



MET Laboratories, Inc. *Safety Certification - EMI - Telecom Environmental Simulation*

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January 5, 2018

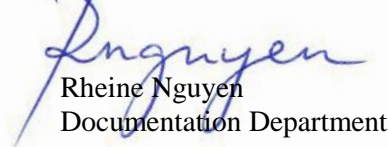
Dakota Ultrasonics
1500 Green Hills Road #107
Scotts Valley, CA 95096

Dear William Holt,

Enclosed is the EMC test report for compliance testing of the Dakota Ultrasonics, DFX-7 USB, tested to the requirements of EN 61326-1: 2013.

Thank you for using the services of MET Laboratories, Inc. If you have any questions regarding these results or if MET can be of further service to you, please feel free to contact me.

Sincerely yours,
MET LABORATORIES, INC.



Rheine Nguyen
Documentation Department

Reference: (\Dakota Ultrasonics\EMCS96296-EURO Rev.1)

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Electromagnetic Compatibility Test Report

for the

**Dakota Ultrasonics
DFX-7 USB**

Tested under

EN 61326-1: 2013

**MET Report: EMCS96296-EURO Rev.1
January 5, 2018**

**Prepared for:
Dakota Ultrasonics
1500 Green Hills Road #107
Scotts Valley, CA 95096**



**Prepared by:
MET Laboratories, Inc.
3162 Belick Street
Santa Clara, CA 95054**



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**Dakota Ultrasonics
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Tested under

EN 61326-1: 2013

MET Report: EMCS96296-EURO Rev.1

Juan Velasquez
Project Engineer, Electromagnetic Compatibility Lab

Rheine Nguyen
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the applicable limits. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements per Test Summary (Section 1.0).

John Mason
Director, Electromagnetic Compatibility Lab



Report Status Sheet

Revision	Report Date	Reason for Revision
Ø	December 13, 2017	Initial Issue.
1	January 5, 2018	Added Model Covered on page 2.



Table of Contents

1.0 Testing Summary	1
2.0 Equipment Configuration	2
2.1 Overview.....	2
2.1.1 Test Site	2
2.1.2 Measurement Uncertainty.....	2
2.2 Detailed EUT Description and Test Setup	3
2.2.1 Description of Test Sample	3
2.2.2 Photograph(s) of Test Sample	3
2.2.3 Block Diagram.....	7
2.2.4 Equipment Configuration	9
2.2.5 Support Equipment	9
2.2.6 Ports and Cabling Information.....	9
2.2.7 Mode of Operation & Method of Monitoring EUT Operation	10
2.2.8 Overall Immunity Performance Criteria	10
2.2.9 Modifications to EUT	11
2.2.10 Disposition of EUT.....	11
3.0 Electromagnetic Compatibility Emission Criteria	12
3.1 Radiated Emission: Limits of Electromagnetic Radiation Disturbance	12
4.0 Electromagnetic Compatibility Immunity Criteria	17
4.1 Electrostatic Discharge	17
4.2 Radio Frequency Electromagnetic Field.....	25
5.0 CE Conformity Marketing	30
6.0 Test Plan	32



List of Tables

Table 1: Executive Summary of EN 61326-1 Compliance Testing	1
Table 2: Uncertainty Calculations Summary	2
Table 3: Equipment Configuration	9
Table 4: Support Equipment	9
Table 5: Ports and Cabling Information	9
Table 6: Performance Criteria Summary.....	11
Table 7. Radiated Emission Limits for Class B Equipment from EN 61326-1.....	12
Table 8. RE - (30 MHz – 1 GHz) Test Results	14
Table 9. RE Test Equipment List.....	16
Table 10. ESD Test Results	18
Table 11. ESD Test Equipment List.....	24
Table 12. RI Test Summary	26
Table 13. RI Test Results	26
Table 14. RI Test Equipment List	29

List of Figures

Figure 1. Block Diagram of Test Configuration (Thickness).....	7
Figure 2. Block Diagram of Test Configuration (Flaw).....	8

List of Photographs

Photograph 1. Front View of DFX-7 USB.....	3
Photograph 2. Bottom View of DFX-7 USB	4
Photograph 3. Left View of DFX-7 USB	5
Photograph 4. Right View of DFX-7 USB	5
Photograph 5. Top View of DFX-7 USB	6
Photograph 6. RE Test Setup	15
Photograph 7. ESD Test Points – Front of EUT	19
Photograph 8. ESD Test Points – Bottom of EUT	20
Photograph 9. ESD Test Points – Left of EUT	21
Photograph 10. ESD Test Points – Right of EUT	21
Photograph 11. ESD Test Points – Right of EUT	22
Photograph 12. ESD Test Setup.....	23
Photograph 13. RI (80 MHz – 1 GHz) Test Setup	27
Photograph 14. RI (Above 1 GHz) Test Setup.....	28

List of Terms and Abbreviations

AC	Alternating Current	FOKI	Frequency of Key Interest
μF	microfarad	GRP	Ground Reference Plane
μH	microhenry	H	Magnetic Field
μs	microseconds	HCP	Horizontal Coupling Plane
ACF	Antenna Correction Factor	Hz	Hertz
AV	Average	IEC	International Electrotechnical Commission
Cal	Calibration	kHz	kilohertz
CE	Conducted Emissions	kPa	kilopascal
CI	Conducted Immunity	kV	kilovolt
CISPR	Comite International Special des Perturbations Radioelectriques (International Special Committee on Radio Interference)	LISN	Line Impedance Stabilization Network
d	Measurement Distance	MHz	Megahertz
dB	Decibels	MI	Magnetic Immunity
dBμA	Decibels above one microamp	PRF	Pulse Repetition Frequency
dBμA/m	Decibels above one microamp per meter	QP	Quasi Peak
dBμV	Decibels above one microvolt	RE	Radiated Emissions
dBμV/m	Decibels above one microvolt per meter	RF	Radio Frequency
DC	Direct Current	RI	Radiated Immunity
E	Electric Field	RMS	Root-Mean-Square
EFT/B	Electrical Fast Transient/Burst	V/m	Volts per meter
ESD	Electrostatic Discharge	VCP	Vertical Coupling Plane
EUT	Equipment Under Test	VDI	Voltage Dips Interruptions
f	Frequency	VF	Voltage Fluctuations



1.0 Testing Summary

The following tests specified by EN 61326-1 were performed with the following results:

Test Method	Test Description	Compliance
EN 55011: 2009 +A1: 2010	Conducted Emissions - Voltage - Class B	NA
EN 55011: 2009 +A1: 2010	Radiated Emissions - Class B	Compliant
EN 61000-3-2: 2006 +A2:2009	Harmonic Current Emissions	NA
EN 61000-3-3: 2008	Voltage Fluctuations/Flicker	NA
EN 61000-4-2: 2009	Electrostatic Discharge Immunity	Compliant
EN 61000-4-3: 2006 +A1:2008 +A2:2010	Radiated Electromagnetic Field Immunity	Compliant
EN 61000-4-4: 2012	Electrical Fast Transient/Burst Immunity	NA
EN 61000-4-5: 2006	Surge Immunity	NA
EN 61000-4-6: 2009	Conducted Radio-Frequency Immunity	NA
EN 61000-4-8: 2010	Magnetic Immunity	NA
EN 61000-4-11: 2004	Voltage Dips, Interruptions and Variations	NA

Table 1: Executive Summary of EN 61326-1 Compliance Testing



2.0 Equipment Configuration

2.1 Overview

MET Laboratories, Inc. was contracted by Dakota Ultrasonics to perform testing on the DFX-7 USB, under Dakota Ultrasonics, Quote: 1DAK0504R2.

This document describes the test setups, test methods, required test equipment, and the test limit used to perform compliance testing of the DFX-7 USB with the requirements of EN 61326-1: 2013, Electrical Equipment for Measurement, Control and Laboratory Use. .

The results obtained relate only to the item(s) tested.

Model(s) Tested:	DFX-7 PLUS USB
Model(s) Covered:	DFX-7 USB DFX-7 PLUS USB CMX COLOR USB
Primary Power as Tested:	3 x AA 1.5 V
Equipment Emissions Class:	B
Evaluated by:	Juan Velasquez
Report Date:	January 5, 2018

2.1.1. Test Site

All testing was performed at MET Laboratories, Inc., 3162 Belick St., Santa Clara, CA 95054. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

MET Laboratories is an ISO/IEC 17025 accredited site by A2LA, California #0591.02.

2.1.2. Measurement Uncertainty

Test Method	Typical Expanded Uncertainty (dB)	K	Confidence Level
Radiated Emissions, (30 MHz – 1 GHz)	±3.24	2	95%

Table 2: Uncertainty Calculations Summary

2.2. Detailed EUT Description and Test Setup

2.2.1. Description of Test Sample

The DFX-7 USB, Equipment Under Test (EUT), is used to measure metal thickness and also look for flaws.

2.2.2. Photograph(s) of Test Sample



Photograph 1. Front View of DFX-7 USB



Photograph 2. Bottom View of DFX-7 USB



Photograph 3. Left View of DFX-7 USB



Photograph 4. Right View of DFX-7 USB



Photograph 5. Top View of DFX-7 USB

2.2.3. Block Diagram

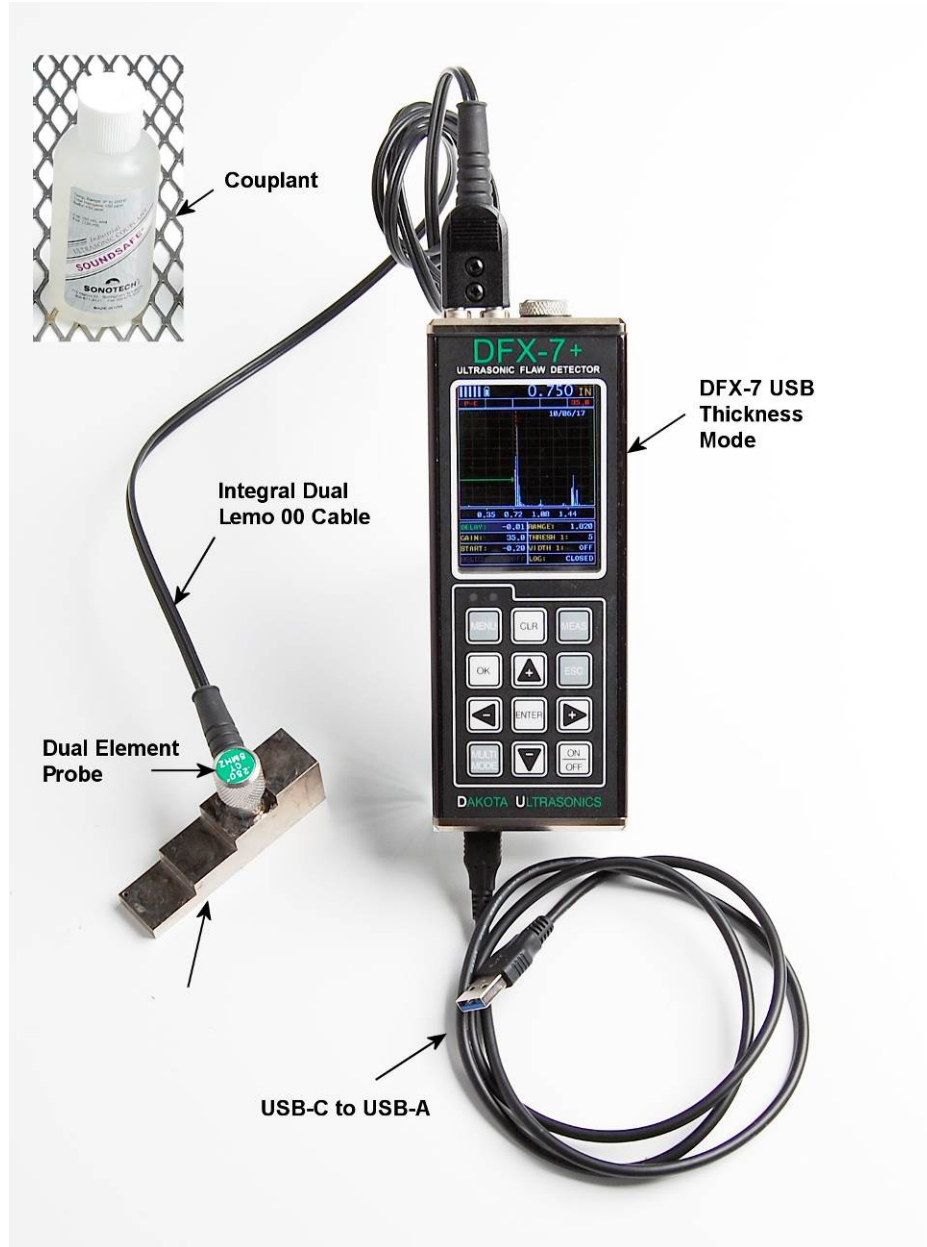


Figure 1. Block Diagram of Test Configuration (Thickness)

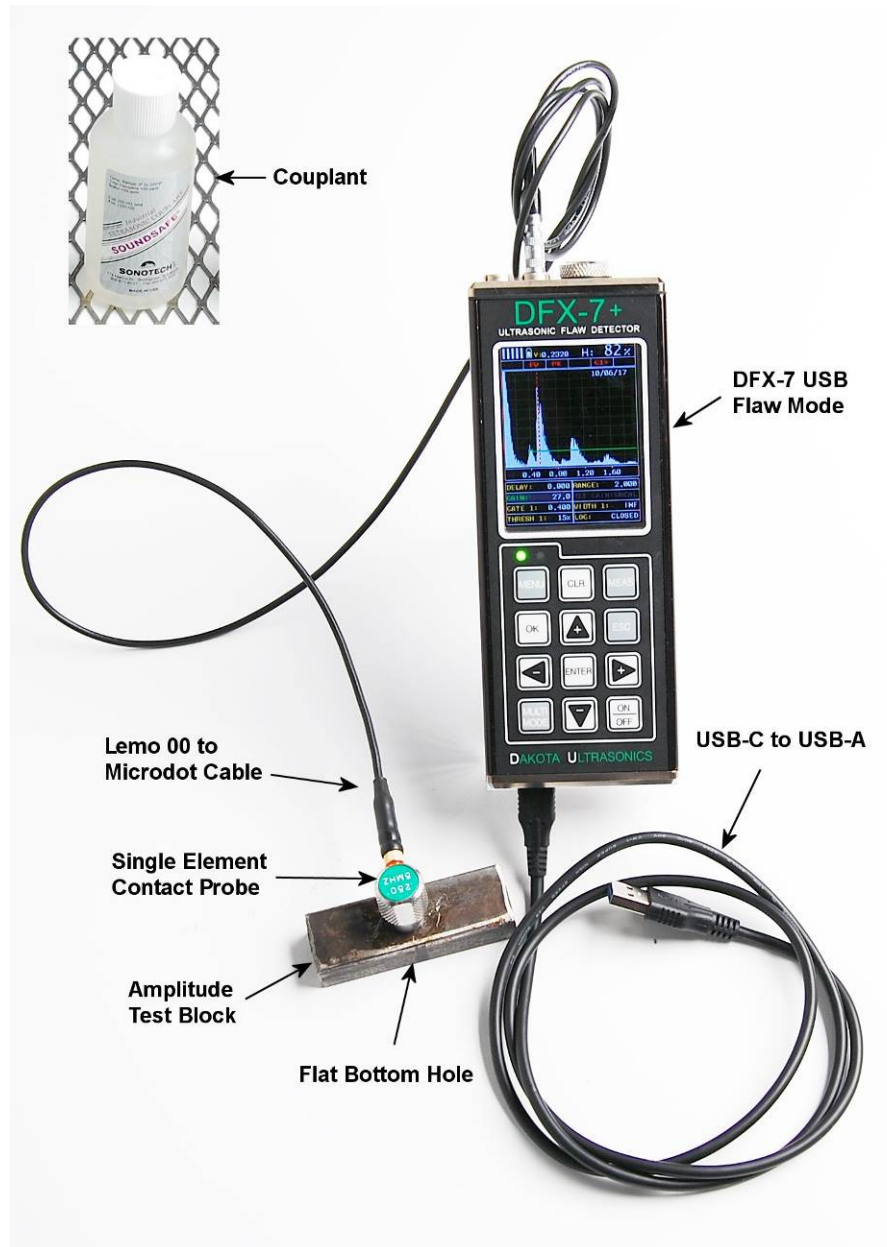


Figure 2. Block Diagram of Test Configuration (Flow)



2.2.4. Equipment Configuration

The EUT was setup as outlined in Figure 1 and Figure 2. All equipment incorporated as part of the EUT is included in the following list.

Ref. ID	Name / Description	Model Number	Part Number	Serial Number	Rev. #
1	DFX-7-USB	Z-221-0003	NA	80101	NA
2	DFX-7-USB	Z-221-0003	NA	80102	NA

Table 3. Equipment Configuration

2.2.5. Support Equipment

Support equipment necessary for the operation and testing of the EUT is included in the following list.

Name / Description	Manufacturer	Model Number	*Customer Supplied Calibration Data
Dual Element Trans	Dakota	T-102-2900	NA
Single Elements Trans	Dakota	T-4023-2845	NA
Test Block Flaw	NA	None	NA
Test Block Thickness	NA	None	NA

Table 4. Support Equipment

* All 'customer supplied' support equipment will include the equipments calibration data. This column will be marked as either not applicable, not available, or will contain the calibration date supplied by the customer.

2.2.6. Ports and Cabling Information

Port name on EUT	Cable Description or reason for no cable	Qty.	Length as tested (m)	Max Length (m)	Shielded (Y/N)
Transducer	Integral to Trans	1	1	3	Y
Transducer	Lemo Microdot	1	1	3	Y
USB C	USB C to USB A	2	1	3	Y

Table 5. Ports and Cabling Information

2.2.7. Mode of Operation & Method of Monitoring EUT Operation

The EUT was operated in the following manner:

1. Amplitude of Signal – For sizing flaws, unit must report “screen height” of echo reflection.
2. Time of Flight – For thickness, measurement unit must measure transit time.

Performance of the EUT was monitored in the following manner:

1. Amplitude Test – Signal height is adjusted to 80% screen height. Readout should remain at $80\% \pm 1$ dB. (89% to 71.3%)
2. T.O.F Test – Transducer is mounted on ½” block – thickness reading should remain stable ± 0.002 inch.

2.2.8. Overall Immunity Performance Criteria

In accordance with EN 61326-1, the EUT was evaluated according to the following performance criteria where specified:

EN 61326-1 Sub-clause

6.4.1 General

The general principles (performance criteria) for the evaluation of the immunity test results are the following.

6.4.2 Performance Criterion A

The equipment shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

6.4.3 Performance Criterion B

The equipment shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

6.4.4 Performance Criterion C

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

Reference	Descriptive Name	EN 61326-1: 2013, Table A.1 Performance Criteria Required	EN 61326-1: 2013, Table A.1 Performance Criteria Achieved
EN 61000-4-2: 2009	Electrostatic Discharge Immunity	B	A
EN 61000-4-3: 2006 +A1:2008 +A2:2010	Radiated Electromagnetic Field Immunity	A	A

Table 6. Performance Criteria Summary

2.2.9. Modifications to EUT

No modifications were made to the EUT.

2.2.10. Disposition of EUT

The test sample including all support equipment (if any), submitted to the Electro-Magnetic Compatibility Lab for testing was returned to Dakota Ultrasonics upon completion of testing.

3.0 Electromagnetic Compatibility Emission Criteria

3.1. Radiated Emission: Limits of Electromagnetic Radiation Disturbance

3.1.1. Test Method, Test Requirements, and Test Procedures

3.1.1.1. Test Method

EN 55011: 2009 +A1: 2010

Industrial, scientific and medical (ISM) radio-frequency equipment – Electromagnetic disturbance characteristics – Limits and Methods of Measurement

3.1.1.2. Test Requirements

In accordance with EN 61326-1, Section 7.2 Emission Limits, the EUT shall meet the Class B radiated emission limits shown in Table 7.

Frequency Band (MHz)	Class B Quasi-Peak limits 10 m measurement distance (dB μ V/m)
30 to 230	30
230 to 1000	37

Table 7. Radiated Emission Limits for Class B Equipment from EN 61326-1

3.1.1.3. Test Procedure

The EUT was placed on a wooden table 80 cm above a GRP located inside a semi-anechoic chamber. The method of testing, test conditions, and test procedures of CISPR 11: 2009 were used. An antenna was located 3 m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. Unless otherwise specified, measurements were made using a quasi-peak detector with a 120 kHz bandwidth.

Emissions measured at 3 m were normalized using an inverse proportionality factor of 20dB per decade for comparison to the 10 m limit. The physical size of the EUT was taken into account as to avoid near-field effects, which could occur near 30 MHz.

3.1.2. Test Results, Test Data, and Test Setup

3.1.2.1. Test Result

The EUT was **compliant** with the Class B requirement(s) of this section. Measured emissions were below applicable limits.

Environmental Conditions for Radiated Emission	
Ambient Temperature:	22.5°C
Relative Humidity:	41%
Atmospheric Pressure:	100 kPa

Test Engineer(s): Juan Velasquez

Test Date(s): 10/09/2017

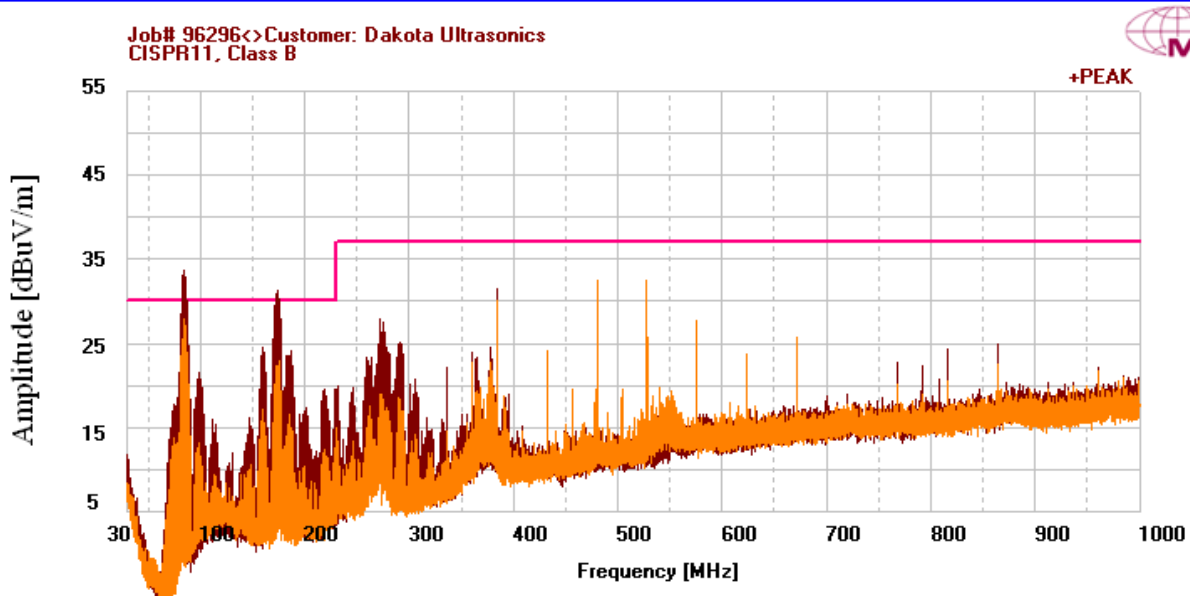
3.1.2.2. Test Data

Frequency (MHz)	Antenna Polarity	EUT Azimuth (Degrees)	Antenna Height (cm)	Uncorrected Amplitude (dBuV)	ACF (dB/m)	Pre Amp Gain (dB)	CBL (dB)	DCF (dB)	Corrected Amplitude (dBuV)	Limit (dBuV)	Margin (dB)
83.64	V	237	339.76	18.3	8.328	0	1.615	-10.46	17.783	30	-12.217
*83.88	H	110	383.88	28.9	8.088	0	1.619	-10.46	28.147	30	-1.853
174.4	H	86	198.17	22.8	9.8	0	2.35	-10.46	24.49	30	-5.51
384	H	157	100	22.8	16.04	0	3.533	-10.46	31.913	37	-5.087
384	V	274	129.35	22.3	15.62	0	3.533	-10.46	30.993	37	-6.007
480	V	320	106	20.5	17.7	0	3.928	-10.46	31.668	37	-5.332
528	V	7	100	19.8	18.08	0	4.155	-10.46	31.575	37	-5.425


Table 8. RE - (30 MHz – 1 GHz) Test Results

Notes: * - At this frequency, the measured electric-field strength exhibits a margin of compliance that is less than 3 dB below the specification limit. We recommend that every emission measured, have at least a 3 dB margin to allow for deviations in the emission characteristics that may occur during the production process.

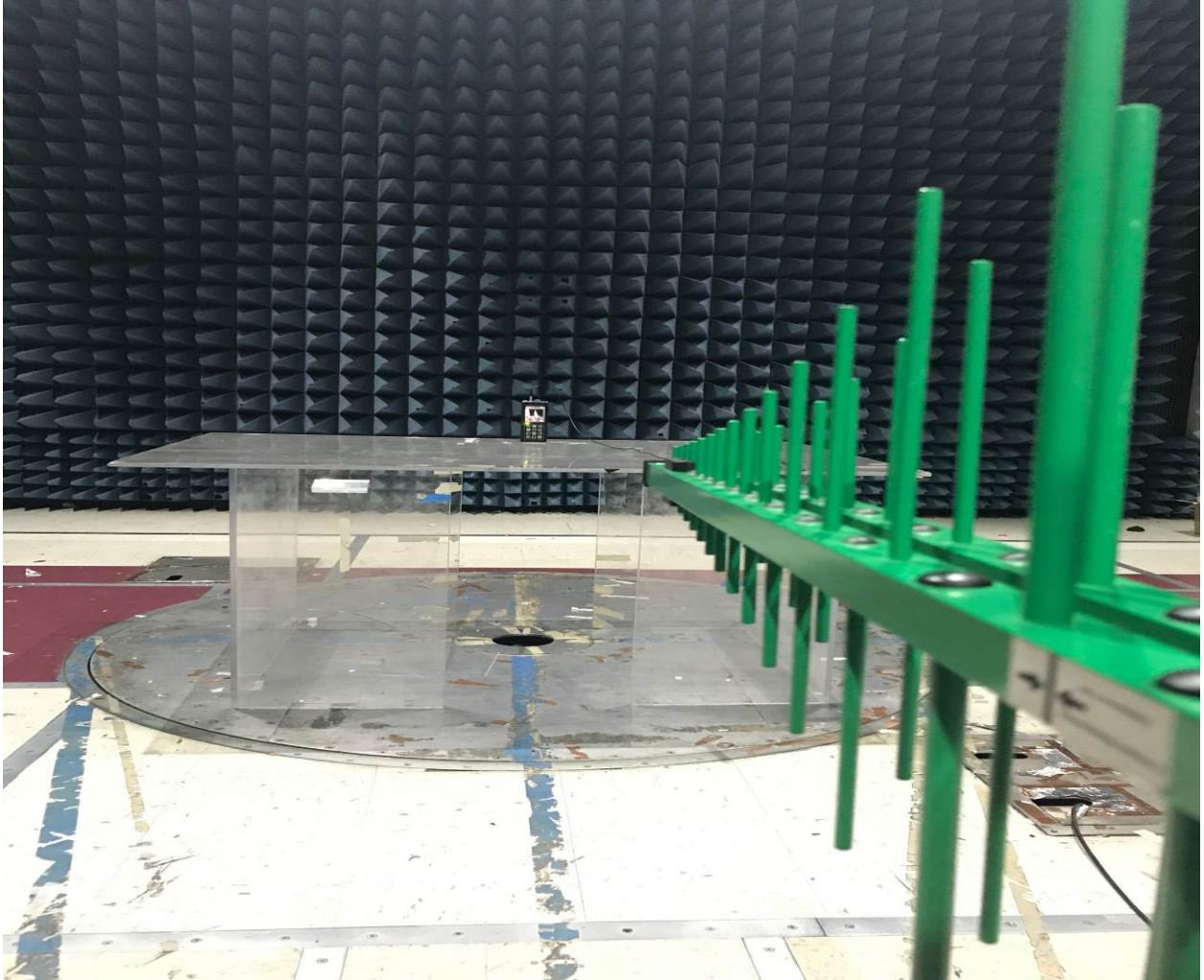
The EUT was tested at 3 m. The data has been corrected for comparison with the 10 m limit using the formula: $20\log(3\text{ m}/10\text{ m})$ as expressed in the 'Distance Correction' column.



Plot 1. RE - (30 MHz – 1 GHz), Plot

 = Vertical Polarization
 = Horizontal Polarization

3.1.2.3. Test Setup Photograph



Photograph 6. RE Test Setup



3.1.2.4. Test Setup Photograph

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2005.

Test Name: Radiated Emissions Electric Field			Test Date(s): 10/09/2017		
MET Asset #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1S2399	Turntable Controller	SUNOL SCIENCE	SC99V	Not Required	Not Required
1S3928	EMI Tester Receiver	Rohde & Schwarz	ESR26	10/28/2016	10/28/2017
1S2482	5 Meter Chamber (NSA)	Panashield	5 Meter Semi-Anechoic Chamber	Not Required	Not Required
1S2600	Bilog Antenna	Teseq	CBL6112D	11/28/2016	11/28/2018

Table 9. RE Test Equipment List

4.0 Electromagnetic Compatibility Immunity Criteria

4.1. Electrostatic Discharge

4.1.1. Test Method, Test Requirements, and Test Procedures

4.1.1.1. Test Method

EN 61000-4-2: 2009
Electromagnetic Discharge Immunity Test

4.1.1.2. Test Requirements

EN 61326-1, Section 6.2, Immunity Requirements

Per EN 61000-4-2, the EUT shall be tested with air discharges of up to ± 8 kV applied to non-conductive surfaces, and to contact discharges of up to ± 4 kV, applied to conductive surfaces of the EUT, HCP and the VCP.

4.1.1.3. Test Procedure

The EUT and cables were isolated from the ground reference plane by an insulating support approximately **0.5 mm** thick. Air discharges of up to ± 8 kV were applied to non-conductive surfaces. Contact discharges of up to ± 4 kV were applied to conductive surfaces of the EUT and the HCP and VCP. Discharges were applied at least ten times to each selected discharge point at each polarity with a minimum time between discharges of 1s. The functionality of the EUT was determined during and after each discharge.



4.1.2. Test Results, Test Data, and Test Setup

4.1.2.1. Test Results

The EUT was **compliant** with the requirement(s) of this section. Anomalies observed. See data below.

Environmental Conditions for Electrostatic Discharge	
Ambient Temperature:	19.8°C
Relative Humidity:	64%
Atmospheric Pressure:	101.1 kPa

Test Engineer(s): Juan Velasquez

Test Date(s): 11/22/2017

4.1.2.2. Test Data

Discharge Type	Test Voltage (±kV)	Results					Anomalies
		Front	Top	Rear	Left	Right	
HCP	4	Pass	Pass	Pass	Pass	Pass	None
VCP	4	Pass	Pass	Pass	Pass	Pass	None
Contact Discharge	2	Pass	Pass	Pass	Pass	Pass	None
	4	Pass	Pass	Pass	Pass	Pass	See Note
Air Discharge	2	Pass	Pass	Pass	Pass	Pass	None
	4	Pass	Pass	Pass	Pass	Pass	None
	6	Pass	Pass	Pass	Pass	Pass	See Note
	8	Pass	Pass	Pass	Pass	Pass	See Note

Note: Screen Flickers when discharge is applied. The battery icon changes from battery life to charging icon.

Table 10. ESD Test Results

4.1.2.3. ESD Test Point Photographs



Photograph 7. ESD Test Points – Front of EUT

X = Contact Discharge Test Points

O = Air Discharge Test Points



Photograph 8. ESD Test Points – Bottom of EUT

X = Contact Discharge Test Points



Photograph 9. ESD Test Points – Left of EUT



Photograph 10. ESD Test Points – Right of EUT

X = Contact Discharge Test Points



Photograph 11. ESD Test Points – Right of EUT

X = Contact Discharge Test Points

4.1.2.4. Test Setup Photograph



Photograph 12. ESD Test Setup



4.1.2.5. Test Equipment List

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2005.

Test Name: Electrostatic Discharge			Test Date(s): 11/22/2017		
MET Asset #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1S2470	Electrostatic Discharge Gun & Simulator	NoiseKen	TC-815R & ESS-2000	11/07/2017	11/07/2018
Test Area 2	Ground Plane	MET Labs, Inc.	N/A	Not Required	Not Required

Table 11. ESD Test Equipment List

4.2. Radio Frequency Electromagnetic Field

4.2.1. Test Method, Test Requirements, and Test Procedures

4.2.1.1. Test Method

EN 61000-4-3: 2006 +A1:2008 +A2:2010
Radiated, Radio-Frequency, Electromagnetic Field Immunity Test

4.2.1.2. Test Requirements

EN 61326-1, Section 6.2, Immunity Requirements
The EUT must not be susceptible to a radiated electromagnetic field of 3 V/m, 80% amplitude modulated 1 kHz, in the frequency range 80 MHz to 2.7 GHz.

4.2.1.3. Test Procedure

Testing was performed in a semi-anechoic chamber as recommended by IEC 61000-4-3. The radiating antenna was placed 2.2 m in front of the EUT Support equipment for the EUT was located outside of the test room. The amplitude, frequency, and dwell time of the radiated interference was controlled by an automated, computer-controlled system.

The signal source was stepped through the applicable frequency range at a rate no faster than 1% of the fundamental. The signal was amplitude modulated 80% over the frequency range 80 MHz to 2.7 GHz at a level of 3 V/m. The dwell time was set at 1 s. Field presence was monitored during testing via a field probe placed in close proximity to the EUT. Throughout testing, the EUT was closely monitored for signs of susceptibility. The test was performed with the antennae oriented in both a horizontal and vertical polarization.



4.2.2. Test Results, Test Data, and Test Setup

4.2.2.1. Test Result

The EUT was **compliant** with the requirement(s) of this section. No anomalies observed.

Environmental Conditions for Radio Frequency Electromagnetic Field	
Ambient Temperature:	19.1°C
Relative Humidity:	49%
Atmospheric Pressure:	102.1 kPa

Test Engineer(s): Juan Velasquez

Test Date(s): 11/29/2017

4.2.2.2. Test Data

Port	Test Description	Specification	Test Level Required	Test Level Achieved	Performance Criteria Achieved	Compliance
Enclosure	RI	EN 61000-4-3: 2006 +A1:2008 +A2:2010	80-1000 MHz at 3 V/m	80-1000 MHz at 10 V/m	A	Compliant
Enclosure	RI		1400-2000 MHz at 3 V/m	1400-2000 MHz at 3 V/m	A	Compliant
Enclosure	RI		2000-2700 MHz at 1 V/m	2000-2700 MHz at 3 V/m	A	Compliant

Table 12. RI Test Summary

Start Frequency (MHz)	Stop Frequency (MHz)	Severity (V/m)	Polarity (H/V)	Modulation (Freq & Type)	Results			
					Front	Back	Left	Right
80	1000	10	V	1 kHz, 80% AM	Pass	Pass	Pass	Pass
80	1000	10	H	1 kHz, 80% AM	Pass	Pass	Pass	Pass
1400	2000	3	V	1 kHz, 80% AM	Pass	Pass	Pass	Pass
1400	2000	3	H	1 kHz, 80% AM	Pass	Pass	Pass	Pass
2000	2700	3	V	1 kHz, 80% AM	Pass	Pass	Pass	Pass
2000	2700	3	H	1 kHz, 80% AM	Pass	Pass	Pass	Pass

Table 13. RI Test Results

4.2.2.3. Test Setup Photograph



Photograph 13. RI (80 MHz – 1 GHz) Test Setup



Photograph 14. RI (Above 1 GHz) Test Setup



4.2.2.4. Test Equipment List

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2005.

Test Name: Radio Frequency Electromagnetic Field			Test Date(s): 11/29/2017		
MET Asset #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1S2576	Amplifier (80 - 1000 MHz)	Amplifier Research	500W1000A	See Note	See Note
1U0208	Signal Generator	Rohde & Schwarz	SMR20	05/01/2017	11/01/2018
1S3872	Amplifier	Amplifier Research	80/20S1G8	See Note	See Note
1S2264	Radiated Immunity Chamber	LINDGREN	N/A	Not Required	Not Required
1S2198	Horn Antenna	EMCO	3115	See Note	See Note
1S2401	Bilog Antenna	Schaffner	CBL6140A	See Note	See Note
1S2579	Isotropic Electric Field Probe	ETS-Lindgren	HI-6053	07/12/2017	07/12/2018
Note: Functionally tested equipment is verified using calibrated instrumentation at the time of testing.					

Table 14. RI Test Equipment List

5.0 CE Conformity Marketing

In order to place the CE marking on your product, it must meet all the requirements of all applicable directives.

The CE conformity marking shall consist of the initial "CE" taking the following form:



If the CE marking is reduced or enlarged, the proportions given in the above graduated drawing must be respected. The various components of the CE marking must have substantially the same vertical dimension, which may not be less than 5 mm.

Declaration of Conformity -

The Declaration must identify the manufacturer or its authorized representative established within the 15 nation European Union (EU). The Declaration must be signed by the party empowered to enter into commitments on behalf of the manufacturer or its authorized representative established within the EU.

User's Manual -

The User's Manual which accompanies the equipment must indicate the Directive(s) to which the CE Mark indicates compliance.

Disposition of Documents -

The technical documentation package and the Declaration of Conformity must be kept within the EU at the disposal of relevant national authorities for inspection. The information must be maintained for a period ending at least 10 years after the last product has been manufactured.

Internal Production Control -

The manufacturer shall take all measures necessary in order that the manufacturing process shall ensure compliance of the manufactured products with the technical documentation and with the requirements of the Directives that apply to them.

Example of a DoC:

DECLARATION OF CONFORMITY

Application of Council Directive(s): **EU/EMC Directive 2014/30/EU**

Standards to which Conformity is Declared: **EN 61326-1: 2013**

Class A/B

Declarer's Name: **Dakota Ultrasonics**

Declarer's Address: **1500 Green Hills Road #107, Scotts Valley, CA 95096**

Type of Equipment: **DFX-7 USB**

I the undersigned, hereby declare under my sole responsibility that the equipment specified above conforms to the above Directive(s) and Standard(s).

(Signature)

(Date)

(Printed name)

(Title)

To be completed by Dakota Ultrasonics personnel.



6.0 Test Plan

EMC Test Plan for the Dakota Ultrasonics, DFX-7 USB

(Please refer to the following section numbers of EN 61326-1 for more detailed information)

EN 61326

Subclause:

5.2.2 COMPOSITION OF EUT

Manufacturer:	Dakota Ultrasonics
Model:	DFX-7 USB
Serial Number:	1. 80101 2. 80102
Size (inches):	Height – 6.5 inches Width – 1.24 inches Length – 2.5 inches
Electrical Ratings:	3 x AA 1.5V
Installation:	Table Top
Description:	The EUT is used to measure metal thickness and also look for flaws.

5.2.3 ASSEMBLY of EUT

Ref. ID	Name / Description	Model Number	Part Number	Serial Number	Rev. #
1	DFX-7-USB	Z-221-0003	NA	80101	NA
2	DFX-7-USB	Z-221-0003	NA	80102	NA

5.2.4 I/O PORTS

Port name on EUT	Cable Description or reason for no cable	Qty.	Length as tested (m)	Max Length (m)	Shielded (Y/N)
Transducer	Integral to Trans	1	1	3	Y
Transducer	Lemo Microdot	1	1	3	Y
USB C	USB C to USB A	2	1	3	Y



5.2.5 AUXILLARY EQUIPMENT

Name / Description	Manufacturer	Model Number	Customer Supplied Calibration Data
Dual Element Trans	Dakota	T-102-2900	NA
Single Elements Trans	Dakota	T-4023-2845	NA
Test Block Flaw	NA	None	NA
Test Block Thickness	NA	None	NA

5.2.6 CABLING AND EARTHING

None – Portable test and measurement equipment

5.3.1 OPERATION MODES

1. Amplitude of Signal – For sizing flaws, unit must report “screen height” of echo reflection.
2. Time of Flight – For thickness, measurement unit must measure transit time.

5.3.2 ENVIRONMENTAL CONDITIONS

Operating Temperature 14 to 140 °F

5.3.3 EUT SOFTWARE DURING TEST

NA

5.4 TEST DESCRIPTION

Tests shall be performed as per EN 61326-1, Table 1

Is the product Class A or Class B in nature (Commercial or Residential)? Class B

Is the product used in Industrial locations? Yes

Is the product used in Controlled Electromagnetic environments (i.e. MRI areas)? No

Is the product battery operated Portable T&M equipment? Yes

Emissions tests shall be performed as per: Class B (residential equipment)

Immunity tests shall be performed as per:

EN 61326-1: 2013, Table A.1 – Immunity test requirements for portable test and measurement equipment