Walt Disney Parks and Resorts US, Inc.

TPv2/300-004278

FCC 15.247:2018

Bluetooth Radio (FHSS)

Report # SYNA0242.1

NVLAP LAB CODE: 200629-0

CERTIFICATE OF TEST

Last Date of Test: June 5, 2018
Walt Disney Parks and Resorts US, Inc.
Model: TPv2/300-004278

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2018	ANSI C63.10:2013

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	No	N/A	Not required for evaluation of a Permissive Change due to a change of enclosure.
6.5, 6.6	Spurious Radiated Emissions	Yes	Pass	
7.5	Duty Cycle	Yes	Pass	
7.8.2	Carrier Frequency Separation	No	N/A	Not required for evaluation of a Permissive Change due to a change of enclosure.
7.8.3	Number of Hopping Frequencies	No	N/A	Not required for evaluation of a Permissive Change due to a change of enclosure.
7.8.4	Dwell Time	No	N/A	Not required for evaluation of a Permissive Change due to a change of enclosure.
7.8.5	Output Power	Yes	Pass	
7.8.6	Band Edge Compliance	No	N/A	Not required for evaluation of a Permissive Change due to a change of enclosure.
7.8.6	Band Edge Compliance - Hopping Mode	No	N/A	Not required for evaluation of a Permissive Change due to a change of enclosure.
7.8.7	Occupied Bandwidth	Yes	Pass	
7.8.8	Spurious Conducted Emissions	No	N/A	Not required for evaluation of a Permissive Change due to a change of enclosure.

Deviations From Test Standards

None

Approved By:

Rod Munro, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

United States

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

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

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with ISED.

European Union

European Commission – 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

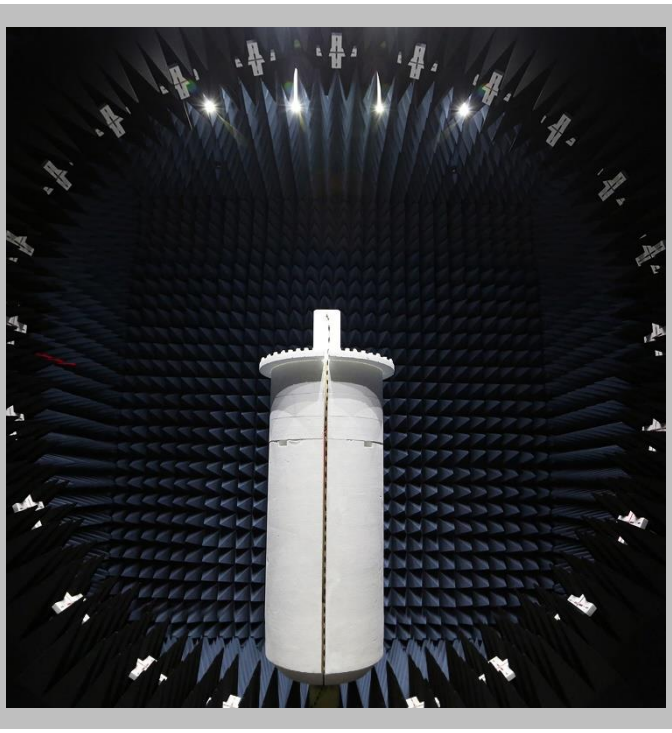
MIC – Recognized by MIC as a CAB for the acceptance of test data.

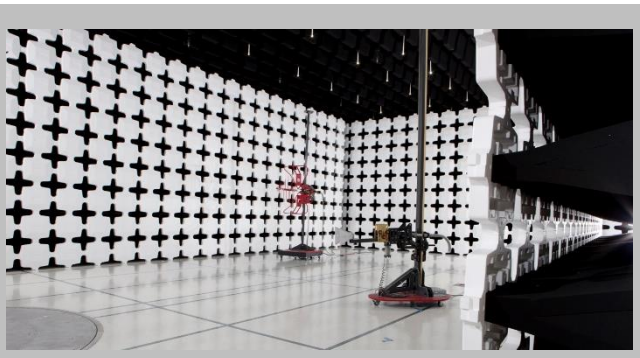
SCOPE

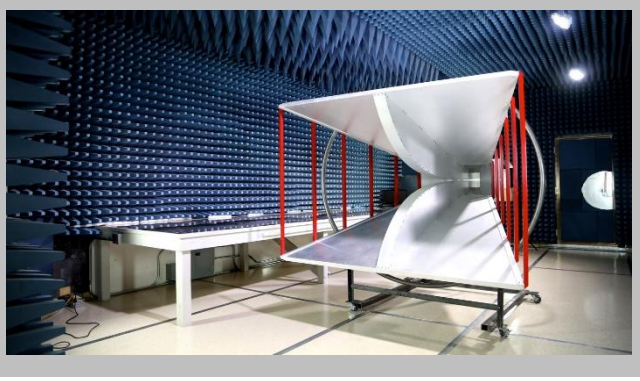
For details on the Scopes of our Accreditations, please visit:
http://portlandcustomer.element.com/ts/scope/scope.htm
http://gsi.nist.gov/global/docs/cabs/designations.html

FACILITIES

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 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/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157







MEASUREMENT UNCERTAINTY

element
TMU.2015.07.10

Measurement Uncertainty

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

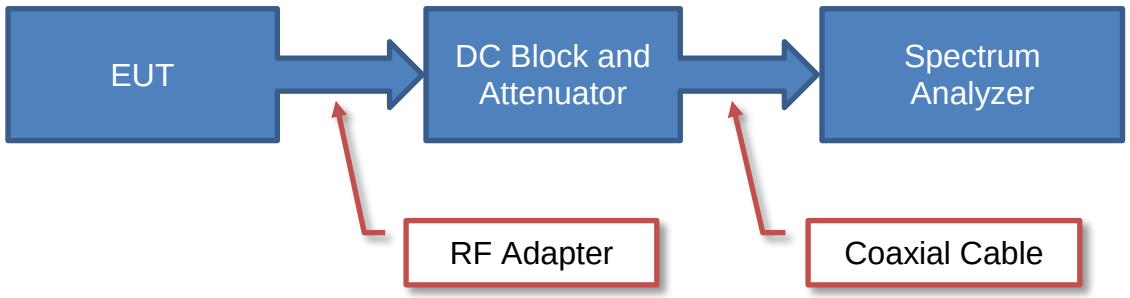
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable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

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

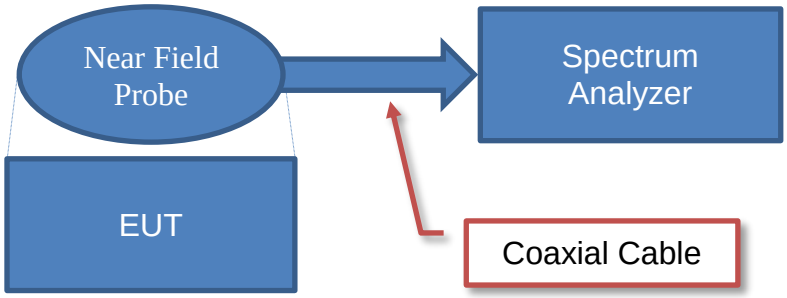
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	0	0
AC Powerline Conducted Emissions (dB)	0	0

Test Setup Block Diagrams

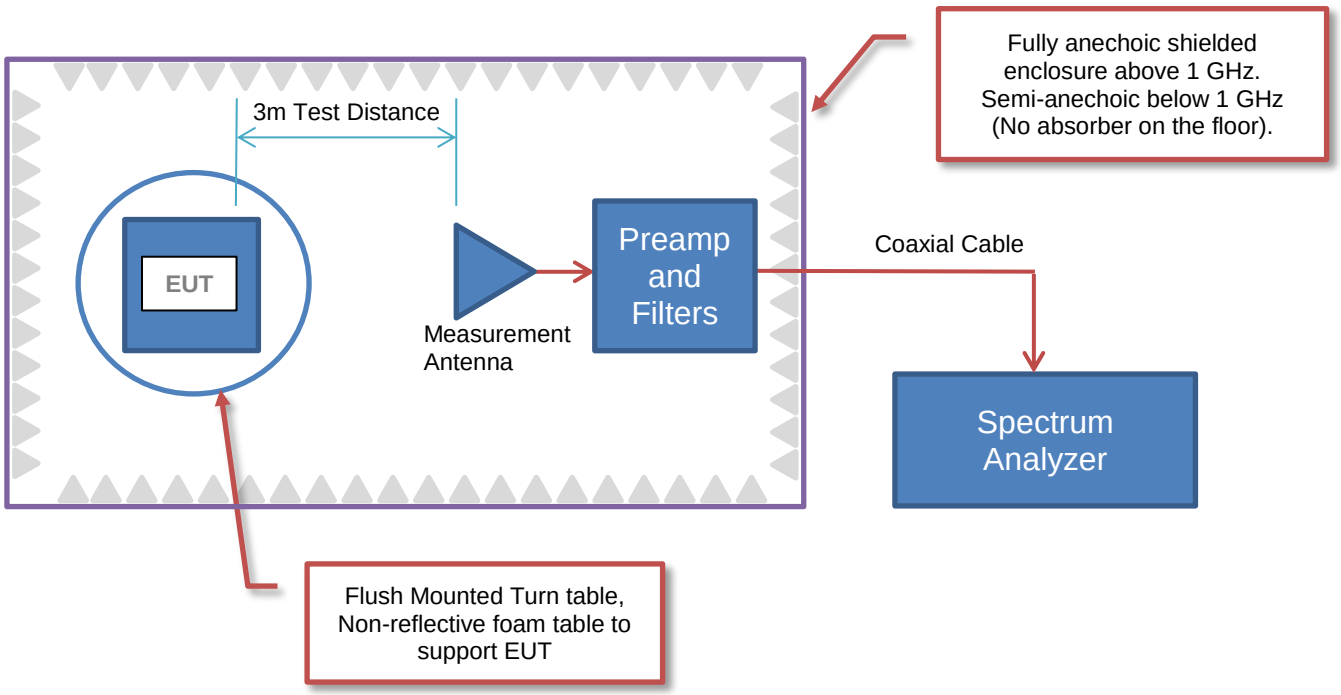
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Walt Disney Parks and Resorts US, Inc.
Address:	PO Box 1000
City, State, Zip:	Lake Buena Vista, Florida 32830
Test Requested By:	Brian Piquette of Synapse Product Development on behalf of Walt Disney Parks and Resorts US, Inc.
Model:	TPv2/300-004278
First Date of Test:	June 4, 2018
Last Date of Test:	June 5, 2018
Receipt Date of Samples:	June 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:
Multi-ticket media reader with Ethernet network interface Device containing an HF RFID reader (ISO 14443), UHF RFID Reader (ISO 18000), BT/BLE Radio, and proprietary 2.4GHz DTS radio.

Testing Objective:
To demonstrate compliance of the FHSS radio to FCC 15.247 requirements for a Permissive Change under FCC ID: 2AJS4-TP-R1G2.

CONFIGURATIONS

Configuration SYNA0242- 1

Software/Firmware Running during test	
Description	**Version**
LRR Firmware	N/A

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Access Point	Walt Disney Parks and Resorts US, Inc.	TPv2/300-004278	SN03

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Apple	MacBook Pro	None
DC Power Supply	Mastech	HY3003D-2	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	No	0.7m	No	DC Power Supply	Access Point
3v3 FTDI Cable	No	1.0m	No	Access Point	Laptop PC
AC Power	No	1.8m	No	AC Mains	DC Power Supply

Configuration SYNA0242- 4

Software/Firmware Running during test	
Description	**Version**
LRR Firmware	N/A

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Access Point	Walt Disney Parks and Resorts US, Inc.	TPv2/300-004278	SN05

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Apple	MacBook Pro	None
DC Power Supply	Mastech	HY3003D-2	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	1.8m	No	AC Mains	DC Power Supply
DC Power	No	3.0m	No	DC Power Supply	Access Point
Ethernet	No	5.0m	No	Access Point	Laptop PC

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	6/4/2018	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	6/4/2018	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	6/4/2018	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT was taken home by the client before the next scheduled test.
4	6/5/2018	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

Transmitting BT at Default Max Power

MODES OF OPERATION

Low Channel, 2402 MHz
Mid Channel, 2441 MHz
High Channel, 2480 MHz

POWER SETTINGS INVESTIGATED

24 VDC

CONFIGURATIONS INVESTIGATED

SYNA0242 - 4

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
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFE	24-Jun-2017	12 mo
Attenuator	Fairview Microwave	SA18E-20	AQV	18-Aug-2017	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	HHI	19-Oct-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFF	13-Dec-2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYL	11-Aug-2017	24 mo
Antenna - Double Ridge	ETS Lindgren	3115	AHW	12-Jul-2016	24 mo
Antenna - Standard Gain	EMCO	3160-07	AHP	NCR	0 mo
Antenna - Standard Gain	EMCO	3160-08	AHO	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AIY	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAB	11-Jul-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVZ	4-May-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOK	18-Aug-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOJ	18-Aug-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOD	9-Mar-2018	12 mo
Cable	Northwest EMC	Bilog Cables	NC1	11-Jul-2017	12 mo
Cable	Northwest EMC	3115 Horn Cable	NC2	4-May-2018	12 mo
Cable	Northwest EMC	Standard Gain Horn Cable	NC3	4-May-2018	12 mo
Cable	Northwest EMC	N/A	NC8	9-Mar-2018	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

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

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

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

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

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

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

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

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

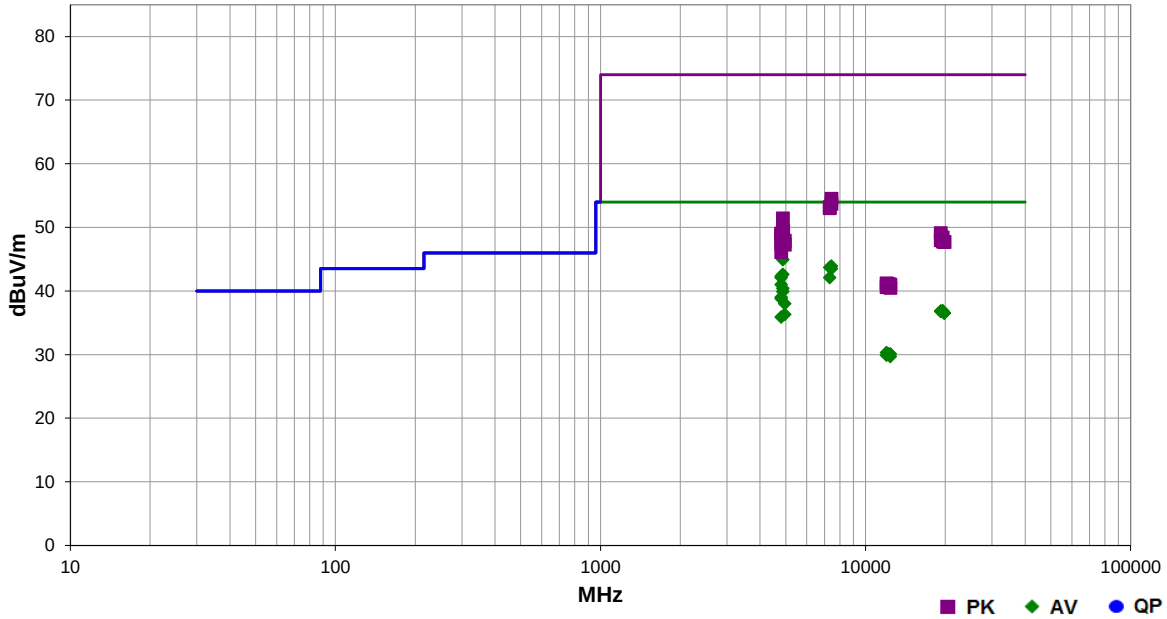
SPURIOUS RADIATED EMISSIONS

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	SYNA0242	**Date:**	5-Jun-2018		
Project:	None	**Temperature:**	22.1 °C		
Job Site:	NC01	**Humidity:**	40% RH		
Serial Number:	SN05	**Barometric Pres.:**	1018 mbar	**Tested by:**	Richard Mellroth
EUT:	TPv2/300-004278				
Configuration:	4				
Customer:	Walt Disney Parks and Resorts US, Inc.				
Attendees:	Reily Blackner				
EUT Power:	24 VDC				
Operating Mode:	Transmitting BT at Default Max Power				
Deviations:	None				
Comments:	See comments next to data points for EUT channel, data rate, and orientation				

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

Run #	18-19,63-65	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4882.025	35.7	9.2	2.6	328.0	3.0	0.0	Horz	AV	0.0	44.9	54.0	-9.1	Mid Ch, DH5, EUT Normal
7439.905	29.7	14.2	1.6	326.0	3.0	0.0	Vert	AV	0.0	43.9	54.0	-10.1	High Ch, DH5, EUT on Side
7322.765	30.0	13.7	2.3	310.0	3.0	0.0	Horz	AV	0.0	43.7	54.0	-10.3	Mid Ch, DH5, EUT Normal
7439.890	29.3	14.2	1.6	11.0	3.0	0.0	Horz	AV	0.0	43.5	54.0	-10.5	High Ch, DH5, EUT Normal
4881.940	33.4	9.2	1.6	335.0	3.0	0.0	Vert	AV	0.0	42.6	54.0	-11.4	Mid Ch, DH5, EUT on Side
4804.042	33.3	9.0	1.6	335.0	3.0	0.0	Horz	AV	0.0	42.3	54.0	-11.7	Low Ch, DH5, EUT Normal
4804.058	33.1	9.0	1.4	328.0	3.0	0.0	Vert	AV	0.0	42.1	54.0	-11.9	Low Ch, DH5, EUT on Side
7322.795	28.4	13.7	1.6	281.0	3.0	0.0	Vert	AV	0.0	42.1	54.0	-11.9	Mid Ch, DH5, EUT on Side
4804.000	32.0	9.0	1.9	332.0	3.0	0.0	Vert	AV	0.0	41.0	54.0	-13.0	Low Ch, DH5, EUT Normal
4881.950	31.2	9.2	2.1	333.0	3.0	0.0	Horz	AV	0.0	40.4	54.0	-13.6	Mid Ch, 3DH5, EUT Normal
4881.960	30.7	9.2	2.0	324.0	3.0	0.0	Horz	AV	0.0	39.9	54.0	-14.1	Mid Ch, 2DH5, EUT Normal
4803.983	30.0	9.0	1.6	314.0	3.0	0.0	Vert	AV	0.0	39.0	54.0	-15.0	Low Ch, DH5, EUT on Back
4803.925	29.8	9.0	1.0	356.0	3.0	0.0	Horz	AV	0.0	38.8	54.0	-15.2	Low Ch, DH5, EUT on Side
4960.010	28.8	9.2	1.6	7.0	3.0	0.0	Horz	AV	0.0	38.0	54.0	-16.0	High Ch, DH5, EUT Normal
19527.960	36.1	0.8	1.5	78.0	3.0	0.0	Horz	AV	0.0	36.9	54.0	-17.1	Mid Ch, DH5, EUT Normal
19214.960	36.2	0.6	1.5	221.0	3.0	0.0	Horz	AV	0.0	36.8	54.0	-17.2	Low Ch, DH5, EUT Normal
19215.050	36.2	0.6	1.5	204.0	3.0	0.0	Vert	AV	0.0	36.8	54.0	-17.2	Low Ch, DH5, EUT on Side
19527.050	36.0	0.8	1.5	235.0	3.0	0.0	Vert	AV	0.0	36.8	54.0	-17.2	Mid Ch, DH5, EUT on Side
19838.550	35.8	0.7	1.5	294.0	3.0	0.0	Vert	AV	0.0	36.5	54.0	-17.5	High Ch, DH5, EUT on Side
19838.570	35.8	0.7	1.5	54.0	3.0	0.0	Horz	AV	0.0	36.5	54.0	-17.5	High Ch, DH5, EUT Normal

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
4959.910	27.1	9.2	1.6	193.0	3.0	0.0	Vert	AV	0.0	36.3	54.0	-17.7	High Ch, DH5, EUT on Side
4803.333	26.9	9.0	1.6	274.0	3.0	0.0	Horz	AV	0.0	35.9	54.0	-18.1	Low Ch, DH5, EUT on Back
7440.105	40.3	14.2	1.6	326.0	3.0	0.0	Vert	PK	0.0	54.5	74.0	-19.5	High Ch, DH5, EUT on Side
7439.280	39.5	14.2	1.6	11.0	3.0	0.0	Horz	PK	0.0	53.7	74.0	-20.3	High Ch, DH5, EUT Normal
7323.595	39.5	13.7	2.3	310.0	3.0	0.0	Horz	PK	0.0	53.2	74.0	-20.8	Mid Ch, DH5, EUT Normal
7323.045	39.3	13.7	1.6	281.0	3.0	0.0	Vert	PK	0.0	53.0	74.0	-21.0	Mid Ch, DH5, EUT on Side
4882.035	42.2	9.2	2.6	328.0	3.0	0.0	Horz	PK	0.0	51.4	74.0	-22.6	Mid Ch, DH5, EUT Normal
12010.490	31.8	-1.5	3.8	334.0	3.0	0.0	Vert	AV	0.0	30.3	54.0	-23.7	Low Ch, DH5, EUT on Side
12398.980	31.8	-1.7	4.0	83.0	3.0	0.0	Vert	AV	0.0	30.1	54.0	-23.9	High Ch, DH5, EUT on Side
12205.610	31.4	-1.3	2.8	67.0	3.0	0.0	Vert	AV	0.0	30.1	54.0	-23.9	Mid Ch, DH5, EUT on Side
12204.510	31.3	-1.3	1.6	122.0	3.0	0.0	Horz	AV	0.0	30.0	54.0	-24.0	Mid Ch, DH5, EUT Normal
12008.990	31.4	-1.5	1.6	296.0	3.0	0.0	Horz	AV	0.0	29.9	54.0	-24.1	Low Ch, DH5, EUT Normal
12399.980	31.4	-1.7	1.6	129.0	3.0	0.0	Horz	AV	0.0	29.7	54.0	-24.3	High Ch, DH5, EUT Normal
4882.205	40.3	9.2	1.6	335.0	3.0	0.0	Vert	PK	0.0	49.5	74.0	-24.5	Mid Ch, DH5, EUT on Side
4882.305	40.3	9.2	2.0	324.0	3.0	0.0	Horz	PK	0.0	49.5	74.0	-24.5	Mid Ch, 2DH5, EUT Normal
4882.060	40.1	9.2	2.1	333.0	3.0	0.0	Horz	PK	0.0	49.3	74.0	-24.7	Mid Ch, 3DH5, EUT Normal
19214.960	48.5	0.6	1.5	204.0	3.0	0.0	Vert	PK	0.0	49.1	74.0	-24.9	Low Ch, DH5, EUT on Side
4803.450	40.0	9.0	1.4	328.0	3.0	0.0	Vert	PK	0.0	49.0	74.0	-25.0	Low Ch, DH5, EUT on Side
4804.067	40.0	9.0	1.6	335.0	3.0	0.0	Horz	PK	0.0	49.0	74.0	-25.0	Low Ch, DH5, EUT Normal
4804.267	39.8	9.0	1.9	332.0	3.0	0.0	Vert	PK	0.0	48.8	74.0	-25.2	Low Ch, DH5, EUT Normal
19528.790	47.6	0.8	1.5	78.0	3.0	0.0	Horz	PK	0.0	48.4	74.0	-25.6	Mid Ch, DH5, EUT Normal
4803.542	39.1	9.0	1.6	314.0	3.0	0.0	Vert	PK	0.0	48.1	74.0	-25.9	Low Ch, DH5, EUT on Back
19217.480	47.3	0.7	1.5	221.0	3.0	0.0	Horz	PK	0.0	48.0	74.0	-26.0	Low Ch, DH5, EUT Normal
4960.760	38.7	9.2	1.6	7.0	3.0	0.0	Horz	PK	0.0	47.9	74.0	-26.1	High Ch, DH5, EUT Normal
19528.630	47.0	0.8	1.5	235.0	3.0	0.0	Vert	PK	0.0	47.8	74.0	-26.2	Mid Ch, DH5, EUT on Side
19839.220	47.0	0.7	1.5	294.0	3.0	0.0	Vert	PK	0.0	47.7	74.0	-26.3	High Ch, DH5, EUT on Side
19839.910	47.0	0.7	1.5	54.0	3.0	0.0	Horz	PK	0.0	47.7	74.0	-26.3	High Ch, DH5, EUT Normal
4803.967	38.4	9.0	1.0	356.0	3.0	0.0	Horz	PK	0.0	47.4	74.0	-26.6	Low Ch, DH5, EUT on Side
4961.290	38.1	9.2	1.6	193.0	3.0	0.0	Vert	PK	0.0	47.3	74.0	-26.7	High Ch, DH5, EUT on Side
4804.658	37.1	9.0	1.6	274.0	3.0	0.0	Horz	PK	0.0	46.1	74.0	-27.9	Low Ch, DH5, EUT on Back
12010.770	42.7	-1.5	3.8	334.0	3.0	0.0	Vert	PK	0.0	41.2	74.0	-32.8	Low Ch, DH5, EUT on Side
12203.670	42.4	-1.3	2.8	67.0	3.0	0.0	Vert	PK	0.0	41.1	74.0	-32.9	Mid Ch, DH5, EUT on Side
12398.750	42.7	-1.7	4.0	83.0	3.0	0.0	Vert	PK	0.0	41.0	74.0	-33.0	High Ch, DH5, EUT on Side
12205.900	42.2	-1.3	1.6	122.0	3.0	0.0	Horz	PK	0.0	40.9	74.0	-33.1	Mid Ch, DH5, EUT Normal
12008.940	42.1	-1.5	1.6	296.0	3.0	0.0	Horz	PK	0.0	40.6	74.0	-33.4	Low Ch, DH5, EUT Normal
12399.390	42.2	-1.7	1.6	129.0	3.0	0.0	Horz	PK	0.0	40.5	74.0	-33.5	High Ch, DH5, EUT Normal

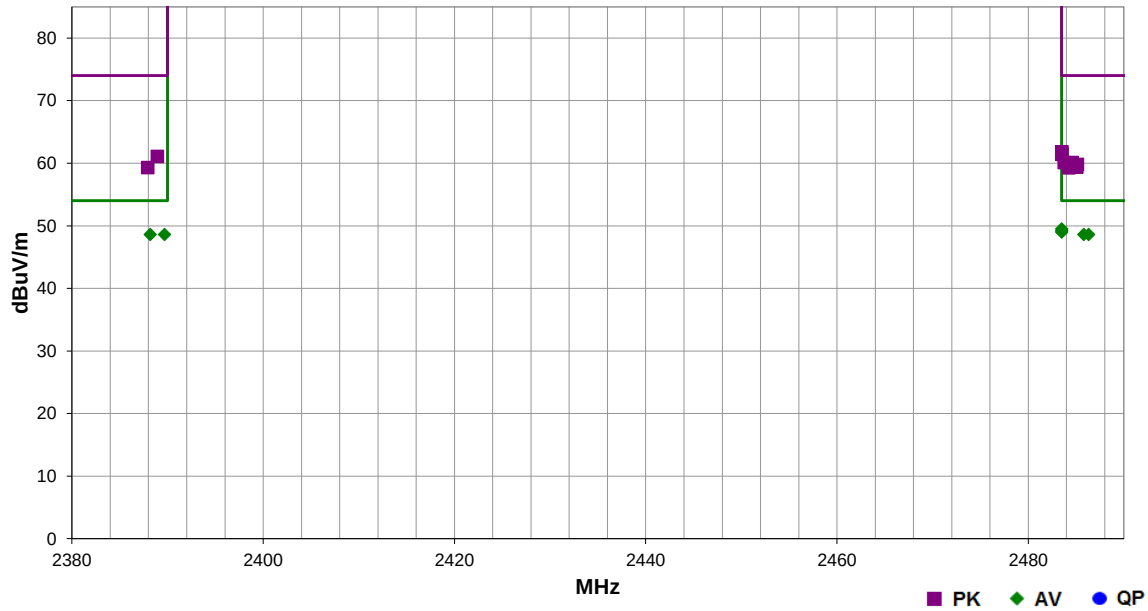
SPURIOUS RADIATED EMISSIONS

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	SYNA0242	**Date:**	5-Jun-2018		
Project:	None	**Temperature:**	22.1 °C		
Job Site:	NC01	**Humidity:**	40% RH		
Serial Number:	SN05	**Barometric Pres.:**	1018 mbar	**Tested by:**	Richard Mellroth
EUT:	TPv2/300-004278				
Configuration:	4				
Customer:	Walt Disney Parks and Resorts US, Inc.				
Attendees:	Reily Blackner				
EUT Power:	24 VDC				
Operating Mode:	Transmitting BT at Default Max Power				
Deviations:	None				
Comments:	See comments next to data points for EUT channel, data rate, and orientation				

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

Run #	15	**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
2483.500	30.3	-0.8	1.6	193.0	3.0	20.0	Vert	AV	0.0	49.5	54.0	-4.5	High Ch, DH5, EUT on Side
2483.505	30.0	-0.8	1.6	7.0	3.0	20.0	Vert	AV	0.0	49.2	54.0	-4.8	High Ch, DH5, EUT Normal
2483.510	29.8	-0.8	1.6	286.0	3.0	20.0	Horz	AV	0.0	49.0	54.0	-5.0	High Ch, DH5, EUT on Back
2485.810	29.4	-0.8	1.6	155.0	3.0	20.0	Horz	AV	0.0	48.6	54.0	-5.4	High Ch, 2DH5, EUT on Side
2486.320	29.4	-0.8	1.6	338.0	3.0	20.0	Horz	AV	0.0	48.6	54.0	-5.4	High Ch, 3DH5, EUT on Side
2388.185	29.2	-0.6	1.6	295.0	3.0	20.0	Horz	AV	0.0	48.6	54.0	-5.4	Low Ch, DH5, EUT on Side
2389.690	29.2	-0.6	1.7	354.0	3.0	20.0	Vert	AV	0.0	48.6	54.0	-5.4	Low Ch, DH5, EUT on Side
2483.520	42.6	-0.8	3.1	303.0	3.0	20.0	Horz	PK	0.0	61.8	74.0	-12.2	High Ch, DH5, EUT on Side
2483.535	42.2	-0.8	3.3	269.0	3.0	20.0	Horz	PK	0.0	61.4	74.0	-12.6	High Ch, DH5, EUT Normal
2388.940	41.7	-0.6	1.7	354.0	3.0	20.0	Vert	PK	0.0	61.1	74.0	-12.9	Low Ch, DH5, EUT on Side
2483.755	40.9	-0.8	1.6	286.0	3.0	20.0	Horz	PK	0.0	60.1	74.0	-13.9	High Ch, DH5, EUT on Back
2484.585	40.9	-0.8	3.0	217.0	3.0	20.0	Vert	PK	0.0	60.1	74.0	-13.9	High Ch, DH5, EUT on Back
2485.130	40.6	-0.8	1.6	193.0	3.0	20.0	Vert	PK	0.0	59.8	74.0	-14.2	High Ch, DH5, EUT on Side
2485.075	40.2	-0.8	1.6	155.0	3.0	20.0	Horz	PK	0.0	59.4	74.0	-14.6	High Ch, 2DH5, EUT on Side
2484.210	40.1	-0.8	1.6	7.0	3.0	20.0	Vert	PK	0.0	59.3	74.0	-14.7	High Ch, DH5, EUT Normal
2484.290	40.1	-0.8	1.6	338.0	3.0	20.0	Horz	PK	0.0	59.3	74.0	-14.7	High Ch, 3DH5, EUT on Side
2387.930	39.9	-0.6	1.6	295.0	3.0	20.0	Horz	PK	0.0	59.3	74.0	-14.7	Low Ch, DH5, EUT on Side

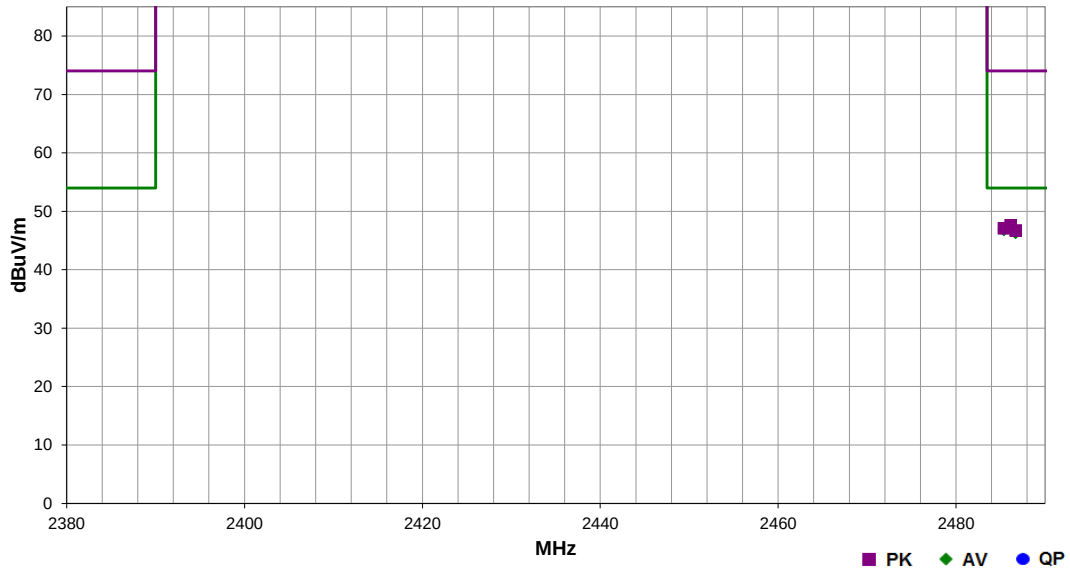
SPURIOUS RADIATED EMISSIONS

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	SYNA0242	**Date:**	5-Jun-2018		
Project:	None	**Temperature:**	22.1 °C		
Job Site:	NC01	**Humidity:**	40% RH		
Serial Number:	SN05	**Barometric Pres.:**	1018 mbar	**Tested by:**	Richard Mellroth
EUT:	TPv2/300-004278				
Configuration:	4				
Customer:	Walt Disney Parks and Resorts US, Inc.				
Attendees:	Reily Blackner				
EUT Power:	24 VDC				
Operating Mode:	Transmitting BT at Default Max Power				
Deviations:	None				
Comments:	See comments next to data points for EUT channel, data rate, and orientation				

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

Run #	16	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass

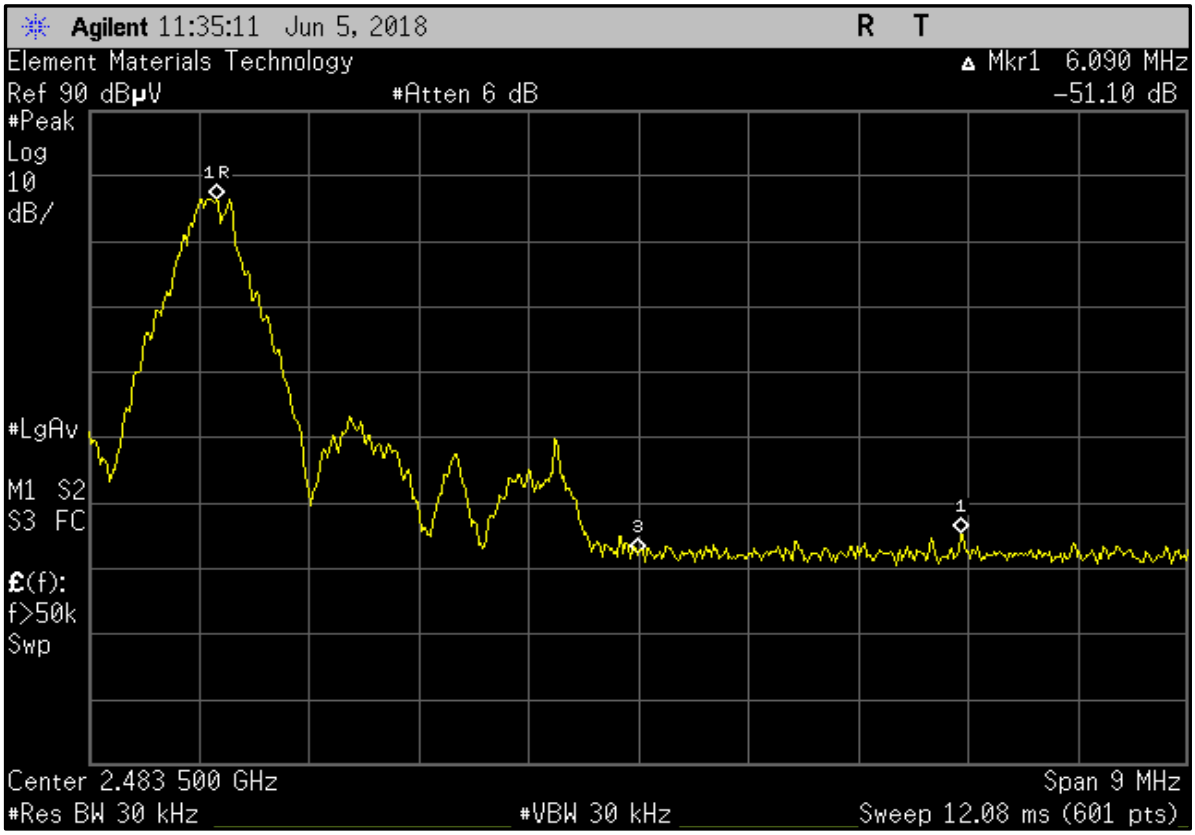


Freq (MHz)	Calculated Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Marker Delta Comments
2486.140	28.1	-0.8	3.0	284.0	3.0	20.0	Horz	AV	0.0	47.3	54.0	-6.7	High Channel, DH5, EUT Normal: Fund 79.2dBuV + -51.1dBc = 28.1dBuV (calc. amp.)
2485.390	27.6	-0.8	3.1	307.0	3.0	20.0	Horz	AV	0.0	46.8	54.0	-7.2	High Ch, DH5, EUT on Side: Fund 78.6dBuV + -51.0dBc = 27.6dBuV (calc. amp.)
2486.710	27.1	-0.8	2.0	274.0	3.0	20.0	Horz	AV	0.0	46.3	54.0	-7.7	High Ch, DH5, EUT on Back: Fund 71.1dBuV + -44.0dBc = 27.1dBuV (calc. amp.)
2486.140	28.4	-0.8	3.0	284.0	3.0	20.0	Horz	PK	0.0	47.6	74.0	-26.4	High Channel, DH5, EUT Normal: Fund 79.5dBuV + -51.1dBc = 28.4dBuV (calc. amp.)
2485.390	27.9	-0.8	3.1	307.0	3.0	20.0	Horz	PK	0.0	47.1	74.0	-26.9	High Ch, DH5, EUT on Side: Fund 78.9dBuV + -51.0dBc = 27.9dBuV (calc. amp.)
2486.710	27.5	-0.8	2.0	274.0	3.0	20.0	Horz	PK	0.0	46.7	74.0	-27.3	High Ch, DH5, EUT on Back: Fund 71.5dBuV + -44.0dBc = 27.5dBuV (calc. amp.)

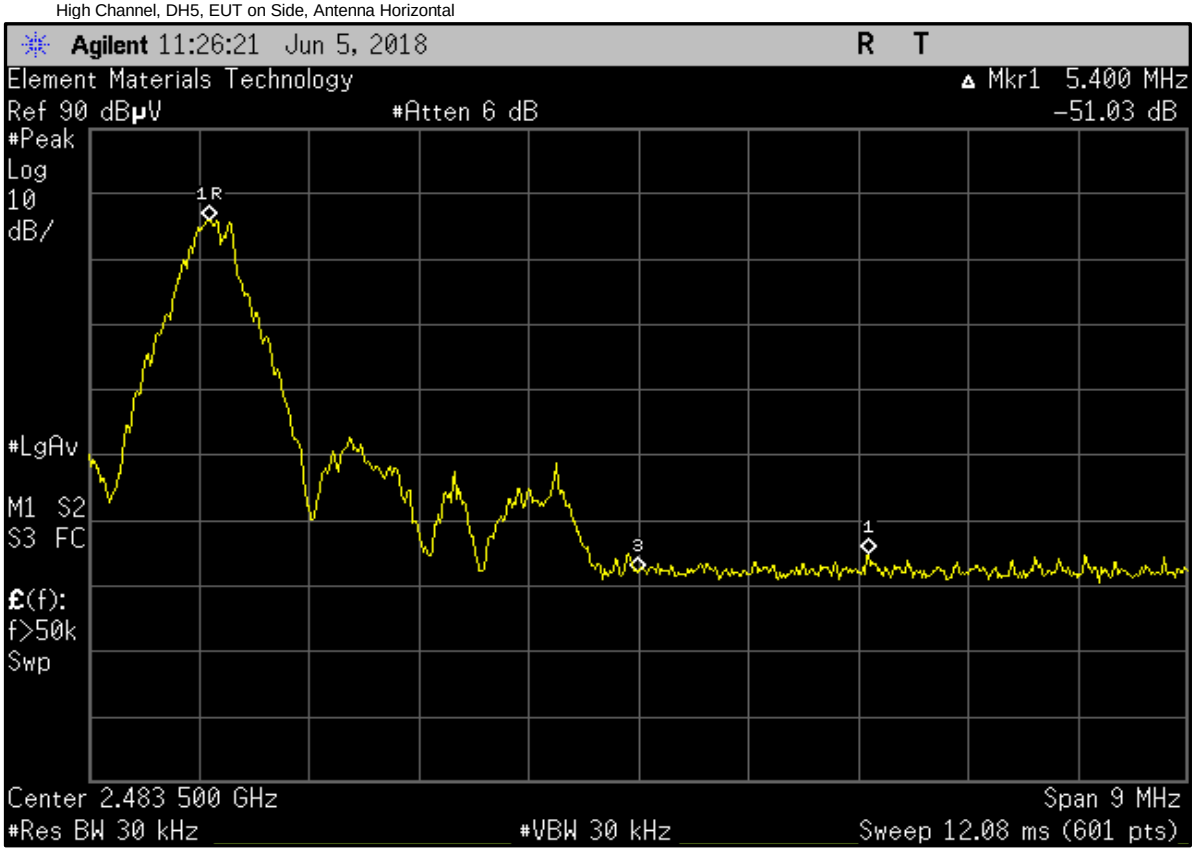
SPURIOUS RADIATED EMISSIONS

High Channel, DH5, EUT Normal, Antenna Horizontal

PSA-ESCI 2018.05.04



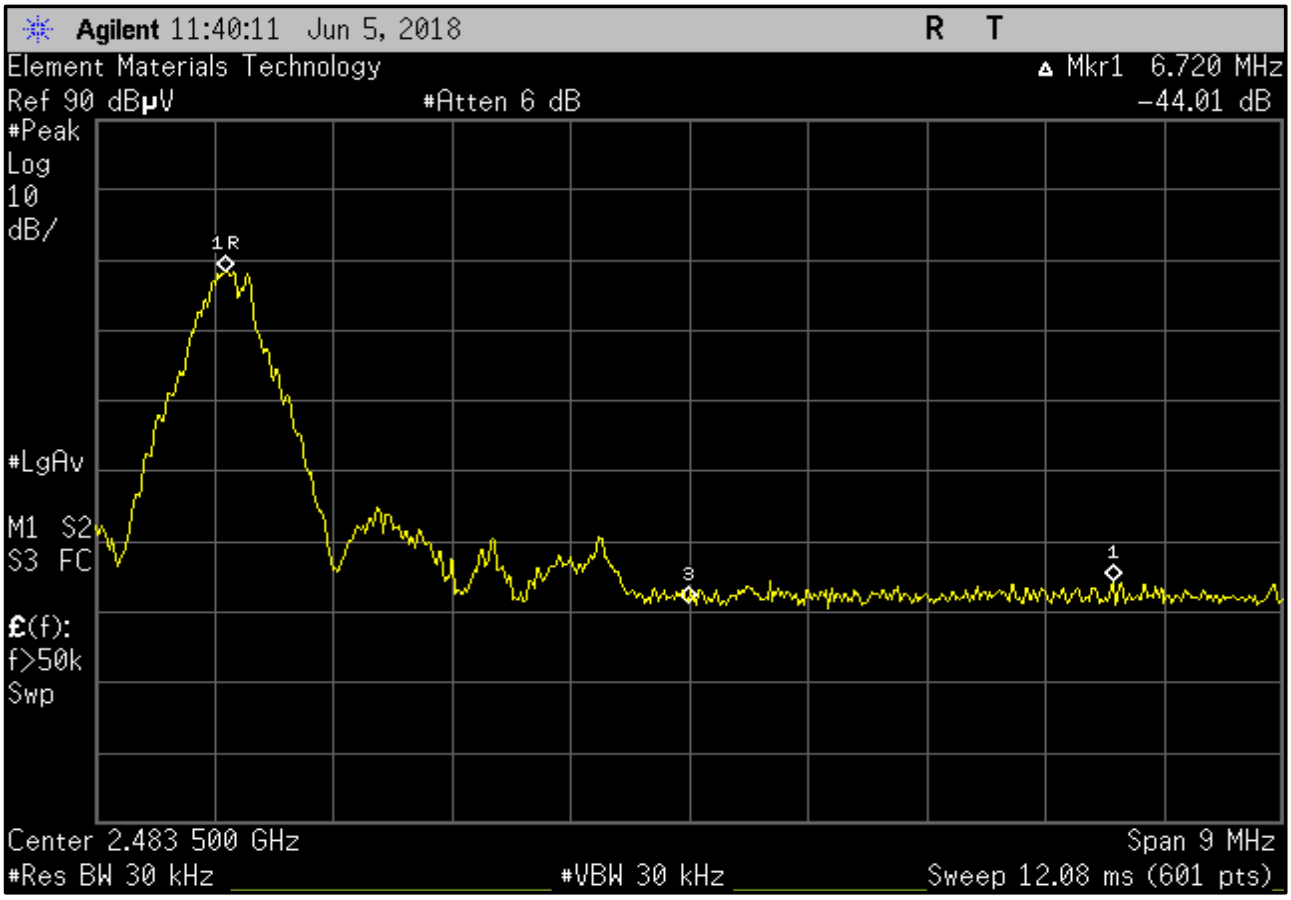
High Channel, DH5, EUT on Side, Antenna Horizontal



SPURIOUS RADIATED EMISSIONS

High Channel, DH5, EUT on Back, Antenna Horizontal

PSA-ESCI 2018.05.04



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	Keysight	N9010A	AFO	1-May-18	1-May-19
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	19-Feb-18	19-Feb-19
Attenuator	Fairview Microwave	SA4014-20	TKV	19-Feb-18	19-Feb-19
Block - DC	Fairview Microwave	SD3379	AMU	19-Feb-18	19-Feb-19
Generator - Signal	Agilent	N5183A	TIA	25-Apr-18	25-Apr-20

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

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

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

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

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

DUTY CYCLE

TbtTx 2018.01.25 BETA XMit 2017.12.13

EUT:	TPv2/300-004278			**Work Order:**	SYNA0242
Serial Number:	SN03			**Date:**	4-Jun-18
Customer:	Walt Disney Parks and Resorts US, Inc.			**Temperature:**	22.6 °C
Attendees:	Reily Blackner			**Humidity:**	43% RH
Project:	None			**Barometric Pres.:**	1022 mbar
Tested by:	Richard Mellroth	**Power:**	24 VDC	**Job Site:**	NC02

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

Power Setting = Default Max

DEVIATIONS FROM TEST STANDARD

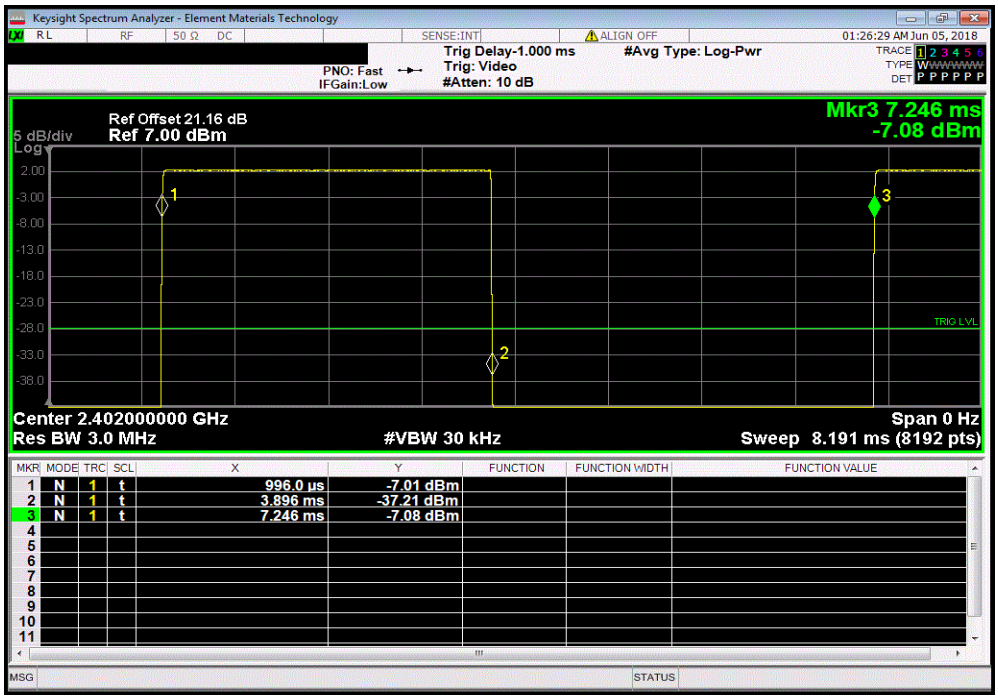
None

Configuration #	1	*Signature*

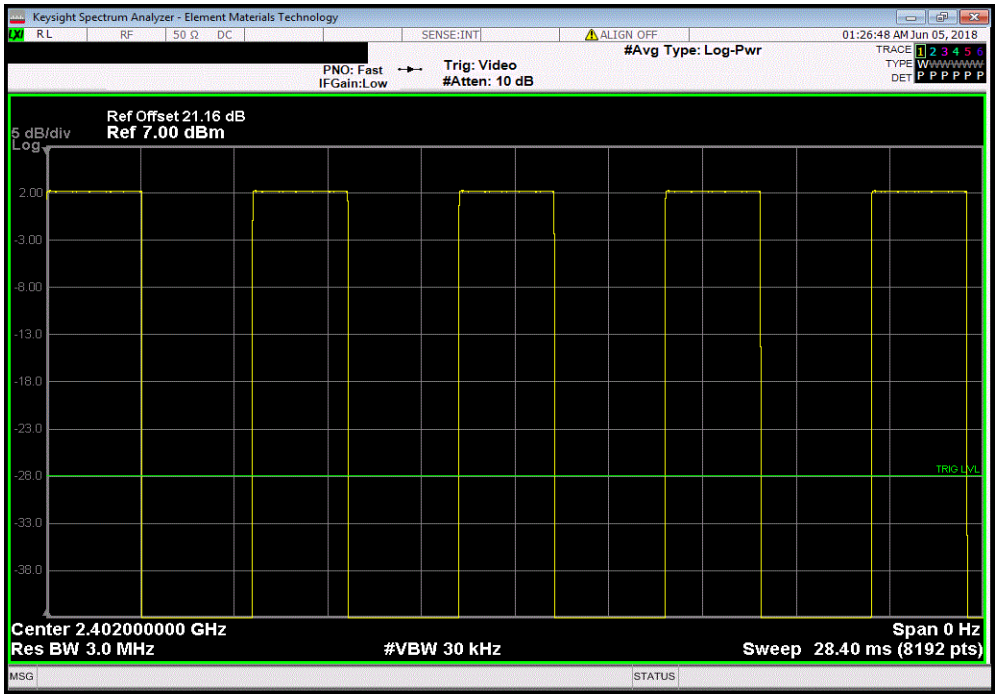
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
Bluetooth FHSS, Non-Hopping Mode						
DH5						
Low Channel, 2402 MHz	2.9 ms	6.25 ms	1	46.4	N/A	N/A
Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel, 2441 MHz	2.901 ms	6.25 ms	1	46.4	N/A	N/A
Mid Channel, 2441 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel, 2480 MHz	2.901 ms	6.25 ms	1	46.4	N/A	N/A
High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A
2DH5						
Low Channel, 2402 MHz	2.911 ms	6.25 ms	1	46.6	N/A	N/A
Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel, 2441 MHz	2.912 ms	6.251 ms	1	46.6	N/A	N/A
Mid Channel, 2441 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel, 2480 MHz	2.911 ms	6.25 ms	1	46.6	N/A	N/A
High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A
3DH5						
Low Channel, 2402 MHz	2.912 ms	6.25 ms	1	46.6	N/A	N/A
Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel, 2441 MHz	2.912 ms	6.25 ms	1	46.6	N/A	N/A
Mid Channel, 2441 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel, 2480 MHz	2.913 ms	6.25 ms	1	46.6	N/A	N/A
High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A

DUTY CYCLE

Bluetooth FHSS, Non-Hopping Mode, DH5, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.9 ms	6.25 ms	1	46.4	N/A	N/A

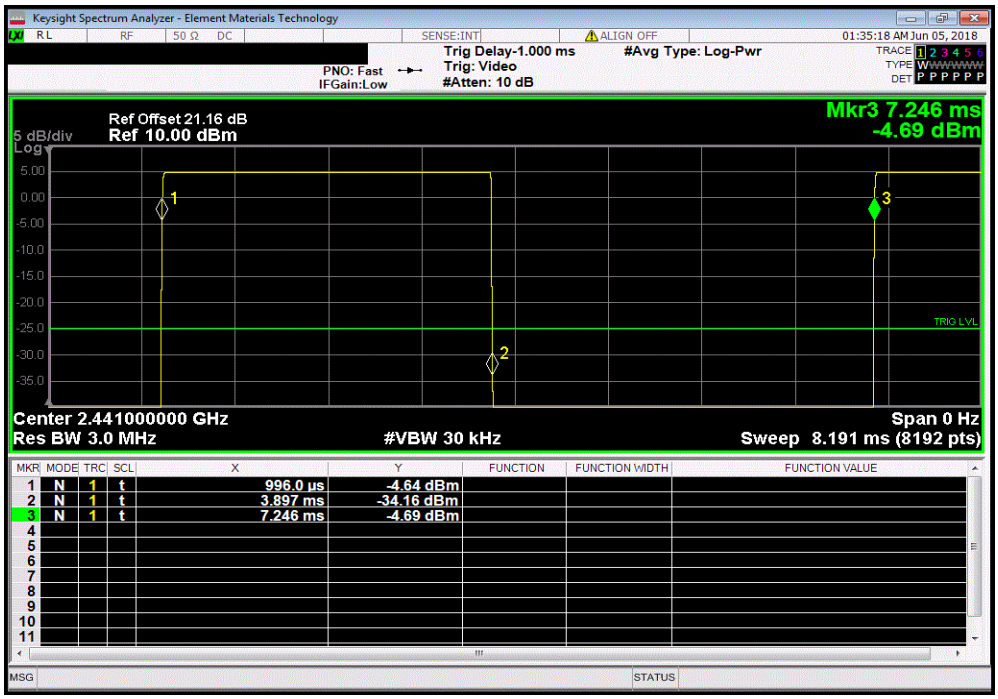


Bluetooth FHSS, Non-Hopping Mode, DH5, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

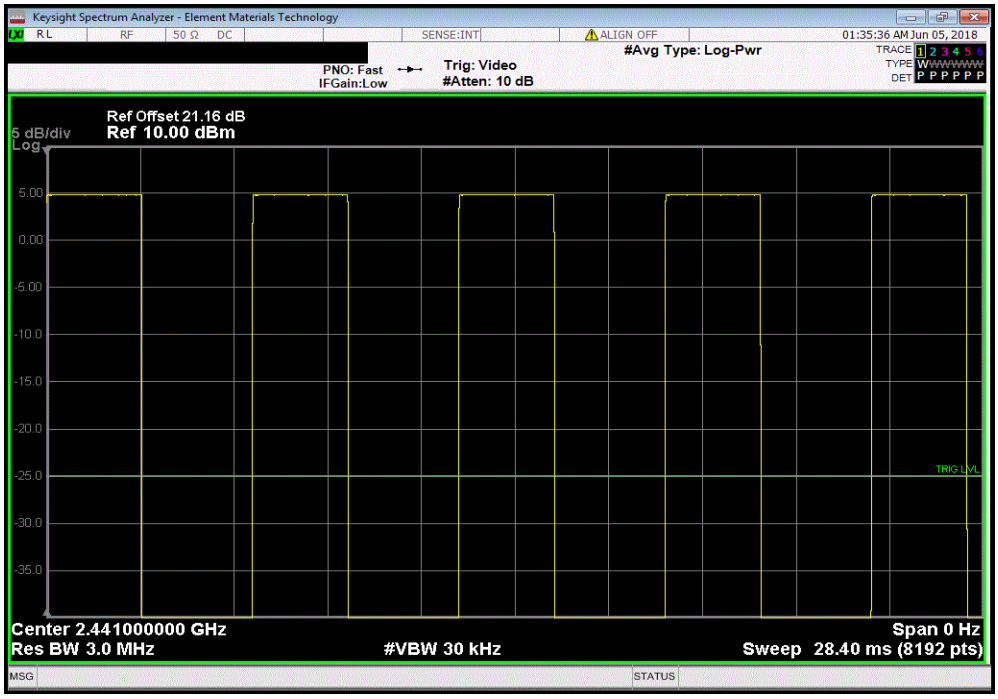


DUTY CYCLE

Bluetooth FHSS, Non-Hopping Mode, DH5, Mid Channel, 2441 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.901 ms	6.25 ms	1	46.4	N/A	N/A

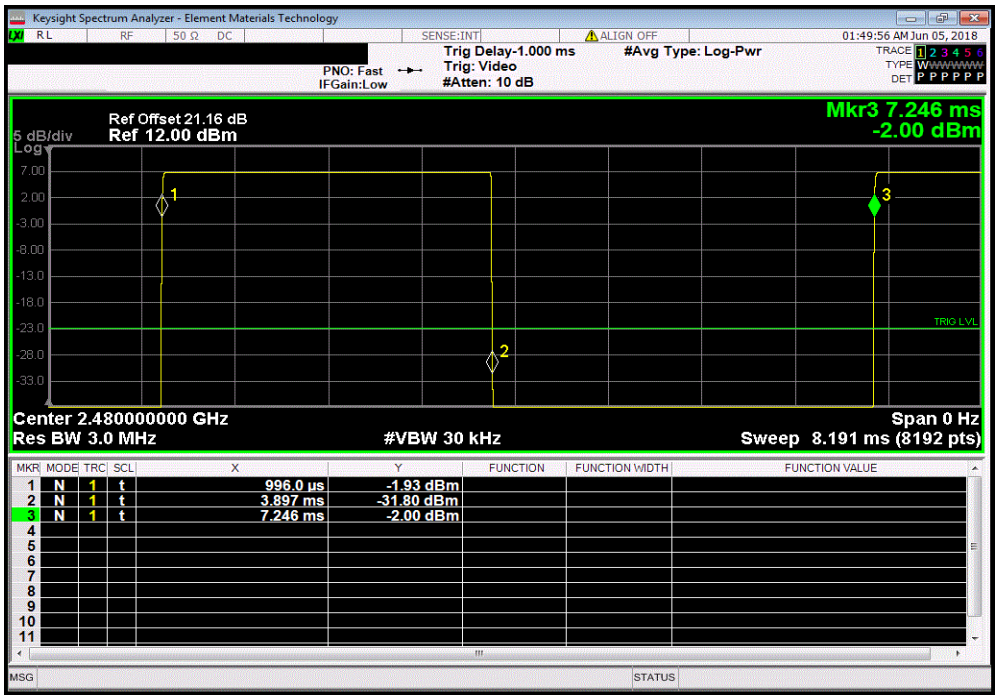


Bluetooth FHSS, Non-Hopping Mode, DH5, Mid Channel, 2441 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

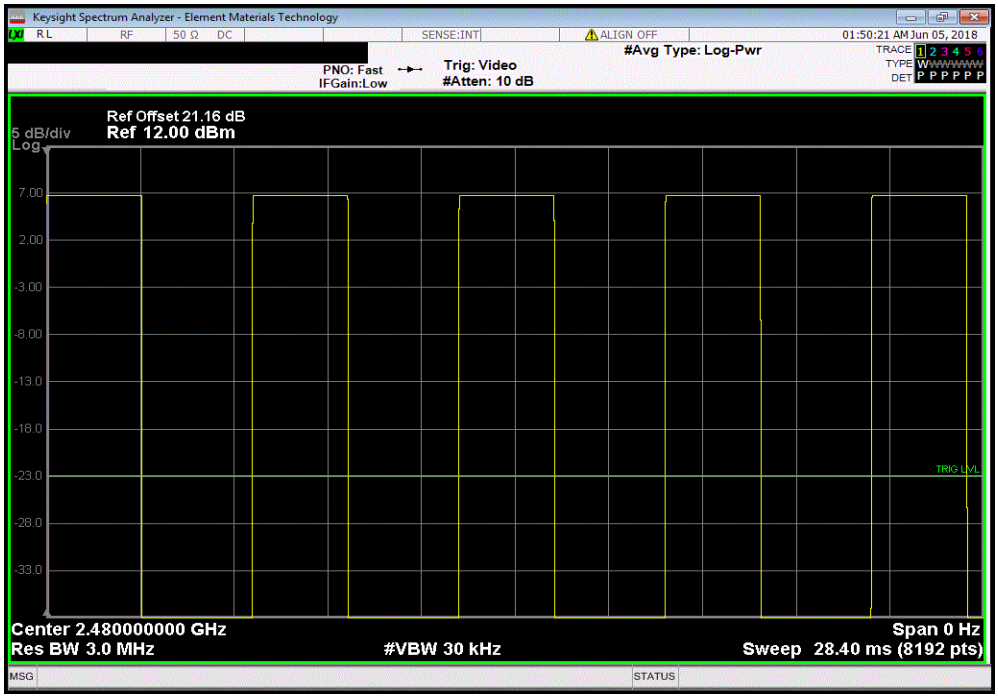


DUTY CYCLE

Bluetooth FHSS, Non-Hopping Mode, DH5, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.901 ms	6.25 ms	1	46.4	N/A	N/A

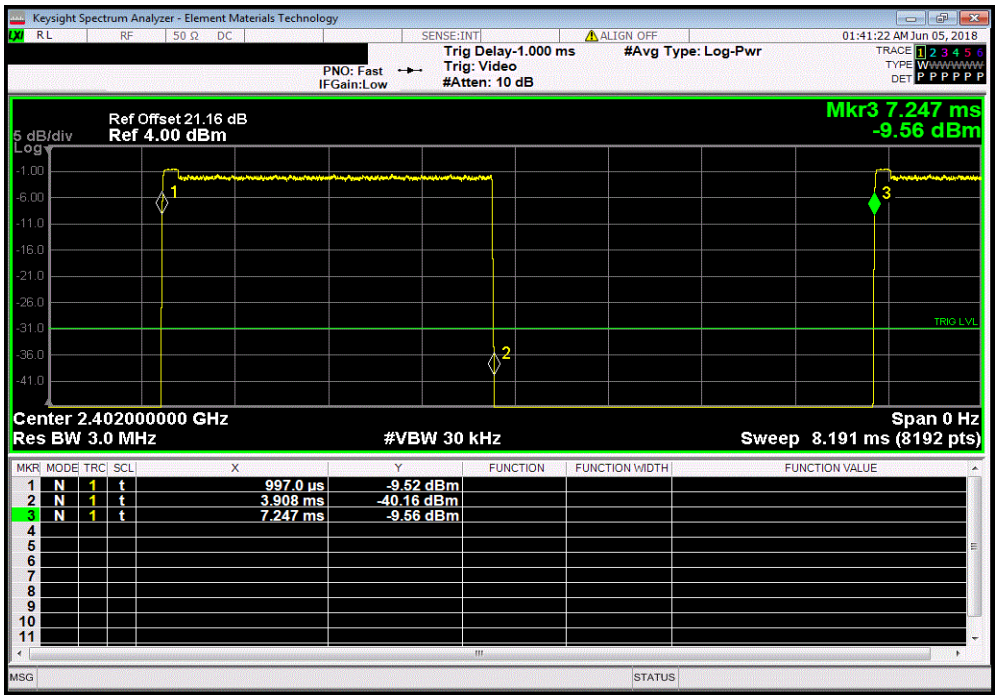


Bluetooth FHSS, Non-Hopping Mode, DH5, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

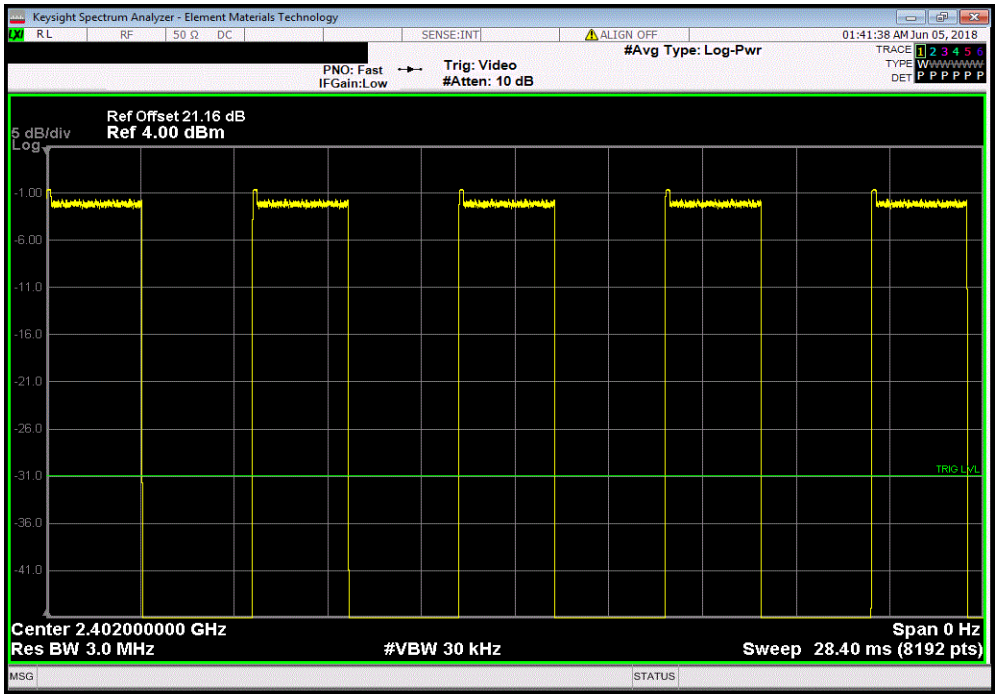


DUTY CYCLE

Bluetooth FHSS, Non-Hopping Mode, 2DH5, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.911 ms	6.25 ms	1	46.6	N/A	N/A

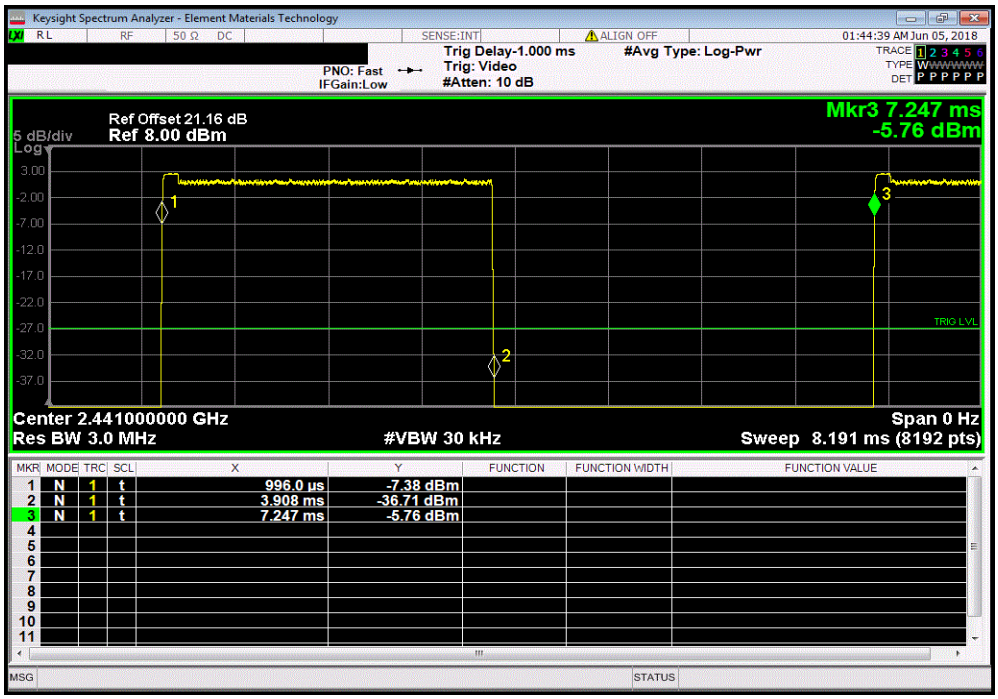


Bluetooth FHSS, Non-Hopping Mode, 2DH5, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

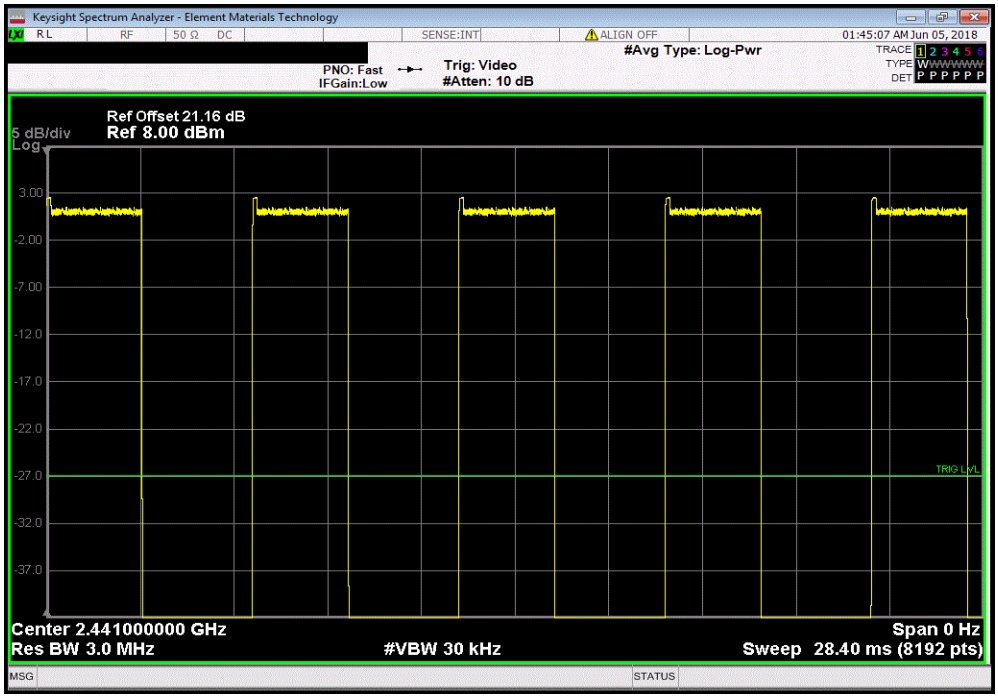


DUTY CYCLE

Bluetooth FHSS, Non-Hopping Mode, 2DH5, Mid Channel, 2441 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.912 ms	6.251 ms	1	46.6	N/A	N/A

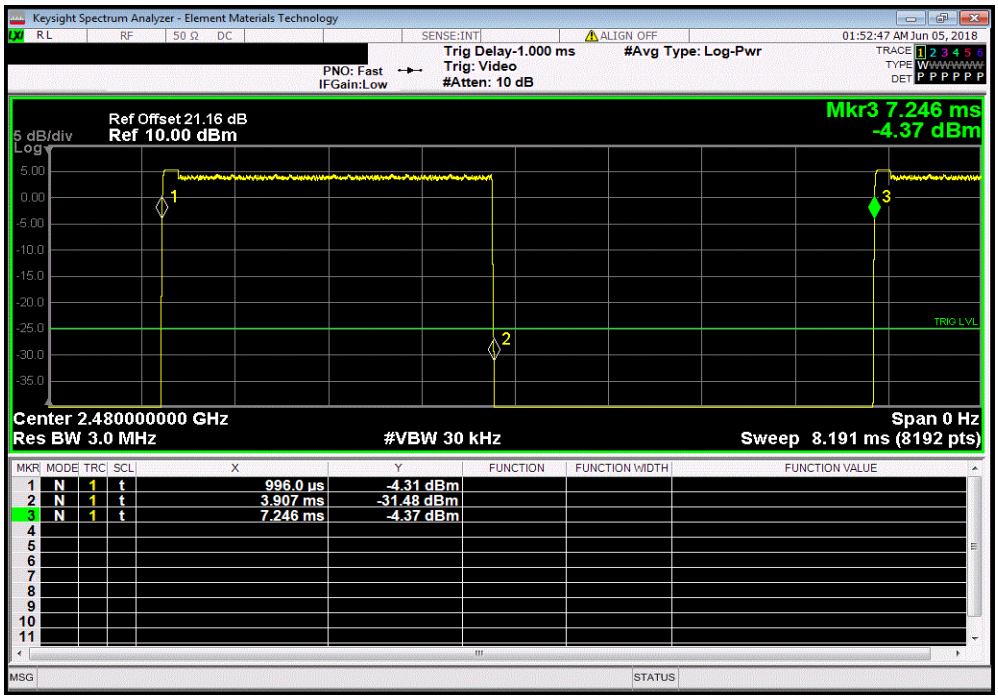


Bluetooth FHSS, Non-Hopping Mode, 2DH5, Mid Channel, 2441 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

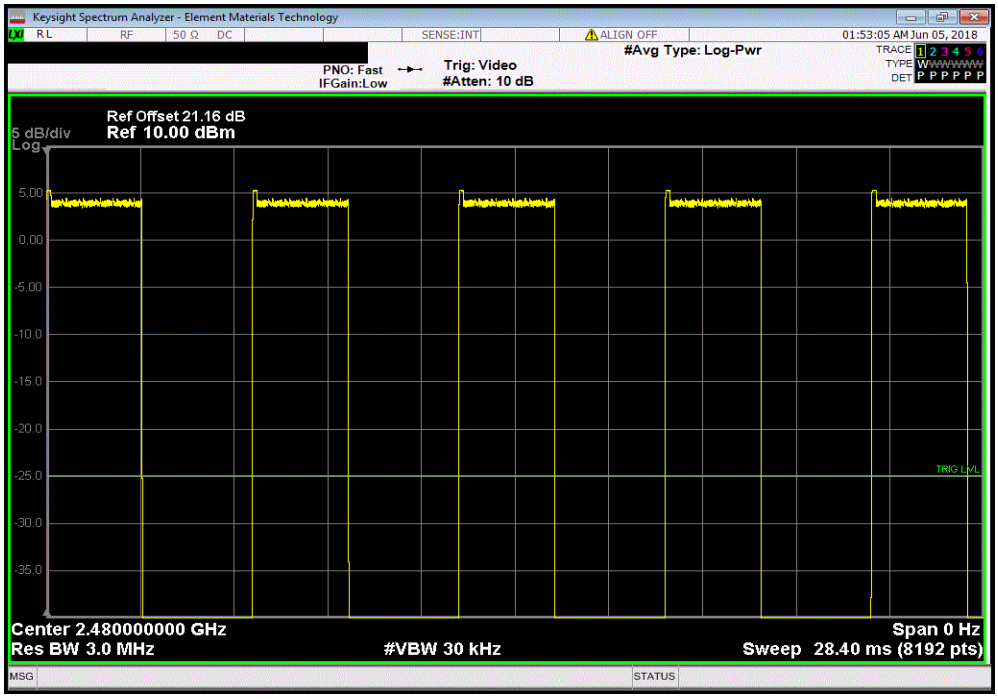


DUTY CYCLE

Bluetooth FHSS, Non-Hopping Mode, 2DH5, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.911 ms	6.25 ms	1	46.6	N/A	N/A

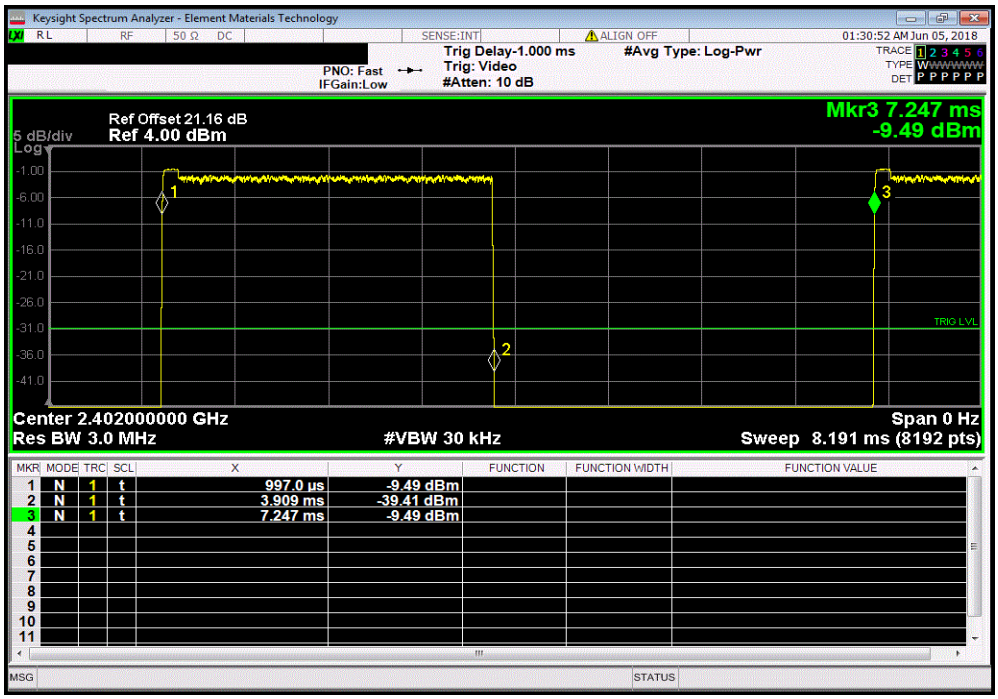


Bluetooth FHSS, Non-Hopping Mode, 2DH5, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

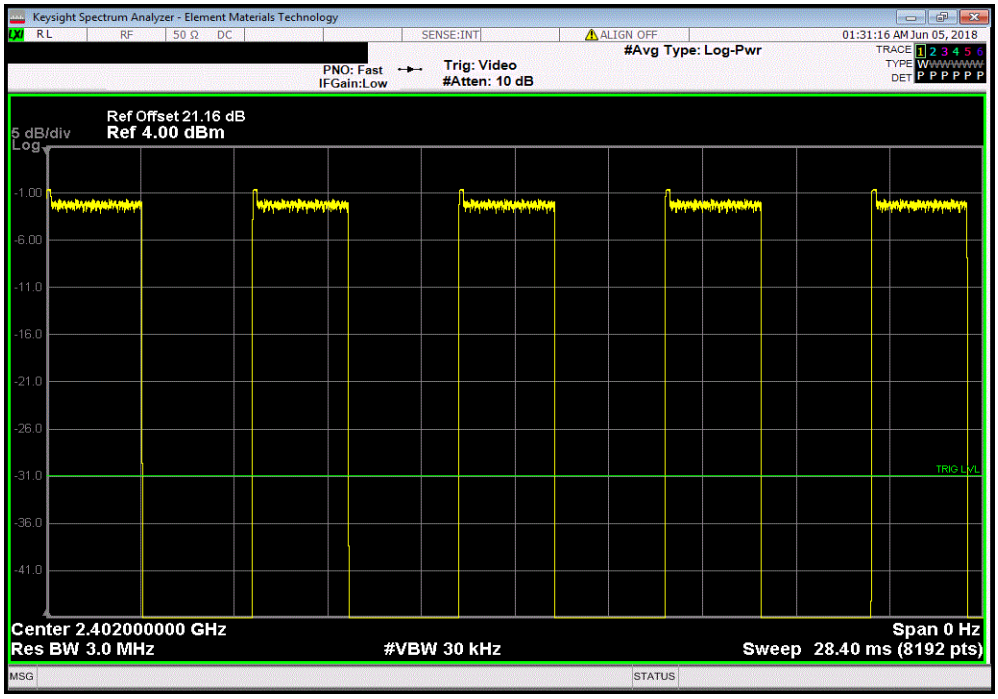


DUTY CYCLE

Bluetooth FHSS, Non-Hopping Mode, 3DH5, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.912 ms	6.25 ms	1	46.6	N/A	N/A

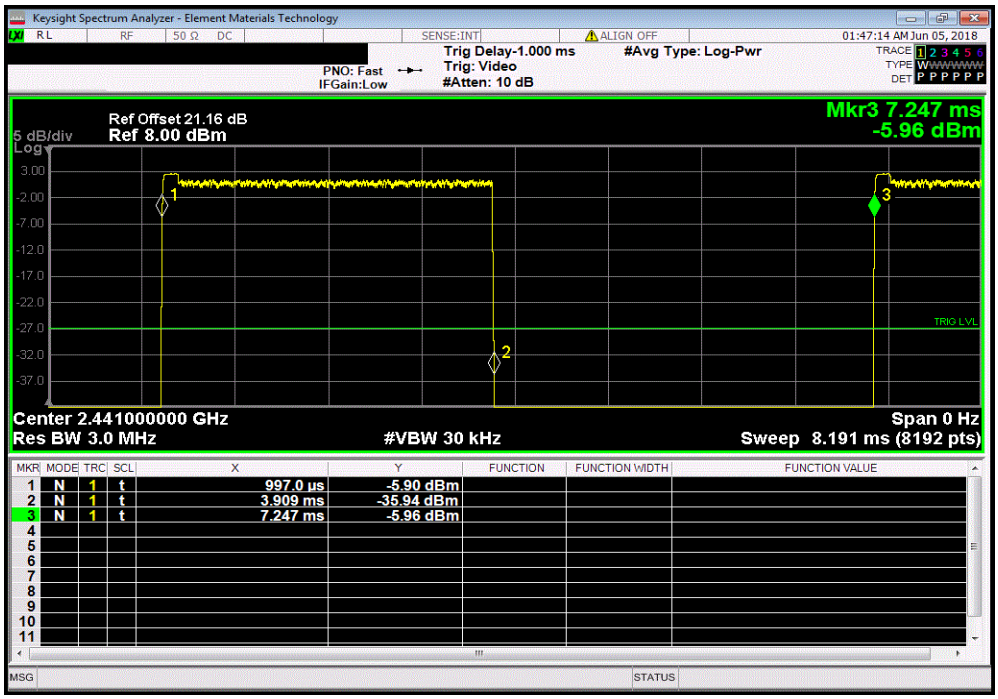


Bluetooth FHSS, Non-Hopping Mode, 3DH5, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

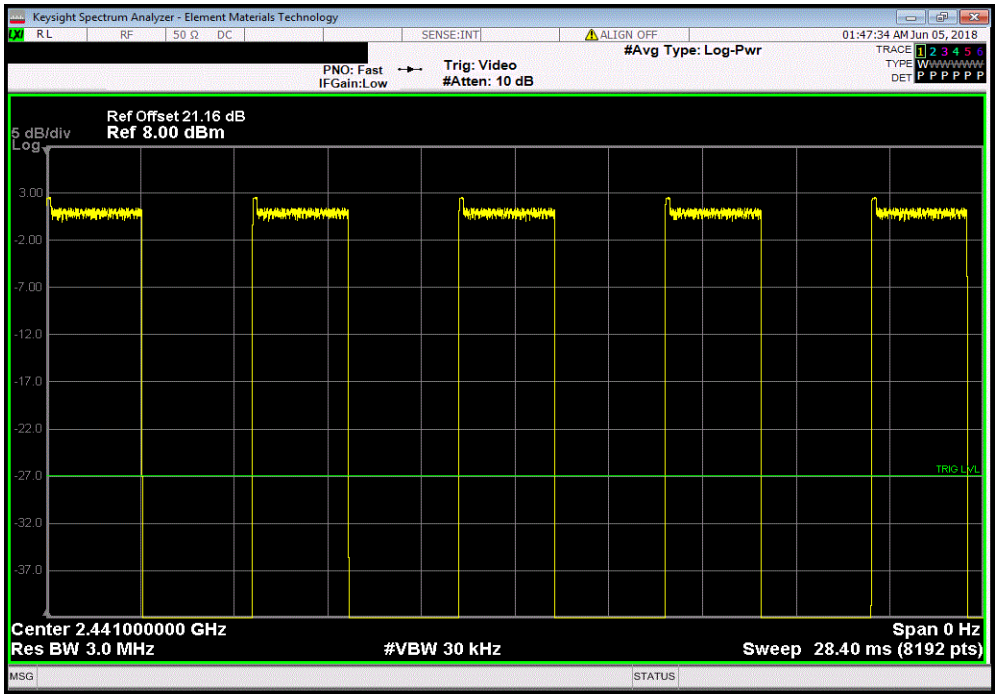


DUTY CYCLE

Bluetooth FHSS, Non-Hopping Mode, 3DH5, Mid Channel, 2441 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.912 ms	6.25 ms	1	46.6	N/A	N/A

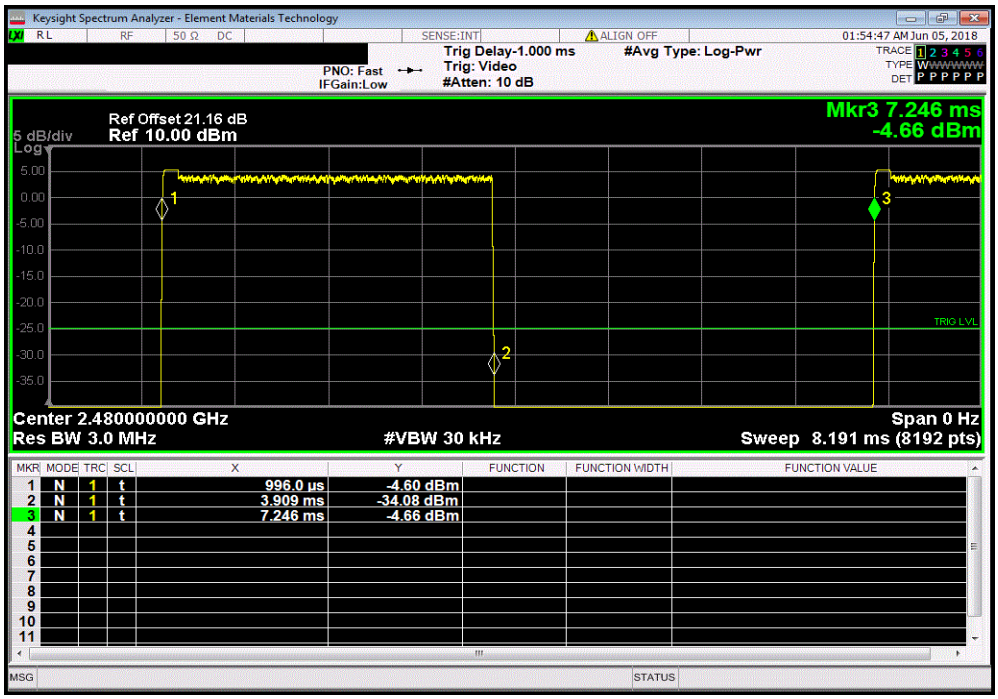


Bluetooth FHSS, Non-Hopping Mode, 3DH5, Mid Channel, 2441 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

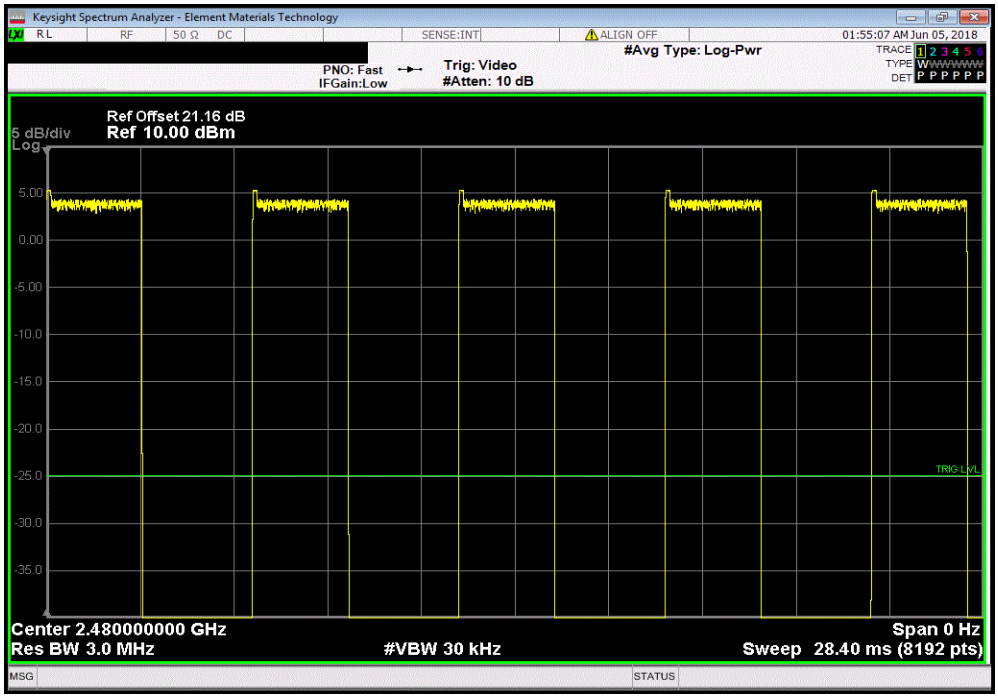


DUTY CYCLE

Bluetooth FHSS, Non-Hopping Mode, 3DH5, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.913 ms	6.25 ms	1	46.6	N/A	N/A



Bluetooth FHSS, Non-Hopping Mode, 3DH5, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



OUTPUT POWER

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	Keysight	N9010A	AFO	1-May-18	1-May-19
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	19-Feb-18	19-Feb-19
Attenuator	Fairview Microwave	SA4014-20	TKV	19-Feb-18	19-Feb-19
Block - DC	Fairview Microwave	SD3379	AMU	19-Feb-18	19-Feb-19
Generator - Signal	Agilent	N5183A	TIA	25-Apr-18	25-Apr-20

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The peak output power was measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting in a no hop mode at the data rate(s) listed in the datasheet.

The method found in ANSI C63.10:2013 Section 7.8.5 was used for a FHSS radio.

De Facto EIRP Limit: The EUT meets the de facto EIRP limit of +27dBm.

OUTPUT POWER

TbtTx 2018.01.25 BETA XMit 2017.12.13

EUT:	TPv2/300-004278			**Work Order:**	SYNA0242
Serial Number:	SN03			**Date:**	4-Jun-18
Customer:	Walt Disney Parks and Resorts US, Inc.			**Temperature:**	22.4 °C
Attendees:	Reily Blackner			**Humidity:**	44.2% RH
Project:	None			**Barometric Pres.:**	1022 mbar
Tested by:	Richard Mellroth	**Power:**	24 VDC	**Job Site:**	NC02

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

Power Setting = Default Max

DEVIATIONS FROM TEST STANDARD

None

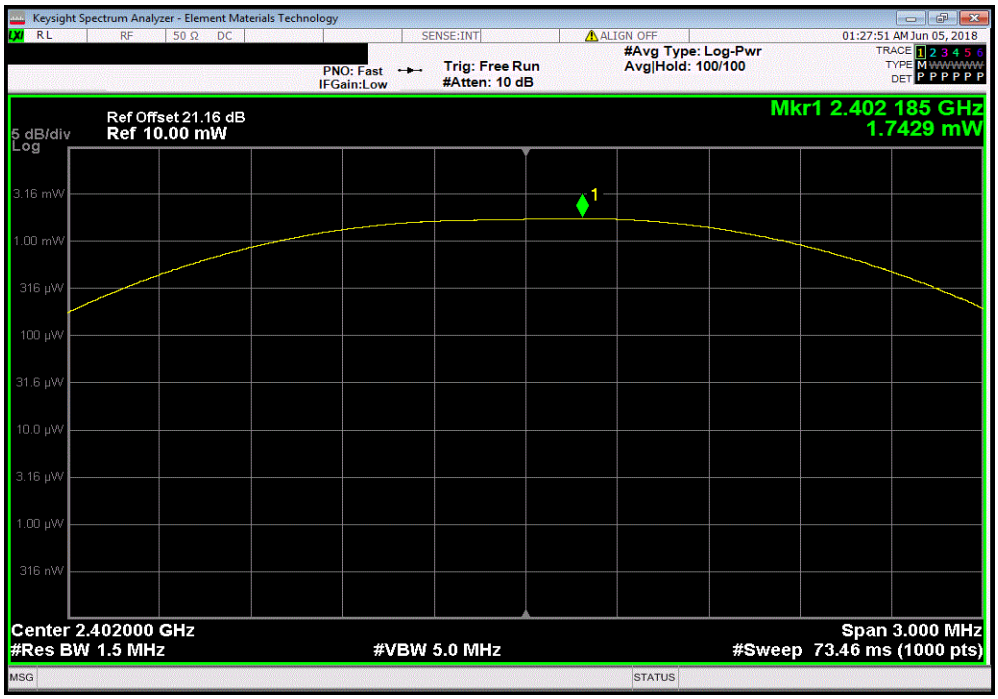
Configuration #	1	*Signature*

		Value	**Limit (<)**	**Result**
Bluetooth FHSS, Non-Hopping Mode				
	DH5			
	Low Channel, 2402 MHz	1.743 mW	125 mW	Pass
	Mid Channel, 2441 MHz	3.118 mW	125 mW	Pass
	High Channel, 2480 MHz	4.823 mW	125 mW	Pass
	2DH5			
	Low Channel, 2402 MHz	1.182 mW	125 mW	Pass
	Mid Channel, 2441 MHz	2.353 mW	125 mW	Pass
	High Channel, 2480 MHz	4.056 mW	125 mW	Pass
	3DH5			
	Low Channel, 2402 MHz	1.279 mW	125 mW	Pass
	Mid Channel, 2441 MHz	2.517 mW	125 mW	Pass
	High Channel, 2480 MHz	4.227 mW	125 mW	Pass

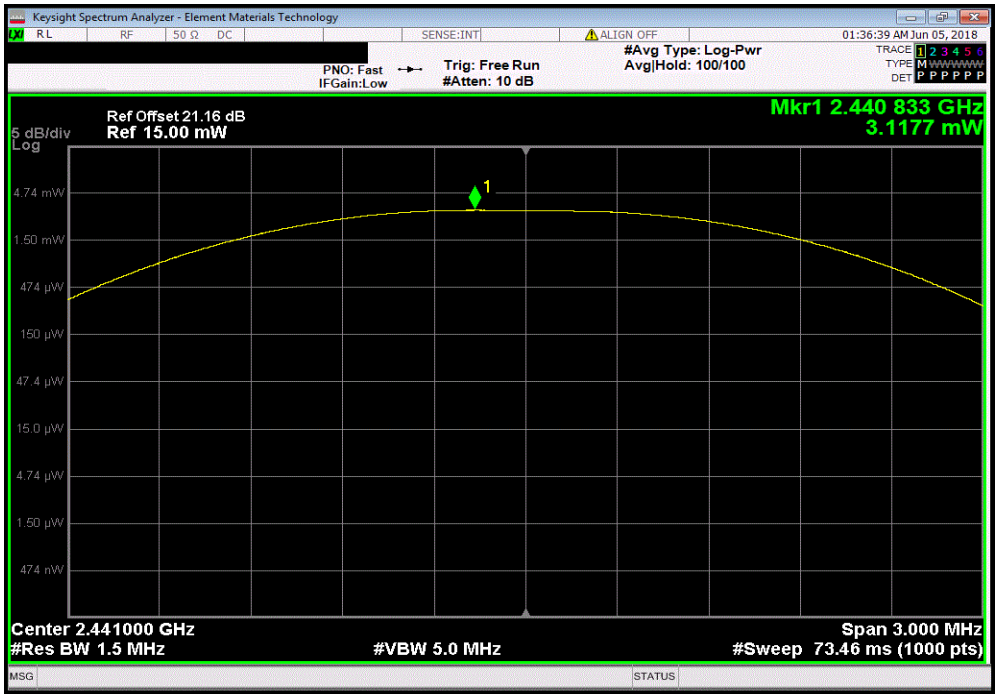
OUTPUT POWER

TbtTx 2018.01.25 BETA XMit 2017.12.13

Bluetooth FHSS, Non-Hopping Mode, DH5, Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				1.743 mW	125 mW	Pass



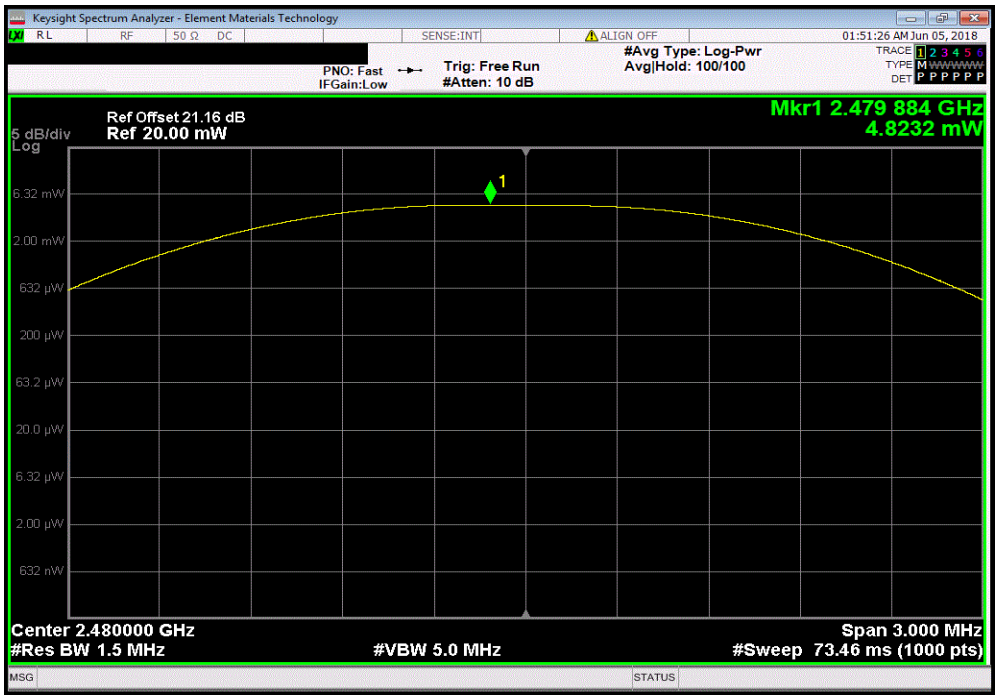
Bluetooth FHSS, Non-Hopping Mode, DH5, Mid Channel, 2441 MHz						
				Value	Limit (<)	Result
				3.118 mW	125 mW	Pass



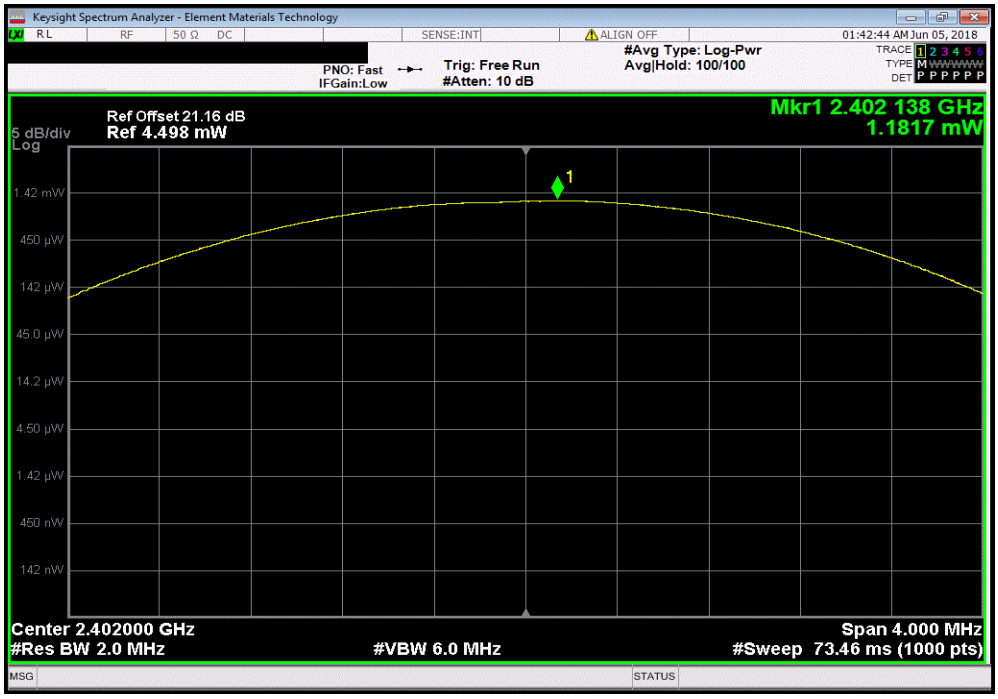
OUTPUT POWER

TbtTx 2018.01.25 BETA XMit 2017.12.13

Bluetooth FHSS, Non-Hopping Mode, DH5, High Channel, 2480 MHz						
				Value	Limit (<)	Result
				4.823 mW	125 mW	Pass



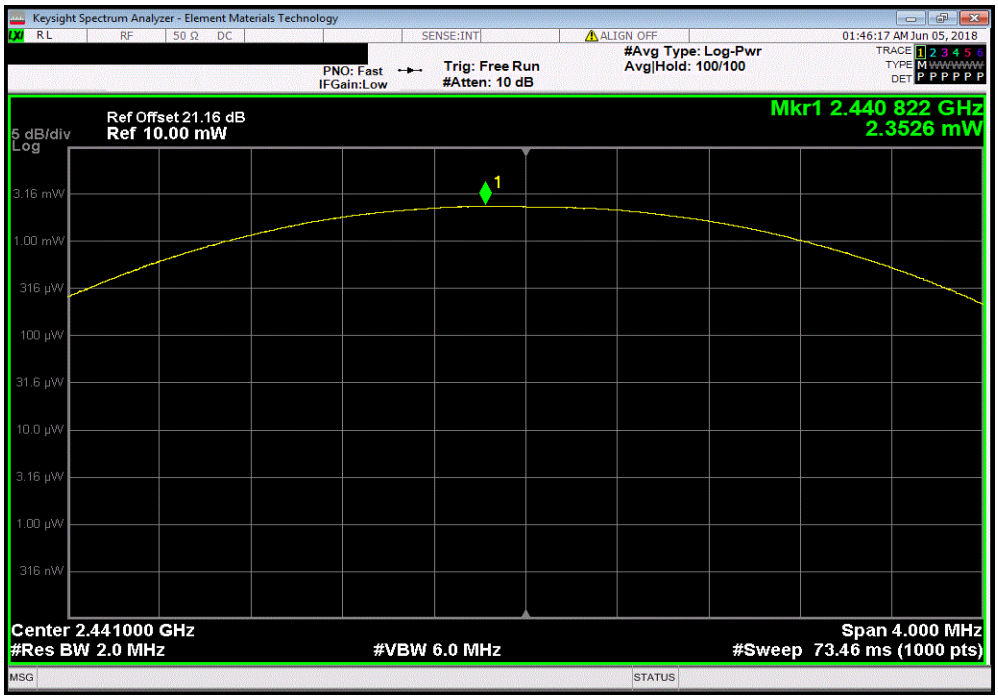
Bluetooth FHSS, Non-Hopping Mode, 2DH5, Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				1.182 mW	125 mW	Pass



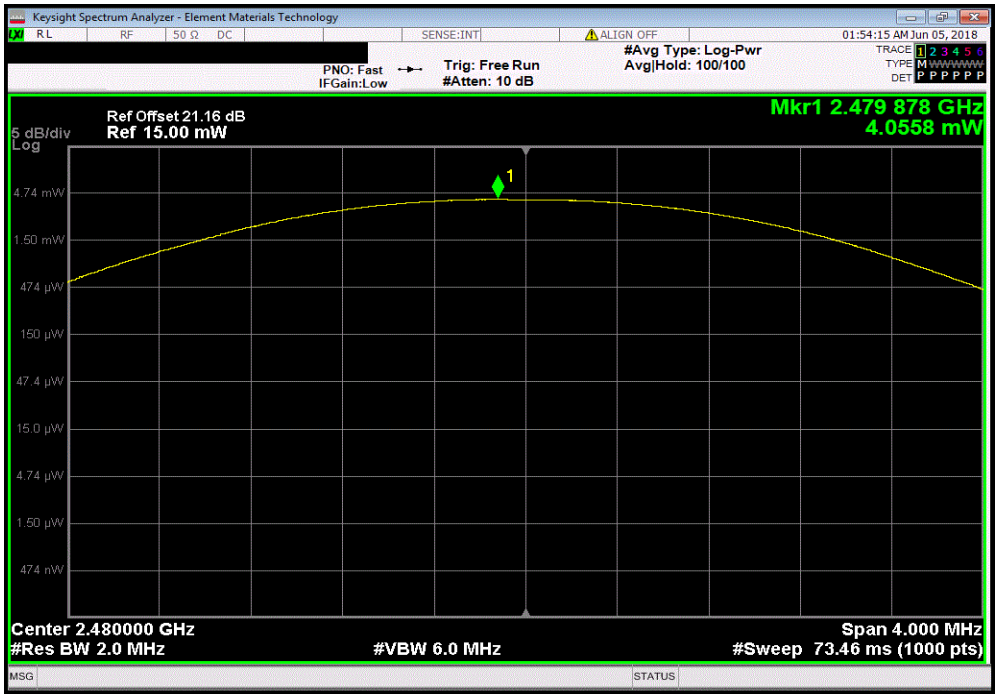
OUTPUT POWER

TbtTx 2018.01.25 BETA XMit 2017.12.13

Bluetooth FHSS, Non-Hopping Mode, 2DH5, Mid Channel, 2441 MHz						
				Value	Limit (<)	Result
				2.353 mW	125 mW	Pass



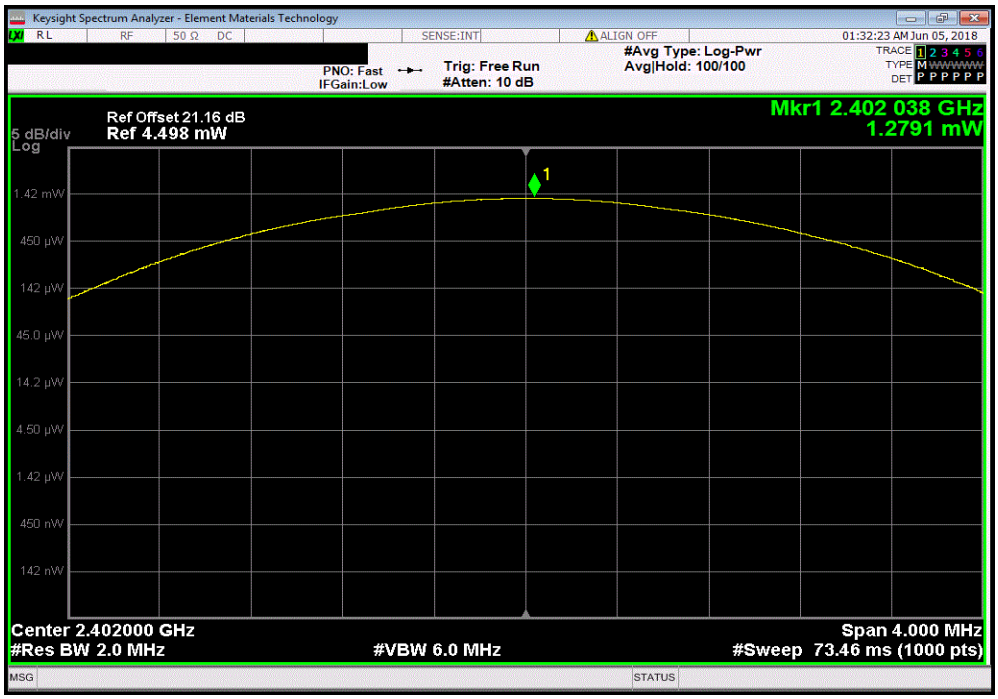
Bluetooth FHSS, Non-Hopping Mode, 2DH5, High Channel, 2480 MHz						
				Value	Limit (<)	Result
				4.056 mW	125 mW	Pass



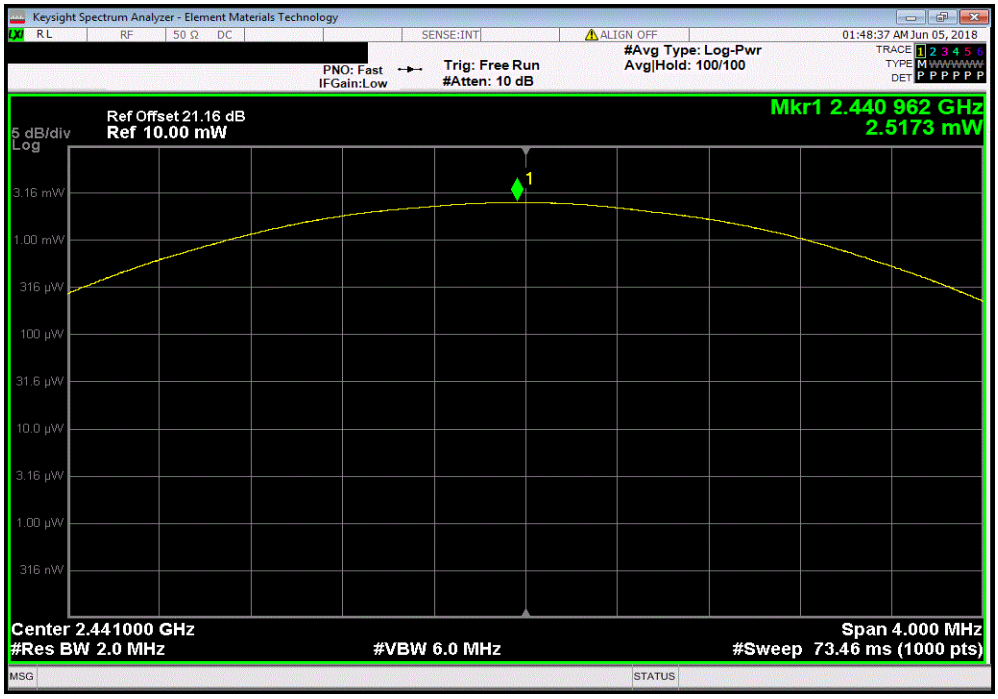
OUTPUT POWER

TbtTx 2018.01.25 BETA XMit 2017.12.13

Bluetooth FHSS, Non-Hopping Mode, 3DH5, Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				1.279 mW	125 mW	Pass

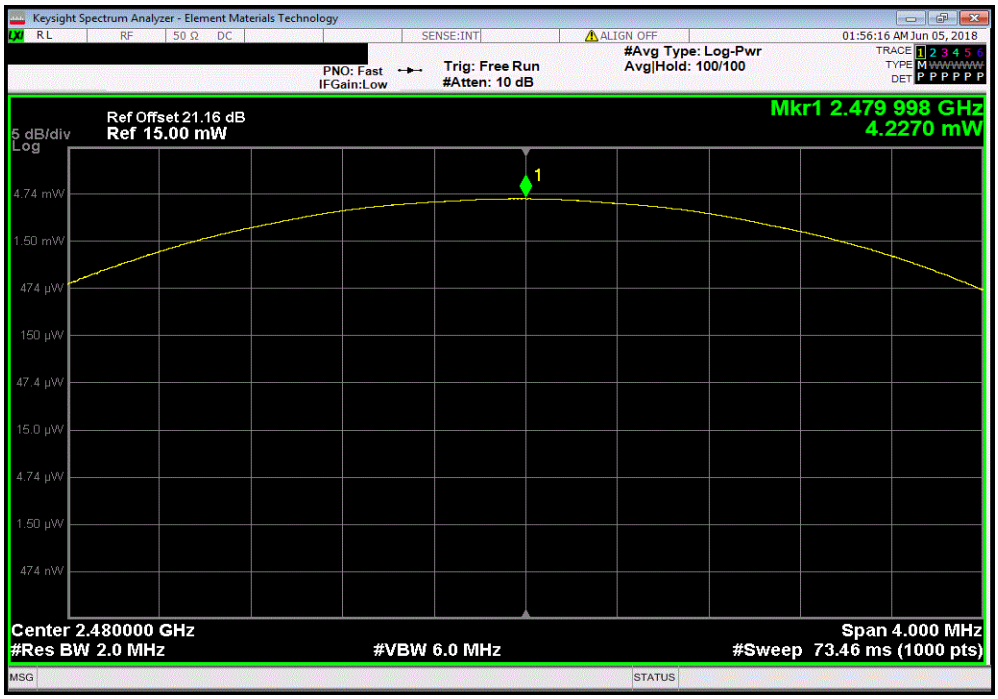


Bluetooth FHSS, Non-Hopping Mode, 3DH5, Mid Channel, 2441 MHz						
				Value	Limit (<)	Result
				2.517 mW	125 mW	Pass



OUTPUT POWER

Bluetooth FHSS, Non-Hopping Mode, 3DH5, High Channel, 2480 MHz						
				Value	Limit (<)	Result
				4.227 mW	125 mW	Pass



OCCUPIED BANDWIDTH

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	Keysight	N9010A	AFO	1-May-18	1-May-19
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	19-Feb-18	19-Feb-19
Attenuator	Fairview Microwave	SA4014-20	TKV	19-Feb-18	19-Feb-19
Block - DC	Fairview Microwave	SD3379	AMU	19-Feb-18	19-Feb-19
Generator - Signal	Agilent	N5183A	TIA	25-Apr-18	25-Apr-20

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The 20 dB occupied bandwidth was measured with the EUT set to low, medium and high transmit frequencies in the band. The EUT was transmitting at the data rate(s) listed in the datasheet in a no-hop mode.

OCCUPIED BANDWIDTH

TbtTx 2018.01.25 BETA XMit 2017.12.13

EUT:	TPv2/300-004278			**Work Order:**	SYNA0242
Serial Number:	SN03			**Date:**	4-Jun-18
Customer:	Walt Disney Parks and Resorts US, Inc.			**Temperature:**	22.6 °C
Attendees:	Reily Blackner			**Humidity:**	43.3% RH
Project:	None			**Barometric Pres.:**	1022 mbar
Tested by:	Richard Mellroth	**Power:**	24 VDC	**Job Site:**	NC02

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

Power Setting = Default Max

DEVIATIONS FROM TEST STANDARD

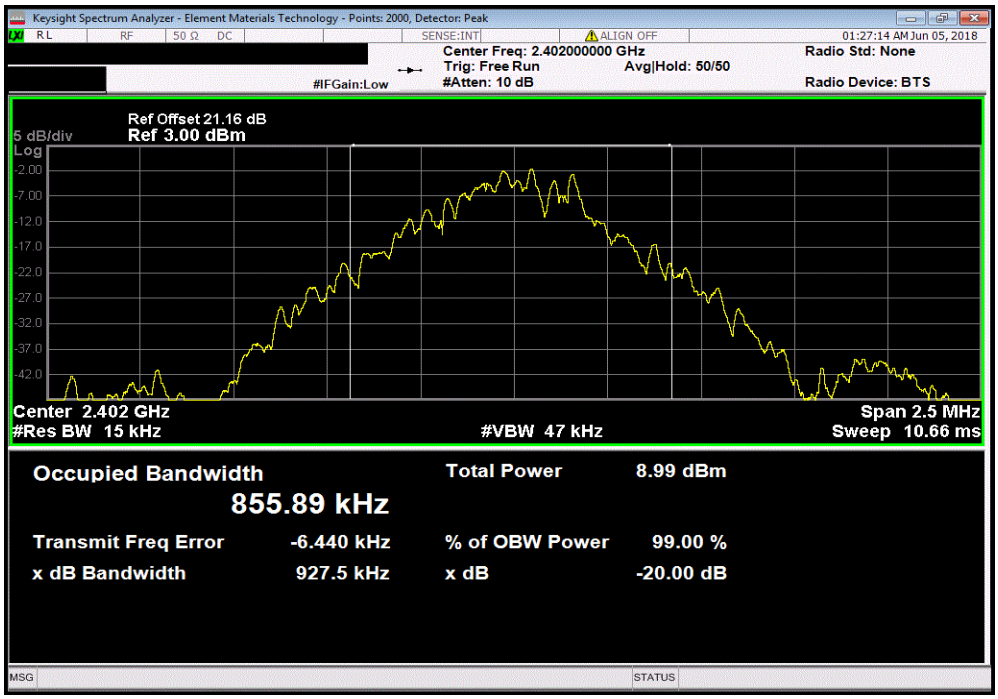
None

Configuration #	**1**	*Signature*

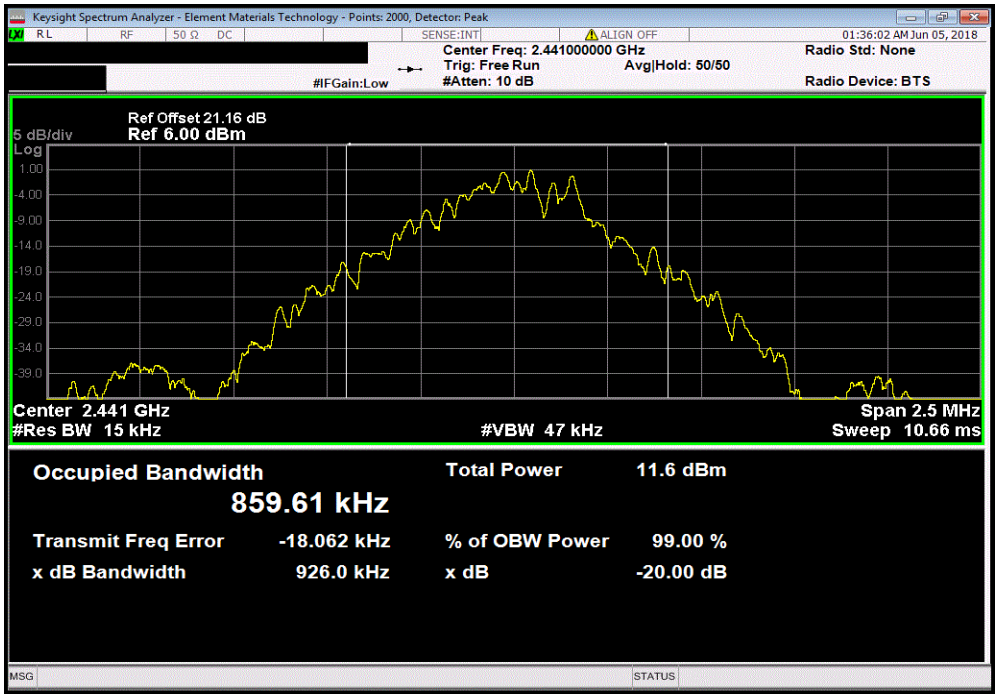
		Value	**Limit (<)**	**Result**
Bluetooth FHSS, Non-Hopping Mode				
	DH5			
	Low Channel, 2402 MHz	927.55 kHz	1.5 MHz	Pass
	Mid Channel, 2441 MHz	926.017 kHz	1.5 MHz	Pass
	High Channel, 2480 MHz	930.117 kHz	1.5 MHz	Pass
	2DH5			
	Low Channel, 2402 MHz	1.288 MHz	1.5 MHz	Pass
	Mid Channel, 2441 MHz	1.308 MHz	1.5 MHz	Pass
	High Channel, 2480 MHz	1.316 MHz	1.5 MHz	Pass
	3DH5			
	Low Channel, 2402 MHz	1.298 MHz	1.5 MHz	Pass
	Mid Channel, 2441 MHz	1.282 MHz	1.5 MHz	Pass
	High Channel, 2480 MHz	1.285 MHz	1.5 MHz	Pass

OCCUPIED BANDWIDTH

Bluetooth FHSS, Non-Hopping Mode, DH5, Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				927.55 kHz	1.5 MHz	Pass



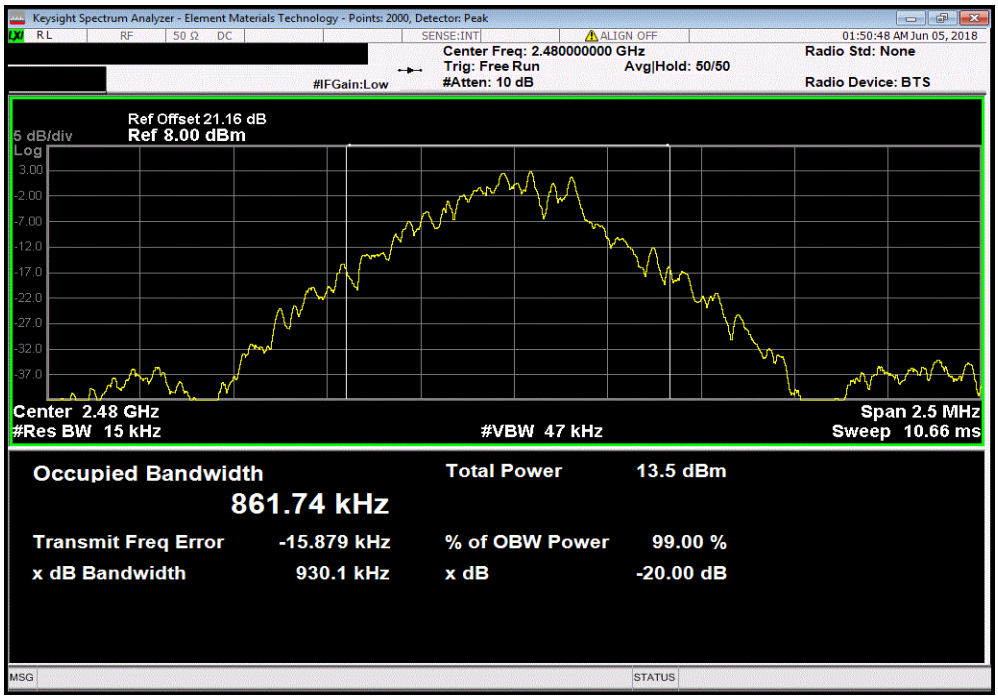
Bluetooth FHSS, Non-Hopping Mode, DH5, Mid Channel, 2441 MHz						
				Value	Limit (<)	Result
				926.017 kHz	1.5 MHz	Pass



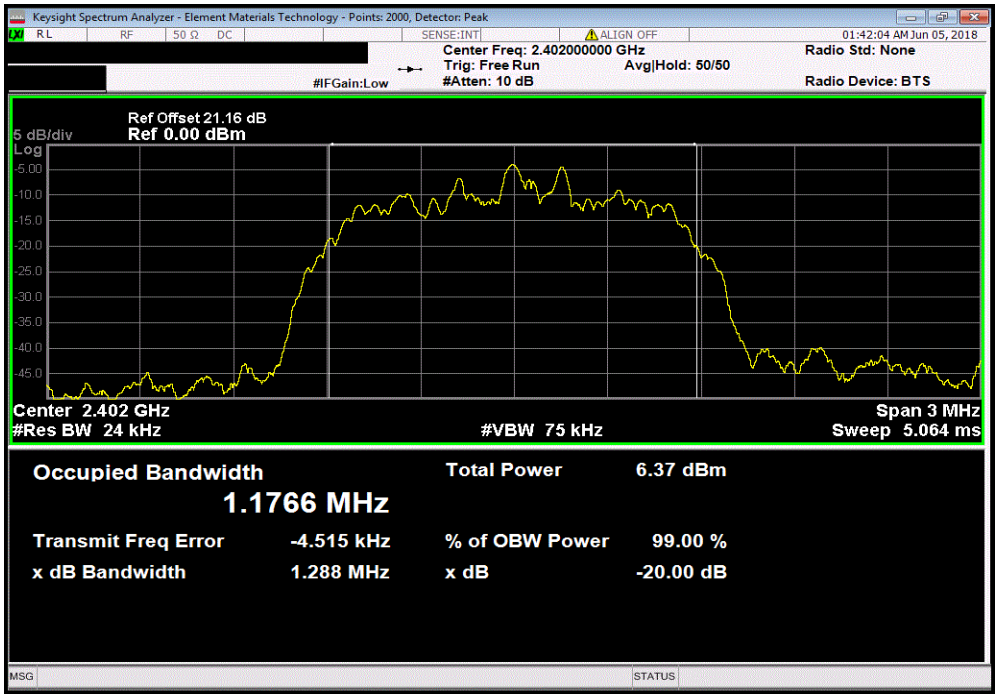
OCCUPIED BANDWIDTH

TbtTx 2018.01.25 BETA XMit 2017.12.13

Bluetooth FHSS, Non-Hopping Mode, DH5, High Channel, 2480 MHz						
				Value	Limit (<)	Result
				930.117 kHz	1.5 MHz	Pass



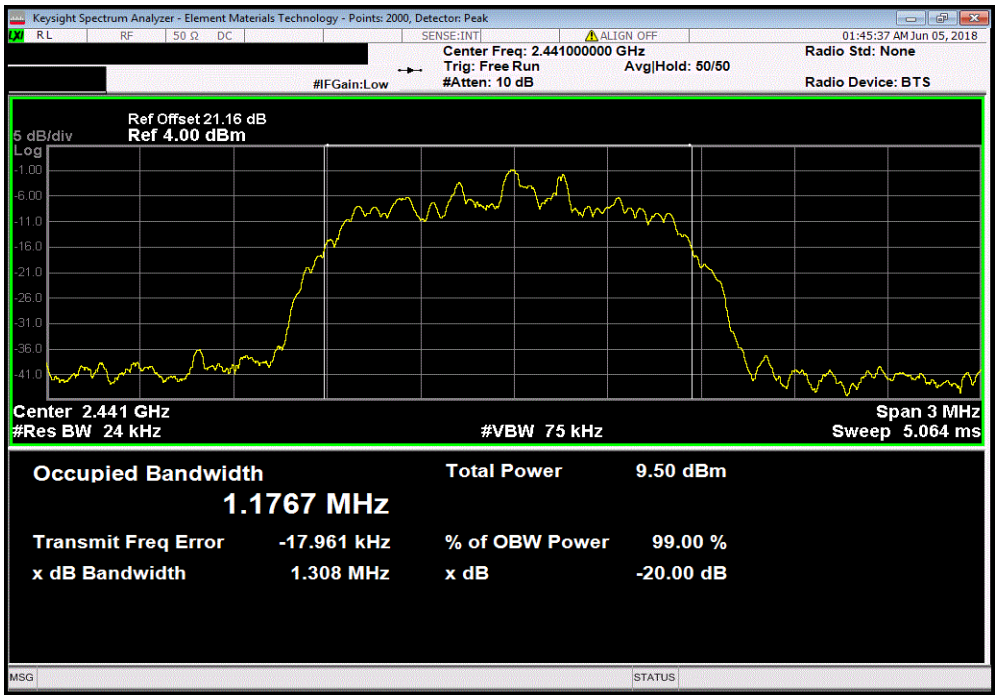
Bluetooth FHSS, Non-Hopping Mode, 2DH5, Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				1.288 MHz	1.5 MHz	Pass



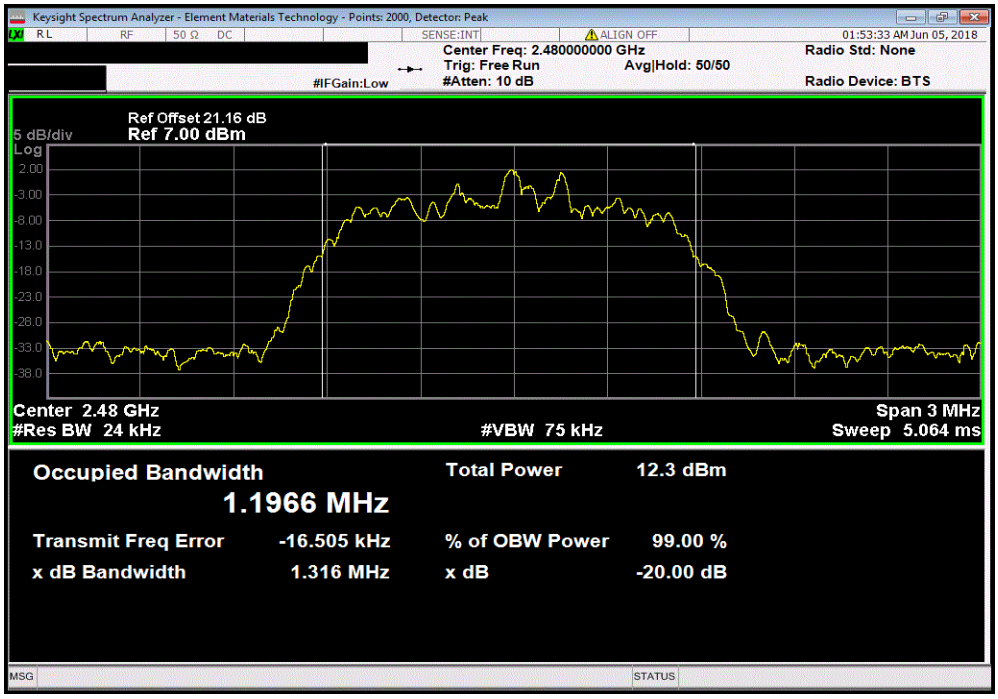
OCCUPIED BANDWIDTH

TbtTx 2018.01.25 BETA XMit 2017.12.13

Bluetooth FHSS, Non-Hopping Mode, 2DH5, Mid Channel, 2441 MHz						
				Value	Limit (<)	Result
				1.308 MHz	1.5 MHz	Pass



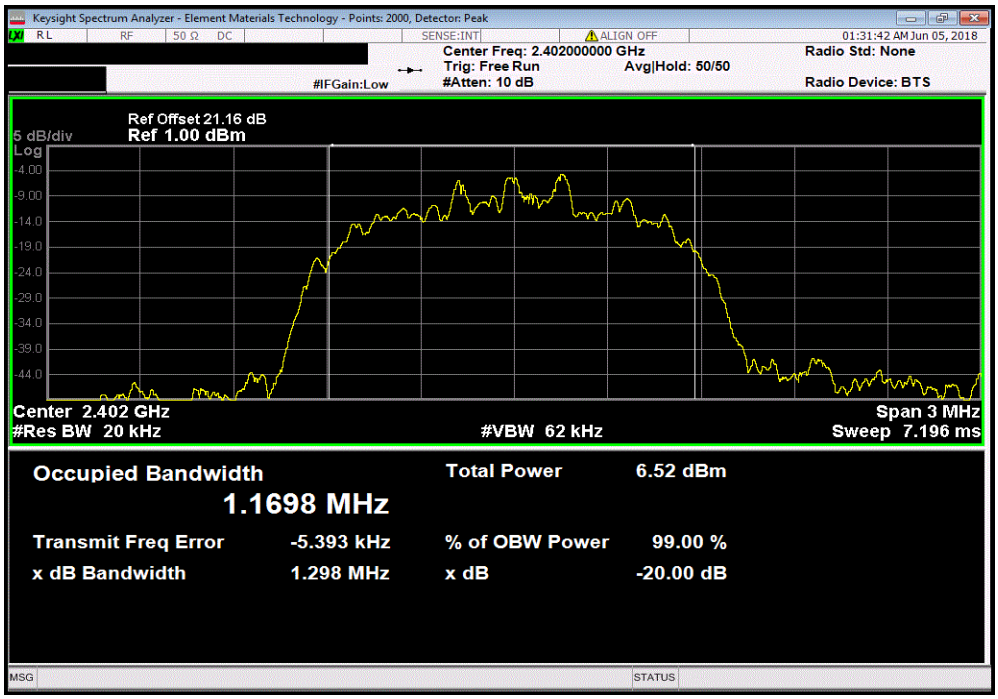
Bluetooth FHSS, Non-Hopping Mode, 2DH5, High Channel, 2480 MHz						
				Value	Limit (<)	Result
				1.316 MHz	1.5 MHz	Pass



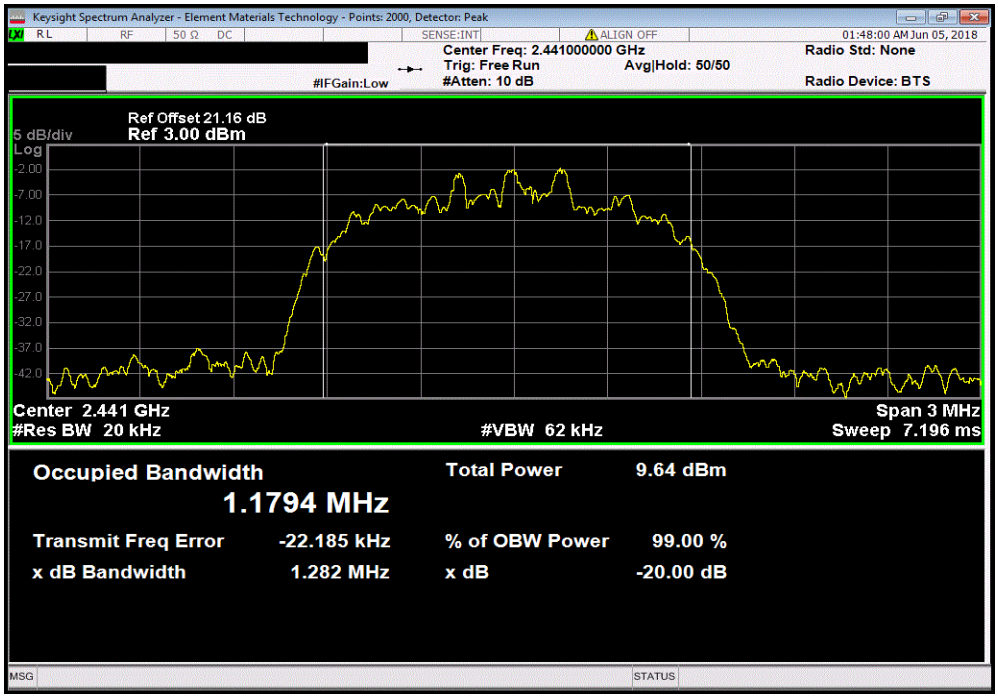
OCCUPIED BANDWIDTH

TbtTx 2018.01.25 BETA XMit 2017.12.13

Bluetooth FHSS, Non-Hopping Mode, 3DH5, Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				1.298 MHz	1.5 MHz	Pass



Bluetooth FHSS, Non-Hopping Mode, 3DH5, Mid Channel, 2441 MHz						
				Value	Limit (<)	Result
				1.282 MHz	1.5 MHz	Pass



OCCUPIED BANDWIDTH

TbtTx 2018.01.25 BETA XMit 2017.12.13

Bluetooth FHSS, Non-Hopping Mode, 3DH5, High Channel, 2480 MHz						
				Value	Limit (<)	Result
				1.285 MHz	1.5 MHz	Pass