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Report On

FCC Testing of the
The Boeing Company Black Smartphone
In accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 27 (LTE
Band IV)

COMMERCIAL-IN-CONFIDENCE

FCC ID: H8V-BLK1

Document 75923267 Report 07 Issue 2

December 2013



Product Service

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PREPARED FOR

The Boeing Company
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PREPARED BY

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APPROVED BY

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Authorised Signatory

DATED

19 December 2013

**This report has been up issued to Issue 2 to amend
the Applicant Name and Address and Product Name.**

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 CFR 47 Part 2 and FCC CFR 47 Part 27. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

N Rousell

G Lawler

A Galpin





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SECTION 1

REPORT SUMMARY

FCC Testing of the
The Boeing Company Black Smartphone
In accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 27 (LTE Band IV)



1.1 INTRODUCTION

The information contained in this report is intended to show verification of the FCC Testing of the The Boeing Company Black Smartphone to the requirements of FCC CFR 47 Part 2 and FCC CFR 47 Part 27.

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	The Boeing Company
Model Number(s)	Black Smartphone
Serial Number(s)	XCV23200852
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 2 (2012) FCC CFR 47 Part 27 (2012)
Incoming Release Date	Application Form 13 December 2013
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	48774 01 July 2013
Start of Test	30 July 2013
Finish of Test	30 August 2013
Name of Engineer(s)	N Rousell G Lawler A Galpin
Related Document(s)	ANSI C63.4: 2003



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 27 is shown below.

Section	Spec Clause		Test Description	Result	Comments/Base Standard
	Pt 2	Pt 27			
LTE FDD IV					
2.1	2.1046	27.50	Power Limits and Duty Cycle	Pass	
2.2	2.1049	27.53	Emission Limits	Pass	
2.3	2.1055	27.54	Frequency Stability	Pass	
2.4	2.1047(d)	-	Modulation Characteristics	Pass	



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1.3 APPLICATION FORM

APPLICANT'S DETAILS			
COMPANY NAME : The Boeing Company ADDRESS : 7700 Boston Blvd. Springfield, VA 22153			
NAME FOR CONTACT PURPOSES : Brian Chapman			
TELEPHONE NO: 703.270.6714 FAX NO:		E-MAIL: brian.s.chapman@boeing.com	

EQUIPMENT INFORMATION			
<u>Equipment designator:</u>			
Model name/number	Identification number		
<u>Supply Voltage:</u>			
☐	AC mains	State AC voltage V	and AC frequency Hz
☐	DC (external)	State DC voltage V	and DC current A
☒	DC (internal)	State DC voltage ... 3.8 V	and Battery type... Li-Polymer
<u>Frequency characteristics:</u>			
Frequency range	1710 MHz to 1754.90 MHz	Channel spacing 100kHz (if channelized)	
Designated test frequencies:			
Bottom: 1710.0 MHz	Middle: 1732.45 MHz	Top: 1754.90 MHz	
<u>Power characteristics:</u>			
Maximum transmitter power 0.2W (23dBm)		Minimum transmitter power W (if variable)	
☒	Continuous transmission		State duty cycle If intermittent, can transmitter be set to continuous transmit test mode? Y/N
☐	Intermittent transmission		
<u>Antenna characteristics:</u>			
☐	Antenna connector	State impedance ohm	
☒	Temporary antenna connector	State impedance 50 ohm	
☒	Integral antenna	State gain (peak) -2dBi	
<u>Modulation characteristics:</u>			
☐	Amplitude	☒ Other	
☐	Frequency	Details, QPSK/16QAM	
☐	Phase		
Can the transmitter operate un-modulated?		Y/N	
ITU Class of emission:			
<u>Extreme conditions:</u>			
Maximum temperature	55 °C	Minimum temperature	-10 °C
Maximum supply voltage	4.2 V	Minimum supply voltage	3.6 V

I hereby declare that I am entitled to sign on behalf of the applicant and that the information supplied is correct and complete.

Signature :

Name :

Position held :

Date :

Brian Chapman
Program Manager
12/13/13



1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a The Boeing Company Black Smartphone. 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 3.8 V DC supply.

FCC Accreditation
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.



SECTION 2

TEST DETAILS

FCC Testing of the
The Boeing Company Black Smartphone
In accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 27 (LTE Band IV)



2.1 POWER LIMITS AND DUTY CYCLE

2.1.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1046
FCC CFR 47 Part 27, Clause 27.50

2.1.2 Equipment Under Test and Modification State

Black Smartphone S/N: XCV23200852 - Modification State 0

2.1.3 Date of Test

30 July 2013, 6 August 2013 & 11 August 2013

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

Carrier Power

The path loss between the EUT and the Spectrum Analyser was measured using a Network Analyser. The path loss for each measurement frequency was established and entered into the Spectrum Analyser as a reference level offset. The measurement detector was set to rms and a number of sweeps were taken. The maximum result was recorded.

Measurements were performed with the EUT operating at maximum power on Bottom, Middle and Top frequencies on QPSK and 16QAM modulation schemes with All Resource Blocks and a single Resource Block positioned at the Low, Middle and High position in the channel bandwidth.

The results are shown in the tables below.

Effective Isotropic Radiated Power

Measurements of the fundamental from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations. The fundamental frequency was maximised by adjusting the antenna height, antenna polarisation and turntable azimuth. A peak detector was used with the trace set to max hold. The maximum result was recorded.

The mast and controller were then returned to the positions which gave the maximum result. The Spectrum Analyser detector was set to rms and configured to integrate the power over the entire emission bandwidth to give the total output power.

The EUT was then removed from the chamber and replaced with a substitution antenna. Using a signal generator the level was adjusted to achieve the same value on the measuring instrument as previously recorded with the EUT. The final result (ERP) was determined by a calculation using the signal generator level, antenna gain and cable loss.

The measurements were performed at a 3m distance unless otherwise stated.

2.1.6 Environmental Conditions

Ambient Temperature 20.6 - 22.7°C
Relative Humidity 40.0 - 61.4%

2.1.7 Test Results

LTE FDD IV

3.8 V DC Supply

Carrier Power

1.4 MHz Bandwidth - QPSK

Carrier Power (dBm)											
1710.7 MHz				1732.5 MHz				1754.3 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
21.6	21.5	21.6	20.4	20.9	21.0	21.0	20.0	21.2	21.3	21.2	20.1

1.4 MHz Bandwidth - 16QAM

Carrier Power (dBm)											
1710.7 MHz				1732.5 MHz				1754.3 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
19.8	20.5	20.9	19.6	19.4	19.6	20.8	18.9	20.7	19.9	20.3	18.8

3.0 MHz Bandwidth - QPSK

Carrier Power (dBm)											
1711.5 MHz				1732.5 MHz				1753.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
21.6	21.4	21.6	20.4	21.2	21.5	21.2	20.1	21.3	21.2	21.8	20.4

3.0 MHz Bandwidth - 16QAM

Carrier Power (dBm)											
1711.5 MHz				1732.5 MHz				1753.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
20.4	20.7	20.6	19.4	19.8	19.6	20.3	19.0	20.3	20.7	21.0	19.6

5.0 MHz Bandwidth - QPSK

Carrier Power (dBm)											
1712.5 MHz				1732.5 MHz				1752.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
21.5	21.6	21.4	20.5	21.1	21.2	21.1	20.0	21.6	21.5	21.5	20.5

5.0 MHz Bandwidth - 16QAM

Carrier Power (dBm)											
1712.5 MHz				1732.5 MHz				1752.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
20.9	20.1	21.1	19.7	19.7	20.4	20.6	19.1	19.8	20.5	20.2	19.5

10.0 MHz Bandwidth - QPSK

Carrier Power (dBm)											
1715.0 MHz				1732.5 MHz				1750.0 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
21.5	18.6	21.4	20.6	20.9	21.1	20.8	20.2	21.5	21.4	21.2	20.4

10.0 MHz Bandwidth - 16QAM

Carrier Power (dBm)											
1715.0 MHz				1732.5 MHz				1750.0 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
19.8	20.8	20.7	19.6	20.1	20.4	19.4	19.3	20.0	20.5	20.5	19.2

15.0 MHz Bandwidth - QPSK

Carrier Power (dBm)											
1717.5 MHz				1732.5 MHz				1747.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
21.5	21.6	21.5	20.7	21.3	20.3	20.9	20.4	20.6	21.0	20.8	20.0

15.0 MHz Bandwidth - 16QAM

Carrier Power (dBm)											
1717.5 MHz				1732.5 MHz				1747.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
20.0	20.0	19.8	19.7	20.3	19.9	19.3	19.5	19.7	20.2	19.8	19.0

20.0 MHz Bandwidth - QPSK

Carrier Power (dBm)											
1720.0 MHz				1732.5 MHz				1745.0 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
21.4	21.5	20.9	20.0	21.8	20.9	21.1	20.2	20.8	21.8	21.2	20.9

20.0 MHz Bandwidth - 16QAM

Carrier Power (dBm)											
1720.0 MHz				1732.5 MHz				1745.0 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
20.2	20.3	20.5	19.3	20.0	19.4	19.8	19.0	18.8	19.9	20.0	19.4

Peak To Average Ratio

1.4 MHz Bandwidth - QPSK

Peak To Average Ratio (dB)											
1710.7 MHz				1732.5 MHz				1754.3 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
6.1	6.0	6.1	7.2	5.9	5.8	5.8	7.0	5.9	5.8	5.9	6.7

1.4 MHz Bandwidth - 16QAM

Peak To Average Ratio (dB)											
1710.7 MHz				1732.5 MHz				1754.3 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
6.9	6.9	6.9	7.6	6.8	6.7	6.8	7.4	7.0	7.0	7.0	7.7

3.0 MHz Bandwidth - QPSK

Peak To Average Ratio (dB)											
1711.5 MHz				1732.5 MHz				1753.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
6.1	6.1	6.2	6.9	6.2	6.1	6.1	6.9	6.2	6.2	6.3	6.7

3.0 MHz Bandwidth - 16QAM

Peak To Average Ratio (dB)											
1711.5 MHz				1732.5 MHz				1753.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
6.3	6.3	6.4	7.8	7.0	7.0	12.0	7.7	6.9	6.9	7.0	7.9

5.0 MHz Bandwidth - QPSK

Peak To Average Ratio (dB)											
1712.5 MHz				1732.5 MHz				1752.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
5.8	5.7	5.9	6.9	5.9	5.7	5.8	6.9	5.7	5.8	5.9	7.0

5.0 MHz Bandwidth - 16QAM

Peak To Average Ratio (dB)											
1712.5 MHz				1732.5 MHz				1752.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
6.5	6.4	6.5	8.0	6.7	6.5	6.5	7.7	6.5	6.4	6.6	8.1

10.0 MHz Bandwidth - QPSK

Peak To Average Ratio (dB)											
1715.0 MHz				1732.5 MHz				1750.0 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
6.2	6.3	6.5	7.4	6.2	6.0	6.0	7.1	5.8	5.8	6.0	7.2

10.0 MHz Bandwidth - 16QAM

Peak To Average Ratio (dB)											
1715.0 MHz				1732.5 MHz				1750.0 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
7.1	6.4	7.3	7.9	7.0	6.7	6.7	7.6	6.9	6.9	7.1	7.8

15.0 MHz Bandwidth - QPSK

Peak To Average Ratio (dB)											
1717.5 MHz				1732.5 MHz				1747.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
6.3	6.1	6.1	7.8	6.2	7.2	5.9	7.2	5.8	6.0	6.3	7.4

15.0 MHz Bandwidth - 16QAM

Peak To Average Ratio (dB)											
1717.5 MHz				1732.5 MHz				1747.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
6.2	6.7	6.4	8.0	6.4	7.0	6.8	8.0	6.8	7.0	7.0	7.9



20.0 MHz Bandwidth - QPSK

Peak To Average Ratio (dB)											
1720.0 MHz				1732.5 MHz				1745.0 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
6.3	6.0	6.0	7.2	6.3	6.2	5.9	7.3	5.9	5.7	6.1	6.1

20.0 MHz Bandwidth - 16QAM

Peak To Average Ratio (dB)											
1720.0 MHz				1732.5 MHz				1745.0 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
7.1	5.9	7.5	8.7	6.7	7.0	7.0	8.5	7.1	7.1	7.3	8.4

Effective Isotropic Radiated Power

1.4 MHz Bandwidth - QPSK

Resource Block	171.7 MHz		1732.5 MHz		1754.3. MHz	
	Result (dBm)	Result (W)	Result (dBm)	Result (W)	Result (dBm)	Result (W)
1 Resource Block - Low	22.17	0.165	21.79	0.151	24.08	0.256
1 Resource Block - Middle	22.30	0.170	21.69	0.148	24.06	0.255
1 Resource Block - High	22.34	0.171	21.78	0.151	24.10	0.257
All Resource Blocks	N/T	N/T	N/T	N/T	N/T	N/T

1.4 MHz Bandwidth – 16QAM

Resource Block	1710.7 MHz		1732.5 MHz		1754.3 MHz	
	Result (dBm)	Result (W)	Result (dBm)	Result (W)	Result (dBm)	Result (W)
1 Resource Block - Low	21.06	0.128	20.77	0.119	23.14	0.206
1 Resource Block - Middle	21.14	0.130	20.87	0.122	23.18	0.208
1 Resource Block - High	21.33	0.136	21.00	0.126	23.18	0.208
All Resource Blocks	N/T	N/T	N/T	N/T	N/T	N/T

3.0 MHz Bandwidth - QPSK

Resource Block	1711.5 MHz		1732.5 MHz		1753.5 MHz	
	Result (dBm)	Result (W)	Result (dBm)	Result (W)	Result (dBm)	Result (W)
1 Resource Block - Low	22.13	0.163	21.08	0.128	24.25	0.266
1 Resource Block - Middle	22.42	0.175	21.43	0.139	24.46	0.279
1 Resource Block - High	22.33	0.171	21.19	0.132	24.62	0.290
All Resource Blocks	N/T	N/T	N/T	N/T	N/T	N/T

3.0 MHz Bandwidth – 16QAM

Resource Block	1711.5 MHz		1732.5 MHz		1753.5 MHz	
	Result (dBm)	Result (W)	Result (dBm)	Result (W)	Result (dBm)	Result (W)
1 Resource Block - Low	20.85	0.122	20.68	0.117	23.74	0.237
1 Resource Block - Middle	21.19	0.132	20.53	0.114	24.05	0.254
1 Resource Block - High	21.18	0.131	20.55	0.114	24.12	0.258
All Resource Blocks	N/T	N/T	N/T	N/T	N/T	N/T

5.0 MHz Bandwidth - QPSK

Resource Block	1711.5 MHz		1732.5 MHz		1753.5 MHz	
	Result (dBm)	Result (W)	Result (dBm)	Result (W)	Result (dBm)	Result (W)
1 Resource Block - Low	20.84	0.121	20.56	0.114	22.41	0.174
1 Resource Block - Middle	20.32	0.108	20.53	0.113	22.38	0.173
1 Resource Block - High	20.61	0.115	21.02	0.126	22.35	0.172
All Resource Blocks	N/T	N/T	N/T	N/T	N/T	N/T

5.0 MHz Bandwidth – 16QAM

Resource Block	1712.5 MHz		1732.5 MHz		1752.5 MHz	
	Result (dBm)	Result (W)	Result (dBm)	Result (W)	Result (dBm)	Result (W)
1 Resource Block - Low	19.72	0.094	20.00	0.100	21.35	0.136
1 Resource Block - Middle	20.11	0.103	20.10	0.102	21.22	0.132
1 Resource Block - High	20.54	0.113	20.35	0.108	21.26	0.134
All Resource Blocks	N/T	N/T	N/T	N/T	N/T	N/T

10.0 MHz Bandwidth - QPSK

Resource Block	1715 MHz		1732.5 MHz		1750.0 MHz	
	Result (dBm)	Result (W)	Result (dBm)	Result (W)	Result (dBm)	Result (W)
1 Resource Block - Low	20.24	0.106	21.47	0.140	22.66	0.185
1 Resource Block - Middle	20.97	0.125	20.88	0.122	22.85	0.193
1 Resource Block - High	21.00	0.126	21.19	0.132	23.18	23.18
All Resource Blocks	N/T	N/T	N/T	N/T	N/T	N/T

10.0 MHz Bandwidth – 16QAM

Resource Block	1715 MHz		1732.5 MHz		1750.0 MHz	
	Result (dBm)	Result (W)	Result (dBm)	Result (W)	Result (dBm)	Result (W)
1 Resource Block - Low	19.37	0.086	20.69	0.117	21.43	0.139
1 Resource Block - Middle	20.13	0.103	20.14	0.103	22.29	0.169
1 Resource Block - High	20.02	0.100	20.55	0.114	22.46	0.176
All Resource Blocks	N/T	N/T	N/T	N/T	N/T	N/T

15.0 MHz Bandwidth - QPSK

Resource Block	1717.5 MHz		1732.5 MHz		1747.5 MHz	
	Result (dBm)	Result (W)	Result (dBm)	Result (W)	Result (dBm)	Result (W)
1 Resource Block - Low	20.56	0.114	21.81	0.152	21.62	0.145
1 Resource Block - Middle	21.20	0.132	21.20	0.132	22.44	0.175
1 Resource Block - High	20.65	0.175	22.09	0.162	22.71	0.187
All Resource Blocks	N/T	N/T	N/T	N/T	N/T	N/T

15.0 MHz Bandwidth – 16QAM

Resource Block	1717.5 MHz		1732.5 MHz		1747.5 MHz	
	Result (dBm)	Result (W)	Result (dBm)	Result (W)	Result (dBm)	Result (W)
1 Resource Block - Low	19.46	0.088	20.97	0.125	20.42	0.110
1 Resource Block - Middle	20.72	0.118	20.17	0.104	21.32	0.136
1 Resource Block - High	20.25	0.106	20.54	0.113	22.06	0.161
All Resource Blocks	N/T	N/T	N/T	N/T	N/T	N/T

20.0 MHz Bandwidth - QPSK

Resource Block	1720.0 MHz		1732.5 MHz		1745.0 MHz	
	Result (dBm)	Result (W)	Result (dBm)	Result (W)	Result (dBm)	Result (W)
1 Resource Block - Low	22.17	0.165	22.00	0.158	20.92	0.124
1 Resource Block - Middle	20.97	0.125	21.36	0.137	22.16	0.164
1 Resource Block - High	21.63	0.146	22.62	0.183	22.58	0.181
All Resource Blocks	N/T	N/T	N/T	N/T	N/T	N/T



Product Service

20.0 MHz Bandwidth – 16QAM

Resource Block	1720.0 MHz		1732.5		1745.0	
	Result (dBm)	Result (W)	Result (dBm)	Result (W)	Result (dBm)	Result (W)
1 Resource Block - Low	20.05	0.101	20.90	0.123	19.87	0.097
1 Resource Block - Middle	20.40	0.110	20.10	0.102	20.64	0.116
1 Resource Block - High	19.64	0.116	21.34	0.136	21.52	0.142
All Resource Blocks	N/T	N/T	N/T	N/T	N/T	N/T

Remarks

N/T – All resource blocks were identified as being a lower power compared with single resource block configurations and hence were not tested.

Limit Clause 27.50 (d)(2)(5)

Basestations: <1640 W

Fixed, Mobile and Portable Stations: <1 W

PAR: <13 dB



2.2 EMISSION LIMITS

2.2.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1049
FCC CFR 47 Part 27, Clause 27.53

2.2.2 Equipment Under Test and Modification State

Black Smartphone S/N: XCV23200852 - Modification State 0

2.2.3 Date of Test

30 July 2013, 7 August 2013, 27 August 2013 & 30 August 2013

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

Occupied Bandwidth

The Spectrum Analyser was configured to measure the Occupied Bandwidth of the EUT using the 99% Occupied Bandwidth measurement function. The EUT was tested on Bottom, Middle and Top channels, on all channel bandwidths with All Resource Blocks and a single Resource Block positioned at the low, middle and high positions within the channel bandwidth.

Band Edge

The path loss between the EUT and the Spectrum Analyser was measured using a Network Analyser and entered as a Reference Level Offset. The EUT was set to transmit on Maximum Power using a Communications Analyser. Using this instrument, the test channels were configured to the Top and Bottom of the band. The EUT was tested with All Resource Blocks active and with one Resource Block active at the position closest to the Band Edge. The RBW was set to a value of at least 1% of the Occupied Bandwidth value. The detector of the Spectrum Analyser was set to rms and the result checked against the -13 dBm limit defined in the specification. The results are shown in the following summary tables and plots.

The EUT shall only be used on the channels defined in the summary tables shown in the reports. Any channels above or below the frequencies listed have not been tested and should not be used.

Conducted Spurious Emissions

In accordance with Part 2.1051 and 27.53, the spurious emissions from the antenna terminal were measured. The transmitter output power was attenuated using a combination of filters and attenuators and the frequency spectrum investigated from 9 kHz to 18 GHz. The EUT was set to transmit on full power with QPSK and 16QAM modulation schemes. The EUT was tested on Bottom, Middle and Top channels on all channel bandwidths with one Resource Block active and Low, Middle and High positions of the channel bandwidth for maximum power. The resolution and video bandwidths were set to 1 MHz and 3 MHz thus meeting the requirements of Part 27.53(h). The spectrum analyser detector was set Peak and the trace to Max Hold.

From 9 kHz to 4 GHz, an attenuator was used. For measuring the range 4 GHz to 20 GHz an attenuator and high pass filter were used. This was to reduce saturation effects in the spectrum analyser.

The maximum path loss across the measurement bands were used as reference level offsets to ensure worst case.

Radiated Emissions

A preliminary profile of the Spurious Radiated Emissions was obtained up to the 10th harmonic by operating the EUT on a remotely controlled turntable within a semi-anechoic chamber. Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations. The profiling produced a list of the worst-case emissions together with the EUT azimuth and antenna polarisation.

Using the information from the preliminary profiling of the EUT, the list of emissions was then confirmed or updated under Alternative Open Site conditions. Emission levels were maximised by adjusting the antenna height, antenna polarisation and turntable azimuth.

The EUT was set to transmit on maximum power on QPSK modulation with one Resource Block active on the worst case channel bandwidth. The EUT was tested on Bottom, Middle and Top channels.

For any emissions found the EUT was then removed from the chamber and replaced with a substitution antenna. Using a signal generator the level was adjusted to achieve the same value on the measuring instrument as previously recorded with the EUT. The final result was determined by a calculation using the signal generator level, antenna gain and cable loss.

The measurements were performed at a 3m distance unless otherwise stated.

2.2.6 Environmental Conditions

Ambient Temperature	20.3 - 24.9°C
Relative Humidity	46.0 - 62.6%



2.2.7 Test Results

LTE FDD IV

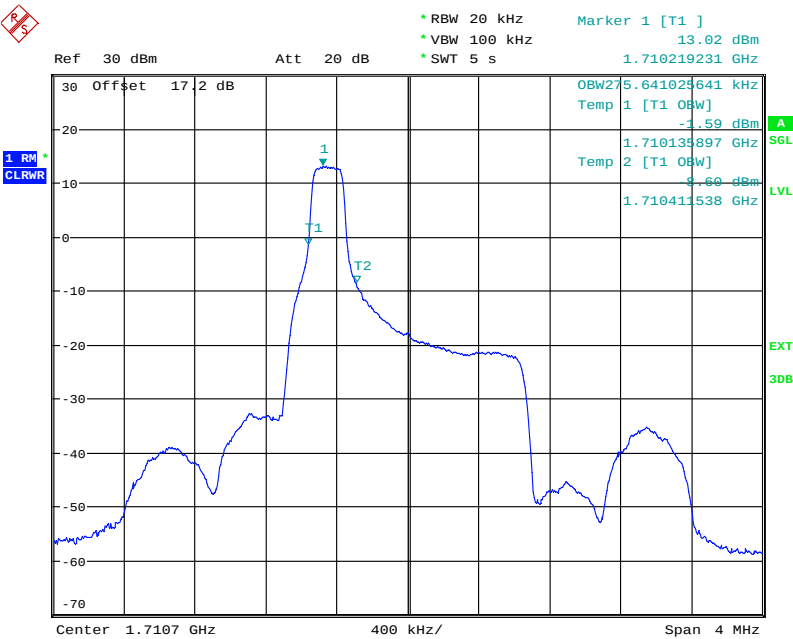
3.8 V DC Supply

Occupied Bandwidth

1.4 MHz Bandwidth - QPSK

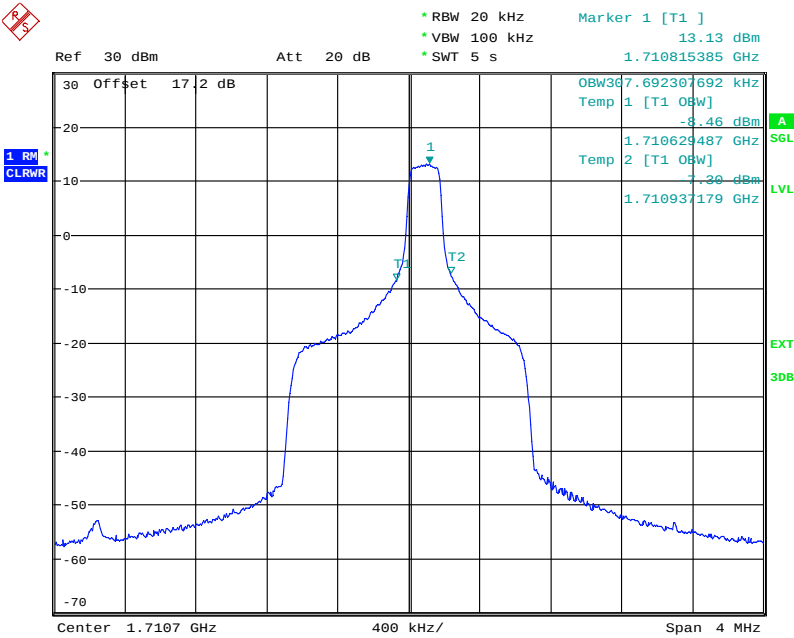
Occupied Bandwidth (kHz)											
1710.7 MHz				1732.5 MHz				1754.3 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
275.6	307.7	282.1	1089.7	288.5	320.5	282.1	1089.7	275.6	314.1	275.6	1089.7

1710.7 MHz - 1 Resource Block - Low



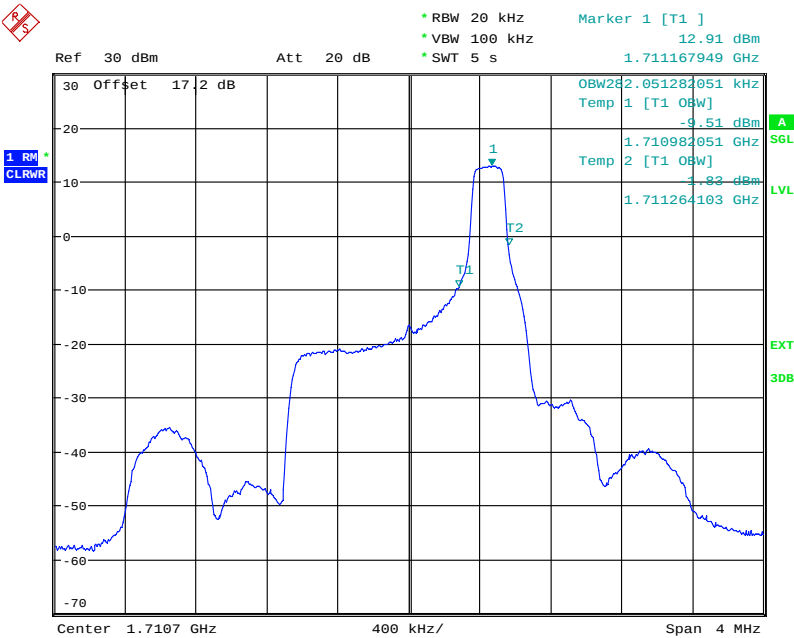
Date: 30.JUL.2013 09:56:59

1710.7 MHz - 1 Resource Block - Middle



Date: 30.JUL.2013 10:20:25

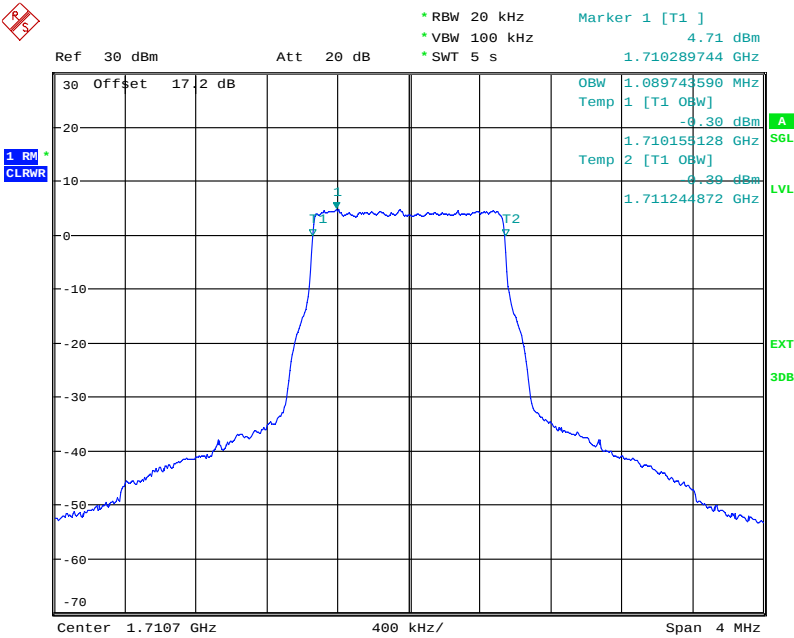
1710.7 MHz - 1 Resource Block - High



Date: 30.JUL.2013 10:32:57

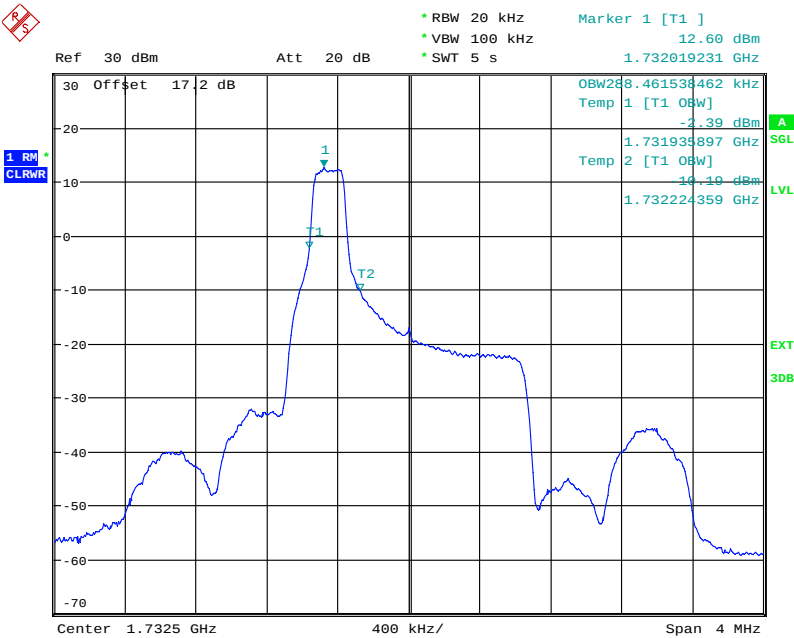


1710.7 MHz - All Resource Blocks



Date: 30.JUL.2013 10:40:32

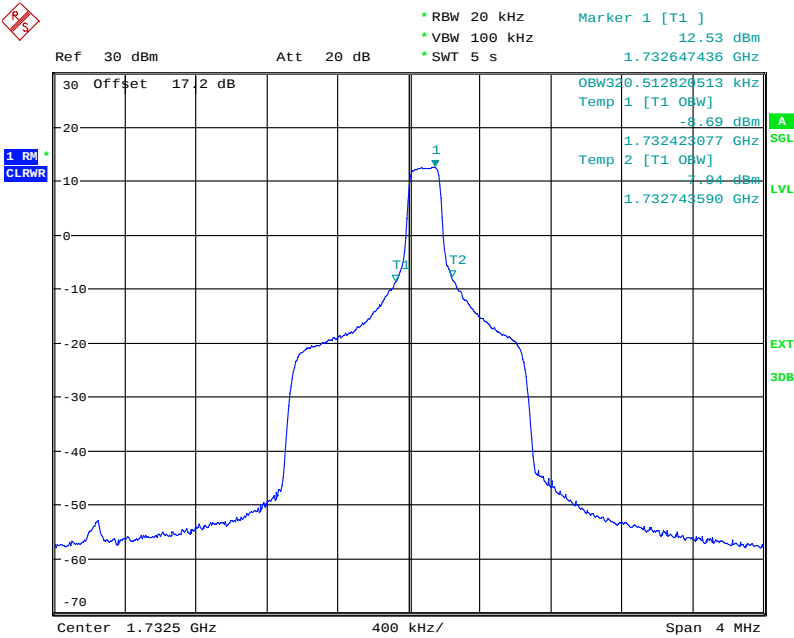
1732.5 MHz - 1 Resource Block - Low



Date: 30.JUL.2013 11:30:10

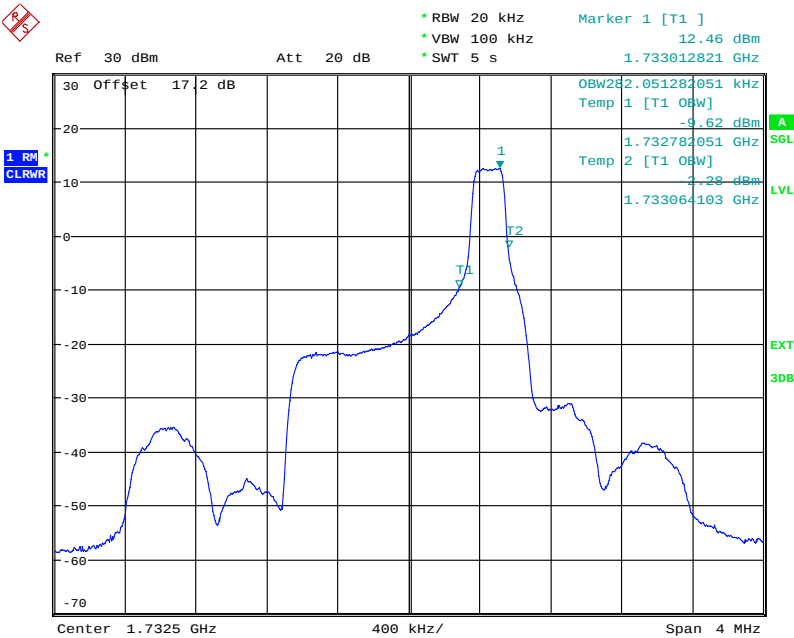


1732.5 MHz - 1 Resource Block - Middle



Date: 30.JUL.2013 11:23:35

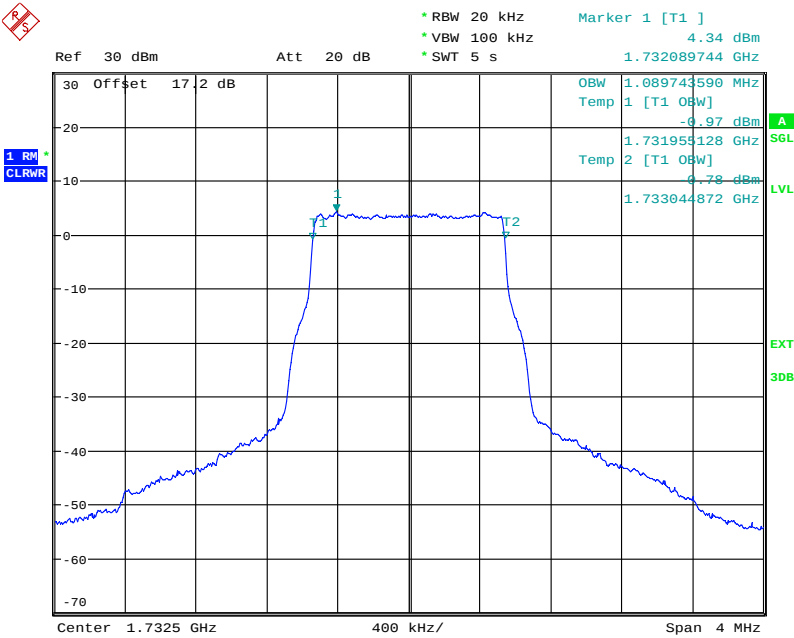
1732.5 MHz - 1 Resource Block - High



Date: 30.JUL.2013 11:16:27

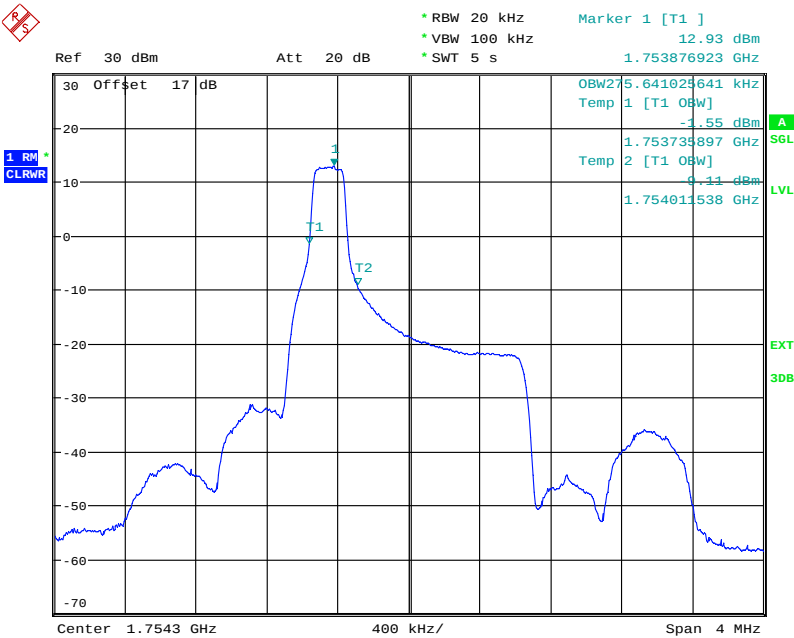


1732.5 MHz - All Resource Blocks



Date: 30.JUL.2013 11:07:13

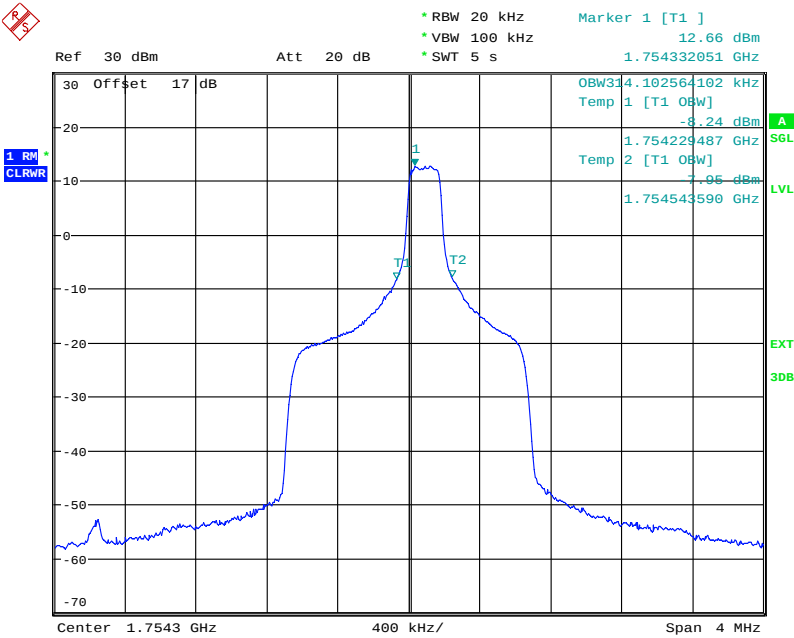
1754.3 MHz - 1 Resource Block - Low



Date: 30.JUL.2013 11:38:38

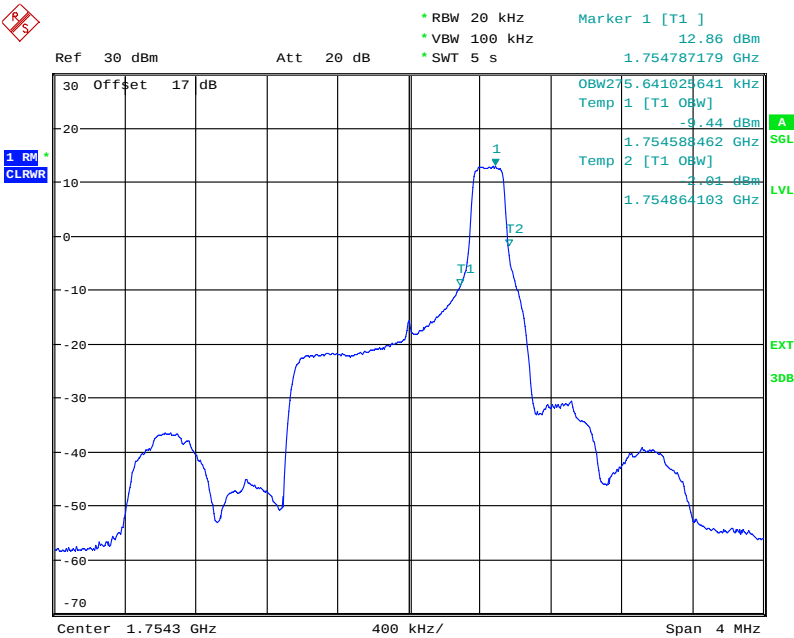


1754.3 MHz - 1 Resource Block - Middle



Date: 30.JUL.2013 11:44:30

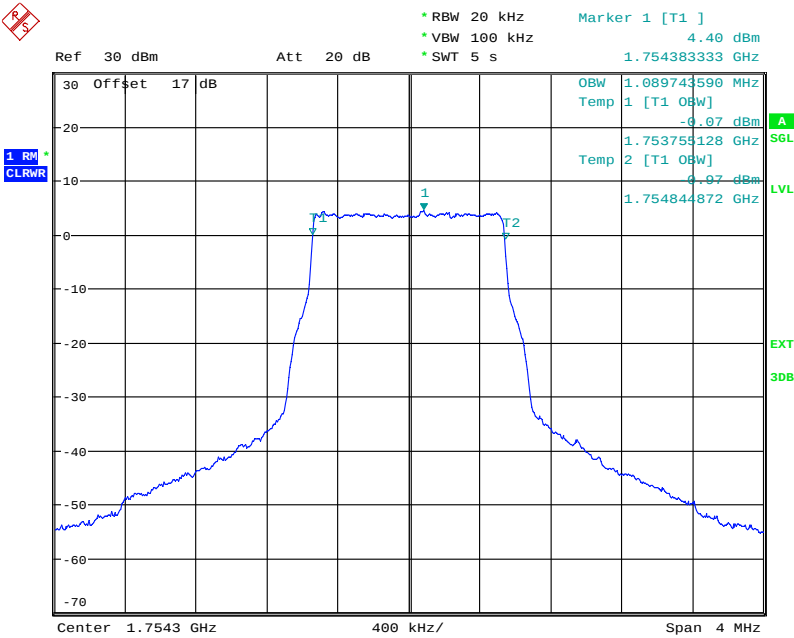
1754.3 MHz - 1 Resource Block - High



Date: 30.JUL.2013 11:52:15



1754.3 MHz - All Resource Blocks



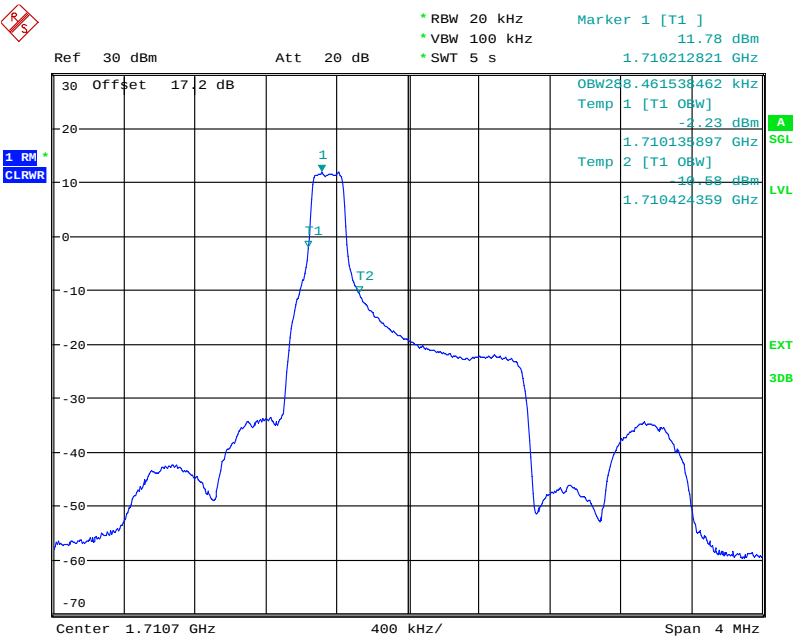
Date: 30.JUL.2013 12:04:12



1.4 MHz Bandwidth - 16QAM

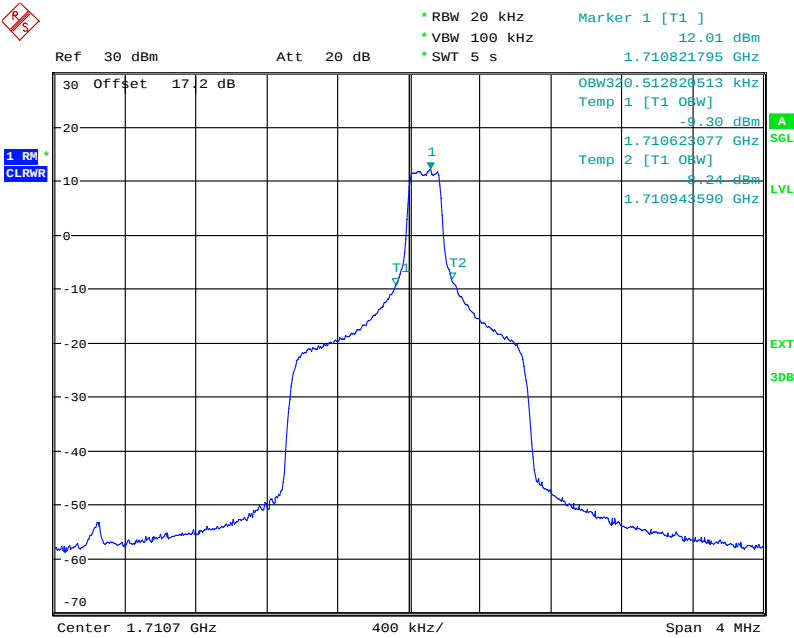
Occupied Bandwidth (kHz)											
1710.7 MHz				1732.5 MHz				1754.3 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
288.5	320.5	288.5	1083.3	288.5	326.9	307.7	1083.3	288.5	326.9	326.9	1083.3

1710.7 MHz - 1 Resource Block - Low



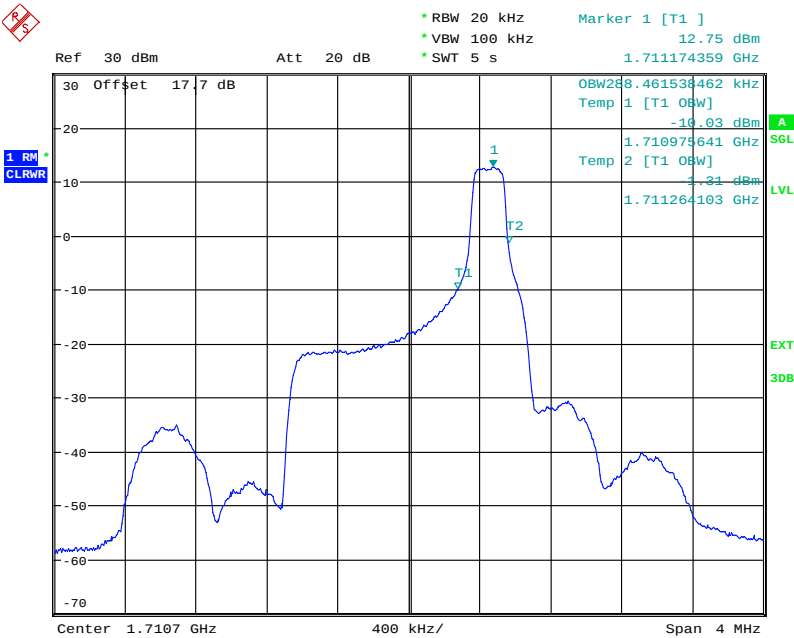
Date: 1.AUG.2013 08:25:45

1710.7 MHz - 1 Resource Block - Middle



Date: 1.AUG.2013 08:35:16

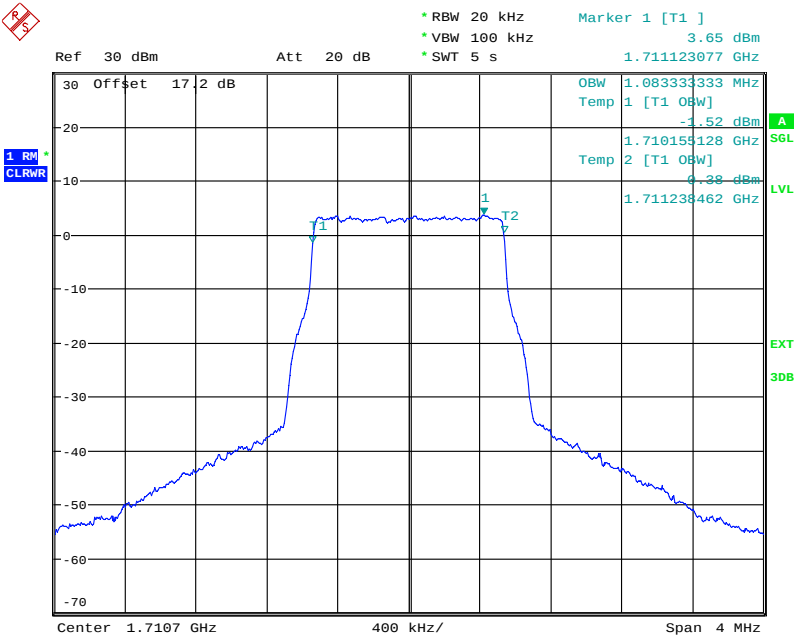
1710.7 MHz - 1 Resource Block - High



Date: 27.AUG.2013 17:14:40

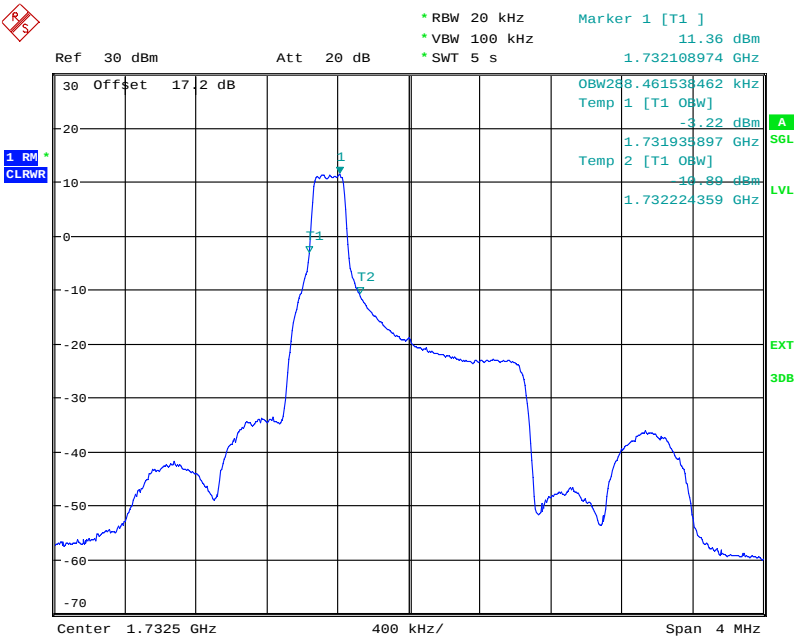


1710.7 MHz - All Resource Blocks



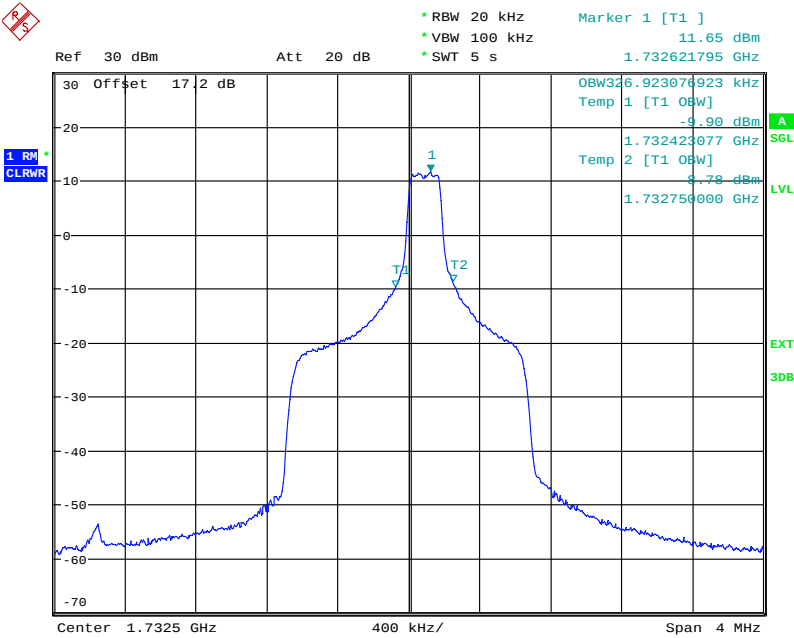
Date: 1.AUG.2013 08:13:00

1732.5 MHz - 1 Resource Block - Low



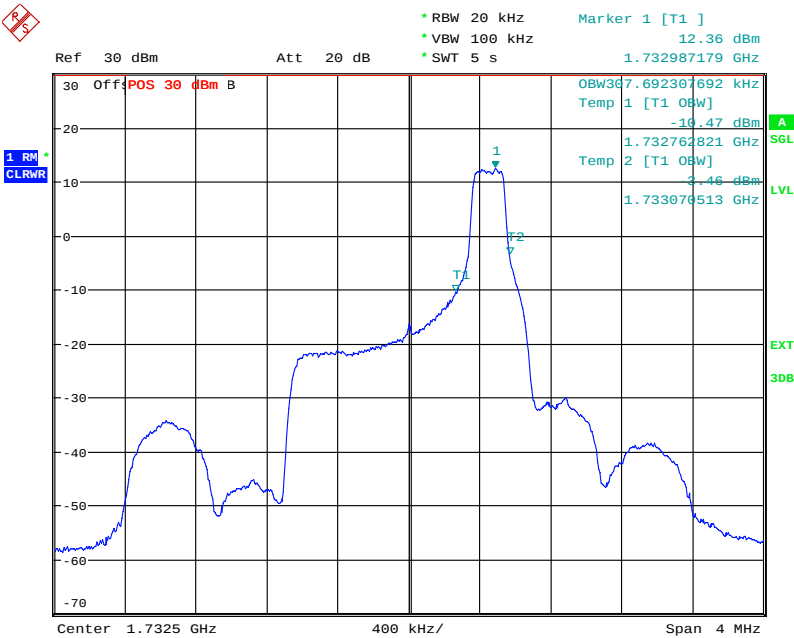
Date: 1.AUG.2013 09:11:23

1732.5 MHz - 1 Resource Block - Middle



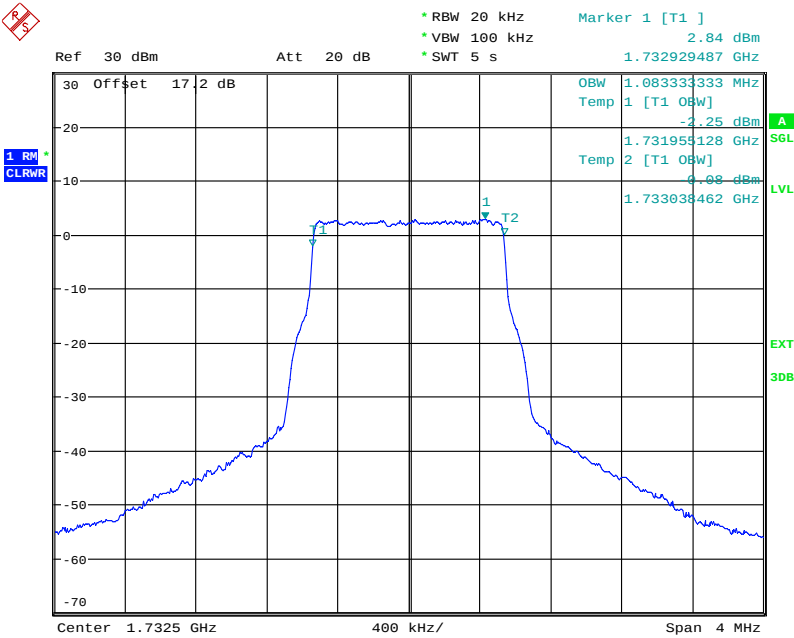
Date: 1.AUG.2013 09:18:30

1732.5 MHz - 1 Resource Block - High



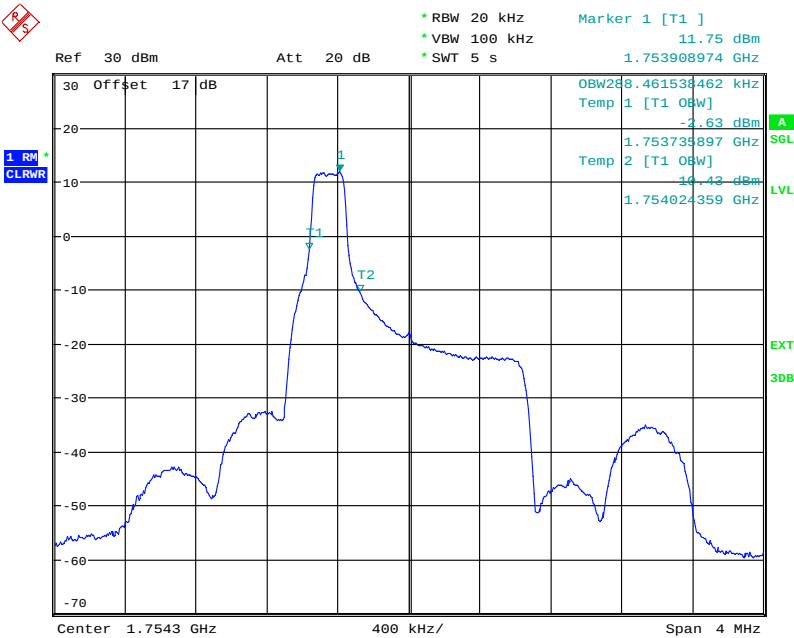
Date: 27.AUG.2013 17:20:20

1732.5 MHz - All Resource Blocks



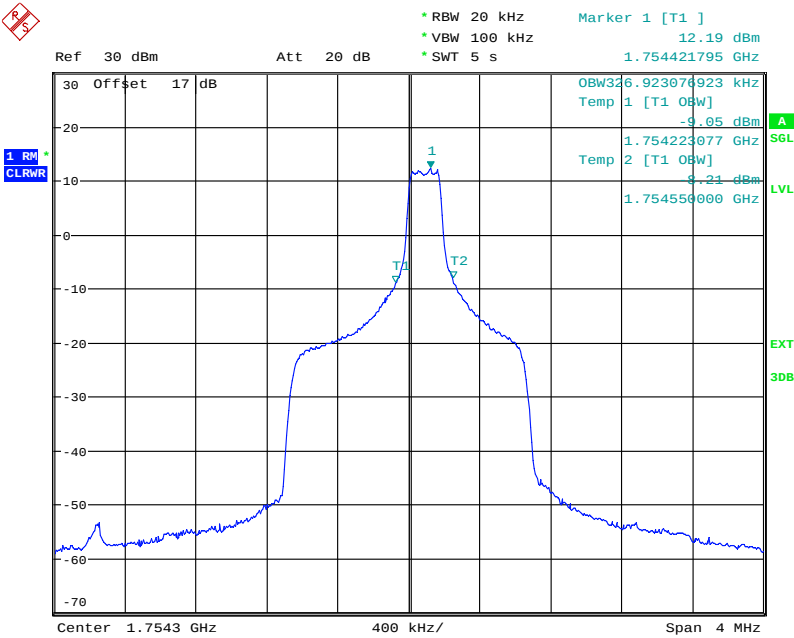
Date: 1.AUG.2013 09:08:13

1754.3 MHz - 1 Resource Block - Low



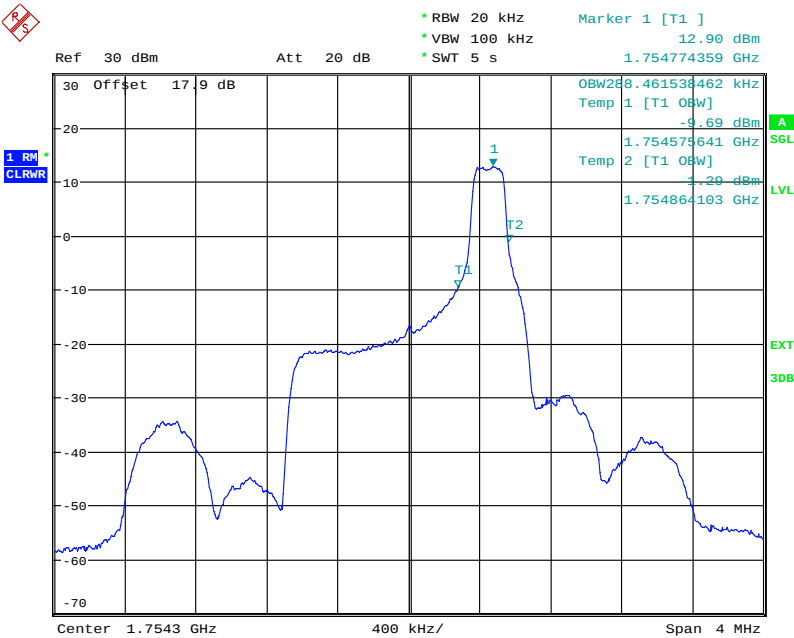
Date: 1.AUG.2013 09:38:53

1754.3 MHz - 1 Resource Block - Middle



Date: 1.AUG.2013 09:52:11

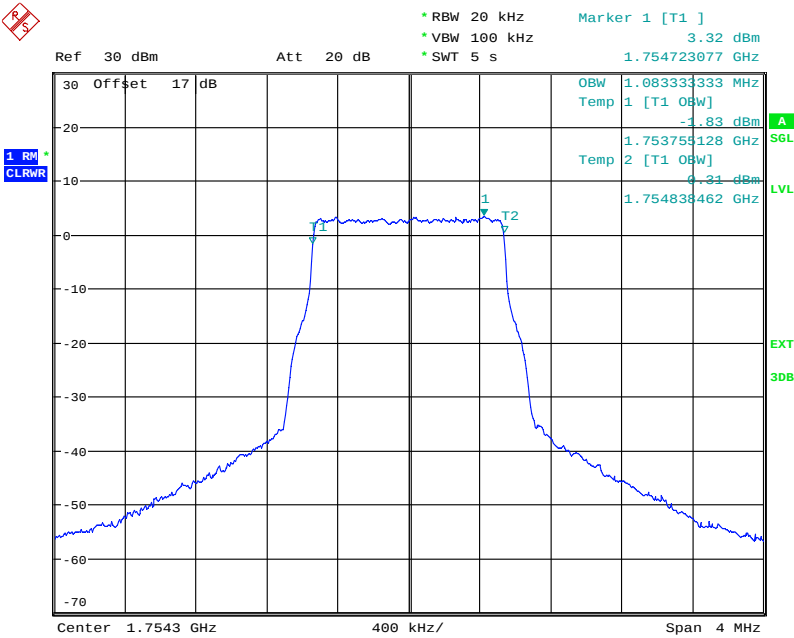
1754.3 MHz - 1 Resource Block - High



Date: 27.AUG.2013 17:23:24



1754.3 MHz - All Resource Blocks



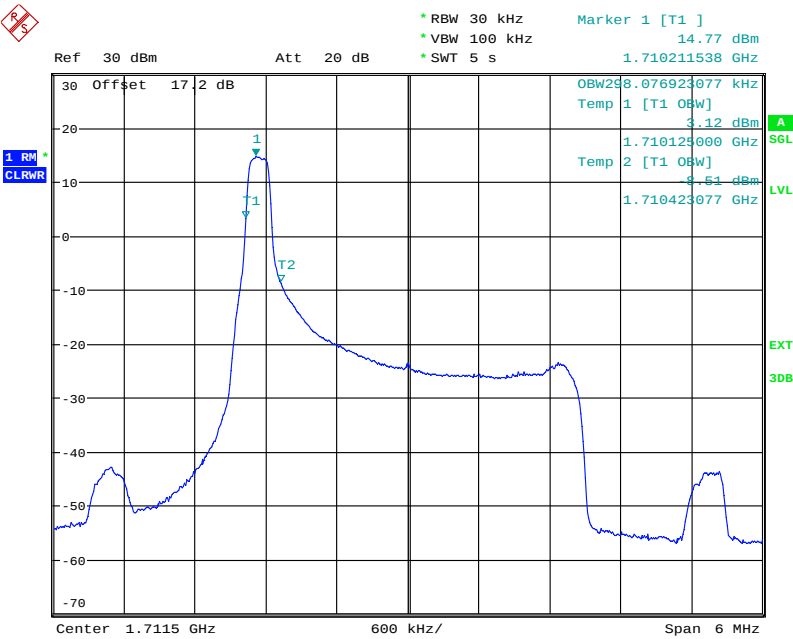
Date: 1.AUG.2013 09:29:30



3.0 MHz Bandwidth - QPSK

Occupied Bandwidth (kHz)											
1711.5 MHz				1732.5 MHz				1753.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
298.1	355.8	298.1	2673.1	288.5	355.8	307.7	2682.7	288.5	336.5	288.5	2673.1

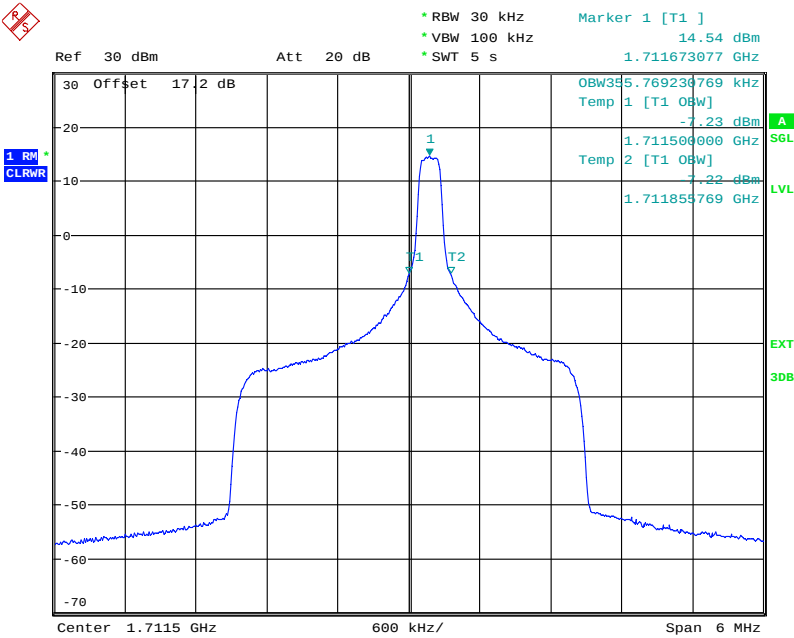
1711.5 MHz - 1 Resource Block - Low



Date: 30.JUL.2013 12:23:20

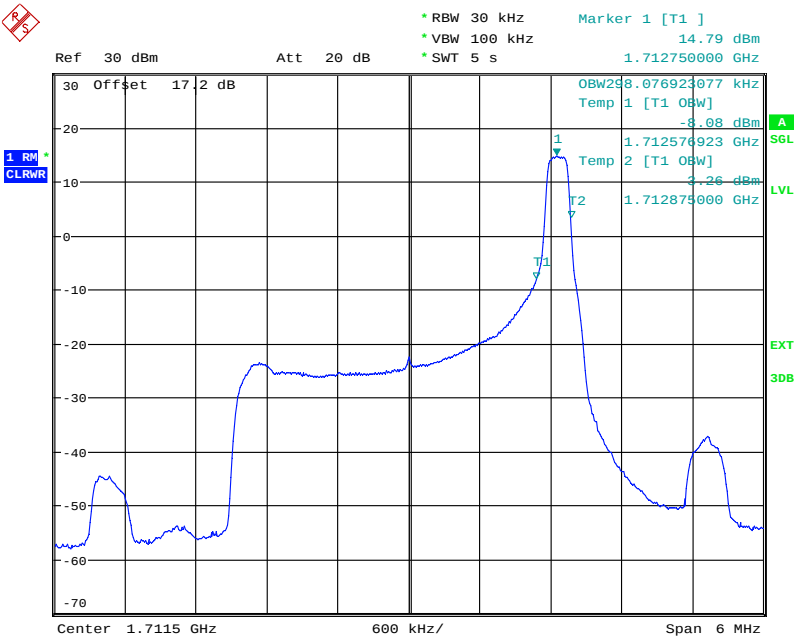


1711.5 MHz - 1 Resource Block - Middle



Date: 30.JUL.2013 12:32:06

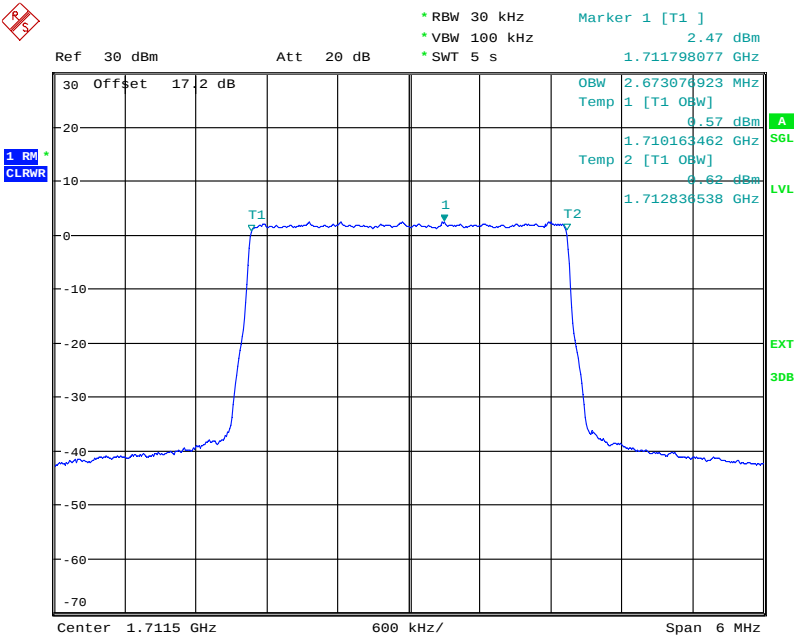
1711.5 MHz - 1 Resource Block - High



Date: 30.JUL.2013 12:44:23

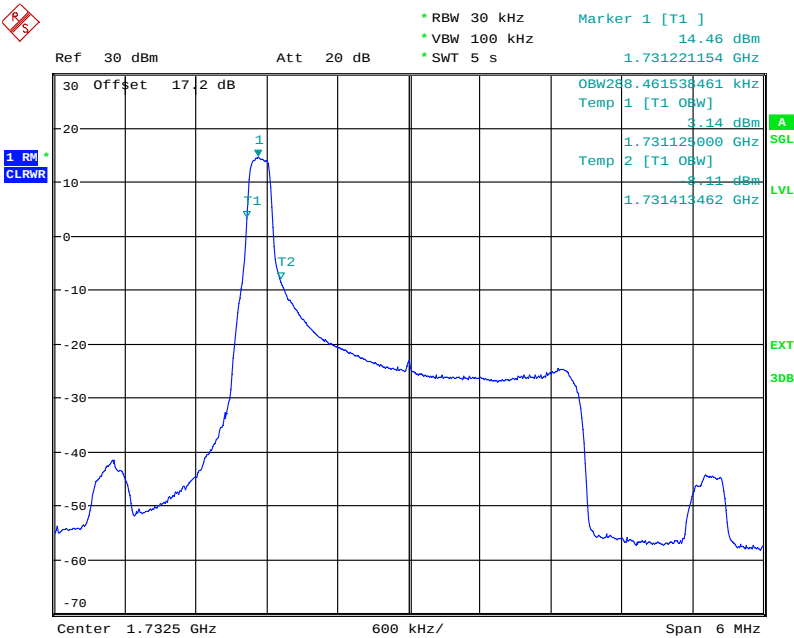


1711.5 MHz - All Resource Blocks



Date: 30.JUL.2013 12:15:10

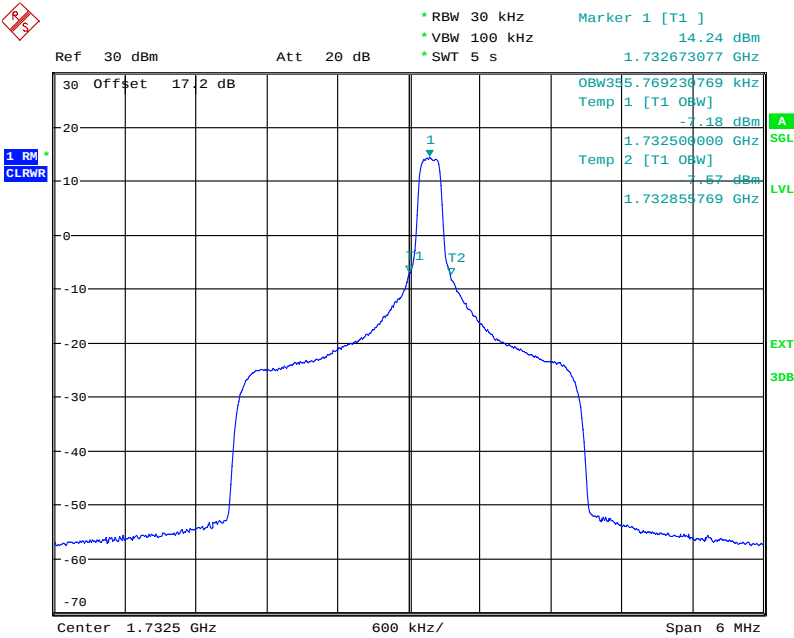
1732.5 MHz - 1 Resource Block - Low



Date: 30.JUL.2013 13:58:32

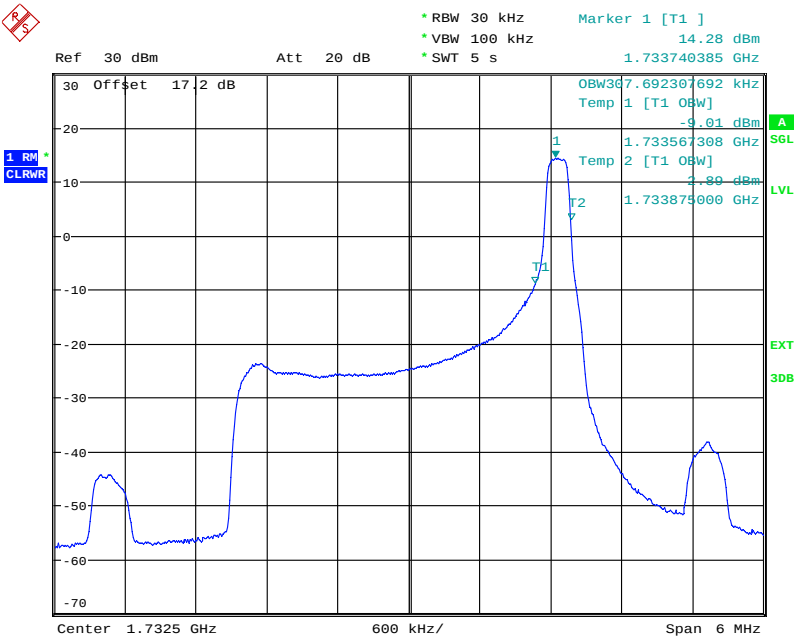


1732.5 MHz - 1 Resource Block - Middle



Date: 30.JUL.2013 13:50:35

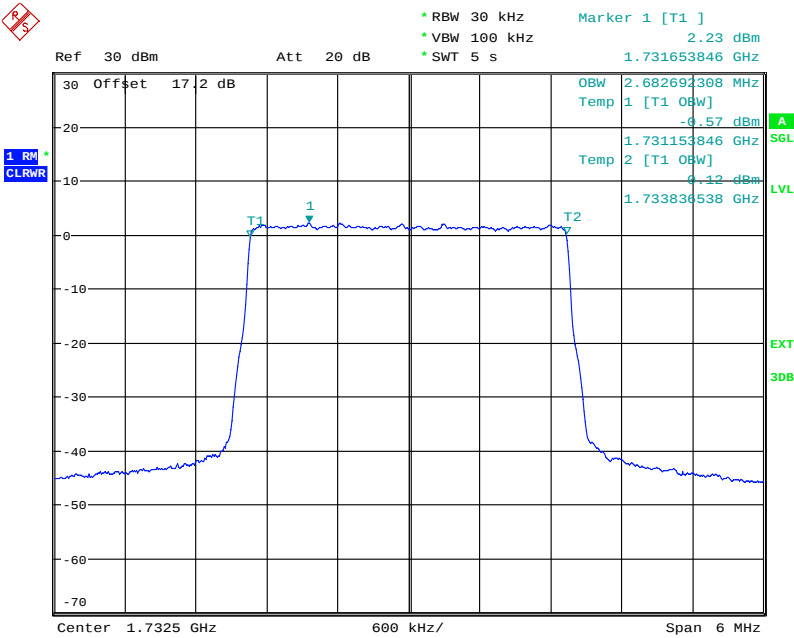
1732.5 MHz - 1 Resource Block - High



Date: 30.JUL.2013 13:42:27

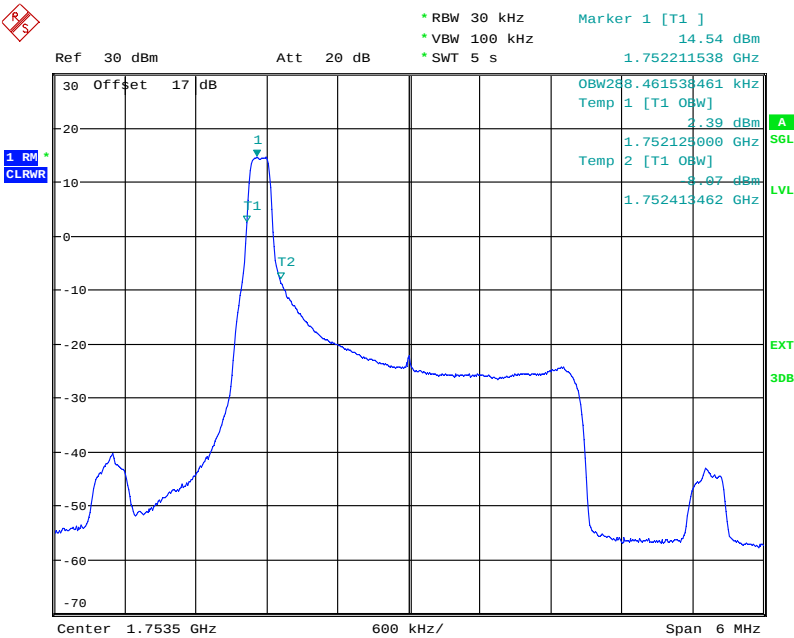


1732.5 MHz - All Resource Blocks



Date: 30.JUL.2013 13:33:04

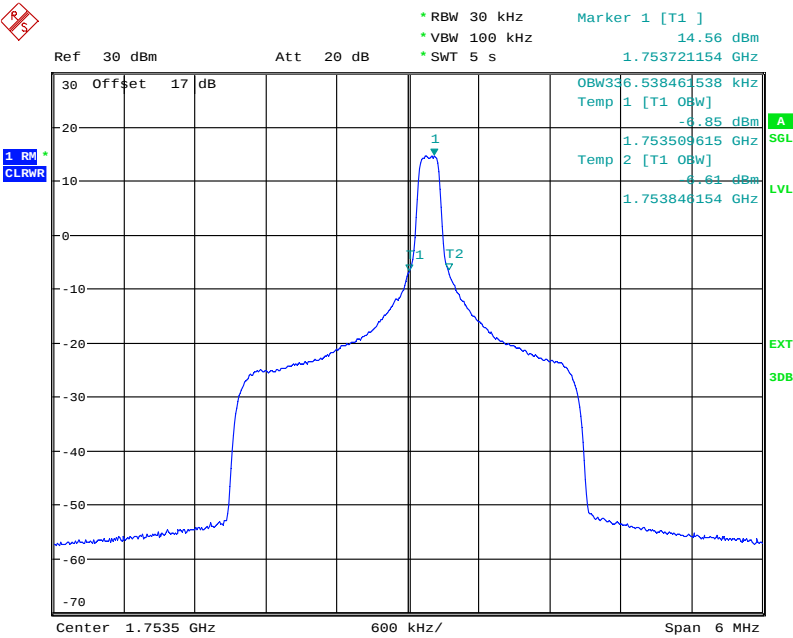
1753.5 MHz - 1 Resource Block - Low



Date: 30.JUL.2013 14:06:05

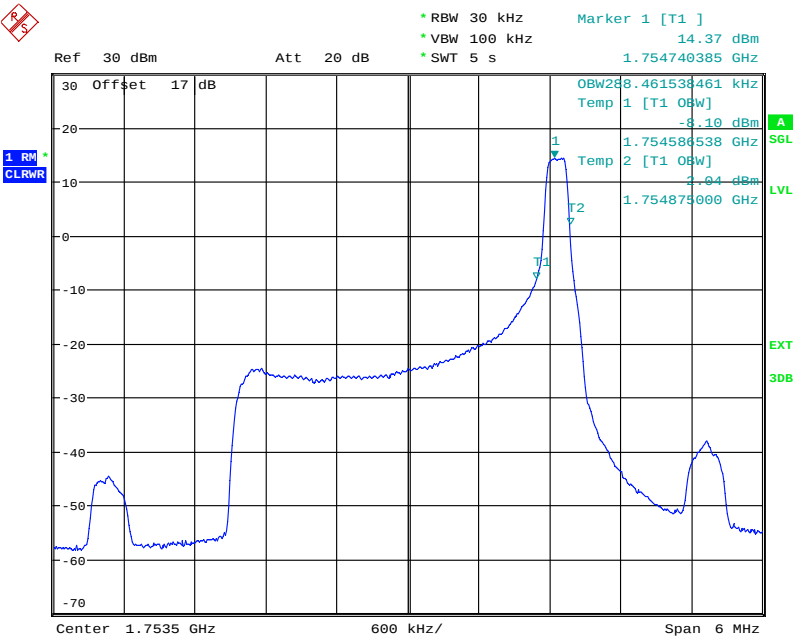


1753.5 MHz - 1 Resource Block - Middle



Date: 30.JUL.2013 14:31:47

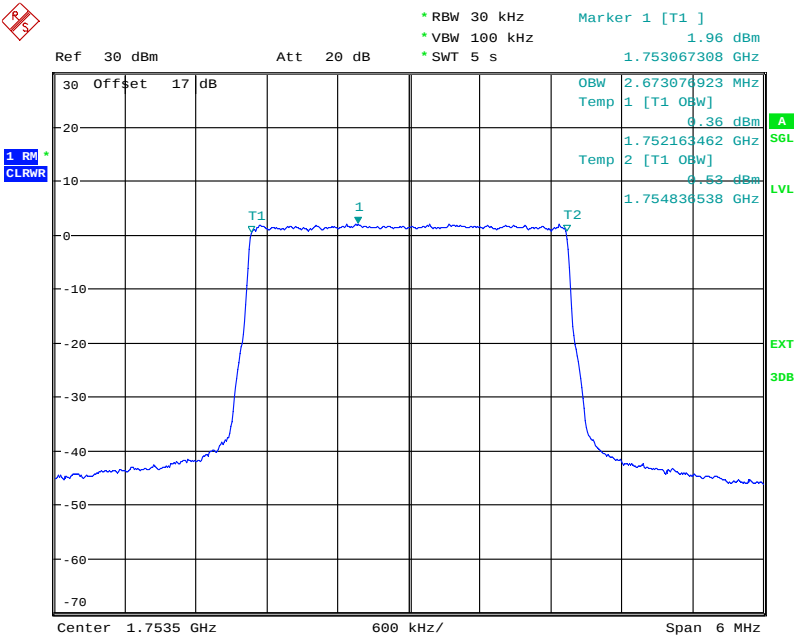
1753.5 MHz - 1 Resource Block - High



Date: 30.JUL.2013 14:38:11



1753.5 MHz - All Resource Blocks



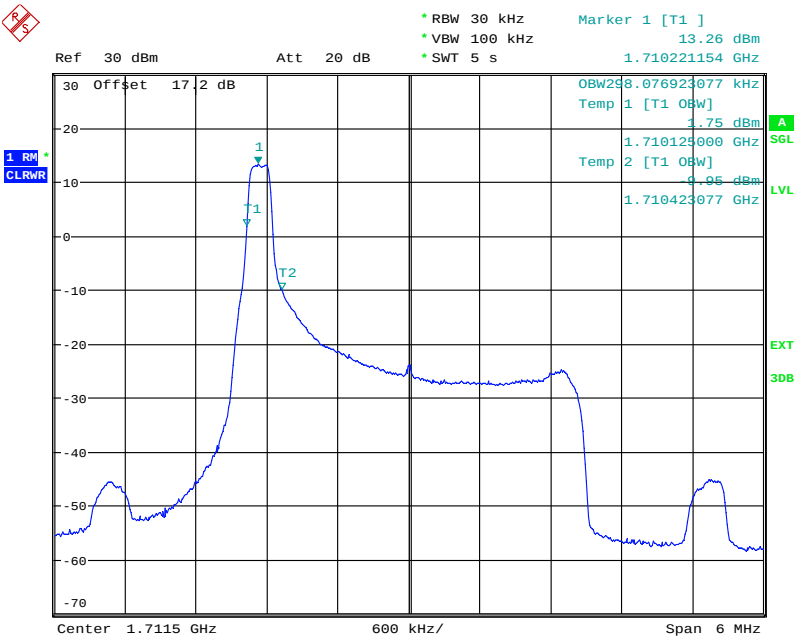
Date: 30.JUL.2013 14:50:32



3.0 MHz Bandwidth - 16QAM

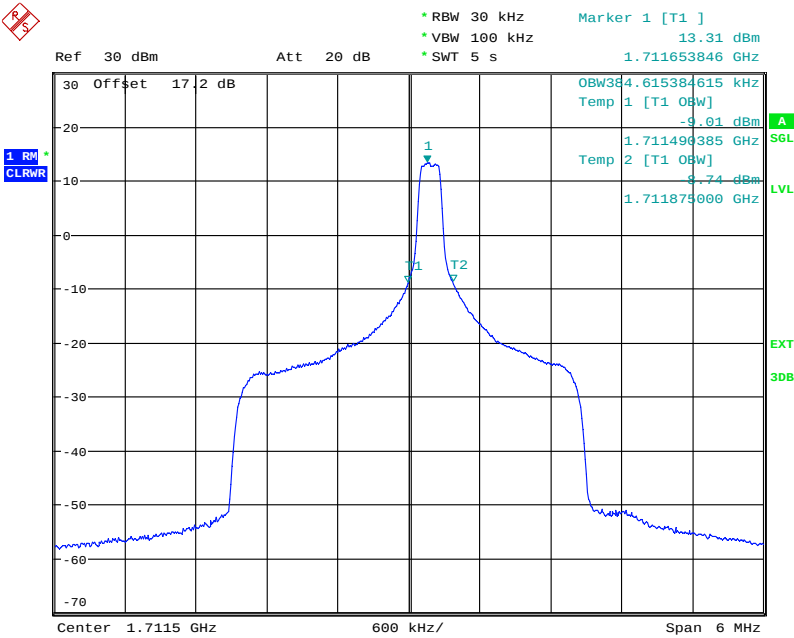
Occupied Bandwidth (kHz)											
1711.5 MHz				1732.5 MHz				1753.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
298.1	384.6	317.3	2673.1	288.5	384.6	326.9	2682.7	307.7	346.2	298.1	2673.1

1711.5 MHz - 1 Resource Block - Low



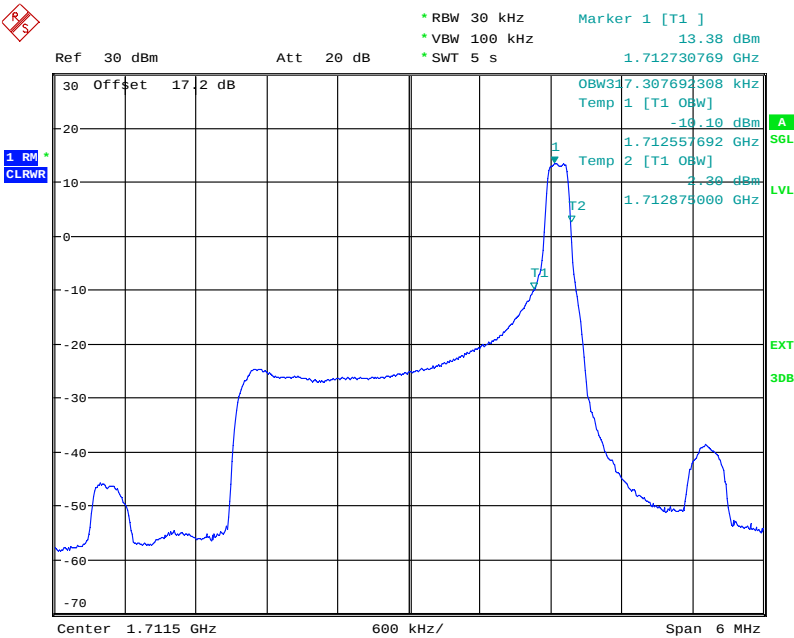
Date: 1.AUG.2013 10:12:51

1711.5 MHz - 1 Resource Block - Middle



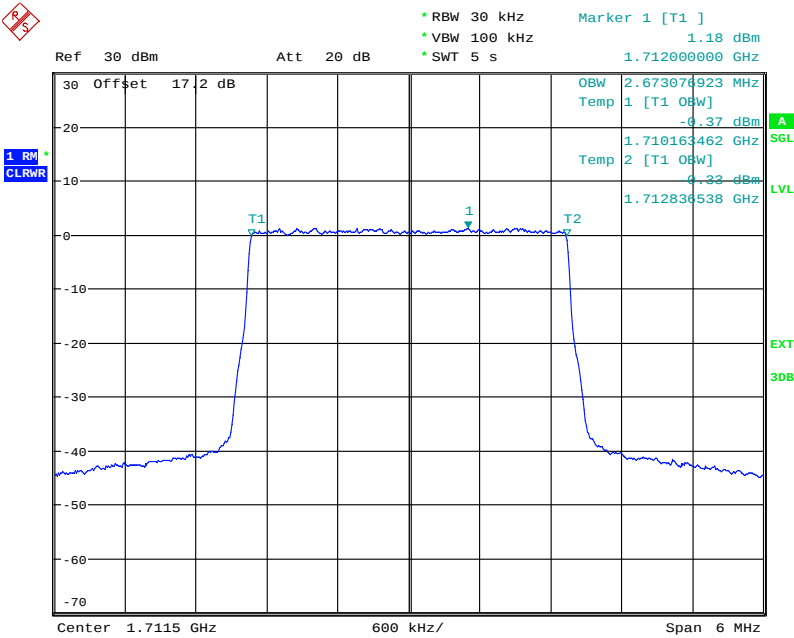
Date: 1.AUG.2013 10:35:52

1711.5 MHz - 1 Resource Block - High



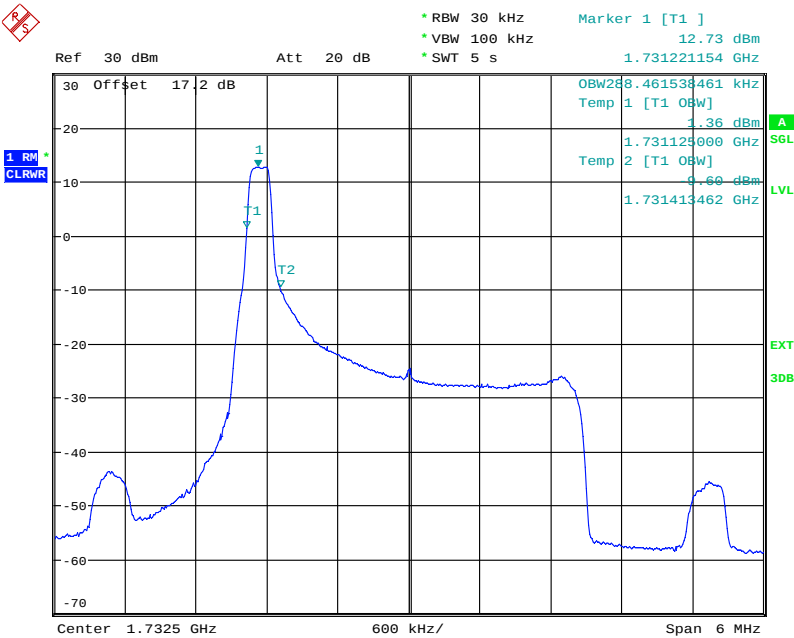
Date: 1.AUG.2013 10:42:44

1711.5 MHz - All Resource Blocks



Date: 1.AUG.2013 10:05:20

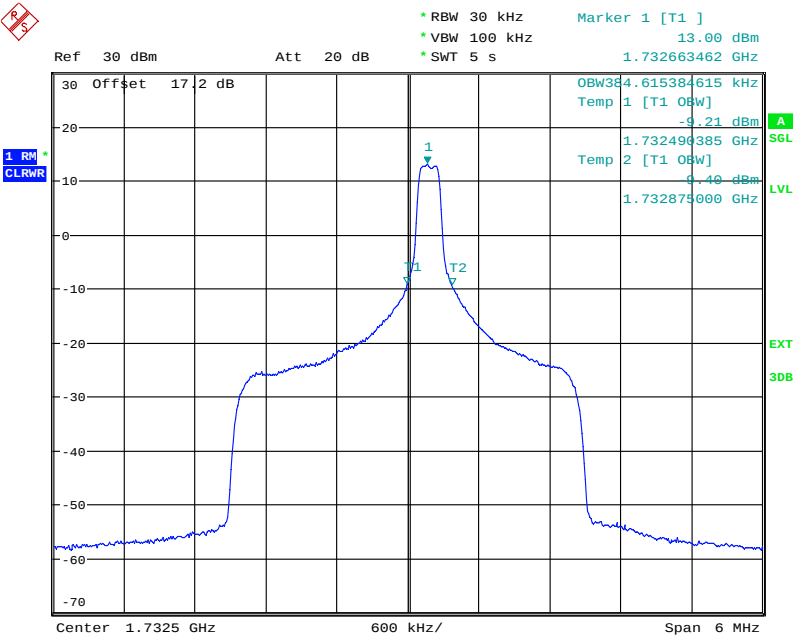
1732.5 MHz - 1 Resource Block - Low



Date: 1.AUG.2013 11:07:29

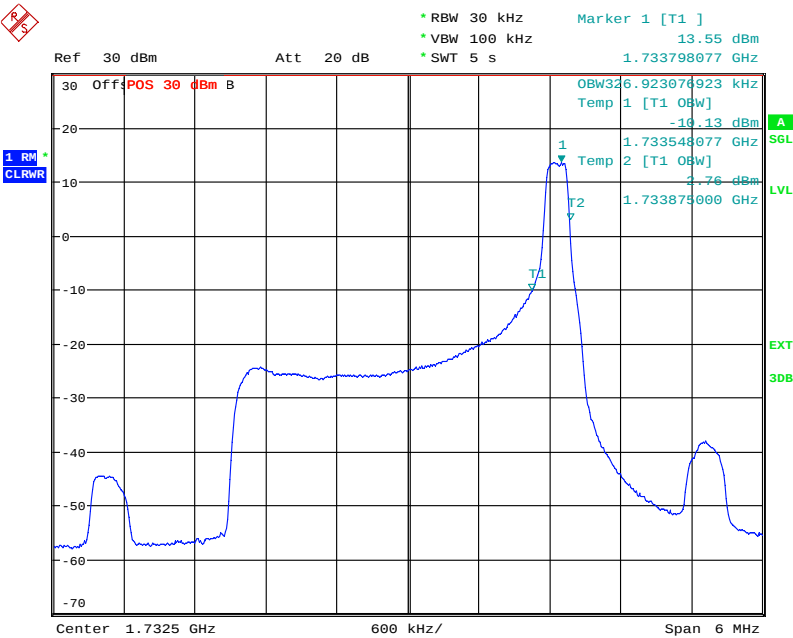


1732.5 MHz - 1 Resource Block - Middle



Date: 1.AUG.2013 11:01:11

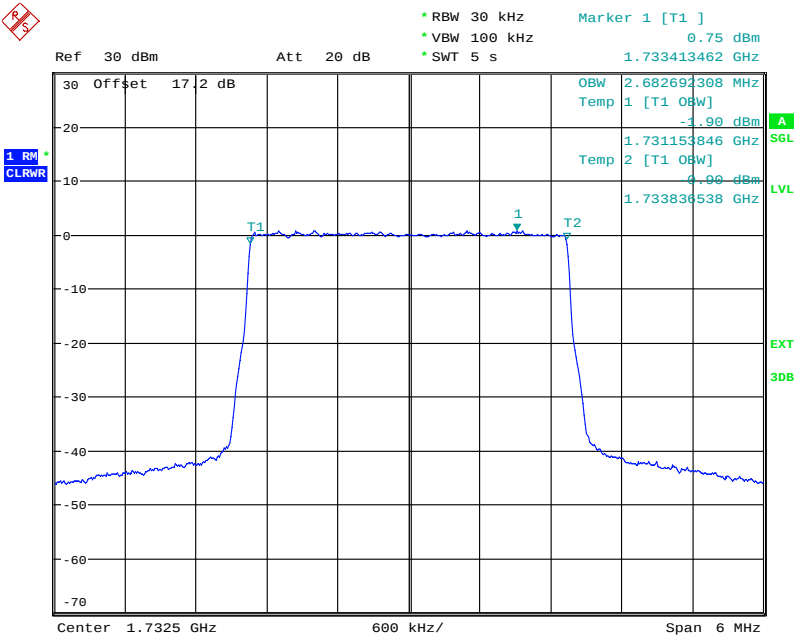
1732.5 MHz - 1 Resource Block - High



Date: 27.AUG.2013 17:29:45

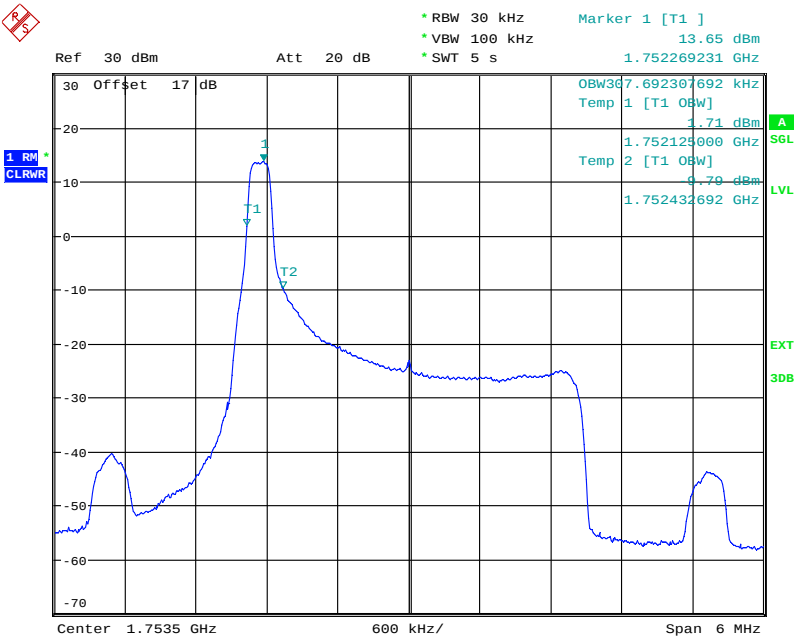


1732.5 MHz - All Resource Blocks



Date: 1.AUG.2013 11:13:17

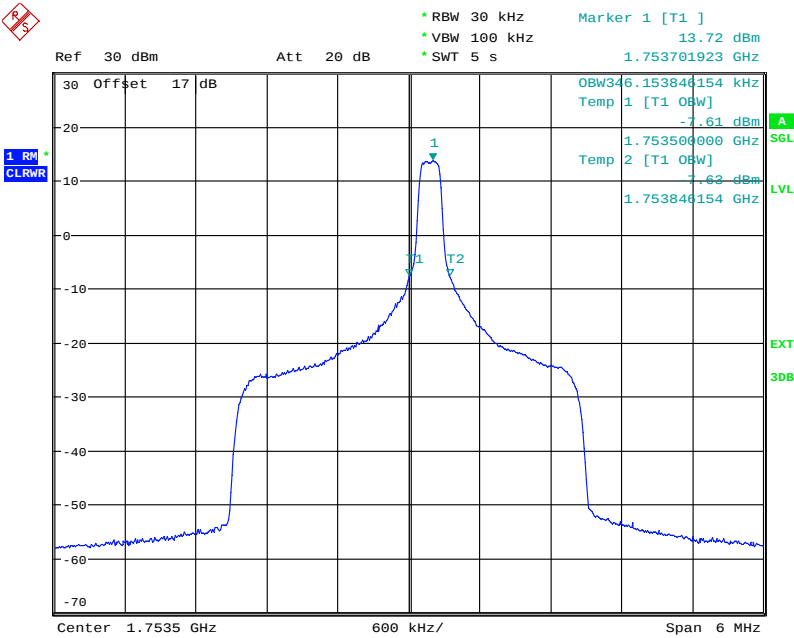
1753.5 MHz - 1 Resource Block - Low



Date: 1.AUG.2013 11:31:47

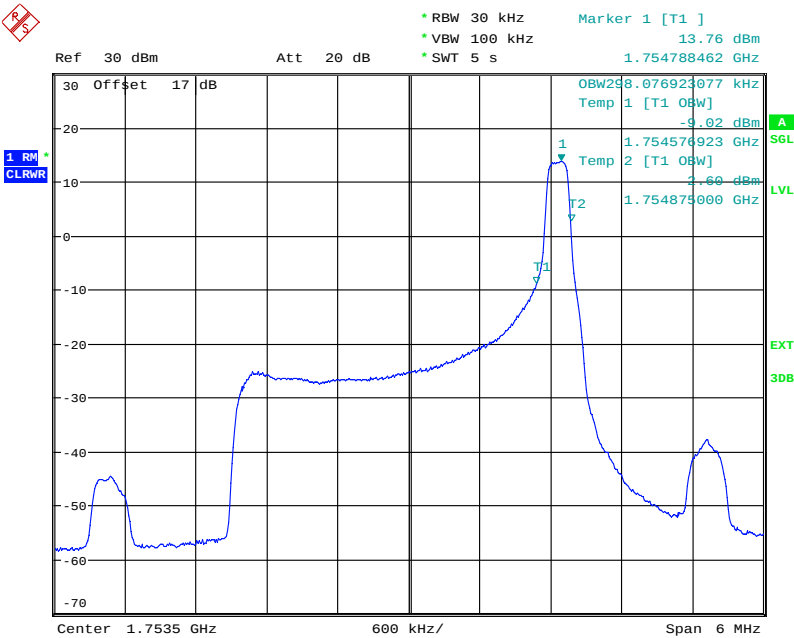


1753.5 MHz - 1 Resource Block - Middle



Date: 1.AUG.2013 11:39:06

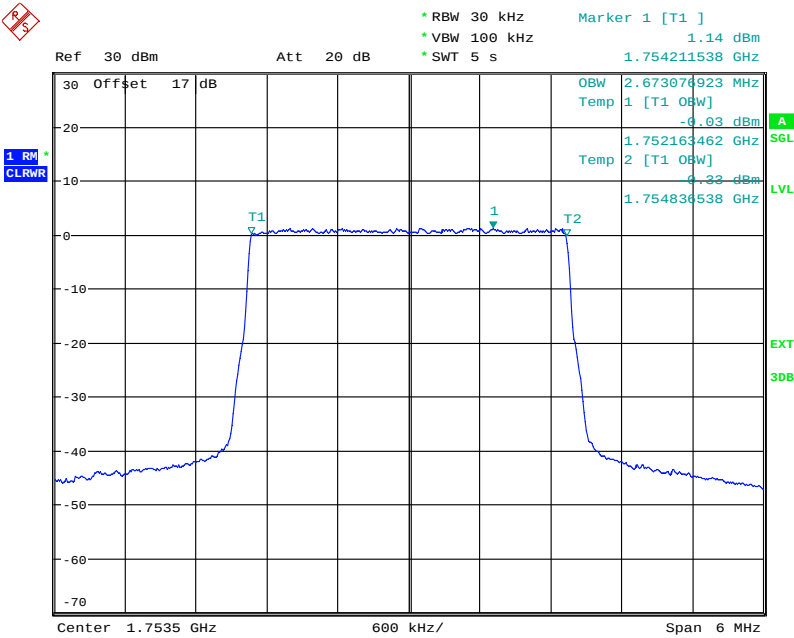
1753.5 MHz - 1 Resource Block - High



Date: 1.AUG.2013 11:48:12



1753.5 MHz - All Resource Blocks



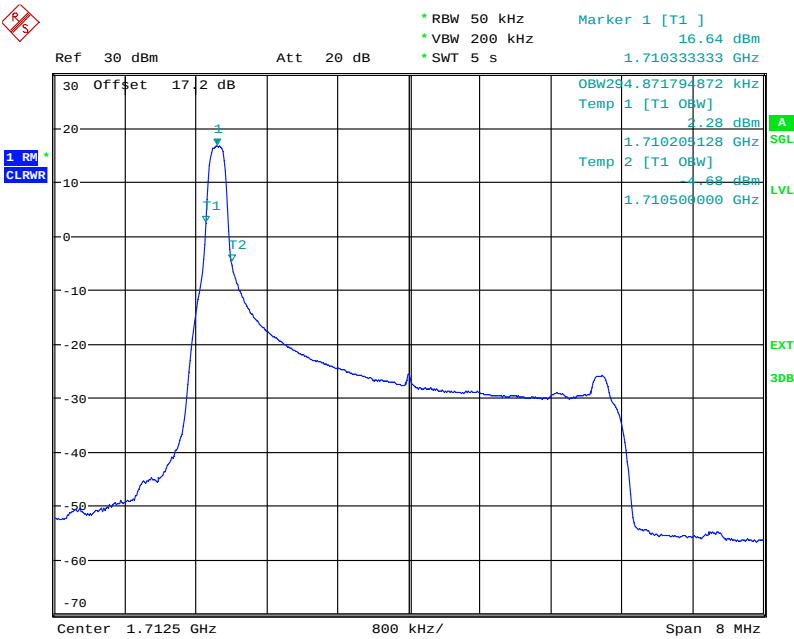
Date: 1.AUG.2013 11:23:53



5.0 MHz Bandwidth - QPSK

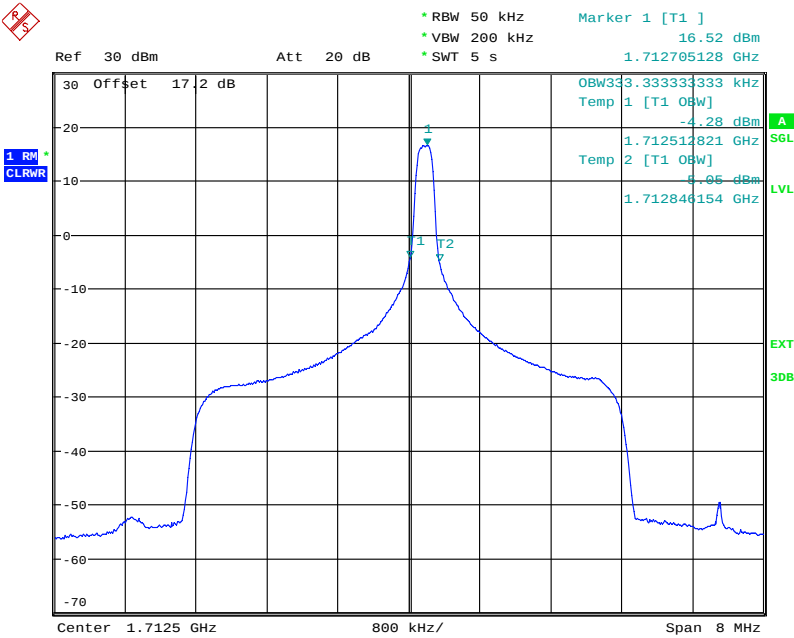
Occupied Bandwidth (kHz)											
1712.5 MHz				1732.5 MHz				1752.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
294.9	333.3	294.9	4461.5	294.9	333.3	307.7	4474.4	294.9	333.3	294.9	4461.5

1712.5 MHz - 1 Resource Block - Low



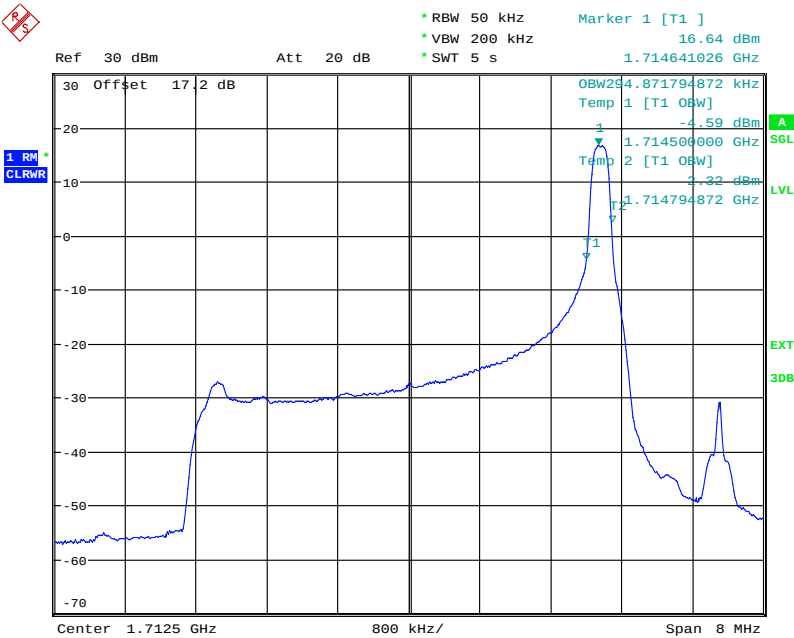
Date: 30.JUL.2013 15:09:59

1712.5 MHz - 1 Resource Block - Middle



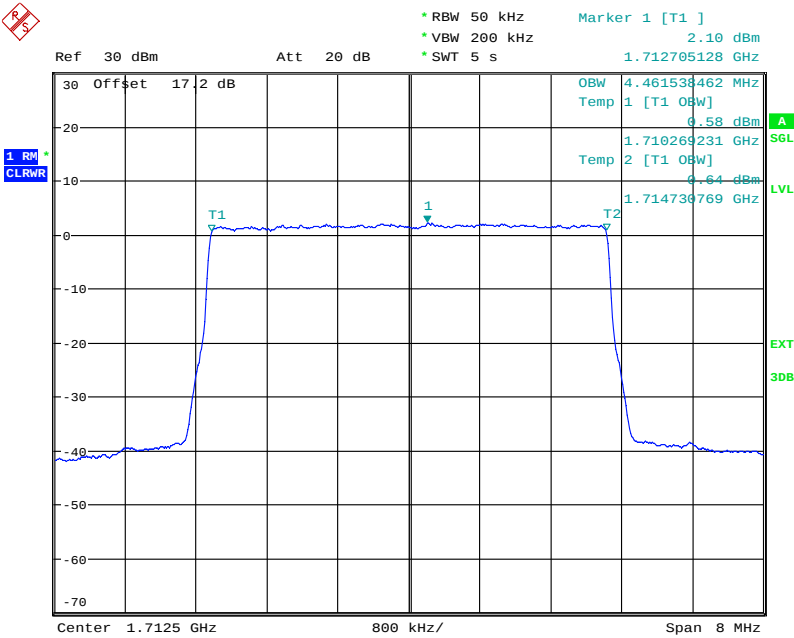
Date: 30.JUL.2013 15:17:49

1712.5 MHz - 1 Resource Block - High



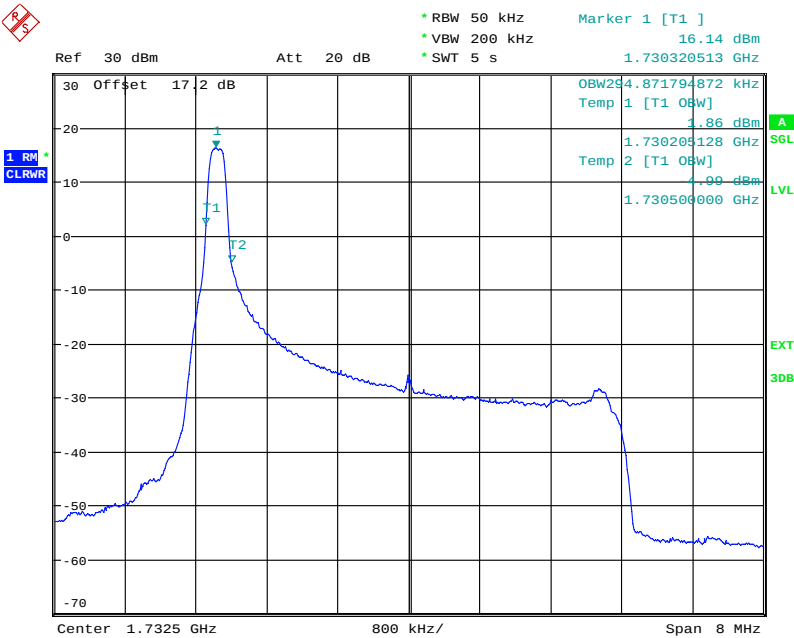
Date: 30.JUL.2013 15:29:14

1712.5 MHz - All Resource Blocks



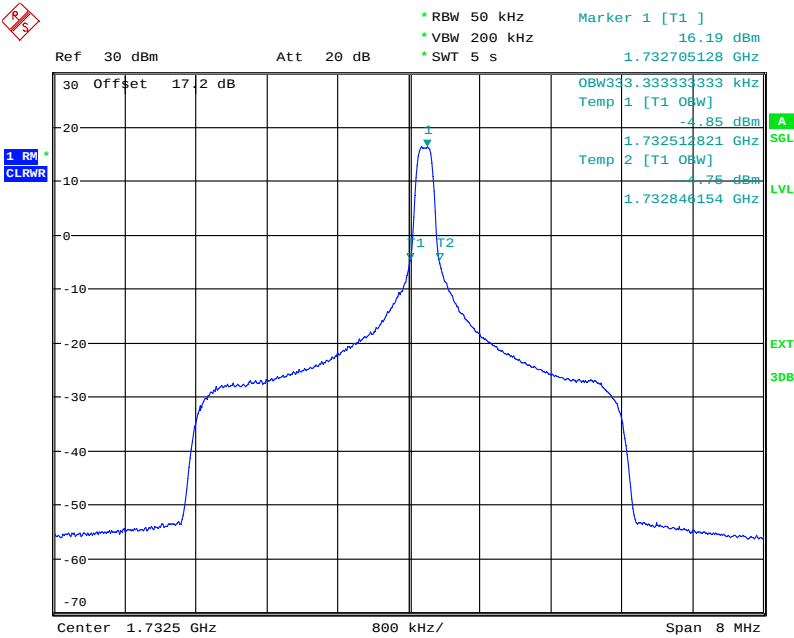
Date: 30.JUL.2013 15:00:30

1732.5 MHz - 1 Resource Block - Low



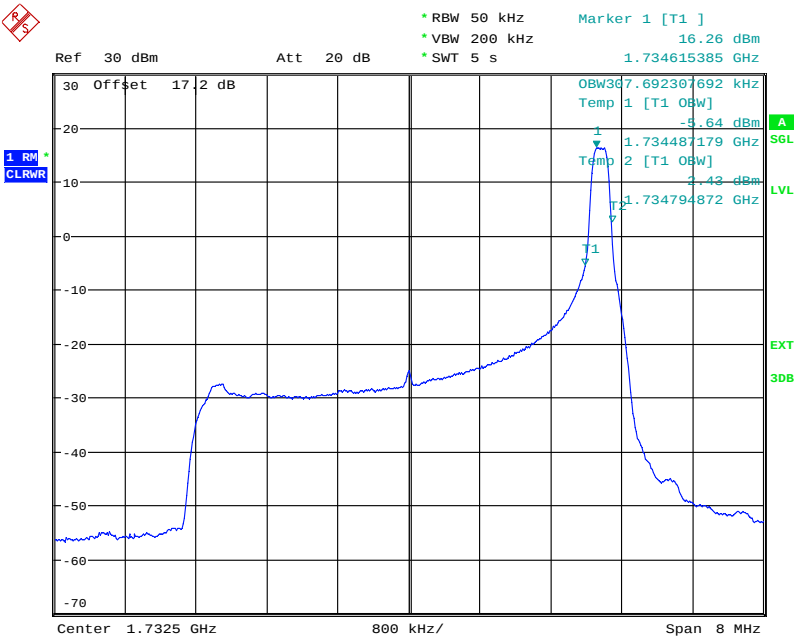
Date: 30.JUL.2013 16:00:30

1732.5 MHz - 1 Resource Block - Middle



Date: 30.JUL.2013 15:54:16

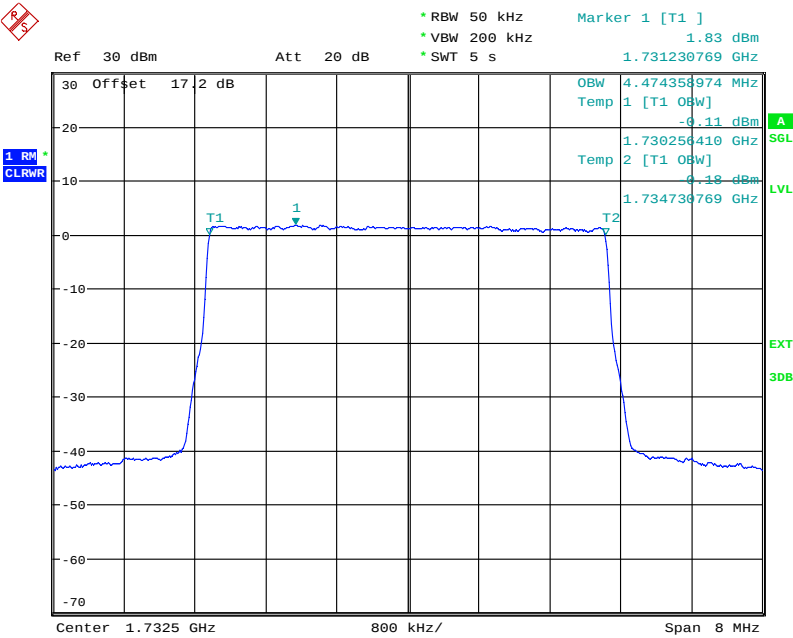
1732.5 MHz - 1 Resource Block - High



Date: 30.JUL.2013 15:48:27

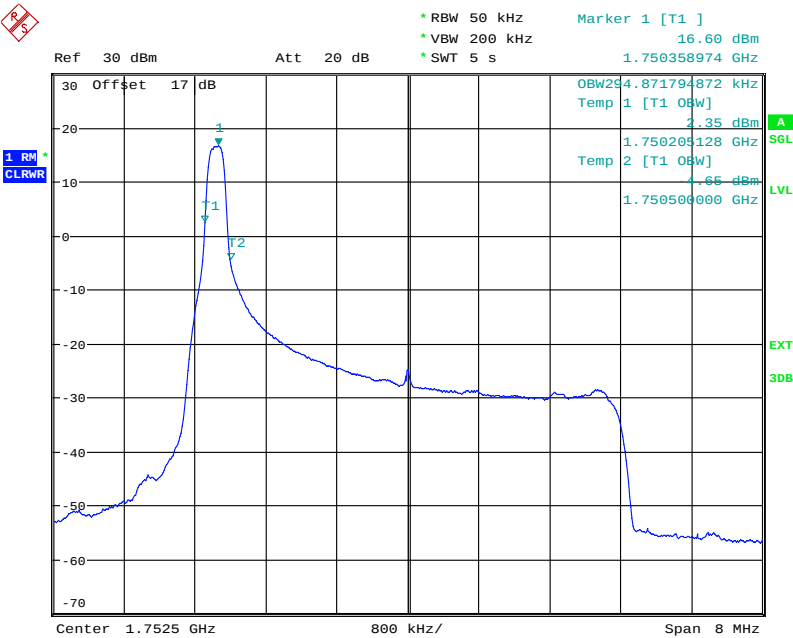


1732.5 MHz - All Resource Blocks



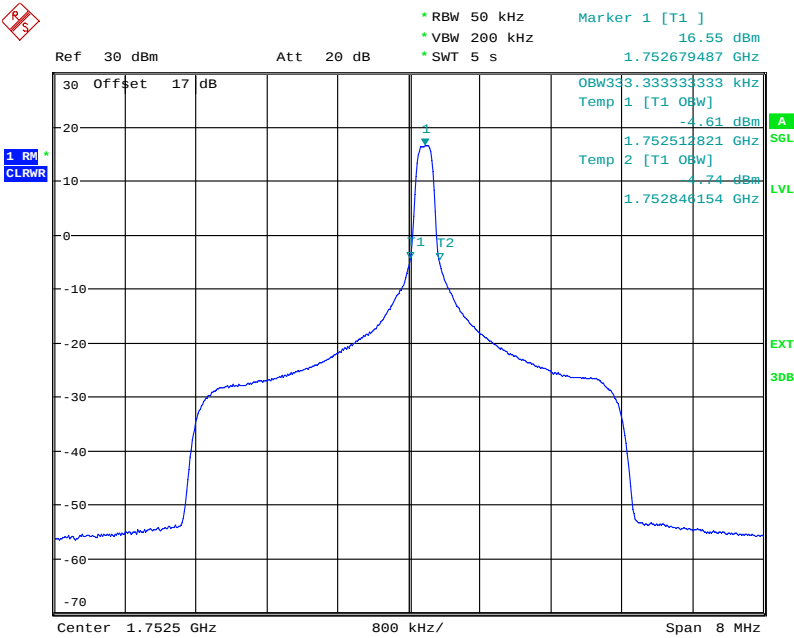
Date: 30.JUL.2013 15:41:55

1752.5 MHz - 1 Resource Block - Low



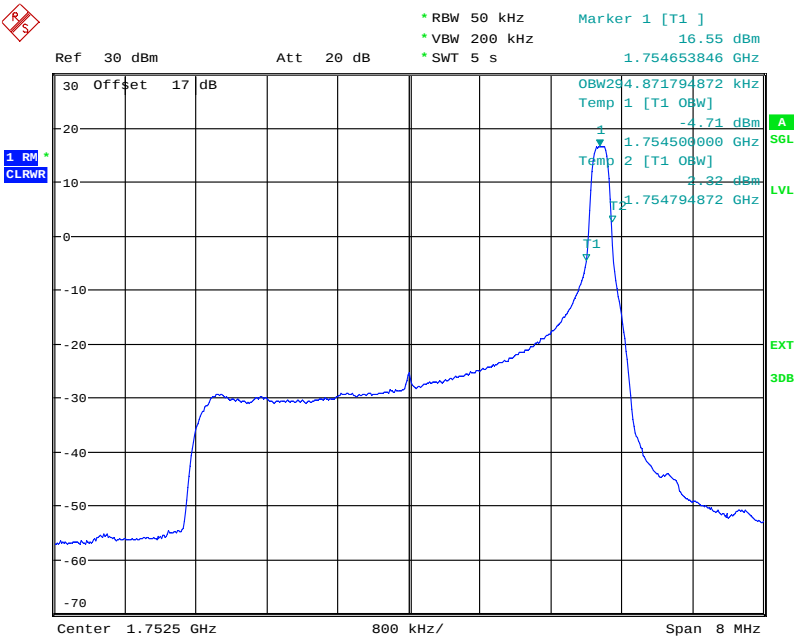
Date: 30.JUL.2013 16:08:32

1752.5 MHz - 1 Resource Block - Middle



Date: 30.JUL.2013 16:14:50

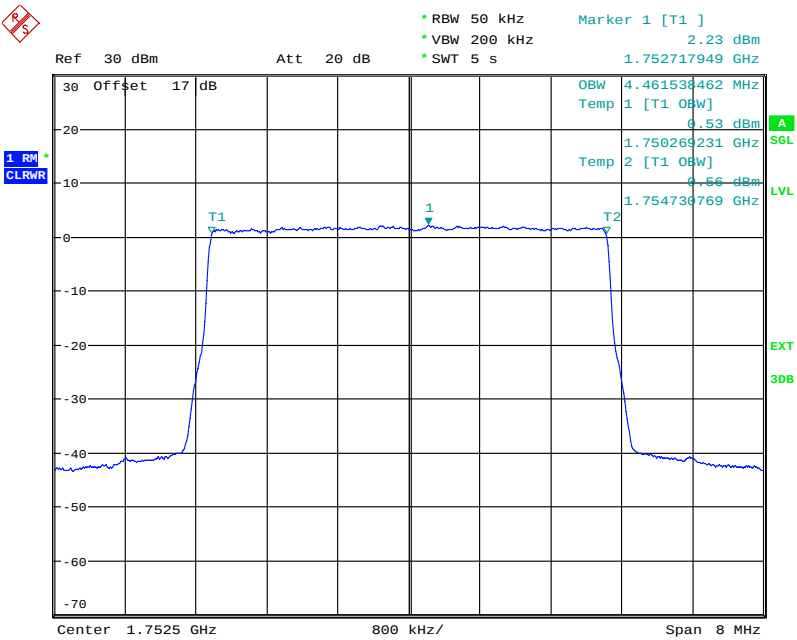
1752.5 MHz - 1 Resource Block - High



Date: 30.JUL.2013 16:20:44



1752.5 MHz - All Resource Blocks



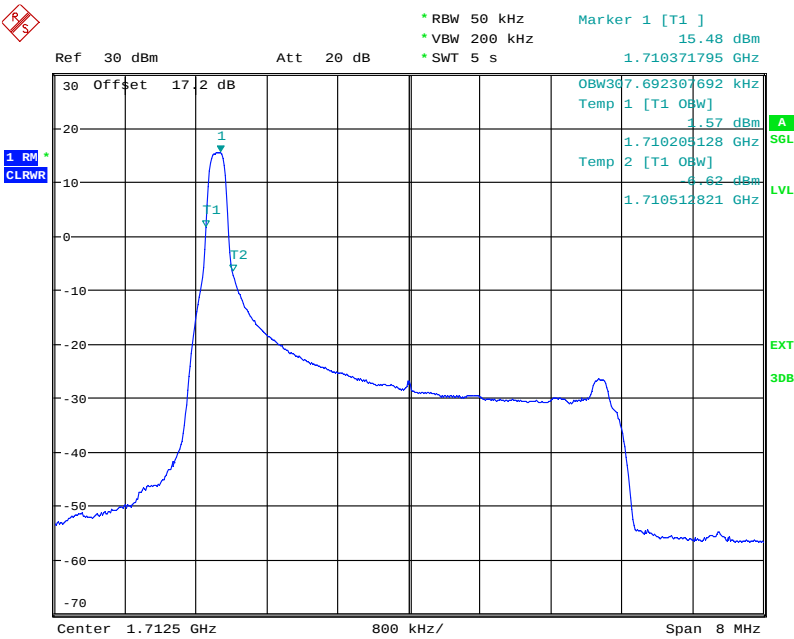
Date: 30.JUL.2013 16:28:14



5.0 MHz Bandwidth - 16QAM

Occupied Bandwidth (kHz)											
1712.5 MHz				1732.5 MHz				1752.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
307.7	359.0	294.9	4461.5	307.7	359.0	307.7	4461.5	307.7	371.8	294.9	4461.5

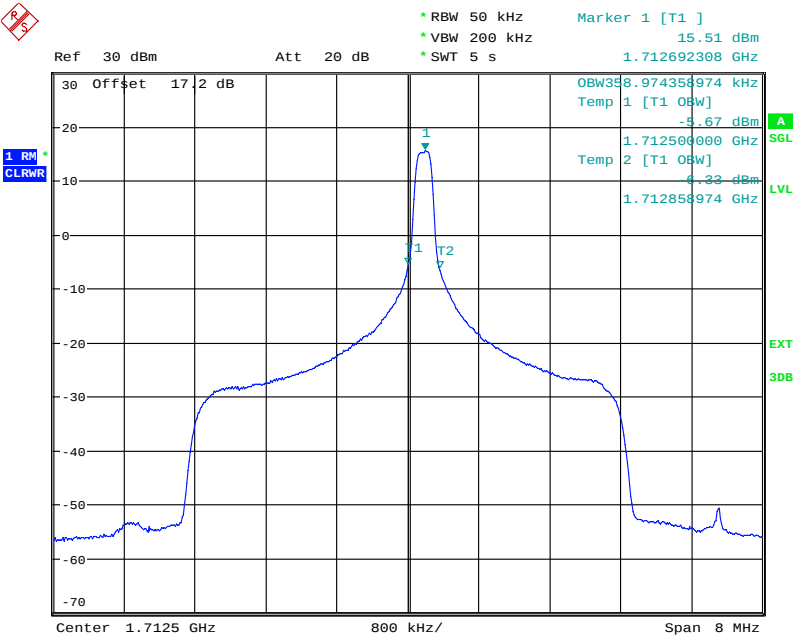
1712.5 MHz - 1 Resource Block - Low



Date: 1.AUG.2013 12:10:38

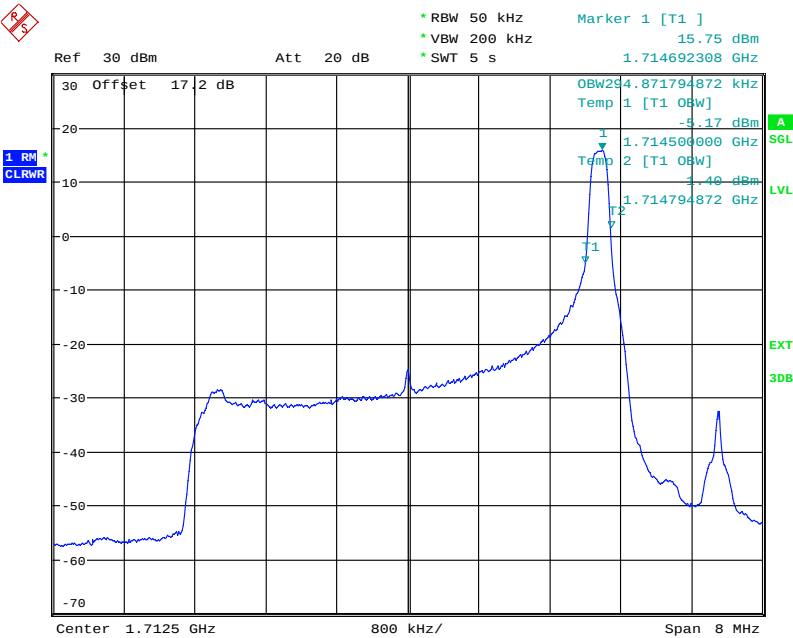


1712.5 MHz - 1 Resource Block - Middle



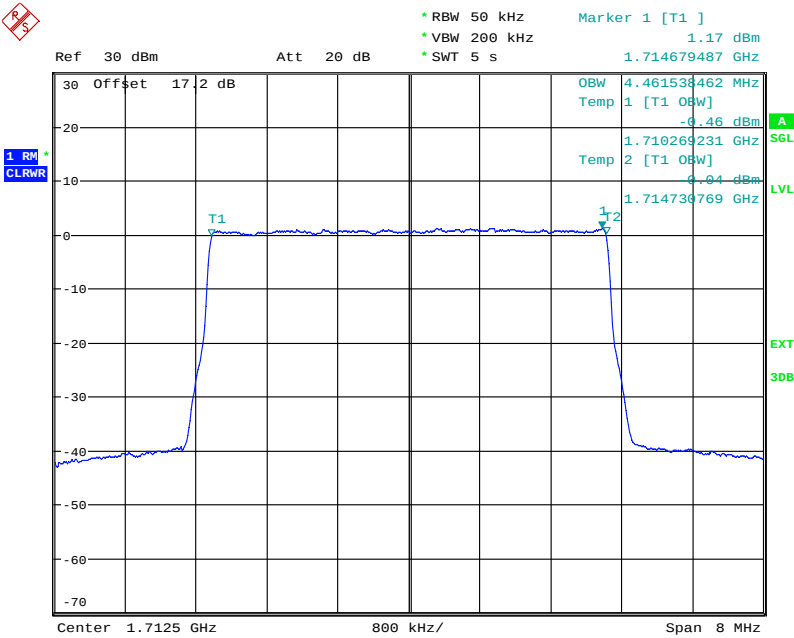
Date: 1.AUG.2013 12:19:52

1712.5 MHz - 1 Resource Block - High



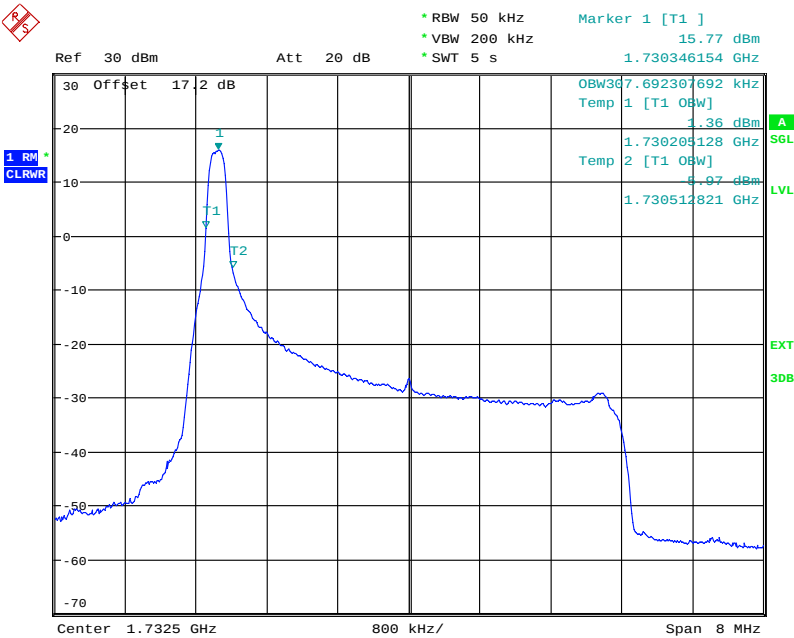
Date: 1.AUG.2013 12:27:43

1712.5 MHz - All Resource Blocks



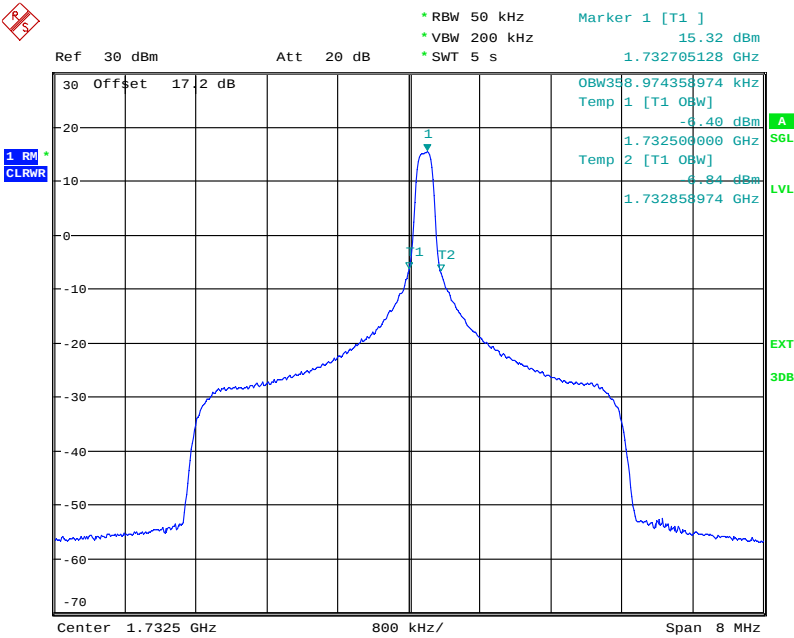
Date: 1.AUG.2013 12:02:56

1732.5 MHz - 1 Resource Block - Low



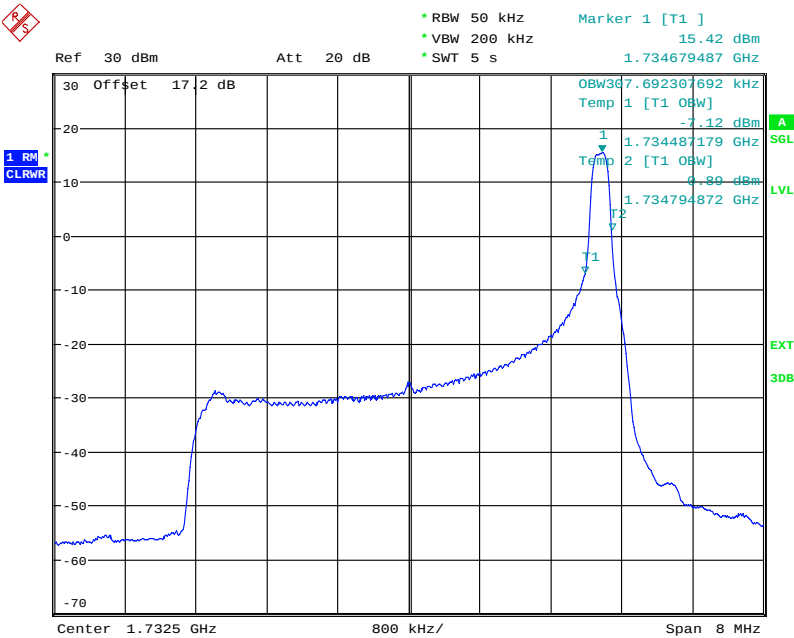
Date: 1.AUG.2013 12:47:07

1732.5 MHz - 1 Resource Block - Middle



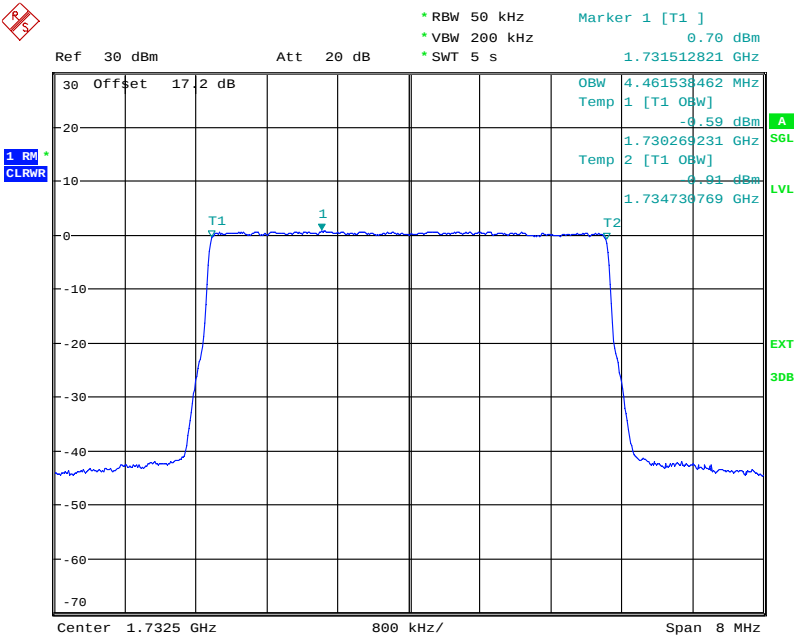
Date: 1.AUG.2013 12:41:22

1732.5 MHz - 1 Resource Block - High



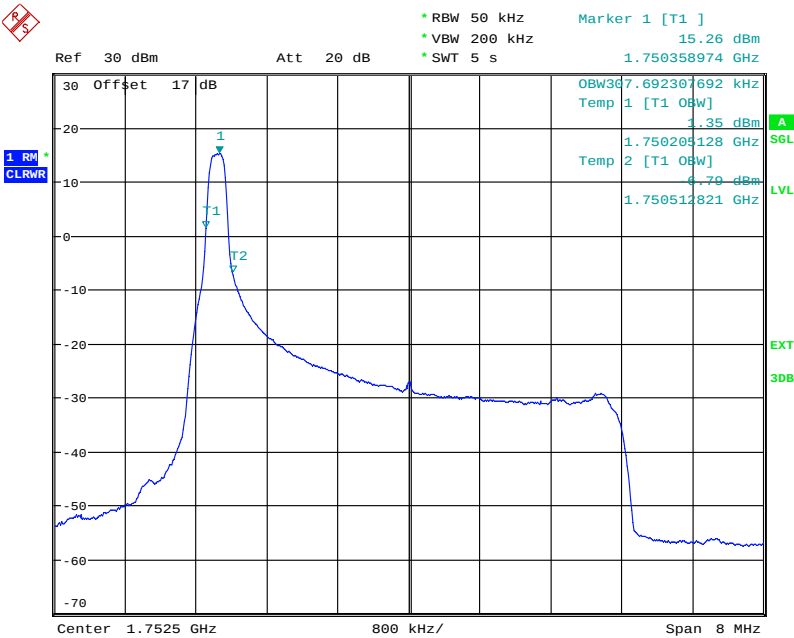
Date: 1.AUG.2013 12:35:05

1732.5 MHz - All Resource Blocks



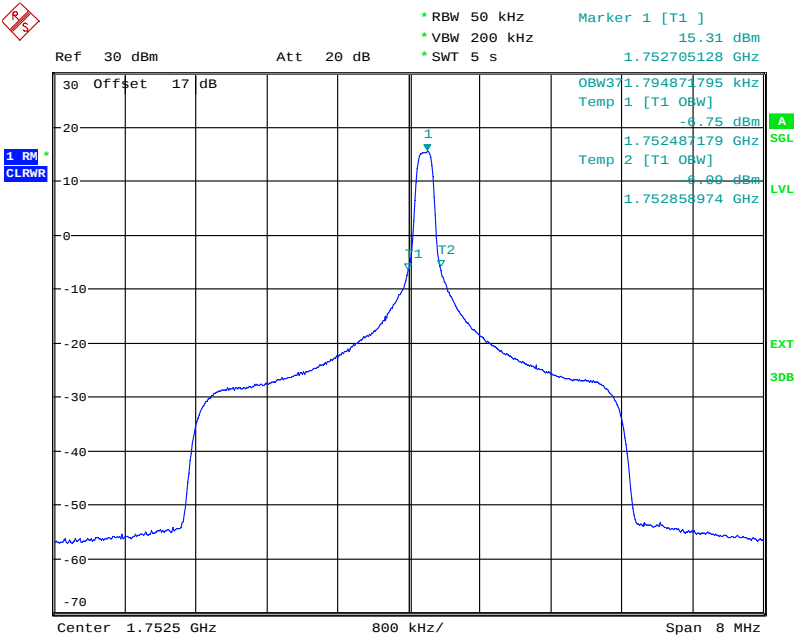
Date: 1.AUG.2013 12:52:45

1752.5 MHz - 1 Resource Block - Low



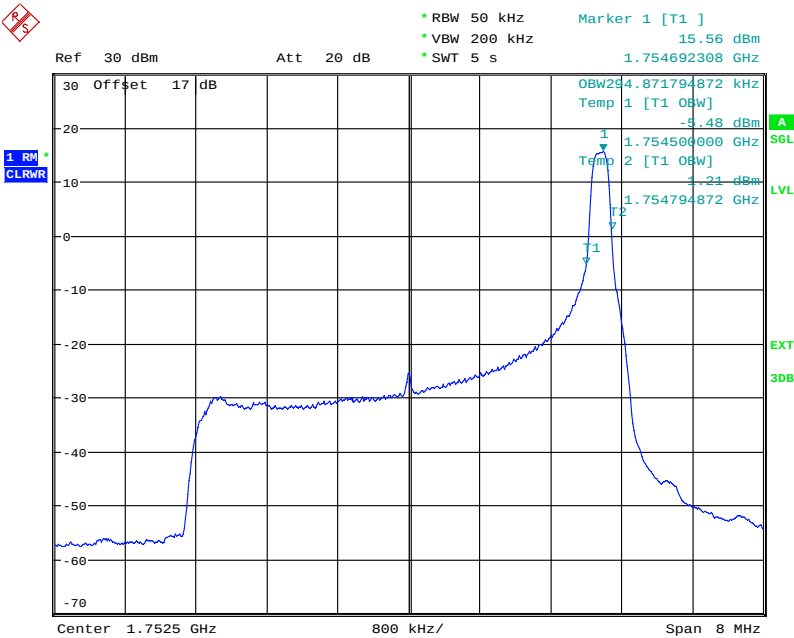
Date: 1.AUG.2013 14:18:48

1752.5 MHz - 1 Resource Block - Middle



Date: 1.AUG.2013 14:04:42

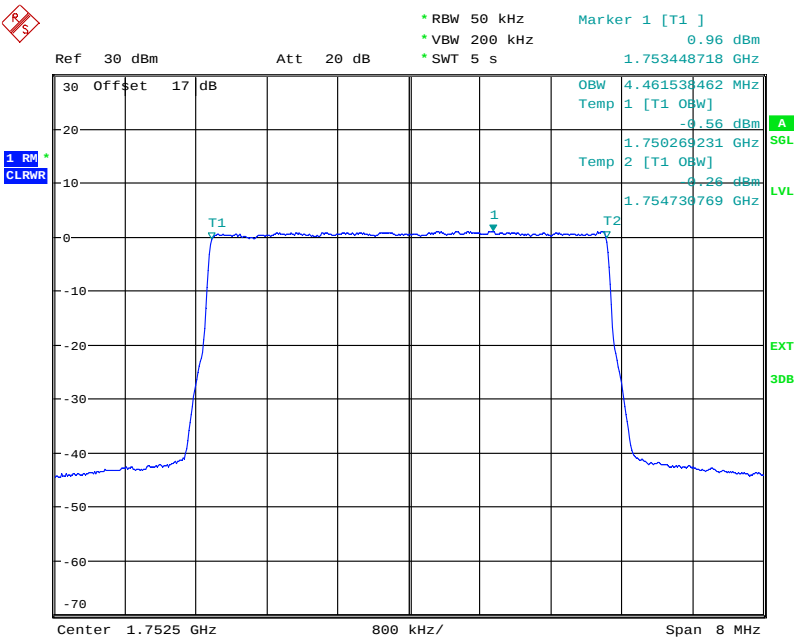
1752.5 MHz - 1 Resource Block - High



Date: 1.AUG.2013 13:56:47



1752.5 MHz - All Resource Blocks



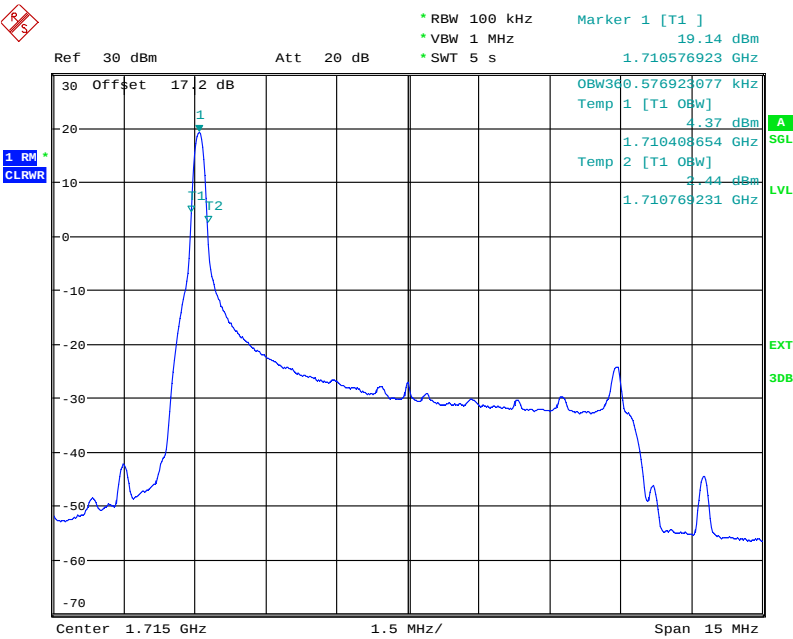
Date: 1.AUG.2013 13:41:11



10.0 MHz Bandwidth - QPSK

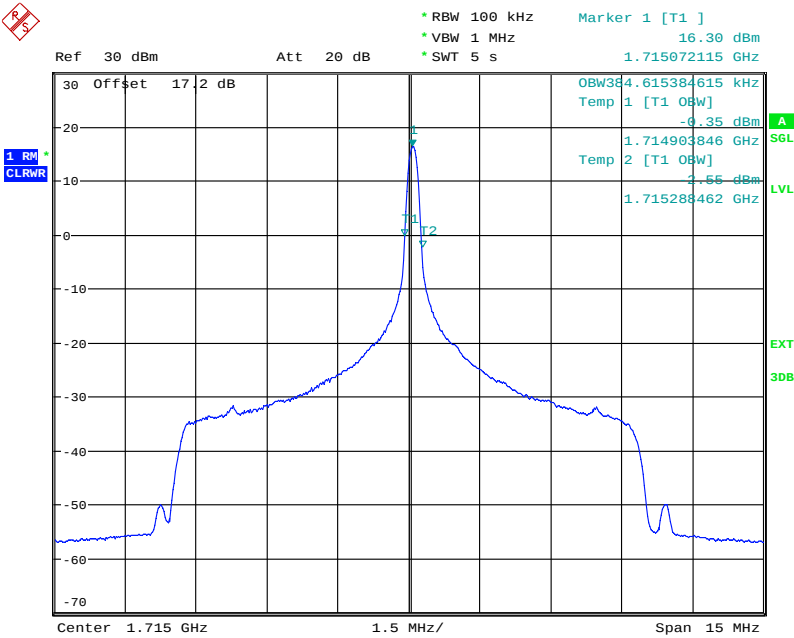
Occupied Bandwidth (kHz)											
1715.0 MHz				1732.5 MHz				1750.0 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
360.6	384.6	384.6	8942.3	360.6	408.7	384.6	8918.3	360.6	408.7	384.6	8942.3

1715 MHz - 1 Resource Block - Low



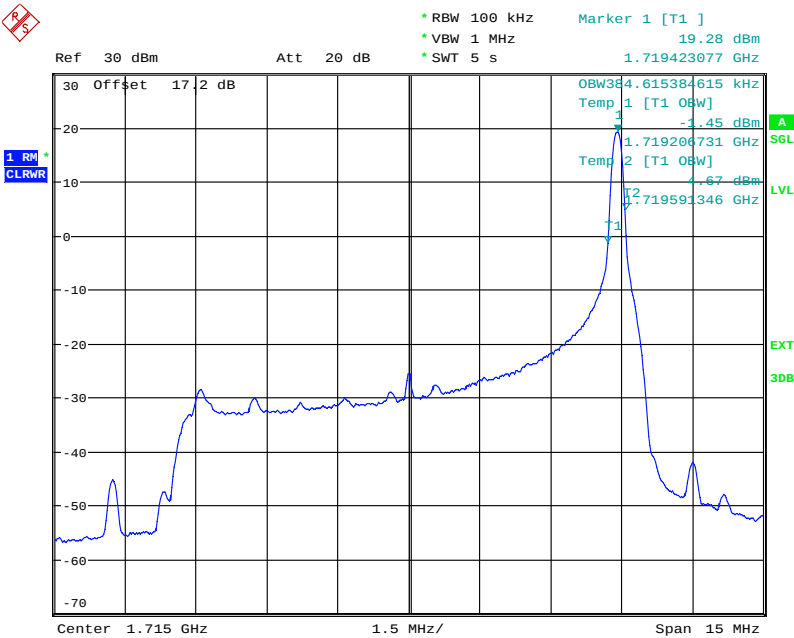
Date: 31.JUL.2013 08:54:47

1715 MHz - 1 Resource Block - Middle



Date: 31.JUL.2013 09:05:00

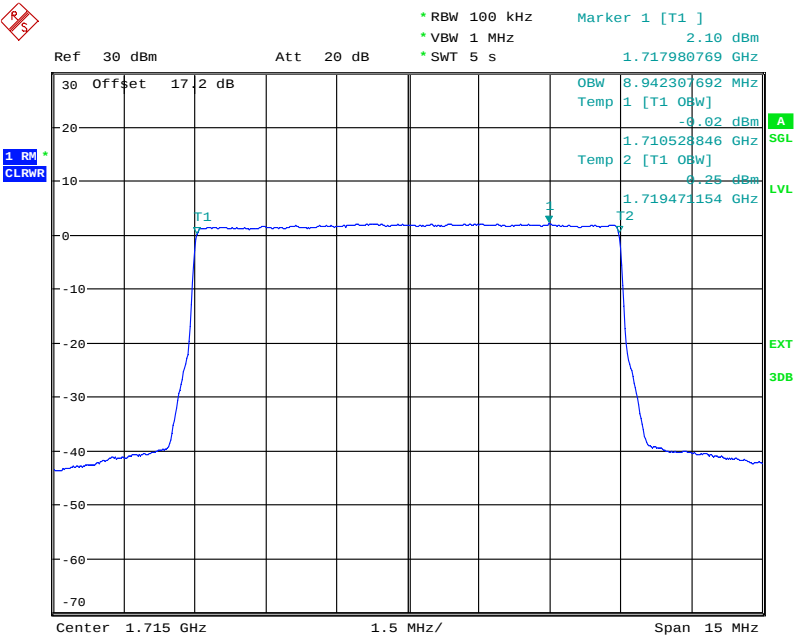
1715 MHz - 1 Resource Block - High



Date: 31.JUL.2013 09:11:49

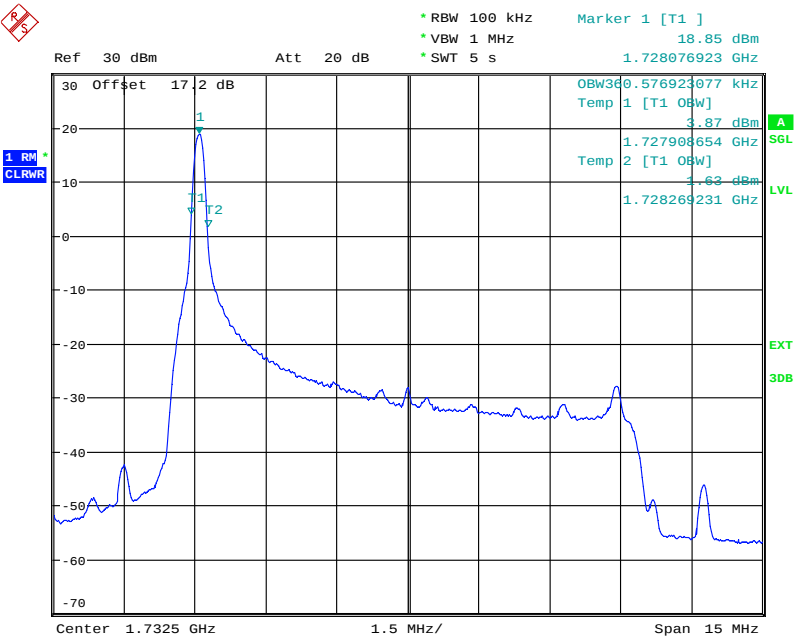


1715 MHz - All Resource Blocks



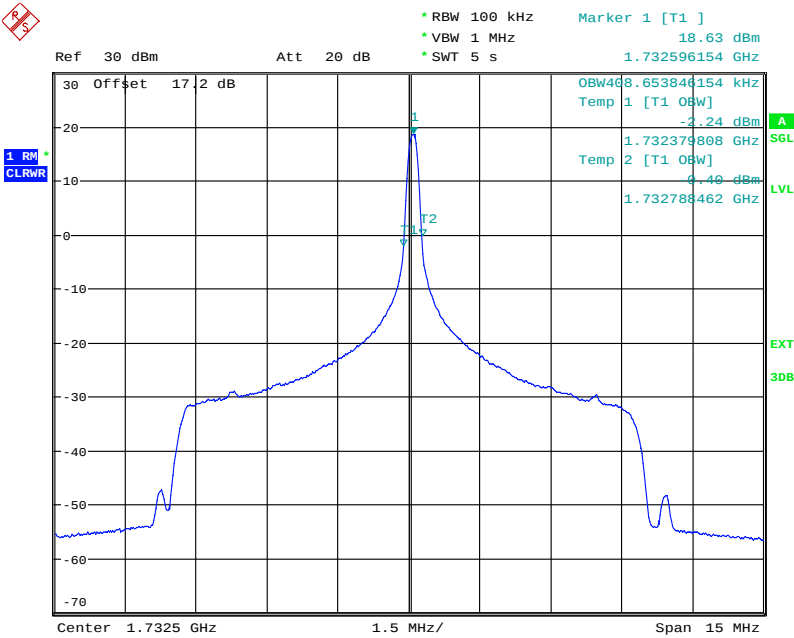
Date: 31.JUL.2013 08:46:22

1732.5 MHz - 1 Resource Block - Low



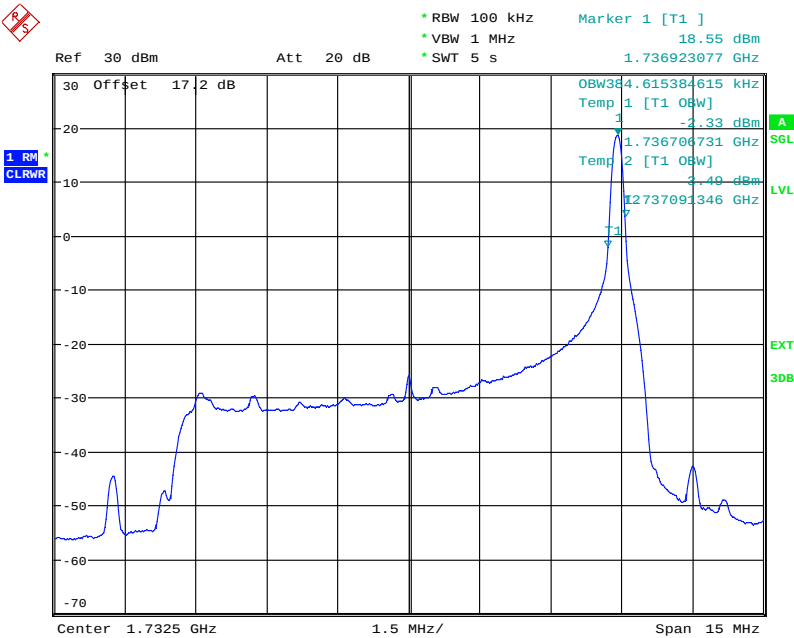
Date: 31.JUL.2013 10:07:52

1732.5 MHz - 1 Resource Block - Middle



Date: 31.JUL.2013 09:56:10

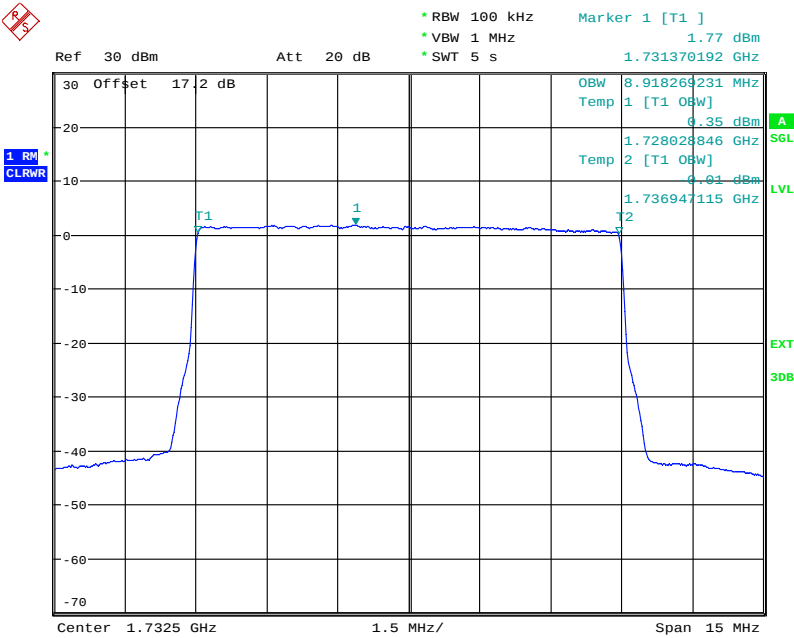
1732.5 MHz - 1 Resource Block - High



Date: 31.JUL.2013 09:27:05

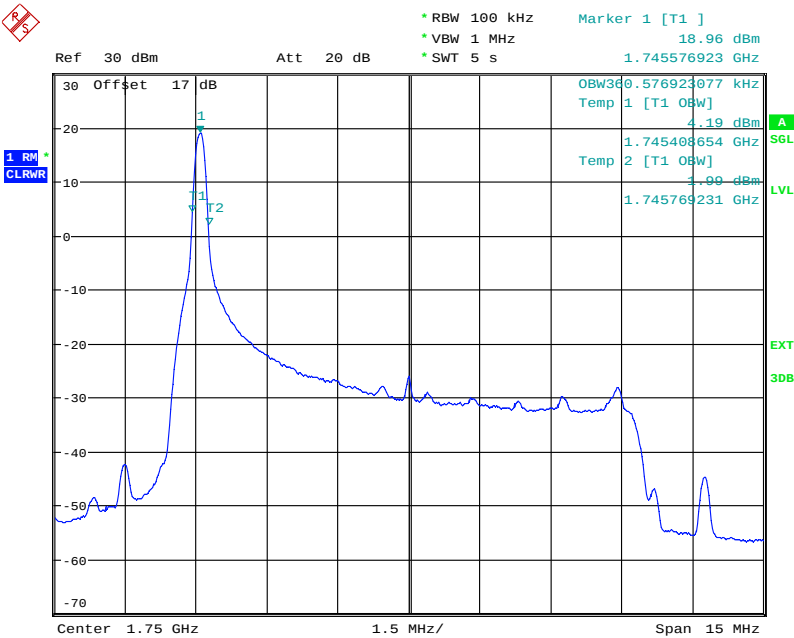


1732.5 MHz - All Resource Blocks



Date: 31.JUL.2013 10:14:15

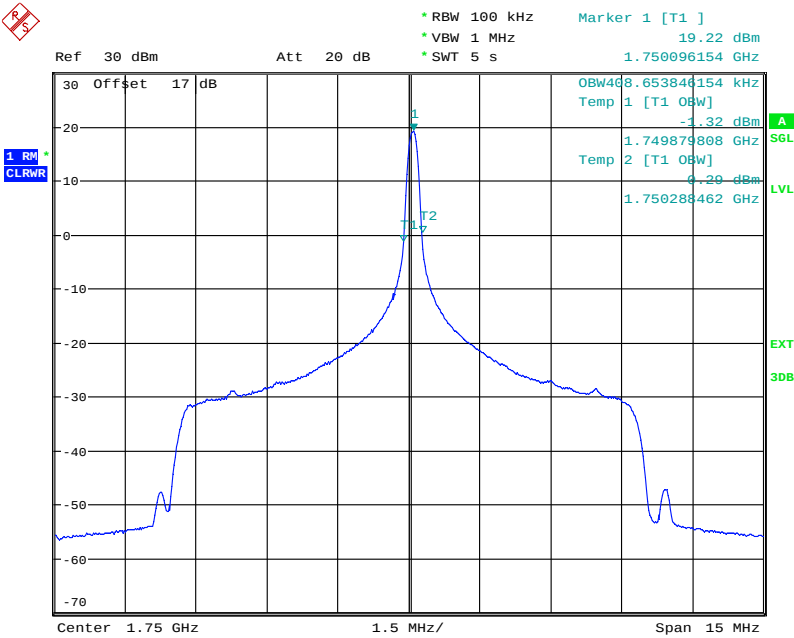
1750 MHz - 1 Resource Block - Low



Date: 31.JUL.2013 10:56:47

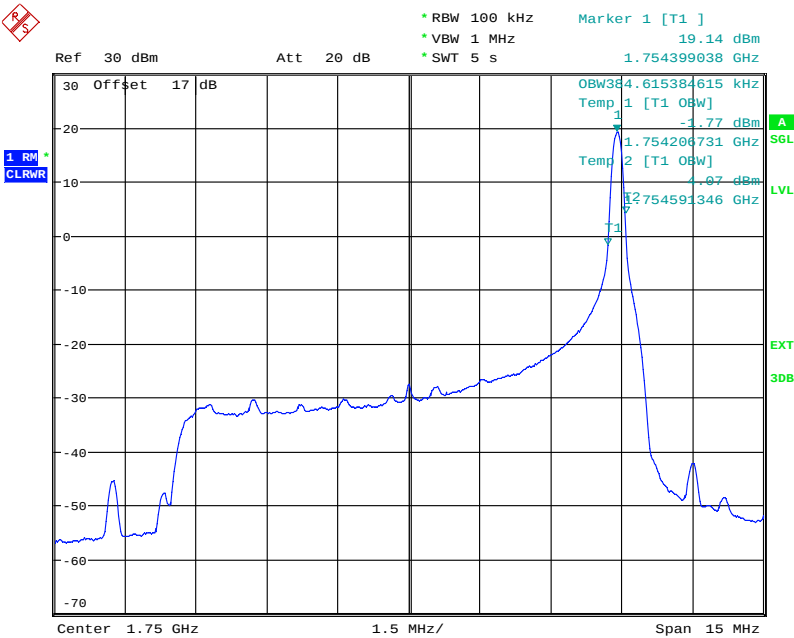


1750 MHz - 1 Resource Block - Middle



Date: 31.JUL.2013 10:40:33

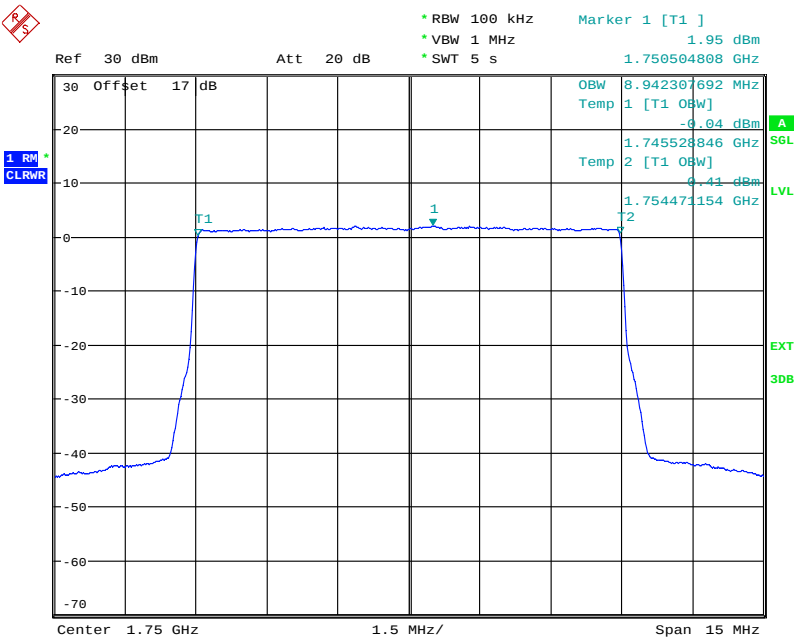
1750 MHz - 1 Resource Block - High



Date: 31.JUL.2013 10:30:33



1750 MHz - All Resource Blocks



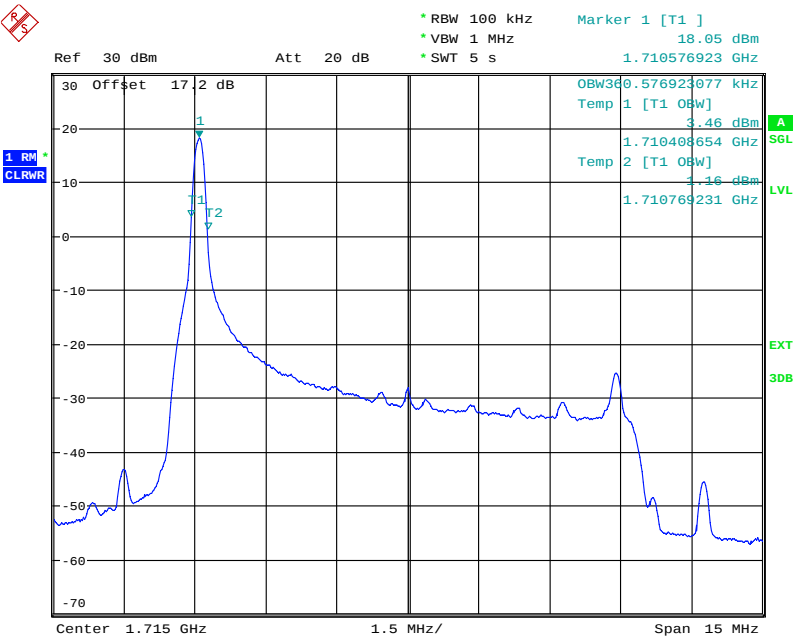
Date: 31.JUL.2013 10:22:50



10.0 MHz Bandwidth - 16QAM

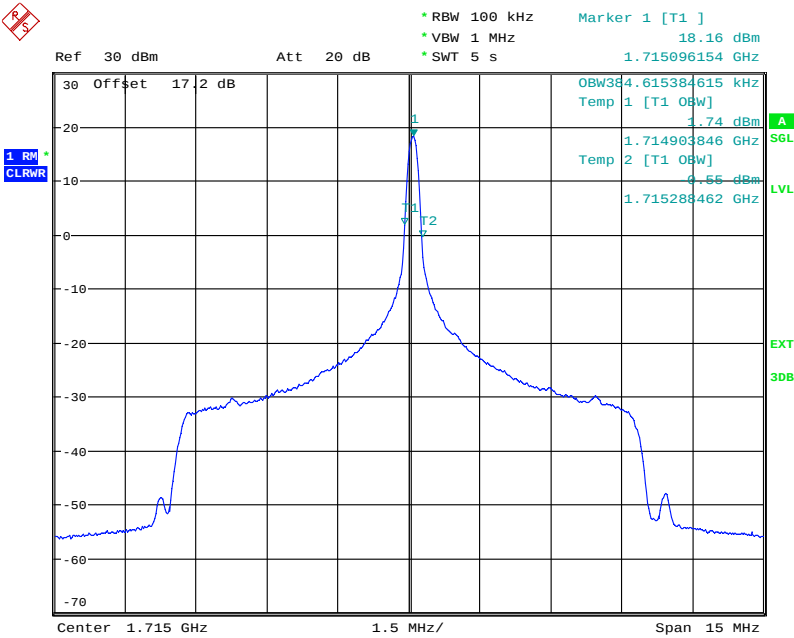
Occupied Bandwidth (kHz)											
1715.0 MHz				1732.5 MHz				1750.0 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
360.6	384.6	384.6	8942.3	384.6	408.7	384.6	8918.3	360.6	408.7	384.6	8942.3

1715 MHz - 1 Resource Block - Low



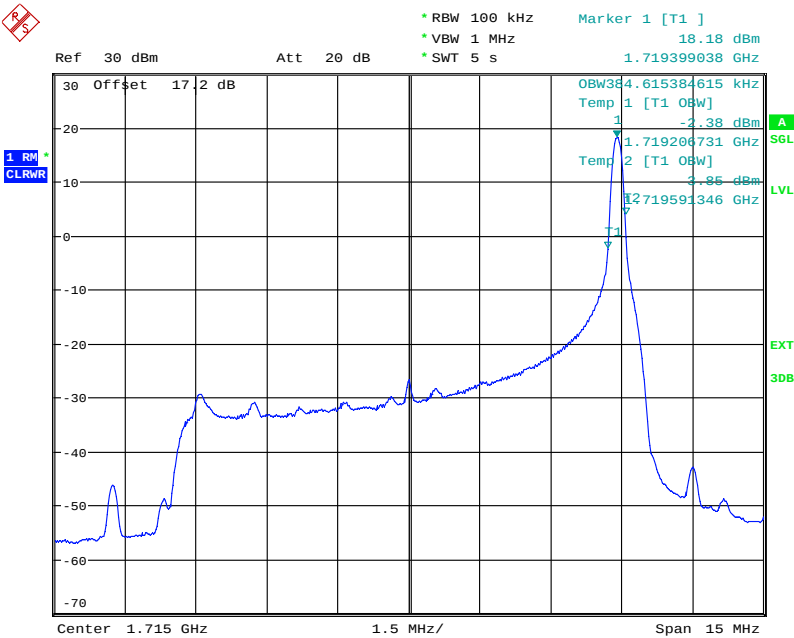
Date: 1.AUG.2013 14:31:11

1715 MHz - 1 Resource Block - Middle



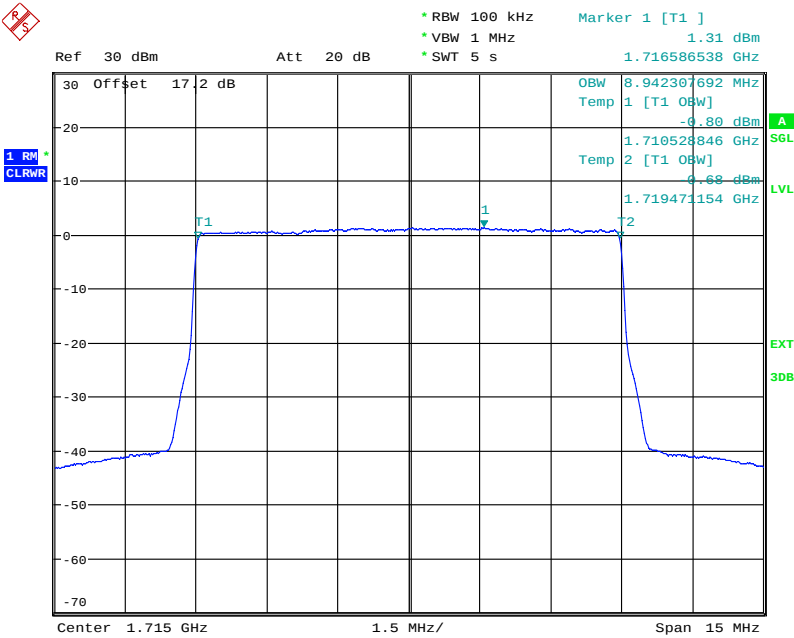
Date: 1.AUG.2013 14:54:12

1715 MHz - 1 Resource Block - High



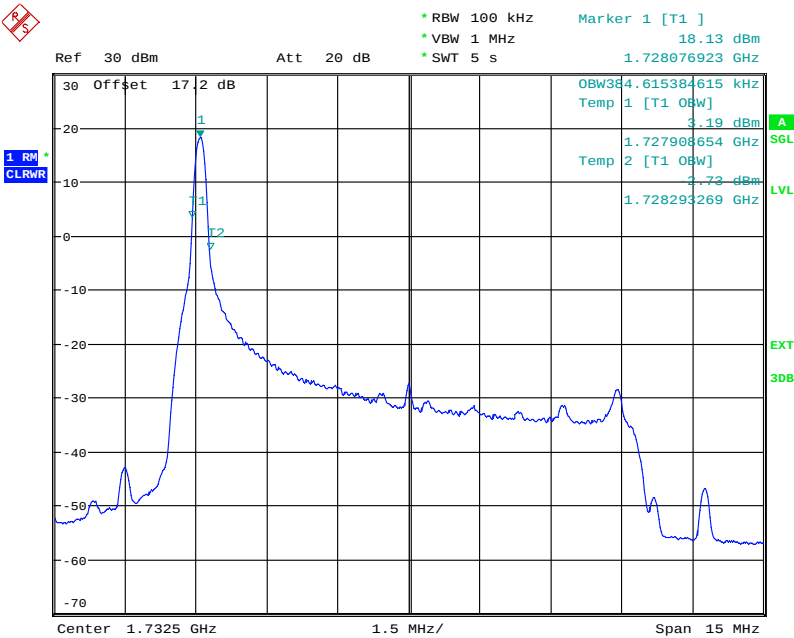
Date: 1.AUG.2013 14:46:02

1715 MHz - All Resource Blocks



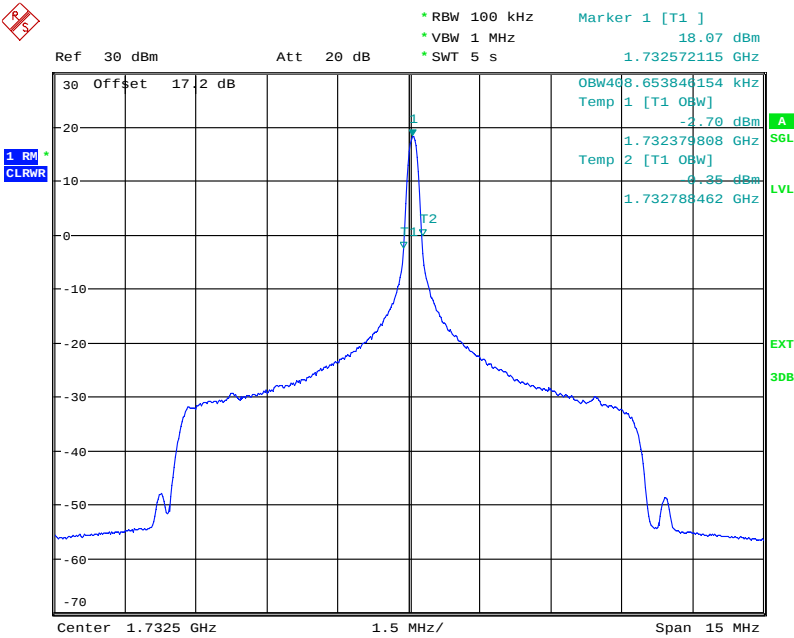
Date: 1.AUG.2013 14:38:53

1732.5 MHz - 1 Resource Block - Low



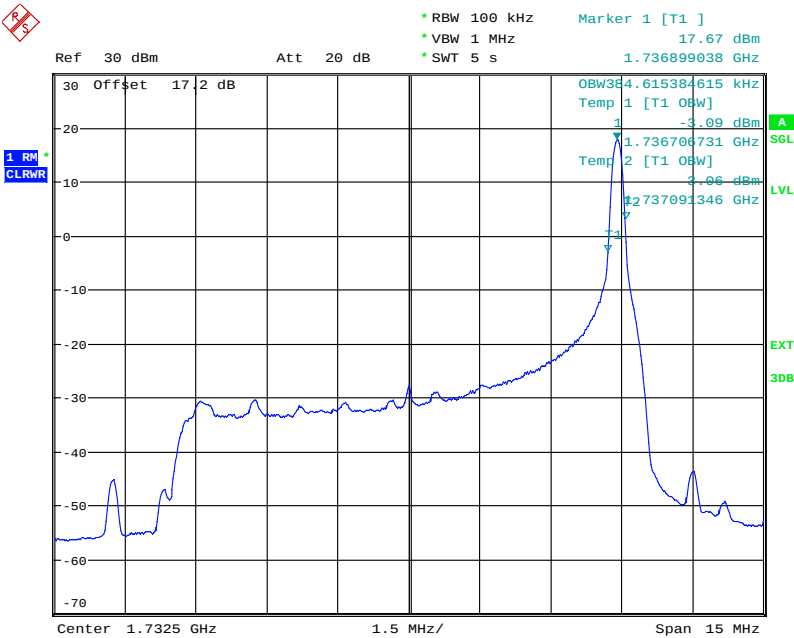
Date: 1.AUG.2013 15:20:26

1732.5 MHz - 1 Resource Block - Middle



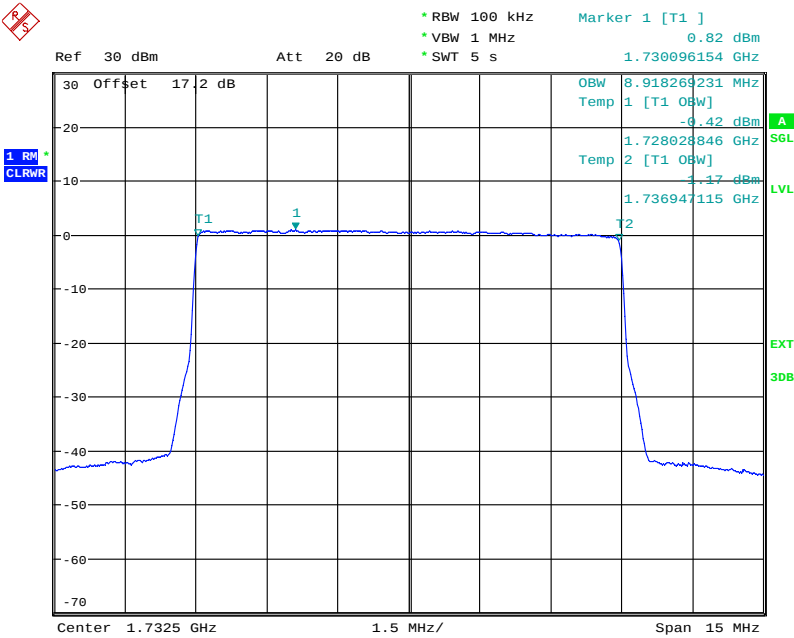
Date: 1.AUG.2013 15:02:33

1732.5 MHz - 1 Resource Block - High



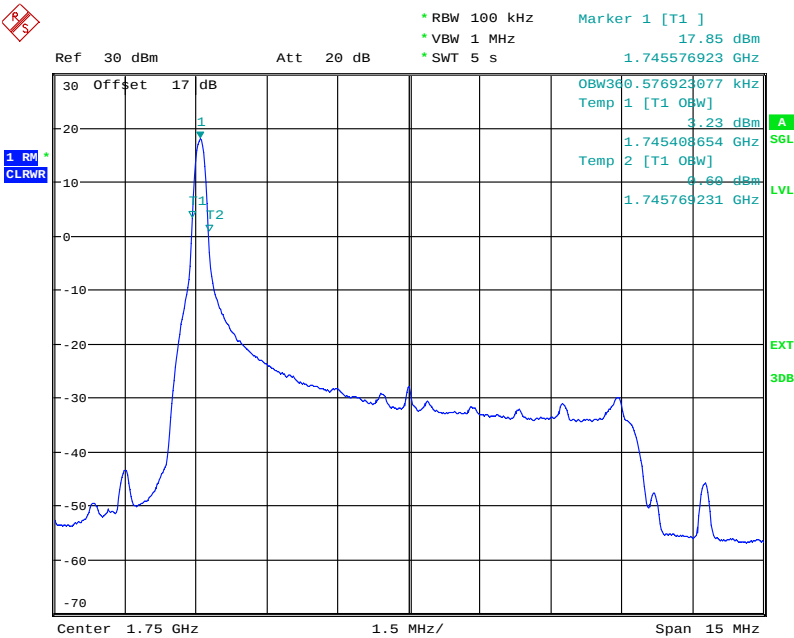
Date: 1.AUG.2013 15:13:39

1732.5 MHz - All Resource Blocks



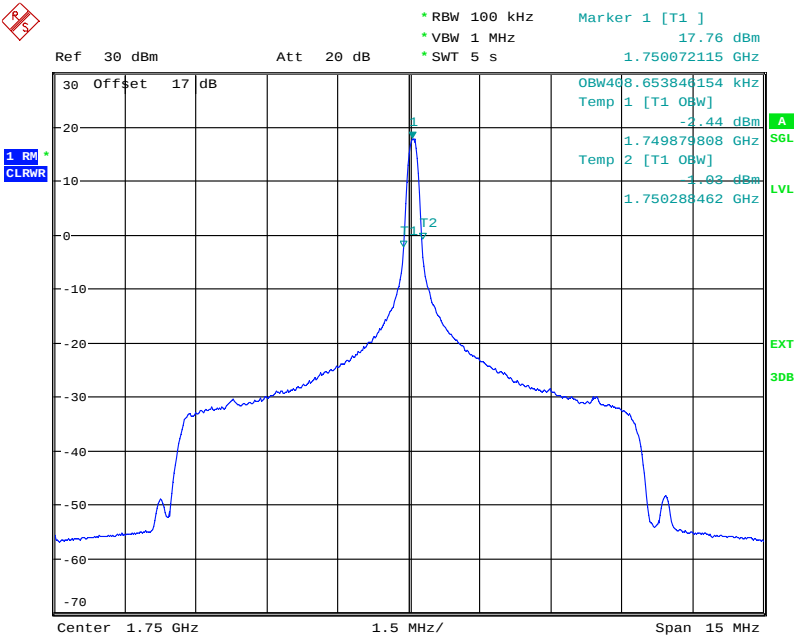
Date: 1.AUG.2013 15:31:12

1750 MHz - 1 Resource Block - Low



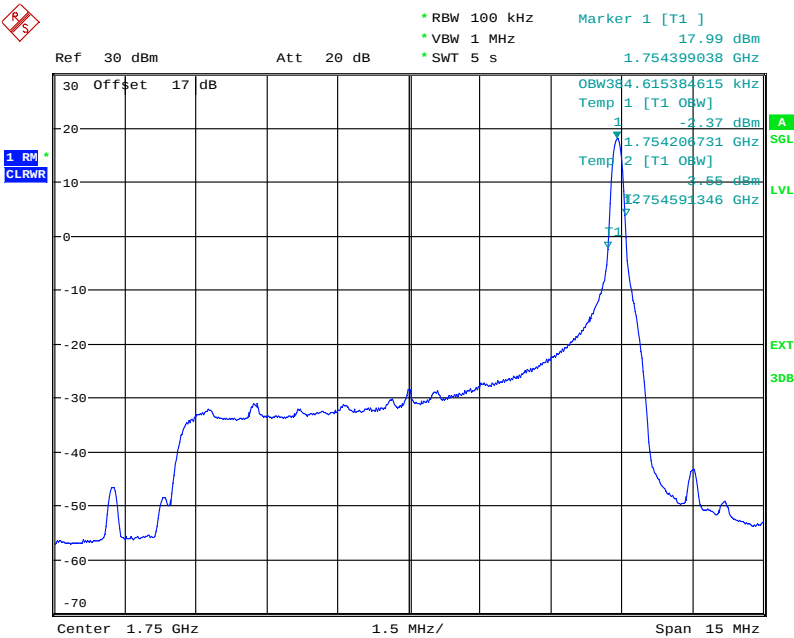
Date: 1.AUG.2013 16:06:12

1750 MHz - 1 Resource Block - Middle



Date: 1.AUG.2013 16:00:08

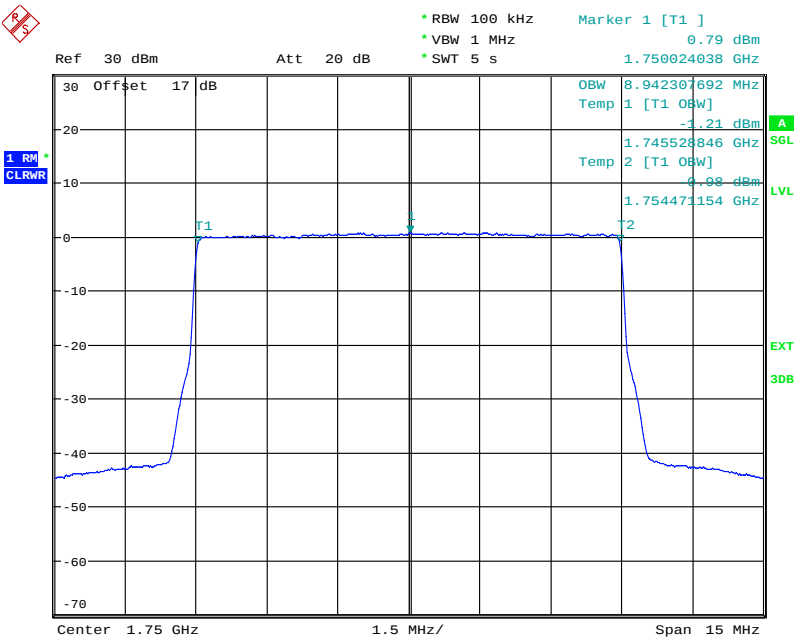
1750 MHz - 1 Resource Block - High



Date: 1.AUG.2013 15:51:23



1750 MHz - All Resource Blocks



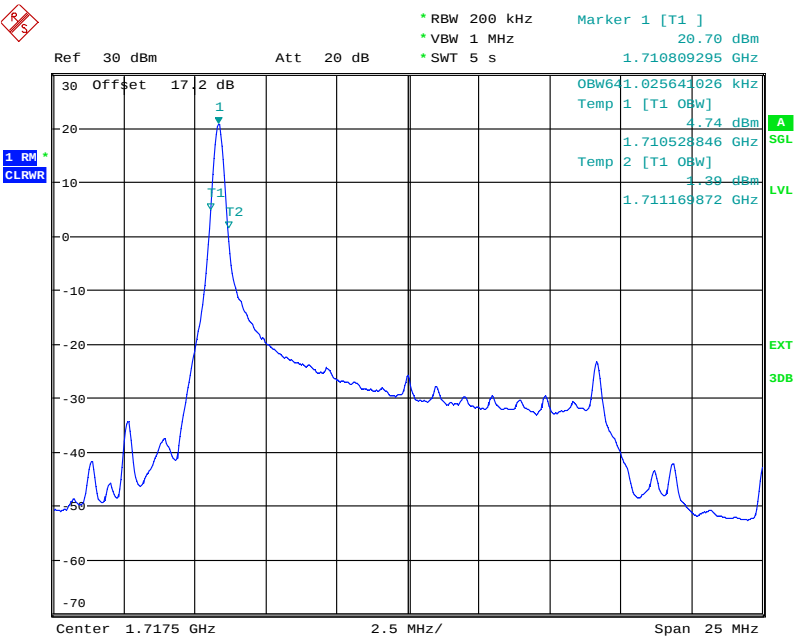
Date: 1.AUG.2013 15:43:43



15.0 MHz Bandwidth - QPSK

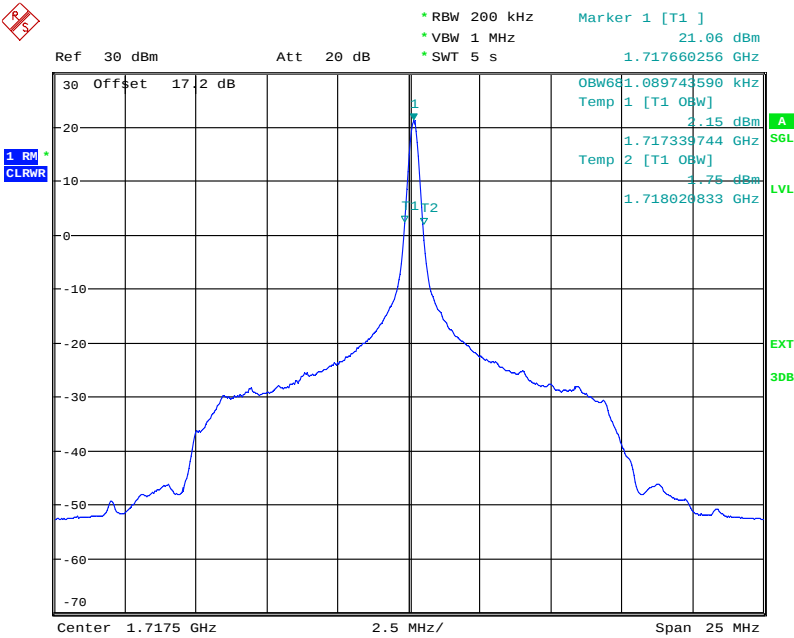
Occupied Bandwidth (kHz)											
1717.5 MHz				1732.5 MHz				1747.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
641.0	681.1	641.0	13461.5	641.0	13421.5	641.0	13421.5	641.0	681.1	641.0	13461.5

1717.5 MHz - 1 Resource Block - Low



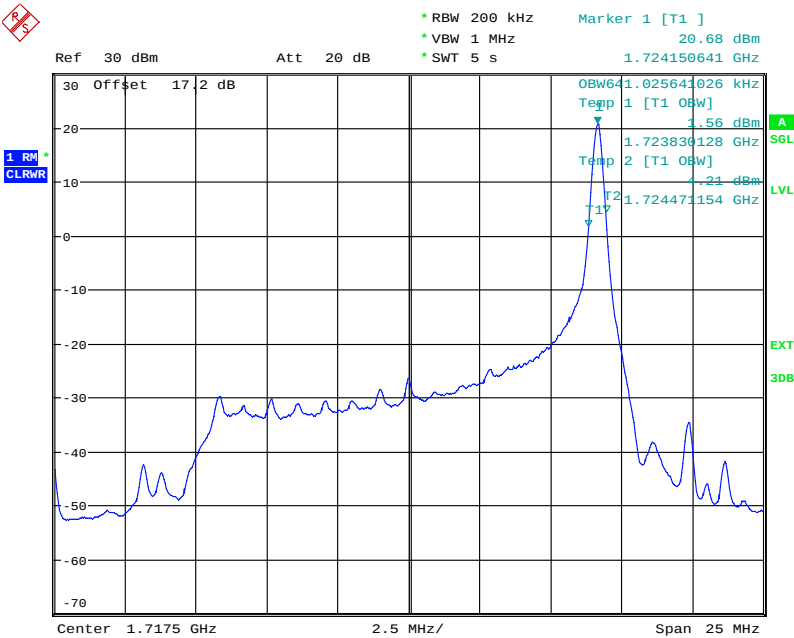
Date: 31.JUL.2013 11:11:28

1717.5 MHz - 1 Resource Block - Middle



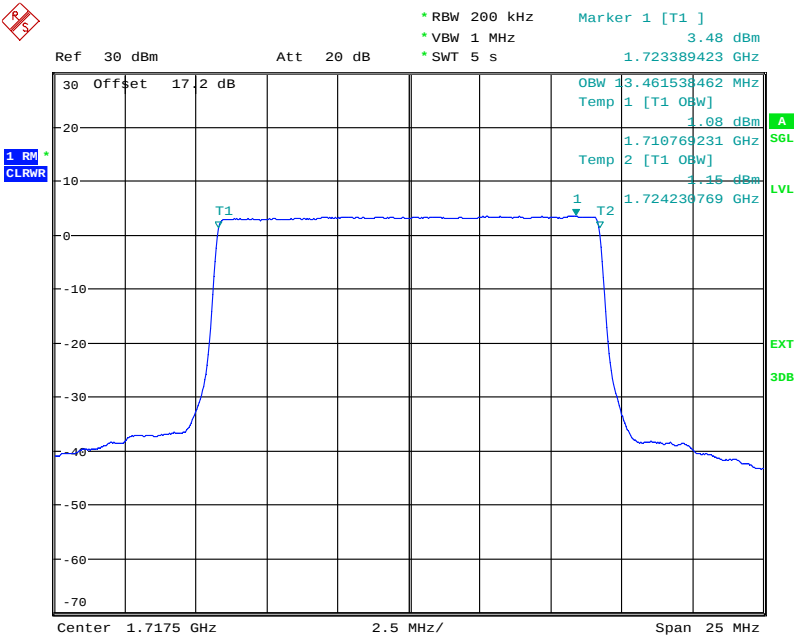
Date: 31.JUL.2013 11:47:38

1717.5 MHz - 1 Resource Block - High



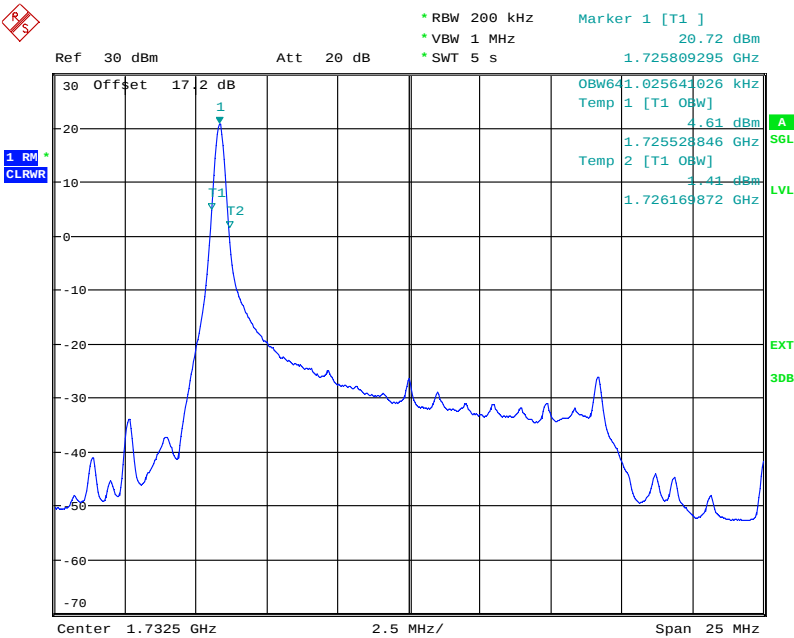
Date: 31.JUL.2013 11:39:58

1717.5 MHz - All Resource Blocks



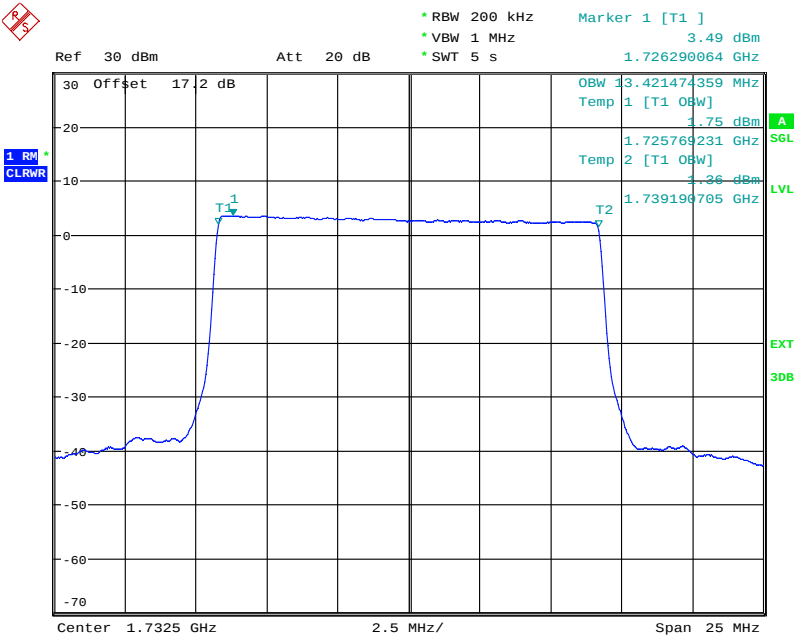
Date: 31.JUL.2013 11:30:10

1732.5 MHz - 1 Resource Block - Low



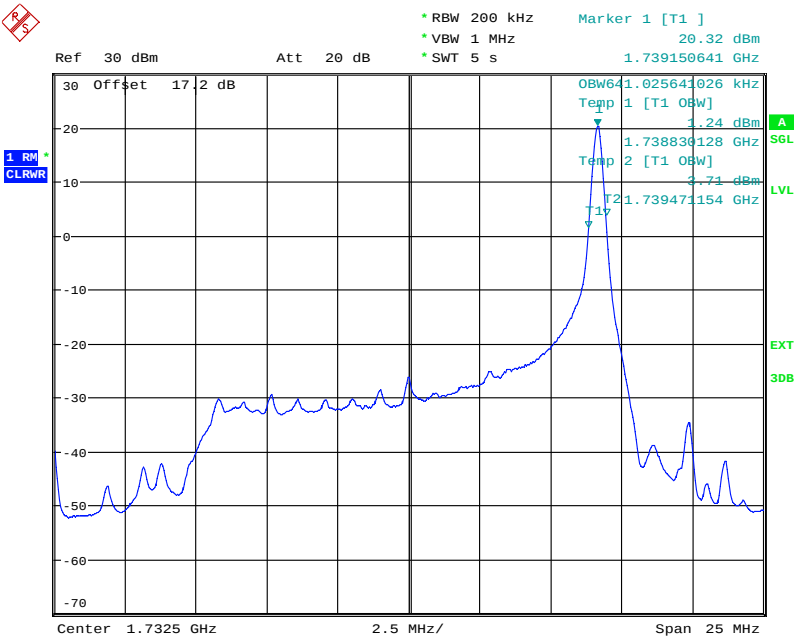
Date: 31.JUL.2013 12:10:04

1732.5 MHz - 1 Resource Block - Middle



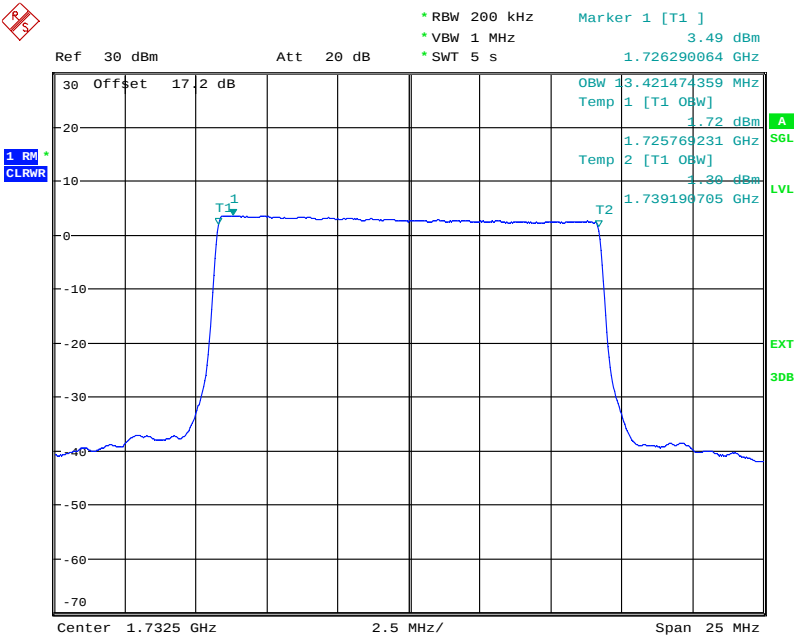
Date: 31.JUL.2013 11:55:33

1732.5 MHz - 1 Resource Block - High



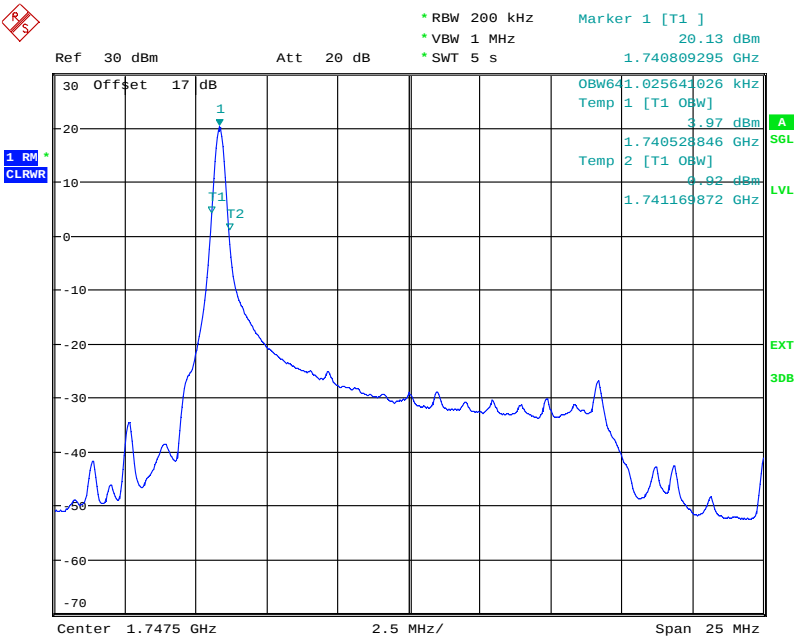
Date: 31.JUL.2013 12:03:35

1732.5 MHz - All Resource Blocks



Date: 31.JUL.2013 12:16:46

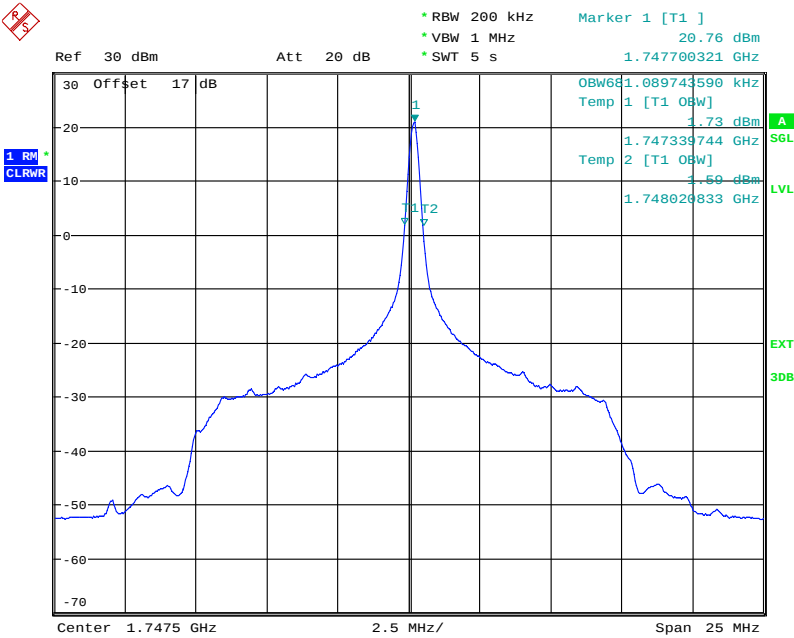
1747.5 MHz - 1 Resource Block - Low



Date: 31.JUL.2013 12:45:18

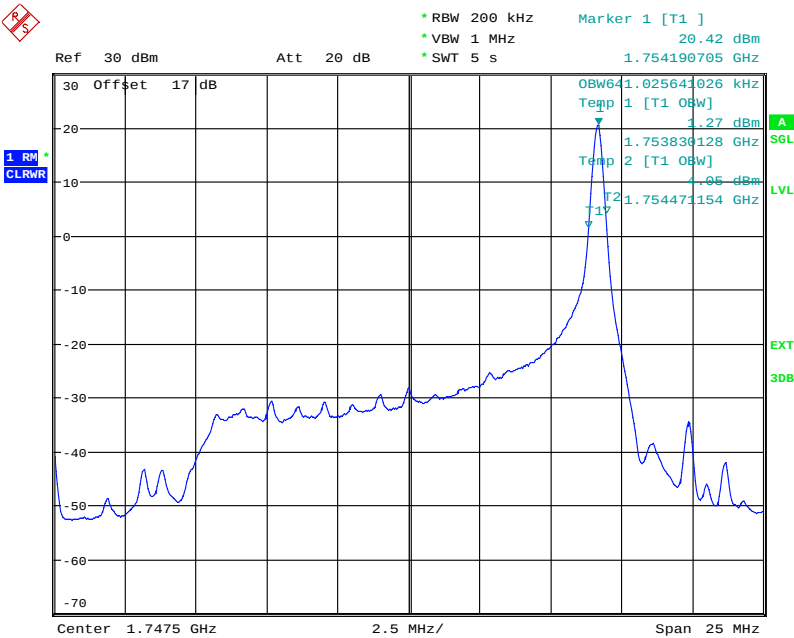


1747.5 MHz - 1 Resource Block - Middle



Date: 31.JUL.2013 12:38:56

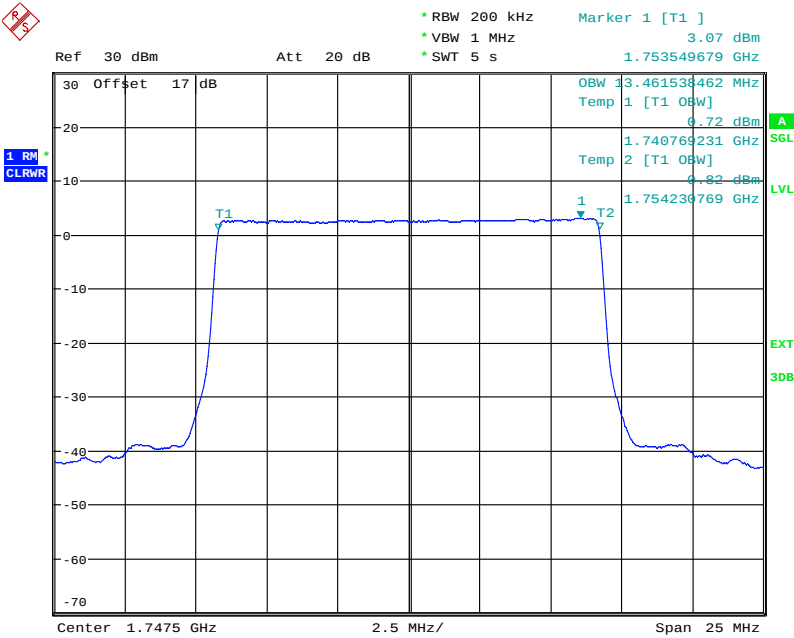
1747.5 MHz - 1 Resource Block - High



Date: 31.JUL.2013 12:31:42



1747.5 MHz - All Resource Blocks



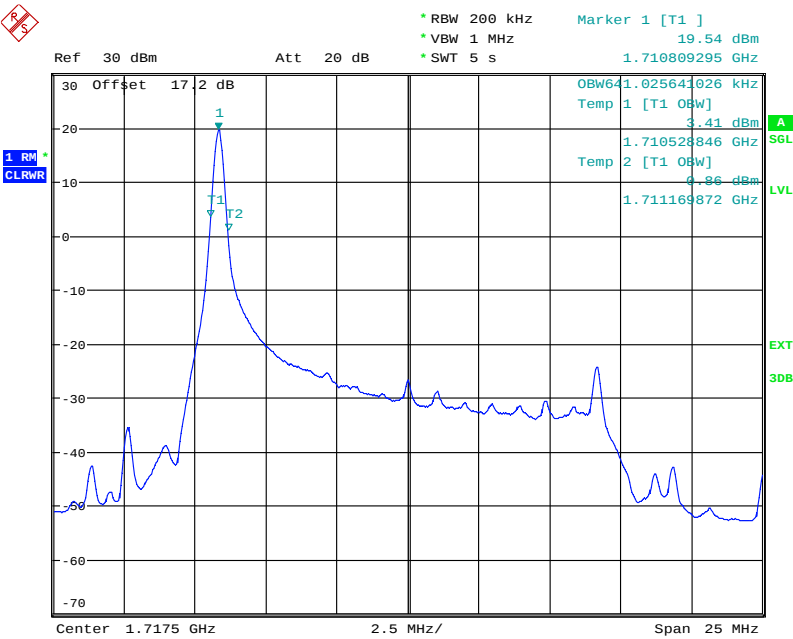
Date: 31.JUL.2013 12:24:11



15.0 MHz Bandwidth - 16QAM

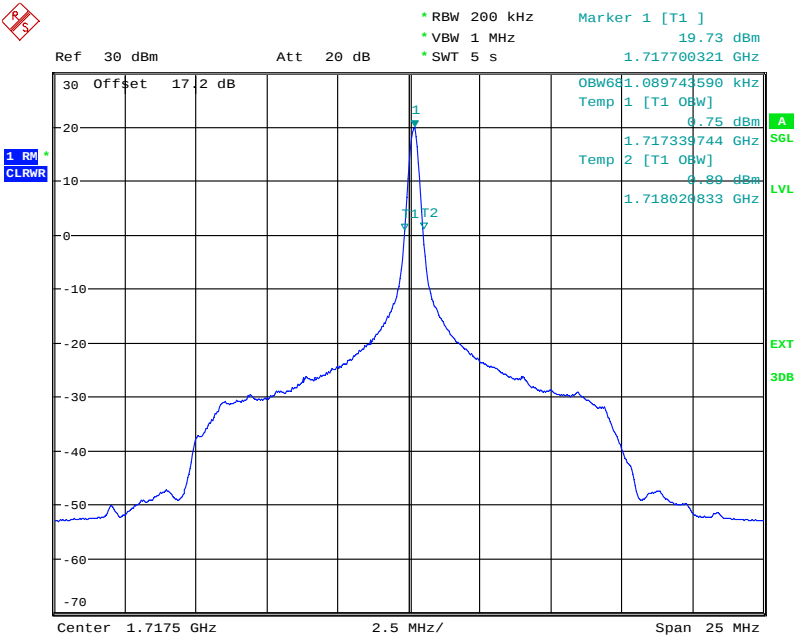
Occupied Bandwidth (kHz)											
1717.5 MHz				1732.5 MHz				1747.5 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
641.0	681.1	641.0	13421.5	641.0	681.1	641.0	13421.5	641.0	681.1	641.0	13461.5

1717.5 MHz - 1 Resource Block - Low



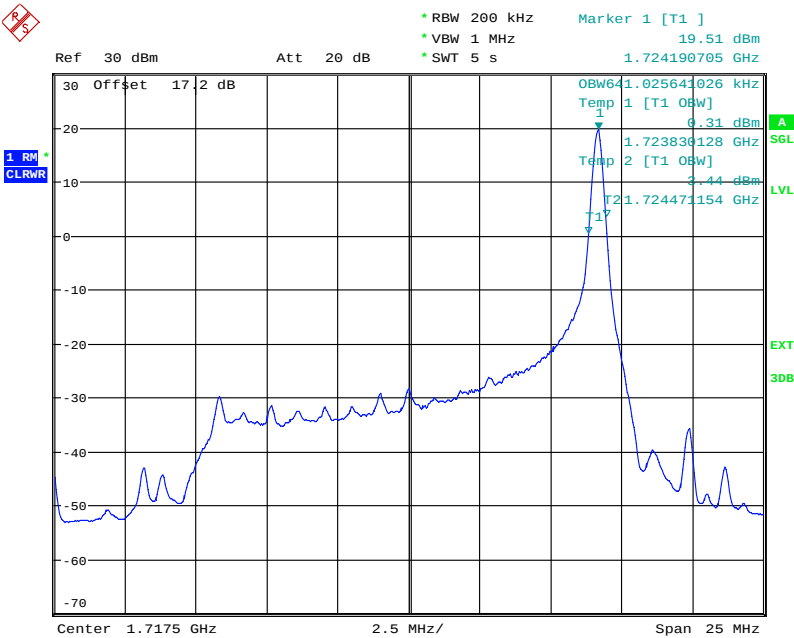
Date: 1.AUG.2013 16:22:03

1717.5 MHz - 1 Resource Block - Middle



Date: 1.AUG.2013 16:29:01

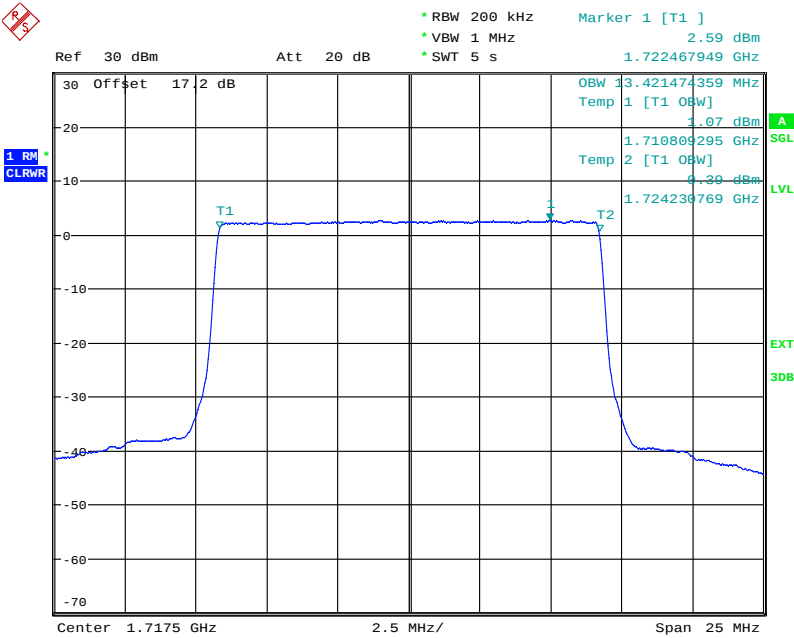
1717.5 MHz - 1 Resource Block - High



Date: 1.AUG.2013 16:34:21

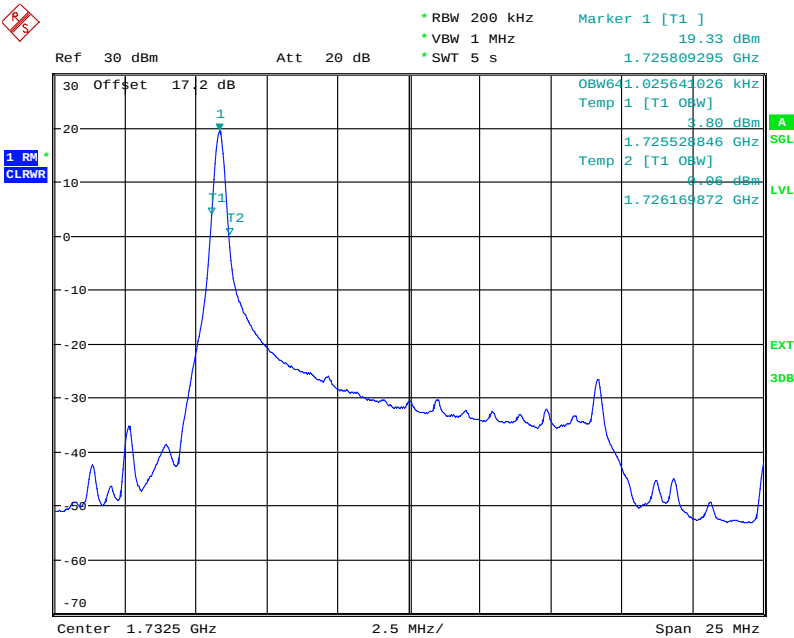


1717.5 MHz - All Resource Blocks



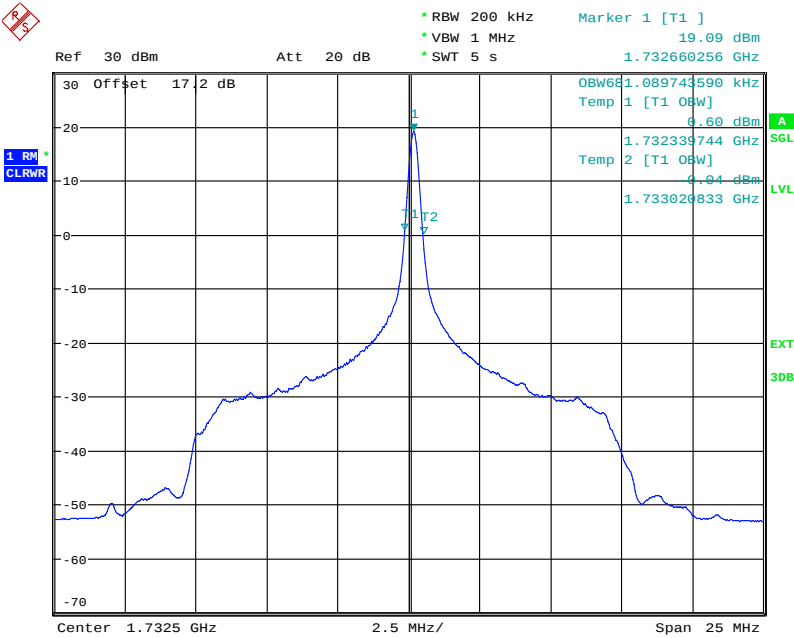
Date: 1.AUG.2013 16:14:20

1732.5 MHz - 1 Resource Block - Low



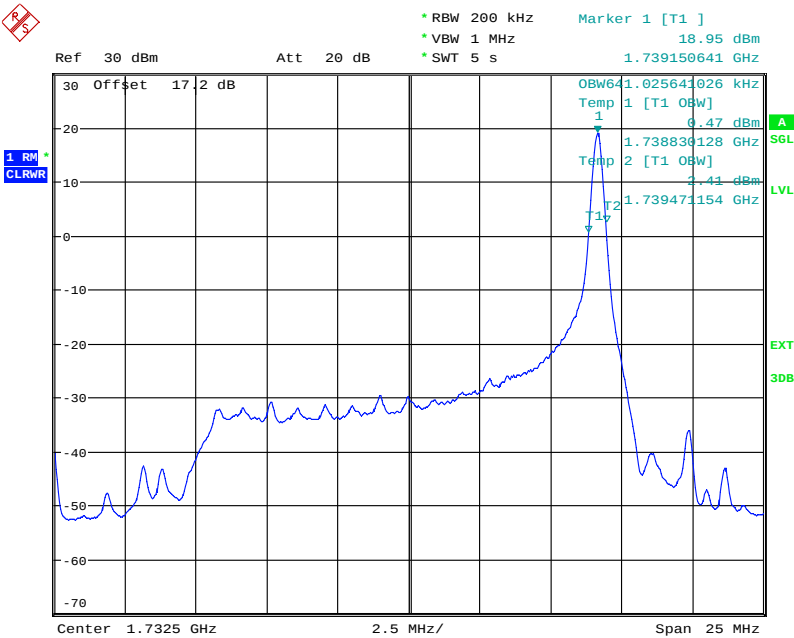
Date: 2.AUG.2013 08:47:06

1732.5 MHz - 1 Resource Block - Middle



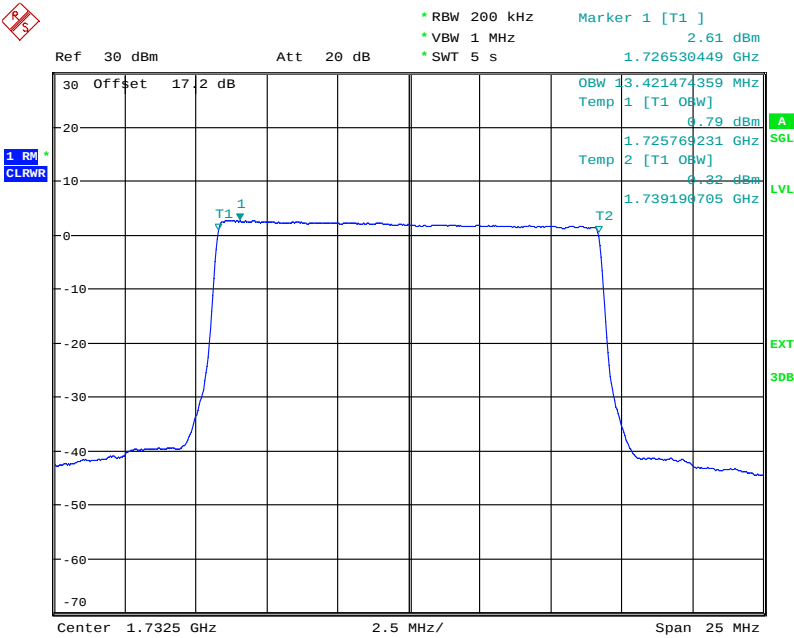
Date: 2.AUG.2013 08:41:18

1732.5 MHz - 1 Resource Block - High



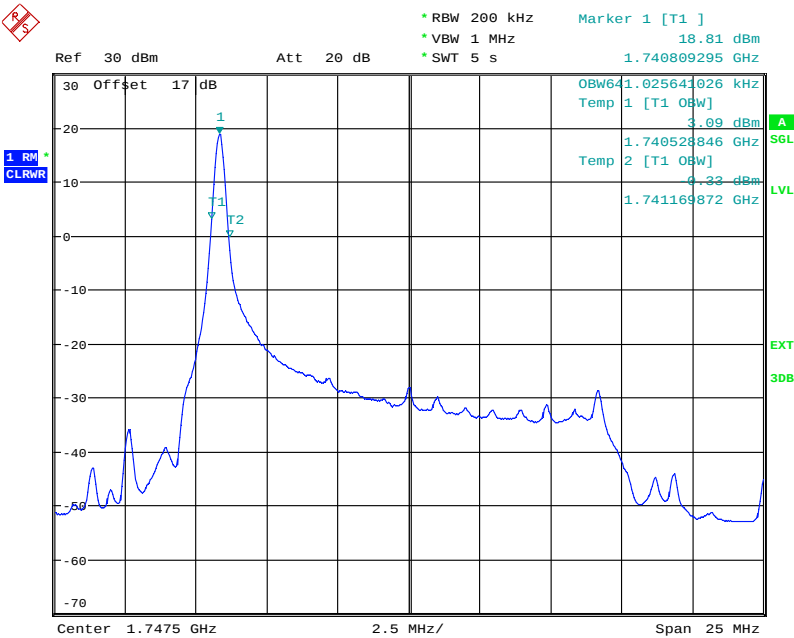
Date: 2.AUG.2013 08:35:21

1732.5 MHz - All Resource Blocks



Date: 2.AUG.2013 08:13:07

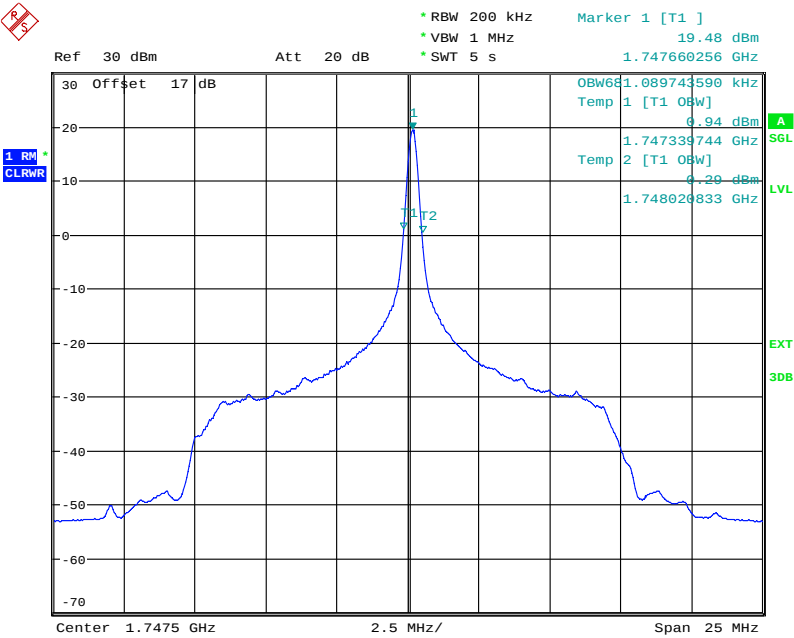
1747.5 MHz - 1 Resource Block - Low



Date: 2.AUG.2013 09:24:37

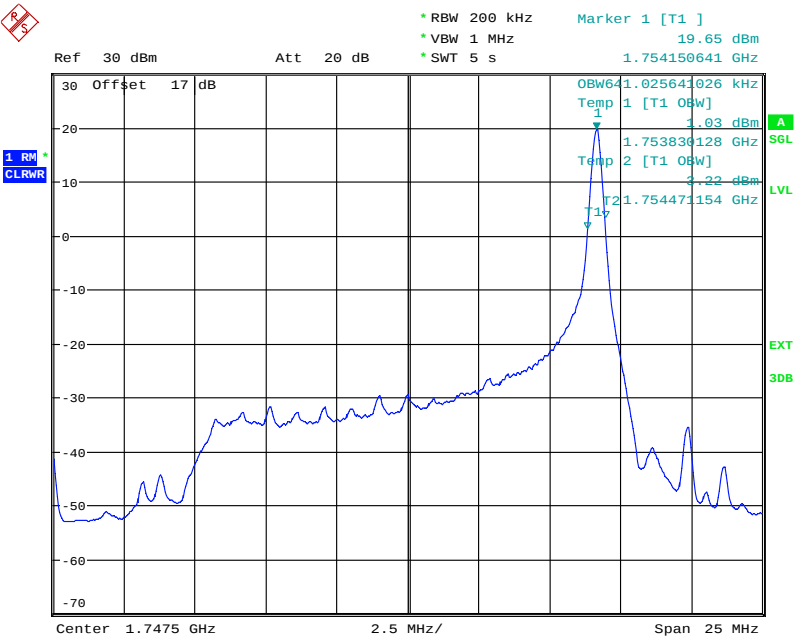


1747.5 MHz - 1 Resource Block - Middle



Date: 2.AUG.2013 09:16:32

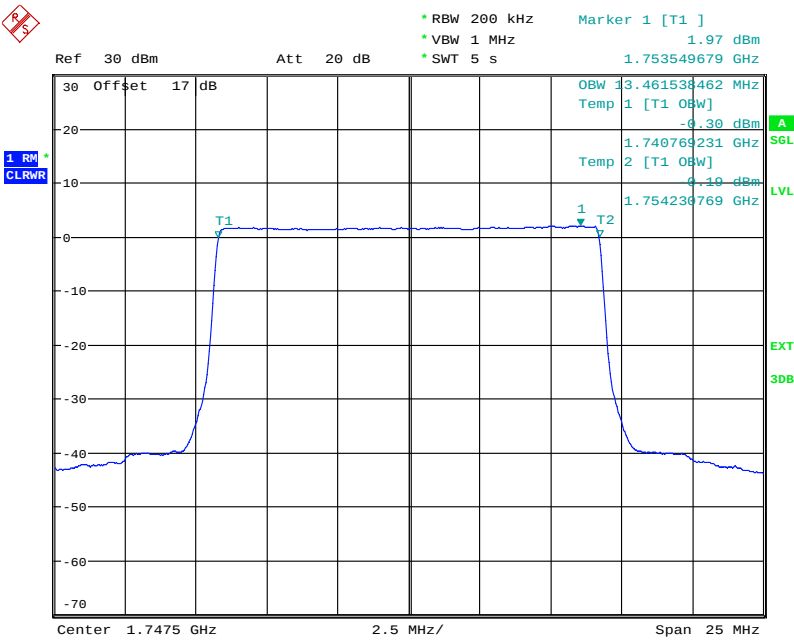
1747.5 MHz - 1 Resource Block - High



Date: 2.AUG.2013 09:02:30



1747.5 MHz - All Resource Blocks



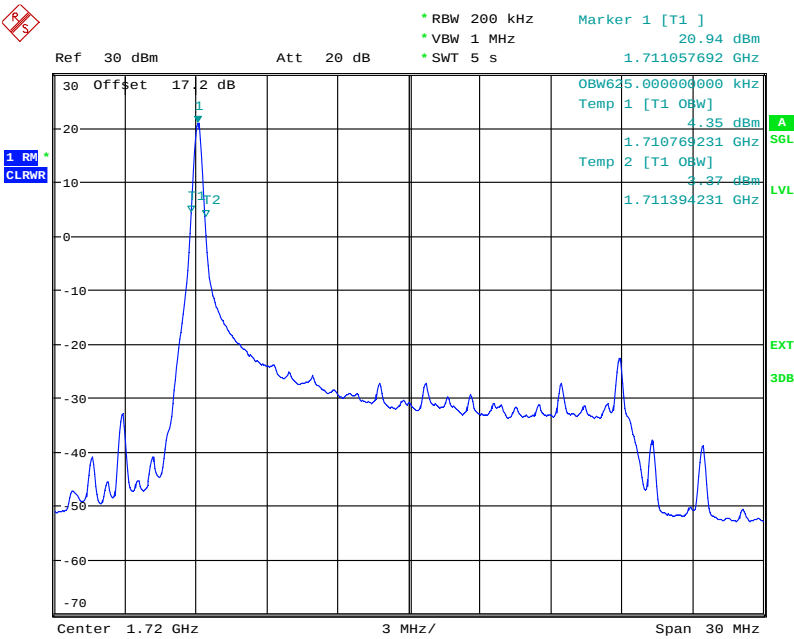
Date: 2.AUG.2013 08:54:30



20.0 MHz Bandwidth - QPSK

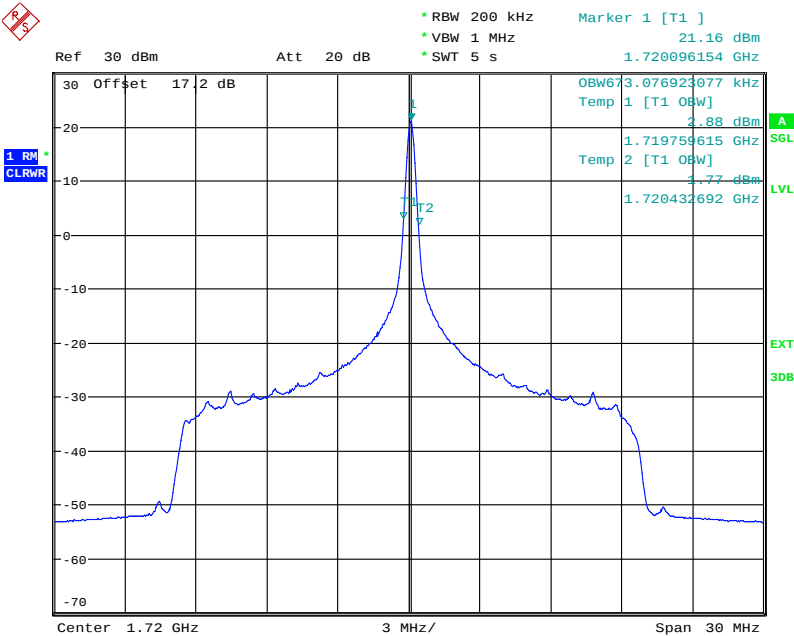
Occupied Bandwidth (kHz)											
1720.0 MHz				1732.5 MHz				1745.0 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
625.0	673.1	673.1	17884.6	625.0	673.1	673.1	17884.6	625.0	673.1	673.1	17884.6

1720 MHz - 1 Resource Block - Low



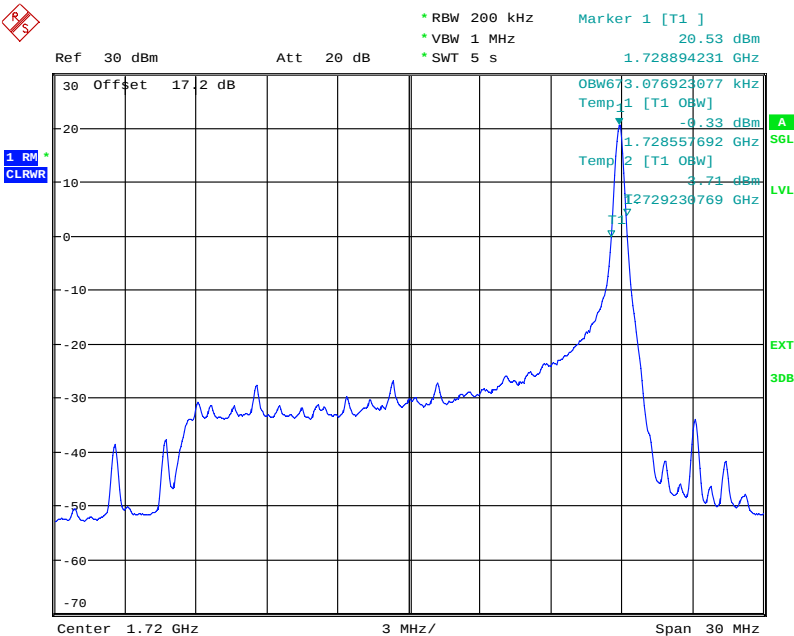
Date: 31.JUL.2013 14:52:09

1720 MHz - 1 Resource Block - Middle



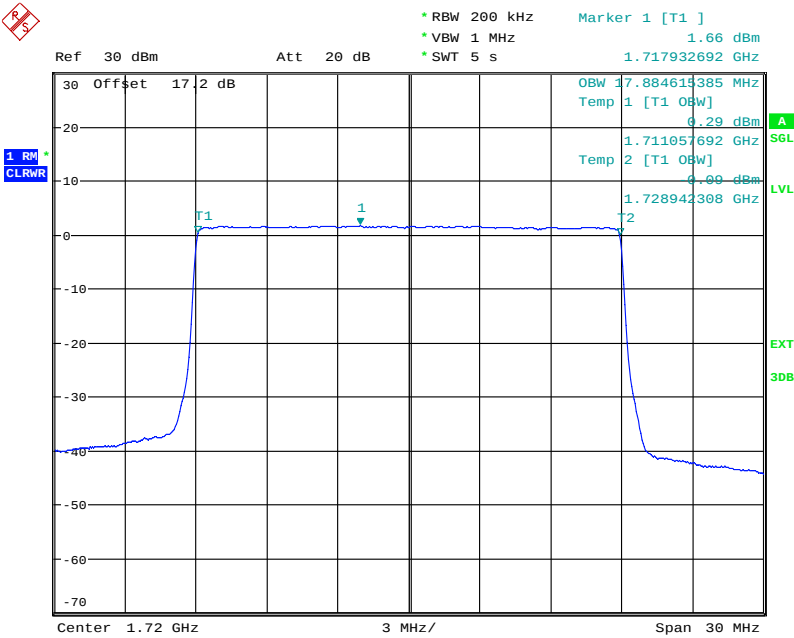
Date: 31.JUL.2013 15:15:04

1720 MHz - 1 Resource Block - High



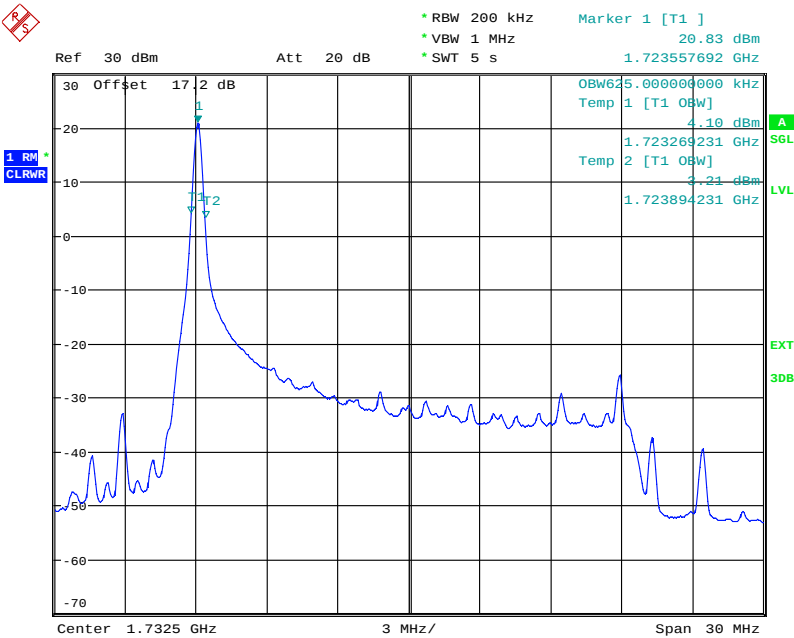
Date: 31.JUL.2013 15:08:26

1720 MHz - All Resource Blocks



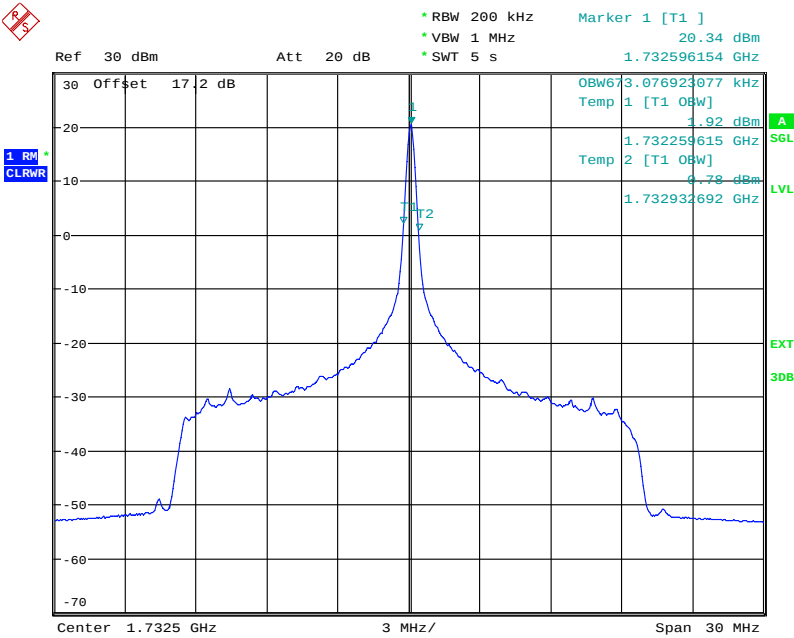
Date: 31.JUL.2013 15:00:26

1732.5 MHz - 1 Resource Block - Low



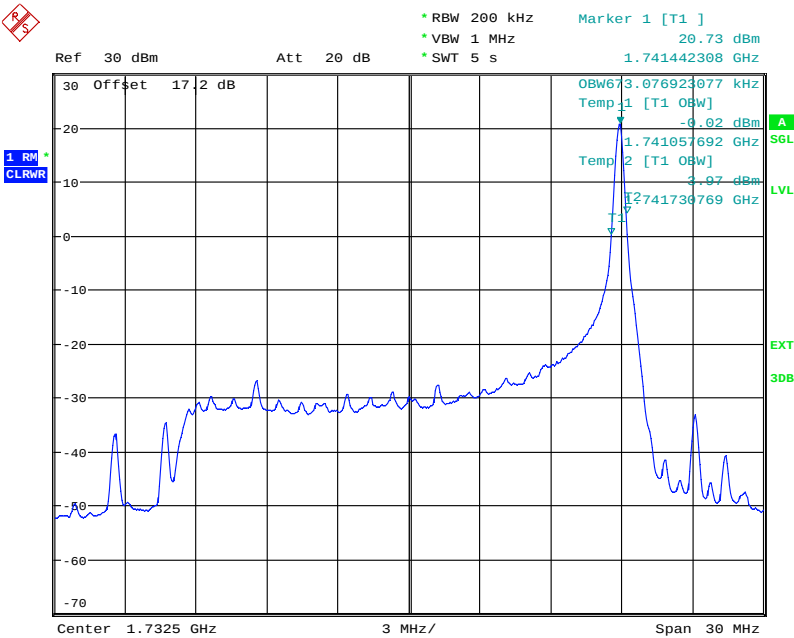
Date: 31.JUL.2013 15:29:37

1732.5 MHz - 1 Resource Block - Middle



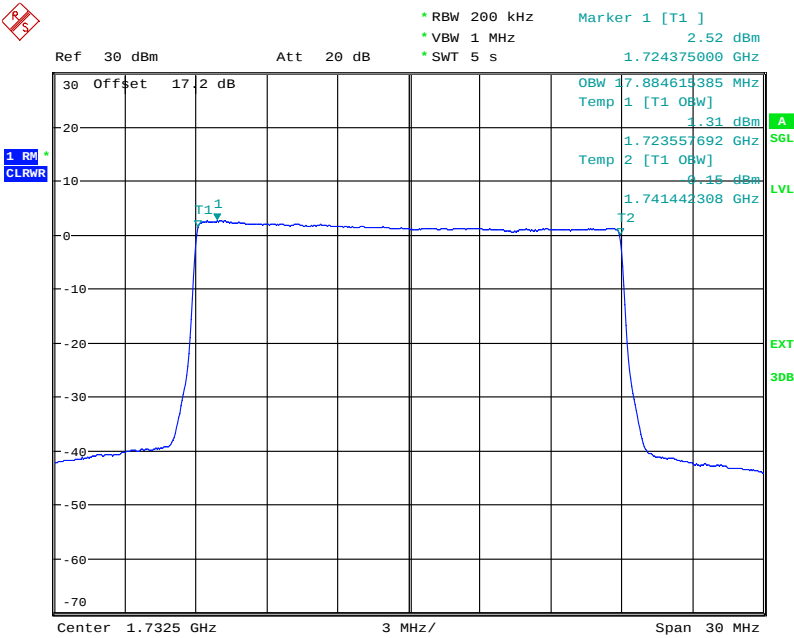
Date: 31.JUL.2013 15:22:58

1732.5 MHz - 1 Resource Block - High



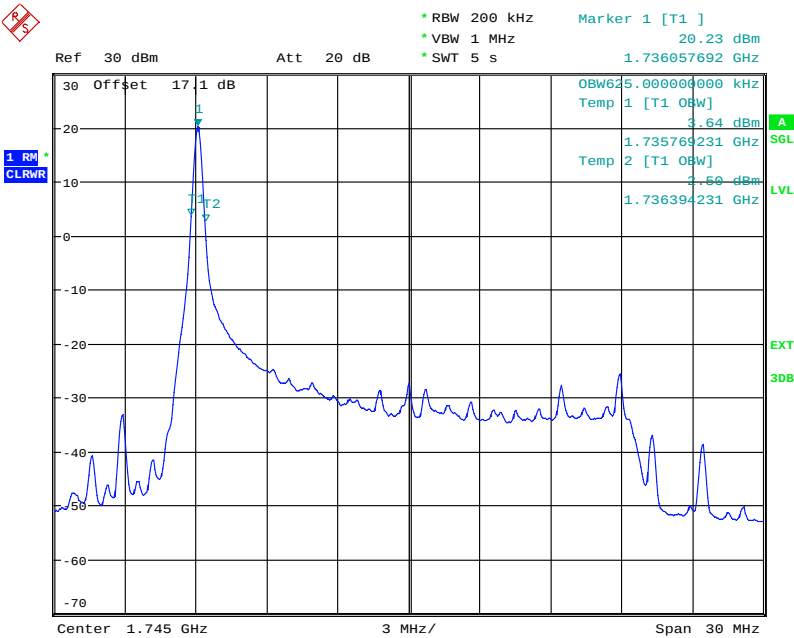
Date: 31.JUL.2013 15:35:38

1732.5 MHz - All Resource Blocks



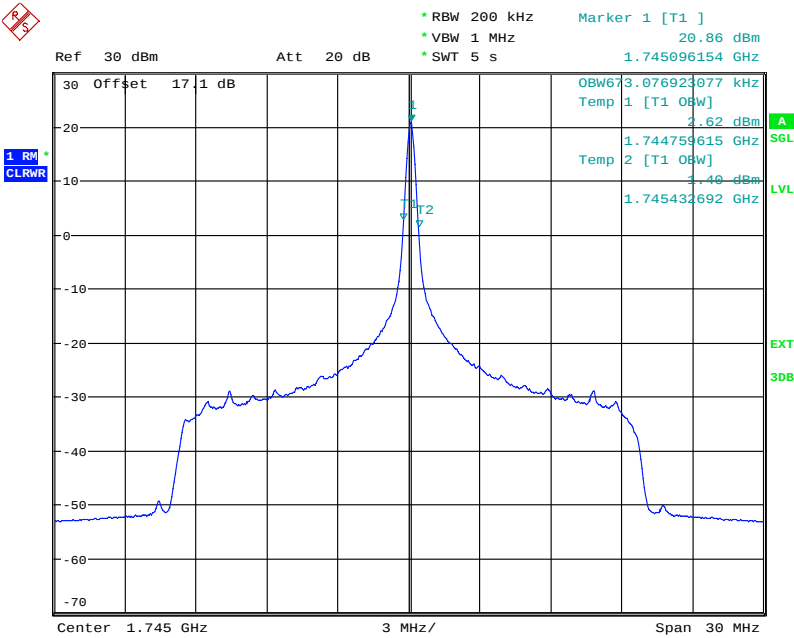
Date: 31.JUL.2013 15:41:30

1745 MHz - 1 Resource Block - Low



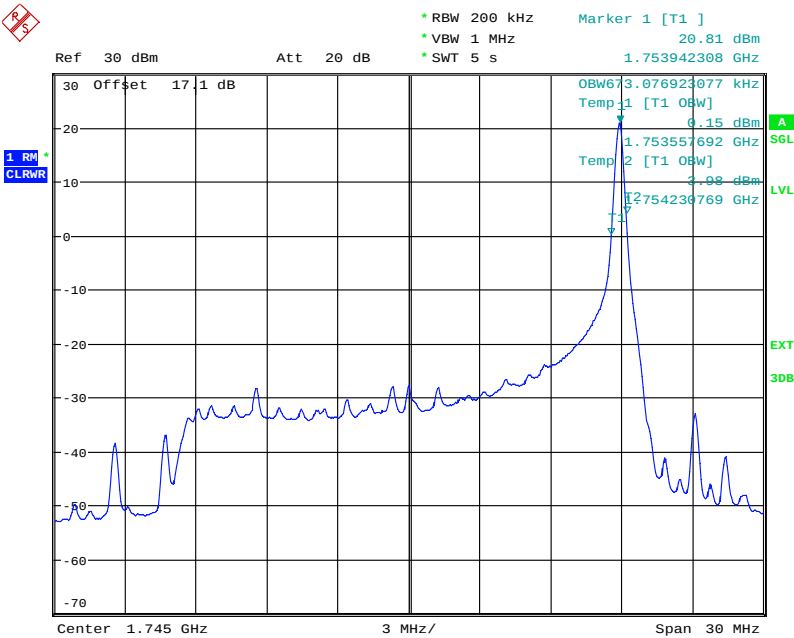
Date: 31.JUL.2013 16:20:34

1745 MHz - 1 Resource Block - Middle



Date: 31.JUL.2013 16:15:12

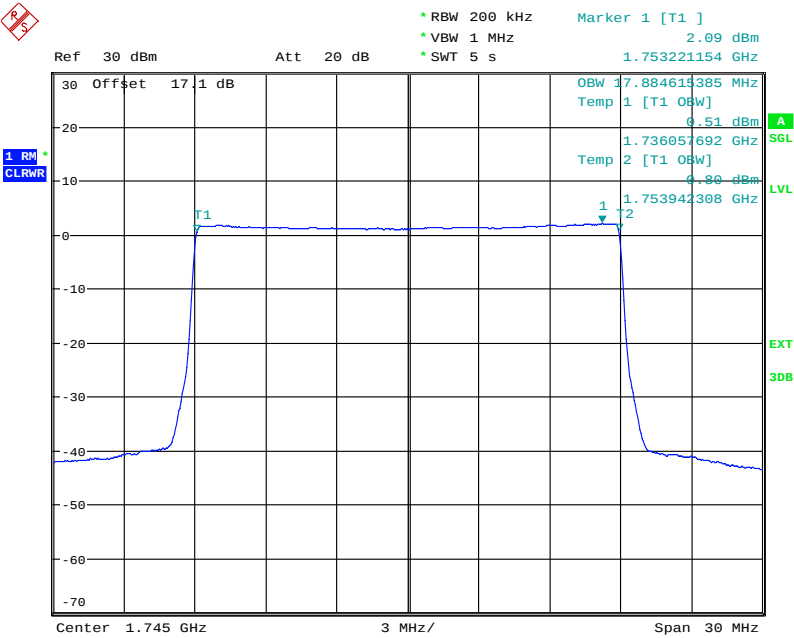
1745 MHz - 1 Resource Block - High



Date: 31.JUL.2013 16:07:30



1745 MHz - All Resource Blocks



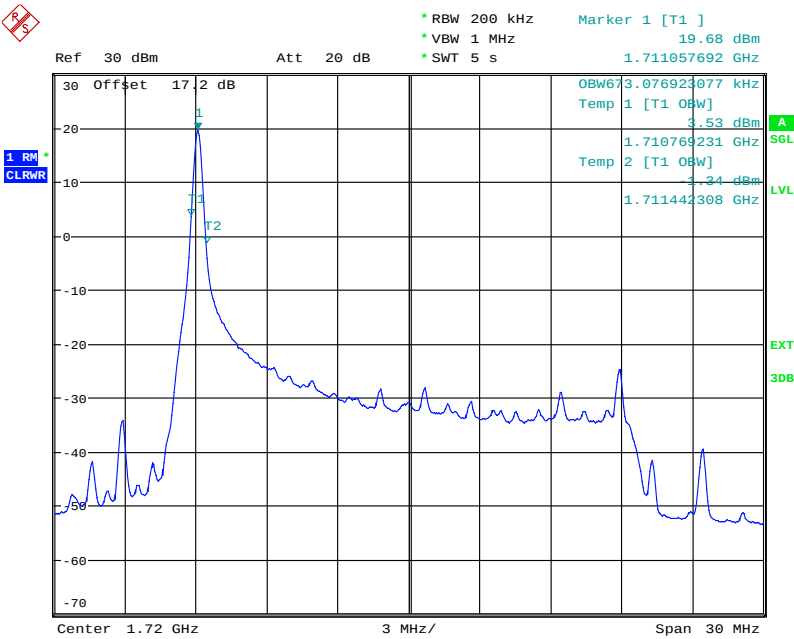
Date: 31.JUL.2013 16:02:12



20.0 MHz Bandwidth - 16QAM

Occupied Bandwidth (kHz)											
1720.0 MHz				1732.5 MHz				1745.0 MHz			
1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks	1 Resource Block			All Resource Blocks
Low	Mid	High		Low	Mid	High		Low	Mid	High	
673.1	673.1	673.1	17884.6	625.0	673.1	673.1	17884.6	625.0	673.1	673.1	17884.6

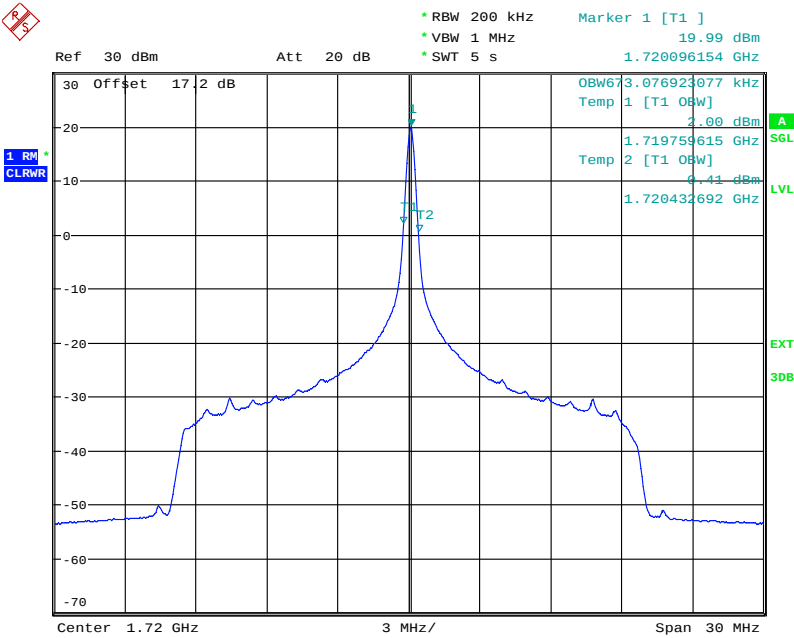
1720 MHz - 1 Resource Block - Low



Date: 2.AUG.2013 09:41:20

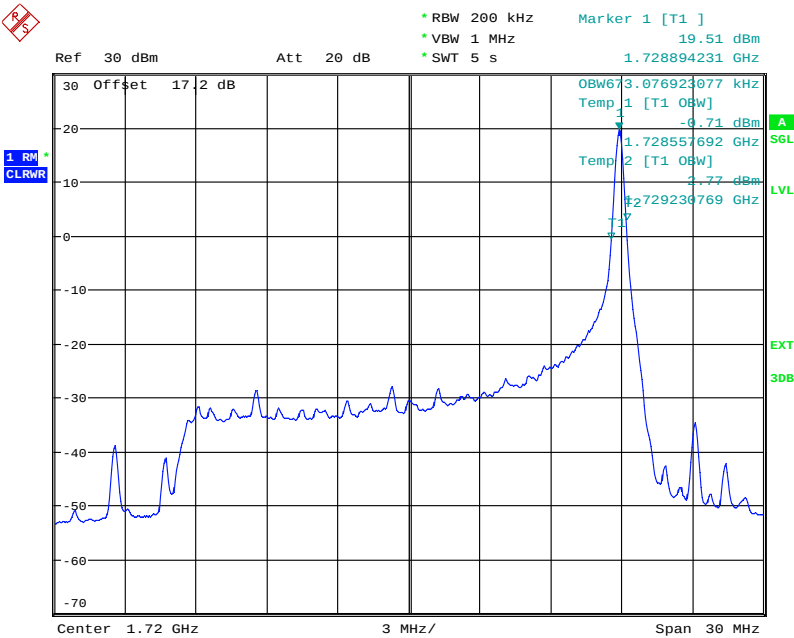


1720 MHz - 1 Resource Block - Middle



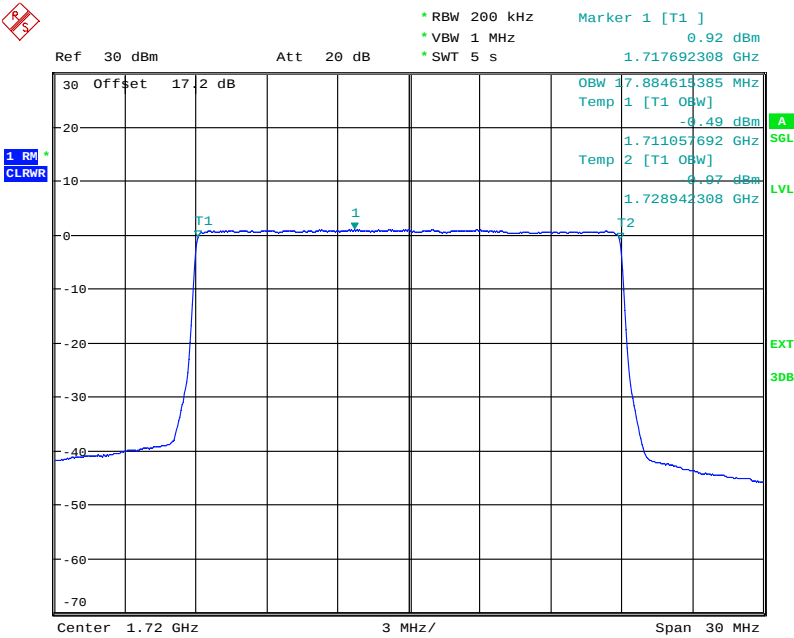
Date: 2.AUG.2013 10:11:01

1720 MHz - 1 Resource Block - High



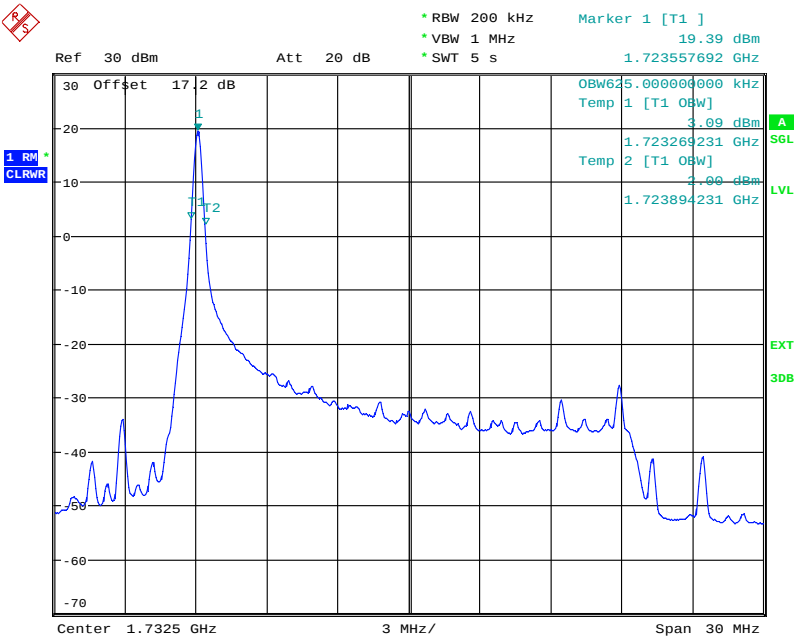
Date: 2.AUG.2013 10:00:52

1720 MHz - All Resource Blocks



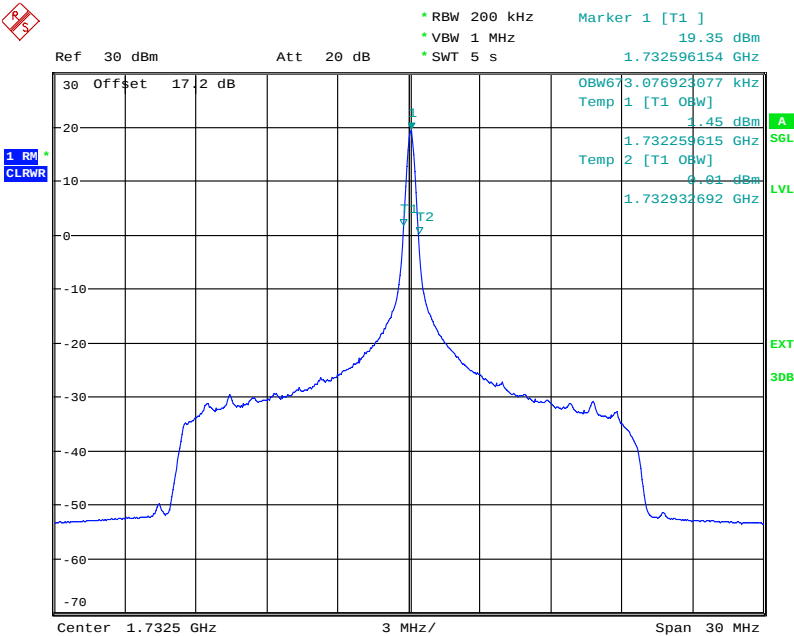
Date: 2.AUG.2013 09:44:12

1732.5 MHz - 1 Resource Block - Low



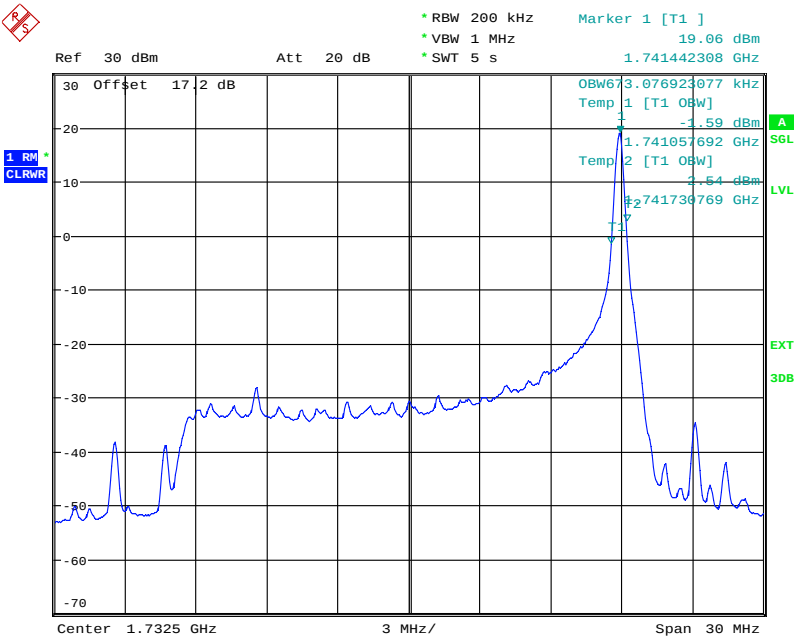
Date: 2.AUG.2013 10:47:03

1732.5 MHz - 1 Resource Block - Middle



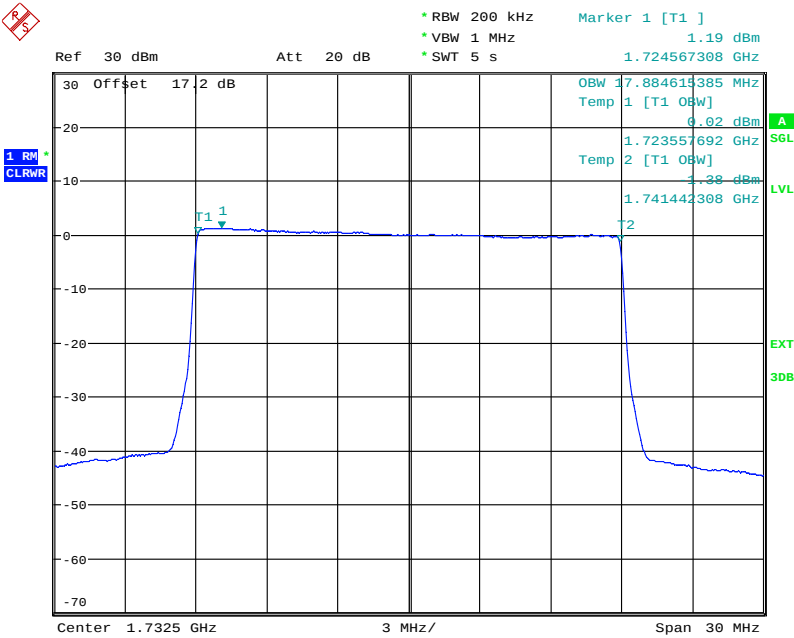
Date: 2.AUG.2013 10:21:09

1732.5 MHz - 1 Resource Block - High



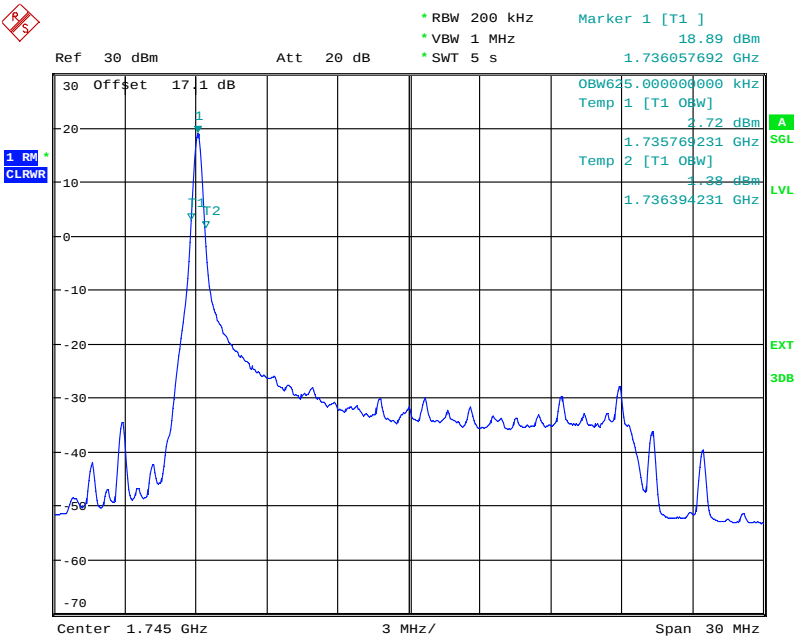
Date: 2.AUG.2013 10:41:17

1732.5 MHz - All Resource Blocks



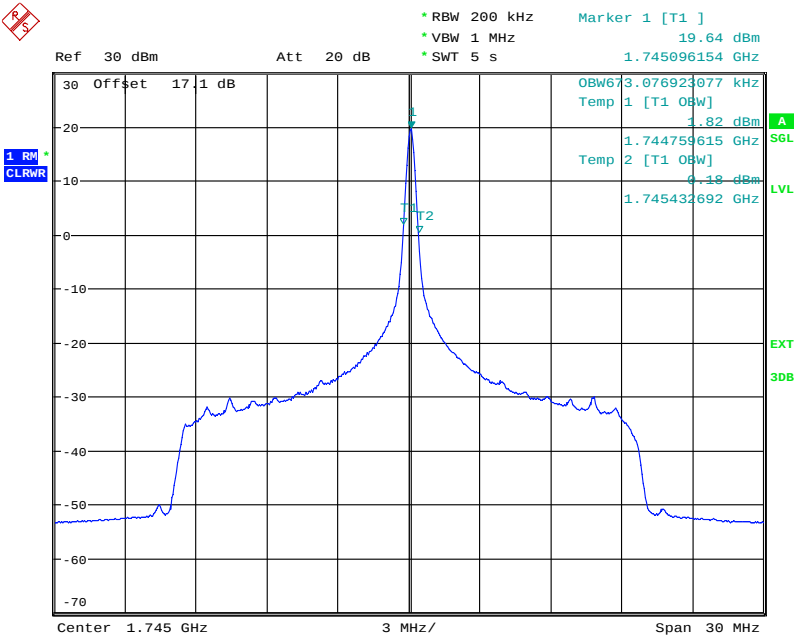
Date: 2.AUG.2013 10:54:38

1745 MHz - 1 Resource Block - Low



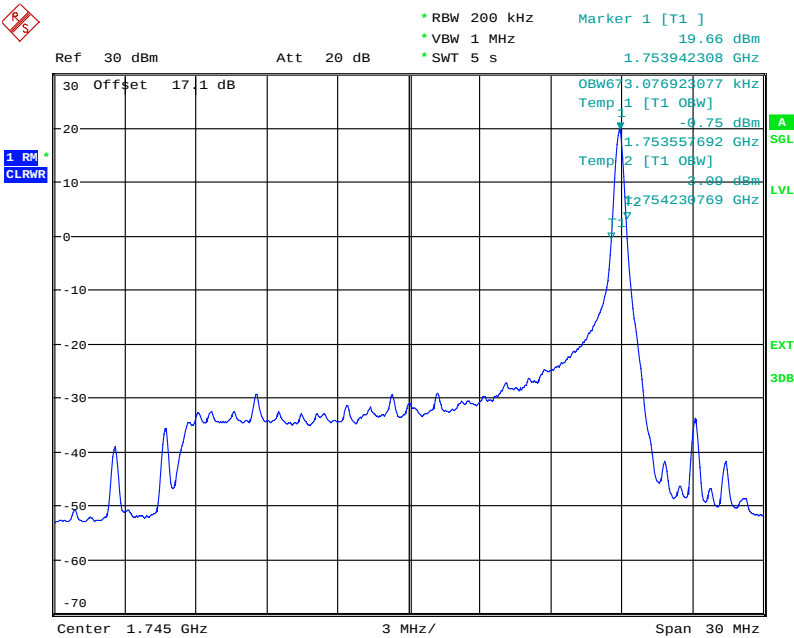
Date: 2.AUG.2013 11:38:19

1745 MHz - 1 Resource Block - Middle



Date: 2.AUG.2013 11:32:37

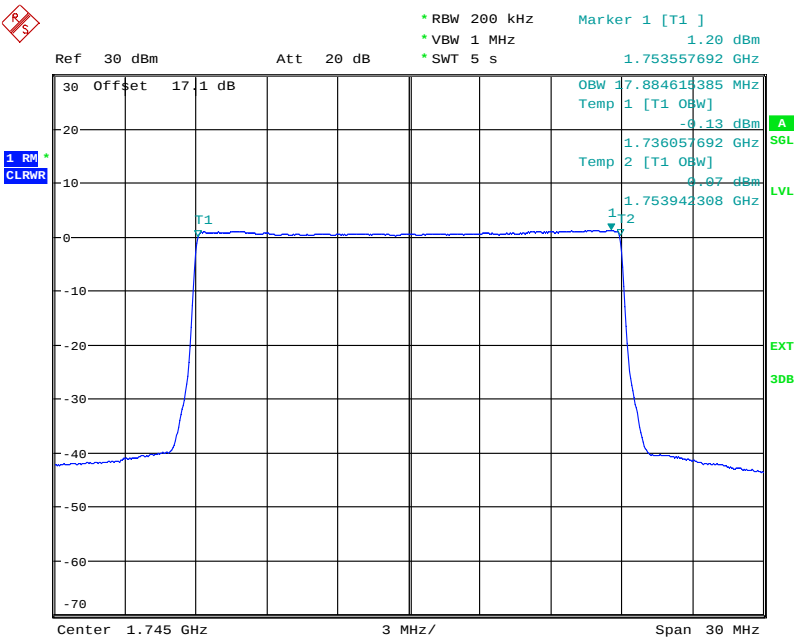
1745 MHz - 1 Resource Block - High



Date: 2.AUG.2013 11:18:14



1745 MHz - All Resource Blocks



Date: 2.AUG.2013 11:10:21

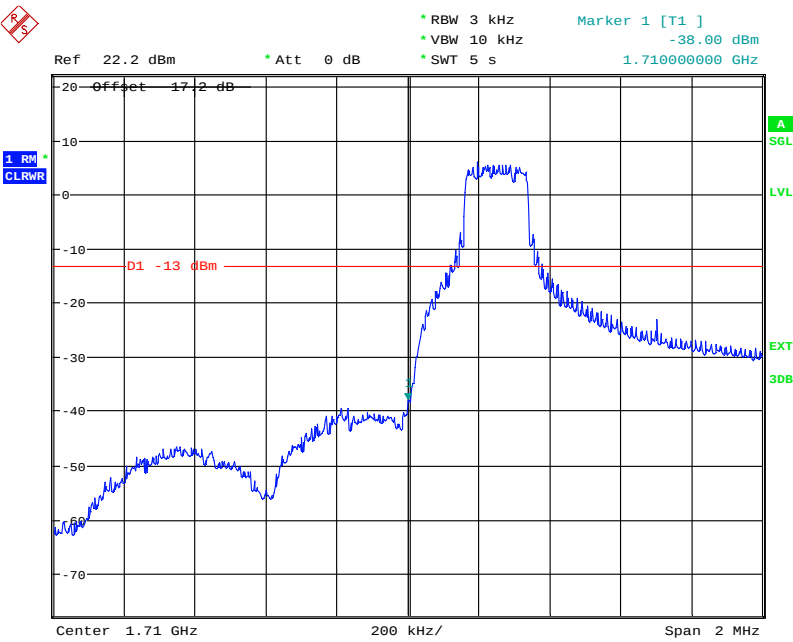


Band Edge

1.4 MHz Bandwidth - QPSK

Band Edge (dBm)			
1710.7 MHz		1754.3 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-38.0	-31.5	-39.6	-31.9

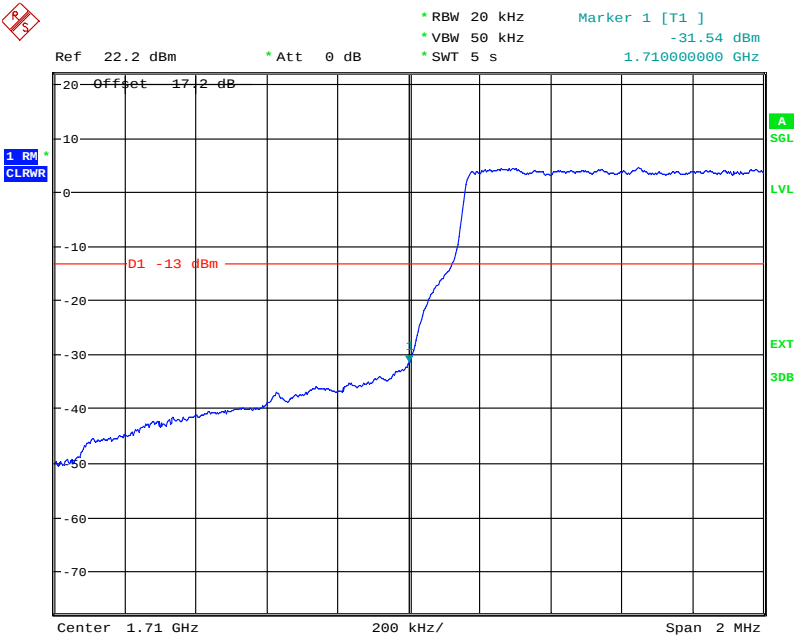
1710.7 MHz - 1 Resource Block - Low



Date: 30.JUL.2013 09:57:37

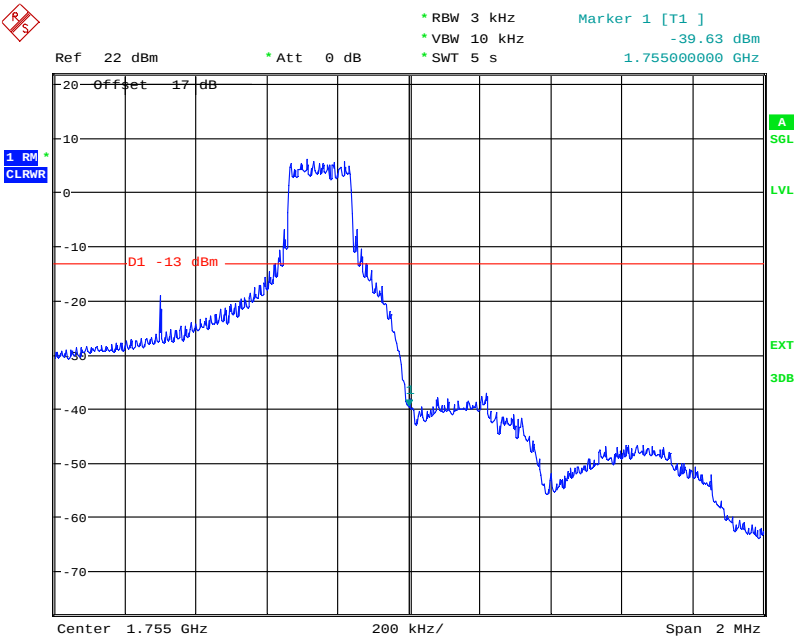


1710.7 MHz - All Resource Blocks



Date: 30.JUL.2013 10:41:09

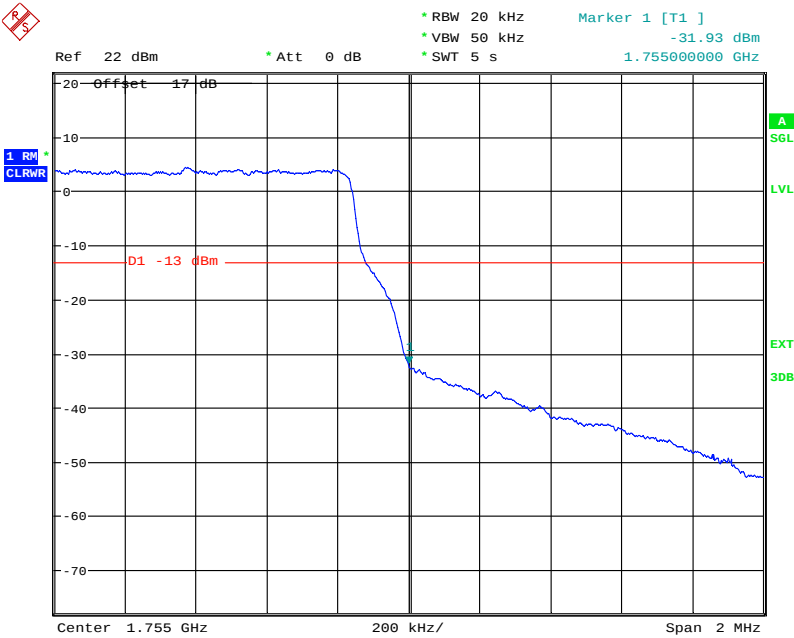
1754.3 MHz - 1 Resource Block - High



Date: 30.JUL.2013 11:52:53



1754.3 MHz - All Resource Blocks



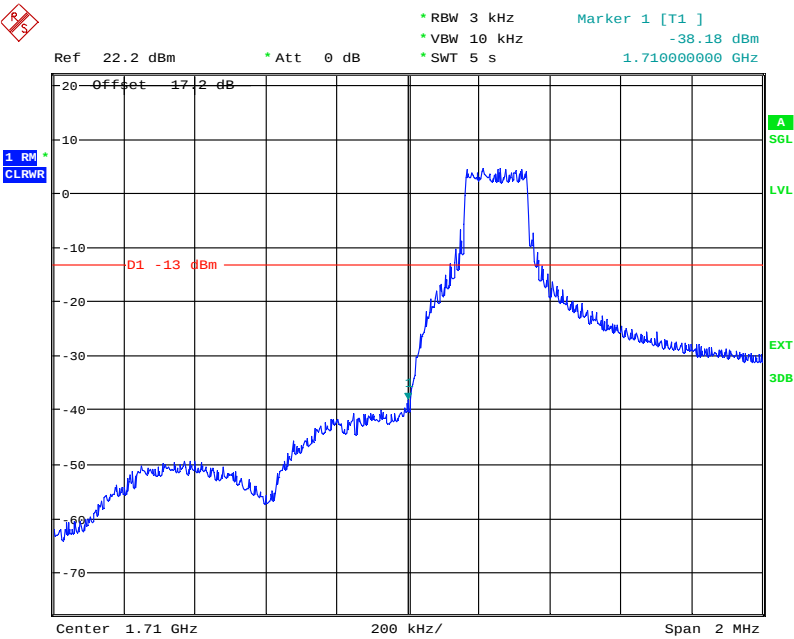
Date: 30.JUL.2013 12:04:50



1.4 MHz Bandwidth - 16QAM

Band Edge (dBm)			
1710.7 MHz		1754.3 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-38.2	-32.3	-39.0	-33.3

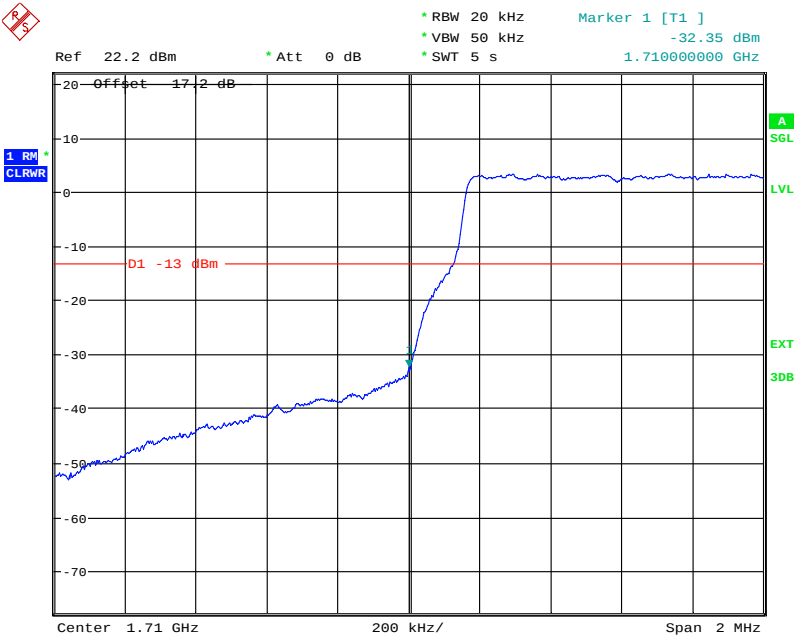
1710.7 MHz - 1 Resource Block - Low



Date: 1.AUG.2013 08:26:24

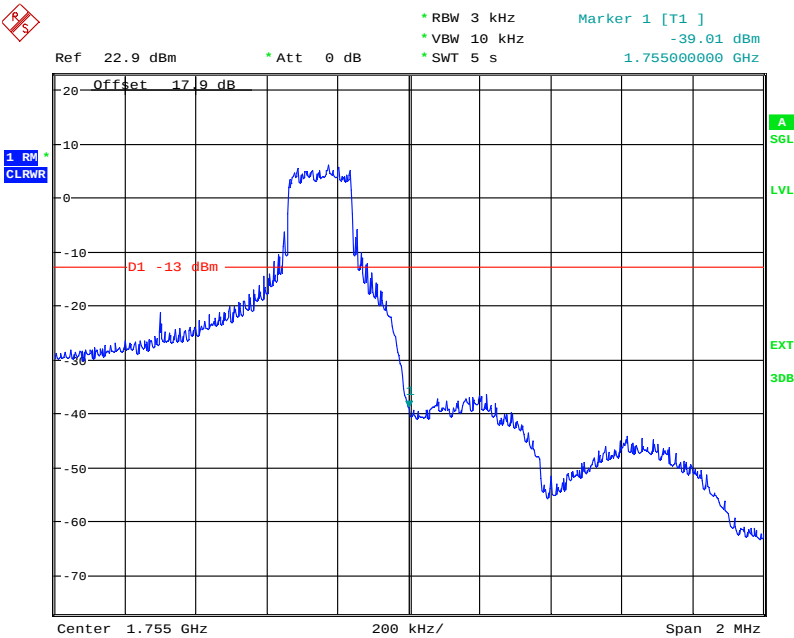


1710.7 MHz - All Resource Blocks



Date: 1.AUG.2013 08:13:38

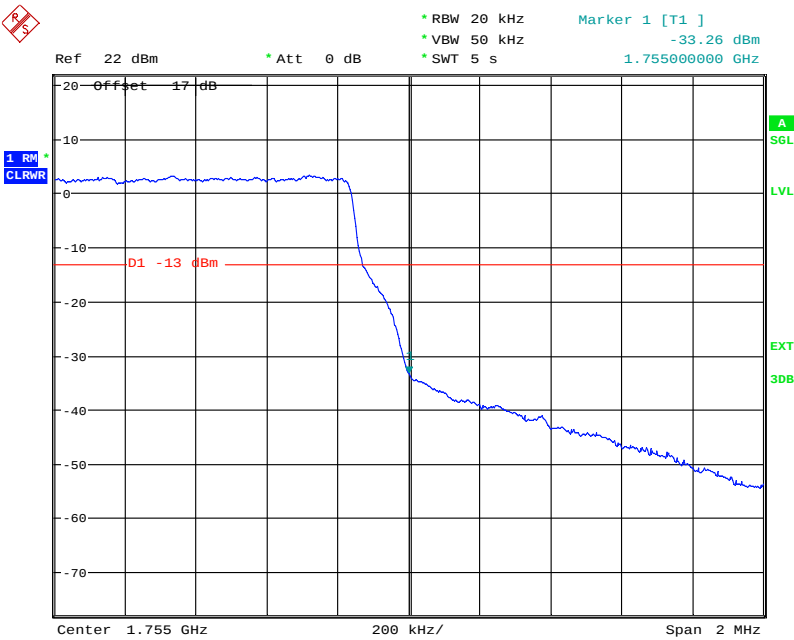
1754.3 MHz - 1 Resource Block - High



Date: 27.AUG.2013 17:24:01



1754.3 MHz - All Resource Blocks



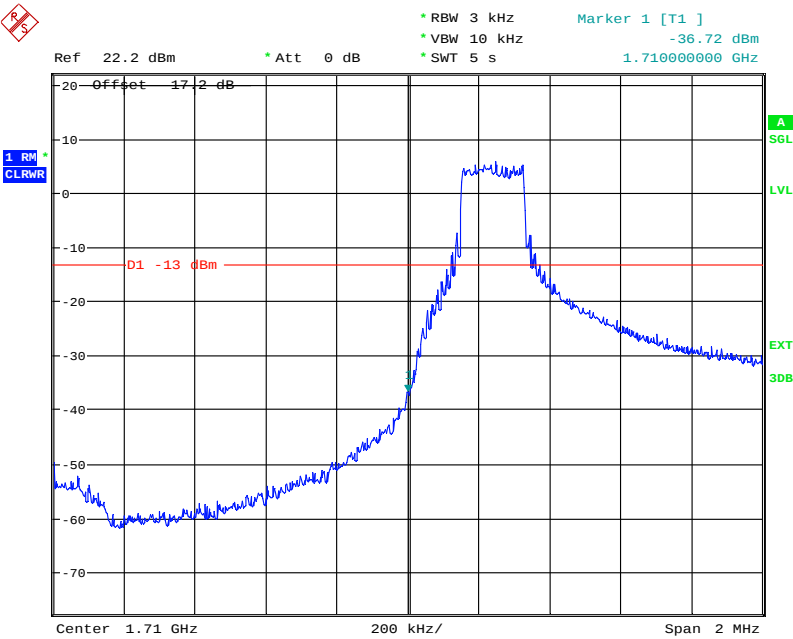
Date: 1.AUG.2013 09:30:09



3.0 MHz Bandwidth - QPSK

Band Edge (dBm)			
1711.5 MHz		1753.5 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-36.7	-33.6	-39.3	-34.4

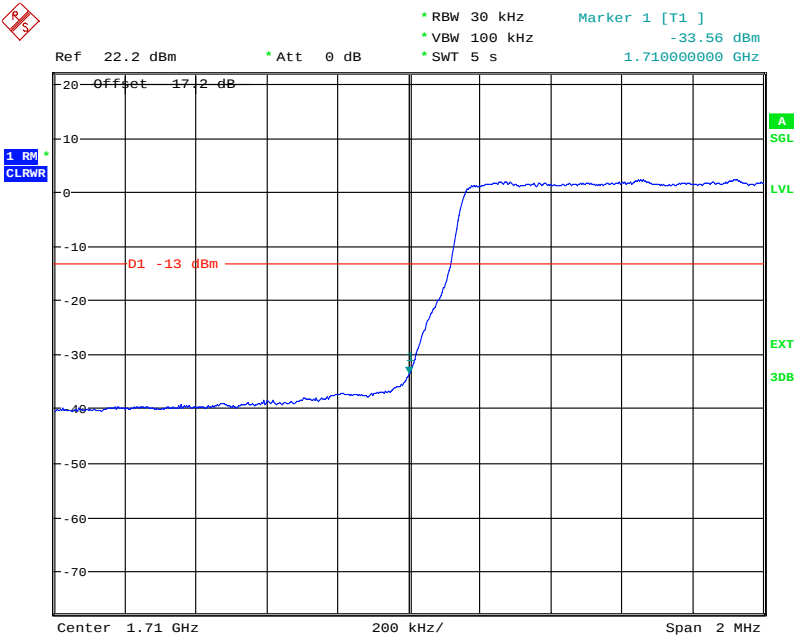
1711.5 MHz - 1 Resource Block - Low



Date: 30.JUL.2013 12:23:58

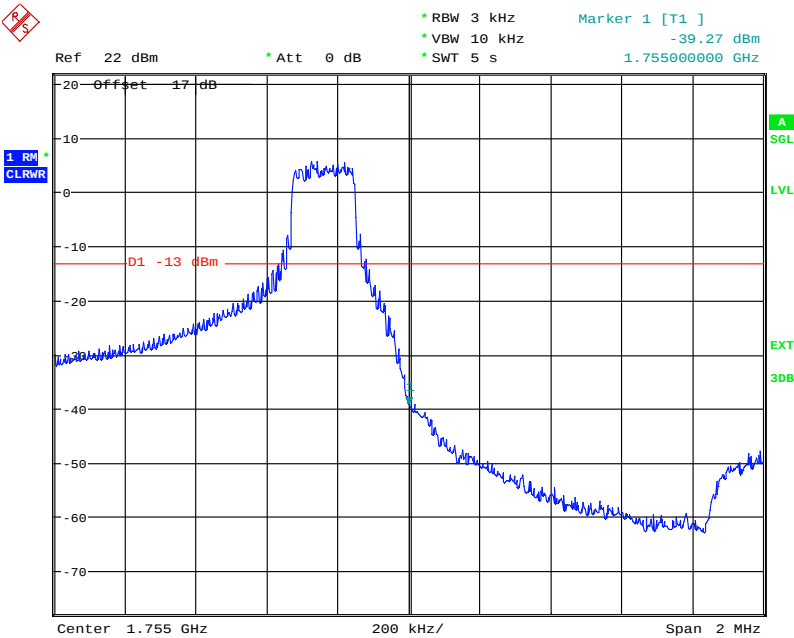


1711.5 MHz - All Resource Blocks



Date: 30.JUL.2013 12:15:48

1753.5 MHz - 1 Resource Block - High



Date: 30.JUL.2013 14:46:51

The screenshot displays a spectrum analyzer interface. The main plot shows a signal spectrum with a prominent peak at 1.755 GHz, marked with a green cursor and a value of -34.37 dBm. A red horizontal line is drawn at -13 dBm, labeled 'D1 -13 dBm'. The x-axis is labeled 'Center 1.755 GHz' and 'Span 2 MHz'. The y-axis represents power in dBm, ranging from -70 to -20. The top of the screen shows various settings: 'Ref 22 dBm', 'Att 0 dB', 'RBW 30 kHz', 'VBW 100 kHz', 'SWT 5 s', and 'Marker 1 [T1]'. The bottom of the screen shows 'Center 1.755 GHz', 'Span 2 MHz', and '200 kHz/'.

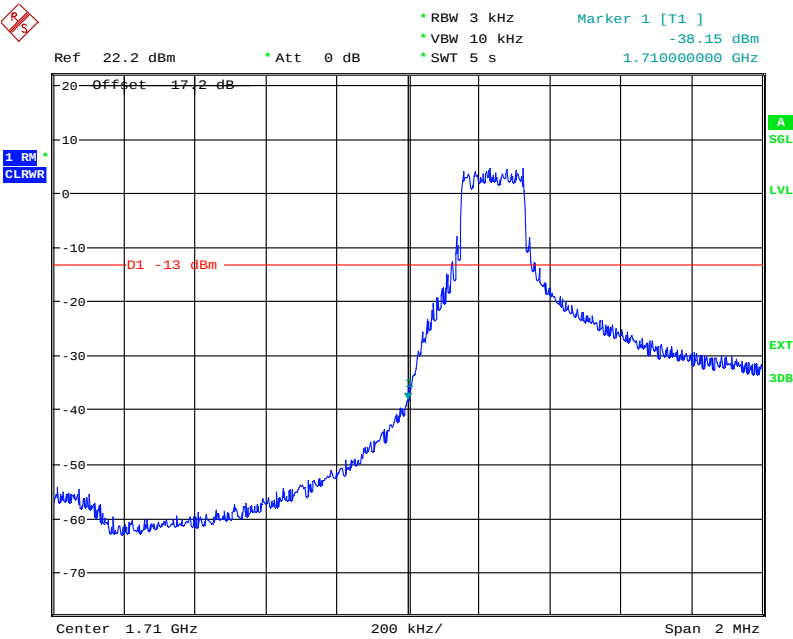
COMMERCIAL-IN-CONFIDENCE



3.0 MHz Bandwidth - 16QAM

Band Edge (dBm)			
1711.5 MHz		1753.5 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-38.2	-35.6	-38.9	-35.1

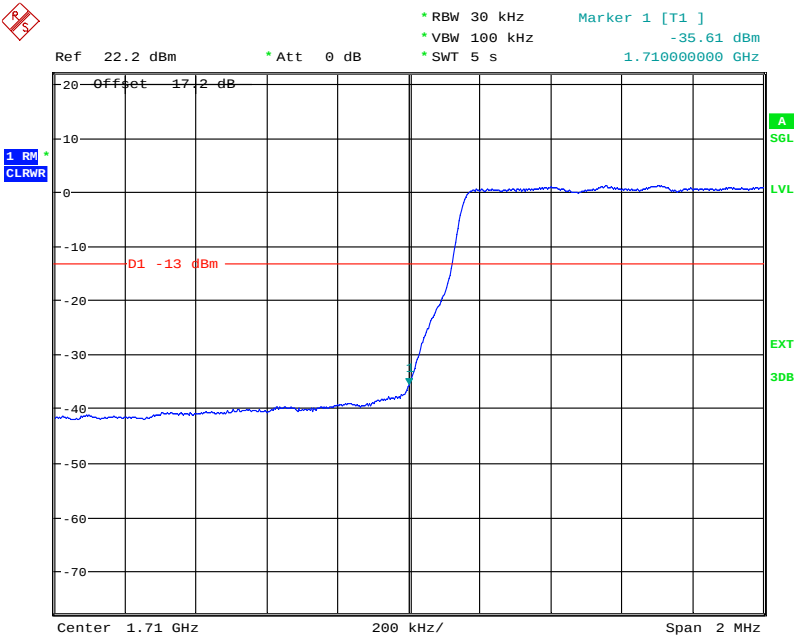
1711.5 MHz - 1 Resource Block - Low



Date: 1.AUG.2013 10:13:30

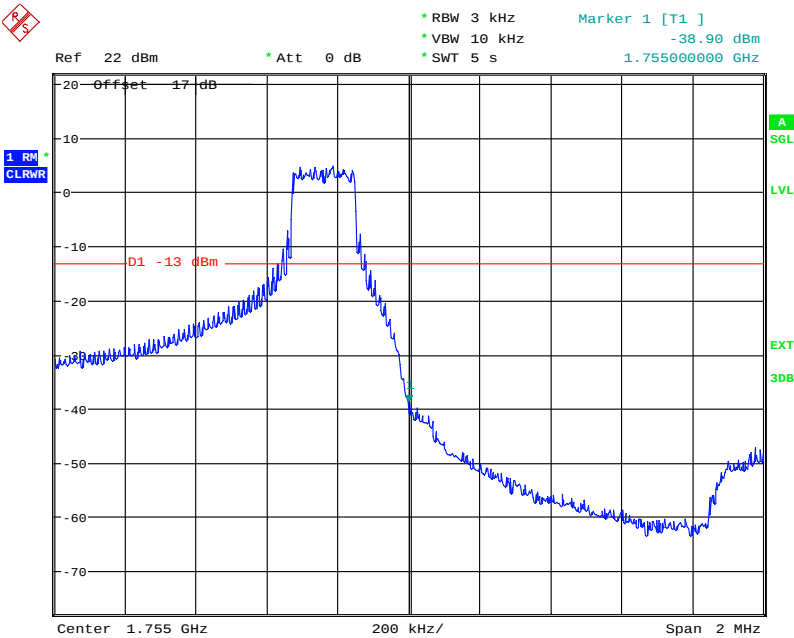


1711.5 MHz - All Resource Blocks



Date: 1.AUG.2013 10:05:59

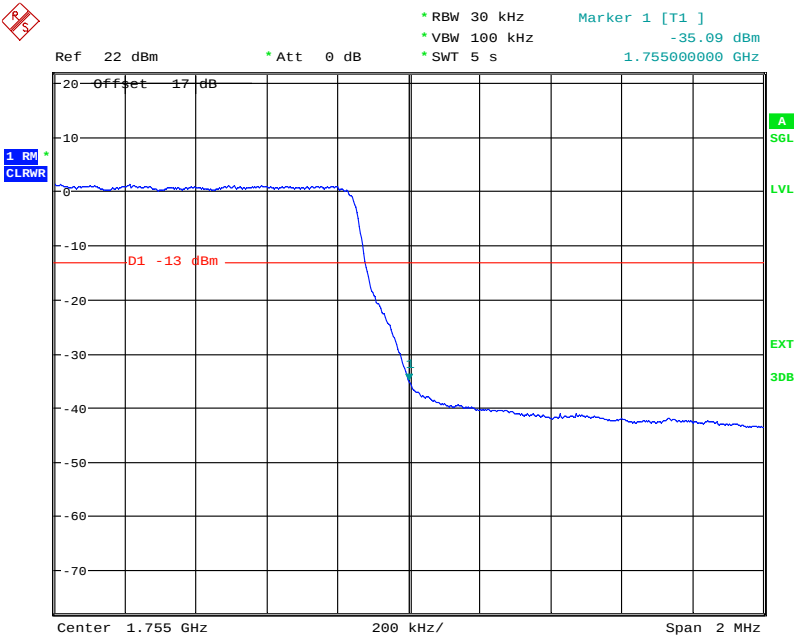
1753.5 MHz - 1 Resource Block - High



Date: 1.AUG.2013 11:48:51



1753.5 MHz - All Resource Blocks



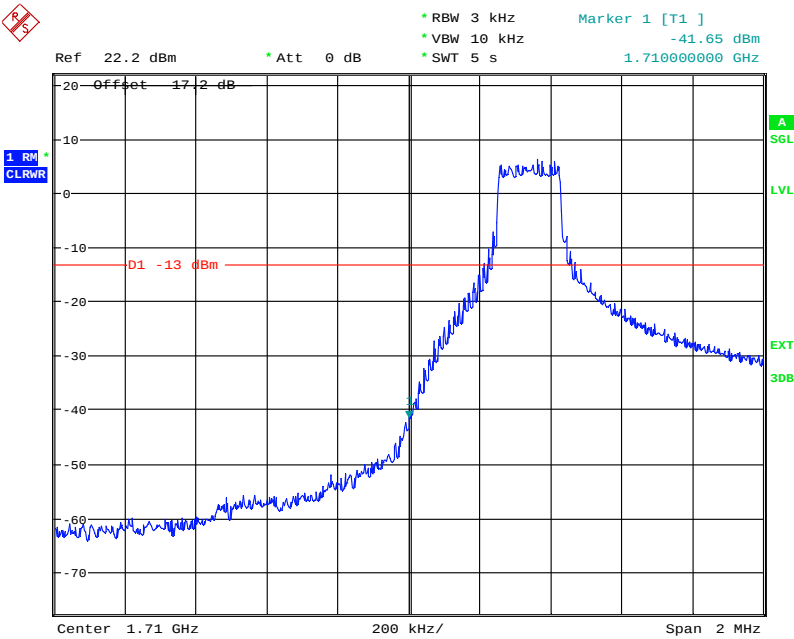
Date: 1.AUG.2013 11:24:31



5.0 MHz Bandwidth - QPSK

Band Edge (dBm)			
1712.5 MHz		1752.5 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-41.6	-35.7	-42.3	-36.3

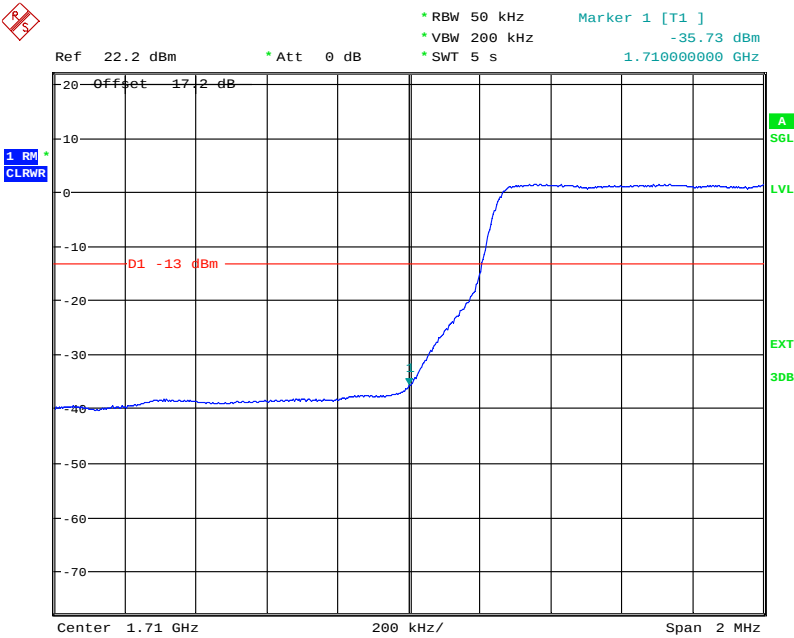
1712.5 MHz - 1 Resource Block - Low



Date: 30.JUL.2013 15:10:36

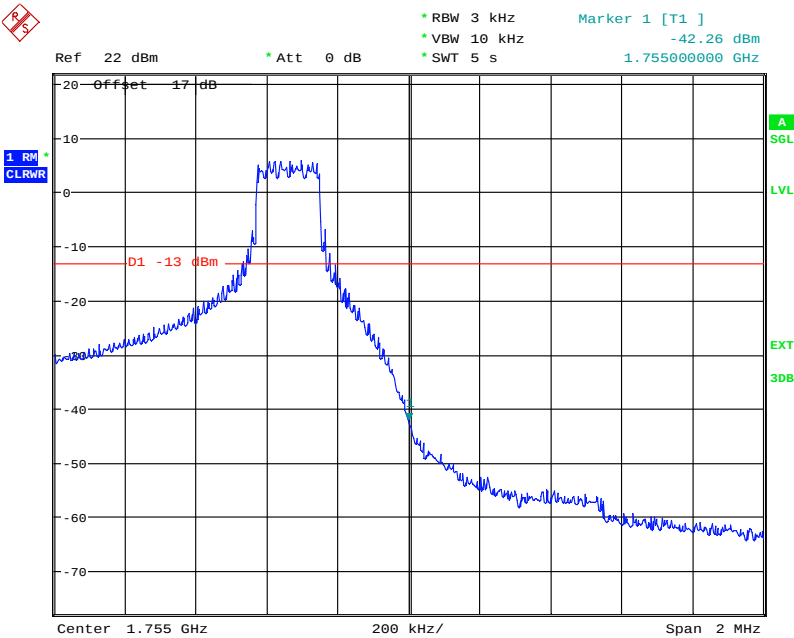


1712.5 MHz - All Resource Blocks



Date: 30.JUL.2013 15:01:08

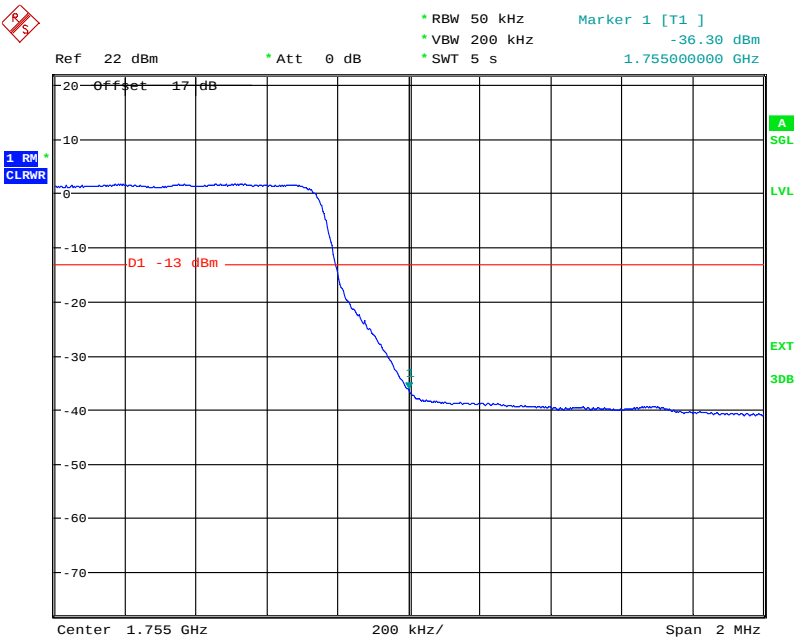
1752.5 MHz - 1 Resource Block - High



Date: 30.JUL.2013 16:21:22



1752.5 MHz - All Resource Blocks



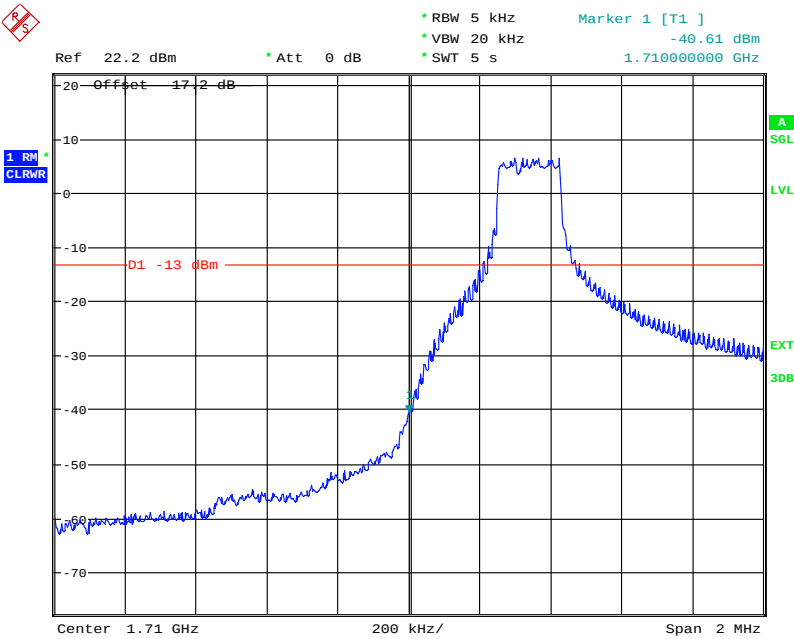
Date: 30.JUL.2013 16:28:52



5.0 MHz Bandwidth - 16QAM

Band Edge (dBm)			
1712.5 MHz		1752.5 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-40.6	-36.9	-43.5	-37.3

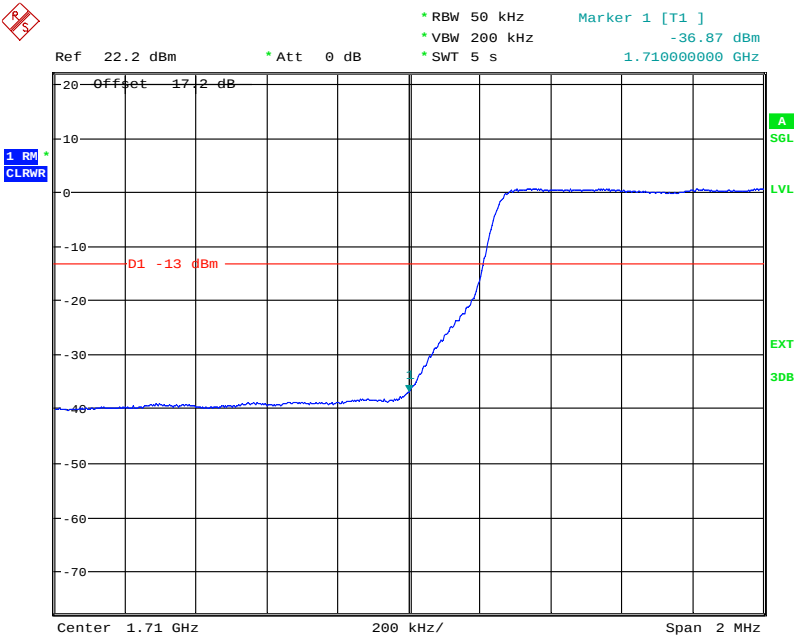
1712.5 MHz - 1 Resource Block - Low



Date: 1.AUG.2013 12:11:17

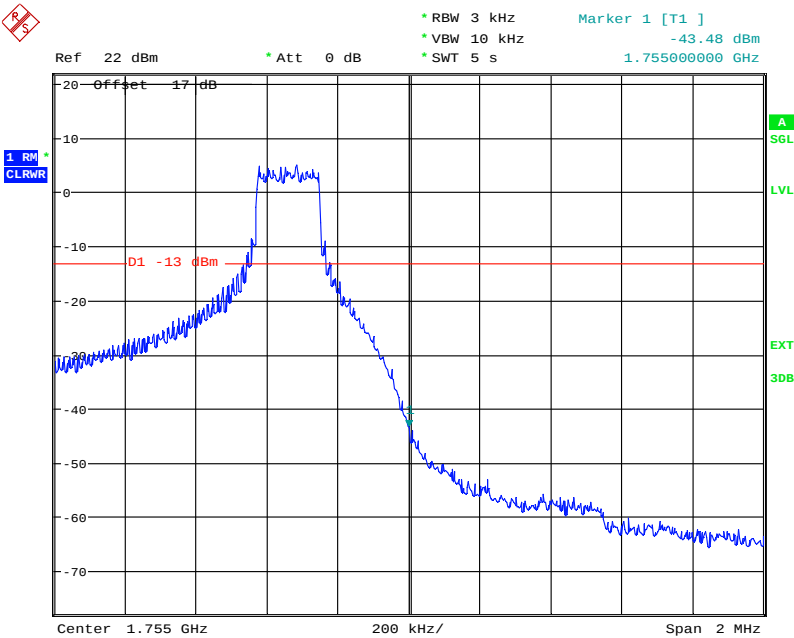


1712.5 MHz - All Resource Blocks



Date: 1.AUG.2013 12:03:34

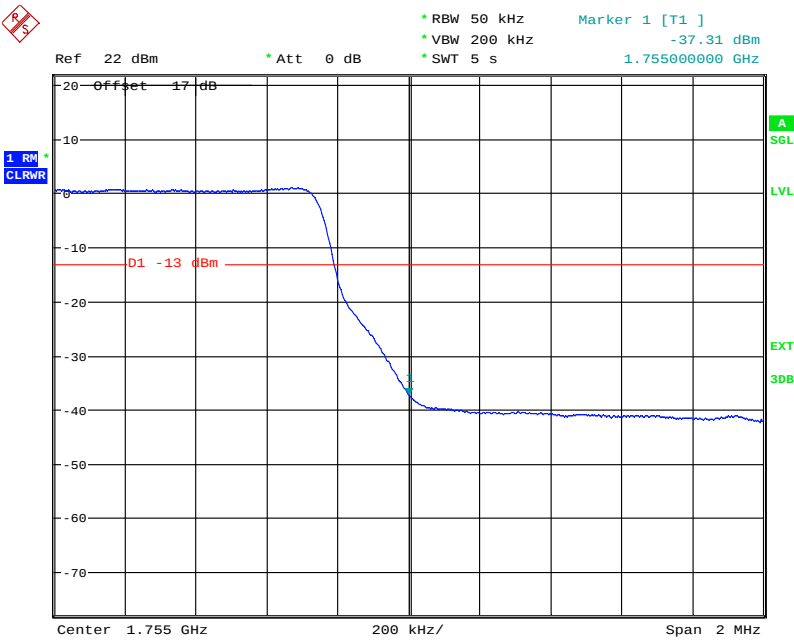
1752.5 MHz - 1 Resource Block - High



Date: 1.AUG.2013 13:57:25



1752.5 MHz - All Resource Blocks



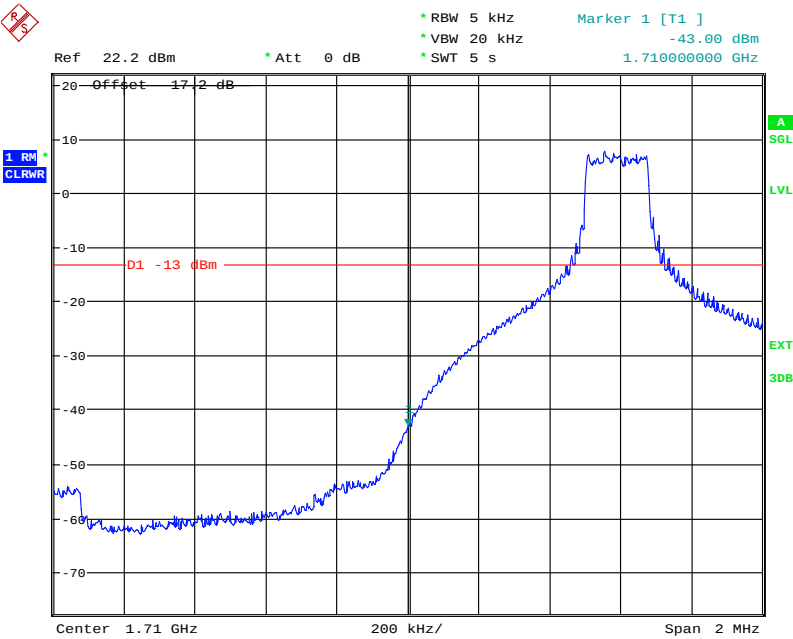
Date: 1.AUG.2013 13:41:49



10.0 MHz Bandwidth - QPSK

Band Edge (dBm)			
1715.0 MHz		1750.0 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-43.0	-36.6	-41.6	-36.8

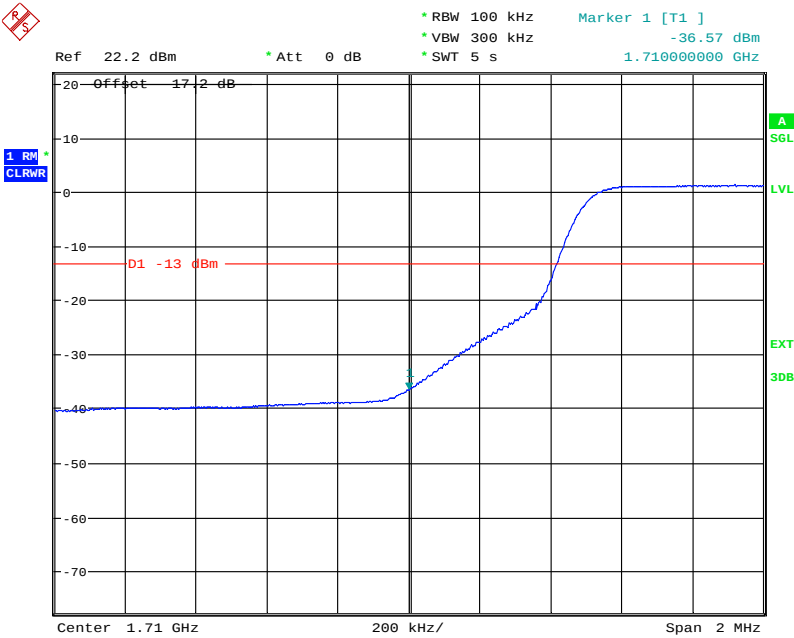
1715 MHz - 1 Resource Block - Low



Date: 31.JUL.2013 08:55:25

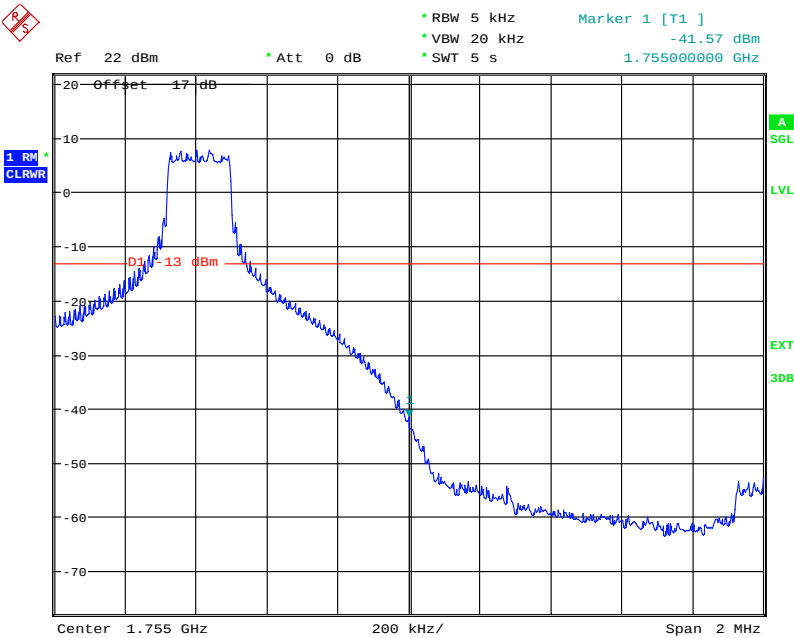


1715 MHz - All Resource Blocks



Date: 31.JUL.2013 08:46:56

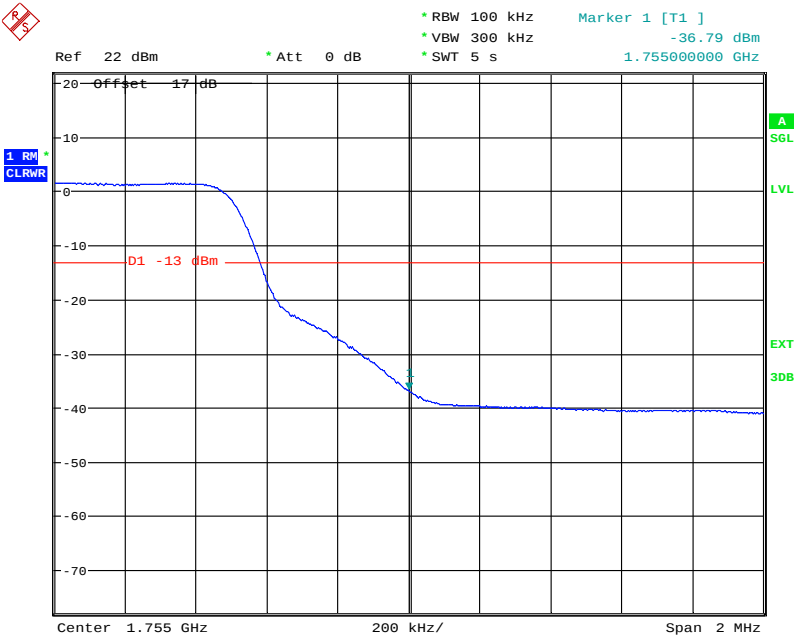
1750 MHz - 1 Resource Block - High



Date: 31.JUL.2013 10:31:07



1750 MHz - All Resource Blocks



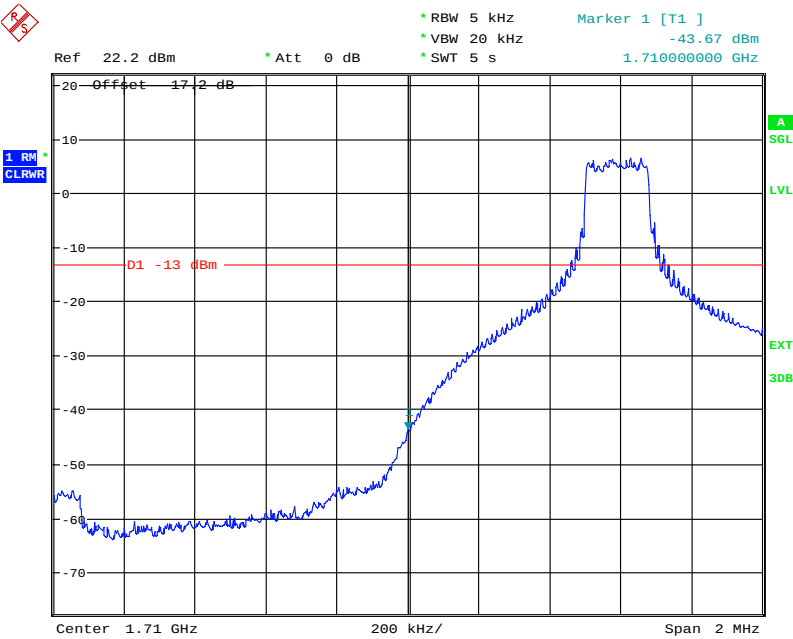
Date: 31.JUL.2013 10:23:28



10.0 MHz Bandwidth - 16QAM

Band Edge (dBm)			
1715.0 MHz		1750.0 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-43.7	-37.4	-41.5	-37.7

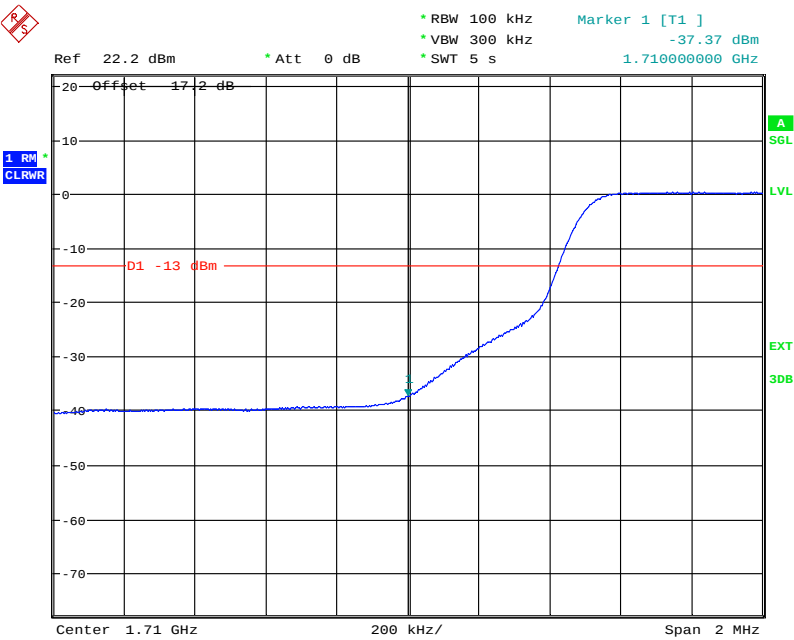
1715 MHz - 1 Resource Block - Low



Date: 1.AUG.2013 14:31:50

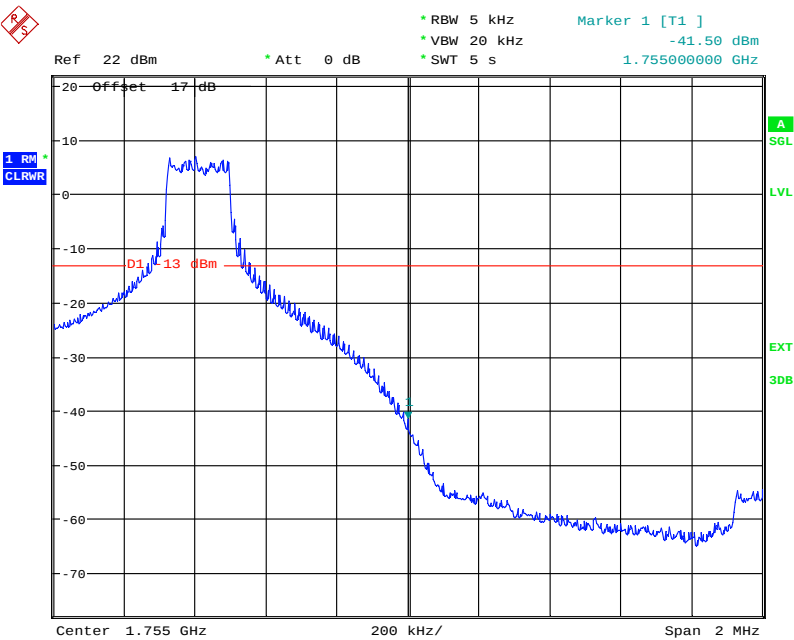


1715 MHz - All Resource Blocks



Date: 1.AUG.2013 14:39:31

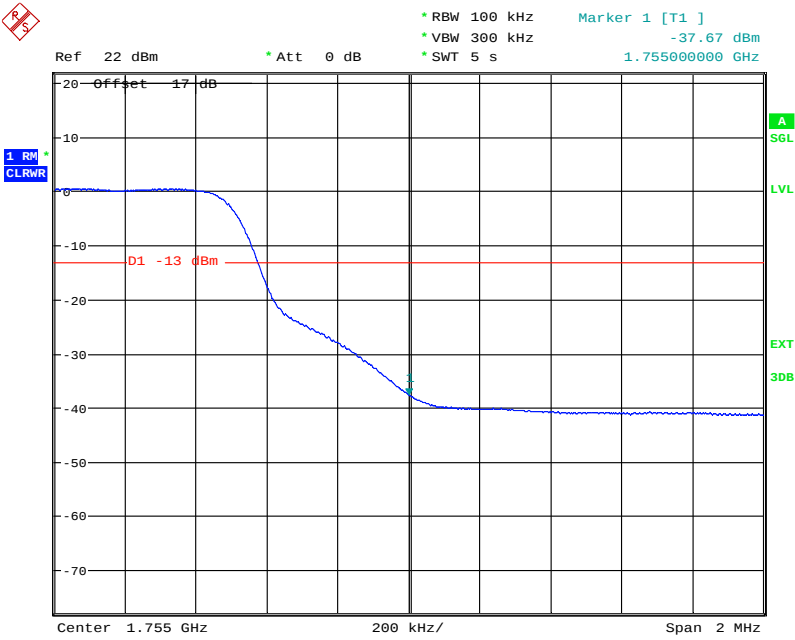
1750 MHz - 1 Resource Block - High



Date: 1.AUG.2013 15:52:02



1750 MHz - All Resource Blocks



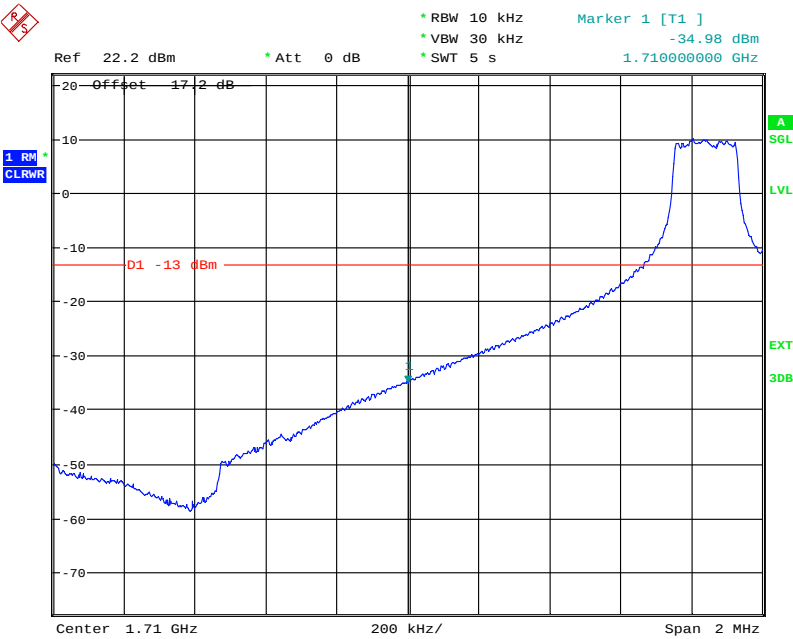
Date: 1.AUG.2013 15:44:23



15.0 MHz Bandwidth - QPSK

Band Edge (dBm)			
1717.5 MHz		1747.5 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-35.0	-32.6	-35.4	-32.7

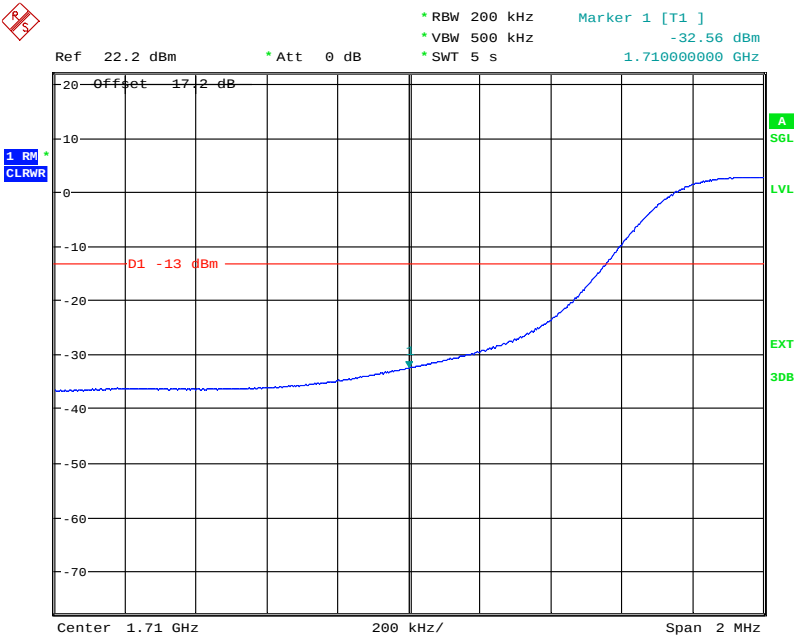
1717.5 MHz - 1 Resource Block - Low



Date: 31.JUL.2013 11:12:06

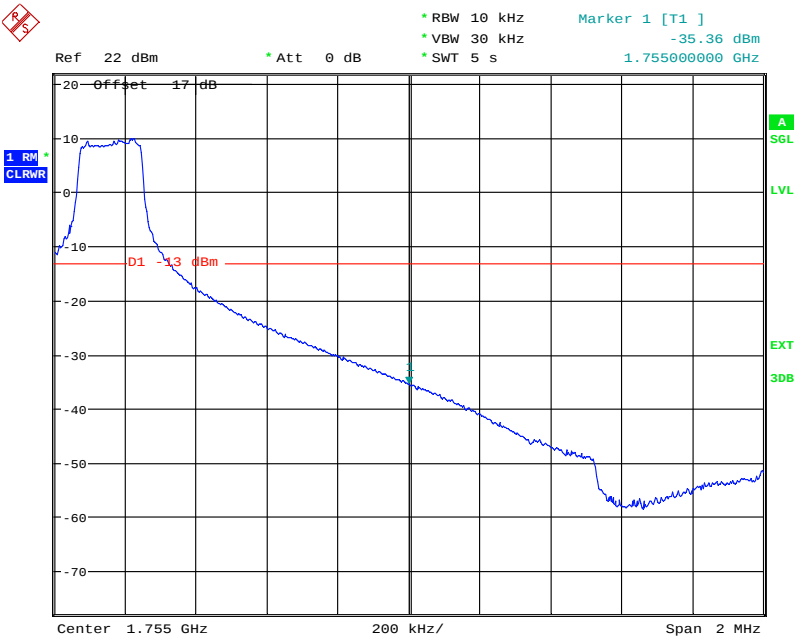


1717.5 MHz - All Resource Blocks



Date: 31.JUL.2013 11:30:48

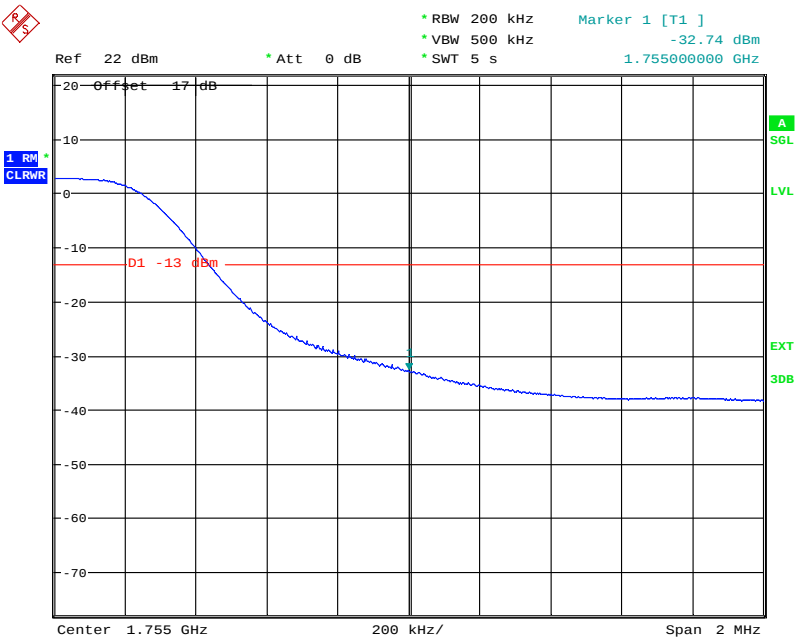
1747.5 MHz - 1 Resource Block - High



Date: 31.JUL.2013 12:32:21



1747.5 MHz - All Resource Blocks



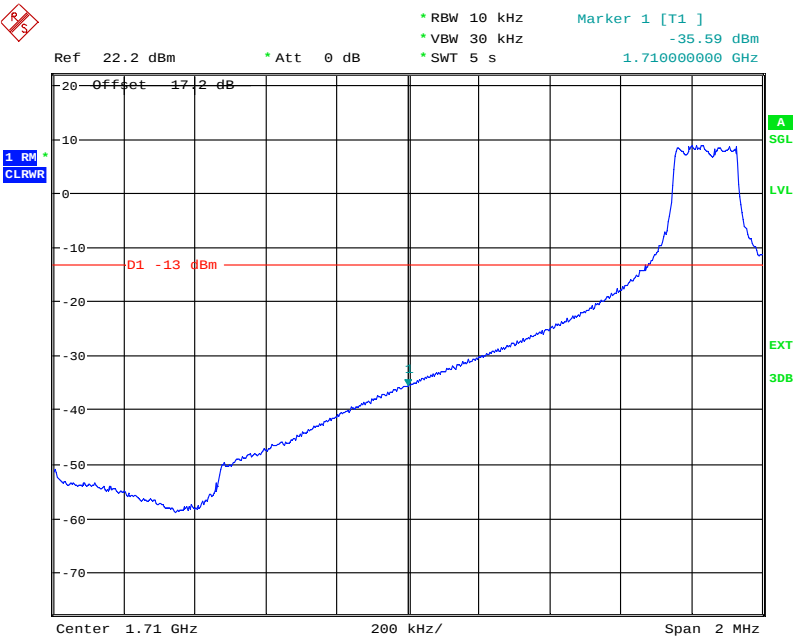
Date: 31.JUL.2013 12:24:50



15.0 MHz Bandwidth - 16QAM

Band Edge (dBm)			
1717.5 MHz		1747.5 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-35.6	-33.3	-36.5	-34.0

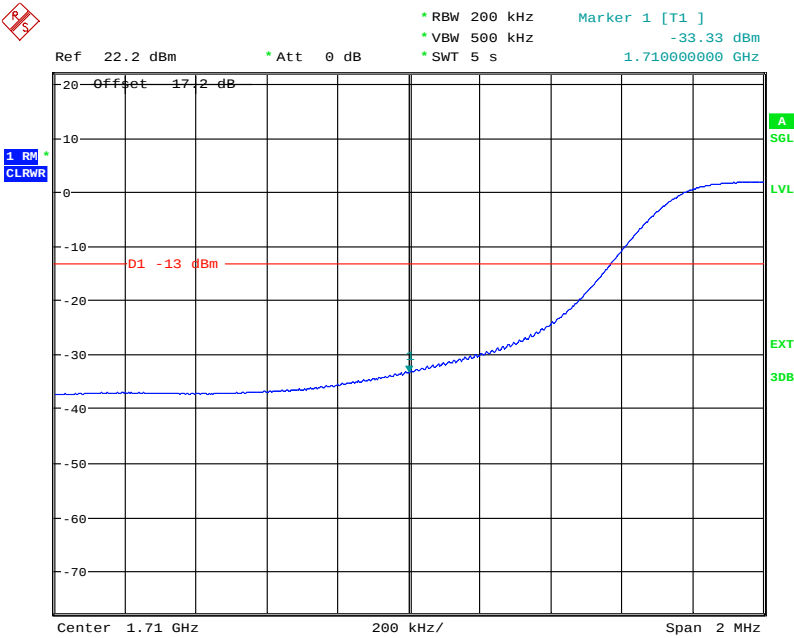
1717.5 MHz - 1 Resource Block - Low



Date: 1.AUG.2013 16:22:41

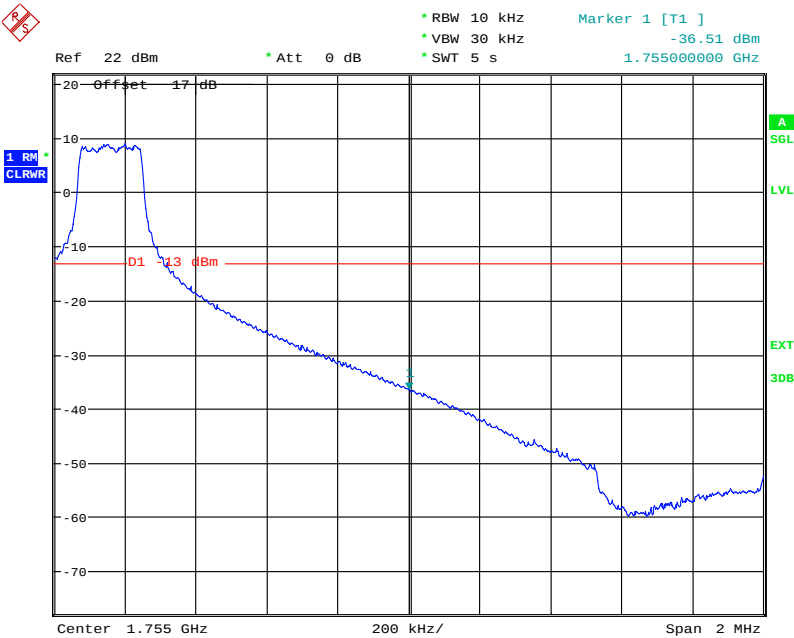


1717.5 MHz - All Resource Blocks



Date: 1.AUG.2013 16:14:58

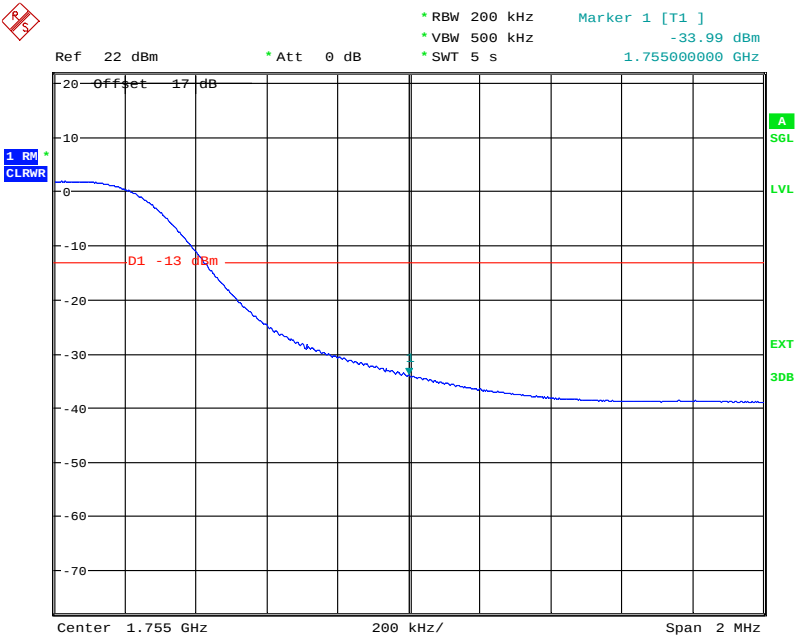
1747.5 MHz - 1 Resource Block - High



Date: 2.AUG.2013 09:03:09



1747.5 MHz - All Resource Blocks



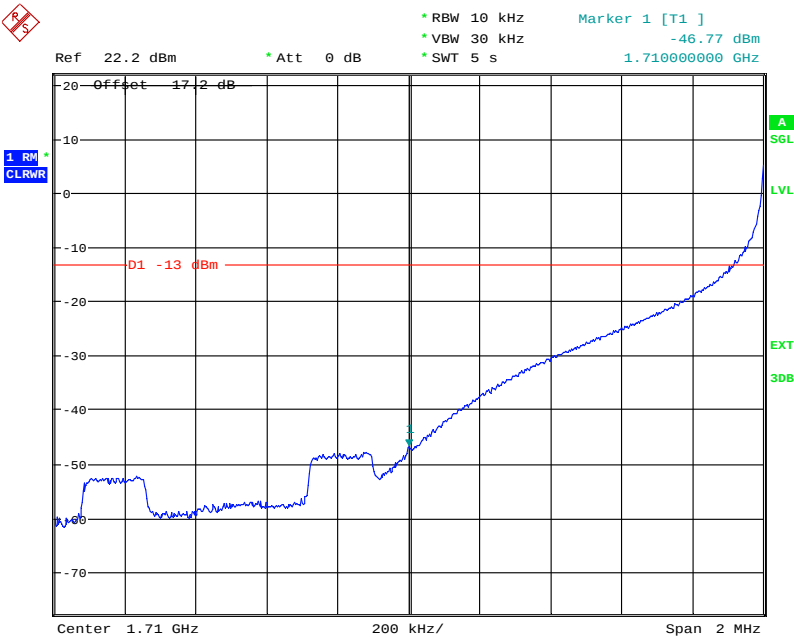
Date: 2.AUG.2013 08:55:08



20.0 MHz Bandwidth - QPSK

Band Edge (dBm)			
1720.0 MHz		1745.0 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-46.8	-35.8	-47.6	-37.9

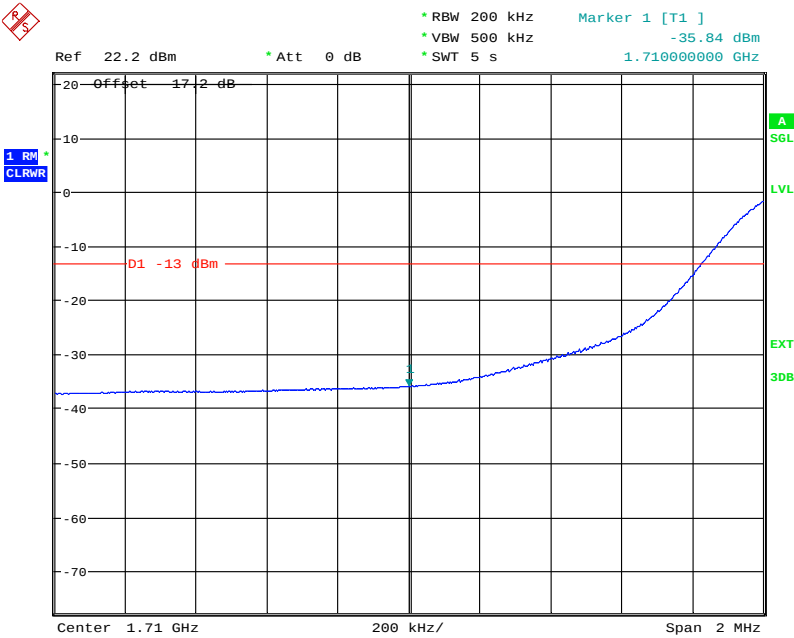
1720 MHz - 1 Resource Block - Low



Date: 31.JUL.2013 14:52:48

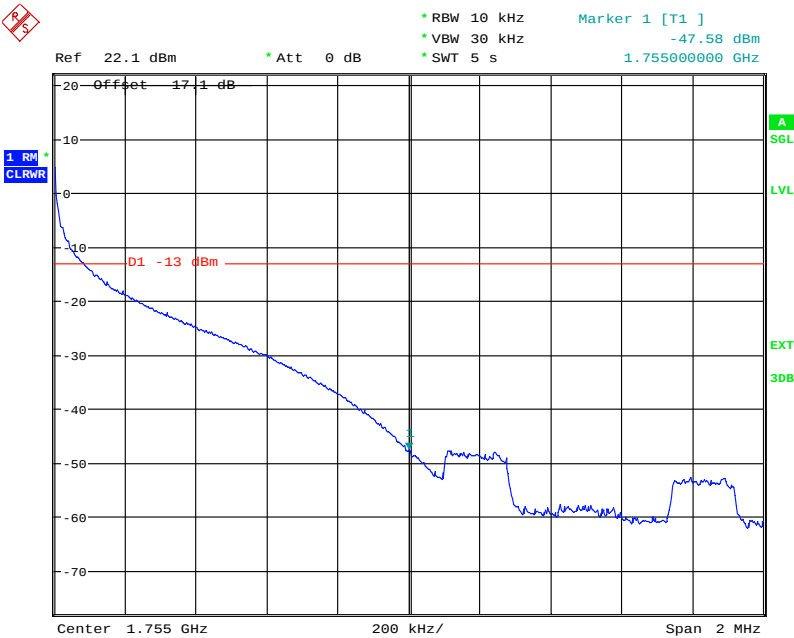


1720 MHz - All Resource Blocks



Date: 31.JUL.2013 15:01:04

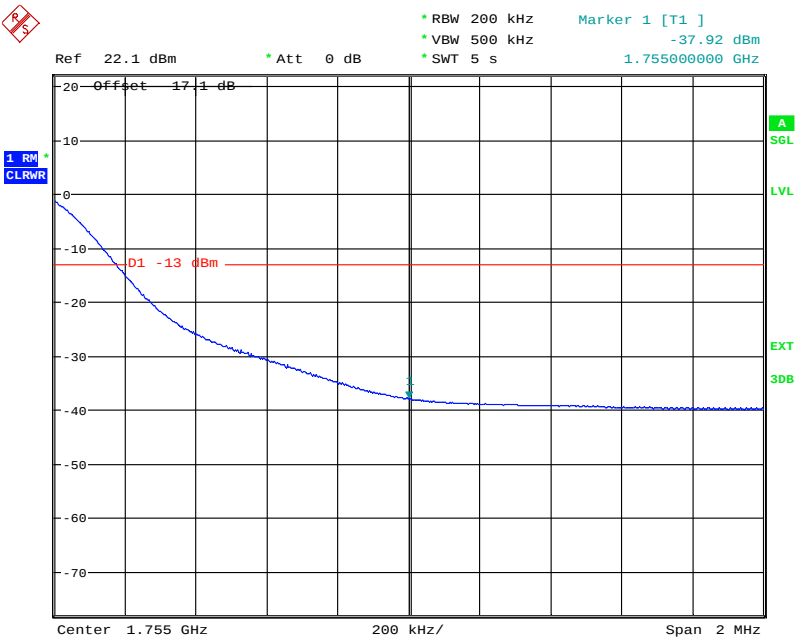
1745 MHz - 1 Resource Block - High



Date: 31.JUL.2013 16:08:09



1745 MHz - All Resource Blocks



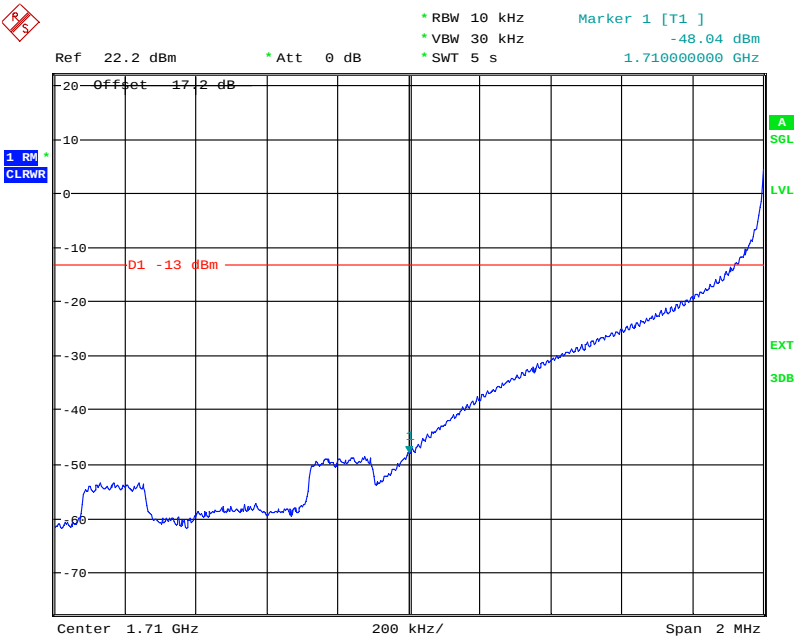
Date: 31.JUL.2013 16:03:07



20.0 MHz Bandwidth - 16QAM

Band Edge (dBm)			
1720.0 MHz		1745.0 MHz	
1 Resource Block	All Resource Blocks	1 Resource Block	All Resource Blocks
Low		High	
-48.0	-37.7	-48.3	-38.3

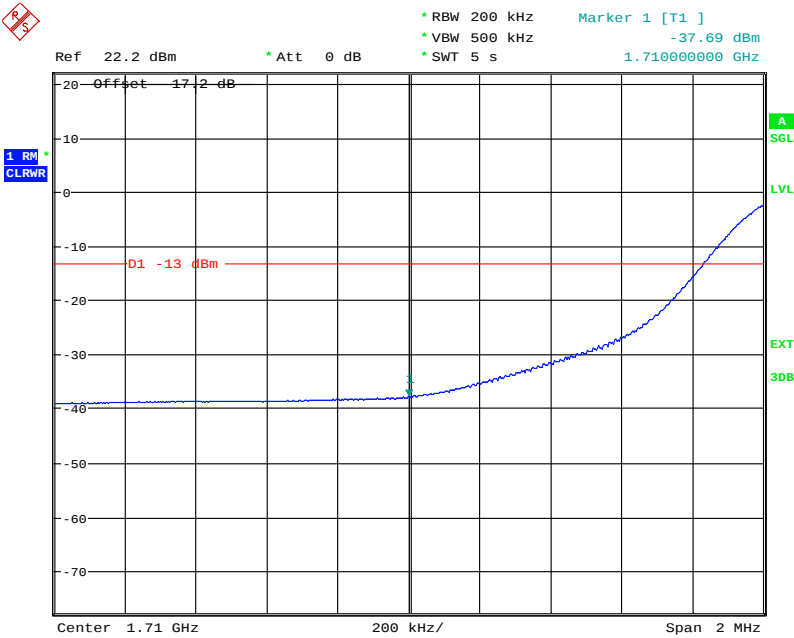
1720 MHz - 1 Resource Block - Low



Date: 2.AUG.2013 09:41:59

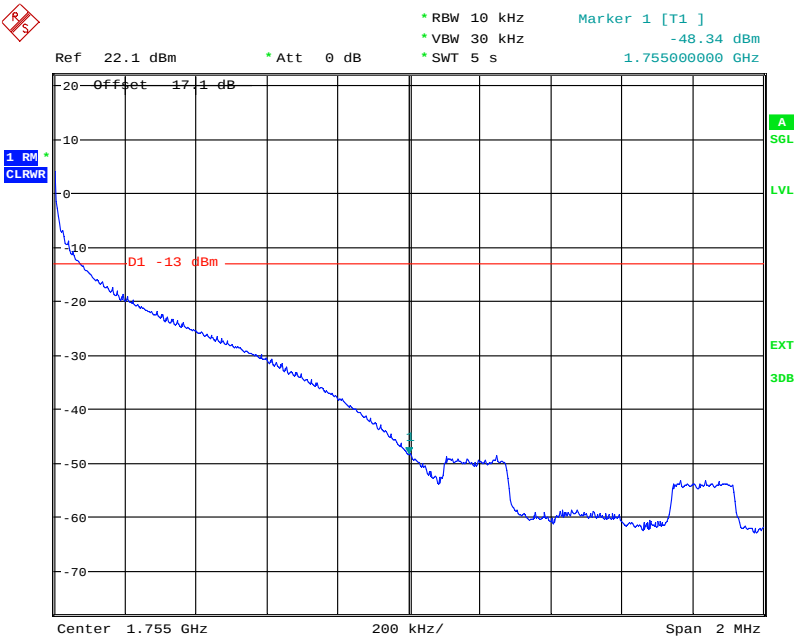


1720 MHz - All Resource Blocks



Date: 2.AUG.2013 09:44:51

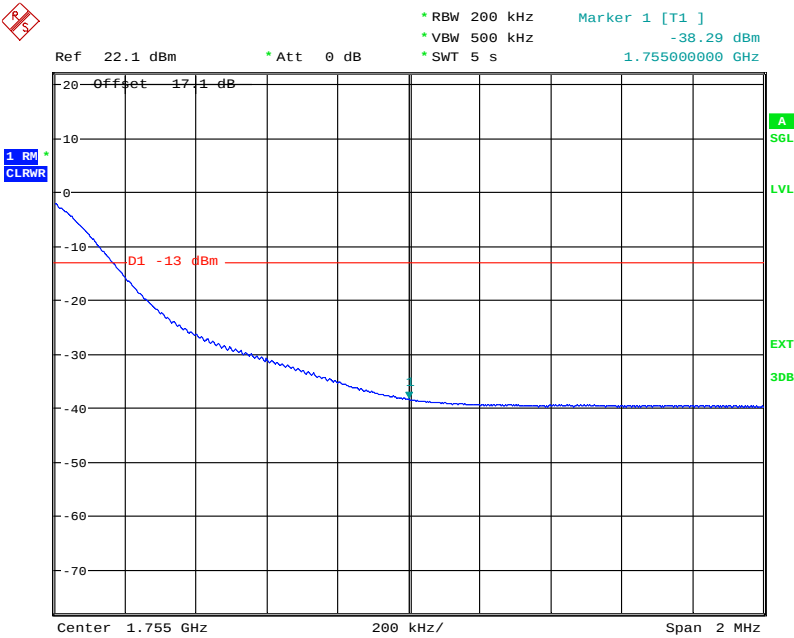
1745 MHz - 1 Resource Block - High



Date: 2.AUG.2013 11:18:52



1745 MHz - All Resource Blocks



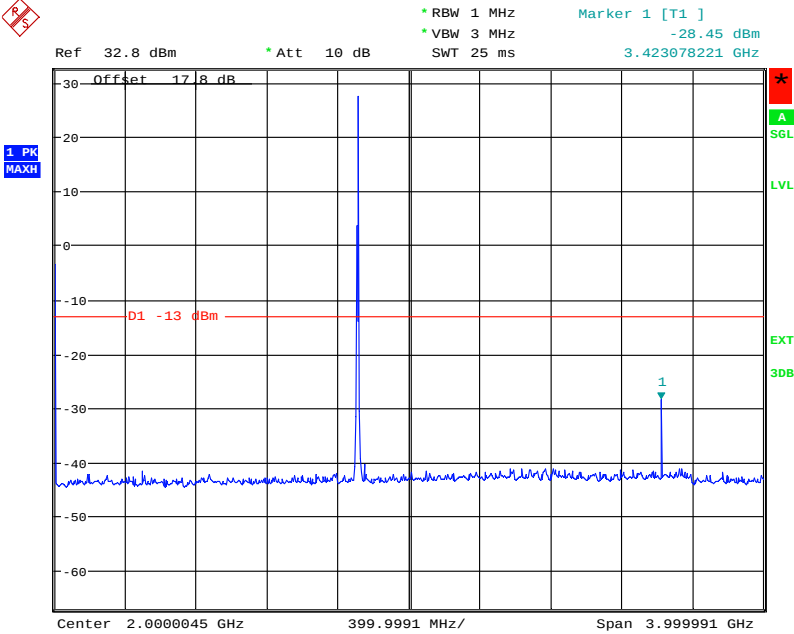
Date: 2.AUG.2013 11:11:00



Conducted Spurious Emissions (Band 1)

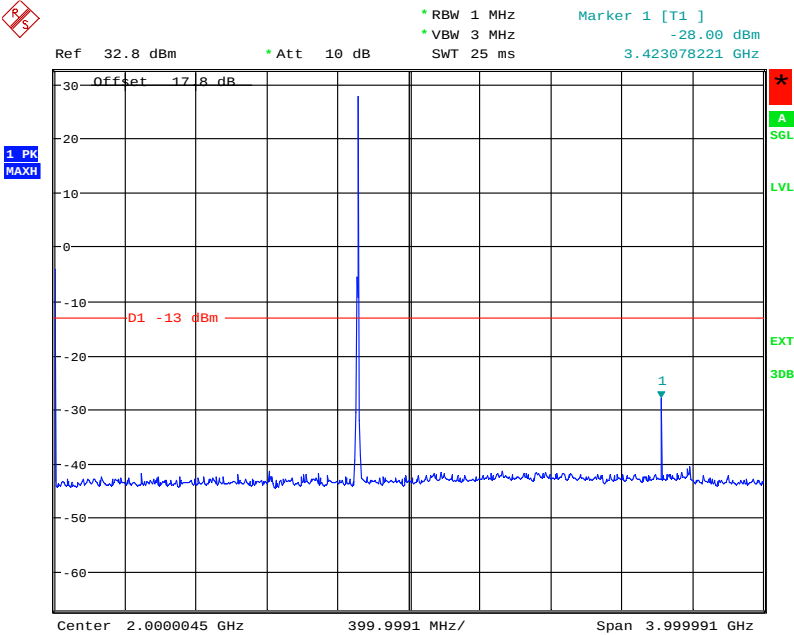
1.4 MHz Bandwidth - QPSK

1710.7 MHz - 1 Resource Block - Low



Date: 30.JUL.2013 09:59:26

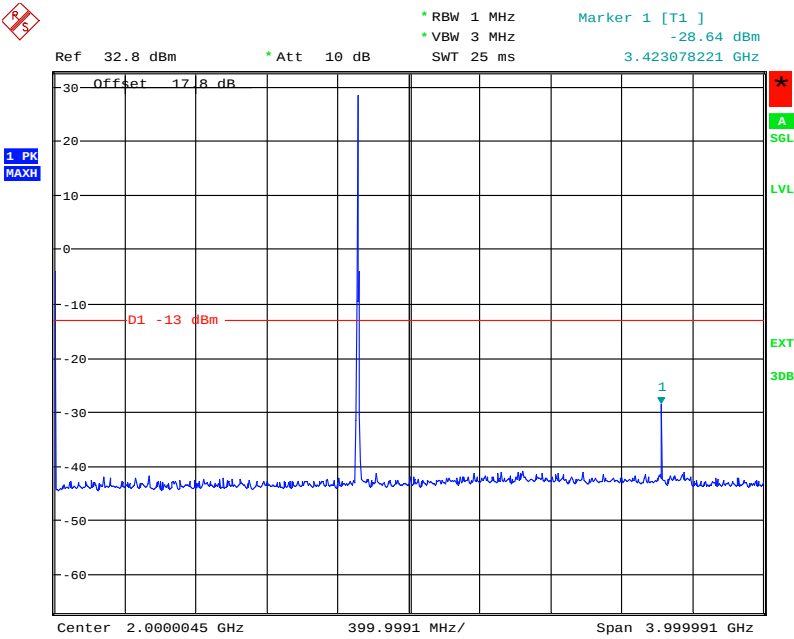
1710.7 MHz - 1 Resource Block - Middle



Date: 30.JUL.2013 10:22:50

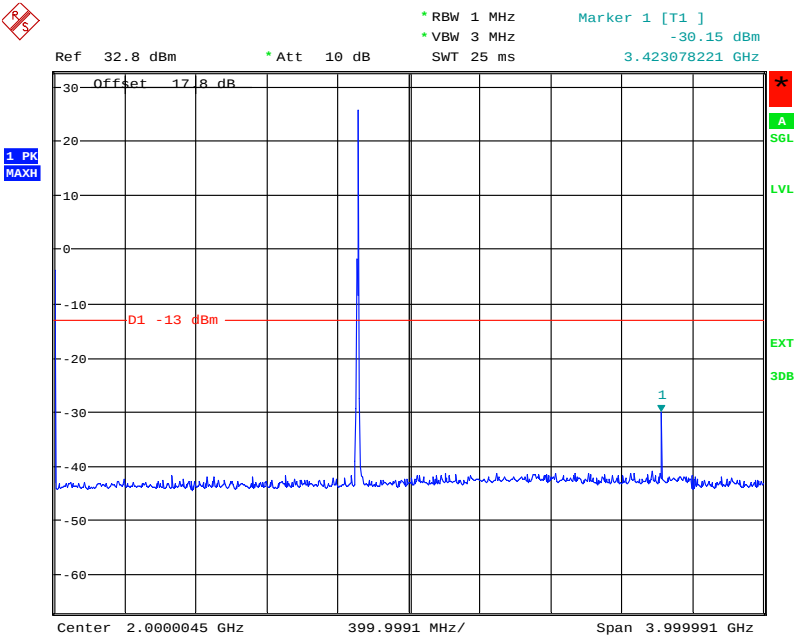


1710.7 MHz - 1 Resource Block - High



Date: 30.JUL.2013 10:34:35

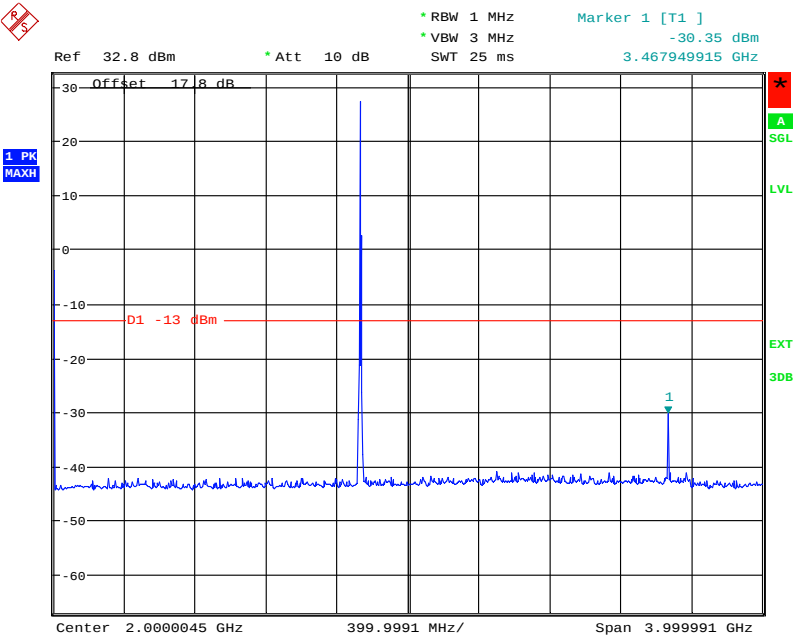
1710.7 MHz - All Resource Blocks



Date: 30.JUL.2013 10:43:24

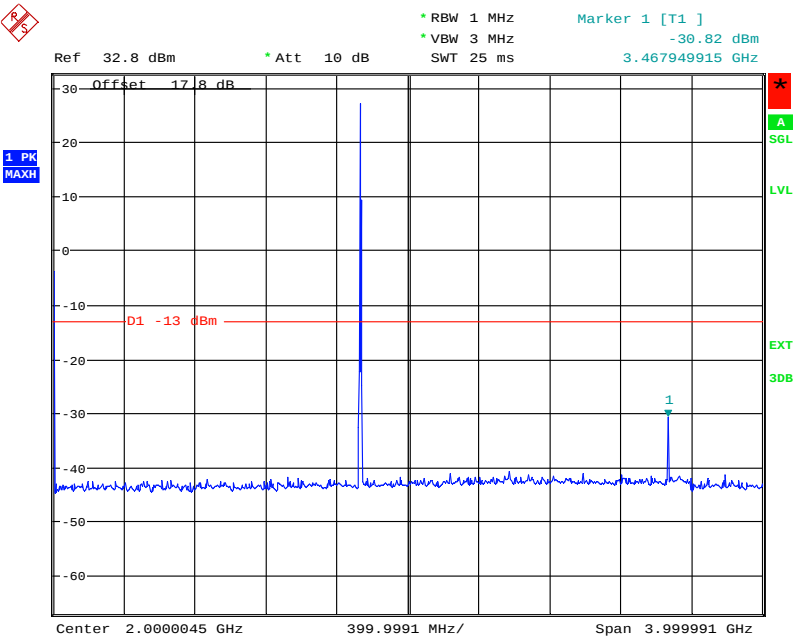


1732.5 MHz - 1 Resource Block - Low



Date: 30.JUL.2013 11:31:48

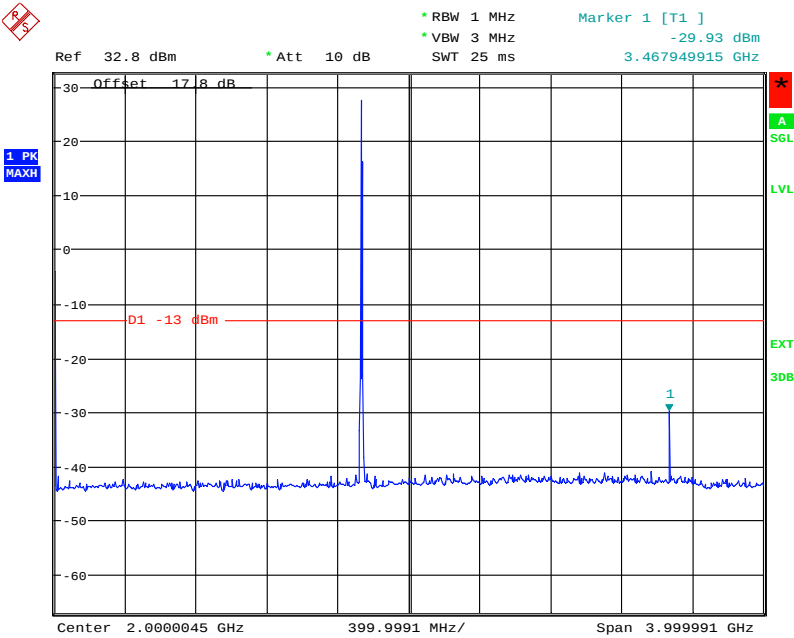
1732.5 MHz - 1 Resource Block - Middle



Date: 30.JUL.2013 11:24:46

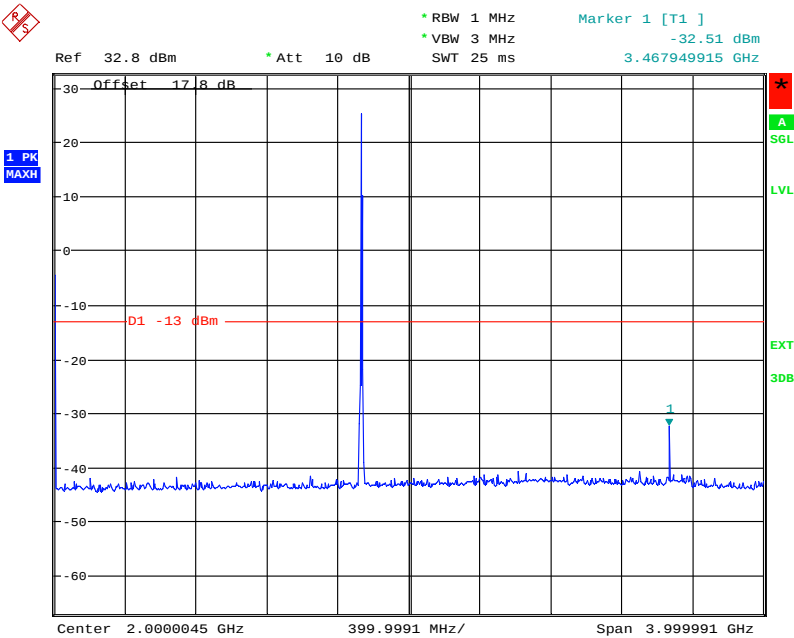


1732.5 MHz - 1 Resource Block - High



Date: 30.JUL.2013 11:18:25

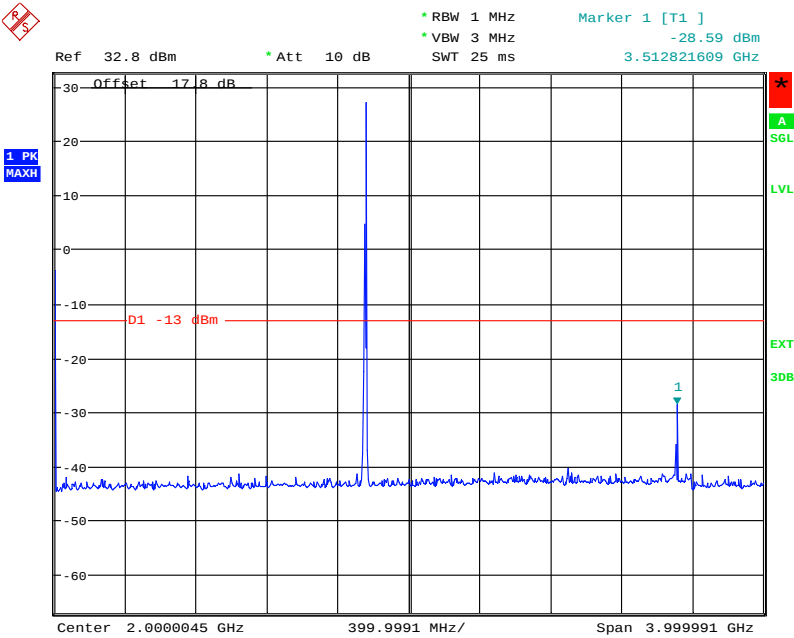
1732.5 MHz - All Resource Blocks



Date: 30.JUL.2013 11:09:46

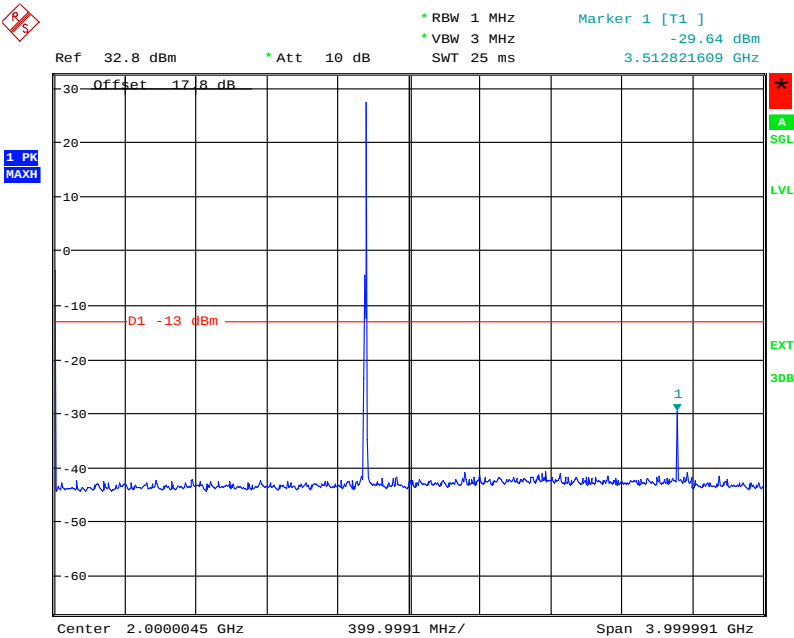


1754.3 MHz - 1 Resource Block - Low



Date: 30.JUL.2013 11:39:51

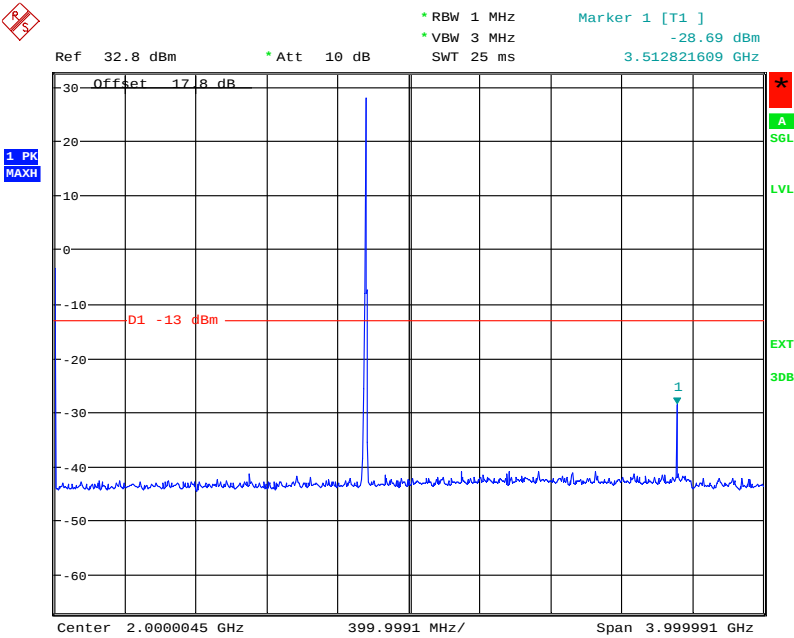
1754.3 MHz - 1 Resource Block - Middle



Date: 30.JUL.2013 11:46:19

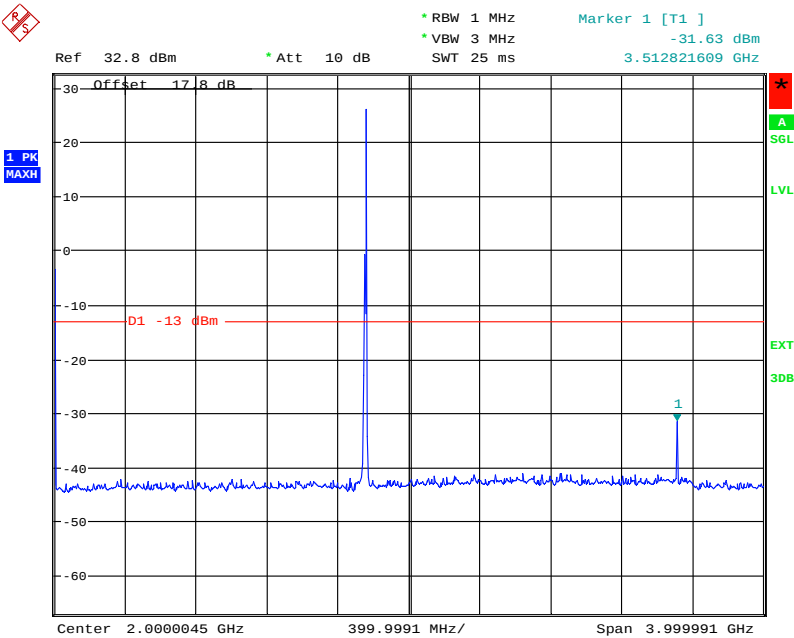


1754.3 MHz - 1 Resource Block - High



Date: 30.JUL.2013 11:56:07

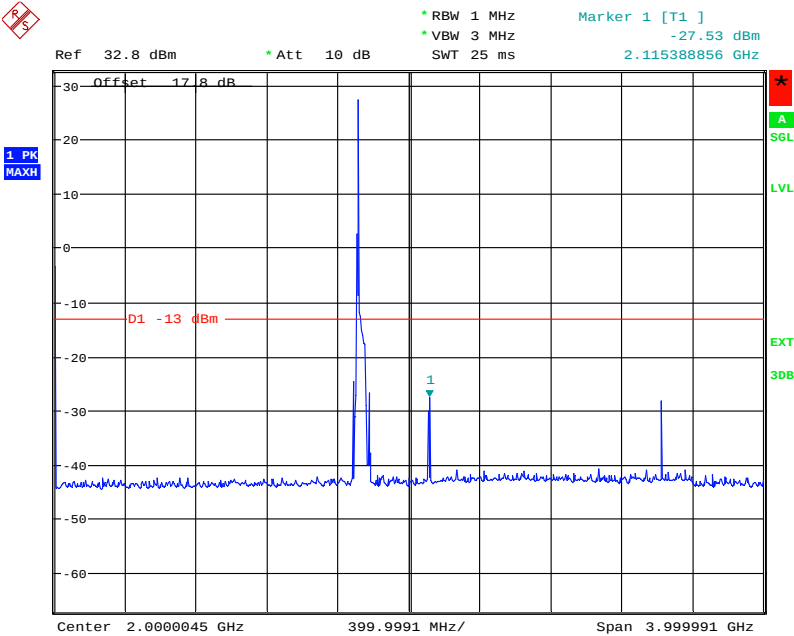
1754.3 MHz - All Resource Blocks



Date: 30.JUL.2013 12:06:40

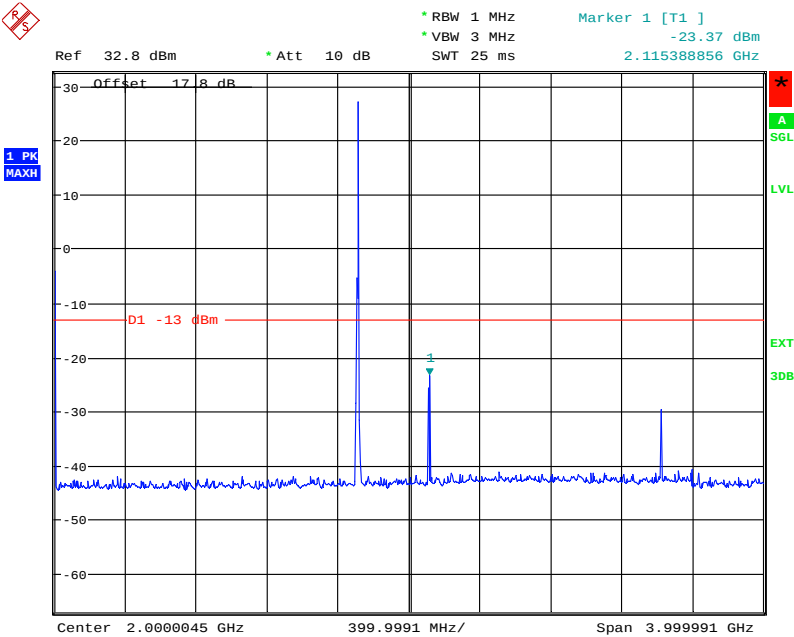
1.4 MHz Bandwidth - 16QAM

1710.7 MHz - 1 Resource Block - Low



Date: 1.AUG.2013 08:28:31

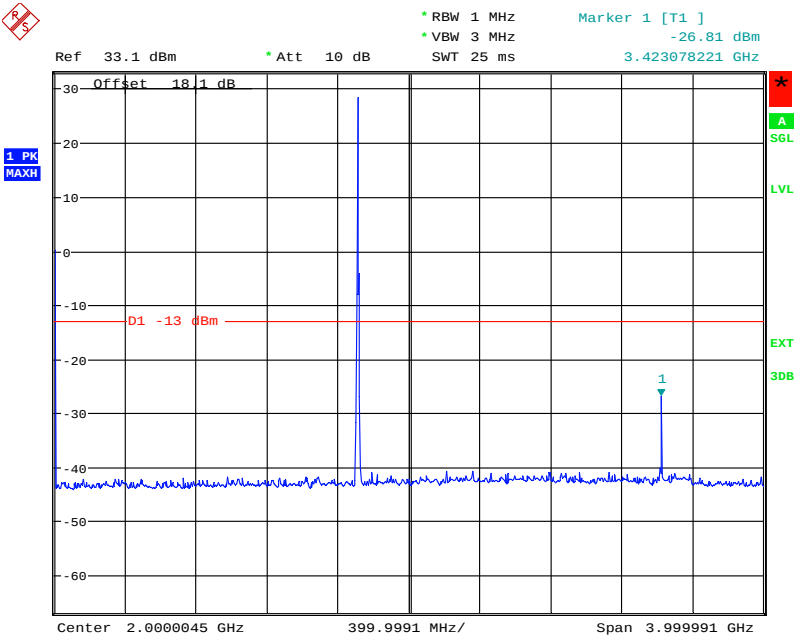
1710.7 MHz - 1 Resource Block - Middle



Date: 1.AUG.2013 08:37:39

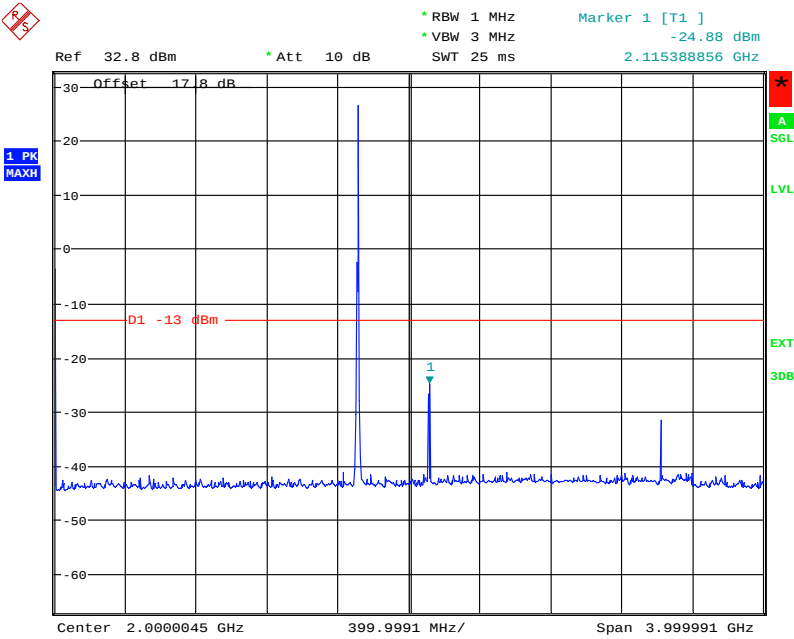


1710.7 MHz - 1 Resource Block - High



Date: 27.AUG.2013 17:17:01

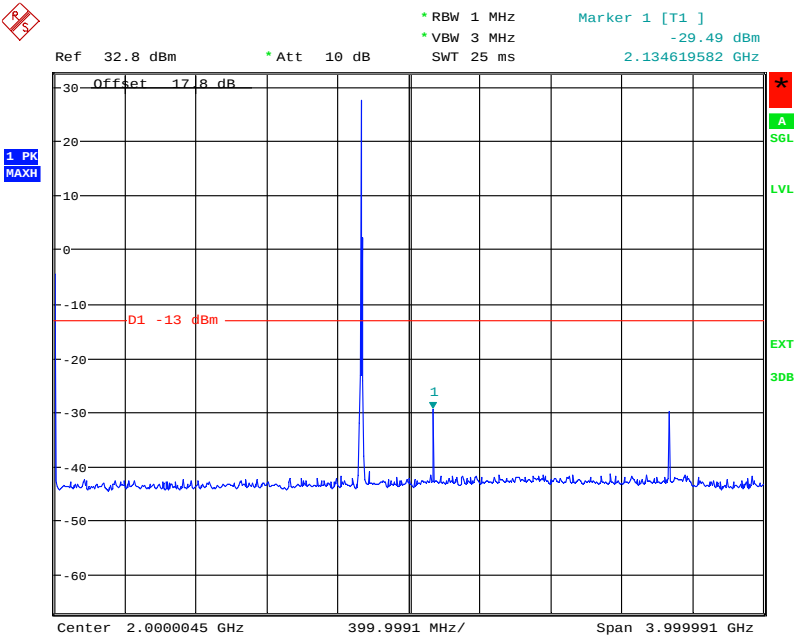
1710.7 MHz - All Resource Blocks



Date: 1.AUG.2013 08:15:29

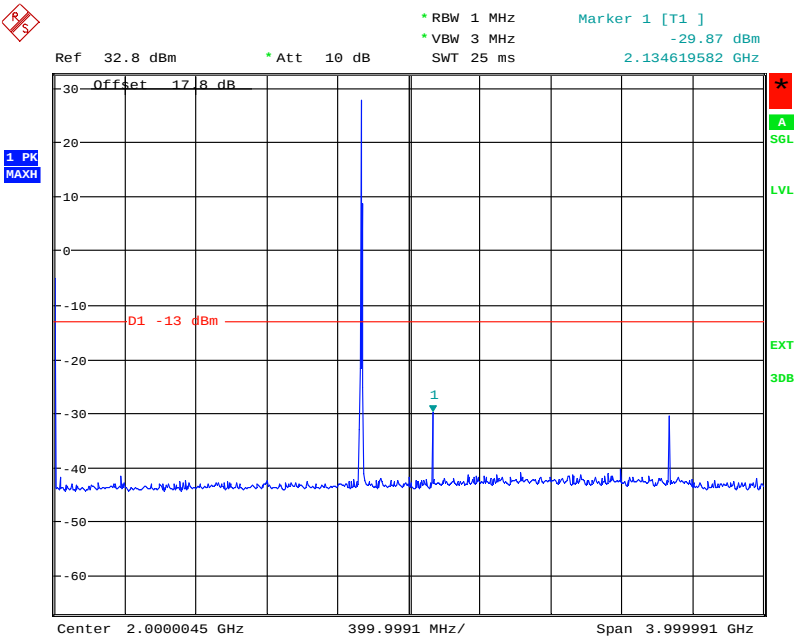


1732.5 MHz - 1 Resource Block - Low



Date: 1.AUG.2013 09:14:00

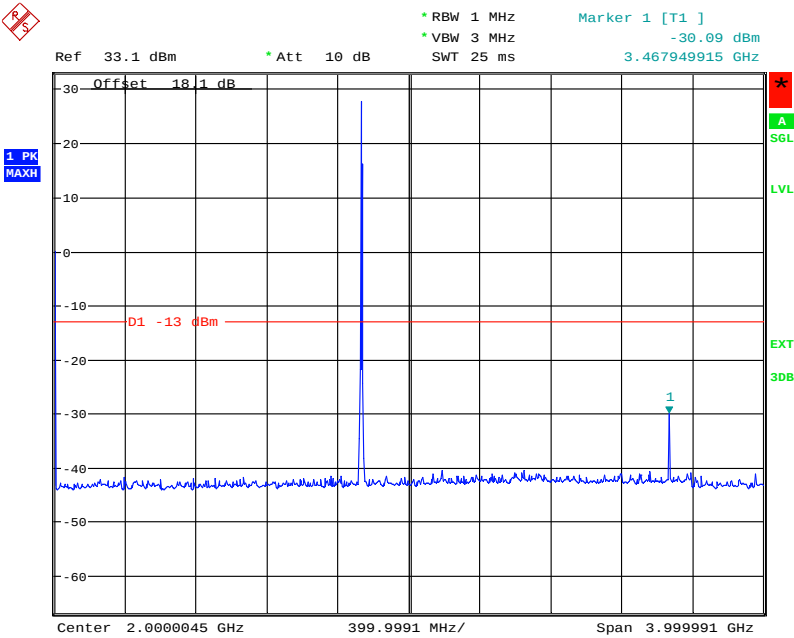
1732.5 MHz - 1 Resource Block - Middle



Date: 1.AUG.2013 09:21:47

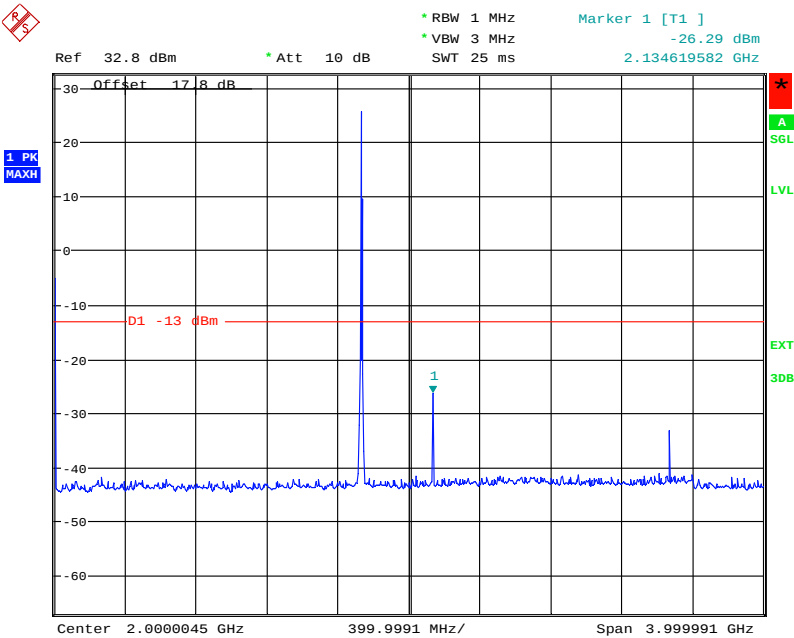


1732.5 MHz - 1 Resource Block - High



Date: 27.AUG.2013 17:21:27

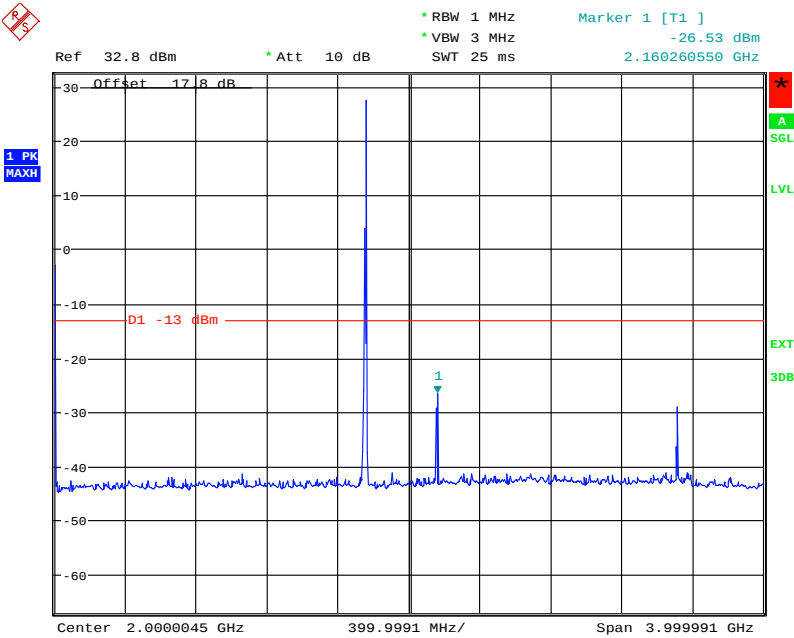
1732.5 MHz - All Resource Blocks



Date: 1.AUG.2013 08:59:43

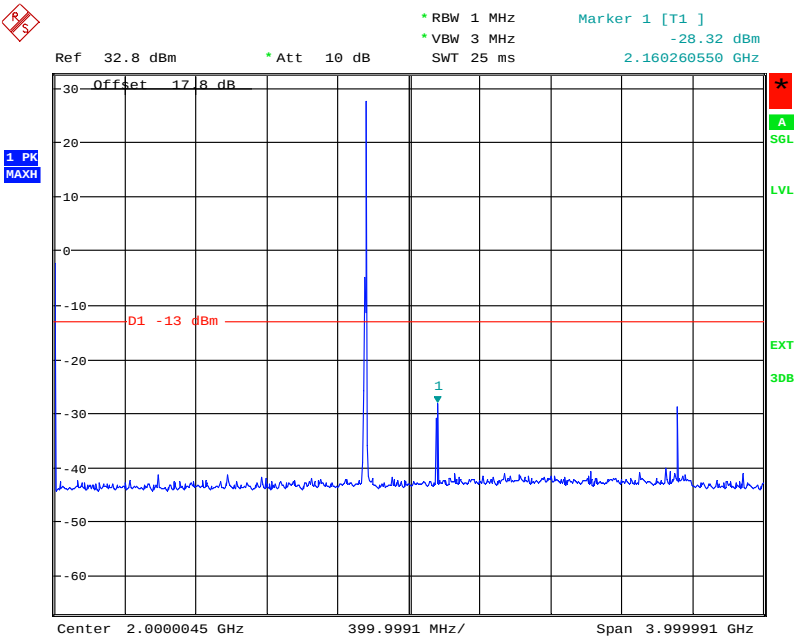


1754.3 MHz - 1 Resource Block - Low



Date: 1.AUG.2013 09:41:22

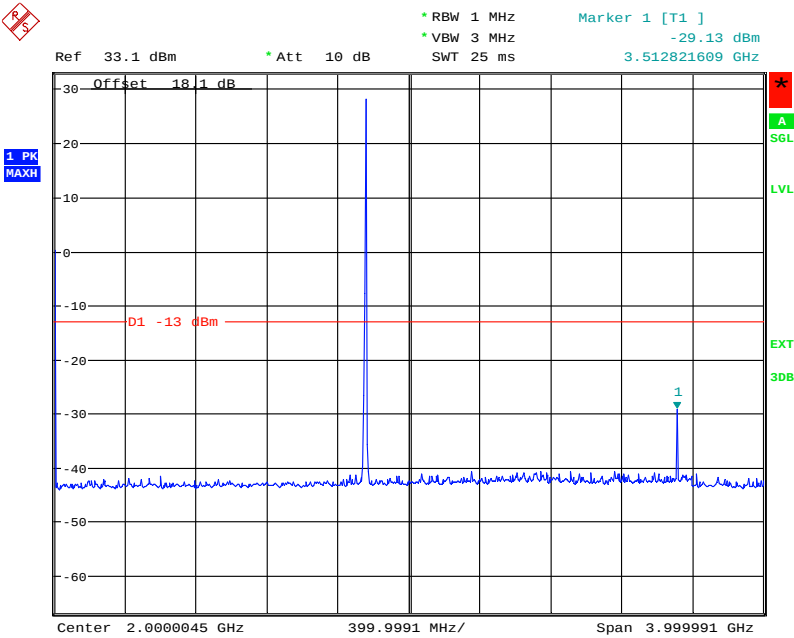
1754.3 MHz - 1 Resource Block - Middle



Date: 1.AUG.2013 09:53:22

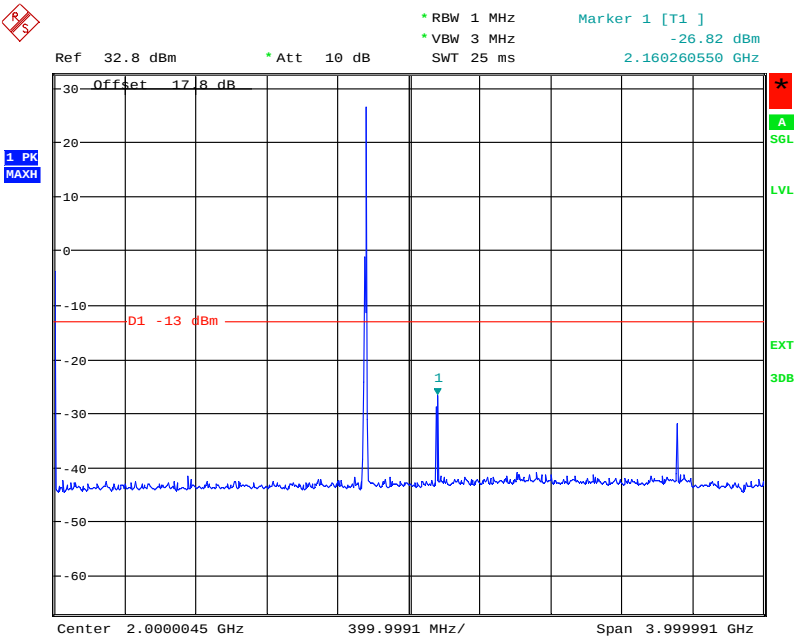


1754.3 MHz - 1 Resource Block - High



Date: 27.AUG.2013 17:25:43

1754.3 MHz - All Resource Blocks

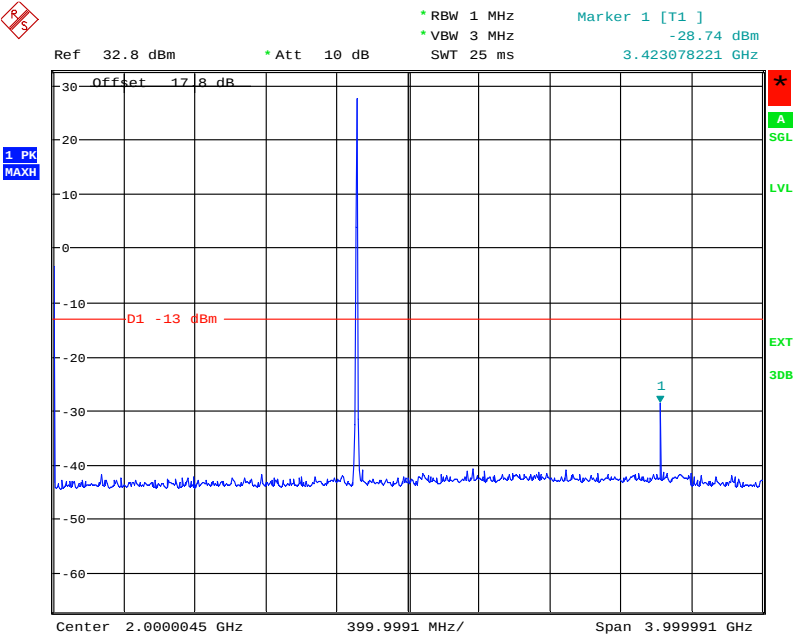


Date: 1.AUG.2013 09:31:56



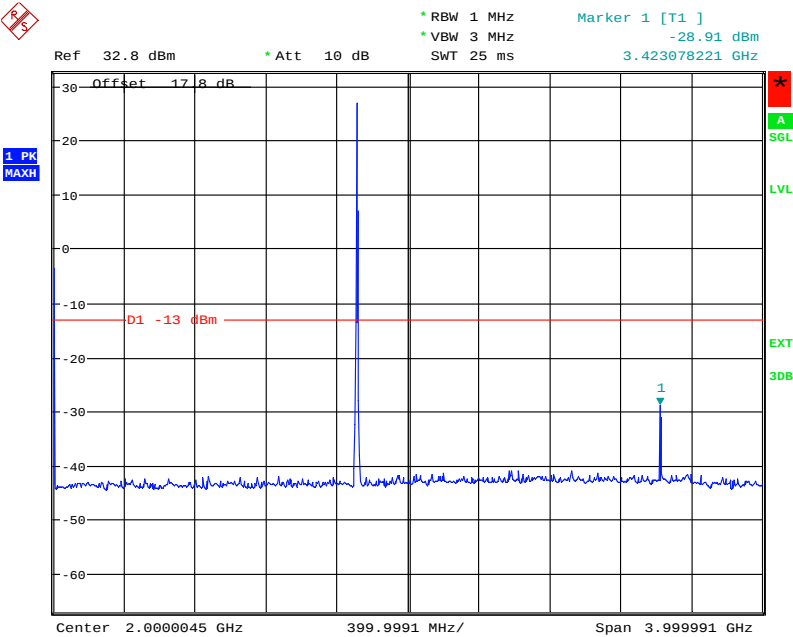
3.0 MHz Bandwidth - QPSK

1711.5 MHz - 1 Resource Block - Low



Date: 30.JUL.2013 12:25:46

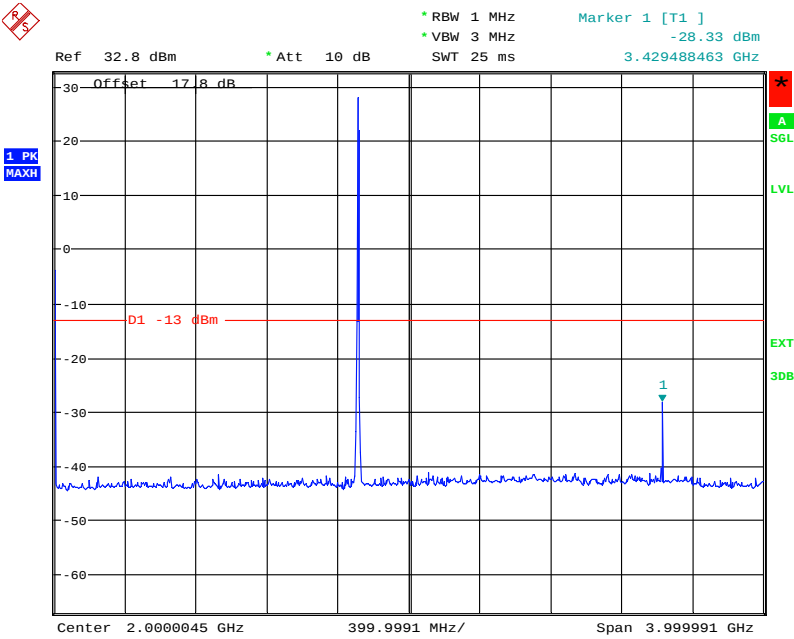
1711.5 MHz - 1 Resource Block - Middle



Date: 30.JUL.2013 12:33:59

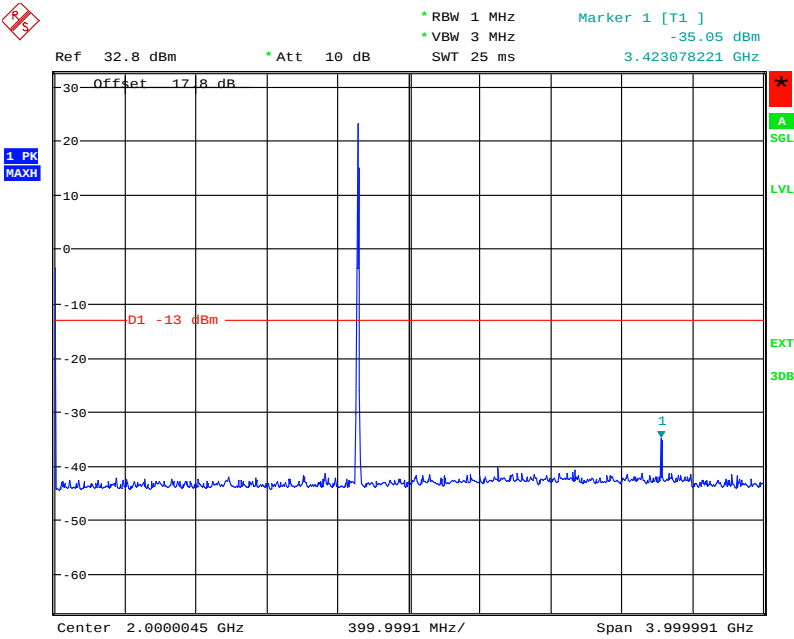


1711.5 MHz - 1 Resource Block - High



Date: 30.JUL.2013 12:45:35

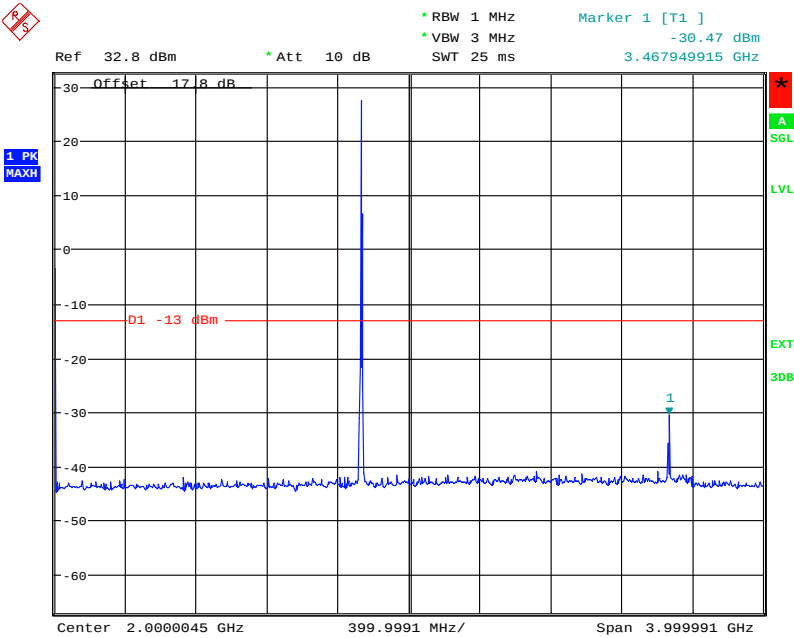
1711.5 MHz - All Resource Blocks



Date: 30.JUL.2013 12:17:40

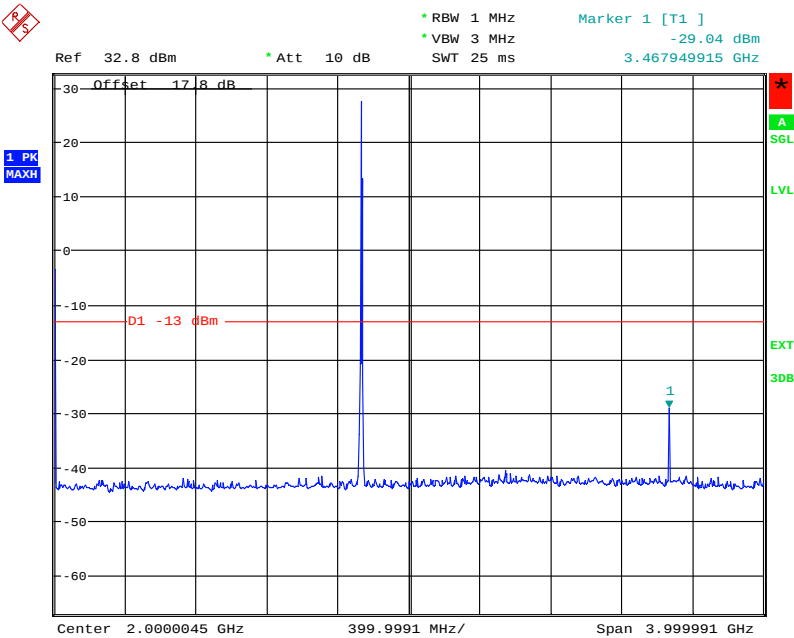


1732.5 MHz - 1 Resource Block - Low



Date: 30.JUL.2013 13:59:44

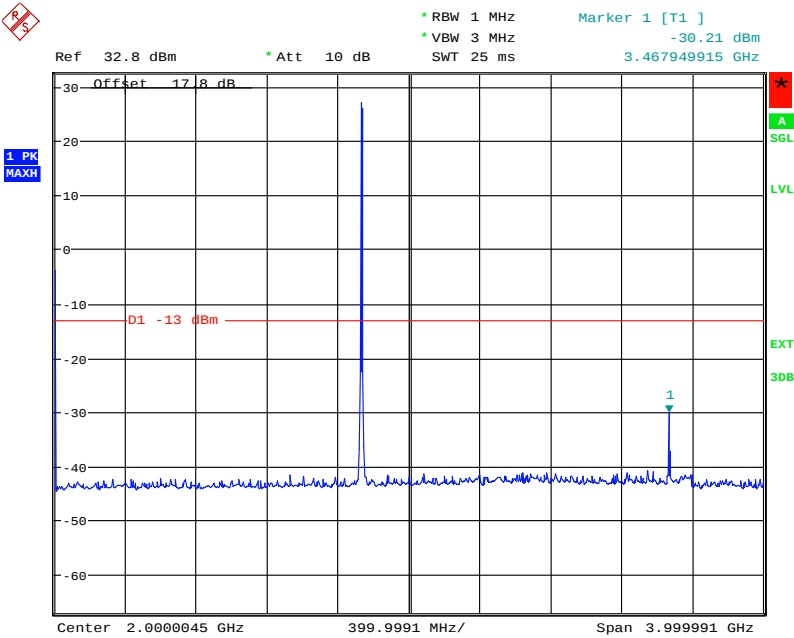
1732.5 MHz - 1 Resource Block - Middle



Date: 30.JUL.2013 13:53:33

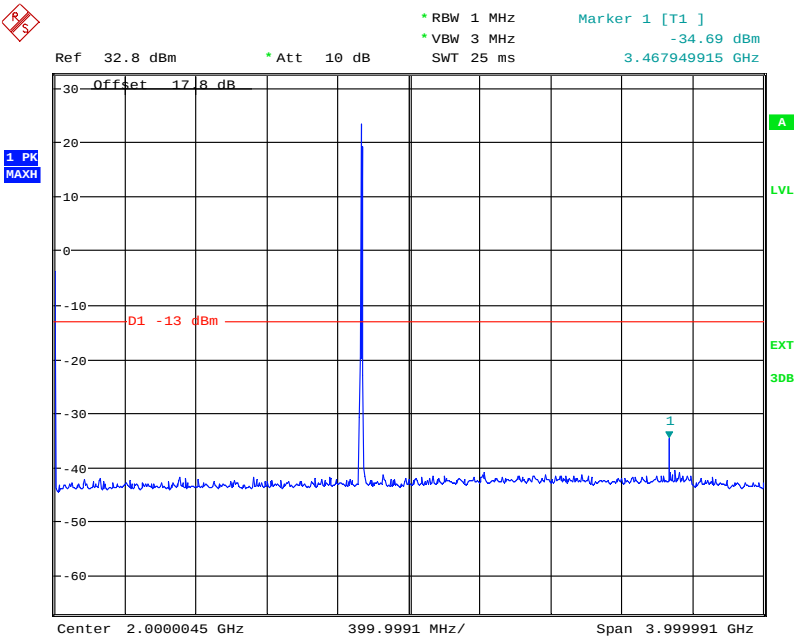


1732.5 MHz - 1 Resource Block - High



Date: 30.JUL.2013 13:45:20

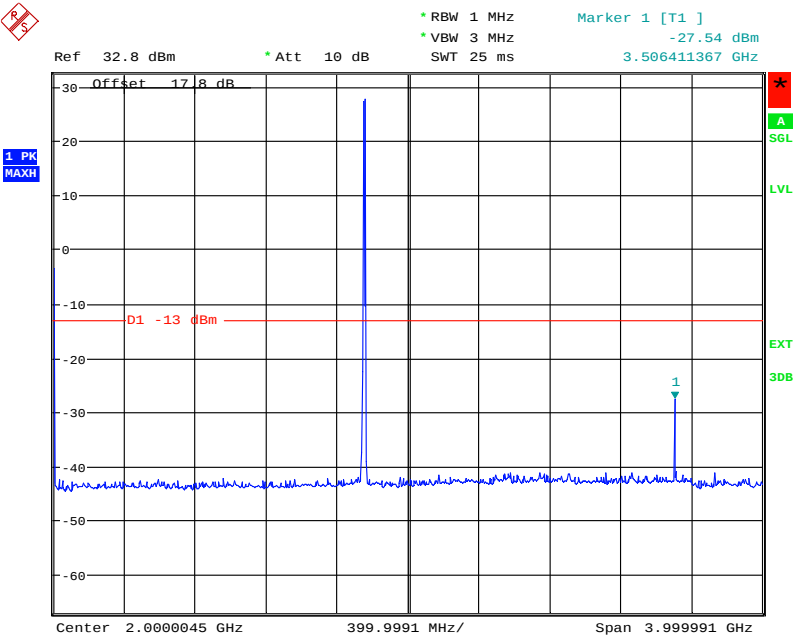
1732.5 MHz - All Resource Blocks



Date: 30.JUL.2013 13:36:53

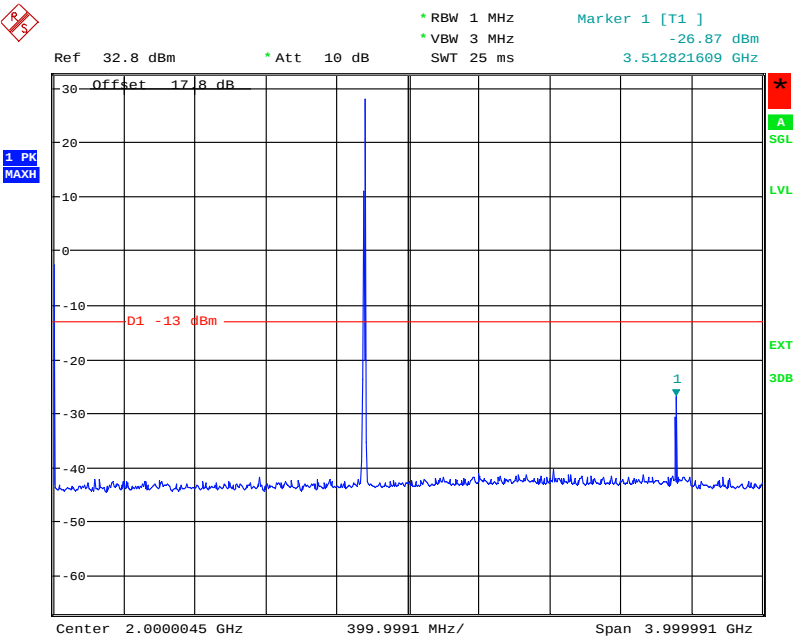


1753.5 MHz - 1 Resource Block - Low



Date: 30.JUL.2013 14:07:38

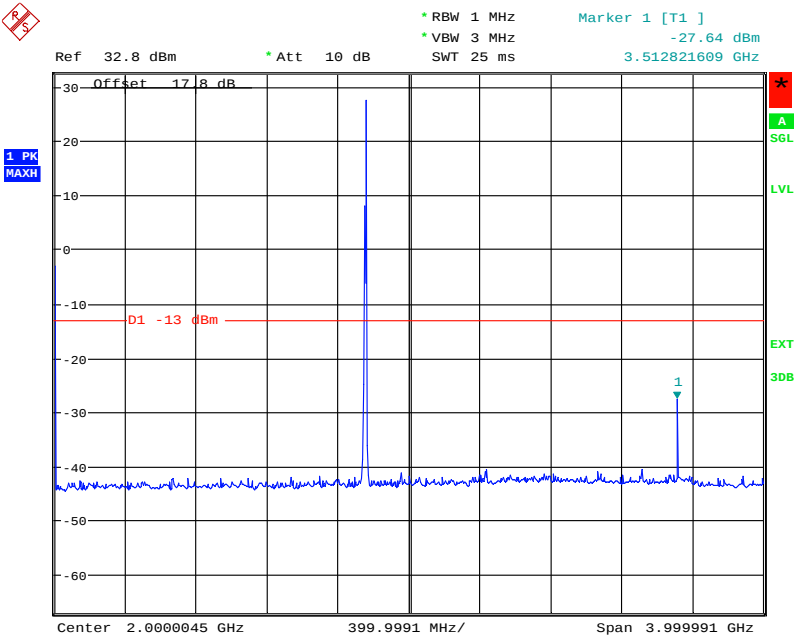
1753.5 MHz - 1 Resource Block - Middle



Date: 30.JUL.2013 14:33:05

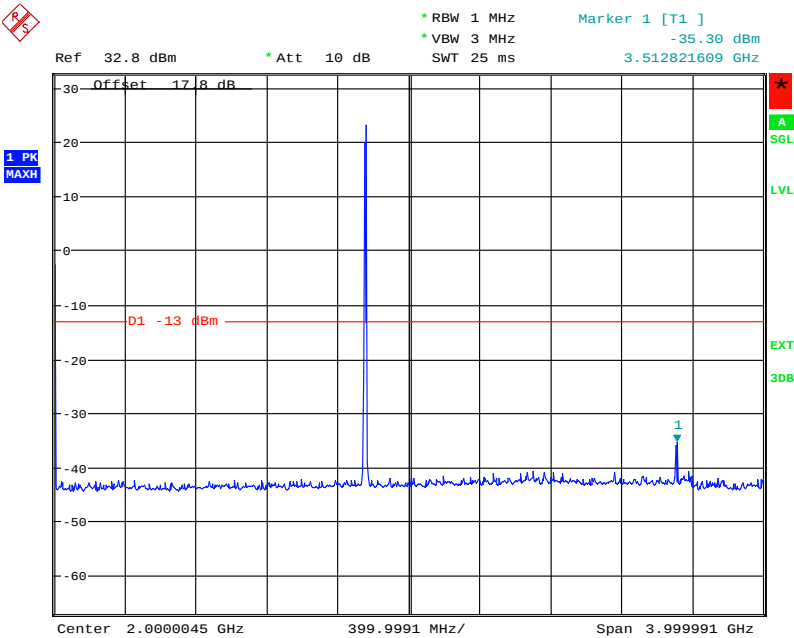


1753.5 MHz - 1 Resource Block - High



Date: 30.JUL.2013 14:40:40

1753.5 MHz - All Resource Blocks



Date: 30.JUL.2013 14:53:05