



element

Timecode Systems Limited

UltraSync BLUE

FCC 15.247:2018

Bluetooth Low Energy (DTS) Radio

Report # TMEC0002.1



NVLAP LAB CODE: 200630-0

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CERTIFICATE OF TEST

Last Date of Test: September 6, 2018
Timecode Systems Limited
Model: UltraSync BLUE

Radio Equipment Testing

Standards

| Specification | Method |
|-----------------|------------------------------|
| FCC 15.247:2018 | ANSI C63.10:2013, KDB 558074 |

Results

| Method Clause | Test Description | Applied | Results | Comments |
|-------------------------------|-------------------------------|---------|---------|---|
| 6.2 | Powerline Conducted Emissions | No | N/A | Not required for a battery powered EUT. |
| 11.12.1, 11.13.2, 6.5, 6.6 | Spurious Radiated Emissions | Yes | Pass | |
| 11.6 | Duty Cycle | Yes | N/A | Characterization of radio operation. |
| 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:



Kyle Holgate, 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). Certification chambers and Open Area Test Sites are filed with ISED.

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

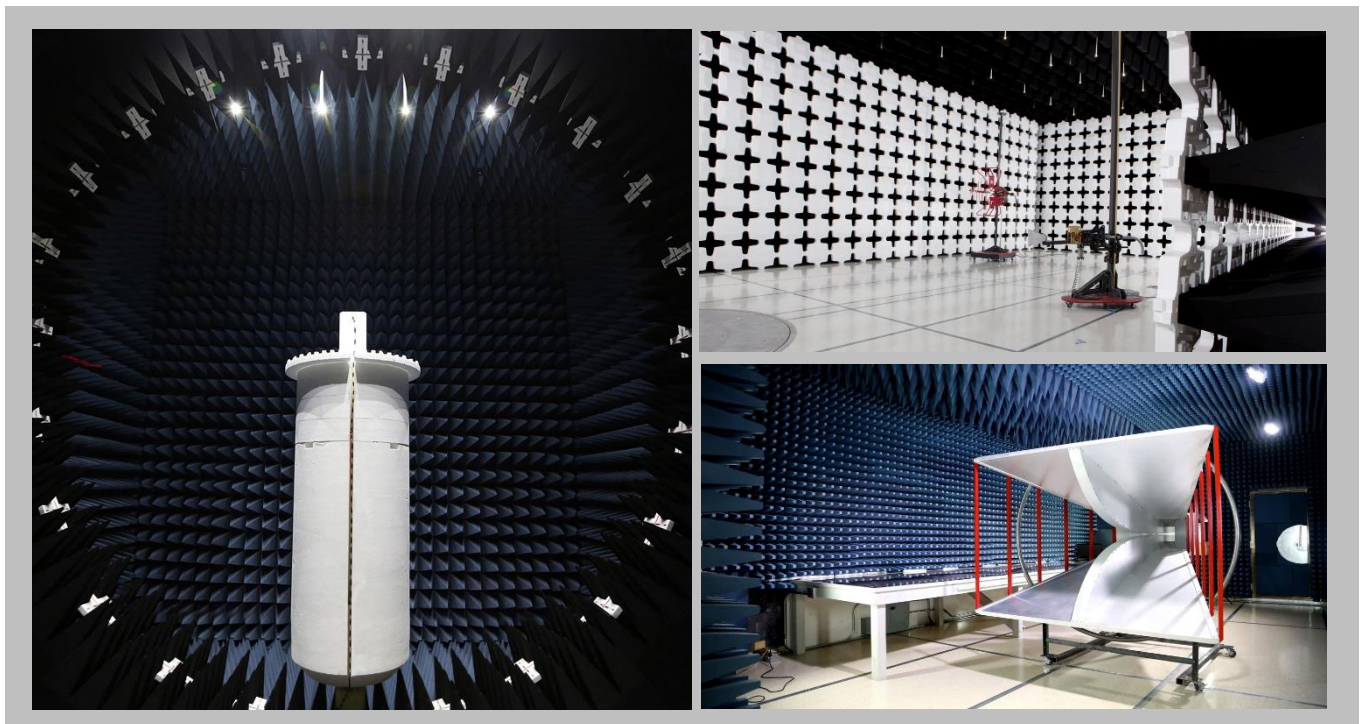
For details on the Scopes of our Accreditations, please visit:

<https://www.nwemc.com/emc-testing-accreditations>

FACILITIES



| | | | | | |
|---|---|--|---|--|---|
| California Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918 | Minnesota Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136 | New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214 | Oregon Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066 | Texas Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255 | Washington Labs NC01-05 19201 120 th 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, 2834E-3 | 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/RRR, MIC, MOC, NCC, OFCA | | | | | |
| US0158 | US0175 | N/A | US0017 | US0191 | US0157 |



MEASUREMENT UNCERTAINTY



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.

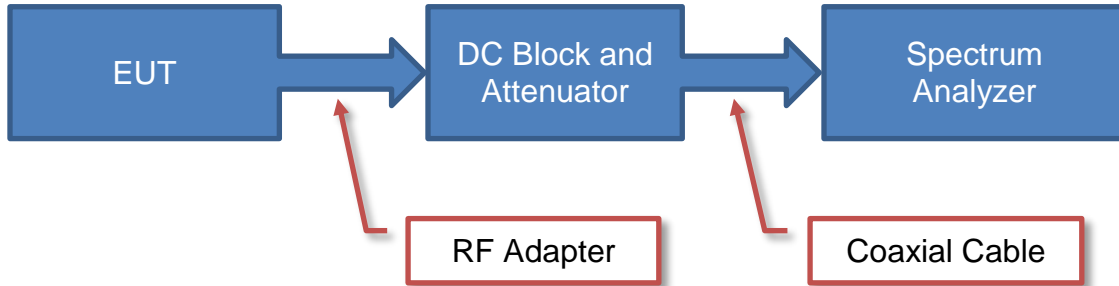
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable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

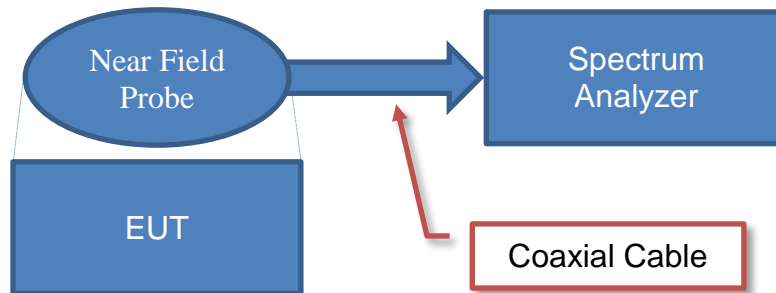
| Test | + MU | - MU |
|---------------------------------------|-------------|-------------|
| Frequency Accuracy (Hz) | 0.0007% | -0.0007% |
| Amplitude Accuracy (dB) | 1.2 dB | -1.2 dB |
| Conducted Power (dB) | 0.3 dB | -0.3 dB |
| Radiated Power via Substitution (dB) | 0.7 dB | -0.7 dB |
| Temperature (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

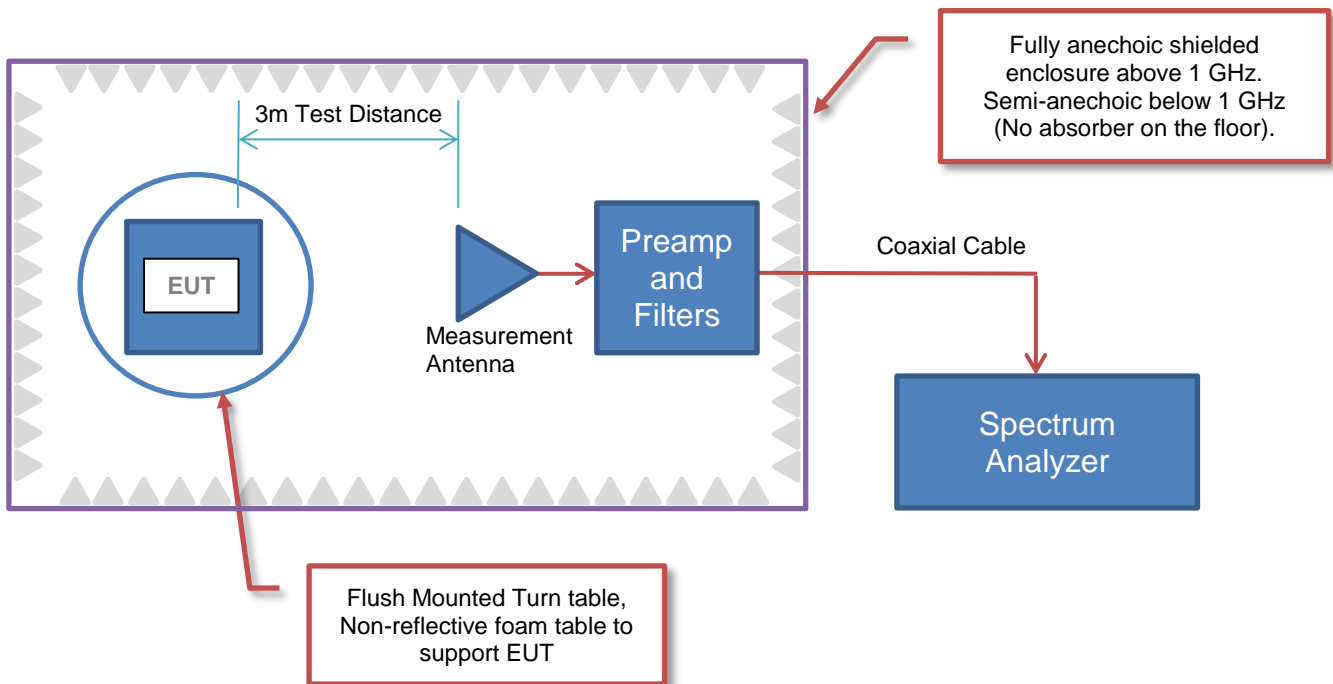
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION



Client and Equipment Under Test (EUT) Information

| | |
|---------------------------------|---|
| Company Name: | Timecode Systems Limited |
| Address: | Unit 6 Elgar Business Centre Moseley Road |
| City, State, Zip: | Hallow, WR2 6NJ |
| Test Requested By: | Paul Scurrell |
| Model: | UltraSync BLUE |
| First Date of Test: | September 4, 2018 |
| Last Date of Test: | September 6, 2018 |
| Receipt Date of Samples: | September 4, 2018 |
| Equipment Design Stage: | Production |
| Equipment Condition: | No Damage |
| Purchase Authorization: | Verified |

Information Provided by the Party Requesting the Test

| |
|---|
| Functional Description of the EUT: |
| Time code synchronization system |
| Testing Objective: |
| To demonstrate compliance of the Bluetooth low energy (DTS) radio to FCC 15.247 requirements. |

CONFIGURATIONS



Configuration TMEC0002- 1

| Software/Firmware Running during test | |
|---------------------------------------|---------|
| Description | Version |
| USB3 | 2.9 |

| EUT | | | |
|----------------------------------|--------------------------|-------------------|---------------|
| Description | Manufacturer | Model/Part Number | Serial Number |
| Time code synchronization system | Timecode Systems Limited | UltraSync BLUE | 111836-000001 |

Configuration TMEC0002- 2

| Software/Firmware Running during test | |
|---------------------------------------|---------|
| Description | Version |
| USB3 | 2.9 |

| EUT | | | |
|----------------------------------|--------------------------|-------------------|---------------|
| Description | Manufacturer | Model/Part Number | Serial Number |
| Time code synchronization system | Timecode Systems Limited | UltraSync BLUE | 111836-000003 |

| Cables | | | | | |
|------------|--------|------------|---------|----------------------------------|--------------|
| Cable Type | Shield | Length (m) | Ferrite | Connection 1 | Connection 2 |
| USB Cable | Yes | 1.0 m | No | Time code synchronization system | Unterminated |

MODIFICATIONS



Equipment Modifications

| Item | Date | Test | Modification | Note | Disposition of EUT |
|------|------------|------------------------------|--------------------------------------|---|---|
| 1 | 2018-09-04 | 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. |
| 2 | 2018-09-04 | 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. |
| 3 | 2018-09-04 | 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. |
| 4 | 2018-09-04 | 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. |
| 5 | 2018-09-04 | 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. |
| 6 | 2018-09-06 | Spurious Radiated Emissions | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | Scheduled testing was completed. |

SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2018.05.04

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

BTLE continuous Tx, Low Ch. = 2402 MHz, Mid Ch. = 2442 MHz, High Ch. = 2480 MHz

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

TMEC0002 - 2

FREQUENCY RANGE INVESTIGATED

| | | | |
|-----------------|--------|----------------|----------|
| Start Frequency | 30 MHz | Stop Frequency | 26.5 GHz |
|-----------------|--------|----------------|----------|

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 | HGR | 28-Feb-2018 | 12 mo |
| Amplifier - Pre-Amplifier | Miteq | AM-1551 | AOY | 28-Feb-2018 | 12 mo |
| Cable | None | 3m Test Distance Cable | EVM | 28-Feb-2018 | 12 mo |
| Antenna - Biconilog | EMCO | 3141 | AXG | 17-Jul-2017 | 24 mo |
| Analyzer - Spectrum Analyzer | Agilent | E4443A | AFB | 31-May-2018 | 12 mo |
| Cable | ESM Cable Corp. | KMKM-72 | EVY | 24-Aug-2018 | 12 mo |
| Amplifier - Pre-Amplifier | Miteq | AMF-6F-18002650-25-10P | AVU | 24-Aug-2018 | 12 mo |
| Antenna - Standard Gain | ETS Lindgren | 3160-09 | AIV | NCR | 0 mo |
| Amplifier - Pre-Amplifier | Miteq | AMF-6F-12001800-30-10P | AVD | 30-Nov-2017 | 12 mo |
| Antenna - Standard Gain | ETS Lindgren | 3160-08 | AHV | NCR | 0 mo |
| Cable | None | Standard Gain Horns Cable | EVF | 30-Nov-2017 | 12 mo |
| Amplifier - Pre-Amplifier | L-3 Narda-MITEQ | AMF-6F-08001200-30-10P | PAO | 30-Nov-2017 | 12 mo |
| Antenna - Standard Gain | ETS Lindgren | 3160-07 | AHU | NCR | 0 mo |
| Cable | N/A | Double Ridge Horn Cables | EVB | 29-Nov-2017 | 12 mo |
| Amplifier - Pre-Amplifier | Miteq | AMF-3D-00100800-32-13P | PAG | 29-Nov-2017 | 12 mo |
| Antenna - Double Ridge | ETS Lindgren | 3115 | AIZ | 7-Feb-2018 | 24 mo |
| Filter - High Pass | Micro-Tronics | HPM50111 | HFO | 1-Feb-2018 | 12 mo |
| Attenuator | Coaxicom | 3910-20 | AXZ | 28-Feb-2018 | 12 mo |
| Analyzer - Spectrum Analyzer | Agilent | E4446A | AAQ | 18-Mar-2018 | 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.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of $10 \cdot \text{LOG}(dc)$.

SPURIOUS RADIATED EMISSIONS

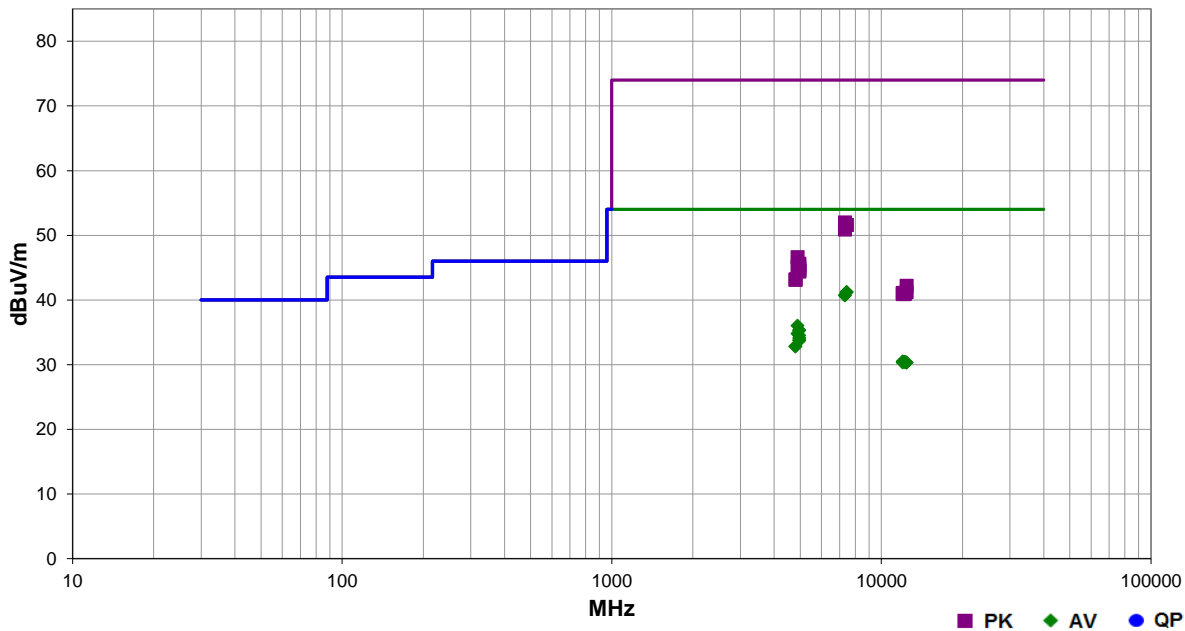


EmiRS 2018.05.07 PSA-ESCI 2018.05.04

| | | | | |
|------------------------|--|--------------------------|-------------|--|
| Work Order: | TMEC0002 | Date: | 6-Sep-2018 | |
| Project: | None | Temperature: | 22.2 °C | |
| Job Site: | EV01 | Humidity: | 41% RH | |
| Serial Number: | 111836-000003 | Barometric Pres.: | 1020 mbar | |
| EUT: | UltraSync BLUE | Tested by: | Jeff Alcoke | |
| Configuration: | 2 | | | |
| Customer: | Timecode Systems Limited | | | |
| Attendees: | Paul Bannister | | | |
| EUT Power: | Battery | | | |
| Operating Mode: | BTLE continuous Tx, Low Ch. = 2402 MHz, Mid Ch. = 2442 MHz, High Ch. = 2480 MHz | | | |
| Deviations: | None | | | |
| Comments: | Software power setting = 50. See comments below for Channel and EUT orientation. | | | |

| Test Specifications | Test Method |
|---------------------|------------------|
| FCC 15.247:2018 | ANSI C63.10:2013 |

| Run # | 11 | 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 |
|------------|------------------|-------------|-------------------------|-------------------|------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------|
| 7440.417 | 28.2 | 13.0 | 1.0 | 160.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 41.2 | 54.0 | -12.8 | High Ch, EUT on Side |
| 7439.125 | 28.2 | 13.0 | 1.0 | 23.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 41.2 | 54.0 | -12.8 | High Ch, EUT on Side |
| 7327.442 | 28.4 | 12.3 | 1.0 | 352.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 40.7 | 54.0 | -13.3 | Mid Ch, EUT on Side |
| 7323.583 | 28.5 | 12.2 | 1.0 | 159.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 40.7 | 54.0 | -13.3 | Mid Ch, EUT on Side |
| 4884.133 | 30.9 | 5.1 | 1.0 | 313.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 36.0 | 54.0 | -18.0 | Mid Ch, EUT on Side |
| 4959.975 | 30.1 | 5.2 | 1.2 | 60.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 35.3 | 54.0 | -18.7 | High Ch, EUT Horz |
| 4960.175 | 30.1 | 5.2 | 1.0 | 198.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 35.3 | 54.0 | -18.7 | High Ch, EUT on Side |
| 4883.850 | 29.7 | 5.1 | 1.0 | 139.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 34.8 | 54.0 | -19.2 | Mid Ch, EUT on Side |
| 4960.108 | 29.3 | 5.2 | 1.0 | 214.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 34.5 | 54.0 | -19.5 | High Ch, EUT on Side |
| 4959.700 | 28.9 | 5.2 | 1.0 | 69.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 34.1 | 54.0 | -19.9 | High Ch, EUT Vert |
| 4961.742 | 28.6 | 5.2 | 1.0 | 129.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 33.8 | 54.0 | -20.2 | High Ch, EUT Horz |
| 4959.967 | 28.5 | 5.2 | 1.0 | 294.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 33.7 | 54.0 | -20.3 | High Ch, EUT Vert |
| 4802.783 | 29.0 | 3.8 | 1.0 | 272.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 32.8 | 54.0 | -21.2 | Low Ch, EUT on Side |
| 4802.092 | 29.0 | 3.8 | 1.0 | 205.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 32.8 | 54.0 | -21.2 | Low Ch, EUT on Side |
| 7325.575 | 39.7 | 12.3 | 1.0 | 352.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 52.0 | 74.0 | -22.0 | Mid Ch, EUT on Side |
| 7440.092 | 38.6 | 13.0 | 1.0 | 160.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 51.6 | 74.0 | -22.4 | High Ch, EUT on Side |
| 7438.083 | 38.6 | 13.0 | 1.0 | 23.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 51.6 | 74.0 | -22.4 | High Ch, EUT on Side |
| 7328.408 | 38.6 | 12.3 | 1.0 | 159.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 50.9 | 74.0 | -23.1 | Mid Ch, EUT on Side |

| 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 |
|------------|------------------|-------------|-------------------------|-------------------|------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------|
| 12008.270 | 29.5 | 1.0 | 1.0 | 285.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 30.5 | 54.0 | -23.5 | Low Ch, EUT on Side |
| 12208.740 | 29.4 | 1.0 | 1.0 | 283.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 30.4 | 54.0 | -23.6 | Mid Ch, EUT on Side |
| 12211.390 | 29.4 | 1.0 | 1.0 | 245.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 30.4 | 54.0 | -23.6 | Mid Ch, EUT on Side |
| 12398.050 | 29.1 | 1.2 | 2.1 | 80.0 | 3.0 | 0.0 | Horz | AV | 0.0 | 30.3 | 54.0 | -23.7 | High Ch, EUT on Side |
| 12398.000 | 29.1 | 1.2 | 2.9 | 210.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 30.3 | 54.0 | -23.7 | High Ch, EUT on Side |
| 12007.910 | 29.3 | 1.0 | 2.1 | 118.0 | 3.0 | 0.0 | Vert | AV | 0.0 | 30.3 | 54.0 | -23.7 | Low Ch, EUT on Side |
| 4884.667 | 41.5 | 5.1 | 1.0 | 313.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 46.6 | 74.0 | -27.4 | Mid Ch, EUT on Side |
| 4959.925 | 40.4 | 5.2 | 1.2 | 60.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 45.6 | 74.0 | -28.4 | High Ch, EUT Horz |
| 4957.858 | 40.1 | 5.2 | 1.0 | 129.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 45.3 | 74.0 | -28.7 | High Ch, EUT Horz |
| 4883.575 | 40.1 | 5.1 | 1.0 | 139.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 45.2 | 74.0 | -28.8 | Mid Ch, EUT on Side |
| 4959.525 | 39.7 | 5.2 | 1.0 | 198.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 44.9 | 74.0 | -29.1 | High Ch, EUT on Side |
| 4959.475 | 39.4 | 5.2 | 1.0 | 214.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 44.6 | 74.0 | -29.4 | High Ch, EUT on Side |
| 4960.925 | 39.3 | 5.2 | 1.0 | 69.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 44.5 | 74.0 | -29.5 | High Ch, EUT Vert |
| 4961.450 | 39.2 | 5.2 | 1.0 | 294.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 44.4 | 74.0 | -29.6 | High Ch, EUT Vert |
| 4804.700 | 39.3 | 3.9 | 1.0 | 205.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 43.2 | 74.0 | -30.8 | Low Ch, EUT on Side |
| 4802.283 | 39.3 | 3.8 | 1.0 | 272.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 43.1 | 74.0 | -30.9 | Low Ch, EUT on Side |
| 12399.340 | 41.0 | 1.2 | 2.1 | 80.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 42.2 | 74.0 | -31.8 | High Ch, EUT on Side |
| 12397.530 | 40.0 | 1.2 | 2.9 | 210.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 41.2 | 74.0 | -32.8 | High Ch, EUT on Side |
| 12009.980 | 40.1 | 1.0 | 2.1 | 118.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 41.1 | 74.0 | -32.9 | Low Ch, EUT on Side |
| 12210.210 | 40.0 | 1.0 | 1.0 | 283.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 41.0 | 74.0 | -33.0 | Mid Ch, EUT on Side |
| 12010.260 | 39.9 | 1.0 | 1.0 | 285.0 | 3.0 | 0.0 | Horz | PK | 0.0 | 40.9 | 74.0 | -33.1 | Low Ch, EUT on Side |
| 12209.580 | 39.9 | 1.0 | 1.0 | 245.0 | 3.0 | 0.0 | Vert | PK | 0.0 | 40.9 | 74.0 | -33.1 | Mid Ch, EUT on Side |

SPURIOUS RADIATED EMISSIONS

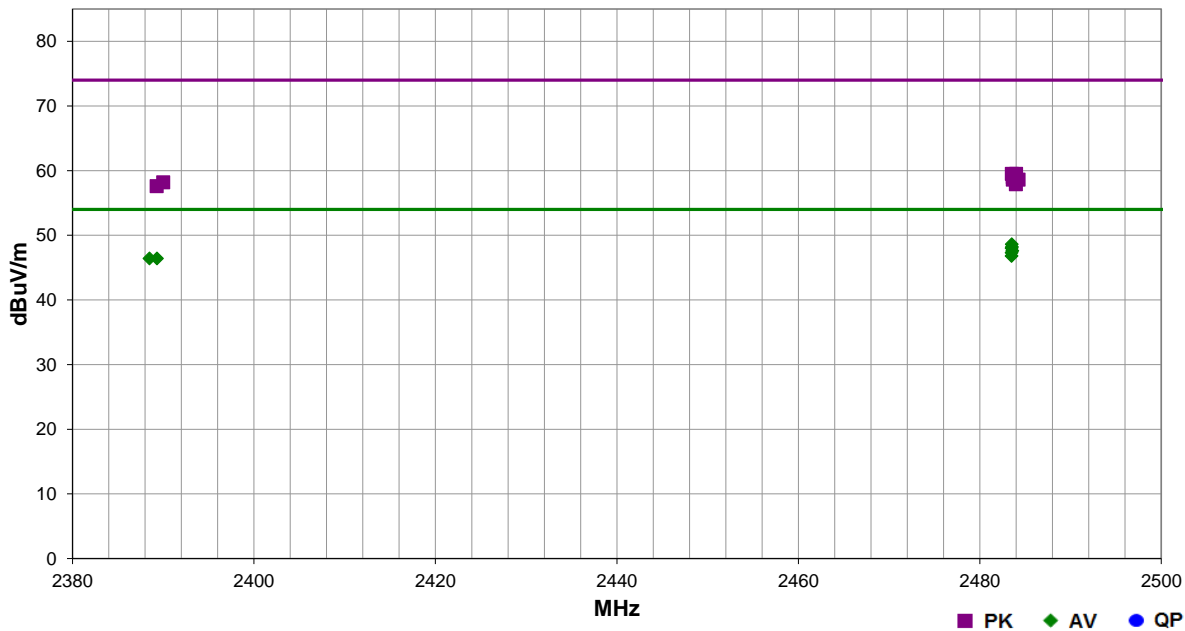


EmiRS 2018.05.07 PSA-ESCI 2018.05.04

| | | | | |
|------------------------|--|--------------------------|------------|--|
| Work Order: | TMEC0002 | Date: | 6-Sep-2018 |  |
| Project: | None | Temperature: | 22.2 °C | |
| Job Site: | EV01 | Humidity: | 41% RH | |
| Serial Number: | 111836-000003 | Barometric Pres.: | 1020 mbar | |
| EUT: | UltraSync BLUE | | | |
| Configuration: | 2 | | | |
| Customer: | Timecode Systems Limited | | | |
| Attendees: | Paul Bannister | | | |
| EUT Power: | Battery | | | |
| Operating Mode: | BTLE continuous Tx, Low Ch. = 2402 MHz, Mid Ch. = 2442 MHz, High Ch. = 2480 MHz | | | |
| Deviations: | None | | | |
| Comments: | Software power setting = 50. See comments below for Channel and EUT orientation. | | | |

| | |
|----------------------------|--------------------|
| Test Specifications | Test Method |
| FCC 15.247:2018 | ANSI C63.10:2013 |

| | | | | | | | |
|--------------|----|--------------------------|---|--------------------------|-----------|----------------|------|
| Run # | 13 | 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 |
|------------|------------------|-------------|-------------------------|-------------------|------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------|
| 2483.520 | 33.1 | -4.5 | 1.0 | 273.0 | 3.0 | 20.0 | Vert | AV | 0.0 | 48.6 | 54.0 | -5.4 | High Ch, EUT Vert |
| 2483.550 | 32.7 | -4.5 | 1.0 | 100.0 | 3.0 | 20.0 | Vert | AV | 0.0 | 48.2 | 54.0 | -5.8 | High Ch, EUT on Side |
| 2483.500 | 32.5 | -4.5 | 1.0 | 320.0 | 3.0 | 20.0 | Horz | AV | 0.0 | 48.0 | 54.0 | -6.0 | High Ch, EUT Horz |
| 2483.603 | 32.1 | -4.5 | 1.3 | 339.0 | 3.0 | 20.0 | Horz | AV | 0.0 | 47.6 | 54.0 | -6.4 | High Ch, EUT Vert |
| 2483.517 | 31.8 | -4.5 | 1.0 | 72.0 | 3.0 | 20.0 | Horz | AV | 0.0 | 47.3 | 54.0 | -6.7 | High Ch, EUT on Side |
| 2483.517 | 31.3 | -4.5 | 1.8 | 102.0 | 3.0 | 20.0 | Vert | AV | 0.0 | 46.8 | 54.0 | -7.2 | High Ch, EUT Horz |
| 2388.490 | 31.3 | -4.9 | 1.0 | 217.0 | 3.0 | 20.0 | Horz | AV | 0.0 | 46.4 | 54.0 | -7.6 | Low Ch, EUT Horz |
| 2389.317 | 31.3 | -4.9 | 1.1 | 234.0 | 3.0 | 20.0 | Vert | AV | 0.0 | 46.4 | 54.0 | -7.6 | Low Ch, EUT Vert |
| 2484.000 | 44.0 | -4.5 | 1.0 | 72.0 | 3.0 | 20.0 | Horz | PK | 0.0 | 59.5 | 74.0 | -14.5 | High Ch, EUT on Side |
| 2483.537 | 44.0 | -4.5 | 1.0 | 273.0 | 3.0 | 20.0 | Vert | PK | 0.0 | 59.5 | 74.0 | -14.5 | High Ch, EUT Vert |
| 2483.643 | 43.5 | -4.5 | 1.0 | 100.0 | 3.0 | 20.0 | Vert | PK | 0.0 | 59.0 | 74.0 | -15.0 | High Ch, EUT on Side |
| 2484.277 | 43.0 | -4.4 | 1.3 | 339.0 | 3.0 | 20.0 | Horz | PK | 0.0 | 58.6 | 74.0 | -15.4 | High Ch, EUT Vert |
| 2483.633 | 43.1 | -4.5 | 1.0 | 320.0 | 3.0 | 20.0 | Horz | PK | 0.0 | 58.6 | 74.0 | -15.4 | High Ch, EUT Horz |
| 2389.987 | 43.1 | -4.9 | 1.1 | 234.0 | 3.0 | 20.0 | Vert | PK | 0.0 | 58.2 | 74.0 | -15.8 | Low Ch, EUT Vert |
| 2483.970 | 42.4 | -4.5 | 1.8 | 102.0 | 3.0 | 20.0 | Vert | PK | 0.0 | 57.9 | 74.0 | -16.1 | High Ch, EUT Horz |
| 2389.267 | 42.5 | -4.9 | 1.0 | 217.0 | 3.0 | 20.0 | Horz | PK | 0.0 | 57.6 | 74.0 | -16.4 | Low Ch, EUT Horz |

DUTY CYCLE



TEST DESCRIPTION

The Duty Cycle (x) were measured for each of the EUT operating modes. 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. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used

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

The EUT operates at 100% Duty Cycle.

OCCUPIED BANDWIDTH



XMI 2017.12.13

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 |
|------------------------------|--------------------|-----------------------|-----|-----------|-----------|
| Analyzer - Spectrum Analyzer | Agilent | N9010A | AFI | 12-Jan-18 | 12-Jan-19 |
| Generator - Signal | Keysight | N5182B | TFU | 27-Oct-15 | 27-Oct-18 |
| Cable | Micro-Coax | UFD150A-1-0720-200200 | EVH | 23-Apr-18 | 23-Apr-19 |
| Attenuator | S.M. Electronics | SA26B-20 | AUY | 16-Apr-18 | 16-Apr-19 |
| Block - DC | Fairview Microwave | SD3379 | AMW | 23-Apr-18 | 23-Apr-19 |

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



TbTx 2017.12.14 XMI 2017.12.13

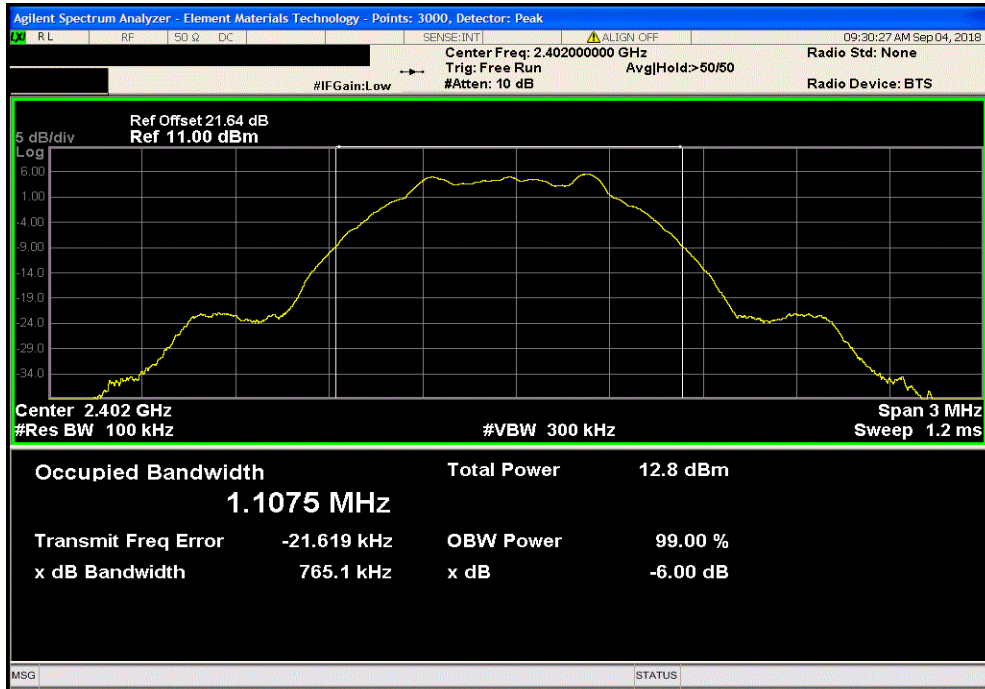
| | | | |
|--------------------------------------|----------------|-------------------------------|------------------|
| EUT: UltraSync BLUE | | Work Order: TMEC0002 | |
| Serial Number: 1836000001 | | Date: 4-Sep-18 | |
| Customer: Timecode Systems Limited | | Temperature: 22 °C | |
| Attendees: Paul Bannister | | Humidity: 40.7% RH | |
| Project: None | | Barometric Pres.: 1022 mbar | |
| Tested by: Jeff Alcock | Power: Battery | Job Site: EV06 | |
| TEST SPECIFICATIONS | | | |
| FCC 15.247:2018 | | Test Method: ANSI C63.10:2013 | |
| COMMENTS | | | |
| Software power setting = 50. | | | |
| DEVIATIONS FROM TEST STANDARD | | | |
| None | | | |
| Configuration # | 1 | Signature | |
| | | | |
| | | Value | Limit (±) Result |
| BLE/GFSK Low Channel, 2402 MHz | | 765.134 kHz | 500 kHz Pass |
| BLE/GFSK Mid Channel, 2442 MHz | | 762.838 kHz | 500 kHz Pass |
| BLE/GFSK High Channel, 2480 MHz | | 763.132 kHz | 500 kHz Pass |

OCCUPIED BANDWIDTH

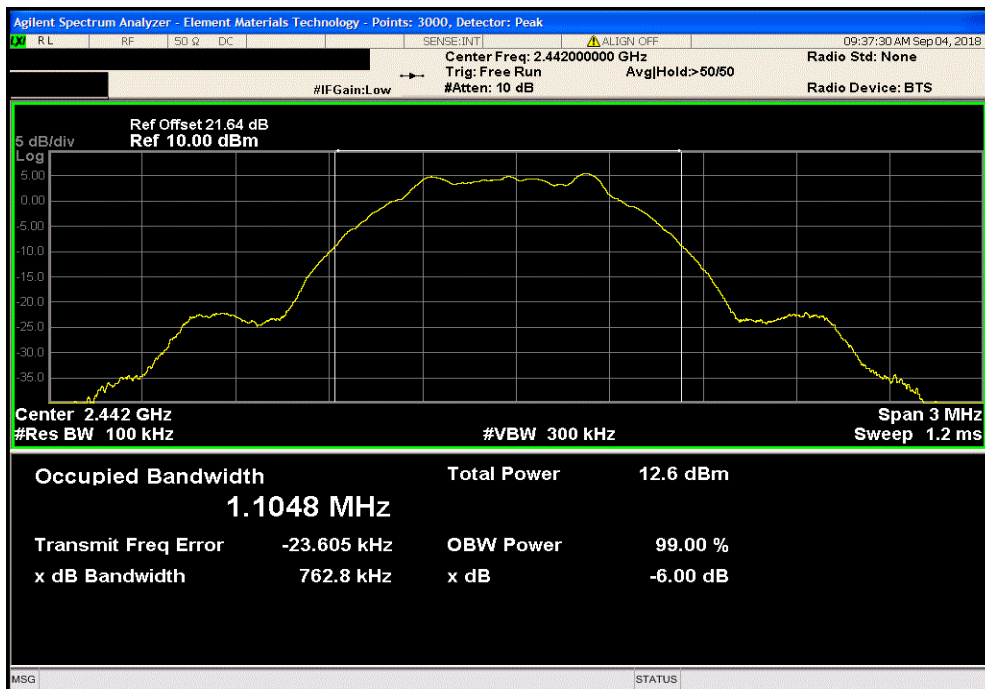


TMTX 2017.12.14 XMI 2017.12.13

| BLE/GFSK Low Channel, 2402 MHz | | | | Value | Limit | Result |
|--------------------------------|--|--|--|-------------|---------|--------|
| | | | | | (≥) | |
| | | | | 765.134 kHz | 500 kHz | Pass |



| BLE/GFSK Mid Channel, 2442 MHz | | | | Value | Limit | Result |
|--------------------------------|--|--|--|-------------|---------|--------|
| | | | | | (≥) | |
| | | | | 762.838 kHz | 500 kHz | Pass |

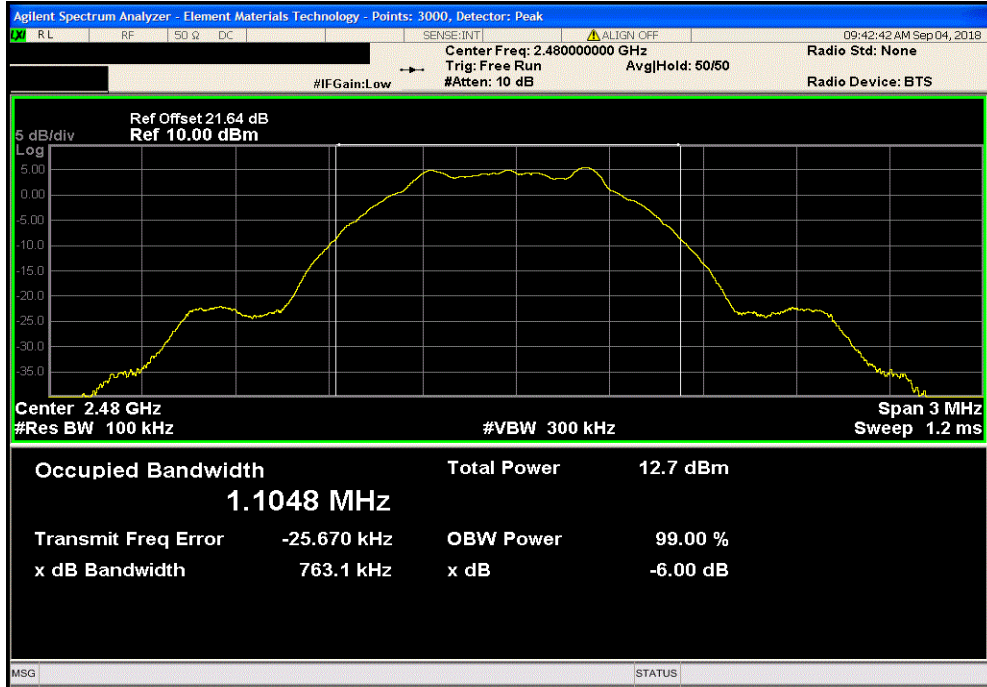


OCCUPIED BANDWIDTH



TMTx 2017.12.14 XMI 2017.12.13

| BLE/GFSK High Channel, 2480 MHz | | | Limit | Result |
|---------------------------------|---------|--|-------|--------|
| Value | (≥) | | | |
| 763.132 kHz | 500 kHz | | | Pass |



OUTPUT POWER



XMI 2017.12.13

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 | Keysight | N5182B | TFU | 27-Oct-15 | 27-Oct-18 |
| Analyzer - Spectrum Analyzer | Agilent | N9010A | AFI | 12-Jan-18 | 12-Jan-19 |
| Cable | Micro-Coax | UFD150A-1-0720-200200 | EVH | 23-Apr-18 | 23-Apr-19 |
| Attenuator | S.M. Electronics | SA26B-20 | AUY | 16-Apr-18 | 16-Apr-19 |
| Block - DC | Fairview Microwave | SD3379 | AMW | 23-Apr-18 | 23-Apr-19 |

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



TbTx 2017.12.14 XMi 2017.12.13

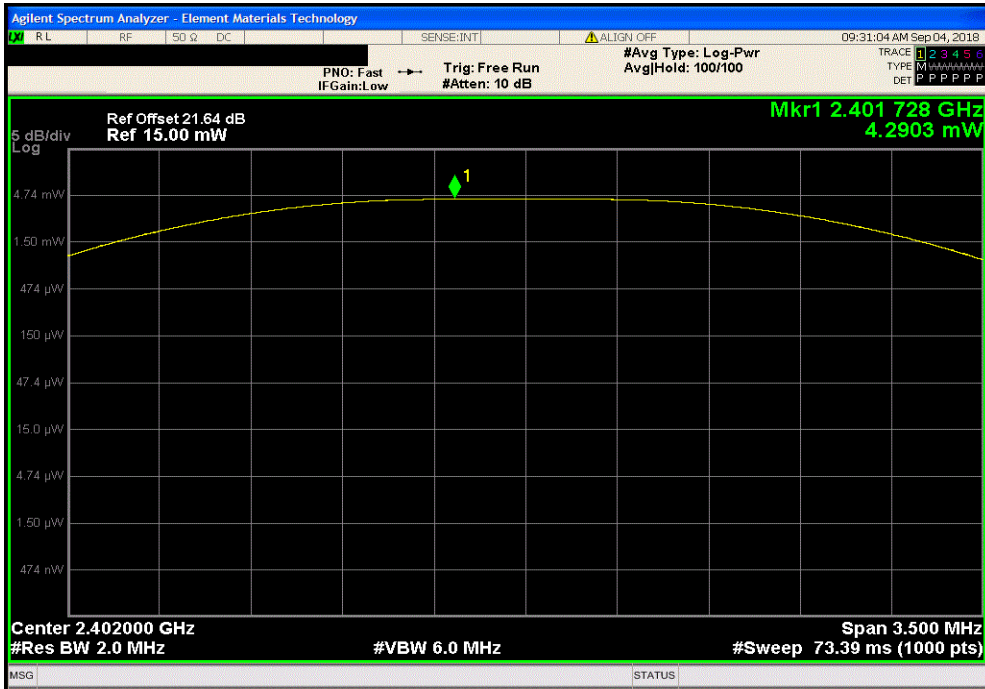
| | | | | | | | |
|--|----------------|---------------------------------|------------------------|------------------------|----------------------|-------------|--------|
| EUT: UltraSync BLUE | | Work Order: TMEC0002 | | | | | |
| Serial Number: 1836000001 | | Date: 4-Sep-18 | | | | | |
| Customer: Timecode Systems Limited | | Temperature: 22 °C | | | | | |
| Attendees: Paul Bannister | | Humidity: 40.7% RH | | | | | |
| Project: None | | Barometric Pres.: 1022 mbar | | | | | |
| Tested by: Jeff Alcock | Power: Battery | Job Site: EV06 | | | | | |
| TEST SPECIFICATIONS | | | | | | | |
| FCC 15.247:2018 | | Test Method | | | | | |
| | | ANSI C63.10:2013 | | | | | |
| COMMENTS | | | | | | | |
| Additional 0.3 dB offset added to measurements to account for clients direct connect SMA cable. Software power setting = 50. | | | | | | | |
| DEVIATIONS FROM TEST STANDARD | | | | | | | |
| None | | | | | | | |
| Configuration # | 1 | Signature | | | | | |
| | | Measured Value (mW) | Additional Offset (dB) | Additional Offset (mW) | Corrected Value (mW) | Limit < (W) | Result |
| | | 4.290 | 0.3 | 1.1 | 5.390 | 1 | Pass |
| | | 4.159 | 0.3 | 1.1 | 5.259 | 1 | Pass |
| | | 4.225 | 0.3 | 1.1 | 5.325 | 1 | Pass |
| | | BLE/GFSK Low Channel, 2402 MHz | | | | | |
| | | BLE/GFSK Mid Channel, 2442 MHz | | | | | |
| | | BLE/GFSK High Channel, 2480 MHz | | | | | |

OUTPUT POWER

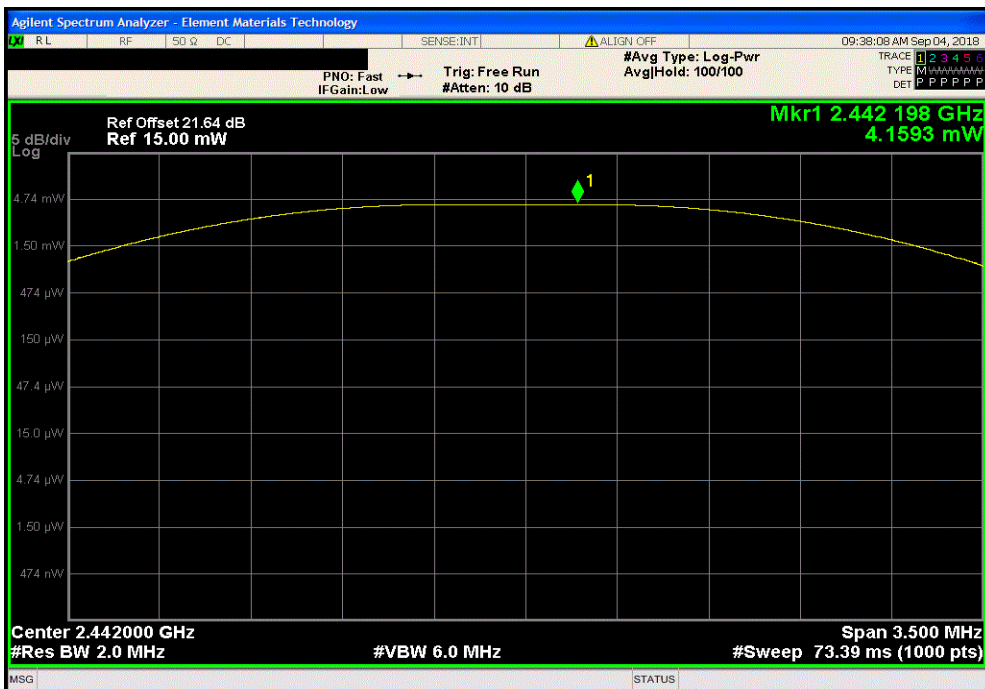


TotTx 2017.12.14 XM8 2017.12.13

| BLE/GFSK Low Channel, 2402 MHz | | | | | | |
|--------------------------------|------------------------|------------------------|----------------------|-------------|--------|--|
| Measured Value (mW) | Additional Offset (dB) | Additional Offset (mW) | Corrected Value (mW) | Limit < (W) | Result | |
| 4.29 | 0.3 | 1.1 | 5.39 | 1 | Pass | |



| BLE/GFSK Mid Channel, 2442 MHz | | | | | | |
|--------------------------------|------------------------|------------------------|----------------------|-------------|--------|--|
| Measured Value (mW) | Additional Offset (dB) | Additional Offset (mW) | Corrected Value (mW) | Limit < (W) | Result | |
| 4.159 | 0.3 | 1.1 | 5.259 | 1 | Pass | |

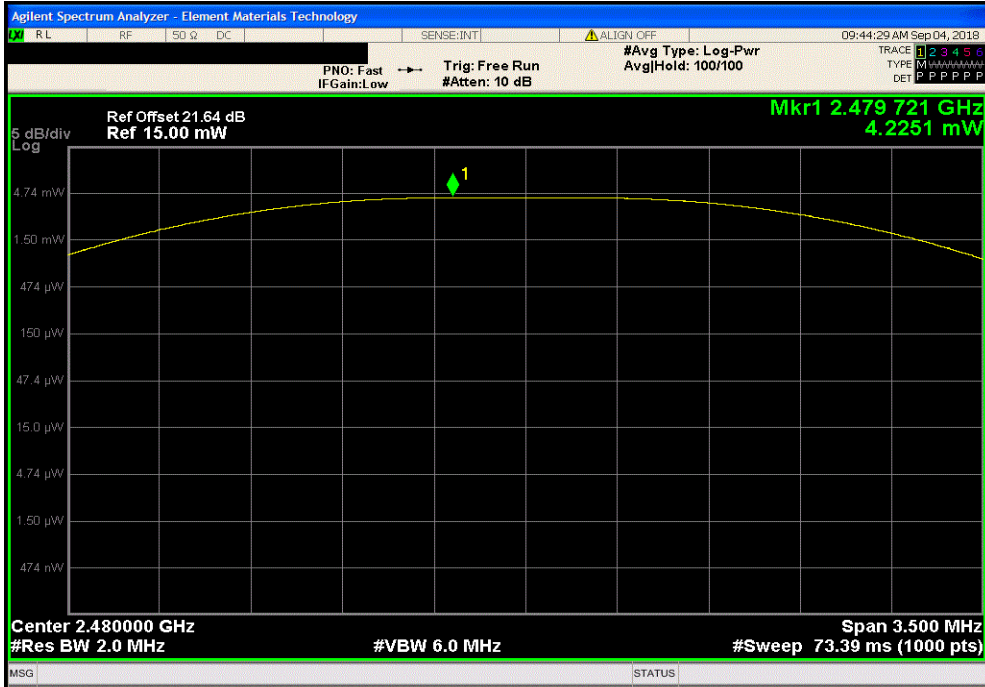


OUTPUT POWER



TotTx 2017.12.14 XM8 2017.12.13

| BLE/GFSK High Channel, 2480 MHz | | | | | | |
|---------------------------------|------------------------|------------------------|----------------------|-------------|--------|--|
| Measured Value (mW) | Additional Offset (dB) | Additional Offset (mW) | Corrected Value (mW) | Limit < (W) | Result | |
| 4.225 | 0.3 | 1.1 | 5.325 | 1 | Pass | |



POWER SPECTRAL DENSITY



XMit 2017.12.13

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 | Keysight | N5182B | TFU | 27-Oct-15 | 27-Oct-18 |
| Cable | Micro-Coax | UFD150A-1-0720-200200 | EVH | 23-Apr-18 | 23-Apr-19 |
| Attenuator | S.M. Electronics | SA26B-20 | AUY | 16-Apr-18 | 16-Apr-19 |
| Block - DC | Fairview Microwave | SD3379 | AMW | 23-Apr-18 | 23-Apr-19 |
| Analyzer - Spectrum Analyzer | Agilent | N9010A | AFI | 12-Jan-18 | 12-Jan-19 |

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



TbTs 2017.12.14 XMI 2017.12.13

| | | | |
|--|---|---------------------------------|----------------------------|
| EUT: UltraSync BLUE | | Work Order: TMEC0002 | |
| Serial Number: 1836000001 | | Date: 4-Sep-18 | |
| Customer: Timecode Systems Limited | | Temperature: 22.1 °C | |
| Attendees: Paul Bannister | | Humidity: 40.6% RH | |
| Project: None | | Barometric Pres.: 1021 mbar | |
| Tested by: Jeff Alcoke | | Power: Battery | |
| | | Job Site: EV06 | |
| TEST SPECIFICATIONS | | Test Method | |
| FCC 15.247:2018 | | ANSI C63.10:2013 | |
| COMMENTS | | | |
| Additional 0.3 dB offset added to measurements to account for clients direct connect SMA cable. Software power setting = 50. | | | |
| DEVIATIONS FROM TEST STANDARD | | | |
| None | | | |
| Configuration # | 1 | Signature | |
| | | Value dBm/3kHz | Additional Offset (dB) |
| | | Corrected Value dBm/3kHz | Limit < dBm/3kHz |
| | | | Results |
| | | BLE/GFSK Low Channel, 2402 MHz | -10.997 0.3 -10.697 8 Pass |
| | | BLE/GFSK Mid Channel, 2442 MHz | -11.132 0.3 -10.832 8 Pass |
| | | BLE/GFSK High Channel, 2480 MHz | -11.054 0.3 -10.754 8 Pass |

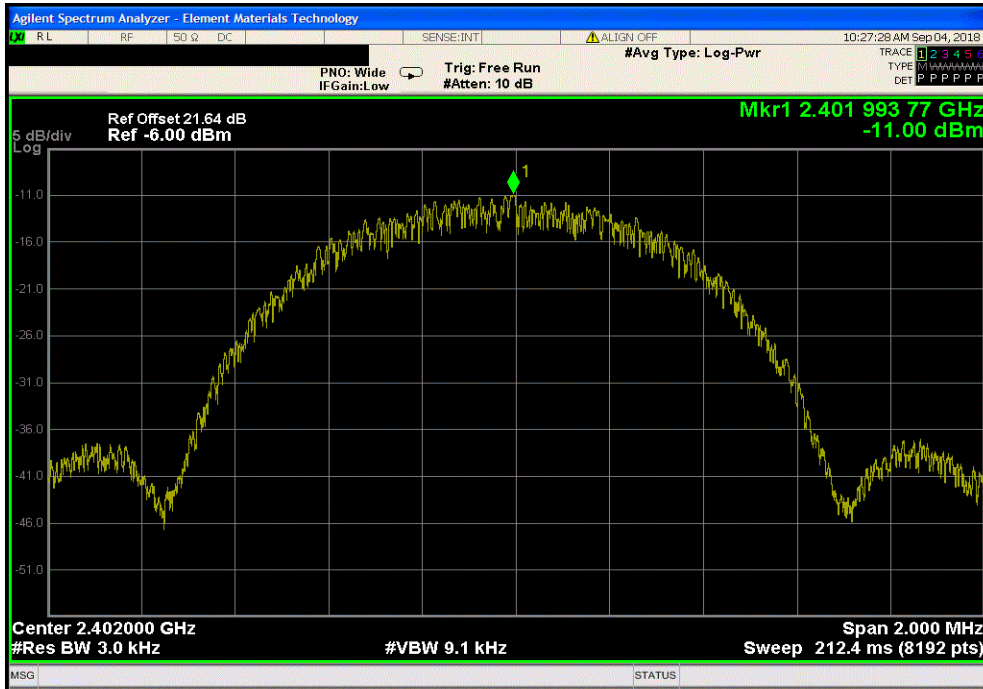
POWER SPECTRAL DENSITY



TxtTx 2017.12.14 XMit 2017.12.13

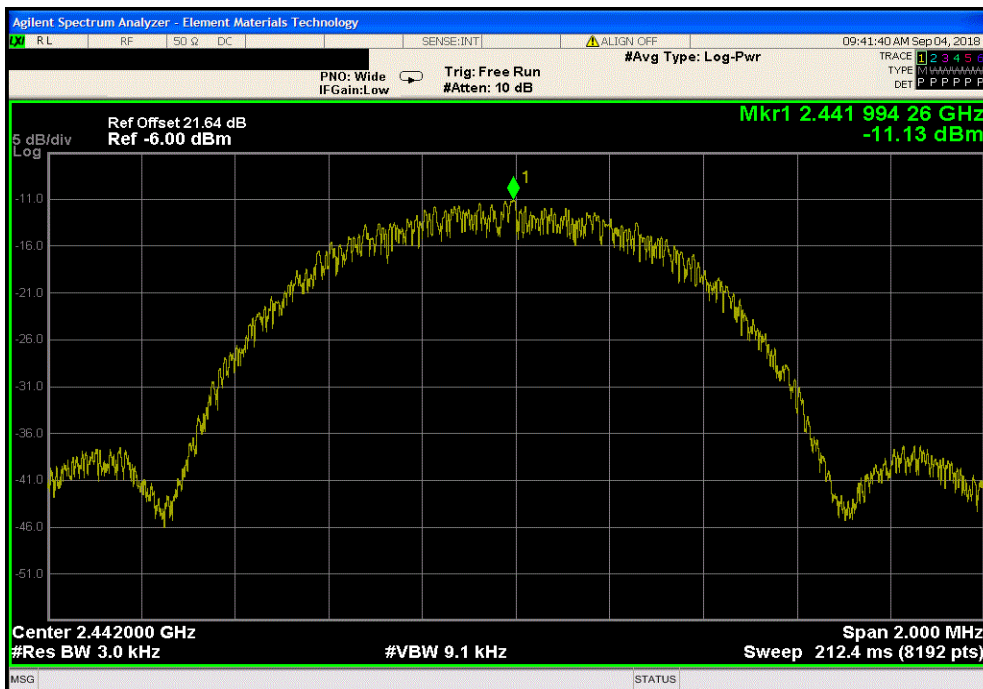
BLE/GFSK Low Channel, 2402 MHz

| Value | Additional Offset | Corrected Value | Limit | Results |
|----------|-------------------|-----------------|------------|---------|
| dBm/3kHz | (dB) | dBm/3kHz | < dBm/3kHz | |
| -10.997 | 0.3 | -10.697 | 8 | Pass |



BLE/GFSK Mid Channel, 2442 MHz

| Value | Additional Offset | Corrected Value | Limit | Results |
|----------|-------------------|-----------------|------------|---------|
| dBm/3kHz | (dB) | dBm/3kHz | < dBm/3kHz | |
| -11.132 | 0.3 | -10.832 | 8 | Pass |

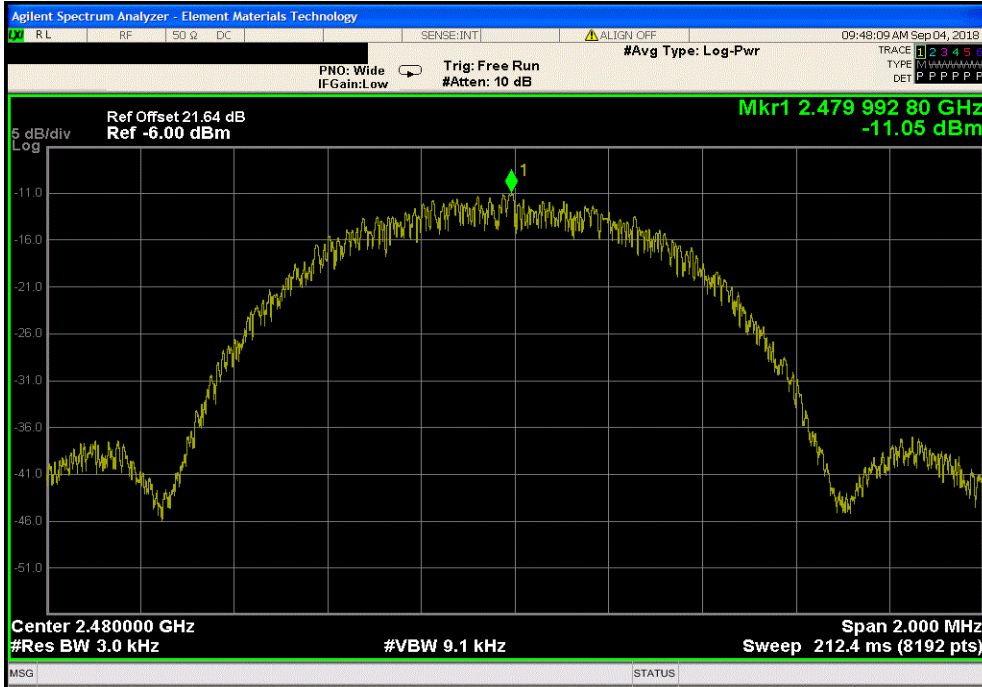


POWER SPECTRAL DENSITY



TMTX 2017.12.14 XMI 2017.12.13

| BLE/GFSK High Channel, 2480 MHz | | | | | |
|---------------------------------|-------------------|-----------------|------------|---------|--|
| Value | Additional Offset | Corrected Value | Limit | Results | |
| dBm/3kHz | (dB) | dBm/3kHz | < dBm/3kHz | | |
| -11.054 | 0.3 | -10.754 | 8 | Pass | |



BAND EDGE COMPLIANCE



XMit 2017.12.13

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 |
|------------------------------|--------------------|-----------------------|-----|-----------|-----------|
| Analyzer - Spectrum Analyzer | Agilent | N9010A | AFI | 12-Jan-18 | 12-Jan-19 |
| Generator - Signal | Keysight | N5182B | TFU | 27-Oct-15 | 27-Oct-18 |
| Cable | Micro-Coax | UFD150A-1-0720-200200 | EVH | 23-Apr-18 | 23-Apr-19 |
| Attenuator | S.M. Electronics | SA26B-20 | AUY | 16-Apr-18 | 16-Apr-19 |
| Block - DC | Fairview Microwave | SD3379 | AMW | 23-Apr-18 | 23-Apr-19 |

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



TbTx 2017.12.14 XMM 2017.12.13

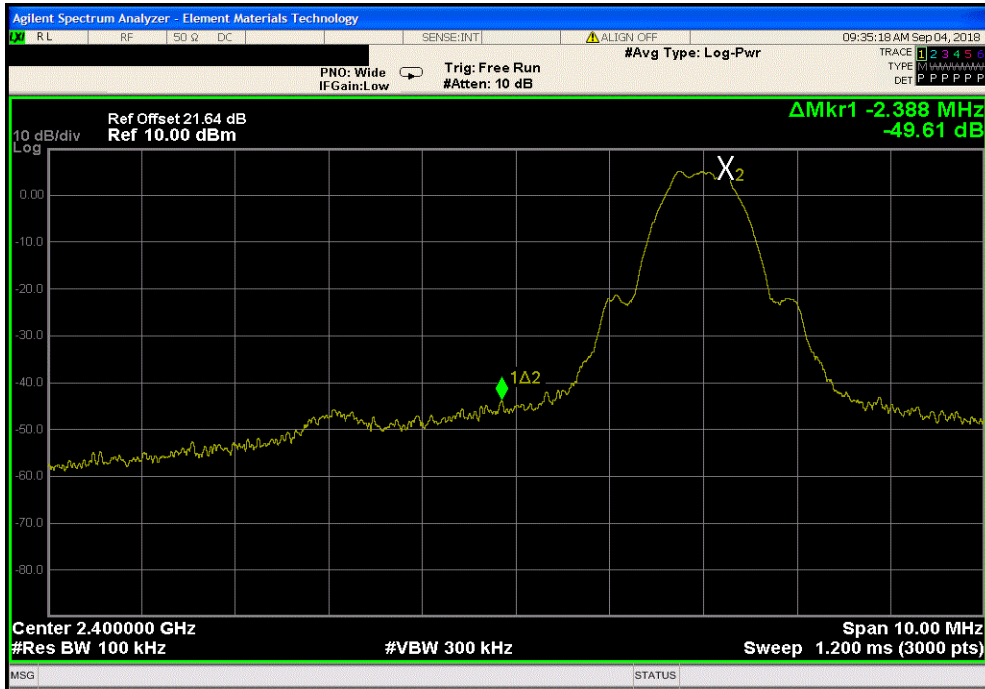
| | | | | | | | |
|--|----------------|---------------------------------|------------------------|-----------------------|---------------|--------|------|
| EUT: UltraSync BLUE | | Work Order: TMEC0002 | | | | | |
| Serial Number: 1836000001 | | Date: 4-Sep-18 | | | | | |
| Customer: Timecode Systems Limited | | Temperature: 21.9 °C | | | | | |
| Attendees: Paul Bannister | | Humidity: 40.7% RH | | | | | |
| Project: None | | Barometric Pres.: 1022 mbar | | | | | |
| Tested by: Jeff Alcock | Power: Battery | Job Site: EV06 | | | | | |
| TEST SPECIFICATIONS | | Test Method | | | | | |
| FCC 15.247:2018 | | ANSI C63.10:2013 | | | | | |
| COMMENTS | | | | | | | |
| Additional 0.3 dB offset added to measurements to account for clients direct connect SMA cable. Software power setting = 50. | | | | | | | |
| DEVIATIONS FROM TEST STANDARD | | | | | | | |
| None | | | | | | | |
| Configuration # | 1 | Signature | | | | | |
| | | Measured Value (dBc) | Additional offset (dB) | Corrected Value (dBc) | Limit ≤ (dBc) | Result | |
| | | BLE/GFSK Low Channel, 2402 MHz | -49.62 | 0.3 | -49.32 | -20 | Pass |
| | | BLE/GFSK High Channel, 2480 MHz | -53.99 | 0.3 | -53.69 | -20 | Pass |

BAND EDGE COMPLIANCE

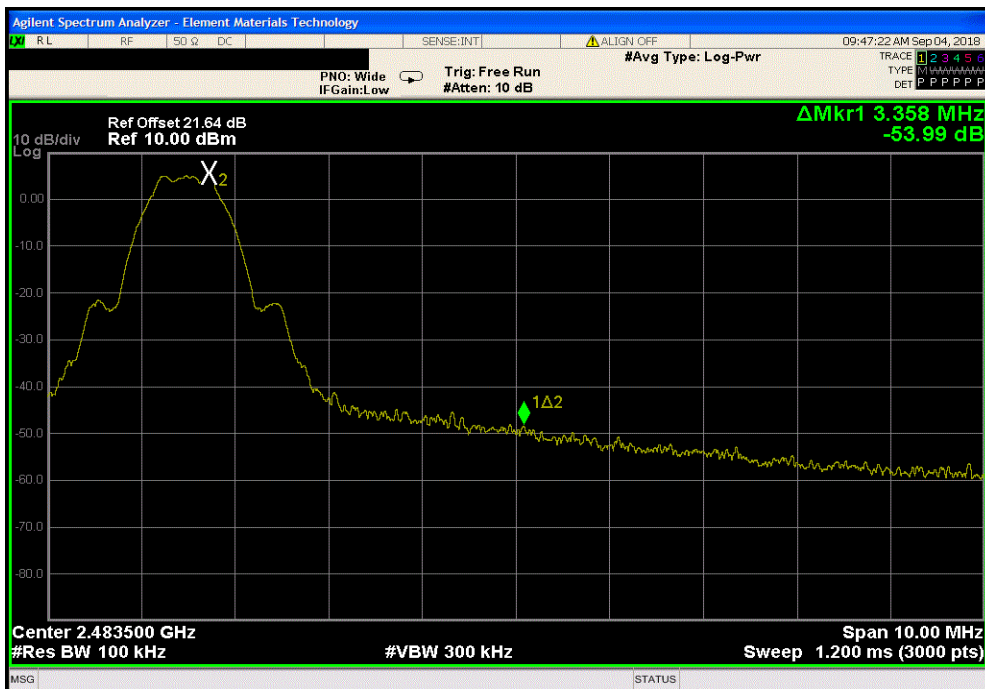


TMTX 2017.12.14 XMI 2017.12.13

| BLE/GFSK Low Channel, 2402 MHz | | | | | | |
|--------------------------------|-------------------|-----------------|---------|--------|--|--|
| Measured Value | Additional offset | Corrected Value | Limit | Result | | |
| (dBc) | (dB) | (dBc) | ≤ (dBc) | | | |
| -49.62 | 0.3 | -49.32 | -20 | Pass | | |



| BLE/GFSK High Channel, 2480 MHz | | | | | | |
|---------------------------------|-------------------|-----------------|---------|--------|--|--|
| Measured Value | Additional offset | Corrected Value | Limit | Result | | |
| (dBc) | (dB) | (dBc) | ≤ (dBc) | | | |
| -53.99 | 0.3 | -53.69 | -20 | Pass | | |



SPURIOUS CONDUCTED EMISSIONS



XMIT 2017.12.13

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 | Keysight | N5182B | TFU | 27-Oct-15 | 27-Oct-18 |
| Cable | Micro-Coax | UFD150A-1-0720-200200 | EVH | 23-Apr-18 | 23-Apr-19 |
| Block - DC | Fairview Microwave | SD3379 | AMW | 23-Apr-18 | 23-Apr-19 |
| Attenuator | S.M. Electronics | SA26B-20 | AUY | 16-Apr-18 | 16-Apr-19 |
| Analyzer - Spectrum Analyzer | Agilent | N9010A | AFI | 12-Jan-18 | 12-Jan-19 |

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



TbTx 2017.12.14 XMt 2017.12.13

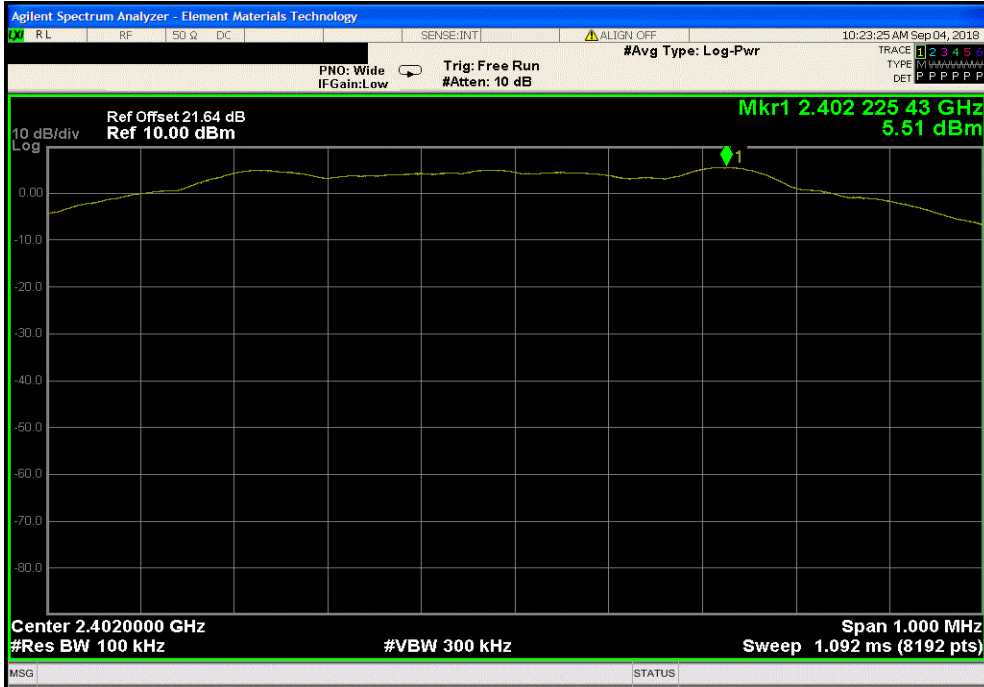
| | | | | | | | |
|--|----------------|-----------------------------|-----------------|------------------------|-----------------------|---------------|--------|
| EUT: UltraSync BLUE | | Work Order: TMEC0002 | | | | | |
| Serial Number: 1836000001 | | Date: 4-Sep-18 | | | | | |
| Customer: Timecode Systems Limited | | Temperature: 22.1 °C | | | | | |
| Attendees: Paul Bannister | | Humidity: 40.6% RH | | | | | |
| Project: None | | Barometric Pres.: 1021 mbar | | | | | |
| Tested by: Jeff Alcock | Power: Battery | Job Site: EV06 | | | | | |
| TEST SPECIFICATIONS | | Test Method | | | | | |
| FCC 15.247:2018 | | ANSI C63.10:2013 | | | | | |
| COMMENTS | | | | | | | |
| Additional 0.3 dB offset added to measurements to account for clients direct connect SMA cable. Software power setting = 50. | | | | | | | |
| DEVIATIONS FROM TEST STANDARD | | | | | | | |
| None | | | | | | | |
| Configuration # | 1 | Signature | | | | | |
| | | Frequency Range | Max Value (dBc) | Additioanl Offset (dB) | Corrected Value (dBc) | Limit ≤ (dBc) | Result |
| BLE/GFSK Low Channel, 2402 MHz | | Fundamental | N/A | N/A | N/A | N/A | N/A |
| BLE/GFSK Low Channel, 2402 MHz | | 30 MHz - 12.5 GHz | -51.90 | 0.3 | -51.60 | -20 | Pass |
| BLE/GFSK Low Channel, 2402 MHz | | 12.5 GHz - 25 GHz | -56.32 | 0.3 | -56.02 | -20 | Pass |
| BLE/GFSK Mid Channel, 2442 MHz | | Fundamental | N/A | N/A | N/A | N/A | N/A |
| BLE/GFSK Mid Channel, 2442 MHz | | 30 MHz - 12.5 GHz | -58.15 | 0.3 | -57.85 | -20 | Pass |
| BLE/GFSK Mid Channel, 2442 MHz | | 12.5 GHz - 25 GHz | -56.66 | 0.3 | -56.36 | -20 | Pass |
| BLE/GFSK High Channel, 2480 MHz | | Fundamental | N/A | N/A | N/A | N/A | N/A |
| BLE/GFSK High Channel, 2480 MHz | | 30 MHz - 12.5 GHz | -57.52 | 0.3 | -57.22 | -20 | Pass |
| BLE/GFSK High Channel, 2480 MHz | | 12.5 GHz - 25 GHz | -56.42 | 0.3 | -56.12 | -20 | Pass |

SPURIOUS CONDUCTED EMISSIONS

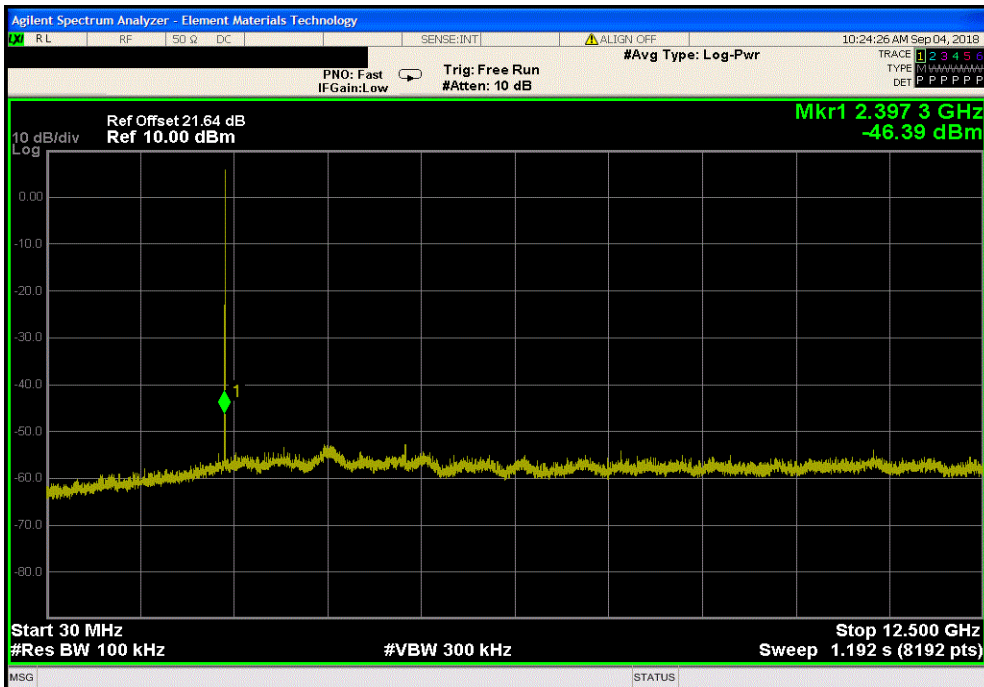


TbTx 2017.12.14 XMit 2017.12.13

| BLE/GFSK Low Channel, 2402 MHz | | | | | | |
|--------------------------------|-----------------|------------------------|-----------------------|--------------------|--------|--|
| Frequency Range | Max Value (dBc) | Additional Offset (dB) | Corrected Value (dBc) | Limit \leq (dBc) | Result | |
| Fundamental | N/A | N/A | N/A | N/A | N/A | |



| BLE/GFSK Low Channel, 2402 MHz | | | | | | |
|--------------------------------|-----------------|------------------------|-----------------------|--------------------|--------|--|
| Frequency Range | Max Value (dBc) | Additional Offset (dB) | Corrected Value (dBc) | Limit \leq (dBc) | Result | |
| 30 MHz - 12.5 GHz | -51.90 | 0.3 | -51.60 | -20 | Pass | |

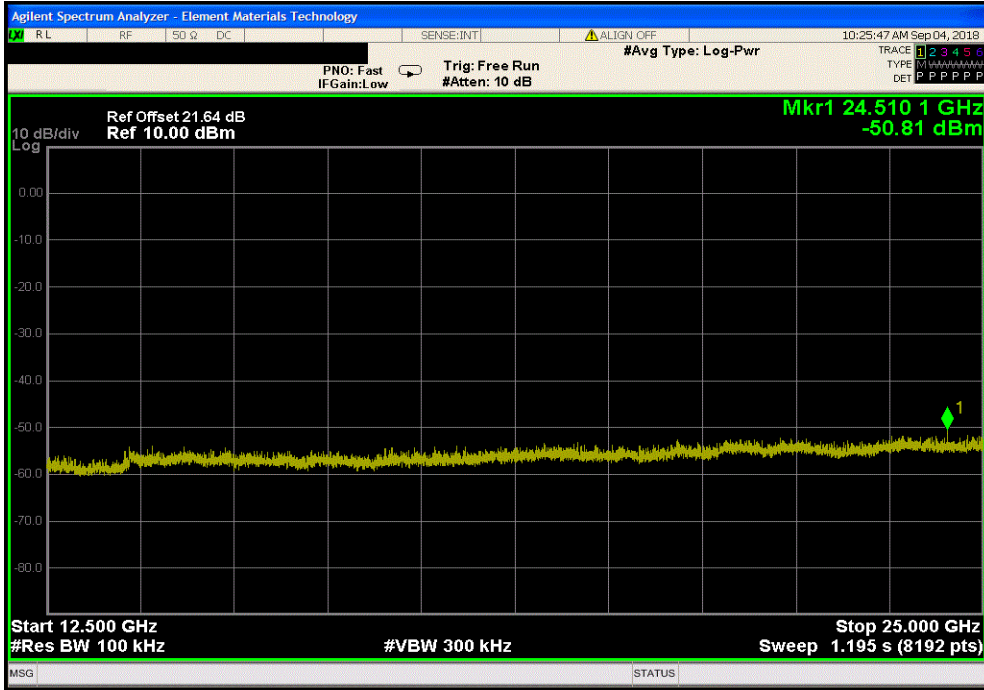


SPURIOUS CONDUCTED EMISSIONS

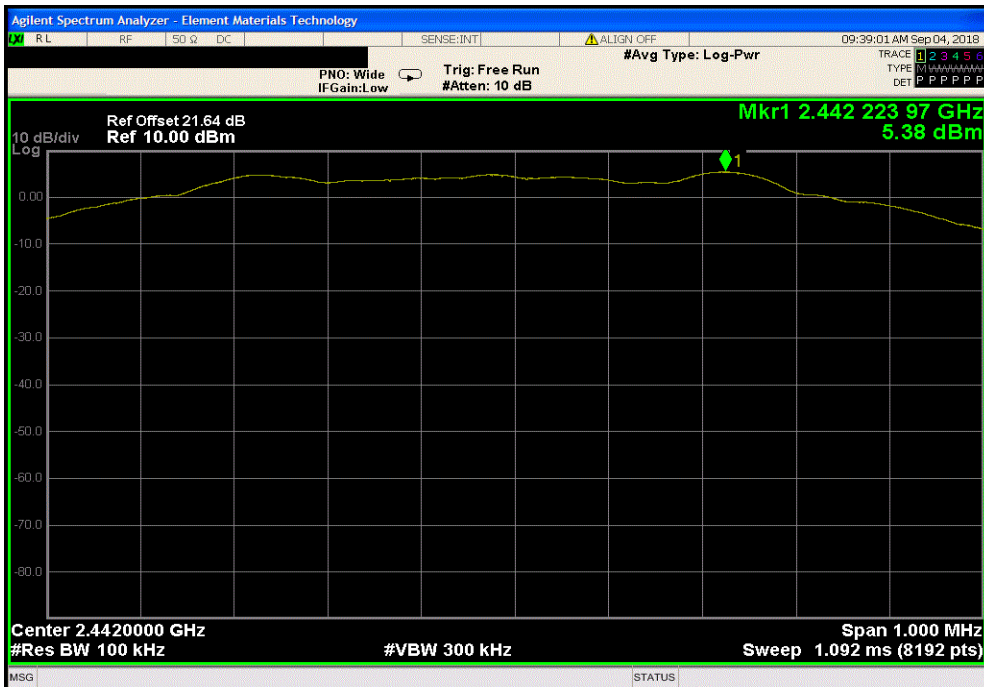


TbTx 2017.12.14 XMit 2017.12.13

| BLE/GFSK Low Channel, 2402 MHz | | | | | | |
|--------------------------------|-----------------|------------------------|-----------------------|--------------------|--------|--|
| Frequency Range | Max Value (dBc) | Additional Offset (dB) | Corrected Value (dBc) | Limit \leq (dBc) | Result | |
| 12.5 GHz - 25 GHz | -56.32 | 0.3 | -56.02 | -20 | Pass | |



| BLE/GFSK Mid Channel, 2442 MHz | | | | | | |
|--------------------------------|-----------------|------------------------|-----------------------|--------------------|--------|--|
| Frequency Range | Max Value (dBc) | Additional Offset (dB) | Corrected Value (dBc) | Limit \leq (dBc) | Result | |
| Fundamental | N/A | N/A | N/A | N/A | N/A | |

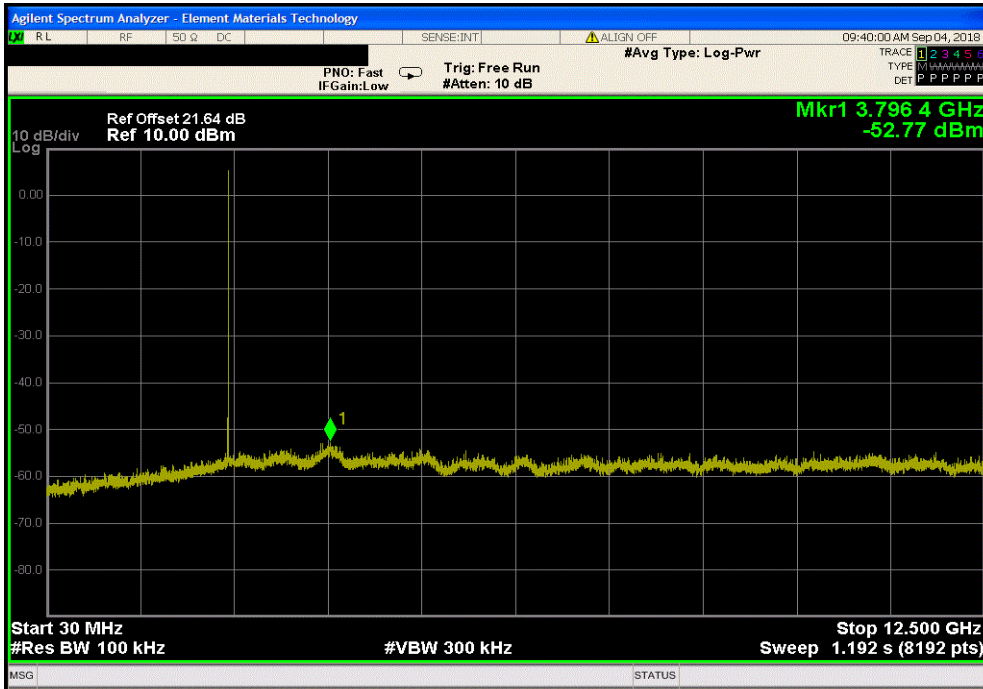


SPURIOUS CONDUCTED EMISSIONS

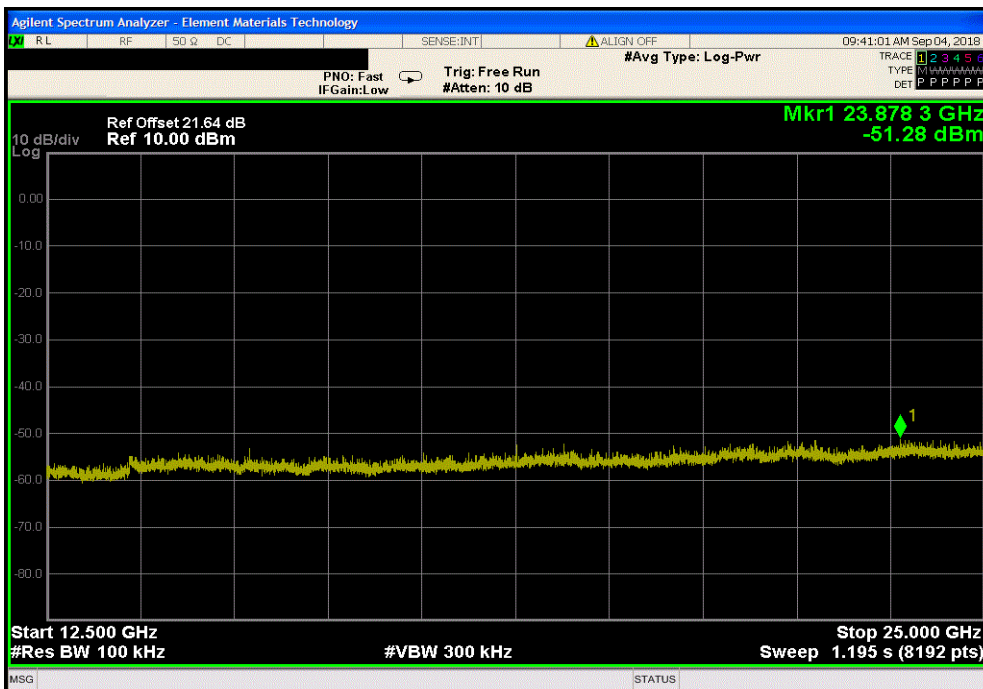


TrtTx 2017.12.14 XMit 2017.12.13

| BLE/GFSK Mid Channel, 2442 MHz | | | | | | |
|--------------------------------|-----------------|------------------------|-----------------------|--------------------|--------|--|
| Frequency Range | Max Value (dBc) | Additional Offset (dB) | Corrected Value (dBc) | Limit \leq (dBc) | Result | |
| 30 MHz - 12.5 GHz | -58.15 | 0.3 | -57.85 | -20 | Pass | |



| BLE/GFSK Mid Channel, 2442 MHz | | | | | | |
|--------------------------------|-----------------|------------------------|-----------------------|--------------------|--------|--|
| Frequency Range | Max Value (dBc) | Additional Offset (dB) | Corrected Value (dBc) | Limit \leq (dBc) | Result | |
| 12.5 GHz - 25 GHz | -56.66 | 0.3 | -56.36 | -20 | Pass | |

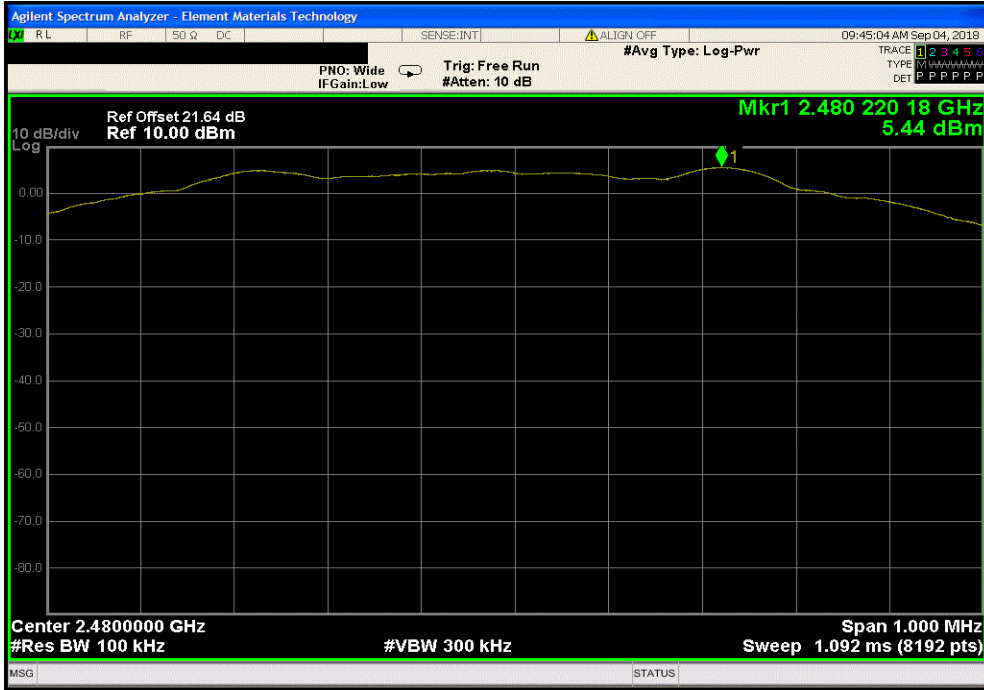


SPURIOUS CONDUCTED EMISSIONS

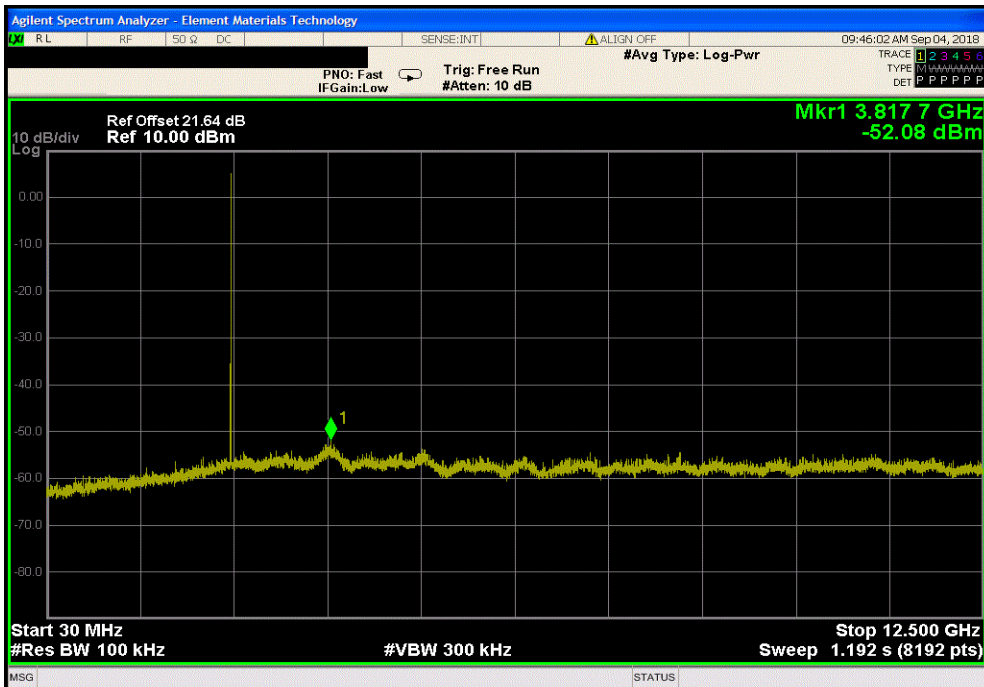


TrtTx 2017.12.14 XMit 2017.12.13

| BLE/GFSK High Channel, 2480 MHz | | | | | | |
|---------------------------------|-----------------|------------------------|-----------------------|--------------------|--------|--|
| Frequency Range | Max Value (dBc) | Additional Offset (dB) | Corrected Value (dBc) | Limit \leq (dBc) | Result | |
| Fundamental | N/A | N/A | N/A | N/A | N/A | |



| BLE/GFSK High Channel, 2480 MHz | | | | | | |
|---------------------------------|-----------------|------------------------|-----------------------|--------------------|--------|--|
| Frequency Range | Max Value (dBc) | Additional Offset (dB) | Corrected Value (dBc) | Limit \leq (dBc) | Result | |
| 30 MHz - 12.5 GHz | -57.52 | 0.3 | -57.22 | -20 | Pass | |



SPURIOUS CONDUCTED EMISSIONS



TbTx 2017.12.14 XMi 2017.12.13

| BLE/GFSK High Channel, 2480 MHz | | | | | | |
|---------------------------------|-----------------|------------------------|-----------------------|---------------|--------|--|
| Frequency Range | Max Value (dBc) | Additional Offset (dB) | Corrected Value (dBc) | Limit ≤ (dBc) | Result | |
| 12.5 GHz - 25 GHz | -56.42 | 0.3 | -56.12 | -20 | Pass | |

