Lytx, Inc.

DC-6000-001

FCC 15.207:2017

FCC 15.247:2017

Bluetooth Radio

Report # LYTX0018.3

NVLAP Lab Code: 200676-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America. This Report shall not be reproduced, except in full without written approval of the laboratory.

CERTIFICATE OF TEST

Last Date of Test: March 23, 2017
Lytx, Inc.
Model: DC-6000-001

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2017	ANSI C63.10:2013, KDB 558074
FCC 15.247:2017	

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6, 11.12.1, 11.13.2	Spurious Radiated Emissions	Yes	Pass	
11.6	Duty Cycle	Yes	Pass	
11.8.2	Occupied Bandwidth	Yes	Pass	
11.9.1.1	Output Power	Yes	Pass	
11.10.2	Power Spectral Density	Yes	Pass	
11.11	Band Edge Compliance	Yes	Pass	
11.11	Spurious Conducted Emissions	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.

REVISION HISTORY

Revision Number	Description	Date	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). Certification chambers and Open Area Test Sites are filed with ISED.

European Union

European Commission – Validated by the European Commission as a Notified Body under the R&TTE Directive.

Australia/New Zealand

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

Korea

MSIP / 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

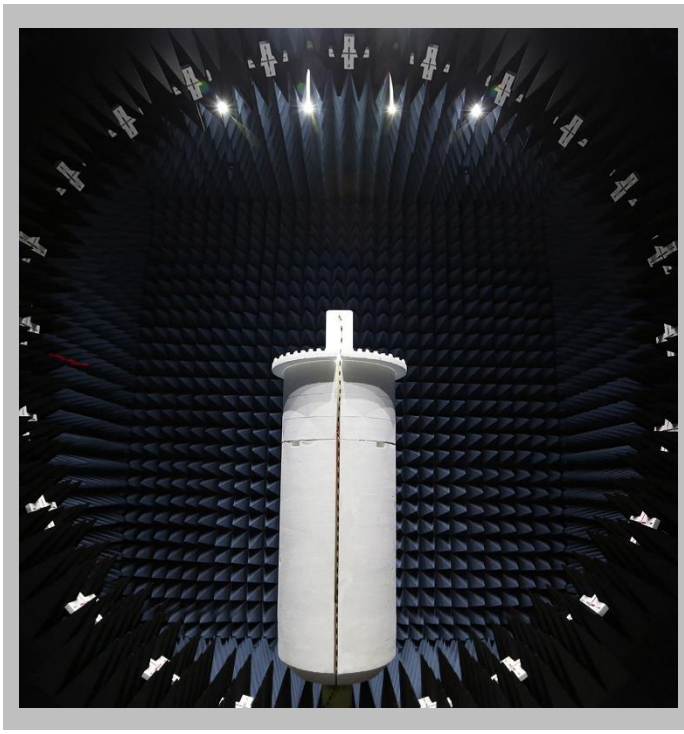
MIC – Recognized by MIC as a CAB for the acceptance of test data.

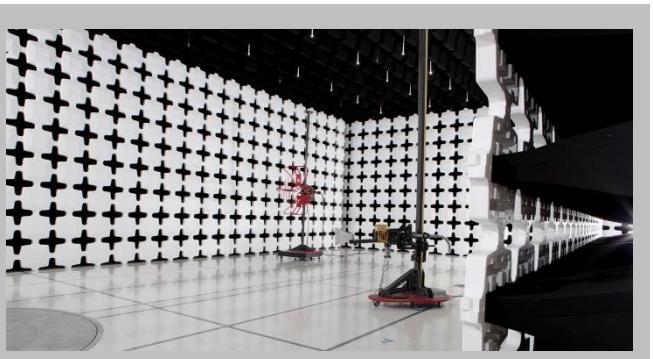
SCOPE

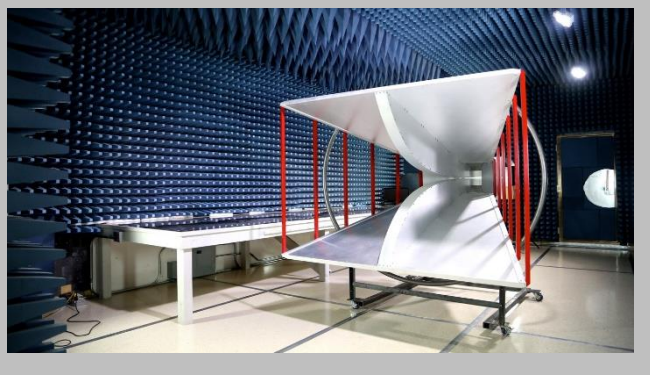
For details on the Scopes of our Accreditations, please visit:
http://portlandcustomer.element.com/ts/scope/scope.htm
http://gsi.nist.gov/global/docs/cabs/designations.html

FACILITIES

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 22975 NW Evergreen Pkwy 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: 200761-0	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	N/A	2834D-1, 2834D-2	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157







MEASUREMENT UNCERTAINTY

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.

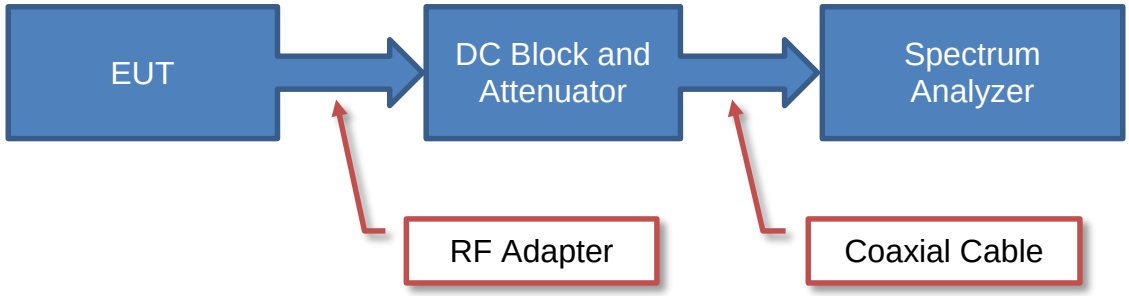
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable 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.

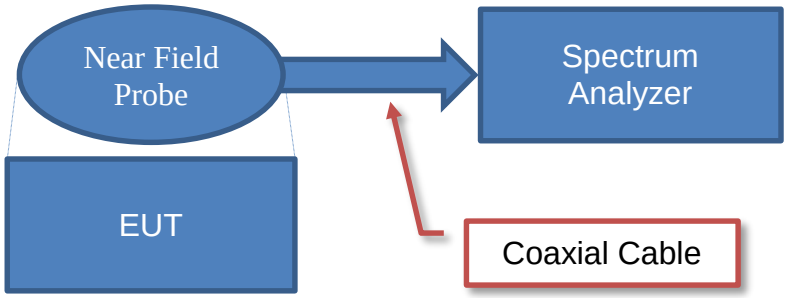
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

Test Setup Block Diagrams

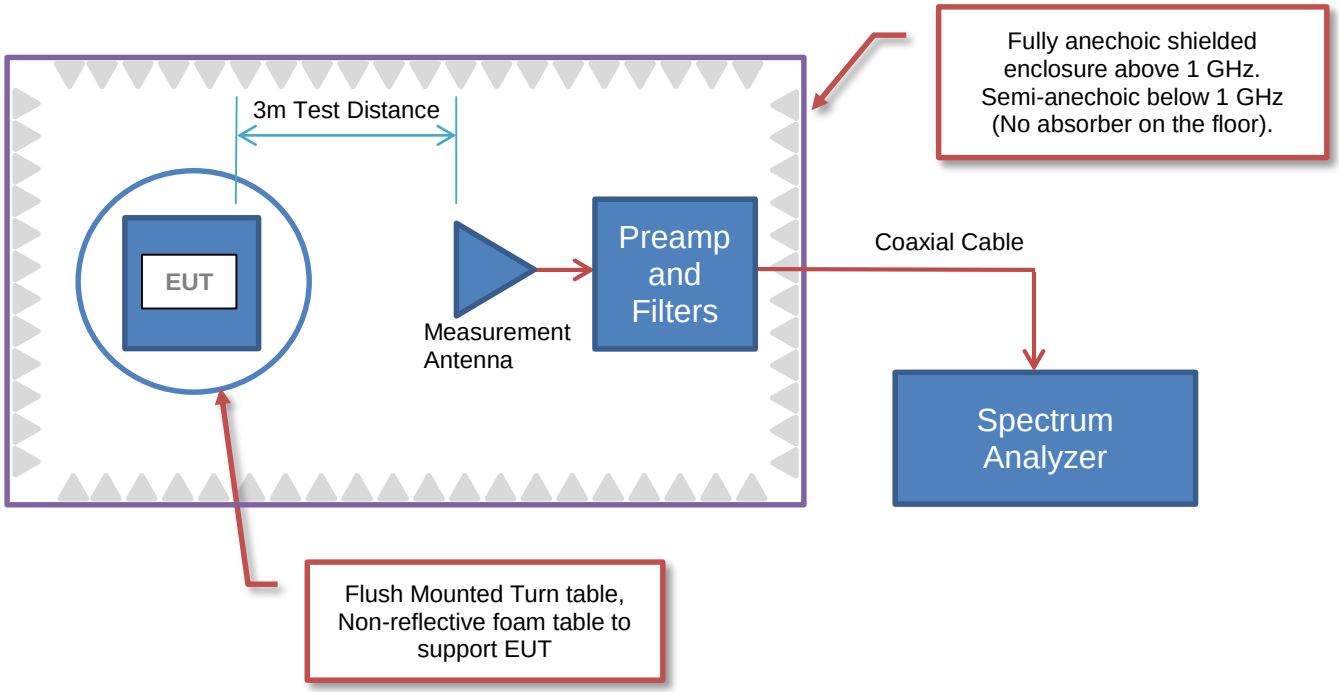
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Lytx, Inc.
Address:	9785 Towne Centre Drive
City, State, Zip:	San Diego, CA 92121
Test Requested By:	Angel Valdes
Model:	DC-6000-001
First Date of Test:	March 20, 2017
Last Date of Test:	March 23, 2017
Receipt Date of Samples:	March 8, 2017
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Vehicle based Event Recorder with WiFi/BLE transceiver and Cellular Modem (FCC ID: N7NWP7)

Testing Objective:
To demonstrate compliance of the Bluetooth radio to FCC 15.247 requirements.

CONFIGURATIONS

Configuration LYTX0018- 4

Software/Firmware Running during test	
Description	**Version**
PuTTY	0.62.0.0

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
In-Vehicle Camera	Lytx, Inc.	DC-6000-001	SF00000437

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Dell	Latitude D600	CN-0X3677-48645-743-3729
Laptop Power Supply	Dell	DA90PS0-00	CN-0XD757-48661-619-0BJJ
DC Power Source	HQ Power	PS3003U	DK10103872

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Cable	No	5.0m	No	In-Vehicle Camera	DC Power Source
AC Cable	No	1.8m	No	AC Mains	Laptop Power Supply
DC Cable	No	2.0m	Yes	Laptop	Laptop Power Supply
AC Cable	No	1.8m	No	AC Mains	DC Power Source
Serial Cable	No	3.0m	No	In-Vehicle Camera	Laptop

CONFIGURATIONS

Configuration LYTX0018- 5

Software/Firmware Running during test	
Description	**Version**
PuTTY	0.62.0.0

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
In-Vehicle Camera	Lytx, Inc.	DC-6000-001	SF00000437

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Dell	Latitude D600	CN-0X3677-48645-743-3729
Laptop Power Supply	Dell	DA90PS0-00	CN-0XD757-48661-619-0BJJ
DC Power Source	HQ Power	PS3003U	DK10103872

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Cable	No	5.0m	No	In-Vehicle Camera	DC Power Source
AC Cable	No	1.8m	No	AC Mains	Laptop Power Supply
DC Cable	No	2.0m	Yes	Laptop	Laptop Power Supply
AC Cable	No	1.8m	No	AC Mains	DC Power Source
Serial Cable	No	3.0m	No	In-Vehicle Camera	Laptop

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	3/20/2017	Band Edge Compliance	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	3/20/2017	Spurious Conducted 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	3/20/2017	Duty Cycle	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	3/20/2017	Occupied 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.
5	3/20/2017	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.
6	3/20/2017	Power Spectral Density	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	3/22/2017	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.
8	3/23/2017	Powerline Conducted Emission	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2017.01.26

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.

MODES OF OPERATION

Mid Channel (19) 2440 MHz

POWER SETTINGS INVESTIGATED

14VDC

CONFIGURATIONS INVESTIGATED

LYTX0018 - 5

SAMPLE CALCULATIONS

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable - Conducted Cable Assembly	Element	OCP, HFP, AWC	OCPA	4/4/2016	12 mo
LISN	Solar Electronics	9252-50-24-BNC	LIA	2/17/2017	12 mo
Receiver	Rohde & Schwarz	ESCI	ARG	6/9/2016	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	BWI (kHz)
0.15 - 30.0	1.0
30.0 - 400.0	10.0
400.0 - 1000.0	100.0
1000.0 - 6000.0	1000.0

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the middle channel in the operational band in a receive mode of operation. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10.

POWERLINE CONDUCTED EMISSIONS

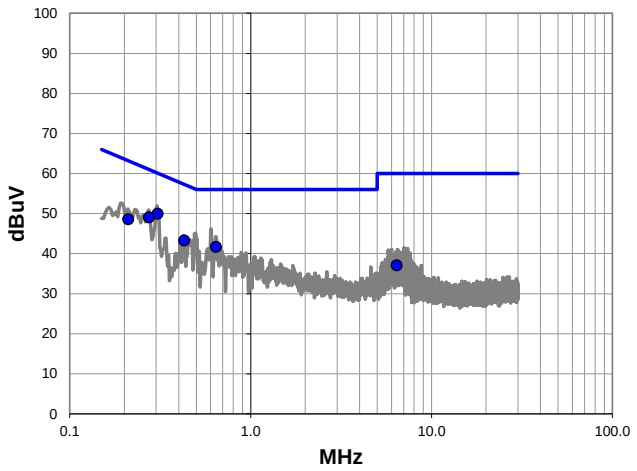
EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	LYTX0018	**Date:**	03/23/17		
Project:	None	**Temperature:**	20.9 °C		
Job Site:	OC06	**Humidity:**	46.7% RH		
Serial Number:	SF00000340	**Barometric Pres.:**	1021 mbar	**Tested by:**	Johnny Candelas
EUT:	DC-6000-001				
Configuration:	5				
Customer:	Lytx, Inc.				
Attendees:	None				
EUT Power:	14VDC				
Operating Mode:	Mid Channel (19) 2440 MHz				
Deviations:	None				
Comments:	None				

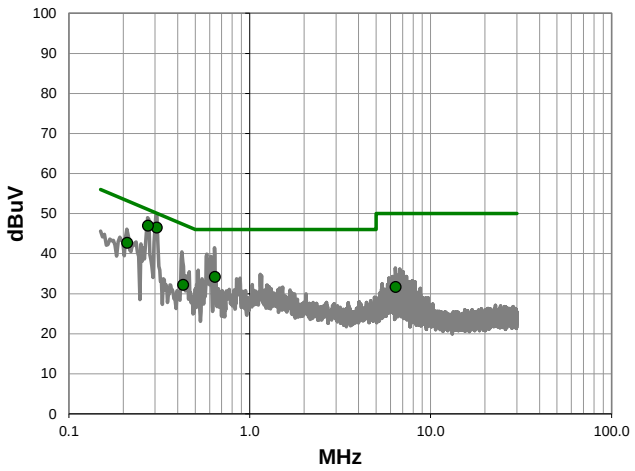
Test Specifications	**Test Method**
FCC 15.207:2017	ANSI C63.10:2013

Run #	6	**Line:**	Positive Lead	**Ext. Attenuation:**	0	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.306	29.8	20.2	50.0	60.1	-10.1
0.274	28.9	20.2	49.1	61.0	-11.9
0.428	23.3	20.0	43.3	57.3	-14.0
0.642	21.7	20.0	41.7	56.0	-14.3
0.210	28.4	20.2	48.6	63.2	-14.6
6.398	16.8	20.3	37.1	60.0	-22.9

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.306	26.3	20.2	46.5	50.1	-3.6
0.274	26.8	20.2	47.0	51.0	-4.0
0.210	22.5	20.2	42.7	53.2	-10.5
0.642	14.2	20.0	34.2	46.0	-11.8
0.428	12.2	20.0	32.2	47.3	-15.1
6.398	11.4	20.3	31.7	50.0	-18.3

POWERLINE CONDUCTED EMISSIONS

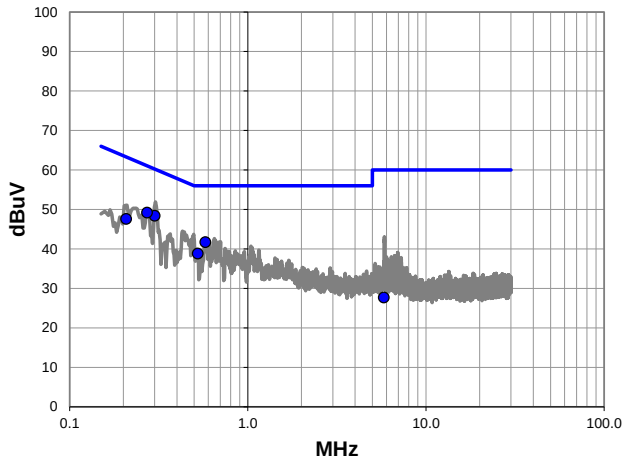
EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	LYTX0018	**Date:**	03/23/17		
Project:	None	**Temperature:**	20.9 °C		
Job Site:	OC06	**Humidity:**	46.7% RH		
Serial Number:	SF00000340	**Barometric Pres.:**	1021 mbar	**Tested by:**	Johnny Candelas
EUT:	DC-6000-001				
Configuration:	5				
Customer:	Lytx, Inc.				
Attendees:	None				
EUT Power:	14VDC				
Operating Mode:	Mid Channel (19) 2440 MHz				
Deviations:	None				
Comments:	None				

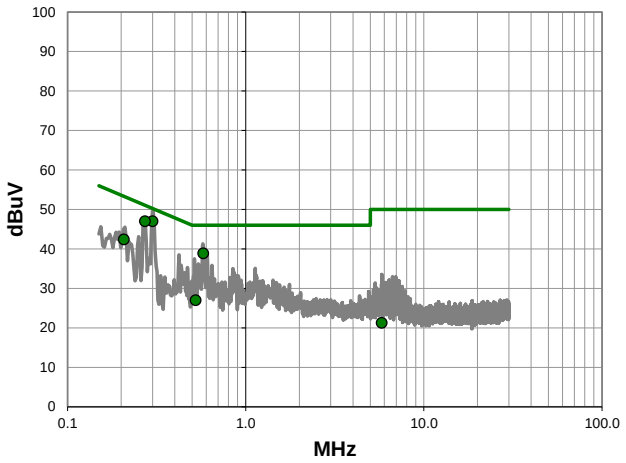
Test Specifications	**Test Method**
FCC 15.207:2017	ANSI C63.10:2013

Run #	7	**Line:**	Negative Lead	**Ext. Attenuation:**	0	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.300	28.2	20.2	48.4	60.2	-11.8
0.272	29.0	20.2	49.2	61.1	-11.9
0.577	21.8	19.9	41.7	56.0	-14.3
0.207	27.4	20.2	47.6	63.3	-15.7
0.523	18.9	19.9	38.8	56.0	-17.2
5.795	7.4	20.3	27.7	60.0	-32.3

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.300	26.8	20.2	47.0	50.2	-3.2
0.272	26.8	20.2	47.0	51.1	-4.1
0.577	19.0	19.9	38.9	46.0	-7.1
0.207	22.2	20.2	42.4	53.3	-10.9
0.523	7.1	19.9	27.0	46.0	-19.0
5.795	1.0	20.3	21.3	50.0	-28.7

SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2017.01.26

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

Low Channel (1) 2402 MHz & High Channel (39) 2480 MHz

Low Channel (1) 2402 MHz, Mid Channel (19) 2440 MHz, & High Channel (39) 2480 MHz

POWER SETTINGS INVESTIGATED

14VDC

CONFIGURATIONS INVESTIGATED

LYTX0018 - 5

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26000 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
Filter - Low Pass	Micro-Tronics	LPM50004	LFC	10/17/2016	12 mo
Attenuator	Fairview Microwave	SA18H-20	TKQ	NCR	0 mo
Filter - High Pass	Micro-Tronics	HPM50111	HHX	8/10/2016	12 mo
Cable	Element	8-18GHz RE Cables	OCO	8/10/2016	12 mo
Cable	Element	18-26GHz RE Cables	OCK	1/3/2017	12 mo
Cable	Element	10kHz-1GHz RE Cables	OCH	8/9/2016	12 mo
Cable	Element	1-8GHz RE Cables	OCJ	8/4/2016	12 mo
Antenna - Biconilog	EMCO	3142	AXB	11/6/2015	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1402	AOZ	8/10/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-4D-010120-30-10P-1	AOP	8/4/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOI	1/3/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOF	8/10/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOE	8/10/2016	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHT	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHR	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AHN	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHB	3/21/2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFJ	1/28/2017	12 mo

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

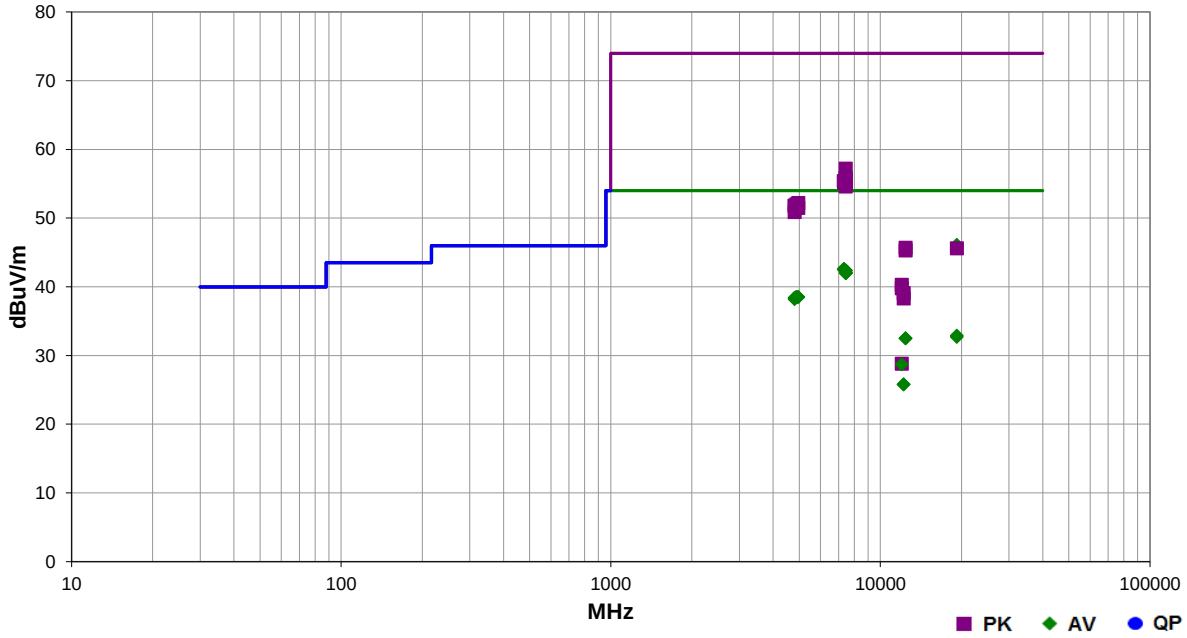
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	LYTX0018	**Date:**	03/22/17		
Project:	None	**Temperature:**	21.4 °C		
Job Site:	OC10	**Humidity:**	54.1% RH		
Serial Number:	SF00000437	**Barometric Pres.:**	1019 mbar	**Tested by:**	Salvador Solorzano, Johnny Candelas
EUT:	DC-6000-001				
Configuration:	5				
Customer:	Lytx, Inc.				
Attendees:	None				
EUT Power:	14VDC				
Operating Mode:	Low Channel (1) 2402 MHz, Mid Channel (19) 2440 MHz, & High Channel (39) 2480 MHz				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

Run #	57	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



(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
7321.133	24.6	18.0	1.4	210.0	3.0	0.0	Horz	AV	0.0	42.6	54.0	-11.4	EUT Horz, Mid Channel
7320.275	24.5	18.0	1.0	38.0	3.0	0.0	Vert	AV	0.0	42.5	54.0	-11.5	EUT Horz, Mid Channel
7442.233	24.5	17.9	1.0	229.0	3.0	0.0	Horz	AV	0.0	42.4	54.0	-11.6	EUT Horz, High Channel
7442.442	24.4	17.9	1.0	133.0	3.0	0.0	Vert	AV	0.0	42.3	54.0	-11.7	EUT Horz, High Channel
7442.492	24.1	17.9	1.4	319.0	3.0	0.0	Horz	AV	0.0	42.0	54.0	-12.0	EUT Vert, High Channel
7441.900	24.1	17.9	1.0	188.0	3.0	0.0	Vert	AV	0.0	42.0	54.0	-12.0	EUT Vert, High Channel
7442.067	24.1	17.9	1.0	281.0	3.0	0.0	Horz	AV	0.0	42.0	54.0	-12.0	EUT Side, High Channel
7442.092	24.1	17.9	1.0	189.0	3.0	0.0	Vert	AV	0.0	42.0	54.0	-12.0	EUT Side, High Channel
4959.675	25.8	12.7	1.0	255.0	3.0	0.0	Horz	AV	0.0	38.5	54.0	-15.5	EUT Horz, High Channel
4957.708	25.8	12.7	1.2	8.0	3.0	0.0	Vert	AV	0.0	38.5	54.0	-15.5	EUT Horz, High Channel
4879.983	25.7	12.8	1.0	41.0	3.0	0.0	Horz	AV	0.0	38.5	54.0	-15.5	EUT Horz, Mid Channel
4879.000	25.7	12.8	1.5	263.0	3.0	0.0	Vert	AV	0.0	38.5	54.0	-15.5	EUT Horz, Mid Channel
4803.670	25.6	12.8	1.0	99.0	3.0	0.0	Horz	AV	0.0	38.4	54.0	-15.6	EUT Horz, Low Channel
4804.010	25.4	12.8	1.0	21.0	3.0	0.0	Vert	AV	0.0	38.2	54.0	-15.8	EUT Horz, Low Channel
7439.492	39.3	17.9	1.0	229.0	3.0	0.0	Horz	PK	0.0	57.2	74.0	-16.8	EUT Horz, High Channel
7441.467	38.0	17.9	1.4	319.0	3.0	0.0	Horz	PK	0.0	55.9	74.0	-18.1	EUT Vert, High Channel
7440.367	37.9	17.9	1.0	133.0	3.0	0.0	Vert	PK	0.0	55.8	74.0	-18.2	EUT Horz, High Channel
7320.050	37.4	18.0	1.4	210.0	3.0	0.0	Horz	PK	0.0	55.4	74.0	-18.6	EUT Horz, Mid Channel

(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
7442.225	37.4	17.9	1.0	281.0	3.0	0.0	Horz	PK	0.0	55.3	74.0	-18.7	EUT Side, High Channel
7321.608	37.2	18.0	1.0	38.0	3.0	0.0	Vert	PK	0.0	55.2	74.0	-18.8	EUT Horz, Mid Channel
7440.842	37.1	17.9	1.0	188.0	3.0	0.0	Vert	PK	0.0	55.0	74.0	-19.0	EUT Vert, High Channel
7438.208	36.7	17.9	1.0	189.0	3.0	0.0	Vert	PK	0.0	54.6	74.0	-19.4	EUT Side, High Channel
19216.890	37.5	-4.6	1.0	179.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	EUT Horz, Low Channel
19217.210	37.3	-4.6	1.0	260.0	3.0	0.0	Horz	AV	0.0	32.7	54.0	-21.3	EUT Horz, Low Channel
12400.090	24.2	8.3	1.0	302.0	3.0	0.0	Horz	AV	0.0	32.5	54.0	-21.5	EUT Horz, High Channel
12400.090	24.2	8.3	2.2	161.0	3.0	0.0	Vert	AV	0.0	32.5	54.0	-21.5	EUT Horz, High Channel
4959.092	39.5	12.7	1.0	255.0	3.0	0.0	Horz	PK	0.0	52.2	74.0	-21.8	EUT Horz, High Channel
4877.592	39.2	12.8	1.0	41.0	3.0	0.0	Horz	PK	0.0	52.0	74.0	-22.0	EUT Horz, Mid Channel
4802.850	39.0	12.8	1.0	21.0	3.0	0.0	Vert	PK	0.0	51.8	74.0	-22.2	EUT Horz, Low Channel
4962.058	38.8	12.7	1.2	8.0	3.0	0.0	Vert	PK	0.0	51.5	74.0	-22.5	EUT Horz, High Channel
4879.958	38.7	12.8	1.5	263.0	3.0	0.0	Vert	PK	0.0	51.5	74.0	-22.5	EUT Horz, Mid Channel
4803.805	38.1	12.8	1.0	99.0	3.0	0.0	Horz	PK	0.0	50.9	74.0	-23.1	EUT Horz, Low Channel
12007.540	32.8	-4.0	1.0	178.0	3.0	0.0	Horz	AV	0.0	28.8	54.0	-25.2	EUT Horz, Low Channel
12007.980	32.7	-4.0	1.0	121.0	3.0	0.0	Vert	AV	0.0	28.7	54.0	-25.3	EUT Horz, Low Channel
19215.130	50.7	-4.6	1.0	260.0	3.0	0.0	Horz	PK	0.0	46.1	74.0	-27.9	EUT Horz, Low Channel
12197.560	28.6	-2.8	1.0	272.0	3.0	0.0	Horz	AV	0.0	25.8	54.0	-28.2	EUT Horz, Mid Channel
12197.500	28.6	-2.8	1.0	49.0	3.0	0.0	Vert	AV	0.0	25.8	54.0	-28.2	EUT Horz, Mid Channel
12402.480	37.4	8.3	2.2	161.0	3.0	0.0	Vert	PK	0.0	45.7	74.0	-28.3	EUT Horz, High Channel
19214.340	50.2	-4.6	1.0	179.0	3.0	0.0	Vert	PK	0.0	45.6	74.0	-28.4	EUT Horz, Low Channel
12400.320	37.0	8.3	1.0	302.0	3.0	0.0	Horz	PK	0.0	45.3	74.0	-28.7	EUT Horz, High Channel
12009.830	44.3	-4.0	1.0	121.0	3.0	0.0	Vert	PK	0.0	40.3	74.0	-33.7	EUT Horz, Low Channel
12011.940	43.9	-4.1	1.0	178.0	3.0	0.0	Horz	PK	0.0	39.8	74.0	-34.2	EUT Horz, Low Channel
12197.590	41.9	-2.8	1.0	49.0	3.0	0.0	Vert	PK	0.0	39.1	74.0	-34.9	EUT Horz, Mid Channel
12198.010	41.1	-2.8	1.0	272.0	3.0	0.0	Horz	PK	0.0	38.3	74.0	-35.7	EUT Horz, Mid Channel

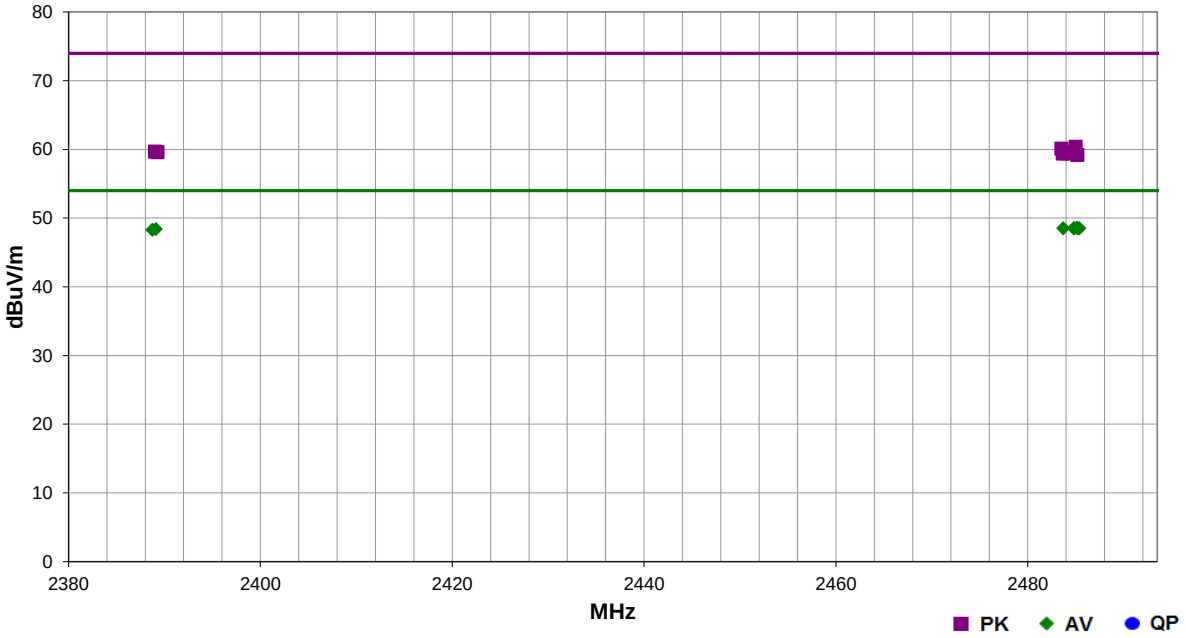
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	LYTX0018	**Date:**	03/22/17		
Project:	None	**Temperature:**	21.4 °C		
Job Site:	OC10	**Humidity:**	54.1% RH		
Serial Number:	SF00000437	**Barometric Pres.:**	1019 mbar	**Tested by:**	Salvador Solorzano, Johnny Candelas
EUT:	DC-6000-001				
Configuration:	5				
Customer:	Lytx, Inc.				
Attendees:	None				
EUT Power:	14VDC				
Operating Mode:	Low Channel (1) 2402 MHz & High Channel (39) 2480 MHz				
Deviations:	None				
Comments:	Band Edge				

Test Specifications	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

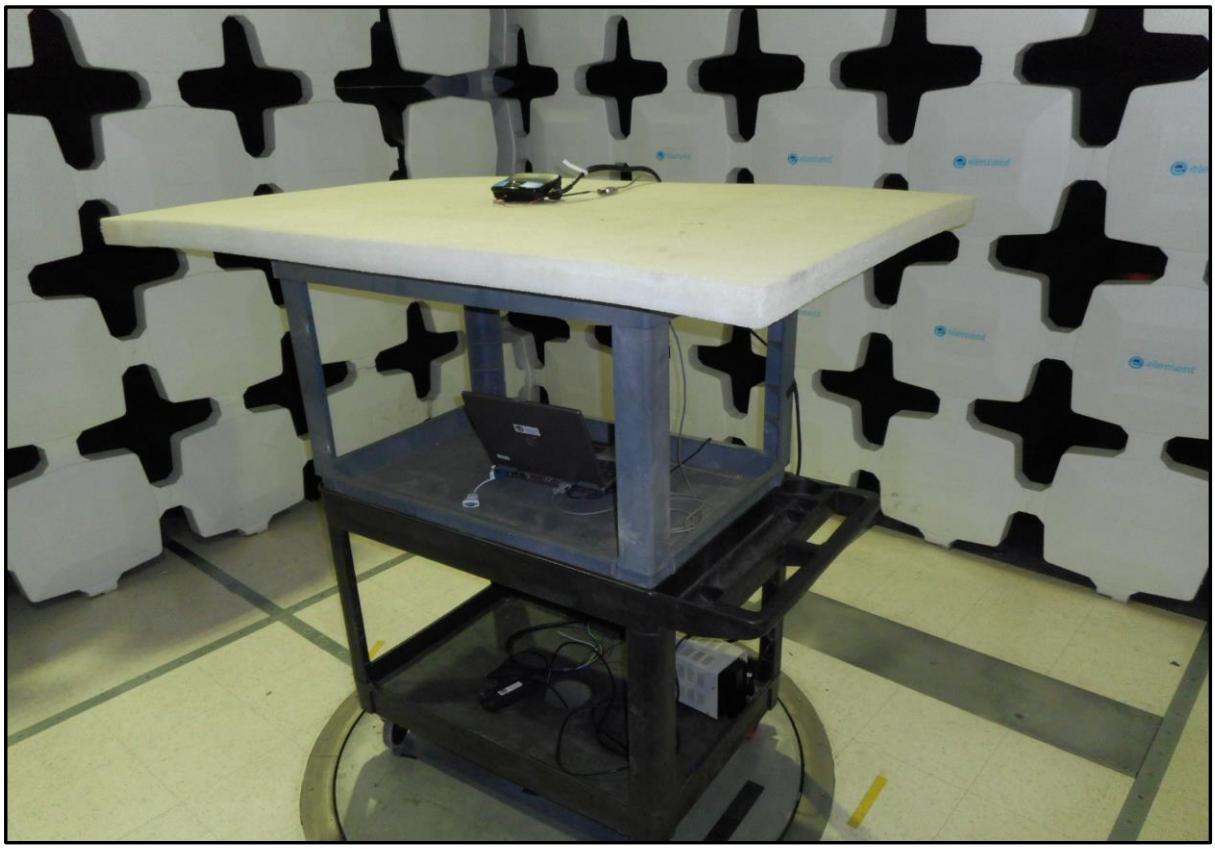
Run #	65	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass

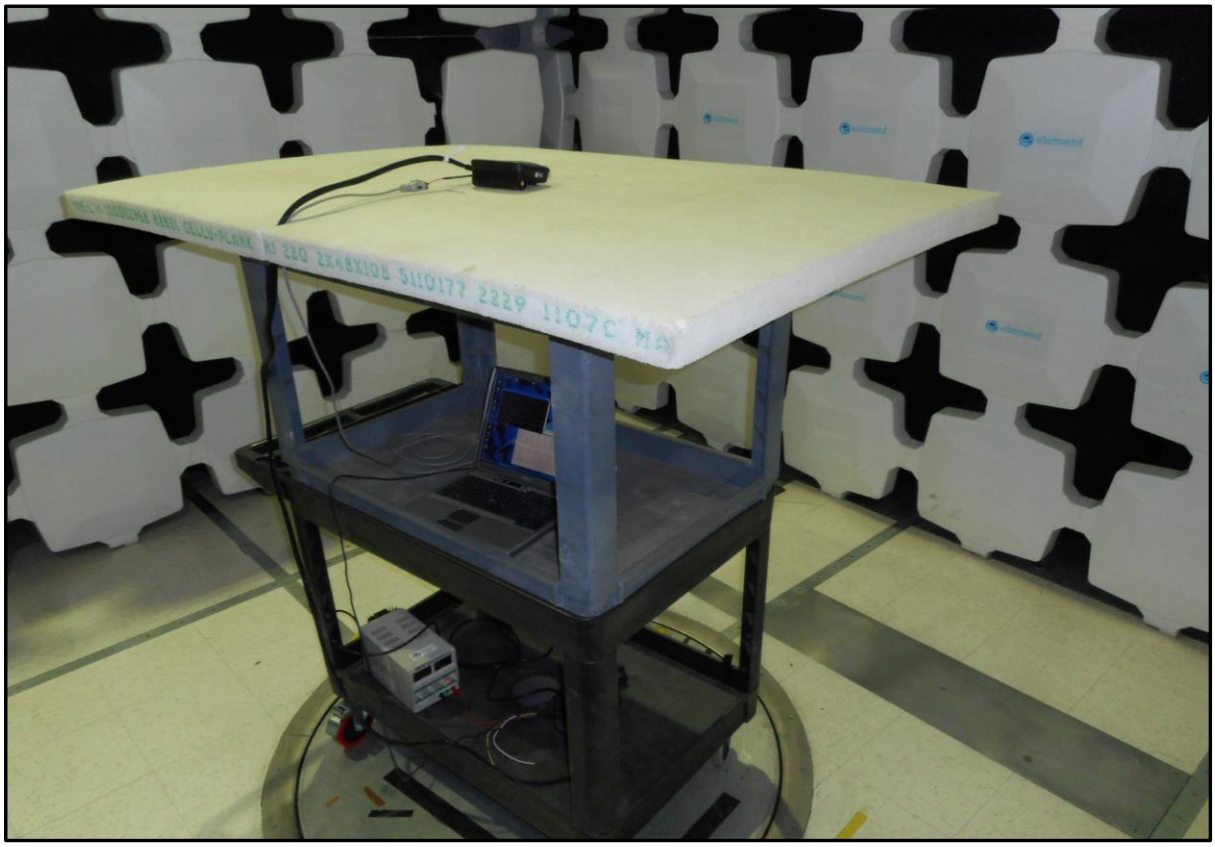


Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2485.127	26.3	2.3	1.0	300.0	3.0	20.0	Horz	AV	0.0	48.6	54.0	-5.4	EUT Horz, High Channel
2484.850	26.2	2.3	1.0	141.0	3.0	20.0	Horz	AV	0.0	48.5	54.0	-5.5	EUT Vert, High Channel
2485.230	26.2	2.3	1.7	206.0	3.0	20.0	Vert	AV	0.0	48.5	54.0	-5.5	EUT Vert, High Channel
2484.817	26.2	2.3	1.0	113.0	3.0	20.0	Horz	AV	0.0	48.5	54.0	-5.5	EUT Side , High Channel
2483.700	26.2	2.3	1.0	221.0	3.0	20.0	Vert	AV	0.0	48.5	54.0	-5.5	EUT Side , High Channel
2485.390	26.2	2.3	1.0	188.0	3.0	20.0	Vert	AV	0.0	48.5	54.0	-5.5	EUT Horz, High Channel
2389.113	26.4	2.0	1.0	216.0	3.0	20.0	Vert	AV	0.0	48.4	54.0	-5.6	EUT Horz, Low Channel
2388.740	26.3	2.0	1.0	232.0	3.0	20.0	Horz	AV	0.0	48.3	54.0	-5.7	EUT Horz, Low Channel
2484.987	38.1	2.3	1.0	221.0	3.0	20.0	Vert	PK	0.0	60.4	74.0	-13.6	EUT Side , High Channel
2483.513	37.8	2.3	1.0	141.0	3.0	20.0	Horz	PK	0.0	60.1	74.0	-13.9	EUT Vert, High Channel
2389.003	37.7	2.0	1.0	216.0	3.0	20.0	Vert	PK	0.0	59.7	74.0	-14.3	EUT Horz, Low Channel
2484.920	37.3	2.3	1.0	113.0	3.0	20.0	Horz	PK	0.0	59.6	74.0	-14.4	EUT Side , High Channel
2389.270	37.6	2.0	1.0	232.0	3.0	20.0	Horz	PK	0.0	59.6	74.0	-14.4	EUT Horz, Low Channel
2484.070	37.1	2.3	1.7	206.0	3.0	20.0	Vert	PK	0.0	59.4	74.0	-14.6	EUT Vert, High Channel
2483.640	37.1	2.3	1.0	300.0	3.0	20.0	Horz	PK	0.0	59.4	74.0	-14.6	EUT Horz, High Channel
2485.173	36.9	2.3	1.0	188.0	3.0	20.0	Vert	PK	0.0	59.2	74.0	-14.8	EUT Horz, High Channel

SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2017.01.26



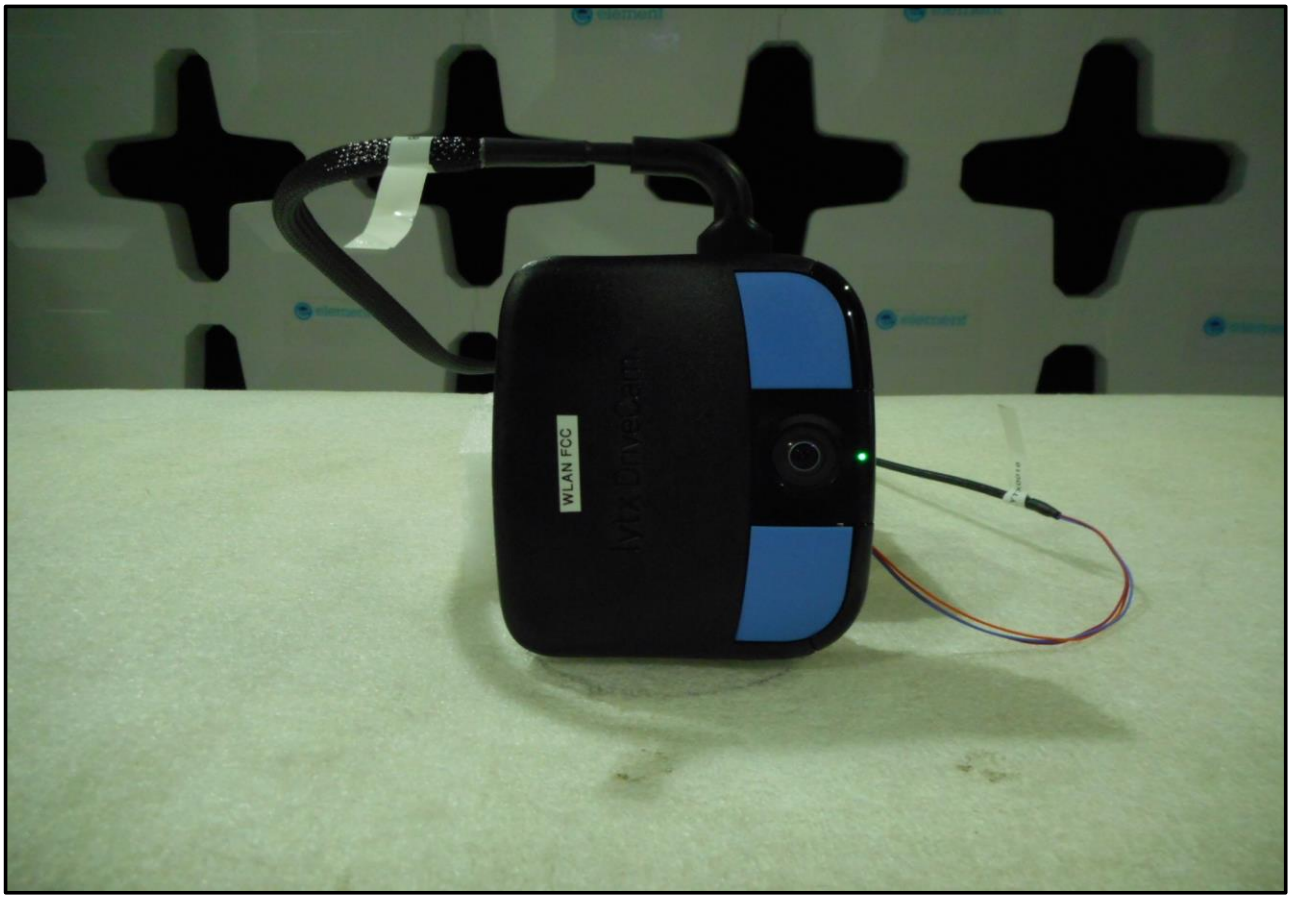


SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2017.01.26

SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2017.01.26



DUTY CYCLE

XMit 2017.01.26

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	E8257D	TGU	2/5/2015	2/5/2018
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	1/5/2017	1/5/2018
Block - DC	Fairview Microwave	SD3379	AMV	1/11/2017	1/11/2018
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	11/2/2016	11/2/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. 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

TbtTx 2017.01.27 XMit 2017.01.26

EUT:	DC-6000-001	Work Order:	LYTX0018
Serial Number:	SF00000437	Date:	04/28/17
Customer:	Lytx, Inc.	Temperature:	20.9 °C
Attendees:	None	Humidity:	48.4% RH
Project:	None	Barometric Pres.:	1016 mbar
Tested by:	Johnny Candelas	Power: 14VDC	Job Site: OC13

TEST SPECIFICATIONS	Test Method
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

Using client provided power settings. DC block/20dB attenuator + Coax cable + Patch cable = 24.1dB total offset for Low Ch & 23.6dB total offset for Mid and High Ch

DEVIATIONS FROM TEST STANDARD

None

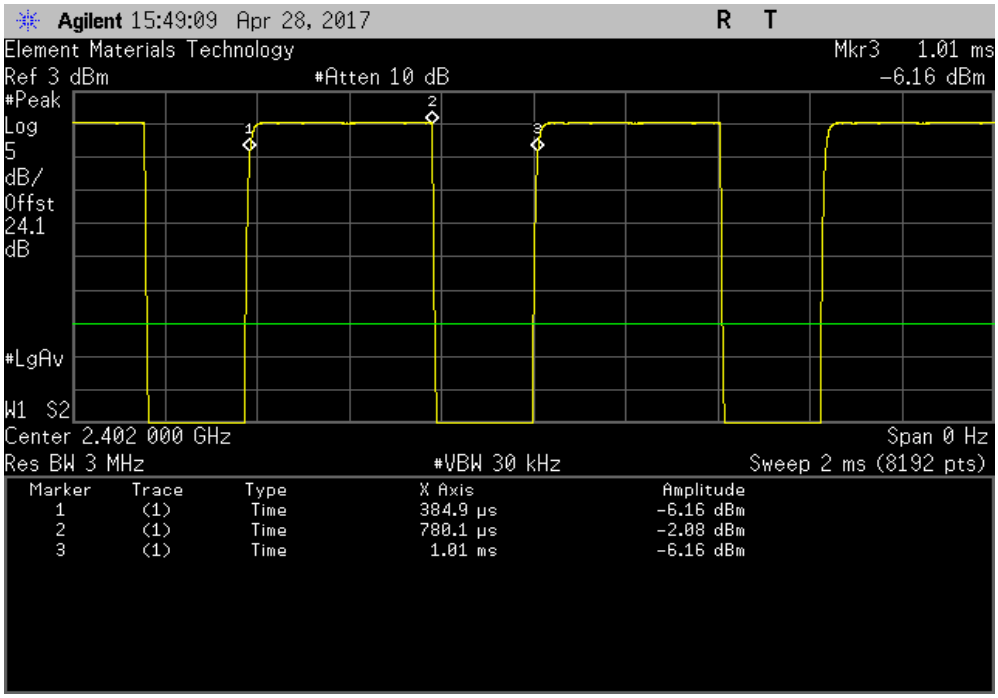
Configuration #	4	Signature

	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
BLE/GFSK Low Channel, 2402 MHz	395.236 us	625.000 us	1	63.2	N/A	N/A
BLE/GFSK Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK Mid Channel, 2440 MHz	395.024 us	624.800 us	1	63.2	N/A	N/A
BLE/GFSK Mid Channel, 2440 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK High Channel, 2480 MHz	395.768 us	624.856 us	1	63.3	N/A	N/A
BLE/GFSK High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A

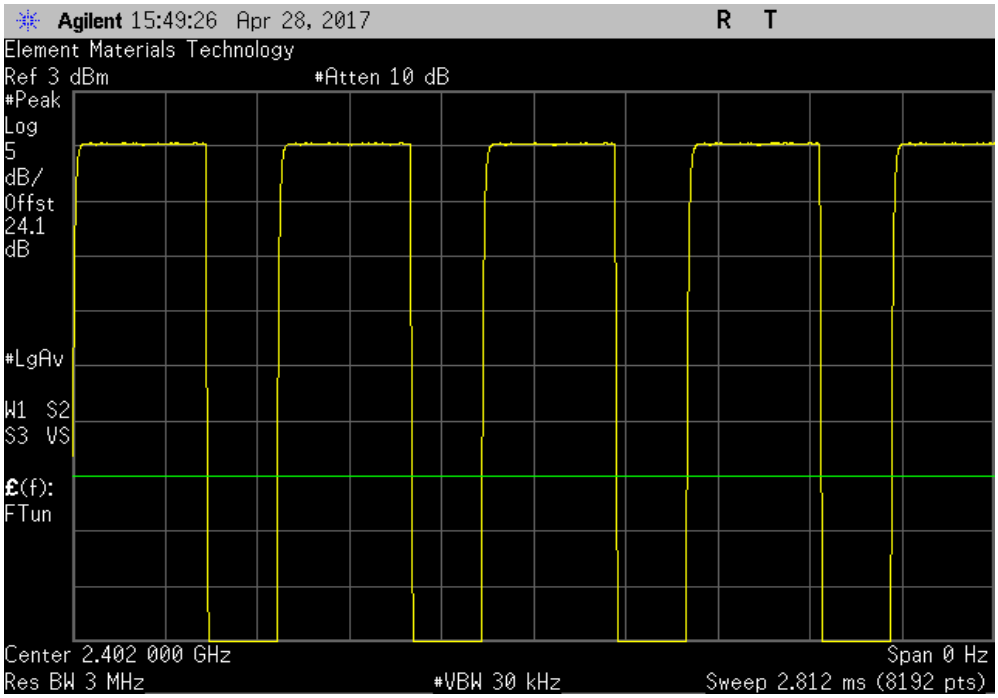
DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.01.26

BLE/GFSK Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	395.236 us	625.000 us	1	63.2	N/A	N/A



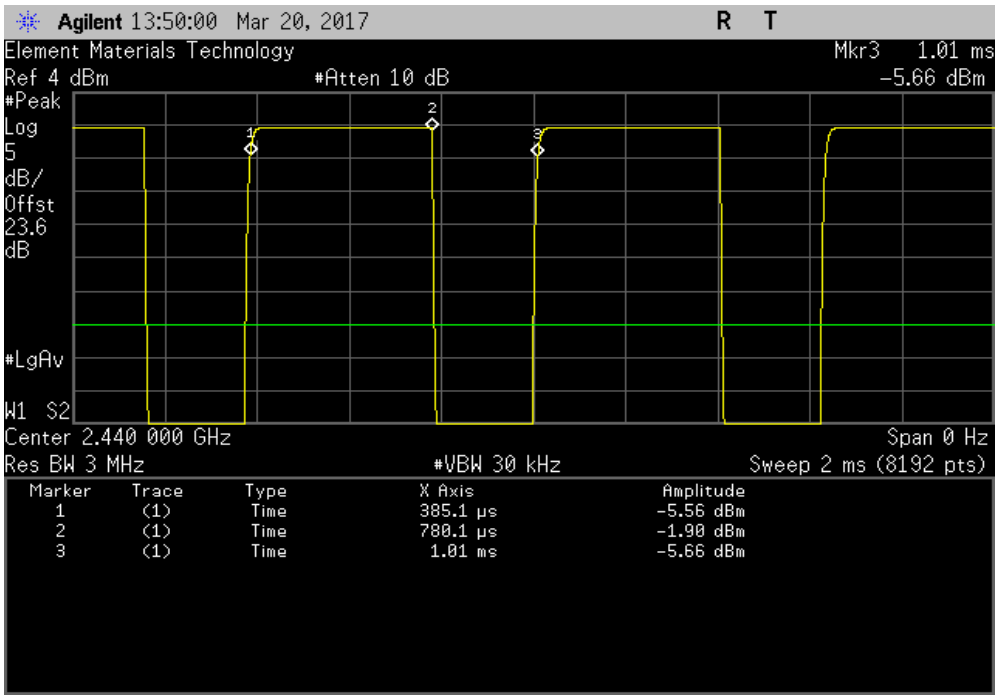
BLE/GFSK Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



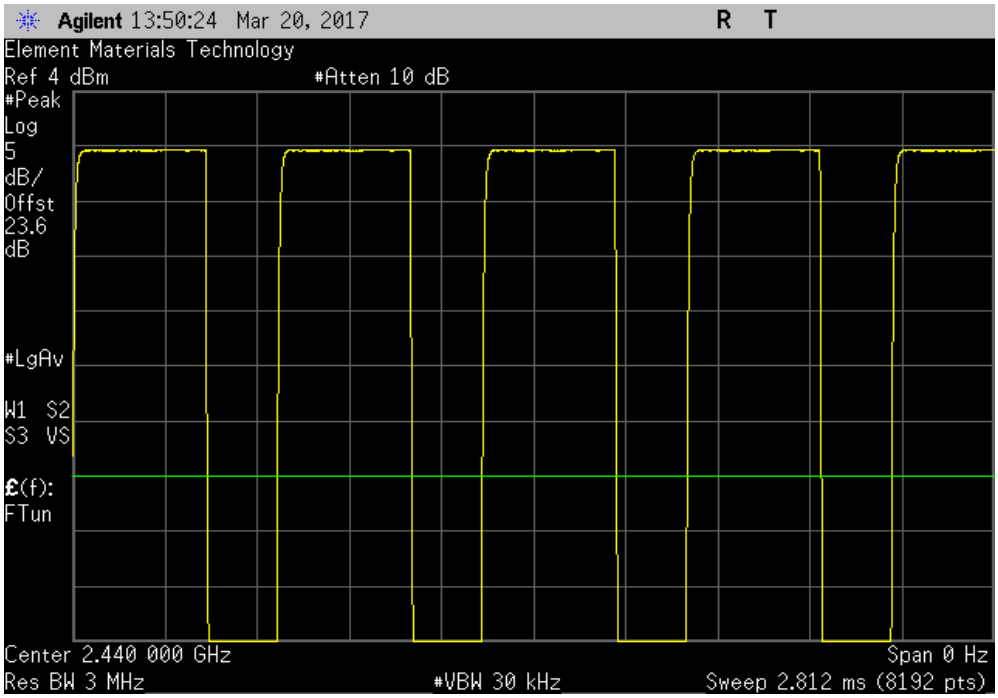
DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.01.26

BLE/GFSK Mid Channel, 2440 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	395.024 us	624.800 us	1	63.2	N/A	N/A



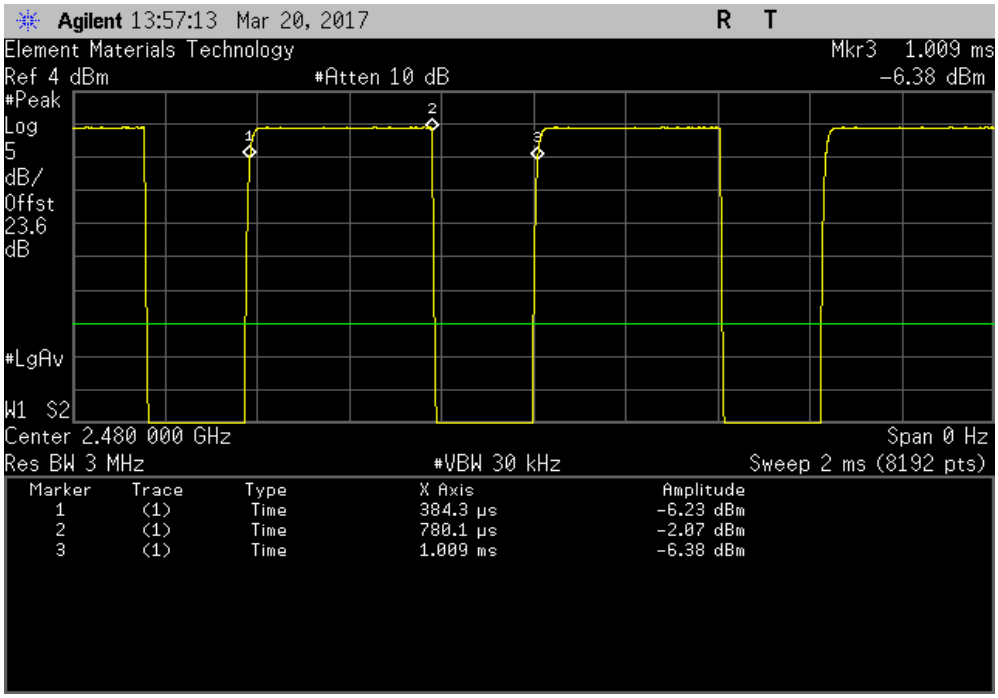
BLE/GFSK Mid Channel, 2440 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



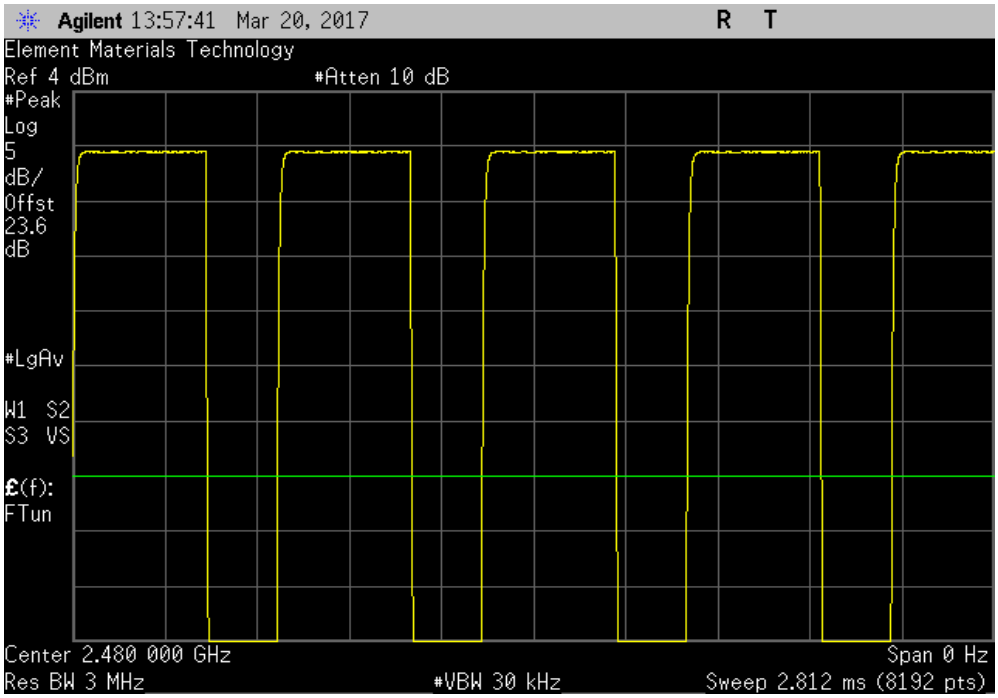
DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.01.26

BLE/GFSK High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	395.768 us	624.856 us	1	63.3	N/A	N/A

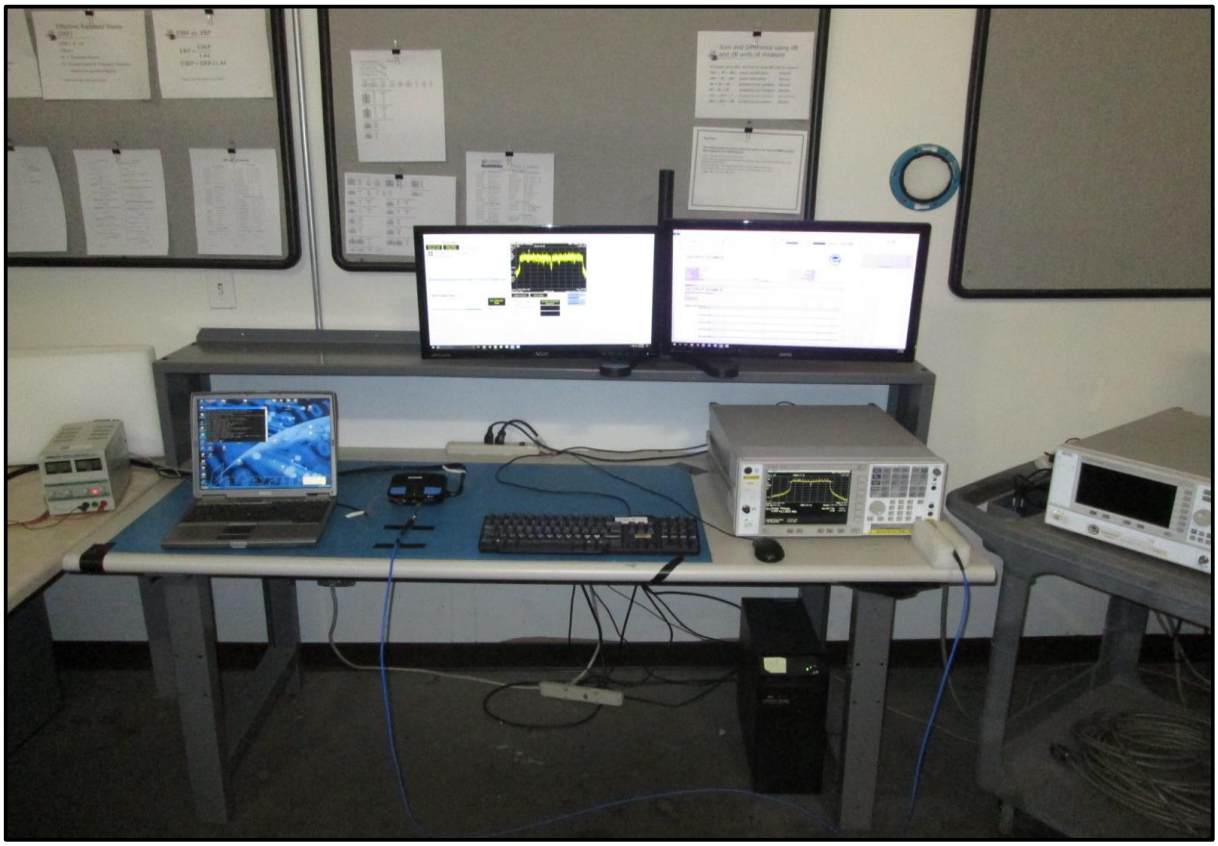


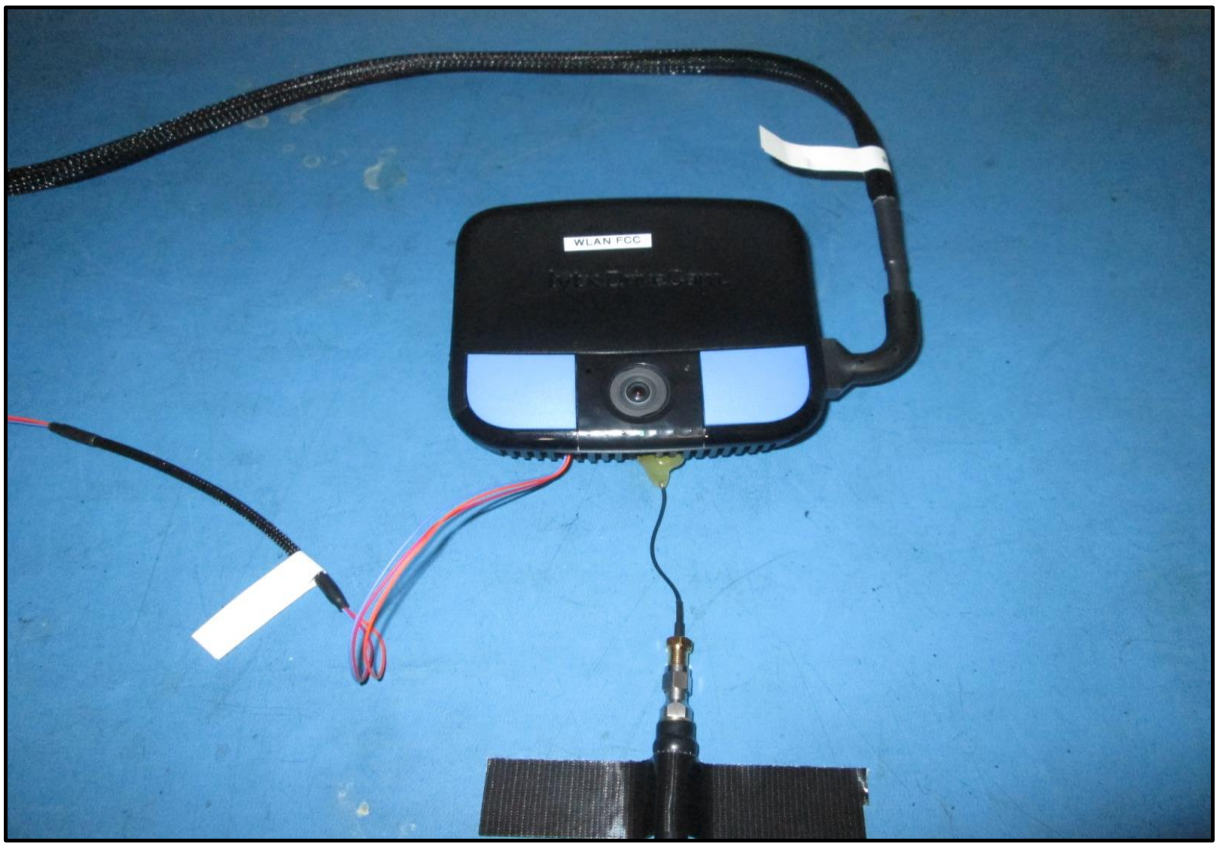
BLE/GFSK High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

XMit 2017.01.26





OCCUPIED BANDWIDTH

XMit 2017.01.26

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	E8257D	TGU	2/5/2015	2/5/2018
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	1/5/2017	1/5/2018
Block - DC	Fairview Microwave	SD3379	AMV	1/11/2017	1/11/2018
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	11/2/2016	11/2/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was set to the channels and modes listed in the datasheet.

The 6dB occupied bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The 99.0% occupied bandwidth was also measured at the same time which can be needed during Output Power depending on the applicable method.

OCCUPIED BANDWIDTH

TbtTx 2017.01.27 XMit 2017.01.26

EUT:	**DC-6000-001**	**Work Order:**	**LYTX0018**
Serial Number:	**SF00000437**	**Date:**	**04/28/17**
Customer:	**Lytx, Inc.**	**Temperature:**	**20.9 °C**
Attendees:	**None**	**Humidity:**	**48.4% RH**
Project:	**None**	**Barometric Pres.:**	**1016 mbar**
Tested by:	**Johnny Candelas**	**Power:** **14VDC**	**Job Site:** **OC13**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

Using client provided power settings. DC block/20dB attenuator + Coax cable + Patch cable = 24.1dB total offset for Low Ch & 23.6dB total offset for Mid and High Ch

DEVIATIONS FROM TEST STANDARD

None

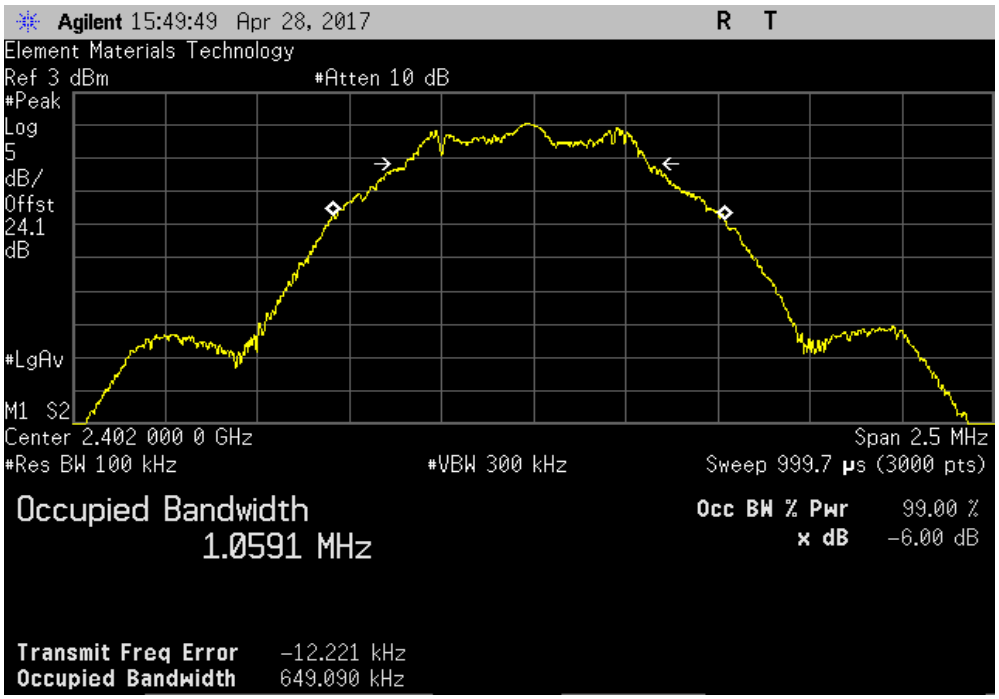
Configuration #	**4**	*Signature*

	Value	**Limit (≥)**	**Result**
BLE/GFSK Low Channel, 2402 MHz	649.090 kHz	500 kHz	Pass
BLE/GFSK Mid Channel, 2440 MHz	636.676 kHz	500 kHz	Pass
BLE/GFSK High Channel, 2480 MHz	660.535 kHz	500 kHz	Pass

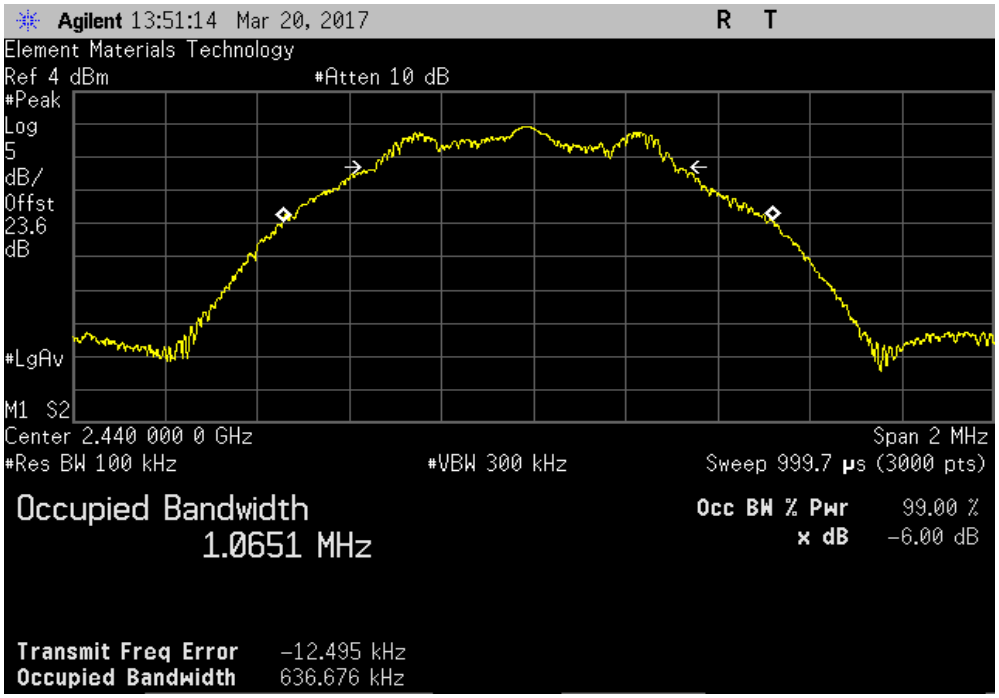
OCCUPIED BANDWIDTH

TbtTx 2017.01.27 XMit 2017.01.26

BLE/GFSK Low Channel, 2402 MHz						
				Value	Limit (≥)	Result
				649.090 kHz	500 kHz	Pass



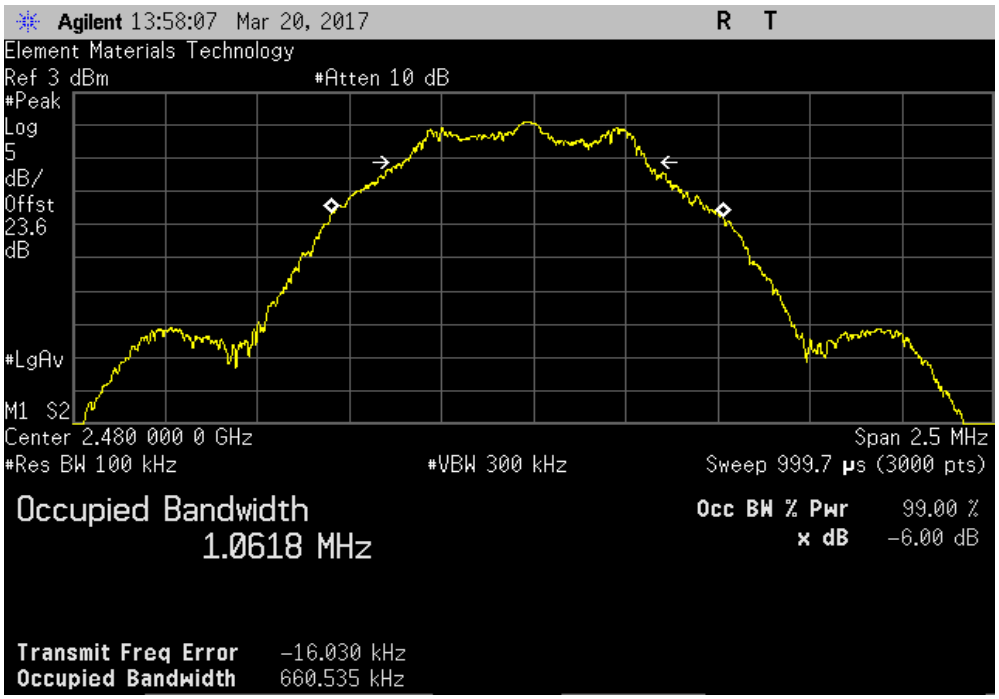
BLE/GFSK Mid Channel, 2440 MHz						
				Value	Limit (≥)	Result
				636.676 kHz	500 kHz	Pass



OCCUPIED BANDWIDTH

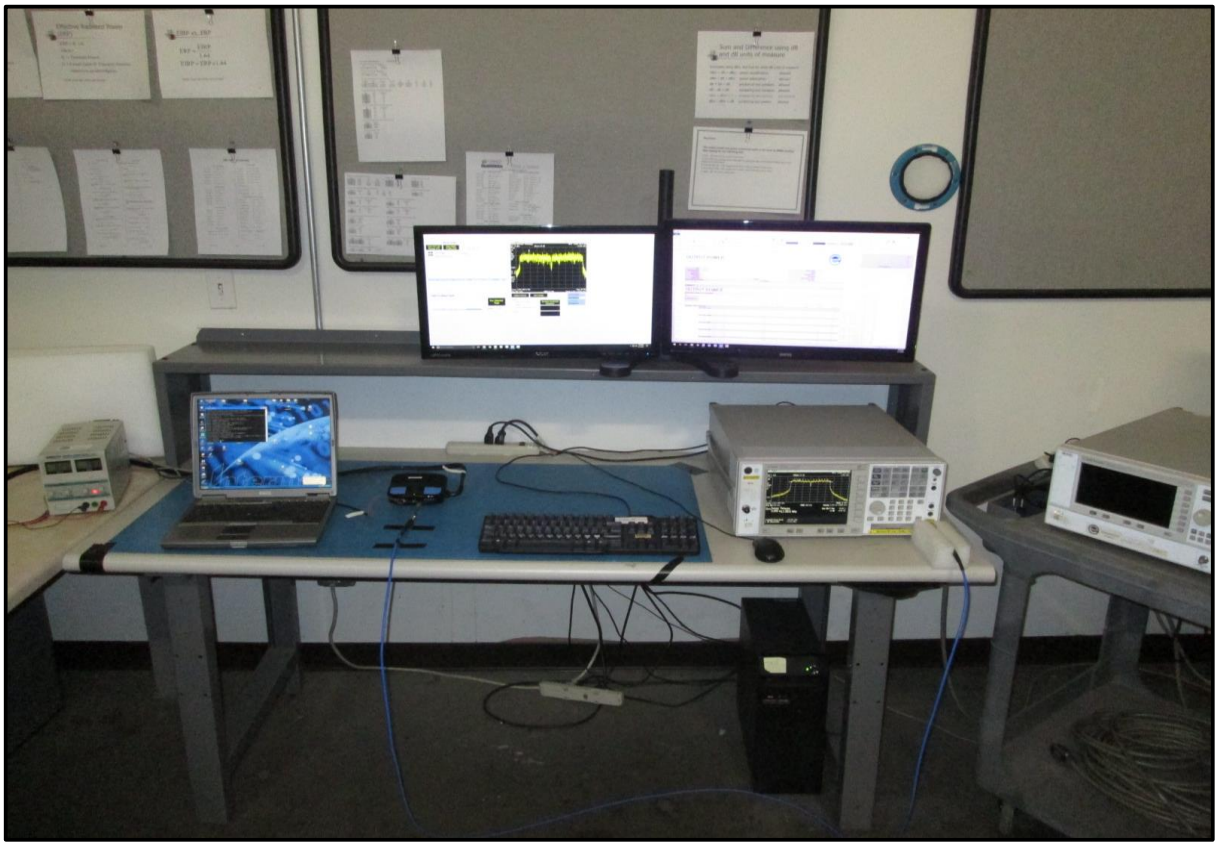
TbtTx 2017.01.27 XMit 2017.01.26

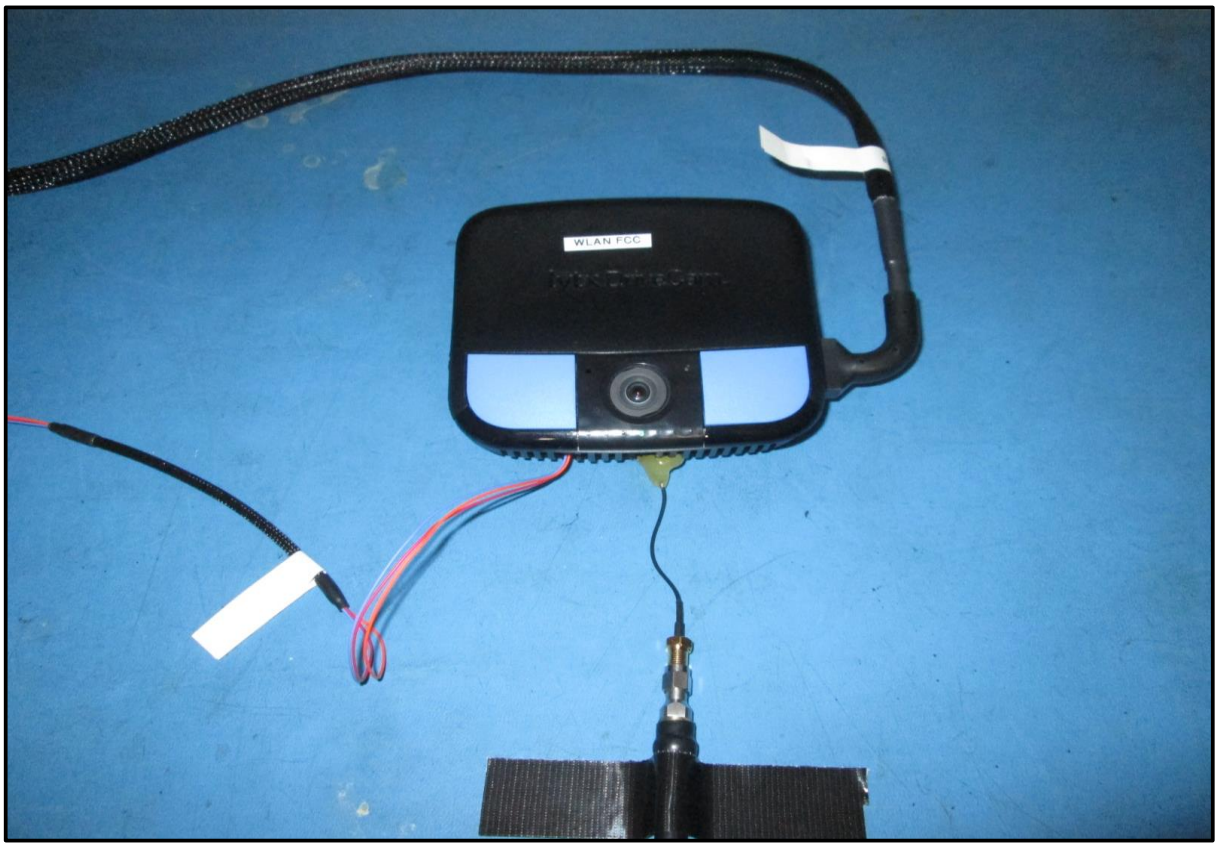
BLE/GFSK High Channel, 2480 MHz						
				Value	Limit (≥)	Result
				660.535 kHz	500 kHz	Pass



OCCUPIED BANDWIDTH

XMit 2017.01.26





OUTPUT POWER

XMit 2017.01.26

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	E8257D	TGU	2/5/2015	2/5/2018
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	1/5/2017	1/5/2018
Block - DC	Fairview Microwave	SD3379	AMV	1/11/2017	1/11/2018
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	11/2/2016	11/2/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

De Facto EIRP Limit: The EUT meets the de facto EIRP limit of +36 dBm.

OUTPUT POWER

TbtTx 2017.01.27 XMit 2017.01.26

EUT:	DC-6000-001			Work Order:	LYTX0018
Serial Number:	SF00000437			Date:	04/28/17
Customer:	Lytx, Inc.			Temperature:	20.9 °C
Attendees:	None			Humidity:	48.4% RH
Project:	None			Barometric Pres.:	1016 mbar
Tested by:	Johnny Candelas	Power:	14VDC	Job Site:	OC13

TEST SPECIFICATIONS	Test Method
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

Using client provided power settings. DC block/20dB attenuator + Coax cable + Patch cable = 24.1dB total offset for Low Ch & 23.6dB total offset for Mid and High Ch

DEVIATIONS FROM TEST STANDARD

None

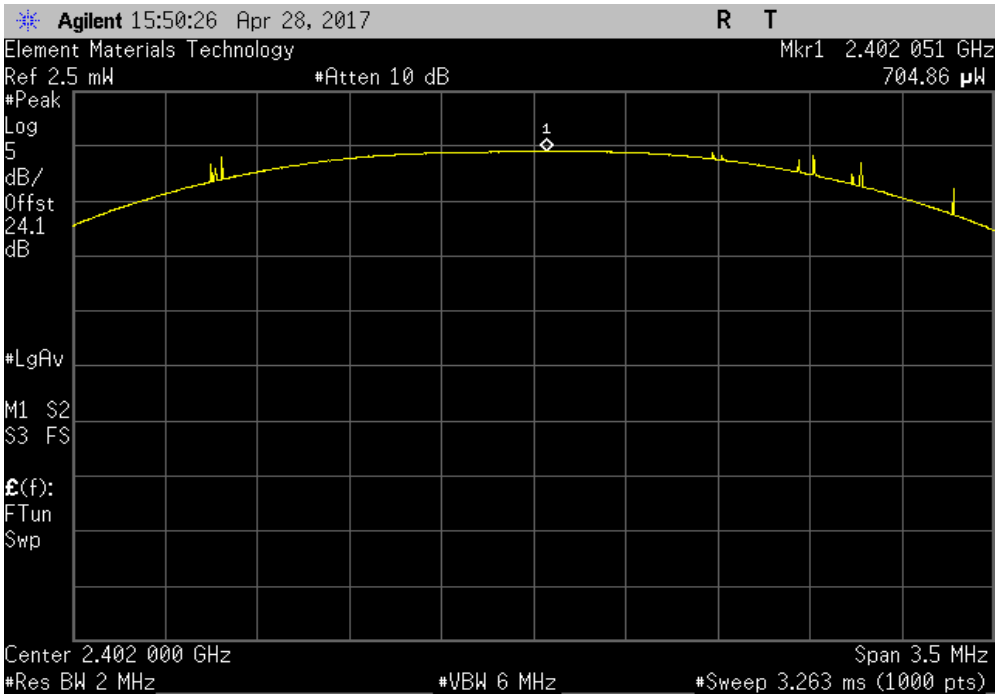
Configuration #	4	Signature

	Value	Limit (<)	Result
BLE/GFSK Low Channel, 2402 MHz	704.855 uW	1 W	Pass
BLE/GFSK Mid Channel, 2440 MHz	770.194 uW	1 W	Pass
BLE/GFSK High Channel, 2480 MHz	761.027 uW	1 W	Pass

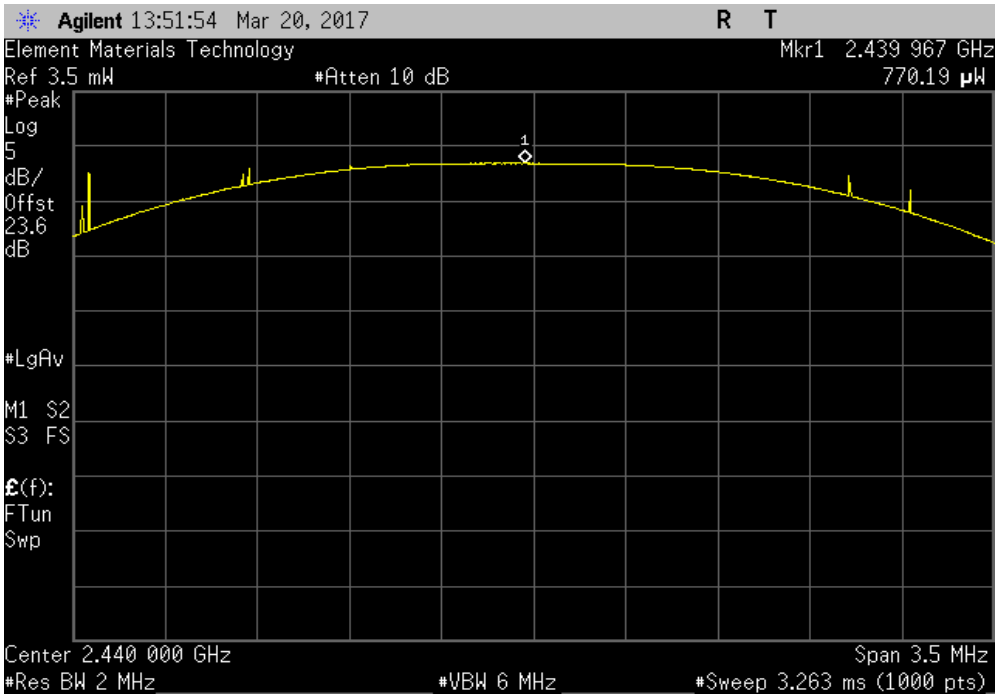
OUTPUT POWER

TbtTx 2017.01.27 XMit 2017.01.26

BLE/GFSK Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				704.855 uW	1 W	Pass



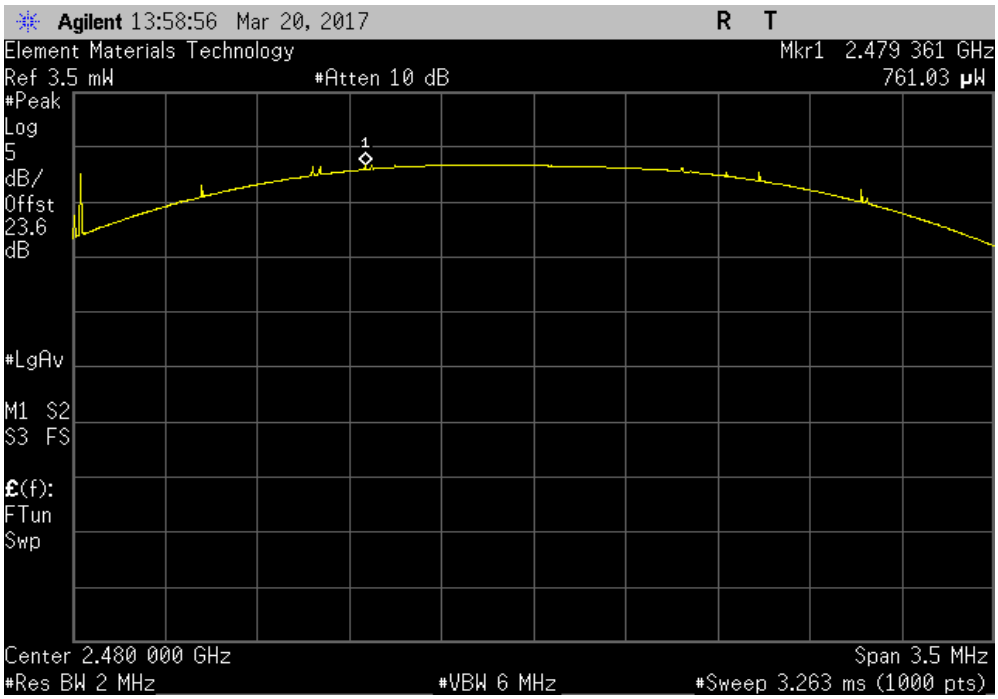
BLE/GFSK Mid Channel, 2440 MHz						
				Value	Limit (<)	Result
				770.194 uW	1 W	Pass



OUTPUT POWER

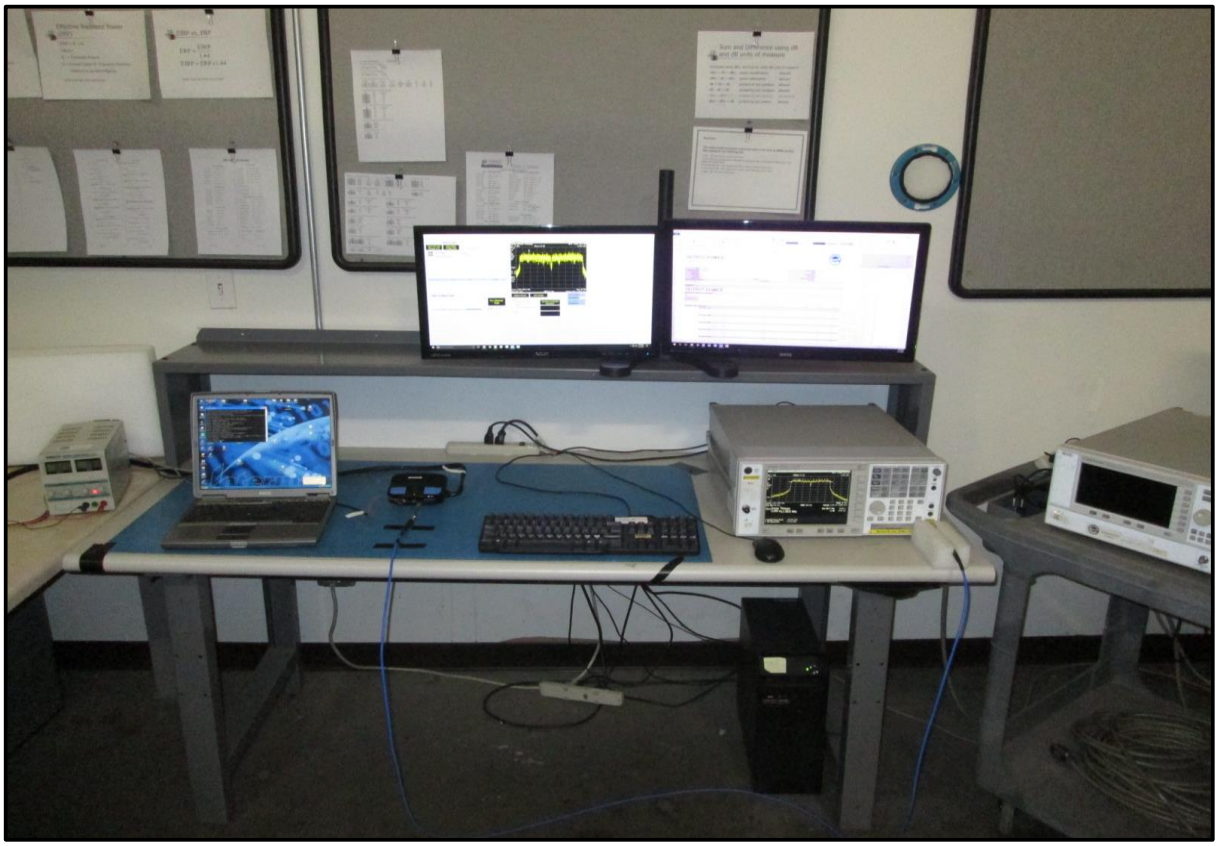
TbtTx 2017.01.27 XMit 2017.01.26

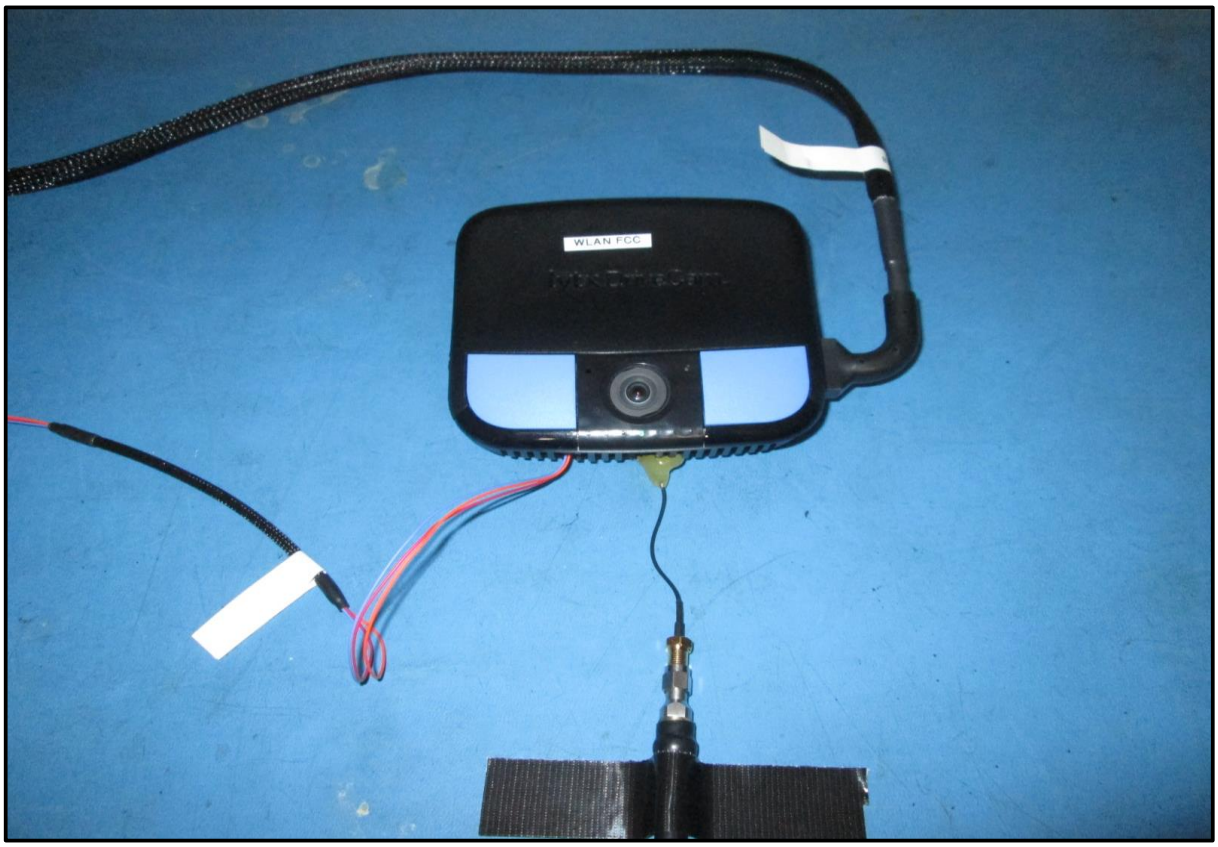
BLE/GFSK High Channel, 2480 MHz						
				Value	Limit (<)	Result
				761.027 uW	1 W	Pass



OUTPUT POWER

XMit 2017.01.26





POWER SPECTRAL DENSITY

XMit 2017.01.26

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	E8257D	TGU	2/5/2015	2/5/2018
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	1/5/2017	1/5/2018
Block - DC	Fairview Microwave	SD3379	AMV	1/11/2017	1/11/2018
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	11/2/2016	11/2/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.

POWER SPECTRAL DENSITY

TbtTx 2017.01.27 XMit 2017.01.26

EUT:	DC-6000-001			Work Order:	LYTX0018
Serial Number:	SF00000437			Date:	04/28/17
Customer:	Lytx, Inc.			Temperature:	20.9 °C
Attendees:	None			Humidity:	48.4% RH
Project:	None			Barometric Pres.:	1016 mbar
Tested by:	Johnny Candelas	Power:	14VDC	Job Site:	OC13

TEST SPECIFICATIONS	Test Method
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

Using client provided power settings. DC block/20dB attenuator + Coax cable + Patch cable = 24.1dB total offset for Low Ch & 23.6dB total offset for Mid and High Ch

DEVIATIONS FROM TEST STANDARD

None

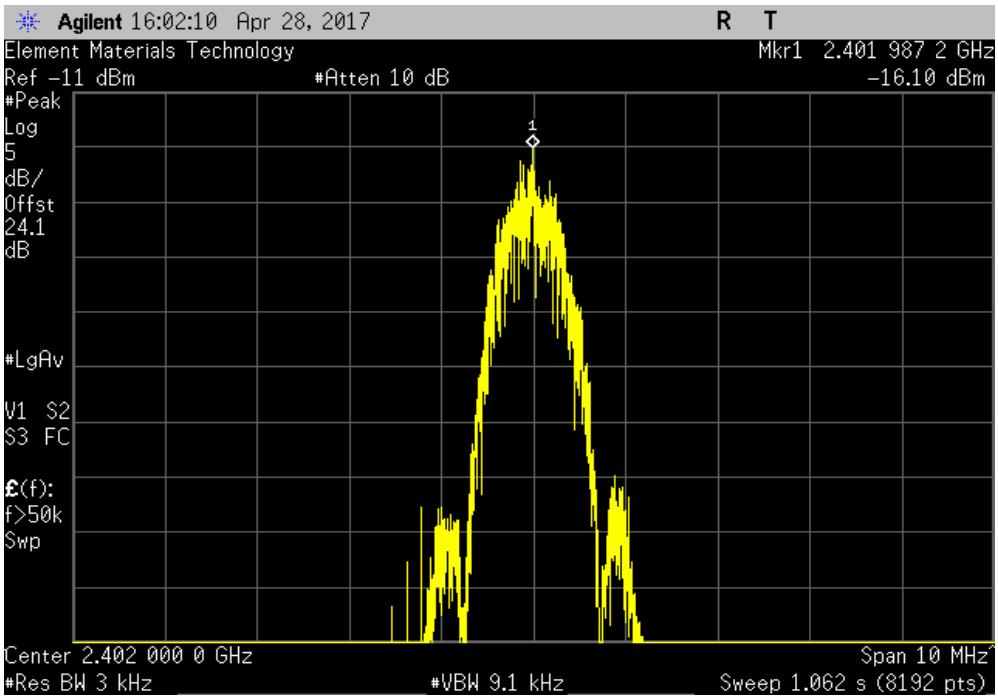
Configuration #	4	Signature

	Value dBm/3kHz	Limit < dBm/3kHz	Results
BLE/GFSK Low Channel, 2402 MHz	-16.100	8	Pass
BLE/GFSK Mid Channel, 2440 MHz	-15.690	8	Pass
BLE/GFSK High Channel, 2480 MHz	-15.919	8	Pass

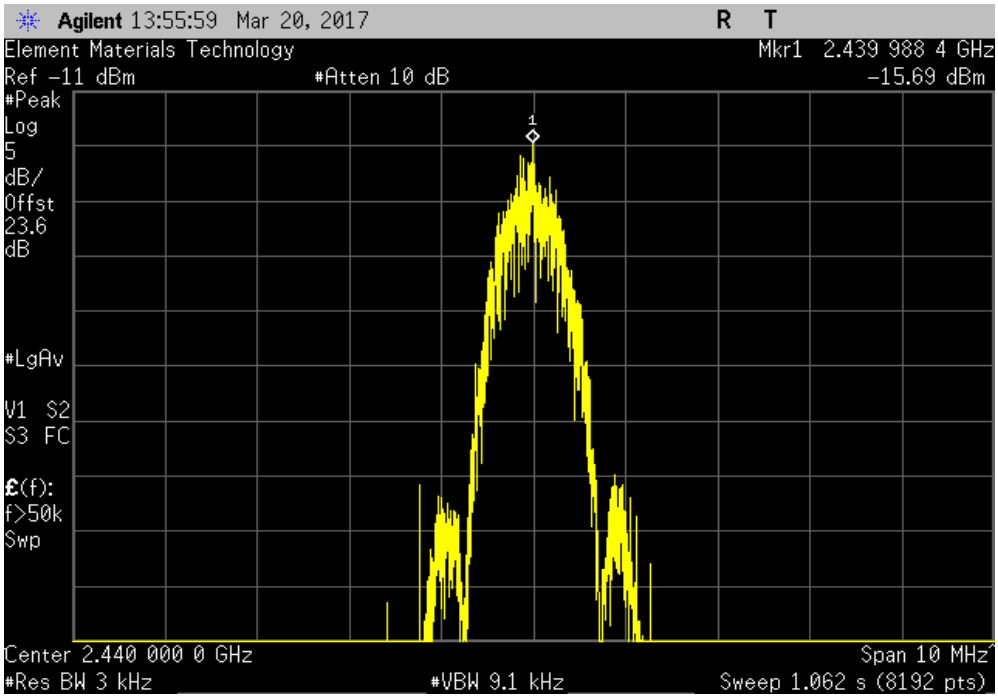
POWER SPECTRAL DENSITY

TbtTx 2017.01.27 XMit 2017.01.26

BLE/GFSK Low Channel, 2402 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-16.100	8	Pass

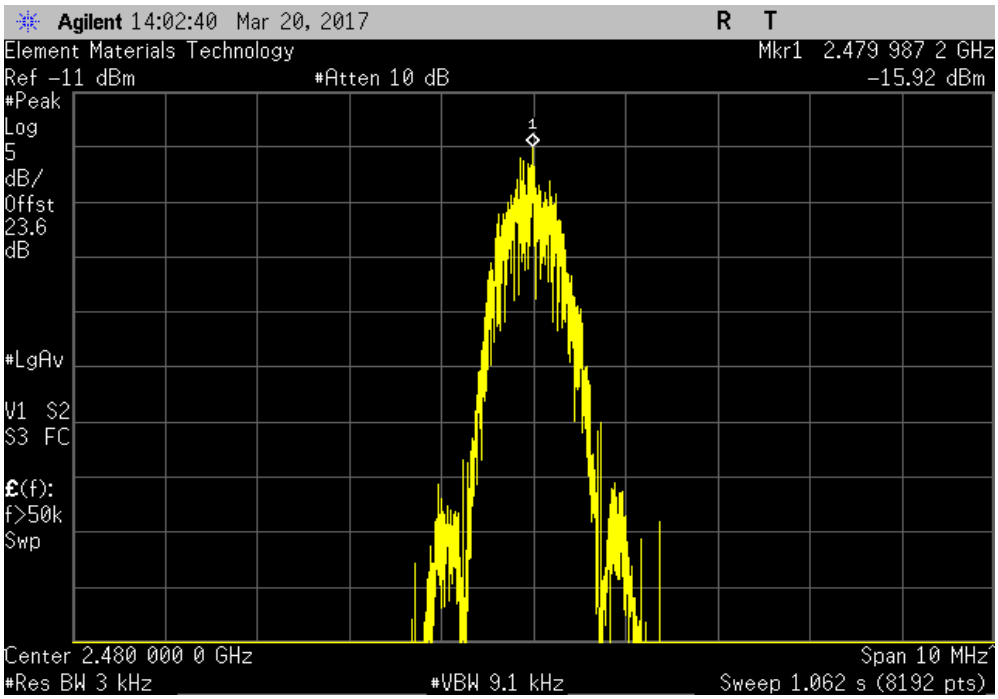


BLE/GFSK Mid Channel, 2440 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-15.690	8	Pass



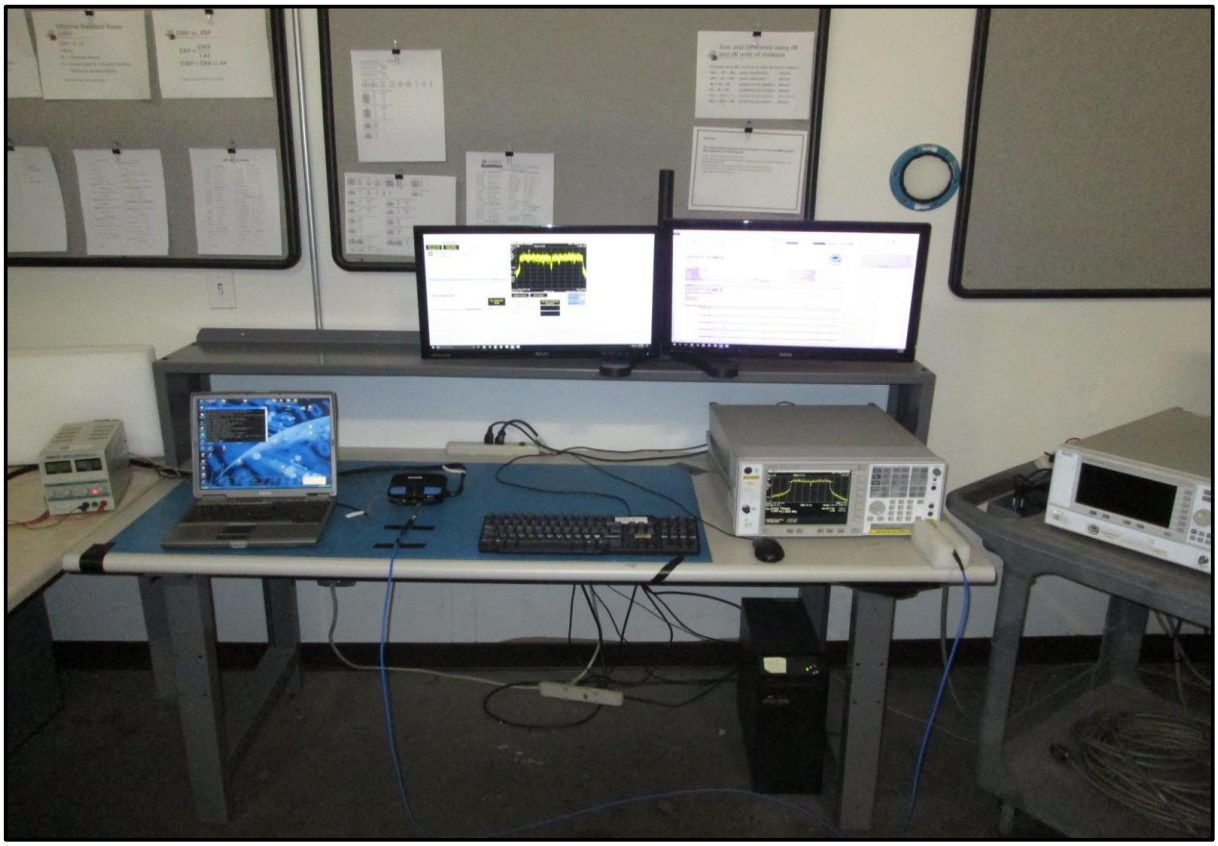
POWER SPECTRAL DENSITY

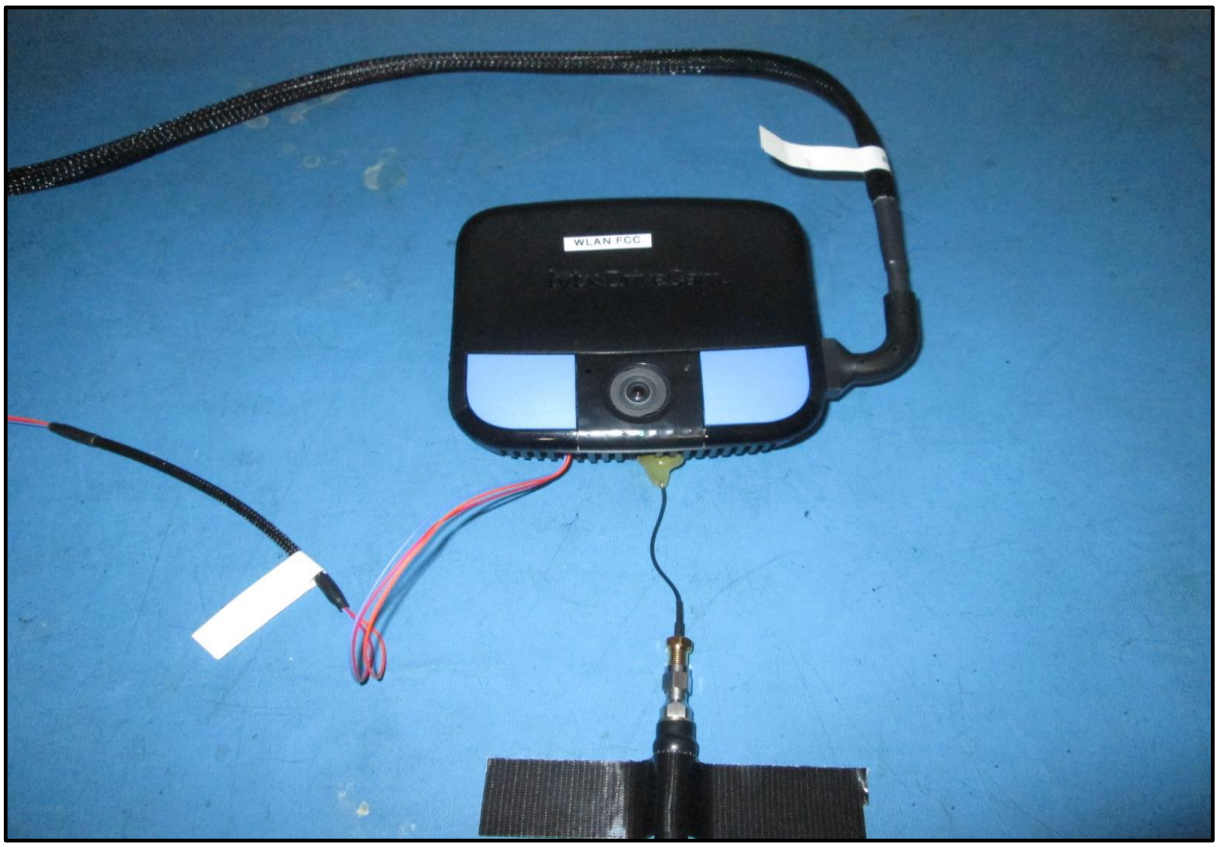
BLE/GFSK High Channel, 2480 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-15.919	8	Pass



POWER SPECTRAL DENSITY

XMit 2017.01.26





BAND EDGE COMPLIANCE

XMit 2017.01.26

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	E8257D	TGU	2/5/2015	2/5/2018
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	1/5/2017	1/5/2018
Block - DC	Fairview Microwave	SD3379	AMV	1/11/2017	1/11/2018
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	11/2/2016	11/2/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

BAND EDGE COMPLIANCE

TbtTx 2017.01.27 XMit 2017.01.26

EUT:	DC-6000-001	Work Order:	LYTX0018
Serial Number:	SF00000437	Date:	04/28/17
Customer:	Lytx, Inc.	Temperature:	20.9 °C
Attendees:	None	Humidity:	48.4% RH
Project:	None	Barometric Pres.:	1016 mbar
Tested by:	Johnny Candelas	Power: 14VDC	Job Site: OC13

TEST SPECIFICATIONS	Test Method
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

Using client provided power settings. DC block/20dB attenuator + Coax cable + Patch cable = 24.1dB total offset for Low Ch & 23.6dB total offset for Mid and High Ch

DEVIATIONS FROM TEST STANDARD

None

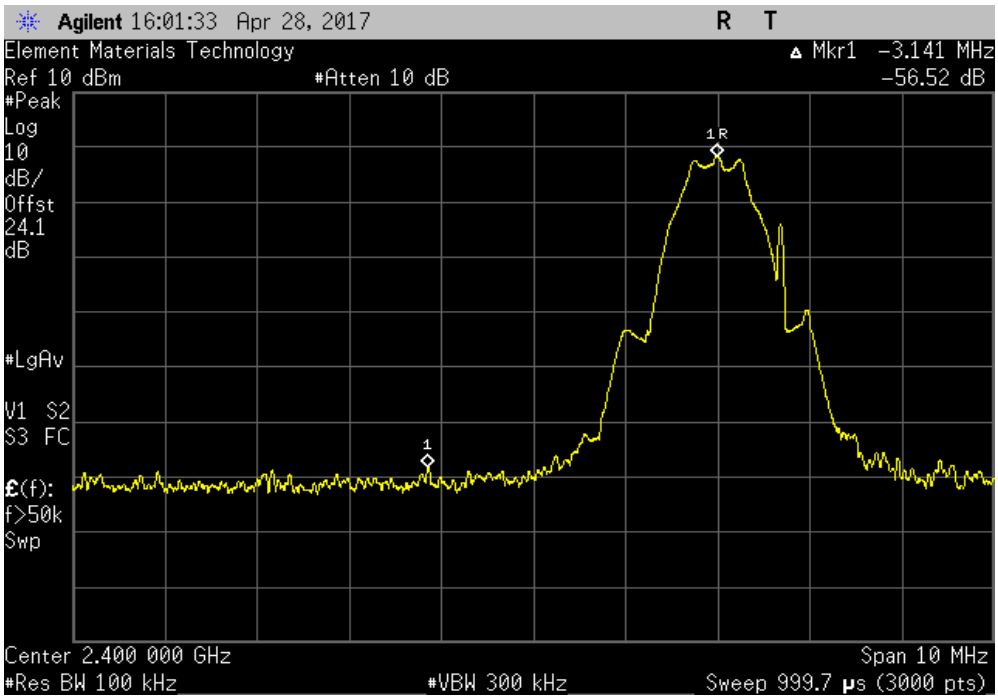
Configuration #	4	Signature

	Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK Low Channel, 2402 MHz	-56.52	-20	Pass
BLE/GFSK High Channel, 2480 MHz	-57.72	-20	Pass

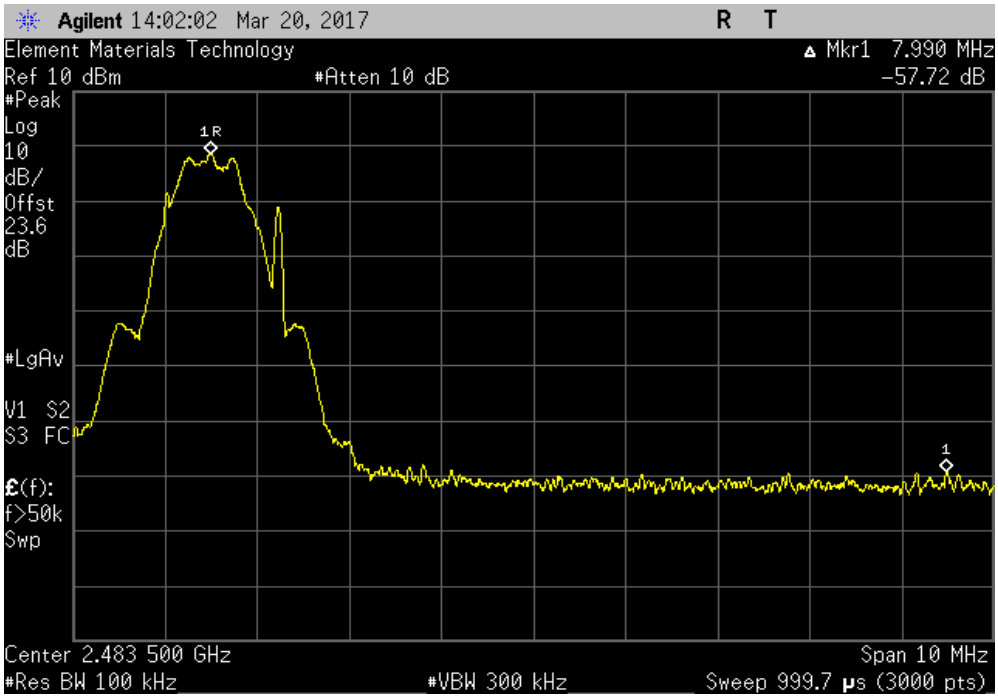
BAND EDGE COMPLIANCE

TbtTx 2017.01.27 XMit 2017.01.26

BLE/GFSK Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-56.52	-20	Pass

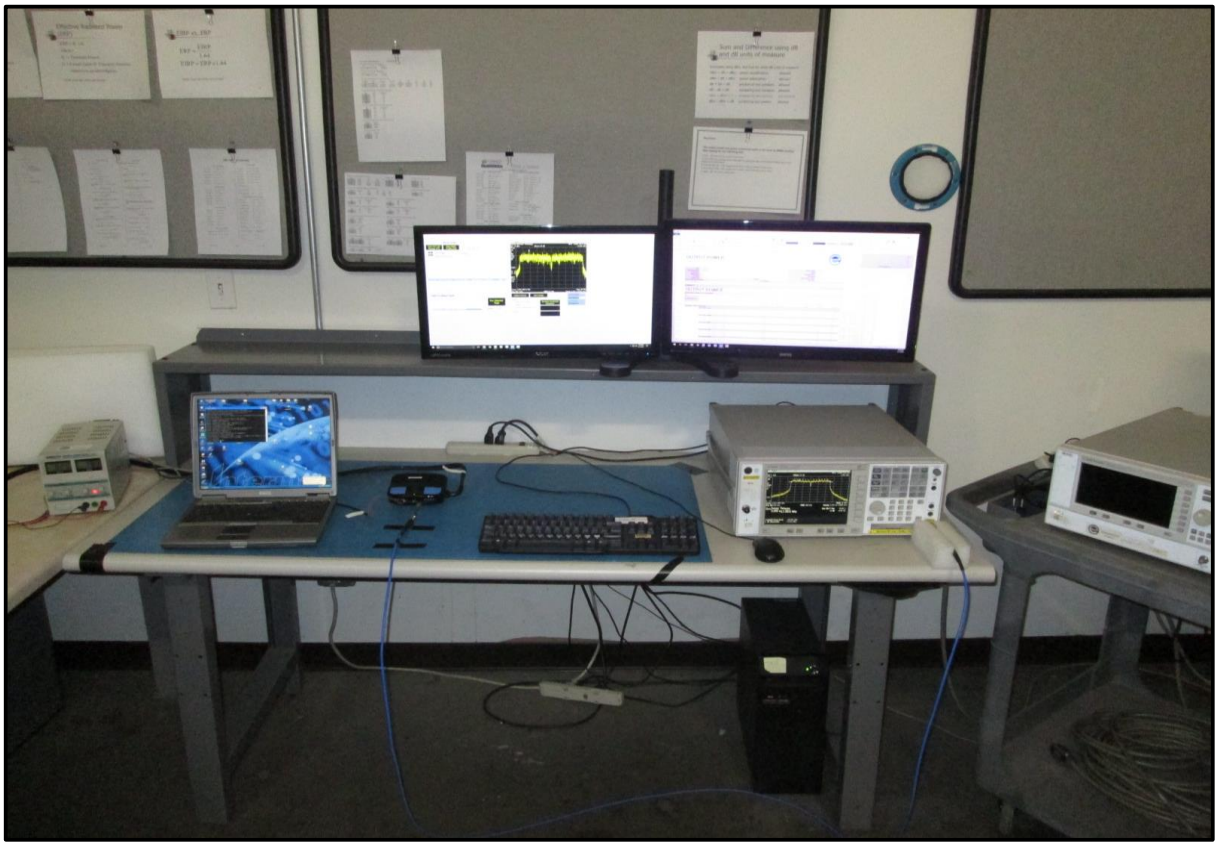


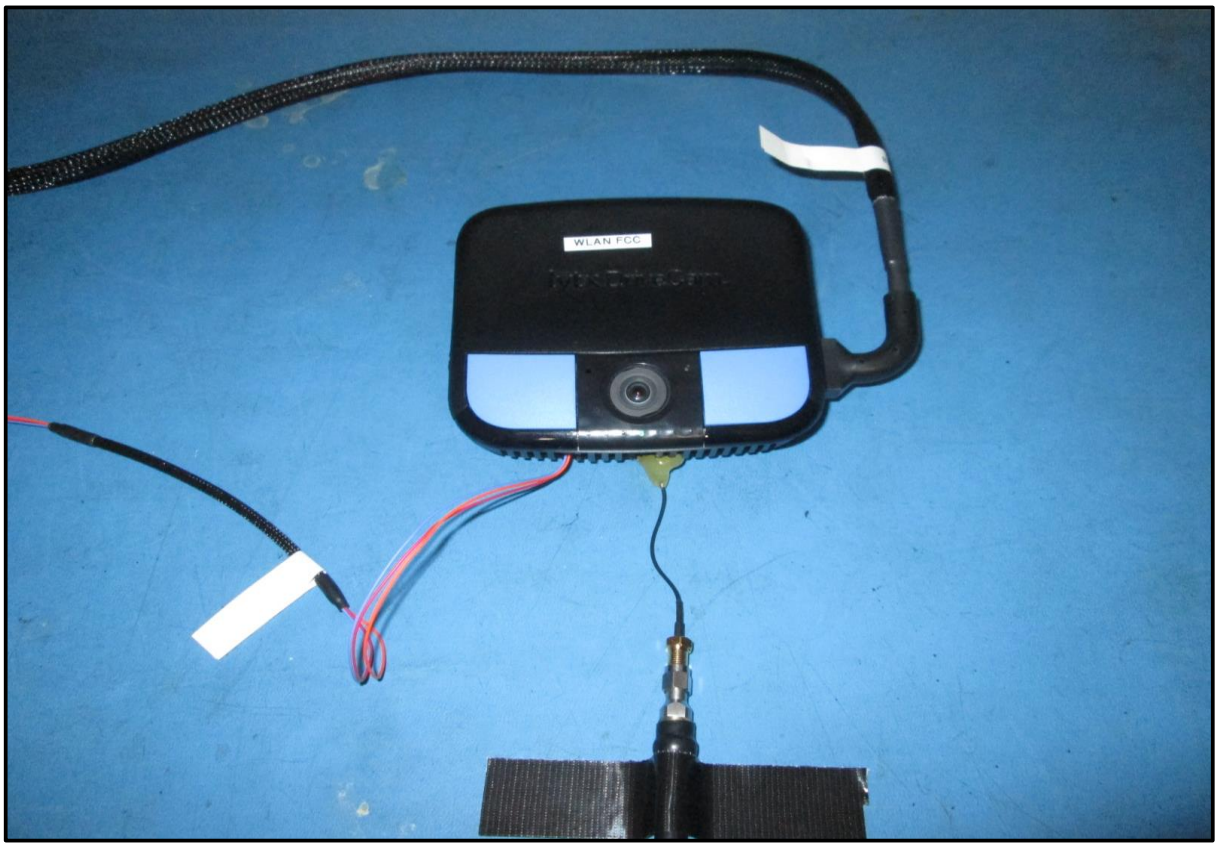
BLE/GFSK High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-57.72	-20	Pass



BAND EDGE COMPLIANCE

XMit 2017.01.26





SPURIOUS CONDUCTED EMISSIONS

XMit 2017.01.26

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	E8257D	TGU	2/5/2015	2/5/2018
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	1/5/2017	1/5/2018
Block - DC	Fairview Microwave	SD3379	AMV	1/11/2017	1/11/2018
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	11/2/2016	11/2/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS

TbtTx 2017.01.27 XMit 2017.01.26

EUT:	**DC-6000-001**	**Work Order:**	**LYTX0018**
Serial Number:	**SF00000437**	**Date:**	**04/28/17**
Customer:	**Lytx, Inc.**	**Temperature:**	**20.9 °C**
Attendees:	**None**	**Humidity:**	**48.4% RH**
Project:	**None**	**Barometric Pres.:**	**1016 mbar**
Tested by:	**Johnny Candelas** **Power:** **14VDC**	**Job Site:**	**OC13**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

Using client provided power settings. DC block/20dB attenuator + Coax cable + Patch cable = 24.1dB total offset for Low Ch & 23.6dB total offset for Mid and High Ch

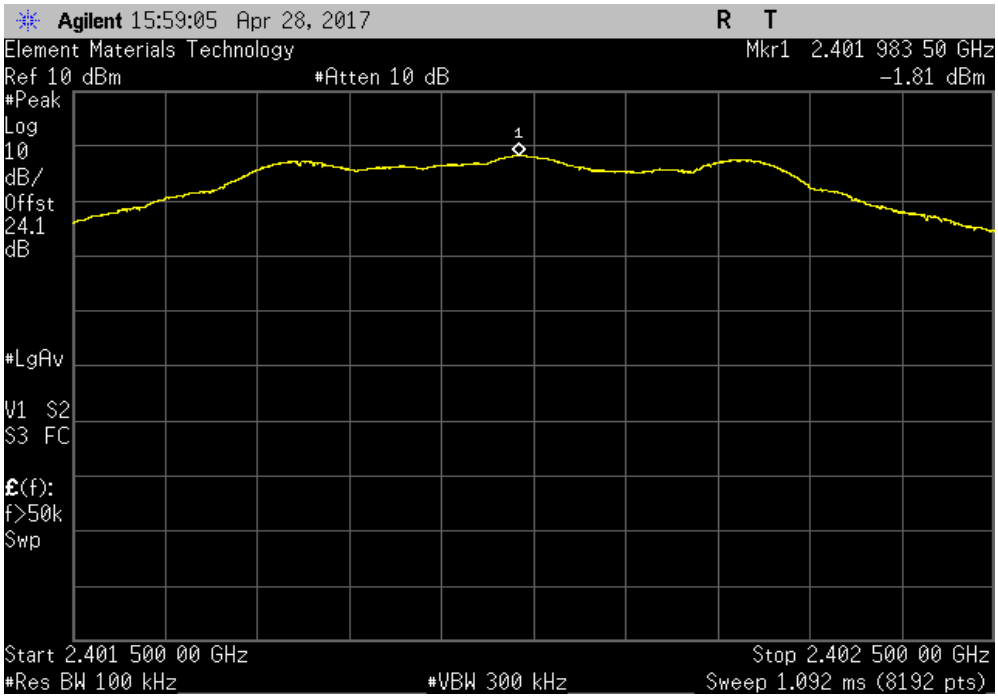
DEVIATIONS FROM TEST STANDARD

None

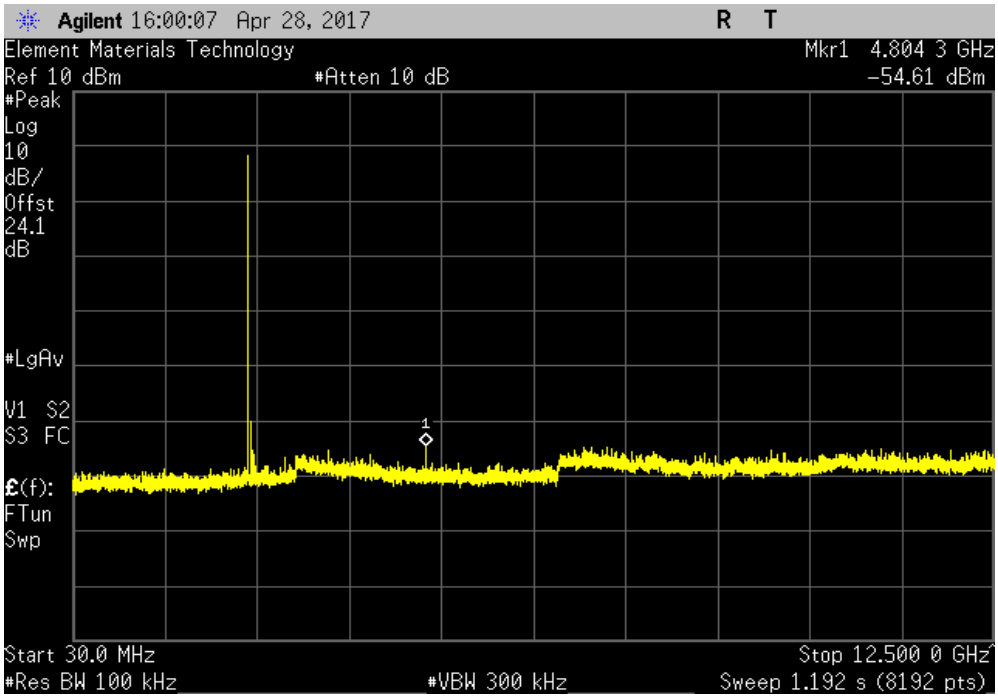
Configuration #	**4**	*Signature*

	Frequency Range	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
BLE/GFSK Low Channel, 2402 MHz	Fundamental	N/A	N/A	N/A
BLE/GFSK Low Channel, 2402 MHz	30 MHz - 12.5 GHz	-52.80	-20	Pass
BLE/GFSK Low Channel, 2402 MHz	12.5 GHz - 25 GHz	-48.95	-20	Pass
BLE/GFSK Mid Channel, 2440 MHz	Fundamental	N/A	N/A	N/A
BLE/GFSK Mid Channel, 2440 MHz	30 MHz - 12.5 GHz	-53.31	-20	Pass
BLE/GFSK Mid Channel, 2440 MHz	12.5 GHz - 25 GHz	-49.93	-20	Pass
BLE/GFSK High Channel, 2480 MHz	Fundamental	N/A	N/A	N/A
BLE/GFSK High Channel, 2480 MHz	30 MHz - 12.5 GHz	-53.75	-20	Pass
BLE/GFSK High Channel, 2480 MHz	12.5 GHz - 25 GHz	-49.89	-20	Pass

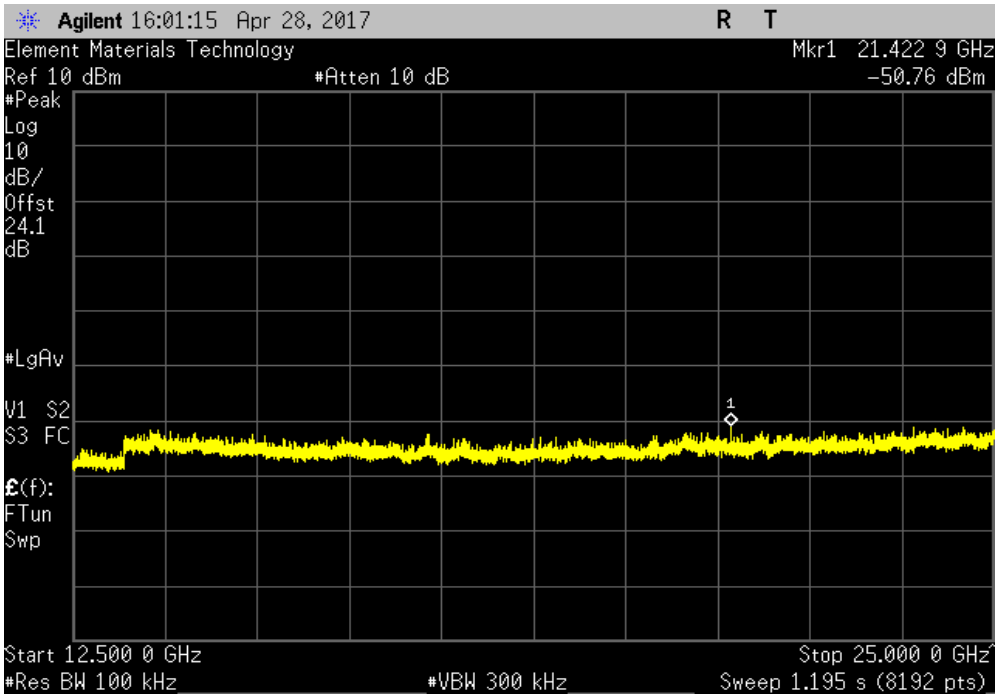
BLE/GFSK Low Channel, 2402 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



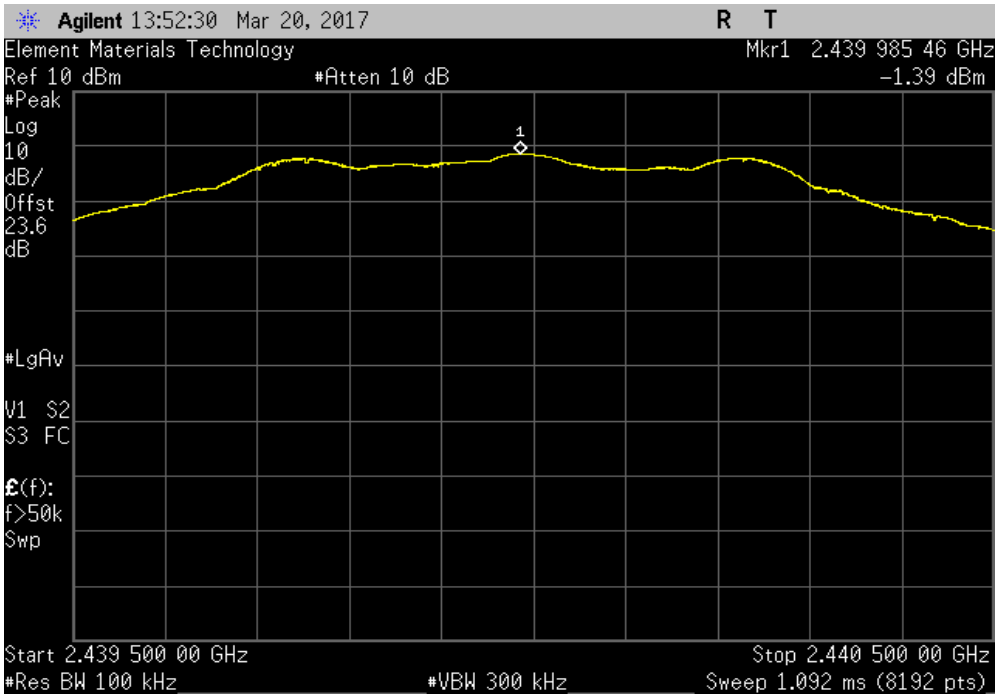
BLE/GFSK Low Channel, 2402 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-52.80	-20	Pass



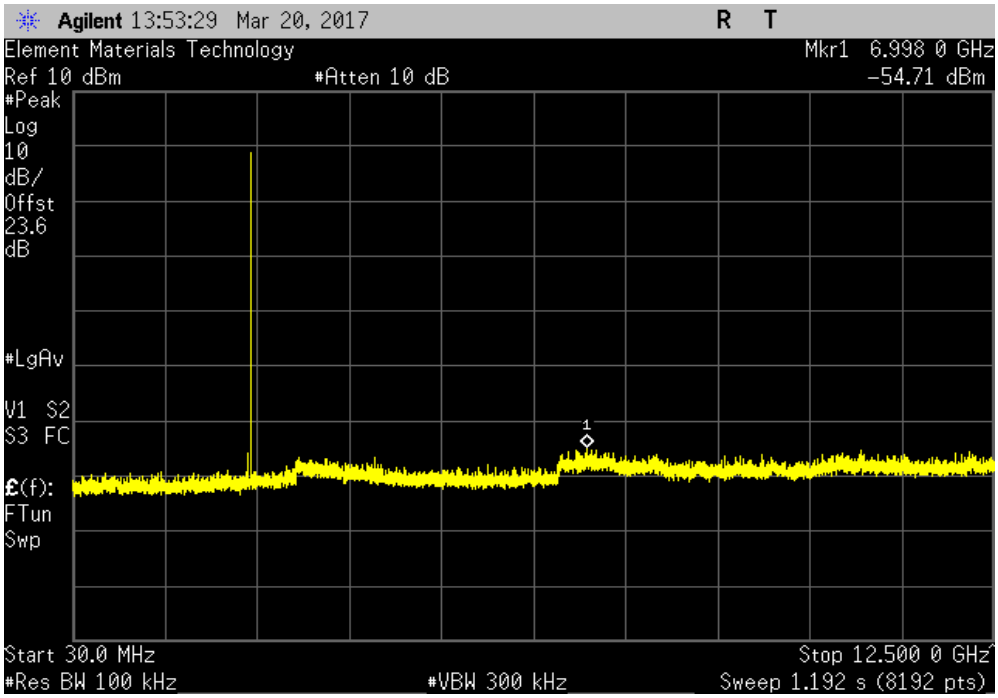
BLE/GFSK Low Channel, 2402 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-48.95	-20	Pass



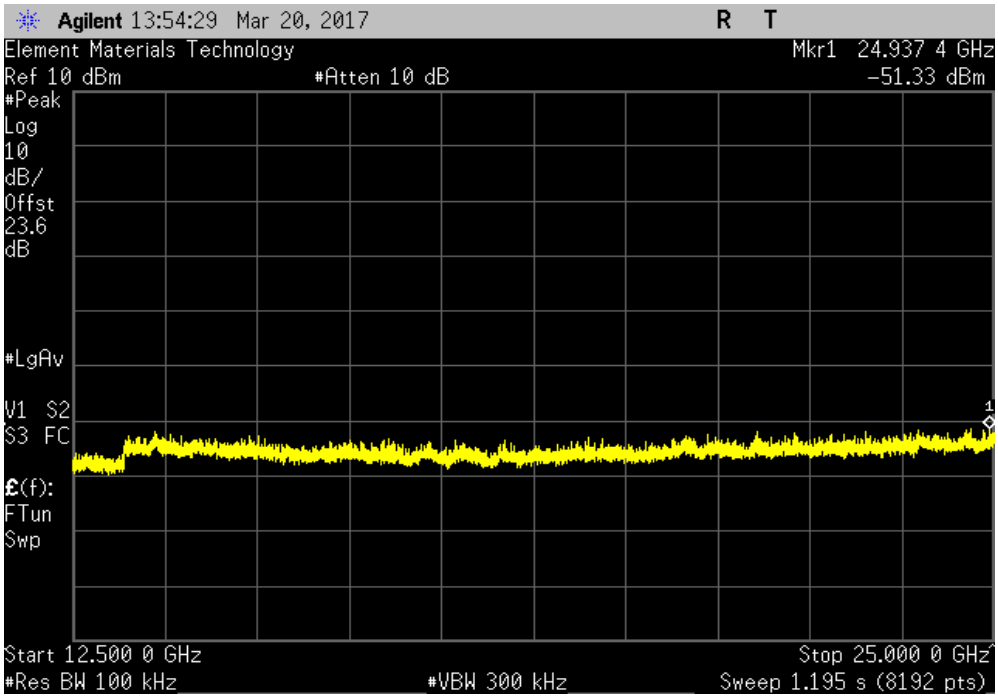
BLE/GFSK Mid Channel, 2440 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



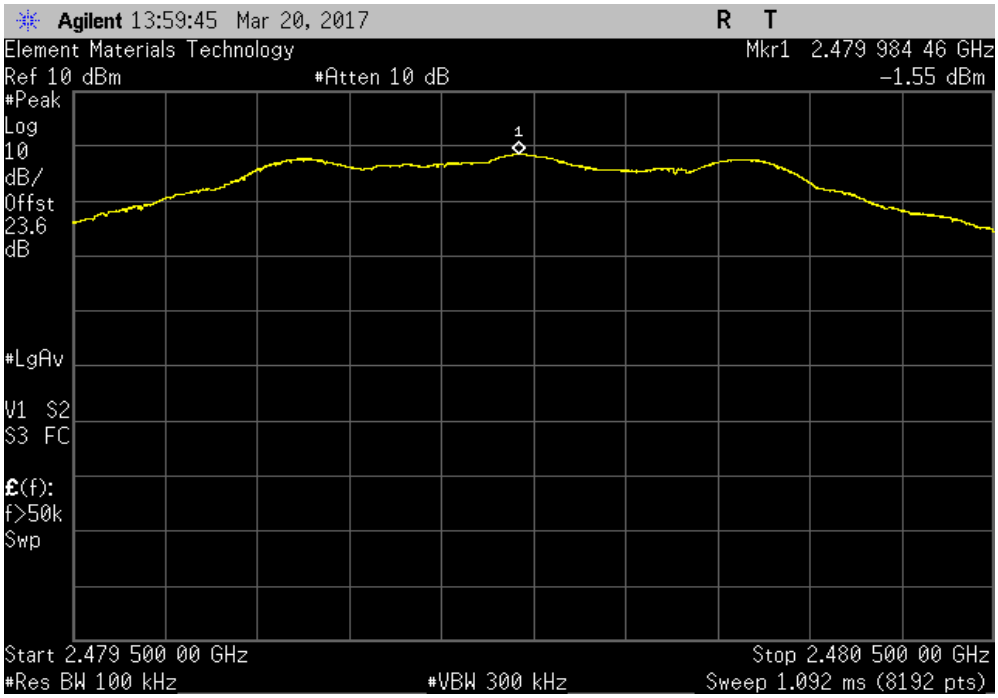
BLE/GFSK Mid Channel, 2440 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-53.31	-20	Pass



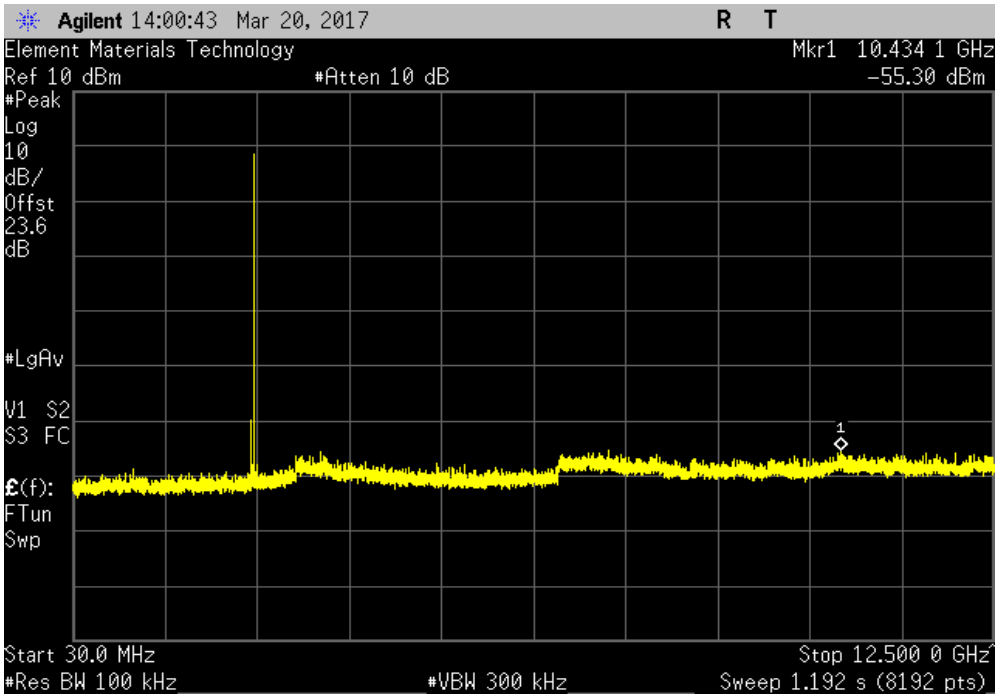
BLE/GFSK Mid Channel, 2440 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-49.93	-20	Pass



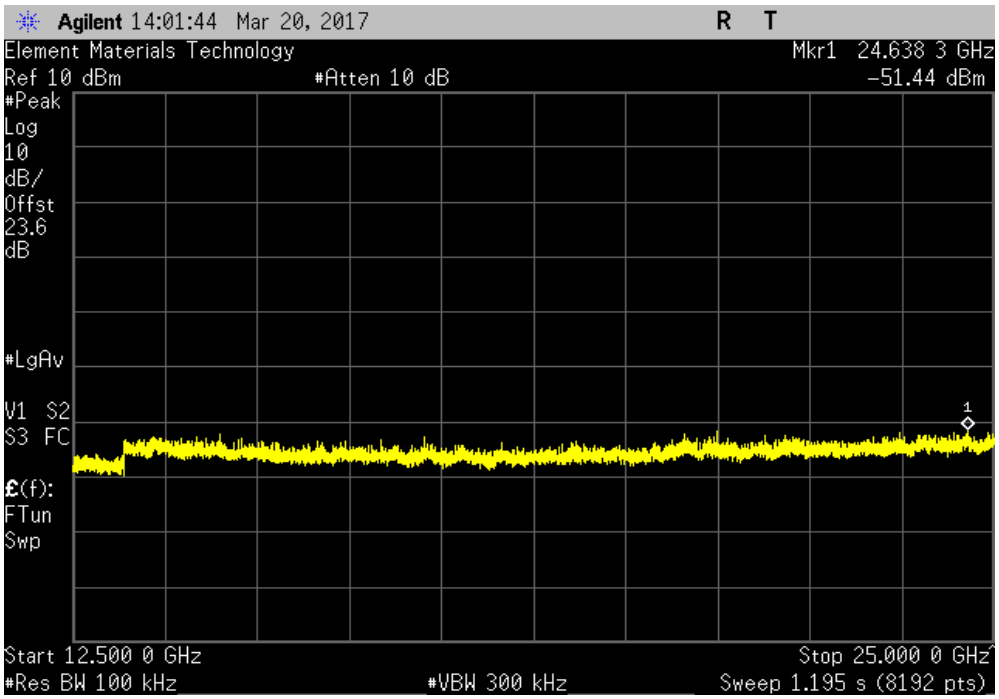
BLE/GFSK High Channel, 2480 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A

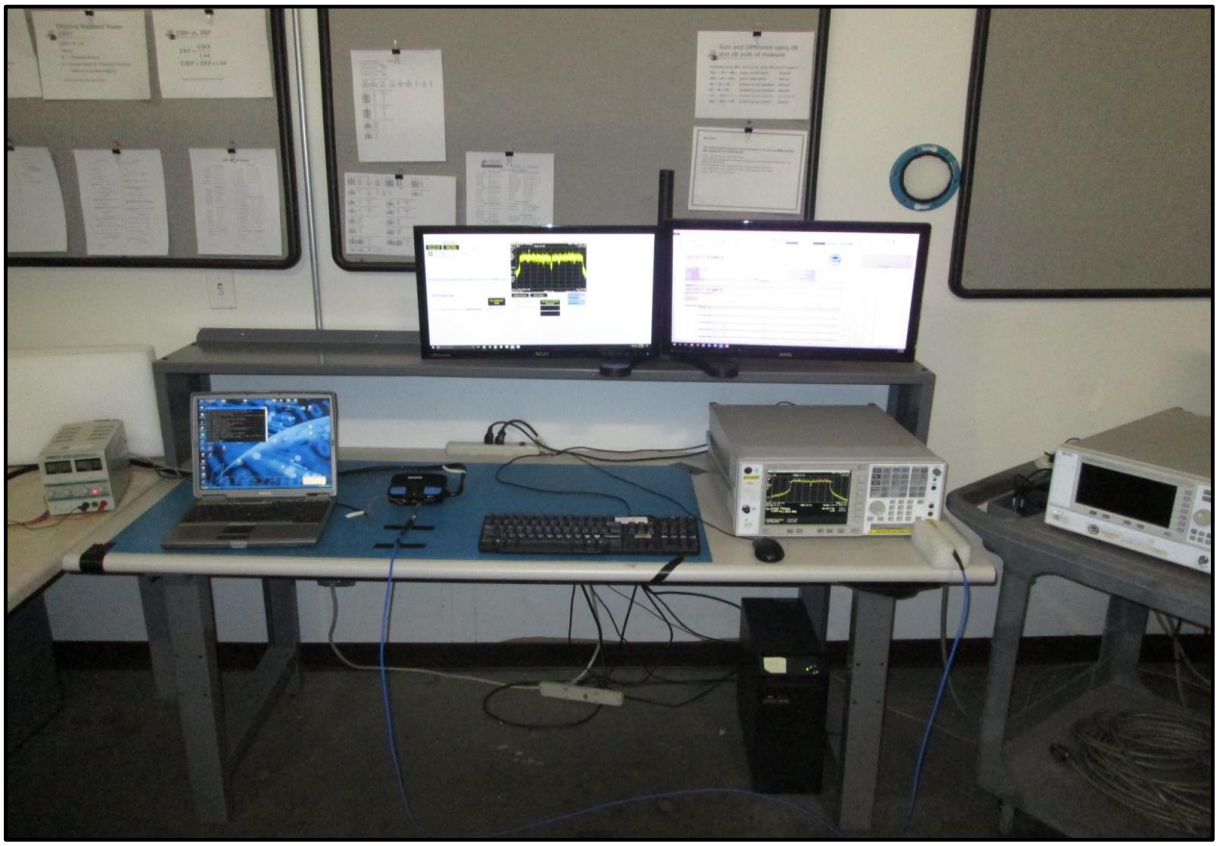
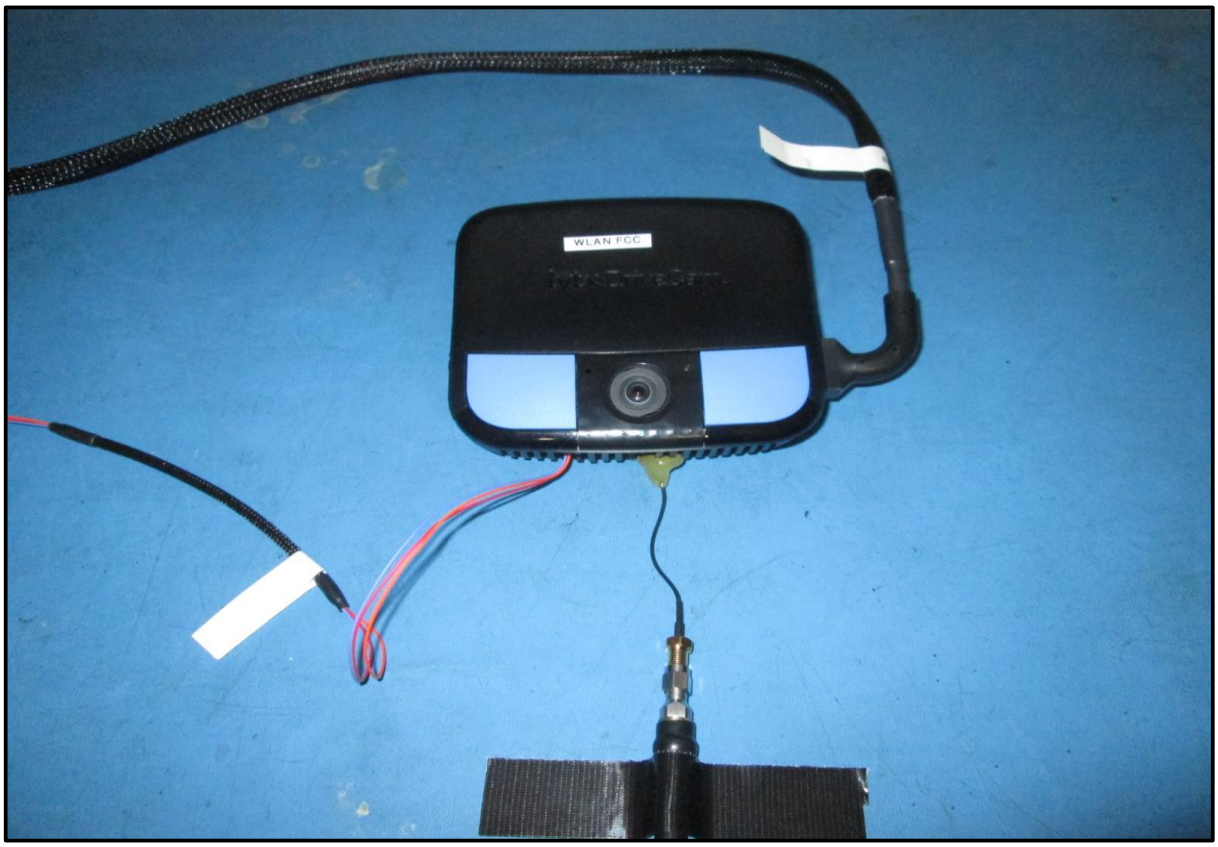


BLE/GFSK High Channel, 2480 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	30 MHz - 12.5 GHz			-53.75	-20	Pass



BLE/GFSK High Channel, 2480 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-49.89	-20	Pass



SPURIOUS CONDUCTED EMISSIONS

XMit 2017.01.26