REPORT

For

Dali Wireless, Inc.

535 Middlefield Road, Suite 280
Menlo Park, CA 94025

Date:	31 August 2017
Report No.:	16462-1E
Revision No.:	1
Project No.:	16462
Equipment:	PS 900 Remote Unit, Single-Band Medium Power
Model No.:	HD30-1-PS-NA-C-I1N
FCC ID:	HCOHD301PSNACI1A

ONE STOP GLOBAL CERTIFICATION SOLUTIONS

Unit 205 – 8291 92 ST., Delta, BC
V4G 0A4, Canada
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TEST REPORT_FCC Part 2, 90		
Private Land Mobile Services		
Report Reference No.....:	16462-1E	
Report Revision History. .....:	✓ Rev. 1: 31 August 2017	
Compiled by (+ signature)	Sophie Piao,	
	David Johanson	
Approved by (+ signature).....	Jeremy Lee	
Date of issue .....:	31 August 2017	
Total number of pages	60	
FCC Site Registration No.:	721268	
IC Site Registration No.:	5970A-2	
Testing Laboratory.....:	LabTest Certification Inc.	
Address .....:	Unit 205 – 8291 92ST. Delta, B.C. V4G 0A4, Canada	
Applicant's name.....:	Dali Wireless, Inc.	
Address .....:	535 Middlefield Road, Suite 280, Menlo Park, CA 94025	
Manufacture's Name .....:	Dali Wireless (Canada) Inc.	
Address .....:	8618 Commerce Court, Burnaby, B.C. V5A 4N6, Canada	
Test specification:		
Standards .....:	➢ FCC Part 2; 2017 ➢ FCC Part 90; 2017	
Test procedure .....:	➢ ANSI C63.10:2013 ➢ ANSI C63.4:2014 ➢ ANSI/TIA-603- E-2016 ➢ FCC KDB 935210 D05 Indus Booster Basic Meas v01r01: Feb 12, 2016	
Non-standard test method……..:	N/A	
Test Report Form(s) Originator .....:	Jeremy Lee	
Master TRF .....:	1036_Rev2 – RF Report Template	
Test item description :		

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Trade Mark ..... :	hd30™
Model/Type reference ..... :	HD30-1-PS-NA-C-I1N
Serial Number ..... :	10911101RA1B77003
FCC ID ..... :	HCOHD301PSNACI1A
IC ID ..... :	-
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing:	
Date of receipt of test item ..... :	Aug 15, 2017
Date (s) of performance of tests..... :	Aug 15 – 23, 2017

Revision History

Revision	Date	Reason For Change	Author(s)
0	Aug. 22	Initial Data	Sophie Piao, David Johanson
1	Aug. 31	First version	Jeremy Lee

Device Under Test Description

Application for ..... :	PS 900 Remote Unit, Single Band Medium Power DAS
Operating Transmit Frequency ..... :	935 MHz – 940 MHz
Operating Receive Frequency ..... :	896 MHz – 901 MHz
Number of Channels ..... :	As many as which can fit
Rated RF Output(e.i.r.p.) ..... :	30 dBm
Modulation Type ..... :	4FSK; P25 Phase I C4FM, CQPSK; P25 Phase II HDQPSK
Equipment mobility ..... :	Fixed
Operating condition ..... :	-40 to +50 °C
Mass of equipment (g) ..... :	< 22,700g
Dimension(W X D X H)	430 mm X 194 mm X 466 mm
Nominal Voltages for:	48 V stand-alone equipment 48 V combined (or host) equipment

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Supply Voltage:	_____ AC _____ Amps __48V__ DC __1.667__ Amps
If DC Power:	___ Internal Power Supply __√__ External Power Supply ___ Battery ☐ Nickel Cadmium ☐ Alkaline ☐ Nickel-Metal Hydride ☐ Lithium-Ion ☐ Other

Program details

Testing Facility by procedure:		
☒	**Radiated Measurement**	LabTest Certification Inc.
Testing location/ address.....:		Unit 3128-20800 Westminster HWY, Richmond, B.C. V6V 2W3 Canada
☒	**Conducted Measurement**:	LabTest Certification Inc.
Testing location/ address.....:		8618 Commerce Court, Burnaby, B.C. V5A 4N6, Canada

Summary of testing:	
Tests performed (name of test and test clause): **Conducted Measurement** **Radiated Emissions on Enclosure**	**Testing location:** **Client Site as Witness Testing** **In SAC, Richmond**
The tests indicated in Test Summary were performed on the product constructed as described below. The test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted. Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. LabTest does not make any claims of compliance for samples or variants which were not tested.	

Description of Equipment Under Test and Variant Models

Description:

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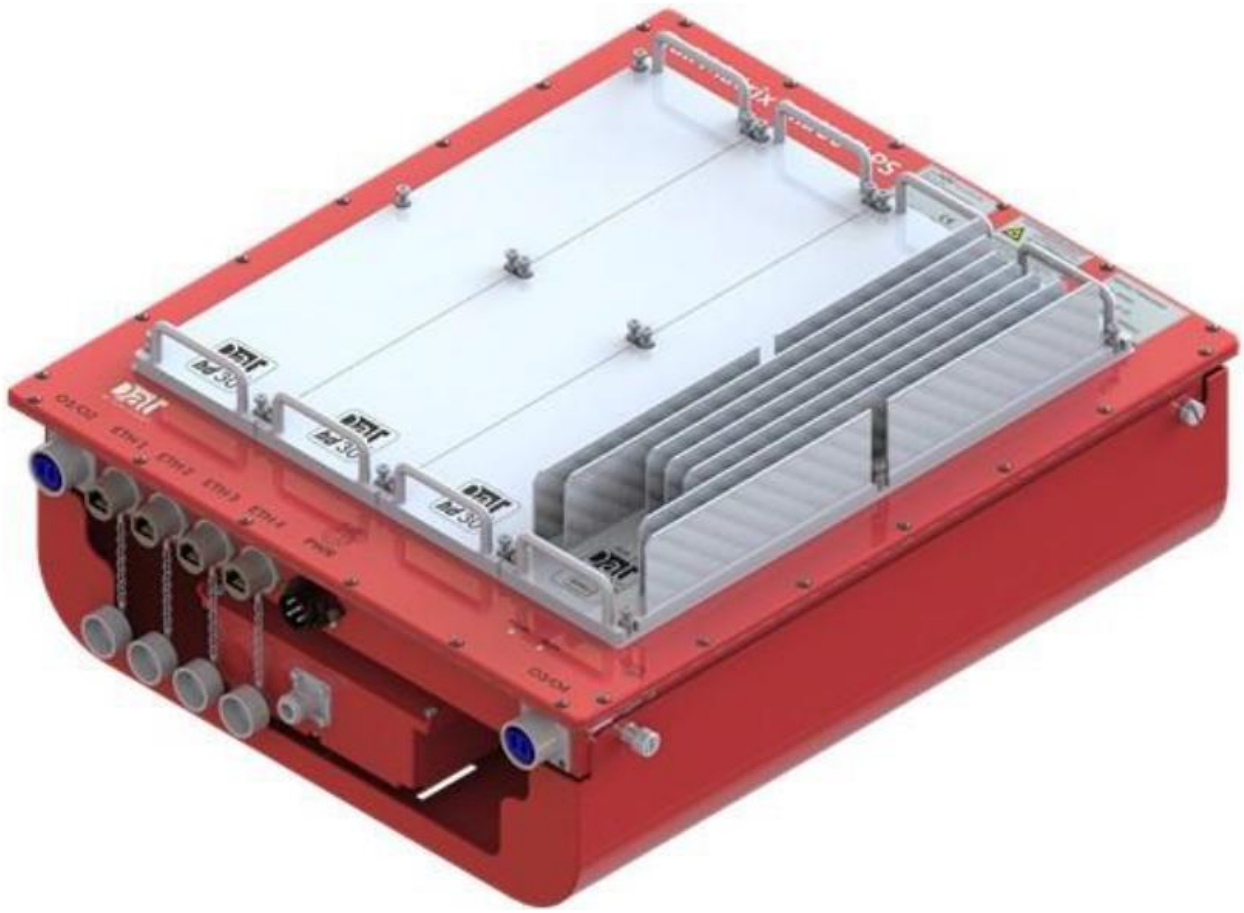
Dali's ***hd*30-ps900,** (30 dBm, 1 W) is an all-digital, medium power, single-band radio remote. It bi-directionally transfers two public safety bands over a single optical fiber (SFP –Single Mode Fiber) to/from the RF Router, hdHost® at 10 Gb/s up to 20 km. It also supports 1 Gbps Ethernet backhaul as well. This smart radio remote enables multiple network topologies that cater to different deployments scenarios including star, chain, hybrid and loop topologies.

- Top view



Variant Models:
The following variant models were not tested as part of this evaluation, but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

None

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Client Equipment Used During Test

Use*	Product Type	Manufacturer	Model	Comments
EUT	*hd30, 900PS*	Dali Wireless Inc.	HD30-1-PS-NA-C-I1N	EUT where the RF (I/O) antenna attached.
AE1	*UBiT-hdHost, 900PS*	Dali Wireless Inc.	UBiT-hdHost-S-PS-C-SS2Q	Auxiliary equipment, which is connected to the Base Station via RF coaxial cables, has no air interface.
AE2	UBiT-CP	Dali Wireless Inc.	UBiT-CP	Auxiliary equipment provides the configuration and control interface to UBiT-*hd*Host and *hd*30.

Abbreviations:
EUT - Equipment Under Test,
AE - Auxiliary/Associated Equipment, or
SIM - Simulator (Not Subjected to Test)

Software and Firmware

Use*	Description	Version
EUT	Software installed	2.0.2.206
AE1	Software installed	2.0.2.206
AE2	Software installed	2.0.2.206

Abbreviations:
EUT - Equipment Under Test,
AE - Auxiliary/Associated Equipment, or
SIM - Simulator (Not Subjected to Test)

Input/Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
1	DC Power Port	DC	No	No	Dual feed 48 VDC Assembly
2	RF I/O Port	I/O	No	No	N-Type Coaxial
3	2 X Optical Fibre I/O Ports	I/O	No	No	LC/UPC Duplex
4	4 X TP	TP	No	No	RJ-45

*Note: AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
I/O = Signal Input or Output Port (Not Involved in Process Control)
TP = Telecommunication Ports

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Power Interface

Mode #	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	48	-	-	DC	-	

EUT Operation Modes

Mode #	Description
1	UL and DL transmission and receiving ON

EUT Configuration Modes

Mode #	Description
1	Ubit-hdHost maximum input threshold set to 0dBm, uplink attenuation set to 0dB; hd30 uplink and downlink attenuation set to 0dB

Test Equipment Verified for function

Model #	Description	Checked Function	Results
N9038A	Spectrum Analyzer	Frequency and Amplitude	Connected 50MHz and -20 dBm Ref_siganl and checked OK.
JB1	Antenna, 30 to 2000MHz	Checked structure	Normal – no damage.
SAS-571	Antenna, 1 to 18GHz	Checked structure	Normal – no damage.
AL-130	Antenna, 9kHz to 30MHz	Checked structure	Normal – no damage.
KT-N5172B	Signal Generator, up to 6GHz	Frequency, Amplitude and Modulation	Within MFR Specs
KT-N9010A	Spectrum Analyzer	Frquency and Amplitude	Within MFR Specs

Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests:

Parameter	Uncertainty
Radio Frequency	±1 ppm
Total RF Power: Conducted	±1 dB
RF Power Density: Conducted	±2.75 dB
Spurious Emissions: Conducted	±3 dB
Temperature	±1 °C
Humidity	±5 %

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DC and Low Frequency Voltages	±3 %
Radiated Emission, 30 to 6,000MHz	± 4.95 dB

Uncertainty figures are valid to a confidence level of 95%.

Result Summary

The Compliance Status is a judgment based on the direct measurements and calculated highest emissions to appropriate standard limits. Measurement uncertainty values, provided on calibration certificates, were not be used in the judgment of the final status of compliance.

FCC Part 15.231 and IC RSS-210			
Test Type	**Regulation**	**Measurement Method**	**Result**
Output Power (Conducted)	FCC Part 2 2.1046 FCC Part 90.219	ANSI TIA-603-E-2016	PASS
Occupied Bandwidth	FCC Part 2 2.1049 FCC Part 90.210	ANSI TIA-603- E-2016	PASS
Unwanted Emissions (Transmitter Conducted)	FCC Part 2 2.1046(a) FCC Part 90.210	ANSI TIA-603- E-2016 & FCC KDB 935210 D05, v01r01	PASS
Spectrum Emission Mask	FCC Part 90 90.210	ANSI TIA-603- E-2016 & FCC KDB 935210 D05, v01r01	PASS
Intermodulation	FCC Part 90 90.219	ANSI TIA-603- E-2016 & FCC KDB 935210 D05, v01r01	PASS
Input/output Power and Amplifier/Booster Gain	FCC Part 90 90.219	ANSI TIA-603- E-2016 & FCC KDB 935210 D05, v01r01	PASS
Noise Figure	FCC Part 90 90.219	ANSI TIA-603- E-2016 & FCC KDB 935210 D05, v01r01	PASS
Radiated Emissions - Enclosure	FCC Part 2.1053, FCC Part 90.210 & FCC Part 90.219	ANSI C63.4:2014 & ANSI/TIA-603-E-2016	PASS

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Output Power (Conducted)

Governing Doc	FCC Part 2 2.1046(a) FCC Part 90.219(d)	Room Temperature (°C)	25
Test Procedure	ANSI/TIA-603- E-2016	Relative Humidity (%)	60
Test Location	Burnaby	Barometric Pressure (kPa)	98.1
Test Engineer	Sophie Piao/Jeremy Lee	Date	Aug 17, 2017
EUT Voltage	☒ DC	☐ 120VAC @ 60Hz	

Test Equipment Used	Manufacturer	Model	Serial Number	Calibration	Calibration due
Signal Generator	Keysight	N5172B	MY53050270	08/04/17	08/04/18
Spectrum Analyzer	Keysight	N9010A	MY50520285	08/07/17	08/07/18
40dB Attenuator	Aeroflex Winschel	58-40-43	n/p	CVP	CVP

Note) CVP = Calibration Verification Performed internally, n/p = not provided.

Frequency Range:	☒ 935.0125 MHz, 937.5 MHz, 939.9875 MHz
Detector:	☒ Peak
Type of Facility:	☒ Test bench
Distance:	☒ Direct
Arrangement of EUT:	☐ Table-top only ☐ Floor-standing only ☒ Rack Mounted

Output Power is less than 5 W.

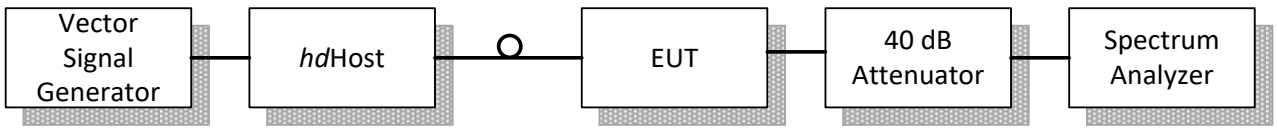
Compliant ☒ Non-Compliant ☐ Not Applicable ☐

Test setup

Description of test set-up:

Output power is measured by connecting a spectrum analyzer to RF output connector of EUT via 40dB Attenuator. With a nominal input power and the amplifier properly adjusted the RF output is measured.

The EUT was set to **Operation Mode #1 with configuration Mode #1.**



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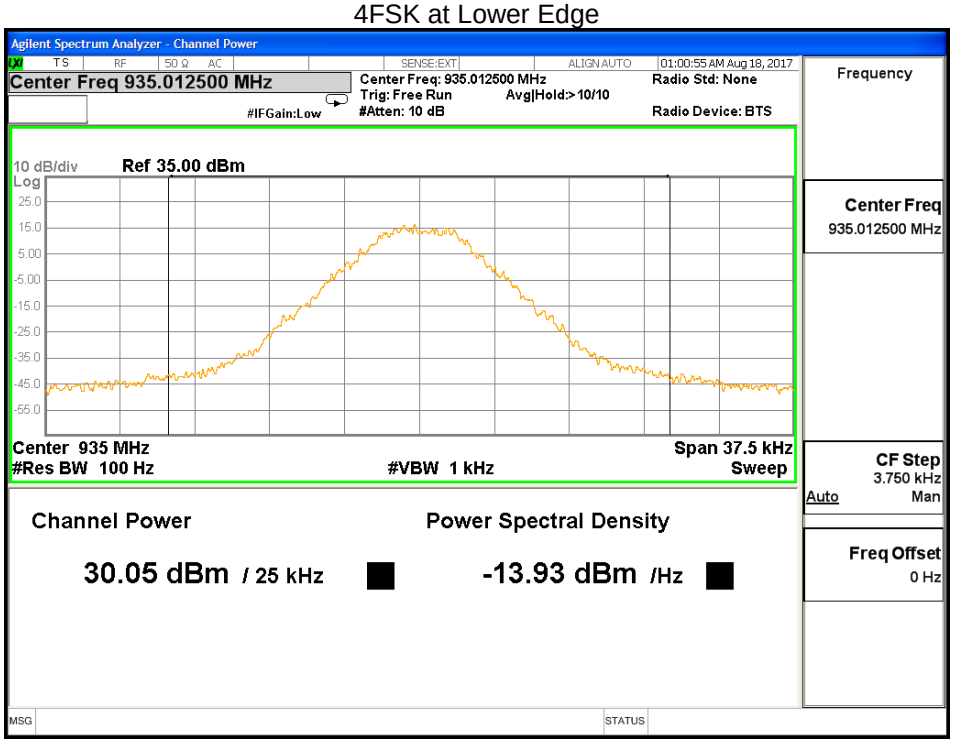
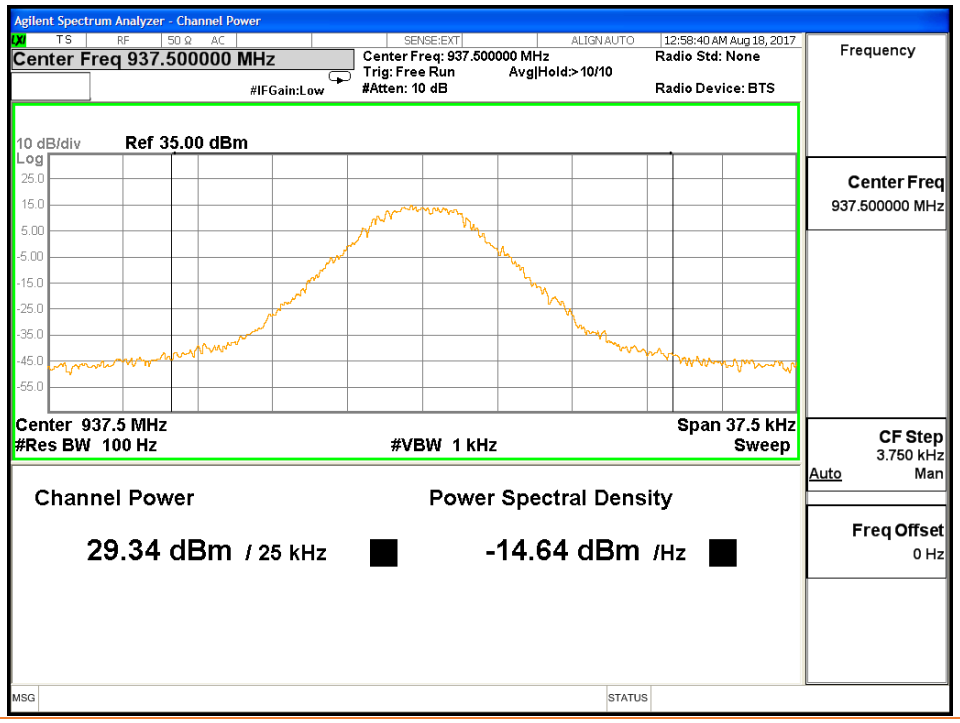
Results

4FSK at Lower Edge



4FSK at Center of Band



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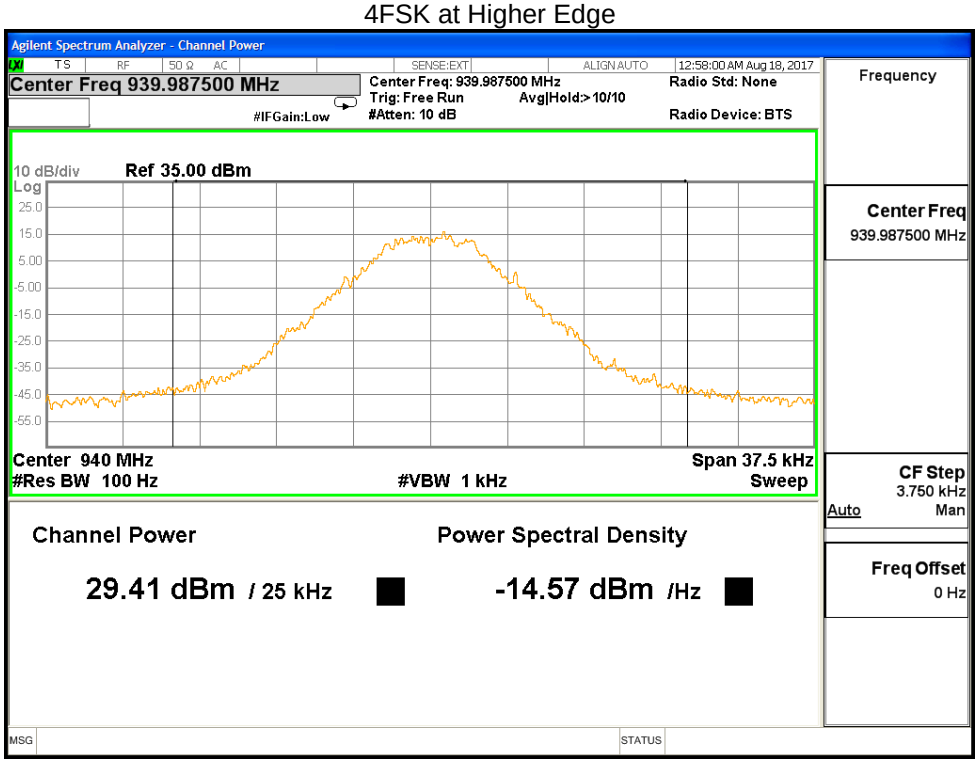
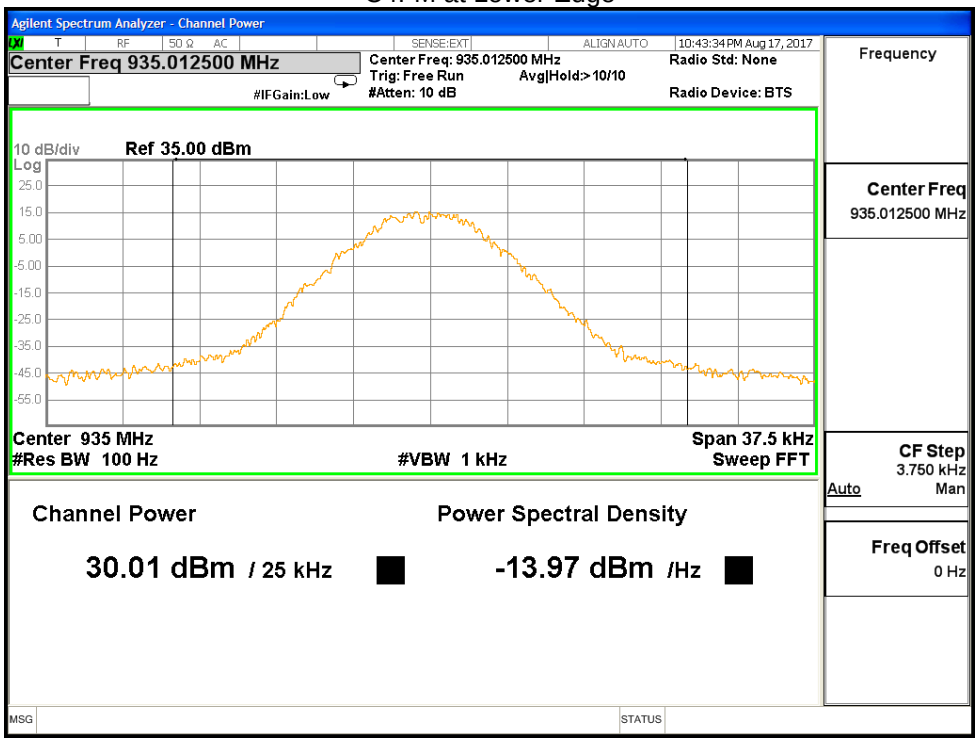
4FSK at Higher Edge



C4FM at Lower Edge



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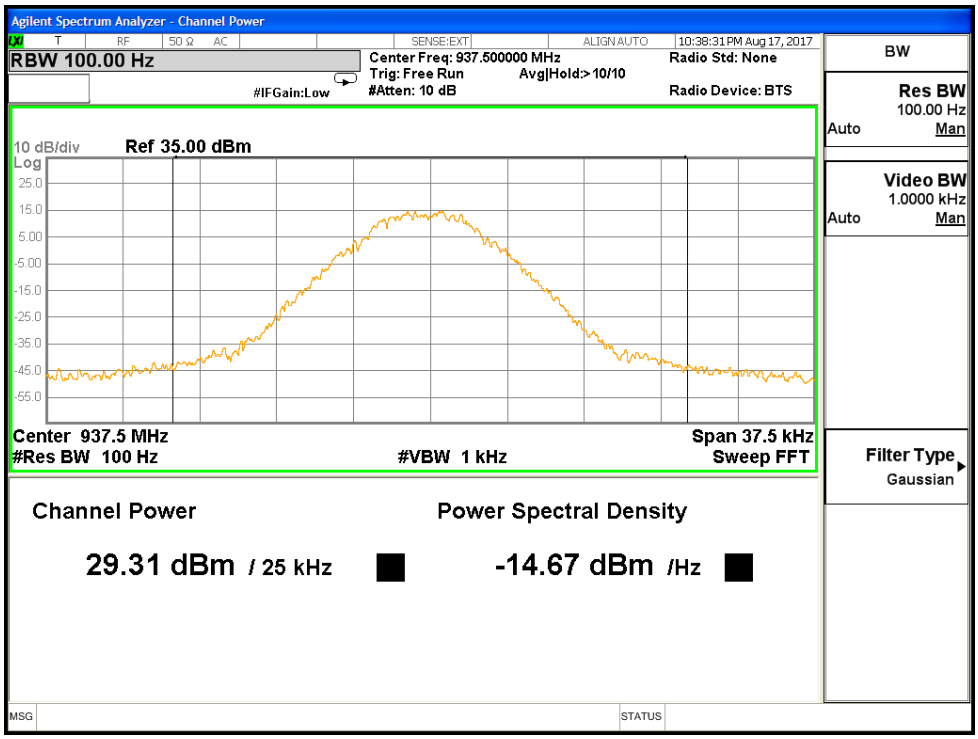
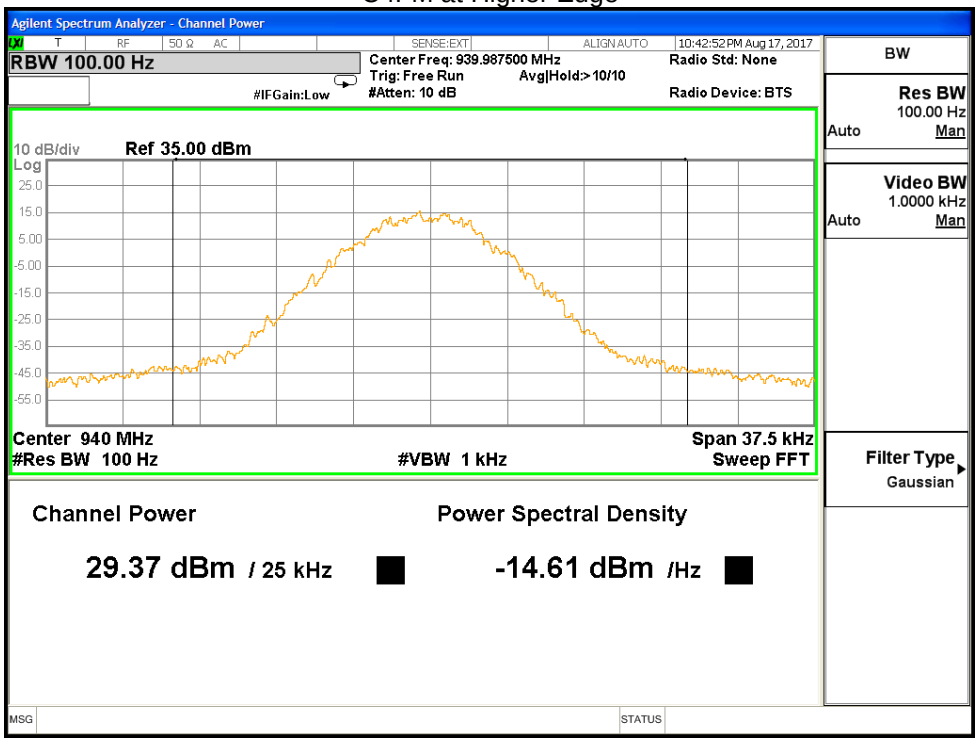
C4FM at Center of Band



C4FM at Higher Edge



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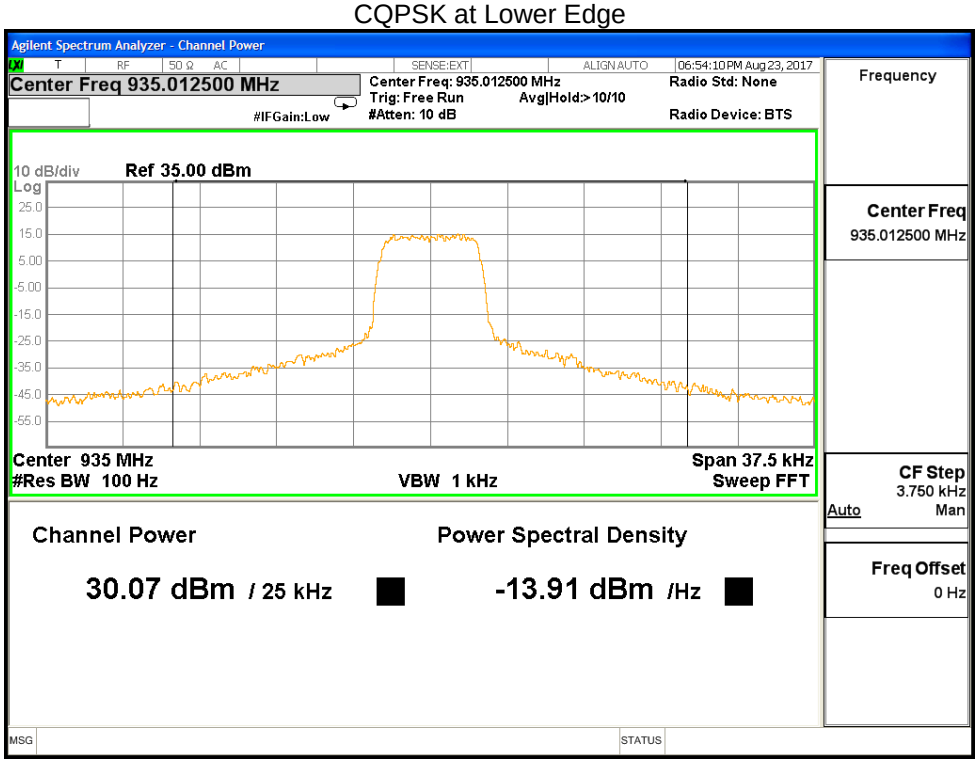
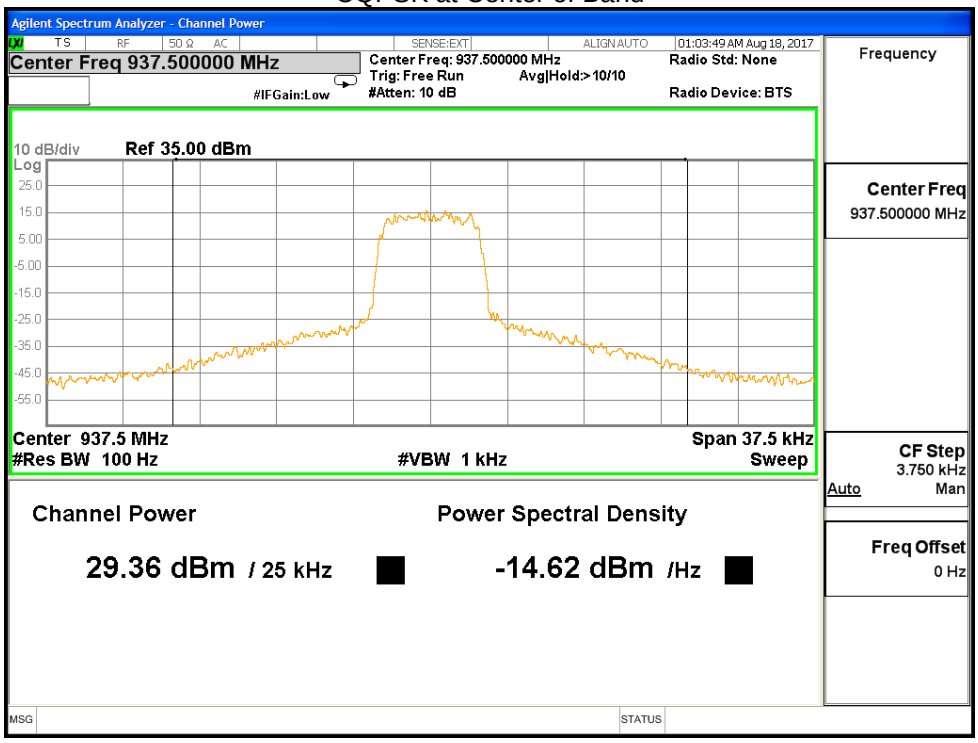
CQPSK at Lower Edge



CQPSK at Center of Band



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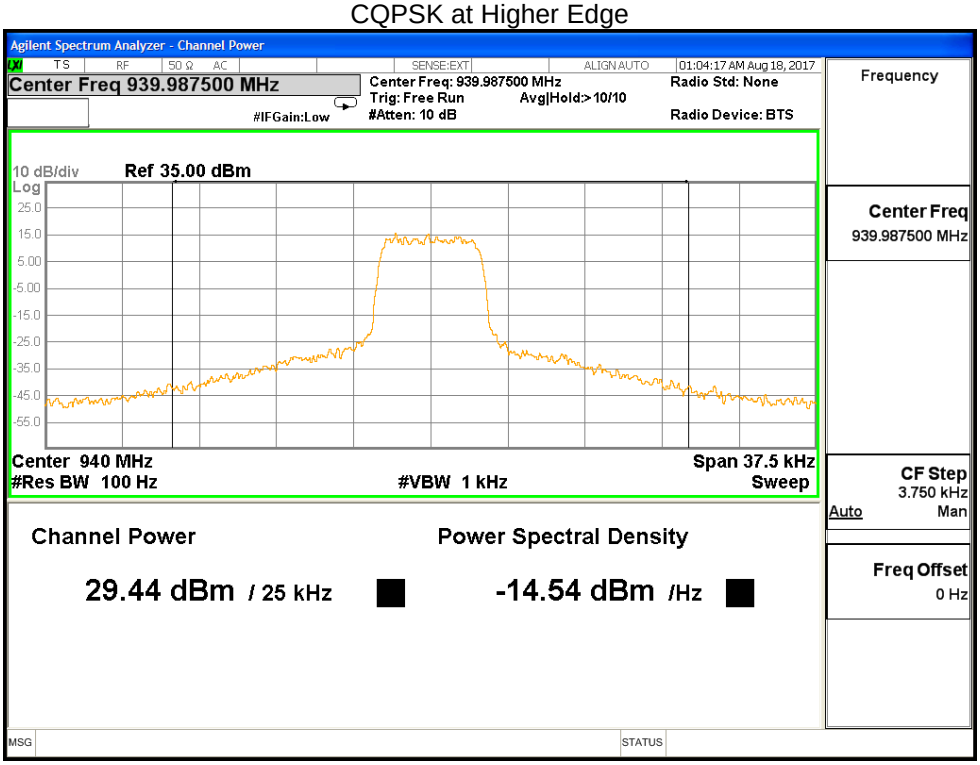
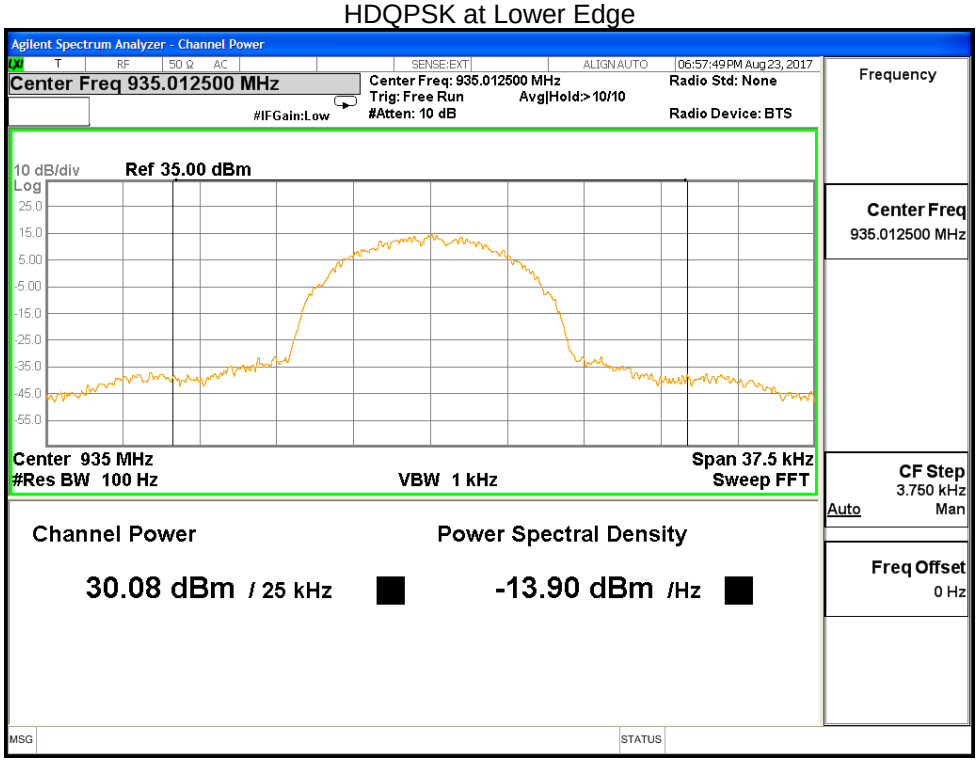
CQPSK at Higher Edge



HDQPSK at Lower Edge



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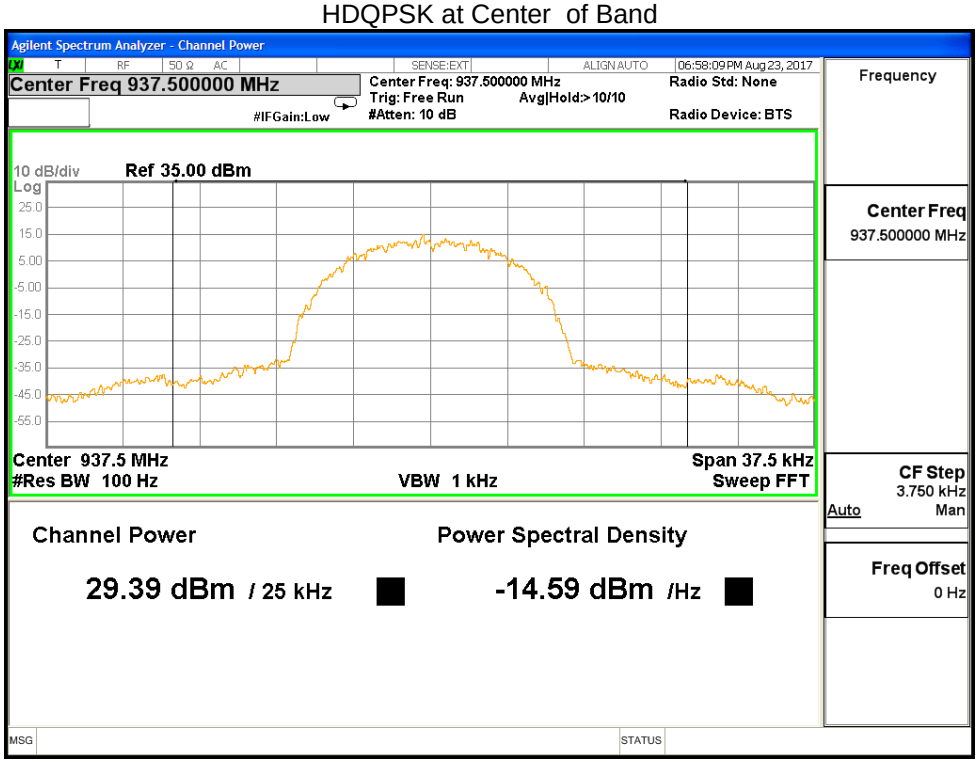
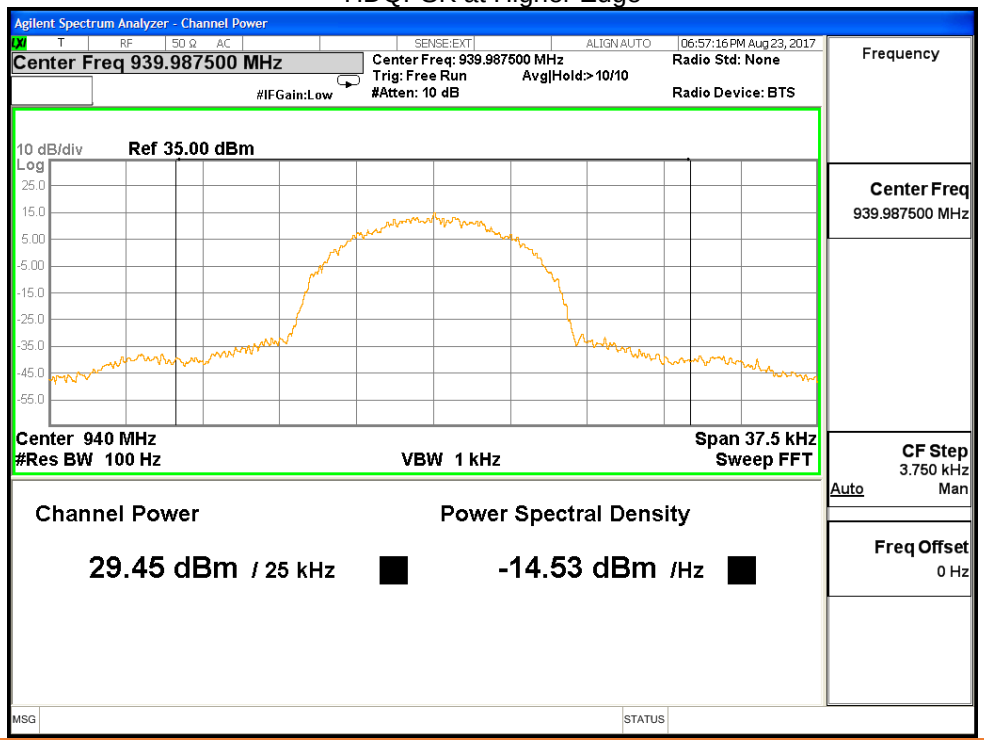
HDQPSK at Center of Band



HDQPSK at Higher Edge



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Occupied Bandwidth

Governing Doc	FCC Part 2 2.1049 FCC Part 90.210	Room Temperature (°C)	25
Test Procedure	ANSI/TIA-603- E-2016	Relative Humidity (%)	60
Test Location	Burnaby	Barometric Pressure (kPa)	98.1
Test Engineer	Sophie Piao/Jeremy Lee	Date	Aug 18, 2017
EUT Voltage	☒ DC	☐ 120VAC @ 60Hz	

Test Equipment Used	Manufacturer	Model	Serial Number	Calibration	Calibration due
Signal Generator	Keysight	N5172B	MY53050270	08/04/17	08/04/18
Spectrum Analyzer	Keysight	N9010A	MY50520285	08/07/17	08/07/18
40dB Attenuator	Aeroflex Winschel	58-40-43	n/p	CVP	CVP

Note) CVP = Calibration Verification Performed internally, n/p = not provided.

Frequency Range:	☒ 935.0125 MHz, 937.5 MHz, 939.9875 MHz
Detector:	☒ Peak
Type of Facility:	☒ Test bench
Distance:	☒ Direct
Arrangement of EUT:	☐ Table-top only ☐ Floor-standing only ☒ Rack Mounted

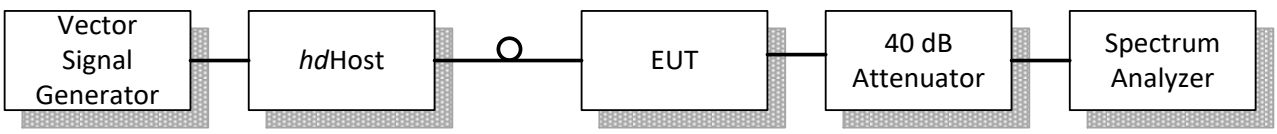
Compliant ☒ Non-Compliant ☐ Not Applicable ☐

Test setup

Description of test set-up:

Occupied Bandwidth is measured by connecting a Spectrum Analyzer to the RF output connector via 40dB attenuator. The required measurement resolution bandwidth (RBW) is 1% of the emission bandwidth. 99% energy rule was applied to measure the occupied channel bandwidth. The emission bandwidth is measured as the width of the signal between two frequency points on the channel edge, outside of which the transmission power is attenuated at least 26dB below the transmitter output power

The EUT was set to **Operation Mode #1 with configuration Mode #1.**



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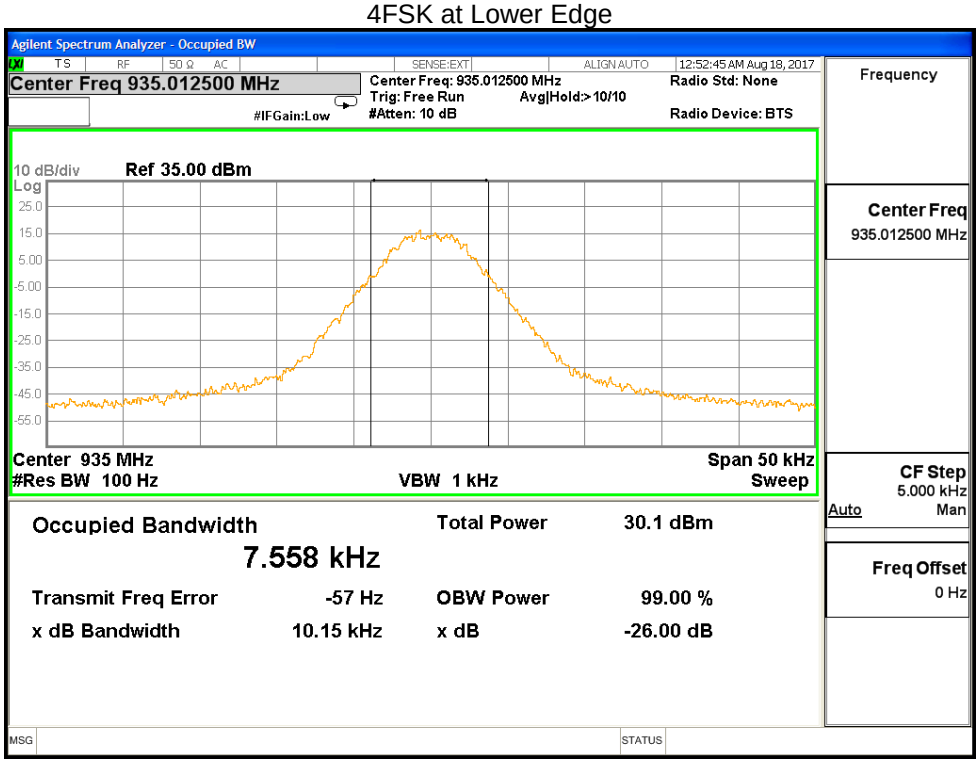
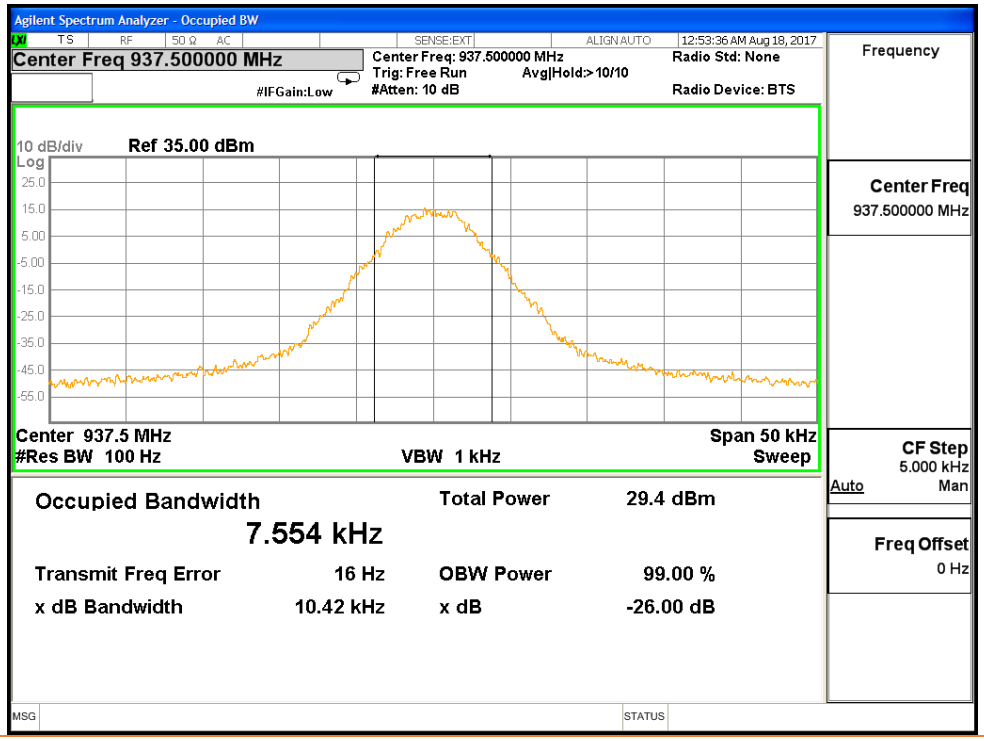
Results

4FSK at Lower Edge



4FSK at Center of Band



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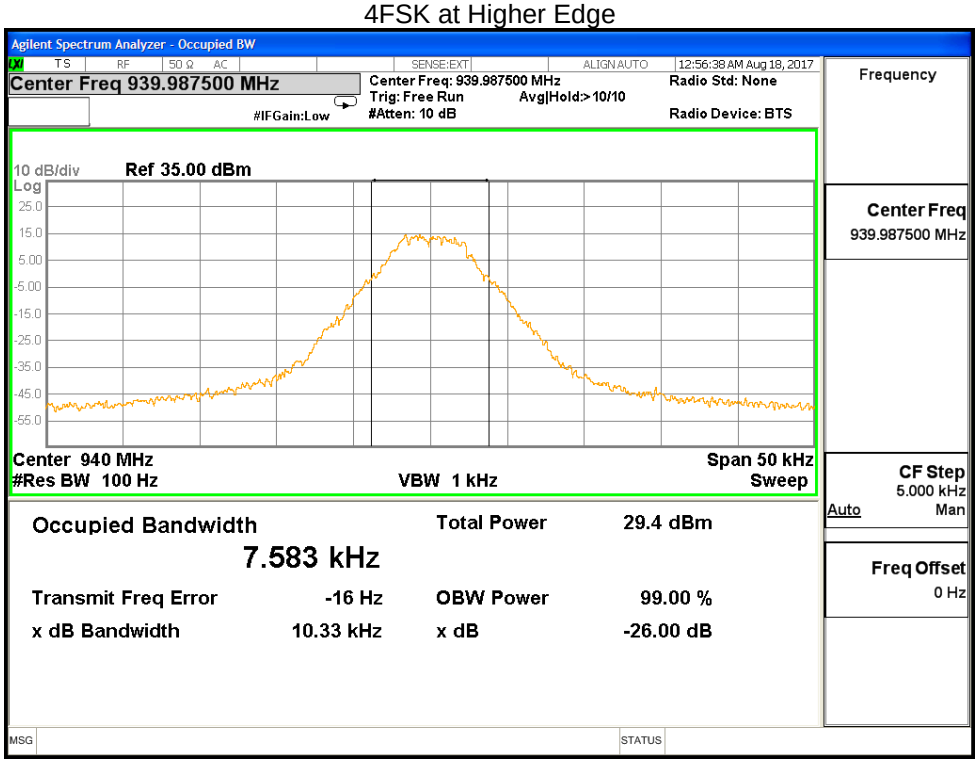
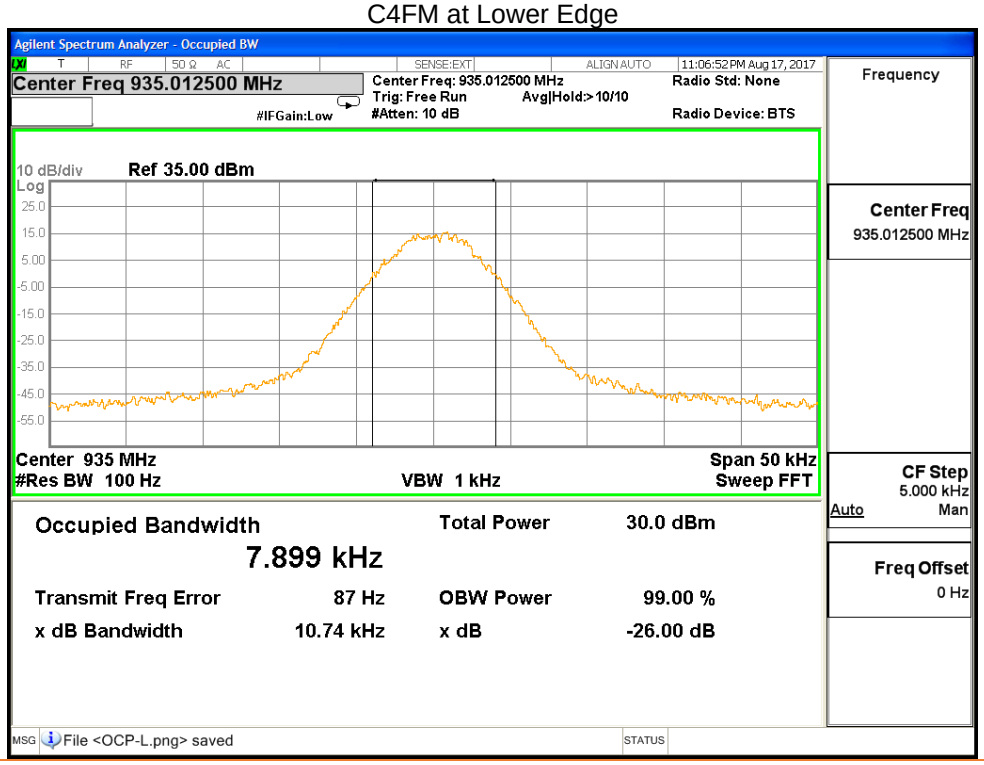
4FSK at Higher Edge



C4FM at Lower Edge



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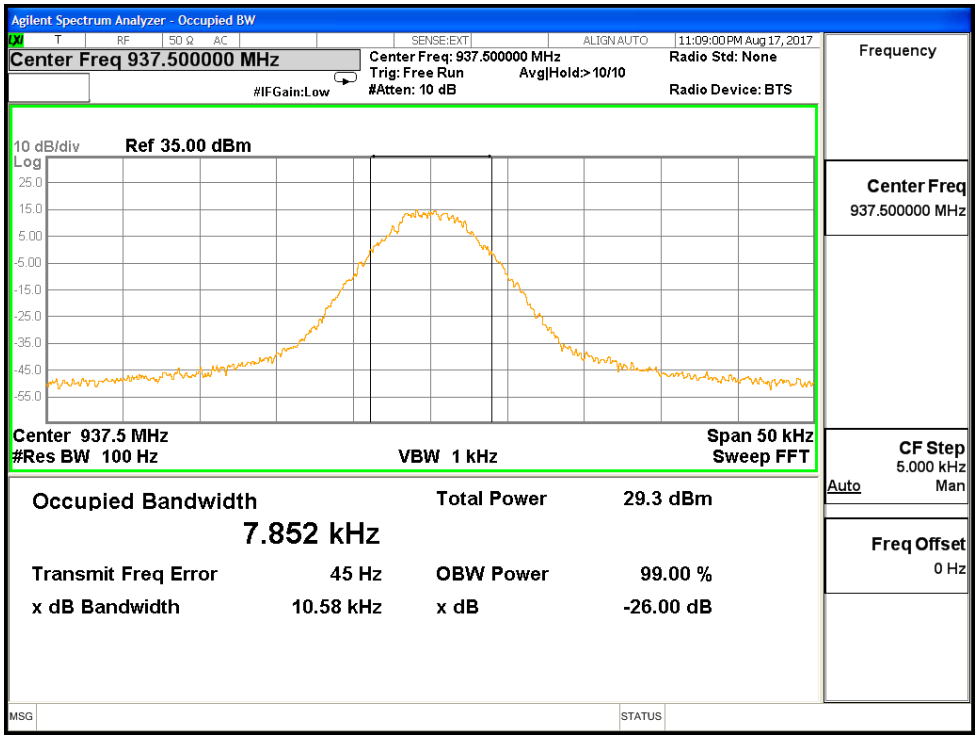
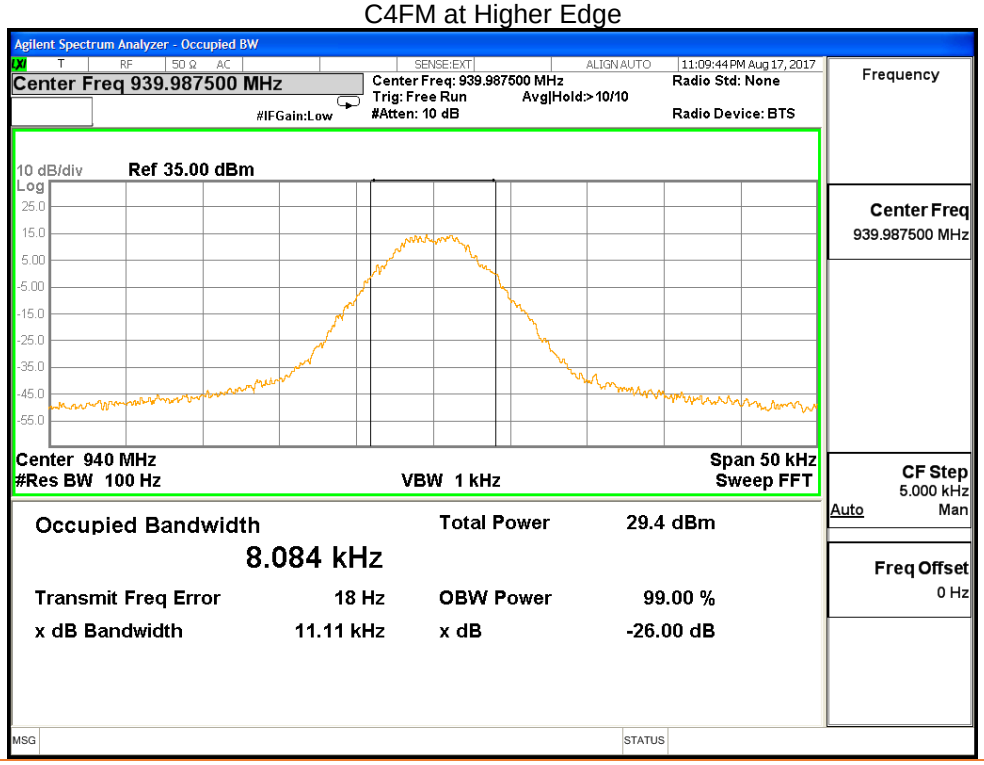
C4FM at Center of Band



C4FM at Higher Edge



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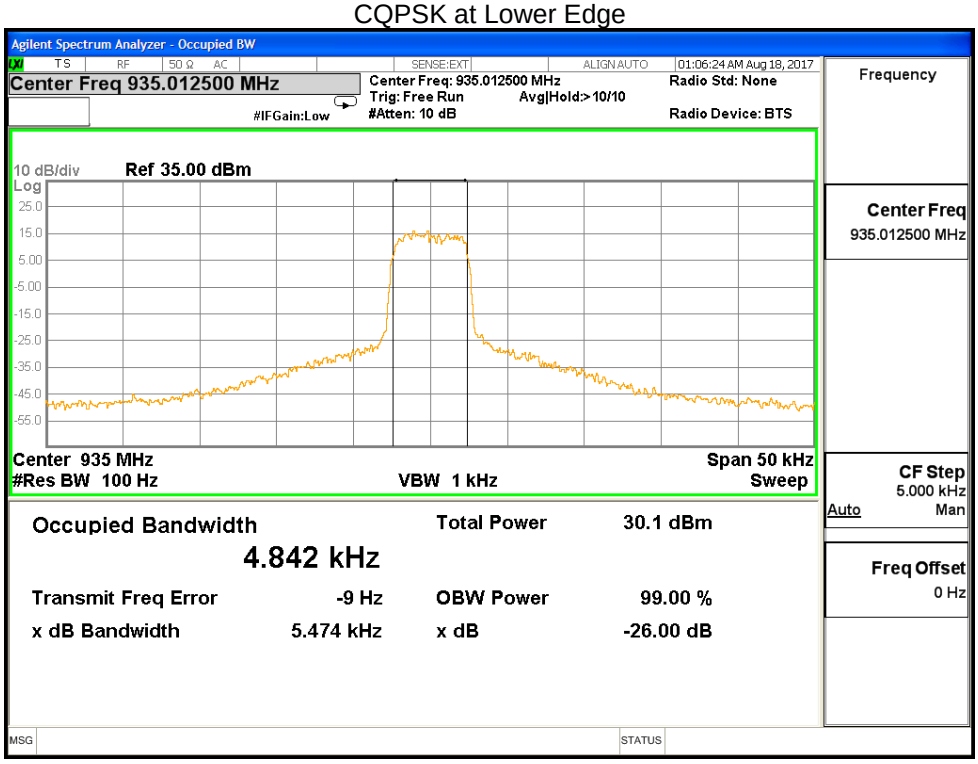
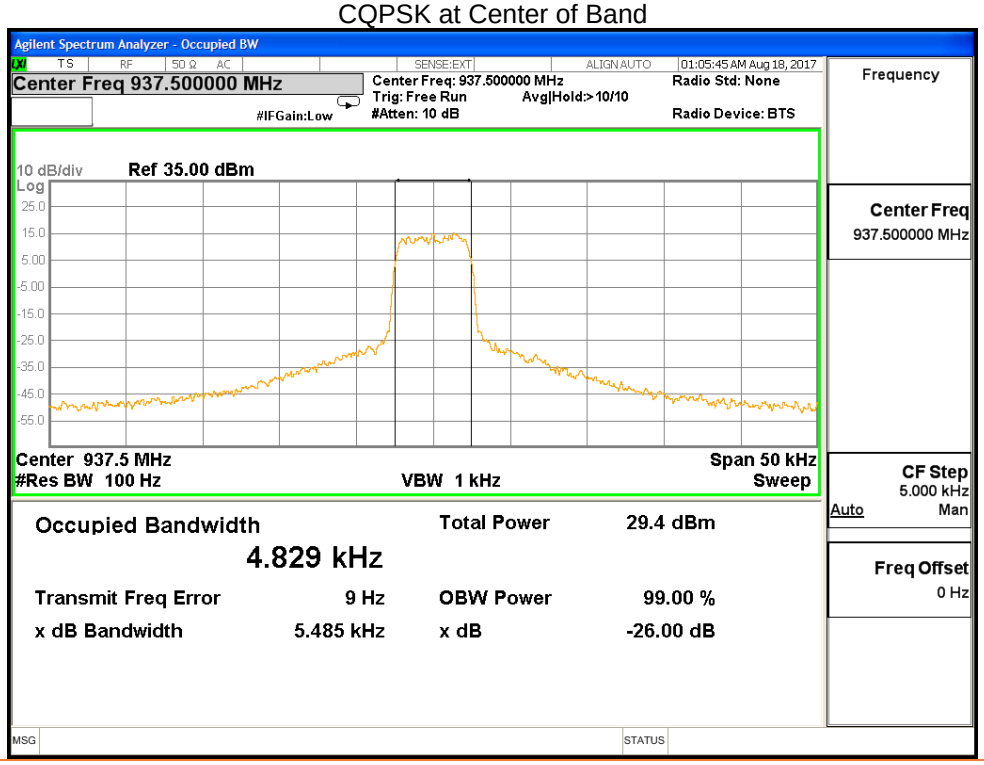
CQPSK at Lower Edge



CQPSK at Center of Band



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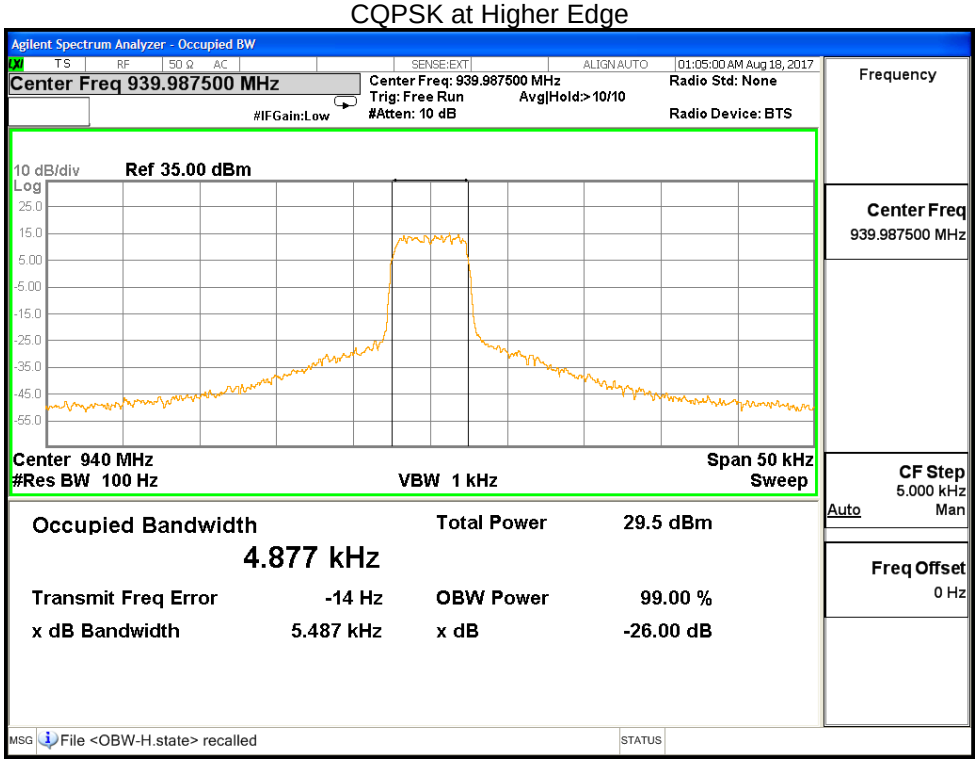
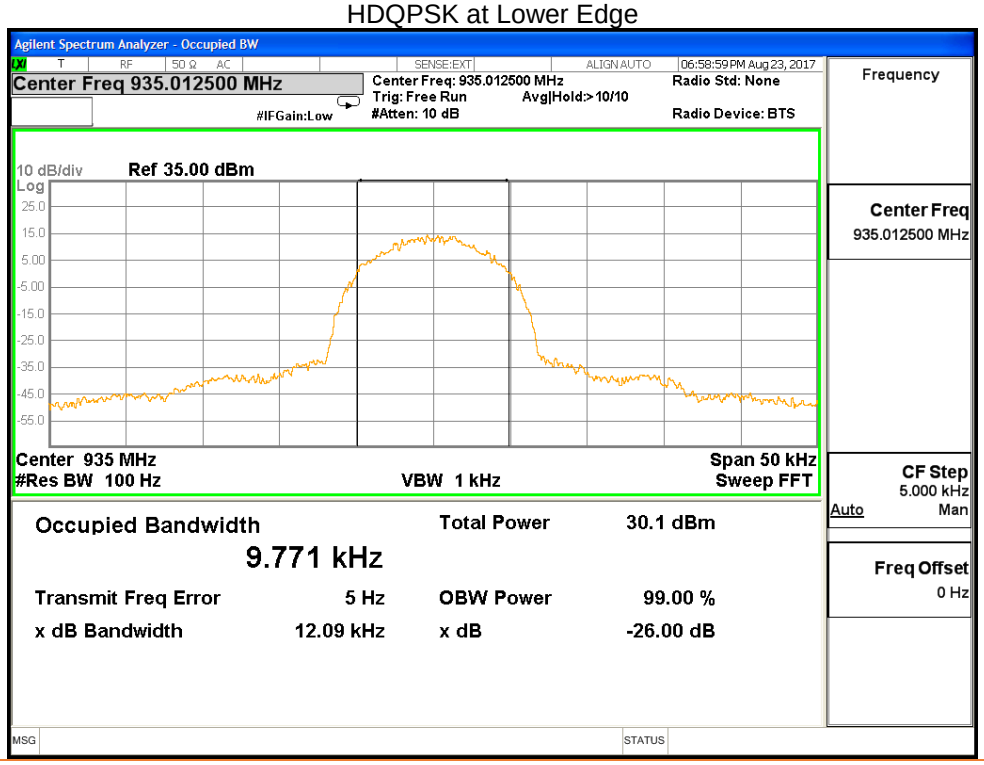
CQPSK at Higher Edge



HDQPSK at Lower Edge



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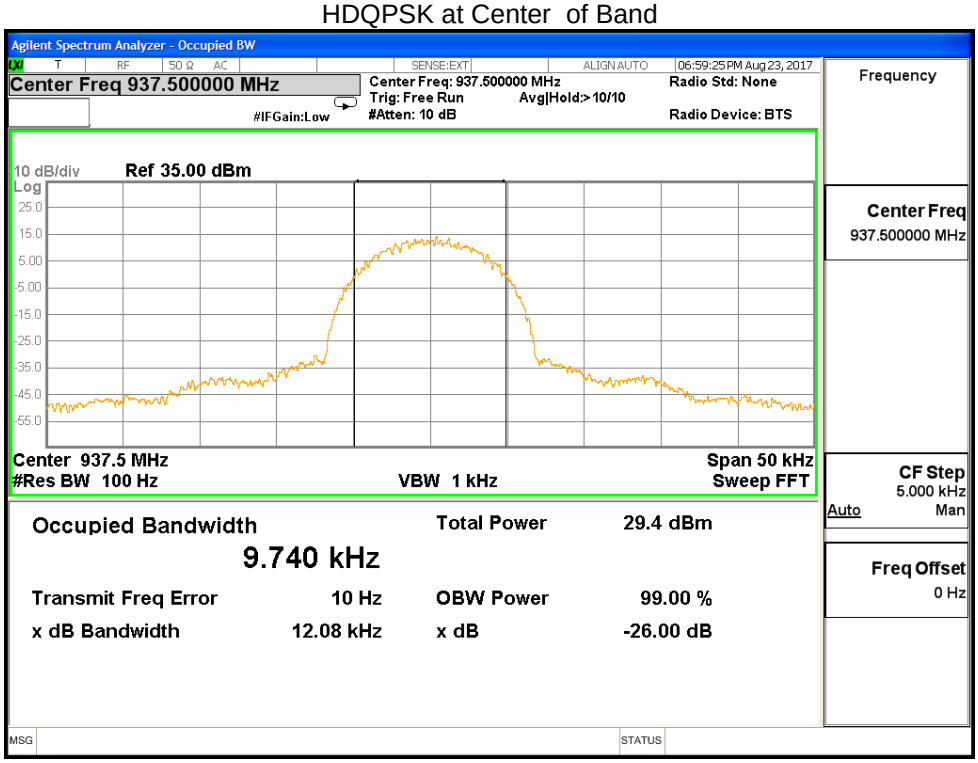
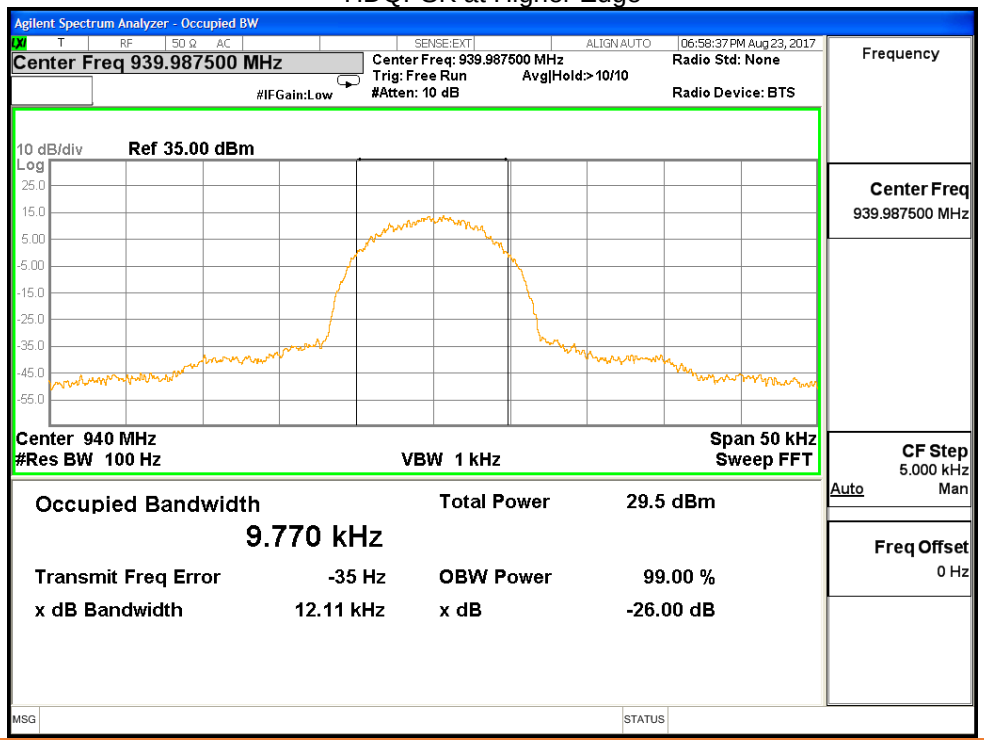
HDQPSK at Center of Band



HDQPSK at Higher Edge



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Unwanted Emissions (Conducted)

Governing Doc	FCC Part 2 2.1046(a) FCC Part 90.210	Room Temperature (°C)	25
Test Procedure	ANSI/TIA-603- E-2016; FCC KDB 935210 D05 Indus Booster Basic Meas v01r01: February 12, 2016	Relative Humidity (%)	60
Test Location	Burnaby	Barometric Pressure (kPa)	98.1
Test Engineer	Sophie Piao/Jeremy Lee	Date	Aug 16, 2017
EUT Voltage	☒ DC	☐ 120VAC @ 60Hz	

Test Equipment Used	Manufacturer	Model	Serial Number	Calibration	Calibration due
Signal Generator	Keysight	N5172B	MY53050270	08/04/17	08/04/18
Spectrum Analyzer	Keysight	N9010A	MY50520285	08/07/17	08/07/18
40dB Attenuator	Aeroflex Winschel	58-40-43	n/p	CVP	CVP

Note) CVP = Calibration Verification Performed internally, n/p = not provided.

Frequency Range:	☒ 9 kHz – 9.4 GHz
Detector:	☒ Peak(for Formal)
RBW/VBW:	☒1/10kHz for 9kHz – 150kHz; ☒ 10/100kHz for 150kHz – 30 MHz; ☒ 100/1000kHz for 30MHz – 1GHz; ☒ 1/50MHz for 1GHz – 9.4GHz
Type of Facility:	☒ Testbench
Distance:	☒ Direct Connection
Arrangement of EUT:	☐ Table-top only ☐ Floor-standing only ☒ Rack Mounted

No emission is greater than -13 dBm.

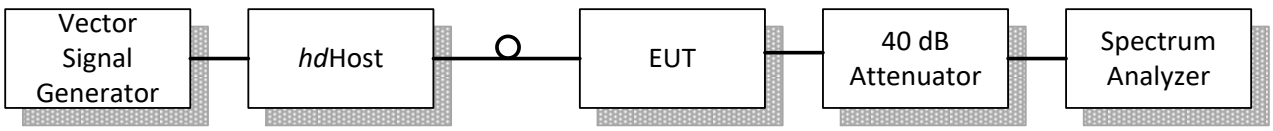
Compliant ☒ Non-Compliant ☐ Not Applicable ☐

Test setup

Description of test set-up:

Unwanted emission was measured by connecting a Spectrum Analyzer to the RF output connector via 40dB Attenuator. The input power was adjusted to produce maximum output power on the antenna port and just below the AGC threshold. The CW input signal was set to the lowest channel, center channel and the highest channel of the EUT operating band.

The EUT was set to **Operation Mode #1 with configuration Mode #1.**



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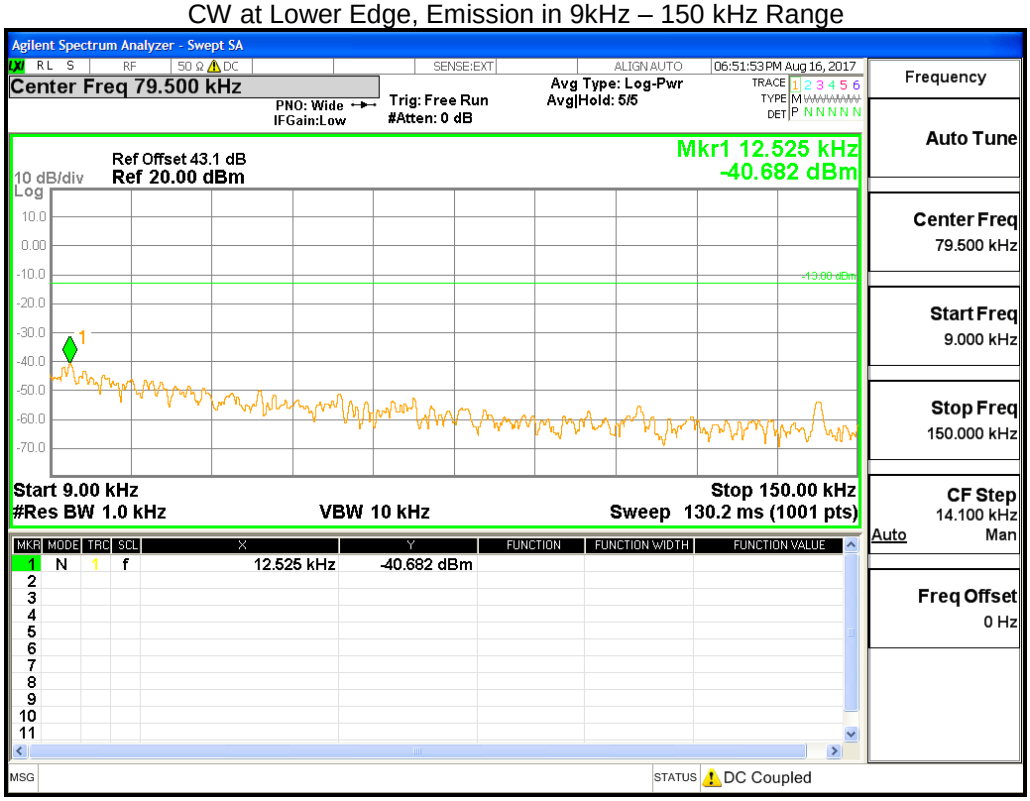
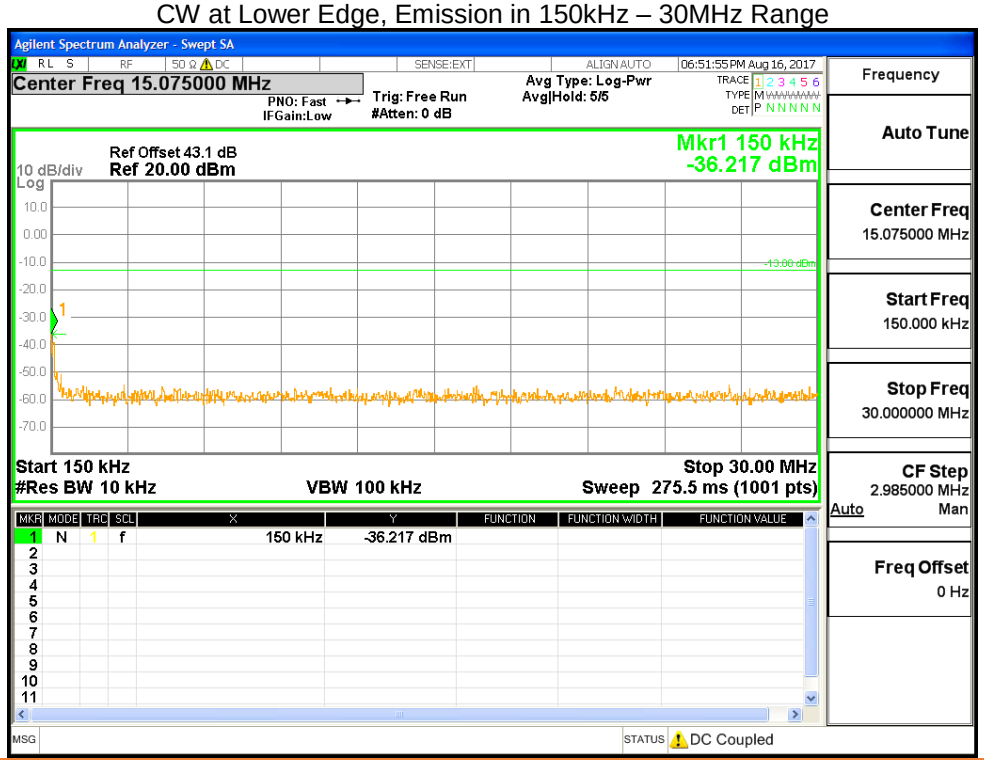
Results

CW at Lower Edge, Emission in 9kHz – 150 kHz Range



CW at Lower Edge, Emission in 150kHz – 30MHz Range



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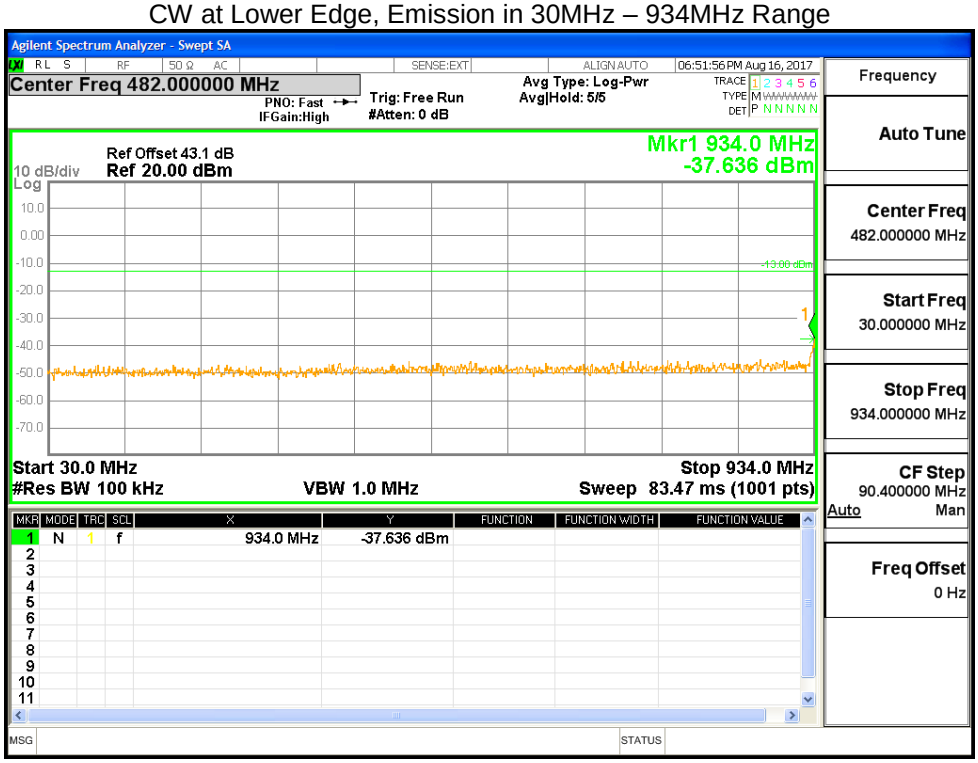
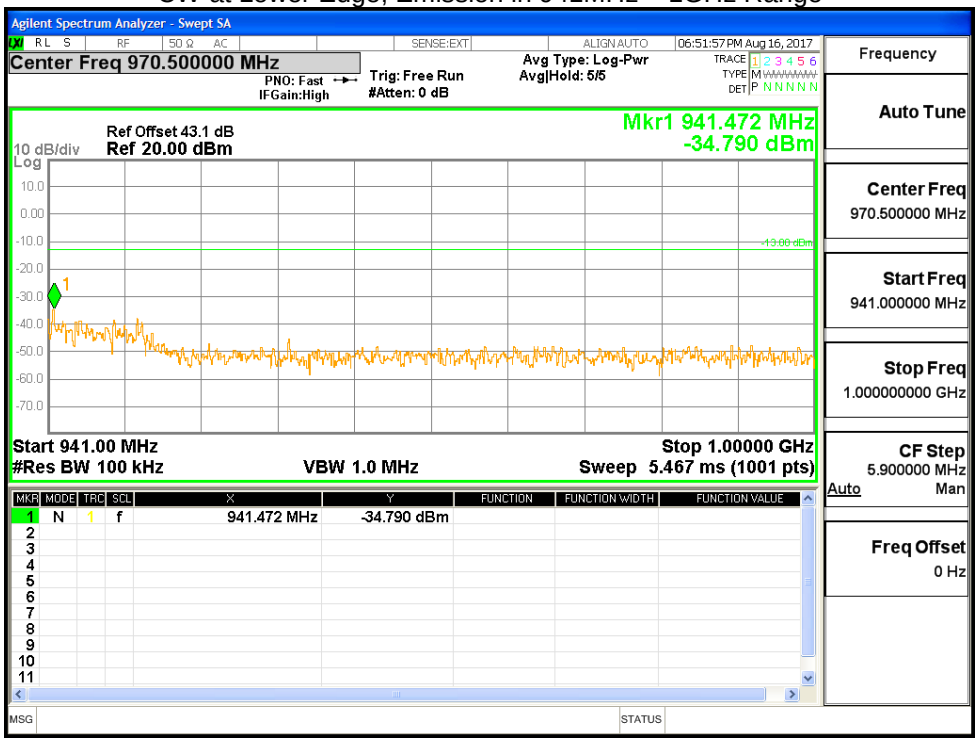
CW at Lower Edge, Emission in 30MHz – 934MHz Range



CW at Lower Edge, Emission in 941MHz – 1GHz Range



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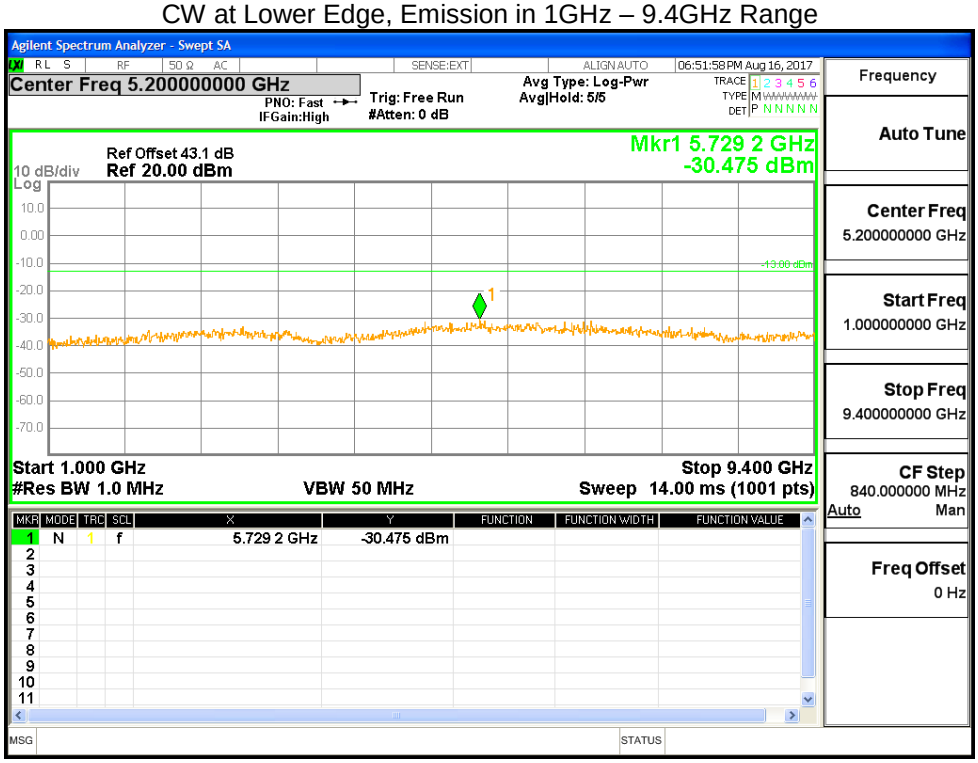
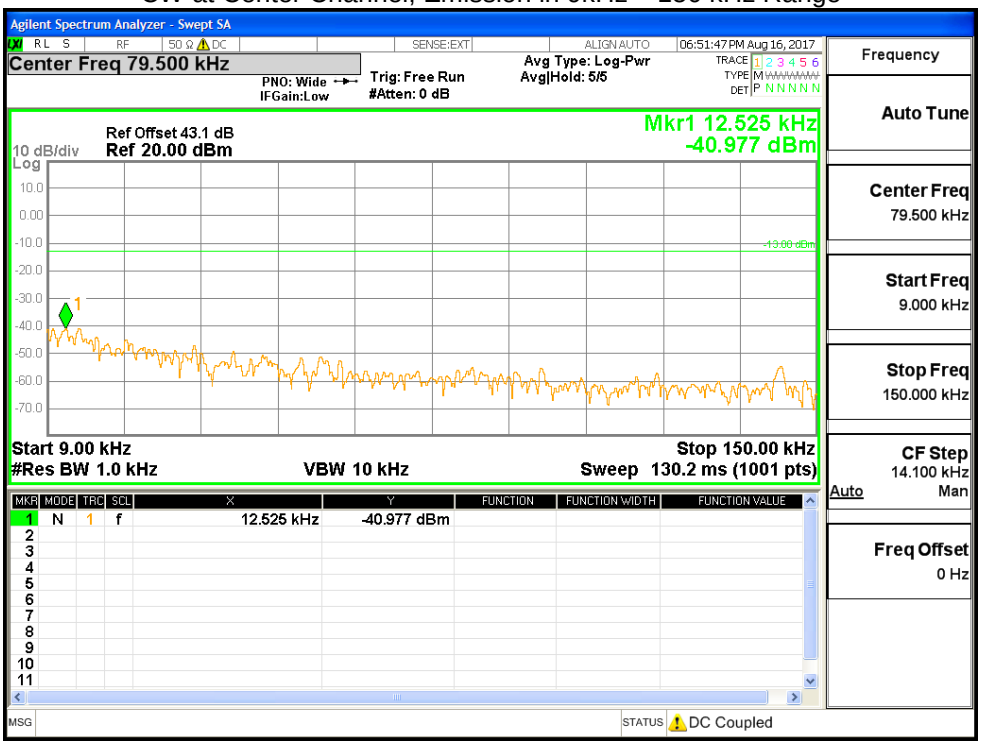
CW at Lower Edge, Emission in 1GHz – 9.4GHz Range



CW at Center Channel, Emission in 9kHz – 150 kHz Range



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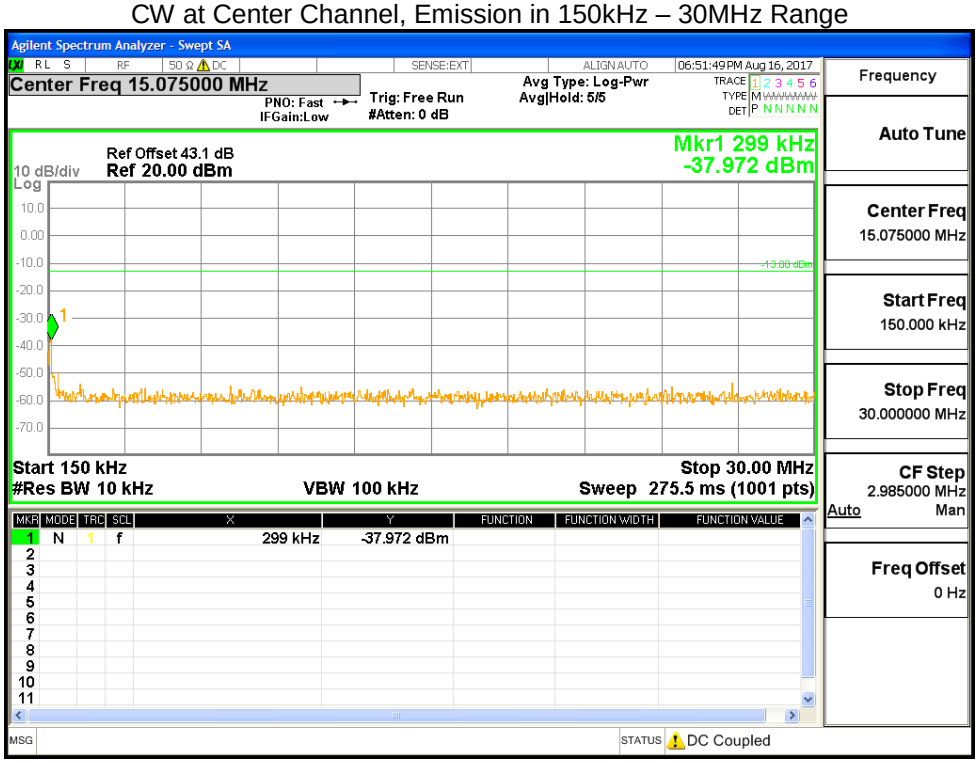
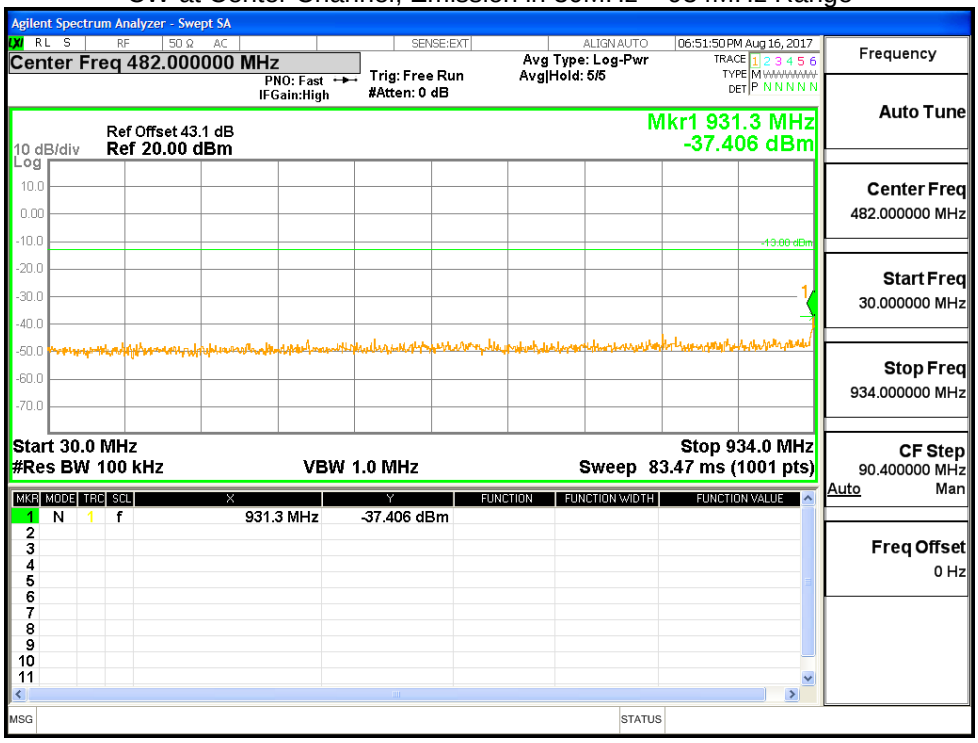
CW at Center Channel, Emission in 150kHz – 30MHz Range



CW at Center Channel, Emission in 30MHz – 934MHz Range



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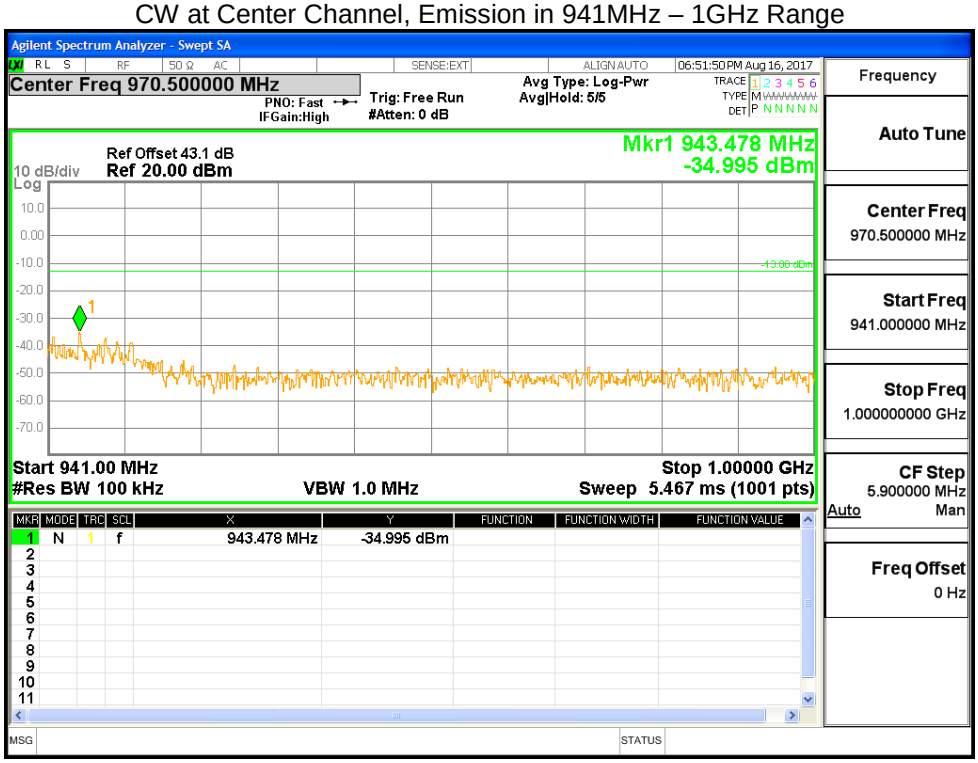
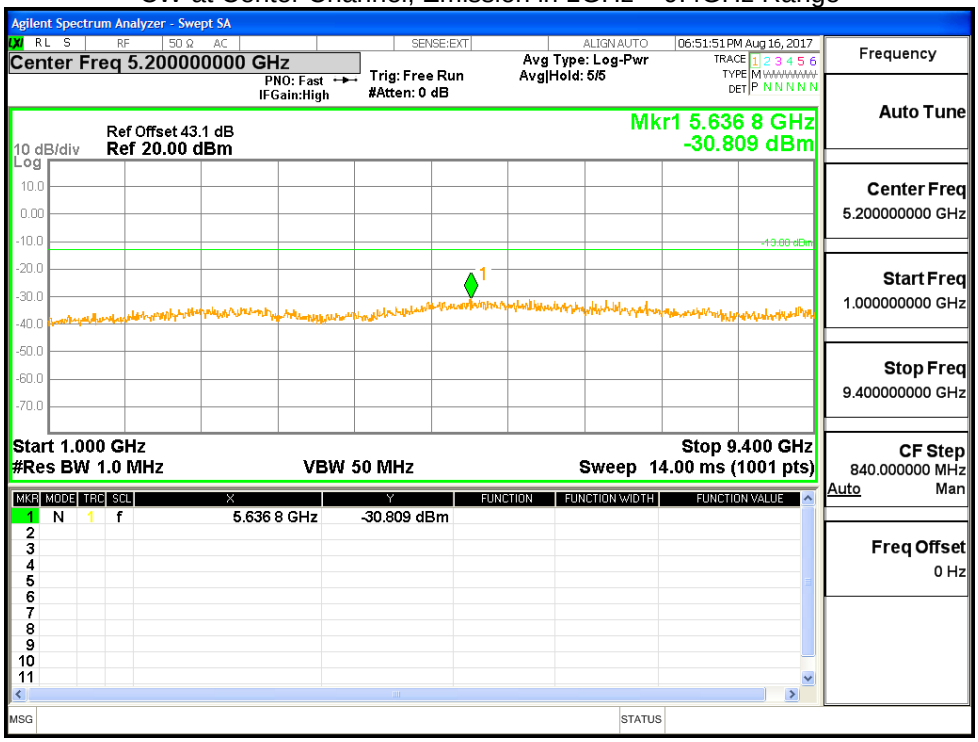
CW at Center Channel, Emission in 941MHz – 1GHz Range



CW at Center Channel, Emission in 1GHz – 9.4GHz Range



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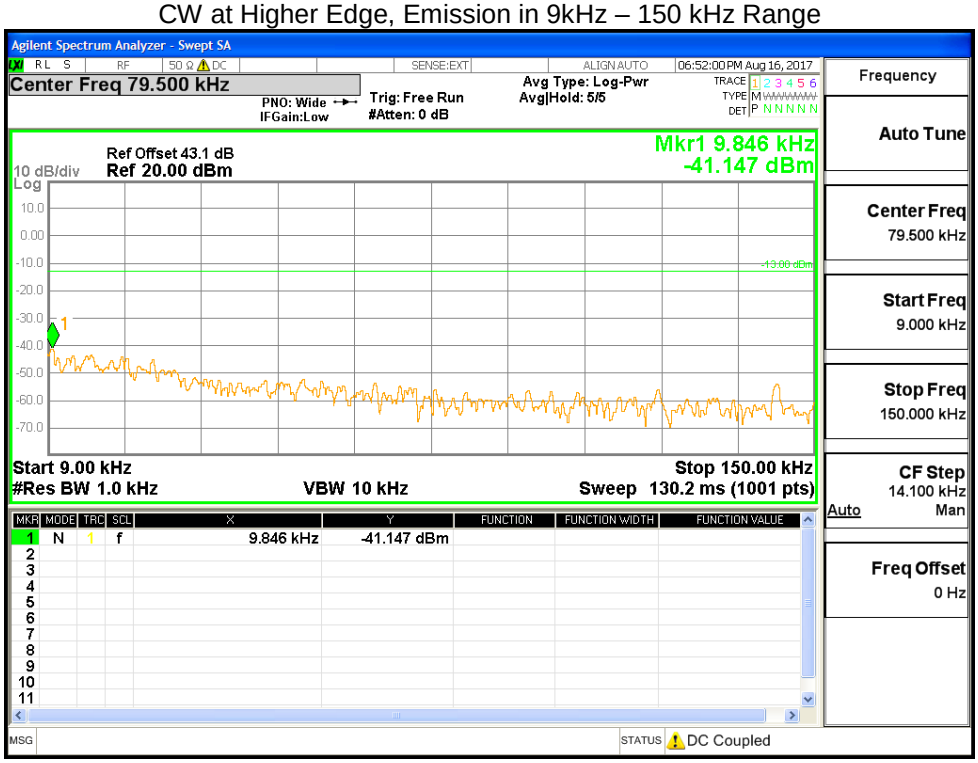
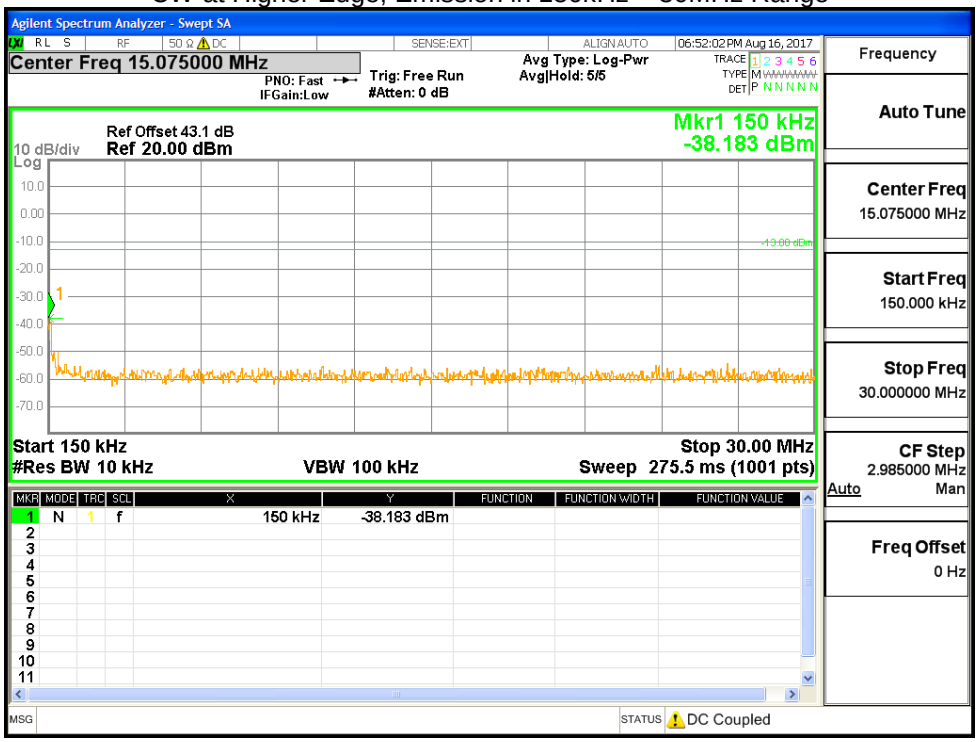
CW at Higher Edge, Emission in 9kHz – 150 kHz Range



CW at Higher Edge, Emission in 150kHz – 30MHz Range



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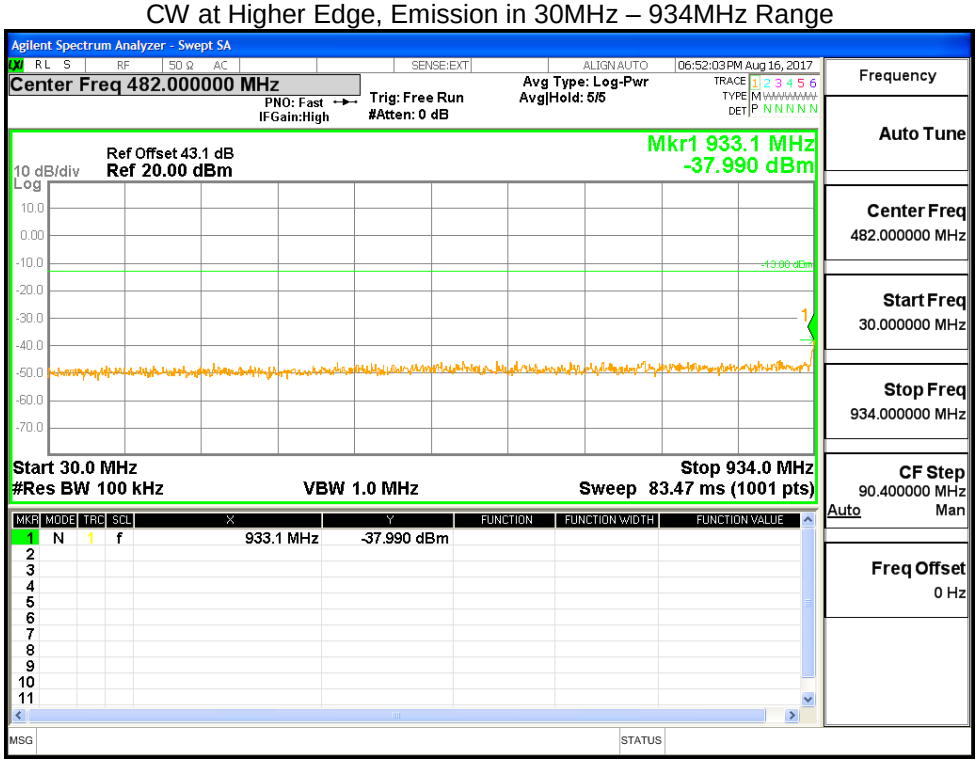
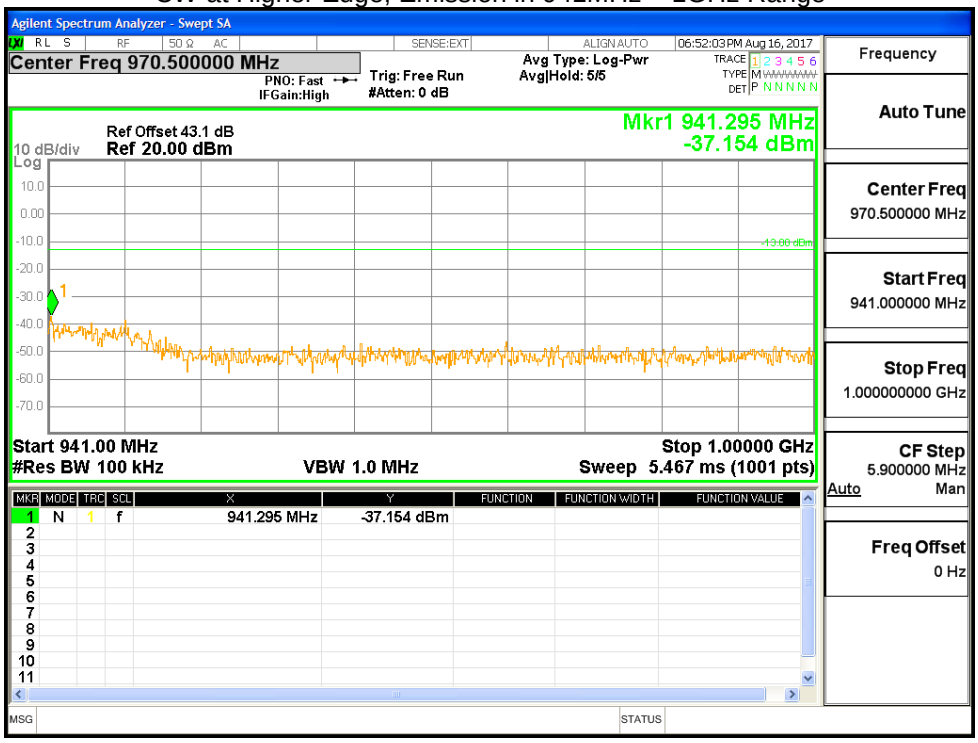
CW at Higher Edge, Emission in 30MHz – 934MHz Range



CW at Higher Edge, Emission in 941MHz – 1GHz Range



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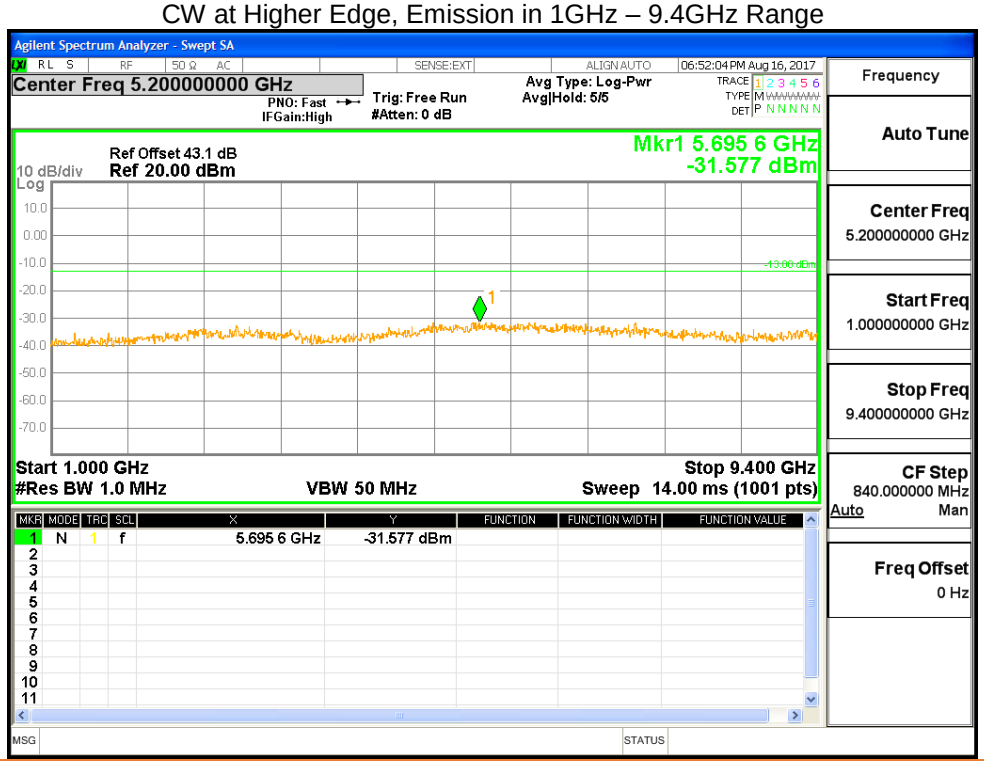
CW at Higher Edge, Emission in 1GHz – 9.4GHz Range



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Spectrum Emission Mask

Governing Doc	FCC Part 90.210 (i)	Room Temperature (°C)	25
Test Procedure	ANSI/TIA-603- E-2016; FCC KDB 935210 D05 Indus Booster Basic Meas v01r01: February 12, 2016	Relative Humidity (%)	60
Test Location	Burnaby	Barometric Pressure (kPa)	98.1
Test Engineer	Sophie Piao/Jeremy Lee	Date	Aug 17, 2017
EUT Voltage	☒ DC	☐ 120VAC @ 60Hz	

Test Equipment Used	Manufacturer	Model	Serial Number	Calibration	Calibration due
Signal Generator	Keysight	N5172B	MY53050270	08/04/17	08/04/18
Spectrum Analyzer	Keysight	N9010A	MY50520285	08/07/17	08/07/18
40dB Attenuator	Aeroflex Winschel	58-40-43	n/p	CVP	CVP

Note) CVP = Calibration Verification Performed internally, n/p = not provided.

Frequency Range:	☒ Center Channel
Detector:	☒ Peak
RBW/VBW:	☒100 Hz
Type of Facility:	☒ Testbench
Distance:	☒ direct connect
Arrangement of EUT:	☐ Table-top only ☐ Floor-standing only ☒ Rack Mounted

Signal of all types of modulation is contained within the emission mask.

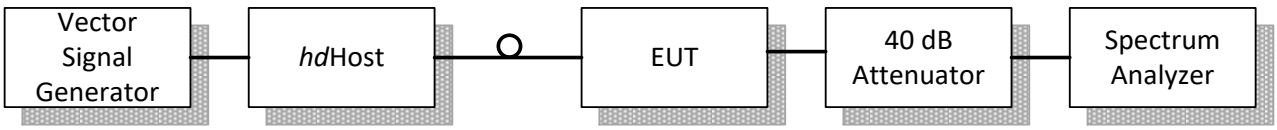
Compliant ☒ Non-Compliant ☐ Not Applicable ☐

Test setup

Description of test set-up:

Spectrum Emission Mask is measured by connecting a Spectrum Analyzer to the RF output connector. The input power was adjusted to produce maximum output power on the antenna port. The reference level was measured with integrated BW 2 times of the channel BW. The emission was measured with RBW 100 Hz.

The EUT was set to **Operation Mode #1 with configuration Mode #1.**



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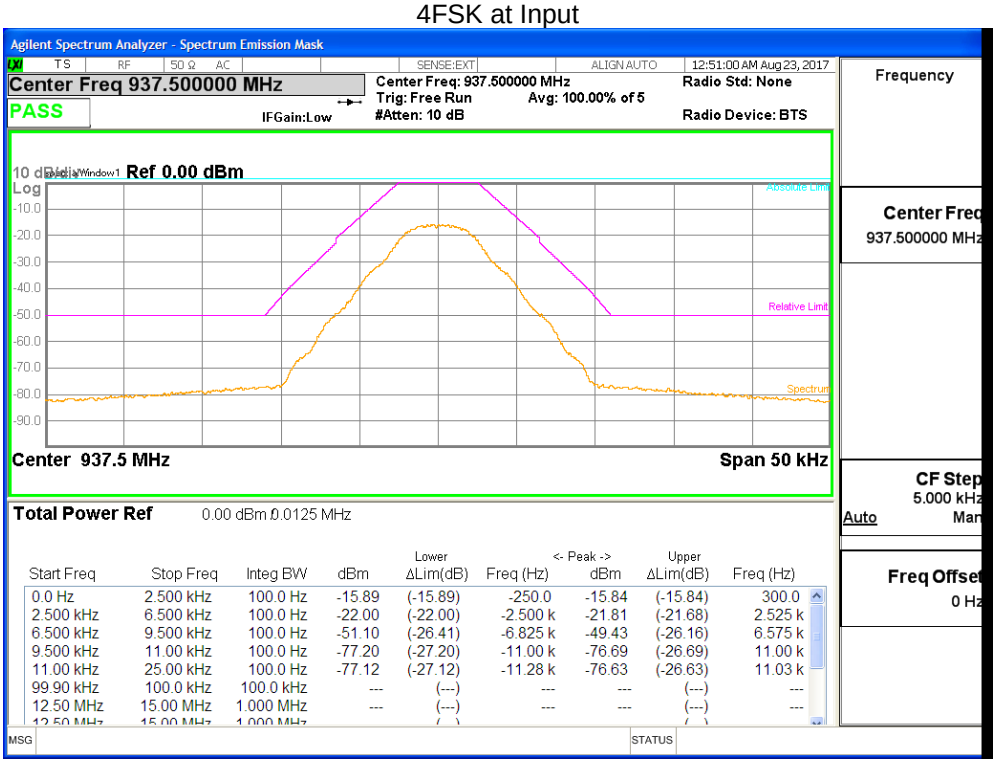
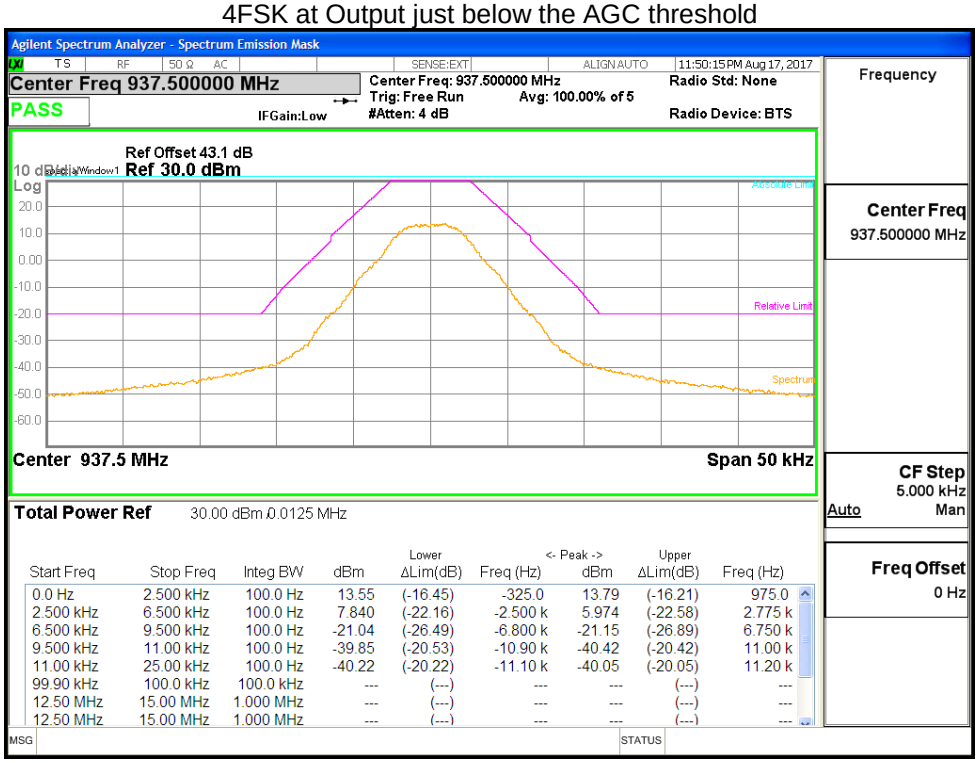
Results

4FSK at Input



Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	2.500 kHz	100.0 Hz	-15.89	(-15.89)	-250.0	-15.84	(-15.84)	300.0
2.500 kHz	6.500 kHz	100.0 Hz	-22.00	(-22.00)	-2.500 k	-21.81	(-21.68)	2.525 k
6.500 kHz	9.500 kHz	100.0 Hz	-51.10	(-26.41)	-6.825 k	-49.43	(-26.16)	6.575 k
9.500 kHz	11.00 kHz	100.0 Hz	-77.20	(-27.20)	-11.00 k	-76.69	(-26.69)	11.00 k
11.00 kHz	25.00 kHz	100.0 Hz	-77.12	(-27.12)	-11.28 k	-76.63	(-26.63)	11.03 k
99.90 kHz	100.0 kHz	100.0 kHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

4FSK at Output just below the AGC threshold



Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	2.500 kHz	100.0 Hz	13.55	(-16.45)	-325.0	13.79	(-16.21)	975.0
2.500 kHz	6.500 kHz	100.0 Hz	7.840	(-22.16)	-2.500 k	5.974	(-22.58)	2.775 k
6.500 kHz	9.500 kHz	100.0 Hz	-21.04	(-26.49)	-6.800 k	-21.15	(-26.89)	6.750 k
9.500 kHz	11.00 kHz	100.0 Hz	-39.85	(-20.53)	-10.90 k	-40.42	(-20.42)	11.00 k
11.00 kHz	25.00 kHz	100.0 Hz	-40.22	(-20.22)	-11.10 k	-40.05	(-20.05)	11.20 k
99.90 kHz	100.0 kHz	100.0 kHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

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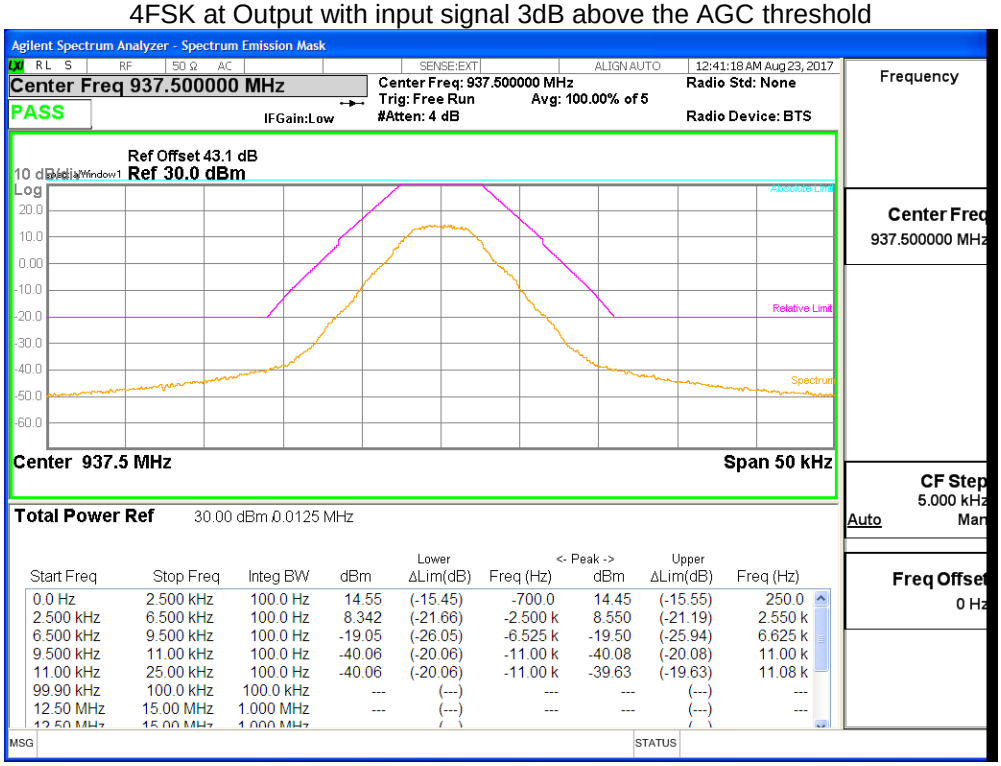
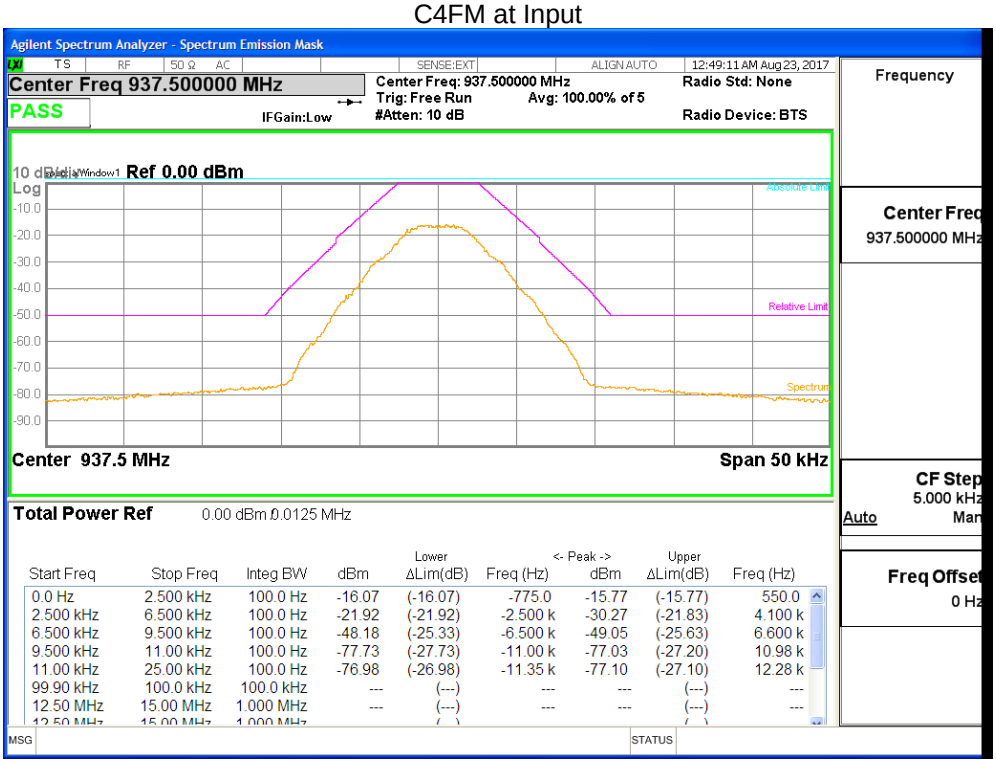
4FSK at Output with input signal 3dB above the AGC threshold



Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	2.500 kHz	100.0 Hz	14.55	(-15.45)	-700.0	14.45	(-15.55)	250.0
2.500 kHz	6.500 kHz	100.0 Hz	8.342	(-21.66)	-2.500 k	8.550	(-21.19)	2.550 k
6.500 kHz	9.500 kHz	100.0 Hz	-19.05	(-26.05)	-6.525 k	-19.50	(-25.94)	6.625 k
9.500 kHz	11.00 kHz	100.0 Hz	-40.06	(-20.06)	-11.00 k	-40.08	(-20.08)	11.00 k
11.00 kHz	25.00 kHz	100.0 Hz	-40.06	(-20.06)	-11.00 k	-39.63	(-19.63)	11.08 k
99.90 kHz	100.0 kHz	100.0 kHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

C4FM at Input



Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	2.500 kHz	100.0 Hz	-16.07	(-16.07)	-775.0	-15.77	(-15.77)	550.0
2.500 kHz	6.500 kHz	100.0 Hz	-21.92	(-21.92)	-2.500 k	-30.27	(-21.83)	4.100 k
6.500 kHz	9.500 kHz	100.0 Hz	-48.18	(-25.33)	-6.500 k	-49.05	(-25.63)	6.600 k
9.500 kHz	11.00 kHz	100.0 Hz	-77.73	(-27.73)	-11.00 k	-77.03	(-27.20)	10.98 k
11.00 kHz	25.00 kHz	100.0 Hz	-76.98	(-26.98)	-11.35 k	-77.10	(-27.10)	12.28 k
99.90 kHz	100.0 kHz	100.0 kHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

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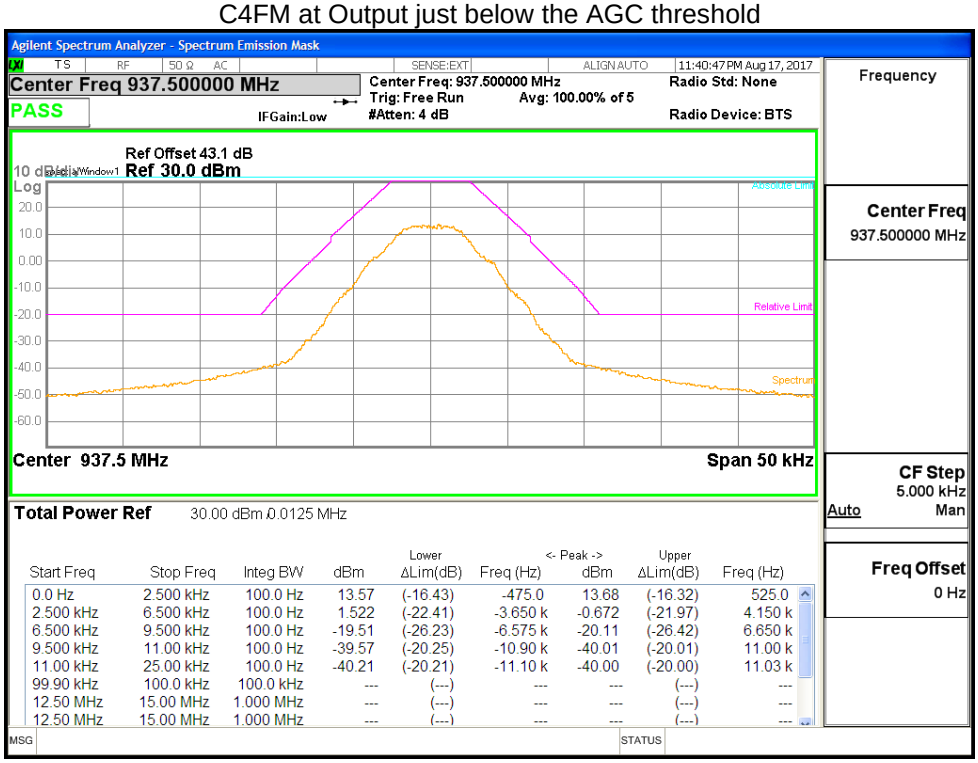
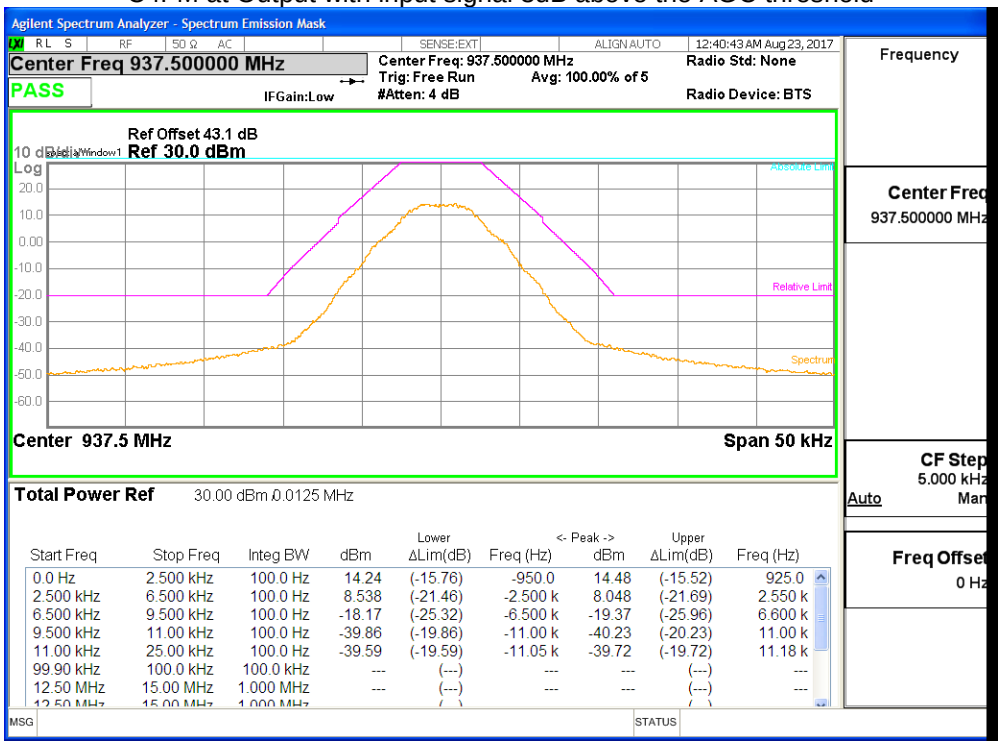
C4FM at Output just below the AGC threshold



Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	2.500 kHz	100.0 Hz	13.57	(-16.43)	-475.0	13.68	(-16.32)	525.0
2.500 kHz	6.500 kHz	100.0 Hz	1.522	(-22.41)	-3.650 k	-0.672	(-21.97)	4.150 k
6.500 kHz	9.500 kHz	100.0 Hz	-19.51	(-26.23)	-6.575 k	-20.11	(-26.42)	6.650 k
9.500 kHz	11.00 kHz	100.0 Hz	-39.57	(-20.25)	-10.90 k	-40.01	(-20.01)	11.00 k
11.00 kHz	25.00 kHz	100.0 Hz	-40.21	(-20.21)	-11.10 k	-40.00	(-20.00)	11.03 k
99.90 kHz	100.0 kHz	100.0 kHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

C4FM at Output with input signal 3dB above the AGC threshold



Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	2.500 kHz	100.0 Hz	14.24	(-15.76)	-950.0	14.48	(-15.52)	925.0
2.500 kHz	6.500 kHz	100.0 Hz	8.538	(-21.46)	-2.500 k	8.048	(-21.69)	2.550 k
6.500 kHz	9.500 kHz	100.0 Hz	-18.17	(-25.32)	-6.500 k	-19.37	(-25.96)	6.600 k
9.500 kHz	11.00 kHz	100.0 Hz	-39.86	(-19.86)	-11.00 k	-40.23	(-20.23)	11.00 k
11.00 kHz	25.00 kHz	100.0 Hz	-39.59	(-19.59)	-11.05 k	-39.72	(-19.72)	11.18 k
99.90 kHz	100.0 kHz	100.0 kHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

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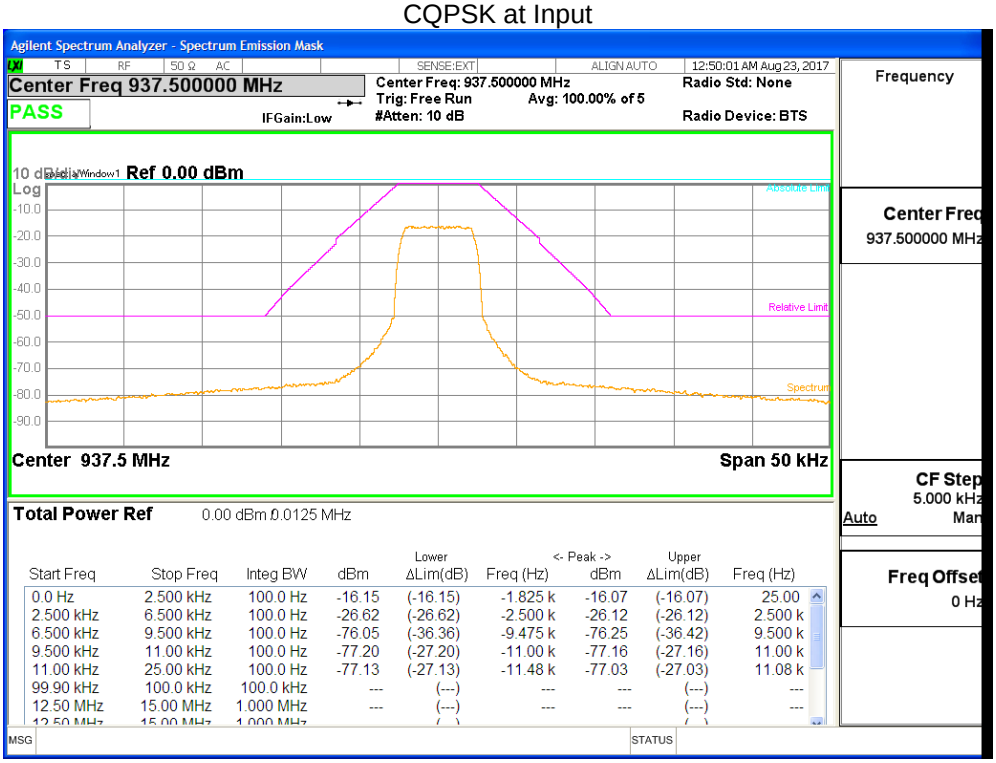
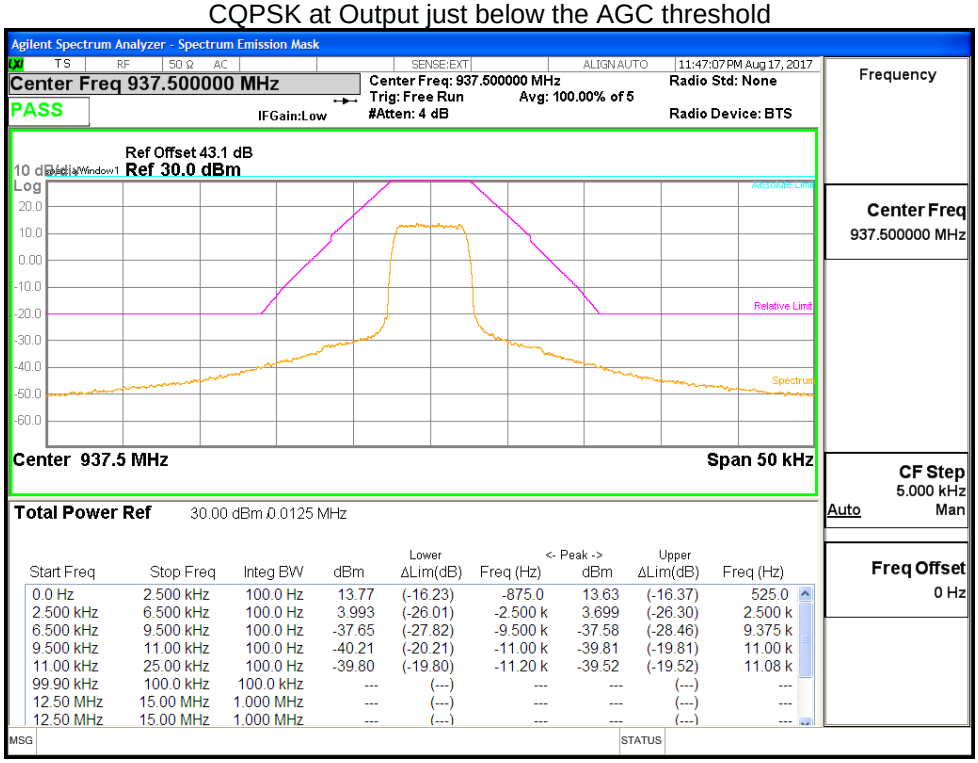
CQPSK at Input



Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	2.500 kHz	100.0 Hz	-16.15	(-16.15)	-1.825 k	-16.07	(-16.07)	25.00
2.500 kHz	6.500 kHz	100.0 Hz	-26.62	(-26.62)	-2.500 k	-26.12	(-26.12)	2.500 k
6.500 kHz	9.500 kHz	100.0 Hz	-76.05	(-36.36)	-9.475 k	-76.25	(-36.42)	9.500 k
9.500 kHz	11.00 kHz	100.0 Hz	-77.20	(-27.20)	-11.00 k	-77.16	(-27.16)	11.00 k
11.00 kHz	25.00 kHz	100.0 Hz	-77.13	(-27.13)	-11.48 k	-77.03	(-27.03)	11.08 k
99.90 kHz	100.0 kHz	100.0 kHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

CQPSK at Output just below the AGC threshold



Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	2.500 kHz	100.0 Hz	13.77	(-16.23)	-875.0	13.63	(-16.37)	525.0
2.500 kHz	6.500 kHz	100.0 Hz	3.993	(-26.01)	-2.500 k	3.699	(-26.30)	2.500 k
6.500 kHz	9.500 kHz	100.0 Hz	-37.65	(-27.82)	-9.500 k	-37.58	(-28.46)	9.375 k
9.500 kHz	11.00 kHz	100.0 Hz	-40.21	(-20.21)	-11.00 k	-39.81	(-19.81)	11.00 k
11.00 kHz	25.00 kHz	100.0 Hz	-39.80	(-19.80)	-11.20 k	-39.52	(-19.52)	11.08 k
99.90 kHz	100.0 kHz	100.0 kHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

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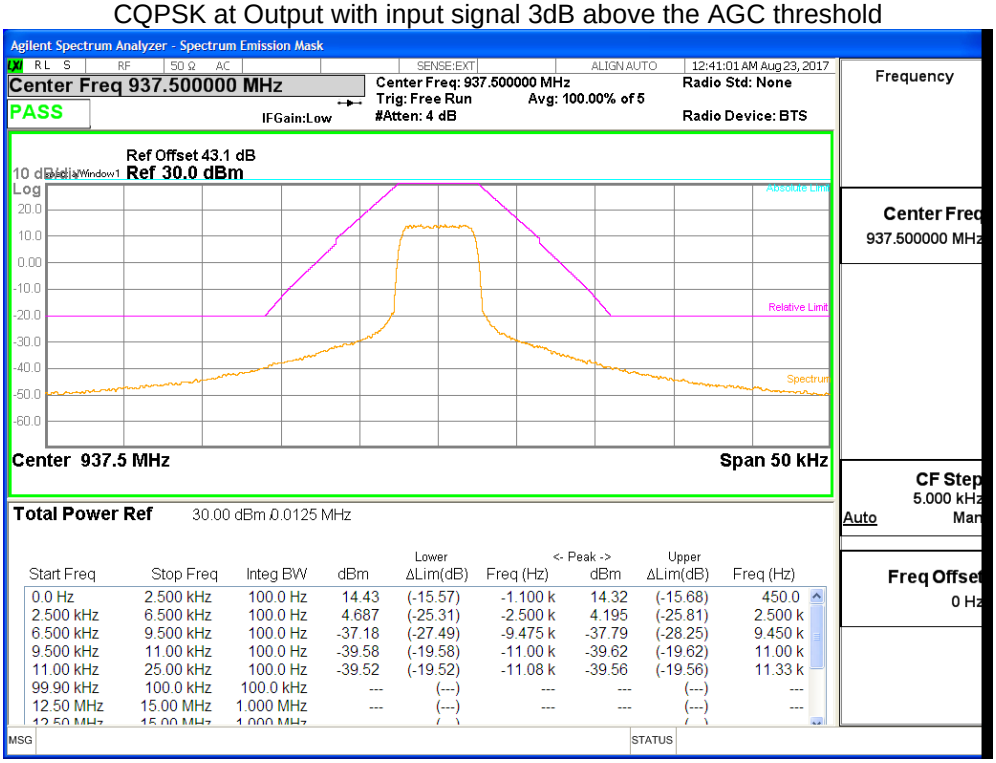
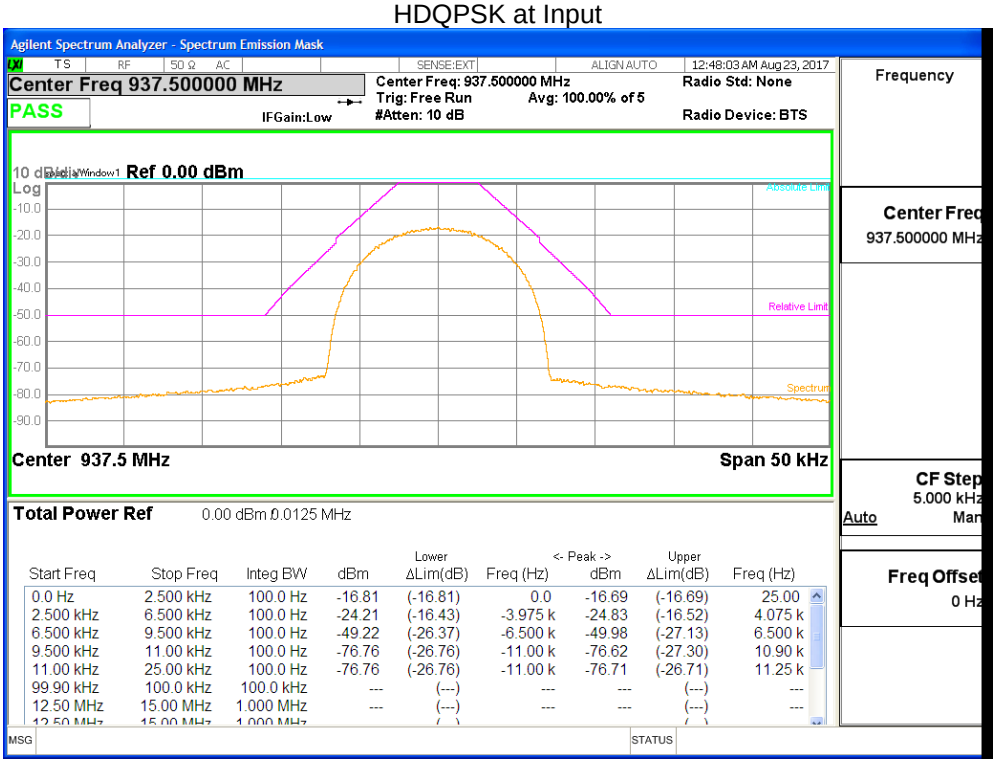
CQPSK at Output with input signal 3dB above the AGC threshold



Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	2.500 kHz	100.0 Hz	14.43	(-15.57)	-1.100 k	14.32	(-15.68)	450.0
2.500 kHz	6.500 kHz	100.0 Hz	4.687	(-25.31)	-2.500 k	4.195	(-25.81)	2.500 k
6.500 kHz	9.500 kHz	100.0 Hz	-37.18	(-27.49)	-9.475 k	-37.79	(-28.25)	9.450 k
9.500 kHz	11.00 kHz	100.0 Hz	-39.58	(-19.58)	-11.00 k	-39.62	(-19.62)	11.00 k
11.00 kHz	25.00 kHz	100.0 Hz	-39.52	(-19.52)	-11.08 k	-39.56	(-19.56)	11.33 k
99.90 kHz	100.0 kHz	100.0 kHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

HDQPSK at Input



Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	2.500 kHz	100.0 Hz	-16.81	(-16.81)	0.0	-16.69	(-16.69)	25.00
2.500 kHz	6.500 kHz	100.0 Hz	-24.21	(-16.43)	-3.975 k	-24.83	(-16.52)	4.075 k
6.500 kHz	9.500 kHz	100.0 Hz	-49.22	(-26.37)	-6.500 k	-49.98	(-27.13)	6.500 k
9.500 kHz	11.00 kHz	100.0 Hz	-76.76	(-26.76)	-11.00 k	-76.62	(-27.30)	10.90 k
11.00 kHz	25.00 kHz	100.0 Hz	-76.76	(-26.76)	-11.00 k	-76.71	(-26.71)	11.25 k
99.90 kHz	100.0 kHz	100.0 kHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

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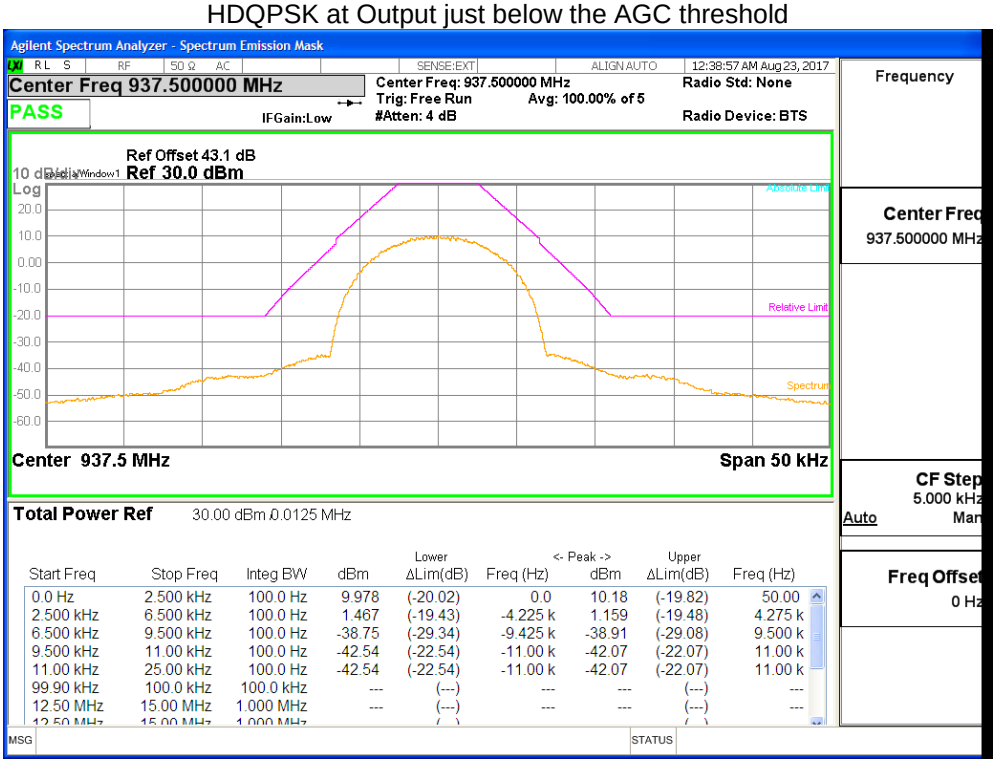
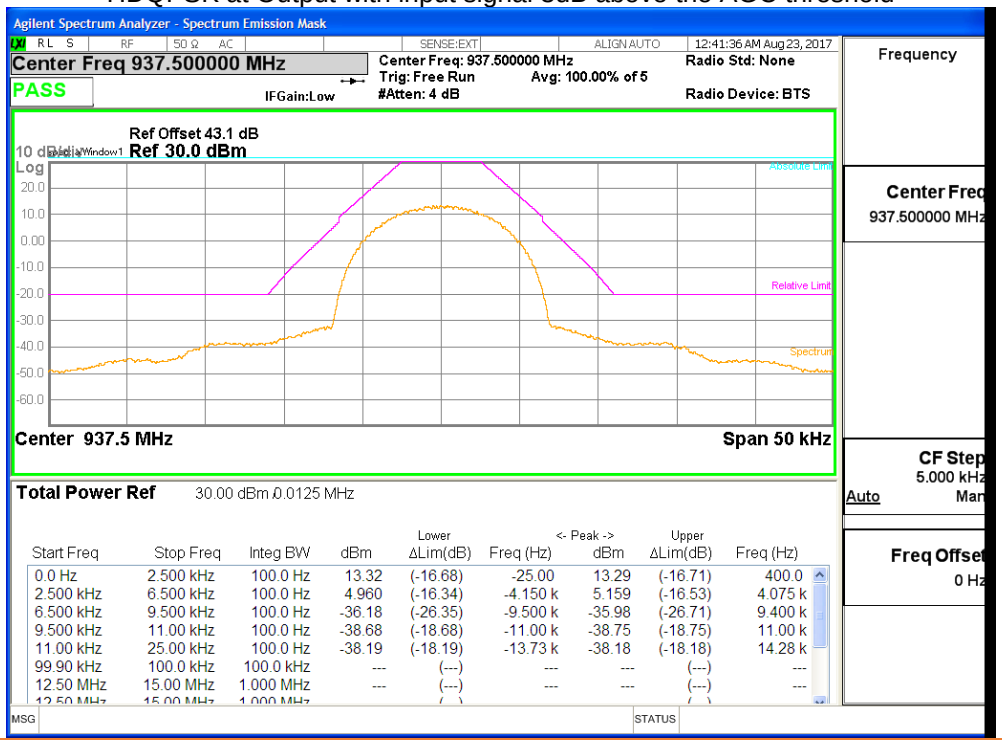
HDQPSK at Output just below the AGC threshold



Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	2.500 kHz	100.0 Hz	9.978	(-20.02)	0.0	10.18	(-19.82)	50.00
2.500 kHz	6.500 kHz	100.0 Hz	1.467	(-19.43)	-4.225 k	1.159	(-19.48)	4.275 k
6.500 kHz	9.500 kHz	100.0 Hz	-38.75	(-29.34)	-9.425 k	-38.91	(-29.08)	9.500 k
9.500 kHz	11.00 kHz	100.0 Hz	-42.54	(-22.54)	-11.00 k	-42.07	(-22.07)	11.00 k
11.00 kHz	25.00 kHz	100.0 Hz	-42.54	(-22.54)	-11.00 k	-42.07	(-22.07)	11.00 k
99.90 kHz	100.0 kHz	100.0 kHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

HDQPSK at Output with input signal 3dB above the AGC threshold



Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	2.500 kHz	100.0 Hz	13.32	(-16.68)	-25.00	13.29	(-16.71)	400.0
2.500 kHz	6.500 kHz	100.0 Hz	4.960	(-16.34)	-4.150 k	5.159	(-16.53)	4.075 k
6.500 kHz	9.500 kHz	100.0 Hz	-36.18	(-26.35)	-9.500 k	-35.98	(-26.71)	9.400 k
9.500 kHz	11.00 kHz	100.0 Hz	-38.68	(-18.68)	-11.00 k	-38.75	(-18.75)	11.00 k
11.00 kHz	25.00 kHz	100.0 Hz	-38.19	(-18.19)	-13.73 k	-38.18	(-18.18)	14.28 k
99.90 kHz	100.0 kHz	100.0 kHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

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Frequency Stability

The hdHost and hd30 are sychronized to the same reference clock. Therefore there is no frequency error after down and up frequency conversion are performed.

The frequency stability check is not applicable to the EUT.

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Intermodulation

Governing Doc	FCC Part 90.219	Room Temperature (°C)	25
Test Procedure	ANSI/TIA-603- E-2016; FCC KDB 935210 D05 Indus Booster Basic Meas v01r01: February 12, 2016	Relative Humidity (%)	60
Test Location	Burnaby	Barometric Pressure (kPa)	98.1
Test Engineer	Sophie Piao/Jeremy Lee	Date	Aug 18, 2017
EUT Voltage	☒ DC	☐ 120VAC @ 60Hz	

Test Equipment Used	Manufacturer	Model	Serial Number	Calibration	Calibration due
Signal Generator	Keysight	N5172B	MY53050270	08/04/17	08/04/18
Spectrum Analyzer	Keysight	N9010A	MY50520285	08/07/17	08/07/18
40dB Attenuator	Aeroflex Winschel	58-40-43	n/p	CVP	CVP

Note) CVP = Calibration Verification Performed internally, n/p = not provided.

Frequency Range:	☒ Max Gain Frequency ± 50kHz
Detector:	☒ Average
RBW/VBW:	☒100/910Hz
Type of Facility:	☒ Tabletop
Distance:	☒ Direct

In order to comply with condition that the ERP of intermodulation products should not exceed −30 dBm in 10 kHz measurement bandwidth, a minimum amount of distribution loss between the *hd*30 remote unit antenna port and antenna radiated power shall be

- 12 dB when 2-Carrier composite power is 30 dBm
- 10 dB when 2-Carrier composite power is 26.5 dBm

Compliant ☒ Non-Compliant ☐ Not Applicable ☐

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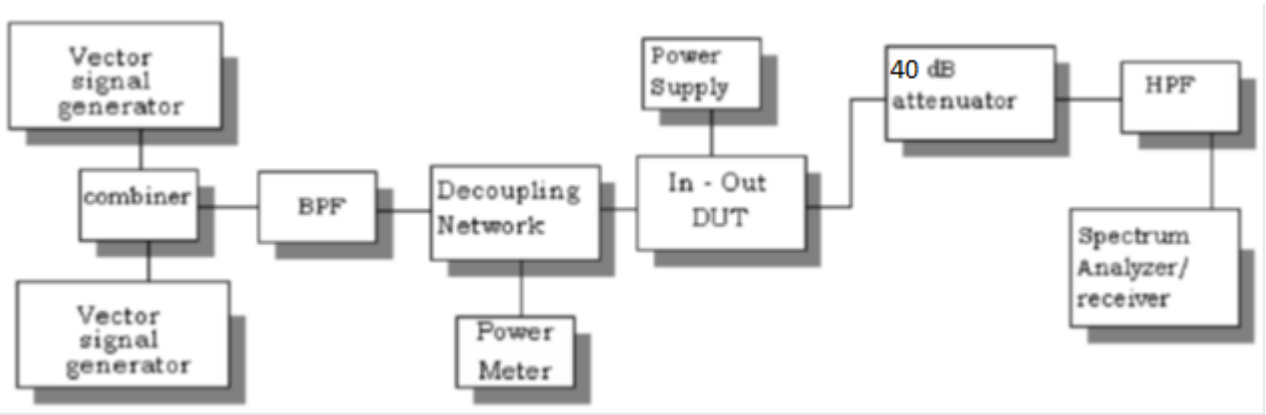
Test setup

Description of test set-up:
The procedure used was ANSI/TIA-603-E-2016. Two tones (CW) method was used. The input power to the amplifier was set at maximum drive level by combining the two tones. The two tones were chosen in such a way (1) the third order intermodulation product frequencies are located within the pass band of the DUT and (2) they produce the worst-case emissions out of band. All signals were modulated. Based on FCC KDB 935210 D05 Indus Booster Basic Meas v01r01: 2016, the two tone was located on either side of the maximum gain frequence in the passing band, and separated with the available spacing, which is 12.5kHz in 900 MHz band. Measurements were performed with modulated -tone at identical input amplitude which produced integrated maximum rated output power. The EUT was set to **Operation Mode #1 with configuration Mode #1.**



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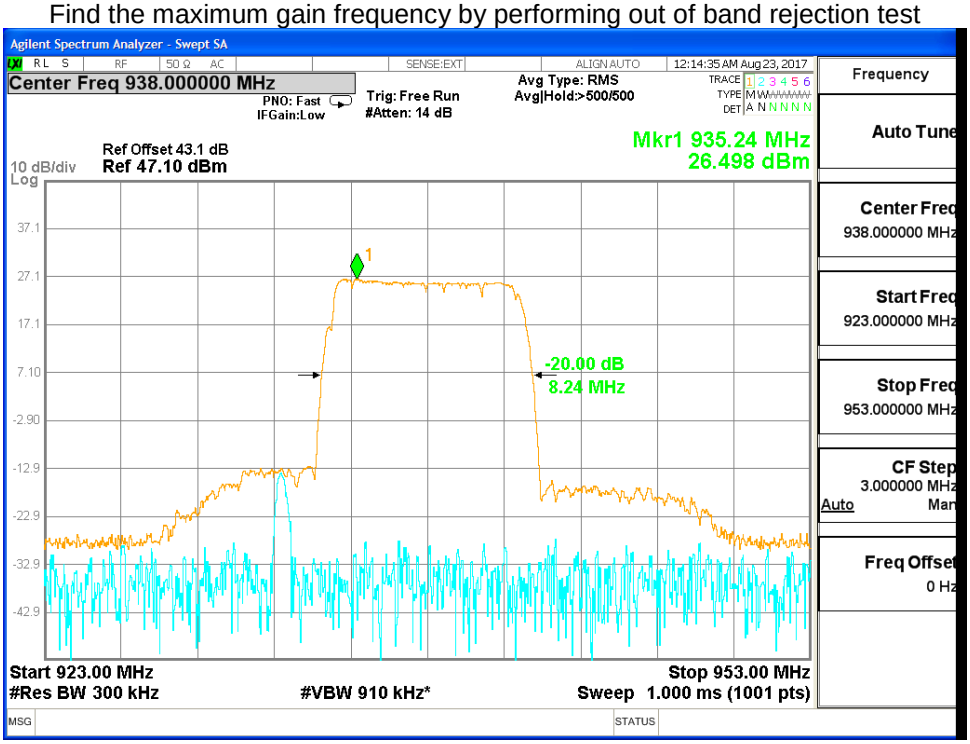
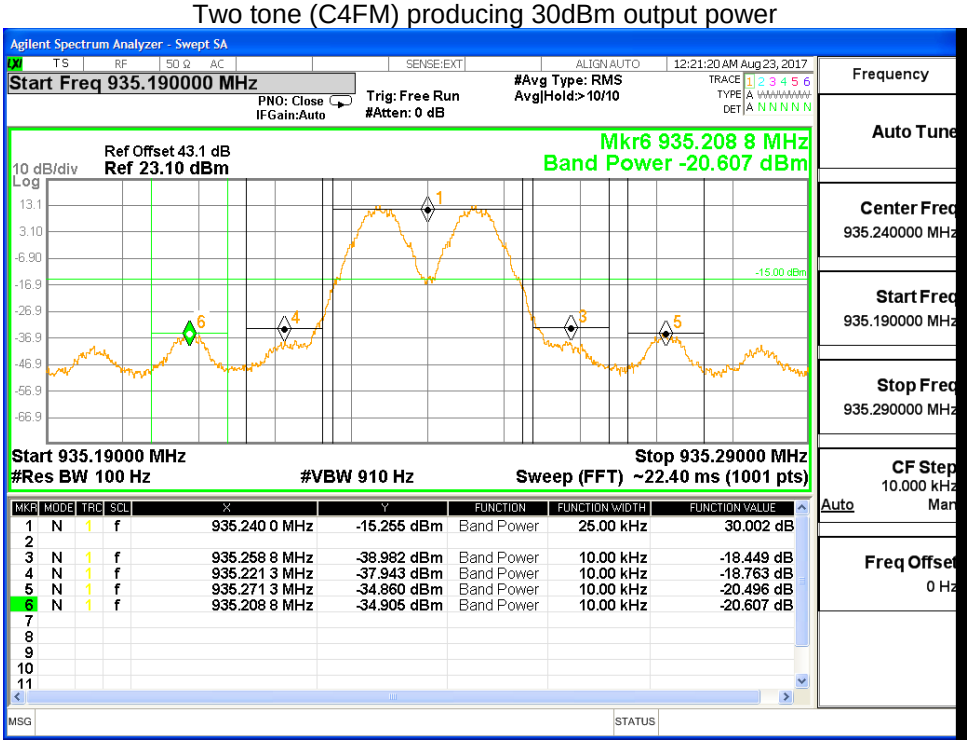
Results

Find the maximum gain frequency by performing out of band rejection test



f_0 = 935.24 MHz

Two tone (C4FM) producing 30dBm output power



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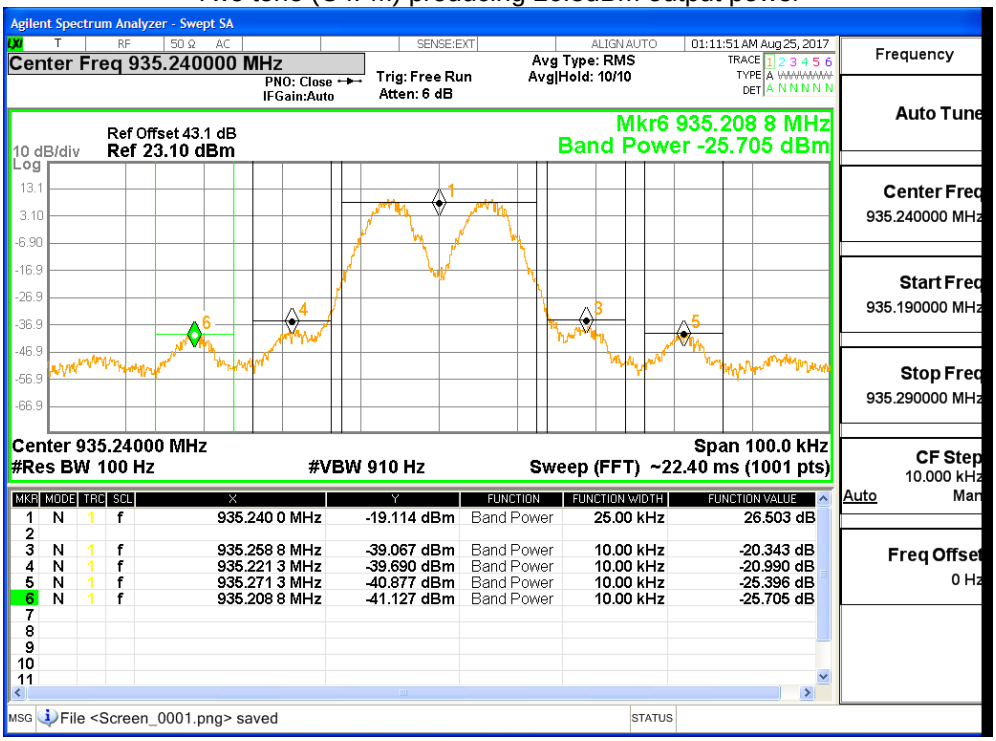
Two tone (C4FM) producing 26.5dBm output power



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Input/output Power and Amplifier/Booster Gain

Governing Doc	FCC Part 90.219	Room Temperature (°C)	25
Test Procedure	ANSI/TIA-603-E-2016; FCC KDB 935210 D05 Indus Booster Basic Meas v01r01: February 12, 2016	Relative Humidity (%)	60
Test Location	Burnaby	Barometric Pressure (kPa)	98.1
Test Engineer	Sophie Piao/Jeremy Lee	Date	Aug 15, 2017
EUT Voltage	☒ DC	☐ 120VAC @ 60Hz	

Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due
Signal Generator	Keysight	N5172B	MY53050270	08/04/17	08/04/18
Spectrum Analyzer	Keysight	N9010A	MY50520285	08/07/17	08/07/18
40dB Attenuator	Aeroflex Winschel	58-40-43	n/p	CVP	CVP

Note) CVP = Calibration Verification Performed internally, n/p = not provided.

Span:	☒ Max Gain Frequency ± 1500kHz
Detector:	☒ Peak
RBW/VBW:	☒100k Hz/ 300 kHz
Type of Facility:	☒ Tabletop
Distance:	☒ Direct

The booster gain was 30.07 dB at 0 dBm nominal input power. The output power produced is less than 5 Watt limited in Part 90.219.

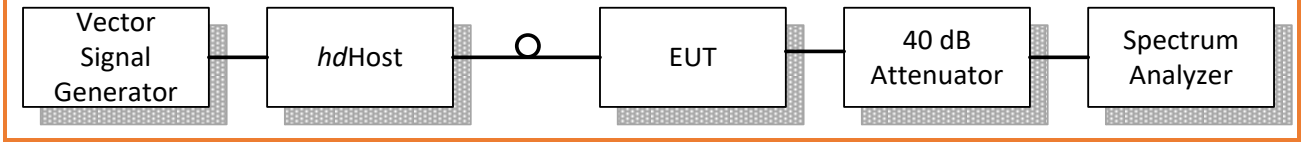
Compliant ☒ Non-Compliant ☒ Not Applicable ☐

Test setup

Description of test set-up:

The procedure used was ANSI/TIA-603-E-2016 and FCC KDB 935210 D05 Indus Booster Basic Meas v01r01:. A CW tone was input at the frequency where the system gain is the maximum in the pass band, with the nominal input power level 0 dBm. The spectrum analyzer was connected to the output RF port via a 50 Ohm 40 dB attenuator. The maximum hold trace and peak detector was used to capture the output power. The output power minus the input power (0dBm) equals to the booster gain in dB.

The EUT was set to **Operation Mode #1 with configuration Mode #1.**



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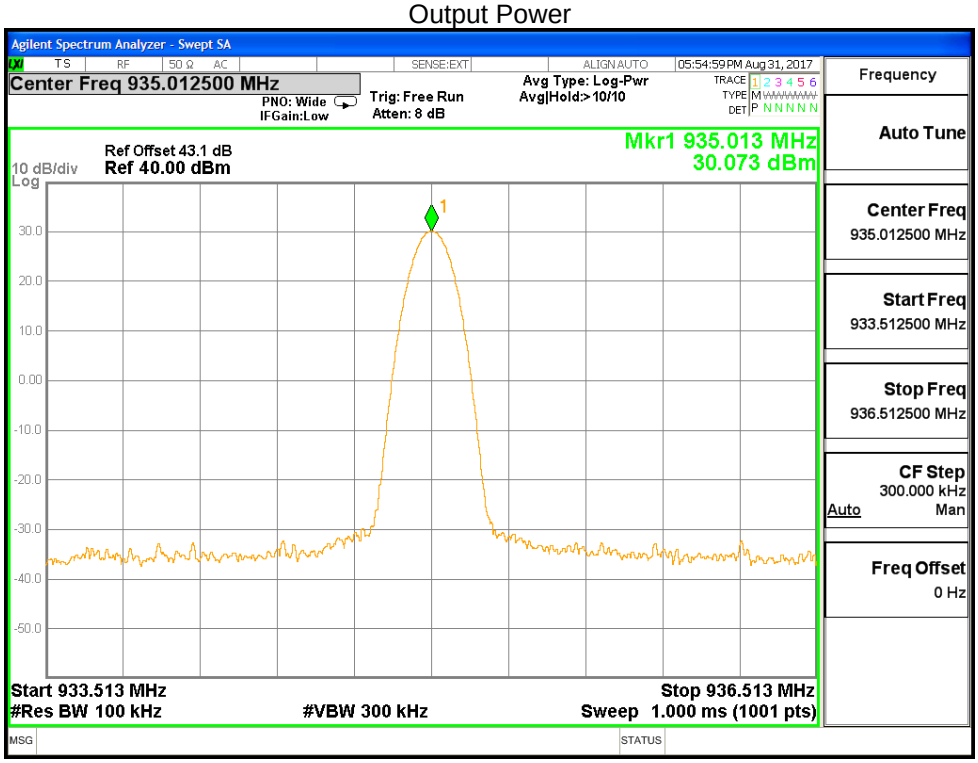
Results

Output Power



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Noise Figure

Governing Doc	FCC Part 90.219	Room Temperature (°C)	25
Test Procedure	ANSI/TIA-603-E-2016; FCC KDB 935210 D05 Indus Booster Basic Meas v01r01: February 12, 2016	Relative Humidity (%)	60
Test Location	Burnaby	Barometric Pressure (kPa)	98.1
Test Engineer	Sophie Piao/Jeremy Lee	Date	Aug 23, 2017
EUT Voltage	☒ DC	☐ 120VAC @ 60Hz	

Test Equipment Used	Manufacturer	Model	Serial Number	Calibration	Calibration due
Spectrum Analyzer	Keysight	N9010A	MY50520285	08/07/17	08/07/18
Noise Source	Keysight	N4001A	MY44420489	CNR	CNR

Note) CNR = Calibration not required when used with other calibrated equipment.

Frequency Range:	☒ 896 MHz – 901 MHz
Detector:	☒ Average
RBW:	☒510 kHz
Type of Facility:	☒ Tabletop
Distance:	☒ Direct

Noise Figure is less than 9dB.

Compliant ☒ Non-Compliant ☐ Not Applicable ☐

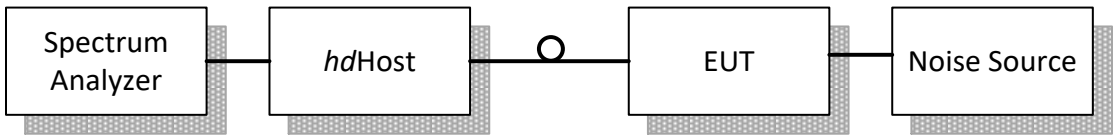
Test setup

Description of test set-up:

Based on FCC KDB 935210 D05 Indus Booster Basic Meas v01r01: 2016, A noise figure analyzer reside in the standard spectrum analyzer was used to connect to the signal output. An excess noise ratio (ENR) calibrated noise source was used to inject noise into the input port of EUT.

Measurements were performed within the EUT's passband.

The EUT was set to **Operation Mode #1 with configuration Mode #1.**



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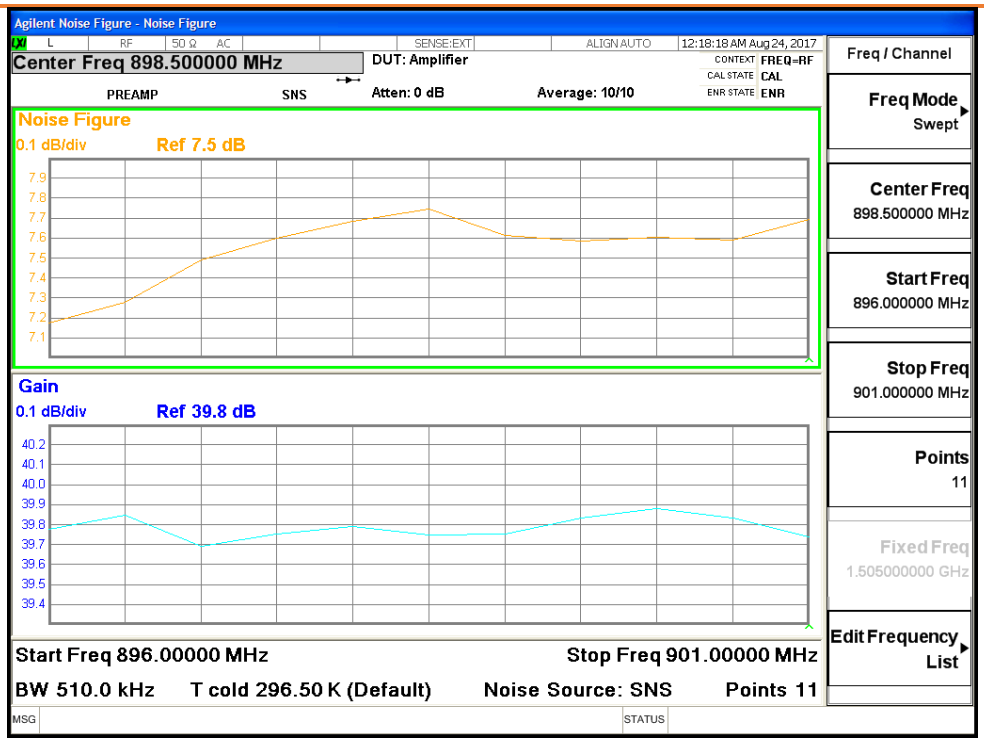
Results



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Radiated Emissions - Enclosure

Governing Doc	FCC 15.209	Room Temperature (°C)	26.5
Test Procedure	ANSI C63.4	Relative Humidity (%)	33
Test Location	Richmond	Barometric Pressure (kPa)	101.7
Test Engineer	David Johanson	Date	July 19, 2017
EUT Voltage	☒ DC	☐ 120VAC @ 60Hz	

Test Equipment Used	Manufacturer	Model	Identifier	Calibration date	Calibration
Spectrum Analyzer	KeySight	N9038A	702	18-Apr-2017	18-Apr-2018
Broadband Antenna	Sunol	JB1	371	29-Mar-2016	29-Mar-2018
Loop Antenna	ComPower	AL-130	241	28-Oct-2015	28-Oct-2017
Horn Antenna	A.H Systems	SAS-571	227C	22-Sep-2016	22-Sep-2018
RF Preamplifier	Agilent	8449B	273	NCR	NCR
EMC Shielded Enclosure	USC	USC-26	374	NCR[1]	NCR[1]

Note1) NCR = No Calibration Required, but NSA was done at 2016.

Frequency Range:	☒ 9kHz-30MHz	☒ 30-1000MHz	☒ 1-18GHz
Detector:	☒ Peak (for Prescan)	☒ Quasi-Peak(for Formal))	☒ Average(for Formal)
RBW/VBW:	☒ 9/30kHz	☒ 120/300kHz	☒ 1/3MHz
Type of Facility:	☒ SAC	☐ FSOATS	☐ *in-situ*
Distance:	☒ 3meter	☐ 10meter	☐ 1meter
Arrangement of EUT:	☒ Table-top only	☐ Floor-standing only	☐ Rack Mounted

Compliant ☒ Non-Compliant ☐ Not Applicable ☐

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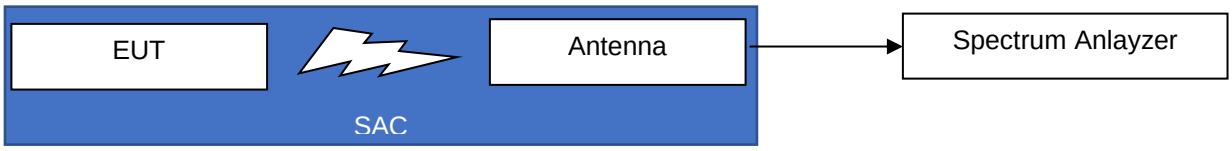
Test setup

Description of test set-up:
The EUT was placed on a nonconducting platform (i.e., an “EUT support table”), of nominal size 1 m by 1.5 m, whose top surface is nominally 80 cm above the reference ground plane. The EUT was set up on 3 meters away from the EUT. The EUT was set continually on its Radio, 1W Max., which was downlinked from tHOST. And the output of RF was terminated via 40dB attenuator, for rejecting the high power of carrier. The lowest, middle and highest channels were used for measuring of all radiated spurious emisions . The EUT was set to **Operation Mode #1 with configuration Mode #1.** 

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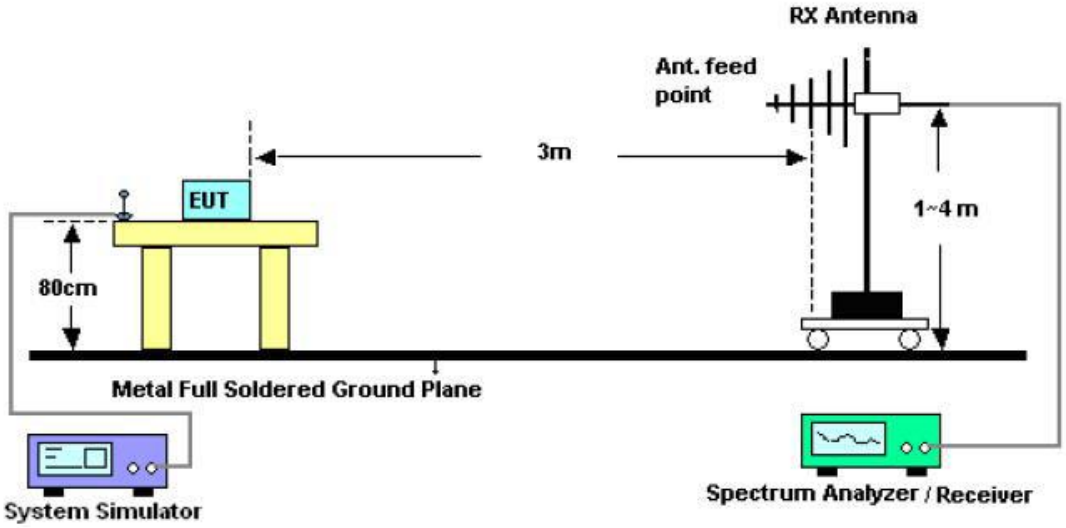
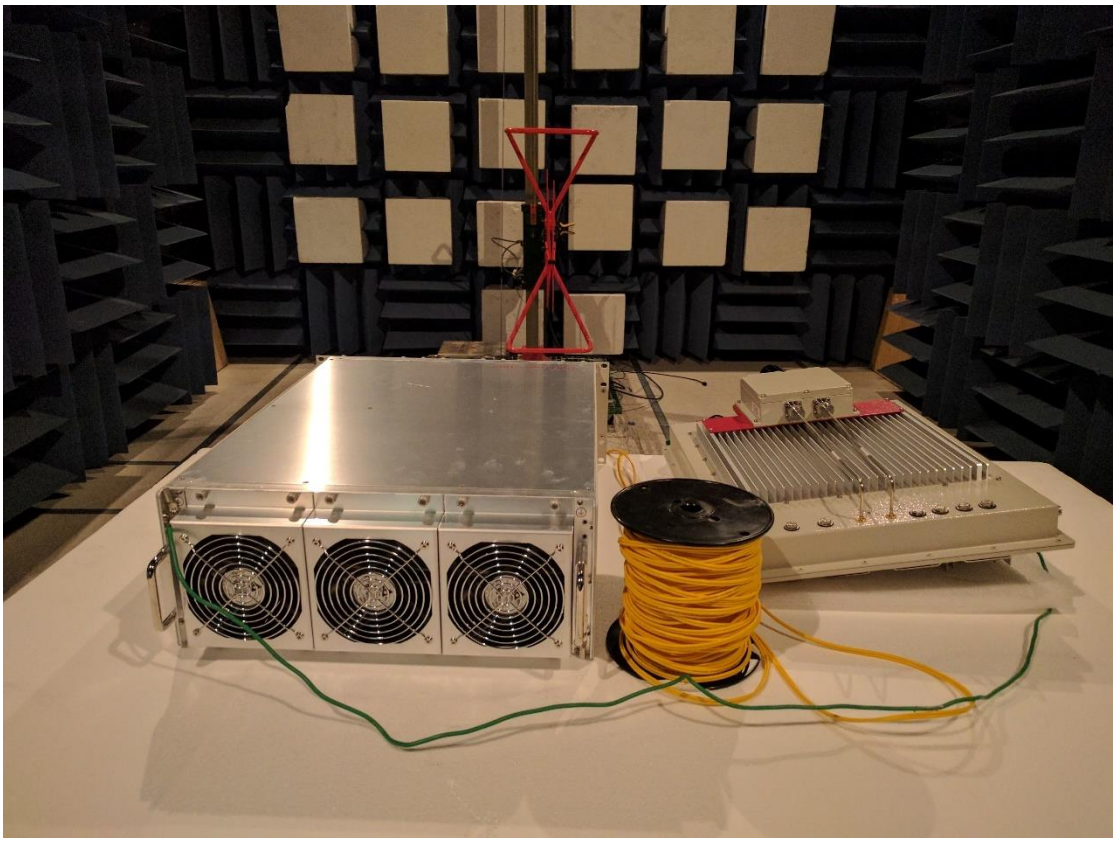
- Radiated Emission 30 to 1,000MHz, with JB-1





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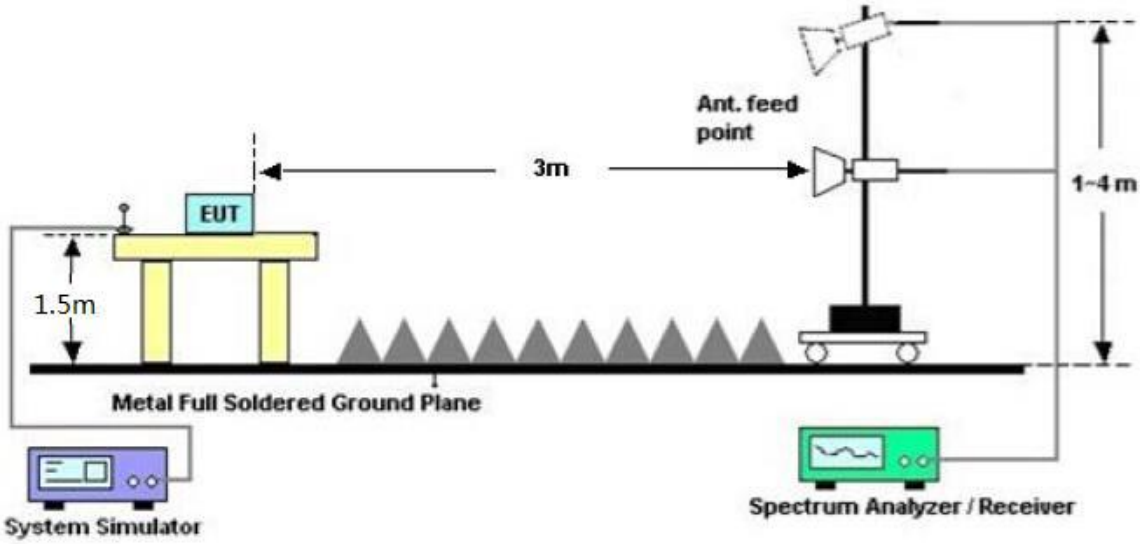
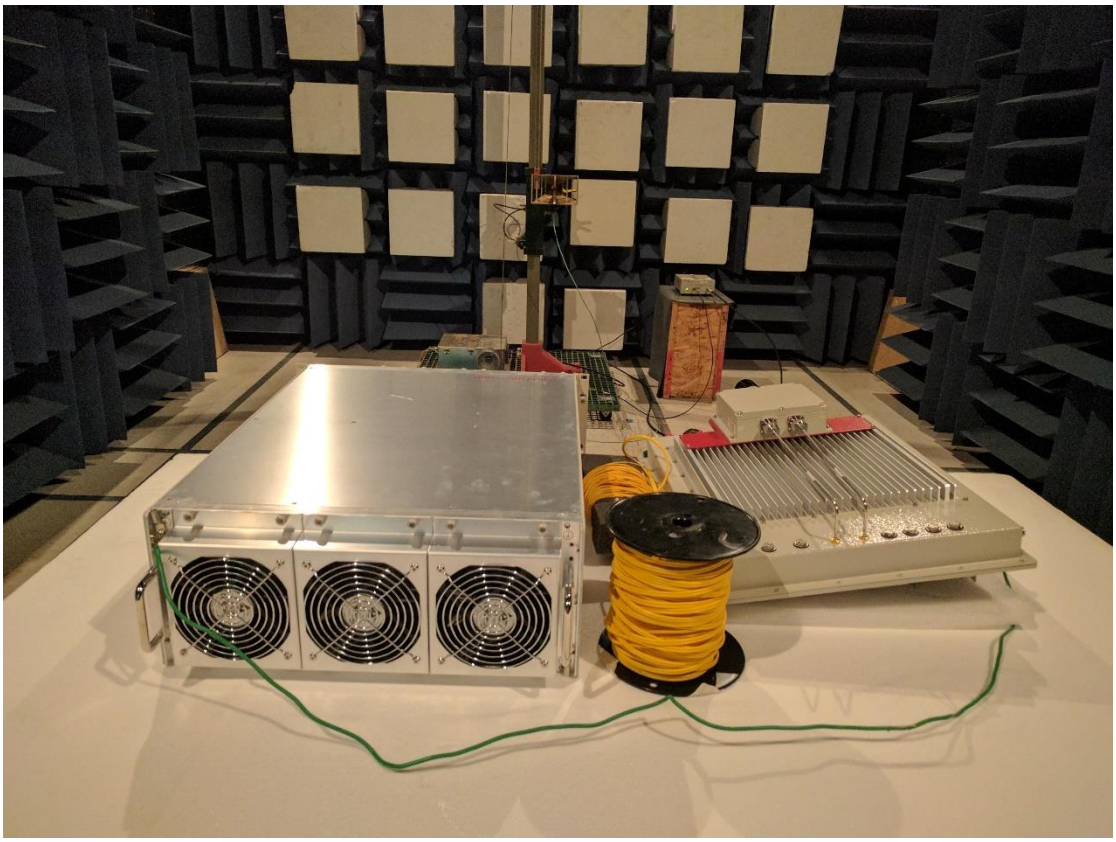
- Radiated Emission 1 to 18GHz, with SAS-571





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Measurement Procedure

Testing was performed in accordance with the test standard(s) referenced in the test summary section of this report. The Equipment Under Test (EUT) was configured based upon the requirements of the applicable test standard. Initially, the primary emission frequencies are identified by positioning a broadband receive antenna three meter from the EUT.

Scans were made with an EMC Analyzer, controlled by EMC Test Software, Tile7!, from 30kHz to 18GHz with the receiver in the peak mode. The receiver IF bandwidth was 9kHz,120 kHz or 1MHz as appropriate for the frequency and scan step was about 30kHz. To ensure that the maximum emission at each discrete frequency of interest is observed, the receive antenna is varied in height from one to four meters and rotated to produce horizontal and vertical polarities while the turntable is rotated to determine the worst emitting configuration. Under 30MHz was only tested at 1meter height and Antenna was changed both polarization, Horizontal and Vertical. Measurements were then made using CISPR quasi peak when the peak readings were within 10dB of the limit line. The numerical results are included herein to demonstrate compliance.

Test Result

The output of EUT was set to 1 Watt(+30dBm), the PASS level of Spurious is: 43 + 10log(P) = 43 + 10log(1) = 43dB attenuation = -13dBm Since of radiated measurement was performed at 3 meters, the limit line was converted to dBuV/m using the formulas ad outlined in KDB 971168: -13 dBm ERP = 84.38 dBuV/m at 3 meters. Spurious Emission level (dBuV/m) = Detected level (dBuV) + Path Loss(dB) + Antenna Factor (dB/m) - Preamplifier's Gain (dB)

Graphical Representation for Emission - Radiated 30kHz to 30MHz

Spectrum was scanned manually from 30kHz to 30MHz. No automated plot is available for this frequency range. No spurious emissions from the product were detectable

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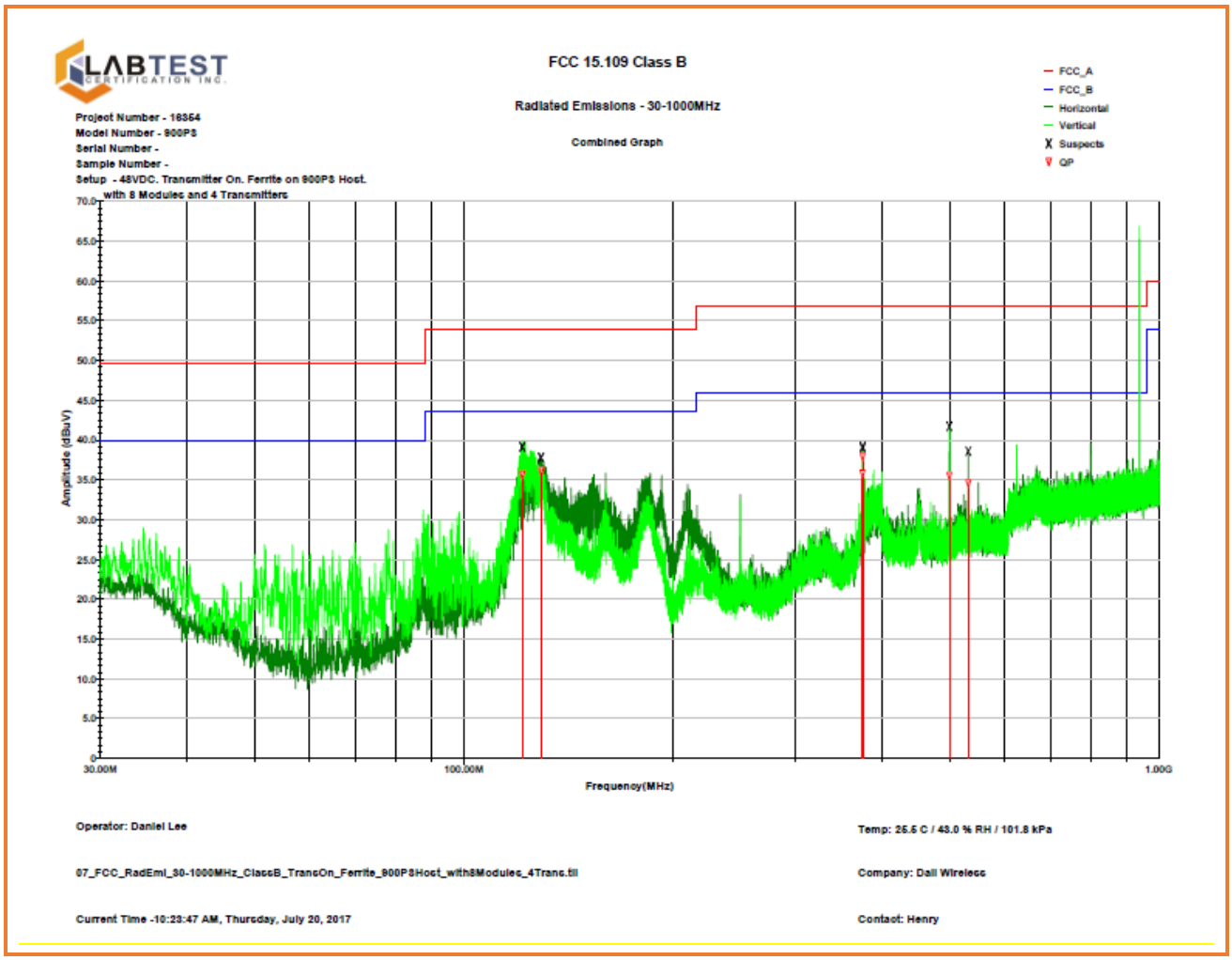
Graphical Representation for Emission - Radiated 30MHz to 1GHz



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Graphical Representation for Emission - Radiated 1 to 18GHz

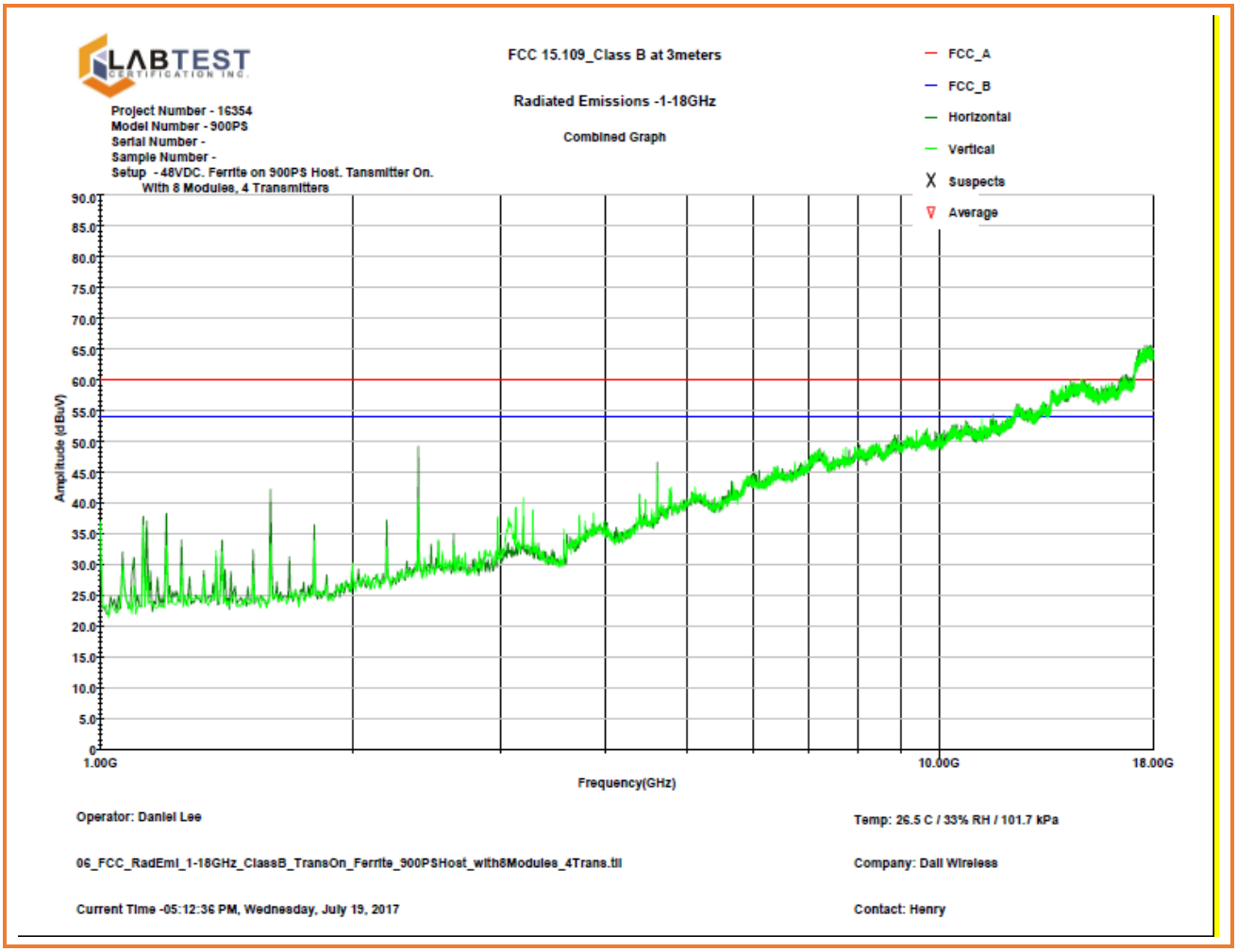

Table Representation for Emission - Radiated 30MHz to 18GHz

No Emissions were measured. All emissions detected, other than the fundamental, were related to the Digital Mode circuitry. No Transmitter Spurious Emissions were detectable and are greater than 20dB below the limit line.

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APPENDIX A: ISO 17025:2005 Accreditation Certificate

CERTIFICATE OF ACCREDITATION

ANSI-ASQ National Accreditation Board
500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

Labtest Certification, Inc.
3128, 20800 Westminster HWY
Richmond B.C. V6V 2W3

has been assessed by ANAB
and meets the requirements of international standard

ISO/IEC 17025:2005

while demonstrating technical competence in the field of

TESTING

Refer to the accompanying Scope of Accreditation for information regarding the types of tests to which this accreditation applies.

AT-2033
Certificate Number

ANAB Approval

Certificate Valid: 08/07/2017-03/04/2018
Version No. 004 Issued: 08/07/2017

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

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ANSI-ASQ National Accreditation Board

ANAB

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Labtest Certification, Inc.
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Richmond, B.C. V6V 2W3
Kavinder Dhillon Ruben Ugarte Phone: 604-247-0444
kdhillon@labtestcert.com ruben.Ugarte@labtestcert.com
www.labtestcert.com

TESTING

Valid to: **March 4, 2018** Certificate Number: **AT-2033**

Testing performed in support of FCC DoC and Certification approval procedures

Type of Device Examples	Scope of Accreditation	Supporting FCC Guidance	Comments
Unintentional Radiators (FCC Part 15, Subpart B)	• ANSI C63.4-2014		
Industrial, Scientific, and Medical Equipment (FCC Part 18) • Consumer ISM equipment	• FCC MP-5, (February 1986)		
Intentional Radiators (FCC Part 15 Subpart C)	• ANSI C63.10-2013		
UPCS (FCC Part 15, Subpart D) •Unlicensed Personal Communication Systems devices	• ANSI C63.17-2013		
U-NII without DFS Intentional Radiators (FCC Part 15, Subpart E) •Unlicensed National Information Infrastructure Devices (U-NII without DFS)	• ANSI C63.10-2013	KDB Publication 789033	
U-NII with DFS Intentional Radiators (FCC Part 15 Subpart E) • Unlicensed National Information Infrastructure U-NII) Devices with Dynamic Frequency Selection (DFS)	• FCC KDB Publication 905462 D02 UNII DFS Compliance Procedures New Rules v01 (April 8, 2016)		
UWB Intentional Radiators (FCC Part 15, Subpart F) •Ultra-wideband Operation	• ANSI C63.10-2013		
BPL Intentional Radiators (FCC Part 15, Subpart G) •Access Broadband Over Power Line (Access BPL)	• ANSI C63.10-2013		
White Space Device Intentional Radiators (FCC Part 15, Subpart H) •White Space Devices	• ANSI C63.10-2013		

Version 003 Issued: 08/07/2017

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ANSI-ASQ National Accreditation Board

Testing performed in support of FCC DoC and Certification approval procedures

Type of Device Examples	Scope of Accreditation	Supporting FCC Guidance	Comments
Commercial Mobile Services (FCC Licensed Radio Service Equipment) •Part 22 (cellular) •Part 24 •Part 25 (non-microwave) •Part 27	• ANSI/TIA-603-D • TIA-102.CAAA-D	KDB Publication 971168	
General Mobile Radio Services (FCC Licensed Radio Service Equipment) •Part 22 (non-cellular) •Part 90 (non-microwave) •Part 95 •Part 97 •Part 101 (non-microwave)	• ANSI/TIA-603-D • TIA-102.CAAA-D		Microwave Frequencies, as used in this part, refers to frequencies of 890 MHz and above.
Citizens Broadband Radio Services (FCC Licensed Radio Service Equipment) •Part 96	• ANSI/TIA-603-D • TIA-102.CAAA-D	KDB Publication 971168	
Maritime and Aviation Radio Services (FCC Licensed Radio Service Equipment) •Part 80 •Part 87	• ANSI/TIA-603-D		
Microwave and Millimeter Bands Radio Services (FCC Licensed Radio Service Equipment) •Part 25 •Part 74 •Part 90 (90Y, 90Z, DSRC) •Part 101	• ANSI/TIA-603-D • TIA-102.CAAA-D		
Broadcast Radio Services (FCC Licensed Radio Service Equipment) •Part 73 •Part 74 (non-microwave)	• ANSI/TIA-603-D • TIA-102.CAAA-D		
RF Exposure •Devices subject to SAR requirements	• IEEE Std 1528™-2013	KDB Publication 865664 KDB Publication 447498	
Hearing Aid Compatibility (Part 20) •HAC for Commercial mobile services	• ANSI C63.19-2007; or • ANSI C63.19-2011		

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Testing performed in support of FCC DoC and Certification approval procedures

Type of Device Examples	Scope of Accreditation	Supporting FCC Guidance	Comments
Signal Boosters (Part 20) •Wideband Consumer signal boosters •Provider-specific signal boosters •Industrial signal boosters	• FCC KDB Publication 935210 D03 Signal Booster Measurements v04(February 12,2016) • FCC KDB Publication 935210 D04 Provider Specific Booster Measurements v02 (February 12,2016) • FCC KDB Publication 935210 D05 Indus Booster Basic Meas v01r01 (February 12,2016)		

Electromagnetic Compatibility (EMC)

Test Method	Test Specification(s)	Range	Comments
Unintentional Radiators	ANSI C63.4-2003 ANSI C63.4-2009		
Radiated and Conducted Emissions	ANSI C63.4:2014; FCC OST/MP-05 (1986); ICES-001(2006); ICES-002(2013); ICES-003(2016); ICES-005(2009); CISPR 16-1-1(2015); CISPR 16-1-2(2014); CISPR 16-1-3(2006); CISPR 16-2-1(2014); CISPR 16-2-2(2010); CISPR 16-2-3(2014); CISPR 16-2-5(2008); CISPR 16-4-2(2014); EN 55016-1-1(2010); EN 55016-1-2(2014); EN 55016-1-3(2006); EN 55016-1-4(2010); EN 55016-2-1(2014); EN 55016-2-2(2011); EN 55016-2-3(2014); EN 55016-4-2(2014); CISPR 11(2012); EN 55011(2013); AS/NZS CISPR 11(2013); KN 11 (RRA Announce 2015-110, Dec, 03, 2015); VCCI V-3 (up to 6 GHz); VCCI V-5; CNS 13438	9 kHz to 40 GHz	

END OF REPORT

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