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Report On

FCC and IC Testing of the
Ericsson Remote Radio Unit LTE and NB-IoT GB and SA KRC 161 414/1,
RRUS 32 B2 (1900 MHz), with compatible Main Unit in a Base Station
configuration in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 24,
Industry Canada RSS-GEN and Industry Canada RSS-133

COMMERCIAL-IN-CONFIDENCE

FCC ID: TA8AKRC161414-1
IC ID: 287AB-AS1614141

PREPARED BY

Maggie Whiting
Key Account Manager

APPROVED BY

Simon Bennett
Authorised Signatory

DATED

25 May 2018



Product Service

CONTENTS

Section	Page No
1	REPORT INFORMATION 2
1.1	Report Details 3
1.2	Brief Summary of Results 4
1.3	Configuration Description 5
1.4	Declaration of Build Status 6
1.5	Product Information 7
1.6	Test Setup 8
1.7	Test Conditions 9
1.8	Deviation From The Standard 9
1.9	Modification Record 9
2	TEST DETAILS 10
2.1	Maximum Peak Output Power and Peak to Average Ratio - Conducted 11
2.2	Occupied Bandwidth 20
2.3	Band Edge 28
2.4	Transmitter Spurious Emissions 35
2.5	Radiated Emissions 54
3	TEST EQUIPMENT USED 80
3.1	Test Equipment Used 81
3.2	Measurement Uncertainty 83
4	ACCREDITATION, DISCLAIMERS AND COPYRIGHT 84
4.1	Accreditation, Disclaimers and Copyright 85
ANNEX A	Module Lists A.2



Product Service

SECTION 1

REPORT INFORMATION



Product Service

1.1 REPORT DETAILS

Manufacturer	Ericsson
Address	Torshamnsgatan 23 Kista SE-16480 Stockholm Sweden
Product Name	RRUS 32 B2
Product Number	KRC 161 414/1
IC Model Name	AS1614141
Serial Number(s)	CF84457717
Software Version	CXP9013268%12_FCCTST1.xlf
Hardware Version	R1D
Test Specification/Issue/Date	FCC CFR 47 Part 2: 2017 FCC CFR 47 Part 24: 2017 Industry Canada RSS-GEN: Issue 4: 2014 Industry Canada RSS-133: Issue 6: 2013
Start of Test	18 April 2018
Finish of Test	17 May 2018
Name of Engineer(s)	Ashok Kumar Joe Santos Nicolas Salguero Camarena
Related Document(s)	KDB 971168 D01 v03r01 KDB 662911 D01 v02r01 ANSI C63.26:2015



Product Service

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 24, Industry Canada RSS-GEN and Industry Canada RSS-133 is shown below.

Section	Specification Clause				Test Description	Result
	FCC CFR 47 Part 2	FCC CFR 47 Part 24	RSS- GEN	RSS- 133		
2.1	2.1046	24.232 (a)	-	6.4	Maximum Peak Output Power and Peak to Average Ratio - Conducted	Pass
2.2	2.1049	24.238 (b)	6.6	-	Occupied Bandwidth	Pass
2.3	2.1051	24.238 (b)	-	6.5	Band Edge	Pass
2.4	2.1051	24.238 (a)	-	6.5	Transmitter Spurious Emissions	Pass
2.5	2.1053	24.238(a)	-	6.5	Radiated Emissions	Pass



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1.3 CONFIGURATION DESCRIPTION

Configuration	RAT	No. Of carriers	Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
				Bottom	Middle	Top
A	LTE+NB IoT GB	1	10 MHz	1935.0	-	1985.0
A	LTE+NB IoT GB	1	15 MHz	1937.5	-	1982.5
A	LTE+NB IoT GB	1	20 MHz	1940.0	-	1980.0
B	LTE+NB IoT GB Carrier Aggregation	2	20 + 20MHz	1940.0 + 1960.0	-	1960.0 + 1980.0
C	NB IoT SA	1	0.18 MHz	1930.2	1960.0	1989.8



Product Service

1.4 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Remote Radio Unit
MANUFACTURER	Ericsson AB
PRODUCT NAME	RRUS 32 B2
PART NUMBER	KRC 161 414/1
IC Model Name	AS1614141
SERIAL NUMBER	CF84457717
HARDWARE VERSION	R1D
SOFTWARE VERSION	CXP9013268%12_FCCTST1.xlf
TRANSMITTER OPERATING RANGE	1930 to 1990 MHz
MODULATIONS	QPSK, 16QAM, 64QAM, 256QAM
INTERMEDIATE FREQUENCIES	-
ITU DESIGNATION OF EMISSION	10 MHz BW channel ¹ : 9M50F9W
	15 MHz BW channel ¹ : 14M2F9W
	20 MHz BW channel ¹ : 18M8F9W
	40 MHz IBW channel ¹ : 38M4F9W
	NB-IoT SA 200 kHz BW channel: 210KW7D
OUTPUT POWER (RMS) (W or dBm)	40W ¹ per port
	NB-IoT SA 20W per port
FCC ID	TA8AKRC161414-1
IC ID	287AB-AS1614141
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	Base station radio

¹ Including 2 NB-IoT GB carriers.

Signature

Linda Grell

Date

2018-05-21

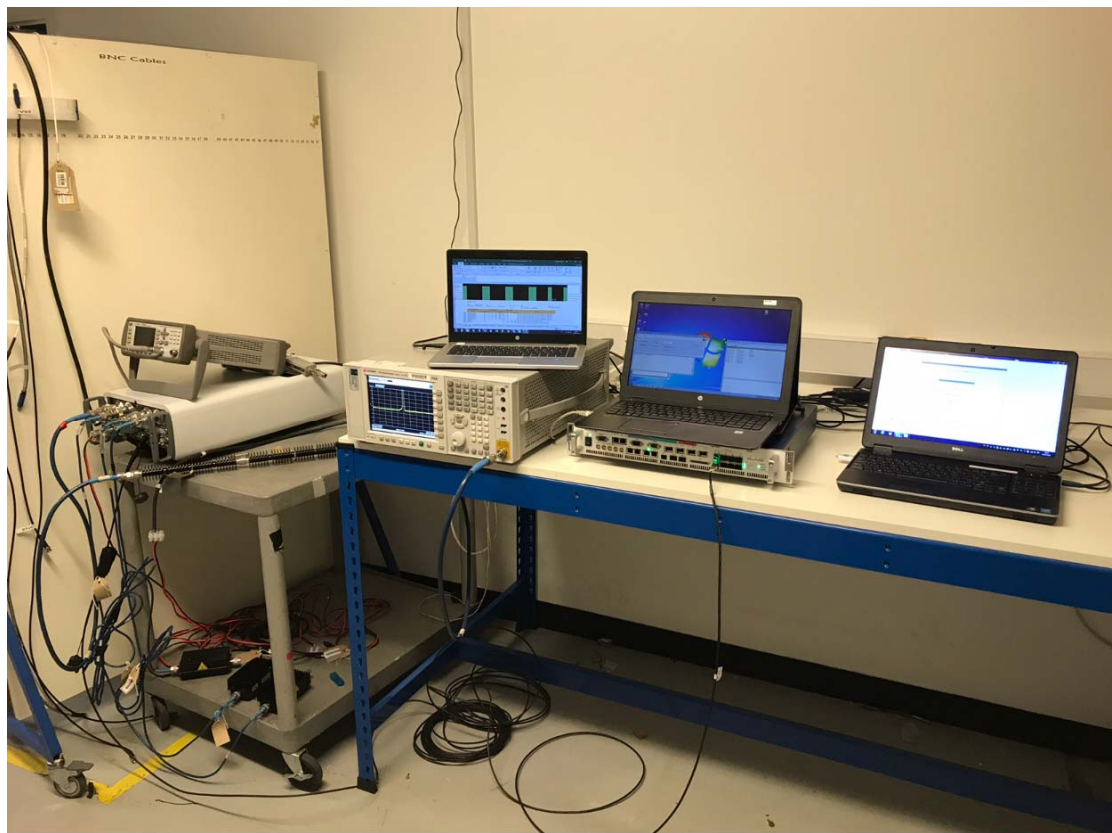
No responsibility will be accepted by TÜV SÜD Product Service UK Limited as to the accuracy of the information declared in this document by the manufacturer.

1.5 PRODUCT INFORMATION

1.5.1 Technical Description

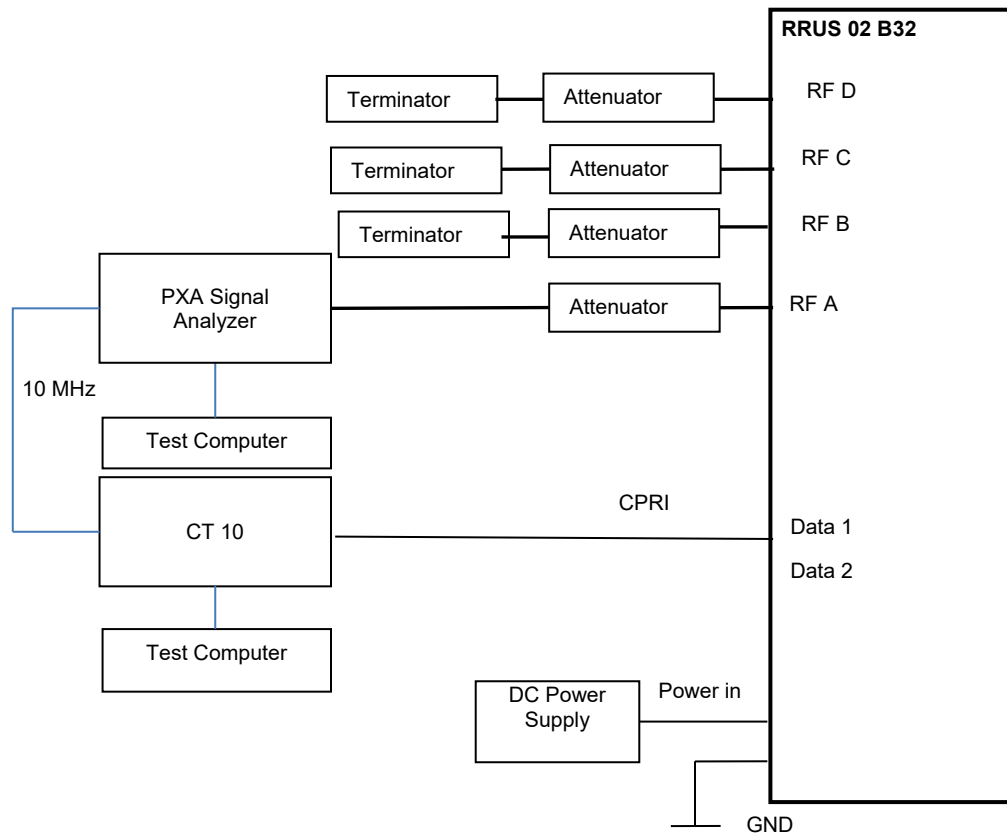
The Equipment Under Test (EUT) KRC 161 414/1 is an Ericsson AB Radio Unit working in the public mobile service (Band) band which provides communication connections to (Band) network. The KRC 161 414/1 operates from a -48V DC supply.

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



Equipment Under Test

1.6 TEST SETUP





Product Service

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 in a shielded enclosure, test laboratories or a chamber as appropriate.

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

FCC Measurement Facility Registration Number
90987 Octagon House, Fareham Test Laboratory

Industry Canada Facility Registration Number
2932B, Site#2932B-1

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.



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SECTION 2

TEST DETAILS



Product Service

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

2.1.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1046
FCC CFR 47 Part 24, Clause 24.232 (a)
Industry Canada RSS-133, Clause 6.4

2.1.2 Date of Test and Modification State

18 April to 17 May 2018 - 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 22-23°C
Relative Humidity 31.6-41%

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.

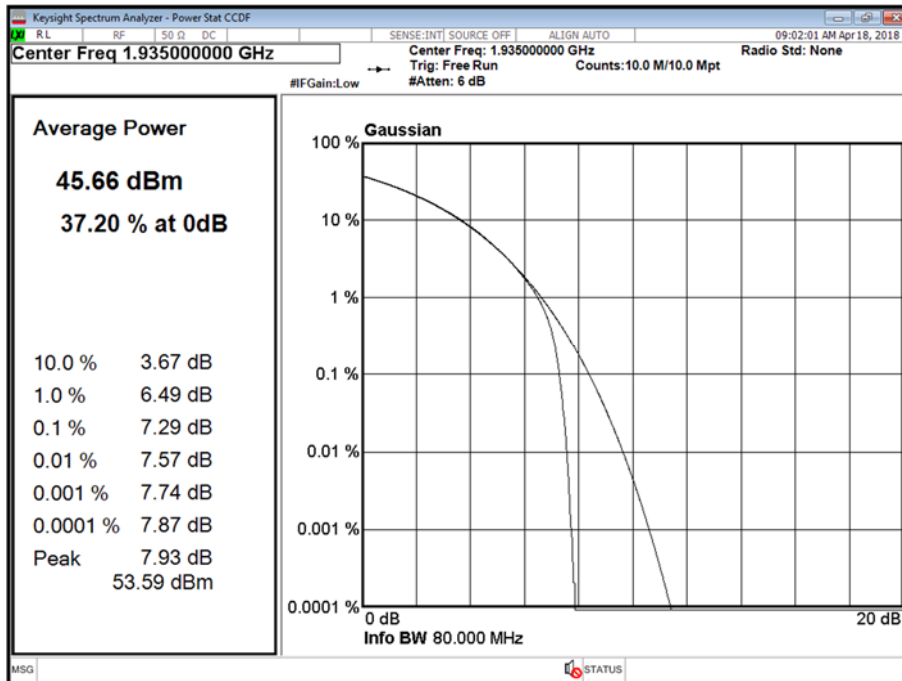
2.1.6 Test Results

Configuration A

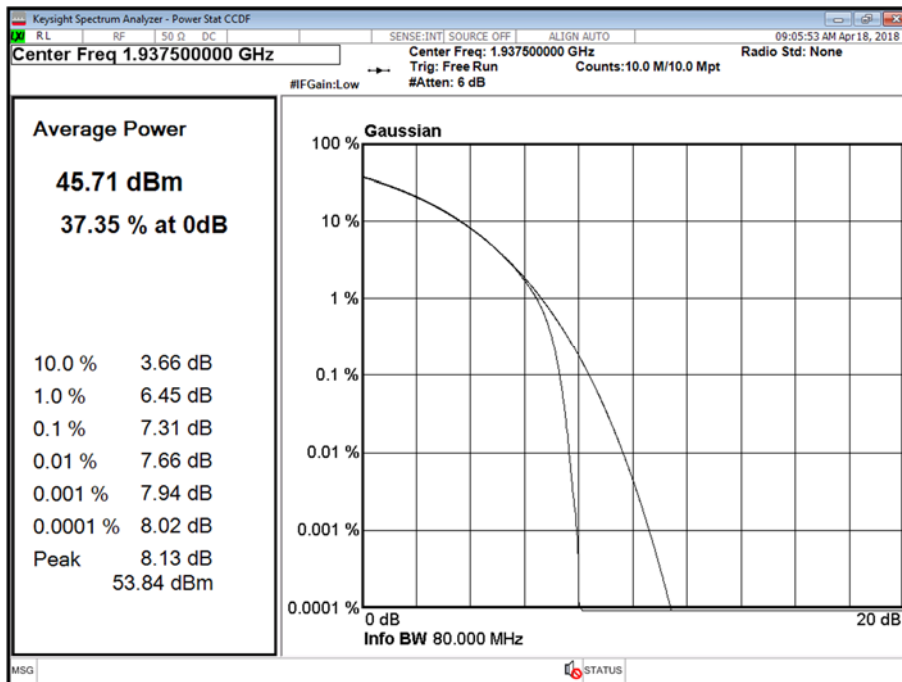
Maximum Output Power 46 dBm

Antenna	LTE / NB-IoT GB Modulation	LTE / NB-IoT GB Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position B		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	L:64QAM / N:QPSK	L:10.0 MHz / N:180 kHz	7.29	45.66	37.15
A	L:64QAM / N:QPSK	L:15.0 MHz / N:180 kHz	7.31	45.71	35.60
A	L:64QAM / N:QPSK	L:20.0 MHz / N:180 kHz	7.39	45.73	34.64

Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:10.0 MHz / N:180 kHz - Channel Position B



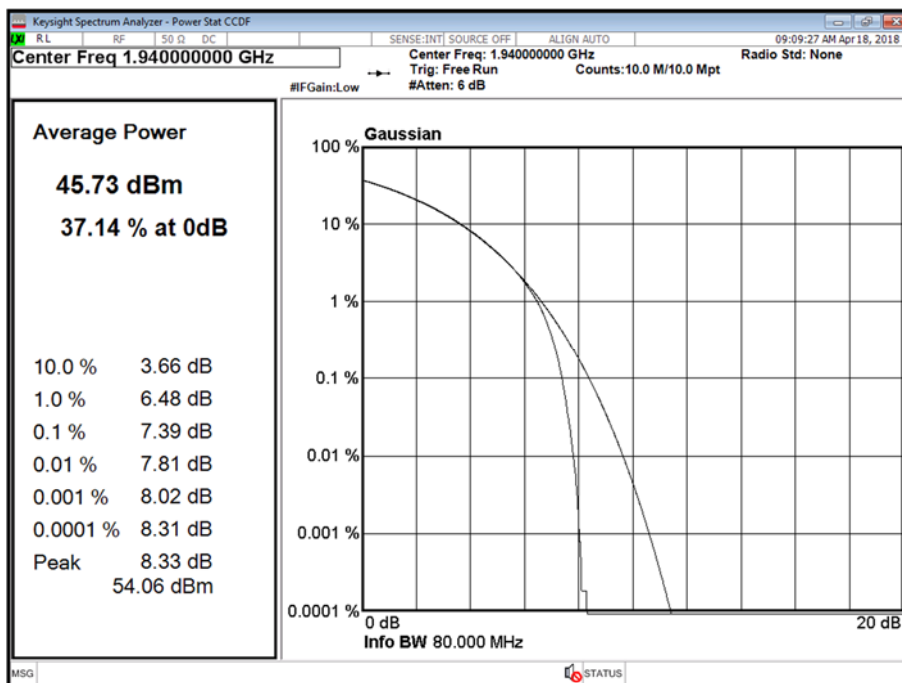
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:15.0 MHz / N:180 kHz - Channel Position B





Product Service

Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:20.0 MHz / N:180 kHz - Channel Position B

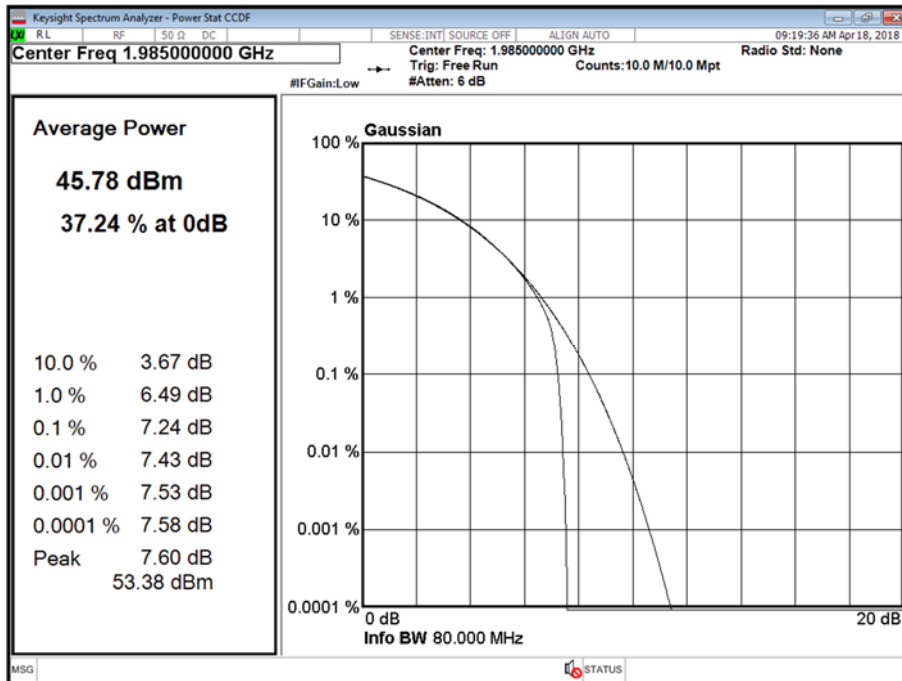


Configuration A

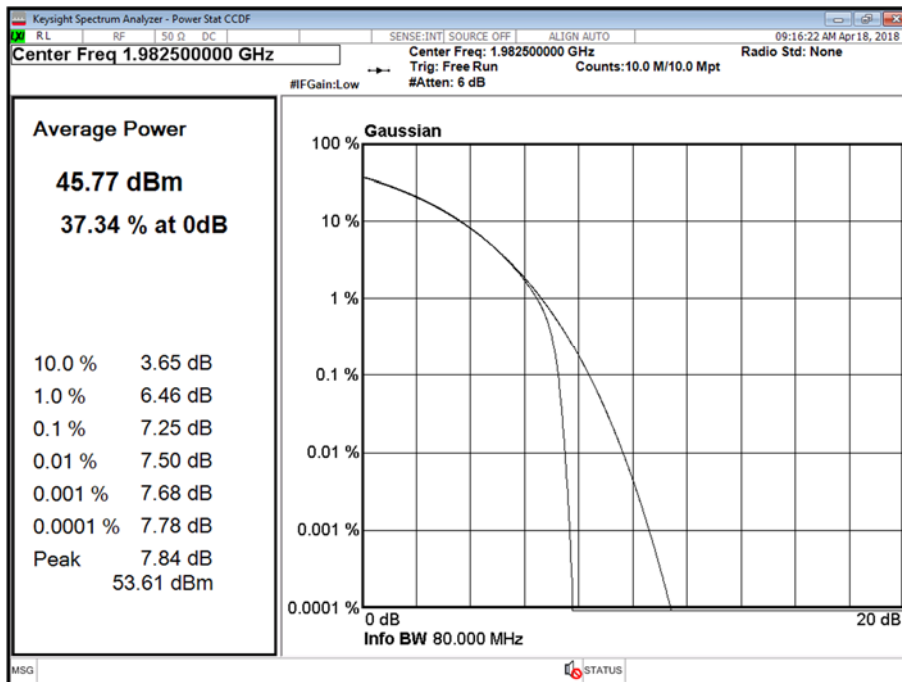
Maximum Output Power 46 dBm

Antenna	LTE / NB-IoT GB Modulation	LTE / NB-IoT GB Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position T		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	L:64QAM / N:QPSK	L:10.0 MHz / N:180 kHz	7.24	45.78	37.50
A	L:64QAM / N:QPSK	L:15.0 MHz / N:180 kHz	7.25	45.77	35.32
A	L:64QAM / N:QPSK	L:20.0 MHz / N:180 kHz	7.30	45.78	31.33

Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:10.0 MHz / N:180 kHz - Channel Position T



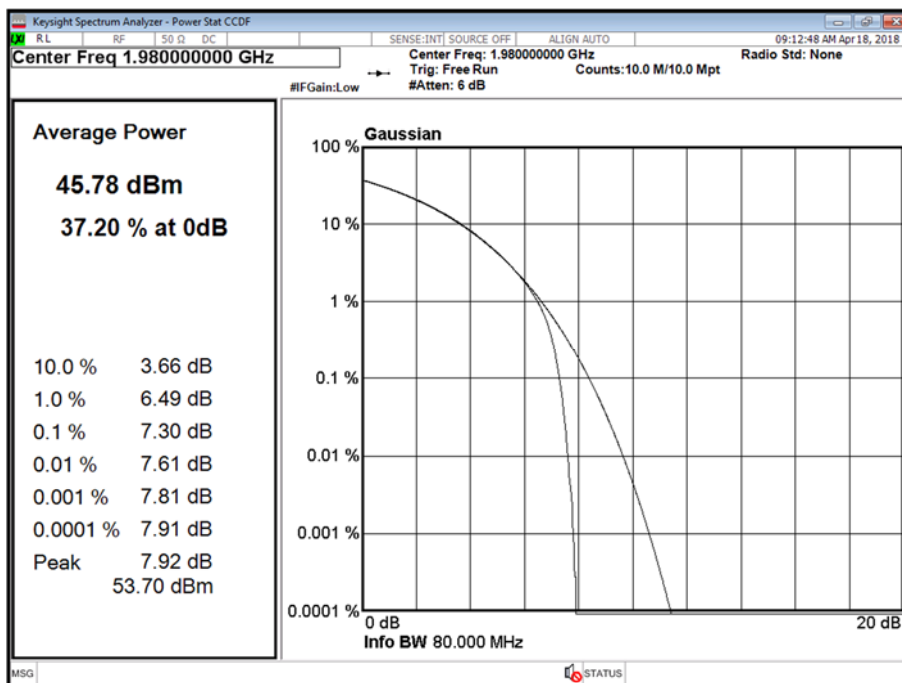
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:15.0 MHz / N:180 kHz - Channel Position T





Product Service

Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:20.0 MHz / N:180 kHz - Channel Position T



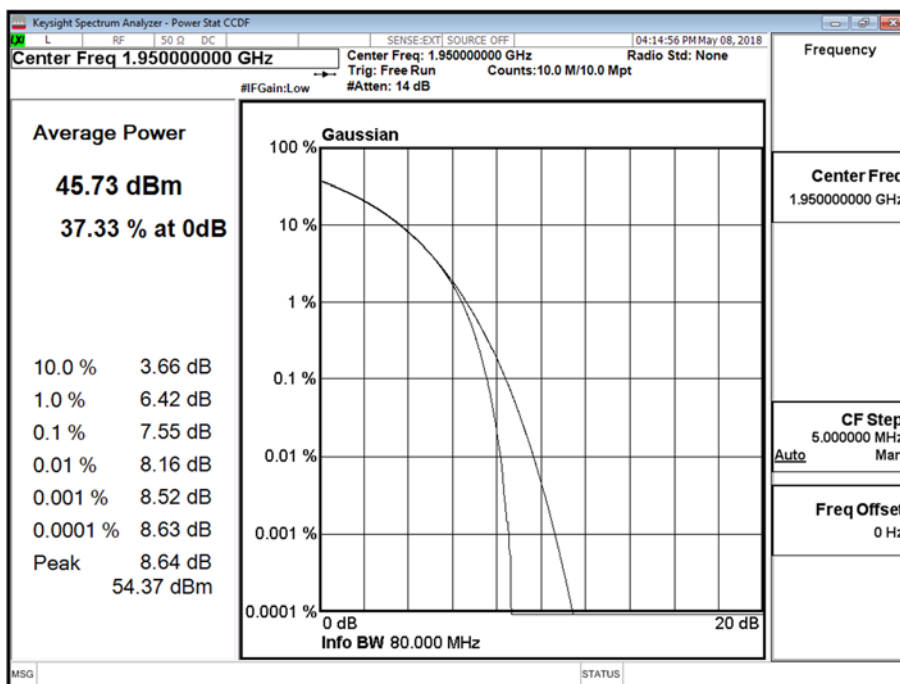
Configuration B

Maximum Output Power 46 dBm

Antenna	LTE / NB-IoT GB Modulation	LTE / NB-IoT GB Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position B		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	L:64QAM / N:QPSK	L:20.0 MHz / N:180 kHz	7.55	45.64	39.93



Product Service



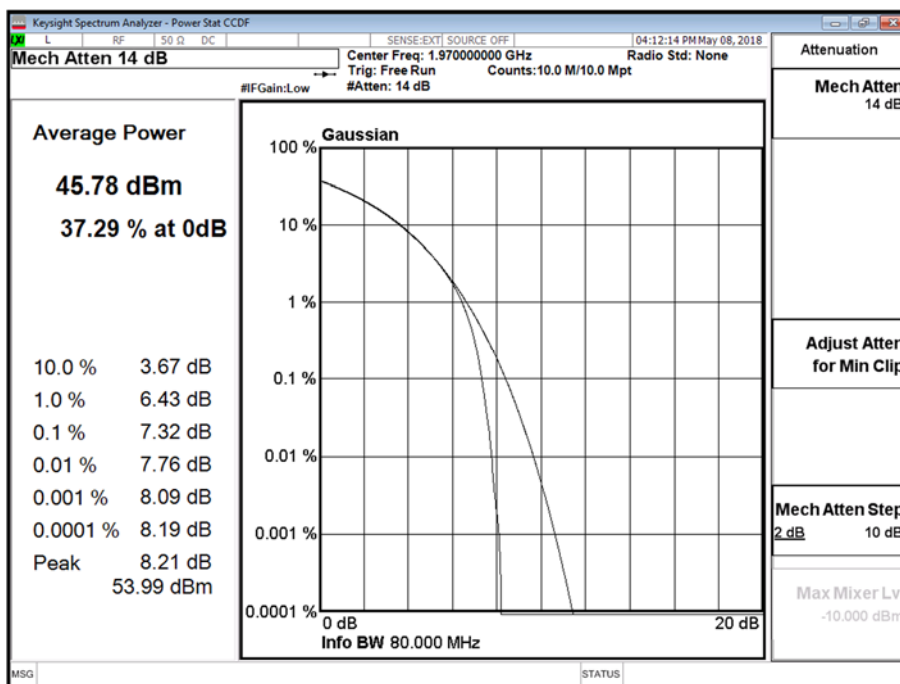
Configuration B

Maximum Output Power 46 dBm

Antenna	LTE / NB-IoT GB Modulation	LTE / NB-IoT GB Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position T		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	L:64QAM / N:QPSK	L:20.0 MHz / N:180 kHz	7.32	45.81	39.42



Product Service



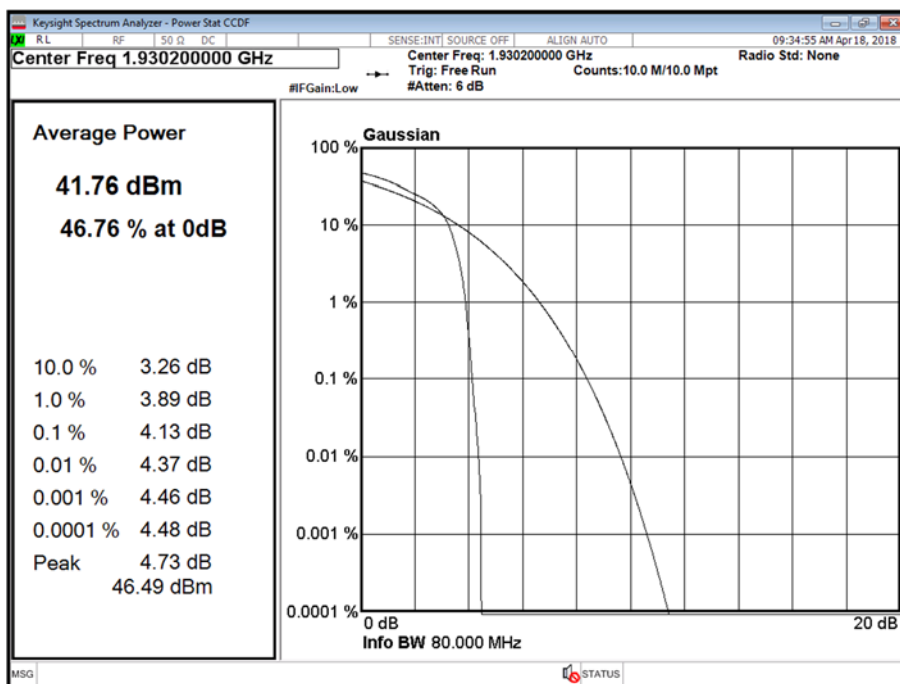
Configuration C

Maximum Output Power 43 dBm

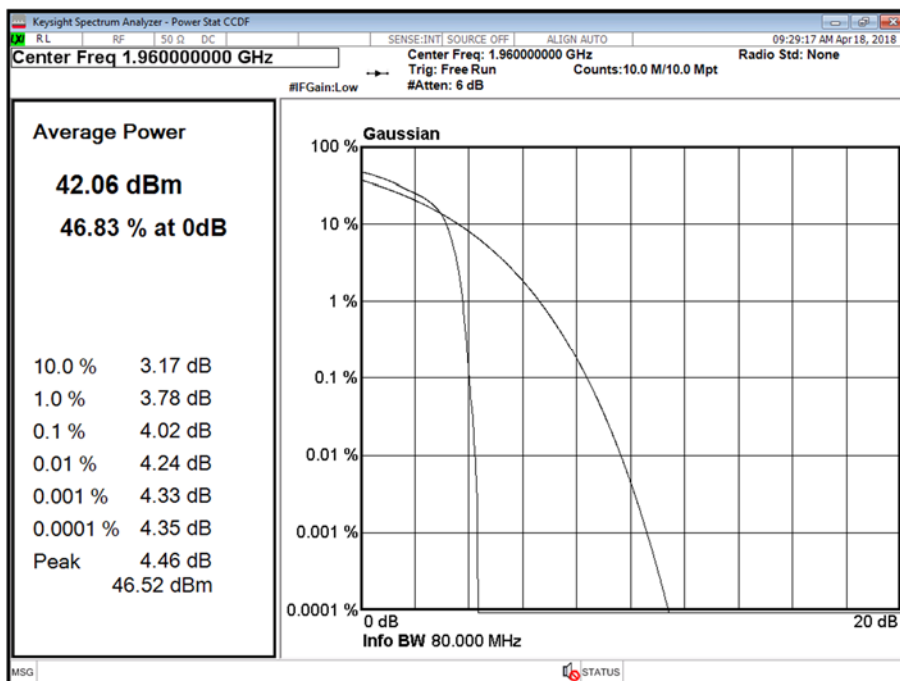
Antenna	NB-IoT SA Modulation	NB-IoT SA Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position B		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	N:QPSK	N:180 kHz	-	41.87	42.53



Product Service



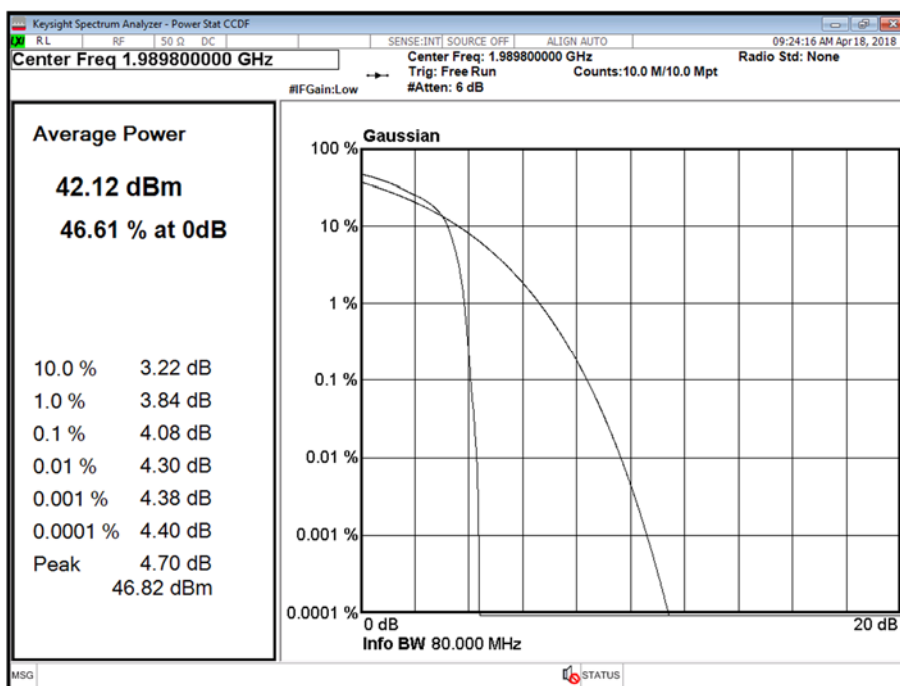
Antenna	NB-IoT SA Modulation	NB-IoT SA Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			PAR (dB)	Channel Position M	
				Average Power	
				dBm	dBm/MHz
A	N:QPSK	N:180 kHz	-	41.95	42.49





Product Service

Antenna	NB-IoT SA Modulation	NB-IoT SA Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position T		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	N:QPSK	N:180 kHz	-	42.11	42.75



Limit	
Peak Power	≤160 W or ≤+50 dBm (FCC – worst case) ≤100 W or ≤+50 dBm (RSS-133)
Peak to Average Ratio	13 dB



Product Service

2.2 OCCUPIED BANDWIDTH

2.2.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1049
FCC CFR 47 Part 24, Clause 24.238 (b)
Industry Canada RSS-GEN, Clause 6.6

2.2.2 Date of Test and Modification State

18 April to 17 May 2018 - 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 22-23°C
Relative Humidity 31.6-41%

2.2.5 Test Method

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

The Spectrum Analyser RBW was configured to be at least 1% of the channel bandwidth of the carrier to be measured.

For 26dB Bandwidth, in accordance with KDB 971168 D01, a peak detector and a trace setting of Max Hold were used. The trace was allowed to stabilise. Using the Spectrum Analyser function, the 26dB measurement result was obtained.

2.2.6 Test Results

Configuration A

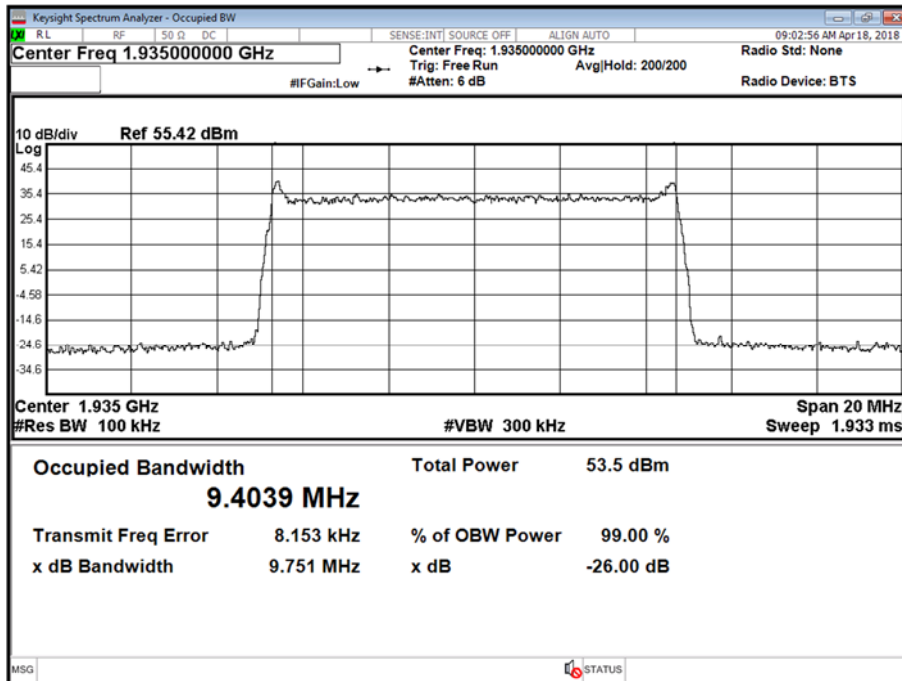
Maximum Output Power 46 dBm

Antenna	LTE / NB-IoT GB Modulation	LTE / NB-IoT GB Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
A	L:64QAM / N:QPSK	L:10.0 MHz / N:180 kHz	9,403.90	9,751.00	-	-	9,400.10	9,760.00
A	L:64QAM / N:QPSK	L:15.0 MHz / N:180 kHz	14,033.00	14,540.00	-	-	14,002.00	14,560.00
A	L:64QAM / N:QPSK	L:20.0 MHz / N:180 kHz	18,428.00	19,350.00	-	-	18,419.00	19,430.00

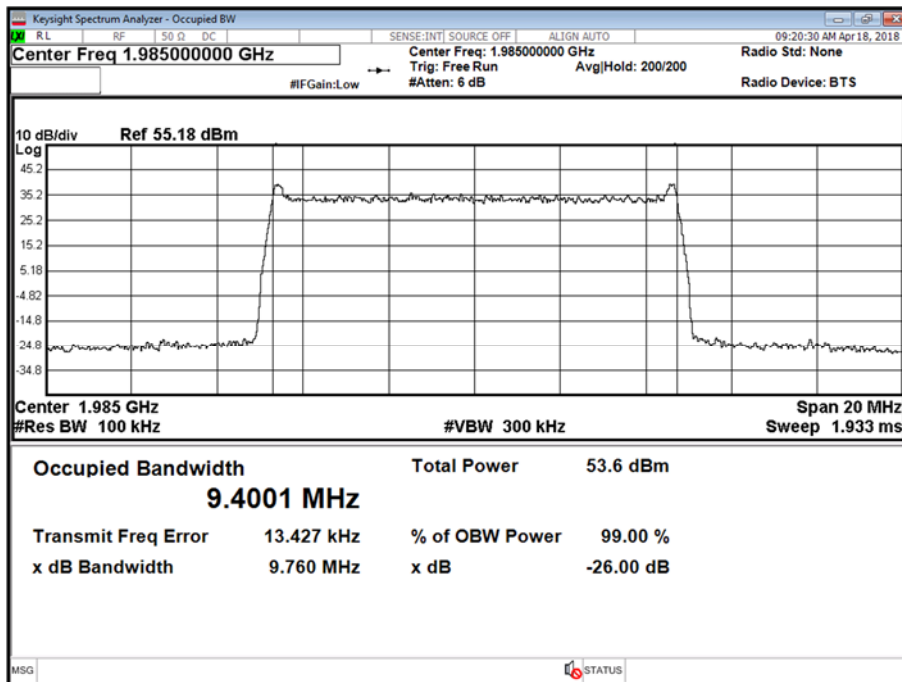


Product Service

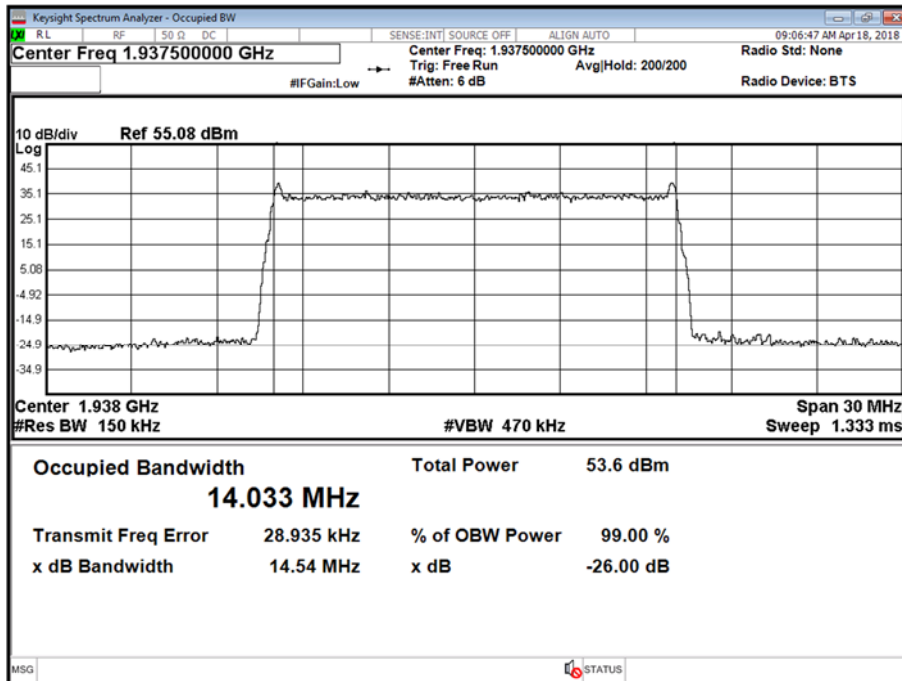
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:10.0 MHz / N:180 kHz - Channel Position B



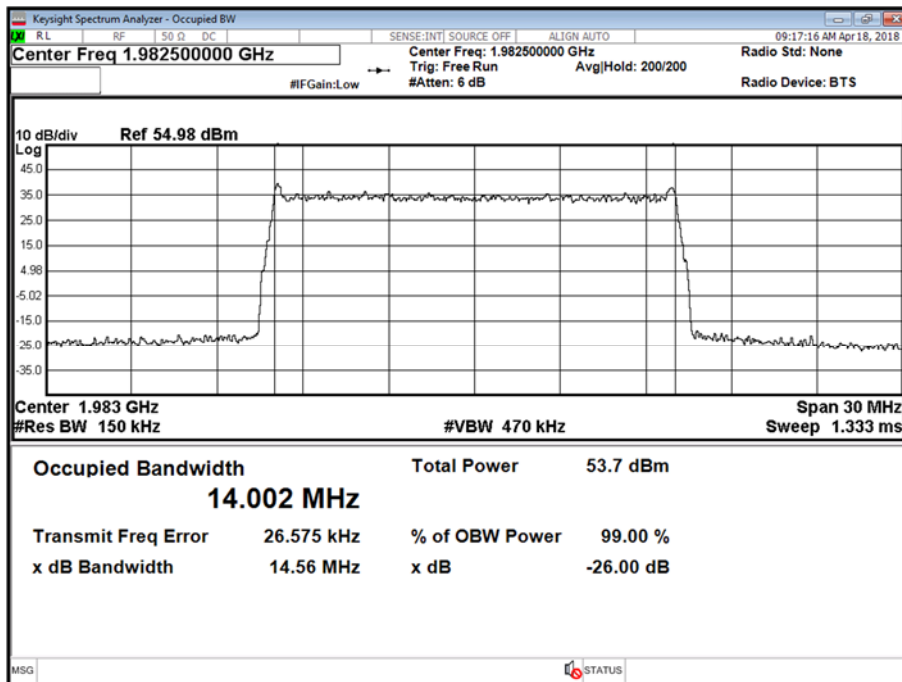
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:10.0 MHz / N:180 kHz - Channel Position T



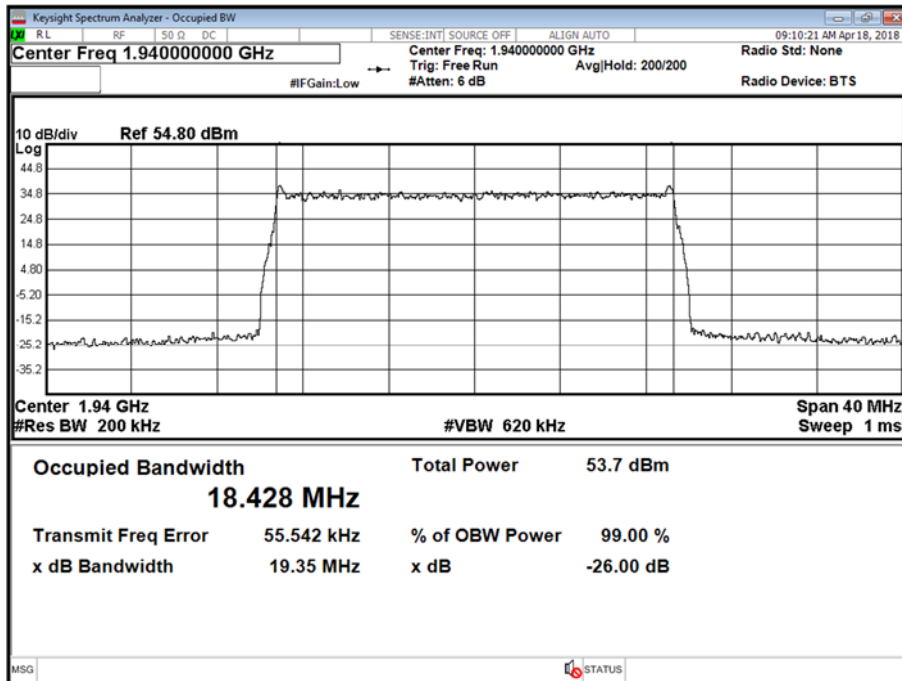
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:15.0 MHz / N:180 kHz - Channel Position B



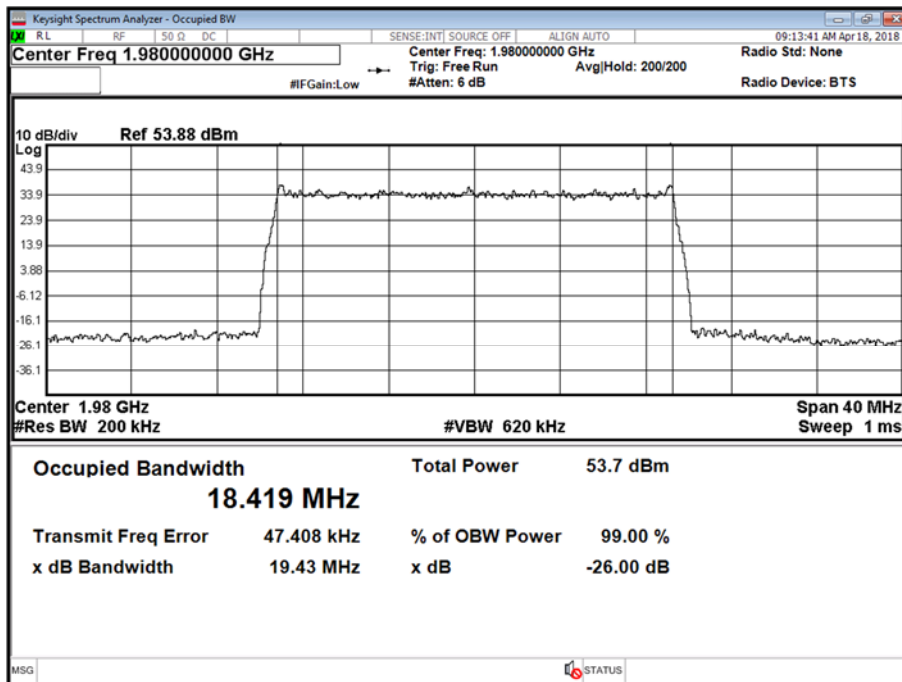
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:15.0 MHz / N:180 kHz - Channel Position T



Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:20.0 MHz / N:180 kHz - Channel Position B



Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:20.0 MHz / N:180 kHz - Channel Position T





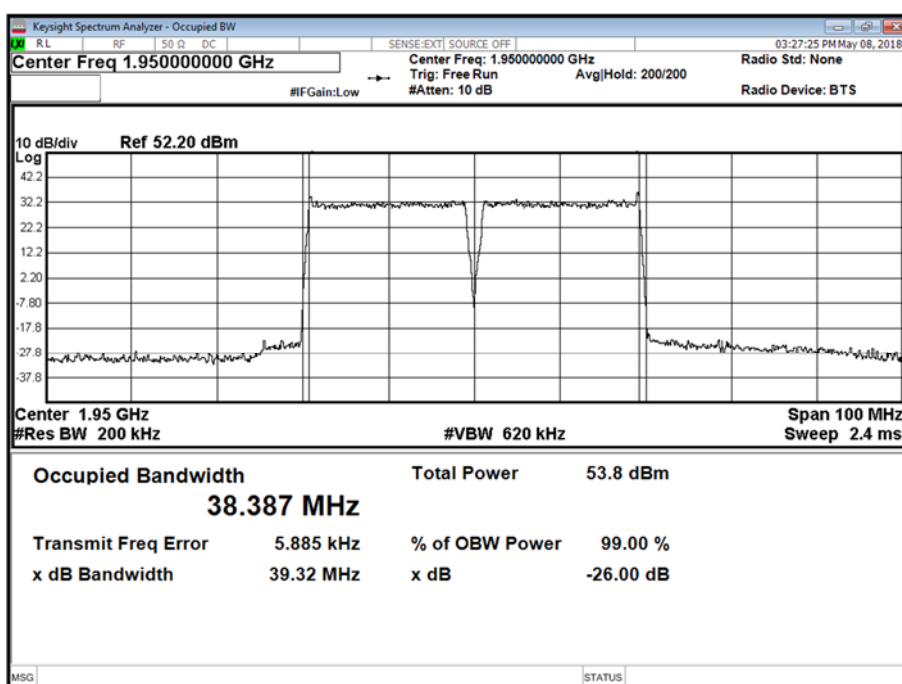
Product Service

Configuration B

Maximum Output Power 46 dBm

Antenna	LTE / NB-IoT GB Modulation	LTE / NB-IoT GB Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
A	L:64QAM / N:QPSK	L:20.0 MHz / N:180 kHz	38,387.00	39,320.00	-	-	38,400.00	39,320.00

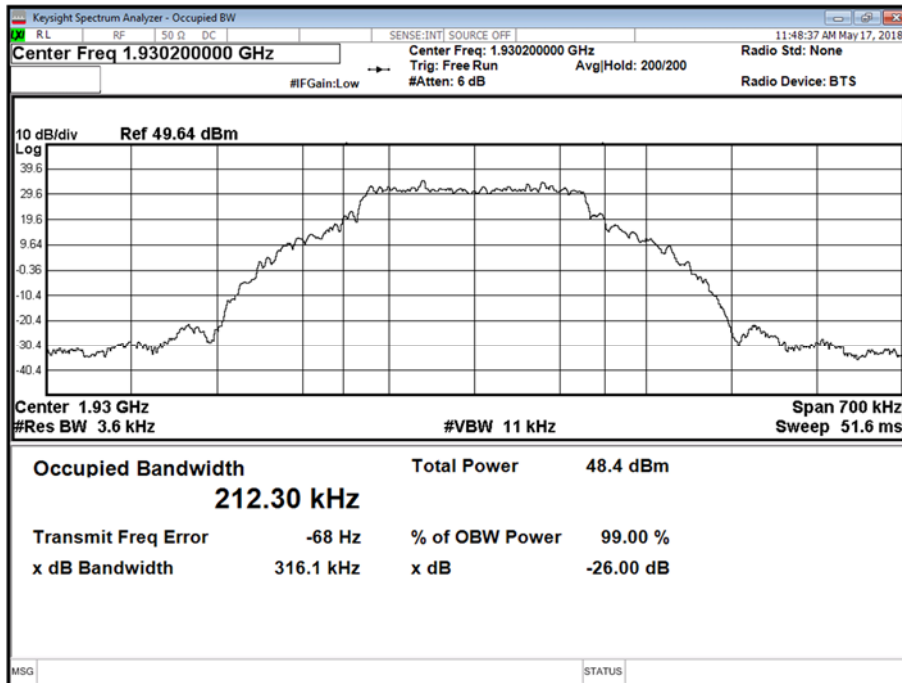
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier Bandwidth L:20.0 MHz / N:180 kHz - Channel Position B



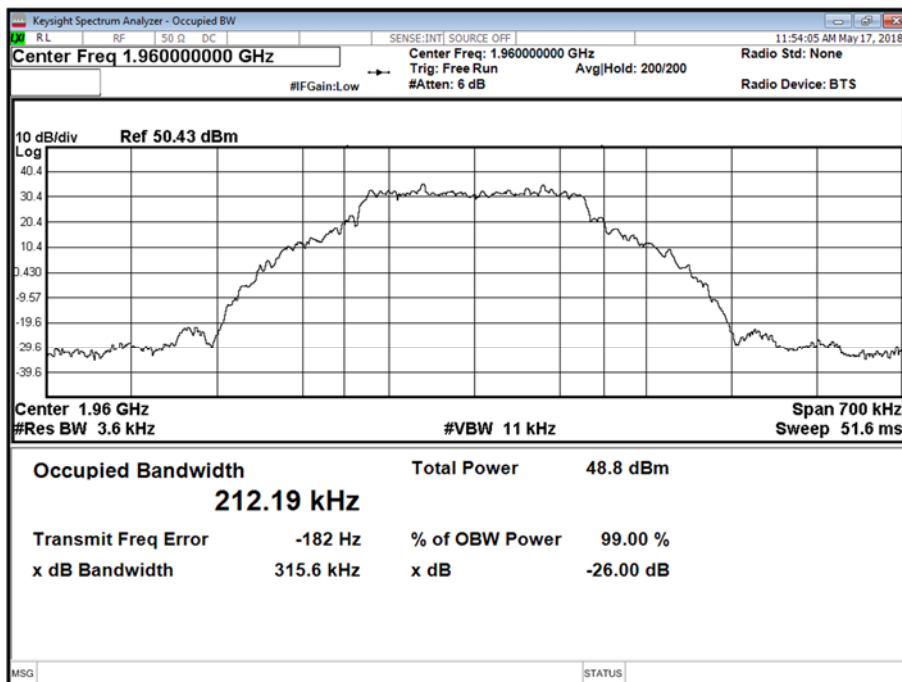


Product Service

Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position B



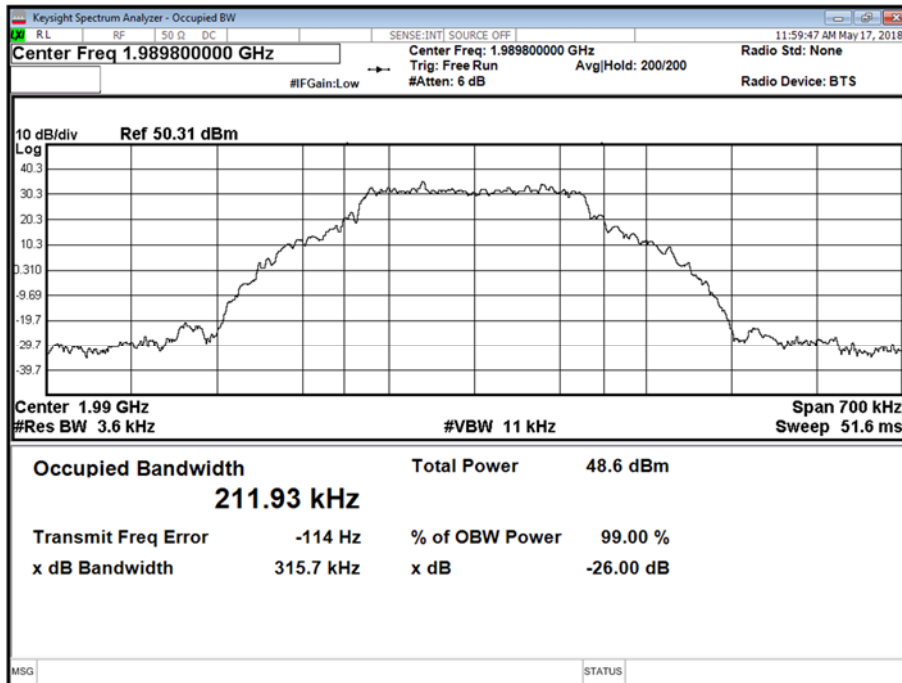
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position M





Product Service

Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position T





Product Service

2.3 BAND EDGE

2.3.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 24, Clause 24.238 (b)
Industry Canada RSS-133, Clause 6.5

2.3.2 Date of Test and Modification State

18 April to 17 May 2018 - 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 22 - 23°C
Relative Humidity 31.6 - 41%

2.3.5 Test Method

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

The EUT was connected to a Spectrum Analyser via 50dB of attenuation. The path loss between the EUT and the Spectrum Analyser was measured using a Network Analyser. The measured path loss was entered as a Reference Level Offset in the Spectrum Analyser. The Spectrum Analyser RBW was adjusted to be at least 1% of the measured 26dB Bandwidth. Using an RMS detector, the frequency spectrum up to 1MHz away from the Band Edge was investigated. Where a margin of <10dB was not achieved using a RBW of at least >1% of the 26dB Bandwidth, the Band Power measurement function of the Spectrum Analyser was used. The Band Power span was configured to be at least 1% of the 26dB Bandwidth and was positioned in the 1MHz region which gave the worst-case result. The display line was set to the worst-case accounting for 4 Port MIMO operation in accordance with KDB 662911 D01. This equated to $43 + 10\log(P) - 10\log(4) = -19\text{dBm}$.

2.3.6 Test Results

Configuration A

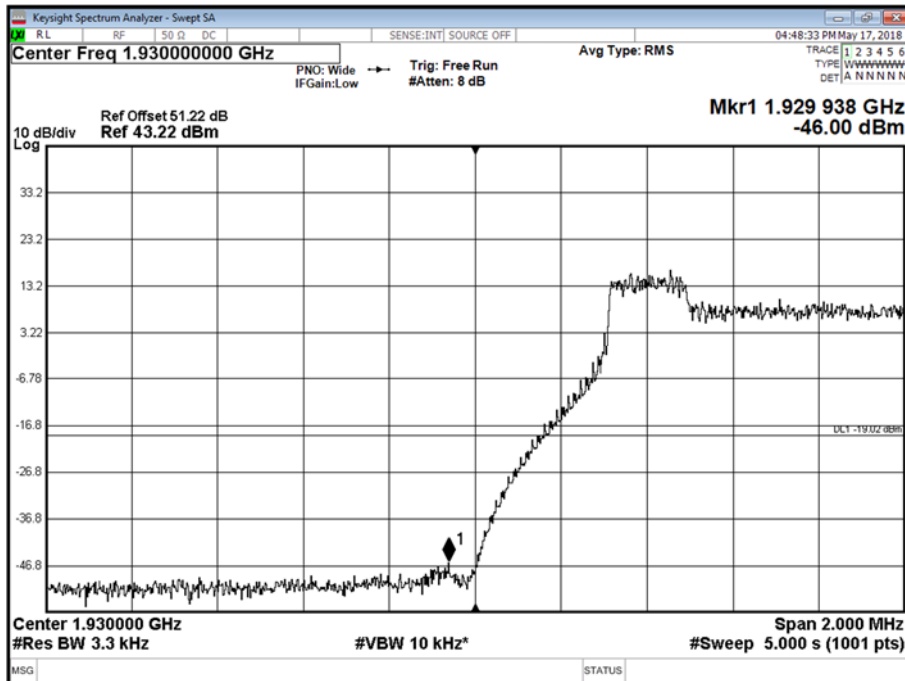
Maximum Output Power 46 dBm

Antenna	LTE / NB-IoT GB Modulation	LTE / NB-IoT GB Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	L:64QAM / N:QPSK	L:10.0 MHz / N:180 kHz	1,935.0	1,985.0
A	L:64QAM / N:QPSK	L:15.0 MHz / N:180 kHz	1,937.5	1,982.5
A	L:64QAM / N:QPSK	L:20.0 MHz / N:180 kHz	1,940.0	1,980.0

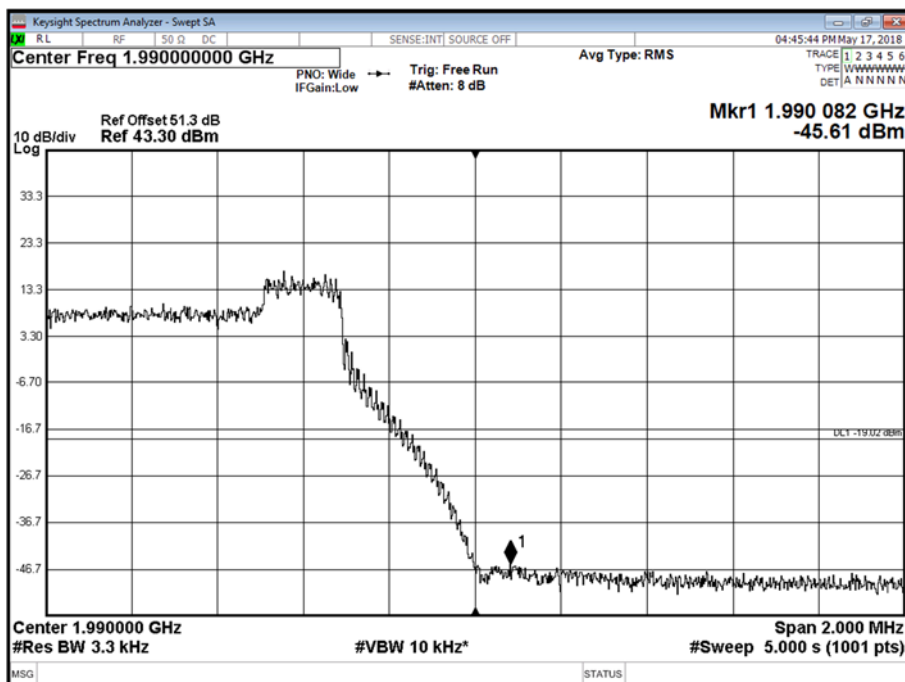


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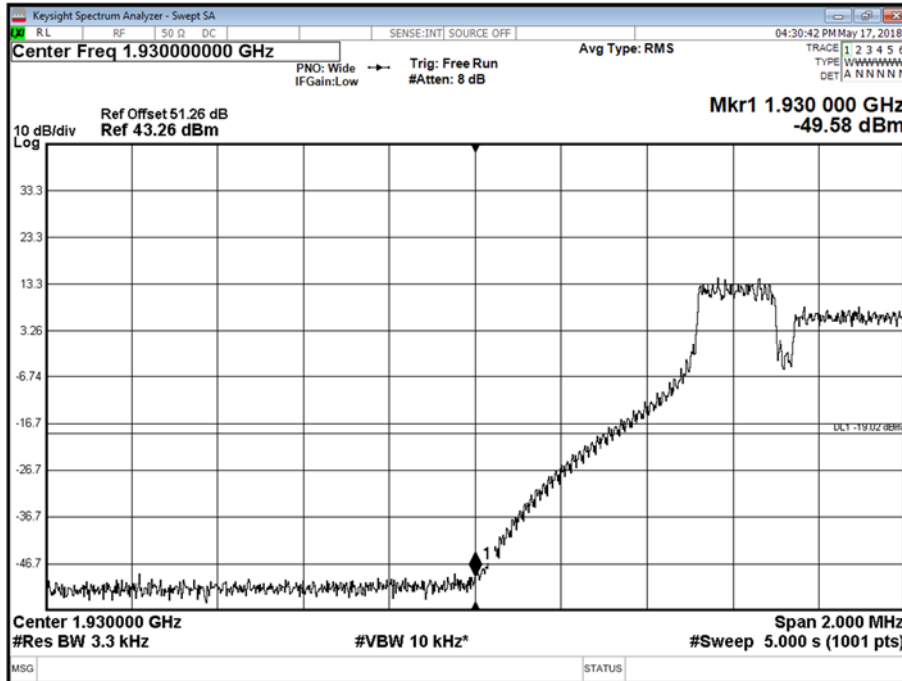
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:10.0 MHz / N:180 kHz - Channel Position B



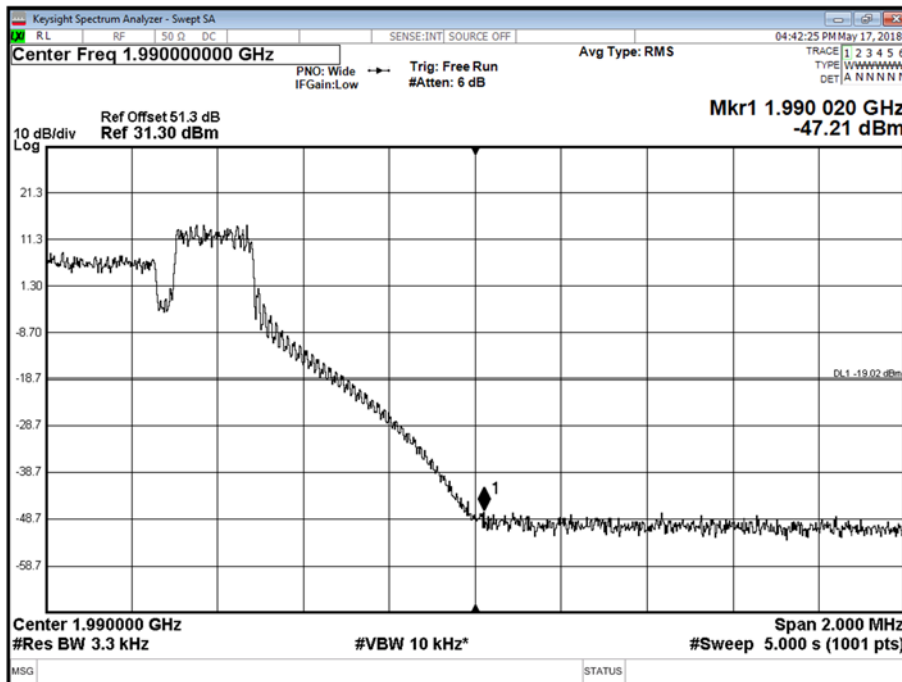
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:10.0 MHz / N:180 kHz - Channel Position T



Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:15.0 MHz / N:180 kHz - Channel Position B



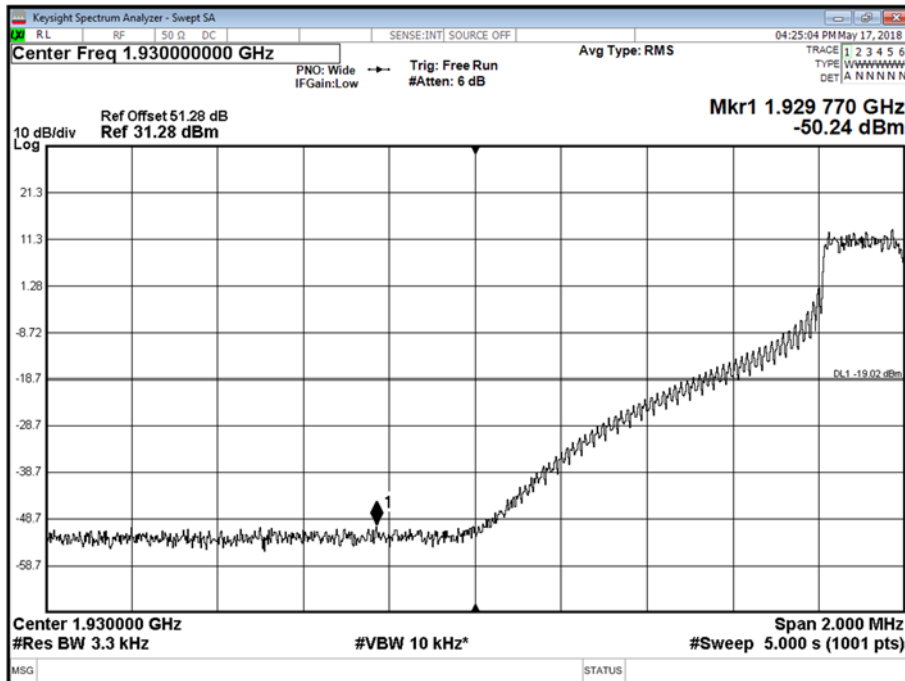
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Bandwidth L:15.0 MHz / N:180 kHz - Channel Position T



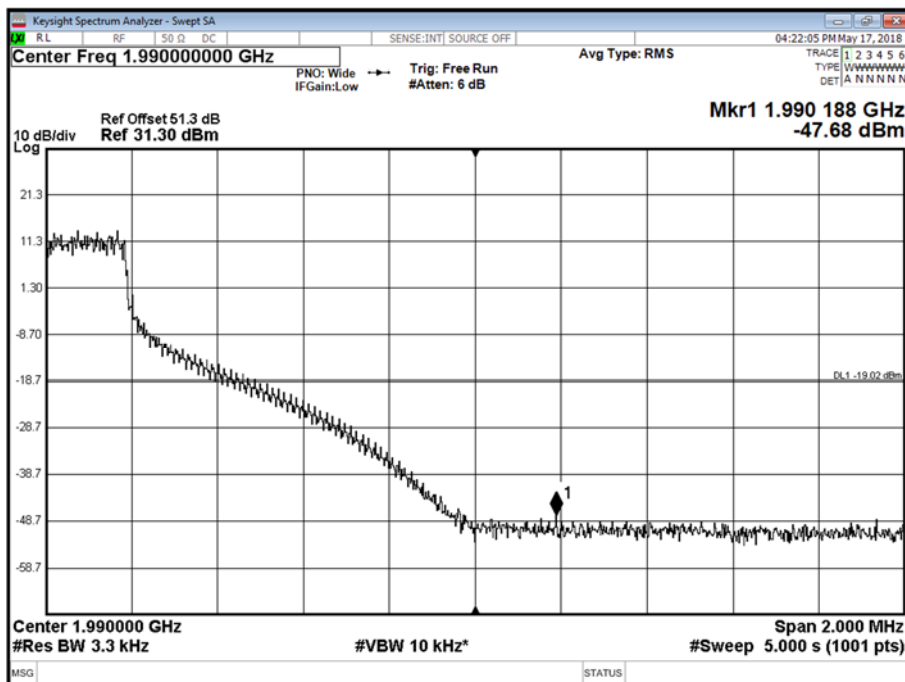


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Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:20.0 MHz / N:180 kHz - Channel Position B



Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:20.0 MHz / N:180 kHz - Channel Position T





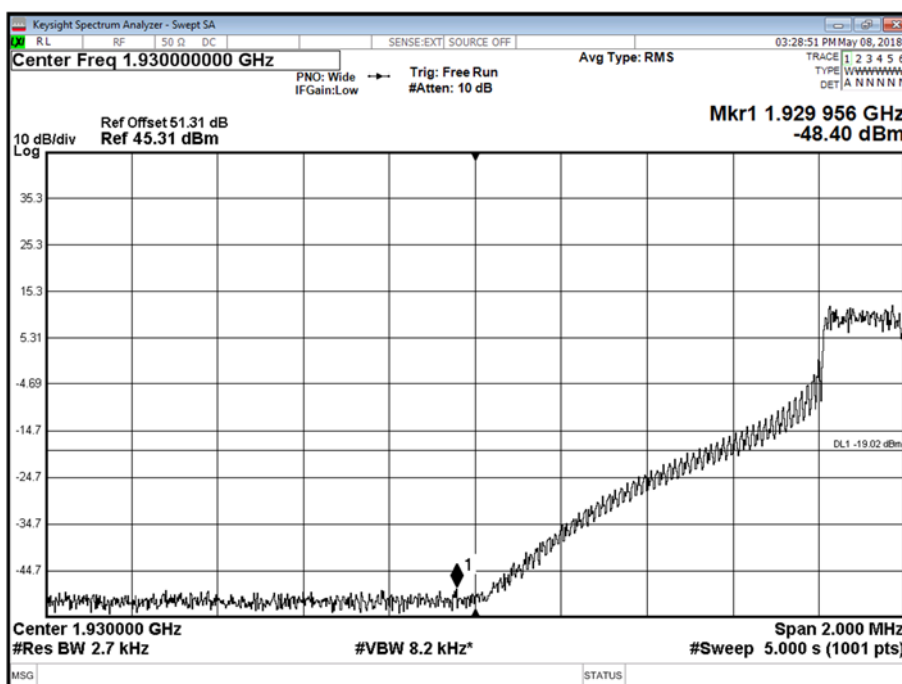
Product Service

Configuration B

Maximum Output Power 46 dBm

Antenna	LTE / NB-IoT GB Modulation	LTE / NB-IoT GB Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	L:64QAM / N:QPSK	L:20.0 MHz / N:180 kHz	1940.0 + 1960.0	1960.0 + 1980.0

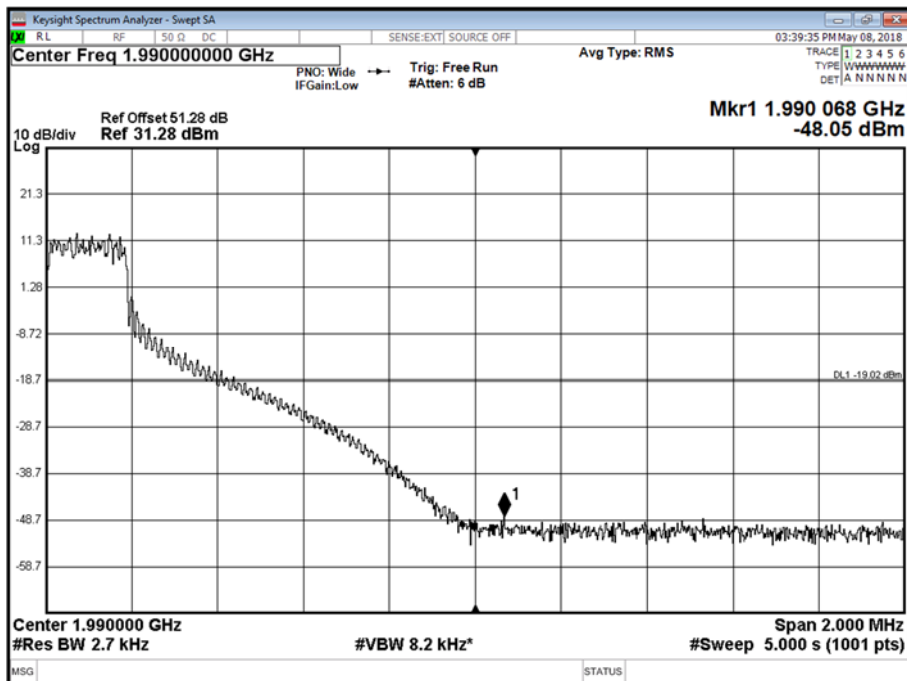
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier Bandwidth L:20.0 MHz / N:180 kHz - Channel Position B





Product Service

Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:20.0 MHz / N:180 kHz - Channel Position T



Configuration C

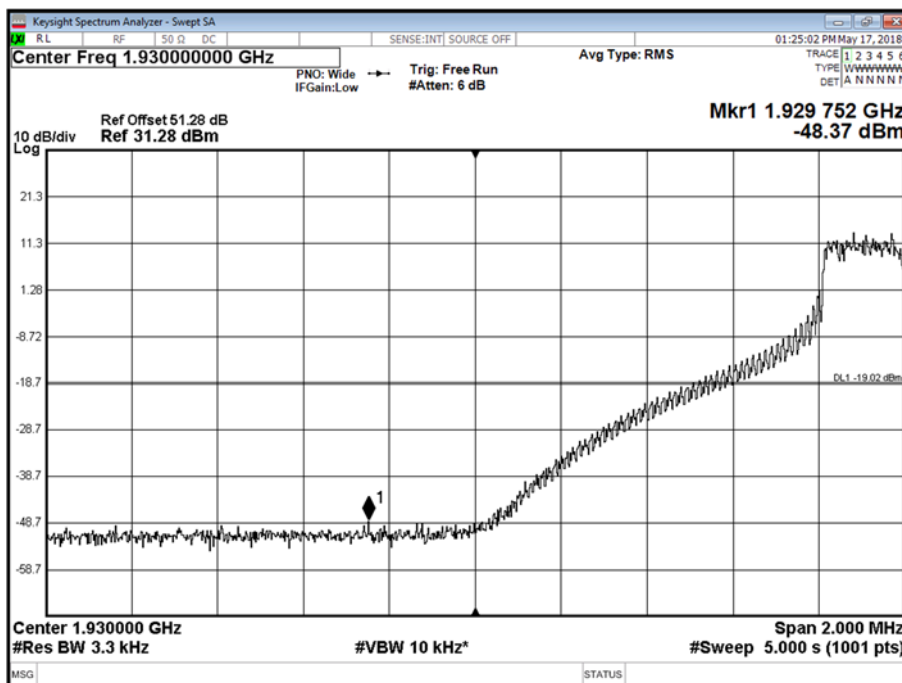
Maximum Output Power 43 dBm

Antenna	NB-IoT SA Modulation	NB-IoT SA Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	N:QPSK	N:180 kHz	1930.2	1989.8

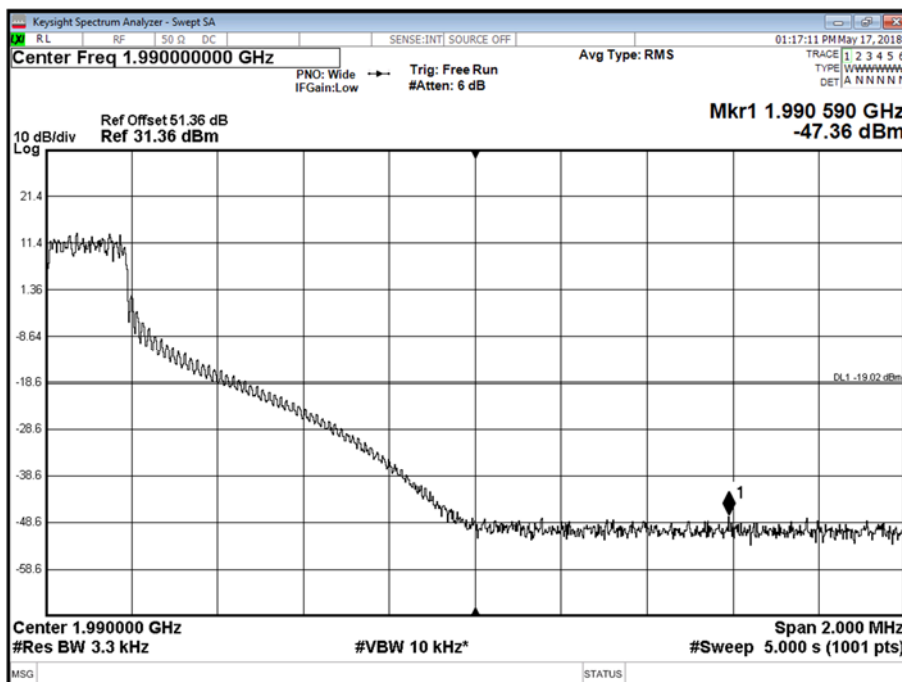


Product Service

Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position B



Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position T



Limit	-13 dBm - 10 * Log (4) = -19 dBm
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Product Service

2.4 TRANSMITTER SPURIOUS EMISSIONS

2.4.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 24, Clause 24.238 (a)
Industry Canada RSS-133, Clause 6.5

2.4.2 Date of Test and Modification State

18 April to 17 May 2018 - 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	22-23°C
Relative Humidity	41%

2.4.5 Test Method

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

The EUT was connected to a Spectrum Analyser via 50dB of attenuation for measurements below 4 GHz and up to 20GHz using 30dB of attenuation and a high pass filter. Prior to testing, a Network Analyser was used to calibrate the path loss between the EUT and the Spectrum Analyser. The worst-case path loss in the measured ranges was entered as a reference level offset. Over the measured ranges, the RBW was set to 1MHz with a VBW of 3MHz. All measurement results are specified as average with an RMS detector being used in conjunction with a trace setting of Max Hold. Measurements were performed in configurations of the EUT as reported below. The configurations chosen were worst case based on pre-test results carried out prior to the start of testing.

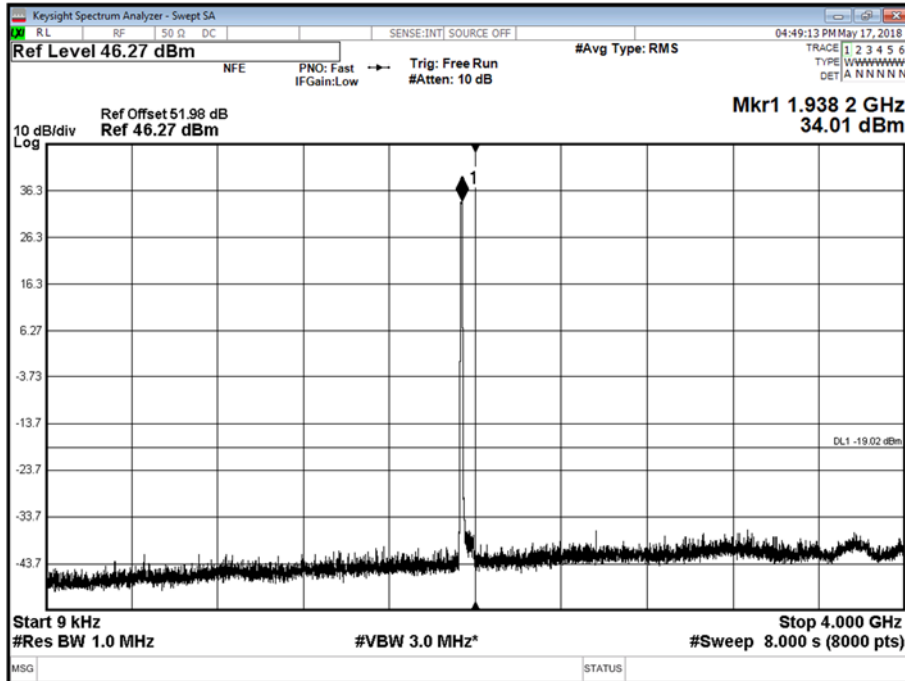
The EUT can transmit with 1, 2 or 4 ports simultaneously. Testing was performed on all ports with the test limits being reduced from the specification limit of $43+10\log(P)$ by a factor of $10\log(4)$ in accordance with KDB 662911 D01 v02r01 to cover all MIMO configurations. This equated to a limit of -19dBm, (worst case).

2.4.6 Test Results

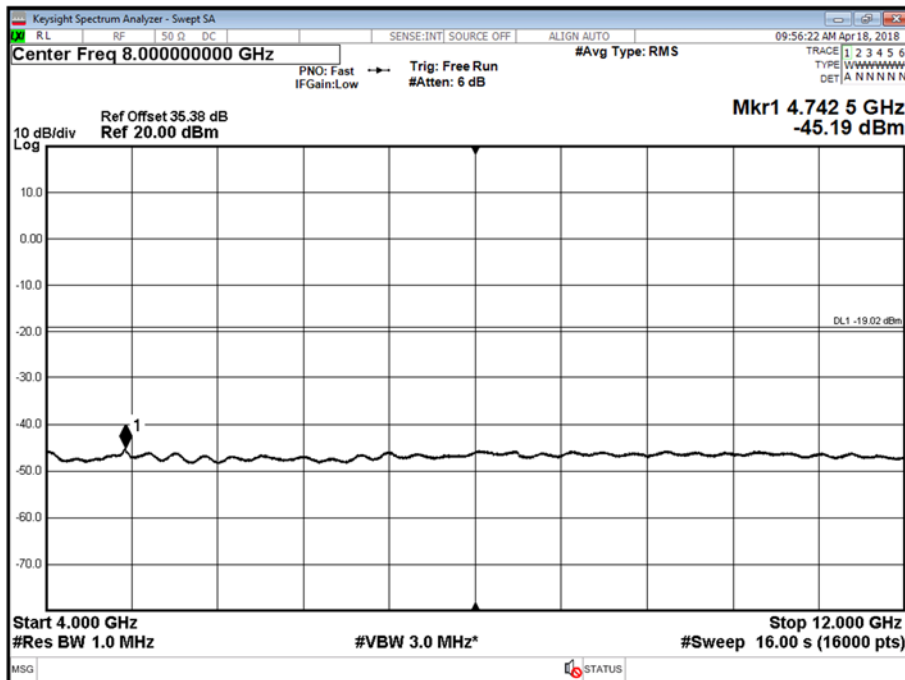
Configuration A

Maximum Output Power 46 dBm

Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:10.0 MHz / N:180 kHz - Channel Position B - Band 1 - Range 0.009 to 4000 MHz



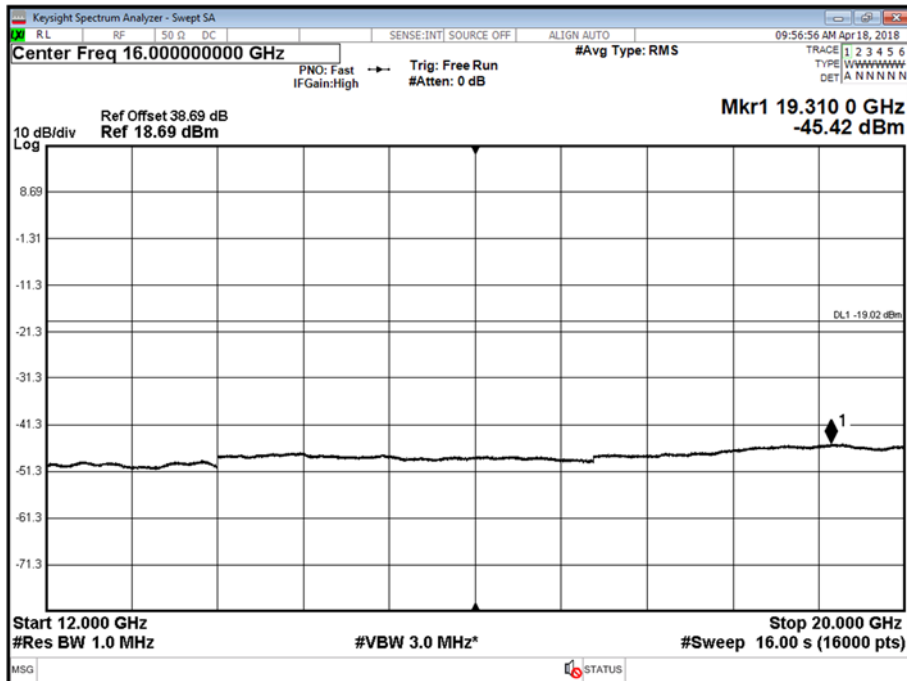
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:10.0 MHz / N:180 kHz - Channel Position B - Band 2 - Range 4000 to 12000 MHz



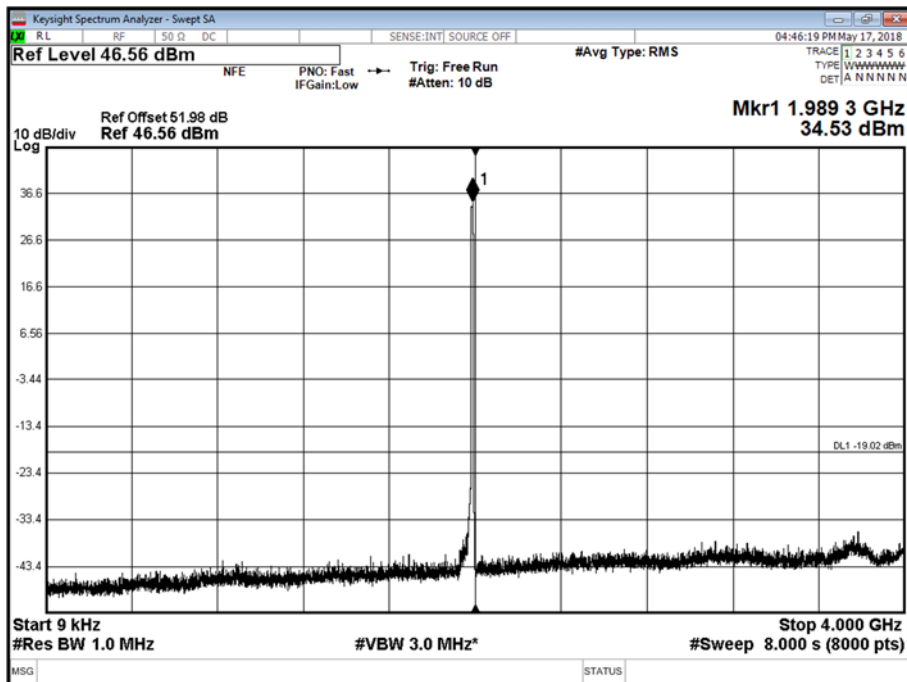


Product Service

Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:10.0 MHz / N:180 kHz - Channel Position B - Band 3 - Range 12000 to 20000 MHz



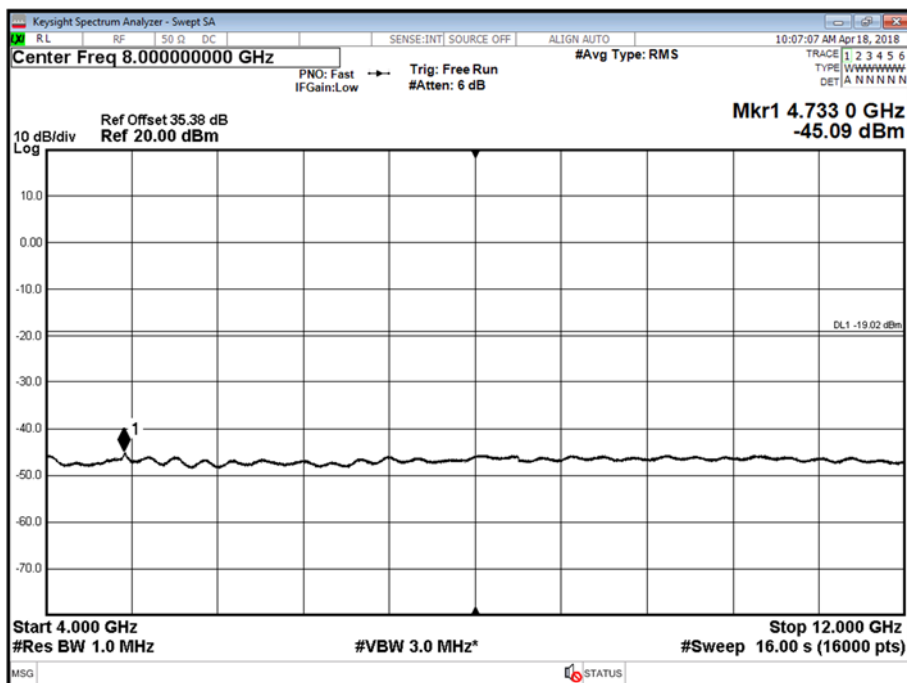
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:10.0 MHz / N:180 kHz - Channel Position T - Band 1 - Range 0.009 to 4000 MHz



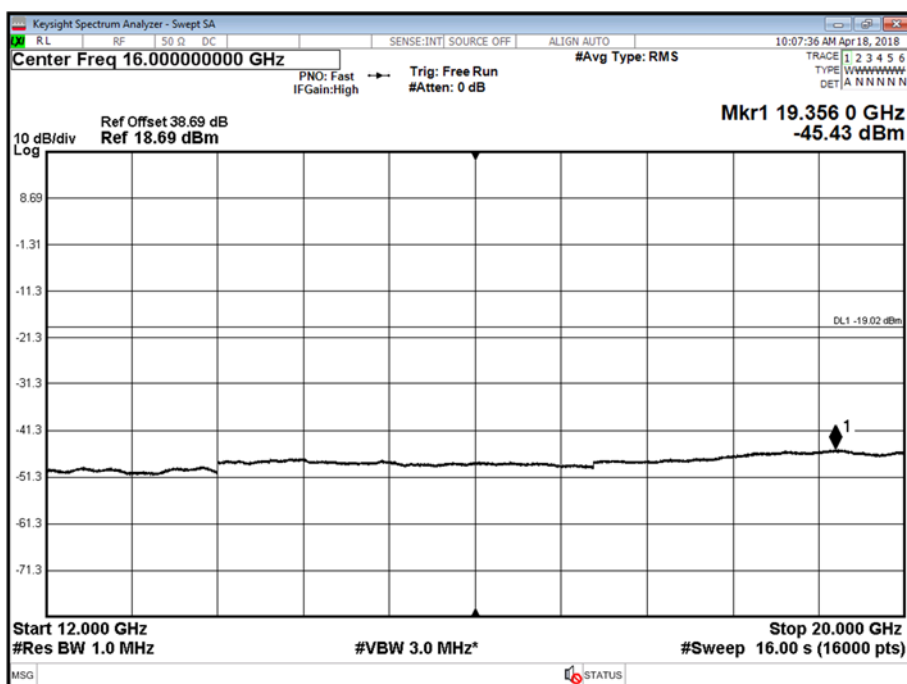


Product Service

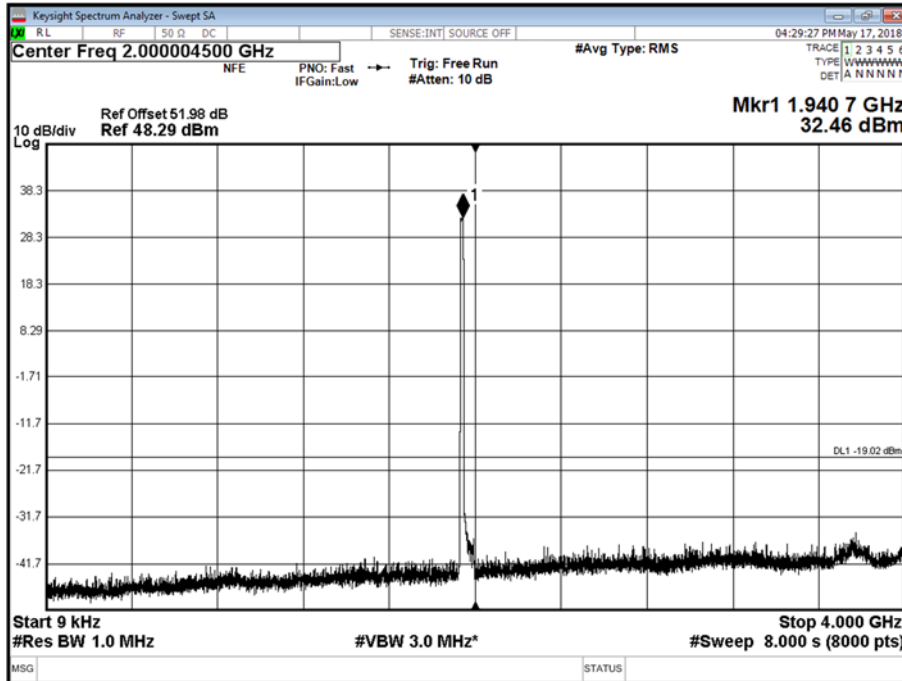
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:10.0 MHz / N:180 kHz - Channel Position T - Band 2 - Range 4000 to 12000 MHz



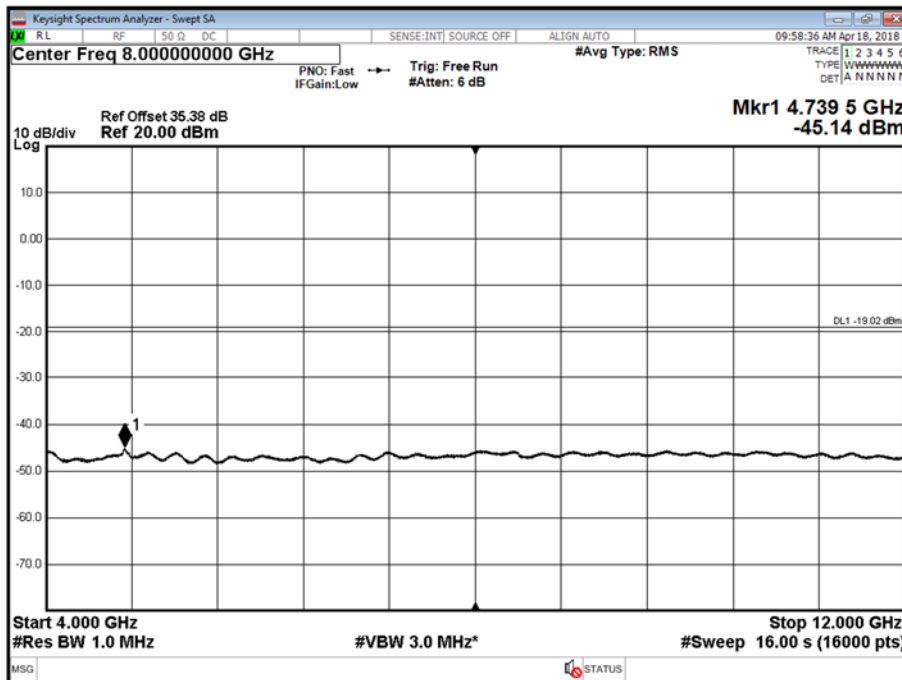
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:10.0 MHz / N:180 kHz - Channel Position T - Band 3 - Range 12000 to 20000 MHz



Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:15.0 MHz / N:180 kHz - Channel Position B - Band 1 - Range 0.009 to 4000 MHz



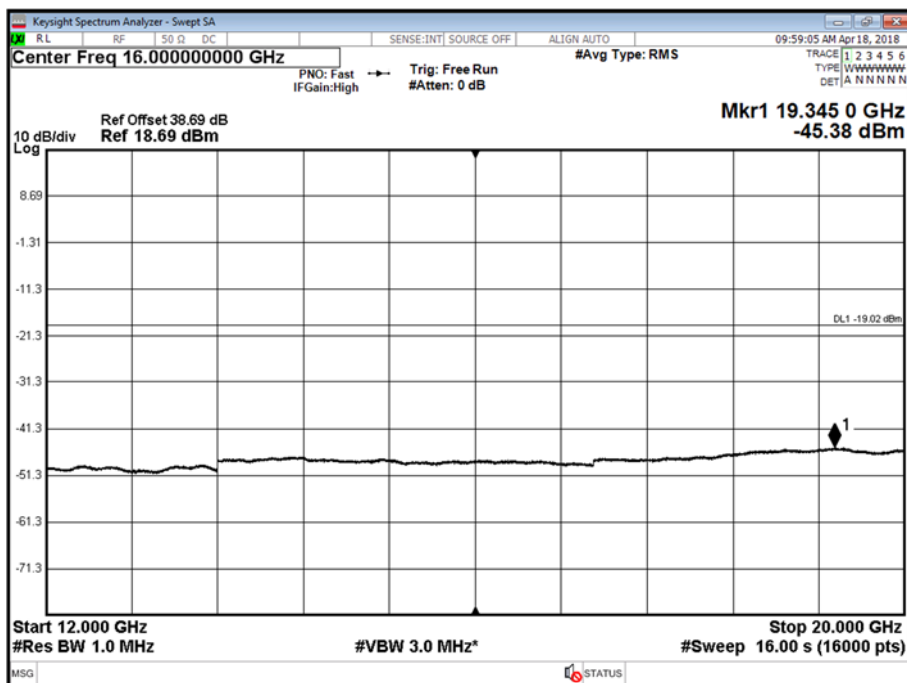
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:15.0 MHz / N:180 kHz - Channel Position B - Band 2 - Range 4000 to 12000 MHz



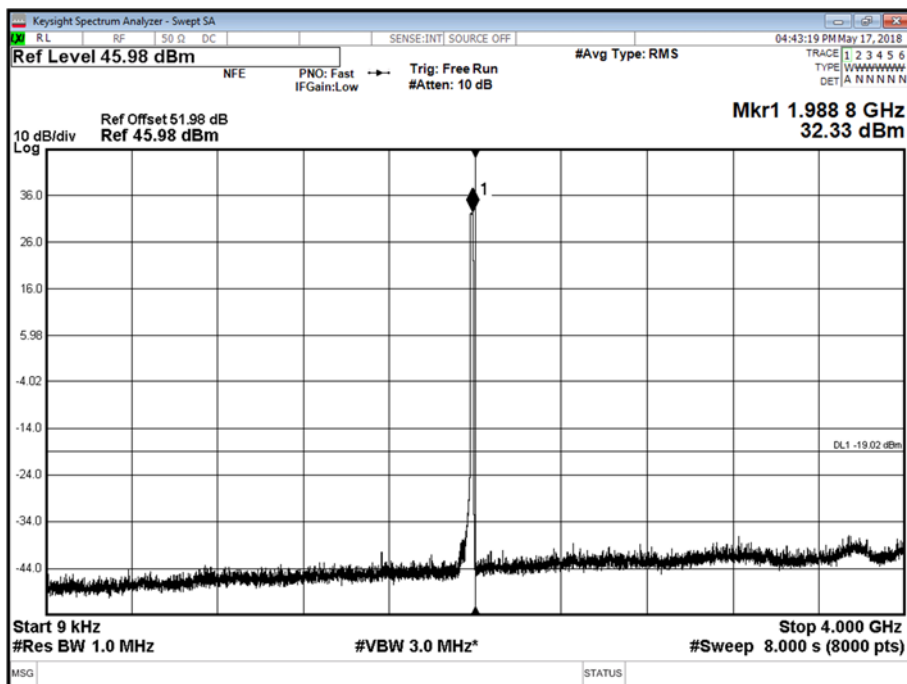


Product Service

Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:15.0 MHz / N:180 kHz - Channel Position B - Band 3 - Range 12000 to 20000 MHz



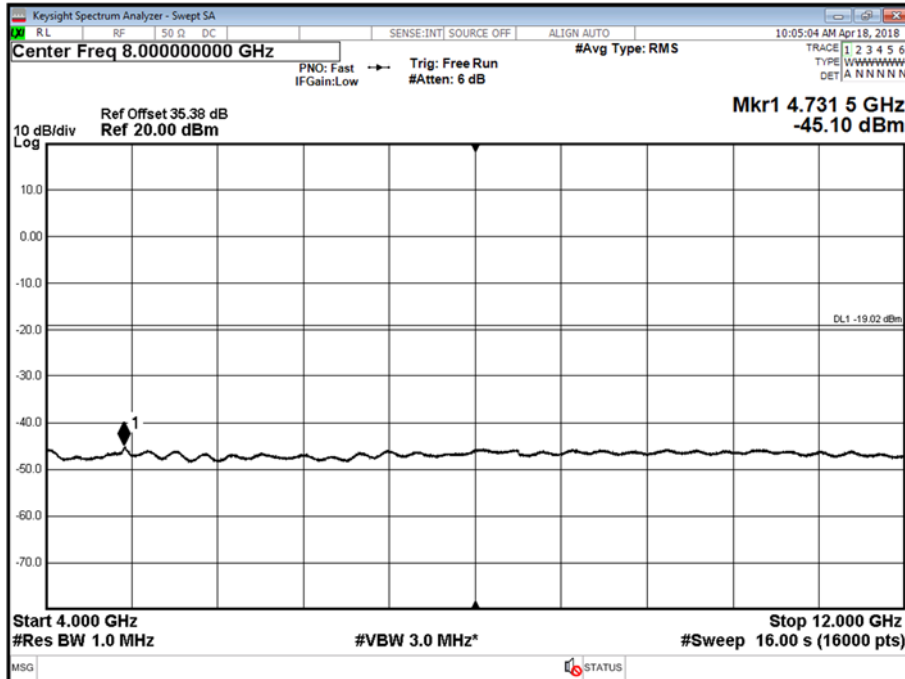
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:15.0 MHz / N:180 kHz - Channel Position T - Band 1 - Range 0.009 to 4000 MHz



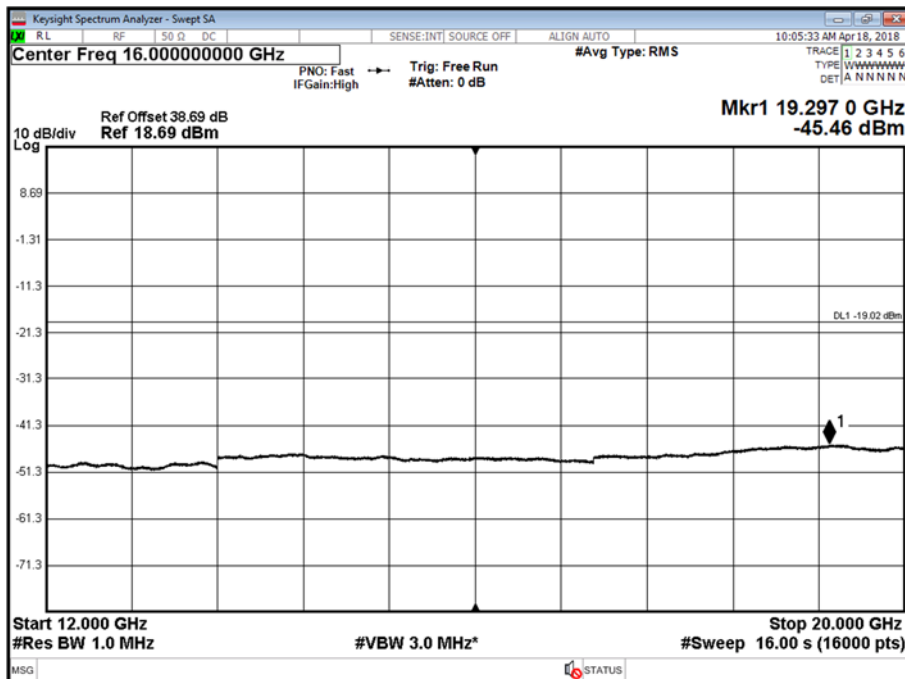


Product Service

Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:15.0 MHz / N:180 kHz - Channel Position T - Band 2 - Range 4000 to 12000 MHz



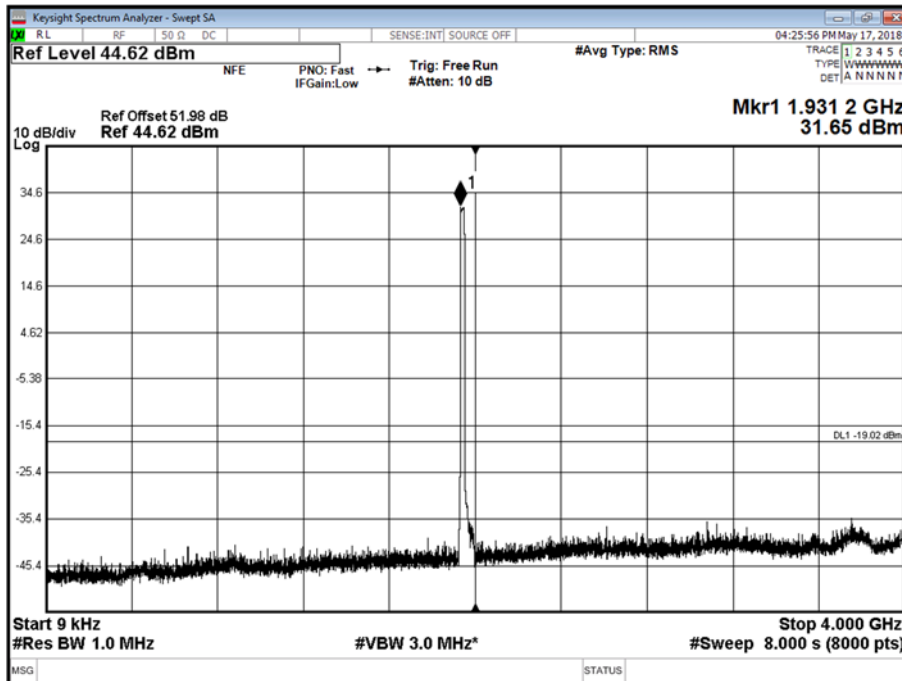
Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:15.0 MHz / N:180 kHz - Channel Position T - Band 3 - Range 12000 to 20000 MHz





Product Service

Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:20.0 MHz / N:180 kHz - Channel Position B - Band 1 - Range 0.009 to 4000 MHz



Antenna A - LTE / NB-IoT GB Modulation L:64QAM / N:QPSK - LTE / NB-IoT GB Carrier
Bandwidth L:20.0 MHz / N:180 kHz - Channel Position B - Band 2 - Range 4000 to 12000 MHz

