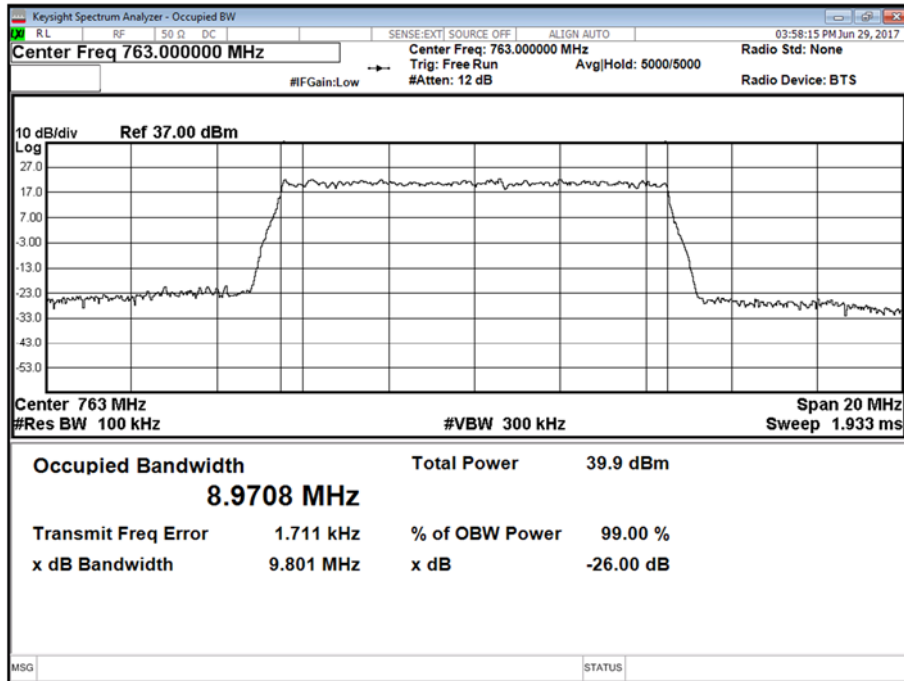


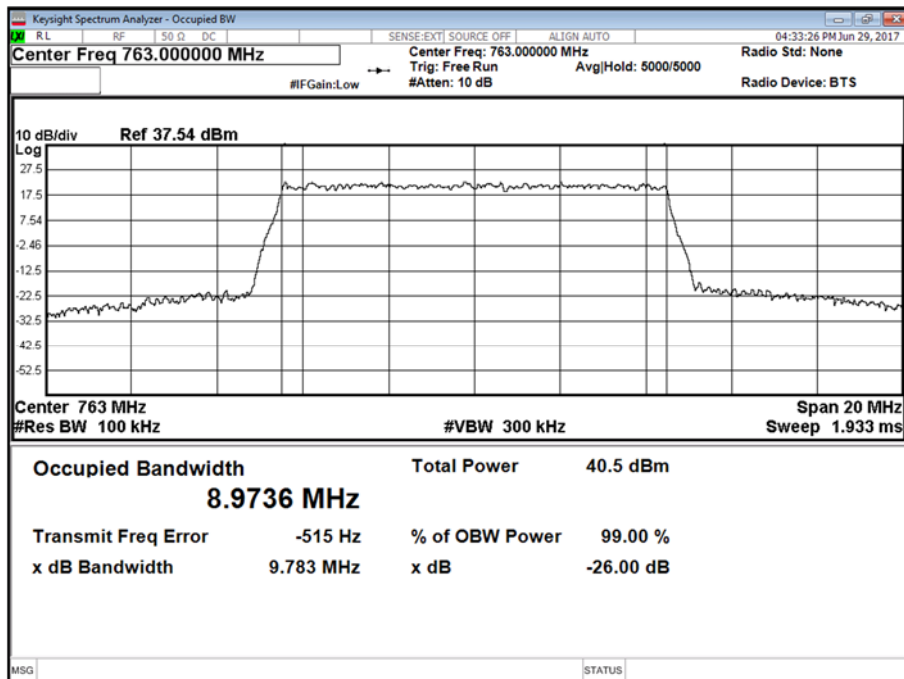


Product Service

Antenna A - LTE Modulation 16QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position B



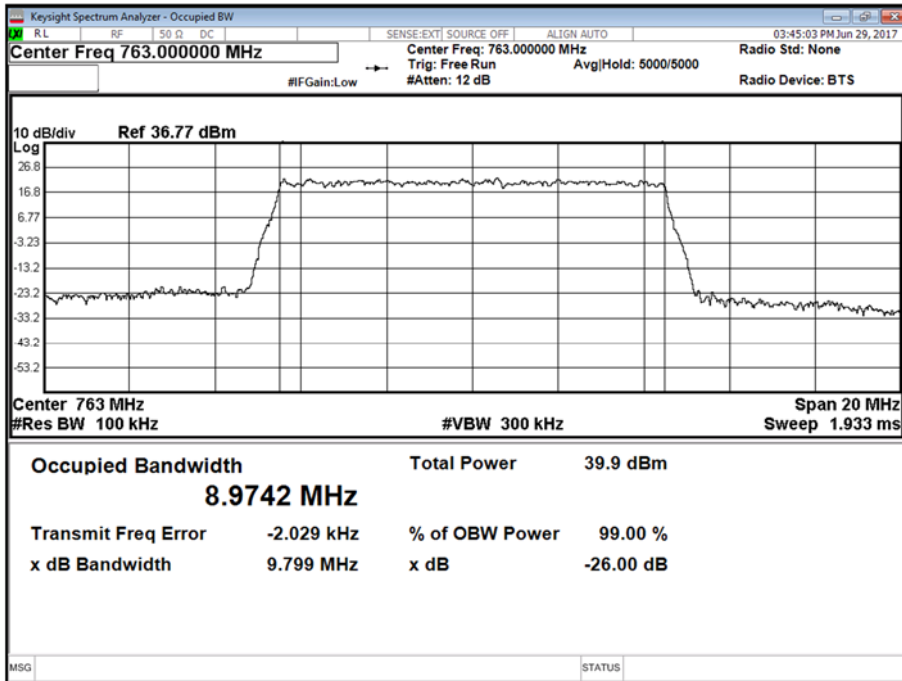
Antenna B - LTE Modulation 16QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position B



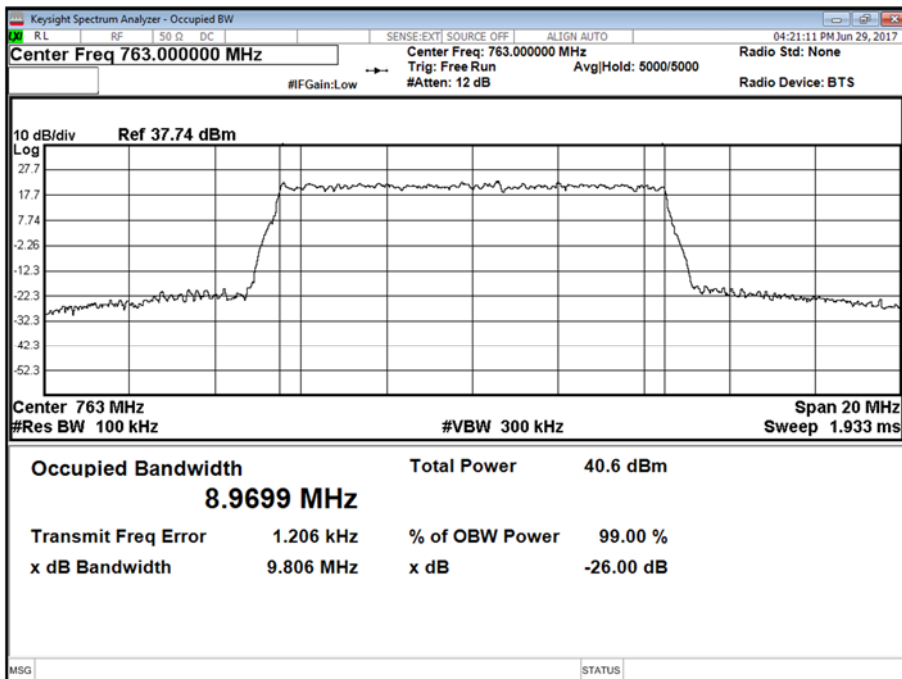


Product Service

Antenna A - LTE Modulation 16QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M



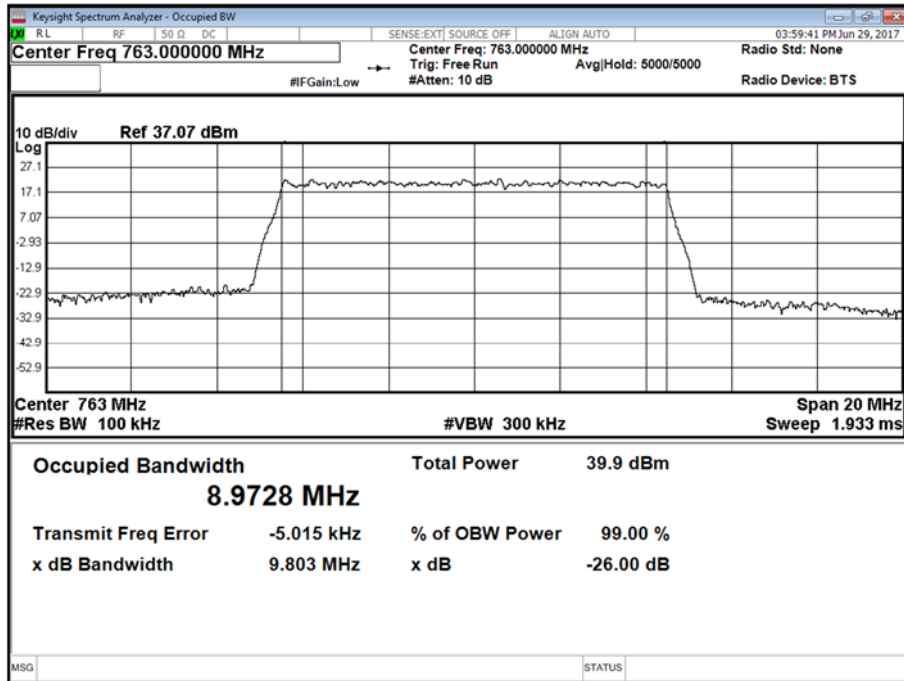
Antenna B - LTE Modulation 16QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M



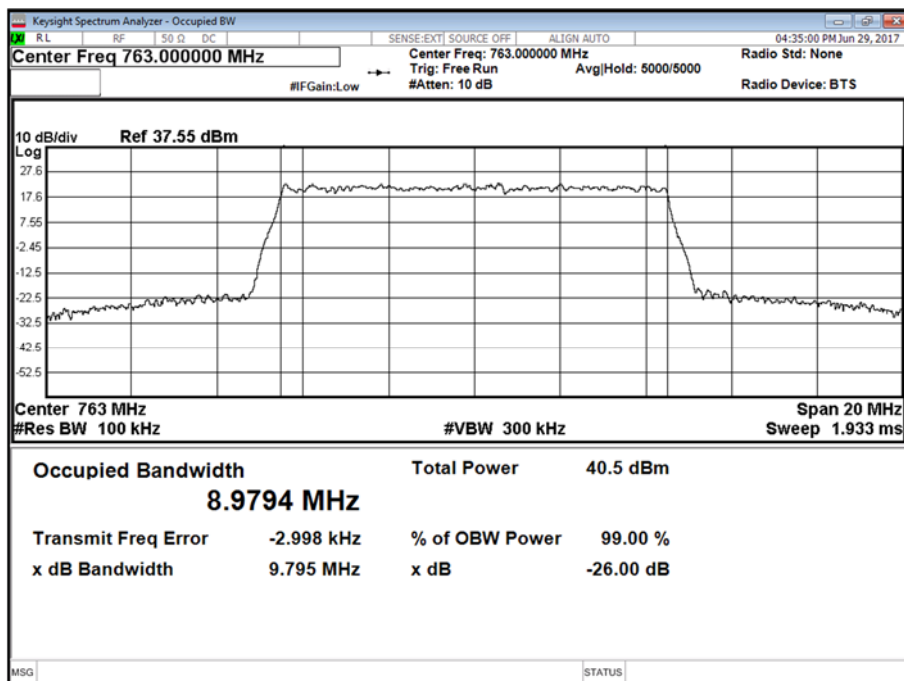


Product Service

Antenna A - LTE Modulation 16QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position T



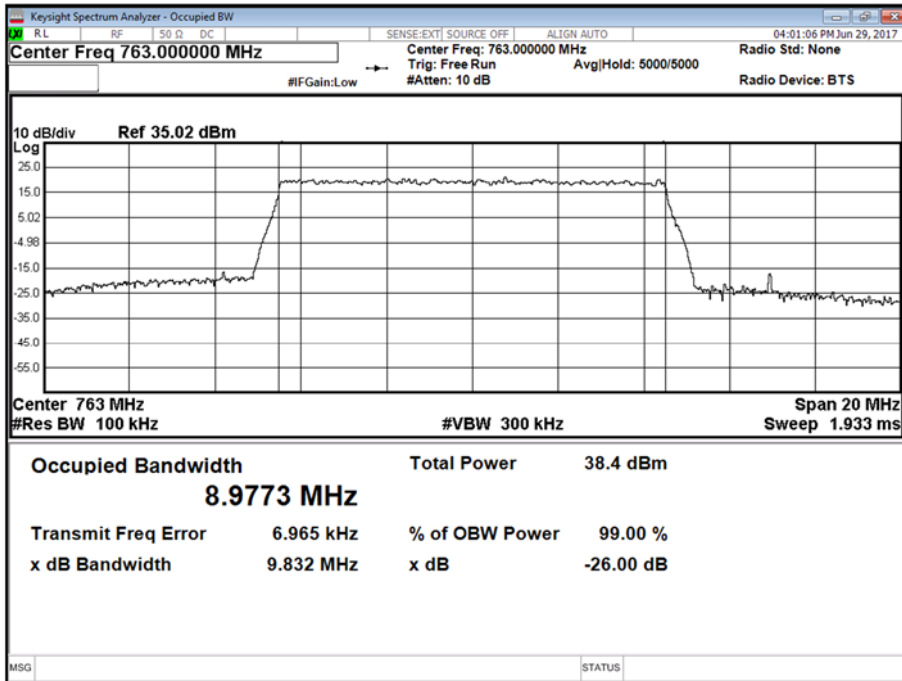
Antenna B - LTE Modulation 16QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position T



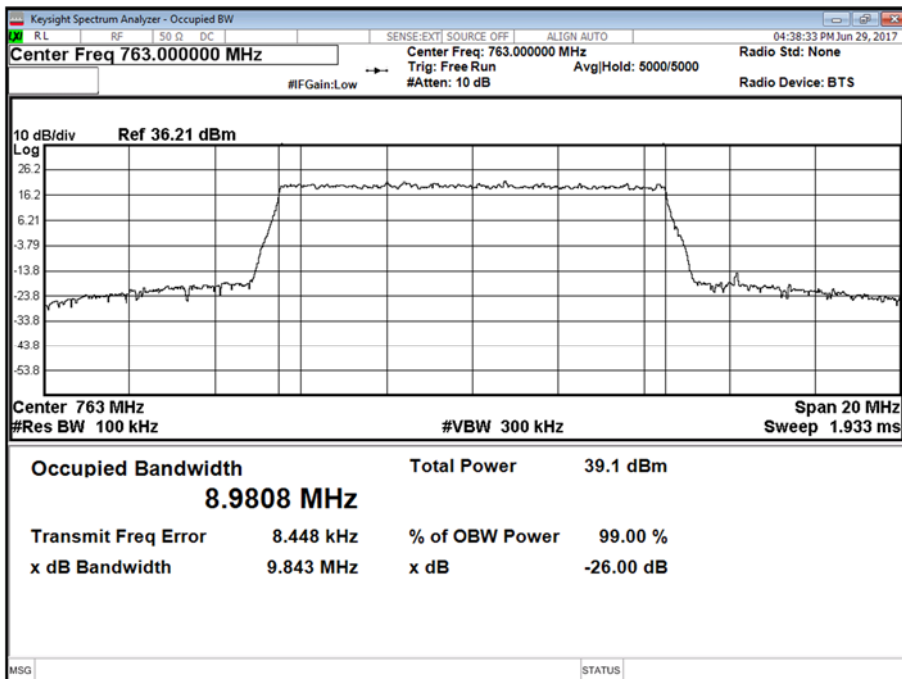


Product Service

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



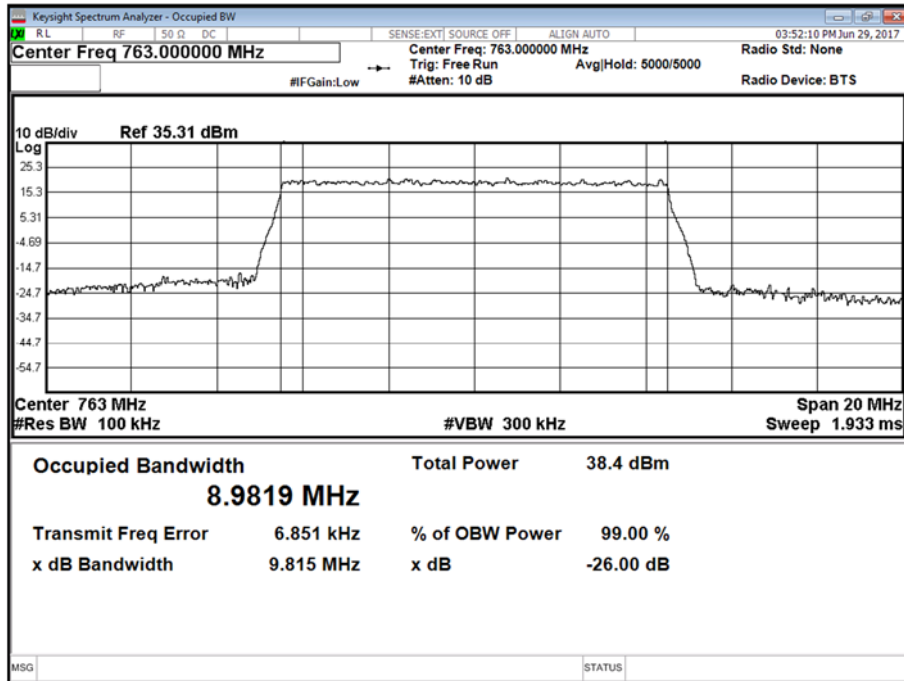
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position B



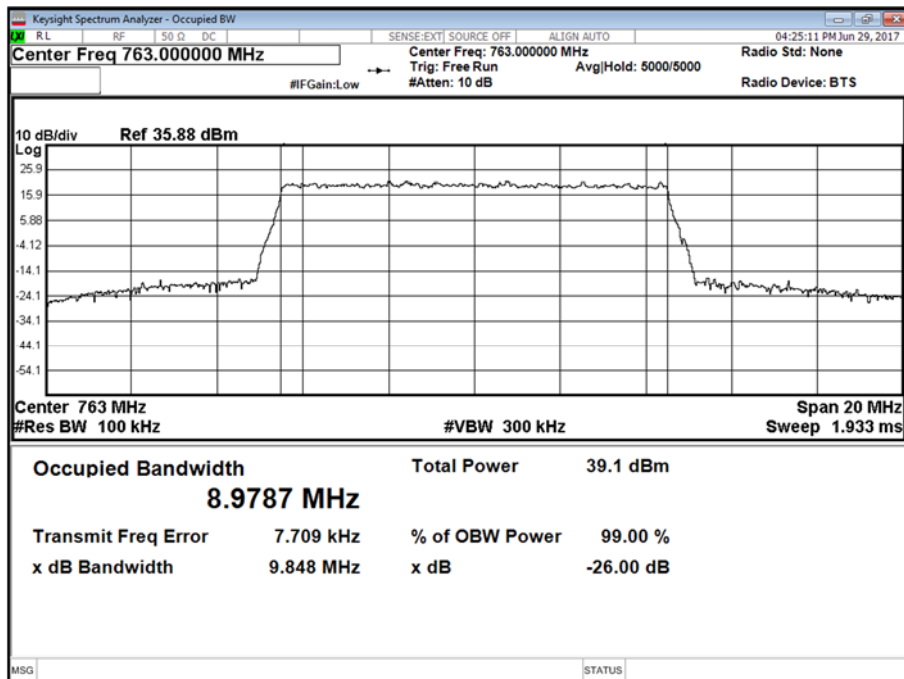


Product Service

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



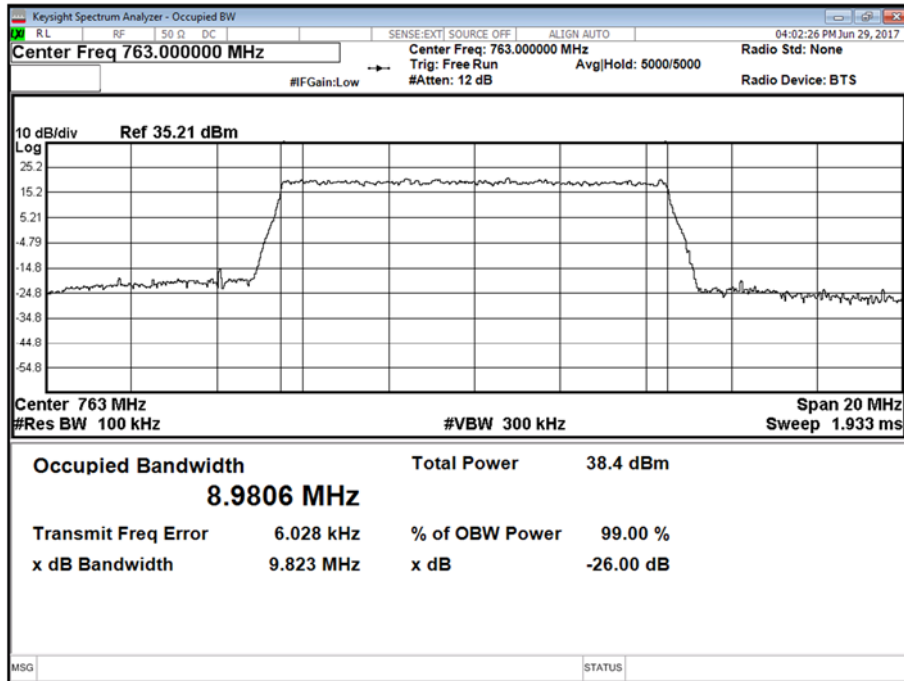
Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M



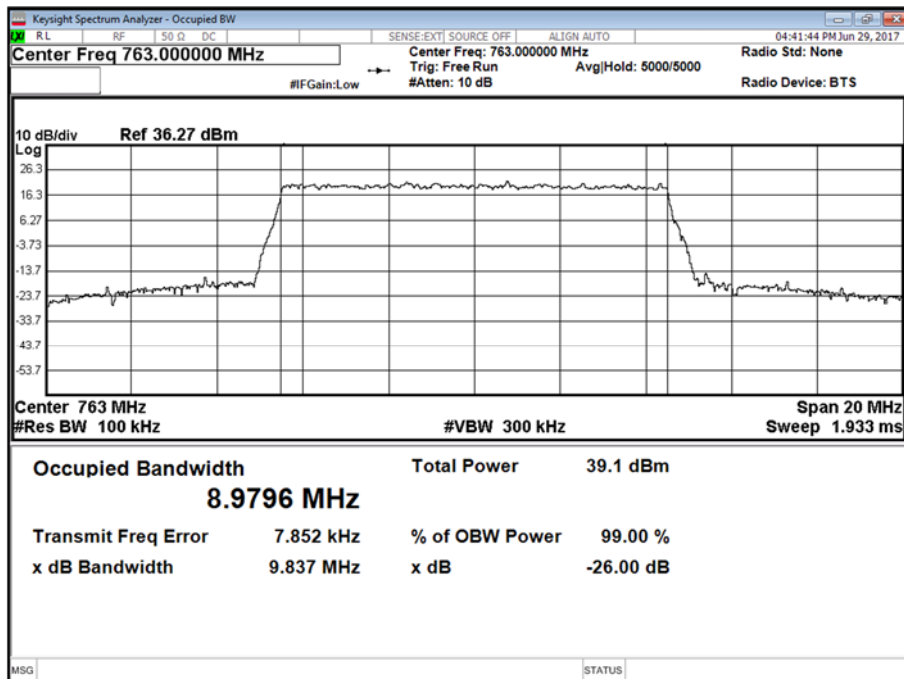


Product Service

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

## **2.3 BAND EDGE**

### **2.3.1 Specification Reference**

FCC CFR 47 Part 2, Clause 2.1051  
FCC CFR 47 Part 90, Clause 90.543(e)(1)(2)(3)

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

29 June 2017 - Modification State 0

### **2.3.3 Test Equipment Used**

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

### **2.3.4 Environmental Conditions**

Ambient Temperature	22.5°C
Relative Humidity	55.2%

### **2.3.5 Test Method**

All measurements were made in accordance with FCC KDB 971168 D01 Clause 6.

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. The Spectrum Analyser RBW was adjusted to be at least 1% of the measured 26 dB Bandwidth. Using an RMS detector, the frequency spectrum up to 1 MHz away from the Band Edge was investigated. The display line was set to the worst case accounting for 2 Port MIMO operation in accordance with KDB 662911 D01. This equated to  $43 + 10\log(P) - 10\log(2) = -16\text{dBm}$ .



Product Service

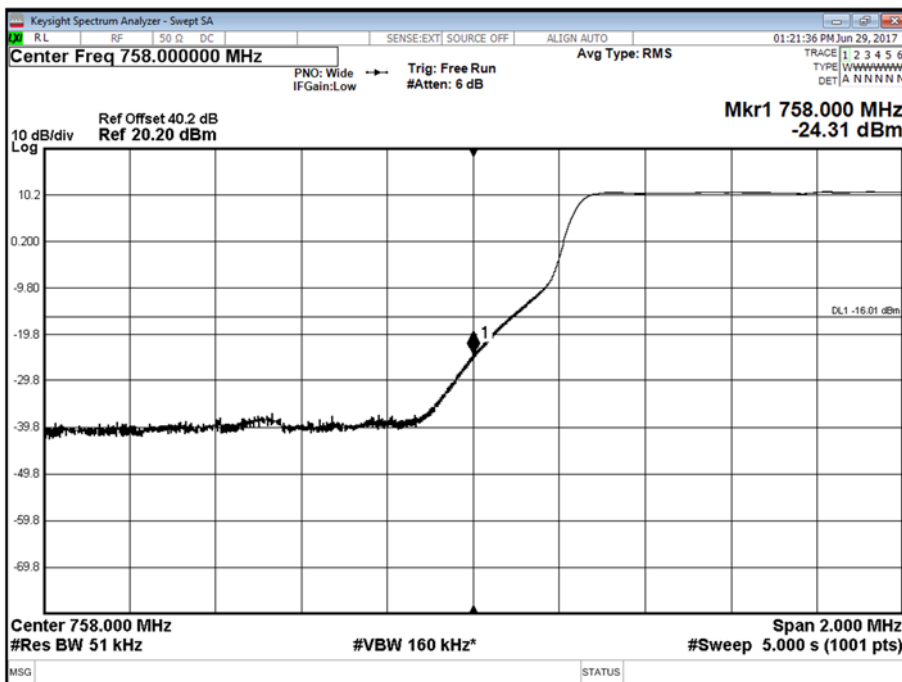
### 2.3.6 Test Results

#### Configuration 1

Maximum Output Power 30 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	QPSK	5.0 MHz	760.5	765.5
B	QPSK	5.0 MHz	760.5	765.5
A	16QAM	5.0 MHz	760.5	765.5
B	16QAM	5.0 MHz	760.5	765.5
A	64QAM	5.0 MHz	760.5	765.5
B	64QAM	5.0 MHz	760.5	765.5
A	QPSK	10.0 MHz	763.0	763.0
B	QPSK	10.0 MHz	763.0	763.0
A	16QAM	10.0 MHz	763.0	763.0
B	16QAM	10.0 MHz	763.0	763.0
A	64QAM	10.0 MHz	763.0	763.0
B	64QAM	10.0 MHz	763.0	763.0

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

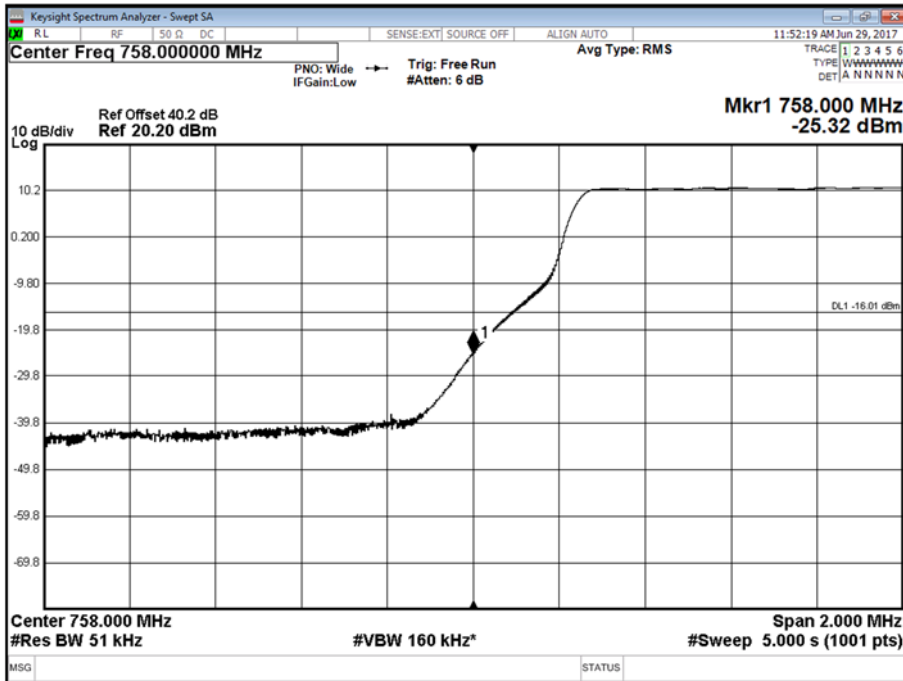




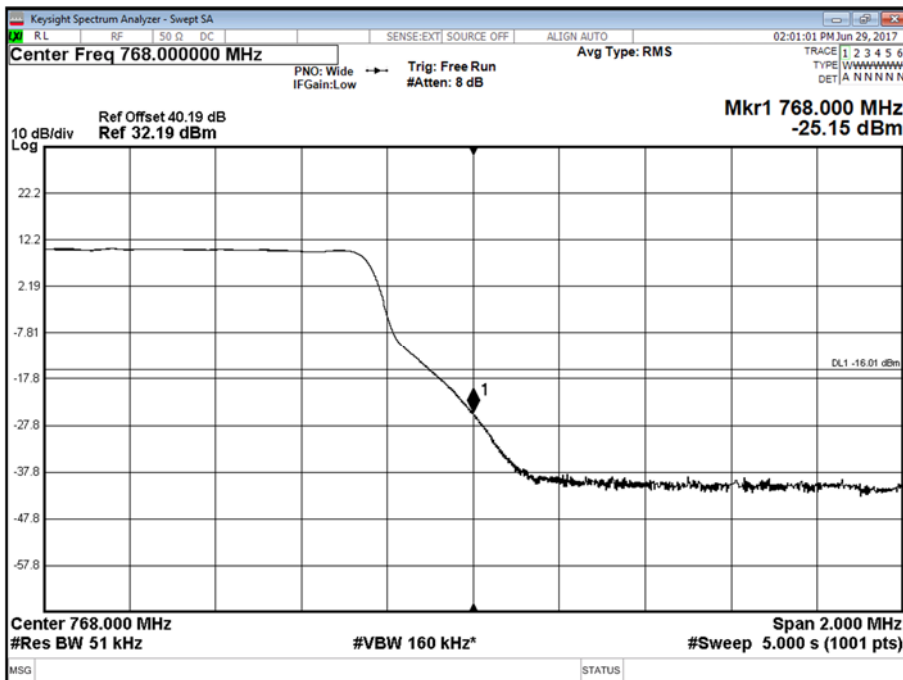


Product Service

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



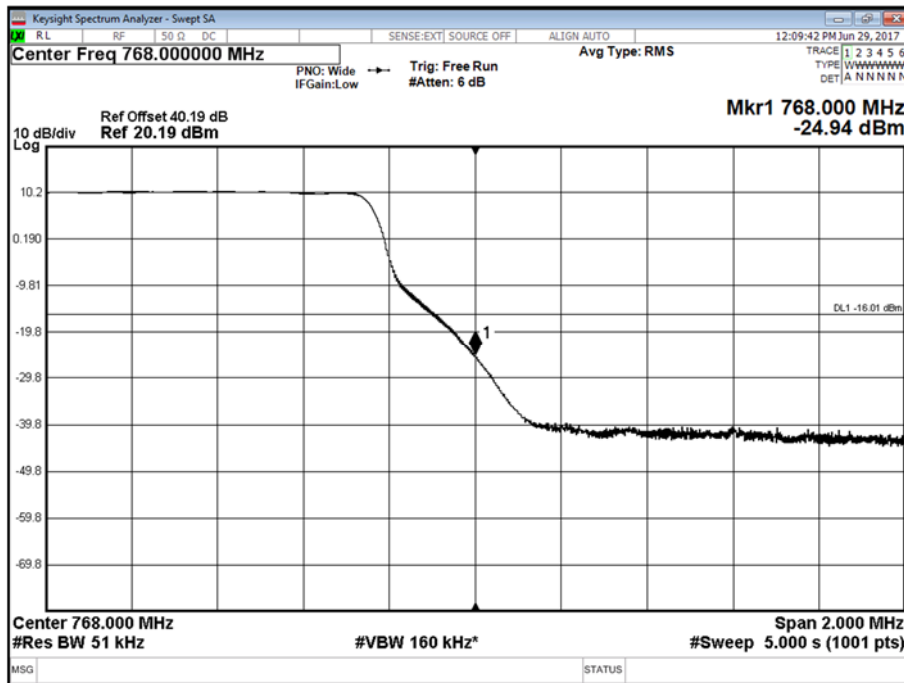
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



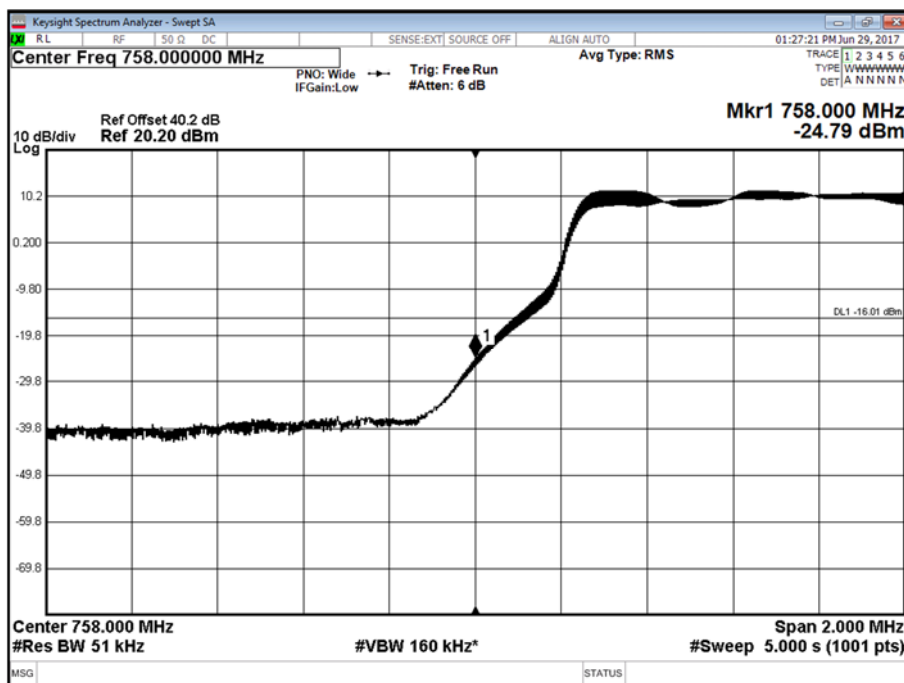


Product Service

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



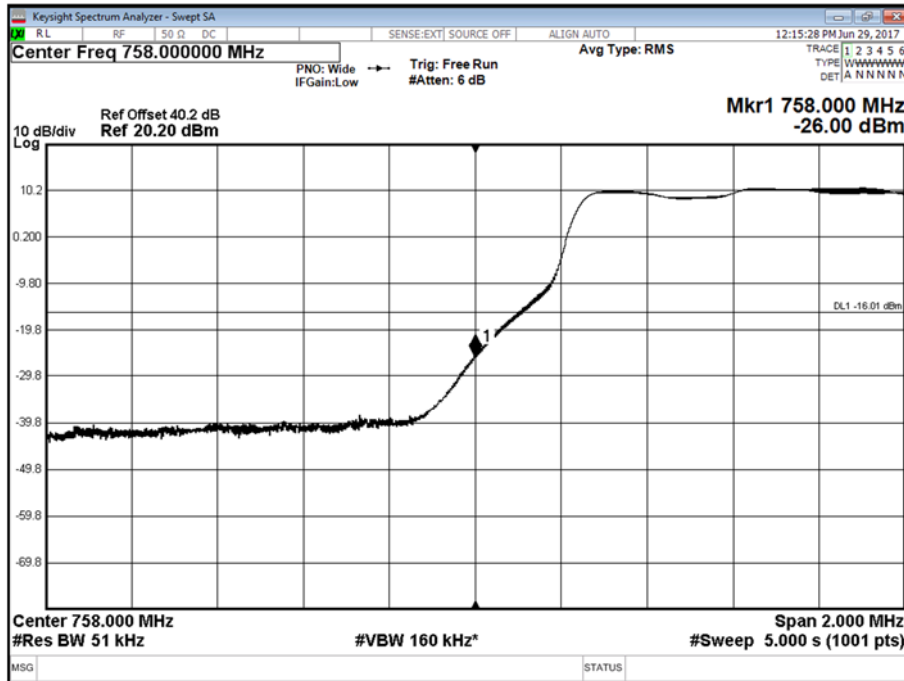
Antenna A - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B



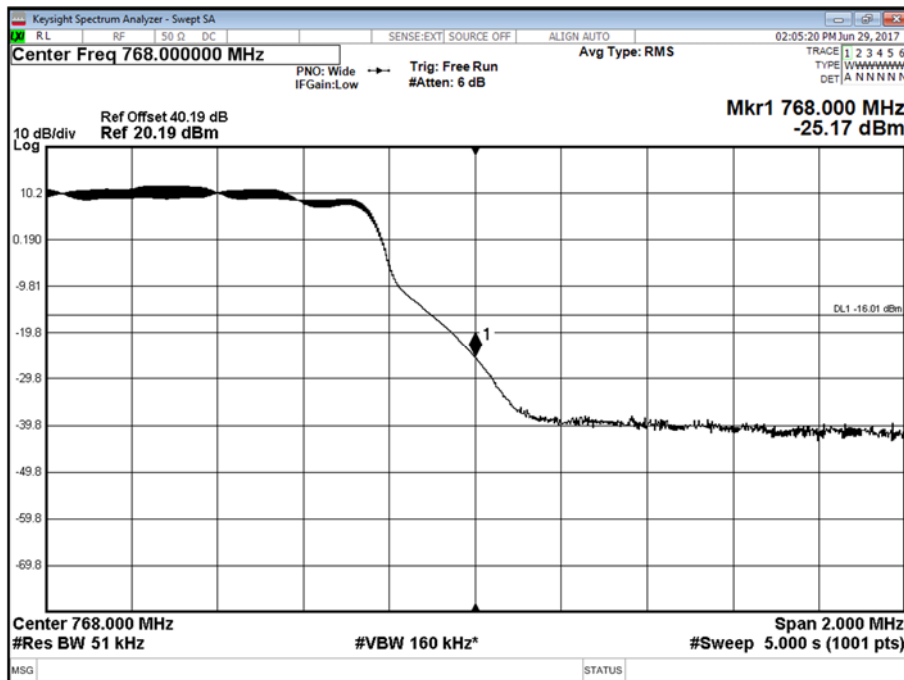


Product Service

Antenna B - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B



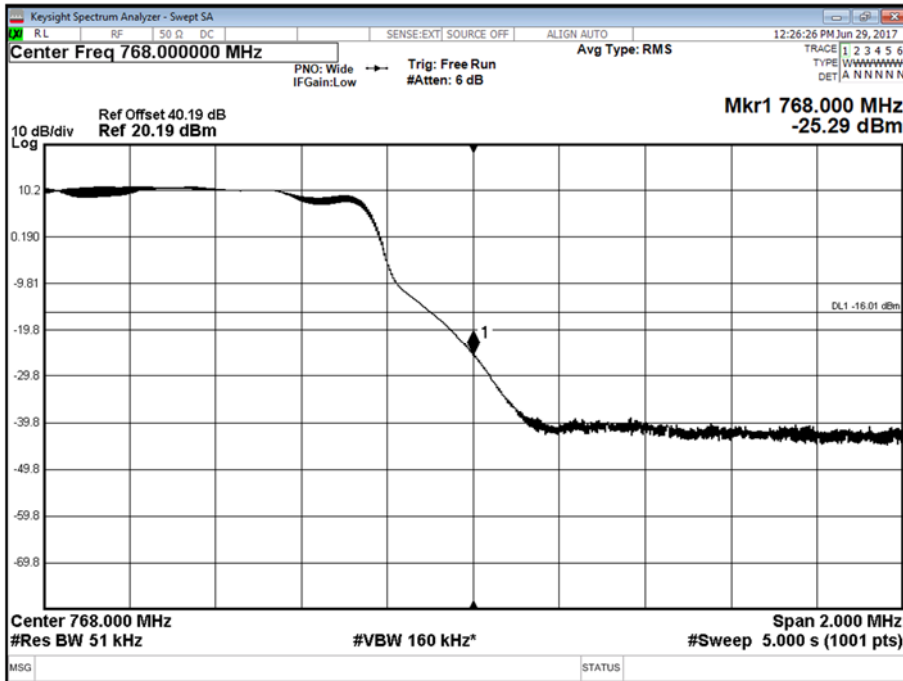
Antenna A - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



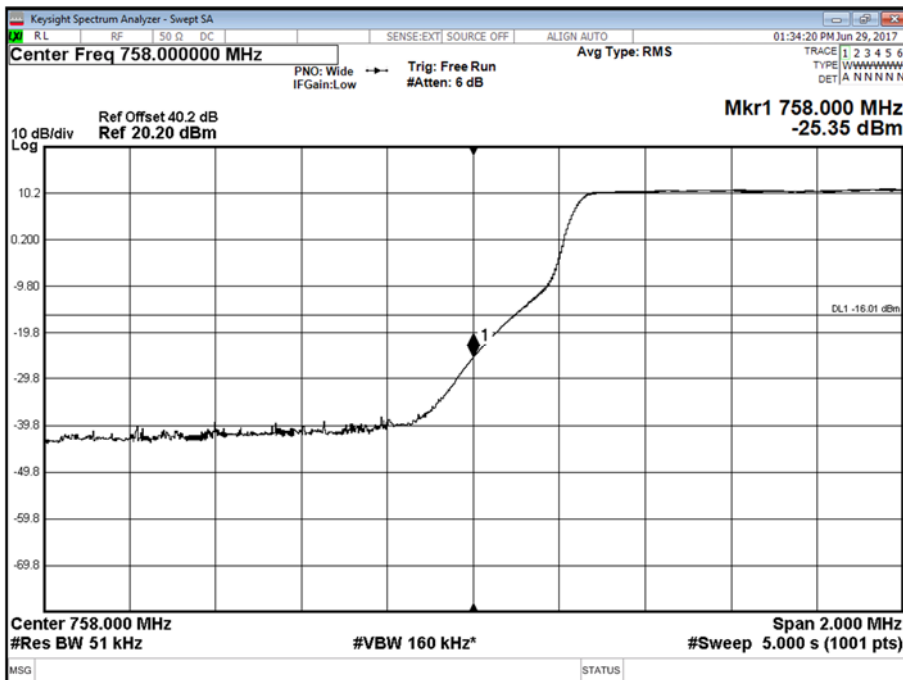


Product Service

Antenna B - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



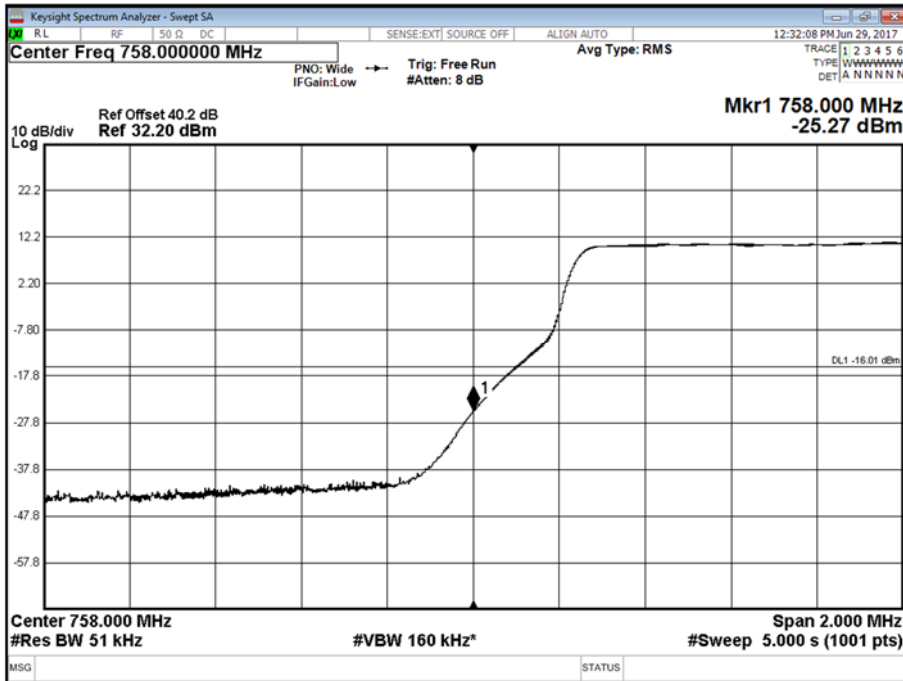
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B



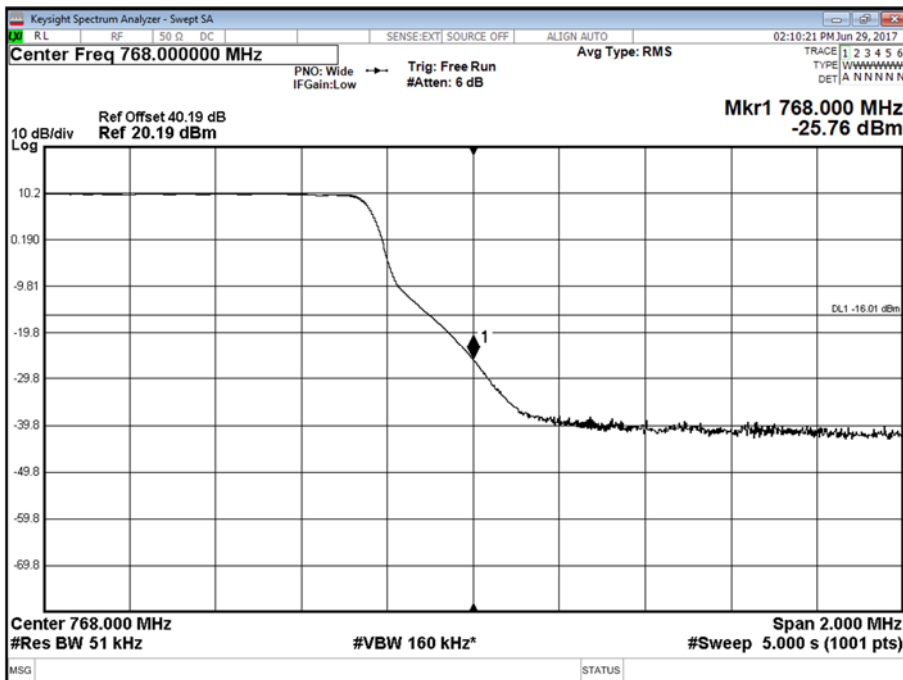


Product Service

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



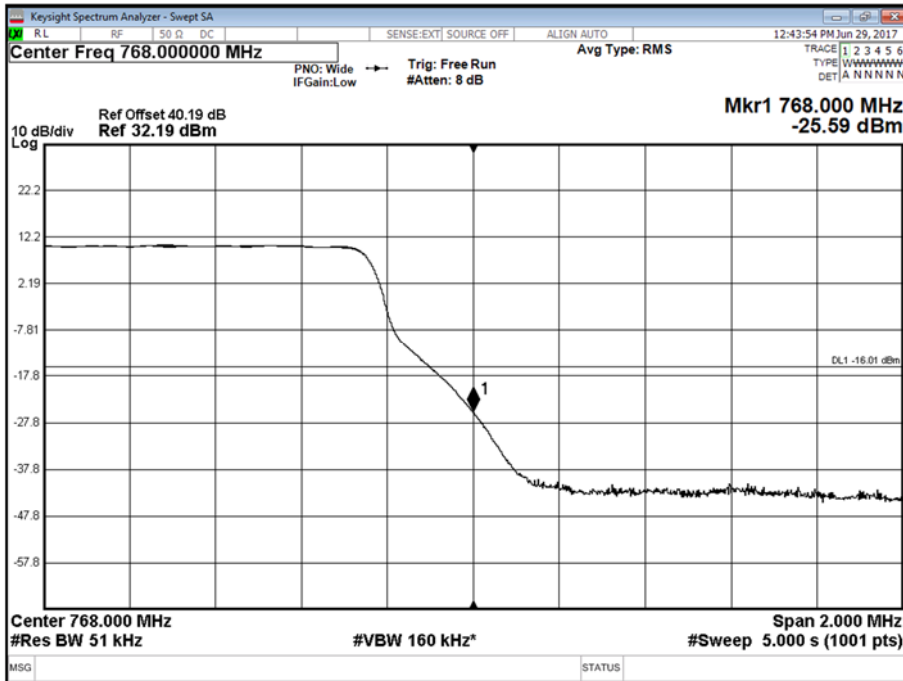
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



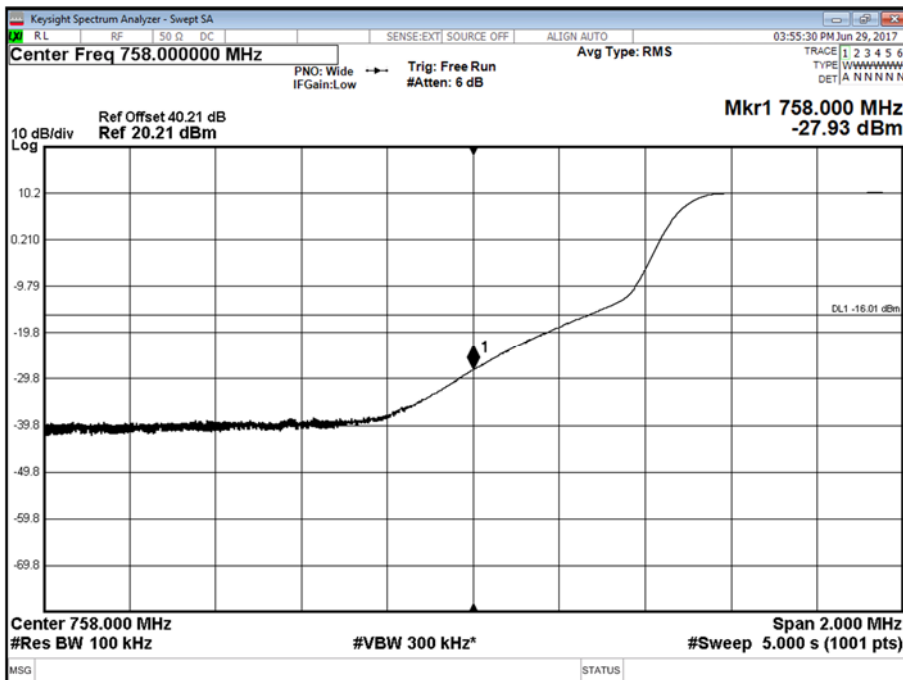


Product Service

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



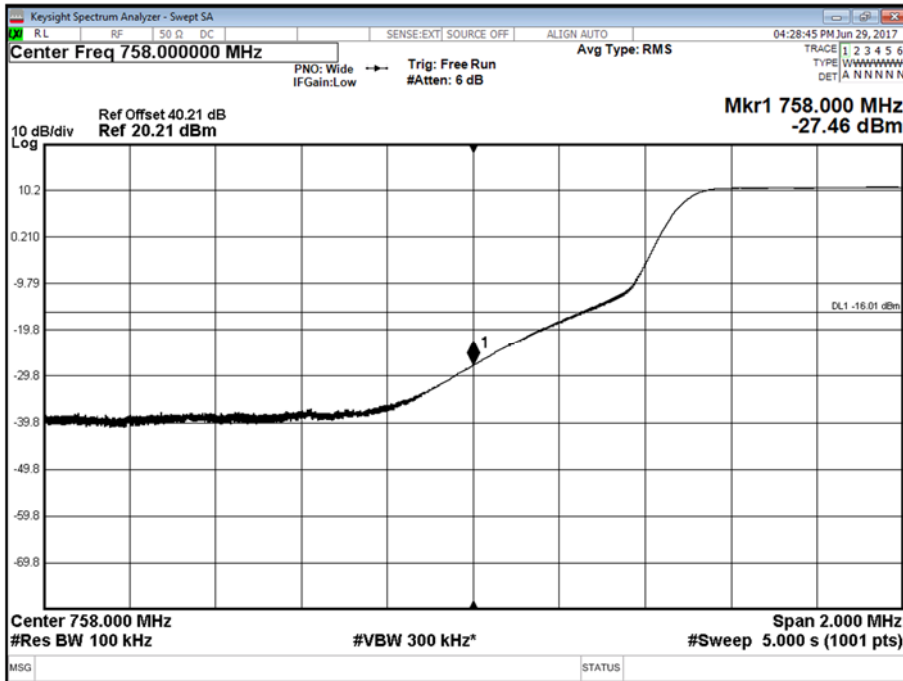
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position M



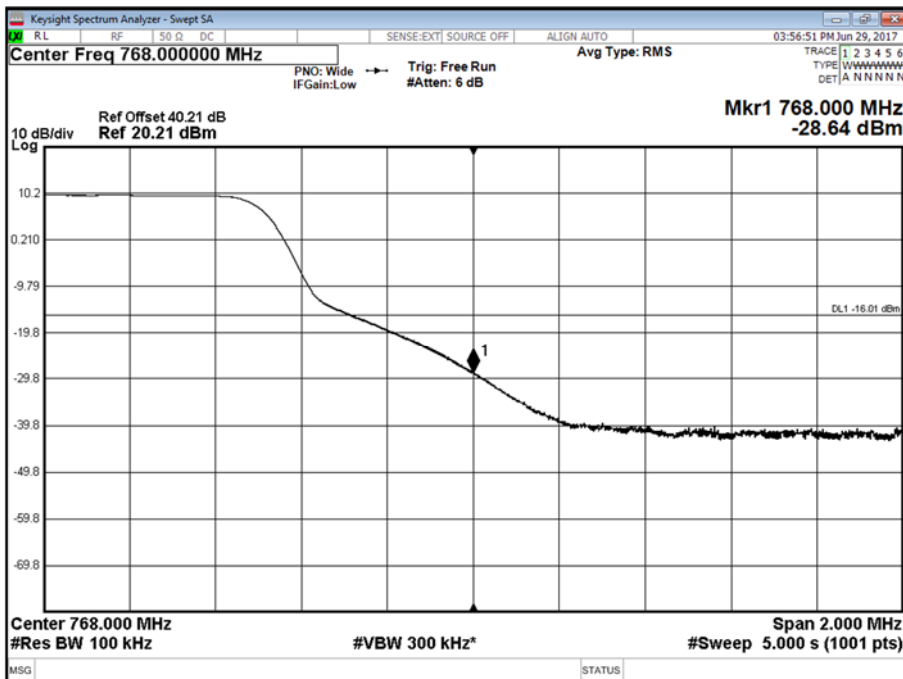


Product Service

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



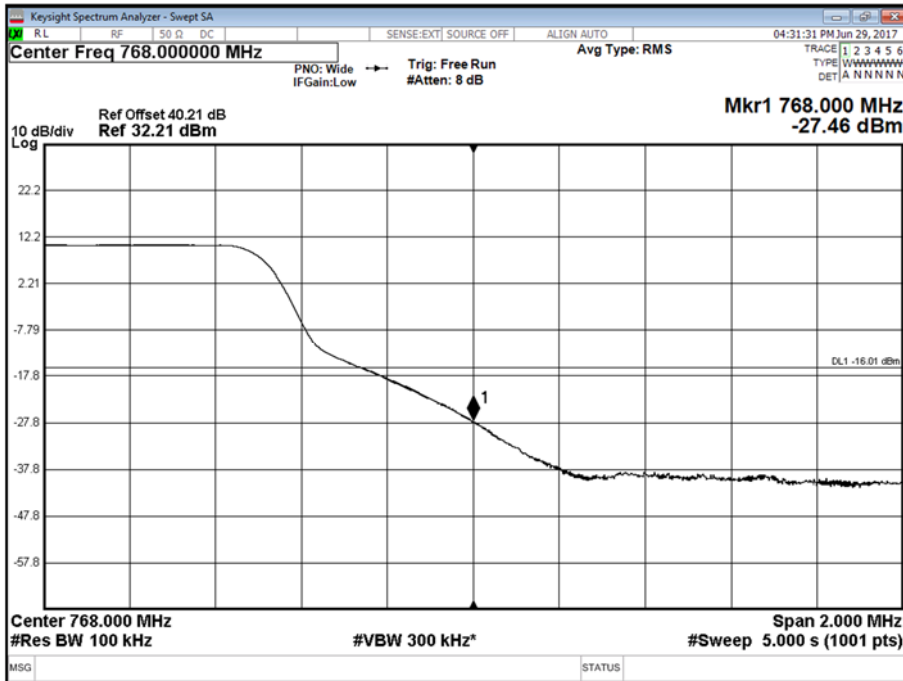
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 10.0 MHz - Channel Position M



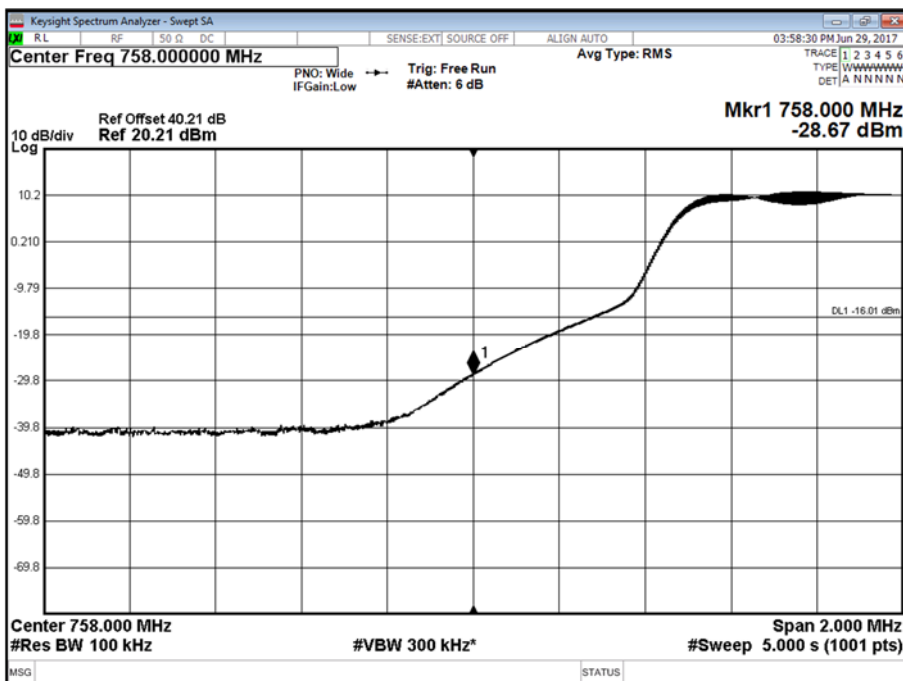


Product Service

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



Antenna A - LTE Modulation 16QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M

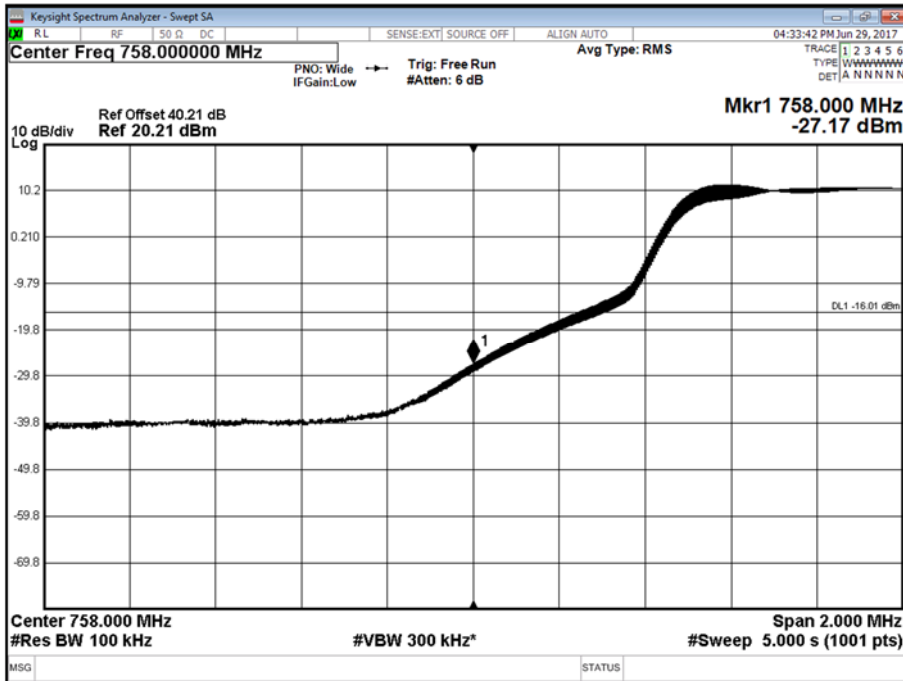




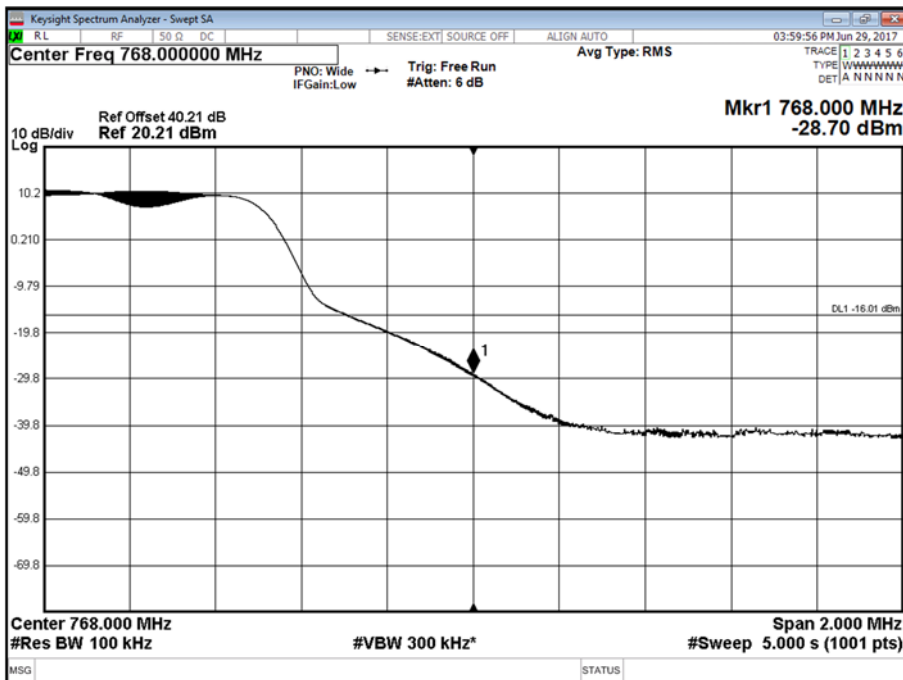


Product Service

Antenna B - LTE Modulation 16QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M



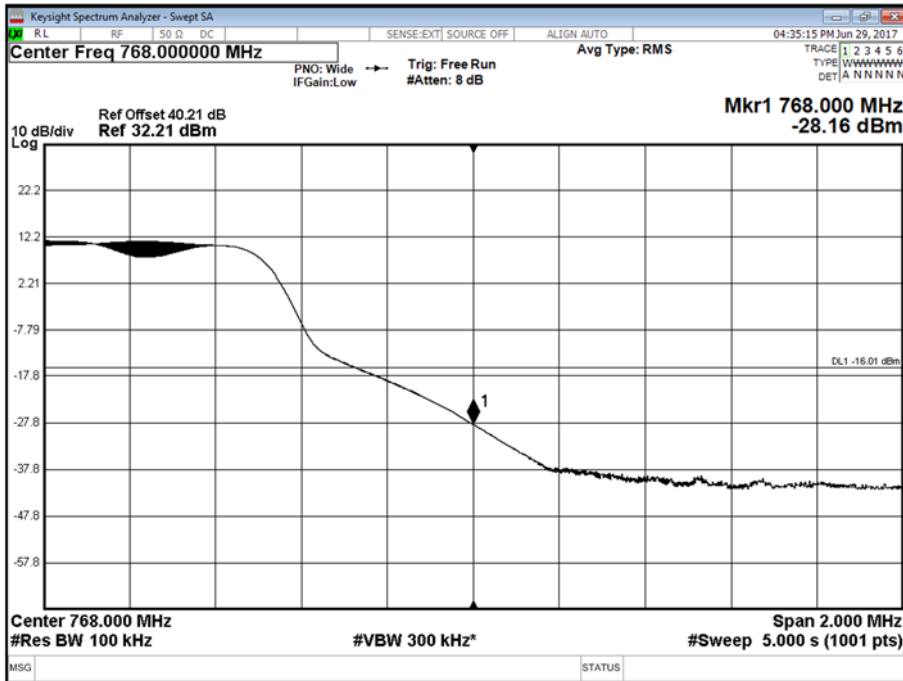
Antenna A - LTE Modulation 16QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M



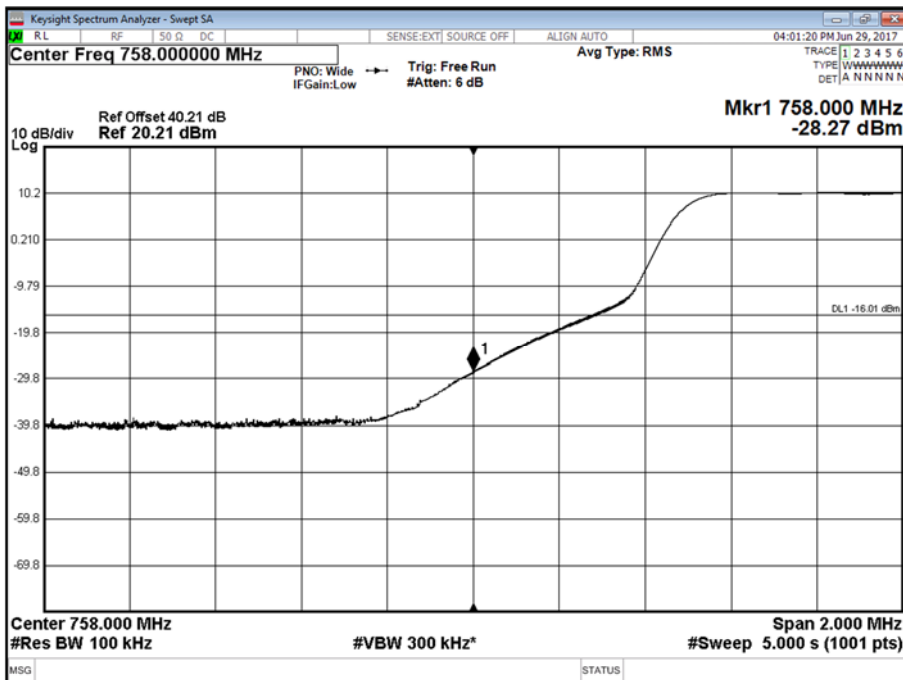


Product Service

Antenna B - LTE Modulation 16QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M



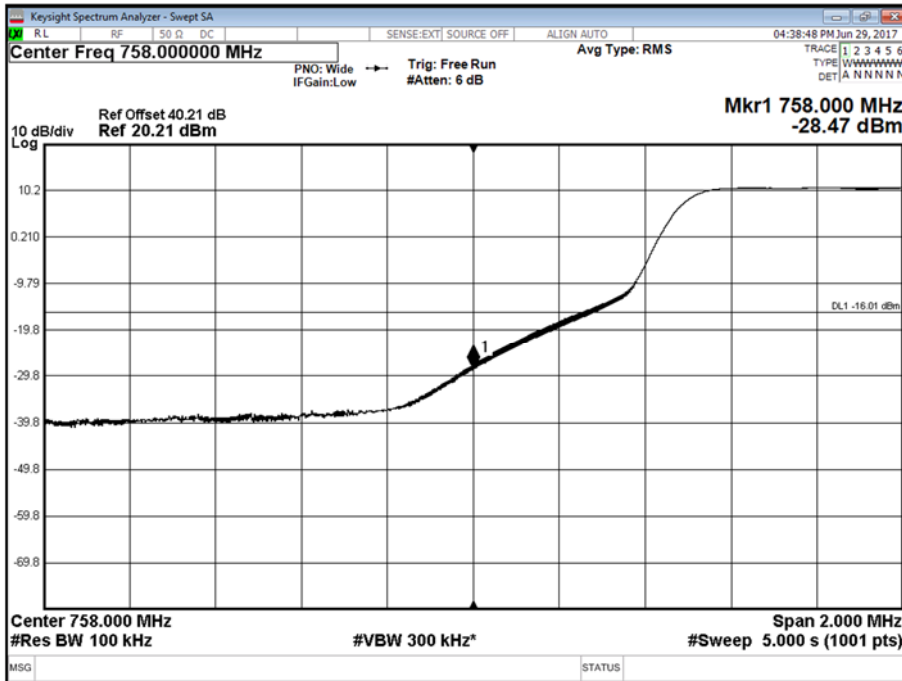
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M



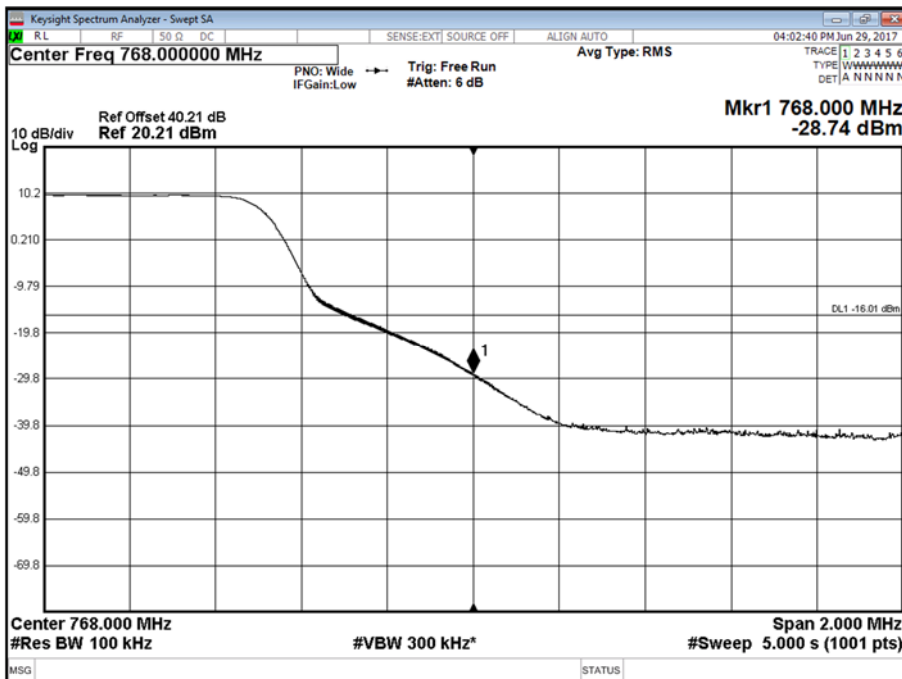


Product Service

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



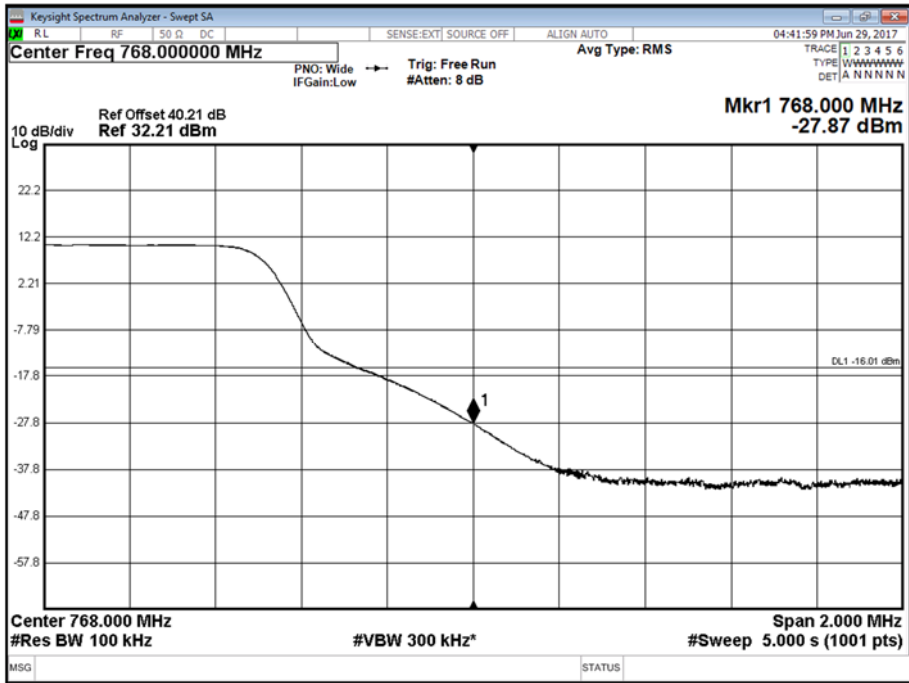
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M





Product Service

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



Limit	-13dBm -16 dBm (2 port MIMO)
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## 2.4 TRANSMITTER CONDUCTED SPURIOUS EMISSIONS

### 2.4.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051  
FCC CFR 47 Part 90, Clause 90.543(e)(1)(2)(3)(f)

### 2.4.2 Date of Test and Modification State

29 June 2017 - 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 22.5°C  
Relative Humidity 55.2%

### 2.4.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01 Clause 6.

The EUT was connected to a Spectrum Analyser via 40 dB of attenuation for measurements below 1.5 GHz and up to 8 GHz using 30 dB of attenuation and a high pass filter. Prior to testing, a Network Analyser was used to calibrate the path loss between the EUT and the Spectrum Analyser. The worst case path loss in the measured ranges was entered as a reference level offset. Over the measured ranges, the RBW was set to 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 is capable of operating with a single carrier from each port simultaneously. This can be a MIMO mode of operation – Port A and B with the carriers at the same frequency.

The EUT can operate as either a fixed or mobile unit. Plots are shown which show limits for both Fixed and Mobile operation.

#### 769 – 775 MHz and 799 – 805 MHz – Fixed Stations

$$76 + 10\log(P) + 10\log(2) = -49 \text{ dBm}$$

#### 769 – 775 MHz and 799 – 805 MHz – Mobile Stations

$$65 + 10\log(P) + 10\log(2) = -38 \text{ dBm}$$

#### 1559 – 1610 MHz

$$-40 \text{ dBm} - 10\log(2) = -43 \text{ dBm}$$

Outside of the above listed bands:

$$43 + 10\log(P) + 10\log(2) = -16 \text{ dBm}$$



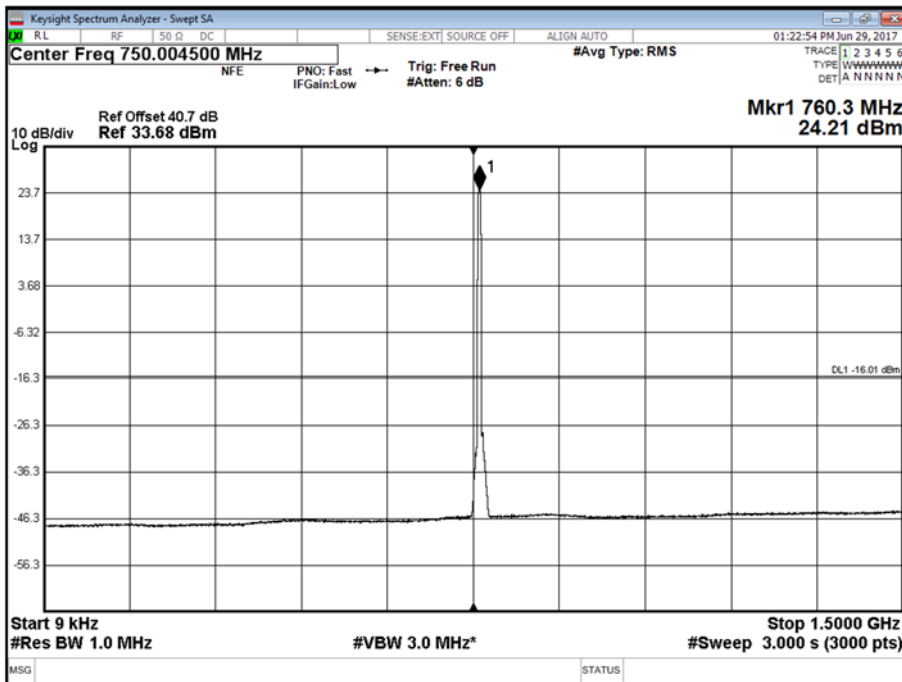
Product Service

## 2.4.6 Test Results

Configuration 1

Maximum Output Power 30 dBm

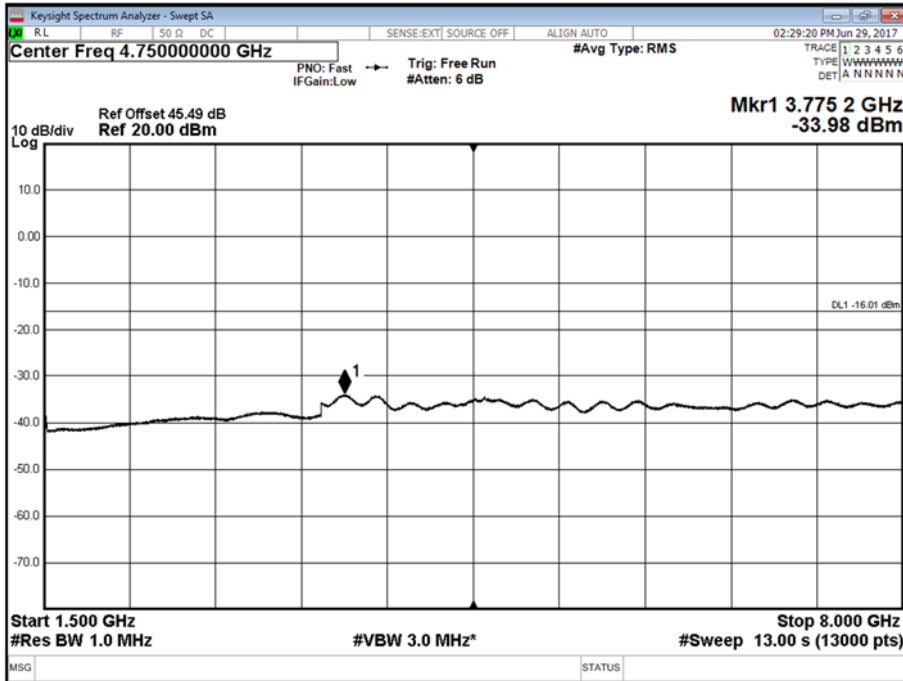
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band 1 - Range 0.009 to 1500 MHz





Product Service

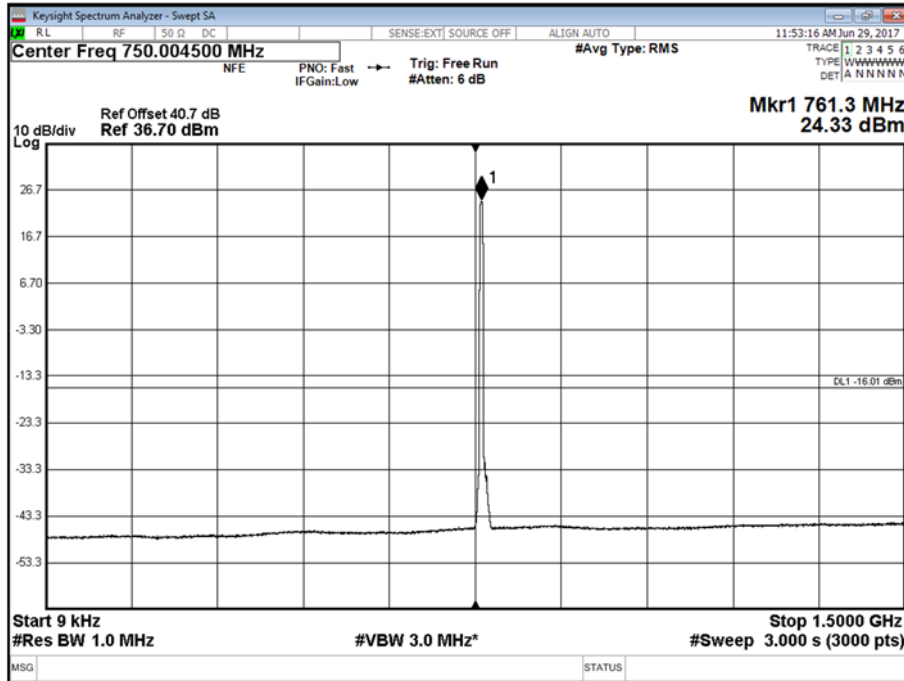
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band 2 - Range 1500 to 8000 MHz



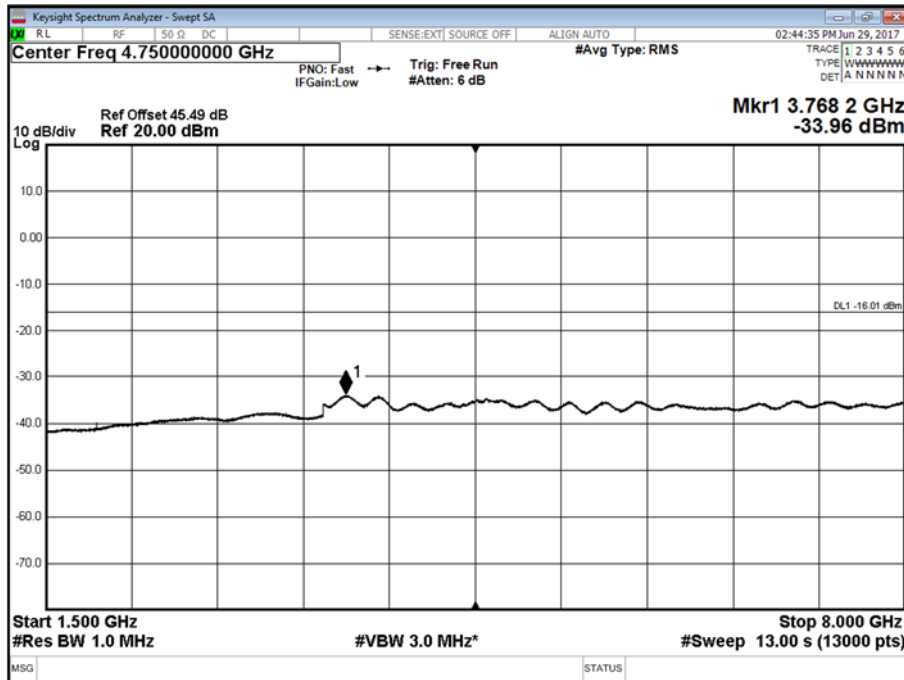


Product Service

Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band 1 - Range 0.009 to 1500 MHz



Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band 2 - Range 1500 to 8000 MHz

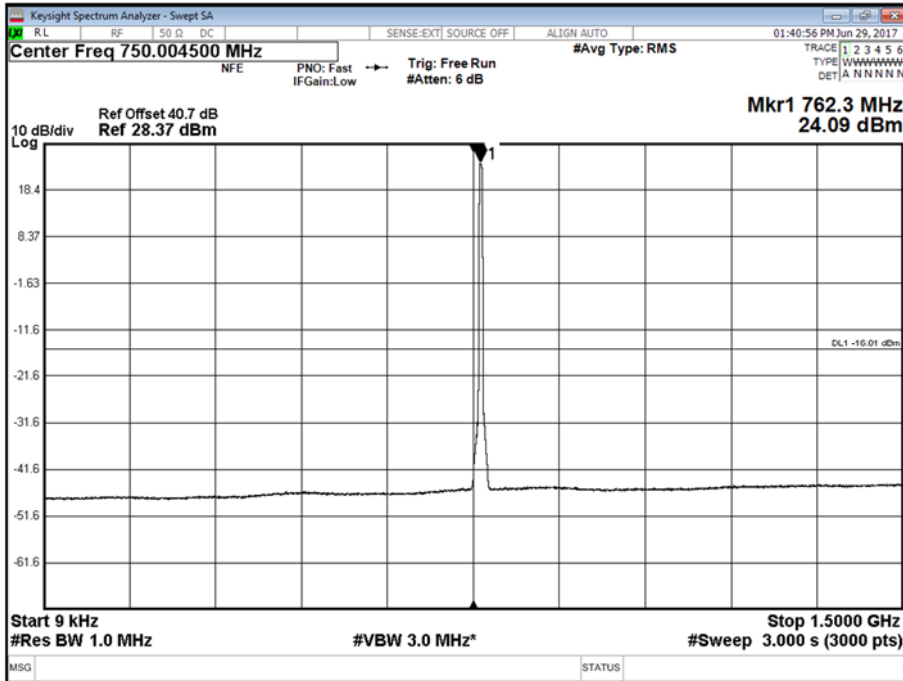




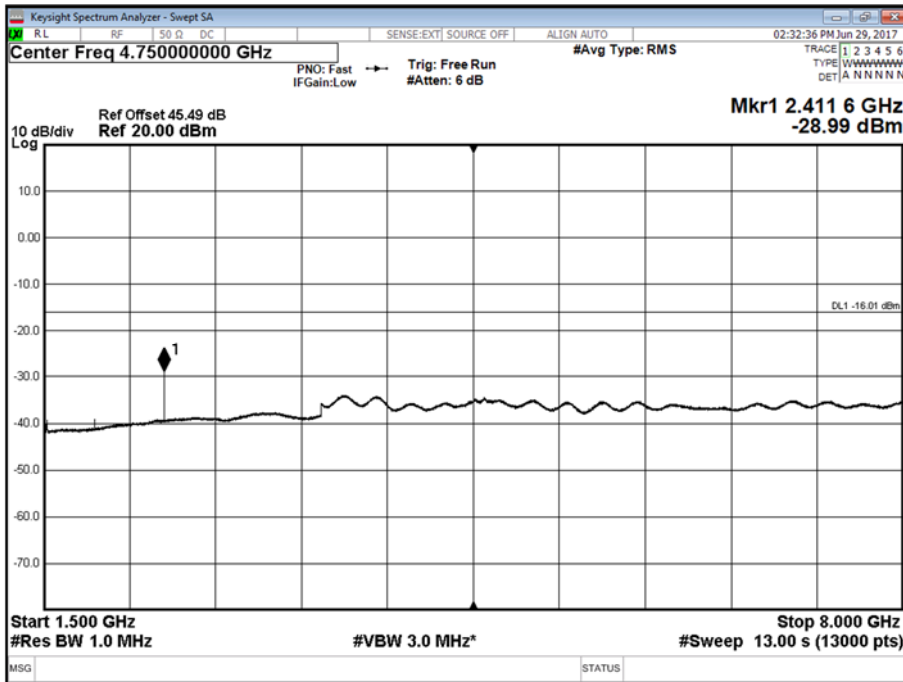


Product Service

Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1500 MHz



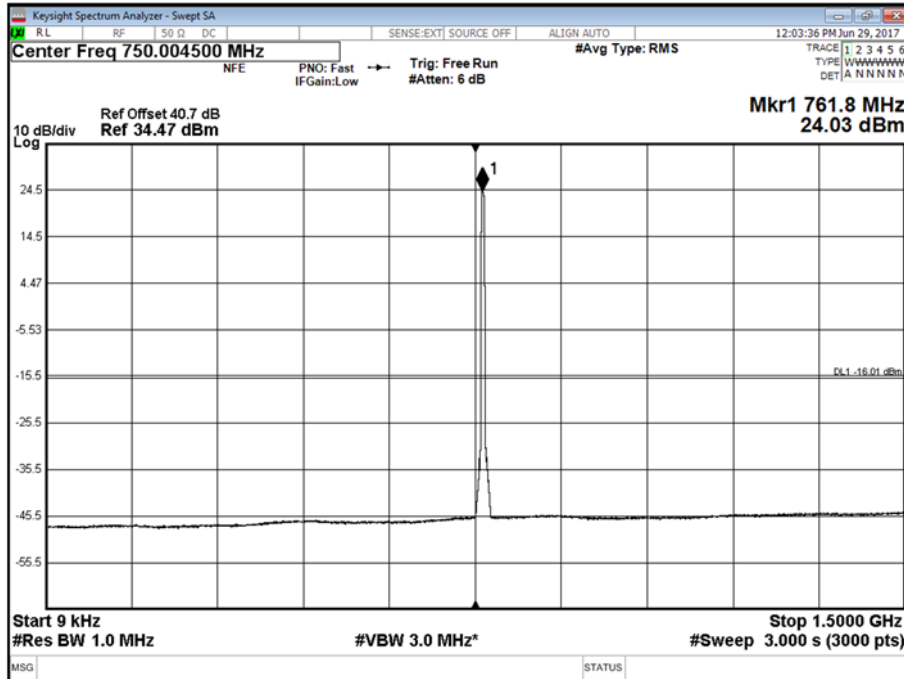
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1500 to 8000 MHz



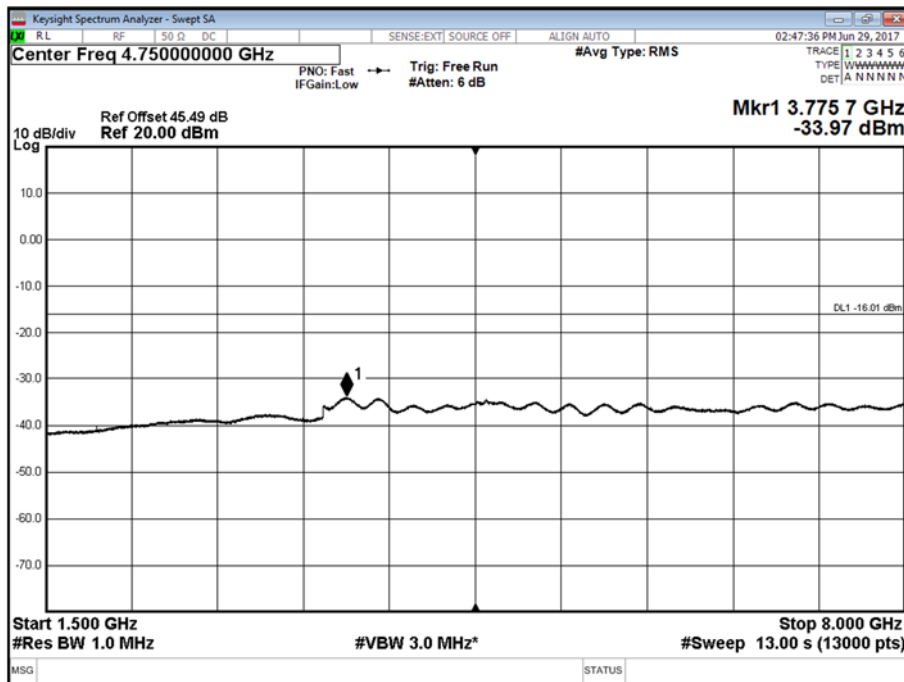


Product Service

Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1500 MHz



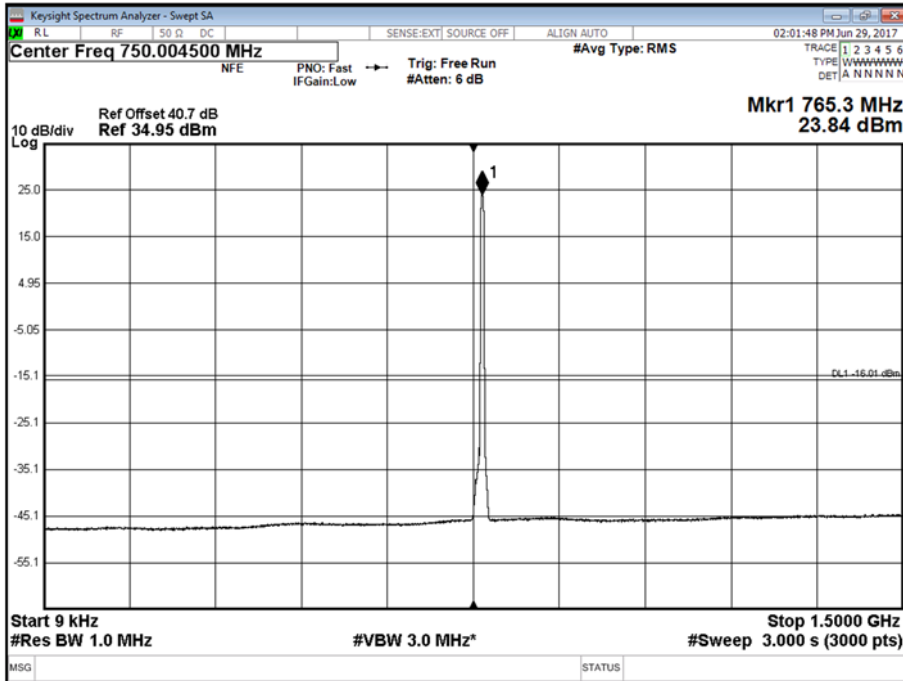
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1500 to 8000 MHz



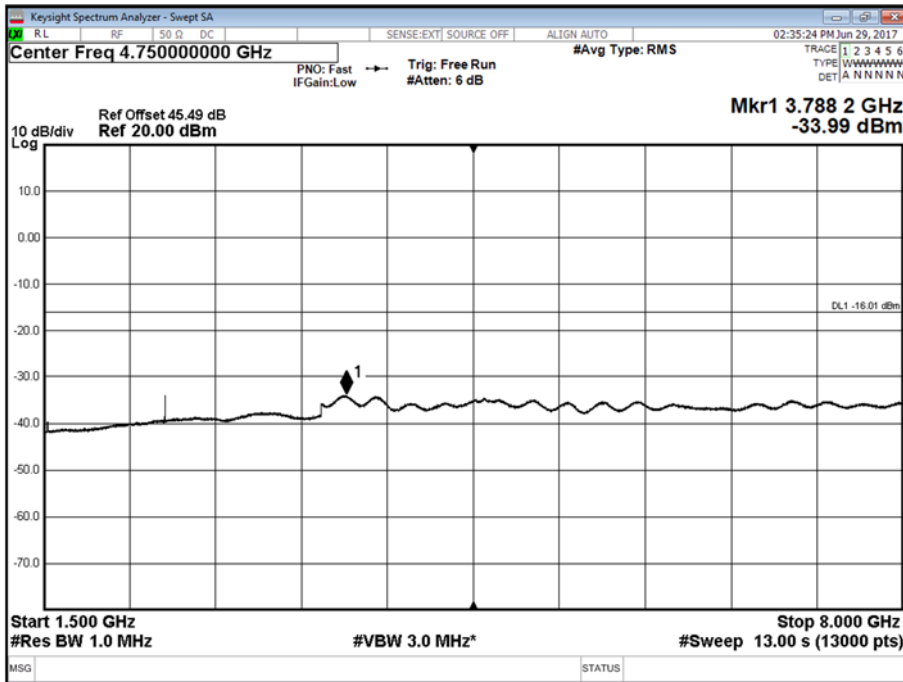


Product Service

Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band 1 - Range 0.009 to 1500 MHz



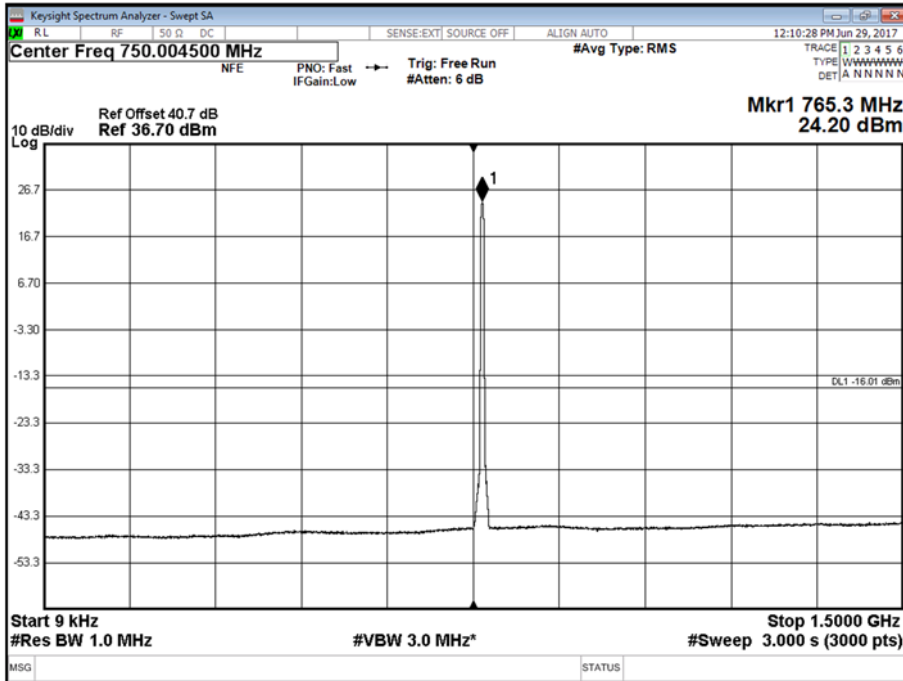
Antenna A - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band 2 - Range 1500 to 8000 MHz



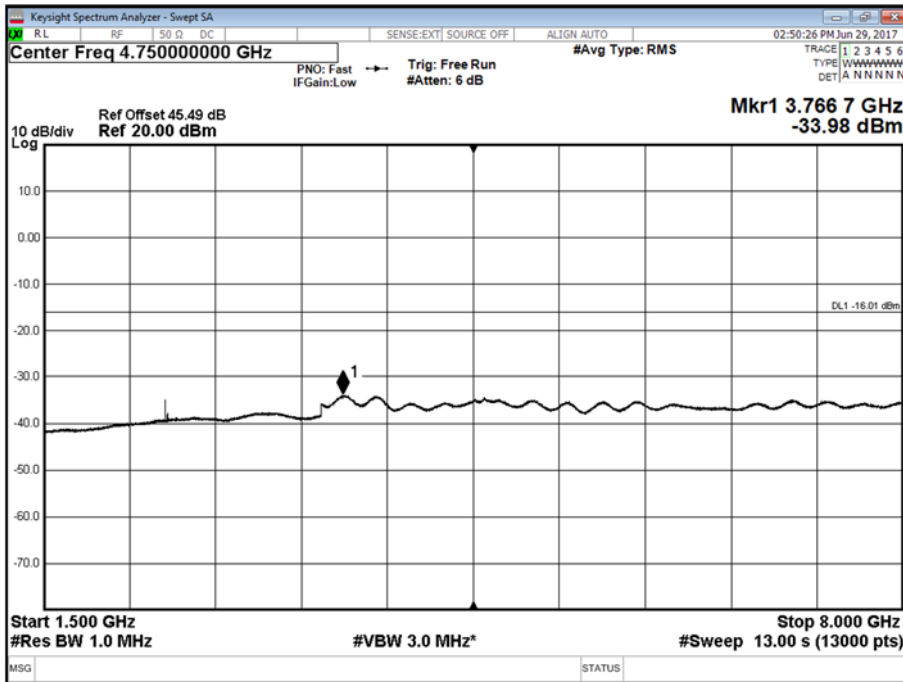


Product Service

Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band 1 - Range 0.009 to 1500 MHz



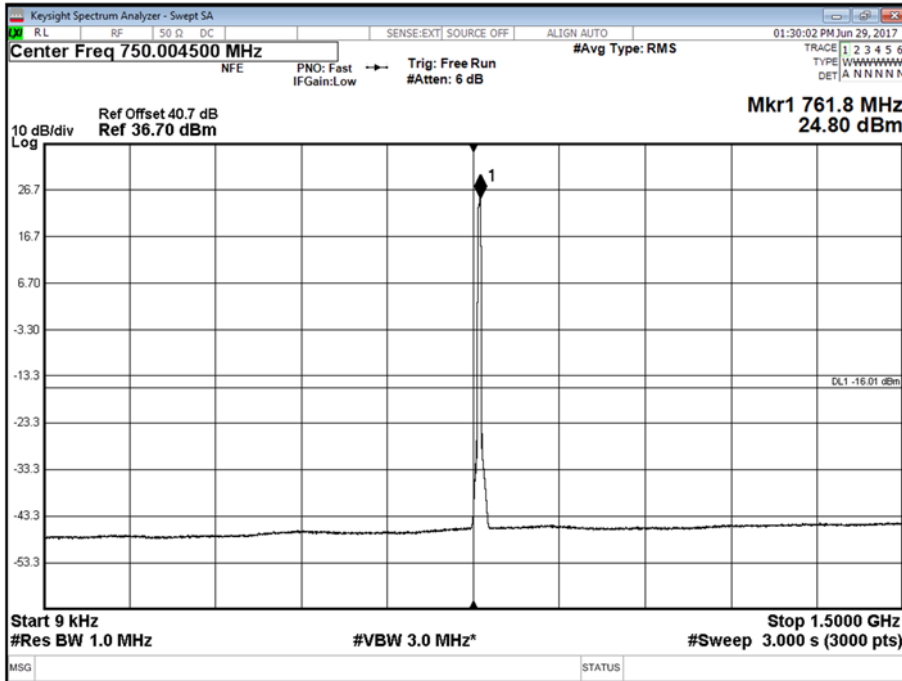
Antenna B - LTE Modulation QPSK - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band 2 - Range 1500 to 8000 MHz



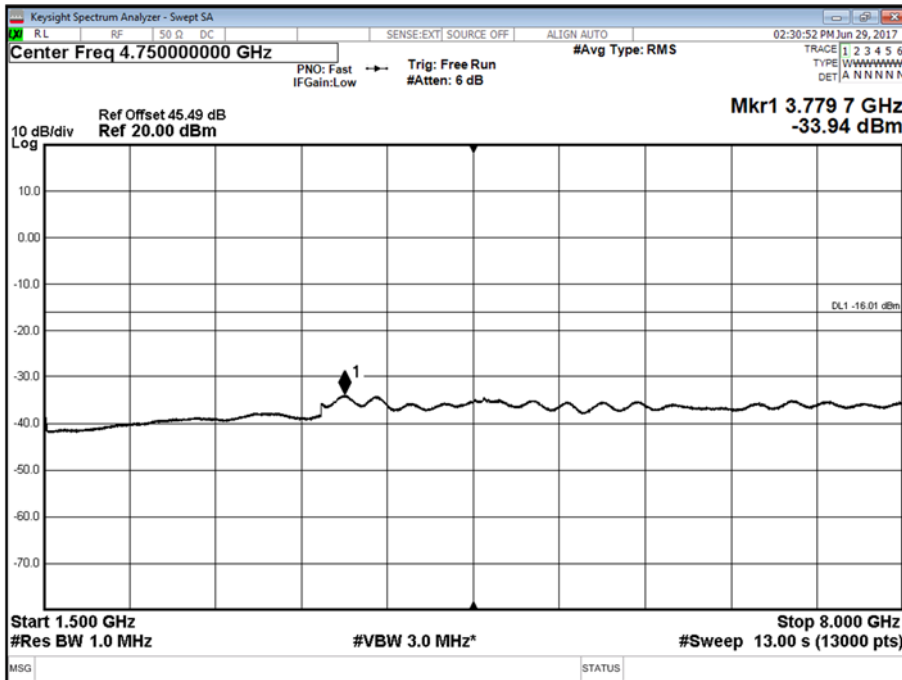


Product Service

Antenna A - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band 1 - Range 0.009 to 1500 MHz



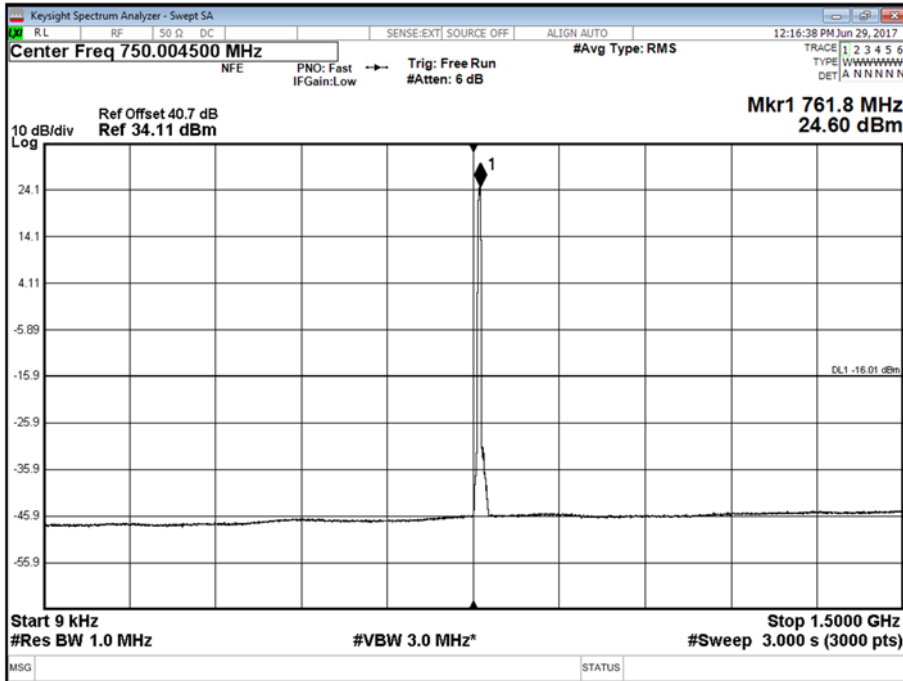
Antenna A - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band 2 - Range 1500 to 8000 MHz



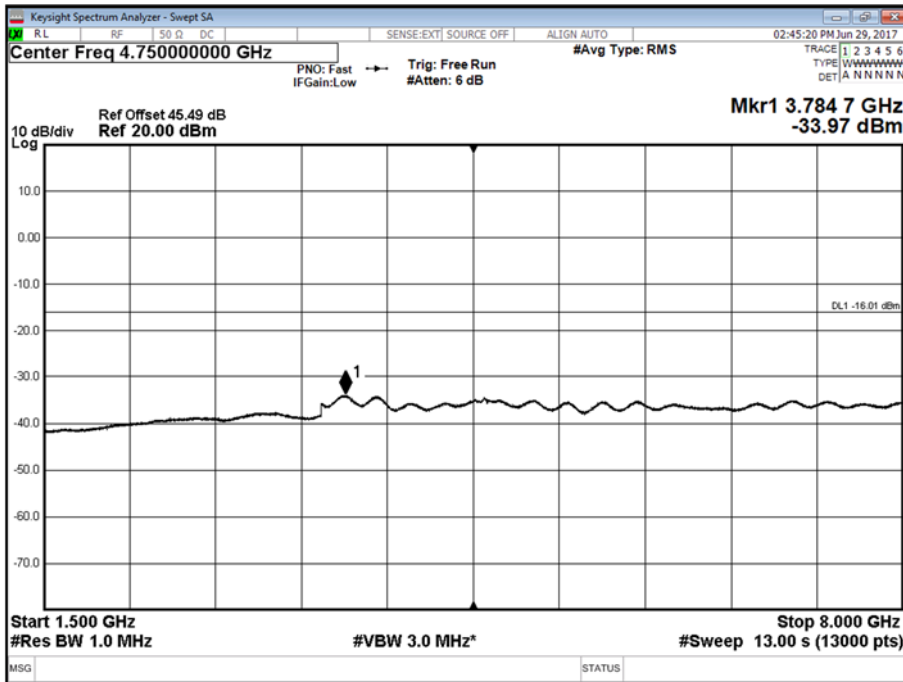


Product Service

Antenna B - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band 1 - Range 0.009 to 1500 MHz



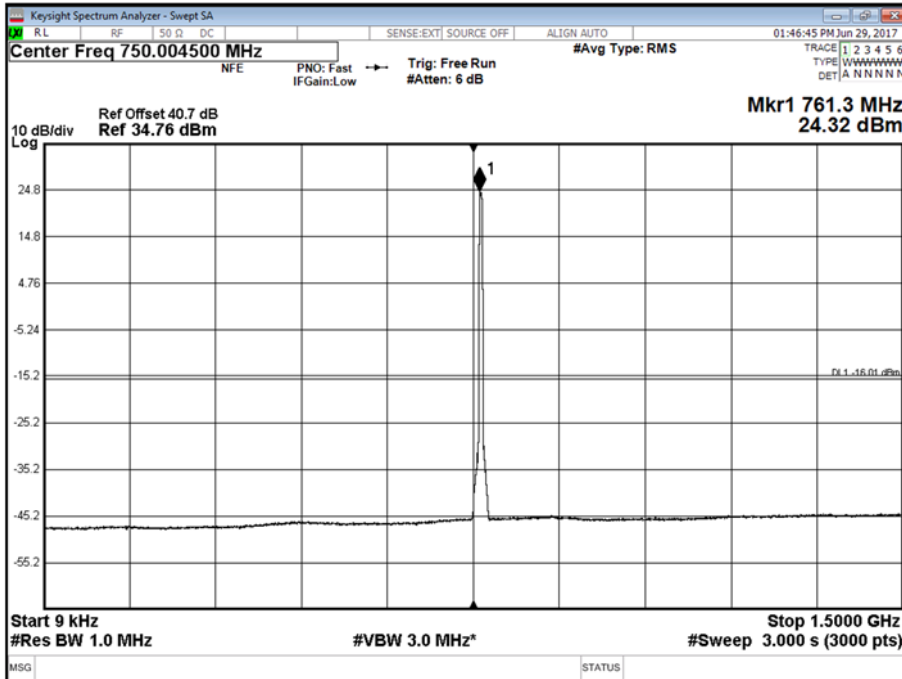
Antenna B - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band 2 - Range 1500 to 8000 MHz



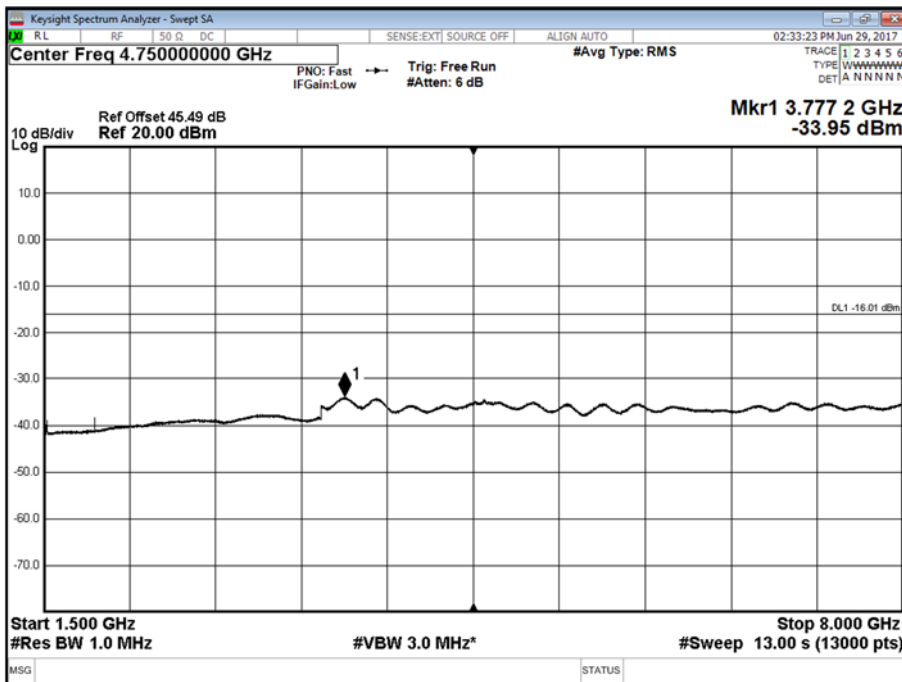


Product Service

Antenna A - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1500 MHz



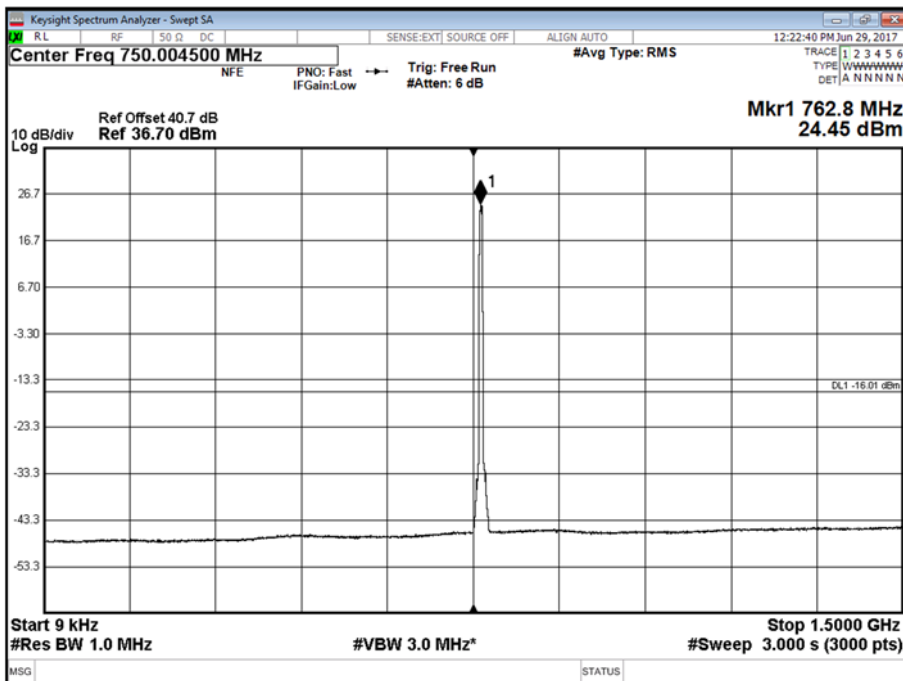
Antenna A - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1500 to 8000 MHz



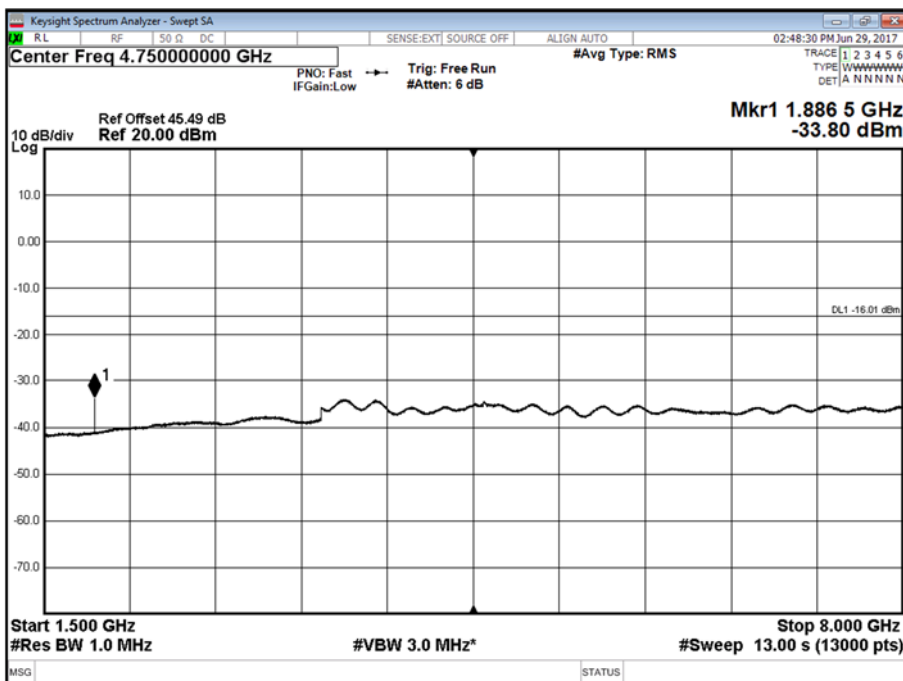


Product Service

Antenna B - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1500 MHz



Antenna B - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1500 to 8000 MHz

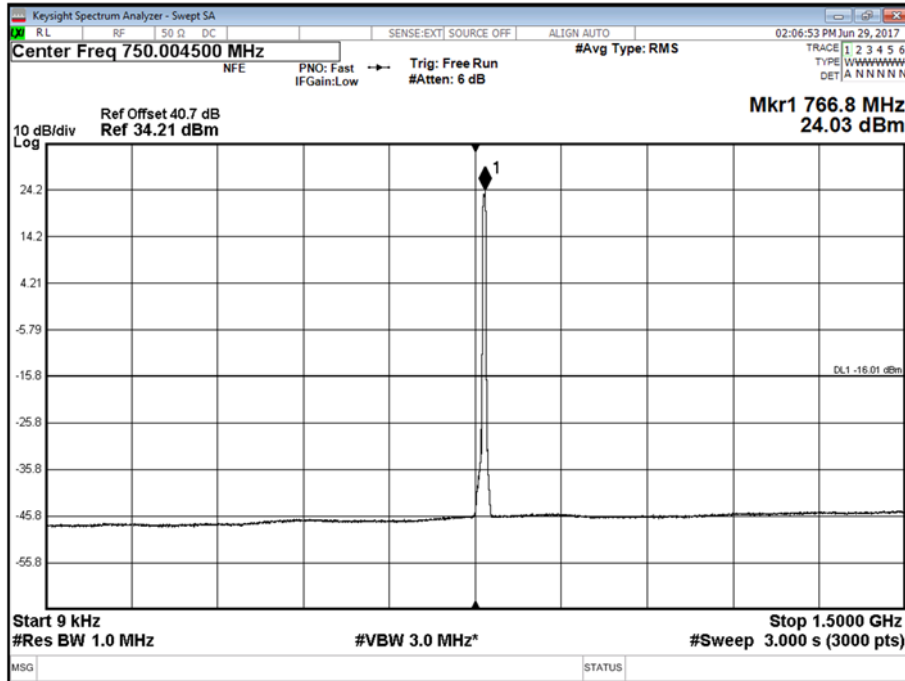






Product Service

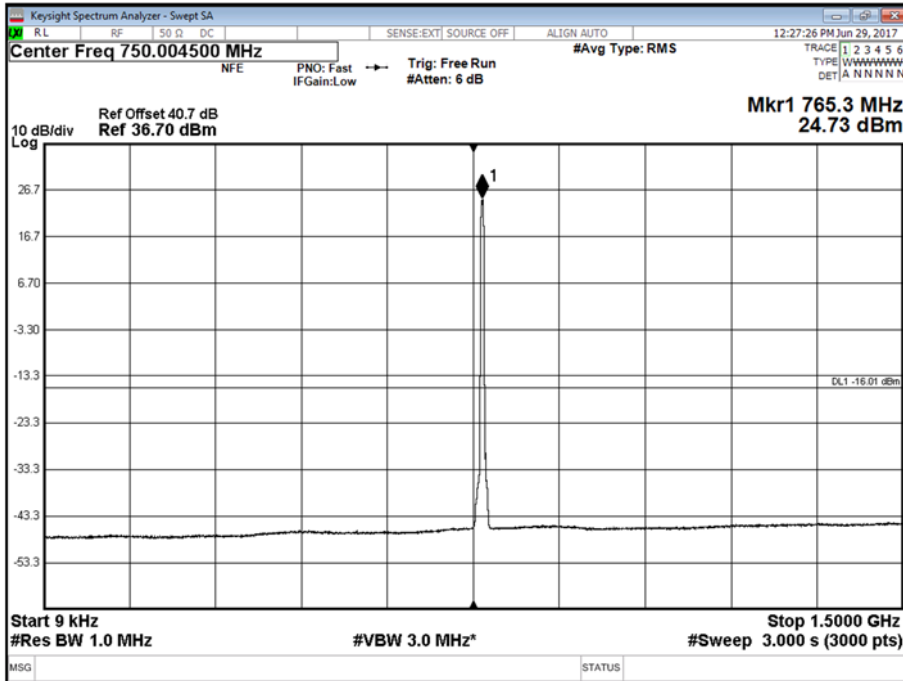
Antenna A - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band 1 - Range 0.009 to 1500 MHz



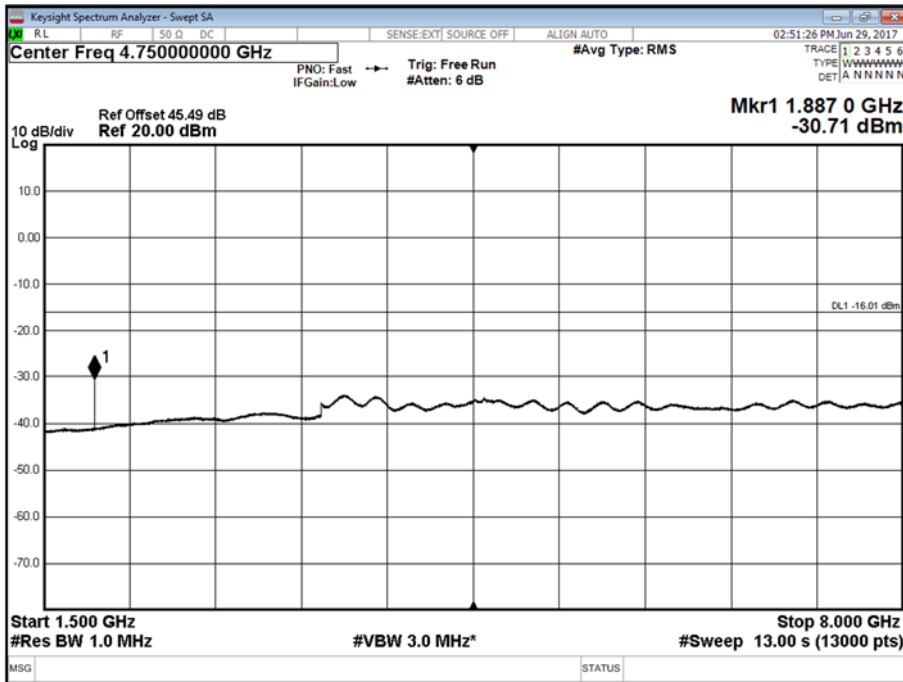


Product Service

Antenna B - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band 1 - Range 0.009 to 1500 MHz



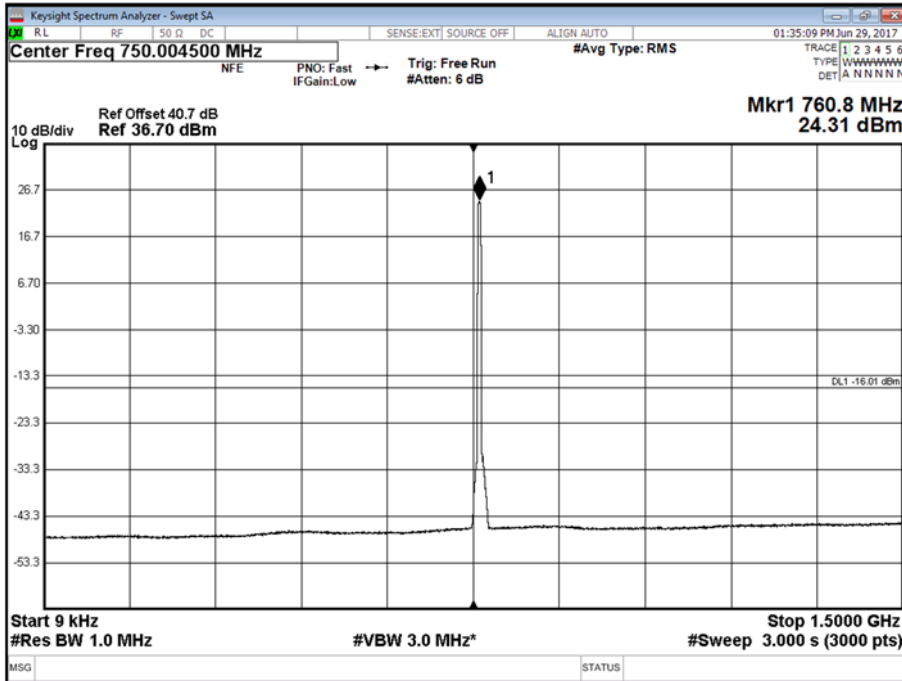
Antenna B - LTE Modulation 16QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T - Band 2 - Range 1500 to 8000 MHz



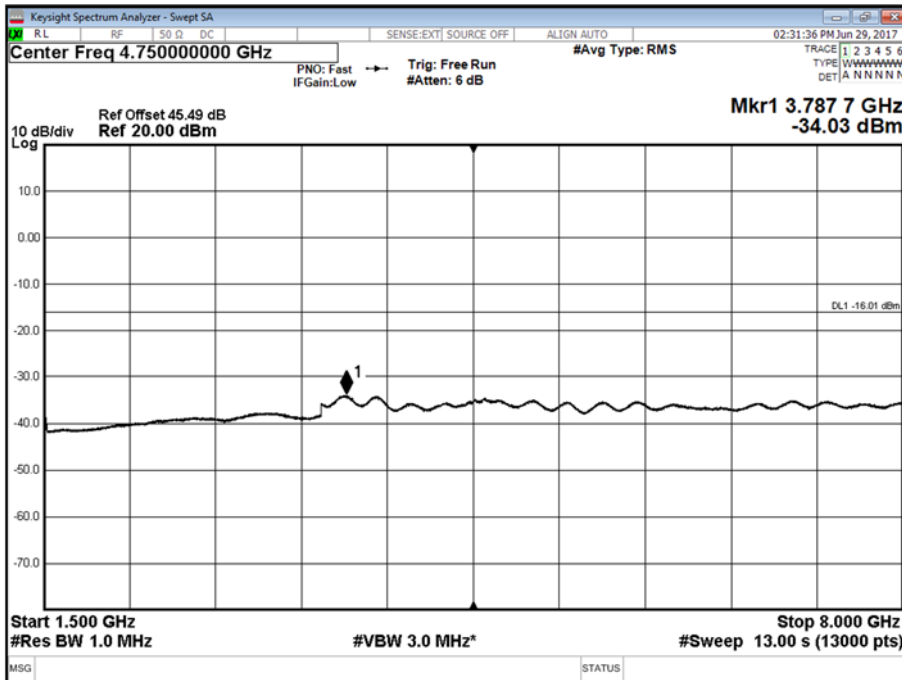


Product Service

Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band 1 - Range 0.009 to 1500 MHz



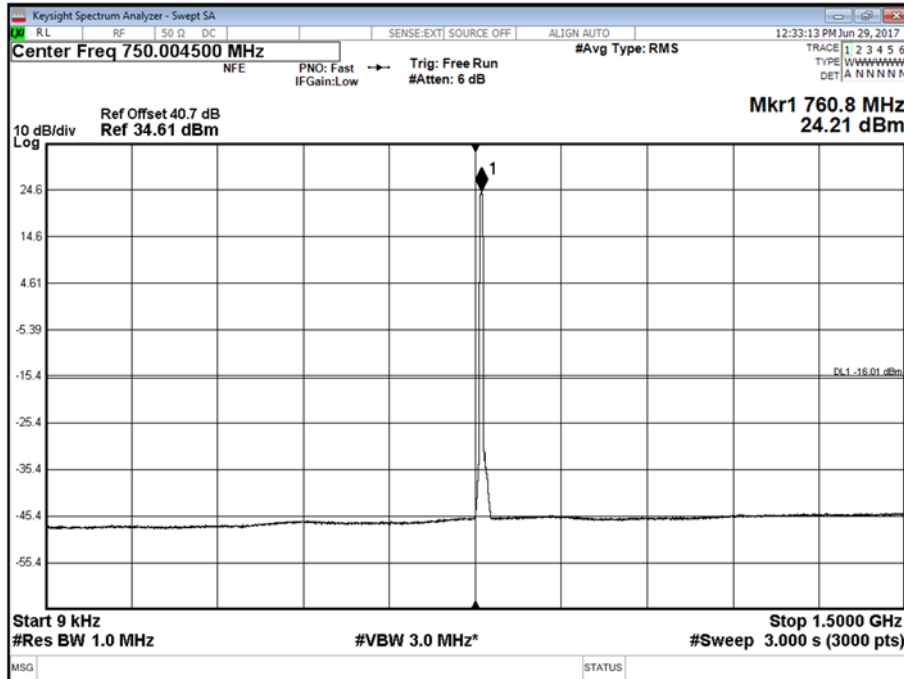
Antenna A - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band 2 - Range 1500 to 8000 MHz





Product Service

Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band 1 - Range 0.009 to 1500 MHz



Antenna B - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B - Band 2 - Range 1500 to 8000 MHz

