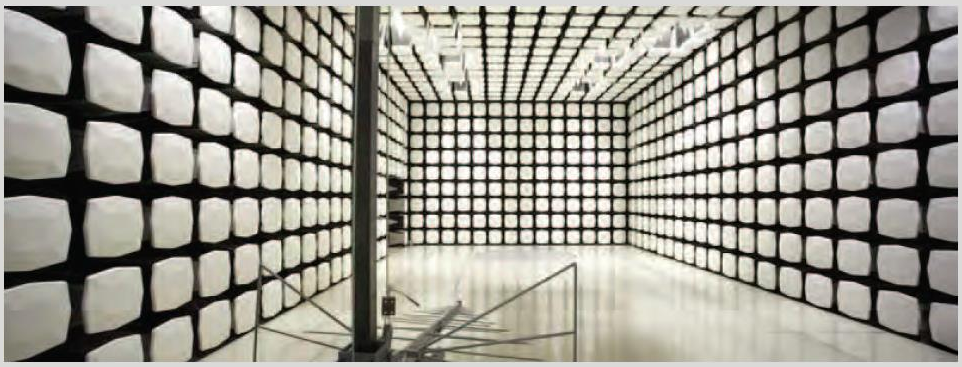
NORTHWEST EMC

LightSpeed Aviation

Tango Transceiver

FCC 15.247:2015

Report # LISA0029.4



NVLAP Lab Code: 200630-0

CERTIFICATE OF TEST

Last Date of Test: August 29, 2015
LightSpeed Aviation
Model: Tango Transceiver

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2015	ANSI C63.10:2013

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	No	N/A	Not required, powered from aircraft
6.5, 6.6	Spurious Radiated Emissions	Yes	Pass	
6.10	Band Edge Compliance	Yes	Pass	
7.8.2	Carrier Frequency Separation	Yes	Pass	
7.8.3	Number of Hopping Frequencies	Yes	Pass	
7.8.4	Dwell Time	Yes	Pass	
7.8.6	Band Edge Compliance - Hopping Mode	Yes	Pass	
11.6	Duty Cycle	Yes	Pass	
11.8.2	Occupied Bandwidth	Yes	Pass	
11.9	Output Power	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.

REVISION HISTORY

NORTHWEST EMC
REV 2014.10.14

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

REV 2015.2.19

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 Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Israel

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

Hong Kong

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

Vietnam

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

SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/
http://gsi.nist.gov/global/docs/cabs/designations.html

MEASUREMENT UNCERTAINTY

TMU.2015.07.10

Measurement Uncertainty

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

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is on each data sheet. 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.

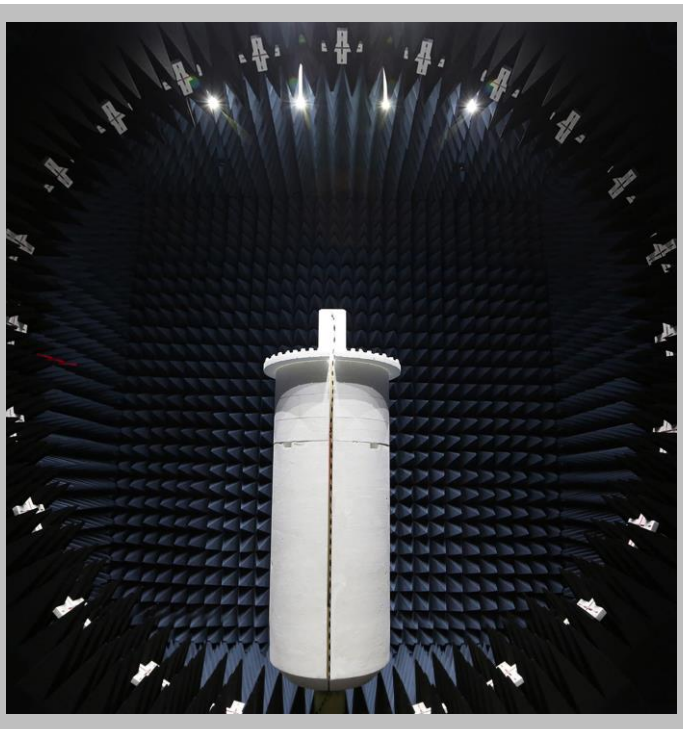
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

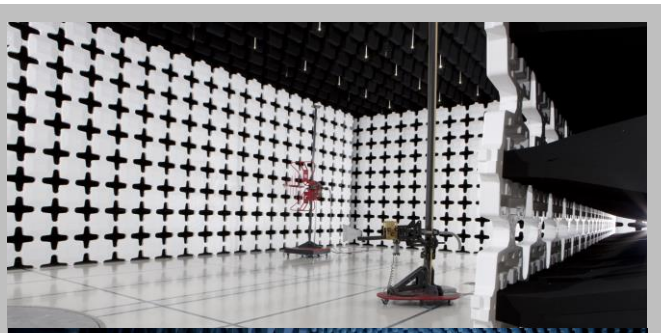
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%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

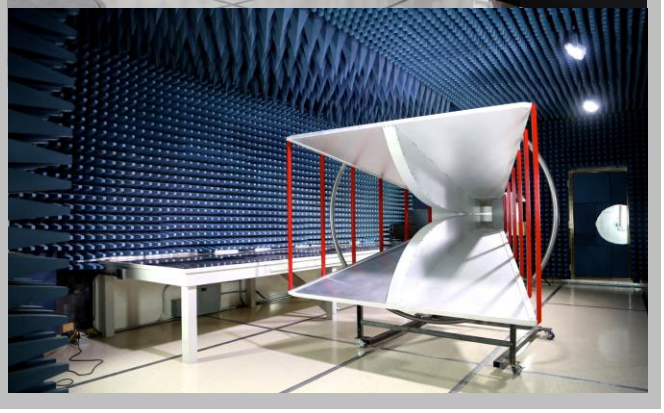
FACILITIES

REV 2015.2.19

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 9801 (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
Industry Canada					
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157







PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	LightSpeed Aviation
Address:	6135 SW Jean Rd
City, State, Zip:	Lake Oswego, OR 97035
Test Requested By:	Eduard Vaynberg
Model:	Tango Transceiver
First Date of Test:	July 31, 2015
Last Date of Test:	August 29, 2015
Receipt Date of Samples:	July 23, 2015
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Transceiver unit which can take audio inputs from an aircraft panel via cables, from an auxiliary audio jack, or from a Bluetooth radio and transmit them via a 2.4 GHz DTS radio to a wireless headset. The unit also contains an analog narrow band FM receiver in the 922-927 MHz frequency range (863-865 MHz in EU markets).

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

CONFIGURATIONS

NORTHWEST EMC 2014-12-10

Configuration LISA0029- 2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
2.4GHz FHSS radio	Raytac Corp.	MD8530P1	None
Tango Transceiver	LightSpeed Aviation	Board 200-00033-000	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
2.4GHz BT Module	Wimate Technologies Corp.	JBM-150	None

Configuration LISA0029- 5

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Tango Transceiver	LightSpeed Aviation	Board 200-00033-000	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC/DC Adapter (DELL)	Dell	JU012	need
USB-SPI Converter	CSR	DEV-SYS-1808-1A	268956
Laptop 2 (Dell)	Dell	M4500	7810167277

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power Cable DELL	Unknown	1.5m	Yes	AC/DC Power Adapter	Laptop Dell
AC Power Cable DELL	No	.7m	No	AC mains	AC/DC Power Adapter
Ethernet Cable	Yes	1m	No	Converter part 1	Converter part 2
USB	Yes	2.2m	No	Converter part 1	Laptop 2 (Dell)

Configuration LISA0029- 7

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
2.4GHz DTS radio	Raytac Corp.	MD8530P1	None
2.4GHz BT Module	Wimate Technologies Corp.	JBM-150	None
Transceiver	LightSpeed Aviation	Board: 202-00033-000	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Panel Power Cable Adapter	No	1.7m	No	Transceiver	Unterminated
LSA	No	0.7m	No	Transceiver	Unterminated
Audio	No	1.2m	No	Transceiver	Unterminated

MODIFICATIONS

NORTHWEST EMC
2014-12-10

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	7/31/2015	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	7/31/2015	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	7/31/2015	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	7/31/2015	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	7/31/2015	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	7/31/2015	Band Edge Compliance-Hopping Mode	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	7/31/2015	Carrier Frequency Separation	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
8	7/31/2015	Number of Hopping Frequencies	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
9	7/31/2015	Dwell Time	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
10	8/29/2015	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

Constant Bluetooth Tx, High Channel 2480MHz, DH5
Constant Bluetooth Tx, Mid Channel 2441MHz, DH5
Constant Bluetooth Tx, Low Channel 2402MHz, DH5
Constant Bluetooth Tx, Low Channel 2402MHz, 2DH5
Constant Bluetooth Tx, Mid Channel 2441MHz, 2DH5
Constant Bluetooth Tx, High Channel 2480MHz, 2DH5
Constant Bluetooth Tx, Low Channel 2402MHz, 3DH5
Constant Bluetooth Tx, Mid Channel 2441MHz, 3DH5
Constant Bluetooth Tx, High Channel 2480MHz, 3DH5

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

LISA0029 - 2
LISA0029 - 7

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26500 MHz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	KMKM-72	EVY	11/9/2014	12 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	11/9/2014	12 mo
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0 mo
Cable	Northwest EMC	20MHz-6GHz, Radiated Immunity	EVD	2/11/2015	12 mo
Antenna, Horn	ETS Lindgren	3160-08	AHV	NCR	0 mo
Cable	None	Standard Gain Horns Cable	EVF	4/20/2015	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	4/20/2015	12 mo
Antenna, Horn	ETS Lindgren	3160-07	AHU	NCR	0 mo
High Pass Filter, 2.8 - 18 GHz	Micro-Tronics	HPM50111	HFO	3/31/2015	12 mo
Attenuator - 20dB, HF (1000MHz - 18000MHz)	Coaxicom	3910-20	AXZ	5/24/2015	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	4/16/2015	12 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	4/16/2015	12 mo
Antenna, Horn	ETS Lindgren	3115	AIZ	1/27/2014	24 mo
Cable	N/A	Bilog Cables	EVA	2/10/2015	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/10/2015	12 mo
Antenna, Biconilog	EMCO	3141	AXE	8/29/2014	24 mo
Spectrum Analyzer	Keysight	N9010A	AFN	2/10/2015	12 mo

TEST DESCRIPTION

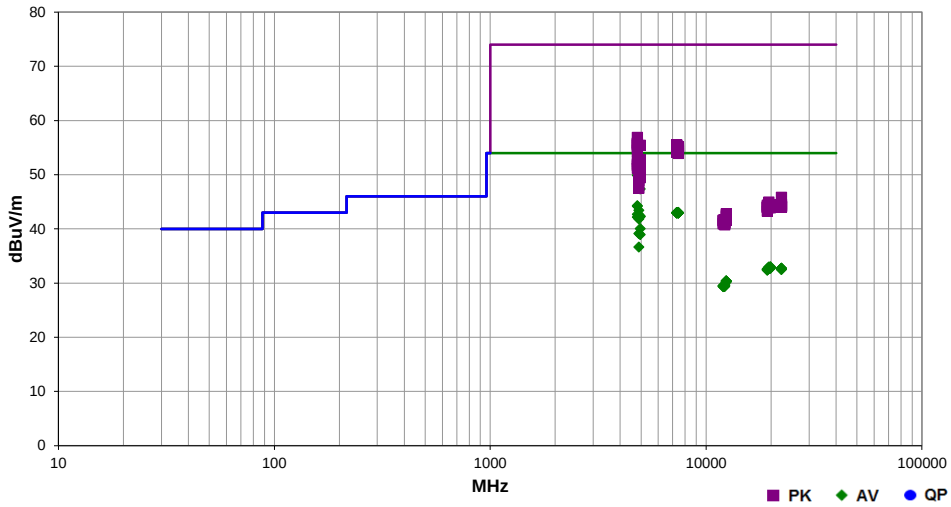
The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization. A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

SPURIOUS RADIATED EMISSIONS

Work Order:	LISA0029	**Date:**	08/06/15		
Project:	None	**Temperature:**	23.2 °C		
Job Site:	EV01	**Humidity:**	38.8% RH		
Serial Number:	None	**Barometric Pres.:**	1020 mbar	**Tested by:**	Cole Ghizzone
EUT:	Tango Transceiver				
Configuration:	2				
Customer:	LightSpeed Aviation				
Attendees:	Ed Katz				
EUT Power:	Battery				
Operating Mode:	Constant BT Tx, reference the data comments for channel, frequency and modulation.				
Deviations:	None				
Comments:	Refernce the data comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

Run #	96	**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
4804.043	46.0	7.4	2.1	115.0	3.0	0.0	Horz	AV	0.0	53.4	54.0	-0.6	Low Channel, 2402MHz, DH5, EUT Horz
4804.067	44.7	7.4	4.0	90.0	3.0	0.0	Vert	AV	0.0	52.1	54.0	-1.9	Low Channel, 2402MHz, DH5, EUT On Side
4804.020	44.6	7.4	1.9	4.0	3.0	0.0	Vert	AV	0.0	52.0	54.0	-2.0	Low Channel, 2402MHz, DH5, EUT Horz
4804.007	44.2	7.4	1.7	244.0	3.0	0.0	Horz	AV	0.0	51.6	54.0	-2.4	Run 2, Low Channel, 2402MHz, DH5, EUT Horz
4803.980	44.1	7.4	1.0	360.0	3.0	0.0	Vert	AV	0.0	51.5	54.0	-2.5	Low Channel, 2402MHz, DH5, EUT Vert
4960.000	43.8	7.5	1.6	236.0	3.0	0.0	Horz	AV	0.0	51.3	54.0	-2.7	High Channel, 2480MHz, DH5, EUT Horz
4804.000	43.6	7.4	1.0	353.0	3.0	0.0	Horz	AV	0.0	51.0	54.0	-3.0	Low Channel, 2402MHz, DH5, EUT On Side
4804.047	42.5	7.4	2.1	322.0	3.0	0.0	Horz	AV	0.0	49.9	54.0	-4.1	Low Channel, 2402MHz, DH5, EUT Vert
4960.010	39.8	7.5	3.5	322.0	3.0	0.0	Vert	AV	0.0	47.3	54.0	-6.7	High Channel, 2480MHz, DH5, EUT On Side
4804.087	36.9	7.4	1.3	114.0	3.0	0.0	Horz	AV	0.0	44.3	54.0	-9.7	Low Channel, 2402MHz, 3DH5, EUT Horz
4804.043	36.8	7.4	1.7	111.0	3.0	0.0	Horz	AV	0.0	44.2	54.0	-9.8	Low Channel, 2402MHz, 2DH5, EUT Horz
4882.080	36.0	7.4	1.7	238.0	3.0	0.0	Horz	AV	0.0	43.4	54.0	-10.6	Mid Channel, 2441MHz, DH5, EUT Horz
7439.713	27.6	15.4	1.0	226.0	3.0	0.0	Horz	AV	0.0	43.0	54.0	-11.0	High Channel, 2480MHz, DH5, EUT Horz
7325.133	27.8	15.2	3.8	79.0	3.0	0.0	Vert	AV	0.0	43.0	54.0	-11.0	Mid Channel, 2441MHz, 3DH5, EUT On Side
7323.690	27.8	15.2	1.0	132.0	3.0	0.0	Horz	AV	0.0	43.0	54.0	-11.0	Mid Channel, 2441MHz, 2DH5, EUT Horz
7321.567	27.8	15.2	1.9	261.0	3.0	0.0	Vert	AV	0.0	43.0	54.0	-11.0	Mid Channel, 2441MHz, 2DH5, EUT On Side
7321.075	27.8	15.2	1.0	184.0	3.0	0.0	Vert	AV	0.0	43.0	54.0	-11.0	Mid Channel, 2441MHz, DH5, EUT On Side
7440.720	27.5	15.4	1.0	4.0	3.0	0.0	Vert	AV	0.0	42.9	54.0	-11.1	High Channel, 2480MHz, 3DH5, EUT On Side
7440.057	27.5	15.4	2.8	81.0	3.0	0.0	Horz	AV	0.0	42.9	54.0	-11.1	High Channel, 2480MHz, 3DH5, EUT Horz
7439.807	27.5	15.4	1.0	25.0	3.0	0.0	Vert	AV	0.0	42.9	54.0	-11.1	High Channel, 2480MHz, DH5, EUT On Side
7439.907	27.5	15.4	1.0	194.0	3.0	0.0	Vert	AV	0.0	42.9	54.0	-11.1	High Channel, 2480MHz, 2DH5, EUT On Side
7439.320	27.5	15.4	2.1	299.0	3.0	0.0	Horz	AV	0.0	42.9	54.0	-11.1	High Channel, 2480MHz, 2DH5, EUT Horz
7323.417	27.7	15.2	3.5	251.0	3.0	0.0	Horz	AV	0.0	42.9	54.0	-11.1	Mid Channel, 2441MHz, DH5, EUT Horz
7323.173	27.7	15.2	2.2	85.0	3.0	0.0	Horz	AV	0.0	42.9	54.0	-11.1	Mid Channel, 2441MHz, 3DH5, EUT Horz
4804.013	35.3	7.4	4.0	132.0	3.0	0.0	Vert	AV	0.0	42.7	54.0	-11.3	Low Channel, 2402MHz, 2DH5, EUT On Side
4882.027	35.2	7.4	1.9	264.0	3.0	0.0	Horz	AV	0.0	42.6	54.0	-11.4	Mid Channel, 2441MHz, 3DH5, EUT Horz
4960.173	34.8	7.5	1.0	273.0	3.0	0.0	Horz	AV	0.0	42.3	54.0	-11.7	High Channel, 2480MHz, 2DH5, EUT Horz
4960.020	34.7	7.5	1.0	277.0	3.0	0.0	Horz	AV	0.0	42.2	54.0	-11.8	High Channel, 2480MHz, 3DH5, EUT Horz
4804.083	34.8	7.4	3.0	49.0	3.0	0.0	Vert	AV	0.0	42.2	54.0	-11.8	Low Channel, 2402MHz, 3DH5, EUT On Side
4882.057	34.6	7.4	1.0	266.0	3.0	0.0	Horz	AV	0.0	42.0	54.0	-12.0	Mid Channel, 2441MHz, 2DH5, EUT Horz
4882.092	34.4	7.4	3.5	236.0	3.0	0.0	Vert	AV	0.0	41.8	54.0	-12.2	Mid Channel, 2441MHz, 2DH5, EUT On Side
4959.833	32.5	7.5	2.7	210.0	3.0	0.0	Vert	AV	0.0	40.0	54.0	-14.0	High Channel, 2480MHz, 3DH5, EUT On Side
4882.058	31.7	7.4	2.3	200.0	3.0	0.0	Vert	AV	0.0	39.1	54.0	-14.9	Mid Channel, 2441MHz, DH5, EUT On Side
4959.933	31.4	7.5	1.0	223.0	3.0	0.0	Vert	AV	0.0	38.9	54.0	-15.1	High Channel, 2480MHz, 2DH5, EUT On Side
4804.363	49.5	7.4	2.1	115.0	3.0	0.0	Horz	PK	0.0	56.9	74.0	-17.1	Low Channel, 2402MHz, DH5, EUT Horz
4882.117	29.2	7.4	1.0	183.0	3.0	0.0	Vert	AV	0.0	36.6	54.0	-17.4	Mid Channel, 2441MHz, 3DH5, EUT On Side
4804.173	48.5	7.4	1.9	4.0	3.0	0.0	Vert	PK	0.0	55.9	74.0	-18.1	Low Channel, 2402MHz, DH5, EUT Horz
4804.353	48.4	7.4	1.0	360.0	3.0	0.0	Vert	PK	0.0	55.8	74.0	-18.2	Low Channel, 2402MHz, DH5, EUT Vert
4804.157	48.2	7.4	1.7	244.0	3.0	0.0	Horz	PK	0.0	55.6	74.0	-18.4	Run 2, Low Channel, 2402MHz, DH5, EUT Horz
7323.850	40.3	15.2	1.0	132.0	3.0	0.0	Horz	PK	0.0	55.5	74.0	-18.5	Mid Channel, 2441MHz, 2DH5, EUT Horz
4804.263	48.1	7.4	4.0	90.0	3.0	0.0	Vert	PK	0.0	55.5	74.0	-18.5	Low Channel, 2402MHz, DH5, EUT On Side
4959.570	47.9	7.5	1.6	236.0	3.0	0.0	Horz	PK	0.0	55.4	74.0	-18.6	High Channel, 2480MHz, DH5, EUT Horz
7323.592	40.2	15.2	1.9	261.0	3.0	0.0	Vert	PK	0.0	55.4	74.0	-18.6	Mid Channel, 2441MHz, 2DH5, EUT On Side
7439.707	39.7	15.4	1.0	226.0	3.0	0.0	Horz	PK	0.0	55.1	74.0	-18.9	High Channel, 2480MHz, DH5, EUT Horz
7323.608	39.8	15.2	3.8	79.0	3.0	0.0	Vert	PK	0.0	55.0	74.0	-19.0	Mid Channel, 2441MHz, 3DH5, EUT On Side
7323.170	39.8	15.2	3.5	251.0	3.0	0.0	Horz	PK	0.0	55.0	74.0	-19.0	Mid Channel, 2441MHz, DH5, EUT Horz

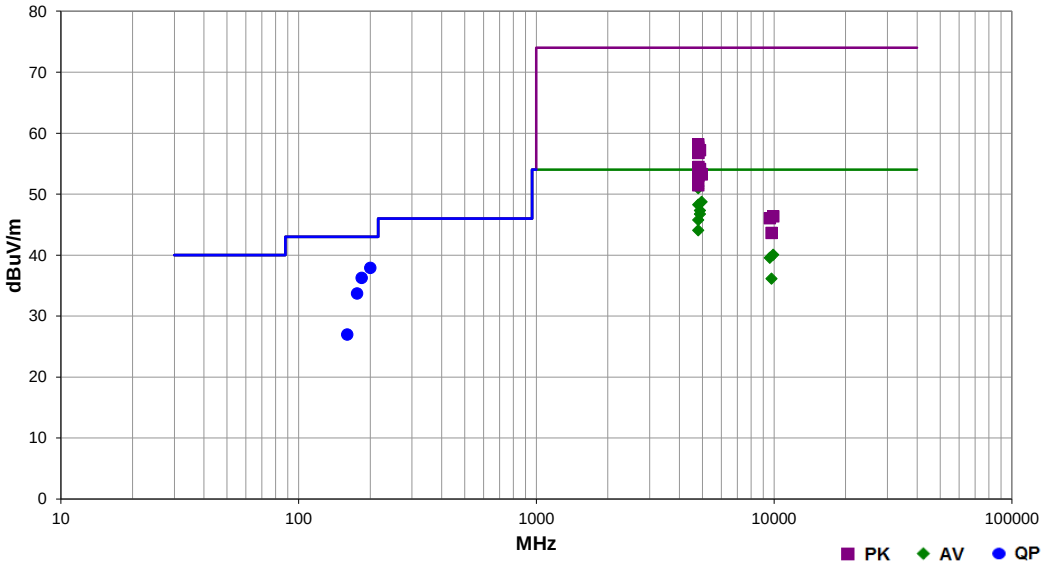
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4804.443	47.6	7.4	1.0	353.0	3.0	0.0	Horz	PK	0.0	55.0	74.0	-19.0	Low Channel, 2402MHz, DH5, EUT On Side
7440.050	39.5	15.4	1.0	194.0	3.0	0.0	Vert	PK	0.0	54.9	74.0	-19.1	High Channel, 2480MHz, 2DH5, EUT On Side
7440.410	39.3	15.4	2.8	81.0	3.0	0.0	Horz	PK	0.0	54.7	74.0	-19.3	High Channel, 2480MHz, 3DH5, EUT Horz
4804.497	47.2	7.4	2.1	322.0	3.0	0.0	Horz	PK	0.0	54.6	74.0	-19.4	Low Channel, 2402MHz, DH5, EUT Vert
7323.917	39.3	15.2	1.0	184.0	3.0	0.0	Vert	PK	0.0	54.5	74.0	-19.5	Mid Channel, 2441MHz, DH5, EUT On Side
7440.903	39.0	15.4	2.1	299.0	3.0	0.0	Horz	PK	0.0	54.4	74.0	-19.6	High Channel, 2480MHz, 2DH5, EUT Horz
7439.583	39.0	15.4	1.0	25.0	3.0	0.0	Vert	PK	0.0	54.4	74.0	-19.6	High Channel, 2480MHz, DH5, EUT On Side
7323.710	39.0	15.2	2.2	85.0	3.0	0.0	Horz	PK	0.0	54.2	74.0	-19.8	Mid Channel, 2441MHz, 3DH5, EUT Horz
7439.030	38.5	15.4	1.0	4.0	3.0	0.0	Vert	PK	0.0	53.9	74.0	-20.1	High Channel, 2480MHz, 3DH5, EUT On Side
19839.780	33.5	-0.5	1.1	176.0	3.0	0.0	Horz	AV	0.0	33.0	54.0	-21.0	High Channel, 2480MHz, 3DH5, EUT Horz
19528.210	33.4	-0.5	1.1	216.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Mid Channel, 2441MHz, 2DH5, EUT On Side
19839.880	33.4	-0.5	1.1	264.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	High Channel, 2480MHz, DH5, EUT On Side
19840.160	33.4	-0.5	1.1	269.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	High Channel, 2480MHz, 2DH5, EUT On Side
19527.980	33.3	-0.5	1.1	216.0	3.0	0.0	Vert	AV	0.0	32.8	54.0	-21.2	Mid Channel, 2441MHz, 3DH5, EUT On Side
19528.360	33.3	-0.5	1.1	206.0	3.0	0.0	Vert	AV	0.0	32.8	54.0	-21.2	Mid Channel, 2441MHz, DH5, EUT On Side
19839.560	33.3	-0.5	1.1	263.0	3.0	0.0	Vert	AV	0.0	32.8	54.0	-21.2	High Channel, 2480MHz, 3DH5, EUT On Side
19839.920	33.3	-0.5	1.1	190.0	3.0	0.0	Horz	AV	0.0	32.8	54.0	-21.2	High Channel, 2480MHz, 2DH5, EUT Horz
19528.340	33.2	-0.5	1.1	123.0	3.0	0.0	Horz	AV	0.0	32.7	54.0	-21.3	Mid Channel, 2441MHz, 2DH5, EUT Horz
19528.220	33.2	-0.5	1.1	123.0	3.0	0.0	Horz	AV	0.0	32.7	54.0	-21.3	Mid Channel, 2441MHz, DH5, EUT Horz
4959.890	45.2	7.5	3.5	322.0	3.0	0.0	Vert	PK	0.0	52.7	74.0	-21.3	High Channel, 2480MHz, DH5, EUT On Side
22319.760	32.6	0.1	1.1	270.0	3.0	0.0	Vert	AV	0.0	32.7	54.0	-21.3	High Channel, 2480MHz, 3DH5, EUT On Side
22320.050	32.6	0.1	1.1	296.0	3.0	0.0	Vert	AV	0.0	32.7	54.0	-21.3	High Channel, 2480MHz, 2DH5, EUT On Side
22320.460	32.6	0.1	1.1	264.0	3.0	0.0	Vert	AV	0.0	32.7	54.0	-21.3	High Channel, 2480MHz, DH5, EUT On Side
19840.350	33.2	-0.5	1.1	181.0	3.0	0.0	Horz	AV	0.0	32.7	54.0	-21.3	High Channel, 2480MHz, DH5, EUT Horz
4803.667	45.3	7.4	1.7	111.0	3.0	0.0	Horz	PK	0.0	52.7	74.0	-21.3	Low Channel, 2402MHz, 2DH5, EUT Horz
19527.760	33.1	-0.5	1.1	133.0	3.0	0.0	Horz	AV	0.0	32.6	54.0	-21.4	Mid Channel, 2441MHz, 3DH5, EUT Horz
19215.740	33.2	-0.6	1.1	4.0	3.0	0.0	Vert	AV	0.0	32.6	54.0	-21.4	Low Channel, 2402MHz, 2DH5, EUT On Side
19215.550	33.2	-0.6	1.1	4.0	3.0	0.0	Vert	AV	0.0	32.6	54.0	-21.4	Low Channel, 2402MHz, DH5, EUT On Side
22319.530	32.4	0.1	1.1	349.0	3.0	0.0	Horz	AV	0.0	32.5	54.0	-21.5	High Channel, 2480MHz, 2DH5, EUT Horz
22320.090	32.4	0.1	1.1	352.0	3.0	0.0	Horz	AV	0.0	32.5	54.0	-21.5	High Channel, 2480MHz, 3DH5, EUT Horz
22320.380	32.4	0.1	1.1	359.0	3.0	0.0	Horz	AV	0.0	32.5	54.0	-21.5	High Channel, 2480MHz, DH5, EUT Horz
19215.670	33.1	-0.6	1.1	4.0	3.0	0.0	Horz	AV	0.0	32.5	54.0	-21.5	Low Channel, 2402MHz, 2DH5, EUT Horz
19215.540	33.1	-0.6	1.1	4.0	3.0	0.0	Vert	AV	0.0	32.5	54.0	-21.5	Low Channel, 2402MHz, 3DH5, EUT On Side
19215.970	33.0	-0.6	1.1	0.0	3.0	0.0	Horz	AV	0.0	32.4	54.0	-21.6	Low Channel, 2402MHz, 3DH5, EUT Horz
19215.890	33.0	-0.6	1.1	4.0	3.0	0.0	Horz	AV	0.0	32.4	54.0	-21.6	Low Channel, 2402MHz, DH5, EUT Horz
4804.077	44.6	7.4	1.3	114.0	3.0	0.0	Horz	PK	0.0	52.0	74.0	-22.0	Low Channel, 2402MHz, 3DH5, EUT Horz
4881.450	44.4	7.4	1.7	238.0	3.0	0.0	Horz	PK	0.0	51.8	74.0	-22.2	Mid Channel, 2441MHz, DH5, EUT Horz
4804.167	44.3	7.4	3.0	49.0	3.0	0.0	Vert	PK	0.0	51.7	74.0	-22.3	Low Channel, 2402MHz, 3DH5, EUT On Side
4959.793	44.0	7.5	1.0	277.0	3.0	0.0	Horz	PK	0.0	51.5	74.0	-22.5	High Channel, 2480MHz, 3DH5, EUT Horz
4959.623	43.8	7.5	1.0	273.0	3.0	0.0	Horz	PK	0.0	51.3	74.0	-22.7	High Channel, 2480MHz, 2DH5, EUT Horz
4882.200	43.9	7.4	1.9	264.0	3.0	0.0	Horz	PK	0.0	51.3	74.0	-22.7	Mid Channel, 2441MHz, 3DH5, EUT Horz
4803.677	43.8	7.4	4.0	132.0	3.0	0.0	Vert	PK	0.0	51.2	74.0	-22.8	Low Channel, 2402MHz, 2DH5, EUT On Side
4882.367	43.6	7.4	3.5	236.0	3.0	0.0	Vert	PK	0.0	51.0	74.0	-23.0	Mid Channel, 2441MHz, 2DH5, EUT On Side
4882.070	43.3	7.4	1.0	266.0	3.0	0.0	Horz	PK	0.0	50.7	74.0	-23.3	Mid Channel, 2441MHz, 2DH5, EUT Horz
12399.950	28.5	1.9	1.0	193.0	3.0	0.0	Horz	AV	0.0	30.4	54.0	-23.6	High Channel, 2480MHz, DH5, EUT Horz
12399.530	28.5	1.9	1.0	212.0	3.0	0.0	Vert	AV	0.0	30.4	54.0	-23.6	High Channel, 2480MHz, DH5, EUT On Side
12399.440	28.5	1.9	2.6	90.0	3.0	0.0	Horz	AV	0.0	30.4	54.0	-23.6	High Channel, 2480MHz, 2DH5, EUT Horz
12399.350	28.5	1.9	1.0	151.0	3.0	0.0	Vert	AV	0.0	30.4	54.0	-23.6	High Channel, 2480MHz, 2DH5, EUT On Side
12399.070	28.4	1.9	1.0	60.0	3.0	0.0	Horz	AV	0.0	30.3	54.0	-23.7	High Channel, 2480MHz, 3DH5, EUT Horz
12399.000	28.3	1.9	1.0	258.0	3.0	0.0	Vert	AV	0.0	30.2	54.0	-23.8	High Channel, 2480MHz, 3DH5, EUT On Side
4960.103	42.5	7.5	2.7	210.0	3.0	0.0	Vert	PK	0.0	50.0	74.0	-24.0	High Channel, 2480MHz, 3DH5, EUT On Side
12205.440	28.5	1.2	4.0	115.0	3.0	0.0	Horz	AV	0.0	29.7	54.0	-24.3	Mid Channel, 2441MHz, 2DH5, EUT Horz
12204.930	28.5	1.2	3.5	147.0	3.0	0.0	Vert	AV	0.0	29.7	54.0	-24.3	Mid Channel, 2441MHz, DH5, EUT On Side
12205.610	28.4	1.2	1.0	240.0	3.0	0.0	Horz	AV	0.0	29.6	54.0	-24.4	Mid Channel, 2441MHz, DH5, EUT Horz
12204.800	28.4	1.2	3.6	146.0	3.0	0.0	Horz	AV	0.0	29.6	54.0	-24.4	Mid Channel, 2441MHz, 3DH5, EUT Horz
12009.330	29.4	0.1	3.3	359.0	3.0	0.0	Vert	AV	0.0	29.5	54.0	-24.5	Low Channel, 2402MHz, 2DH5, EUT On Side
12204.170	28.3	1.2	1.0	295.0	3.0	0.0	Vert	AV	0.0	29.5	54.0	-24.5	Mid Channel, 2441MHz, 2DH5, EUT On Side
4960.043	41.9	7.5	1.0	223.0	3.0	0.0	Vert	PK	0.0	49.4	74.0	-24.6	High Channel, 2480MHz, 2DH5, EUT On Side
12009.930	29.3	0.1	1.0	55.0	3.0	0.0	Vert	AV	0.0	29.4	54.0	-24.6	Low Channel, 2402MHz, 3DH5, EUT On Side
12009.720	29.3	0.1	1.0	296.0	3.0	0.0	Horz	AV	0.0	29.4	54.0	-24.6	Low Channel, 2402MHz, 3DH5, EUT Horz
12009.450	29.3	0.1	3.6	360.0	3.0	0.0	Horz	AV	0.0	29.4	54.0	-24.6	Low Channel, 2402MHz, 2DH5, EUT Horz
12009.020	29.3	0.1	1.0	356.0	3.0	0.0	Vert	AV	0.0	29.4	54.0	-24.6	Low Channel, 2402MHz, DH5, EUT On Side
12205.570	28.2	1.2	1.0	13.0	3.0	0.0	Vert	AV	0.0	29.4	54.0	-24.6	Mid Channel, 2441MHz, 3DH5, EUT On Side
12009.950	29.2	0.1	1.0	289.0	3.0	0.0	Horz	AV	0.0	29.3	54.0	-24.7	Low Channel, 2402MHz, DH5, EUT Horz
4882.033	41.5	7.4	2.3	200.0	3.0	0.0	Vert	PK	0.0	48.9	74.0	-25.1	Mid Channel, 2441MHz, DH5, EUT On Side
4883.767	40.1	7.4	1.0	183.0	3.0	0.0	Vert	PK	0.0	47.5	74.0	-26.5	Mid Channel, 2441MHz, 3DH5, EUT On Side
22319.930	45.7	0.1	1.1	349.0	3.0	0.0	Horz	PK	0.0	45.8	74.0	-28.2	High Channel, 2480MHz, 2DH5, EUT Horz
19527.870	45.4	-0.5	1.1	206.0	3.0	0.0	Vert	PK	0.0	44.9	74.0	-29.1	Mid Channel, 2441MHz, DH5, EUT On Side
22319.750	44.4	0.1	1.1	359.0	3.0	0.0	Horz	PK	0.0	44.5	74.0	-29.5	High Channel, 2480MHz, DH5, EUT Horz
19839.620	45.0	-0.5	1.1	263.0	3.0	0.0	Vert	PK	0.0	44.5	74.0	-29.5	High Channel, 2480MHz, 3DH5, EUT On Side
19840.000	44.9	-0.5	1.1	190.0	3.0	0.0	Horz	PK	0.0	44.4	74.0	-29.6	High Channel, 2480MHz, 2DH5, EUT Horz
19216.310	45.0	-0.6	1.1	4.0	3.0	0.0	Vert	PK	0.0	44.4	74.0	-29.6	Low Channel, 2402MHz, DH5, EUT On Side
19839.800	44.8	-0.5	1.1	264.0	3.0	0.0	Vert	PK	0.0	44.3	74.0	-29.7	High Channel, 2480MHz, DH5, EUT On Side
19840.430	44.8	-0.5	1.1	176.0	3.0	0.0	Horz	PK	0.0	44.3	74.0	-29.7	High Channel, 2480MHz, 3DH5, EUT Horz
19528.220	44.7	-0.5	1.1	216.0	3.0	0.0	Vert	PK	0.0	44.2	74.0	-29.8	Mid Channel, 2441MHz, 2DH5, EUT On Side
22319.770	44.1	0.1	1.1	352.0	3.0	0.0	Horz	PK	0.0	44.2	74.0	-29.8	High Channel, 2480MHz, 3DH5, EUT Horz
22320.280	44.1	0.1	1.1	270.0	3.0	0.0	Vert	PK	0.0	44.2	74.0	-29.8	High Channel, 2480MHz, 3DH5, EUT On Side
19215.800	44.8	-0.6	1.1	4.0	3.0	0.0	Vert	PK	0.0	44.2	74.0	-29.8	Low Channel, 2402MHz, 2DH5, EUT On Side
19527.510	44.6	-0.5	1.1	123.0	3.0	0.0	Horz	PK	0.0	44.1	74.0	-29.9	Mid Channel, 2441MHz, 2DH5, EUT Horz
19527.820	44.5	-0.5	1.1	216.0	3.0	0.0	Vert	PK	0.0	44.0	74.0	-30.0	Mid Channel, 2441MHz, 3DH5, EUT On Side
22320.330	43.9	0.1	1.1	264.0	3.0	0.0	Vert	PK	0.0	44.0	74.0	-30.0	High Channel, 2480MHz, DH5, EUT On Side
22320.380	43.9	0.1	1.1	296.0	3.0	0.0	Vert	PK	0.0	44.0	74.0	-30.0	High Channel, 2480MHz, 2DH5, EUT On Side
19840.140	44.5	-0.5	1.1	181.0	3.0	0.0	Horz	PK	0.0	44.0	74.0	-30.0	High Channel, 2480MHz, DH5, EUT Horz
19216.480	44.6	-0.6	1.1	4.0	3.0	0.0	Vert	PK	0.0	44.0	74.0	-30.0	Low Channel, 2402MHz, 3DH5, EUT On Side
19216.400	44.6	-0.6	1.1	4.0	3.0	0.0	Horz	PK	0.0	44.0	74.0	-30.0	Low Channel, 2402MHz, 2DH5, EUT Horz
19215.720	44.6	-0.6	1.1	0.0	3.0	0.0	Horz	PK	0.0	44.0	74.0	-30.0	Low Channel, 2402MHz, 3DH5, EUT Horz
19528.100	44.4	-0.5	1.1	123.0	3.0	0.0	Horz	PK	0.0	43.9	74.0	-30.1	Mid Channel, 2441MHz, DH5, EUT Horz
19527.990	44.4	-0.5	1.1	133.0	3.0	0.0	Horz	PK	0.0	43.9	74.0	-30.1	Mid Channel, 2441MHz, 3DH5, EUT Horz
19840.480	44.4	-0.5	1.1	269.0	3.0	0.0	Vert	PK	0.0	43.9	74.0	-30.1	High Channel, 2480MHz, 2DH5, EUT On Side
19215.590	43.9	-0.6	1.1	4.0	3.0	0.0	Horz	PK	0.0	43.3	74.0	-30.7	Low Channel, 2402MHz, DH5, EUT Horz
12399.580	40.9	1.9	1.0	60.0	3.0	0.0	Horz	PK	0.0	42.8	74.0	-31.2	High Channel, 2480MHz, 3DH5, EUT Horz
12399.730	40.7	1.9	2.6	90.0	3.0	0.0	Horz	PK	0.0	42.6	74.0	-31.4	High Channel, 2480MHz, 2DH5, EUT Horz
12399.620	40.4	1.9	1.0	151.0	3.0	0.0	Vert	PK	0.0	42.3	74.0	-31.7	High Channel, 2480MHz, 2DH5, EUT On Side
12399.750	39.8	1.9	1.0	212.0	3.0	0.0	Vert	PK	0.0	41.7	74.0	-32.3	High Channel, 2480MHz, DH5, EUT On Side
12399.280	39.8	1.9	1.0	193.0	3.0	0.0	Horz	PK	0.0	41.7	74.0	-32.3	High Channel, 2480MHz, DH5, EUT Horz
12204.500	40.5	1.2	1.0	13.0	3.0	0.0	Vert	PK	0.0	41.7	74.0	-32.3	Mid Channel, 2441MHz, 3DH5, EUT On Side
12009.970	41.5	0.1	1.0	55.0	3.0	0.0	Vert	PK	0.0	41.6	74.0	-32.4	Low Channel, 2402MHz, 3DH5, EUT On Side
12399.510	39.7	1.9	1.0	258.0	3.0	0.0	Vert	PK	0.0	41.6	74.0	-32.4	High Channel, 2480MHz, 3DH5, EUT On Side
12010.510	41.4	0.1	3.3	359.0	3.0	0.0	Vert	PK	0.0	41.5	74.0	-32.5	Low Channel, 2402MHz, 2DH5, EUT On Side
12009.750	41.4	0.1	1.0	356.0	3.0	0.0	Vert	PK	0.0	41.5	74.0	-32.5	Low Channel, 2402MHz, DH5, EUT On Side
12009.020	41.3	0.1	3.6	360.0	3.0	0.0	Horz	PK	0.0	41.4	74.0	-32.6	Low Channel, 2402MHz, 2DH5, EUT Horz
12205.780	40.1	1.2	3.5	147.0	3.0	0.0	Vert	PK	0.0	41.3	74.0	-32.7	Mid Channel, 2441MHz, DH5, EUT On Side
12204.840	39.9	1.2	1.0	240.0	3.0	0.0	Horz	PK	0.0	41.1	74.0	-32.9	Mid Channel, 2441MHz, DH5, EUT Horz
12204.110	39.9	1.2	1.0	295.0	3.0	0.0	Vert	PK	0.0	41.1	74.0	-32.9	Mid Channel, 2441MHz, 2DH5, EUT On Side
12204.040	39.9	1.2	3.6	146.0	3.0	0.0	Horz	PK	0.0	41.1	74.0	-32.9	Mid Channel, 2441MHz, 3DH5, EUT Horz
12010.190	40.9	0.1	1.0	289.0	3.0	0.0	Horz	PK	0.0	41.0	74.0	-33.0	Low Channel, 2402MHz, DH5, EUT Horz
12009.710	40.8	0.1	1.0	296.0	3.0	0.0	Horz	PK	0.0	40.9	74.0	-33.1	Low Channel, 2402MHz, 3DH5, EUT Horz
12204.650	39.6	1.2	4.0	115.0	3.0	0.0	Horz	PK	0.0	40.8	74.0	-33.2	Mid Channel, 2441MHz, 2DH5, EUT Horz

SPURIOUS RADIATED EMISSIONS

Work Order:	LISA0029	**Date:**	08/29/15		
Project:	None	**Temperature:**	24.5 °C		
Job Site:	EV01	**Humidity:**	44.4% RH		
Serial Number:	None	**Barometric Pres.:**	1015.8 mbar	**Tested by:**	Cole Ghizzone
EUT:	Tango Transceiver				
Configuration:	7				
Customer:	LightSpeed Aviation				
Attendees:	Eduard Vaynberg				
EUT Power:	Battery				
Operating Mode:	Constant BT Tx, reference the data comments for channel, frequency and modulation.				
Deviations:	None				
Comments:	Reference the data comments for the EUT orientation.				

Test Specifications	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

Run #	109	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



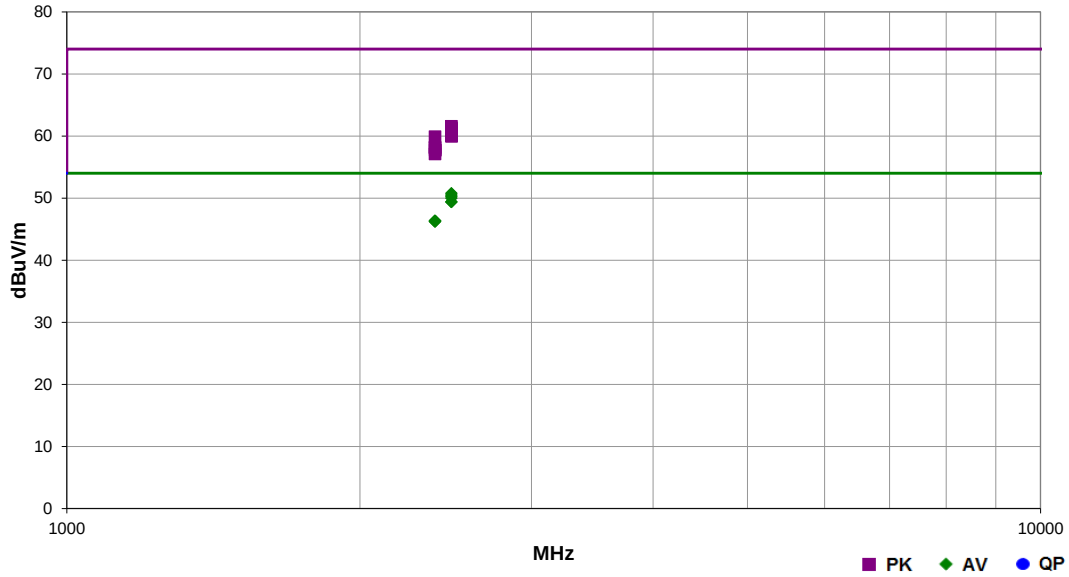
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4881.995	46.4	7.4	1.5	347.0	3.0	0.0	Vert	AV	0.0	53.8	54.0	-0.2	Mid Channel, 2441MHz, DH5, EUT Vert
4803.975	45.3	7.4	1.7	304.0	3.0	0.0	Vert	AV	0.0	52.7	54.0	-1.3	Low Channel, 2402MHz, DH5, EUT Vert
4803.975	44.7	7.4	1.0	322.0	3.0	0.0	Horz	AV	0.0	52.1	54.0	-1.9	Low Channel, 2402MHz, DH5, EUT On Side
4803.975	44.0	7.4	4.0	61.0	3.0	0.0	Vert	AV	0.0	51.4	54.0	-2.6	Low Channel, 2402MHz, DH5, EUT On Side
4803.975	43.9	7.4	2.0	0.0	3.0	0.0	Vert	AV	0.0	51.3	54.0	-2.7	Low Channel, 2402MHz, DH5, EUT Horz
4803.975	43.6	7.4	1.2	100.0	3.0	0.0	Horz	AV	0.0	51.0	54.0	-3.0	Low Channel, 2402MHz, DH5, EUT Horz
200.056	45.0	-7.1	1.5	186.0	3.0	0.0	Horz	QP	0.0	37.9	43.0	-5.1	Low Channel, 2402MHz, DH5, EUT Vert
4959.980	41.2	7.5	2.9	32.0	3.0	0.0	Vert	AV	0.0	48.7	54.0	-5.3	High Channel, 2480MHz, DH5, EUT Vert
4803.975	40.9	7.4	1.0	321.0	3.0	0.0	Horz	AV	0.0	48.3	54.0	-5.7	Low Channel, 2402MHz, DH5, EUT Vert
4882.125	39.9	7.4	1.5	347.0	3.0	0.0	Vert	AV	0.0	47.3	54.0	-6.7	Mid Channel, 2441MHz, 2DH5, EUT Vert
183.963	43.5	-7.2	2.0	172.0	3.0	0.0	Horz	QP	0.0	36.3	43.0	-6.7	Low Channel, 2402MHz, DH5, EUT Vert
4881.945	39.3	7.4	1.5	347.0	3.0	0.0	Vert	AV	0.0	46.7	54.0	-7.3	Mid Channel, 2441MHz, 3DH5, EUT Vert
4804.035	38.4	7.4	1.8	326.0	3.0	0.0	Vert	AV	0.0	45.8	54.0	-8.2	Low Channel, 2402MHz, 2DH5, EUT Vert
176.019	41.3	-7.6	1.9	192.0	3.0	0.0	Horz	QP	0.0	33.7	43.0	-9.3	Low Channel, 2402MHz, DH5, EUT Vert
4804.080	36.7	7.4	1.0	310.0	3.0	0.0	Vert	AV	0.0	44.1	54.0	-9.9	Low Channel, 2402MHz, 3DH5, EUT Vert
9920.517	49.6	-9.5	1.5	24.0	3.0	0.0	Vert	AV	0.0	40.1	54.0	-13.9	High Channel, 2480MHz, DH5, EUT Vert
9608.517	48.9	-9.3	1.2	36.0	3.0	0.0	Vert	AV	0.0	39.6	54.0	-14.4	Low Channel, 2402MHz, DH5, EUT Vert
4803.785	50.8	7.4	1.7	304.0	3.0	0.0	Vert	PK	0.0	58.2	74.0	-15.8	Low Channel, 2402MHz, DH5, EUT Vert
160.024	34.9	-7.9	2.1	198.0	3.0	0.0	Horz	QP	0.0	27.0	43.0	-16.0	Low Channel, 2402MHz, DH5, EUT Vert
4803.620	50.3	7.4	1.0	322.0	3.0	0.0	Horz	PK	0.0	57.7	74.0	-16.3	Low Channel, 2402MHz, DH5, EUT On Side
4804.300	49.9	7.4	1.2	100.0	3.0	0.0	Horz	PK	0.0	57.3	74.0	-16.7	Low Channel, 2402MHz, DH5, EUT Horz
4881.645	49.8	7.4	1.5	347.0	3.0	0.0	Vert	PK	0.0	57.2	74.0	-16.8	Mid Channel, 2441MHz, DH5, EUT Vert
4803.965	49.4	7.4	2.0	0.0	3.0	0.0	Vert	PK	0.0	56.8	74.0	-17.2	Low Channel, 2402MHz, DH5, EUT Horz
4803.625	49.4	7.4	4.0	61.0	3.0	0.0	Vert	PK	0.0	56.8	74.0	-17.2	Low Channel, 2402MHz, DH5, EUT On Side
9764.510	45.5	-9.4	1.3	31.0	3.0	0.0	Vert	AV	0.0	36.1	54.0	-17.9	Mid Channel, 2441MHz, DH5, EUT Vert
4804.225	47.1	7.4	1.0	321.0	3.0	0.0	Horz	PK	0.0	54.5	74.0	-19.5	Low Channel, 2402MHz, DH5, EUT Vert
4881.880	46.7	7.4	1.5	347.0	3.0	0.0	Vert	PK	0.0	54.1	74.0	-19.9	Mid Channel, 2441MHz, 2DH5, EUT Vert
4881.915	46.1	7.4	1.5	347.0	3.0	0.0	Vert	PK	0.0	53.5	74.0	-20.5	Mid Channel, 2441MHz, 3DH5, EUT Vert
4960.050	45.7	7.5	2.9	32.0	3.0	0.0	Vert	PK	0.0	53.2	74.0	-20.8	High Channel, 2480MHz, DH5, EUT Vert
4804.375	45.7	7.4	1.8	326.0	3.0	0.0	Vert	PK	0.0	53.1	74.0	-20.9	Low Channel, 2402MHz, 2DH5, EUT Vert
4803.655	44.1	7.4	1.0	310.0	3.0	0.0	Vert	PK	0.0	51.5	74.0	-22.5	Low Channel, 2402MHz, 3DH5, EUT Vert
9920.692	55.9	-9.5	1.5	24.0	3.0	0.0	Vert	PK	0.0	46.4	74.0	-27.6	High Channel, 2480MHz, DH5, EUT Vert
9607.358	55.4	-9.3	1.2	36.0	3.0	0.0	Vert	PK	0.0	46.1	74.0	-27.9	Low Channel, 2402MHz, DH5, EUT Vert
9764.675	53.0	-9.4	1.3	31.0	3.0	0.0	Vert	PK	0.0	43.6	74.0	-30.4	Mid Channel, 2441MHz, DH5, EUT Vert

SPURIOUS RADIATED EMISSIONS

Work Order:	LISA0029	**Date:**	08/06/15		
Project:	None	**Temperature:**	23.2 °C		
Job Site:	EV01	**Humidity:**	38.8% RH		
Serial Number:	None	**Barometric Pres.:**	1020 mbar	**Tested by:**	Cole Ghizzone
EUT:	Tango Transceiver				
Configuration:	2				
Customer:	LightSpeed Aviation				
Attendees:	Ed Katz				
EUT Power:	Battery				
Operating Mode:	Constant BT Tx, reference the data comments for channel, frequency and modulation.				
Deviations:	None				
Comments:	Refernce the data comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

Run #	94	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



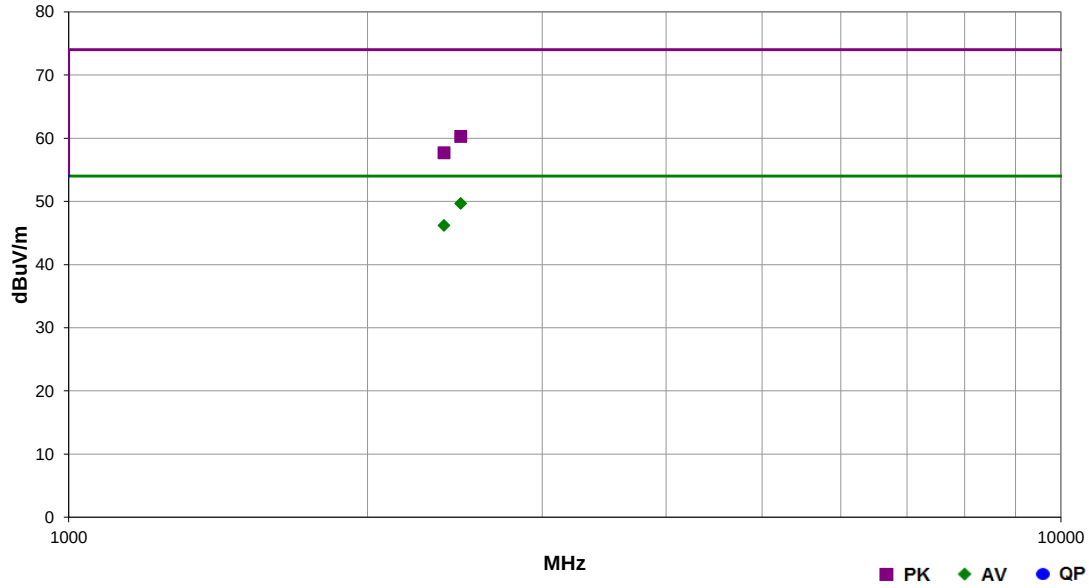
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2483.500	33.8	-3.0	1.0	175.0	3.0	20.0	Horz	AV	0.0	50.8	54.0	-3.2	High Channel, 2480MHz, 2DH5, EUT Horz
2483.528	33.5	-3.0	1.0	12.0	3.0	20.0	Vert	AV	0.0	50.5	54.0	-3.5	High Channel, 2480MHz, 3DH5, EUT On Side
2483.522	33.3	-3.0	1.0	212.0	3.0	20.0	Vert	AV	0.0	50.3	54.0	-3.7	High Channel, 2480MHz, 2DH5, EUT On Side
2483.533	33.0	-3.0	1.0	207.0	3.0	20.0	Horz	AV	0.0	50.0	54.0	-4.0	High Channel, 2480MHz, 3DH5, EUT Horz
2483.578	32.4	-3.0	1.0	153.0	3.0	20.0	Vert	AV	0.0	49.4	54.0	-4.6	High Channel, 2480MHz, DH5, EUT On Side
2483.545	32.4	-3.0	1.0	150.0	3.0	20.0	Horz	AV	0.0	49.4	54.0	-4.6	High Channel, 2480MHz, DH5, EUT Horz
2389.122	29.6	-3.3	1.0	127.0	3.0	20.0	Horz	AV	0.0	46.3	54.0	-7.7	Low Channel, 2402MHz, 3DH5, EUT Horz
2389.203	29.6	-3.3	1.0	31.0	3.0	20.0	Horz	AV	0.0	46.3	54.0	-7.7	Low Channel, 2402MHz, 2DH5, EUT Horz
2389.345	29.6	-3.3	1.0	278.0	3.0	20.0	Vert	AV	0.0	46.3	54.0	-7.7	Low Channel, 2402MHz, DH5, EUT On Side
2389.535	29.6	-3.3	1.0	65.0	3.0	20.0	Horz	AV	0.0	46.3	54.0	-7.7	Low Channel, 2402MHz, DH5, EUT Horz
2389.988	29.6	-3.3	3.6	211.0	3.0	20.0	Vert	AV	0.0	46.3	54.0	-7.7	Low Channel, 2402MHz, 3DH5, EUT On Side
2389.097	29.5	-3.3	1.0	355.0	3.0	20.0	Vert	AV	0.0	46.2	54.0	-7.8	Low Channel, 2402MHz, 2DH5, EUT On Side
2483.567	44.6	-3.0	1.0	207.0	3.0	20.0	Horz	PK	0.0	61.6	74.0	-12.4	High Channel, 2480MHz, 3DH5, EUT Horz
2483.507	44.3	-3.0	1.0	212.0	3.0	20.0	Vert	PK	0.0	61.3	74.0	-12.7	High Channel, 2480MHz, 2DH5, EUT On Side
2483.635	44.2	-3.0	1.0	175.0	3.0	20.0	Horz	PK	0.0	61.2	74.0	-12.8	High Channel, 2480MHz, 2DH5, EUT Horz
2483.510	44.1	-3.0	1.0	12.0	3.0	20.0	Vert	PK	0.0	61.1	74.0	-12.9	High Channel, 2480MHz, 3DH5, EUT On Side
2484.045	43.0	-3.0	1.0	153.0	3.0	20.0	Vert	PK	0.0	60.0	74.0	-14.0	High Channel, 2480MHz, DH5, EUT On Side
2483.613	43.0	-3.0	1.0	150.0	3.0	20.0	Horz	PK	0.0	60.0	74.0	-14.0	High Channel, 2480MHz, DH5, EUT Horz
2389.187	43.2	-3.3	1.0	127.0	3.0	20.0	Horz	PK	0.0	59.9	74.0	-14.1	Low Channel, 2402MHz, 3DH5, EUT Horz
2389.137	41.5	-3.3	1.0	278.0	3.0	20.0	Vert	PK	0.0	58.2	74.0	-15.8	Low Channel, 2402MHz, DH5, EUT On Side
2389.275	41.4	-3.3	1.0	65.0	3.0	20.0	Horz	PK	0.0	58.1	74.0	-15.9	Low Channel, 2402MHz, DH5, EUT Horz
2389.893	41.1	-3.3	3.6	211.0	3.0	20.0	Vert	PK	0.0	57.8	74.0	-16.2	Low Channel, 2402MHz, 3DH5, EUT On Side
2389.590	41.0	-3.3	1.0	31.0	3.0	20.0	Horz	PK	0.0	57.7	74.0	-16.3	Low Channel, 2402MHz, 2DH5, EUT Horz
2389.170	40.4	-3.3	1.0	355.0	3.0	20.0	Vert	PK	0.0	57.1	74.0	-16.9	Low Channel, 2402MHz, 2DH5, EUT On Side

SPURIOUS RADIATED EMISSIONS

Work Order:	LISA0029	**Date:**	08/29/15		
Project:	None	**Temperature:**	24.5 °C		
Job Site:	EV01	**Humidity:**	44.4% RH		
Serial Number:	None	**Barometric Pres.:**	1015.8 mbar	**Tested by:**	Cole Ghizzone
EUT:	Tango Transceiver				
Configuration:	7				
Customer:	LightSpeed Aviation				
Attendees:	Eduard Vaynberg				
EUT Power:	Battery				
Operating Mode:	Constant BT Tx, reference the data comments for channel, frequency and modulation.				
Deviations:	None				
Comments:	Reference the data comments for the EUT orientation.				

Test Specifications	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

Run #	111	**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
2483.508	32.7	-3.0	1.0	230.0	3.0	20.0	Horz	AV	0.0	49.7	54.0	-4.3	High Channel, 2480MHz, 2DH5, EUT Horz
2389.248	29.5	-3.3	3.5	79.0	3.0	20.0	Horz	AV	0.0	46.2	54.0	-7.8	Low Channel, 2402MHz, 3DH5, EUT Vert
2483.552	43.3	-3.0	1.0	230.0	3.0	20.0	Horz	PK	0.0	60.3	74.0	-13.7	High Channel, 2480MHz, 2DH5, EUT Horz
2389.712	41.0	-3.3	3.5	79.0	3.0	20.0	Horz	PK	0.0	57.7	74.0	-16.3	Low Channel, 2402MHz, 3DH5, EUT Vert

BAND EDGE COMPLIANCE

XMit 2015.01.14

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.	Interval (mos)
Signal Generator	Keysight	N5182B	TFX	4/16/2015	36
Direct Connect Cable	ESM Cable Corp.	TT	EV1	NCR	0
DC Block, 40 GHz - SMA	Fairview Microwave	SD3379	AMP	6/18/2015	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/14/2015	12
Spectrum Analyzer	Agilent	E4446A	AAQ	3/10/2015	12

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to low and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet in a no hop mode. The channels closest to the band edges were selected.

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

BAND EDGE COMPLIANCE

NORTHWEST EMC

XMit 2015.01.14

EUT:	**Tango Transceiver**			**Work Order:**	**LISA0029**
Serial Number:	**None**			**Date:**	**07/31/15**
Customer:	**LightSpeed Aviation**			**Temperature:**	**24.7°C**
Attendees:	**Eduard Vaynberg**			**Humidity:**	**40%**
Project:	**None**			**Barometric Pres.:**	**1017**
Tested by:	**Brandon Hobbs**	**Power:**	**Battery**	**Job Site:**	**EV06**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

The EUT was tested in a non frequency hopping mode.

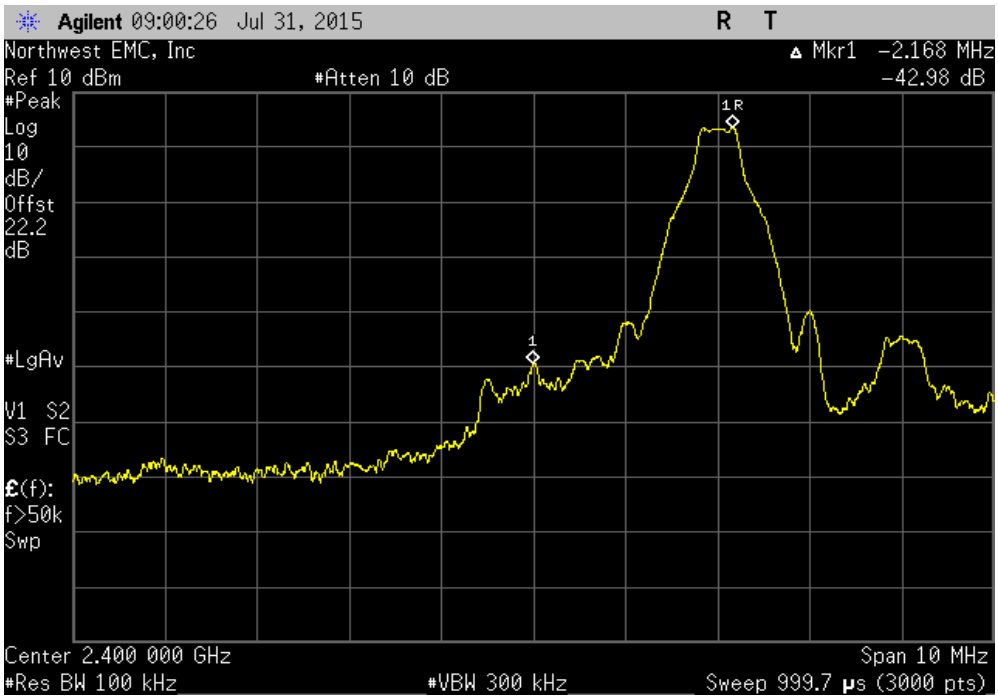
DEVIATIONS FROM TEST STANDARD

None

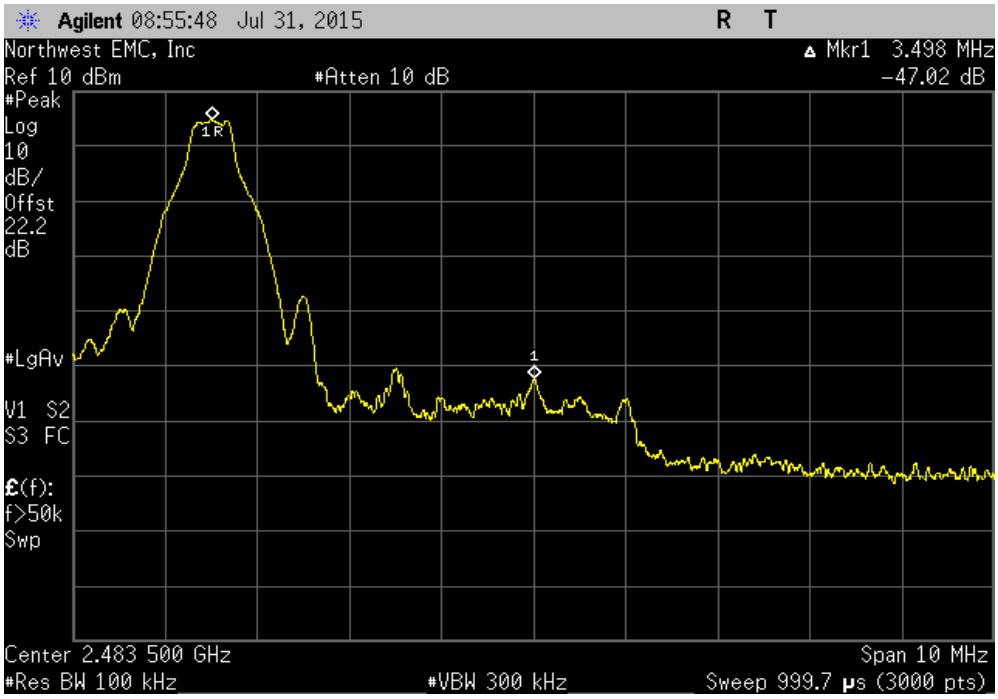
Configuration #	**5**	*Signature*

		Value (dBc)	**Limit ≤ (dBc)**	**Result**
DH5, GFSK				
	Low Channel, 2402 MHz	-42.98	-20	Pass
	High Channel, 2480 MHz	-47.02	-20	Pass
2DH5, pi/4-DQPSK				
	Low Channel, 2402 MHz	-42.84	-20	Pass
	High Channel, 2480 MHz	-44.46	-20	Pass
3DH5, 8-DPSK				
	Low Channel, 2402 MHz	-42.24	-20	Pass
	High Channel, 2480 MHz	-45.83	-20	Pass

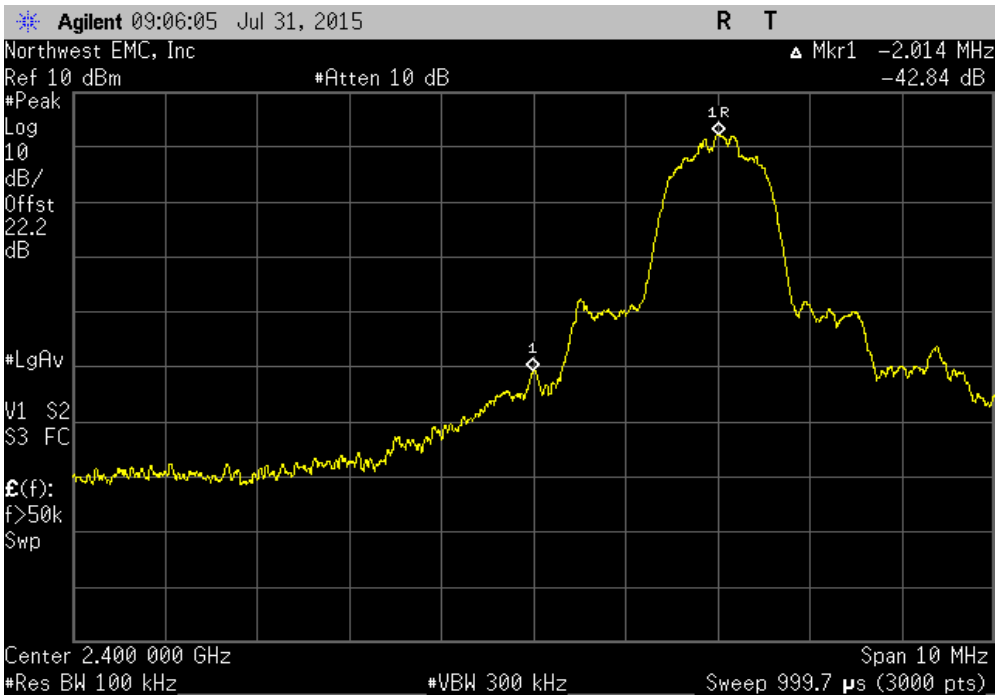
DH5, GFSK, Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-42.98	-20	Pass



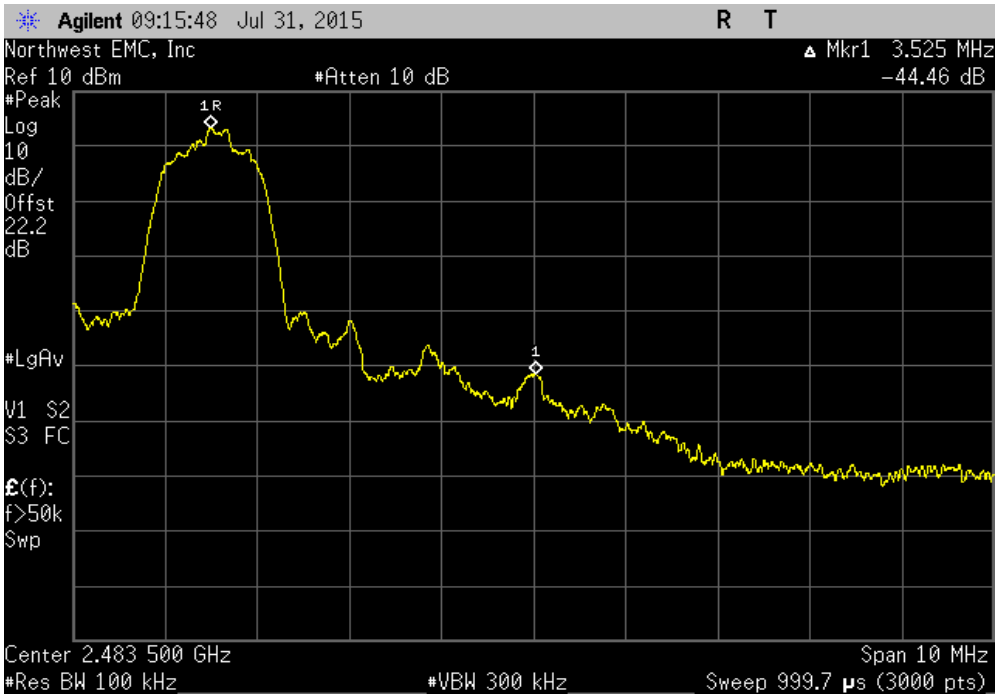
DH5, GFSK, High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-47.02	-20	Pass



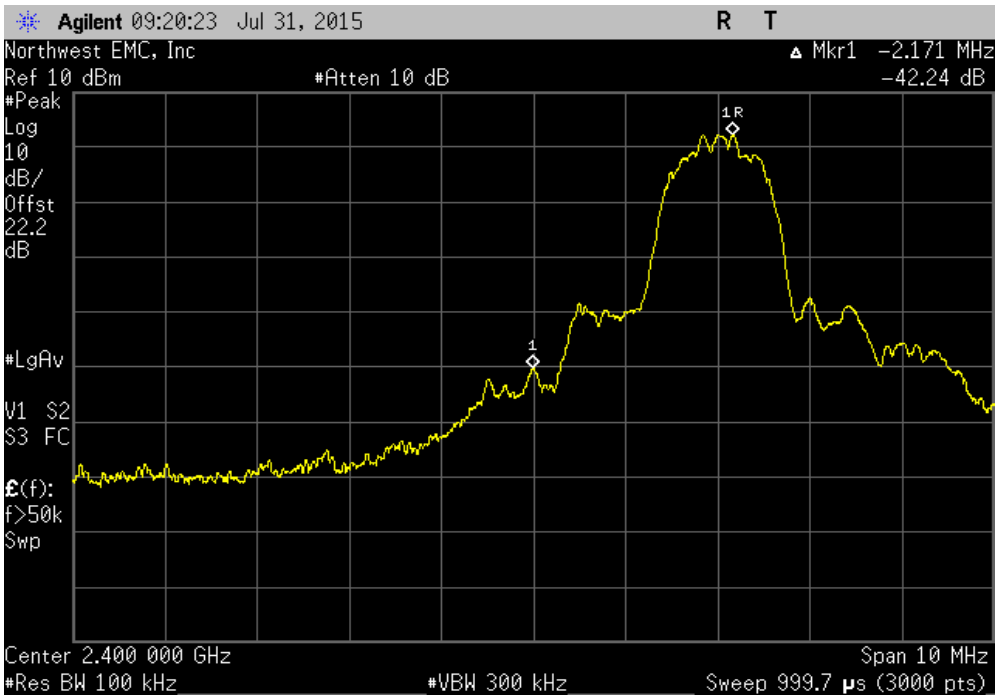
2DH5, pi/4-DQPSK, Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-42.84	-20	Pass



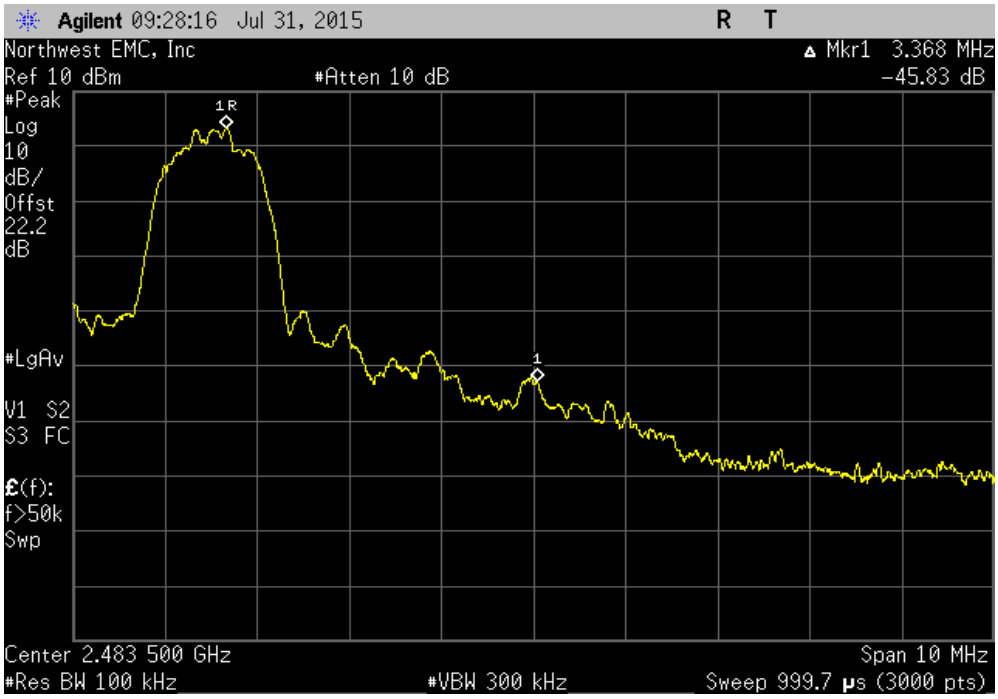
2DH5, pi/4-DQPSK, High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-44.46	-20	Pass



3DH5, 8-DPSK, Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-42.24	-20	Pass



3DH5, 8-DPSK, High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-45.83	-20	Pass



CARRIER FREQUENCY SEPARATION

XMit 2015.01.14

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.	Interval (mos)
Signal Generator	Keysight	N5182B	TFX	4/16/2015	36
Direct Connect Cable	ESM Cable Corp.	TT	EV1	NCR	0
DC Block, 40 GHz - SMA	Fairview Microwave	SD3379	AMP	6/18/2015	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/14/2015	12
Spectrum Analyzer	Agilent	E4446A	AAQ	3/10/2015	12

TEST DESCRIPTION

The carrier frequency separation was measured between each of 5 hopping channels in the middle of the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.

CARRIER FREQUENCY SEPARATION

NORTHWEST EMC

XMit 2015.01.14

EUT:	Tango Transceiver			**Work Order:**	LISA0029
Serial Number:	None			**Date:**	07/31/15
Customer:	LightSpeed Aviation			**Temperature:**	24.7°C
Attendees:	Eduard Vaynberg			**Humidity:**	40%
Project:	None			**Barometric Pres.:**	1017
Tested by:	Brandon Hobbs	**Power:**	Battery	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

The EUT was tested in frequency hopping mode.

DEVIATIONS FROM TEST STANDARD

None

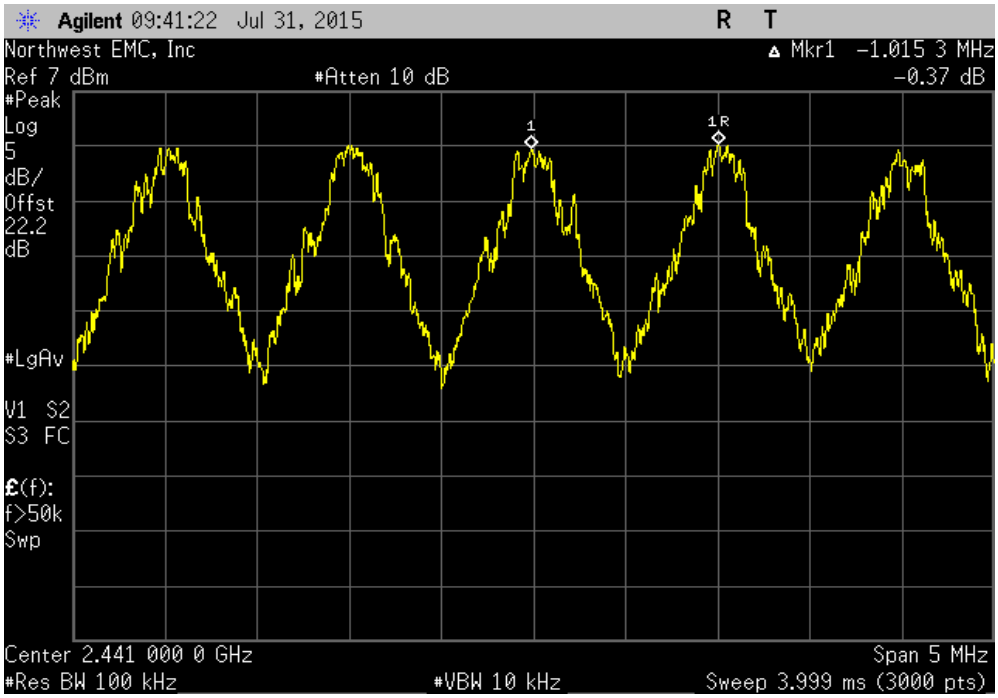
Configuration #	5	Signature

		Value	Limit (≥)	Results
Hopping Mode				
	DH5, GFSK			
	Mid Channel, 2441 MHz	1.0 MHz	1 MHz	Pass

CARRIER FREQUENCY SEPARATION

XMit 2015.01.14

Hopping Mode, DH5, GFSK, Mid Channel, 2441 MHz						
				Value	Limit (≥)	Results
				1.0 MHz	1 MHz	Pass



NUMBER OF HOPPING FREQUENCIES

XMit 2015.01.14

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.	Interval (mos)
Signal Generator	Keysight	N5182B	TFX	4/16/2015	36
Direct Connect Cable	ESM Cable Corp.	TT	EV1	NCR	0
DC Block, 40 GHz - SMA	Fairview Microwave	SD3379	AMP	6/18/2015	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/14/2015	12
Spectrum Analyzer	Agilent	E4446A	AAQ	3/10/2015	12

TEST DESCRIPTION

The number of hopping frequencies was measured across the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.

NUMBER OF HOPPING FREQUENCIES

NORTHWEST EMC

XMit 2015.01.14

EUT:	**Tango Transceiver**			**Work Order:**	**LISA0029**
Serial Number:	**None**			**Date:**	**07/31/15**
Customer:	**LightSpeed Aviation**			**Temperature:**	**24.7°C**
Attendees:	**Eduard Vaynberg**			**Humidity:**	**40%**
Project:	**None**			**Barometric Pres.:**	**1017**
Tested by:	**Brandon Hobbs**	**Power:**	**Battery**	**Job Site:**	**EV06**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

The EUT was tested in frequency hopping mode.

DEVIATIONS FROM TEST STANDARD

None

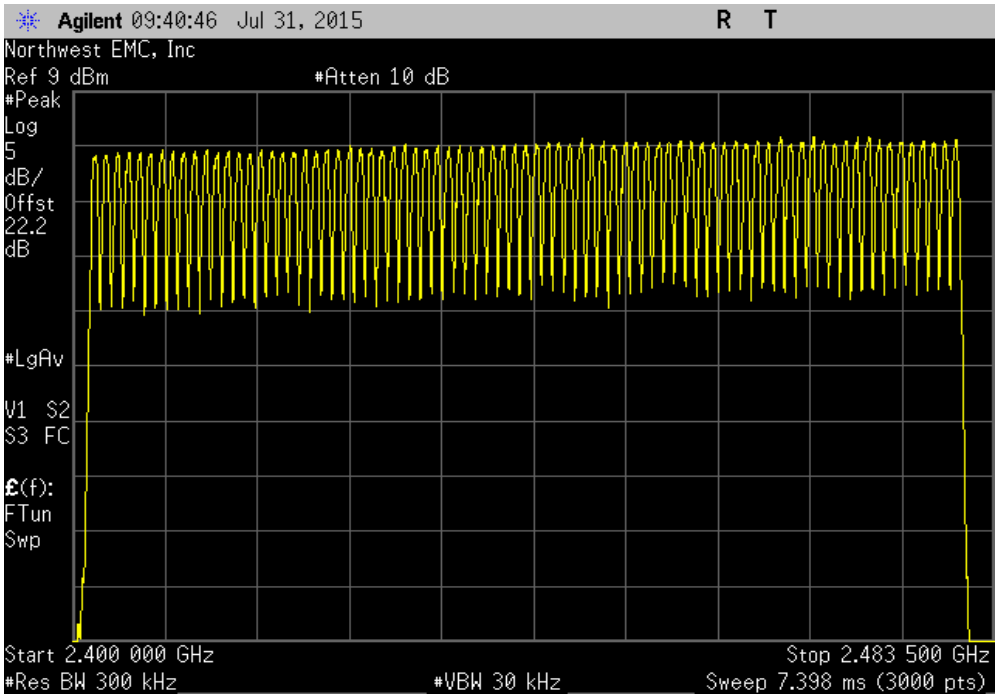
Configuration #	**5**	*Signature*

		Number of Channels	**Limit**	**Results**
Hopping Mode				
	DH5, GFSK			
	Mid Channel, 2441 MHz	79	15	Pass

NUMBER OF HOPPING FREQUENCIES

XMit 2015.01.14

Hopping Mode, DH5, GFSK, Mid Channel, 2441 MHz						
				Number of Channels	Limit	Results
				79	15	Pass



DWELL TIME

XMit 2015.01.14

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.	Interval (mos)
Signal Generator	Keysight	N5182B	TFX	4/16/2015	36
Direct Connect Cable	ESM Cable Corp.	TT	EV1	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/14/2015	12
DC Block, 40 GHz - SMA	Fairview Microwave	SD3379	AMP	6/18/2015	12
Spectrum Analyzer	Agilent	E4446A	AAQ	3/10/2015	12

TEST DESCRIPTION

The average dwell time per hopping channel was measured at one hopping channel in the middle of the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.

The dwell time limit is based on the Number of Hopping Channels * 400 mS. For Bluetooth this would be 79 Channels * 400mS = 31.6 Sec.

On Time During 31.6 Sec = Pulse Width * Average Number of Pulses * Scale Factor

- Average Number of Pulses is based on 4 samples.

- Scale Factor = 31.6 Sec / Screen Capture Sweep Time = 31.6 Sec / 6.32 Sec = 5

DWELL TIME

NORTHWEST EMC

XMit 2015.01.14

EUT:	Tango Transceiver			**Work Order:**	LISA0029
Serial Number:	None			**Date:**	07/31/15
Customer:	LightSpeed Aviation			**Temperature:**	24.7°C
Attendees:	Eduard Vaynberg			**Humidity:**	40%
Project:	None			**Barometric Pres.:**	1017
Tested by:	Brandon Hobbs	**Power:**	Battery	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

The EUT was tested in frequency hopping mode.

DEVIATIONS FROM TEST STANDARD

None

Configuration #	5	Signature

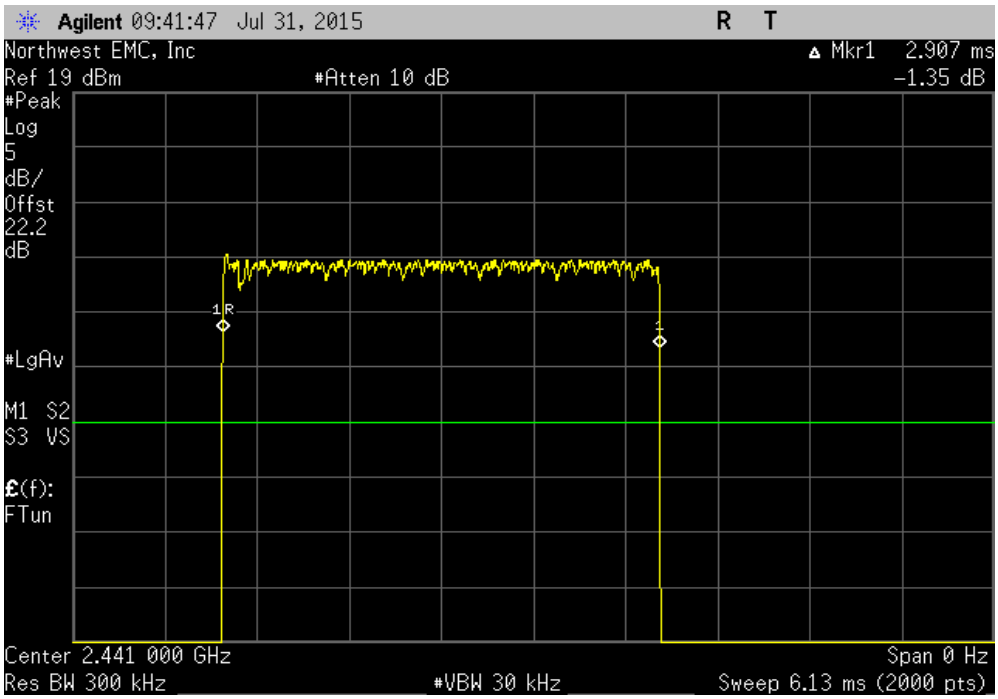
		Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
Hopping Mode								
	DH5, GFSK							
	Mid Channel, 2441 MHz	2.907	N/A	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	2.907	N/A	22	5	319.77	400	Pass
	2DH5, pi/4-DQPSK							
	Mid Channel, 2441 MHz	2.919	N/A	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	2.919	N/A	22	5	321.09	400	Pass
	3DH5, 8-DPSK							
	Mid Channel, 2441 MHz	2.919	N/A	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2441 MHz	2.919	N/A	22	5	321.09	400	Pass

DWELL TIME

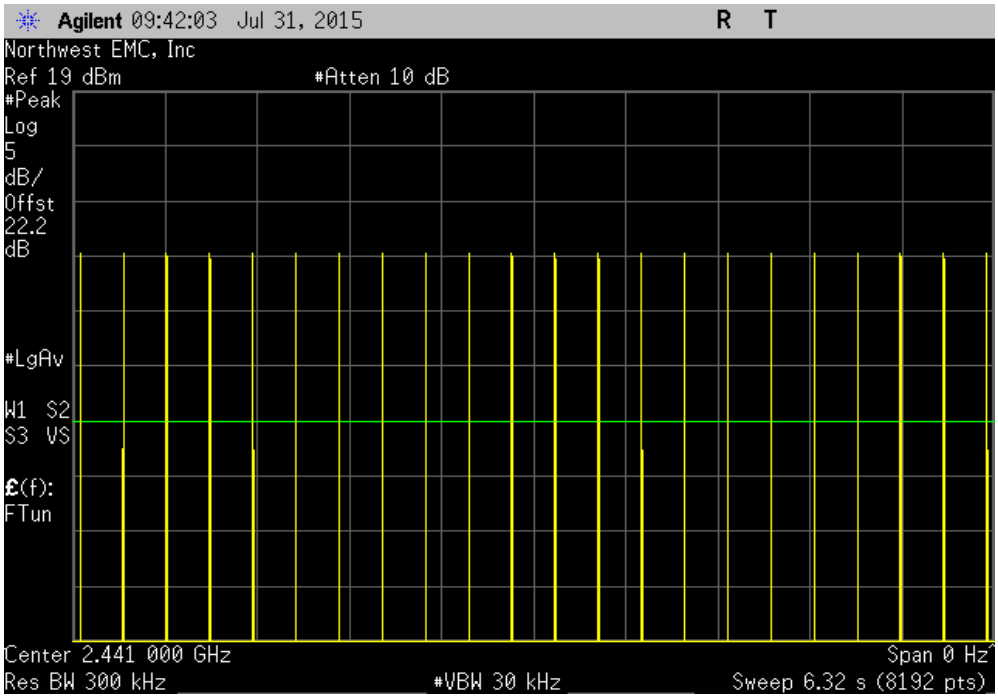
NORTHWEST EMC

XMit 2015.01.14

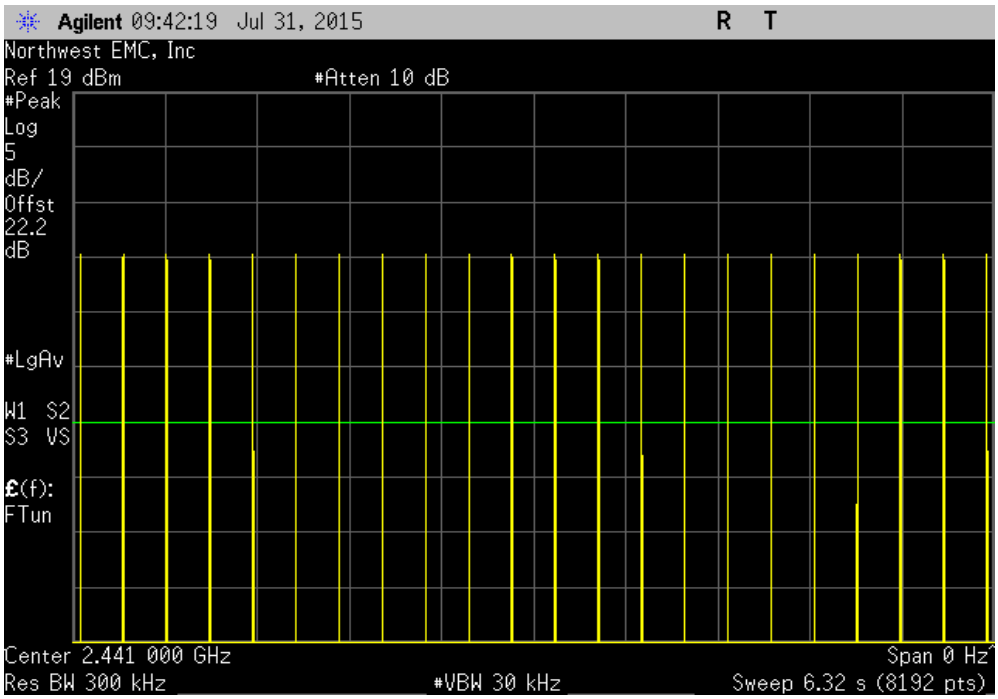
Hopping Mode, DH5, GFSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.907	N/A	N/A	N/A	N/A	N/A	N/A



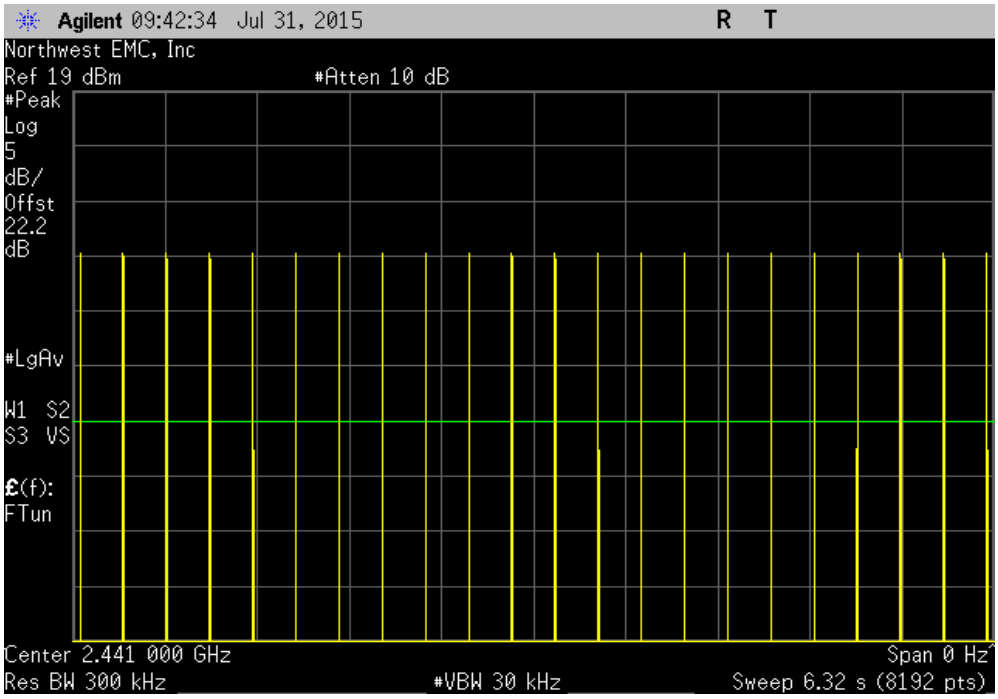
Hopping Mode, DH5, GFSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, DH5, GFSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, DH5, GFSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A

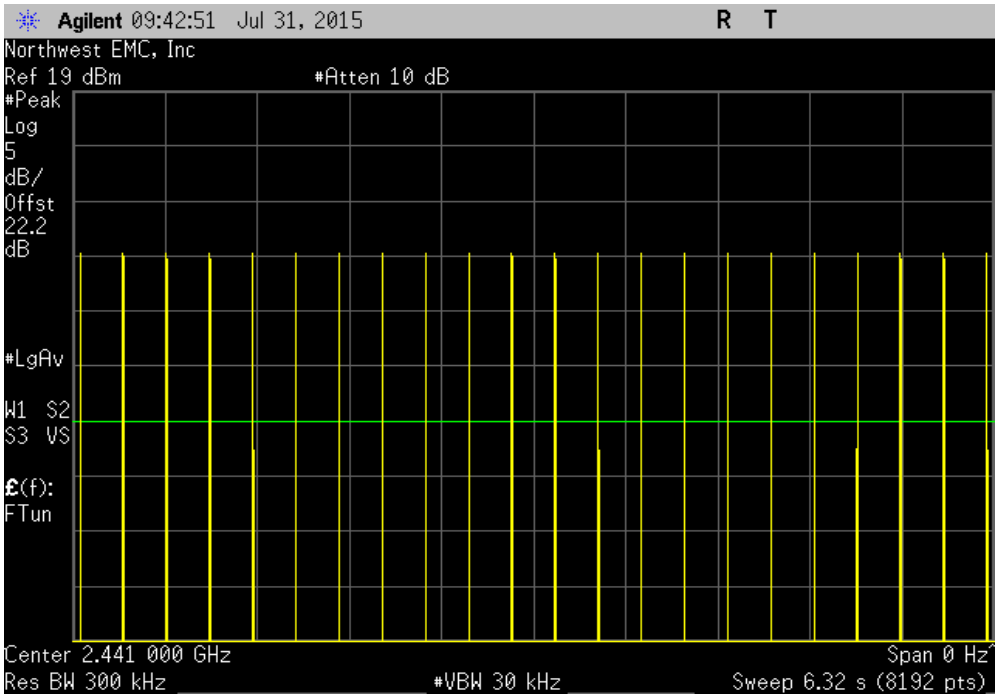


DWELL TIME

NORTHWEST EMC

XMit 2015.01.14

Hopping Mode, DH5, GFSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, DH5, GFSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.907	N/A	22	5	319.77	400	Pass

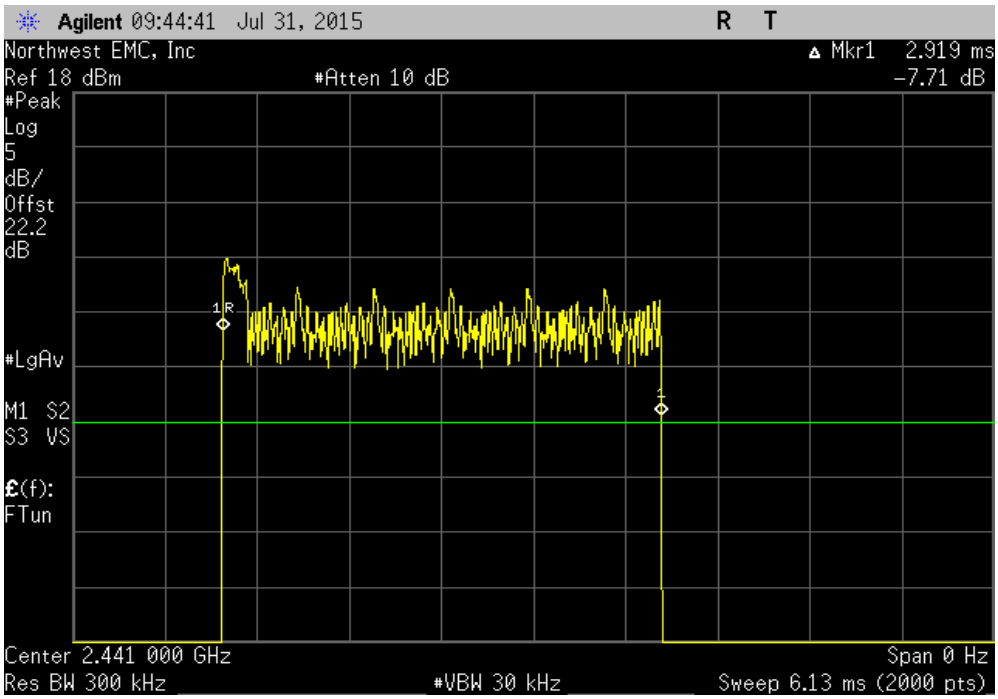
Calculation Only

No Screen Capture Required

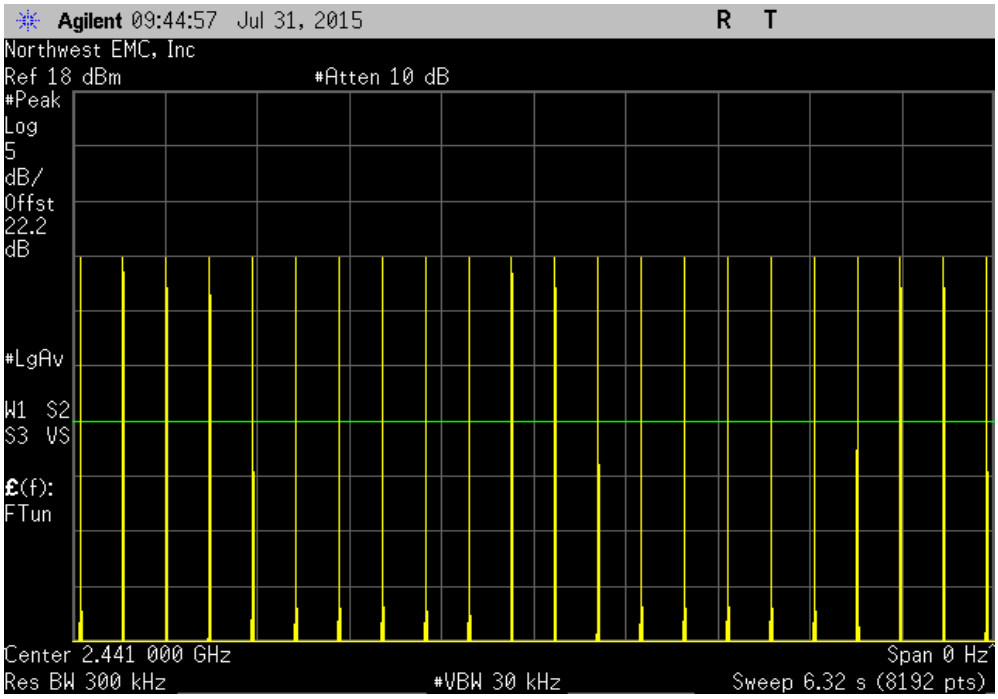
DWELL TIME

XMit 2015.01.14

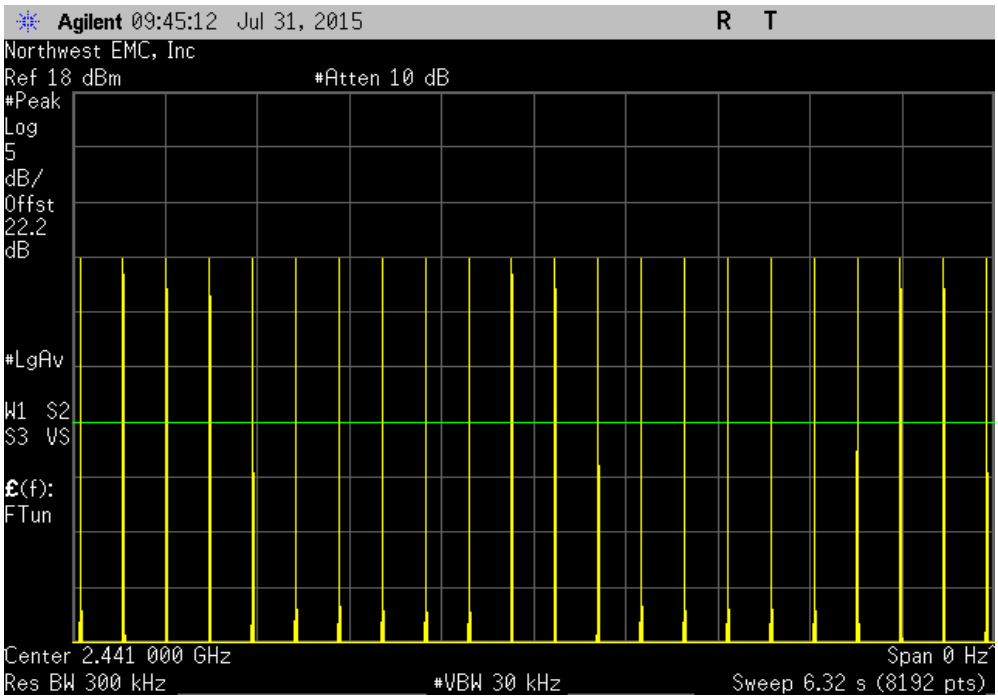
Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.919	N/A	N/A	N/A	N/A	N/A	N/A



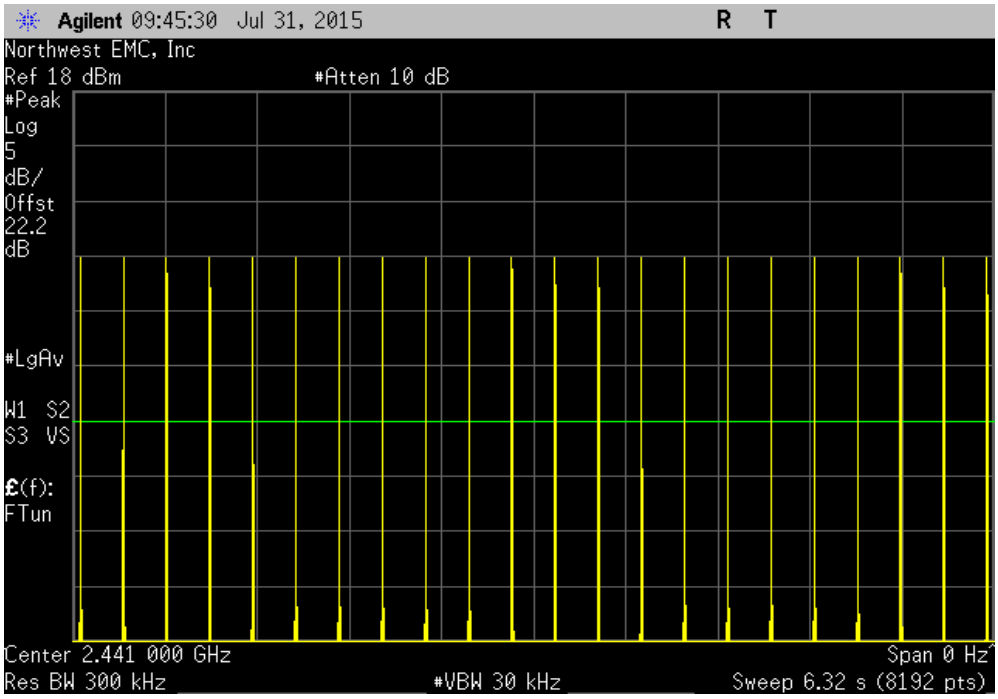
Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



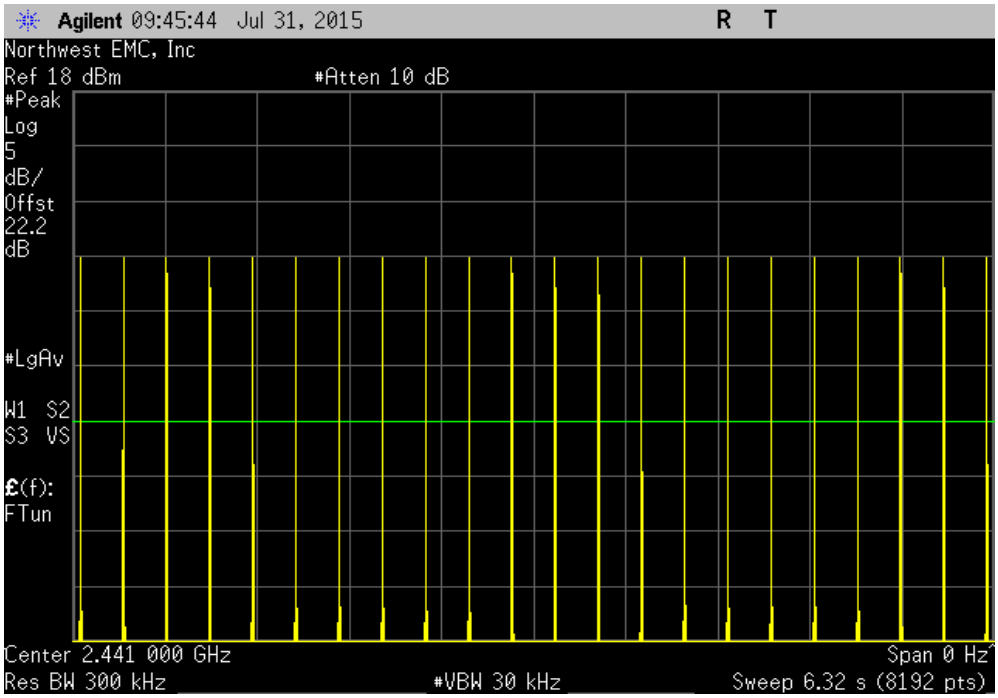
Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



DWELL TIME

XMit 2015.01.14

Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.919	N/A	22	5	321.09	400	Pass

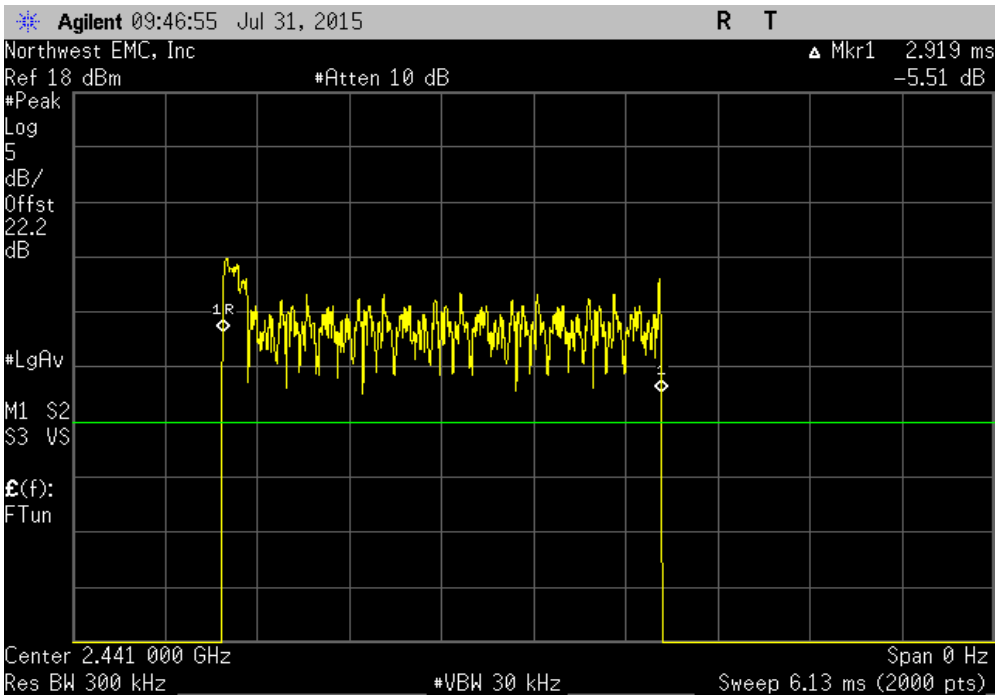
Calculation Only

No Screen Capture Required

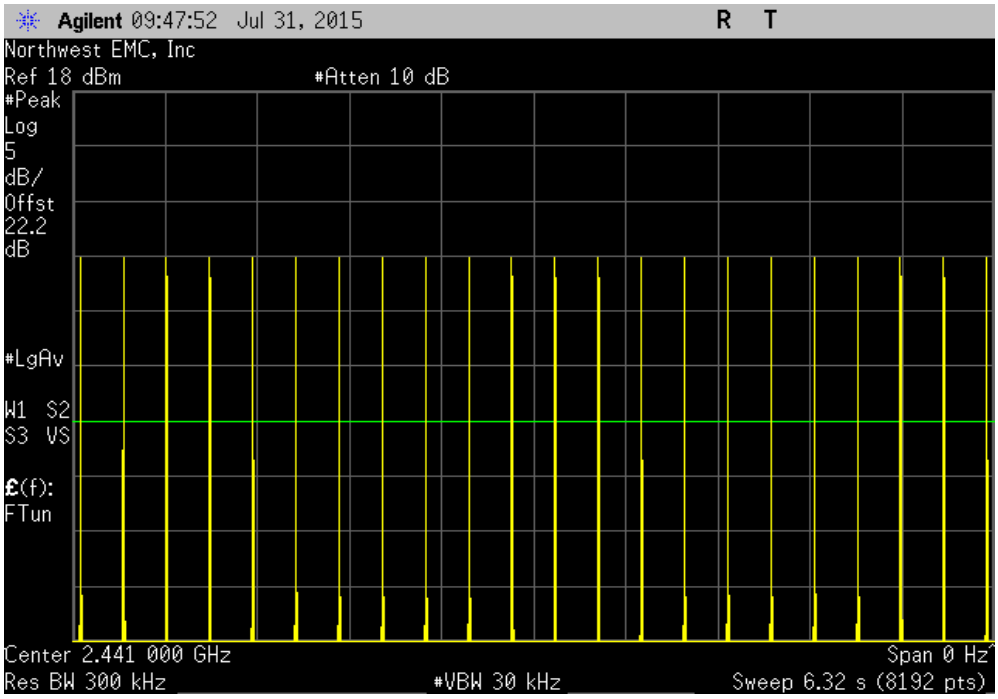
DWELL TIME

XMit 2015.01.14

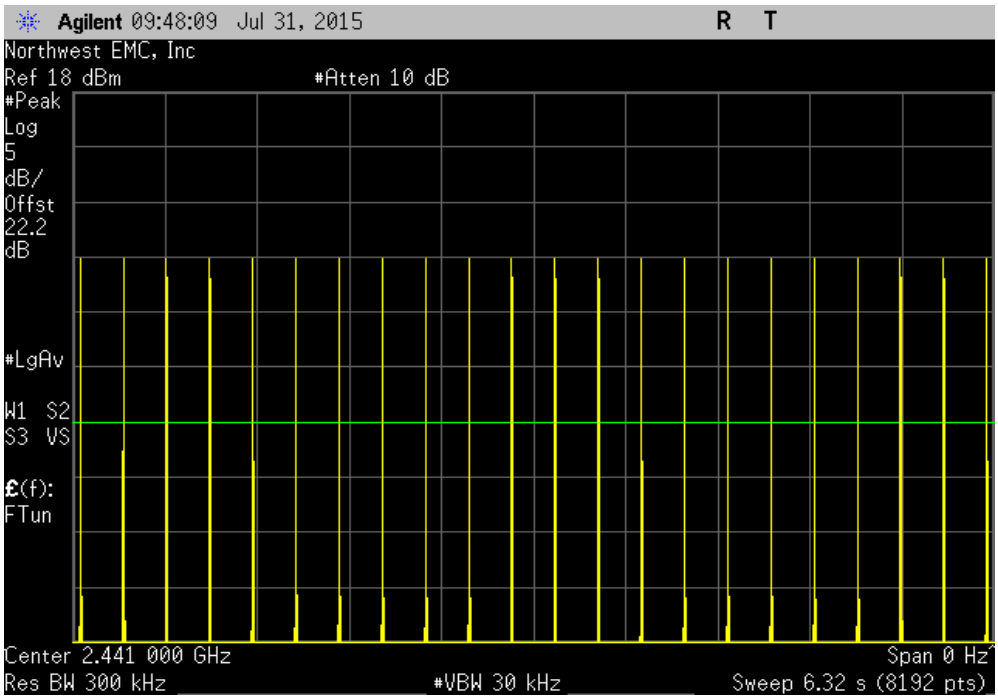
Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.919	N/A	N/A	N/A	N/A	N/A	N/A



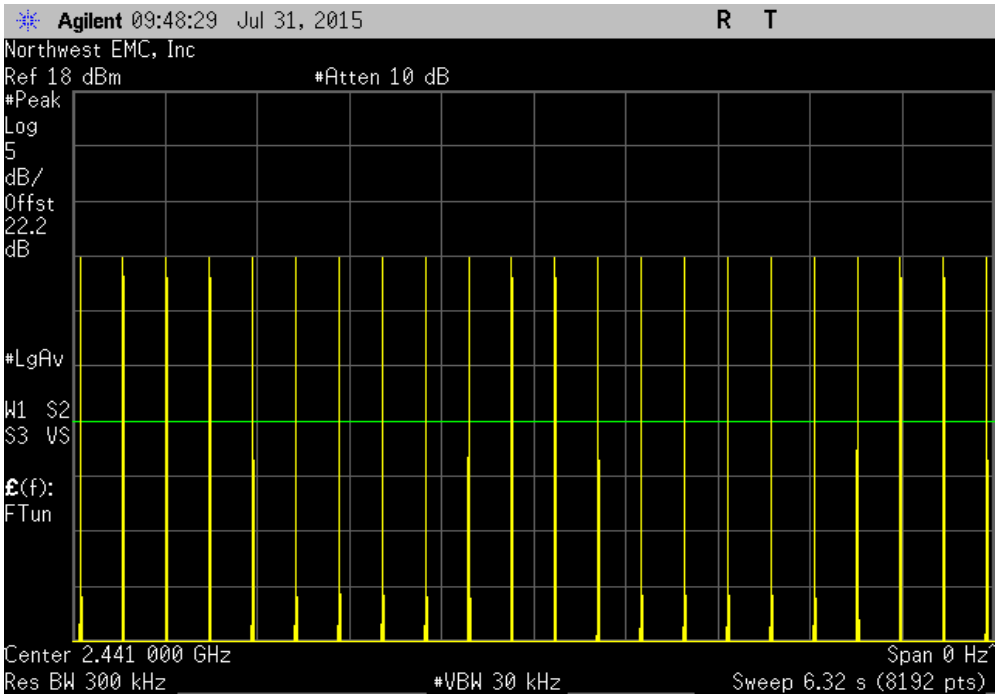
Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



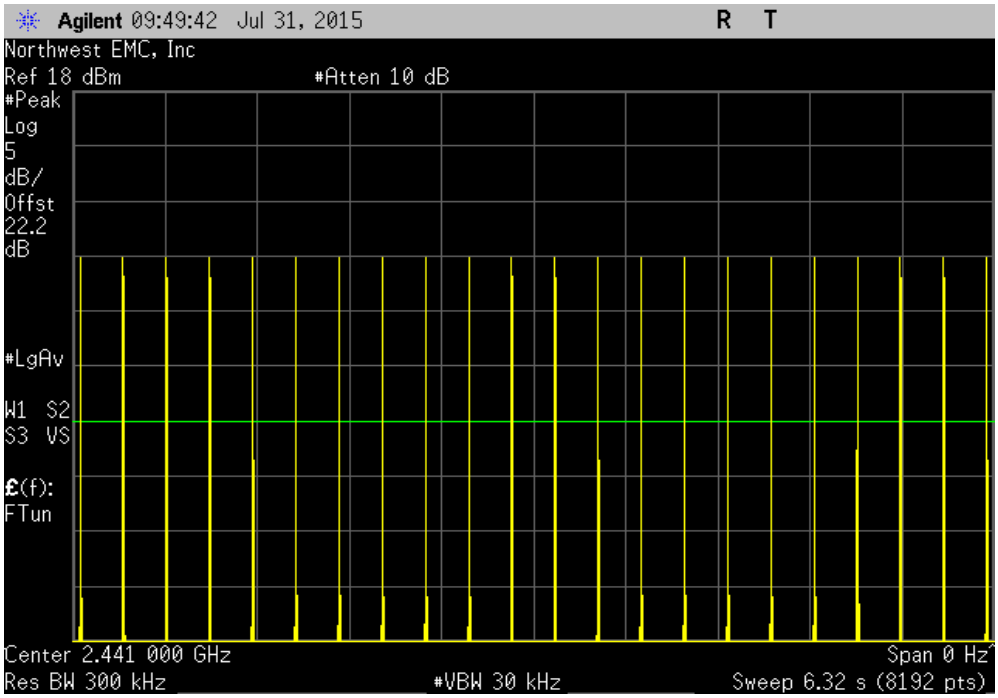
Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2441 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.919	N/A	22	5	321.09	400	Pass

Calculation Only

No Screen Capture Required

BAND EDGE COMPLIANCE -HOPPING MODE

XMit 2015.01.14

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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mos)
Signal Generator	Keysight	N5182B	TFX	4/16/2015	36
Direct Connect Cable	ESM Cable Corp.	TT	EV1	NCR	0
DC Block, 40 GHz - SMA	Fairview Microwave	SD3379	AMP	6/18/2015	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/14/2015	12
Spectrum Analyzer	Agilent	E4446A	AAQ	3/10/2015	12

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to its normal pseudo-random hopping sequence. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. 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 -HOPPING MODE

NORTHWEST EMC

XMit 2015.01.14

EUT:	**Tango Transceiver**			**Work Order:**	**LISA0029**
Serial Number:	**None**			**Date:**	**07/31/15**
Customer:	**LightSpeed Aviation**			**Temperature:**	**24.7°C**
Attendees:	**Eduard Vaynberg**			**Humidity:**	**40%**
Project:	**None**			**Barometric Pres.:**	**1017**
Tested by:	**Brandon Hobbs**	**Power:**	**Battery**	**Job Site:**	**EV06**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

The EUT was tested in frequency hopping mode.

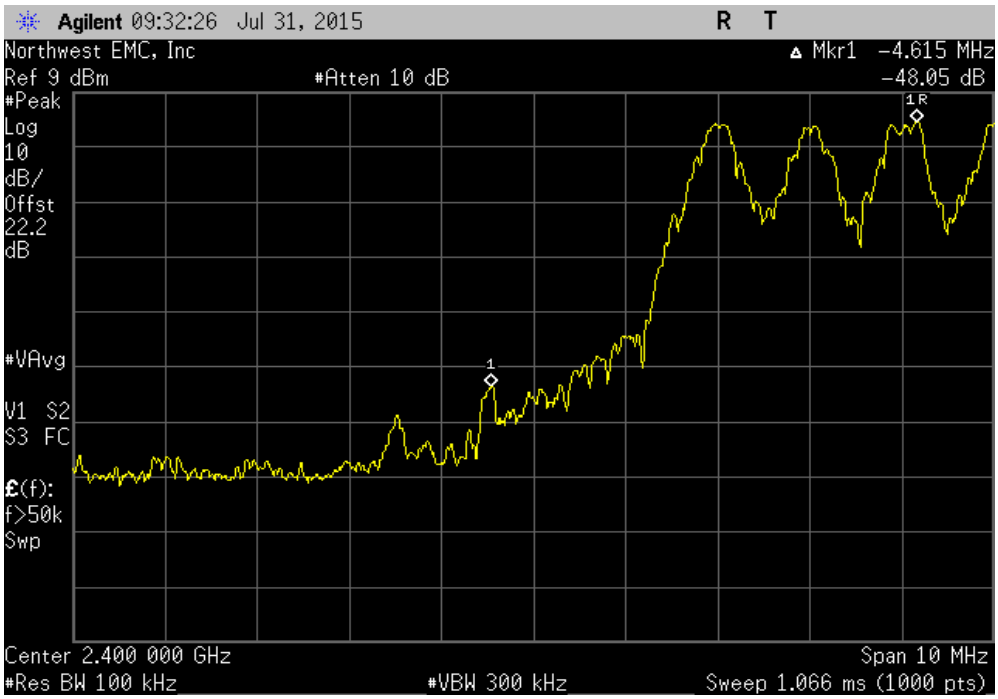
DEVIATIONS FROM TEST STANDARD

None

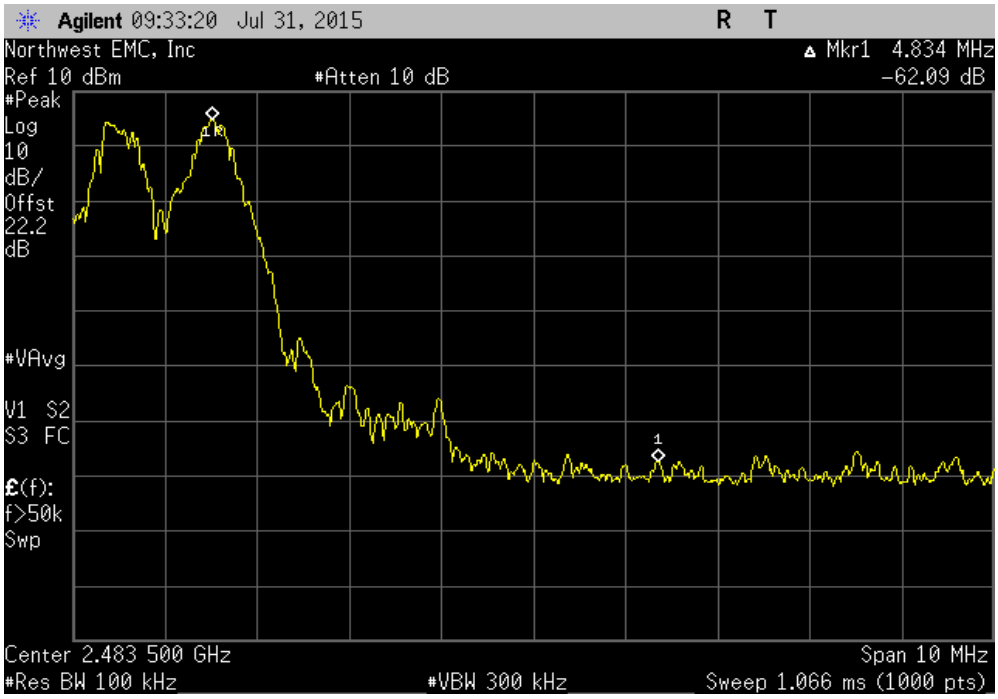
Configuration #	**5**	*Signature*

		Value (dBc)	**Limit ≤ (dBc)**	**Result**
Hopping Mode				
	DH5, GFSK			
	Low Channel, 2402 MHz	-48.05	-20	Pass
	High Channel, 2480 MHz	-62.09	-20	Pass
	2DH5, pi/4-DQPSK			
	Low Channel, 2402 MHz	-45.53	-20	Pass
	High Channel, 2480 MHz	-59.68	-20	Pass
	3DH5, 8-DPSK			
	Low Channel, 2402 MHz	-47.24	-20	Pass
	High Channel, 2480 MHz	-59.1	-20	Pass

Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-48.05	-20	Pass



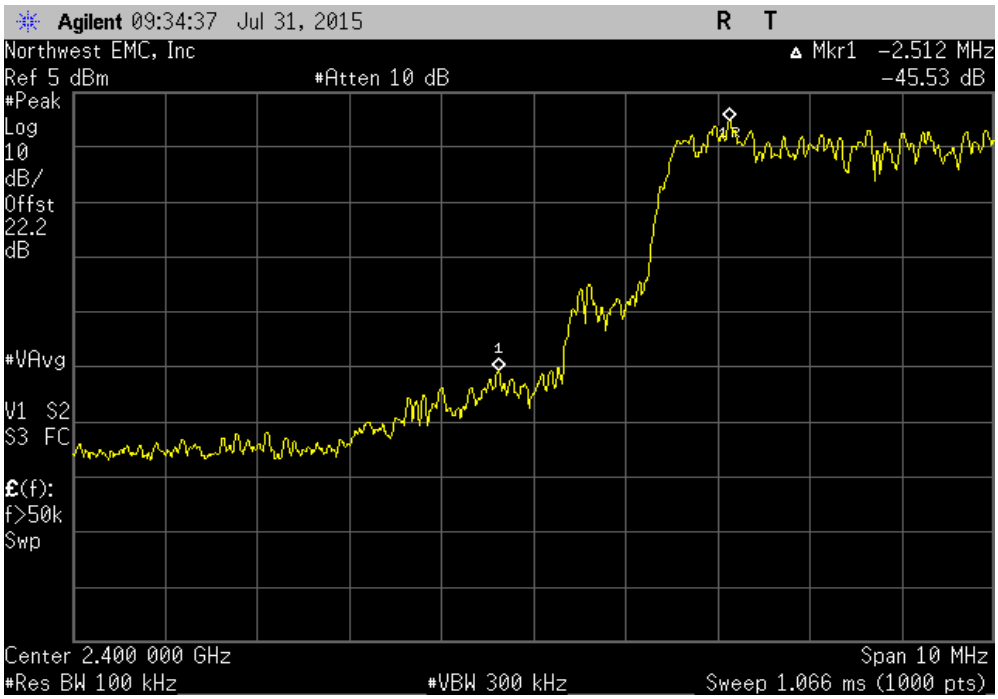
Hopping Mode, DH5, GFSK, High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-62.09	-20	Pass



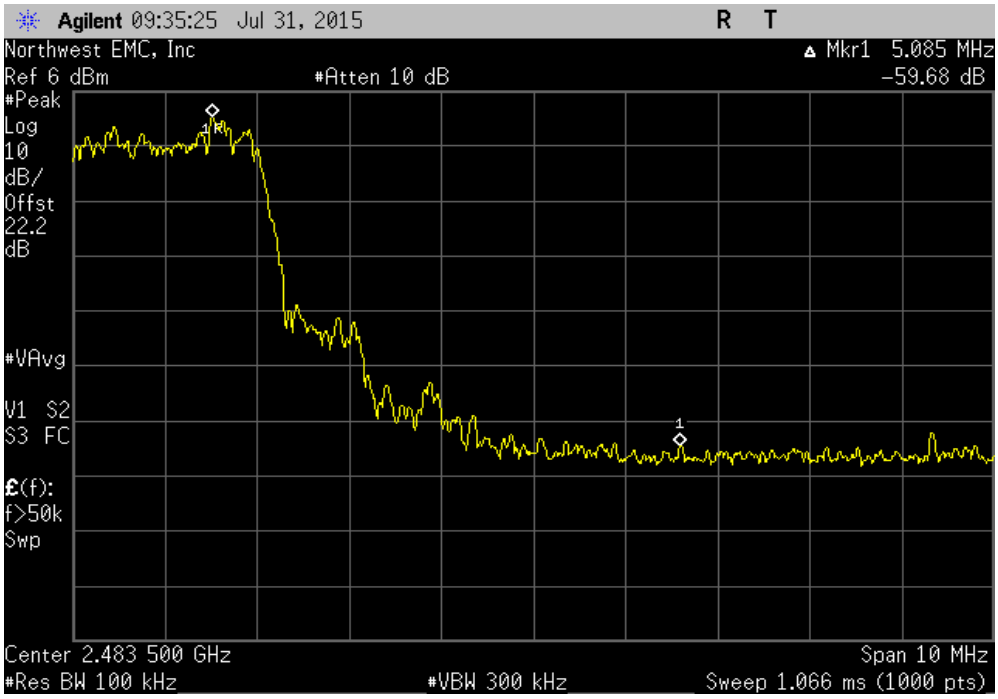
BAND EDGE COMPLIANCE -HOPPING MODE

XMit 2015.01.14

Hopping Mode, 2DH5, pi/4-DQPSK, Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-45.53	-20	Pass



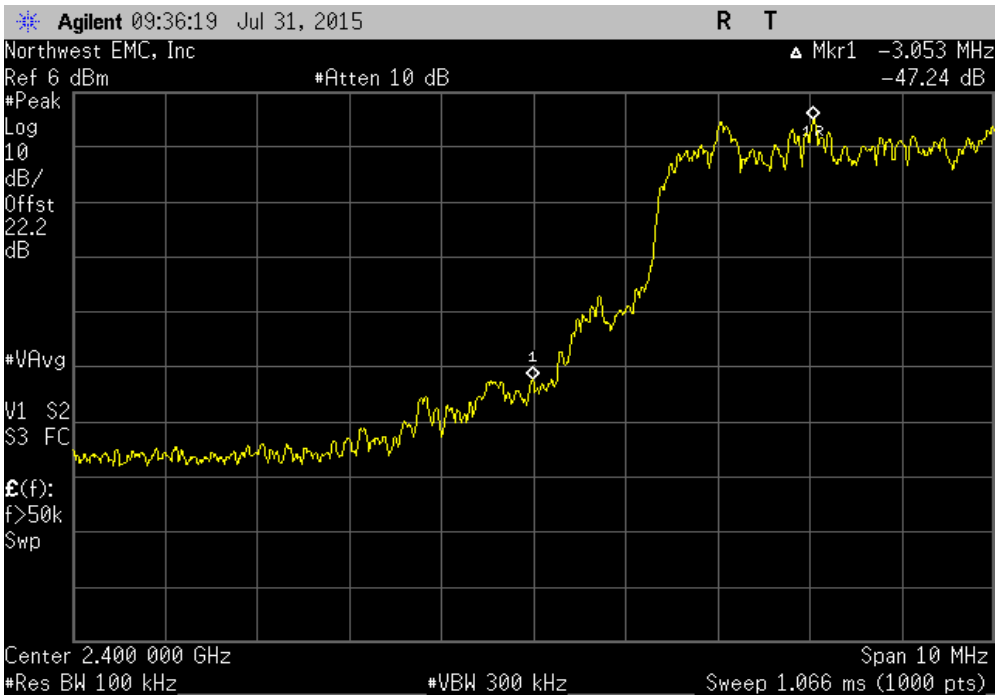
Hopping Mode, 2DH5, pi/4-DQPSK, High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-59.68	-20	Pass



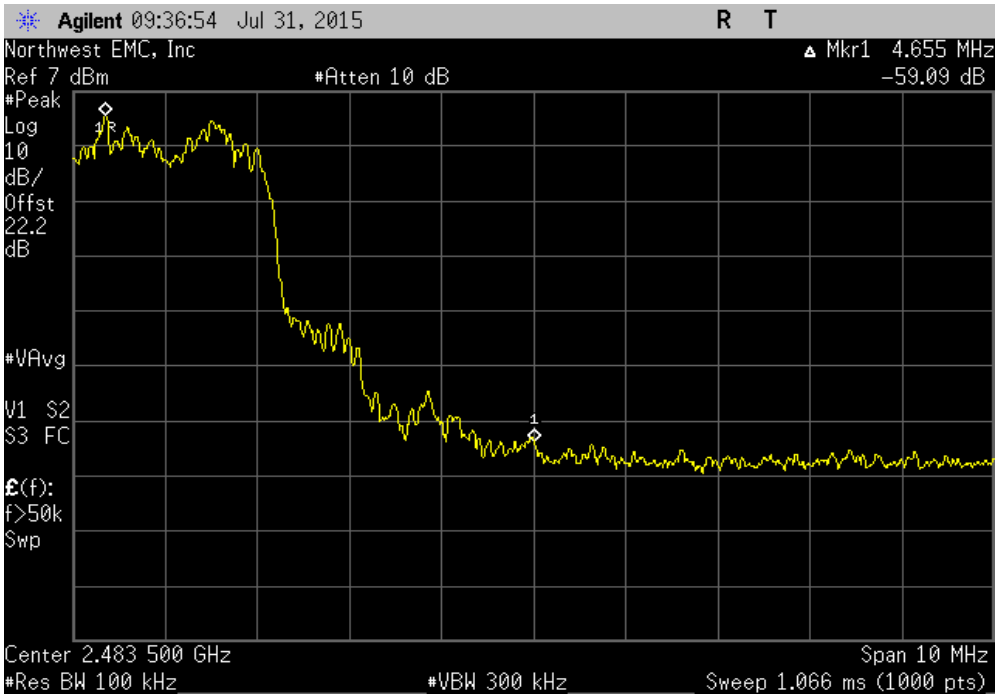
BAND EDGE COMPLIANCE -HOPPING MODE

XMit 2015.01.14

Hopping Mode, 3DH5, 8-DPSK, Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-47.24	-20	Pass



Hopping Mode, 3DH5, 8-DPSK, High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-59.1	-20	Pass



DUTY CYCLE

XMit 2015.01.14

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.	Interval (mos)
Signal Generator	Keysight	N5182B	TFX	4/16/2015	36
Direct Connect Cable	ESM Cable Corp.	TT	EV1	NCR	0
DC Block, 40 GHz - SMA	Fairview Microwave	SD3379	AMP	6/18/2015	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/14/2015	12
Spectrum Analyzer	Agilent	E4446A	AAQ	3/10/2015	12

TEST DESCRIPTION

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

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.

If the transmit duty cycle < 98 percent, burst gating was used during some of the other tests in this report to only measure during the burst duration.

DUTY CYCLE

NORTHWEST EMC

XMit 2015.01.14

EUT:	**Tango Transceiver**			**Work Order:**	**LISA0029**
Serial Number:	**None**			**Date:**	**07/31/15**
Customer:	**LightSpeed Aviation**			**Temperature:**	**24.7°C**
Attendees:	**Eduard Vaynberg**			**Humidity:**	**40%**
Project:	**None**			**Barometric Pres.:**	**1017**
Tested by:	**Brandon Hobbs**	**Power:**	**Battery**	**Job Site:**	**EV06**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

The EUT was tested in a non frequency hopping mode.

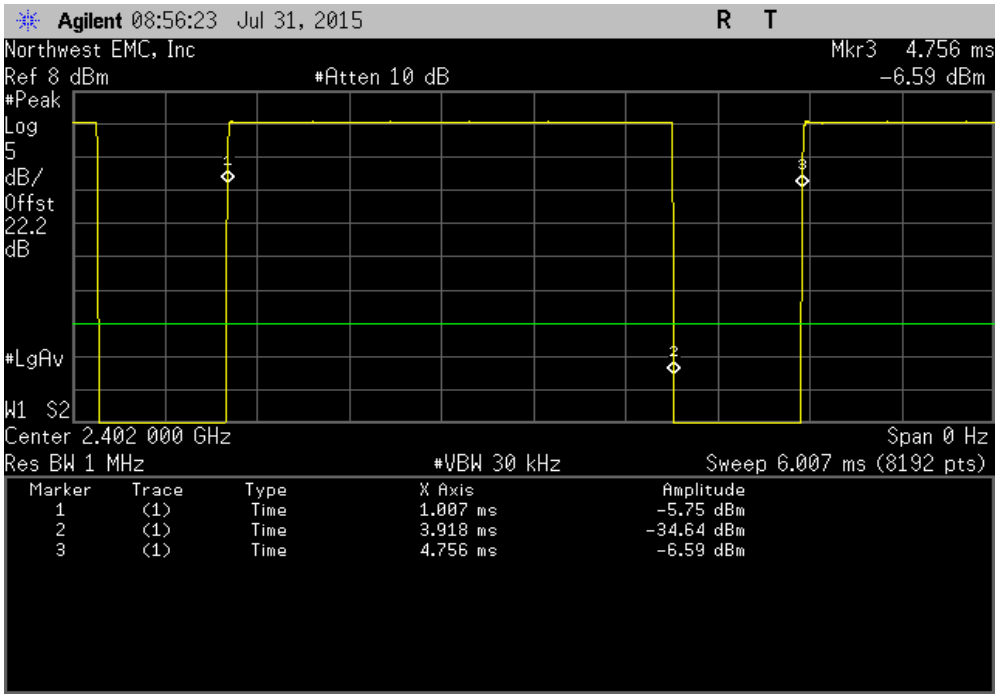
DEVIATIONS FROM TEST STANDARD

None

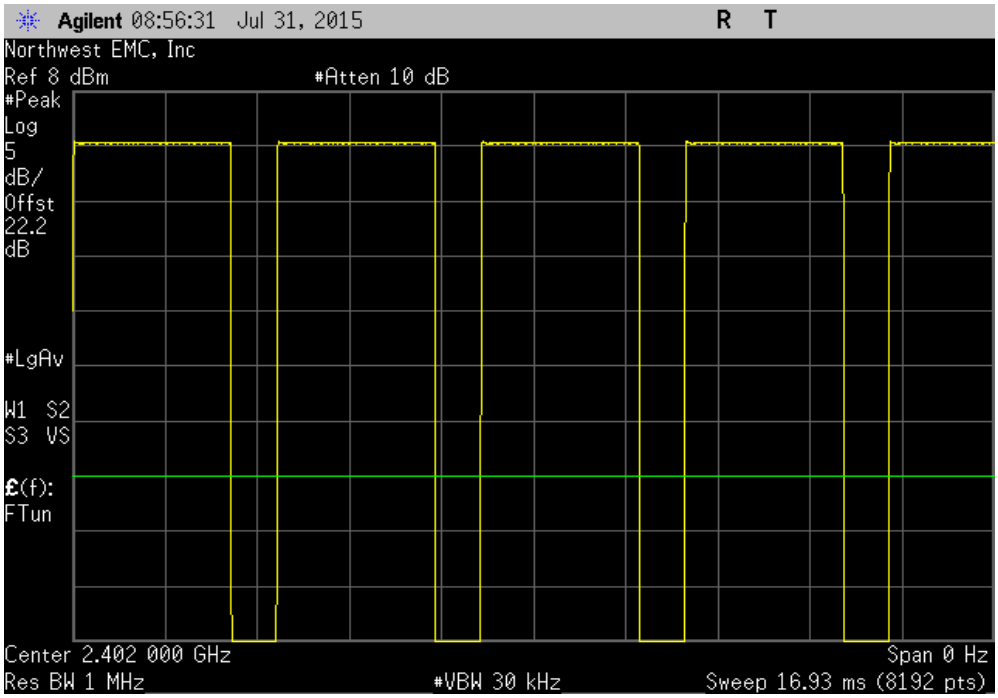
Configuration #	**5**	*Signature*

		Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
DH5, GFSK							
	Low Channel, 2402 MHz	2.911 ms	3.75 ms	1	77.6	N/A	N/A
	Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel, 2441 MHz	2.911 ms	3.75 ms	1	77.6	N/A	N/A
	Mid Channel, 2441 MHz	N/A	N/A	5	N/A	N/A	N/A
	High Channel, 2480 MHz	2.912 ms	3.75 ms	1	77.7	N/A	N/A
	High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A
2DH5, pi/4-DQPSK							
	Low Channel, 2402 MHz	2.921 ms	3.75 ms	1	77.9	N/A	N/A
	Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel, 2441 MHz	2.921 ms	3.75 ms	1	77.9	N/A	N/A
	Mid Channel, 2441 MHz	N/A	N/A	5	N/A	N/A	N/A
	High Channel, 2480 MHz	2.922 ms	3.75 ms	1	77.9	N/A	N/A
	High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A
3DH5, 8-DPSK							
	Low Channel, 2402 MHz	2.922 ms	3.75 ms	1	77.9	N/A	N/A
	Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel, 2441 MHz	2.922 ms	3.75 ms	1	77.9	N/A	N/A
	Mid Channel, 2441 MHz	N/A	N/A	5	N/A	N/A	N/A
	High Channel, 2480 MHz	2.922 ms	3.75 ms	1	77.9	N/A	N/A
	High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A

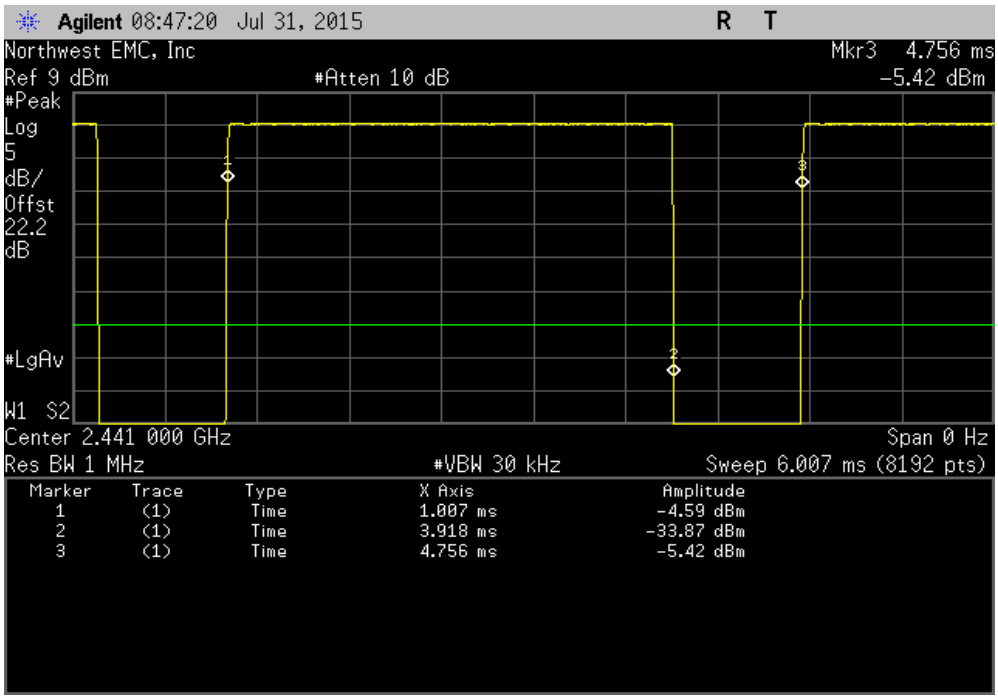
DH5, GFSK, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.911 ms	3.75 ms	1	77.6	N/A	N/A



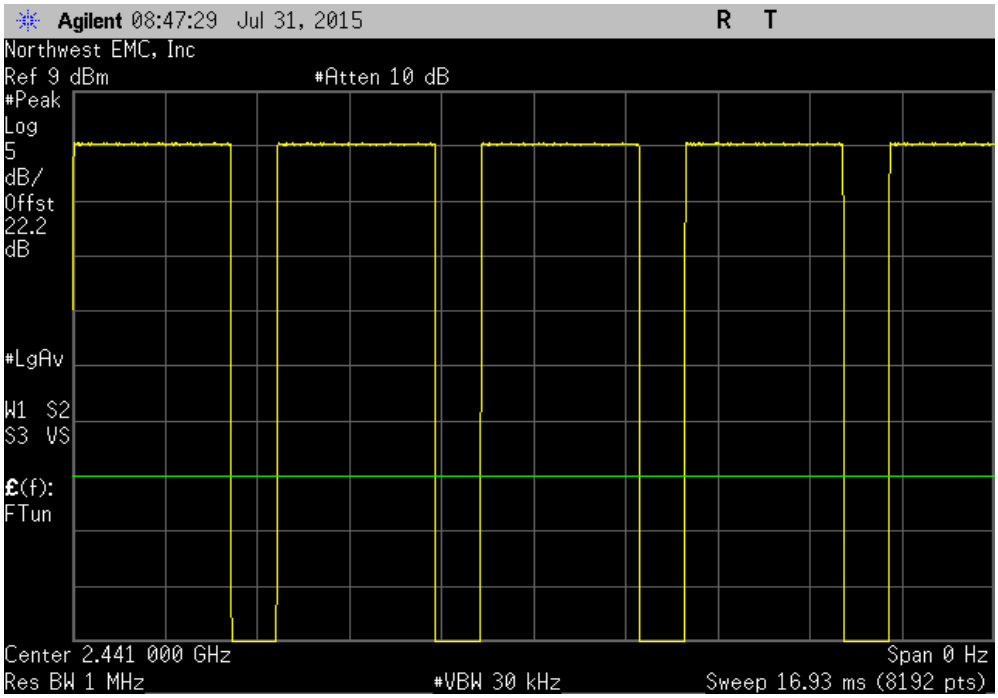
DH5, GFSK, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



DH5, GFSK, Mid Channel, 2441 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.911 ms	3.75 ms	1	77.6	N/A	N/A



DH5, GFSK, Mid Channel, 2441 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

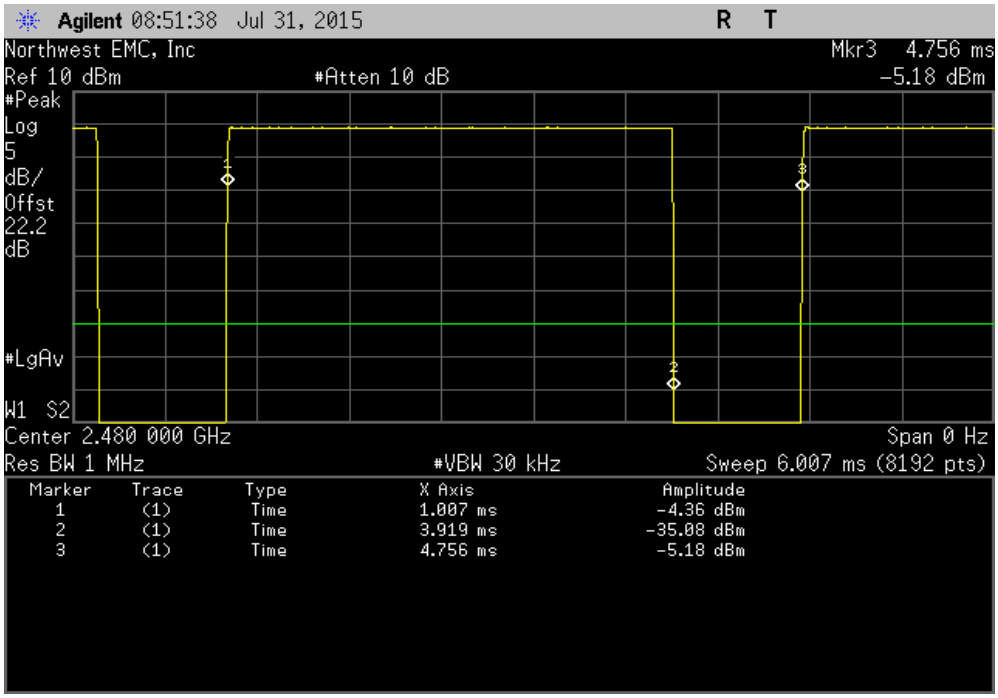


DUTY CYCLE

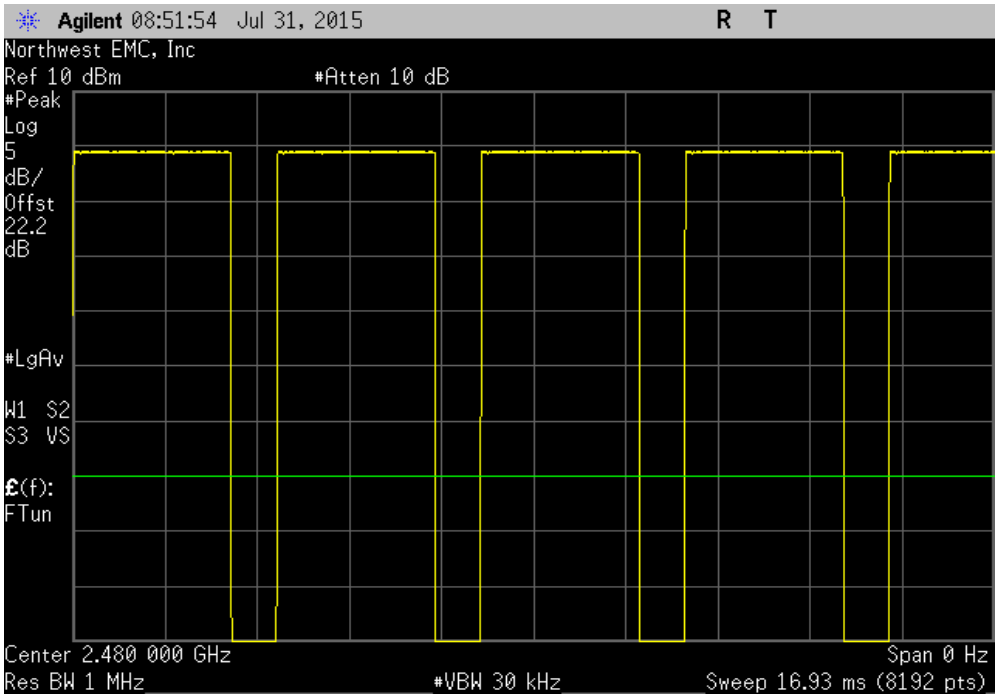
NORTHWEST EMC

XMit 2015.01.14

DH5, GFSK, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.912 ms	3.75 ms	1	77.7	N/A	N/A



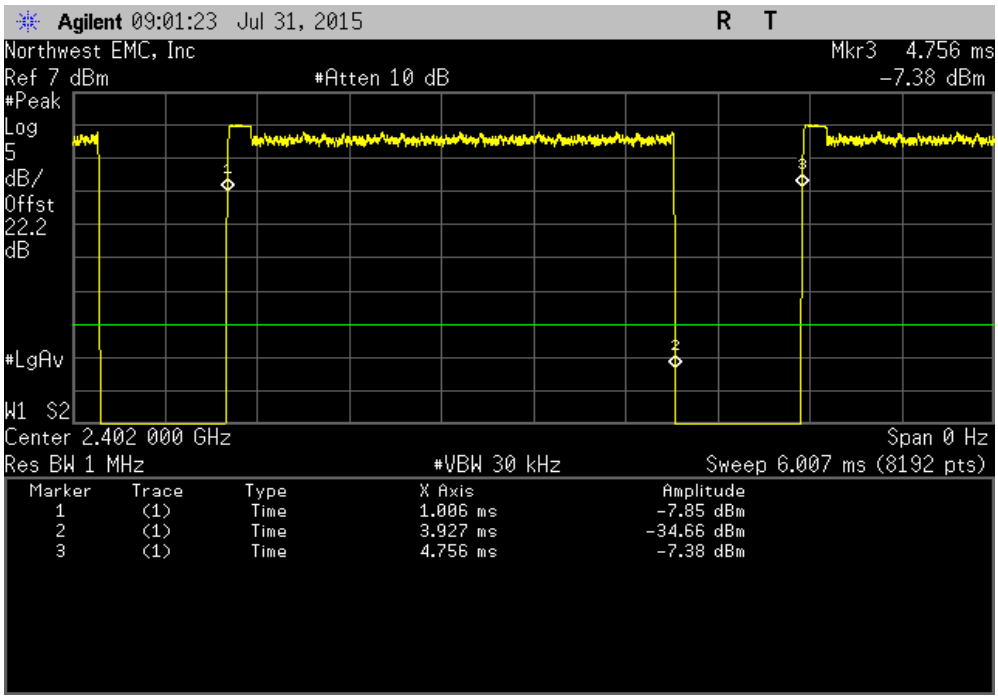
DH5, GFSK, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



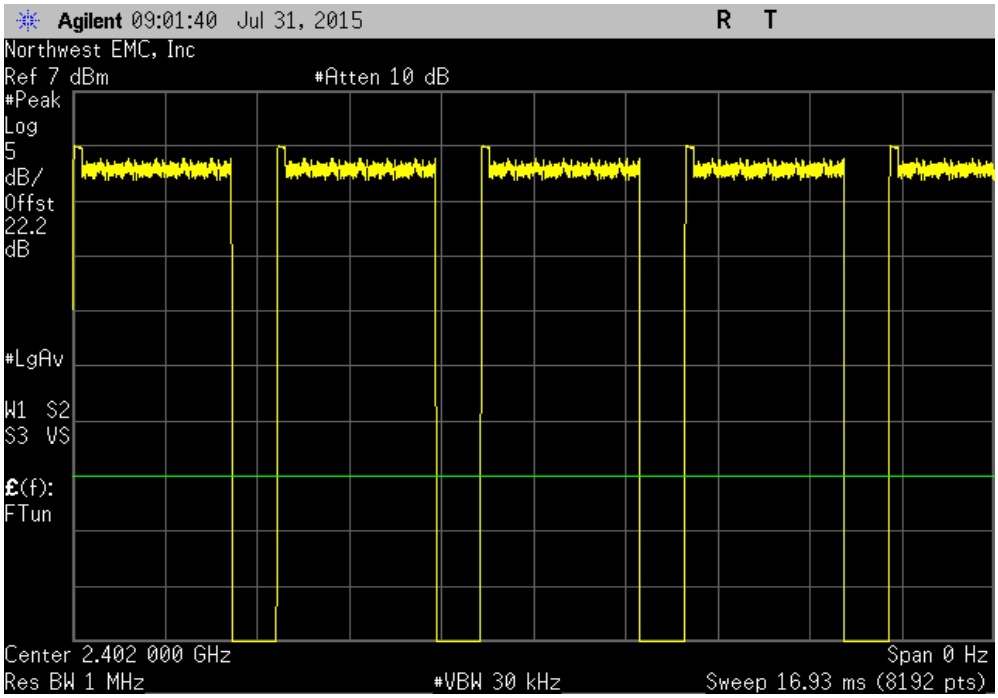
DUTY CYCLE

XMit 2015.01.14

2DH5, pi/4-DQPSK, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.921 ms	3.75 ms	1	77.9	N/A	N/A



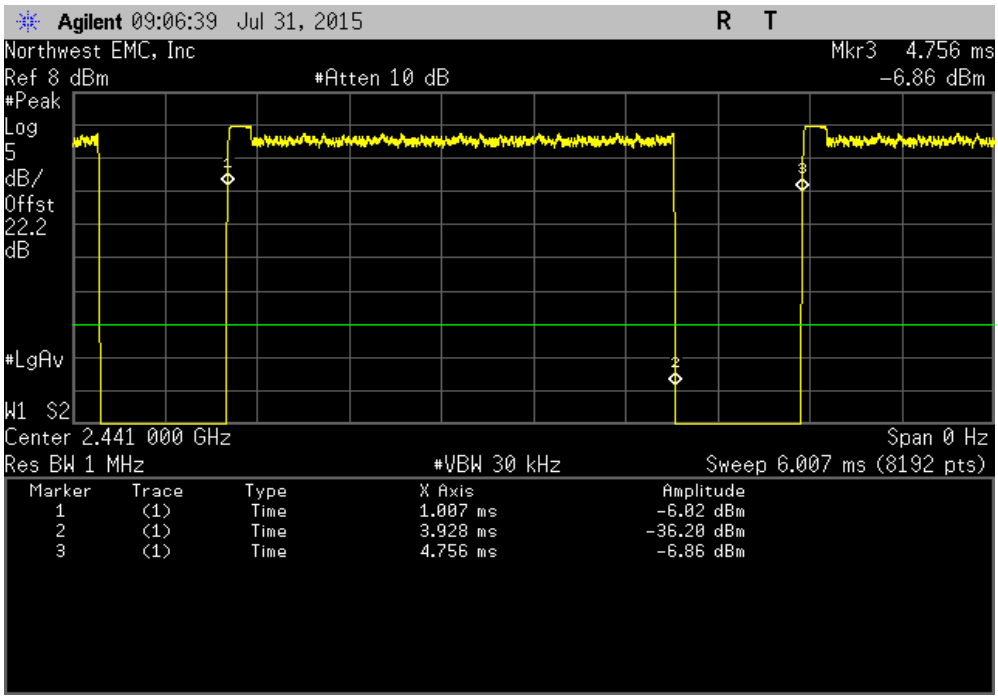
2DH5, pi/4-DQPSK, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



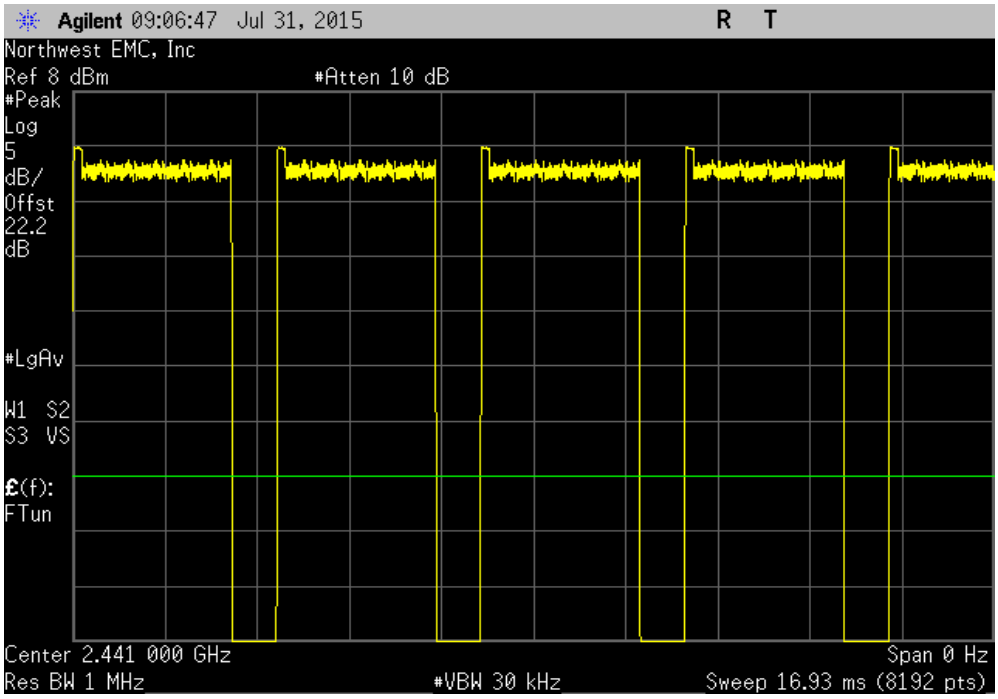
DUTY CYCLE

XMit 2015.01.14

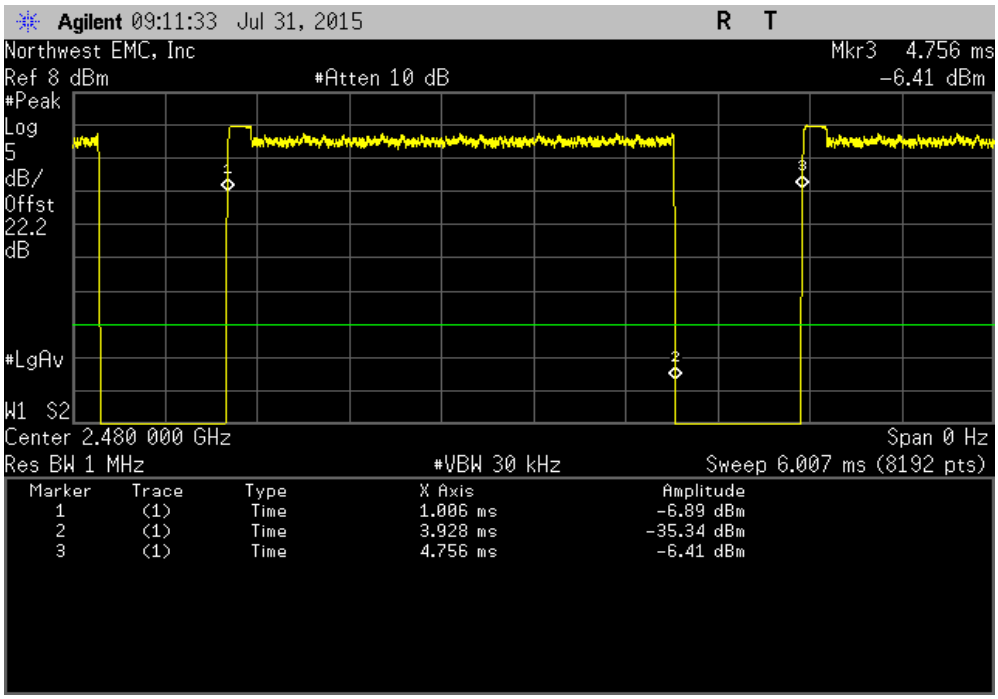
2DH5, pi/4-DQPSK, Mid Channel, 2441 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.921 ms	3.75 ms	1	77.9	N/A	N/A



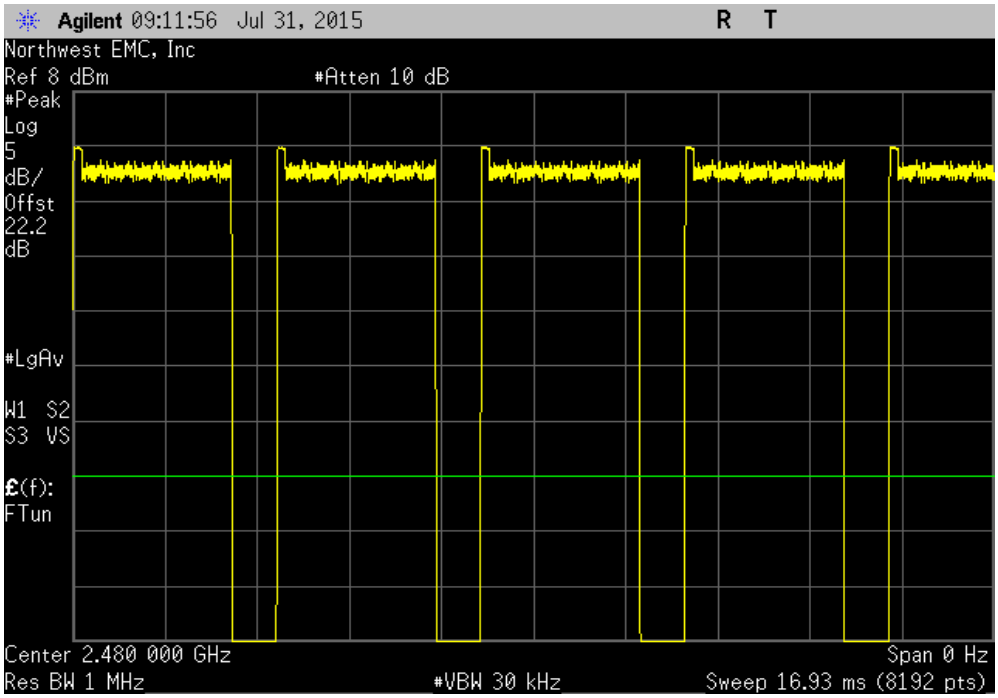
2DH5, pi/4-DQPSK, Mid Channel, 2441 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



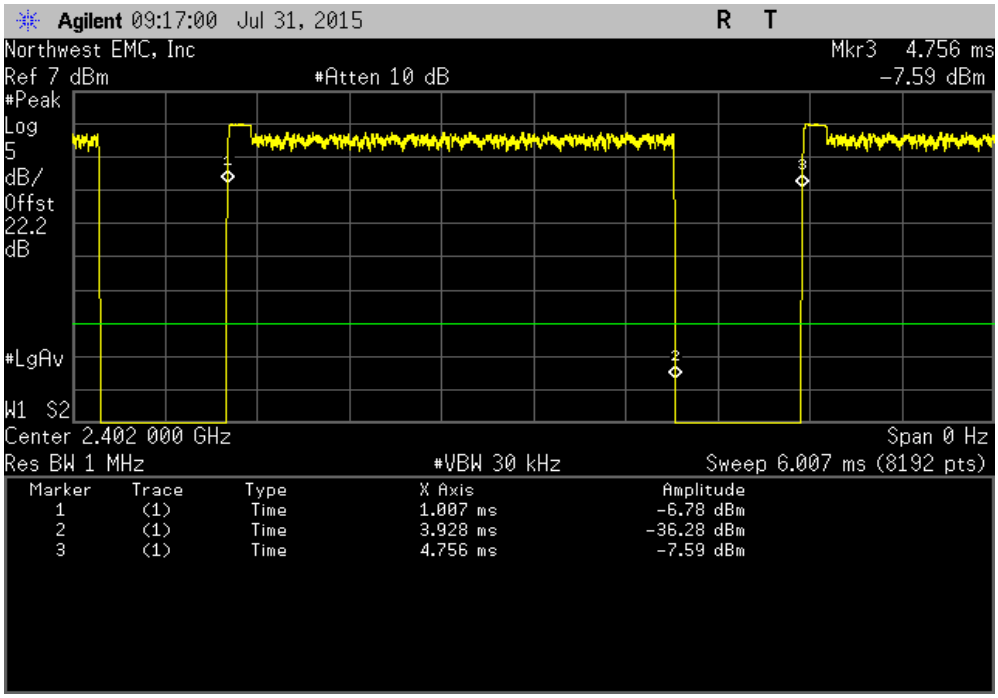
2DH5, pi/4-DQPSK, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.922 ms	3.75 ms	1	77.9	N/A	N/A



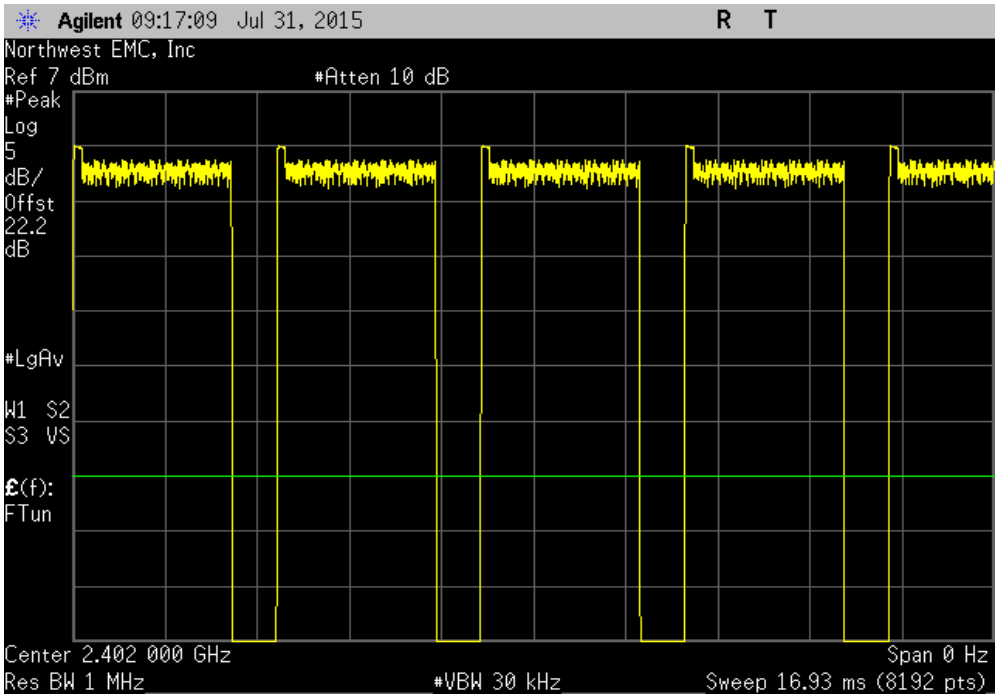
2DH5, pi/4-DQPSK, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



3DH5, 8-DPSK, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.922 ms	3.75 ms	1	77.9	N/A	N/A



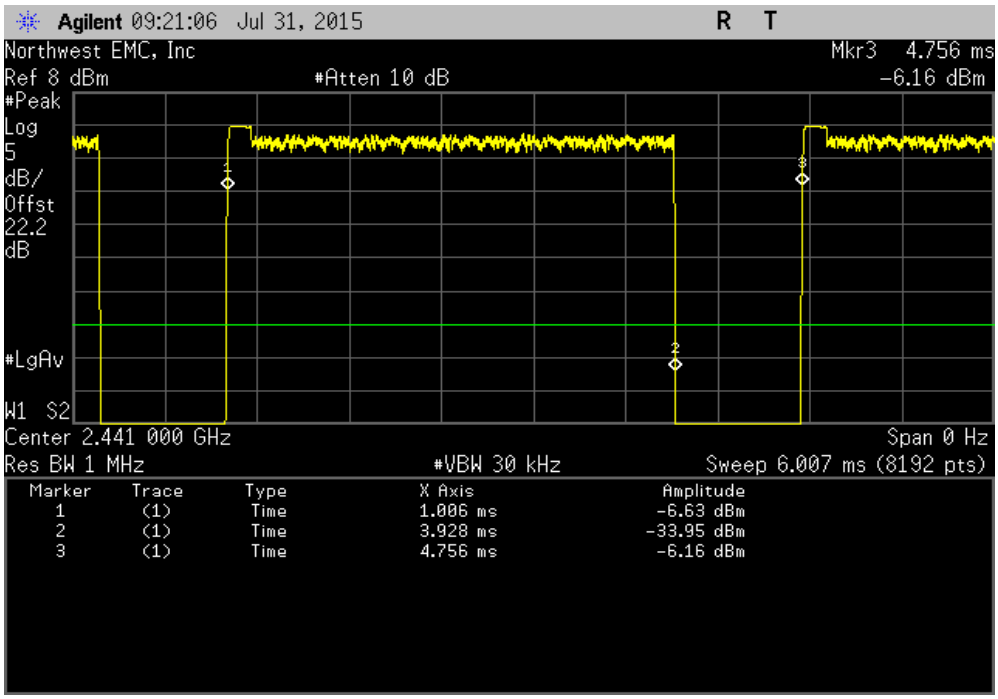
3DH5, 8-DPSK, Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



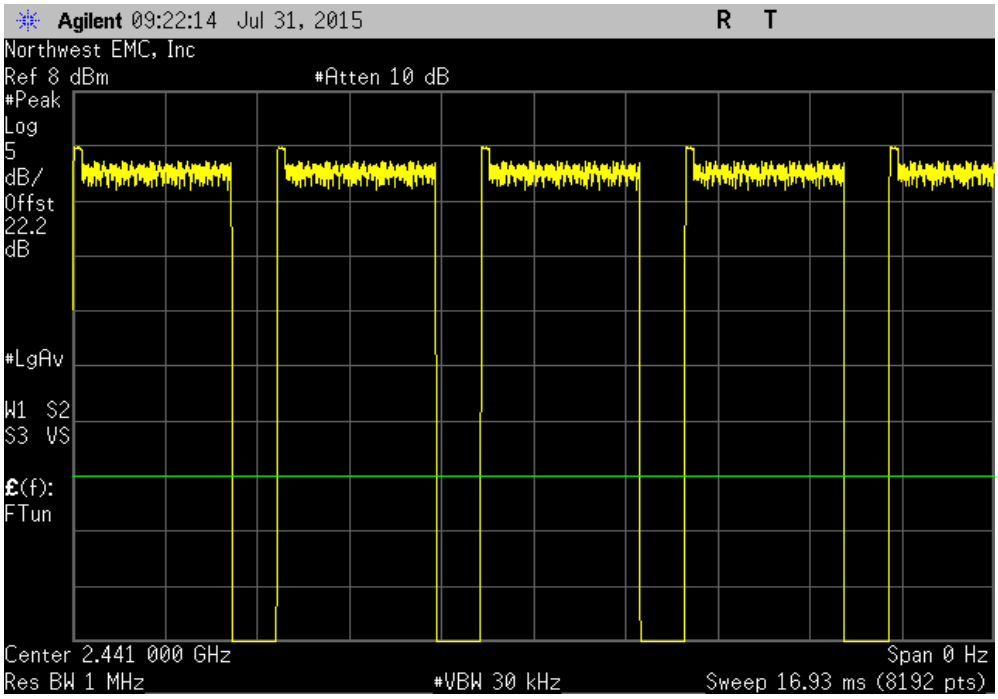
DUTY CYCLE

XMit 2015.01.14

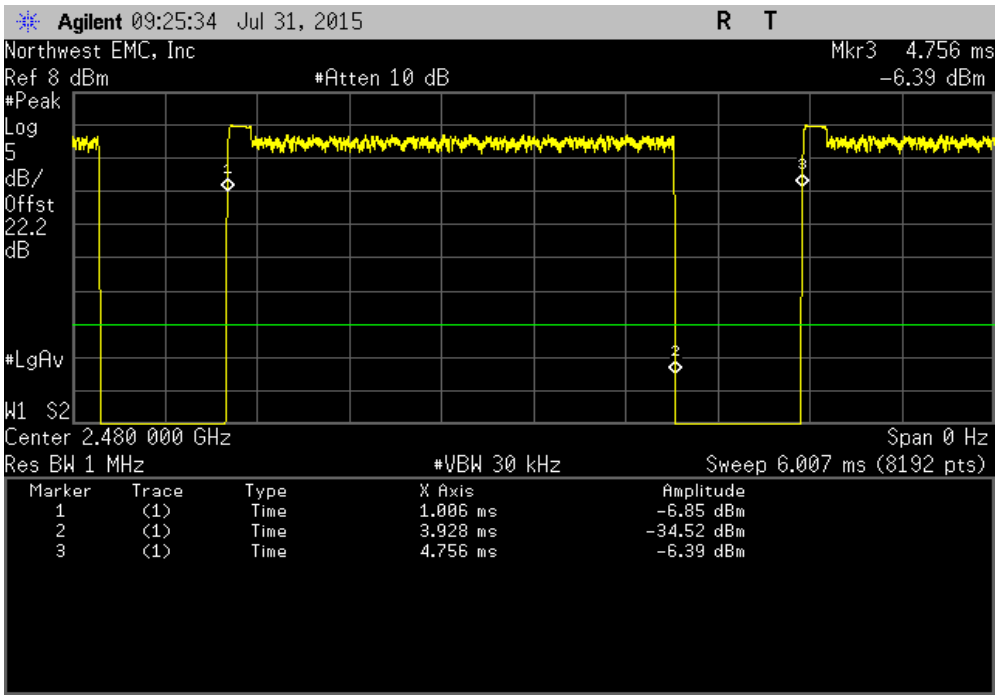
3DH5, 8-DPSK, Mid Channel, 2441 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.922 ms	3.75 ms	1	77.9	N/A	N/A



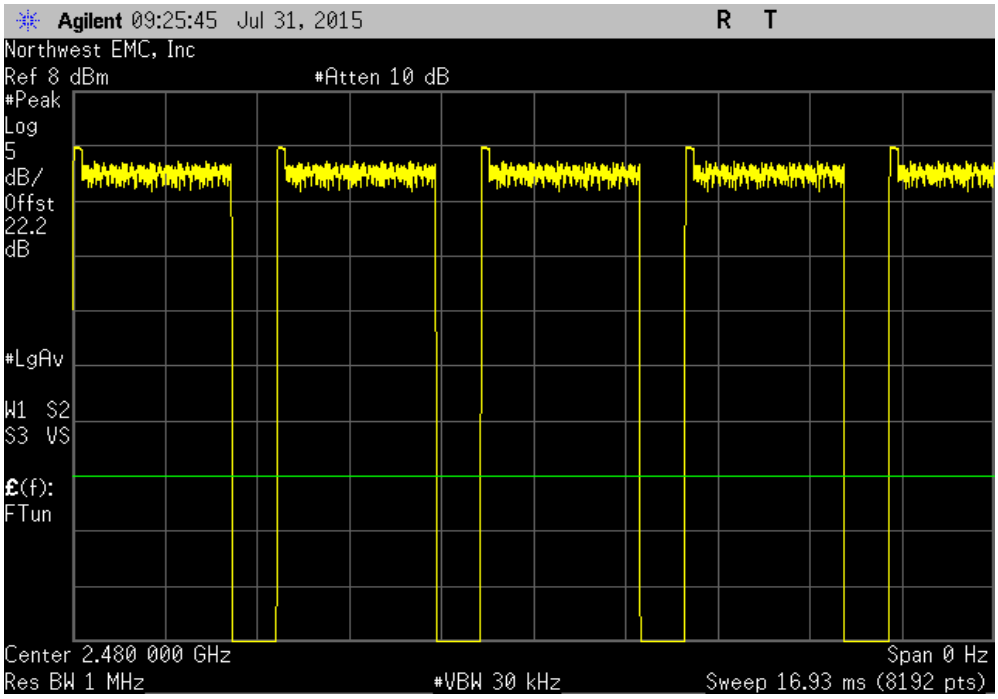
3DH5, 8-DPSK, Mid Channel, 2441 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



3DH5, 8-DPSK, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.922 ms	3.75 ms	1	77.9	N/A	N/A



3DH5, 8-DPSK, High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



OCCUPIED BANDWIDTH

XMit 2015.01.14

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.	Interval (mos)
Signal Generator	Keysight	N5182B	TFX	4/16/2015	36
Direct Connect Cable	ESM Cable Corp.	TT	EV1	NCR	0
DC Block, 40 GHz - SMA	Fairview Microwave	SD3379	AMP	6/18/2015	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/14/2015	12
Spectrum Analyzer	Agilent	E4446A	AAQ	3/10/2015	12

TEST DESCRIPTION

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

OCCUPIED BANDWIDTH

NORTHWEST EMC

XMit 2015.01.14

EUT:	Tango Transceiver			**Work Order:**	LISA0029
Serial Number:	None			**Date:**	07/31/15
Customer:	LightSpeed Aviation			**Temperature:**	24.7°C
Attendees:	Eduard Vaynberg			**Humidity:**	40%
Project:	None			**Barometric Pres.:**	1017
Tested by:	Brandon Hobbs	**Power:**	Battery	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

The EUT was tested in a non frequency hopping mode.

DEVIATIONS FROM TEST STANDARD

None

Configuration #	5	Signature

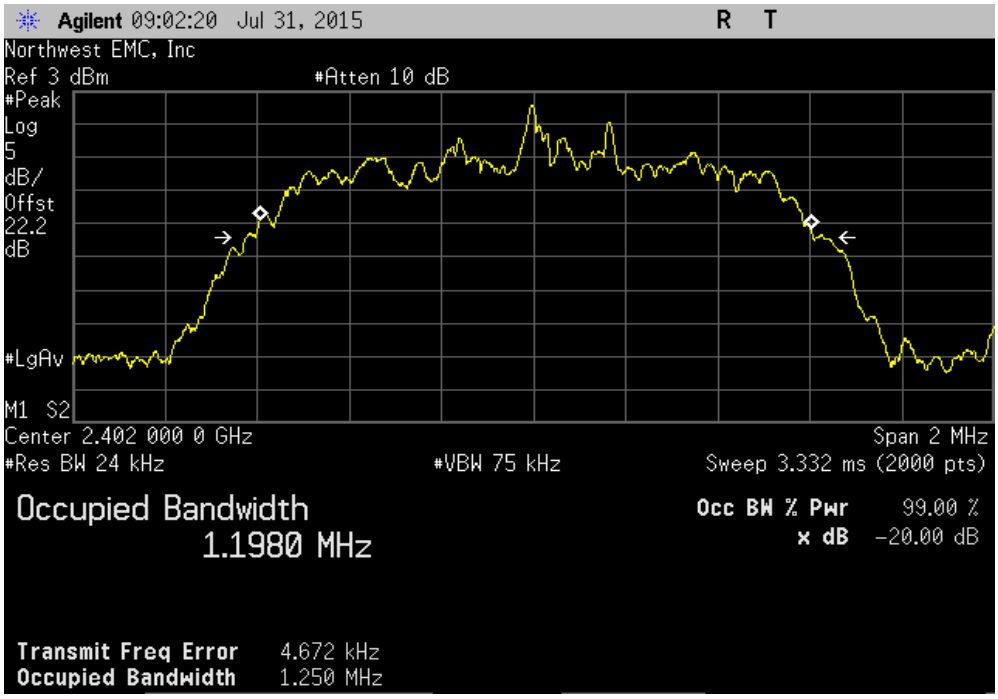
		Value	Limit (<)	Result
DH5, GFSK				
	Low Channel, 2402 MHz	883.381 kHz	1.5 MHz	Pass
	Mid Channel, 2441 MHz	910.668 kHz	1.5 MHz	Pass
	High Channel, 2480 MHz	891.946 kHz	1.5 MHz	Pass
2DH5, pi/4-DQPSK				
	Low Channel, 2402 MHz	1.25 MHz	1.5 MHz	Pass
	Mid Channel, 2441 MHz	1.274 MHz	1.5 MHz	Pass
	High Channel, 2480 MHz	1.272 MHz	1.5 MHz	Pass
3DH5, 8-DPSK				
	Low Channel, 2402 MHz	1.264 MHz	1.5 MHz	Pass
	Mid Channel, 2441 MHz	1.255 MHz	1.5 MHz	Pass
	High Channel, 2480 MHz	1.254 MHz	1.5 MHz	Pass

DH5, GFSK, Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				883.381 kHz	1.5 MHz	Pass

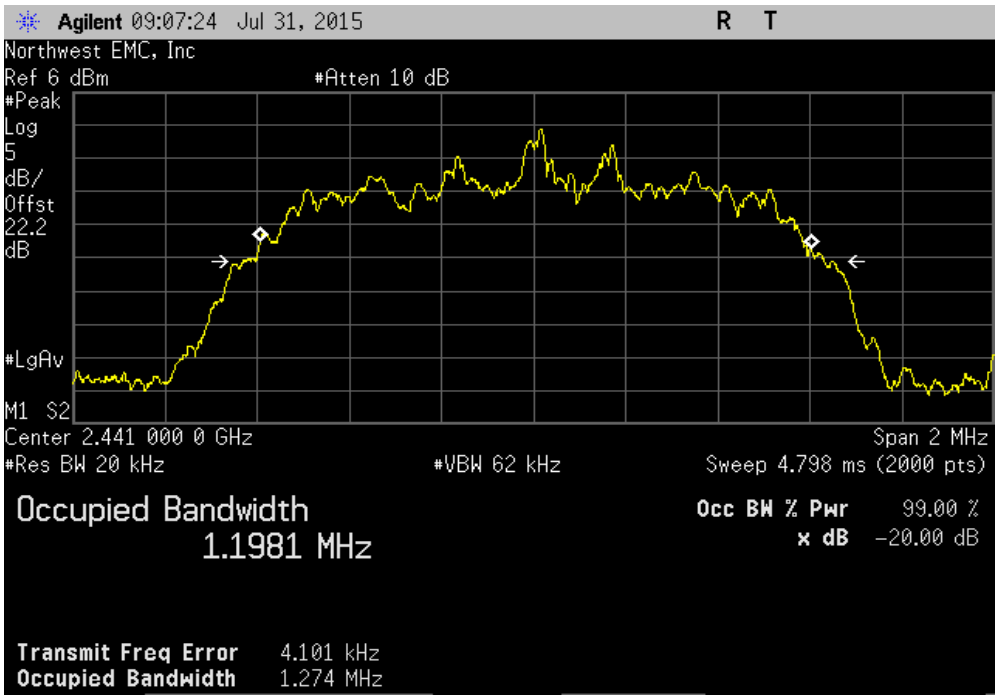
DH5, GFSK, Mid Channel, 2441 MHz						
				Value	Limit (<)	Result
				910.668 kHz	1.5 MHz	Pass

DH5, GFSK, High Channel, 2480 MHz						
				Value	Limit (<)	Result
				891.946 kHz	1.5 MHz	Pass

2DH5, pi/4-DQPSK, Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				1.25 MHz	1.5 MHz	Pass

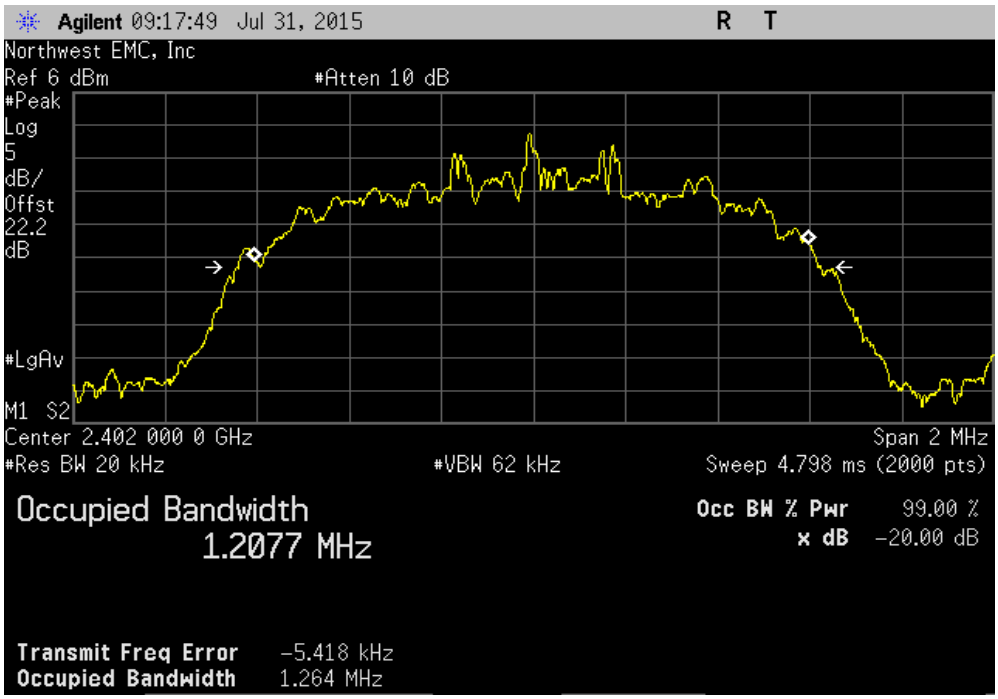


2DH5, pi/4-DQPSK, Mid Channel, 2441 MHz						
				Value	Limit (<)	Result
				1.274 MHz	1.5 MHz	Pass

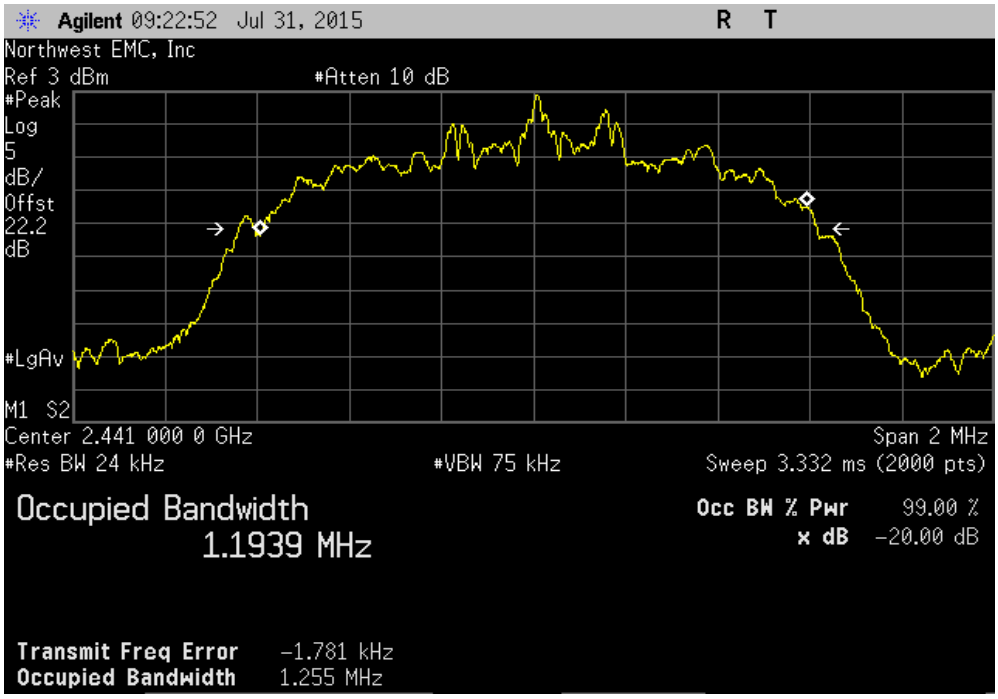


2DH5, pi/4-DQPSK, High Channel, 2480 MHz						
				Value	Limit (<)	Result
				1.272 MHz	1.5 MHz	Pass

3DH5, 8-DPSK, Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				1.264 MHz	1.5 MHz	Pass



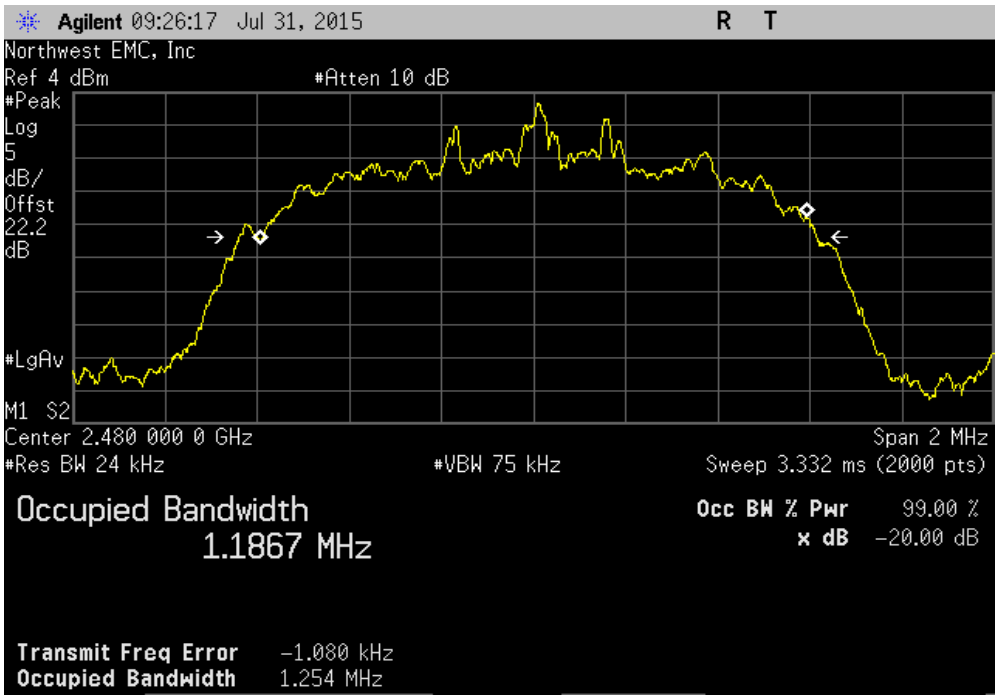
3DH5, 8-DPSK, Mid Channel, 2441 MHz						
				Value	Limit (<)	Result
				1.255 MHz	1.5 MHz	Pass



OCCUPIED BANDWIDTH

XMit 2015.01.14

3DH5, 8-DPSK, High Channel, 2480 MHz						
				Value	Limit (<)	Result
				1.254 MHz	1.5 MHz	Pass



OUTPUT POWER

XMit 2015.01.14

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.	Interval (mos)
Signal Generator	Keysight	N5182B	TFX	4/16/2015	36
Direct Connect Cable	ESM Cable Corp.	TT	EV1	NCR	0
DC Block, 40 GHz - SMA	Fairview Microwave	SD3379	AMP	6/18/2015	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/14/2015	12
Spectrum Analyzer	Agilent	E4446A	AAQ	3/10/2015	12

TEST DESCRIPTION

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

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36 dBm.

OUTPUT POWER

NORTHWEST EMC

XMit 2015.01.14

EUT:	**Tango Transceiver**			**Work Order:**	**LISA0029**
Serial Number:	**None**			**Date:**	**07/31/15**
Customer:	**LightSpeed Aviation**			**Temperature:**	**24.7°C**
Attendees:	**Eduard Vaynberg**			**Humidity:**	**40%**
Project:	**None**			**Barometric Pres.:**	**1017**
Tested by:	**Brandon Hobbs**	**Power:**	**Battery**	**Job Site:**	**EV06**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

The EUT was tested in a non frequency hopping mode.

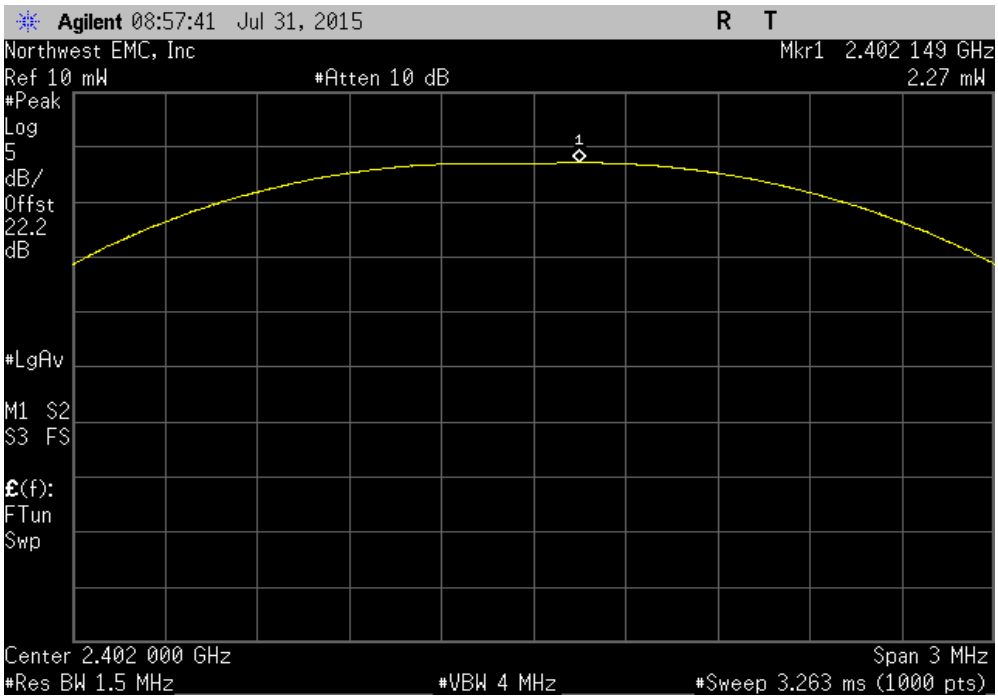
DEVIATIONS FROM TEST STANDARD

None

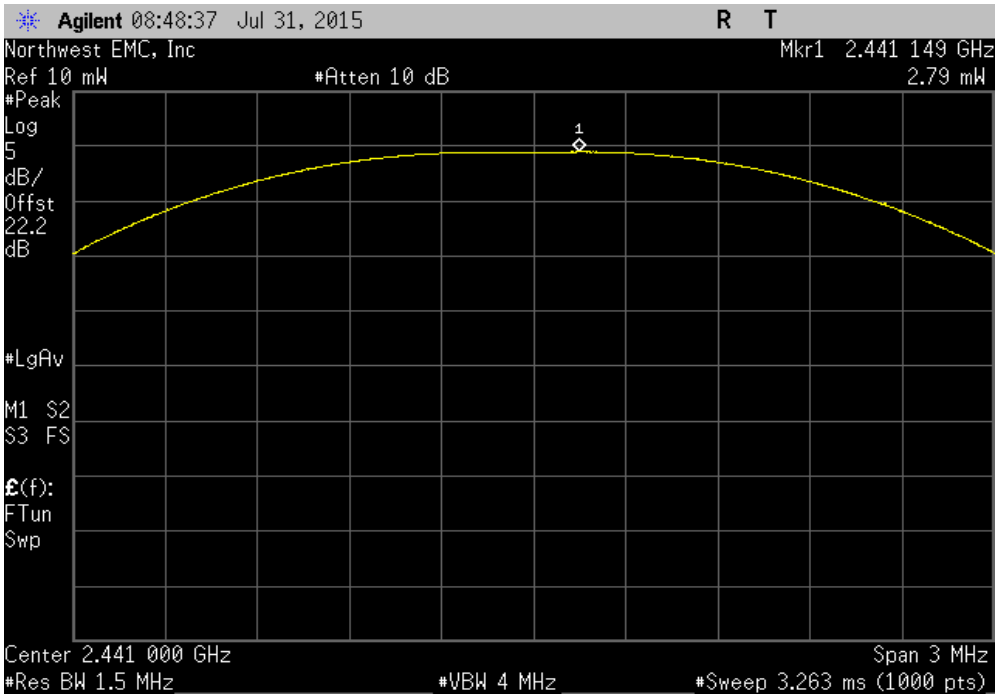
Configuration #	**5**	*Signature*

		Value	**Limit (<)**	**Result**
DH5, GFSK				
	Low Channel, 2402 MHz	2.274 mW	125 mW	Pass
	Mid Channel, 2441 MHz	2.793 mW	125 mW	Pass
	High Channel, 2480 MHz	2.954 mW	125 mW	Pass
2DH5, pi/4-DQPSK				
	Low Channel, 2402 MHz	1.924 mW	125 mW	Pass
	Mid Channel, 2441 MHz	2.349 mW	125 mW	Pass
	High Channel, 2480 MHz	2.389 mW	125 mW	Pass
3DH5, 8-DPSK				
	Low Channel, 2402 MHz	2.017 mW	125 mW	Pass
	Mid Channel, 2441 MHz	2.479 mW	125 mW	Pass
	High Channel, 2480 MHz	2.554 mW	125 mW	Pass

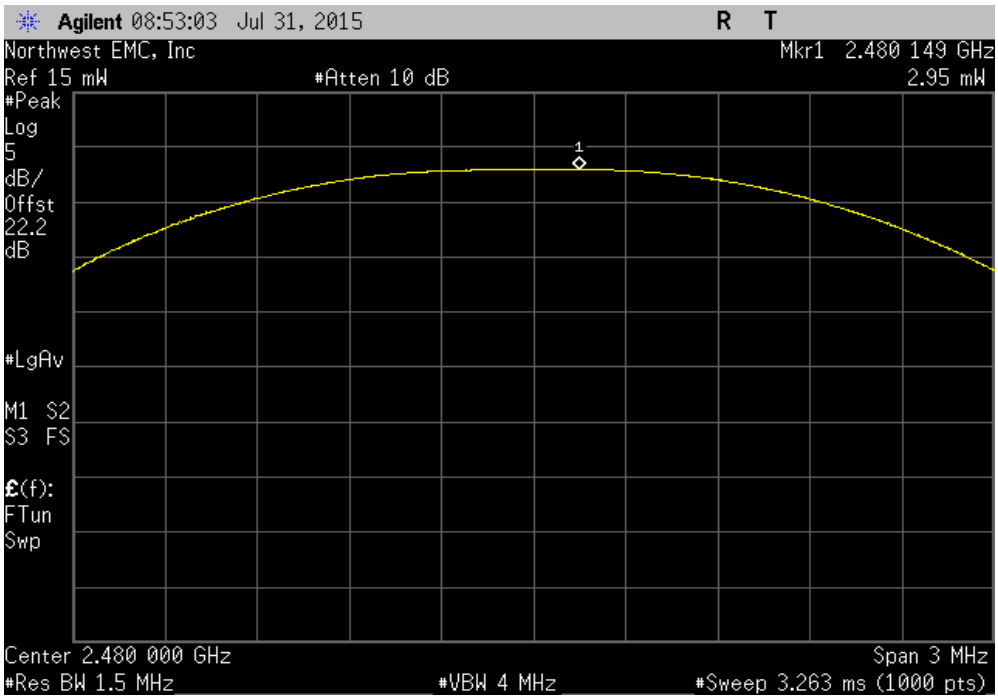
DH5, GFSK, Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				2.274 mW	125 mW	Pass



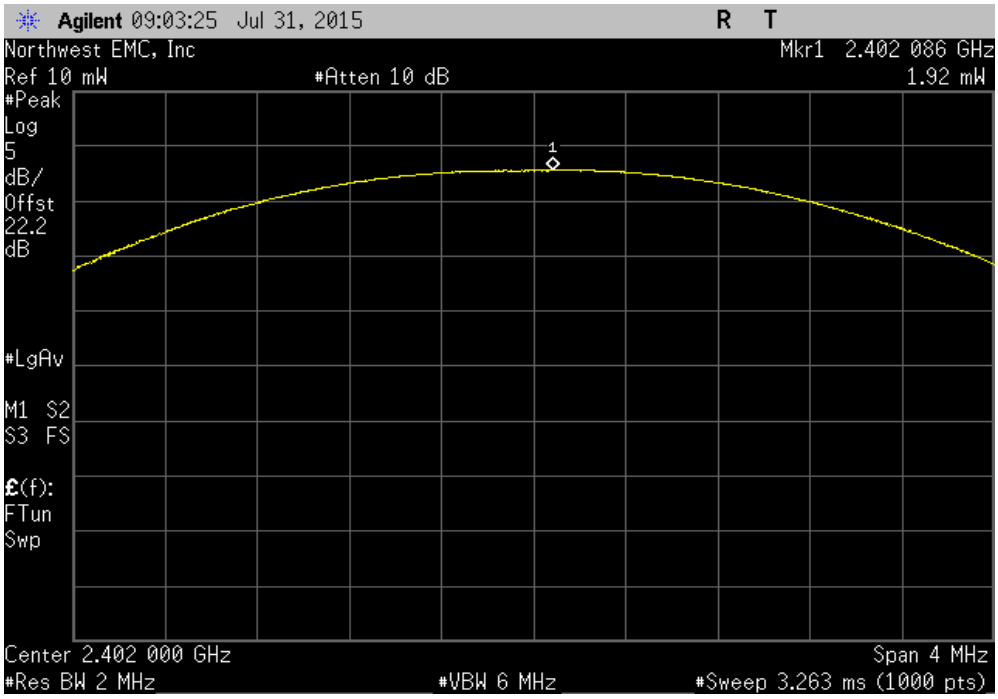
DH5, GFSK, Mid Channel, 2441 MHz						
				Value	Limit (<)	Result
				2.793 mW	125 mW	Pass



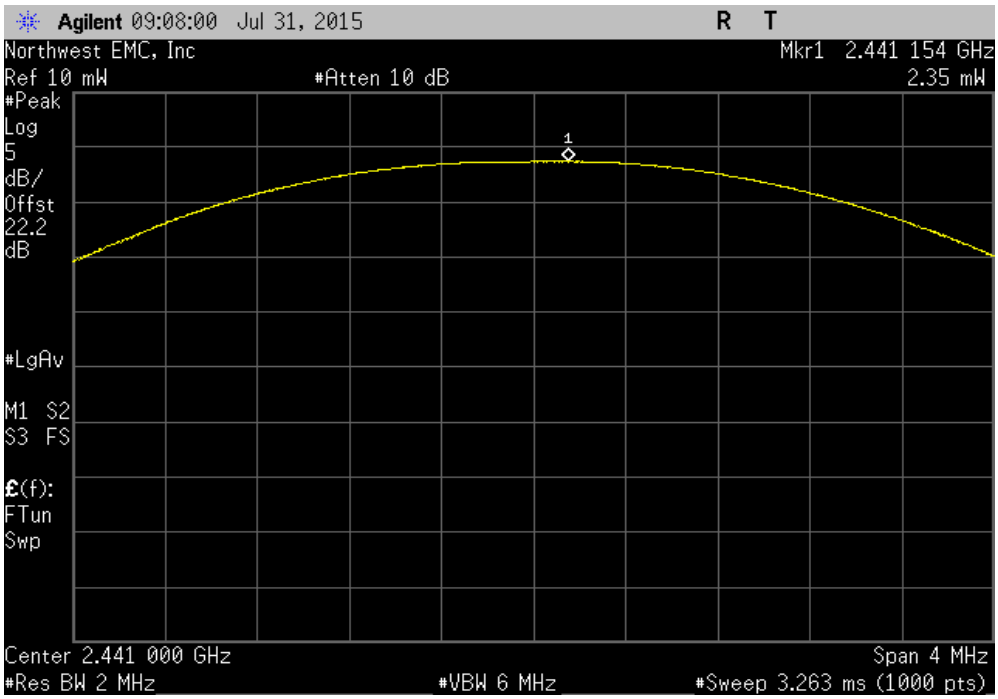
DH5, GFSK, High Channel, 2480 MHz						
				Value	Limit (<)	Result
				2.954 mW	125 mW	Pass



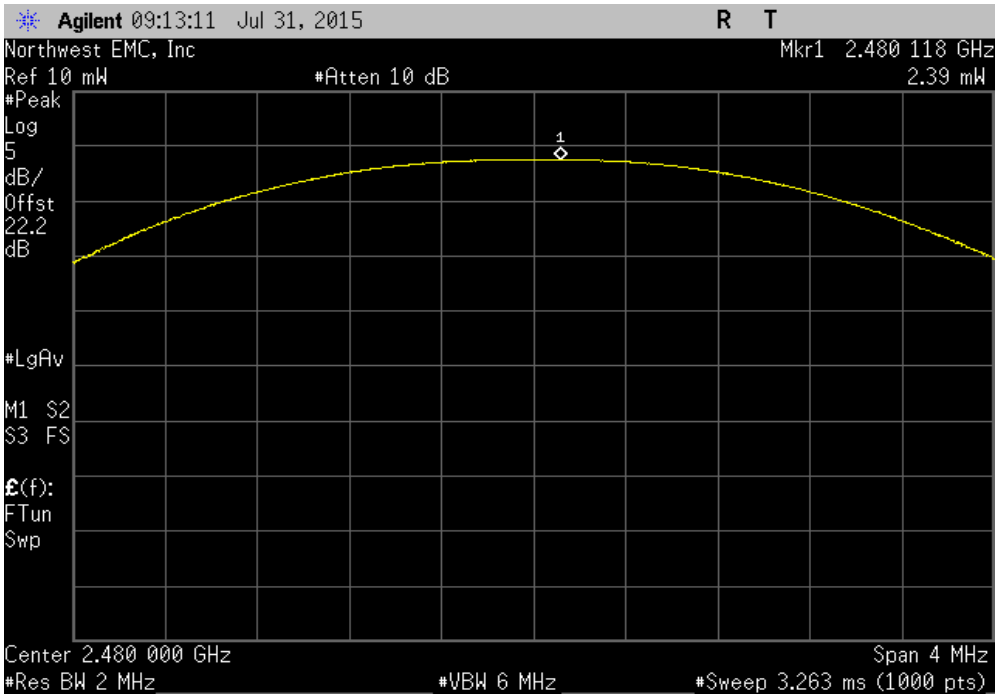
2DH5, pi/4-DQPSK, Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				1.924 mW	125 mW	Pass



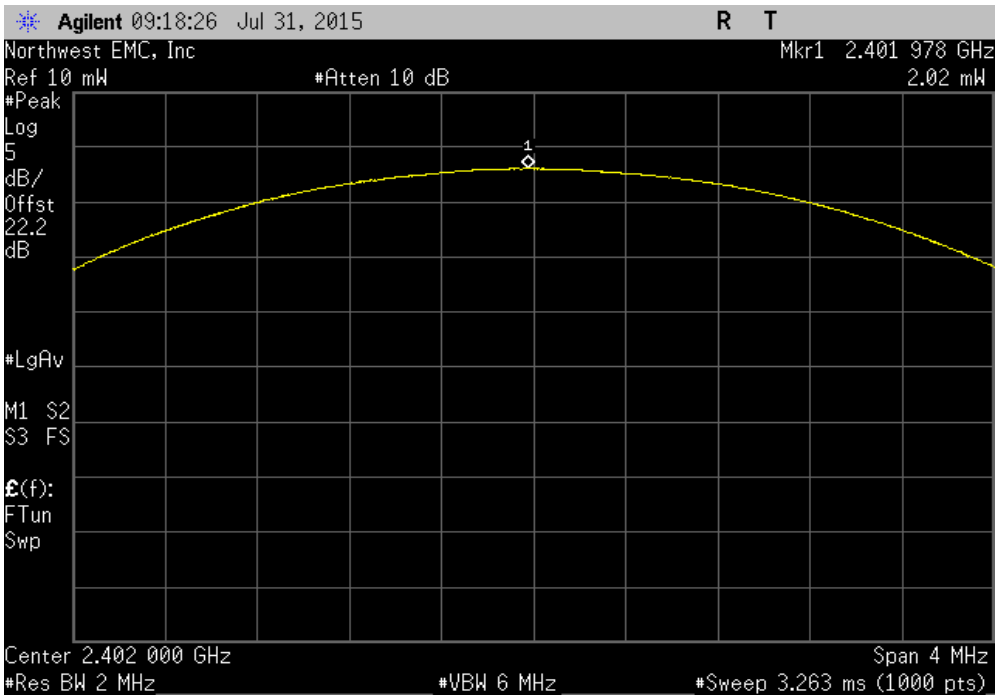
2DH5, pi/4-DQPSK, Mid Channel, 2441 MHz							
					Value	Limit (<)	Result
					2.349 mW	125 mW	Pass



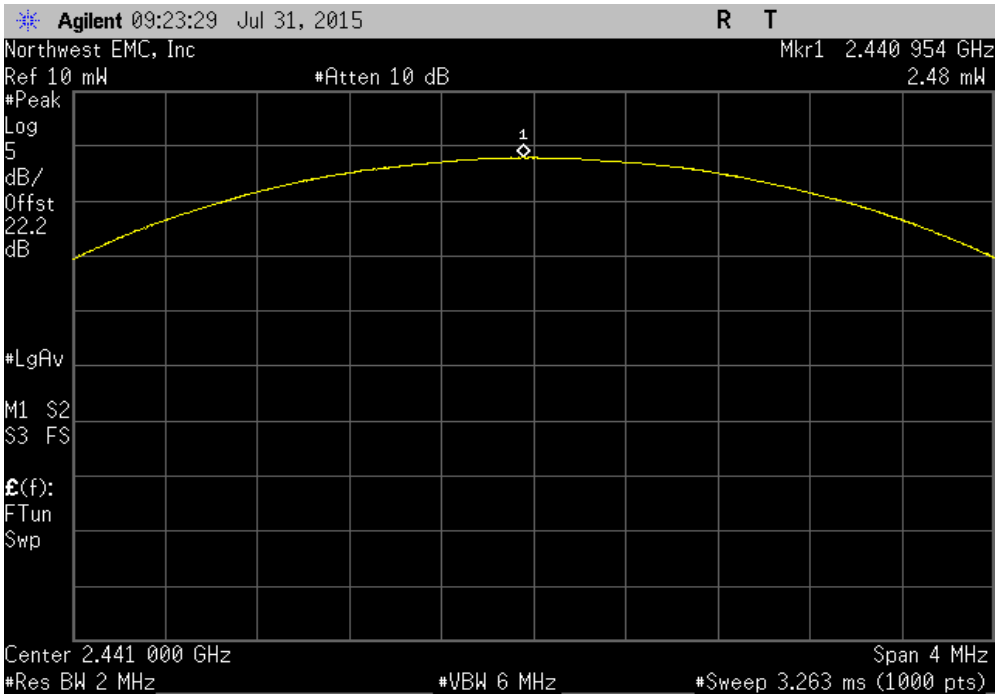
2DH5, pi/4-DQPSK, High Channel, 2480 MHz							
					Value	Limit (<)	Result
					2.389 mW	125 mW	Pass



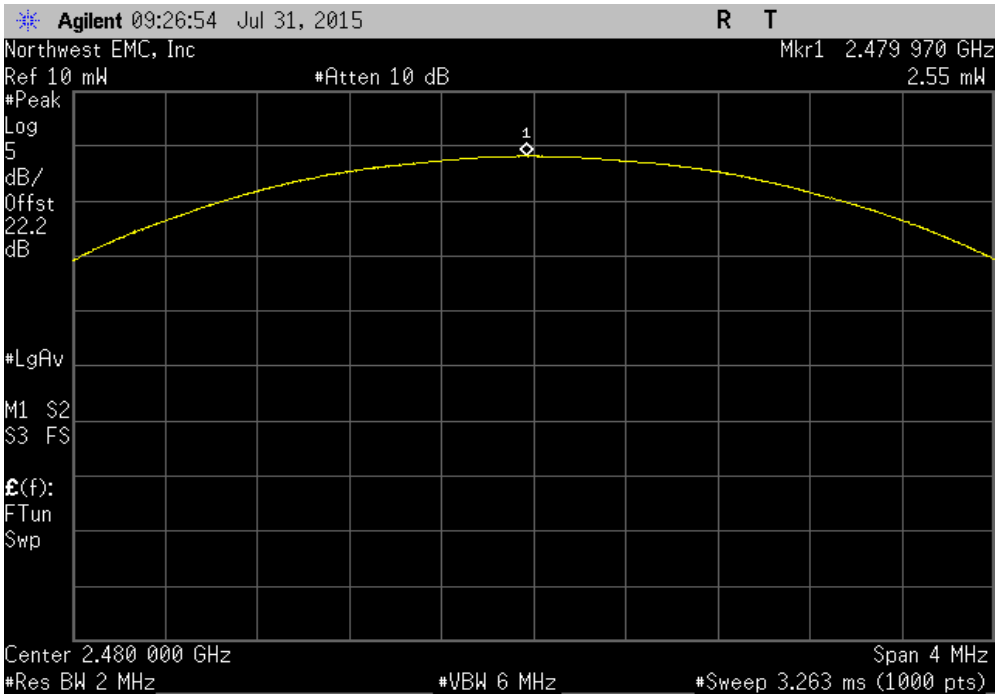
3DH5, 8-DPSK, Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				2.017 mW	125 mW	Pass



3DH5, 8-DPSK, Mid Channel, 2441 MHz						
				Value	Limit (<)	Result
				2.479 mW	125 mW	Pass



3DH5, 8-DPSK, High Channel, 2480 MHz						
				Value	Limit (<)	Result
				2.554 mW	125 mW	Pass



SPURIOUS CONDUCTED EMISSIONS

XMit 2015.01.14

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.	Interval (mos)
Signal Generator	Keysight	N5182B	TFX	4/16/2015	36
Direct Connect Cable	ESM Cable Corp.	TT	EV1	NCR	0
DC Block, 40 GHz - SMA	Fairview Microwave	SD3379	AMP	6/18/2015	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/14/2015	12
Spectrum Analyzer	Agilent	E4446A	AAQ	3/10/2015	12

TEST DESCRIPTION

The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet in a no-hop mode. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS

NORTHWEST EMC

XMit 2015.01.14

EUT:	**Tango Transceiver**			**Work Order:**	**LISA0029**
Serial Number:	**None**			**Date:**	**07/31/15**
Customer:	**LightSpeed Aviation**			**Temperature:**	**24.7°C**
Attendees:	**Eduard Vaynberg**			**Humidity:**	**40%**
Project:	**None**			**Barometric Pres.:**	**1017**
Tested by:	**Brandon Hobbs**	**Power:**	**Battery**	**Job Site:**	**EV06**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

The EUT was tested in a non frequency hopping mode.

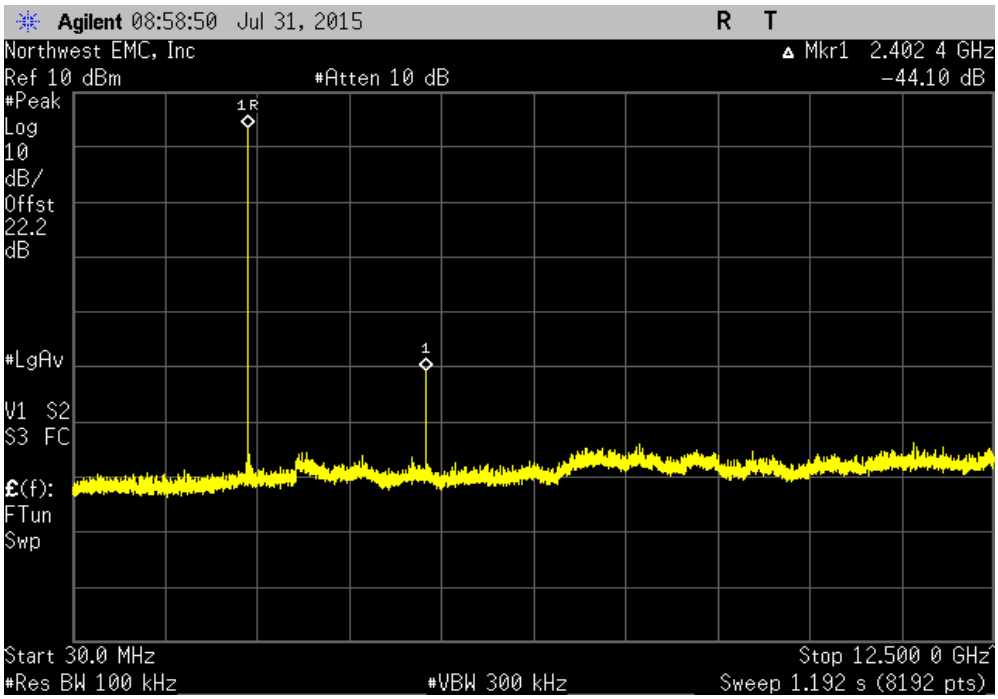
DEVIATIONS FROM TEST STANDARD

None

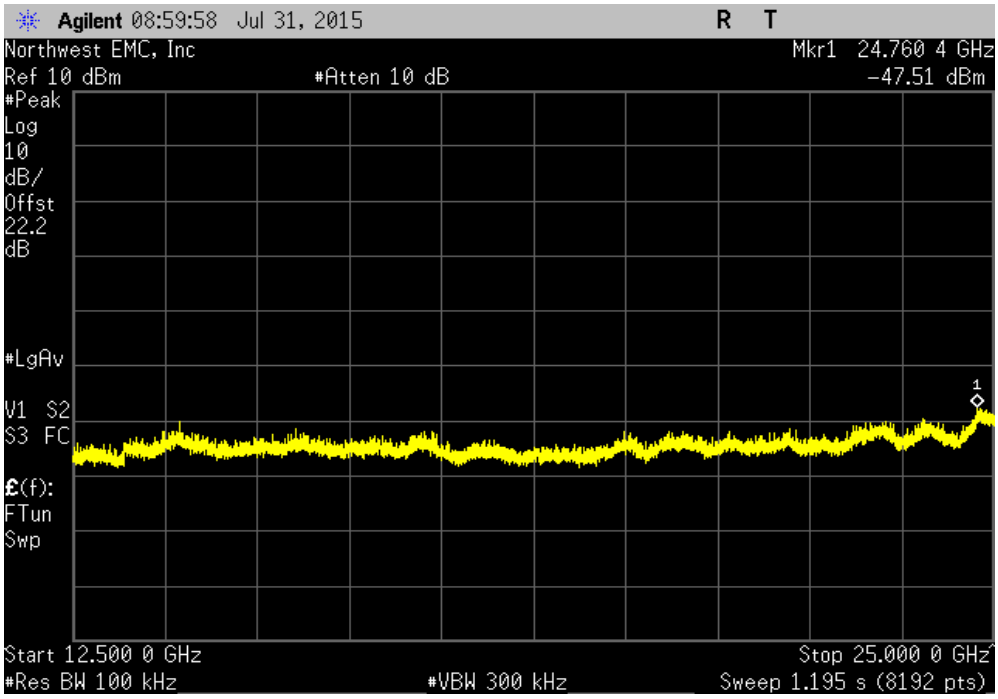
Configuration #	**5**	*Signature*

		Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result
DH5, GFSK					
	Low Channel, 2402 MHz	30 MHz - 12.5 GHz	-44.1	-20	Pass
	Low Channel, 2402 MHz	12.5 GHz - 25 GHz	-51.04	-20	Pass
	Mid Channel, 2441 MHz	30 MHz - 12.5 GHz	-46.02	-20	Pass
	Mid Channel, 2441 MHz	12.5 GHz - 25 GHz	-51.61	-20	Pass
	High Channel, 2480 MHz	30 MHz - 12.5 GHz	-48.53	-20	Pass
	High Channel, 2480 MHz	12.5 GHz - 25 GHz	-52.08	-20	Pass
2DH5, pi/4-DQPSK					
	Low Channel, 2402 MHz	30 MHz - 12.5 GHz	-50.7	-20	Pass
	Low Channel, 2402 MHz	12.5 GHz - 25 GHz	-48.64	-20	Pass
	Mid Channel, 2441 MHz	30 MHz - 12.5 GHz	-50.23	-20	Pass
	Mid Channel, 2441 MHz	12.5 GHz - 25 GHz	-50.61	-20	Pass
	High Channel, 2480 MHz	30 MHz - 12.5 GHz	-55.07	-20	Pass
	High Channel, 2480 MHz	12.5 GHz - 25 GHz	-49.81	-20	Pass
3DH5, 8-DPSK					
	Low Channel, 2402 MHz	30 MHz - 12.5 GHz	-49.51	-20	Pass
	Low Channel, 2402 MHz	12.5 GHz - 25 GHz	-45.98	-20	Pass
	Mid Channel, 2441 MHz	30 MHz - 12.5 GHz	-53.07	-20	Pass
	Mid Channel, 2441 MHz	12.5 GHz - 25 GHz	-49.52	-20	Pass
	High Channel, 2480 MHz	30 MHz - 12.5 GHz	-49.54	-20	Pass
	High Channel, 2480 MHz	12.5 GHz - 25 GHz	-46.02	-20	Pass

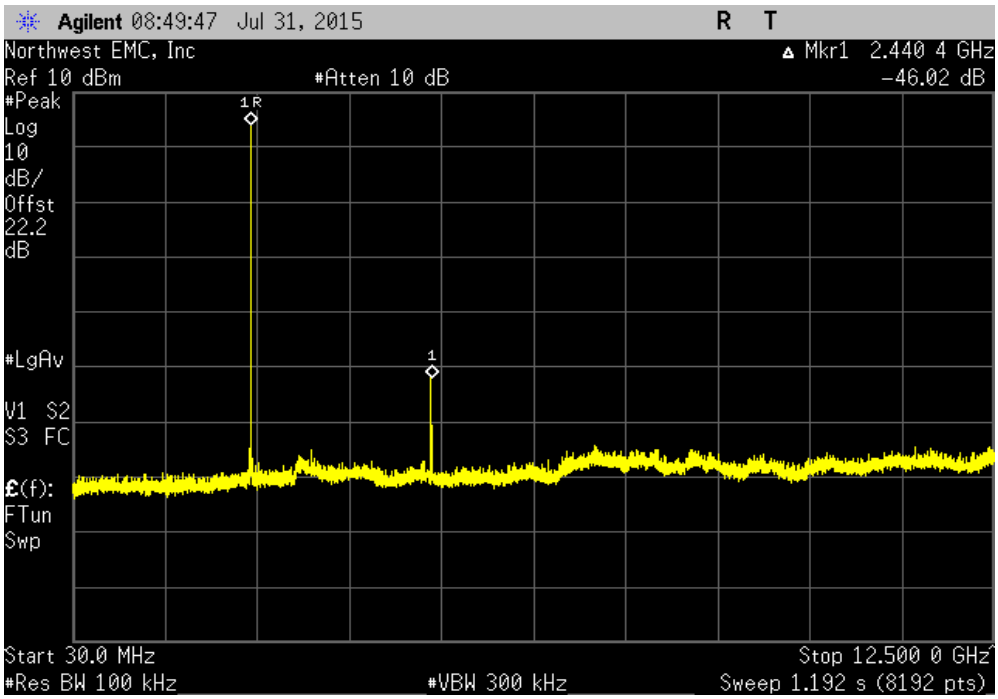
DH5, GFSK, Low Channel, 2402 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-44.1	-20	Pass



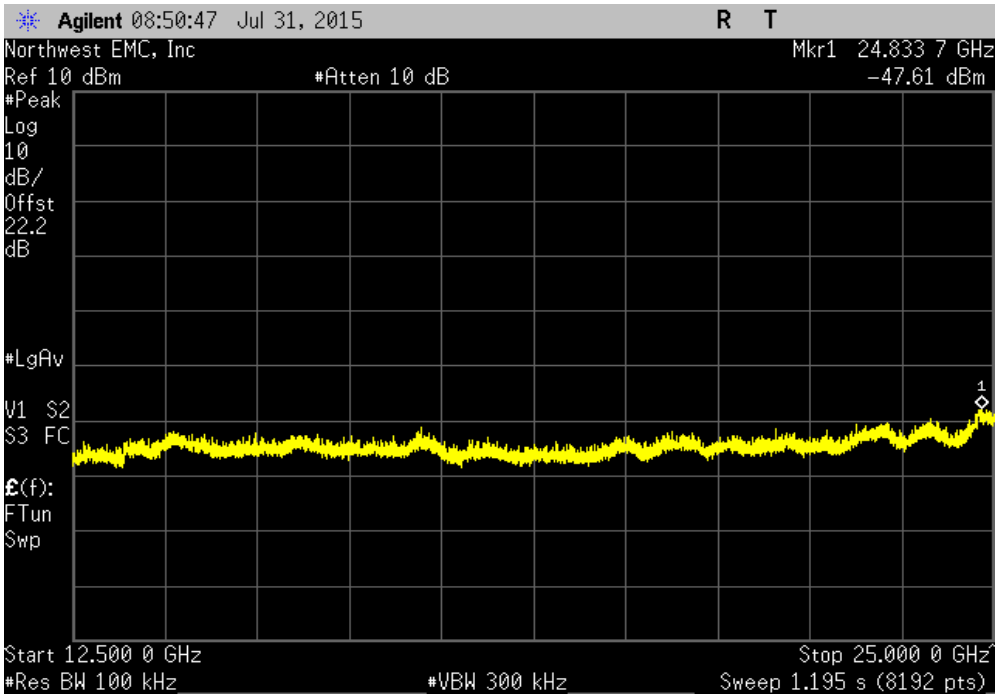
DH5, GFSK, Low Channel, 2402 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-51.04	-20	Pass



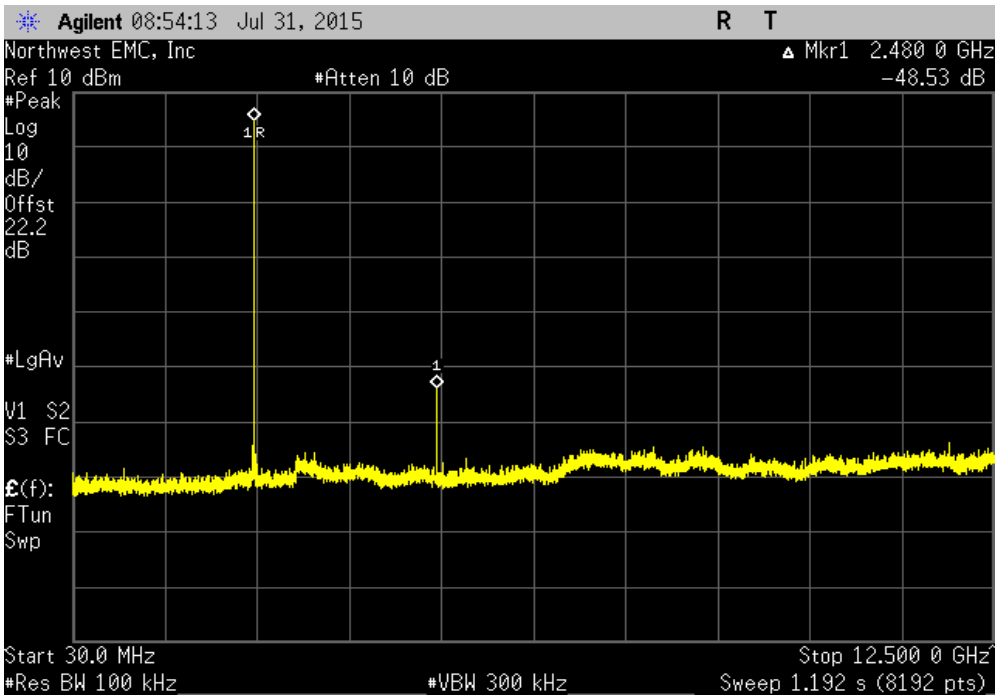
DH5, GFSK, Mid Channel, 2441 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-46.02	-20	Pass



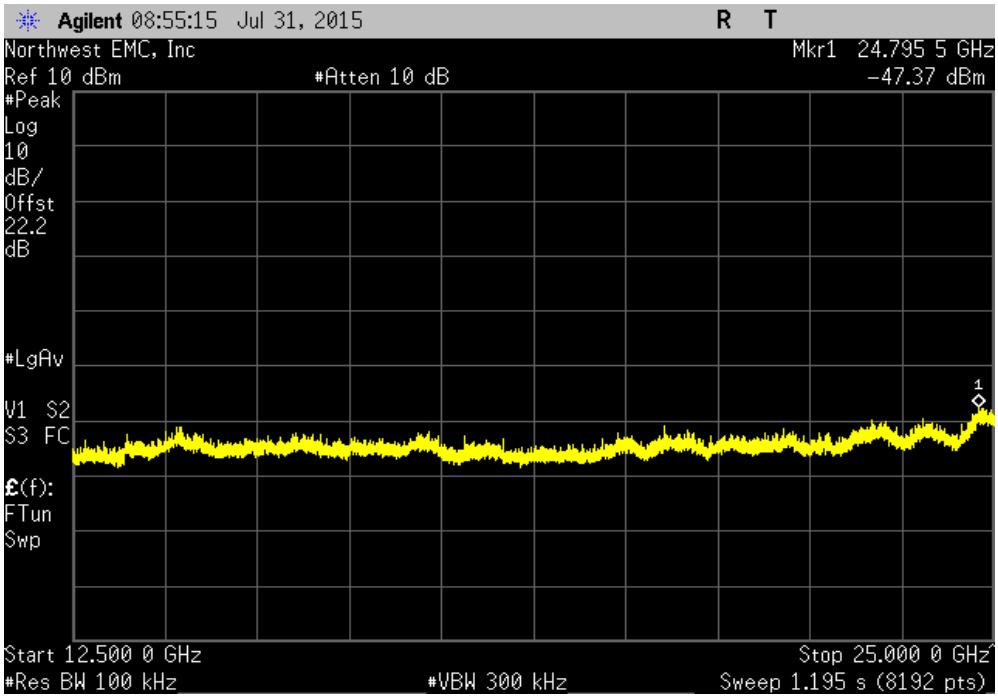
DH5, GFSK, Mid Channel, 2441 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-51.61	-20	Pass



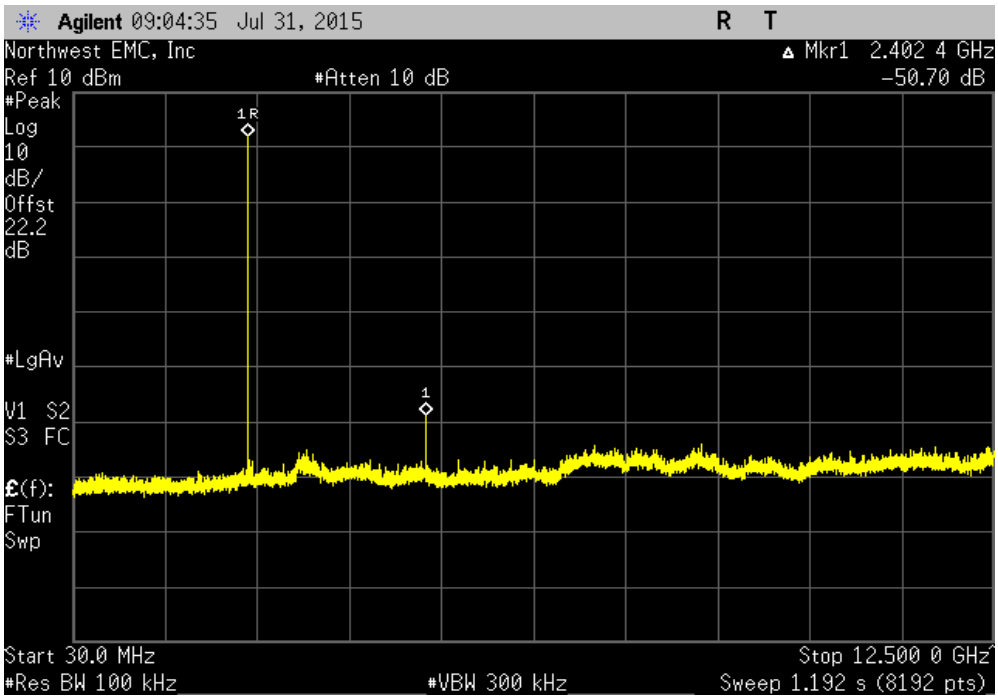
DH5, GFSK, High Channel, 2480 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-48.53	-20	Pass



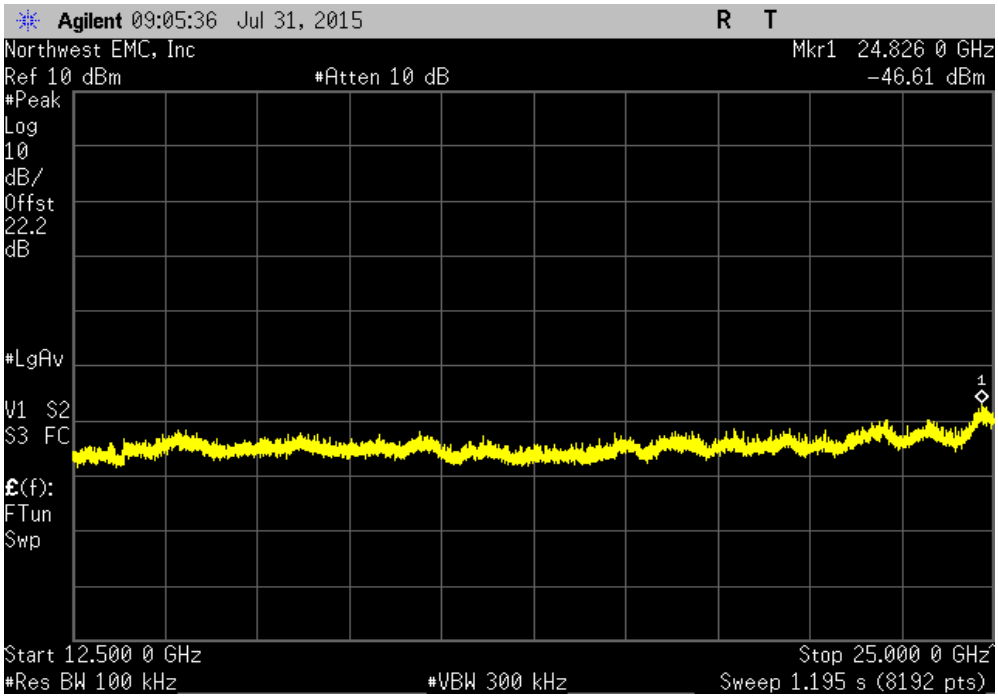
DH5, GFSK, High Channel, 2480 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-52.08	-20	Pass



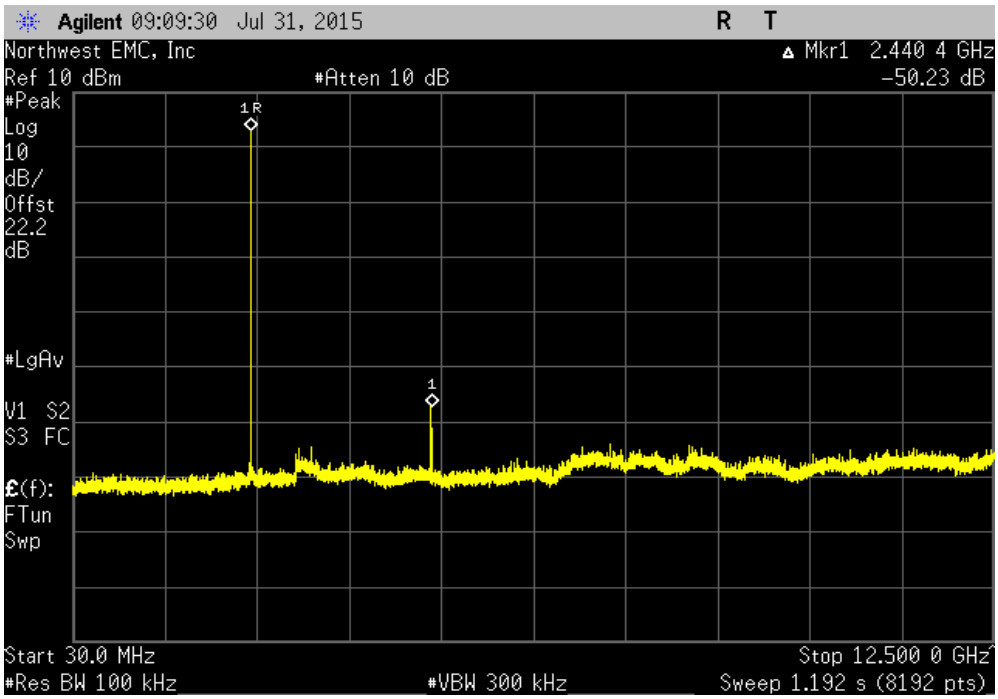
2DH5, pi/4-DQPSK, Low Channel, 2402 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-50.7	-20	Pass



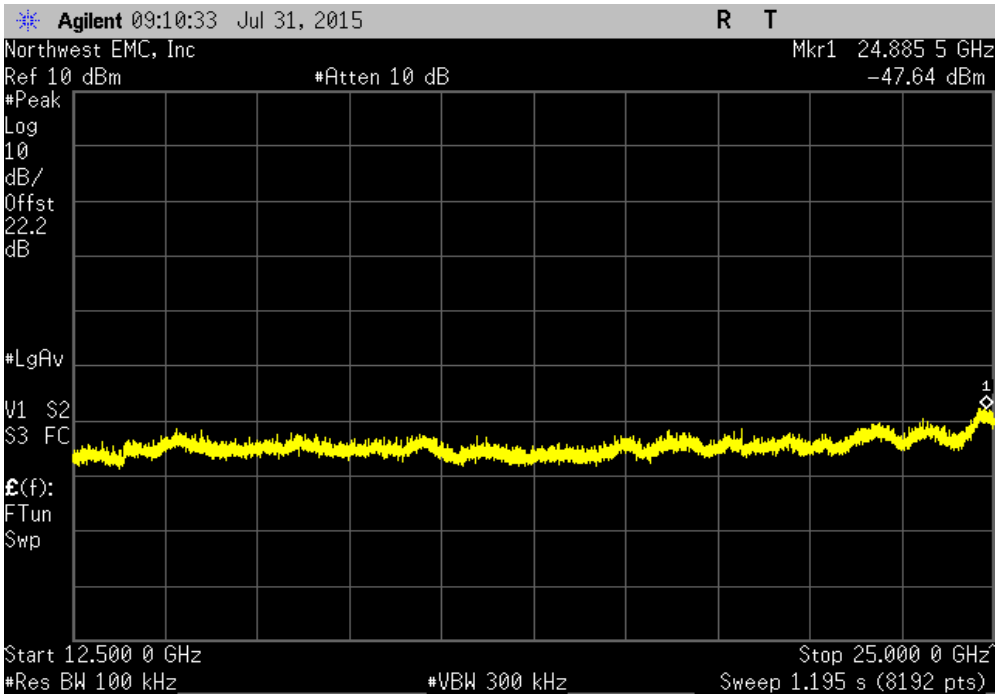
2DH5, pi/4-DQPSK, Low Channel, 2402 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-48.64	-20	Pass



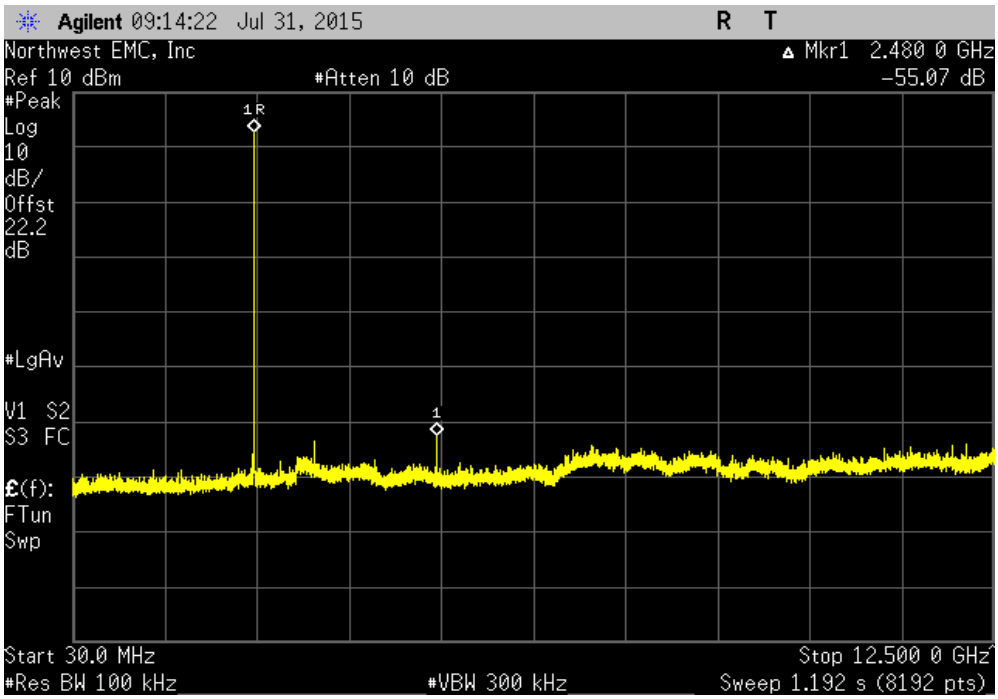
2DH5, pi/4-DQPSK, Mid Channel, 2441 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-50.23	-20	Pass



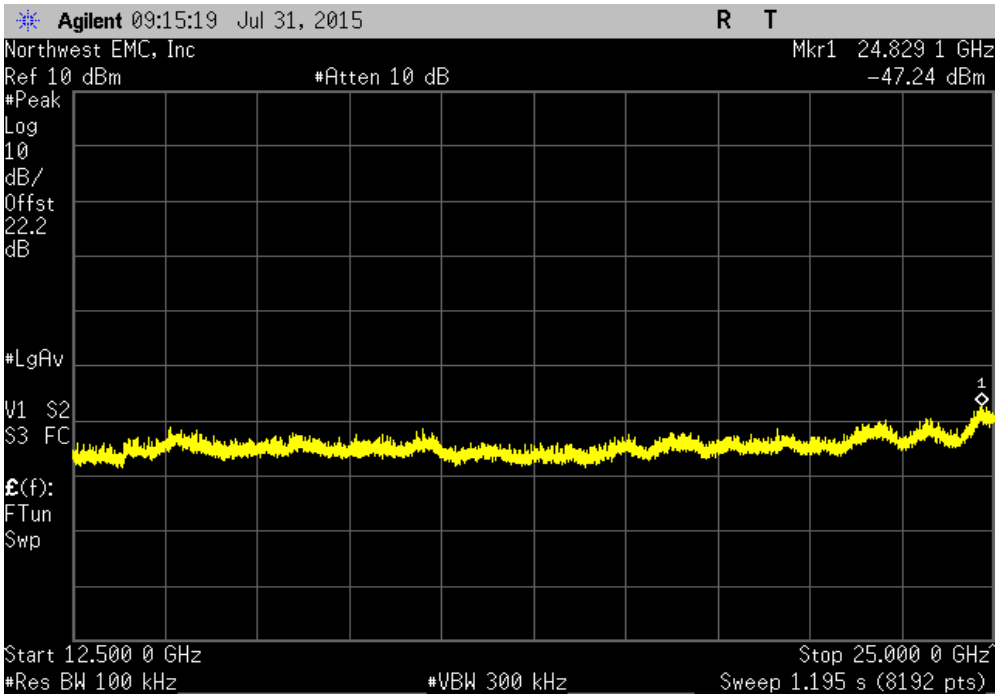
2DH5, pi/4-DQPSK, Mid Channel, 2441 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-50.61	-20	Pass



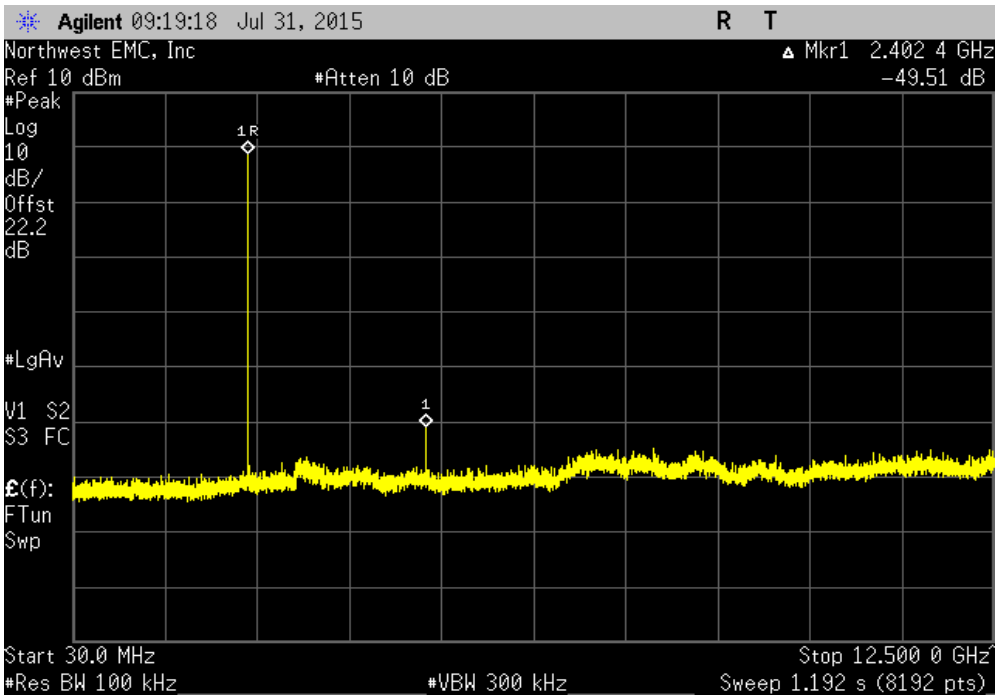
2DH5, pi/4-DQPSK, High Channel, 2480 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-55.07	-20	Pass



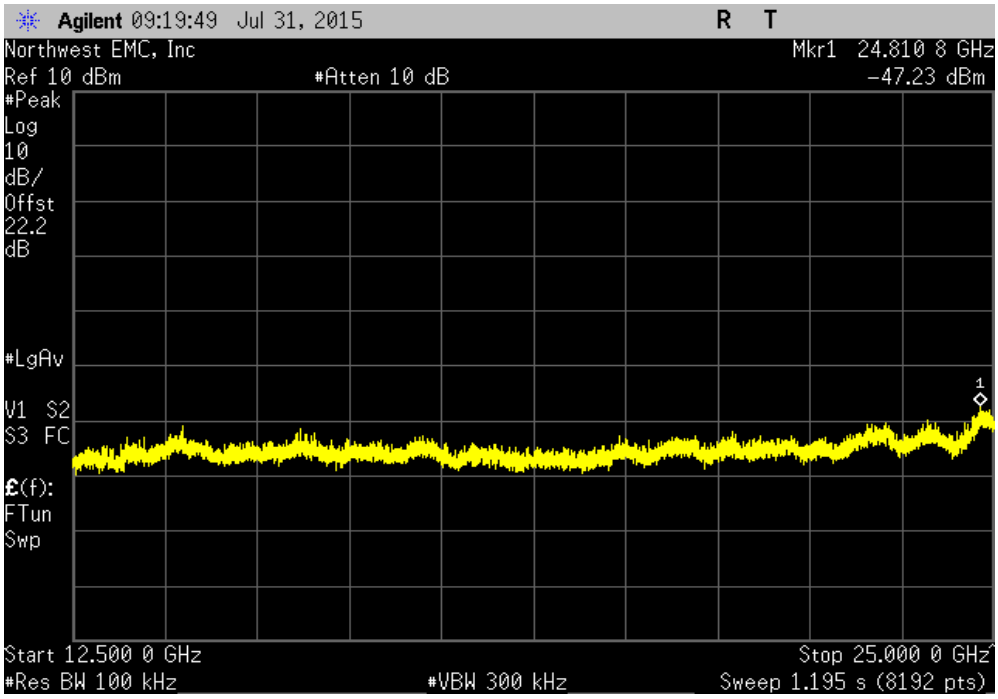
2DH5, pi/4-DQPSK, High Channel, 2480 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-49.81	-20	Pass



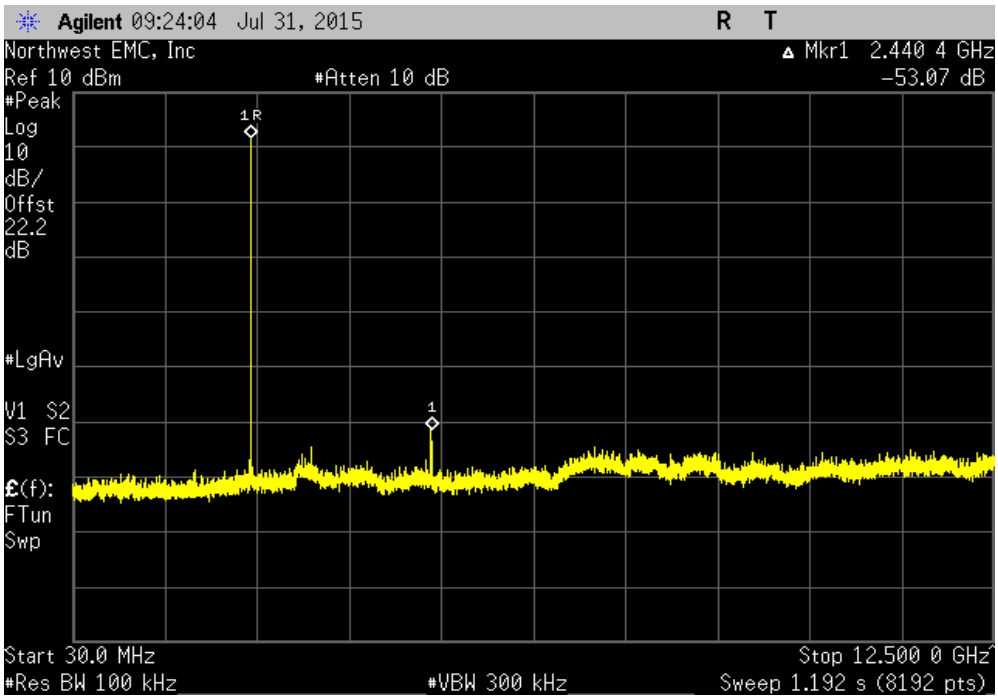
3DH5, 8-DPSK, Low Channel, 2402 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-49.51	-20	Pass



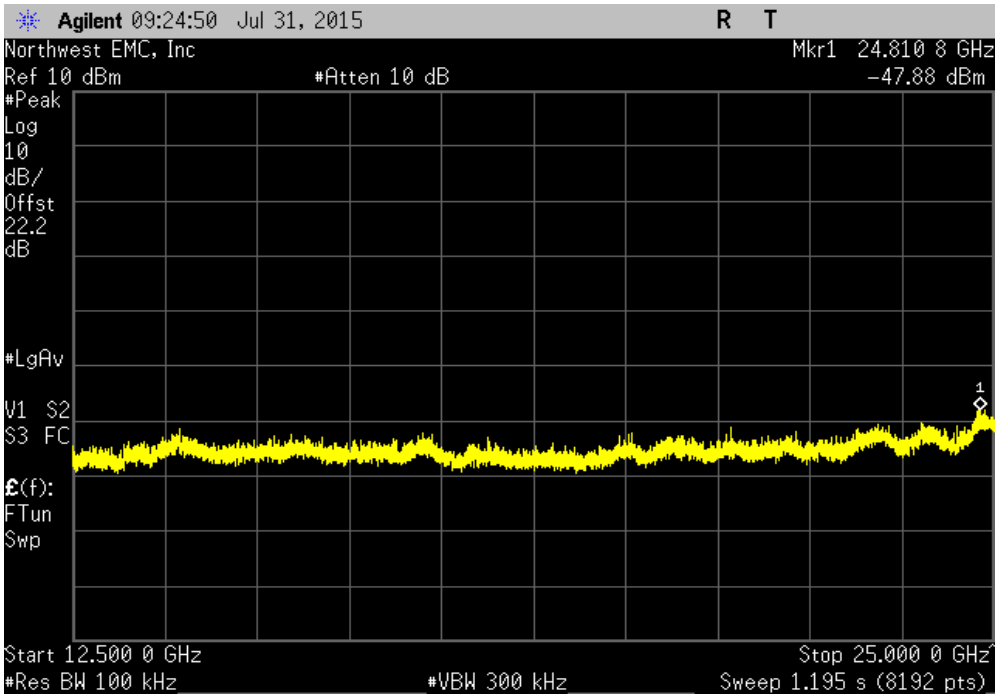
3DH5, 8-DPSK, Low Channel, 2402 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-45.98	-20	Pass



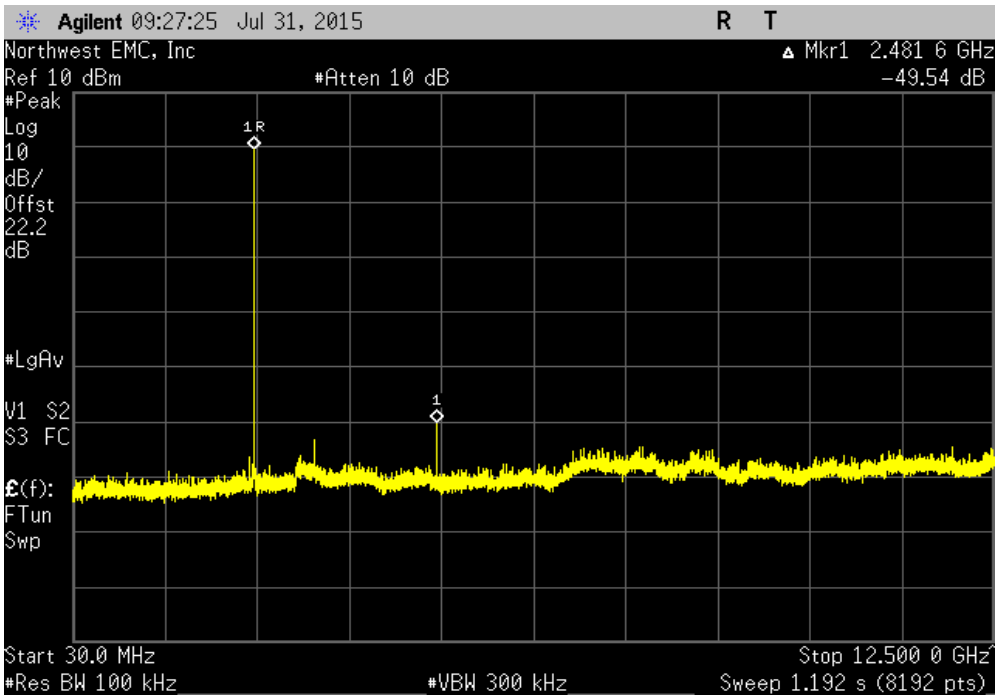
3DH5, 8-DPSK, Mid Channel, 2441 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-53.07	-20	Pass



3DH5, 8-DPSK, Mid Channel, 2441 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-49.52	-20	Pass



3DH5, 8-DPSK, High Channel, 2480 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-49.54	-20	Pass



3DH5, 8-DPSK, High Channel, 2480 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-46.02	-20	Pass