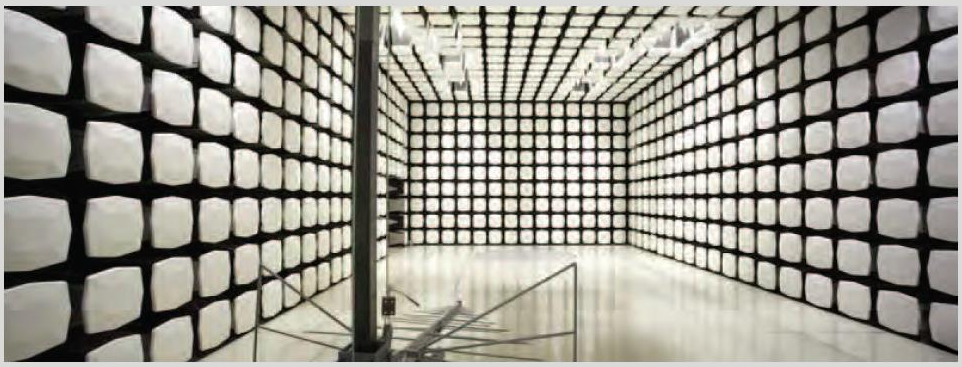
Radio Test Report
Application for a Class II Permissive Change of Equipment Authorization
FCC Part 22 and IC RSS-132
[869MHz – 894MHz]

FCC ID: VBNAHBCA-01
IC ID: 661W-AHBCA

Nokia Solutions and Networks
Airscale Base Transceiver Station Remote Radio Head
Model: AHBCA

Report # NOKI0009



NVLAP LAB CODE: 201049-0

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CERTIFICATE OF TEST

Last Date of Test: February 12, 2020
Nokia Solutions and Networks
EUT: Airscale Base Transceiver Station Remote Radio Head Model AHBCA

Radio Equipment Testing

Standards

Specification	Method
Code of Federal Regulations (CFR) Title 47 Part 2 (Radio Standards Specification) RSS-Gen Issue 6: 2019 CFR Title 47 Part 22 Subpart H – Cellular Radiotelephone Service RSS-132 Issue 3 - January, 2013 – Cellular Telephone Systems …	ANSI C63.26-2015 with FCC KDB 971168 D01 v03r01 FCC KDB 662911D01 v02r01

Results

Test Description	Applied	Results	Comments
Duty Cycle	No	N/A	Not requested.
Band Edge Compliance	Yes	Pass	
Output Power	Yes	Pass	
Peak to Average Power (PAPR)/CCDF	Yes	Pass	
Band Edge Compliance	Yes	Pass	
Spurious Emissions at the Antenna Terminals	Yes	Pass	
Spurious Radiated Emissions	No	N/A	Not requested.

Deviations From Test Standards

None

Approved By:

Kyle Holgate, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

REVISION HISTORY

Revision Number	Description	Date (yyyy-mm-dd)	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

United States

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

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

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

European Union

European Commission – Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Israel

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

Hong Kong

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

Vietnam

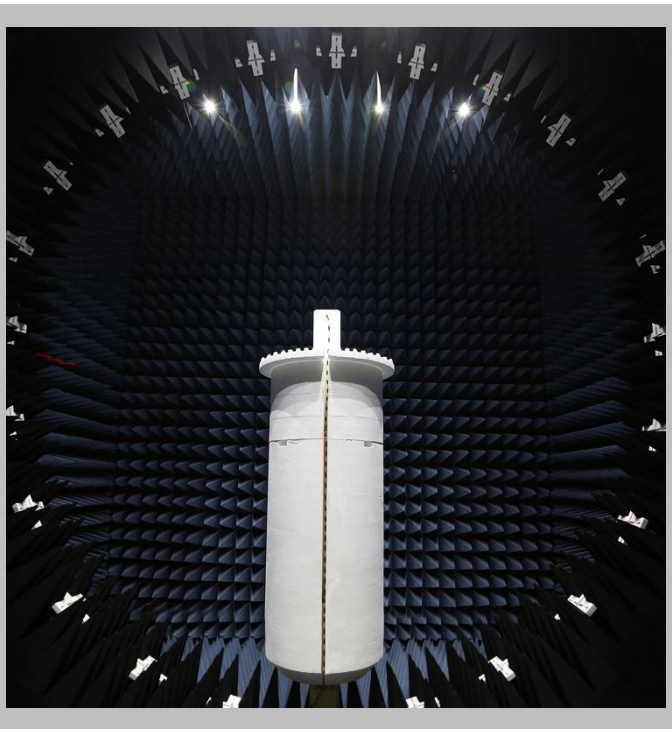
MIC – Recognized by MIC as a CAB for the acceptance of test data.

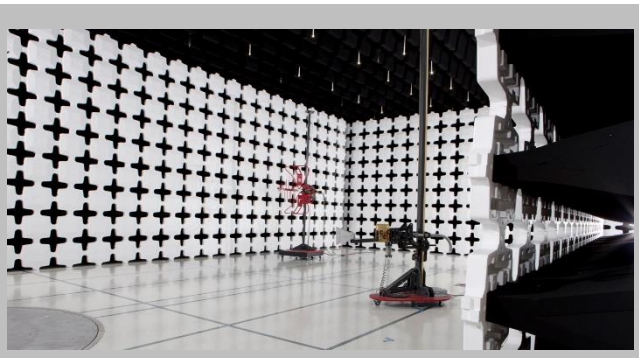
SCOPE

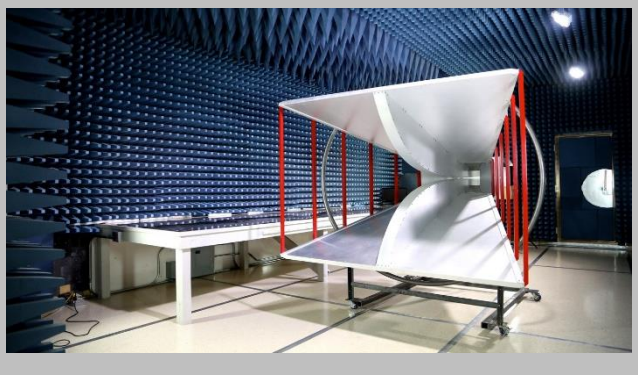
For details on the Scopes of our Accreditations, please visit:
https://www.nwemc.com/emc-testing-accreditations

FACILITIES

California	Minnesota	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP				
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada				
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1
BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA				
US0158	US0175	US0017	US0191	US0157







MEASUREMENT UNCERTAINTY

element
TMU.2015.07.10

Measurement Uncertainty

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

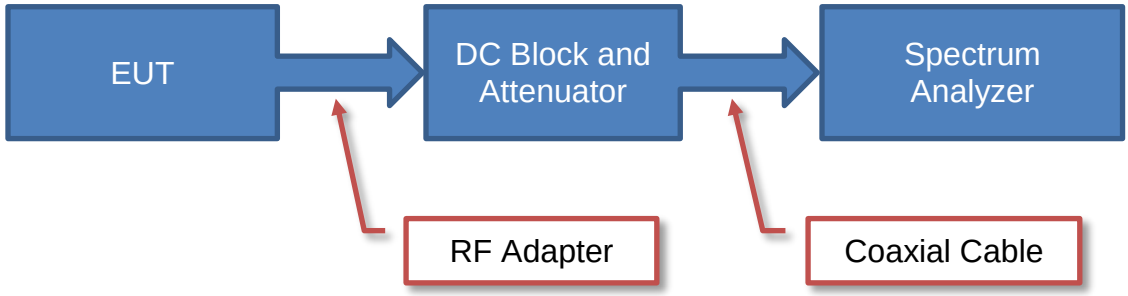
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable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

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

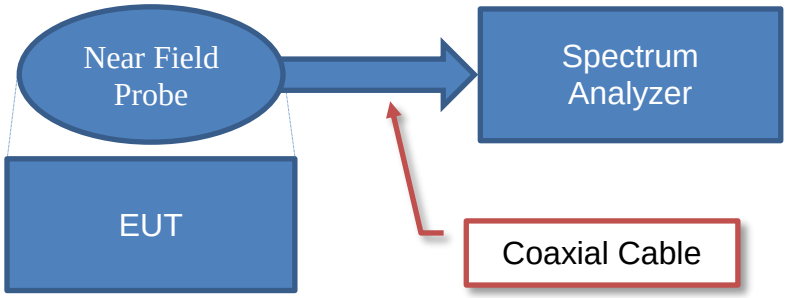
Test	+ MU	- MU
Frequency Accuracy	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.1 dB	-5.1 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

Test Setup Block Diagrams

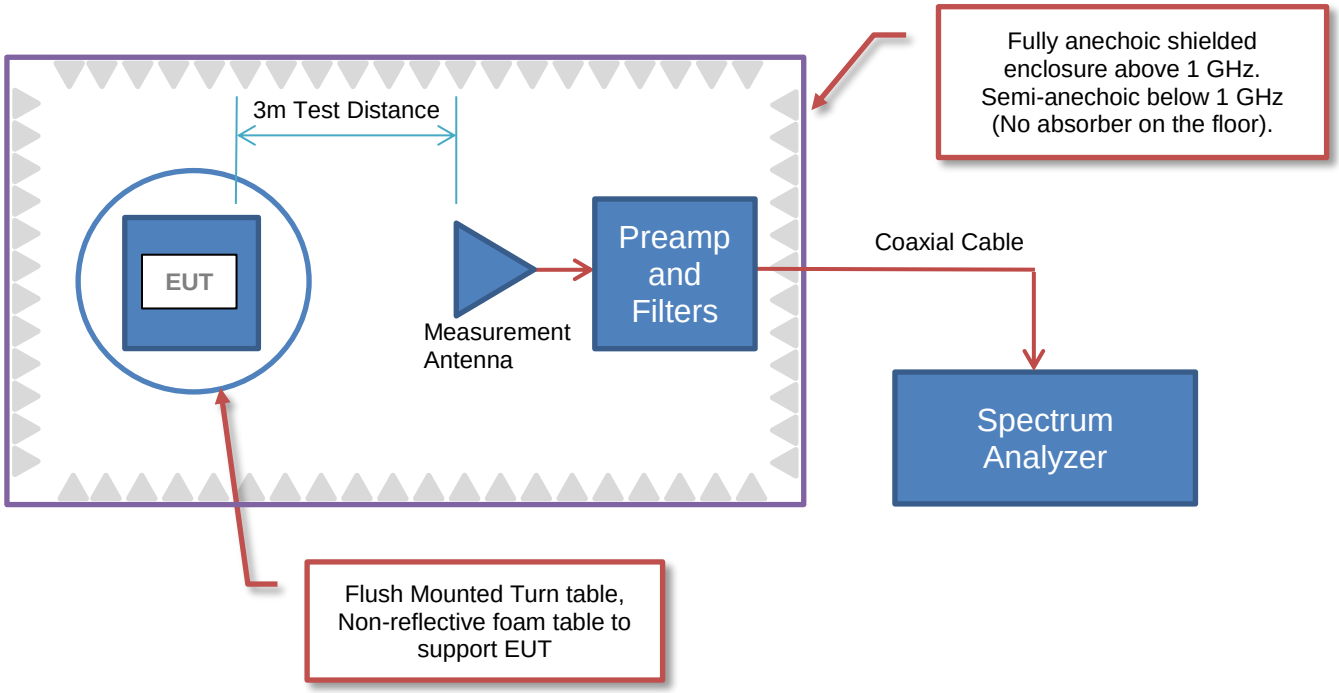
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Nokia Solutions and Networks
Address:	6000 Connection Drive
City, State, Zip:	Irving, TX 75039
Test Requested By:	Steve Mitchell
EUT:	Airscale Base Transceiver Station Remote Radio Head Model AHBCA
First Date of Test:	February 11, 2020
Last Date of Test:	February 12, 2020
Receipt Date of Samples:	February 11, 2020
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

A class II permissive change on the original filing is being pursued to add 5G NR (new radio) carriers to the Airscale BTS RRH model AHBCA FCC and ISED radio certifications. The original FCC certification submittal (FCC ID: VBNAHBCA-01) and the original ISED certification submittal (IC ID: 661W-AHBCA) was NTS Test Report Number PR081649 Revision 2 dated July 2, 2018. The original test effort includes testing for LTE technologies. Please refer to the test report on the original certification for details on all required testing.

All conducted RF testing performed for the original certification testing has been repeated using 5G NR carriers for this class II permissive change per correspondence/guidance from Nemko TCB. The same test methodology used in the original certification testing was used in this class II permissive change test effort. 5G NR carrier bandwidths of 5MHz and 10MHz with QPSK, 16QAM, 64QAM and 256QAM modulation types were verified under this effort. Tests performed under the class II change effort include RF power, peak to average power ratio, emission bandwidth (99% and 26 dB down), band edge spurious emissions, and conducted spurious emissions. The 5G NR carriers/modulation types for this testing are based upon 3GPP TS 38.141-1 Test Models and are NR-FR1-TM 1.1 (QPSK modulation type), NR-FR1-TM 3.2 (16QAM modulation type), NR-FR1-TM 3.1 (64QAM modulation type), and NR-FR1-TM 3.1a (256QAM modulation type).

The testing was performed on the same hardware (AHBCA) as the original certification test. The same AHBCA RF port (Antenna 2) determined in the original certification testing to be the highest power port was used for all testing in this effort. The base station and remote radio head software for this testing is an updated release that includes 5G NR carrier support.

The radiated emissions and frequency stability measurements performed in the original certification was not repeated under this effort per TCB guidance. The radiated emission and frequency stability/accuracy results from the original certification had enough margin to preclude requiring additional testing. The same frequency stability/accuracy radio design is the same for all radio technologies/modulation types.

The equipment under test (EUT) is a Nokia Solutions and Networks AirScale Base Transceiver Station (BTS) Remote Radio Head (RRH) module, model AHBCA. The AHBCA remote radio head is a multistandard multicarrier radio module designed to support LTE, narrow band IoT (internet of things) operations (in-band, guard band, standalone) and 5G NR. The scope of testing in this effort is for 5G NR operations.

The AHBCA RRH has four transmit/four receive antenna ports (4TX/4RX for Band 5 and 4TX/4RX for Band 13). Each antenna port supports 3GPP frequency band 5 (BTS Rx: 824 to 849 MHz/BTS TX: 869 to 894 MHz) and 3GPP frequency band 13 (BTS Rx: 777 to 787 MHz/BTS TX: 746 to 756 MHz). The maximum RF output power of the RRH is 160 Watts (40 watts per carrier, 40 watts per antenna port). The RRH can be operated as a 4x4 MIMO, 2x2 MIMO or as non-MIMO. The TX and RX instantaneous bandwidth cover the full operational bandwidth. The RRH supports 5G NR channel bandwidths of 5MHz and 10MHz for 3GPP frequency bands n5 operations. The RRH supports four 5G NR downlink modulation types (QPSK, 16QAM, 64QAM and 256QAM).

The RRH has external interfaces including DC power (DC In), ground, transmit/receive (ANT), external alarm (EAC), optical CPRI (OPT) and remote electrical tilt (RET). The RRH with applicable installation kit may be pole or wall mounted. The RRH may be configured with optional cooling fan.

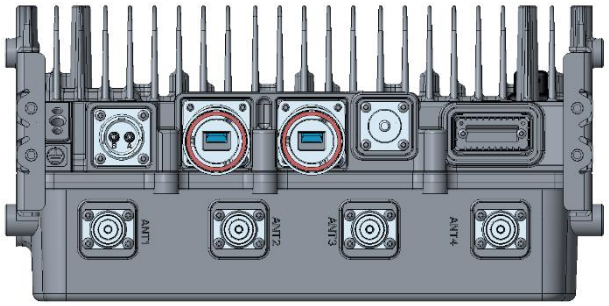
The AHBCA 5G NR channel bandwidths are 5 and 10MHz. The channel spacing is 100 kHz between channel numbers. The AHBCA 5G NR downlink channel numbers and frequencies for Band n5 are as follows:

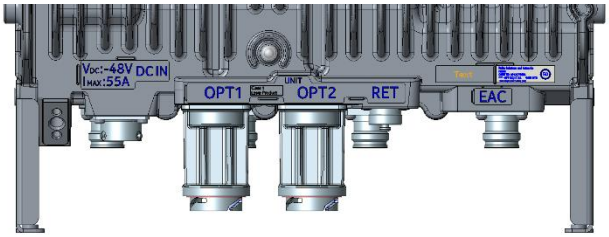
	Downlink NR-ARFCN	Downlink Frequency (MHz)	5G NR Channel Bandwidth	
			5 MHz	10 MHz
AHBCA 5G NR Band n5 (Ant 1, 2, 3, 4)	173800	869.0	Band Edge	Band Edge
	174300	871.5	Bottom Ch	
	174800	874.0		Bottom Ch
	176300	881.5	Middle Ch	Middle Ch
	177800	889.0		Top Channel
	178200	891.5	Top Channel	
	178800	894.0	Band Edge	Band Edge

AHBCA Downlink Band Edge 5G NR Band n5 Frequency Channels

PRODUCT DESCRIPTION

AHBCA Connector Layout:





EUT External Interfaces

Name	Qty	Connector Type	Purpose (and Description)
DC In	1	Quick Disconnect	2-pole Power Circular Connector
GND	1	Screw lug (2xM5/1xM8)	Ground
ANT	4	4.3-10	RF signal for Transmitter/Receiver (50 Ohm)
Unit	1	LED	Unit Status LED
EAC	1	MDR26	External Alarm Interface (4 alarms)
OPT	2	SFP+ cage	Optical CPRI Interface up to 10 Gps.
RET	1	8-pin circular connector conforming to IEC 60130-9 – Ed.3.0	AISG 2.0 to external devices
Fan	1	Molex Microfit	Power for RRH Fan. Located on the side of RRH.

Testing Objective:

A class II permissive change on the original filing is being pursued to add 5G NR (new radio) carriers to the Airscale BTS RRH model AHBCA FCC and ISED radio certifications.

CONFIGURATIONS

Configuration NOKI0009- 1

Software/Firmware Running during test	
Description	**Version**
Radio module Software	FRM 50.01.R20
BTS Software Version	5G20A_GNB_0000_000840_000232

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Airscale BTS Remote Radio Head Model AHBCA	Nokia Solutions and Networks	474241A.101	BL1818M0028

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AMIA (BTS system Module)	Nokia Solutions and Networks	473098A.101	RK182307104
ASIK (BTS system Module)	Nokia Solutions and Networks	474021A.102	AH173111443
ABIL (BTS system Module)	Nokia Solutions and Networks	474020A.102	L1183605740
Attenuator 250W/30dB	Weinschel corp.	58-30-34	LL627
SFP+ 9.8G,300M,850NM	NOKIA	473842.A101	KR160900020030
SFP+9.8G,300M,850NM	NOKIA	473842.A101	MA17331610207
HP ProBook 5470b	HP	B2G14EC#ABA	CNU246B8XP
HP-DC System power supply	HP	6032A	3440A-10308
FPAC (DC-pwr supply)	Nokia	472438A.101	G7111007146
2 Meter RF cable	Times Microwave Systems	SPP250NM43MR2.0M	463559-00005TMC
2 Meter RF cable	Times Microwave Systems	SPP250NM43MR2.0M	463559-00006TMC
2 Meter RF cable	Times Microwave Systems	SPP250NM43MR2.0M	463559-00002TMC
250W -50ohm -Terminating Load	API Weinschel inc	1433-3-LIM	TC867
250W -50ohm -Terminating Load	API Weinschel inc	1433-3-LIM	TV066
250W -50ohm -Terminating Load	API Weinschel inc	1433-3-LIM	TC870
5watt Low Pass filter	Mini-Circuits	NLP-550	1
5watt Low Pass filter	Mini-Circuits	NLP-550	2
5watt Low Pass filter	Mini-Circuits	NLP-550	3
Fiber Optic cable 0300 mm	Amphenol	E201648	11C
CATe data cable	LEONI L	64867m	146180
FYGB GPS receiver	Nokia	472748A	71231431
WebEM- PC	Lenovo	20HES2141X	None
RF cable HS-SUCOFLEX_106	Huber+Suhner Inc.	HS-SUCOFLEX_106	SN297372
RF cable HS-SUCOFLEX_104	Huber+Suhner Inc.	HS-SUCOFLEX_104	SN551123/4
CAT-5e cable	CSA	LL73189	E151955

CONFIGURATIONS

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
RF cable HS-SUCFLEX_106	Yes	2.0 m	No	AHBCA [RRH] RF Port 2	Attenuator 250W/30dB
Amphenol Fiber Optic cable	No	7.0 m	No	ASIK	AHBCA
Cat-5e cable	Yes	7.0 m	No	ASIK	WebEM- PC
CAT5e data cable	Yes	25 m	No	ASIK	FYGB GPS receiver
RF cable Port 1	Yes	2.0 m	No	AHBCA [RRH] RF Port 1	250W 50 ohm Load
RF cable Port 3	Yes	2.0 m	No	AHBCA [RRH] RF Port 3	250W 50 ohm Load
RF cable Port 4	Yes	2.0 m	No	AHBCA [RRH] RF Port 4	250W 50 ohm Load
RF cable HS-SUCFLEX_104	Yes	1.0 m	No	5watt Low Pass filter	Analyzer

CONFIGURATIONS

Configuration NOKI0009- 2

Software/Firmware Running during test	
Description	**Version**
Radio module Software	FRM 50.01.R20
BTS Software Version	5G20A_GNB_0000_000840_000232

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Airscale BTS Remote Radio Head Model AHBCA	Nokia Solutions and Networks	474241A.101	BL1818M0028

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AMIA (BTS system Module)	Nokia Solutions and Networks	473098A.101	RK182307104
ASIK (BTS system Module)	Nokia Solutions and Networks	474021A.102	AH173111443
ABIL (BTS system Module)	Nokia Solutions and Networks	474020A.102	L1183605740
Attenuator 250W/30dB	Weinschel corp.	58-30-34	LL627
SFP+ 9.8G,300M,850NM	NOKIA	473842.A101	KR160900020030
SFP+9.8G,300M,850NM	NOKIA	473842.A101	MA17331610207
HP ProBook 5470b	HP	B2G14EC#ABA	CNU246B8XP
HP-DC System power supply	HP	6032A	3440A-10308
FPAC (DC-pwr supply)	Nokia	472438A.101	G7111007146
2 Meter RF cable	Times Microwave Systems	SPP250NM43MR2.0M	463559-00005TMC
2 Meter RF cable	Times Microwave Systems	SPP250NM43MR2.0M	463559-00006TMC
2 Meter RF cable	Times Microwave Systems	SPP250NM43MR2.0M	463559-00002TMC
250W -50ohm -Terminating Load	API Weinschel inc	1433-3-LIM	TC867
250W -50ohm -Terminating Load	API Weinschel inc	1433-3-LIM	TV066
250W -50ohm -Terminating Load	API Weinschel inc	1433-3-LIM	TC870
Fiber Optic cable 0300 mm	Amphenol	E201648	11C
CATe data cable	LEONI L	64867m	146180
FYGB GPS receiver	Nokia	472748A	71231431
WebEM- PC	Lenovo	20HES2141X	None
RF cable HS-SUCOFLEX_106	Huber+Suhner Inc.	HS-SUCOFLEX_106	SN297372
RF cable HS-SUCOFLEX_104	Huber+Suhner Inc.	HS-SUCOFLEX_104	SN551123/4
CAT-5e cable	CSA	LL73189	E151955

CONFIGURATIONS

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
RF cable HS-SUCFLEX_106	Yes	2.0 m	No	AHBCA [RRH] RF Port 2	Attenuator 250W/30dB
RF cable HS-SUCFLEX_104	Yes	1.0 m	No	Attenuator 250W/30dB	Analyzer
Amphenol Fiber Optic cable	No	7.0 m	No	ASIK	AHBCA
Cat-5e cable	Yes	7.0 m	No	ASIK	WebEM- PC
CAT5e data cable	Yes	25 m	No	ASIK	FYGB GPS receiver
RF cable Port 1	Yes	2.0 m	No	AHBCA [RRH] RF Port 1	250W 50 ohm Load
RF cable Port 3	Yes	2.0 m	No	AHBCA [RRH] RF Port 3	250W 50 ohm Load
RF cable Port 4	Yes	2.0 m	No	AHBCA [RRH] RF Port 4	250W 50 ohm Load

CONFIGURATIONS

Configuration NOKI0009- 3

Software/Firmware Running during test	
Description	**Version**
Radio module Software	FRM 50.01.R20
BTS Software Version	5G20A_GNB_0000_000840_000232

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Airscale BTS Remote Radio Head Model AHBCA	Nokia Solutions and Networks	474241A.101	BL1818M0028

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AMIA (BTS system Module)	Nokia Solutions and Networks	473098A.101	RK182307104
ASIK (BTS system Module)	Nokia Solutions and Networks	474021A.102	AH173111443
ABIL (BTS system Module)	Nokia Solutions and Networks	474020A.102	L1183605740
High Pass Filter 1.2 GHz	RLC Electronics	F-14699	0050
Attenuator 150W/20dB	AeroflexWeinschel	66-20-33	BZ2075
SFP+ 9.8G,300M,850NM	NOKIA	473842.A101	KR160900020030
SFP+9.8G,300M,850NM	NOKIA	473842.A101	MA17331610207
HP ProBook 5470b	HP	B2G14EC#ABA	CNU246B8XP
HP-DC System power supply	HP	6032A	3440A-10308
FPAC (DC-pwr supply)	Nokia	472438A.101	G7111007146
2 Meter RF cable	Times Microwave Systems	SPP250NM43MR2.0M	463559-00005TMC
2 Meter RF cable	Times Microwave Systems	SPP250NM43MR2.0M	463559-00006TMC
2 Meter RF cable	Times Microwave Systems	SPP250NM43MR2.0M	463559-00002TMC
250W -50ohm -Terminating Load	API Weinschel inc	1433-3-LIM	TC867
250W -50ohm -Terminating Load	API Weinschel inc	1433-3-LIM	TV066
250W -50ohm -Terminating Load	API Weinschel inc	1433-3-LIM	TC870
Fiber Optic cable 0300 mm	Amphenol	E201648	11C
CATe data cable	LEONI L	64867m	146180
FYGB GPS receiver	Nokia	472748A	71231431
WebEM- PC	Lenovo	20HES2141X	None
RF cable HS-SUCOFLEX_106	Huber+Suhner Inc.	HS-SUCOFLEX_106	SN297372
RF cable HS-SUCOFLEX_104	Huber+Suhner Inc.	HS-SUCOFLEX_104	SN551123/4
CAT-5e cable	CSA	LL73189	E151955

CONFIGURATIONS

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Amphenol Fiber Optic cable	No	7.0 m	No	ASIK	AHBCA
Cat-5e cable	Yes	7.0 m	No	ASIK	WebEM- PC
CAT5e data cable	Yes	25 m	No	ASIK	FYGB GPS receiver
RF cable Port 1	Yes	2.0 m	No	AHBCA [RRH] RF Port 1	250W 50 ohm Load
RF cable Port 3	Yes	2.0 m	No	AHBCA [RRH] RF Port 3	250W 50 ohm Load
RF cable Port 4	Yes	2.0 m	No	AHBCA [RRH] RF Port 4	250W 50 ohm Load
RF cable HS-SUCFLEX_106	Yes	2.0 m	No	AHBCA [RRH] RF Port 2	Attenuator 150W/20dB
RF cable HS-SUCFLEX_104	Yes	1.0 m	No	High Pass Filter 1.2 GHz	Analyzer

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2020-02-12	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2020-02-14	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2020-02-14	Peak to Average Power (PAPR)/CCDF	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2020-02-17	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2020-02-17	Spurious Emissions at the Antenna Terminals	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

BAND EDGE COMPLIANCE

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Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in the available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

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

All limits were adjusted by a factor of [-10*log(4)] dB to account for the device operation as a 4 port MIMO transmitter, as per FCC KDB 622911.

Per FCC 22.917(b)and RSS-132 paragraph 5.5, the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The limit is adjusted to -19 dBm [-13 dBm -10 log (4)] per FCC KDB 662911D01 v02r01 because the BTS may operate as a 4 port MIMO transmitter.

Per FCC 22.917(b)(1)and RSS-132 paragraph 5.5, emissions seen up to 1 MHz outside of authorized operating frequency range band edges shell be measured with a RBW of 1% of the measured emission bandwidth. Any emission seen to be > 1 MHz further outside the band edges shall be measured with a RBW of 100 kHz. However, a narrower RBW of at least 1% of the emission bandwidth is still allowed provided that the measured power is integrated over the full reference bandwidth of 100 kHz or 1% of the emission bandwidth.

BAND EDGE COMPLIANCE

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EUT:	Airscale Base Transceiver Station Remote Radio Head Model AHBCA	Work Order:	NOKI0009
Serial Number:	BL1818M0028	Date:	17-Feb-20
Customer:	Nokia Solutions and Networks	Temperature:	23 °C
Attendees:	Mitch Hill, John Rattanavong	Humidity:	45.2% RH
Project:	None	Barometric Pres.:	1009 mbar
Tested by:	Brandon Hobbs	Power: 54 VDC	Job Site: TX09

TEST SPECIFICATIONS	Test Method
FCC 22H:2020	ANSI C63.26:2015
RSS-132:2013	RSS-132:2013

COMMENTS

All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks. The highest power port operating at maximum power was used for all testing. Worst case port was testing can be found in the original report.

DEVIATIONS FROM TEST STANDARD

None

Configuration #	2	Signature

				Value (dBm)	Limit (dBm)	Result
Band 5 (Single Carrier) Port 2						
	5 MHz					
		QPSK				
			Low Channel, 871.5 MHz			
			Frequency Range 1	-25.1	-19	Pass
			Frequency Range 3	-27.2	-19	Pass
			High Channel, 891.5 MHz			
			Frequency Range 1	-25.4	-19	Pass
			Frequency Range 3	-32.8	-19	Pass
		16-QAM				
			Low Channel, 871.5 MHz			
			Frequency Range 1	-25.9	-19	Pass
			Frequency Range 3	-26.6	-19	Pass
			High Channel, 891.5 MHz			
			Frequency Range 1	-25.2	-19	Pass
			Frequency Range 3	-32.8	-19	Pass
		64-QAM				
			Low Channel, 871.5 MHz			
			Frequency Range 1	-25.1	-19	Pass
			Frequency Range 3	-27.6	-19	Pass
			High Channel, 891.5 MHz			
			Frequency Range 1	-25.8	-19	Pass
			Frequency Range 3	-32.7	-19	Pass
		256-QAM				
			Low Channel, 871.5 MHz			
			Frequency Range 1	-26.2	-19	Pass
			Frequency Range 3	-28.0	-19	Pass
			High Channel, 891.5 MHz			
			Frequency Range 1	-26.6	-19	Pass
			Frequency Range 3	-32.3	-19	Pass
	10 MHz					
		QPSK				
			Low Channel, 874 MHz			
			Frequency Range 1	-24.7	-19	Pass
			Frequency Range 3	-27.1	-19	Pass
			High Channel, 889 MHz			
			Frequency Range 1	-25.7	-19	Pass
			Frequency Range 3	-32.2	-19	Pass
		16-QAM				
			Low Channel, 874 MHz			
			Frequency Range 1	-25.6	-19	Pass
			Frequency Range 3	-27.8	-19	Pass
			High Channel, 889 MHz			
			Frequency Range 1	-26.0	-19	Pass
			Frequency Range 3	-32.4	-19	Pass
		64-QAM				
			Low Channel, 874 MHz			
			Frequency Range 1	-24.5	-19	Pass
			Frequency Range 3	-27.6	-19	Pass
			High Channel, 889 MHz			
			Frequency Range 1	-25.7	-19	Pass
			Frequency Range 3	-32.1	-19	Pass
		256-QAM				
			Low Channel, 874 MHz			
			Frequency Range 1	-24.5	-19	Pass
			Frequency Range 3	-27.3	-19	Pass
			High Channel, 889 MHz			
			Frequency Range 1	-26.1	-19	Pass
			Frequency Range 3	-32.0	-19	Pass

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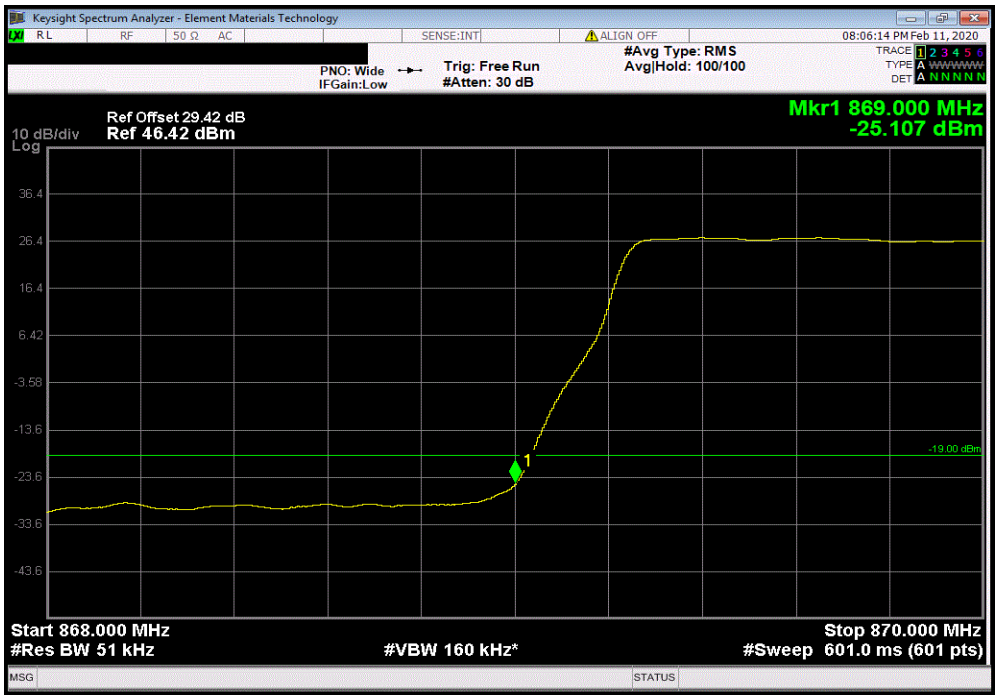
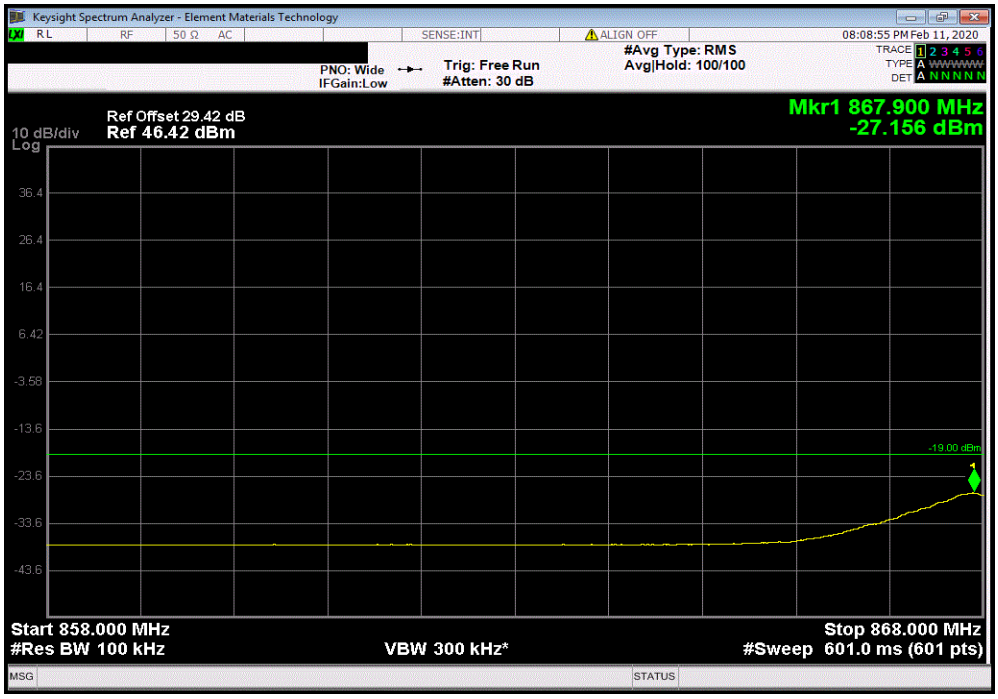
Band 5 (Single Carrier) Port 2, 5 MHz, QPSK, Low Channel, 871.5 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-25.107	-19	Pass



Band 5 (Single Carrier) Port 2, 5 MHz, QPSK, Low Channel, 871.5 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-27.156	-19	Pass



BAND EDGE COMPLIANCE

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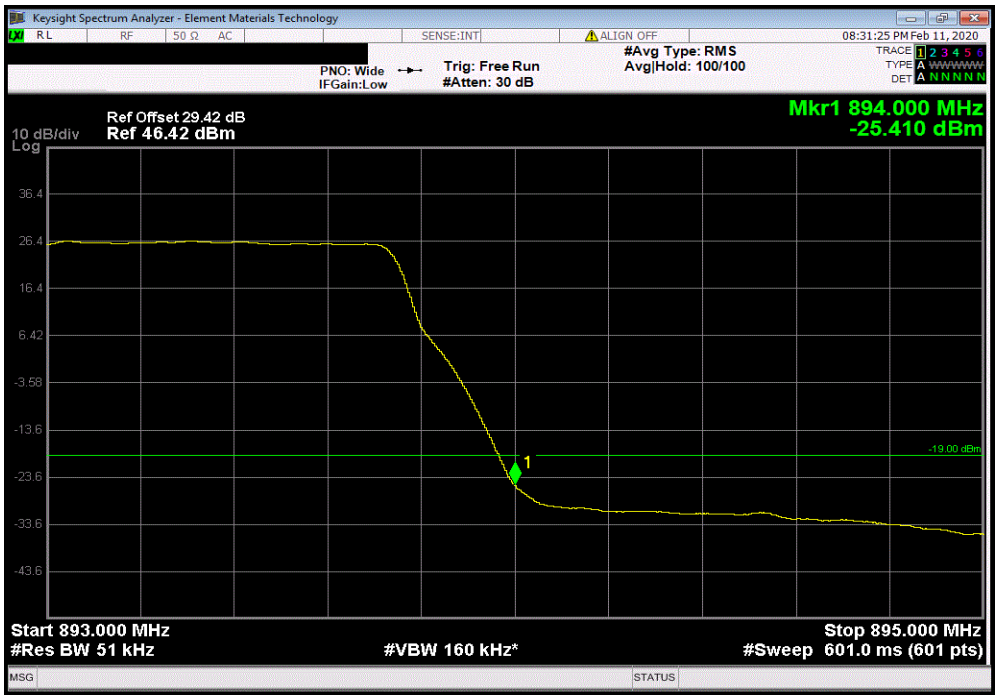
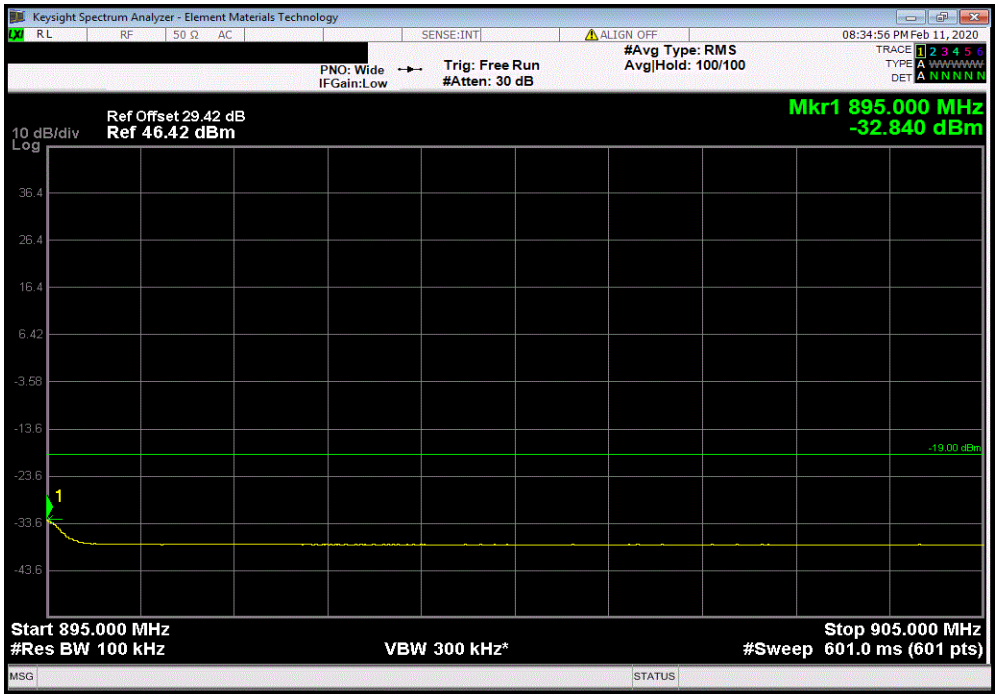
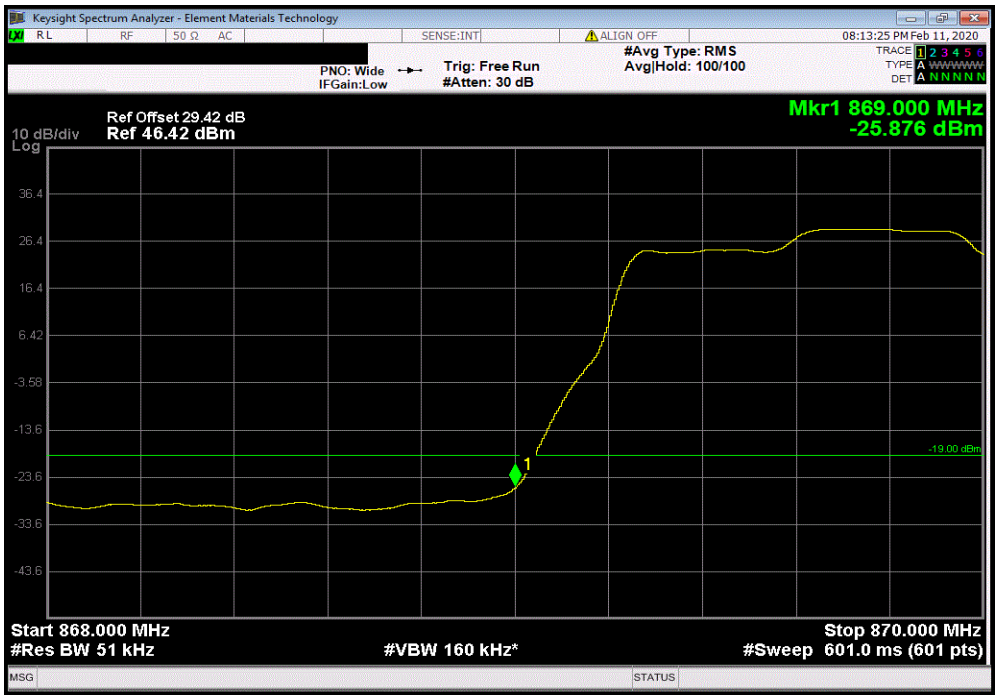
Band 5 (Single Carrier) Port 2, 5 MHz, QPSK, High Channel, 891.5 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-25.41	-19	Pass



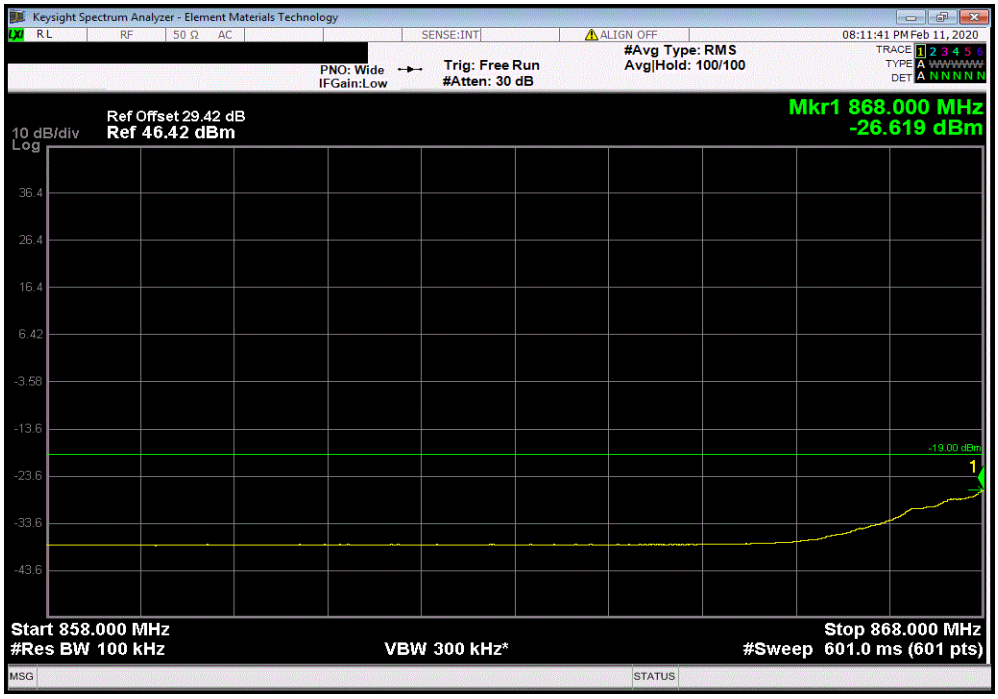
Band 5 (Single Carrier) Port 2, 5 MHz, QPSK, High Channel, 891.5 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-32.84	-19	Pass



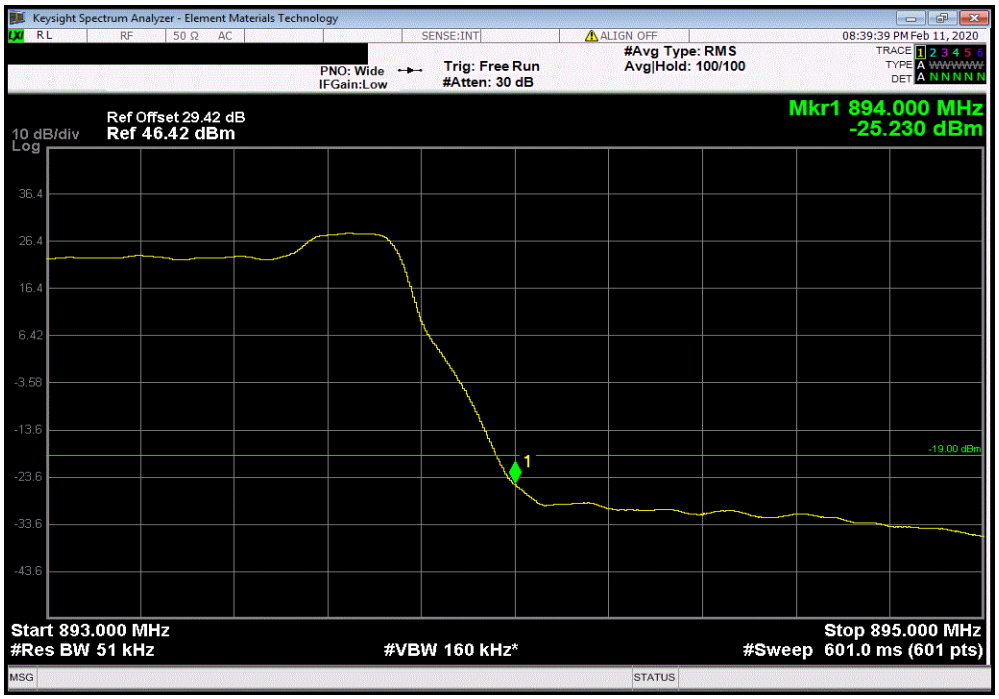
Band 5 (Single Carrier) Port 2, 5 MHz, 16-QAM, Low Channel, 871.5 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-25.876	-19	Pass



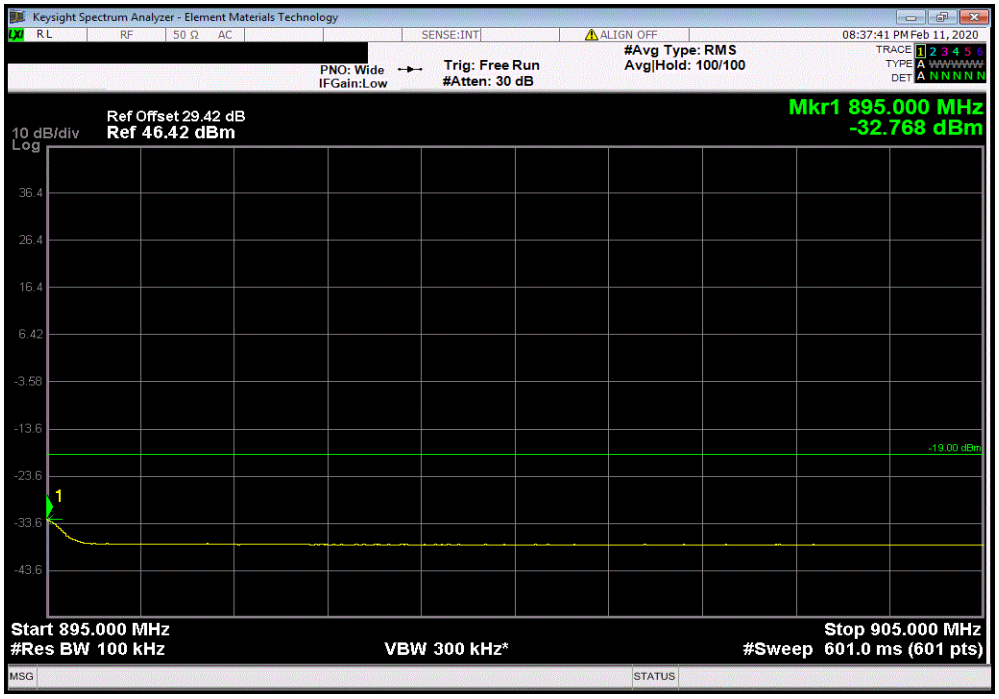
Band 5 (Single Carrier) Port 2, 5 MHz, 16-QAM, Low Channel, 871.5 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-26.619	-19	Pass



Band 5 (Single Carrier) Port 2, 5 MHz, 16-QAM, High Channel, 891.5 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-25.23	-19	Pass



Band 5 (Single Carrier) Port 2, 5 MHz, 16-QAM, High Channel, 891.5 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-32.768	-19	Pass



BAND EDGE COMPLIANCE

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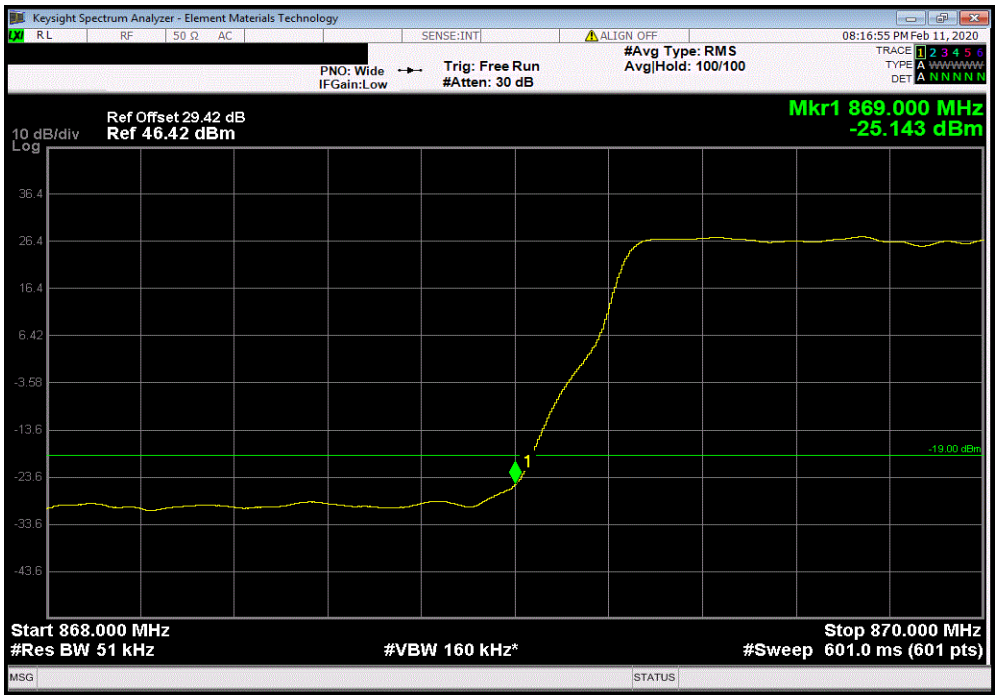
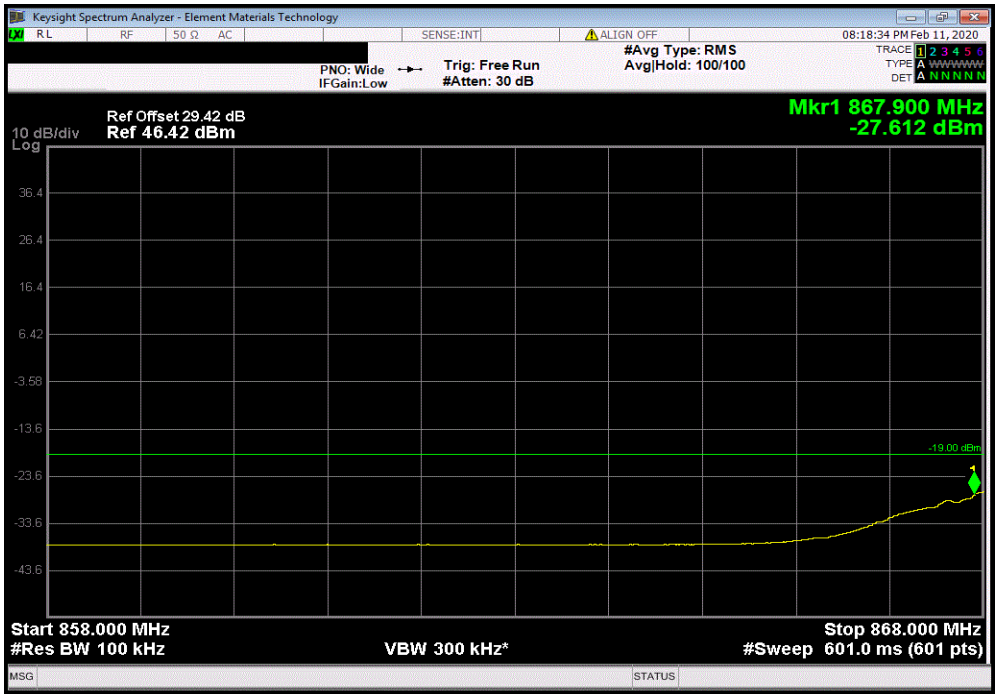
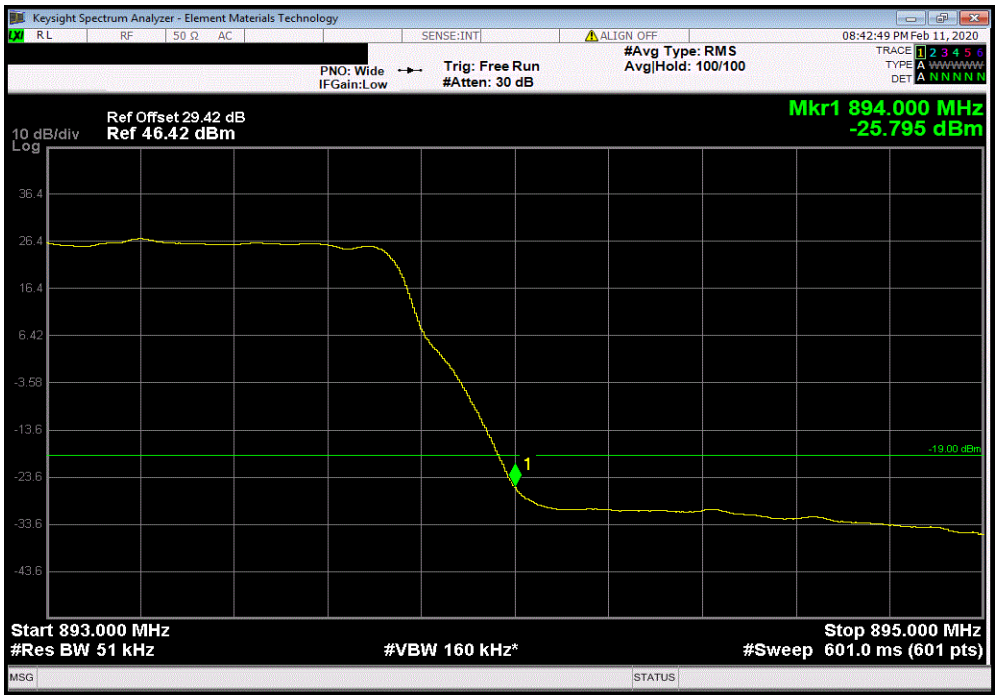
Band 5 (Single Carrier) Port 2, 5 MHz, 64-QAM, Low Channel, 871.5 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-25.143	-19	Pass



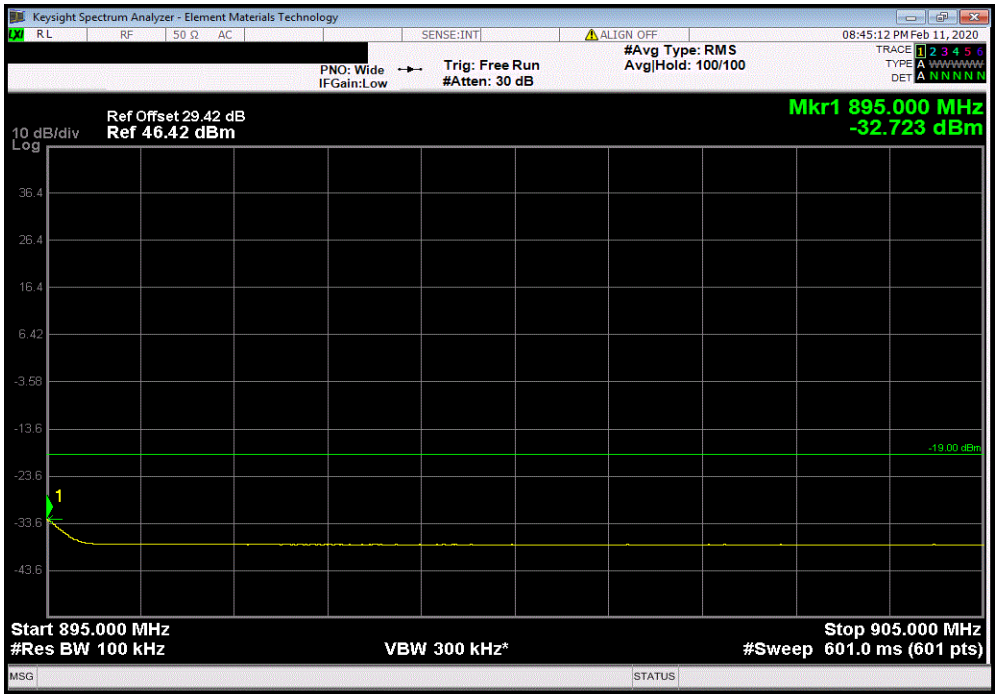
Band 5 (Single Carrier) Port 2, 5 MHz, 64-QAM, Low Channel, 871.5 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-27.612	-19	Pass



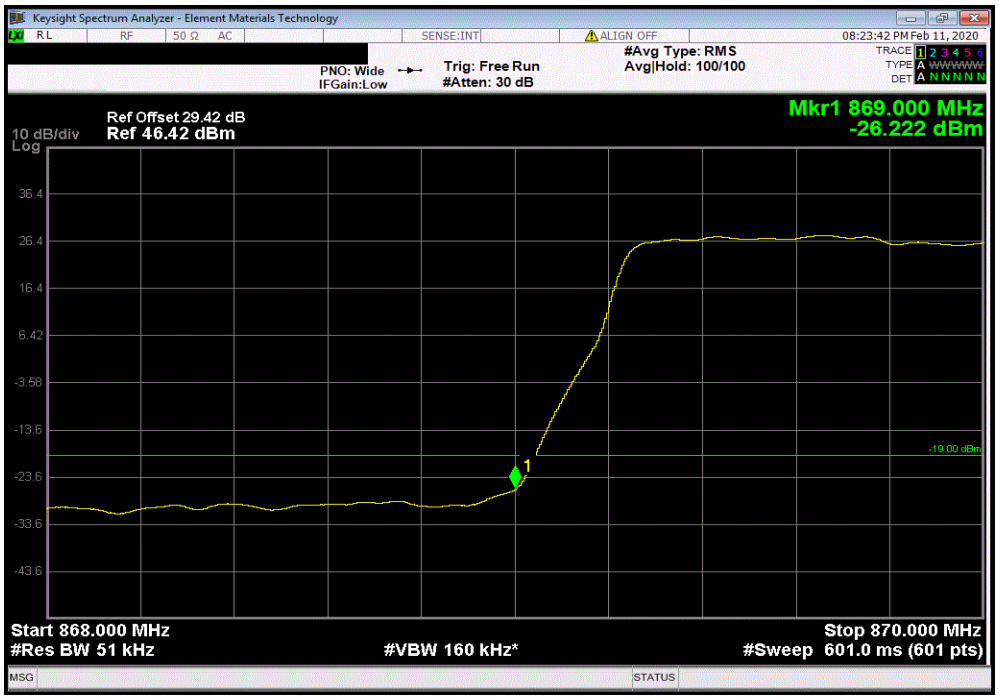
Band 5 (Single Carrier) Port 2, 5 MHz, 64-QAM, High Channel, 891.5 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-25.795	-19	Pass



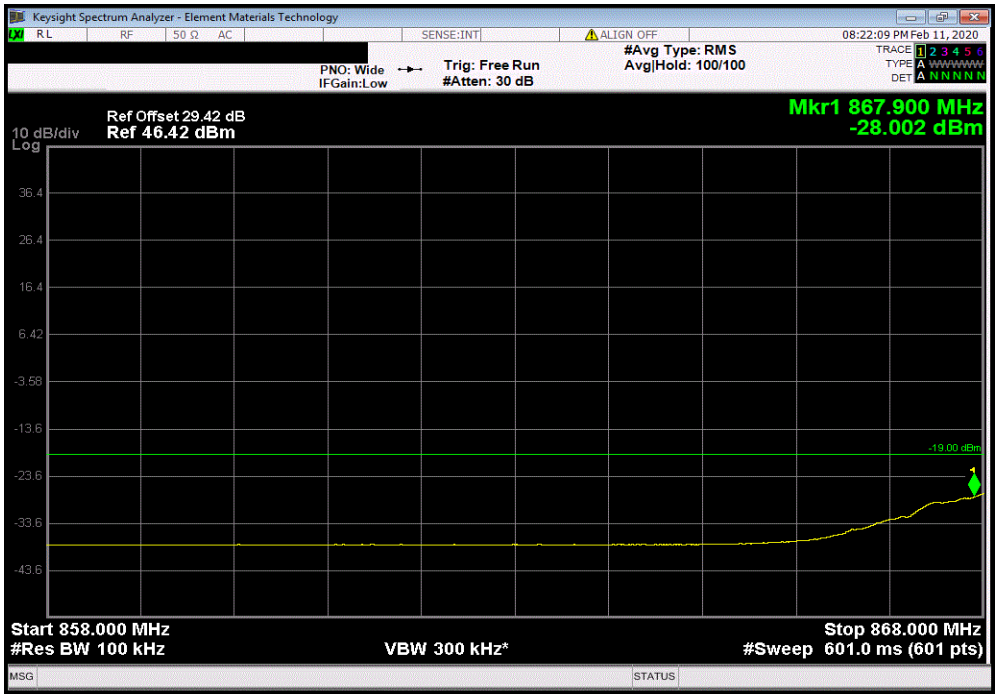
Band 5 (Single Carrier) Port 2, 5 MHz, 64-QAM, High Channel, 891.5 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-32.723	-19	Pass



Band 5 (Single Carrier) Port 2, 5 MHz, 256-QAM, Low Channel, 871.5 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-26.222	-19	Pass



Band 5 (Single Carrier) Port 2, 5 MHz, 256-QAM, Low Channel, 871.5 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-28.002	-19	Pass



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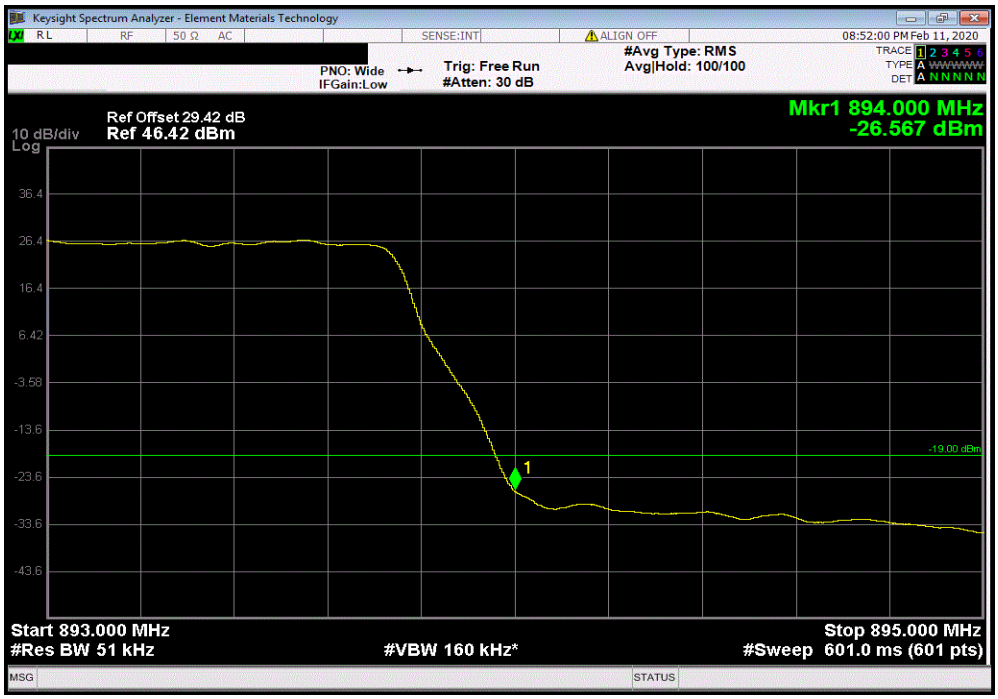
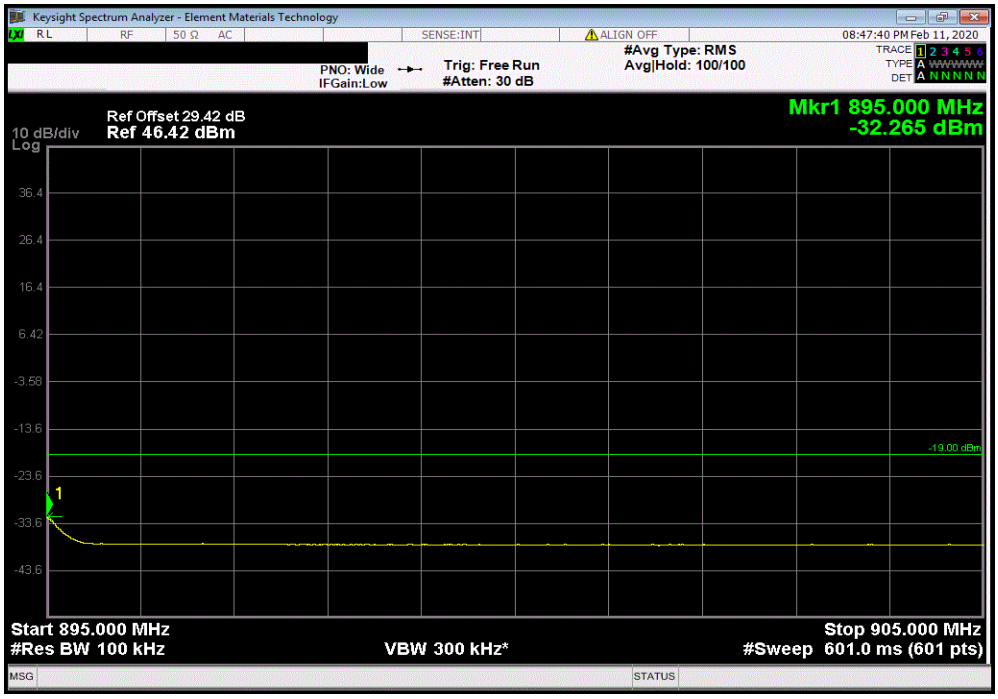
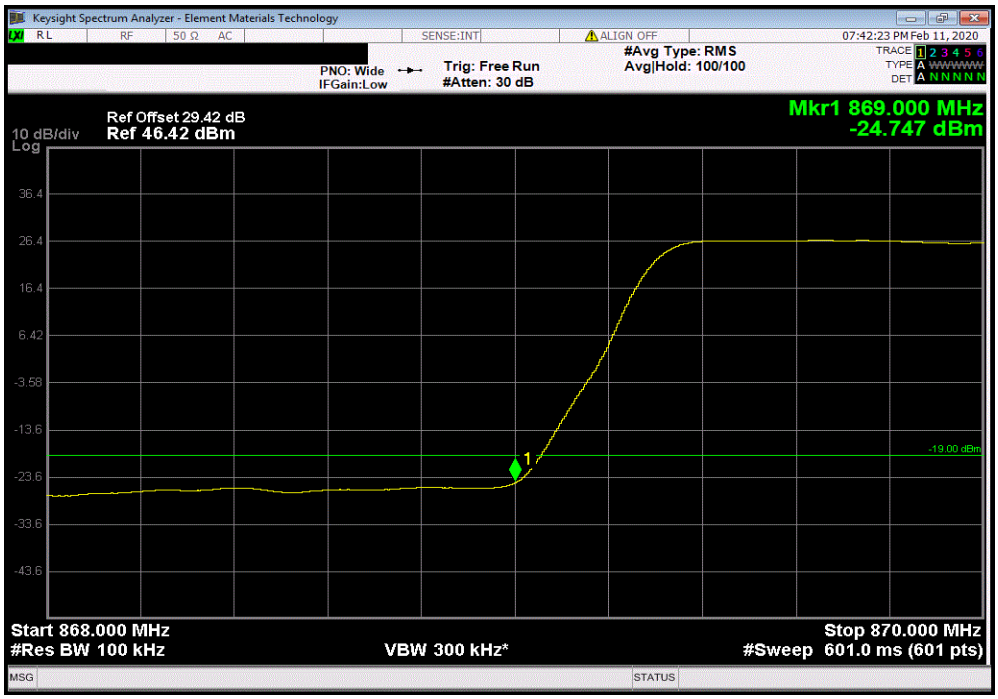
Band 5 (Single Carrier) Port 2, 5 MHz, 256-QAM, High Channel, 891.5 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-26.567	-19	Pass



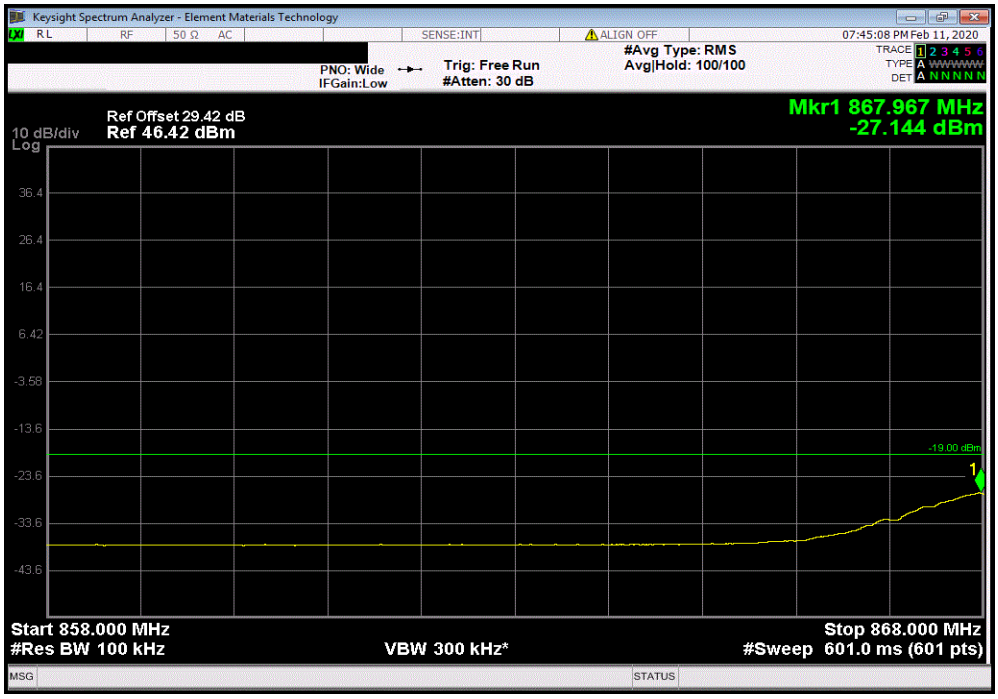
Band 5 (Single Carrier) Port 2, 5 MHz, 256-QAM, High Channel, 891.5 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-32.265	-19	Pass



Band 5 (Single Carrier) Port 2, 10 MHz, QPSK, Low Channel, 874 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-24.747	-19	Pass



Band 5 (Single Carrier) Port 2, 10 MHz, QPSK, Low Channel, 874 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-27.144	-19	Pass



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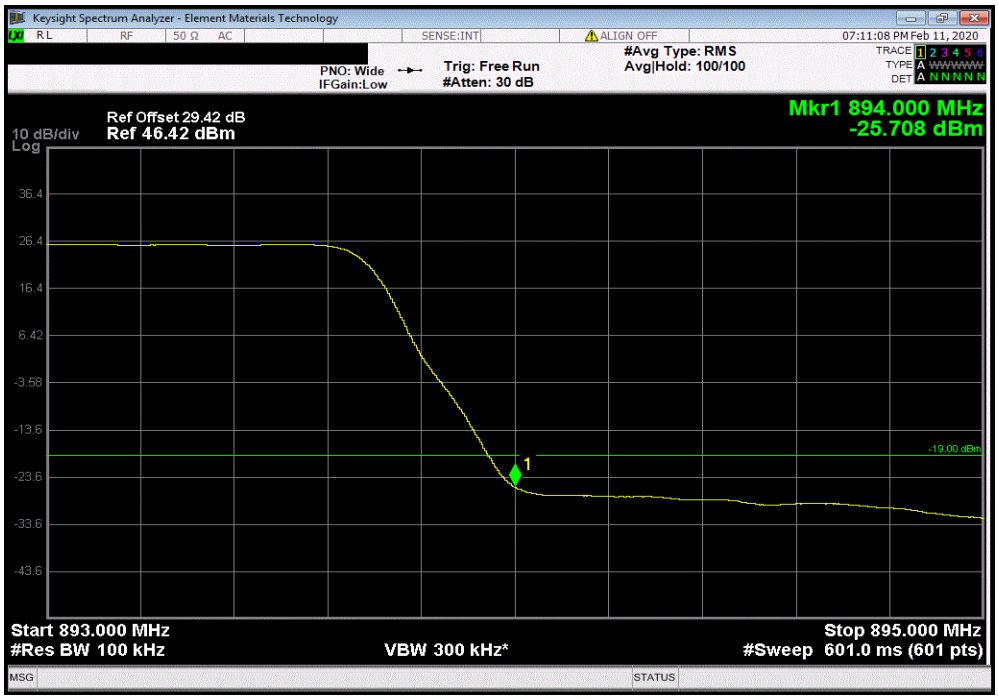
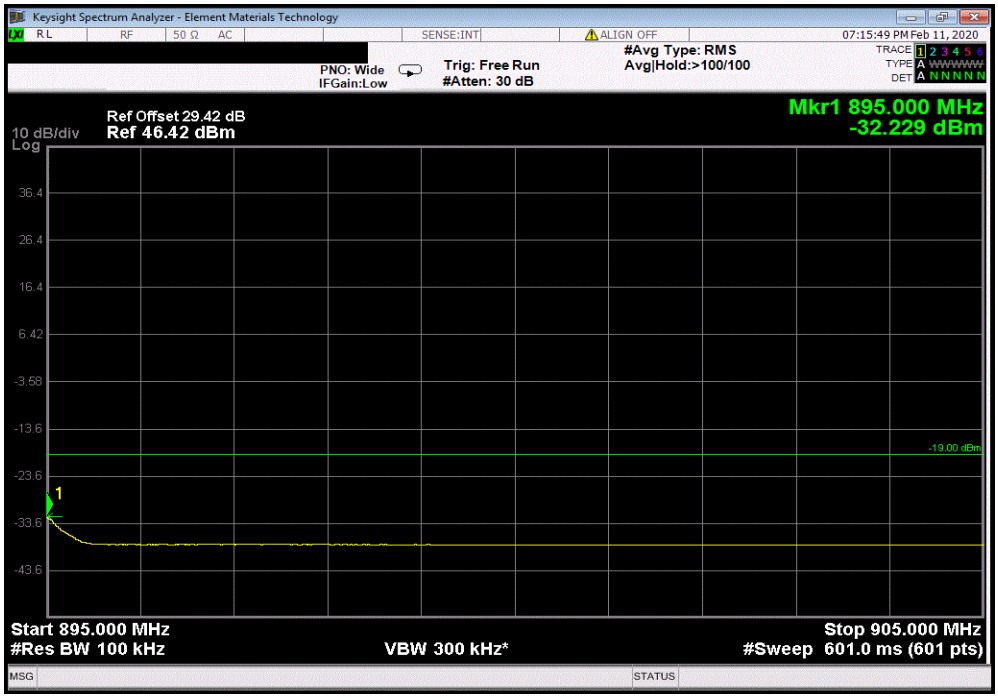
Band 5 (Single Carrier) Port 2, 10 MHz, QPSK, High Channel, 889 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-25.708	-19	Pass



Band 5 (Single Carrier) Port 2, 10 MHz, QPSK, High Channel, 889 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-32.229	-19	Pass



BAND EDGE COMPLIANCE

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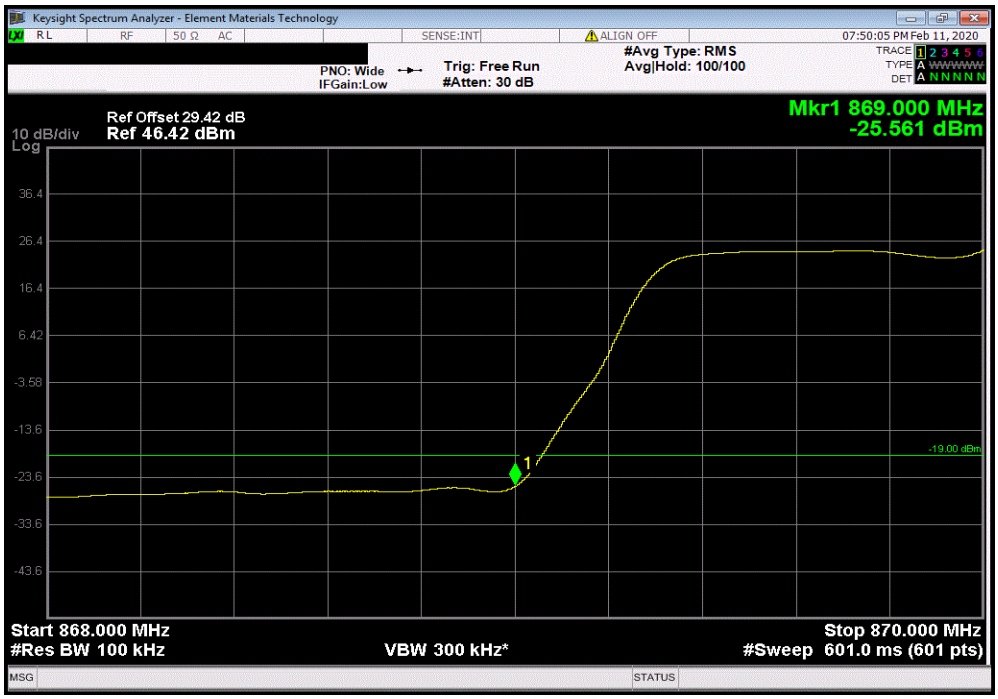
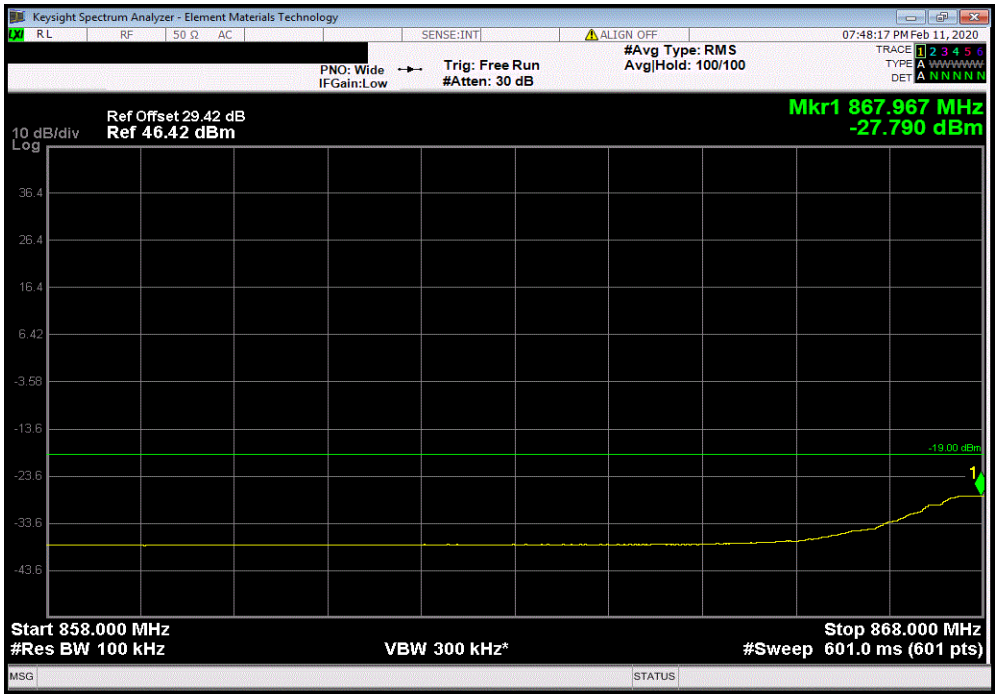
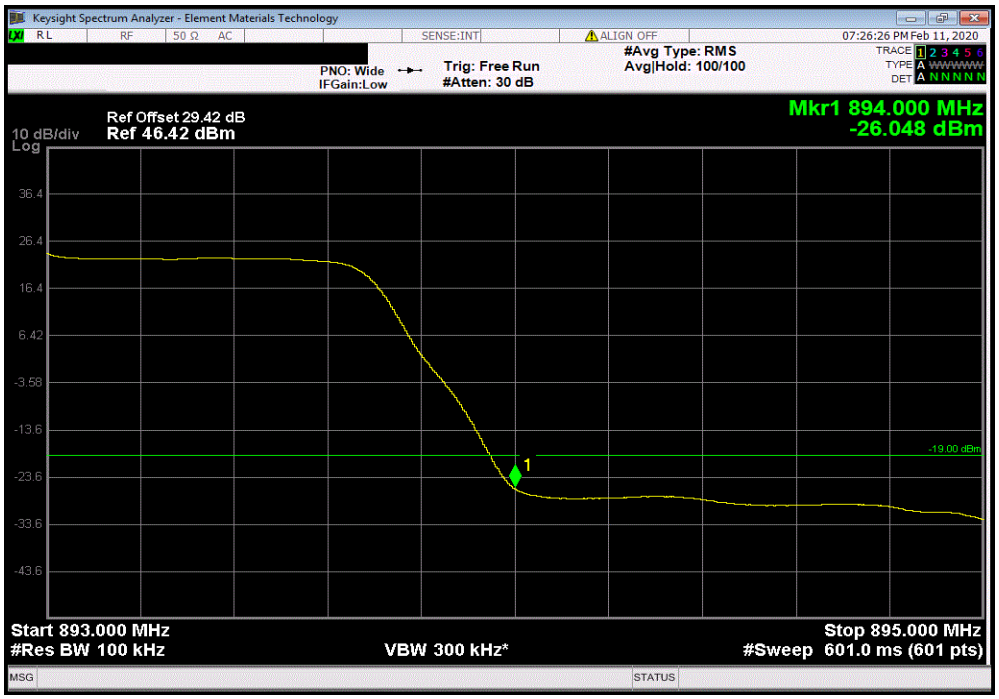
Band 5 (Single Carrier) Port 2, 10 MHz, 16-QAM, Low Channel, 874 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-25.561	-19	Pass



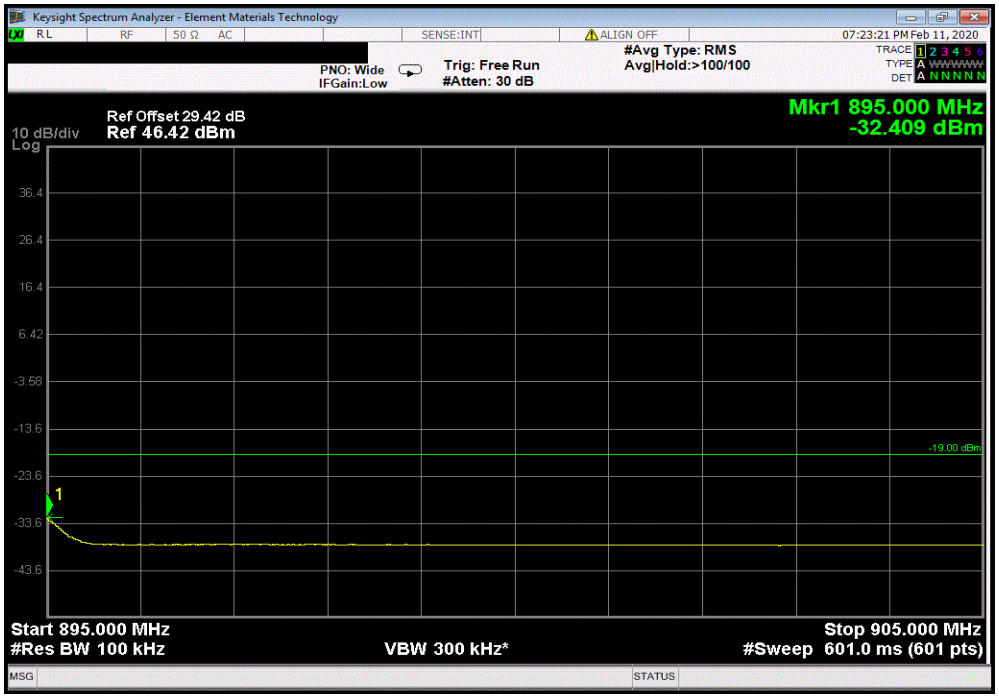
Band 5 (Single Carrier) Port 2, 10 MHz, 16-QAM, Low Channel, 874 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-27.79	-19	Pass



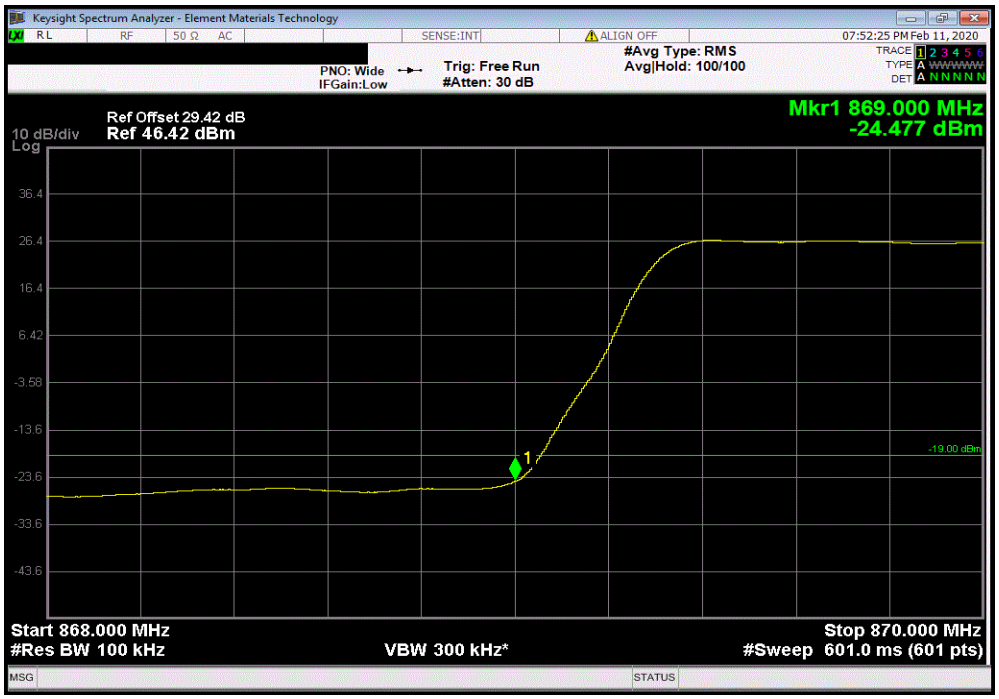
Band 5 (Single Carrier) Port 2, 10 MHz, 16-QAM, High Channel, 889 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-26.048	-19	Pass



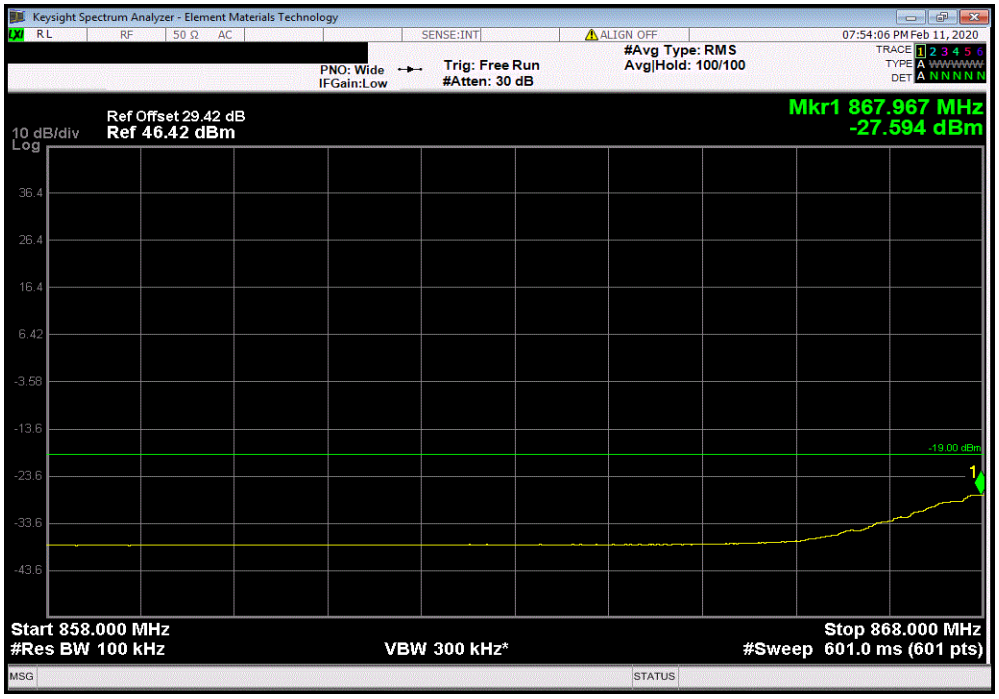
Band 5 (Single Carrier) Port 2, 10 MHz, 16-QAM, High Channel, 889 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-32.409	-19	Pass



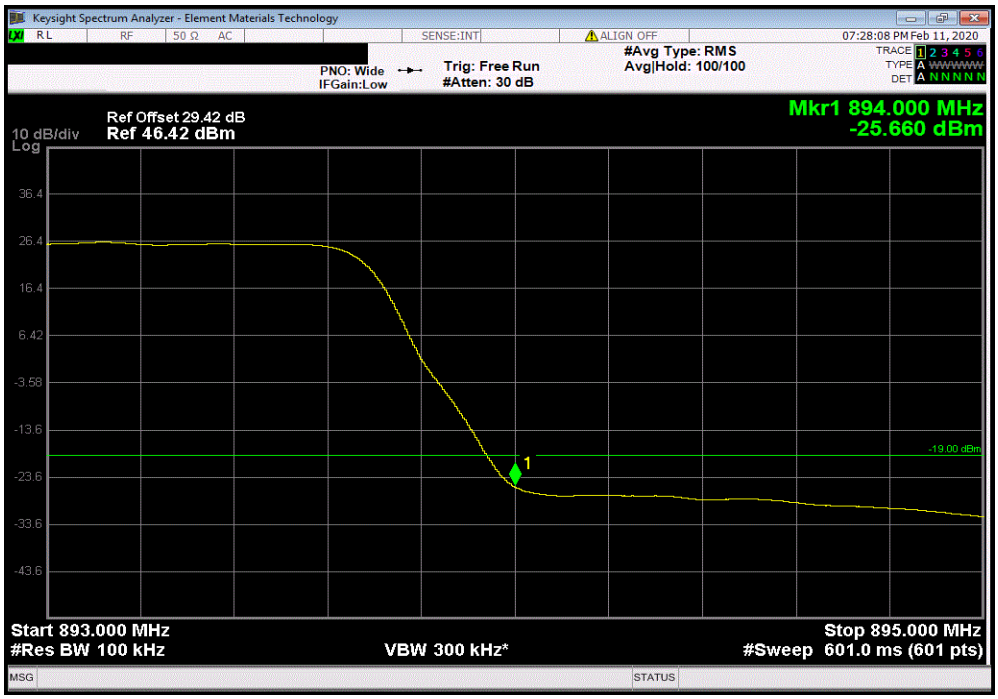
Band 5 (Single Carrier) Port 2, 10 MHz, 64-QAM, Low Channel, 874 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-24.477	-19	Pass



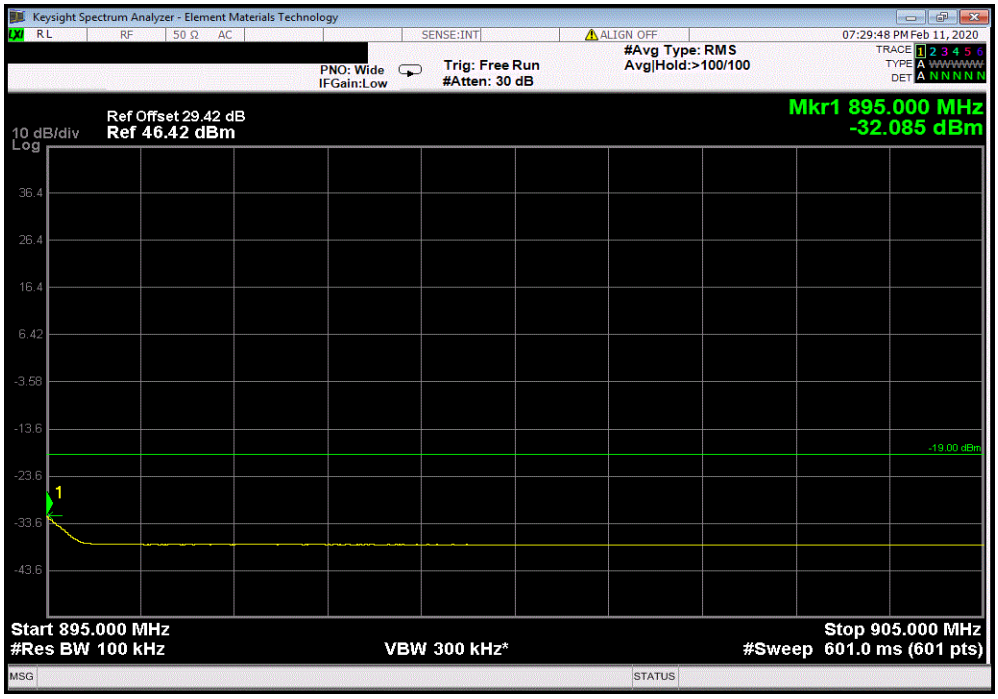
Band 5 (Single Carrier) Port 2, 10 MHz, 64-QAM, Low Channel, 874 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-27.594	-19	Pass



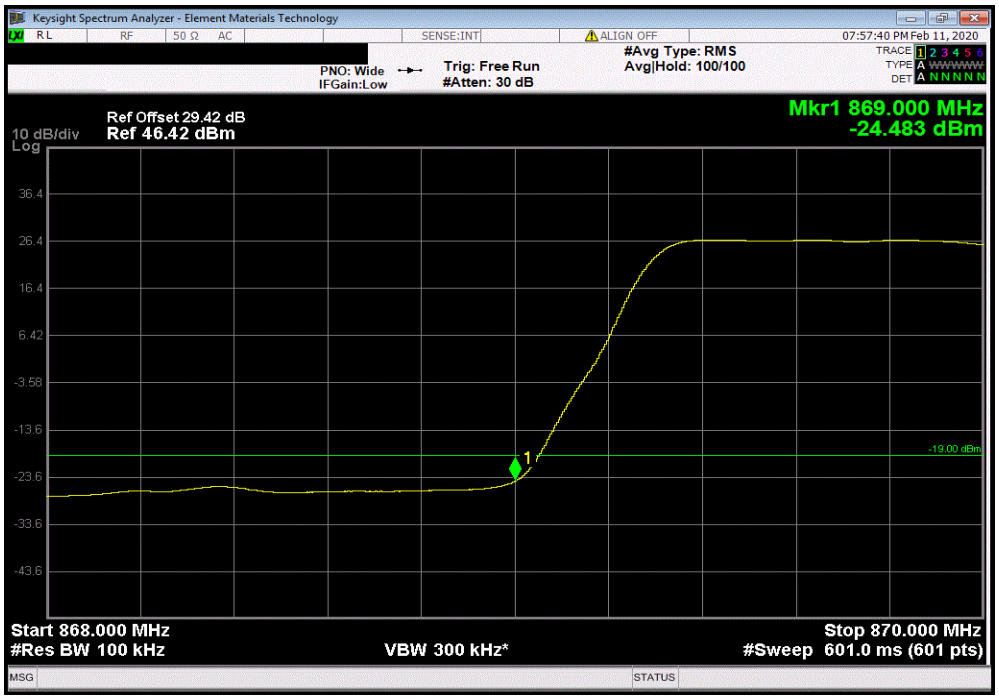
Band 5 (Single Carrier) Port 2, 10 MHz, 64-QAM, High Channel, 889 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-25.66	-19	Pass



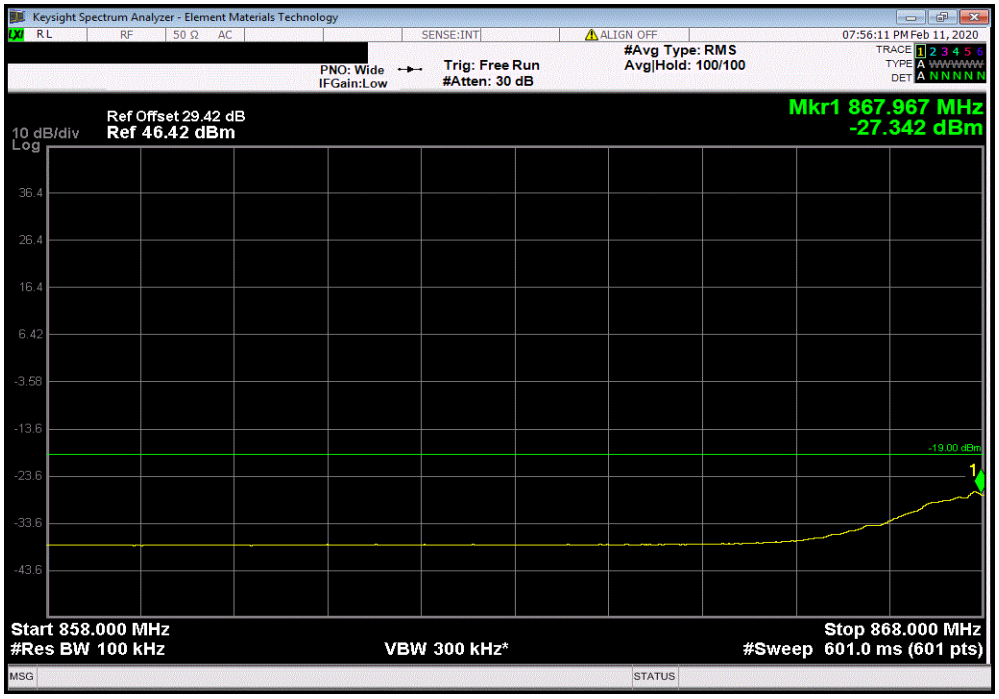
Band 5 (Single Carrier) Port 2, 10 MHz, 64-QAM, High Channel, 889 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-32.085	-19	Pass



Band 5 (Single Carrier) Port 2, 10 MHz, 256-QAM, Low Channel, 874 MHz, Frequency Range 1						
				Value (dBm)	Limit (dBm)	Result
				-24.483	-19	Pass

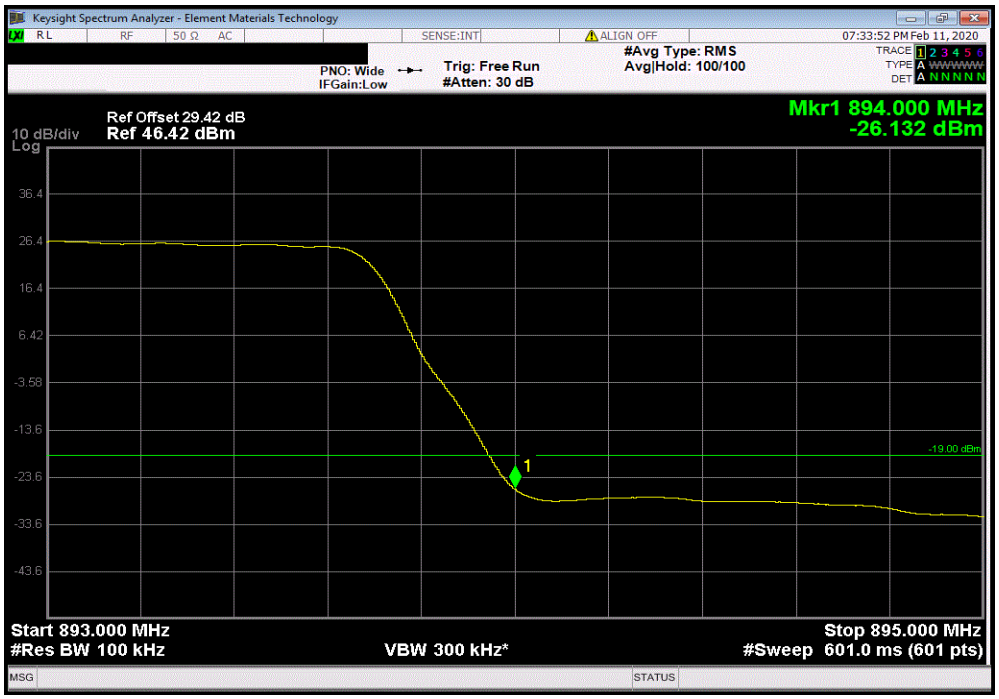


Band 5 (Single Carrier) Port 2, 10 MHz, 256-QAM, Low Channel, 874 MHz, Frequency Range 3						
				Value (dBm)	Limit (dBm)	Result
				-27.342	-19	Pass



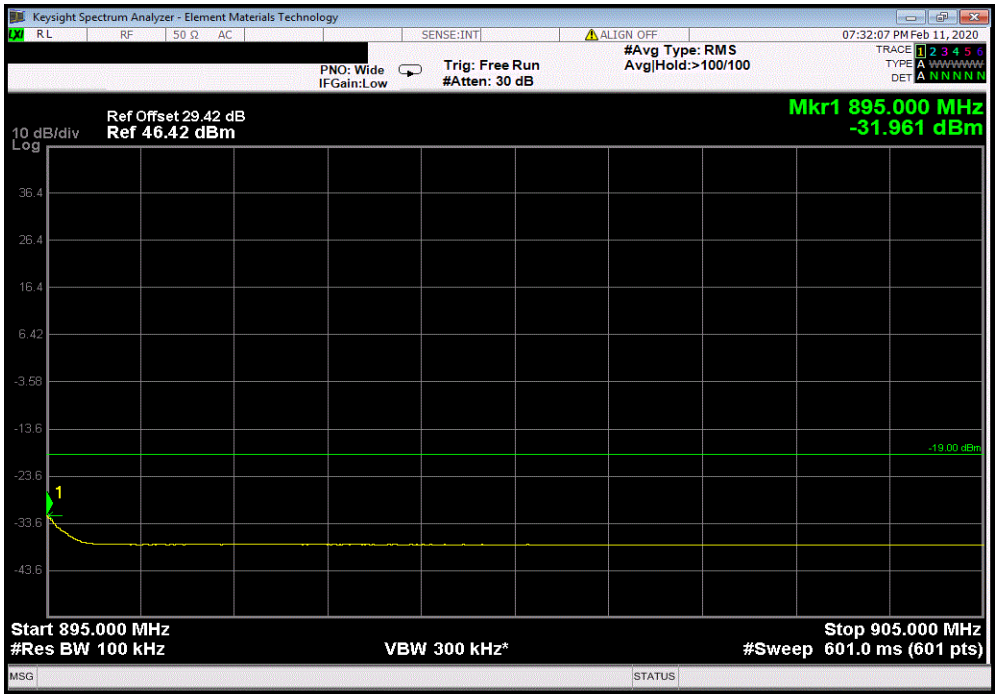
Band 5 (Single Carrier) Port 2, 10 MHz, 256-QAM, High Channel, 889 MHz, Frequency Range 1

				Value (dBm)	Limit (dBm)	Result
				-26.132	-19	Pass



Band 5 (Single Carrier) Port 2, 10 MHz, 256-QAM, High Channel, 889 MHz, Frequency Range 3

				Value (dBm)	Limit (dBm)	Result
				-31.961	-19	Pass



CONDUCTED OUTPUT POWER

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Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	19-Mar-19	19-Mar-20

TEST DESCRIPTION

The measurement was made using a direct connection between the Rf output of the EUT and a spectrum analyzer. The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the follwing data sheets. The transmit power was set to its default maximum.

The method in section 5.2.4.4 of ANSI C63.26 was used to make the measurement. This method uses trace averaging across ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

Per FCC part 22.913 and per RSS 132 paragraph 5.4/SRSP 503 paragraph 5.1.1, the EIRP limits are 1640 watts.
The Effective Radiated Power (ERP) of the transceiver cannot exceed 500 Watts.

CONDUCTED OUTPUT POWER

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EUT:	Airscale Base Transceiver Station Remote Radio Head Model AHBCA	Work Order:	NOKI0009
Serial Number:	BL1818M0028	Date:	14-Feb-20
Customer:	Nokia Solutions and Networks	Temperature:	21.7 °C
Attendees:	Mitch Hill, John Rattanavong	Humidity:	26.5% RH
Project:	None	Barometric Pres.:	1036 mbar
Tested by:	Brandon Hobbs	Job Site:	TX09
Power:	54 VDC		

TEST SPECIFICATIONS	Test Method
FCC 22H:2020	ANSI C63.26:2015
RSS-132:2013	RSS-132:2013

COMMENTS

All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks. The highest power port operating at maximum power was used for all testing. Worst case port was tested for and found in the original report.

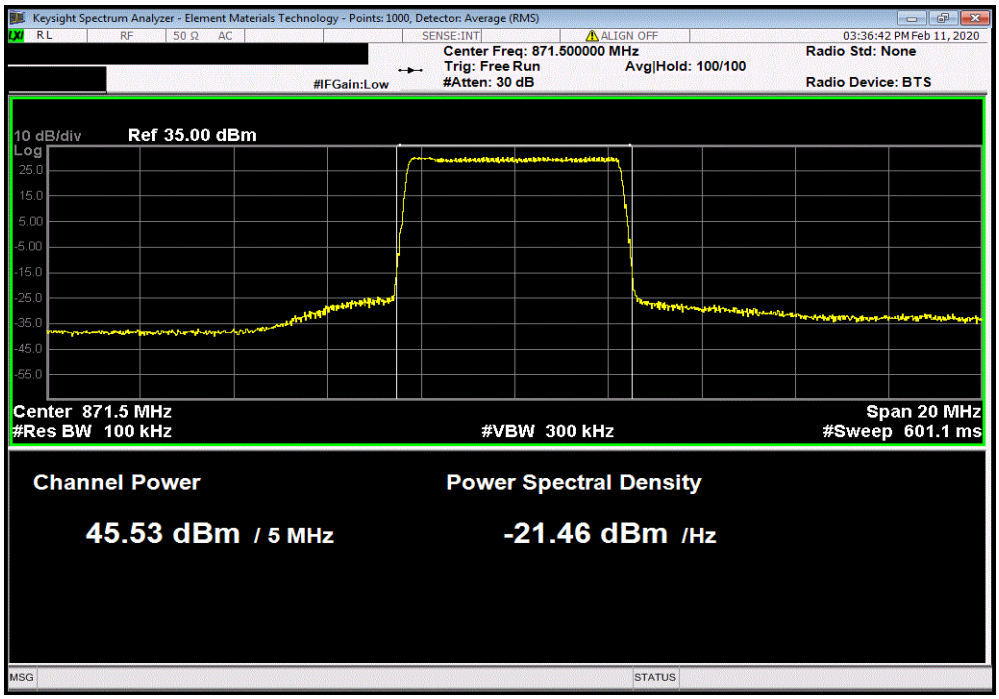
DEVIATIONS FROM TEST STANDARD

None

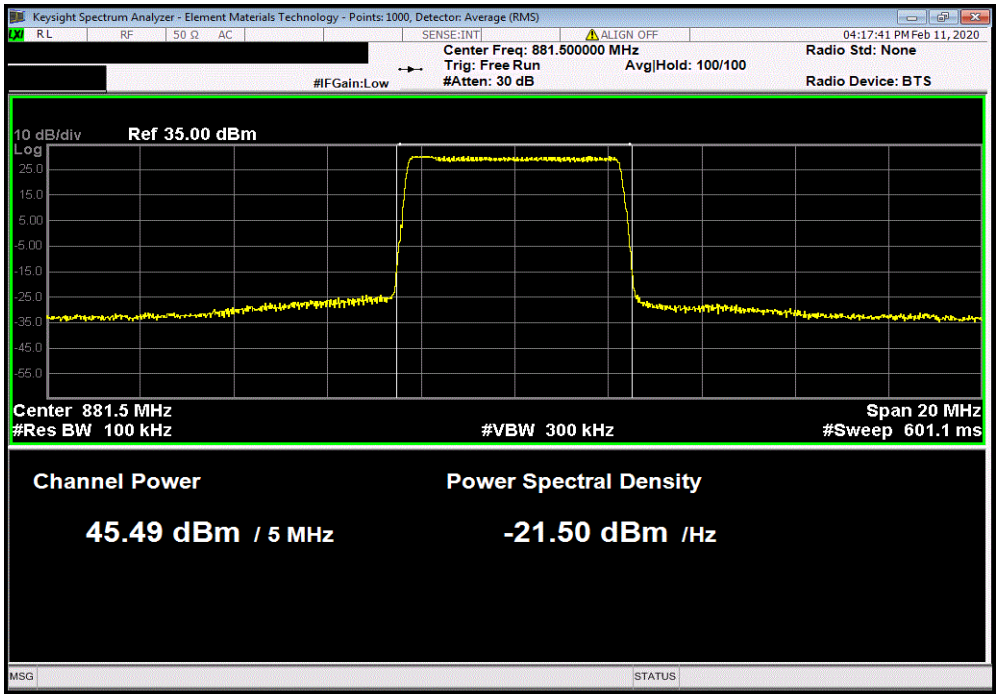
Configuration #	2	Signature

			Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
Band 5 (Single Carrier) Port 2								
5 MHz								
	QPSK							
		Low Channel, 871.5 MHz	45.5	0	Not Provided	45.5	57	Pass
		Mid Channel, 881.5 MHz	45.5	0	Not Provided	45.5	57	Pass
		High Channel, 891.5 MHz	45.4	0	Not Provided	45.4	57	Pass
	16-QAM							
		Low Channel, 871.5 MHz	45.7	0	Not Provided	45.7	57	Pass
		Mid Channel, 881.5 MHz	45.5	0	Not Provided	45.5	57	Pass
		High Channel, 891.5 MHz	45.4	0	Not Provided	45.4	57	Pass
	64-QAM							
		Low Channel, 871.5 MHz	45.4	0	Not Provided	45.4	57	Pass
		Mid Channel, 881.5 MHz	45.3	0	Not Provided	45.3	57	Pass
		High Channel, 891.5 MHz	45.2	0	Not Provided	45.2	57	Pass
	256-QAM							
		Low Channel, 871.5 MHz	45.3	0	Not Provided	45.3	57	Pass
		Mid Channel, 881.5 MHz	45.2	0	Not Provided	45.2	57	Pass
		High Channel, 891.5 MHz	45.1	0	Not Provided	45.1	57	Pass
10 MHz								
	QPSK							
		Low Channel, 874 MHz	45.5	0	Not Provided	45.5	57	Pass
		Mid Channel, 881.5 MHz	45.4	0	Not Provided	45.4	57	Pass
		High Channel, 889 MHz	45.6	0	Not Provided	45.6	57	Pass
	16-QAM							
		Low Channel, 874 MHz	45.6	0	Not Provided	45.6	57	Pass
		Mid Channel, 881.5 MHz	45.4	0	Not Provided	45.4	57	Pass
		High Channel, 889 MHz	45.6	0	Not Provided	45.6	57	Pass
	64-QAM							
		Low Channel, 874 MHz	45.5	0	Not Provided	45.5	57	Pass
		Mid Channel, 881.5 MHz	45.3	0	Not Provided	45.3	57	Pass
		High Channel, 889 MHz	45.6	0	Not Provided	45.6	57	Pass
	256-QAM							
		Low Channel, 874 MHz	45.4	0	Not Provided	45.4	57	Pass
		Mid Channel, 881.5 MHz	45.2	0	Not Provided	45.2	57	Pass
		High Channel, 889 MHz	45.5	0	Not Provided	45.5	57	Pass

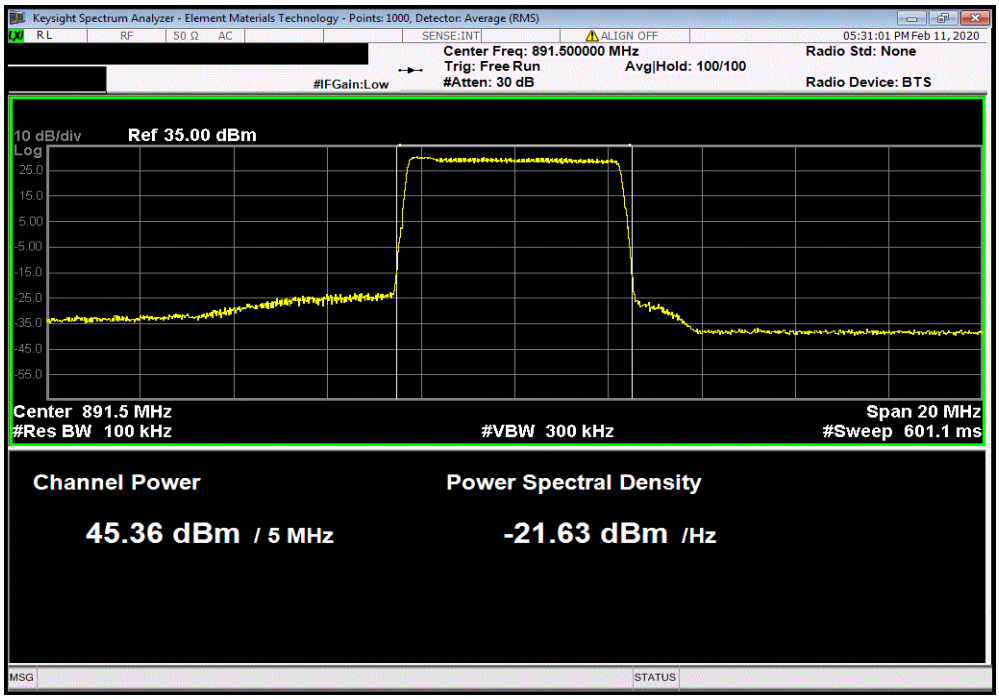
Band 5 (Single Carrier) Port 2, 5 MHz, QPSK, Low Channel, 871.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.534	0	Not Provided	45.5	57	Pass



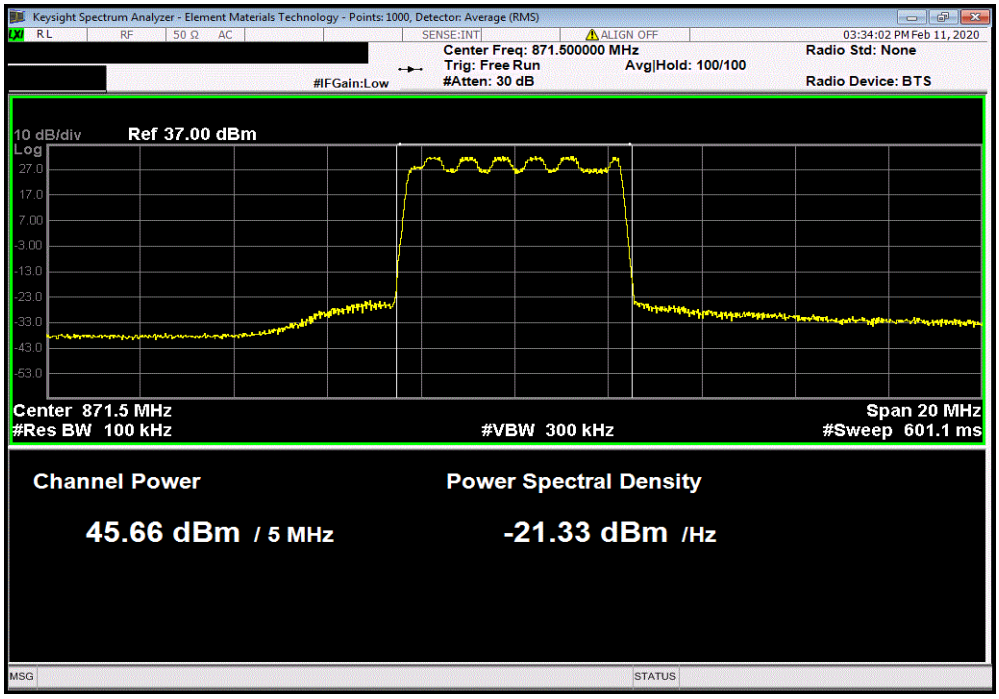
Band 5 (Single Carrier) Port 2, 5 MHz, QPSK, Mid Channel, 881.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.491	0	Not Provided	45.5	57	Pass



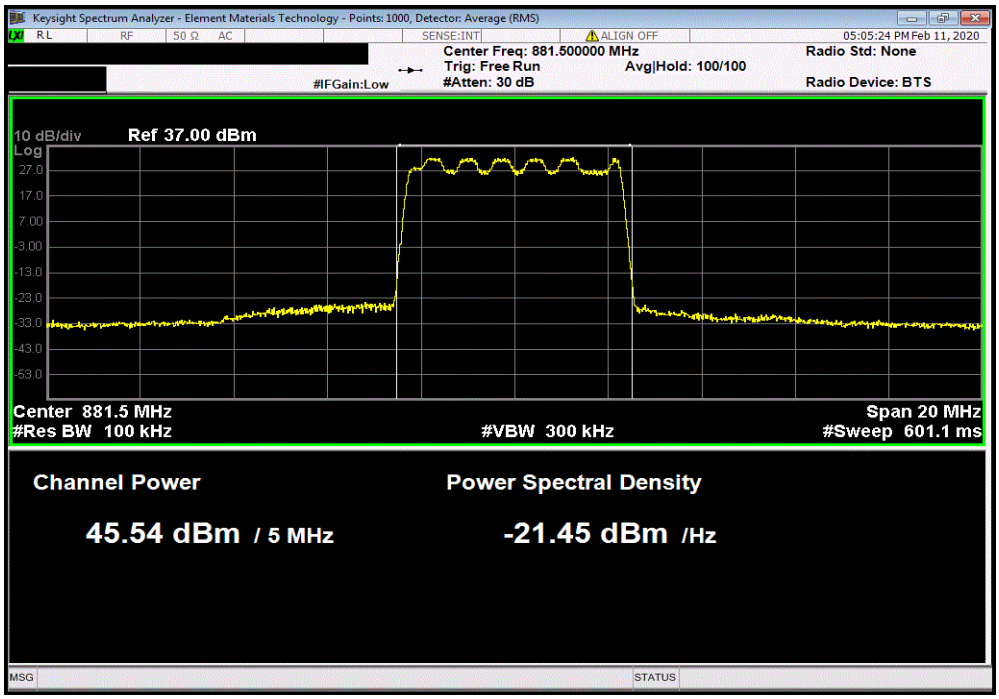
Band 5 (Single Carrier) Port 2, 5 MHz, QPSK, High Channel, 891.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.355	0	Not Provided	45.4	57	Pass



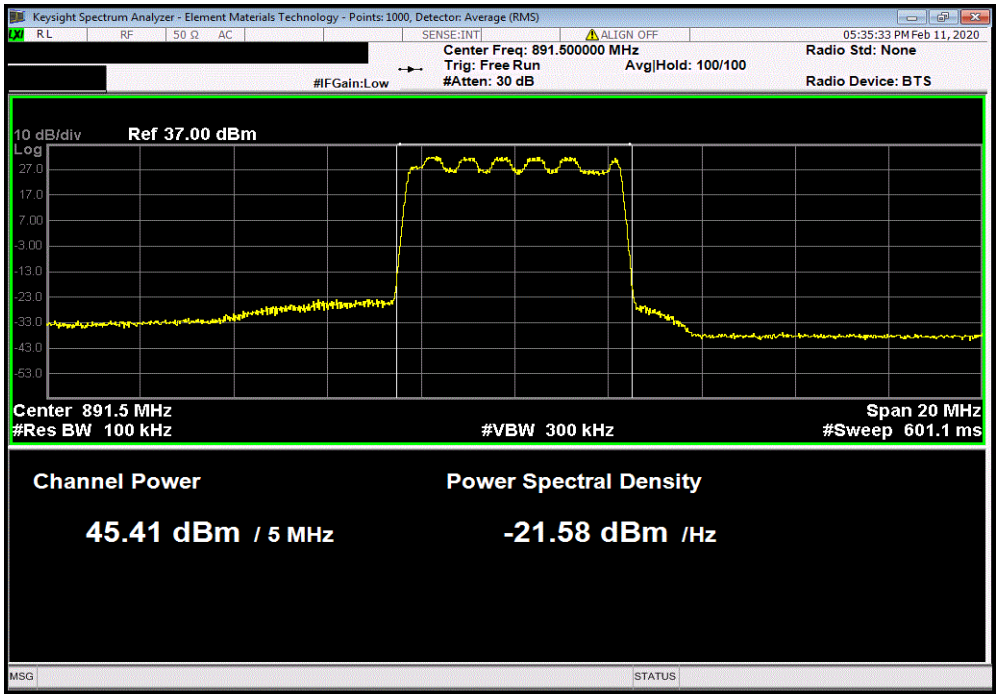
Band 5 (Single Carrier) Port 2, 5 MHz, 16-QAM, Low Channel, 871.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.656	0	Not Provided	45.7	57	Pass



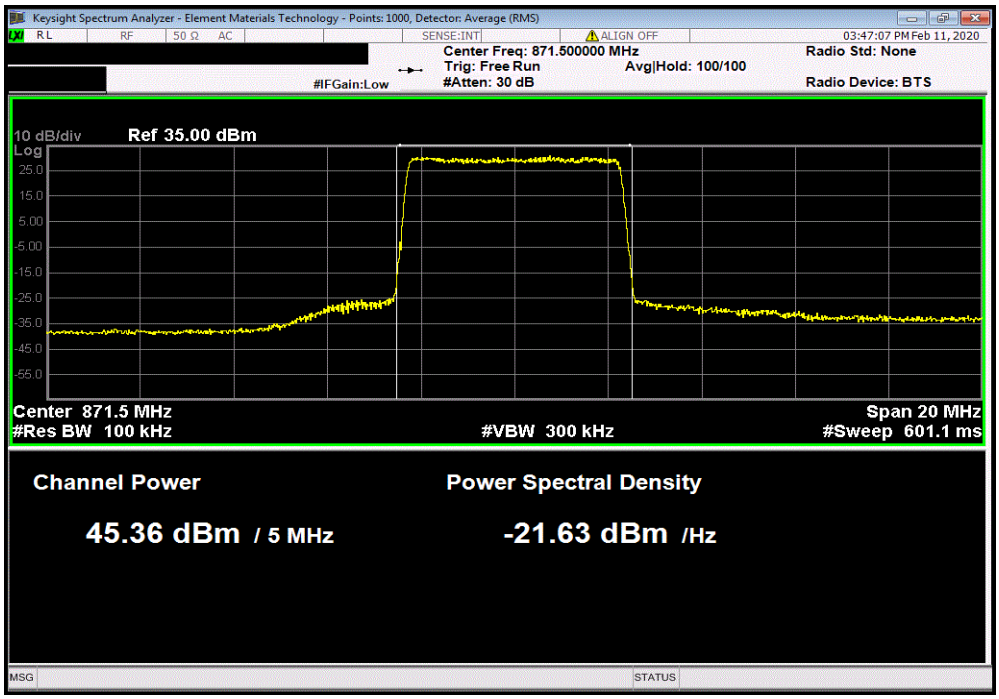
Band 5 (Single Carrier) Port 2, 5 MHz, 16-QAM, Mid Channel, 881.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.536	0	Not Provided	45.5	57	Pass



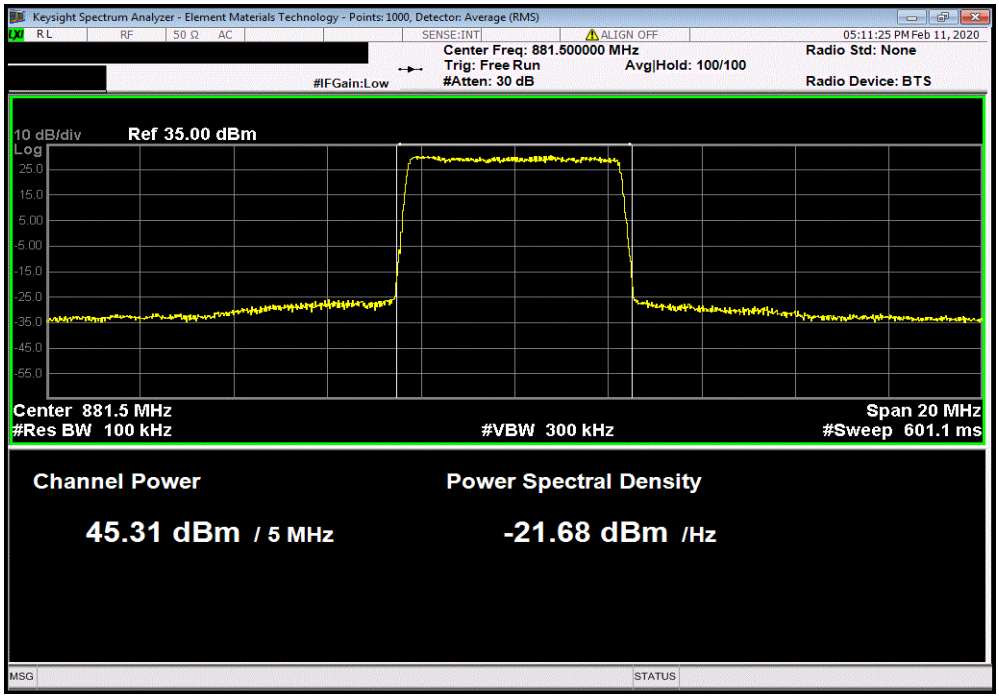
Band 5 (Single Carrier) Port 2, 5 MHz, 16-QAM, High Channel, 891.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.405	0	Not Provided	45.4	57	Pass



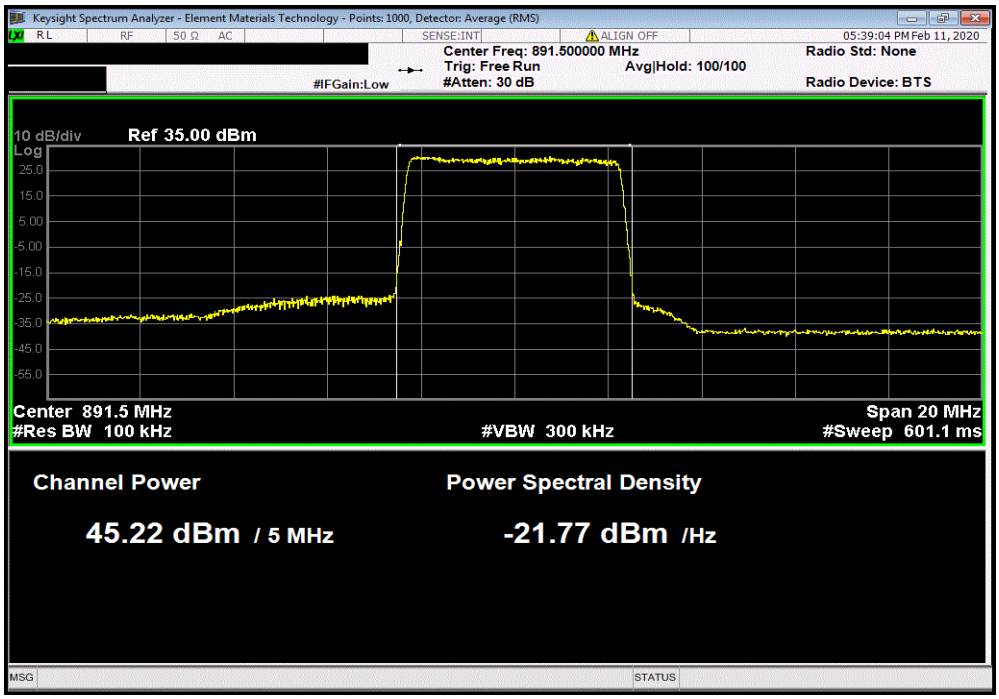
Band 5 (Single Carrier) Port 2, 5 MHz, 64-QAM, Low Channel, 871.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.362	0	Not Provided	45.4	57	Pass



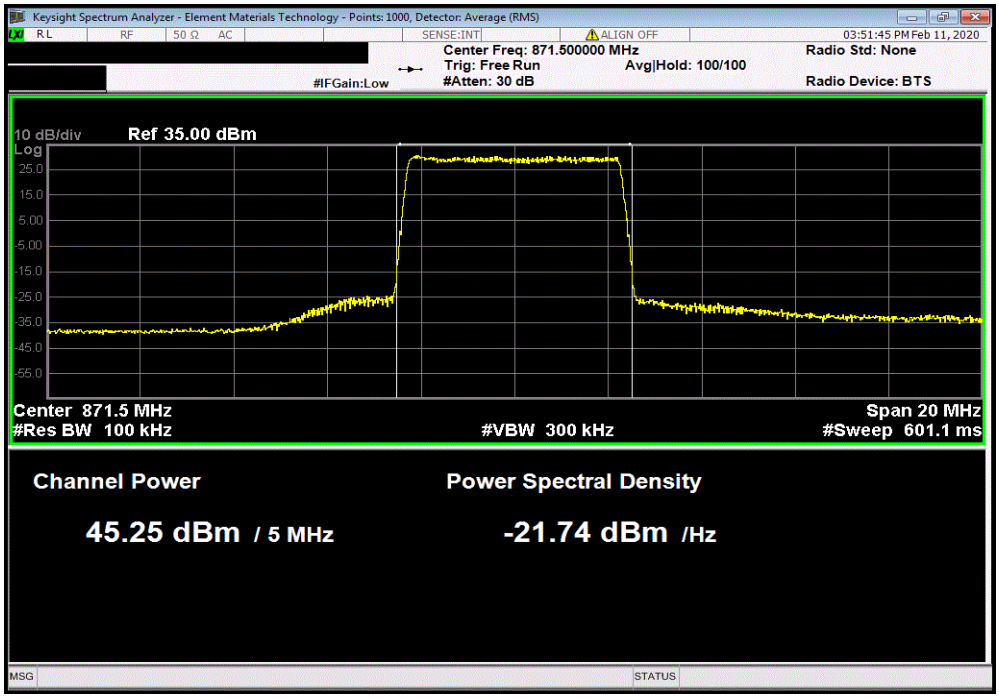
Band 5 (Single Carrier) Port 2, 5 MHz, 64-QAM, Mid Channel, 881.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.31	0	Not Provided	45.3	57	Pass



Band 5 (Single Carrier) Port 2, 5 MHz, 64-QAM, High Channel, 891.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.222	0	Not Provided	45.2	57	Pass



Band 5 (Single Carrier) Port 2, 5 MHz, 256-QAM, Low Channel, 871.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.251	0	Not Provided	45.3	57	Pass



CONDUCTED OUTPUT POWER

element

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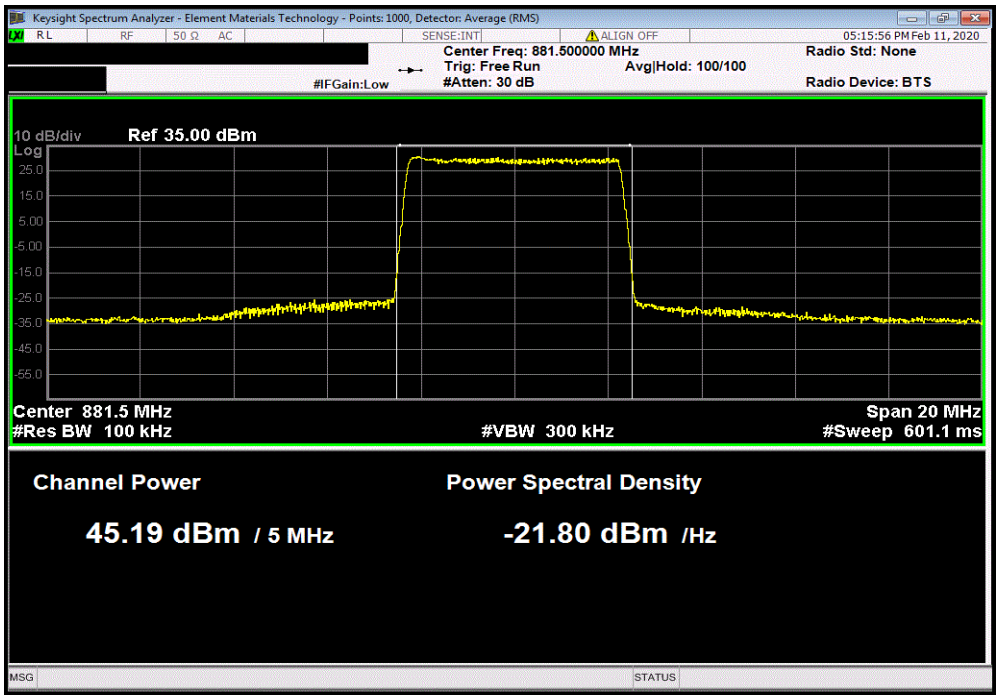
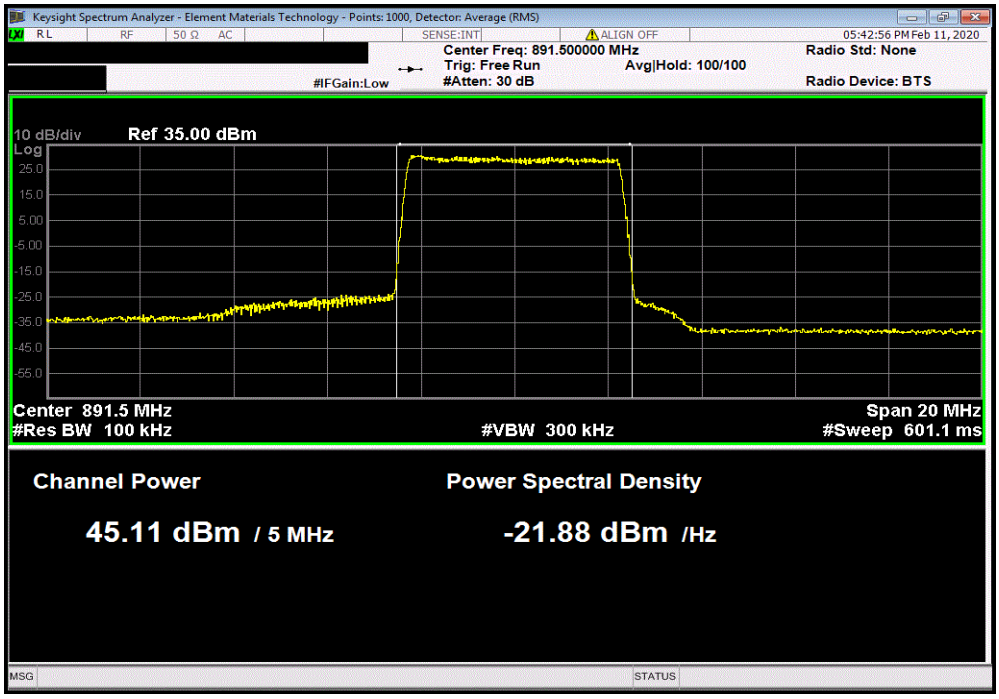
Band 5 (Single Carrier) Port 2, 5 MHz, 256-QAM, Mid Channel, 881.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.193	0	Not Provided	45.2	57	Pass



Band 5 (Single Carrier) Port 2, 5 MHz, 256-QAM, High Channel, 891.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.106	0	Not Provided	45.1	57	Pass



CONDUCTED OUTPUT POWER

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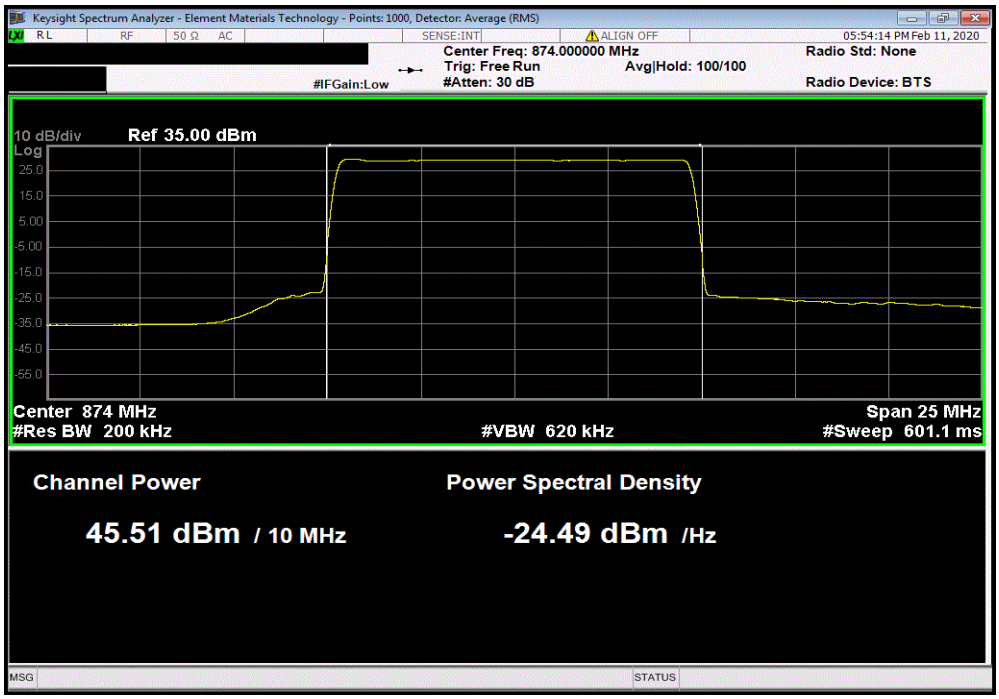
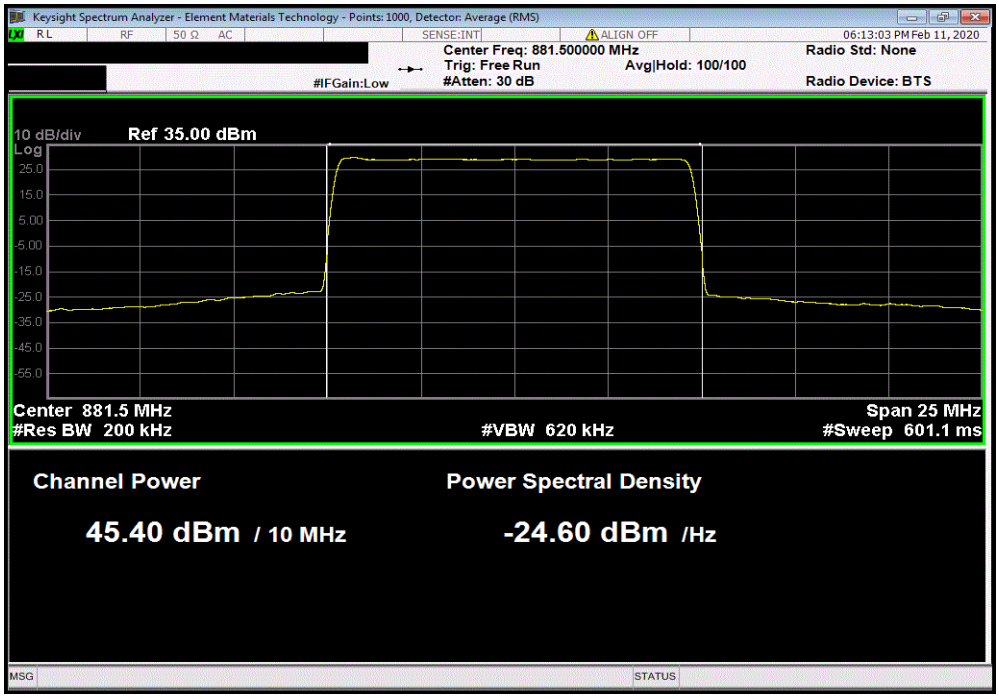
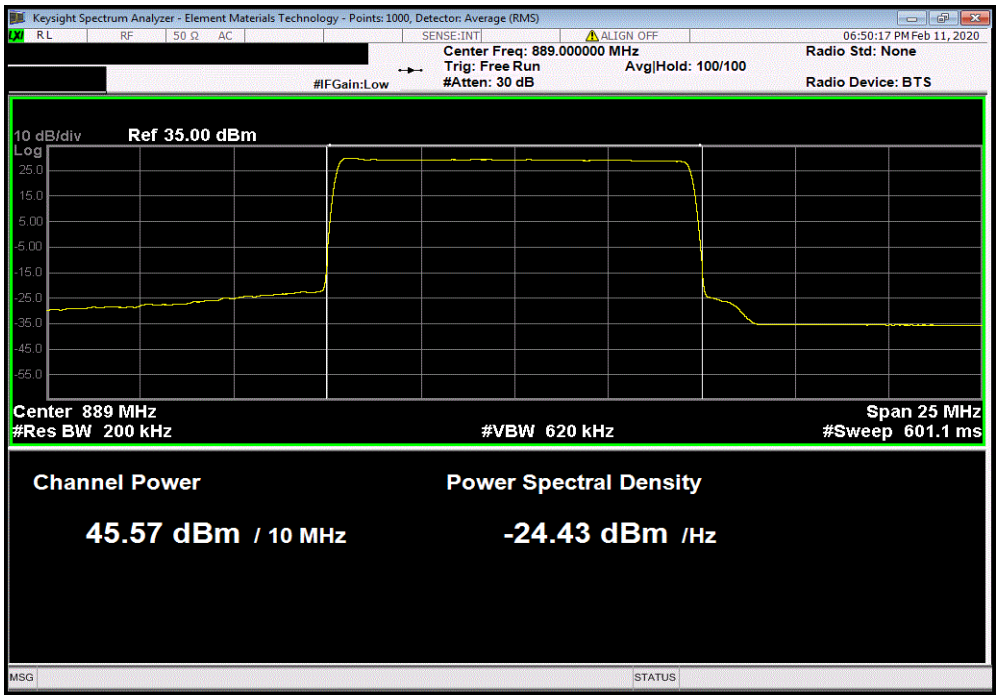
Band 5 (Single Carrier) Port 2, 10 MHz, QPSK, Low Channel, 874 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.51	0	Not Provided	45.5	57	Pass



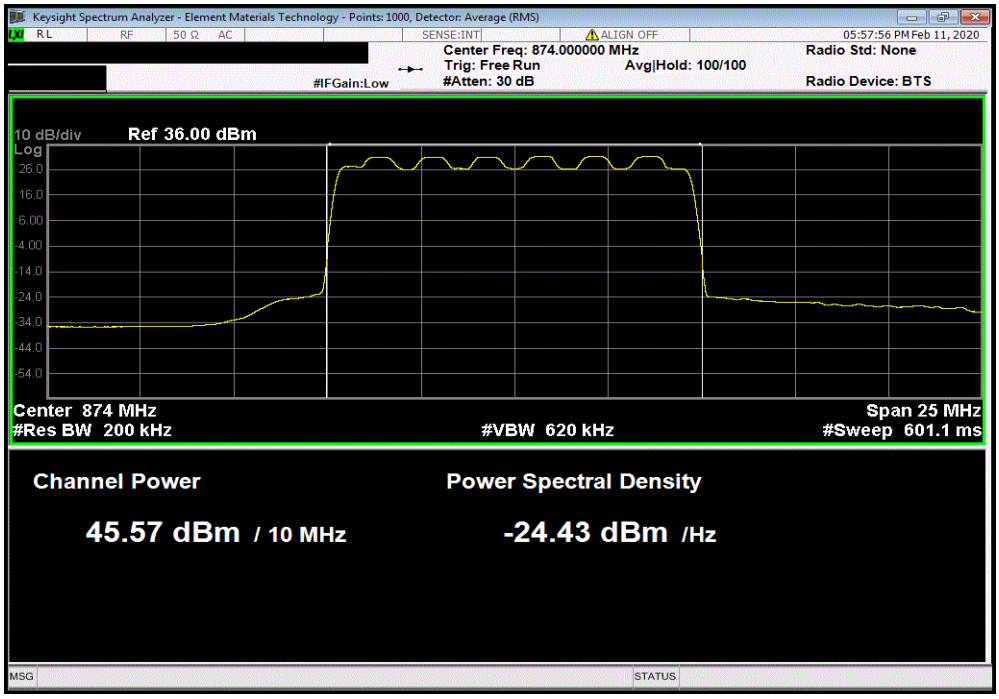
Band 5 (Single Carrier) Port 2, 10 MHz, QPSK, Mid Channel, 881.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.404	0	Not Provided	45.4	57	Pass



Band 5 (Single Carrier) Port 2, 10 MHz, QPSK, High Channel, 889 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.571	0	Not Provided	45.6	57	Pass



Band 5 (Single Carrier) Port 2, 10 MHz, 16-QAM, Low Channel, 874 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.571	0	Not Provided	45.6	57	Pass



CONDUCTED OUTPUT POWER

element

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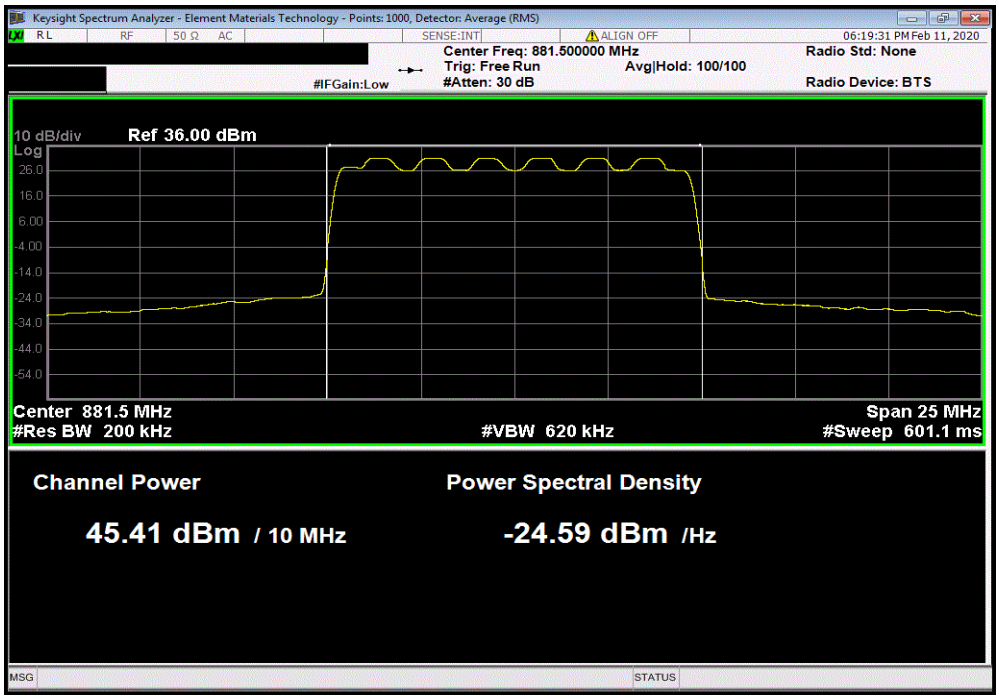
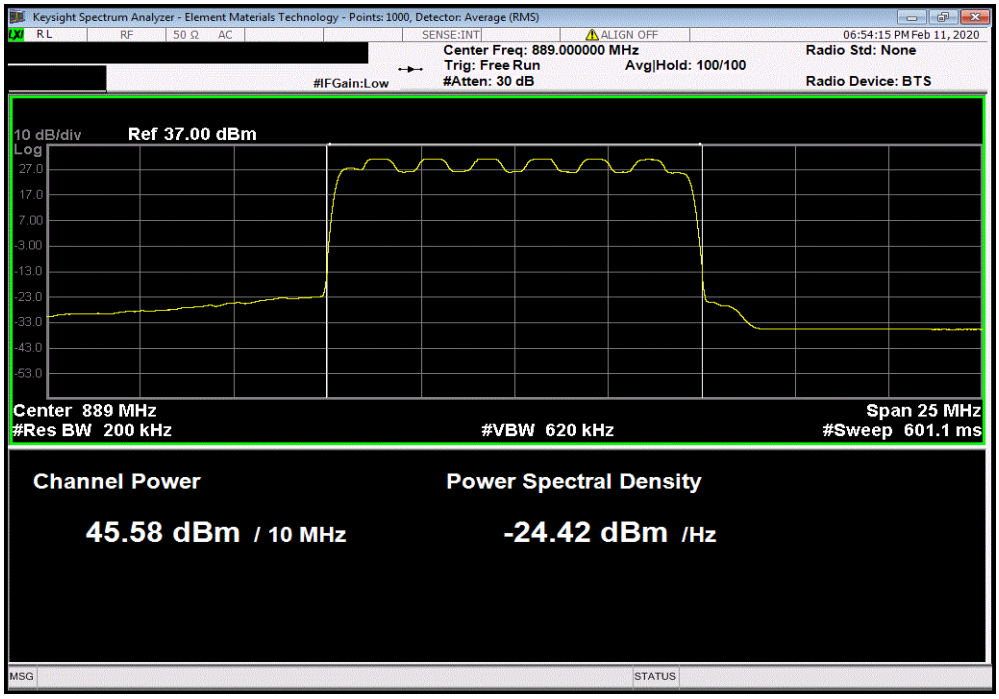
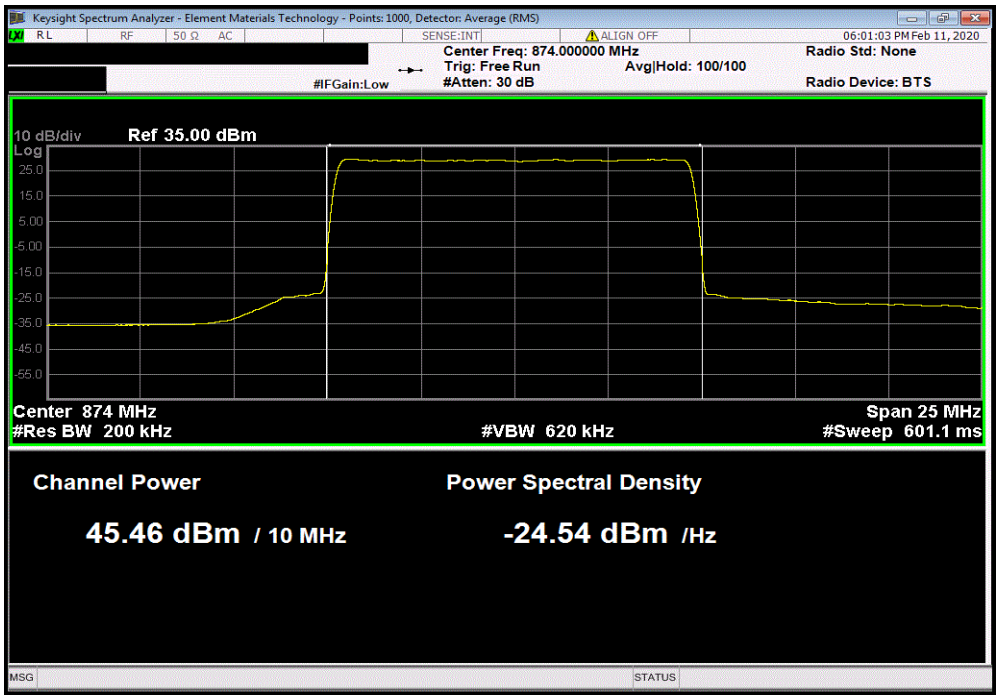
Band 5 (Single Carrier) Port 2, 10 MHz, 16-QAM, Mid Channel, 881.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.415	0	Not Provided	45.4	57	Pass



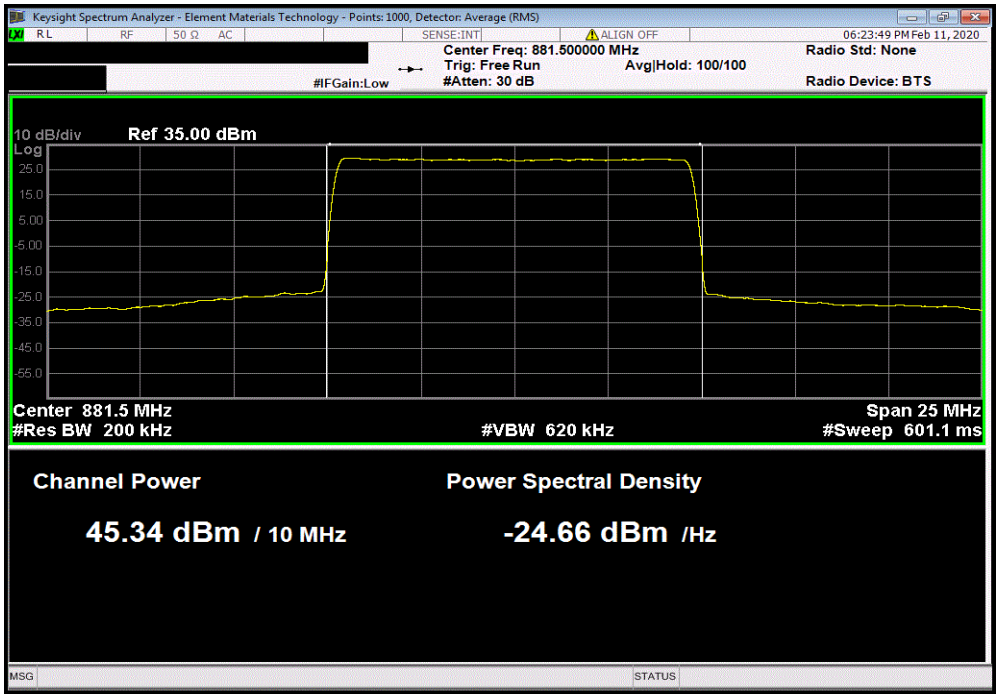
Band 5 (Single Carrier) Port 2, 10 MHz, 16-QAM, High Channel, 889 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.578	0	Not Provided	45.6	57	Pass



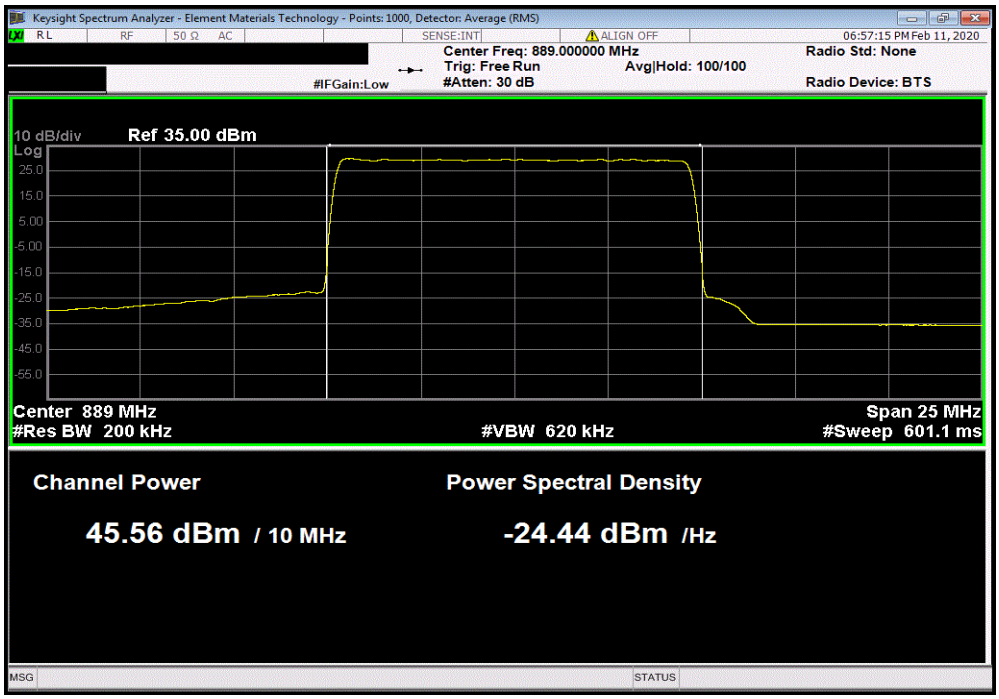
Band 5 (Single Carrier) Port 2, 10 MHz, 64-QAM, Low Channel, 874 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.458	0	Not Provided	45.5	57	Pass



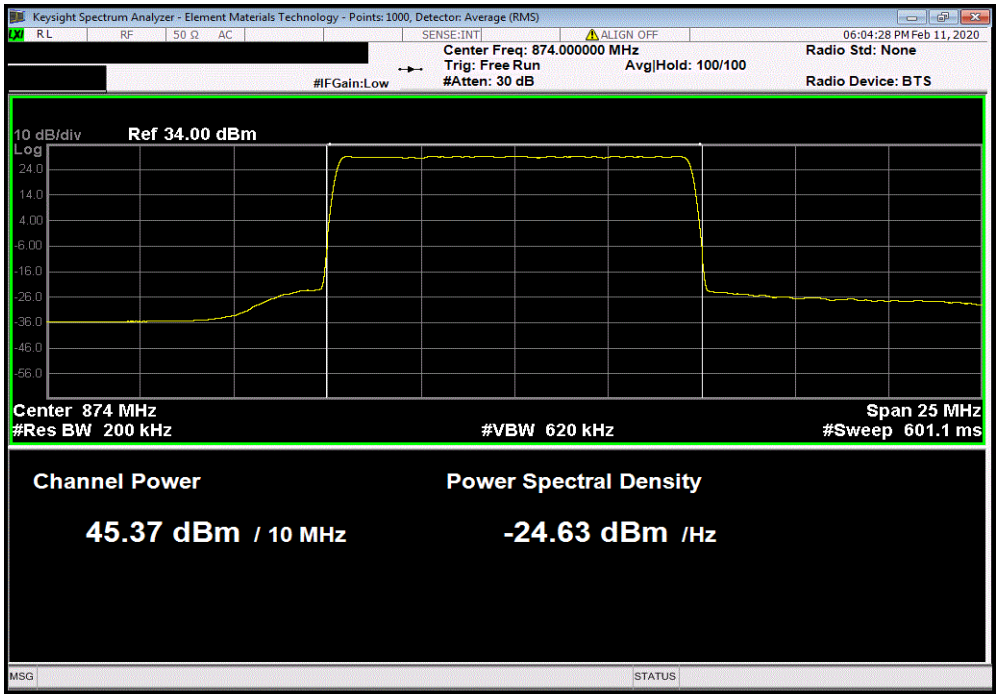
Band 5 (Single Carrier) Port 2, 10 MHz, 64-QAM, Mid Channel, 881.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.339	0	Not Provided	45.3	57	Pass



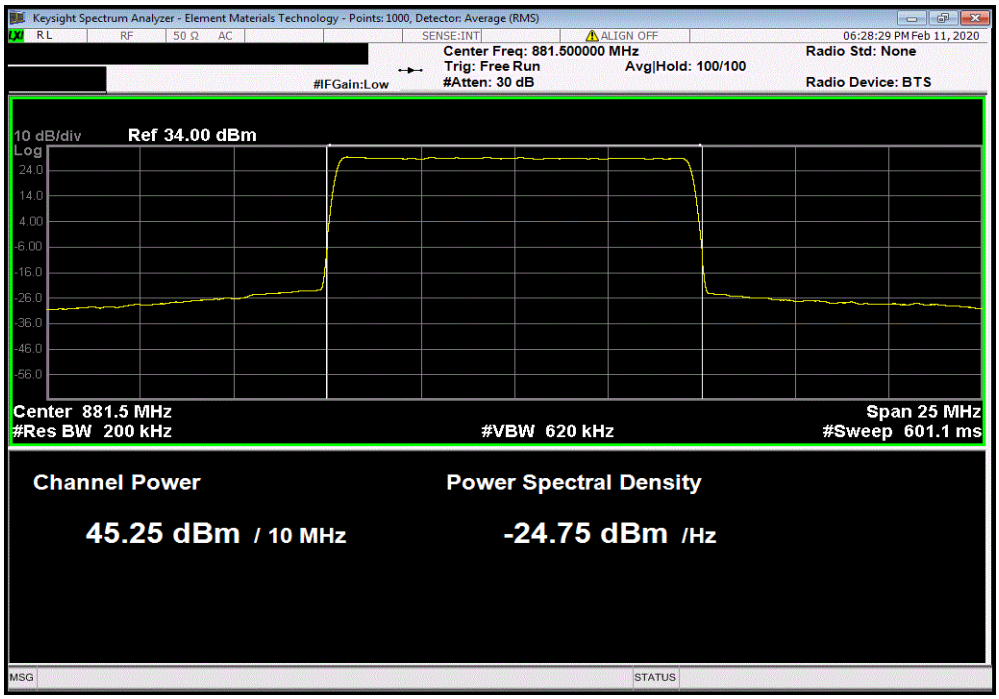
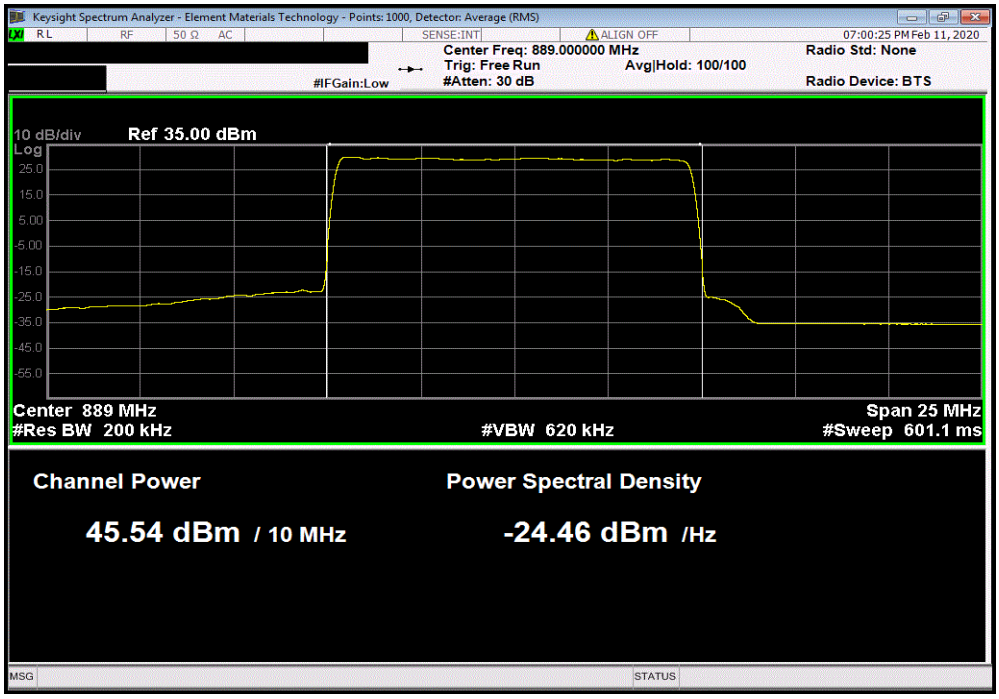
Band 5 (Single Carrier) Port 2, 10 MHz, 64-QAM, High Channel, 889 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.555	0	Not Provided	45.6	57	Pass



Band 5 (Single Carrier) Port 2, 10 MHz, 256-QAM, Low Channel, 874 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.373	0	Not Provided	45.4	57	Pass



Band 5 (Single Carrier) Port 2, 10 MHz, 256-QAM,Mid Channel, 881.5 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.248	0	Not Provided	45.2	57	Pass



Band 5 (Single Carrier) Port 2, 10 MHz, 256-QAM, High Channel, 889 MHz						
	Initial Power (dBm/OBW)	Duty Cycle Factor (dB)	Antenna Gain dBd=(dBi) - 2.15dB	Final w/o Ant Gain Value (dBm/OBW)	Limit ERP (dBm/OBW)	Results
	45.541	0	Not Provided	45.5	57	Pass