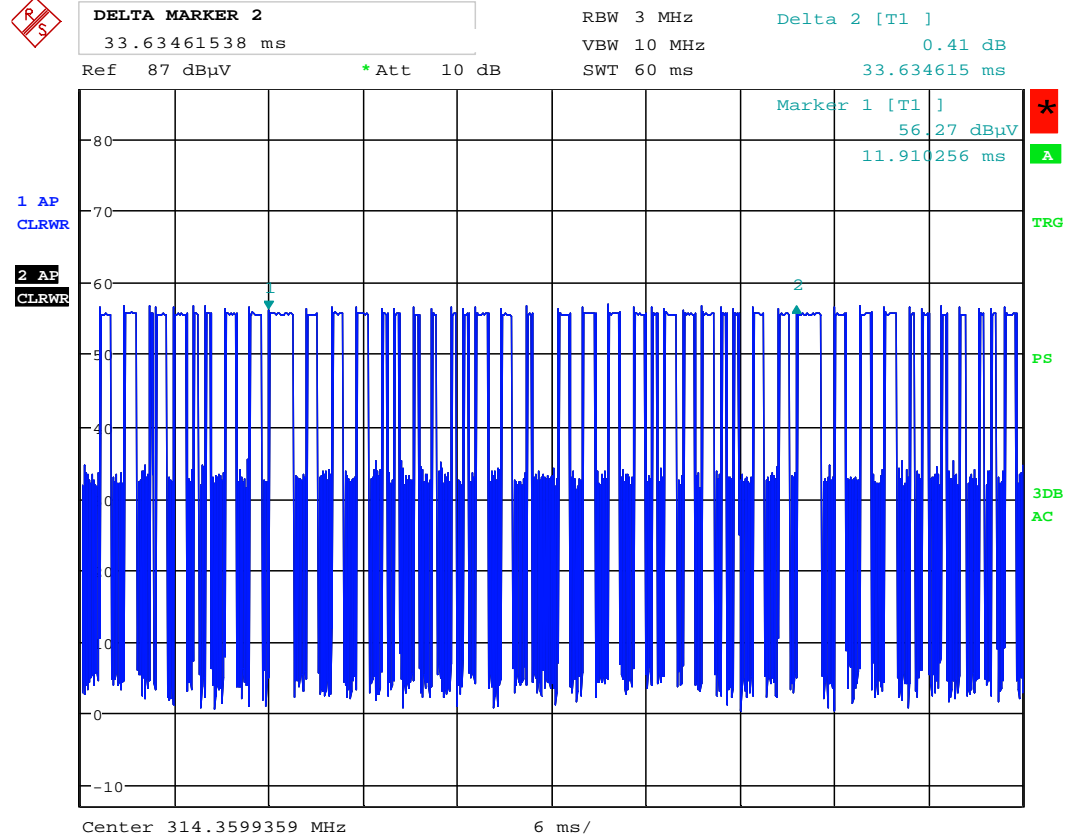
3DB

AC

Center 314.3599359 MHz

1.6 ms/

1 cycle = 33.6346153ms



Long Pulse	1.714ms	Number of long pulses per cycle	1
Med pulse	0.795ms	Number of medium pulses per cycle	14
Short Pulse	0.385ms	Number of short pulses per cycle	10
1 Cycle	33.63ms		

Duty Cycle Correction Factor = $20 * \log(T_{on} / T_{Total})$

$20 * \log(((1 * 1.714) + (14 * 0.795) + (10 * 0.385)) / 33.63)$
 $= 20 * \log(16.689 / 33.63)$
 $= -6.08 \text{ dB}$

Test Personnel: Brian Daffin
 Supervising/Reviewing Engineer
 (Where Applicable): N/A
 Product Standard: ANSI C63.10: 2013
 Input Voltage: 24 VDC
 Pretest Verification w/ Ambient Signals or BB Source: Yes

Test Date: 10/13/2016
 Ambient Temperature: 22.4 C
 Relative Humidity: 39.9 %
 Atmospheric Pressure: 995.5 mbar

11 Antenna Requirement

11.1 Method

Tests are performed in accordance with Title 47 CFR Part 15.203 and ANSI C63.10:2013.

The device came equipped with a permanent PCB trace antenna.

12 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	2/7/2017	102749283LEX-001	BD	BCT	Original Issue