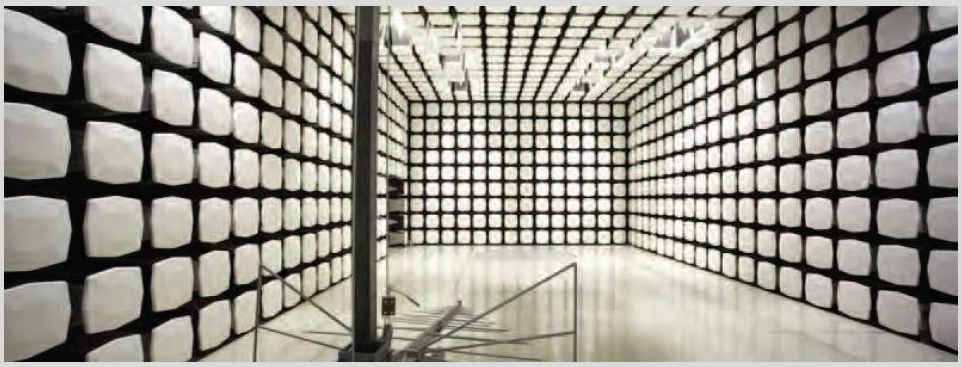
Canary Medical

CTE Implant

FCC 95I:2020

MedRadio

Report: CAAL0012.1, Issue Date: October 14, 2020



NVLAP LAB CODE: 200676-0

CERTIFICATE OF TEST

Last Date of Test: October 12, 2020
Canary Medical
EUT: CTE Implant

Radio Equipment Testing

Standards

Specification	Method
FCC 95I:2020	ANSI C63.26:2015, ANSI C63.4:2014

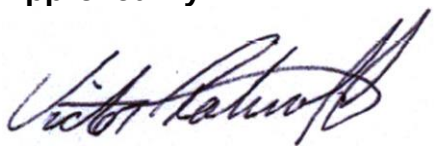
Results

Method Clause	Test Description	Applied	Results	Comments
ANSI C63.26 5.4.3	Emission Bandwidth	Yes	Pass	
FCC 95.2579(a)(1)	Emission Mask	Yes	Pass	
ANSI C63.26 5.2.3.3	Duty Cycle Characterization	Yes	Pass	
ANSI C63.26 5.2.3.3	Conducted Output Power	Yes	Pass	
ANSI C63.26 5.6	Frequency Stability	Yes	Pass	
ANSI C63.26 5.5.4	Spurious Radiated Emissions	Yes	Pass	
ANSI C63.26 5.7	Spurious Conducted Emissions	Yes	Pass	
ANSI C63.26 5.2.3.3, 5.2.7	Radiated Power (EIRP)	Yes	Pass	

Deviations From Test Standards

None

Approved By:



Victor Ratinoff, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

REVISION HISTORY

Revision Number	Description	Date (yyyy-mm-dd)	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Element to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

European Union

European Commission – Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIT / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

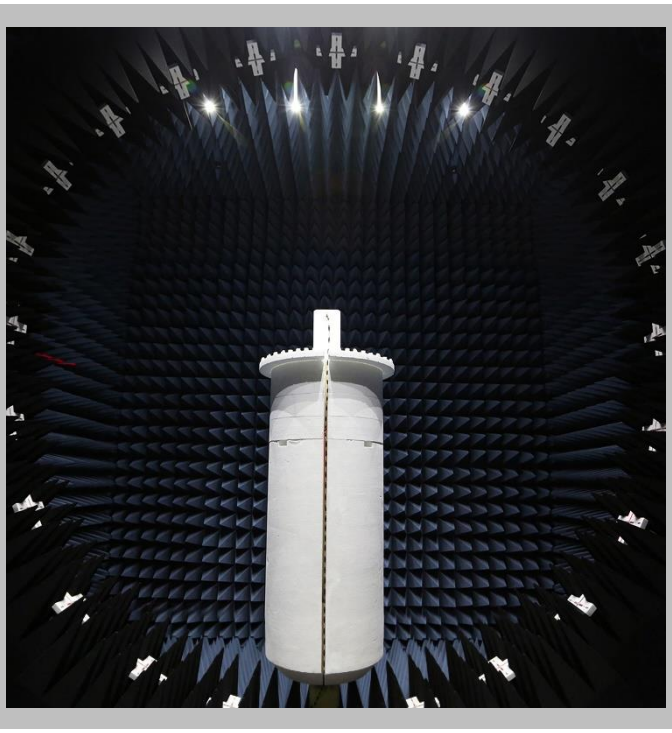
MIC – Recognized by MIC as a CAB for the acceptance of test data.

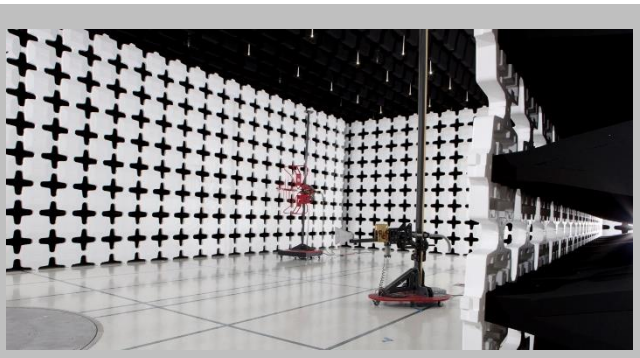
SCOPE

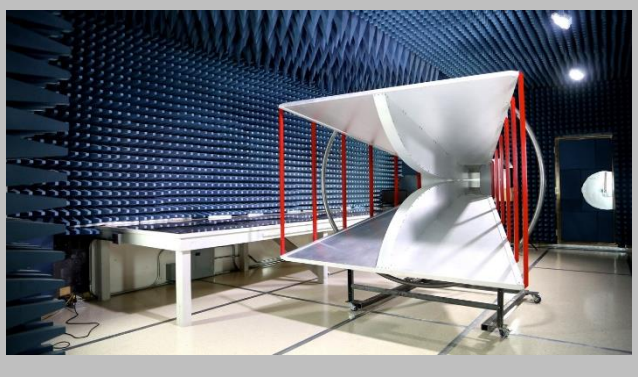
For details on the Scopes of our Accreditations, please visit:
https://www.nwemc.com/emc-testing-accreditations

FACILITIES

California	Minnesota	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP				
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada				
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1
BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA				
US0158	US0175	US0017	US0191	US0157







MEASUREMENT UNCERTAINTY

element
TMU.2015.07.10

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

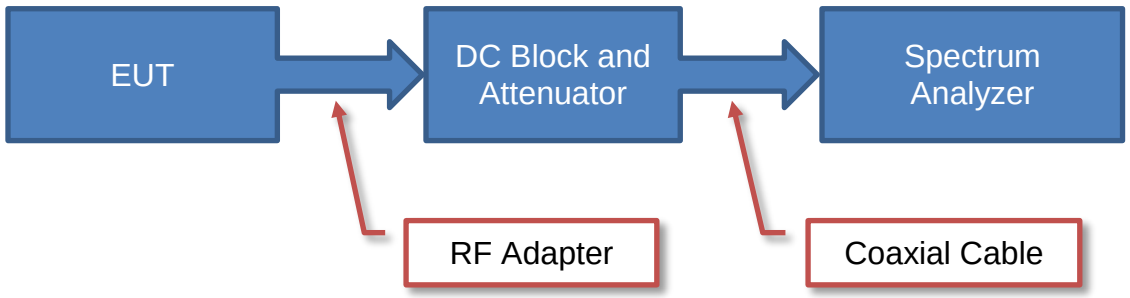
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

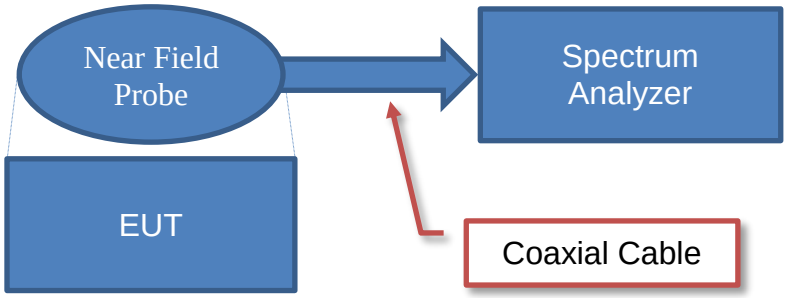
Test	+ MU	- MU
Frequency Accuracy	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.1 dB	-5.1 dB
AC Powerline Conducted Emissions (dB)	2.6 dB	-2.6 dB

Test Setup Block Diagrams

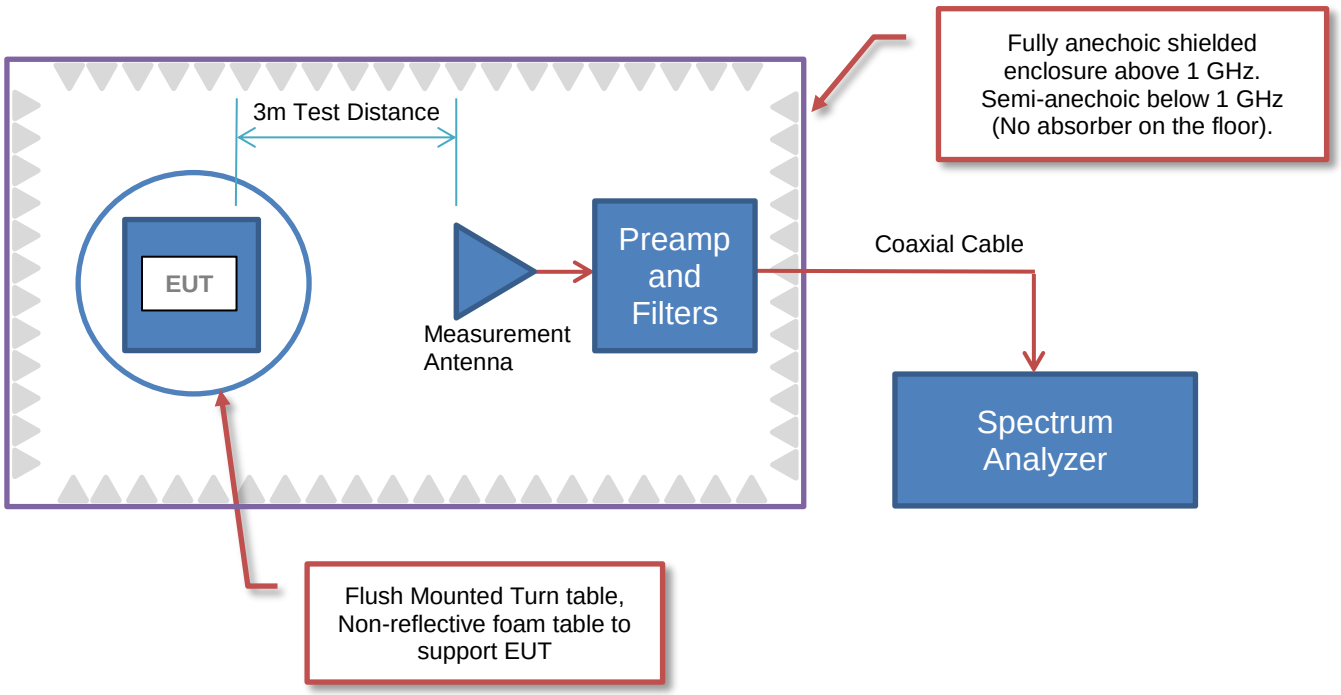
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Canary Medical
Address:	2710 Loker Ave West
City, State, Zip:	Carlsbad, CA 92010
Test Requested By:	Peter Schiller
EUT:	CTE Implant
First Date of Test:	October 8, 2020
Last Date of Test:	October 12, 2020
Receipt Date of Samples:	October 6, 2020
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Implantable knee device with dual-band 2.45GHz and MICS band custom antenna and a base station that will be operating over a PIFA antenna on 2.45 GHz for low-power wake-up and on an on-the-board helical antenna for the MICS band.

Testing Objective:
Seeking FCC authorization for the MedRadio transmitter to FCC Part 95I.

CONFIGURATIONS

Configuration CAAL0012- 1

Software/Firmware Running during test	
Description	**Version**
Implant Firmware	1.0.2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
CTE Implant	Canary Medical	CTE1	115

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Manufacturing Base Station	Microsemi	MSB300	124

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Dell Laptop	Dell	Latitude 5490	10226584082

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB Cable	Yes	3.0m	No	Host Laptop	Manufacturing Base Station

CONFIGURATIONS

Configuration CAAL0012- 5

Software/Firmware Running during test	
Description	**Version**
Implant Firmware	1.0.2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
CTE Implant (Development Board)	Canary Medical	190909 Rev 2	20030018

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
DC Power Supply	Agilent	E3548A	MY51120046
Manufacturing Base Station	Microsemi	MSB300	124
Dell Laptop	Dell	Latitude 5490	10226584082
Host Laptop Power Supply	Dell	HA45NM140	CN-00285K-CH200-998-CB9A-A07

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Cable	No	1.0m	No	CTE Implant	DC Power Supply
USB Cable	Yes	3.0m	No	Host Laptop	Manufacturing Base Station
DC Cable	Yes	1.7m	Yes	Host Laptop	Host Laptop Power Supply
AC Cable	No	1.0m	No	Host Laptop Power Supply	AC Mains

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2020-10-08	Radiated Power (EIRP)	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2020-10-09	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2020-10-12	Emission Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2020-10-12	Emission Mask	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2020-10-12	Duty Cycle Characterization	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	2020-10-12	Conducted Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	2020-10-12	Frequency Stability	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	2020-10-12	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

EMISSIONS BANDWIDTH

XMit 2020.03.25.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5182A	TIF	29-Aug-20	29-Aug-23
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	16-Dec-19	16-Dec-20
Block - DC	Aeroflex	INMET 8535	AMO	14-Feb-20	14-Feb-21
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAY	16-Dec-19	16-Dec-20

TEST DESCRIPTION

Per 47 CFR 95.2573(a), the emission bandwidth was determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 20 dB down relative to the maximum level of the modulated carrier. A spectrum analyzer using a peak detector with no video filtering was used with a resolution bandwidth equal to approximately 1.0 percent of the emission bandwidth of the EUT.

EMISSIONS BANDWIDTH

TbtTx 2019.08.30.0 XMit 2020.03.25.0

EUT:	**CTE Implant**			**Work Order:**	**CAAL0012**
Serial Number:	**20030018**			**Date:**	**12-Oct-20**
Customer:	**Canary Medical**			**Temperature:**	**25.9 °C**
Attendees:	**Peter Schiller**			**Humidity:**	**43.8% RH**
Project:	**None**			**Barometric Pres.:**	**1015 mbar**
Tested by:	**Mark Baytan**	**Power:**	**3.0 VDC**	**Job Site:**	**OC13**

TEST SPECIFICATIONS	**Test Method**
FCC 95I:2020	ANSI C63.26:2015

COMMENTS

Reference level offset accounted for in screen captures.

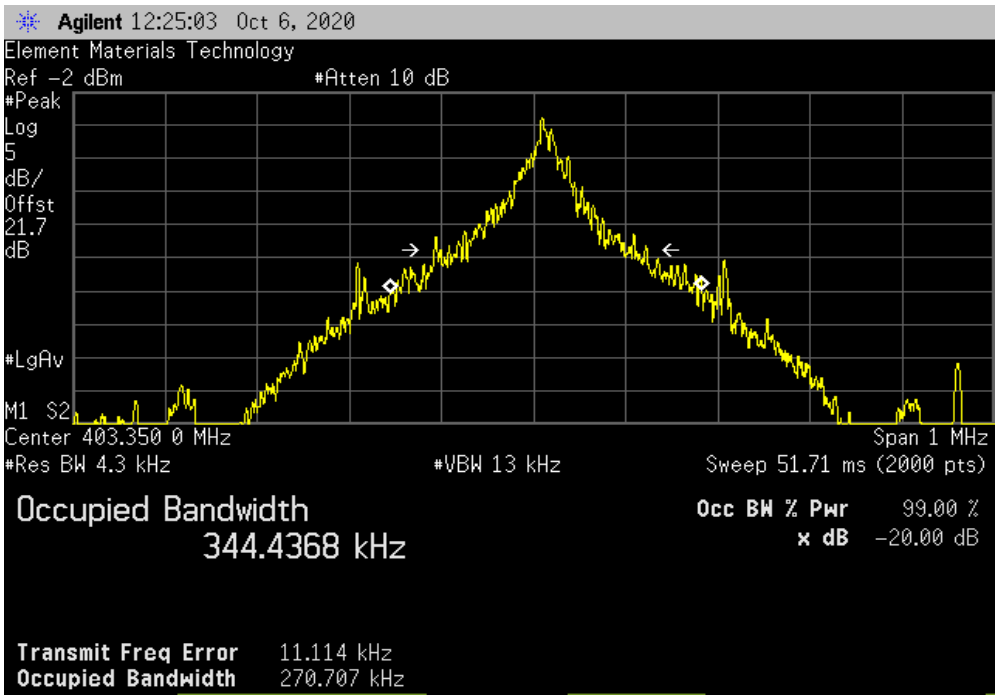
DEVIATIONS FROM TEST STANDARD

None

Configuration #	**5**	*Signature*

	Value	**Limit (≤)**	**Result**
Mid Channel, 403.35 MHz	270.707 kHz	300 kHz	Pass

Mid Channel, 403.35 MHz						
				Value	Limit (≤)	Result
				270.707 kHz	300 kHz	Pass



EMISSION MASK

XMit 2020.03.25.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5182A	TIF	29-Aug-20	29-Aug-23
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	16-Dec-19	16-Dec-20
Block - DC	Aeroflex	INMET 8535	AMO	14-Feb-20	14-Feb-21
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAY	16-Dec-19	16-Dec-20

TEST DESCRIPTION

Per 47 CFR 95.2579(a)(1) the emission mask was measured. Emissions more than 150 kHz away from the center frequency must be attenuated below the transmitter output power by at least 20 dB. This was evaluated by the Occupied Bandwidth measurement according to 47 CFR 95.2573(a). In addition, emissions 250 kHz or less above and below the MICS band (402-405 MHz) must be attenuated below the maximum permitted output power by at least 20 dB.

A spectrum analyzer was used to measure the emission mask. A spectrum analyzer using a peak detector with no video filtering was used with a resolution bandwidth equal to approximately 1.0 percent of the emission bandwidth of the EUT. However, various plots were made using different frequency spans and resolution bandwidths in an attempt to not only satisfy the measurement criteria, but to also show that all emissions outside of the occupied band are greatly attenuated.

EMISSION MASK

TbtTx 2019.08.30.0 XMit 2020.03.25.0

EUT:	**CTE Implant**			**Work Order:**	**CAAL0012**
Serial Number:	**20030018**			**Date:**	**12-Oct-20**
Customer:	**Canary Medical**			**Temperature:**	**25.8 °C**
Attendees:	**Peter Schiller**			**Humidity:**	**43.8% RH**
Project:	**None**			**Barometric Pres.:**	**1015 mbar**
Tested by:	**Mark Baytan**	**Power:**	**3.0 VDC**	**Job Site:**	**OC13**

TEST SPECIFICATIONS	**Test Method**
FCC 95I:2020	ANSI C63.26:2015

COMMENTS

Reference level offset accounted for in screen captures.

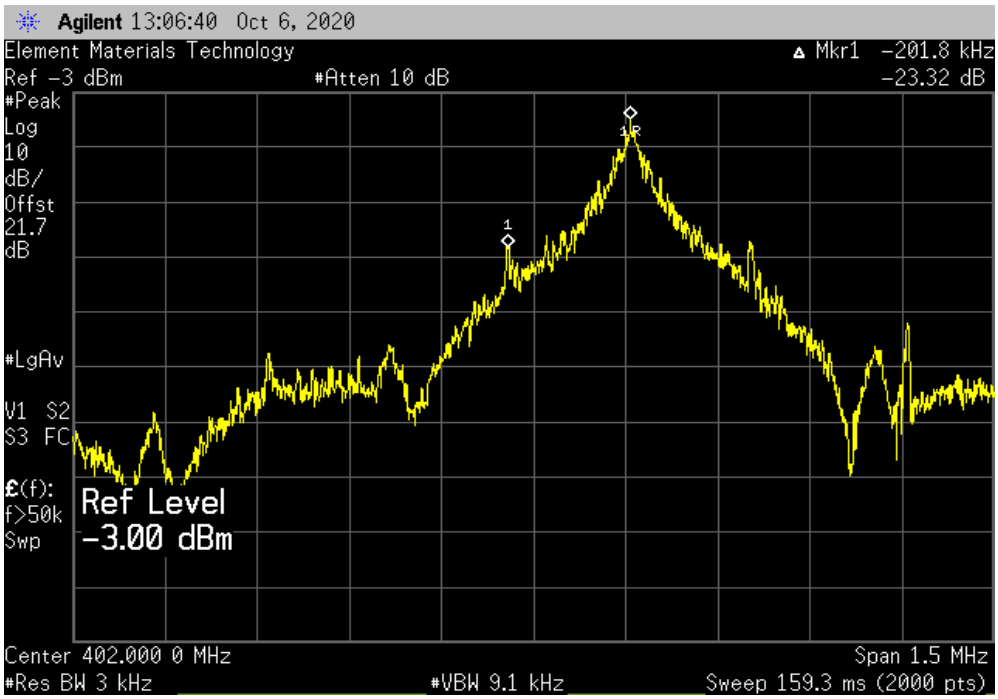
DEVIATIONS FROM TEST STANDARD

None

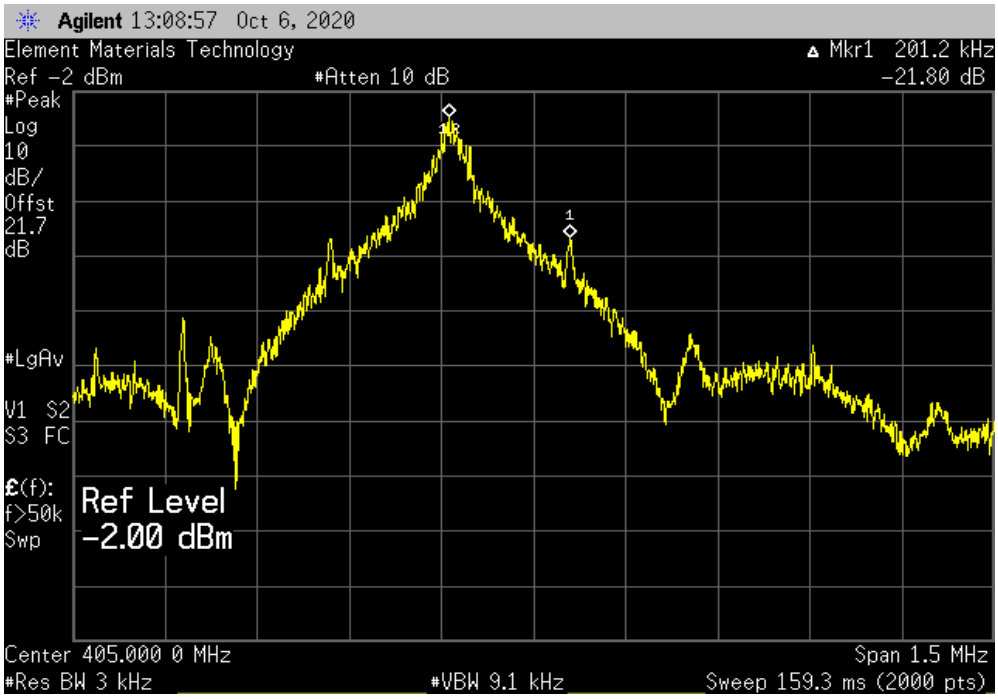
Configuration #	**5**	*Signature*

	Value (dBc)	**Limit ≤ (dBc)**	**Result**
Low Channel, 402.15 MHz	-23.32	-20	Pass
High Channel, 404.85 MHz	-21.81	-20	Pass

Low Channel, 402.15 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-23.32	-20	Pass



High Channel, 404.85 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-21.81	-20	Pass



DUTY CYCLE

XMit 2020.03.25.0

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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5182A	TIF	29-Aug-20	29-Aug-23
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	16-Dec-19	16-Dec-20
Block - DC	Aeroflex	INMET 8535	AMO	14-Feb-20	14-Feb-21
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAY	16-Dec-19	16-Dec-20

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

DUTY CYCLE

element

TbtTx 2019.08.30.0 XMit 2020.03.25.0

EUT:	**CTE Implant**			**Work Order:**	**CAAL0012**
Serial Number:	**20030018**			**Date:**	**12-Oct-20**
Customer:	**Canary Medical**			**Temperature:**	**25.8 °C**
Attendees:	**Peter Schiller**			**Humidity:**	**43.8% RH**
Project:	**None**			**Barometric Pres.:**	**1015 mbar**
Tested by:	**Mark Baytan**	**Power:**	**3.0 VDC**	**Job Site:**	**OC13**

TEST SPECIFICATIONS	**Test Method**
FCC 95I:2020	ANSI C63.26:2015

COMMENTS

Reference level offset accounted for in screen captures

DEVIATIONS FROM TEST STANDARD

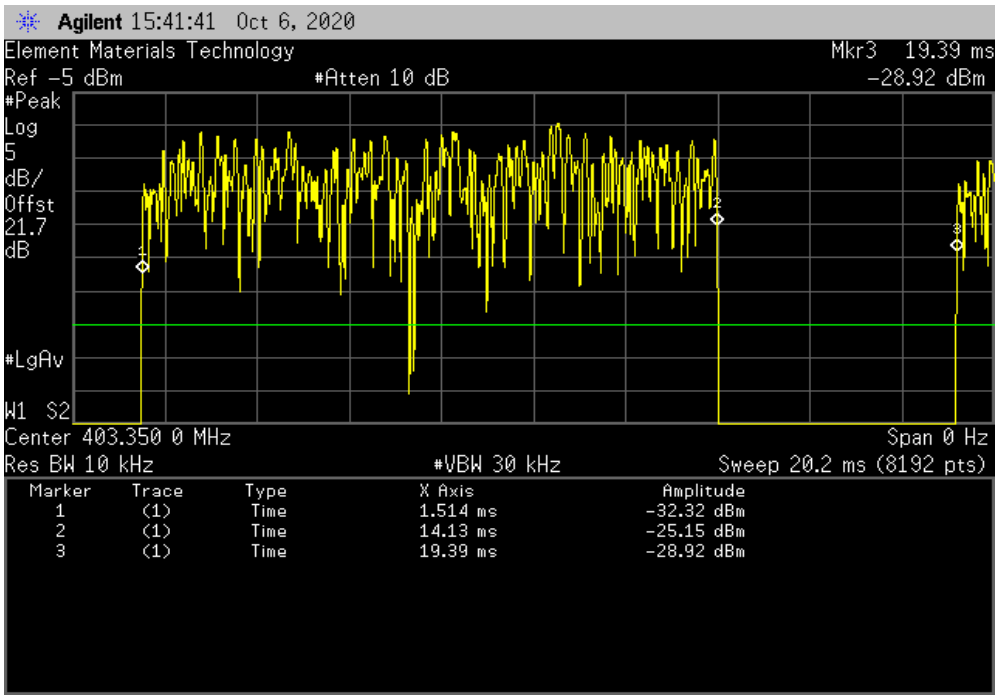
None

Configuration #	**5**	*Signature*

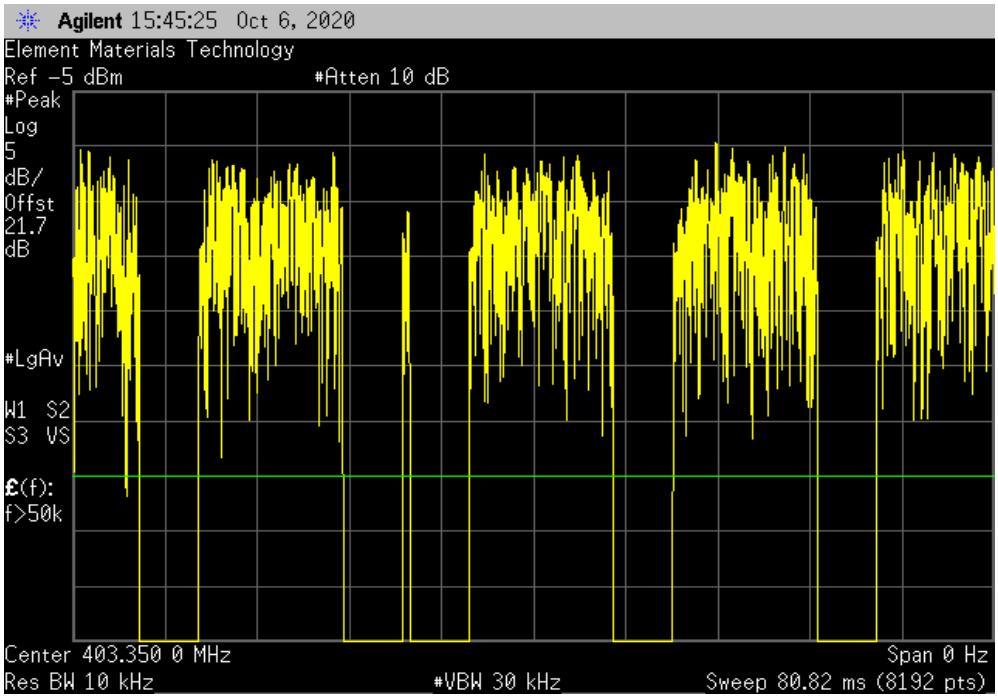
	Pulse Width	**Period**	**Number of Pulses**	**Value (%)**	**Limit N/A ()**	**Results**
Normal Voltage						
Mid Channel, 403.35 MHz	12.614 ms	17.876 ms	1	70.6	N/A	N/A
Mid Channel, 403.35 MHz	N/A	N/A	6	N/A	N/A	N/A

DUTY CYCLE

Normal Voltage, Mid Channel, 403.35 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A ()	Results
	12.614 ms	17.876 ms	1	70.6	N/A	N/A



Normal Voltage, Mid Channel, 403.35 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A ()	Results
	N/A	N/A	6	N/A	N/A	N/A



OUTPUT POWER

XMit 2020.03.25.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5182A	TIF	29-Aug-20	29-Aug-23
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	16-Dec-19	16-Dec-20
Block - DC	Aeroflex	INMET 8535	AMO	14-Feb-20	14-Feb-21
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAY	16-Dec-19	16-Dec-20

TEST DESCRIPTION

Per FCC Part 2.1046, RSS-GEN, the output power shall be measured at the RF terminal. The peak output power was measured with the EUT configured in the modes listed in the datasheet. The EUT was transmitting at its maximum data rate.

FCC Part 95 and RSS-243 have no conducted output power limit. It is a requirement to characterize this information and that data is contained within this datasheet.

OUTPUT POWER

TbtTx 2019.08.30.0 XMit 2020.03.25.0

EUT:	CTE Implant			**Work Order:**	CAAL0012
Serial Number:	20030018			**Date:**	12-Oct-20
Customer:	Canary Medical			**Temperature:**	25.8 °C
Attendees:	Peter Schiller			**Humidity:**	43.8% RH
Project:	None			**Barometric Pres.:**	1015 mbar
Tested by:	Mark Baytan	**Power:**	3.0 VDC	**Job Site:**	OC13

TEST SPECIFICATIONS	Test Method
FCC 95I:2020	ANSI C63.26:2015

COMMENTS

Reference level offset accounted for in screen captures

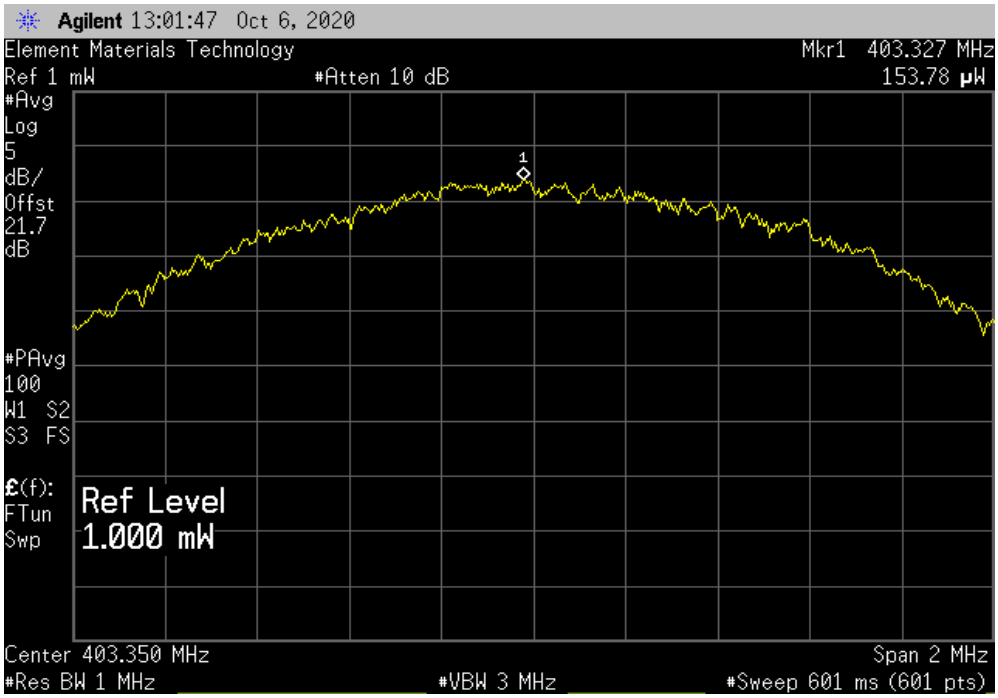
DEVIATIONS FROM TEST STANDARD

None

Configuration #	5	Signature

	Avg Cond Pwr (µW)	Value (µW)	Limit (µW)	Results
Mid Channel, 403.35 MHz	153.78	153.78	N/A	N/A

Mid Channel, 403.35 MHz						
	Avg Cond Pwr (µW)			Value (µW)	Limit (µW)	Results
	153.78			153.78	N/A	N/A



FREQUENCY STABILITY

XMit 2020.03.25.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5182A	TIF	29-Aug-20	29-Aug-23
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	16-Dec-19	16-Dec-20
Block - DC	Aeroflex	INMET 8535	AMO	14-Feb-20	14-Feb-21
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAY	16-Dec-19	16-Dec-20

TEST DESCRIPTION

The test was carried out with the optional method of modulation on the carrier. The analyzer was placed in a low resolution bandwidth for best frequency accuracy. The trace was max held to capture the entire envelope of the carrier. A marker was placed at the same dBc level below and above the highest power point in the modulation envelope to determine the center of the carrier.

The EUT was placed inside a temperature / humidity chamber.

Variation of Supply Voltage

The primary supply voltage was varied from 85% to 115% of the nominal voltage. A DC lab supply was used to vary the supply voltage.

Variation of Ambient Temperature

Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (+25°, +35°C and +45° C).

FREQUENCY STABILITY

element

TbtTx 2019.08.30.0 XMit 2020.03.25.0

EUT:	**CTE Implant**			**Work Order:**	**CAAL0012**
Serial Number:	**20030018**			**Date:**	**12-Oct-20**
Customer:	**Canary Medical**			**Temperature:**	**25.8 °C**
Attendees:	**Peter Schiller**			**Humidity:**	**43.8% RH**
Project:	**None**			**Barometric Pres.:**	**1015 mbar**
Tested by:	**Mark Baytan**	**Power:**	**3.0 VDC**	**Job Site:**	**OC13**

TEST SPECIFICATIONS	**Test Method**
FCC 95I:2020	ANSI C63.26:2015

COMMENTS

Reference level offset accounted for in screen captures

DEVIATIONS FROM TEST STANDARD

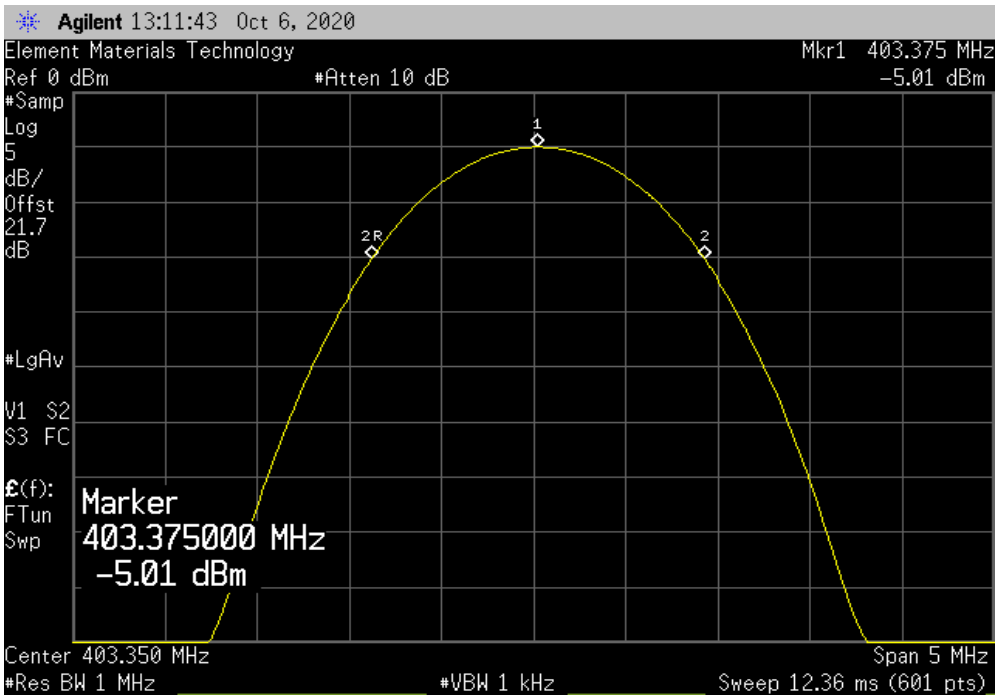
None

Configuration #	**5**	*Signature*

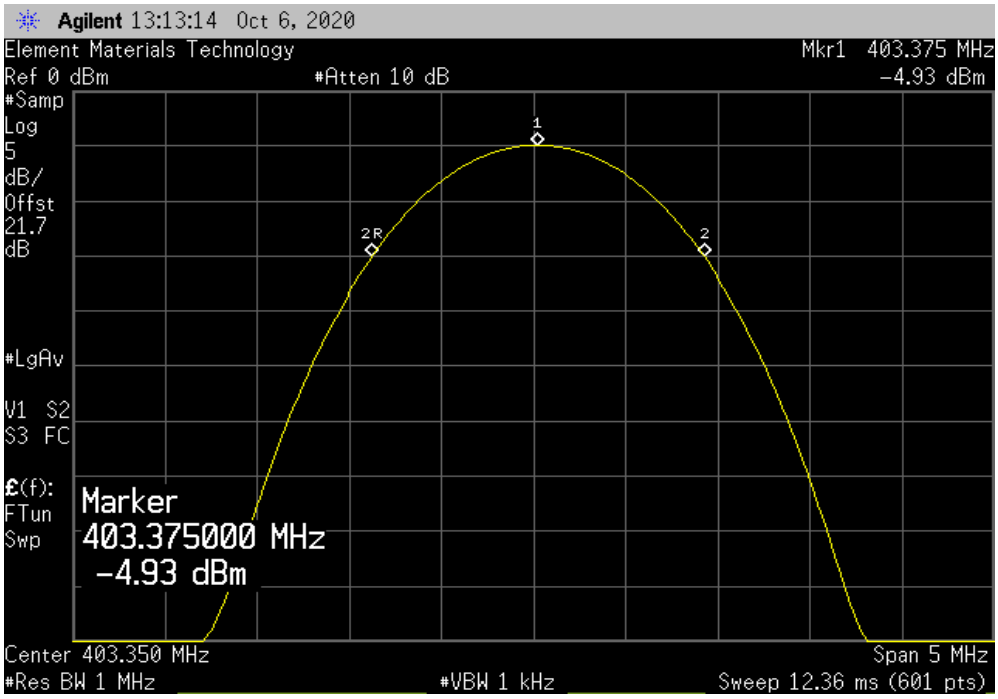
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
Normal Voltage					
Mid Channel, 403.35 MHz	403.375	403.35	62	100	Pass
Extreme Voltage +15%					
Mid Channel, 403.35 MHz	403.375	403.35	62	100	Pass
Extreme Voltage -15%					
Mid Channel, 403.35 MHz	403.375	403.35	62	100	Pass
Extreme Temperature +25°C					
Mid Channel, 403.35 MHz	403.375	403.35	62	100	Pass
Extreme Temperature +35°C					
Mid Channel, 403.35 MHz	403.375	403.35	62	100	Pass
Extreme Temperature +45°C					
Mid Channel, 403.35 MHz	403.38	403.35	74.4	100	Pass

FREQUENCY STABILITY

Normal Voltage, Mid Channel, 403.35 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		403.375	403.35	62	100	Pass

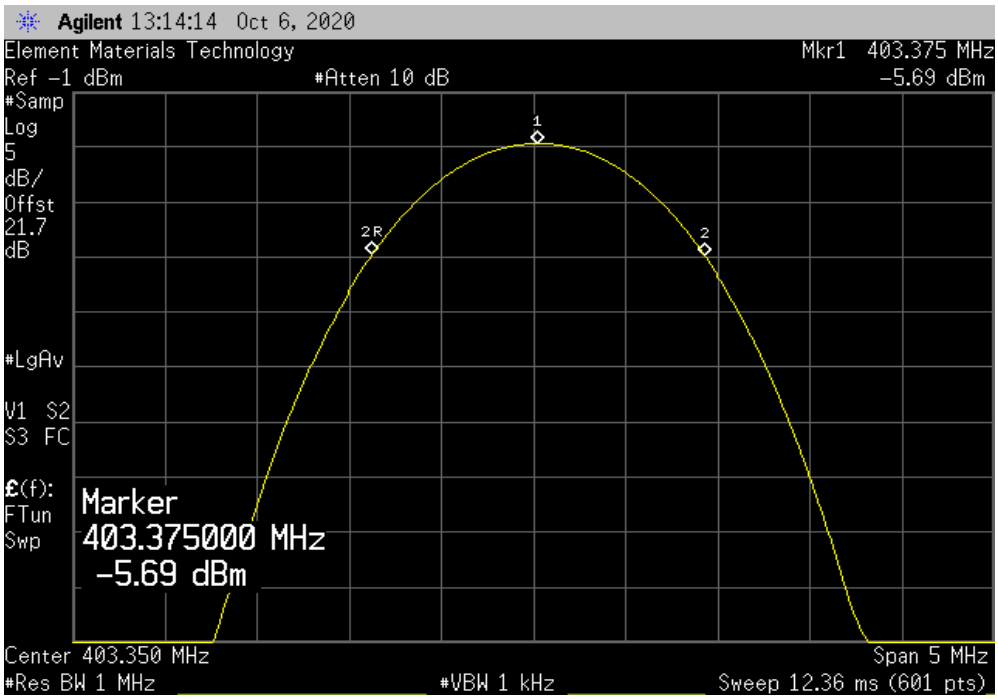


Extreme Voltage +15%, Mid Channel, 403.35 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		403.375	403.35	62	100	Pass

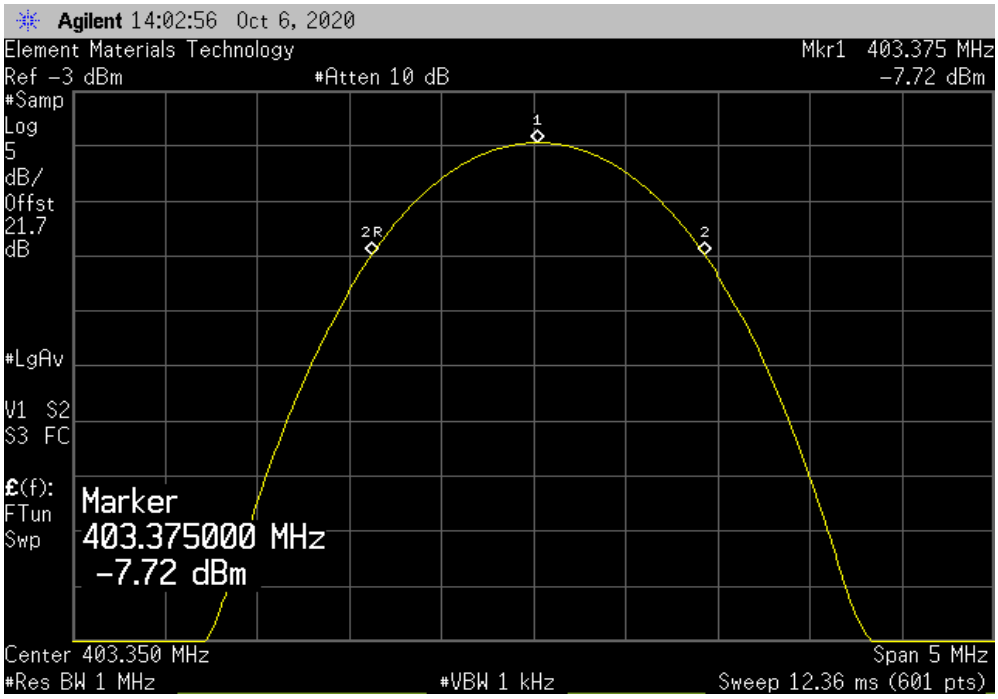


FREQUENCY STABILITY

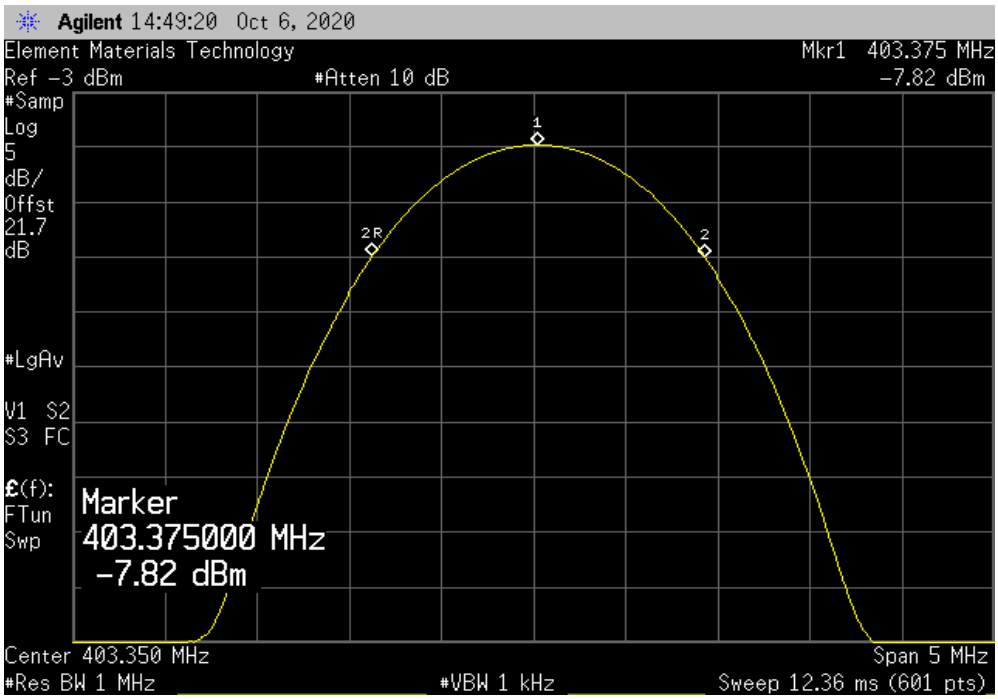
Extreme Voltage -15%, Mid Channel, 403.35 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		403.375	403.35	62	100	Pass



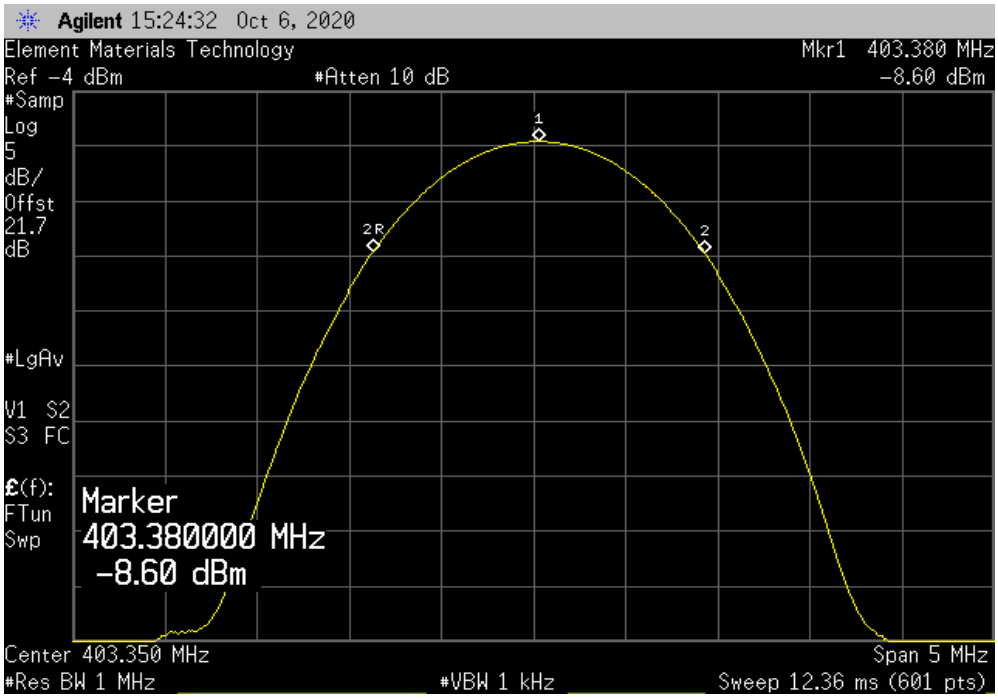
Extreme Temperature +25°C, Mid Channel, 403.35 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		403.375	403.35	62	100	Pass



Extreme Temperature +35°C, Mid Channel, 403.35 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		403.375	403.35	62	100	Pass



Extreme Temperature +45°C, Mid Channel, 403.35 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		403.38	403.35	74.4	100	Pass



SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2020.06.24.2

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting MICS: Mid Ch 4 (403.35 MHz)

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

CAAL0012 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	5000 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	1-8GHz cables	OCX	2020-03-02	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVJ	2020-03-02	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIR	2020-07-07	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAD	2020-07-01	12 mo
Cable	ESM Cable Corp.	30-1GHz cables	OCW	2020-05-01	12 mo
Antenna - Biconilog	EMCO	3142	AXB	2020-04-15	24 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFJ	2020-01-04	12 mo

TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. For each configuration, the spectrum was scanned throughout the specified range. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.26). A preamp was used for this test in order to provide sufficient measurement sensitivity.

Per CFR 47 95.2579(a), field strength measurements were performed and compared to the specified limits.

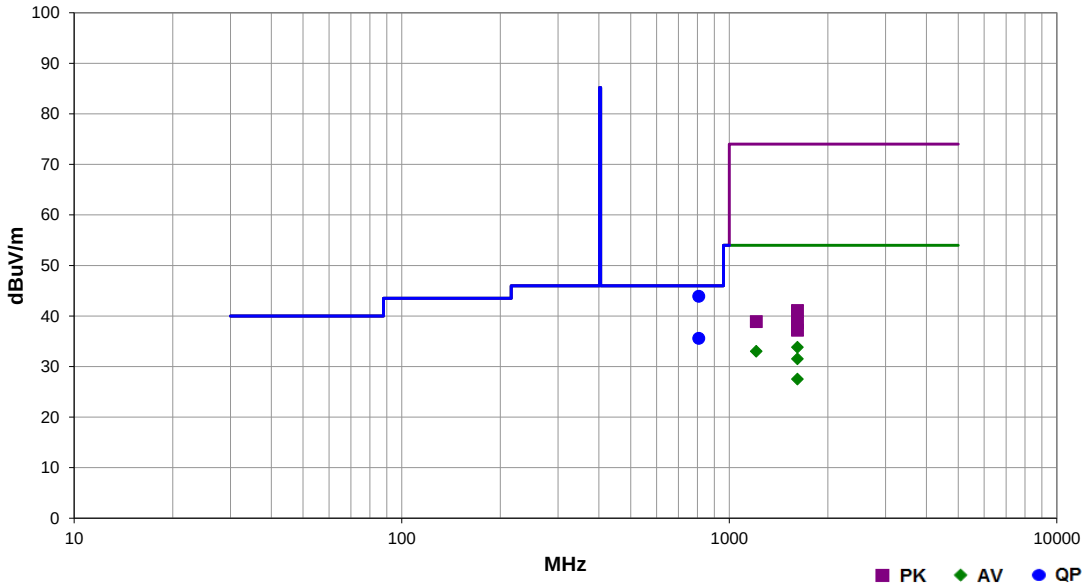
SPURIOUS RADIATED EMISSIONS

EmiR5 2020.06.24.4 PSA-ESCI 2020.06.24.2

Work Order:	CAAL0012	**Date:**	2020-10-09		
Project:	None	**Temperature:**	22.8 °C		
Job Site:	OC07	**Humidity:**	47.1% RH		
Serial Number:	115	**Barometric Pres.:**	1016 mbar	**Tested by:**	Nolan De Ramos
EUT:	CTE Implant				
Configuration:	1				
Customer:	Canary Medical				
Attendees:	Peter Schiller				
EUT Power:	Battery				
Operating Mode:	Transmitting MICS: Mid Ch 4 (403.35 MHz)				
Deviations:	None				
Comments:	Vertical orientation was found to be worst case orientation for EUT based on peak scans. Measurements taken on 2nd, 3rd and 4th harmonics of mid channel 403.35 MHz.				

Test Specifications	**Test Method**
FCC 95I:2020	ANSI C63.26:2015

Run #	4	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
806.700	33.1	10.8	2.5	30.0	3.0	0.0	Vert	QP	0.0	43.9	46.0	-2.1	MICS, Mid Ch 403.35 MHz, EUT vertical
806.690	24.8	10.8	2.2	20.0	3.0	0.0	Horz	QP	0.0	35.6	46.0	-10.4	MICS, Mid Ch 403.35 MHz, EUT vertical
1615.183	40.7	-6.9	3.3	360.0	3.0	0.0	Vert	AV	0.0	33.8	54.0	-20.2	MICS, Mid Ch 403.35 MHz, EUT vertical
1210.117	41.5	-8.5	1.3	0.0	3.0	0.0	Vert	AV	0.0	33.0	54.0	-21.0	MICS, Mid Ch 403.35 MHz, EUT vertical
1615.250	38.4	-6.9	1.6	219.0	3.0	0.0	Vert	AV	0.0	31.5	54.0	-22.5	MICS, Mid Ch 403.35 MHz, EUT on side
1615.242	34.4	-6.9	1.3	61.0	3.0	0.0	Horz	AV	0.0	27.5	54.0	-26.5	MICS, Mid Ch 403.35 MHz, EUT vertical
1615.058	48.0	-6.9	3.3	360.0	3.0	0.0	Vert	PK	0.0	41.1	74.0	-32.9	MICS, Mid Ch 403.35 MHz, EUT vertical
1210.017	47.4	-8.5	1.3	0.0	3.0	0.0	Vert	PK	0.0	38.9	74.0	-35.1	MICS, Mid Ch 403.35 MHz, EUT vertical
1615.358	45.6	-6.9	1.6	219.0	3.0	0.0	Vert	PK	0.0	38.7	74.0	-35.3	MICS, Mid Ch 403.35 MHz, EUT on side
1615.242	44.1	-6.9	1.3	61.0	3.0	0.0	Horz	PK	0.0	37.2	74.0	-36.8	MICS, Mid Ch 403.35 MHz, EUT vertical

SPURIOUS CONDUCTED EMISSIONS

XMit 2020.03.25.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5182A	TIF	29-Aug-20	29-Aug-23
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	16-Dec-19	16-Dec-20
Block - DC	Aeroflex	INMET 8535	AMO	14-Feb-20	14-Feb-21
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAY	16-Dec-19	16-Dec-20

TEST DESCRIPTION

Per FCC Part 2.1051, the spurious emissions shall be measured at the RF terminal. The peak spurious emissions were measured with the EUT configured to the modes listed in the datasheet. The EUT was transmitting at its maximum data rate.

FCC Part 95 have no conducted spurious emissions limit. It is a requirement to characterize this information and that data is contained within this datasheet.

SPURIOUS CONDUCTED EMISSIONS

TbtTx 2019.08.30.0 XMit 2020.03.25.0

EUT:	**CTE Implant**			**Work Order:**	**CAAL0012**
Serial Number:	**20030018**			**Date:**	**12-Oct-20**
Customer:	**Canary Medical**			**Temperature:**	**25.8 °C**
Attendees:	**Peter Schiller**			**Humidity:**	**43.8% RH**
Project:	**None**			**Barometric Pres.:**	**1015 mbar**
Tested by:	**Mark Baytan**	**Power:**	**3.0 VDC**	**Job Site:**	**OC13**

TEST SPECIFICATIONS	**Test Method**
FCC 95I:2020	ANSI C63.26:2015

COMMENTS

Reference level offset accounted for in screen captures

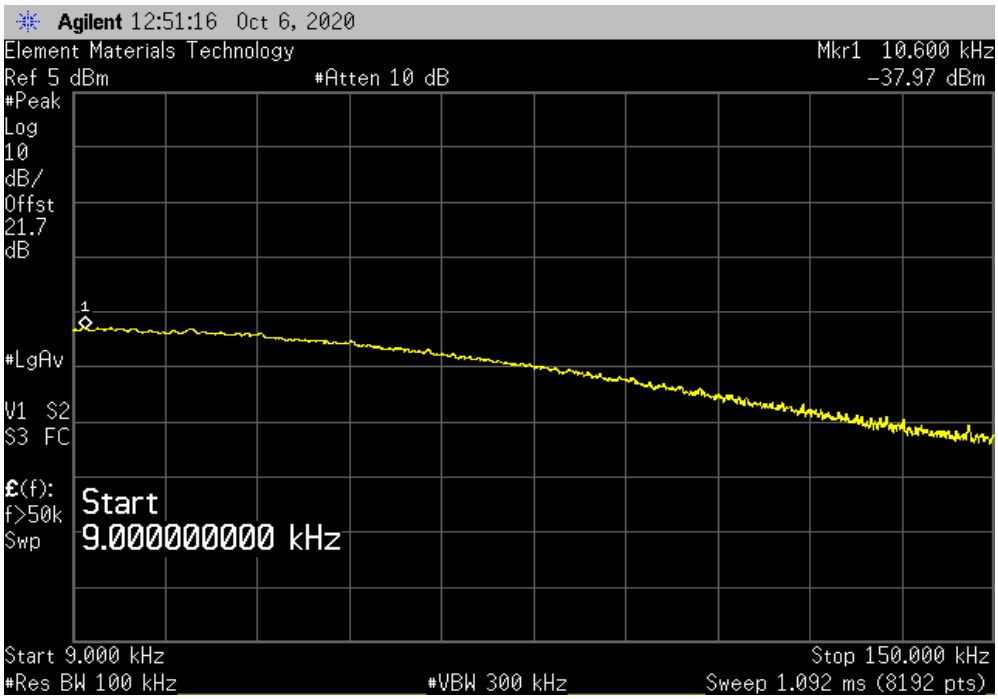
DEVIATIONS FROM TEST STANDARD

None

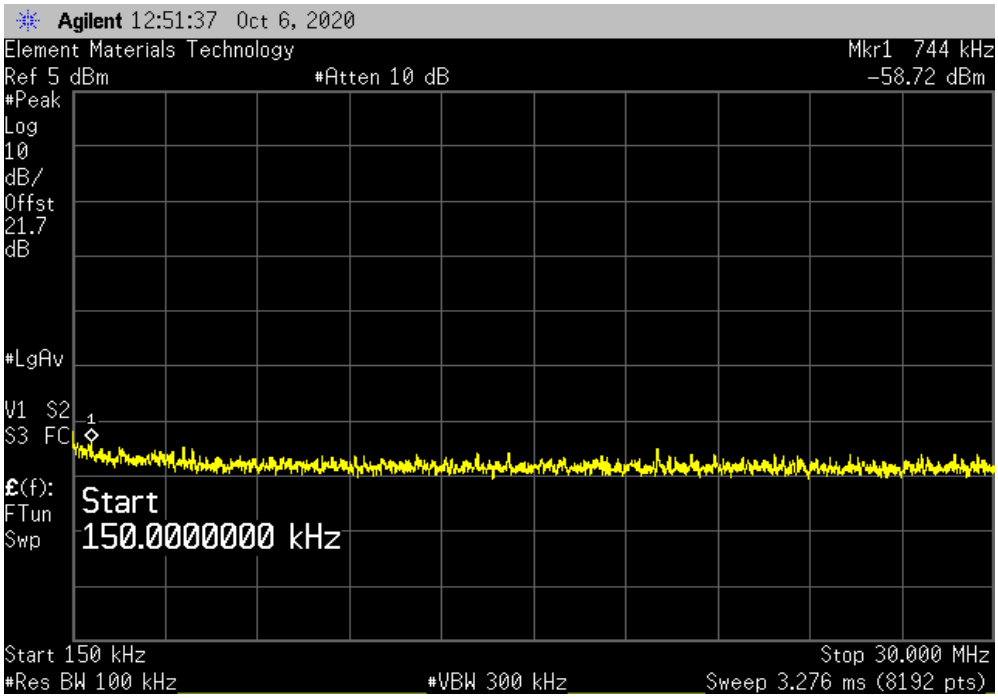
Configuration #	**5**	*Signature*

	Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit A (dBc)	Result
Mid Channel, 403.35 MHz	9 kHz - 150 kHz	0.01	-37.97		N/A
Mid Channel, 403.35 MHz	150 kHz - 30 MHz	0.74	-20.49		N/A
Mid Channel, 403.35 MHz	30 MHz - 5 GHz	403.2	33.59		N/A

Mid Channel, 403.35 MHz					
Frequency Range		Measured Freq (MHz)	Max Value (dBc)	Limit A (dBc)	Result
	9 kHz - 150 kHz	0.01	-37.97		N/A



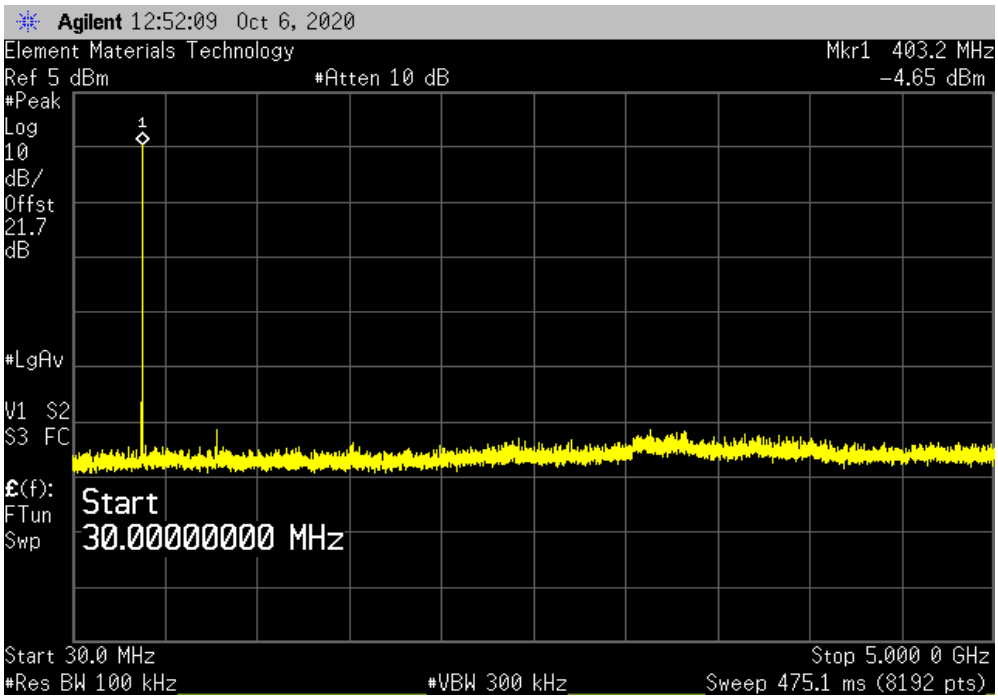
Mid Channel, 403.35 MHz					
Frequency Range		Measured Freq (MHz)	Max Value (dBc)	Limit A (dBc)	Result
	150 kHz - 30 MHz	0.74	-20.49		N/A



SPURIOUS CONDUCTED EMISSIONS

TbtTx 2019.08.30.0 XMit 2020.03.25.0

Mid Channel, 403.35 MHz					
Frequency Range		Measured Freq (MHz)	Max Value (dBc)	Limit A (dBc)	Result
30 MHz - 5 GHz		403.2	33.59		N/A



RADIATED POWER (EIRP)

PSA-ESCI 2020.04.03.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting MICS: Low Ch 0 (402.15 MHz), Mid Ch 4 (403.35 MHz), High Ch 9 (404.85 MHz)

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

CAAL0012 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	402 MHz	Stop Frequency	405 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAD	2020-07-01	12 mo
Cable	ESM Cable Corp.	30-1GHz cables	OCW	2020-05-01	12 mo
Antenna - Biconilog	EMCO	3142	AXB	2020-04-15	24 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFJ	2020-01-04	12 mo

TEST DESCRIPTION

Per 95.2567(a)(2), the maximum radiated field strength for a MICS transmitter is 25uW EIRP. The Field Strength of the Fundamental data was converted to EIRP with the formula based upon the Friis transmission equation with 6 dB removed due to reflections from the ground plane: EIRP = ((E/2)*d)^2/30 where E is V/m and d = distance = 3m, and EIRP = W (Reference 95.2569(a)).

The Field Strength of the Fundamental was measured in the far-field at an FCC Listed Semi-anechoic Chamber. Spectrum analyzer and linearly polarized antennas were used to measure the radiated field strength of the fundamental.

The orientation of the EUT and measurement antenna were manipulated to maximize the level of emissions. The turntable azimuth was varied to maximize the level of radiated emissions. The height of the measurement antenna was also varied from 1 to 4 meters. The amplitude and frequency of the emissions were noted.

The EUT was configured to transmit in a fixture that simulates the human torso. The dimensions of the test fixture and the characteristics of the tissue substitute material met the requirements 95.2569(c) and FCC KDB 617965. The height of the transmitter was 1.5-meter above the reference ground plane.

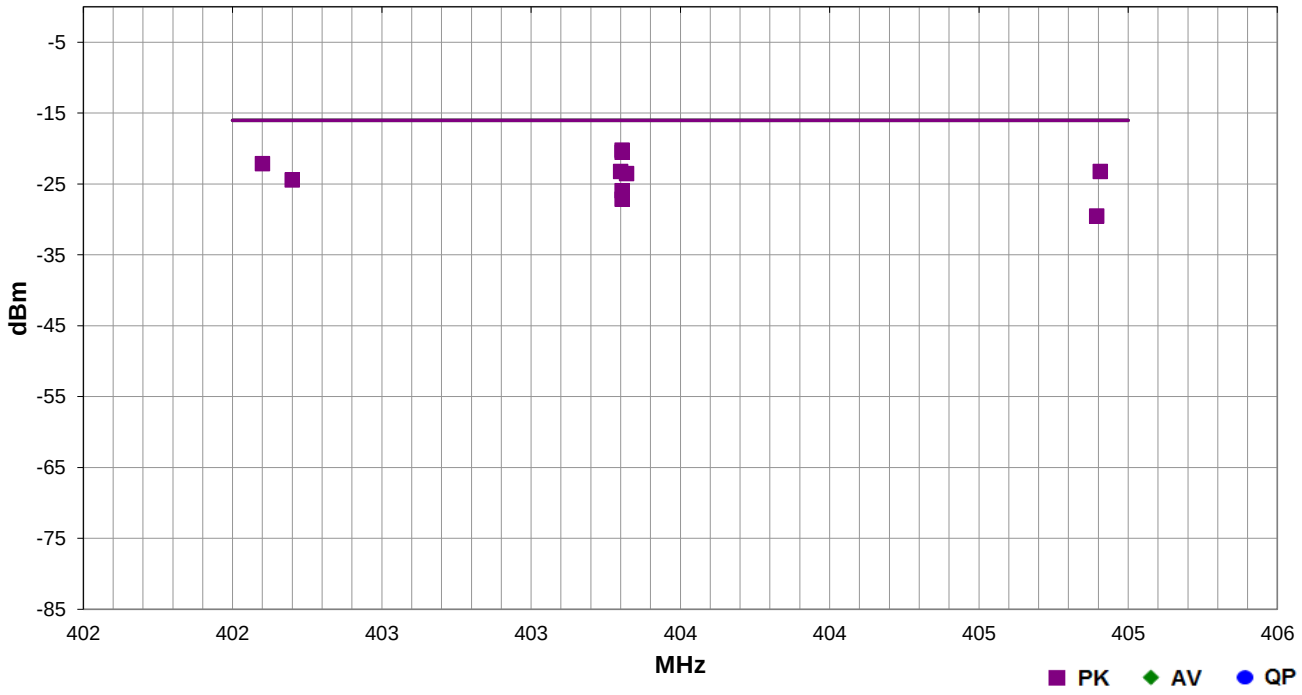
RADIATED POWER (EIRP)

EmiR5 2020.06.24.4 PSA-ESCI 2020.06.24.2

Work Order:	CAAL0012	**Date:**	2020-10-08		
Project:	None	**Temperature:**	25.5 °C		
Job Site:	OC07	**Humidity:**	42% RH		
Serial Number:	115	**Barometric Pres.:**	1015 mbar	**Tested by:**	Mark Baytan
EUT:	CTE Implant				
Configuration:	1				
Customer:	Canary Medical				
Attendees:	Peter Schiller				
EUT Power:	Battery				
Operating Mode:	Transmitting MICS: Low Ch 0 (402.15 MHz), Mid Ch 4 (403.35 MHz), High Ch 9 (404.85 MHz)				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 95I:2020	ANSI C63.26:2015

Run #	1	**Test Distance (m)**	3	**Antenna Height(s)**	1.8(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	403.305	1.25	340.0	Vert	PK	9.5E-6	-20.2	-16.0	-4.2	Mid Ch 4, EUT Horz
	403.305	1.68	334.0	Vert	PK	8.9E-6	-20.5	-16.0	-4.5	Mid Ch 4, EUT Vert
	402.100	1.43	209.0	Vert	PK	6.1E-6	-22.1	-16.0	-6.1	Low Ch 0, EUT Horz
	403.300	2.3	360.0	Vert	PK	4.8E-6	-23.2	-16.0	-7.2	Mid Ch 4, EUT on Side
	404.907	1.42	224.0	Vert	PK	4.8E-6	-23.2	-16.0	-7.2	High Ch 9, EUT Horz
	403.320	1.28	306.0	Horz	PK	4.4E-6	-23.5	-16.0	-7.5	Mid Ch 4, EUT Horz
	402.200	1.28	300.0	Horz	PK	3.6E-6	-24.4	-16.0	-8.4	Low Ch 0, EUT Horz
	403.305	2.42	242.0	Horz	PK	2.6E-6	-25.9	-16.0	-9.9	Mid Ch 4, EUT Vert
	403.305	2.3	0.0	Horz	PK	1.9E-6	-27.1	-16.0	-11.1	Mid Ch 4, EUT on Side
	404.894	1.27	0.0	Horz	PK	1.1E-6	-29.5	-16.0	-13.5	High Ch 9, EUT Horz