

**FCC PART 15 SUBPART C SECTION 15.231,
RSS GEN, & RSS 210
TEST REPORT**

for

**EMERGENCY TRANSMITTER
Model: DXS-F1**

Prepared for

NORTEK SECURITY & CONTROL
1950 CAMINO VIDA ROBLE, SUITE 150
CARLSBAD, CA 92008

Prepared by: _____

TOREY OLIVER

Approved by: _____

MATT HARRISON

COMPATIBLE ELECTRONICS INC.
20621 PASCAL WAY
LAKE FOREST, CALIFORNIA 92630
(949) 587-0400

DATE: DECEMBER 31st, 2015

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
PAGES	18	2	2	2	11	16	51

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Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

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1	Plot Map And Layout of Test Site Below 1GHz
2	Plot Map And Layout of Test Site Above 1GHz



GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced in any form unless done so in full with the written permission of Compatible Electronics.

This report must not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.

Device Tested: Emergency Transmitter
 Model: DXS-F1
 S/N: None

Product Description: The Model DXS-F1 is a battery powered, miniature, water-resistant*, supervised fall detection pendant transmitter designed for use with Linear PERS Consoles. The transmitter is supplied with an adjustable lanyard with a breakaway release. When a person's fall is detected by the transmitter's internal accelerometer, or when the pendant's button is pressed, a digitally coded wireless signal is sent to the companion Console. The signal indicator on the transmitter lights green when the unit is activated. When activated using the pendant's button, the transmitter can send a signal for up to 30 seconds if held per activation.

Modifications: The EUT was not modified in order to comply with specifications.

Manufacturer: Nortek Security & Control
 1950 Camino Vida Roble, Suite 150
 Carlsbad, CA 92008

Test Dates: December 31st, 2015

 January 3rd, 2016

Test Specifications: EMI requirements

 CFR Title 47, Part 15 Subpart C Sections 15.205, 15.207, 15.209 and 15.231
 RSS GEN & RSS 210

Test Procedure: ANSI C63.4 & C63.10



SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz - 30 MHz.	The EUT is battery powered; therefore this test was deemed unnecessary and thus was not performed.
2	Radiated RF Emissions & Harmonics, 9 kHz – 4,000 MHz.	Complies with the limits of CFR Title 47, Part 15 Subpart C Section 15.209, 15.231, & RSS GEN.
3	-20 dB Occupied Bandwidth of the Emission	Complies with the limits of CFR Title 47, Part 15, Subpart C, section 15.231 & RSS 210.
4	Peak Radiated EMI	Complies with the limits of CFR Title 47, Part 15, Subpart C, section 15.231 & RSS 210.
5	Transmit Timeout	Complies with the limits of CFR Title 47, Part 15, Subpart C, section 15.231 & RSS 210.

TABLE 1
SIX HIGHEST RADIATED EMISSIONS READINGS

	Reading Type (PK / QP / AV)	Polarization (Vert / Horz)	Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Delta (dB)	Test Distance
1	QP	V	945.10	37.80	46.00	-8.20	3-Meter
2	QP	V	630.10	36.11	46.00	-9.89	3-Meter
3	QP	H	630.10	36.02	46.00	-9.98	3-Meter
4	QP	H	879.40	32.96	46.00	-13.04	3-Meter
5	QP	V	879.40	32.17	46.00	-13.83	3-Meter
6	QP	H	39.70	20.96	40.00	-19.04	3-Meter



1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Emergency Transmitter Model: DXS-F1. The EMI measurements were performed according to the measurement procedure described in ANSI C63.10. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT (equipment under test) hereafter, are within the specification limits defined by the Code of Federal Regulations Title 47, Part 15 Subpart C sections 15.205, 15.207, 15.209, 15.231, RSS GEN, & RSS 210.



2. ADMINISTRATIVE DATA

2.1 Location of Testing

The tests described herein were performed at the test facility of Compatible Electronics, 20621 Pascal Way Lake Forest, California 92630.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Nortek

Josh Hansen Regulatory Engineer

Compatible Electronics, Inc.

Matt Harrison Lab Manager
Torey Oliver Test Technician

2.4 Date Test Sample was Received

The test sample was received on December 30th, 2015.

2.5 Disposition of the Test Sample

The test sample remains at Compatible Electronics, Inc. as of the date of this test report.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
NVLAP	National Voluntary Laboratory Accreditation Program
CFR	Code of Federal Regulations
PCB	Printed Circuit Board
TX	Transmit
RX	Receive



3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this Test Report.

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
ANSI C63.4 2014	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz.
ANSI C63.10: 2013	American National Standard for Testing Unlicensed Wireless Devices
RSS GEN	General Requirements for Compliance of Radio Apparatus
RSS 210	Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment



4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration

The Emergency Transmitter Model: DXS-F1 (EUT) was setup in a tabletop configuration. The EUT was checked all 3 axis. The worst case was found to be the X-Axis. The EUT was continuously transmitting a data stream during the tests.

The EUT was tested with a new battery.

It was determined that the emissions were at their highest level when the EUT was transmitting in the configuration described above for Radiated Emissions. The final radiated data was taken in the above configuration. Please see Appendix E for the test data.

4.1.1 Photograph Test Configuration



4.1.2 Cable Construction and Termination

The EUT has no interconnecting cables.



5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT**5.1 EUT and Accessory List**

#	EQUIPMENT TYPE	MANU-FACTURER	MODEL	SERIAL NUMBER
1	EMERGENCY TRANSMITTER (EUT)	NORTEK	DXS-F1	NONE



5.2 EMI Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Computer	Compatible Electronics	NONE	NONE	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100157	09/22/2015	09/22/2016
Antenna, Loop	Com Power	AL-130	121049	12/06/2014	12/06/2016
Antenna, CombiLog	Com Power	AC-220	003	05/21/2014	05/21/2016
Antenna, Horn 1-18GHz	Com Power	AH-118	071225	07/01/2014	07/01/2016
Pre-Amp, 1-18GHz	Com Power	PAM-118	551033	04/24/2014	04/24/2016
Mast, Antenna Positioner	Sunol Science Corporation	TWR 95-4	020808-3	N/A	N/A
Antenna Mast	Sunol Science Corporation	TWR 95-4	020808-3	N/A	N/A
Turntable	Sunol Science Corporation	FM 2001	N/A	N/A	N/A
Mast and Turntable Controller	Sunol Science Corporation	SC104V	020808-1	N/A	N/A



6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and the figures in Appendix D of this report for test location.

6.2 EUT Mounting, Bonding and Grounding

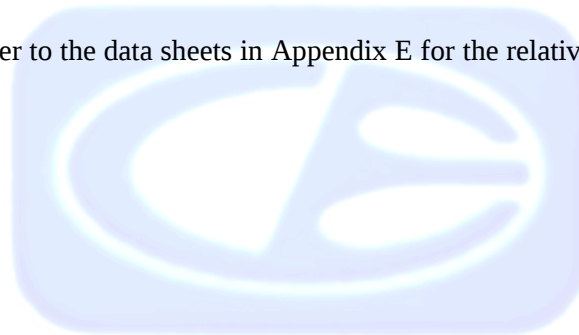
The EUT was mounted 1.0 meter high on a non-conductive surface, which was placed above the ground plane.

For above 1GHz the EUT was mounted on a 1.5 meter high non-conductive tabletop, which was placed on the ground plane.

The EUT was not grounded.

6.3 Facility Environmental Characteristics

When applicable refer to the data sheets in Appendix E for the relative humidity, air temperature, and barometric pressure.



7. CHARACTERISTICS OF THE TRANSMITTER

7.1 Channel Number and Frequencies

The EUT has one operating channel and the EUT has OOK modulation. The EUT has a fixed output power.

1 == 315 MHz

7.2 Antenna

The antenna is made up of a trace located on the PCB.



8. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

8.1 RF Emissions

8.1.1 Conducted Emissions Test

The EUT is battery operated; therefore this test was deemed unnecessary and thus was not performed.

The EMI receiver was used as a measuring meter. A quasi-peak and/or average reading was taken only where indicated in the data sheets. The LISN output was measured using the EMI receiver. The output of the second LISN was terminated by a 50-ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding, and grounding of the EUT. The EUT received its power through the LISN, which was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI 63.4. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the computer software.



8.1.2 Radiated Emissions (Spurious and Harmonics) Test

The EMI receiver was used as a measuring meter. The receiver was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the receiver records the highest measured reading over all the sweeps. Amplifiers were used to increase the sensitivity of the instrument. There was one Microwave Preamplifier used for frequencies above 1 GHz.

For spurious emissions the quasi-peak detector was used for frequencies below 1GHz and the average detector was used for frequencies above 1 GHz.

For the Harmonic emissions a duty cycle average was used.

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE (MHz)	TRANSDUCER	EFFECTIVE MEASUREMENT BANDWIDTH
.009 to .150	Active Loop Antenna	200 Hz
.150 to 30	Active Loop Antenna	9 kHz
30 to 1000	Combilog Antenna	100 kHz
1000 to 4000	Horn Antenna	1 MHz

The TDK FAC-3 shielded test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with ANSI C63.4 & ANSI C63.10. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters in both vertical and horizontal polarizations (for E field radiated field strength).

Test Results:

The EUT complies with the limits of CFR Title 47 Part 15 Subpart C sections 15.205, 15.209, 15.231, RSS GEN & RSS 210. The six highest emissions are listed in table 1.



8.1.3 Peak radiated EMI

The EUT was tested at a 3-meter test distance to obtain the final test data. The final qualification data sheets are located in Appendix E. This data also shows compliance at the band edges.

Duty Cycle Correction Factor = -19.939dB

$$\delta(\text{dB}) = 20 \log \left[\sum (nt_1 + mt_2 + \dots + \xi t_x) / T \right]$$

where

n is the number of pulses of duration t_1

m is the number of pulses of duration t_2

ξ is the number of pulses of duration t_x

T is the period of the pulse train or 100 ms if the pulse train length is greater than 100 ms

Pulse Type 1 = $17 * 592.386774 \mu\text{S} = 10.07058 \text{ mS}$

Total On Time = 10.07058 mS

$100\text{ms} / 10.07058 = 0.1007$

$20 \log (0.1007) = -19.939 \text{ dB}$ correction factor

Test Results:

The EUT complies with Part 15, Subpart C, section 15.231 & RSS 210.



8.1.4 Bandwidth of the Fundamental

The -20 dB bandwidth was checked using the EMI Receiver to see that the emissions were wholly within the 0.25% of the operating frequency centered on the fundamental frequency. The RBW was set to 5 kHz and the VBW was set to 20 kHz. A Plot of the -20 dB bandwidth is located in Appendix E.

Test Results:

The EUT complies with the requirements of CFR Title 47, Part 15, Subpart C, section 15.231 (c) for the -20 dB bandwidth of the fundamental. The EUT has a -20 dB bandwidth that is lies wholly within the 0.25% of the operating frequency centered on the fundamental frequency.

8.1.5 Transmit Timeout

The Transmit timeout test was performed using the EMI Receiver to make sure the transmission coming from the transmitter would cease within 5 seconds after the activation. A Plot of the transmission duration is located in Appendix E.

Test Results:

The EUT complies with the requirements of CFR Title 47, Part 15, Subpart C, section 15.231 (c) & RSS 210 for Transmit Timeout less than 5 seconds.

9. TEST PROCEDURE DEVIATIONS

The test procedures were not deviated from throughout all tests.

10. CONCLUSIONS

The Emergency Transmitter Model: DXS-F1 meets all of the relevant specification requirements defined in the Code of Federal Regulations Title 47, Part 15 Subpart C sections 15.205, 15.207, 15.209, 15.231, RSS GEN, & RSS 210.



APPENDIX A***LABORATORY ACCREDITATIONS AND
RECOGNITIONS***

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

LABORATORY ACCREDITATIONS AND RECOGNITIONS



NVLAP LAB CODES 200063-0,
200528-0, 200527-0

For US, Canada, Australia/New Zealand, Taiwan and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025 an ISO 9002 equivalent. Please follow the link to the NIST site for each of our facilities NVLAP certificate and scope of accreditation.

NVLAP listing links

Agoura Division - <http://ts.nist.gov/Standards/scopes/2000630.htm>

Brea Division - <http://ts.nist.gov/Standards/scopes/2005280.htm>

Silverado/Lake Forest Division - <http://ts.nist.gov/Standards/scopes/2005270.htm>



ANSI listing

[CETCB](#)

<https://www.ansica.org/wwwversion2/outside/ALLdirectoryDetails.asp?menuID=1&prgID=3&orgID=123&status=4>



Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for EMC under the US/EU Mutual Recognition Agreement (MRA).



Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for Taiwan/BSMI under the US/APEC (Asia-Pacific Economic Cooperation) Mutual Recognition Agreement (MRA).

We are also certified/listed for IT products by the following country/agency:



VCCI Listing, from VCCI site

[Enter "Compatible" in search form](#) http://www.vcci.or.jp/vcci_e/activity/registration/setsubi.html



FCC Listing, from FCC OET site

[FCC test lab search](#) <https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm>



Compatible Electronics IC listing can be found at:

<http://www.ic.gc.ca/eic/site/ic1.nsf/eng/home>



Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

APPENDIX B***MODIFICATIONS TO THE EUT***

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

MODIFICATIONS TO THE EUT

There were no modifications were made during testing.



APPENDIX C***ADDITIONAL MODELS COVERED
UNDER THIS REPORT***

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

EMERGENCY TRANSMITTER

Model: DXS-F1

S/N: None

No additional models were tested.



APPENDIX D***DIAGRAMS, CHARTS, AND PHOTOS***

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

FIGURE 1: PLOT MAP AND LAYOUT OF TEST SITE BELOW 1GHZ

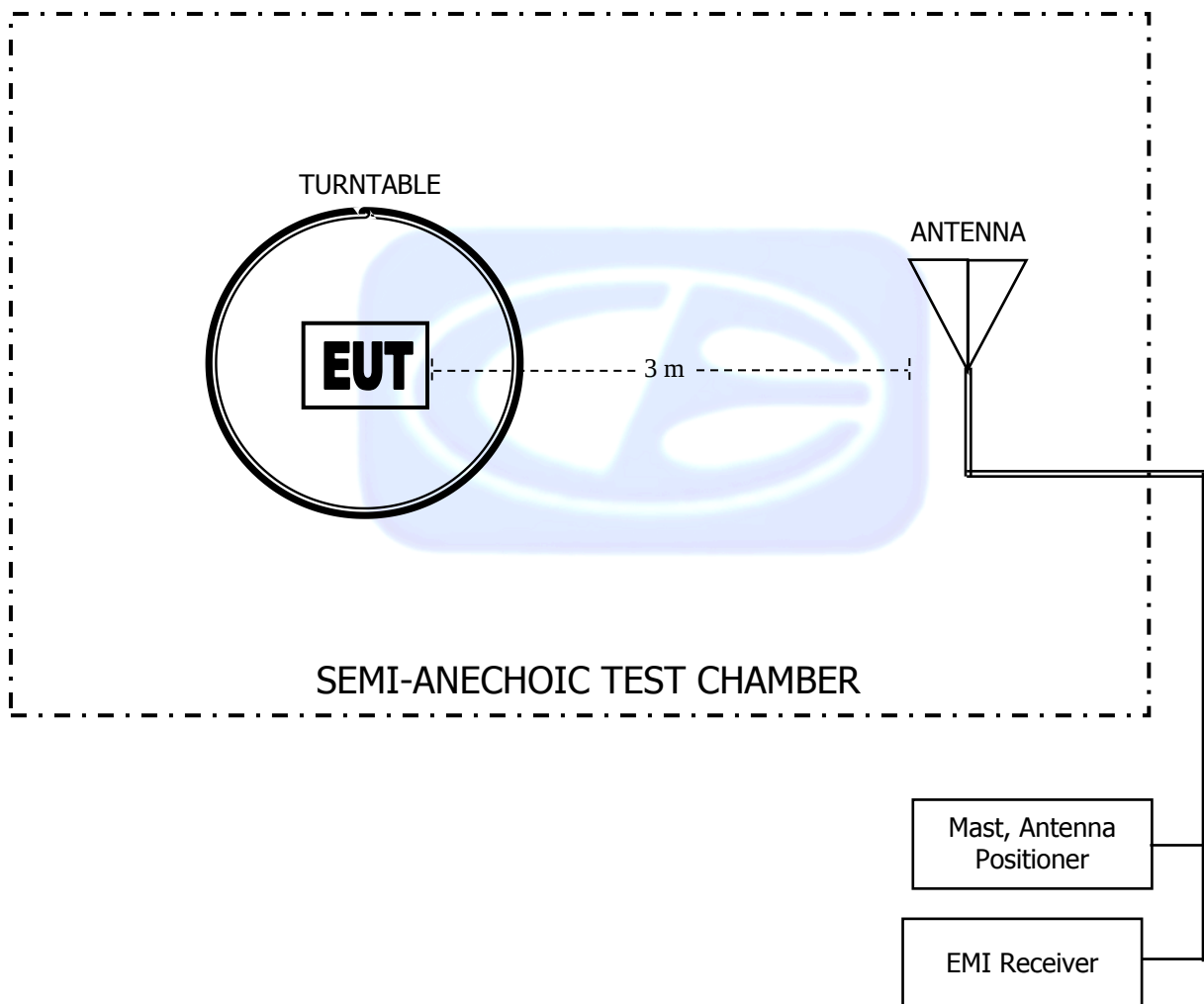
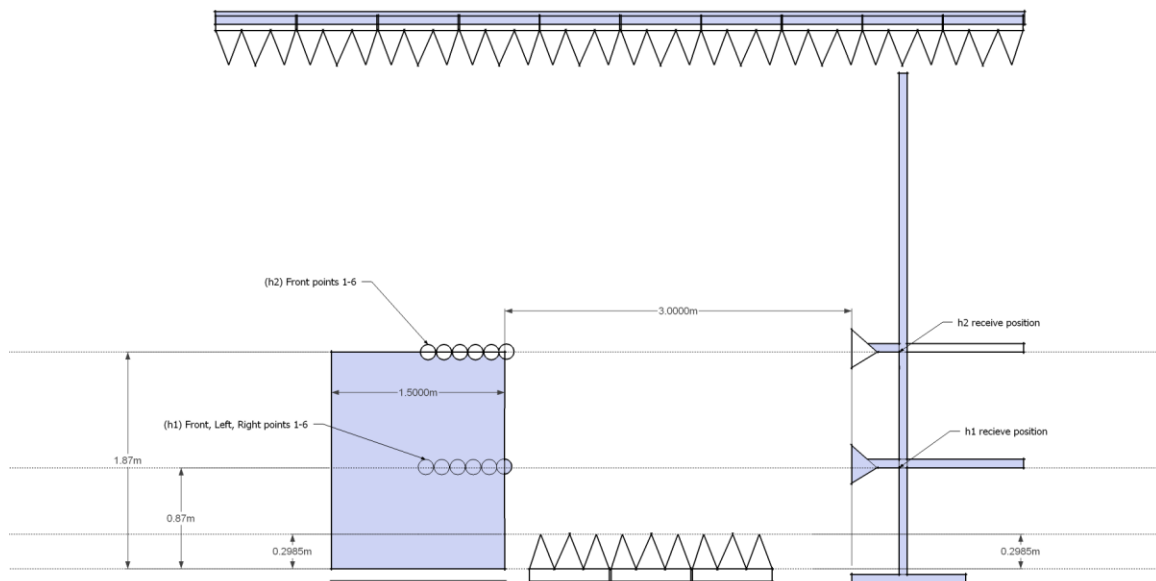


FIGURE 2: PLOT MAP AND LAYOUT OF TEST SITE ABOVE 1GHZ



COM-POWER AL-130**LOOP ANTENNA****S/N: 121049****CALIBRATION DUE: DECEMBER 6, 2016**

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)	FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-34.64	16.86	0.8	-36.32	15.18
0.01	-34.78	16.72	0.9	-36.22	15.28
0.02	-35.91	15.59	1.0	-36.22	15.28
0.03	-35.48	16.02	2.0	-35.91	15.59
0.04	-35.82	15.68	3.0	-35.91	15.59
0.05	-36.49	15.01	4.0	-36.01	15.49
0.06	-36.30	15.20	5.0	-35.80	15.70
0.07	-36.43	15.07	6.0	-36.00	15.50
0.08	-36.30	15.20	7.0	-35.90	15.60
0.09	-36.39	15.11	8.0	-35.70	15.80
0.1	-36.41	15.09	9.0	-35.70	15.80
0.2	-36.61	14.89	10.0	-35.60	15.90
0.3	-36.63	14.87	15.0	-36.52	14.98
0.4	-36.52	14.99	20.0	-35.75	15.75
0.5	-36.63	14.87	25.0	-37.78	13.72
0.6	-36.62	14.88	30.0	-38.62	12.88
0.7	-36.53	14.97			



COM-POWER AC-220**LAB P - COMBILOG ANTENNA****S/N: 003****CALIBRATION DUE: MAY 21, 2016**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	22.90	160	15.20
35	22.80	180	14.40
40	23.50	200	14.10
45	21.90	250	15.90
50	22.00	300	18.20
60	18.10	400	19.40
70	12.80	500	21.50
80	12.10	600	22.00
90	12.70	700	23.90
100	13.00	800	25.80
120	15.50	900	27.00
140	14.40	1000	27.90



COM-POWER AH-118**HORN ANTENNA****S/N: 071225****CALIBRATION DUE: JULY 1, 2016**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
1000	30.2	9500	43.86
1500	29.46	10000	43.85
2000	31.81	10500	43.54
2500	35.95	11000	45.28
3000	33.6	11500	45.18
3500	36.43	12000	45.03
4000	35.85	12500	44.33
4500	36.32	13000	45.71
5000	40.11	13500	46.89
5500	38.7	14000	46.88
6000	39.33	14500	45.89
6500	40.08	15000	49.59
7000	41.17	15500	46.49
7500	43.58	16000	45.01
8000	41.55	16500	44.57
8500	42.63	17000	48.28
9000	43.5	17500	49.88
		18000	49.94



COM-POWER PAM-118A**1-18GHz - PREAMPLIFIER****S/N: 551033****CALIBRATION DUE: FEBRUARY 5, 2016**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
500	36.57	5500	40.23
1000	38.49	6000	38.68
1100	38.83	6500	39.16
1200	39.05	7000	35.30
1300	39.06	7500	36.25
1400	38.83	8000	36.08
1500	38.52	8500	36.03
1600	38.69	9000	36.9
1700	39.54	9500	37.29
1800	39.66	10000	37.56
1900	40.49	11000	37.23
2000	40.03	12000	37.05
2500	39.30	13000	36.15
3000	41.29	14000	33.80
3500	40.61	15000	37.41
4000	41.49	16000	37.98
4500	41.51	17000	35.82
5000	40.41	18000	32.01





FRONT VIEW

NORTEK
EMERGENCY TRANSMITTER
Model: DXS-F1

FCC SUBPART C - RADIATED EMISSIONS < 1GHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

**REAR VIEW**

NORTEK
EMERGENCY TRANSMITTER
Model: DXS-F1
FCC SUBPART C - RADIATED EMISSIONS < 1GHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

**FRONT VIEW**

NORTEK

EMERGENCY TRANSMITTER

Model: DXS-F1

FCC SUBPART C - RADIATED EMISSIONS > 1GHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500**Agoura Division**
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600**Silverado Division**
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700**Lake Forest Division**
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

**REAR VIEW**

NORTEK
EMERGENCY TRANSMITTER
Model: DXS-F1
FCC SUBPART C - RADIATED EMISSIONS > 1GHz

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FOR MAXIMUM EMISSIONS**

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APPENDIX E***RADIATED EMISSIONS DATA SHEETS***

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
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(818) 597-0600

Silverado Division
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(949) 589-0700

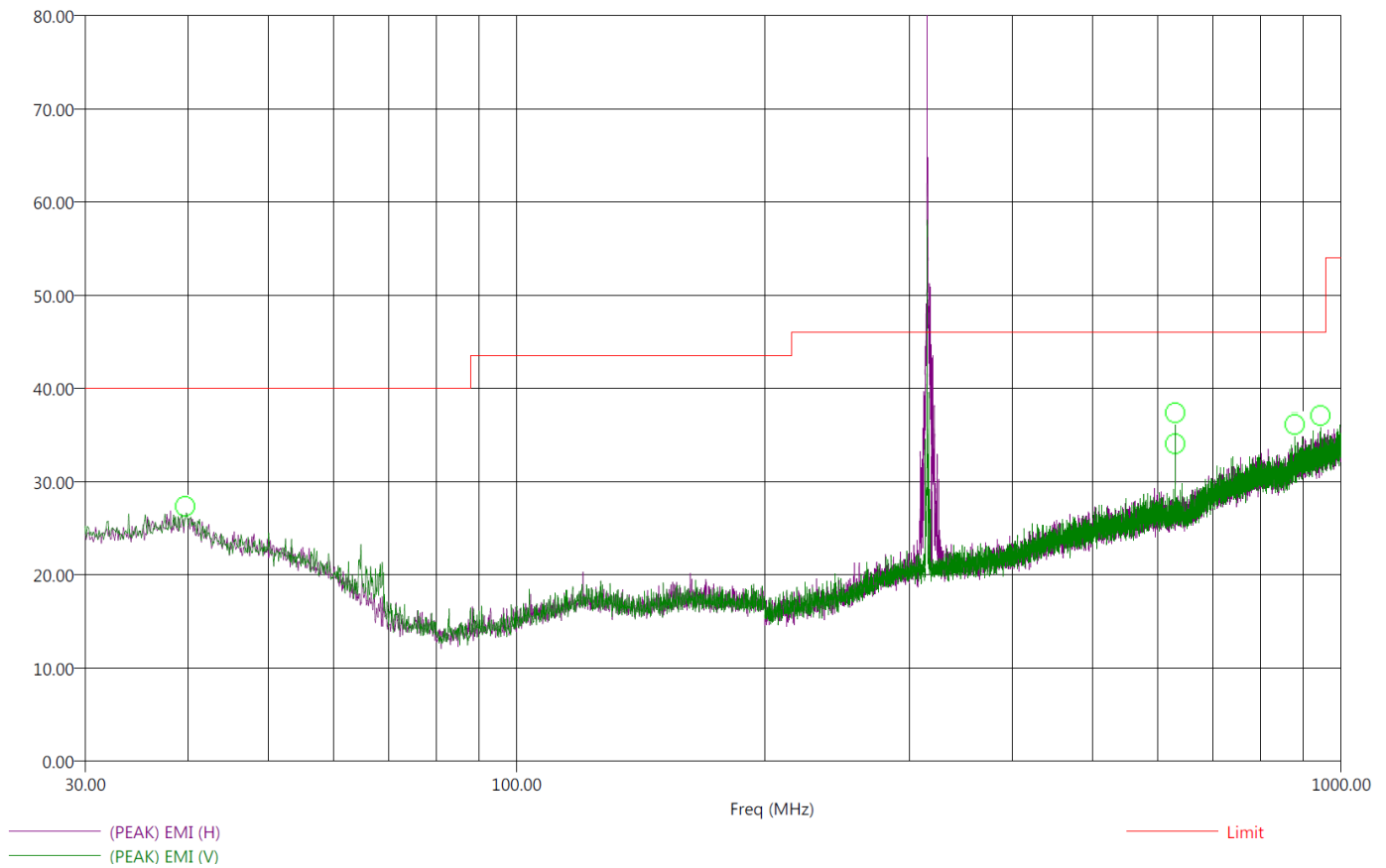
Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

Title: FCC 15.209
File: Radiated Pre-Scan 30-1000Mhz
Operator: Torey Oliver
EUT Type: Emergency Transmitter / DXS-F1
EUT Condition: The EUT is constantly transmitting 315 MHz.
Comments: X Axis
Worst Case
Temp: 21f
Hum: 39%
3VDC

12/31/2015 2:32:24 PM
Sequence: Preliminary Scan

Compatible Electronics, Inc. FAC-3 (Lab P)

Electric Field Strength (dBμV/m)



***There were no radiated emissions other than harmonics found below 30 MHz or above 1GHz.
This is the worst case mode.***



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(949) 589-0700

Lake Forest Division
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Lake Forest, CA 92630
(949) 587-0400

Title: FCC 15.209
File: Radiated Final 30-1000Mhz
Operator: Torey Oliver
EUT Type: Emergency Transmitter / DXS-F1
EUT Condition: The EUT is constantly transmitting 315 MHz.
Comments: X Axis
Worst Case
Temp: 21f
Hum: 39%
3VDC

12/31/2015 2:55:09 PM
Sequence: Final Measurements

Compatible Electronics, Inc. FAC-3 (Lab P)

Freq (MHz)	(QP) Margin (dB)	(QP) EMI (dBµV/m)	(PEAK) EMI (dBµV/m)	Limit (dBµV/m)	Pol	Ttbl Agl (deg)	Twr Ht (cm)	Transducer(dB)	Cable(dB)
39.70	-19.04	20.96	26.43	40.00	H	43.25	114.70	23.45	1.28
630.10	-9.98	36.02	38.52	46.00	H	144.25	192.05	22.60	2.51
630.10	-9.89	36.11	38.52	46.00	V	-0.25	99.94	22.60	2.51
879.40	-13.04	32.96	38.44	46.00	H	359.00	379.52	26.76	2.98
879.40	-13.83	32.17	36.62	46.00	V	322.50	219.52	26.77	2.98
945.10	-8.20	37.80	41.34	46.00	V	85.25	118.11	27.22	3.48

*There were no radiated emissions other than harmonics found below 30 MHz or above 1GHz.
This is the worst case mode.*



FUNDAMENTAL & HARMONICS



DATA SHEETS



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114 Olinda Drive
Brea, CA 92823
(714) 579-0500

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2337 Troutdale Drive
Agoura, CA 91301
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FUNDAMENTAL FIELD STRENGTH

FCC 15.231Company: Nortek
EUT: Panic Button w/ Fall DetectionModel: DXS-F1
Duty Cycle Correction Factor: -19.94Date: 12/31/2015
Lab: P
Tested: Torey
By: Oliver**Compatible Electronics, Inc. FAC-3**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table	Tower	Comments
315.00	83.82	H	95.62	-11.80	Peak	290.00	1.00	X-Axis
315.00	63.88	H	75.62	-11.74	Avg	290.00	1.00	X-Axis
315.00	62.37	V	95.62	-33.25	Peak	346.00	1.25	X-Axis
315.00	42.43	V	75.62	-33.19	Avg	346.00	1.25	X-Axis

Test distance
3 meter

HARMONICS HORIZONTAL

FCC 15.231

Company: Nortek
EUT: Emergency Transmitter
Model: DXS-F1
Duty Cycle Correction Factor: -19.94

Date: 1/3/2015
Lab: P
Tested By: Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
630.00	38.52	H	66.00	-27.48	Peak	1.92	144.00	
630.00	36.02	H	46.00	-9.98	QP	1.92	144.00	
945.00		H	73.98		Peak			No Emissions Found
945.00		H	53.98		QP			No Emissions Found
1260.00		H	73.98		Peak			No Emissions Found
1260.00		H	53.98		Avg			No Emissions Found
1575.00	43.68	H	77.26	-33.58	Peak	3.65	129	
1575.00	23.74	H	57.26	-33.519	Avg	3.65	129	
1890.00	47.88	H	77.26	-29.38	Peak	2.91	114	
1890.00	27.94	H	57.26	-29.319	Avg	2.91	114	
2205.00	50.77	H	77.26	-26.49	Peak	1.73	144	
2205.00	30.83	H	57.26	-26.43	Avg	1.73	144	
2520.00	51.61	H	73.98	-22.37	Peak	1.19	161	
2520.00	31.67	H	53.98	-22.31	Avg	1.19	161	
2835.00	66.58	H	77.26	-10.68	Peak	2.04	327	
2835.00	46.64	H	57.26	-10.62	Avg	2.04	327	
3150.00	58.98	H	77.26	-18.28	Peak	1.51	151	
3150.00	39.04	H	57.26	-18.219	Avg	1.51	151	

Test distance
3 meter



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(714) 579-0500

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HARMONICS VERTICAL

FCC 15.231

Company: Nortek
EUT: Emergency Transmitter
Model: DXS-F1
Duty Cycle Correction Factor: -19.94

Date: 1/3/2015
Lab: P
Tested By: Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
630.00	38.52	V	66.00	-27.48	Peak	1.00	0.00	
630.00	36.11	V	46.00	-9.89	QP	1.00	0.00	
945.00	41.34	V	73.98	-32.64	Peak	1.18	85	
945.00	37.80	V	53.98	-16.18	QP	1.18	85	
1260.00	40.72	V	73.98	-33.26	Peak	1.58	186	
1260.00	20.78	V	53.98	-33.20	Avg	1.58	186	
1575.00	51.59	V	77.26	-25.67	Peak	1.69	235	
1575.00	31.65	V	57.26	-25.61	Avg	1.69	235	
1890.00	55.45	V	77.26	-21.81	Peak	1.76	0	
1890.00	35.51	V	57.26	-21.75	Avg	1.76	0	
2205.00	53.65	V	77.26	-23.61	Peak	1.86	0	
2205.00	33.71	V	57.26	-23.55	Avg	1.86	0	
2520.00	48.81	V	73.98	-25.17	Peak	1.17	0	
2520.00	28.87	V	53.98	-25.11	Avg	1.17	0	
2835.00	65.67	V	77.26	-11.59	Peak	1.62	240	
2835.00	45.73	V	57.26	-11.53	Avg	1.62	240	
3150.00	62.24	V	77.26	-15.02	Peak	1.16	214	
3150.00	42.30	V	57.26	-14.96	Avg	1.16	214	

Test distance
3 meter



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DUTY CYCLE PLOTS



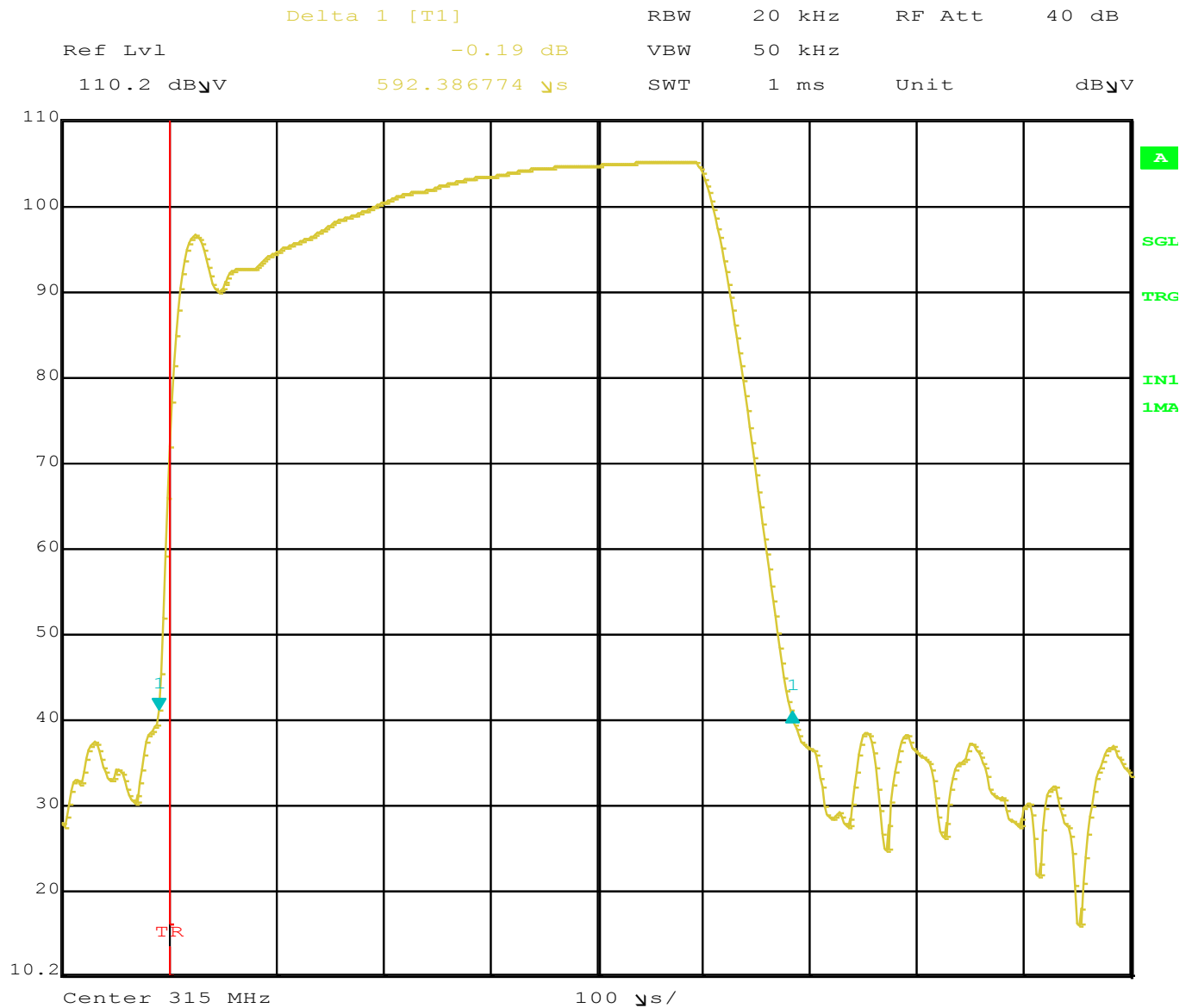
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DUTY CYCLE



Comment A: duty cycle

Time of Pulse = 592.386774 μS



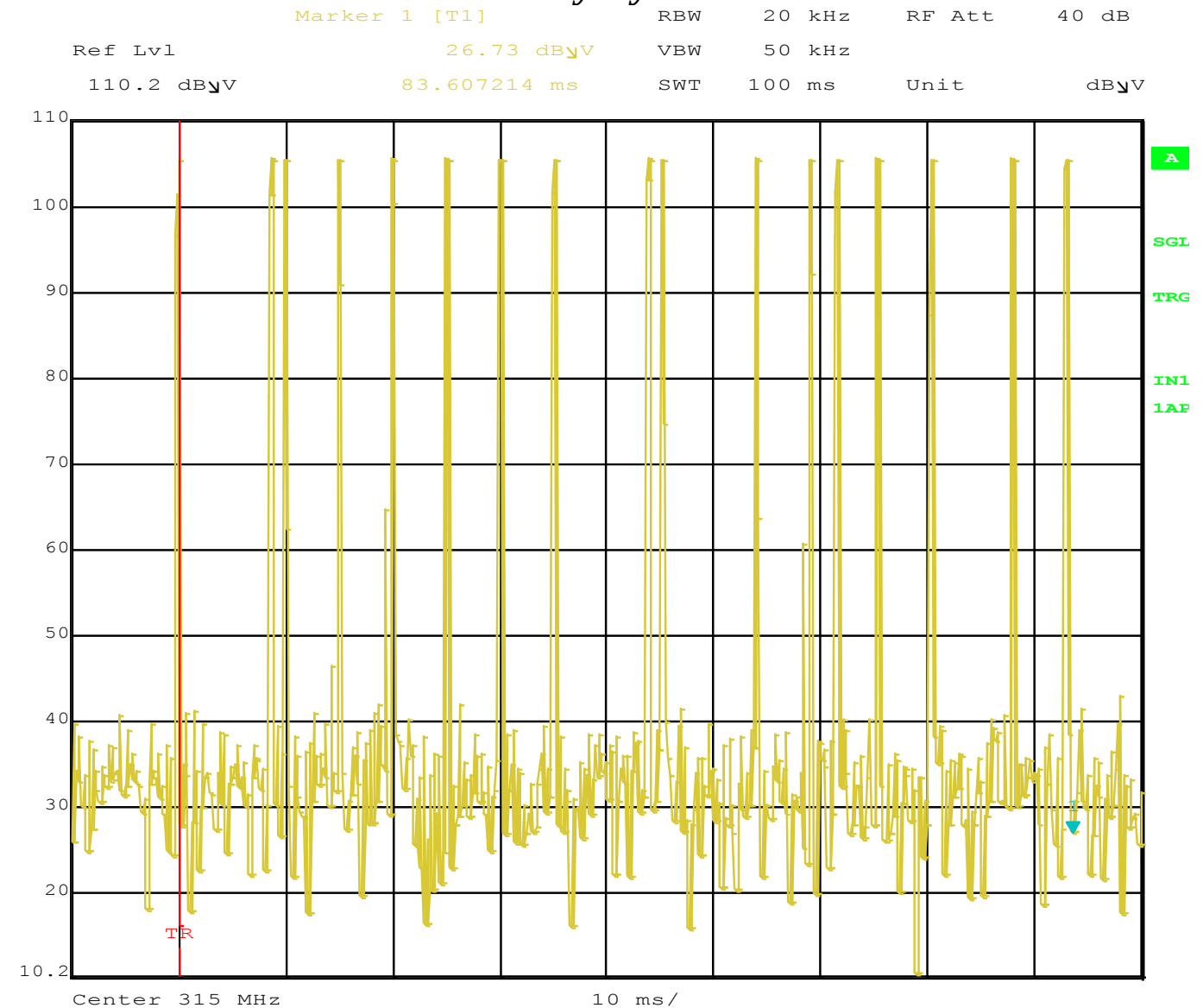
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Duty Cycle



Number of Pulses in Worst Case 100 mS = 17

Pulse On Time = $592.386774 \mu\text{S} \times 17 = 10.07057516 \text{ mS}$

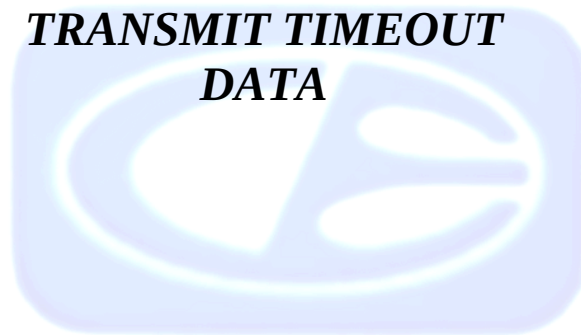
Duty Cycle = $10.07057516 \text{ mS} / 100 \text{ mS} = 0.1007$

The Peak to Average Duty Cycle Correction = -19.93dB

Max Duty Cycle Correction Factor = -20.00dB



TRANSMIT TIMEOUT DATA



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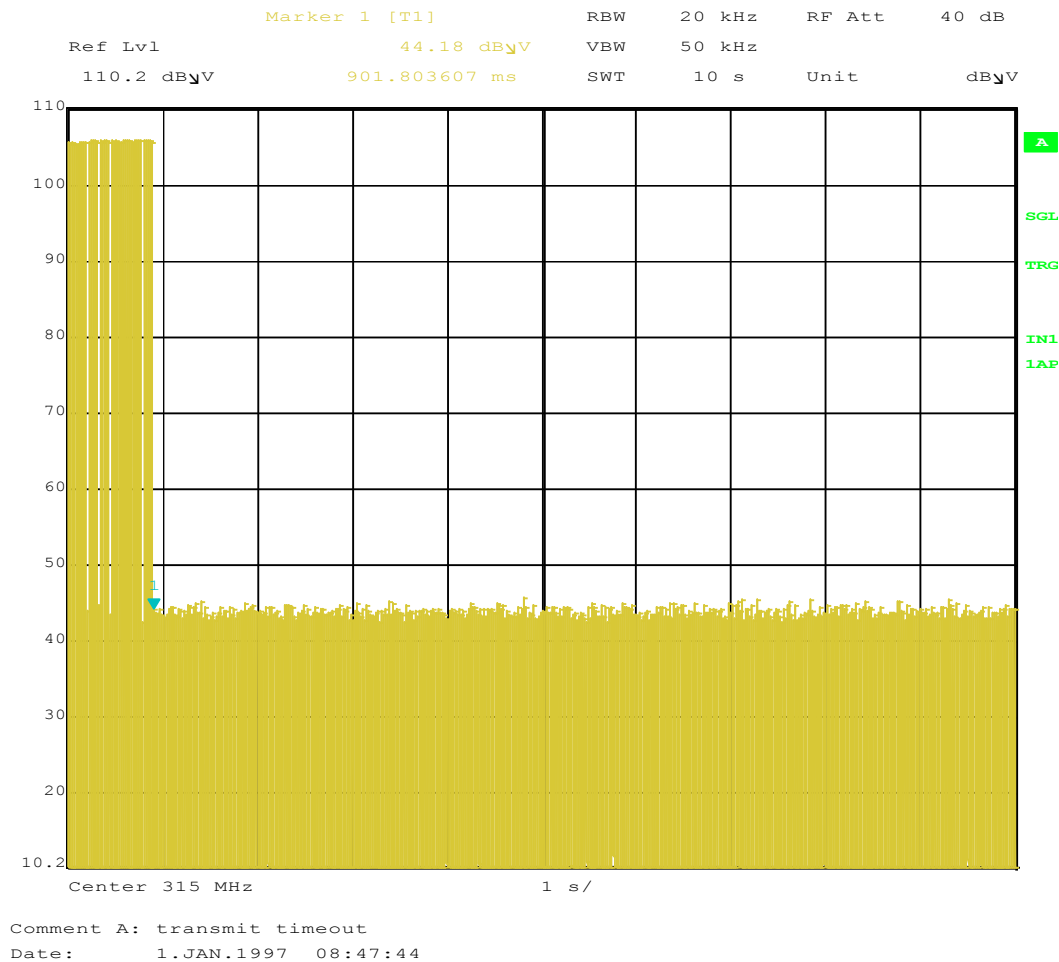
TRANSMIT TIMEOUT

FCC 15.231

Company: Nortek
 EUT: Emergency Transmitter
 Model: DXS-F1

Date: 12/31/2015
 Lab: P
 Tested By: Torey Oliver

Freq. (MHz)	Time (S)	Limit (S)	Margin	Comments
315.00	0.906	5	-4.094	



**15.231
-20 dB BANDWIDTH
DATA**



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Agoura Division
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-20dB BANDWIDTH

FCC 15.231

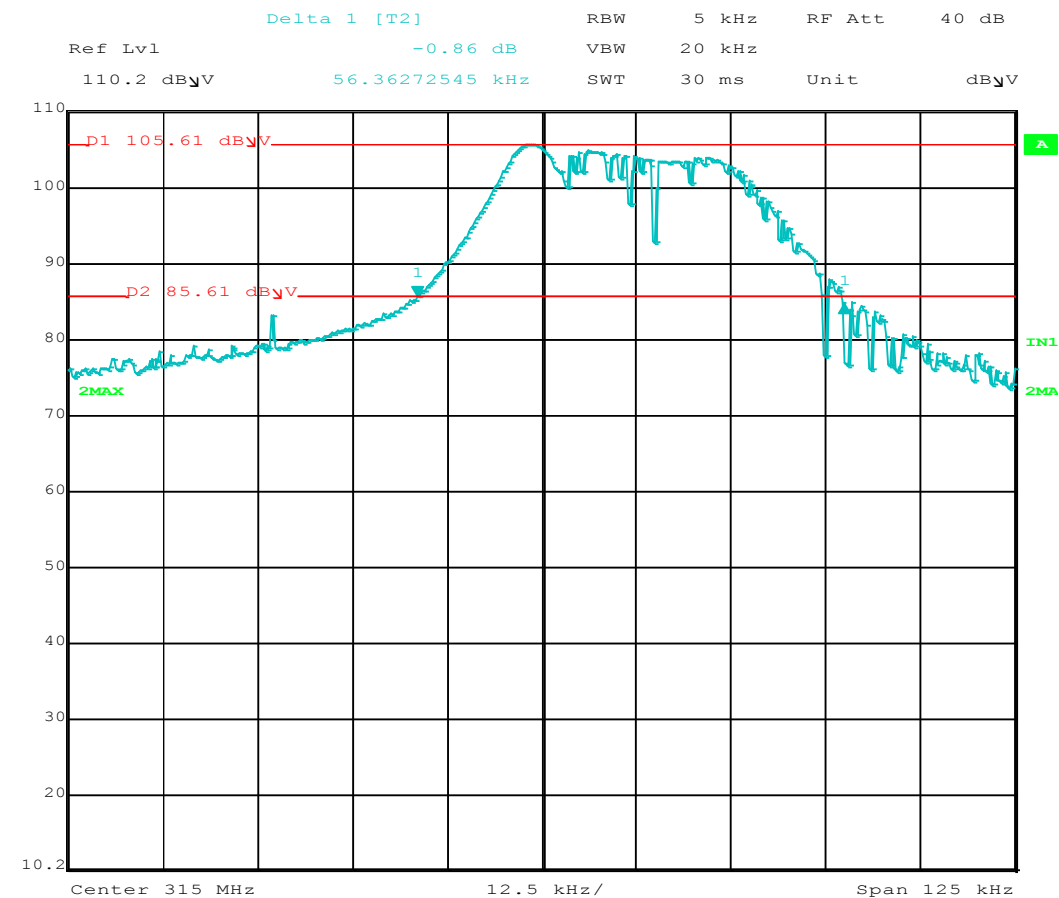
Company: Nortek
EUT: Emergency Transmitter
Model: DXS-F1
Duty Cycle Correction Factor:

-19.94

Date: 12/31/2015
Lab: P
Tested By: Torey Oliver

Compatible Electronics, Inc. FAC-3

Freq. (MHz)	Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
315.00	56.36	787.50	-731.14



Comment A: occupied bandwidth
Date: 1.JAN.1997 08:33:45



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***RSS 210
OCCUPIED BANDWIDTH
DATA***



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OCCUPIED BANDWIDTH

FCC 15.231

Company: Nortek
 EUT: Emergency Transmitter
 Model: DXS-F1
 Duty Cycle Correction Factor: -19.94

Date: 12/31/2015
 Lab: P
 Tested By: Torey Oliver

Compatible Electronics, Inc. FAC-3

Freq. (MHz)	Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
315.00	49.34	787.50	-738.16

