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# Report On

FCC and IC Testing of the  
Ericsson LTE and NB-IoT GB and NB-IoT SA KRC 161 553/1 Radio  
2203 B66A (2100 MHz) Base Station in accordance with FCC CFR 47  
Part 2, FCC CFR 47 Part 27, Industry Canada RSS-GEN and Industry  
Canada RSS-139

COMMERCIAL-IN-CONFIDENCE

FCC ID: TA8AKRC161553-1  
IC ID: 287AB-AS1615531

PREPARED BY

Maggie Whiting  
Key Account Manager

APPROVED BY

Steve Scarfe  
Authorised Signatory

DATED

13 August 2018

Document 75942505 Report 02 Issue 2

August 2018



Product Service

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## **SECTION 1**

### **REPORT INFORMATION**



Product Service

## 1.1 REPORT DETAILS

Manufacturer	Ericsson
Address	Torshamnsgatan 23 Kista SE-16480 Stockholm Sweden
Product Name	Radio 2203 B66A
Product Number	KRC 161 553/1
IC Model Name	AS1615531
Serial Number(s)	C82A554620
Software Version	CXP9013268%9_AM00
Hardware Version	R1D
Test Specification/Issue/Date	FCC CFR 47 Part 2: 2017 FCC CFR 47 Part 27: 2017 Industry Canada RSS-GEN: Issue 4: 2014 Industry Canada RSS-139: Issue 3: 2015
Start of Test	03 July 2018
Finish of Test	25 July 2018
Name of Engineer(s)	Neil Rousell Jaiyanth Balendrarajah Graeme Lawler
Related Document(s)	KDB 971168 D01 v02r02 KDB 662911 D01 v02r01 ANSI C63.26:2015

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### 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 Parts 2 & 27. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

N Rousell

G Lawler

J Balendrarajah

**This report has been up issued to Issue 2 and should be read in place of Issue 1. This report has been up issued to correct the wrong part number and frequency in Section 1.5.1.**



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 27, Industry Canada RSS-GEN and Industry Canada RSS-139 is shown below.

Section	Specification Clause				Test Description	Result
	FCC CFR 47 Part 2	FCC CFR 47 Part 27	RSS-GEN	RSS-139		
2.1	2.1046	27.50	-	6.4	Maximum Peak Output Power and Peak to Average Ratio - Conducted	Pass
2.2	2.1049	27.53	6.6	-	Occupied Bandwidth	Pass
2.3	2.1051	27.53 (h)	-	6.5	Band Edge	Pass
2.4	2.1051	27.53 (h)	-	6.5	Transmitter Spurious Emissions	Pass
2.5	2.1051	27.53 (g)	-	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	10MHz	2115.0	-	2175.0
A	LTE+NB IoT GB	1	15MHz	2117.5	-	2172.5
A	LTE+NB IoT GB	1	20MHz	2120.0	-	2170.0
B	NB IoT SA	1	0.18 MHz	2110.2	2145.0	2179.8



1.4 DECLARATION OF BUILD STATUS

MANUFACTURING DESCRIPTION	Radio Unit	
MANUFACTURER	Ericsson AB	
TYPE	Radio 2203 B86A	
PART NUMBER	KRC 161 553/1	
SERIAL NUMBER	C82A554620	
HARDWARE VERSION	R1D	
SOFTWARE VERSION	CXP9013288%9_AM0	
TRANSMITTER FREQUENCY OPERATING RANGE (MHz)	DL: 2110-2180 MHz	
RECEIVER FREQUENCY OPERATING RANGE (MHz)	UL: 1710-1780 MHz	
COUNTRY OF ORIGIN	Sweden	
INTERMEDIATE FREQUENCIES	--	
EMISSION DESIGNATOR(S): (i.e. G1D, GXW)	See below	
MODULATION TYPES: (i.e. phase mod, amplitude mod or comb thereof...)	Combination of phase and amplitude modulation	
HIGHEST INTERNALLY GENERATED FREQUENCY	Carrier frequency 1995 MHz CPRI 9.8 Gbps	
OUTPUT POWER (W or dBm)	2 ports, total 5 W (37 dBm) per port <sup>1</sup> , SR L max 3 carriers (3x32.2 dBm) per port <sup>1</sup> , SR W max 4 carriers (4x31 dBm) per port, MR (L+W) max 5 carriers (5x30 dBm) per port <sup>1</sup> , NB-IoT SA max 1 carrier (1x5W) per port	
FCC ID	See below	
INDUSTRY CANADA ID	See below	
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	See below	
<b>MODULES (if applicable)</b>		
MANUFACTURING DESCRIPTION	Radio Unit	
MANUFACTURER	Ericsson AB	
TYPE	Radio 2203 B86A	
POWER	36 VDC	
FCC ID	TA8AKRC161553-1	
COUNTRY OF ORIGIN	Sweden	
INDUSTRY CANADA ID	287AB-AS1615531	
EMISSION DESIGNATORS	FCC	ISED
	LTE: 1.4MHz 1M40F9W 3MHz 3M00F9W 5MHz 5M00F9W 10MHz 9M45F9W 15MHz 14M1F9W 20MHz 18M5F9W 200 kHz 210KW7D	LTE: 1.4MHz 1M10G7D, 1M10W7D 3MHz 2M89G7D, 2M89W7D 5MHz 4M50G7D, 4M50W7D 10MHz 9M45G7D, 9M45W7D 15MHz 14M1G7D, 14M1W7D 20MHz 18M5G7D, 18M5W7D 200 kHz 210KW7D
	WCDMA: 5MHz 5M00F9W	WCDMA: 5MHz 4M20F9W

<sup>1</sup> Including 2 NB-IoT GB carriers per port.

Signature   
Linda Grell

Date 2018-07-06

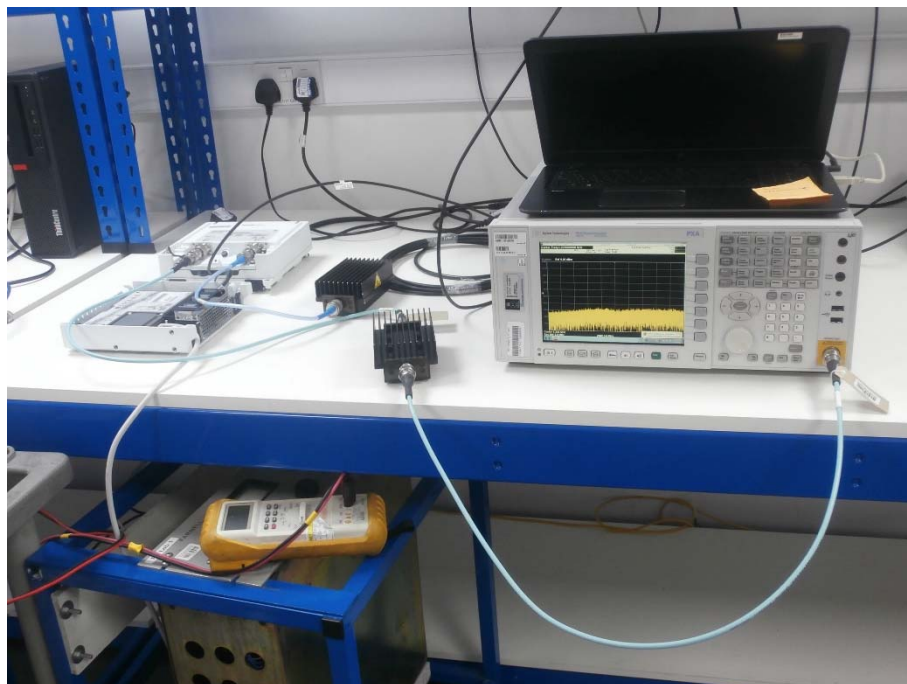
No responsibility will be accepted by TÜV SÜD Product Service UK Limited as to the accuracy of the information declared in this document by the manufacturer.

## 1.5 PRODUCT INFORMATION

### 1.5.1 Technical Description

The Equipment Under Test (EUT) KRC 161 553/1 is an Ericsson AB Radio Unit working in the public mobile service (2100 MHz) band which provides communication connections to (2100 MHz) network. The KRC 161 553/1 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.

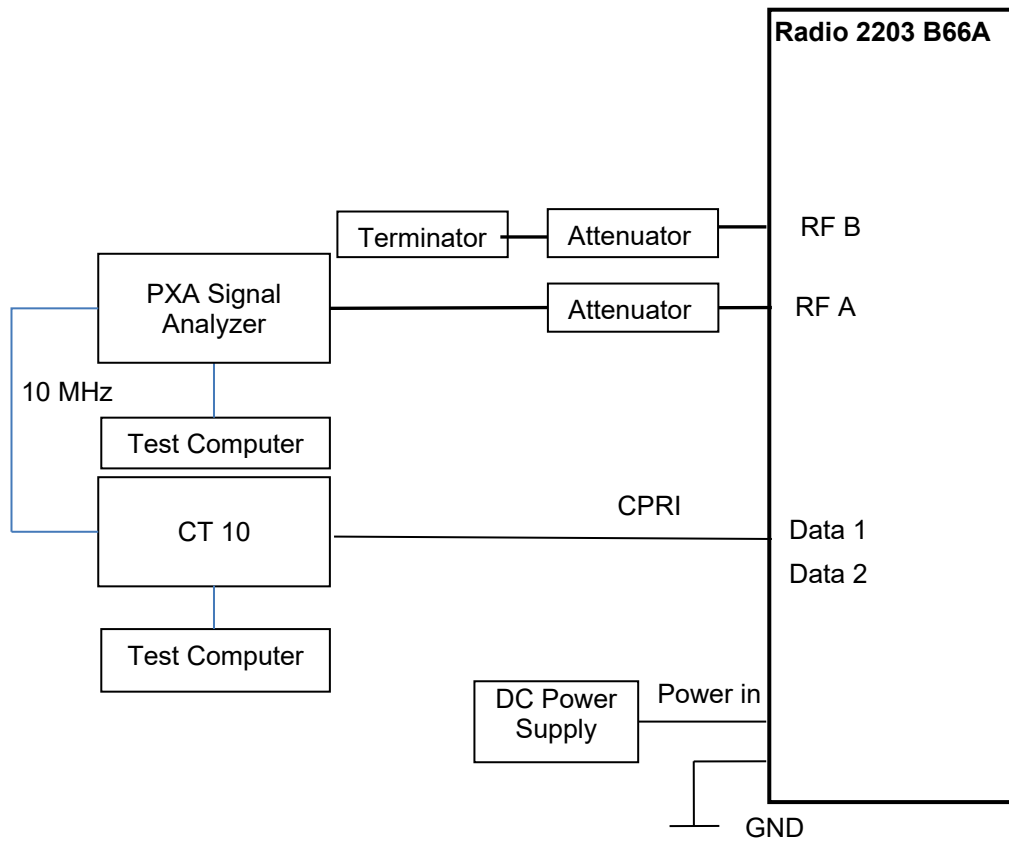


Equipment Under Test





### 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

## 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 ALTERNATIVE TEST SITE

Under our group UKAS Accreditation, TÜV SÜD Product Service conducted the following tests at Ericsson in Fareham, UK.

Test Name	Name of Engineer(s)
Maximum Peak Output Power and Peak to Average Ratio - Conducted	Neil Rousell
Occupied Bandwidth	Neil Rousell
Band Edge	Neil Rousell
Transmitter Spurious Emissions	Neil Rousell
Transmitter Spurious Radiated Emissions	Jaiyanth Balendrarajah Graeme Lawler



Product Service

## **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 2, Clause 2.1046  
 FCC CFR 47 Part 27, Clause 27.50  
 Industry Canada RSS-139, Clause 6.4

**2.1.2 Date of Test and Modification State**

03 July 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 20.6°C  
 Relative Humidity 45.6%

**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

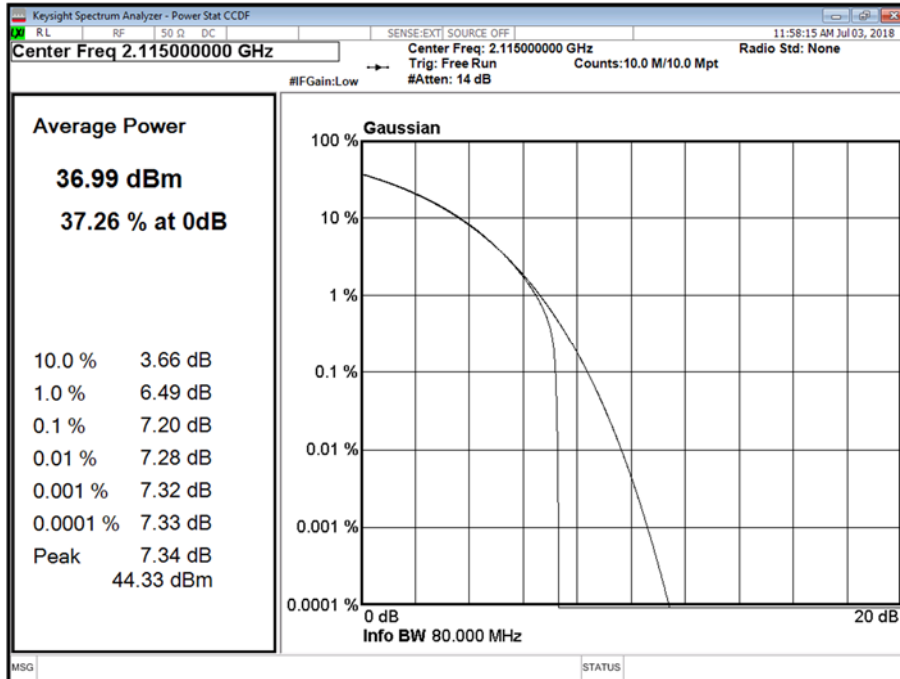
Maximum Output Power 37 dBm

Antenna	E-UTRA / NB-IoT GB Modulation	E-UTRA / NB-IoT GB Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			PAR (dB)	Channel Position $B_{RFBW}$	
				Average Power	
				dBm	dBm/MHz
A	E:64QAM / N:QPSK	E:10.0 MHz / N:180 kHz	7.20	36.98	-
A	E:64QAM / N:QPSK	E:15.0 MHz / N:180 kHz	7.16	37.06	-
A	E:64QAM / N:QPSK	E:20.0 MHz / N:180 kHz	7.18	37.22	-

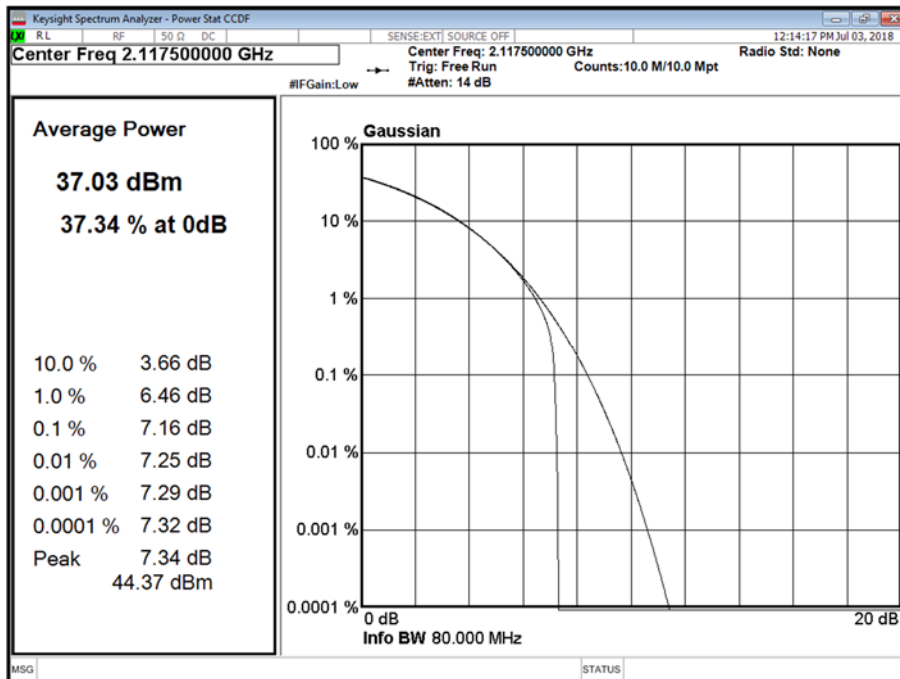


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position BRFBW



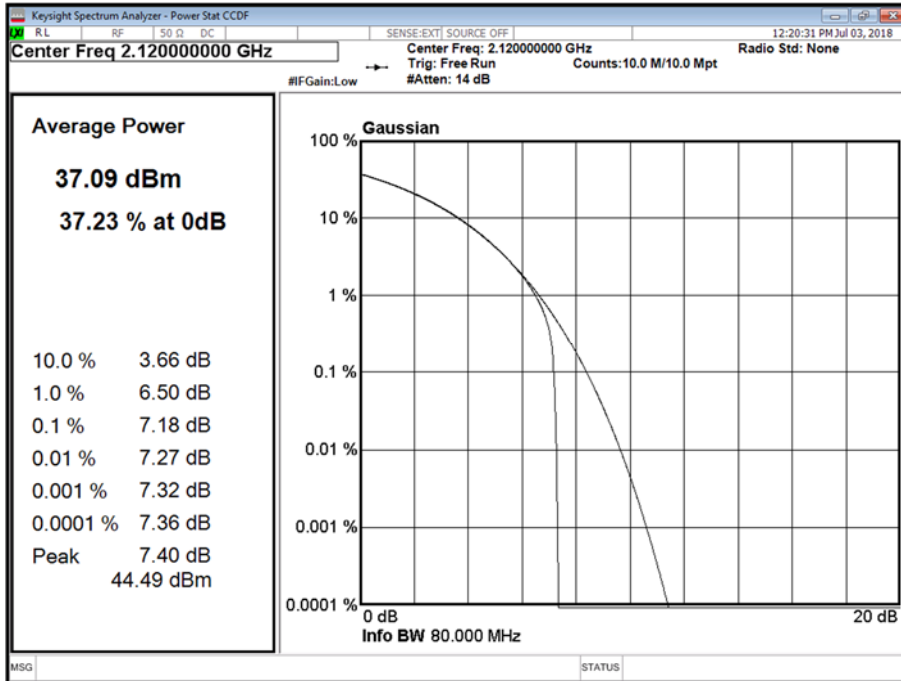
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:15.0 MHz / N:180 kHz - Channel Position BRFBW





Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position BRFBW



Configuration A

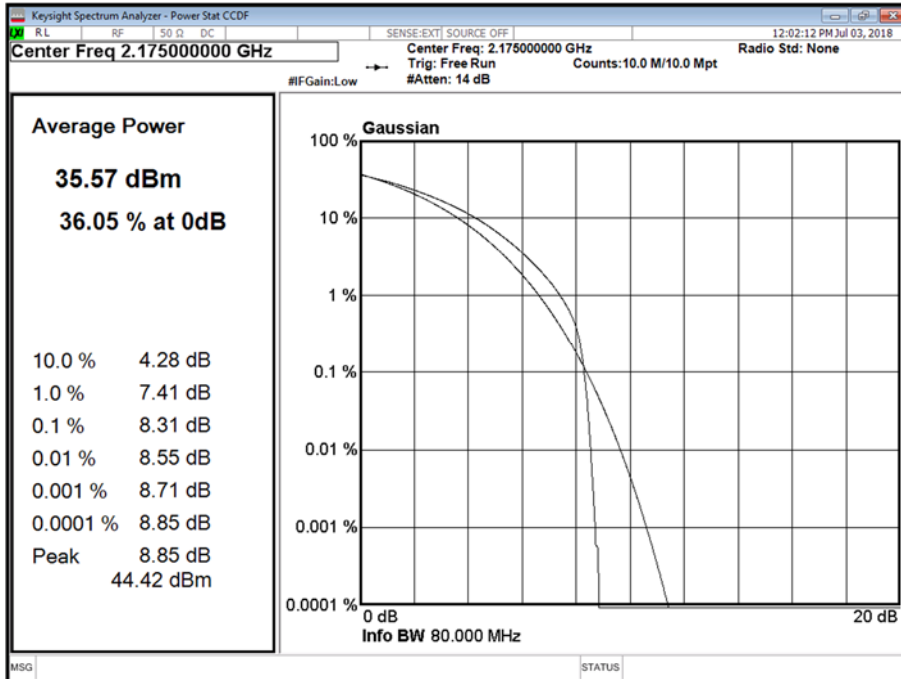
Maximum Output Power 37 dBm

Antenna	E-UTRA / NB-IoT GB Modulation	E-UTRA / NB-IoT GB Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position TRFBW		
			PAR (dB)	Average Power	
dBm	dBm/MHz				
A	E:64QAM / N:QPSK	E:10.0 MHz / N:180 kHz	8.31	36.71	-
A	E:64QAM / N:QPSK	E:15.0 MHz / N:180 kHz	7.24	36.90	-
A	E:64QAM / N:QPSK	E:20.0 MHz / N:180 kHz	7.30	36.83	-

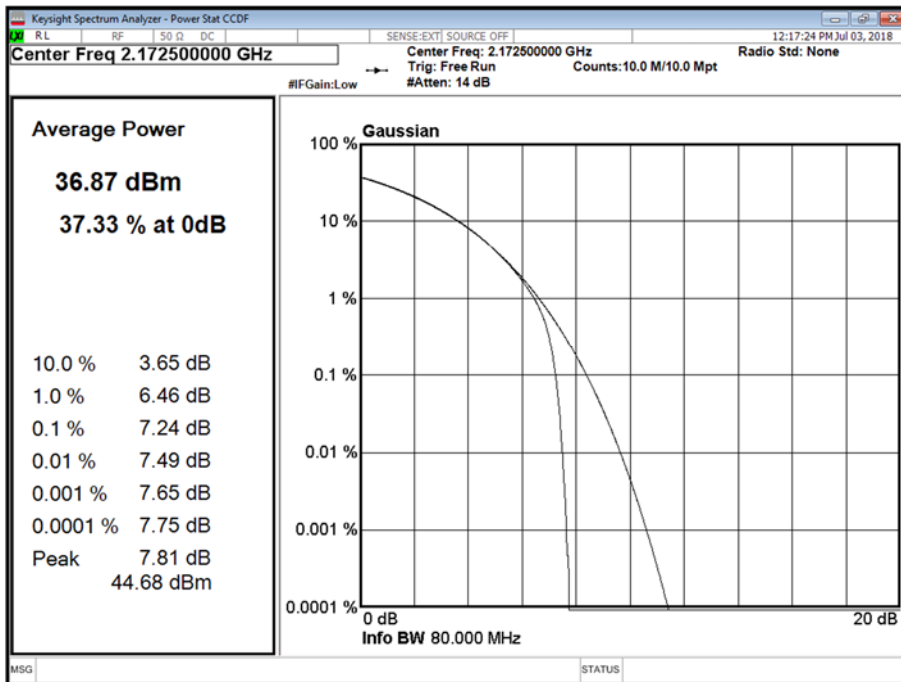


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position TRFBW



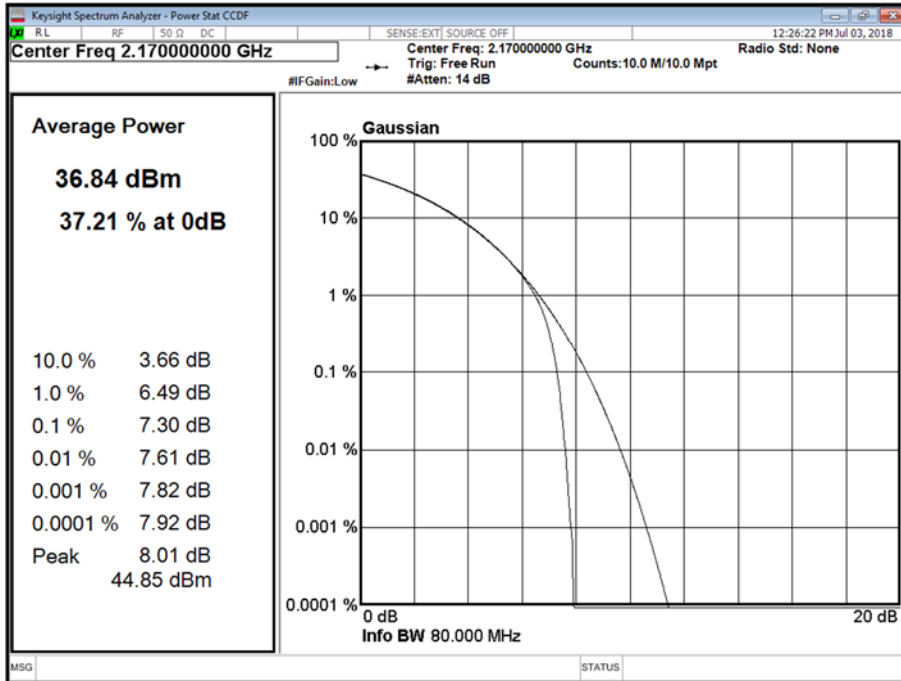
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:15.0 MHz / N:180 kHz - Channel Position TRFBW





Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position TRFBW



Configuration B

Maximum Output Power 37 dBm

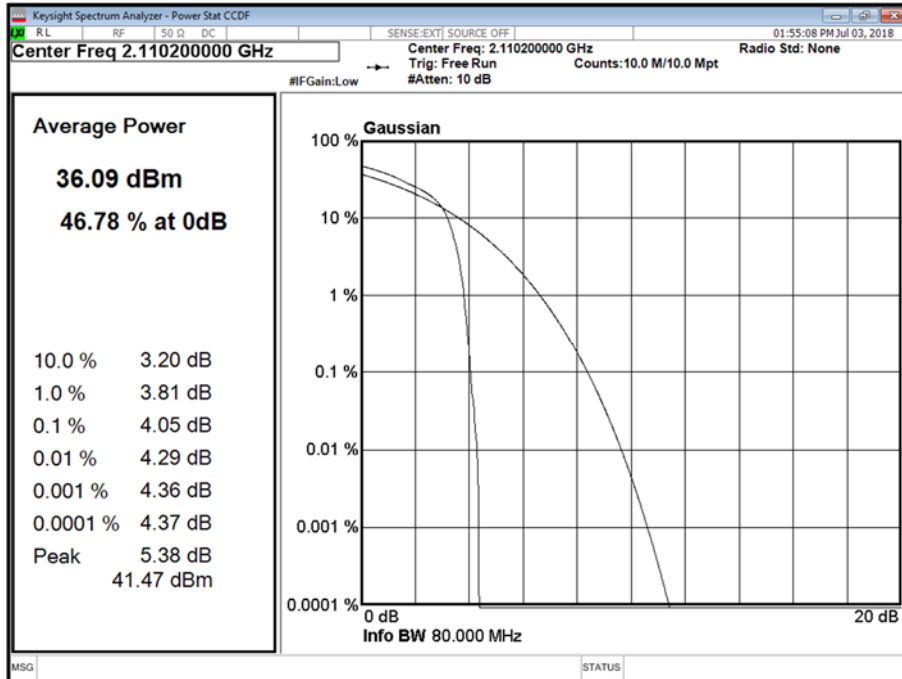
Antenna	NB-IoT SA Modulation	NB-IoT SA Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position B		
			PAR (dB)	Average Power	
dBm	dBm/MHz				
A	N:QPSK	N:180 kHz	4.05	36.18	-





Product Service

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



Configuration B

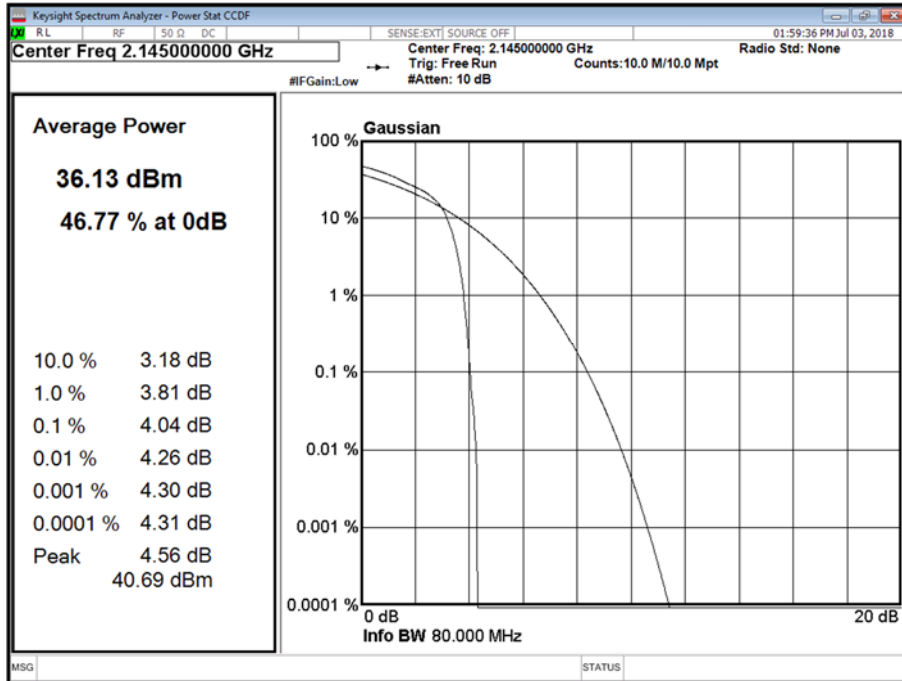
Maximum Output Power 37 dBm

Antenna	NB-IoT SA Modulation	NB-IoT SA Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position M		
			PAR (dB)	Average Power	
dBm	dBm/MHz				
A	N:QPSK	N:180 kHz	4.04	36.16	-



Product Service

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



Configuration B

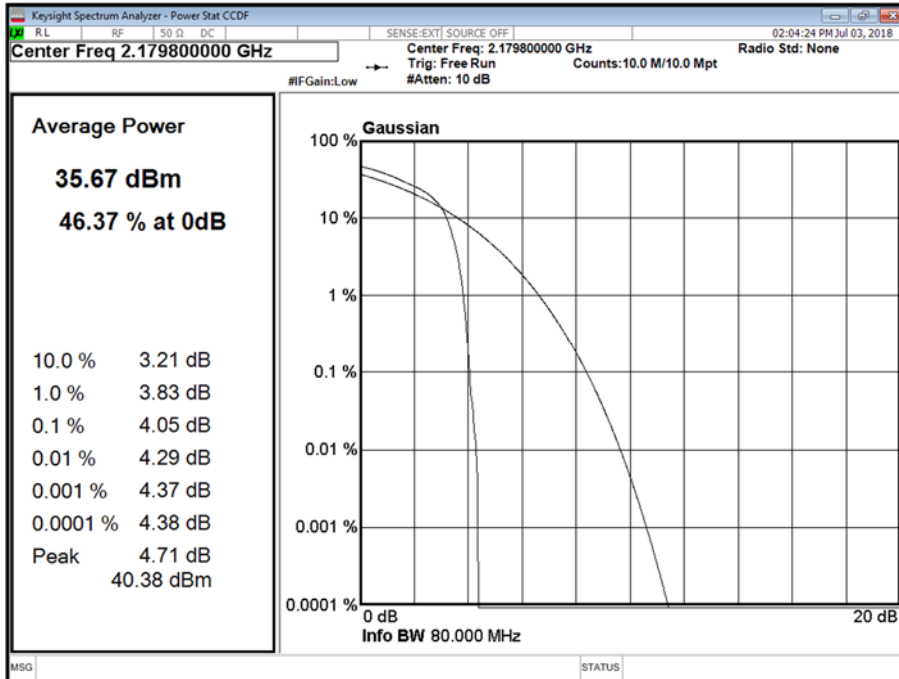
Maximum Output Power 37 dBm

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	4.05	35.68	-



Product Service

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



Limit	
Peak Power	≤500 W or ≤+57 dBm
Peak to Average Ratio	13 dB



**2.2 OCCUPIED BANDWIDTH**

**2.2.1 Specification Reference**

FCC CFR 47 Part 2, Clause 2.1049  
 FCC CFR 47 Part 27, Clause 27.53  
 Industry Canada RSS-GEN, Clause 6.6

**2.2.2 Date of Test and Modification State**

03 July 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 20.6°C  
 Relative Humidity 45.6%

**2.2.5 Test Method**

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

**2.2.6 Test Results**

Configuration A

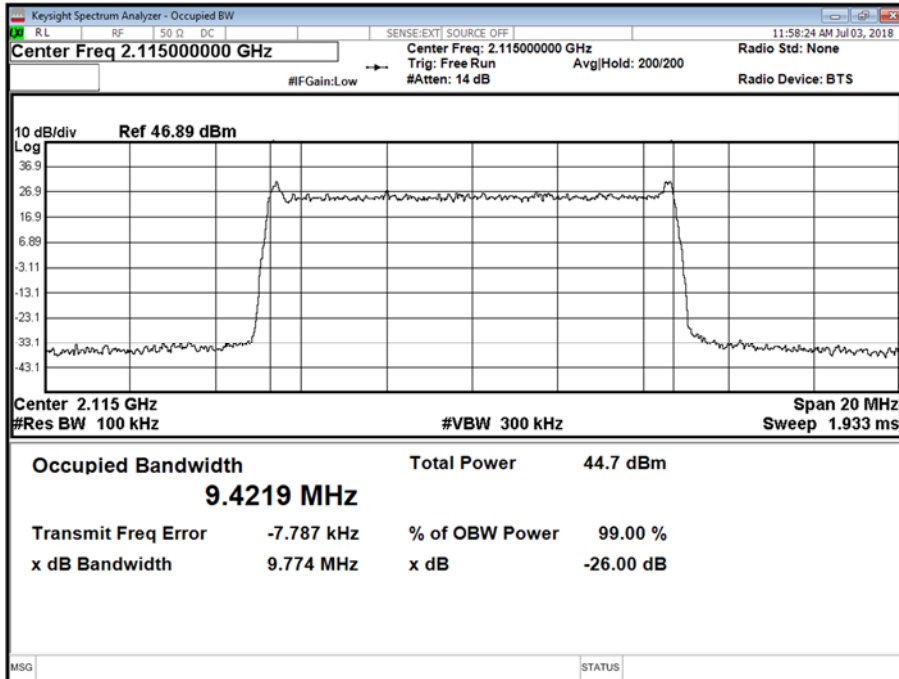
Maximum Output Power 37 dBm

Antenna	E-UTRA / NB-IoT GB Modulation	E-UTRA / NB-IoT GB Carrier Bandwidth	Result (KHz)			
			Channel Position BRFBW		Channel Position TRFBW	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
A	E:64QAM / N:QPSK	E:10.0 MHz / N:180 kHz	9,421.91	9,773.90	9,403.02	9,757.13
A	E:64QAM / N:QPSK	E:15.0 MHz / N:180 kHz	13,999.38	14,593.85	14,006.72	14,563.69
A	E:64QAM / N:QPSK	E:20.0 MHz / N:180 kHz	18,439.13	19,374.71	18,433.57	19,203.37

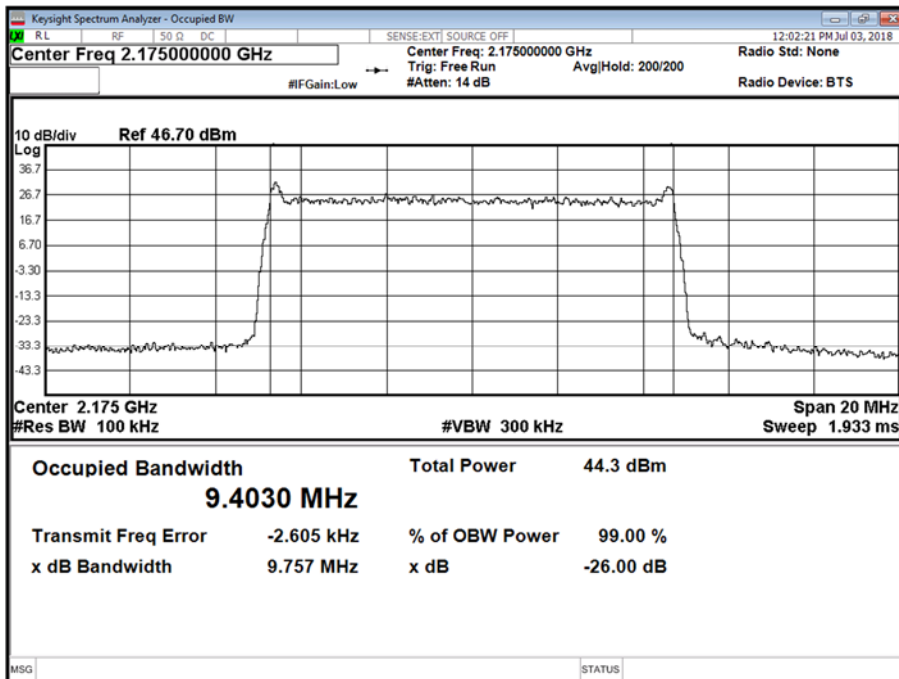


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position BRFBW



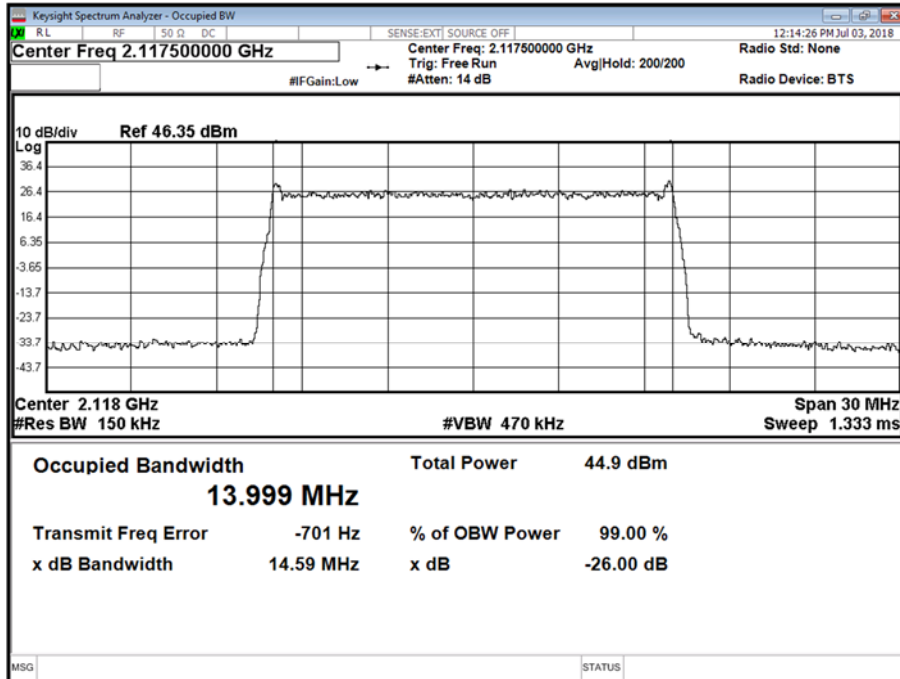
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position TRFBW



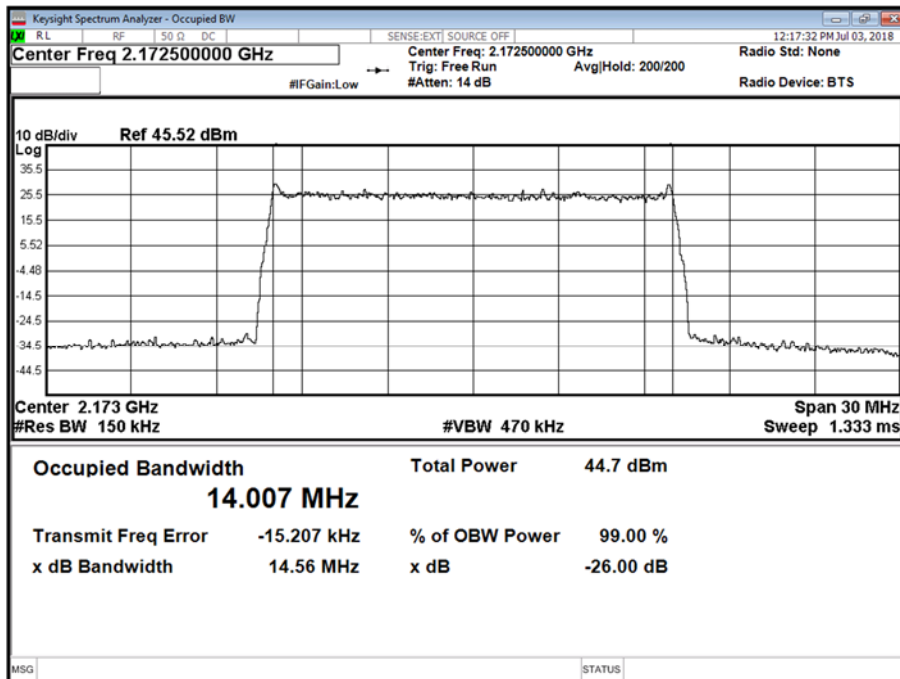


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:15.0 MHz / N:180 kHz - Channel Position BRFBW



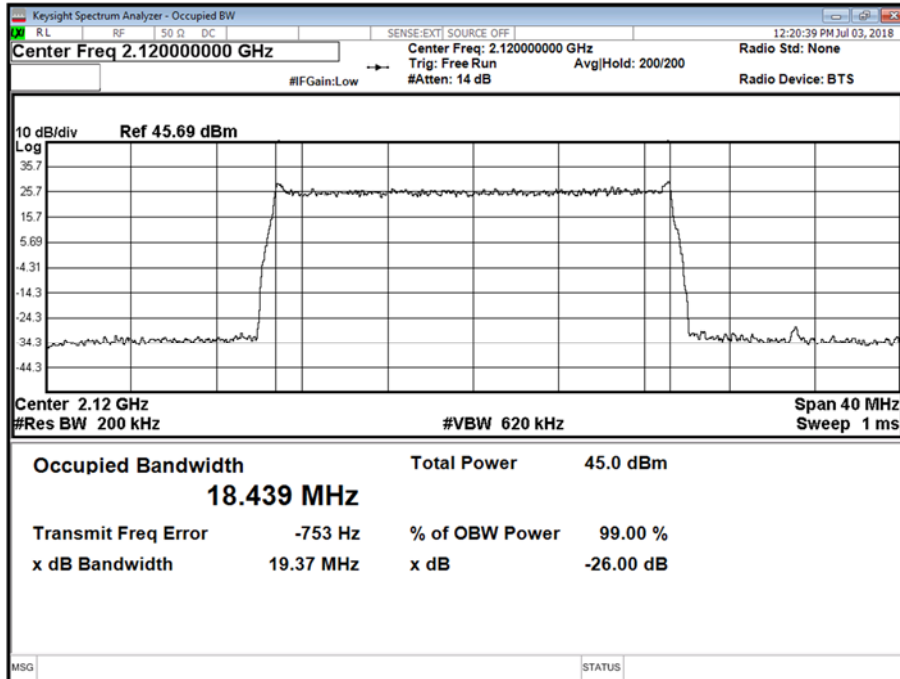
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:15.0 MHz / N:180 kHz - Channel Position TRFBW



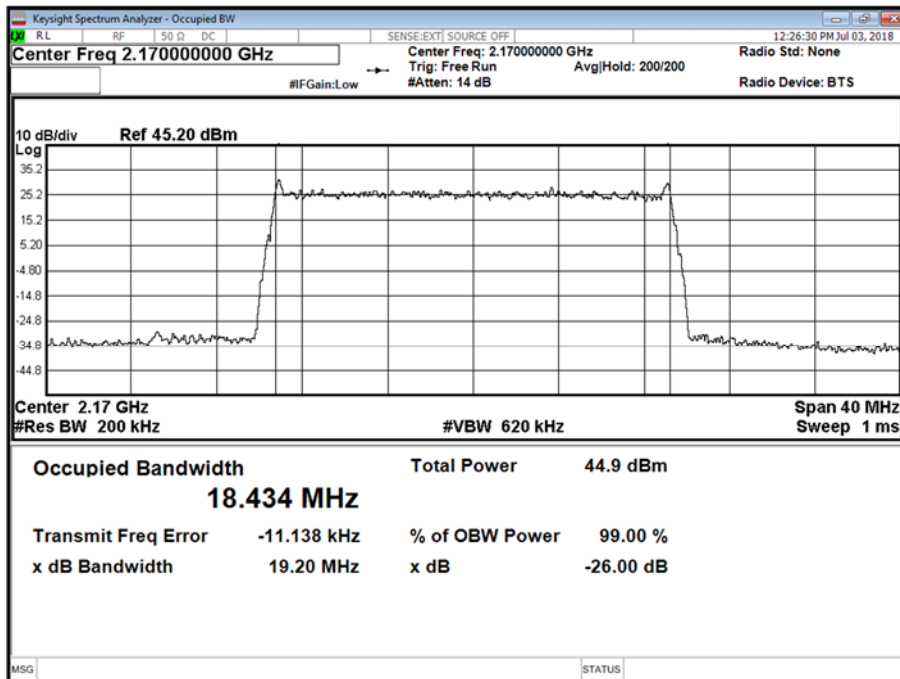


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position BRFBW



Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position TRFBW





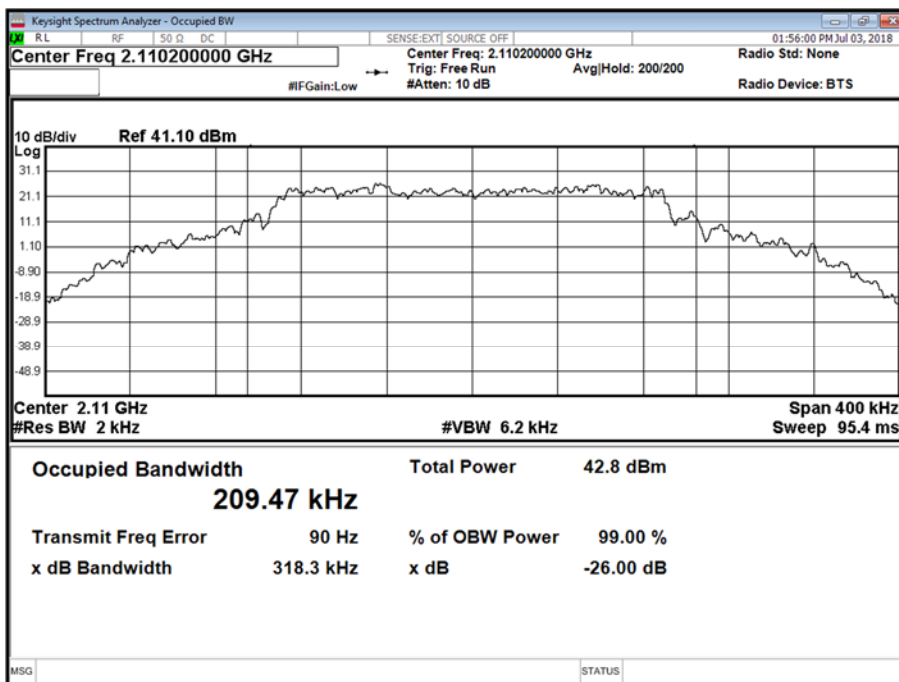
Product Service

Configuration B

Maximum Output Power 37 dBm

Antenna	NB-IoT SA Modulation	NB-IoT SA 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	N:QPSK	N:180 kHz	209.47	318.32	209.45	318.32	209.55	318.38

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

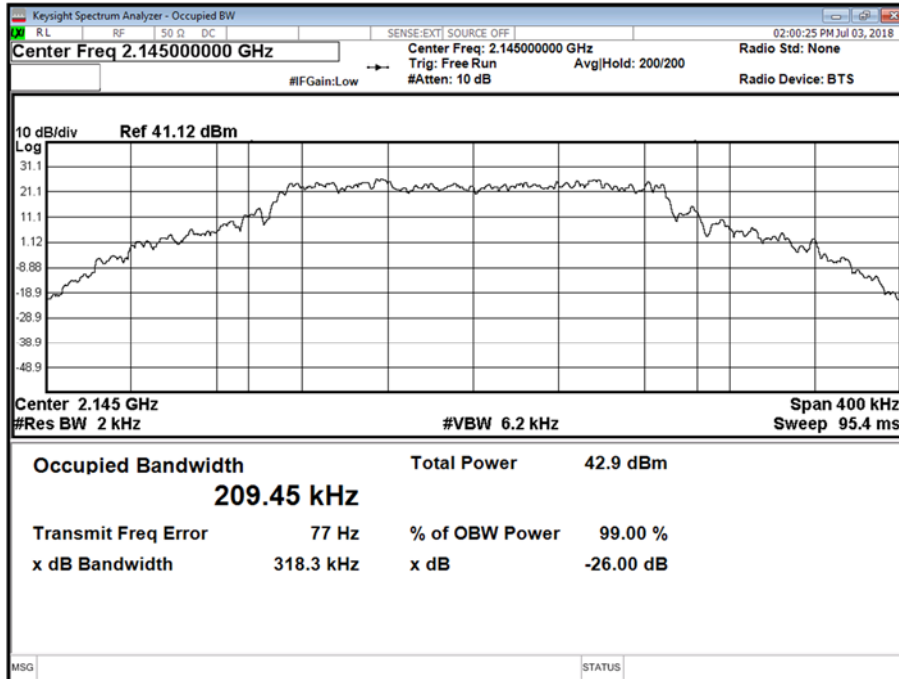




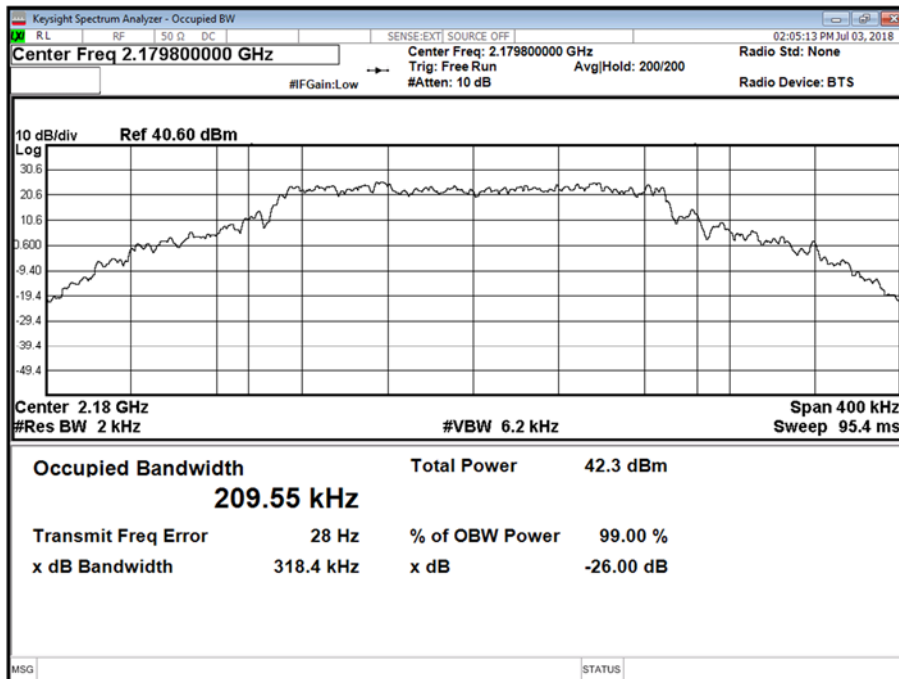


Product Service

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



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





**2.3 BAND EDGE**

**2.3.1 Specification Reference**

FCC CFR 47 Part 2, Clause 2.1051  
 FCC CFR 47 Part 27, Clause 27.53 (h)  
 Industry Canada RSS-139, Clause 6.5

**2.3.2 Date of Test and Modification State**

03 July 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 20.6°C  
 Relative Humidity 45.6%

**2.3.5 Test Method**

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

Each antenna port has been declared as being equivalent, therefore measurements were made on one antenna port only. To account for this, the limit was tightened by  $10 * \text{Log}(N)$ , where N is equal to the number of MIMO antenna ports.

For four ports, the limit was calculated as being  $-13 \text{ dBm} - 10 * \text{Log}(4) = -19 \text{ dBm}$ .

For dual ports, the limit was calculated as being  $-13 \text{ dBm} - 10 * \text{Log}(2) = -16 \text{ dBm}$ .

**2.3.6 Test Results**

Configuration A

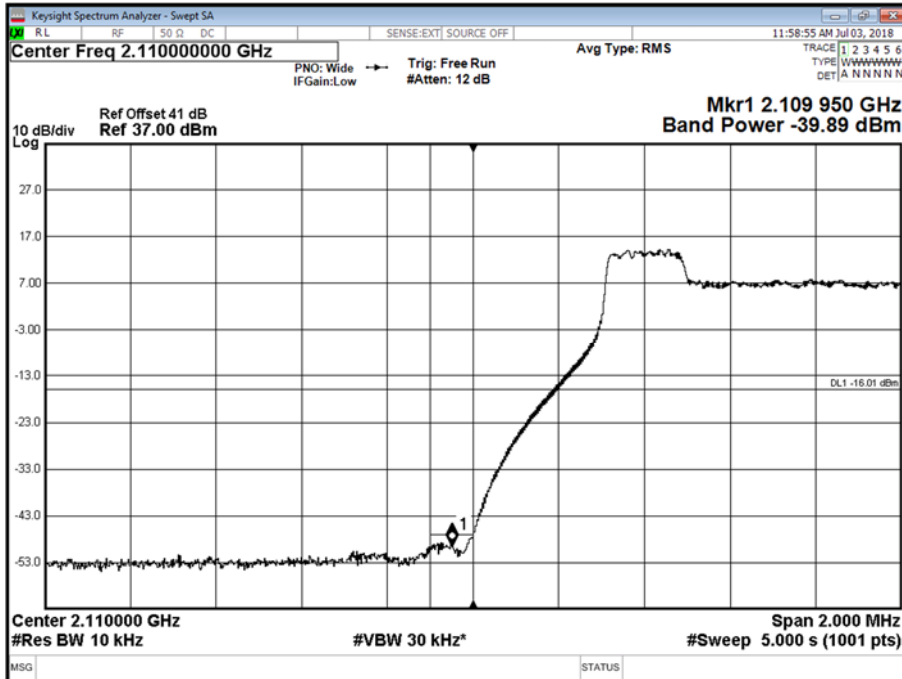
Maximum Output Power 37 dBm

Antenna	E-UTRA / NB-IoT GB Modulation	E-UTRA / NB-IoT GB Carrier Bandwidth	Band Edge (MHz)	
			Channel Position BRFBW	Channel Position TRFBW
A	E:64QAM / N:QPSK	E:10.0 MHz / N:180 kHz	2,115.0	2,175.0
A	E:64QAM / N:QPSK	E:15.0 MHz / N:180 kHz	2,117.5	2,172.5
A	E:64QAM / N:QPSK	E:20.0 MHz / N:180 kHz	2,120.0	2,170.0

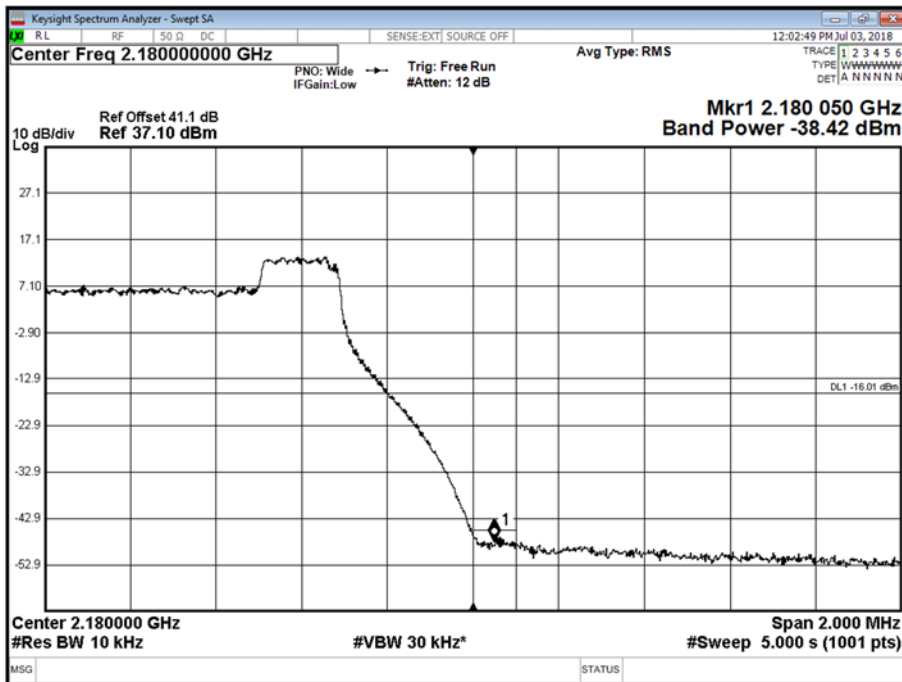


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position BRFBW



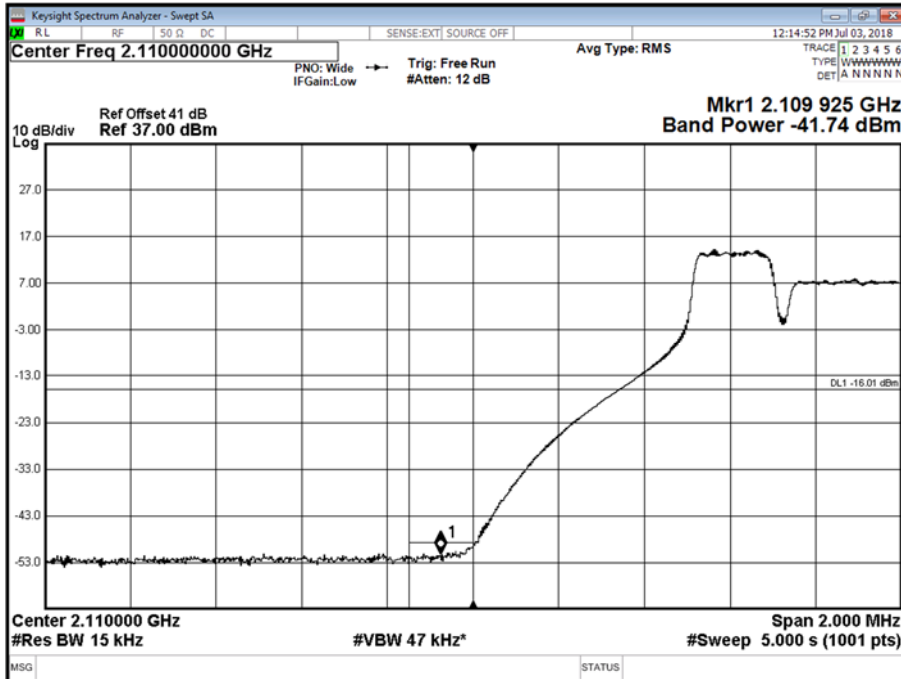
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position TRFBW



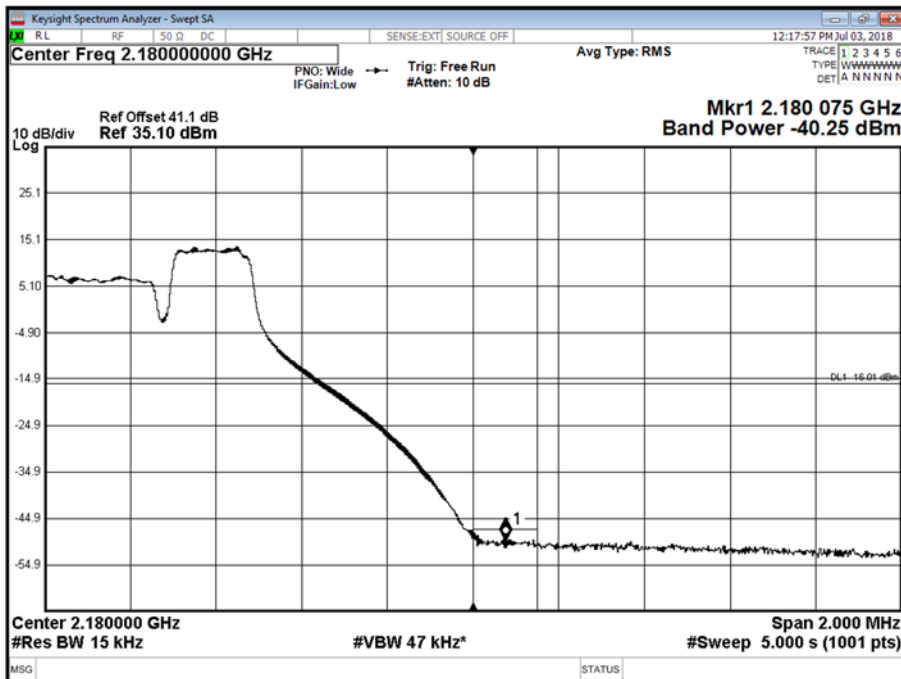


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:15.0 MHz / N:180 kHz - Channel Position BRFBW



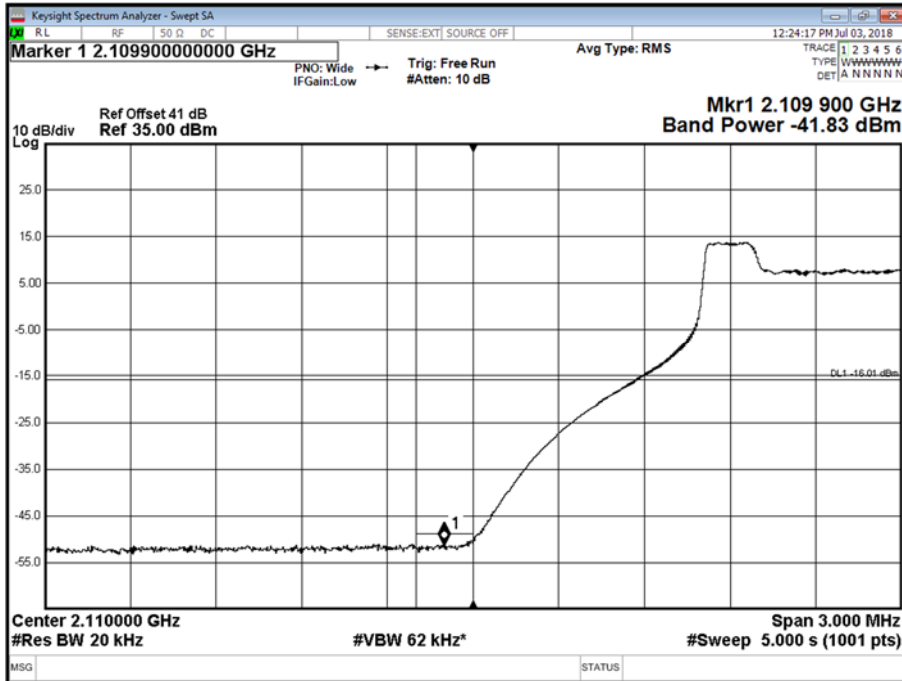
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:15.0 MHz / N:180 kHz - Channel Position TRFBW



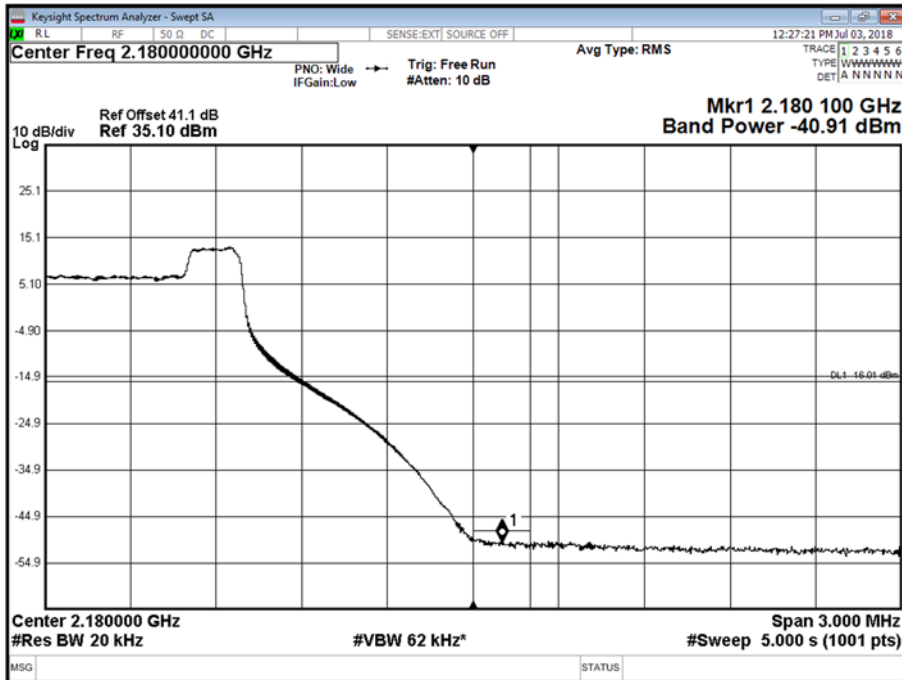


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position BRFBW



Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position TRFBW





Product Service

Configuration B

Maximum Output Power 37 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	2,110.2	2,179.8

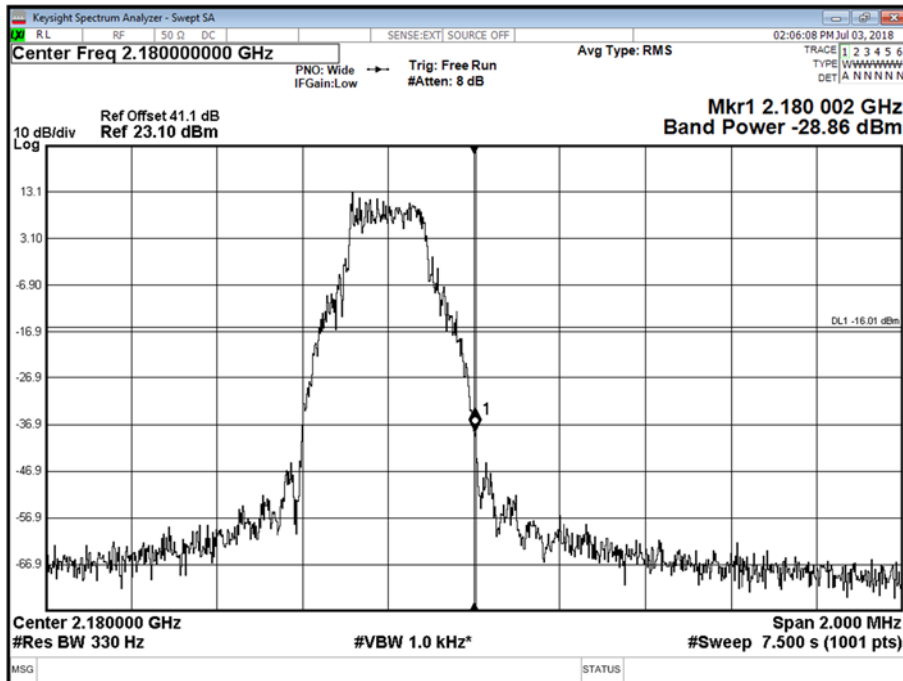
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position B





Product Service

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



Limit	-16 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 27, Clause 27.53 (h)  
Industry Canada RSS-139, Clause 6.5

### **2.4.2 Date of Test and Modification State**

03 July 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	20.6°C
Relative Humidity	45.6%

### **2.4.5 Test Method**

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

Each antenna port has been declared as being equivalent, therefore measurements were made on one antenna port only. To account for this, the limit was tightened by  $10 * \text{Log}(N)$ , where N is equal to the number of MIMO antenna ports.

For four ports, the limit was calculated as being  $-13 \text{ dBm} - 10 * \text{Log}(4) = -19 \text{ dBm}$ .

For dual ports, the limit was calculated as being  $-13 \text{ dBm} - 10 * \text{Log}(2) = -16 \text{ dBm}$ .

### **2.4.6 Test Results**

Configuration A

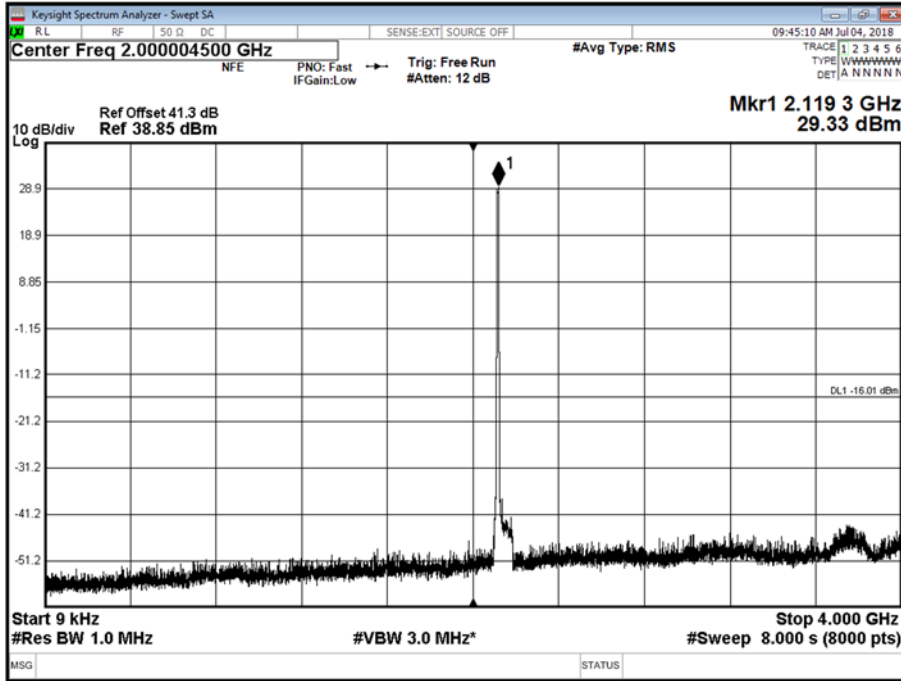
Maximum Output Power 37 dBm



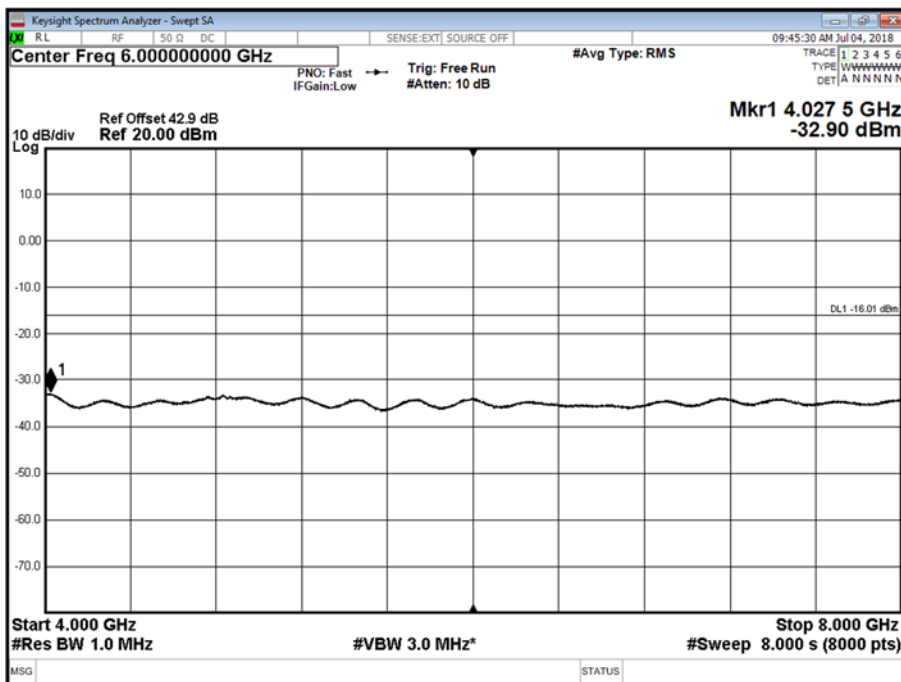


Product Service

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



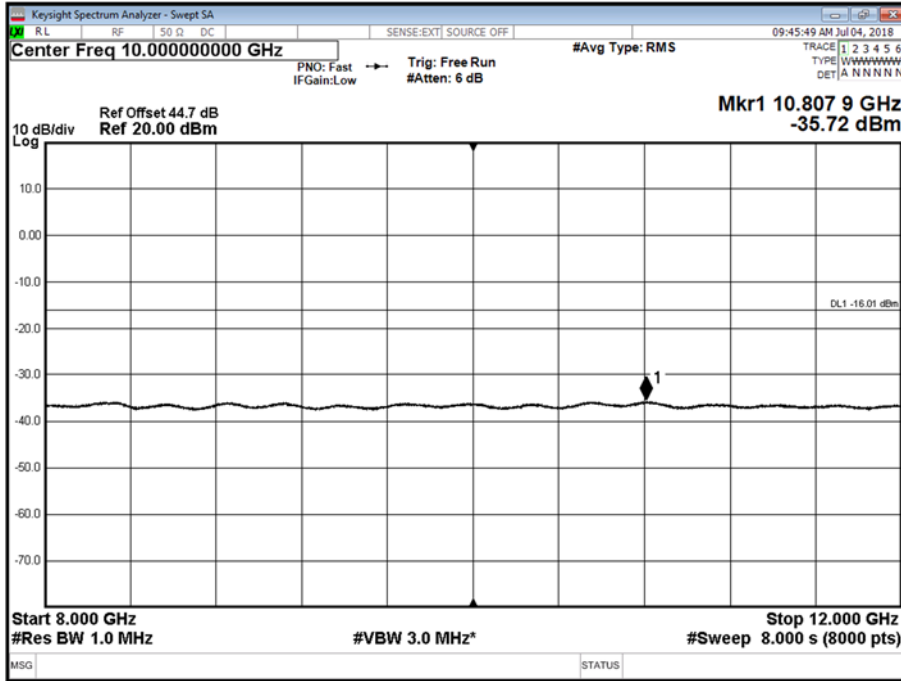
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position BRFBW - Band 2 - Range 4000  
to 8000 MHz



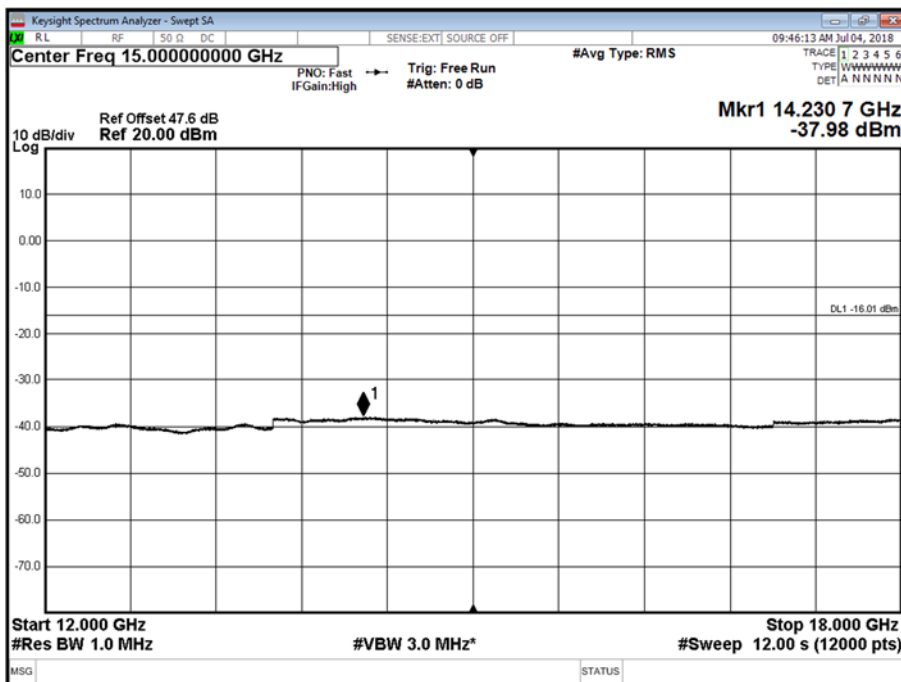


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position BRFBW - Band 3 - Range 8000  
to 12000 MHz



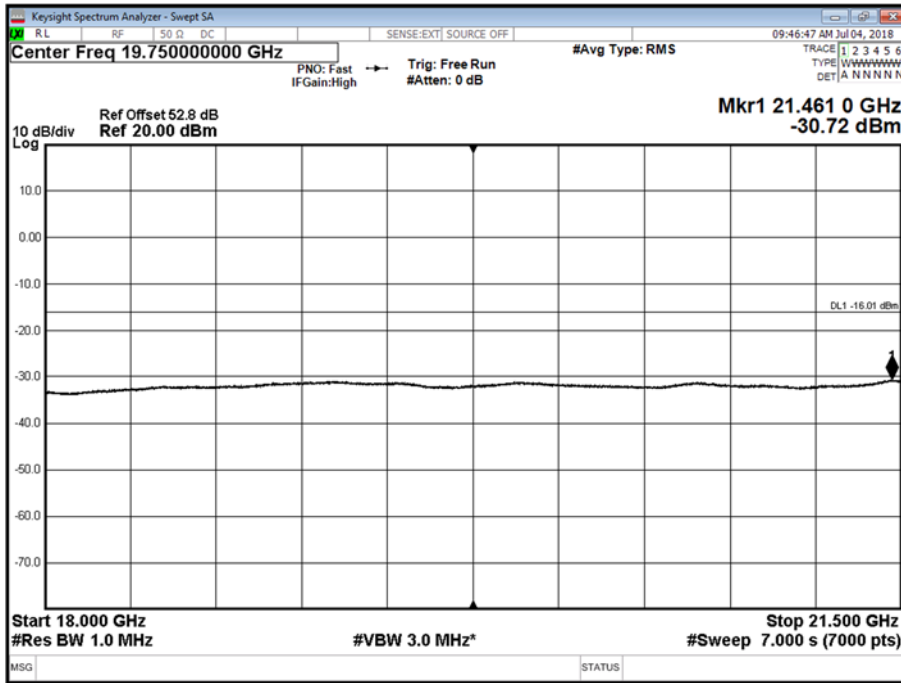
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position BRFBW - Band 4 - Range 12000  
to 18000 MHz



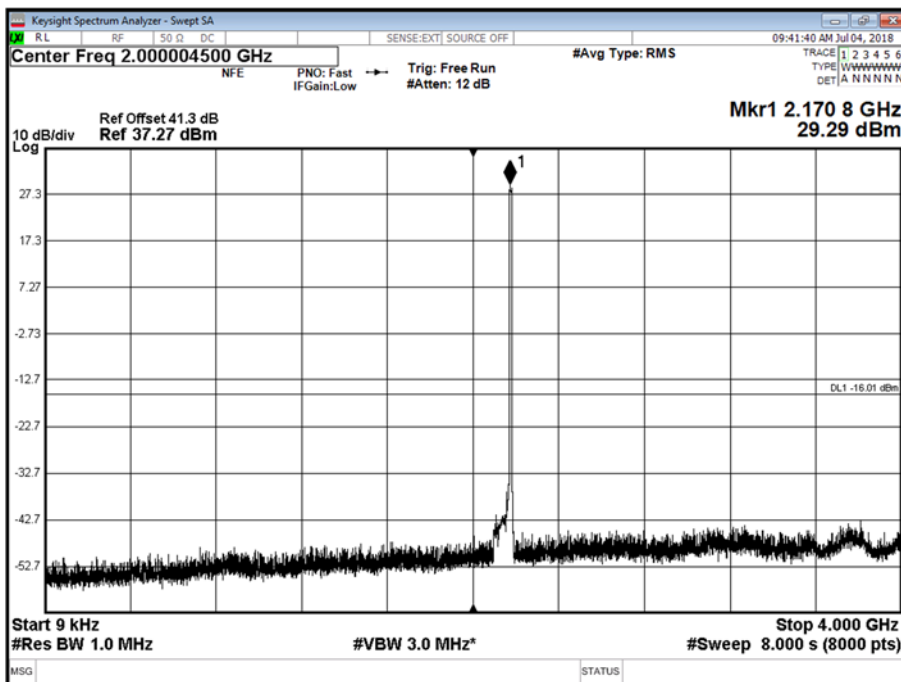


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position BRFBW - Band 5 - Range 18000  
to 20000 MHz



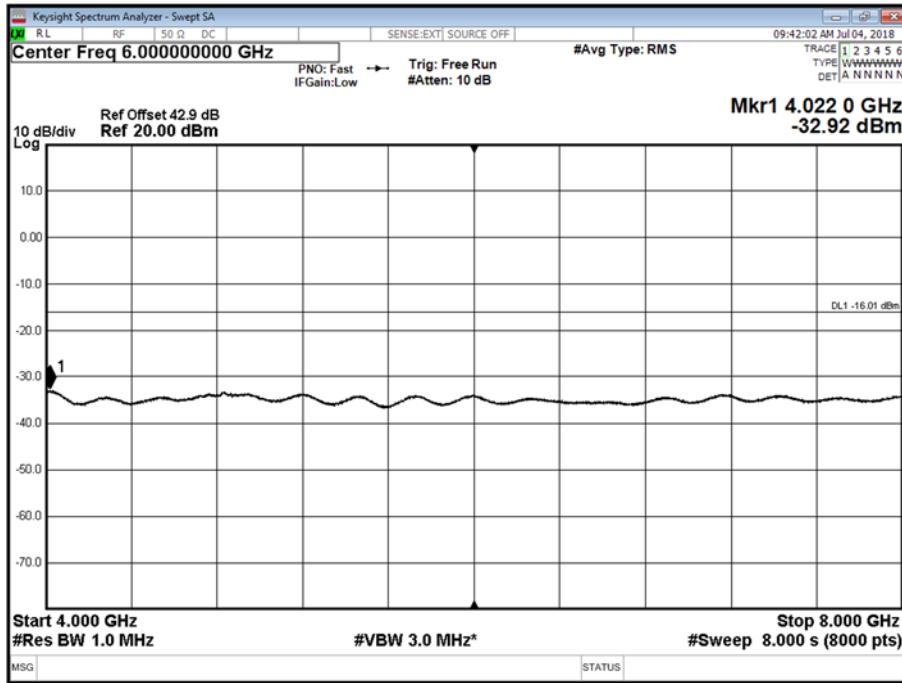
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position TRFBW - Band 1 - Range 0.009  
to 4000 MHz



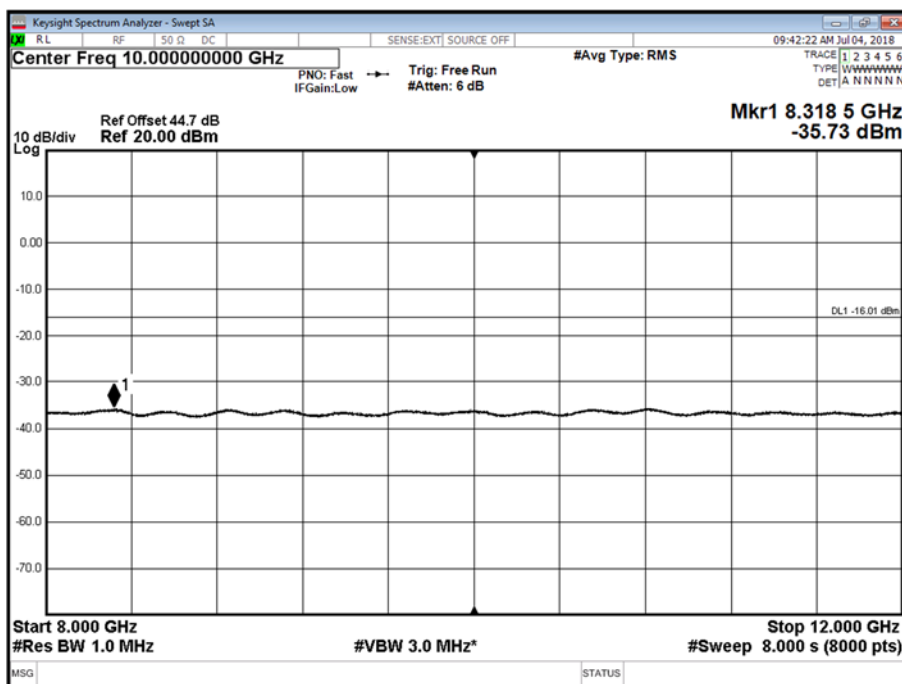


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position TRFBW - Band 2 - Range 4000  
to 8000 MHz



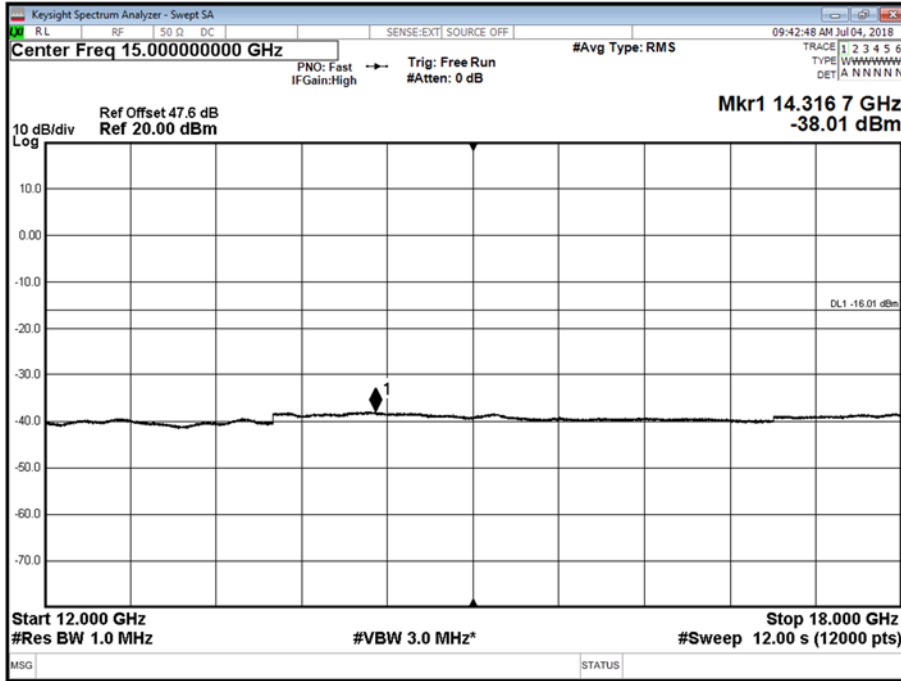
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position TRFBW - Band 3 - Range 8000  
to 12000 MHz



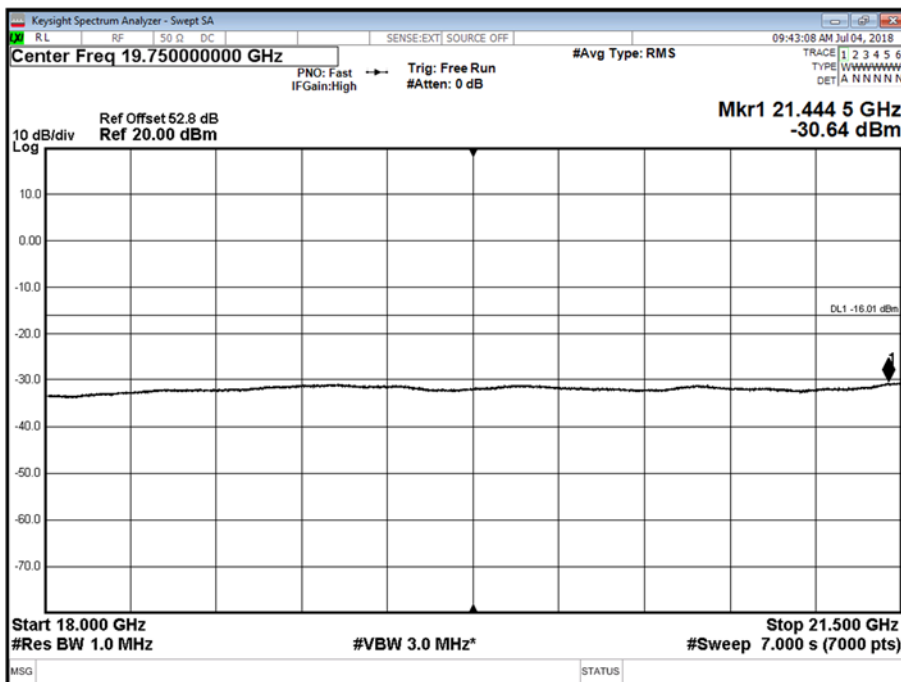


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position TRFBW - Band 4 - Range 12000  
to 18000 MHz



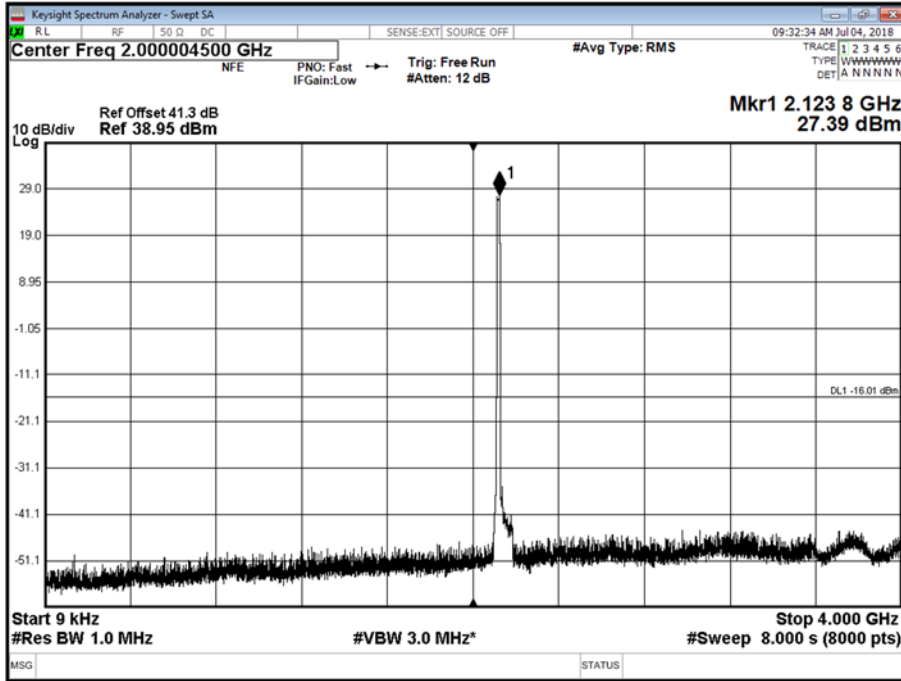
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:10.0 MHz / N:180 kHz - Channel Position TRFBW - Band 5 - Range 18000  
to 20000 MHz



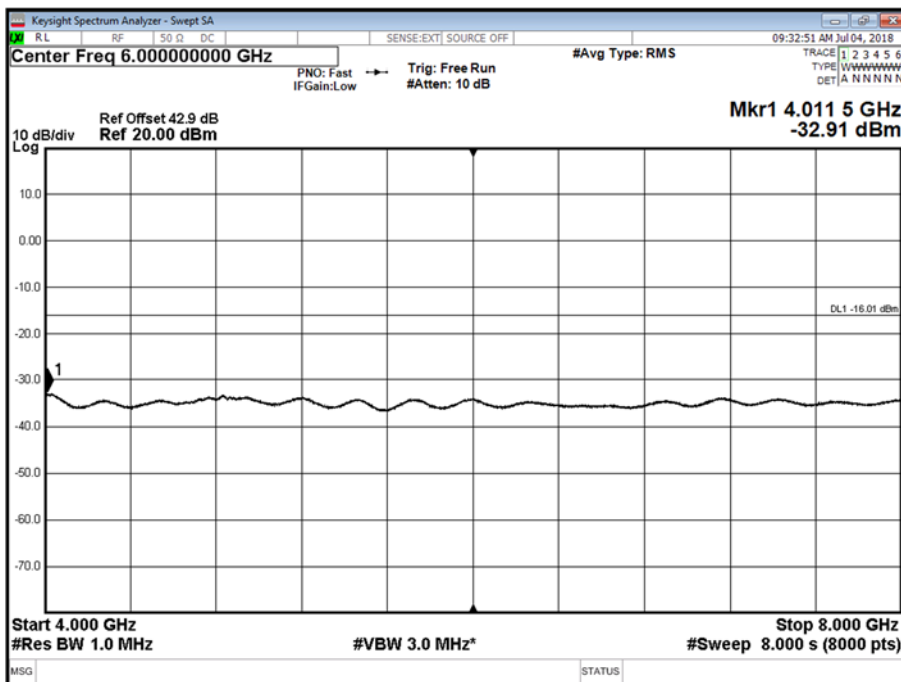


Product Service

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



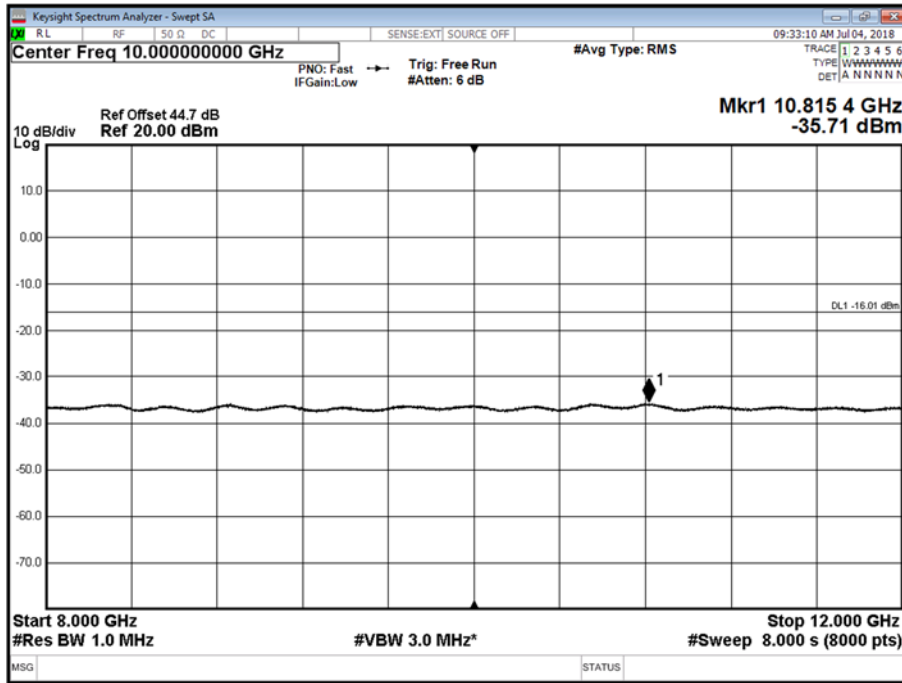
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:15.0 MHz / N:180 kHz - Channel Position BRFBW - Band 2 - Range 4000  
to 8000 MHz



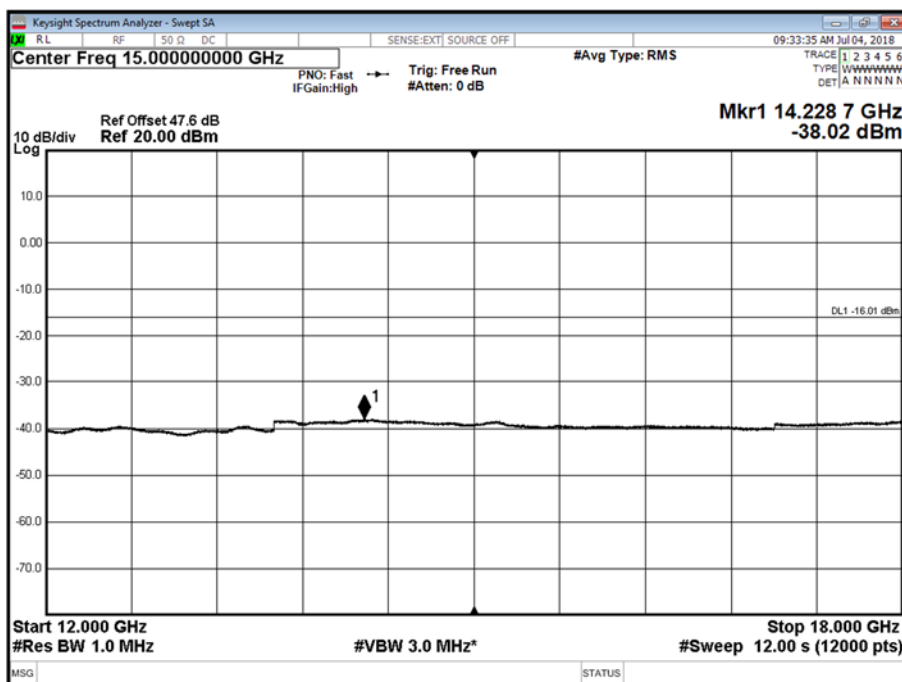


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:15.0 MHz / N:180 kHz - Channel Position BRFBW - Band 3 - Range 8000  
to 12000 MHz



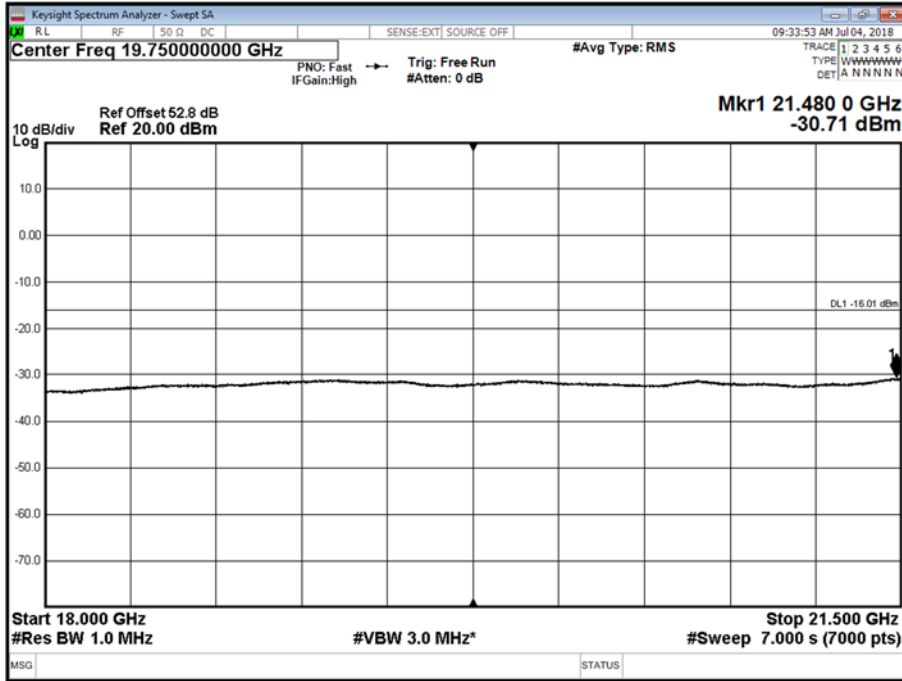
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:15.0 MHz / N:180 kHz - Channel Position BRFBW - Band 4 - Range 12000  
to 18000 MHz



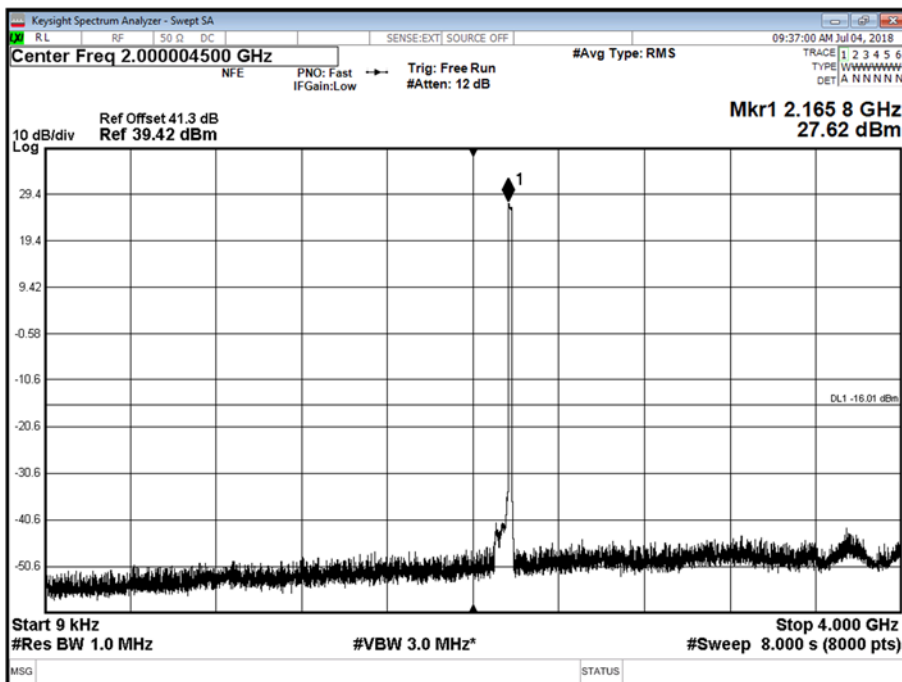


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:15.0 MHz / N:180 kHz - Channel Position BRFBW - Band 5 - Range 18000  
to 20000 MHz



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

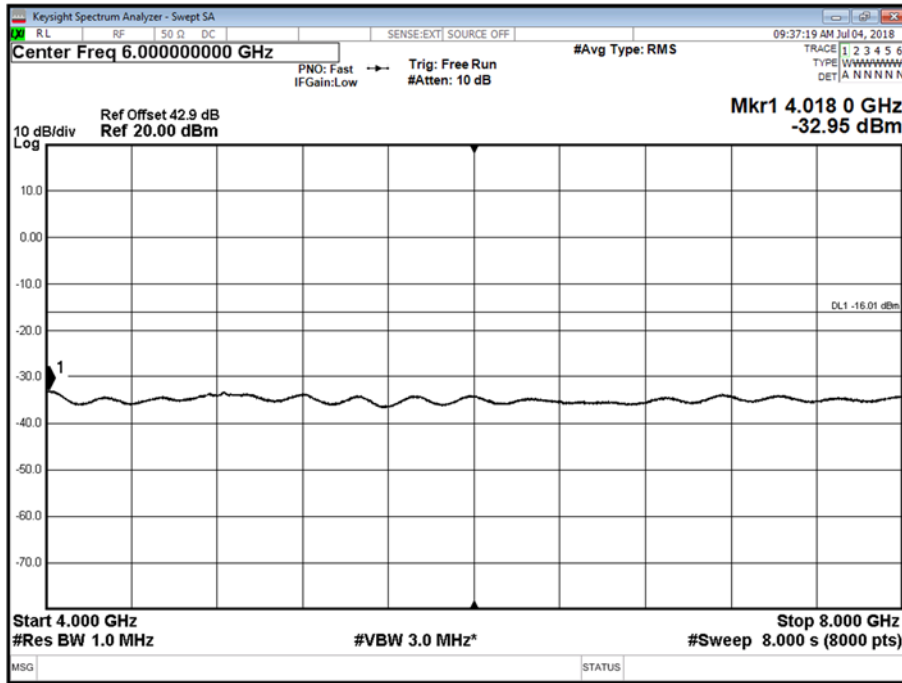




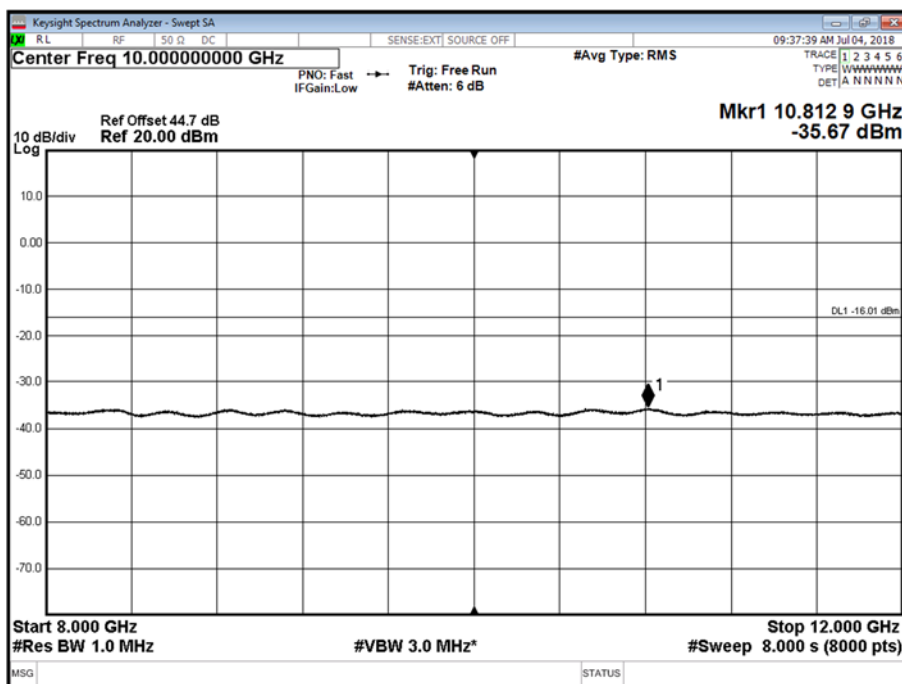


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:15.0 MHz / N:180 kHz - Channel Position TRFBW - Band 2 - Range 4000  
to 8000 MHz



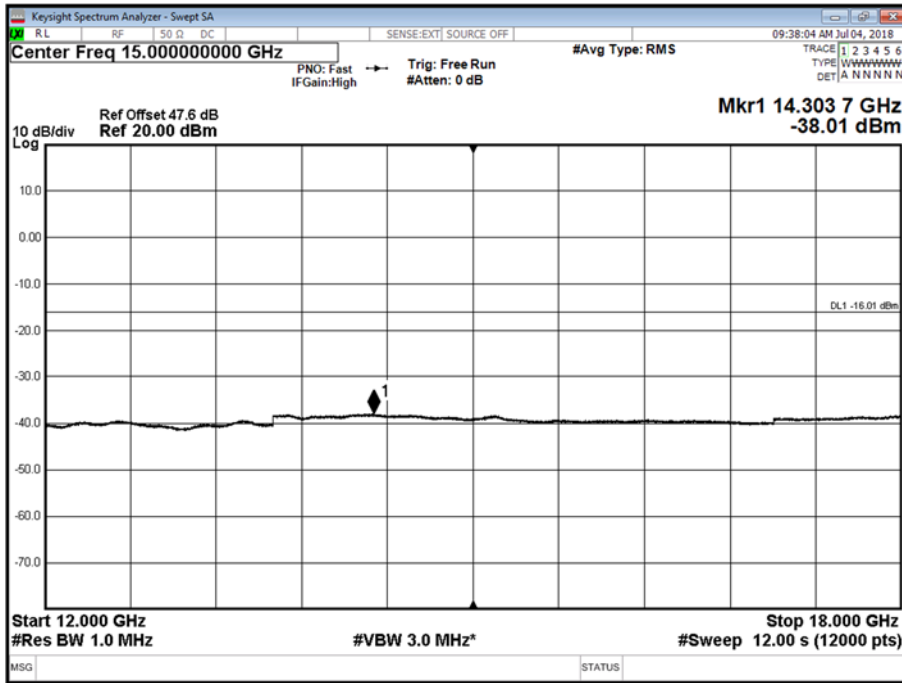
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:15.0 MHz / N:180 kHz - Channel Position TRFBW - Band 3 - Range 8000  
to 12000 MHz



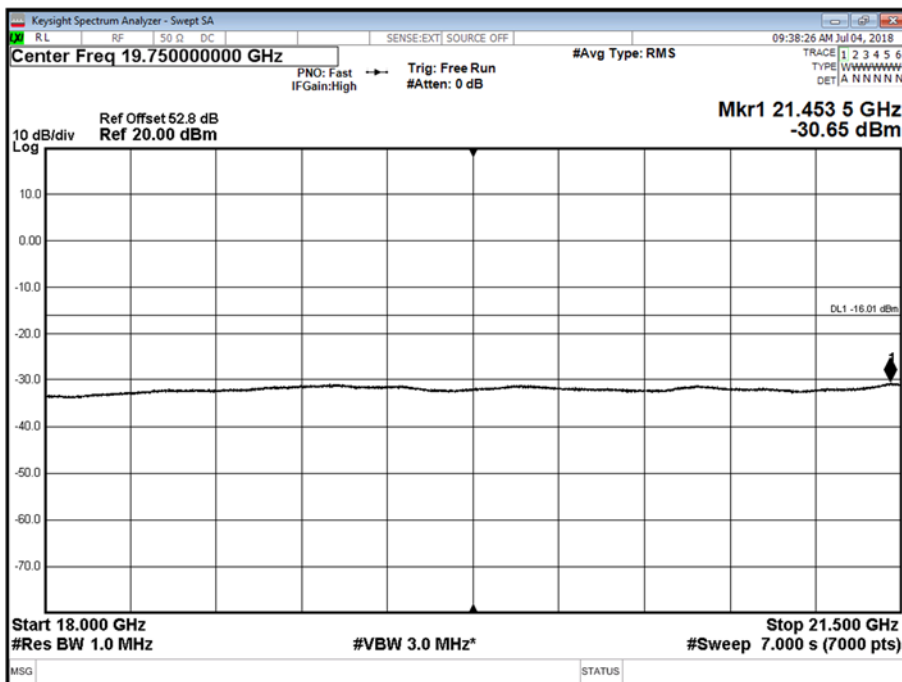


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:15.0 MHz / N:180 kHz - Channel Position TRFBW - Band 4 - Range 12000  
to 18000 MHz



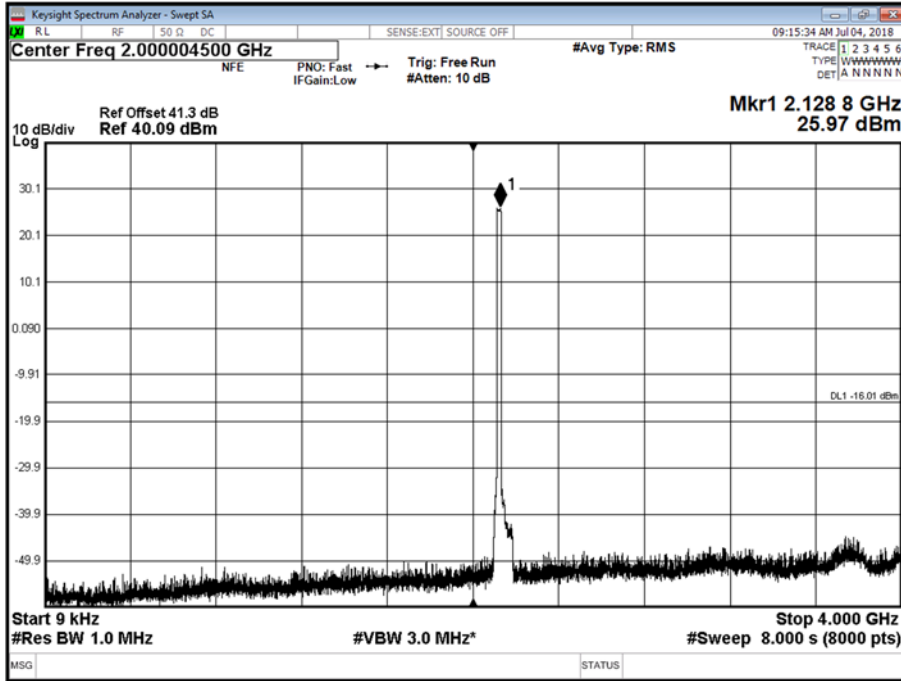
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:15.0 MHz / N:180 kHz - Channel Position TRFBW - Band 5 - Range 18000  
to 20000 MHz



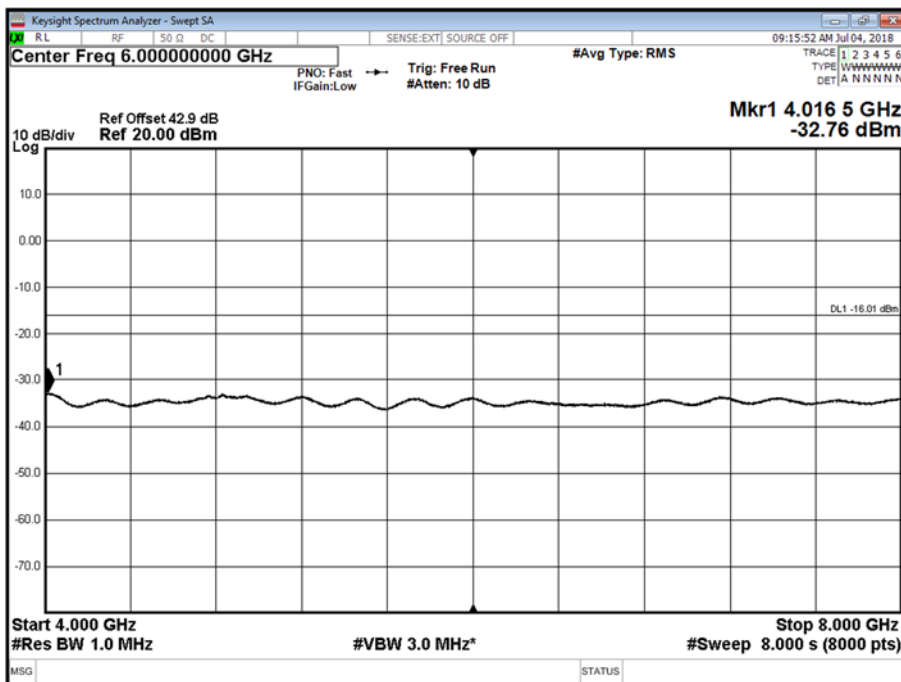


Product Service

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



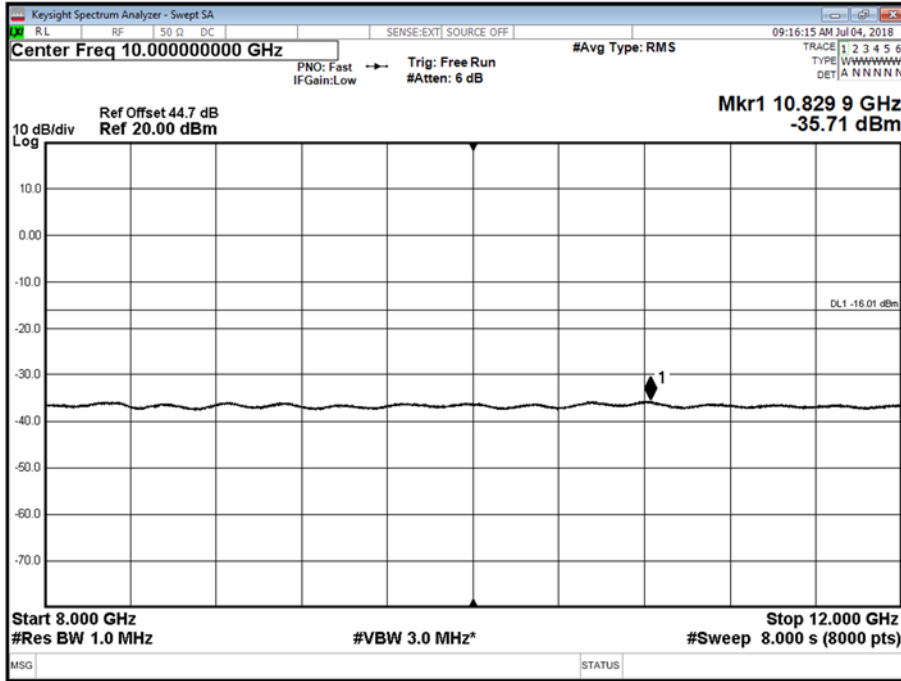
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position BRFBW - Band 2 - Range 4000  
to 8000 MHz



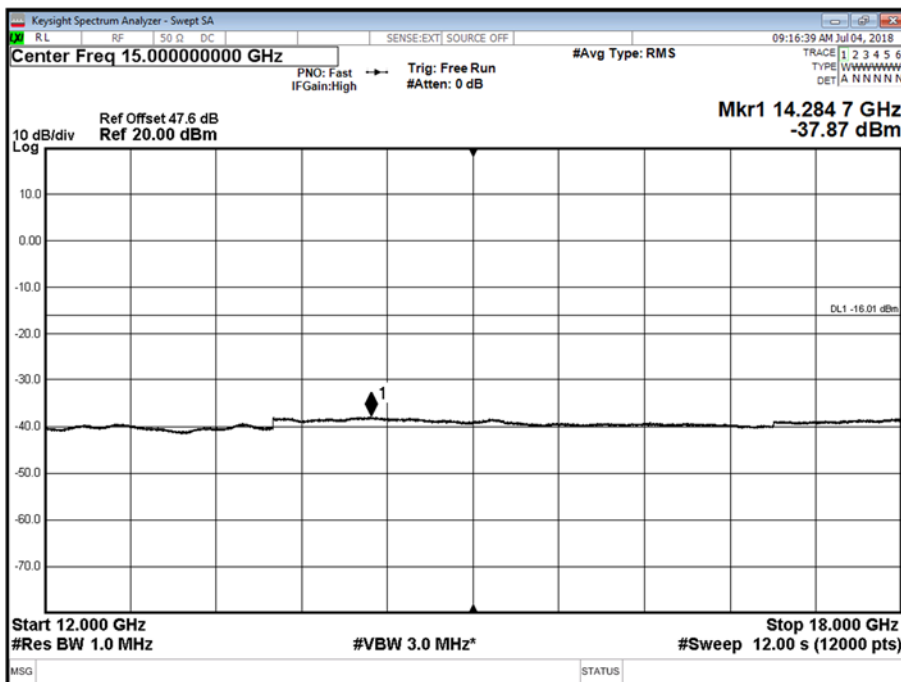


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position BRFBW - Band 3 - Range 8000  
to 12000 MHz



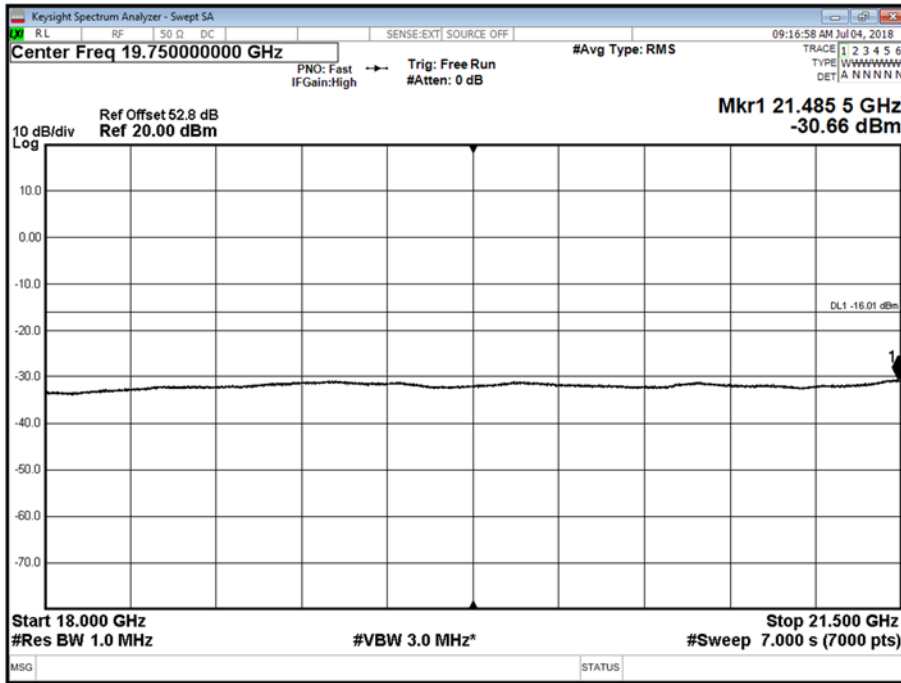
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position BRFBW - Band 4 - Range 12000  
to 18000 MHz



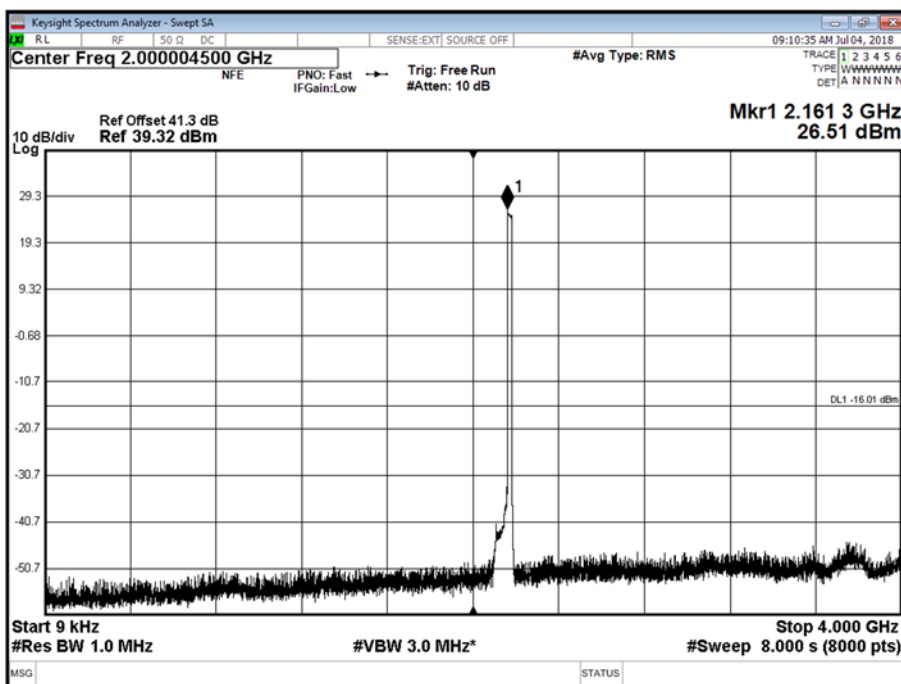


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position BRFBW - Band 5 - Range 18000  
to 20000 MHz



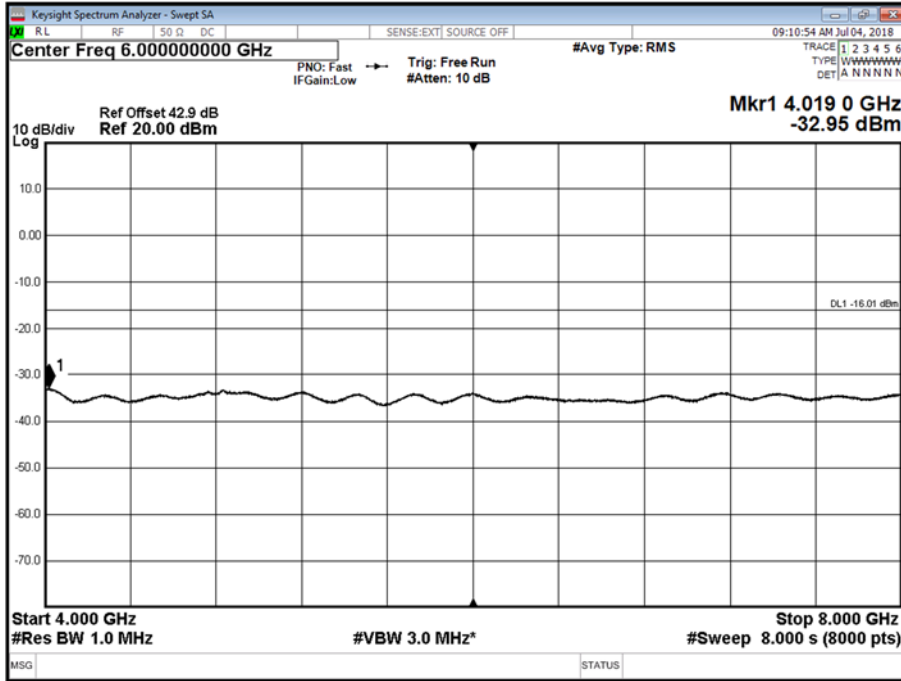
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position TRFBW - Band 1 - Range 0.009  
to 4000 MHz



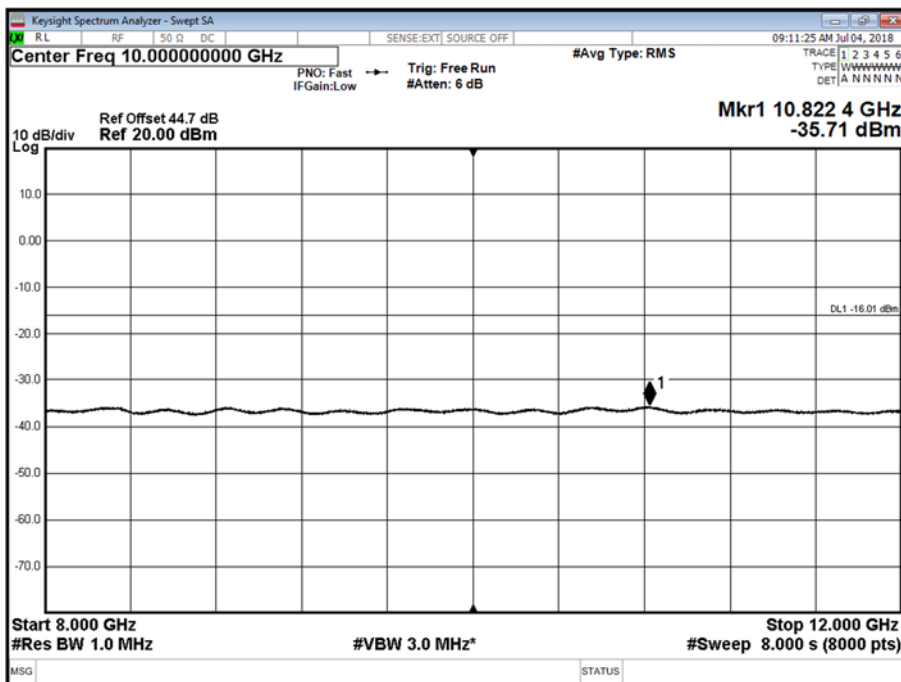


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position TRFBW - Band 2 - Range 4000  
to 8000 MHz



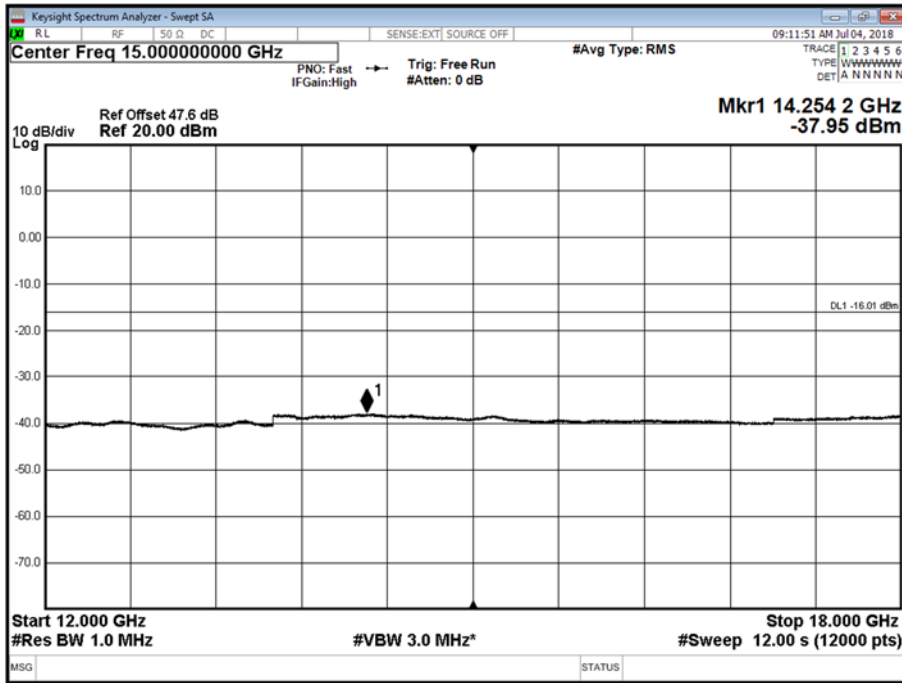
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position TRFBW - Band 3 - Range 8000  
to 12000 MHz



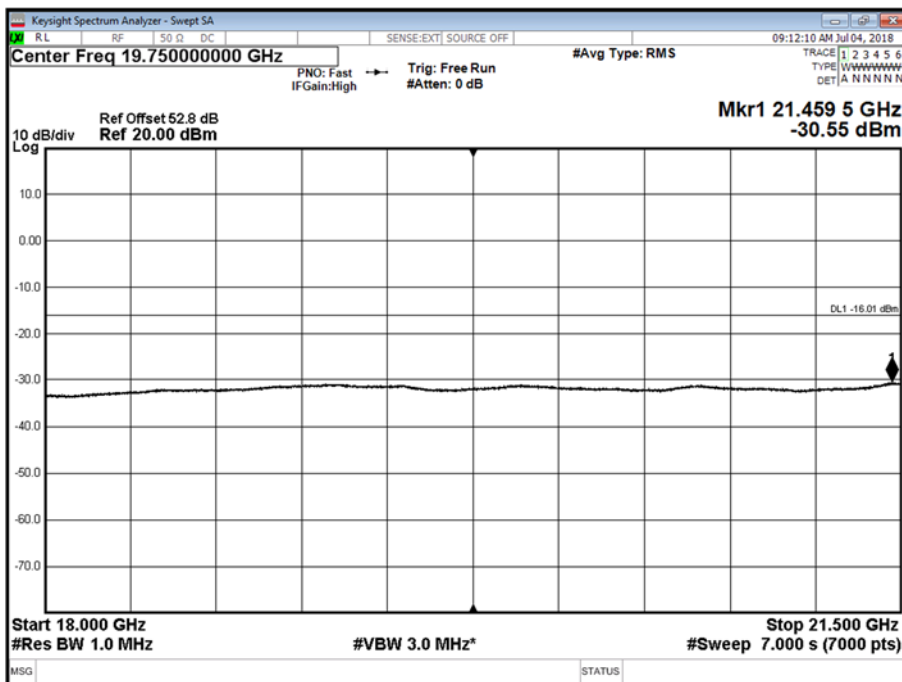


Product Service

Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position TRFBW - Band 4 - Range 12000  
to 18000 MHz



Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB  
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position TRFBW - Band 5 - Range 18000  
to 20000 MHz



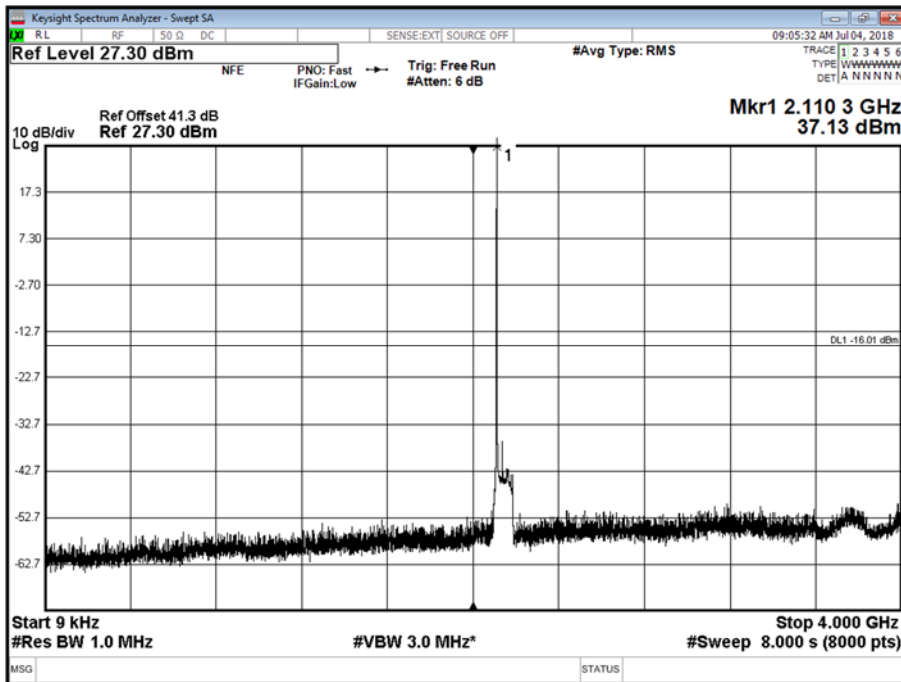


Product Service

Configuration B

Maximum Output Power 37 dBm

Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position B - Band 1 - Range 0.009 to 4000 MHz

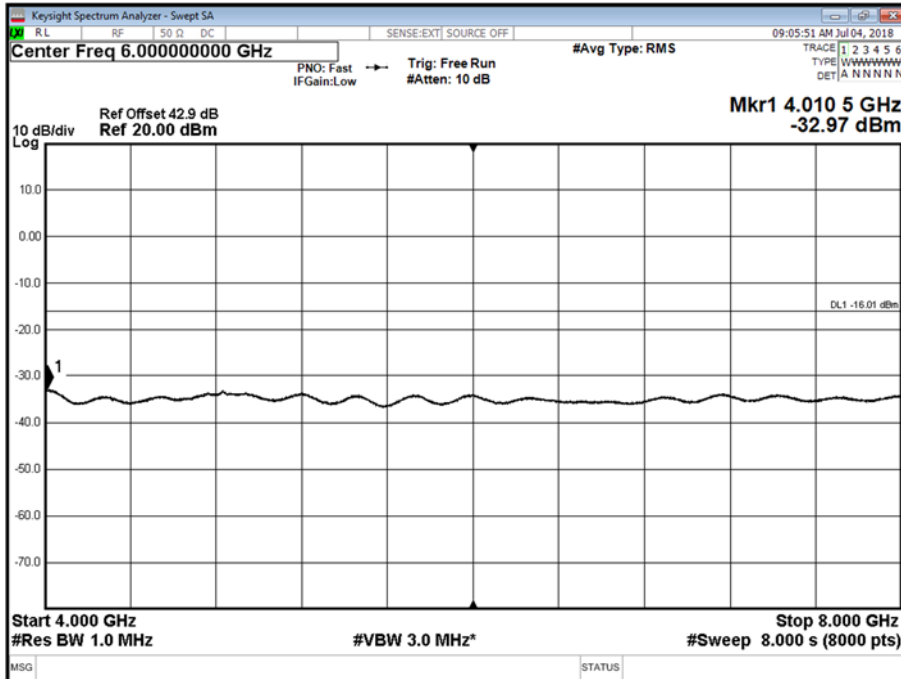




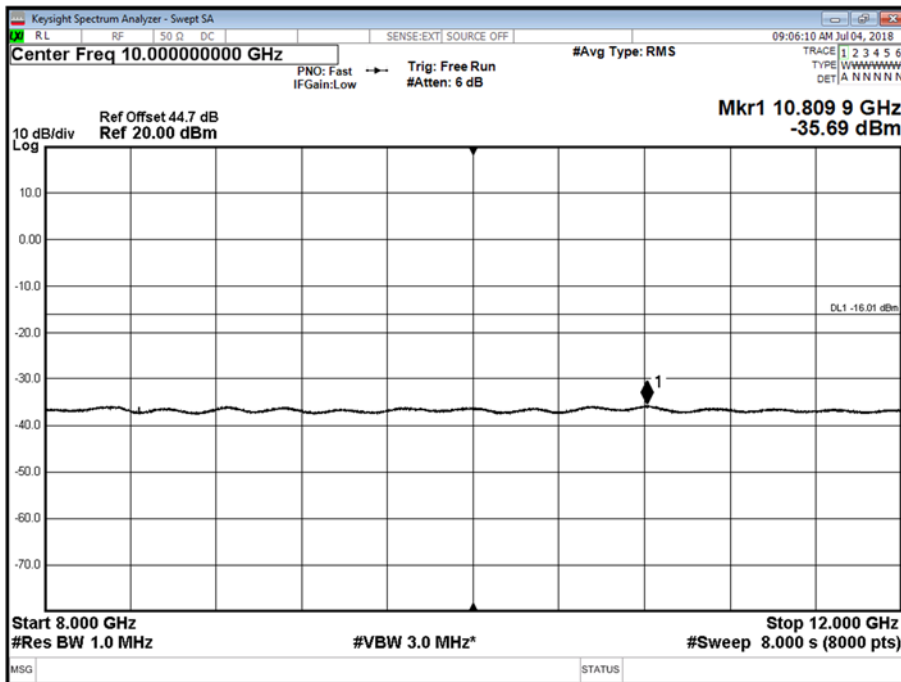


Product Service

Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position B - Band 2 - Range 4000 to 8000 MHz



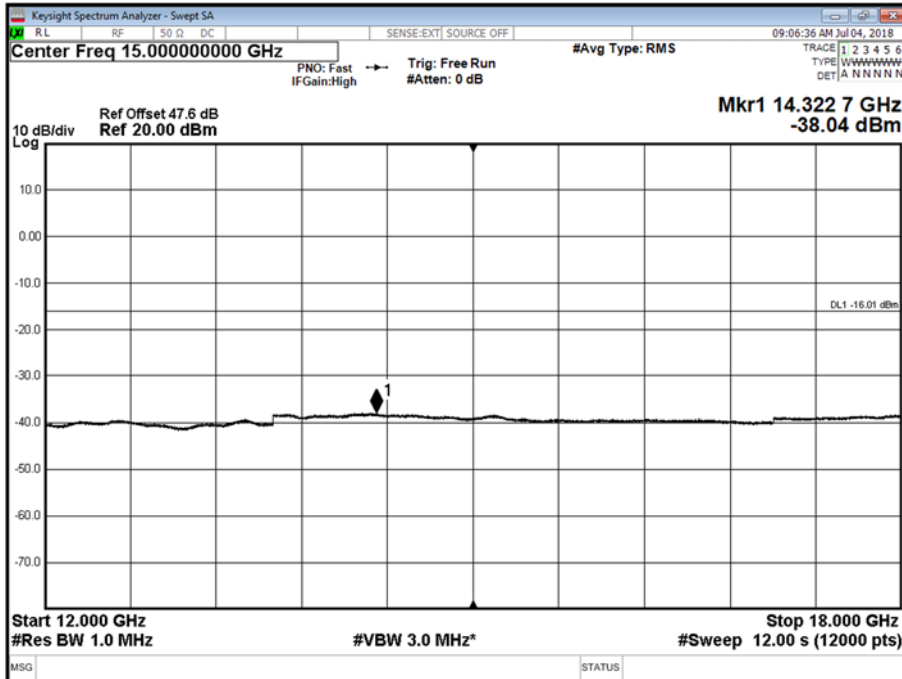
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position B - Band 3 - Range 8000 to 12000 MHz





Product Service

Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position B - Band 4 - Range 12000 to 18000 MHz



Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position B - Band 5 - Range 18000 to 20000 MHz

