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# Report On

FCC and IC Testing of the  
Ericsson RD 2242 B5 (869-894 MHz) WCDMA/LTE Base Station In  
accordance with FCC CFR 47 Part 2 and 22 and Industry Canada  
RSS-132 and RSS-GEN

COMMERCIAL-IN-CONFIDENCE

FCC ID: TA8AKRY901332-1

IC: 287AB-AS9013321

PREPARED BY

APPROVED BY

DATED

A handwritten signature in black ink.

Neil Rousell  
Senior Engineer (RF)

A handwritten signature in black ink.

Nic Forsyth  
Authorised Signatory

02 April 2015

Document 75929787 Report 01 Issue 1

April 2015

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Product Service

## **SECTION 1**

### **REPORT INFORMATION**

## 1.1 REPORT DETAILS

Manufacturer	Ericsson
Address	349 Terry Fox Drive Ottawa Ontario K2K 2V6
Product Name	RD 2242 B5
Product Number	KRY 901 332/1
IC Model Name	AS9013321
Serial Number(s)	C829459692
Software Version	CXP9013268/14_R59FK
Hardware Version	R1B
Test Specification/Issue/Date	FCC CFR 47 Part 2: 2014 FCC CFR 47 Part 22: 2014 Industry Canada RSS-132 Issue 3: 2013
Start of Test	16 March 2015
Finish of Test	19 March 2015
Name of Engineer(s)	Neil Rousell
Related Document(s)	Industry Canada RSS-GEN Issue 4: 2014

## 1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2 and 22 and Industry Canada RSS-132 and RSS-GEN is shown below.

Section	Spec Clause			Test Description	Result
	Part 2	Part 22	RSS-GEN / RSS 132		
2.1	2.1046	22.913(a)	5.4	Maximum Peak Output Power – Conducted	Pass
2.2	2.1049(h)	22.917(b)	6.6	Occupied Bandwidth	Pass
2.3	2.1051	22.917(b) 22.905(a)(b)	5.5	Spurious Emissions at Band Edge	Pass
2.4	2.1051	22.917(a)(b)	5.5	Conducted Spurious Emissions	Pass
2.5	2.1055 (d)(1),(b)	22.355	6.11 / 5.3	Frequency Stability Under Temperature Variations	Pass
2.6	2.1055(d)(1)	22.355	6.11 / 5.3	Frequency Stability Under Voltage Variations	Pass
-	-	-	7.1 / 5.6	Receiver Spurious Emissions	Pass *
-	2.1051	22.917(a)(b)	6.13	Transmitter Radiated Emissions	Pass*

\* - Reference Flextronics Design Validation Centre, Canada EMC Test Report: Reference Number K002569-TR-EMC-05\_R1

**Flextronics Canada Design Services Inc.**  
1280 Teron Side Road  
Kanata, Ontario, K2K 2C1  
Canada

### Accreditations (Flextronics)

The Design Validation Centre (DVC) test facilities are accredited by the Standards Council of Canada (SCC) to ISO/IEC 17025 in accordance with the scope of accreditation outlined at the web site [http://palcan.scc.ca/Specs/PDF/95\\_e.pdf](http://palcan.scc.ca/Specs/PDF/95_e.pdf). The SCC is a signatory of the APLAC [4] and ILAC [14] Mutual Recognition Arrangements. The SCC's Laboratory Accreditation Program has been evaluated and has demonstrated its competence to operate according to the requirements of ISO/IEC 17011.

- 4) APLAC, Asia Pacific Laboratory Accreditation Cooperation, Website (<http://www.aplac.org>).
- 14) ILAC, International Laboratory Accreditation Cooperation, Website (<http://www.ilac.org/>)

### 1.3 CONFIGURATION DESCRIPTION

The RD 2242 B5 / KRY 901 332/1 supports Single, Multi Carrier and Mixed Mode operation from either a single or dual port configuration.

The RD 2242 B5 / KRY 901 332/1 supports LTE Test Models E-TM1.1, E-TM3.1, E-TM3.2 and WCDMA Test Models TM1, TM5 and TM6 in Band 5 (869 MHz – 894 MHz). LTE Test Models (as defined in 3GPP TS 36.141) E-TM1.1, E-TM3.1 and E-TM3.2 were used to represent QPSK, 64QAM and 16QAM modulation respectively and WCDMA Test Models (as defined in 3GPP TS 25.141) TM1, TM5 and TM6 were used to represent QPSK, 16QAM and 64QAM modulation respectively.

The RD 2242 B5 has been tested and authorized for LTE and WCDMA SC, MC and MM transmission. The Test Model used, unless otherwise stated, for LTE was E-TM1.1 and WCDMA TM5.

For TX test cases: Maximum Conducted Output Power, Spurious Emissions at Antenna Terminals ( $\pm 1\text{MHz}$ ) and Conducted Spurious Emissions, measurements were performed on both RF Ports using a test limit accounting for MIMO operation with 2 ports. All RF ports were tested for RF Carrier Power and results recorded using the Measure and Sum approach to account for MIMO operation. The test limits shown are representative of the worst case. All testing was performed with the EUT transmitting at maximum RF power unless otherwise stated.

The EUT was powered via POE (Power Over Ethernet) from the IRU 2242 using a -48V DC Power supply.

#### WCDMA B5 (869 MHz – 894 MHz) Channel Configurations

##### All tests except MC Band Edge Emissions

Configuration	RAT	No. of Carriers	Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
				Bottom (BRFBW)	Middle (MRFBW)	Top (TRFBW)
1	W	1	5 / 4.2	871.4	881.6	891.6
2	W	2	5	-	871.4 + 891.6	-
3	W	3	5	-	871.4 + 886.6 + 891.6	-
4	W	4	5	-	871.4 + 876.4 + 886.6 + 891.6	-

Table 1

##### MC Band Edge Emissions

Configuration	RAT	No. of Carriers	Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)	
				BRFBW (Bottom Edge)	TRFBW (Top Edge)
2 (BE)	W	2	5	871.4 + 876.4	886.6 + 891.6

Table 2

### LTE B5 (869 MHz – 894 MHz) Channel Configurations

#### All tests except MC Band Edge Emissions

Configuration	RAT	No. of Carriers	Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
				Bottom (BRFBW)	Middle (MRFBW)	Top (TRFBW)
5	L	1	5	871.5	881.5	891.5
6	L	2	5	-	871.5 + 891.5	-
7	L	1	10	874	881.5	889
8	L	2	10	-	874 + 889	-

Table 3

#### MC Band Edge Emissions

Configuration	RAT	No. of Carriers	Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)	
				BRFBW (Bottom Edge)	TRFBW (Top Edge)
6 (BE)	L	2	5	871.5 + 876.5	886.5 + 891.5
8 (BE)	L	2	10	874 + 884	879 + 889

Table 4

### WCDMA/LTE (MM) B5 (869 MHz – 894 MHz) Channel Configurations

#### All tests except Band Edge Emissions

Configuration	RAT	No. of Carriers	Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
				BRFBW	MRFBW	TRFBW
9	W + L	2	5 + 10	-	871.4 + 889	-
10	W + W + L	3	5 + 5 + 10	-	871.4 + 876.4 + 889	-
11	W + W + W + L + L	5	5 + 5 + 5 + 5 + 5	-	871.4 + 876.4 + 881.4 + 886.5 + 891.5	-

Table 5

#### Band Edge Emissions

Configuration	RAT	No. of Carriers	Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)	
				BRFBW (Bottom Edge)	TRFBW (Top Edge)
12	W + L	2	5 + 10	871.4 + 878.9	884.1 + 891.6

Table 6

## 1.4 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Radio Dot
MANUFACTURER	Ericsson
TYPE	Remote Radio Base Station
PART NUMBER	KRY 901 332/1
SERIAL NUMBER	C829459692
HARDWARE VERSION	R1B
SOFTWARE VERSION	R59FK
TRANSMITTER OPERATING RANGE	869MHz – 894MHz
RECEIVER OPERATING RANGE	824MHz – 849MHz
COUNTRY OF ORIGIN	Sweden
INTERMEDIATE FREQUENCIES	DL: 117.36 – 142.36MHz, UL: 54.08 – 79.08MHz
EMISSION DESIGNATOR(S): (i.e. G1D, GXW)	LTE 5M00 W7D 10M0 W7D  WCDMA 5M00 F9W
MODULATION TYPES: (i.e. GMSK, QPSK)	LTE: QPSK, 16QAM, 64QAM  WCDMA: QPSK, 16QAM, 64QAM
HIGHEST INTERNALLY GENERATED FREQUENCY	1.01136GHz
OUTPUT POWER (W or dBm)	2 x 0.05W (17dBm)
FCC ID	TA8AKRY901332-1
INDUSTRY CANADA ID	287AB-AS9013321
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The RD 2242 B5 (KRY 901 332/1) is a Remote Radio Unit forming part of the Ericsson Radio Base Station (RBS) equipment. The RD provides radio access for mobile and fixed devices and is intended for the indoor environment. The radio operates over 2 Transmit ports in MRO;Single, Multi-Carrier, and MIMO transmission with a maximum rated RF Output of 0.05W per port over an operational temperature of 5°C to +40°C. The unit is designed to be ceiling mounted.

Signature:



David Bolzon

Date: 02 April 2015

Declaration of Build Status Serial Number: C829459692

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

## 1.5 PRODUCT INFORMATION

### 1.5.1 Technical Description

The RD 2242 B5 (KRY 901 332/1) is a multi-standard radio forming part of Ericsson's RBS 6000 series Radio Base Station (RBS) equipment. The RD 2242 (Radio Dot System) product provides radio access for mobile and fixed devices and is intended for the indoor environment.

An RDI (Radio Dot Interface) cable provides the RD 2242 with a power, control and digital communications between the RD 2242 and RBS. The location of the RD 2242 with respect to the RBS is limited to a distance of 100 metres.

The RD 2242 B5 supports two (2) Transmit / Receive ports operating in the Band 5 at a Downlink (transmit) frequency from 869 MHz to 894 MHz and an Uplink (receive) frequency from 824 MHz to 849 MHz. The radio operates in FDD (Frequency Division Duplex) with a duplex spacing of 45 MHz and supports operation on multi Radio Access Transmission Standards (RATS) at transmit carrier bandwidths up to 10 MHz.

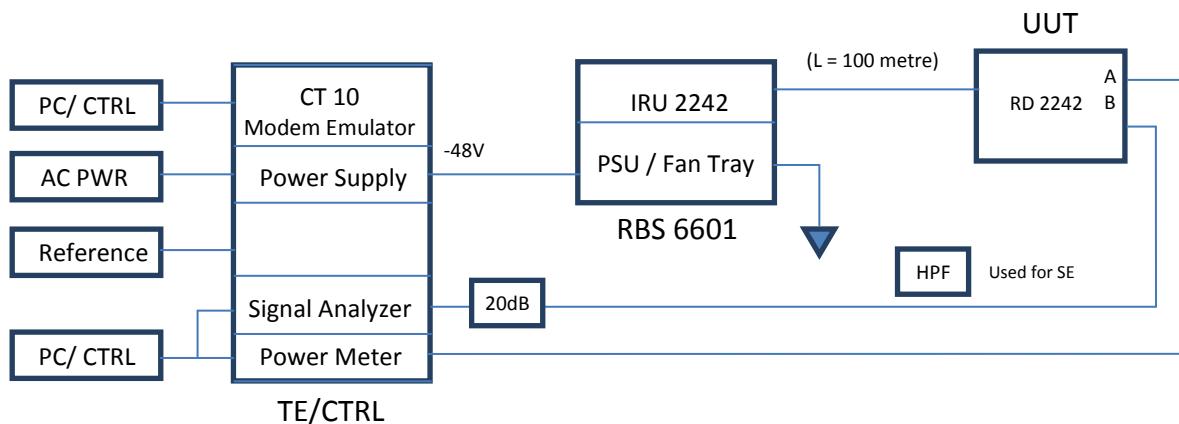
The radio operates over 2 transmit ports in Single, Multi-Carrier, and Mixed Mode MIMO transmission with a maximum rated RF output power of 50mW per port over an operational temperature of +5° C to +40° C.

A full technical description can be found in the Manufacturer's documentation.

## 1.6 TEST SETUP

### Test Setup, Conducted Measurement:

RD 2242 B5 RU Radio Compliance Set-Up



See Section 3 for a list of the test equipment used in the test.

### Test Setup, Radiated Measurement:

Reference: Flextronics Design Validation Centre, Canada Report Reference Number K002569-TR-EMC-05\_R1.

#### **1.7 TEST CONDITIONS**

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure, test laboratories or a chamber as appropriate.

The EUT was powered from a -48V DC supply via POE (Power Over Ethernet).

#### **1.8 DEVIATION FROM THE STANDARD**

No deviations from the applicable test standards or test plan were made during testing.

#### **1.9 MODIFICATION RECORD**

No modifications were made to the EUT during testing.

#### **1.10 ALTERNATIVE TEST SITE**

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

#### **1.11 ADDITIONAL INFORMATION**

Testing performed in the presence of Mr Denis Lalonde and Ms Diana Gradinaru.

## **SECTION 2**

### **TEST DETAILS**

## 2.1 MAXIMUM PEAK OUTPUT POWER AND PEAK TO AVERAGE RATIO - CONDUCTED

### 2.1.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1046  
FCC CFR 47 Part 22, Clause 22.913(a)  
Industry Canada RSS-132, Clause 5.4

### 2.1.2 Date of Test and Modification State

16, 17 and 18 March 2015 - 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	27.3 - 27.7°C
Relative Humidity	18.5 - 21.1%

### 2.1.5 Test Method

The EUT was connected to a Spectrum Analyser via 20dB 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.

Measurements were performed with the Spectrum Analyser Band Power measurement function in accordance with FCC KDB 971168 D01 v02r02. The detector was set to RMS with a RBW of at least 1% of the theoretical signal bandwidth and a VBW of 3 times the RBW. The detection bandwidth was configured to be wider than the total bandwidth of the carrier or combinations of carriers, (multi-carrier). The sweep time was set to Auto and 200 averages were performed before the result was recorded. Prior to testing, comparative measurements were made with an Average Power sensor and Power Meter to confirm correlation with the method used.

Due to Average measurements being recorded, an additional Peak to Average measurement was made in all single carrier configurations. This was achieved using the CCDF function of the Spectrum Analyser with the RBW being set to 80MHz (In this case 10MHz was the total RF Bandwidth in single and multi-carrier mode). A comparison was made with a wide band Power Meter capable of measuring Peak to Average ratio to confirm correlation with the method used.

Testing was performed on both ports.

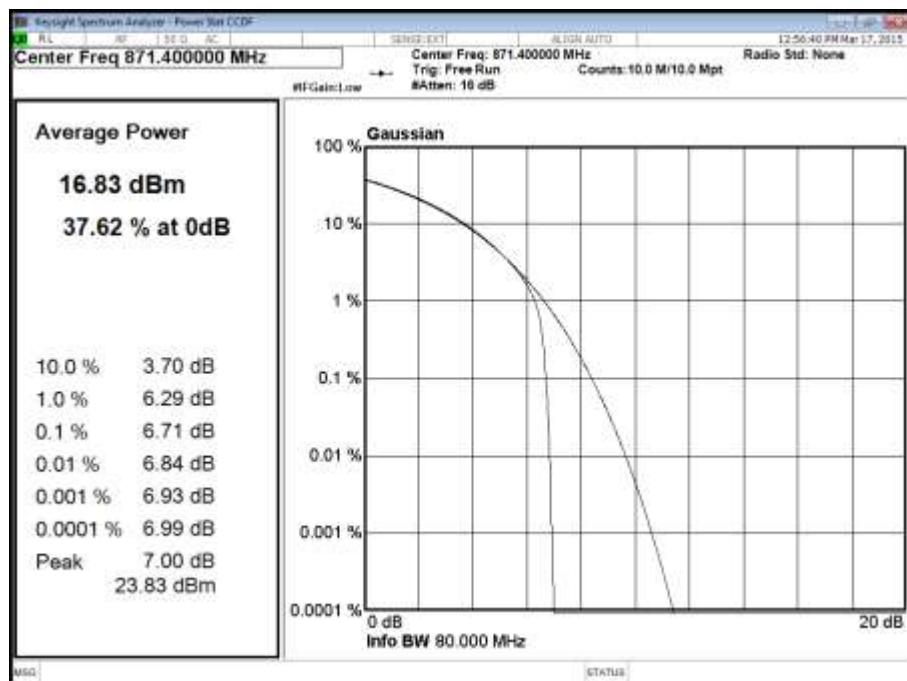
## 2.1.6 Test Results

Configuration 1 – WCDMA SC (see table 1)

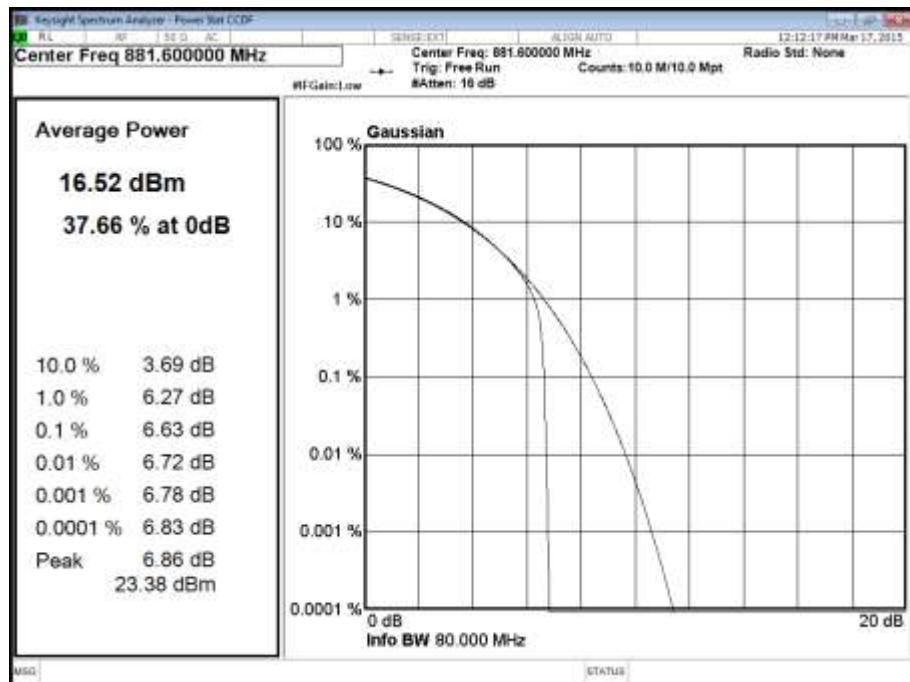
Maximum Output Power 17 dBm (per port)

Antenna	Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B		Channel Position M		Channel Position T	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM	17.02	6.71	16.71	6.63	17.63	6.69
B	16QAM	16.97	6.61	17.06	6.58	16.34	6.62
Total		20.00	-	19.90	-	20.04	-

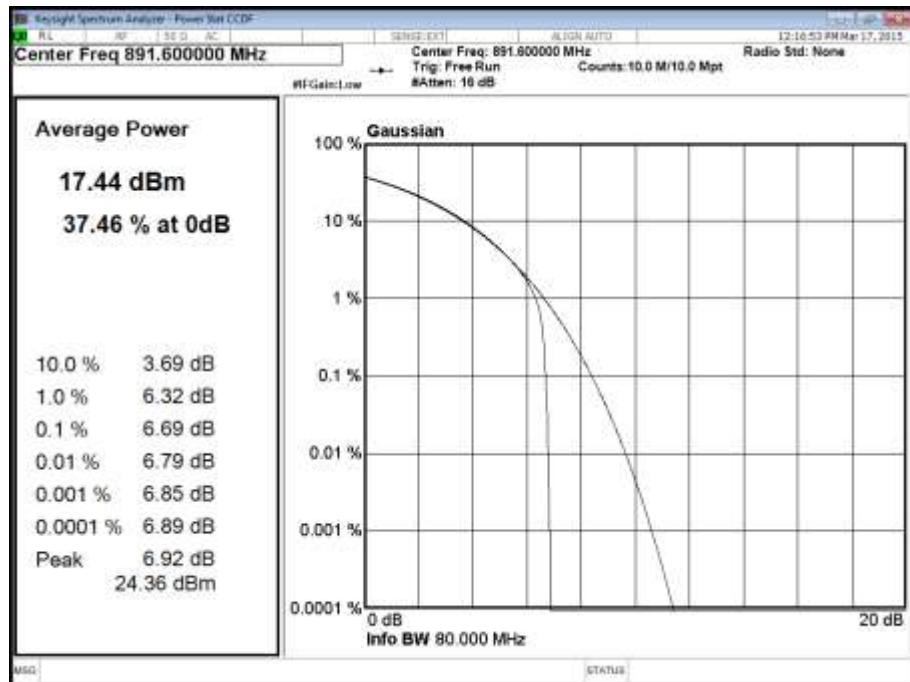
### Channel Position B - Antenna A

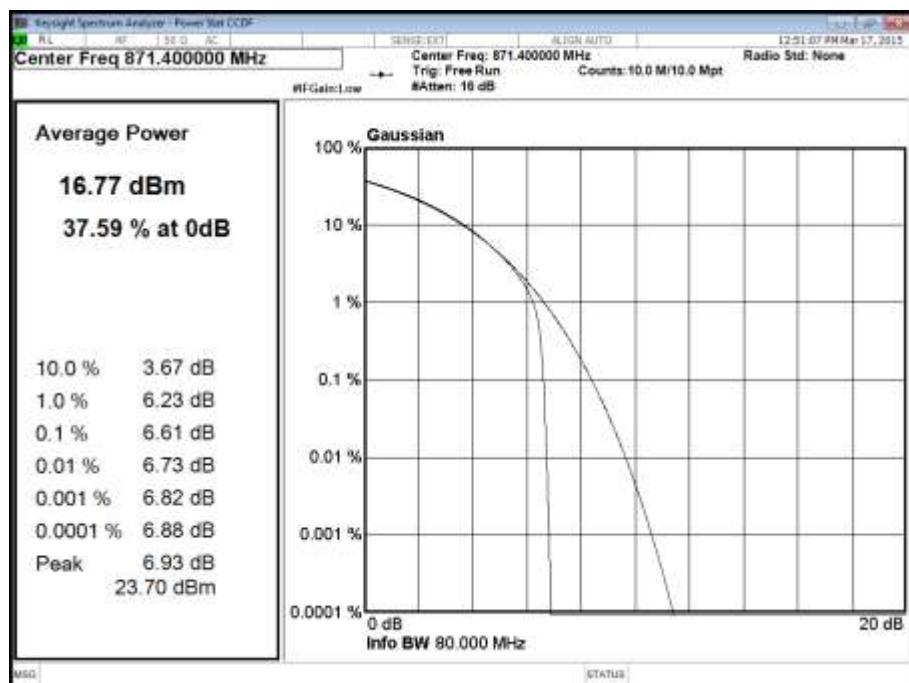
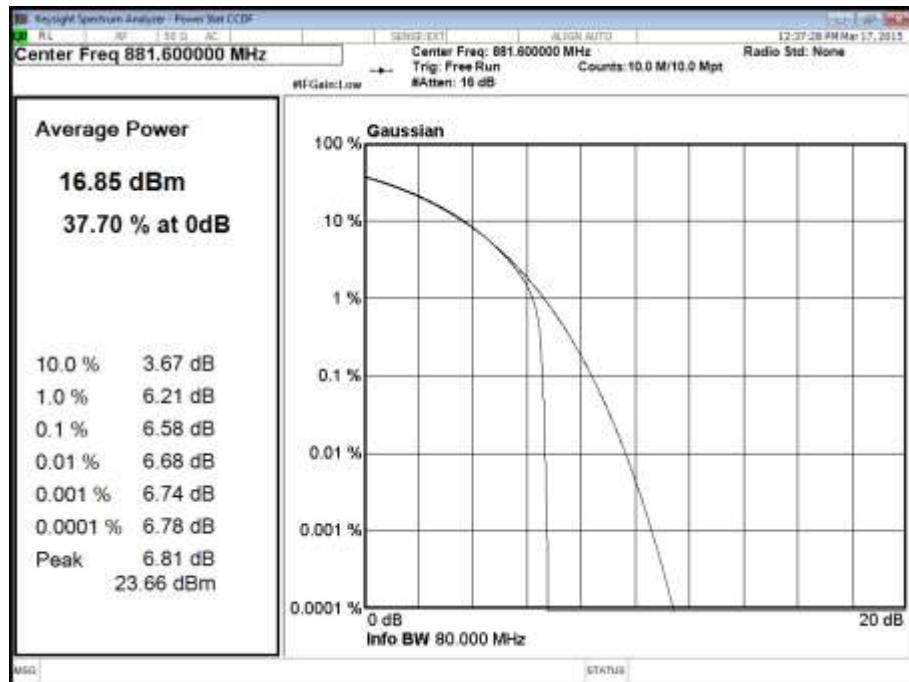


## Channel Position M - Antenna A

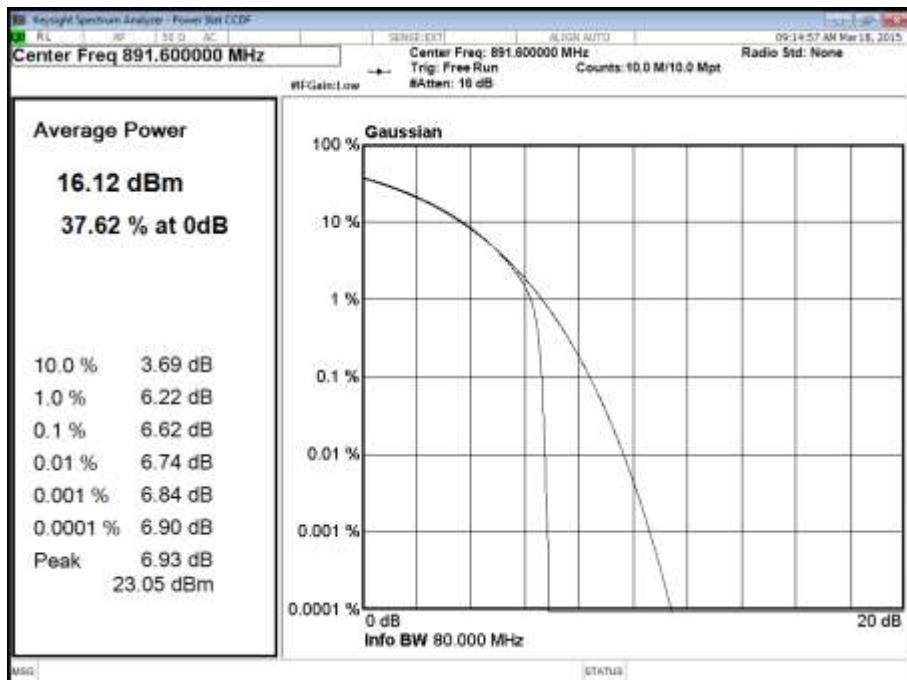


## Channel Position T - Antenna A



Channel Position B - Antenna B

Channel Position M - Antenna B


## Channel Position T - Antenna B



## Configuration 2 – WCDMA MC (see table 1)

Maximum Output Power 17 dBm (per port)

Antenna	Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B		Channel Position M		Channel Position T	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM	-	-	17.03	-	-	-
B	16QAM	-	-	16.53	-	-	-
Total		-	-	19.79	-	-	-

## Configuration 4 – WCDMA MC (see table 1)

Maximum Output Power 17 dBm (per port)

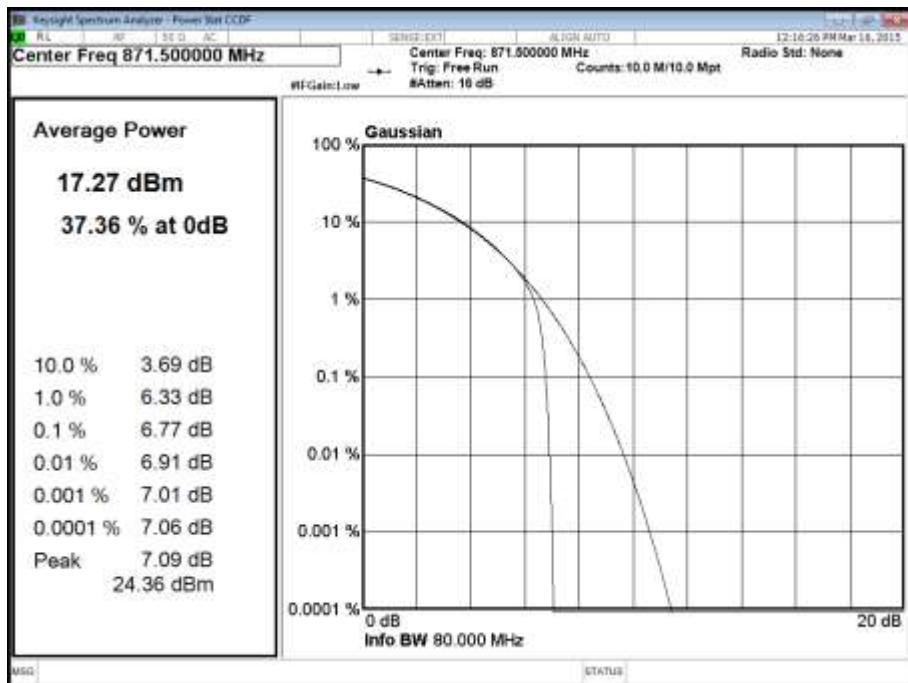
Antenna	Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B		Channel Position M		Channel Position T	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM	-	-	16.94	-	-	-
B	16QAM	-	-	16.52	-	-	-
Total		-	-	19.75	-	-	-

## Configuration 5 – LTE SC (see table 3)

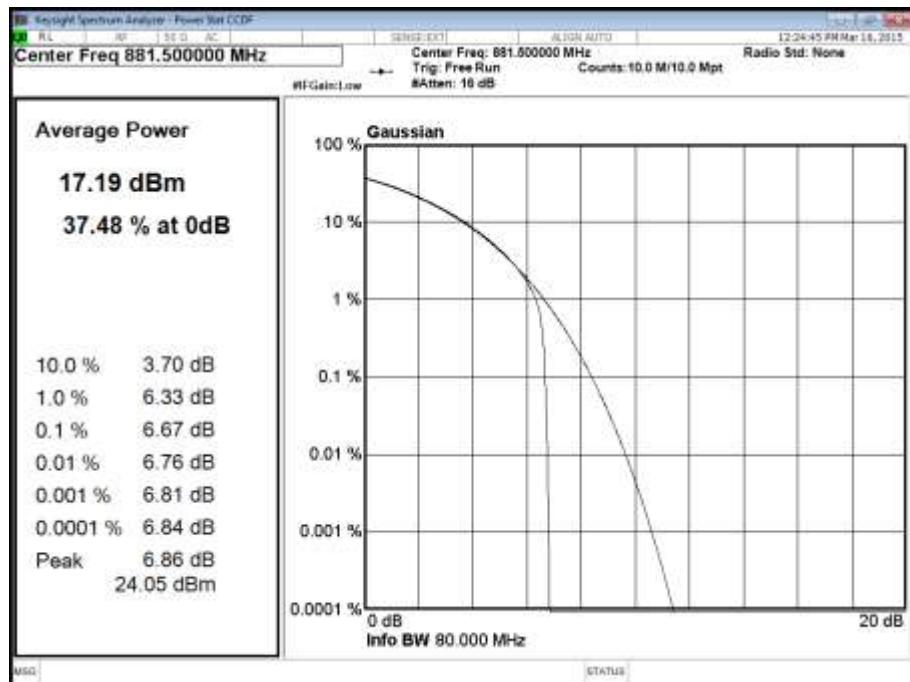
Maximum Output Power 17 dBm (per port)

Antenna	Carrier Bandwidth (MHz) / Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B		Channel Position M		Channel Position T	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	5.0 MHz / QPSK	17.44	6.77	17.37	6.67	17.00	6.71
		16.96	6.68	17.32	6.61	17.09	6.67
Total		20.22	-	20.35	-	20.06	-
A	10.0 MHz / QPSK	17.58	6.84	17.44	6.71	17.29	6.77
		17.00	6.74	17.37	6.65	17.41	6.72
Total		20.31	-	20.42	-	20.36	-

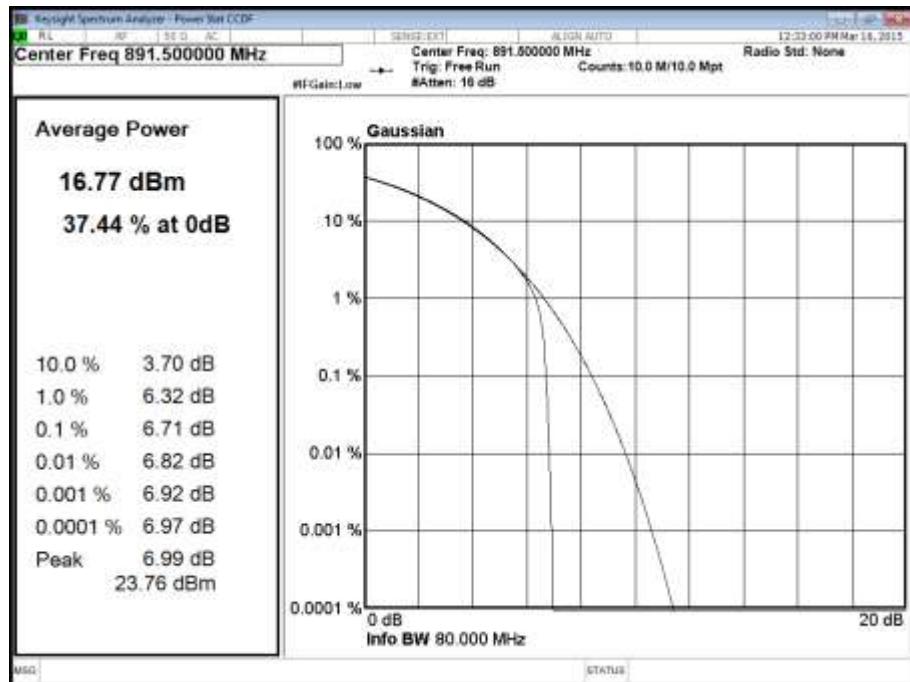
## Channel Position B - Antenna A - 5 MHz Bandwidth



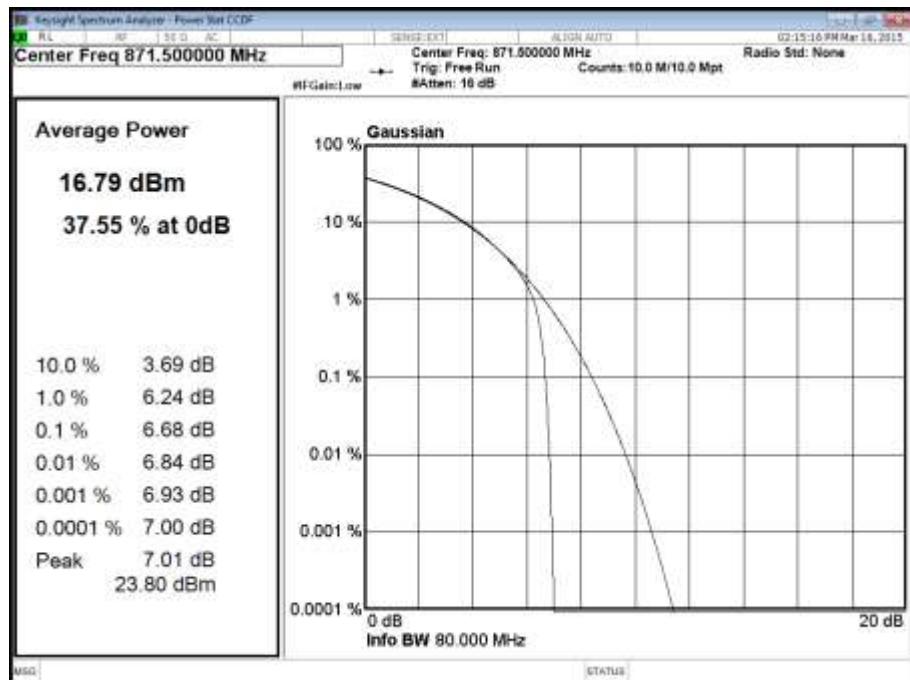
## Channel Position M - Antenna A - 5 MHz Bandwidth



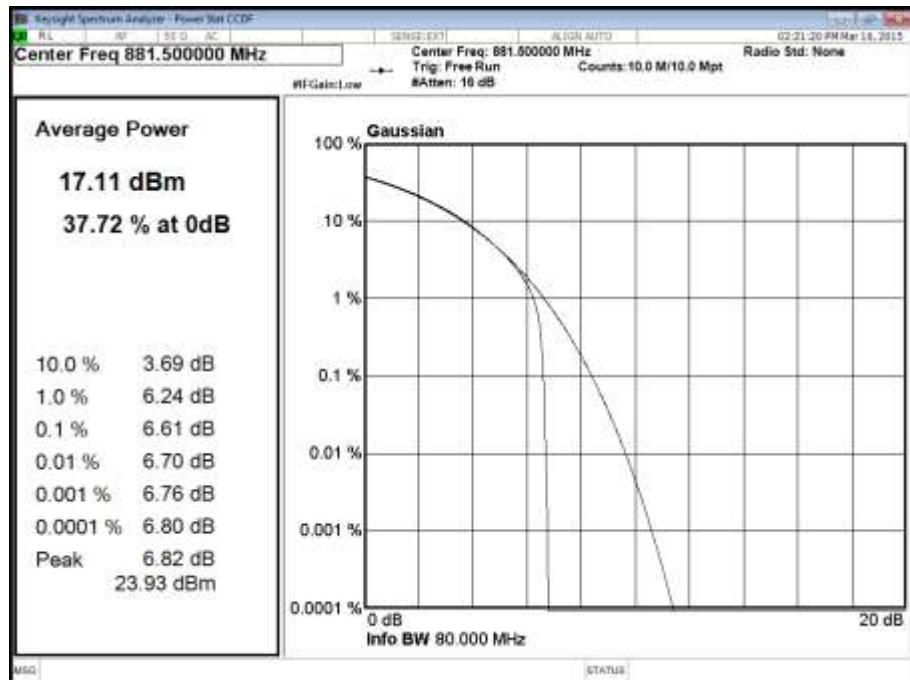
## Channel Position T - Antenna A - 5 MHz Bandwidth



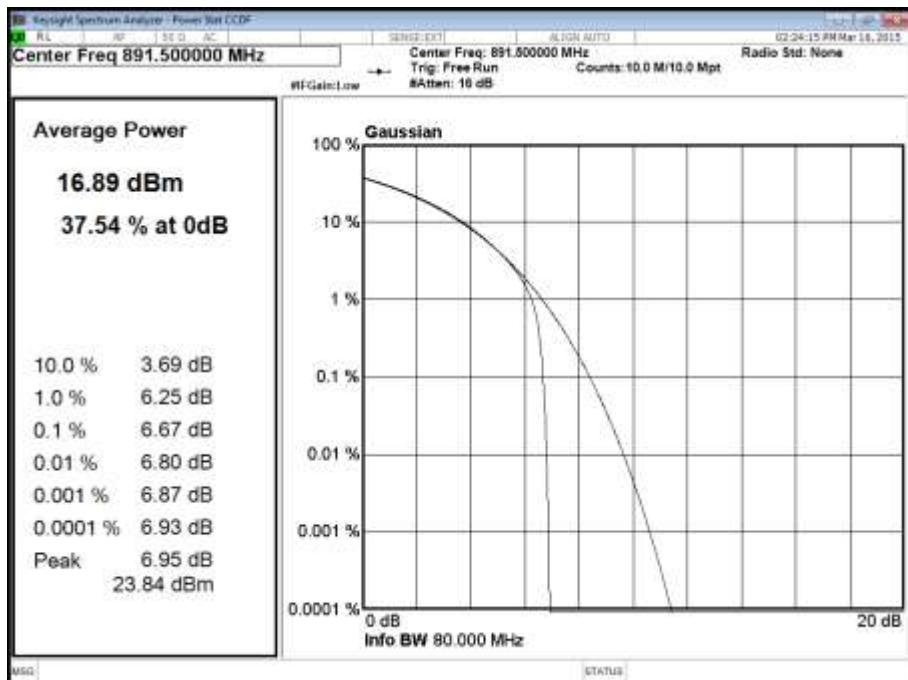
## Channel Position B - Antenna B - 5 MHz Bandwidth



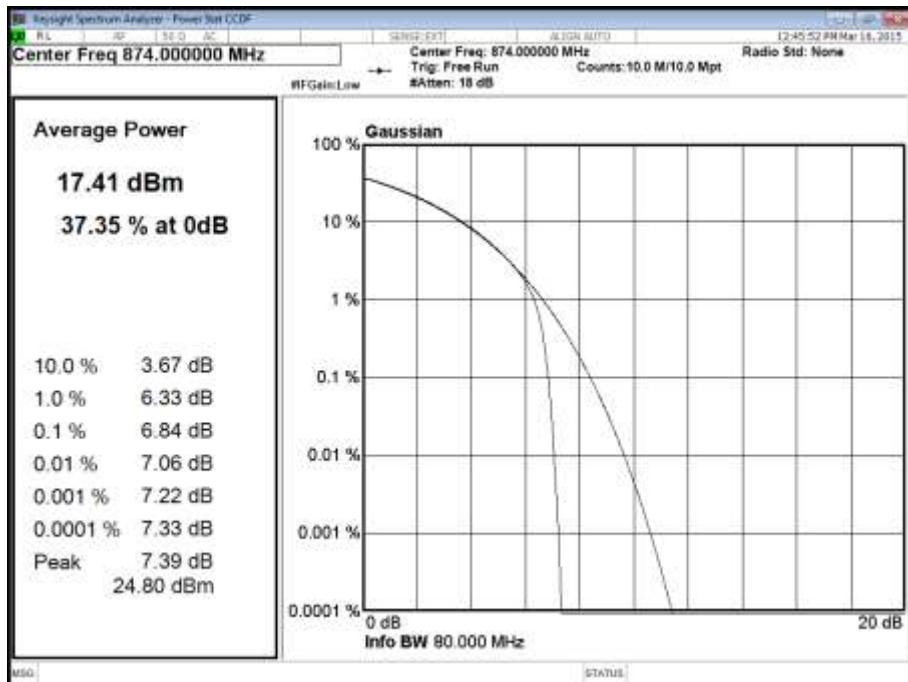
## Channel Position M - Antenna B - 5 MHz Bandwidth



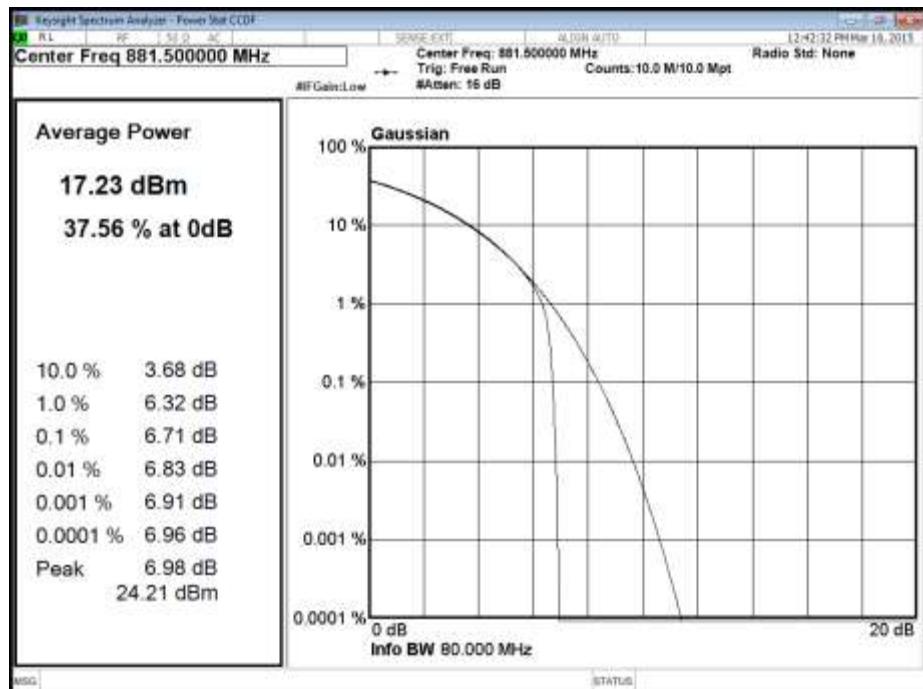
## Channel Position T - Antenna B - 5 MHz Bandwidth



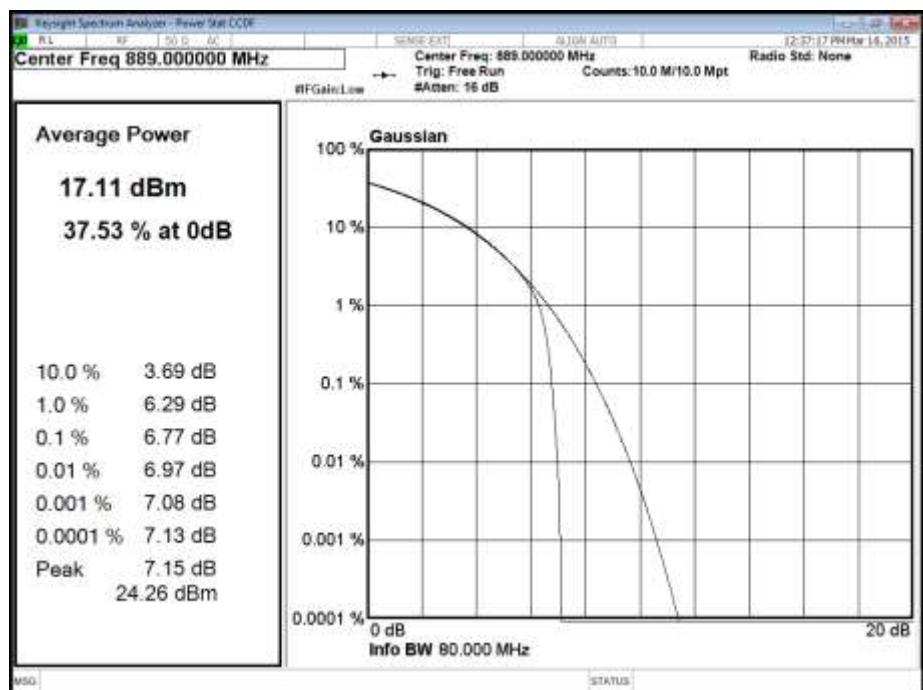
## Channel Position B - Antenna A - 10 MHz Bandwidth



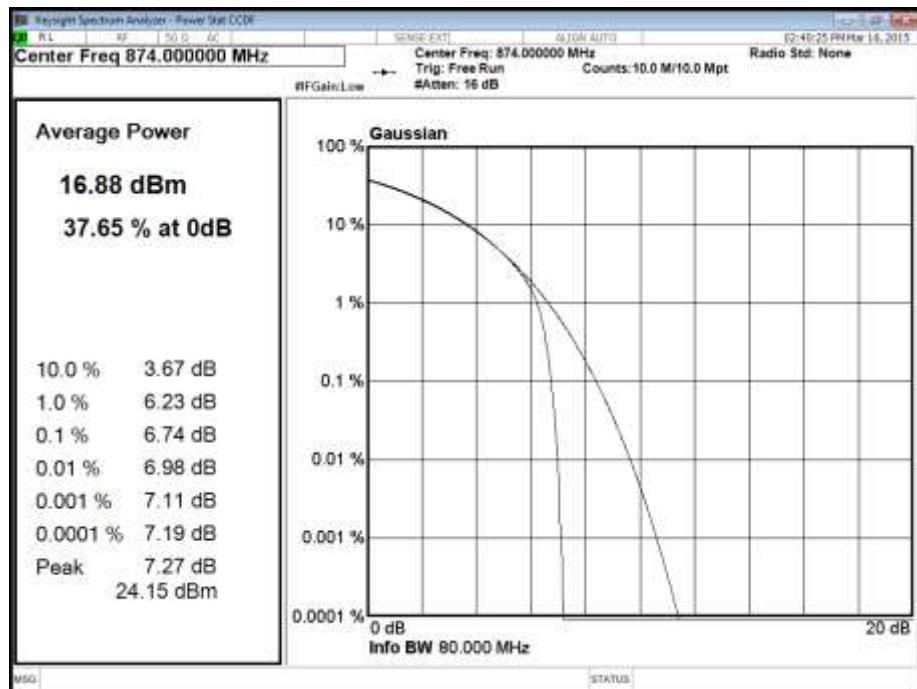
## Channel Position M - Antenna A - 10 MHz Bandwidth



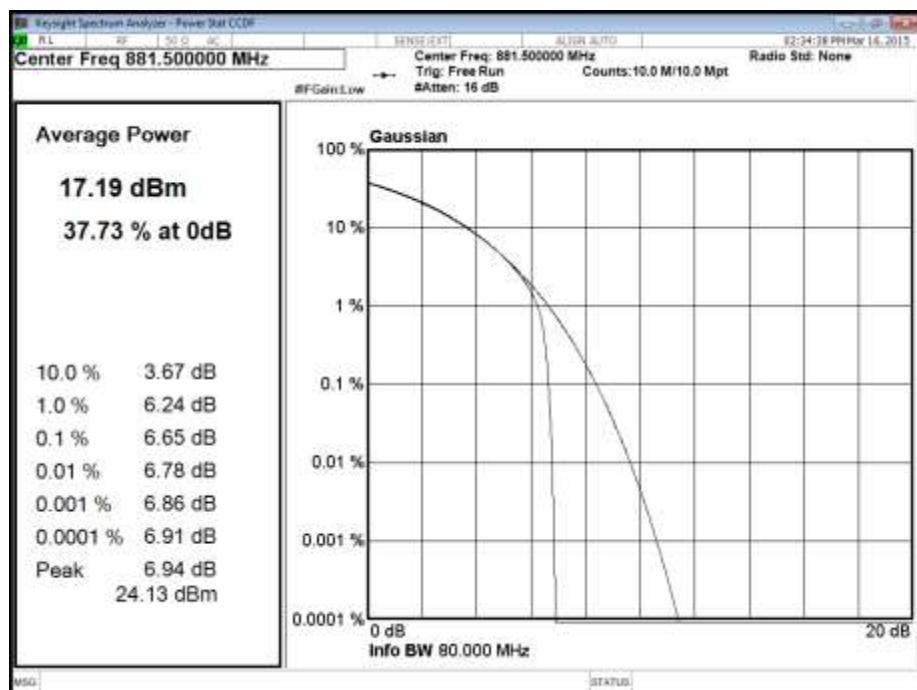
## Channel Position T - Antenna A - 10 MHz Bandwidth



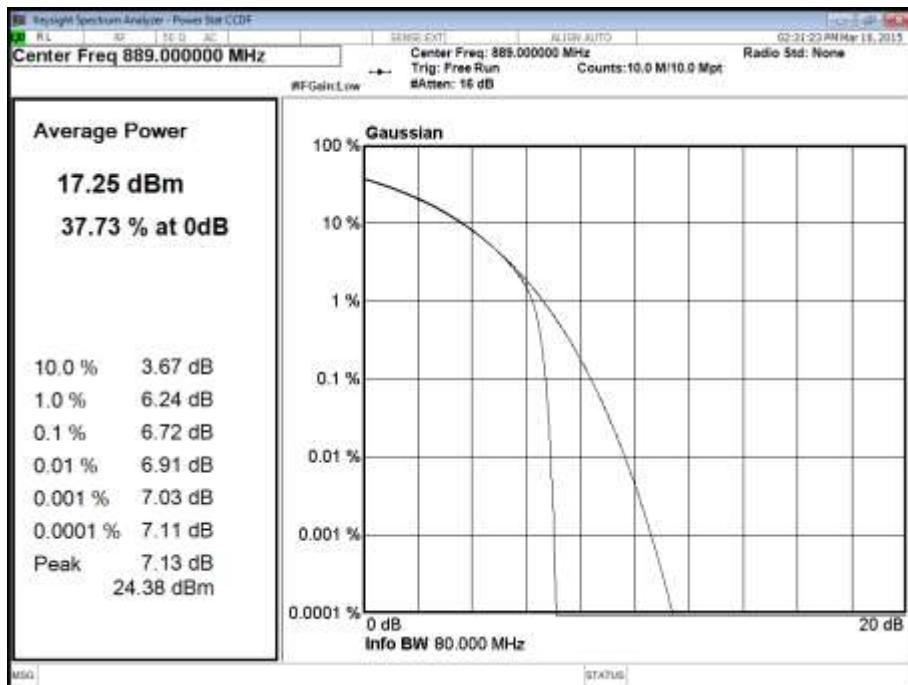
## Channel Position B - Antenna B - 10 MHz Bandwidth



## Channel Position M - Antenna B - 10 MHz Bandwidth



## Channel Position T - Antenna B - 10 MHz Bandwidth



Configuration 6 – LTE MC (see table 3)

Maximum Output Power 17 dBm (per port)

Antenna	Carrier Bandwidth (MHz) / Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B		Channel Position M		Channel Position T	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	5.0 MHz / QPSK	-	-	17.26	-	-	-
B		-	-	16.82	-	-	-
Total		-	-	20.05	-	-	-
A	10.0 MHz / QPSK	-	-	17.45	-	-	-
B		-	-	17.26	-	-	-
Total		-	-	20.37	-	-	-

## Configuration 9 – WCDMA + LTE (see table 5)

Maximum Output Power 17 dBm (per port)

Antenna	WCDMA Modulation / LTE Bandwidth	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position BRFBW		Channel Position MRFBW		Channel Position TRFBW	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM / 10.0 MHz	-	-	16.89	-	-	-
B	16QAM / 10.0 MHz	-	-	17.06	-	-	-
Total		-	-	19.99	-	-	-

Remarks

LTE Modulation = QPSK

## Configuration 11 – WCDMA + LTE (see table 5)

Maximum Output Power 17 dBm (per port)

Antenna	WCDMA Modulation / LTE Bandwidth	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position BRFBW		Channel Position MRFBW		Channel Position TRFBW	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM / 5.0 MHz	-	-	17.12	-	-	-
B	16QAM / 5.0 MHz	-	-	17.01	-	-	-
Total		-	-	20.08	-	-	-

Remarks

LTE Modulation = QPSK

Limit
Peak Power
Peak to Average Ratio

## 2.2 OCCUPIED BANDWIDTH

### 2.2.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1049(h)  
FCC CFR 47 Part 22, Clause 22.917(b)  
Industry Canada RSS-GEN, Clause 4.6.1

### 2.2.2 Date of Test and Modification State

16 and 17 March 2015 - 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 27.5 - 27.7°C  
Relative Humidity 19.9 - 21.1%

### 2.2.5 Test Method

The EUT was connected to a Spectrum Analyser via 20dB 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 configured to be at least 1% of the channel bandwidth of the carrier to be measured. The Spectrum Analyser Occupied bandwidth measurement mode was used in conjunction with an RMS detector and a long sweep time (as described in the operating manual for the test equipment) for the 26dB and 99% Occupied Bandwidth measurements on Bottom, Middle and Top Channels. Testing was performed on both ports.

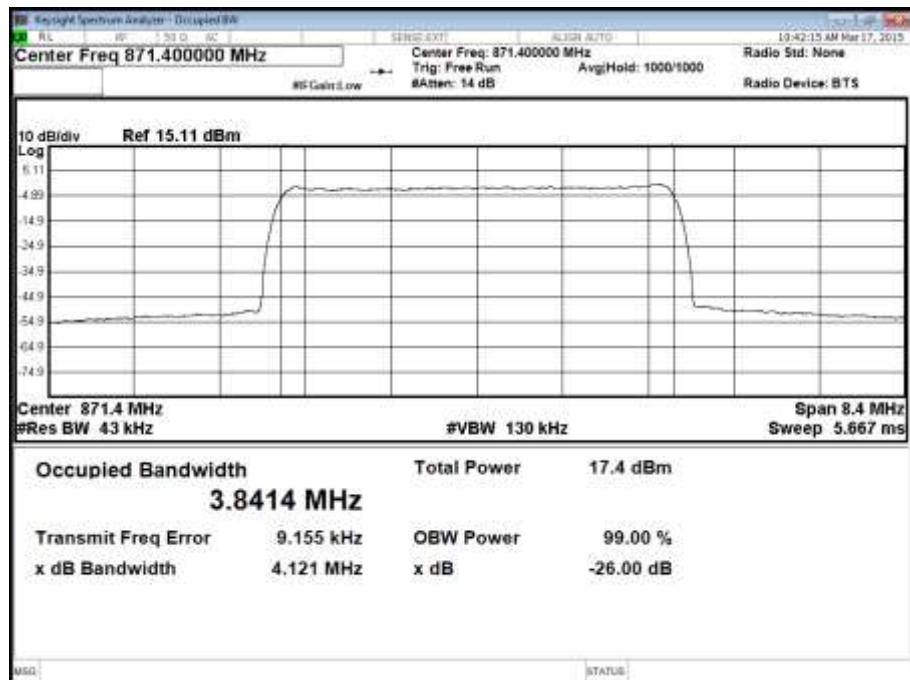
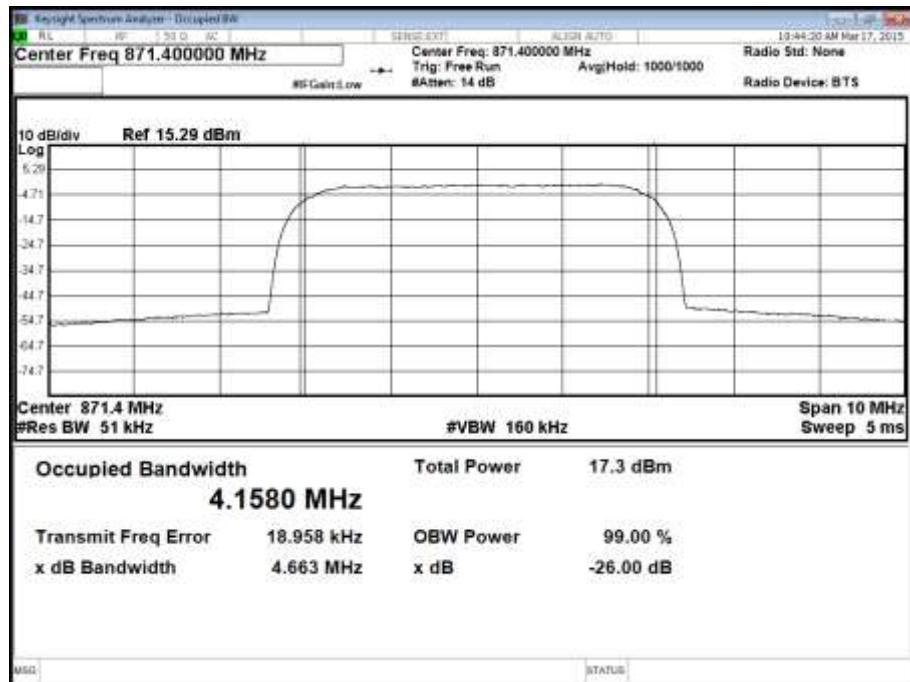
The results are shown in the plots below.

### 2.2.6 Test Results

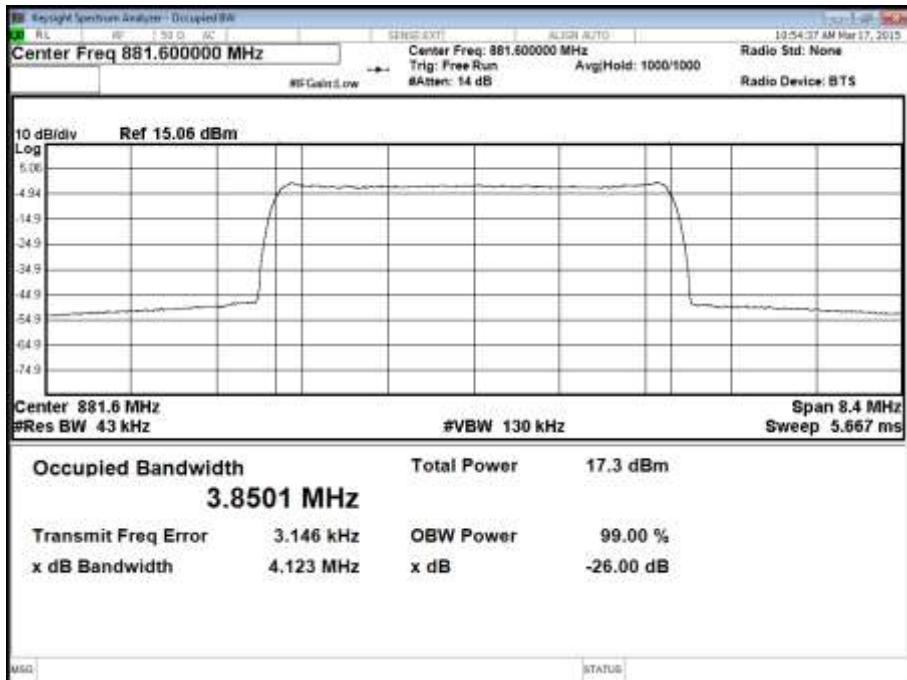
Configuration 1 – WCDMA SC Antenna A (see table 1)

Maximum Output Power 17 dBm (per port)

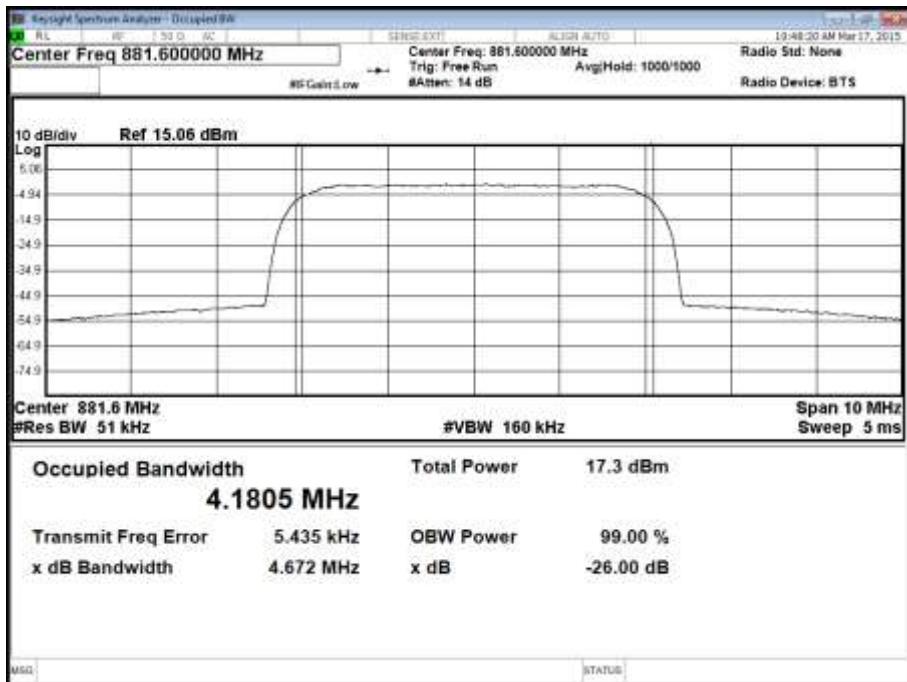
Carrier Bandwidth / Modulation	Result (KHz)					
	Channel Position B		Channel Position M		Channel Position T	
	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
QPSK / 4.2 MHz	3,841.40	4,120.67	3,850.12	4,123.18	3,849.01	4,121.83
QPSK / 5.0 MHz	4,158.02	4,663.10	4,180.54	4,671.93	4,175.36	4,670.36

Channel Position B - Antenna A - 4.2 MHz Bandwidth

Channel Position B - Antenna A - 5 MHz Bandwidth


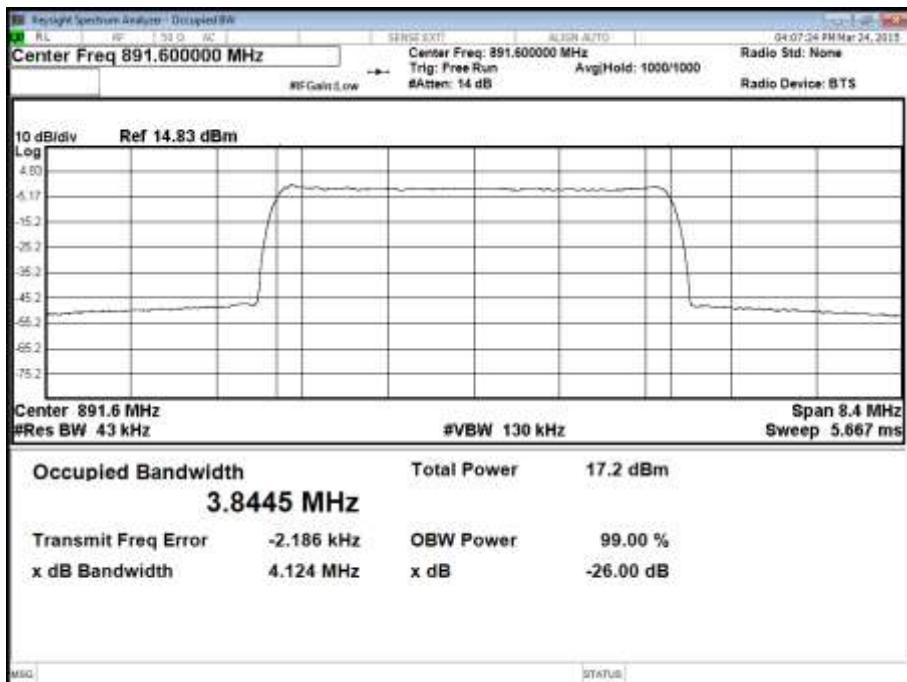
### Channel Position M - Antenna A - 4.2 MHz Bandwidth



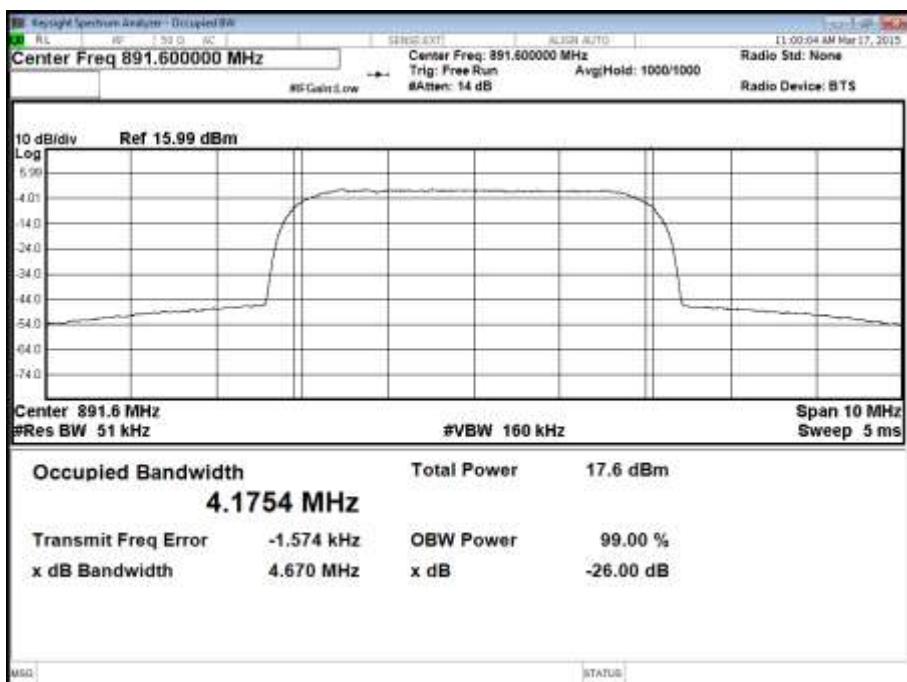
## Channel Position M - Antenna A - 5 MHz Bandwidth



## Channel Position T - Antenna A - 4.2 MHz Bandwidth



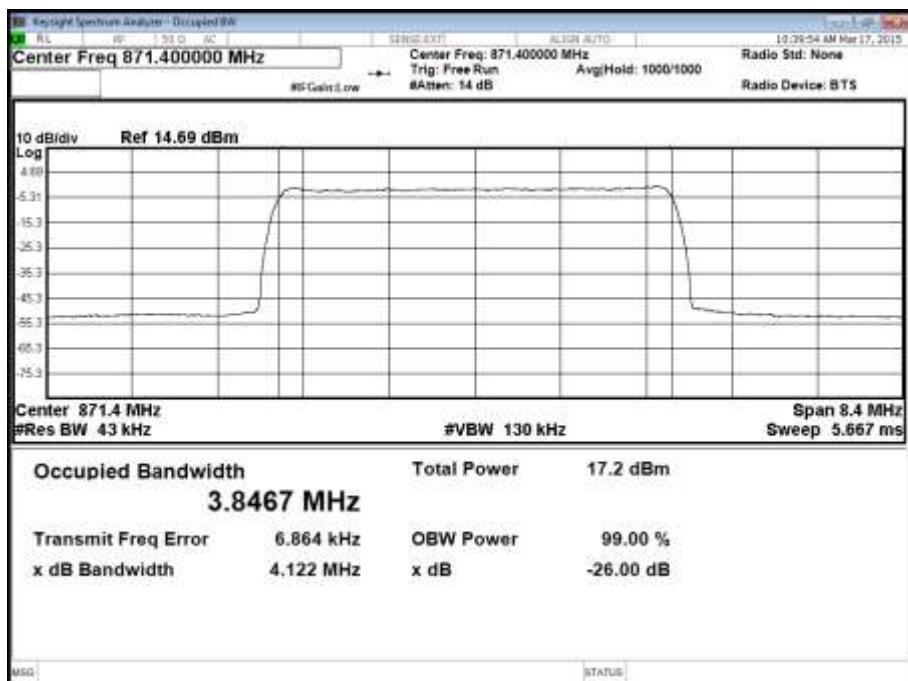
## Channel Position T - Antenna A - 5 MHz Bandwidth



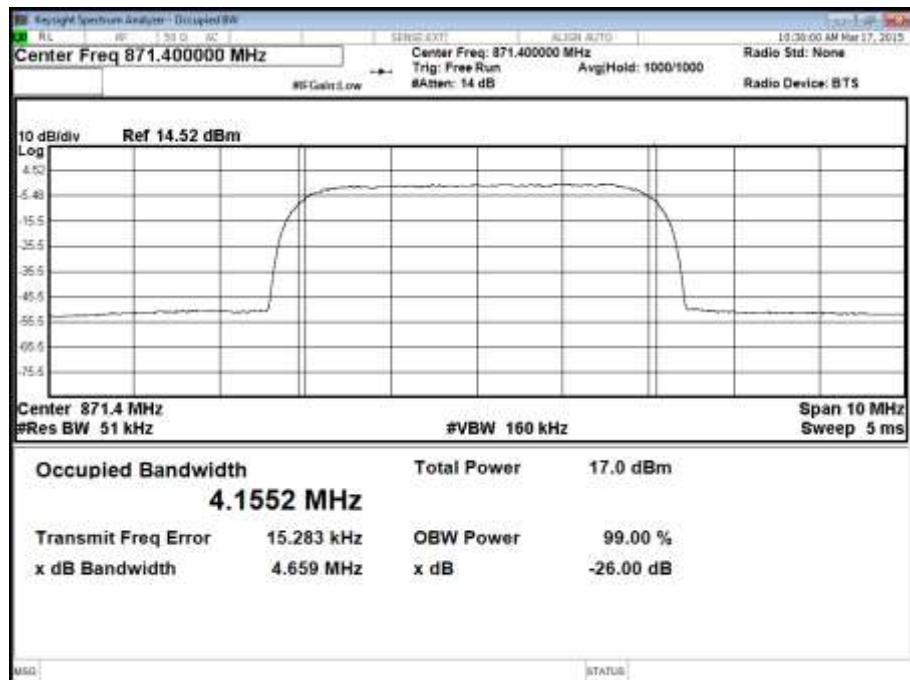
Configuration 1 – WCDMA SC Antenna B (see table 1)

Maximum Output Power 17 dBm (per port)

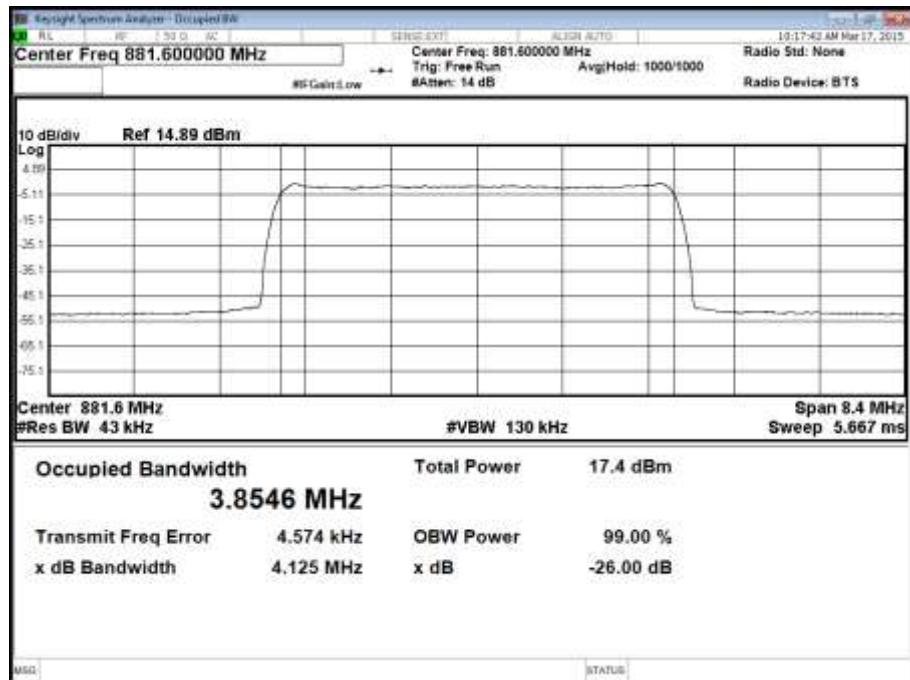
Carrier Bandwidth / Modulation	Result (KHz)					
	Channel Position B		Channel Position M		Channel Position T	
Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	
QPSK / 4.2 MHz	3,846.72	4,121.98	3,854.59	4,125.25	3,850.10	4,122.03
QPSK / 5.0 MHz	4,155.24	4,659.23	4,176.83	4,667.64	4,170.35	4,663.33

Channel Position B - Antenna B - 4.2 MHz Bandwidth


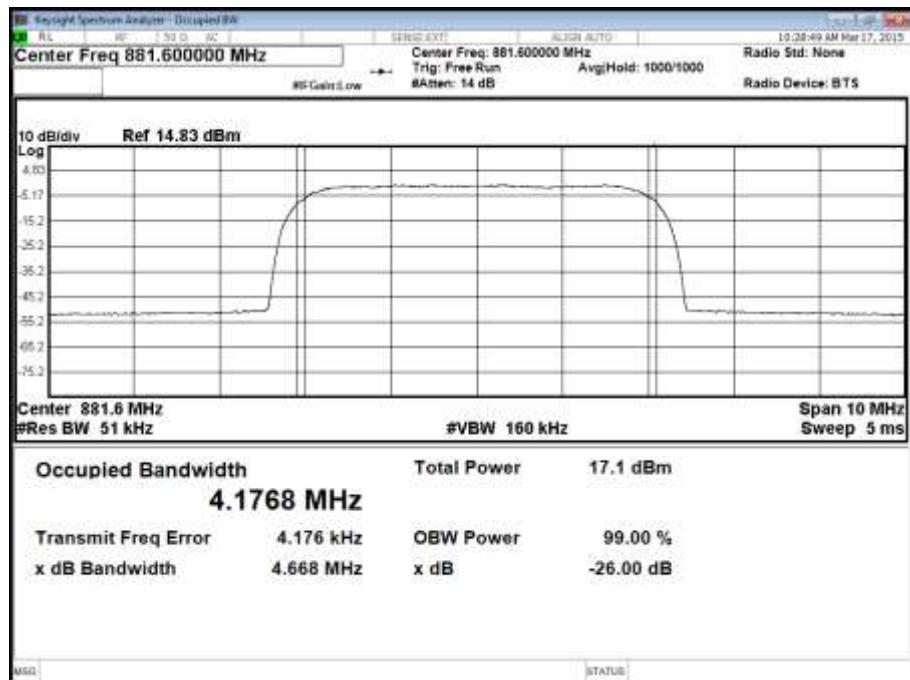
## Channel Position B - Antenna B - 5 MHz Bandwidth



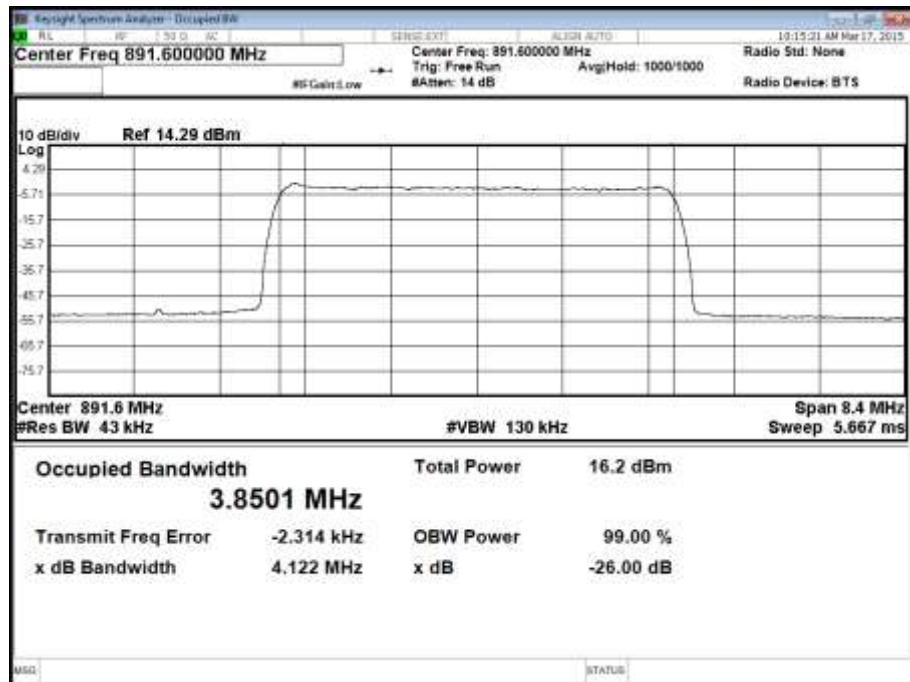
## Channel Position M - Antenna B - 4.2 MHz Bandwidth



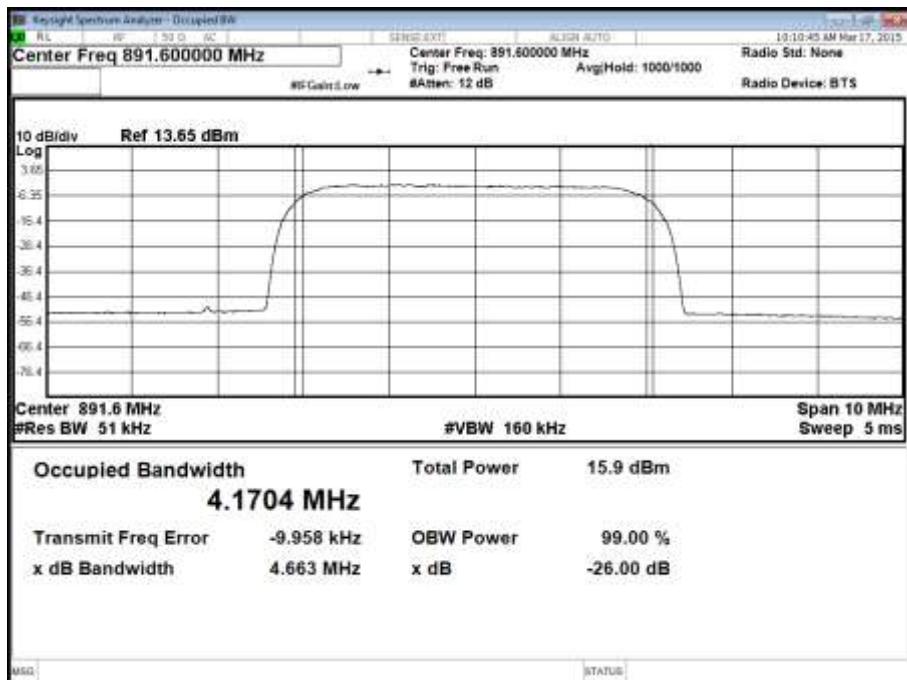
## Channel Position M - Antenna B - 5 MHz Bandwidth



## Channel Position T - Antenna B - 4.2 MHz Bandwidth



## Channel Position T - Antenna B - 5 MHz Bandwidth

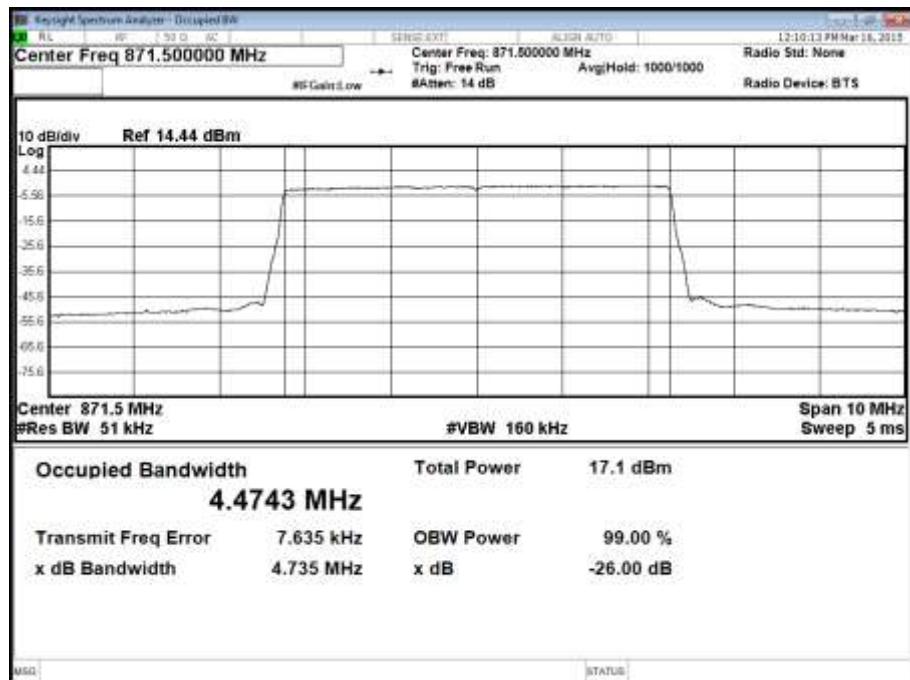


Configuration 5 – LTE SC Antenna A (see table 3)

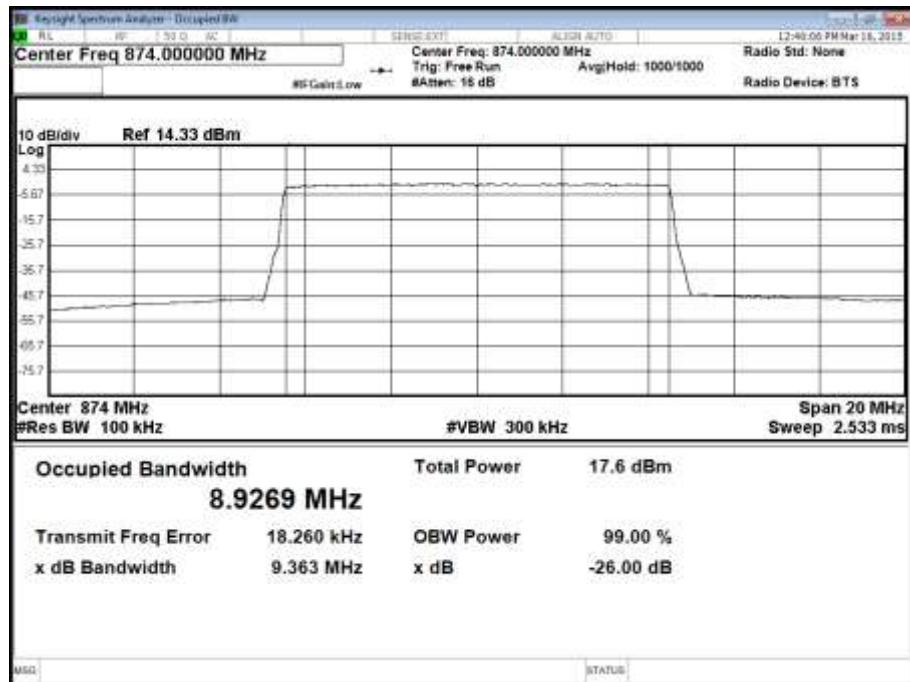
Maximum Output Power 17 dBm (per port)

Carrier Bandwidth / Modulation	Result (KHz)					
	Channel Position B		Channel Position M		Channel Position T	
	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
5.0 MHz / QPSK	4,474.29	4,734.81	4,480.30	4,745.27	4,479.48	4,740.15
10.0 MHz / QPSK	8,926.88	9,362.63	8,943.90	9,411.94	8,937.08	9,397.26

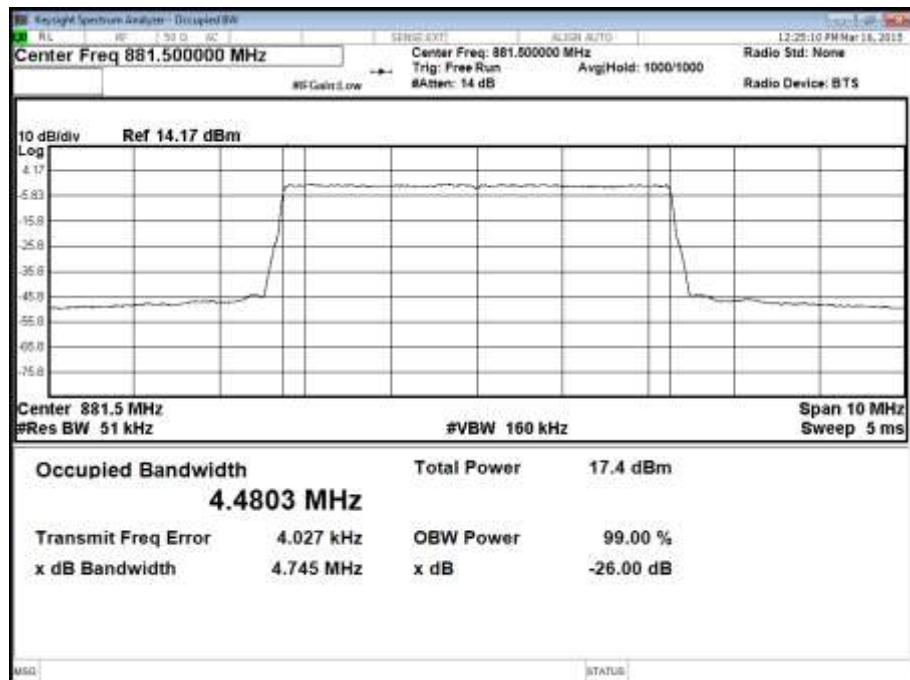
## Channel Position B - Antenna A - 5 MHz Bandwidth



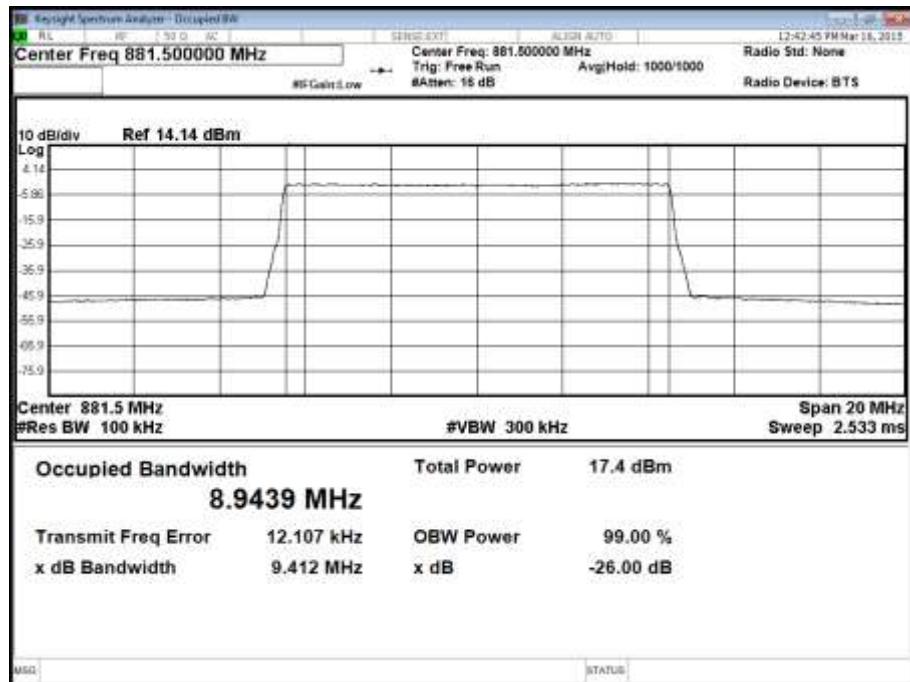
## Channel Position B - Antenna A - 10 MHz Bandwidth



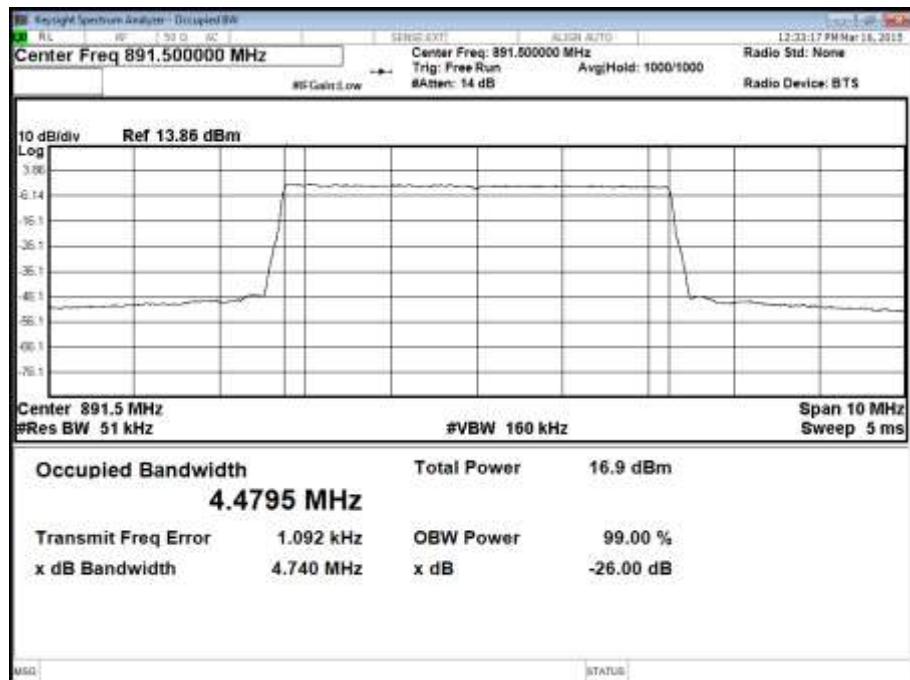
## Channel Position M - Antenna A - 5 MHz Bandwidth



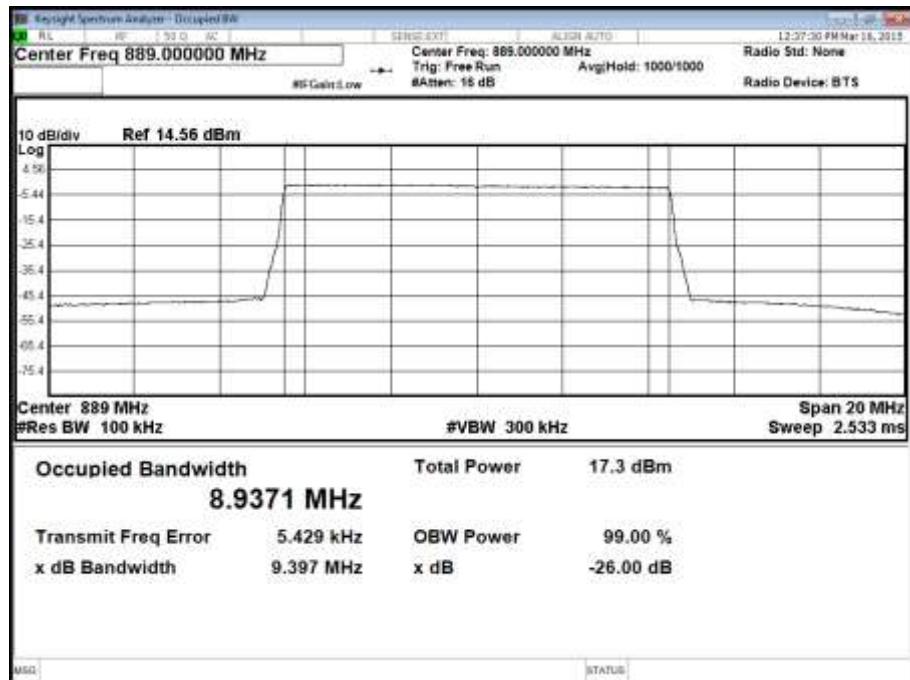
## Channel Position M - Antenna A - 10 MHz Bandwidth



## Channel Position T - Antenna A - 5 MHz Bandwidth



## Channel Position T - Antenna A - 10 MHz Bandwidth

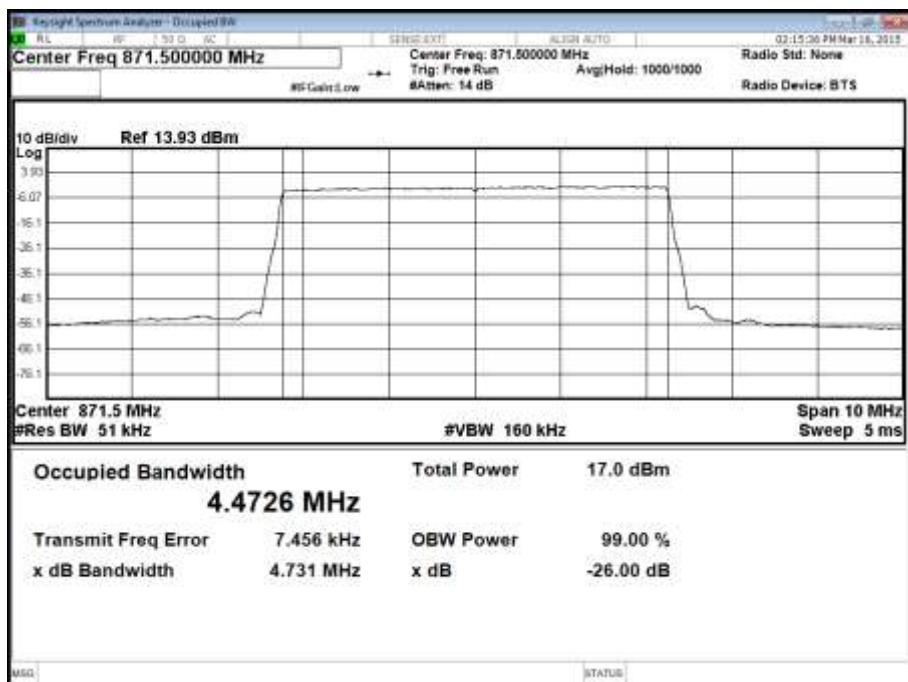


## Configuration 5 – LTE SC Antenna B (see table 3)

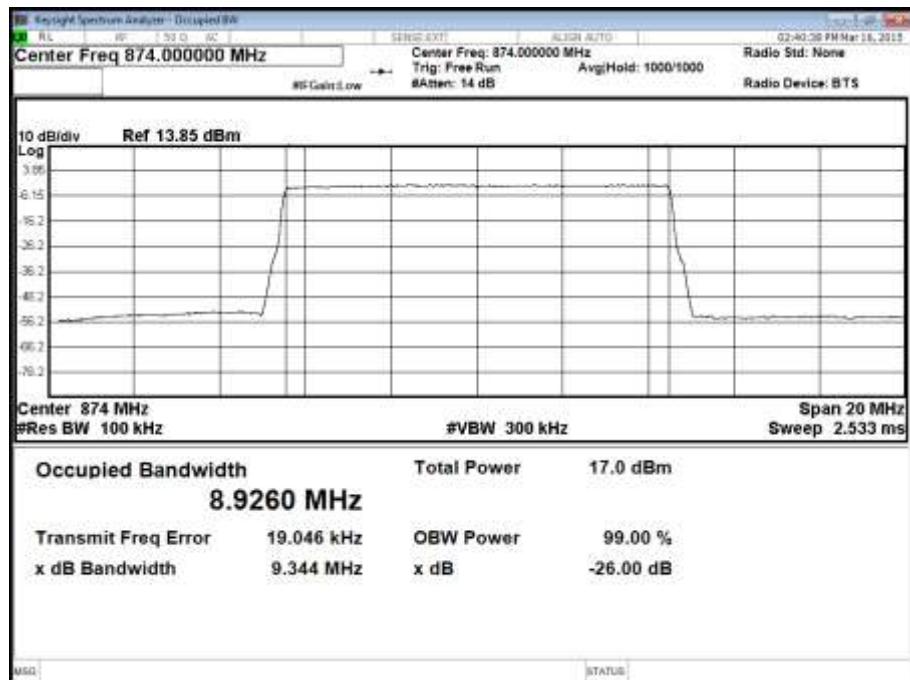
Maximum Output Power 17 dBm (per port)

Carrier Bandwidth / Modulation	Result (KHz)					
	Channel Position B		Channel Position M		Channel Position T	
	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
5.0 MHz / QPSK	4,472.65	4,730.57	4,479.47	4,737.34	4,477.01	4,732.21
10.0 MHz / QPSK	8,925.96	9,343.94	8,946.31	9,388.33	8,930.13	9,367.62

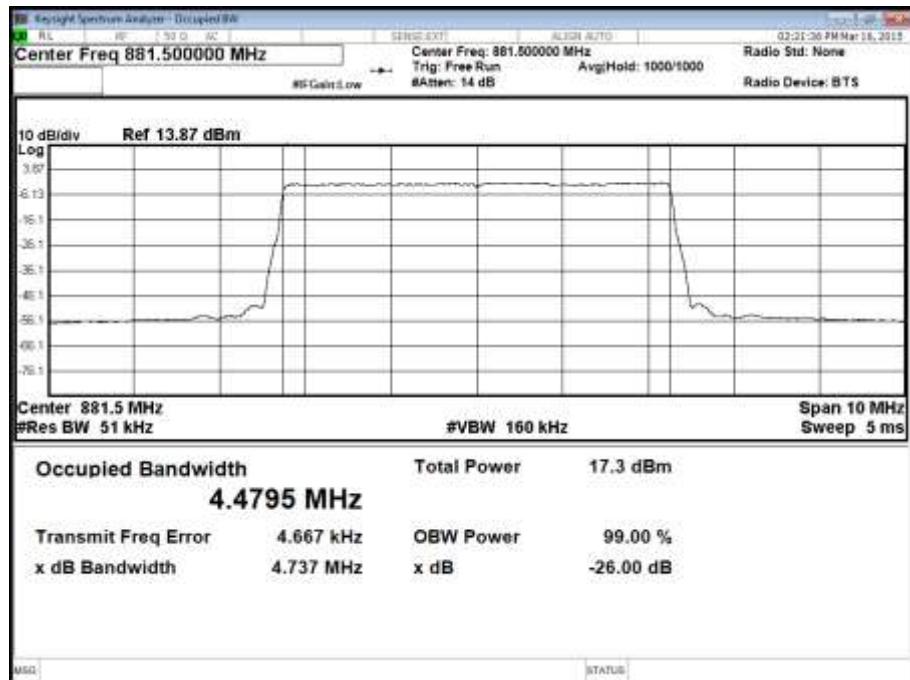
## Channel Position B - Antenna B - 5 MHz Bandwidth

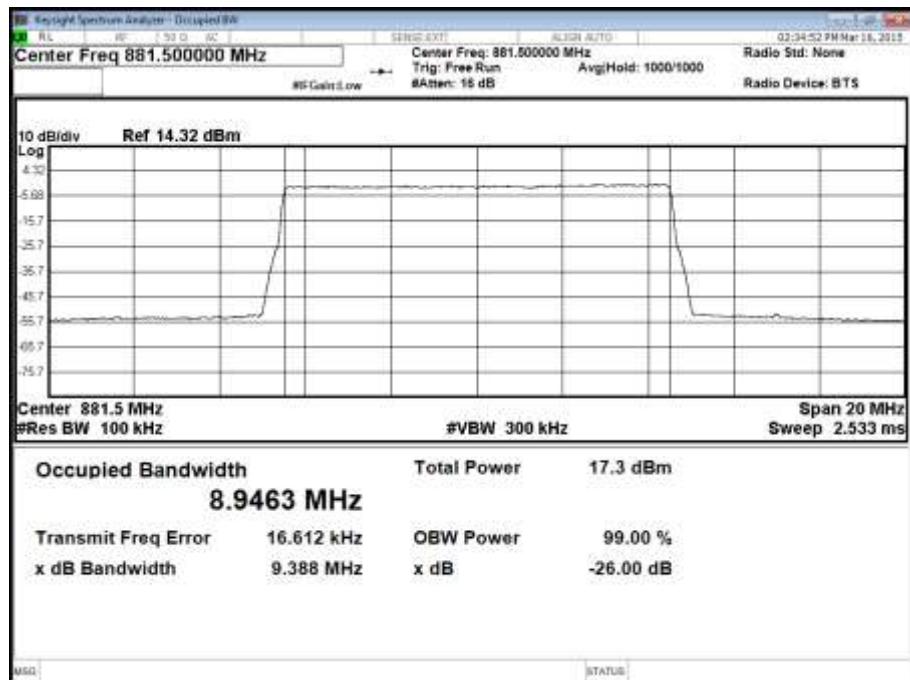
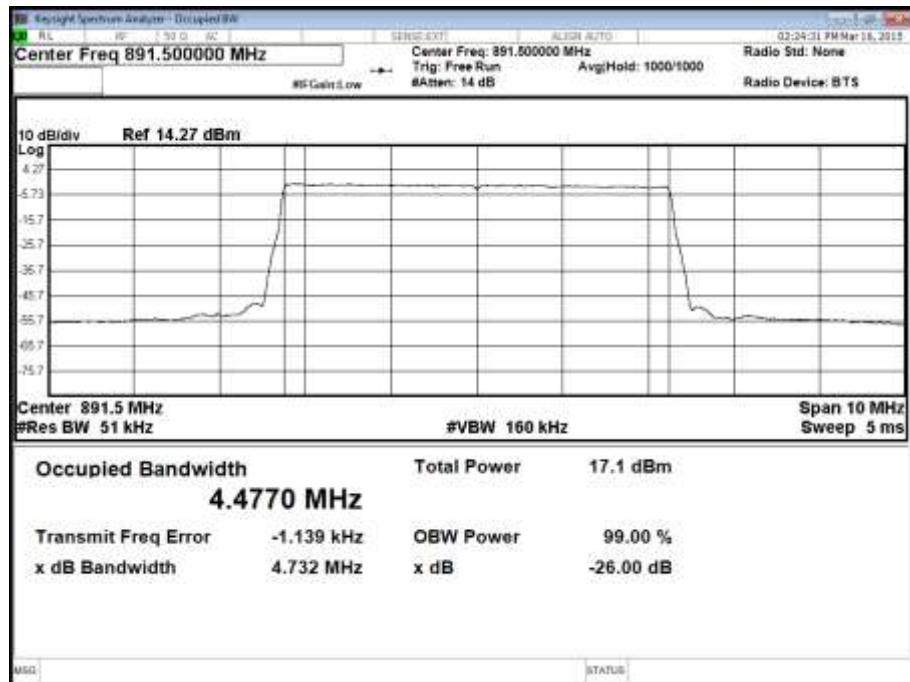


## Channel Position B - Antenna B - 10 MHz Bandwidth

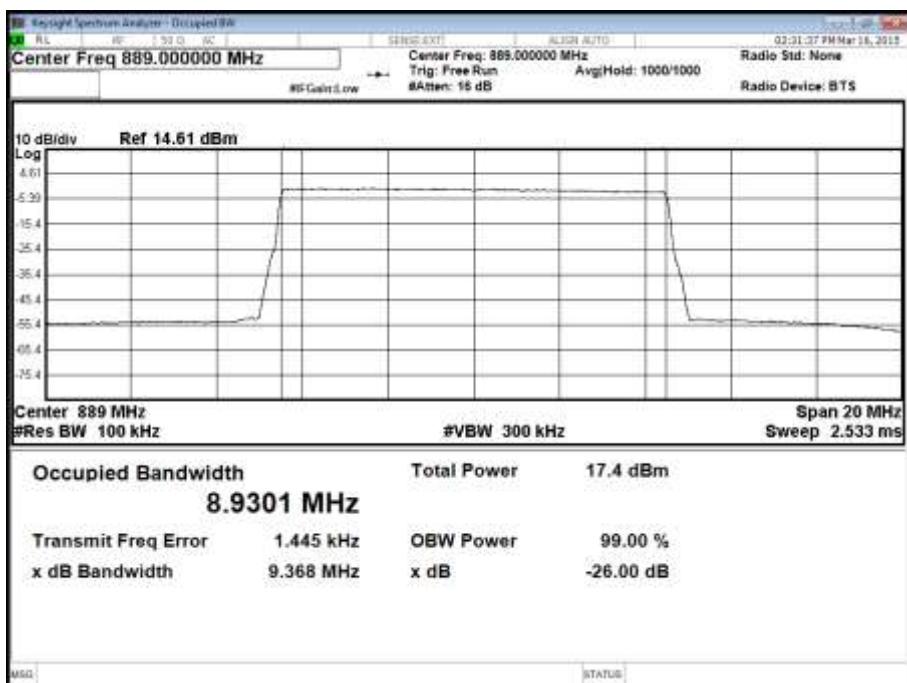


## Channel Position M - Antenna B - 5 MHz Bandwidth



Channel Position M - Antenna B - 10 MHz Bandwidth

Channel Position T - Antenna B - 5 MHz Bandwidth


## Channel Position T - Antenna B - 10 MHz Bandwidth



## 2.3 BAND EDGE

### 2.3.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051  
FCC CFR 47 Part 22, Clause 22.917(b), 22.905(a)(b)  
Industry Canada RSS-132, Clause 5.5

### 2.3.2 Date of Test and Modification State

16, 17 and 18 March 2015 - 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 27.3 - 27.7°C  
Relative Humidity 18.5 - 21.1%

### 2.3.5 Test Method

The EUT was connected to a Spectrum Analyser via 20dB 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. Using the Band Power measurement function of the Spectrum Analyser with an RMS detector, the frequency spectrum up to 1MHz away from the Band Edge was investigated. The Band Power span was configured to be at least 1% of the 26dB Bandwidth and was positioned in the 1MHz region which gave the worst case result.

Testing was performed on both ports. The test limits were set to a worst case value of -16dBm.

The results are shown in the plots below.

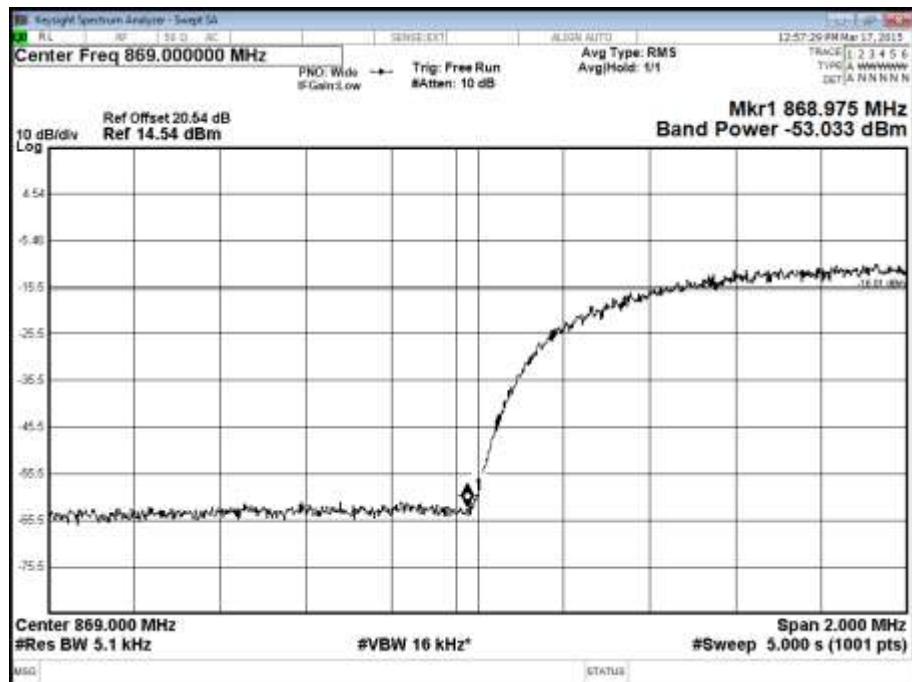
### 2.3.6 Test Results

Configuration 1 – WCDMA SC Antenna A (see table 1)

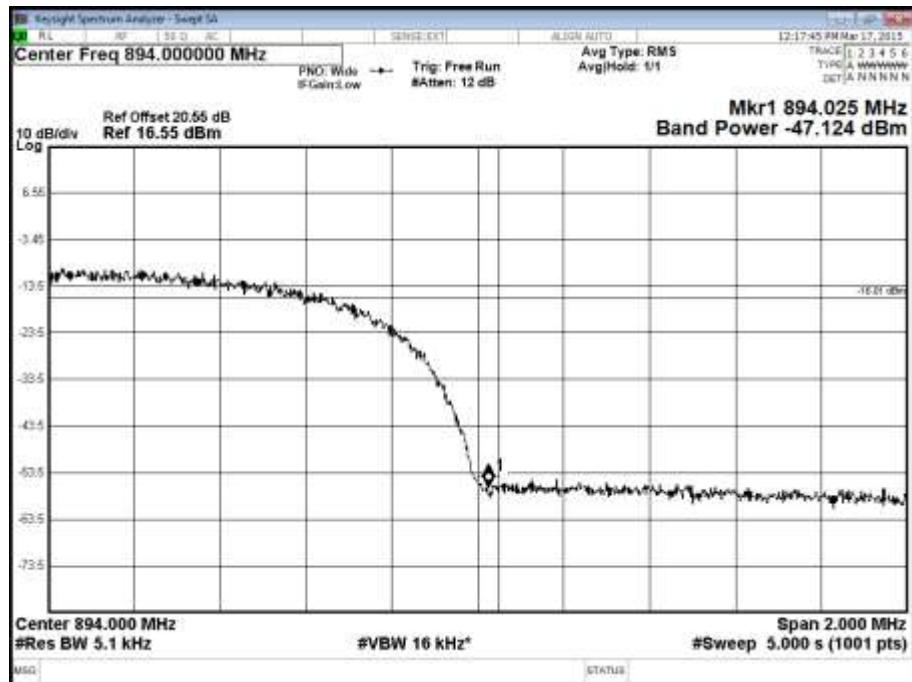
Maximum Output Power 17 dBm (per port)

Modulation	Band Edge (MHz)	
	Channel Position B	Channel Position T
16QAM	871.40	891.60

## Channel Position B - Antenna A



## Channel Position T - Antenna A

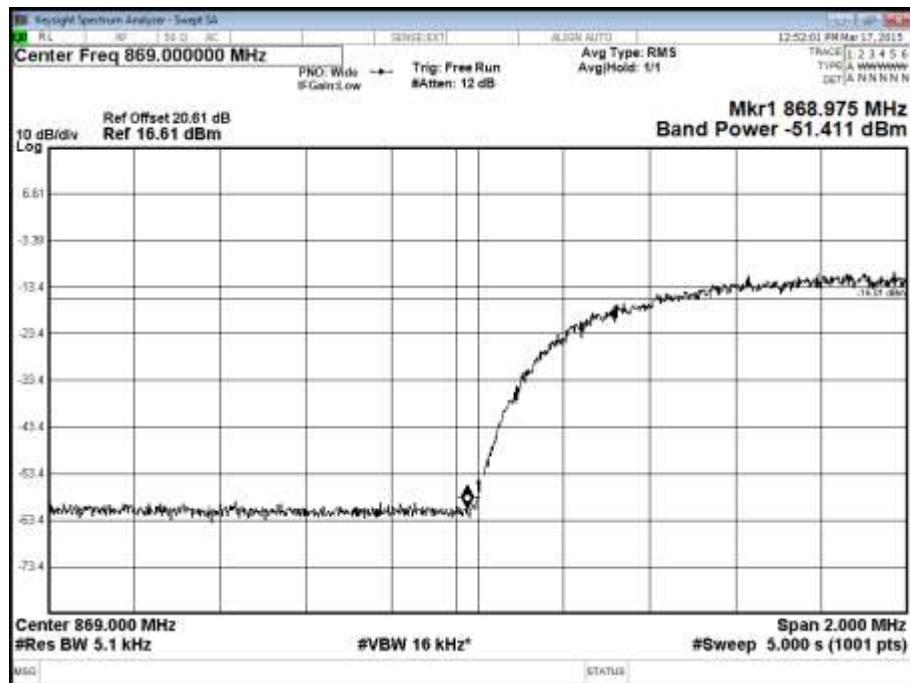


Configuration 1 – WCDMA SC Antenna B (see table 1)

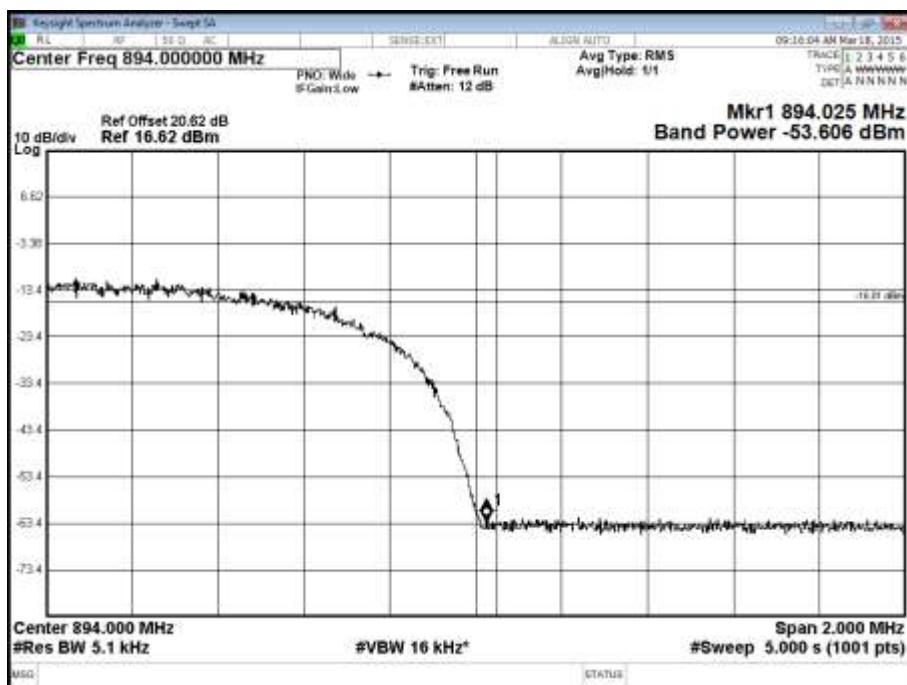
Maximum Output Power 17 dBm (per port)

Modulation	Band Edge (MHz)	
	Channel Position B	Channel Position T
16QAM	871.40	891.60

#### Channel Position B - Antenna B



## Channel Position T - Antenna B



Configuration 2 (BE) – WCDMA MC Antenna A (see table 2)

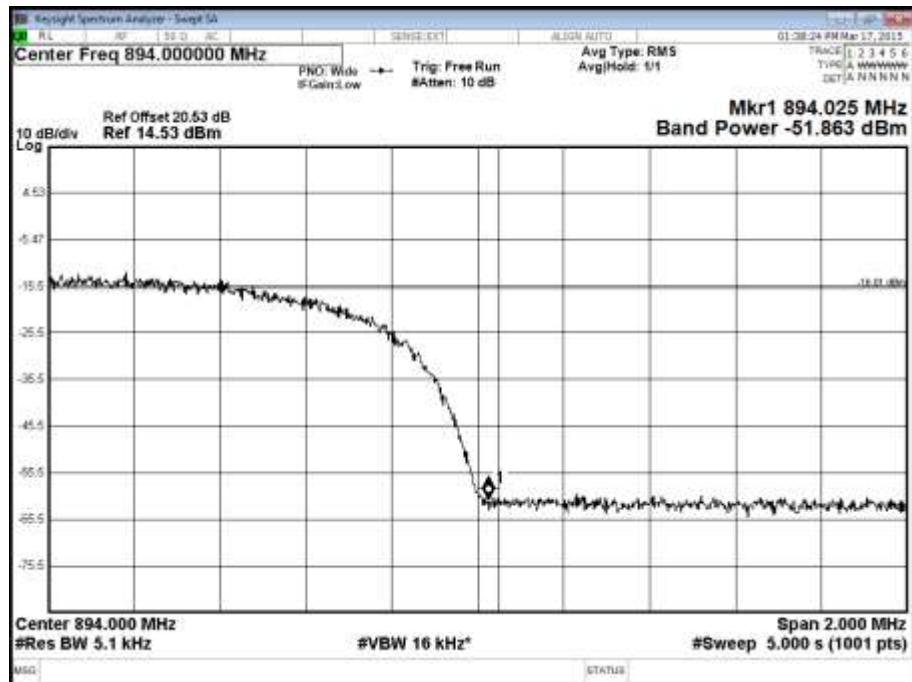
Maximum Output Power 17 dBm (per port)

Modulation	Band Edge (MHz)	
	Channel Position B	Channel Position T
16QAM	871.4 + 876.4	886.6 + 891.6

## Channel Position B - Antenna A



## Channel Position T - Antenna A

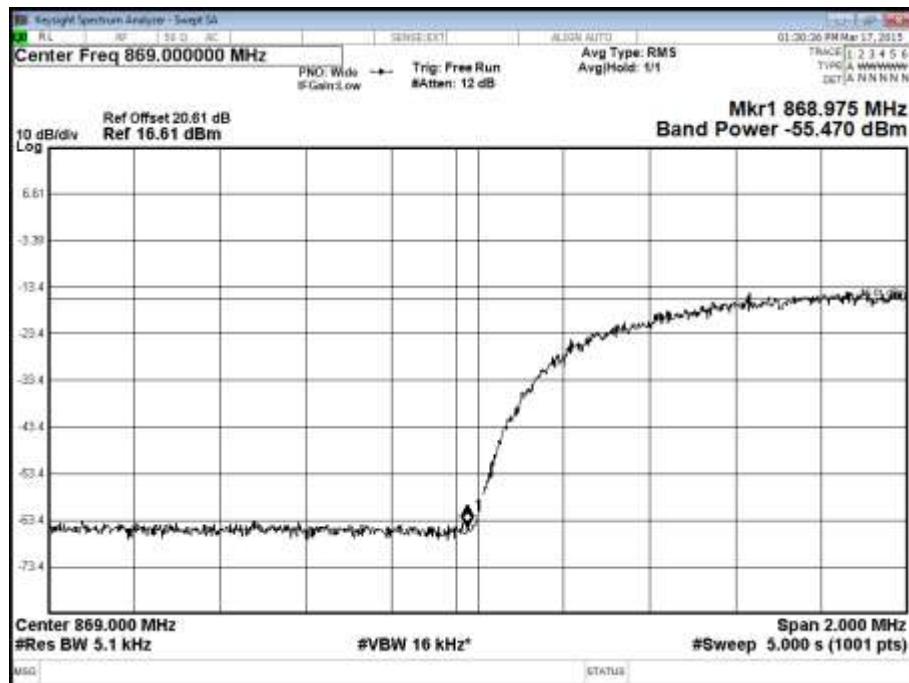


Configuration 2 (BE) – WCDMA MC Antenna B (see table 2)

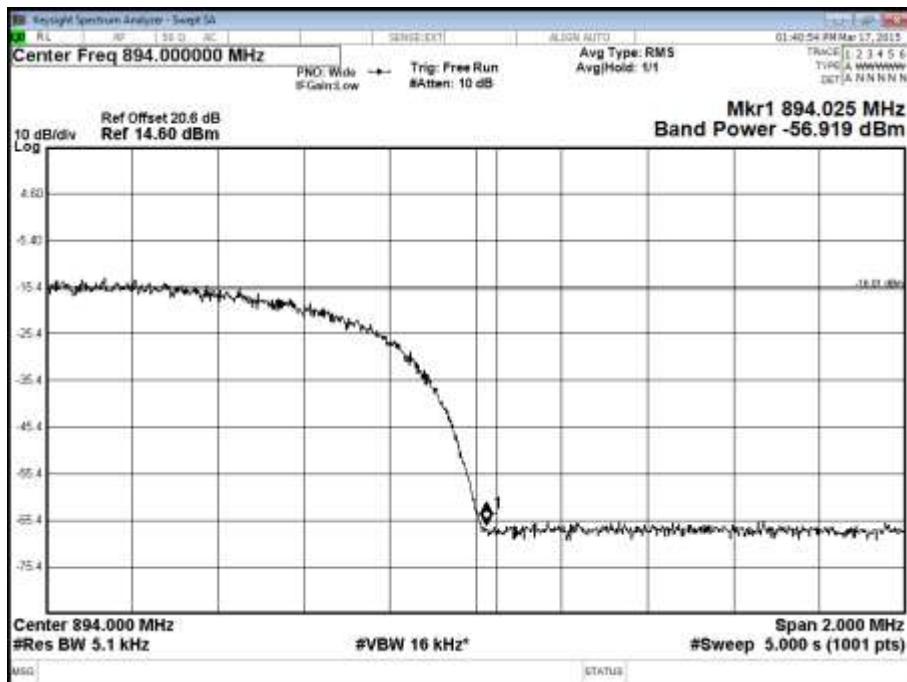
Maximum Output Power 17 dBm (per port)

Modulation	Band Edge (MHz)	
	Channel Position B	Channel Position T
16QAM	871.4 + 876.4	886.6 + 891.6

#### Channel Position B - Antenna B



## Channel Position T - Antenna B

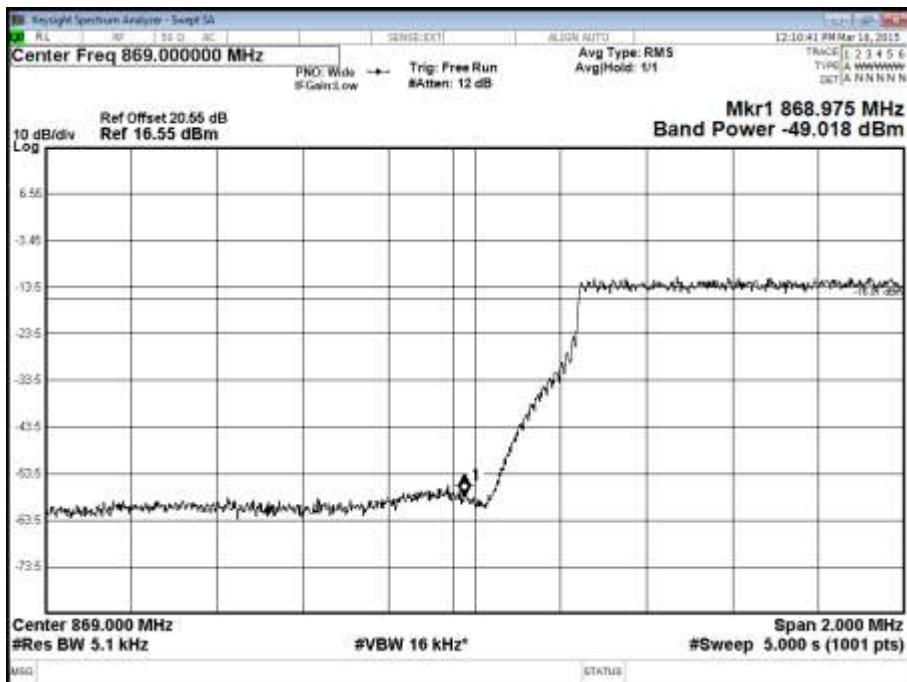


Configuration 5 – LTE SC Antenna A (see table 3)

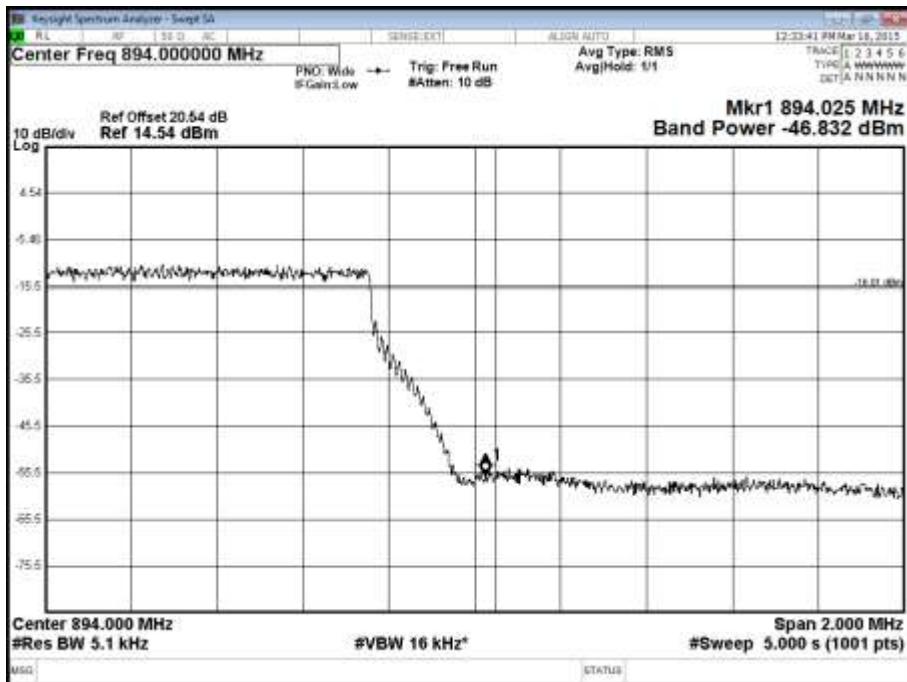
Maximum Output Power 17 dBm (per port)

Carrier Bandwidth	Modulation	Band Edge (MHz)	
		Channel Position B	Channel Position T
5.0 MHz	QPSK	871.50	891.50
10.0 MHz	QPSK	874.00	889.00

## Channel Position B - Antenna A - 5 MHz Bandwidth



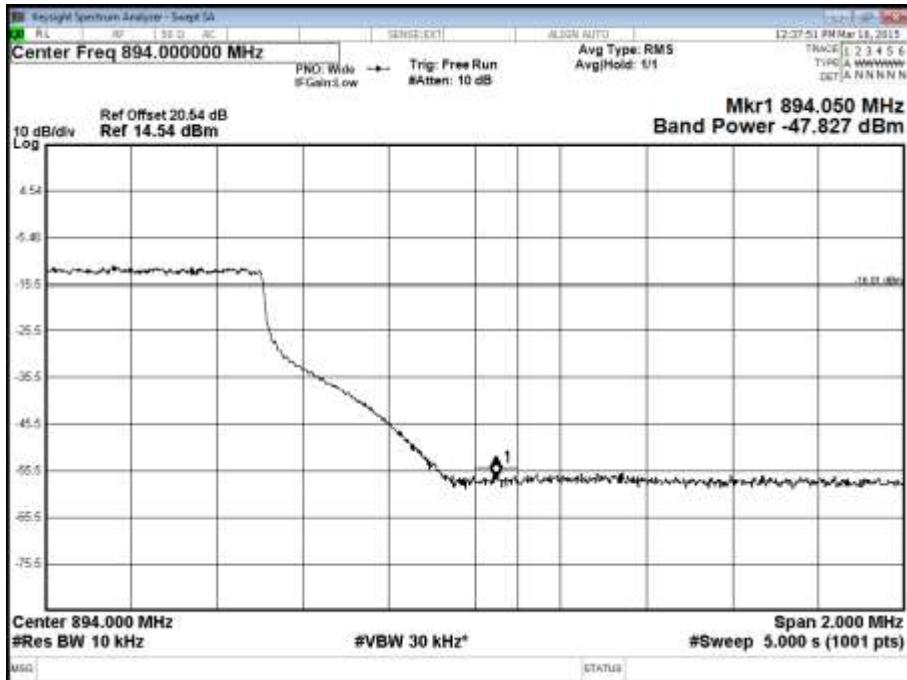
## Channel Position T - Antenna A - 5 MHz Bandwidth



## Channel Position B - Antenna A - 10 MHz Bandwidth



## Channel Position T - Antenna A - 10 MHz Bandwidth

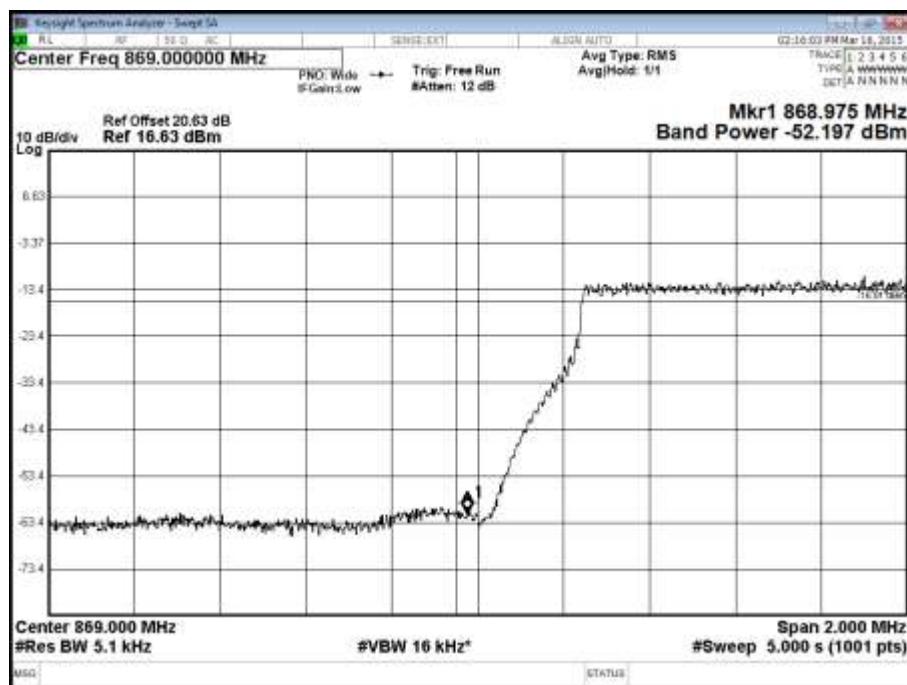


Configuration 5 – LTE SC Antenna B (see table 3)

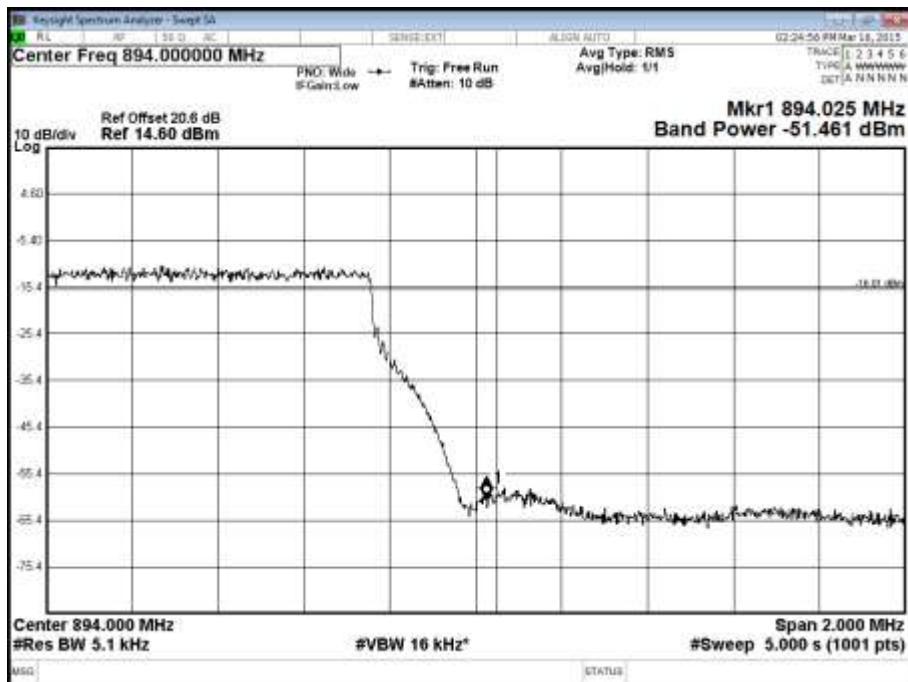
Maximum Output Power 17 dBm (per port)

Carrier Bandwidth	Modulation	Band Edge (MHz)	
		Channel Position B	Channel Position T
5.0 MHz	QPSK	871.50	891.50
10.0 MHz	QPSK	874.00	889.00

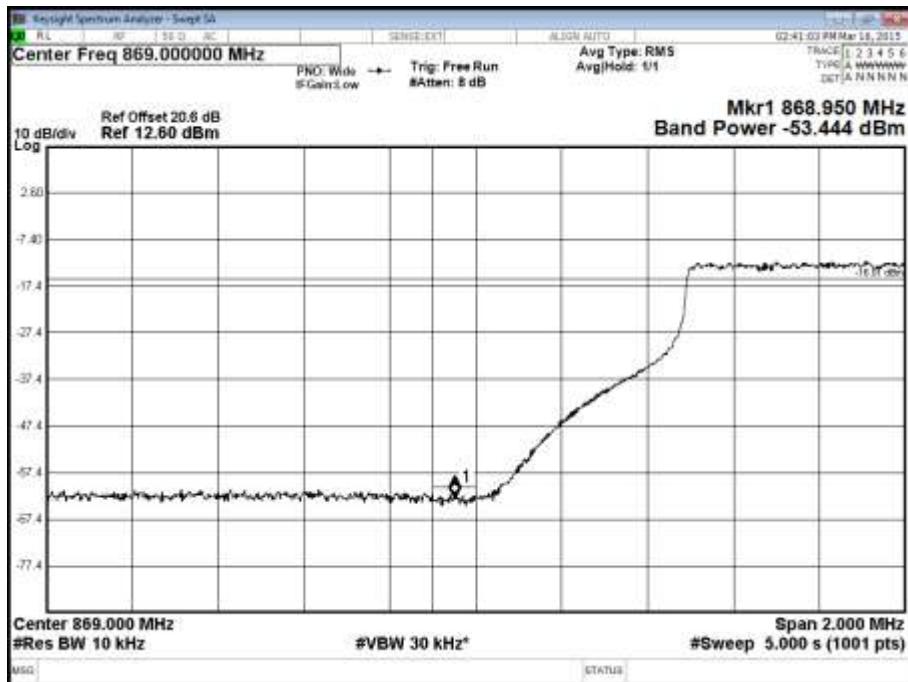
Channel Position B - Antenna B - 5 MHz Bandwidth



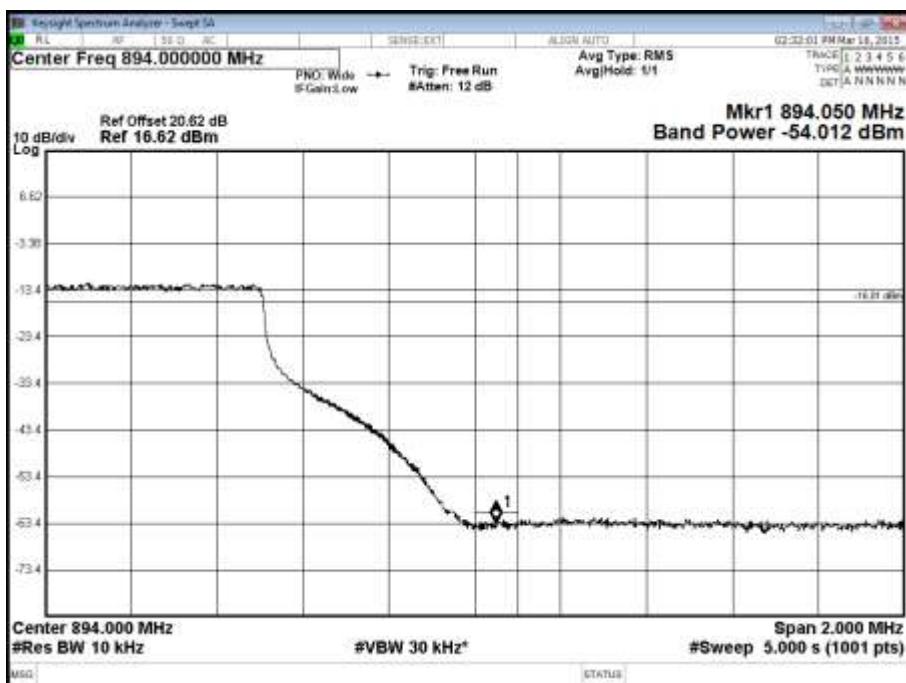
## Channel Position T - Antenna B - 5 MHz Bandwidth



## Channel Position B - Antenna B - 10 MHz Bandwidth



## Channel Position T - Antenna B - 10 MHz Bandwidth

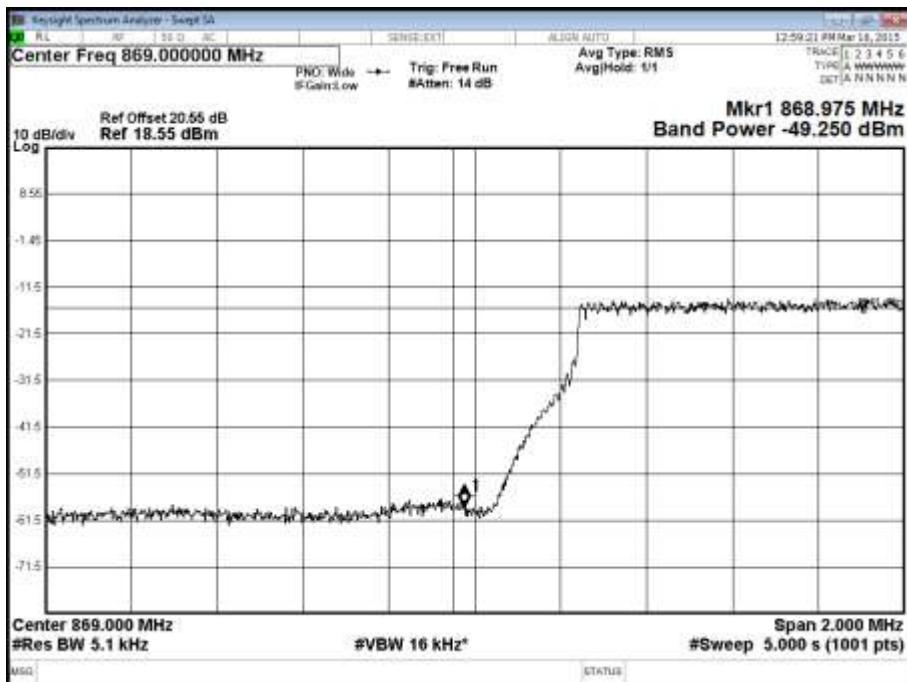


Configuration 6 and 8 (BE) – LTE MC Antenna A (see table 4)

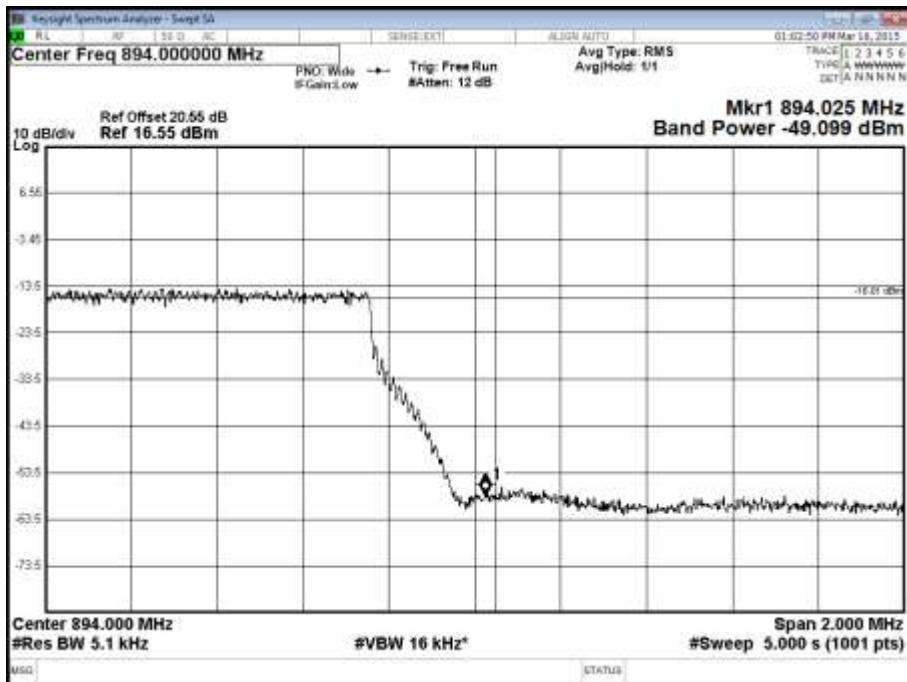
Maximum Output Power 17 dBm (per port)

Carrier Bandwidth	Modulation	Band Edge (MHz)	
		Channel Position B	Channel Position T
5.0 MHz	QPSK	871.5 + 876.5	886.5 + 891.5
10.0 MHz	QPSK	874.0 + 884.0	879.0 + 889.0

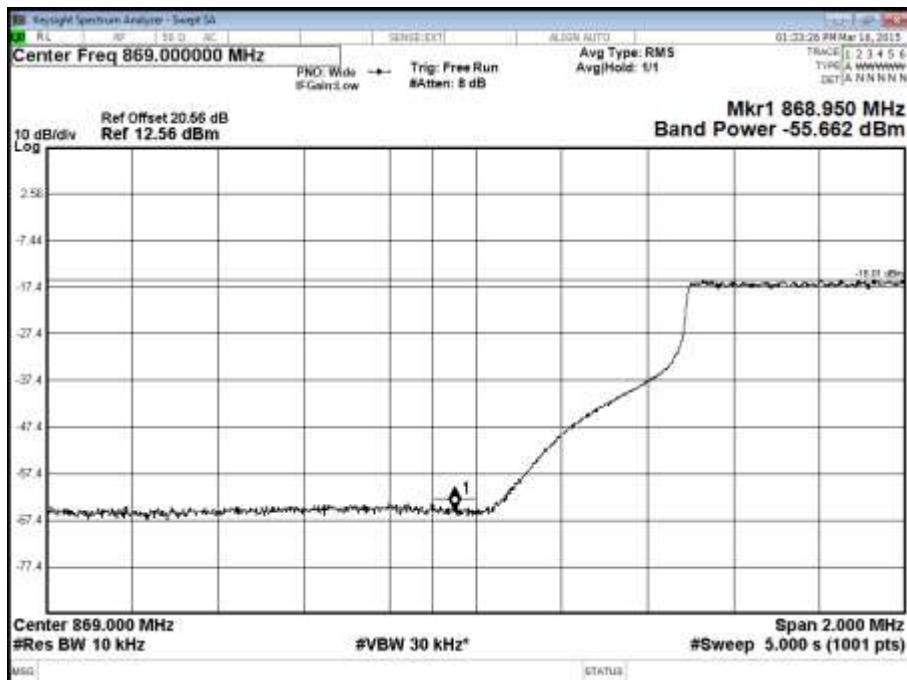
## Channel Position B - Antenna A - 5 MHz Bandwidth



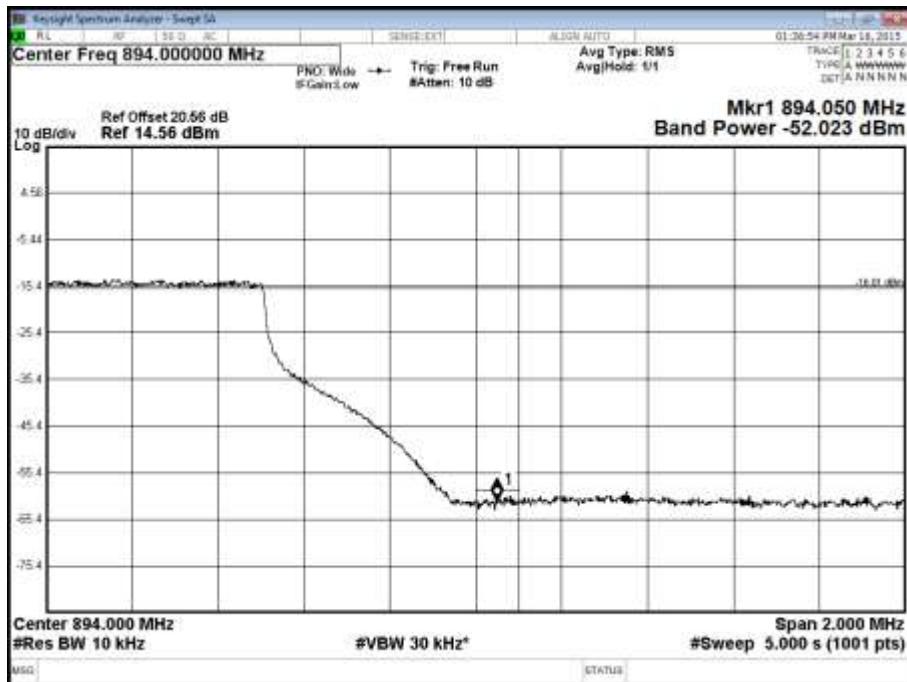
## Channel Position T - Antenna A - 5 MHz Bandwidth



## Channel Position B - Antenna A - 10 MHz Bandwidth



## Channel Position T - Antenna A - 10 MHz Bandwidth

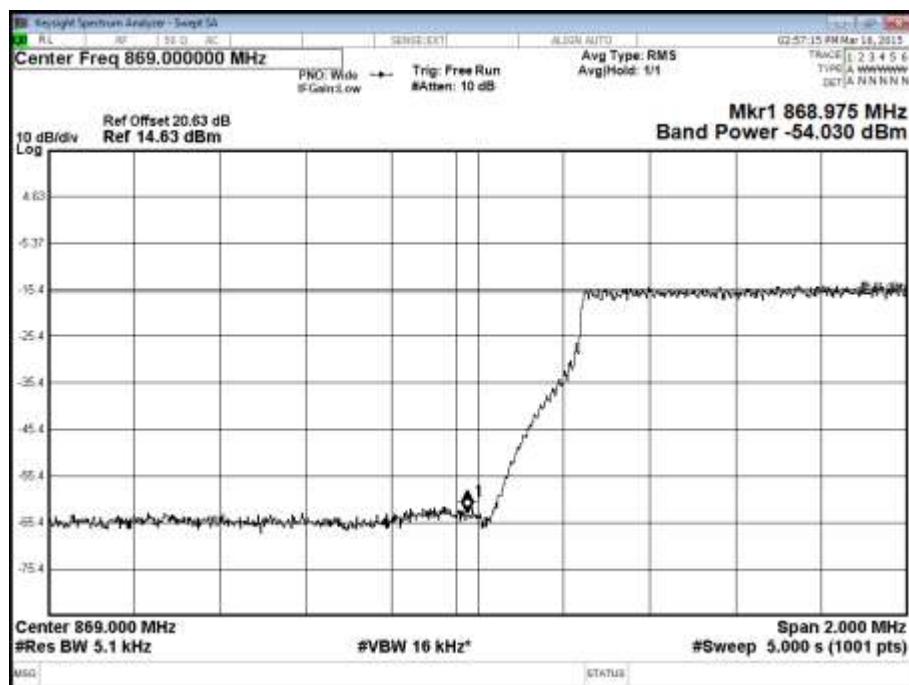


Configuration 6 and 8 (BE) – LTE MC Antenna B (see table 4)

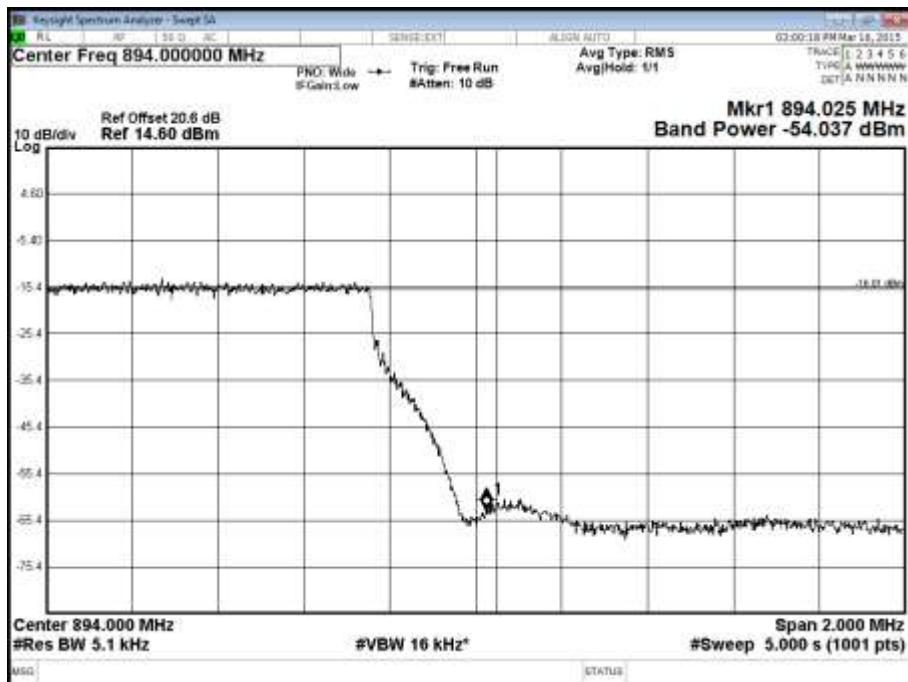
Maximum Output Power 17 dBm (per port)

Carrier Bandwidth	Modulation	Band Edge (MHz)	
		Channel Position B	Channel Position T
5.0 MHz	QPSK	871.5 + 876.5	886.5 + 891.5
10.0 MHz	QPSK	874.0 + 884.0	879.0 + 889.0

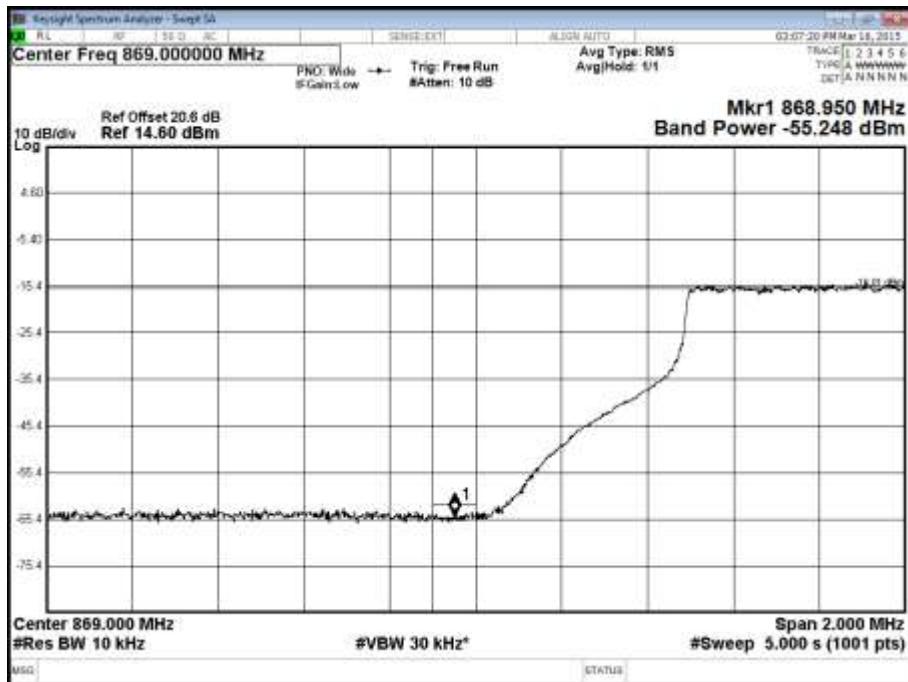
Channel Position B - Antenna B - 5 MHz Bandwidth



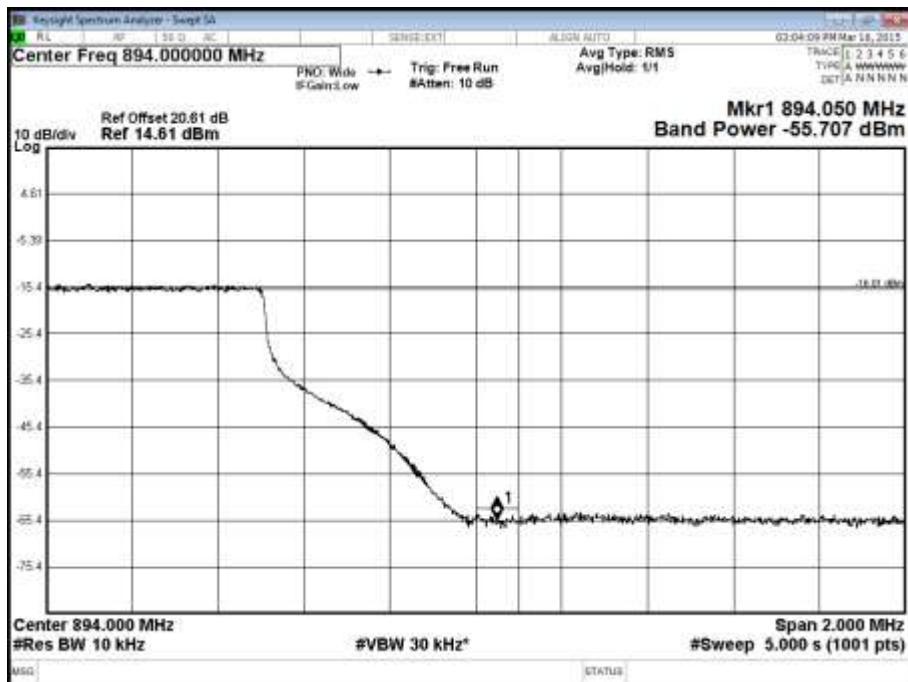
## Channel Position T - Antenna B - 5 MHz Bandwidth



## Channel Position B - Antenna B - 10 MHz Bandwidth



## Channel Position T - Antenna B - 10 MHz Bandwidth



Configuration 12 – WCDMA + LTE Antenna A (see table 6)

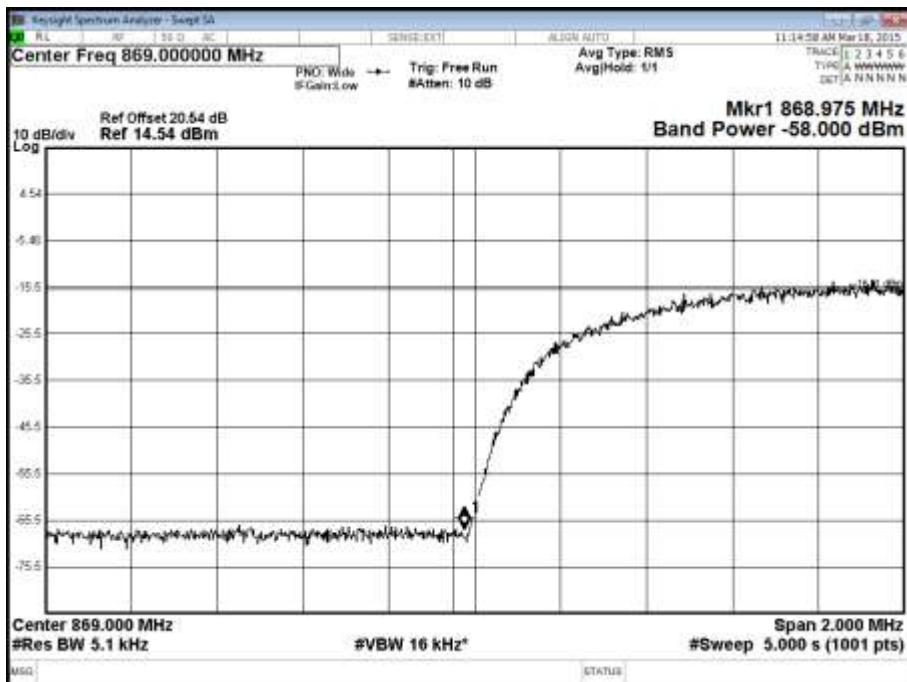
Maximum Output Power 17 dBm (per port)

WCDMA Modulation / LTE Bandwidth	Band Edge (MHz)	
	Channel Position BRFBW	Channel Position TRFBW
16QAM / 10.0 MHz	871.4 + 878.9	884.1 + 891.6

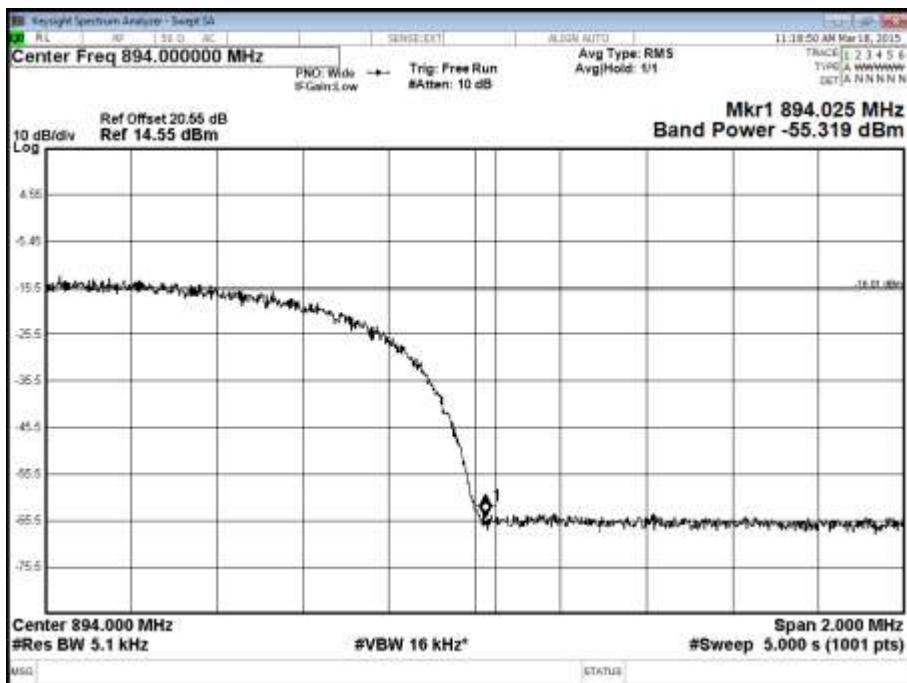
Remarks

LTE Modulation = QPSK

## Channel Position BRFBW - Antenna A



## Channel Position TRFBW - Antenna A



Configuration 12 – WCDMA + LTE Antenna B (see table 6)

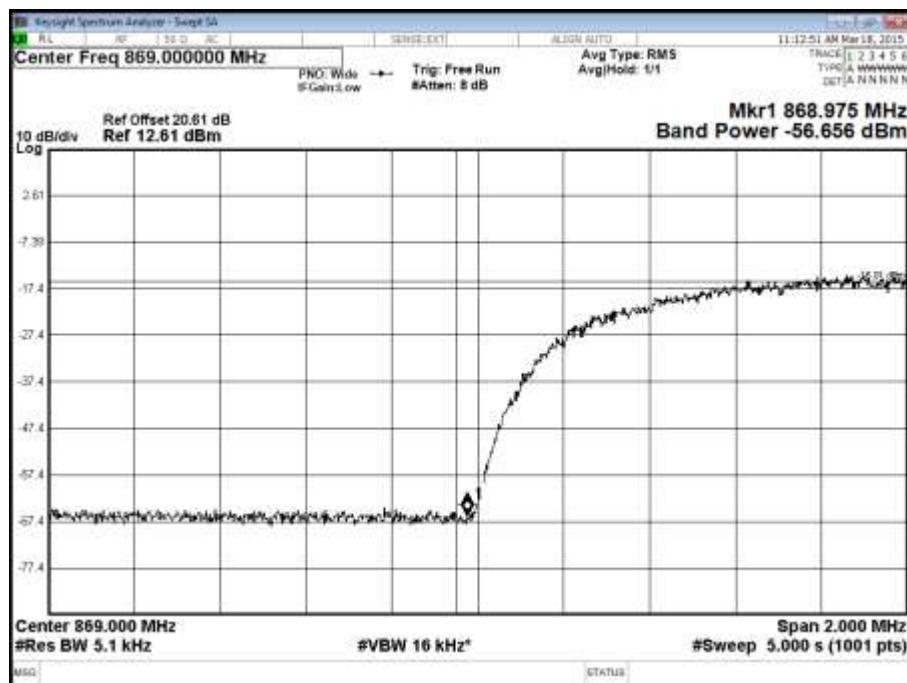
Maximum Output Power 17 dBm (per port)

WCDMA Modulation / LTE Bandwidth	Band Edge (MHz)	
	Channel Position BRFBW	Channel Position TRFBW
16QAM / 10.0 MHz	871.4 + 878.9	884.1 + 891.6

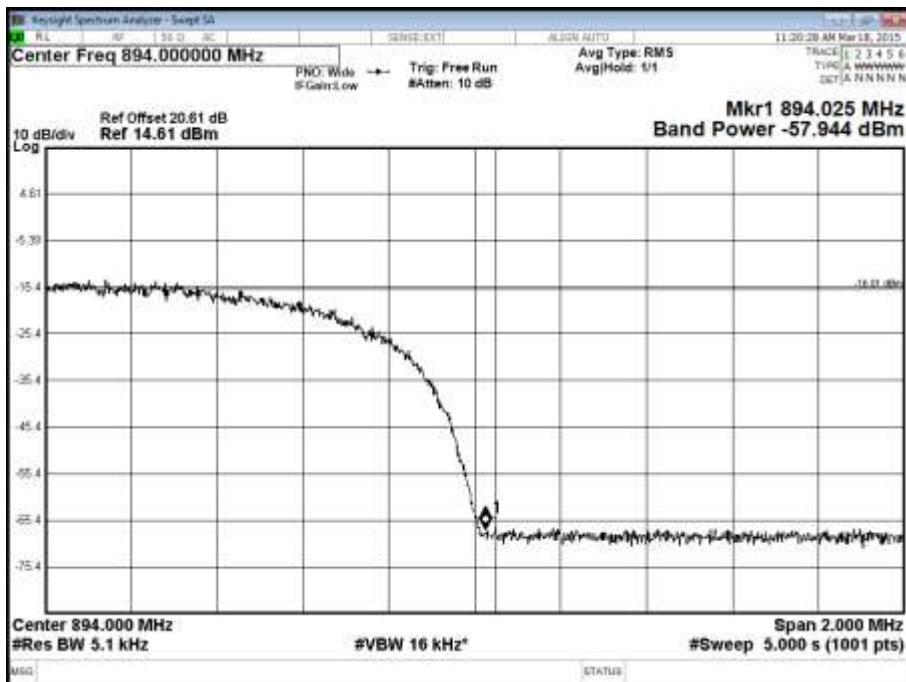
Remarks

LTE Modulation = QPSK

Channel Position BRFBW - Antenna B



## Channel Position TRFBW - Antenna B



Limit	-16 dBm (-13 dBm - 10log(NANT) where N = 2)
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## 2.4 TRANSMITTER SPURIOUS EMISSIONS

### 2.4.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051  
FCC CFR 47 Part 22, Clause 22.917(a)(b)  
Industry Canada RSS-132, Clause 5.5

### 2.4.2 Date of Test and Modification State

16, 17 and 18 March 2015 - 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	27.3 - 27.7°C
Relative Humidity	18.5 - 21.1%

### 2.4.5 Test Method

The EUT was connected to a Spectrum Analyser via 20dB of attenuation for measurements from 9KHz to 9GHz except for the measurement band between 1.34GHz to 6GHz where 20dB of attenuation and a high pass filter were used.

A Network Analyser was used to calibrate the path loss between the EUT and the Spectrum Analyser and the worst case path loss in the measured ranges was entered as a reference level offset.

Over the measured ranges, the analyser RBW was set to 1MHz, VBW 3MHz with an RMS detector used in conjunction with a trace Max Hold to give the required average result.

Testing was performed on both ports in configurations of the EUT as reported below. The test limits were set to a worst case value of -16dBm.

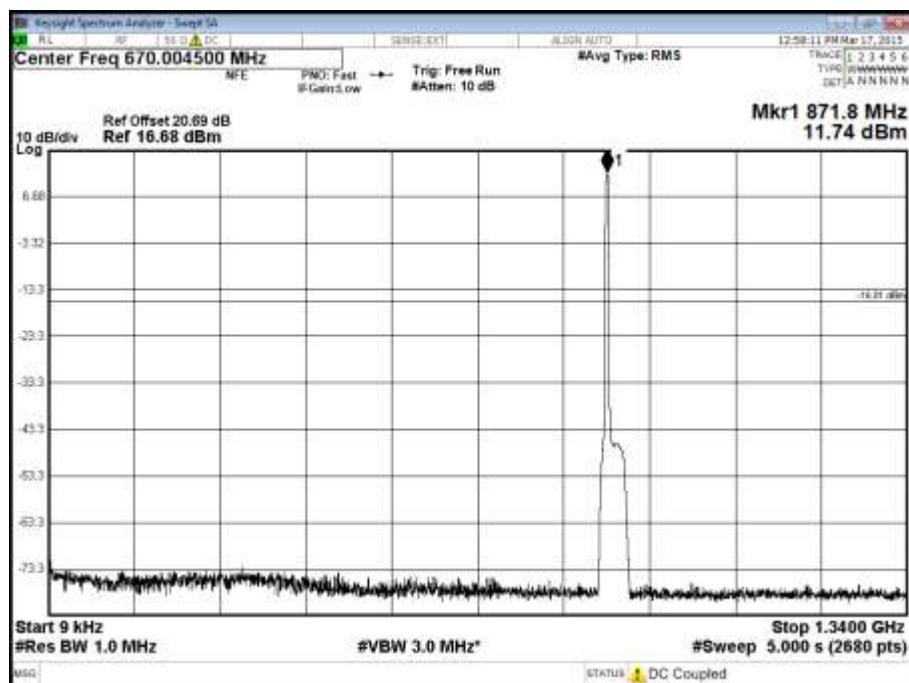
The results are shown in the plots below.

## 2.4.6 Test Results

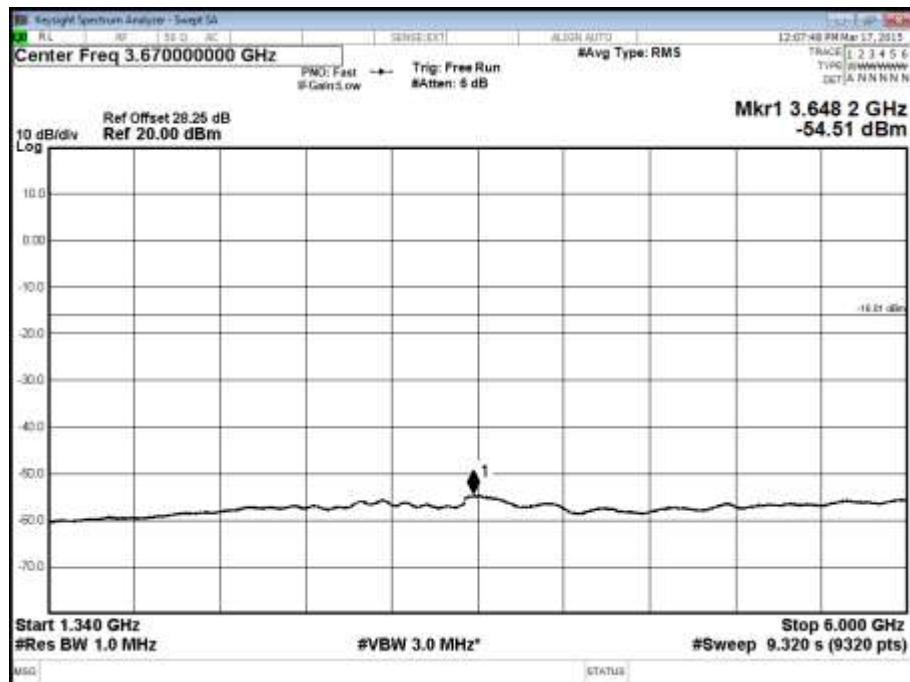
Configuration 1 – WCDMA SC Antenna A (see table 1)

Maximum Output Power 17 dBm (per port)

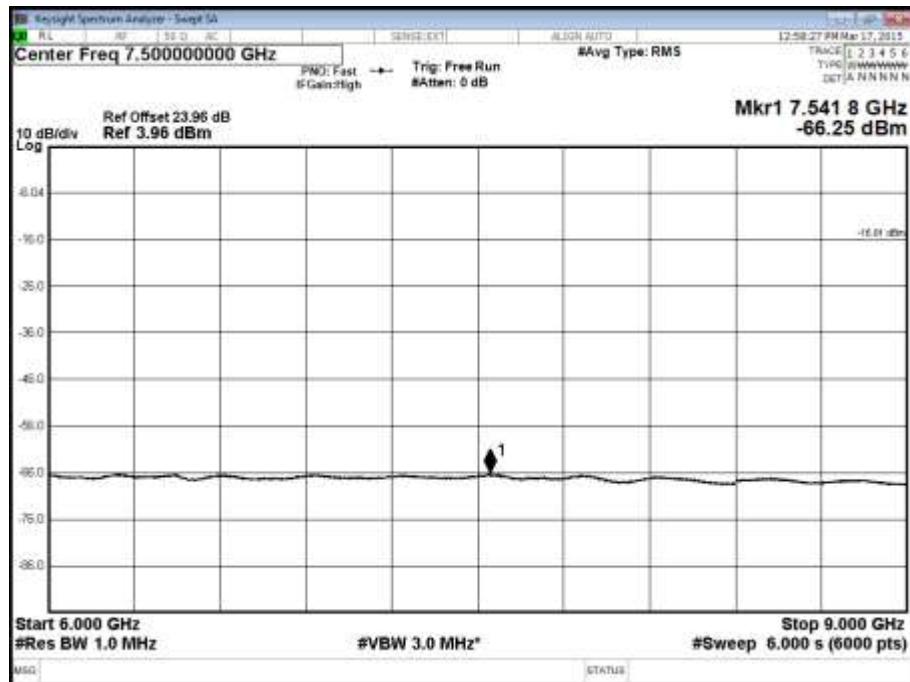
### Channel Position B - Antenna A



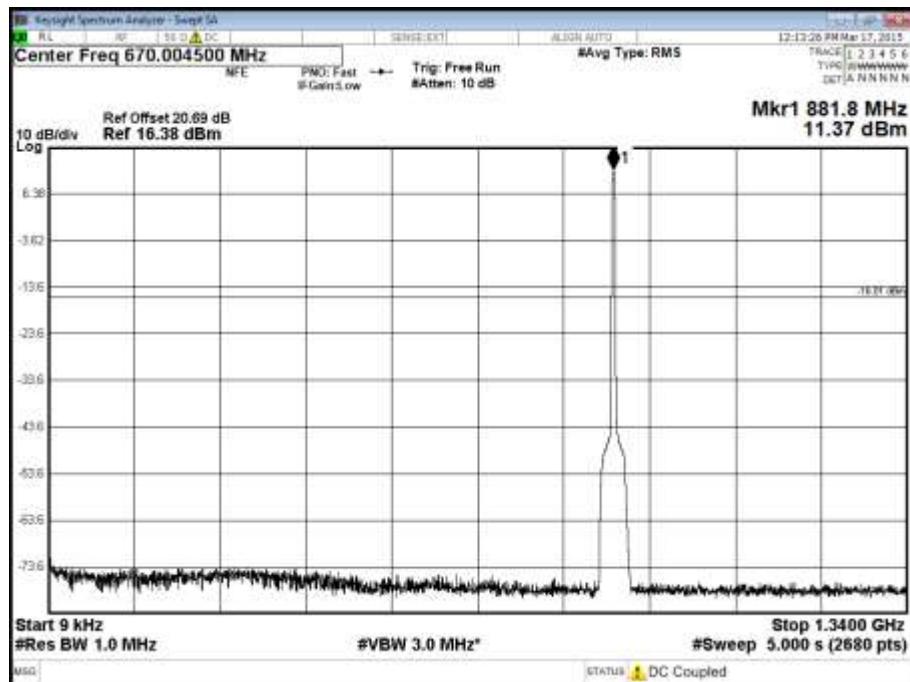
## Channel Position B - Antenna A



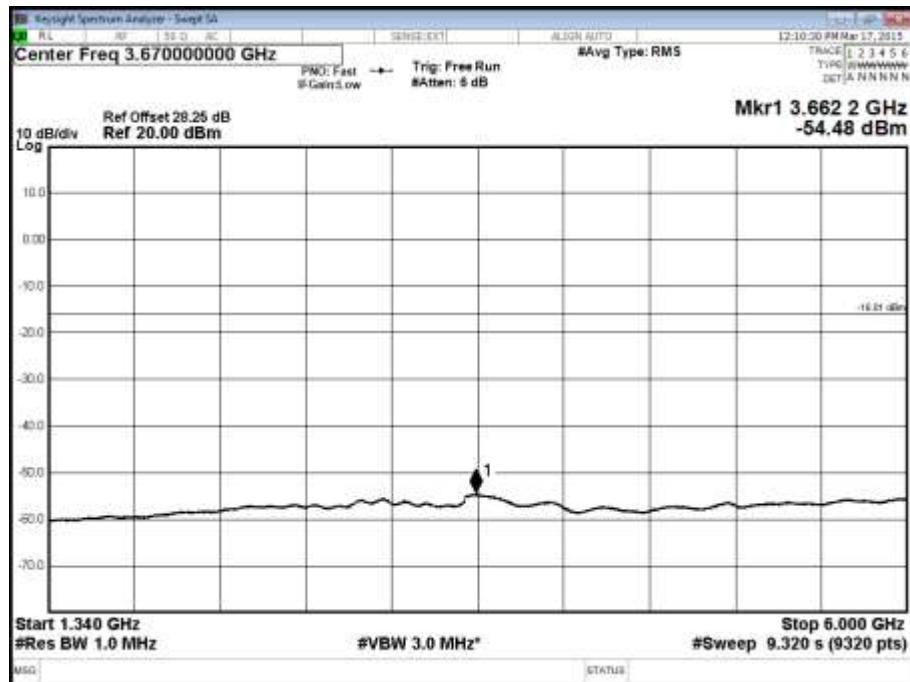
## Channel Position B - Antenna A



## Channel Position M - Antenna A



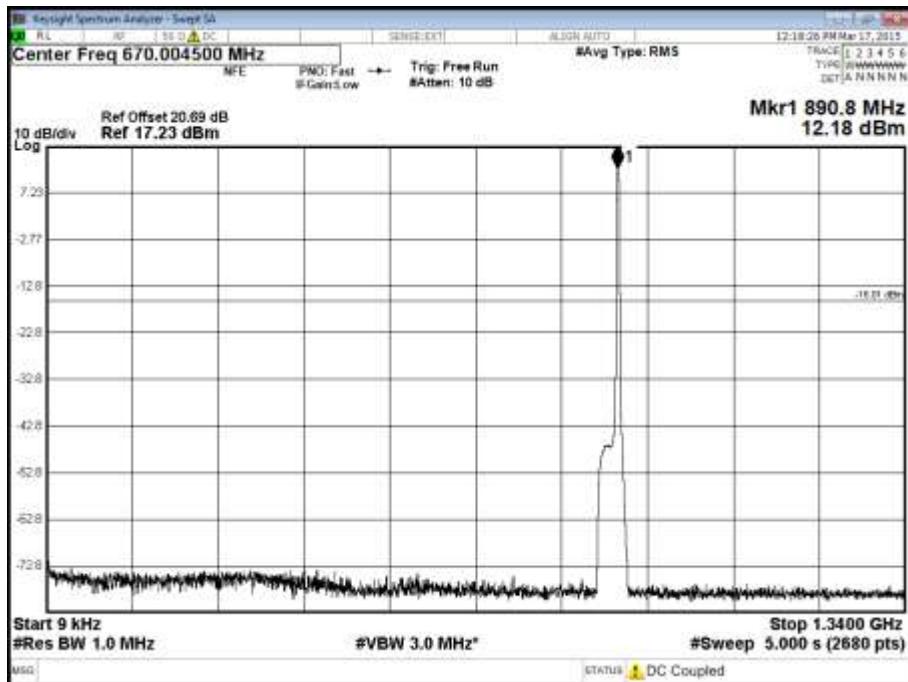
## Channel Position M - Antenna A



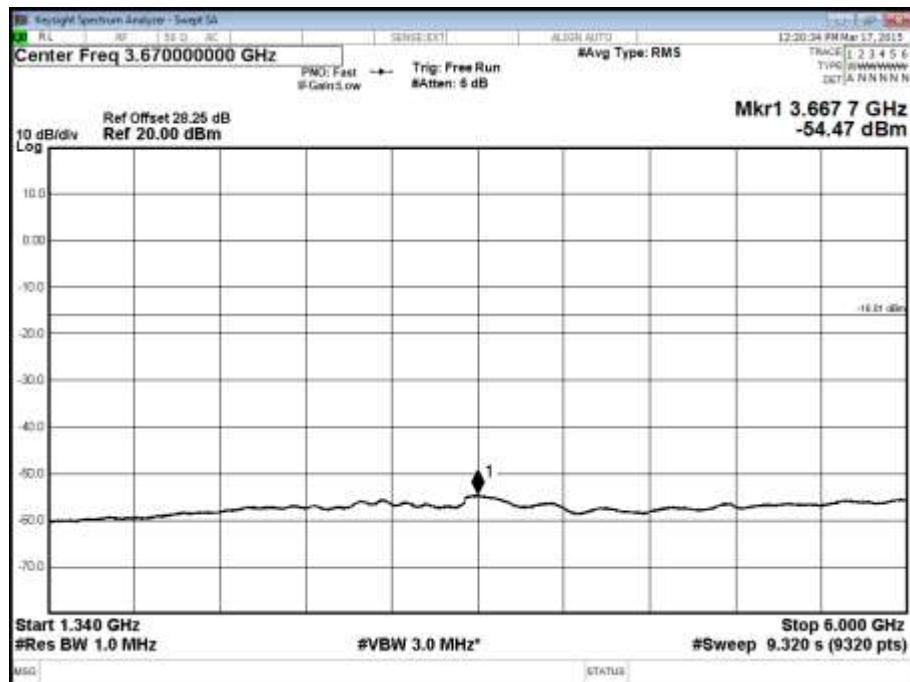
## Channel Position M - Antenna A



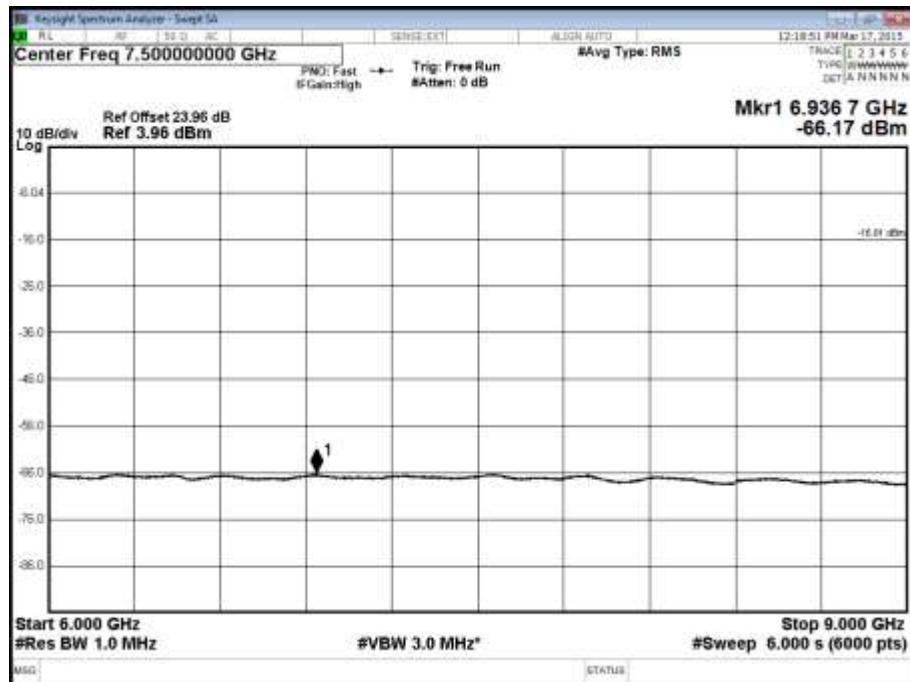
## Channel Position T - Antenna A



## Channel Position T - Antenna A



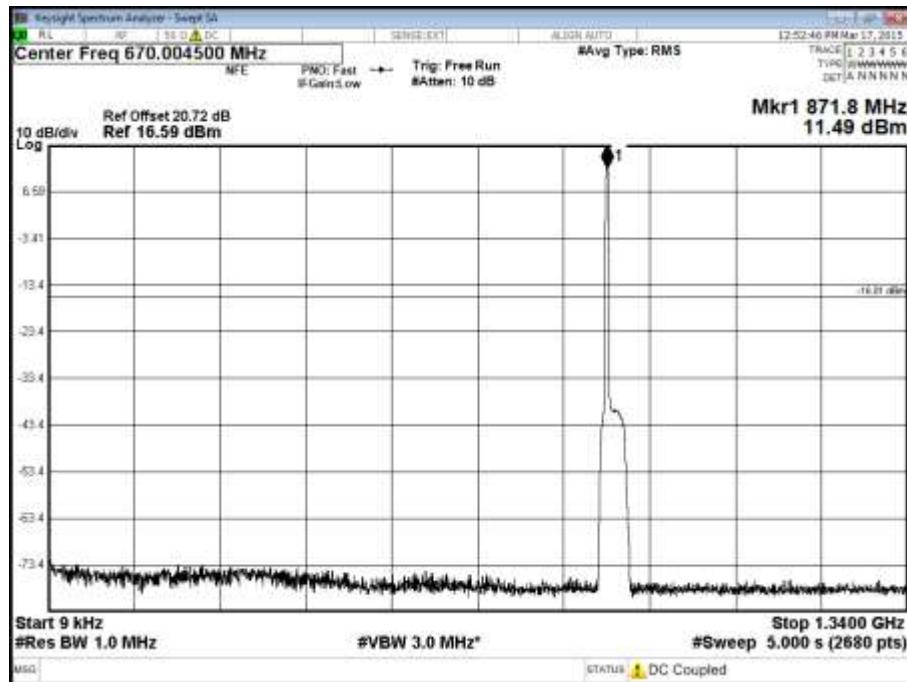
## Channel Position T - Antenna A



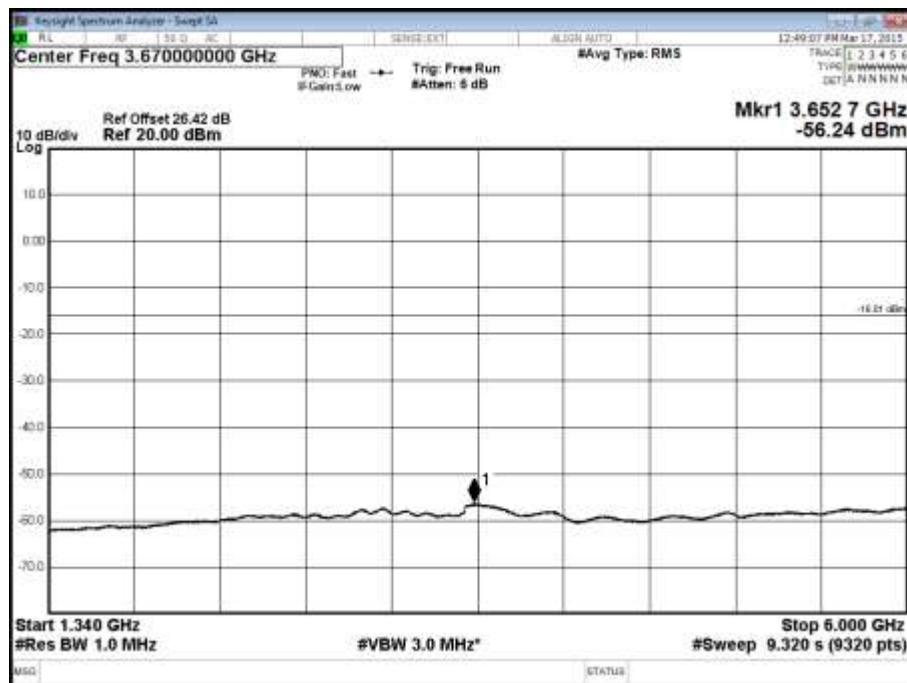
Configuration 1 – WCDMA SC Antenna B (see table 1)

Maximum Output Power 17 dBm (per port)

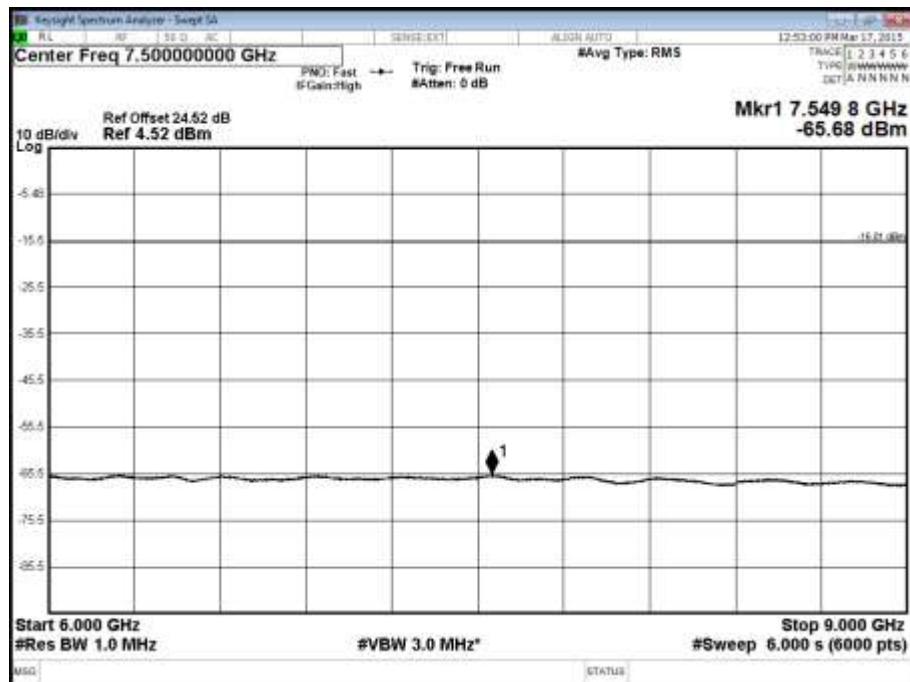
Channel Position B - Antenna B



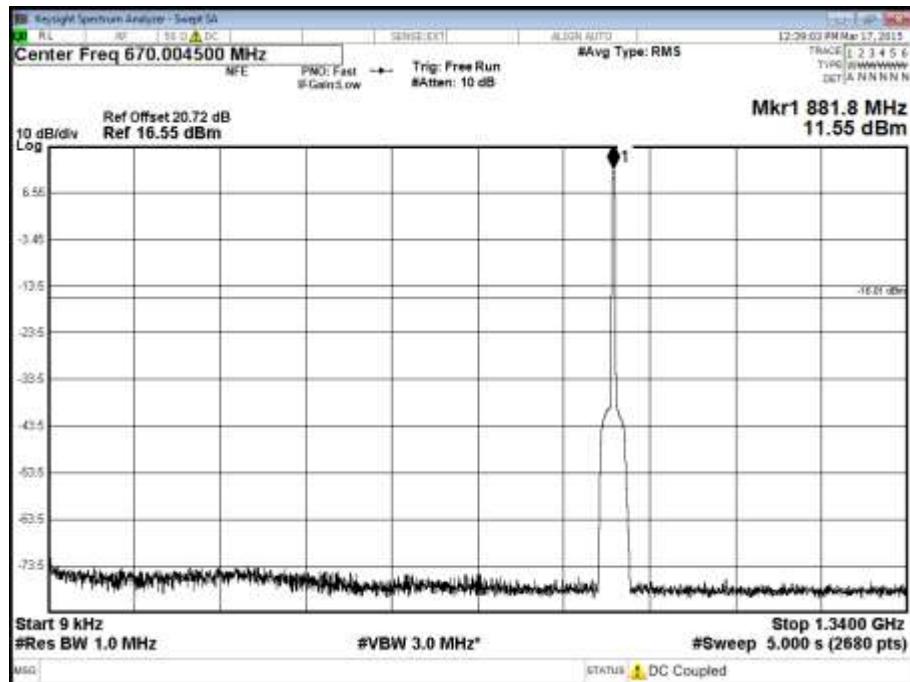
Channel Position B - Antenna B



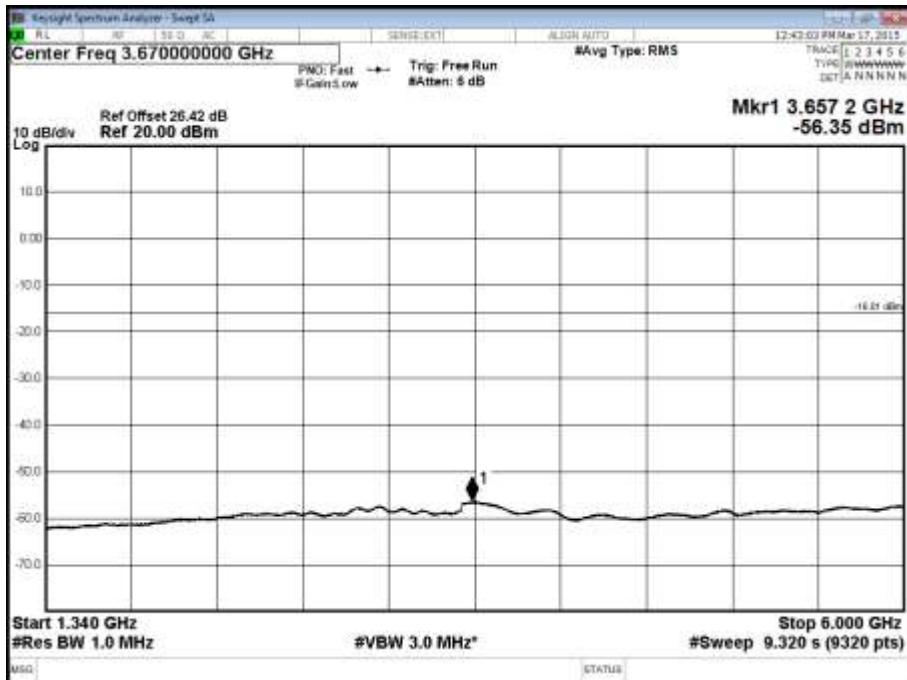
## Channel Position B - Antenna B



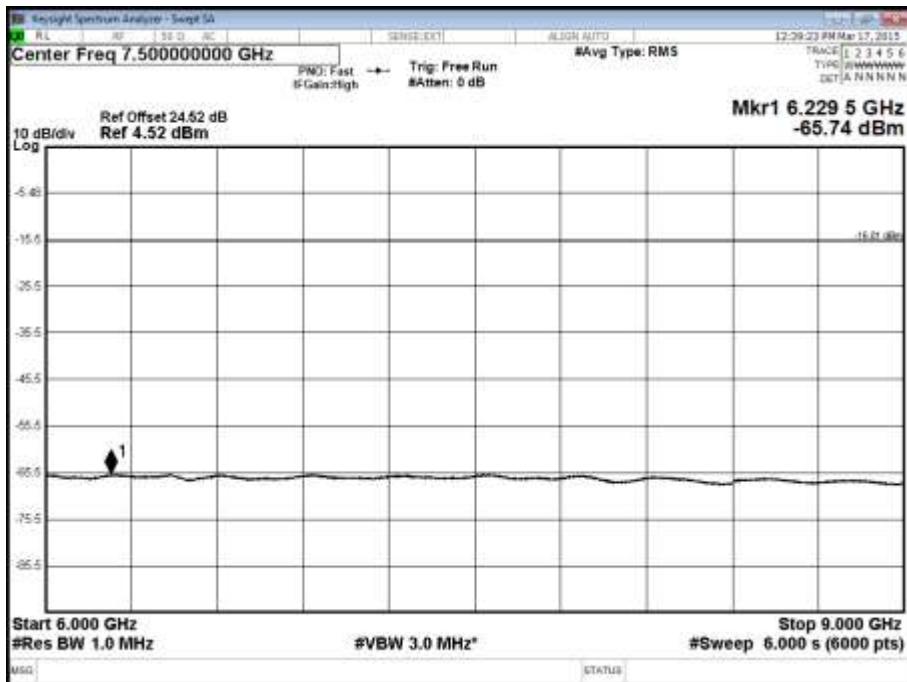
## Channel Position M - Antenna B



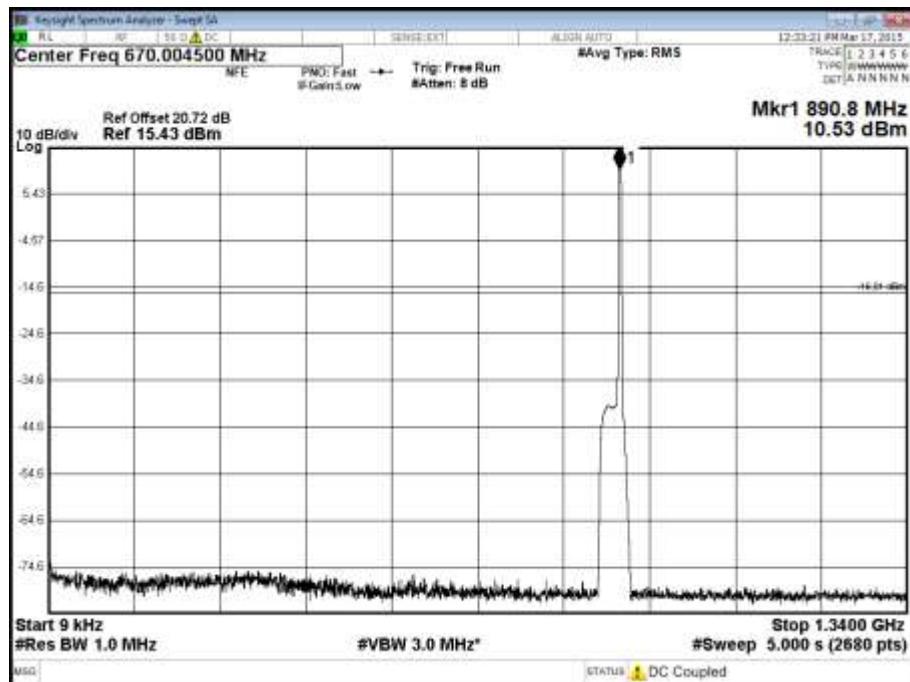
### Channel Position M - Antenna B



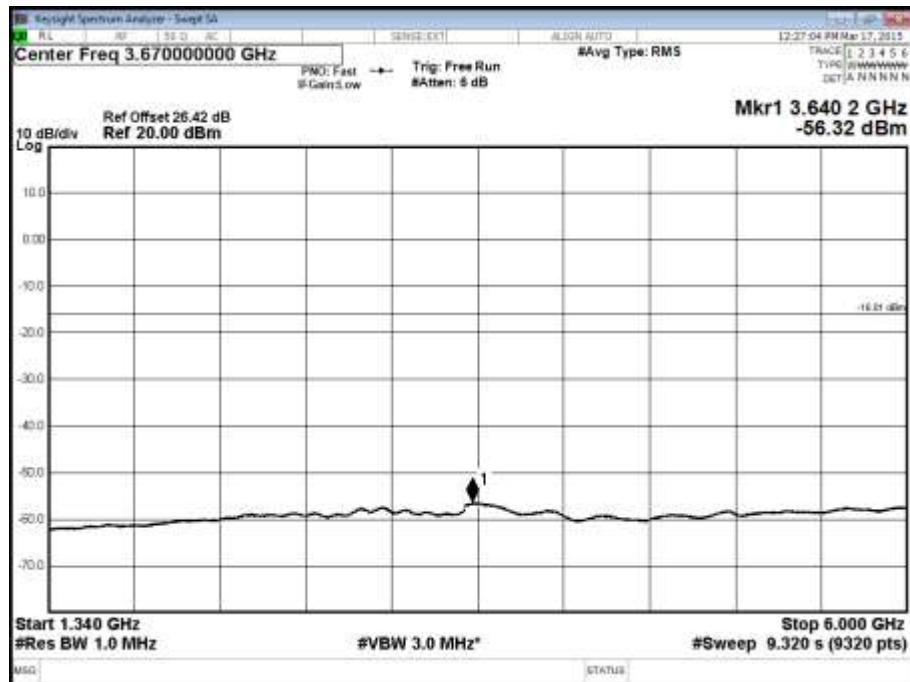
## Channel Position M - Antenna B



## Channel Position T - Antenna B



## Channel Position T - Antenna B



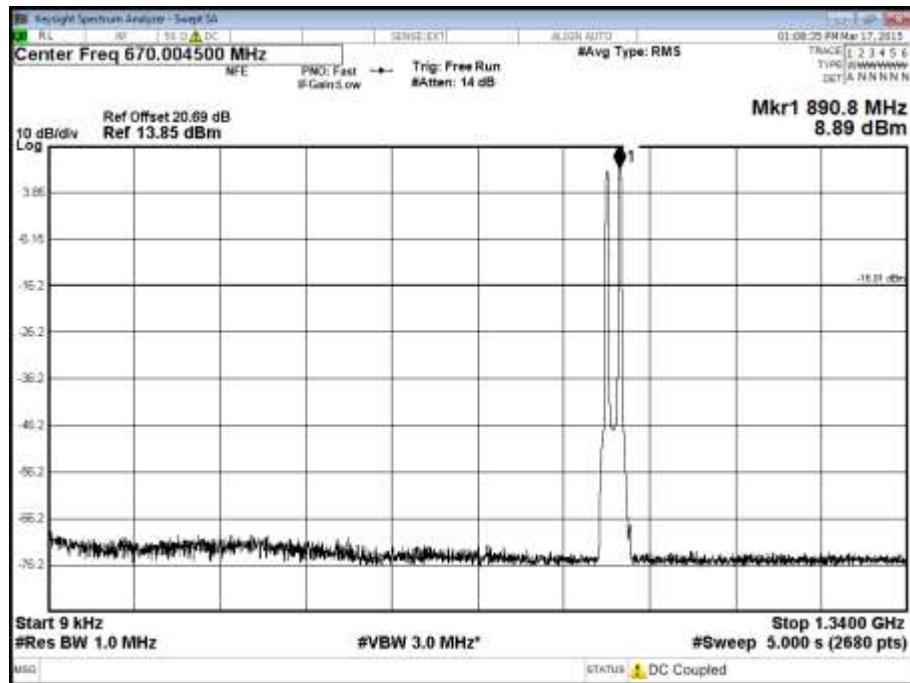
## Channel Position T - Antenna B



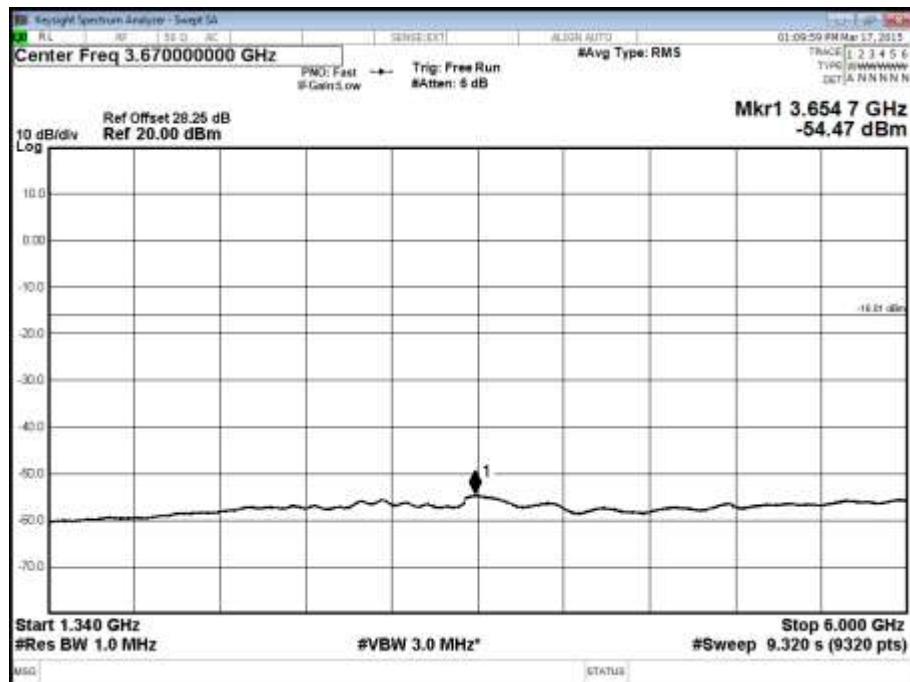
Configuration 2 – WCDMA MC Antenna A (see table 1)

Maximum Output Power 17 dBm (per port)

## Channel Position M - Antenna A



## Channel Position M - Antenna A



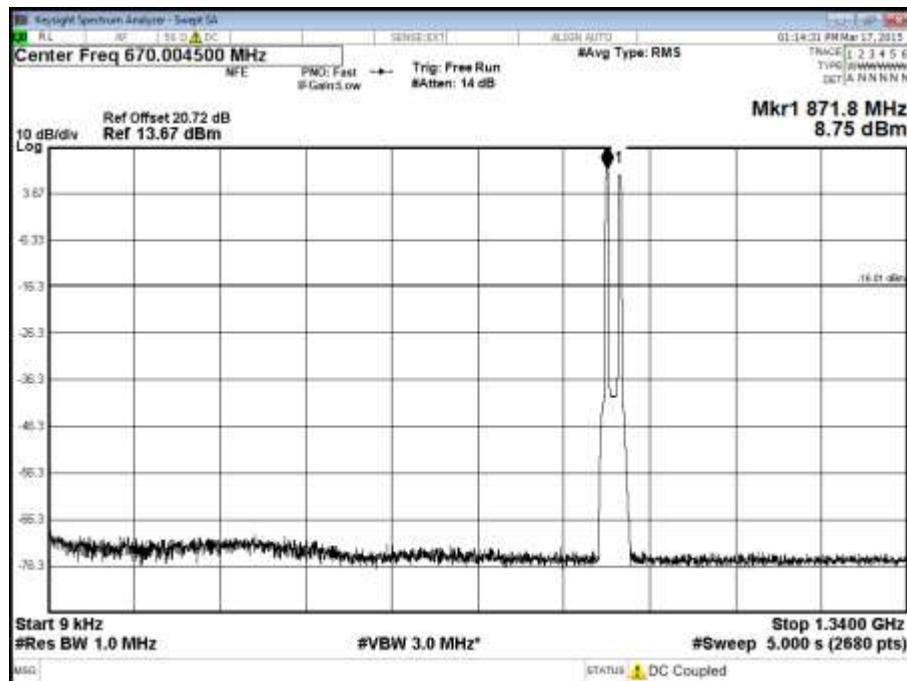
## Channel Position M - Antenna A



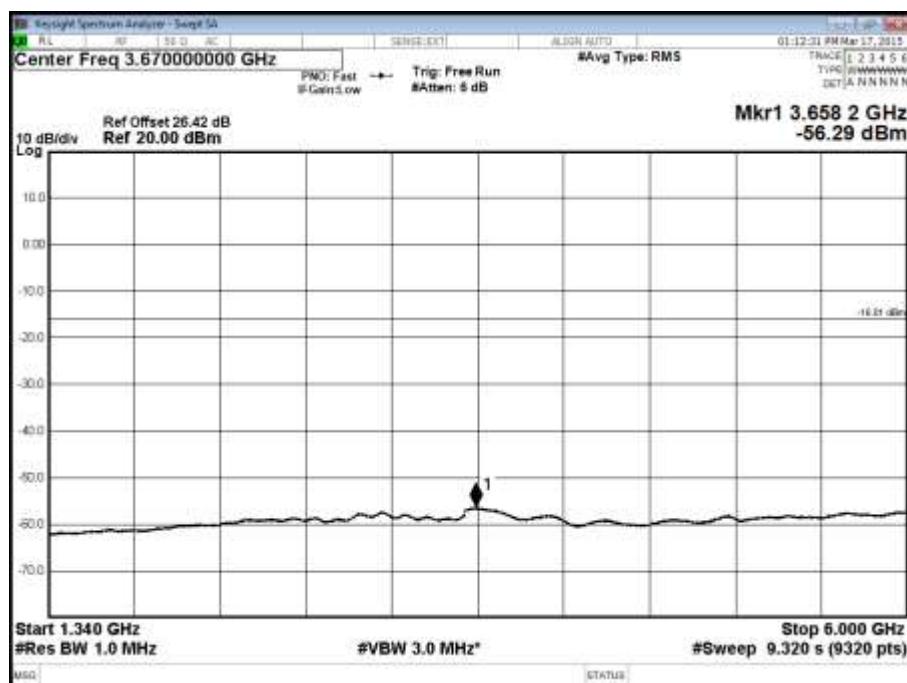
Configuration 2 – WCDMA MC Antenna B (see table 1)

Maximum Output Power 17 dBm (per port)

Channel Position M - Antenna B



Channel Position M - Antenna B



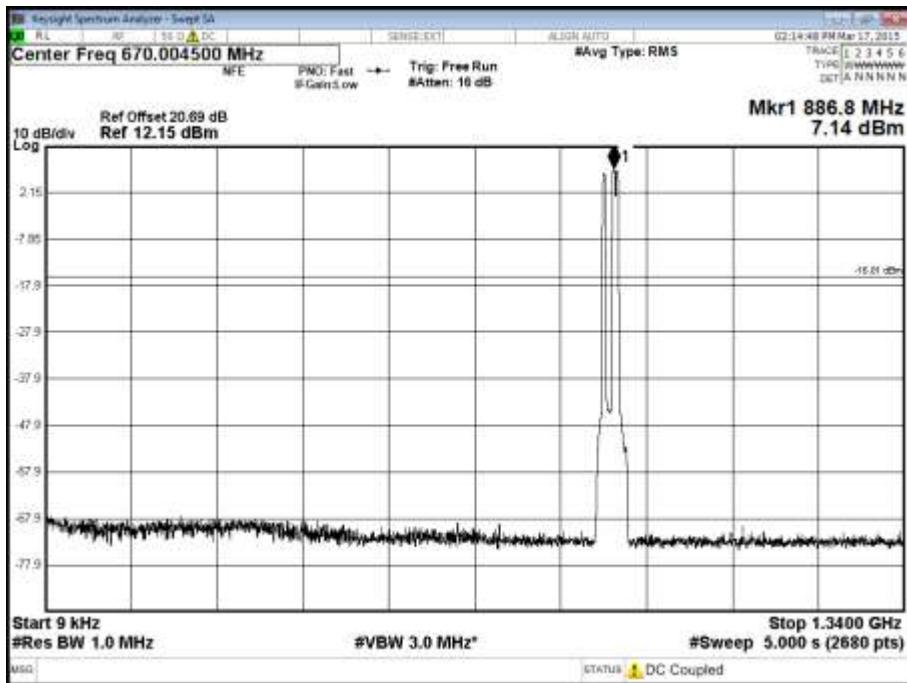
## Channel Position M - Antenna B



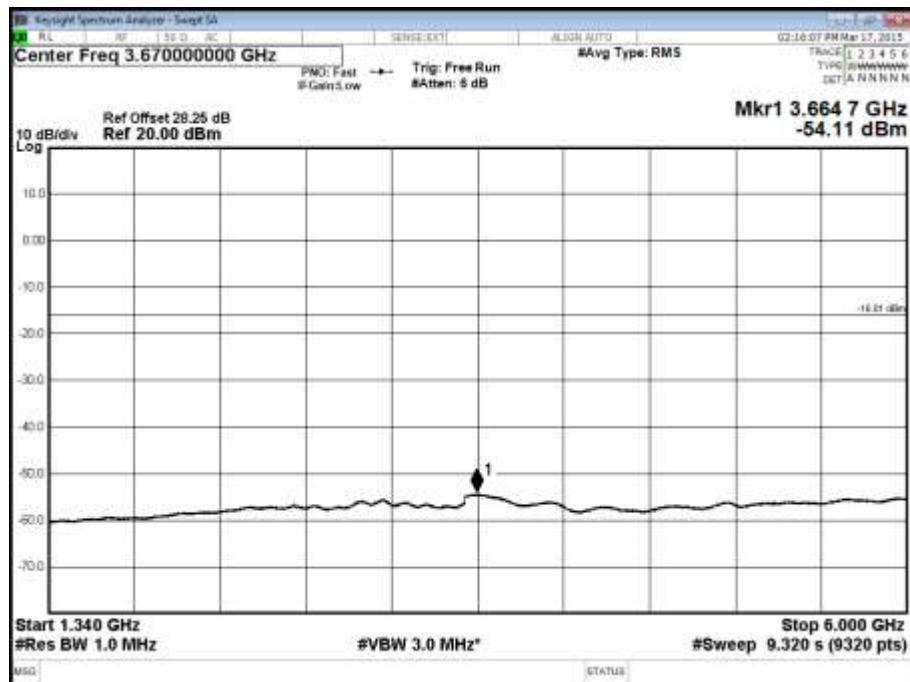
## Configuration 3 – WCDMA MC Antenna A (see table 1)

Maximum Output Power 17 dBm (per port)

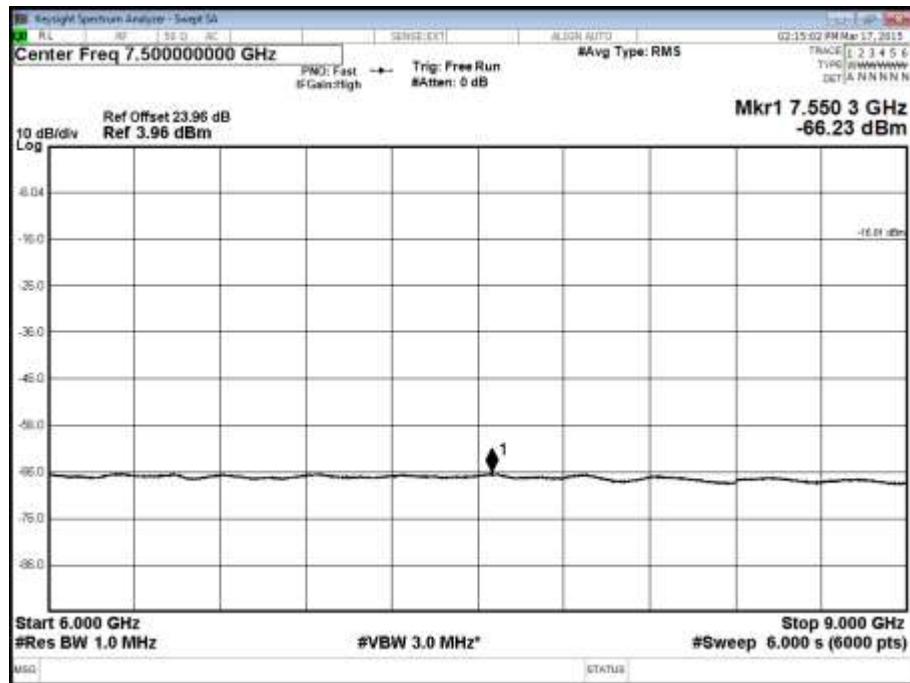
## Channel Position M - Antenna A



## Channel Position M - Antenna A



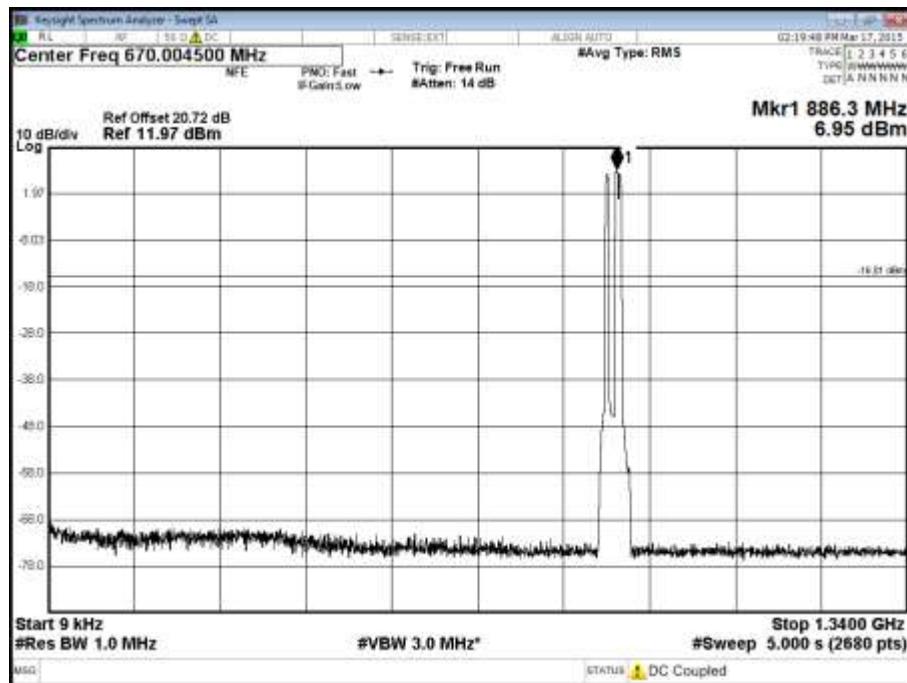
## Channel Position M - Antenna A



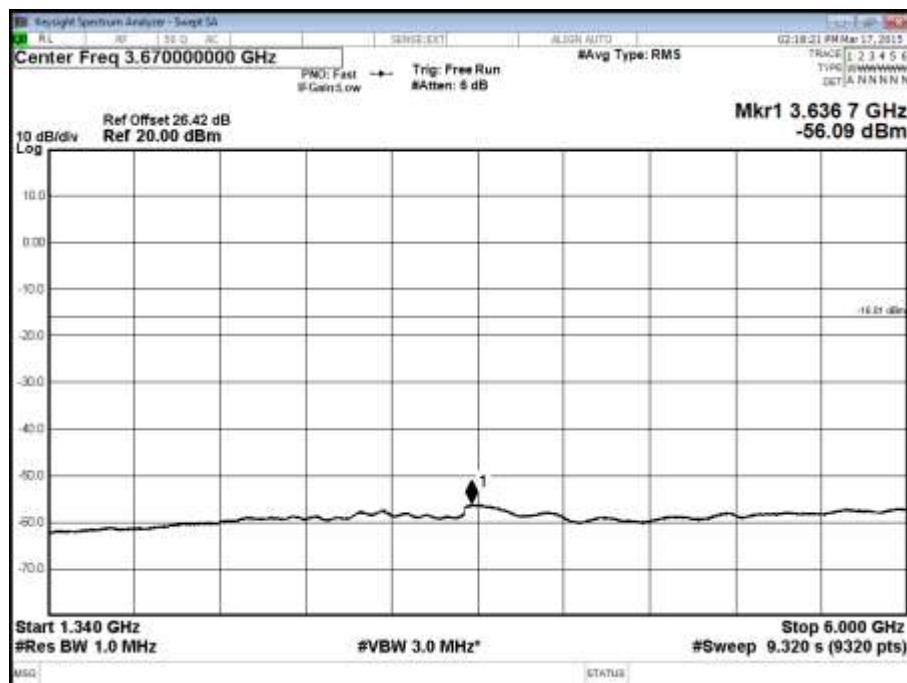
Configuration 3 – WCDMA MC Antenna B (see table 1)

Maximum Output Power 17 dBm (per port)

Channel Position M - Antenna B



Channel Position M - Antenna B



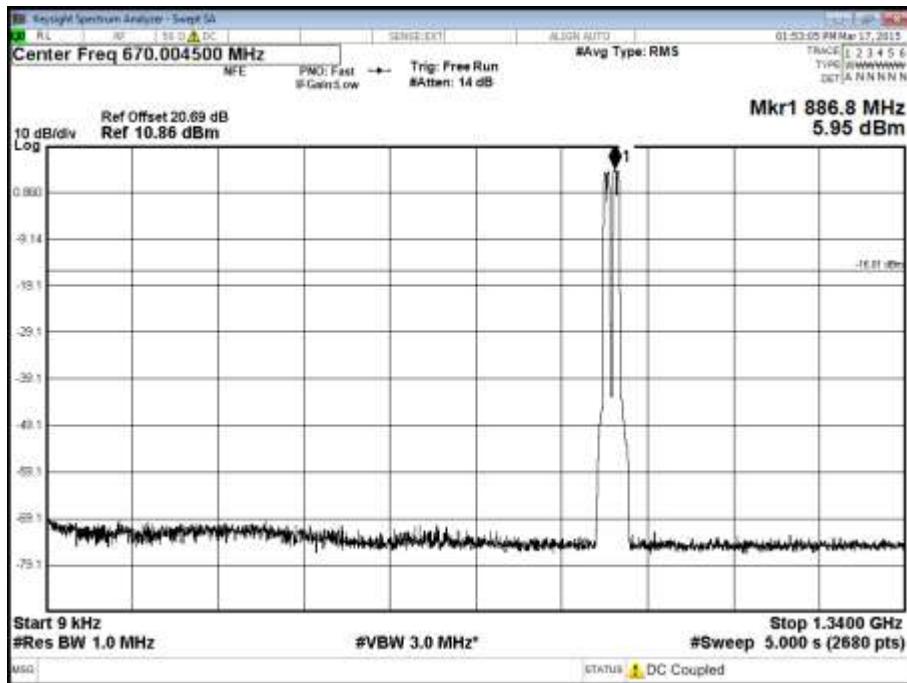
## Channel Position M - Antenna B



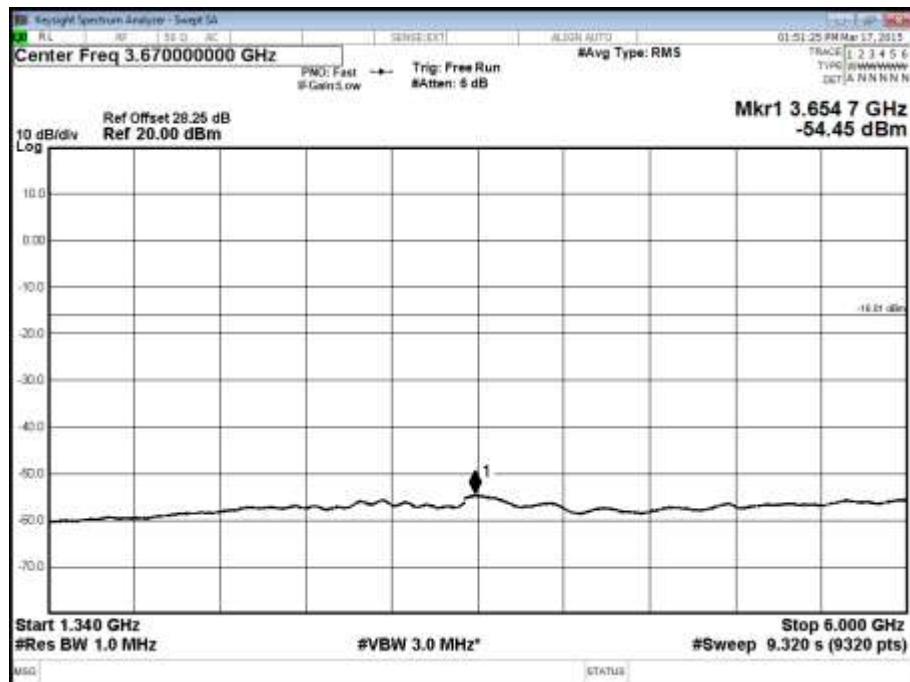
## Configuration 4 – WCDMA MC Antenna A (see table 1)

Maximum Output Power 17 dBm (per port)

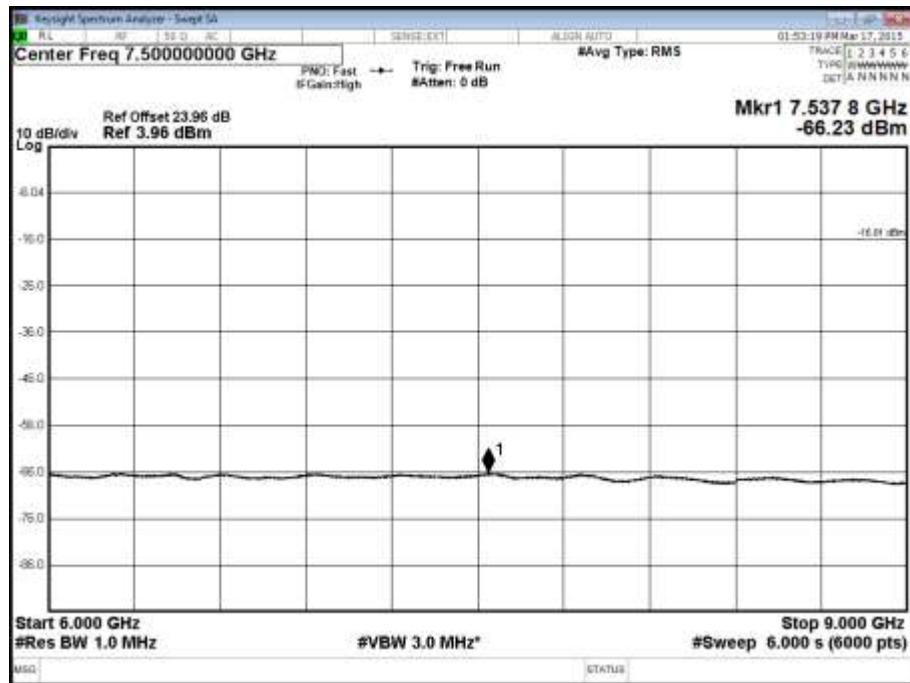
## Channel Position M - Antenna A



## Channel Position M - Antenna A



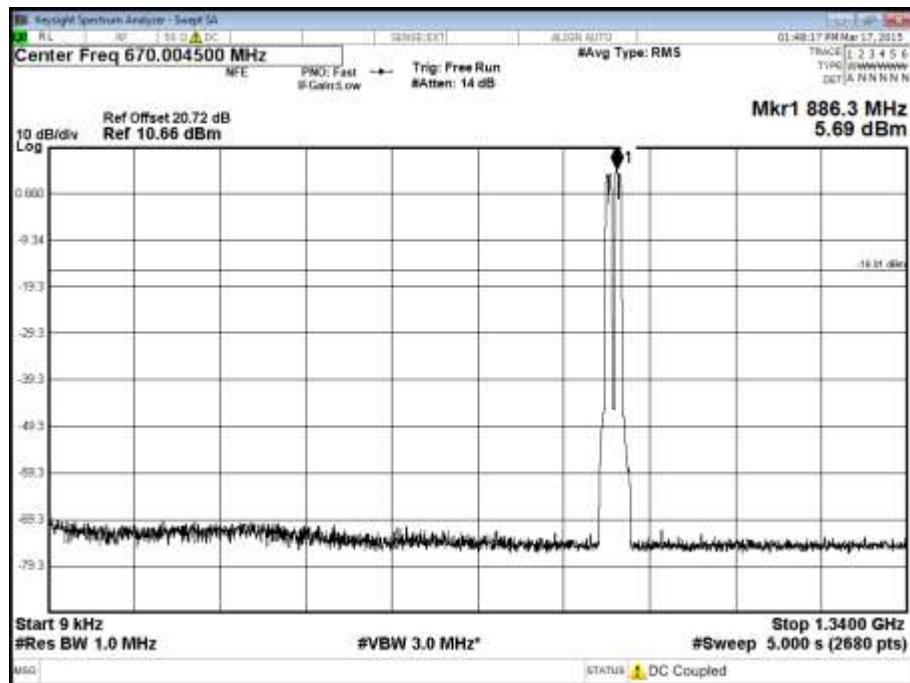
## Channel Position M - Antenna A



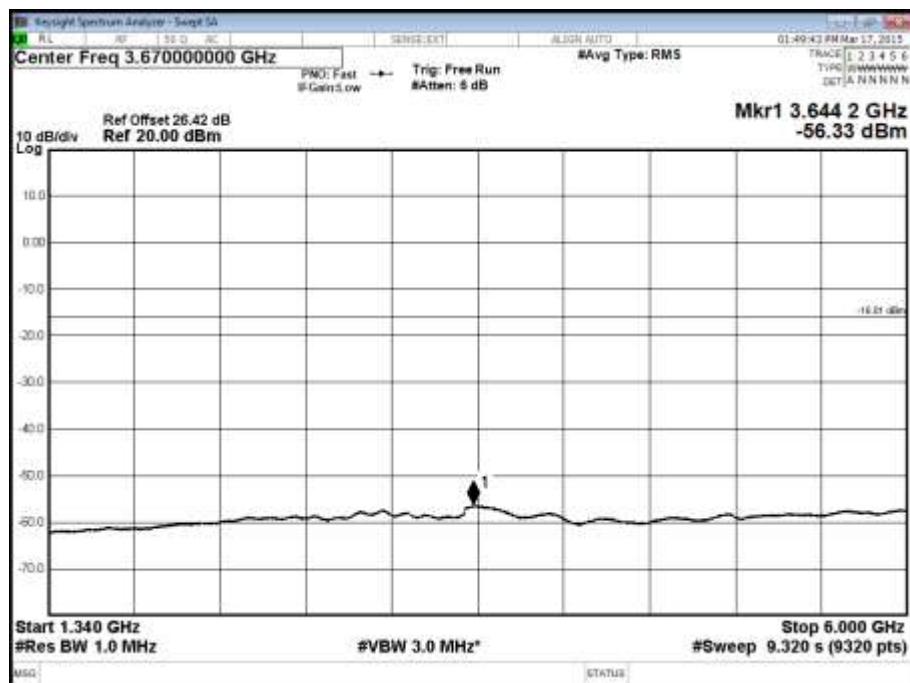
Configuration 4 – WCDMA MC Antenna B (see table 1)

Maximum Output Power 17 dBm (per port)

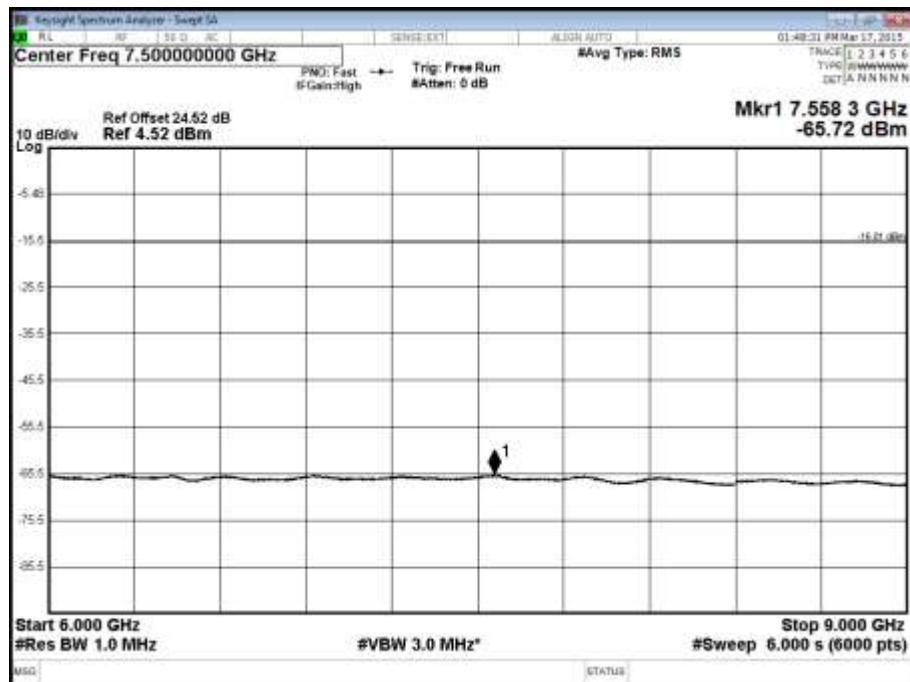
Channel Position M - Antenna B



Channel Position M - Antenna B



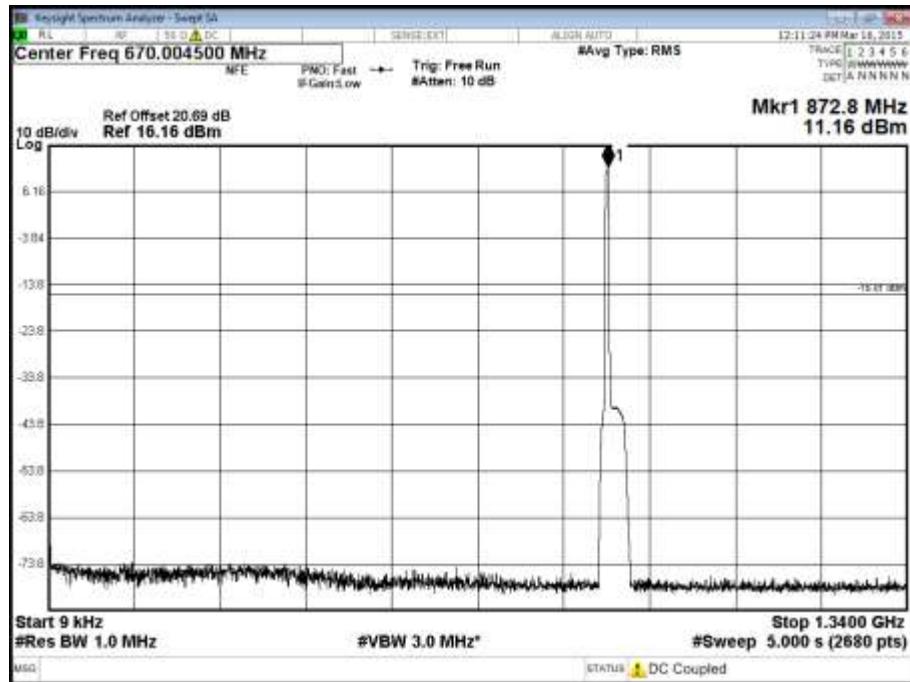
## Channel Position M - Antenna B

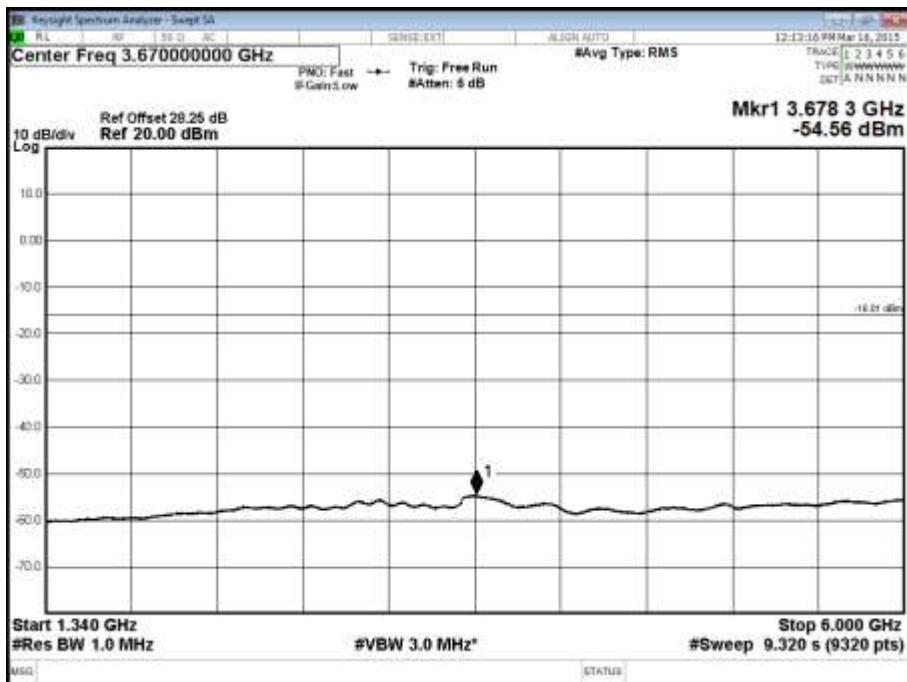
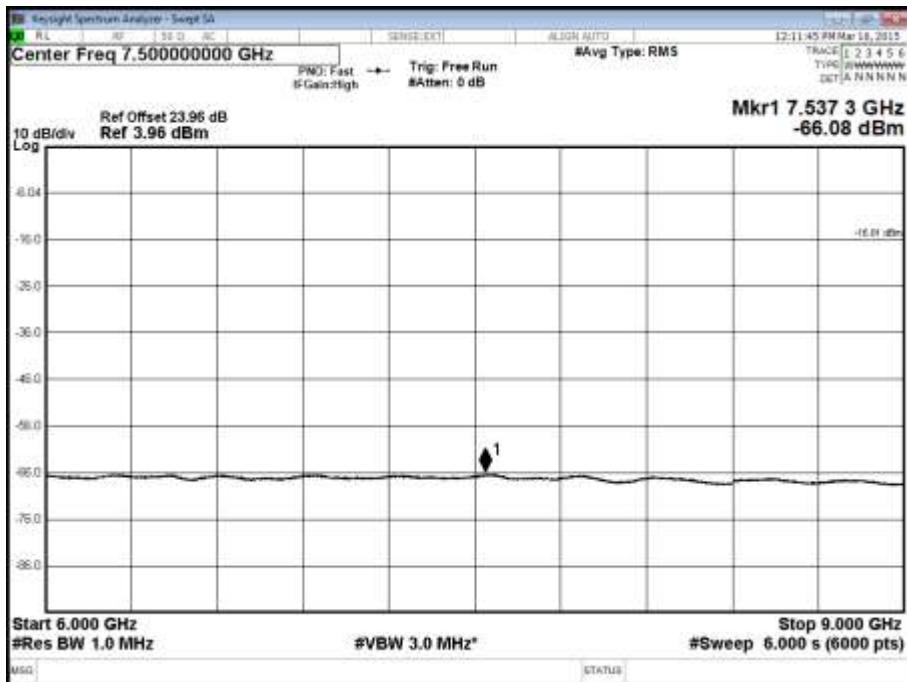


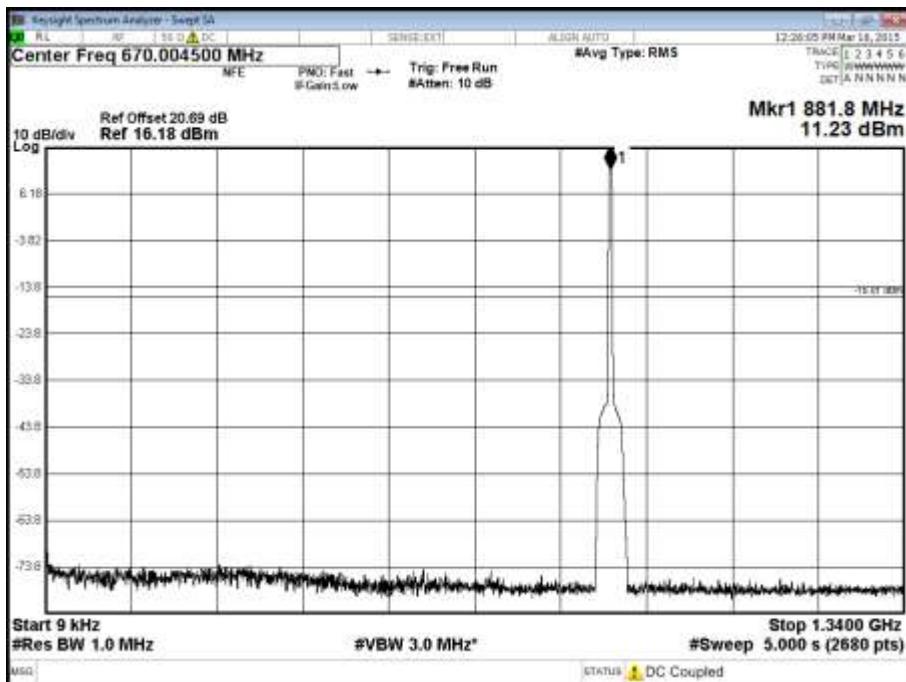
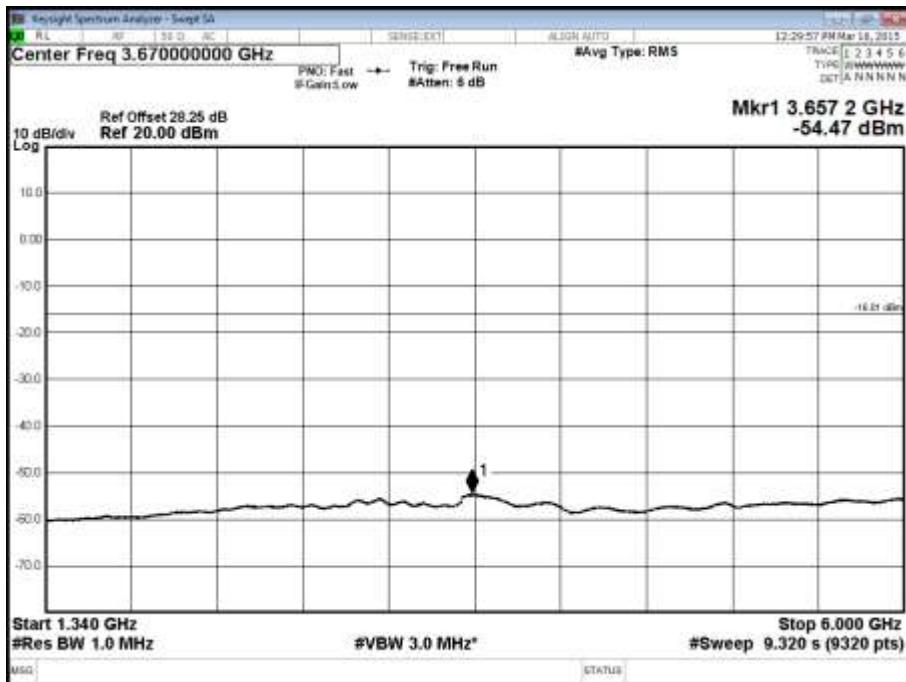
## Configuration 5 – LTE SC Antenna A (see table 3)

Maximum Output Power 17 dBm (per port)

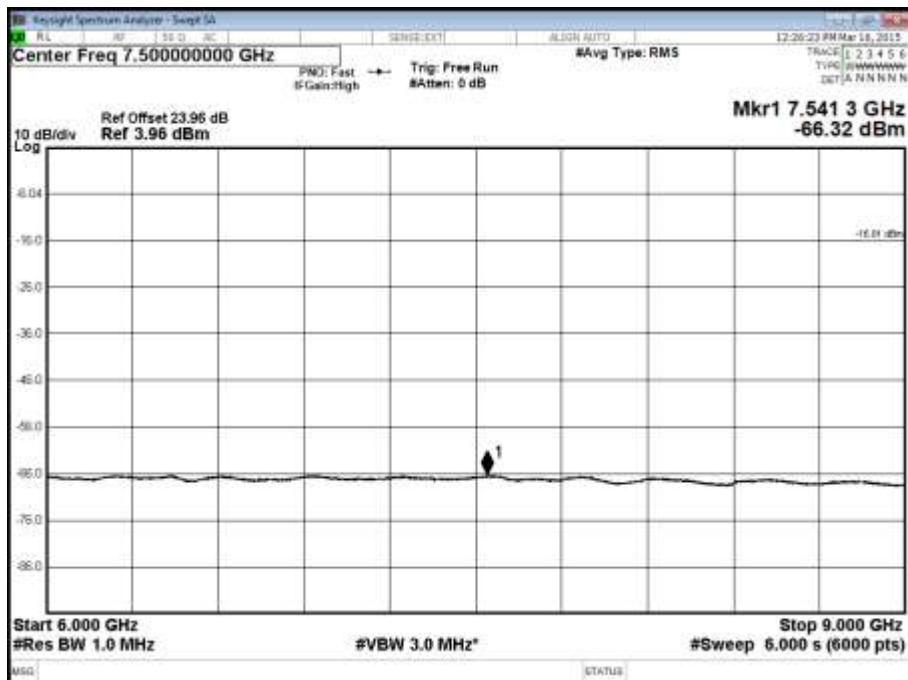
## Channel Position B - Antenna A - 5MHz Bandwidth



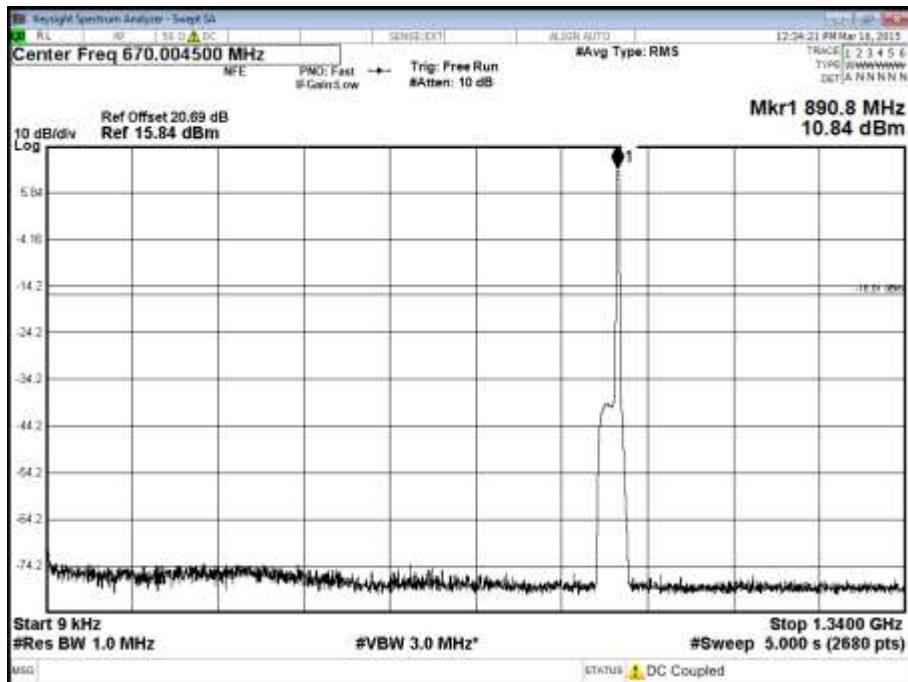
Channel Position B - Antenna A - 5MHz Bandwidth

Channel Position B - Antenna A - 5MHz Bandwidth


Channel Position M - Antenna A - 5MHz Bandwidth

Channel Position M - Antenna A - 5MHz Bandwidth


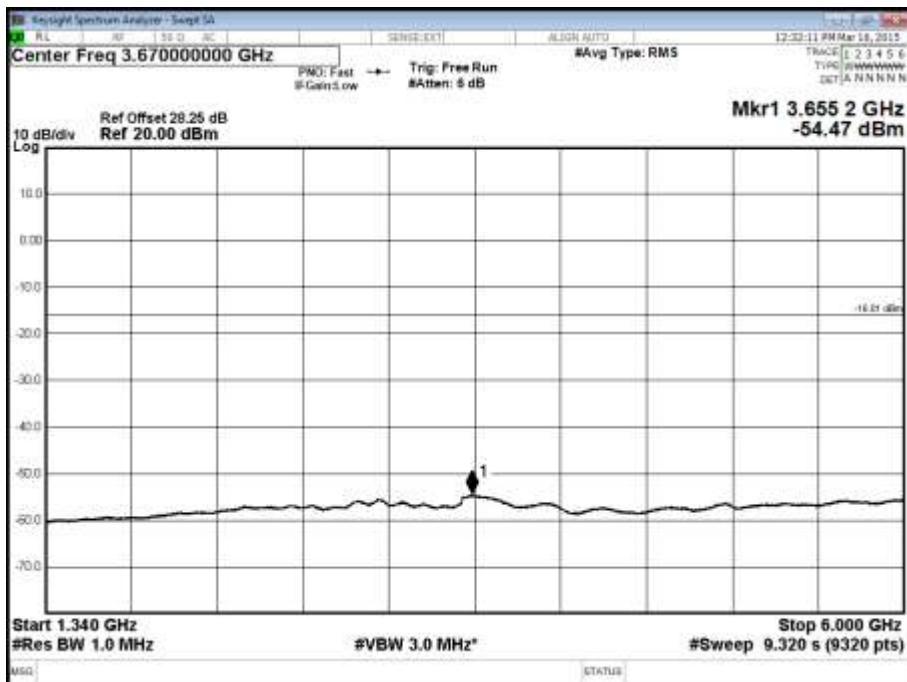
## Channel Position M - Antenna A - 5MHz Bandwidth



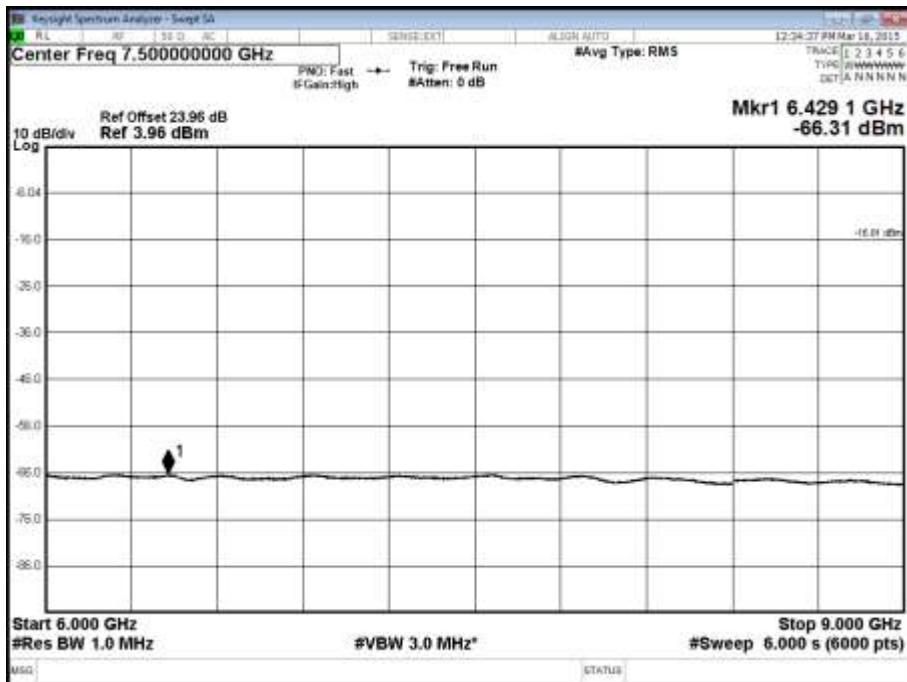
## Channel Position T - Antenna A - 5MHz Bandwidth



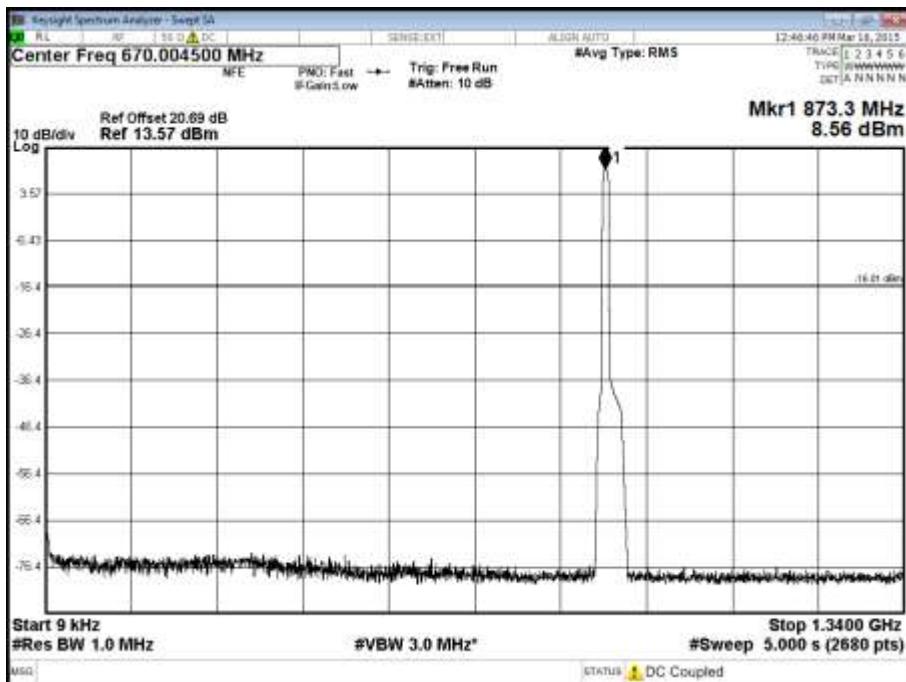
## Channel Position T - Antenna A - 5MHz Bandwidth



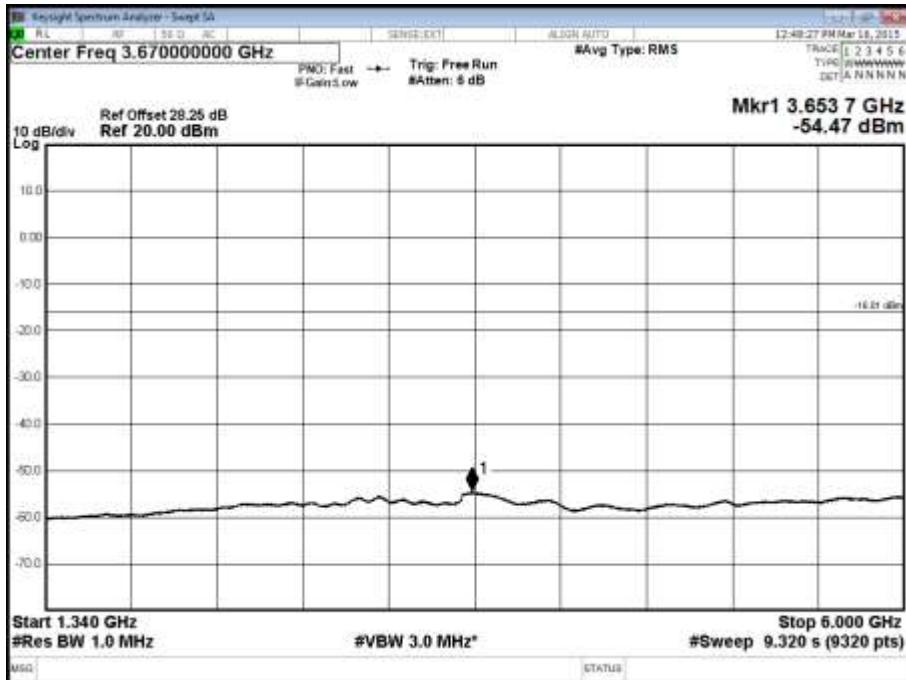
## Channel Position T - Antenna A - 5MHz Bandwidth



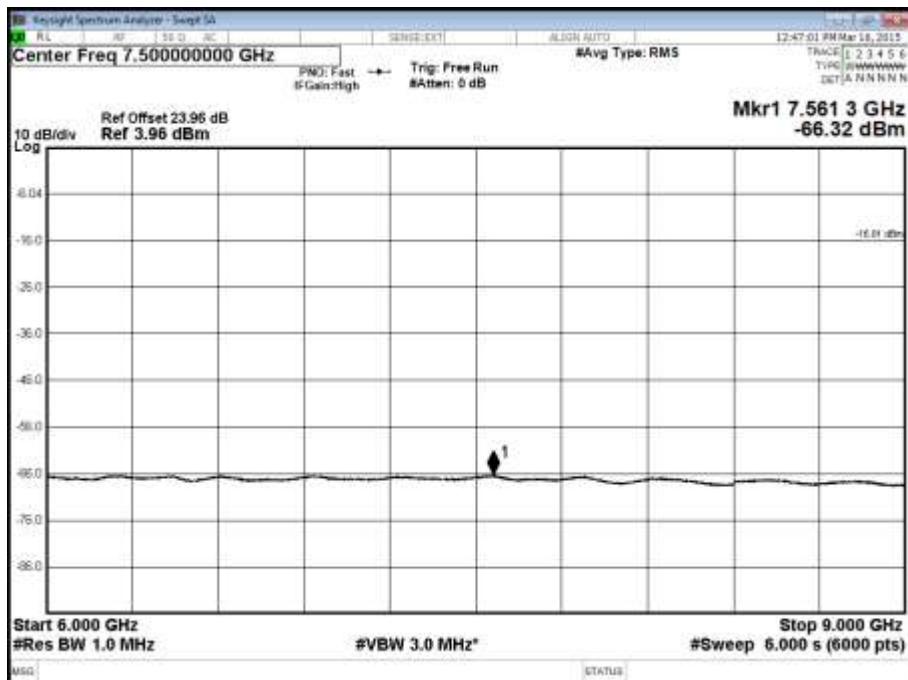
## Channel Position B - Antenna A - 10 MHz Bandwidth



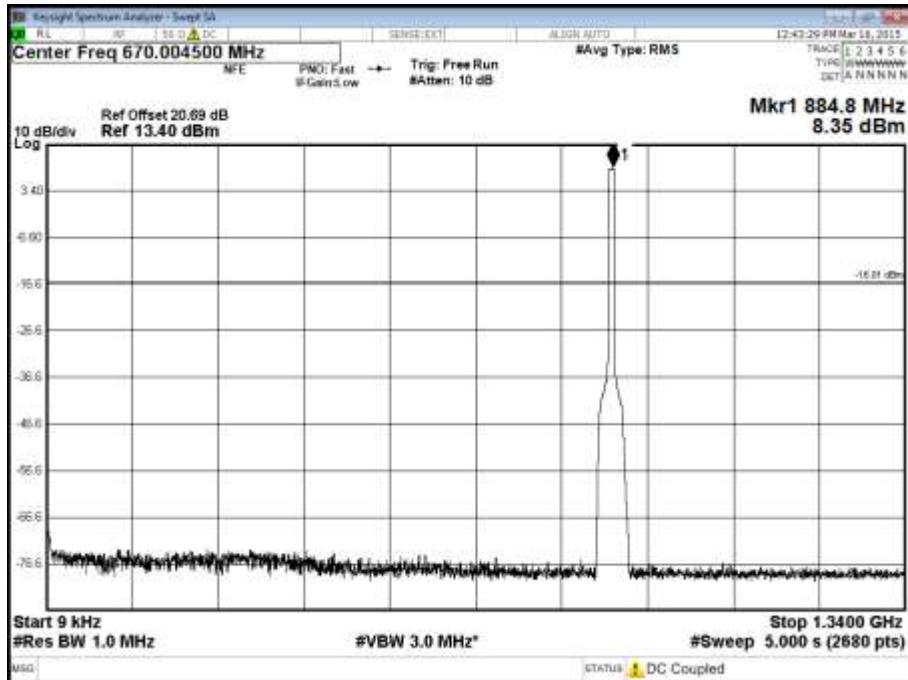
## Channel Position B - Antenna A - 10 MHz Bandwidth

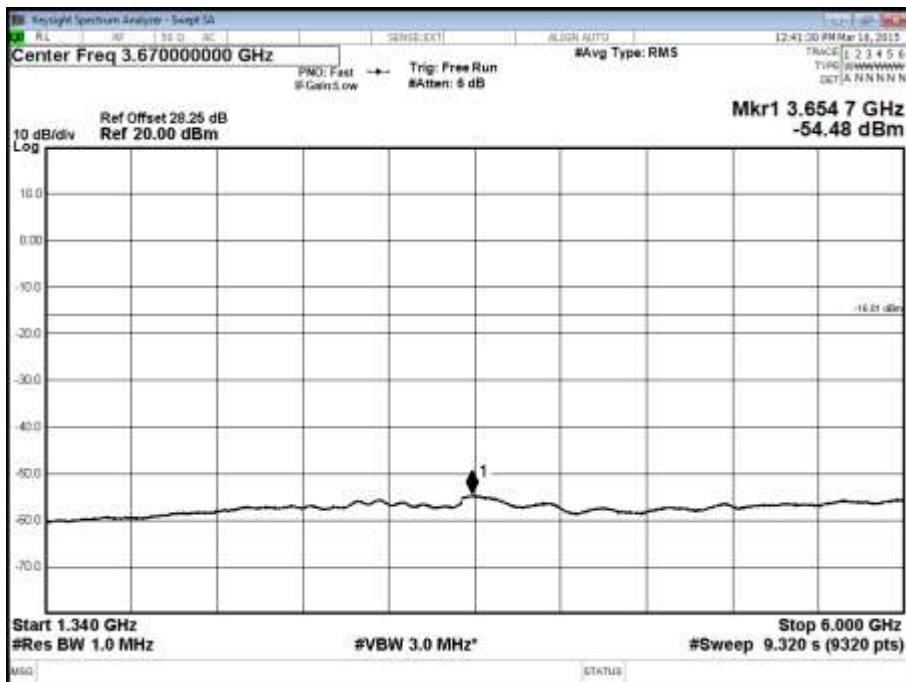
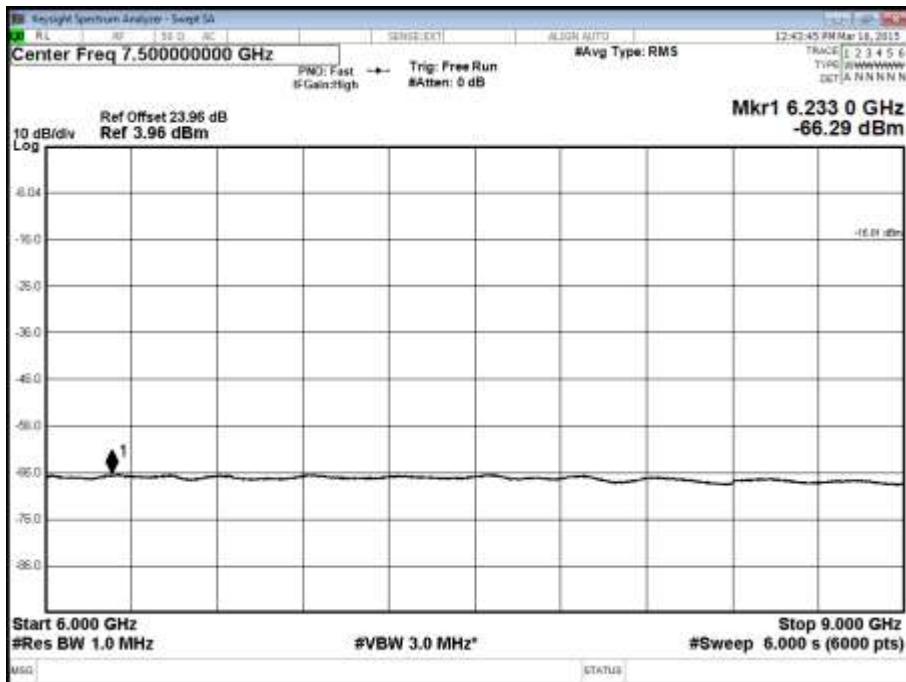


## Channel Position B - Antenna A - 10 MHz Bandwidth

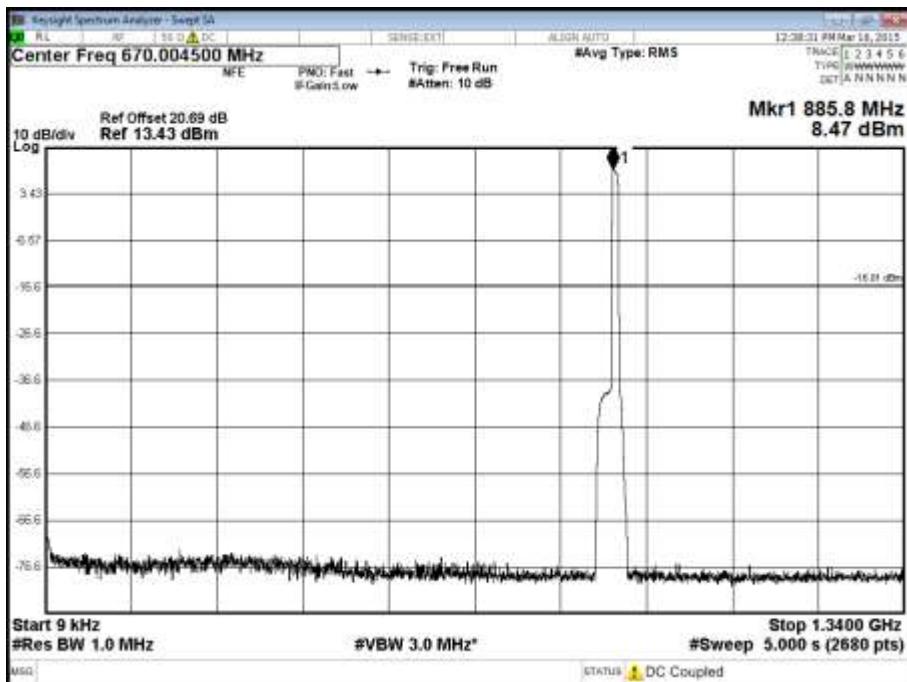


## Channel Position M - Antenna A - 10 MHz Bandwidth

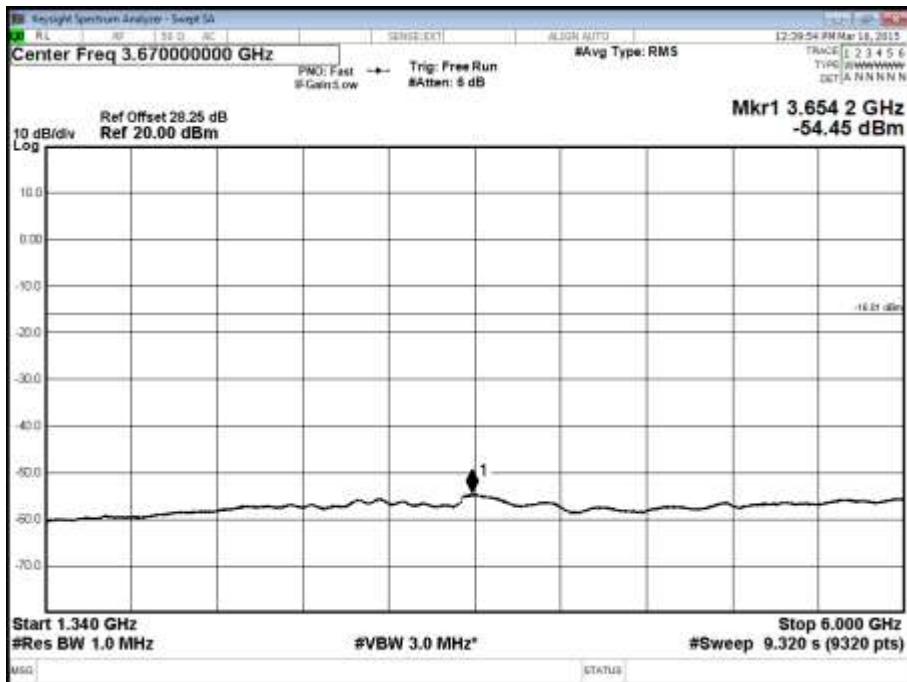


Channel Position M - Antenna A - 10 MHz Bandwidth

Channel Position M - Antenna A - 10 MHz Bandwidth


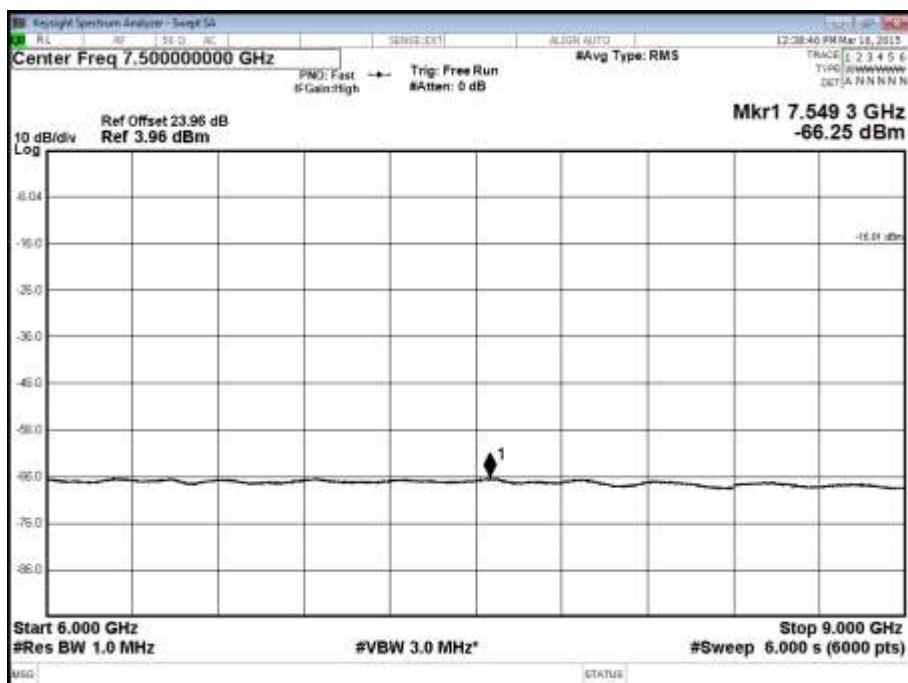
## Channel Position T - Antenna A - 10 MHz Bandwidth



## Channel Position T - Antenna A - 10 MHz Bandwidth



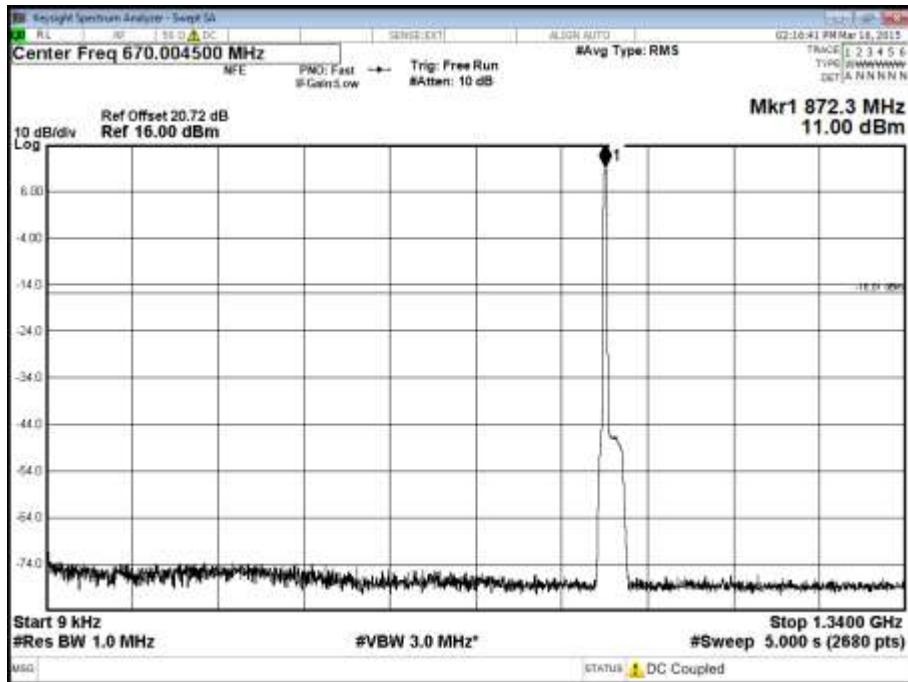
## Channel Position T - Antenna A - 10 MHz Bandwidth



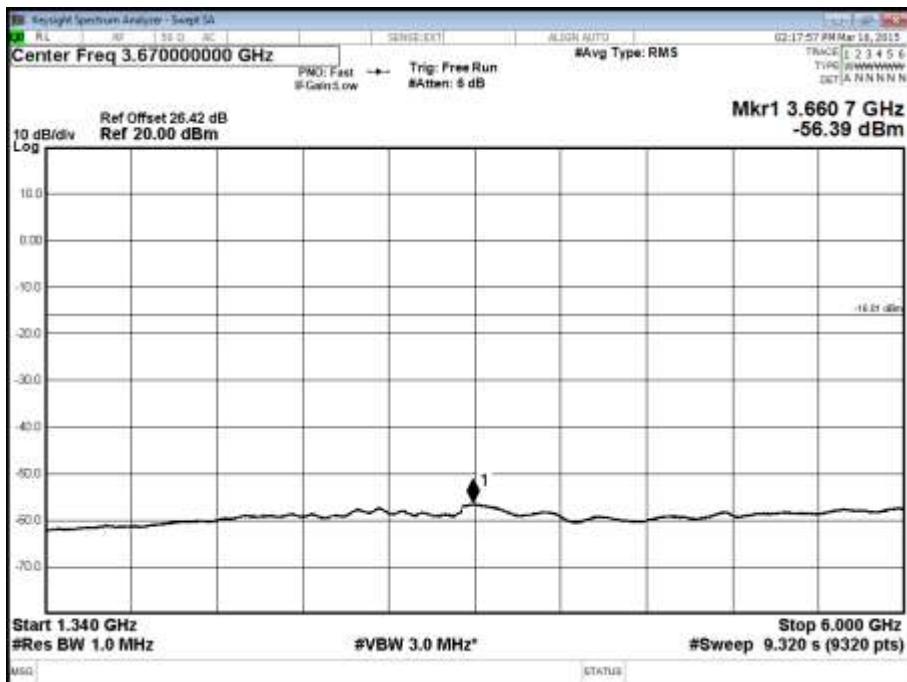
## Configuration 5 – LTE SC Antenna B (see table 3)

Maximum Output Power 17 dBm (per port)

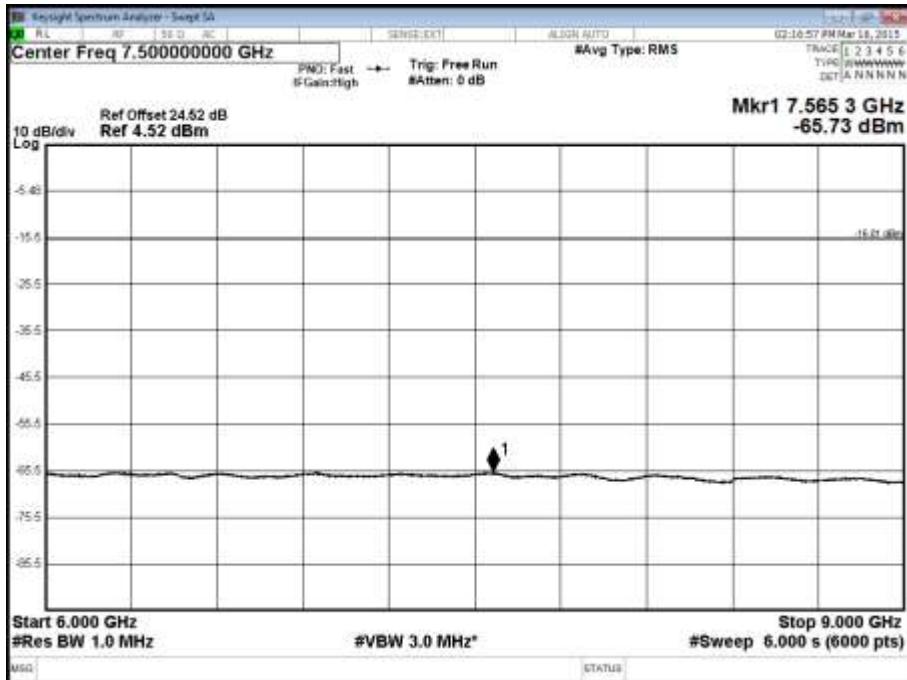
## Channel Position B - Antenna B - 5 MHz Bandwidth



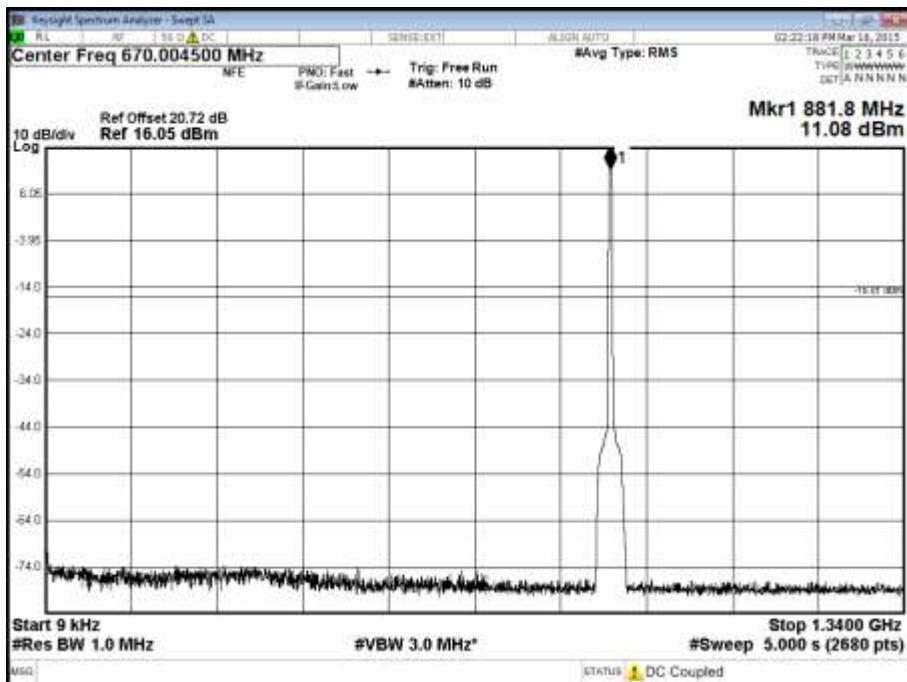
## Channel Position B - Antenna B - 5 MHz Bandwidth



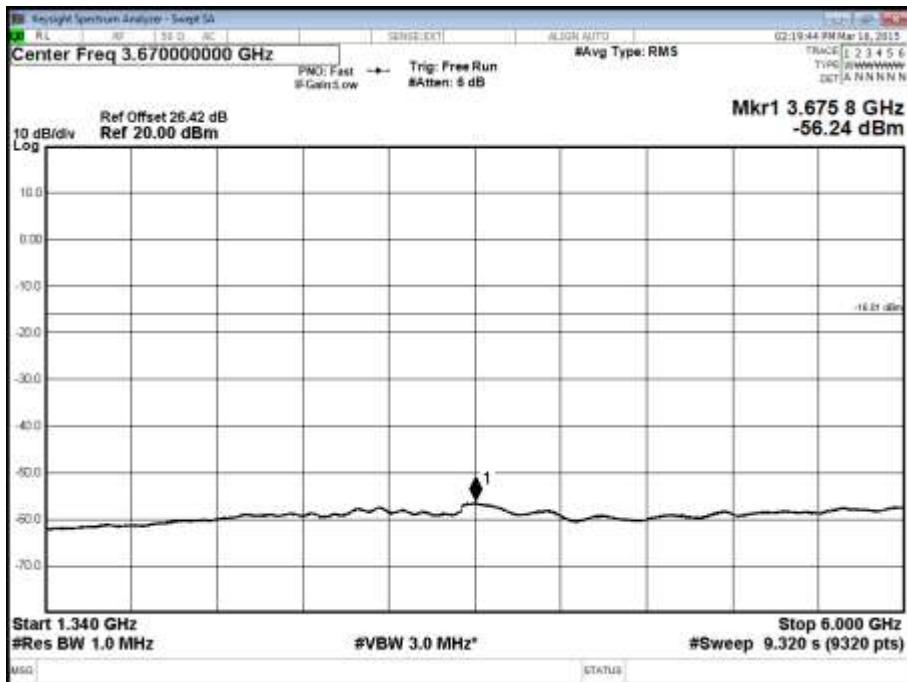
## Channel Position B - Antenna B - 5 MHz Bandwidth



## Channel Position M - Antenna B - 5 MHz Bandwidth



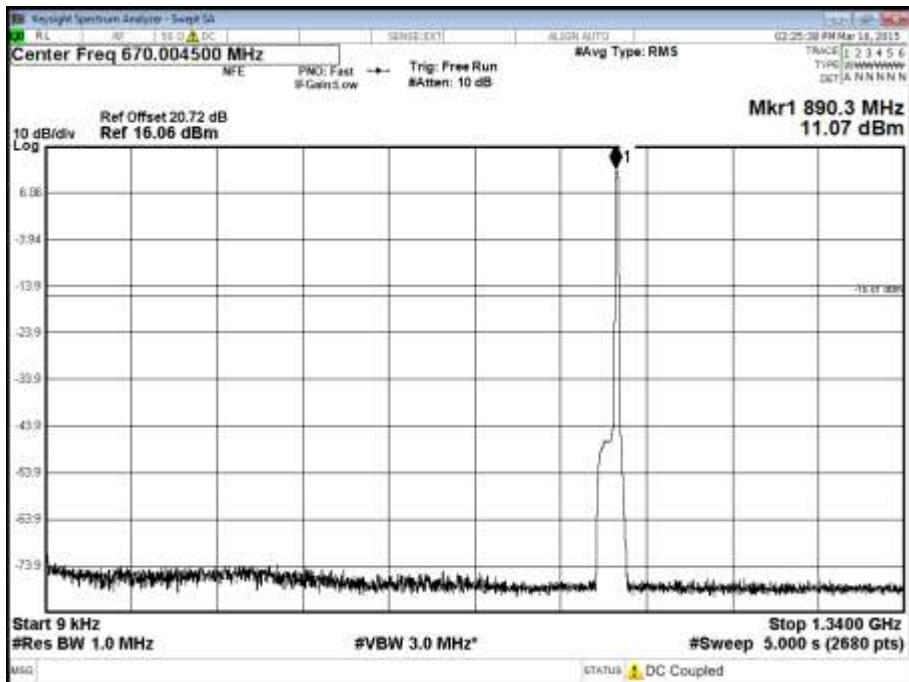
## Channel Position M - Antenna B - 5 MHz Bandwidth



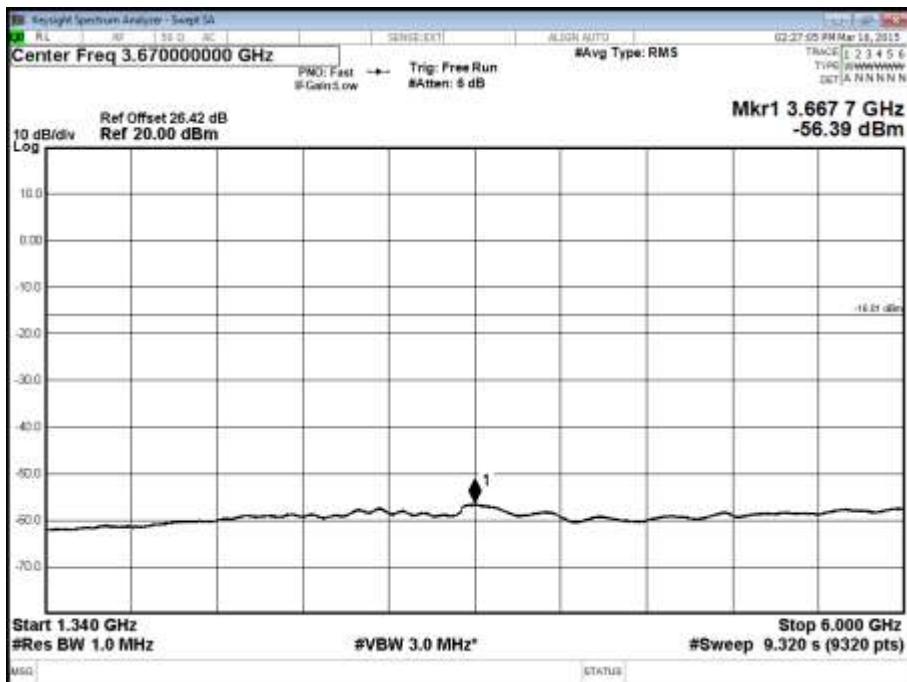
## Channel Position M - Antenna B - 5 MHz Bandwidth



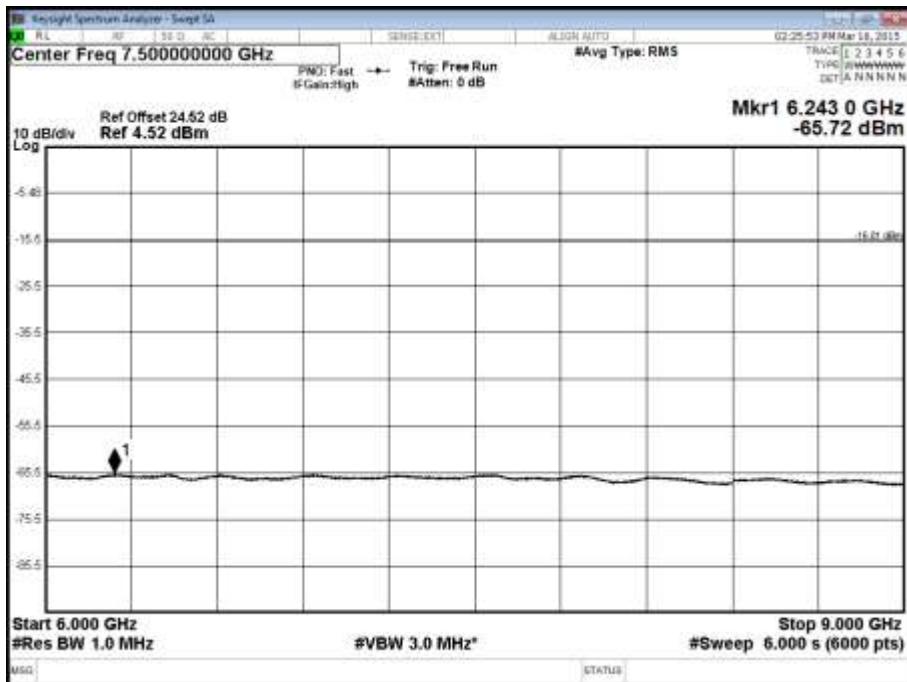
## Channel Position T - Antenna B - 5 MHz Bandwidth



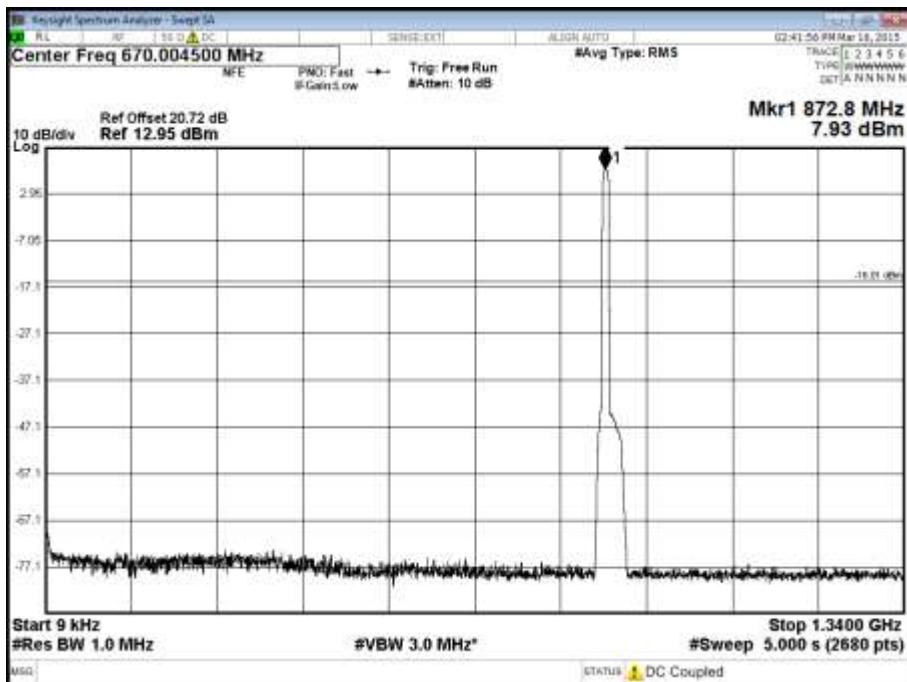
## Channel Position T - Antenna B - 5 MHz Bandwidth



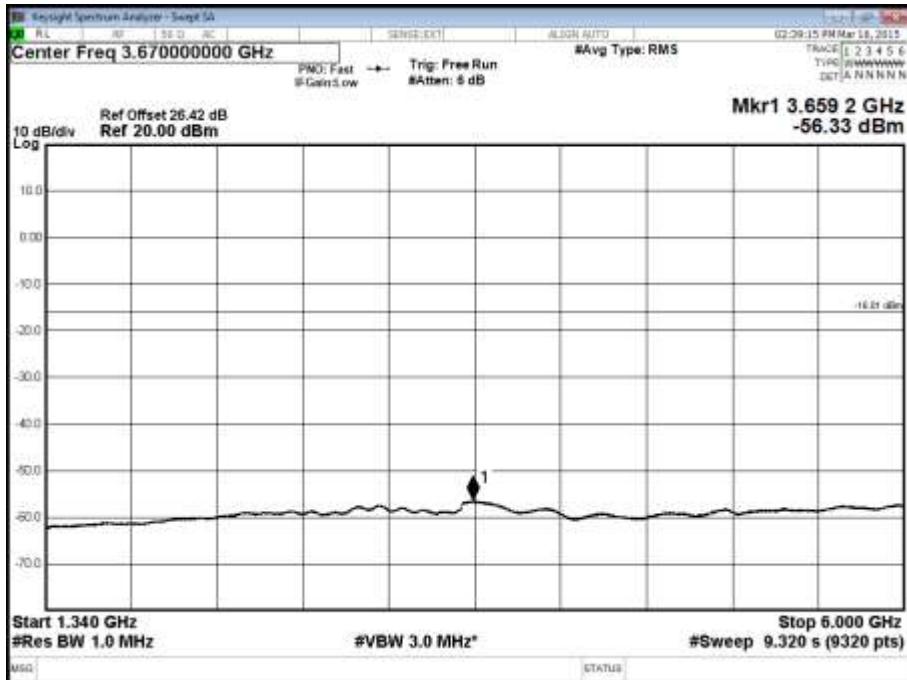
## Channel Position T - Antenna B - 5 MHz Bandwidth



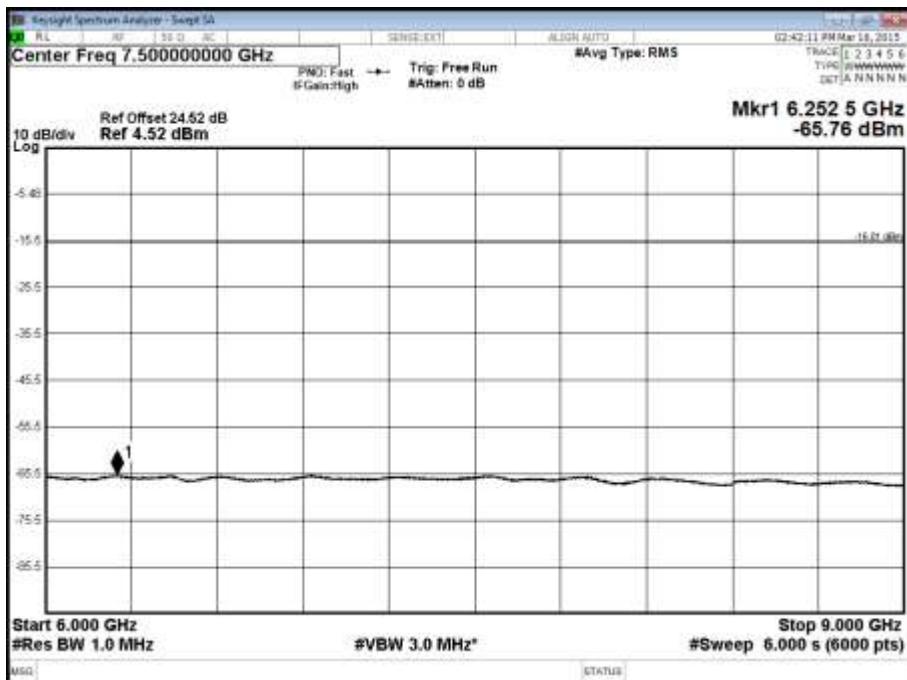
## Channel Position B - Antenna B - 10 MHz Bandwidth



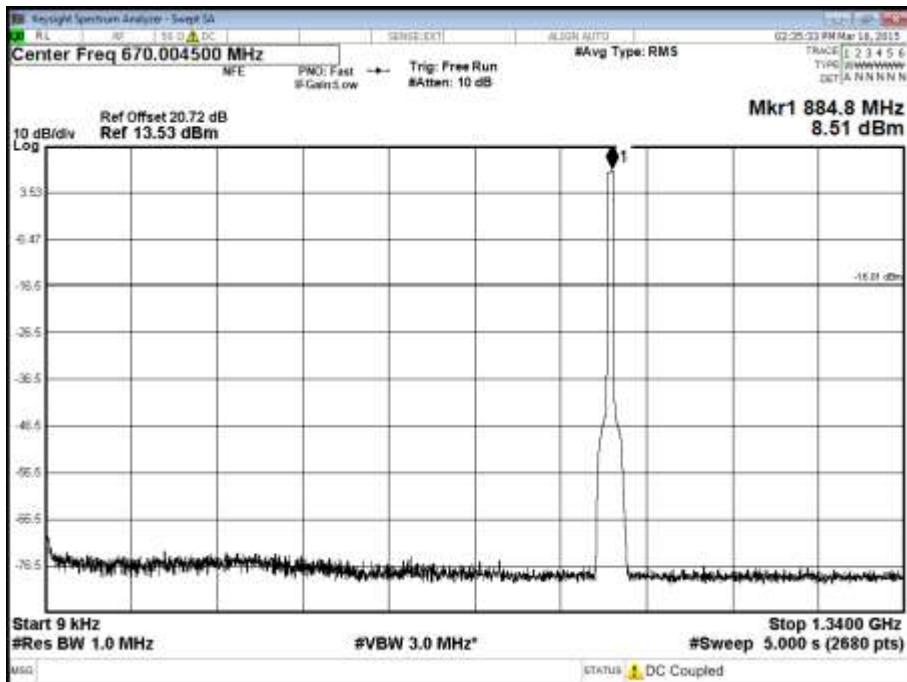
## Channel Position B - Antenna B - 10 MHz Bandwidth

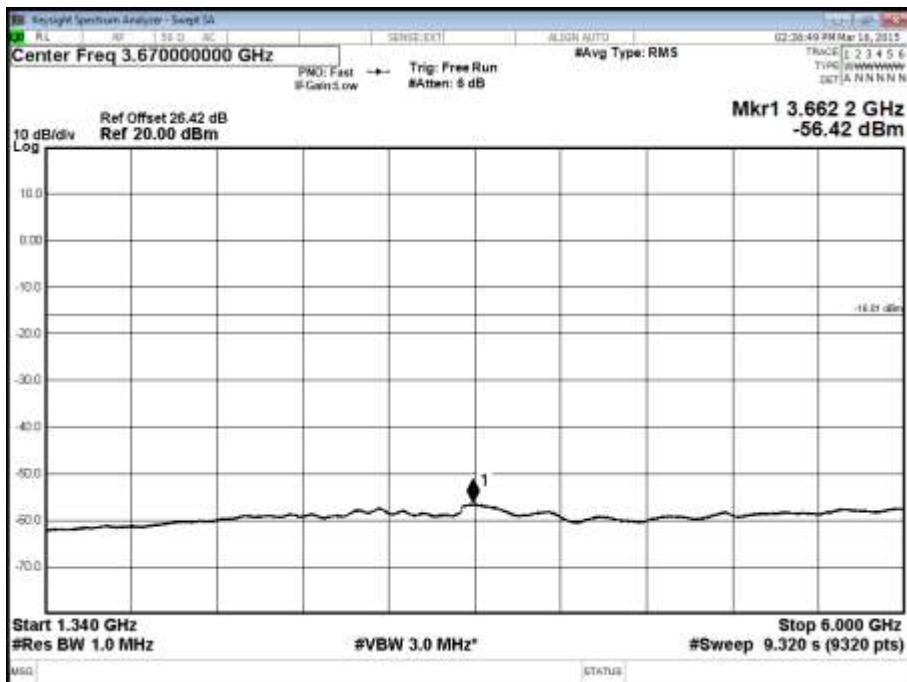


## Channel Position B - Antenna B - 10 MHz Bandwidth

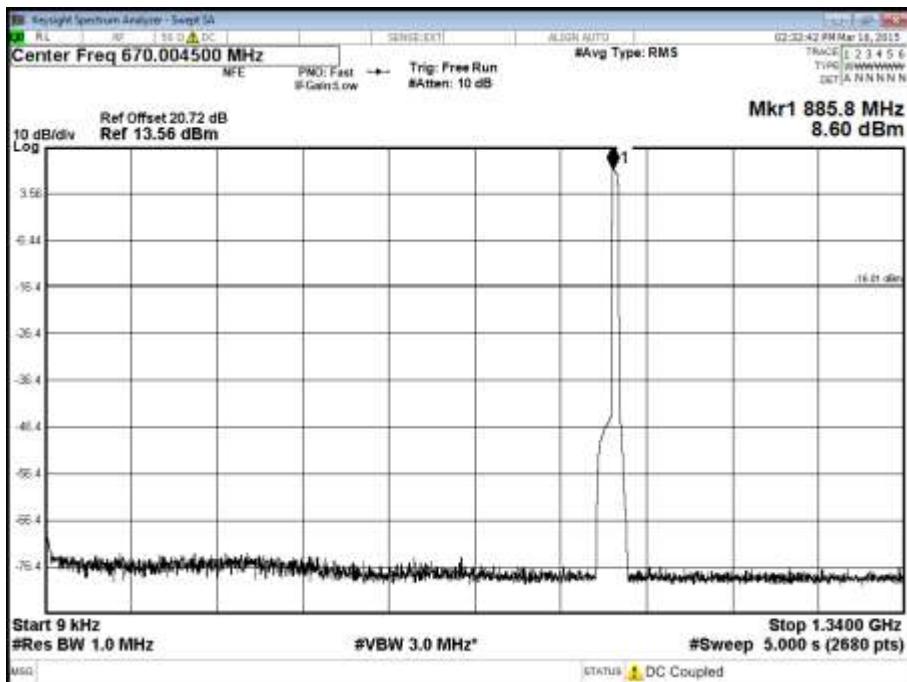


## Channel Position M - Antenna B - 10 MHz Bandwidth



Channel Position M - Antenna B - 10 MHz Bandwidth

Channel Position M - Antenna B - 10 MHz Bandwidth

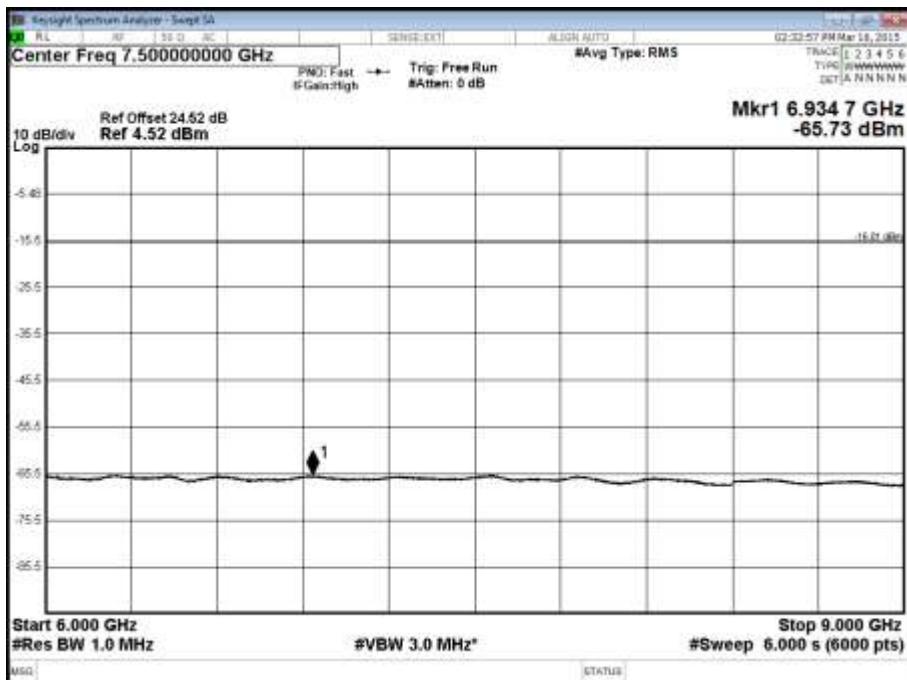

## Channel Position T - Antenna B - 10 MHz Bandwidth



## Channel Position T - Antenna B - 10 MHz Bandwidth



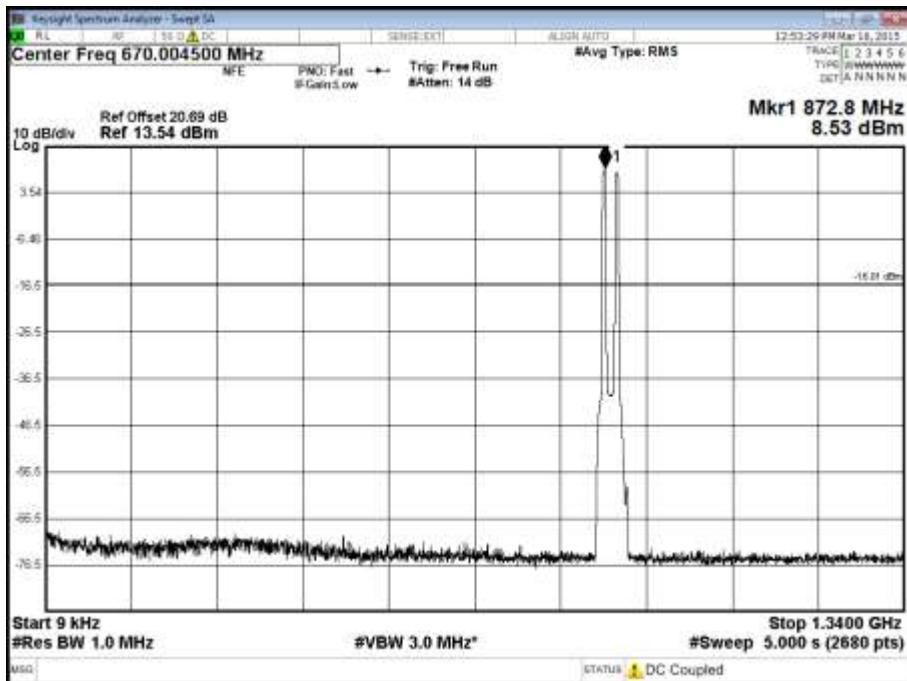
## Channel Position T - Antenna B - 10 MHz Bandwidth



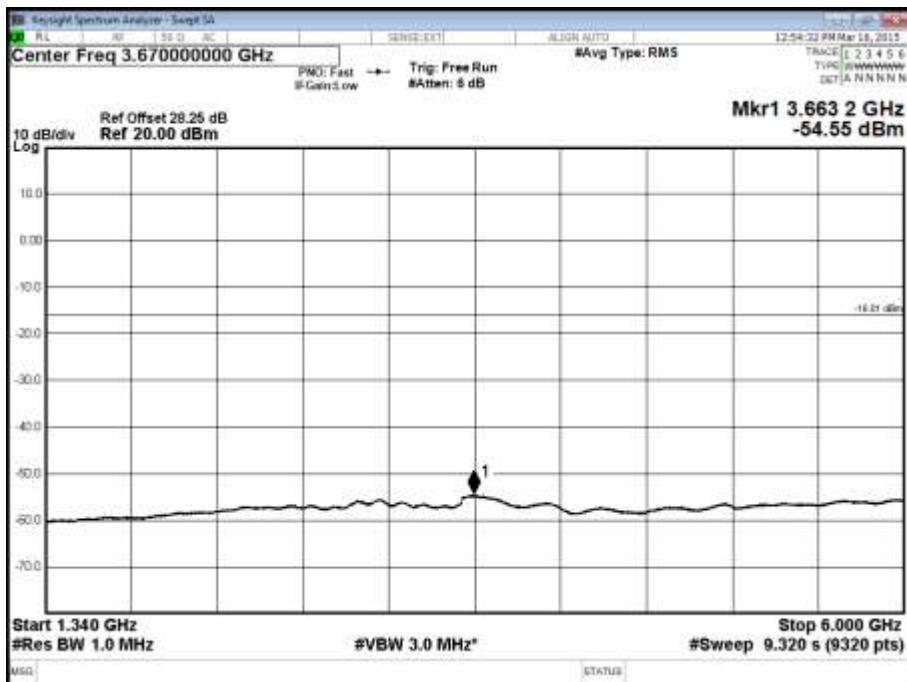
## Configuration 6 – LTE MC Antenna A (see table 3)

Maximum Output Power 17 dBm (per port)

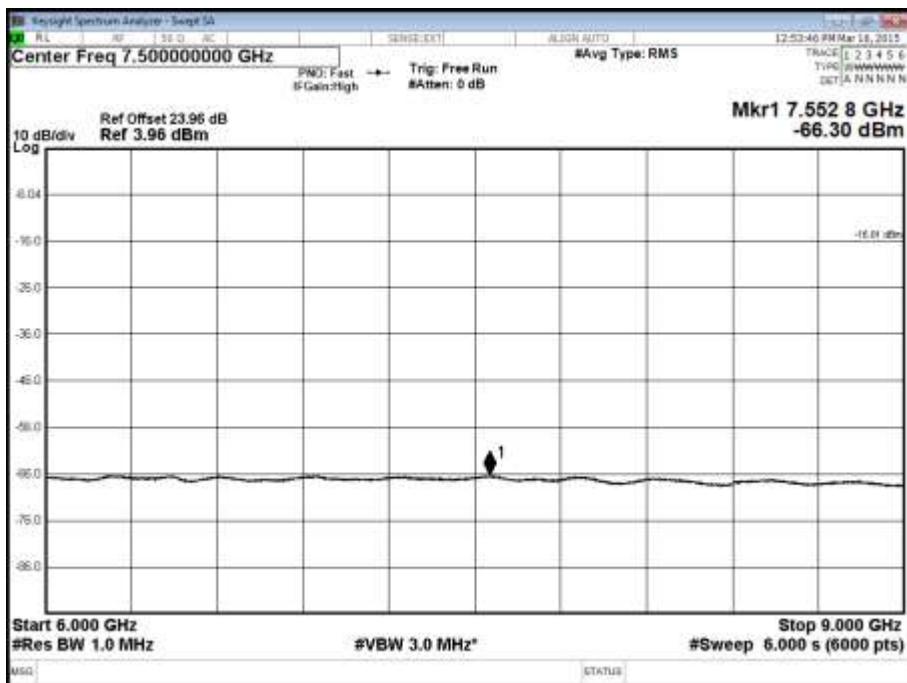
## Channel Position M - Antenna A - 5 MHz Bandwidth

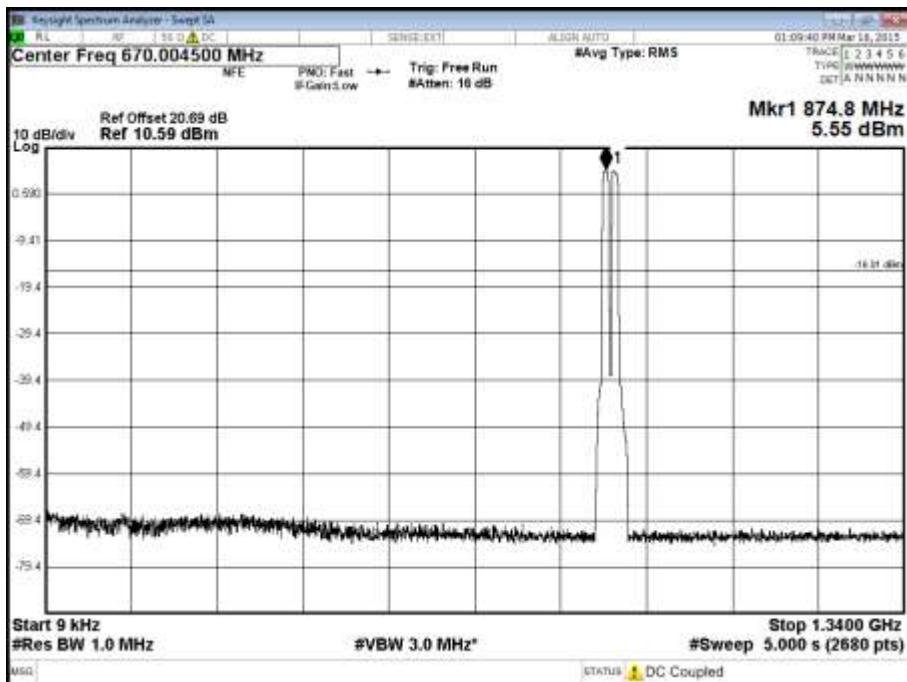
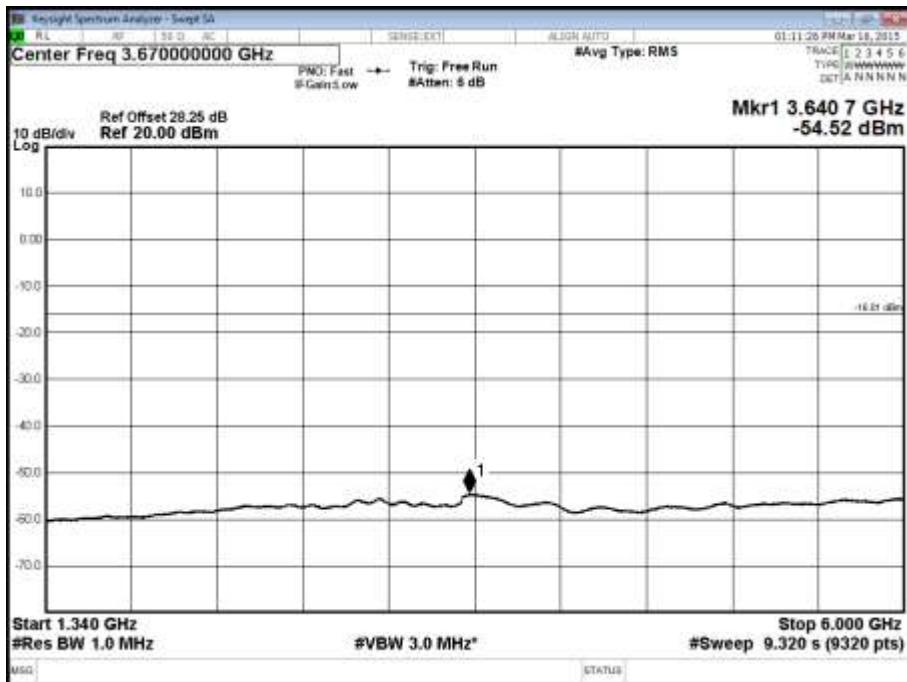


## Channel Position M - Antenna A - 5 MHz Bandwidth

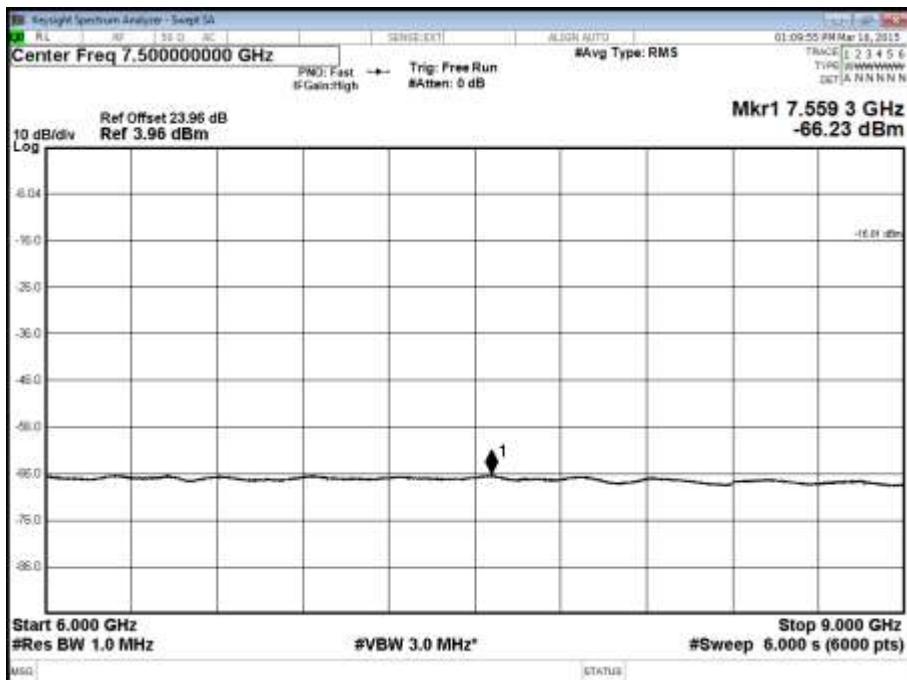


## Channel Position M - Antenna A - 5 MHz Bandwidth



Channel Position M - Antenna A - 10 MHz Bandwidth

Channel Position M - Antenna A - 10 MHz Bandwidth


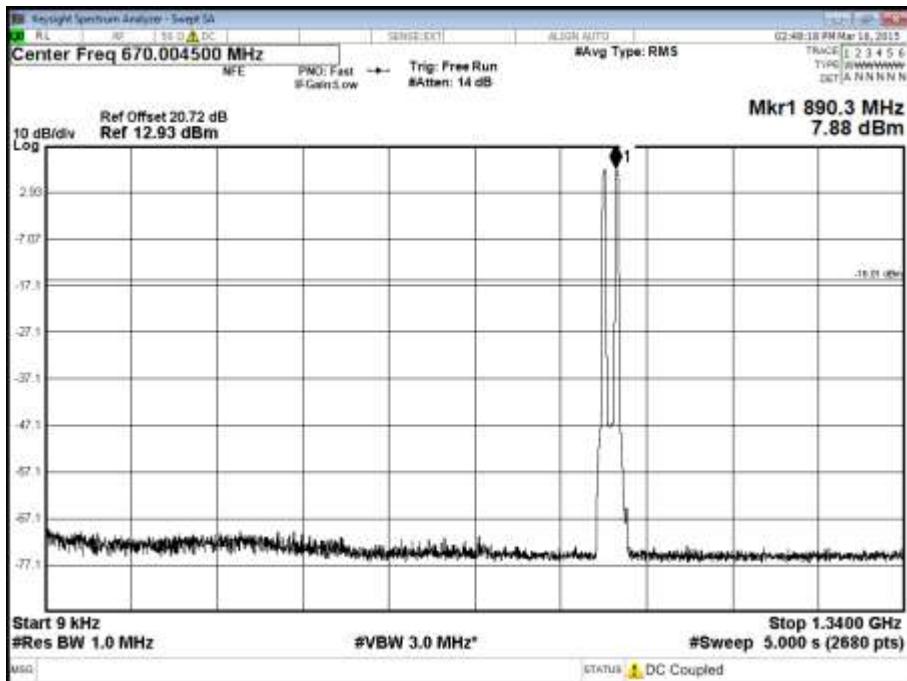
## Channel Position M - Antenna A - 10 MHz Bandwidth



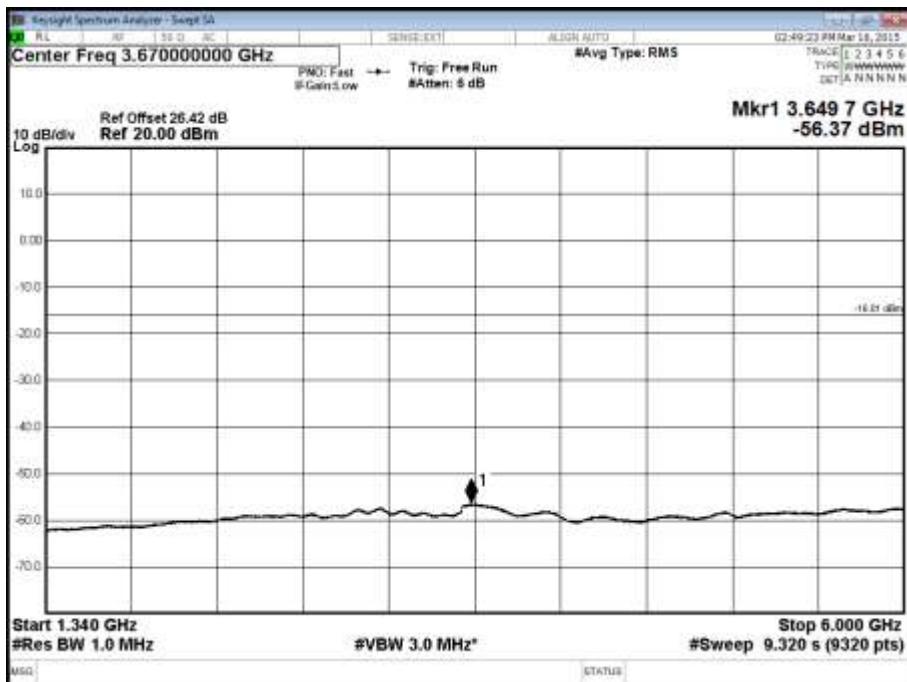
## Configuration 6 – LTE MC Antenna B (see table 3)

Maximum Output Power 17 dBm (per port)

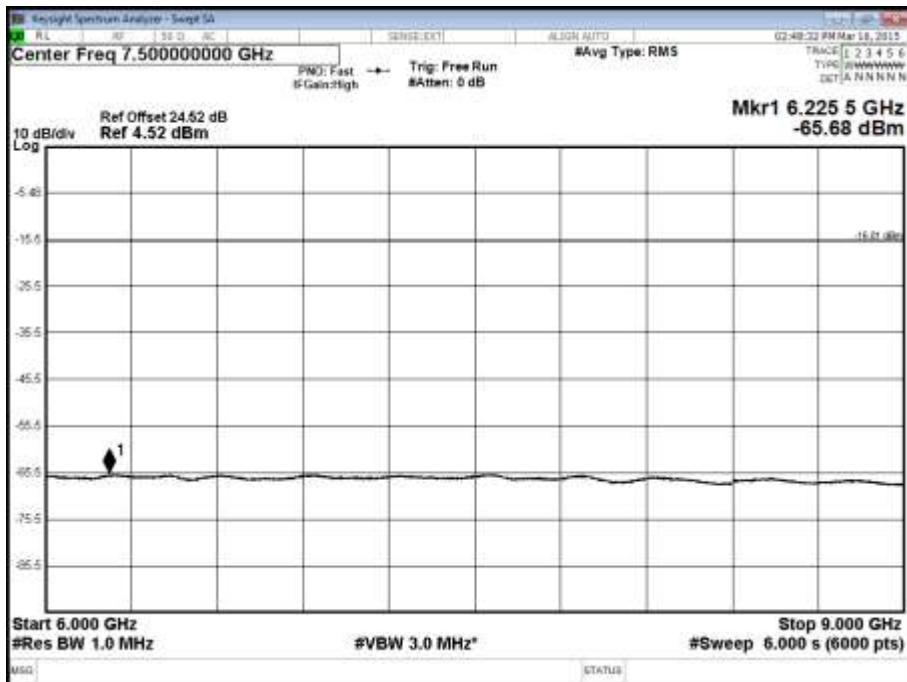
## Channel Position M - Antenna B - 5 MHz Bandwidth

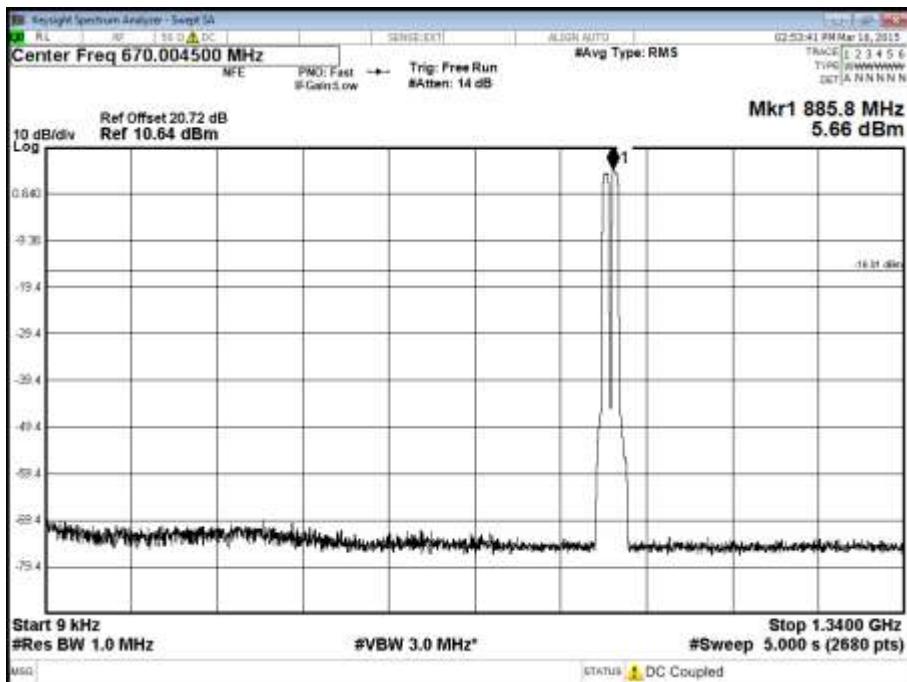
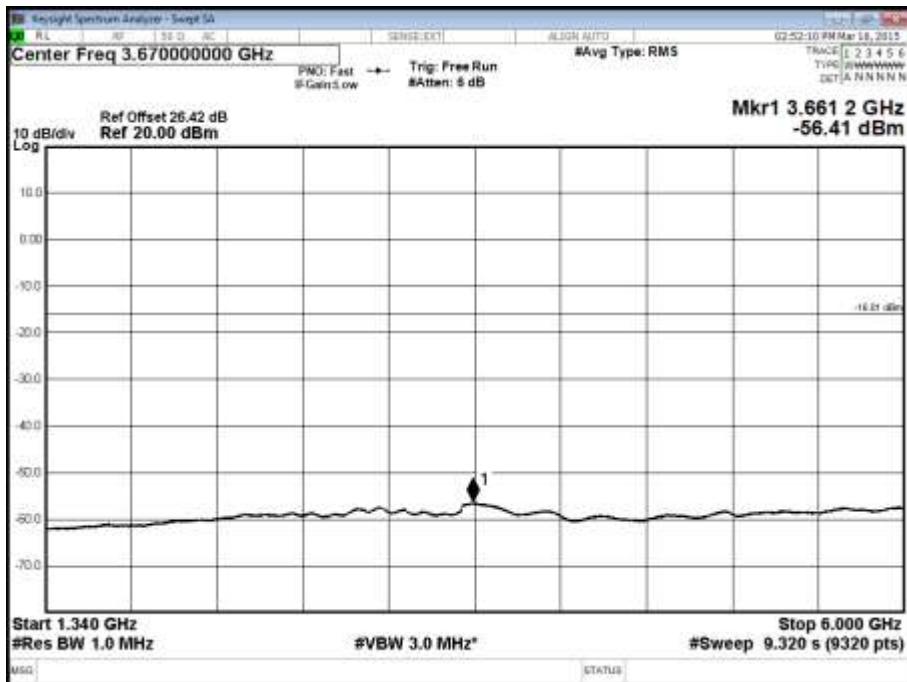


## Channel Position M - Antenna B - 5 MHz Bandwidth

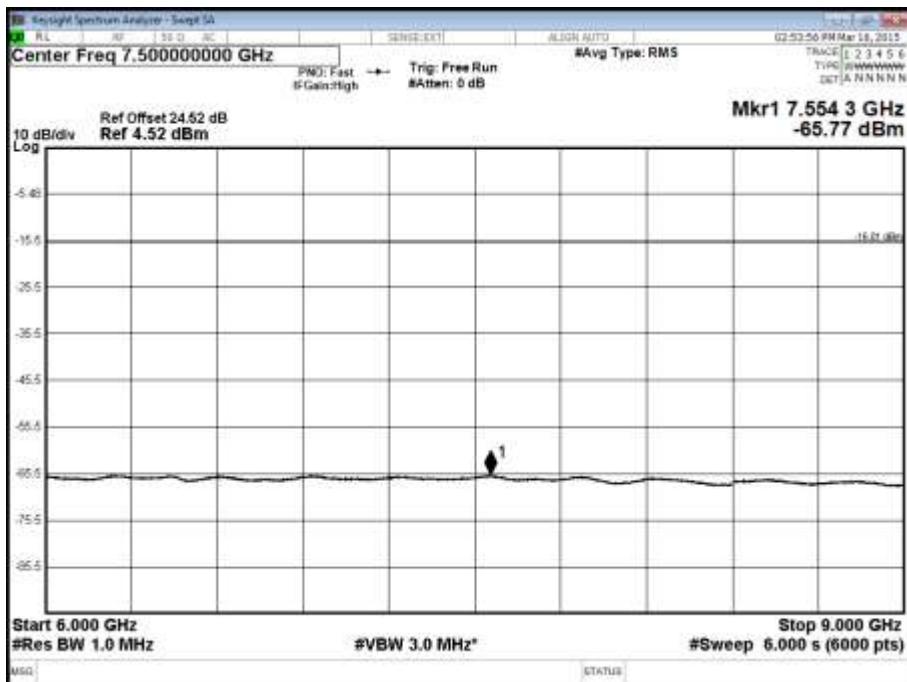


## Channel Position M - Antenna B - 5 MHz Bandwidth



Channel Position M - Antenna B - 10 MHz Bandwidth

Channel Position M - Antenna B - 10 MHz Bandwidth


## Channel Position M - Antenna B - 10 MHz Bandwidth



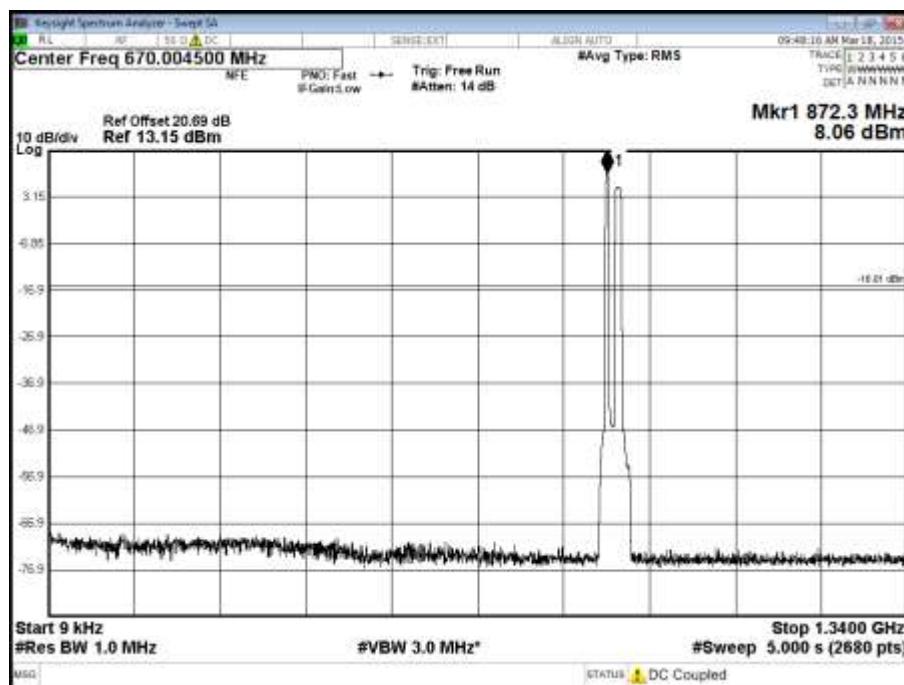
Configuration 9 – WCDMA + LTE Antenna A (see table 5)

Maximum Output Power 17 dBm (per port)

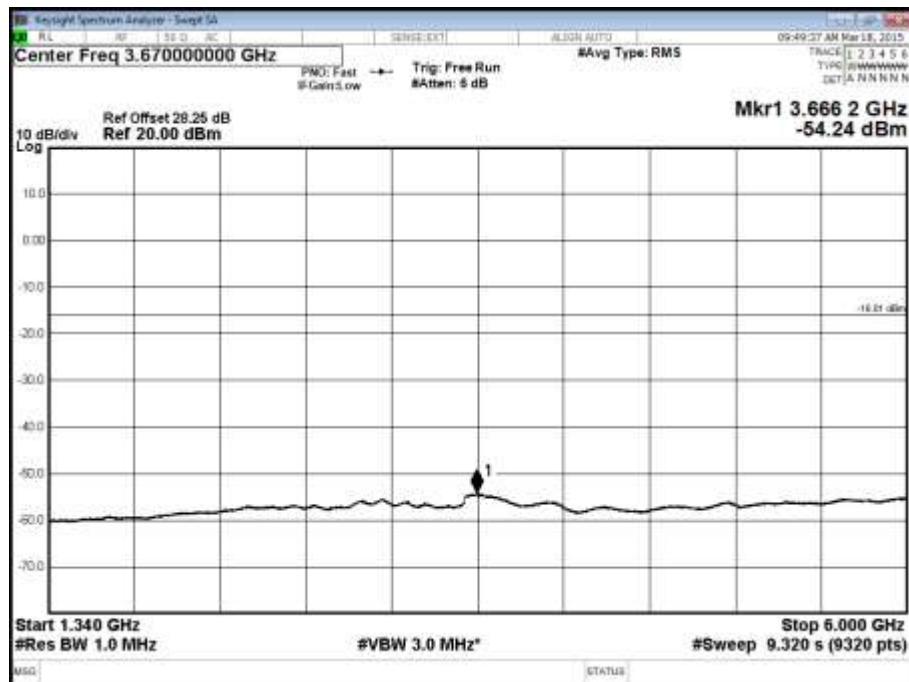
Remarks

LTE Modulation = QPSK

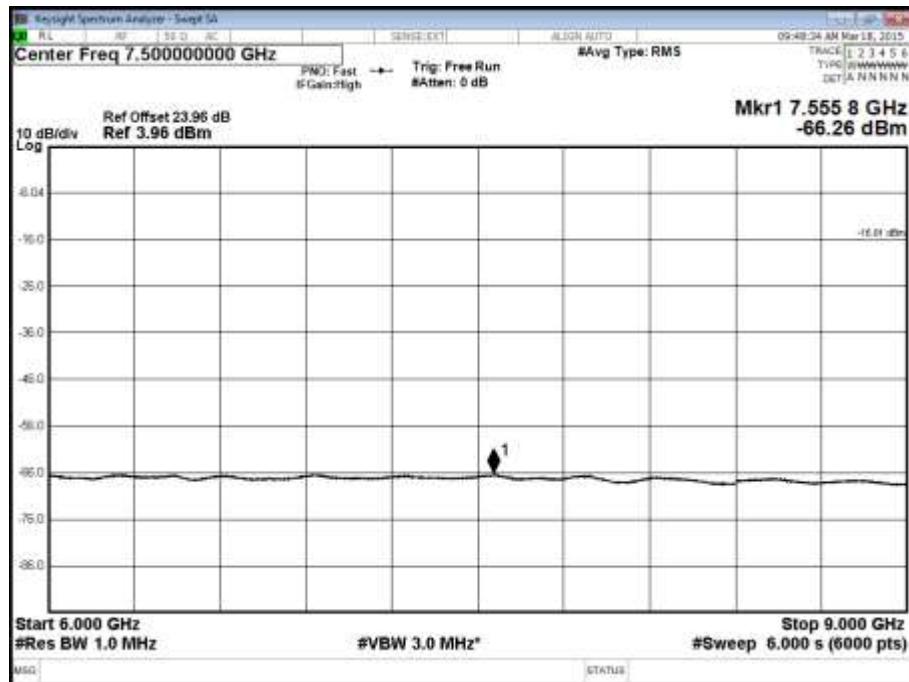
Channel Position MRFBW - Antenna A



## Channel Position MRFBW - Antenna A



## Channel Position MRFBW - Antenna A



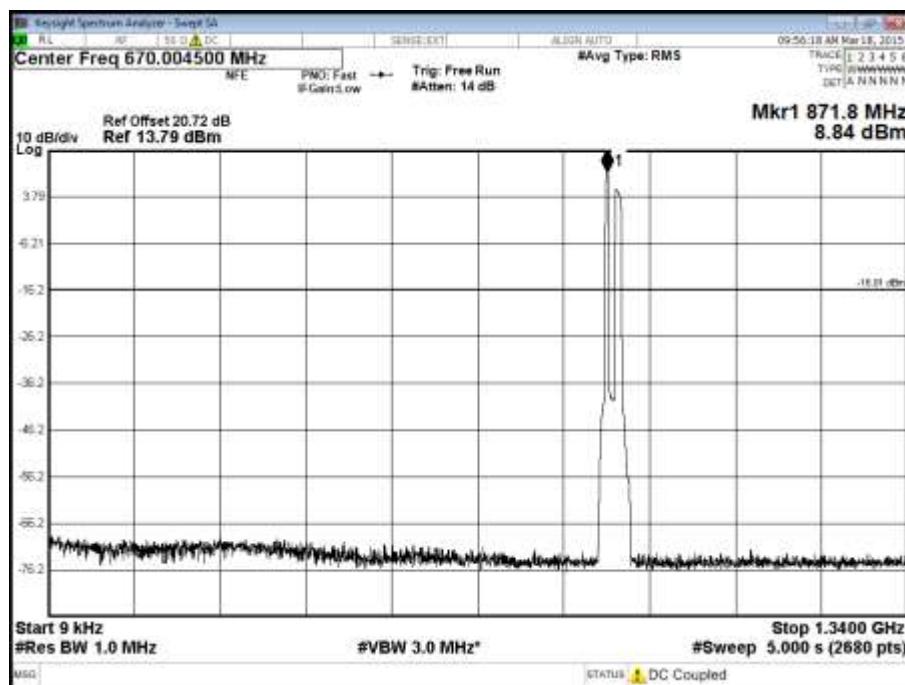
Configuration 9 – WCDMA + LTE Antenna B (see table 5)

Maximum Output Power 17 dBm (per port)

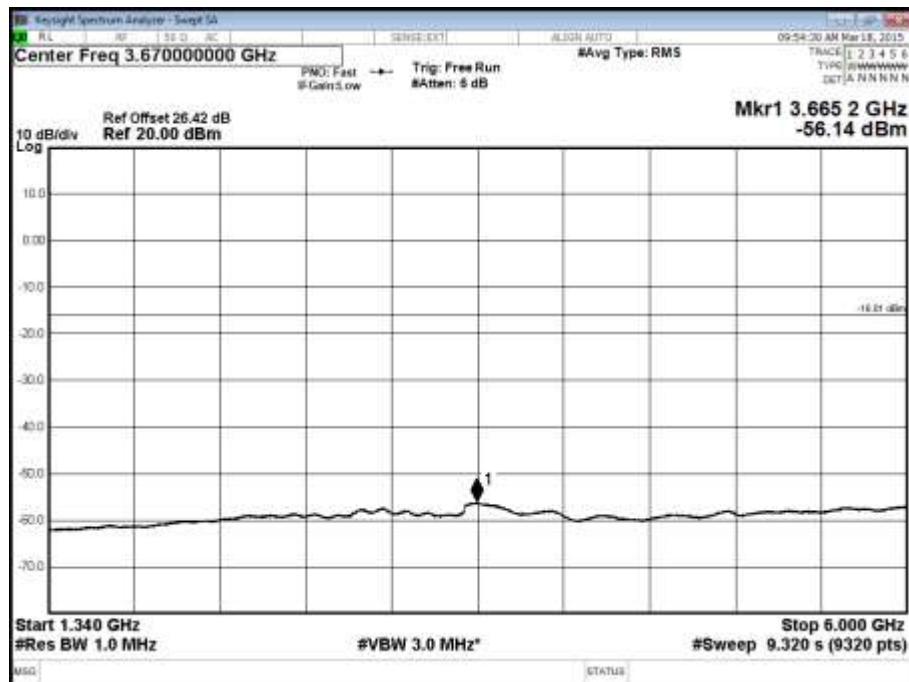
Remarks

LTE Modulation = QPSK

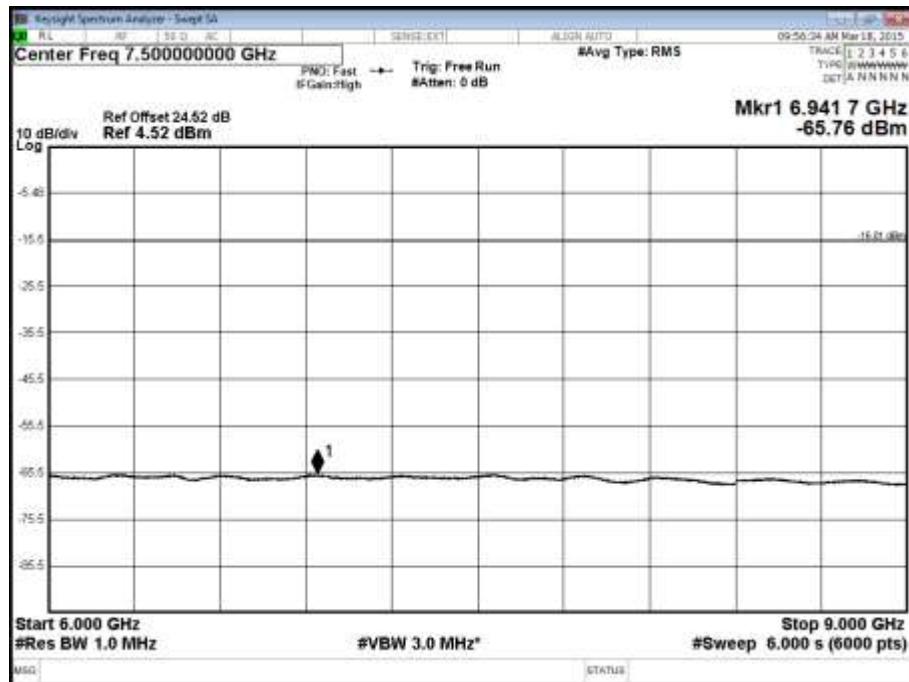
Channel Position MRFBW - Antenna B



## Channel Position MRFBW - Antenna B



## Channel Position MRFBW - Antenna B



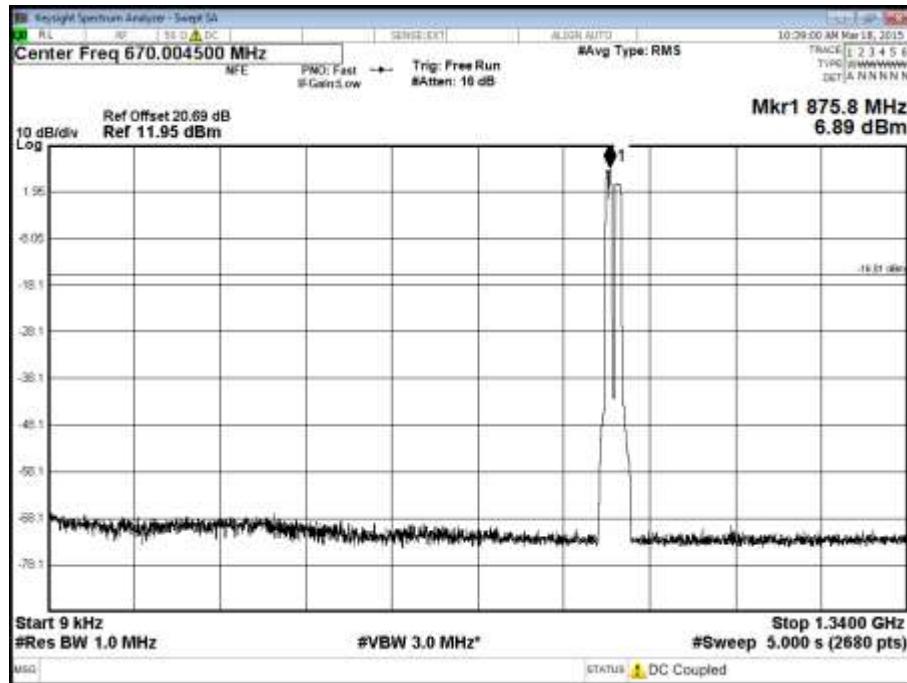
Configuration 10 – WCDMA + LTE Antenna A (see table 5)

Maximum Output Power 17 dBm (per port)

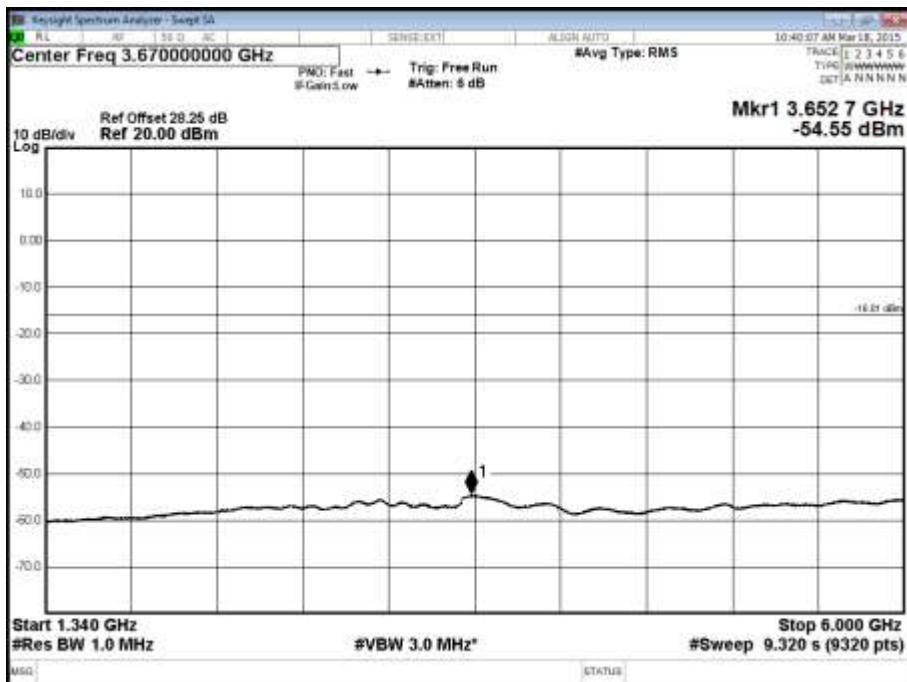
Remarks

LTE Modulation = QPSK

Channel Position MRFBW - Antenna A



## Channel Position MRFBW - Antenna A



## Channel Position MRFBW - Antenna A



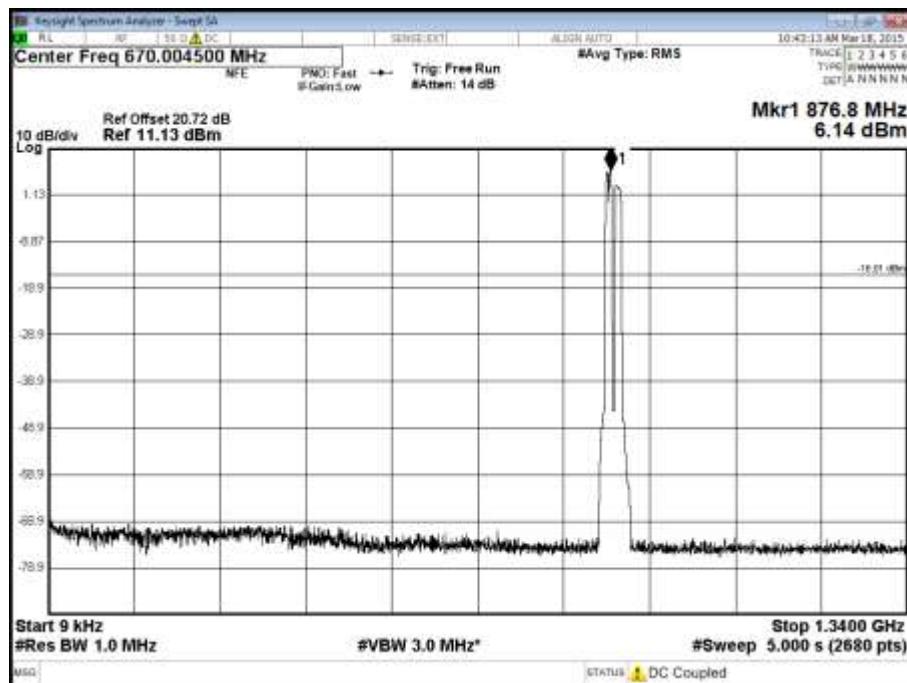
Configuration 10 – WCDMA + LTE Antenna B (see table 5)

Maximum Output Power 17 dBm (per port)

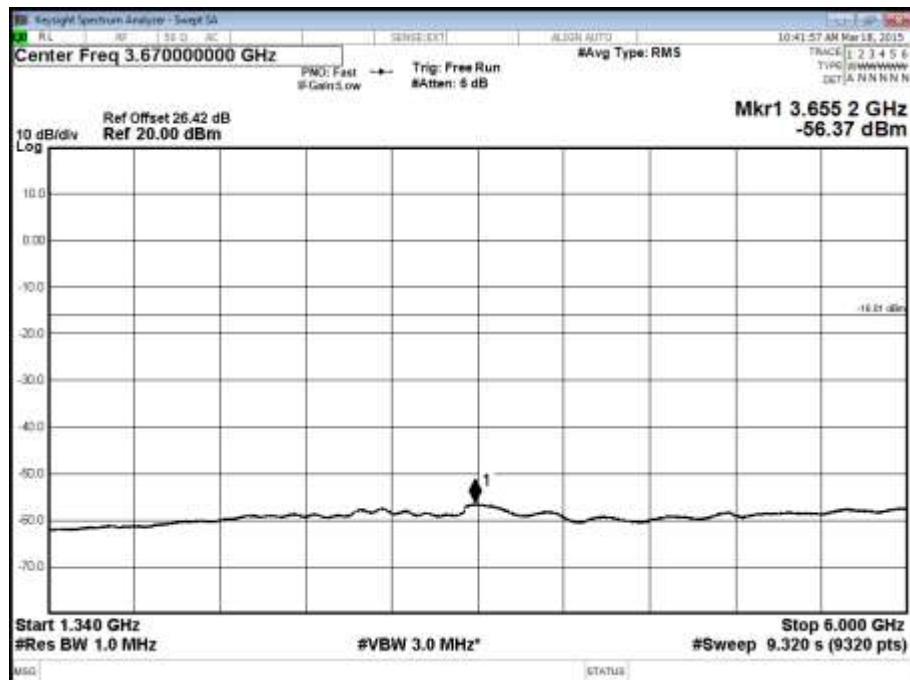
Remarks

LTE Modulation = QPSK

Channel Position MRFBW - Antenna B



## Channel Position MRFBW - Antenna B



## Channel Position MRFBW - Antenna B



Limit	-16dBm
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## 2.5 FREQUENCY STABILITY

### 2.5.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1055  
FCC CFR 47 Part 22, Clause 22.355  
Industry Canada RSS-132, Clause 5.3  
Industry Canada RSS-GEN, Clause 4.7

### 2.5.2 Date of Test and Modification State

18 March 2015 - Modification State 0

### 2.5.3 Test Equipment Used

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

### 2.5.4 Environmental Conditions

Ambient Temperature 27.3°C  
Relative Humidity 18.5%

### 2.5.5 Test Method

The EUT was placed in a Climatic Chamber and connected to a Vector Signal Analyser via an attenuator. The temperature was varied over the range -30°C to +50°C in 10°C steps. At each temperature interval, the EUT was left to stabilise. After this period of time, the mean Frequency Error was measured and recorded on the Middle channel.

At 20°C, the voltage was varied between 85% and 115% of the nominal declared voltage. At each extreme voltage, the mean Frequency Error was measured and recorded on the Middle channel.

### 2.5.6 Test Results

Configuration 5 – LTE SC Antenna A

Maximum Output Power 17 dBm (per port)

Temperature	Frequency Error (Hz)
	Channel Position M
-30°C	NPD
-20°C	NPD
-10°C	2.64
0°C	2.01
+5°C	1.74
+10°C	2.40
+20°C	1.72
+30°C	2.19
+40°C	2.73
+50°C	2.15

Remarks

IRU 2242 was outside climatic chamber at ambient temperature. NPD = No Power Detected.  
Used Test Model / Channel Bandwidth = ETM1.1 (QPSK) / 5 MHz.

## Configuration 1 – WCDMA SC Antenna A

Maximum Output Power 17 dBm (per port)

Temperature	Frequency Error (Hz)
	Channel Position M
-30°C	NPD
-20°C	NPD
-10°C	1.92
0°C	1.24
+5°C	-1.17
+10°C	1.48
+20°C	1.51
+30°C	-1.14
+40°C	-1.85
+50°C	-1.45

Remarks

IRU 2242 was outside climatic chamber at ambient temperature. NPD = No Power Detected.  
Used Test Model = TM1 (QPSK).

## Configuration 5 – LTE SC Antenna A

Maximum Output Power 17 dBm (per port)

Voltage	Frequency Error (Hz)
	Channel Position M
-40.8 V	2.10
-48.0 V	1.72
-55.2 V	1.60

Remarks

IRU 2242 was outside climatic chamber at ambient temperature. Used Test Model / Channel Bandwidth = ETM1.1 (QPSK) / 5 MHz.

## Configuration 1 – WCDMA Antenna A

Maximum Output Power 17 dBm (per port)

Voltage	Frequency Error (Hz)
	Channel Position M
-40.8 V	1.74
-48.0 V	1.51
-55.2 V	1.63

Remarks

IRU 2242 was outside climatic chamber at ambient temperature. Used Test Model = TM1 (QPSK).

Limit	±1.5 ppm or ±1.322 kHz
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### **SECTION 3**

#### **TEST EQUIPMENT USED**

### 3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Maximum Peak Output Power and Peak to Average Ratio - Conducted					
Hygrometer	Rotronic	A1	2138	12	03-Dec-2015
DMM	Fluke	179	4007	12	31-Jul-2015
Spectrum Analyser	Agilent	PXA N9030A	US49230391	12	22-Sep-2015
Network Analyser	Agilent	8722ES	US39175387	12	15-Oct-2015
Power Meter	Agilent	1912A	MY45101348	24	22-Jul-2016
Power Sensor	Agilent	1921A	MY52410016	12	22-Jul-2015
PSU	Xantrex	XKW60-50	1001425551	-	O/P Mon
Attenuator (20dB)	Hewlett Packard	8491A	-	-	O/P Mon
Occupied Bandwidth					
Hygrometer	Rotronic	A1	2138	12	03-Dec-2015
DMM	Fluke	179	4007	12	31-Jul-2015
Spectrum Analyser	Agilent	PXA N9030A	US49230391	12	22-Sep-2015
Network Analyser	Agilent	8722ES	US39175387	12	15-Oct-2015
Power Meter	Agilent	1912A	MY45101348	24	22-Jul-2016
Power Sensor	Agilent	1921A	MY52410016	12	22-Jul-2015
PSU	Xantrex	XKW60-50	1001425551	-	O/P Mon
Attenuator (20dB)	Hewlett Packard	8491A	-	-	O/P Mon
Band Edge					
Hygrometer	Rotronic	A1	2138	12	03-Dec-2015
DMM	Fluke	179	4007	12	31-Jul-2015
Spectrum Analyser	Agilent	PXA N9030A	US49230391	12	22-Sep-2015
Network Analyser	Agilent	8722ES	US39175387	12	15-Oct-2015
Power Meter	Agilent	1912A	MY45101348	24	22-Jul-2016
Power Sensor	Agilent	1921A	MY52410016	12	22-Jul-2015
PSU	Xantrex	XKW60-50	1001425551	-	O/P Mon
Attenuator (20dB)	Hewlett Packard	8491A	-	-	O/P Mon
Transmitter Spurious Emissions					
Hygrometer	Rotronic	A1	2138	12	03-Dec-2015
DMM	Fluke	179	4007	12	31-Jul-2015
Spectrum Analyser	Agilent	PXA N9030A	US49230391	12	22-Sep-2015
Network Analyser	Agilent	8722ES	US39175387	12	15-Oct-2015
Power Meter	Agilent	1912A	MY45101348	24	22-Jul-2016
Power Sensor	Agilent	1921A	MY52410016	12	22-Jul-2015
PSU	Xantrex	XKW60-50	1001425551	-	O/P Mon
Attenuator (20dB)	Hewlett Packard	8491A	-	-	O/P Mon
HPF	Mini-Circuits	1340-4000	-	-	O/P Mon

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
<b>Frequency Stability</b>					
Hygrometer	Rotronic	A1	2138	12	03-Dec-2015
DMM	Fluke	179	4007	12	31-Jul-2015
Thermometer	Fluke	51	3173	12	01-Dec-2015
Spectrum Analyser	R&S	FSQ	101165/026	12	20-Oct-2015
Network Analyser	Agilent	8722ES	US39175387	12	15-Oct-2015
PSU	Xantrex	XKW60-50	1001425551	-	O/P Mon
Attenuator (20dB)	Hewlett Packard	8491A	-	-	O/P Mon
Climatic chamber	Burnsco	RTC-37P-3-3	07-07	-	O/P Mon

O/P Mon – Output Monitored with Calibrated Equipment

### 3.2 MEASUREMENT UNCERTAINTY

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

Test Discipline	Frequency / Parameter	MU
Conducted Maximum Peak Output Power	30 MHz to 20 GHz Amplitude	± 0.5 dB
Conducted Emissions	30 MHz to 20 GHz Amplitude	± 3.5 dB
Frequency Stability	30 MHz to 2 GHz Amplitude	± 0.03 Hz
Occupied Bandwidth	Up to 20 MHz Bandwidth	± 290 kHz
Band Edge	30 MHz to 20 GHz Amplitude	± 3.5 dB

## **SECTION 4**

### **ACCREDITATION, DISCLAIMERS AND COPYRIGHT**

#### 4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



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

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

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

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**ANNEX A**

**MODULE LIST**

Configuration A			
Product	Product No	R-State	Serial No
IRU 2242	KRC 161 444/1	R1C	C828840931
RD 2242 B5	KRY 901 332/1	R1B	C829459692
SUP 6601	BFL 901 009/1	R3B	BR81278870

Software Version:	CXP9013268/14	Revision:	R59FK
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