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Report On

FCC and ISED Testing of the
Ericsson RD 2242 B5, KRY 901 332/1 NR, LTE & NR (869-894 MHz)
Base Station in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part
22, ISED RSS-GEN and ISED RSS-132
Class II Permissive Change

COMMERCIAL-IN-CONFIDENCE

FCC ID: TA8AKRY901332-1
IC: 287AB-AS9013321

PREPARED BY

A handwritten signature in black ink, appearing to read "Glen Westwell".

Glen Westwell

APPROVED BY

A handwritten signature in black ink, appearing to read "Scott Drysdale".

Scott Drysdale

DATED

Nov 27th 2020

Document 7169008761 Report 01 Issue 1

November 2020



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SECTION 1

REPORT INFORMATION



1.1 REPORT DETAILS

Manufacturer	Ericsson
Address	349 Terry Fox Drive Ottawa Ontario K2K 2V6
Product Name & Product Number	RD 2242 B5
IC Model Name	KRY 901 332/1
Serial Number(s)	TD3T930441
Software Version	CXP 901 3268/14_R79FE
Hardware Version	R1D
Test Specification/Issue/Date	FCC CFR 47 Part 2: 2019 FCC CFR 47 Part 22: 2019 ISED RSS-GEN: Issue 5: March 2019 Amendment 1 ISED RSS-132: Issue 3: 2013
Test Plan	RD 2242 B5 FCC test plan (addition of NR)
Start of Test	09 November 2020
Finish of Test	09 November 2020
Name of Engineer(s)	Glen Westwell
Related Document(s)	KDB 971168 D01 v02r02 KDB 662911 D01 v02r01

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate compliance with FCC CFR 47 Part 2, FCC CFR 47 Part 22, ISED RSS-GEN and ISED RSS-132. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

Glen Westwell



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 22, ISED RSS-GEN and ISED RSS-132 is shown below.

Section	Specification Clause				Test Description	Result
	FCC CFR 47 Part 2	FCC CFR 47 Part 22	RSS-GEN	ISED RSS-132		
2.1	2.1046	22.913 (a)	-	5.4	Maximum Peak Output Power and Peak to Average Ratio - Conducted	Pass
2.2	2.1049	22.917 (b)	6.7	5.5	Occupied Bandwidth	Pass
2.3	2.1051	22.917(b)	-	5.5	Band Edge	Pass
2.4	2.1051	22.917(b)	6.13	5.5	Transceiver Spurious Emissions	Pass

1.3 CONFIGURATION DESCRIPTION

Configuration A					
RAT	N0. Of Carriers	Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
NR	1	5 MHz	871.5	881.5	891.5
		10 MHz	874.0	881.5	889.0
		15 MHz	876.5	881.5	886.5
		20 MHz	879.0	881.5	884.0

Configuration B					
RAT	N0. Of Carriers	Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
LTE+NR	2	5 MHz	871.5+876.5	879.0+884.0	886.5+891.5
		10 MHz	874.0+884.0	876.5+886.5	879.0+889.0

Configuration C					
RAT	N0. of Carriers	Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
5 x NR / 2LTE+3NR	5	5 MHz	871.5+876.5+881.5	871.5+876.5+881.5	871.5+876.5+881.5
			+886.5+891.5	+886.5+891.5	+886.5+891.5



1.4 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	RD 2242 B5
MANUFACTURER	Ericsson
TYPE	Remote Radio Base Station
PART NUMBER	KRY 901 332/1
SERIAL NUMBER	TD3T930441
HARDWARE VERSION	R1D
SOFTWARE VERSION	CXP 901 3268/14-R79FE
TRANSMITTER OPERATING RANGE	869-894 MHz
RECEIVER OPERATING RANGE	824-849 MHz
COUNTRY OF ORIGIN	China
INTERMEDIATE FREQUENCIES	DL: 117.36-142.36, UL:54.08-79.08
EMISSION DESIGNATOR(S): (i.e. G1D, GXW)	LTE: 5M00W7D, 10M0W7D NR: 5M00F9W, 10M0F9W, 15M0F9W, 20M0F9W WCDMA: 5M00F9W
MODULATION TYPES: (i.e. GMSK, QPSK)	LTE: QPSK, 16QAM, 64QAM, 256QAM NR: QPSK, 16QAM, 64QAM, 256QAM WCDMA: QPSK, 16QAM, 64QAM
HIGHEST INTERNALLY GENERATED FREQUENCY	1.011 GHz
OUTPUT POWER (W or dBm)	2 x 0.05W (2 x 17dBm)
ANTENNA GAIN	-0.4 dBi
FCC ID	TA8AKRY901332-1
INDUSTRY CANADA ID	287AB-AS9013321
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The RD 2242 B5 (KRY 901 332/1) is a Remote Radio Units forming part of the Ericsson Radio Base Station (RBS) equipment. The product provides radio access for mobile and fixed devices and is intended for the indoor environment. The radio operates over 2 Transmit ports in MRO; Single, Multi-Carrier, and MIMO transmission with a maximum rated RF Output of 0.050W per port over an operational temperature of 5°C to +40°C. The unit is designed to be ceiling or wall mounted.

Signature:

.....

Denis Lalonde

Date: 23 November 2020

Declaration of Build Status Serial Number: TD3T930441

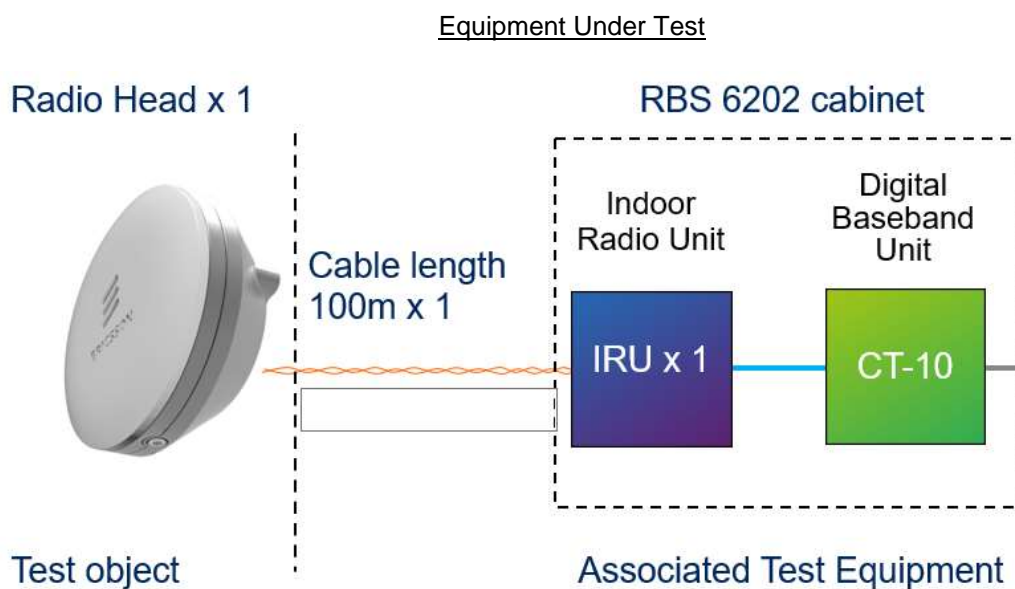
No responsibility will be accepted by TÜV SÜD UK Limited as to the accuracy of the information declared in this document by the manufacturer.

1.5 PRODUCT INFORMATION

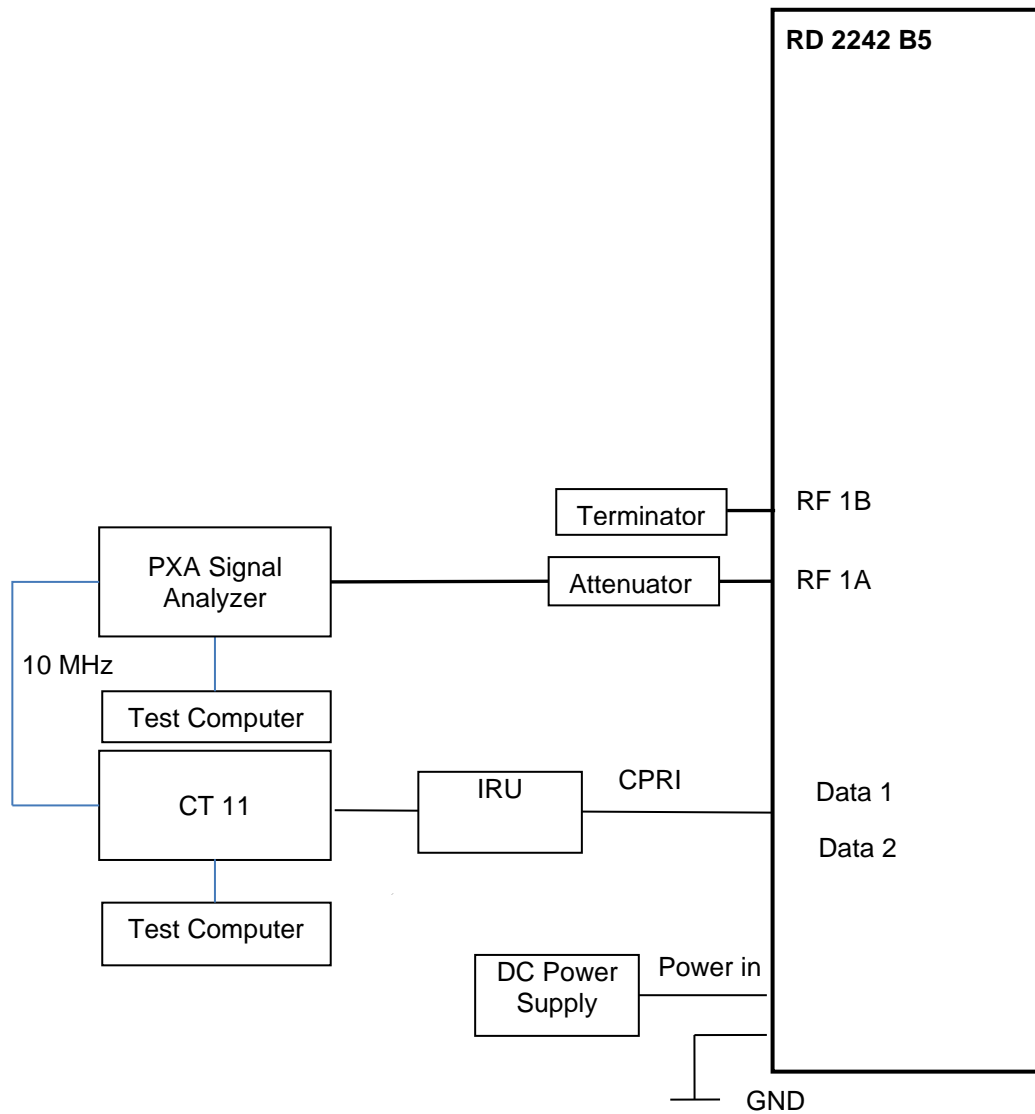
1.5.1 Technical Description

The Equipment Under Test (EUT) RD 2242 B5 is an Ericsson AB Radio Unit working in the public mobile service 869-894 MHz band which provides communication connections to 869-894 MHz network. The RD 2242 B5 operates from a -48V DC supply.

The Equipment Under Test (EUT) is shown in the photograph below. A full technical description can be found in the Manufacturer's documentation.



1.6 TEST SETUP





1.7 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated as described in the Test Method for each Test.

The EUT was powered from a -48V DC supply.

FCC Measurement Facility Registration Number: CA4810

ISED Accreditation

ISED#24015, TUV SUD, Ottawa, Canada

Under our group A2LA Accreditation, TÜV SÜD conducted the following tests at Ericsson, Ottawa.

Test Name	Name of Engineer(s)
Maximum Peak Output Power and Peak to Average Ratio - Conducted	Glen Westwell
Occupied Bandwidth	Glen Westwell
Band Edge	Glen Westwell
Transmitter Spurious Emissions	Glen Westwell

1.8 DEVIATION FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

1.9 MODIFICATION RECORD

No modifications were made to the EUT during testing.

1.10 ADDITIONAL INFORMATION

1. This filing is for a Class 2 Permissive change to add NR modulation to a previously certified Radio for use in the USA and Canada under the following ID's:
FCC ID: TA8AKRY901332-1
ISED ID: 287AB-AS9013321

2. Transmitter performance was measured for top, mid & bottom channels, where applicable, across both antenna ports as presented in the average power measurement tables. Maximum power performance was determined to be, antenna port A.

3. The 5 MHz carrier configuration C occupies the full 25MHz carrier bandwidth for 869-894 MHz. Therefore top, mid, bottom channels are the same under this config.



SECTION 2

TEST DETAILS



2.1 MAXIMUM PEAK OUTPUT POWER AND PEAK TO AVERAGE RATIO - CONDUCTED

2.1.1 Specification Reference

FCC CFR 47 Part 22, Clause 22.913 (a)
ISED RSS-132, Clause 5.4
FCC CFR 47 Part 2, Clause 2.1046

2.1.2 Date of Test and Modification State

9 Nov 2020: Modification State 0

2.1.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.4 Environmental Conditions

Ambient Temperature 24.9°C
Relative Humidity 29.8%

2.1.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, clause 5.2.1 and summed in accordance with FCC KDB 662911 D01.

2.1.6 Test Results

Configuration A

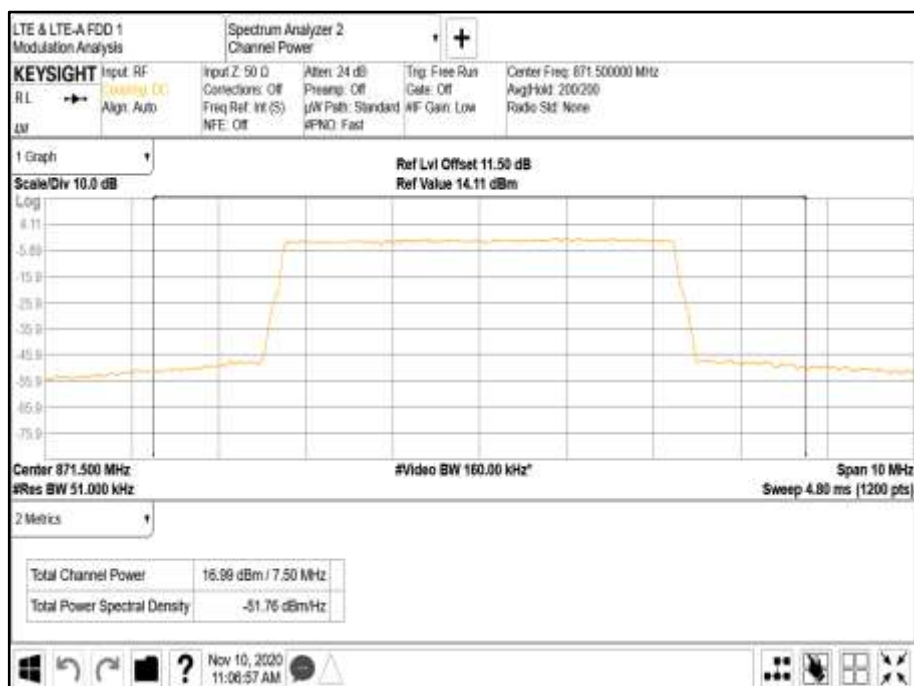
Maximum Output Power 17 dBm / Port

Antenna	Modulation	Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position B		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	NR: QPSK	5.0 MHz	7.00	16.99	11.71
B	NR: QPSK	5.0 MHz	-	16.38	11.71
Total			-	19.71	14.72
A	NR: QPSK	10.0 MHz	7.12	17.33	8.59
B	NR: QPSK	10.0 MHz	-	16.92	8.59
Total			-	20.14	11.60
A	NR: QPSK	15.0 MHz	7.42	17.36	6.95
B	NR: QPSK	15.0 MHz	-	17.16	6.95
Total			-	20.27	9.96
A	NR: QPSK	20.0 MHz	7.40	17.33	5.79
B	NR: QPSK	20.0 MHz	-	17.15	5.79
Total			-	20.25	8.80

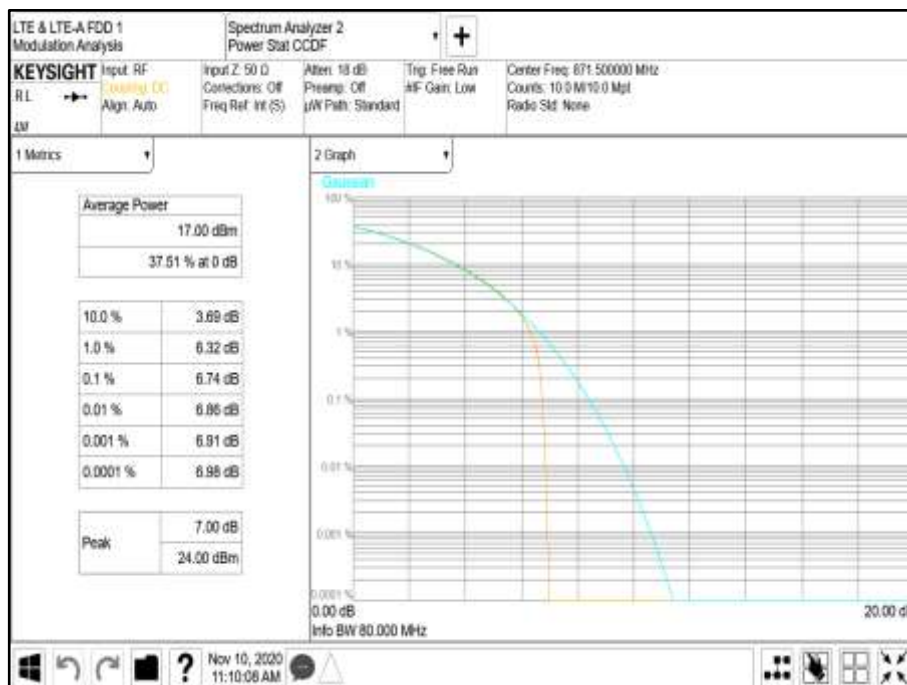
Remarks

1. Transmitter performance was measured for top, mid, bottom channels across both antenna ports as represented in the average power measurement tables. Maximum power performance was determined to be antenna port A. 2. The plot results presented represent typical performance for all bands and antenna ports based on transmitter port A performance. 3. Plot data performance are on file and available on request. 4. The integral Antenna gain for this RD 2242 B5 is -0.4 dBi.

Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position B

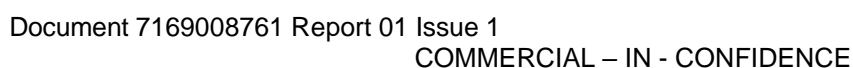
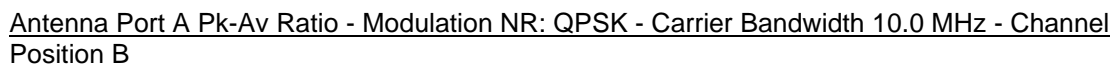
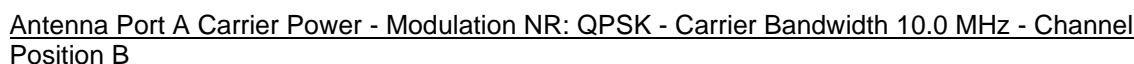


Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position B



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position B

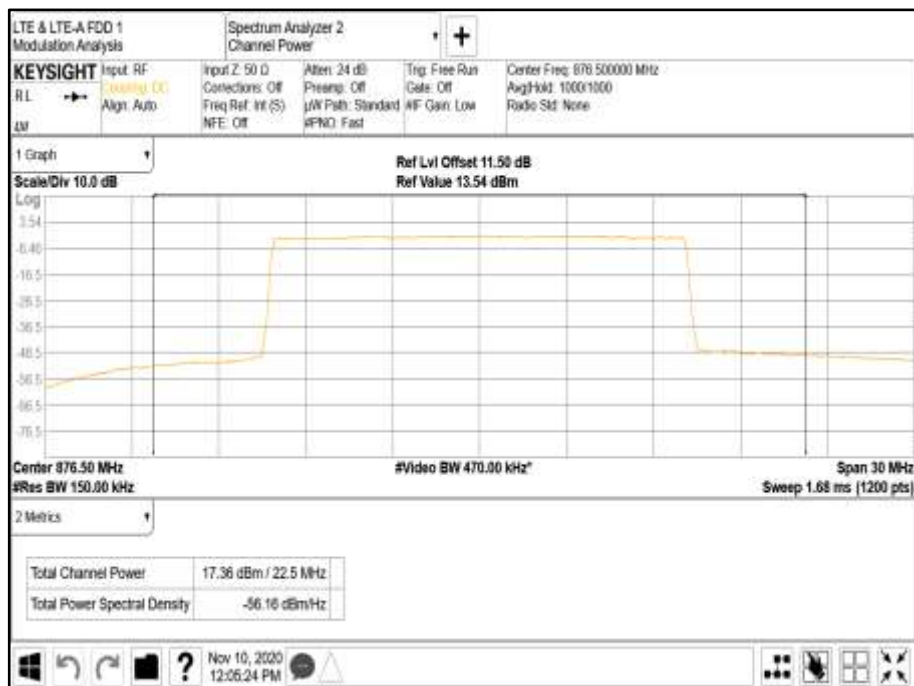




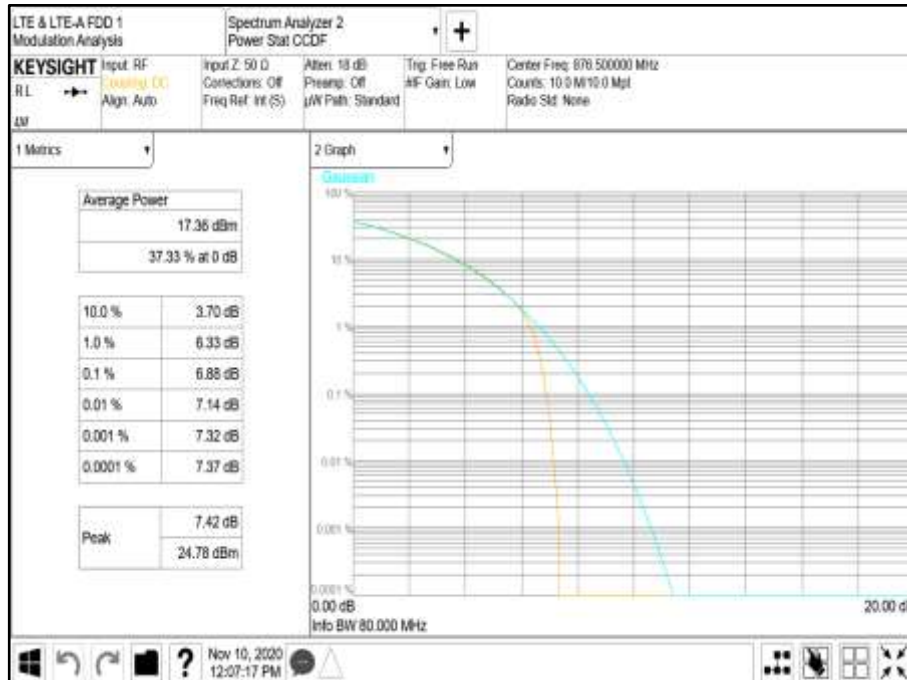
Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position B



Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position B



Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position B



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position B



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position B



Configuration A

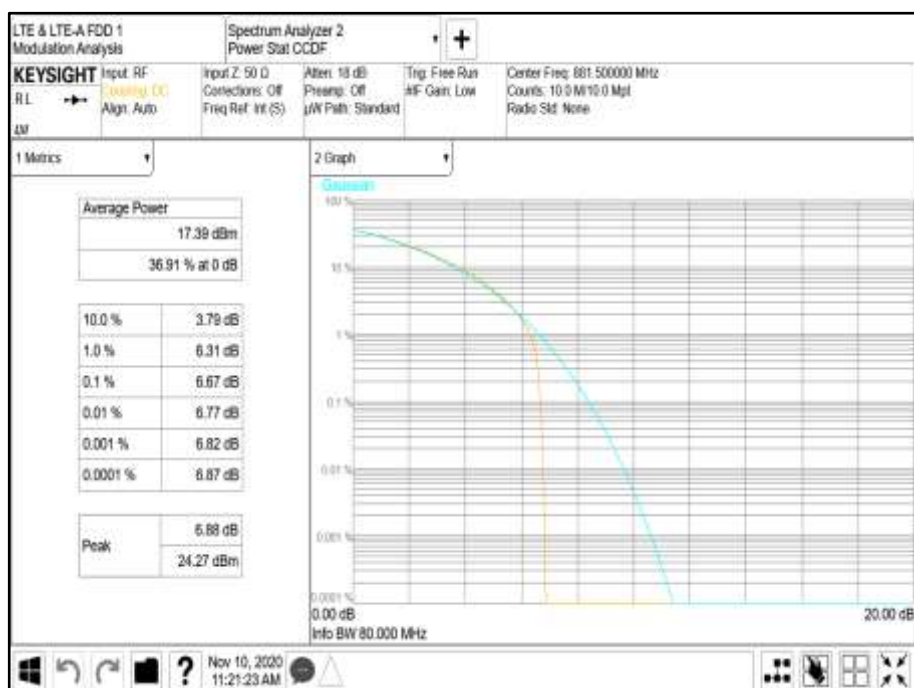
Maximum Output Power 17 dBm / Port

Antenna	Modulation	Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position M		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	NR: QPSK	5.0 MHz	6.88	17.35	11.85
B	NR: QPSK	5.0 MHz	-	17.42	11.85
Total			-	20.40	14.86
A	NR: QPSK	10.0 MHz	6.87	17.40	8.56
B	NR: QPSK	10.0 MHz	-	17.36	8.56
Total			-	20.39	11.57
A	NR: QPSK	15.0 MHz	7.04	17.38	6.77
B	NR: QPSK	15.0 MHz	-	17.29	6.77
Total			-	20.35	9.78
A	NR: QPSK	20.0 MHz	7.28	17.29	5.43
B	NR: QPSK	20.0 MHz	-	17.07	5.43
Total			-	20.19	8.44

Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M



Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M



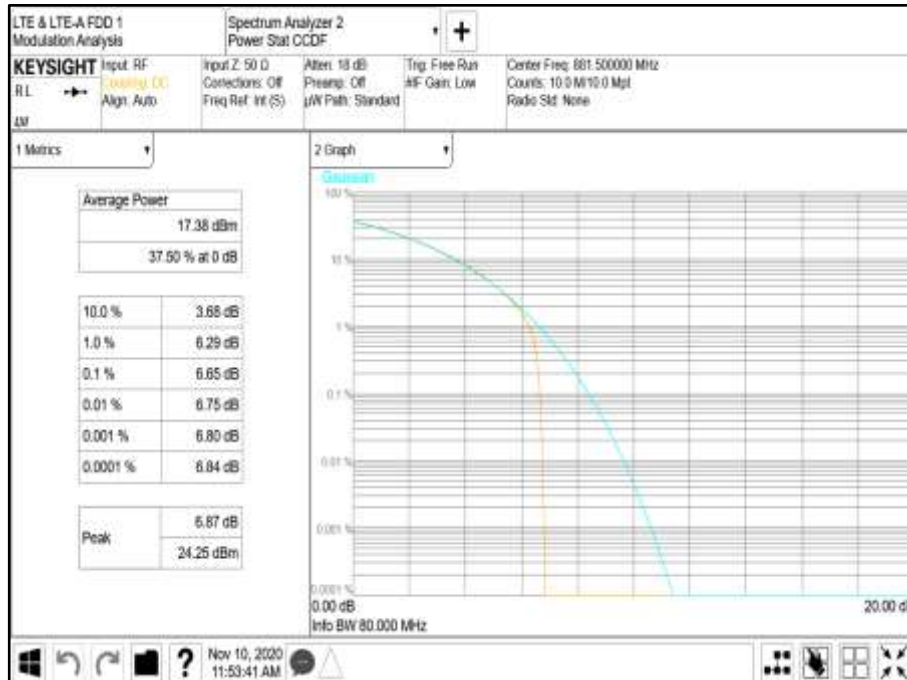
Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M



Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position M



Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position M



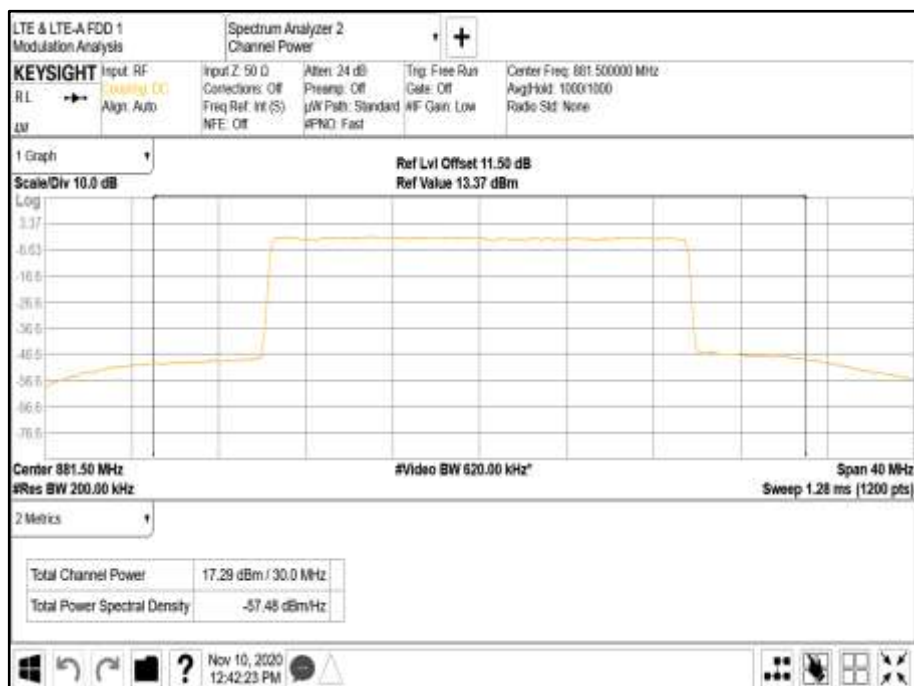
Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position M



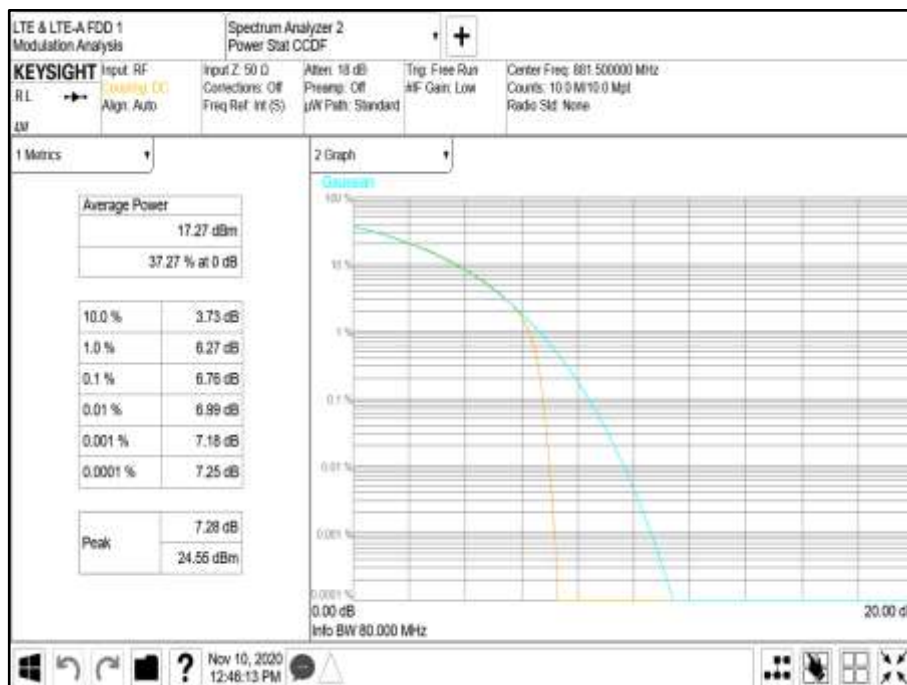
Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position M



Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position M



Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position M



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position M



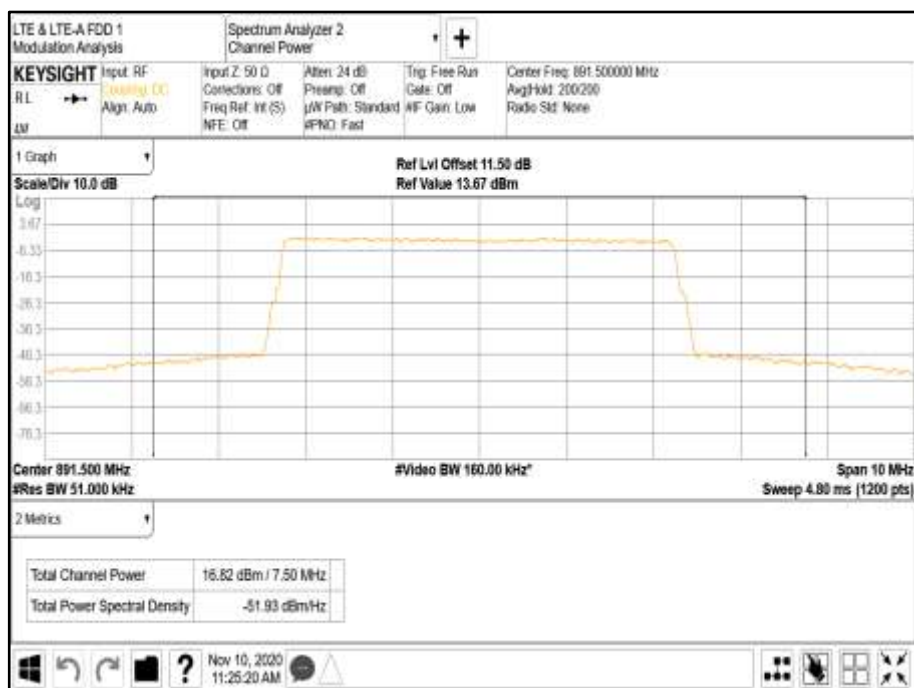


Configuration A

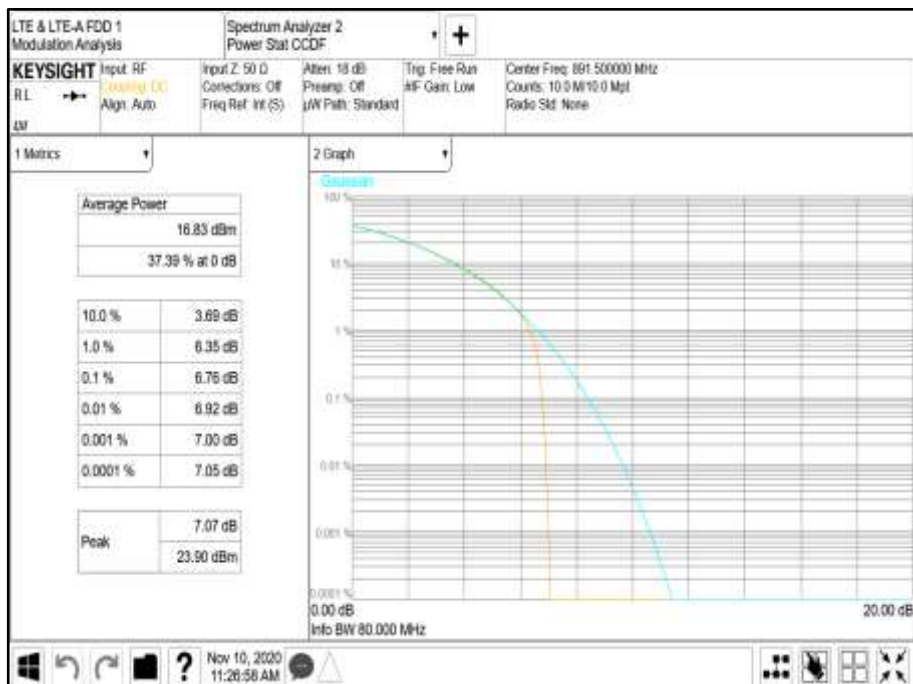
Maximum Output Power 17 dBm / Port

Antenna	Modulation	Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position T		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	NR: QPSK	5.0 MHz	7.07	16.82	11.18
B	NR: QPSK	5.0 MHz	-	16.74	11.18
Total			-	19.79	14.19
A	NR: QPSK	10.0 MHz	7.24	17.02	8.04
B	NR: QPSK	10.0 MHz	-	16.94	8.04
Total			-	19.99	11.05
A	NR: QPSK	15.0 MHz	7.73	17.16	6.60
B	NR: QPSK	15.0 MHz	-	17.09	6.60
Total			-	20.14	9.61
A	NR: QPSK	20.0 MHz	7.92	17.15	5.34
B	NR: QPSK	20.0 MHz	-	17.00	5.34
Total			-	20.09	8.35

Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position T



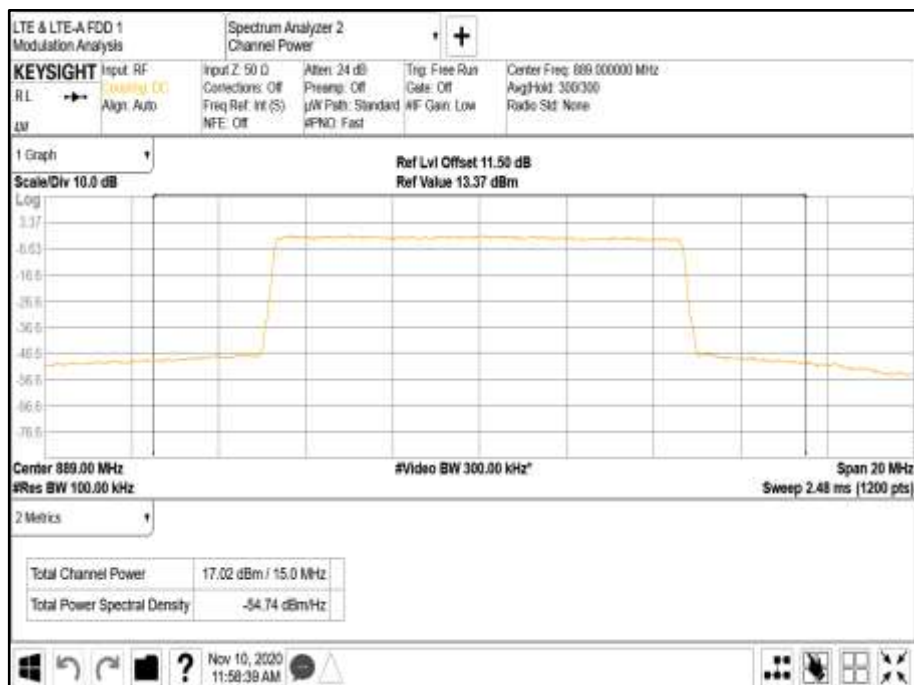
Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position T



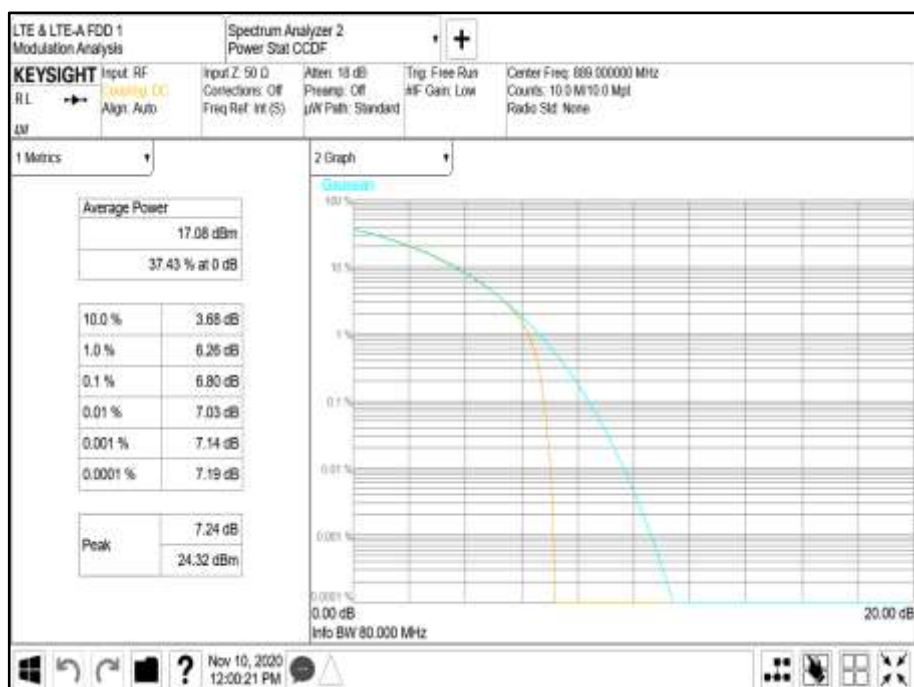
Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position T



Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position T



Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position T



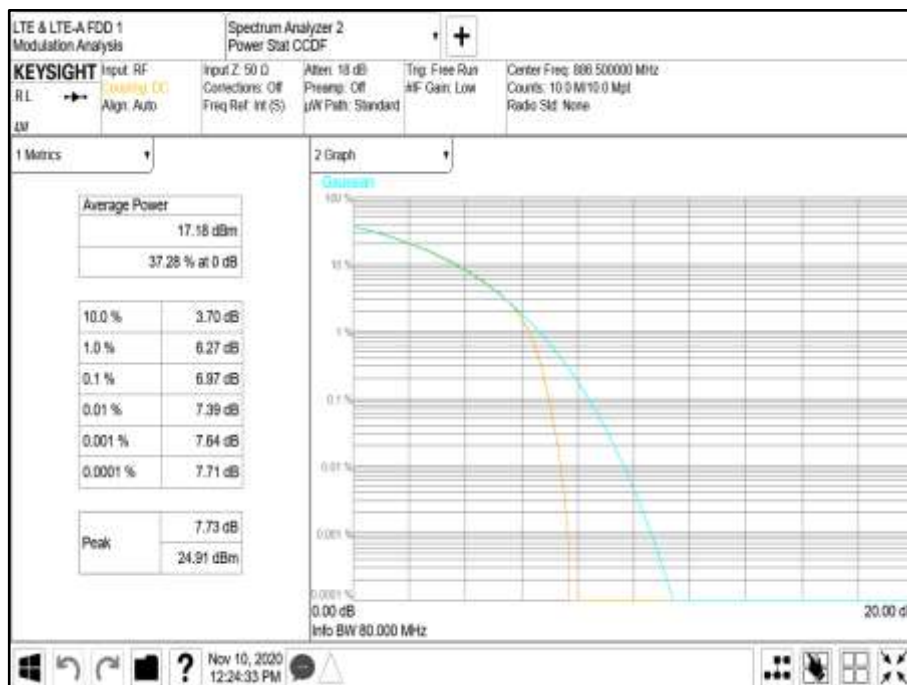
Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position T



Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position T



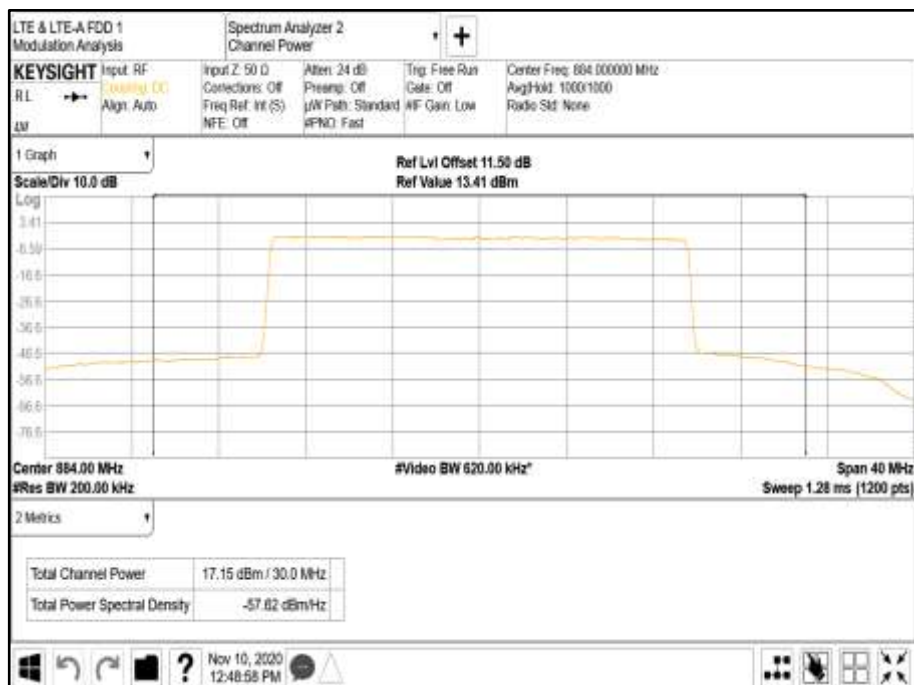
Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position T



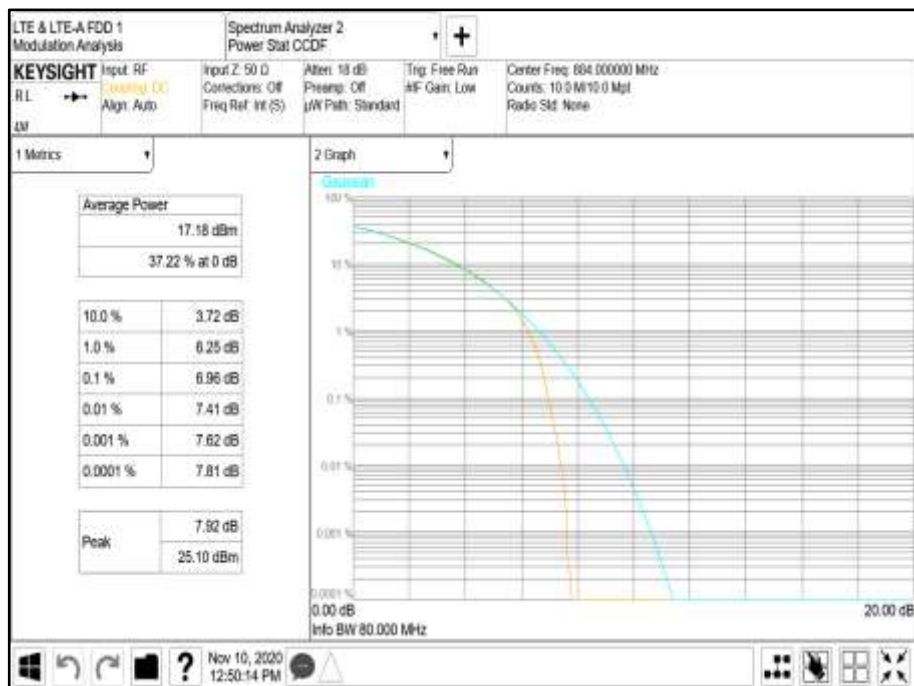
Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position T



Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position T



Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position T



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position T



Configuration B

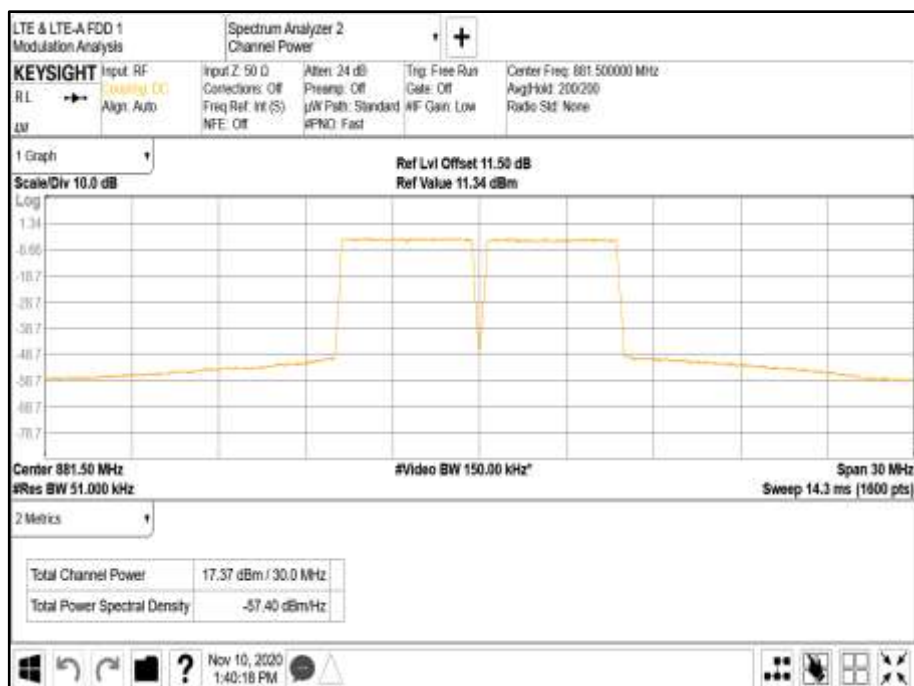
Maximum Output Power 17.00 dBm / Port

Antenna	Modulation	Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position M		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	LTE + NR: QPSK	5.0+5.0 MHz	-	17.37	-
B	LTE + NR: QPSK	5.0+5.0 MHz	-	17.31	-
Total			-	20.35	-
A	LTE + NR: QPSK	10.0+10.0 MHz	-	17.57	-
B	LTE + NR: QPSK	10.0+10.0 MHz	-	17.39	-
Total			-	20.49	-

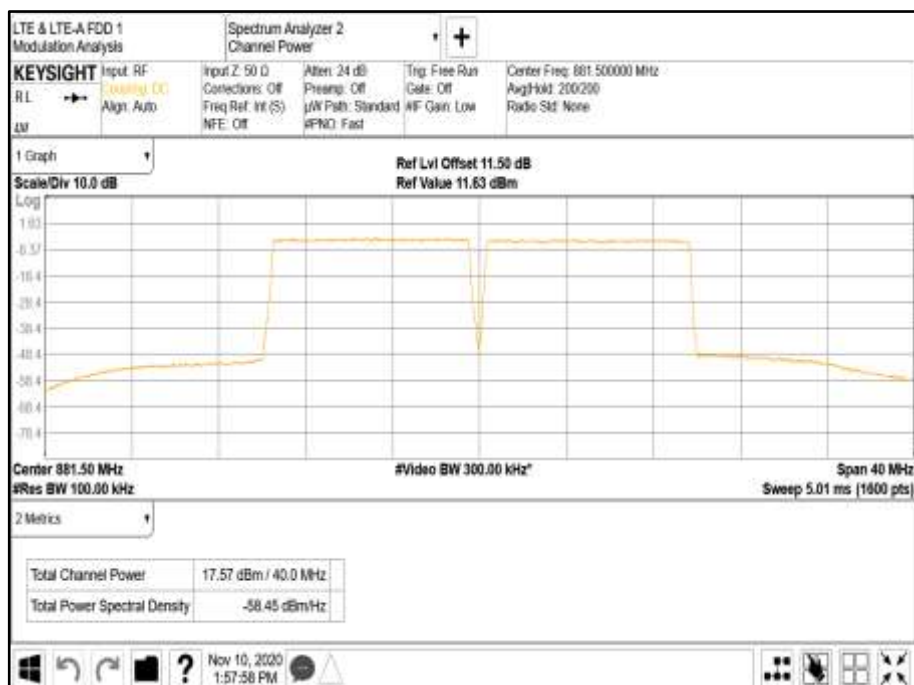
Remarks

1. Two carrier transmitter performance is presented. 2. The plot results represent typical radio performance across all channels. 3. The highest power transmitter configuration is presented for compliance. 4. Plot data performance for all transmitter ports and channels are available on request.

Antenna A - Modulation LTE+NR: QPSK - Carrier Bandwidth 5.0+5.0 MHz - Channel Position M



Antenna A - Modulation LTE+NR: QPSK - Carrier Bandwidth 10.0+10.0 MHz - Channel Position M





Configuration C

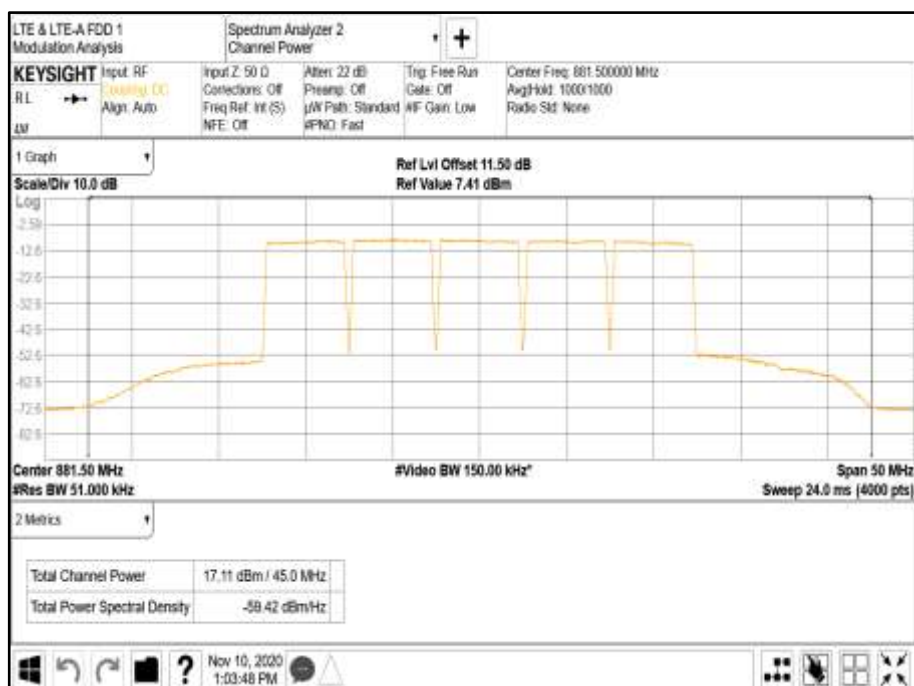
Maximum Output Power 17.00 dBm / Port

Antenna	Modulation	Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position M		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	NR: QPSK	5.0+5.0+5.0+5.0+5.0 MHz	-	17.11	-
B	NR: QPSK	5.0+5.0+5.0+5.0+5.0 MHz	-	16.93	-
Total			-	20.03	-
A	2LTE + 3NR: QPSK	5.0+5.0+5.0+5.0+5.0 MHz	-	17.29	-
B	2LTE + 3NR: QPSK	5.0+5.0+5.0+5.0+5.0 MHz	-	17.06	-
Total			-	20.19	-

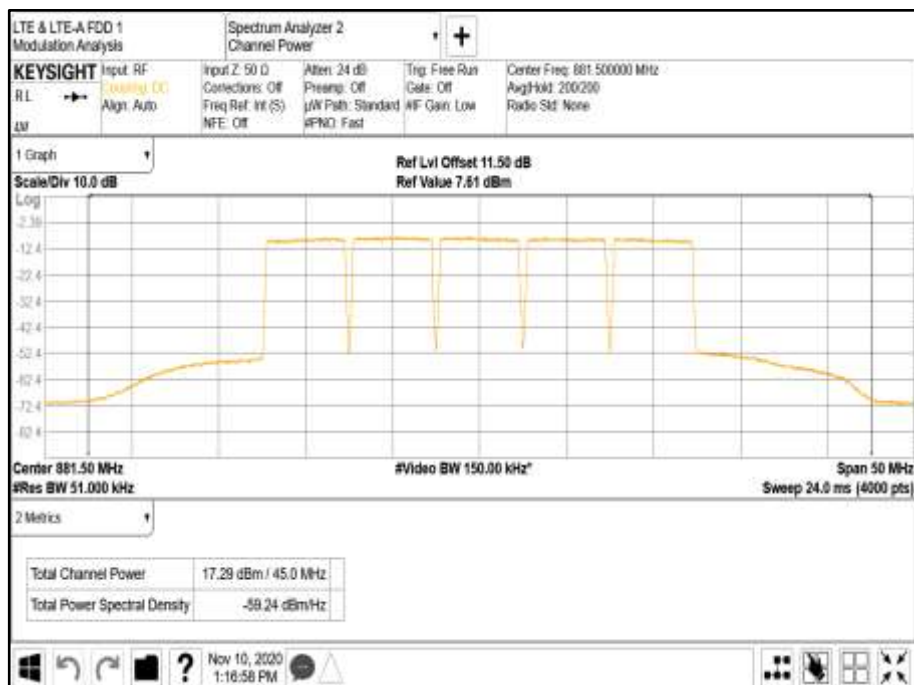
Remarks

1. Five carrier transmitter performance is presented. 2. The plot results represent typical radio performance across the transmit pass band. 3. The highest power transmitter configuration is presented for compliance. 4. The 5MHz carrier configuration occupies the full pass band of 25MHz.

Antenna A - Modulation NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0 MHz - Channel Position M



Antenna A - Modulation LTE+NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0 MHz - Channel Position M



Limit	
Peak Power	≤ 1640 W or ≤ +62.15 dBm

The radio unit was tested with maximum output power and without an antenna. ERP/EIRP compliance is addressed at the time of licensing, as required by the responsible FCC/ISED Bureau(s). Licensees are required to take into account maximum allowed antenna gain used in combination with the above power settings to prevent the radiated output power exceeding the limits.



2.2 OCCUPIED BANDWIDTH

2.2.1 Specification Reference

FCC CFR 47 Part 22, Clause 22.917 (b)
ISED RSS-GEN, Clause 6.7
ISED RSS-132, Clause 5.5
FCC CFR 47 Part 2, Clause 2.1049

2.2.2 Date of Test and Modification State

9 Nov 2020: Modification State 0

2.2.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.4 Environmental Conditions

Ambient Temperature 24.9°C
Relative Humidity 29.8%

2.2.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01.

2.2.6 Test Results

Configuration A

Maximum Output Power 17 dBm / Port

Modulation	Carrier Bandwidth	Result (MHz)	
		Channel Bandwidth	
		Occupied Bandwidth	-26 dB Bandwidth
NR: QPSK	NR: 5.0 MHz	4.46	4.74
NR: QPSK	NR: 10.0 MHz	9.27	9.66
NR: QPSK	NR: 15.0 MHz	14.09	14.61
NR: QPSK	NR: 20.0 MHz	18.89	19.59

Remarks

Representative occupied bandwidth performance results presented. Plot data performance for all transmitter ports and channel positions are on file and available on request.



2.3 BAND EDGE

2.3.1 Specification Reference

FCC CFR 47 Part 22, Clause 22.917(b)
ISED RSS-132, Clause 5.5
FCC CFR 47 Part 2, Clause 2.1051

2.3.2 Date of Test and Modification State

9 Nov 2020: Modification State 0

2.3.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.4 Environmental Conditions

Ambient Temperature 24.9°C
Relative Humidity 29.8%

2.3.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01.

The EUT has 2 transmit ports, therefore, the test limits used were calculated on a worst-case basis accounting for an effective 2 port MIMO configuration.

Testing was performed with a test limit of $43+10\log(P) - 10\log(2) = -16$ dBm

2.3.6 Test Results

Configuration A

Maximum Output Power 17 dBm / Port

Antenna	Modulation	Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	NR: QPSK	LTE: 5.0 MHz	871.5	891.5
A	NR: QPSK	LTE: 10.0 MHz	874.0	889.0
A	NR: QPSK	LTE: 15.0 MHz	876.5	886.5
A	NR: QPSK	LTE: 20.0 MHz	879.0	884.0

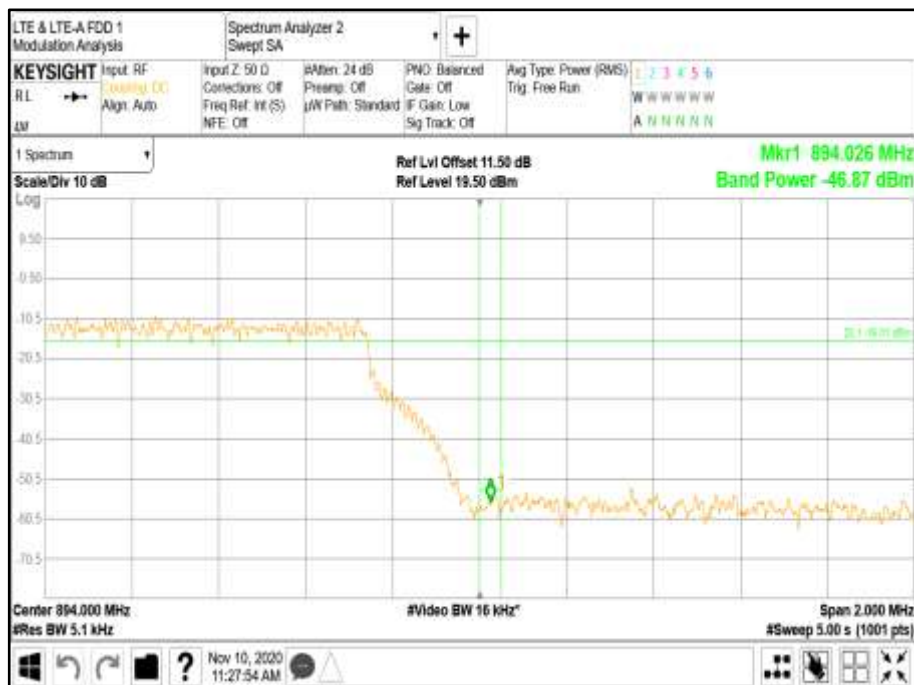
Remarks

1. Bandedge data was captured from the transmit port with maximum measured power.
2. Worst case bandedge data presented.

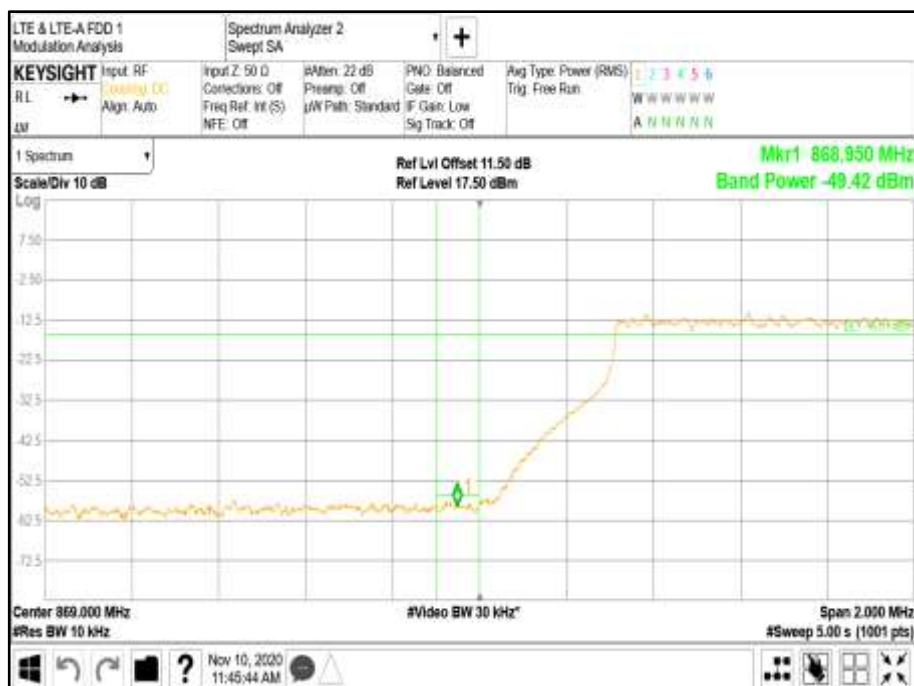
Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 5.0 MHz - Channel Position B



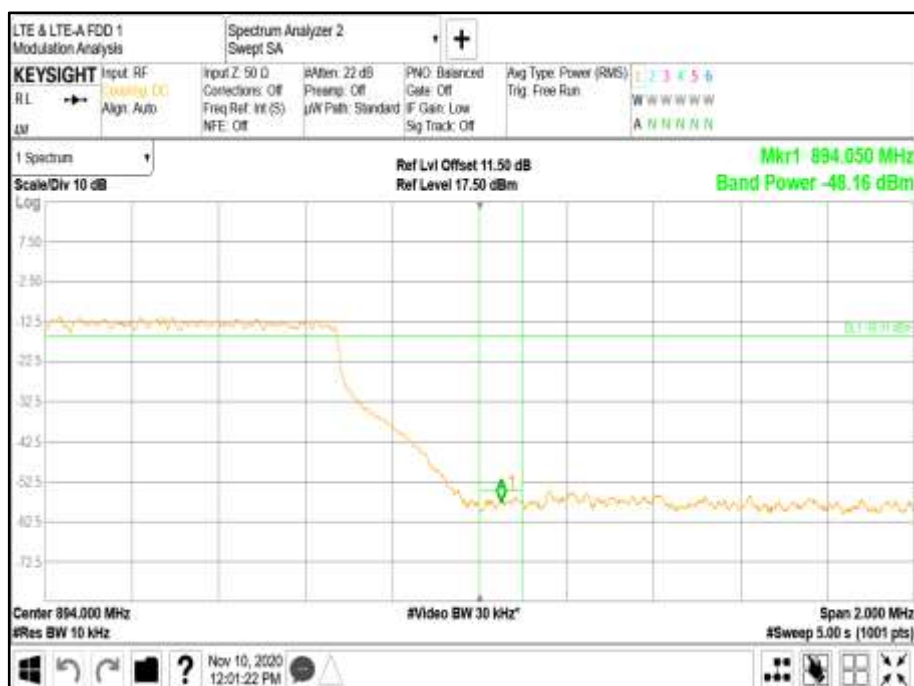
Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 5.0 MHz - Channel Position T



Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 10.0 MHz - Channel Position B



Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 10.0 MHz - Channel Position T



Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 15.0 MHz - Channel Position B



Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 15.0 MHz - Channel Position T



Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 20.0 MHz - Channel Position B



Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 20.0 MHz - Channel Position T





Configuration B

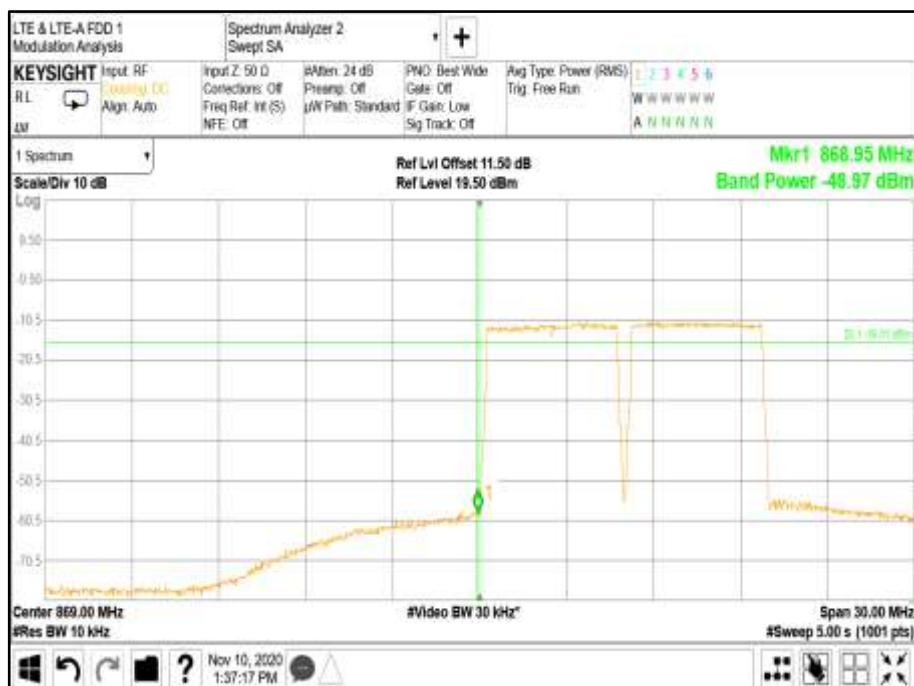
Maximum Output Power 17.00 dBm / Port

Antenna	Modulation	Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	LTE + NR QPSK	5.0+5.0 MHz	871.5+876.5	886.5+891.5
A	LTE + NR QPSK	10.0+10.0 MHz	874.0+884.0	879.0+889.0

Remarks

Two carrier transmitter performance is presented. The plot results represent typical radio performance. Plot data performance for all transmitter ports and channels are on file and available on request.

Antenna A - Modulation LTE + NR QPSK - Carrier Bandwidth 5.0+5.0 MHz - Channel Position B



Antenna A - Modulation LTE + NR QPSK - Carrier Bandwidth 5.0+5.0 MHz - Channel Position T



Antenna A - Modulation LTE + NR QPSK - Carrier Bandwidth 10.0+10.0 MHz - Channel Position B



Antenna A - Modulation LTE + NR QPSK - Carrier Bandwidth 10.0+10.0 MHz - Channel Position T



Configuration C

Maximum Output Power 17.00 dBm / Port

Antenn a	Modulation	Carrier Bandwidth	Band Edge (MHz)	
			Channel Position M	Channel Position T
A	NR: QPSK	5.0+5.0+5.0+5.0+5.0 MHz	871.5+876.5+881.5+886.5+891.5	871.5+876.5+881.5+886.5+891.5
A	2LTE + 3NR: QPSK	5.0+5.0+5.0+5.0+5.0 MHz	871.5+876.5+881.5+886.5+891.5	871.5+876.5+881.5+886.5+891.5

Antennas A - Modulation NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0 MHz - Channel Position B



Antennas A - Modulation NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0 MHz - Channel Position T



Antennas A - Modulation LTE + NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0 MHz - Channel Position B



Antennas A - Modulation LTE + NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0 MHz - Channel Position T



Limit	-16 dBm (-13 dBm - 10log(No. of ports) where N = 2)
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2.4 TRANSCEIVER SPURIOUS EMISSIONS

2.4.1 Specification Reference

FCC CFR 47 Part 22, Clause 22.917(b)
ISED RSS-GEN, Clause 6.13
ISED RSS-132, Clause 5.5
FCC CFR 47 Part 2, Clause 2.1051

2.4.2 Date of Test and Modification State

9 Nov 2020: Modification State 0

2.4.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.4 Environmental Conditions

Ambient Temperature	24.9°C
Relative Humidity	29.8%

2.4.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01.

The EUT has 2 transmit ports, therefore, the test limits used were calculated on a worst-case basis accounting for an effective 2 port MIMO configuration.

Testing was performed with a test limit of $43+10\log(P) - 10\log(2) = -16$ dBm

2.4.6 Test Results

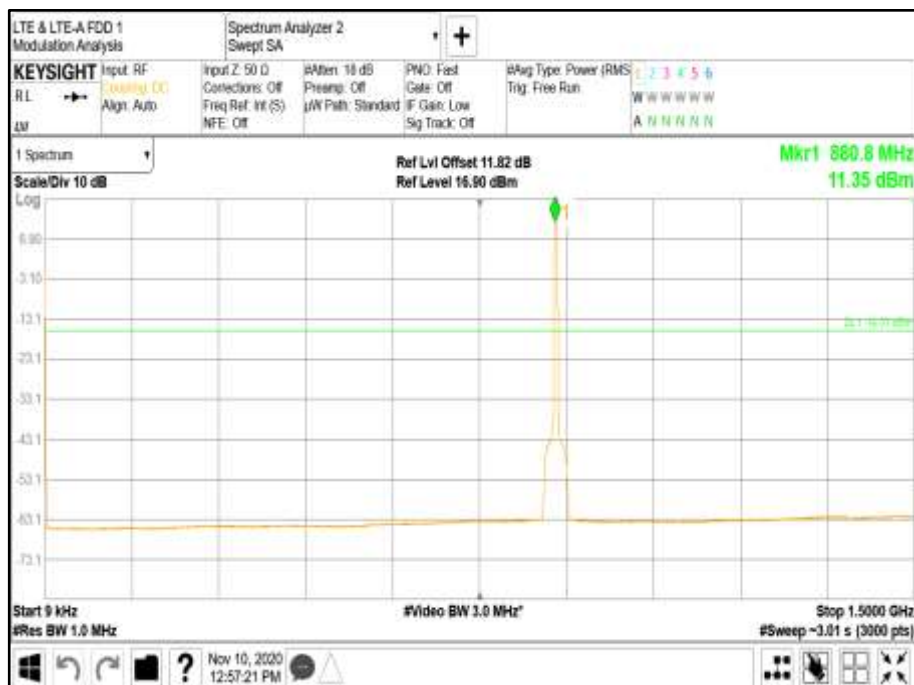
Configuration A

Maximum Output Power 17 dBm / Port

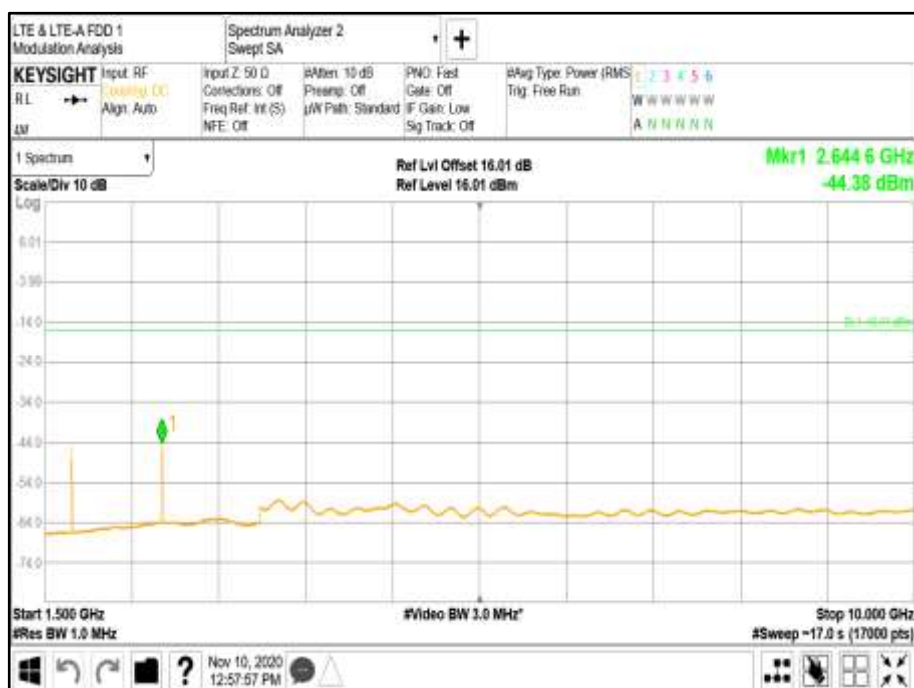
Remarks

1. Transceiver spurious emissions have been searched for all channel bandwidths and antenna ports.
2. Representative spurious emissions performance has been presented for all modulations.
3. Plot data performance for all transmitter ports, channel bandwidths, and channel positions are on file and available on request.

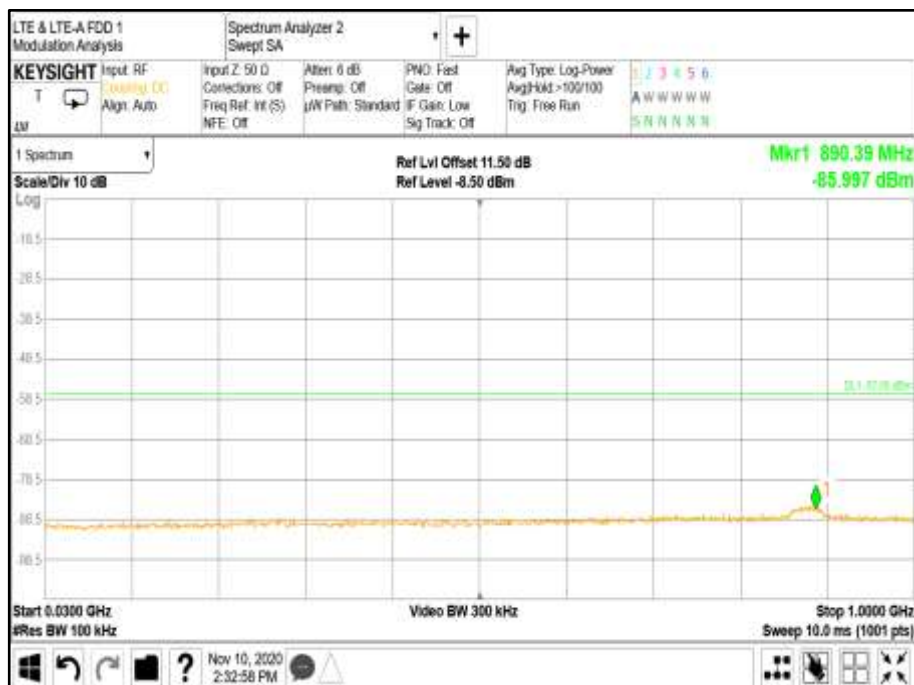
Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1.00 - Range 0.009 to 1500 MHz



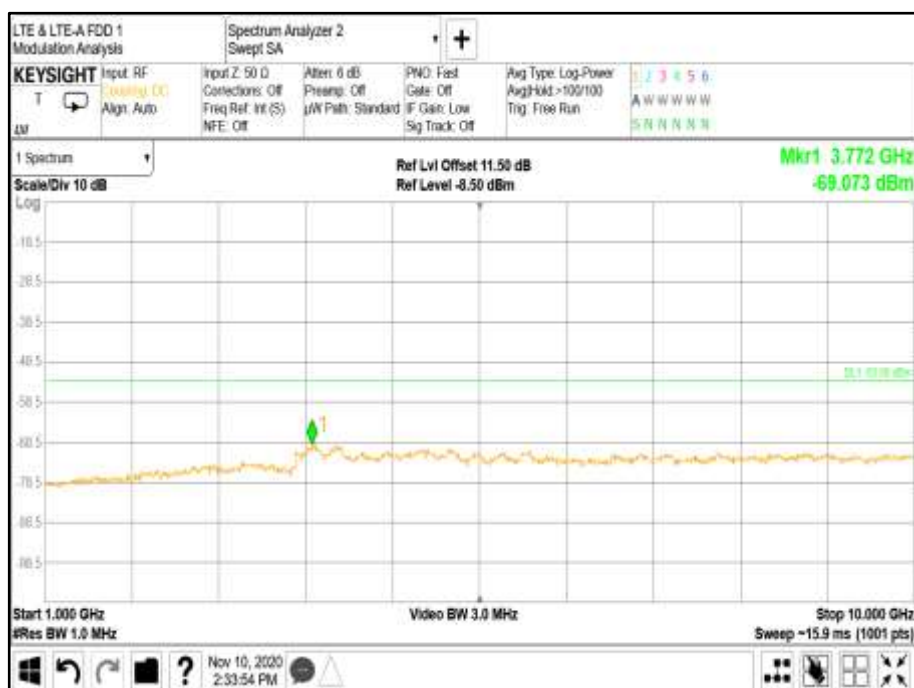
Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2.00 - Range 1500 to 10000 MHz



Modulation RX Spur - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 30 to 1000 MHz



Modulation RX Spur - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1000 to 10000 MHz





Configuration B

Maximum Output Power 17.00 dBm / Port

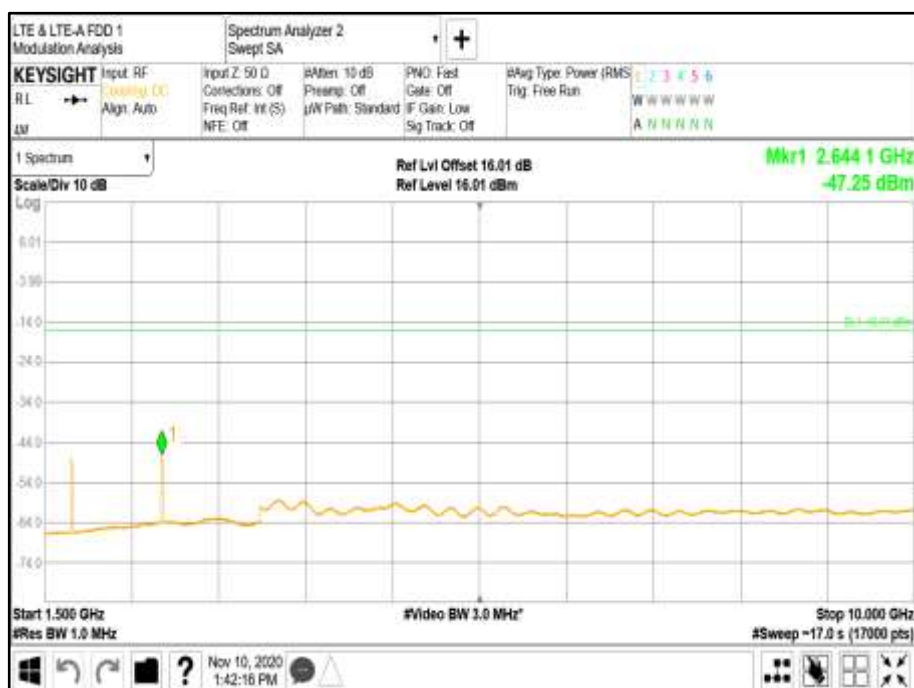
Remarks

1. Transceiver spurious emissions have been searched for all channel bandwidths and antenna ports.
2. Representative spurious emissions performance has been presented for all modulations.
3. Plot data performance for all transmitter ports, channel bandwidths, and channel positions are on file and available on request.

Modulation LTE + NR QPSK - Carrier Bandwidth 5.0+5.0 MHz - Channel Position M - Band 1.00
- Range 0.009 to 1500 MHz



Modulation LTE + NR QPSK - Carrier Bandwidth 5.0+5.0 MHz - Channel Position M - Band 2.00
- Range 1500 to 10000 MHz





Configuration C

Maximum Output Power 17.00 dBm / Port

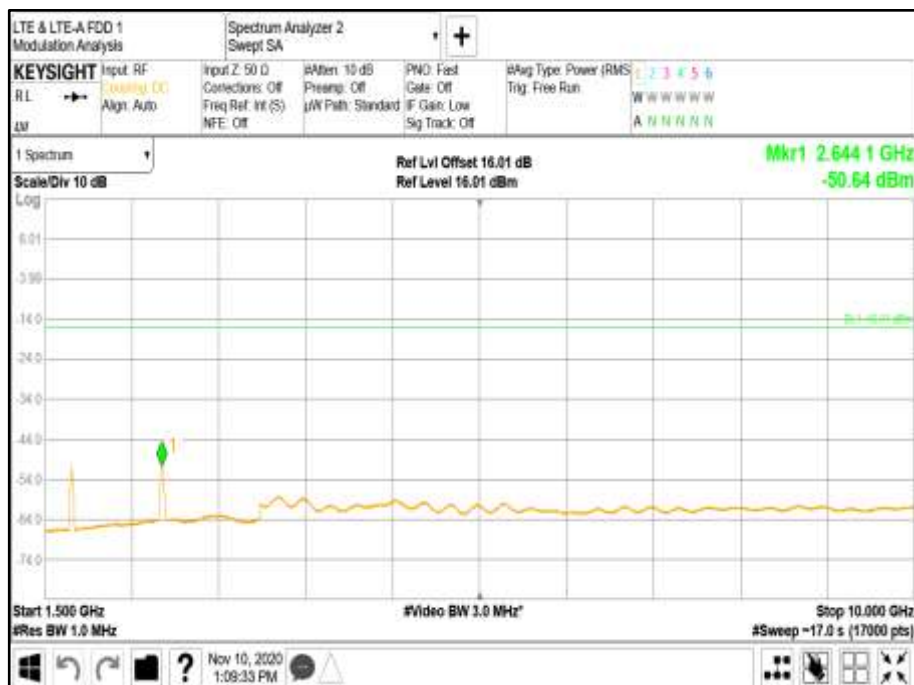
Remarks

1. Transceiver spurious emissions have been searched for all channel bandwidths and antenna ports.
2. Representative spurious emissions performance has been presented for all modulations.
3. Plot data performance for all transmitter ports, channel bandwidths, and channel positions are on file and available on request.

Modulation NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0 MHz - Channel Position M - Band 1.00 - Range 0.009 to 1500 MHz



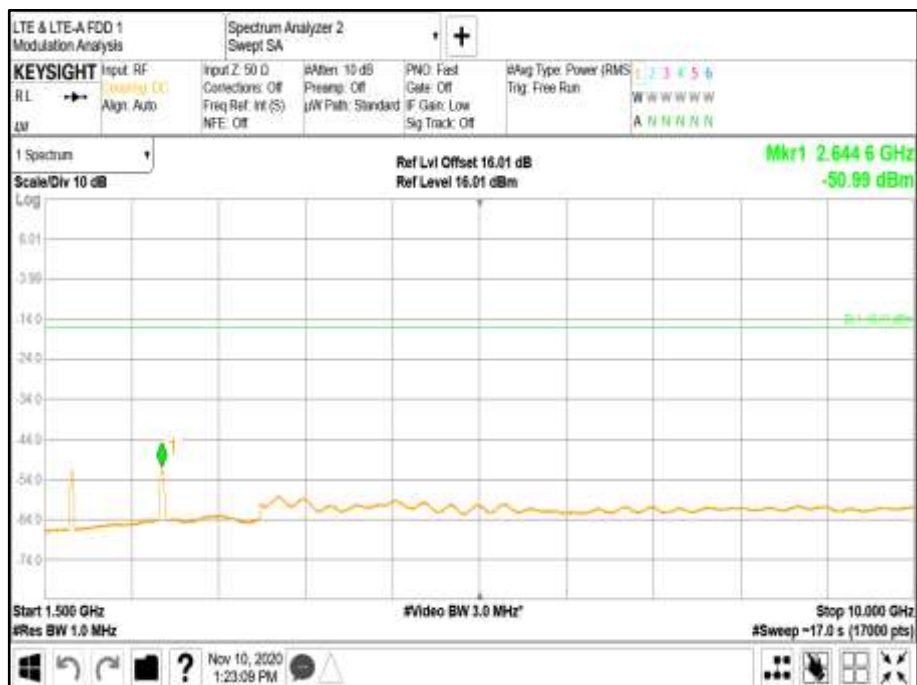
Modulation NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0 MHz - Channel Position M - Band 2.00 - Range 1500 to 10000 MHz



Modulation LTE + NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1500 MHz



Modulation LTE + NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0 MHz - Channel Position M - Band 2.00 - Range 1500 to 10000 MHz



Limit	-16dBm
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SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Spectrum Analyzer	Keysight	PXA N9030B	MY57144347	24	24/04/2022
Digital Multimeter	Fluke	75.00	54041218.00	24	16/11/2020
Thermometer	VWR	61161-364	192595396.00	24	25/10/2021
PSU	Xantrex	XKW60-50	E00109862	-	O/P Mon
Attenuator (10dB)	Mini-Circuits	BW-K10-2W44+	-	-	O/P Mon
RF Switch	Ericsson	RARSW 4x1	1.00	-	O/P Mon
Switching Control Unit	HP	11713A	3748A060876	-	O/P Mon
Climate Chamber	Burnsco	RTC-37P-3-3	-07-07	-	O/P Mon

N/A – Not Applicable

O/P Mon – Output Monitored with Calibrated Equipment



3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter		MU
Conducted Maximum Peak Output Power	30 MHz to 20 GHz Amplitude		± 0.7 dB
Conducted Emissions	30 MHz to 20 GHz Amplitude		± 2.1 dB
Frequency Stability	30 MHz to 2 GHz		± 5.0 Hz
Occupied Bandwidth	Up to 20 MHz Bandwidth	5 MHz Bandwidth	± 11547 Hz
		10 MHz Bandwidth	± 23094 Hz
		15 MHz Bandwidth	± 34641 Hz
		20 MHz Bandwidth	± 46188 Hz
Band Edge	30 MHz to 20 GHz Amplitude		± 0.8 dB
Radiated Spurious Emissions	30 MHz to 1 GHz		± 5.2 dB
	1 GHz to 40GHz		± 6.3 dB

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2007, clause 4.4.3 and 4.5.1.



SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



Testing Laboratory
Certificate #2955.19

This report relates only to the actual item/items tested.

This report does not imply product endorsement by any government, accreditation agency, or TÜV SÜD Canada Inc.

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This report relates only to the actual item/items tested.

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ANNEX A

MODULE LIST



Configuration A			
Product	Product No	R-State	Serial No
CT11	LPC 102 494/1	R2A	T01G495060
SUP 6601	1/BFL 901 009/1	R3B	BR81278870
IRU 2242	KRC 161 444/2	R2A	C829960688
RD 2242 B5 (EUT)	KRY 901 332/1	R1D	TD3T930441
Software Version:	CXP 901 3268/14	Revision:	R79FE