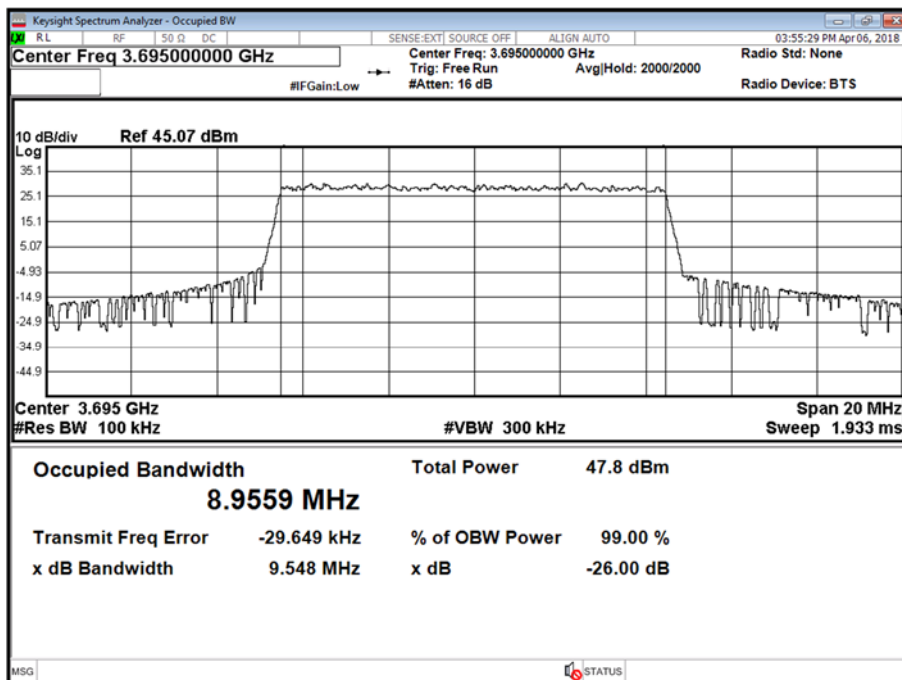


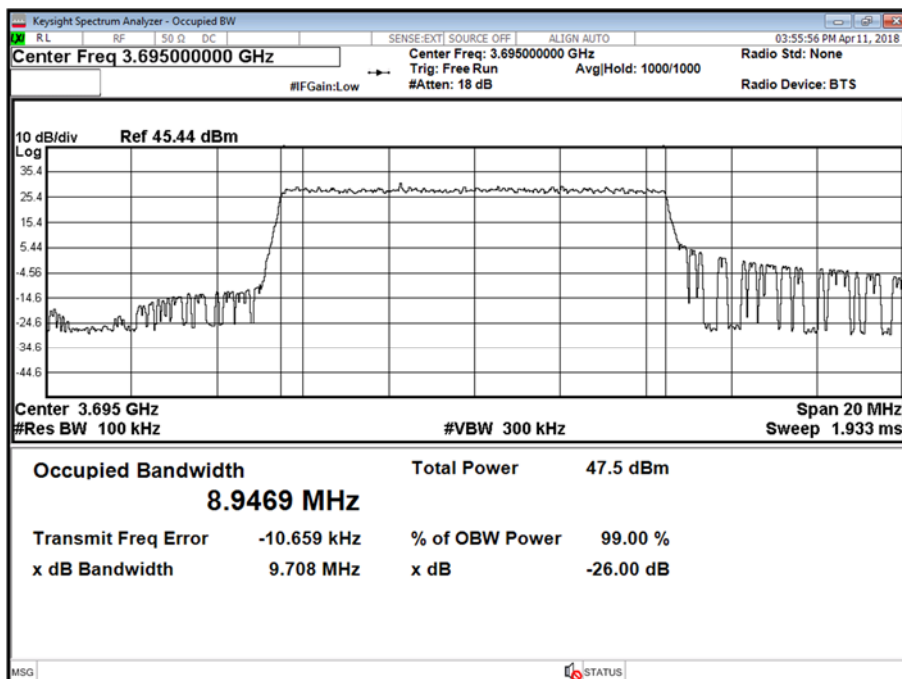


Product Service

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



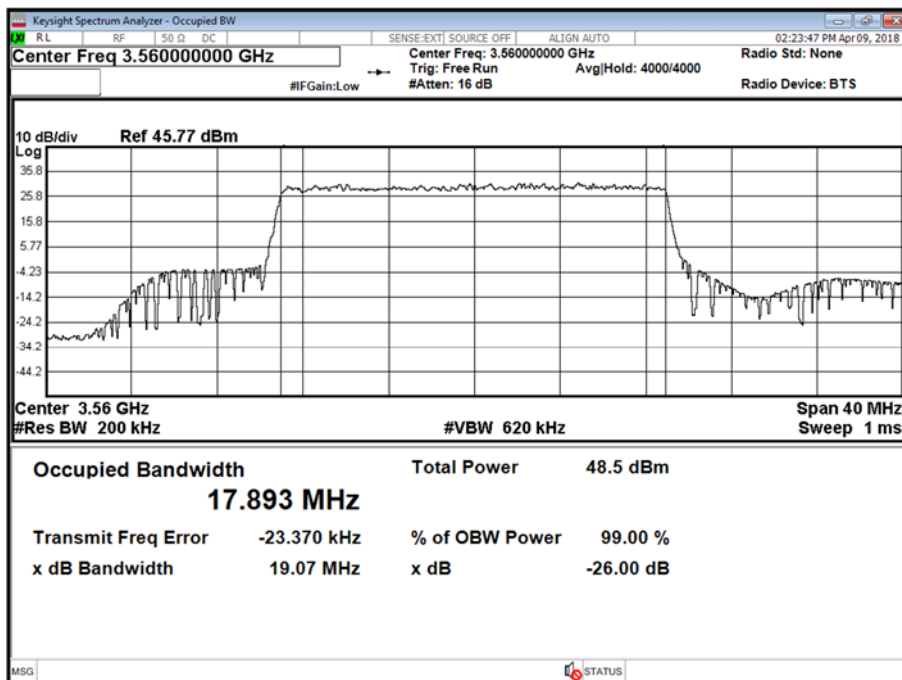
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position T



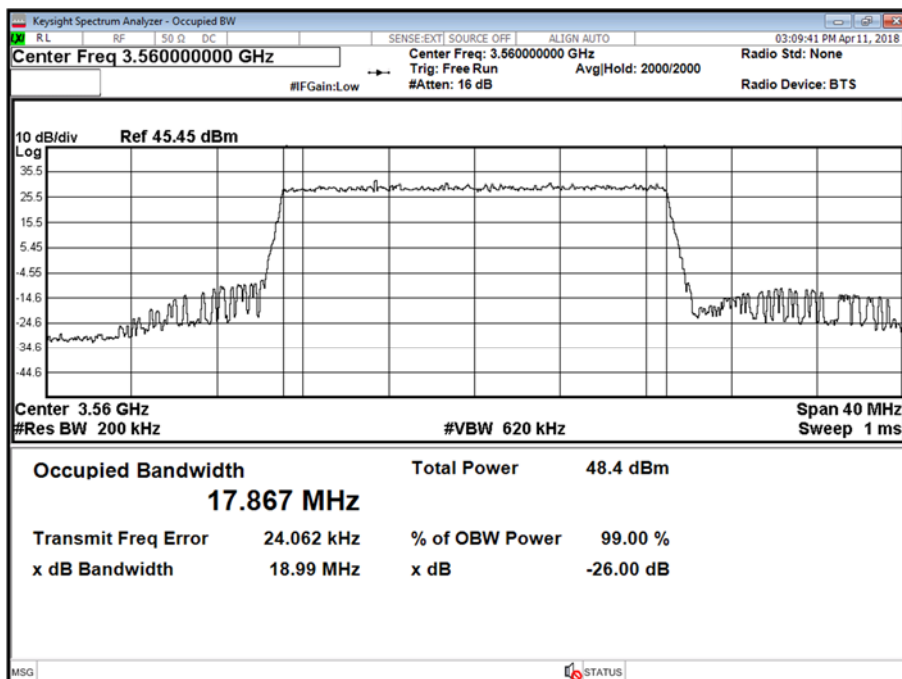


Product Service

Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position B



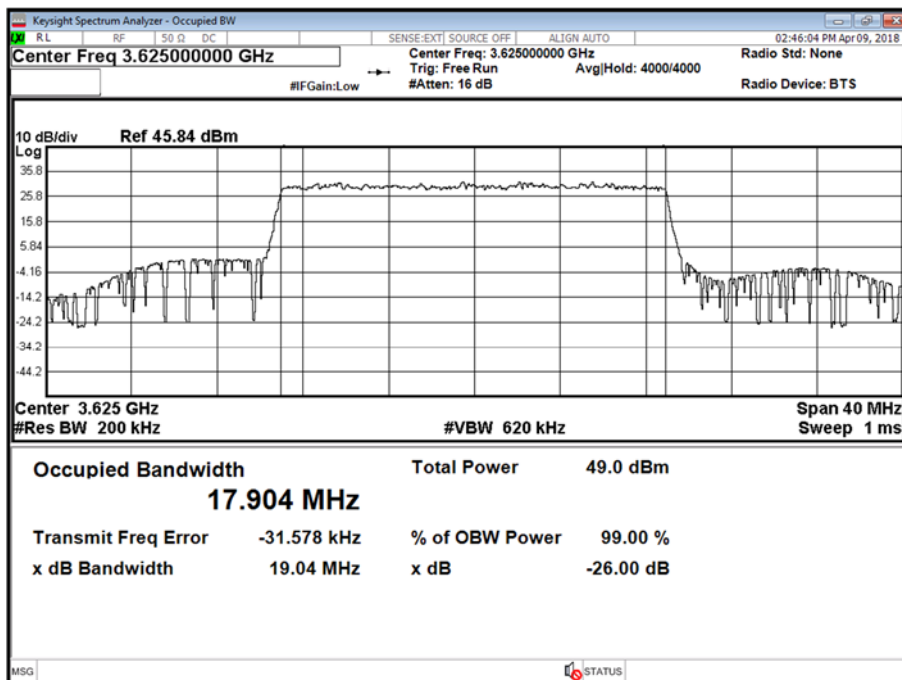
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position B



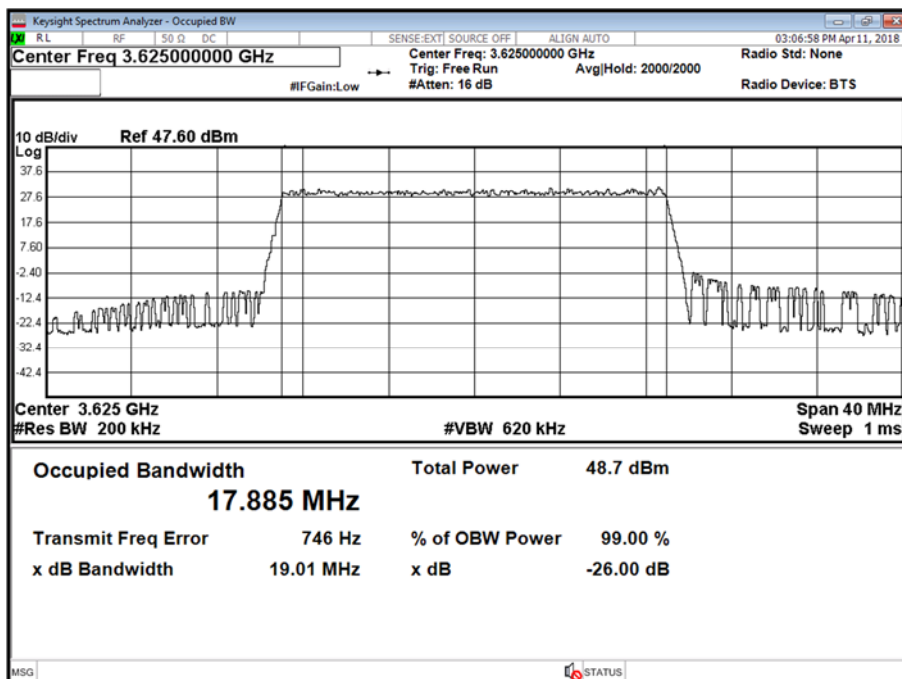


Product Service

Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position M



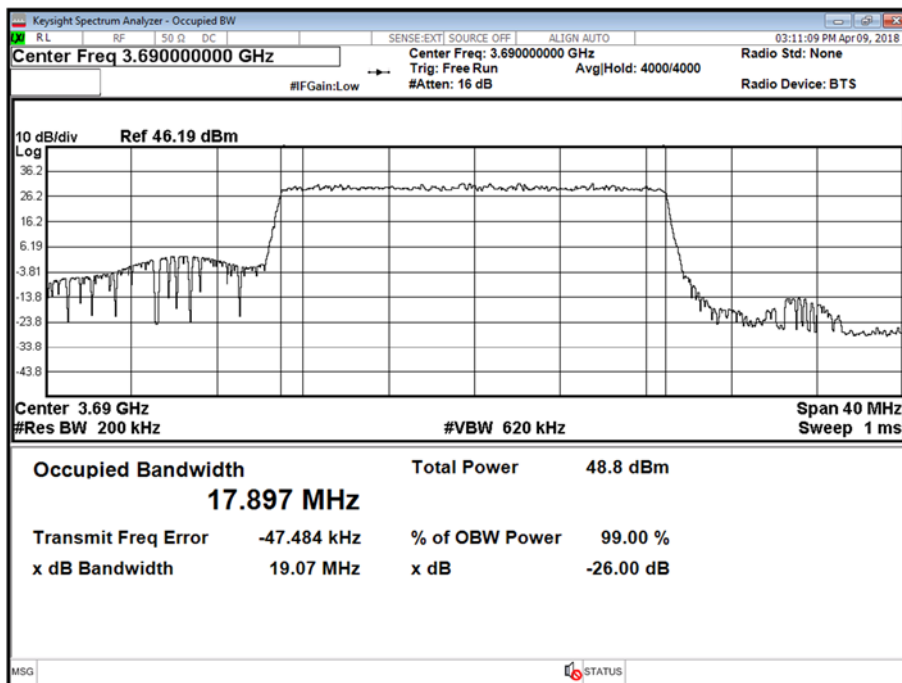
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position M



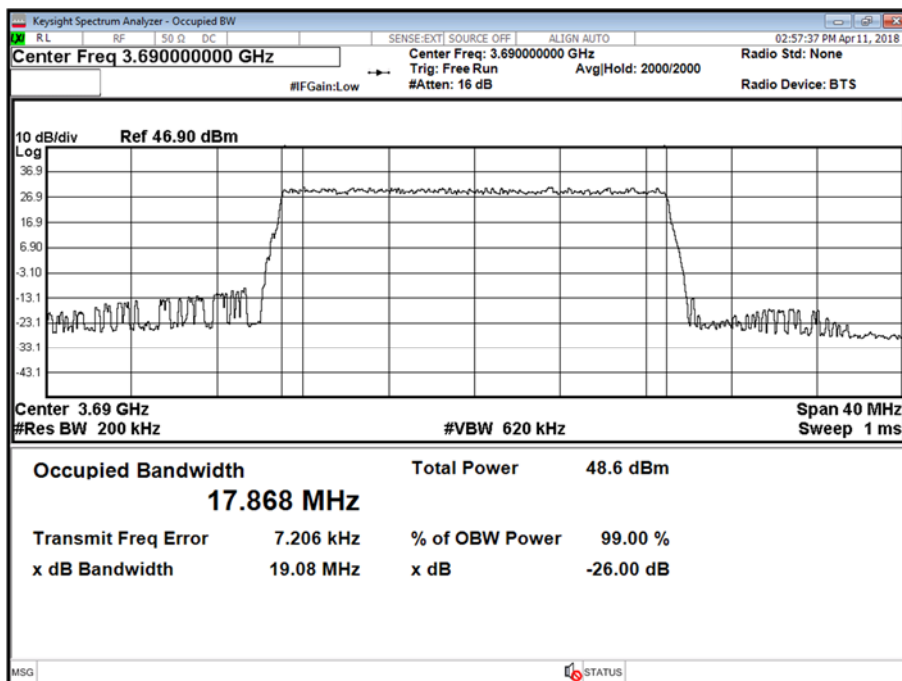


Product Service

Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position T



Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position T





Product Service

2.3 BAND EDGE

2.3.1 Specification Reference

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

2.3.2 Date of Test and Modification State

06, 13 April 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 21.4 - 22°C
Relative Humidity 37.5 - 42.4%

2.3.5 Test Method

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

The EUT was connected to a Spectrum Analyser via 40 dB of attenuation. The path loss between the EUT and the Spectrum Analyser was measured using a Network Analyser. The measured path loss was entered as a Reference Level Offset in the Spectrum Analyser. All measurements were made using a RBW of <1 % of the 26 dB Bandwidth in conjunction with the Band Power function of the Spectrum Analyser. The Band Power span was configured to be at least 1 % of the 26 dB Bandwidth and was positioned in the 1MHz region above/below the band edge which gave the worst case result. The result was an integration of the power giving the result as a value which was at least 1 % of the 26 dB Bandwidth. The display line was set to the worst case accounting for 2 Port MIMO operation in accordance with KDB 662911 D01 . This equated to $43 + 10\log(P) - 10\log(2) = -16\text{dBm}$.

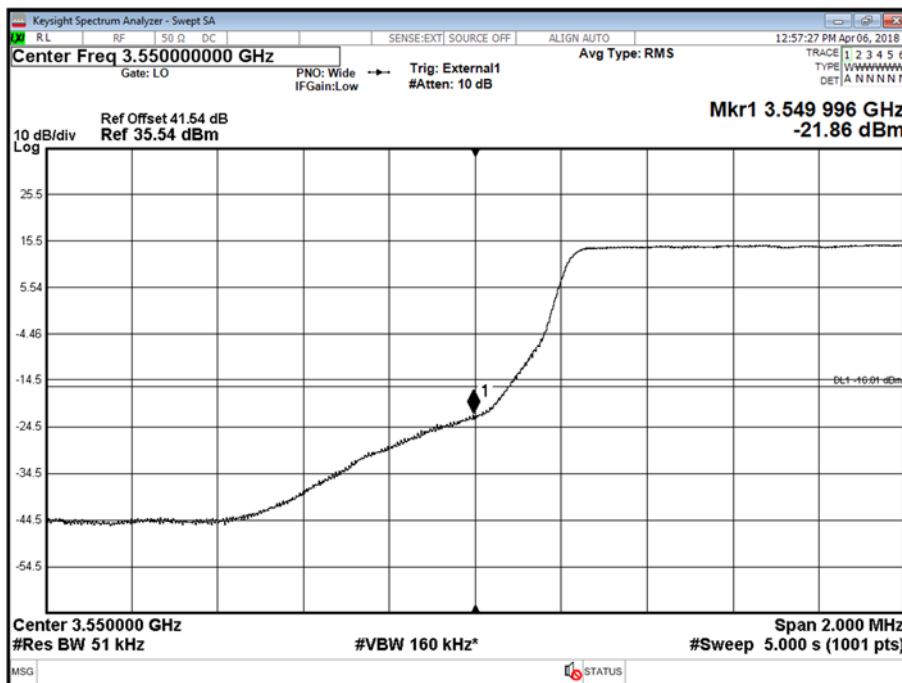
2.3.6 Test Results

Configuration A1

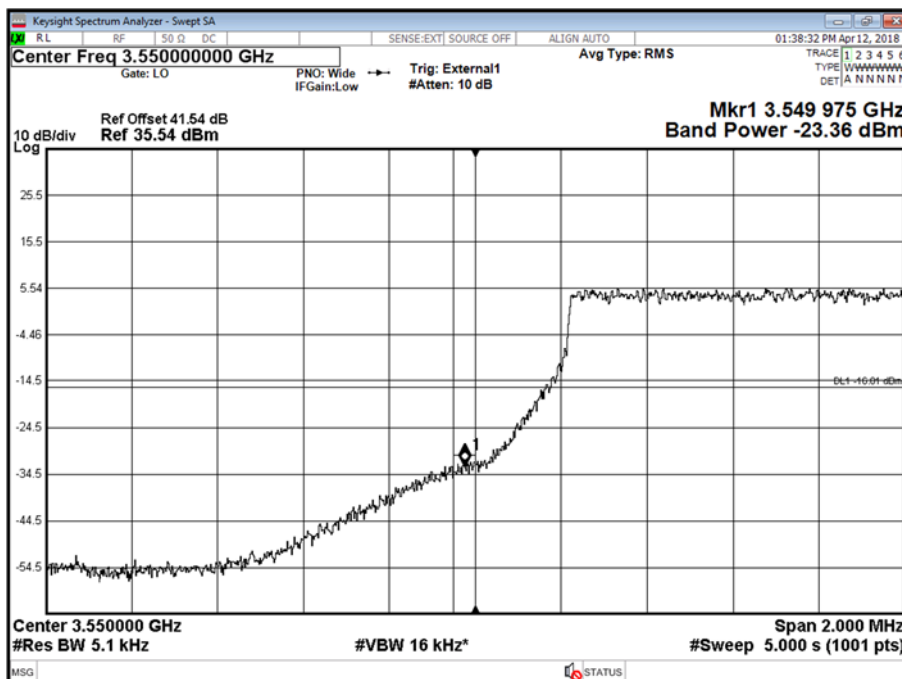
Maximum Output Power 40 dBm (5 MHz, 34 dBm)

Antenna	LTE Modulation	LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	64QAM	5.0 MHz	3,552.5	3,697.5
B	64QAM	5.0 MHz	3,552.5	3,697.5
A	64QAM	10.0 MHz	3,555.0	3,695.0
B	64QAM	10.0 MHz	3,555.0	3,695.0
A	64QAM	20.0 MHz	3,560.0	3,690.0
B	64QAM	20.0 MHz	3,560.0	3,690.0

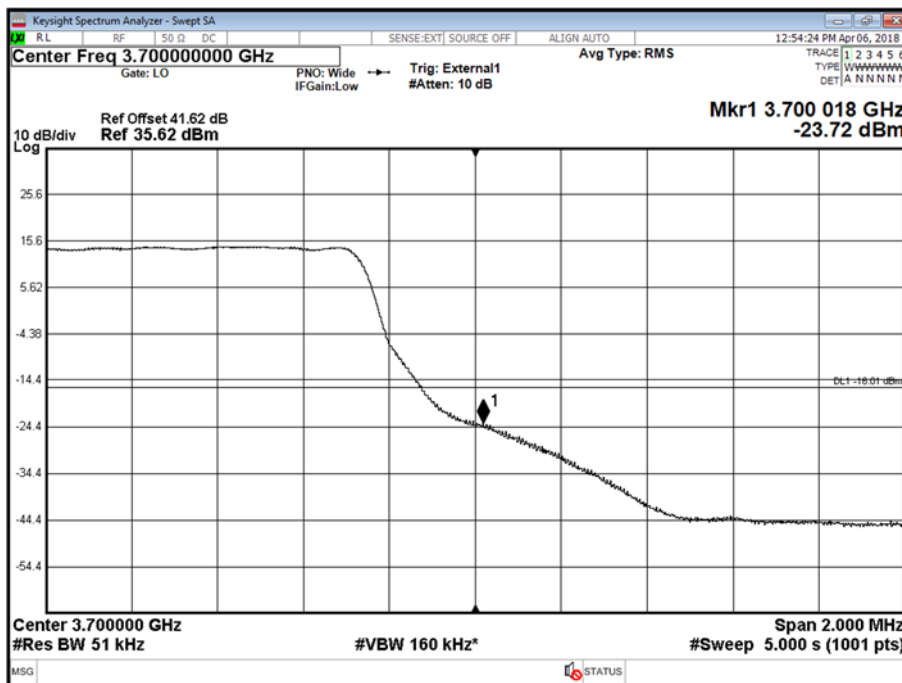
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B



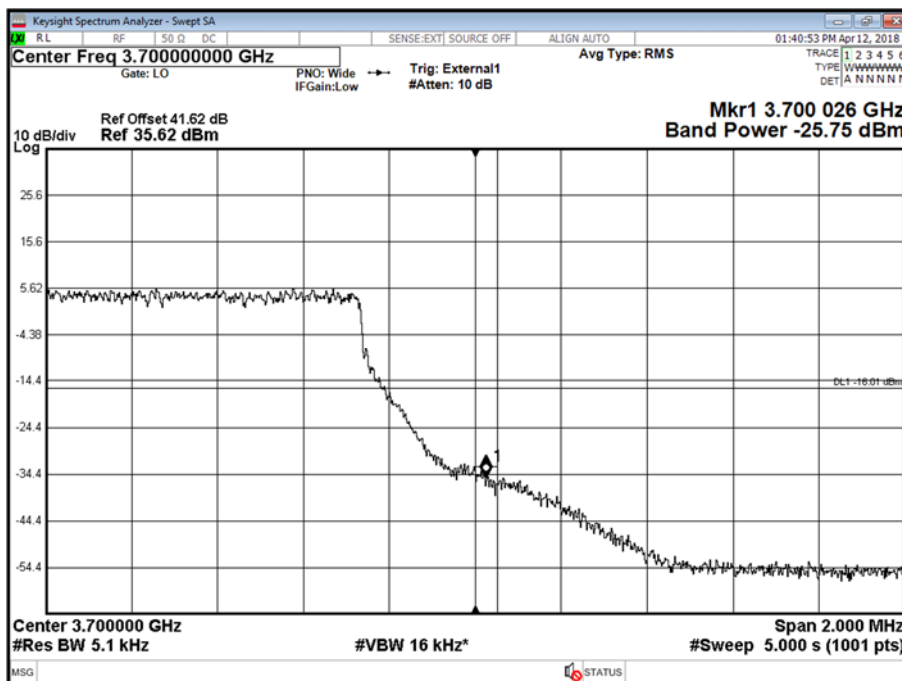
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B



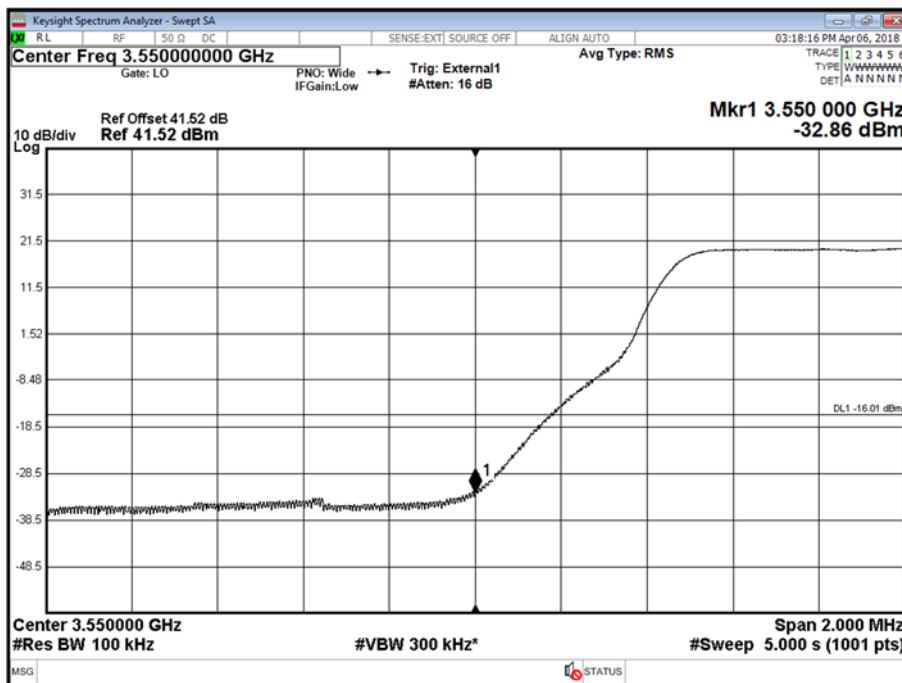
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



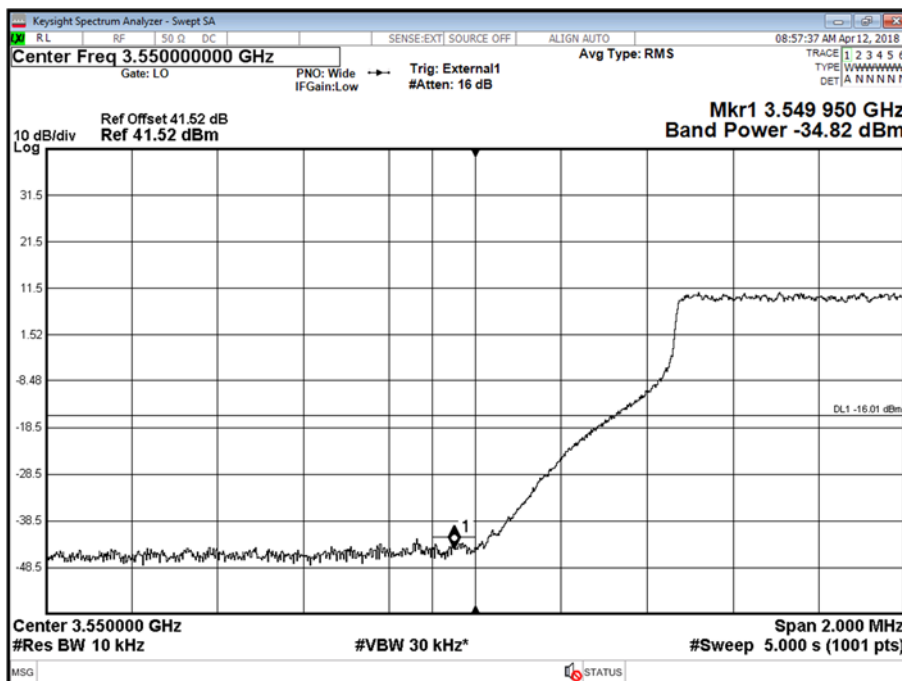
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



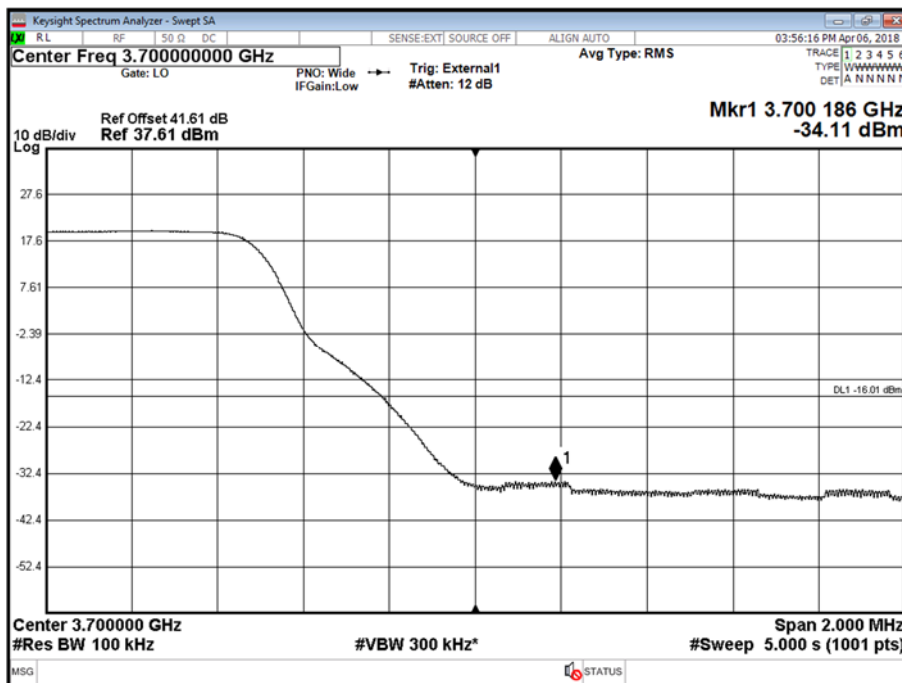
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position B



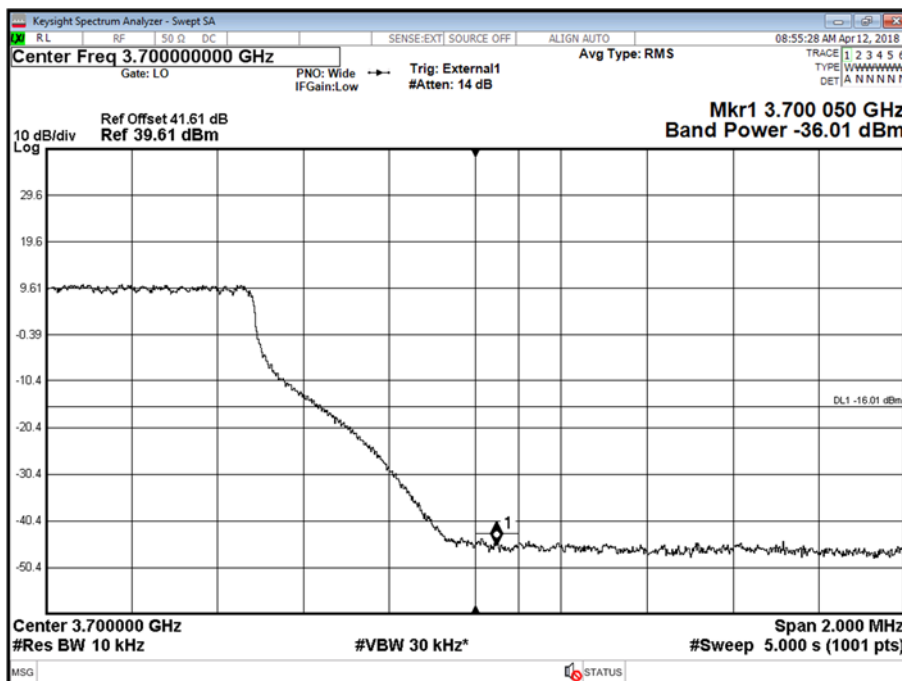
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position B



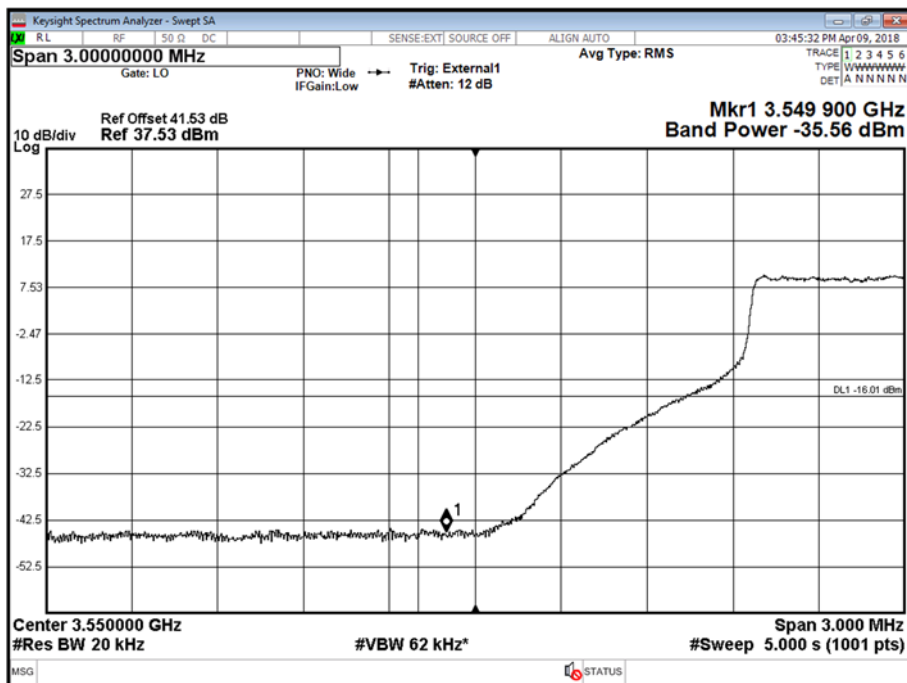
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position T



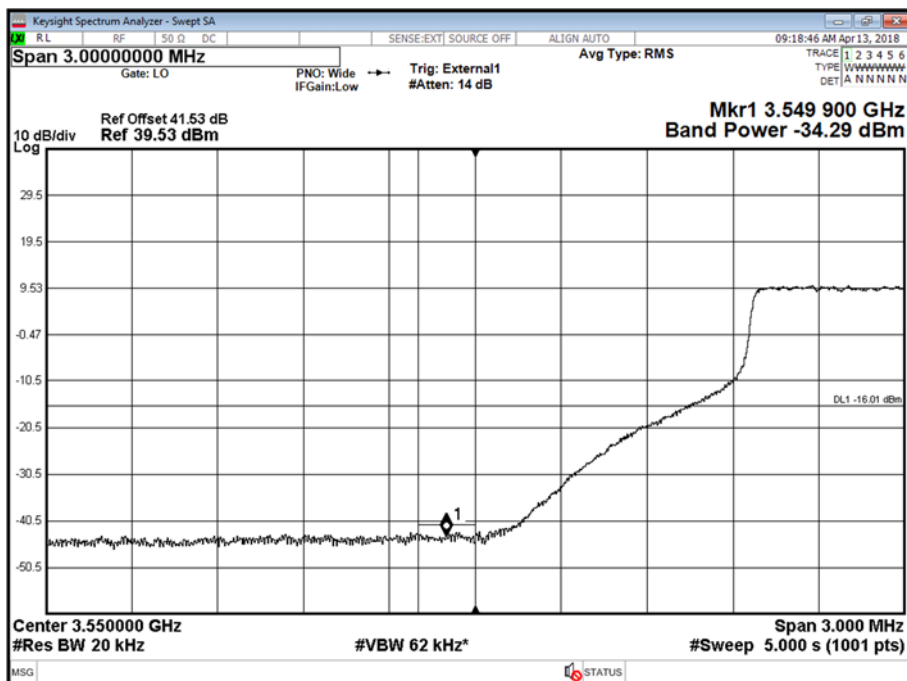
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position T



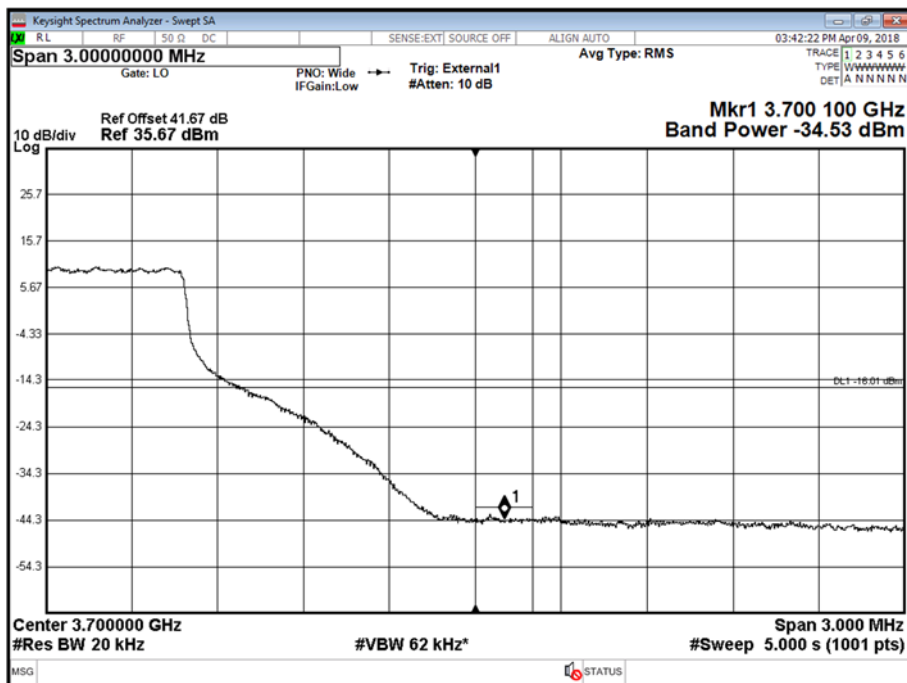
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position B



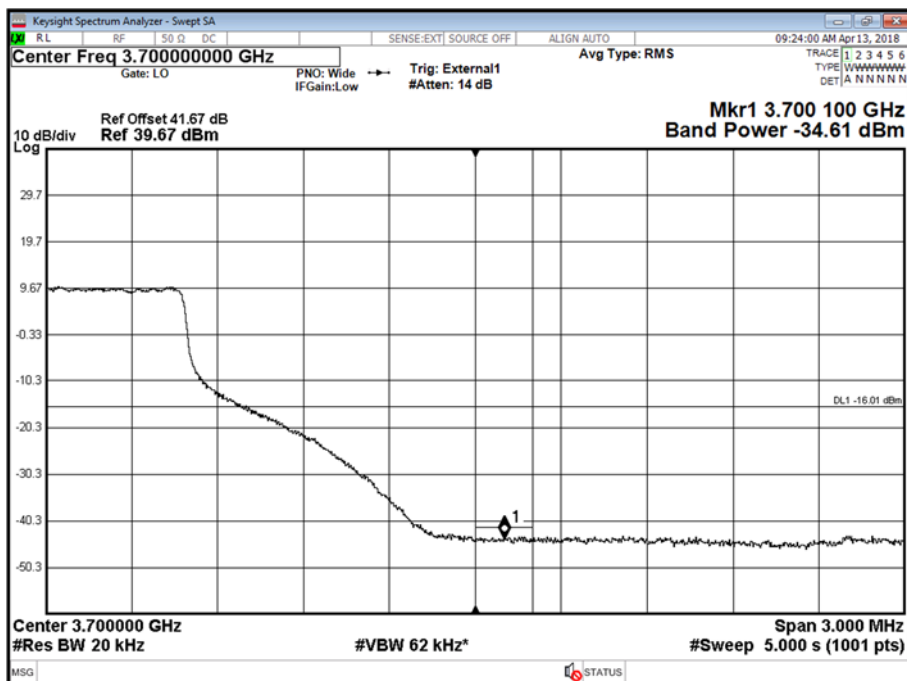
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position B



Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position T



Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position T





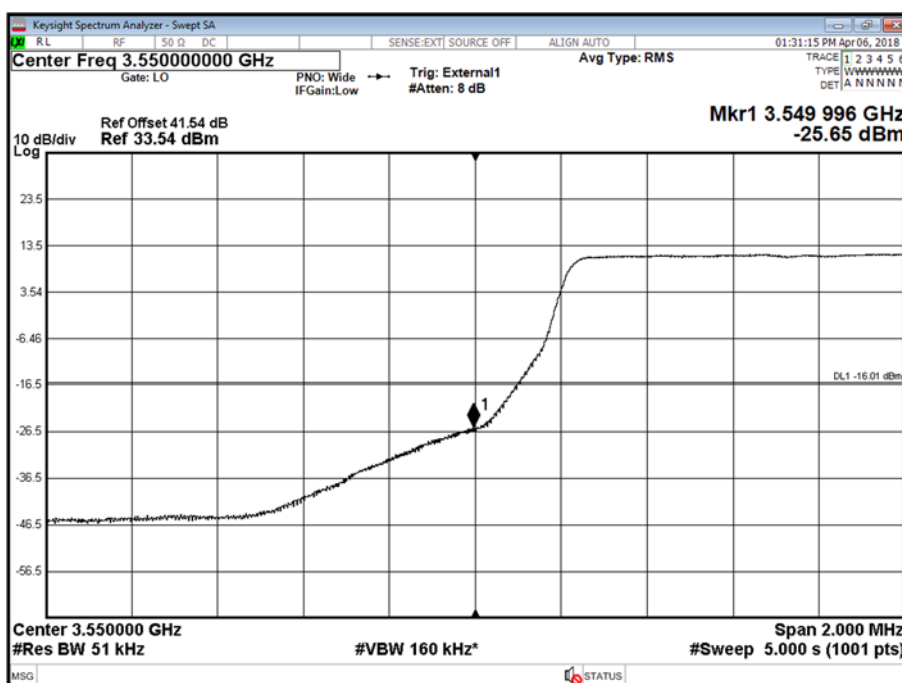
Product Service

Configuration A2

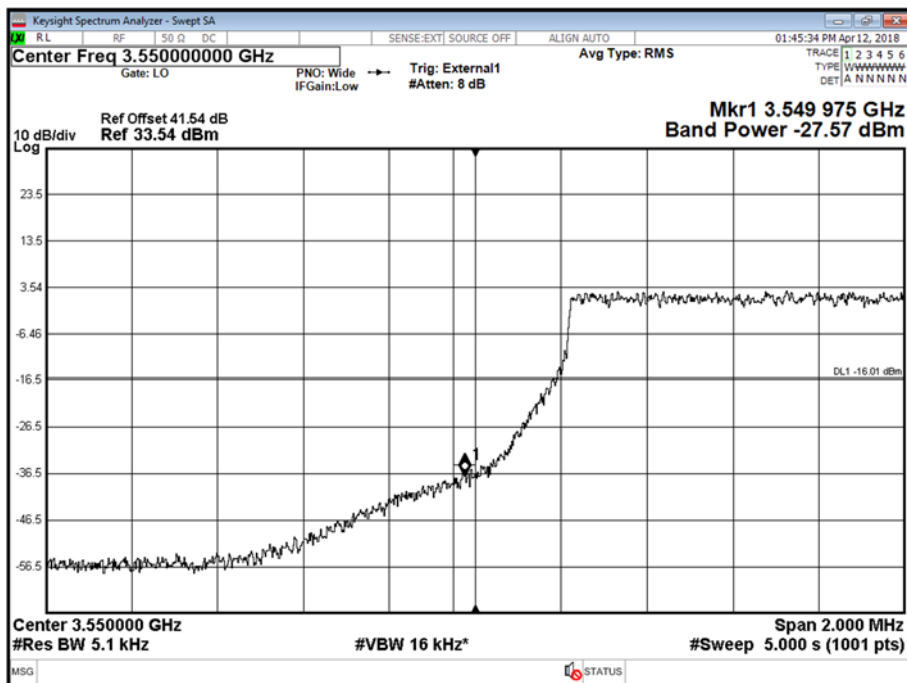
Maximum Output Power 40 dBm (5 MHz, 34 dBm)

Antenna	LTE Modulation	LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	64QAM	5.0 MHz	3552.5 + 3557.5	3692.5 + 3697.5
B	64QAM	5.0 MHz	3552.5 + 3557.5	3692.5 + 3697.5
A	64QAM	10.0 MHz	3555 + 3565	3685 + 3695
B	64QAM	10.0 MHz	3555 + 3565	3685 + 3695
A	64QAM	20.0 MHz	3560 + 3580	3670 + 3690
B	64QAM	20.0 MHz	3560 + 3580	3670 + 3690

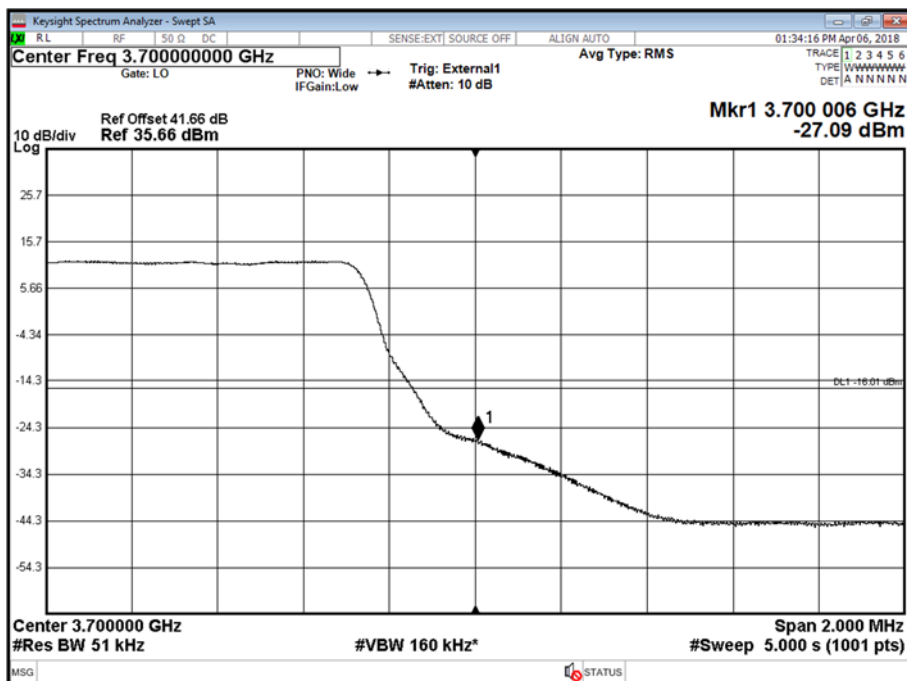
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B



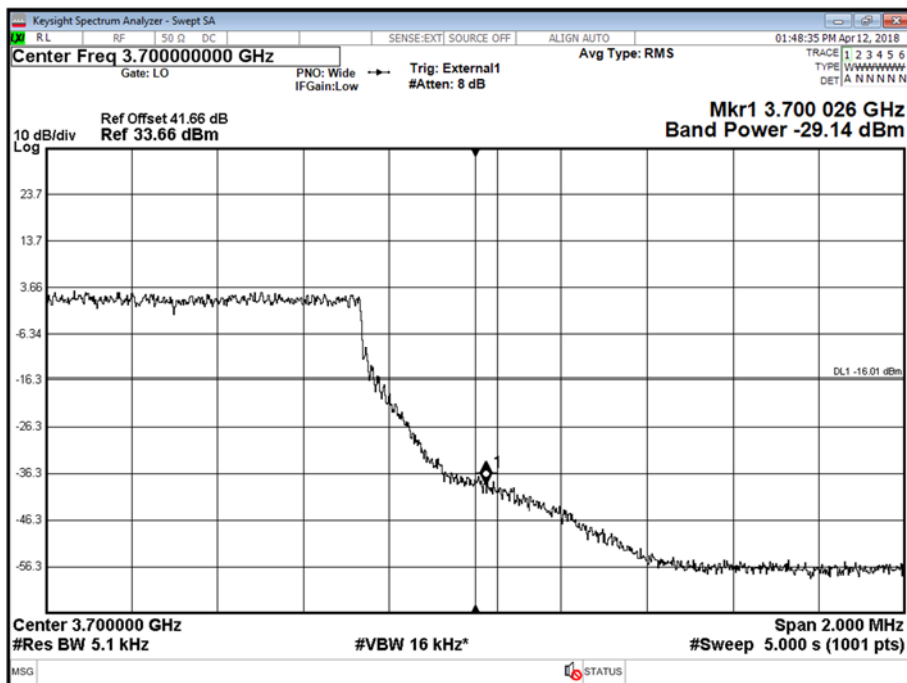
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B



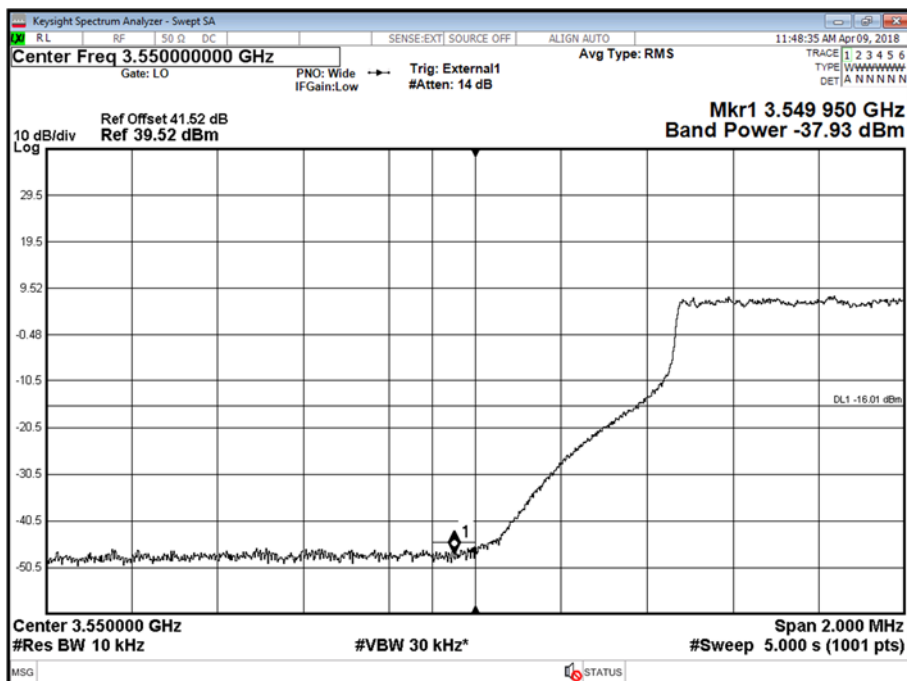
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



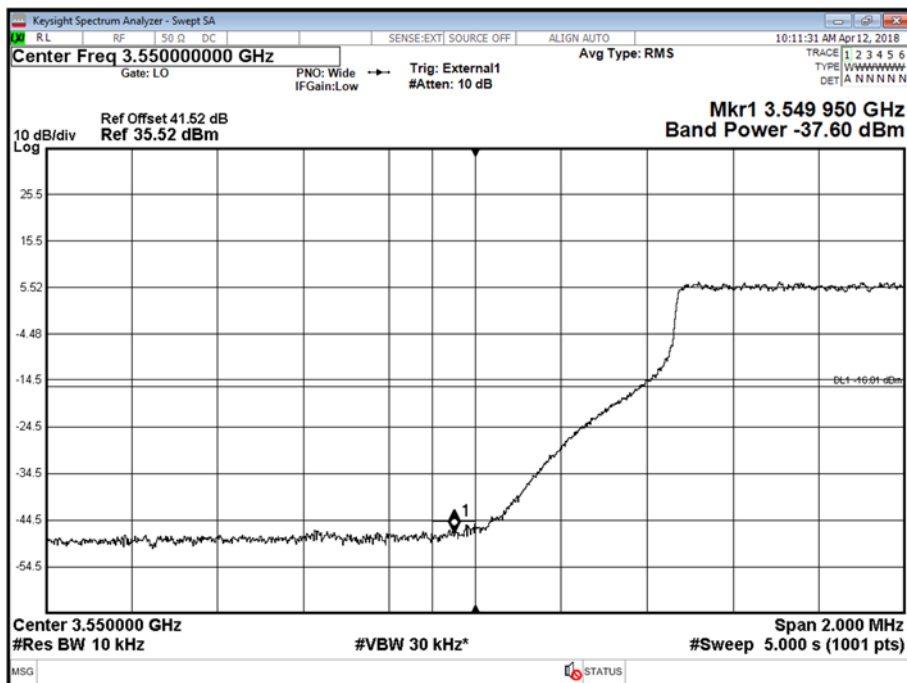
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



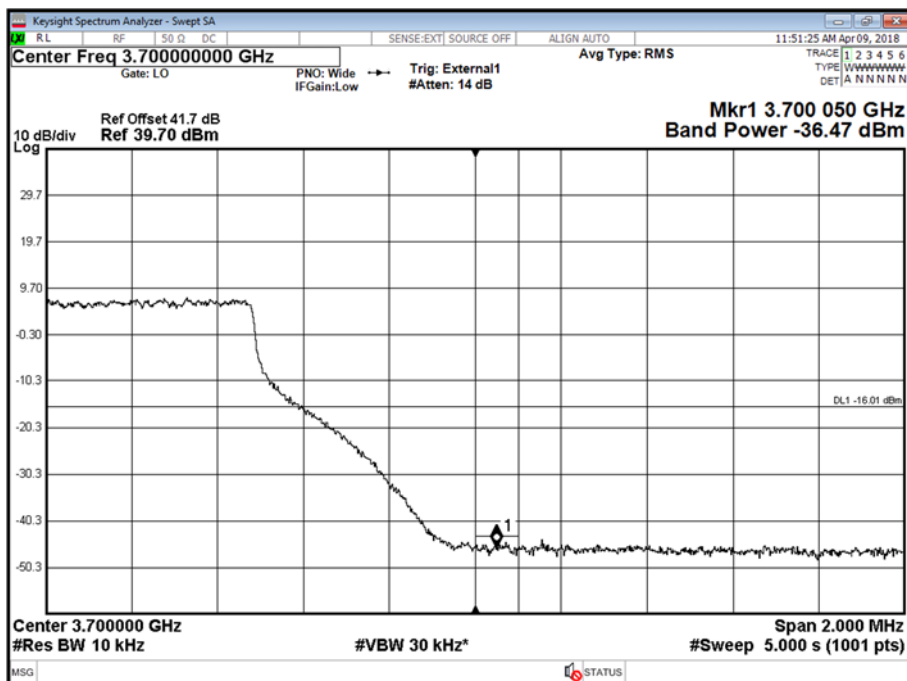
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position B



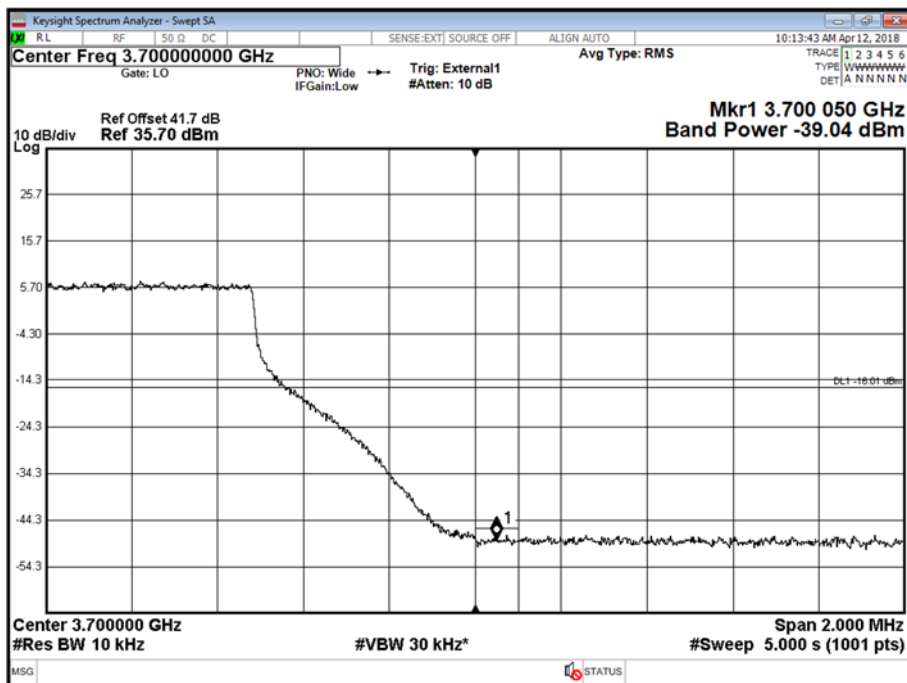
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position B



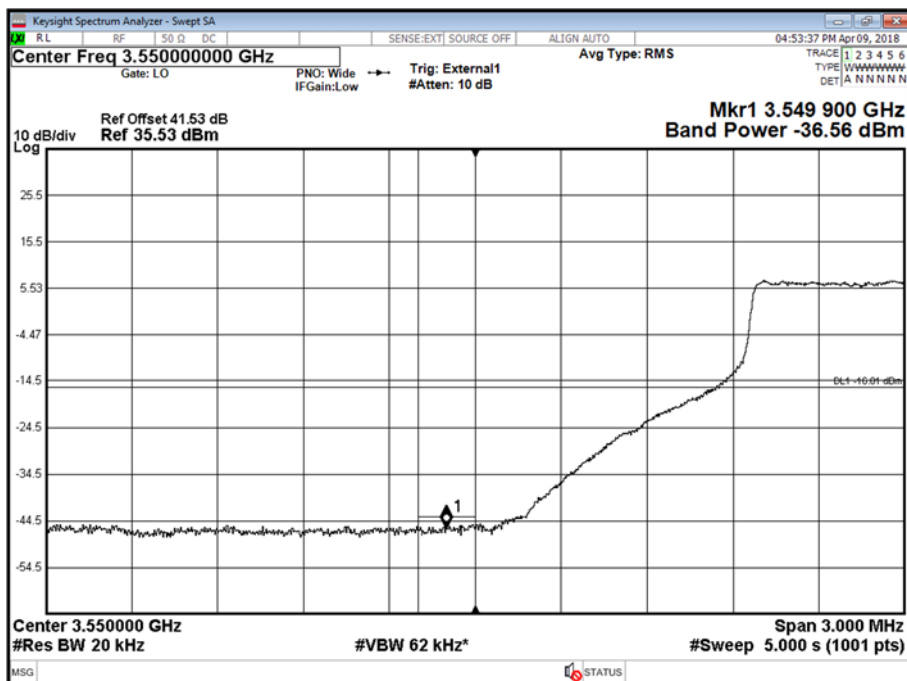
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position T



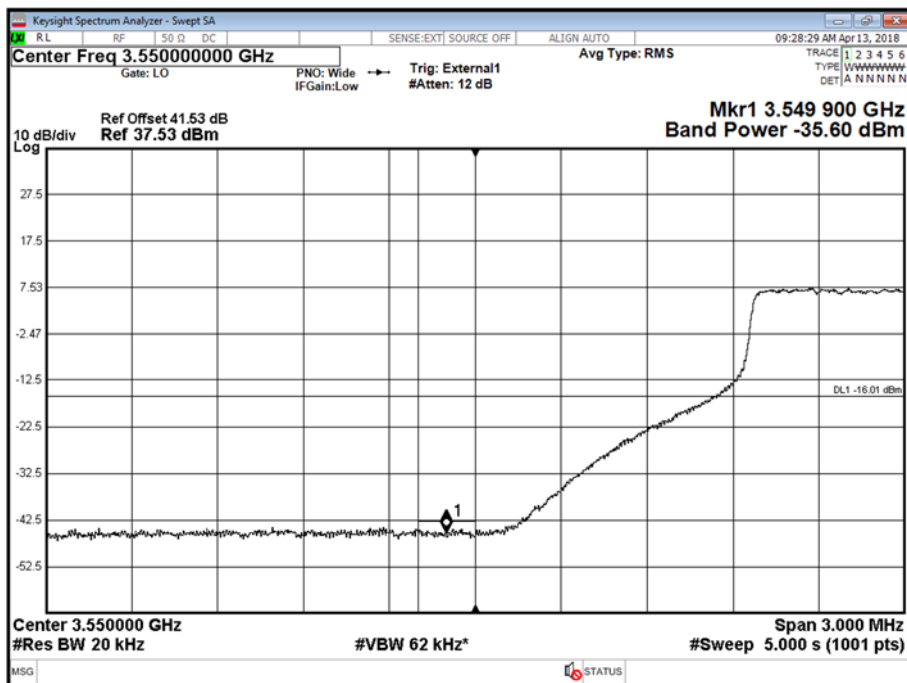
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position T



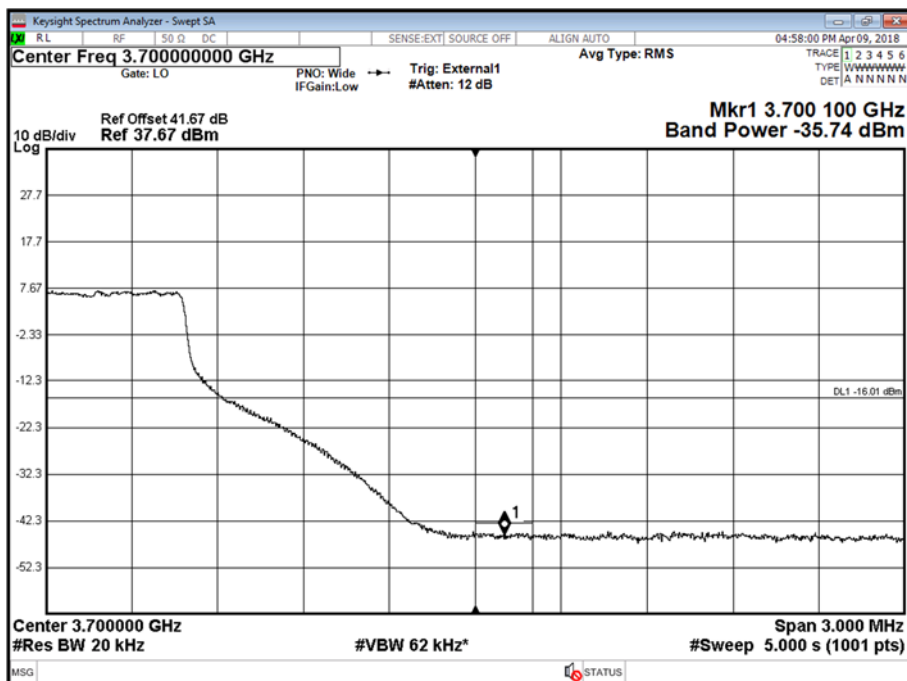
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position B



Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position B



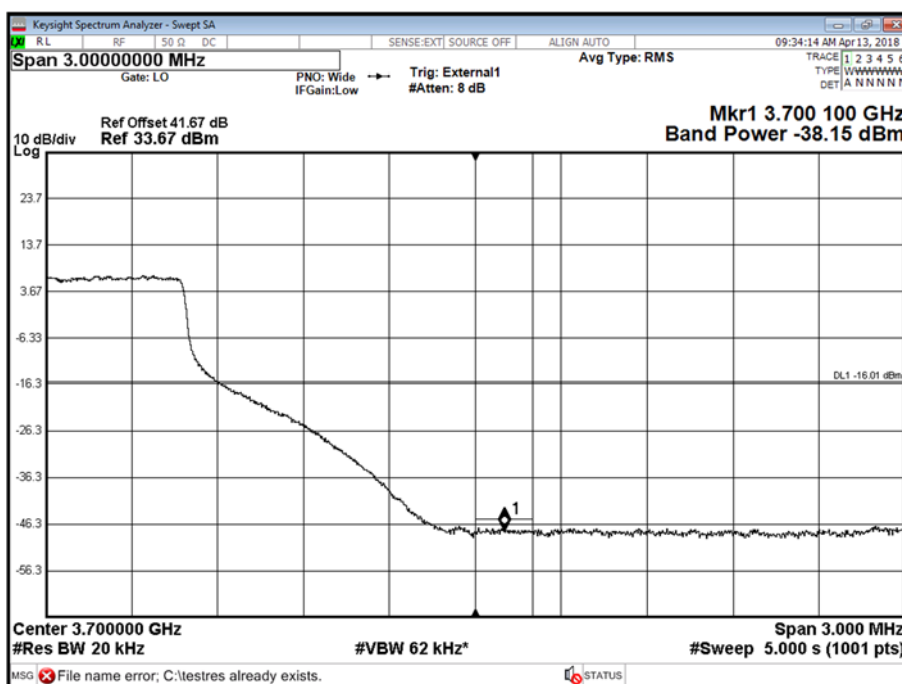
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position T





Product Service

Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position T

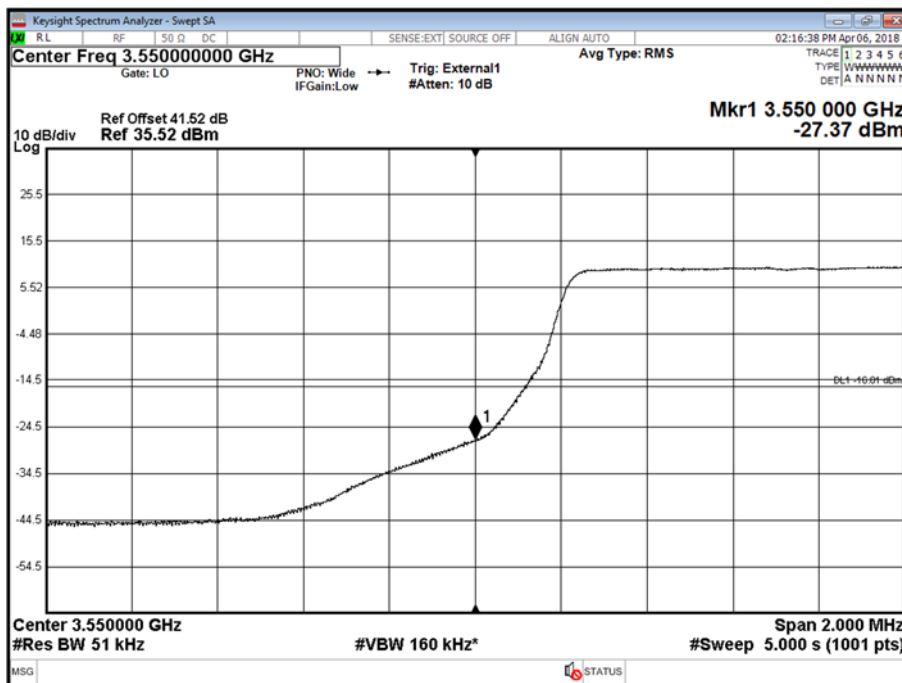


Configuration A3

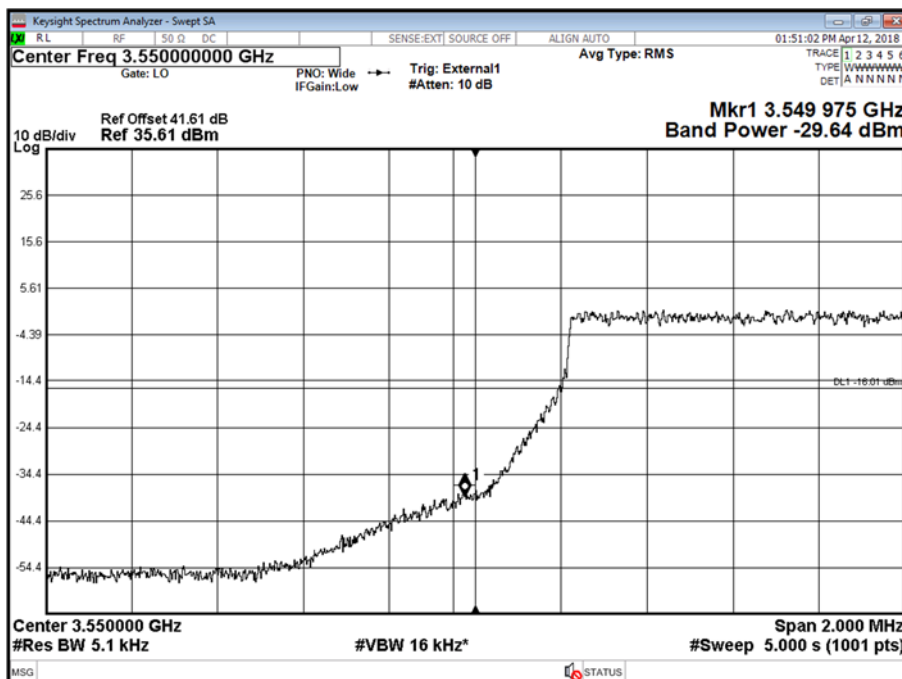
Maximum Output Power 40 dBm (5 MHz, 34 dBm)

Antenna	LTE Modulation	LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	64QAM	5.0 MHz	3552.5 + 3557.5 + 3562.5	3687.5 + 3692.5 + 3697.5
B	64QAM	5.0 MHz	3552.5 + 3557.5 + 3562.5	3687.5 + 3692.5 + 3697.5
A	64QAM	10.0 MHz	3555 + 3565 + 3575	3675 + 3685 + 3695
B	64QAM	10.0 MHz	3555 + 3565 + 3575	3675 + 3685 + 3695
A	64QAM	20.0 MHz	3560 + 3580 + 3600	3650 + 3670 + 3690
B	64QAM	20.0 MHz	3560 + 3580 + 3600	3650 + 3670 + 3690

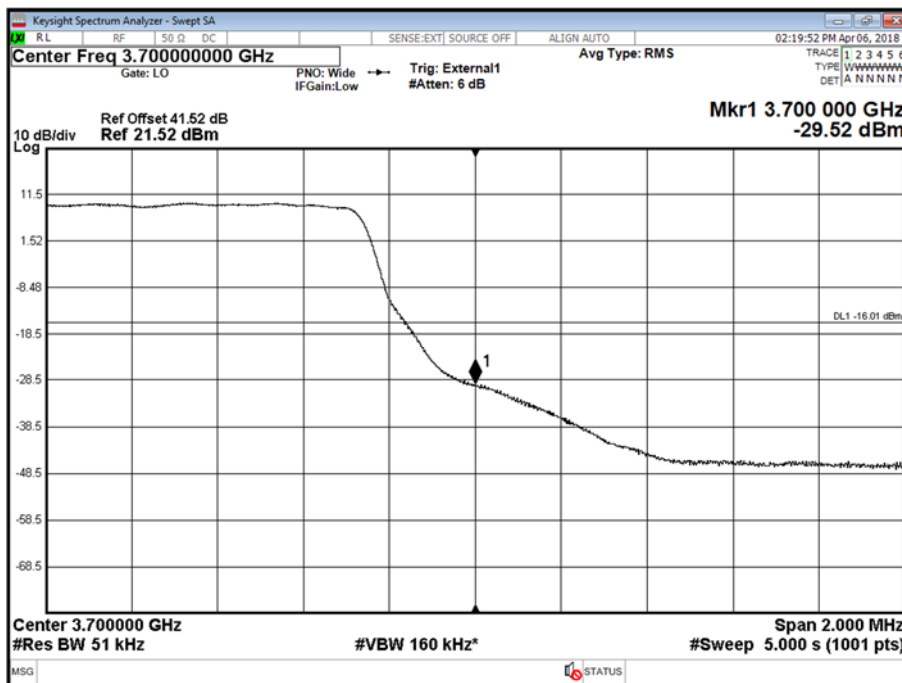
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B



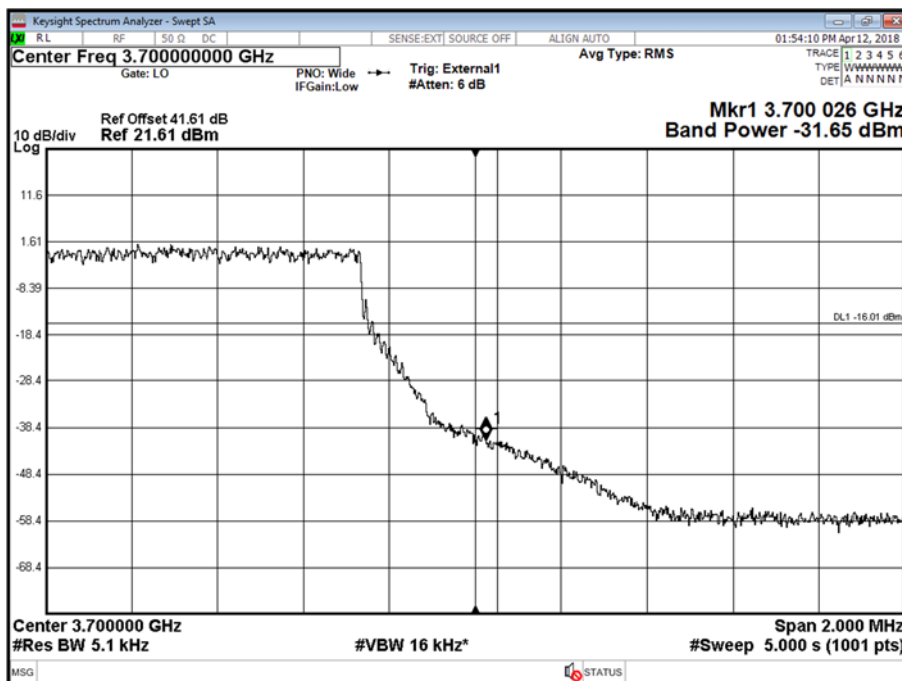
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B



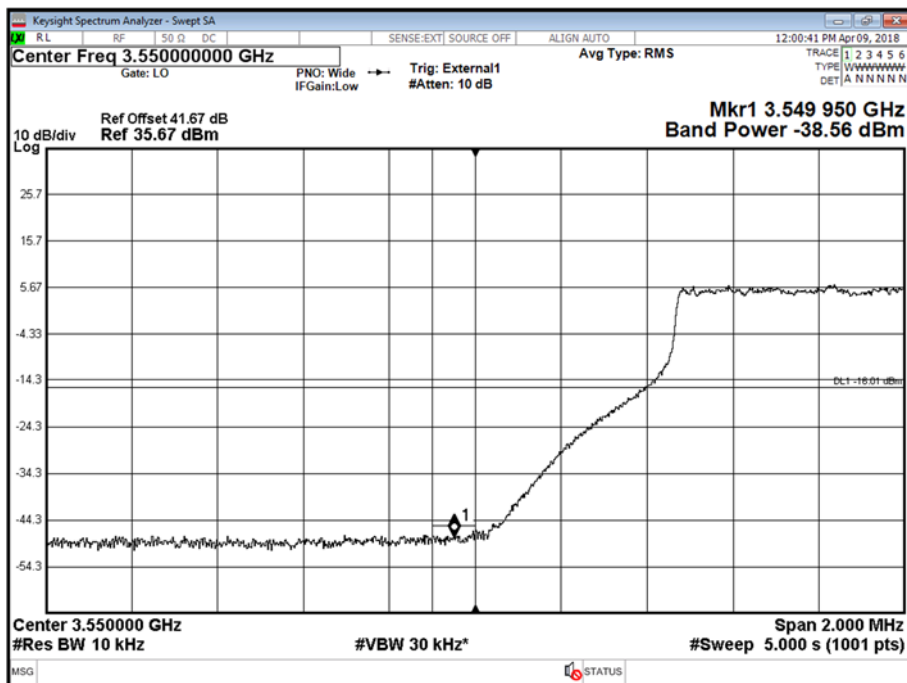
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



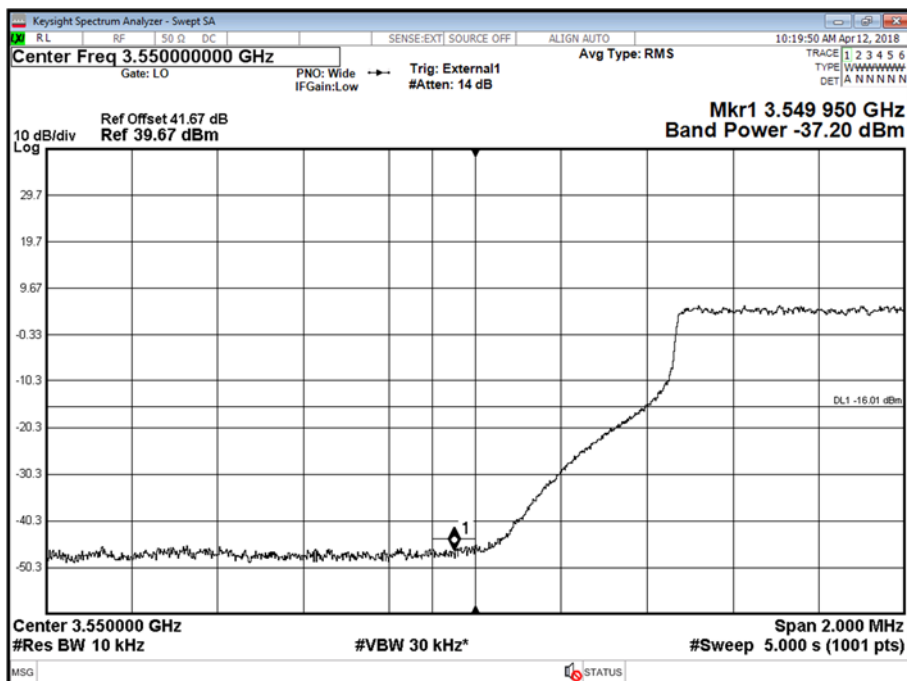
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



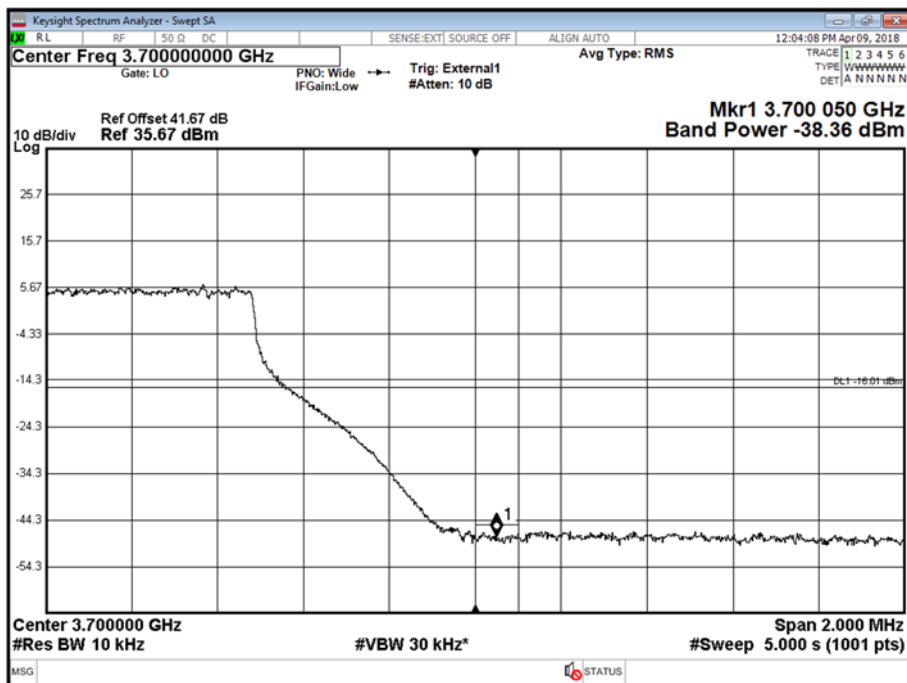
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position B



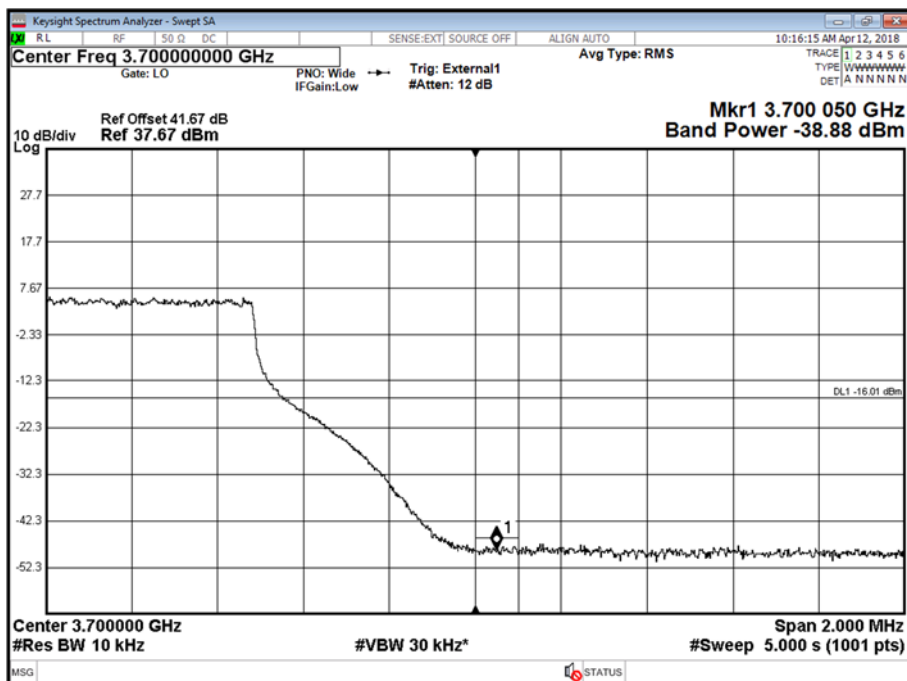
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position B



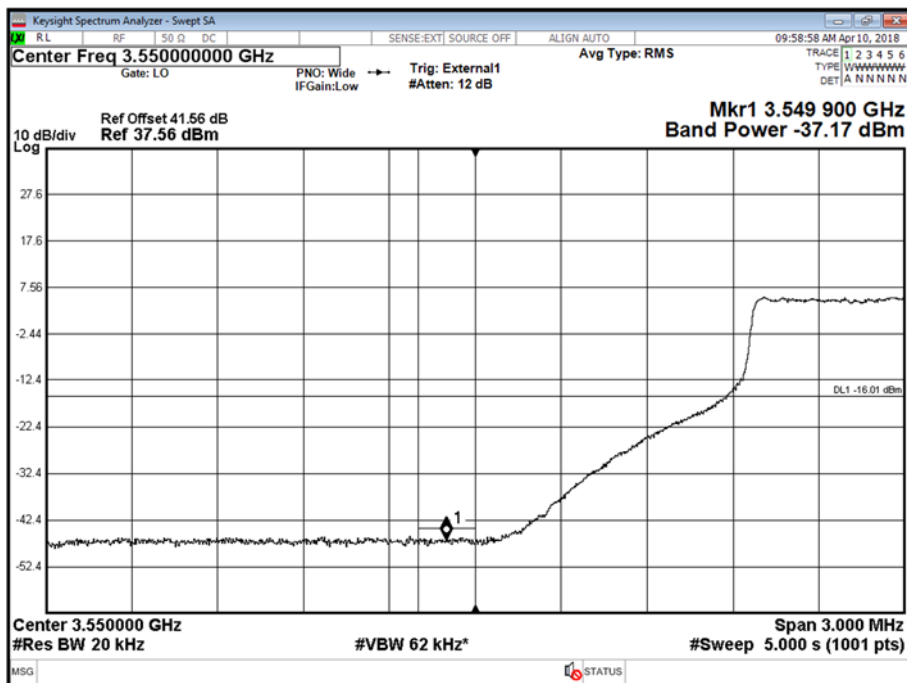
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position T



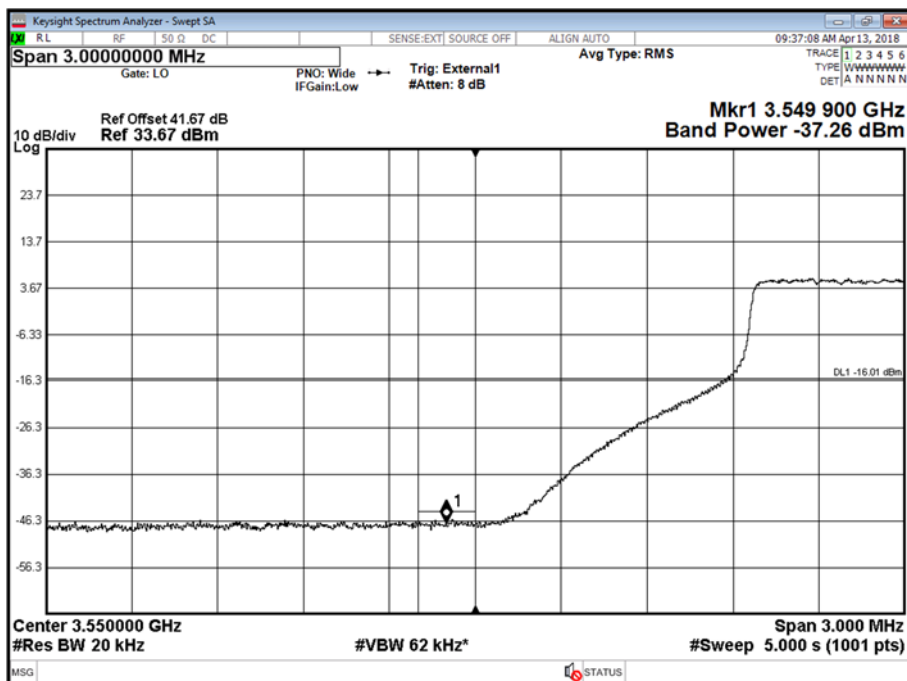
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position T



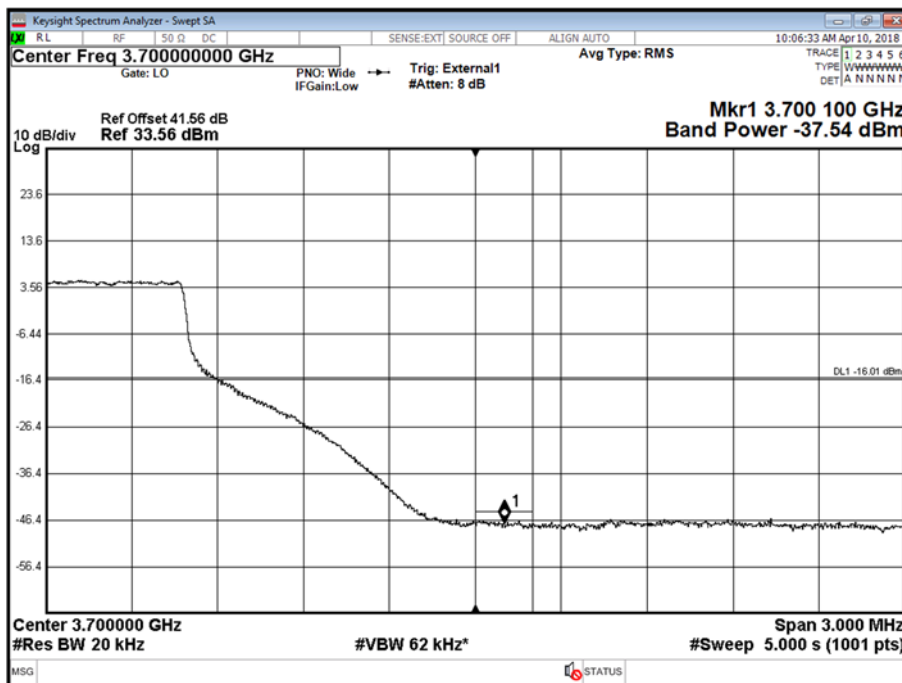
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position B



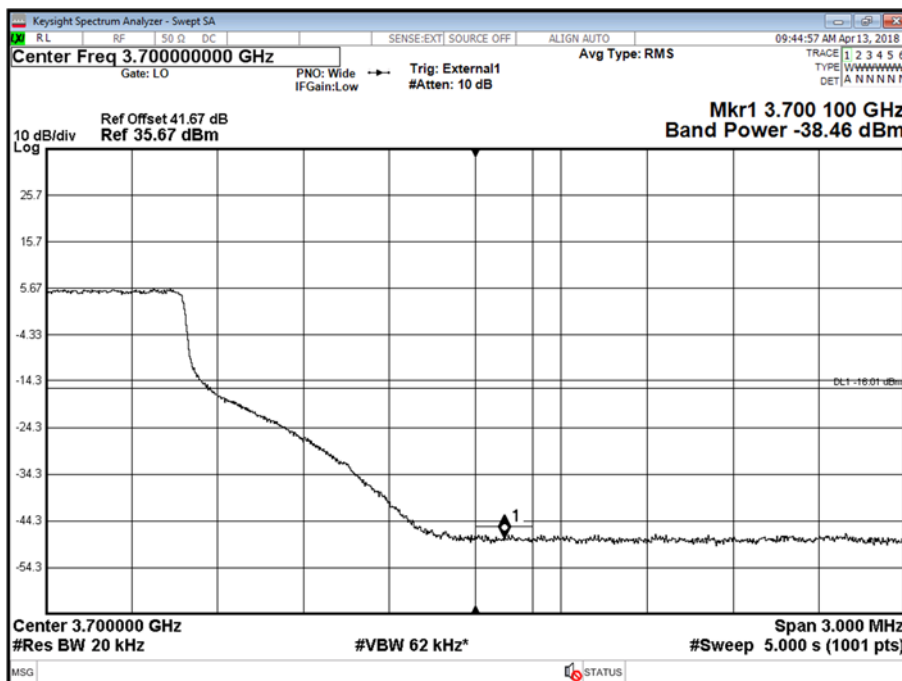
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position B



Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position T



Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position T



Limit

-13 dBm/MHz $-10\log(2) = -16$ dBm/MHz (2 port MIMO)



Product Service

2.4 TRANSMITTER SPURIOUS EMISSIONS

2.4.1 Specification Reference

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

2.4.2 Date of Test and Modification State

17 April 2018 - Modification State 0

2.4.3 Test Equipment Used

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

2.4.4 Environmental Conditions

Ambient Temperature	22.7°C
Relative Humidity	42.9%

2.4.5 Test Method

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

The EUT was connected to a Spectrum Analyser using various configurations including a Band Stop Filter, High Pass Filters and Waveguide. Prior to testing, a Network Analyser was used to calibrate the path loss between the EUT and the Spectrum Analyser. The worst case path loss in the measured ranges was entered as a reference level offset. Over the measured ranges, the RBW was set to 1MHz with a VBW of 3MHz. All measurement results are specified as average with an RMS detector being used in conjunction with a trace setting of Max Hold. Measurements were performed in configurations of the EUT as reported below.

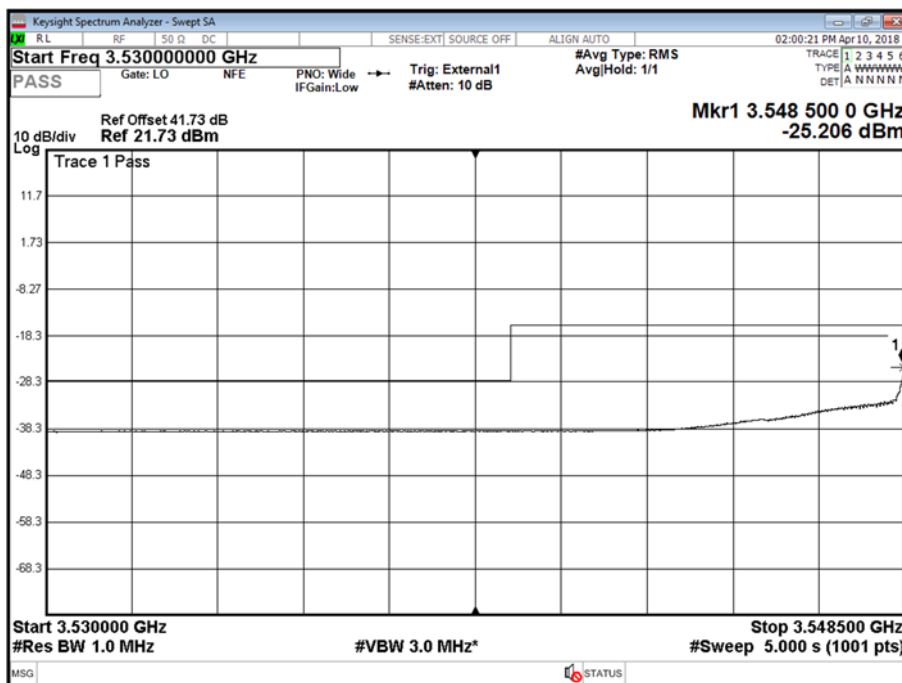
The EUT can transmit with 1 or 2 ports simultaneously. Testing was performed on all ports with the test limits being reduced from the specification limit by a factor of $10\log(2)$ in accordance with KDB 662911 D01 v02r01 to cover all MIMO configurations.

2.4.6 Test Results

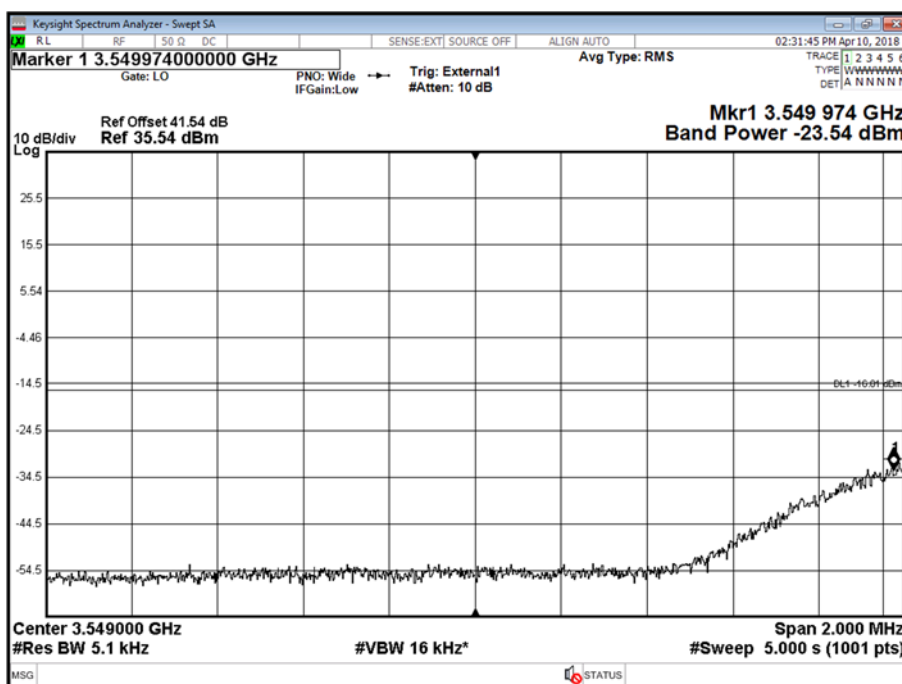
Configuration A1

Maximum Output Power 40 dBm (5 MHz, 34 dBm)

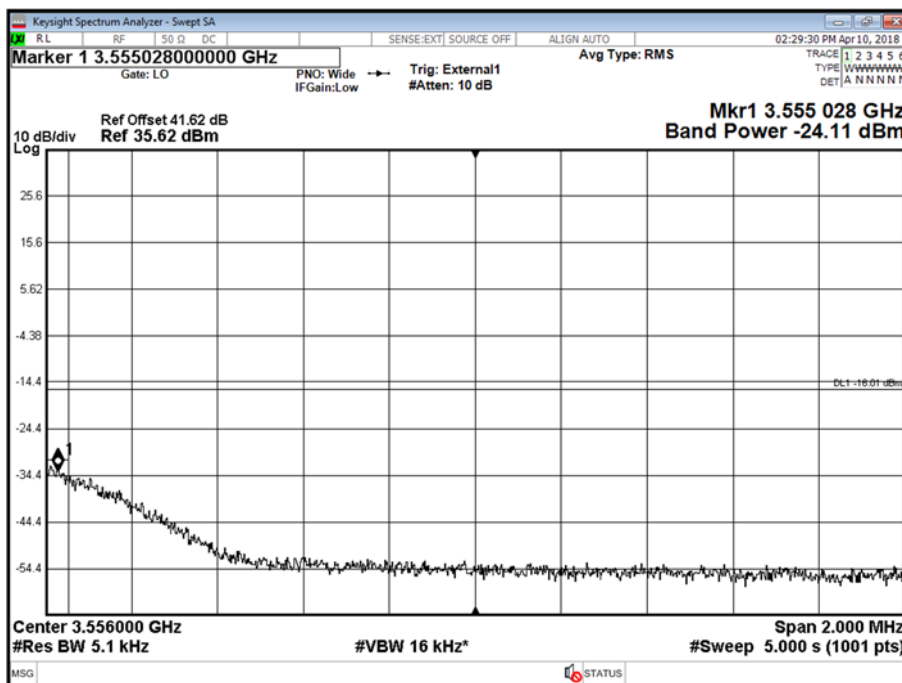
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band mask low - Range Low



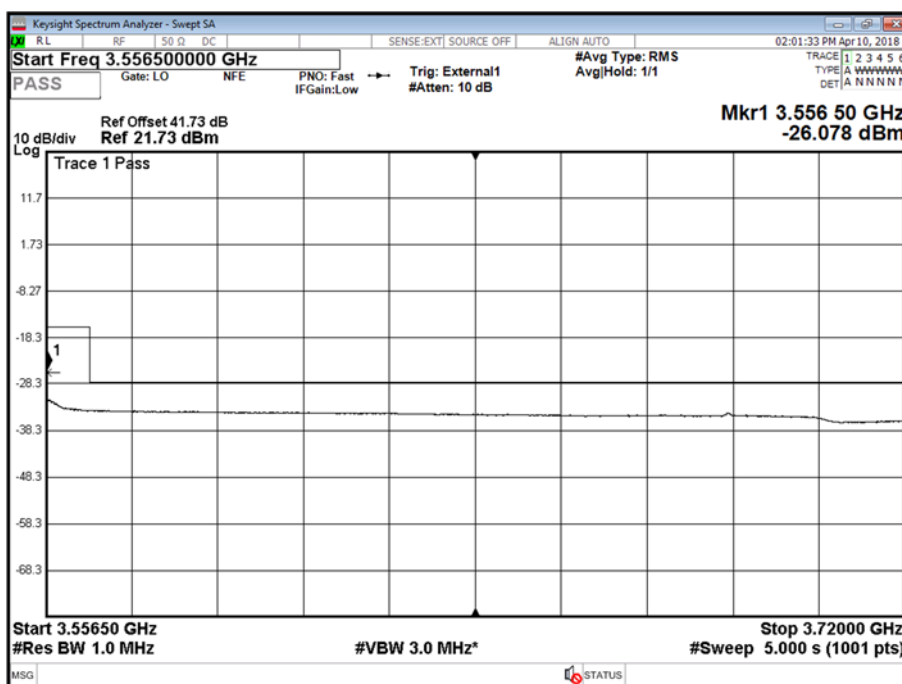
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band edge - Range edge low



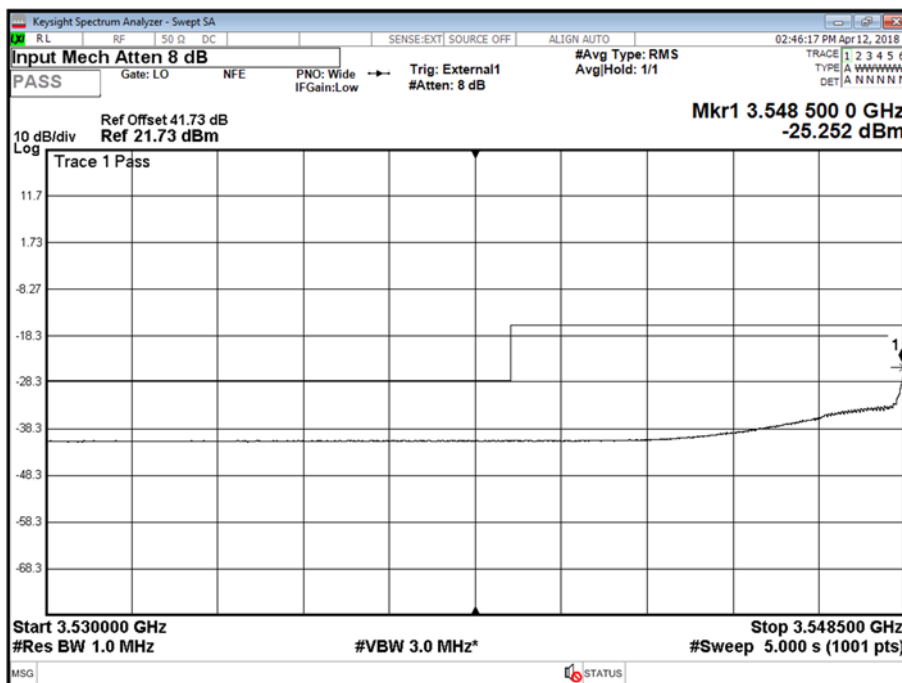
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band edge - Range edge high



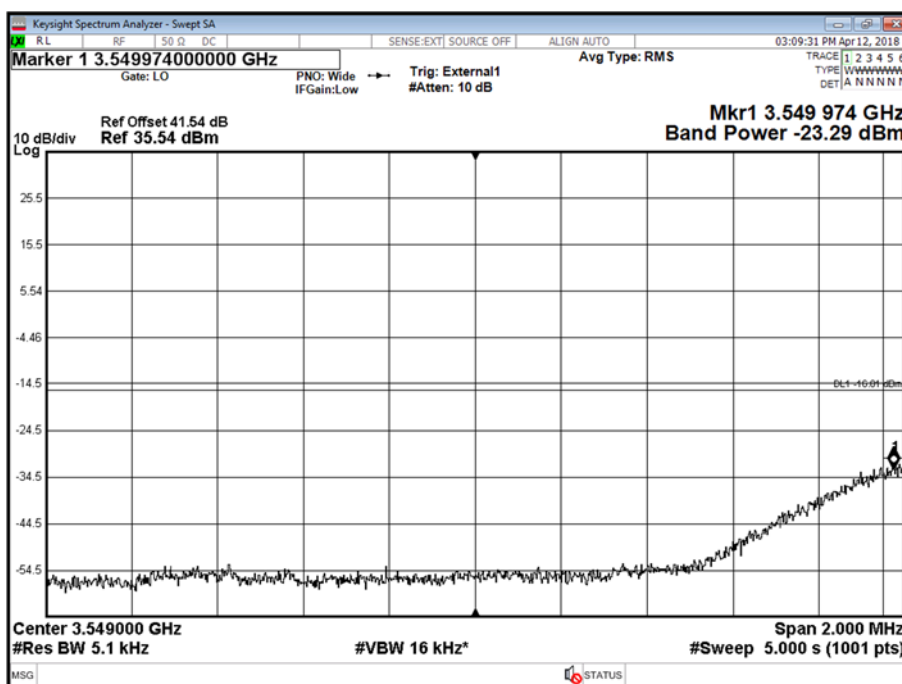
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band mask high - Range High



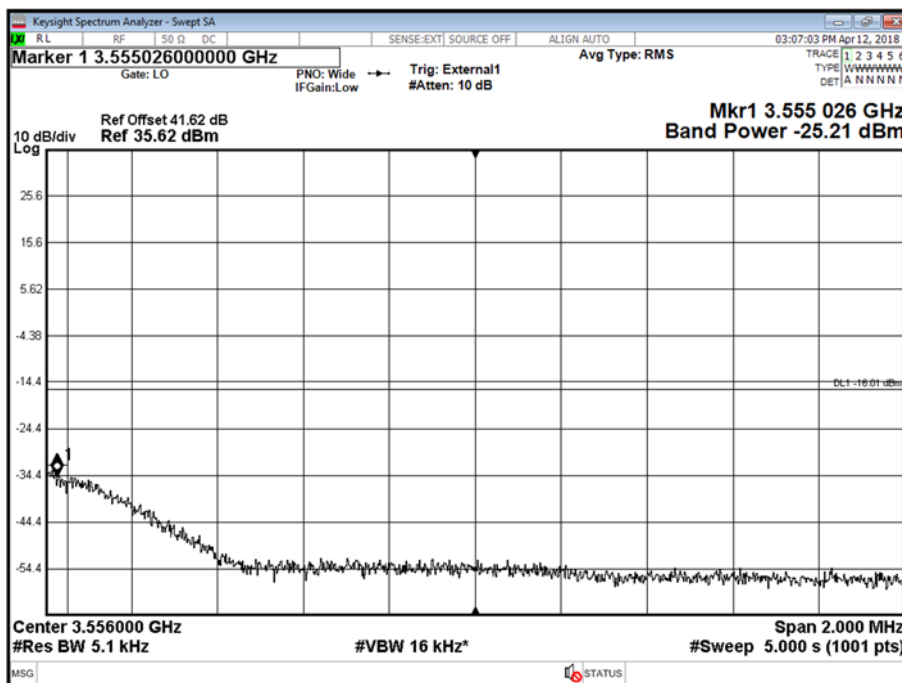
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band mask low - Range Low



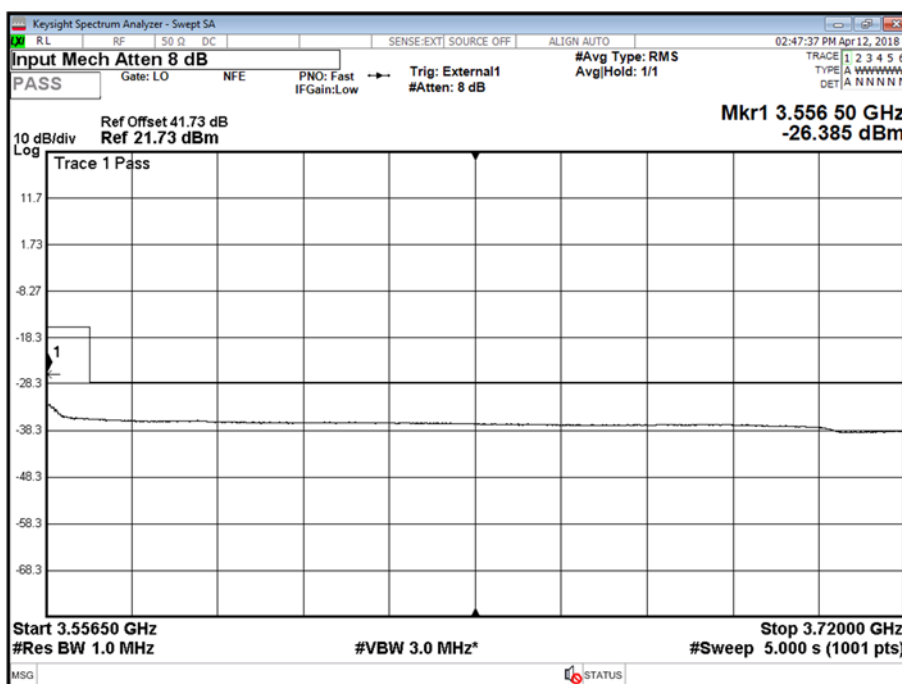
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band edge - Range edge low



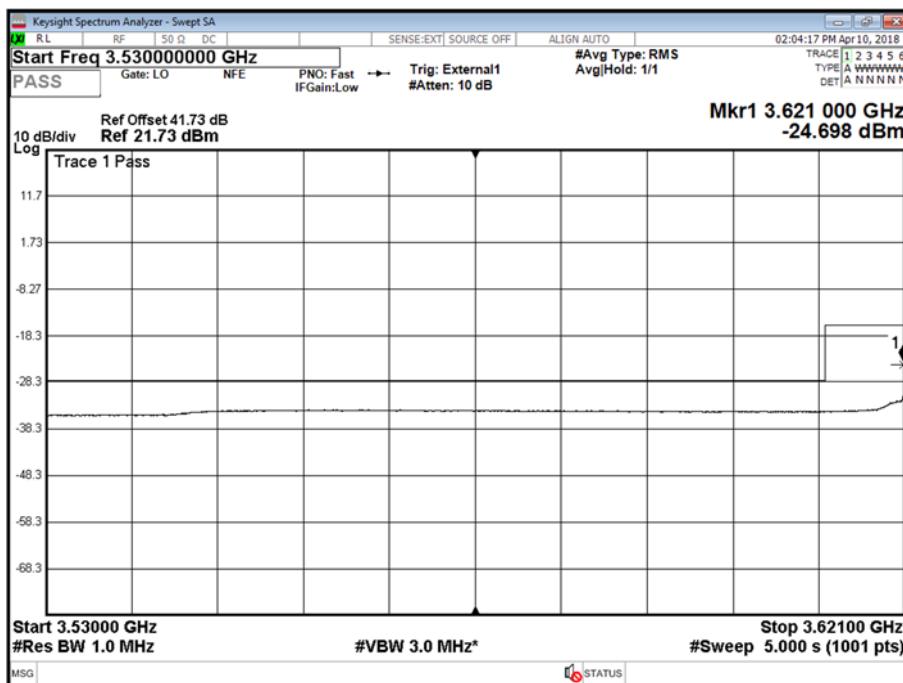
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band edge - Range edge high



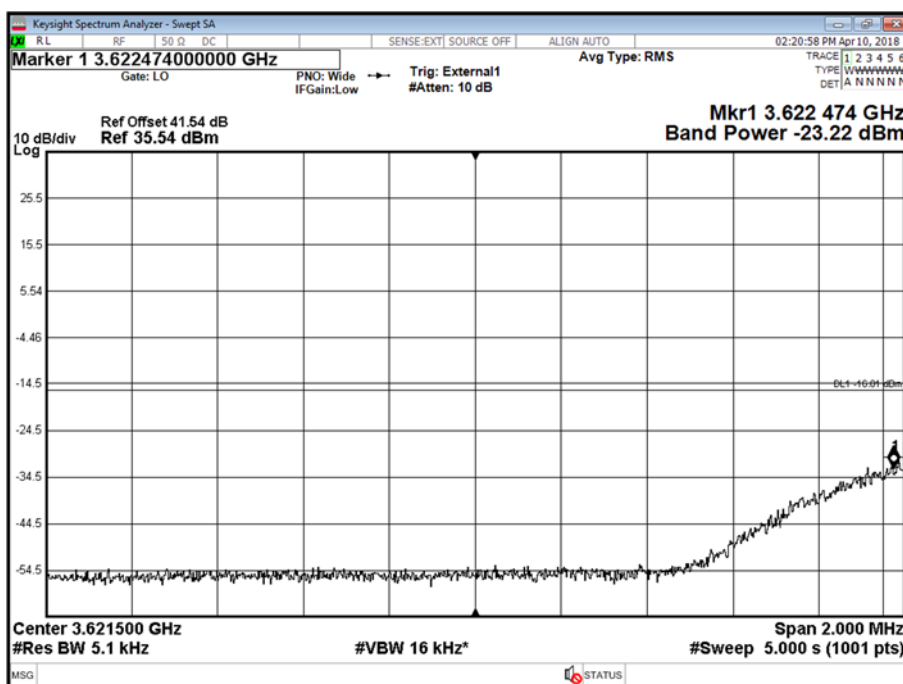
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band mask high - Range High



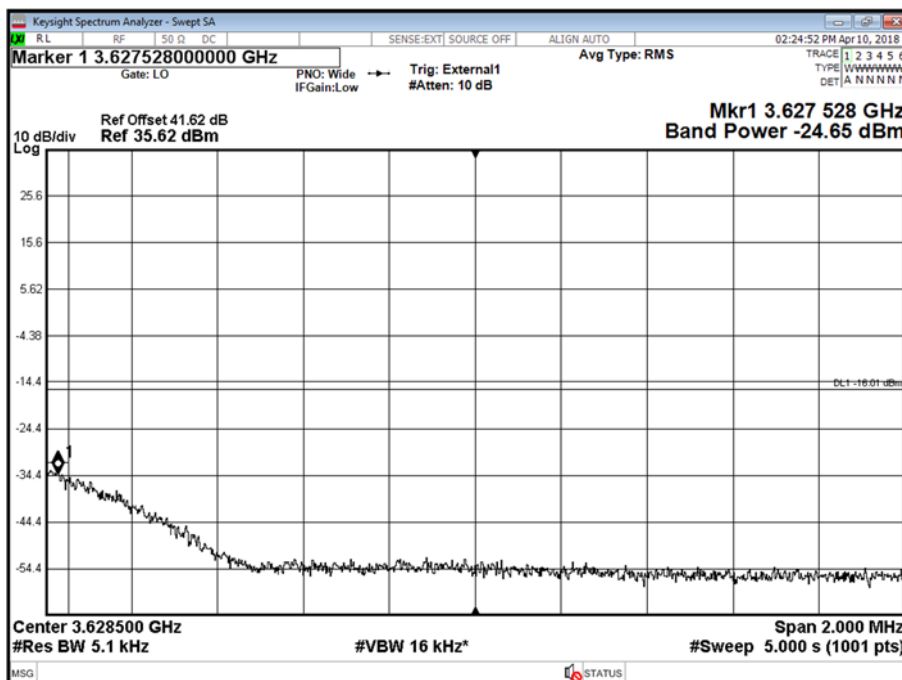
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band mask low - Range Low



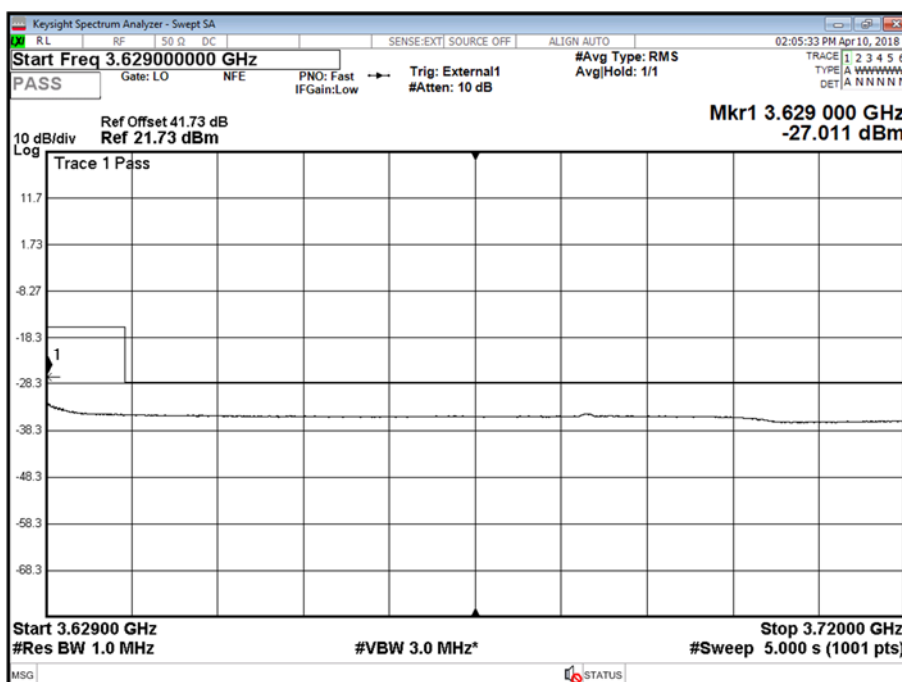
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band edge - Range edge low



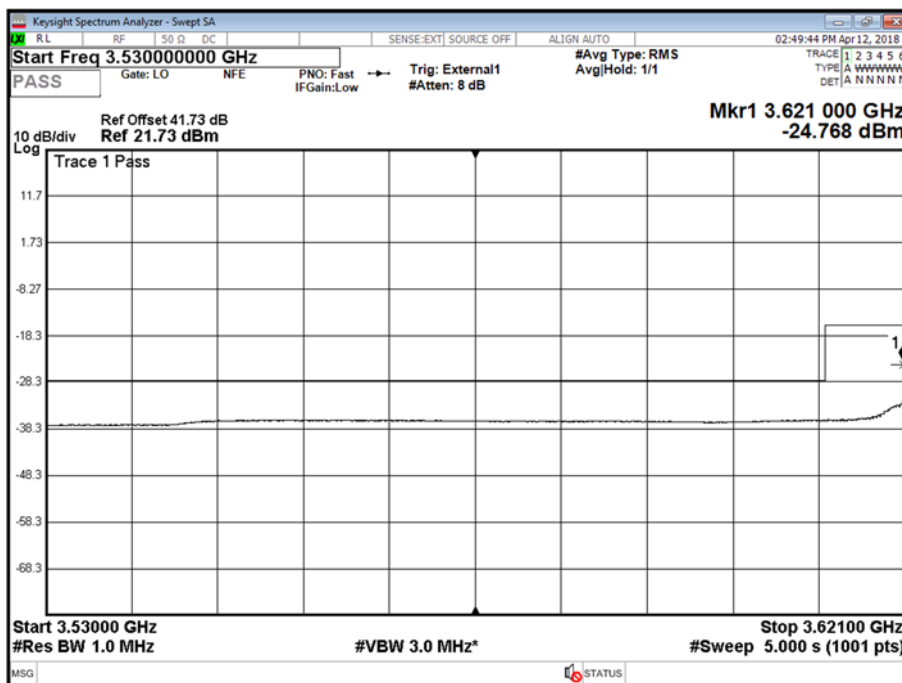
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band edge - Range edge high



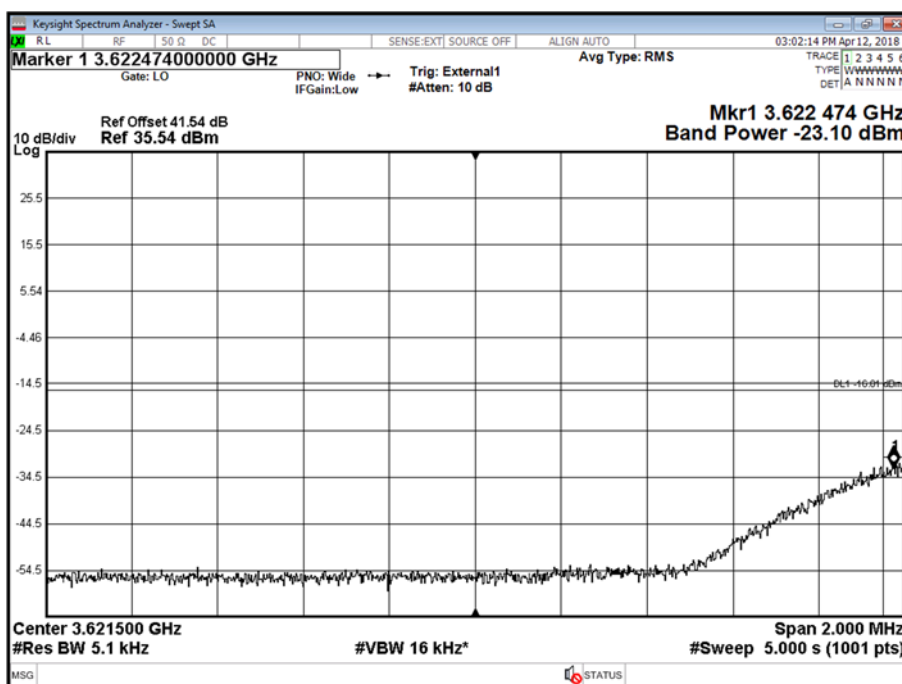
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band mask high - Range High



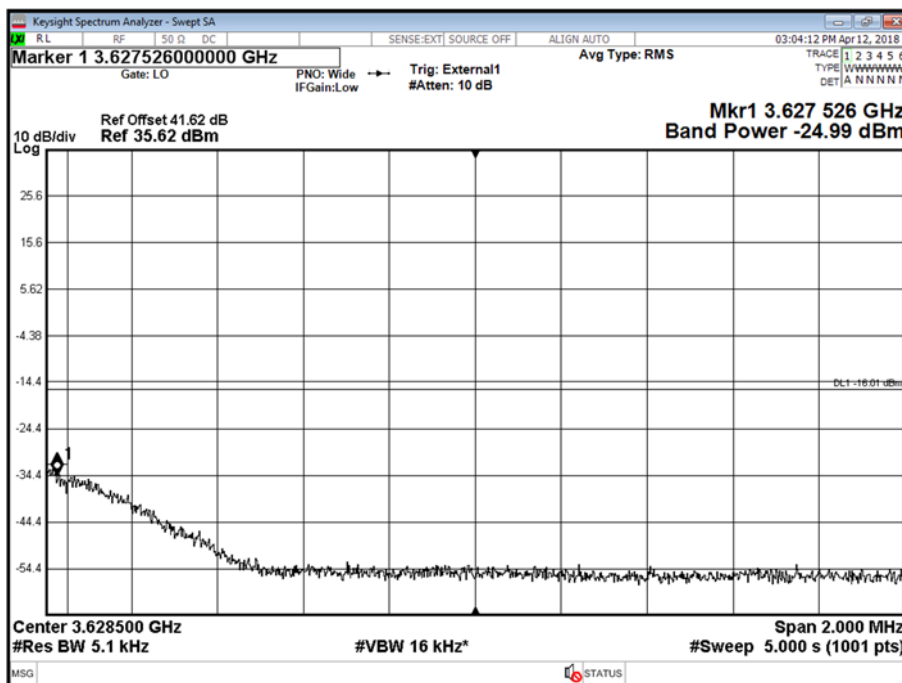
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band mask low - Range Low



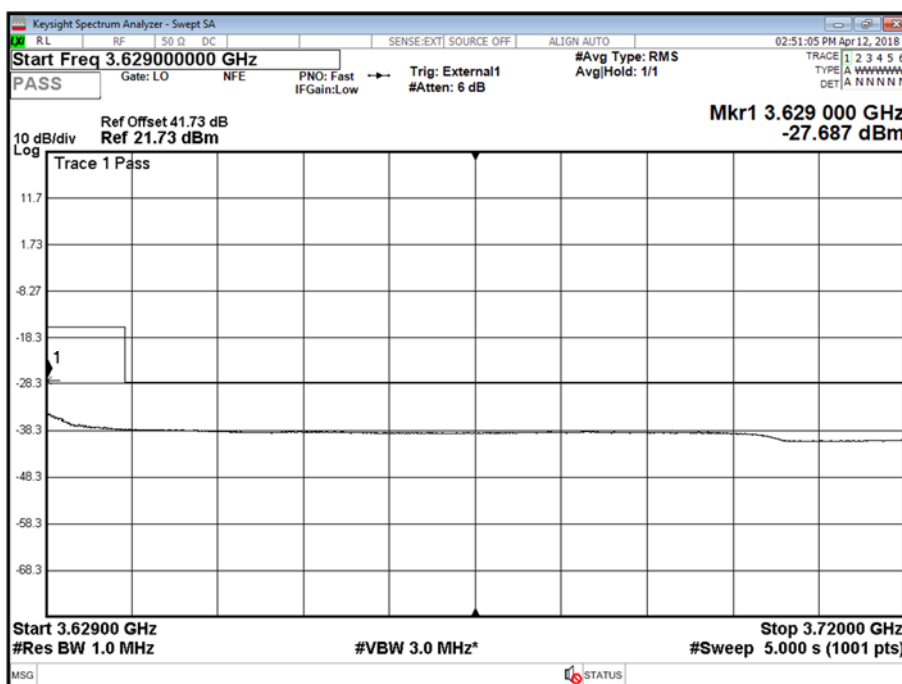
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band edge - Range edge low



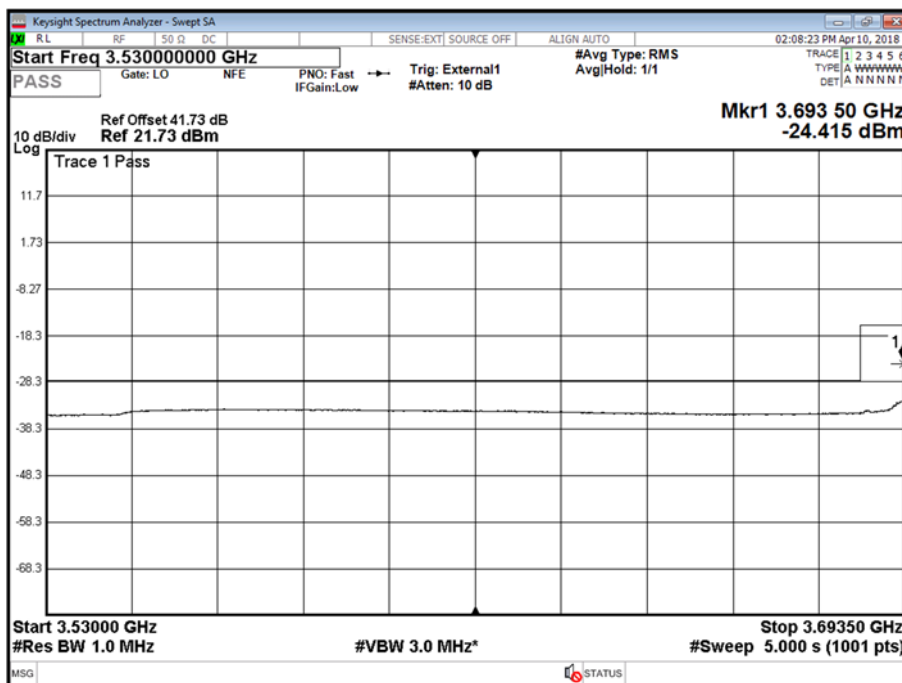
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band edge - Range edge high



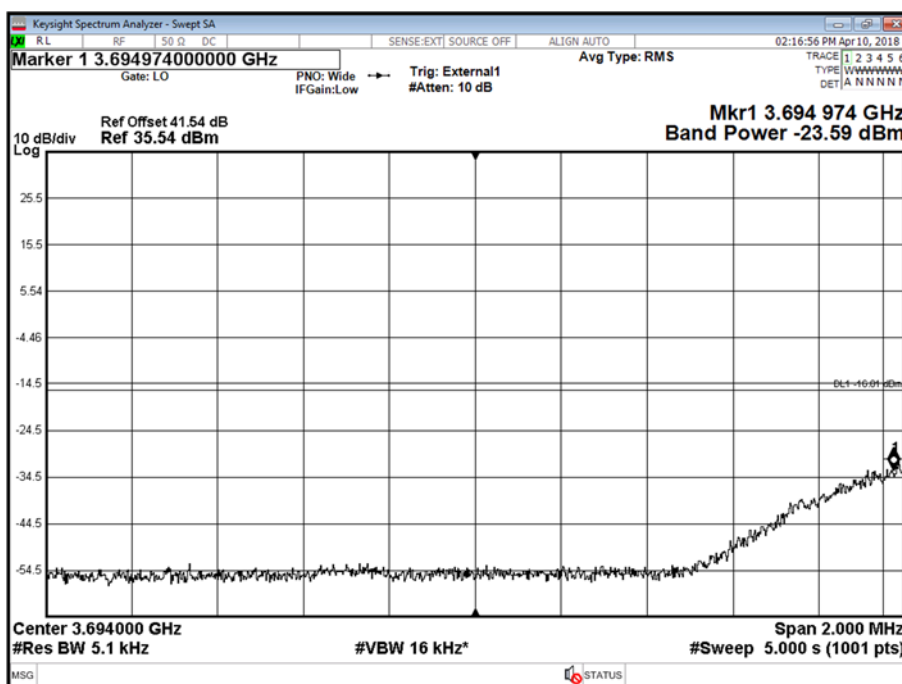
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band mask high - Range High



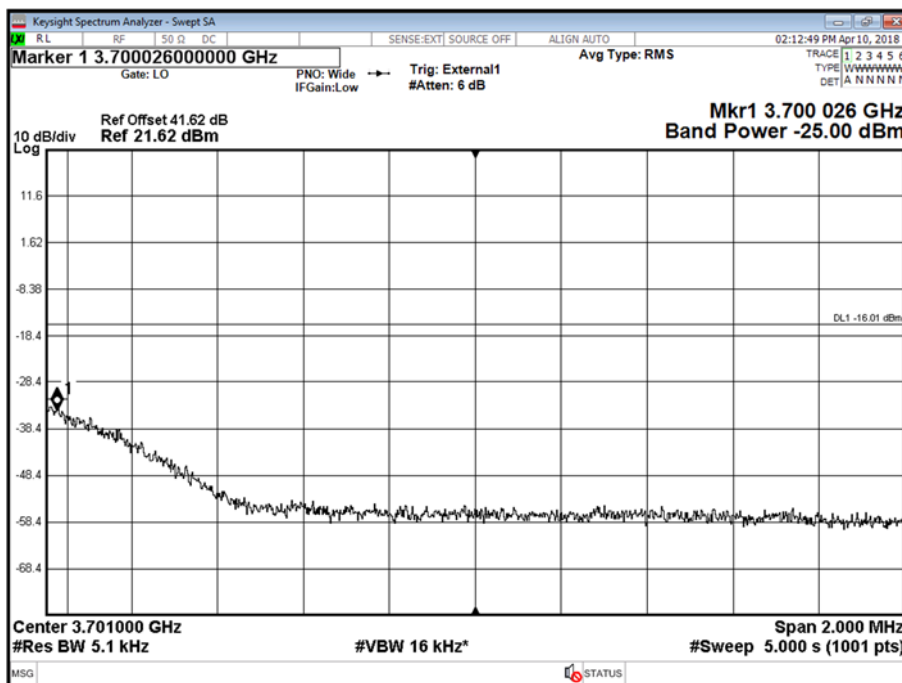
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band mask low - Range Low



Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band edge - Range edge low



Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band edge - Range edge high



Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band mask high - Range High

