

Timecode Systems Limited

UltraSync BLUE

FCC 15.247:2018 Bluetooth Low Energy (DTS) Radio

Report # TMEC0002.1





This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government. This Report shall not be reproduced, except in full without written approval of the laboratory.

EAR-Controlled Data - This document contains technical data whose export and reexport/retransfer is subject to control by the U.S. Department of Commerce under the Export Administration Act and the Export Administration Regulations. The Department of Commerce's prior written approval may be required for the export or re-export/retransfer of such technical data to any foreign person, foreign entity or foreign organization whether in the United States or abroad.

More: https://www.bis.doc.gov/index.php/forms-documents/regulations-docs/14-commerce-country-chart/fileT

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 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

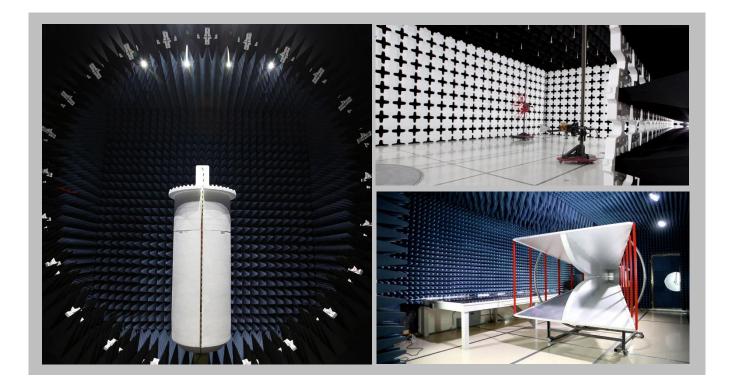
For details on the Scopes of our Accreditations, please visit: https://www.nwemc.com/emc-testing-accreditations

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	
		NV	LAP			
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	
		BS	МІ			
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R	
		VC	CI			
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



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.

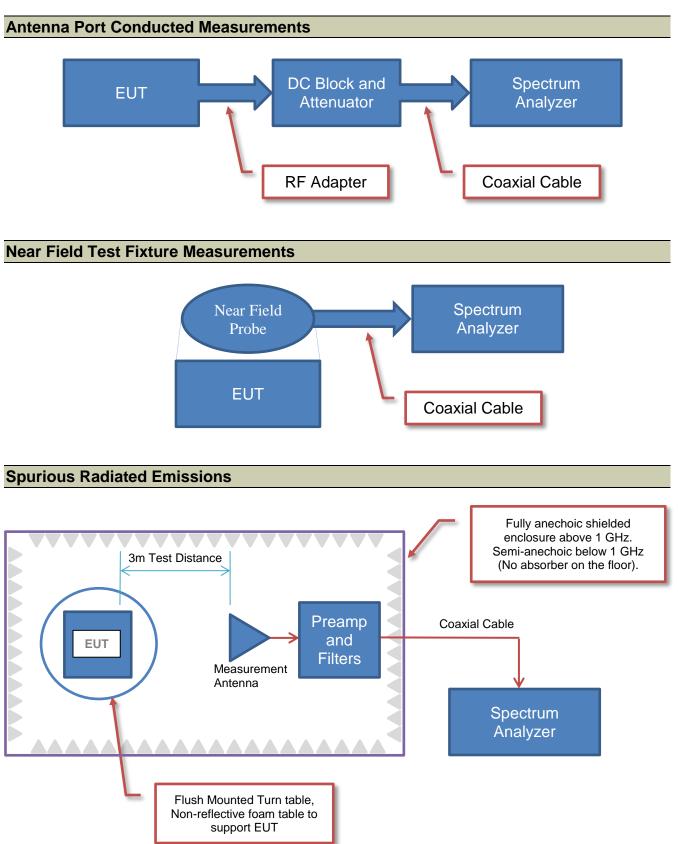
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable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





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
USBI3	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	
USBI3	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



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

Manufacturer	Model	ID	Last Cal.	Interval
Micro-Tronics	LPM50004	HGR	28-Feb-2018	12 mo
Miteq	AM-1551	AOY	28-Feb-2018	12 mo
None	3m Test Distance Cable	EVM	28-Feb-2018	12 mo
EMCO	3141	AXG	17-Jul-2017	24 mo
Agilent	E4443A	AFB	31-May-2018	12 mo
ESM Cable Corp.	KMKM-72	EVY	24-Aug-2018	12 mo
Miteq	AMF-6F-18002650-25-10P	AVU	24-Aug-2018	12 mo
ETS Lindgren	3160-09	AIV	NCR	0 mo
Miteq	AMF-6F-12001800-30-10P	AVD	30-Nov-2017	12 mo
ETS Lindgren	3160-08	AHV	NCR	0 mo
None	Standard Gain Horns Cable	EVF	30-Nov-2017	12 mo
L-3 Narda-MITEQ	AMF-6F-08001200-30-10P	PAO	30-Nov-2017	12 mo
ETS Lindgren	3160-07	AHU	NCR	0 mo
N/A	Double Ridge Horn Cables	EVB	29-Nov-2017	12 mo
Miteq	AMF-3D-00100800-32-13P	PAG	29-Nov-2017	12 mo
ETS Lindgren	3115	AIZ	7-Feb-2018	24 mo
Micro-Tronics	HPM50111	HFO	1-Feb-2018	12 mo
Coaxicom	3910-20	AXZ	28-Feb-2018	12 mo
Agilent	E4446A	AAQ	18-Mar-2018	12 mo
	Micro-Tronics Miteq None EMCO Agilent ESM Cable Corp. Miteq ETS Lindgren None L-3 Narda-MITEQ ETS Lindgren N/A Miteq ETS Lindgren N/A Miteq ETS Lindgren Micro-Tronics Coaxicom	Micro-TronicsLPM50004MiteqAM-1551None3m Test Distance CableEMCO3141AgilentE4443AESM Cable Corp.KMKM-72MiteqAMF-6F-18002650-25-10PETS Lindgren3160-09MiteqAMF-6F-12001800-30-10PETS Lindgren3160-08NoneStandard Gain Horns CableL-3 Narda-MITEQAMF-6F-08001200-30-10PETS Lindgren3160-07N/ADouble Ridge Horn CablesMiteqAMF-3D-00100800-32-13PETS Lindgren3115Micro-TronicsHPM50111Coaxicom3910-20	Micro-TronicsLPM50004HGRMiteqAM-1551AOYNone3m Test Distance CableEVMEMCO3141AXGAgilentE4443AAFBESM Cable Corp.KMKM-72EVYMiteqAMF-6F-18002650-25-10PAVUETS Lindgren3160-09AIVMiteqAMF-6F-12001800-30-10PAVDETS Lindgren3160-08AHVNoneStandard Gain Horns CableEVFL-3 Narda-MITEQAMF-6F-08001200-30-10PPAOETS Lindgren3160-07AHUN/ADouble Ridge Horn CablesEVBMiteqAMF-3D-00100800-32-13PPAGETS Lindgren3115AIZMicro-TronicsHPM50111HFOCoaxicom3910-20AXZ	Micro-Tronics LPM50004 HGR 28-Feb-2018 Miteq AM-1551 AOY 28-Feb-2018 None 3m Test Distance Cable EVM 28-Feb-2018 EMCO 3141 AXG 17-Jul-2017 Agilent E4443A AFB 31-May-2018 ESM Cable Corp. KMKM-72 EVY 24-Aug-2018 Miteq AMF-6F-18002650-25-10P AVU 24-Aug-2018 ETS Lindgren 3160-09 AIV NCR Miteq AMF-6F-12001800-30-10P AVD 30-Nov-2017 ETS Lindgren 3160-08 AHV NCR None Standard Gain Horns Cable EVF 30-Nov-2017 L-3 Narda-MITEQ AMF-6F-08001200-30-10P PAO 30-Nov-2017 ETS Lindgren 3160-07 AHU NCR N/A Double Ridge Horn Cables EVB 29-Nov-2017 TS Lindgren 3160-07 AHU NCR N/A Double Ridge Horn Cables EVB 29-Nov-2017 Miteq A

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*LOG(dc).

SPURIOUS RADIATED EMISSIONS



	k Order		IEC0002		Date:	6-Sep-201	3	- //	Ma
	Project		None	Ter	mperature:	22.2 °C	(/	at 1	
	lob Site		EV01		Humidity:	41% RH		1/ 14/0	52
Serial N	Number		36-000003	Barome	etric Pres.:	1020 mba	Tes	sted by: Jeff Alcoke	
		UltraSyr	nc BLUE						
	uration								
			le Systems	Limited					
Att	endees	Paul Ba	nnister						
EUT	Power	Battery							
Operating	g Mode	BTLE co	ontinuous T	x, Low Ch. =	2402 MHz, Mi	d Ch. = 2442 I	MHz, High Ch. = 248	30 MHz	
Dev	viations	None							
Cor	nments		e power set	ting = 50. See	e comments b	elow for Chanı	nel and EUT orienta	tion.	
est Specifi	cations					Test	Method		
CC 15.247:							I C63.10:2013		
Run #	11	Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results	Pass
Run #	11	Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results	Pass
	11	Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results	Pass
Run #	11	Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results	Pass
	11	Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results	Pass
80	11	Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results	Pass
	11	Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results	Pass
80	11	Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results	Pass
80	11	Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results	Pass
80	11	Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results	
80	11	Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results	Pass
80	11	Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results Image: Image of the second	Pass
80	11	Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results Image: Strategy of the st	Pass
80		Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)		
80	11	Test		n) 3	Antenna H	leight(s)	1 to 4(m)	Results Image: Image of the second	
80 - 70 - 60 - 50 -		Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results Image: Strategy of the st	
80 70 60 50 80 40		Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results Image: Image of the second	
80		Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results Image: Image of the second	
80 70 60 50 W/Ngp 40		Test	Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results Image: Image	
80 70 60 50 W/Ngp 40			Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results	
80 70 60 50 40 30				n) 3	Antenna H	leight(s)	1 to 4(m)	Results	
80 70 60 50 40 30 20			Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results	
80 70 60 50 40 30			Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results Image: Image	
80 70 60 50 40 30 20			Distance (n	n) 3	Antenna H	leight(s)	1 to 4(m)	Results Image: Image	
80 70 60 50 40 30 20 10				n) 3	Antenna H	leight(s)	1 to 4(m)	Results Image: Image	
80		Test			Antenna H	leight(s)		Results Image: Image	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



	Corder:	TMEC0			Date:	6-Sep-2			- //	/h.
	Project:	None			perature:	22.2 °		1/	24 /	
	ob Site:	EV0			Humidity:	41% R			141	82
Serial N	lumber:	111836-00		Barome	tric Pres.:	1020 ml	bar	Tested	by: Jeff Alcoke	
		UltraSync BL	UE							
	uration:									
		Timecode Sy		nited						
		Paul Bannist	er							
EUT	Power:									
Operating	g Mode:	BTLE contin	uous Tx, l	_ow Ch. = 2	2402 MHz, M	id Ch. = 244	2 MHz, High	Ch. = 2480 M	IHz	
Dev	iations:	None								
Com	nments:	Software pov	ver setting	g = 50. See	comments b	elow for Cha	annel and EU	IT orientation.		
est Specific	cations					Te	st Method			
CC 15.247:2							ISI C63.10:2	013		
Run #	13	Test Dist	ance (m)	3	Antenna H	leight(s)	1 tc	a 4(m)	Results	Pass
Run #	13	Test Dista	ance (m)	3	Antenna H	leight(s)	1 tc	o 4(m)	Results	Pass
	13	Test Dista	ance (m)	3	Antenna H	leight(s)	1 to	o 4(m)	Results	Pass
Run #	13	Test Dista	ance (m)	3	Antenna H	leight(s)	1 tc	o 4(m)	Results	Pass
	13	Test Dista	ance (m)	3	Antenna H	leight(s)	1 tc	0 4(m)	Results	Pass
80	13	Test Dista	ance (m)	3	Antenna H	leight(s)	1 to	0 4(m)	Results	Pass
	13	Test Dista	ance (m)	3	Antenna H	leight(s)	1 to	0 4(m)	Results	Pass
80	13	Test Dista	ance (m)	3	Antenna H	leight(s)	1 to	0 4(m)	Results	Pass
80	13	Test Dista	ance (m)	3	Antenna H	leight(s)		0.4(m)	Results	Pass
80	13	Test Dista	ance (m)	3	Antenna H	leight(s)		0.4(m)	Results	Pass
80	13	Test Dista	ance (m)	3	Antenna H	leight(s)		0 4(m)	Results	Pass
80	13	Test Dista	ance (m)	3	Antenna H	leight(s)		0 4(m)	Results	Pass
80	13	Test Dista	ance (m)	3	Antenna H	leight(s)		0 4(m)	Results Image: Strategy of the st	
80	13	Test Dista	ance (m)	3	Antenna H	leight(s)		0 4(m)	Results Image: Constraint of the second s	
80		Test Dista	ance (m)	3	Antenna H	leight(s)		0 4(m)	Results Image: Strategy of the st	
80		Test Dista	ance (m)	3	Antenna H	leight(s)		0 4(m)	Results Image: Strategy of the st	
80 70 60 50 50 40		Test Dista	ance (m)	3	Antenna H	leight(s)		o 4(m)	Results	
80		Test Dista	ance (m)	3	Antenna H	leight(s)		D 4(m)	Results	
80 70 60 50 50 40		Test Dista	ance (m)	3	Antenna H	leight(s)		0 4(m)	Results Image: Image	
80		Test Dista	ance (m)	3	Antenna H	leight(s)		0 4(m)	Results Image: Second secon	
80 70 60 50 50 40			ance (m)	3	Antenna H	leight(s)		D 4(m)	Results I I I I I I I I I I I I I I I I I I I I I I I I I I </td <td></td>	
80			ance (m)	3		leight(s)		D 4(m)	Results	
80			ance (m)	3		leight(s)		D 4(m)	Results	
80 70 60 50 50 40 30 20			ance (m)	3	Antenna H			D 4(m)	Results	
80 70 60 50 50 40 30 20 10			ance (m)	3	Antenna H			D 4(m)	Results	
80 70 60 50 50 40 30 20 10 0			ance (m)		Antenna H					
80 70 60 50 40 30 20 10			ance (m)	3	Antenna H			2460	Results I I I <t< td=""><td>Pass</td></t<>	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.



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

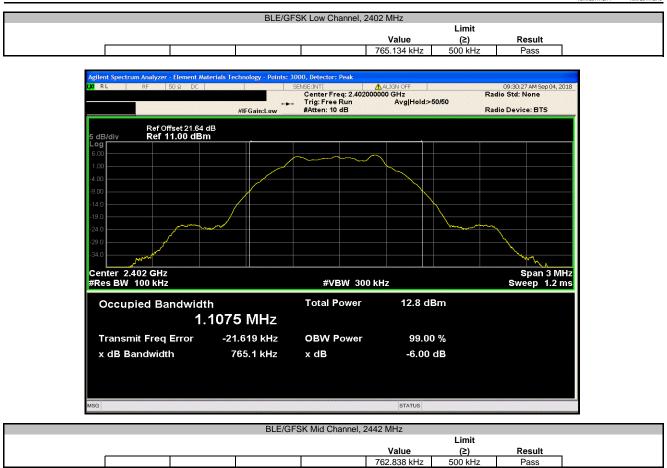
The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was set to the channels and modes listed in the datasheet.

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.



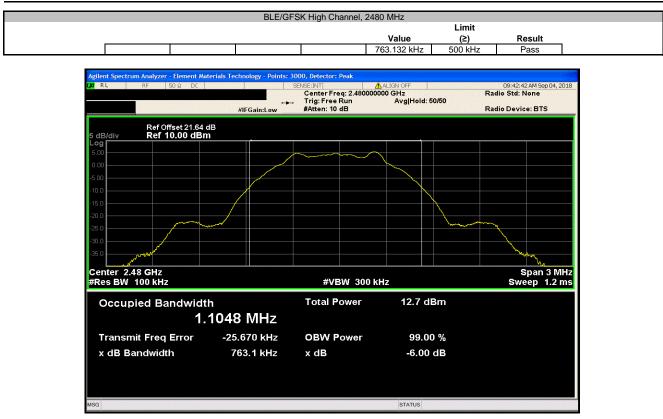
		TbtTx 2017.12.14	XMit 2017.12.
EUT: UltraSync BLUE	Work Order:		
Serial Number: 1836000001	Date:	4-Sep-18	
Customer: Timecode Systems Limited	Temperature:		
Attendees: Paul Bannister	Humidity:		
Project: None	Barometric Pres.:		
Tested by: Jeff Alcoke Power: Battery	Job Site:	EV06	
TEST SPECIFICATIONS Test Method			
FCC 15.247:2018 ANSI C63.10:2013			
COMMENTS			
Software power setting = 50.			
Software power setting = 50. DEVIATIONS FROM TEST STANDARD None			
DEVIATIONS FROM TEST STANDARD			
DEVIATIONS FROM TEST STANDARD None Configuration # 1		Limit	
DEVIATIONS FROM TEST STANDARD None Configuration # 1	Value	Limit (≥)	Result
DEVIATIONS FROM TEST STANDARD None Configuration # 1 Signature	Value 765.134 kHz		Result Pass
DEVIATIONS FROM TEST STANDARD None Configuration # 1		(≥)	













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
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.



								TbtTx 2017.12.14	XMit 2017.
EUT: UI	traSync BLUE						Work Order:	TMEC0002	
Serial Number: 18	36000001						Date:	4-Sep-18	
Customer: Tir	mecode Systems Limited						Temperature:	22 °C	
Attendees: Pa	aul Bannister						Humidity:	40.7% RH	
Project: No	one					E	Barometric Pres.:	1022 mbar	
Tested by: Je	ff Alcoke		Power	Battery			Job Site:	EV06	
EST SPECIFICATION	IS			Test Method					
CC 15.247:2018				ANSI C63.10:2013					
	et added to measurements to	account for clients direct co	onnect SMA cable. So	oftware power setti	ng = 50.				
dditional 0.3 dB offse		account for clients direct co	onnect SMA cable. So	oftware power setti	ng = 50.				
COMMENTS Additional 0.3 dB offse DEVIATIONS FROM TI None		account for clients direct co	onnect SMA cable. So	oftware power setti	ng = 50.				
dditional 0.3 dB offso EVIATIONS FROM TI		account for clients direct co	onnect SMA cable. So	oftware power setti	ng = 50.				
dditional 0.3 dB offso EVIATIONS FROM TI			onnect SMA cable. So	oftware power setti	ng = 50. Additional Offset	Additional Offest	Corrected	Limit	
dditional 0.3 dB offso EVIATIONS FROM TI one			onnect SMA cable. So		- 	Additional Offest (mW)	Corrected Value (mW)	Limit < (W)	Result
dditional 0.3 dB offse	EST STANDARD		onnect SMA cable. So	Measured	Additional Offset				Result Pass
dditional 0.3 dB offse	EST STANDARD 1 el, 2402 MHz		onnect SMA cable. So	Measured Value (mW)	Additional Offset (dB)	(mW)	Value (mW)		



							TbtTx 2017.12
		BLE/GFS	K Low Channel, 240	02 MHz			_
	Measured		Additional Offest		Limit		
	Value (mW)	(dB)	(mW)	Value (mW)	< (W)	Result	
	4.29	0.3	1.1	5.39	1	Pass	
	lyzer - Element Materials T						
LXU RL RF	50 Ω DC	SENSE		IGN OFF #Avg Type: Log-Pwr	09:3	1:04 AM Sep 04, 2018 TRACE 1 2 3 4 5 6	
			ig: Free Run tten: 10 dB	Avg Hold: 100/100		TRACE 1 2 3 4 5 6 TYPE MWWWWWW DET P P P P P P	
		IFGain:Low #A			Mkr1 2 40	01 728 GHz	
Ref C	Offset 21.64 dB 15.00 mW					4.2903 mW	
5 dB/div Ref	15.00 11144			1			
			1				
4.74 m₩							
1.50 mW							
474 µVV							
150 µVV							
150 HAA							
47.4 µVV							
15.0 μW							
4.74 μ₩							
1.50 μVV							
474 n₩							
Center 2.40200					Sp	an 3.500 MHz	
#Res BW 2.0 M	Hz	#VBW 6.0	MHz		/eep 73.39	ms (1000 pts)	
MSG				STATUS			
							_
	Measured		SK Mid Channel, 244 Additional Offest		Limit		
	Value (mW)	(dB)	(mW)	Value (mW)	< (W)	Result	
	4.159	0.3	1.1	5.259	1	Pass	
			•				
Agilent Spectrum Ana	lyzer - Element Materials T	echnology					
LXI RL RF		SENSE		IGN OFF	09:3	8:08 AM Sep 04, 2018	
			ig: Free Run	#Avg Type: Log-Pwr Avg Hold: 100/100		TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P P P P P	
			tten: 10 dB			DET PPPPP	

KIRL RF 50Ω DC	SENSE:INT	ALIGN OFF	09:38:08 AM Sep 04, 2018
	PNO: Fast ↔ Trig: Free Run IFGain:Low #Atten: 10 dB	#Avg Type: Log-Pwr Avg Hold: 100/100	TRACE 1 2 3 4 5 TYPE M
Ref Offset 21.64 dB dB/div Ref 15.00 mW		N	/lkr1 2.442 198 GH: 4.1593 mW
.74 mW		↓ 1	
.50 mW			
474 uW			
150 μVV			
7.4 μW			
5.0 µW			
.74 μW			
.50 µW			
174 nW			
enter 2.442000 GHz Res BW 2.0 MHz	#VBW 6.0 MHz	#Swe	Span 3.500 MH ep 73.39 ms (1000 pts
SG		STATUS	



Agilent Spectrum Analyzer - Element Materials Technology Agilent Spectrum Analyzer - Element Materials Technology X RL RF 50 Q DC SENSE:INT ALIGN OFF 09:44:29AM Sep 04, PNO: Fast → Trig: Free Run IFGain:Low #Atten: 10 dB Mkr1 2.479 721 G 5 dB/div Ref 15.00 mW 4.2251 n 1 Past 1 Past ALIGN OFF 09:44:29AM Sep 04, #Ayg Type: Log-Pwr Avg Hold: 100/100 Trice Minute Mkr1 2.479 721 G 4.2251 n			_E/GFSK High Channel, 2			
Aglent Spectrum Analyzer - Element Materials Technology MRL RF 50 Ω DC PN0: Fast → Trig: Free Run #Atten: 10 dB #AugINoid: 100/100 Ref Offset 21.64 dB Mkr1 2.479 721 G 4.74 mW ↓ 150 mW ↓ 474 μW ↓						_
Aglient Spectrum Analyzer - Element Materials Technology OP:44:29 AM Sep 04, Dr RL RF 50 2 DC SENSE:INT ALIGN OFF 09:44:29 AM Sep 04, PN0: Fast IFGain:Low Trig: Free Run #Avg Hold: 100/100 TRACE 1 23 S dB/div Ref Offset 21.64 dB Mkr1 2.479 721 G 4.2251 n L og 1 1 4.2251 n 1.50 mW 1 1 1 1 4.74 mW 474 µW 474 µW 1 1 1	·'					Result
OP RL RF 50 2 DC SENSE:INT ALIGN OFE 09:44:29 M sen 04, #Avg Type: Log-Pwr Avg Hold: 100/100 TRACE 2.3 PN0: Fast IFGain:Low + Trig: Free Run #Atten: 10 dB #Avg Type: Log-Pwr Avg Hold: 100/100 TRACE 2.3 Kef Offset 21.64 dB S dB/div Ref 15.00 mW		4.225 0.3	1.1	5.325	1	Pass
Image: Non-Section of the sector o						
PN0: Fast IFGain:Low Trig: Free Run #Atten: 10 dB #Avg Type: Log-Pwr Avg Hold: 100/100 Trace 12.8 Ver yer Trig: Free Run Per 6 dB/div Ref 0ffset 21.64 dB Ref 15.00 mW Mkr1 2.479 721 G 4.2251 n Mkr1 2.479 721 G 4.2251 n 4.74 mW 1 1 1 1 1.60 mW 1 1 1 1 1.50 mW 1 1 1 1 474 µW 1 1 1 1 1 150 µW 1 1 1 1 1 1						
Ref Offset 21.64 dB Mkr1 2.479 721 G 5 dB/div Ref 15.00 mW 4.74 mW 1 1.50 mW 1 474 µW 1 474 µW 1	tL RF 50 Ω	Ω DC	SENSE:INT			14:29 AM Sep 04, 2018
Addition		PNO: Fast + IFGain:Low		Avg Hold: 100/100		TRACE 1 2 3 4 5 6 TYPE MWWWW DET P P P P P
4.74 mW 1.50 mW 474 µW 150 µW 47.4 µW 47.4 µW		1.64 dB m₩			Mkr1 2.4	79 721 GHz 4.2251 mW
1.50 mW			↓ 1			
474 μW 150 μW 47.4 μW 47.4 μW						
150 μW	mW					
47.4 pW	μνν					
	μνν					
15.0 µW	μνν					
	μΨ					
4.74 µW	μW					
1.50 µW						
	h					
474 nW	nW					
Center 2.480000 GHz Span 3.500 M	nter 2.480000 <u>GHz</u>				Sp	an 3.500 MHz
#Res BW 2.0 MHz #VBW 6.0 MHz #Sweep 73.39 ms (1000	es BW 2.0 MHz	#VE	BW 6.0 MHz	#S	weep 73.39	ms (1000 pts)



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

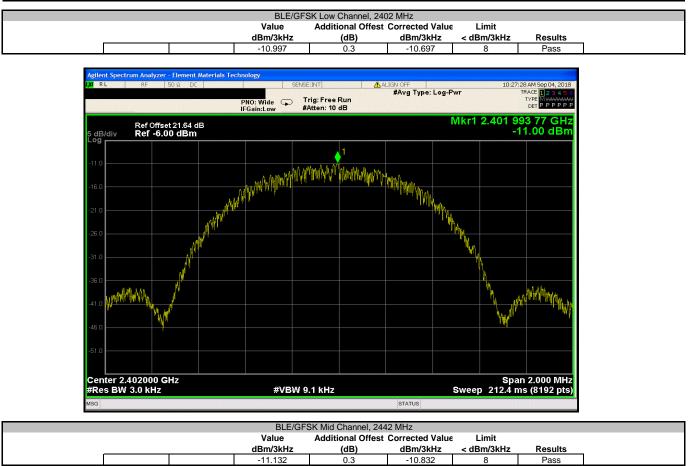
The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

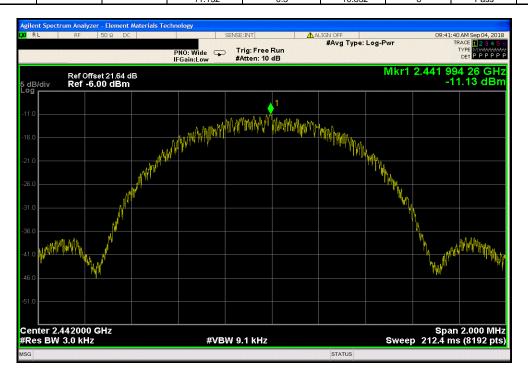
Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.



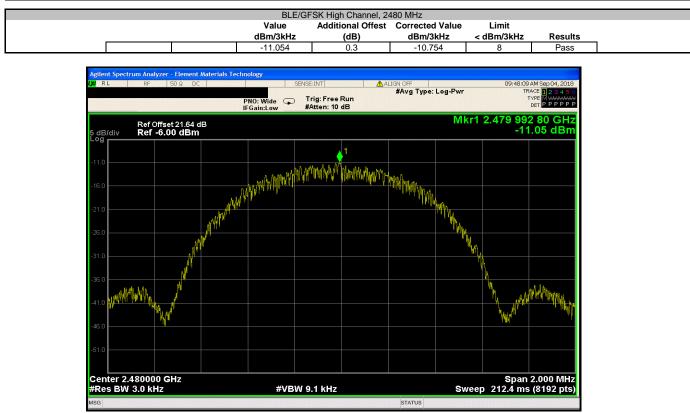
EUT:	UltraSync BLUE						Work Order:	TMEC0002	
Serial Number:	1836000001						Date:	4-Sep-18	
Customer:	Timecode Systems Limited						Temperature:	22.1 °C	
Attendees:	Paul Bannister						Humidity:	40.6% RH	
Project:	None						Barometric Pres.:	1021 mbar	
Tested by:	Jeff Alcoke		Power	: Battery			Job Site:	EV06	
TEST SPECIFICATI	IONS			Test Method					
CC 15.247:2018				ANSI C63.10:2013					
				•					
COMMENTS Additional 0.3 dB of	ffset added to measurements to ac	count for clients dire	ct connect SMA cable. S	oftware power setting = {	50.				
Additional 0.3 dB of DEVIATIONS FROM	ffset added to measurements to ac	count for clients dire	ct connect SMA cable. S	oftware power setting = 5	50.				
Additional 0.3 dB o		count for clients dire	ct connect SMA cable. S	oftware power setting = 5	50.				
Additional 0.3 dB of DEVIATIONS FROM		count for clients dire	ict connect SMA cable. S	oftware power setting = t	50.				
Additional 0.3 dB or DEVIATIONS FROM None			ct connect SMA cable. S	oftware power setting = 5	50. Value	Additional Offest	Corrected Value	Limit	
Additional 0.3 dB or DEVIATIONS FROM None			ect connect SMA cable. S			Additional Offest (dB)	Corrected Value dBm/3kHz	Limit < dBm/3kHz	Results
Additional 0.3 dB or DEVIATIONS FROM Jone Configuration #	1 TEST STANDARD		rct connect SMA cable. S		Value				Results Pass
Additional 0.3 dB or DEVIATIONS FROM None	1 TEST STANDARD		ct connect SMA cable. S		Value dBm/3kHz	(dB)	dBm/3kHz	< dBm/3kHz	











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



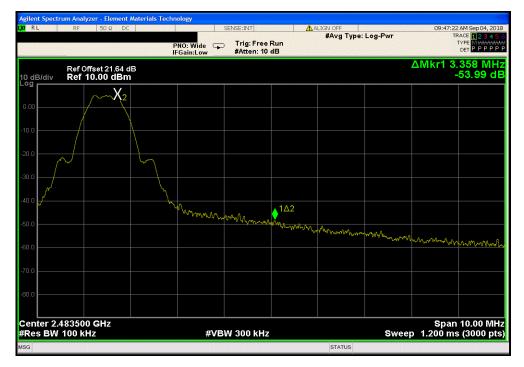
				TbtTx 2017.12.14	XMit 2017.12.1		
EUT: UltraSync BLUE			Work Order:	TMEC0002			
Serial Number: 1836000001			Date:	4-Sep-18			
Customer: Timecode Systems Limited			Temperature:	21.9 °C			
Attendees: Paul Bannister	Bannister						
Project: None			Barometric Pres.:	1022 mbar			
Tested by: Jeff Alcoke	Power: 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 con	nect SMA cable. Software power setting = 50.						
DEVIATIONS FROM TEST STANDARD							
DEVIATIONS FROM TEST STANDARD None							
	TAT //						
None Configuration # 1	Teach Measured Val	e Additional offset	Corrected Value	Limit			
None Configuration # 1	0.1 1912	le Additional offset (dB)	Corrected Value (dBc)	Limit ≤ (dBc)	Result		
None Configuration # 1	Measured Val				Result Pass		

BAND EDGE COMPLIANCE





	Measured Value	Additional offset	Corrected Value	Limit	
	(dBc)	(dB)	(dBc)	≤ (dBc)	Result
	-53.99	0.3	-53.69	-20	Pass





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

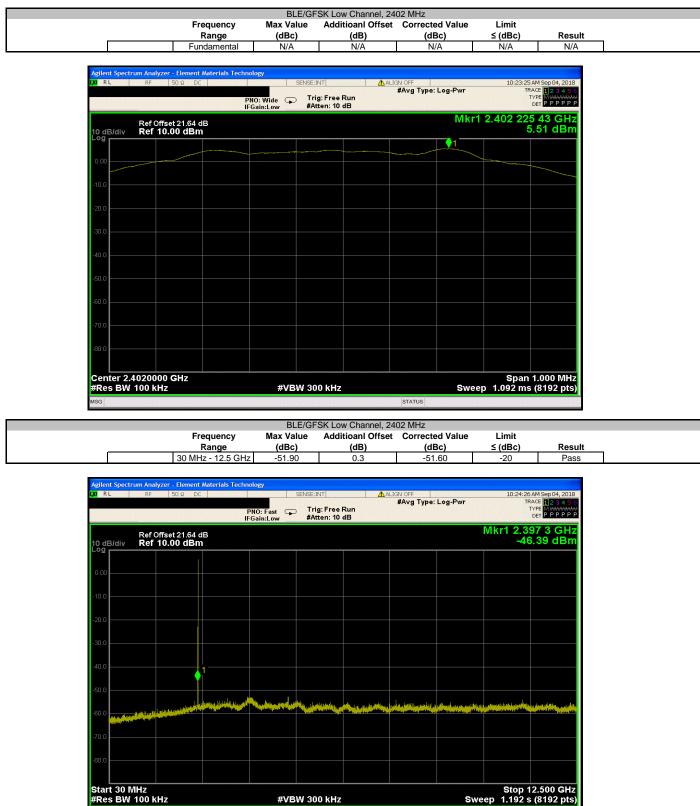
TEST DESCRIPTION

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.



XMit 2017.12.13 EUT: UltraSync BLUE Serial Number: 1836000001 Customer: Timecode Systems Limited Attendees: Paul Bannister Brotech Nene Work Order: TMEC0002 Date: 4-Sep-18 Temperature: 22.1 °C Humidity: 40.6% RH Barometric Pres.: 1021 mbar Project: None Tested by: Jeff Alcoke TEST SPECIFICATIONS Power: Battery Test Method Job Site: EV06 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 Jet Configuration # 1 Signature Max Value Additioanl Offset Corrected Value Frequency Limit Result Range (dBc) (dB) (dBc) ≤ (dBc) N/A N/A BLE/GFSK Low Channel, 2402 MHz Fundamental N/A N/A N/A BLE/GFSK Low Channel, 2402 MHz BLE/GFSK Low Channel, 2402 MHz BLE/GFSK Mid Channel, 2442 MHz 0.3 0.3 -20 -20 Pass Pass N/A 30 MHz - 12.5 GHz -51.90 -51.60 12.5 GHz - 25 GHz -56.32 -56.02 N/A -20 Fundamental 30 MHz - 12.5 GHz N/A N/A N/A BLE/GFSK Mid Channel, 2442 MHz -58.15 0.3 -57.85 Pass 12.5 GHz - 25 GHz Fundamental 0.3 N/A -56.36 N/A -20 N/A BLE/GFSK Mid Channel, 2442 MHz -56.66 Pass BLE/GFSK High Channel, 2480 MHz N/A N/A BLE/GFSK High Channel, 2480 MHz BLE/GFSK High Channel, 2480 MHz 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz 0.3 0.3 -57.22 -56.12 -20 -20 Pass Pass -57.52 -56.42





STATUS

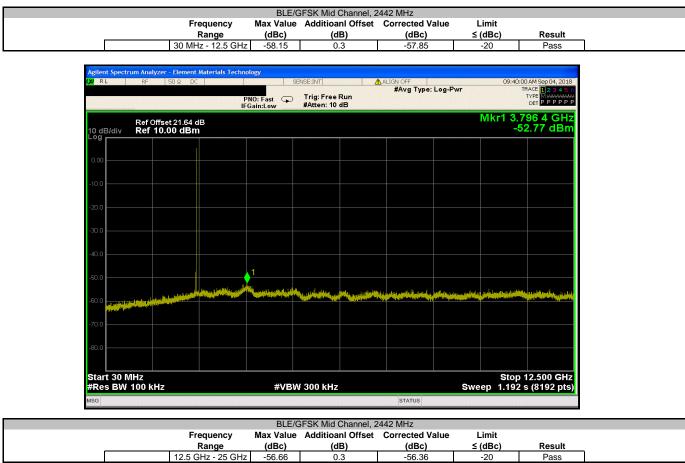


	F		FSK Low Channel, 2 Additioanl Offset		Limit	
	Frequency Range	(dBc)	(dB)	(dBc)	≤ (dBc)	Result
	12.5 GHz - 25 GHz		0.3	-56.02	-20	Pass
Agilent Spectrum Analyzer	- Element Materials Techn	ology	ana salara dala tang salas dala sala	n nation and the state of the states of the	onno constructivo contra antece o	ane and contraction and
KAIRL RF	50 Ω DC	SE	INSE:INT	ALIGN OFF #Avg Type: Log-P		5:47 AM Sep 04, 2018
	I	PNO: Fast 😱 Gain:Low	Trig: Free Run #Atten: 10 dB	#Avg Type: Log-P		TRACE 1 2 3 4 5 6 TYPE M MANAMAN DET P P P P P P
Ref Offse 10 dB/div Ref 10.	et 21.64 dB 00 dBm				Mkr1 24	.510 1 GHz 50.81 dBm
L V g						
0.00						_
-10.0						
-20.0						
-30.0						
-40.0						
-50.0						1
լեսվվեր	يتعلى والمتحدل بالتحمين وتأمل الروسية أشته	وعفاولة فالعارين والمتعاولة	have also from the state of the strength for strength ().	ومناف ومدوله والمتروا فالمتنا ومعاله ومداله	والمقرار والاروات المتحط والمحل الملحة	الغاية والإنام ويتخاو التدي
-60.0	All and the second s	and the second	and a subscription of the second s			
70.0						
-70.0						
-80.0						
Start 12.500 GHz #Res BW 100 kHz		#VBN	/ 300 kHz		Stop Sweep 1.19	o 25.000 GHz 5 s (8192 pts)
MSG				STATUS		
			GFSK Mid Channel, 2			

	Frequency	Max Value	Additioanl Offset	Corrected Value	Limit	
	Range	(dBc)	(dB)	(dBc)	≤ (dBc)	Result
	Fundamental	N/A	N/A	N/A	N/A	N/A

RL	RF 50 Ω DC		SI	ENSE:INT	ALIGN OFF		09:39:01 AM Sep 04, 201
			NO: Wide 😱 Gain:Low	Trig: Free Run #Atten: 10 dB	#Avg Type: Log	-Pwr	TRACE 12345 TYPE MUMMM DET PPPP
) dB/div	Ref Offset 21.64 d Ref 10.00 dBm	В				Mkr1 2.4	42 223 97 GH 5.38 dBn
°g						1	
0.0							
0.0							
D.O							
0.0							
o.o							
0.0							
	4420000 GHz 100 kHz		#VBV	V 300 kHz		Sween 1	Span 1.000 MH 092 ms (8192 pts
G				1 300 KHZ	STATUS	Oweep 1.	032 m3 (0132 pt





0 RL	RF	50 Q DC			SENSE:INT	A	LIGN OFF		09:41:0)1 AM Sep 04, 2018
			IF	PNO: Fast 🖵 -Gain:Low	Trig: Free #Atten: 10		#Avg Type:	Log-Pwr	1	TYPE 12345 TYPE MUNUUW DET PPPP
0 dB/div	Ref Offse Ref 10.	et21.64 d 00 dBm	В						Mkr1 23.8 -5	378 3 GH: 1.28 dBn
.og										
0.00										
10.0										
20.0										
30.0										
40.0										
50.0										≜ 1
يە ھەلە	والمجارية المحد والمحاد	, lide de Judieur	المقي بالمالم المالي		فليتخبط المرياضين	بالبار بالأداد وم			ali dali dali da	Manual day laws
0.0 ALAA	a and a set of the set									
70.0										
30.0										
	.500 GHz N 100 kHz			#VB	W 300 kHz			Sv	Stop veep 1.195	25.000 GH
sg							STATUS	34	reep mee	e to rece pre



dB/div	Ref Offset 21.64 Ref 10.00 dBr	dB n						Mkr1 3.8 -5:	17 7 GH 2.08 dB
0									
o									
0									
0									
.0			1						
	الافتانين المراجع	المسيد الجمادي مطلحا	المدابلة وبالماني والمنا	Nine of the line of the local division of the local division of the local division of the local division of the	AND LOUGHT				
0									
o									
art 30 M es BW	/IHz 100 kHz		#VB	W 300 kHz			Swe	Stop * ep 1.192 *	12.500 GI
						STATUS	0.110		

