166 South Carter, Genoa City, WI 53128

Company:	RF Technologies Inc.
Model Tested:	9450-7066 and 9450-7262
Report Number:	20628
Project Number:	6983

Code of Federal Regulations 47 Part 15 – Radio Frequency Devices

Subpart C – Intentional Radiators
Section 15.231
Periodic operation in the band 40.66 - 40.70 MHz
and above 70 MHz
&
Section 15.209
Radiated Emission Limits: General Requirements

THE FOLLOWING **MEETS** THE ABOVE TEST SPECIFICATION

Formal Name:	Baby Check
Kind of Equipment:	Wireless Infant Security Device
Frequency Range:	318 MHz transmitter (with 66 kHz receiver) Model 9450-7066 318 MHz transmitter (with 262 kHz receiver) Model 9450-7262
Test Configuration:	Tabletop - battery operated device tested in three orthogonal positions
Model Number(s):	9450-7066, 9450-7262
Model(s) Tested:	9450-7066, 9450-7262
Serial Number(s):	none (Test Sample)
Date of Tests:	January 6 and February 6, 2015
Test Conducted For:	RF Technologies, Inc. 3125 N. 126th Street Brookfield, WI 53005

NOTICE: "This test report relates only to the items tested and must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government". Please see the "Description of Test Sample" page listed inside of this report.

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SIGNATURE PAGE

Tested or Supervised By:

Craig Brandt
Senior Test Engineer

Reviewed By:

William Stumpf
OATS Manager

Approved By:

Brian Mattson
General Manager

166 South Carter, Genoa City, WI 53128

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United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 100276-0

D.L.S. Electronic Systems, Inc.
Wheeling, IL

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2014-10-01 through 2015-09-30
Effective dates

For the National Institute of Standards and Technology

NVLAP-01C (REV. 2009-01-28)

1.0 Summary of Test Report

It was determined that the Baby Check transmitter, Models 9450-7066 and 9450-7262, comply with the requirements of CFR 47 Part 15 Subpart C Section 15.231 and 15.209.

Subpart C Applicable Technical Requirements Tested:

Section	Description	Procedure	Note	Compliant?
15.231(c)	Emission Bandwidth – 20 dB	ANSI C63.10-2009	2	Yes
15.231(a)(2)	Automatic Deactivation	ANSI C63.10-2009	2	Yes
15.231(a)(3)	Periodic Transmissions	ANSI C63.10-2009	2	Yes
15.209 15.231(b)	Field Strength of Emissions - Fundamental and Spurious -	ANSI C63.10-2009	1,2	Yes
15.35(c)	Duty Cycle Correction	ANSI C63.10-2009	2	Informative

Note 1: Tested in 3 orthogonal planes.
Note 2: Radiated emission measurement.

2.0 Introduction

On January 6th and February 6th, 2015 the Baby Check transmitter, Model 9450-7262, as provided from RF Technologies Inc. was tested to the requirements of CFR 47 Part 15 Subpart C Section 15.231 and 15.209. To meet these requirements, the procedures contained within this report were performed by personnel of D.L.S Electronic Systems, Inc.

3.0 Test Facilities

D.L.S. Electronic Systems, Inc. is a full service EMC/Safety Testing Laboratory accredited to ISO 17025. NVLAP Certificate and Scope can be viewed at http://www.dlsemc.com/certificate. Our facilities are registered with the FCC, Industry Canada, and VCCI.

Wisconsin Test Facility:
D.L.S. Electronic Systems, Inc.
166 S. Carter Street
Genoa City, Wisconsin 53128

Wheeling Test Facility:
D.L.S. Electronic Systems, Inc.
1250 Peterson Drive
Wheeling, IL 60090

4.0 Description of Test Sample

Description:

The Baby Check device receives low frequency (66kHz or 262kHz) transmissions from an infant worn transmitter and validates the infants ID for the purpose of matching the infant with a mother's room. The device transmits the result of any attempted match to the building network system using a short range 318MHz transmission.

Type of Equipment / Frequency Range:

Body-Worn / 318 MHz transmitter with either 66 kHz or 262 kHz receiver

Physical Dimensions of Equipment Under Test:

Length: 2.5 in. x Width: 2 in. x Height: 0.625 in.

Power Source:

3.6 VDC battery

Internal Frequencies:

4.1943 MHz

Transmit Frequencies Used For Test Purpose:

318 MHz

Type of Modulation(s) / Antenna Type:

OOK / PCB trace antenna with 0 dBi gain

Description of Circuit Board(s) / Part Number:

PCB Assembly (9450-7066 model)	0830-0175-B
PCB Assembly (9450-7262 model)	0830-0176-B

5.0 Test Equipment

A list of the equipment used can be found in the table below. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.

D.L.S. Wisconsin – OATS Site 2 - Test Equipment:

30 – 1000 MHz

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Receiver	Rohde & Schwarz	ESI 26	837491/010	20 Hz – 26 GHz	7-17-14	7-17-15
Preamplifier	Rohde & Schwarz	TS-PR10	032001/004	9 kHz – 1 GHz	1-7-15	1-7-16
Antenna	EMCO	3104C	00054892	20 MHz – 200 MHz	10-1-14	10-1-16
Antenna	EMCO	3146	1205	200 MHz – 1 GHz	10-24-14	10-24-16
Test Software	Rohde & Schwarz	ESK-1	V1.7.1	N/A	N/A	N/A

Additional if 1-18 GHz

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Preamp	Miteq	AMF-7D-01001800-22-10P	17779900	1GHz-18GHz	2-12-14	2-12-15
Horn Antenna	Com Power	AH118	071127	1-18GHz	9-3-14	9-3-16
Filter- High-Pass	Q-Microwave	100460	1	1.0GHz-18GHz	6-24-14	6-24-15
Test Software	Rohde & Schwarz	ESK-1	V1.7.1	N/A	N/A	N/A

6.0 Test Arrangements

Radiated Emissions Measurement Arrangement:

All radiated emission measurements were performed at D.L.S. Electronic Systems, Inc. and set up according to ANSI C63.10-2009, unless otherwise noted. Description of procedures and measurements can be found in Appendix B – Measurement Data. See Appendix A for additional photos of the test set up.

Unless otherwise noted, the bandwidth of the measuring receiver / analyzer used during testing is shown below.

Frequency Range	Bandwidth (-6 dB)
30 MHz to 1 GHz	120 kHz
Above 1 GHz	1 MHz

7.0 Test Conditions

Temperature and Humidity:

64°F at 24% RH

Battery Voltage:

3.6 VDC

8.0 Modifications Made To EUT For Compliance

None noted at time of test.

9.0 Additional Descriptions

This device uses circuit board antennas that are not user serviceable, which complies with the requirements of 15.203.

The EUT's normal operation is mostly in sleep mode with very infrequent transmit bursts. Testing was done with test firmware which allowed for a continuous modulated transmit signal.

Note that the 66 kHz and 262 kHz receivers are exempt from the technical provisions of CFR 47 Part 15 Subpart B as defined by section 15.101(b).

10.0 Results

Measurements were performed in accordance with ANSI C63.10-2009. Graphical and tabular data can be found in Appendix B at the end of this report.

11.0 Conclusion

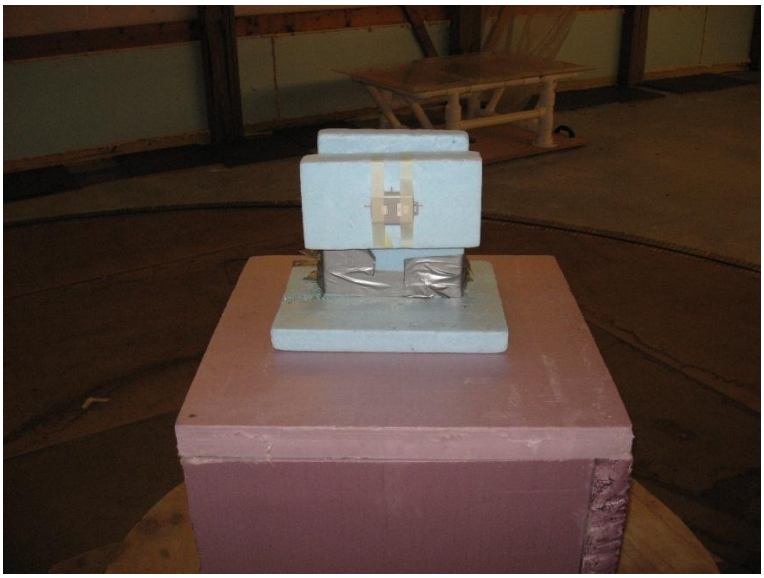
The Baby Check transmitter, Models 9450-7066 and 9450-7262 as provided from RF Technologies, Inc., tested on January 6th and February 6th, 2015 **meet** the requirements of CFR 47 Part 15 Subpart C Section 15.231 and 15.209.

Appendix A – Test Setup Photos

Photo Information and Test Setup:

Item: EUT – Baby Check transmitter

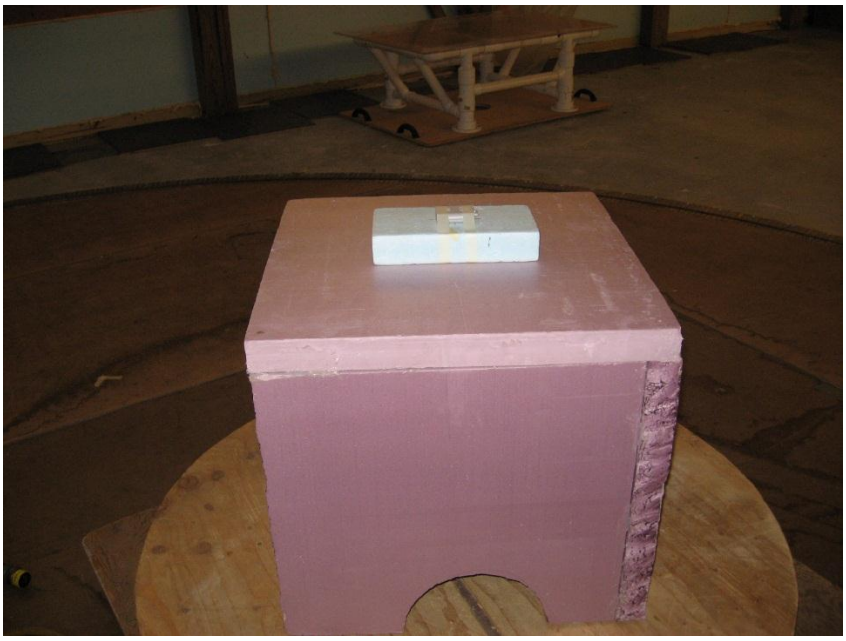
Radiated X Position



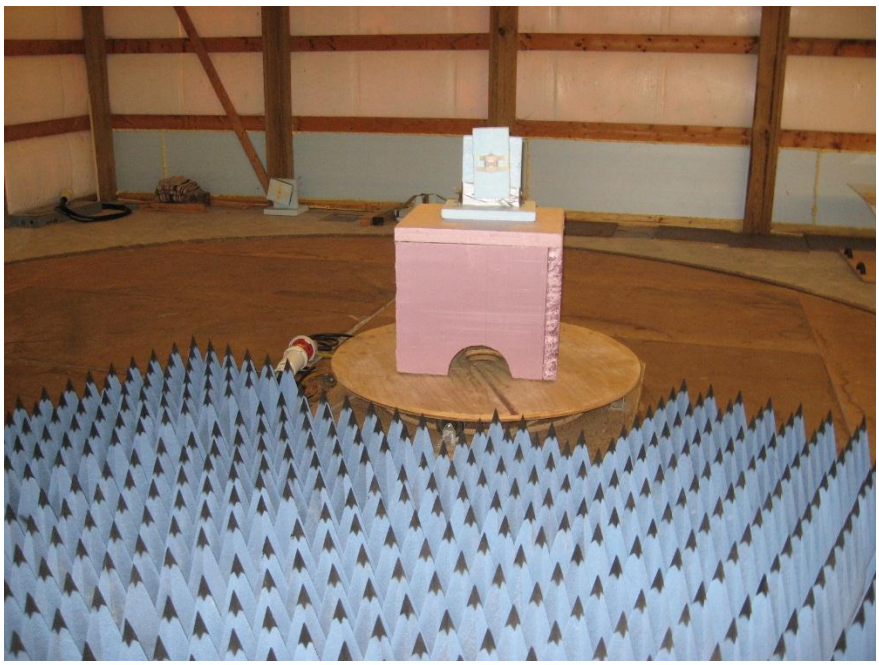
Radiated Y Position

Appendix A

Radiated Z Position



Radiated above 1 GHz



Appendix B – Measurement Data

B1.0 Emission Bandwidth – 20 dB

Rule Part:

Section 15.231 (c)

Test Procedure:

ANSI C63.10-2009

Limit:

Section 15.231 (c):

318 MHz x 0.25% = 795 kHz

Results:

Compliant
20 dB bandwidth: **32.46 kHz**

Sample Equation(s):

None

Notes:

This was a radiated emissions measurement. The maximum field strength of the emission was determined and the bandwidth was measured from the points at 20 dB down from the modulated carrier.

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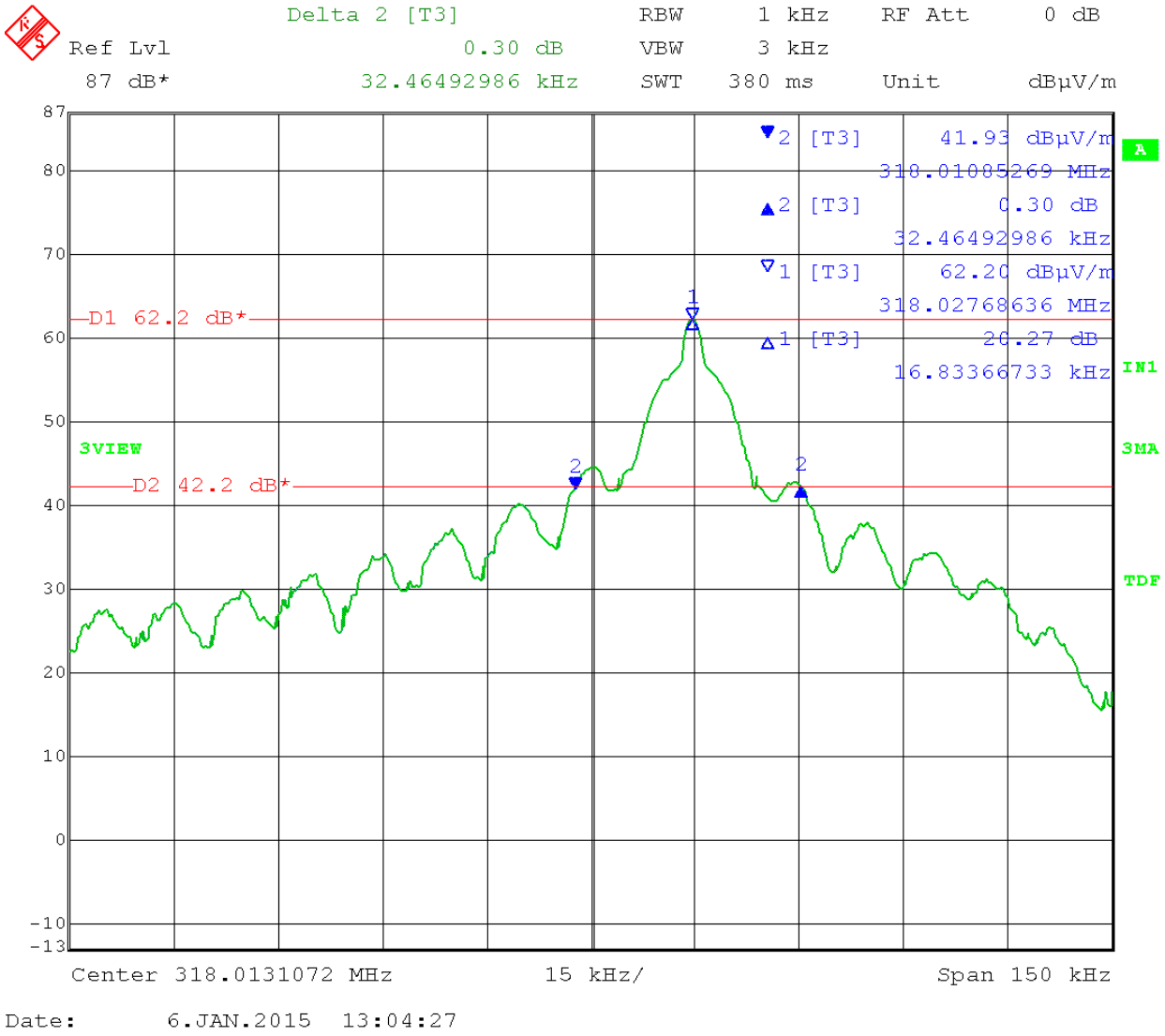
Appendix B

Test Date:	01-06-2015
Company:	RF Technologies
EUT:	Baby Check 318 MHz Transmitter
Test:	20 dB Bandwidth
Operator:	Craig B

Comment: SPAN 2 to 5 times occupied bandwidth
RBW between 1% and 5% of occupied bandwidth

20 dB Bandwidth = 32.46 kHz



Appendix B

B2.0 Automatic Deactivation

Rule Part:

15.231 (a) (2)

Test Procedure:

ANSI C63.10-2009

Limit:

A transmitter activated automatically shall cease transmission within 5 seconds after activation.

Results:

Compliant

Sample Equation(s):

None

Notes:

Transmission immediately ceases upon deactivation.

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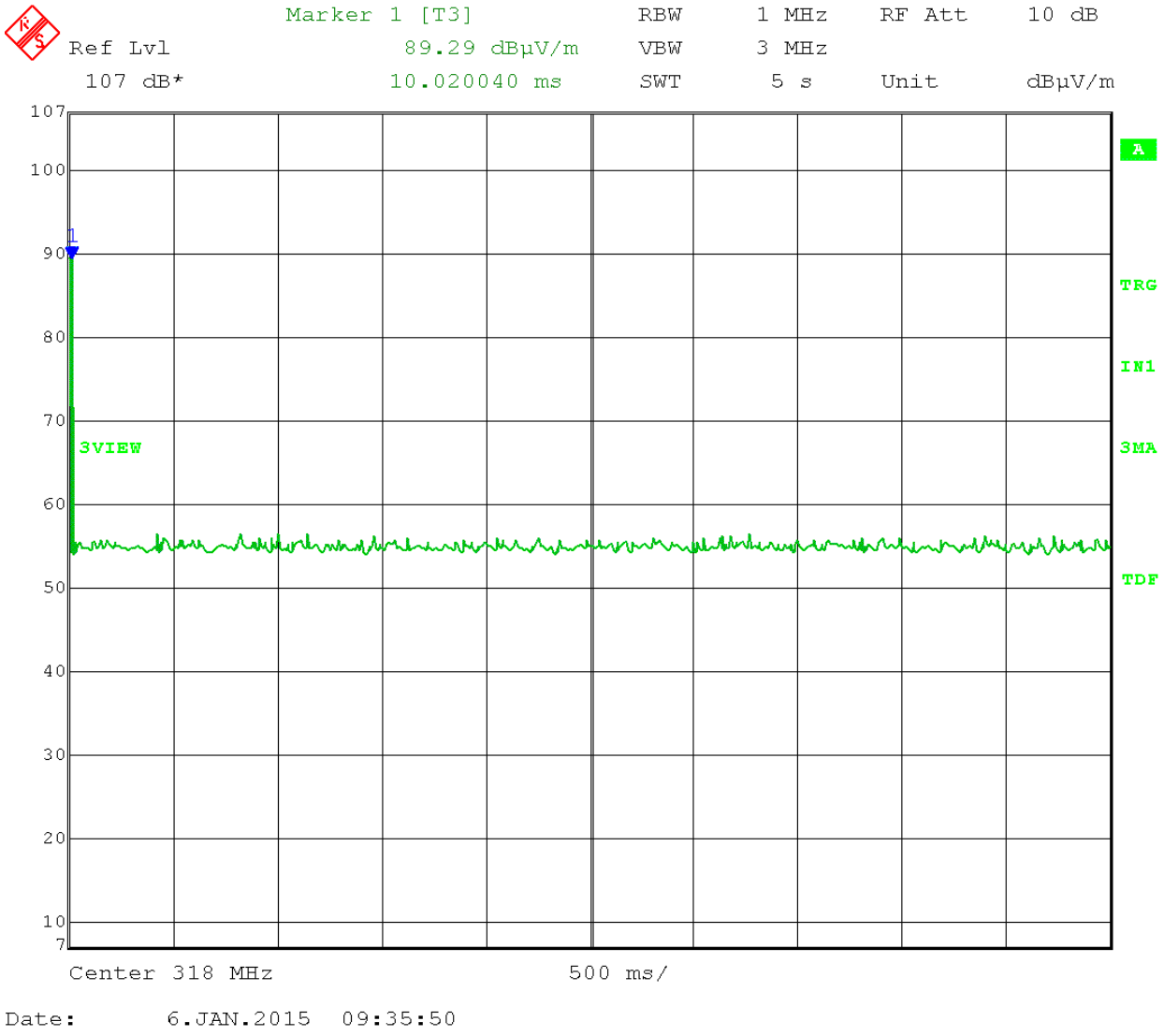
Appendix B

Test Date: 01-06-2015
Company: RF Technologies
EUT: Baby Check 318 MHz Transmitter
Test: Dwell Time
Operator: Craig B

Comment: A transmitter activated automatically shall cease transmission within 5 seconds after activation.



Appendix B

B3.0 Periodic Transmissions

Rule Part:

15.231 (a) (3)

Test Procedure:

ANSI C63.10-2009

Limit:

Total transmission time does not exceed two seconds per hour.

Results:

Compliant
Total time of transmission in an hour: 1.4 seconds

Sample Equation(s):

None

Notes:

Worst case predetermined transmissions observed. Transmission is for system integrity purposes.

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Company:	RF Technologies Inc.
Model Tested:	9450-7066 and 9450-7262
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Appendix B

Company: RF Technologies Test Date: 01-06-2015

EUT: Baby Check 318 MHz Transmitter

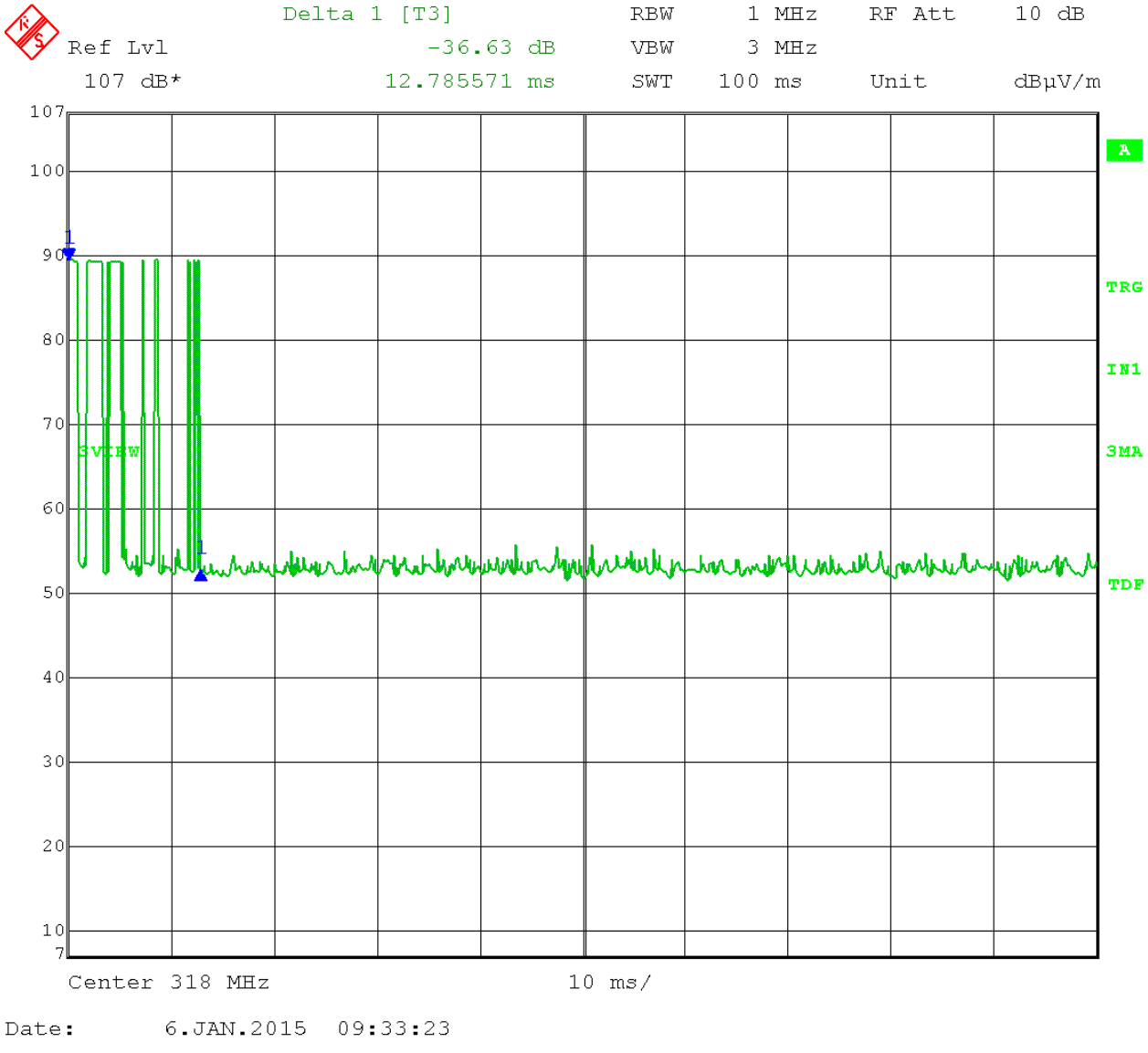
Test: Periodic transmissions over one hour

Operator: Craig B

Comment: EUT transmits at regular predetermined intervals for system integrity.
Total transmission time must not exceed two seconds per hour.

Transmission time = 12.8 ms.
Transmission every 34 seconds.
Total transmission time for one hour = **1.4 seconds**.

Transmission Time:



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Company: RF Technologies Inc.
Model Tested: 9450-7066 and 9450-7262
Report Number: 20628
Project Number: 6983

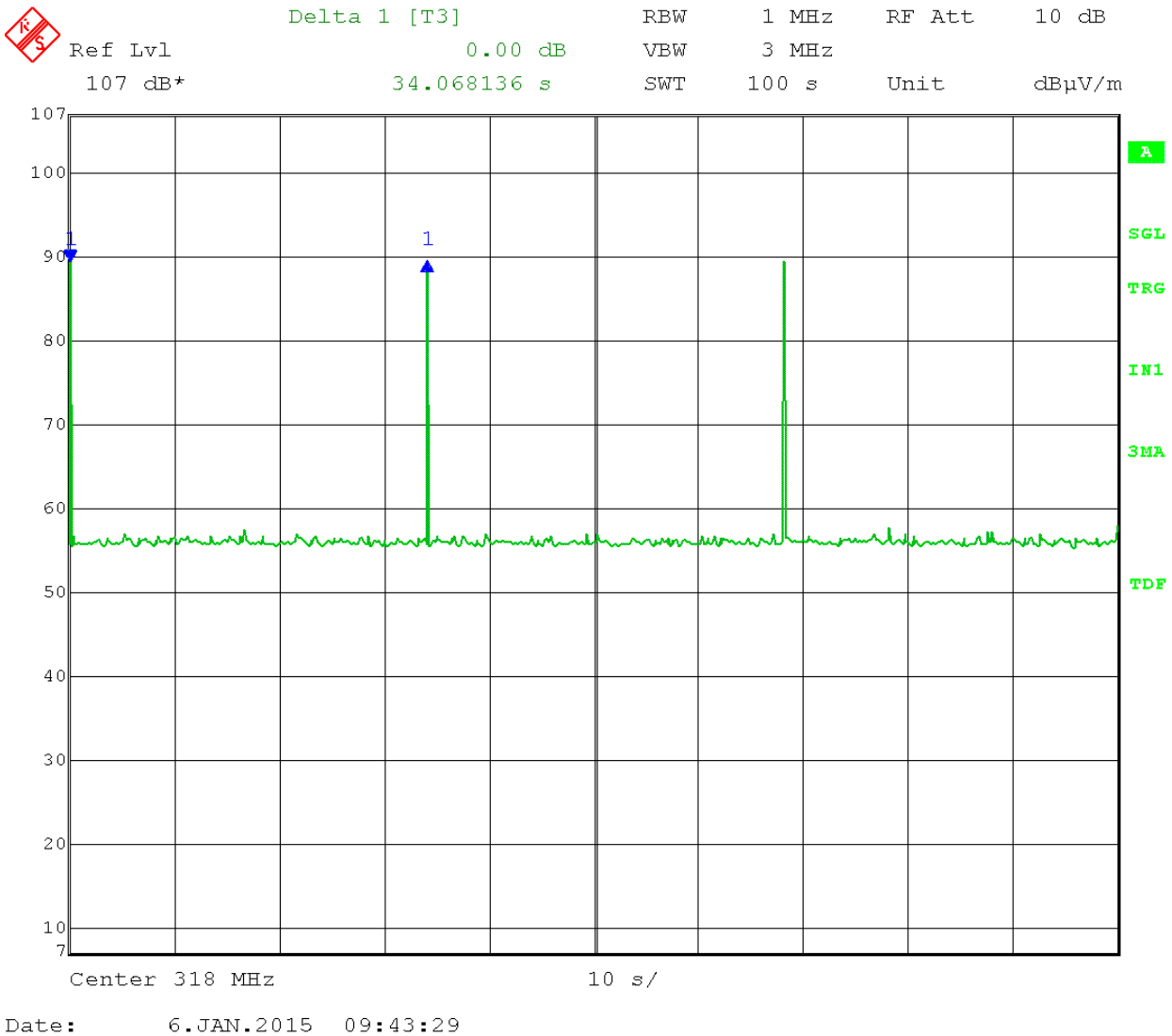
Appendix B

Company: RF Technologies Test Date: 01-06-2015
EUT: Baby Check 318 MHz Transmitter
Test: Periodic transmissions over one hour
Operator: Craig B

Comment: EUT transmits at regular predetermined intervals for system integrity.
Total transmission time must not exceed two seconds per hour.

Transmission time = 12.8 ms.
Transmission every 34 seconds.
Total transmission time for one hour = **1.4 seconds**.

Time between transmissions:



Appendix B

B4.0 Field Strength of Emissions – Fundamental and Spurious

Rule Part:

15.231 (b) including 15.205 and 15.209

Test Procedure:

ANSI C63.10-2009

Limit:

Fundamental (F) µV/m at 3 meters: 41.6667(F) – 7083.3333
The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.

Results:

Compliant

Sample Equation(s):

41.6667(F) – 7083.3333 = 6166.67 µV/m at 3 meters

20*log (6166.67) = 75.80 dB µV/m at 3 meters

Final Corrected = Total Level - Duty Cycle Correction
Margin = Limit - Final Corrected
Total Level = Level + System Loss + Antenna Factor

Notes:

The emissions were measured of the fundamental and spurious at a distance of three meters between the EUT and the measuring antenna. The EUT was rotated in 3 orthogonal planes and the highest emission was recorded. Compliance is determined by comparing peak data, minus duty cycle correction, to the average limit.

Radiated Fundamental and Spurious Emissions – 30 MHz to 3.2 GHz
Tested at a 3 Meter Distance

EUT: Baby Check 318 MHz Transmitter (262 kHz receiver)
Manufacturer: RF Technologies
Operating Condition: 64deg F; 24% R.H.
Test Site: Site 2
Operator: Paul L
Test Specification: FCC Part 15.231(b)
Comment: Battery Operated
Date: 02-06-2015

Notes:

All measurements were made with a peak detector.

Frequency (MHz)	Measurement Type	Antenna Polarization	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m	Duty Cycle Correction	Final Corrected (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	EUT Angle (deg)	Comment
318.000	Max Peak	Vertical	52.22	14.58	3.6	70.40	0	70.40	95.80	25.4	1.8	270	F
	Average						17.8	52.60	75.80	23.2			
	Max Peak	Horizontal	47.02	14.58	3.9	65.50	0	65.50	95.80	30.3	2.0	0	F
	Average						17.8	47.70	75.80	28.1			
636.000	Max Peak	Vertical	25.06	19.64	5.2	49.90	0	49.90	75.80	25.9	1.5	270	H
	Average						17.8	32.10	55.80	23.7			
	Max Peak	Horizontal	21.96	19.64	5.2	46.80	0	46.80	75.80	29.0	2.0	100	H
	Average						17.8	29.00	55.80	26.8			
954.000	Max Peak	Vertical	29.72	23.78	6.6	60.10	0	60.10	75.80	15.7	1.5	100	H
	Average						17.8	42.30	55.80	13.5			
	Max Peak	Horizontal	32.92	23.78	6.6	63.30	0	63.30	75.80	12.5	1.0	180	H
	Average						17.8	45.50	55.80	10.3			
1272.000	Max Peak	Vertical	83.75	25.55	-56.1	53.20	0	53.20	74.00	20.8	1.0	270	H / RB
	Average						17.8	35.40	54.00	18.6			
	Max Peak	Horizontal	81.05	25.55	-56.1	50.50	0	50.50	74.00	23.5	1.0	270	H / RB
	Average						17.8	32.70	54.00	21.3			
1590.000	Max Peak	Vertical	76.03	25.57	-55.4	46.20	0	46.20	74.00	27.8	1.0	270	H / RB
	Average						17.8	28.40	54.00	25.6			
	Max Peak	Horizontal	73.33	25.57	-55.4	43.50	0	43.50	74.00	30.5	1.0	180	H / RB
	Average						17.8	25.70	54.00	28.3			
1908.000	Max Peak	Vertical	75.05	27.15	-55.1	47.10	0	47.10	75.80	28.7	1.0	225	H
	Average						17.8	29.30	55.80	26.5			
	Max Peak	Horizontal	77.65	27.15	-55.1	49.70	0	49.70	75.80	26.1	1.0	0	H
	Average						17.8	31.90	55.80	23.9			
2226.000	Max Peak	Vertical	72.17	28.23	-54.9	45.50	0	45.50	74.00	28.5	1.5	90	H / RB
	Average						17.8	27.70	54.00	26.3			
	Max Peak	Horizontal	70.97	28.23	-54.9	44.30	0	44.30	74.00	29.7	1.5	90	H / RB
	Average						17.8	26.50	54.00	27.5			

Legend: H=Harmonic ; RB=Restricted Band ; F=Fundamental
Level = Total Level - System Loss - Antenna Factor
Final Corrected = Total Level - Duty Cycle Correction
Margin = Limit - Final Corrected

B5.0 Duty Cycle Correction

Rule Part:

15.35 (c)

Test Procedure:

ANSI C63.10-2009

Limit:

Informative

Results:

Duty Cycle Correction Factor = 17.8 dB

Sample Equation(s):

See data

Notes:

Compliance is determined by comparing peak data, minus duty cycle correction, to the average limit.

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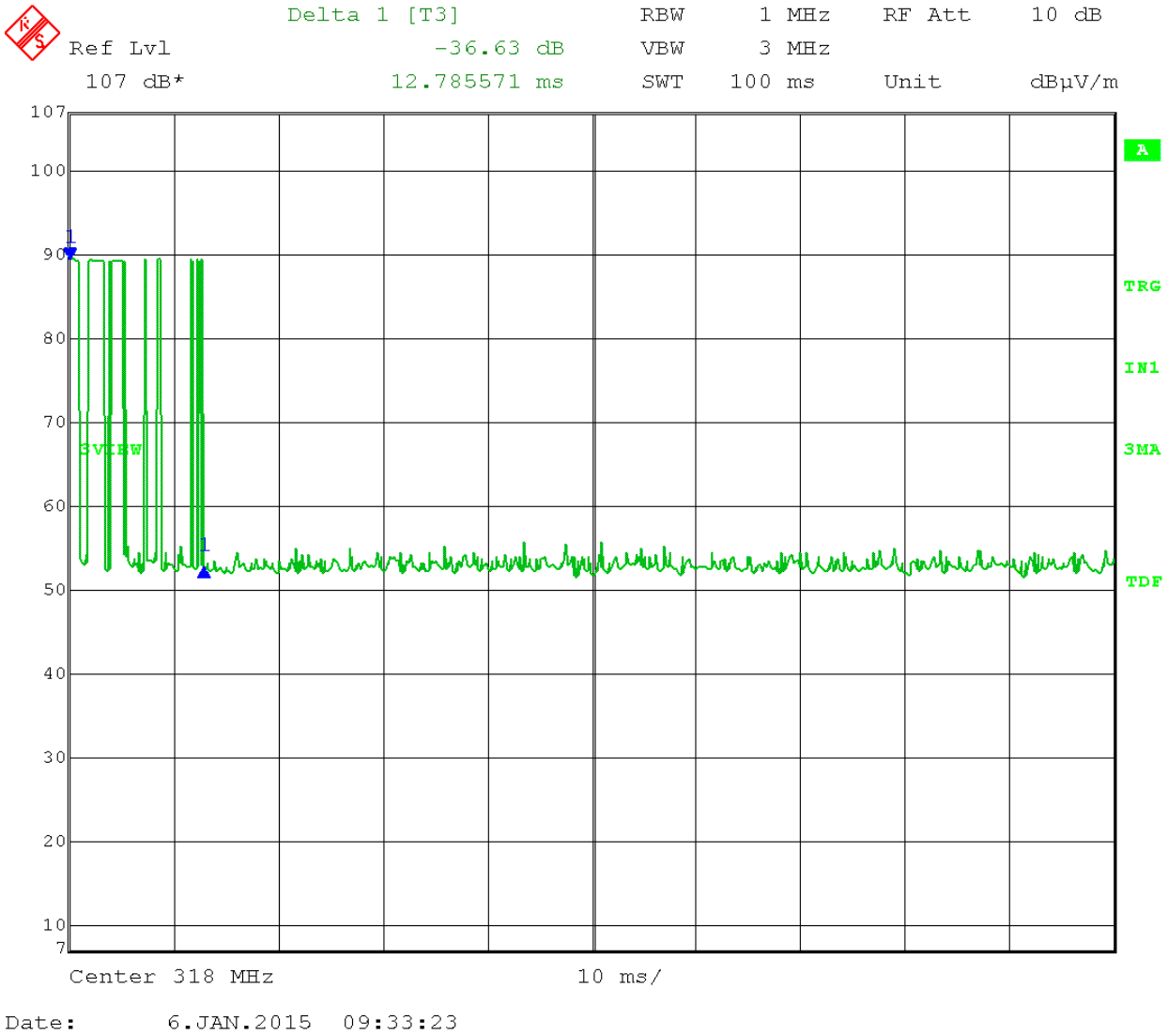
Appendix B

Test Date:	01-06-2015
Company:	RF Technologies
EUT:	Baby Check 318 MHz Transmitter
Test:	Duty Cycle – worst case for normal operation
Operator:	Craig B

Comment: ON time of one pulse train = 12.8 ms
Duty Cycle correction = 20 Log (12.8/100) = -17.8 dB

100 ms sweep:



END OF REPORT

Revision #	Date	Comments	By
1.0	02-09-2015	Initial Release	JS
1.1	02-10-2015	Extra notes added to pages 13 & 15 after review	JS