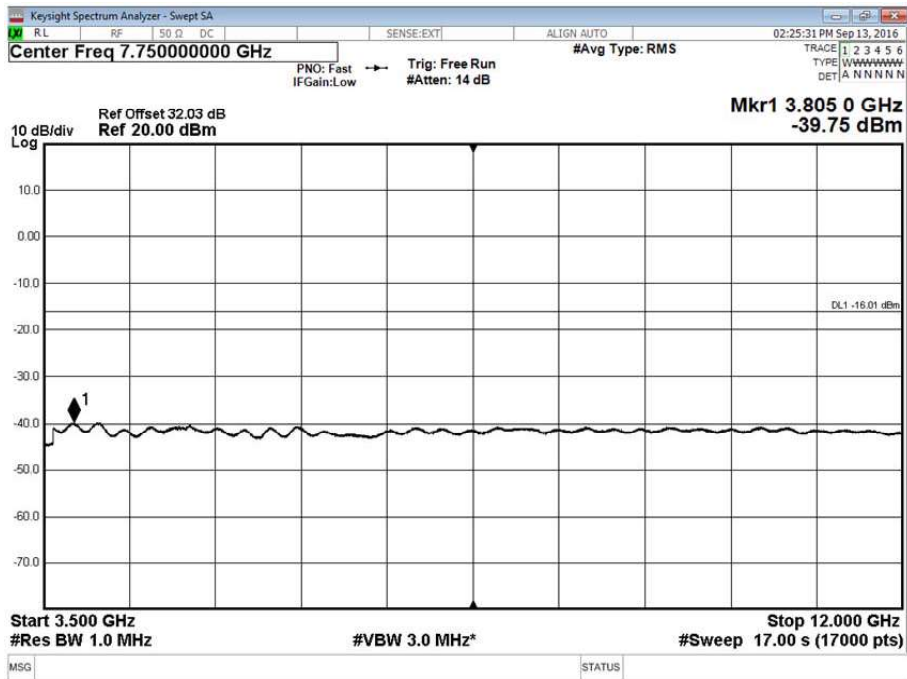
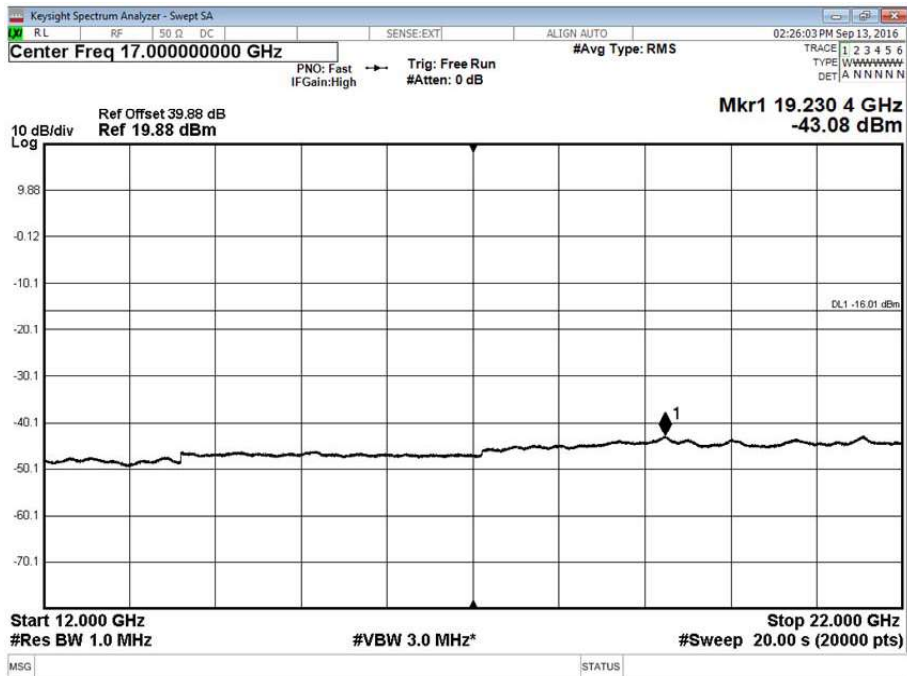


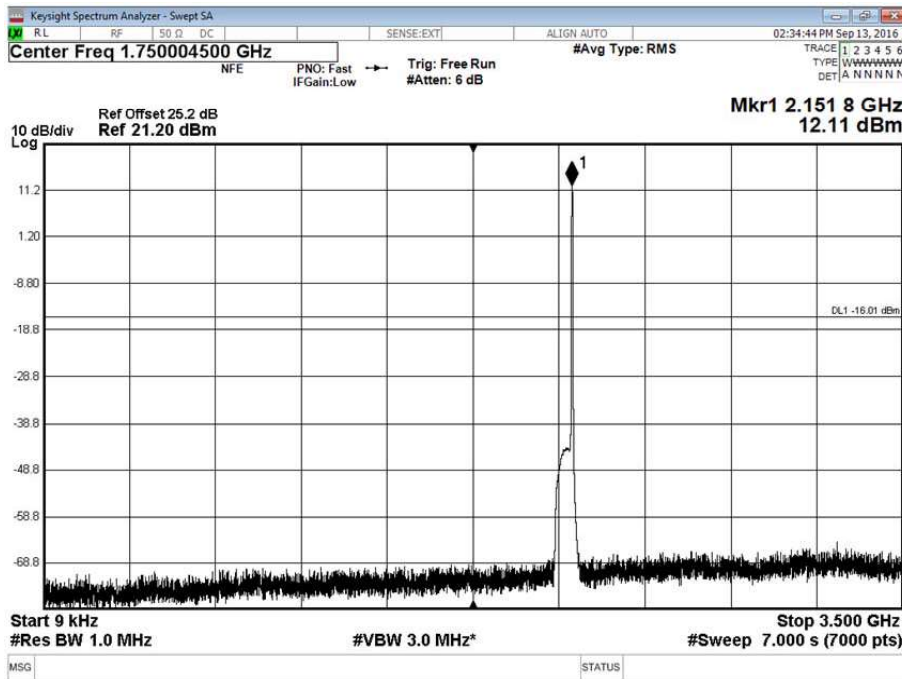
Channel Position M - Bandwidth 5.0 MHz - Antenna A



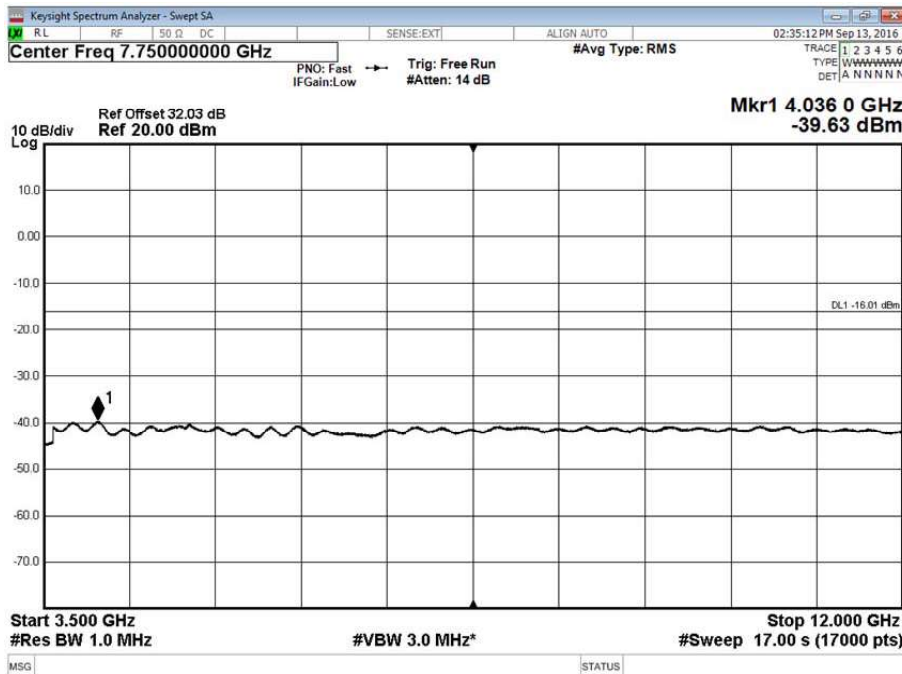
Channel Position M - Bandwidth 5.0 MHz - Antenna A



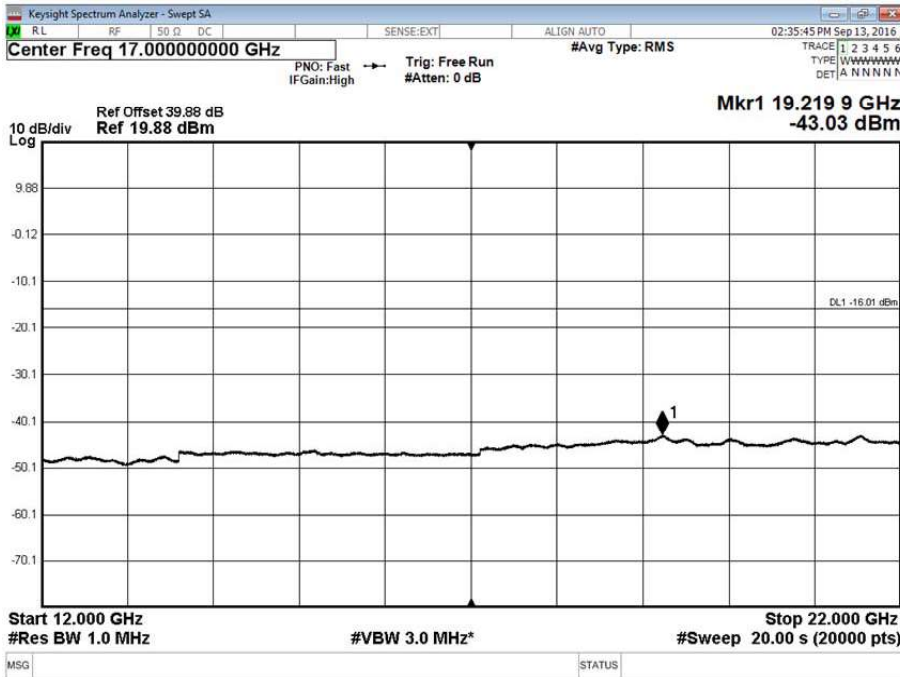
Channel Position T - Bandwidth 5.0 MHz - Antenna A



Channel Position T - Bandwidth 5.0 MHz - Antenna A



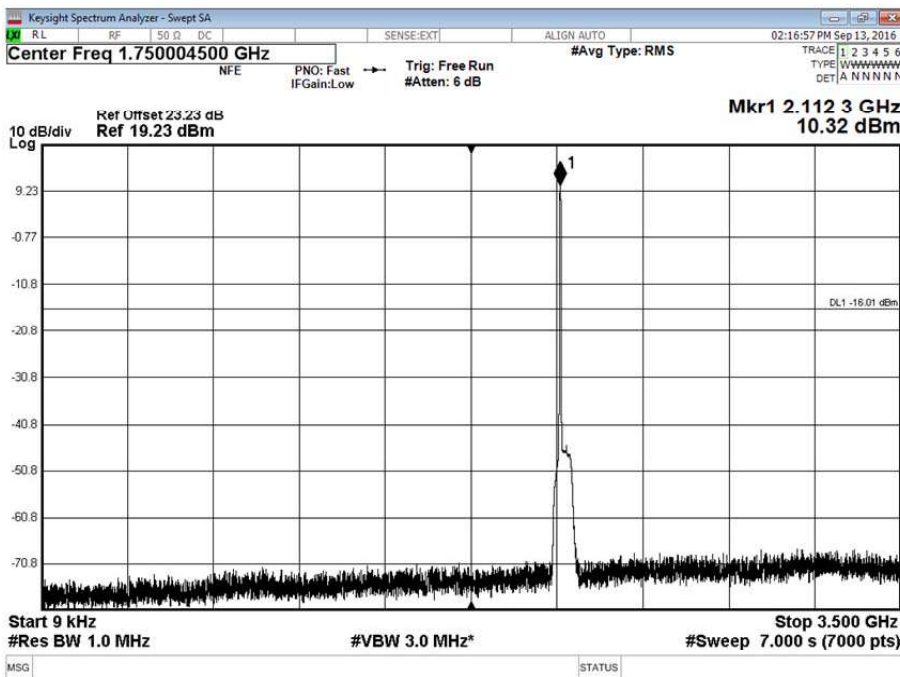
Channel Position T - Bandwidth 5.0 MHz - Antenna A



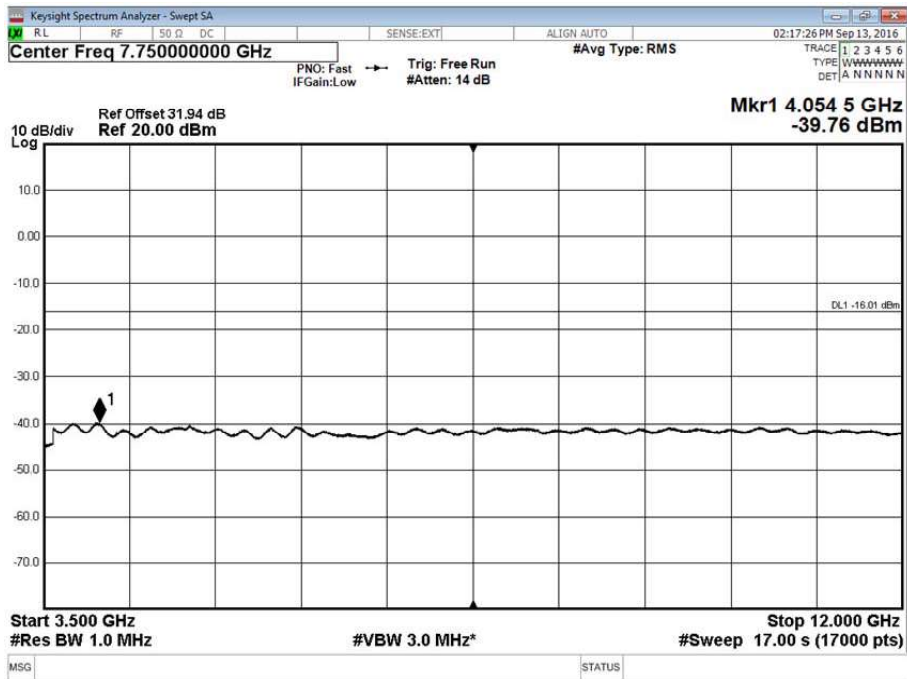
Configuration 1

Maximum Output Power 17 dBm

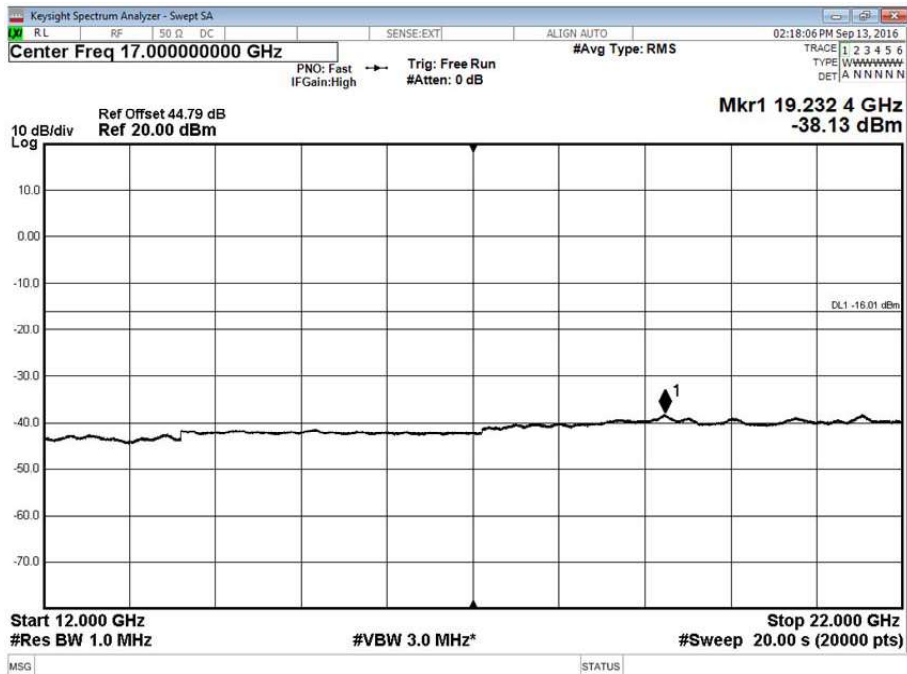
Channel Position B - Bandwidth 5.0 MHz - Antenna B



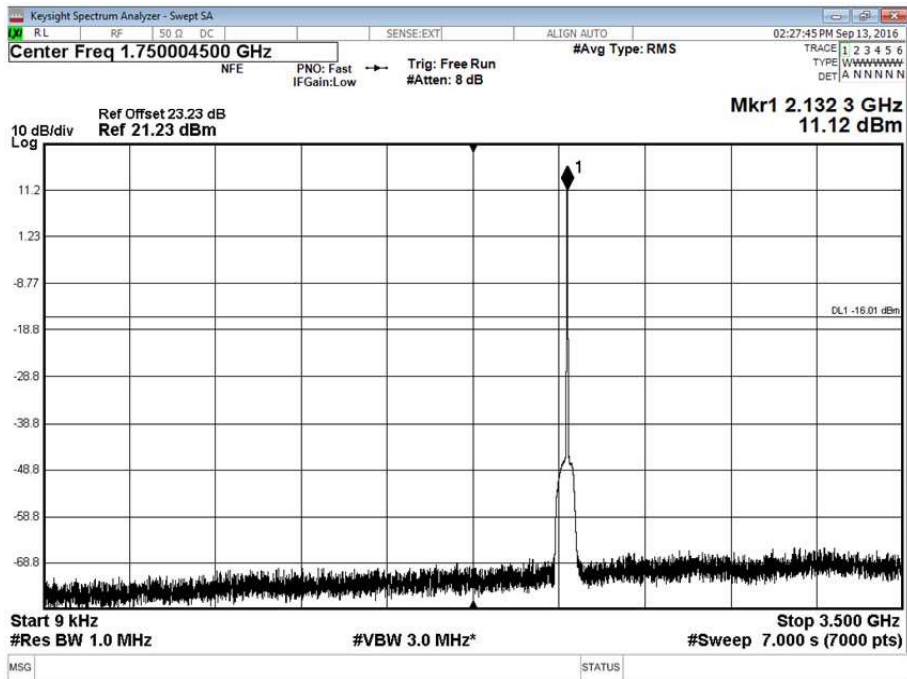
Channel Position B - Bandwidth 5.0 MHz - Antenna B



Channel Position B - Bandwidth 5.0 MHz - Antenna B



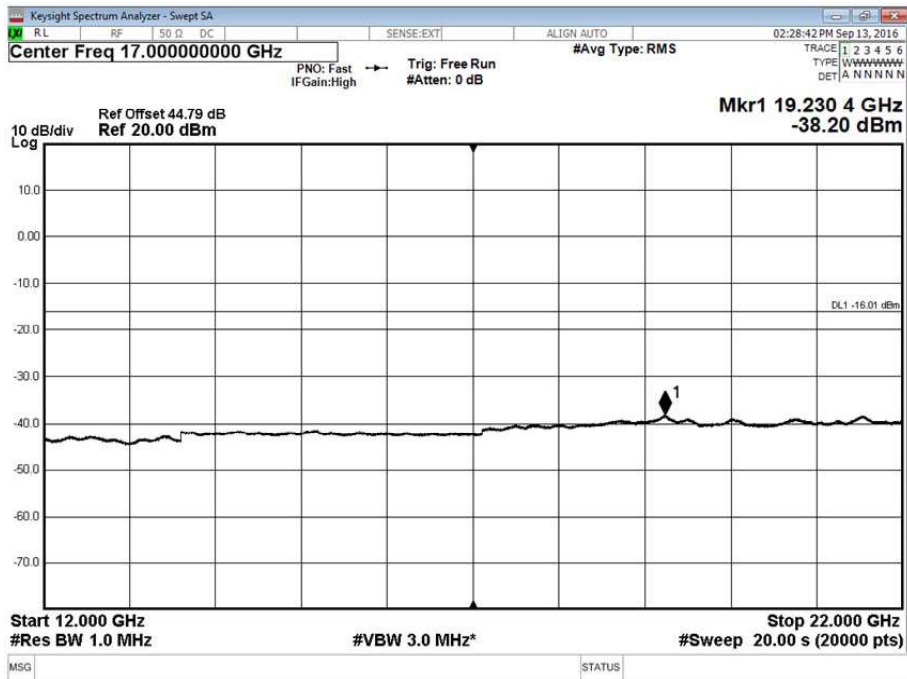
Channel Position M - Bandwidth 5.0 MHz - Antenna B



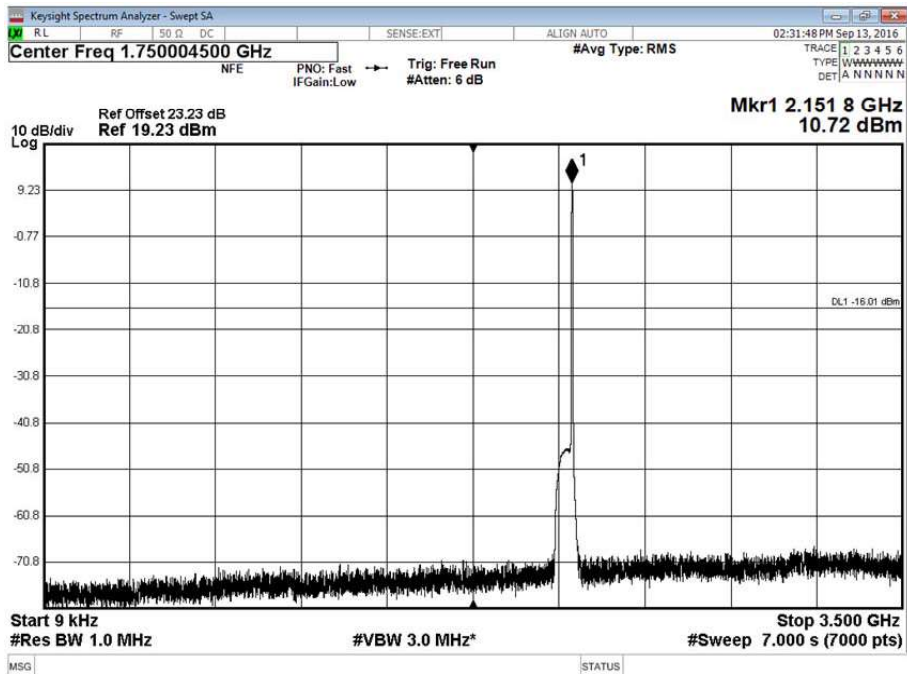
Channel Position M - Bandwidth 5.0 MHz - Antenna B



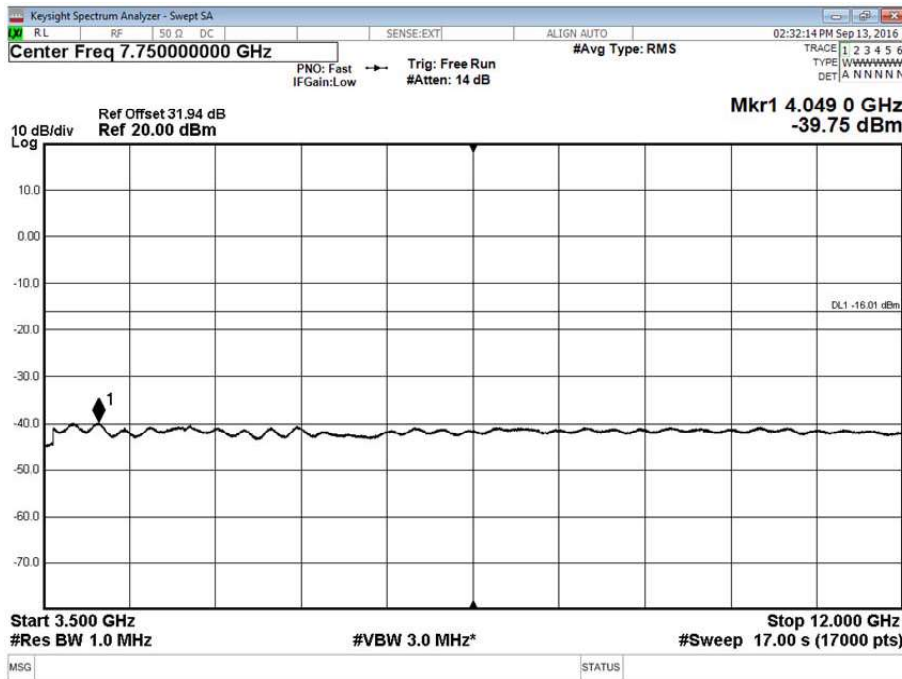
Channel Position M - Bandwidth 5.0 MHz - Antenna B



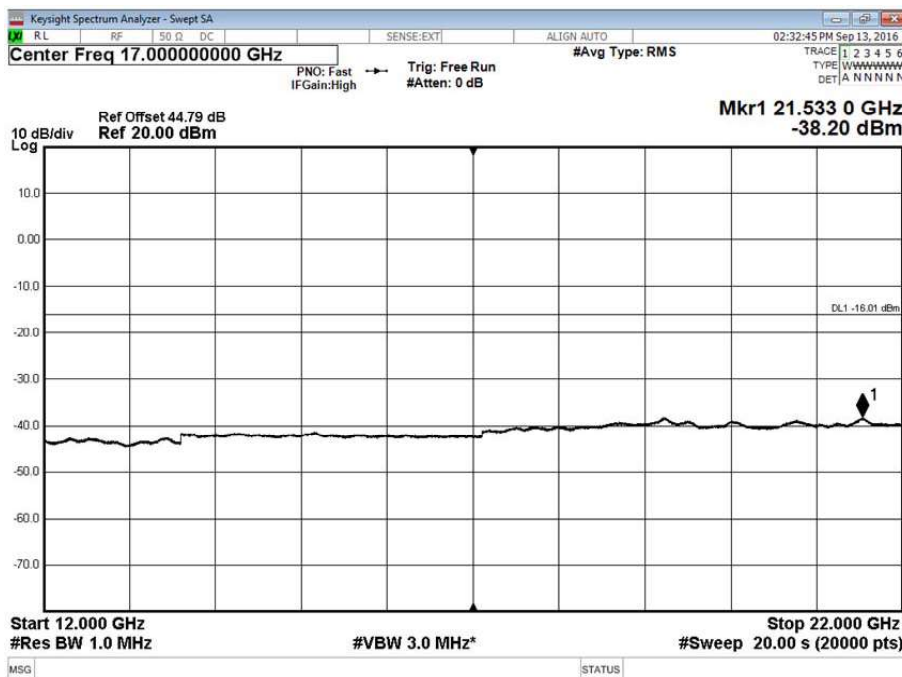
Channel Position T - Bandwidth 5.0 MHz - Antenna B



Channel Position T - Bandwidth 5.0 MHz - Antenna B



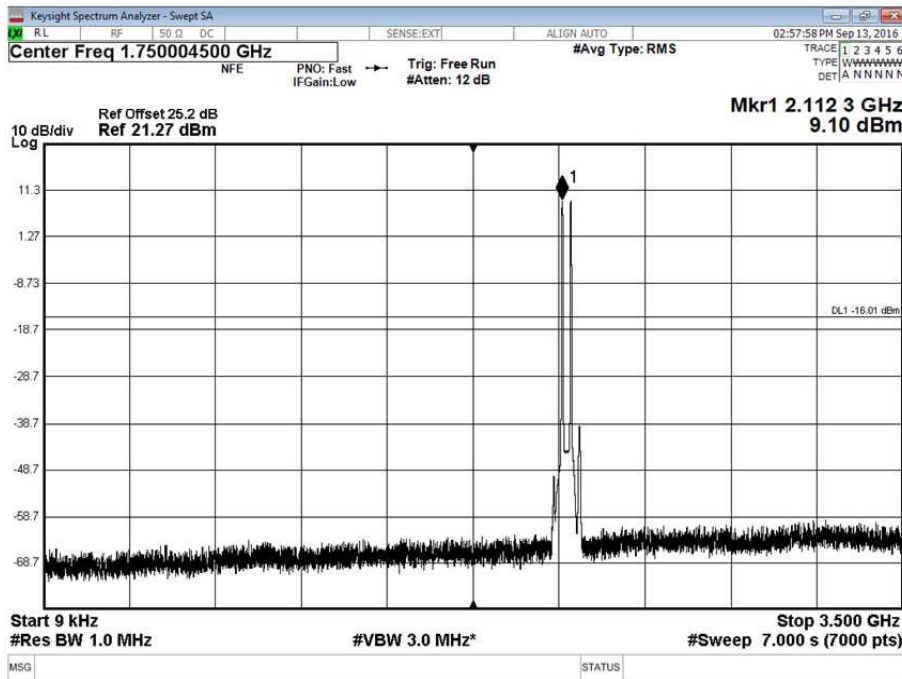
Channel Position T - Bandwidth 5.0 MHz - Antenna B



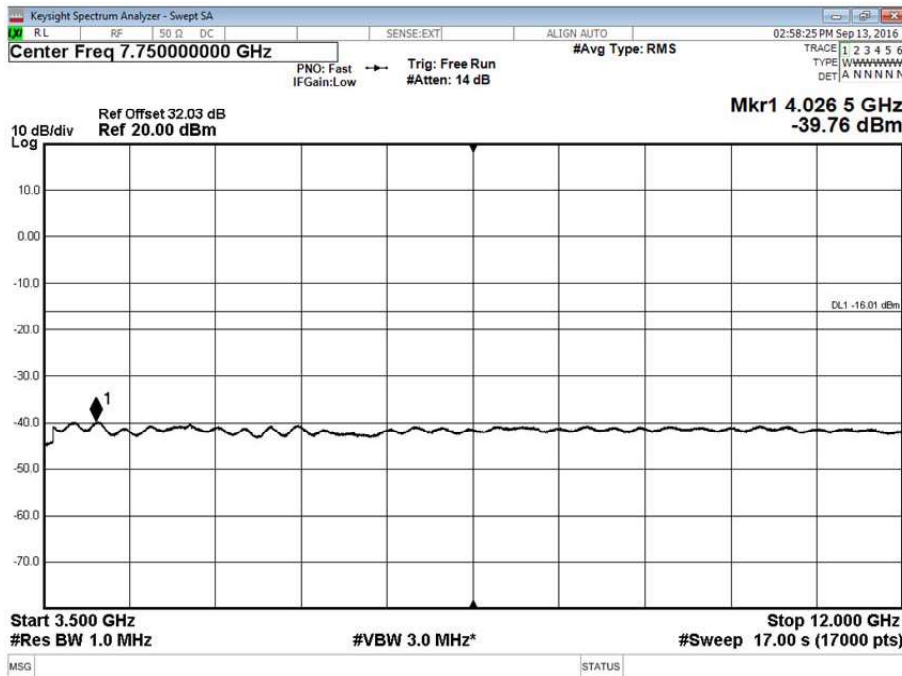
Configuration 2

Maximum Output Power 17 dBm

Channel Position B - Bandwidth 5.0 MHz - Antenna A

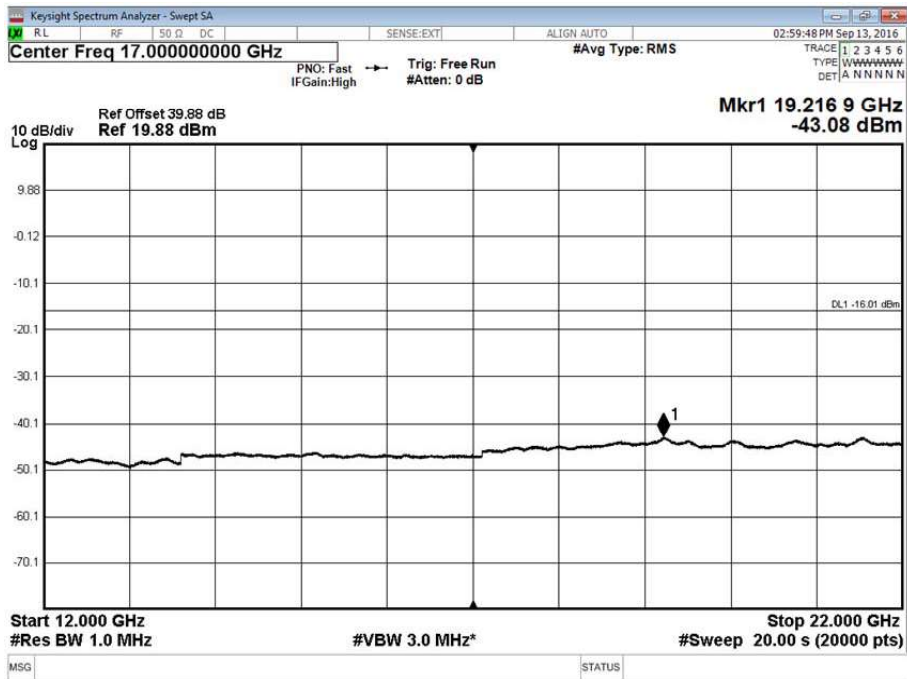


Channel Position B - Bandwidth 5.0 MHz - Antenna A

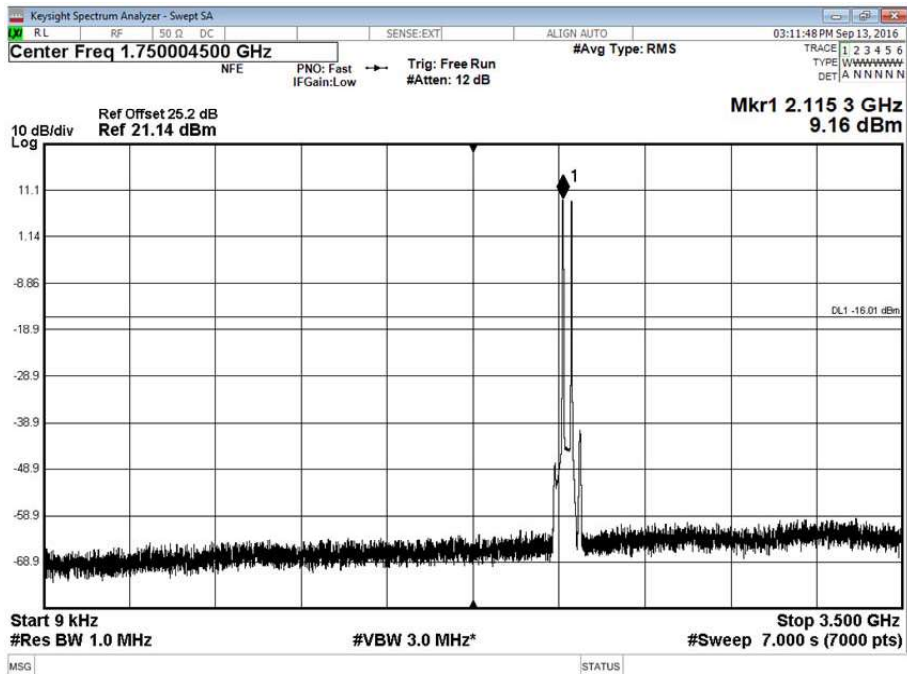




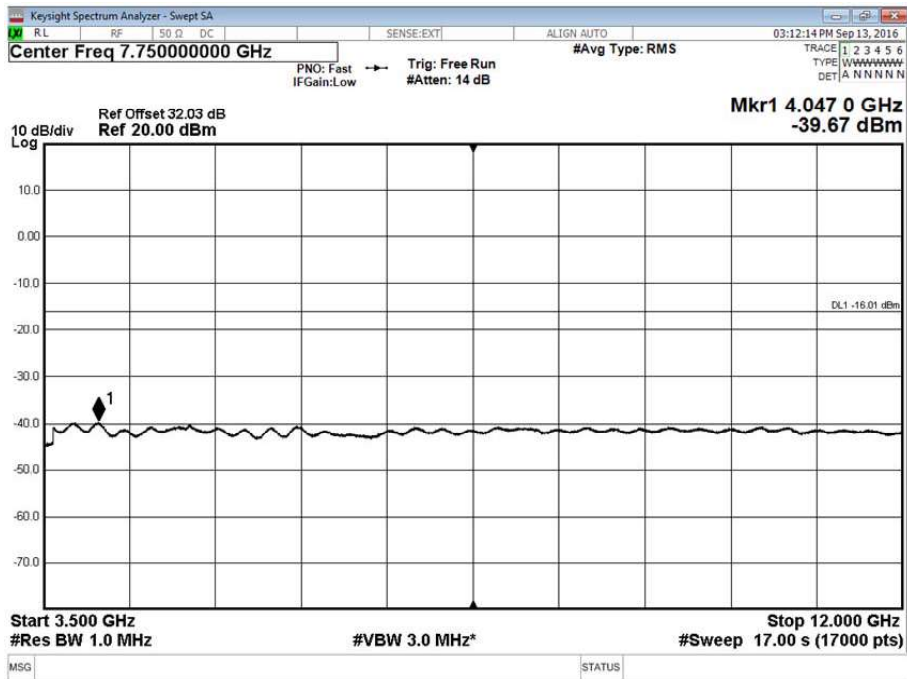
Channel Position B - Bandwidth 5.0 MHz - Antenna A



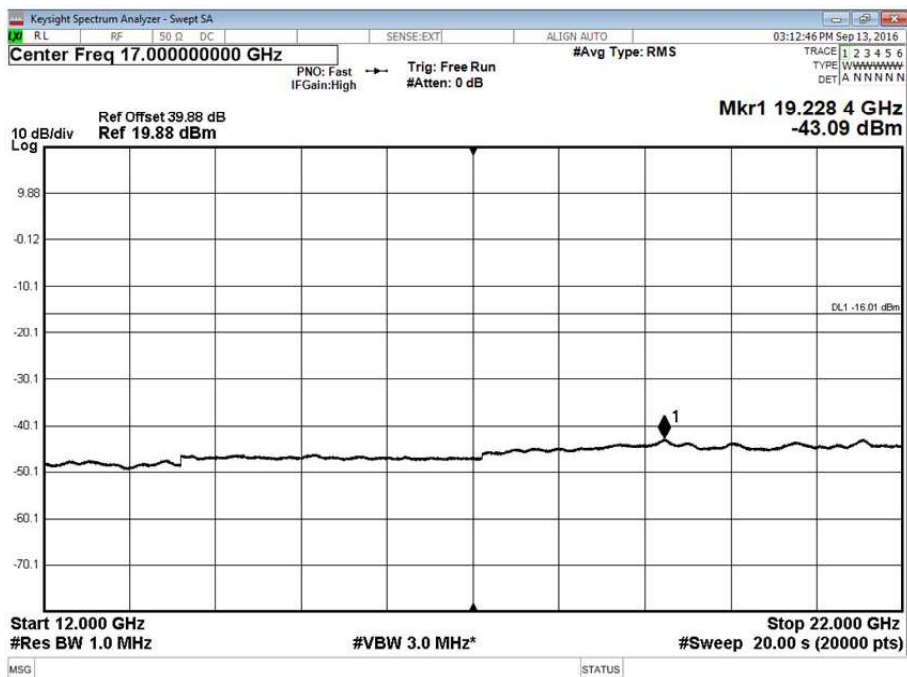
Channel Position M - Bandwidth 5.0 MHz - Antenna A



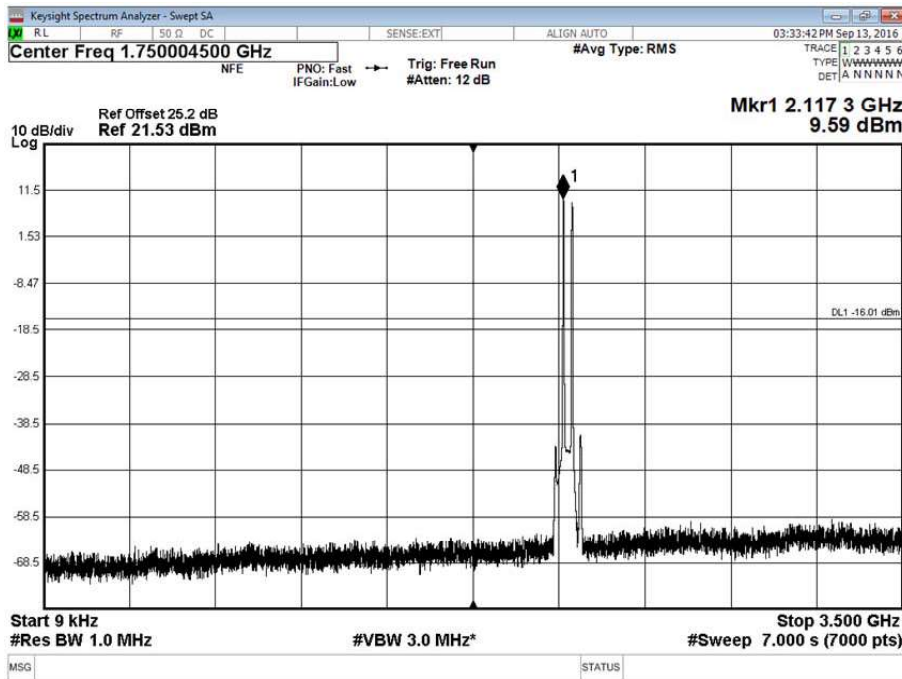
Channel Position M - Bandwidth 5.0 MHz - Antenna A



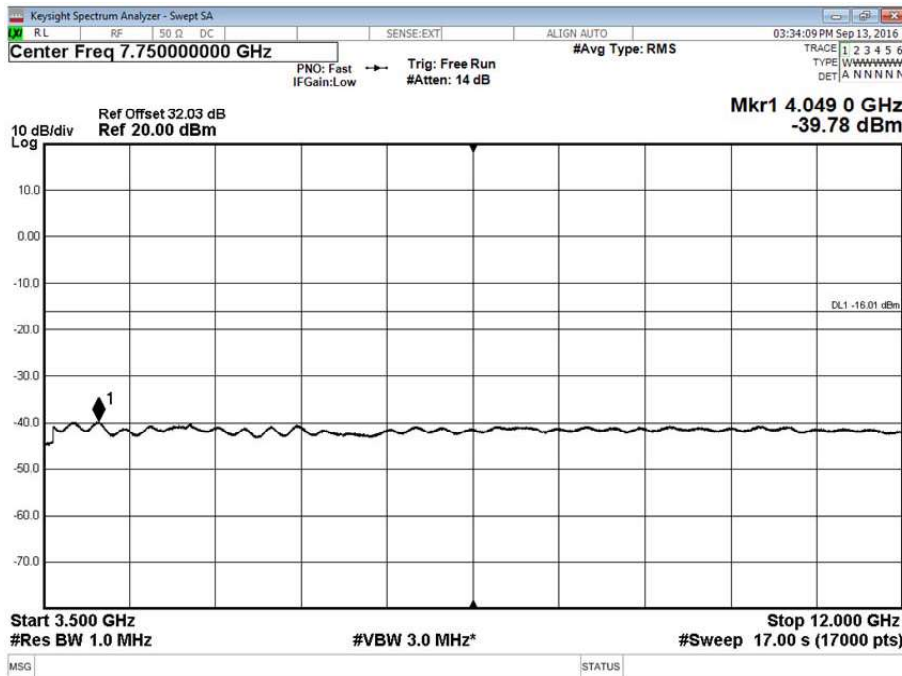
Channel Position M - Bandwidth 5.0 MHz - Antenna A



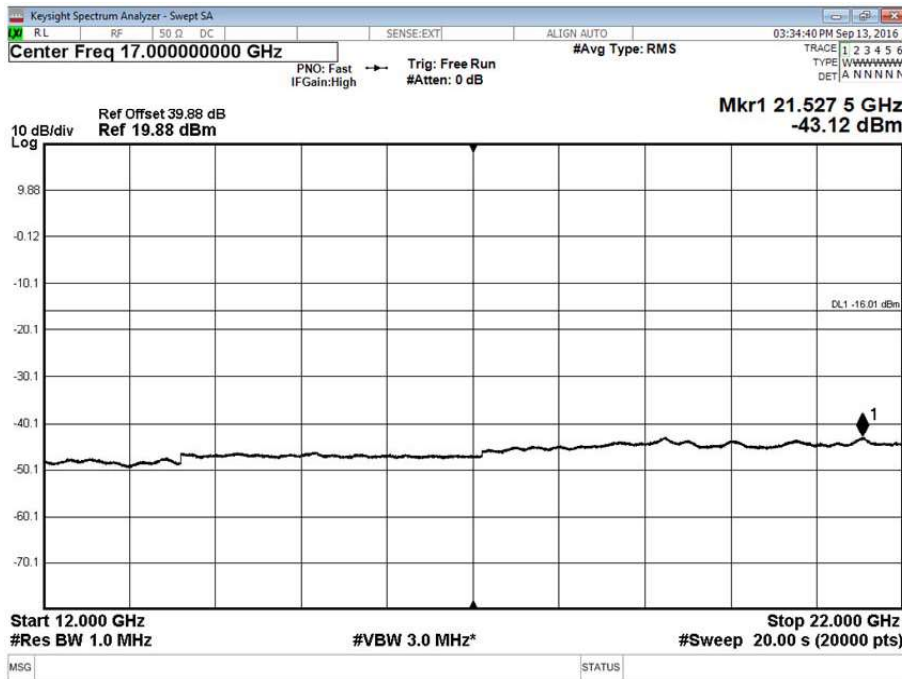
Channel Position T - Bandwidth 5.0 MHz - Antenna A



Channel Position T - Bandwidth 5.0 MHz - Antenna A



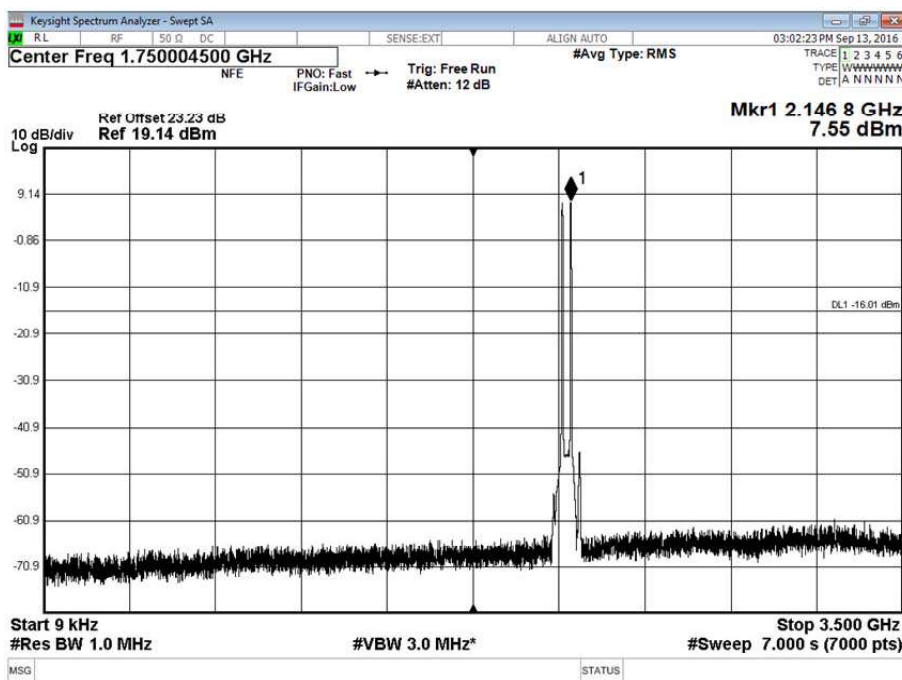
Channel Position T - Bandwidth 5.0 MHz - Antenna A



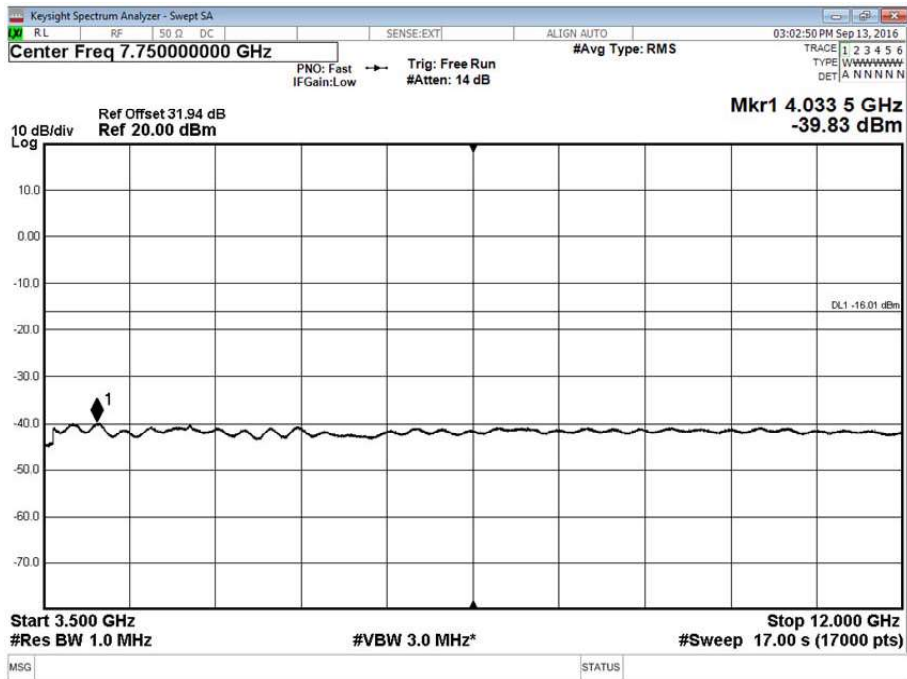
Configuration 2

Maximum Output Power 17 dBm

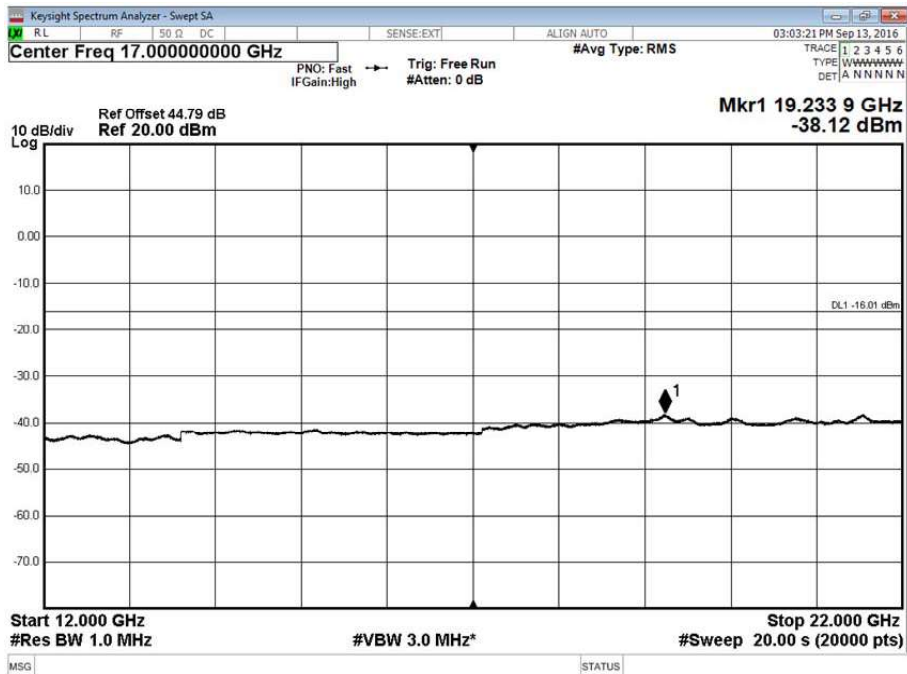
Channel Position B - Bandwidth 5.0 MHz - Antenna B



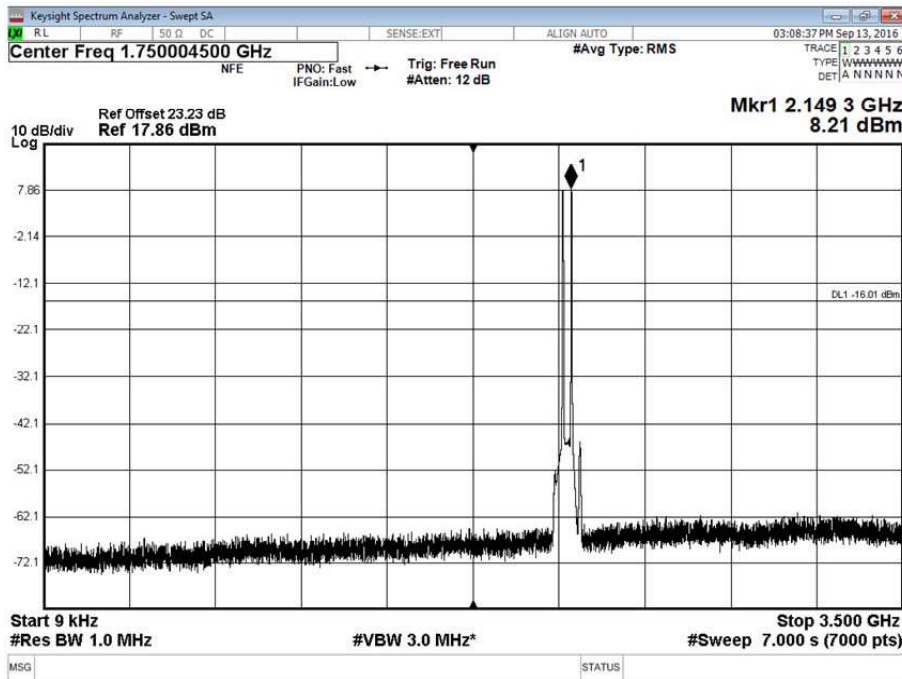
Channel Position B - Bandwidth 5.0 MHz - Antenna B



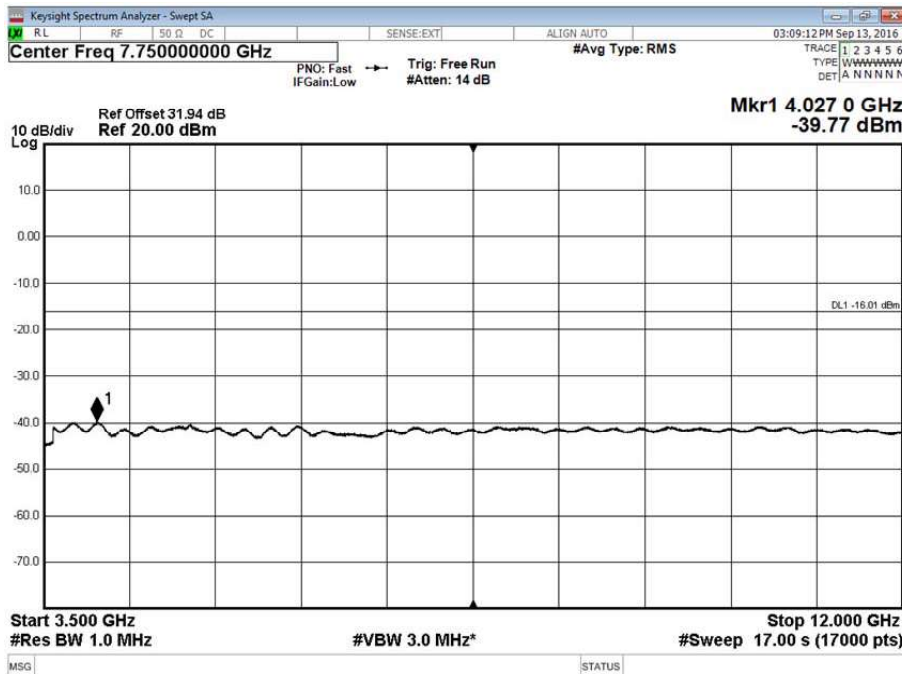
Channel Position B - Bandwidth 5.0 MHz - Antenna B



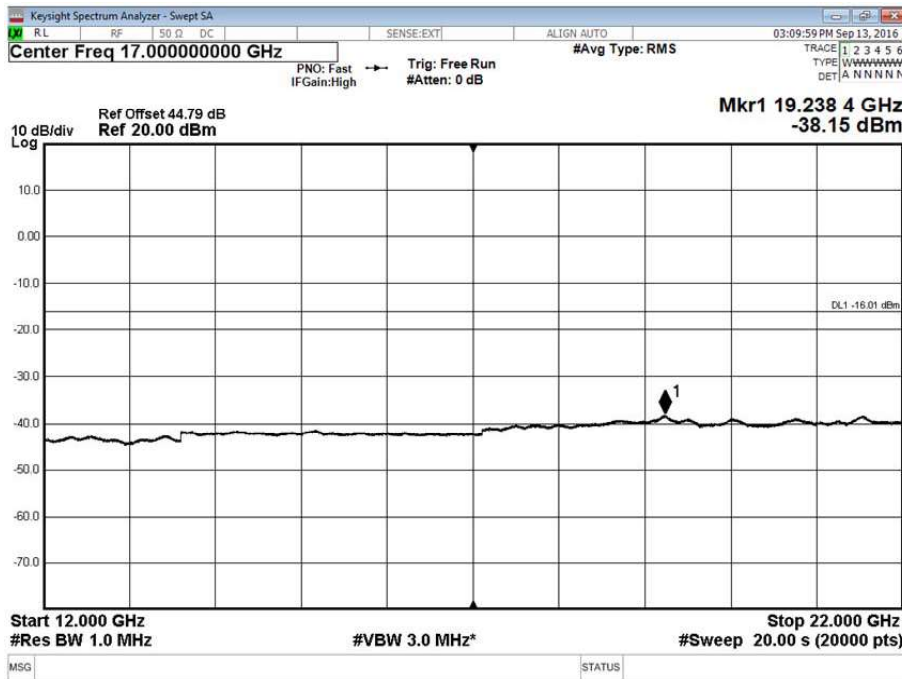
Channel Position M - Bandwidth 5.0 MHz - Antenna B



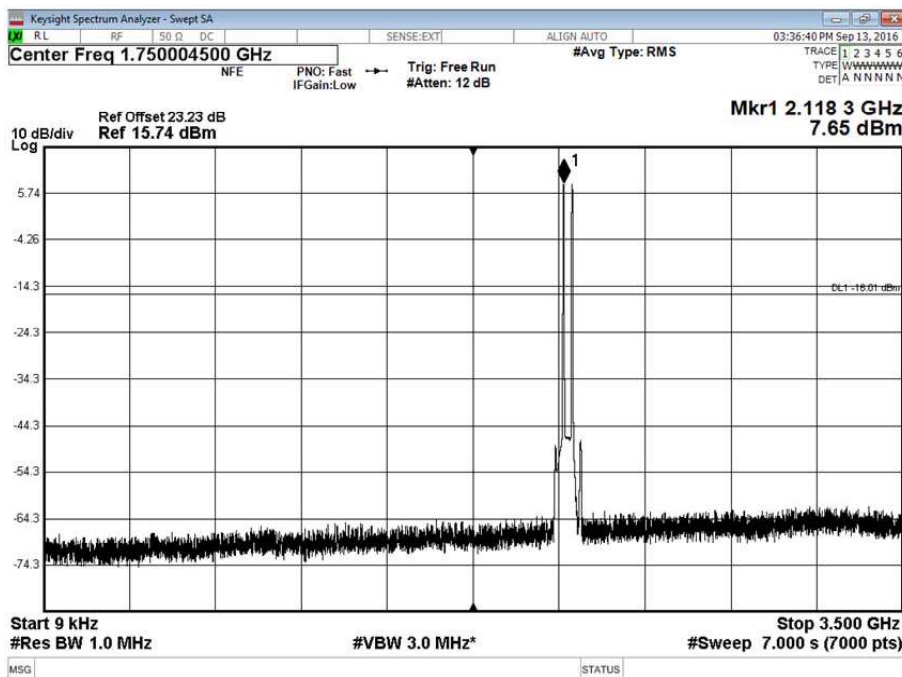
Channel Position M - Bandwidth 5.0 MHz - Antenna B



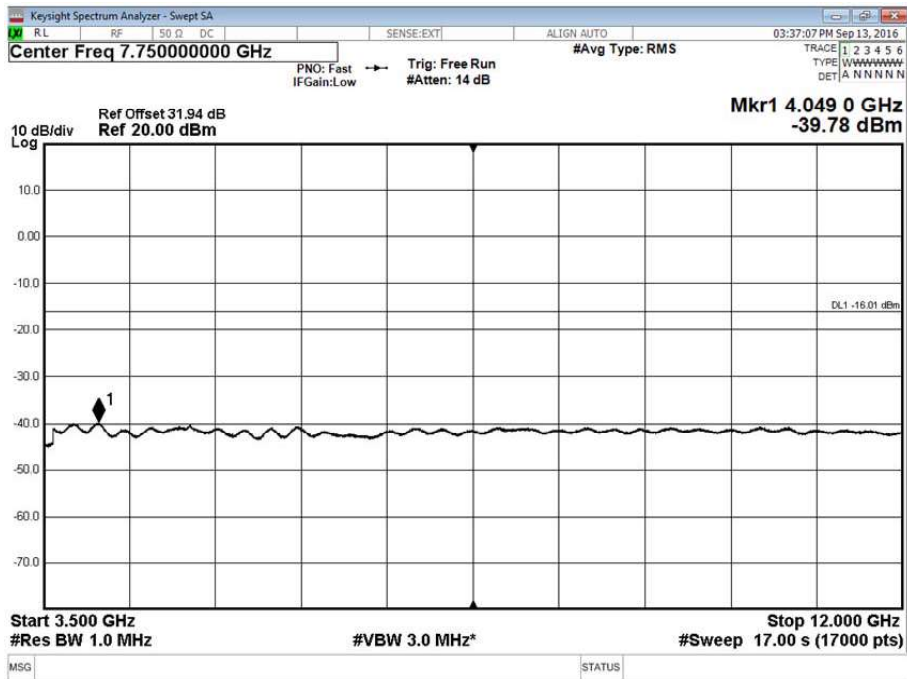
Channel Position M - Bandwidth 5.0 MHz - Antenna B



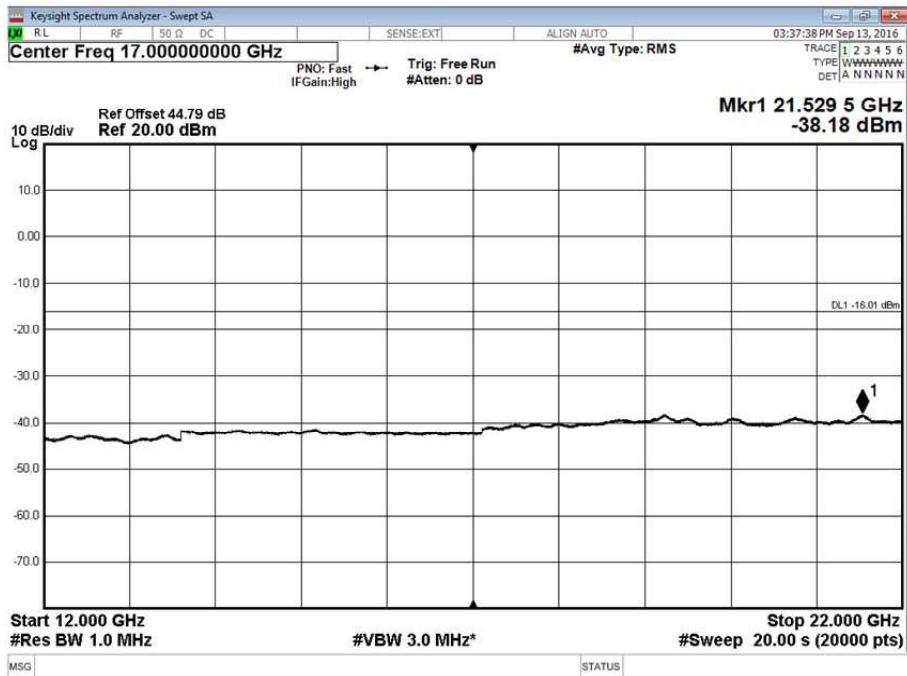
Channel Position T - Bandwidth 5.0 MHz - Antenna B



Channel Position T - Bandwidth 5.0 MHz - Antenna B



Channel Position T - Bandwidth 5.0 MHz - Antenna B

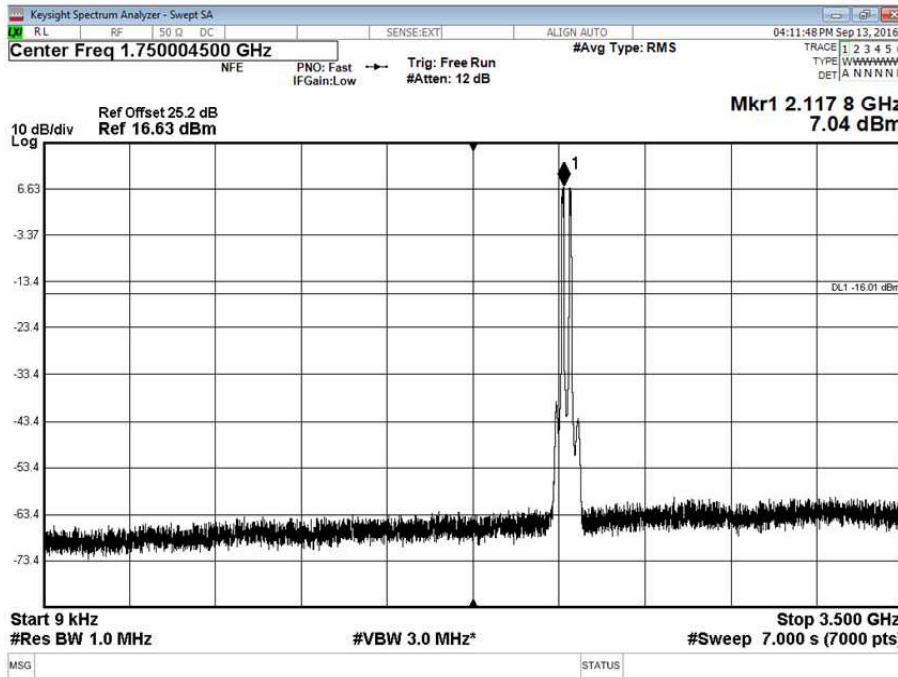




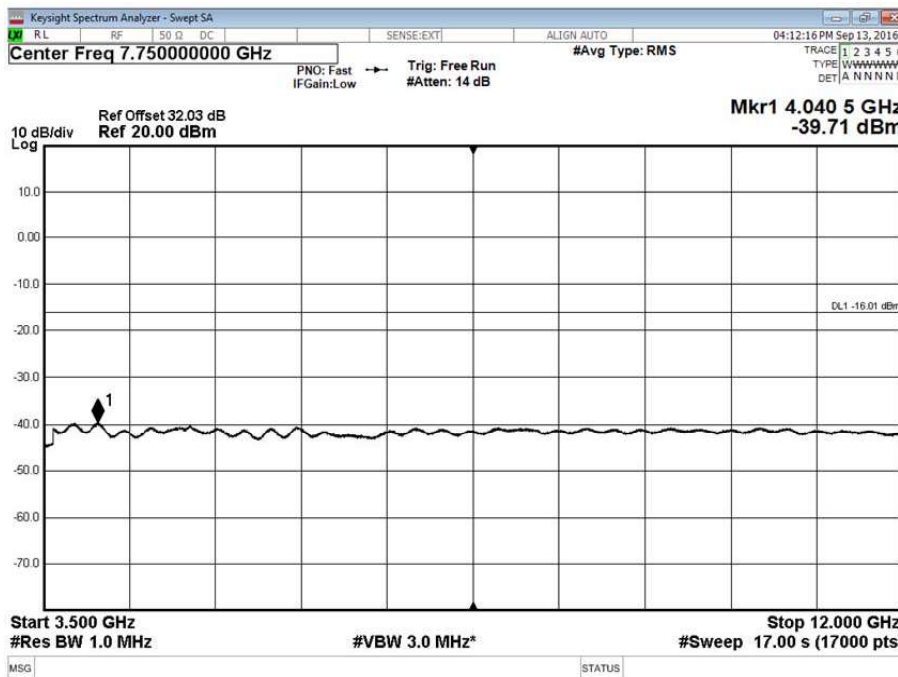
Configuration 3

Maximum Output Power 17 dBm

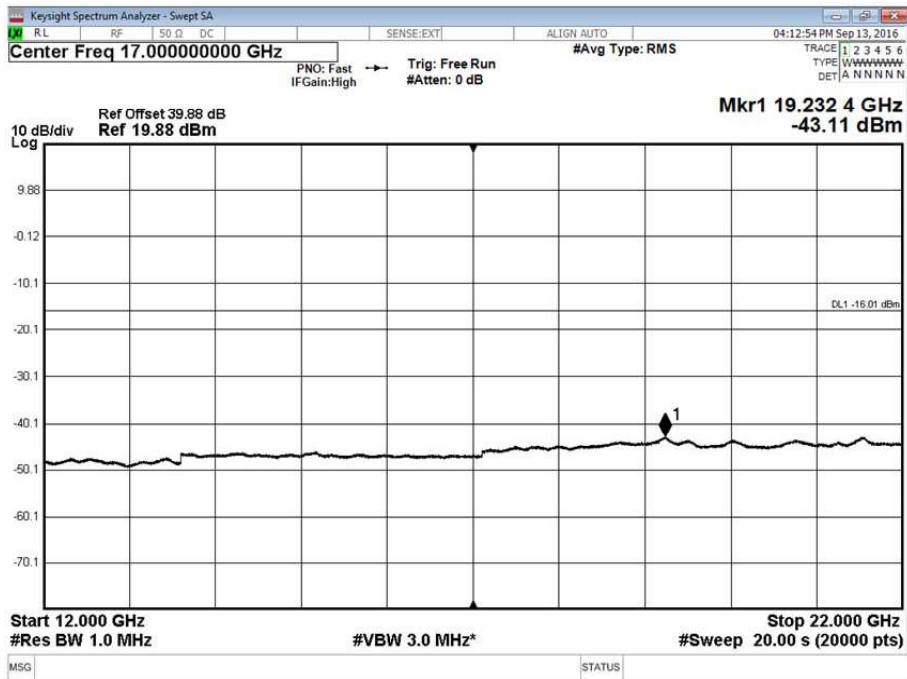
Channel Position B - Bandwidth 5.0 MHz - Antenna A



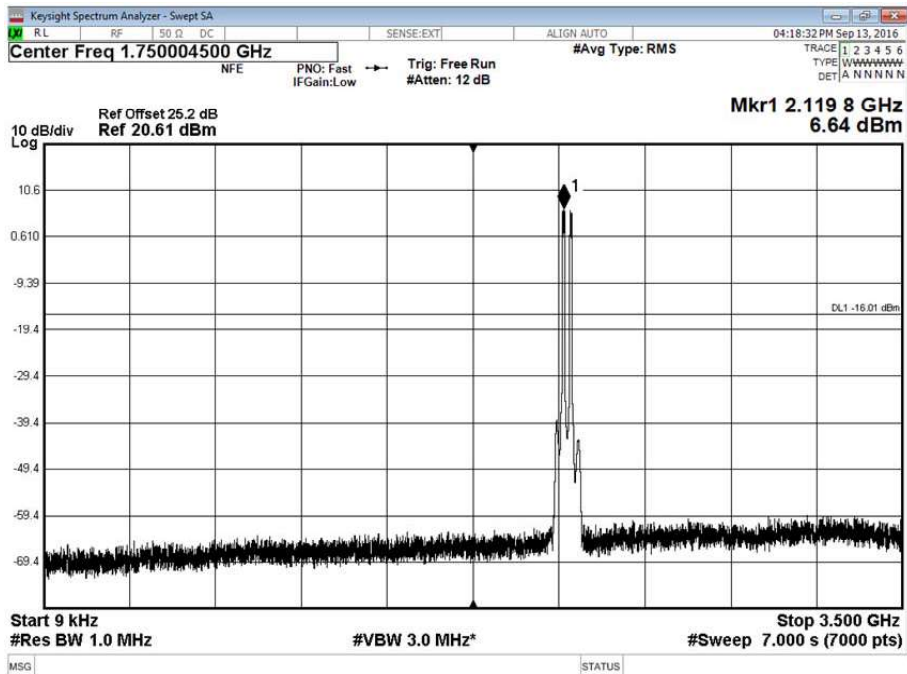
Channel Position B - Bandwidth 5.0 MHz - Antenna A



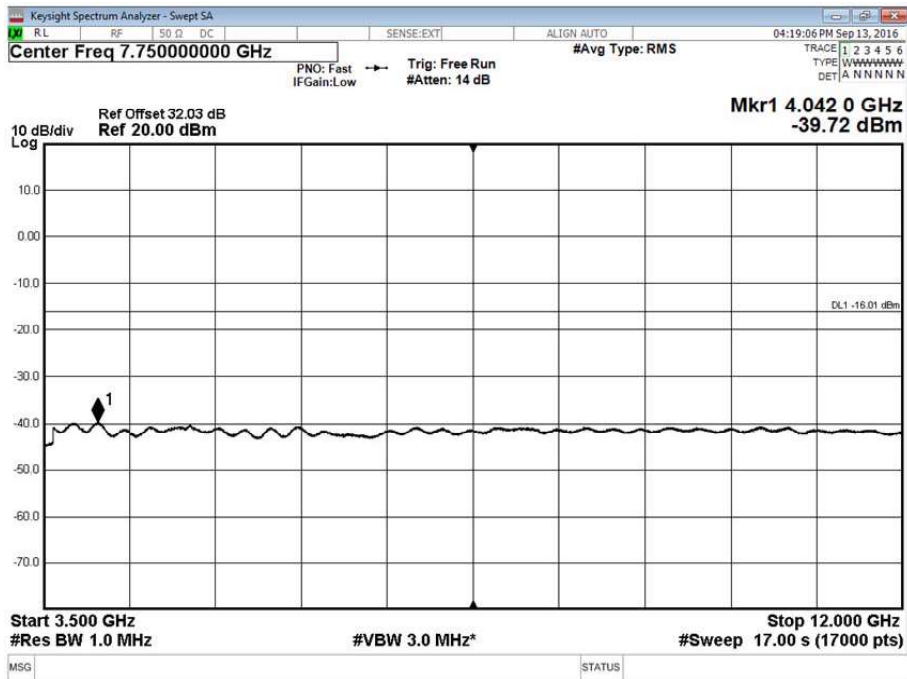
## Channel Position B - Bandwidth 5.0 MHz - Antenna A



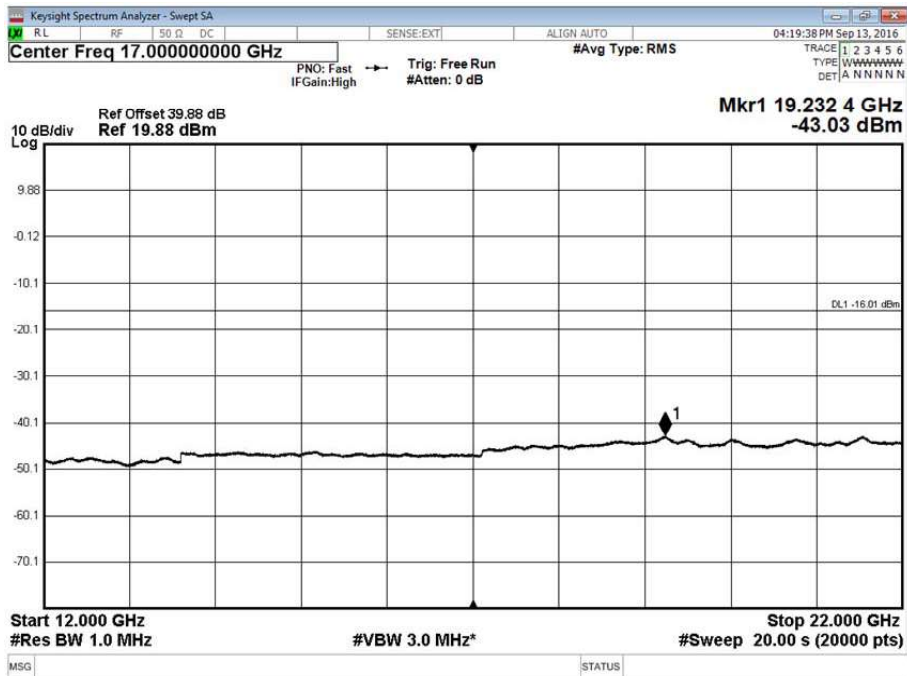
## Channel Position M - Bandwidth 5.0 MHz - Antenna A



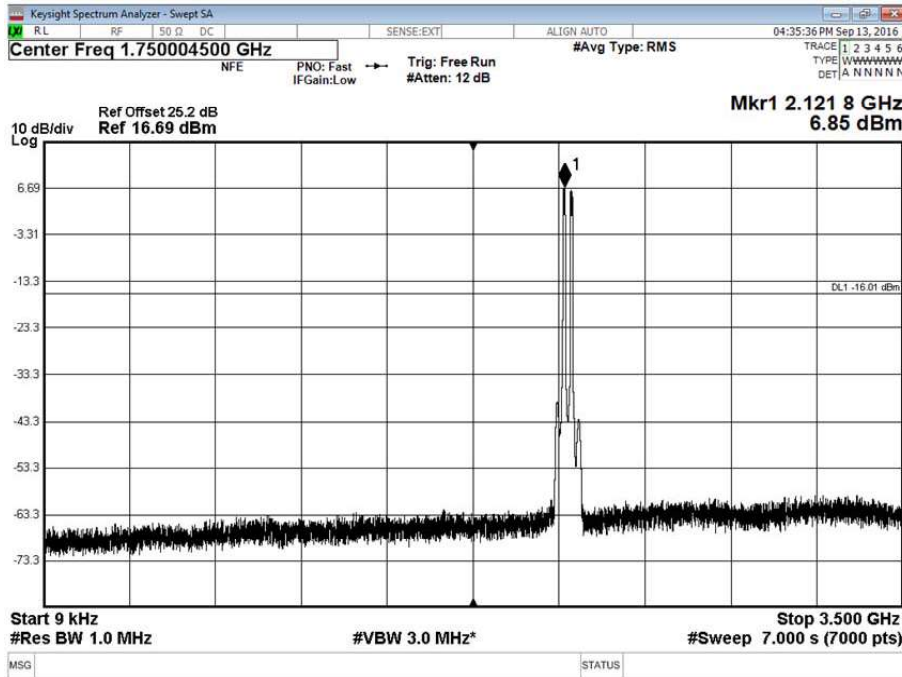
Channel Position M - Bandwidth 5.0 MHz - Antenna A



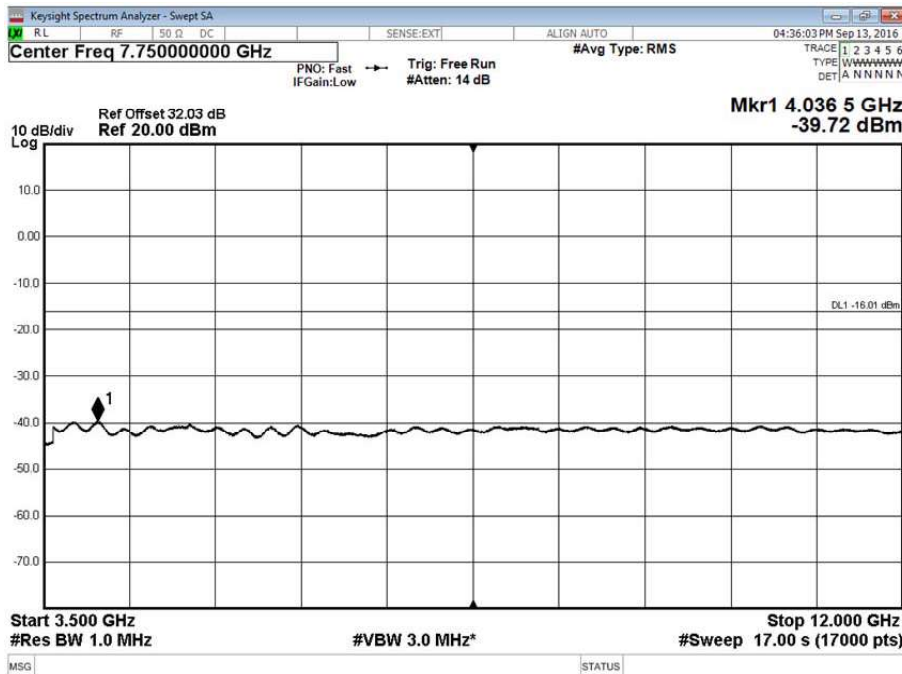
Channel Position M - Bandwidth 5.0 MHz - Antenna A



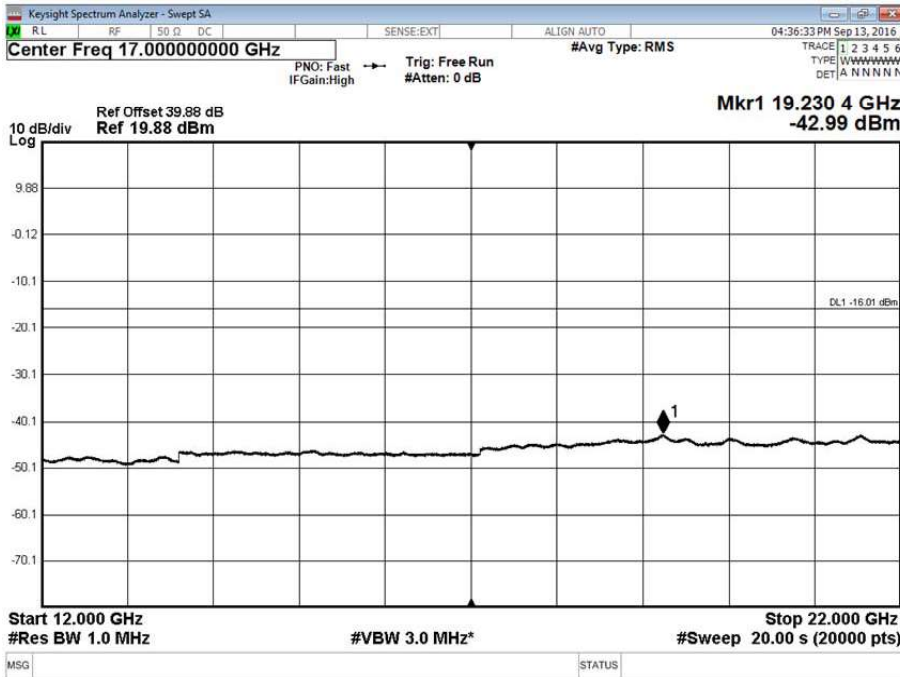
Channel Position T - Bandwidth 5.0 MHz - Antenna A



Channel Position T - Bandwidth 5.0 MHz - Antenna A



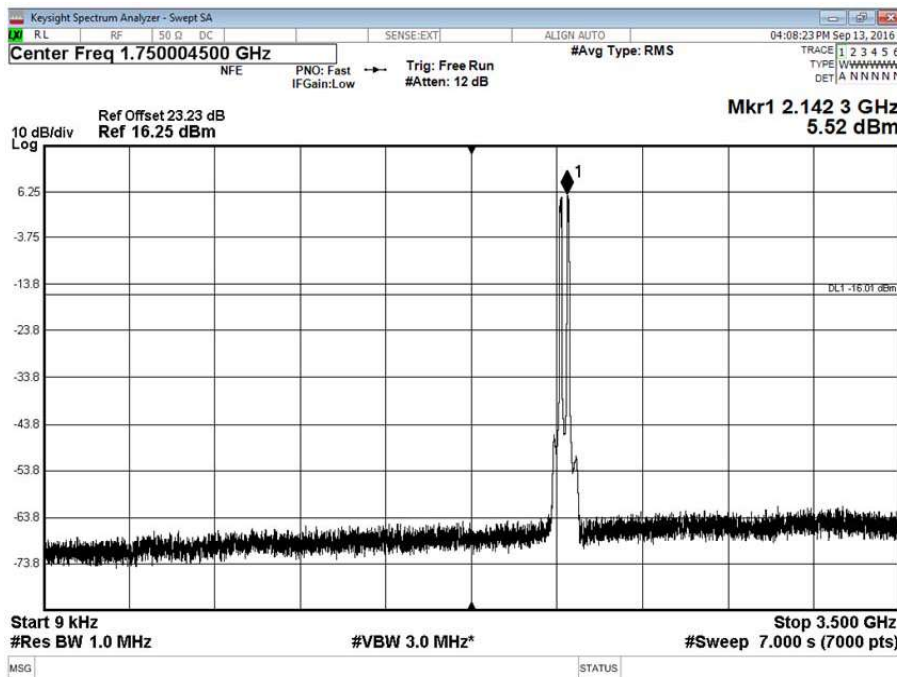
Channel Position T - Bandwidth 5.0 MHz - Antenna A



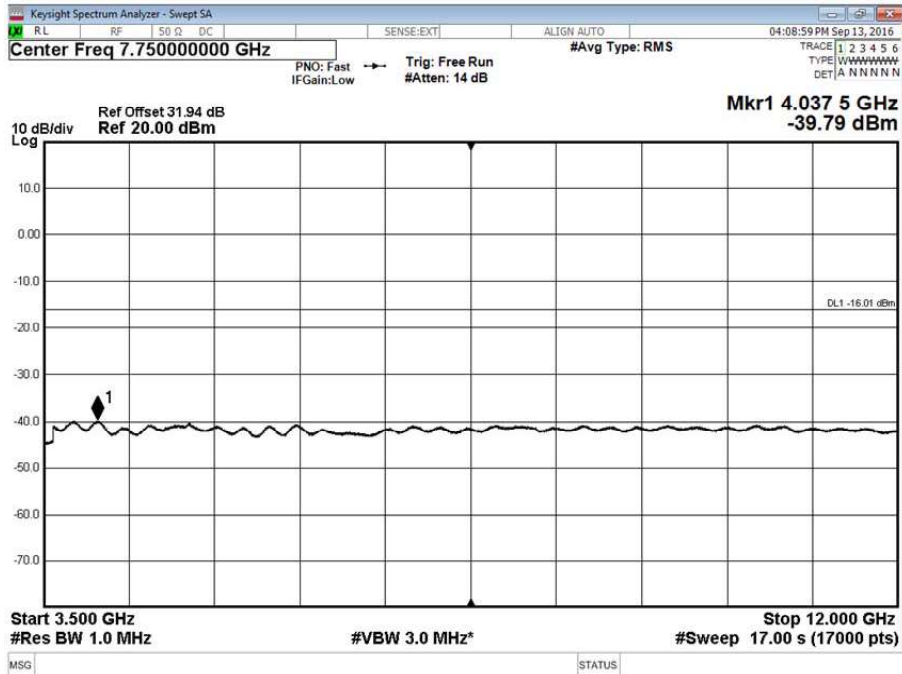
Configuration 3

Maximum Output Power 17 dBm

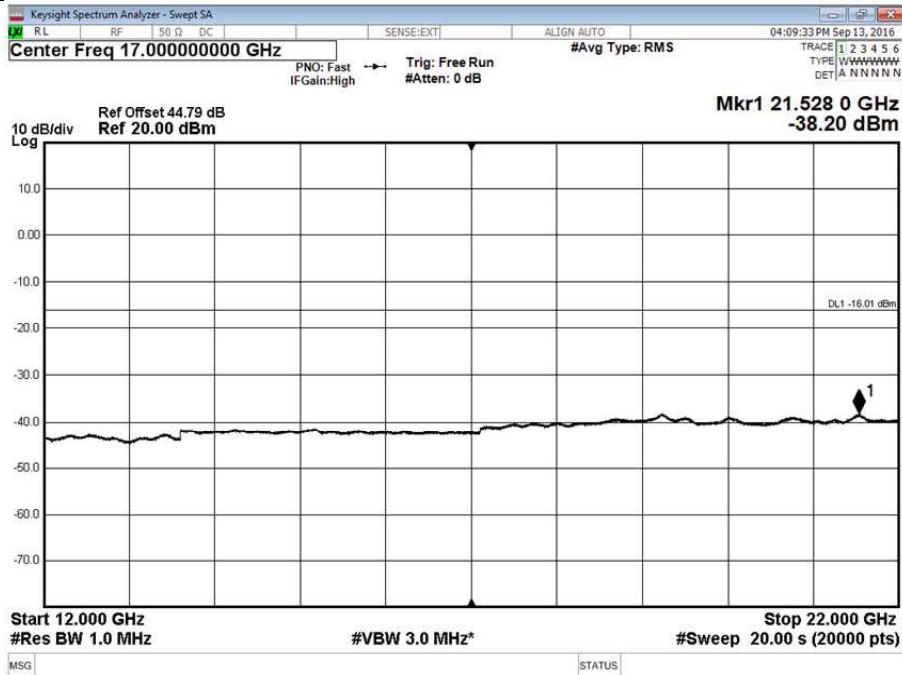
Channel Position B - Bandwidth 5.0 MHz - Antenna B



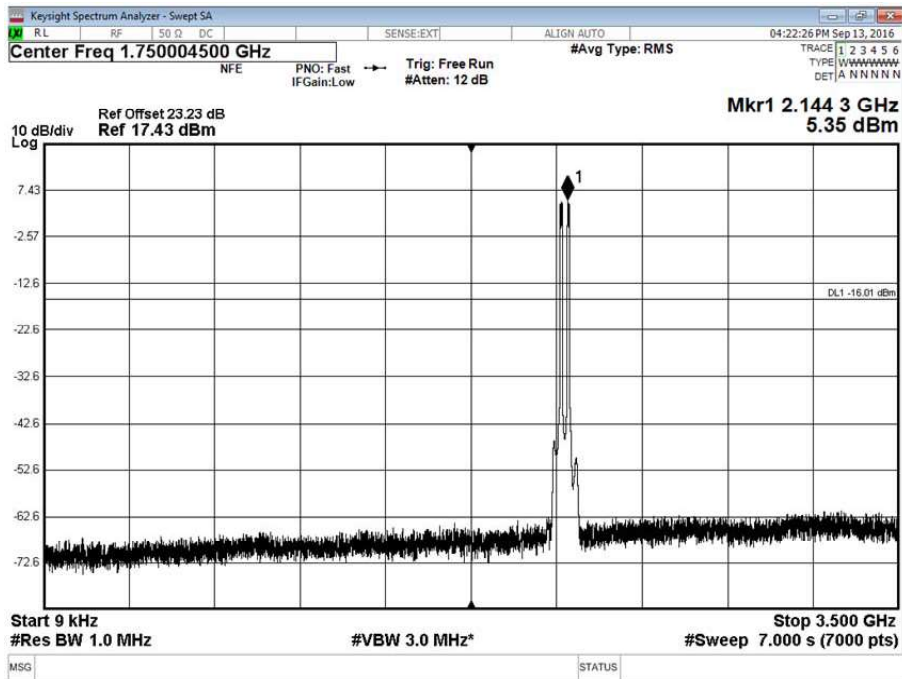
Channel Position B - Bandwidth 5.0 MHz - Antenna B



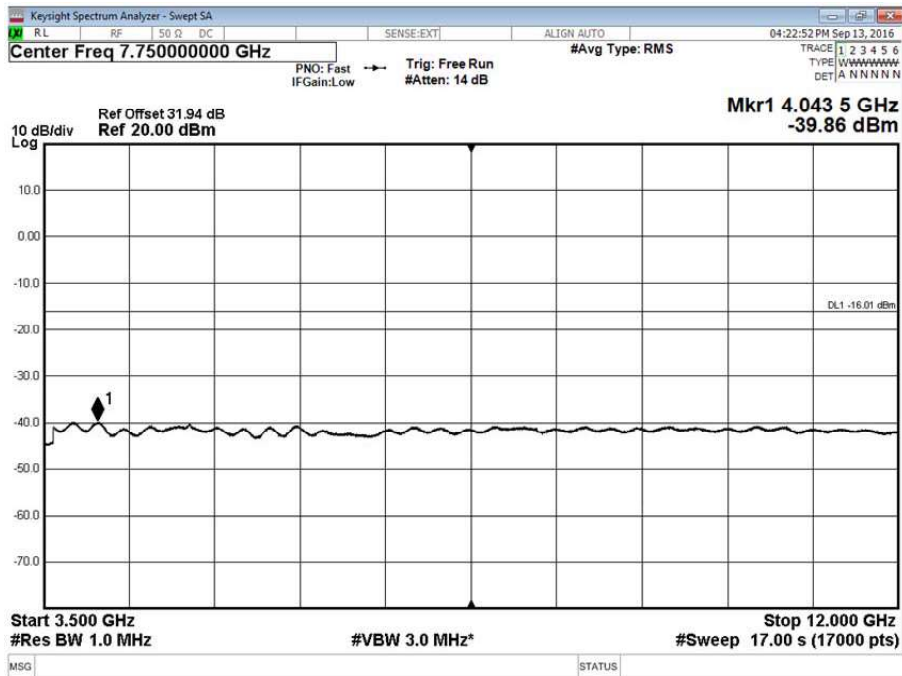
Channel Position B - Bandwidth 5.0 MHz - Antenna B



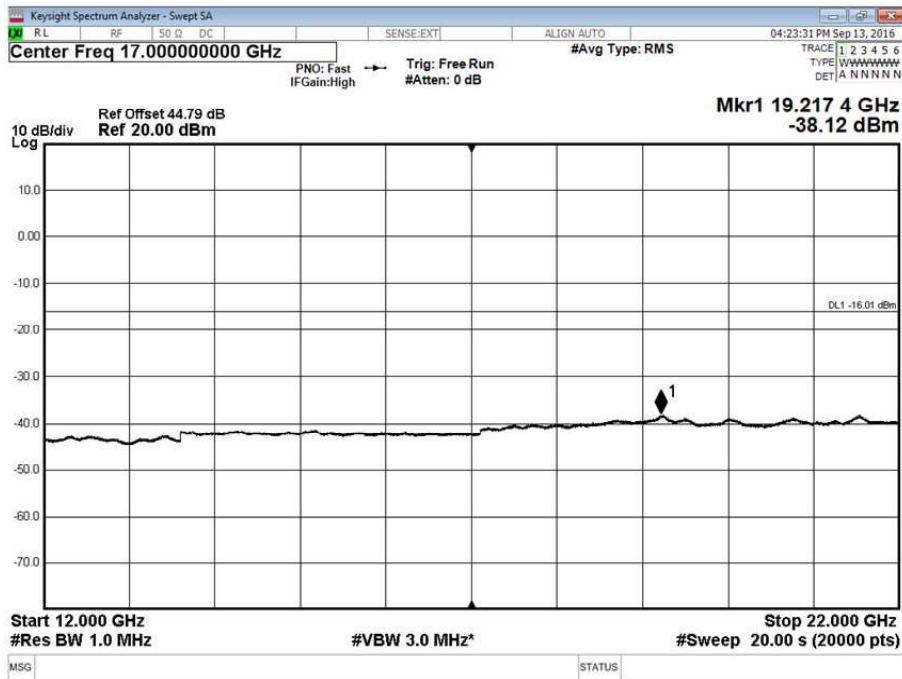
Channel Position M - Bandwidth 5.0 MHz - Antenna B



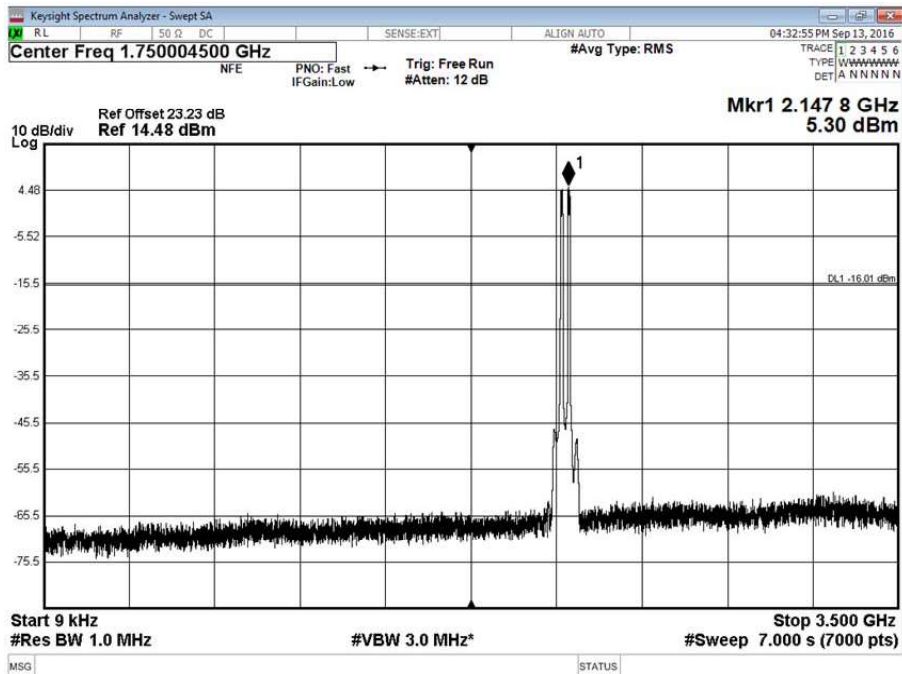
Channel Position M - Bandwidth 5.0 MHz - Antenna B



Channel Position M - Bandwidth 5.0 MHz - Antenna B

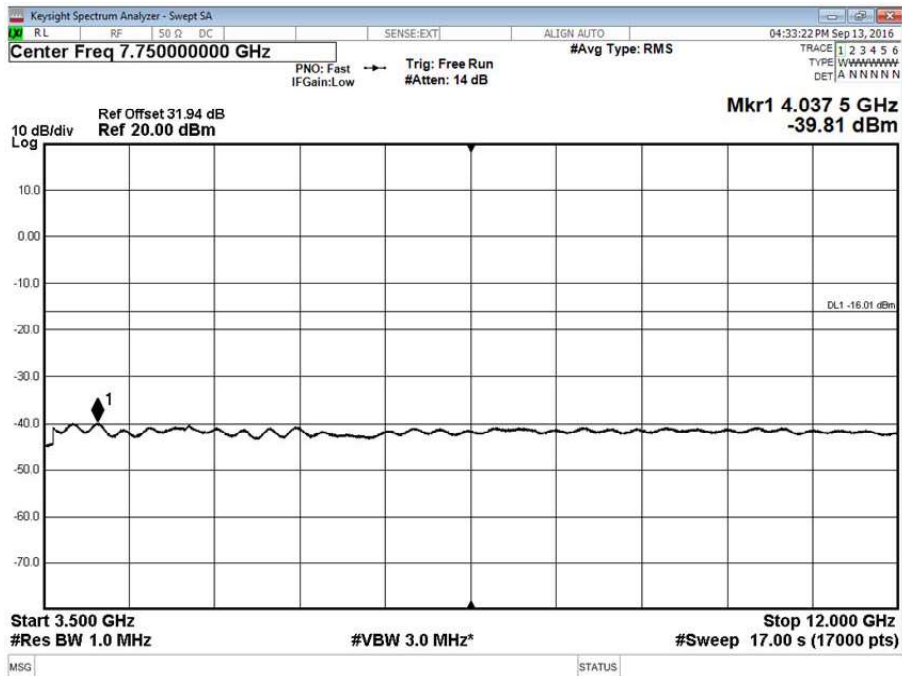


Channel Position T - Bandwidth 5.0 MHz - Antenna B

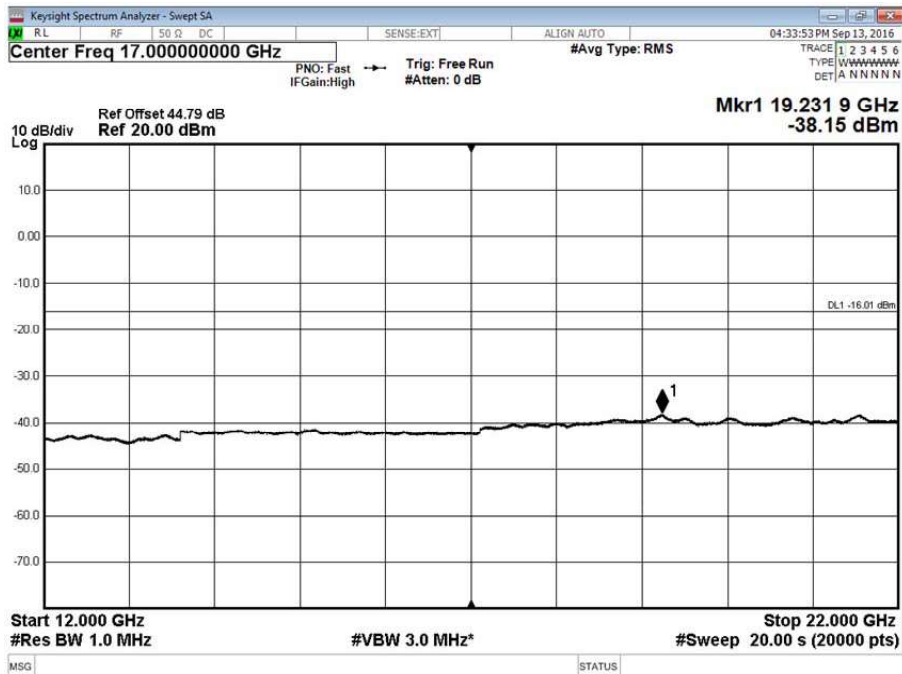




Channel Position T - Bandwidth 5.0 MHz - Antenna B



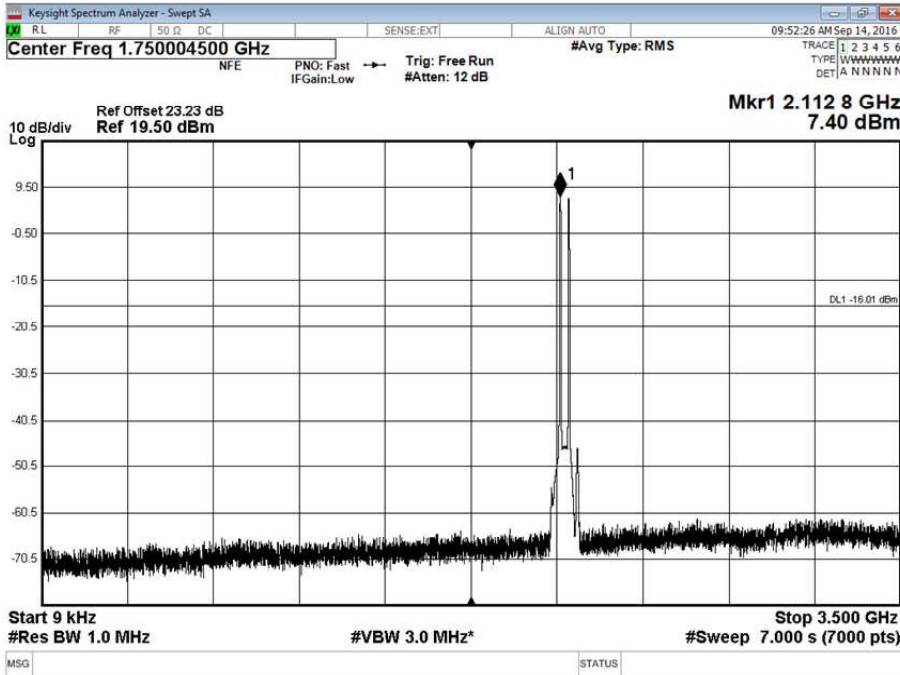
Channel Position T - Bandwidth 5.0 MHz - Antenna B



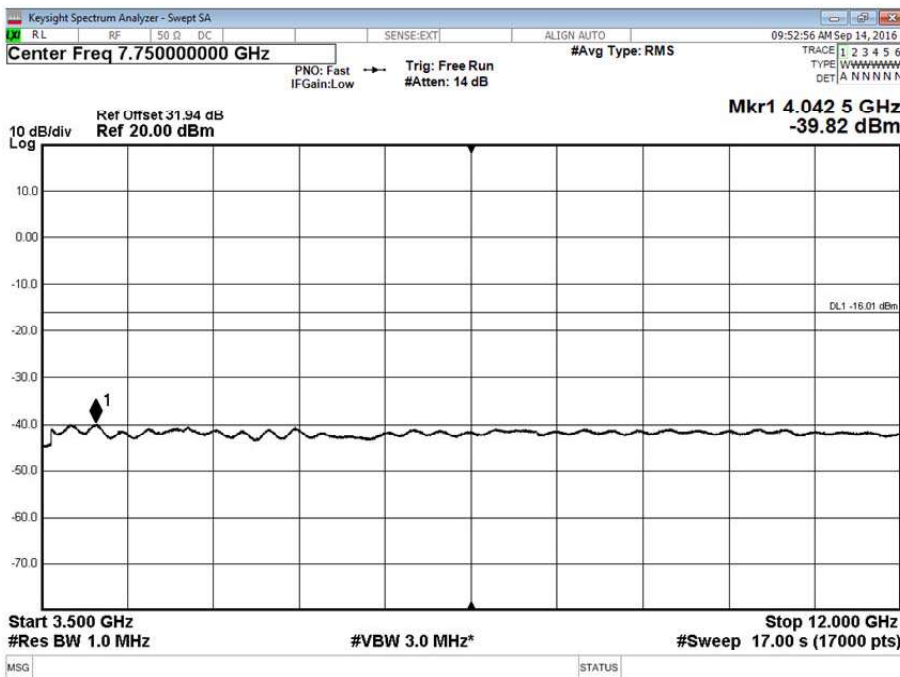
Configuration 6

Maximum Output Power 17 dBm

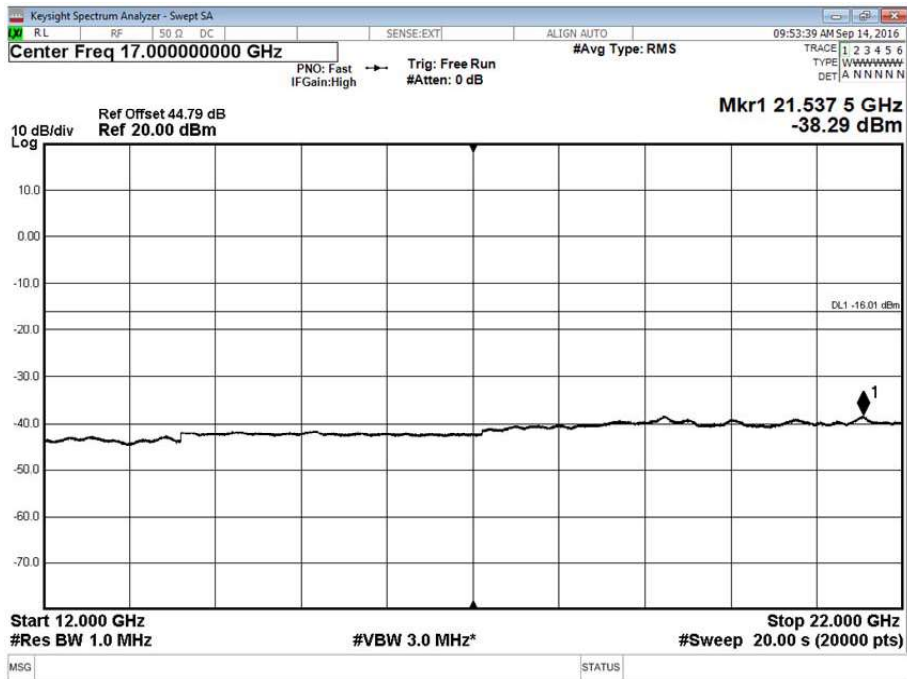
Channel Position BRFBW - Bandwidth 5.0 MHz - Antenna B



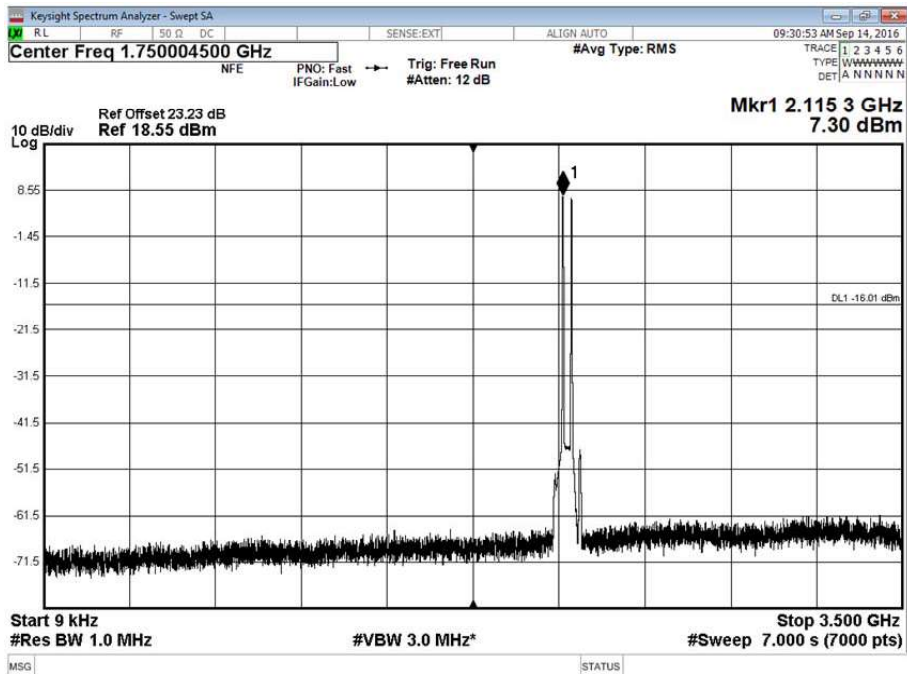
Channel Position BRFBW - Bandwidth 5.0 MHz - Antenna B



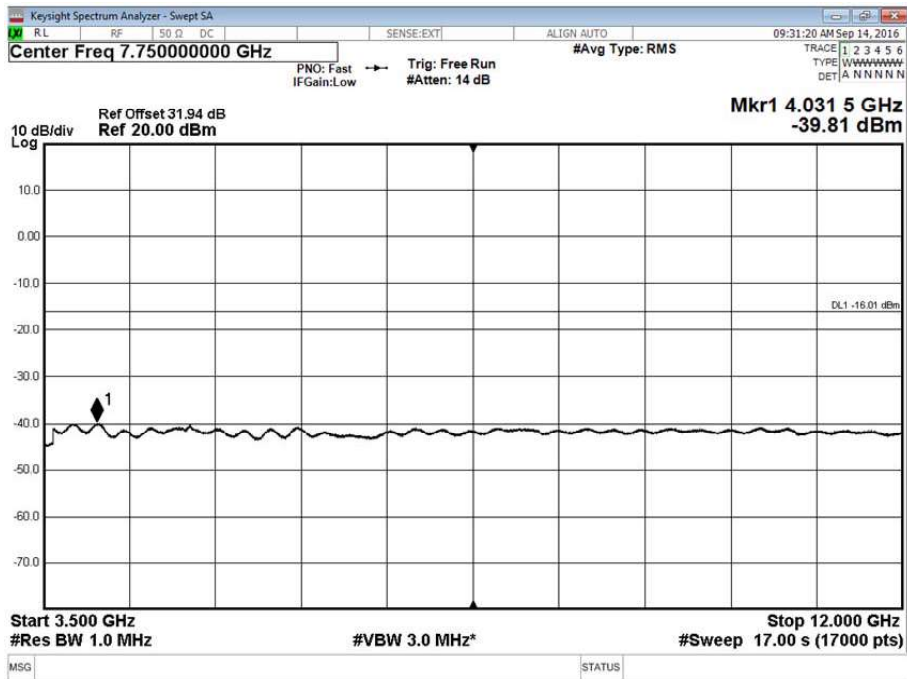
Channel Position BRFBW - Bandwidth 5.0 MHz - Antenna B



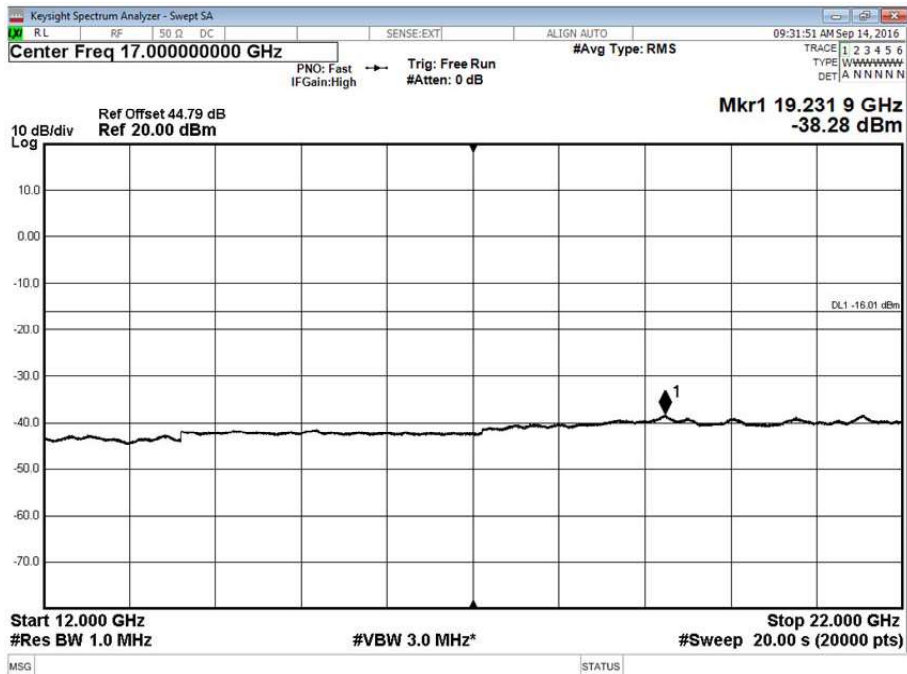
Channel Position MRFBW - Bandwidth 5.0 MHz - Antenna B



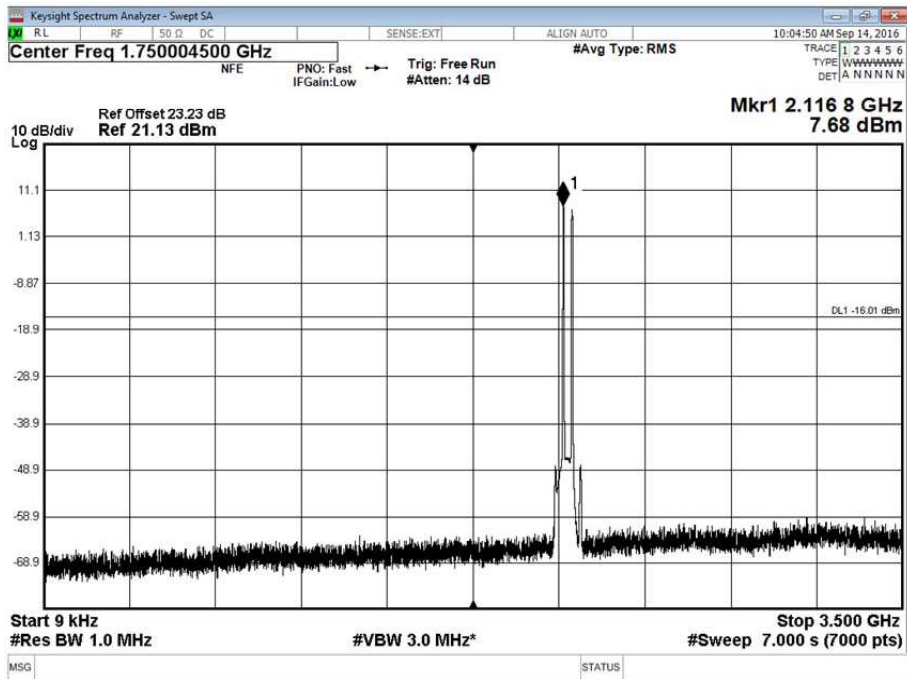
Channel Position MRFBW - Bandwidth 5.0 MHz - Antenna B



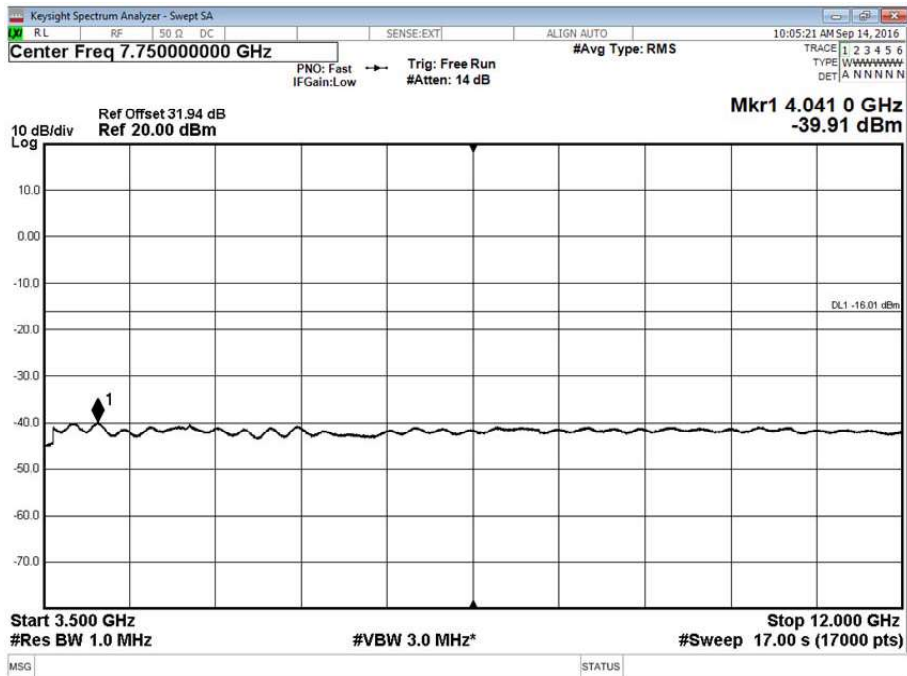
Channel Position MRFBW - Bandwidth 5.0 MHz - Antenna B



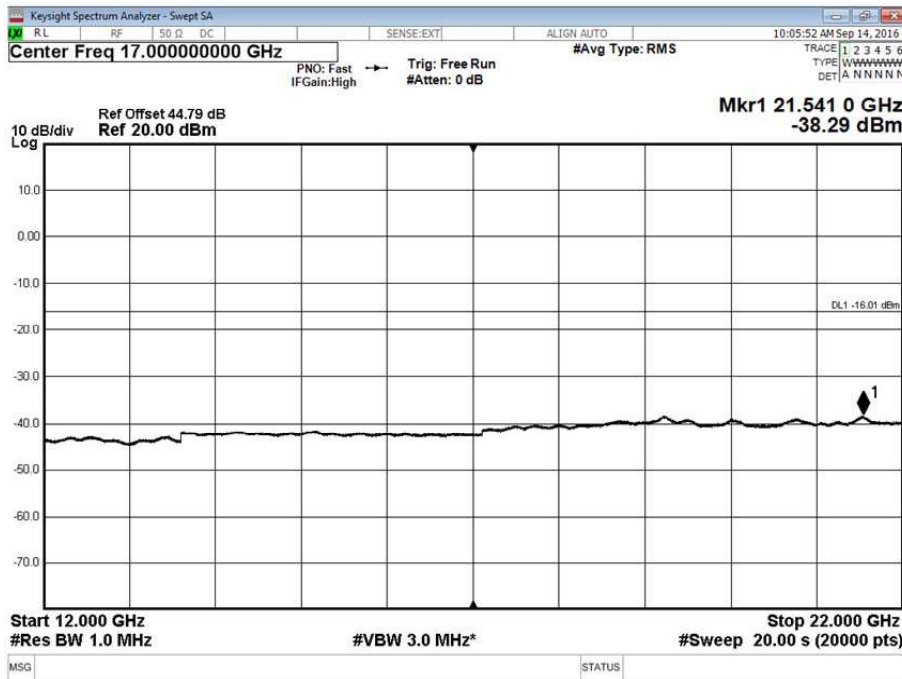
Channel Position TRFBW - Bandwidth 5.0 MHz - Antenna B



Channel Position TRFBW - Bandwidth 5.0 MHz - Antenna B



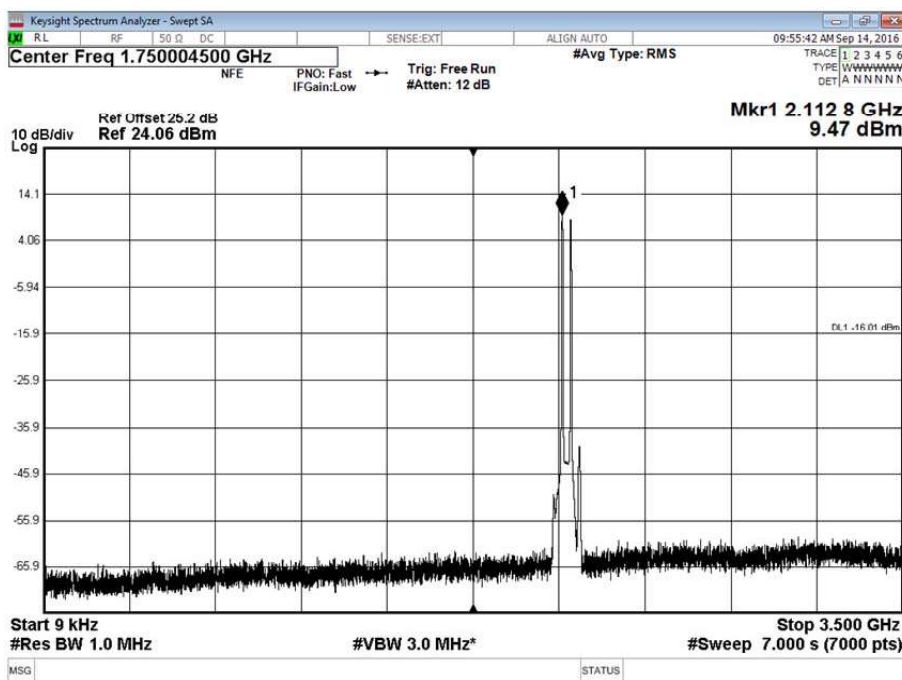
Channel Position TRFBW - Bandwidth 5.0 MHz - Antenna B



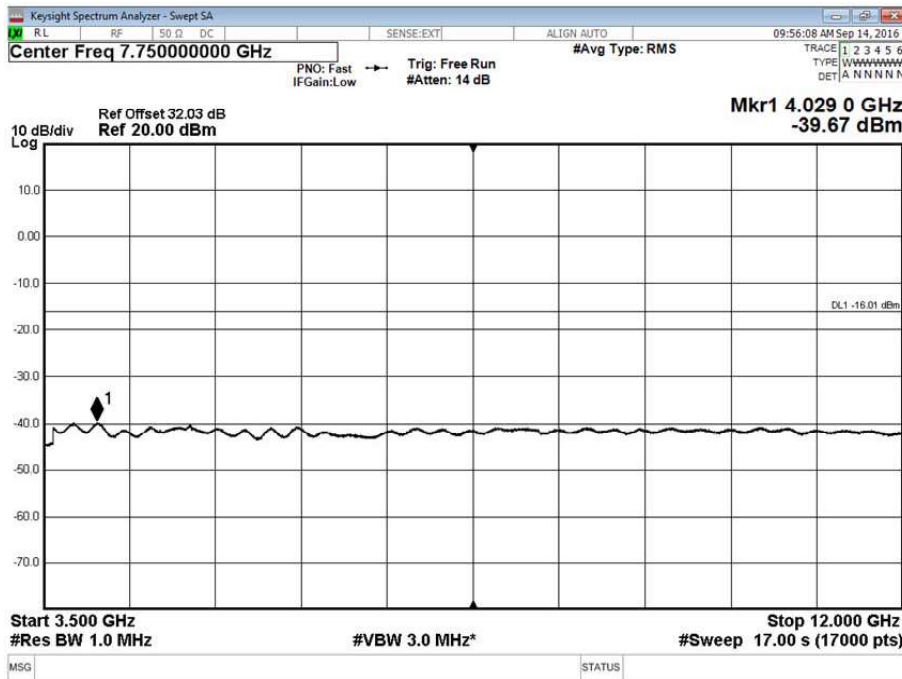
Configuration 4

Maximum Output Power 17 dBm

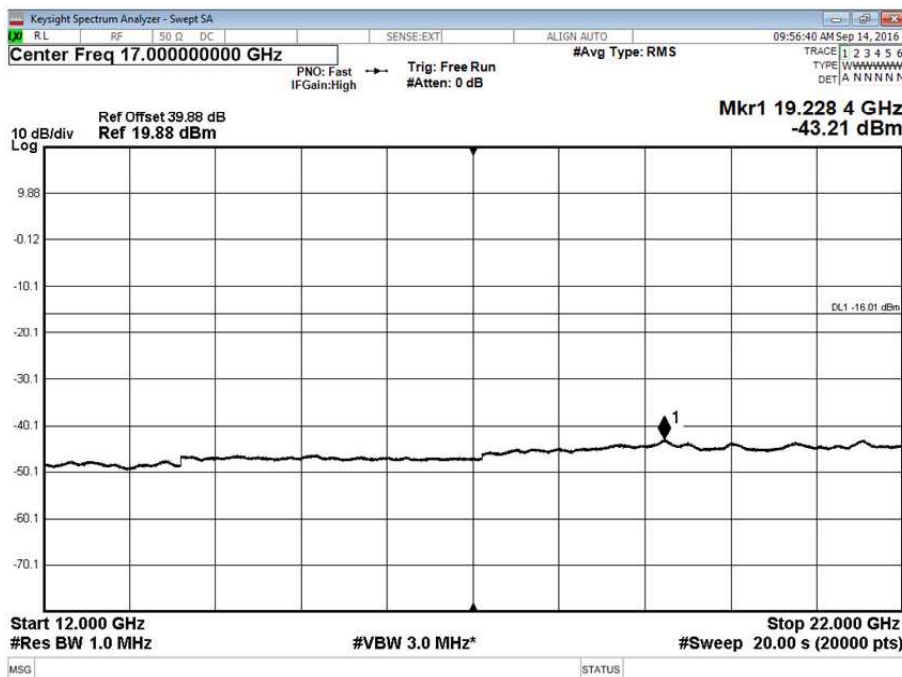
Channel Position BRFBW - Bandwidth 5.0 MHz - Antenna A



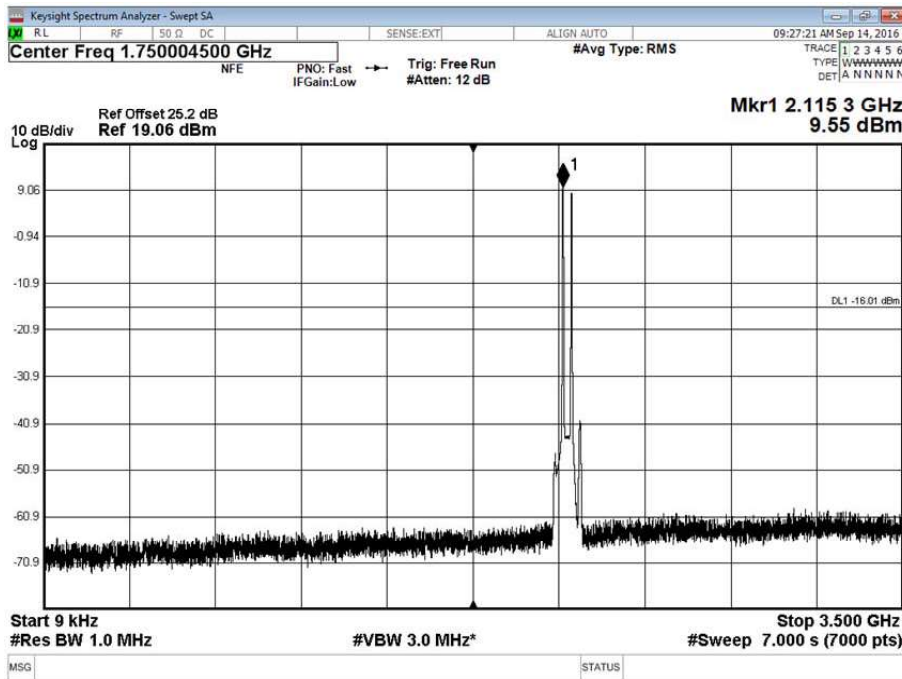
Channel Position BRFBW - Bandwidth 5.0 MHz - Antenna A



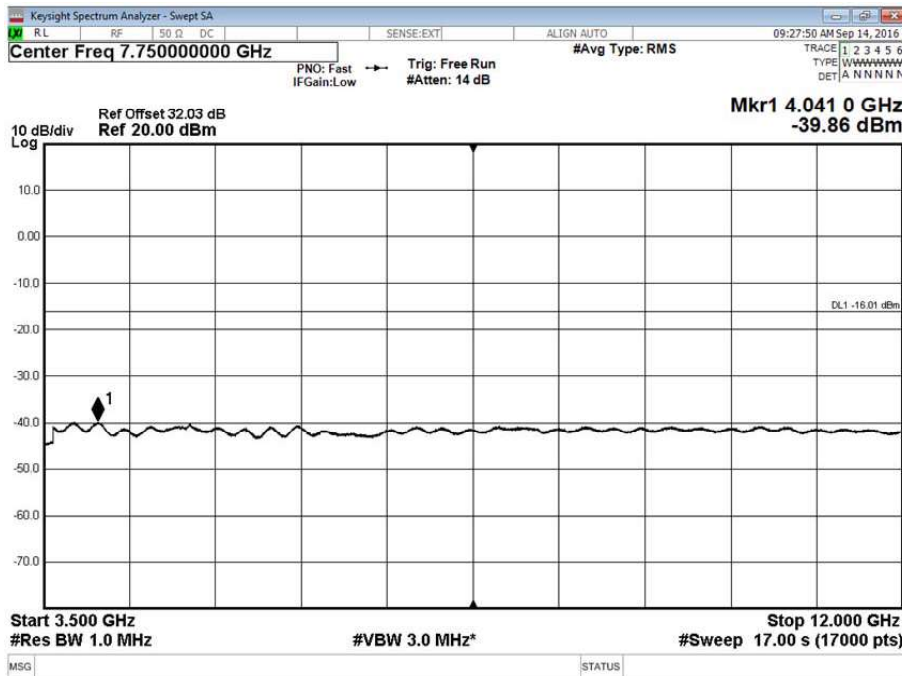
Channel Position BRFBW - Bandwidth 5.0 MHz - Antenna A



Channel Position MRFBW - Bandwidth 5.0 MHz - Antenna A

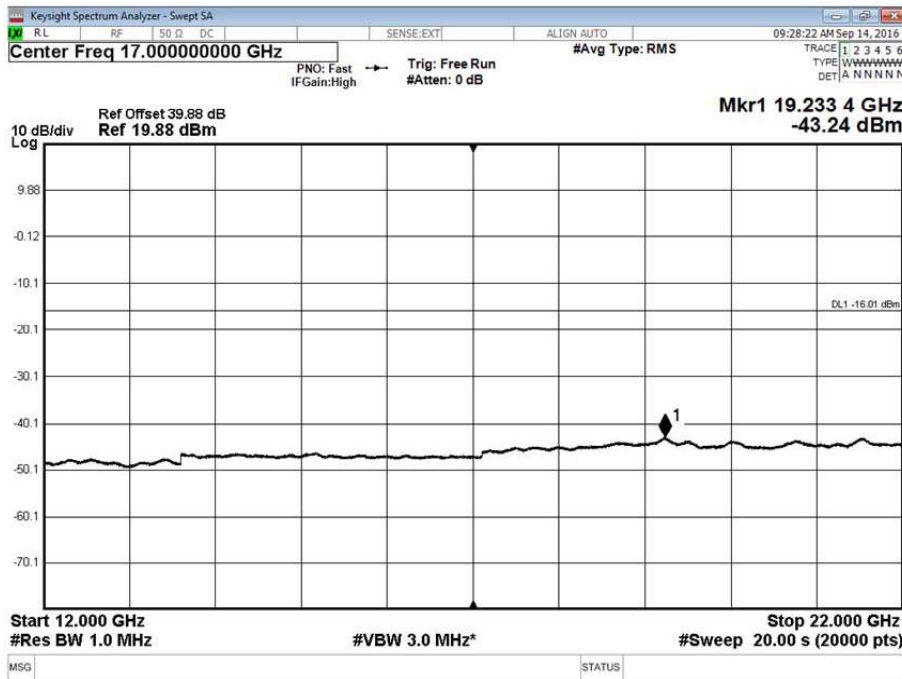


Channel Position MRFBW - Bandwidth 5.0 MHz - Antenna A

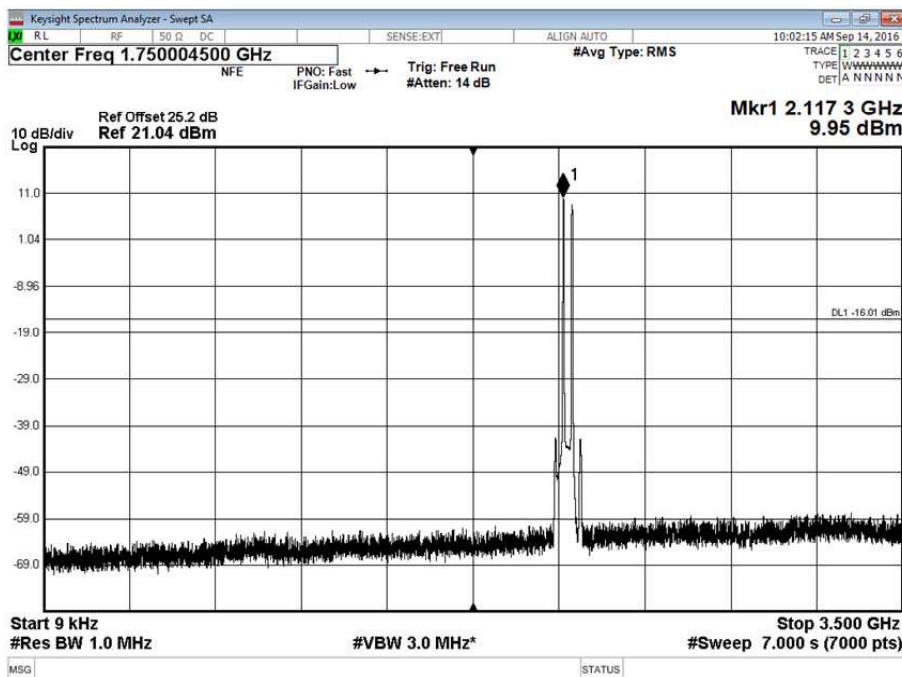




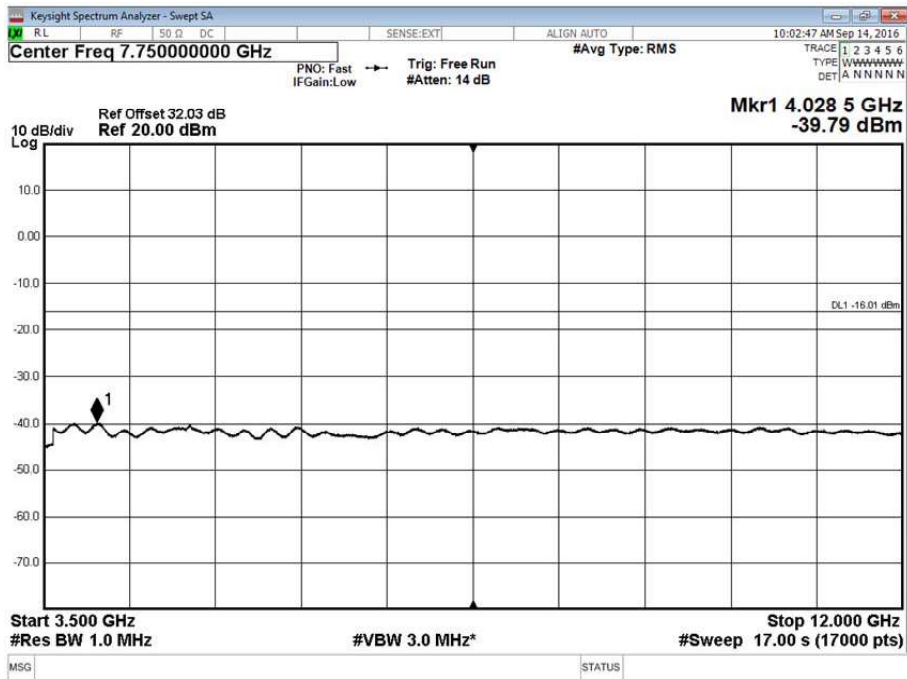
Channel Position MRFBW - Bandwidth 5.0 MHz - Antenna A



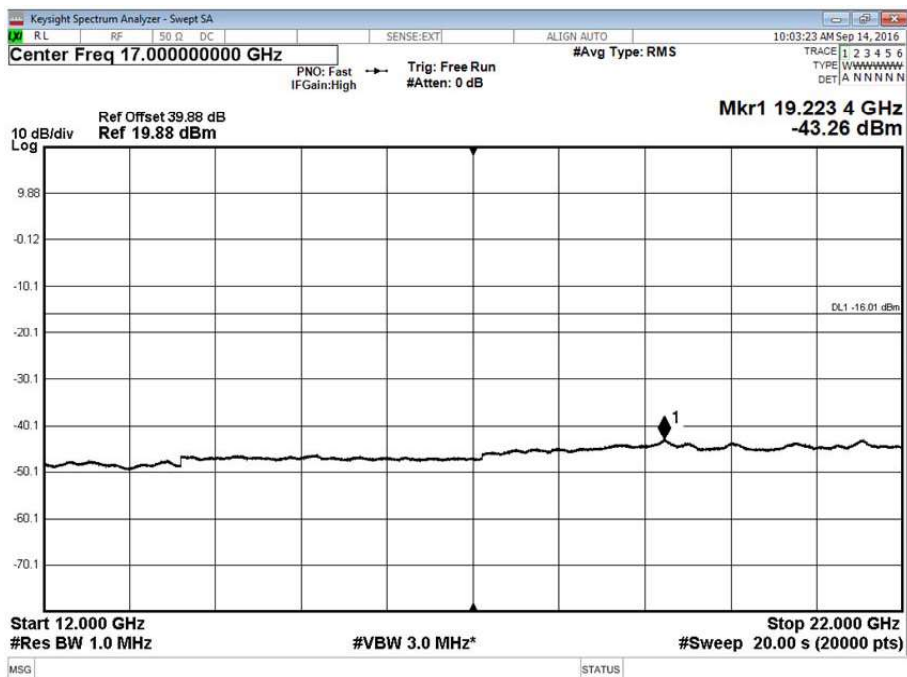
Channel Position TRFBW - Bandwidth 5.0 MHz - Antenna A



Channel Position TRFBW - Bandwidth 5.0 MHz - Antenna A



Channel Position TRFBW - Bandwidth 5.0 MHz - Antenna A



Limit	-16 dBm
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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 27, Clause 27.54  
Industry Canada RSS-139, Clause 6.4

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

14 and 15 September 2016 - 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	25 - 25.6°C
Relative Humidity	41.5 - 42.5%

### **2.5.5 Test Method**

The EUT was placed in a Climatic Chamber and connected to a Signal Analyser via 20dB of attenuation. The EUT was set to transmit at its maximum rated output power in the configuration described below.

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 1

Maximum Output Power 17 dBm

Temperature	Frequency Error (Hz)
	Channel Position M
-30°C	NPD
-20°C	5.65
-10°C	5.09
0°C	5.15
+10°C	6.33
+20°C	5.74
+30°C	5.38
+40°C	5.53
+50°C	6.14

Remarks

IRU 2242 was outside climatic chamber at ambient temperature. KRY 901 309/1.  
NPD = No Power Detected.

Configuration 1

Maximum Output Power 17 dBm

Voltage	Frequency Error (Hz)
	Channel Position M
-40.8 V	5.42
-48.0 V	5.07
-55.2 V	5.14

Limit	$\pm 1.5$ ppm or $\pm 3.165$ kHz
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Product Service

### **SECTION 3**

#### **TEST EQUIPMENT USED**

### 3.1 TEST EQUIPMENT USED

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

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
<b>Maximum Peak Output Power and Peak to Average Ratio - Conducted</b>					
Hygrometer	Rotronic	HP21	4300	12	23-Aug-17
DMM	Fluke	179	4006	12	09-Dec-16
Spectrum Analyser	Agilent	PXA N9030A	MY55410202	12	12-Jul-17
Network Analyser	Agilent	8722ES	US39175387	12	15-Oct-16
Power Meter	Rohde and Schwarz	NRP2	1144.1374K02-101123-ea	-	O/P Mon
Power Sensor	Rohde and Schwarz	NRP-Z51	1138.0005.02-102476-Fg	-	O/P Mon
Power Sensor	Rohde and Schwarz	NRP-Z51	1138.0005.02-102838-bR	-	O/P Mon
PSU (DC)	Xantrex	XKW60-50	1001425551	-	O/P Mon
Attenuator (20dB)	Weinschel	WA48-20-33-LIM	A1999	-	O/P Mon
Attenuator (20dB)	Weinschel	WA48-20-33-LIM	A2000	-	O/P Mon
RF Switch	Ericsson	RARFSW 4X1	001	-	O/P Mon
Switch Driver	Hewlett Packard	11713A	3748A06076	-	O/P Mon
PSU (DC)	Leader	730-3D	9801135	-	O/P Mon
<b>Occupied Bandwidth</b>					
Hygrometer	Rotronic	HP21	4300	12	23-Aug-17
DMM	Fluke	179	4006	12	09-Dec-16
Spectrum Analyser	Agilent	PXA N9030A	MY55410202	12	12-Jul-17
Network Analyser	Agilent	8722ES	US39175387	12	15-Oct-16
Power Meter	Rohde and Schwarz	NRP2	1144.1374K02-101123-ea	-	O/P Mon
Power Sensor	Rohde and Schwarz	NRP-Z51	1138.0005.02-102476-Fg	-	O/P Mon
Power Sensor	Rohde and Schwarz	NRP-Z51	1138.0005.02-102838-bR	-	O/P Mon
PSU (DC)	Xantrex	XKW60-50	1001425551	-	O/P Mon
Attenuator (20dB)	Weinschel	WA48-20-33-LIM	A1999	-	O/P Mon
Attenuator (20dB)	Weinschel	WA48-20-33-LIM	A2000	-	O/P Mon
RF Switch	Ericsson	RARFSW 4X1	001	-	O/P Mon
Switch Driver	Hewlett Packard	11713A	3748A06076	-	O/P Mon
PSU (DC)	Leader	730-3D	9801135	-	O/P Mon
<b>Band Edge</b>					
Hygrometer	Rotronic	HP21	4300	12	23-Aug-17
DMM	Fluke	179	4006	12	09-Dec-16
Spectrum Analyser	Agilent	PXA N9030A	MY55410202	12	12-Jul-17
Network Analyser	Agilent	8722ES	US39175387	12	15-Oct-16
Power Meter	Rohde and Schwarz	NRP2	1144.1374K02-101123-ea	-	O/P Mon
Power Sensor	Rohde and Schwarz	NRP-Z51	1138.0005.02-102476-Fg	-	O/P Mon
Power Sensor	Rohde and Schwarz	NRP-Z51	1138.0005.02-102838-bR	-	O/P Mon
PSU (DC)	Xantrex	XKW60-50	1001425551	-	O/P Mon
Attenuator (20dB)	Weinschel	WA48-20-33-LIM	A1999	-	O/P Mon
Attenuator (20dB)	Weinschel	WA48-20-33-LIM	A2000	-	O/P Mon
RF Switch	Ericsson	RARFSW 4X1	001	-	O/P Mon

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Switch Driver	Hewlett Packard	11713A	3748A06076	-	O/P Mon
PSU (DC)	Leader	730-3D	9801135	-	O/P Mon
Transmitter Spurious Emissions					
Hygrometer	Rotronic	HP21	4300	12	23-Aug-17
DMM	Fluke	179	4006	12	09-Dec-16
Spectrum Analyser	Agilent	PXA N9030A	MY55410202	12	12-Jul-17
Network Analyser	Agilent	8722ES	US39175387	12	15-Oct-16
Power Meter	Rohde and Schwarz	NRP2	1144.1374K02-101123- ea	-	O/P Mon
Power Sensor	Rohde and Schwarz	NRP-Z51	1138.0005.02-102476-Fg	-	O/P Mon
Power Sensor	Rohde and Schwarz	NRP-Z51	1138.0005.02-102838-bR	-	O/P Mon
PSU (DC)	Xantrex	XKW60-50	1001425551	-	O/P Mon
Attenuator (20dB)	Weinschel	WA48-20-33-LIM	A1999	-	O/P Mon
Attenuator (20dB)	Weinschel	WA48-20-33-LIM	A2000	-	O/P Mon
RF Switch	Ericsson	RARFSW 4X1	001	-	O/P Mon
Switch Driver	Hewlett Packard	11713A	3748A06076	-	O/P Mon
PSU (DC)	Leader	730-3D	9801135	-	O/P Mon
HPF	Wainwright	WHNX6-2766- 3500-26500-40	001	-	O/P Mon
Frequency Stability					
Hygrometer	Rotronic	HP21	4300	12	23-Aug-17
DMM	Fluke	179	4006	12	09-Dec-16
Thermometer	Fluke	51	3174	12	01-Dec-16
Spectrum Analyser	Agilent	PXA N9030A	MY55410202	12	12-Jul-17
PSU (DC)	Xantrex	XKW60-50	1001425551	-	O/P Mon
Attenuator (20dB)	Weinschel	WA48-20-33-LIM	A1999	-	O/P Mon
Attenuator (20dB)	Weinschel	WA48-20-33-LIM	A2000	-	O/P Mon
Climatic chamber	Burnsco	RTC-37P-3-3	07-07	-	O/P Mon

N/A – Not Applicable

OP 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	$\pm 0.1$ dB
Conducted Emissions	30 MHz to 20 GHz Amplitude	$\pm 2.3$ dB
Frequency Stability	30 MHz to 2 GHz	$\pm 5.0$ Hz
Occupied Bandwidth	Up to 20 MHz Bandwidth	$\pm 1.1$ Hz
Band Edge	30 MHz to 20 GHz Amplitude	$\pm 2.3$ dB





Product Service

## **SECTION 5**

### **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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Product Service

## **ANNEX A**

### **MODULE LIST**



Product Service

Configuration1			
Product	Product No	R-State	Serial No
IRU 2242	KRC 161 444/2	R2B	C829886796
RD 2242 B4	KRY 901 309/1	R2A	C828676641
SUP 6601	BFL 901 009/1	R3B	BR81278870
Software Version:	CXP9013268/14	Revision:	R64DC04