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Report On

FCC and IC Testing of the Ericsson KRC 161 669/3 (Radio 4478 B14)
LTE (700 MHz) Base Station in accordance with FCC CFR 47 Part 2,
FCC CFR 47 Part 90, Industry Canada RSS-GEN and Industry Canada
RSS-140

COMMERCIAL-IN-CONFIDENCE

FCC ID: TA8AKRC161669-3
IC: 287AB-AS1616693

PREPARED BY

Natalie Bennett
Project Manager (RF
and Telecom)

APPROVED BY

Steve Scarfe
Authorised Signatory

DATED

24 January 2019

Document 75943170 Report 12 Issue 2

January 2019



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 & Product Number	Radio 4478 B14 - KRC 161 669/3
IC Model Name	AS1616993
Serial Number(s)	D16X143630
Software Version	CXP9013268/15_ R73AM
Hardware Version	R1C
Non-Tested Variant	Radio 4478 B14 - KRC 161 669/1
Non-Tested FCC ID	TA8AKRC161669-3
Non-Tested IC ID	287AB-AS1616693
Non-Tested IC Model Name	AS1616993
Test Specification/Issue/Date	FCC CFR 47 Part 2: 2017 FCC CFR 47 Part 90: 2017 Industry Canada RSS-GEN: Issue 5: 2018 Industry Canada RSS-140: Issue 2: 2018
Start of Test	31 October 2018
Finish of Test	07 November 2018
Name of Engineer(s)	Graeme Lawler and Nicolas Salguero
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 90, Industry Canada RSS-GEN and Industry Canada RSS-140. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

Graeme Lawler

Nicolas Salguero

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 Issue 2 to correct the FCC ID, IC ID and IC Model Name in Section 1.1.



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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 90, Industry Canada RSS-GEN and Industry Canada RSS-140 is shown below.

Section	Specification Clause				Test Description	Result
	FCC CFR 47 Part 2	FCC CFR 47 Part 90	RSS-GEN	RSS-140		
2.1	2.1046	90.635	-	4.3	Maximum Peak Output Power and Peak to Average Ratio - Conducted	Pass
2.2	2.1049	-	6.6	-	Occupied Bandwidth	Pass
2.3	2.1051	90.691	-		Band Edge	Pass
2.4	2.1051	90.691	-	4.4	Transmitter Spurious Emissions	Pass
2.5	2.1051	90.691	-	4.4	Radiated Emissions	Pass

Measurement Uncertainty Decision Statement

Determination of conformity with the specification limits is based on the results of the compliance measurement and does not take into account measurement instrumentation uncertainty as defined in ANSI C63.26:2015 Clause 1.3.



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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	-	763.0	-
B	NB IoT SA	1	0.18 MHz	758.2	763.0	767.8



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1.4 DECLARATION OF BUILD STATUS

MAIN EUT		
MANUFACTURING DESCRIPTION	Radio Unit	
MANUFACTURER	Ericsson AB	
PRODUCT NAME	Radio 4478 B14 (G2)	
PART NUMBER	KRC 161 669/1	KRC 161 669/3 ³
IC Model Name	-	AS1616693
SERIAL NUMBER	-	D16X143630
HARDWARE VERSION	-	R1C
SOFTWARE VERSION	-	CXP9013268_15 R73AM
TRANSMITTER OPERATING RANGE	758 - 768 MHz	
MODULATIONS	LTE: QPSK, 16QAM, 64QAM, 256QAM	
ITU DESIGNATION OF EMISSION	5 MHz BW channel : 4M50W7D	
	5+5 MHz BW channel : 9M43W7D ²	
	10 MHz BW channel ¹ : 9M40W7D	
	NB-IoT SA 180 kHz BW channel: 225KW7D	
OUTPUT POWER (RMS) (W or dBm)	4 ports, 40W ¹ per port	
	NB-IoT SA 1 x 20W (per port)	
FCC ID	TA8AKRC161669-3	
IC ID	287AB-AS1616693	
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	Base station radio	

¹Including 2 NB-IoT GB carriers.

²Carrier aggregated 2 x 5MHz

³ KRC 161 669/3 is the test object, both variants are electrically equivalent, with only mechanical differences in the enclosure.

Signature

Audun B. Helle

Audun Helle

Date

2018-11-30

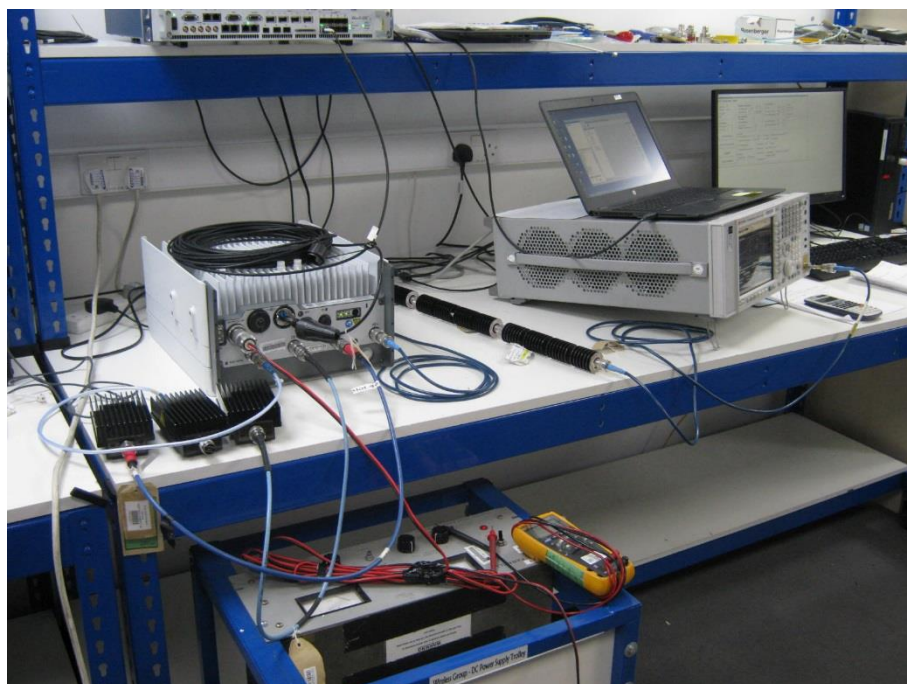
No responsibility will be accepted by TÜV SÜD Product Service UK Limited as to the accuracy of the information declared in this document by the manufacturer.

1.5 PRODUCT INFORMATION

1.5.1 Technical Description

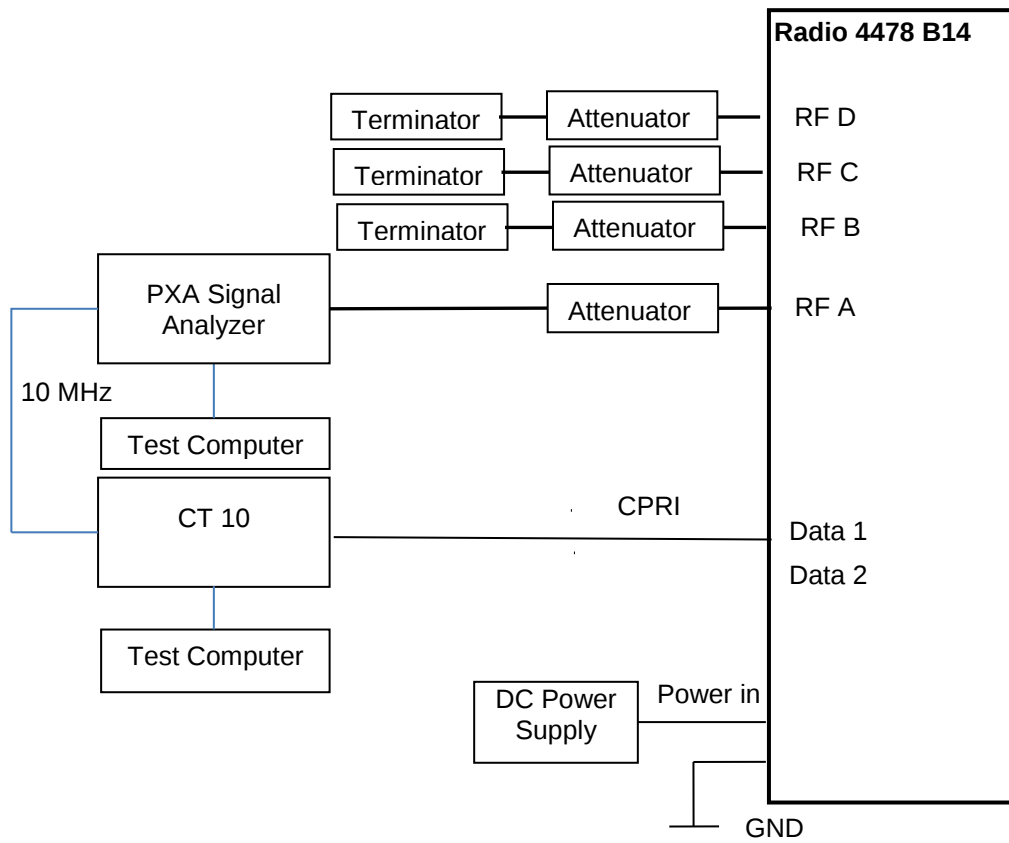
The Equipment Under Test (EUT) Radio 4478 B14 - KRC 161 669/3 is an Ericsson AB Radio Unit working in the public mobile service 700 MHz band which provides communication connections to 700 MHz network. The Radio 4478 B14 - KRC 161 669/3 operates from a -48V DC supply.

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





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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 Accreditation
IC2932B-1 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 TEST LOCATION

TÜV SÜD Product Service conducted the following tests at our Fareham Test Laboratory.

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

Office Address:

Octagon House
Concorde Way
Segensworth North
Fareham
Hampshire
PO15 5RL
United Kingdom



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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 90, Clause 90.635)
Industry Canada RSS-140, Clause 4.3

2.1.2 Date of Test and Modification State

07 November 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	25.7°C
Relative Humidity	46%

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.

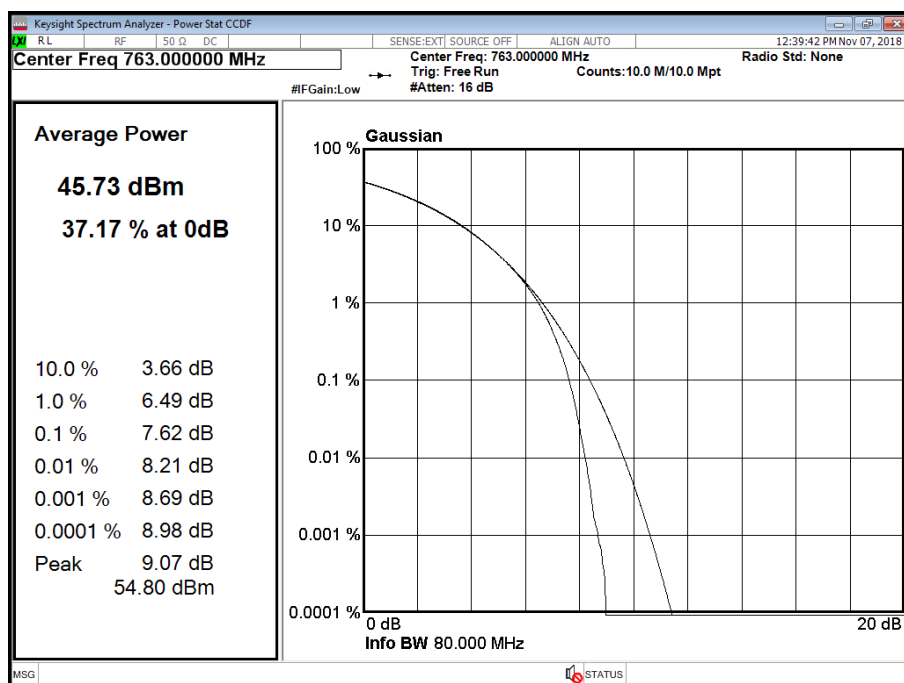
2.1.6 Test Results

Configuration A

Maximum Output Power 46 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position M		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	64QAM	10.0 MHz	7.62	45.82	-

Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M





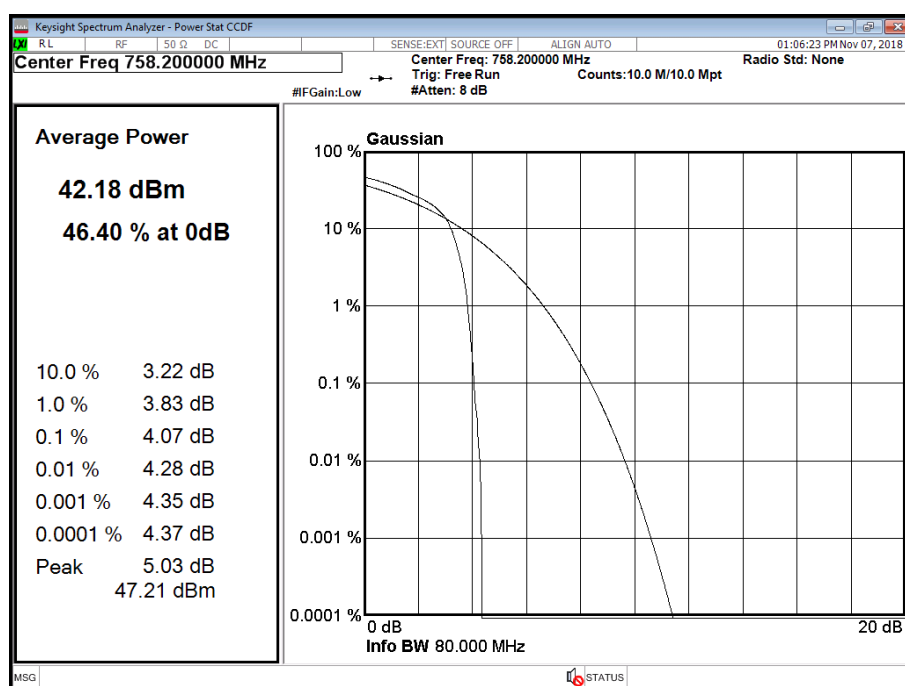
Product Service

Configuration B

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:64QAM	N:180 kHz	4.07	42.20	-

Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position B





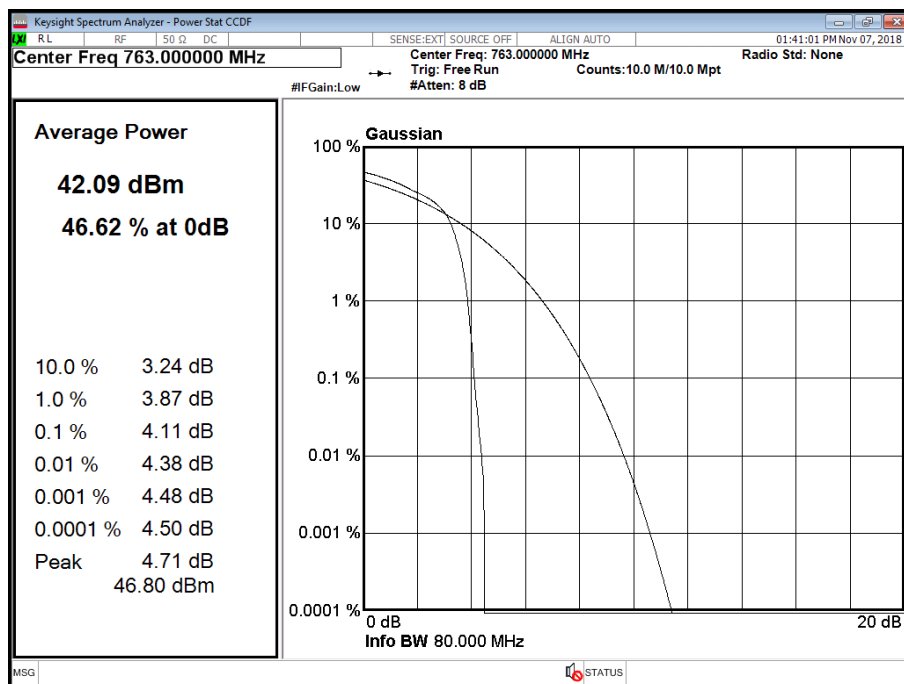
Product Service

Configuration B

Maximum Output Power 43 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:64QAM	N:180 kHz	4.11	42.18	-

Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position M





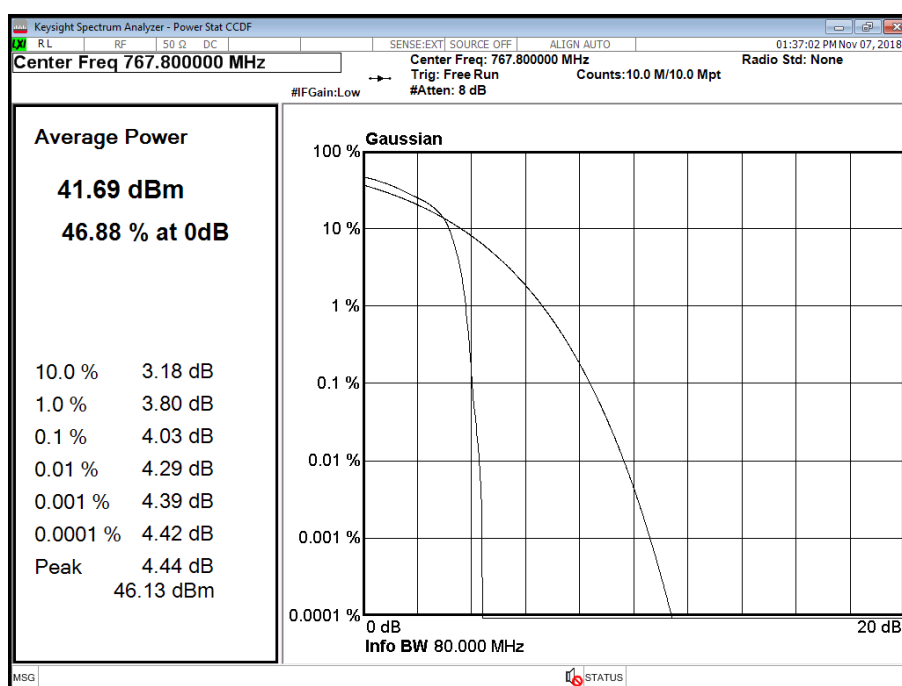
Product Service

Configuration B

Maximum Output Power 43 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:64QAM	N:180 kHz	4.03	41.68	-

Antenna A - NB-IoT SA Modulation N:64QAM - 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



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2.2 OCCUPIED BANDWIDTH

2.2.1 Specification Reference

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

2.2.2 Date of Test and Modification State

07 November 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	25.7°C
Relative Humidity	46%

2.2.5 Test Method

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



Product Service

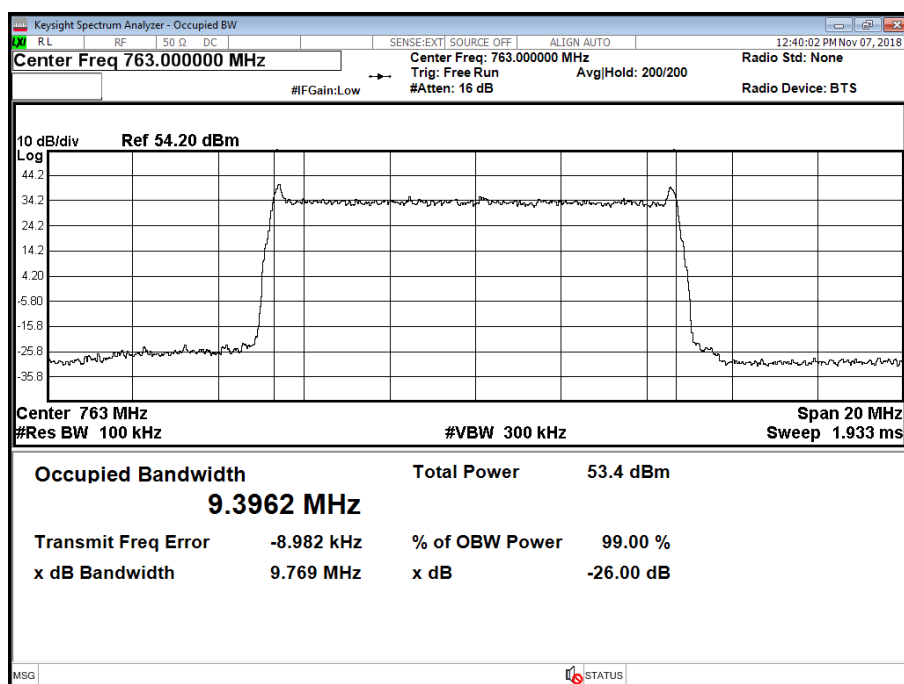
2.2.6 Test Results

Configuration A

Maximum Output Power 46 dBm

Antenna	LTE Modulation	LTE 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	64QAM	10.0 MHz	-	-	9,396.20	9,769.00	-	-

Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M





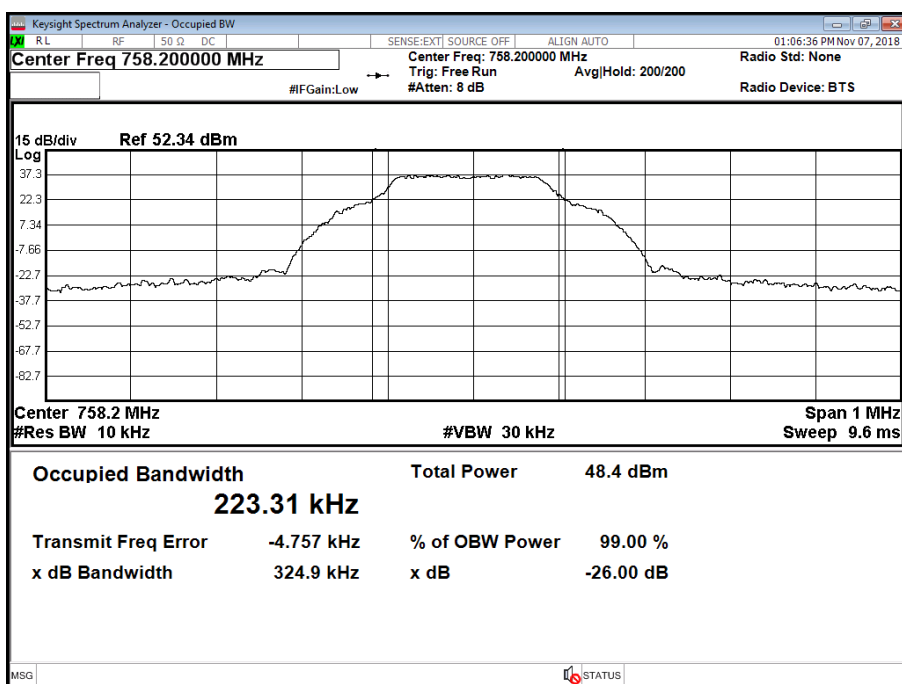
Product Service

Configuration B

Maximum Output Power 43 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:64QAM	N:180 kHz	223.31	324.90	223.38	321.90	224.44	324.20

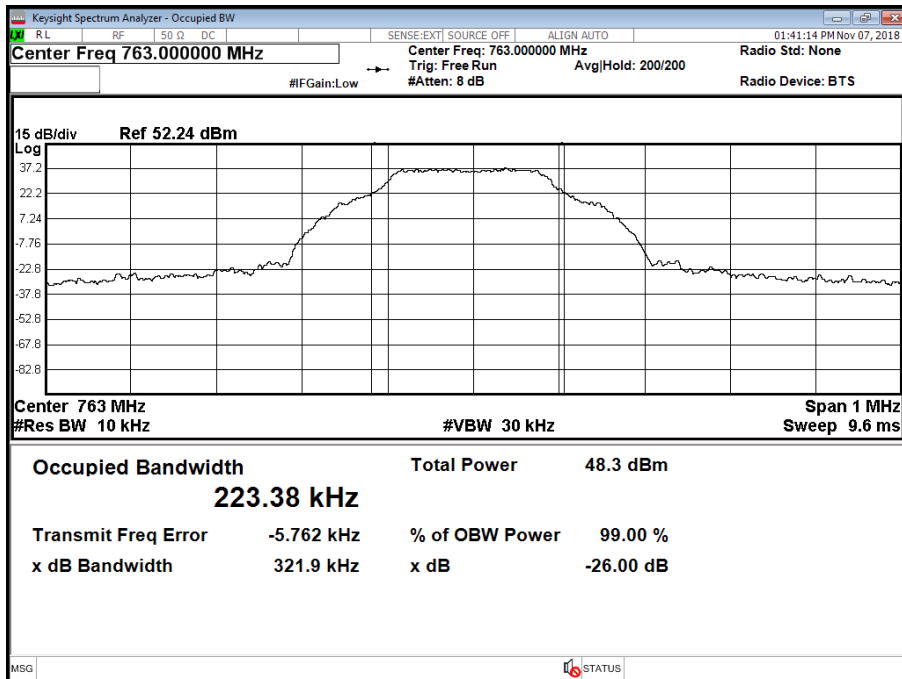
Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position B



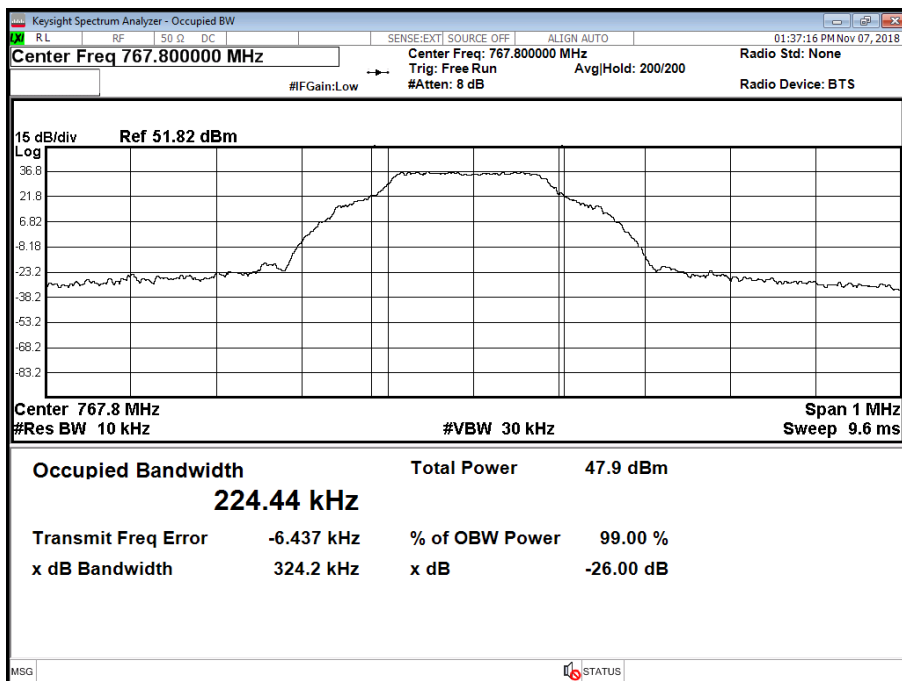


Product Service

Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position M



Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position T





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2.3 BAND EDGE

2.3.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 90, Clause 90.691

2.3.2 Date of Test and Modification State

07 November 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	25.7°C
Relative Humidity	46%

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 $10 * \log(N)$, where N is equal to the number of MIMO antenna ports.

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

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



Product Service

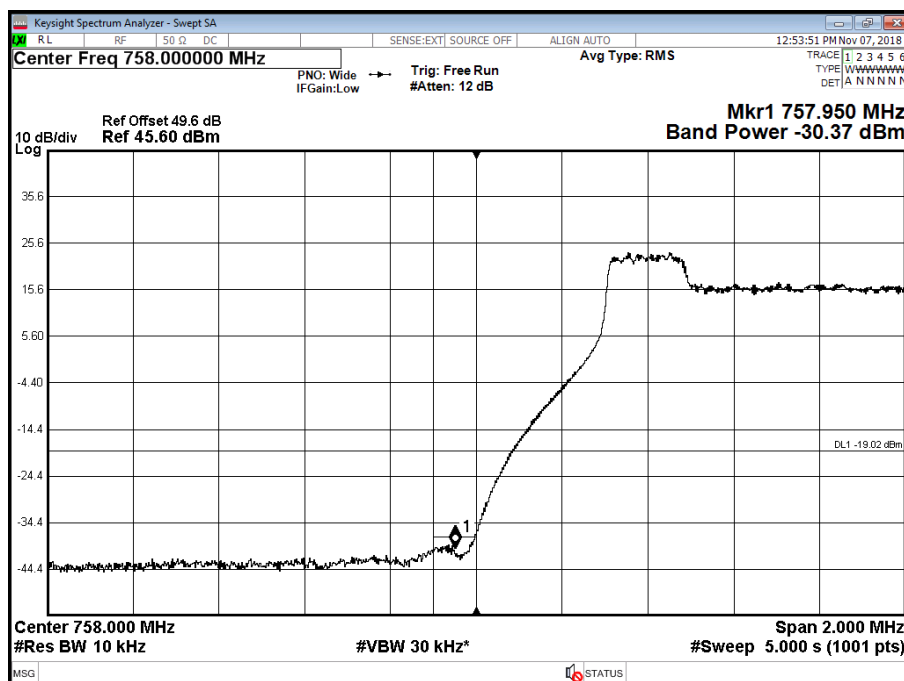
2.3.6 Test Results

Configuration A

Maximum Output Power 46 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	64QAM	10.0 MHz	-30.4	-31.6

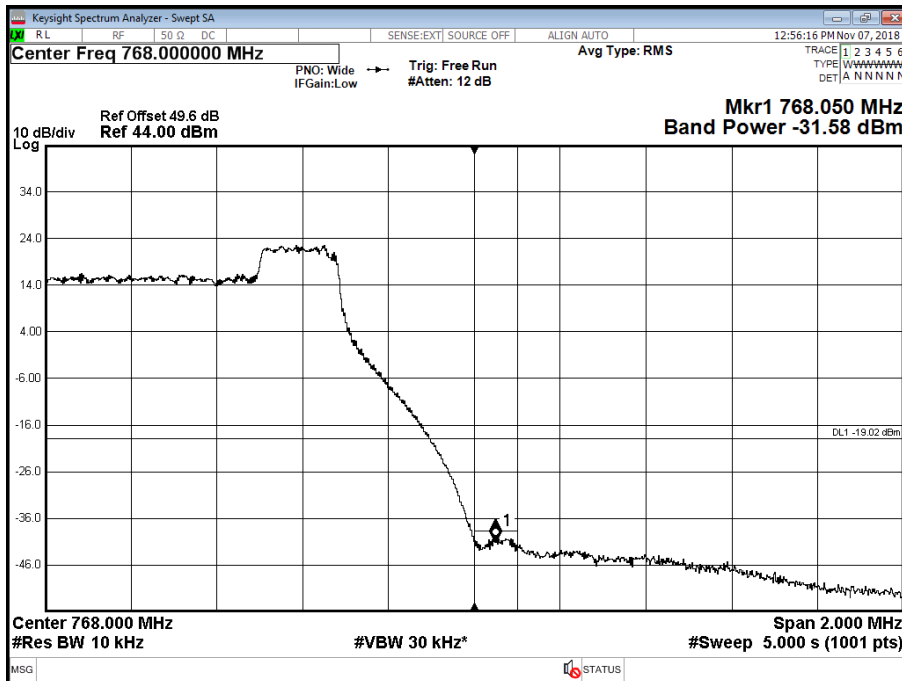
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position B





Product Service

Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position T





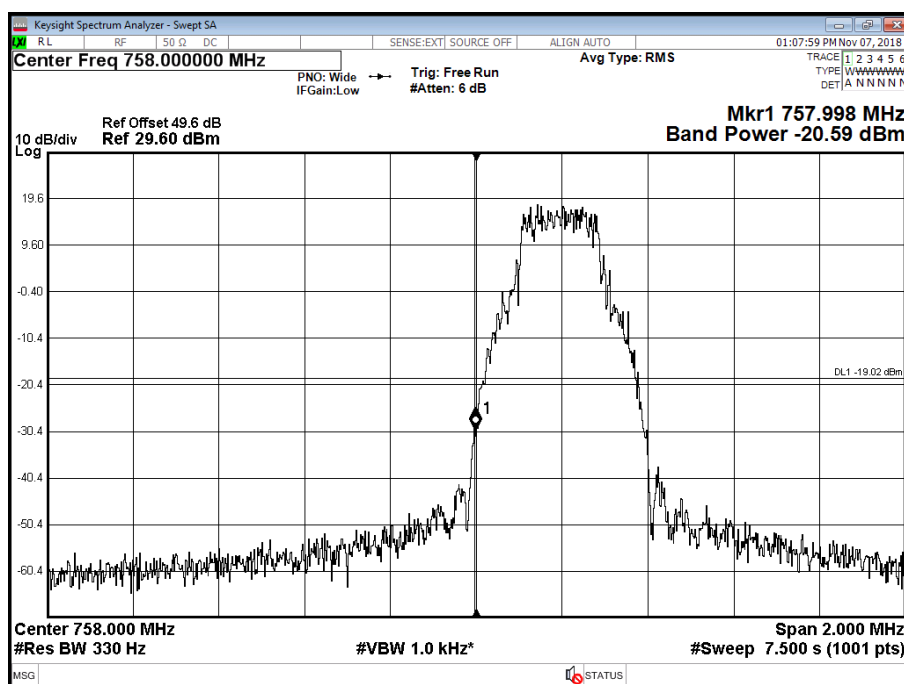
Product Service

Configuration B

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:64QAM	N:180 kHz	-20.6	-29.4

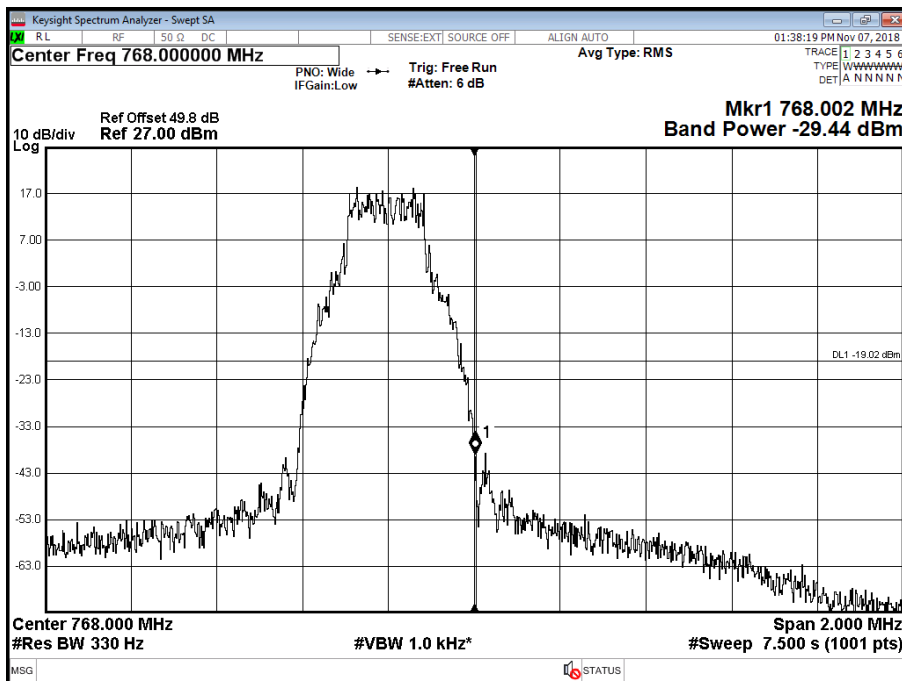
Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position B





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Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position T



Limit	-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 90, Clause 90.691
Industry Canada RSS-140, Clause 4.4

2.4.2 Date of Test and Modification State

07 November 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	25.7°C
Relative Humidity	46%

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 $10 * \log(N)$, where N is equal to the number of MIMO antenna ports.

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

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



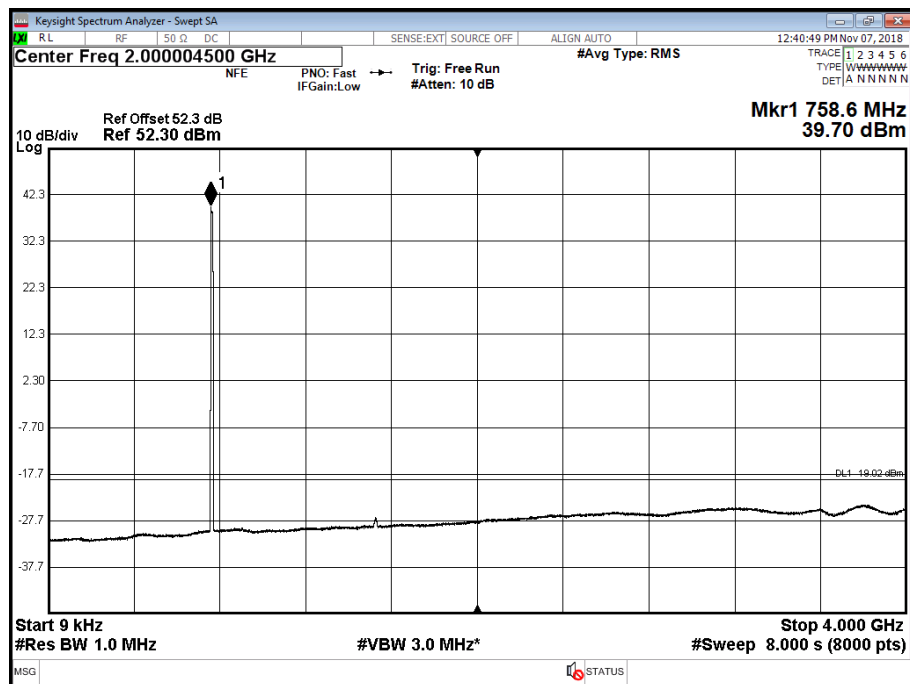
Product Service

2.4.6 Test Results

Configuration A

Maximum Output Power 46 dBm

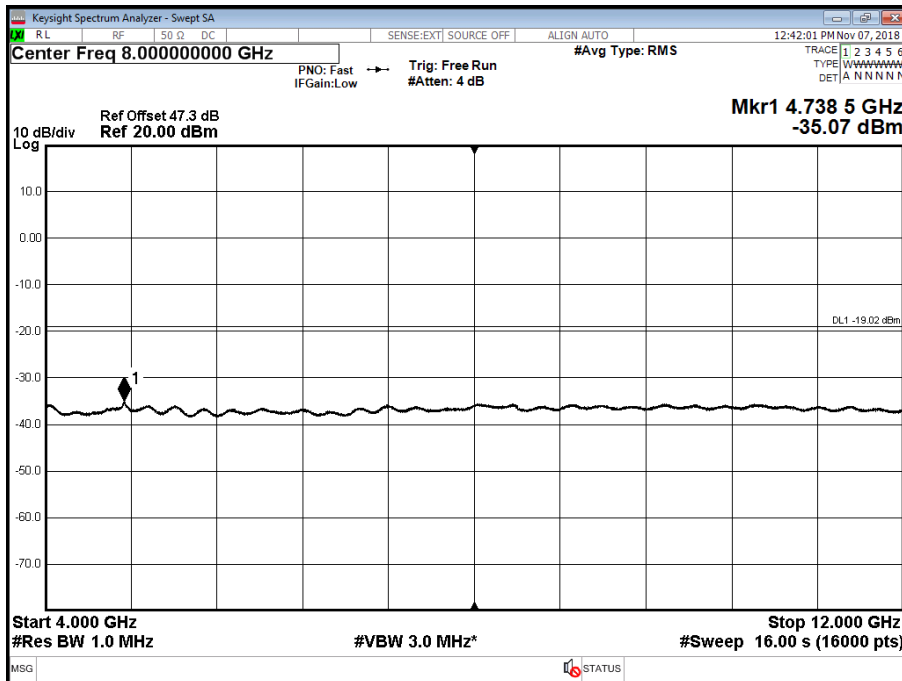
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band 1 - Range 0.009 to 4000 MHz



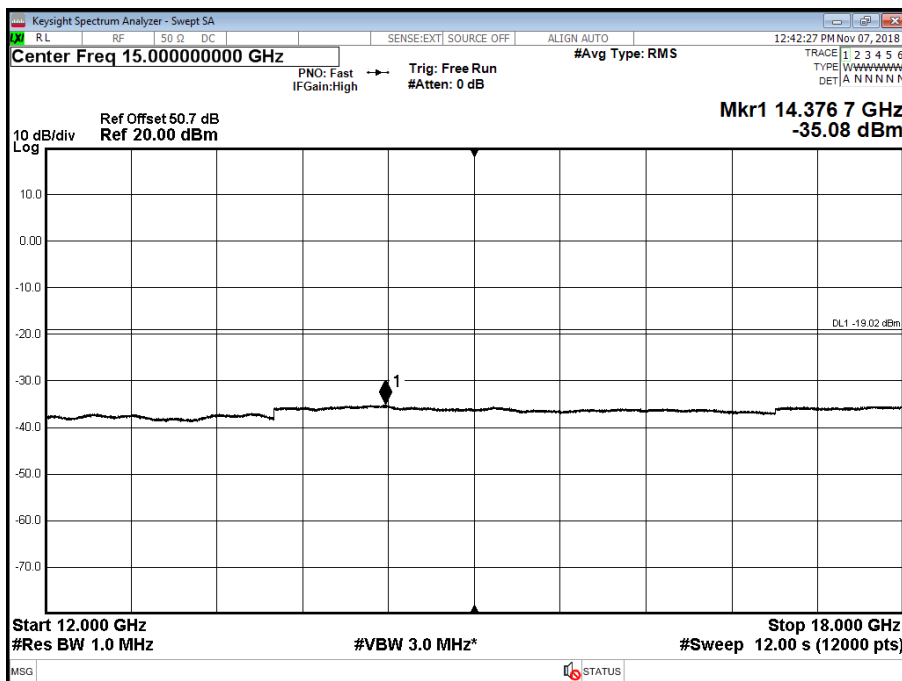


Product Service

Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band 2 - Range 4000 to 12000 MHz



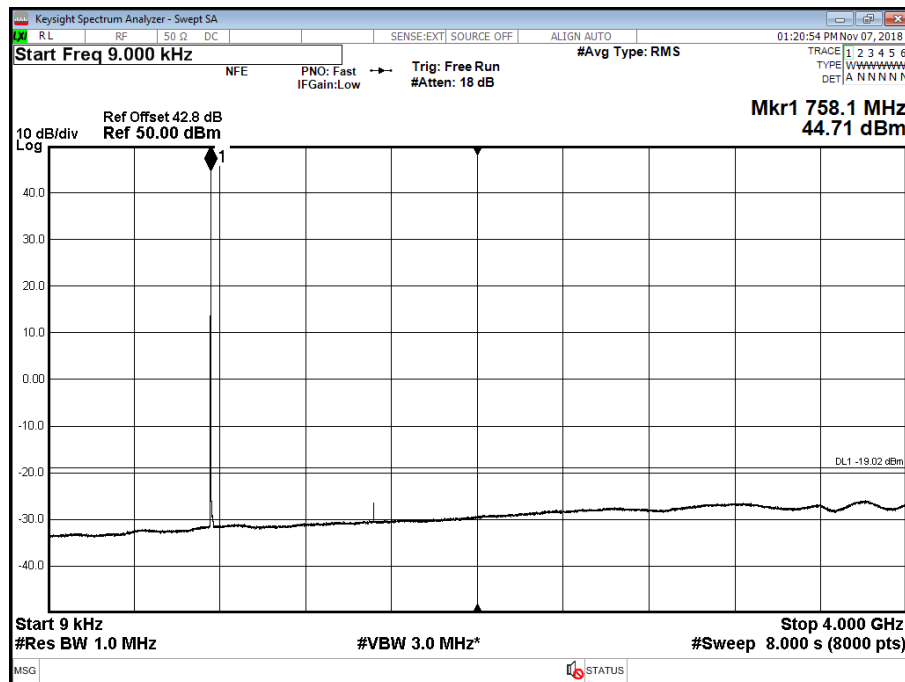
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band 3 - Range 12000 to 18000 MHz



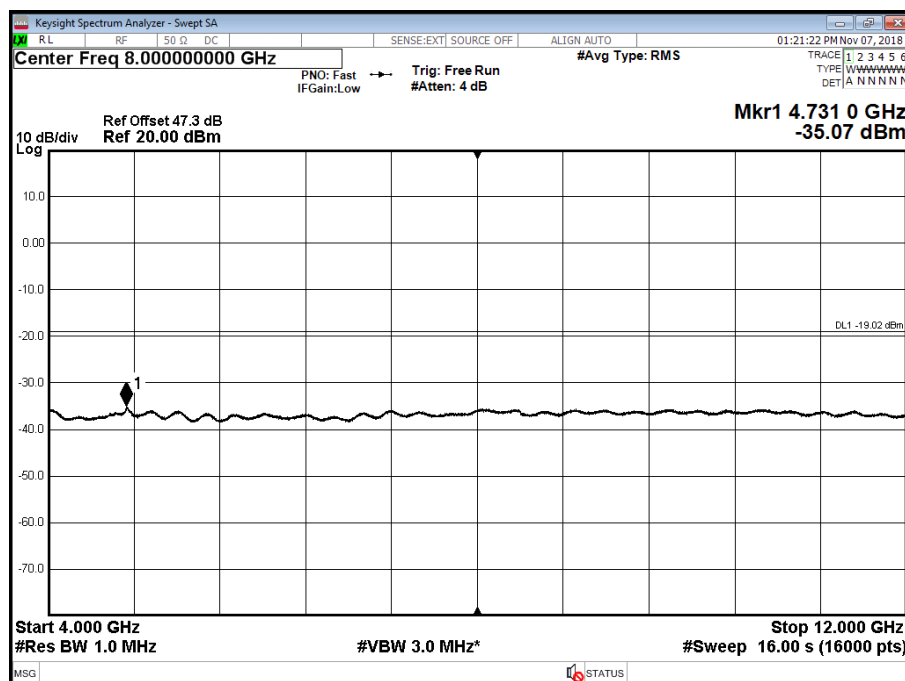
Configuration B

Maximum Output Power 43 dBm

Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position B - Band 1 - Range 0.009 to 4000 MHz



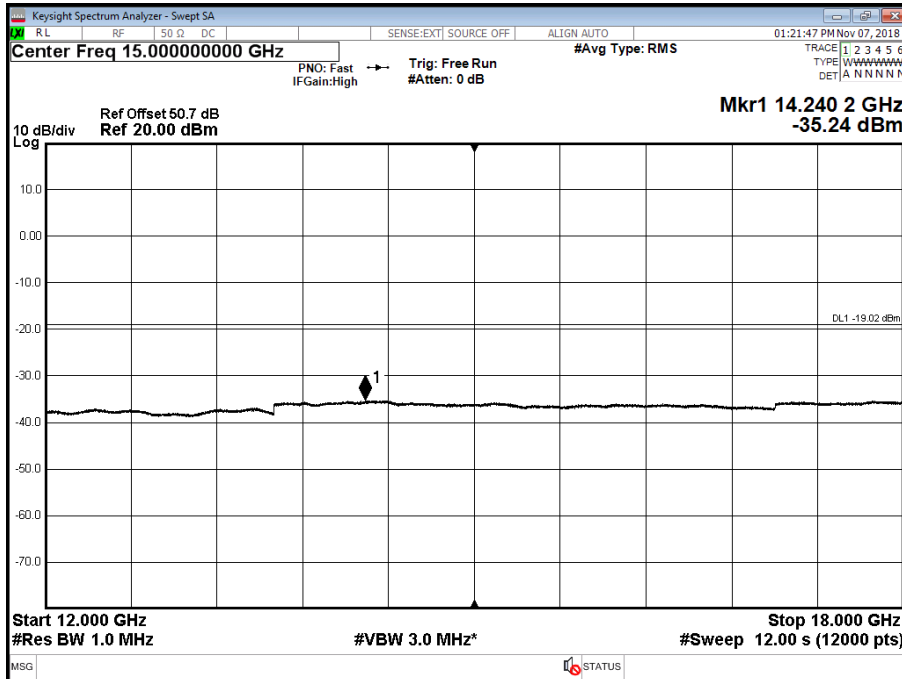
Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position B - Band 2 - Range 4000 to 8000 MHz



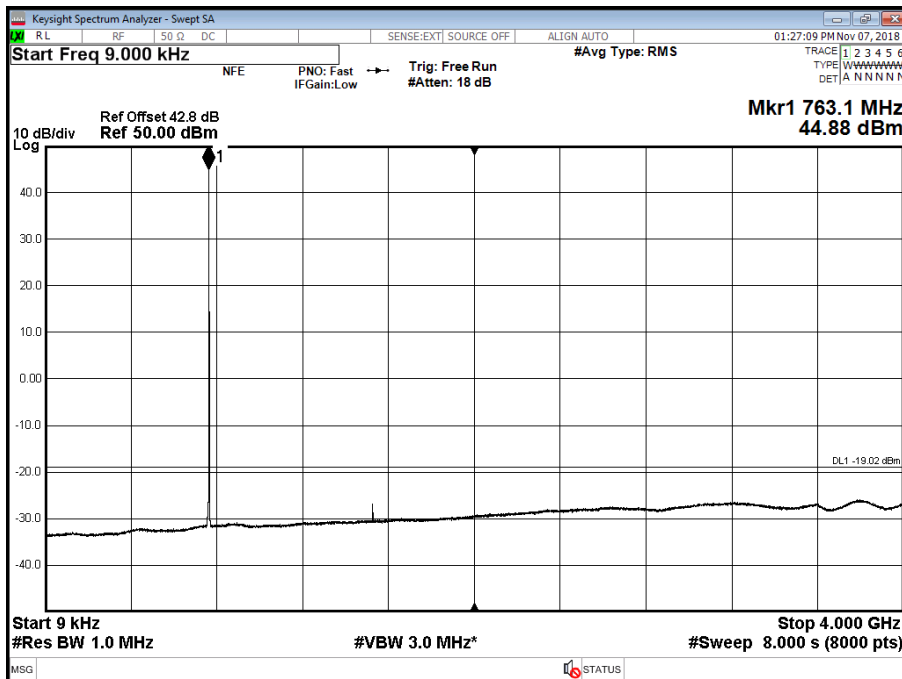


Product Service

Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position B - Band 3 - Range 12000 to 18000 MHz



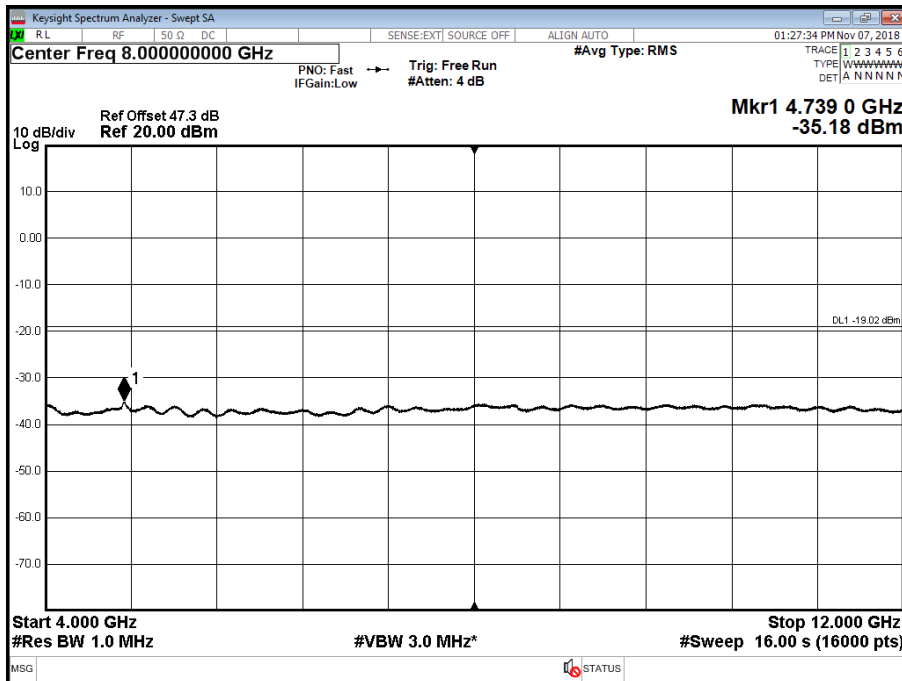
Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position M - Band 1 - Range 0.009 to 4000 MHz



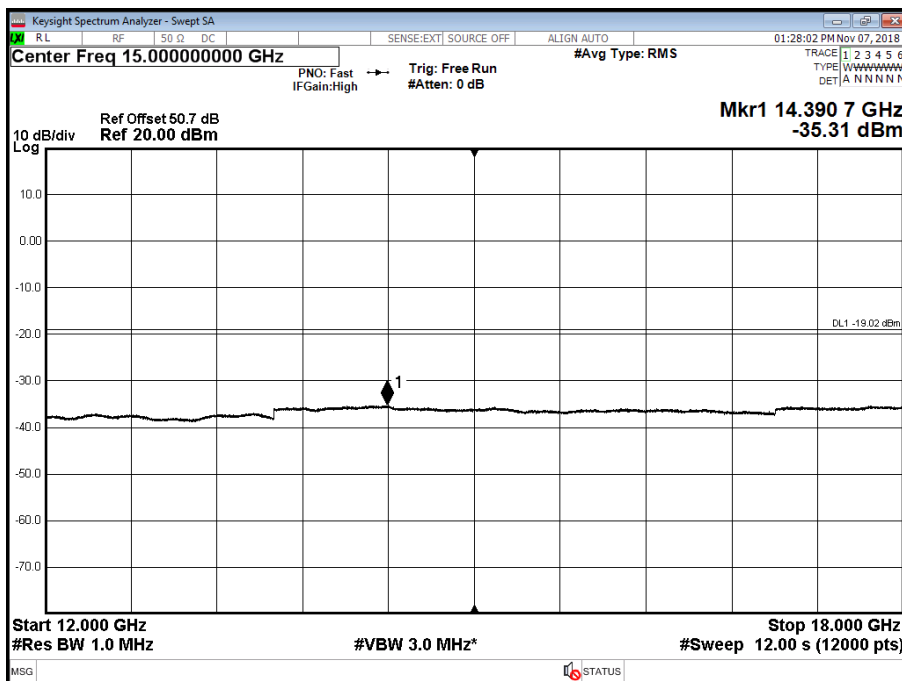


Product Service

Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position M - Band 2 - Range 4000 to 8000 MHz



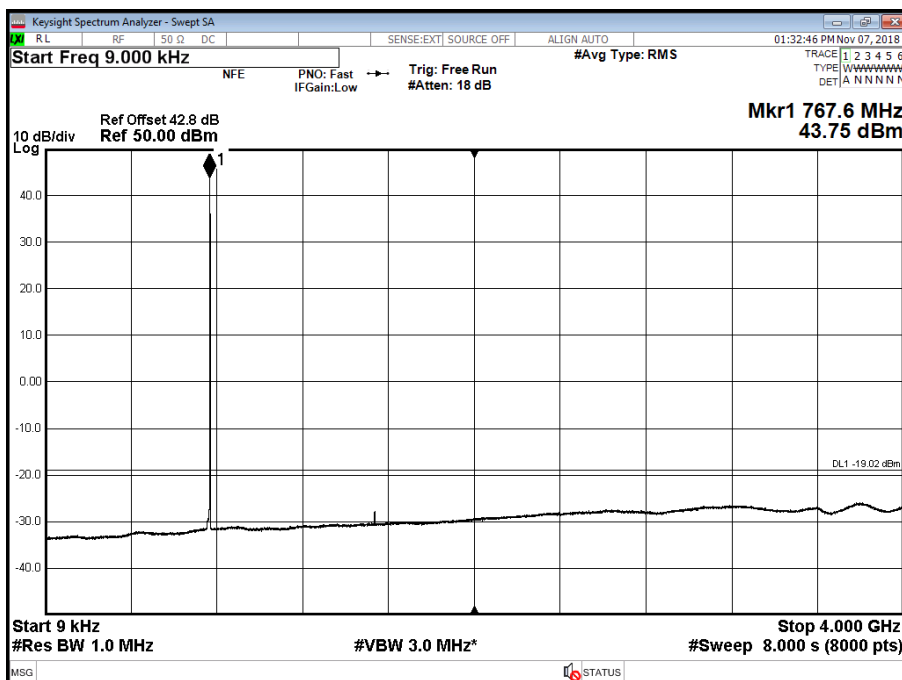
Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position M - Band 3 - Range 12000 to 18000 MHz



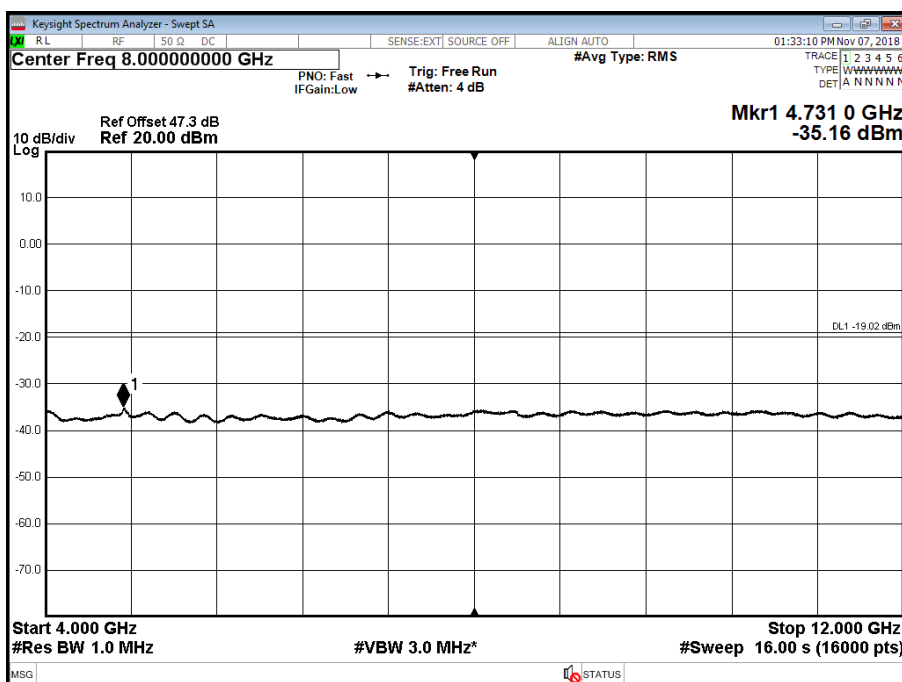


Product Service

Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position T - Band 1 - Range 0.009 to 4000 MHz



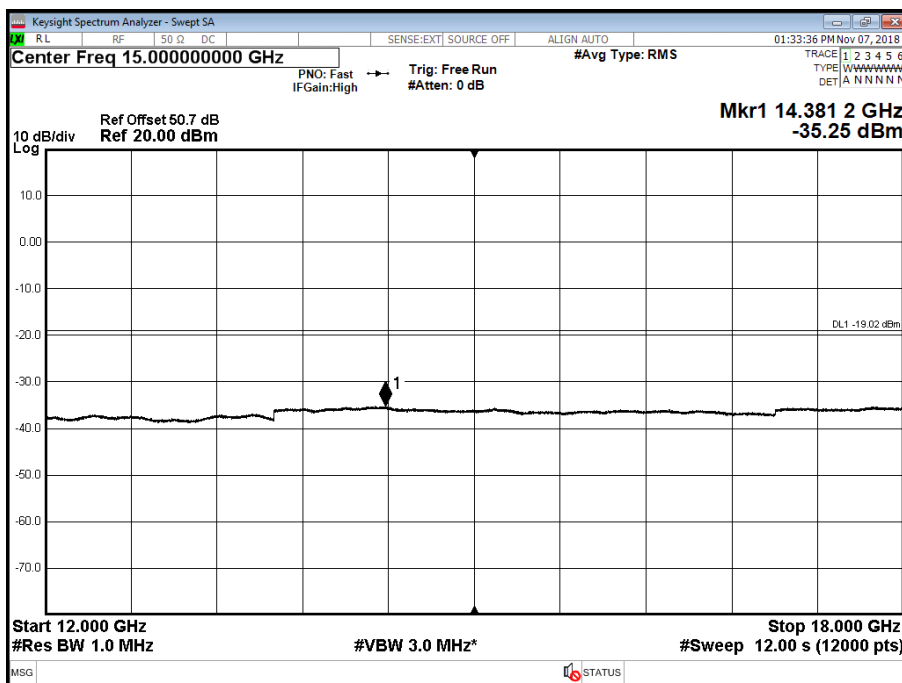
Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz - Channel Position T - Band 2 - Range 4000 to 8000 MHz





Product Service

Antenna A - NB-IoT SA Modulation N:64QAM - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position T - Band 3 - Range 12000 to 18000 MHz



Limit

-19dBm



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2.5 RADIATED EMISSIONS

2.5.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 90, Clause 90.691
Industry Canada RSS-140, Clause 4.4

2.5.2 Date of Test and Modification State

17 October 2018 - Modification State 0

2.5.3 Test Equipment Used

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

2.5.4 Environmental Conditions

Ambient Temperature	21.8°C
Relative Humidity	36.7%

2.5.5 Test Method

The test was applied in accordance with test method requirements of FCC Part 90 and ANSI/TIA-603-C-2004.

A preliminary profile of the Spurious Radiated Emissions was obtained by operating the EUT on a remotely controlled turntable within the chamber. Measurements of emissions from the EUT were obtained with the measurement antenna in both horizontal and vertical polarisations.

Emissions identified within the range 30MHz to 8GHz were then formally measured using a peak detector as the worst case.

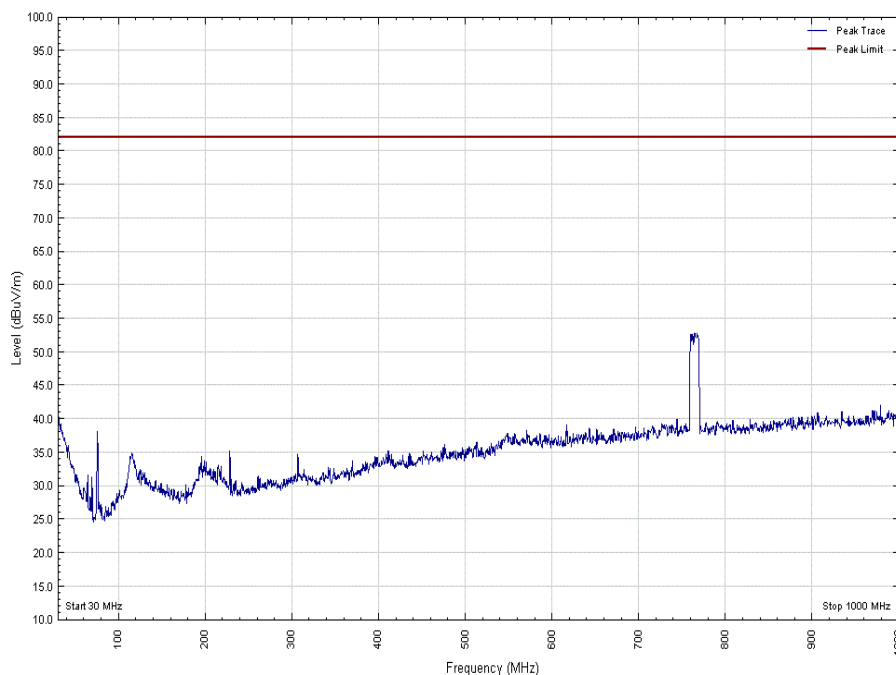
In the frequency range 30MHz – 8GHz, the measurement was performed with a resolution bandwidth of 1MHz.

2.5.6 Test Results

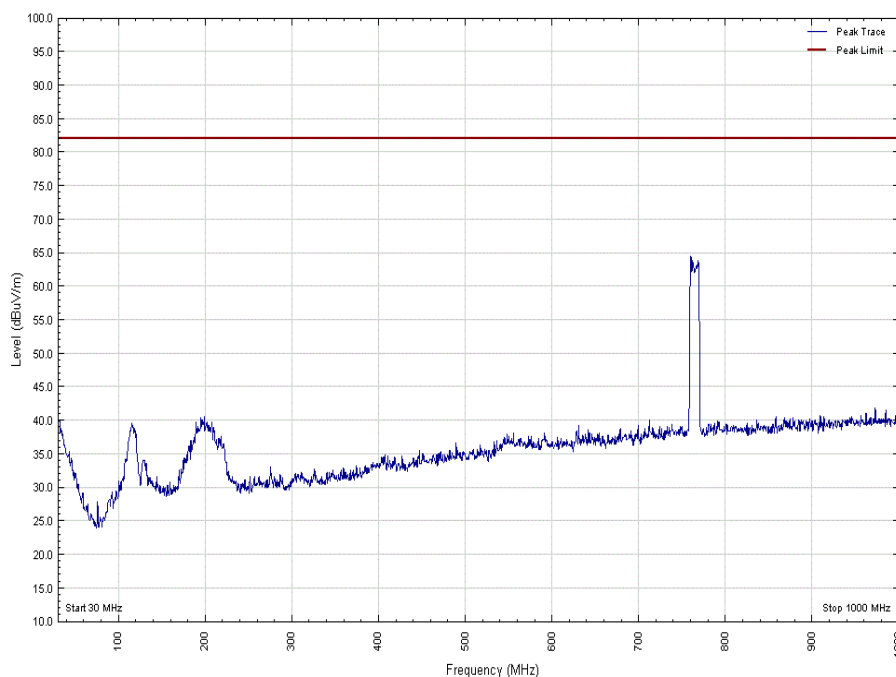
Configuration A

Maximum Output Power 46 dBm

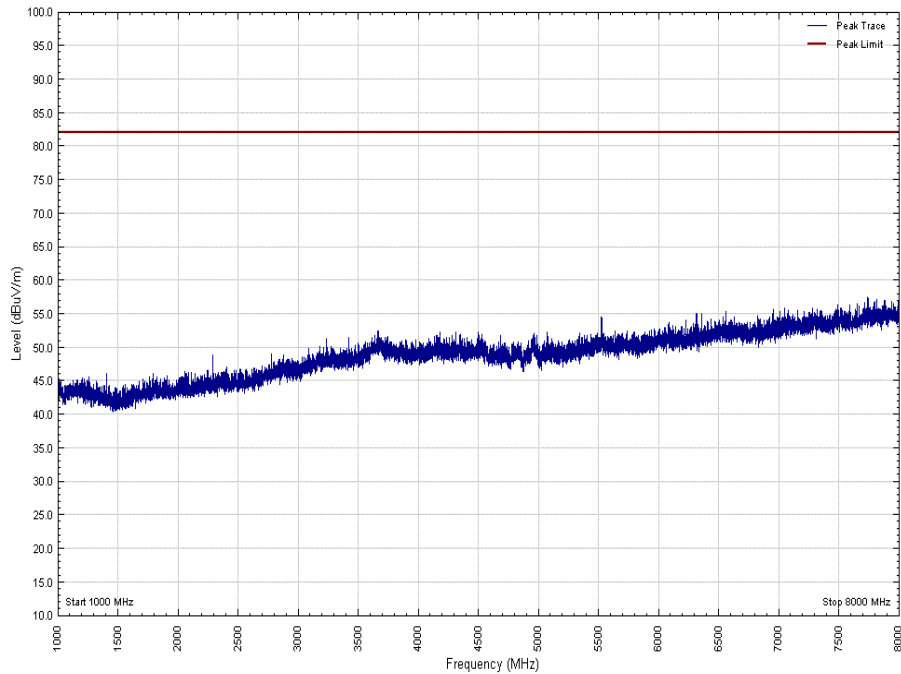
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band 14 - Range 30 MHz to 1 GHz V



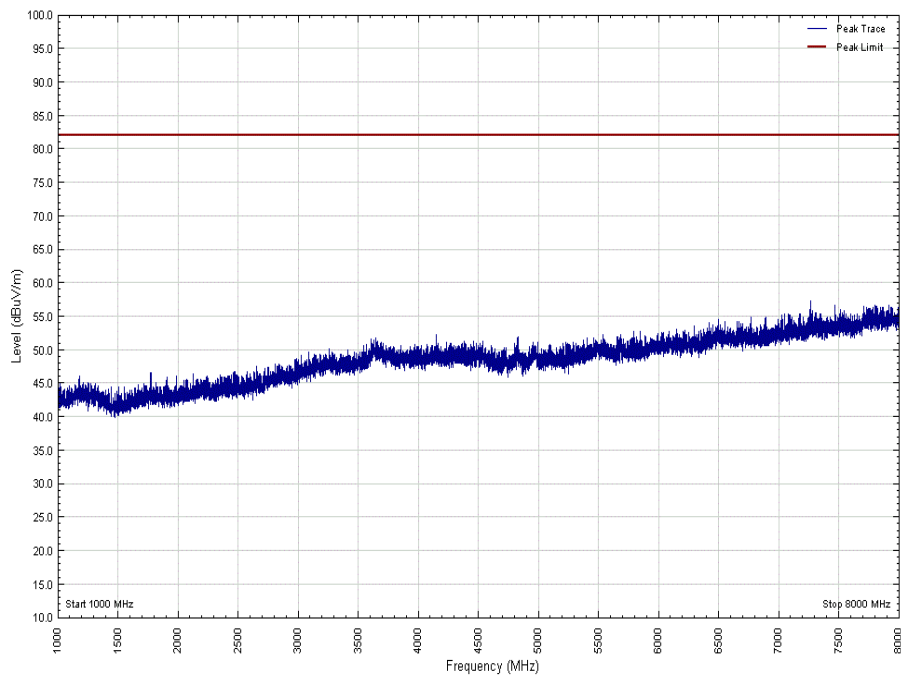
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band 14 - Range 30 MHz to 1 GHz H



Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band 14 - Range 1 GHz to 8 GHz_V



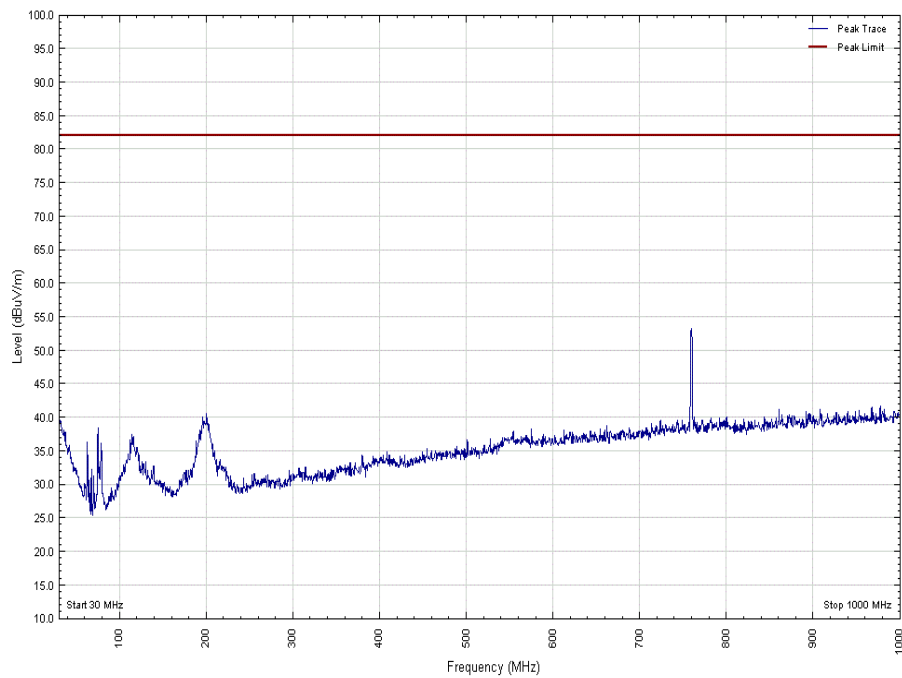
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band 14 - Range 1 GHz to 8 GHz_H



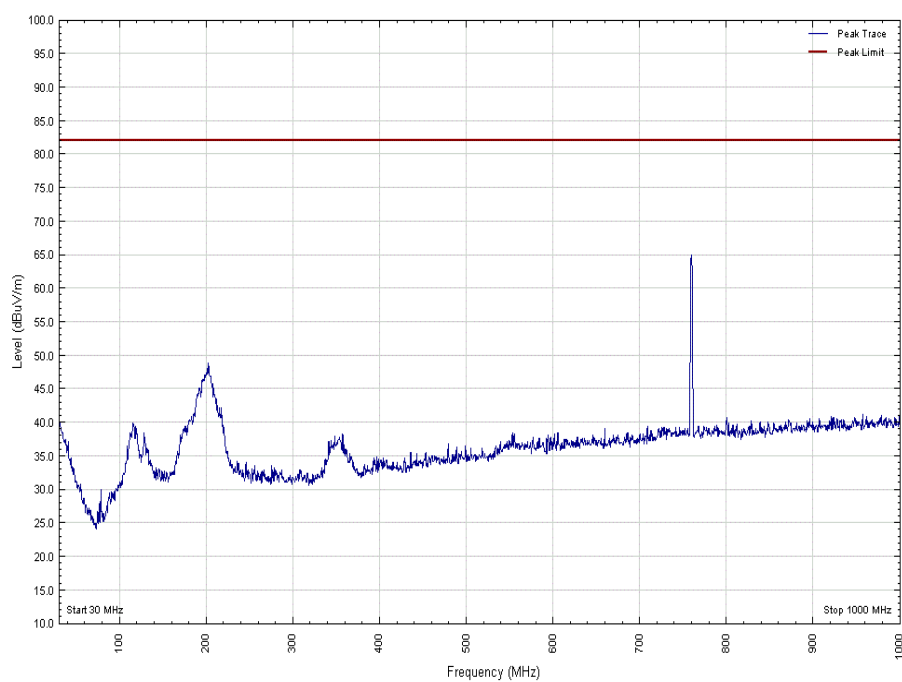
Configuration B

Maximum Output Power 43 dBm

Antenna A - NB-IoT SA Modulation 64QAM - NB-IoT SA Carrier Bandwidth N: 180 kHz -
Channel Position B - Band 14 - Range 30 MHz to 1 GHz _V



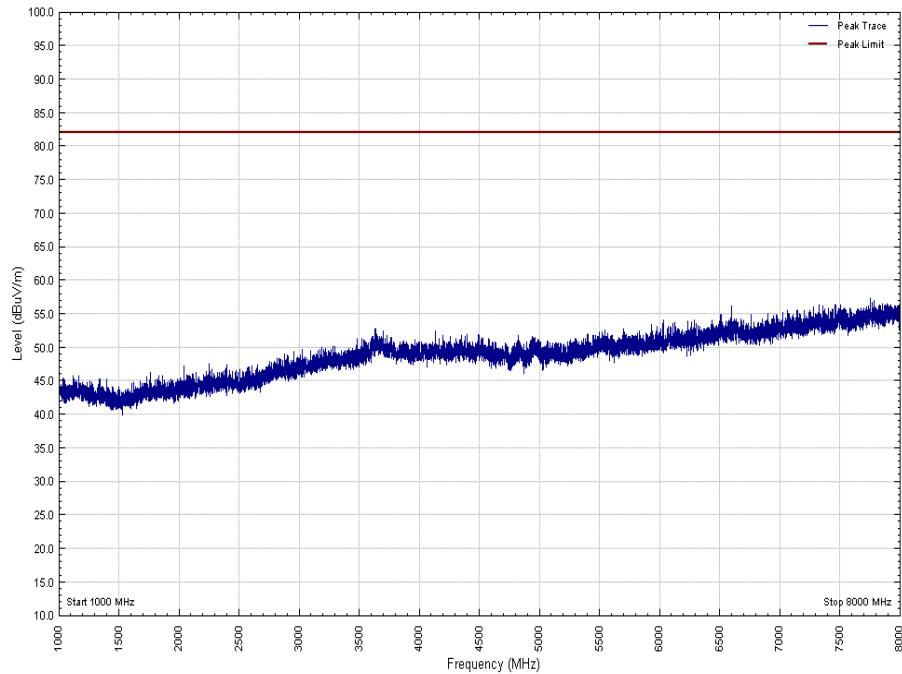
Antenna A - NB-IoT SA Modulation 64QAM - NB-IoT SA Carrier Bandwidth N: 180 kHz -
Channel Position B - Band 14 - Range 30 MHz to 1 GHz _H



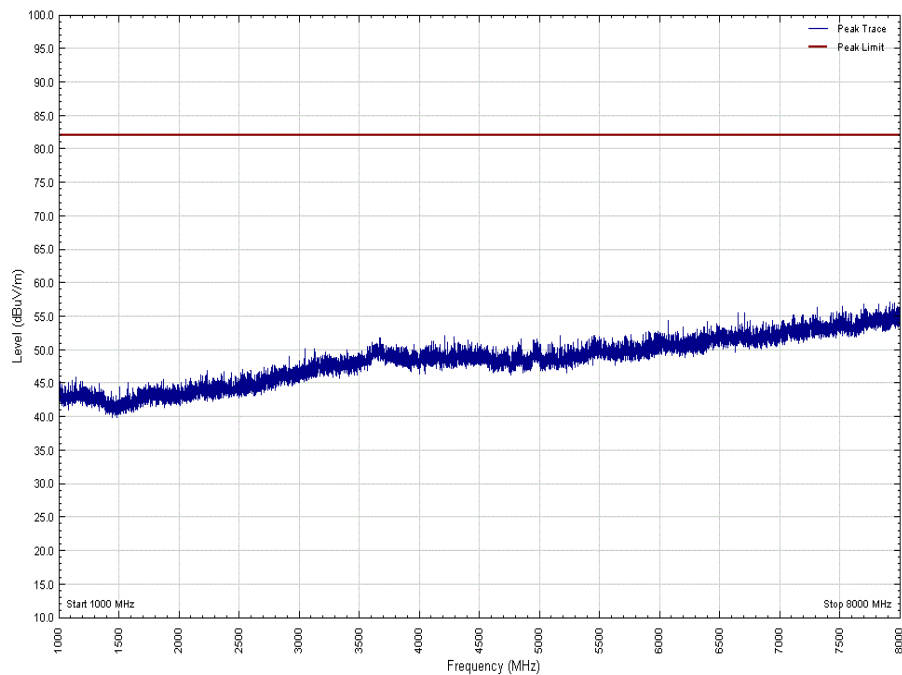


Product Service

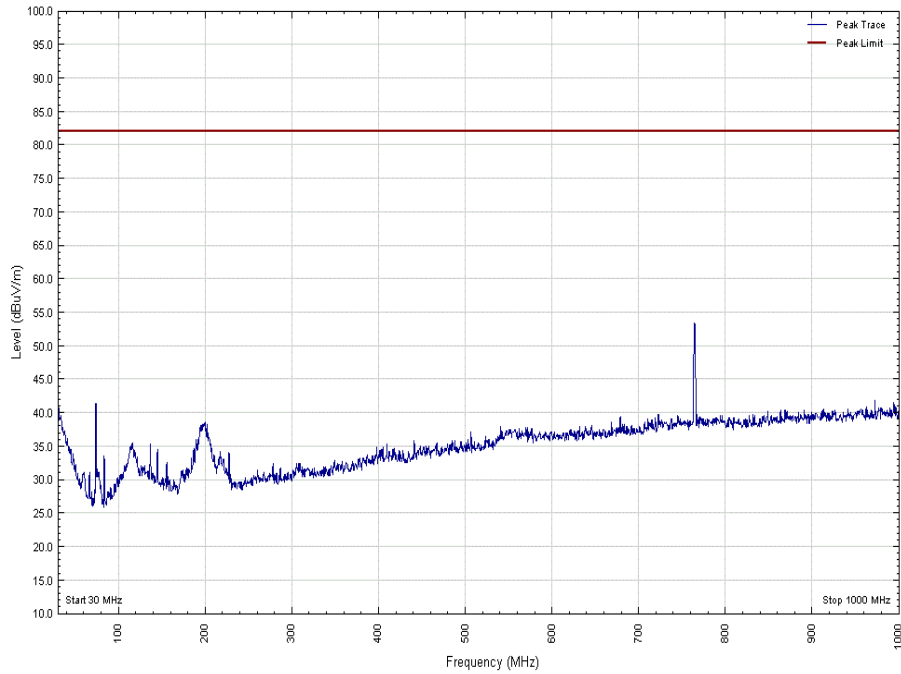
Antenna A - NB-IoT SA Modulation 64QAM - NB-IoT SA Carrier Bandwidth N: 180 kHz -
Channel Position B - Band 14 - Range 1 GHz to 8 GHz_V



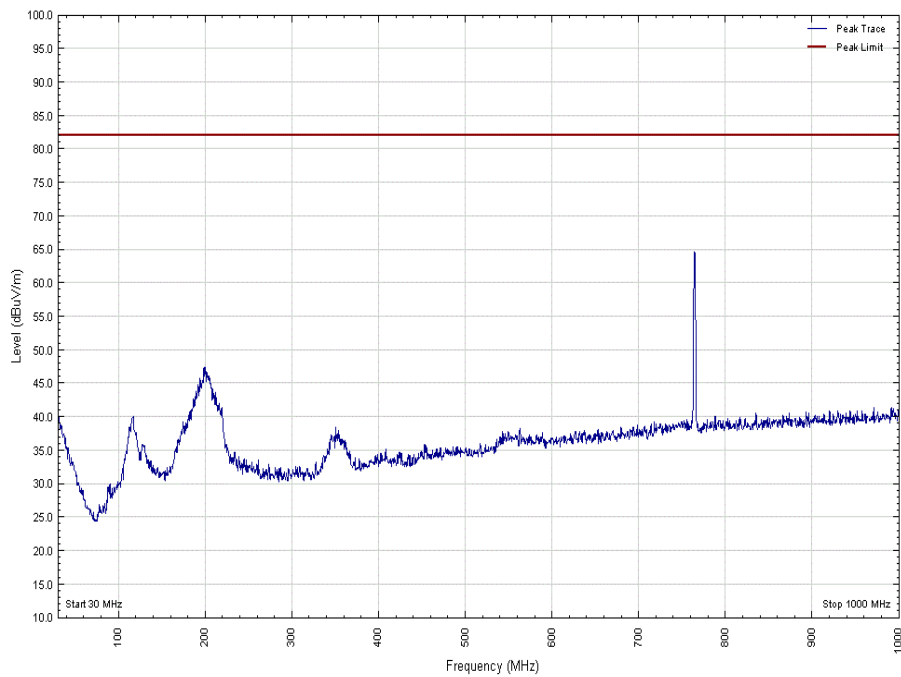
Antenna A - NB-IoT SA Modulation 64QAM - NB-IoT SA Carrier Bandwidth N: 180 kHz -
Channel Position B - Band 14 - Range 1 GHz to 8 GHz_H



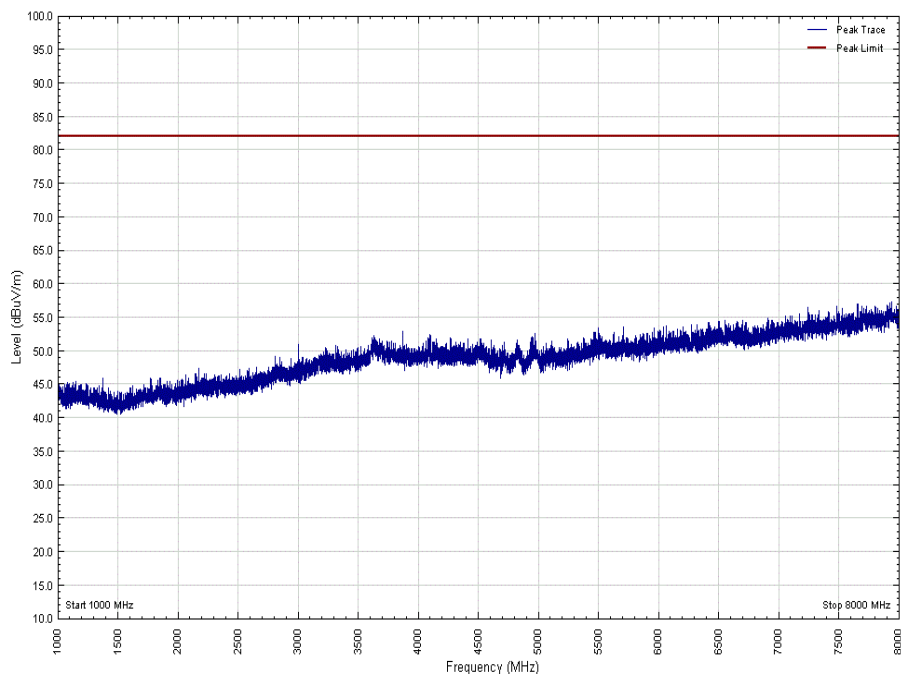
Antenna A - NB-IoT SA Modulation 64QAM - NB-IoT SA Carrier Bandwidth N: 180 kHz -
Channel Position M - Band 14 - Range 30 MHz to 1 GHz V



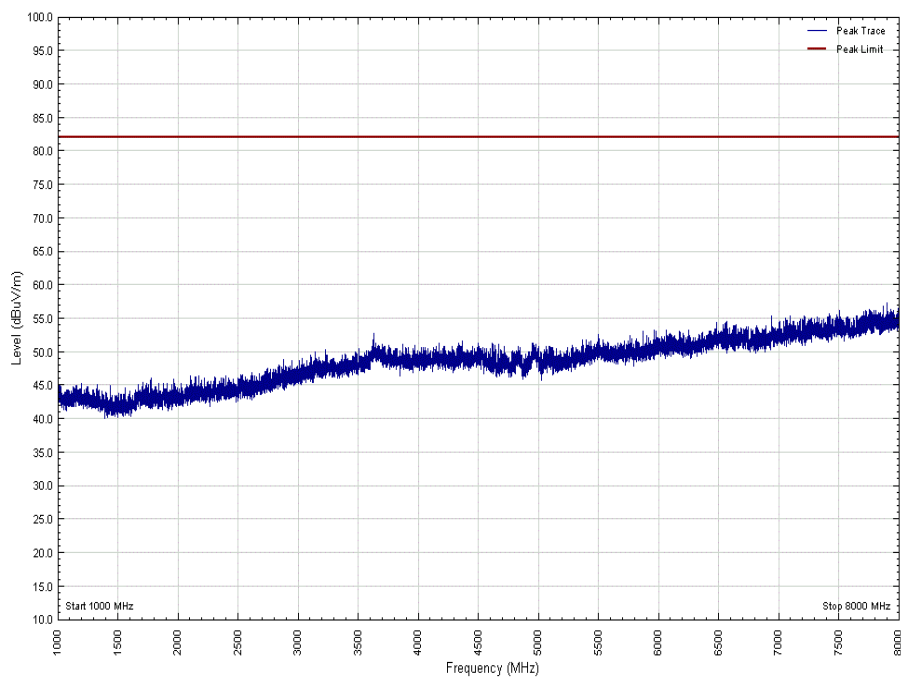
Antenna A - NB-IoT SA Modulation 64QAM - NB-IoT SA Carrier Bandwidth N: 180 kHz -
Channel Position M - Band 14 - Range 30 MHz to 1 GHz H



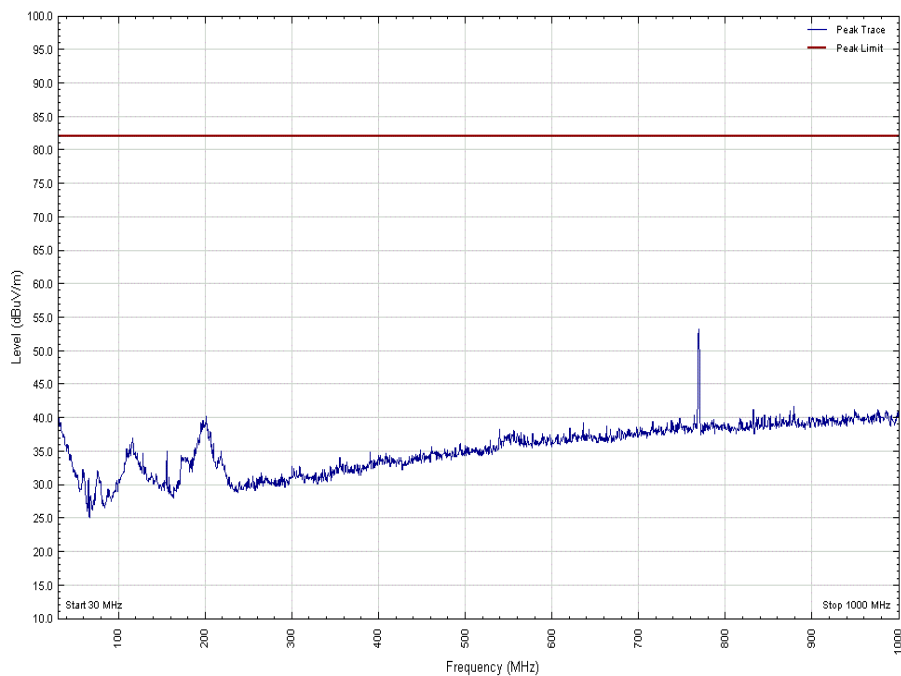
Antenna A - NB-IoT SA Modulation 64QAM - NB-IoT SA Carrier Bandwidth N: 180 kHz -
Channel Position M - Band 14 - Range 1 GHz to 8 GHz V



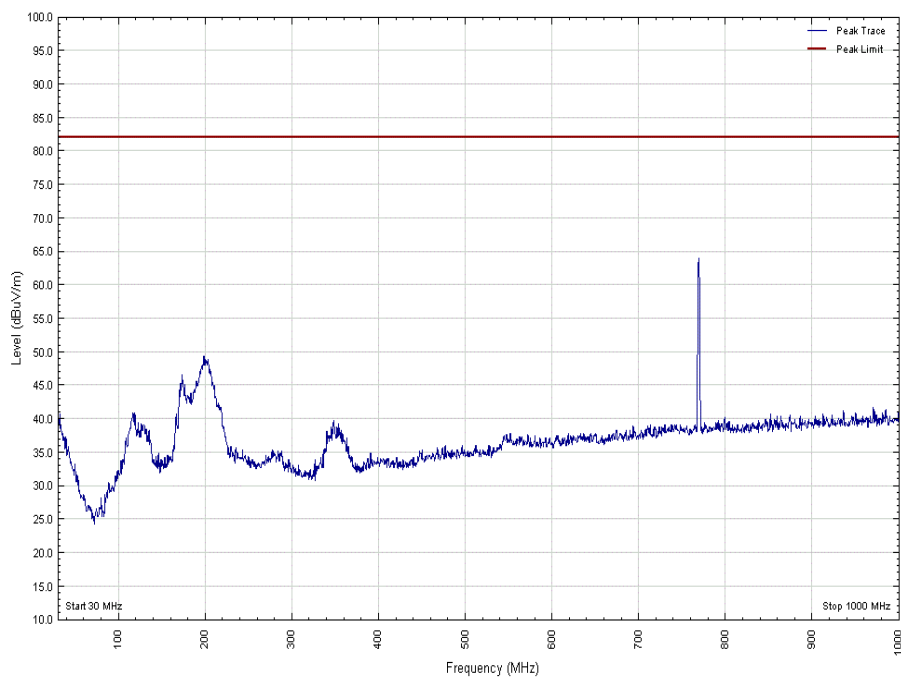
Antenna A - NB-IoT SA Modulation 64QAM - NB-IoT SA Carrier Bandwidth N: 180 kHz -
Channel Position M - Band 14 - Range 1 GHz to 8 GHz H



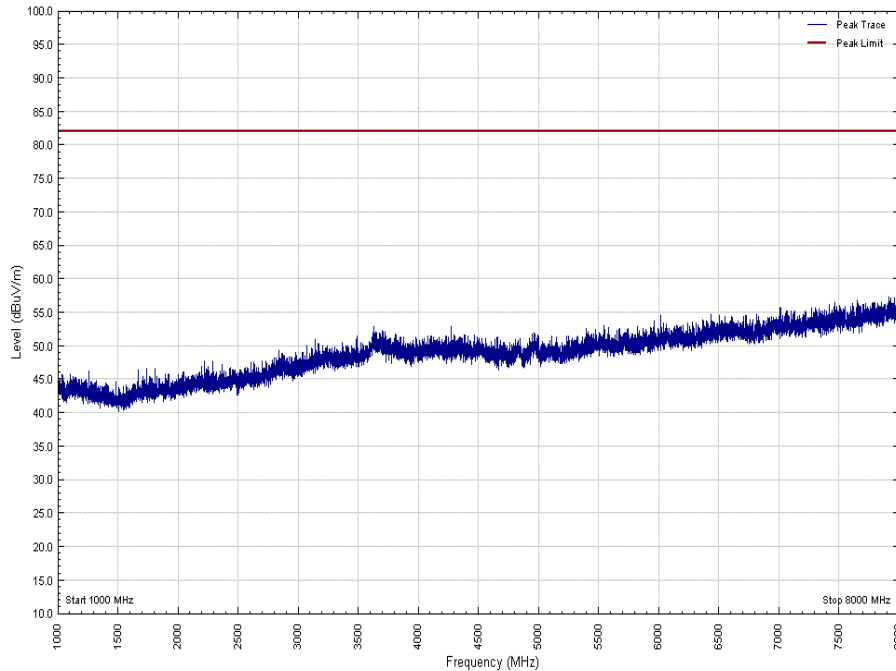
Antenna A - NB-IoT SA Modulation 64QAM - NB-IoT SA Carrier Bandwidth N: 180 kHz -
Channel Position T - Band 14 - Range 30 MHz to 1 GHz V



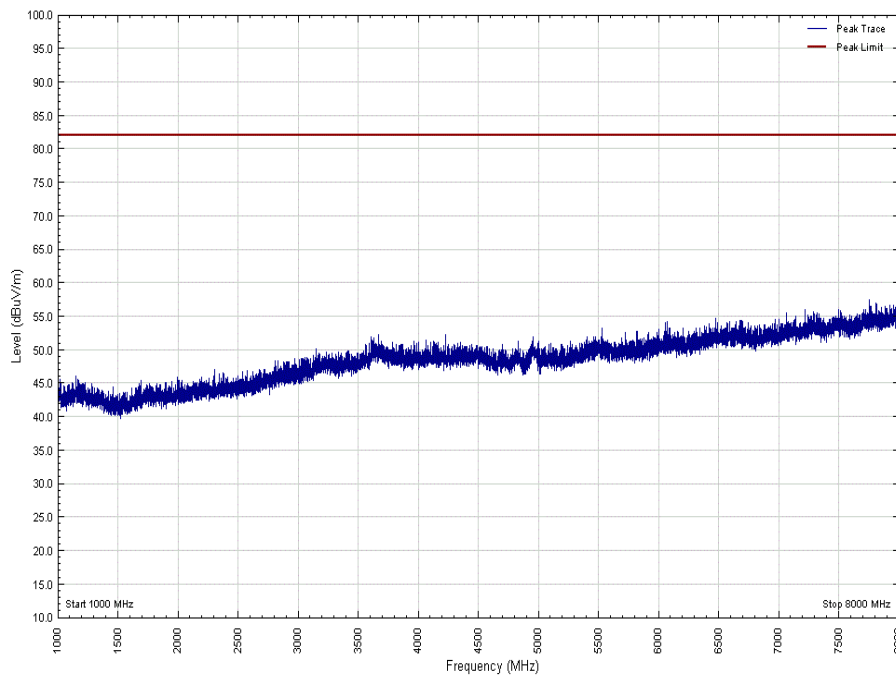
Antenna A - NB-IoT SA Modulation 64QAM - NB-IoT SA Carrier Bandwidth N: 180 kHz -
Channel Position T - Band 14 - Range 30 MHz to 1 GHz H



Antenna A - NB-IoT SA Modulation 64QAM - NB-IoT SA Carrier Bandwidth N: 180 kHz -
Channel Position T - Band 14 - Range 1 GHz to 8 GHz V



Antenna A - NB-IoT SA Modulation 64QAM - NB-IoT SA Carrier Bandwidth N: 180 kHz -
Channel Position T - Band 14 - Range 1 GHz to 8 GHz H



Limit	-13dBm / 82.2dBuV/m.
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Product Service

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
Maximum Peak Output Power and Peak to Average Ratio - Conducted					
Hygrometer	Rotronic	A1	2138	12	21-Feb-2019
Signal Analyser	N9030A	Keysight	4653	12	05-Feb-2019
PSU	Farnell	H60/25	1092	-	O/P Mon
DMM	Fluke	179	4006	12	13-Dec-2018
Attenuator	Weinschel	48-10-43	4868	-	O/P Mon
Attenuator	Weinschel	48-30-43	4871	12	17-Jul-2019
Attenuator	Weinschel	48-10-43	3593	12	16-Jul-2019
Network Analyser	R&S	ZVA 40	3548	12	17-Oct-2019
Calibration unit	R&S	ZV Z54	4368	12	22-Oct-2019
Occupied Bandwidth					
Hygrometer	Rotronic	A1	2138	12	21-Feb-2019
Signal Analyser	N9030A	Keysight	4653	12	05-Feb-2019
PSU	Farnell	H60/25	1092	-	O/P Mon
DMM	Fluke	179	4006	12	13-Dec-2018
Attenuator	Weinschel	48-10-43	4868	-	O/P Mon
Attenuator	Weinschel	48-30-43	4871	12	17-Jul-2019
Attenuator	Weinschel	48-10-43	3593	12	16-Jul-2019
Network Analyser	R&S	ZVA 40	3548	12	17-Oct-2019
Calibration unit	R&S	ZV Z54	4368	12	22-Oct-2019
Band Edge					
Hygrometer	Rotronic	A1	2138	12	21-Feb-2019
Signal Analyser	N9030A	Keysight	4653	12	05-Feb-2019
PSU	Farnell	H60/25	1092	-	O/P Mon
DMM	Fluke	179	4006	12	13-Dec-2018
Attenuator	Weinschel	48-10-43	4868	-	O/P Mon
Attenuator	Weinschel	48-30-43	4871	12	17-Jul-2019
Attenuator	Weinschel	48-10-43	3593	12	16-Jul-2019
Network Analyser	R&S	ZVA 40	3548	12	17-Oct-2019
Calibration unit	R&S	ZV Z54	4368	12	22-Oct-2019
Transmitter Spurious Emissions					
Hygrometer	Rotronic	A1	2138	12	21-Feb-2019
Signal Analyser	N9030A	Keysight	4653	12	05-Feb-2019
PSU	Farnell	H60/25	1092	-	O/P Mon
DMM	Fluke	179	4006	12	13-Dec-2018
Attenuator	Weinschel	48-10-43	4868	-	O/P Mon
Attenuator	Weinschel	48-30-43	4871	12	17-Jul-2019
Attenuator	Weinschel	48-10-43	3593	12	16-Jul-2019
Network Analyser	R&S	ZVA 40	3548	12	17-Oct-2019
Calibration unit	R&S	ZV Z54	4368	12	22-Oct-2019



Product Service

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Radiated Emissions					
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Multimeter	Iso-tech	IDM101	2419	12	23-Nov-2018
Antenna with permanent attenuator (Bilog)	Chase	CBL6143	2904	24	08-Aug-2019
EMI Receiver	Keysight Technologies	N9038A MXE	4628	12	04-Jul-2019
Double Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	4722	12	01-Mar-2019
Mast Controller	Maturo GmbH	NCD	4810	-	TU
Tilt Antenna Mast	Maturo GmbH	TAM 4.0-P	4811	-	TU
9m N type RF cable	Rosenberger	2303-0 9.0m PNm PNm	4827	6	04-Jan-2019
4dB Attenuator	Pasternack	PE7047-4	4935	12	28-Nov-2018
Hygrometer	Rotronic	HP21	4989	12	26-Apr-2019
Cable (40GHz)	Rosenberger	LU1-001-2000	5020	-	O/P Mon
EmX Software	TUV SUD Product Service	EmX V1.3.21	5125	-	Software

O/P Mon – Output Monitored with Calibrated Equipment



Product Service

3.2 MEASUREMENT UNCERTAINTY

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

Test Discipline	Frequency / Parameter	MU
Conducted Maximum Output Power	30MHz to 10GHz Amplitude	0.5dB*
Conducted Emissions	30MHz to 40GHz Amplitude	3.0dB*
Frequency Stability	30MHz to 3GHz	$<\pm 1 \times 10^{-7}$
Radiated Emissions, Bilog Antenna, AOATS	30MHz to 1GHz Amplitude	5.1dB*
Radiated Emissions, Horn Antenna, AOATS	1GHz to 40GHz Amplitude	6.3dB*
Worst case error for both Time and Frequency measurement 12 parts in 10^6		

* In accordance with CISPR 16-4



Product Service

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



Product Service

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



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

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).

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Product Service

ANNEX A

MODULE LIST



Product Service

Configuration A			
Product	Product No	R-State	Serial No
Radio 4478	KRC 161 669/3	R1C	D16X143630
Software Version:	CXP9013268/15	Revision:	R73AM