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Report On

FCC Testing of the Sharp Hep-band LTE (B1 / B3 / B5 / B13 / B17 / B26 / B38), Dual-band WCDMA (FDD I / V), Quad-band GSM (850 / 900 / 1800 / 1900) & WiMAX2+ (TDD41) multi mode Smart phone with Bluetooth, WLAN, SRD(NFC, FeliCa) and GPS in accordance with FCC 47 CFR Part 22 and FCC 47 CFR Part 2 (LTE FDD 5)

COMMERCIAL-IN-CONFIDENCE

FCC ID: APYHRO00234

Document 75933606 Report 18 Issue 1

May 2016



Product Service

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REPORT ON w

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Document 75933606 Report 18 Issue 1

May 2016

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DATED

05 May 2016

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 22 and FCC 47 CFR Part 2. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

M Toubella

M Russell



T Guy



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SECTION 1

REPORT SUMMARY

FCC Testing of the
Sharp Hep-band LTE (B1 / B3 / B5 / B13 / B17 / B26 / B38), Dual-band WCDMA (FDD I / V),
Quad-band GSM (850 / 900 / 1800 / 1900) & WiMAX2+ (TDD41) multi mode Smart phone with
Bluetooth, WLAN, SRD(NFC, FeliCa) and GPS
In accordance with FCC 47 CFR Part 22 and FCC 47 CFR Part 2 (LTE FDD 5)



Product Service

1.1 INTRODUCTION

The information contained in this report is intended to show the verification of FCC Testing of the Sharp Hep-band LTE (B1 / B3 / B5 / B13 / B17 / B26 / B38), Dual-band WCDMA (FDD I / V), Quad-band GSM (850 / 900 / 1800 / 1900) & WiMAX2+ (TDD41) multi mode Smart phone with Bluetooth, WLAN, SRD(NFC, FeliCa) and GPS to the requirements of FCC 47 CFR Part 22 and FCC 47 CFR Part 2.

Objective	To perform FCC Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Sharp Corporation
Serial Number(s)	IMEI 004401115723393 IMEI 004401115723674
Number of Samples Tested	2
Test Specification/Issue/Date	FCC 47 CFR Part 22 (2015) FCC 47 CFR Part 2 (2015)
Disposal	Held Pending Disposal
Reference Number	Not Applicable
Date	Not Applicable
Order Number	10749
Date	15 February 2016
Start of Test	23 March 2016
Finish of Test	23 April 2016
Name of Engineer(s)	M Toubella M Russell T Guy
Related Document(s)	ANSI C63.4 (2014) ANSI TIA-603-D (2010)



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 22 and FCC 47 CFR Part 2 (LTE FDD 5) is shown below.

Section	Specification Clause		Test Description	Result	Comments/Base Standard
	Part 22	Part 2			
LTE FDD 5					
2.1	22.355	2.1055	Frequency Tolerance	Pass	
2.2	22.905	2.1051	Spurious Emissions at Band Edge	Pass	
2.3	22.913 (a)	2.1046	Maximum Conducted Output Power	Pass	
2.4	-	2.1046	Peak to Average Ratio	Pass	
2.5	22.917	-	Emission Limitations for Cellular Equipment	Pass	
2.6	22.917 (a)	2.1051	Spurious Emissions at Antenna Terminals	Pass	
2.7	22.917 (b)	2.1049 (h)	26 dB Bandwidth	Pass	
2.8	-	2.1047 (d)	Modulation Characteristics	-	Customer Declaration



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1.3 PRODUCT TECHNICAL DESCRIPTION

Refer to Model Description APYHRO00234 Rev 4.0 document.

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a Sharp Hep-band LTE (B1 / B3 / B5 / B13 / B17 / B26 / B38), Dual-band WCDMA (FDD I / V), Quad-band GSM (850 / 900 / 1800 / 1900) & WiMAX2+ (TDD41) multi mode Smart phone with Bluetooth, WLAN, SRD(NFC, FeliCa) and GPS. A full technical description can be found in the manufacturer's documentation.

1.5 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.

The EUT was powered from a 4.0 V DC supply.

FCC Measurement Facility Registration Number
90987 Octagon House, Fareham Test Laboratory

1.6 DEVIATIONS FROM THE STANDARD

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

1.7 MODIFICATION RECORD

Modification 0 - No modifications were made to the test sample during testing.



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SECTION 2

TEST DETAILS

FCC Testing of the
Sharp Hep-band LTE (B1 / B3 / B5 / B13 / B17 / B26 / B38), Dual-band WCDMA (FDD I / V),
Quad-band GSM (850 / 900 / 1800 / 1900) & WiMAX2+ (TDD41) multi mode Smart phone with
Bluetooth, WLAN, SRD(NFC, FeliCa) and GPS
In accordance with FCC 47 CFR Part 22 and FCC 47 CFR Part 2 (LTE FDD 5)



Product Service

2.1 FREQUENCY TOLERANCE**2.1.1 Specification Reference**

FCC 47 CFR Part 22, Clause 22.355
FCC 47 CFR Part 2, Clause 2.1055

2.1.2 Equipment Under Test and Modification State

S/N: IMEI 004401115723393 - Modification State 0

2.1.3 Date of Test

13 April 2016

2.1.4 Test Equipment Used

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

2.1.5 Test Procedure

This test was performed in accordance with FCC 47 CFR Part 2, Clause 2.1055.

Remarks

The CMW 500 frequency measurement function was used to measure the frequency error using a nominal uplink frequency of 836.40 MHz,

2.1.6 Environmental Conditions

Ambient Temperature	20.1°C
Relative Humidity	35.6%



2.1.7 Test Results

LTE FDD 5, Frequency Tolerance Results

Under Temperature Variations

10 MHz Bandwidth - QPSK

Frequency Error (ppm)		
836.4 MHz		
Supply Voltage	Temperature Interval °C	All Resource Blocks
3.7 V DC	+20	0.006
4.0 V DC	-30	0.005
4.0 V DC	-20	0.004
4.0 V DC	-10	0.009
4.0 V DC	0	0.005
4.0 V DC	+10	0.010
4.0 V DC	+20	0.006
4.0 V DC	+30	-0.007
4.0 V DC	+40	-0.007
4.0 V DC	+50	-0.010

10 MHz Bandwidth – 16QAM

Frequency Error (ppm)		
836.4 MHz		
Supply Voltage	Temperature Interval °C	All Resource Blocks
3.7 V DC	+20	0.005
4.0 V DC	-30	0.006
4.0 V DC	-20	0.006
4.0 V DC	-10	-0.005
4.0 V DC	0	0.004
4.0 V DC	+10	0.006
4.0 V DC	+20	0.006
4.0 V DC	+30	-0.006
4.0 V DC	+40	-0.007
4.0 V DC	+50	-0.006



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FCC 47 CFR Part 22, Limit Clause 22.355

Frequency Range (MHz)	Base, Fixed (ppm)	Mobile $\leq$ 3 watts (ppm)	Mobile $\leq$ 3 watts (ppm)
25 to 50	20	20	50
50 to 450	5	5	50
450 to 512	2.5	5	5
821 to 896	1.5	2.5	2.5
928 to 929	5.0	-	-
929 to 960	1.5	-	-
2110 to 2220	10	-	-



Product Service

2.2 SPURIOUS EMISSIONS AT BAND EDGE

2.2.1 Specification Reference

FCC 47 CFR Part 22, Clause 22.905
FCC 47 CFR Part 2, Clause 2.1051

2.2.2 Equipment Under Test and Modification State

S/N: IMEI 004401115723393 - Modification State 0

2.2.3 Date of Test

1 April 2016 & 23 April

2.2.4 Test Equipment Used

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

2.2.5 Test Procedure

The test was performed in accordance with KDB 971168 D01 v02r02, Clause 6.

Remarks

All measurements were performed using an integration method at the band edge. The RBW setting was set at one tenth of the integration bandwidth. The integration bandwidth was configured to be at least 1% of the 26 dB bandwidth as defined in 22.917(b). The integration bandwidth was configured in the position that yielded the highest result in the 1 MHz region immediately outside the band edge. The limit is -13 dBm as MIMO is not supported by the UE.

2.2.6 Environmental Conditions

Ambient Temperature	21.0°C
Relative Humidity	33.6%



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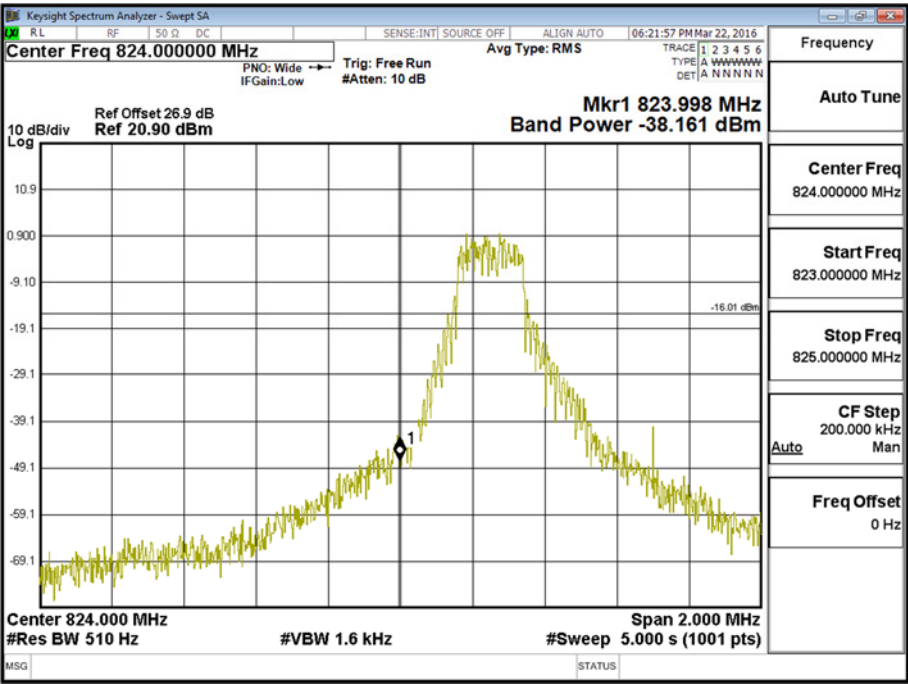
2.2.7 Test Results

LTE FDD 5, Spurious Emissions at Band Edge Results

1.4 MHz Bandwidth - QPSK

Band Edge (dBm)			
824.7 MHz		848.3 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-38.16	-36.83	-37.23	-34.33

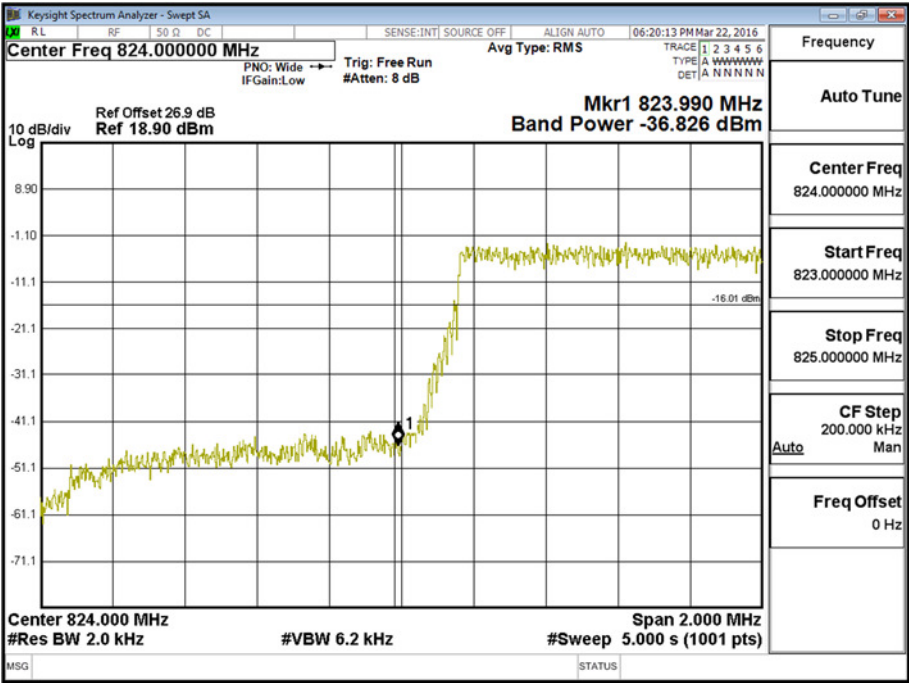
824.7 MHz - 1 Resource Block - Low



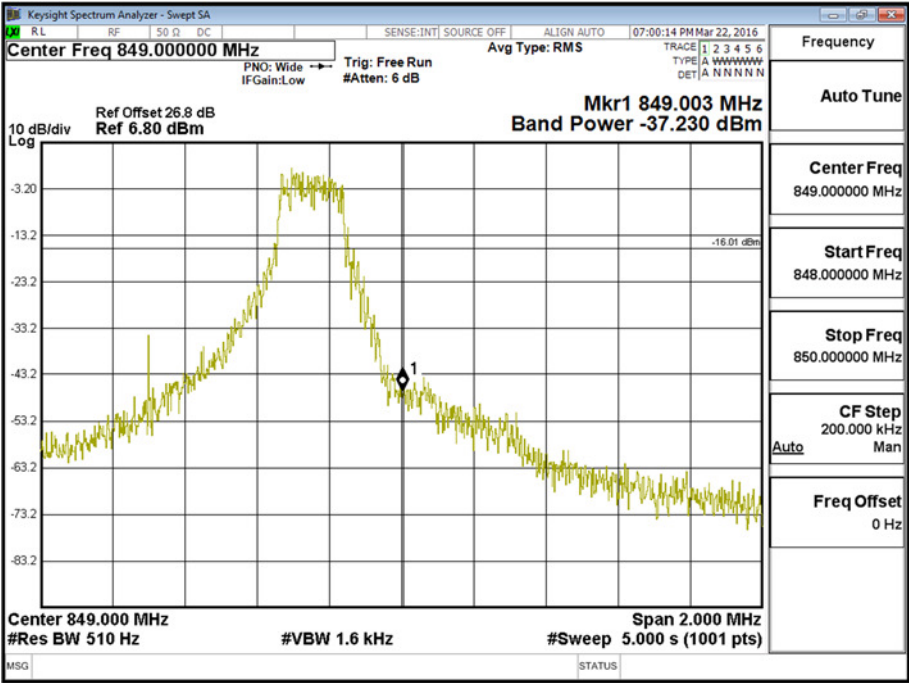


Product Service

824.7 MHz - All Resource Blocks



848.3 MHz - 1 Resource Block - High



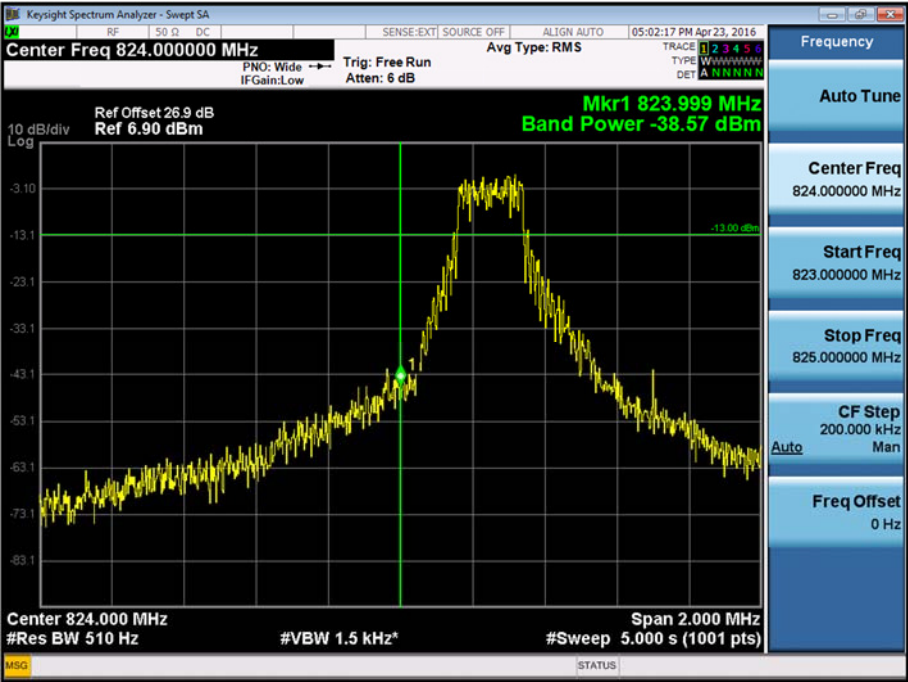


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1.4 MHz Bandwidth - 16QAM

Band Edge (dBm)			
824.7 MHz		848.3 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-37.82	-39.48	-38.57	-35.37

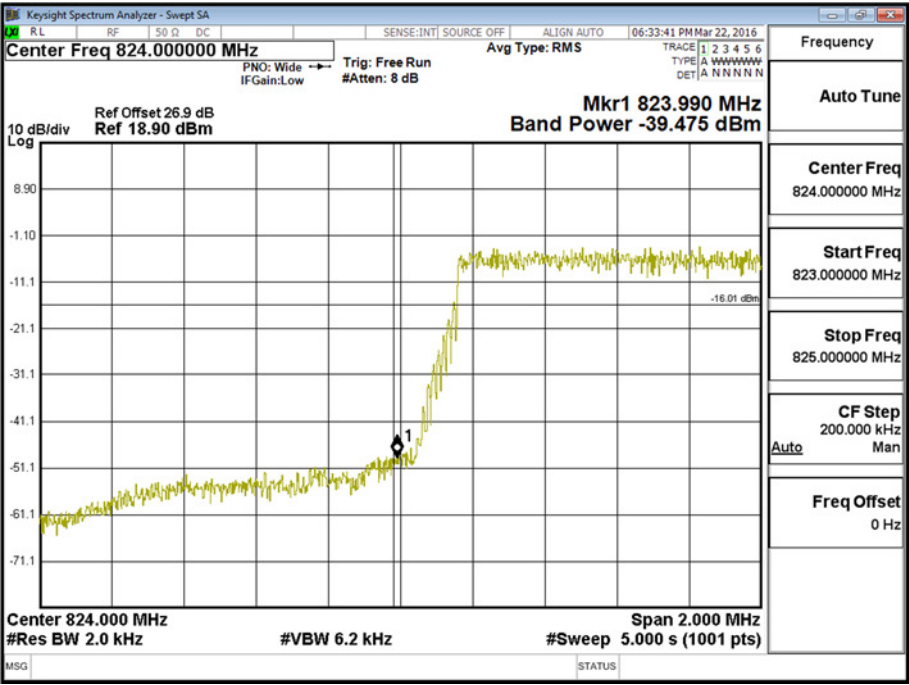
824.7 MHz - 1 Resource Block - Low



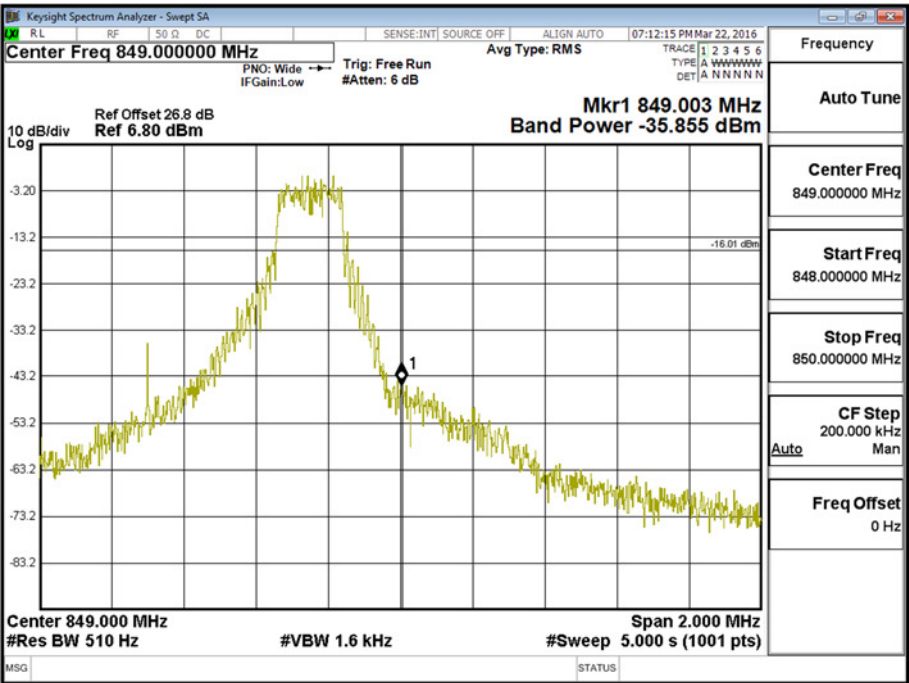


Product Service

824.7 MHz - All Resource Blocks



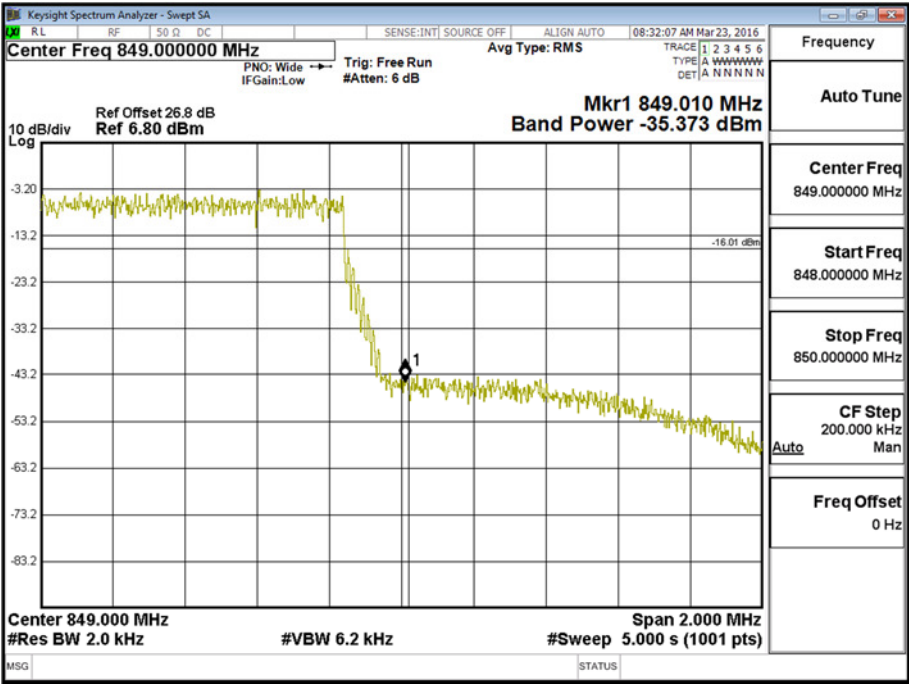
848.3 MHz - 1 Resource Block - High





Product Service

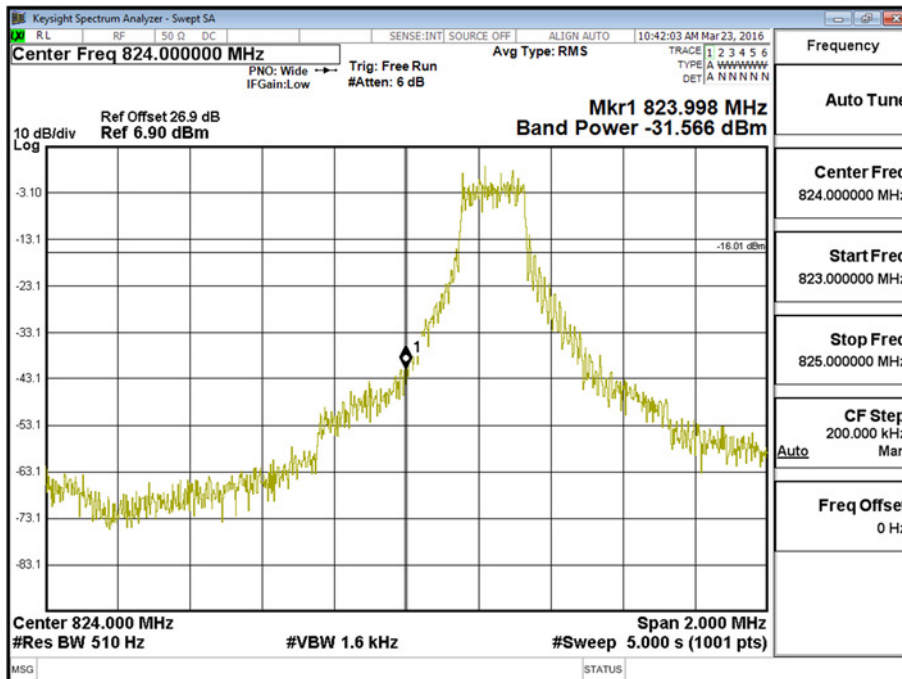
848.3 MHz - All Resource Blocks



3.0 MHz Bandwidth - QPSK

Band Edge (dBm)			
825.5 MHz		847.5 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-31.57	-30.30	-29.56	-31.18

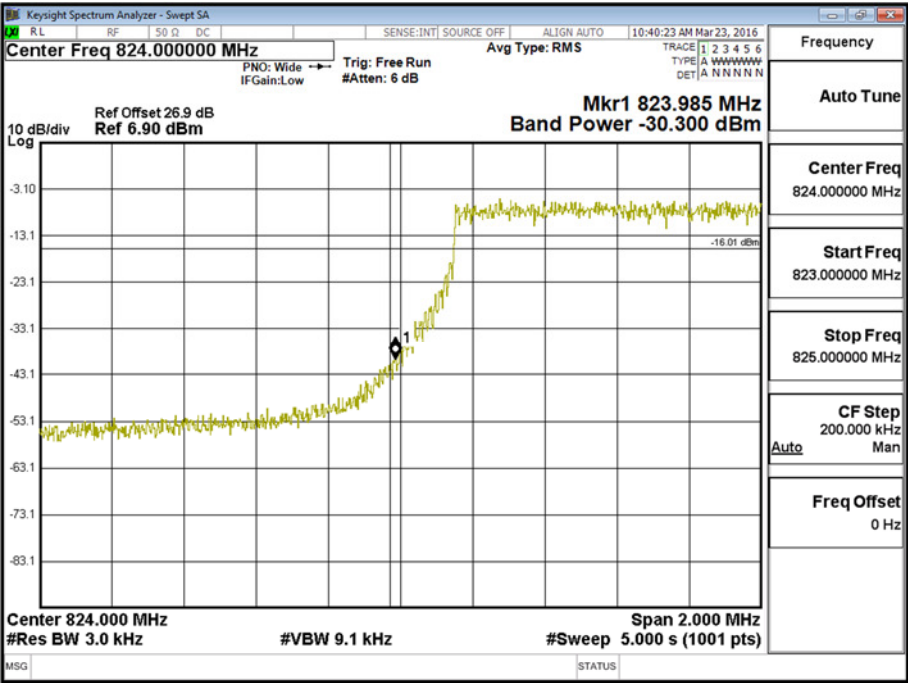
825.5 MHz - 1 Resource Block - Low



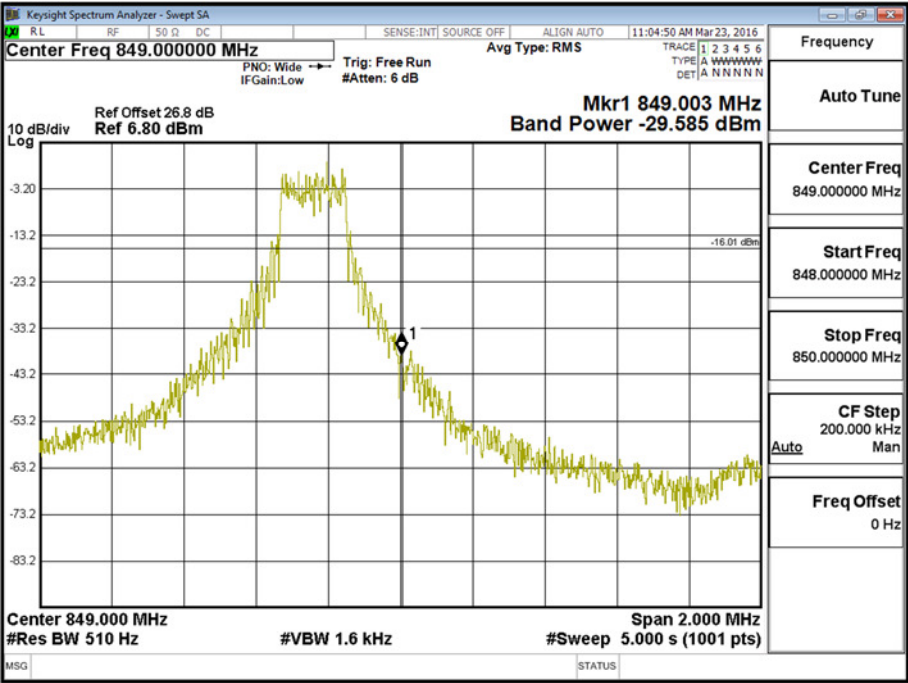


Product Service

825.5 MHz - All Resource Blocks



847.5 MHz - 1 Resource Block - High



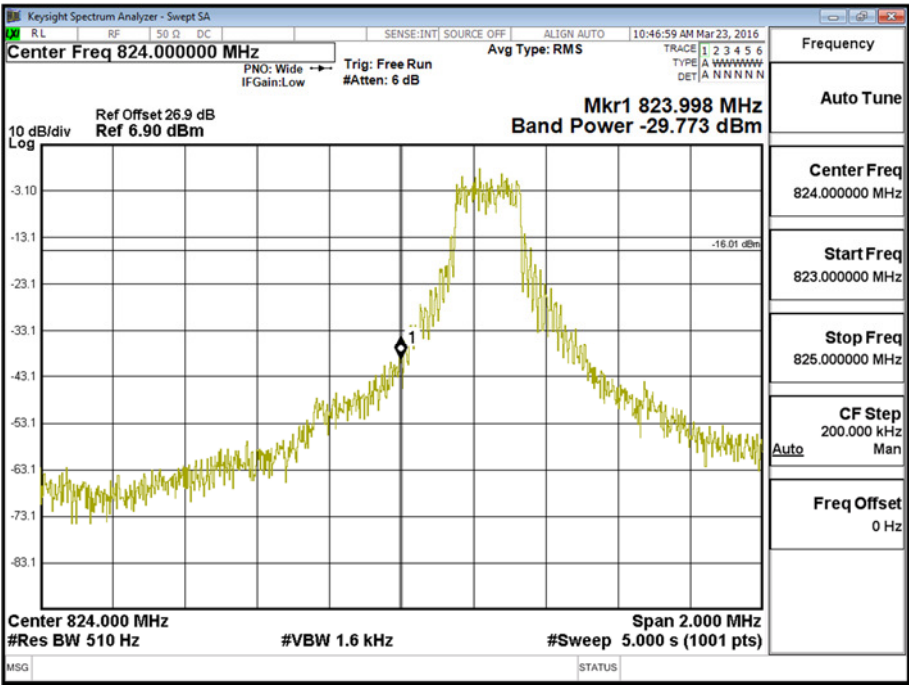


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3.0 MHz Bandwidth - 16QAM

Band Edge (dBm)			
825.5 MHz		847.5 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-29.77	-29.47	-29.56	-30.68

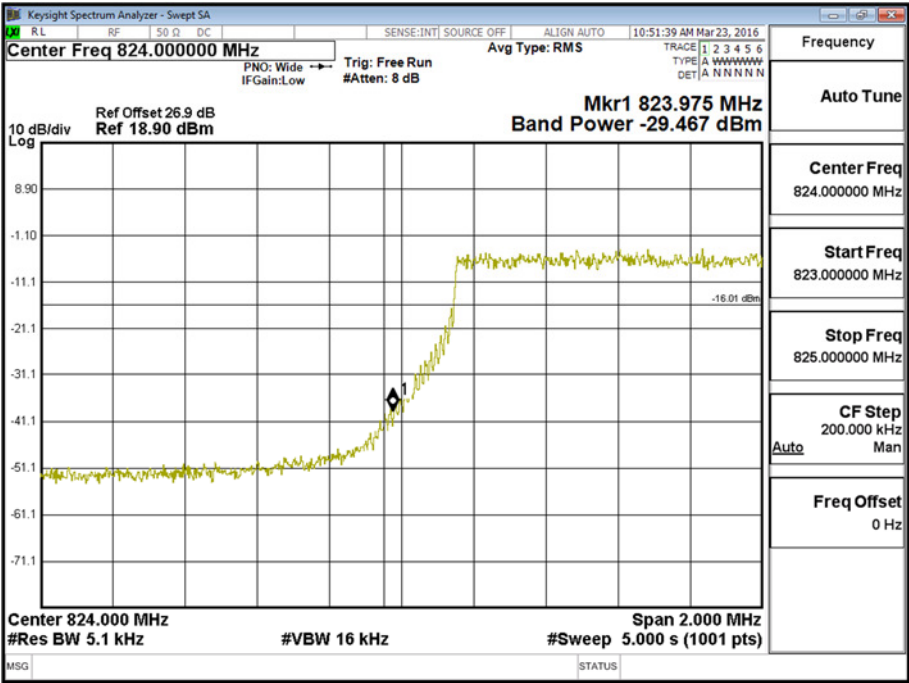
825.5 MHz - 1 Resource Block - Low



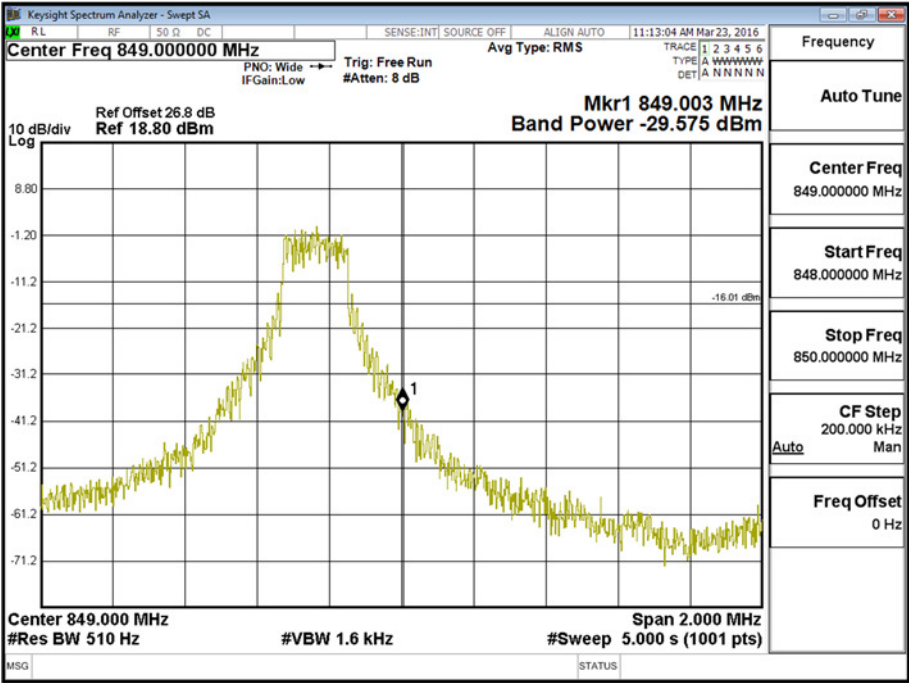


Product Service

825.5 MHz - All Resource Blocks



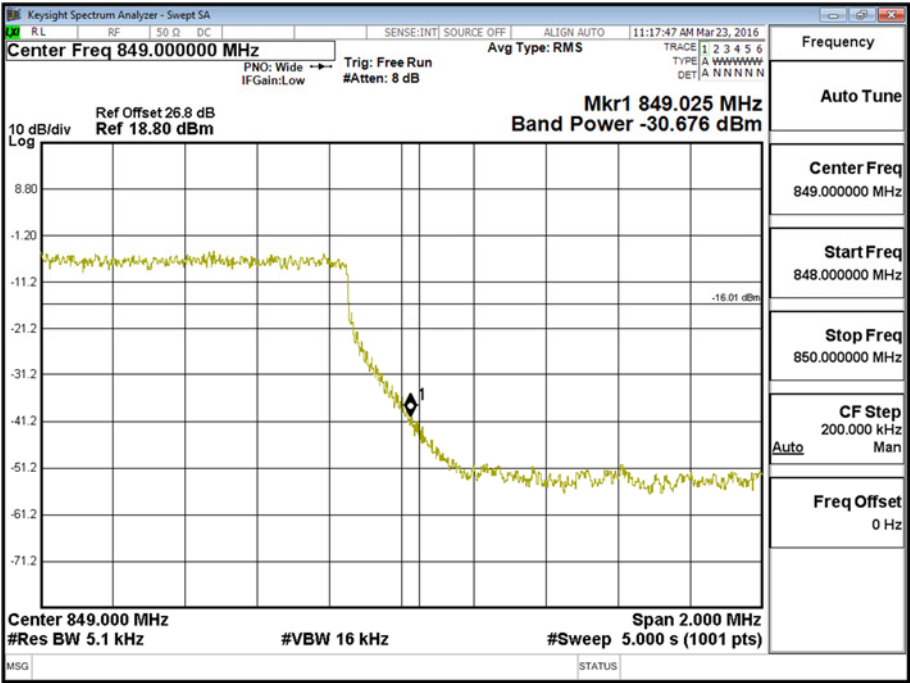
847.5 MHz - 1 Resource Block – High





Product Service

847.5 MHz - All Resource Blocks



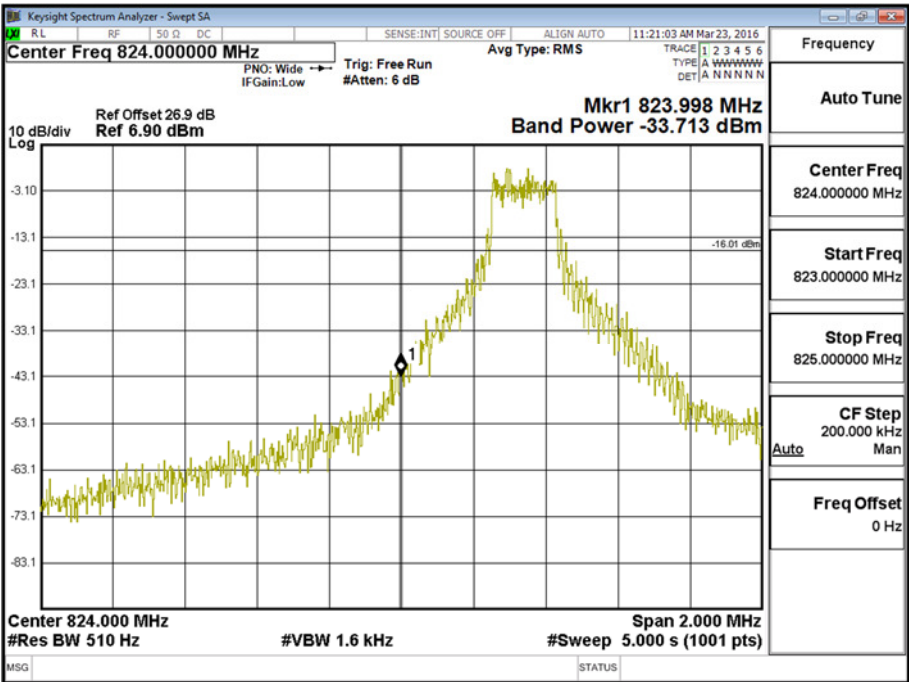


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5.0 MHz Bandwidth - QPSK

Band Edge (dBm)			
826.5 MHz		846.5 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-33.71	-33.74	-34.12	-35.77

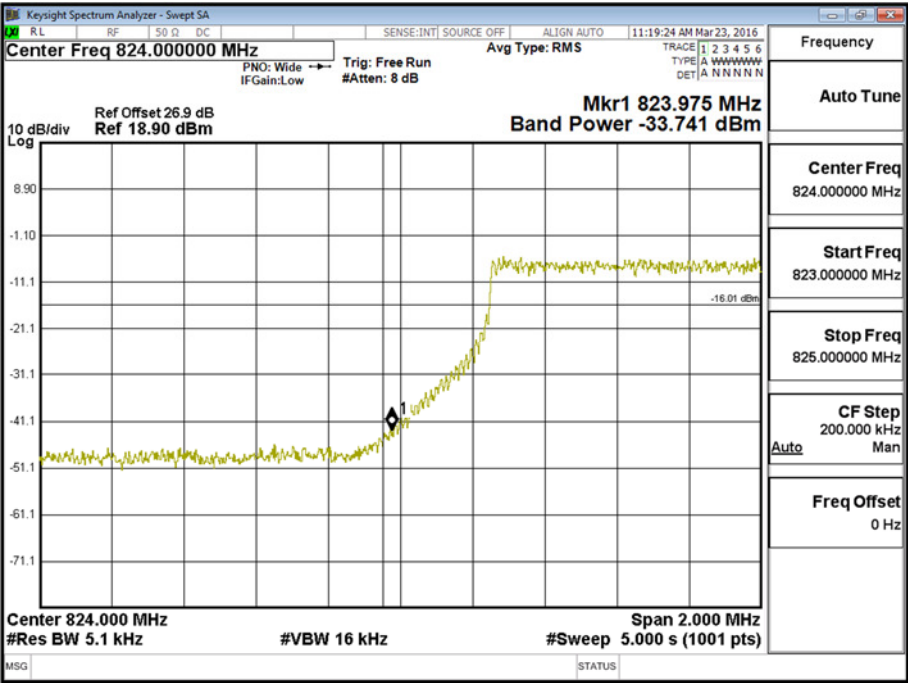
826.5 MHz - 1 Resource Block - Low



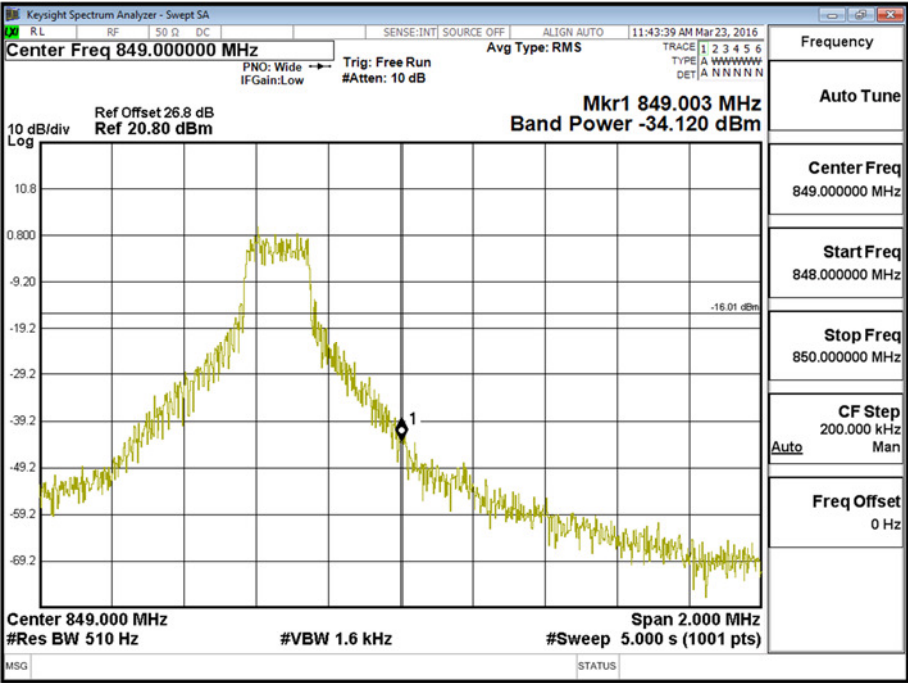


Product Service

826.5 MHz - All Resource Blocks



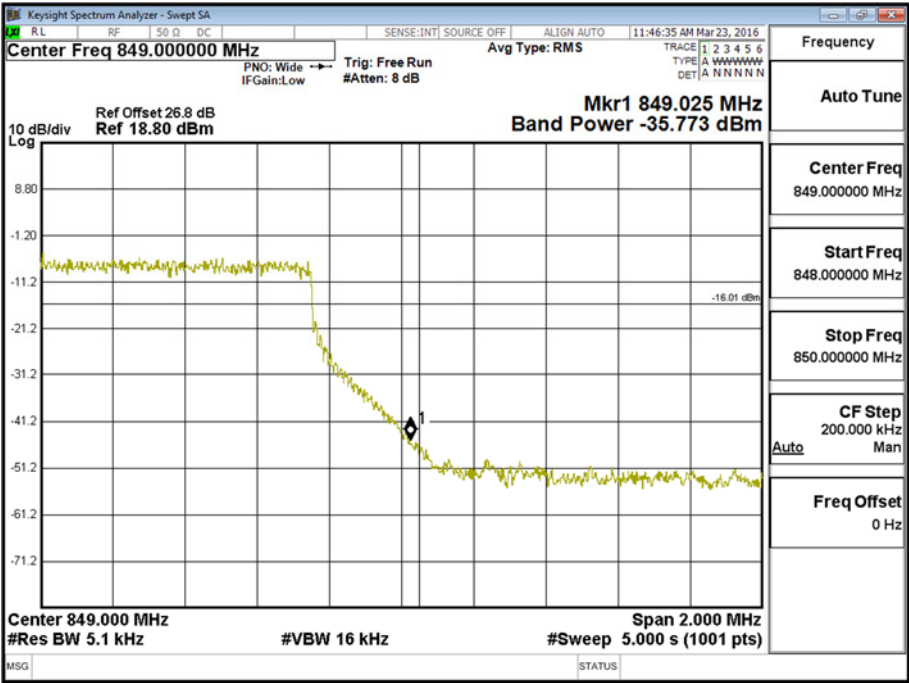
846.5 MHz - 1 Resource Block - High





Product Service

846.5 MHz - All Resource Blocks



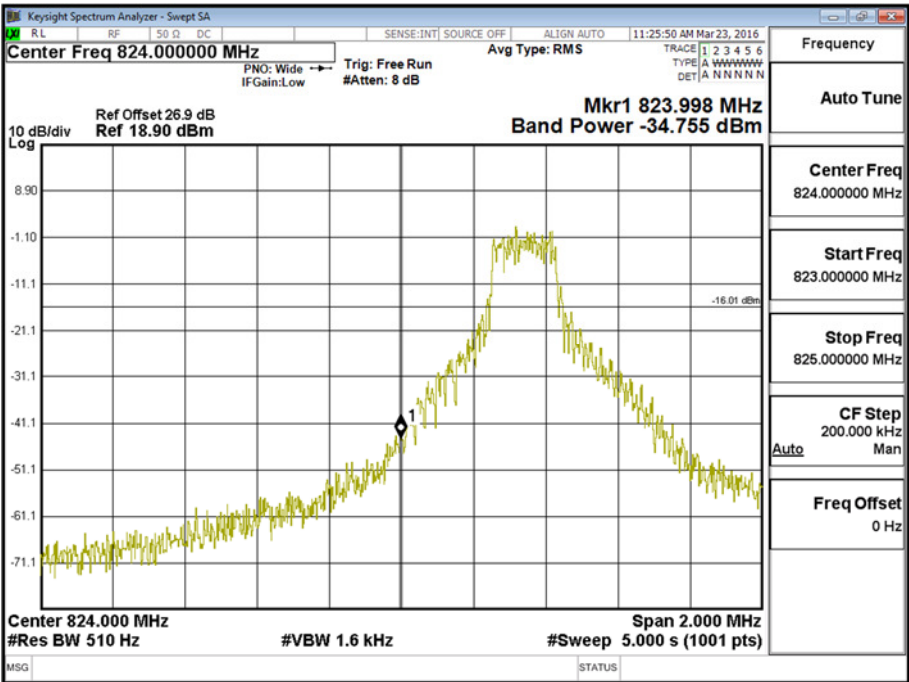


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5.0 MHz Bandwidth - 16QAM

Band Edge (dBm)			
826.5 MHz		846.5 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-34.76	-35.22	-36.26	-36.58

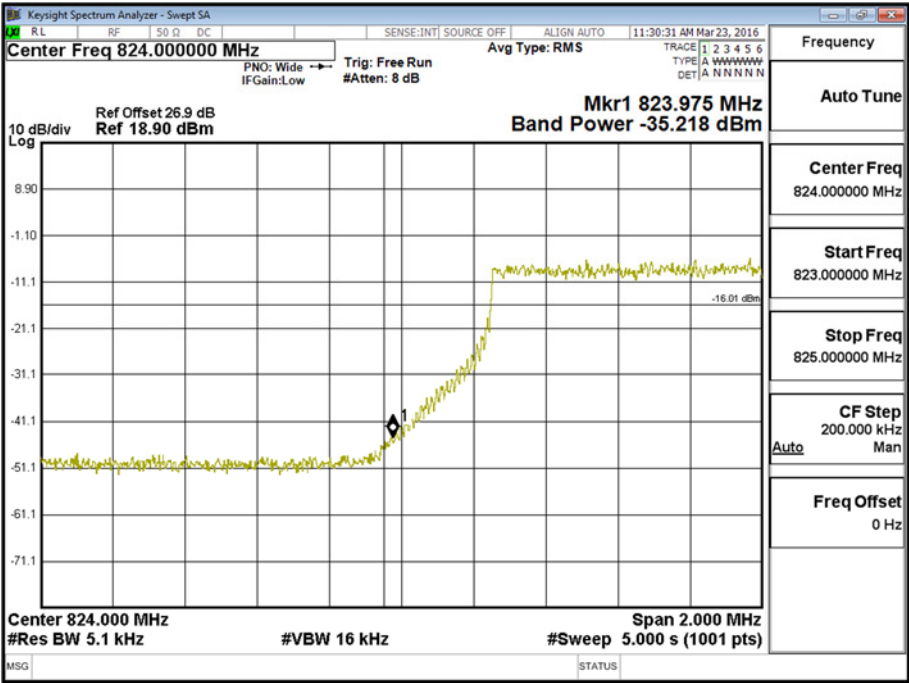
826.5 MHz - 1 Resource Block - Low



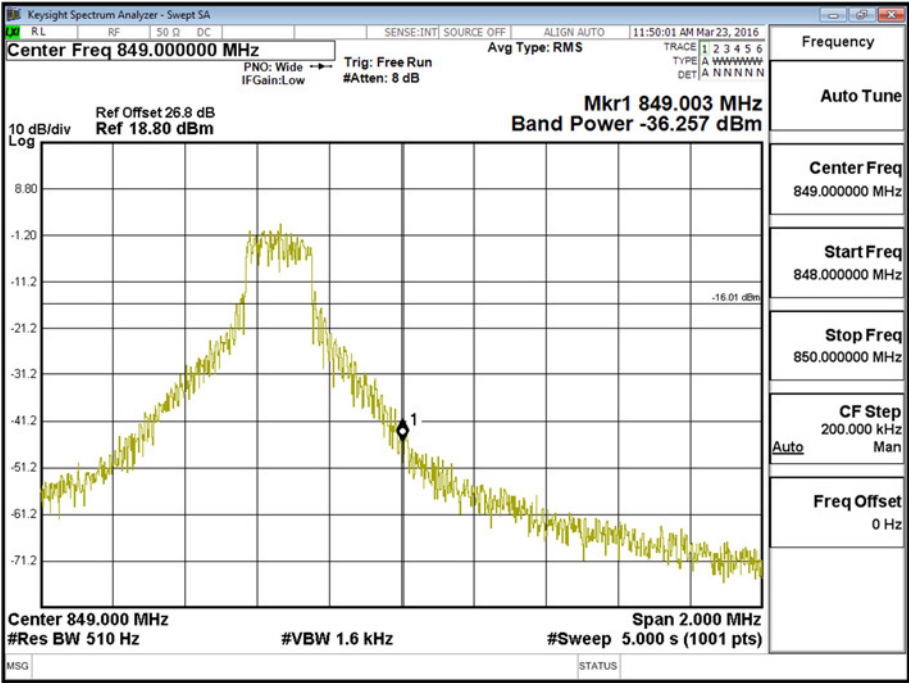


Product Service

826.5 MHz - All Resource Blocks



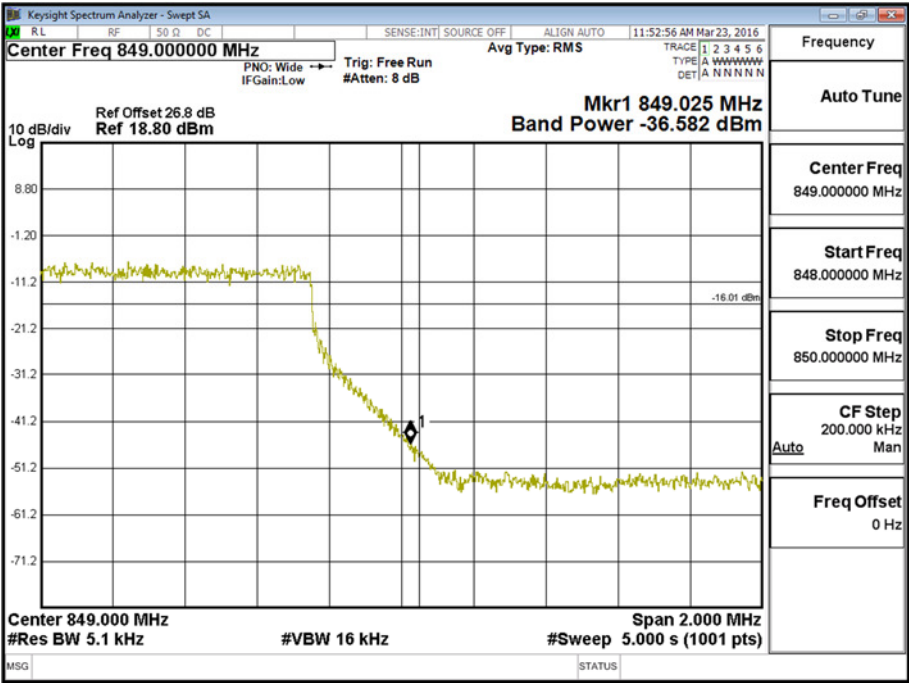
846.5 MHz - 1 Resource Block - High





Product Service

846.5 MHz - All Resource Blocks



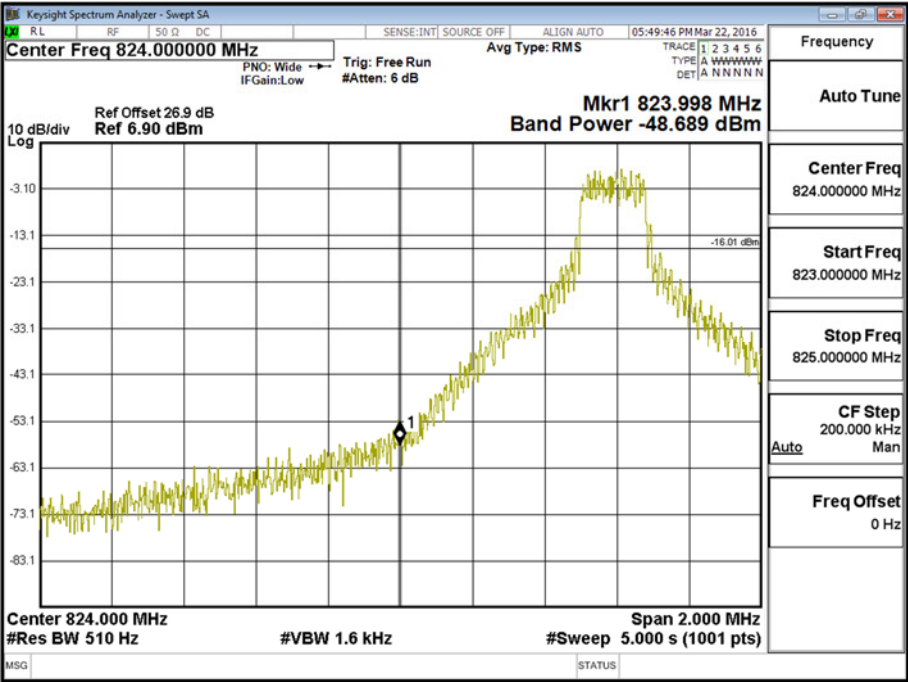


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10.0 MHz Bandwidth - QPSK

Band Edge (dBm)			
829.0 MHz		844.0 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-48.69	-36.56	-47.01	-34.31

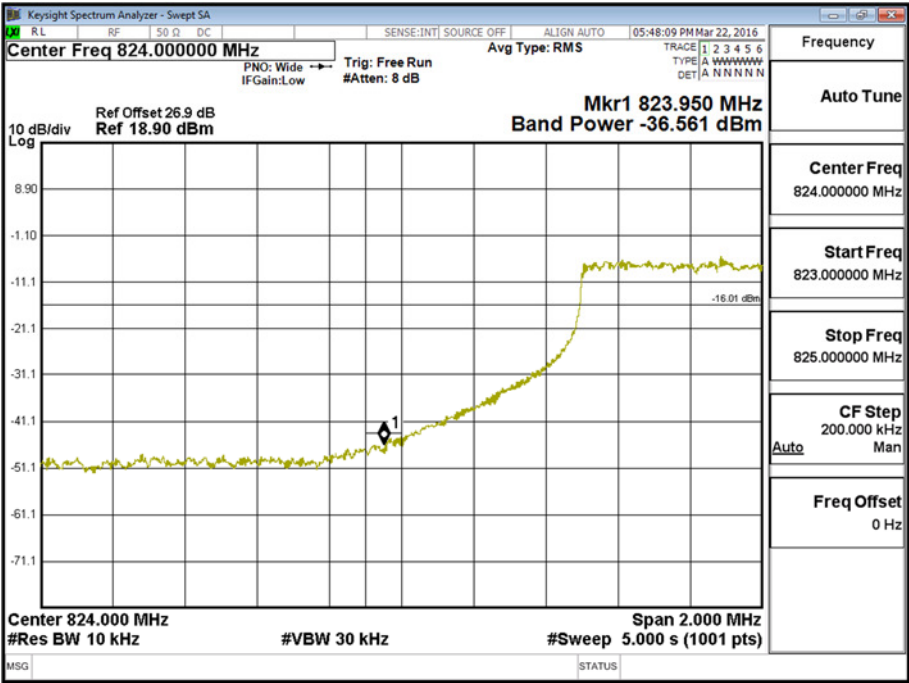
829.0 MHz - 1 Resource Block - Low



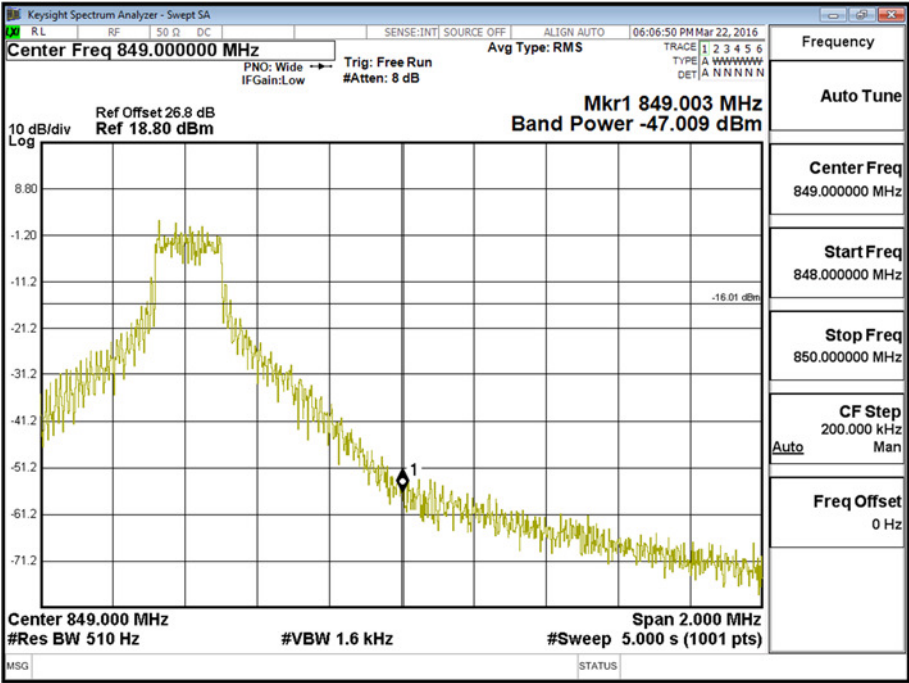


Product Service

829.0 MHz - All Resource Blocks



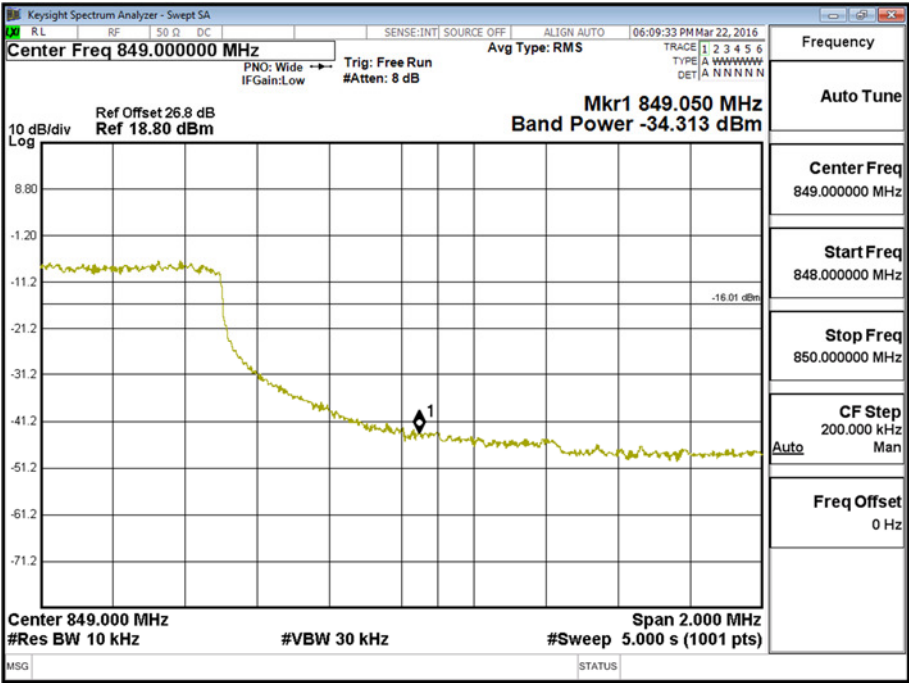
844.0 MHz - 1 Resource Block - High





Product Service

844.0 MHz - All Resource Blocks



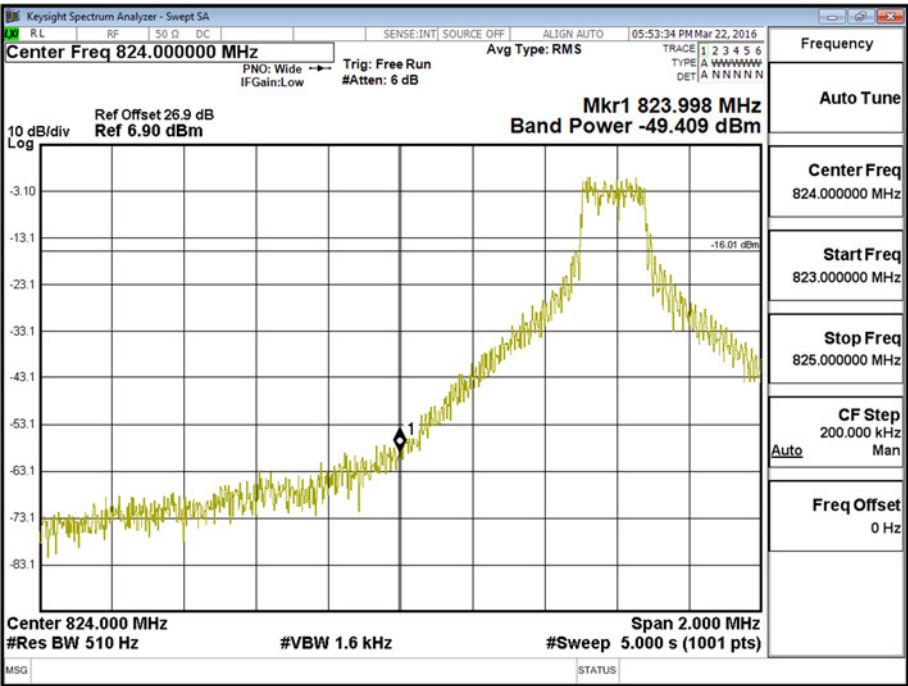


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10.0 MHz Bandwidth - 16QAM

Band Edge (dBm)			
829.0 MHz		844.0 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-49.41	-38.45	-46.74	-36.45

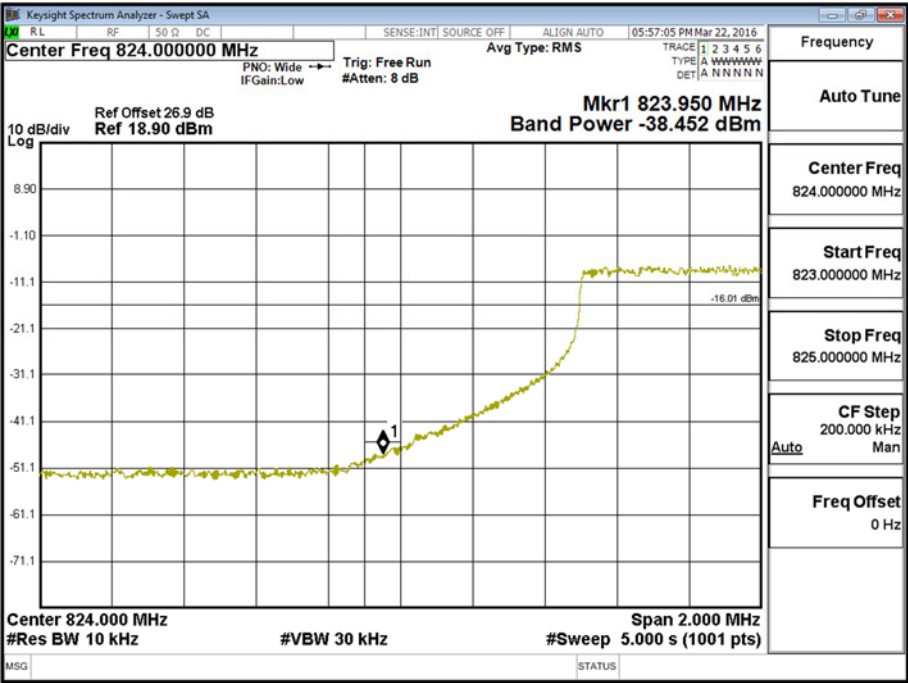
829.0 MHz - 1 Resource Block - Low



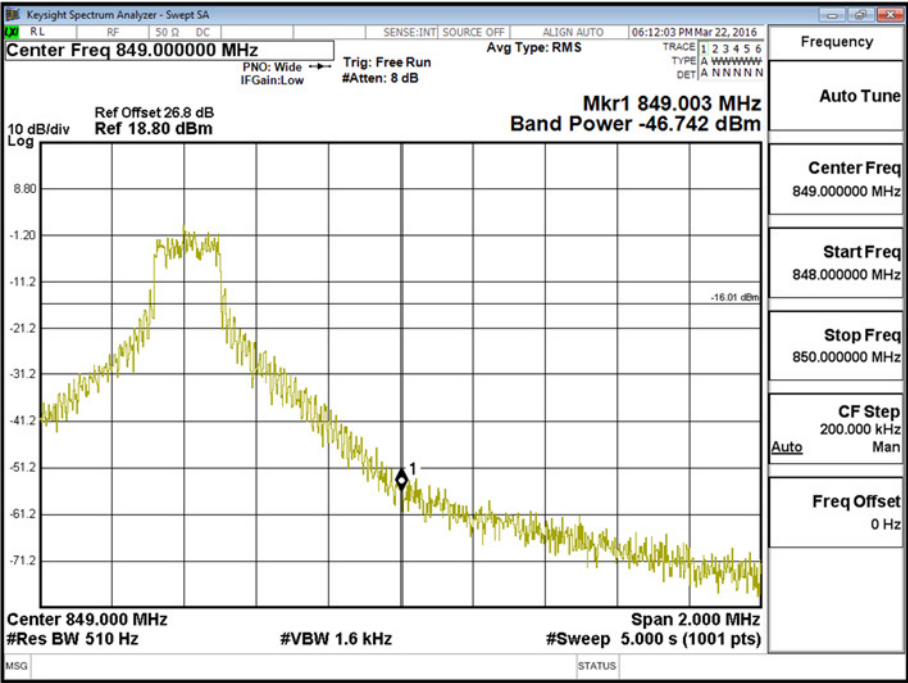


Product Service

829.0 MHz - All Resource Blocks



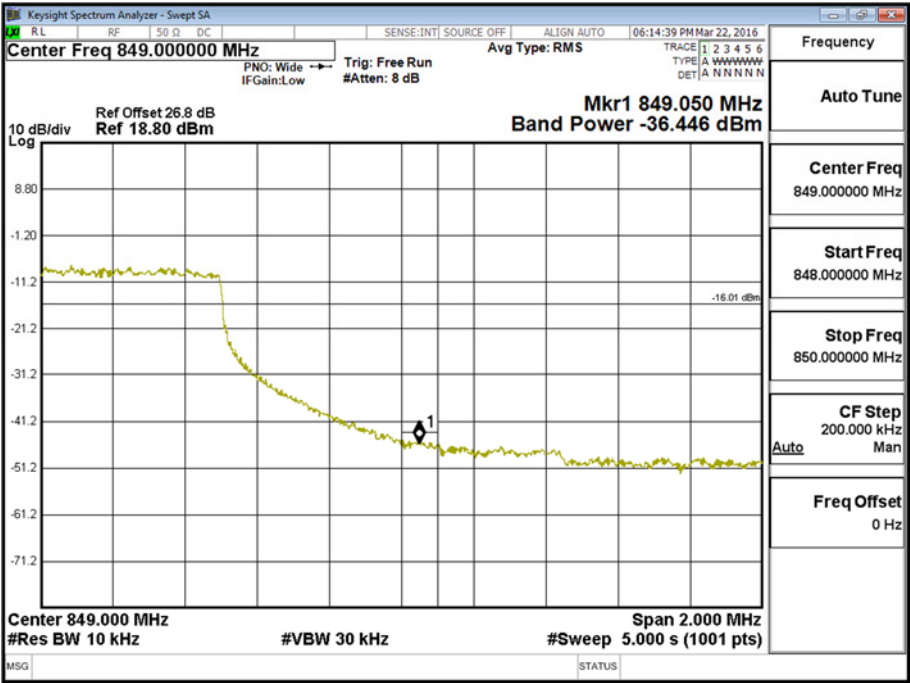
844.0 MHz - 1 Resource Block - High





Product Service

844.0 MHz - All Resource Blocks



FCC 47 CFR Part 22, Limit Clause 22.905 and 22.917

-13 dBm at block edge.



Product Service

2.3 MAXIMUM CONDUCTED OUTPUT POWER

2.3.1 Specification Reference

FCC 47 CFR Part 22, Clause 22.913 (a)
FCC 47 CFR Part 2, Clause 2.1046

2.3.2 Equipment Under Test and Modification State

S/N: IMEI 004401115723393 - Modification State 0

2.3.3 Date of Test

23 March 2016

2.3.4 Test Equipment Used

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

2.3.5 Test Procedure

The test was performed in accordance with KDB 971168 D01 v02r02, Clause 5.2.1

Remarks

The antenna gain was declared by the manufacturer as 2.0 dBi. As per KDB 412172 D01 v01r01 results are recorded in ERP therefore reported results are calculated as per the following calculation:

$$\text{ERP} = \text{Pout (dBm)} + \text{ANT Gain (dBi)} - 2.15 \text{ (dB)}$$

2.3.6 Environmental Conditions

Ambient Temperature	23.3°C
Relative Humidity	25.6%



2.3.7 Test Results

LTE FDD 5, RMC, Maximum Conducted Output Power Results

1.4 MHz Bandwidth - QPSK

Resource Block Allocation	Resource Block Offset	Carrier Power - ERP (dBm)		
		824.7 MHz	836.5 MHz	848.3 MHz
1	Low	22.58	22.44	22.46
1	Mid	22.58	22.49	22.41
1	High	22.54	22.36	22.33
3	Low	22.64	22.55	22.53
3	Mid	22.64	22.55	22.51
3	High	22.66	22.47	22.44
6	-	21.71	21.44	21.43

1.4 MHz Bandwidth - 16QAM

Resource Block Allocation	Resource Block Offset	Carrier Power - ERP (dBm)		
		824.7 MHz	836.5 MHz	848.3 MHz
1	Low	21.89	21.50	21.53
1	Mid	21.84	21.98	21.65
1	High	21.77	21.63	21.86
3	Low	21.68	21.49	21.60
3	Mid	21.72	21.58	21.62
3	High	21.63	21.56	20.88
6	-	20.63	20.47	20.44

3.0 MHz Bandwidth - QPSK

Resource Block Allocation	Resource Block Offset	Carrier Power - ERP (dBm)		
		825.5 MHz	836.5 MHz	847.5 MHz
1	Low	22.57	22.81	22.83
1	Mid	22.71	22.88	22.78
1	High	22.64	22.48	22.45
8	Low	21.49	21.31	21.76
8	Mid	21.45	21.29	21.75
8	High	21.33	21.2	21.57
15	-	21.47	21.33	21.25

3.0 MHz Bandwidth - 16QAM

Resource Block Allocation	Resource Block Offset	Carrier Power - ERP (dBm)		
		825.5 MHz	836.5 MHz	847.5 MHz
1	Low	22.15	21.79	21.94
1	Mid	22.13	22.02	22.05
1	High	21.61	21.77	21.86
8	Low	20.51	20.31	20.31
8	Mid	20.51	20.28	20.39
8	High	20.36	20.20	20.38
15	-	20.52	20.32	20.32

5.0 MHz Bandwidth - QPSK

Resource Block Allocation	Resource Block Offset	Carrier Power - ERP (dBm)		
		826.5 MHz	836.5 MHz	846.5 MHz
1	Low	22.85	22.72	22.78
1	Mid	22.57	22.34	22.76
1	High	23.15	22.76	22.71
12	Low	21.47	21.33	21.25
12	Mid	21.41	21.28	21.27
12	High	21.44	21.26	21.37
25	-	21.37	21.19	21.34

5.0 MHz Bandwidth - 16QAM

Resource Block Allocation	Resource Block Offset	Carrier Power - ERP (dBm)		
		826.5 MHz	836.5 MHz	846.5 MHz
1	Low	22.41	21.84	21.97
1	Mid	21.63	21.78	21.63
1	High	22.02	21.82	21.85
12	Low	20.52	20.32	20.32
12	Mid	20.34	20.37	20.35
12	High	20.54	20.29	20.38
25	-	20.44	20.26	20.37

10.0 MHz Bandwidth - QPSK

Resource Block Allocation	Resource Block Offset	Carrier Power - ERP (dBm)		
		829.0 MHz	836.5 MHz	844.0 MHz
1	Low	22.92	22.62	22.58
1	Mid	22.63	22.72	22.38
1	High	22.82	22.62	22.60
25	Low	21.59	21.47	21.35
25	Mid	21.62	21.53	21.46
25	High	21.65	21.50	21.39
50	-	21.60	21.49	21.44

10.0 MHz Bandwidth - 16QAM

Resource Block Allocation	Resource Block Offset	Carrier Power - ERP (dBm)		
		829.0 MHz	836.5 MHz	844.0 MHz
1	Low	22.09	21.80	21.80
1	Mid	22.06	21.70	21.62
1	High	21.99	21.71	22.02
25	Low	20.60	20.51	20.45
25	Mid	20.67	20.49	20.45
25	High	20.65	20.38	20.48
50	-	20.56	20.52	20.44

FCC 47 CFR Part 22, Limit Clause 22.913 (a)(2)

Mobile Transmitters: 7 W or 38.45 dBm



Product Service

2.4 PEAK TO AVERAGE RATIO**2.4.1 Specification Reference**

FCC 47 CFR Part 2, Clause 2.1046

2.4.2 Equipment Under Test and Modification State

S/N: IMEI 004401115723393 - Modification State 0

2.4.3 Date of Test

23 March 2016

2.4.4 Test Equipment Used

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

2.4.5 Test Procedure

The test was performed in accordance with KDB 971168 D01 v02r02, Clause 5.7.1

2.4.6 Environmental Conditions

Ambient Temperature	23.3°C
Relative Humidity	25.6%



2.4.7 Test Results

LTE FDD 5, RMC, Maximum Conducted Output Power Results

1.4 MHz Bandwidth - QPSK

Resource Block Allocation	Resource Block Offset	Peak to Average Ratio (dB)		
		824.7 MHz	836.5 MHz	848.3 MHz
1	Low	4.55	4.82	4.32
1	Mid	4.43	4.61	4.09
1	High	4.56	4.80	4.10
3	Low	4.50	4.90	4.20
3	Mid	4.46	4.84	4.15
3	High	4.49	4.84	4.09
6	-	5.29	5.39	5.18

1.4 MHz Bandwidth - 16QAM

Resource Block Allocation	Resource Block Offset	Peak to Average Ratio (dB)		
		824.7 MHz	836.5 MHz	848.3 MHz
1	Low	5.36	5.59	5.18
1	Mid	5.24	5.44	4.96
1	High	5.38	5.62	4.95
3	Low	5.48	5.87	5.06
3	Mid	5.40	5.78	4.95
3	High	5.48	5.84	4.97
6	-	6.22	6.33	6.19

3.0 MHz Bandwidth – QPSK

Resource Block Allocation	Resource Block Offset	Peak to Average Ratio (dB)		
		825.5 MHz	836.5 MHz	847.5 MHz
1	Low	4.44	4.35	4.07
1	Mid	4.21	4.16	3.36
1	High	4.17	4.63	4.06
8	Low	5.19	5.29	5.10
8	Mid	5.06	5.10	4.85
8	High	5.01	4.96	4.84
15	-	5.00	4.89	4.87

3.0 MHz Bandwidth - 16QAM

Resource Block Allocation	Resource Block Offset	Peak to Average Ratio (dB)		
		825.5 MHz	836.5 MHz	847.5 MHz
1	Low	4.75	5.40	5.09
1	Mid	4.64	5.00	4.30
1	High	5.16	5.28	4.86
8	Low	5.87	5.70	5.74
8	Mid	5.83	5.60	5.65
8	High	5.93	5.80	5.78
15	-	6.13	6.09	6.17

5.0 MHz Bandwidth - QPSK

Resource Block Allocation	Resource Block Offset	Peak to Average Ratio (dB)		
		826.5 MHz	836.5 MHz	846.5 MHz
1	Low	3.93	4.49	4.33
1	Mid	4.34	4.59	4.15
1	High	3.89	4.24	3.45
12	Low	5.00	4.89	4.87
12	Mid	4.90	4.86	4.78
12	High	4.85	4.78	4.75
25	-	5.34	5.84	5.27

5.0 MHz Bandwidth - 16QAM

Resource Block Allocation	Resource Block Offset	Peak to Average Ratio (dB)		
		826.5 MHz	836.5 MHz	846.5 MHz
1	Low	4.54	5.36	5.24
1	Mid	5.21	5.08	5.33
1	High	5.02	5.07	4.50
12	Low	5.87	5.72	5.73
12	Mid	5.82	5.75	5.72
12	High	5.79	5.71	5.64
25	-	6.11	6.09	6.12

10.0 MHz Bandwidth - QPSK

Resource Block Allocation	Resource Block Offset	Peak to Average Ratio (dB)		
		829.0 MHz	836.5 MHz	844.0 MHz
1	Low	4.09	4.65	4.48
1	Mid	4.54	4.58	4.63
1	High	4.54	4.48	3.74
25	Low	4.96	4.90	4.94
25	Mid	4.86	4.84	4.82
25	High	4.86	4.89	4.90
50	-	5.29	5.31	5.26

10.0 MHz Bandwidth - 16QAM

Resource Block Allocation	Resource Block Offset	Peak to Average Ratio (dB)		
		829.0 MHz	836.5 MHz	844.0 MHz
1	Low	5.00	5.37	5.14
1	Mid	5.37	5.28	5.42
1	High	5.43	5.37	4.40
25	Low	5.88	5.78	5.77
25	Mid	5.76	5.70	5.67
25	High	5.78	5.77	5.76
50	-	6.09	6.05	6.03

FCC 47 CFR Part 22, Limit Clause

None specified.



Product Service

2.5 EMISSION LIMITATIONS FOR CELLULAR EQUIPMENT

2.5.1 Specification Reference

FCC 47 CFR Part 22, Clause 22.917

2.5.2 Equipment Under Test and Modification State

S/N: IMEI 004401115723674 - Modification State 0

2.5.3 Date of Test

4 April 2016

2.5.4 Test Equipment Used

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

2.5.5 Test Procedure

The test was performed in accordance with KDB 971168 D01 v02r02, Clause 5.8 and 7 and ANSI TIA-603-D, Clause 2.2.12. The EUT was configured as defined in ANSI C63.4.

2.5.6 Environmental Conditions

Ambient Temperature	20.2°C
Relative Humidity	33.7%



Product Service

2.5.7 Test Results

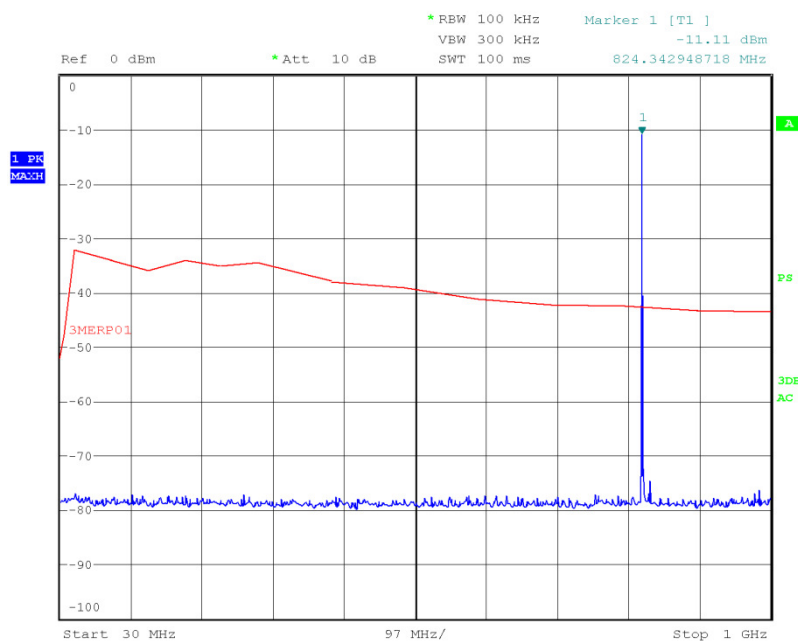
LTE FDD 5, Emission Limitations for Cellular Equipment Results

1.4 MHz Bandwidth – QPSK

824.7 MHz

1 Resource Block - Low

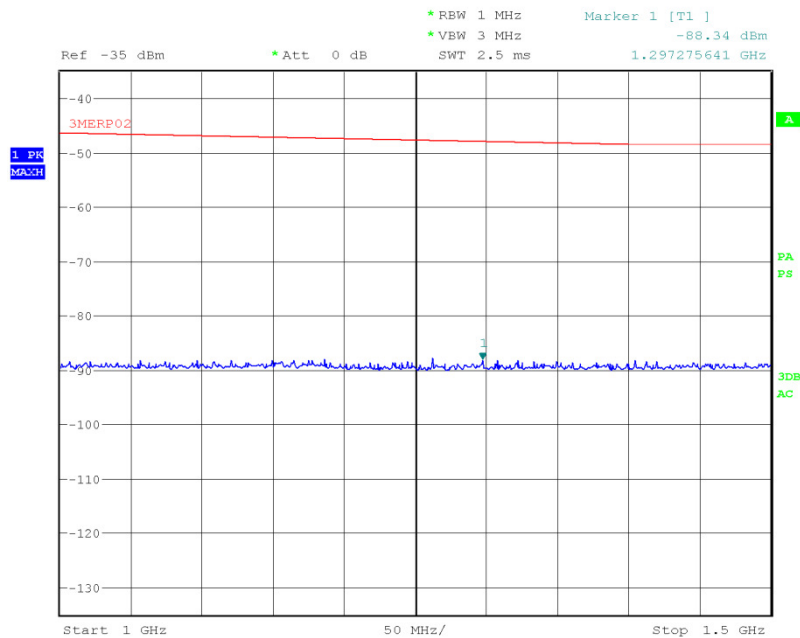
30 MHz to 1 GHz



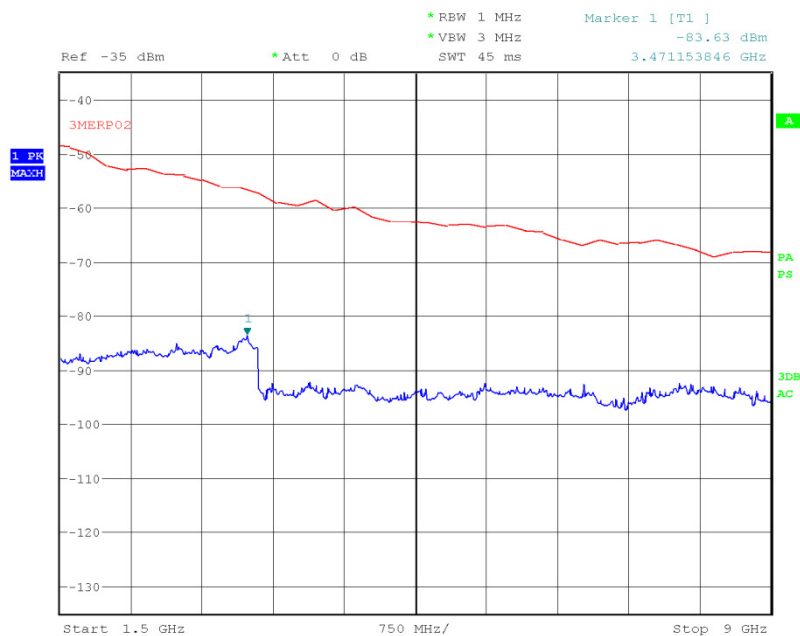
Date: 3.APR.2016 22:13:34



Product Service

1 GHz to 1.5 GHz

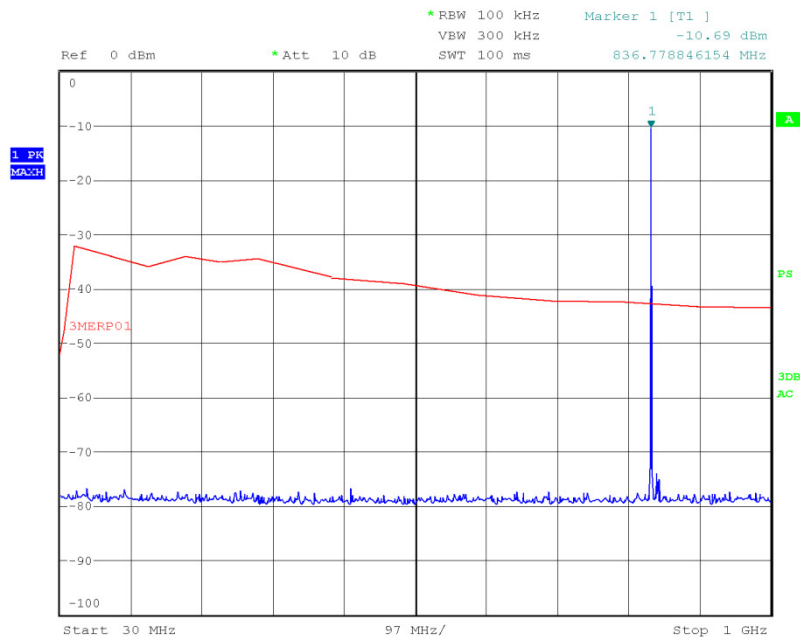
Date: 9.APR.2016 17:41:22

1.5 GHz to 9 GHz

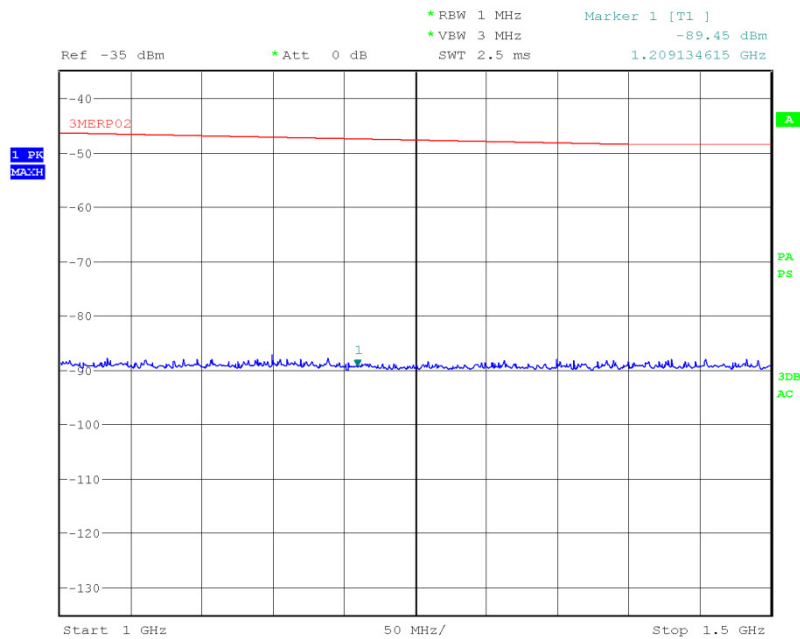
Date: 10.APR.2016 09:30:44



Product Service

836.5 MHz1 Resource Block - Mid30 MHz to 1 GHz

Date: 3.APR.2016 22:10:35

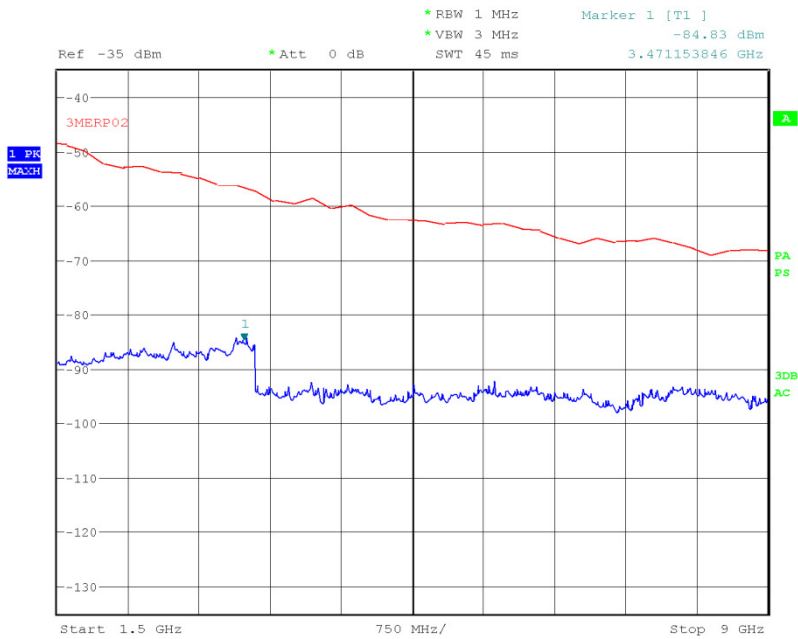
1 GHz to 1.5 GHz

Date: 9.APR.2016 17:47:30



Product Service

1.5 GHz to 9 GHz



Date: 10.APR.2016 09:35:39

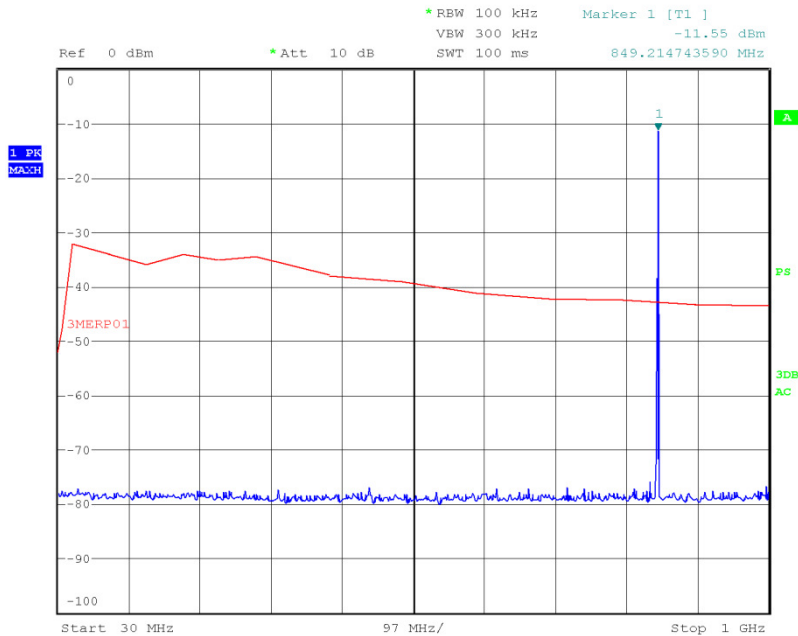


Product Service

848.3 MHz

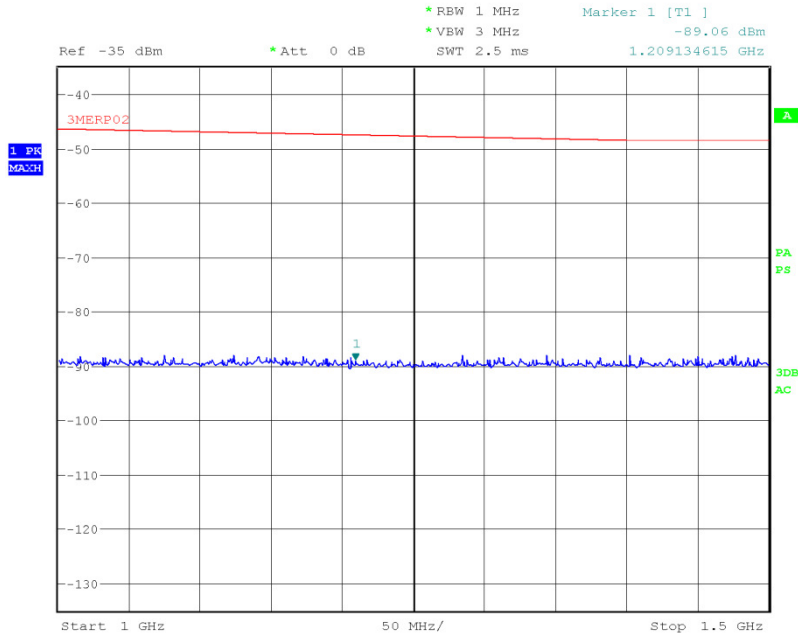
1 Resource Block - Low

30 MHz to 1 GHz



Date: 3.APR.2016 22:16:15

1 GHz to 1.5 GHz

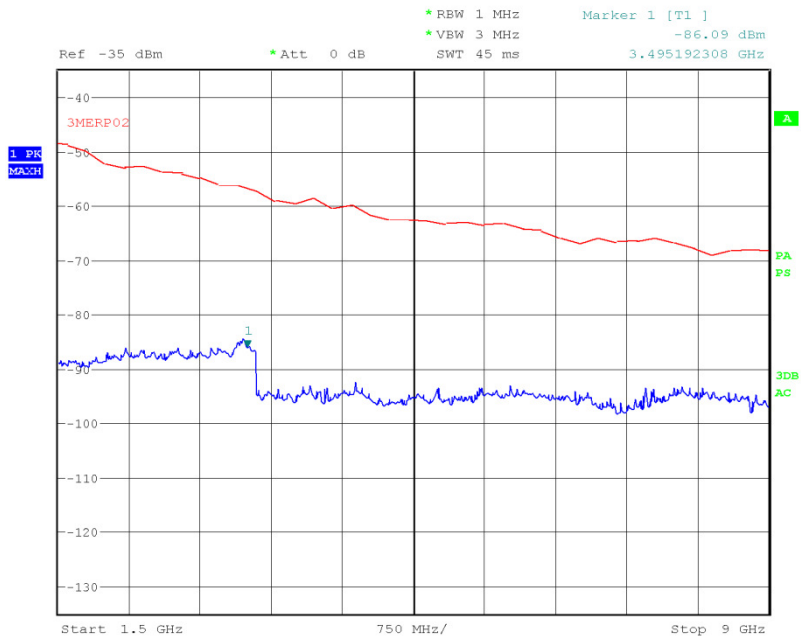


Date: 9.APR.2016 17:49:49



Product Service

1.5 GHz to 9 GHz



Date: 10.APR.2016 09:38:14



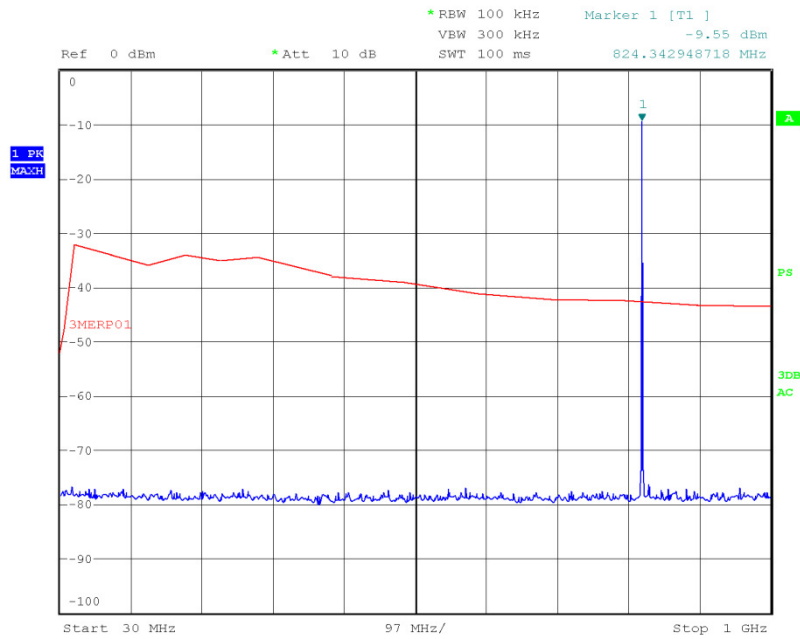
Product Service

1.4 MHz Bandwidth – 16QAM

824.7 MHz

1 Resource Block - Low

30 MHz to 1 GHz

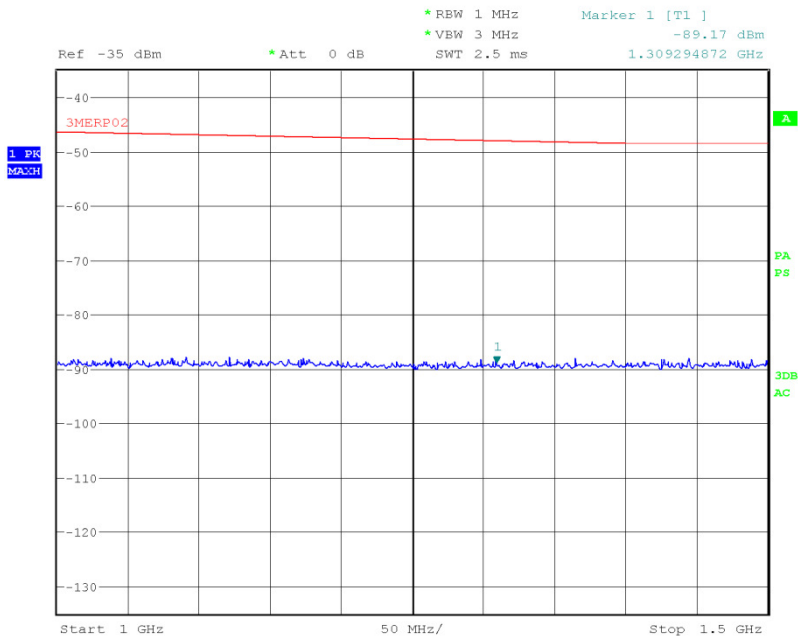


Date: 3.APR.2016 22:28:39



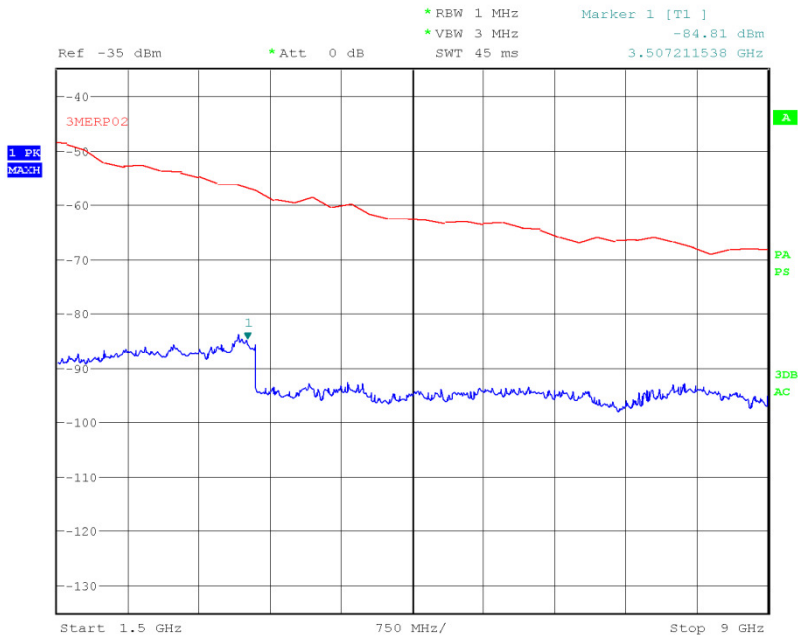
Product Service

1 GHz to 1.5 GHz



Date: 9.APR.2016 18:04:07

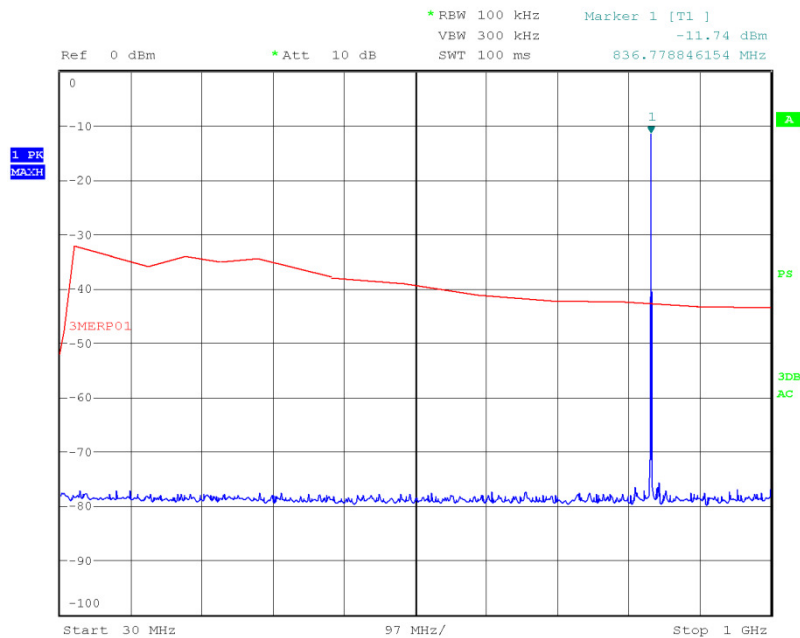
1.5 GHz to 9 GHz



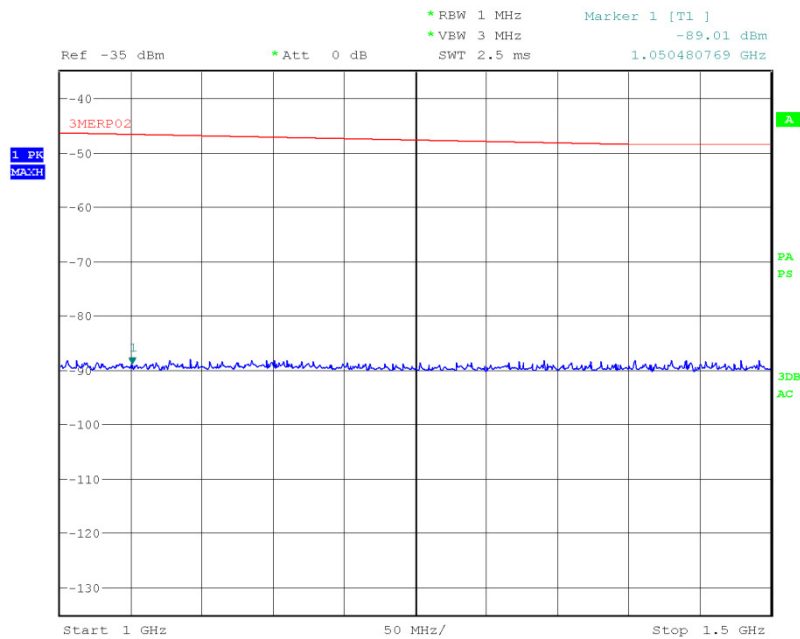
Date: 10.APR.2016 09:49:41



Product Service

836.5 MHz1 Resource Block - Mid30 MHz to 1 GHz

Date: 3.APR.2016 22:25:39

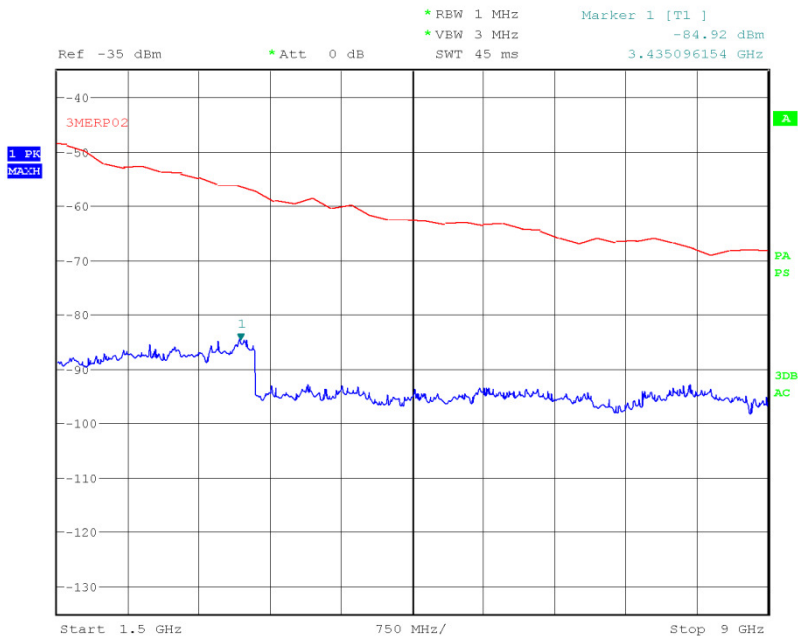
1 GHz to 1.5 GHz

Date: 9.APR.2016 17:58:16



Product Service

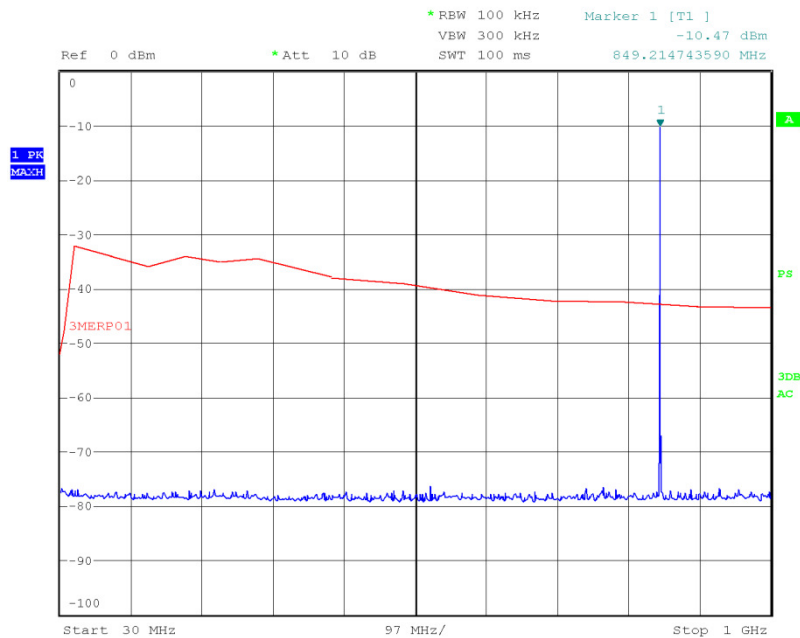
1.5 GHz to 9 GHz



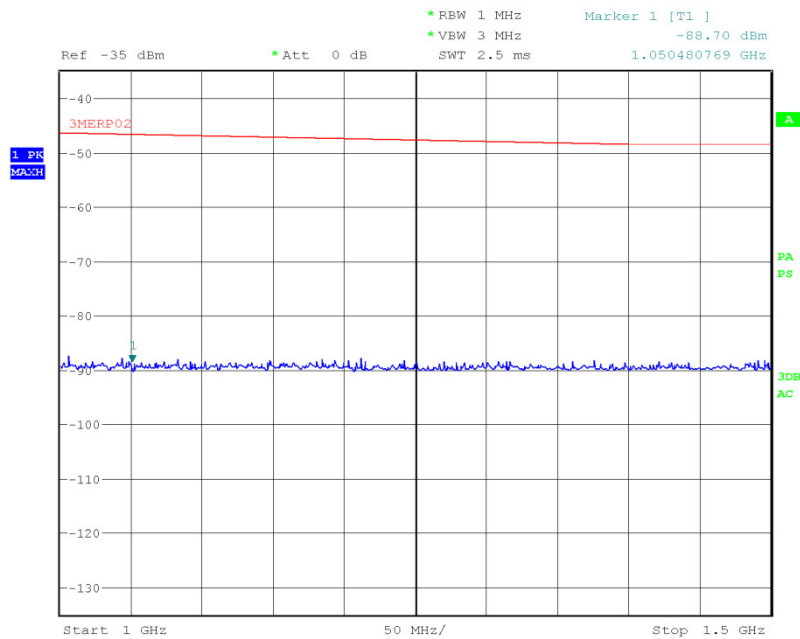
Date: 10.APR.2016 09:44:05



Product Service

848.3 MHz1 Resource Block - High30 MHz to 1 GHz

Date: 3.APR.2016 22:22:48

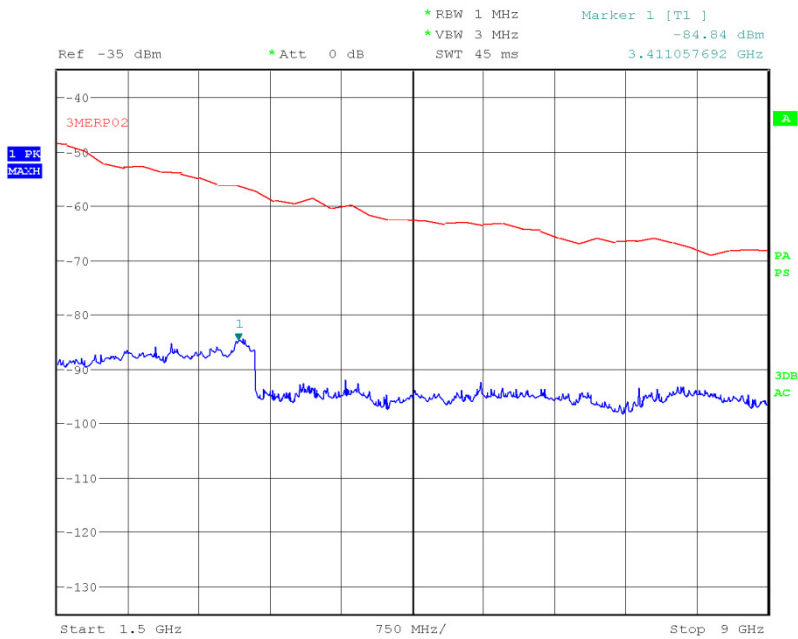
1 GHz to 1.5 GHz

Date: 9.APR.2016 17:55:27



Product Service

1.5 GHz to 9 GHz



Date: 10.APR.2016 09:41:08



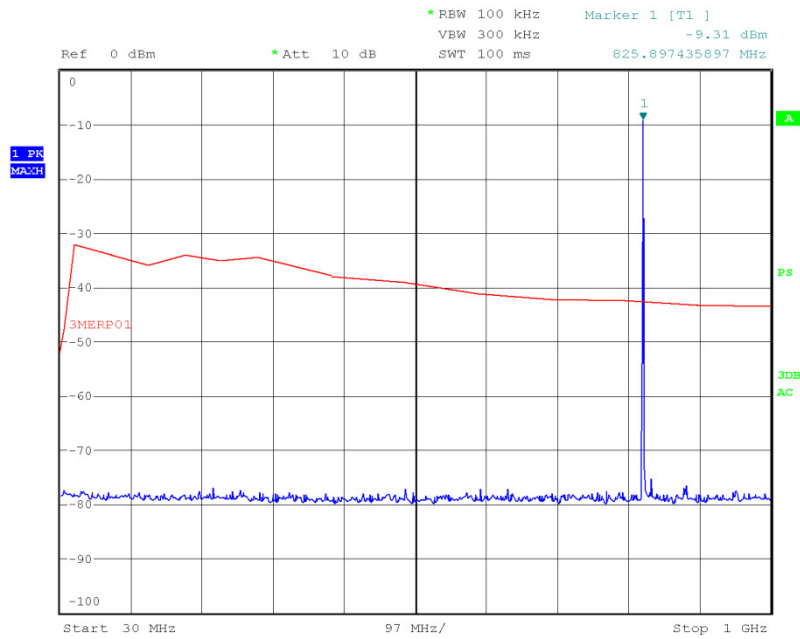
Product Service

3.0MHz Bandwidth – QPSK

825.5 MHz

1 Resource Block - Mid

30 MHz to 1 GHz

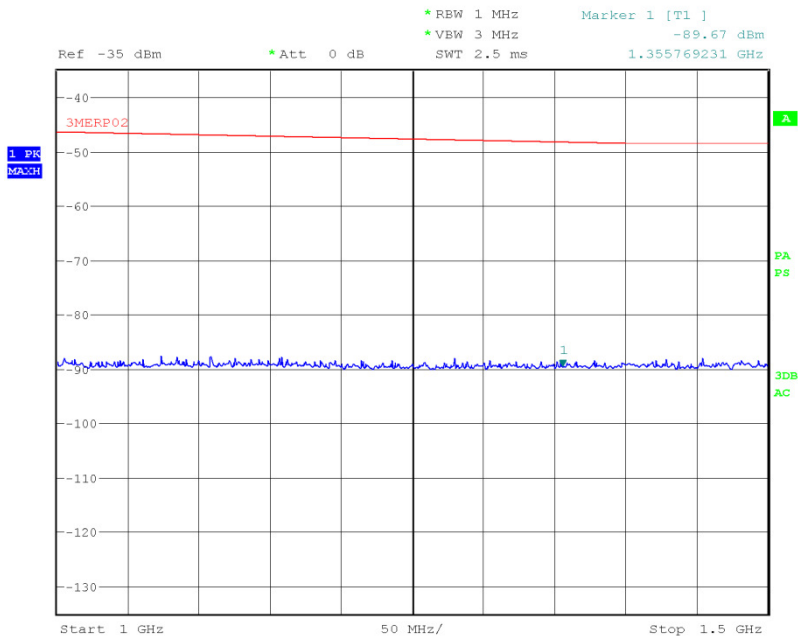


Date: 3.APR.2016 22:52:42



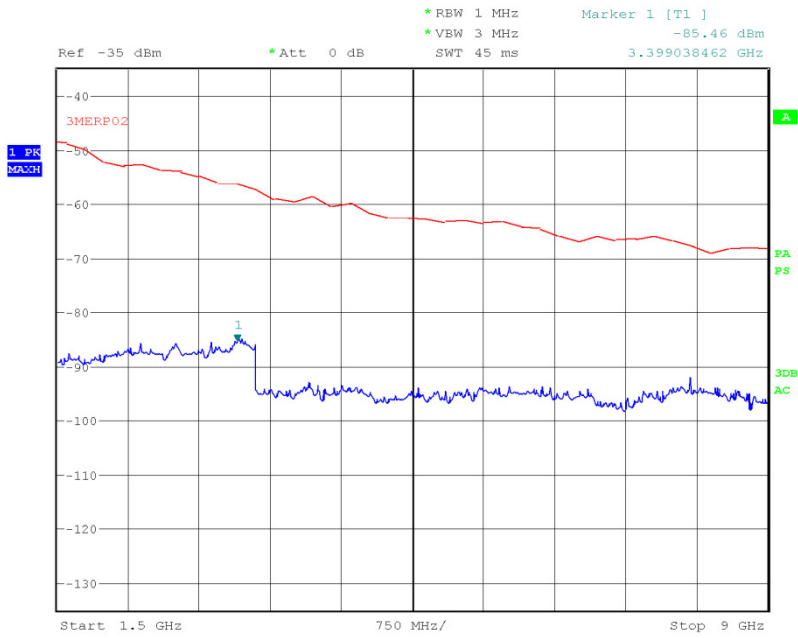
Product Service

1 GHz to 1.5 GHz



Date: 9.APR.2016 18:09:12

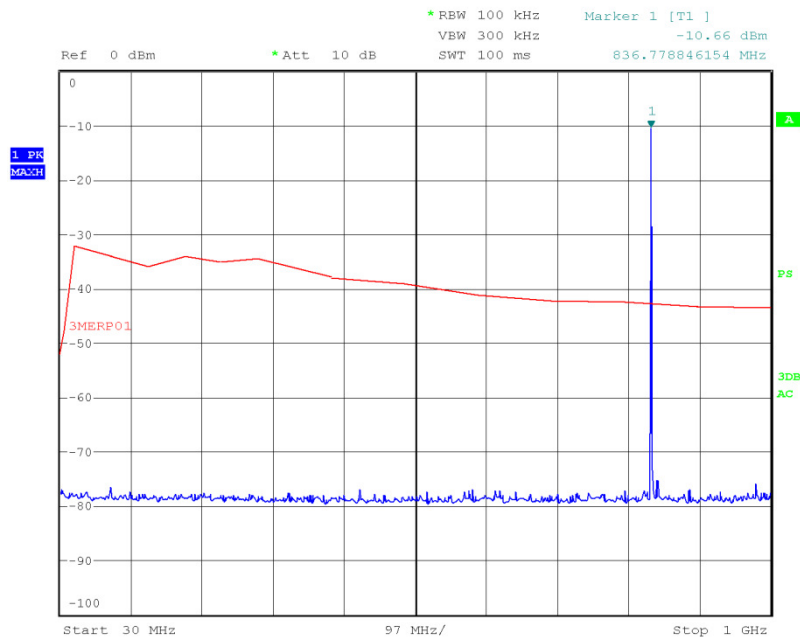
1.5 GHz to 9 GHz



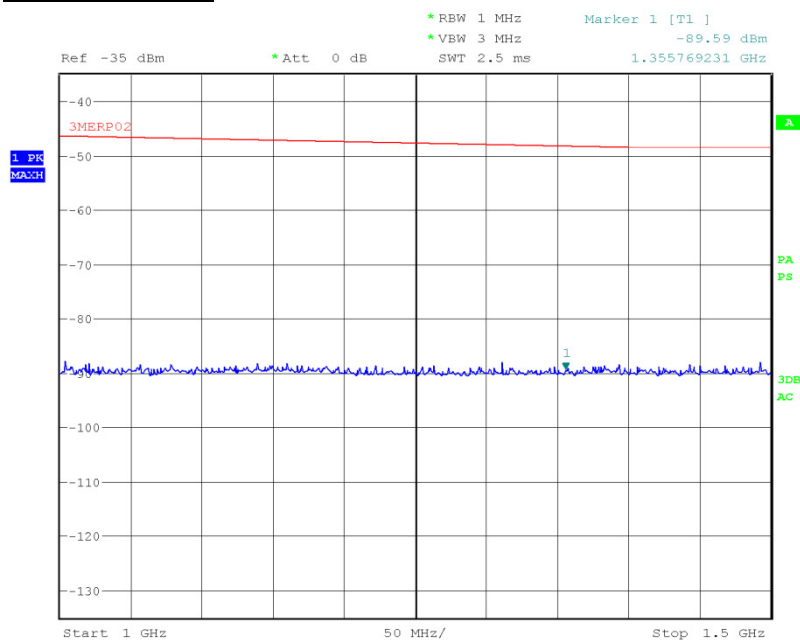
Date: 10.APR.2016 09:53:58



Product Service

836.5 MHz1 Resource Block - Mid30 MHz to 1 GHz

Date: 3.APR.2016 22:50:17

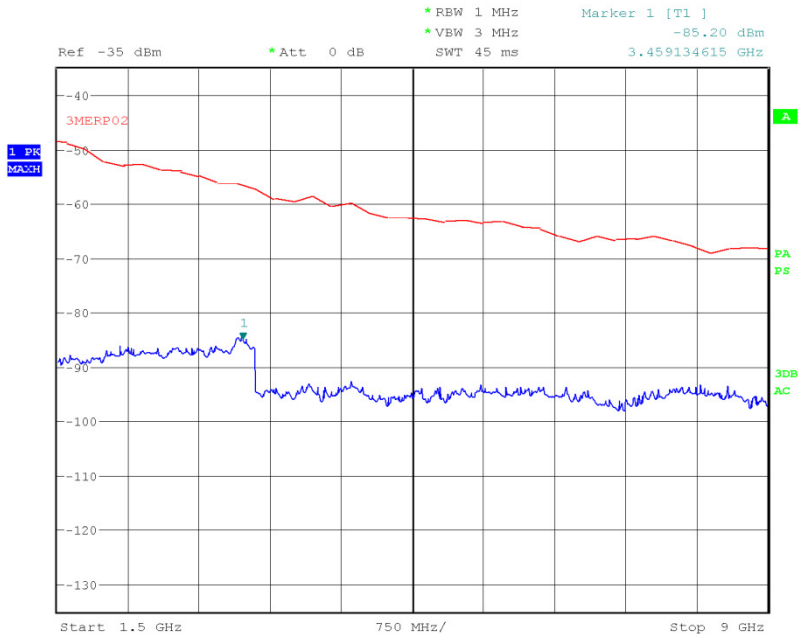
1 GHz to 1.5 GHz

Date: 9.APR.2016 18:10:36



Product Service

1.5 GHz to 9 GHz



Date: 10.APR.2016 09:57:05

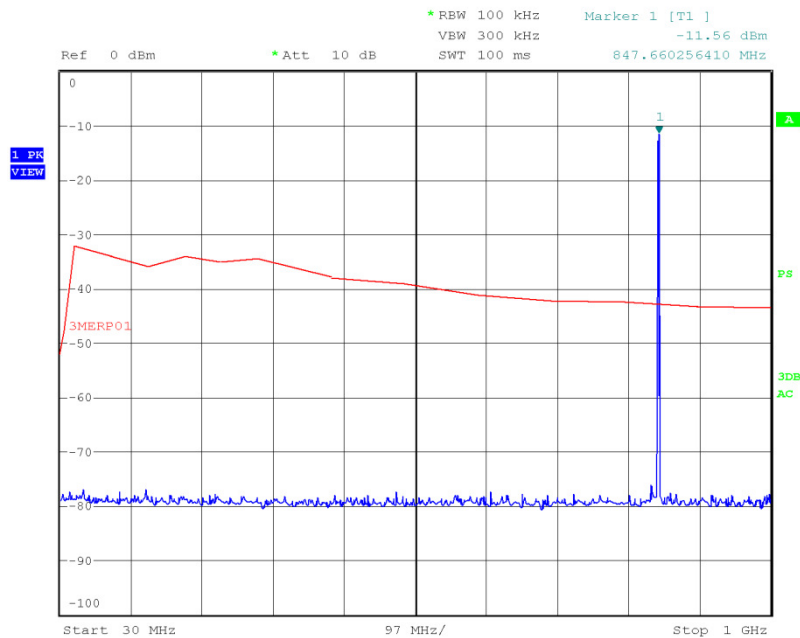


Product Service

847.5 MHz

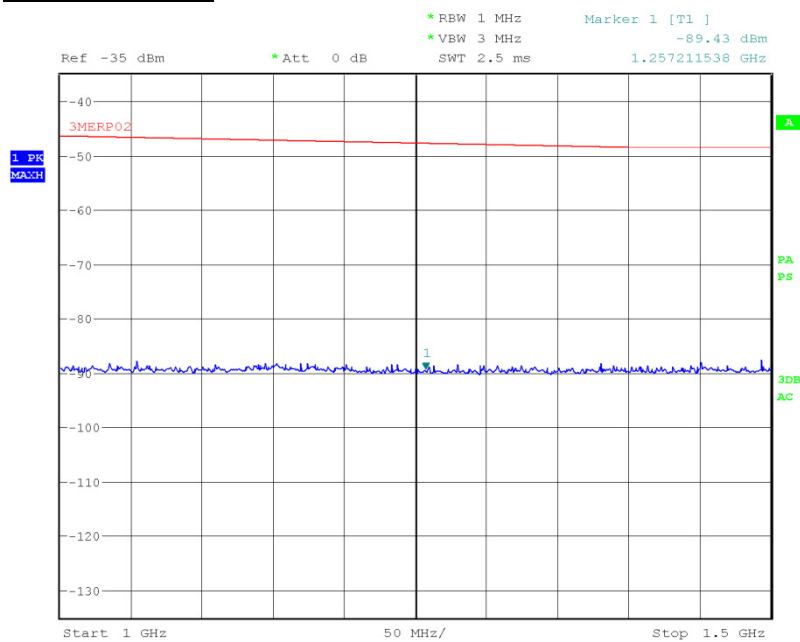
1 Resource Block - Low

30 MHz to 1 GHz



Date: 3.APR.2016 22:57:04

1 GHz to 1.5 GHz

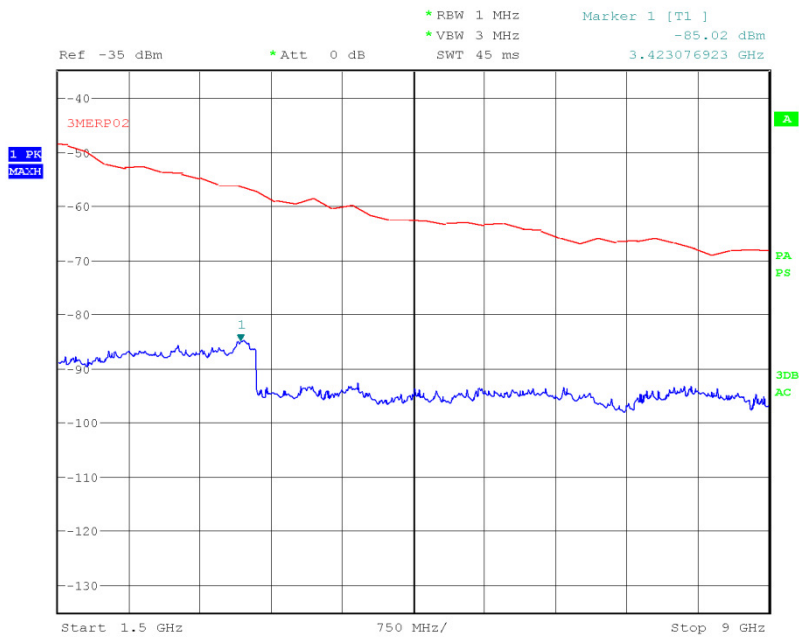


Date: 9.APR.2016 18:13:43



Product Service

1.5GHz to 9 GHz



Date: 10.APR.2016 10:01:37



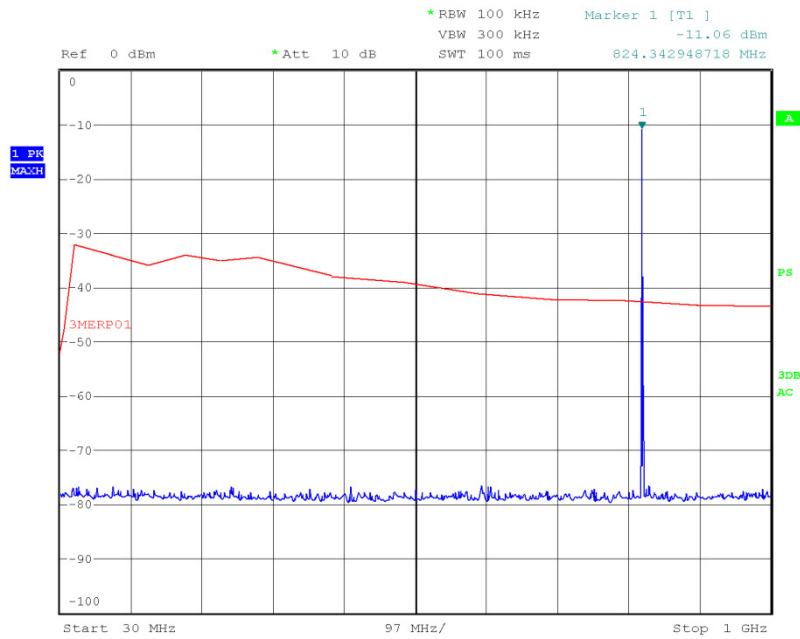
Product Service

3.0 MHz Bandwidth – 16QAM

825.5 MHz

1 Resource Block - Low

30 MHz to 1 GHz

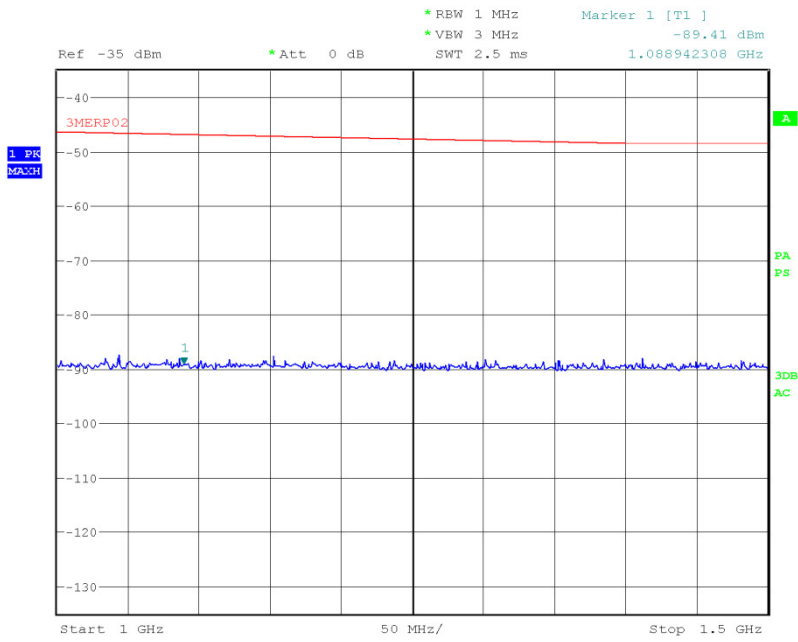


Date: 3.APR.2016 23:06:13



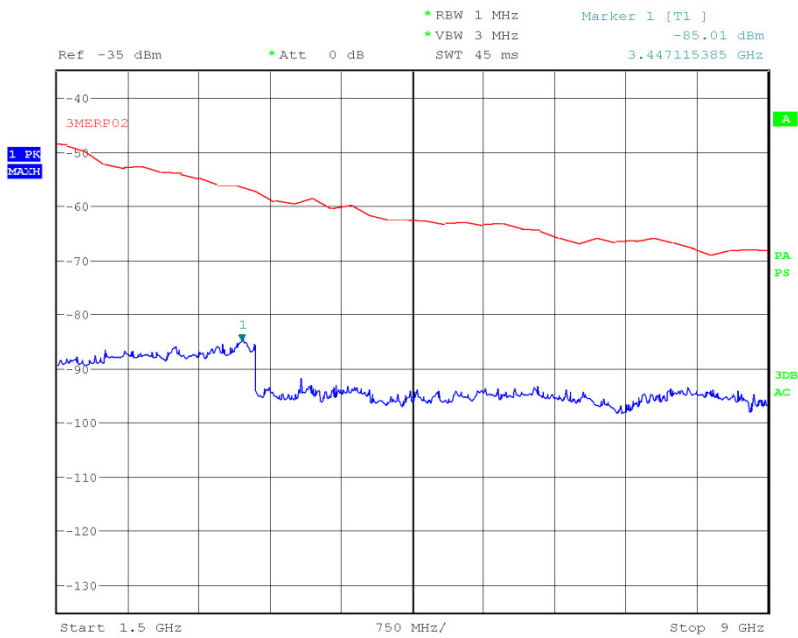
Product Service

1 GHz to 1.5 GHz



Date: 9.APR.2016 18:25:14

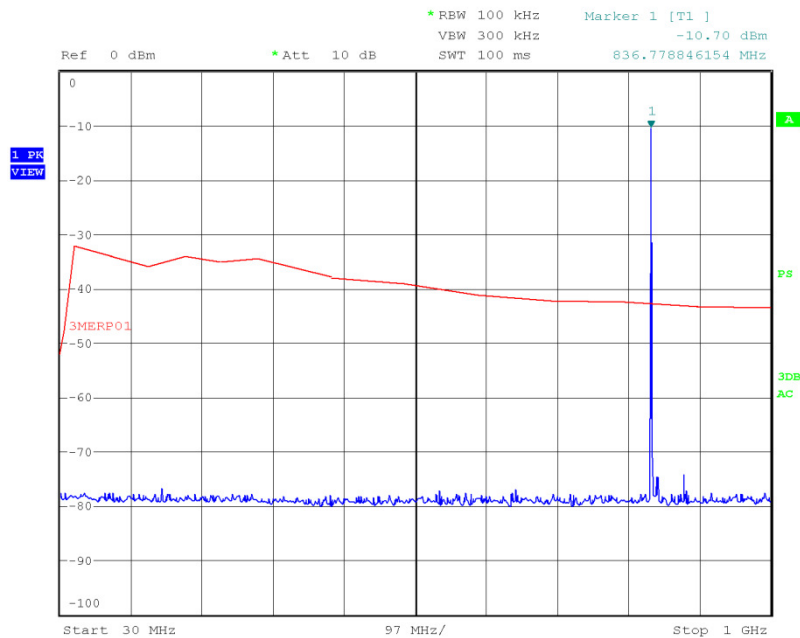
1.5 GHz to 9 GHz



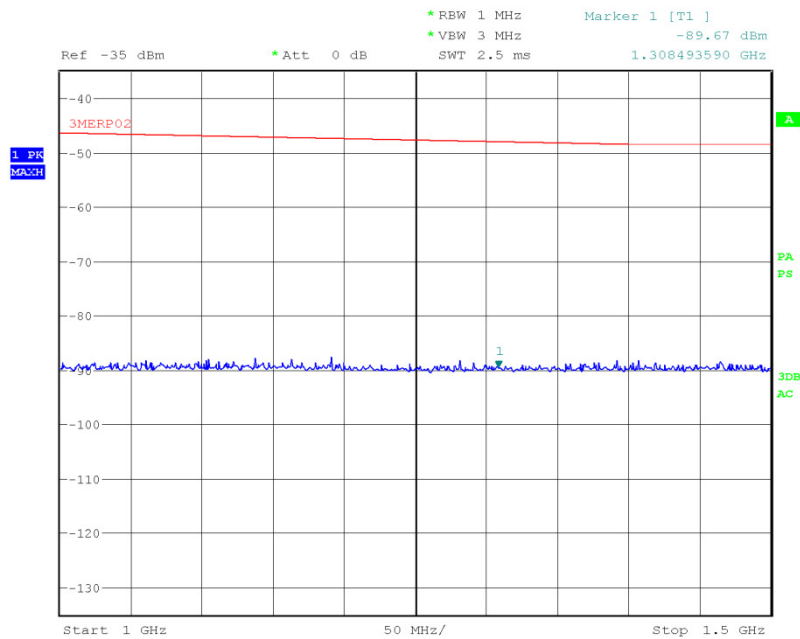
Date: 10.APR.2016 10:12:59



Product Service

836.5 MHz1 Resource Block - Mid30 MHz to 1 GHz

Date: 3.APR.2016 23:02:33

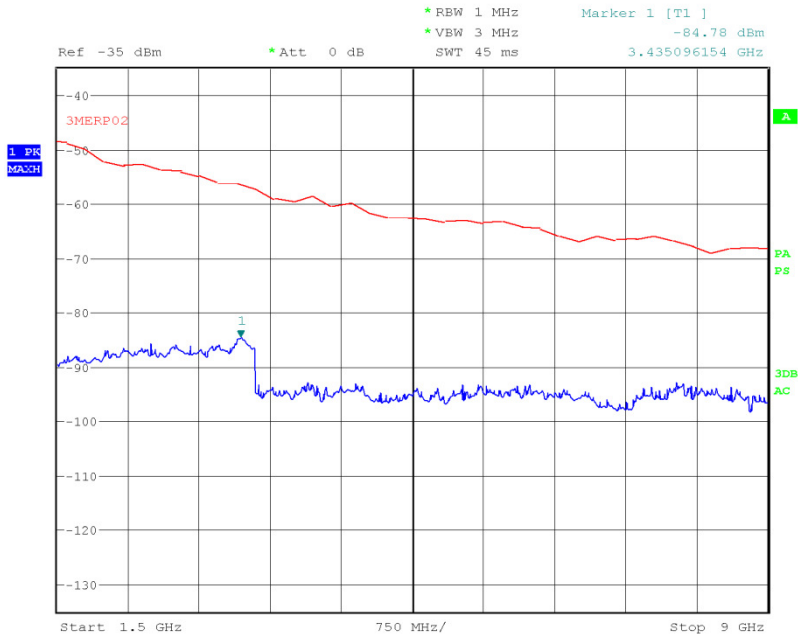
1 GHz to 1.5 GHz

Date: 9.APR.2016 18:20:17



Product Service

1.5 GHz to 9 GHz



Date: 10.APR.2016 10:10:14

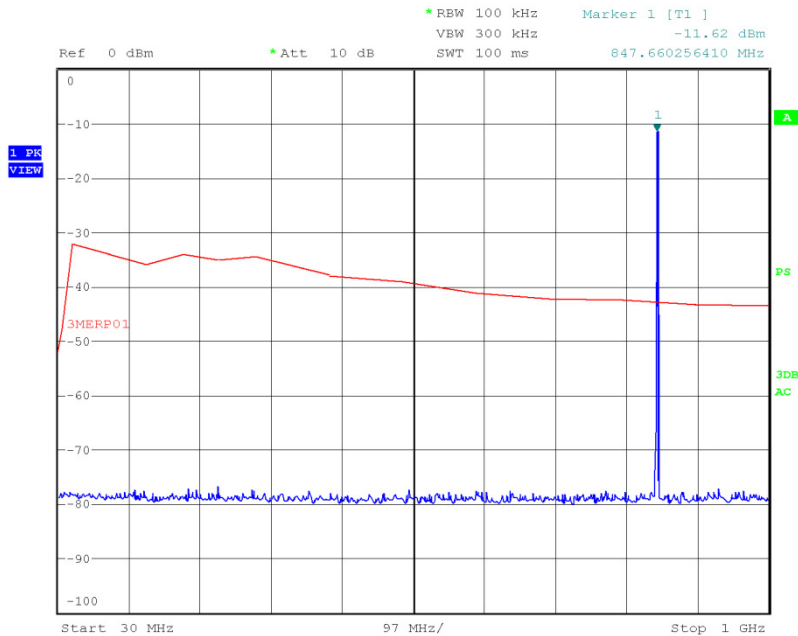


Product Service

847.5 MHz

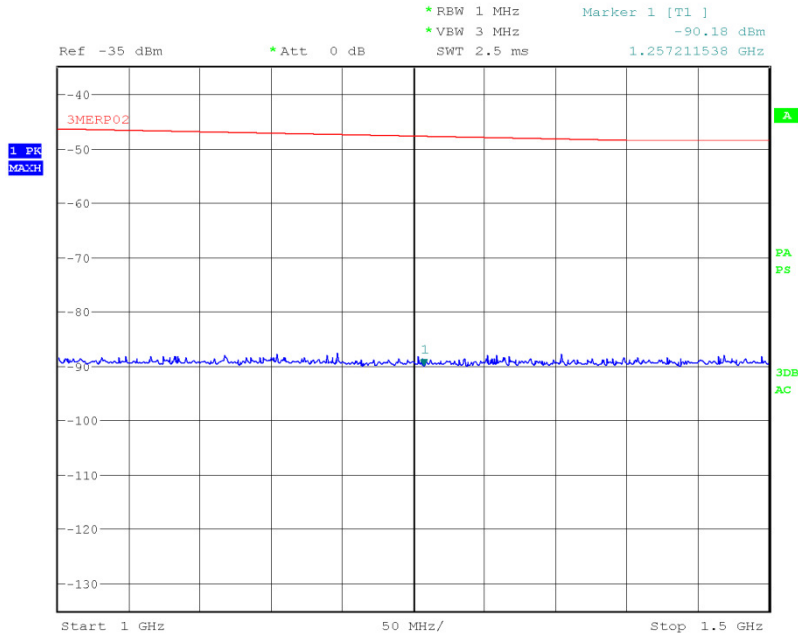
1 Resource Block - Mid

30 MHz to 1 GHz



Date: 3.APR.2016 23:00:08

1 GHz to 1.5 GHz

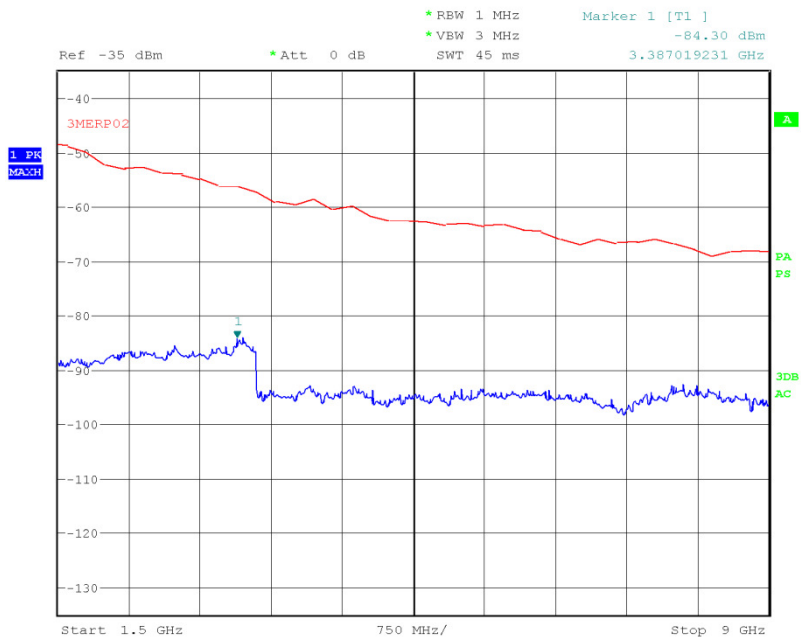


Date: 9.APR.2016 18:18:21



Product Service

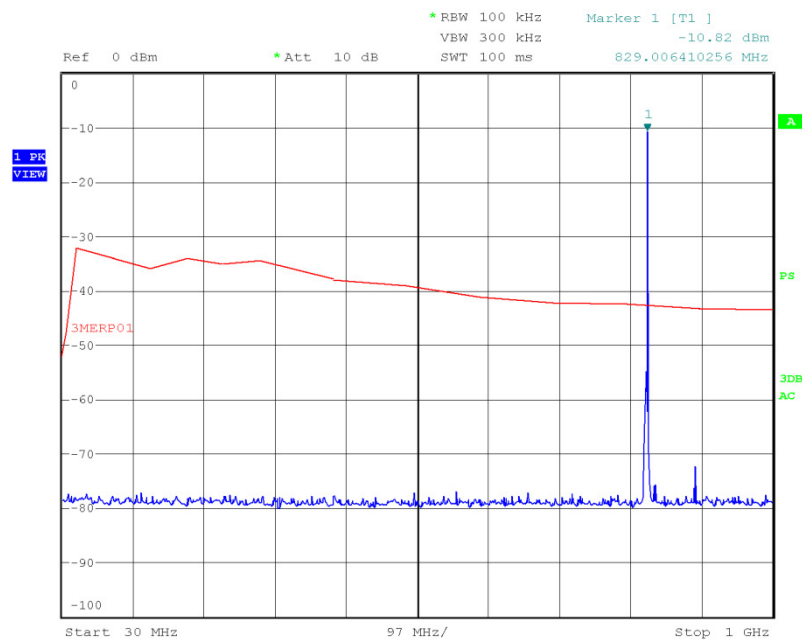
1.5 GHz to 9 GHz



Date: 10.APR.2016 10:06:37



Product Service

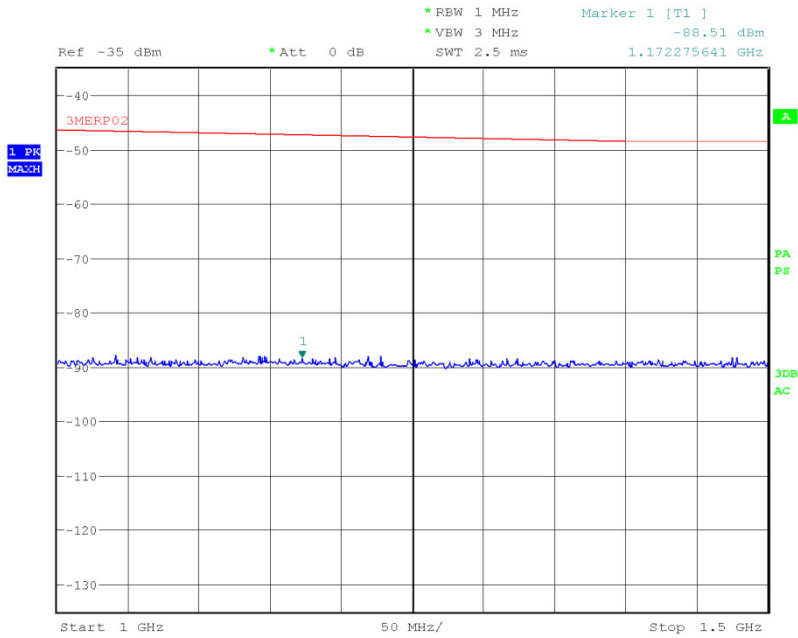
5.0 MHz Bandwidth – QPSK826.5 MHz1 Resource Block - High30 MHz to 1 GHz

Date: 3.APR.2016 23:29:08



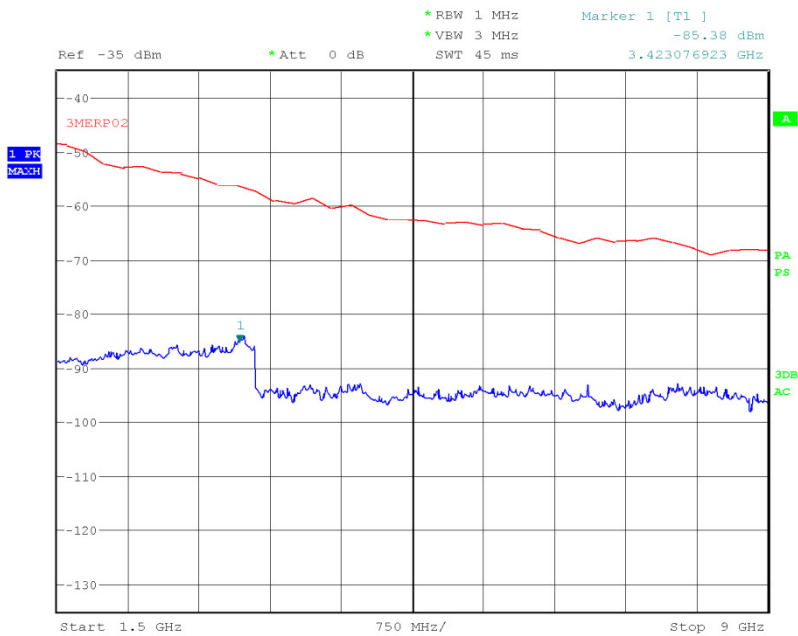
Product Service

1 GHz to 1.5 GHz



Date: 9.APR.2016 18:29:53

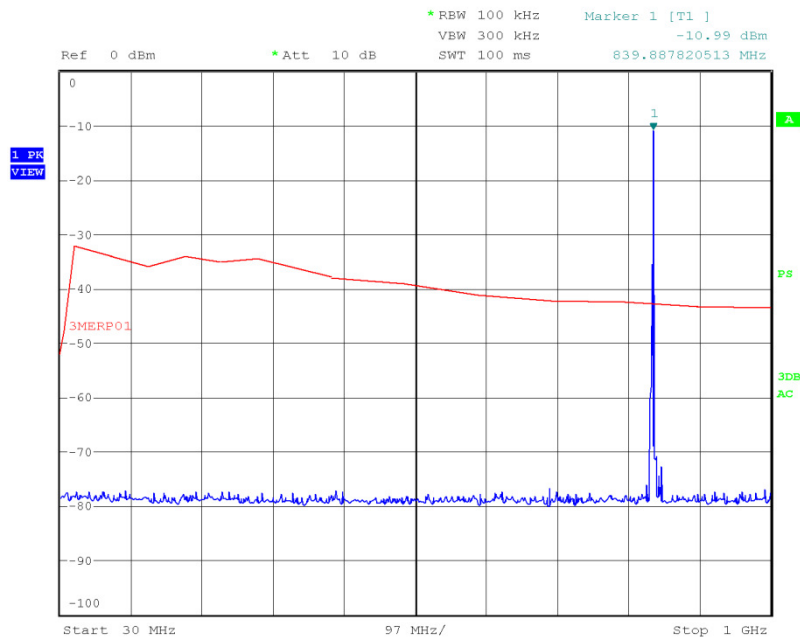
1.5GHz to 9GHz



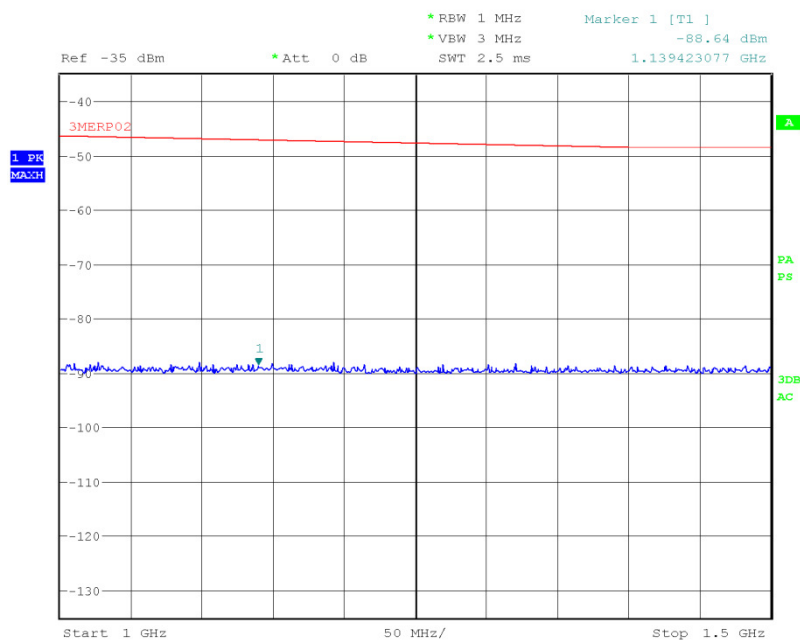
Date: 10.APR.2016 10:19:00



Product Service

836.5 MHz1 Resource Block - High30 MHz to 1 GHz

Date: 3.APR.2016 23:24:51

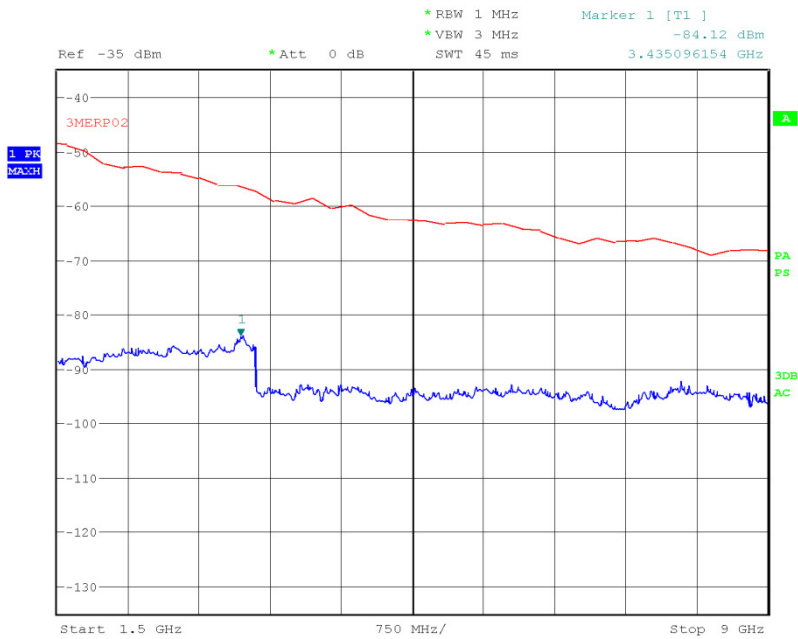
1 GHz to 1.5 GHz

Date: 9.APR.2016 18:32:41



Product Service

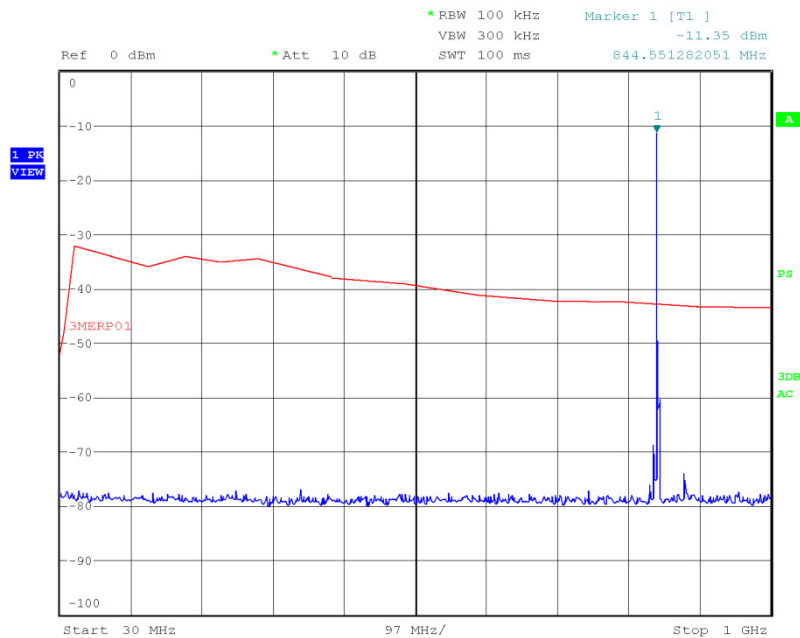
1.5 GHz to 9 GHz



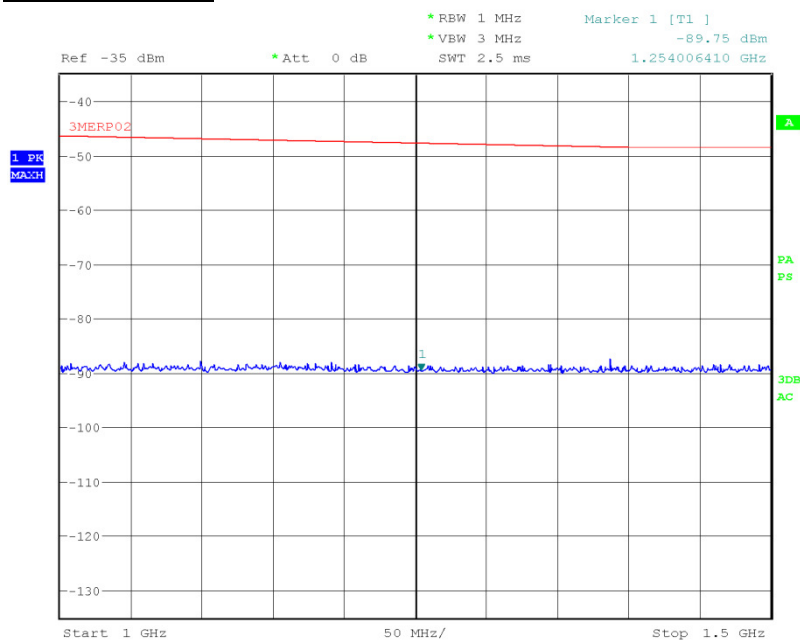
Date: 10.APR.2016 10:29:37



Product Service

846.5 MHz1 Resource Block - Low30 MHz to 1 GHz

Date: 3.APR.2016 23:32:14

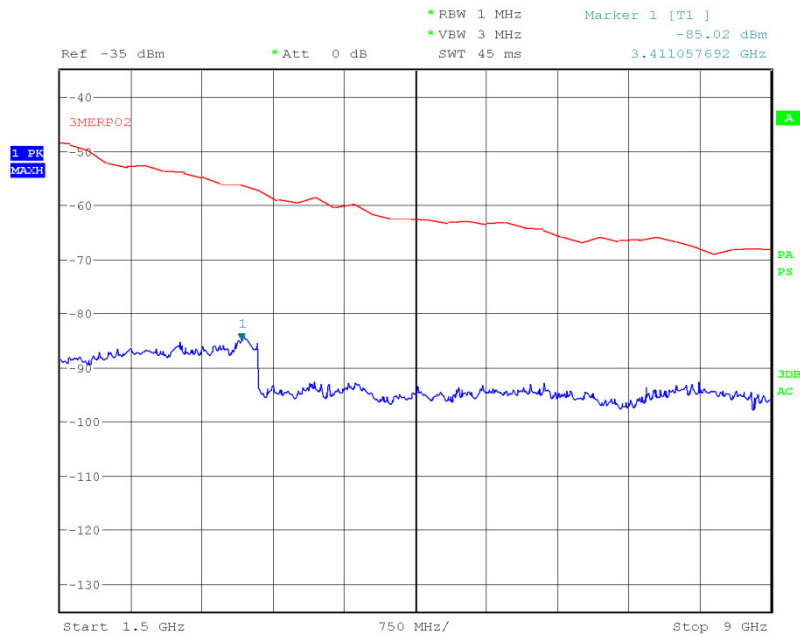
1 GHz to 1.5 GHz

Date: 9.APR.2016 18:37:40



Product Service

1.5 GHz to 9 GHz



Date: 10.APR.2016 10:36:00



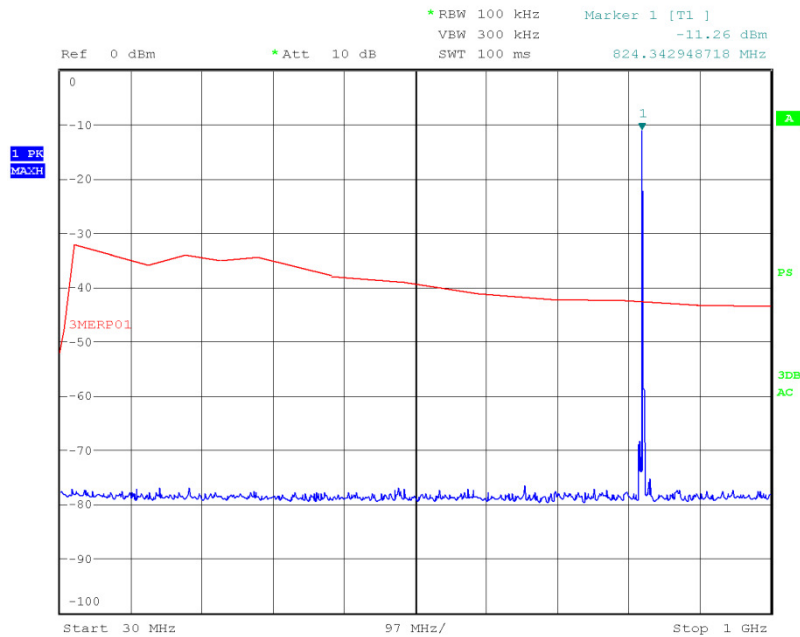
Product Service

5.0 MHz Bandwidth – 16QAM

826.5 MHz

1 Resource Block - Low

30 MHz to 1 GHz



Date: 3.APR.2016 23:49:01