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Report On

Limited FCC Testing of the
Ericsson Remote Radio Unit LTE KRC 161 711/1 Radio 2208 B48 (3550-3700) MHz in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 96

COMMERCIAL-IN-CONFIDENCE

FCC ID: TA8AKRC161711-1

PREPARED BY	APPROVED BY	DATED
Maggie Whiting Key Account Manager	Matthew Russell Authorised Signatory	16 January 2018

Document 75941015 Report 03 Issue 2 **January 2019**

Product Service

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Product Service

SECTION 1

REPORT INFORMATION

1.1 REPORT DETAILS

Manufacturer	Ericsson
Address	Torshamnsgatan 23 Kista SE-16480 Stockholm Sweden
Product Name & Product Number	Radio 2208 B48
IC Model Name	KRC 161 711/1
Serial Number(s)	D827120517
Software Version	CXP9034711/2_R1K
Hardware Version	R1B
Test Specification/Issue/Date	FCC CFR 47 Part 2: 2017 FCC CFR 47 Part 96: 2017
Start of Test	06 December 2018
Finish of Test	07 December 2018
Name of Engineer(s)	Neil Rousell
Related Document(s)	KDB 971168 D01 v03r01 KDB 662911 D01 v02r01 KDB 940660 D01 Part 96 CBRS Eqpt v01

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 and Part 96. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

Neil Rousell

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 add PSD (dBm/MHz) values and EIRP evaluation.

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 96, and is shown below.

Section	Test Description			Result
	FCC CFR 47 Part 2	FCC CFR 47 Part 96		
2.1	2.1046	96.41 (b)(c)(g)	Power Limits EIRP, Power Management, Peak-average Power Ratio (PAPR), PSD	Pass
2.2	2.1051	96.41 (e)(1)	Transmitter Spurious 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.

1.3 CONFIGURATION DESCRIPTION

Configuration A - Single Carrier			
Bandwidth (MHz)	Bottom (MHz)	Middle (MHz)	Top (MHz)
5	3552.5	3625	3697.5
10	3555	3625	3695
20	3560	3625	3690
Configuration B - 2 Carriers			
Bandwidth (MHz)	Bottom (MHz)	Middle (MHz)	Top (MHz)
5	3552.5 + 3607.5	3597.5 + 3652.5	3642.5 + 3697.5
10	3555 + 3605	3600 + 3650	3645 + 3695
20	3560 + 3600	3605 + 3645	3650 + 3690
Configuration C - 3 Carriers			
Bandwidth (MHz)	Bottom (MHz)	Middle (MHz)	Top (MHz)
5	3552.5 + 3557.5 + 3607.5	3597.5 + 3602.5 + 3652.5	3642.5 + 3647.5 + 3697.5
10	3555 + 3565 + 3605	3600 + 3610 + 3650	3645 + 3655 + 3695
20	3560 + 3580 + 3600	3605 + 3625 + 3645	3650 + 3670 + 3690

1.4 DECLARATION OF BUILD STATUS

MANUFACTURING DESCRIPTION	Remote Radio Unit
MANUFACTURER	Ericsson AB
PRODUCT NAME	Radio 2208 B48
PRODUCT NUMBER	KRC 161 711/1
TRANSMITTER OPERATING RANGE	TX/RX: 3550 - 3700 MHz
MODULATIONS	LTE: QPSK, 16QAM, 64QAM, 256QAM
ITU DESIGNATION OF EMISSION	LTE: 5M00F9W, 10M0F9W, 20M0F9W
NUMBER OF CARRIERS	Maximum 3 carriers
SUPPORTED CHANNEL BANDWIDTH CONFIGURATION	LTE: 5MHz, 10MHz and 20MHz
MAX OUTPUT POWER (RMS) (W or dBm) Per Port	5MHz BW: 34.0 dBm (2.5W) 10MHz & 20MHz BW: 40.0 dBm (10W) for 2x2 MIMO; 36.0 dBm (4W) for 4x4 MIMO
OUTPUT POWER TOLERANCE	+0.6/-2.0 dB
INSTANTANEOUS BANDWIDTH	60MHz
NUMBER OF ANTENNA PORTS	2 TX/RX ports
Integrated Antenna name	Antenna 6550
Integrated Antenna product number	KRE 101 2251/2
Integrated Antenna Gain	11.5 ± 0.5dBi
FCC ID	TA8AKRC161711-1
Power source	36V DC
TECHNICAL DESCRIPTION	The equipment is the Remote Radio Part of TDD LTE Base Station.
(a brief description of the intended use and operation)	

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

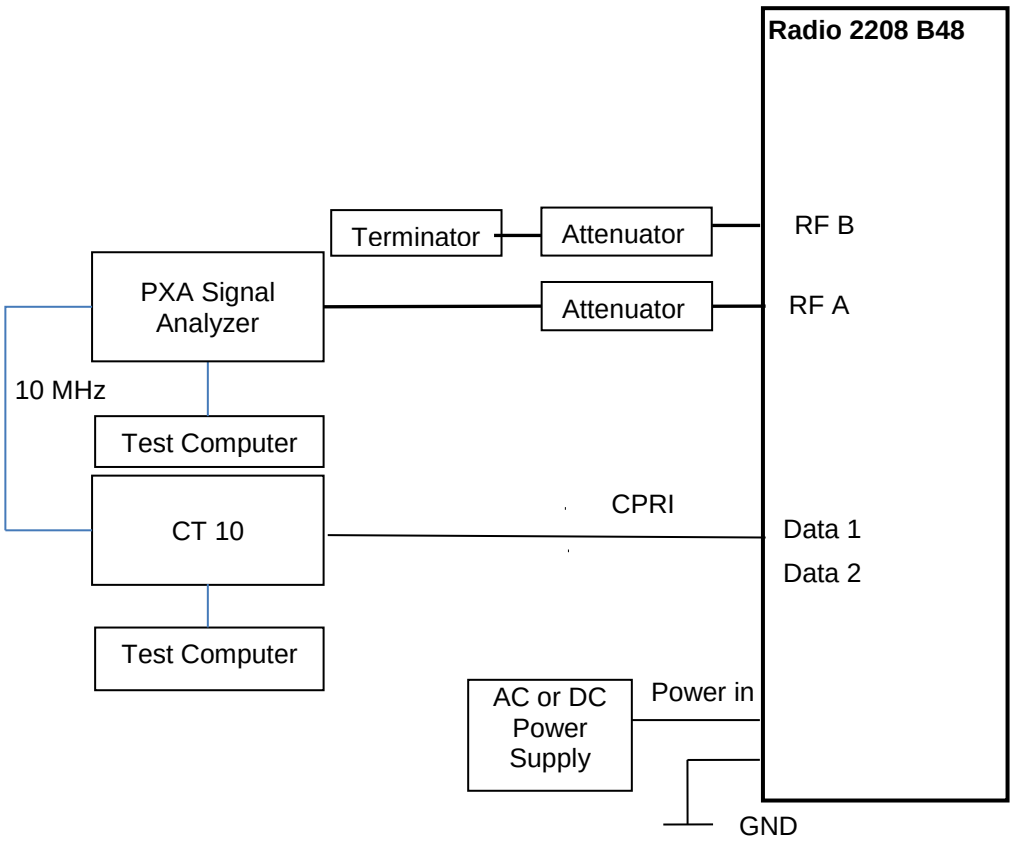
The Equipment Under Test (EUT) KRC 161 711/1 is an Ericsson AB Radio Unit working in the public mobile service 3550-3700 MHz band which provides communication connections to 3550-3700 MHz network. The KRC 161 711/1 operates from a -48V DC or a 120V AC power supply.

The Equipment Under Test is a Category B Product.

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



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 120V (60Hz) AC supply. The EUT can also operate from a -48 V DC power 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 ADDITIONAL INFORMATION

This testing has been carried out in addition to that performed in TUV SUD Test Report 75941015 Report 01 (2x2 MIMO) to cover the extra requirement for 4x4 MIMO.

SECTION 2

TEST DETAILS

2.1 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 96, Clause 96.41 (b)(c)(g)

2.1.2 Date of Test and Modification State

06 and 07 December 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	24.1 - 24.6°C
Relative Humidity	35.3 - 49.9%

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.

When testing a 4x4 MIMO configuration, two samples are connected together via a communication link. The output power is reduced to account for 4 transmit ports in the Base Station software. Testing was carried out on 2 ports and the results for 4 port operation were calculated by adding 3 dB to each of the measured ports. This presents a worst case scenario. Two radios that would be used in a typical configuration are physically and electrically identical.

The Power Spectral Density measurements were calculated from using the previously measured OBW taken from Report 75941015 Report 1. The following formula was used:

10 MHz Measured Power – (10 * log(OBW / 1 MHz))

The smallest OBW for the measured channel was used from the measured port for each channel which resulted in the highest power spectral density.

2.1.6 Test Results

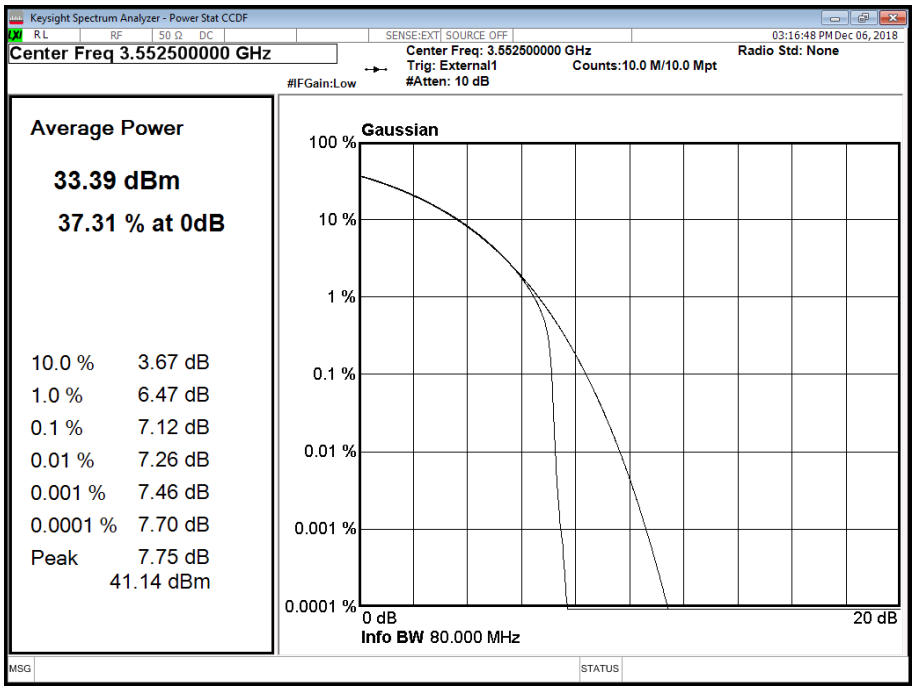
Configuration A

Maximum Output Power 36 dBm (5 MHz, 34 dBm)

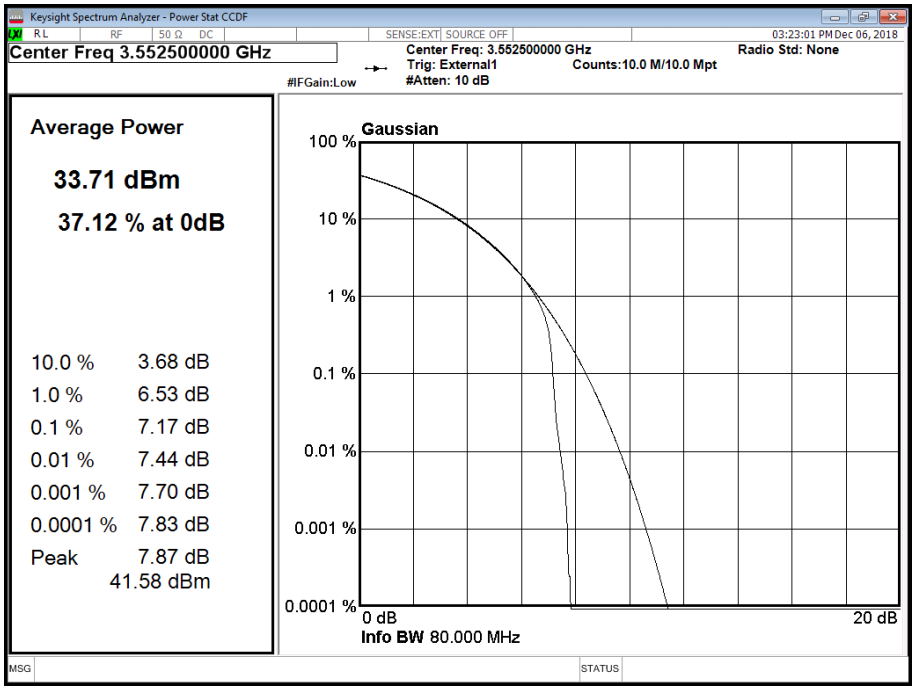
Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power			
			Channel Position B			
			PAR (dB)	Average Power		
				dBm	dBm/10 MHz	dBm/MHz
A	QPSK	5.0 MHz	7.12	33.50	33.43	26.92
B	QPSK	5.0 MHz	7.17	33.71	33.65	27.14
C	QPSK	5.0 MHz	7.17	33.71	33.65	27.14
D	QPSK	5.0 MHz	7.17	33.71	33.65	27.14
Total			-	39.68	39.62	33.12
A	QPSK	10.0 MHz	7.17	35.57	35.46	25.94
B	QPSK	10.0 MHz	7.18	35.69	35.65	26.13
C	QPSK	10.0 MHz	7.18	35.69	35.65	26.13
D	QPSK	10.0 MHz	7.18	35.69	35.65	26.13
Total			-	41.68	41.62	32.11
A	QPSK	20.0 MHz	7.25	35.57	33.02	23.02
B	QPSK	20.0 MHz	7.25	35.61	33.13	23.13
C	QPSK	20.0 MHz	7.25	35.61	33.13	23.13
D	QPSK	20.0 MHz	7.25	35.61	33.13	23.13
Total			-	41.62	39.12	29.12

Note: Ports C and D were not measured. The results were calculated based on the worst case measured result from Ports A and B due to the radio for Ports C and D being electrically identical. The worst-case result from Ports A and B for CCDF was used due to the radios being electrically identical.

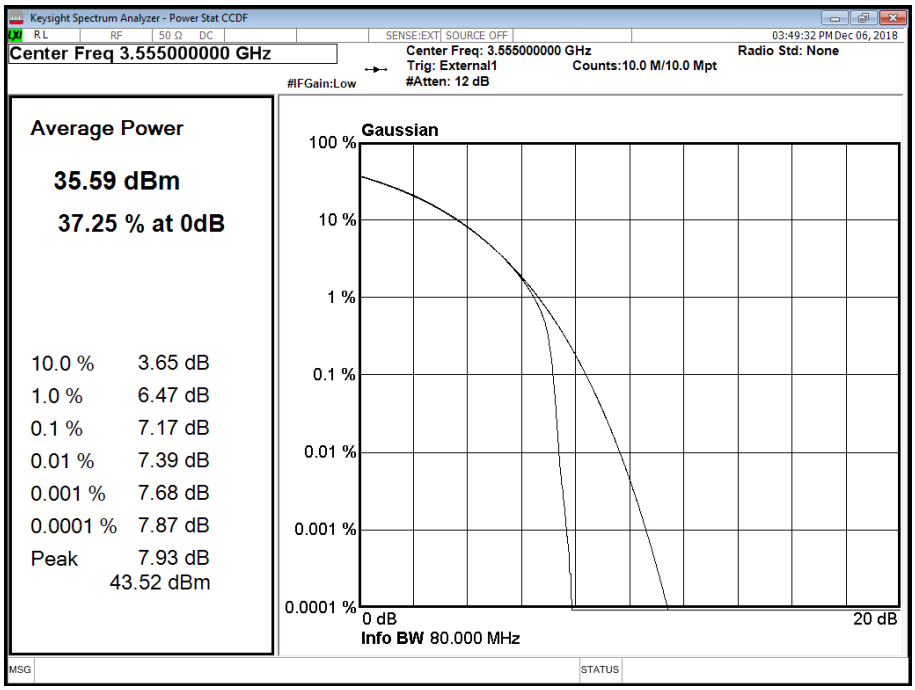
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B



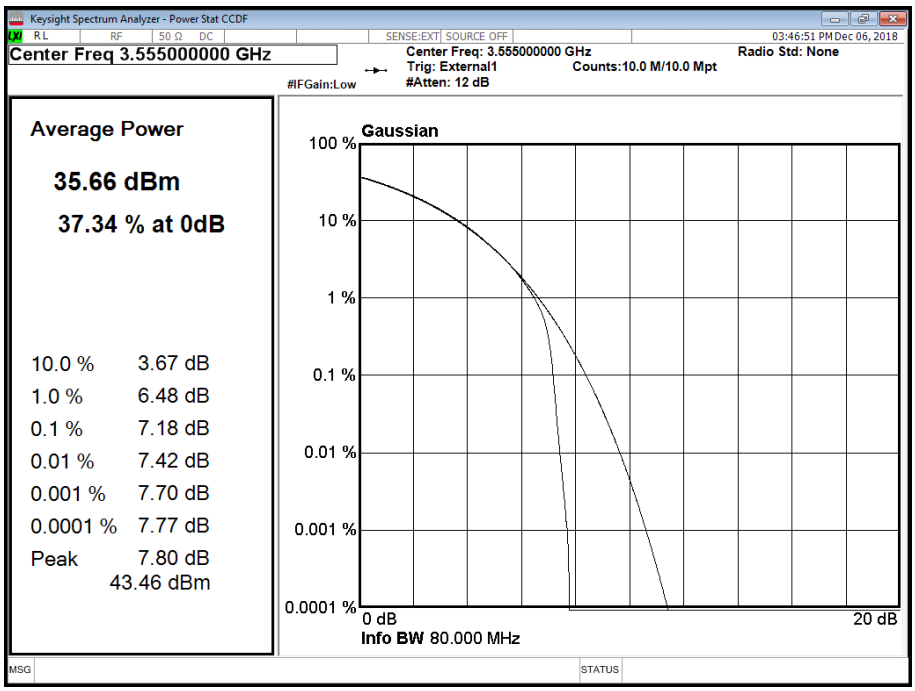
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B



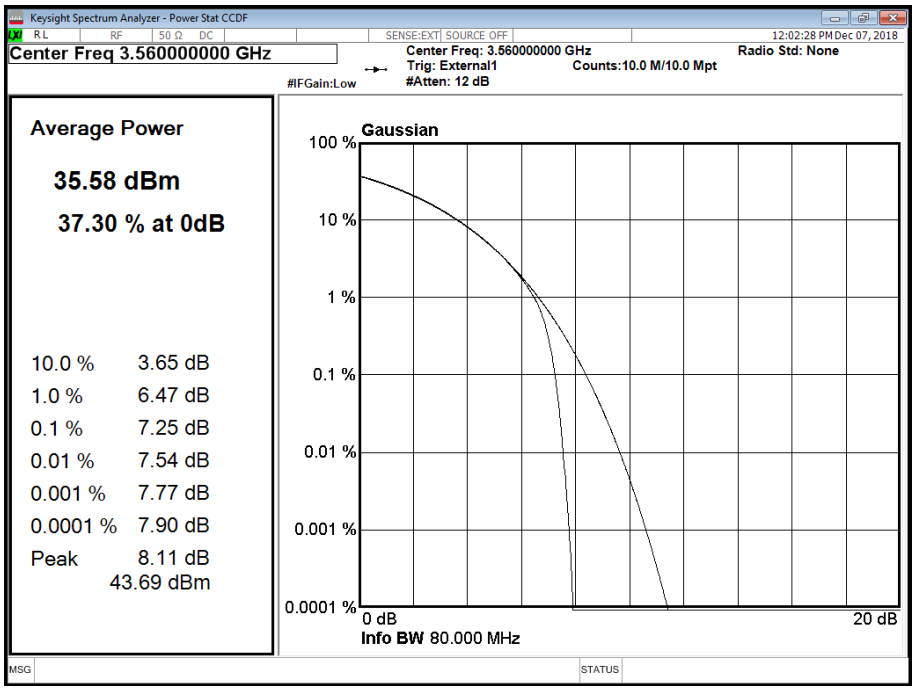
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position B



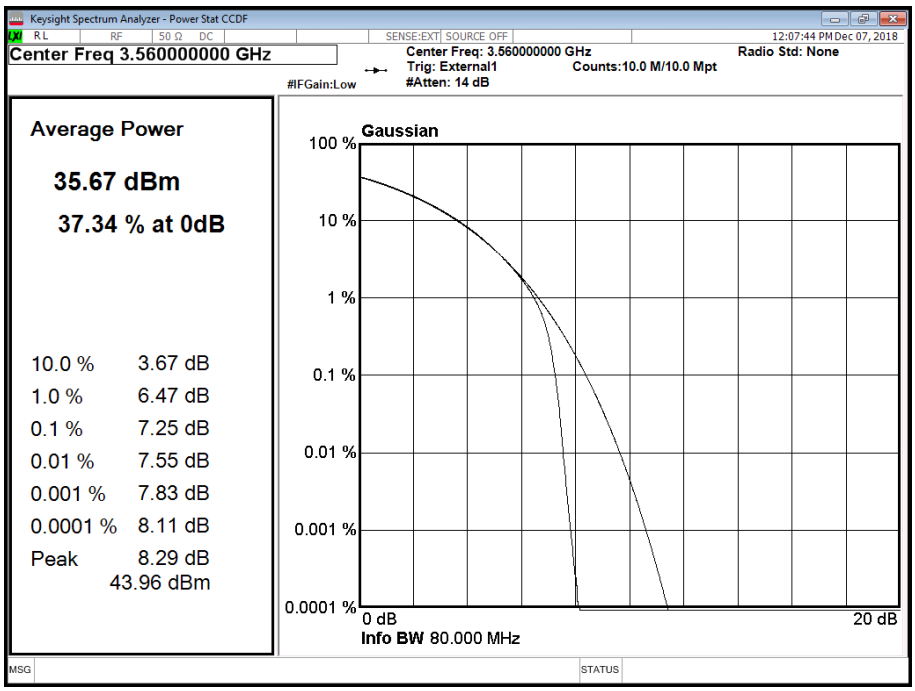
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position B



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



Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position B



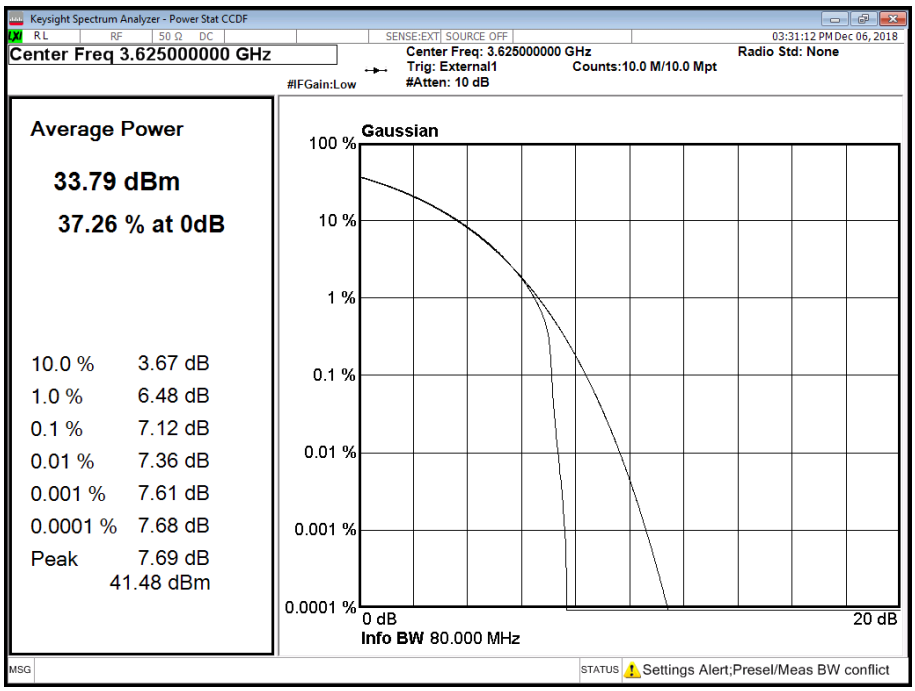
Configuration A

Maximum Output Power 36 dBm (5 MHz, 34 dBm)

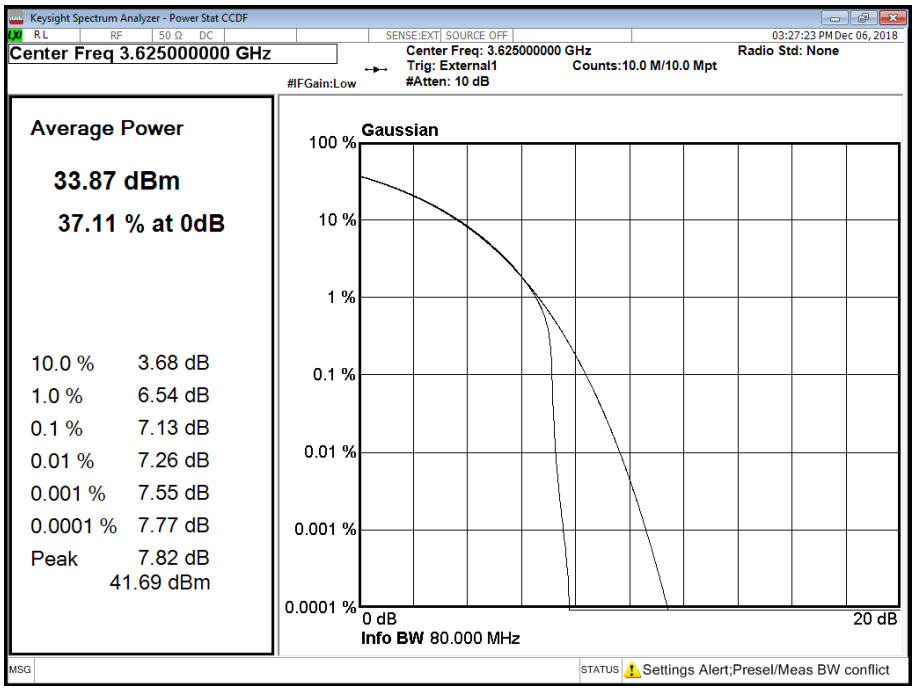
Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power			
			Channel Position M			
			PAR (dB)	Average Power		
				dBm	dBm/10 MHz	dBm/MHz
A	QPSK	5.0 MHz	7.12	33.79	33.75	27.23
B	QPSK	5.0 MHz	7.13	33.92	33.90	27.38
C	QPSK	5.0 MHz	7.13	33.92	33.90	27.38
D	QPSK	5.0 MHz	7.13	33.92	33.90	27.38
Total			-	39.91	39.88	33.37
A	QPSK	10.0 MHz	7.14	35.76	35.84	26.32
B	QPSK	10.0 MHz	7.14	35.87	35.88	26.36
C	QPSK	10.0 MHz	7.14	35.87	35.88	26.36
D	QPSK	10.0 MHz	7.14	35.87	35.88	26.36
Total			-	41.86	41.89	32.38
A	QPSK	20.0 MHz	7.17	35.79	33.37	23.37
B	QPSK	20.0 MHz	7.15	36.01	33.43	23.43
C	QPSK	20.0 MHz	7.17	36.01	33.43	23.43
D	QPSK	20.0 MHz	7.17	36.01	33.43	23.43
Total			-	41.98	39.44	29.46

Note: Ports C and D were not measured. The results were calculated based on the worst case measured result from Ports A and B due to the radio for Ports C and D being electrically identical. The worst-case result from Ports A and B for CCDF was used due to the radios being electrically identical.

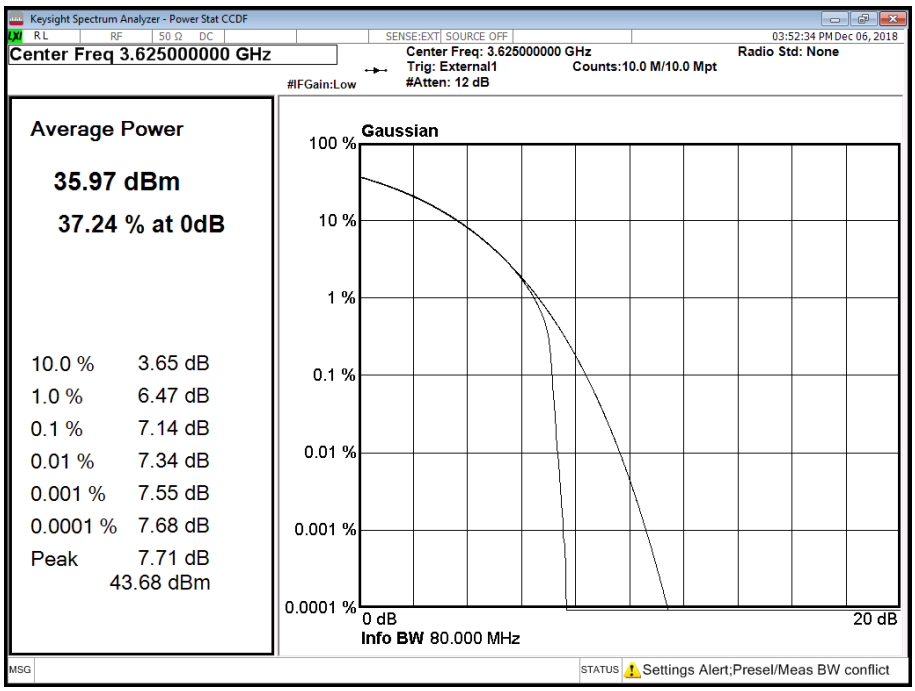
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M



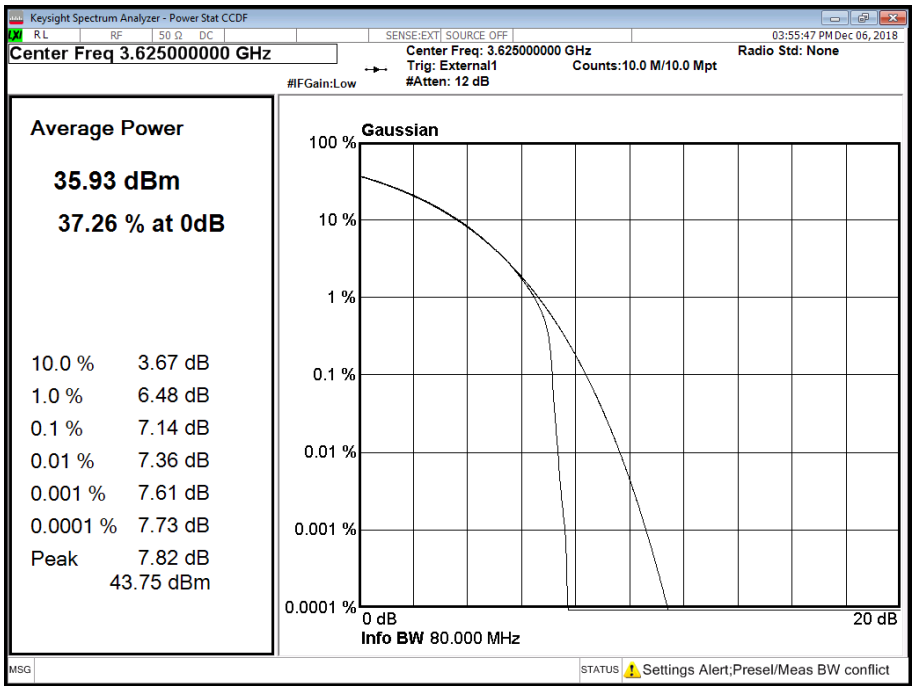
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M



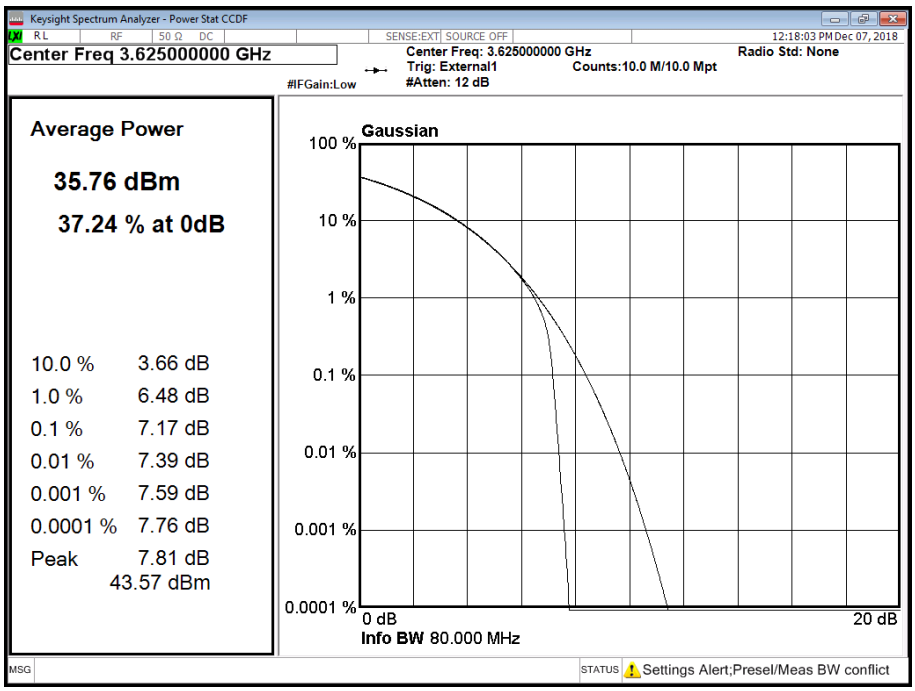
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position M



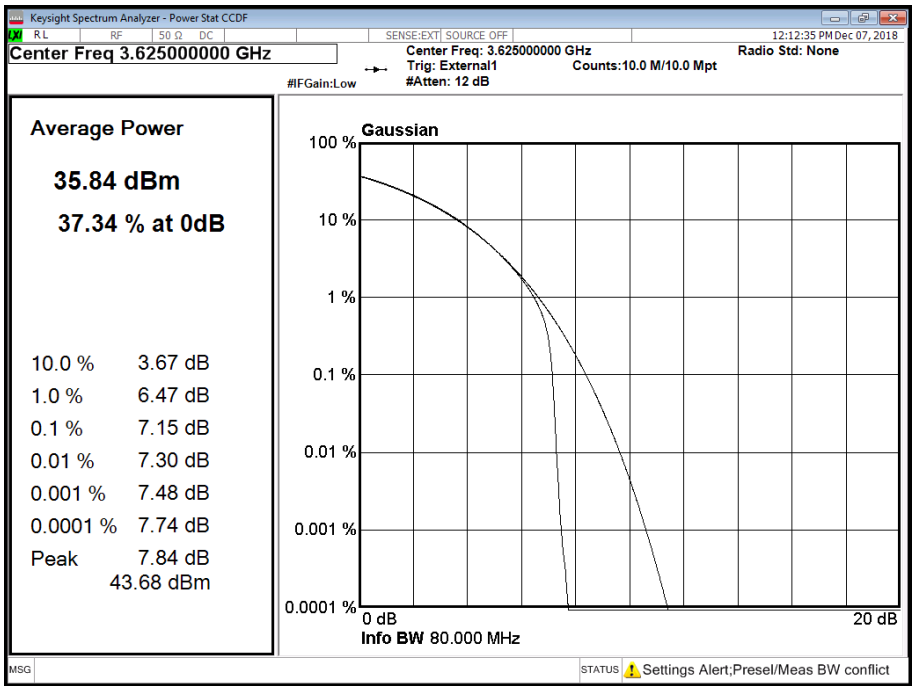
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position M



Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M



Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M



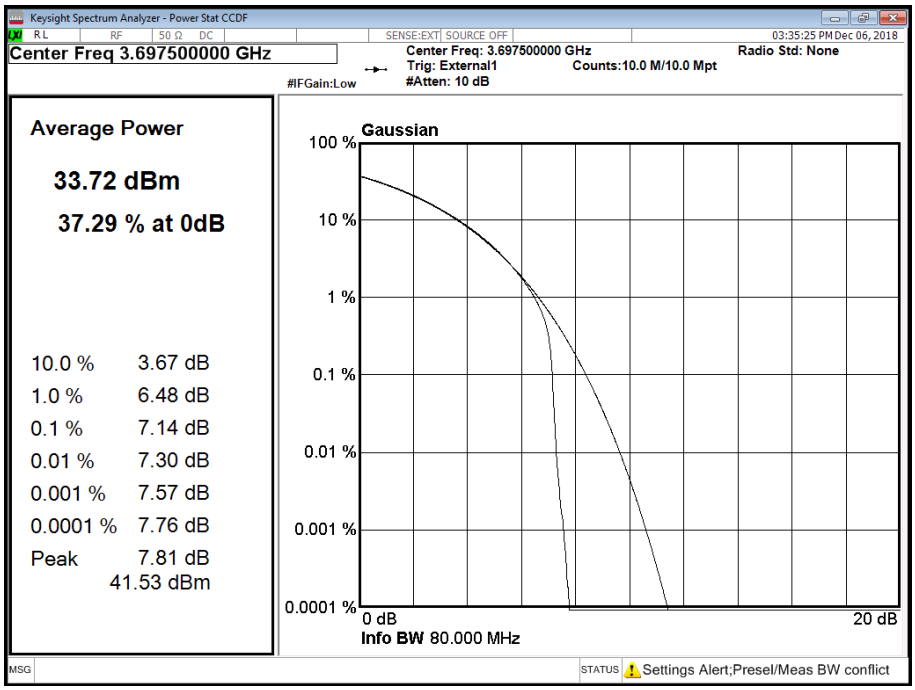
Configuration A

Maximum Output Power 36 dBm (5 MHz, 34 dBm)

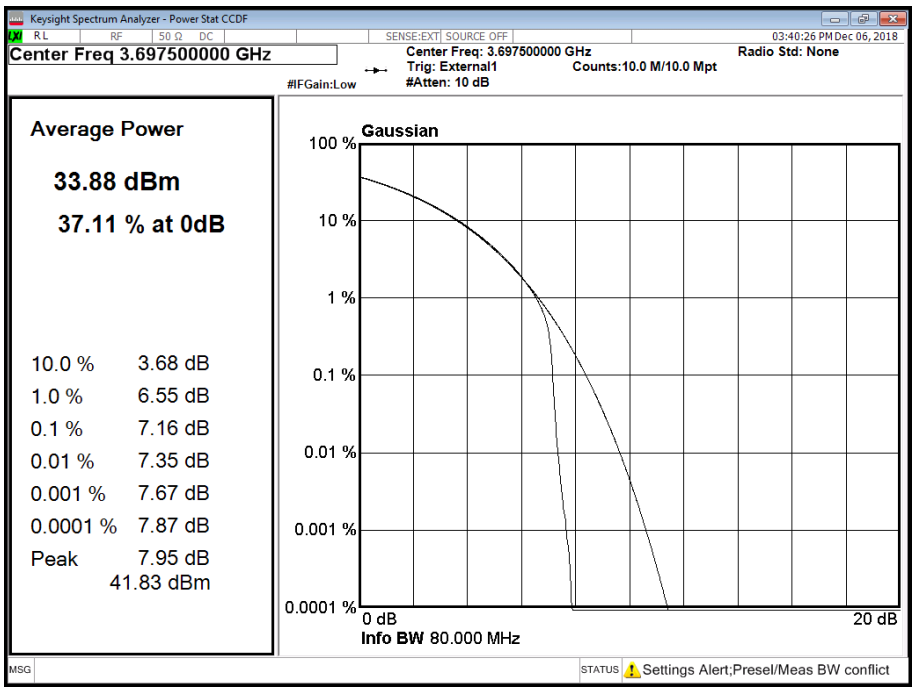
Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power			
			Channel Position T			
			PAR (dB)	Average Power		
				dBm	dBm/10 MHz	dBm/MHz
A	QPSK	5.0 MHz	7.14	33.62	33.56	27.04
B	QPSK	5.0 MHz	7.16	33.82	33.76	27.24
C	QPSK	5.0 MHz	7.16	33.82	33.76	27.24
D	QPSK	5.0 MHz	7.16	33.82	33.76	27.24
Total			-	39.79	39.73	33.22
A	QPSK	10.0 MHz	7.17	35.73	35.72	26.20
B	QPSK	10.0 MHz	7.17	35.79	35.76	26.24
C	QPSK	10.0 MHz	7.17	35.79	35.76	26.24
D	QPSK	10.0 MHz	7.17	35.79	35.76	26.24
Total			-	41.80	41.77	32.26
A	QPSK	20.0 MHz	7.27	35.58	33.10	23.10
B	QPSK	20.0 MHz	7.28	35.63	33.20	23.20
C	QPSK	20.0 MHz	7.28	35.63	33.20	23.20
D	QPSK	20.0 MHz	7.28	35.63	33.20	23.20
Total			-	41.64	39.19	29.22

Note: Ports C and D were not measured. The results were calculated based on the worst case measured result from Ports A and B due to the radio for Ports C and D being electrically identical. The worst-case result from Ports A and B for CCDF was used due to the radios being electrically identical.

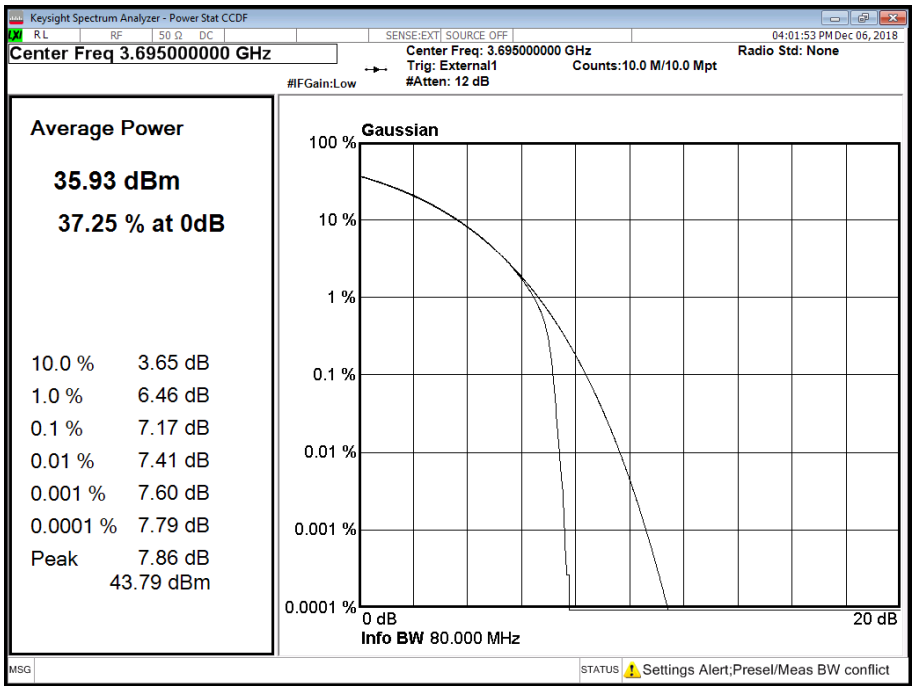
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



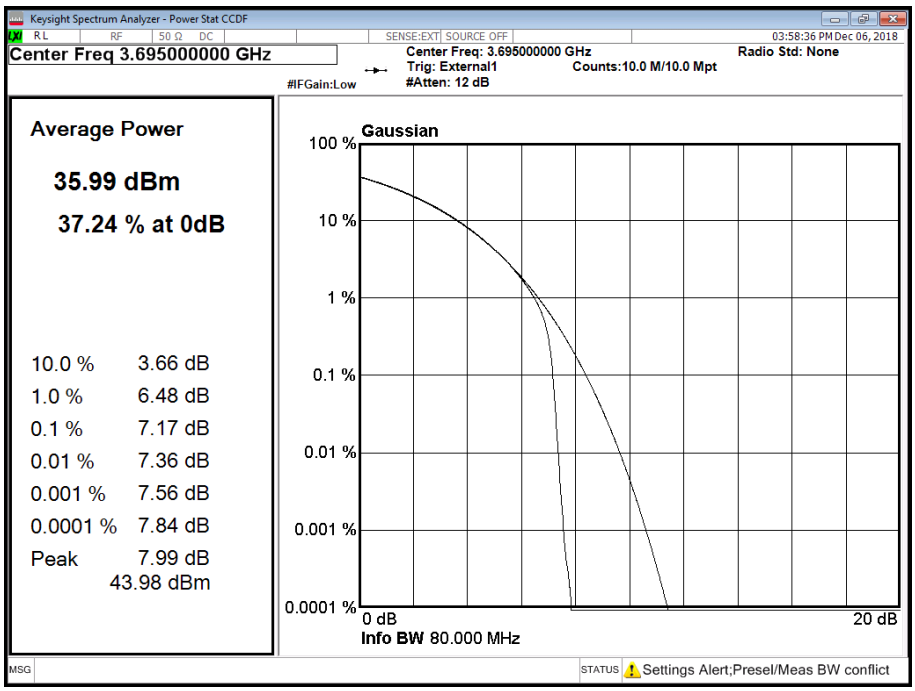
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



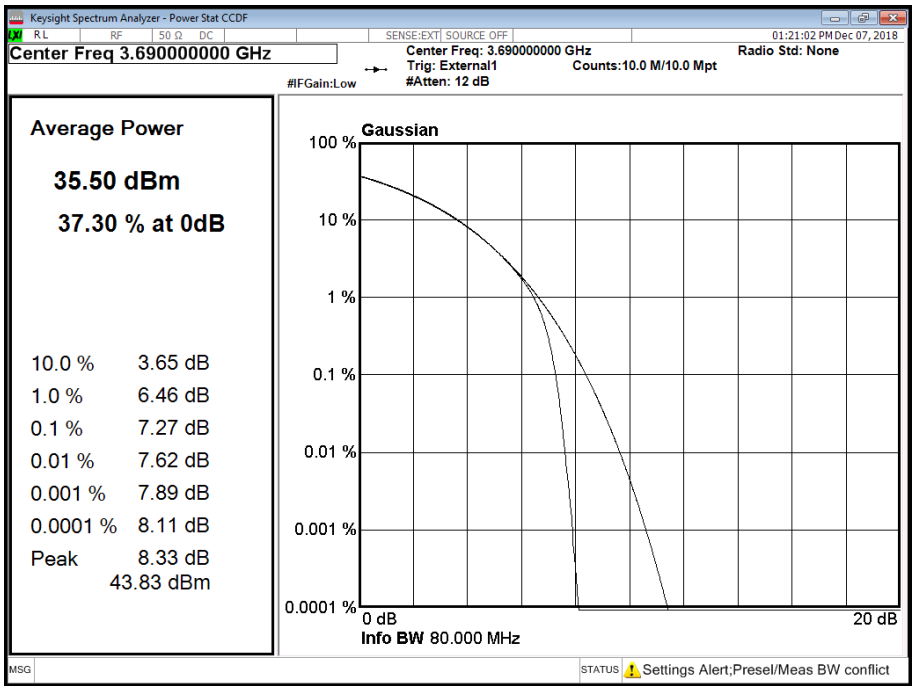
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position T



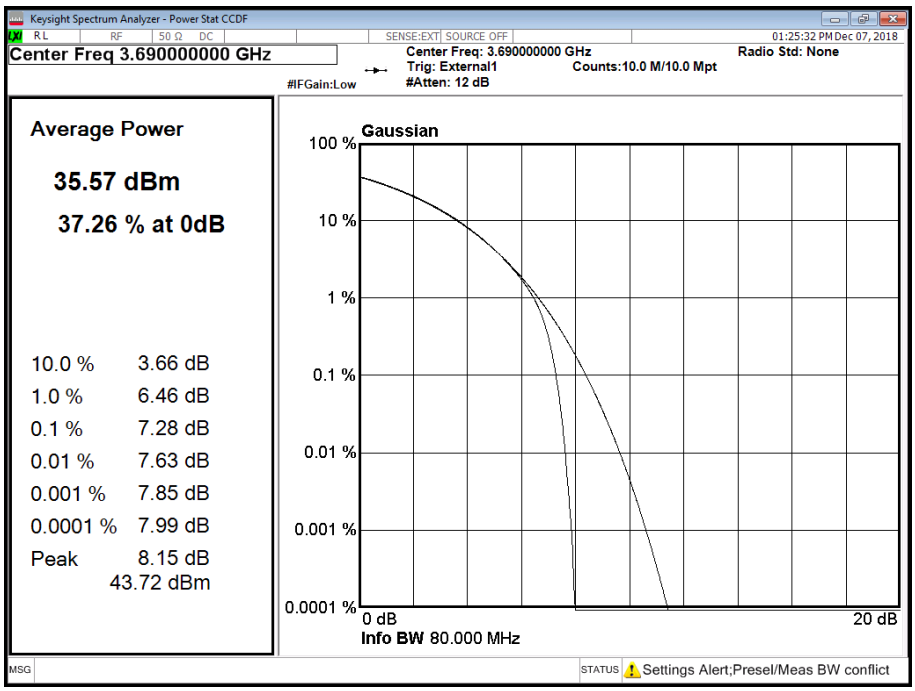
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position T



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



Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position T



Configuration B

Maximum Output Power 36 dBm (5 MHz, 34 dBm)

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power			
			Channel Position B			
			PAR (dB)	Average Power		
				dBm	dBm/10 MHz	dBm/MHz
A	QPSK	5.0 MHz	-	34.06	31.16	24.65
B	QPSK	5.0 MHz	-	34.14	31.37	24.86
C	QPSK	5.0 MHz	-	34.14	31.37	24.86
D	QPSK	5.0 MHz	-	34.14	31.37	24.86
Total			-	40.14	37.34	30.84
A	QPSK	10.0 MHz	-	35.83	32.90	23.38
B	QPSK	10.0 MHz	-	35.89	33.08	23.56
C	QPSK	10.0 MHz	-	35.89	33.08	23.56
D	QPSK	10.0 MHz	-	35.89	33.08	23.56
Total			-	41.90	39.06	29.56
A	QPSK	20.0 MHz	-	35.77	30.49	20.49
B	QPSK	20.0 MHz	-	35.85	30.57	20.57
C	QPSK	20.0 MHz	-	35.85	30.57	20.57
D	QPSK	20.0 MHz	-	35.85	30.57	20.57
Total			-	41.85	36.57	26.61

Note: Ports C and D were not measured. The results were calculated based on the worst case measured result from Ports A and B due to the radio for Ports C and D being electrically identical. The worst-case result from Ports A and B for CCDF was used due to the radios being electrically identical.

Configuration B

Maximum Output Power 36 dBm (5 MHz, 34 dBm)

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power			
			Channel Position M			
			PAR (dB)	Average Power		
				dBm	dBm/10 MHz	dBm/MHz
A	QPSK	5.0 MHz	-	33.55	30.65	24.13
B	QPSK	5.0 MHz	-	33.51	30.52	24.00
C	QPSK	5.0 MHz	-	33.55	30.65	24.13
D	QPSK	5.0 MHz	-	33.55	30.65	24.13
Total			-	39.56	36.63	30.14
A	QPSK	10.0 MHz	-	35.57	32.64	23.12
B	QPSK	10.0 MHz	-	35.61	32.62	23.10
C	QPSK	10.0 MHz	-	35.61	32.64	23.12
D	QPSK	10.0 MHz	-	35.61	32.64	23.12
Total			-	41.62	38.66	29.16
A	QPSK	20.0 MHz	-	35.65	30.14	20.14
B	QPSK	20.0 MHz	-	35.69	30.18	20.18
C	QPSK	20.0 MHz	-	35.69	30.18	20.18
D	QPSK	20.0 MHz	-	35.69	30.18	20.18
Total			-	41.70	36.19	26.23

Configuration B

Maximum Output Power 36 dBm (5 MHz, 34 dBm)

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power			
			Channel Position T			
			PAR (dB)	Average Power		
				dBm	dBm/10 MHz	dBm/MHz
A	QPSK	5.0 MHz	-	33.64	31.02	24.50
B	QPSK	5.0 MHz	-	33.62	31.00	24.48
C	QPSK	5.0 MHz	-	33.64	31.02	24.50
D	QPSK	5.0 MHz	-	33.64	31.02	24.50
Total			-	39.66	37.04	30.53
A	QPSK	10.0 MHz	-	35.70	33.12	23.60
B	QPSK	10.0 MHz	-	35.84	33.11	23.59
C	QPSK	10.0 MHz	-	35.84	33.12	23.60
D	QPSK	10.0 MHz	-	35.84	33.12	23.60
Total			-	41.83	39.14	29.64
A	QPSK	20.0 MHz	-	35.74	30.58	20.58
B	QPSK	20.0 MHz	-	35.78	30.53	20.53
C	QPSK	20.0 MHz	-	35.78	30.58	20.58
D	QPSK	20.0 MHz	-	35.78	30.58	20.58
Total			-	41.79	36.59	26.63

Configuration C

Maximum Output Power 36 dBm (5 MHz, 34 dBm)

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power			
			Channel Position B			
			PAR (dB)	Average Power		
				dBm	dBm/10 MHz	dBm/MHz
A	QPSK	5.0 MHz	-	33.70	31.99	25.48
B	QPSK	5.0 MHz	-	33.76	32.09	25.58
C	QPSK	5.0 MHz	-	33.76	32.09	25.58
D	QPSK	5.0 MHz	-	33.76	32.09	25.58
Total			-	39.77	38.08	31.59
A	QPSK	10.0 MHz	-	35.87	31.23	21.71
B	QPSK	10.0 MHz	-	35.84	31.36	21.84
C	QPSK	10.0 MHz	-	35.87	31.36	21.84
D	QPSK	10.0 MHz	-	35.87	31.36	21.84
Total			-	41.88	37.35	27.86
A	QPSK	20.0 MHz	-	36.02	28.96	18.96
B	QPSK	20.0 MHz	-	35.99	28.95	18.95
C	QPSK	20.0 MHz	-	36.02	28.96	18.96
D	QPSK	20.0 MHz	-	36.02	28.96	18.96
Total			-	42.03	34.98	25.03

Configuration C

Maximum Output Power 36 dBm (5 MHz, 34 dBm)

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power			
			Channel Position M			
			PAR (dB)	Average Power		
				dBm	dBm/10 MHz	dBm/MHz
A	QPSK	5.0 MHz	-	33.52	31.61	25.09
B	QPSK	5.0 MHz	-	33.44	31.63	25.11
C	QPSK	5.0 MHz	-	33.52	31.63	25.11
D	QPSK	5.0 MHz	-	33.52	31.63	25.11
Total			-	39.52	37.65	31.14
A	QPSK	10.0 MHz	-	35.67	31.06	21.54
B	QPSK	10.0 MHz	-	35.64	30.93	21.41
C	QPSK	10.0 MHz	-	35.67	31.06	21.54
D	QPSK	10.0 MHz	-	35.67	31.06	21.54
Total			-	41.68	37.05	27.49
A	QPSK	20.0 MHz	-	35.81	28.52	18.52
B	QPSK	20.0 MHz	-	35.89	28.65	18.65
C	QPSK	20.0 MHz	-	35.89	28.65	18.65
D	QPSK	20.0 MHz	-	35.89	28.65	18.65
Total			-	41.89	34.64	24.70

Configuration C

Maximum Output Power 36 dBm (5 MHz, 34 dBm)

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power			
			Channel Position T			
			PAR (dB)	Average Power		
				dBm	dBm/10 MHz	dBm/MHz
A	QPSK	5.0 MHz	-	33.38	31.29	24.77
B	QPSK	5.0 MHz	-	33.66	31.63	25.11
C	QPSK	5.0 MHz	-	33.66	31.63	25.11
D	QPSK	5.0 MHz	-	33.66	31.63	25.11
Total			-	39.61	37.57	31.06
A	QPSK	10.0 MHz	-	35.71	31.40	21.88
B	QPSK	10.0 MHz	-	35.73	31.38	21.86
C	QPSK	10.0 MHz	-	35.73	31.40	21.88
D	QPSK	10.0 MHz	-	35.73	31.40	21.88
Total			-	41.75	37.41	27.92
A	QPSK	20.0 MHz	-	35.47	28.58	18.58
B	QPSK	20.0 MHz	-	35.61	28.62	18.62
C	QPSK	20.0 MHz	-	35.61	28.62	18.62
D	QPSK	20.0 MHz	-	35.61	28.62	18.62
Total			-	41.60	34.63	24.69

EIRP Compliance

The maximum allowable antenna gain + cable loss cannot exceed the values in the table below when the radio operating at the maximum output power in order to be compliant with the EIRP requirements in Part 96.41.

RF exposure compliance for the external antenna shall be addressed at the time of licensing, as required by the responsible FCC Bureau(s), including antenna co-location requirements of Part 1.1307(b)(3).

LTE Carrier Bandwidth MHz	Maximum Total output power dBm	Maximum Antenna gain + cable loss dBi	EIRP dBm/10MHz	EIRP per Bandwidth dBm	EIRP per Bandwidth W
5	40	4	44	44	25
10	42	5	47	47	50
20	42	8	47	50	100

Limit	
Maximum EIRP	Category A CBSD Maximum EIRP: 30 dBm/10 MHz Maximum PSD: 20 dBm/MHz Category B CBSD Maximum EIRP: 47 dBm/10 MHz Maximum PSD: 37 dBm/MHz
Peak to Average Ratio	13 dB

2.2 TRANSMITTER SPURIOUS EMISSIONS

2.2.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 96, Clause 96.41 (e)(1)

2.2.2 Date of Test and Modification State

06 and 07 December 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	24.1 - 24.6°C
Relative Humidity	35.3 - 49.9%

2.2.5 Test Method

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

The EUT was connected to a Spectrum Analyser. 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 1 MHz with a VBW of 3 MHz. 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.

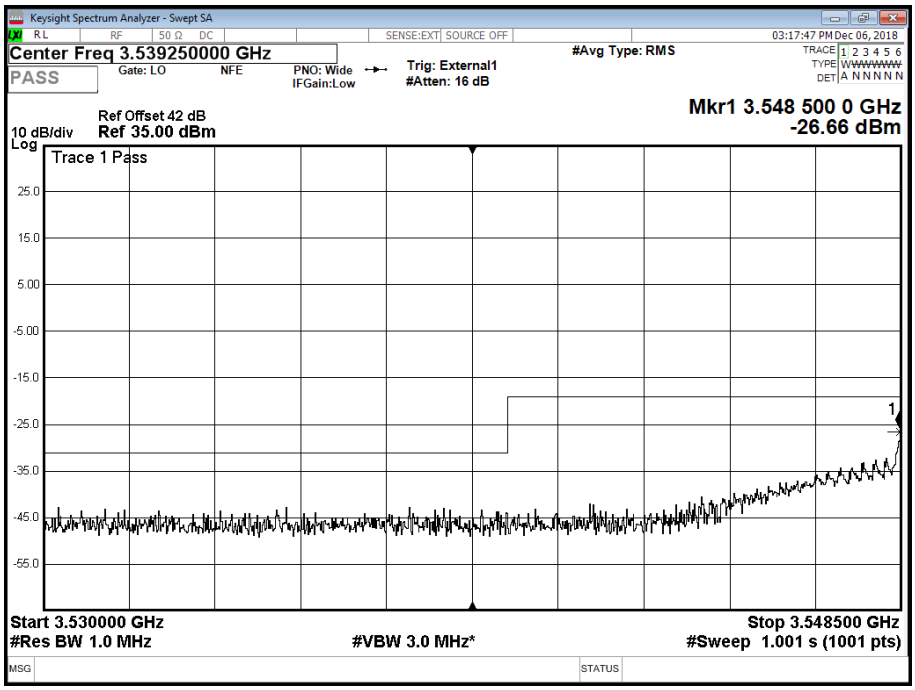
The EUT can transmit with 2 or 4 ports simultaneously. Testing was performed on 2 ports with the test limits being reduced from the specification limit by a factor of 10log(4) in accordance with KDB 662911 D01 v02r01 to cover all MIMO configurations.

2.2.6 Test Results

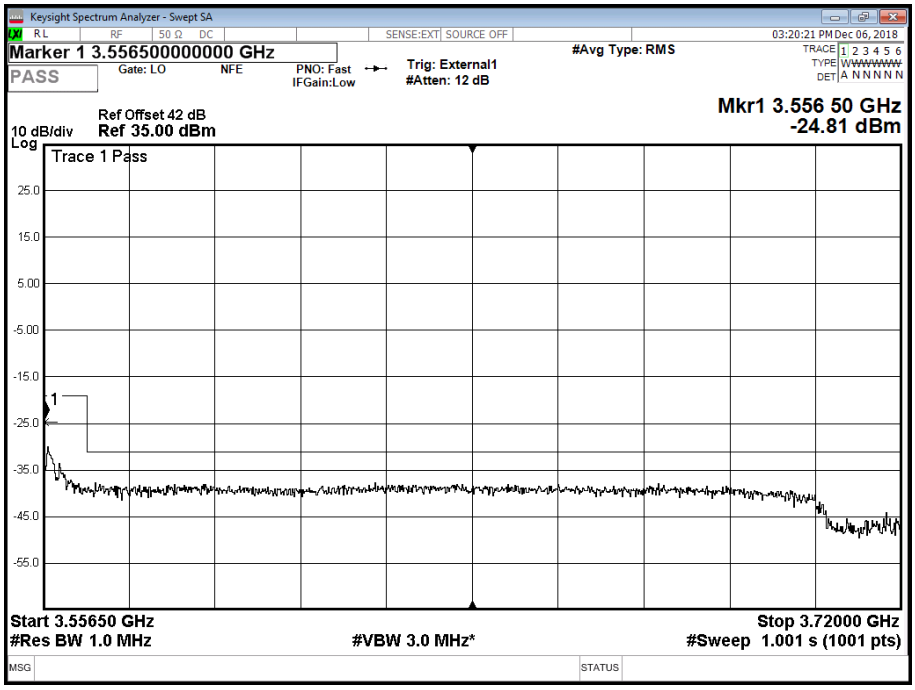
Configuration A

Maximum Output Power 36 dBm (5 MHz, 34 dBm)

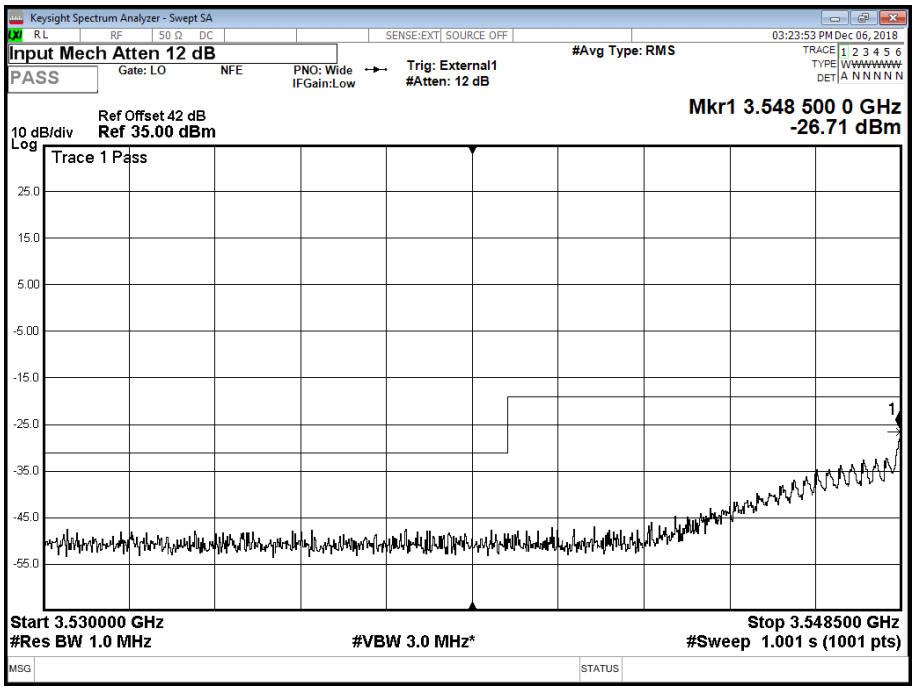
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band Mask_Low - Range Mask_Low



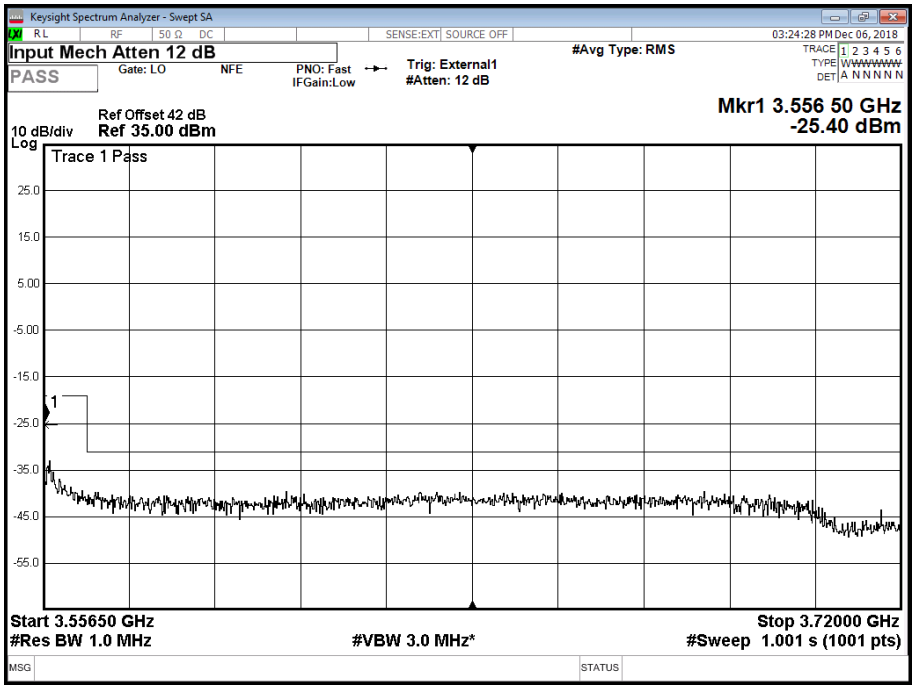
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band Mask_High - Range Mask_High



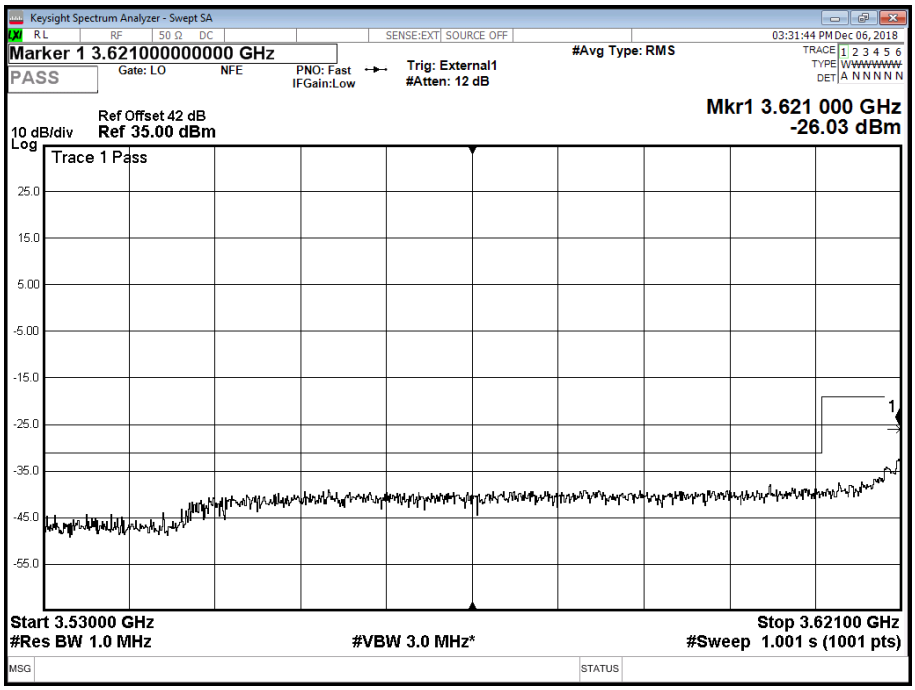
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band Mask_Low - Range Mask_Low



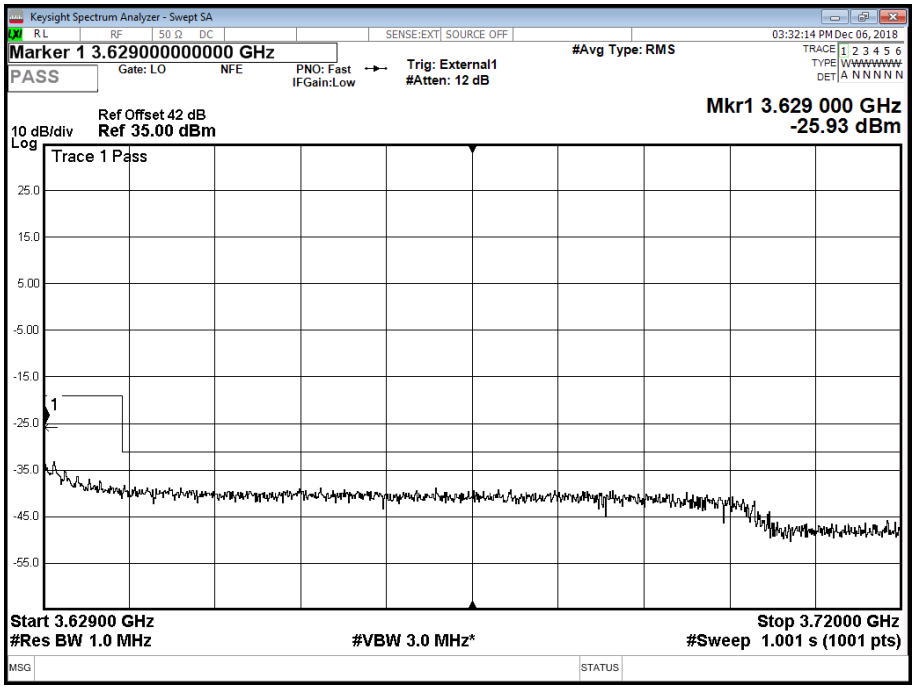
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band Mask_High - Range Mask_High



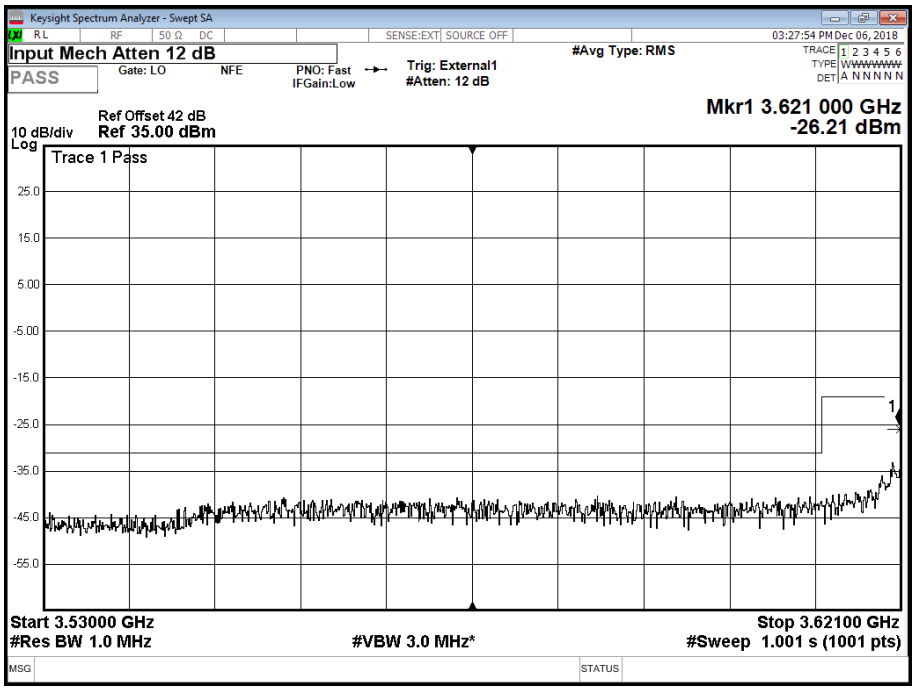
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band Mask_Low - Range Mask_Low



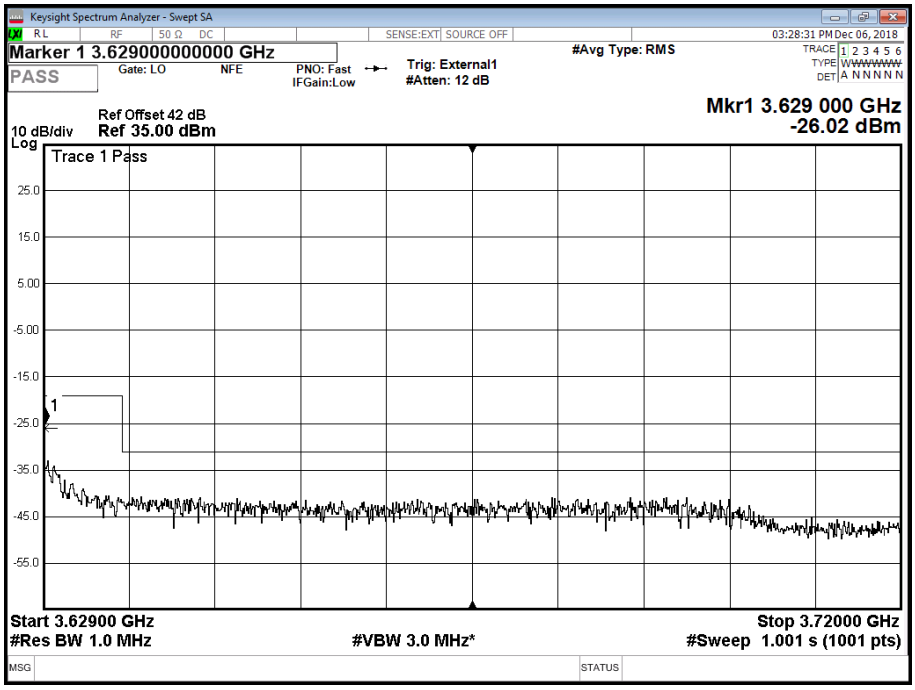
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band Mask_High - Range Mask_High



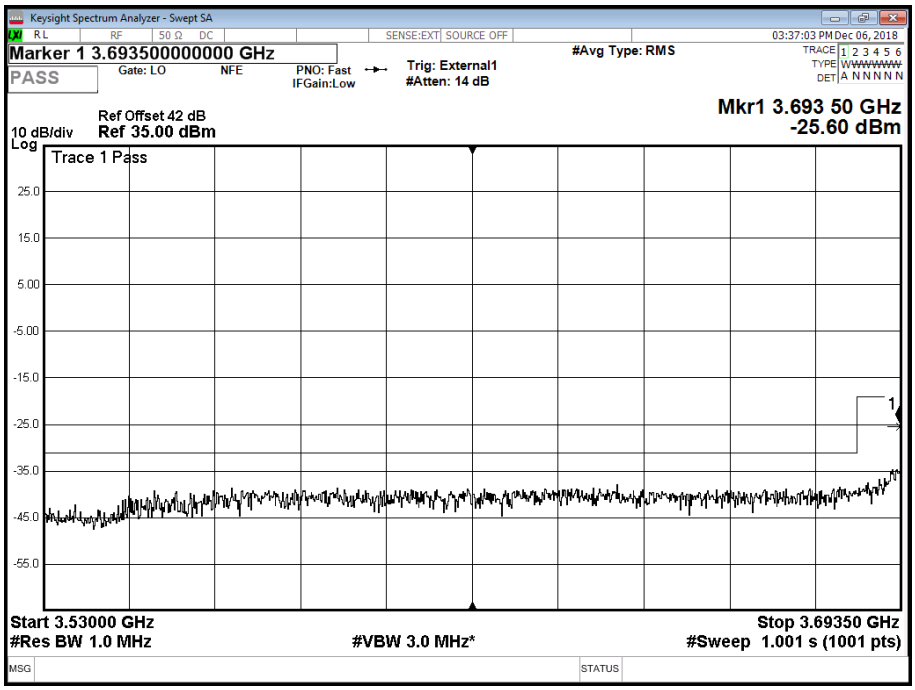
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band Mask_Low - Range Mask_Low



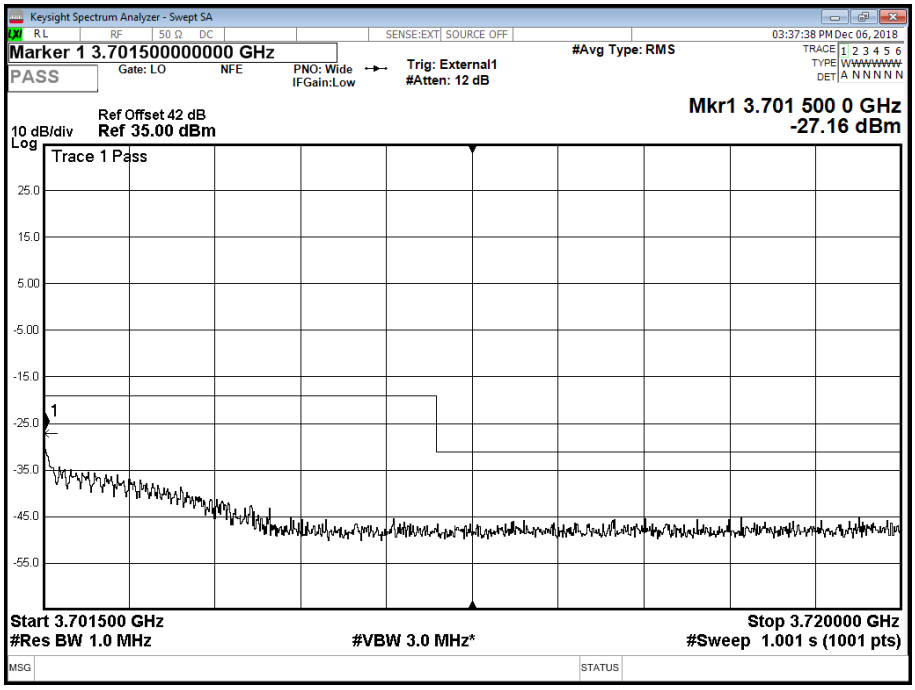
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band Mask_High - Range Mask_High



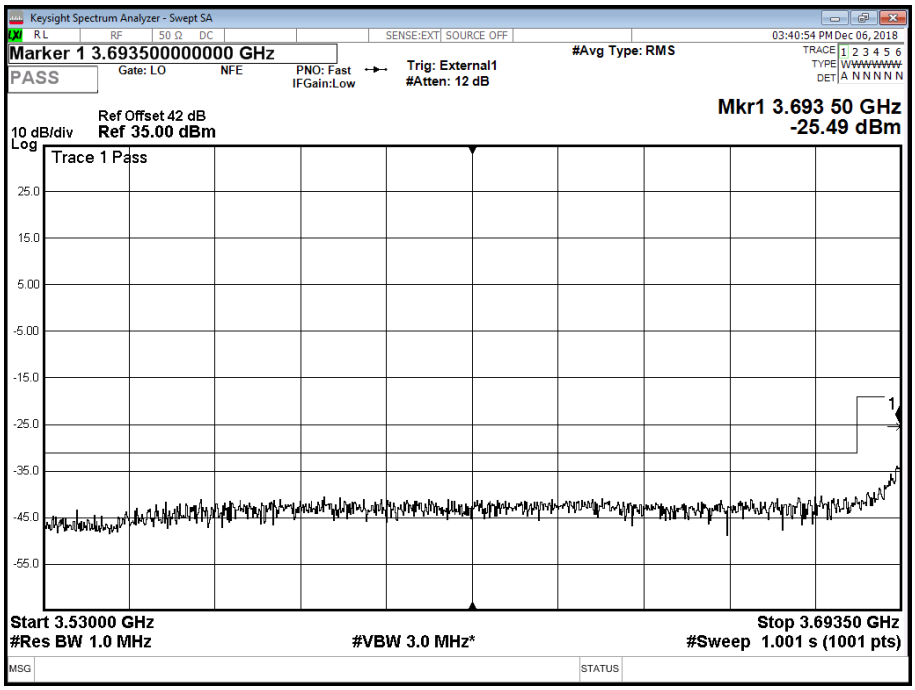
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band Mask_Low - Range Mask_Low



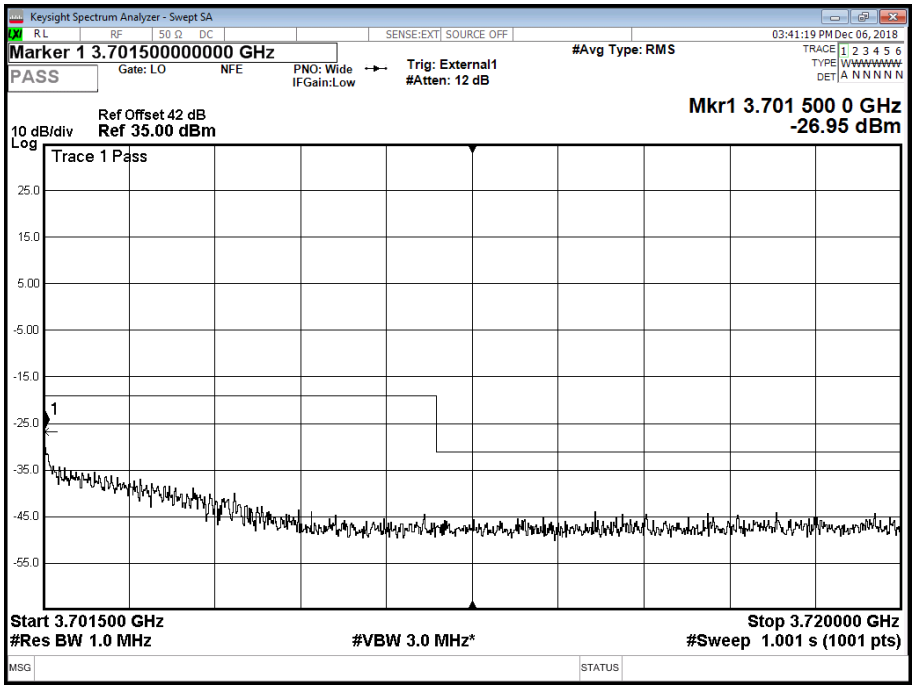
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band Mask_High - Range Mask_High



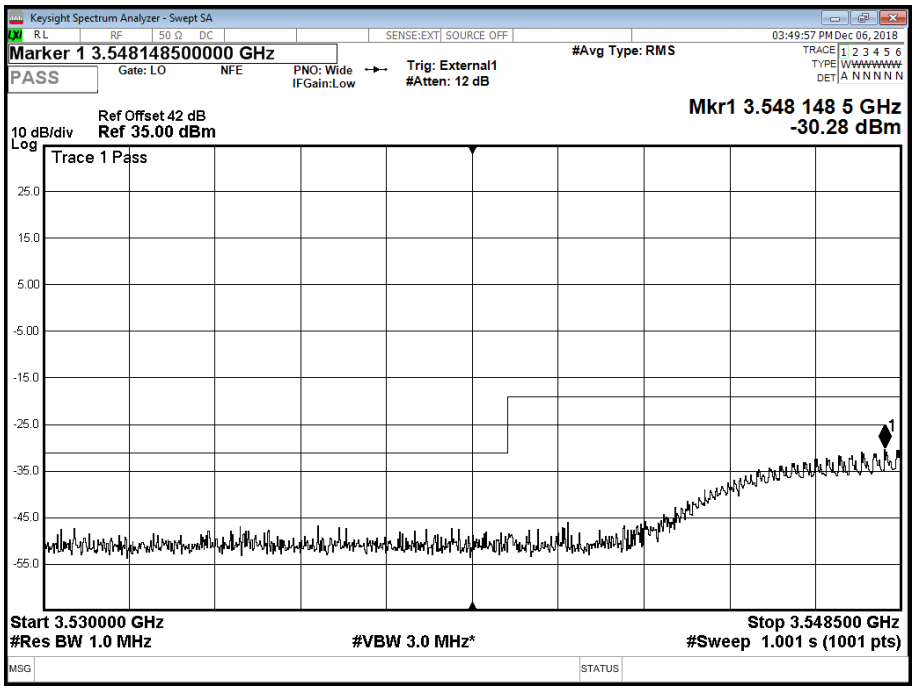
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band Mask_Low - Range Mask_Low



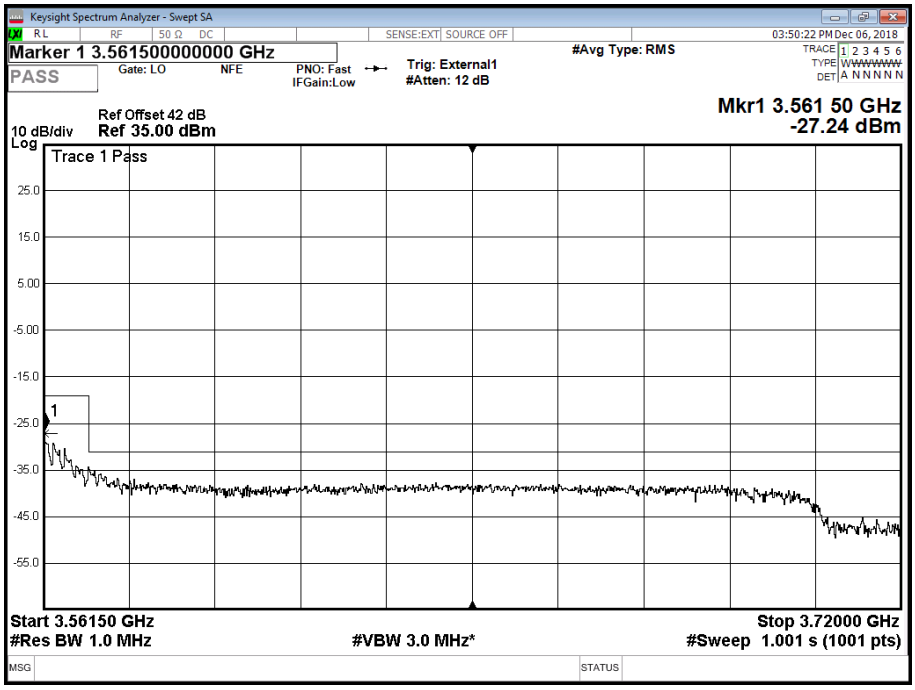
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band Mask_High - Range Mask_High



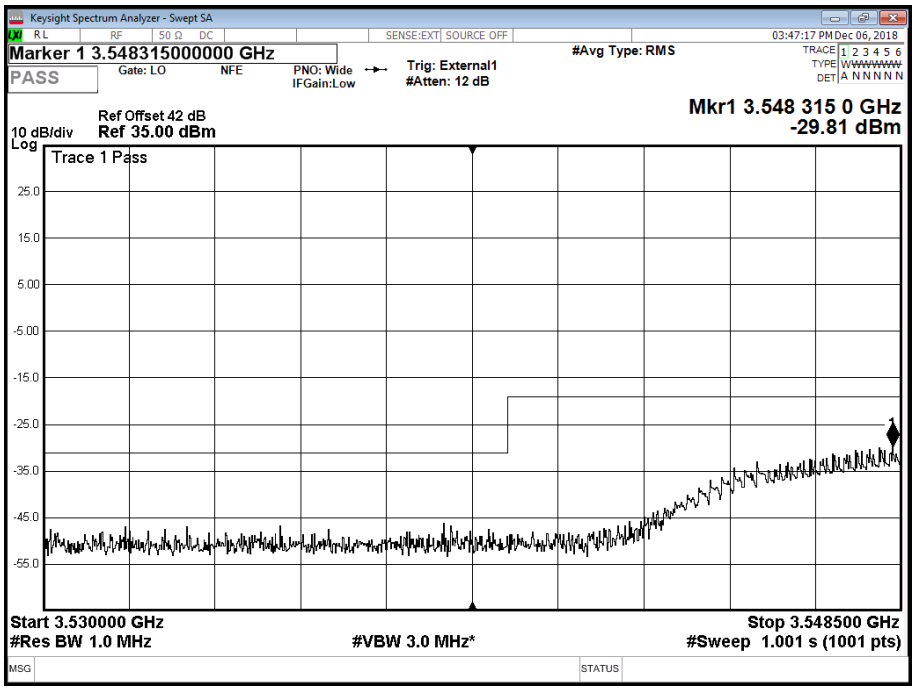
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position B - Band Mask_Low - Range Mask_Low



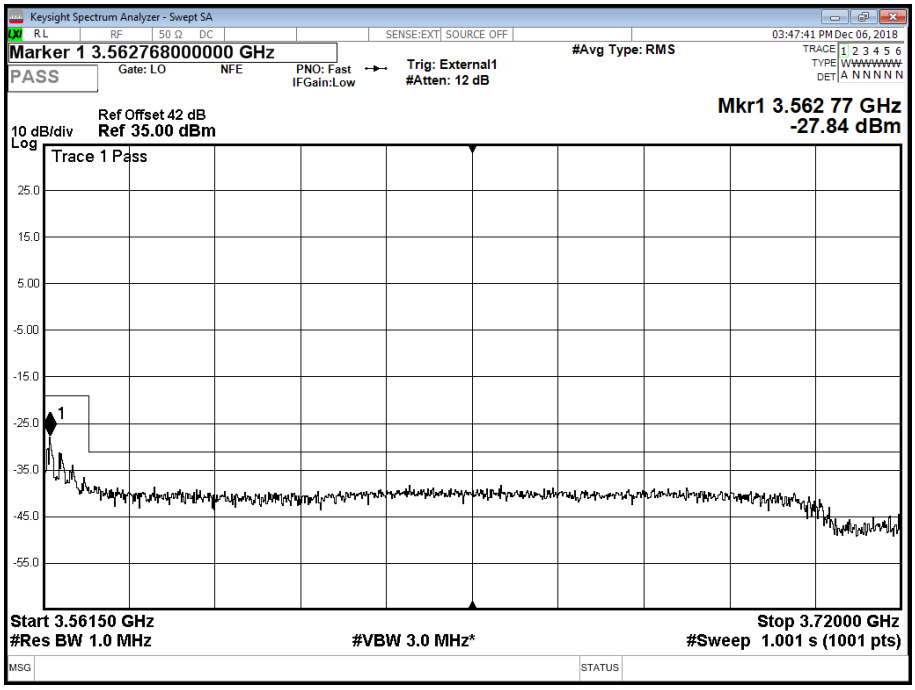
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position B - Band Mask_High - Range Mask_High



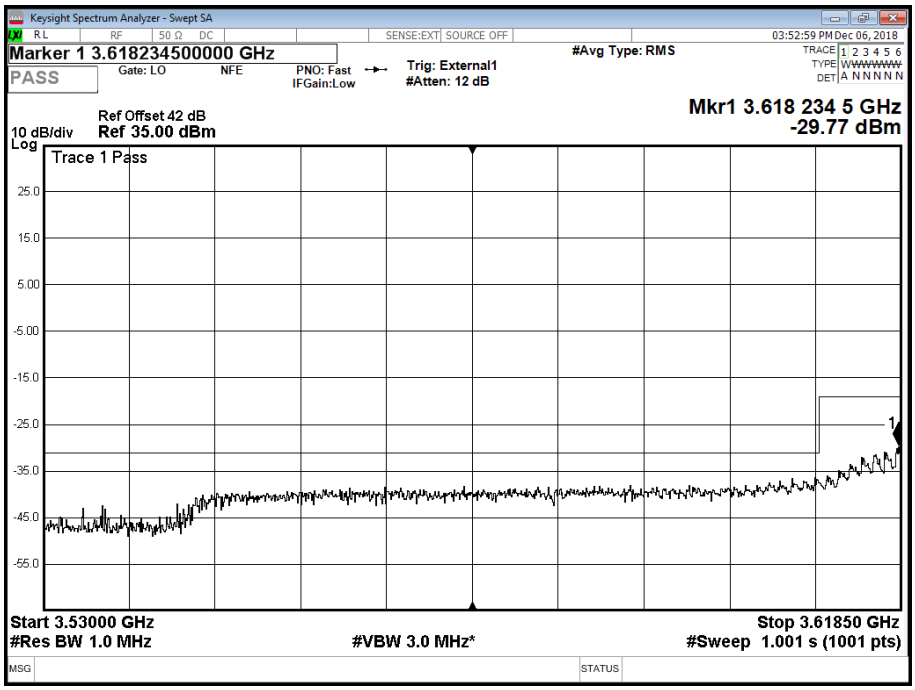
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position B - Band Mask_Low - Range Mask_Low



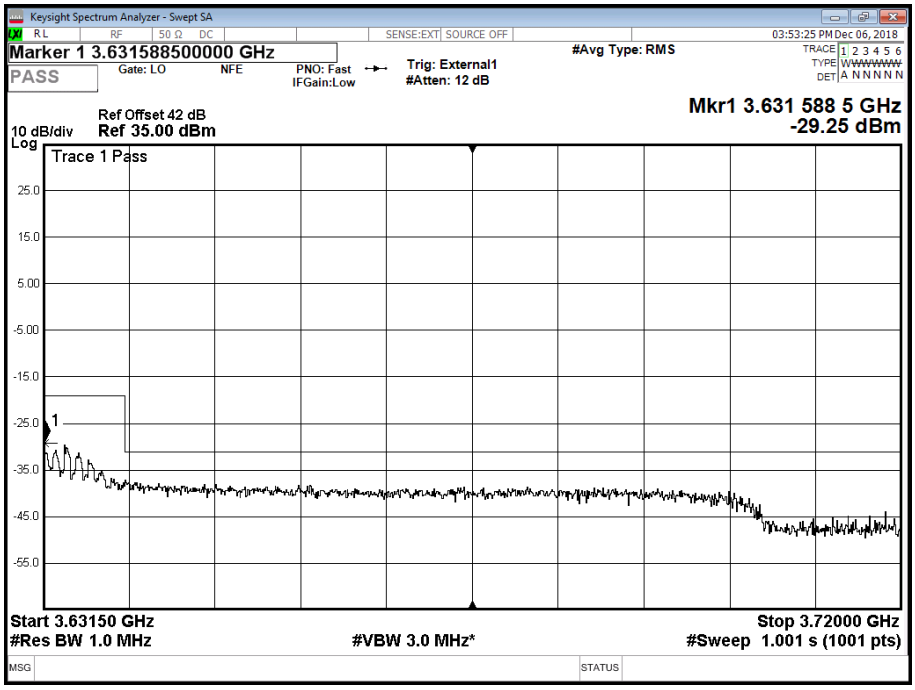
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position B - Band Mask_High - Range Mask_High



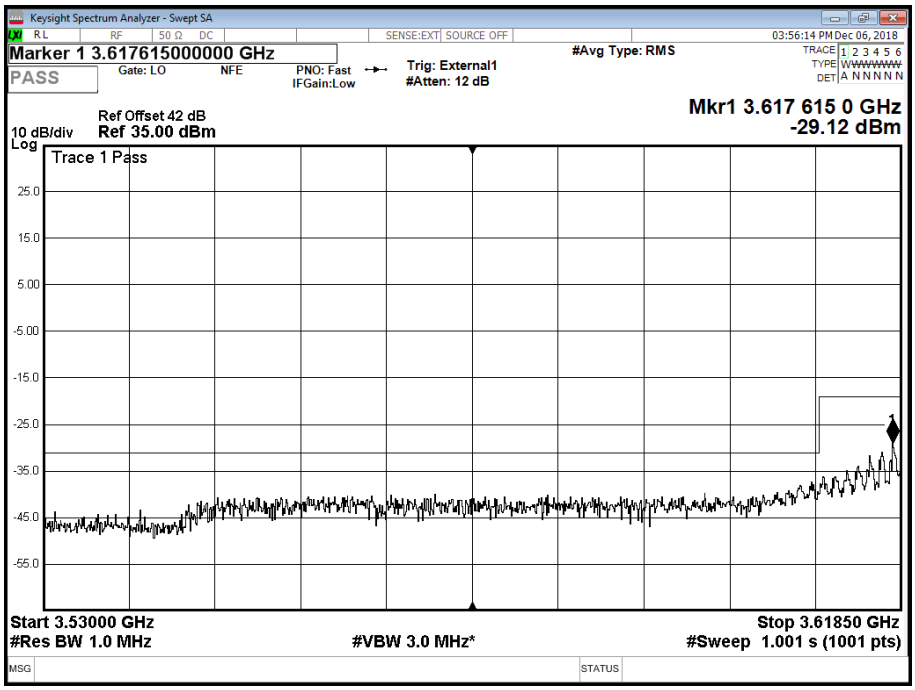
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band Mask_Low - Range Mask_Low



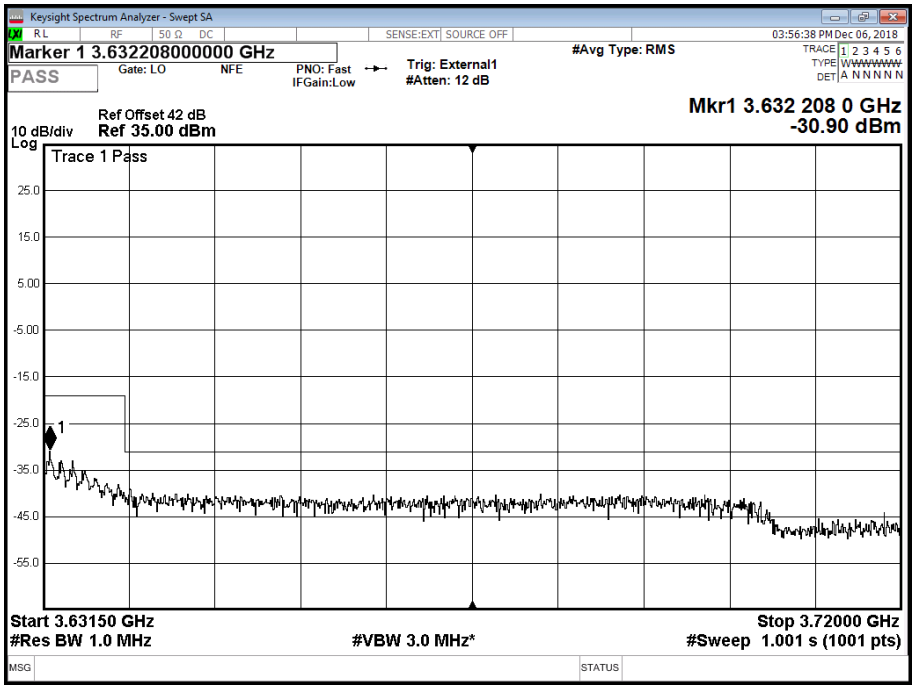
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band Mask_High - Range Mask_High



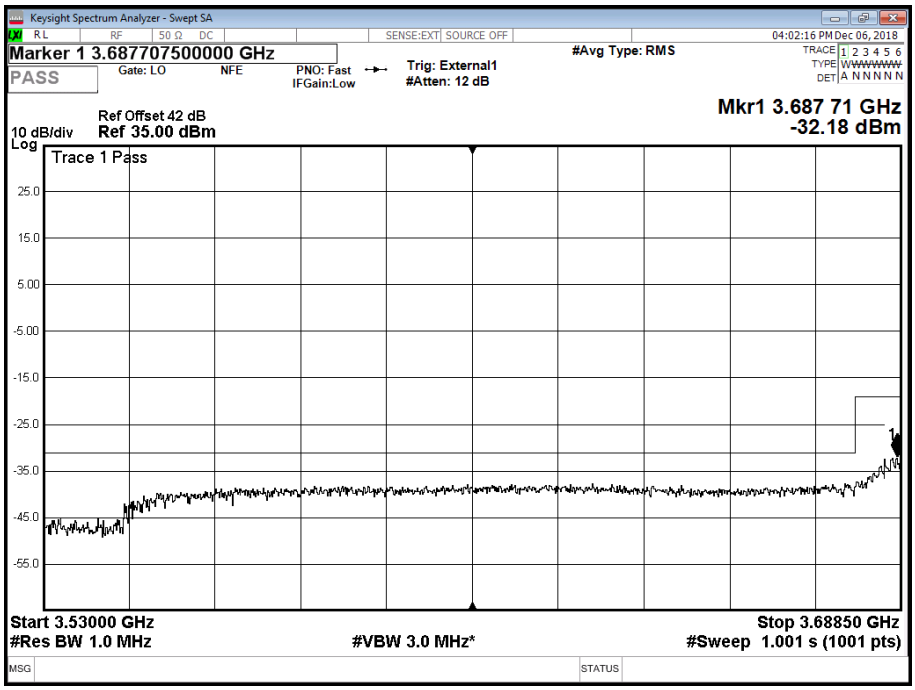
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band Mask_Low - Range Mask_Low



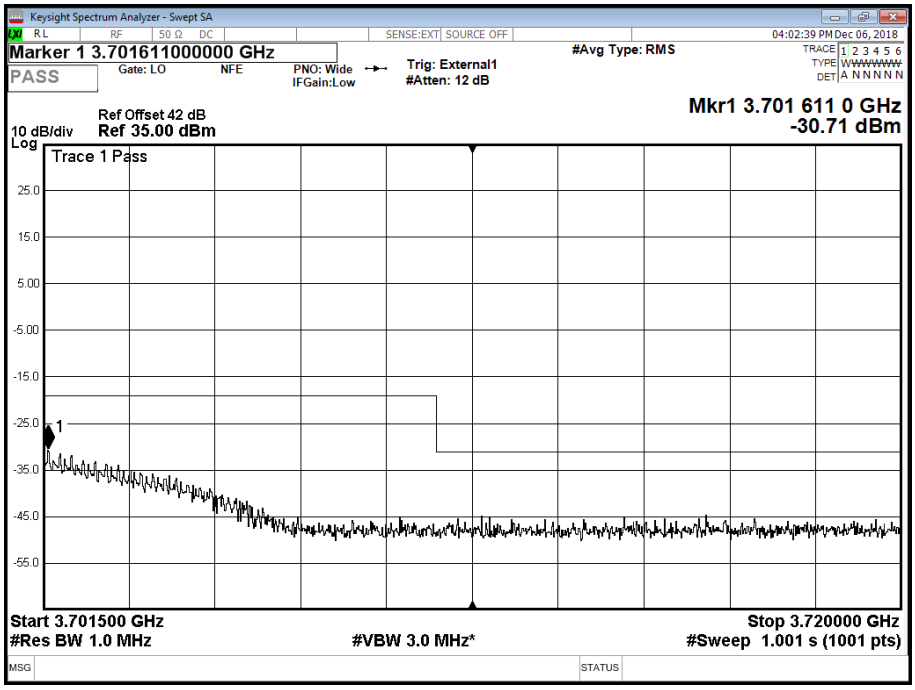
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position M - Band Mask_High - Range Mask_High



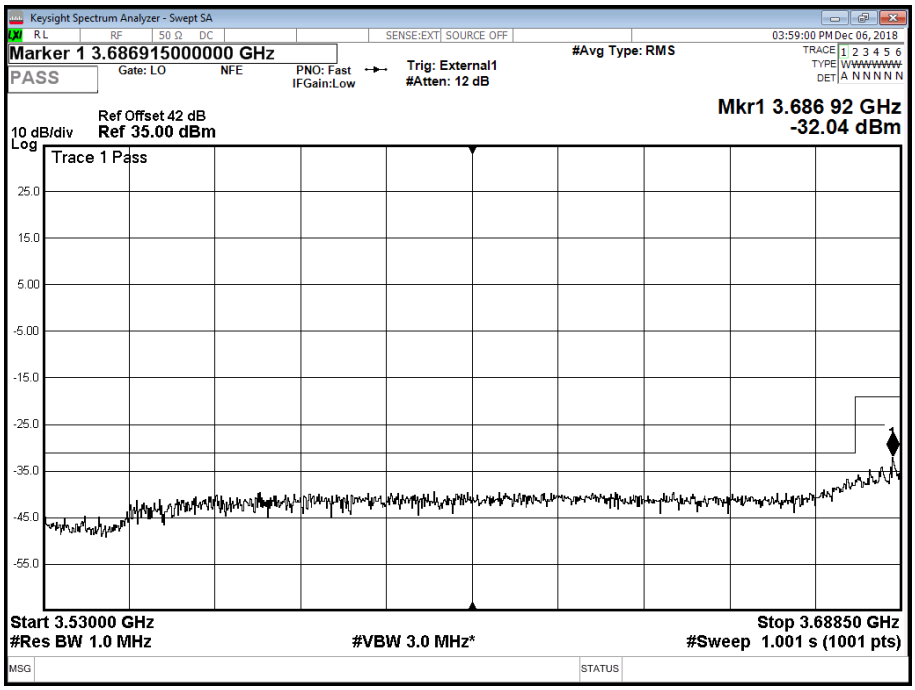
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position T - Band Mask_Low - Range Mask_Low



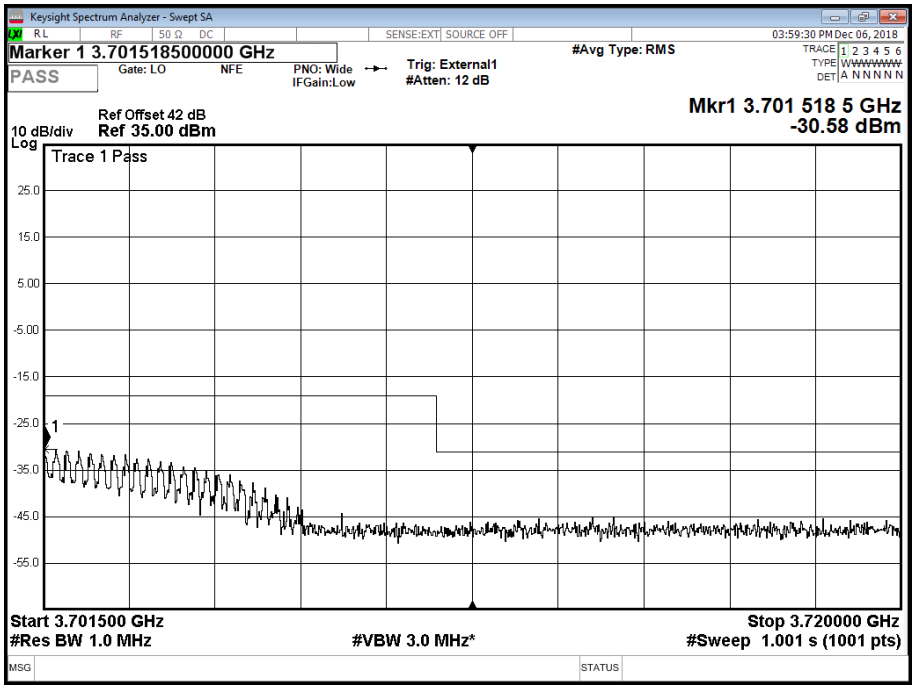
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position T - Band Mask_High - Range Mask_High



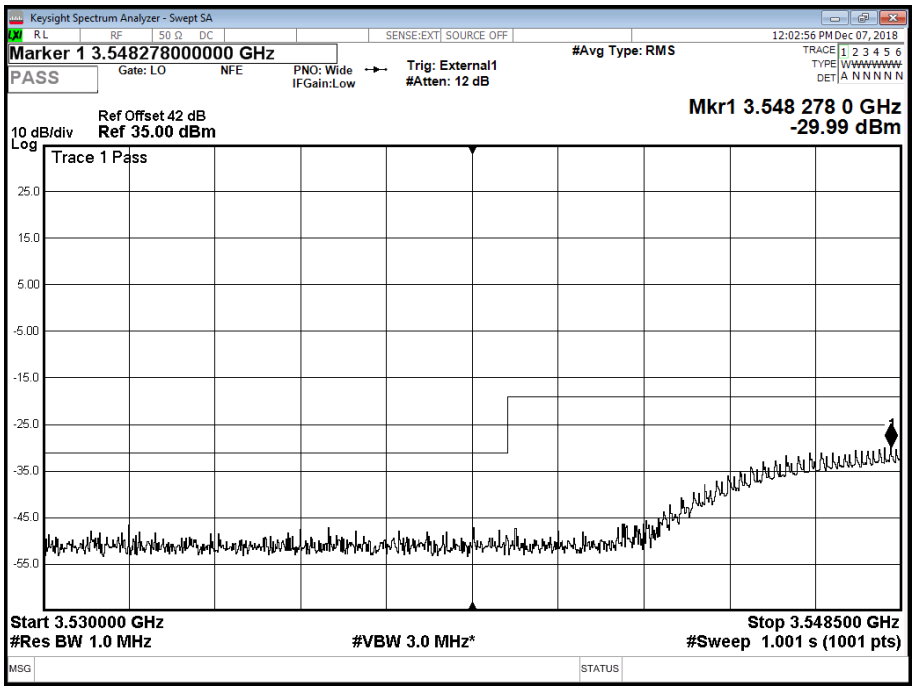
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position T - Band Mask_Low - Range Mask_Low



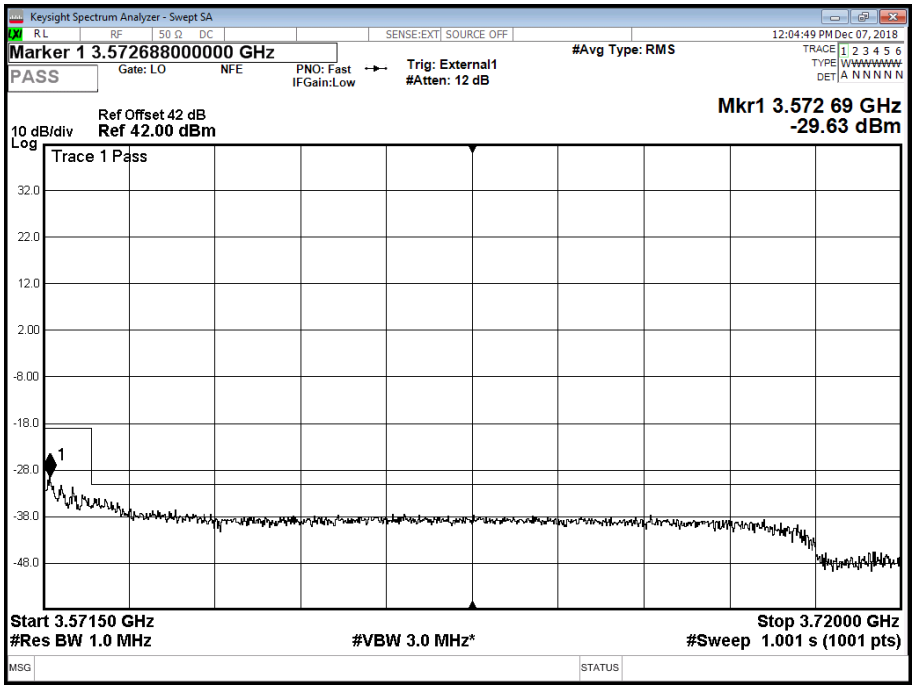
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position T - Band Mask_High - Range Mask_High



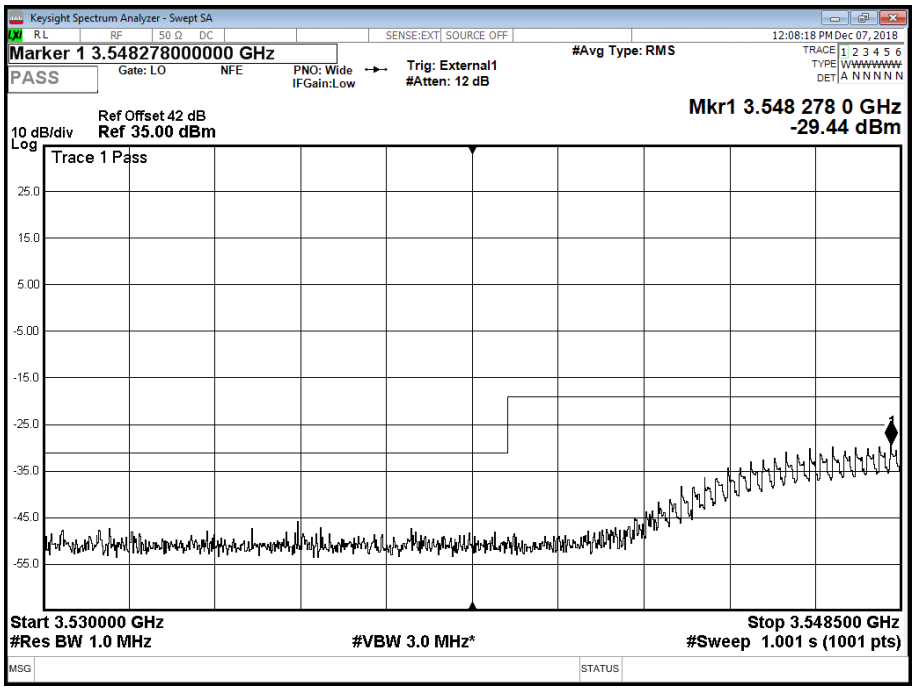
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position B - Band Mask_Low - Range Mask_Low



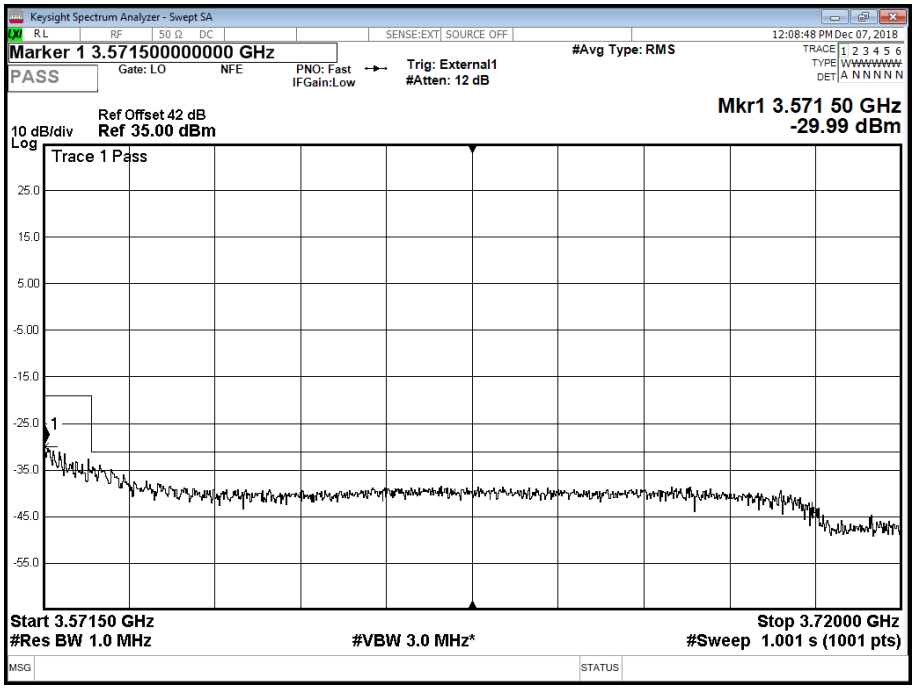
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position B - Band Mask_High - Range Mask_High



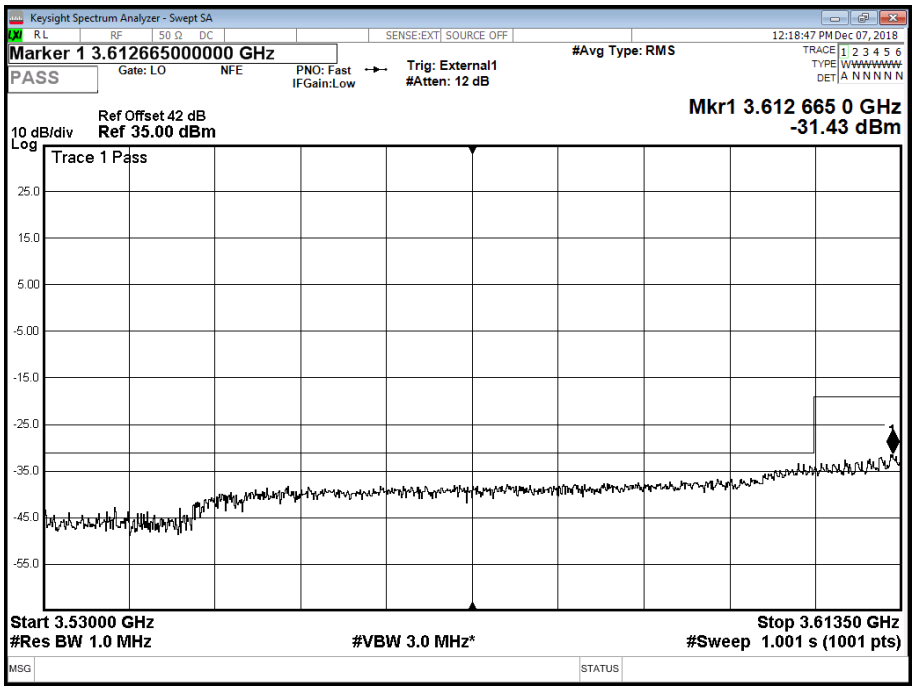
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position B - Band Mask_Low - Range Mask_Low



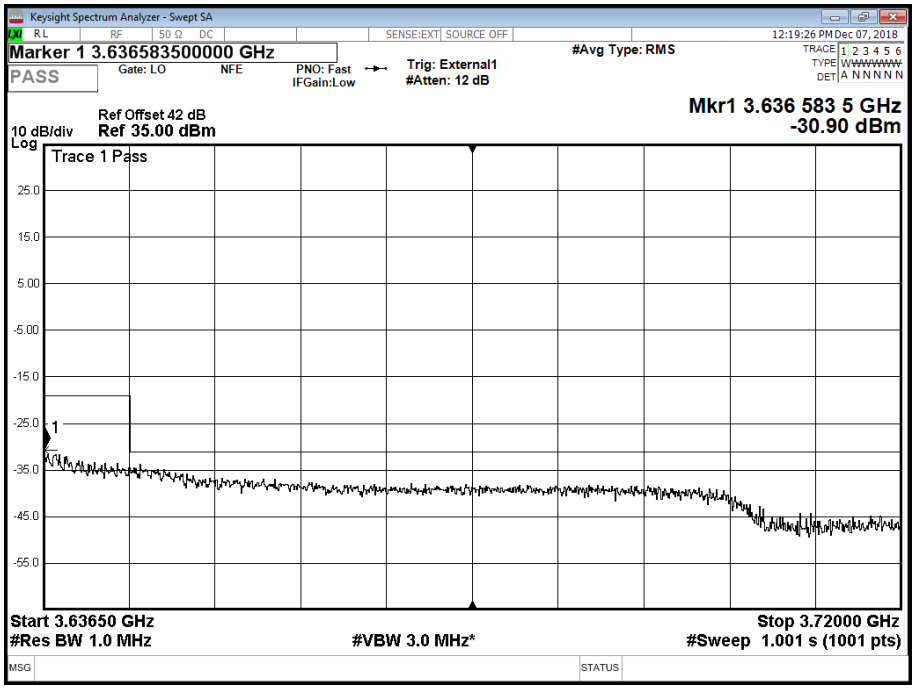
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position B - Band Mask_High - Range Mask_High



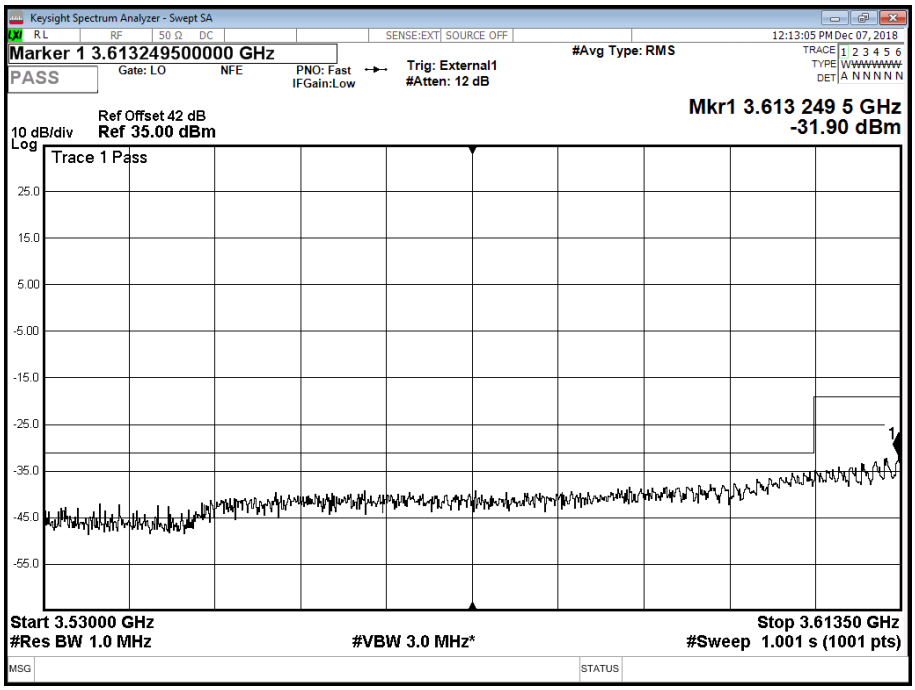
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band Mask_Low - Range Mask_Low



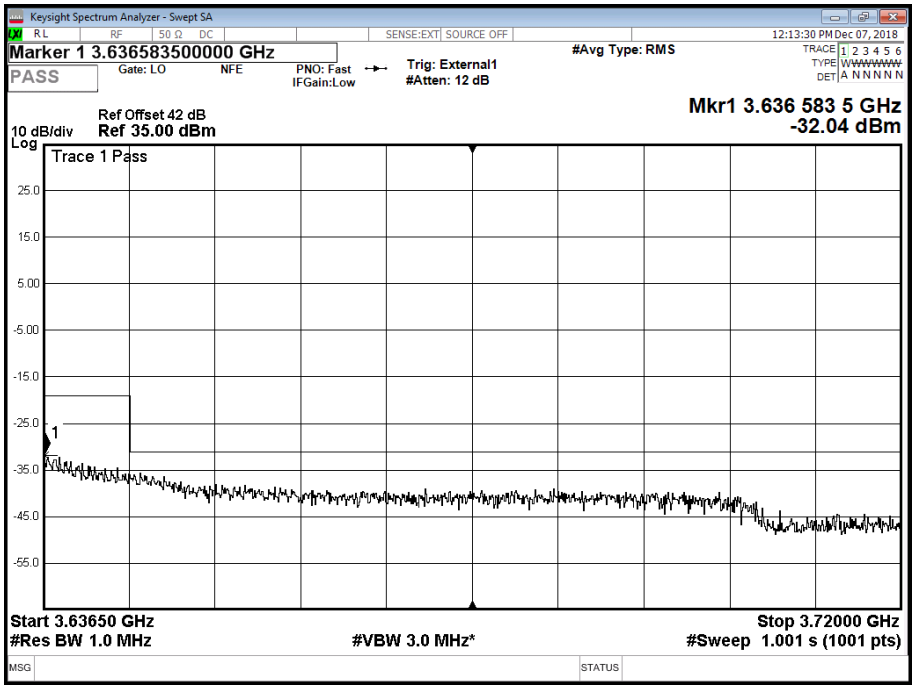
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band Mask_High - Range Mask_High



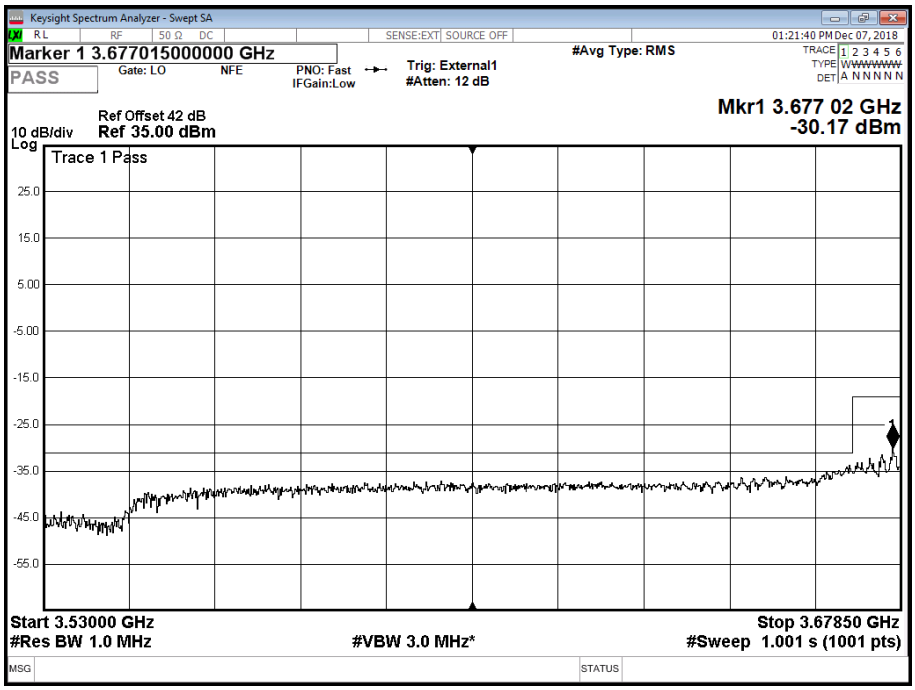
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band Mask_Low - Range Mask_Low



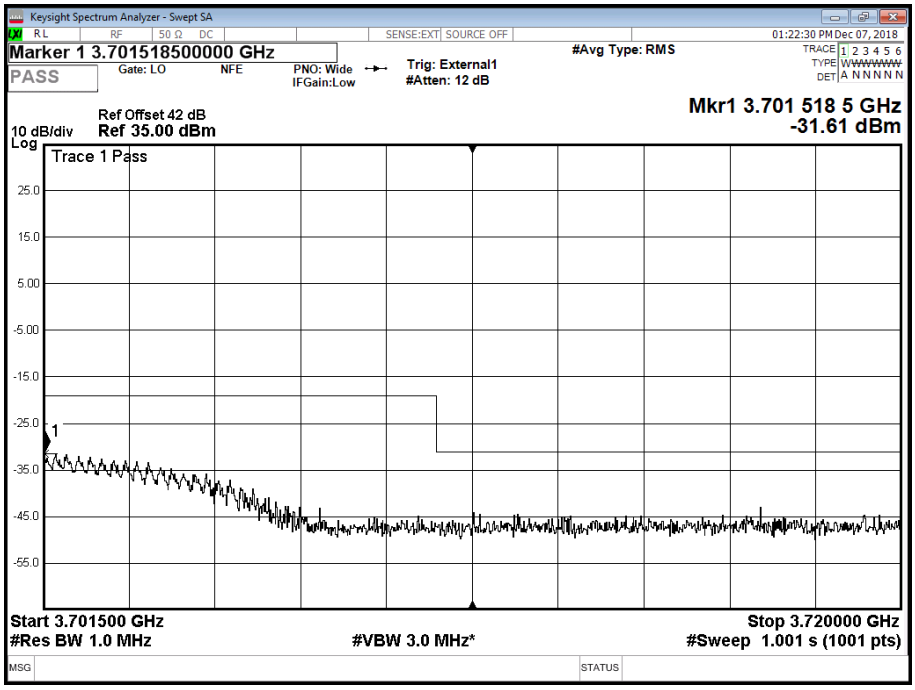
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position M - Band Mask_High - Range Mask_High



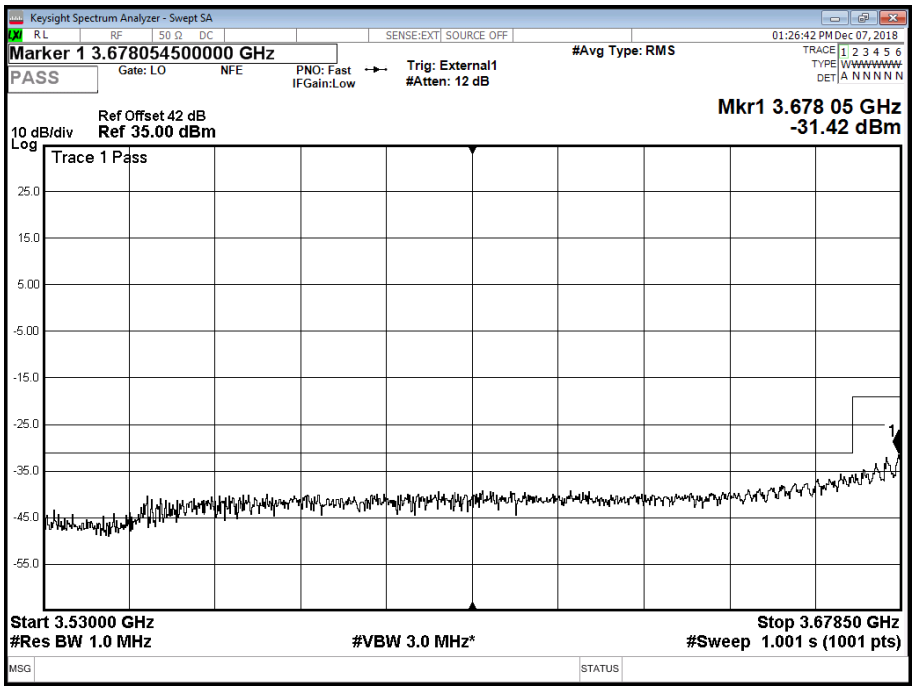
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position T - Band Mask_Low - Range Mask_Low



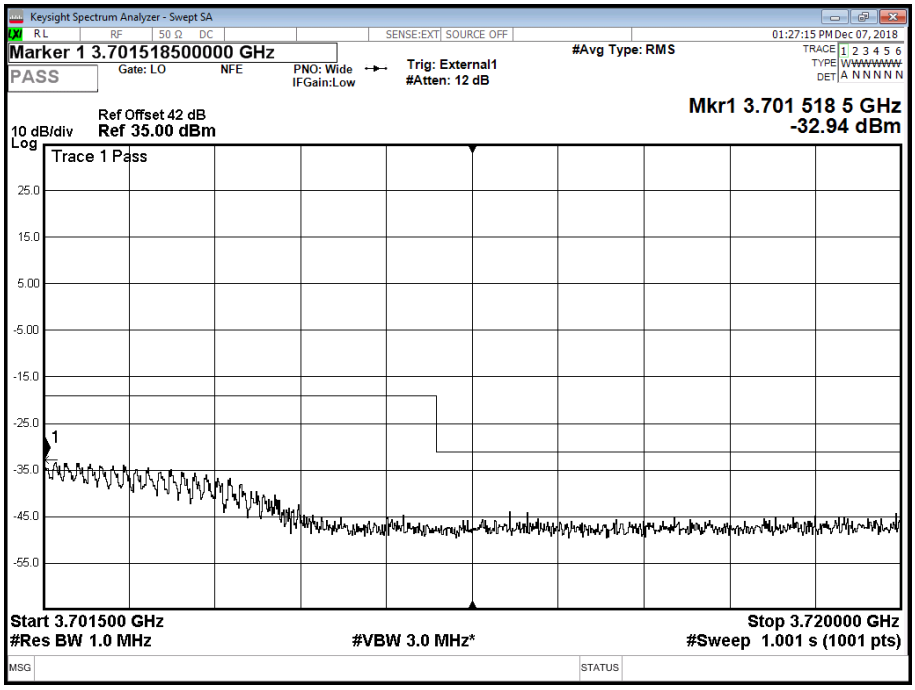
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position T - Band Mask_High - Range Mask_High



Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position T - Band Mask_Low - Range Mask_Low



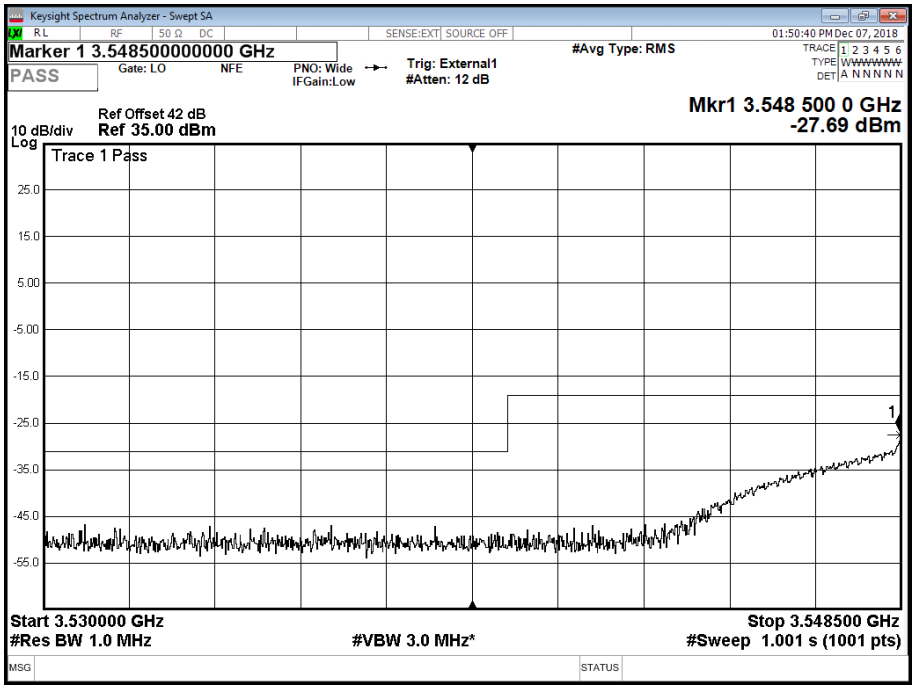
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 20.0 MHz - Channel Position T - Band Mask_High - Range Mask_High



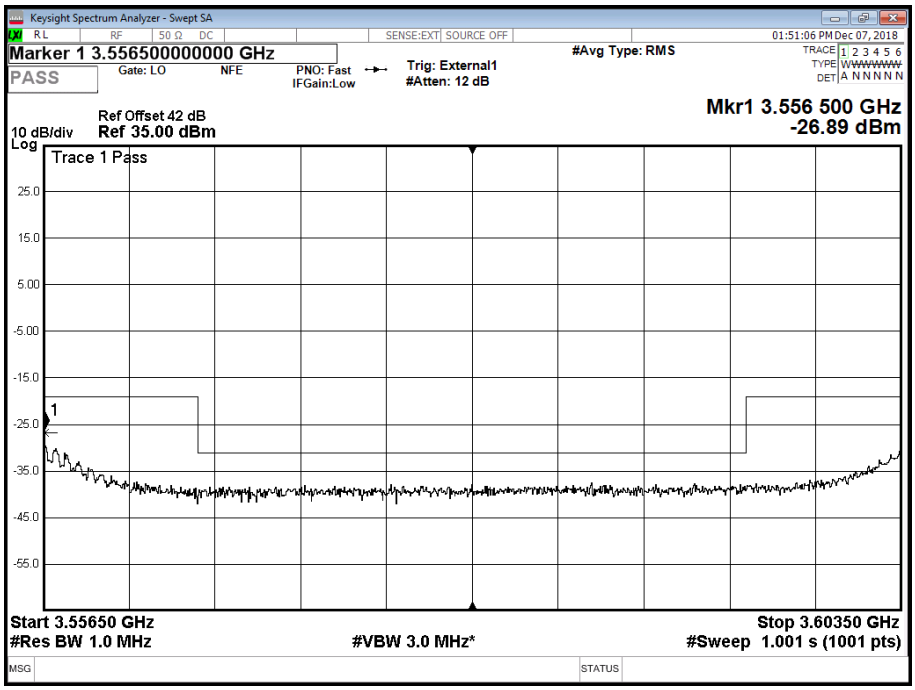
Configuration B

Maximum Output Power 36 dBm (5 MHz, 34 dBm)

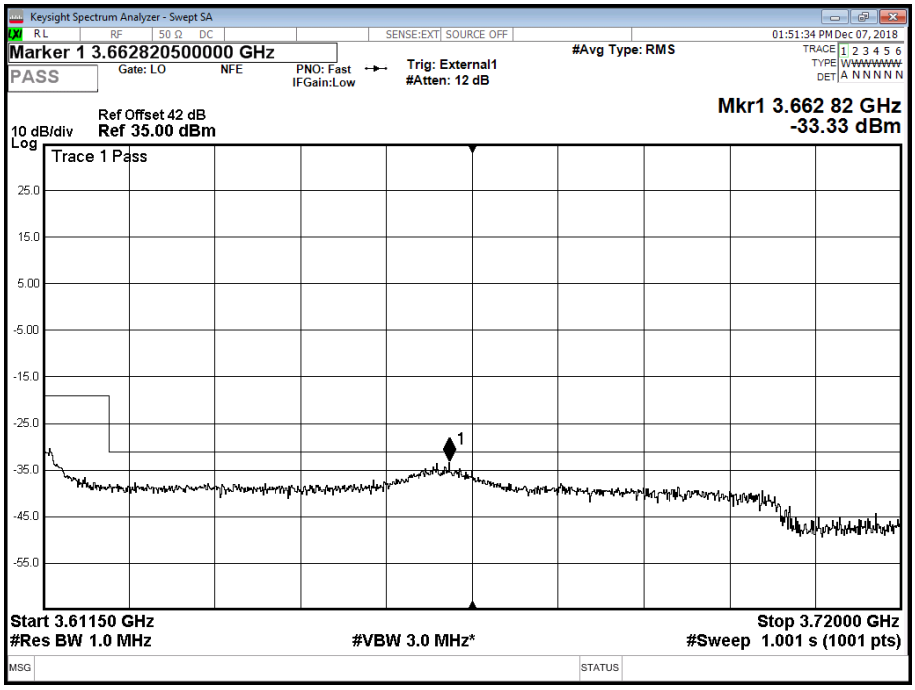
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band Mask_Low - Range Mask_Low



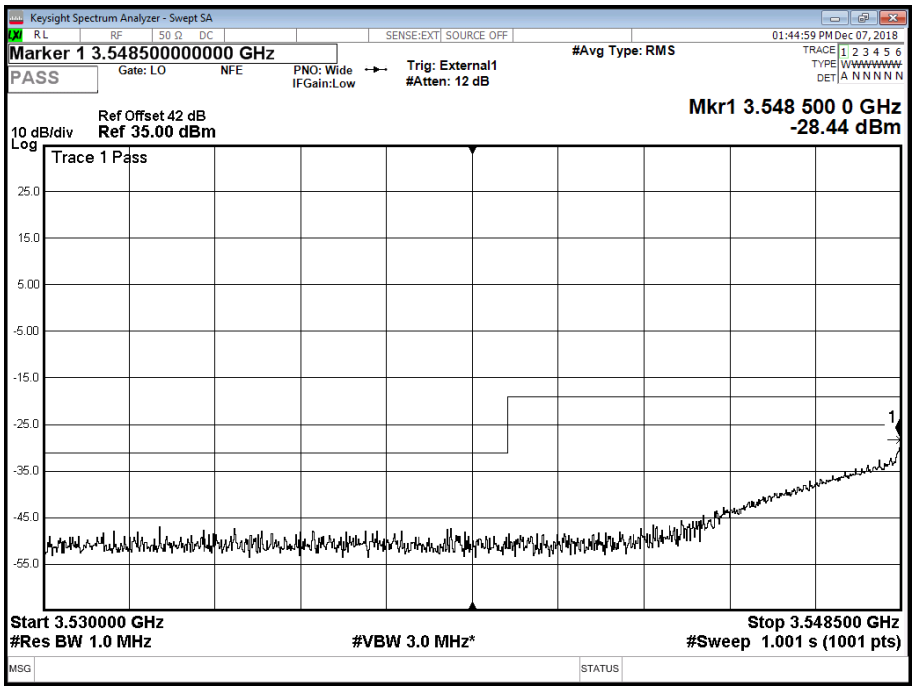
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band Mask_Mid - Range Mask_Mid



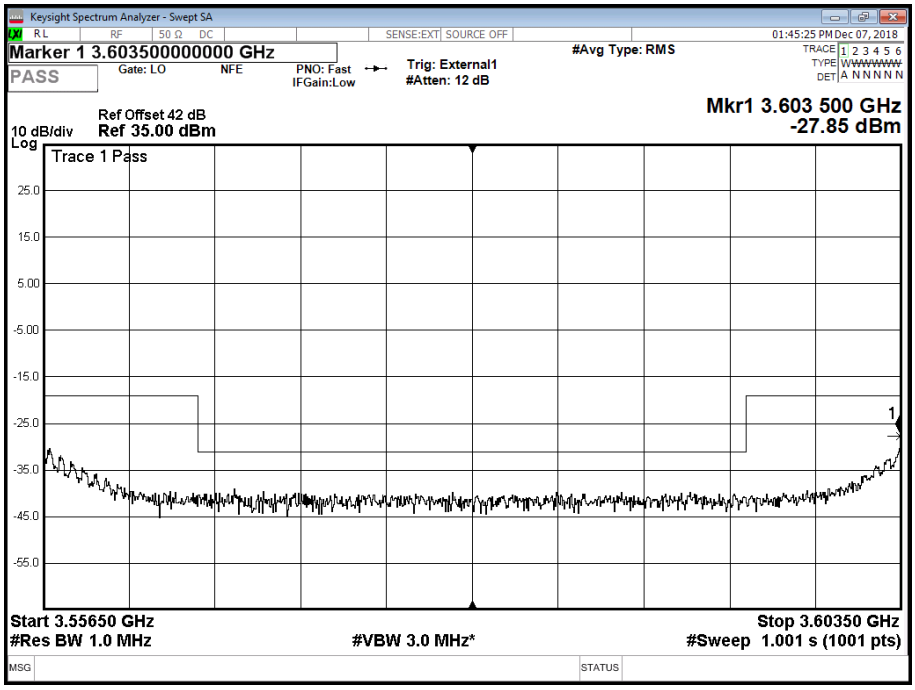
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band Mask_High - Range Mask_High



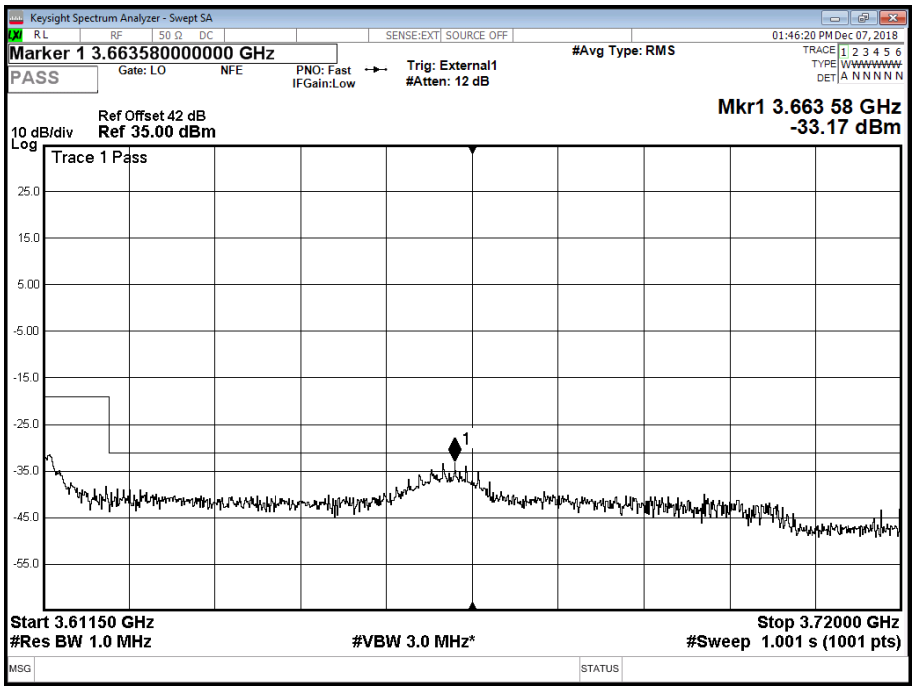
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band Mask_Low - Range Mask_Low



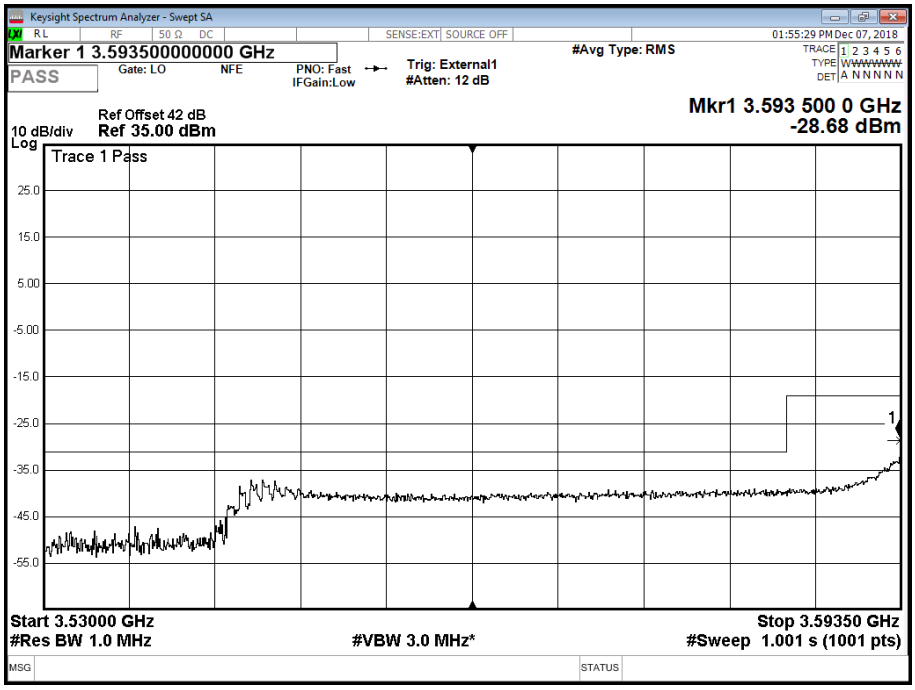
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band Mask_Mid - Range Mask_Mid



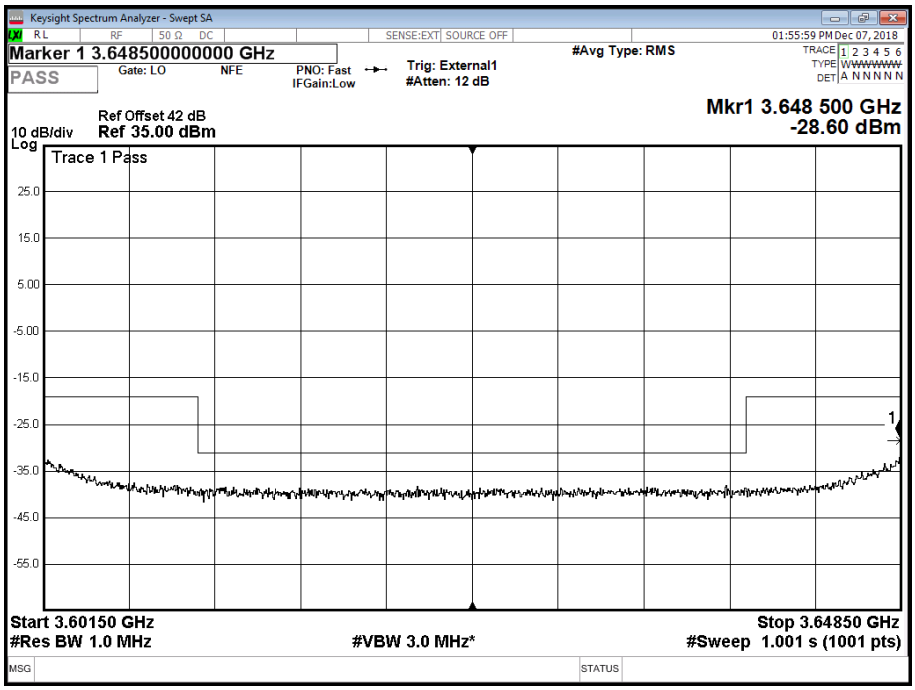
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band Mask_High - Range Mask_High



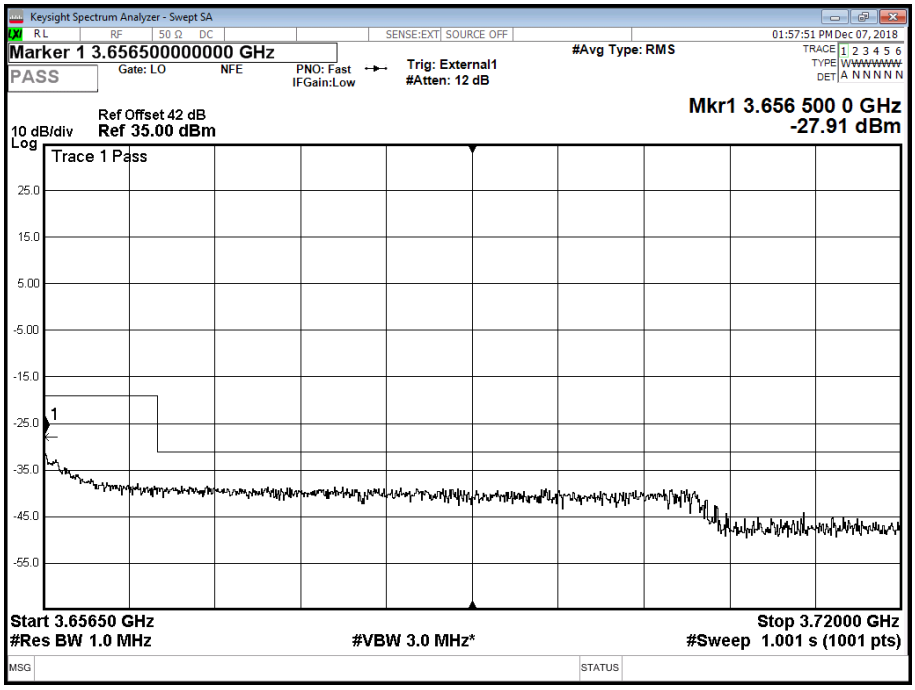
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band Mask_Low - Range Mask_Low



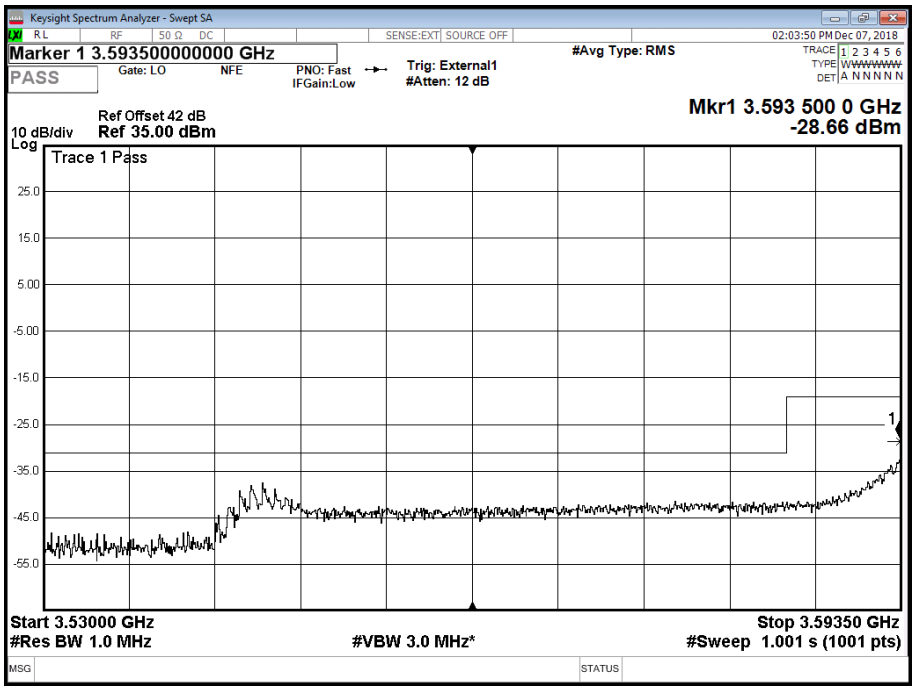
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band Mask_Mid - Range Mask_Mid



Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band Mask_High - Range Mask_High



Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band Mask_Low - Range Mask_Low



Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band Mask_Mid - Range Mask_Mid